TSG-RAN Meeting #14
Kyoto, Japan, 11 – 14, December, 2001

RP-010740

Title: **Agreed CRs (R99 and Rel-4 Category A) to TS 25.215**

Source: **TSG-RAN WG1**

Agenda item: **8.1.3**

No.	Spec	CR	Rev	R1 T-doc	Subject	Release	Cat	W/I Code	V_old	V_new
1	25.215	097	-	R1-01-1124	Clarification of internal measurements	R99	F	TEI	3.8.0	3.9.0
2	25.215	098	-	R1-01-1124	Clarification of internal measurements	Rel-4	A	TEI	4.2.0	4.3.0
3	25.215	100	1	R1-01-1291	Correction to the definitions of UE and UTRAN GPS timing of cell frames for UE positioning	R99	F	TEI	3.8.0	3.9.0
4	25.215	101	1	R1-01-1291	Correction to the definitions of UE and UTRAN GPS timing of cell frames for UE positioning	Rel-4	A	TEI	4.2.0	4.3.0
5	25.215	102	-	R1-01-1169	Clarification of P-CCPCH RSCP in 25.215	R99	F	TEI	3.8.0	3.9.0
6	25.215	103	-	R1-01-1169	Clarification of P-CCPCH RSCP in 25.215	Rel-4	A	TEI	4.2.0	4.3.0
7	25.215	104	-	R1-01-1238	Revised definitions of CPICH Ec/No and UTRA carrier RSSI	R99	F	TEI	3.8.0	3.9.0
8	25.215	105	-	R1-01-1238	Revised definitions of CPICH Ec/No and UTRA carrier RSSI	Rel-4	A	TEI	4.2.0	4.3.0

CR-Form-v4

CHANGE REQUEST

| ⌘ | **25.215** CR **097** | ⌘ rev | **-** | ⌘ | Current version: | **3.8.0** | ⌘ |

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

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

Title: ⌘	Clarification of internal measurements		
Source: ⌘	TSG RAN WG1		
Work item code: ⌘	TEI	***Date:*** ⌘	2001-11-13
Category: ⌘	**F**	***Release:*** ⌘	R99

Use <u>one</u> of the following categories:
F (correction)
A (corresponds to a correction in an earlier release)
B (addition of feature),
C (functional modification of feature)
D (editorial modification)
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use <u>one</u> of the following releases:
2   (GSM Phase 2)
R96   (Release 1996)
R97   (Release 1997)
R98   (Release 1998)
R99   (Release 1999)
REL-4   (Release 4)
REL-5   (Release 5)

Reason for change: ⌘	The term "internal measurement" has a specific meaning in RAN WG2 specifications (25.331), where it refers to reported UE internal measurements. In previous discussions RAN WG1 also talked about internal measurements, referring to measurements that are performed internally in UE or UTRAN and that are not reported to the RNC, e.g. SIR estimation in the UE. Such internal measurements are not specified in TS 25.215.
Summary of change: ⌘	Clarify that the UE internal measurements in the introductory sections of 25.215 refer to measurements that are reported to the RNC.
Consequences if not approved: ⌘	Ambiguity in the terminology used by RAN WGs.

Clauses affected: ⌘	4, 5
Other specs Affected: ⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments: ⌘	This CR is considered to have isolated impact.

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change reques

4 Control of UE/UTRAN measurements

In this chapter the general measurement control concept of the higher layers is briefly described to provide an understanding on how L1 measurements are initiated and controlled by higher layers.

L1 provides with the measurement specifications a toolbox of measurement abilities for the UE and the UTRAN. These measurements can be differentiated in different reported measurement types: intra-frequency, inter-frequency, inter-system, traffic volume, quality and UE internal measurements (see [14]).

In the L1 measurement specifications the measurements, see chapter 5, are distinguished between measurements in the UE (the messages will be described in the RRC Protocol) and measurements in the UTRAN (the messages will be described in the NBAP and the Frame Protocol).

To initiate a specific measurement the UTRAN transmits a 'measurement control message' to the UE including a measurement ID and type, a command (setup, modify, release), the measurement objects and quantity, the reporting quantities, criteria (periodical/event-triggered) and mode (acknowledged/unacknowledged), see [14].

When the reporting criteria is fulfilled the UE shall answer with a 'measurement report message' to the UTRAN including the measurement ID and the results.

In idle mode the measurement control message is broadcast in a System Information.

Intra-frequency reporting events, traffic volume reporting events and UE internal measurement reporting events described in [14] define events which trigger the UE to send a report to the UTRAN. This defines a toolbox from which the UTRAN can choose the needed reporting events.

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.

CR-Form-v4

CHANGE REQUEST

| ⌘ | **25.215** CR **098** | ⌘ rev | **-** | ⌘ | Current version: | **4.2.0** | ⌘ |

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

Title: ⌘	Clarification of internal measurements	
Source: ⌘	TSG RAN WG1	
Work item code: ⌘	TEI	***Date:*** ⌘ 2001-11-13
Category: ⌘	**A**	***Release:*** ⌘ REL-4

<table>
<tr><td colspan="2"><i>Use <u>one</u> of the following categories:</i></td><td colspan="2"><i>Use <u>one</u> of the following releases:</i></td></tr>
<tr><td>F</td><td><i>(correction)</i></td><td>2</td><td><i>(GSM Phase 2)</i></td></tr>
<tr><td>A</td><td><i>(corresponds to a correction in an earlier release)</i></td><td>R96</td><td><i>(Release 1996)</i></td></tr>
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<tr><td>D</td><td><i>(editorial modification)</i></td><td>R99</td><td><i>(Release 1999)</i></td></tr>
<tr><td colspan="2"><i>Detailed explanations of the above categories can</i></td><td>REL-4</td><td><i>(Release 4)</i></td></tr>
<tr><td colspan="2"><i>be found in 3GPP <u>TR 21.900</u>.</i></td><td>REL-5</td><td><i>(Release 5)</i></td></tr>
</table>

Reason for change: ⌘	The term "internal measurement" has a specific meaning in RAN WG2 specifications (25.331), where it refers to reported UE internal measurements. In previous discussions RAN WG1 also talked about internal measurements, referring to measurements that are performed internally in UE or UTRAN and that are not reported to the RNC, e.g. SIR estimation in the UE. Such internal measurements are not specified in TS 25.215.
Summary of change: ⌘	Clarify that the UE internal measurements in the introductory sections of 25.215 refer to measurements that are reported to the RNC.
Consequences if not approved: ⌘	Ambiguity in the terminology used by RAN WGs.

Clauses affected: ⌘	4, 5

Other specs Affected: ⌘	☐	Other core specifications	⌘
	☐	Test specifications	
	☐	O&M Specifications	

Other comments: ⌘	This CR is considered to have isolated impact.

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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.

CR-Form-v4

CHANGE REQUEST

⌘ **25.215** CR **100** ⌘ rev **1** ⌘ Current version: **3.8.0** ⌘

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

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

Title: ⌘	Correction to the definitions of UE and UTRAN GPS timing of cell frames for UE positioning	
Source: ⌘	TSG RAN WG1	
Work item code: ⌘	TEI	***Date:*** ⌘ 16 November 2001
Category: ⌘ **F**		***Release:*** ⌘ R99

Use one of the following categories:
   F *(correction)*
   A *(corresponds to a correction in an earlier release)*
   B *(addition of feature),*
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   R98   *(Release 1998)*
   R99   *(Release 1999)*
   REL-4   *(Release 4)*
   REL-5   *(Release 5)*

Reason for change: ⌘	There are contradictory requirements in the definition of the UE GPS timing of cell frames for UE positioning measurement. Specifically, the definition states that the measurement must be made with cells "within the active set" but the measurement is also applicable for Connected Inter. The applicability of the measurement to inter-frequency cells seems incorrect as other measurements that similarly require the reading of the SFN on other cells (such as the SFN-SFN observed time difference type 1) are not applicable to this state. Specifically it is not possible to read the SFN of an inter-frequency cell during compressed mode or during FACH measurement occasions. Further, the requirement that the measurement must be made with active set cells limits the measurement to being performed only when the mobile is in CELL_DCH. RAN2 has recently expressed a desire that the UE also be able to report UE positioning measurements while in the CELL_FACH state. On the UTRAN side, the definition of the GPS timing of cell frames also includes the reference to cells "within the active set". The notion of an active set does generally exist on the UTRAN side and the network should be able to request the measurement without specific reference to the active set of a given UE. Thus it is suggested to remove this text also.
Summary of change: ⌘	The text "where cell j is a cell within the active set" is removed from the definition of UE and UTRAN GPS timing of cell frames for UE for UE positioning. "Cell j" is replaced by "reference cell" meaning as defined by RRC signalling for the UE and NBAP signalling for the UTRAN.The applicability to Connected Inter is also removed from the UE measurement.
Consequences if not approved: ⌘	There will be conflicting and incorrect requirements for the performance of the measurement UE GSP timing of cell frames for UE positioning.

		Isolated Impact Analysis: This is an isolated impact CR that corrects a functionality where the specification contained contradictions. This CR would not affect implementations behaving as indicated in the CR, would affect implementations supporting the corrected functionality otherwise.

Clauses affected:	⌘			

Other specs affected:	⌘	☐	Other core specifications	⌘	
		☐	Test specifications		
		☐	O&M Specifications		

Other comments:	⌘	

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5.1.10   UE Rx-Tx time difference

Definition	The difference in time between the UE uplink DPCCH/DPDCH frame transmission and the first detected path (in time), of the downlink DPCH frame from the measured radio link. Type 1 and Type 2 are defined. For Type 1, the reference Rx path shall be the first detected path (in time) amongst the paths (from the measured radio link) used in the demodulation process. For Type 2, the reference Rx path shall be the first detected path (in time) amongst all paths (from the measured radio link) detected by the UE. The reference path used for the measurement may therefore be different for Type 1 and Type 2. The reference point for the UE Rx-Tx time difference shall be the antenna connector of the UE. Measurement shall be made for each cell included in the active set.
Applicable for	Connected Intra

5.1.11   Observed time difference to GSM cell

Definition	The Observed time difference to GSM cell is defined as: $T_{RxGSMj} - T_{RxSFNi}$, where: T_{RxSFNi} is the time at the beginning of the P-CCPCH frame with SFN=0 from cell i. 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 reference point for the Observed time difference to GSM cell shall be the antenna connector of the UE. 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. The reported time difference is calculated from the actual measurement in the UE. The actual measurement shall be based on: $T_{MeasGSM,j}$: The start of the first tail bit of the most recently received GSM SCH on frequency j $T_{MeasSFN,i}$: The start of the last P-CCPCH frame received on frequency i before receiving the GSM SCH on frequency j For calculating the reported time difference, the frame lengths are always assumed to be 10 ms for UTRA and (60/13) ms for GSM.
Applicable for	Idle, Connected Inter

5.1.12   UE GPS Timing of Cell Frames for UE positioning

Definition	The timing between the reference 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 detected path (in time) of the reference cell j CPICH, where cell j is a cell within the active set. The reference point for $T_{UE-GPSj}$ shall be the antenna connector of the UE.
Applicable for	Connected Intra, Connected Inter

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.

The term "antenna connector" used in this sub-clause to define the reference point for the UTRAN measurements refers to the "BS antenna connector" test port A and test port B as described in [19]. The term "antenna connector" refers to Rx or Tx antenna connector as described in the respective measurement definitions.

5.2.1   Received total wide band power

Definition	The received wide band power, including noise generated in the receiver, within the bandwidth defined by the pulse shaping filter. In case of receiver diversity the reported value shall be linear average of the power in the diversity branches. The reference point for the Received total wide band power measurement shall be the output of the pulse shaping filter in the receiver.

5.2.2   SIR

Definition	Signal to Interference Ratio, is defined as: (RSCP/ISCP)×SF. Measurement shall be performed on the DPCCH of a Radio Link Set. In compressed mode the SIR shall not be measured in the transmission gap. The reference point for the SIR measurements shall be the Rx antenna connector. where: RSCP = Received Signal Code Power, unbiased measurement of the received power on one code. ISCP = Interference Signal Code Power, the interference on the received signal. SF=The spreading factor used on the DPCCH.

5.2.3   SIR$_{error}$

Definition	$SIR_{error} = SIR - SIR_{target\_ave}$, where: SIR = the SIR measured by UTRAN, defined in section 5.2, given in dB. SIR_{target_ave} = the SIR_{target} averaged over the same time period as the SIR used in the SIR_{error} calculation. In compressed mode $SIR_{target}=SIR_{cm\_target}$ shall be used when calculating SIR_{target_ave}. In compressed mode the SIR_{target_ave} shall not be calculated over the transmission gap. The averaging of SIR_{target} shall be made in a linear scale and SIR_{target_ave} shall be given in dB.

5.2.4   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 Tx antenna connector. In case of Tx diversity the transmitted carrier power for each branch shall be measured and the maximum of the two values shall be reported to higher layers, i.e. only one value will be reported to higher layers.

5.2.5   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 transmitted from the UTRAN access point and shall reflect the power on the pilot bits of the DPCCH-field. 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. The reference point for the transmitted code power measurement shall be the Tx antenna connector. In case of Tx diversity the transmitted code power for each branch shall be measured and summed together in [W].

5.2.6   Transport channel BER

Definition	The transport channel BER is an estimation of the average bit error rate (BER) of the DPDCH data of a Radio Link Set. 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.

5.2.7   Physical channel BER

Definition	The Physical channel BER is an estimation of the average bit error rate (BER) on the DPCCH of a Radio Link Set. 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 the latest TTI of the respective TrCH.

5.2.8   Round trip time

Definition	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. The reference point for T_{TX} shall be the Tx antenna connector. T_{RX} = The time of reception of the beginning (the first detected path, in time) of the corresponding uplink DPCCH/DPDCH frame from the UE. The reference point for T_{RX} shall be the Rx antenna connector. 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.

5.2.9   UTRAN GPS Timing of Cell Frames for UE positioning

Definition	$T_{UTRAN-GPSj}$ is defined as the time of the occurrence of a specified UTRAN event according to GPS Time Of Week. The specified UTRAN event is the beginning of the transmission of a particular frame in the reference cell j (identified through its SFN), where cell j is a cell within the active set. The reference point for $T_{UTRAN-GPSj}$ shall be the Tx antenna connector.

CR-Form-v4

CHANGE REQUEST

⌘	**25.215** CR **101**	⌘ rev **1** ⌘	Current version: **4.2.0** ⌘

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

Title: ⌘	Correction to the definitions of UE and UTRAN GPS timing of cell frames for UE positioning	
Source: ⌘	TSG RAN WG1	
Work item code: ⌘	TEI	*Date:* ⌘ 16 November 2001
Category: ⌘	**A**	*Release:* ⌘ REL-4

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Reason for change: ⌘	There are contradictory requirements in the definition of the UE GPS timing of cell frames for UE positioning measurement. Specifically, the definition states that the measurement must be made with cells "within the active set" but the measurement is also applicable for Connected Inter.

The applicability of the measurement to inter-frequency cells seems incorrect as other measurements that similarly require the reading of the SFN on other cells (such as the SFN-SFN observed time difference type 1) are not applicable to this state. Specifically it is not possible to read the SFN of an inter-frequency cell during compressed mode or during FACH measurement occasions.

Further, the requirement that the measurement must be made with active set cells limits the measurement to being performed only when the mobile is in CELL_DCH. RAN2 has recently expressed a desire that the UE also be able to report UE positioning measurements while in the CELL_FACH state.

On the UTRAN side, the definition of the GPS timing of cell frames also includes the reference to cells "within the active set". The notion of an active set does generally exist on the UTRAN side and the network should be able to request the measurement without specific reference to the active set of a given UE. Thus it is suggested to remove this text also. |
| ***Summary of change:*** ⌘ | The text "where cell j is a cell within the active set" is removed from the definition of UE and UTRAN GSP timing of cell frames for UE for UE positioning. "Cell j" is replaced by "reference cell" meaning as defined by RRC signalling for the UE and NBAP signalling for the UTRAN. The applicability to Connected Inter is also removed from the UE measurement. |
| ***Consequences if not approved:*** ⌘ | There will be conflicting and incorrect requirements for the performance of the measurement UE GSP timing of cell frames for UE positioning. |

		Isolated Impact Analysis: This is an isolated impact CR that corrects a functionality where the specification contained contradictions. This CR would not affect implementations behaving as indicated in the CR, would affect implementations supporting the corrected functionality otherwise.

Clauses affected:	⌘			
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

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5.1.10 UE Rx-Tx time difference

Definition	The difference in time between the UE uplink DPCCH/DPDCH frame transmission and the first detected path (in time), of the downlink DPCH frame from the measured radio link. Type 1 and Type 2 are defined. For Type 1, the reference Rx path shall be the first detected path (in time) amongst the paths (from the measured radio link) used in the demodulation process. For Type 2, the reference Rx path shall be the first detected path (in time) amongst all paths (from the measured radio link) detected by the UE. The reference path used for the measurement may therefore be different for Type 1 and Type 2. The reference point for the UE Rx-Tx time difference shall be the antenna connector of the UE. Measurement shall be made for each cell included in the active set.
Applicable for	Connected Intra

5.1.11 Observed time difference to GSM cell

Definition	The Observed time difference to GSM cell is defined as: T_{RxGSMj} - T_{RxSFNi}, where: T_{RxSFNi} is the time at the beginning of the P-CCPCH frame with SFN=0 from cell i. 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 reference point for the Observed time difference to GSM cell shall be the antenna connector of the UE. 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. The reported time difference is calculated from the actual measurement in the UE. The actual measurement shall be based on: $T_{MeasGSM,j}$: The start of the first tail bit of the most recently received GSM SCH on frequency j $T_{MeasSFN,i}$: The start of the last P-CCPCH frame received on frequency i before receiving the GSM SCH on frequency j For calculating the reported time difference, the frame lengths are always assumed to be 10 ms for UTRA and (60/13) ms for GSM.
Applicable for	Idle, Connected Inter

5.1.12 UE GPS Timing of Cell Frames for UE positioning

Definition	The timing between the reference 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 detected path (in time) of the reference cell j CPICH, where cell j is a cell within the active set. The reference point for $T_{UE-GPSj}$ shall be the antenna connector of the UE.
Applicable for	Connected Intra, Connected Inter

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.

The term "antenna connector" used in this sub-clause to define the reference point for the UTRAN measurements refers to the "BS antenna connector" test port A and test port B as described in [19]. The term "antenna connector" refers to Rx or Tx antenna connector as described in the respective measurement definitions.

5.2.1   Received total wide band power

Definition	The received wide band power, including noise generated in the receiver, within the bandwidth defined by the pulse shaping filter. In case of receiver diversity the reported value shall be linear average of the power in the diversity branches. The reference point for the Received total wide band power measurement shall be the output of the pulse shaping filter in the receiver.

5.2.2   SIR

Definition	Signal to Interference Ratio, is defined as: $(RSCP/ISCP) \times SF$. Measurement shall be performed on the DPCCH of a Radio Link Set. In compressed mode the SIR shall not be measured in the transmission gap. The reference point for the SIR measurements shall be the Rx antenna connector. where: RSCP = Received Signal Code Power, unbiased measurement of the received power on one code. ISCP = Interference Signal Code Power, the interference on the received signal. SF=The spreading factor used on the DPCCH.

5.2.3   SIR$_{error}$

Definition	$SIR_{error} = SIR - SIR_{target\_ave}$, where: SIR = the SIR measured by UTRAN, defined in section 5.2, given in dB. SIR_{target_ave} = the SIR_{target} averaged over the same time period as the SIR used in the SIR_{error} calculation. In compressed mode $SIR_{target}=SIR_{cm\_target}$ shall be used when calculating SIR_{target_ave}. In compressed mode the SIR_{target_ave} shall not be calculated over the transmission gap. The averaging of SIR_{target} shall be made in a linear scale and SIR_{target_ave} shall be given in dB.

5.2.4   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 Tx antenna connector. In case of Tx diversity the transmitted carrier power for each branch shall be measured and the maximum of the two values shall be reported to higher layers, i.e. only one value will be reported to higher layers.

5.2.5   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 transmitted from the UTRAN access point and shall reflect the power on the pilot bits of the DPCCH-field. 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. The reference point for the transmitted code power measurement shall be the Tx antenna connector. In case of Tx diversity the transmitted code power for each branch shall be measured and summed together in [W].

## 5.2.6	Transport channel BER

Definition	The transport channel BER is an estimation of the average bit error rate (BER) of the DPDCH data of a Radio Link Set. 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.

## 5.2.7	Physical channel BER

Definition	The Physical channel BER is an estimation of the average bit error rate (BER) on the DPCCH of a Radio Link Set. 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 the latest TTI of the respective TrCH.

## 5.2.8	Round trip time

Definition	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. The reference point for T_{TX} shall be the Tx antenna connector. T_{RX} = The time of reception of the beginning (the first detected path, in time) of the corresponding uplink DPCCH/DPDCH frame from the UE. The reference point for T_{RX} shall be the Rx antenna connector. 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.

## 5.2.9	UTRAN GPS Timing of Cell Frames for UE positioning

Definition	$T_{UTRAN-GPSj}$ is defined as the time of the occurrence of a specified UTRAN event according to GPS Time Of Week. The specified UTRAN event is the beginning of the transmission of a particular frame in the reference cell j (identified through its SFN), where cell j is a cell within the active set. The reference point for $T_{UTRAN-GPSj}$ shall be the Tx antenna connector.

3GPP TSG RAN Meeting #14   *R1-01-1169*
Kyoto, Japan, 11th-14th, December, 2001

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CHANGE REQUEST

✂   **25.215** CR **102**   ✂ rev **-** ✂   Current version: **3.8.0** ✂

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

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

Title: ✂	Clarification of P-CCPCH RSCP in 25.215	
Source: ✂	TSG RAN WG1	
Work item code: ✂	TEI	***Date:*** ✂ 14-11-2001

Category: ✂ **F**	***Release:*** ✂ R99

Use one of the following categories:
   F *(correction)*
   A *(corresponds to a correction in an earlier release)*
   B *(addition of feature),*
   C *(functional modification of feature)*
   D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
   2   *(GSM Phase 2)*
   R96   *(Release 1996)*
   R97   *(Release 1997)*
   R98   *(Release 1998)*
   R99   *(Release 1999)*
   REL-4 *(Release 4)*
   REL-5 *(Release 5)*

Reason for change: ✂	In section 5.1.2 the P-CCPCH RSCP measurement is defined to monitor TDD cells. A note describes details of the measurement. However, these details are not in line with what is defined in TS25.225, some detailed information is also missing.
Summary of change: ✂	Removes the note and adds a reference to TS25.225.
Consequences if not approved: ✂	Analysis: This CR corrects a function where the specification was ambiguous or not sufficiently explicit. It would not affect implementations behaving like indicated in the CR, but would affect implementations supporting the corrected functionality otherwise. The CR clarifies the P-CCPCH RSCP measurement only.

Clauses affected: ✂	2, 5.1.2

Other specs Affected: ✂	☐ Other core specifications ✂	
	☐ Test specifications	
	☐ O&M Specifications	

Other comments: ✂	

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2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TS 25.211: "Physical channels and mapping of transport channels onto physical channels (FDD)".

[2] 3GPP TS 25.212: "Multiplexing and channel coding (FDD)".

[3] 3GPP TS 25.213: "Spreading and modulation (FDD)".

[4] 3GPP TS 25.214: "Physical layer procedures (FDD)".

[5] 3GPP TS 25.215: "Physical layer - Measurements (FDD)".

[6] 3GPP TS 25.221: "Physical channels and mapping of transport channels onto physical channels (TDD)".

[7] 3GPP TS 25.222: "Multiplexing and channel coding (TDD)".

[8] 3GPP TS 25.223: "Spreading and modulation (TDD)".

[9] 3GPP TS 25.224: "Physical layer procedures (TDD)".

[10] 3GPP TS 25.301: "Radio Interface Protocol Architecture".

[11] 3GPP TS 25.302: "Services provided by the Physical layer".

[12] 3GPP TS 25.303: "UE functions and interlayer procedures in connected mode".

[13] 3GPP TS 25.304: "UE procedures in idle mode".

[14] 3GPP TS 25.331: "RRC Protocol Specification".

[15] 3GPP TR 25.922: "Radio Resource Management Strategies".

[16] 3GPP TR 25.923: "Report on Location Services (LCS)".

[17] 3GPP TR 25.401: "UTRAN Overall Description".

[18] 3GPP TS 25.101: "UE Radio transmission and Reception (FDD)".

[19] 3GPP TS 25.104: "UTRA (BS) FDD; Radio transmission and Reception".

[20] 3GPP TS 25.133: " Requirements for Support of Radio Resource Management (FDD)"

[21] 3GPP TS 25.225: " Physical layer – Measurements (TDD)".

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 shall be the antenna connector of the UE. See [21] for further details on this measurement.~~Note:~~ ~~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

3GPP TSG RAN Meeting #14   *R1-01-1169*
Kyoto, Japan, 11ᵗʰ-14ᵗʰ, December, 2001

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CHANGE REQUEST

�â   **25.215** CR **103**   �â rev **-** �â Current version: **4.2.0** �â

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

Title: ✄	Clarification of P-CCPCH RSCP in 25.215	
Source: ✄	TSG RAN WG1	
Work item code: ✄	TEI	***Date:*** ✄ 14-11-2001

Category: ✄ **A**	***Release:*** ✄ REL-4

Use one of the following categories:
   F *(correction)*
   A *(corresponds to a correction in an earlier release)*
   B *(addition of feature),*
   C *(functional modification of feature)*
   D *(editorial modification)*
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  R97 *(Release 1997)*
  R98 *(Release 1998)*
  R99 *(Release 1999)*
  REL-4 *(Release 4)*
  REL-5 *(Release 5)*

Reason for change: ✄	In section 5.1.2 the P-CCPCH RSCP measurement is defined to monitor TDD cells. A note describes details of the measurement. However, these details are not in line with what is defined in TS25.225, some detailed information is also missing.
Summary of change: ✄	Removes the note and adds a reference to TS25.225.
Consequences if not approved: ✄	Analysis: This CR corrects a function where the specification was ambiguous or not sufficiently explicit. It would not affect implementations behaving like indicated in the CR, but would affect implementations supporting the corrected functionality otherwise. The CR clarifies the P-CCPCH RSCP measurement only.

Clauses affected: ✄	2, 5.1.2
Other specs Affected: ✄	☐ Other core specifications ✄ ☐ Test specifications ☐ O&M Specifications
Other comments: ✄	

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.

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[2]   3GPP TS 25.212: "Multiplexing and channel coding (FDD)".

[3]   3GPP TS 25.213: "Spreading and modulation (FDD)".

[4]   3GPP TS 25.214: "Physical layer procedures (FDD)".

[5]   3GPP TS 25.215: "Physical layer - Measurements (FDD)".

[6]   3GPP TS 25.221: "Physical channels and mapping of transport channels onto physical channels (TDD)".

[7]   3GPP TS 25.222: "Multiplexing and channel coding (TDD)".

[8]   3GPP TS 25.223: "Spreading and modulation (TDD)".

[9]   3GPP TS 25.224: "Physical layer procedures (TDD)".

[10]   3GPP TS 25.301: "Radio Interface Protocol Architecture".

[11]   3GPP TS 25.302: "Services provided by the Physical layer".

[12]   3GPP TS 25.303: "UE functions and interlayer procedures in connected mode".

[13]   3GPP TS 25.304: "UE procedures in idle mode".

[14]   3GPP TS 25.331: "RRC Protocol Specification".

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[16]   3GPP TR 25.923: "Report on Location Services (LCS)".

[17]   3GPP TR 25.401: "UTRAN Overall Description".

[18]   3GPP TS 25.101: "UE Radio transmission and Reception (FDD)".

[19]   3GPP TS 25.104: "UTRA (BS) FDD; Radio transmission and Reception".

[20]   3GPP TS 25.133: " Requirements for Support of Radio Resource Management (FDD)"

[21]   3GPP TS 25.225: " Physical layer – Measurements (TDD)".

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 shall be the antenna connector of the UE.
	See [21] for further details on this measurement.Note: 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

3GPP TSG RAN Meeting #14
Kyoto, Japan, 11ᵗʰ-14ᵗʰ, December, 2001

R1-01-1238

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CHANGE REQUEST

| ⌘ | **25.215** CR **104** | ⌘ rev | **-** | ⌘ Current version: | **3.8.0** | ⌘ |

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

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

Title: ⌘	Revised definitions of CPICH Ec/No and UTRA carrier RSSI	
Source: ⌘	TSG RAN WG1	
Work item code: ⌘	TEI	***Date:*** ⌘ 20-11-2001

Category: ⌘ **F**	***Release:*** ⌘ R99
Use <u>one</u> of the following categories: **F** (correction) **A** (corresponds to a correction in an earlier release) **B** (addition of feature), **C** (functional modification of feature) **D** (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

Reason for change: ⌘	These measurements are used for cell selection/reselection, handover evaluation and the RRM algorithms of UTRAN. Thus it is felt that from system point of view it is more useful for UTRAN that UE reports the measurement outputs as seen by the UE, and not something which does not relate to real UE performance when UE is operating close to noise floor.
Summary of change: ⌘	UE measurements include thermal noise and noise generated in the receiver
Consequences if not approved: ⌘	TS25.215 is not in line with TSG RAN WG4 assumptions

---

Clauses affected: ⌘	5.1.3, 5.1.5
Other specs Affected: ⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments: ⌘	Isolated impact: This change has only impact on CPICH Ec/No and UTRA carrier RSSI measurements in the UE

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text.   Delete those parts of the specification which are not relevant to the change request

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.
	The following terms are used in the tables:
	    Idle = Shall be possible to perform in idle mode;
	    Connected Intra = Shall be possible to perform in connected mode on an intra-frequency;
	    Connected Inter = Shall be possible to perform in connected mode on an inter-frequency.

The term "antenna connector of the UE" used in this sub-clause to define the reference point for the UE measurements is defined in [18].

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 shall be the antenna connector of 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

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 shall be the antenna connector of the UE. Note: 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

5.1.3 UTRA carrier RSSI

Definition	The received wide band power, including thermal noise and noise generated in the receiver, within the bandwidth defined by the receiver pulse shaping filter. The reference point for the measurement shall be the antenna connector of the UE.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 shall be the antenna connector of the UE.
Applicable for	Idle, Connected Intra, Connected Inter

5.1.4 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 shall be the antenna connector of the UE.
Applicable for	Idle, Connected Inter

5.1.5 CPICH Ec/No

Definition	The received energy per chip divided by the power density in the band. The CPICH Ec/No is identical to CPICH RSCP/ UTRA Carrier RSSI.~~The Ec/No is identical to RSCP/RSSI.~~ Measurement shall be performed on the Primary CPICH. The reference point for the CPICH Ec/No shall be the antenna connector of 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

5.1.6 Transport channel BLER

| Definition | Estimation of the transport channel block error rate (BLER). The BLER estimation shall be based on evaluating the CRC of each transport block associated with the measured transport channel after RL combination. The BLER shall be computed over the measurement period as the ratio between the number of received transport blocks resulting in a CRC error and the number of received transport blocks.

When either TFCI or guided detection is used, the measurement "Transport channel BLER" may only be requested for a transport channel when the associated CRC size is non zero and at least one transport format in the associated transport format set includes at least one transport block.

When neither TFCI nor guided detection is used, the measurement "Transport channel BLER" may only be requested for a transport channel when the associated CRC size is non zero and all transport formats in the associated transport format set include at least one transport block.

The measurement "Transport channel BLER" does not apply to transport channels mapped on a P-CCPCH and a S-CCPCH. The UE shall be able to perform the measurement "Transport channel BLER" on any transport channel configured such that the measurement "Transport channel BLER" can be requested as defined in this section. |
|---|---|
| Applicable for | Connected Intra |

5.1.7 UE transmitted power

Definition	The total UE transmitted power on one carrier. The reference point for the UE transmitted power shall be the antenna connector of the UE.
Applicable for	Connected Intra

3GPP TSG RAN Meeting #14

Kyoto, Japan, 11th-14th, December, 2001

R1-01-1238

							CR-Form-v4

CHANGE REQUEST

⌘ **25.215 CR 105** ⌘ rev **-** ⌘ Current version: **4.2.0** ⌘

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

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

Title: ⌘	Revised definitions of CPICH Ec/No and UTRA carrier RSSI
Source: ⌘	TSG RAN WG1
Work item code: ⌘ TEI	***Date:*** ⌘ 20-11-2001

Category: ⌘ **A**	***Release:*** ⌘ REL-4

Use one of the following categories:
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  R97 *(Release 1997)*
  R98 *(Release 1998)*
  R99 *(Release 1999)*
  REL-4 *(Release 4)*
  REL-5 *(Release 5)*

Reason for change: ⌘	These measurements are used for cell selection/reselection, handover evaluation and the RRM algorithms of UTRAN. Thus it is felt that from system point of view it is more useful for UTRAN that UE reports the measurement outputs as seen by the UE, and not something which does not relate to real UE performance when UE is operating close to noise floor.
Summary of change: ⌘	UE measurements include thermal noise and noise generated in the receiver
Consequences if not approved: ⌘	TS25.215 is not in line with TSG RAN WG4 assumptions

Clauses affected: ⌘	5.1.3, 5.1.5
Other specs Affected: ⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments: ⌘	Isolated impact: This change has only impact on CPICH Ec/No and UTRA carrier RSSI measurements in the UE

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text.   Delete those parts of the specification which are not relevant to the change request

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.
	The following terms are used in the tables:
	   Idle = Shall be possible to perform in idle mode;
	   Connected Intra = Shall be possible to perform in connected mode on an intra-frequency;
	   Connected Inter = Shall be possible to perform in connected mode on an inter-frequency.

The term "antenna connector of the UE" used in this sub-clause to define the reference point for the UE measurements is defined in [18].

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 shall be the antenna connector of 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

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 shall be the antenna connector of the UE. Note: 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

5.1.3 UTRA carrier RSSI

Definition	The received wide band power, including thermal noise and noise generated in the receiver, within the bandwidth defined by the receiver pulse shaping filter. The reference point for the measurement shall be the antenna connector of the UE.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 shall be the antenna connector of the UE.
Applicable for	Idle, Connected Intra, Connected Inter

5.1.4 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 shall be the antenna connector of the UE.
Applicable for	Idle, Connected Inter

5.1.5   CPICH Ec/No

Definition	The received energy per chip divided by the power density in the band. The CPICH Ec/No is identical to CPICH RSCP/ UTRA Carrier RSSI. ~~The Ec/No is identical to RSCP/RSSI.~~ ~~Measurement shall be performed on the Primary CPICH.~~ Measurement shall be performed on the Primary CPICH. The reference point for the CPICH Ec/No shall be the antenna connector of 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

5.1.6   Transport channel BLER

Definition	Estimation of the transport channel block error rate (BLER). The BLER estimation shall be based on evaluating the CRC of each transport block associated with the measured transport channel after RL combination. The BLER shall be computed over the measurement period as the ratio between the number of received transport blocks resulting in a CRC error and the number of received transport blocks. When either TFCI or guided detection is used, the measurement "Transport channel BLER" may only be requested for a transport channel when the associated CRC size is non zero and at least one transport format in the associated transport format set includes at least one transport block. When neither TFCI nor guided detection is used, the measurement "Transport channel BLER" may only be requested for a transport channel when the associated CRC size is non zero and all transport formats in the associated transport format set include at least one transport block. The measurement "Transport channel BLER" does not apply to transport channels mapped on a P-CCPCH and a S-CCPCH. The UE shall be able to perform the measurement "Transport channel BLER" on any transport channel configured such that the measurement "Transport channel BLER" can be requested as defined in this section.
Applicable for	Connected Intra

5.1.7   UE transmitted power

Definition	The total UE transmitted power on one carrier. The reference point for the UE transmitted power shall be the antenna connector of the UE.
Applicable for	Connected Intra