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Agenda item: AH 16

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Title: CR 25.215-004: Measurements are done on Primary CPICH

Document for: Decision

In the definition of several UE measurements the term CPICH is used as a name for a physical channel where measurements shall be performed. As there are two types of CPICHs defined in 25.211, e.g. Primary CPICH and Secondary CPICH it is unclear which physical channel that are meant. In this CR it is proposed that CPICH is replaced by Primary CPICH in the definition of UE measurements in 25.215.

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
Range/mapping	Gives the range and mapping to bits for the measurements quantity.

5.1.1 CPICH RSCP

Definition	Received Signal Code Power, the received power on one code after de-spreading measured on the pilot bits of the Primary CPICH. The reference point for the RSCP is the antenna connector at the UE.
Applicable for	Idle, Connected Intra, Connected Inter
Range/mapping	

5.1.2 RSCP

Definition	Received Signal Code Power, the received power on one code after de-spreading measured on the pilot bits of the DPCCH after RL combination. The reference point for the RSCP is the antenna connector at the UE.
Applicable for	Connected Intra
Range/mapping	

5.1.3 ISCP

Note that it is not a requirement that the ISCP shall be possible to report to higher layers. The ISCP is defined in this section because it is included in the definition of SIR.

Definition	Interference Signal Code Power, the interference on the received signal after de-spreading. 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.
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5.1.4 SIR

Definition	Signal to Interference Ratio, defined as the RSCP divided by ISCP. The SIR shall be measured on DPCCH after RL combination. The reference point for the SIR is the antenna connector of the UE.
Applicable for	Connected Intra
Range/mapping	

5.1.5 UTRA carrier RSSI

Definition	Received Signal Strength Indicator, the wide-band received power within the relevant channel bandwidth. Measurement shall be performed on a UTRAN downlink carrier. The reference point for the RSSI is the antenna connector at the UE.
Applicable for	Idle, Connected Intra, Connected Inter
Range/mapping	

5.1.6 GSM carrier RSSI

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

5.1.7 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	

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	

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	

5.1.10 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	

5.1.11 CFN-SFN observed time difference

Definition	The CFN-SFN observed time difference to cell is defined as: $OFF \times 38400 + T_m$, where: $T_m = T_{RxSFN} - (T_{UETx} - T_0)$, given in chip units with the range [0, 1, ..., 38399] chips T_{UETx} is the time when the UE transmits an uplink DPCCH/DPDCH frame. T_0 is defined in TS 25.211 section 7.1.3. 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 $T_m = 0$). and $OFF = (CFN_{Tx} - SFN) \bmod 256$, given in number of frames with the range [0, 1, ..., 255] frames CFN_{Tx} is the connection frame number for the UE transmission of an uplink DPCCH/DPDCH frame at the time T_{UETx} . SFN = the system frame number for the neighbouring P-CCPCH frame received in the UE at the time T_{RxSFN} .
Applicable for	Connected Inter, Connected Intra
Range/mapping	Time difference is given with the resolution of one chip with the range [0, ..., 9830399] chips.

5.1.12 SFN-SFN observed time difference

Definition	Type 1: The SFN-SFN observed time difference to cell is defined as: $OFF \times 38400 + T_m$, where: $T_m = T_{RxSFNj} - T_{RxSFNi}$, given in chip units with the range [0, 1, ..., 38399] chips T_{RxSFNj} is the time at the beginning of a received neighbouring P-CCPCH frame from cell j. 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 $T_m = 0$). and $OFF = (SFN_j - SFN_i) \bmod 256$, given in number of frames with the range [0, 1, ..., 255] frames SFN_j = the system frame number for downlink P-CCPCH frame from cell j in the UE at the time T_{RxSFNj} . SFN_i = the system frame number for the P-CCPCH frame from cell i received in the UE at the time T_{RxSFNi} . Type 2: The relative timing difference between cell j and cell i, defined as $T_{CPICHRxj} - T_{CPICHRxi}$, where: $T_{CPICHRxj}$ is the time when the UE receives one Primary CPICH slot from cell j $T_{CPICHRxi}$ 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 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. Type 2: Time difference is given with a resolution of 0.5 chip with the range [-1279, ..., 1280] chips.

5.1.13 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. Note: The definition of "first significant path" needs further elaboration.
Applicable for	Connected Intra
Range/mapping	Always positive.

5.2 UTRAN measurement abilities

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