TSG-RAN Working Group 1 meeting #9
Dresden, Germany
November 30 – December 3, 1999

TSGR1#9(99)i66

Agenda item:

Source: Ericsson

Title: CR 25.214-012: Uplink power control maximum TX power

Document for: Decision

In TS 25.214, there is a note for the text dealing with uplink power control maximum power. There is already a parameter specified by WG2 in the RRC specification, that is used to control the maximum transmit power of the UE, so the note in TS 25.214 questioning this can be removed. Moreover, the power is not associated directly with a certain rate on the DPDCH, so that statement can be removed.

3GPP TSG RAN WG1 Meeting #9
Dresden, Germany, Nov 30 – Dec 3, 1999

Document ????99???
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.214 **CR** **012** Current Version: 3.0.0

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

For submission to: TSG-RAN #6 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: Ericsson **Date:** 1999-11-18

Subject: Uplink power control maximum TX power

Work item:

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

F	Correction	X
A	Corresponds to a correction in an earlier release	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change: There is already a parameter specified by WG2 in the RRC specification, that is used to control the maximum transmit power of the UE, so the note in TS 25.214 questioning this can be removed. Moreover, the power is not associated directly with a certain rate on the DPDCH, so that statement can be removed.

Clauses affected:

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:

P_{RACH}: transmitter power level in dBm,
L_{Pearch}: measured path loss in dB,
I_{BTS}: interference signal power level at BTS in dBm, which is broadcasted on BCH,
Constant value: This value shall be designated via Layer 3 message (operator matter).

5.1.1.2 Setting of PRACH control and data part power difference

The message part of the uplink PRACH channel shall employ gain factors to control the control/data part relative power similar to the uplink dedicated physical channels. Hence, section 5.1.2.4 applies also for the RACH message part, with the differences that:

- b_c is the gain factor for the control part (similar to DPCCH),
- b_d is the gain factor for the data part (similar to DPDCH),
- no inner loop power control is performed.

5.1.2 DPCCH/DPDCH

5.1.2.1 General

The uplink transmit power control procedure controls simultaneously the power of a DPCCH and its corresponding DPDCHs. The power control loop adjusts the power of the DPCCH and DPDCHs with the same amount. The relative transmit power offset between DPCCH and DPDCHs is determined by the network and signalled to the UE using higher layer signalling.

5.1.2.2 Ordinary transmit power control

5.1.2.2.1 General

The initial uplink transmit power to use is decided using an open-loop power estimate, similar to the random access procedure.

< Editor's note: This needs to be elaborated, how is the estimate derived? >

By means of higher layer signalling, a ~~The~~ maximum transmission power ~~at the maximum rate of DPDCH is designated~~ for uplink inner-loop power control may be set to a lower value than what the terminal power class is capable of. Power control ~~and control must~~shall be performed within the allowed~~is~~ range.

~~*< Editor's note: The necessity of this range needs to be confirmed. >* The maximum transmit power value of the inner-loop TPC is set by the network using higher layer signalling.~~

The uplink inner-loop power control adjusts the UE transmit power in order to keep the received uplink signal-to-interference ratio (SIR) at a given SIR target, SIR_{target}.

The serving cells (cells in the active set) should estimate signal-to-interference ratio SIR_{est} of the received uplink DPCH . The serving cells then generates TPC commands and transmits the commands once per slot according to the following rule: if $SIR_{est} > SIR_{target}$ then the TPC command to transmit is “0”, while if $SIR_{est} < SIR_{target}$ then the TPC command to transmit is “1”.

Upon reception of one or more TPC commands in a slot, the UE derives a single TPC command, TPC_cmd, for each slot, combining multiple TPC commands if more than one is received in a slot. Two algorithms shall be supported by the UE for deriving a TPC_cmd, as described in subclauses 5.1.2.2.2 and 5.1.2.2.3. Which of these two algorithms is used is an UE-specific parameter and is under the control of the UTRAN.