TSG-RAN Working Group 1 (Radio) meeting #16 ***TSGR1#16(00)1215***
Pusan, Korea, 10-13, October 2000

Agenda Item: **5**

Source: **Siemens**

Title: **TPC command generation on downlink during RLS initialisation**

Document for: **Discussion and Decision**

In TS 25.433 section 8.2.17.2 the following text, which describes what should be L1 functionality, appears:

"[FDD - The First RLS Indicator IE indicates if the concerning RL shall be considered part of the first RLS established towards this UE. If the First RLS indicator IE is set to "first RLS", the Node B shall use a TPC pattern of n* "01" + "1" in the DL of the concerning RL and all RLs which are part of the same RLS, until UL synchronisation is achieved on the Uu. The parameter n shall be set equal to the value received in the DL TPC pattern 01 count IE in the Cell Setup procedure. The TPC pattern shall continuously be repeated but shall be restarted at the beginning of every frame with CFNmod4=0. For all other RLs, the Node B shall use a TPC pattern of all "1"'s in the DL until UL synchronisation is achieved on the Uu.]"

As this has been in a WG3 specification it is presumably part of R99. The best way to deal with this is possibly to approve a CR which puts the functionality in L1 and then allow WG1 to reference the transferred text.

A suitable CR is enclosed in this Tdoc below.

3GPP TSG RAN WG1 #16
Pusan,Korea, 10-13 OCT 2000

Document R1-00-1215
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	135	Current Version:	3.4.0

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

For submission to:	RAN#10	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-Formv2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [ ]

Source: Siemens **Date:** 3 Oct 2000

Subject: TPC command generation on downlink during RLS initialisation

Work item:

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

F	Correction	X	**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			Release 99	X
				Release 00	

Reason for change: The text in this CR is derived from 25.433 section 8.2.17.2 in which a pattern of TPC bits is sent on the DL for the benefit of UEs which may operate on the values during the time in which SIR estimates cannot be made of UL signals from that UE.

Clauses affected: 5.1.2.2.1.2 (added to document)

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:

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

5.1.2.2 Ordinary transmit power control

5.1.2.2.1 General

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 should then generate TPC commands and transmit 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 shall derive 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. Which of these two algorithms is used is determined by a UE-specific higher-layer parameter, "PowerControlAlgorithm", and is under the control of the UTRAN. If "PowerControlAlgorithm" indicates "algorithm1", then the layer 1 parameter PCA shall take the value 1 and if "PowerControlAlgorithm" indicates "algorithm2" then PCA shall take the value 2.

If PCA has the value 1, Algorithm 1, described in subclause 5.1.2.2.2, shall be used for processing TPC commands.

If PCA has the value 2, Algorithm 2, described in subclause 5.1.2.2.3, shall be used for processing TPC commands.

The step size $?_{TPC}$ is a layer 1 parameter which is derived from the UE-specific higher-layer parameter "TPC-StepSize" which is under the control of the UTRAN. If "TPC-StepSize" has the value "dB1", then the layer 1 parameter $?_{TPC}$ shall take the value 1 dB and if "TPC-StepSize" has the value "dB2", then $?_{TPC}$ shall take the value 2 dB.

After deriving of the combined TPC command TPC_cmd using one of the two supported algorithms, the UE shall adjust the transmit power of the uplink DPCCH with a step of $?_{DPCCH}$ (in dB) which is given by:

$?_{DPCCH} = ?_{TPC} ? TPC\_cmd.$

5.1.2.2.1.1 Out of synchronisation handling

The UE shall shut its transmitter off when the UE estimates the DPCCH quality over the last 200 ms period to be worse than a threshold Q_{out}. This criterion is never fulfilled during the first 200 ms of the dedicated channel's existence. Q_{out} is defined implicitly by the relevant tests in [7].

The UE can turn its transmitter on when the UE estimates the DPCCH quality over the last 200 ms period to be better than a threshold Q_{in}. This criterion is always fulfilled during the first 200 ms of the dedicated channel's existence. Q_{in} is defined implicitly by the relevant tests in [7]. When transmission is resumed, the power of the DPCCH shall be the same as when the UE transmitter was shut off.

5.1.2.2.1.2 TPC command generation on downlink during RLS initialisation

When commanded by higher layers the TPC values sent on the downlink in cells which have not yet achieved uplink synchronisation shall follow a pattern as follows:

Either, if higher layers indicate this is the first radio link sent to the UE

- a value 'n' is obtained from the parameter "DL TPC pattern 01 count" passed by higher layers,
- the pattern shall consist of n instances of "01" plus one instance of "1",
- the pattern shall be forcibly re-started at the beginning of each frame where CFN mod 4 = 0.

or else

- The pattern shall consist of all "1".

The pattern shall terminate once uplink synchronisation is achieved.