TSG RAN Meeting #26   **RP-040459**
Athens, Greece, 8 - 10 December 2004

Title	CR (Rel-6 Category C) to TS25.224 for Improvements to uplink closed-loop power control for 1.28Mcps TDD
Source	TSG RAN WG1
Agenda Item	8.9

RAN1 Tdoc	Spec	CR	Rev	Phase	Cat	Current Version	Subject	Work item	Remarks
R1-041507	25.224	140	1	Rel-6	C	6.2.0	Improvements to uplink closed-loop power control for 1.28Mcps TDD	TEI-6	Linked CR not yet available

CR-Form-v7.1

CHANGE REQUEST

| ⌘ | **TS 25.224 CR 140** | ⌘**rev** | **1** | ⌘ | Current version: | **6.2.0** | ⌘ |

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

Proposed change affects: UICC apps⌘ ☐   ME **X** Radio Access Network **X** Core Network ☐

Title: ⌘	Improvements to uplink closed-loop power control for 1.28Mcps TDD	
Source: ⌘	RAN WG1	
Work item code:⌘ TEI 6		***Date:*** ⌘ 19/11/2004

Category: ⌘ **C**		***Release:*** ⌘ Rel-6

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:
 Ph2 *(GSM Phase 2)*
 R96 *(Release 1996)*
 R97 *(Release 1997)*
 R98 *(Release 1998)*
 R99 *(Release 1999)*
 Rel-4 *(Release 4)*
 Rel-5 *(Release 5)*
 Rel-6 *(Release 6)*
 Rel-7 *(Release 7)*

Reason for change: ⌘	1) Uplink power control performance can be improved if the UE is allowed to take available pathloss information into account when calculating uplink transmit power. 2) Existing procedures during uplink transmission pauses may cause continual reset of the TPC loop due to UL DTX.
Summary of change:⌘	1) It is clarified that the UE may optionally assist the closed-loop power control process (if allowed by higher layers) by using pathloss information from beacon channel receptions. 2) The procedure during an uplink transmission pause is modifed such that the TPC loop is not reset for short transmission pauses.
Consequences if ***not approved:*** ⌘	1) Achievable uplink capacity improvements will not be realised. 2) Uplink power control operation will be inefficient in the presence of transmission pauses (eg: DTX, fractionated DPCH's and uplink shared channels).

Clauses affected: ⌘	5.1.1.4

	Y	N		
Other specs ⌘	**X**		Other core specifications ⌘	25.331
affected:		**X**	Test specifications	
		X	O&M Specifications	

Other comments: ⌘	

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

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.

5.1.1.4 DPCH and PUSCH

The initial transmission power for uplink DPCH and PUSCH is set by higher layers based on open loop power control as described in [15]. The UE then transits into closed loop power control. The node B shall generate TPC commands according to a quality target set by higher layers in order to instruct an increase or decrease in the level of transmission power from the UE and send them in the TPC field of associated downlink CCTrCHs (see [8] for a description of the mapping between DL associated TPC symbols and UL controlled CCTrCH/timeslots). If the physical channel power shall should be increased, the TPC command is set to "up", whereas if the power shall should be reduced the command is set to "down". A TPC command sent in a downlink CCTrCH controls all uplink DPCHs and PUSCHs in the associated uplink CCTrCH and timeslot. An example of SIR based UL power control is given in annex A2

If signalled by higher layers, the UE must follow the received TPC commands only. In this case, Aat the UE when the TPC command is judged as 'down', the mobile transmit power shall be reduced by one power control step, whereas if it is judged as 'up', the mobile transmit power shall be raised by one power control step.

If indicated as allowed by higher layers, the UE may optionally take into account pathloss estimated from beacon function physical channels in addition to the TPC commands when calculating the transmit power. In this case, the mobile transmit power is first modified as described above by the received TPC command and is then further modified based upon the pathloss estimated on recent beacon transmissions. Modifications based upon pathloss shall only be applied when the UE estimates that the pathloss on the uplink transmission timeslot and the pathloss on the beacon timeslots used to derive the modification value are likely to be similar.

The closed loop power control procedure for UL DPCH and PUSCH is not affected by the use of TSTD.

In the event of no associated uplink data being transmitted between two related downlink TPC commands, the UE shall ignore the resulting TPC command. The transmit power for the next instance of the timeslot/CCTrCH pair shall then be set:

> i) to the power level of the previous uplink transmission, optionally modified to compensate for the change in pathloss observed during the uplink transmission pause or,

> ii) using the open loop procedure as for initial transmissions

The UE shall select which of the above methods to apply. For short transmission pauses method (i) should be used.