TSG-RAN Meeting #21 **RP-030460**
Frankfurt, Germany, 16 - 19 September 2003

Title: **CRs (Rel-5) to TS 25.224**

Source: **TSG-RAN WG1**

Agenda item: **7.2.5**

TS 25.224 **(RP-030460)**

RP Tdoc #	WG Toc#	Spec	CR	R	Subject	Phase	Cat	Curre	New	WI	Remarks
RP-030460	R1-030872	25.224	121	3	Clarification on PDSCH Downlink Power Control Procedures	Rel-5	F	5.5.0	5.6.0	TEI-5	

3GPP TSG-RAN WG1 Meeting #33
New York, USA, 25-29 August 2003

Tdoc ⌘R1-030872

CR-Form-v7

CHANGE REQUEST

⌘ **TS 25.224 CR 121** ⌘**rev 3** ⌘ Current version: **5.5.0** ⌘

*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 ☐ Radio Access Network ☒ Core Network ☐

Title:	⌘	Clarification on PDSCH Downlink Power Control Procedures
Source:	⌘	TSG RAN WG1
Work item code:	⌘	TEI-5
Date:	⌘	27th August 2003
Category:	⌘	**F**
Release:	⌘	Rel-5

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)
Rel-6 (Release 6)

Reason for change:	⌘	Following a discussion in RAN WG3 a procedural clarification is required within RAN1 specs to cover scenarios in which a PDSCH CCTrCH has no associated UL CCTrCH for the purposes of TPC-based power control.
Summary of change:	⌘	It is clarified that in the event that a PDSCH CCTrCH has no associated UL CCTrCH for the purposes of DL power control then the power of the PDSCH is controlled by higher layers.
Consequences if not approved:	⌘	Unspecified behaviour of the Node-B in cases where associated UL CCTrCH have not been assigned by higher layers for the purposes of PDSCH DL power control, leading to improperly managed resources and reduced network capacity

Clauses affected:	⌘	4.2.3.4

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

⌘

Other comments:	⌘	**Isolated impact analysis:** This CR affects only the PDSCH power control function at Node-B. It does not affect implementations operating as specified in this CR. It is expected that most implementations would have adopted the described interpretation and would therefore not be impacted. Backwards and forwards compatibility are thus not affected by this CR.

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.

4.2.3.4 DPCH, PDSCH

The initial transmission power of the downlink DPCH and the PDSCH shall be set by ~~the network~~higher layer signalling. If associated uplink CCTrCHs for TPC commands are signalled to the UE by higher layers (mandatory for a DPCH), the network shall transit into inner loop power control after the initial transmission. The UE shall then generate TPC commands to control the network transmit power and send them in the TPC field of the associated uplink CCTrCHs. If the physical channel power should be increased, the TPC command is set to "up" whereas if the power should be reduced the TPC command is set to "down". An example on how to derive the TPC commands and the definition of the inner loop power control are given in Annex A.1. A TPC command sent in an uplink CCTrCH controls all downlink DPCHs or PDSCHs to which the associated downlink CCTrCH is mapped to.

If a PDSCH does not have associated uplink CCTrCHs configured for TPC power control, its power shall be controlled by higher layer signalling.

In the case that no associated downlink data is scheduled within 15 timeslots before the transmission of a TPC command then this is regarded as a transmission pause. The TPC commands in this case shall be derived from measurements on beacon function physical channels. An example solution for the generation of the TPC command for this case is given in Annex A 1.

When not in a transmission pause each TPC command shall always be based on all associated downlink transmissions received since the previous related TPC command. Related TPC commands are defined as TPC commands associated with the same downlink CCTrCHs. If there are no associated downlink transmissions (or equivalently no beacon transmissions when in a transmission pause) between two or more uplink transmissions carrying related TPC commands, then these TPC commands shall be identical and they shall be regarded by the UTRAN as a single TPC command.

UTRAN may decide how to adjust the transmit power in response to the received TPC command.

The UTRAN may apply an individual offset to the transmission power in each timeslot according to the downlink interference level at the UE.

The transmission power of one DPCH or PDSCH shall not exceed the limits set by higher layer signalling by means of Maximum_DL_Power (dB) and Minimum_DL_Power (dB). The transmission power is defined as the average power over one timeslot of the complex QPSK symbols of a single DPCH or PDSCH before spreading relative to the power of the P-CCPCH.

During a downlink transmission pause, both UE and Node B shall use the same TPC step size which is signalled by higher layers. The UTRAN may accumulate the TPC commands received during the pause. TPC commands that shall be regarded as identical may only be counted once. The initial UTRAN transmission power for the first data transmission after the pause may then be set to the sum of transmission power before the pause and a power offset according to the accumulated TPC commands. Additionally this sum may include a constant set by the operator and a correction term due to uncertainties in the reception of the TPC bits. The total downlink transmission power at the Node B within one timeslot shall not exceed Maximum Transmission Power set by higher layer signalling. If the total transmit power of all channels in a timeslot exceeds this limit, then the transmission power of all downlink DPCHs and PDSCHs shall be reduced by the same amount in dB. The value for this power reduction is determined, so that the total transmit power of all channels in this timeslot is equal to the maximum transmission power.