3GPP TSG RAN Meeting #18 **RP-020854**
New Orleans, Louisiana, USA, 3 - 6 December, 2002

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

Source: **TSG-RAN WG1**

Agenda item: **7.1.5**

Release 5 CRs

CRs with no links to other specifications

TS 25.224 **(RP-020854)**

No.	Spec	CR	Rev	R1 T-doc	Subject	Phase	Cat	Workitem	V_old	V_new
1	25.224	102	1	R1-02-1454	Corrections and clarifications to TDD CQI description	REL-5	F	HSDPA-Phys	5.2.1	5.3.0

3GPP TSG-RAN1 Meeting #29
Shanghai, China, 05 – 08 November 2002

Tdoc ⌘R1-02-1454

CR-Form-v7

CHANGE REQUEST

⌘ **25.224** **CR** **102** ⌘ **rev** **1** ⌘ Current version: **5.2.1** ⌘

*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:	⌘	CR 25.224-102 (Rel-5) Corrections and clarifications to TDD CQI description
Source:	⌘	TSG RAN WG1
Work item code:	⌘	HSDPA-Phys
Date:	⌘	07/11/2002
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:	⌘	TDD CQI description is incomplete and ambiguous
Summary of change:	⌘	Abbreviation TFRC is removed It is clarified that the CQI is referenced to a given set of transmitted HS-DSCH resources, but that the UE may chose to use any measurements it likes to derive this CQI. The ambiguous term “BLER” is explicitly defined to be the probability of a transport block error when the HS-DSCH is decoded in isolation. The term “throughput” is similarly clarified by defining it as a function of the estimated BLER and RTBS. It is clarified that the CQI must be transmitted in the next available HS-SICH following a delay of 1 timeslot after the end of the last timeslot of the HS-DSCH transmission.
Consequences if not approved:	⌘	TDD CQI description will remain incomplete and ambiguous

Clauses affected:	⌘	3, 4.11.2

Other specs affected:	⌘	Y	N		⌘
			X	Other core specifications	
			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.

3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

ACK	Acknowledgement
ASC	Access Service Class
BCCH	Broadcast Control Channel
BCH	Broadcast Channel
CCTrCH	Coded Composite Transport Channel
CDMA	Code Division Multiple Access
CQI	Channel Quality Information
CRC	Cyclic Redundancy Check
DCA	Dynamic Channel Allocation
DL	Downlink
DPCH	Dedicated Physical Channel
DTX	Discontinuous Transmission
FACH	Forward Access Channel
FDD	Frequency Division Duplex
HS-DSCH	High Speed Downlink Shared Channel
HS-PDSCH	High Speed Physical Downlink Shared Channel
HS-SCCH	Shared Control Channel for HS-DSCH
HS-SICH	Shared Information Channel for HS-DSCH
ISCP	Interference Signal Code Power
MAC	Medium Access Control
NACK	Negative Acknowledgement
NRT	Non-Real Time
P-CCPCH	Primary Common Control Physical Channel
PC	Power Control
PDSCH	Physical Downlink Shared Channel
PRACH	Physical Random Access Channel
PUSCH	Physical Uplink Shared Channel
RACH	Random Access Channel
RL	Radio Link
RRC	Radio Resource Control
RSCP	Received Signal Code Power
RT	Real Time
RU	Resource Unit
SBGP	Special Burst Generation Gap
SBP	Special Burst Period
SBSP	Special Burst Scheduling Period
S-CCPCH	Secondary Common Control Physical Channel
SCH	Synchronisation Channel
SCTD	Space Code Transmit Diversity
SFN	System Frame Number
SIR	Signal–to-Interference Ratio
SSCH	Secondary Synchronisation Channel
STD	Selective Transmit Diversity
TA	Timing Advance
TDD	Time Division Duplex
TF	Transport Format
TFC	Transport Format Combination
TFCI	Transport Format Combination Indicator
TFCS	Transport Format Combination Set
~~TFRC~~	~~Transport Format Resource Combination~~

TFRI	Transport Format Resource Indicator
TPC	Transmit Power Control
TSTD	Time Switched Transmit Diversity
TTI	Transmission Time Interval
TxAA	Transmit Adaptive Antennas
UE	User Equipment
UL	Uplink
UMTS	Universal Mobile Telecommunications System
UTRAN	UMTS Radio Access Network
VBR	Variable Bit Rate

4.11.2 HS-DSCH Channel Quality Indication Procedure

~~The quality indicator sent by the UE on the HS-SICH is a recommended Transport Format Resource Combination, TFRC. The recommended TFRC shall be based on the HS-PDSCH resources most recently received by the UE and refers to the possible transport block sizes and modulation schemes available for these resources. Hence the channel quality indicator (CQI) consists only of the Transport Block Size and Modulation Format fields of the TFRI. The UE adopts the same mapping table for these fields as is used by the NodeB.~~

The channel quality indicator (CQI) provides the NodeB with an estimate of the code rate that would have maximised the single-transmission throughput of the previous HS-DSCH transmission if decoded in isolation. The CQI report requires to be referenced to a given set of HS-PDSCH resources by the NodeB, but note that the UE is not restricted to making measurements only on these reference resources when deriving a given CQI. The reference resources for a CQI report shall be a set of HS-PDSCH resources that were received by the UE in a single TTI, and contain a complete transport block. These resources will be known to the NodeB from the relative timings of the HS-SICH carryng the CQI and previous HS-DSCH transmissions to the UE.

The CQI consists of two fields; a Recommended Transport Block Size (RTBS) and a Recommended Modulation Format (RMF). The UE shall use the same mapping table for these fields as is being used for the time slot information and modulation scheme information fields respectively of the HS-SCCH.

The reporting procedure is as follows:

1. The UE receives a message on an HS-SCCH telling it which resources have been allocated to it for the next associated HS-DSCH transmission.

~~2. The UE reads the HS-DSCH transmission, and makes the necessary measurements to derive a CQI that it estimates would give it the highest throughput for the allocated resources whilst still meeting a specified threshold BLER of 10%.~~

2. The UE reads the associated HS-DSCH transmission, and makes the necessary measurements to derive a CQI that it estimates would have given it the highest single-transmission throughput for the allocated resources whilst achieving a BLER of no more than 10 %.

   BLER, in this context, is defined as the probability that a transport block transmitted using the RTBS and RMF is received in error if decoded in isolation. For the purposes of this calculation, it shall be assumed that the transport block that would be transmitted with these parameters would use redundancy version parameters s = 1 and r = 0. Note that, by this definition, a UE shall never report a CQI that corresponds to a code rate greater than unity.

   Using this definition of BLER, single-transmission throughput shall be defined as follows :

   $$\text{single-transmission throughput} = (1 - \text{BLER}) \times \text{RTBS}$$

~~3. The UE reports the most recently derived CQI to the NodeB in the next available HS-SICH.~~

3. The CQI report derived from a given HS-DSCH transmission shall be reported to the NodeB in the next HS-SICH available to the UE following that HS-DSCH transmission, which may not necessarily be the same HS-SICH that carries the ACK/NACK information for that HS-DSCH transmission. The UE shall always transmit the most recently derived CQI in any given HS-SICH, which may mean that some CQI reports are discarded without being transmitted to the NodeB.