TSG-RAN Meeting #8
Düsseldorf, Germany, 21 - 23 June 2000

TSGRP#8(00)0248

Title: **Agreed CRs to TS 25.427**

Source: **TSG-RAN WG3**

Agenda item: **5.3.3**

Tdoc_Num	Specification	CR_Num	Revision_Nu	CR_Subject	CR_Category	WG_Status	Cur_Ver_Num	New_Ver_Nu
R3-001152	25.427	020		Clarification of Payload CRC Field (DCH FP)	F	agreed	3.2.0	3.3.0
R3-001199	25.427	017	1	Change quality estimate to 8 bits	F	agreed	3.2.0	3.3.0
R3-001287	25.427	024		Addition of protocol version	F	agreed	3.2.0	3.3.0
R3-001546	25.427	023	1	Change of definition of the Quality Estimation (QE)	F	agreed	3.2.0	3.3.0
R3-001586	25.427	025	1	Reference for the definition of invalid CFN.	F	agreed	3.2.0	3.3.0
R3-001587	25.427	019	4	Change of definition of the quality estimate (QE)	B	agreed	3.2.0	3.3.0

TSG-RAN Working Group 3 Meeting #12
Seoul, Korea, 10th – 13th April 2000

Document ***R3-001199***
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25.427	**CR**	**017r1**	Current Version:	3.2.0

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

For submission to: TSG RAN #8	for approval	X	strategic		(for SMG use only)
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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: (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [ ]
(at least one should be marked with an X)

Source: R-WG3 **Date:** April 2000

Subject: Change quality estimate definition according to WG1.

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: WG1 has changed the mapping of the Quality Estimate (QE) to 8 bits (previously 6 bits), and the naming of mapping from BER_LOG to PhCh_BER_LOG and TrCh_BER_LOG. This CR introduces the same changes in User Plane DCH protocol.

Clauses affected: 6.2.2, 6.2.4.5

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:

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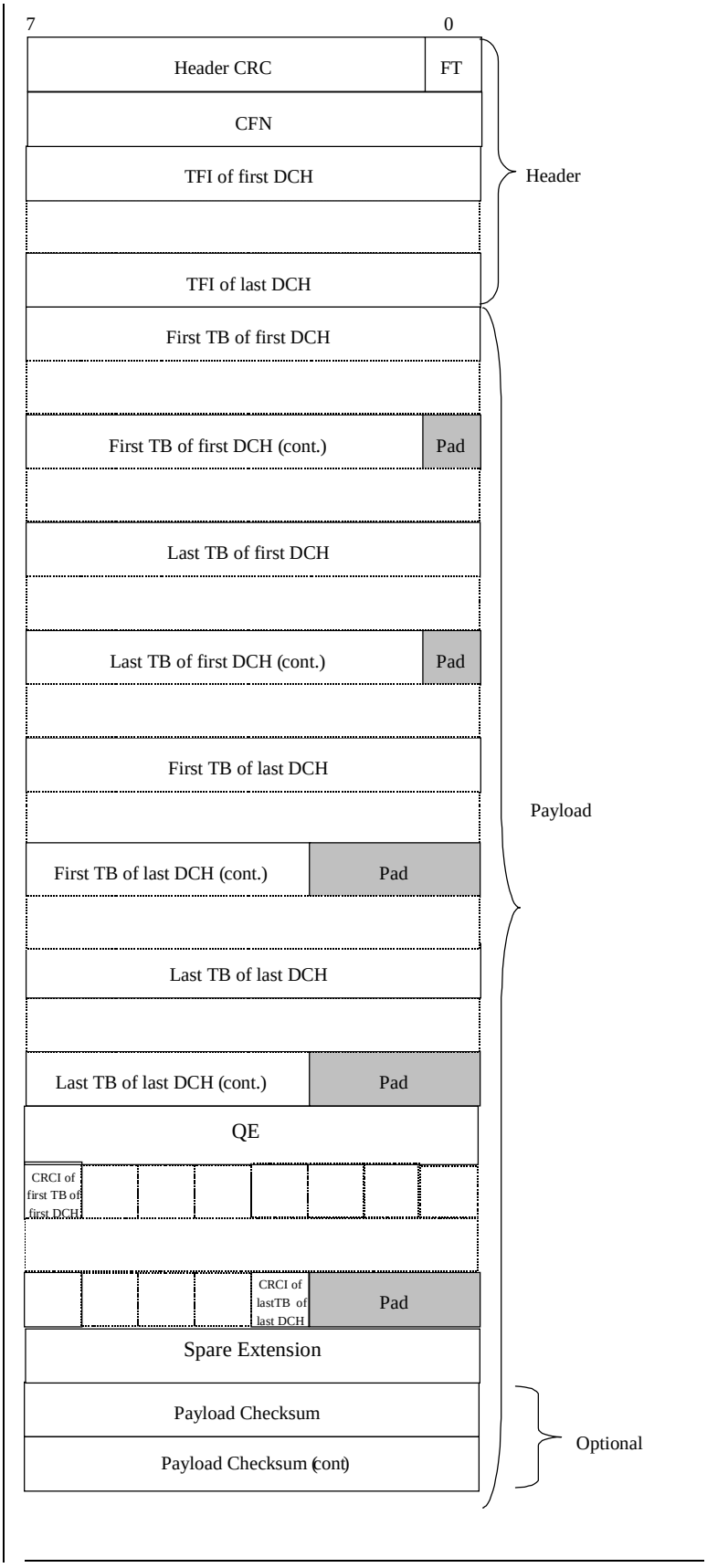
6.2.2 Uplink data frame

The structure of the UL data frame is shown below.


7
0
Header CRC
FT
CFN
TFI of first DCH
TFI of last DCH
Header
First TB of first DCH
First TB of first DCH (cont.)
Pad
Last TB of first DCH
Last TB of first DCH (cont.)
Pad
First TB of last DCH
First TB of last DCH (cont.)
Pad
Last TB of last DCH
Last TB of last DCH (cont.)
Pad
QE
CRCI of first TB of first DCH
CRCI of lastTB of last DCH
Pad
Spare Extension
Payload Checksum
Payload Checksum (cont)
Payload
Optional

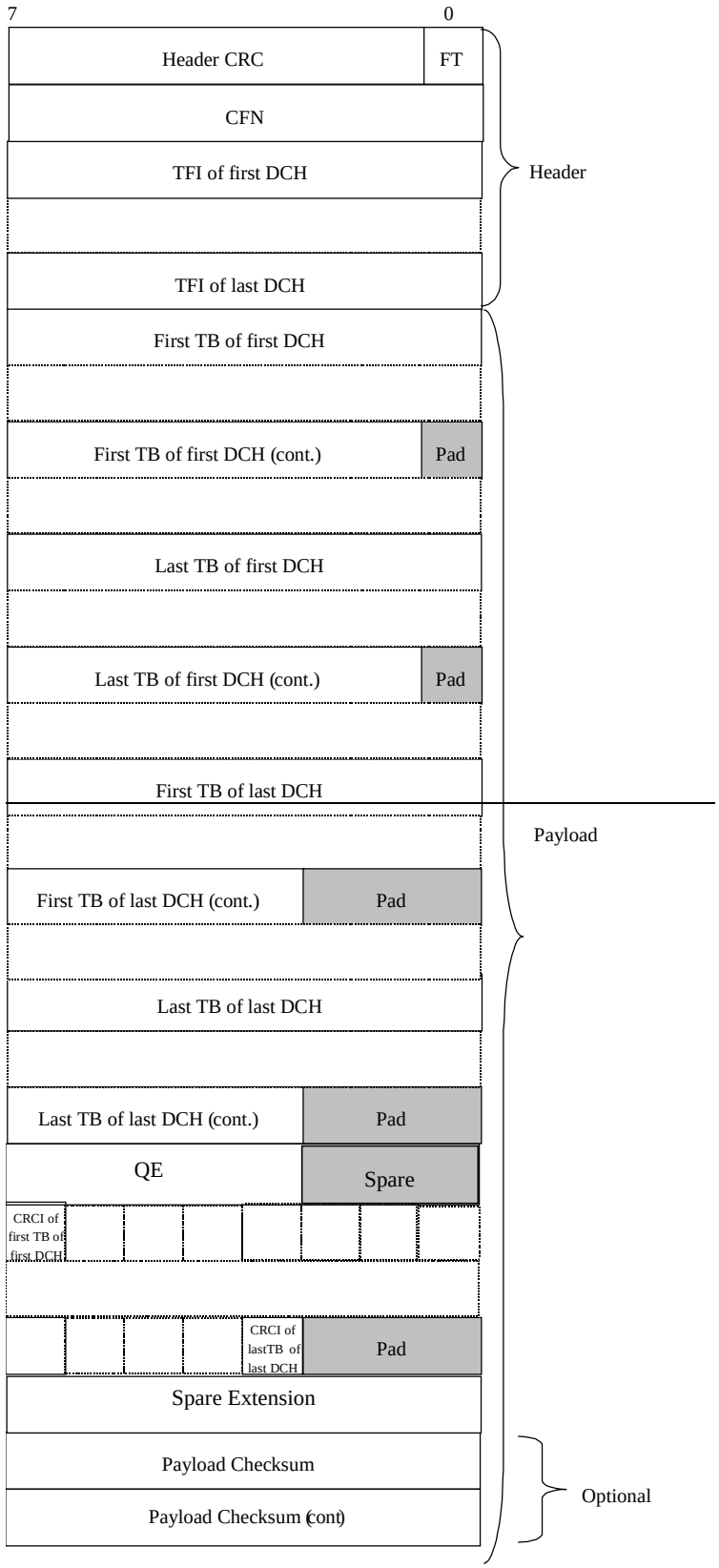


Figure 11: Uplink data frame structure

6.2.4.5 Quality Estimate (QE)

Description: The quality estimate is derived from the [FDD - Transport channel BER or Physical channel BER][TDD - DPCH Physical Channel BER].

[FDD – If the DCH FP frame includes TB's for the DCH which was indicated as "selected DCH" with the QE-selector IE in the control plane [25.433][25.423], then the QE is the Transport channel BER for the selected DCH. If no Transport channel BER is available the QE is the Physical channel BER].

[FDD – If the IE QE-Selector equals “non-selected DCH” for all DCHs in the DCH FP frame the is the Physical channel BER].

The quality estimate shall be set to the Transport channel BER or Physical channel BER and be measured in the units TrCh_BER_LOG and PhCh_BER_LOG respectively (see Ref 25.215 and 25.225). The quality estimate is needed in order to select a transport block when all CRC indications are showing bad (or good) frame. The UL Outer Loop Power Control may also use the quality estimate.

Value range: {0-~~63~~255}, granularity 1

Field length: ~~6~~ 8 bits

TSG-RAN Working Group 3 Meeting #13
Honolulu, USA, 22 May – 26 May 2000

***Document* R3-001587**
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25.427	CR	019r4	Current Version:	3.2.0

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

For submission to:	TSG RAN #8	for approval	X	strategic		*(for SMG use only)*
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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		UTRAN / Radio	X	Core Network	

Source: R-WG3 **Date:** 2000-05-24

Subject: Handling of “0 bit” transport block.

Work item:

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

F	Correction		**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature	X		Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: In accordance with the agreement on R1-000278, several descriptions have to be updated.

Clauses affected: 5.1

Other specs affected:

Other 3G core specifications	X	→ 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:

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5 DCH Frame Protocol procedures

5.1 Data transfer

When there is some data to be transmitted, DCH data frames are transferred every transmission time interval between the SRNC and the Node B for downlink transfer, and between Node B and SRNC for uplink transfer.

An optional error detection mechanism may be used to protect the data transfer if needed. At the transport channel setup it shall be specified if the error detection on the user data is used.

5.1.1 Uplink

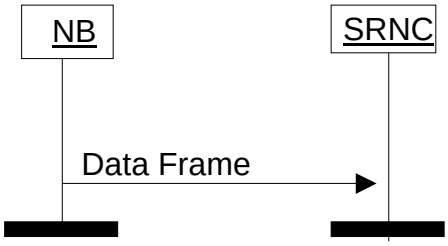

Figure 1: Uplink data transfer

Two modes can be used for the UL transmission: *normal mode* and *silent mode*. The mode is selected by the SRNC when the transport connection is setup and signaled to the Node B with the relevant control plane procedure.

- In normal mode, the Node B shall always send an UL data frame to the RNC for all the DCHs in a set of coordinated DCHs regardless of the number ~~length~~ of Transport Blocks of the DCHs~~, i.e. also when it has received zero bits for a transport channel during a certain TTI~~.

- In silent mode and in case only one transport channel is transported on a transport bearer, the node-B shall not send an UL data frame to the RNC when it has received a ~~zero bits~~TFI indicating "number of TB equal to 0" for the~~a~~ transport channel during a ~~certain~~ TTI.

- In silent mode and in case of coordinated DCHs, when the Node B receives a ~~zero bits bits~~TFI indicating "number of TB equal to 0" for all the DCHs in a set of coordinated DCHs, the N~~n~~ode B shall not send an UL data frame to the RNC for this set of coordinated DCHs.

When UL synchronisation is lost or not yet achieved on the Uu, UL data frames are not sent to the SRNC.

When Node B receives an invalid TFCI no data frame shall be sent to the SRNC.

5.1.2 Downlink

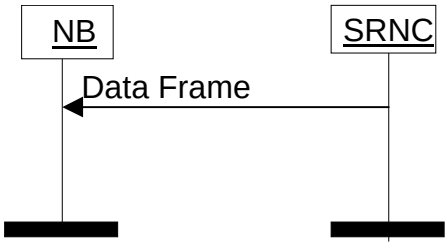

Figure 2: Downlink data transfer

The Node B shall only consider a transport connection synchronised after it has received at least one data frame on this transport connection with a positive TOA [4].

The Node B shall consider the DL user plane for a certain RL synchronised if all transport connections established for carrying DL data frames for this RL can be considered synchronised.

Only when the DL user plane is considered synchronised, the Node B shall transmit on the [FDD - DL DPDCH][TDD – DPCH].

When the DL user plane is considered synchronised and the Node B does not receive a valid FP frame in a TTI, it assumes that there is no data to be transmitted in that TTI for this transport channel.

If the node B is aware of a TFI value corresponding to zero bits for this transport channel, this TFI is assumed. If the TFS contains both a TFI corresponding to “TB length equal to 0 bits” and a TFI corresponding to “number of TB equal to 0”, the node-B shall assume the TFI corresponding to “number of TB equal to 0”. When combining the TFI’s of the different transport channels, a valid TFCI might result and in this case data shall be transmitted on Uu.

If the node B is not aware of a TFI value corresponding to zero bits for this transport channel or if combining the TFI corresponding to zero bits with other TFI’s, results in an unknown TFI combination, the handling as described in the following paragraph shall be applied.

~~If the given TFS for a certain Transport Channel containsTFIs indicating “number of TB equal to 0”, and if the NodeB receives no frame from SRNC for a certain TTI, the NodeB shall assign a TFI corresponding to “number of TB equal to 0”.~~

At each frame, the Node B shall build the TFCI value of each CCTrCH, according to the TFI of the DCH data frames multiplexed on this CCTrCH and scheduled for that frame. [FDD - In case the Node receives an unknown combination of DCH data frames, it shall transmit only the DPCCH without TFCI bits.] [TDD - In case the Node receives an unknown combination of DCH data frames, it shall apply DTX, i.e. suspend transmission on the corresponding DPCHs.]

3GPP-RAN-WG3 Meeting #12
Seoul, Korea, April 10-13 2000

Document *R3-001152*

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25.427	**CR**	**20**	Current Version:	3.2.0

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

For submission to: TSG RAN#8 *list expected approval meeting # here ↑*

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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 [ ] UTRAN / Radio [X] Core Network [ ]

Source: R-WG3 **Date:** 10th April 2000

Subject: Clarification of Payload CRC Field (DCH FP)

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: DL DCH FP may be transferred from SRNC to NodeB regardless of payload length. i.e. even if the payload length is zero, the CRC shall be calculated, attached to FP, and the FP may still be sent towards NodeB.

This CR clarifies the CRC caluculation in case the payload length is zero.

Clauses affected: 7.2.1 CRC Calculation

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:

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7.2.1 CRC Calculation

The parity bits are generated by one of the following cyclic generator polynomials:

$g_{CRC16}(D) = D^{16} + D^{15} + D^2 + 1$

$g_{CRC7}(D) = D^7 + D^6 + D^2 + 1$

Denote the bits in a frame by $a_1, a_2, a_3, \ldots, a_{A_i}$, and the parity bits by $p_1, p_2, p_3, \ldots, p_{L_i}$. A_i is the length of a protected data and L_i is 16 or 7 depending on the CRC length.

The encoding is performed in a systematic form, which means that in GF(2), the polynomial for the payload

$$a_1 D^{A_i+15} + a_2 D^{A_i+14} + \ldots + a_{A_i} D^{16} + p_1 D^{15} + p_2 D^{14} + \ldots + p_{15} D^1 + p_{16}$$

yields a remainder equal to 0 when divided by $g_{CRC16}(D)$ and the polynomial for the header and control frame

$$a_1 D^{A_i+6} + a_2 D^{A_i+5} + \ldots + a_{A_i} D^7 + p_1 D^6 + p_2 D^5 + \ldots + p_6 D^1 + p_7$$

yields a remainder equal to 0 when divided by $g_{CRC7}(D)$. If $A_i = 0$, $p_1 = p_2 = p_3 = \cdots = p_{L_i} = 0$.

TSG-RAN Working Group 3 Meeting #13
Hawaii, USA, 22 – 26 May, 2000

***Document* R3-001546**
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25.427	CR	023r1	Current Version:	3.2.0

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

For submission to:	TSG RAN #8	for approval	X	strategic		(for SMG use only)
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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		UTRAN / Radio	X	Core Network	

Source: R-WG3 **Date:** May, 2000

Subject: Change of definition of the Quality Estimation (QE) for TDD

Work item:

Category: *(only one category shall be marked with an X)*				**Release:**	
F	Correction	X		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:
In WG1 the BER definition has been changed to Transport channel BER and Physical channel BER.
This CR updates the definition of the QE for TDD in the same way as already updated for FDD.

Changes within revised version CR023r1:
* references have been updated indicating the reference number
* BER handling for TDD same as for FDD, i.e. if no transport channel BER is available, the QE is the Physical channel BER.

Clauses affected: 2, 6.2.4.5

Other specs affected:				
	Other 3G core specifications	X	→ List of CRs:	25.423 3.1.0 CR-103, 25.433-3.1.0 CR-119, 25.435-3.2.0 CR-018
	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:


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2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.

For a specific reference, subsequent revisions do not apply.

For a non-specific reference, the latest version applies.

For this Release 1999 document, references to 3G documents are for Release 1999 versions (version 3.x.y).

[1] TS UMTS 25.301: "Radio Interface Protocol Architecture".

[2] TS 25.401: "UTRAN architecture description".

[3] TS 25.302: "Services provided by the Physical Layer, Source WG2".

[4] TS 25.433: "UTRAN Iub interface NBAP signalling".

[5] TS 25.402: "Synchronisation in UTRAN, Stage 2".

[6] TS 25.423: "UTRAN Iur interface RNSAP signalling".

[7] TS 25.215: "Physical layer – Measurements (FDD)".

[8] TS 25.225: "Physical layer – Measurements (TDD)".

6.2.4.5 Quality Estimate (QE)

Description: The quality estimate is derived from the ~~[FDD -~~ Transport channel BER or Physical channel BER~~][TDD - DPCH Physical Channel BER]~~.

~~[FDD -~~ If the DCH FP frame includes TB's for the DCH which was indicated as "selected~~ DCH~~" with the QE-selector IE in the control plane [4~~25.433~~][6~~25.423~~], then the QE is the Transport channel BER for the selected DCH. ~~[FDD -~~ If no Transport channel BER is available the QE is the Physical channel BER~~]~~.

~~[FDD -~~ If the IE QE-Selector equals “non-selected~~ DCH~~” for all DCHs in the DCH FP frame, then the QE is the Physical channel BER~~]~~.

The quality estimate shall be set to the Transport channel BER or Physical channel BER and be measured in the unit BER_LOG (see Ref [7]~~25.215~~ and [8]~~25.225~~). The quality estimate is needed in order to select a transport block when all CRC indications are showing bad (or good) frame. The UL Outer Loop Power Control may also use the quality estimate.

Value range: {0-63}, granularity 1.

Field length: 6 bits.

3GPP TSG-RAN Working Group Meeting #13
Hawaii, USA, 22nd-26th May 2000

R3-001287
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25.427	CR	024	Current Version:	3.2.0.

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

For submission to:	TSG-RAN #8	for approval	X	strategic		(for SMG use only)
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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 [ ] UTRAN / Radio [X] Core Network [ ]

Source: R-WG3 **Date:** May 2000

Subject: Addition of User Plane Protocol Version.

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 working assumption is that the user plane protocol version will be negotiated on the control plane. Currently user plane specifications do not indicate the protocol version. Therefore this CR introduces a subclause with protocol version indication.

Clauses affected: 4.3

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:

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4 General aspects

The specification of I_{ub} DCH data streams is also valid for I_{ur} DCH data streams.

The SRNC is responsible for creating communications inside the SRNS. The SRNC provides to the Node B the complete configuration of the Transport channels to be provided by the Node B for a given communication.

The parameters of a Transport channel are described in [1]. These Transport channels are multiplexed on the downlink by the Node B on radio physical channels, and de-multiplexed on the uplink from radio physical channels to Transport channels.

Every set of coordinated Transport channel related to one UE context that is communicated over a set of cells that are macro-diversity combined within Node B or DRNC, is carried on one transport connection. This means that there are as many transport connections as set of coordinated Transport channels and User ports for that communication.

Bi-directional transport connections are used.

4.1 DCH FP services

DCH frame protocol provides the following services:

- Transport of TBS across Iub and Iur interface.
- Transport of outer loop power control information between the SRNC and the Node B.
- Support of transport channel synchronisation mechanism.
- Support of Node Synchronisation mechanism.
- Transfer of DSCH TFI from SRNC to Node B.
- Transfer of Rx timing deviation (TDD) from the Node B to the SRNC.

4.2 Services expected from data transport

Following service is required from the transport layer:

- In sequence delivery of FP PDU.

4.3 Protocol Version

This revision of the specification specifies version 1 of the protocol.

3GPP TSG-RA WG3 Meeting #13
O'hau, 22-26 May, 2000

***Document* R3-001586**
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25.427	CR	25r1	Current Version:	3.2.0

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

For submission to:	RAN#8	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 [ ] UTRAN / Radio [X] Core Network [ ]

Source: R-WG3 **Date:**

Subject: Reference for the definition of Invalid CFN

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: TS 25.212 defines some restriction on how to select the correct CFN values based on the TTI. The CR clarifies the behaviour of the receiving entity when the CFNs in the received FP frame does not fulfil the rules specified in 25.212.. The behaviour is, as for the other error cases, to ignore the erroneous frame.

Clauses affected: 2, 7.1

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:

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- For this Release 1999 document, references to 3G documents are for Release 1999 versions (version 3.x.y).

[1] TS UMTS 25.301: "Radio Interface Protocol Architecture".

[2] TS 25.401: "UTRAN architecture description".

[3] TS 25.302: "Services provided by the Physical Layer, Source WG2".

[4] TS 25.433: "UTRAN Iub interface NBAP signalling".

[5] TS 25.402: "Synchronisation in UTRAN, Stage 2".

[6] TS 25.212: "Multiplexing and channel coding, FDD".

[7] TS 25.222: "Multiplexing and channel coding, TDD".

7.1 General

A Frame Protocol frame with illegal or not comprehended parameter value shall be ignored. Frame protocol frames sent with a CFN in which the radio resources assigned to the associated Iub data port are not available, shall be ignored.

Frame protocol frames with CFN value that does not fulfil the requirement set in chapter [FDD - 4.2.14 of Ref [6]] [TDD - 4.2.12 of Ref. [7]], shall be ignored