TSG-RAN Meeting #21 **RP-030456**
Frankfurt, Germany, 16 - 19 September 2003

Title: **CRs (Rel-5) to TS 25.212**

Source: **TSG-RAN WG1**

Agenda item: **7.2.5**

TS 25.212 **(RP-030456)**

RP Tdoc #	WG Toc#	Spec	CR	R	Subject	Phase	Cat	Curre	New	WI	Remarks
RP-030456	R1-030932	25.212	178	4	Clarification on Single Transport Format Detection	Rel-5	F	5.5.0	5.6.0	TEI-5	
RP-030456	R1-030752	25.212	179	-	Correction on table number in first interleave description	Rel-5	D	5.5.0	5.6.0	TEI-5	
RP-030456	R1-030936	25.212	180	3	Broadening the conditions that require Ues to perform BTFD for the case of HS-DSCH reception	Rel-5	C	5.5.0	5.6.0	HSDPA-Phys	

3GPP TSG-RAN WG1 Meeting #33
New York, U.S.A, 25-29 August, 2003

Tdoc ⌘R1-030932

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CHANGE REQUEST

⌘ **25.212** **CR** **178** ⌘ **rev** **4** ⌘ 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 Single Transport Format Detection
Source:	⌘	TSG RAN WG1
Work item code:	⌘	TEI-5
Date:	⌘	26/08/2003
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:	⌘	Requirements for single transport format detection are not specified in TS25.212
Summary of change:	⌘	A new chapter about requirements for single transport format detection is added into 25.212.
Consequences if not approved:	⌘	The use and the requirements for single transport format detection remains ambiguous.

Clauses affected:	⌘	4.3.1a

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

Other comments:	⌘	**Isolated Impact Analysis**: This CR only affects the single transport format detection part in the specification. The CR does not have impact on earlier releases than Rel5. The CR does have impact on UE/UTRAN implementations of the STFD behaving other than specified in 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:

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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.

- explicit blind detection is used on the guiding TrCH.

If the transport format set for a TrCH *i* does not contain more than one transport format with more than zero transport blocks, no explicit blind transport format detection needs to be performed for this TrCH. The UE can use guided detection for this TrCH or single transport format detection, where the UE always assumes the transport format corresponding to more than zero transport blocks for decoding.

For uplink, blind transport format detection is a network controlled option. For downlink, the UE shall be capable of performing blind transport format detection, if certain restrictions on the configured transport channels are fulfilled.

For a DPCH associated with a PDSCH, the DPCCH shall include TFCI.

4.3.1 Blind transport format detection

When no TFCI is available then explicit blind detection or guided detection shall be performed on all TrCHs within the CCTrCH that have more than one transport format and that do not use single transport format detection. The UE shall only be required to support blind transport format detection if all of the following restrictions are fulfilled:

1. only one CCTrCH is received by the UE;
2. the number of CCTrCH bits received per radio frame is 600 or less;
3. the number of transport format combinations of the CCTrCH is 64 or less;
4. fixed positions of the transport channels is used on the CCTrCH to be detectable;
5. convolutional coding is used on all explicitly detectable TrCHs;
6. CRC with non-zero length is appended to all transport blocks on all explicitly detectable TrCHs;
7. at least one transport block shall be transmitted per TTI on each explicitly detectable TrCH;
8. the number of explicitly detectable TrCHs is 3 or less;
9. for all explicitly detectable TrCHs *i*, the number of code blocks in one TTI (C_i) shall not exceed 1;
10. the sum of the transport format set sizes of all explicitly detectable TrCHs, is 16 or less. The transport format set size is defined as the number of transport formats within the transport format set;
11. there is at least one TrCH that can be used as the guiding transport channel for all transport channels using guided detection.

Examples of blind transport format detection methods are given in annex A.

4.3.1a Single transport format detection

When no TFCI is available, then single transport format detection shall be applied on all TrCHs within the CCTrCH that have a transport format set not containing more than one transport format with more than zero transport blocks and that do not use guided detection. The UE shall only be required to support single transport format detection if the following restrictions are fulfilled:

1. For each transport channel that is single transport format detected, CRC with non-zero length is appended to all transport blocks within the non-zero transport block transport format;
2. fixed positions of the transport channels is used on the CCTrCH to be detectable.

4.3.2 Transport format detection based on TFCI

If a TFCI is available, then TFCI based detection shall be applicable to all TrCHs within the CCTrCH. The TFCI informs the receiver about the transport format combination of the CCTrCHs. As soon as the TFCI is detected, the transport format combination, and hence the transport formats of the individual transport channels are known.

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Tdoc ⌘R1-030752

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CHANGE REQUEST

⌘ **25.212** **CR** **179** ⌘ **rev** **-** ⌘ Current version: **5.5.0** ⌘

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Proposed change affects: UICC apps⌘ [ ] ME [X] Radio Access Network [X] Core Network [ ]

Title:	⌘	Correction on table number in first interleave description
Source:	⌘	TSG RAN WG1
Work item code:	⌘	TEI-5
Date:	⌘	18/Aug/2003
Category:	⌘	**D**
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)*
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R96	*(Release 1996)*
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R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	In section 4.2.5.1 of TS25.212, "insertion of marked bits in the sequence to be input in first interleaver" is described. In the sentence, table 3 is referred as 1st interleaving bit reversal pattern. Actually table 3 is inter-row permutation patterns for turbo code internal interleaver and table 4 is 1st interleaving bit reversal pattern. So correction is proposed.
Summary of change:	⌘	Modification from table 3 to table 4 is proposed.
Consequences if not approved:	⌘	There may be misunderstanding such 1st interleaving is carried out based on table 3, which is inter-row permutation patterns for turbo code internal interleaver. <Isolated Impact Analysis> The same error exists in release 99 and 4 specifications but we believe educated user must acknowledge this is an editorial mistake. We believe this modification does not bring forward and backward compatibility problem.

Clauses affected:	⌘	4.2.5.1

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

Other comments: ⌘

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4.2.5.1 Insertion of marked bits in the sequence to be input in first interleaver

In normal mode, compressed mode by higher layer scheduling, and compressed mode by spreading factor reduction:

$x_{i,k} = z_{i,k}$ and $X_i = Z_i$

In case the TTI contains a radio frame that is compressed by puncturing and fixed positions are used, sequence $x_{i,k}$ which will be input to first interleaver for TrCH i and TTI m within largest TTI, is built from bits $z_{i,k}$, $k=1, \ldots, Z_i$, plus $Np_{i,\max}^{TTI,m}$ bits marked p and $X_i = Z_i + Np_{i,\max}^{TTI,m}$, as is described thereafter.

$Np_{i,\max}^{TTI,m}$ is defined in the Rate Matching subclause 4.2.7.

$P1_{Fi}(x)$ defines the inter column permutation function for a TTI of length $F_i \times 10$ms, as defined in Table 4~~3~~ in section 4.2.5.2. $P1_{Fi}(x)$ is the Bit Reversal function of x on $\log_2(F_i)$ bits.

NOTE 1: C[x], x= 0 to $F_i - 1$, the number of bits p which have to be inserted in each of the $F_i$segments of the TTI, where x is the column number before permutation, i.e. in each column of the first interleaver. $C[P1_{Fi}(x)]$ is equal to $Np_{i,\max}^{m\times F_i+x}$ for x equal 0 to F_i-1 for fixed positions. It is noted $Np_i^{m\times F_i+x}$ in the following initialisation step.

NOTE 2: cbi[x], x=0 to $F_i - 1$, the counter of the number of bits p inserted in each of the F_i segments of the TTI, i.e. in each column of the first interleaver x is the column number before permutation.

col = 0

while col < F_i **do** -- here col is the column number after column permutation

C[$P1_{Fi}$(col)] = $Np_i^{m\times F_i+col}$ -- initialisation of number of bits p to be inserted in each of the F_i segments of the TTI number m

cbi[$P1_{Fi}$(col)] = 0 -- initialisation of counter of number of bits p inserted in each of the F_i segments of the TTI

col = col +1

end do

n = 0, m = 0

while n < X_i **do** -- from here col is the column number before column permutation

col = n mod F_i

if cbi[col] < C[col] **do**

$x_{i,n}$ = p -- insert one p bit

cbi[col] = cbi[col]+1 -- update counter of number of bits p inserted

else -- no more p bit to insert in this segment

$x_{i,n} = z_{i,,m}$

m = m+1

endif

n = n +1

end do

3GPP TSG-RAN1 Meeting #33 **Tdoc ⌘R1-03-0936**
New York City, New York, U.S.A, August 24th – 29th,2003

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CHANGE REQUEST

⌘ **25.212** **CR** **180** ⌘**rev** **3** ⌘ Current version: **5.5.0** ⌘

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Proposed change affects: UICC apps⌘ [-] ME [X] Radio Access Network [X] Core Network [-]

Title:	⌘	Broadening the conditions that require UEs to perform BTFD for the case of HS-DSCH reception
Source:	⌘	TSG RAN WG1
Work item code:	⌘	HSDPA-Phys
Date:	⌘	21/08/2003
Category:	⌘	**C**
Release:	⌘	Rel-5

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Rel-4 *(Release 4)*
Rel-5 *(Release 5)*
Rel-6 *(Release 6)*

Reason for change:	⌘	To allow outer loop power control to be performed over the DL DCCH SRB on the associated DPCH of an HS-DSCH radio bearer without much overhead. The change also helps when considering simultaneous service of HSDPA + AMR.
Summary of change:	⌘	The conditions under which UEs are required to perform BTFD are broadened for the case where the UE receives HS-DSCH.
Consequences if not approved:	⌘	Outer loop power control can be applied to the DL DCCH SRB on the associated DPCH of an HS-DSCH radio bearer only with the use of TFCI, which incurs an overhead of 2 bits/slot. Also, when considering simultaneous service of HSDPA + AMR, BTFD will not be applicable for AMR. *Isolated Impact Analysis:* The proposed change in the specification only corresponds to UEs who are simultaneously receiving (only) one CCTrCH of dedicated type and (only) one CCTrCH of common type for HS-DSCH. The change is limited to requiring these UEs to perform BTFD on the CCTrCH of dedicated type. Rel 99/4 UEs are not affected.

Clauses affected:	⌘	4.3.1			
		Y	**N**		
Other specs Affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

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4.3.1 Blind transport format detection

When no TFCI is available then explicit blind detection or guided detection shall be performed on all TrCHs within the CCTrCH that have more than one transport format and that do not use single transport format detection. The UE shall only be required to support blind transport format detection if all of the following restrictions are fulfilled:

1. either only one CCTrCH is received, or one CCTrCH of dedicated type and one CCTrCH of common type for HS-DSCH are received by the UE;

   If only one CCTrCH is received by the UE, the following conditions apply to that CCTrCH and those TrCHs that are multiplexed on the CCTrCH. If one CCTrCH of dedicated type and one CCTrCH of common type for HS-DSCH are received by the UE, the following conditions apply to the dedicated type CCTrCH and the TrCHs that are multiplexed on the dedicated type CCTrCH.

2. the number of CCTrCH bits received per radio frame is 600 or less;
3. the number of transport format combinations of the CCTrCH is 64 or less;
4. fixed positions of the transport channels is used on the CCTrCH to be detectable;
5. convolutional coding is used on all explicitly detectable TrCHs;
6. CRC with non-zero length is appended to all transport blocks on all explicitly detectable TrCHs;
7. at least one transport block shall be transmitted per TTI on each explicitly detectable TrCH;
8. the number of explicitly detectable TrCHs is 3 or less;
9. for all explicitly detectable TrCHs *i*, the number of code blocks in one TTI (C_i) shall not exceed 1;
10. the sum of the transport format set sizes of all explicitly detectable TrCHs, is 16 or less. The transport format set size is defined as the number of transport formats within the transport format set;
11. there is at least one TrCH that can be used as the guiding transport channel for all transport channels using guided detection.