3GPP TSG-RAN WG1 (Radio) Meeting #9 ***Document*** ***R1-99I91***

Dresden, Germany, 30 Nov- 3 Dec 1999

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.222 **CR** **006** Current Version: 3.0.0

3G specification number ↑ *↑ CR number as allocated by 3G support team*

For submision to TSG RAN#6 *list TSG meeting no. here ↑*

for approval [X]
for information [ ]

(only one box should be marked with an X)

Form: 3G CR cover sheet, version 1.0 *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf*

Proposed change affects: *(at least one should be marked with an X)* USIM [ ] ME [X] UTRAN [X] Core Network [ ]

Source: Siemens AG **Date:** 18th November 99

Subject: Inclusion of coding schemes for USCH/DSCH

3G Work item: TS25.222 V3.0.0

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

F	Correction	X
A	Corresponds to a correction in a 2G specification	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	

Reason for change: Up to now there is no definition of possible coding parameters for the transport channels USCH and DSCH. This CR proposes to use the same coding schemes as for dedicated channels. Additionally, the option 'no coding' now is defined as a separate coding scheme for DCH, USCH and DSCH.

Clauses affected: 4.2.3

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other 2G 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:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

4.2.3 Channel coding

Code blocks are delivered to the channel coding block. They are denoted by $o_{ir1}, o_{ir2}, o_{ir3}, \ldots, o_{irK_i}$, where i is the TrCH number, r is the code block number, and K_i is the number of bits in each code block. The number of code blocks on TrCH i is denoted by C_i. After encoding the bits are denoted by $y_{ir1}, y_{ir2}, y_{ir3}, \ldots, y_{irY_i}$. The encoded blocks are serially multiplexed so that the block with lowest index r is output first from the channel coding block. The bits output are denoted by $c_{i1}, c_{i2}, c_{i3}, \ldots, c_{iE_i}$, where i is the TrCH number and $E_i = C_i Y_i$. The output bits are defined by the following relations:

$c_{ik} = y_{i1k}$ $k = 1, 2, ,.Y_i$

$c_{ik} = y_{i,2,(k-Y_i)}$ $k = Y_i + 1, Y_i + 2, ,.2Y_i$

$c_{ik} = y_{i,3,(k-2Y_i)}$ $k = 2Y_i + 1, 2Y_i + 2, ,.3Y_i$

…

$c_{ik} = y_{i,C_i,(k-(C_i-1)Y_i)}$ $k = (C_i - 1)Y_i + 1, (C_i - 1)Y_i + 2, ,.C_iY_i$

The relation between o_{irk} and Y_{irk} and between K_i and Y_i is dependent on the channel coding scheme.

The following channel coding schemes can be applied to transport channels:

- Convolutional coding
- Turbo coding
- No channel coding

The values of Y_i in connection with each coding scheme:

- Convolutional coding, ½ rate: $Y_i = 2*K_i + 16$; 1/3 rate: $Y_i = 3*K_i + 24$
- Turbo coding, 1/3 rate: $Y_i = 3*K_i + 12$
- No channel coding, $Y_i = K_i$

Table 4.2.3-1: Error Correction Coding Parameters

Transport channel type	Coding scheme	Coding rate
BCH	Convolutional code	1/2
PCH		
FACH		
RACH		
DCH/USCH/DSCH		1/3, 1/2~~, or no coding~~
DCH/USCH/DSCH	Turbo code	1/3~~, or no coding~~
DCH/USCH/DSCH	No coding	

4.2.3.1 Convolutional Coding

- Constraint length K=9. Coding rates 1/2 and 1/3.
- The configuration of the convolutional coder is presented in figure 4-2.
- The output from the convolutional coder shall be done in the order output0, output1,output2, output0, output1,…, output2. (When coding rate is 1/2, output is done up to output 1).

- The initial value of the shift register of the coder shall be “all 0”.