TSG-RAN Meeting #22 **RP-030647**
Maui, Hawaii, USA, 9 - 12 December 2003

Title: **Supplement Independent Release 5 CRs to TS 25.212**

Source: **TSG-RAN WG1**

Agenda item: **7.2.5**

TS 25.212 (RP-030647)

RP tdoc#	WG tdoc#	Spec	CR	R	Subject	Ph	Cat	Current	New	WI	Remarks
RP-030647	R1-031101	25.212	183	-	Clarification of the CRC attachment procedure for HS-SCCH	Rel-5	F	5.6.0	5.7.0	HSDPA-Phys	
RP-030647	R1-031272	25.212	184	1	Correction of UE identity notation	Rel-5	F	5.6.0	5.7.0	HSDPA-Phys	

The WI of CR183 was corrected from TEI-5 to HSDPA-Phys

3GPP TSG-RAN WG1 Meeting #34
Seoul, Korea, 6-10 October, 2003

Tdoc R1-031101

CR-Form-v7

CHANGE REQUEST

⌘ **25.212**	**CR 183**	⌘ **rev**	**-**	⌘ Current version:	**5.6.0** ⌘

*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 [X] Radio Access Network [X] Core Network [ ]

Title: ⌘	Clarification of the CRC attachment procedure for HS-SCCH		
Source: ⌘	TSG RAN WG1		
Work item code: ⌘	HSDPA-Phys	***Date:*** ⌘	03/10/2003
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: ⌘	CRC attachment procedure for HS-SCCH in not clearly defined.
Summary of change: ⌘	Bir ordering for CRC attachemnt is defined to align with the procedure for other channels.
Consequences if not approved: ⌘	Spefications will remain ambiguous. Isolated Impact Analysis: No impact to other specification as the correction only corresponds to CRC attachment procedure for HS-SCCH. The change does not have impact on earlier release than Rel-5.

Clauses affected: ⌘	4.6.4			
	Y	**N**		
Other specs affected: ⌘		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.

4.6.4 CRC attachment for HS-SCCH

From the sequence of bits $x_{1,1}$, $x_{1,2}$, …, $x_{1,8,}$ $x_{2,1}$, $x_{2,2}$, …, $x_{2,13}$ a 16 bits CRC is calculated according to Section 4.2.1.1. This gives a sequence of bits c_1, c_2, …, c_{16}. where

$$c_k = p_{im(17-k)} \qquad k=1,2,\ldots,16$$

This sequence of bits is then masked with the UE Identity $x_{ue,1}$, $x_{ue,2}$, …, $x_{ue,16}$ and then appended to the sequence of bits $x_{2,1}$, $x_{2,2}$, …, $x_{2,13}$ to form the sequence of bits y_1, y_2, …, y_{29}, where

$y_i = x_{2,i}$ $\quad$ $i=1,2,\ldots,13$

$y_i = (c_{i-13} + x_{ue,i-13}) \bmod 2$ $\quad$ $i=14,15,\ldots,29$

3GPP TSG- RAN WG1 Meeting #35
Lisbon, Portugal, 17-21 November, 2003

Tdoc ⌘ R1-031272

CR-Form-v7

CHANGE REQUEST

⌘ 25.212	CR 184	⌘ rev 1	⌘ Current version: 5.6.0 ⌘

*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 [X] Radio Access Network [X] Core Network [ ]

Title: ⌘	Correction of UE identity notation		
Source: ⌘	TSG RAN WG1		
Work item code: ⌘	HSDPA-Phys	***Date:*** ⌘	15/10/2003
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: ⌘	The notation of UE identity bits in section 4.6.2.4 is not consistent with other sections
Summary of change: ⌘	Notation UE identity bits in section 4.6.2.4 is updated. The notation of physical channel bit in section 4.6.8 is also corrected
Consequences if not approved: ⌘	Inconsistent notation remains in specification <Isolated Impact Analysis> There should be no impact, as an educated user should see this editorial mistake.

Clauses affected: ⌘	4.6.2.4 & 4.6.8			
	Y	**N**		
Other specs affected: ⌘			Other core specifications ⌘	
			Test specifications	
			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.

4.6.2 HS-SCCH information field mapping

4.6.2.1 Redundancy and constellation version coding

The redundancy version (RV) parameters *r, s* and constellation version parameter *b* are coded jointly to produce the value X_{rv}. X_{rv} is alternatively represented as the sequence $x_{rv,1}$, $x_{rv,2}$, $x_{rv,3}$ where $x_{rv,1}$ is the MSB. This is done according to the following tables according to the modulation mode used:

Table 12: RV coding for 16 QAM

X_{rv} (value)	s	r	b
0	1	0	0
1	0	0	0
2	1	1	1
3	0	1	1
4	1	0	1
5	1	0	2
6	1	0	3
7	1	1	0

Table 13: RV coding for QPSK

X_{rv} (value)	s	r
0	1	0
1	0	0
2	1	1
3	0	1
4	1	2
5	0	2
6	1	3
7	0	3

4.6.2.2 Modulation scheme mapping

The value of $x_{ms,1}$ is derived from the modulation and given by the following:

$$x_{ms,1} = \begin{cases} 0 & if \quad QPSK \\ 1 & if \quad 16QAM \end{cases}$$

4.6.2.3 Channelization code-set mapping

The channelization code-set bits $x_{ccs,1}$, $x_{ccs,2}$, …, $x_{ccs,7}$ are coded according to the following:

Given P (multi-)codes starting at code O calculate the information-field using the unsigned binary representation of integers calculated by the expressions,

for the first three bits (code group indicator):

$x_{ccs,1}, x_{ccs,2}, x_{ccs,3}$ = min(P-1,15-P)

for the last four bits (code offset indicator):

$x_{ccs,4}, x_{ccs,5}, x_{ccs,6}, x_{ccs,7} = |O-1-\lfloor P/8 \rfloor *15|$

The definitions of P and O are given in [3].

4.6.2.4 UE identity mapping

The UE identity is the HS-DSCH Radio Network Identifier (H-RNTI) defined in [13]. This is mapped such that ~~xue,1~~ $x_{ue,1}$ corresponds to the MSB and ~~xue,16~~ $x_{ue,16}$ to the LSB, cf. [14].

4.6.3 Multiplexing of HS-SCCH information

The channelization-code-set information $x_{ccs,1}, x_{ccs,2}, \ldots, x_{ccs,7}$ and modulation-scheme information $x_{ms,1}$ are multiplexed together. This gives a sequence of bits $x_{1,1}, x_{1,2}, \ldots, x_{1,8}$ where

$x_{1,i} = x_{ccs,i}$ $\quad i=1,2,\ldots,7$

$x_{1,i} = x_{ms,i-7}$ $\quad i=8$

The transport-block-size information $x_{tbs,1}, x_{tbs,2}, \ldots, x_{tbs,6}$, Hybrid-ARQ-process information $x_{hap,1}, x_{hap,2}, x_{hap,3}$, redundancy-version information $x_{rv,1}, x_{rv,2}, x_{rv,3}$ and new-data indicator $x_{nd,1}$ are multiplexed together. This gives a sequence of bits $x_{2,1}, x_{2,2}, \ldots, x_{2,13}$ where

$x_{2,i} = x_{tbs,i}$ $\quad i=1,2,\ldots,6$

$x_{2,i} = x_{hap,i-6}$ $\quad i=7,8,9$

$x_{2,i} = x_{rv,i-9}$ $\quad i=10,11,12$

$x_{2,i} = x_{nd,i-12}$ $\quad i=13$

4.6.4 CRC attachment for HS-SCCH

From the sequence of bits $x_{1,1}, x_{1,2}, \ldots, x_{1,8}, x_{2,1}, x_{2,2}, \ldots, x_{2,13}$ a 16 bits CRC is calculated according to Section 4.2.1.1. This gives a sequence of bits $c_1, c_2, \ldots, c_{16}$. This sequence of bits is then masked with the UE Identity $x_{ue,1}, x_{ue,2}, \ldots, x_{ue,16}$ and then appended to the sequence of bits $x_{2,1}, x_{2,2}, \ldots, x_{2,13}$ to form the sequence of bits $y_1, y_2, \ldots, y_{29}$, where

$y_i = x_{2,i}$ $\quad i=1,2,\ldots,13$

$y_i = (c_{i-13} + x_{ue,i-13}) \bmod 2$ $\quad i=14,15,\ldots,29$

4.6.5 Channel coding for HS-SCCH

Rate 1/3 convolutional coding, as described in Section 4.2.3.1, is applied to the sequence of bits $x_{1,1}, x_{1,2}, \ldots, x_{1,8}$. This gives a sequence of bits $z_{1,1}, z_{1,2}, \ldots, z_{1,48}$.

Rate 1/3 convolutional coding, as described in Section 4.2.3.1, is applied to the sequence of bits $y_1, y_2, \ldots, y_{29}$. This gives a sequence of bits $z_{2,1}, z_{2,2}, \ldots, z_{2,111}$.

Note that the coded sequence lengths result from the termination of K=9 convolutional coding being fully applied.

4.6.6 Rate matching for HS-SCCH

From the input sequence $z_{1,1}, z_{1,2}, \ldots, z_{1,48}$ the bits $z_{1,1}, z_{1,2}, z_{1,4}, z_{1,8}, z_{1,42}, z_{1,45}, z_{1,47}, z_{1,48}$ are punctured to obtain the output sequence $r_{1,1}, r_{1,2} \ldots r_{1,40}$.

From the input sequence $z_{2,1}, z_{2,2}, \ldots, z_{2,111}$ the bits $z_{2,1}, z_{2,2}, z_{2,3}, z_{2,4}, z_{2,5}, z_{2,6}, z_{2,7}, z_{2,8}, z_{2,12}, z_{2,14}, z_{2,15}, z_{2,24}, z_{2,42}, z_{2,48}, z_{2,54}, z_{2,57}, z_{2,60}, z_{2,66}, z_{2,69}, z_{2,96}, z_{2,99}, z_{2,101}, z_{2,102}, z_{2,104}, z_{2,105}, z_{2,106}, z_{2,107}, z_{2,108}, z_{2,109}, z_{2,110}, z_{2,111}$ are punctured to obtain the output sequence $r_{2,1}, r_{2,2} \ldots r_{2,80}$.

4.6.7 UE specific masking for HS-SCCH

The rate matched bits $r_{1,1},r_{1,2}\ldots r_{1,40}$ shall be masked in an UE specific way using the UE identity $x_{ue,1}$, $x_{ue,2}$, …, $x_{ue,16}$, to produce the bits $s_{1,1},s_{1,2}\ldots s_{1,40}$.

Intermediate code word bits b_i, i=1,2…,48, are defined by endcoding the UE identity bits using the rate ½ convolutional coding described in Section 4.2.3.1. Eight bits out of the resulting 48 convolutionally encoded bits are punctured using the rate matching rule of Section 4.6.6 for the HS-SCCH part 1 sequence, that is, the intermediate code word bits b_1, b_2, b_4, b_8, b_{42}, b_{45}, b_{47}, $b_{48,}$ are punctured to obtain the 40 bit UE specific scrambling sequence c_1, c_2, ….c_{40}. .

The mask output bits $s_{1,1},s_{1,2}\ldots s_{1,40}$ are calculated as follows:

$s_{1,k} =(r_{1,k} + c_k)\ mod\ 2$ for k = 1,2…40

4.6.8 Physical channel mapping for HS-SCCH

The HS-SCCH sub-frame is described in[2].

The sequence of bits $s_{1,1}$, $s_{1,2}$,, …, $s_{1,40}$ is mapped to the first slot of the HS-SCCH sub frame. The bits $s_{1,k}$ are mapped to the PhCHs so that the bits for each PhCH are transmitted over the air in ascending order with respect to *k*.

The sequence of bits $r_{2,1}$, $r_{2,2}$,, …,~~$rs_{2,80}$~~,$r_{2,80}$ is mapped to the second and third slot of the HS-SCCH sub frame. The bits $r_{2,k}$ are mapped to the PhCHs so that the bits for each PhCH are transmitted over the air in ascending order with respect to *k*.