

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

**RP-030462**

**Title:**        **Linked CRs (Rel-5) to TS 25.211(RAN1), TS 25.214 (RAN1) and TS 25.331 (RAN2) on Removal of the combination of TxAA Mode 1 with HS-SCCH**

**Source:**     **TSG-RAN WG1**

**Agenda item:**    **7.2.6**

*TS 25.211, TS 25.214 and TS 25.331(RAN2)*    **(RP-030462)**

<b>RP Tdoc #</b>	<b>WG Toc#</b>	<b>Spec</b>	<b>CR</b>	<b>R</b>	<b>Subject</b>	<b>Phase</b>	<b>Cat</b>	<b>Curre</b>	<b>New</b>	<b>WI</b>	<b>Remarks</b>
RP-030462	R1-030857	25.211	186	1	Removal of the combination of TxAA Mode 1 with HS-SCCH	Rel-5	F	5.4.0	5.5.0	HSDPA-Phys	
RP-030462	R1-030652	25.214	326	-	Removal of the combination of TxAA Mode 1 with HS-SCCH	Rel-5	F	5.5.0	5.6.0	HSDPA-Phys	
RP-030462	R2-032006	25.331	2061	-	HS-SCCH transmit diversity mode	Rel-5	F	5.5.0	5.6.0	HSDPA-L23	

## CHANGE REQUEST

⌘ **25.211 CR 186** ⌘ rev **1** ⌘ Current version: **5.4.0** ⌘

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

<b>Title:</b>	⌘ Removal of the combination of TxAA Mode 1 with HS-SCCH		
<b>Source:</b>	⌘ TSG RAN WG1		
<b>Work item code:</b>	⌘ HSDPA-Phys	<b>Date:</b>	⌘ 26/08/2003
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)		2 (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)		R96 (Release 1996)
	<b>B</b> (addition of feature),		R97 (Release 1997)
	<b>C</b> (functional modification of feature)		R98 (Release 1998)
	<b>D</b> (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

<b>Reason for change:</b>	⌘ The performance of HS-SCCH suffers when closed loop Tx diversity is operated on it.
<b>Summary of change:</b>	⌘ The combination of TxAA Mode 1 and HS-SCCH is removed from the specification.
<b>Consequences if not approved:</b>	⌘ HS-SCCH detection will suffer in some channel environments when TxAA Mode 1 is employed in the Node B.
	<u>Impact Analysis:</u> This CR has isolated impact with the previous version of the specification. The change is limited only to the phase reference functionality when network implements the earlier version and the UE the new one.

<b>Clauses affected:</b>	⌘ 5.3.1						
<b>Other specs affected:</b>	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px;">Y</td> <td style="width: 20px;">N</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> </table>	Y	N	⌘	X	Other core specifications	⌘
Y	N						
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	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> </table>	⌘	X	Test specifications			
⌘	X						
	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> </table>	⌘	X	O&M Specifications			
⌘	X						
<b>Other comments:</b>	⌘						

**How to create CRs using this form:**

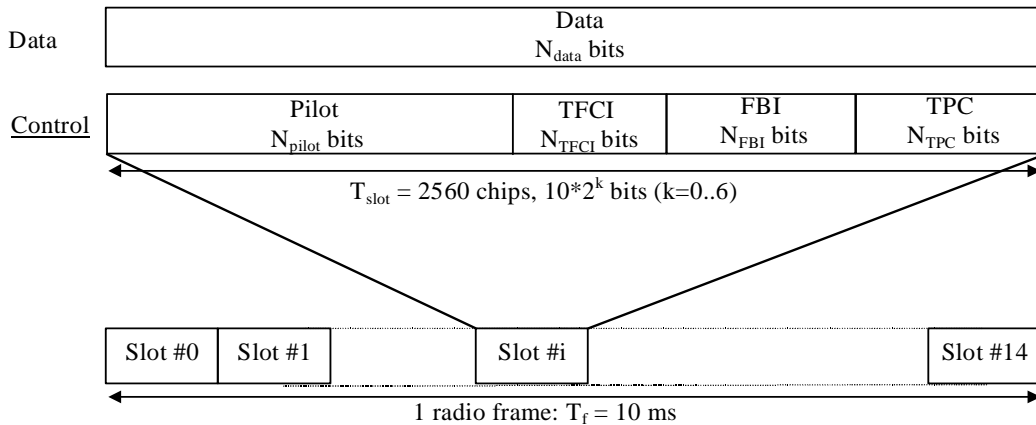
Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
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- 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.

**Table 9: Slot format of the control part of CPCH message part**

Slot Format #i	Channel Bit Rate (kbps)	Channel Symbol Rate (ksps)	SF	Bits/ Frame	Bits/ Slot	N <sub>pilot</sub>	N <sub>TPC</sub>	N <sub>TFCI</sub>	N <sub>FBI</sub>
0	15	15	256	150	10	6	2	2	0
1	15	15	256	150	10	5	2	2	1

Figure 7 shows the frame structure of the uplink common packet physical channel. Each frame of length 10 ms is split into 15 slots, each of length  $T_{slot} = 2560$  chips, corresponding to one power-control period.



**Figure 7: Frame structure for uplink Data and Control Parts Associated with PCPCH**

The data part consists of  $10 \cdot 2^k$  bits, where  $k = 0, 1, 2, 3, 4, 5, 6$ , corresponding to spreading factors of 256, 128, 64, 32, 16, 8, 4 respectively.

## 5.3 Downlink physical channels

### 5.3.1 Downlink transmit diversity

Table 10 summarises the possible application of open and closed loop transmit diversity modes on different downlink physical channel types. Simultaneous use of STTD and closed loop modes on the same physical channel is not allowed. In addition, if Tx diversity is applied on any of the downlink physical channels it shall also be applied on P-CCPCH and SCH. Regarding CPICH transmission in case of transmit diversity, see subclause 5.3.3.1.

With respect to the usage of Tx diversity [for DPCH](#) on different radio links within an active set, the following rules apply:

- Different Tx diversity modes (STTD and closed loop) shall not be used on the radio links within one active set.
- No Tx diversity on one or more radio links shall not prevent UTRAN to use Tx diversity on other radio links within the same active set.
- If STTD is activated on one or several radio links in the active set, the UE shall operate STTD on only those radio links where STTD has been activated. Higher layers inform the UE about the usage of STTD on the individual radio links in the active set.
- If closed loop TX diversity is activated on one or several radio links in the active set, the UE shall operate closed loop TX diversity on only those radio links where closed loop TX diversity has been activated. Higher layers inform the UE about the usage of closed loop TX diversity on the individual radio links in the active set.

Furthermore, the transmit diversity mode used for a PDSCH frame shall be the same as the transmit diversity mode used for the DPCH associated with this PDSCH frame. The transmit diversity mode on the associated DPCH may not change during a PDSCH frame and within the slot prior to the PDSCH frame. This includes any change between no Tx diversity, open loop, closed loop mode 1 or closed loop mode 2.

Also, the transmit diversity mode used for a HS-SCCH and/or a HS-PDSCH subframe shall be the same as the transmit diversity mode used for the DPCH associated with this HS-SCCH and/or HS-PDSCH subframe. If the DPCH associated with an HS-SCCH subframe is using either open or closed loop transmit diversity on the radio link transmitted from the HS-DSCH serving cell, the HS-SCCH subframe from this cell shall be transmitted using STTD, otherwise no transmit diversity shall be used for this HS-SCCH subframe. The transmit diversity mode on the associated DPCH may not change during a HS-SCCH and/or HS-PDSCH subframe and within the slot prior to the HS-SCCH subframe. This includes any change between no Tx diversity, and either open loop or, closed loop mode ~~1 or closed loop mode 2~~.

**Table 10: Application of Tx diversity modes on downlink physical channel types**  
 "X" – can be applied, "-" – not applied

Physical channel type	Open loop mode		Closed loop mode	
	TSTD	STTD	Mode 1	Mode 2
P-CCPCH	-	X	-	-
SCH	X	-	-	-
S-CCPCH	-	X	-	-
DPCH	-	X	X	X
PICH	-	X	-	-
PDSCH	-	X	X	X
HS-PDSCH	-	X	X	-
HS-SCCH	-	X	<del>X</del>	-
AICH	-	X	-	-
CSICH	-	X	-	-
AP-AICH	-	X	-	-
CD/CA-ICH	-	X	-	-
DL-DPCCH for CPCH	-	X	X	X

5.3.1.1 Open loop transmit diversity

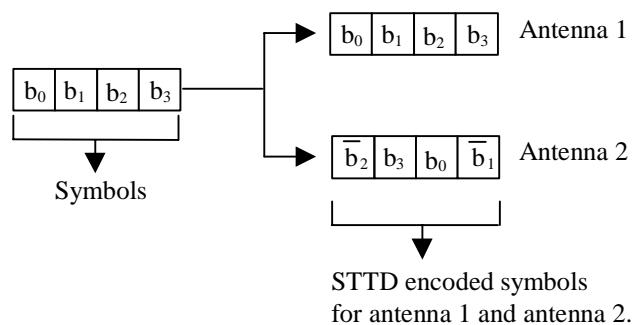
5.3.1.1.1 Space time block coding based transmit antenna diversity (STTD)

The open loop downlink transmit diversity employs a space time block coding based transmit diversity (STTD).

The STTD encoding is optional in UTRAN. STTD support is mandatory at the UE.

If higher layers signal that neither P-CPICH nor S-CPICH can be used as phase reference for the downlink DPCH for a radio link in a cell, the UE shall assume that STTD is not used for the downlink DPCH (and the associated PDSCH if applicable) in that cell.

A block diagram of a generic STTD encoder is shown in the figure 8 and figure 8A below. Channel coding, rate matching and interleaving are done as in the non-diversity mode. For QPSK, the STTD encoder operates on 4 symbols  $b_0, b_1, b_2, b_3$  as shown in figure 8. For AICH, AP-AICH and CD/CA-ICH, the  $b_i$  are real valued signals, and  $\bar{b}_i$  is defined as  $-b_i$ . For channels other than AICH, AP-AICH and CD/CA-ICH, the  $b_i$  are 3-valued digits, taking the values 0, 1, "DTX", and  $\bar{b}_i$  is defined as follows: if  $b_i = 0$  then  $\bar{b}_i = 1$ , if  $b_i = 1$  then  $\bar{b}_i = 0$ , otherwise  $\bar{b}_i = b_i$ .



**Figure 8: Generic block diagram of the STTD encoder for QPSK**

## CHANGE REQUEST

⌘ **TS25.214 CR 326** ⌘ rev - ⌘ 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

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<b>Source:</b>	⌘ TSG RAN WG1		
<b>Work item code:</b>	⌘ HSDPA-Phys	<b>Date:</b>	⌘ 11/08/2003
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
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**Table 8: Summary of number of feedback information bits per slot,  $N_{FBD}$ , feedback command length in slots,  $N_w$ , feedback command rate, feedback bit rate, number of phase bits,  $N_{ph}$ , per signalling word, number of amplitude bits,  $N_{po}$ , per signalling word and amount of constellation rotation at UE for the two closed loop modes**

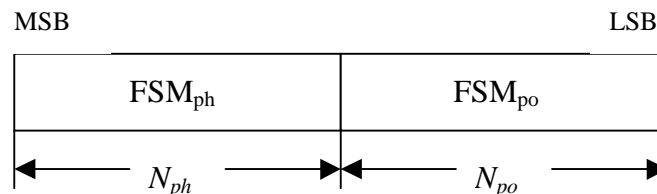
Closed loop mode	$N_{FBD}$	$N_w$	Update rate	Feedback bit rate	$N_{po}$	$N_{ph}$	Constellation rotation
1	1	1	1500 Hz	1500 bps	0	1	$\pi/2$
2	1	4	1500 Hz	1500 bps	1	3	N/A

## 7.1 Determination of feedback information

The UE uses the CPICH to separately estimate the channels seen from each antenna.

Once every slot, the UE computes the phase adjustment,  $\phi$ , and for mode 2 the amplitude adjustment that should be applied at the UTRAN access point to maximise the UE received power. During soft handover, the UE computes the phase adjustment and for mode 2 the amplitude adjustment to maximise the total UE received power from the cells in the active set. In the case that a PDSCH, ~~or HS-PDSCH, or HS-SCCH~~ is associated with a DPCH for which closed-loop transmit diversity is applied, the antenna weights applied to the PDSCH, ~~and HS-PDSCH, and HS-SCCH~~, respectively, are the same as the antenna weights applied to the associated DPCH. In case a PDSCH, ~~or HS-PDSCH, or HS-SCCH~~ is associated with a DPCH during soft handover, the UE may emphasize the radio link transmitted from carrying PDSCH, or HS-PDSCH serving cell, or HS-SCCH, respectively, when calculating the antenna weights. An example of how the computations can be accomplished is given in Annex A.2.

The UE feeds back to the UTRAN access point the information on which phase/power settings to use. Feedback Signalling Message (FSM) bits are transmitted in the portion of FBI field of uplink DPCCCH slot(s) assigned to closed loop mode transmit diversity, the FBI D field (see [1]). Each message is of length  $N_w = N_{po} + N_{ph}$  bits and its format is shown in the figure 4. The transmission order of bits is from MSB to LSB, i.e. MSB is transmitted first.  $FSM_{po}$  and  $FSM_{ph}$  subfields are used to transmit the power and phase settings, respectively.



**Figure 4: Format of feedback signalling message.  $FSM_{po}$  transmits the power setting and  $FSM_{ph}$  the phase setting**

The adjustments are made by the UTRAN Access Point at the beginning of the downlink DPCCCH pilot field. The downlink slot in which the adjustment is done is signalled to L1 of UE by higher layers. Two possibilities exist:

- 1) When feedback command is transmitted in uplink slot  $i$ , which is transmitted approximately 1024 chips in offset from the received downlink slot  $j$ , the adjustment is done at the beginning of the pilot field of the downlink slot  $(j+1) \bmod 15$ .
- 2) When feedback command is transmitted in uplink slot  $i$ , which is transmitted approximately 1024 chips in offset from the received downlink slot  $j$ , the adjustment is done at the beginning of the pilot field of the downlink slot  $(j+2) \bmod 15$ .

Thus, adjustment timing at UTRAN Access Point is either according to 1) or 2) as controlled by the higher layers.

In case of soft handover, Layer 1 shall support different adjustment timing values for different radio links in the same active set.

The timing of the weight adjustment of the PDSCH is such that the PDSCH weight adjustment is done at the PDSCH slot border,  $N$  chips after the adjustment of the associated DPCH, where  $0 \leq N < 2560$ .



The timing of the weight adjustment of the HS-PDSCH ~~and the HS-SCCH~~ is such that the HS-PDSCH ~~and HS-SCCH~~ weight adjustment is done at the HS-PDSCH ~~and HS-SCCH~~ slot border, respectively, M chips after the adjustment of the associated DPCH, where  $0 \leq M < 2560$ .

## 7.2 Closed loop mode 1

The UE uses the CPICH transmitted both from antenna 1 and antenna 2 to calculate the phase adjustment to be applied at UTRAN access point to maximise the UE received power. In each slot, UE calculates the optimum phase adjustment,  $\phi$ , for antenna 2, which is then quantized into  $\phi_Q$  having two possible values as follows:

$$\phi_Q = \begin{cases} \pi, & \text{if } \pi/2 < \phi - \phi_r(i) \leq 3\pi/2 \\ 0, & \text{otherwise} \end{cases} \quad (1)$$

where:

$$\phi_r(i) = \begin{cases} 0, & i = 0,2,4,6,8,10,12,14 \\ \pi/2, & i = 1,3,5,7,9,11,13 \end{cases} \quad (2)$$

If  $\phi_Q = 0$ , a command '0' is send to UTRAN using the FSM<sub>ph</sub> field. Correspondingly, if  $\phi_Q = \pi$ , command '1' is send to UTRAN using the FSM<sub>ph</sub> field.

Due to rotation of the constellation at UE the UTRAN interprets the received commands according to table 9 which shows the mapping between phase adjustment,  $\phi_i$ , and received feedback command for each uplink slot.

**Table 9: Phase adjustments,  $\phi_i$ , corresponding to feedback commands for the slots  $i$  of the UL radio frame**

Slot #	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FSM	0	0	$\pi/2$	0	$\pi/2$	0	$\pi/2$	0	$\pi/2$	0	$\pi/2$	0	$\pi/2$	0	$\pi/2$
	1	$\pi$	$-\pi/2$	$\pi$	$-\pi/2$	$\pi$	$-\pi/2$	$\pi$	$-\pi/2$	$\pi$	$-\pi/2$	$\pi$	$-\pi/2$	$\pi$	$-\pi/2$

The weight  $w_2$  is then calculated by averaging the received phases over 2 consecutive slots. Algorithmically,  $w_2$  is calculated as follows:

$$w_2 = \frac{\sum_{i=n-1}^n \cos(\phi_i)}{2} + j \frac{\sum_{i=n-1}^n \sin(\phi_i)}{2} \quad (3)$$

where:

$$\phi_i \in \{0, \pi, \pi/2, -\pi/2\} \quad (4)$$

For antenna 1,  $w_1$  is constant:

$$w_1 = 1/\sqrt{2} \quad (5)$$

### 7.2.1 Mode 1 end of frame adjustment

In closed loop mode 1 at frame borders the averaging operation is slightly modified. Upon reception of the FB command for slot 0 of a frame, the average is calculated based on the command for slot 13 of the previous frame and the command for slot 0 of the current frame, i.e.  $\phi$  from slot 14 is not used:

$$w_2 = \frac{\cos(\phi_{13}^{j-1}) + \cos(\phi_0^j)}{2} + j \frac{\sin(\phi_{13}^{j-1}) + \sin(\phi_0^j)}{2} \quad (6)$$

where:

- $\phi_{13}^{j-1}$  = phase adjustment from frame j-1, slot 13.
- $\phi_0^j$  = phase adjustment from frame j, slot 0.

## 7.2.2 Mode 1 normal initialisation

For the first frame of transmission UE determines the feedback commands in a normal way and sends them to UTRAN.

Before the first FB command is received, the UTRAN shall use the initial weight  $w_2 = \frac{1}{2}(1 + j)$ .

Having received the first FB command the UTRAN calculates  $w_2$  as follows:

$$w_2 = \frac{\cos(\pi/2) + \cos(\phi_0)}{2} + j \frac{\sin(\pi/2) + \sin(\phi_0)}{2} \quad (7)$$

where:

$\phi_0$  = phase adjustment from slot 0 of the first frame.

## 7.2.3 Mode 1 operation during compressed mode

### 7.2.3.1 Downlink in compressed mode and uplink in normal mode

When downlink is in compressed mode but uplink is operating normally (i.e. not compressed) the UTRAN continues its Tx diversity related functions in the same way as in non-compressed downlink mode.

In downlink transmission gaps there are uplink slots for which no new estimate of the phase adjustment is calculated. During these slots the following rules are applied in UE when determining the feedback command:

- 1) If no new estimate of phase adjustment  $\phi$  exists corresponding to the feedback command to be sent in uplink slot  $i$ :
  - If  $1 < i < 15$ :
    - the feedback command sent in uplink slot  $i-2$  is used;
  - else if  $i = 0$ :
    - the feedback command sent in uplink slot 14 of previous frame is used;
  - else if  $i = 1$ :
    - the feedback command sent in uplink slot 13 of previous frame is used;
  - end if.
- 2) When transmission in downlink is started again in downlink slot  $N_{\text{last}}+1$  (if  $N_{\text{last}}+1 = 15$ , then slot 0 in the next frame) the UE must resume calculating new estimates of the phase adjustment. The feedback command corresponding to the first new estimate of  $\phi$  must be sent in the uplink slot which is transmitted approximately 1024 chips in offset from the downlink slot  $N_{\text{last}}+1$ .

### 7.2.3.2 Both downlink and uplink in compressed mode

During the uplink transmission gaps no FB commands are sent from UE to UTRAN. When transmission in downlink is started again in downlink slot  $N_{\text{last}}+1$  (if  $N_{\text{last}}+1 = 15$ , then slot 0 in the next frame) the UE must resume calculating new estimates of the phase adjustment. The feedback command corresponding to the first new estimate of  $\phi$  must be sent in the uplink slot which is transmitted approximately 1024 chips in offset from the downlink slot  $N_{\text{last}}+1$ .

The UTRAN continues to update the weight  $w_2$  until the uplink transmission gap starts and no more FB commands are received. When the transmission in downlink resumes in slot  $N_{\text{last}}+1$ , the value of  $w_2$ , calculated after receiving the last FB command before the start of the uplink transmission gap, is applied to antenna 2 signal.

After the UE resumes transmission in uplink and sends the first FB command, the new value of  $w_2$  is calculated as follows:

- $S_1 = \{0, 2, 4, 6, 8, 10, 12, 14\}$ .
- $S_2 = \{1, 3, 5, 7, 9, 11, 13\}$ .
- $i$  = number of uplink slot at which the transmission resumes.
- $j$  = number of uplink slot at which the last FB command was sent before the start of the uplink transmission gap.
- Do while ( $i \in S_1$  and  $j \in S_1$ ) or ( $i \in S_2$  and  $j \in S_2$ ):
  - $j = j-1$ ;
  - if  $j < 0$ ;
  - $j = 14$ ;
- end if;
- end do;
- calculate  $w_2$  based on FB commands received in uplink slots  $i$  and  $j$ .

Note that for  $N_{\text{last}} = 13$  the end of frame adjustment procedure shall be based on the FB commands for the last odd slot prior to the uplink transmission gap and slot 0.

### 7.2.3.3 Uplink in compressed mode and downlink in normal mode

The UTRAN continues to update the value of  $w_2$  until the uplink transmission gap starts and no more FB commands are received. Then, the value of  $w_2$  calculated after receiving the last FB command before the uplink transmission gap is applied to the antenna 2 signal. When the UE resumes transmission in uplink, it shall send FB commands according to section 7.2 equations 2 and 3 (normal operation) and the UTRAN Access Point shall interpret the FB commands according to Table 9.

The calculation of  $w_2$  by the UTRAN following the uplink transmission gap, and before the first two FB commands following the gap are received is not specified.

## 7.2.4 Mode 1 initialisation during compressed mode

### 7.2.4.1 Downlink in compressed mode

When closed loop mode 1 is initialised during the downlink transmission gap of compressed mode there are slots for which no estimate of the phase adjustment is calculated and no previous feedback command is available.

In this case, if the UE is required to send feedback in the uplink, the FB command to the UTRAN shall be '0'.

When transmission in downlink is started again in slot  $N_{\text{last}}+1$  (if  $N_{\text{last}}+1 = 15$ , then slot 0 in the next frame), the

UTRAN shall use the initial weight  $w_2 = \frac{1}{2}(1 + j)$ . The UE must start calculating estimates of the phase adjustment.

The feedback command corresponding to the first estimate of  $\phi$  must be sent in the uplink slot which is transmitted approximately 1024 chips in offset from the downlink slot  $N_{\text{last}}+1$ . Having received this feedback command the UTRAN calculates  $w_2$  as follows:

$$w_2 = \frac{\cos(\phi_i) + \cos(\phi_j)}{2} + j \frac{\sin(\phi_i) + \sin(\phi_j)}{2} \quad (8)$$

where:

$\phi_i$  = phase adjustment in uplink slot  $i$ , which is transmitted approximately 1024 chips in offset from the downlink slot  $N_{\text{last}}+1$ .

$$\phi_j = \frac{\pi}{2}, \text{ if slot } i \text{ is even ( } i \in \{0, 2, 4, 6, 8, 10, 12, 14\} \text{ ) and}$$

$$\phi_j = 0, \text{ if slot } i \text{ is odd ( } i \in \{1, 3, 5, 7, 9, 11, 13\} \text{ )}$$

#### 7.2.4.2 Uplink in compressed mode

Initialisation of closed loop mode 1 operation during uplink compressed mode only is not specified.

CR-Form-v7

## CHANGE REQUEST

# 25.331 CR 2061 # rev - # 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

<b>Title:</b>	# HS-SCCH transmit diversity mode		
<b>Source:</b>	# RAN WG2		
<b>Work item code:</b>	# HSDPA-L23	<b>Date:</b>	# 29/08/2003
<b>Category:</b>	# <b>F</b>	<b>Release:</b>	# Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)	2	(GSM Phase 2)
	A (corresponds to a correction in an earlier release)	R96	(Release 1996)
	B (addition of feature),	R97	(Release 1997)
	C (functional modification of feature)	R98	(Release 1998)
	D (editorial modification)	R99	(Release 1999)
	Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .	Rel-4	(Release 4)
		Rel-5	(Release 5)
		Rel-6	(Release 6)

<b>Reason for change:</b>	# CR 25.211-186r1 (R1-030857) needs to be reflected in 25.331.		
	The reason for change in R1-030857: The performance of HS-SCCH suffers when closed loop Tx diversity is operated on it.		
<b>Summary of change:</b>	# The combination of TxAAs Mode 1 and HS-SCCH is removed.		
<b>Consequences if not approved:</b>	# HS-SCCH detection will suffer in some channel environments when TxAAs Mode 1 is employed in the Node B.		

<b>Clauses affected:</b>	# 8.6.6.24										
<b>Other specs affected:</b>	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"> </td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> </table>	Y	N	X			X		X	Other core specifications	# 25.211-CR186r1 (R1-030857)
Y	N										
X											
	X										
	X										
		Test specifications									
		O&M Specifications									
<b>Other comments:</b>	#										

### 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.

### 8.6.6.24 Tx Diversity Mode

If the IE "Tx Diversity Mode" is included the UE shall:

- 1> if the value of the IE "Tx Diversity Mode" is STTD:
  - 2> configure the Layer 1 to use the Tx diversity mode indicated in the IE "Tx Diversity Mode" for the radio links for which the IE "Closed loop timing adjustment mode" is included, ignoring the actual value of IE "Closed loop timing adjustment mode".
- 1> if the value of the IE "Tx Diversity Mode" is closed loop mode 1 or closed loop mode 2:
  - 2> configure the Layer 1 to use the Tx diversity mode indicated in the IE "Tx Diversity Mode" for the radio links for which the IE "Closed loop timing adjustment mode" is included, using the actual value of the IE "Closed loop timing adjustment mode".
- 1> if the value of the IE "Tx Diversity Mode" is "none":
  - 2> configure the Layer 1 not to use Tx diversity for all radio links in the active set.

If the IE "Tx Diversity Mode" is not included, the UE shall:

- 1> continue to use the already configured Tx diversity mode;
- 1> in case no Tx diversity mode has been configured:
  - 2> do not apply Tx diversity.

For HS-SCCH, the UE shall:

- 1> if the DPCH associated with a HS-SCCH is using either open or closed loop transmit diversity on the radio link transmitted from the HS-DSCH serving cell:
  - 2> use STTD for this HS-SCCH;
- 1> otherwise:
  - 2> not use Tx diversity for this HS-SCCH.