## **3GPP TSG RAN Meeting #17** Biarritz, France, 3 – 6, September 2002

Title:

Agreed CRs (R99 and Rel-4/Rel-5 Category A) to TS 25.211 and TS 25.214 on "Reversal of unwanted corrections resulting from CR 25.211-122 & CR 25.214-226"

Source: **TSG-RAN WG1** 

Agenda item: 7.1.3

No.	Spec	CR	Rev	R1 T-doc	Subject	Phase	Cat	Workitem	V_old	V_new
1	25.211	162	1	R1-02-1097	Reversal of unwanted corrections resulting from CR 25.211-122	R99	F	TEI	3.11.0	3.12.0
2	25.211	163	-	R1-02-1097	Reversal of unwanted corrections resulting from CR 25.211-122	Rel-4	Α	TEI	4.5.0	4.6.0
3	25.211	164	-	R1-02-1097	Reversal of unwanted corrections resulting from CR 25.211-122	Rel-5	Α	TEI	5.1.0	5.2.0
4	25.214	270	1	R1-02-1097	Reversal of unwanted corrections resulting from CR 25.211-122 & CR 25.214-226	R99	F	TEI	3.10.0	3.11.0
5	25.214	271	-	R1-02-1097	Reversal of unwanted corrections resulting from CR 25.211-122 & CR 25.214-226	Rel-4	Α	TEI	4.4.0	4.5.0
6	25.214	272	-	R1-02-1097	Reversal of unwanted corrections resulting from CR 25.211-122 & CR 25.214-226	Rel-5	Α	TEI	5.1.0	5.2.0

Proposed change affects:

		CHAN	GE REQ	UE	ST	•		CR-Form-v
¥	25.211 CR	162	<b>≋rev</b>	1	¥	Current version:	3.11.0	*
or <u>HEL</u>	<b>P</b> on using this form, see	e bottom c	of this page or	look	at th	ne pop-up text ove	r the 光 syn	nbols.

UICC apps#

ME X Radio Access Network X Core Network

Title: Reversal of unwanted corrections resulting from CR 25.211-122 TSG RAN WG1 Source: Date: # 14/08/2002 F Release: # R99 Category: Use one of the following categories: Use one of the following releases: F (correction) (GSM Phase 2) 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 Rel-4 (Release 4) be found in 3GPP TR 21.900. Rel-5 (Release 5) Rel-6 (Release 6)

CR 25.211-122 approved in TSG-RAN #14 introduced changes which have not Reason for change: # been identified on the cover sheet and which are not in line with the earlier version of the TS 25.211. Specifically the changes resulting from CR 25.211-122 imply that the UE shall support transmit diversity closed loop mode 1 when the number of of DPCCH pilot bits equal 2 (Npilot=2). This contradicts and adds new requirement (category C CR) relative to version 3.8.0 and earlier version of the specification which specified that the pilot pattern used for closed loop mode 1 was orthogonal (implicitely excluded Npilot=2). Summary of change: ₩ Cancellation of CR 25.211-122 changes relative to orthogonal pilot pattern in conjunction with transmit diversity closed loop mode 1. Removal of columns irrelevant to closed loop mode 1 in Table 15 (Table 15 was introduced by CR 25.211-122 which duplicated Table 14 used for STTD) Explicit mention that slot formats with Npilot=2 may not be used together with transmit diversity closed loop mode 1. Consequences if # UE developed based on version 3.8.0 or earlier may have to be re-designed to not approved: support the modified functionality introduced by CR 25.211-122.

Clauses affected:	第 5.3.2.2			
Other specs affected:	X Test s	core specifications # pecifications Specifications	CR 25.214-2	70
Other comments:	器 Impact ana	ysis:		

UEs implemented based on version 3.8.0 and earlier or 3.c.0 and later will reject the configuration when operating with network implementation based on version 3.9.0, 3.a.0 & 3.b.0 (as well as corresponding versions in Rel-4 & Rel-5) which select DPCH configurations with slot formats corresponding toNpilot=2 and enable transmit diversity closed loop mode 1. Consequently this CR has an isolated impact.

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

- 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 <a href="ftp://ftp.3gpp.org/specs/">ftp://ftp.3gpp.org/specs/</a> 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.

### 5.3.2.2 Dedicated channel pilots with closed loop mode transmit diversity

In closed loop mode 1 different orthogonal pilot patterns (orthogonal when  $N_{pilot} > 2$ ) are used between the transmit antennas. Closed loop mode 1 shall not be used with DPCH slot formats for which  $N_{pilot} = 2$ . Pilot patterns defined in the table 12 will be used on antenna 1 and pilot patterns defined in the table 15 on antenna 2. This is illustrated in the figure 11 a which indicates the difference in the pilot patterns with different shading.

Table 15: Pilot bit patterns of downlink DPCCH for antenna 2 using closed loop mode 1

	N <sub>pilot</sub> = 2	N <sub>pilo</sub>			N <sub>pilo</sub>						N <sub>pilot</sub>		i				<sub>t</sub> = 4
		(*	<del>1)</del>		(* <u>1</u>	<u>-</u> 2)					(*2	<u>2</u> 3)				<del>(*</del>	<del>4)</del>
Symbol #	0	0	1	0	1	2	3	0	1	2	3	4	5	6	7	0	4
Slot #0	<del>01</del>	01	10	11	00	00	10	11	00	00	10	11	00	00	10	01	<del>10</del>
1	<del>10</del>	10	10	11	00	00	01	11	00	00	01	11	10	00	10	<del>10</del>	01
2	11	11	10	11	11	00	00	11	11	00	00	11	10	00	11	11	00
3	<del>10</del>	10	10	11	10	00	01	11	10	00	01	11	00	00	00	<del>10</del>	01
4	00	00	10	11	11	00	11	11	11	00	11	11	01	00	10	00	44
5	<del>01</del>	01	10	11	00	00	10	11	00	00	10	11	11	00	00	01	<del>10</del>
6	<del>01</del>	01	10	11	10	00	10	11	10	00	10	11	01	00	11	01	<del>10</del>
7	00	00	10	11	10	00	11	11	10	00	11	11	10	00	11	00	11
8	11	11	10	11	00	00	00	11	00	00	00	11	01	00	01	11	00
9	<del>01</del>	01	10	11	01	00	10	11	01	00	10	11	01	00	01	01	<del>10</del>
10	11	11	10	11	11	00	00	11	11	00	00	11	00	00	10	11	00
11	00	00	10	11	01	00	11	11	01	00	11	11	00	00	01	00	11
12	00	00	10	11	10	00	11	11	10	00	11	11	11	00	00	00	11
13	<del>10</del>	10	10	11	01	00	01	11	01	00	01	11	10	00	01	<del>10</del>	01
14	<del>10</del>	10	10	11	01	00	01	11	01	00	01	11	11	00	11	<del>10</del>	01

NOTE \*1: This pattern is used except slot formats 2B and 3B.

NOTE \*12: This pattern is used except slot formats 0B, 1B, 4B, 5B, 8B, and 9B.

NOTE  $\star \overline{2}3$ : This pattern is used except slot formats 6B, 7B, 10B, 11B, 12B, and 13B.

NOTE \*4: This pattern is used for slot formats 2B and 3B.

NOTE: For slot format nB where n = 0, 1, 4, 5, 6, ..., 15, the pilot bit pattern corresponding to  $N_{pilot}/2$  is to be used and symbol repetition shall be applied.

In closed loop mode 2 same pilot pattern is used on both of the antennas (see figure 11 b). The pattern to be used is according to the table 12.

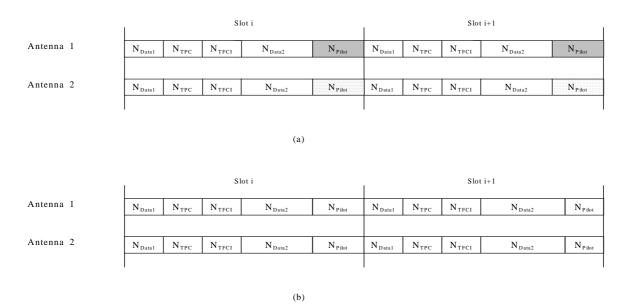


Figure 11: Slot structures for downlink dedicated physical channel diversity transmission.

Structure (a) is used in closed loop mode 1.

Structure (b) is used in closed loop mode 2.

Different shading of the pilots indicate orthogonality of the patterns

	(	CHANG	GE REQ	UES	ST.		CR-Form-v7
ж	25.211 CR	163	<b>≋ rev</b>	<b>-</b> 9	Current version	4.5.0	¥
For <b>HEL</b>	<b>P</b> on using this form, see	e bottom of	this page or l	look at	the pop-up text o	ver the % sy	mbols.

ж	25.211	CR 1	63	<b>≋rev</b>	_ 8	€ Current	version:	4.5.0	$\mathfrak{R}$
For <u>HELP</u> on	using this fo	orm, see b	ottom of this	page or i	look at	the pop-up	text over	the <b>光</b> syn	nbols.
Proposed change	e affects:	UICC app	os#	ME X	Radio	Access Ne	twork X	Core Ne	twork
Title:	€ Reversa	l of unwar	nted correction	ons result	ing fro	m CR 25.21	1-122		
Source:	₭ TSG RA	N WG1							
Work item code:	€ TEI					Date	e: ¥ <mark>14</mark> /	/08/2002	
Category:	F (co A (co B (ac C (fu D (ec Detailed ex	rrection) presponds Idition of fe nctional mod litorial mod	odification of fe lification) of the above	n in an ear eature)		Use <u>on</u> 2	(GSI) (Rele	I-4 Dillowing rele M Phase 2) Pase 1996) Pase 1997) Pase 1998) Pase 1999) Pase 4) Pase 5) Pase 6)	eases:
Reason for chang	bee vers imp nun requ spe	n identifie sion of the ly that the nber of of uirement ( cification)	22 approved d on the covered to the	er sheet a Specifica pport tran t bits equa CR) relativited that th	and whally the semit deal 2 (Note to version)	nich are not in changes restiversity close pilot=2). This ersion 3.8.0 pattern use	n line wit sulting fro ed loop n s contrac and earli	th the earli om CR 25 node 1 who licts and a er version	er 211-122 en the dds new of the
Summary of char	nge:# -	Cancellat	ion of CR 25	5.211-122	chang	jes relative t	o orthogo	onal pilot p	attern in

conjunction with transmit diversity closed loop mode 1. Removal of columns irrelevant to closed loop mode 1 in Table 15 (Table 15 was introduced by CR 25.211-122 which duplicated Table 14 used for STTD) Explicit mention that slot formats with Npilot=2 may not be used together with transmit diversity closed loop mode 1. Consequences if # UE developed based on version 4.2.0 or earlier may have to be re-designed to not approved: support the modified functionality introduced by CR 25.211-122.

第 5.3.2.2 Clauses affected: Other core specifications Other specs ж <mark>х</mark> ₩ CR 25.214-271 affected: X Test specifications X O&M Specifications Other comments: **Impact analysis:** 

UEs implemented based on version 4.2.0 and earlier or 4.6.0 and later will reject the configuration when operating with network implementation based on version 4.3.0, 4.4.0 & 4.5.0 (as well as corresponding versions in R99 & Rel-5) which select DPCH configurations with slot formats corresponding toNpilot=2 and enable transmit diversity closed loop mode 1. Consequently this CR has an isolated impact.

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### 5.3.2.2 Dedicated channel pilots with closed loop mode transmit diversity

In closed loop mode 1 different-orthogonal pilot patterns (orthogonal when  $N_{pilot} > 2$ ) are used between the transmit antennas. Closed loop mode 1 shall not be used with DPCH slot formats for which  $N_{pilot} = 2$ . Pilot patterns defined in the table 12 will be used on antenna 1 and pilot patterns defined in the table 15 on antenna 2. This is illustrated in the figure 11 a which indicates the difference in the pilot patterns with different shading.

Table 15: Pilot bit patterns of downlink DPCCH for antenna 2 using closed loop mode 1

	N <sub>pilot</sub> = 2	N <sub>pilo</sub>			N <sub>pilo</sub>						N <sub>pilot</sub>		i				<sub>t</sub> = 4
		<del>(</del> *	<del>1)</del>		(^2	<u>21)</u>					(^=	<u>32</u> )				<del>(</del> *	<del>4)</del>
Symbol #	0	0	1	0	1	2	3	0	1	2	3	4	5	6	7	0	4
Slot #0	01	01	10	11	00	00	10	11	00	00	10	11	00	00	10	01	<del>10</del>
1	<del>10</del>	10	10	11	00	00	01	11	00	00	01	11	10	00	10	<del>10</del>	01
2	11	11	10	11	11	00	00	11	11	00	00	11	10	00	11	11	00
3	<del>10</del>	10	10	11	10	00	01	11	10	00	01	11	00	00	00	<del>10</del>	01
4	00	00	10	11	11	00	11	11	11	00	11	11	01	00	10	00	11
5	<del>01</del>	01	10	11	00	00	10	11	00	00	10	11	11	00	00	01	<del>10</del>
6	01	01	10	11	10	00	10	11	10	00	10	11	01	00	11	01	<del>10</del>
7	00	00	10	11	10	00	11	11	10	00	11	11	10	00	11	00	11
8	11	11	10	11	00	00	00	11	00	00	00	11	01	00	01	11	00
9	01	01	10	11	01	00	10	11	01	00	10	11	01	00	01	01	<del>10</del>
10	<del>11</del>	11	10	11	11	00	00	11	11	00	00	11	00	00	10	11	00
11	00	00	10	11	01	00	11	11	01	00	11	11	00	00	01	00	11
12	00	00	10	11	10	00	11	11	10	00	11	11	11	00	00	00	11
13	<del>10</del>	10	10	11	01	00	01	11	01	00	01	11	10	00	01	<del>10</del>	01
14	<del>10</del>	10	10	11	01	00	01	11	01	00	01	11	11	00	11	<del>10</del>	01

NOTE \*1: This pattern is used except slot formats 2B and 3B.

NOTE \*21: This pattern is used except slot formats 0B, 1B, 4B, 5B, 8B, and 9B.

NOTE \*32: This pattern is used except slot formats 6B, 7B, 10B, 11B, 12B, and 13B.

NOTE \*4: This pattern is used for slot formats 2B and 3B.

NOTE: For slot format *n*B where *n* = 0, 1, 4, 5, 6, ..., 15, the pilot bit pattern corresponding to N<sub>pilot</sub>/2 is to be used and symbol repetition shall be applied.

In closed loop mode 2 same pilot pattern is used on both of the antennas (see figure 11 b). The pattern to be used is according to the table 12.

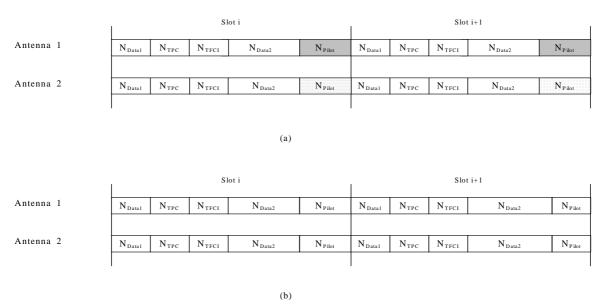


Figure 11: Slot structures for downlink dedicated physical channel diversity transmission.

Structure (a) is used in closed loop mode 1.

Structure (b) is used in closed loop mode 2.

Different shading of the pilots indicate orthogonality of the patterns

		CHANGE	REQ	UE	ST	•		CR-Form-v7
ж	25.211 CR	164	жrev	-	ж	Current version:	5.1.0	æ
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<b></b>	25.211	CR <mark>164</mark>	<b>πrev</b> −	光 Current vers	5.1.0 **
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			MEND	P. A. N.	
Proposed change a	rrects:	UICC apps <b></b>	ME A Rad	iio Access Netwol	rk X Core Network
Title: 第	Reversal	of unwanted correct	ons resulting fr	om CR 25.211-12	22
Source: #	TSG RAN	NWG1			
Work item code: 第	TEI			Date: ♯	14/08/2002
Category: Ж	Α			Release: ₩	Rel-5
		the following categorie	s:		the following releases:
		rection)		2	(GSM Phase 2)
		rresponds to a correction dition of feature),	n in an earlier re	elease) R96 R97	(Release 1996) (Release 1997)
		nctional modification of	feature)	R98	(Release 1998)
		itorial modification)	outur 0)	R99	(Release 1999)
		planations of the above	categories can	Rel-4	(Release 4)
	be found in	3GPP <u>TR 21.900</u> .		Rel-5	(Release 5)
				Rel-6	(Release 6)
Reason for change:	beer vers impl num requ spec	n identified on the co- ion of the TS 25.211 y that the UE shall su ber of of DPCCH pilo irement (category C	ver sheet and versheet and versheet sheet and versheet by the second of	which are not in line changes resulting diversity closed to Npilot=2). This coversion 3.8.0 and pattern used for	anges which have not ne with the earlier ng from CR 25.211-122 pop mode 1 when the intradicts and adds new learlier version of the r closed loop mode 1
Summary of change	- ,	conjunction with trans Removal of columns was introduced by Cl	smit diversity cl irrelevant to clo R 25.211-122 w slot formats wit	losed loop mode of osed loop mode 1 which duplicated T th Npilot=2 may no	thogonal pilot pattern in 1. in Table 15 (Table 15 Table 14 used for STTD) ot be used together with
Consequences if not approved:		developed based on port the modified fund			to be re-designed to 1-122.
Clauses affected:	<b>第</b> 5.3.2	2.2			
Other specs	Y N # X	Other core specific	ations #	CR 25.214-272	
affected:	X	Test specifications			

Clauses affected:	#	5.3	.2.2			
Other specs affected:	ж	X	Other core specifications Test specifications O&M Specifications	ж	CR 25.214-272	
Other comments:	¥	lm	oact analysis:			

UEs implemented based on version 5.2.0 and later will reject the configuration when operating with network implementation based on version 5.0.0 and 5.1.0 (as well as versions corresponding to the 2001-09 to 2002-06 issues of R99 and Rel-4) which select DPCH configurations with slot formats corresponding toNpilot=2 and enable transmit diversity closed loop mode 1. Consequently this CR has an isolated impact.

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

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### 5.3.2.2 Dedicated channel pilots with closed loop mode transmit diversity

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Table 16: Pilot bit patterns of downlink DPCCH for antenna 2 using closed loop mode 1

	N <sub>pilot</sub> = 2	N <sub>pilo</sub>			N <sub>pilo</sub>						N <sub>pilot</sub>		i				<sub>t</sub> = 4
		(*	<del>1)</del>		(^2	<u>21)</u>					(^=	<u>32</u> )				<del>(</del> *	<del>4)</del>
Symbol #	0	0	1	0	1	2	3	0	1	2	3	4	5	6	7	0	4
Slot #0	01	01	10	11	00	00	10	11	00	00	10	11	00	00	10	01	<del>10</del>
1	<del>10</del>	10	10	11	00	00	01	11	00	00	01	11	10	00	10	<del>10</del>	01
2	11	11	10	11	11	00	00	11	11	00	00	11	10	00	11	11	00
3	<del>10</del>	10	10	11	10	00	01	11	10	00	01	11	00	00	00	<del>10</del>	01
4	00	00	10	11	11	00	11	11	11	00	11	11	01	00	10	00	11
5	<del>01</del>	01	10	11	00	00	10	11	00	00	10	11	11	00	00	01	<del>10</del>
6	01	01	10	11	10	00	10	11	10	00	10	11	01	00	11	01	<del>10</del>
7	00	00	10	11	10	00	11	11	10	00	11	11	10	00	11	00	11
8	11	11	10	11	00	00	00	11	00	00	00	11	01	00	01	11	00
9	01	01	10	11	01	00	10	11	01	00	10	11	01	00	01	01	<del>10</del>
10	11	11	10	11	11	00	00	11	11	00	00	11	00	00	10	11	00
11	00	00	10	11	01	00	11	11	01	00	11	11	00	00	01	00	11
12	00	00	10	11	10	00	11	11	10	00	11	11	11	00	00	00	11
13	<del>10</del>	10	10	11	01	00	01	11	01	00	01	11	10	00	01	<del>10</del>	01
14	<del>10</del>	10	10	11	01	00	01	11	01	00	01	11	11	00	11	<del>10</del>	01

NOTE \*1: This pattern is used except slot formats 2B and 3B.

NOTE \*21: This pattern is used except slot formats 0B, 1B, 4B, 5B, 8B, and 9B.

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NOTE: For slot format *n*B where *n* = 0, 1, 4, 5, 6, ..., 15, the pilot bit pattern corresponding to N<sub>pilot</sub>/2 is to be used and symbol repetition shall be applied.

In closed loop mode 2 same pilot pattern is used on both of the antennas (see figure 13 b). The pattern to be used is according to the table 13.

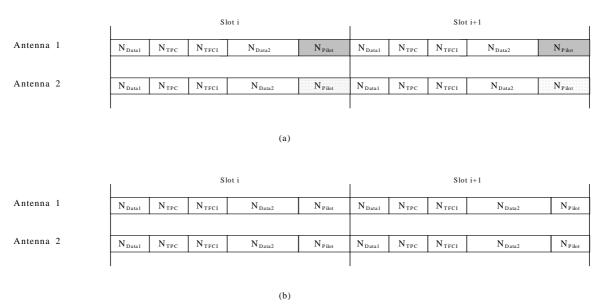


Figure 13: Slot structures for downlink dedicated physical channel diversity transmission.

Structure (a) is used in closed loop mode 1.

Structure (b) is used in closed loop mode 2.

Different shading of the pilots indicate orthogonality of the patterns

ME X Radio Access Network X Core Network

(Release 6)

Rel-6

Proposed change affects:

	C	HANGE	REQ	UE:	ST		(	CR-Form-v7
*	25.214 CR 2	270	жrev	1	¥	Current version: 3.1	0.0	¥

For <u>HELP</u> on using this form, see bottom of this page or look at the pop-up text over the **%** symbols.

UICC apps#

Title:	ж	Reversal of unwanted corrections resulting f	rom CR 25.211-12	2 & CR 25.214-226
Source:	Ж	TSG RAN WG1		
Work item code:	æ	TEI	Date: ₩	14/08/2002
Category:	ж	F	Release: ₩	R99
		Use one 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 re	elease) R96	(Release 1996)
		<b>B</b> (addition of feature),	R97	(Release 1997)
		C (functional modification of feature)	R98	(Release 1998)
		<b>D</b> (editorial modification)	R99	(Release 1999)
		Detailed explanations of the above categories can	Rel-4	(Release 4)
		be found in 3GPP TR 21,900.	Rel-5	(Release 5)

Reason for change: 

CR 25.211-122 approved in TSG-RAN #14 introduced changes which have not been identified on the cover sheet and which are not in line with the earlier version of the TS 25.211. Specifically the changes resulting from CR 25.211-122 imply that the UE shall support transmit diversity closed loop mode 1 when the number of of DPCCH pilot bits equal 2 (Npilot=2). This contradicts and adds new requirement (category C CR) relative to version 3.8.0 and earlier version of the specification which specified that the pilot pattern used for closed loop mode 1 was orthogonal (implicitly excluded Npilot=2).

Subsequently CR 25.214-226 was approved in TSG RAN # 15 to align TS 25.214 with TS 25.211 text resulting from CR 25.211-122.

Summary of change: # Cancellation of CR 25.214-226 relative to orthogonal pilot pattern in conjunction with transmit diversity closed loop mode 1.

CR 25.211-162 presented together with this CR, cancels the category C changes introduced by CR 25.211-122. This CR cancels the associated changes introduced by CR25.214-226 for consistency.

Consequences if not approved:

Assuming CR 25.211-162 is approved, the text in 25.214 would not be consistent with 25.211 and may imply that transmit diversity closed loop mode 1 shall be supported in conjunction with DPCH slot formats for which Npilot=2.

Clauses affected: 第 7

Other specs affected:	ж	X		CR 25.211-162
Other comments:	¥	Th	pact analysis: e impact of CR 25.211-162 is listed sistency with CR 25.211-162 and h	in the related cover sheet. This CR is for has no impact in itself.

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

- 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 <a href="ftp://ftp.3gpp.org/specs/">ftp://ftp.3gpp.org/specs/</a>. 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.

# 7 Closed loop mode transmit diversity

The general transmitter structure to support closed loop mode transmit diversity for DPCH transmission is shown in figure 3. Channel coding, interleaving and spreading are done as in non-diversity mode. The spread complex valued signal is fed to both TX antenna branches, and weighted with antenna specific weight factors  $w_1$  and  $w_2$ . The weight factors are complex valued signals (i.e.,  $w_i = a_i + jb_i$ ), in general.

The weight factors (actually the corresponding phase adjustments in closed loop mode 1 and phase/amplitude adjustments in closed loop mode 2) are determined by the UE, and signalled to the UTRAN access point (=cell transceiver) using the D sub-field of the FBI field of uplink DPCCH.

For the closed loop mode 1 different (orthogonal-when  $N_{pilot} > 2$ ) dedicated pilot symbols in the DPCCH are sent on the 2 different antennas. For closed loop mode 2 the same dedicated pilot symbols in the DPCCH are sent on both antennas.

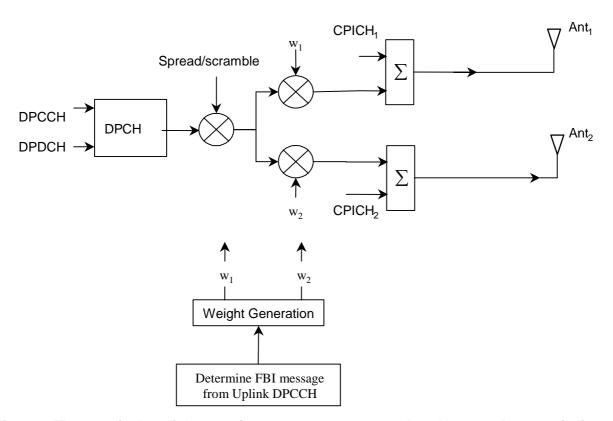


Figure 3: The generic downlink transmitter structure to support closed loop mode transmit diversity for DPCH transmission

There are two closed loop modes whose characteristics are summarised in the table 8. The use of the modes is controlled via higher layer signalling.

Table 8: Summary of number of feedback information bits per slot,  $N_{\text{FBD}}$ , feedback command length in slots,  $N_{\text{W}}$ , feedback command rate, feedback bit rate, number of phase bits,  $N_{\text{ph}}$ , per signalling word, number of amplitude bits,  $N_{\text{po}}$ , per signalling word and amount of constellation rotation at UE for the two closed loop modes

Closed loop mode	N <sub>FBD</sub>	N <sub>W</sub>	Update rate	Feedback bit rate	N <sub>po</sub>	N <sub>ph</sub>	Constellatio n rotation
1	1	1	1500 Hz	1500 bps	0	1	π/2
2	1	4	1500 Hz	1500 bps	1	3	N/A

Error! No text of specified style in document.

ME X Radio Access Network X Core Network

(Release 6)

Rel-6

Proposed change affects:

		CHANG	E REQ	UE	ST			CR-Form-v7
*	25.214 CF	271	жrev	-	Ж	Current version:	4.4.0	¥
- 450								

For <u>HELP</u> on using this form, see bottom of this page or look at the pop-up text over the **%** symbols.

UICC apps#

Title:	ж	Reversal of unwanted corrections res	ulting from CR 25.211-12	2 & CR 25.214-226
			J	
Source:	Ж	TSG RAN WG1		
Work item code:	æ	TEI	Date: ₩	14/08/2002
Category:	ж	A	Release: ₩	Rel-4
		Use one of the following categories:	Use <u>one</u> of t	he following releases:
		F (correction)	2	(GSM Phase 2)
		A (corresponds to a correction in an e	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 categor	ries can Rel-4	(Release 4)
		be found in 3GPP TR 21,900.	Rel-5	(Release 5)

Reason for change: 

CR 25.211-122 approved in TSG-RAN #14 introduced changes which have not been identified on the cover sheet and which are not in line with the earlier version of the TS 25.211. Specifically the changes resulting from CR 25.211-122 imply that the UE shall support transmit diversity closed loop mode 1 when the number of of DPCCH pilot bits equal 2 (Npilot=2). This contradicts and adds new requirement (category C CR) relative to version 3.8.0 and earlier version of the specification which specified that the pilot pattern used for closed loop mode 1 was orthogonal (implicitly excluded Npilot=2).

Subsequently CR 25.214-226 was approved in TSG RAN # 15 to align TS 25.214 with TS 25.211 text resulting from CR 25.211-122.

Summary of change: # Cancellation of CR 25.214-226 relative to orthogonal pilot pattern in conjunction with transmit diversity closed loop mode 1.

CR 25.211-163 presented together with this CR, cancels the category C changes introduced by CR 25.211-122. This CR cancels the associated changes introduced by CR25.214-226 for consistency.

Consequences if not approved:

Assuming CR 25.211-163 is approved, the text in 25.214 would not be consistent with 25.211 and may imply that transmit diversity closed loop mode 1 shall be supported in conjunction with DPCH slot formats for which Npilot=2.

Clauses affected: # 7

Other specs affected:	ж	X Z		CR 25.211-163
Other comments:	¥	The	e impact of CR 25.211-163 is listed sistency with CR 25.211-163 and h	in the related cover sheet. This CR is for has not impact in itself.

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

- 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 <a href="ftp://ftp.3gpp.org/specs/">ftp://ftp.3gpp.org/specs/</a>. 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.

# 7 Closed loop mode transmit diversity

The general transmitter structure to support closed loop mode transmit diversity for DPCH transmission is shown in figure 3. Channel coding, interleaving and spreading are done as in non-diversity mode. The spread complex valued signal is fed to both TX antenna branches, and weighted with antenna specific weight factors  $w_1$  and  $w_2$ . The weight factors are complex valued signals (i.e.,  $w_i = a_i + jb_i$ ), in general.

The weight factors (actually the corresponding phase adjustments in closed loop mode 1 and phase/amplitude adjustments in closed loop mode 2) are determined by the UE, and signalled to the UTRAN access point (=cell transceiver) using the D sub-field of the FBI field of uplink DPCCH.

For the closed loop mode 1 different (orthogonal when  $N_{pilot} > 2$ ) dedicated pilot symbols in the DPCCH are sent on the 2 different antennas. For closed loop mode 2 the same dedicated pilot symbols in the DPCCH are sent on both antennas.

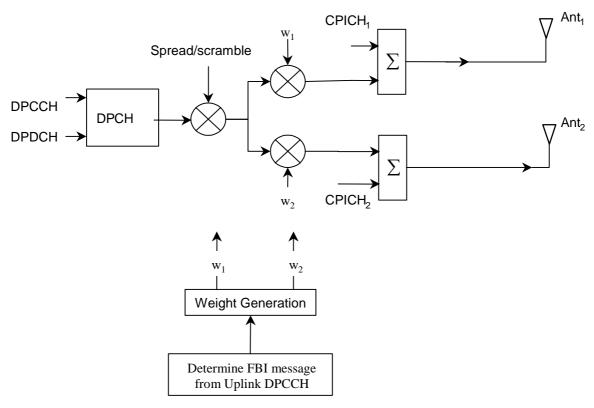


Figure 3: The generic downlink transmitter structure to support closed loop mode transmit diversity for DPCH transmission

There are two closed loop modes whose characteristics are summarised in the table 8. The use of the modes is controlled via higher layer signalling.

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 <sub>FBD</sub>	N <sub>W</sub>	Update rate	Feedback bit rate	N <sub>po</sub>	$N_{ m ph}$	Constellatio n rotation
1	1	1	1500 Hz	1500 bps	0	1	π/2
2	1	4	1500 Hz	1500 bps	1	3	N/A

ME X Radio Access Network X Core Network

(Release 6)

Rel-6

Proposed change affects:

	(	CHANGE	REQU	JES	ST .		
ж <mark>2</mark>	5.214 CR	272	жrev	<b>-</b> 3	Current version:	5.1.0	*

For <u>HELP</u> on using this form, see bottom of this page or look at the pop-up text over the **%** symbols.

UICC apps#

Title:	ж	Reversal of unwanted corrections result	ing from CR 25.211	-122	2 & CR 25.214-226
			_		
Source:	$\mathfrak{R}$	TSG RAN WG1			
Work item code	<b>:</b> Ж	TEI	Date	: <b></b>	14/08/2002
Category:	$\mathfrak{R}$	A	Release	: <b></b>	Rel-5
		Use one of the following categories:	Use <u>one</u>	of t	he following releases:
		<b>F</b> (correction)	2	(	GSM Phase 2)
		A (corresponds to a correction in an ear	lier release) R96	(	Release 1996)
		<b>D</b> / 11'' ( ( ) )			(Dalassa 1007)
		<b>B</b> (addition of feature),	R97	(	(Release 1997)
		<b>C</b> (functional modification of feature)	R97 R98	,	Release 1997) (Release 1998)
		, , , , , , , , , , , , , , , , , , , ,		(	,
		C (functional modification of feature)	R98 R99	(	Release 1998)

Reason for change: 

CR 25.211-122 approved in TSG-RAN #14 introduced changes which have not been identified on the cover sheet and which are not in line with the earlier

version of the TS 25.211. Specifically the changes resulting from CR 25.211-122 imply that the UE shall support transmit diversity closed loop mode 1 when the number of of DPCCH pilot bits equal 2 (Npilot=2). This contradicts and adds new requirement (category C CR) relative to version 3.8.0 and earlier version of the specification which specified that the pilot pattern used for closed loop mode 1 was orthogonal (implicitly excluded Npilot=2).

Subsequently CR 25.214-226 was approved in TSG RAN # 15 to align TS 25.214 with TS 25.211 text resulting from CR 25.211-122.

Summary of change: # Cancellation of CR 25.214-226 relative to orthogonal pilot pattern in conjunction with transmit diversity closed loop mode 1.

CR 25.211-162 presented together with this CR, cancels the category C changes introduced by CR 25.211-122. This CR cancels the associated changes introduced by CR25.214-226 for consistency.

Consequences if anot approved:

Assuming CR 25.211-164 is approved, the text in 25.214 would not be consistent with 25.211 and may imply that transmit diversity closed loop mode 1 shall be supported in conjunction with DPCH slot formats for which Npilot=2.

Clauses affected: # 8

Other specs affected:	¥	Y N X X	Other core specifications Test specifications O&M Specifications	¥	CR 25.211-164
Other comments:	ж	The	act analysis: impact of CR 25.211-164 is liste sistency with CR 25.211-164 and		in the related cover sheet. This CR is for as no impact in itself.

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

- 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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# 8 Closed loop mode transmit diversity

The general transmitter structure to support closed loop mode transmit diversity for DPCH transmission is shown in figure 3. Channel coding, interleaving and spreading are done as in non-diversity mode. The spread complex valued signal is fed to both TX antenna branches, and weighted with antenna specific weight factors  $w_1$  and  $w_2$ . The weight factors are complex valued signals (i.e.,  $w_i = a_i + jb_i$ ), in general.

The weight factors (actually the corresponding phase adjustments in closed loop mode 1 and phase/amplitude adjustments in closed loop mode 2) are determined by the UE, and signalled to the UTRAN access point (=cell transceiver) using the D sub-field of the FBI field of uplink DPCCH.

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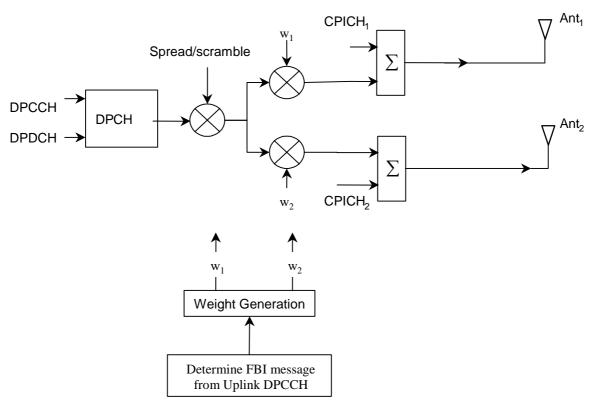


Figure 3: The generic downlink transmitter structure to support closed loop mode transmit diversity for DPCH transmission

There are two closed loop modes whose characteristics are summarised in the table 12. The use of the modes is controlled via higher layer signalling.

Table 12: 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 <sub>FBD</sub>	N <sub>W</sub>	Update rate	Feedback bit rate	N <sub>po</sub>	$N_{ m ph}$	Constellatio n rotation
1	1	1	1500 Hz	1500 bps	0	1	π/2
2	1	4	1500 Hz	1500 bps	1	3	N/A