

TSG RAN Meeting #20
Hämeenlinna, Finland, 3 - 6 June, 2003

RP-030217

Title CRs (Rel-5 and Rel-6 Category A) to TS 25.101 under WI "High Speed Downlink Packet Access" (FDD)
Source TSG RAN WG4
Agenda Item 8.5.1

RAN4 Tdoc	Spec	CR	R	Cat	Rel	Curr Ver	Title	Work Item
R4-020375	25.101	231		F	Rel-5	5.6.0	Maximum input power for the UE	HSDPA-RF
R4-020376	25.101	232		A	Rel-6	6.0.0	Maximum input power for the UE	HSDPA-RF
R4-020465	25.101	248		F	Rel-5	5.6.0	Removal of some of the FRC test cases with PA3 channel	HSDPA-RF
R4-020564	25.101	252		A	Rel-6	6.0.0	Removal of some of the FRC test cases with PA3 channel	HSDPA-RF
R4-020575	25.101	249	1	F	Rel-5	5.6.0	Specification of HSDPA CQI test	HSDPA-RF
R4-020576	25.101	253		A	Rel-6	6.0.0	Specification of HSDPA CQI test	HSDPA-RF
R4-020607	25.101	255		F	Rel-5	5.6.0	Specification of HSDPA FRC Performance with Closed Loop Transmit Diversity	HSDPA-RF
R4-020608	25.101	256		A	Rel-6	6.0.0	Specification of HSDPA FRC Performance with Closed Loop Transmit Diversity	HSDPA-RF
R4-020609	25.101	257		F	Rel-5	5.6.0	Specification of HS-SCCH Performance	HSDPA-RF
R4-020610	25.101	258		A	Rel-6	6.0.0	Specification of HS-SCCH Performance	HSDPA-RF
R4-020611	25.101	259		F	Rel-5	5.6.0	Specification of HSDPA CQI test in fading	HSDPA-RF
R4-020612	25.101	260		A	Rel-6	6.0.0	Specification of HSDPA CQI test in fading	HSDPA-RF

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CHANGE REQUEST⌘ **25.101 CR 231** ⌘ 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 Radio Access Network Core Network

Title:	⌘ Maximum received power at UE		
Source:	⌘ RAN WG4		
Work item code:	⌘ HSDPA-RF	Date:	⌘ 27/05/2003
Category:	⌘ F	Release:	⌘ 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 TR 21.900 .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

Reason for change:	⌘ The requirements on the linearity in the receiver when 16-QAM is received is much higher than when QPSK is received.
Summary of change:	⌘ Added a new requirement similar to HSDPA fixed reference channel without any fading or noise but at a high signal level.
Consequences if not approved:	⌘ There are no requirement on the linearity of the receiver at high input levels that are relevant for 16-QAM.

Clauses affected:	⌘ 7.4																
Other specs affected:	<table border="1"> <tr> <td>Y</td> <td>N</td> <td rowspan="3">Other core specifications</td> <td rowspan="3">⌘</td> </tr> <tr> <td></td> <td>N</td> </tr> <tr> <td></td> <td>N</td> </tr> <tr> <td></td> <td>N</td> <td>Test specifications</td> <td></td> </tr> <tr> <td></td> <td>N</td> <td>O&M Specifications</td> <td></td> </tr> </table>	Y	N	Other core specifications	⌘		N		N		N	Test specifications			N	O&M Specifications	
Y	N	Other core specifications	⌘														
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	N																
	N	Test specifications															
	N	O&M Specifications															
Other comments:	⌘ Equivalent CRs in other Releases: CR232 cat. A to 25.101 v6.0.0																

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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.

7.4 Maximum input level

This is defined as the maximum mean power received at the UE antenna port, which does not degrade the specified BER performance.

7.4.1 Minimum requirement [for DPCH reception](#)

The BER shall not exceed 0.001 for the parameters specified in Table 7.3.

Table 7.3: Maximum input level

Parameter	Unit	Level
$\frac{DPCH_Ec}{I_{or}}$	dB	-19
\hat{I}_{or}	dBm/3.84 MHz	-25
UE transmitted mean power	dBm	20 (for Power class 3) 18 (for Power class 4)

NOTE: Since the spreading factor is large ($10\log(SF)=21\text{dB}$), the majority of the total input signal consists of the OCNS interference. The structure of OCNS signal is defined in Annex C.3.2.

7.4.2 [Minimum requirement for HS-PDSCH reception](#)

7.4.2.2 [Minimum requirement for 16QAM](#)

[For the parameters specified in Table 7.X, the requirements are specified in terms of a minimum information bit throughput R as shown in Table 7.Y for the DL reference channel H-Set 1 specified in Annex A.7.1.1. with the addition of the parameters added in the end of Table 7.X and downlink physical channel setup according to Annex C.5.](#)

Table 7.X

Parameter	Unit	Test
Phase reference		P-CPICH
\hat{I}_{or}	dBm/3.84 MHz	-25 *
UE transmitted mean power	dBm	20 (for Power class 3) 18 (for Power class 4)
DPCH	DPCH_Ec/I _{or}	-13
HS-SCCH_1	HS-SCCH_Ec/I _{or}	-13
Redundancy and constellation version		6
Maximum number of HARQ transmissions		1
Note: The HS-DSCH shall be transmitted continuously with constant power but only every third TTI shall be sent to the UE under test.		

Table 7.Y

HS-PDSCH E_c/I_{or} (dB)	T-put_R (kbps) *
-3	700

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CHANGE REQUEST⌘ **25.101 CR 232** ⌘ rev ⌘ Current version: **6.0.0** ⌘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:	⌘ Maximum received power at UE		
Source:	⌘ RAN WG4		
Work item code:	⌘ HSDPA-RF	Date:	⌘ 27/05/2003
Category:	⌘ A	Release:	⌘ Rel-6
	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 TR 21.900 .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

Reason for change:	⌘ The requirements on the linearity in the receiver when 16-QAM is received is much higher than when QPSK is received.
Summary of change:	⌘ Added a new requirement similar to HSDPA fixed reference channel without any fading or noise but at a high signal level.
Consequences if not approved:	⌘ There are no requirement on the linearity of the receiver at high input levels that are relevant for 16-QAM.

Clauses affected:	⌘ 7.4												
Other specs affected:	<table border="1"> <tr> <td>Y</td> <td>N</td> <td></td> </tr> <tr> <td>⌘</td> <td>N</td> <td>Other core specifications</td> </tr> <tr> <td></td> <td>N</td> <td>Test specifications</td> </tr> <tr> <td></td> <td>N</td> <td>O&M Specifications</td> </tr> </table>	Y	N		⌘	N	Other core specifications		N	Test specifications		N	O&M Specifications
Y	N												
⌘	N	Other core specifications											
	N	Test specifications											
	N	O&M Specifications											
Other comments:	⌘ Equivalent CRs in other Releases: CR231 cat. F to 25.101 v5.6.0												

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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.

7.4 Maximum input level

This is defined as the maximum mean power received at the UE antenna port, which does not degrade the specified BER performance.

7.4.1 Minimum requirement [for DPCH reception](#)

The BER shall not exceed 0.001 for the parameters specified in Table 7.3.

Table 7.3: Maximum input level

Parameter	Unit	Level
$\frac{DPCH_Ec}{I_{or}}$	dB	-19
\hat{I}_{or}	dBm/3.84 MHz	-25
UE transmitted mean power	dBm	20 (for Power class 3) 18 (for Power class 4)

NOTE: Since the spreading factor is large ($10\log(SF)=21\text{dB}$), the majority of the total input signal consists of the OCNS interference. The structure of OCNS signal is defined in Annex C.3.2.

7.4.2 [Minimum requirement for HS-PDSCH reception](#)

7.4.2.2 [Minimum requirement for 16QAM](#)

[For the parameters specified in Table 7.X, the requirements are specified in terms of a minimum information bit throughput R as shown in Table 7.Y for the DL reference channel H-Set 1 specified in Annex A.7.1.1. with the addition of the parameters added in the end of Table 7.X and downlink physical channel setup according to Annex C.5.](#)

Table 7.X

Parameter	Unit	Test
Phase reference		P-CPICH
\hat{I}_{or}	dBm/3.84 MHz	-25 *
UE transmitted mean power	dBm	20 (for Power class 3) 18 (for Power class 4)
DPCH	DPCH Ec/lor	-13
HS-SCCH 1	HS-SCCH Ec/lor	-13
Redundancy and constellation version		6
Maximum number of HARQ transmissions		1
Note: The HS-DSCH shall be transmitted continuously with constant power but only every third TTI shall be sent to the UE under test.		

Table 7.Y

HS-PDSCH $\frac{E_c}{I_{or}}$ (dB)	T-put R (kbps) *
-3	700

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CHANGE REQUEST

⌘ **25.101 CR 248** ⌘ rev ⌘ Current version: **5.6.0** ⌘

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Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘ Removal of some of the FRC test cases with PA3 channel		
Source:	⌘ RAN WG4		
Work item code:	⌘ HSDPA-RF	Date:	⌘ 27/05/2003
Category:	⌘ F	Release:	⌘ Rel-5
	<i>Use one of the following categories:</i> 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 .		<i>Use one of the following releases:</i> 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 FRC test cases with the PA3 channel, lor/loc = 0dB and HS-DSCH Ec/lor = -3dB may not make available enough power for the HS-SCCH and DPCH channels and hence are difficult to configure in the test configuration. Hence, these two test cases are removed. The other PA3 test cases are retained.
Summary of change:	⌘ FRC test cases with PA3 channel, lor/loc = 0dB and HS-DSCH Ec/lor = -3dB are removed.
Consequences if not approved:	⌘ It may not be possible in practice to configure the FRC test cases with PA3 channel, lor/loc = 0dB and Ec/lor = -3dB..

Clauses affected:	⌘ 9.2.1.3						
Other specs affected:	<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;">⌘</td> <td style="text-align: center;">X</td> </tr> </table> Other core specifications	Y	N	⌘	X	⌘	
Y	N						
⌘	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> Test specifications	⌘	X				
⌘	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> O&M Specifications	⌘	X				
⌘	X						
Other comments:	⌘ Equivalent CRs in other Releases: CR252 cat. A to 25.101 v6.0.0						

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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.

9.2.1.1 Minimum requirement QPSK, Fixed Reference Channel (FRC) H-Set 1/2/3

For the parameters specified in Table 9.2, the requirements are specified in terms of a minimum information bit throughput R as shown in Table 9.3 for the DL reference channels specified in Annex A.7.1

Table 9.2

Parameter	Unit	Test 1	Test 2	Test 3	Test 4
Phase reference		P-CPICH			
I_{oc}	dBm/3.84 MHz	-60			
Redundancy and constellation version coding sequence		{0,2,5,6}			
Maximum number of HARQ transmission		4			

Table 9.3

Test Number	Propagation Conditions	Reference value		
		HS-PDSCH E_c / I_{or} (dB)	T-put R (kbps) * $\hat{I}_{or} / I_{oc} = 0$ dB	T-put R (kbps) * $\hat{I}_{or} / I_{oc} = 10$ dB
1	PA3	-6	65	309
		-3	447 N/A	423
2	PB3	-6	23	181
		-3	138	287
3	VA30	-6	22	190
		-3	142	295
4	VA120	-6	13	181
		-3	140	275

* Notes: 1) The reference value R is for the Fixed Reference Channel (FRC) H-Set 1
 2) For Fixed Reference Channel (FRC) H-Set 2 the reference values for R should be scaled (multiplied by 1.5)
 3) For Fixed Reference Channel (FRC) H-Set 3 the reference values for R should be scaled (multiplied by 3)

9.2.1.3 Minimum requirement QPSK, Fixed Reference Channel (FRC) H-Set 4/5

For the parameters specified in Table 9.6, the requirements are specified in terms of a minimum information bit throughput R as shown in Table 9.7 and 9.8 for the DL reference channels specified in Annex A.7.1.4 and A.7.1.5.

Table 9.6 Test Parameters for Testing QPSK FRCs H-Set 4/H-Set 5

Parameter	Unit	Test 1	Test 2	Test 3	Test 4
Phase reference		P-CPICH			
I_{oc}	dBm/3.84 MHz	-60			
Redundancy and constellation version coding sequence		{0,2,5,6}			
Maximum number of HARQ transmission		4			

Table 9.7 Minimum requirement QPSK, Fixed Reference Channel (FRC) H-Set 4

Test Number	Propagation Conditions	Reference value		
		HS-PDSCH E_c/I_{or} (dB)	T-put R (kbps) * $\hat{I}_{or}/I_{oc} = 0$ dB	T-put R (kbps) * $\hat{I}_{or}/I_{oc} = 10$ dB
1	PA3	-6	72	340
		-3	470 N/A	439
2	PB3	-6	24	186
		-3	142	299
3	VA30	-6	19	183
		-3	148	306
4	VA120	-6	11	170
		-3	144	284

* Notes: 1) The reference value R is for the Fixed Reference Channel (FRC) H-Set 4

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Title:	⌘ Specification of HSDPA CQI test		
Source:	⌘ RAN WG4		
Work item code:	⌘ HSDPA-RF	Date:	⌘ 27/05/2003
Category:	⌘ F	Release:	⌘ 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 TR 21.900 .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

Reason for change:	⌘ The required HSDPA CQI accuracy tests for UE capability category 1-6 and 11-12 are not specified. The tests are essential to ensure consistent operation of CQI reporting across all UEs.
Summary of change:	⌘ CQI reporting behaviour under AWGN channel is specified. CQI reporting accuracy in terms of measurement variance and measurement bias is tested with the introduction of the test.
Consequences if not approved:	⌘ HSDPA CQI performance requirements for UE capability category 1-6 and 11-12 are not specified, resulting HSDPA performance specification to be incomplete.

Clauses affected:	⌘ C.5, New section 9.4										
Other specs affected:	<table border="1"> <tr> <td>Y</td> <td>N</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> </table>	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other core specifications	⌘
Y	N										
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<input type="checkbox"/>	<input checked="" type="checkbox"/>										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
		Test specifications									
		O&M Specifications									
Other comments:	⌘ Equivalent CRs in other Releases: CR253r1 cat. A to 25.101 v6.0.0										

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9.4 Reporting of Channel Quality Indicator

The reporting accuracy of channel quality indicator (CQI) under AWGN environments is determined by the reporting variance and the BLER performance using the transport format indicated by the reported CQI median.

9.4.1 Minimum Requirement – UE capability categories 1-6

For the parameters specified in Table 9.x, the reported CQI value shall be in the range of +/-2 of the reported median more than 90% of the time. If the HS-PDSCH packet error rate (PER) using transport format indicated by median CQI is less than 0.1, PER using transport format indicated by (median CQI +2) shall be larger than 0.1. If the HS-PDSCH packet error rate (PER) using transport format indicated by median CQI is larger than 0.1, PER using transport format indicated by (median CQI -1) shall be less than 0.1.

Table 9.x: Test Parameter for CQI: categories 1-6

Parameter	Unit	Test 1	Test 2	Test 3
\hat{I}_{or} / I_{oc}	dB	0	5	10
I_{oc}	dBm/3.84 MHz	-60		
Phase reference	-	P-CPICH		
HS-PDSCH E_c / I_{or} (*)	dB	-3		
HS-SCCH E_c / I_{or}	dB	-10		
DPCH E_c / I_{or}	dB	-10		
Maximum number of H-ARQ transmission	-	1		
Number of HS-SCCH set to be monitored	-	1		
CQI feedback cycle	ms	2		
CQI repetition factor	-	1		
HS-DSCH transmission pattern	-	"XOOXOOX" to incorporate inter-TTI=3 UEs, where "X" indicates TTI in which HS-PDSCH is allocated to the UE, and "O" indicates DTX		
Note1: Measurement power offset "I" is configured by RRC accordingly				
Note2: TF for HS-PDSCH is configured according to the reported CQI statistics. TF based on median CQI, median CQI -1, median CQI+2 are used. Other physical channel parameters are configured according to the CQI mapping table described in TS25.214				

9.4.2 Minimum Requirement – UE capability categories 11,12

For the parameters specified in Table 9.y, the reported CQI value shall be in the range of +/-2 of the reported median more than 90% of the time. If the HS-PDSCH packet error rate (PER) using transport format indicated by median CQI is less than 0.1, PER using transport format indicated by (median CQI +2) shall be larger than 0.1. If the HS-PDSCH packet error rate (PER) using transport format indicated by median CQI is larger than 0.1, PER using transport format indicated by (median CQI -1) shall be less than 0.1.

Table 9.y: Test Parameter for CQI: categories 11,12

<u>Parameter</u>	<u>Unit</u>	<u>Test 1</u>	<u>Test 2</u>
\hat{I}_{or}/I_{oc}	<u>dB</u>	<u>0</u>	<u>5</u>
I_{oc}	<u>dBm/3.84 MHz</u>	<u>-60</u>	
<u>Phase reference</u>	<u>:</u>	<u>P-CPICH</u>	
<u>HS-PDSCH E_c/I_{or} (*)</u>	<u>dB</u>	<u>-3</u>	
<u>HS-SCCH E_c/I_{or}</u>	<u>dB</u>	<u>-10</u>	
<u>DPCH E_c/I_{or}</u>	<u>dB</u>	<u>-10</u>	
<u>Maximum number of H-ARQ transmission</u>	<u>:</u>	<u>1</u>	
<u>Number of HS-SCCH set to be monitored</u>	<u>:</u>	<u>1</u>	
<u>CQI feedback cycle</u>	<u>ms</u>	<u>2</u>	
<u>CQI repetition factor</u>	<u>:</u>	<u>1</u>	
<u>HS-DSCH transmission pattern</u>	<u>:</u>	<u>"XOOXOOX", where "X" indicates TTI in which HS-PDSCH is allocated to the UE, and "O" indicates DTX</u>	
<u>Note1: Measurement power offset "T" is configured by RRC accordingly</u> <u>Note2: TF for HS-PDSCH is configured according to the reported CQI statistics. TF based on median CQI, median CQI -1, median CQI+2 are used. Other physical channel parameters are configured according to the CQI mapping table described in TS25.214</u>			

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C.5 HSDPA DL Physical channels

C.5.1 Downlink Physical Channels connection set-up

Table C.8 is applicable for the measurements for tests in subclause 9.2.1- and 9.4. Table C.9 is applicable for the measurements for tests in subclause 9.2.2.

Table C.8: Downlink physical channels for HSDPA receiver testing for Single Link performance.

Physical Channel	Parameter	Value	Note
P-CPICH	P-CPICH_Ec/Ior	-10dB	
P-CCPCH	P-CCPCH_Ec/Ior	-12dB	Mean power level is shared with SCH.
SCH	SCH_Ec/Ior	-12dB	Mean power level is shared with P-CCPCH – SCH includes P- and S-SCH, with power split between both. P-SCH code is S_dl,0 as per TS25.213 S-SCH pattern is scrambling code group 0
PICH	PICH_Ec/Ior	-15dB	
DPCH	DPCH_Ec/Ior	Test-specific	12.2 kbps DL reference measurement channel as defined in Annex A.3.1
HS-SCCH_1	HS-SCCH_Ec/Ior	Test-specific	Specifies fraction of Node-B radiated power transmitted when TTI is active (i.e. due to minimum inter-TTI interval).
HS-SCCH_2	HS-SCCH_Ec/Ior	DTX'd	No signalling scheduled, or power radiated, on this HS-SCCH, but signalled to the UE as present.
HS-SCCH_3	HS-SCCH_Ec/Ior	DTX'd	As HS-SCCH_2.
HS-SCCH_4	HS-SCCH_Ec/Ior	DTX'd	As HS-SCCH_2.
HS-PDSCH	HS-PDSCH_Ec/Ior	Test-specific	.
OCNS		Necessary power so that total transmit power spectral density of Node B (Ior) adds to one	OCNS interference consists of 6 dedicated data channels as specified in table C.10.

Table C.9: Downlink physical channels for HSDPA receiver testing for Open Loop Diversity performance.

Void

C.5.2 OCNS Definition

The selected channelization codes and relative power levels for OCNS transmission during for HSDPA performance assessment are defined in Table C.10. The selected codes are designed to have a single length-16 parent code.

Table C.10: OCNS definition for HSDPA receiver testing.

Channelization Code at SF=128	Relative Level setting (dB)	DPCH Data
2	-6	The DPCH data for each channelization code shall be uncorrelated with each other and with any wanted signal over the period of any measurement.
3	-8	
4	-8	
5	-10	
6	-7	
7	-9	

Paris, France 19 - 23 May, 2003

CR-Form-v7

CHANGE REQUEST⌘ **25.101 CR 252** ⌘ rev ⌘ Current version: **6.0.0** ⌘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:	⌘ Removal of some of the FRC test cases with PA3 channel		
Source:	⌘ RAN WG4		
Work item code:	⌘ HSDPA-RF	Date:	⌘ 27/05/2003
Category:	⌘ A	Release:	⌘ Rel-6
	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 TR 21.900 .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

Reason for change:	⌘ The FRC test cases with the PA3 channel, lor/loc = 0dB and HS-DSCH Ec/lor = -3dB may not make available enough power for the HS-SCCH and DPCH channels and hence are difficult to configure in the test configuration. Hence, these two test cases are removed. The other PA3 test cases are retained.
Summary of change:	⌘ FRC test cases with PA3 channel, lor/loc = 0dB and HS-DSCH Ec/lor = -3dB are removed.
Consequences if not approved:	⌘ It may not be possible in practice to configure the FRC test cases with PA3 channel, lor/loc = 0dB and Ec/lor = -3dB..

Clauses affected:	⌘ 9.2.1.3										
Other specs affected:	<table border="1"> <tr> <td>Y</td> <td>N</td> </tr> <tr> <td></td> <td>X</td> </tr> <tr> <td></td> <td>X</td> </tr> <tr> <td></td> <td>X</td> </tr> </table>	Y	N		X		X		X	Other core specifications	⌘
Y	N										
	X										
	X										
	X										
		Test specifications									
		O&M Specifications									
Other comments:	⌘ Equivalent CRs in other Releases: CR248 cat. F to 25.101 v5.6.0										

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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.

9.2.1.1 Minimum requirement QPSK, Fixed Reference Channel (FRC) H-Set 1/2/3

For the parameters specified in Table 9.2, the requirements are specified in terms of a minimum information bit throughput R as shown in Table 9.3 for the DL reference channels specified in Annex A.7.1

Table 9.2

Parameter	Unit	Test 1	Test 2	Test 3	Test 4
Phase reference		P-CPICH			
I_{oc}	dBm/3.84 MHz	-60			
Redundancy and constellation version coding sequence		{0,2,5,6}			
Maximum number of HARQ transmission		4			

Table 9.3

Test Number	Propagation Conditions	Reference value		
		HS-PDSCH E_c / I_{or} (dB)	T-put R (kbps) * $\hat{I}_{or} / I_{oc} = 0$ dB	T-put R (kbps) * $\hat{I}_{or} / I_{oc} = 10$ dB
1	PA3	-6	65	309
		-3	447 N/A	423
2	PB3	-6	23	181
		-3	138	287
3	VA30	-6	22	190
		-3	142	295
4	VA120	-6	13	181
		-3	140	275

* Notes: 1) The reference value R is for the Fixed Reference Channel (FRC) H-Set 1
2) For Fixed Reference Channel (FRC) H-Set 2 the reference values for R should be scaled (multiplied by 1.5)
3) For Fixed Reference Channel (FRC) H-Set 3 the reference values for R should be scaled (multiplied by 3)

9.2.1.3 Minimum requirement QPSK, Fixed Reference Channel (FRC) H-Set 4/5

For the parameters specified in Table 9.6, the requirements are specified in terms of a minimum information bit throughput R as shown in Table 9.7 and 9.8 for the DL reference channels specified in Annex A.7.1.4 and A.7.1.5.

Table 9.6 Test Parameters for Testing QPSK FRCs H-Set 4/H-Set 5

Parameter	Unit	Test 1	Test 2	Test 3	Test 4
Phase reference		P-CPICH			
I_{oc}	dBm/3.84 MHz	-60			
Redundancy and constellation version coding sequence		{0,2,5,6}			
Maximum number of HARQ transmission		4			

Table 9.7 Minimum requirement QPSK, Fixed Reference Channel (FRC) H-Set 4

Test Number	Propagation Conditions	Reference value		
		HS-PDSCH E_c/I_{or} (dB)	T-put R (kbps) * $\hat{I}_{or}/I_{oc} = 0$ dB	T-put R (kbps) * $\hat{I}_{or}/I_{oc} = 10$ dB
1	PA3	-6	72	340
		-3	470 N/A	439
2	PB3	-6	24	186
		-3	142	299
3	VA30	-6	19	183
		-3	148	306
4	VA120	-6	11	170
		-3	144	284

* Notes: 1) The reference value R is for the Fixed Reference Channel (FRC) H-Set 4

CHANGE REQUEST

⌘ **25.101 CR 253** ⌘ rev ⌘ Current version: **6.0.0** ⌘

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:	⌘ Specification of HSDPA CQI test		
Source:	⌘ RAN WG4		
Work item code:	⌘ HSDPA-RF	Date:	⌘ 27/05/2003
Category:	⌘ A	Release:	⌘ Rel-6
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)	R96	2 (GSM Phase 2)
	A (corresponds to a correction in an earlier release)	R97	(Release 1996)
	B (addition of feature),	R98	(Release 1997)
	C (functional modification of feature)	R99	(Release 1998)
	D (editorial modification)	Rel-4	(Release 1999)
	Detailed explanations of the above categories can	Rel-5	(Release 4)
	be found in 3GPP TR 21.900 .	Rel-6	(Release 5)
			(Release 6)

Reason for change:	⌘ The required HSDPA CQI accuracy tests for UE capability category 1-6 and 11-12 are not specified. The tests are essential to ensure consistent operation of CQI reporting across all UEs.
Summary of change:	⌘ CQI reporting behaviour under AWGN channel is specified. CQI reporting accuracy in terms of measurement variance and measurement bias is tested with the introduction of the test.
Consequences if not approved:	⌘ HSDPA CQI performance requirements for UE capability category 1-6 and 11-12 are not specified, resulting HSDPA performance specification to be incomplete.

Clauses affected:	⌘ C.5, New section 9.4										
Other specs affected:	<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;">X</td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> </tr> </table>	Y	N	X	X	X	X	X	X	Other core specifications	⌘
Y	N										
X	X										
X	X										
X	X										
		Test specifications									
		O&M Specifications									
Other comments:	⌘ Equivalent CRs in other Releases: CR249 cat. F to 25.101 v5.6.0										

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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.

9.4 Reporting of Channel Quality Indicator

The reporting accuracy of channel quality indicator (CQI) under AWGN environments is determined by the reporting variance and the BLER performance using the transport format indicated by the reported CQI median.

9.4.1 Minimum Requirement – UE capability categories 1-6

For the parameters specified in Table 9.x, the reported CQI value shall be in the range of +/-2 of the reported median more than 90% of the time. If the HS-PDSCH packet error rate (PER) using transport format indicated by median CQI is less than 0.1, PER using transport format indicated by (median CQI +2) shall be larger than 0.1. If the HS-PDSCH packet error rate (PER) using transport format indicated by median CQI is larger than 0.1, PER using transport format indicated by (median CQI -1) shall be less than 0.1.

Table 9.x: Test Parameter for CQI: categories 1-6

Parameter	Unit	Test 1	Test 2	Test 3
\hat{I}_{or} / I_{oc}	dB	0	5	10
I_{oc}	dBm/3.84 MHz	-60		
Phase reference	-	P-CPICH		
HS-PDSCH E_c / I_{or} (*)	dB	-3		
HS-SCCH E_c / I_{or}	dB	-10		
DPCH E_c / I_{or}	dB	-10		
Maximum number of H-ARQ transmission	-	1		
Number of HS-SCCH set to be monitored	-	1		
CQI feedback cycle	ms	2		
CQI repetition factor	-	1		
HS-DSCH transmission pattern	-	"XOOXOOX" to incorporate inter-TTI=3 UEs, where "X" indicates TTI in which HS-PDSCH is allocated to the UE, and "O" indicates DTX		
Note1: Measurement power offset "I" is configured by RRC accordingly				
Note2: TF for HS-PDSCH is configured according to the reported CQI statistics. TF based on median CQI, median CQI -1, median CQI+2 are used. Other physical channel parameters are configured according to the CQI mapping table described in TS25.214				

9.4.2 Minimum Requirement – UE capability categories 11,12

For the parameters specified in Table 9.y, the reported CQI value shall be in the range of +/-2 of the reported median more than 90% of the time. If the HS-PDSCH packet error rate (PER) using transport format indicated by median CQI is less than 0.1, PER using transport format indicated by (median CQI +2) shall be larger than 0.1. If the HS-PDSCH packet error rate (PER) using transport format indicated by median CQI is larger than 0.1, PER using transport format indicated by (median CQI -1) shall be less than 0.1.

Table 9.y: Test Parameter for CQI: categories 11,12

<u>Parameter</u>	<u>Unit</u>	<u>Test 1</u>	<u>Test 2</u>
\hat{I}_{or}/I_{oc}	<u>dB</u>	<u>0</u>	<u>5</u>
I_{oc}	<u>dBm/3.84 MHz</u>	<u>-60</u>	
<u>Phase reference</u>	<u>-</u>	<u>P-CPICH</u>	
<u>HS-PDSCH E_c/I_{or} (*)</u>	<u>dB</u>	<u>-3</u>	
<u>HS-SCCH E_c/I_{or}</u>	<u>dB</u>	<u>-10</u>	
<u>DPCH E_c/I_{or}</u>	<u>dB</u>	<u>-10</u>	
<u>Maximum number of H-ARQ transmission</u>	<u>-</u>	<u>1</u>	
<u>Number of HS-SCCH set to be monitored</u>	<u>-</u>	<u>1</u>	
<u>CQI feedback cycle</u>	<u>ms</u>	<u>2</u>	
<u>CQI repetition factor</u>	<u>-</u>	<u>1</u>	
<u>HS-DSCH transmission pattern</u>	<u>-</u>	<u>"XOOXOOX", where "X" indicates TTI in which HS-PDSCH is allocated to the UE, and "O" indicates DTX</u>	
<u>Note1: Measurement power offset "T" is configured by RRC accordingly</u> <u>Note2: TF for HS-PDSCH is configured according to the reported CQI statistics. TF based on median CQI, median CQI -1, median CQI+2 are used. Other physical channel parameters are configured according to the CQI mapping table described in TS25.214</u>			

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C.5 HSDPA DL Physical channels

C.5.1 Downlink Physical Channels connection set-up

Table C.8 is applicable for the measurements for tests in subclause 9.2.1- and 9.4. Table C.9 is applicable for the measurements for tests in subclause 9.2.2.

Table C.8: Downlink physical channels for HSDPA receiver testing for Single Link performance.

Physical Channel	Parameter	Value	Note
P-CPICH	P-CPICH_Ec/Ior	-10dB	
P-CCPCH	P-CCPCH_Ec/Ior	-12dB	Mean power level is shared with SCH.
SCH	SCH_Ec/Ior	-12dB	Mean power level is shared with P-CCPCH – SCH includes P- and S-SCH, with power split between both. P-SCH code is S_dl,0 as per TS25.213 S-SCH pattern is scrambling code group 0
PICH	PICH_Ec/Ior	-15dB	
DPCH	DPCH_Ec/Ior	Test-specific	12.2 kbps DL reference measurement channel as defined in Annex A.3.1
HS-SCCH_1	HS-SCCH_Ec/Ior	Test-specific	Specifies fraction of Node-B radiated power transmitted when TTI is active (i.e. due to minimum inter-TTI interval).
HS-SCCH_2	HS-SCCH_Ec/Ior	DTX'd	No signalling scheduled, or power radiated, on this HS-SCCH, but signalled to the UE as present.
HS-SCCH_3	HS-SCCH_Ec/Ior	DTX'd	As HS-SCCH_2.
HS-SCCH_4	HS-SCCH_Ec/Ior	DTX'd	As HS-SCCH_2.
HS-PDSCH	HS-PDSCH_Ec/Ior	Test-specific	.
OCNS		Necessary power so that total transmit power spectral density of Node B (Ior) adds to one	OCNS interference consists of 6 dedicated data channels as specified in table C.10.

Table C.9: Downlink physical channels for HSDPA receiver testing for Open Loop Diversity performance.

Void

C.5.2 OCNS Definition

The selected channelization codes and relative power levels for OCNS transmission during for HSDPA performance assessment are defined in Table C.10. The selected codes are designed to have a single length-16 parent code.

Table C.10: OCNS definition for HSDPA receiver testing.

Channelization Code at SF=128	Relative Level setting (dB)	DPCH Data
2	-6	The DPCH data for each channelization code shall be uncorrelated with each other and with any wanted signal over the period of any measurement.
3	-8	
4	-8	
5	-10	
6	-7	
7	-9	

Paris, France 19 - 23 May, 2003

CR-Form-v7

CHANGE REQUEST⌘ **25.101 CR 255** ⌘ 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 Radio Access Network Core Network

Title:	⌘ Specification of HSDPA FRC Performance with Closed Loop Transmit Diversity		
Source:	⌘ RAN WG4		
Work item code:	⌘ HSDPA-RF	Date:	⌘ 27/05/2003
Category:	⌘ F	Release:	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)	R96	2 (GSM Phase 2)
	A (corresponds to a correction in an earlier release)	R97	(Release 1996)
	B (addition of feature),	R98	(Release 1997)
	C (functional modification of feature)	R99	(Release 1998)
	D (editorial modification)	Rel-4	(Release 1999)
	Detailed explanations of the above categories can	Rel-5	(Release 4)
	be found in 3GPP TR 21.900 .	Rel-6	(Release 5)
			(Release 6)

Reason for change:	⌘ The required HSDPA FRC throughput performance for H-Sets 1-5 with closed loop transmit diversity is not specified.
Summary of change:	⌘ Test cases and requirements for Closed Loop Transmit Diversity (Mode-1) performance for HSDPA Fixed Reference Channels are added.
Consequences if not approved:	⌘ HSDPA FRC performance requirements for H-Sets 1-5 are not specified for the closed loop transmit diversity case, and the HSPDA receiver performance specification is incomplete.

Clauses affected:	⌘ 9.2.3, C.5.1										
Other specs affected:	<table border="1"> <tr> <td>Y</td> <td>N</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> </table>	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other core specifications	⌘
Y	N										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
		Test specifications									
		O&M Specifications									
Other comments:	⌘ Equivalent CRs in other Releases: CR256 cat. A to 25.101 v6.0.0										

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.

9.2.3 Closed Loop Diversity Performance

The closed loop transmit diversity (Mode 1) performance of the High Speed Physical Downlink Shared Channel (HS-DSCH) in multi-path fading environments are determined by the information bit throughput R.

Note: The results in Section 9.2.3 assume error-free HS-SCCH signalling and are subject to further review upon completion of further assessment of the transmit diversity configuration for the HS-SCCH.

9.2.3.1 Minimum requirement QPSK, Fixed Reference Channel (FRC) H-Set 1/2/3

For the parameters specified in Table 9.A, the requirements are specified in terms of a minimum information bit throughput R as shown in Table 9.B for the DL reference channels specified in Annex A.7.1.

Table 9.A Test Parameters for Testing QPSK FRCs H-Set 1/H-Set 2/H-Set 3

Parameter	Unit	Test 1	Test 2	Test 3
Phase reference			P-CPICH	
I_{oc}	dBm/3.84 MHz		-60	
Redundancy and constellation version coding sequence			{0,2,5,6}	
Maximum number of HARQ transmission			4	
Feedback Error Rate	%		4	

Table 9.B Minimum requirement QPSK, Fixed Reference Channel (FRC) H-Set 1/2/3

Test Number	Propagation Conditions	Reference value		
		HS-PDSCH E_c/I_{or} (dB)	T-put R (kbps) * $\hat{I}_{or}/I_{oc} = 0$ dB	T-put R (kbps) * $\hat{I}_{or}/I_{oc} = 10$ dB
1	PA3	-6	118	399
		-3	225	458
2	PB3	-6	50	199
		-3	173	301
3	VA30	-6	47	204
		-3	172	305

* Notes: 1) The reference value R is for the Fixed Reference Channel (FRC) H-Set 1
 2) For Fixed Reference Channel (FRC) H-Set 2 the reference values for R should be scaled (multiplied by 1.5 and rounding to the nearest integer t-put in kbps, where values of $i+1/2$ are rounded up to $i+1$, i integer)
 3) For Fixed Reference Channel (FRC) H-Set 3 the reference values for R should be scaled (multiplied by 3 and rounding to the nearest integer t-put in kbps, where values of $i+1/2$ are rounded up to $i+1$, i integer)

9.2.3.2 Minimum requirement 16QAM, Fixed Reference Channel (FRC) H-Set 1/2/3

For the parameters specified in Table 9.C, the requirements are specified in terms of a minimum information bit throughput R as shown in Table 9.D for the DL reference channels specified in Annex A.7.1.

Table 9.C Test Parameters for Testing 16-QAM FRCs H-Set 1/H-Set 2/H-Set 3

Parameter	Unit	Test 1	Test 2	Test 3
Phase reference			P-CPICH	
I_{oc}	dBm/3.84 MHz		-60	
Redundancy and constellation version coding sequence			{6,2,1,5}	
Maximum number of HARQ transmission			4	
Feedback Error Rate	%		4	

Table 9.D Minimum requirement 16QAM, Fixed Reference Channel (FRC) H-Set 1/2/3

Test Number	Propagation Conditions	Reference value	
		HS-PDSCH E_c / I_{or} (dB)	T-put R (kbps) * $\hat{I}_{or} / I_{oc} = 10$ dB
1	PA3	-6	361
		-3	500
2	PB3	-6	74
		-3	255
3	VA30	-6	84
		-3	254

* Notes: 1)The reference value R is for the Fixed Reference Channel (FRC) H-Set 1
 2) For Fixed Reference Channel (FRC) H-Set 2 the reference values for R should be scaled (multiplied by 1.5 and rounding to the nearest integer t-put in kbps, where values of i+1/2 are rounded up to i+1, i integer)
 3) For Fixed Reference Channel (FRC) H-Set 3 the reference values for R should be scaled (multiplied by 3 and rounding to the nearest integer t-put in kbps, where values of i+1/2 are rounded up to i+1, i integer)

9.2.3.3 Minimum requirement QPSK, Fixed Reference Channel (FRC) H-Set 4/5

For the parameters specified in Table 9.E, the requirements are specified in terms of a minimum information bit throughput R as shown in Tables 9.F and 9.G for the DL reference channels specified in Annex A.7.1.4 and A.7.1.5 respectively.

Table 9.E Test Parameters for Testing QPSK FRCs H-Set 4/H-Set 5

Parameter	Unit	Test 1	Test 2	Test 3
Phase reference			P-CPICH	
I_{oc}	dBm/3.84 MHz		-60	
Redundancy and constellation version coding sequence			{0,2,5,6}	
Maximum number of HARQ transmission			4	
Feedback Error Rate	%		4	

Table 9.F Minimum requirement QPSK, Fixed Reference Channel (FRC) H-Set 4

Test Number	Propagation Conditions	Reference value		
		HS-PDSCH E_c / I_{or} (dB)	T-put R (kbps) * $\hat{I}_{or} / I_{oc} = 0$ dB	T-put R (kbps) * $\hat{I}_{or} / I_{oc} = 10$ dB
1	PA3	-6	114	398
		-3	223	457
2	PB3	-6	43	196
		-3	167	292
3	VA30	-6	40	199
		-3	170	305

* Notes: 1) The reference value R is for the Fixed Reference Channel (FRC) H-Set 4

Table 9.G Minimum requirement QPSK, Fixed Reference Channel (FRC) H-Set 5

Test Number	Propagation Conditions	Reference value		
		HS-PDSCH E_c / I_{or} (dB)	T-put R (kbps) * $\hat{I}_{or} / I_{oc} = 0$ dB	T-put R (kbps) * $\hat{I}_{or} / I_{oc} = 10$ dB
1	PA3	-6	177	599
		-3	338	687
2	PB3	-6	75	299
		-3	260	452
3	VA30	-6	71	306
		-3	258	458

* Notes: 1) The reference value R is for the Fixed Reference Channel (FRC) H-Set 5

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C.5 HSDPA DL Physical channels

C.5.1 Downlink Physical Channels connection set-up

Table C.8 is applicable for the measurements for tests in subclause 9.2.1. Table C.9 is applicable for the measurements for tests in subclause 9.2.2. [Table C.10 is applicable for the measurements for tests in subclause 9.2.3.](#)

Table C.8: Downlink physical channels for HSDPA receiver testing for Single Link performance.

Physical Channel	Parameter	Value	Note
P-CPICH	P-CPICH_Ec/Ior	-10dB	
P-CCPCH	P-CCPCH_Ec/Ior	-12dB	Mean power level is shared with SCH.
SCH	SCH_Ec/Ior	-12dB	Mean power level is shared with P-CCPCH – SCH includes P- and S-SCH, with power split between both. P-SCH code is S_dl,0 as per TS25.213 S-SCH pattern is scrambling code group 0
PICH	PICH_Ec/Ior	-15dB	
DPCH	DPCH_Ec/Ior	Test-specific	12.2 kbps DL reference measurement channel as defined in Annex A.3.1
HS-SCCH_1	HS-SCCH_Ec/Ior	Test-specific	Specifies fraction of Node-B radiated power transmitted when TTI is active (i.e. due to minimum inter-TTI interval).
HS-SCCH_2	HS-SCCH_Ec/Ior	DTX'd	No signalling scheduled, or power radiated, on this HS-SCCH, but signalled to the UE as present.
HS-SCCH_3	HS-SCCH_Ec/Ior	DTX'd	As HS-SCCH_2.
HS-SCCH_4	HS-SCCH_Ec/Ior	DTX'd	As HS-SCCH_2.
HS-PDSCH	HS-PDSCH_Ec/Ior	Test-specific	.
OCNS		Necessary power so that total transmit power spectral density of Node B (Ior) adds to one	OCNS interference consists of 6 dedicated data channels as specified in table C.10.

Table C.9: Downlink physical channels for HSDPA receiver testing for Open Loop Transmit Diversity performance.

<u>Physical Channel</u>	<u>Parameter</u>	<u>Value</u>	<u>Note</u>
<u>P-CPICH (antenna 1)</u>	<u>P-CPICH_Ec1/lor</u>	<u>-13dB</u>	<u>1. Total P-CPICH_Ec/lor = -10dB</u>
<u>P-CPICH (antenna 2)</u>	<u>P-CPICH_Ec2/lor</u>	<u>-13dB</u>	
<u>P-CCPCH (antenna 1)</u>	<u>P-CCPCH_Ec1/lor</u>	<u>-15dB</u>	<u>1. STTD applied.</u> <u>2. Total P-CCPCH Ec/lor is -12dB.</u>
<u>P-CCPCH (antenna 2)</u>	<u>P-CCPCH_Ec2/lor</u>	<u>-15dB</u>	
<u>SCH (antenna 1/2)</u>	<u>SCH_Ec/lor</u>	<u>-12dB</u>	<u>1. TSTD applied.</u> <u>2. Power divided equally between primary and secondary SCH.</u>
<u>PICH (antenna 1)</u>	<u>PICH_Ec1/lor</u>	<u>-18dB</u>	<u>1. STTD applied.</u> <u>2. Total PICH Ec/lor is -15dB.</u>
<u>PICH (antenna 2)</u>	<u>PICH_Ec2/lor</u>	<u>-18dB</u>	
<u>DPCH</u>	<u>DPCH_Ec/lor</u>	<u>Test-specific</u>	<u>1. STTD applied.</u>
<u>HS-SCCH_1</u>	<u>HS-SCCH_Ec/lor</u>	<u>Test-specific</u>	<u>1. STTD applied.</u> <u>2. Specifies fraction of Node-B radiated power transmitted when TTI is active (i.e. due to minimum inter-TTI interval).</u>
<u>HS-SCCH_2</u>	<u>HS-SCCH_Ec/lor</u>	<u>DTX'd</u>	<u>1. UE assumes STTD applied.</u> <u>2. No signalling scheduled, or power radiated, on this HS-SCCH, but signalled to the UE as present.</u>
<u>HS-SCCH_3</u>	<u>HS-SCCH_Ec/lor</u>	<u>DTX'd</u>	<u>1. As HS-SCCH_2.</u>
<u>HS-SCCH_4</u>	<u>HS-SCCH_Ec/lor</u>	<u>DTX'd</u>	<u>2. As HS-SCCH_2.</u>
<u>HS-PDSCH</u>	<u>HS-PDSCH_Ec/lor</u>	<u>Test-specific</u>	<u>1. STTD applied.</u>
<u>OCNS</u>		<u>Necessary power so that total transmit power spectral density of Node B (lor) adds to one</u>	<u>1. STTD applied.</u> <u>2. Balance of power I_{or} of the Node-B is assigned to OCNS.</u> <u>3. Power divided equally between antennas.</u>

Table C.10: Downlink physical channels for HSDPA receiver testing for Closed Loop Transmit Diversity (Mode-1) performance.

<u>Physical Channel</u>	<u>Parameter</u>	<u>Value</u>	<u>Note</u>
<u>P-CPICH (antenna 1)</u>	<u>P-CPICH_Ec1/lor</u>	<u>-13dB</u>	<u>1. Total P-CPICH_Ec/lor = -10dB</u>
<u>P-CPICH (antenna 2)</u>	<u>P-CPICH_Ec2/lor</u>	<u>-13dB</u>	
<u>P-CCPCH (antenna 1)</u>	<u>P-CCPCH_Ec1/lor</u>	<u>-15dB</u>	<u>1. STTD applied.</u> <u>2. Total P-CCPCH Ec/lor is -12dB.</u>
<u>P-CCPCH (antenna 2)</u>	<u>P-CCPCH_Ec2/lor</u>	<u>-15dB</u>	
<u>SCH (antenna 1/2)</u>	<u>SCH_Ec/lor</u>	<u>-12dB</u>	<u>1. TSTD applied.</u> <u>2. Power divided equally between primary and secondary SCH.</u>
<u>PICH (antenna 1)</u>	<u>PICH_Ec1/lor</u>	<u>-18dB</u>	<u>1. STTD applied.</u> <u>2. Total PICH Ec/lor is -15dB.</u>
<u>PICH (antenna 2)</u>	<u>PICH_Ec2/lor</u>	<u>-18dB</u>	
<u>DPCH</u>	<u>DPCH_Ec/lor</u>	<u>Test-specific</u>	<u>1. CL1 applied.</u>
<u>HS-SCCH_1</u>	<u>HS-SCCH_Ec/lor</u>	<u>Test-specific</u>	<u>1. [TBD] applied.</u> <u>2. Specifies fraction of Node-B radiated power transmitted when TTI is active (i.e. due to minimum inter-TTI interval).</u>
<u>HS-SCCH_2</u>	<u>HS-SCCH_Ec/lor</u>	<u>DTX'd</u>	<u>1. UE assumes [TBD] applied.</u> <u>2. No signalling scheduled, or power radiated, on this HS-SCCH, but signalled to the UE as present.</u>
<u>HS-SCCH_3</u>	<u>HS-SCCH_Ec/lor</u>	<u>DTX'd</u>	<u>1. As HS-SCCH_2.</u>

HS-SCCH 4	HS-SCCH Ec/Ior	DTX'd	2. As HS-SCCH 2.
HS-PDSCH	HS-PDSCH Ec/Ior	Test-specific	1. CL1 applied.
OCNS		Necessary power so that total transmit power spectral density of Node B (lor) adds to one	1. STTD applied. 2. Balance of power I_{or} of the Node-B is assigned to OCNS. 3. Power divided equally between antennas.

C.5.2 OCNS Definition

The selected channelization codes and relative power levels for OCNS transmission during for HSDPA performance assessment are defined in Table C.10. The selected codes are designed to have a single length-16 parent code.

Table C.10: OCNS definition for HSDPA receiver testing.

Channelization Code at SF=128	Relative Level setting (dB)	DPCH Data
2	-6	The DPCH data for each channelization code shall be uncorrelated with each other and with any wanted signal over the period of any measurement.
3	-8	
4	-8	
5	-10	
6	-7	
7	-9	

Paris, France 19 - 23 May, 2003

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CHANGE REQUEST⌘ **25.101 CR 256** ⌘ rev ⌘ Current version: **6.0.0** ⌘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:	⌘ Specification of HSDPA FRC Performance with Closed Loop Transmit Diversity		
Source:	⌘ RAN WG4		
Work item code:	⌘ HSDPA-RF	Date:	⌘ 27/05/2003
Category:	⌘ A	Release:	⌘ Rel-6
	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 TR 21.900 .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

Reason for change:	⌘ The required HSDPA FRC throughput performance for H-Sets 1-5 with closed loop transmit diversity is not specified.
Summary of change:	⌘ Test cases and requirements for Closed Loop Transmit Diversity (Mode-1) performance for HSDPA Fixed Reference Channels are added.
Consequences if not approved:	⌘ HSDPA FRC performance requirements for H-Sets 1-5 are not specified for the closed loop transmit diversity case, and the HSPDA receiver performance specification is incomplete.

Clauses affected:	⌘ 9.2.3, C.5.1										
Other specs affected:	<table border="1"> <tr> <td>Y</td> <td>N</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> </table>	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other core specifications	⌘
Y	N										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
		Test specifications									
		O&M Specifications									
Other comments:	⌘ Equivalent CRs in other Releases: CR255 cat. F to 25.101 v5.6.0										

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.

9.2.3 Closed Loop Diversity Performance

The closed loop transmit diversity (Mode 1) performance of the High Speed Physical Downlink Shared Channel (HS-DSCH) in multi-path fading environments are determined by the information bit throughput R.

Note: The results in Section 9.2.3 assume error-free HS-SCCH signalling and are subject to further review upon completion of further assessment of the transmit diversity configuration for the HS-SCCH.

9.2.3.1 Minimum requirement QPSK, Fixed Reference Channel (FRC) H-Set 1/2/3

For the parameters specified in Table 9.A, the requirements are specified in terms of a minimum information bit throughput R as shown in Table 9.B for the DL reference channels specified in Annex A.7.1.

Table 9.A Test Parameters for Testing QPSK FRCs H-Set 1/H-Set 2/H-Set 3

Parameter	Unit	Test 1	Test 2	Test 3
Phase reference			P-CPICH	
I_{oc}	dBm/3.84 MHz		-60	
Redundancy and constellation version coding sequence			{0,2,5,6}	
Maximum number of HARQ transmission			4	
Feedback Error Rate	%		4	

Table 9.B Minimum requirement QPSK, Fixed Reference Channel (FRC) H-Set 1/2/3

Test Number	Propagation Conditions	Reference value		
		HS-PDSCH E_c/I_{or} (dB)	T-put R (kbps) * $\hat{I}_{or}/I_{oc} = 0$ dB	T-put R (kbps) * $\hat{I}_{or}/I_{oc} = 10$ dB
1	PA3	-6	118	399
		-3	225	458
2	PB3	-6	50	199
		-3	173	301
3	VA30	-6	47	204
		-3	172	305

* Notes: 1) The reference value R is for the Fixed Reference Channel (FRC) H-Set 1
 2) For Fixed Reference Channel (FRC) H-Set 2 the reference values for R should be scaled (multiplied by 1.5 and rounding to the nearest integer t-put in kbps, where values of $i+1/2$ are rounded up to $i+1$, i integer)
 3) For Fixed Reference Channel (FRC) H-Set 3 the reference values for R should be scaled (multiplied by 3 and rounding to the nearest integer t-put in kbps, where values of $i+1/2$ are rounded up to $i+1$, i integer)

9.2.3.2 Minimum requirement 16QAM, Fixed Reference Channel (FRC) H-Set 1/2/3

For the parameters specified in Table 9.C, the requirements are specified in terms of a minimum information bit throughput R as shown in Table 9.D for the DL reference channels specified in Annex A.7.1.

Table 9.C Test Parameters for Testing 16-QAM FRCs H-Set 1/H-Set 2/H-Set 3

Parameter	Unit	Test 1	Test 2	Test 3
Phase reference			P-CPICH	
I_{oc}	dBm/3.84 MHz		-60	
Redundancy and constellation version coding sequence			{6,2,1,5}	
Maximum number of HARQ transmission			4	
Feedback Error Rate	%		4	

Table 9.D Minimum requirement 16QAM, Fixed Reference Channel (FRC) H-Set 1/2/3

Test Number	Propagation Conditions	Reference value	
		HS-PDSCH E_c / I_{or} (dB)	T-put R (kbps) * $\hat{I}_{or} / I_{oc} = 10$ dB
1	PA3	-6	361
		-3	500
2	PB3	-6	74
		-3	255
3	VA30	-6	84
		-3	254

* Notes: 1)The reference value R is for the Fixed Reference Channel (FRC) H-Set 1
 2) For Fixed Reference Channel (FRC) H-Set 2 the reference values for R should be scaled (multiplied by 1.5 and rounding to the nearest integer t-put in kbps, where values of i+1/2 are rounded up to i+1, i integer)
 3) For Fixed Reference Channel (FRC) H-Set 3 the reference values for R should be scaled (multiplied by 3 and rounding to the nearest integer t-put in kbps, where values of i+1/2 are rounded up to i+1, i integer)

9.2.3.3 Minimum requirement QPSK, Fixed Reference Channel (FRC) H-Set 4/5

For the parameters specified in Table 9.E, the requirements are specified in terms of a minimum information bit throughput R as shown in Tables 9.F and 9.G for the DL reference channels specified in Annex A.7.1.4 and A.7.1.5 respectively.

Table 9.E Test Parameters for Testing QPSK FRCs H-Set 4/H-Set 5

Parameter	Unit	Test 1	Test 2	Test 3
Phase reference			P-CPICH	
I_{oc}	dBm/3.84 MHz		-60	
Redundancy and constellation version coding sequence			{0,2,5,6}	
Maximum number of HARQ transmission			4	
Feedback Error Rate	%		4	

Table 9.F Minimum requirement QPSK, Fixed Reference Channel (FRC) H-Set 4

Test Number	Propagation Conditions	Reference value		
		HS-PDSCH E_c / I_{or} (dB)	T-put R (kbps) * $\hat{I}_{or} / I_{oc} = 0$ dB	T-put R (kbps) * $\hat{I}_{or} / I_{oc} = 10$ dB
1	PA3	-6	114	398
		-3	223	457
2	PB3	-6	43	196
		-3	167	292
3	VA30	-6	40	199
		-3	170	305

* Notes: 1) The reference value R is for the Fixed Reference Channel (FRC) H-Set 4

Table 9.G Minimum requirement QPSK, Fixed Reference Channel (FRC) H-Set 5

Test Number	Propagation Conditions	Reference value		
		HS-PDSCH E_c / I_{or} (dB)	T-put R (kbps) * $\hat{I}_{or} / I_{oc} = 0$ dB	T-put R (kbps) * $\hat{I}_{or} / I_{oc} = 10$ dB
1	PA3	-6	177	599
		-3	338	687
2	PB3	-6	75	299
		-3	260	452
3	VA30	-6	71	306
		-3	258	458

* Notes: 1) The reference value R is for the Fixed Reference Channel (FRC) H-Set 5

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C.5 HSDPA DL Physical channels

C.5.1 Downlink Physical Channels connection set-up

Table C.8 is applicable for the measurements for tests in subclause 9.2.1. Table C.9 is applicable for the measurements for tests in subclause 9.2.2. [Table C.10 is applicable for the measurements for tests in subclause 9.2.3.](#)

Table C.8: Downlink physical channels for HSDPA receiver testing for Single Link performance.

Physical Channel	Parameter	Value	Note
P-CPICH	P-CPICH_Ec/Ior	-10dB	
P-CCPCH	P-CCPCH_Ec/Ior	-12dB	Mean power level is shared with SCH.
SCH	SCH_Ec/Ior	-12dB	Mean power level is shared with P-CCPCH – SCH includes P- and S-SCH, with power split between both. P-SCH code is S_dl,0 as per TS25.213 S-SCH pattern is scrambling code group 0
PICH	PICH_Ec/Ior	-15dB	
DPCH	DPCH_Ec/Ior	Test-specific	12.2 kbps DL reference measurement channel as defined in Annex A.3.1
HS-SCCH_1	HS-SCCH_Ec/Ior	Test-specific	Specifies fraction of Node-B radiated power transmitted when TTI is active (i.e. due to minimum inter-TTI interval).
HS-SCCH_2	HS-SCCH_Ec/Ior	DTX'd	No signalling scheduled, or power radiated, on this HS-SCCH, but signalled to the UE as present.
HS-SCCH_3	HS-SCCH_Ec/Ior	DTX'd	As HS-SCCH_2.
HS-SCCH_4	HS-SCCH_Ec/Ior	DTX'd	As HS-SCCH_2.
HS-PDSCH	HS-PDSCH_Ec/Ior	Test-specific	.
OCNS		Necessary power so that total transmit power spectral density of Node B (Ior) adds to one	OCNS interference consists of 6 dedicated data channels as specified in table C.10.

Table C.9: Downlink physical channels for HSDPA receiver testing for Open Loop Transmit Diversity performance.

<u>Physical Channel</u>	<u>Parameter</u>	<u>Value</u>	<u>Note</u>
<u>P-CPICH (antenna 1)</u>	<u>P-CPICH_Ec1/lor</u>	<u>-13dB</u>	<u>1. Total P-CPICH_Ec/lor = -10dB</u>
<u>P-CPICH (antenna 2)</u>	<u>P-CPICH_Ec2/lor</u>	<u>-13dB</u>	
<u>P-CCPCH (antenna 1)</u>	<u>P-CCPCH_Ec1/lor</u>	<u>-15dB</u>	<u>1. STTD applied.</u> <u>2. Total P-CCPCH Ec/lor is -12dB.</u>
<u>P-CCPCH (antenna 2)</u>	<u>P-CCPCH_Ec2/lor</u>	<u>-15dB</u>	
<u>SCH (antenna 1/2)</u>	<u>SCH_Ec/lor</u>	<u>-12dB</u>	<u>1. TSTD applied.</u> <u>2. Power divided equally between primary and secondary SCH.</u>
<u>PICH (antenna 1)</u>	<u>PICH_Ec1/lor</u>	<u>-18dB</u>	<u>1. STTD applied.</u> <u>2. Total PICH Ec/lor is -15dB.</u>
<u>PICH (antenna 2)</u>	<u>PICH_Ec2/lor</u>	<u>-18dB</u>	
<u>DPCH</u>	<u>DPCH_Ec/lor</u>	<u>Test-specific</u>	<u>1. STTD applied.</u>
<u>HS-SCCH_1</u>	<u>HS-SCCH_Ec/lor</u>	<u>Test-specific</u>	<u>1. STTD applied.</u> <u>2. Specifies fraction of Node-B radiated power transmitted when TTI is active (i.e. due to minimum inter-TTI interval).</u>
<u>HS-SCCH_2</u>	<u>HS-SCCH_Ec/lor</u>	<u>DTX'd</u>	<u>1. UE assumes STTD applied.</u> <u>2. No signalling scheduled, or power radiated, on this HS-SCCH, but signalled to the UE as present.</u>
<u>HS-SCCH_3</u>	<u>HS-SCCH_Ec/lor</u>	<u>DTX'd</u>	<u>1. As HS-SCCH_2.</u>
<u>HS-SCCH_4</u>	<u>HS-SCCH_Ec/lor</u>	<u>DTX'd</u>	<u>2. As HS-SCCH_2.</u>
<u>HS-PDSCH</u>	<u>HS-PDSCH_Ec/lor</u>	<u>Test-specific</u>	<u>1. STTD applied.</u>
<u>OCNS</u>		<u>Necessary power so that total transmit power spectral density of Node B (lor) adds to one</u>	<u>1. STTD applied.</u> <u>2. Balance of power I_{or} of the Node-B is assigned to OCNS.</u> <u>3. Power divided equally between antennas.</u>

Table C.10: Downlink physical channels for HSDPA receiver testing for Closed Loop Transmit Diversity (Mode-1) performance.

<u>Physical Channel</u>	<u>Parameter</u>	<u>Value</u>	<u>Note</u>
<u>P-CPICH (antenna 1)</u>	<u>P-CPICH_Ec1/lor</u>	<u>-13dB</u>	<u>1. Total P-CPICH_Ec/lor = -10dB</u>
<u>P-CPICH (antenna 2)</u>	<u>P-CPICH_Ec2/lor</u>	<u>-13dB</u>	
<u>P-CCPCH (antenna 1)</u>	<u>P-CCPCH_Ec1/lor</u>	<u>-15dB</u>	<u>1. STTD applied.</u> <u>2. Total P-CCPCH Ec/lor is -12dB.</u>
<u>P-CCPCH (antenna 2)</u>	<u>P-CCPCH_Ec2/lor</u>	<u>-15dB</u>	
<u>SCH (antenna 1/2)</u>	<u>SCH_Ec/lor</u>	<u>-12dB</u>	<u>1. TSTD applied.</u> <u>2. Power divided equally between primary and secondary SCH.</u>
<u>PICH (antenna 1)</u>	<u>PICH_Ec1/lor</u>	<u>-18dB</u>	<u>1. STTD applied.</u> <u>2. Total PICH Ec/lor is -15dB.</u>
<u>PICH (antenna 2)</u>	<u>PICH_Ec2/lor</u>	<u>-18dB</u>	
<u>DPCH</u>	<u>DPCH_Ec/lor</u>	<u>Test-specific</u>	<u>1. CL1 applied.</u>
<u>HS-SCCH_1</u>	<u>HS-SCCH_Ec/lor</u>	<u>Test-specific</u>	<u>1. [TBD] applied.</u> <u>2. Specifies fraction of Node-B radiated power transmitted when TTI is active (i.e. due to minimum inter-TTI interval).</u>
<u>HS-SCCH_2</u>	<u>HS-SCCH_Ec/lor</u>	<u>DTX'd</u>	<u>1. UE assumes [TBD] applied.</u> <u>2. No signalling scheduled, or power radiated, on this HS-SCCH, but signalled to the UE as present.</u>
<u>HS-SCCH_3</u>	<u>HS-SCCH_Ec/lor</u>	<u>DTX'd</u>	<u>1. As HS-SCCH_2.</u>

HS-SCCH 4	HS-SCCH Ec/lor	DTX'd	2. As HS-SCCH 2.
HS-PDSCH	HS-PDSCH Ec/lor	Test-specific	1. CL1 applied.
OCNS		Necessary power so that total transmit power spectral density of Node B (lor) adds to one	1. STTD applied. 2. Balance of power I_{or} of the Node-B is assigned to OCNS. 3. Power divided equally between antennas.

C.5.2 OCNS Definition

The selected channelization codes and relative power levels for OCNS transmission during for HSDPA performance assessment are defined in Table C.10. The selected codes are designed to have a single length-16 parent code.

Table C.10: OCNS definition for HSDPA receiver testing.

Channelization Code at SF=128	Relative Level setting (dB)	DPCH Data
2	-6	The DPCH data for each channelization code shall be uncorrelated with each other and with any wanted signal over the period of any measurement.
3	-8	
4	-8	
5	-10	
6	-7	
7	-9	

Paris, France 19 - 23 May, 2003

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CHANGE REQUEST⌘ **25.101 CR 257** ⌘ 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 Radio Access Network Core Network

Title:	⌘ Specification of HS-SCCH Performance		
Source:	⌘ RAN WG4		
Work item code:	⌘ HSDPA-RF	Date:	⌘ 27/05/2003
Category:	⌘ F	Release:	⌘ 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 TR 21.900 .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

Reason for change:	⌘ The required HS-SCCH detection performance is not specified.
Summary of change:	⌘ Test cases and requirements for HS-SCCH detection performance are added. Also, the downlink physical channel connection set-up for HS-SCCH testing is added in Annex C.
Consequences if not approved:	⌘ HS_SCCH detection performance is not defined and the HSPDA receiver performance specification is incomplete.

Clauses affected:	⌘ C.5										
Other specs Affected:	<table border="1"> <tr> <td>Y</td> <td>N</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> </table>	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other core specifications	⌘
Y	N										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
		Test specifications									
		O&M Specifications									
Other comments:	⌘ Equivalent CRs in other Releases: CR258 cat. A to 25.101 v6.0.0										

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.

9.X HS-SCCH Detection Performance

The detection performance of the HS-SCCH is determined by the probability of event E_m , which is declared when the UE is signaled on HS-SCCH-1, but DTX is observed in the corresponding HS-DPCCH ACK/NACK field. The probability of event E_m is denoted $P(E_m)$.

9.X.1 Minimum Requirements

For the test parameters specified in Table 9.a, for each value of HS-SCCH-1 E_c/I_{or} specified in Table 9.b the measured $P(E_m)$ shall be less than or equal to the corresponding specified value of $P(E_m)$.

Table 9.a: Test parameters for HS-SCCH detection

Parameter	Unit	Test 1	Test 2	Test 3
I_{oc}	$\frac{\text{dBm}}{3.84 \text{ MHz}}$	-60		
Phase reference	-	P-CPICH		
P-CPICH E_c / I_{or} (*)	dB	-10		
HS-SCCH UE Identity ($x_{ue,1} \pm x_{ue,2} \pm \dots \pm x_{ue,16}$)		HS-SCCH-1: 1010101010101010 (UE under test addressed solely via HS-SCCH-1) HS-SCCH-2: 0001001010101010 HS-SCCH-3: 0001101010101010 HS-SCCH-4: 0001111110101010		
HS-DSCH TF of UE1		TF corresponding to CQI1		
HS-SCCH-1 TTI Transmission Pattern	-	"...XOOXOOX...", where "X" indicates TTI in which HS-SCCH-1 signals the UE, and "O" indicates no signalling		

Table 9.b: Minimum requirement for HS-SCCH detection

Test Number	Propagation Conditions	Reference value		
		HS-SCCH-1 E_c / I_{or} (dB)	\hat{I}_{or} / I_{oc} (dB)	$P(E_m)$
1	PA3	-9	0	0.05
2	PA3	-9.9	5	0.01
3	VA30	-10	0	0.01

=====

C.5 HSDPA DL Physical channels

C.5.1 Downlink Physical Channels connection set-up

Table C.8 is applicable for the measurements for tests in subclause 9.2.1. Table C.9 is applicable for the measurements for tests in subclause 9.2.2. [Table C.a is applicable for the measurements for tests in subclause 9.X.](#)

=====

Table C.a: Downlink physical channels for HSDPA receiver testing for HS-SCCH detection performance

<u>Parameter</u>	<u>Units</u>	<u>Value</u>	<u>Comment</u>
<u>CPICH</u> E_c / I_{or}	<u>dB</u>	<u>-10</u>	
<u>CCPCH</u> E_c / I_{or}	<u>dB</u>	<u>-12</u>	<u>Mean power level is shared with SCH.</u>
<u>SCH</u> E_c / I_{or}	<u>dB</u>	<u>-12</u>	<u>Mean power level is shared with P-CCPCH – SCH includes P- and S-SCH, with power split between both. P-SCH code is S_dl,0 as per TS25.213 S-SCH pattern is scrambling code group 0</u>
<u>PICH</u> E_c / I_{or}	<u>dB</u>	<u>-15</u>	
<u>HS-DSCH-1</u> E_c / I_{or}	<u>dB</u>	<u>-10</u>	<u>HS-DSCH associated with HS-SCCH-1</u>
<u>HS-DSCH-2</u> E_c / I_{or}	<u>dB</u>	<u>DTX</u>	<u>HS-DSCH associated with HS-SCCH-2</u>
<u>HS-DSCH-3</u> E_c / I_{or}	<u>dB</u>	<u>DTX</u>	<u>HS-DSCH associated with HS-SCCH-3</u>
<u>HS-DSCH-4</u> E_c / I_{or}	<u>dB</u>	<u>DTX</u>	<u>HS-DSCH associated with HS-SCCH-4</u>
<u>DPCH</u> E_c / I_{or}	<u>dB</u>	<u>-8</u>	<u>12.2 kbps DL reference measurement channel as defined in Annex A.3.1</u>
<u>HS-SCCH-1</u> E_c / I_{or}	<u>dB</u>	<u>Test Specific</u>	<u>All HS-SCCH's allocated equal E_c / I_{or}. Specifies E_c / I_{or} when TTI is active.</u>
<u>HS-SCCH-2</u> E_c / I_{or}	<u>dB</u>		
<u>HS-SCCH-3</u> E_c / I_{or}	<u>dB</u>		
<u>HS-SCCH-4</u> E_c / I_{or}	<u>dB</u>		
<u>OCNS</u> E_c / I_{or}	<u>dB</u>	<u>Remaining power at Node-B (including HS-SCCH power allocation when HS-SCCH's inactive).</u>	<u>OCNS interference consists of 6 dedicated data channels as specified in table C.10.</u>

C.5.2 OCNS Definition

The selected channelization codes and relative power levels for OCNS transmission during for HSDPA performance assessment are defined in Table C.10. The selected codes are designed to have a single length-16 parent code.

Table C.10: OCNS definition for HSDPA receiver testing.

Channelization Code at SF=128	Relative Level setting (dB)	DPCH Data
2	-6	The DPCH data for each channelization code shall be uncorrelated with each other and with any wanted signal over the period of any measurement.
3	-8	
4	-8	
5	-10	
6	-7	
7	-9	

Paris, France 19 - 23 May, 2003

CR-Form-v7

CHANGE REQUEST⌘ **25.101 CR 258** ⌘ rev ⌘ Current version: **6.0.0** ⌘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:	⌘ Specification of HS-SCCH Performance		
Source:	⌘ RAN WG4		
Work item code:	⌘ HSDPA-RF	Date:	⌘ 27/05/2003
Category:	⌘ A	Release:	⌘ Rel-6
	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 TR 21.900 .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

Reason for change:	⌘ The required HS-SCCH detection performance is not specified.
Summary of change:	⌘ Test cases and requirements for HS-SCCH detection performance are added. Also, the downlink physical channel connection set-up for HS-SCCH testing is added in Annex C.
Consequences if not approved:	⌘ HS_SCCH detection performance is not defined and the HSPDA receiver performance specification is incomplete.

Clauses affected:	⌘ C.5										
Other specs Affected:	<table border="1"> <tr> <td>Y</td> <td>N</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> </table>	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other core specifications	⌘
Y	N										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
		Test specifications									
		O&M Specifications									
Other comments:	⌘ Equivalent CRs in other Releases: CR257 cat. F to 25.101 v5.6.0										

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.

9.X HS-SCCH Detection Performance

The detection performance of the HS-SCCH is determined by the probability of event E_m , which is declared when the UE is signaled on HS-SCCH-1, but DTX is observed in the corresponding HS-DPCCH ACK/NACK field. The probability of event E_m is denoted $P(E_m)$.

9.X.1 Minimum Requirements

For the test parameters specified in Table 9.a, for each value of HS-SCCH-1 E_c/I_{or} specified in Table 9.b the measured $P(E_m)$ shall be less than or equal to the corresponding specified value of $P(E_m)$.

Table 9.a: Test parameters for HS-SCCH detection

Parameter	Unit	Test 1	Test 2	Test 3
I_{oc}	$\frac{\text{dBm}}{3.84 \text{ MHz}}$	-60		
Phase reference	-	P-CPICH		
P-CPICH E_c / I_{or} (*)	dB	-10		
HS-SCCH UE Identity ($x_{ue,1} \pm x_{ue,2} \pm \dots \pm x_{ue,16}$)		HS-SCCH-1: 1010101010101010 (UE under test addressed solely via HS-SCCH-1) HS-SCCH-2: 0001001010101010 HS-SCCH-3: 0001101010101010 HS-SCCH-4: 0001111110101010		
HS-DSCH TF of UE1		TF corresponding to CQI1		
HS-SCCH-1 TTI Transmission Pattern	-	"...XOOXOOX...", where "X" indicates TTI in which HS-SCCH-1 signals the UE, and "O" indicates no signalling		

Table 9.b: Minimum requirement for HS-SCCH detection

Test Number	Propagation Conditions	Reference value		
		HS-SCCH-1 E_c / I_{or} (dB)	\hat{I}_{or} / I_{oc} (dB)	$P(E_m)$
1	PA3	-9	0	0.05
2	PA3	-9.9	5	0.01
3	VA30	-10	0	0.01

=====

C.5 HSDPA DL Physical channels

C.5.1 Downlink Physical Channels connection set-up

Table C.8 is applicable for the measurements for tests in subclause 9.2.1. Table C.9 is applicable for the measurements for tests in subclause 9.2.2. [Table C.a is applicable for the measurements for tests in subclause 9.X.](#)

=====

Table C.a: Downlink physical channels for HSDPA receiver testing for HS-SCCH detection performance

<u>Parameter</u>	<u>Units</u>	<u>Value</u>	<u>Comment</u>
<u>CPICH</u> E_c / I_{or}	<u>dB</u>	<u>-10</u>	
<u>CCPCH</u> E_c / I_{or}	<u>dB</u>	<u>-12</u>	<u>Mean power level is shared with SCH.</u>
<u>SCH</u> E_c / I_{or}	<u>dB</u>	<u>-12</u>	<u>Mean power level is shared with P-CCPCH – SCH includes P- and S-SCH, with power split between both. P-SCH code is S_dl,0 as per TS25.213 S-SCH pattern is scrambling code group 0</u>
<u>PICH</u> E_c / I_{or}	<u>dB</u>	<u>-15</u>	
<u>HS-DSCH-1</u> E_c / I_{or}	<u>dB</u>	<u>-10</u>	<u>HS-DSCH associated with HS-SCCH-1</u>
<u>HS-DSCH-2</u> E_c / I_{or}	<u>dB</u>	<u>DTX</u>	<u>HS-DSCH associated with HS-SCCH-2</u>
<u>HS-DSCH-3</u> E_c / I_{or}	<u>dB</u>	<u>DTX</u>	<u>HS-DSCH associated with HS-SCCH-3</u>
<u>HS-DSCH-4</u> E_c / I_{or}	<u>dB</u>	<u>DTX</u>	<u>HS-DSCH associated with HS-SCCH-4</u>
<u>DPCH</u> E_c / I_{or}	<u>dB</u>	<u>-8</u>	<u>12.2 kbps DL reference measurement channel as defined in Annex A.3.1</u>
<u>HS-SCCH-1</u> E_c / I_{or}	<u>dB</u>	<u>Test Specific</u>	<u>All HS-SCCH's allocated equal E_c / I_{or}. Specifies E_c / I_{or} when TTI is active.</u>
<u>HS-SCCH-2</u> E_c / I_{or}	<u>dB</u>		
<u>HS-SCCH-3</u> E_c / I_{or}	<u>dB</u>		
<u>HS-SCCH-4</u> E_c / I_{or}	<u>dB</u>		
<u>OCNS</u> E_c / I_{or}	<u>dB</u>	<u>Remaining power at Node-B (including HS-SCCH power allocation when HS-SCCH's inactive).</u>	<u>OCNS interference consists of 6 dedicated data channels as specified in table C.10.</u>

C.5.2 OCNS Definition

The selected channelization codes and relative power levels for OCNS transmission during for HSDPA performance assessment are defined in Table C.10. The selected codes are designed to have a single length-16 parent code.

Table C.10: OCNS definition for HSDPA receiver testing.

Channelization Code at SF=128	Relative Level setting (dB)	DPCH Data
2	-6	The DPCH data for each channelization code shall be uncorrelated with each other and with any wanted signal over the period of any measurement.
3	-8	
4	-8	
5	-10	
6	-7	
7	-9	

Paris, France 19 - 23 May, 2003

CR-Form-v7

CHANGE REQUEST⌘ **25.101 CR 259** ⌘ 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 Radio Access Network Core Network

Title:	⌘ Specification of HSDPA CQI test in fading		
Source:	⌘ RAN WG4		
Work item code:	⌘ HSDPA-RF	Date:	⌘ 27/05/2003
Category:	⌘ F	Release:	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)	R96	(GSM Phase 2)
	A (corresponds to a correction in an earlier release)	R97	(Release 1996)
	B (addition of feature),	R98	(Release 1997)
	C (functional modification of feature)	R99	(Release 1998)
	D (editorial modification)	Rel-4	(Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900 .	Rel-5	(Release 4)
		Rel-6	(Release 5)
			(Release 6)

Reason for change:	⌘ The required HSDPA CQI accuracy tests in fading are not specified. The tests are essential to ensure consistent operation of CQI reporting across all UEs.
Summary of change:	⌘ Test cases and requirements for CQI accuracy test in fading conditions are added. A new propagation channel model – Case 8 – is defined with the same power profile as Case 1 but with a doppler velocity of 30 kmph.
Consequences if not approved:	⌘ HSDPA CQI performance requirements in fading are not specified, and resulting HSPDA performance specifications are incomplete.

Clauses affected:	⌘ B.2.2, C.5										
Other specs affected:	<table border="1"> <tr> <td>Y</td> <td>N</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> </table>	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other core specifications	⌘
Y	N										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
		Test specifications									
		O&M Specifications									
Other comments:	⌘ Equivalent CRs in other Releases: CR260 cat. A to 25.101 v6.0.0										

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>.

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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.

9.X Reporting of Channel Quality Indicator in Fading Channel Conditions

The reporting accuracy of the channel quality indicator (CQI) under fading environments is determined by the BLER performance using the transport format indicated by the reported CQI median.

The specified requirements may be subject to further simulations to verify assumptions.

9.X.1 Minimum Requirement – UE capability categories 1-6

For the parameters specified in Table 9.x, the requirements are specified in terms of maximum BLERs at particular reported CQIs when transmitting a fixed transport format given by the CQI median as shown in Table 9.y. The BLER at a particular reported CQI is obtained by associating a particular CQI reference measurement period with HS-PDSCH subframe overlapping with the end of this CQI reference measurement period and calculating the fraction of erroneous HS-PDSCH subframes.

Table 9.x: Test Parameters for CQI test in fading: categories 1-6

Parameter	Unit	Test 1	Test 2
HS-PDSCH $E_c / I_{or} (*)$	dB	-8	-4
\hat{I}_{or} / I_{oc}	dB	0	5
I_{oc}	DBm/3.84 MHz	-60	
Phase reference	-	P-CPICH	
HS-SCCH 1 E_c / I_{or}	dB	-8.5	
DPCH E_c / I_{or}	dB	-6	
Maximum number of H-ARQ transmission	-	1	
Number of HS-SCCH set to be monitored	-	1	
CQI feedback cycle	ms	2	
CQI repetition factor	-	1	
HS-DSCH transmission pattern	-	“...XOOXOOX...” to incorporate inter-TTI=3 UEs, where “X” indicates TTI in which HS-PDSCH is allocated to the UE, and “O” indicates DTX	
Propagation Channel		Case 8	
Note1: Measurement power offset “T” is configured by RRC accordingly Note2: TF for HS-PDSCH is configured according to the reported CQI statistics. TF based on median CQI is used. Other physical channel parameters are configured according to the CQI mapping table described in TS25.214			

Table 9.y: Minimum requirement for CQI test in fading for categories 1-6

Reported CQI	Maximum BLER	
	Test 1	Test2
CQI median	60%	60%
CQI median + 3	15%	15%

9.X.2 Minimum Requirement – UE capability categories 11,12

For the parameters specified in Table 9.a, , the requirements are specified in terms of BLERs at particular reported CQIs when a fixed transport format given by CQI median as shown in Table 9.b. The BLER at a particular reported CQI is

obtained by associating a particular CQI reference measurement period with HS-PDSCH subframe overlapping with the end of this CQI reference measurement period and calculating the fraction of erroneous HS-PDSCH subframes.

Table 9.a: Test Parameters for CQI test in fading: categories 11-12

<u>Parameter</u>	<u>Unit</u>	<u>Test 1</u>
<u>HS-PDSCH E_c / I_{or} (*)</u>	<u>dB</u>	<u>-8</u>
<u>\hat{I}_{or} / I_{oc}</u>	<u>dB</u>	<u>0</u>
<u>I_{oc}</u>	<u>dBm/3.84 MHz</u>	<u>-60</u>
<u>Phase reference</u>	<u>-</u>	<u>P-CPICH</u>
<u>HS-SCCH 1 E_c / I_{or}</u>	<u>dB</u>	<u>-8.5</u>
<u>DPCH E_c / I_{or}</u>	<u>dB</u>	<u>-6</u>
<u>Maximum number of H-ARQ transmission</u>	<u>-</u>	<u>1</u>
<u>Number of HS-SCCH set to be monitored</u>	<u>-</u>	<u>1</u>
<u>CQI feedback cycle</u>	<u>ms</u>	<u>2</u>
<u>CQI repetition factor</u>	<u>-</u>	<u>1</u>
<u>HS-DSCH transmission pattern</u>	<u>-</u>	<u>“...XOOXOO...” to incorporate inter-TTI=3 UEs, where “X” indicates TTI in which HS-PDSCH is allocated to the UE, and “O” indicates DTX</u>
<u>Propagation Channel</u>		<u>Case 8</u>
<u>Note1: Measurement power offset “T” is configured by RRC accordingly</u> <u>Note2: TF for HS-PDSCH is configured according to the reported CQI statistics. TF based on median CQI is used. Other physical channel parameters are configured according to the CQI mapping table described in TS25.214</u>		

Table 9.y: Minimum requirement for CQI test in fading for categories 11-12

<u>Reported CQI</u>	<u>Maximum BLER</u>
	<u>Test 1</u>
<u>CQI median</u>	<u>60%</u>
<u>CQI median + 3</u>	<u>15%</u>

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B.2 Propagation Conditions

B.2.1 Static propagation condition

The propagation for the static performance measurement is an Additive White Gaussian Noise (AWGN) environment. No fading and multi-paths exist for this propagation model.

B.2.2 Multi-path fading propagation conditions

Table B1 shows propagation conditions that are used for the performance measurements in multi-path fading environment. All taps have classical Doppler spectrum.

Table B.1: Propagation Conditions for Multi path Fading Environments (Cases 1 to 6)

Case 1, speed 3km/h		Case 2, speed 3 km/h		Case 3, Speed 120 km/h		Case 4, speed 3 km/h		* Case 5, speed 50 km/h		Case 6, Speed 250 km/h	
Relative Delay [ns]	Relative mean Power [dB]	Relative Delay [ns]	Relative mean Power [dB]	Relative Delay [ns]	Relative mean Power [dB]	Relative Delay [ns]	Relative mean Power [dB]	Relative Delay [ns]	Relative mean Power [dB]	Relative Delay [ns]	Relative mean Power [dB]
0	0	0	0	0	0	0	0	0	0	0	0
976	-10	976	0	260	-3	976	0	976	-10	260	-3
		20000	0	521	-6					521	-6
				781	-9					781	-9

NOTE: Case 5 is only used in TS25.133.

Table B.1A shows propagation conditions that are used for the performance measurements in multi-path environment when UE is informed by higher layer signalling that only DPCCH exists for channel estimation. All taps have classical Doppler spectrum. Taps are normalized to the strongest tap in the beam/sector. The actual power relation between the sector and the beam is determined by the test case.

Table B.1A: Propagation Conditions for Multi path Fading Environments (Case 7)

Case 7, speed 50 km/h		
Relative Delay [ns]	Average Power [dB]	
	Sector	Beam
0	0.0	-
260	-4.3	-
1040	-6.6	-
4690	-2.0	0.0
7290	-7.0	-0.3
14580	-7.5	-0.9

Table B.1B shows propagation conditions that are used for HSDPA performance measurements in multi-path fading environment.

Table B.1B: Propagation Conditions for Multi-Path Fading Environments for HSDPA Performance Requirements

ITU Pedestrian A Speed 3km/h (PA3)		ITU Pedestrian B Speed 3km/h (PB3)		ITU vehicular A Speed 30km/h (VA30)		ITU vehicular A Speed 120km/h (VA120)	
Relative Delay [ns]	Relative Mean Power [dB]	Relative Delay [ns]	Relative Mean Power [dB]	Relative Delay [ns]	Relative Mean Power [dB]	Relative Delay [ns]	Relative Mean Power [dB]
0	0	0	0	0	0	0	0
110	-9.7	200	-0.9	310	-1.0	310	-1.0
190	-19.2	800	-4.9	710	-9.0	710	-9.0
410	-22.8	1200	-8.0	1090	-10.0	1090	-10.0
		2300	-7.8	1730	-15.0	1730	-15.0
		3700	-23.9	2510	-20.0	2510	-20.0

Note: The propagation conditions used in simulations were based on the TR 25.890. The effect of re-mapping of channel rays to integer sample locations is FFS.

[Table B.1C shows propagation conditions that are used for CQI test in multi-path fading](#)

[Table B.1C: Propagation Conditions for CQI test in multi-path fading](#)

Case 8, speed 30km/h	
Relative Delay [ns]	Relative mean Power [dB]
0	0
976	-10

C.5 HSDPA DL Physical channels

C.5.1 Downlink Physical Channels connection set-up

Table C.8 is applicable for the measurements for tests in subclause 9.2.1- [and 9.X](#). Table C.9 is applicable for the measurements for tests in subclause 9.2.2.

Table C.8: Downlink physical channels for HSDPA receiver testing for Single Link performance.

Physical Channel	Parameter	Value	Note
P-CPICH	P-CPICH_Ec/Ior	-10dB	
P-CCPCH	P-CCPCH_Ec/Ior	-12dB	Mean power level is shared with SCH.
SCH	SCH_Ec/Ior	-12dB	Mean power level is shared with P-CCPCH – SCH includes P- and S-SCH, with power split between both. P-SCH code is S_dl,0 as per TS25.213 S-SCH pattern is scrambling code group 0
PICH	PICH_Ec/Ior	-15dB	
DPCH	DPCH_Ec/Ior	Test-specific	12.2 kbps DL reference measurement channel as defined in Annex A.3.1
HS-SCCH_1	HS-SCCH_Ec/Ior	Test-specific	Specifies fraction of Node-B radiated power transmitted when TTI is active (i.e. due to minimum inter-TTI interval).
HS-SCCH_2	HS-SCCH_Ec/Ior	DTX'd	No signalling scheduled, or power radiated, on this HS-SCCH, but signalled to the UE as present.
HS-SCCH_3	HS-SCCH_Ec/Ior	DTX'd	As HS-SCCH_2.
HS-SCCH_4	HS-SCCH_Ec/Ior	DTX'd	As HS-SCCH_2.
HS-PDSCH	HS-PDSCH_Ec/Ior	Test-specific	.
OCNS		Necessary power so that total transmit power spectral density of Node B (Ior) adds to one	OCNS interference consists of 6 dedicated data channels as specified in table C.10.

Table C.9: Downlink physical channels for HSDPA receiver testing for Open Loop Diversity performance.

Void

C.5.2 OCNS Definition

The selected channelization codes and relative power levels for OCNS transmission during for HSDPA performance assessment are defined in Table C.10. The selected codes are designed to have a single length-16 parent code.

Table C.10: OCNS definition for HSDPA receiver testing.

Channelization Code at SF=128	Relative Level setting (dB)	DPCH Data
2	-6	The DPCH data for each channelization code shall be uncorrelated with each other and with any wanted signal over the period of any measurement.
3	-8	
4	-8	
5	-10	
6	-7	
7	-9	

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Paris, France 19 - 23 May, 2003

CR-Form-v7

CHANGE REQUEST⌘ **25.101 CR 260** ⌘ rev ⌘ Current version: **6.0.0** ⌘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:	⌘ Specification of HSDPA CQI test in fading		
Source:	⌘ RAN WG4		
Work item code:	⌘ HSDPA-RF	Date:	⌘ 27/05/2003
Category:	⌘ A	Release:	⌘ Rel-6
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)	R96	2 (GSM Phase 2)
	A (corresponds to a correction in an earlier release)	R97	(Release 1996)
	B (addition of feature),	R98	(Release 1997)
	C (functional modification of feature)	R99	(Release 1998)
	D (editorial modification)	Rel-4	(Release 1999)
	Detailed explanations of the above categories can	Rel-5	(Release 4)
	be found in 3GPP TR 21.900 .	Rel-6	(Release 5)
			(Release 6)

Reason for change:	⌘ The required HSDPA CQI accuracy tests in fading are not specified. The tests are essential to ensure consistent operation of CQI reporting across all UEs.
Summary of change:	⌘ Test cases and requirements for CQI accuracy test in fading conditions are added. A new propagation channel model – Case 8 – is defined with the same power profile as Case 1 but with a doppler velocity of 30 kmph.
Consequences if not approved:	⌘ HSDPA CQI performance requirements in fading are not specified, and resulting HSPDA performance specifications are incomplete.

Clauses affected:	⌘ B.2.2, C.5										
Other specs affected:	<table border="1"> <tr> <td>Y</td> <td>N</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> </table>	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other core specifications	⌘
Y	N										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
		Test specifications									
		O&M Specifications									
Other comments:	⌘ Equivalent CRs in other Releases: CR259 cat. F to 25.101 v5.6.0										

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.

9.X Reporting of Channel Quality Indicator in Fading Channel Conditions

The reporting accuracy of the channel quality indicator (CQI) under fading environments is determined by the BLER performance using the transport format indicated by the reported CQI median.

The specified requirements may be subject to further simulations to verify assumptions.

9.X.1 Minimum Requirement – UE capability categories 1-6

For the parameters specified in Table 9.x, the requirements are specified in terms of maximum BLERs at particular reported CQIs when transmitting a fixed transport format given by the CQI median as shown in Table 9.y. The BLER at a particular reported CQI is obtained by associating a particular CQI reference measurement period with HS-PDSCH subframe overlapping with the end of this CQI reference measurement period and calculating the fraction of erroneous HS-PDSCH subframes.

Table 9.x: Test Parameters for CQI test in fading: categories 1-6

Parameter	Unit	Test 1	Test 2
HS-PDSCH $E_c / I_{or} (*)$	dB	-8	-4
\hat{I}_{or} / I_{oc}	dB	0	5
I_{oc}	DBm/3.84 MHz	-60	
Phase reference	-	P-CPICH	
HS-SCCH 1 E_c / I_{or}	dB	-8.5	
DPCH E_c / I_{or}	dB	-6	
Maximum number of H-ARQ transmission	-	1	
Number of HS-SCCH set to be monitored	-	1	
CQI feedback cycle	ms	2	
CQI repetition factor	-	1	
HS-DSCH transmission pattern	-	“...XOOXOOX...” to incorporate inter-TTI=3 UEs, where “X” indicates TTI in which HS-PDSCH is allocated to the UE, and “O” indicates DTX	
Propagation Channel		Case 8	
Note1: Measurement power offset “T” is configured by RRC accordingly Note2: TF for HS-PDSCH is configured according to the reported CQI statistics. TF based on median CQI is used. Other physical channel parameters are configured according to the CQI mapping table described in TS25.214			

Table 9.y: Minimum requirement for CQI test in fading for categories 1-6

Reported CQI	Maximum BLER	
	Test 1	Test2
CQI median	60%	60%
CQI median + 3	15%	15%

9.X.2 Minimum Requirement – UE capability categories 11,12

For the parameters specified in Table 9.a, , the requirements are specified in terms of BLERs at particular reported CQIs when a fixed transport format given by CQI median as shown in Table 9.b. The BLER at a particular reported CQI is

obtained by associating a particular CQI reference measurement period with HS-PDSCH subframe overlapping with the end of this CQI reference measurement period and calculating the fraction of erroneous HS-PDSCH subframes.

Table 9.a: Test Parameters for CQI test in fading: categories 11-12

<u>Parameter</u>	<u>Unit</u>	<u>Test 1</u>
<u>HS-PDSCH E_c / I_{or} (*)</u>	<u>dB</u>	<u>-8</u>
<u>\hat{I}_{or} / I_{oc}</u>	<u>dB</u>	<u>0</u>
<u>I_{oc}</u>	<u>dBm/3.84 MHz</u>	<u>-60</u>
<u>Phase reference</u>	<u>-</u>	<u>P-CPICH</u>
<u>HS-SCCH 1 E_c / I_{or}</u>	<u>dB</u>	<u>-8.5</u>
<u>DPCH E_c / I_{or}</u>	<u>dB</u>	<u>-6</u>
<u>Maximum number of H-ARQ transmission</u>	<u>-</u>	<u>1</u>
<u>Number of HS-SCCH set to be monitored</u>	<u>-</u>	<u>1</u>
<u>CQI feedback cycle</u>	<u>ms</u>	<u>2</u>
<u>CQI repetition factor</u>	<u>-</u>	<u>1</u>
<u>HS-DSCH transmission pattern</u>	<u>-</u>	<u>“...XOOXOOX...” to incorporate inter-TTI=3 UEs, where “X” indicates TTI in which HS-PDSCH is allocated to the UE, and “O” indicates DTX</u>
<u>Propagation Channel</u>		<u>Case 8</u>
<u>Note1: Measurement power offset “T” is configured by RRC accordingly</u> <u>Note2: TF for HS-PDSCH is configured according to the reported CQI statistics. TF based on median CQI is used. Other physical channel parameters are configured according to the CQI mapping table described in TS25.214</u>		

Table 9.y: Minimum requirement for CQI test in fading for categories 11-12

<u>Reported CQI</u>	<u>Maximum BLER</u>
	<u>Test 1</u>
<u>CQI median</u>	<u>60%</u>
<u>CQI median + 3</u>	<u>15%</u>

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B.2 Propagation Conditions

B.2.1 Static propagation condition

The propagation for the static performance measurement is an Additive White Gaussian Noise (AWGN) environment. No fading and multi-paths exist for this propagation model.

B.2.2 Multi-path fading propagation conditions

Table B1 shows propagation conditions that are used for the performance measurements in multi-path fading environment. All taps have classical Doppler spectrum.

Table B.1: Propagation Conditions for Multi path Fading Environments (Cases 1 to 6)

Case 1, speed 3km/h		Case 2, speed 3 km/h		Case 3, Speed 120 km/h		Case 4, speed 3 km/h		* Case 5, speed 50 km/h		Case 6, Speed 250 km/h	
Relative Delay [ns]	Relative mean Power [dB]	Relative Delay [ns]	Relative mean Power [dB]	Relative Delay [ns]	Relative mean Power [dB]	Relative Delay [ns]	Relative mean Power [dB]	Relative Delay [ns]	Relative mean Power [dB]	Relative Delay [ns]	Relative mean Power [dB]
0	0	0	0	0	0	0	0	0	0	0	0
976	-10	976	0	260	-3	976	0	976	-10	260	-3
		20000	0	521	-6					521	-6
				781	-9					781	-9

NOTE: Case 5 is only used in TS25.133.

Table B.1A shows propagation conditions that are used for the performance measurements in multi-path environment when UE is informed by higher layer signalling that only DPCCH exists for channel estimation. All taps have classical Doppler spectrum. Taps are normalized to the strongest tap in the beam/sector. The actual power relation between the sector and the beam is determined by the test case.

Table B.1A: Propagation Conditions for Multi path Fading Environments (Case 7)

Case 7, speed 50 km/h		
Relative Delay [ns]	Average Power [dB]	
	Sector	Beam
0	0.0	-
260	-4.3	-
1040	-6.6	-
4690	-2.0	0.0
7290	-7.0	-0.3
14580	-7.5	-0.9

Table B.1B shows propagation conditions that are used for HSDPA performance measurements in multi-path fading environment.

Table B.1B: Propagation Conditions for Multi-Path Fading Environments for HSDPA Performance Requirements

ITU Pedestrian A Speed 3km/h (PA3)		ITU Pedestrian B Speed 3km/h (PB3)		ITU vehicular A Speed 30km/h (VA30)		ITU vehicular A Speed 120km/h (VA120)	
Relative Delay [ns]	Relative Mean Power [dB]	Relative Delay [ns]	Relative Mean Power [dB]	Relative Delay [ns]	Relative Mean Power [dB]	Relative Delay [ns]	Relative Mean Power [dB]
0	0	0	0	0	0	0	0
110	-9.7	200	-0.9	310	-1.0	310	-1.0
190	-19.2	800	-4.9	710	-9.0	710	-9.0
410	-22.8	1200	-8.0	1090	-10.0	1090	-10.0
		2300	-7.8	1730	-15.0	1730	-15.0
		3700	-23.9	2510	-20.0	2510	-20.0

Note: The propagation conditions used in simulations were based on the TR 25.890. The effect of re-mapping of channel rays to integer sample locations is FFS.

[Table B.1C shows propagation conditions that are used for CQI test in multi-path fading](#)

[Table B.1C: Propagation Conditions for CQI test in multi-path fading](#)

Case 8, speed 30km/h	
Relative Delay [ns]	Relative mean Power [dB]
0	0
976	-10

C.5 HSDPA DL Physical channels

C.5.1 Downlink Physical Channels connection set-up

Table C.8 is applicable for the measurements for tests in subclause 9.2.1- [and 9.X](#). Table C.9 is applicable for the measurements for tests in subclause 9.2.2.

Table C.8: Downlink physical channels for HSDPA receiver testing for Single Link performance.

Physical Channel	Parameter	Value	Note
P-CPICH	P-CPICH_Ec/Ior	-10dB	
P-CCPCH	P-CCPCH_Ec/Ior	-12dB	Mean power level is shared with SCH.
SCH	SCH_Ec/Ior	-12dB	Mean power level is shared with P-CCPCH – SCH includes P- and S-SCH, with power split between both. P-SCH code is S_dl,0 as per TS25.213 S-SCH pattern is scrambling code group 0
PICH	PICH_Ec/Ior	-15dB	
DPCH	DPCH_Ec/Ior	Test-specific	12.2 kbps DL reference measurement channel as defined in Annex A.3.1
HS-SCCH_1	HS-SCCH_Ec/Ior	Test-specific	Specifies fraction of Node-B radiated power transmitted when TTI is active (i.e. due to minimum inter-TTI interval).
HS-SCCH_2	HS-SCCH_Ec/Ior	DTX'd	No signalling scheduled, or power radiated, on this HS-SCCH, but signalled to the UE as present.
HS-SCCH_3	HS-SCCH_Ec/Ior	DTX'd	As HS-SCCH_2.
HS-SCCH_4	HS-SCCH_Ec/Ior	DTX'd	As HS-SCCH_2.
HS-PDSCH	HS-PDSCH_Ec/Ior	Test-specific	.
OCNS		Necessary power so that total transmit power spectral density of Node B (Ior) adds to one	OCNS interference consists of 6 dedicated data channels as specified in table C.10.

Table C.9: Downlink physical channels for HSDPA receiver testing for Open Loop Diversity performance.

Void

C.5.2 OCNS Definition

The selected channelization codes and relative power levels for OCNS transmission during for HSDPA performance assessment are defined in Table C.10. The selected codes are designed to have a single length-16 parent code.

Table C.10: OCNS definition for HSDPA receiver testing.

Channelization Code at SF=128	Relative Level setting (dB)	DPCH Data
2	-6	The DPCH data for each channelization code shall be uncorrelated with each other and with any wanted signal over the period of any measurement.
3	-8	
4	-8	
5	-10	
6	-7	
7	-9	

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