# TSG RAN Meeting #22 Maui, Hawaii, US, 9 - 12 December 2003

RP-030608

Title CRs (Rel-6) to TS 25.101 for HSDPA

Source TSG RAN WG4

Agenda Item 8.10

RAN4 Tdoc	Spec	CR	R	Cat	Rel	Curr Ver	Title	Work Item
R4-030918	25.101	281		F	Rel-6	6.2.0	Specification of HSDPA FRC Performance for H-Set 6	HSDPA-RF
R4-031104	25.101	282	1	F	Rel-6	6.2.0	Specification of HS-SCCH Performance with Open Loop Transmit Diversity	HSDPA-RF
R4-031107	25.101	284	1	F	Rel-6	6.2.0	Specification of CQI Testing for UE Capability Categories 11, 12 and 1-6 in Open and Closed Loop Transmit Diversities	HSDPA-RF
R4-031108	25.101	285	1	F	Rel-6	6.2.0	Specification of CQI Testing for UE Capability Categories 7 and 8	HSDPA-RF

# 3GPP TSG RAN WG4 (Radio) Meeting #29

R4-030918

San Diego, USA 17 - 21 November 2003

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Title:	Specifica	tion of HSDPA F	RC Performance	for H-Set 6				
Source: #	RAN WG	4						
Work item code: 第	HSDPA-I	RF		Date	e: 第 <mark>_26/11/200</mark>	13		
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3)	<ol> <li>With "track changes" disabled, paste the clause containing the first piece the change request.</li> </ol>	e the entire CR fo of changed text.	orm (use CTRL-A to Delete those parts	select it) into the specif of the specification whic	ication just in front of th are not relevant to

### 9.2.1.4 Minimum requirement QPSK, Fixed Reference Channel (FRC) H-Set 6

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.7.1.6.

Table 9.a Test Parameters for Testing QPSK FRCs H-Set 6

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

Table 9.b Minimum requirement QPSK, Fixed Reference Channel (FRC) H-Set 6

Test	<b>Propagation</b>	Reference value			
Number	Conditions	$\frac{\text{HS-PDSCH}}{E_c/I_{or}}$ (dB)	$\frac{\text{T-put } R \text{ (kbps) *}}{\hat{I}_{or} / I_{oc}} = \frac{10 \text{ dB}}{}$		
1	PA3	<u>-6</u>	<u>1407</u>		
	<u>1 A3</u>	<u>-3</u>	<u>2090</u>		

### 9.2.1.5 Minimum requirement 16QAM, Fixed Reference Channel (FRC) H-Set 6

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.7.1.6.

Table 9.c Test Parameters for Testing 16-QAM FRCs H-Set 6

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

Table 9.d Minimum requirement 16QAM, Fixed Reference Channel (FRC) H-Set 6

<u>Test</u>	<b>Propagation</b>	Reference value			
<u>Number</u>	<u>Conditions</u>	HS-PDSCH	T-put R (kbps) *		
		$E_c/I_{or}$ (dB)	$\hat{I}_{or}/I_{oc} = 10 \text{ dB}$		
1	PA3	<u>-6</u>	<u>887</u>		
	FAS	<u>-3</u>	<u>1664</u>		

## A.7.1.6 Fixed Reference Channel Definition H-Set 6

Table A.30: Fixed Reference Channel H-Set 6

<u>Parameter</u>	<u>Unit</u>	<u>Va</u>	lue
Nominal Avg. Inf. Bit Rate	kbps	<u>3219</u>	<u>4689</u>
Inter-TTI Distance	TTI's	<u>1</u>	<u>1</u>
Number of HARQ Processes	Proces	<u>6</u>	<u>6</u>
	<u>ses</u>	<u> </u>	<u> </u>
Information Bit Payload ( N <sub>INF</sub> )	<u>Bits</u>	<u>6438</u>	<u>9377</u>
Number Code Blocks	Blocks	<u>2</u>	<u>2</u>
Binary Channel Bits Per TTI	<u>Bits</u>	<u>9600</u>	<u>15360</u>
Total Available SML's in UE	SML's	<u>115200</u>	<u>115200</u>
Number of SML's per HARQ Proc.	SML's	19200	19200
Coding Rate		0.67	<u>0.61</u>
Number of Physical Channel Codes	<u>Codes</u>	<u>10</u>	<u>8</u>
<u>Modulation</u>		<u>QPSK</u>	<u>16QAM</u>

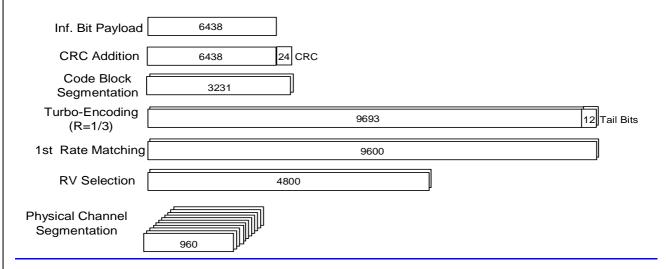


Figure A.20: Coding rate for Fixed reference Channel H-Set 6 (QPSK)

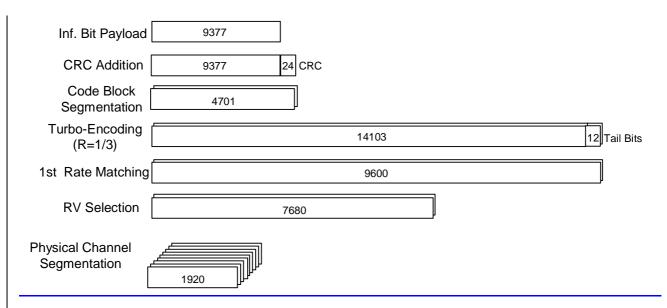


Figure A.21: Coding rate for Fixed reference Channel H-Set 6 (16 QAM)

# 3GPP TSG RAN WG4 (Radio) Meeting #29

R4-031104

San Diego, USA 17 - 21 November 2003

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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

# 9.4 HS-SCCH Detection Performance

The detection performance of the HS-SCCH is determined by the probability of event  $E_{\rm m}$ , 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  $E_{\rm m}$  is denoted  $P(E_{\rm m})$ .

## 9.4.1 Single Link Performance Minimum Requirements

For the test parameters specified in Table 9.29, for each value of HS-SCCH-1  $E_c/I_{or}$  specified in Table 9.30 the measured  $P(E_m)$  shall be less than or equal to the corresponding specified value of  $P(E_m)$ .

Table 9.29: Test parameters for HS-SCCH detection

Parameter	Unit	Test 1	Test 2	Test 3	
$I_{oc}$	dBm/3.84		-60	•	
θε	MHz				
Phase reference	-	P-CPICH			
P-CPICH $^{E_c/I_{or}}$ (*)	dB	-10			
HS-SCCH UE Identity		HS-SCCH-1: 1010101010101010			
$(x_{ue,1}, x_{ue,2},, x_{ue,16})$		(UE under test addressed solely via HS-SCCH-1)			
( ue,1 / ue,2 / / ue,10 /		HS-SCCI	H-2: 00010010101	01010	
		HS-SCCH-3: 0001101010101010			
		HS-SCCI	H-4: 00011111101	01010	
HS-DSCH TF of UE1		TF corresponding to CQI1			
HS-SCCH-1 TTI -		"XOOXOOX", where "X" indicates TTI in which HS-			
Transmission Pattern		SCCH-1 signals the UE, and "O" indicates no signalling			

Table 9.30: Minimum requirement for HS-SCCH detection

Test	Propagation		Reference value					
Number	Conditions	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				

### 9.4.2 Open Loop Diversity Performance

For the test parameters specified in Table 9.31, for each value of HS-SCCH-1  $E_c/I_{or}$  specified in Table 9.32 the measured  $P(E_m)$  shall be less than or equal to the corresponding specified value of  $P(E_m)$ .

Table 9.31: Test parameters for HS-SCCH detection

<u>Parameter</u>	<u>Unit</u>	Test 1	Test 2	Test 3		
$I_{oc}$	dBm/3.84	-60				
	MHz					
Phase reference	_		P-CPICH			
P-CPICH $E_c/I_{or}$ (*)	<u>dB</u>		<u>-10</u>			
HS-SCCH UE Identity		HS-SCCH	I-1: 1010101010101	<u> </u>		
$(x_{ue,1}, x_{ue,2},, x_{ue,16})$		(UE under test addressed solely via HS-SCCH-1)				
<u>ue,12 ue,2 ue,16 2</u>		HS-SCCH	I-2: 000100101010	<u>01010</u>		
		HS-SCCH	<u>l-3: 00011010101</u>	<u>01010</u>		
		HS-SCCH	<u>l-4: 00011111101(</u>	<u>01010</u>		
HS-DSCH TF of UE1		TF cor	responding to CQ	<u> 11</u>		
HS-SCCH-1 TTI	<u>=</u>	<u>"XOOXOOX", w</u>	here "X" indicates	TTI in which HS-		
Transmission Pattern		SCCH-1 signals the	UE, and "O" indica	ites no signalling		

Table 9.32: Minimum requirement for HS-SCCH detection

Test	<b>Propagation</b>	Reference value				
Number	Conditions	$\frac{\text{HS-SCCH-1}}{E_c/I_{or} \text{ (dB)}}$	$\hat{I}_{or}/I_{oc}$ (dB)	$P(E_m)$		
<u>1</u>	PA3	<u>-11.6</u>	<u>0</u>	<u>0.05</u>		
<u>2</u>	<u>PA3</u>	<u>-13.4</u>	<u>5</u>	<u>0.01</u>		
3	VA30	-11.5	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 and 9.3. 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.11 is applicable for the measurements for tests in subclause 9.4.19.4. Table C.a is applicable for the measurements in subclause 9.4.2

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

<u>Parameter</u>	<u>Units</u>	<u>Value</u>	Comment
$\underline{\text{P-CPICH}}  \underline{E_c / I_{or}}  \underline{\text{(antenna 1)}}$	<u>dB</u>	<u>-13</u>	1. Total P-CPICH $E_c/I_{or}$ = -10dB
$\underline{\text{P-CPICH}}  \underline{E_c  /  I_{or}   (\text{antenna 2})}$	<u>dB</u>	<u>-13</u>	Letter Strong Ect for 1905
P-CCPCH $E_c/I_{or}$ (antenna 1)	<u>dB</u>	<u>-15</u>	1. STTD applied
P-CCPCH $E_c/I_{or}$ (antenna 2)	<u>dB</u>	<u>-15</u>	$2. \text{ Total P-CCPCH} E_c / I_{or} = -12dB$
SCH $E_c/I_{or}$ (antenna 1/2)	<u>dB</u>	<u>-12</u>	1. TSTD applied 2. Mean power level is shared with P-CCPCH – SCH includes P- and S-SCH, with power split between both. 3. P-SCH code is S_dl,0 as per TS25.213 4. S-SCH pattern is scrambling code group 0
PICH $E_c/I_{or}$ (antenna 1)	<u>dB</u>	<u>-15</u>	1. STTD applied
$\underline{PICH}  \overline{E_c / I_{or}}   \underline{(antenna 2)}$	<u>dB</u>	<u>-15</u>	$2. \text{ Total PICH} E_c / I_{or} = -12 \text{dB}$
$\underline{HS\text{-DSCH\text{-}1}}E_c/I_{or}$	<u>dB</u>	<u>-10</u>	1. STTD applied 2. HS-DSCH assoc. with HS-SCCH-1
$\underline{HS\text{-DSCH\text{-}2}}\underline{E_c/I_{or}}$	<u>dB</u>	DTX	1. STTD applied 2. HS-DSCH assoc. with HS-SCCH-2
$\underline{HS\text{-DSCH\text{-}3}}\underline{E_c/I_{or}}$	<u>dB</u>	DTX	1. STTD applied 2. HS-DSCH assoc. with HS-SCCH-3
$\underline{HS\text{-DSCH\text{-}4}}\underline{E_c/I_{or}}$	<u>dB</u>	DTX	1. STTD applied 2. HS-DSCH assoc. with HS-SCCH-4
$\underline{DPCH}_{E_c/I_{or}}$	<u>dB</u>	<u>-8</u>	1. STTD applied 2. 12.2 kbps DL reference measurement channel as defined in Annex A.3.1
$\underline{HS\text{-SCCH1}}E_c/I_{or}$	<u>dB</u>		
$\underline{HS\text{-SCCH\text{-}2}}\overline{E_c/I_{or}}$	<u>dB</u>	T	
$\overline{HS\text{-SCCH ext{-}3}}\overline{E_c/I_{or}}$	<u>dB</u>	Test Specific	3. Specifies $E_c/I_{or}$ when TTI is active.
$\underline{HS\text{-SCCH\text{-}4}}\overline{E_c/I_{or}}$	<u>dB</u>		
$\frac{\text{OCNS}}{E_c/I_{or}}$	<u>dB</u>	Remaining power at Node-B (including HS- SCCH power allocation when HS- SCCH's inactive).	1. STTD applied 2. OCNS interference consists of 6 dedicated data channels as specified in table C.10. 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
3	-8	channelization code shall be
4	-8	uncorrelated with each other and
5	-10	with any wanted signal over the
6	-7	period of any measurement.
7	-9	

# 3GPP TSG RAN WG4 (Radio) Meeting #29

R4-031107

San Diego, USA 17 - 21 November 2003

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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.

# 9.3 Reporting of Channel Quality Indicator

## 9.3.1 AWGN propagation conditions Single Link Performance

### 9.3.1.1 AWGN propagation conditions

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.

9.3.1.1.1 Minimum Requirement - UE capability categories 1-69.3.1.1 Minimum Requirement - UE capability categories 1-6

For the parameters specified in Table 9.23, the reported CQI value shall be in the range of  $\pm$ 0 of the reported median more than 90% of the time. If the HS-PDSCH (BLER) using transport format indicated by median CQI is less than 0.1, BLER using transport format indicated by (median CQI  $\pm$ 2) shall be larger than 0.1. If the HS-PDSCH (BLER) using transport format indicated by median CQI is larger than 0.1, BLER using transport format indicated by (median CQI  $\pm$ 1) shall be less than 0.1.

Table 9.23: 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		
$HS ext{-}PDSCHE_c/I_{or}(^*)$	dB		-3		
HS-SCCH_1 $E_c/I_{or}$	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 "Γ" is configured by RRC accordingly and as defined in [7]  Note2: TF for HS-PDSCH is configured according to the reported CQI statistics. TF					
based on mediar	based on median CQI, median CQI -1, median CQI+2 are used. Other physical channel parameters are configured according to the CQI maping table described				

9.3.1.1.2 Minimum Requirement - UE capability categories 11, 129.3.1.2 Minimum Requirement - UE capability categories 11, 12

For the parameters specified in Table 9.24, 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 (BLER) using transport format indicated by median CQI is less than

0.1, BLER using transport format indicated by (median CQI +2) shall be larger than 0.1. If the HS-PDSCH (BLER) using transport format indicated by median CQI is larger than 0.1, BLER using transport format indicated by (median CQI -1) shall be less than 0.1.

Table 9.24: Test Parameter for CQI: categories 11,12

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	
$HS ext{-}PDSCHE_c/I_{or}(^*)$	dB		-3	
HS-SCCH_1 $E_c/I_{or}$	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 "Γ" is configured by RRC accordingly and as d				and as defined
in [7]  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 maping table described in TS25.214				

### 9.3.1.2 Fading propagation conditions 9.3.2 Fading propagation 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.

9.3.1.2.1 Minimum Requirement - UE capability categories 1-69.3.2.1 Minimum Requirement - UE capability categories 1-6

Table 9.25: Test Parameters for CQI test in fading: categories 1-6

Parameter	Unit	Test 1	Test 2	
$HS ext{-}PDSCHE_c/I_{or}(^*)$	dB	-8	-4	
$\hat{I}_{or}$ / $I_{oc}$	dB	0	5	
$I_{oc}$	dBm/3.84 MHz	-60		
Phase reference	-	P-CF	PICH	
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		Cas	se 8	
Note1: Measurement power offset "\Gamma" is configured by RRC accordingly and as defined in [7]  Note2: TF for HS-PDSCH is configured according to the reported CQI statistics.				
Thorace. The form beginning to the reported our statistics.				

TF based on median CQI is used. Other physical channel parameters are configured according to the CQI maping table described in TS25.214

Table 9.26: Minimum requirement for CQI test in fading for categories 1-6

Reported CQI	Maximum BLER		
Reported CQ1	Test 1	Test2	
CQI median	60%	60%	
CQI median + 3	15%	15%	

9.3.1.2.2. Minimum Requirement - UE capability categories 11,129.3.2.2 Minimum Requirement - UE capability categories 11,12

Table 9.27: Test Parameters for CQI test in fading: categories 11-12

Parameter	Unit	Test 1	Test 2	
$HS ext{-}PDSCHE_c/I_{or}$ (*)	dB	-8	-4	
$\hat{I}_{or}$ / $I_{oc}$	dB	0 5		
$I_{oc}$	dBm/3.84 MHz	-60		
Phase reference	-	P-CF	PICH	
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 Cas			se 8	
Note1: Measurement power offset "Γ" is configured by RRC accordingly and as defined in [7]				
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 maping table described in TS25.214

Table 9.28: Minimum requirement for CQI test in fading for categories 11-12

Reported CQI	Maximum BLER		
Reported CQ1	Test 1	Test2	
CQI median	60%	60%	
CQI median + 3	15%	15%	

### 9.3.2 Open Loop Diversity Performance

### 9.3.2.1 AWGN propagation conditions

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.

### 9.3.2.1.1 Minimum Requirement - UE capability categories 1-6

For the parameters specified in Table 9.23, 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 (BLER) using transport format indicated by median CQI is less than 0.1, BLER using transport format indicated by (median CQI +2) shall be larger than 0.1. If the HS-PDSCH (BLER) using transport format indicated by median CQI is larger than 0.1, BLER using transport format indicated by (median CQI -1) shall be less than 0.1.

Table 9.28: Test Parameter for CQI: categories 1-6

<u>Parameter</u>	<u>Unit</u>	Test 1	Test 2	Test 3		
$\hat{I}_{or}$ / $I_{oc}$	<u>dB</u>	<u>0</u>	<u>5</u>	<u>10</u>		
$I_{oc}$	dBm/3.84 MHz		<u>-60</u>			
Phase reference	Ξ.		P-CPICH			
$\underline{HS\text{-PDSCH}}\underline{E_c/I_{or}}\underline{(^{\boldsymbol{*}})}$	<u>dB</u>		<u>-3</u>			
$\underline{HS\text{-SCCH}}\underline{1}\underline{E_c}/I_{or}$	<u>dB</u>		<u>-10</u>			
$\underline{DPCH}\underline{E_c/I_{or}}$	<u>dB</u>		<u>-10</u>			
Maximum number of H-ARQ transmission	Ξ.	1				
Number of HS-SCCH set to be monitored	=	<u>1</u>				
CQI feedback cycle	<u>ms</u>	<u>2</u>				
CQI repetition factor	=	<u>1</u>				
HS-DSCH transmission pattern	=	"XOOXOOX" to incorporate inter-TTI=3 <u>UEs, where "X" indicates TTI in which HS-PDSCH is allocated to the UE, and "O" indicates DTX</u>				
Note1: Measurement power offset "Γ" is configured by RRC accordingly and as defined						
Note2: in [7]  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 maping table described						
<u>in TS25.214</u>	in TS25.214					

### 9.3.2.1.2 Minimum Requirement - UE capability categories 11,12

For the parameters specified in Table 9.24, 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 (BLER) using transport format indicated by median CQI is less than 0.1, BLER using transport format indicated by (median CQI +2) shall be larger than 0.1. If the HS-PDSCH (BLER) using transport format indicated by median CQI is larger than 0.1, BLER using transport format indicated by (median CQI -1) shall be less than 0.1.

Table 9.29: Test Parameter for CQI: categories 11,12

<u>Parameter</u>	<u>Unit</u>	Test 1	Test 2	Test 3	
$\hat{I}_{or}$ / $I_{oc}$	<u>dB</u>	<u>0</u>	<u>5</u>	<u>10</u>	
$I_{oc}$	<u>dBm/3.84 MHz</u>		<u>-60</u>		
Phase reference	П		P-CPICH		
$\underline{HS\text{-PDSCH}}\underline{E_c/I_{or}} \overset{ ext{(*)}}{}$	<u>dB</u>		<u>-3</u>		
$\underline{HS\text{-SCCH\_1}}_{E_c}/I_{or}$	<u>dB</u>		<u>-10</u>		
$\underline{DPCH}_{E_c}/I_{or}$	<u>dB</u>		<u>-10</u>		
Maximum number of H-ARQ transmission	<u>-</u>	1			
Number of HS-SCCH set to be monitored	=	<u>1</u>			
CQI feedback cycle	<u>ms</u>	<u>2</u>			
CQI repetition factor	Ξ.	<u>1</u>			
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			
<u>-</u>					
Note2: in [7]  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 maping table described in TS25.214					

### 9.3.2.2 Fading propagation 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.

### 9.3.2.2.1 Minimum Requirement - UE capability categories 1-6

Table 9.30: Test Parameters for CQI test in fading: categories 1-6

<u>Parameter</u>	<u>Unit</u>	Test 1	Test 2			
$\underline{HS\text{-PDSCH}}\underline{E_c/I_{or}} \overset{\text{(*)}}{(-)}$	<u>dB</u>	<u>-8</u>	<u>-4</u>			
$\hat{I}_{or}/I_{oc}$	<u>dB</u>	<u>0</u>	<u>5</u>			
$I_{oc}$	<u>dBm/3.84 MHz</u>	<u>-6</u>	<u>60</u>			
Phase reference	<u>=</u>	P-CF	PICH PICH			
$\underline{HS\text{-SCCH\_1}}_{E_c}/I_{or}$	<u>dB</u>	<u>-8</u>	<u>.5</u>			
$\underline{DPCH}_{E_c}/I_{or}$	<u>dB</u>	1	<u>6</u>			
Maximum number of H-ARQ transmission	=	1				
Number of HS-SCCH set to be monitored	=	<u>1</u>				
CQI feedback cycle	<u>ms</u>	2	) =			
CQI repetition factor	_					
HS-DSCH transmission pattern						
Propagation Channel	Propagation Channel Case 8					
Note1: Measurement power offset "Γ" is configured by RRC accordingly and as						
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 maping table described in TS25.214						

Table 9.31: Minimum requirement for CQI test in fading for categories 1-6

Reported CQI	Maximum BLER		
<u>Reported CQI</u>	Test 1	Test2	
CQI median	<u>60%</u>	<u>60%</u>	
CQI median + 3	<u>15%</u>	<u>15%</u>	

### 9.3.2.2.2 Minimum Requirement – UE capability categories 11,12

Table 9.32: Test Parameters for CQI test in fading: categories 11-12

<u>Parameter</u>	<u>Unit</u>	Test 1	Test 2			
$\underline{HS\text{-PDSCH}}\underline{E_c/I_{or}} \overset{\text{(*)}}{(-)}$	<u>dB</u>	<u>-8</u>	<u>-4</u>			
$\hat{I}_{or}/I_{oc}$	<u>dB</u>	<u>0</u>	<u>5</u>			
$I_{oc}$	<u>dBm/3.84 MHz</u>	<u>-6</u>	<u>60</u>			
Phase reference		P-CF	PICH PICH			
$\underline{HS\text{-SCCH\_1}}_{E_c}/I_{or}$	<u>dB</u>	<u>-8</u>	<u>.5</u>			
$\underline{DPCH}_{E_c}/I_{or}$	<u>dB</u>	<u>-1</u>	<u>6</u>			
Maximum number of H-ARQ transmission	<u>=</u>	1	_			
Number of HS-SCCH set to be monitored	<u>=</u>	<u>1</u>				
CQI feedback cycle	<u>ms</u>	2	) =			
CQI repetition factor	<u>-</u>					
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	Propagation Channel Case 8					
Note1: Measurement power offset "Γ" is configured by RRC accordingly and as						
Note2: TF for HS-PDSCH is configured according to the reported CQI statistics.						
		Other physical chann ping table described				

Table 9.33: Minimum requirement for CQI test in fading for categories 11-12

Reported CQI	Maximum BLER		
<u>Reported CQI</u>	Test 1	Test2	
CQI median	<u>60%</u>	<u>60%</u>	
CQI median + 3	<u>15%</u>	<u>15%</u>	

### 9.3.3 Closed Loop Diversity Performance

### 9.3.3.1 AWGN propagation conditions

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.

### 9.3.3.1.1 Minimum Requirement - UE capability categories 1-6

For the parameters specified in Table 9.23, 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 (BLER) using transport format indicated by median CQI is less than 0.1, BLER using transport format indicated by (median CQI +2) shall be larger than 0.1. If the HS-PDSCH (BLER) using transport format indicated by median CQI is larger than 0.1, BLER using transport format indicated by (median CQI -1) shall be less than 0.1.

Table 9.34: Test Parameter for CQI: categories 1-6

<u>Parameter</u>	<u>Unit</u>	Test 1	Test 2	Test 3	
$\hat{I}_{or}$ / $I_{oc}$	<u>dB</u>	<u>0</u>	<u>5</u>	<u>10</u>	
$I_{oc}$	<u>dBm/3.84 MHz</u>		<u>-60</u>		
Phase reference	Ξ.		P-CPICH		
$\underline{HS\text{-PDSCH}}\underline{E_c/I_{or}} \underline{\begin{picture}(*)\\ (*)\end{picture}}$	<u>dB</u>		<u>-3</u>		
$\underline{HS\text{-SCCH}}\underline{1}\underline{E_c}/I_{or}$	<u>dB</u>		<u>-10</u>		
$\underline{DPCH}\underline{E_c/I_{or}}$	<u>dB</u>		<u>-10</u>		
Maximum number of H-ARQ transmission	_	1			
Number of HS-SCCH set to be monitored	Ξ.	1			
CQI feedback cycle	<u>ms</u>	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 "Γ" is configured by RRC accordingly and as defined					
Note2: in [7]  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 maping table described					
in TS25.214					

### 9.3.3.1.2 Minimum Requirement - UE capability categories 11,12

For the parameters specified in Table 9.24, 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 (BLER) using transport format indicated by median CQI is less than 0.1, BLER using transport format indicated by (median CQI +2) shall be larger than 0.1. If the HS-PDSCH (BLER) using transport format indicated by median CQI is larger than 0.1, BLER using transport format indicated by (median CQI -1) shall be less than 0.1.

Table 9.35: Test Parameter for CQI: categories 11,12

<u>Parameter</u>	<u>Unit</u>	Test 1	Test 2	Test 3	
$\hat{I}_{or}$ / $I_{oc}$	<u>dB</u>	<u>0</u>	<u>5</u>	<u>10</u>	
$I_{oc}$	<u>dBm/3.84 MHz</u>		<u>-60</u>		
Phase reference	Ξ.		P-CPICH		
$\underline{HS\text{-PDSCH}}\underline{E_c/I_{or}} \underline{\begin{picture}(*)\\ (*)\end{picture}}$	<u>dB</u>		<u>-3</u>		
$\underline{HS\text{-SCCH}}\underline{1}\underline{E_c}/I_{or}$	<u>dB</u>		<u>-10</u>		
$\underline{DPCH}\underline{E_c/I_{or}}$	<u>dB</u>		<u>-10</u>		
Maximum number of H-ARQ transmission	_	1			
Number of HS-SCCH set to be monitored	Ξ.	1			
CQI feedback cycle	<u>ms</u>	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 "Γ" is configured by RRC accordingly and as defined					
Note2: in [7]  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 maping table described					
in TS25.214					

### 9.3.3.2 Fading propagation 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.

### 9.3.3.2.1 Minimum Requirement - UE capability categories 1-6

Table 9.36: Test Parameters for CQI test in fading: categories 1-6

<u>Parameter</u>	<u>Unit</u>	Test 1	Test 2		
$\underline{HS\text{-PDSCH}}E_c/I_{or}\underline{(^{\star})}$	<u>dB</u>	<u>-8</u>	<u>-4</u>		
$\hat{I}_{or}/I_{oc}$	<u>dB</u>	<u>0</u>	<u>5</u>		
$I_{oc}$	<u>dBm/3.84 MHz</u>	<u>-6</u>	<u>60</u>		
Phase reference	ч	P-CF	PICH PICH		
$\underline{HS\text{-SCCH\_1}}_{E_c}/I_{or}$	<u>dB</u>	<u>-8</u>	<u>.5</u>		
$\underline{DPCH}_{E_c}/I_{or}$	<u>dB</u>	1	<u>6</u>		
Maximum number of H-ARQ transmission	ш	1			
Number of HS-SCCH set to be monitored	=	1			
CQI feedback cycle	<u>ms</u>	2	) =		
CQI repetition factor	• 1				
HS-DSCH transmission pattern	Ξ	"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 "\Gamma" is configured by RRC accordingly and as defined in [7]  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					
		Other physical chanr ping table described			

Table 9.37: Minimum requirement for CQI test in fading for categories 1-6

Reported CQI	Maximum BLER		
<u>Reported CQI</u>	Test 1	Test2	
CQI median	<u>60%</u>	<u>60%</u>	
CQI median + 3	<u>15%</u>	<u>15%</u>	

### 9.3.3.2.2 Minimum Requirement – UE capability categories 11,12

Table 9.38: Test Parameters for CQI test in fading: categories 11-12

<u>Parameter</u>	<u>Unit</u>	Test 1	Test 2			
$\underline{HS-PDSCH}E_c/I_{or}\overset{(*)}{}$	<u>dB</u>	<u>-8</u>	<u>-4</u>			
$\hat{I}_{or}/I_{oc}$	<u>dB</u>	<u>0</u>	<u>5</u>			
$I_{oc}$	<u>dBm/3.84 MHz</u>	<u>-6</u>	<u>60</u>			
Phase reference	<u>-</u>	P-CF	<u>PICH</u>			
$\underline{HS\text{-SCCH\_1}}_{E_c}/I_{or}$	<u>dB</u>	<u>-8</u>	<u>.5</u>			
$\underline{DPCH}_{E_c}/I_{or}$	<u>dB</u>	<u>-1</u>	9			
Maximum number of H-ARQ transmission	=	1	<u>I</u>			
Number of HS-SCCH set to be monitored	Ξ.	<u>1</u>				
CQI feedback cycle	<u>ms</u>	2	2			
CQI repetition factor	<u>-</u>					
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	Propagation Channel Case 8					
Note1: Measurement power offset "Γ" is configured by RRC accordingly and as						
Note2: TF for HS-PDSCH is configured according to the reported CQI statistics.						
		Other physical chann				
configured accord	ding to the CQI ma	ping table described	<u>In 1825.214</u>			

Table 9.39: Minimum requirement for CQI test in fading for categories 11-12

Reported CQI	Maximum BLER		
<u>Reported CQI</u>	Test 1	Test2	
CQI median	<u>60%</u>	<u>60%</u>	
CQI median + 3	<u>15%</u>	<u>15%</u>	

### R4-031108

# 3GPP TSG RAN WG4 (Radio) Meeting #29 San Diego, USA 17 - 21 November 2003

CHANGE REQUEST							
ж	25.101	CR 285	жrev	<b>1</b>	Current version	on: <b>6.2.0</b>	*
For <u>HELP</u> on us	ing this fo	rm, see bottom of	this page or	look at the	pop-up text o	over the <b>%</b> syr	nbols.
Proposed change a	ffects:	UICC apps <b></b>	ME X	] Radio Ac	cess Network	Core Ne	etwork
Title:	Specifica	ation of CQI Testir	ng for UE Cap	ability Cat	egories 7 and	8	
Source: #	RAN WO	G4					
Work item code: ₩	HSDPA-	RF			Date: ₩	26/11/2003	
	Use <u>one</u> of F (co. A (co B (ad C (ful D (ed Detailed ex	i the following categorection) rresponds to a corredition of feature), nctional modification itorial modification) splanations of the all 3GPP TR 21.900.	ection in an ear	lier release	Use <u>one</u> of th 2 (1) R96 (1) R97 (1) R98 (1) R99 (1) Rel-4 (1) Rel-5 (1)	Rel-6 ne following rele GSM Phase 2) Release 1996) Release 1997) Release 1998) Release 1999) Release 4) Release 5) Release 5)	eases:
December of an about	00 TI.				,	,	
Reason for change:	ま <mark>Ihe</mark>	required CQI test	ing for UE ca	pability cat	tegories / and	a & do not exis	St.
Summary of change	dive	tests for UE capa ersity and closed le pose.					
Consequences if not approved:		equired CQI testi fication will be inc		ability cate	egories 7 and	8 do not exist	and the
Clauses affected:	<b> 9.3</b>						
Other specs Affected:	¥ X	Other core specification	ons	*			
Other comments:	æ						

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

- 1) Fill out the above form. The symbols above marked # contain pop-up help information about the field that they are closest to.
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3)	<ol> <li>With "track changes" disabled, paste the clause containing the first piece the change request.</li> </ol>	e the entire CR fo of changed text.	orm (use CTRL-A to Delete those parts	select it) into the specif of the specification whic	ication just in front of th are not relevant to

# 9.3 Reporting of Channel Quality Indicator

### 9.3.1 Single Link Performance

### 9.3.1.1 AWGN propagation conditions

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.

### 9.3.1.1.1 Minimum Requirement - UE capability categories 1-6

For the parameters specified in Table 9.23, 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 (BLER) using transport format indicated by median CQI is less than 0.1, BLER using transport format indicated by (median CQI +2) shall be larger than 0.1. If the HS-PDSCH (BLER) using transport format indicated by median CQI is larger than 0.1, BLER using transport format indicated by (median CQI -1) shall be less than 0.1.

Table 9.23: 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	
$HS ext{-}PDSCHE_c/I_{or}(^\star)$	dB		-3	
HS-SCCH_1 $E_c/I_{or}$	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 "Γ" is configured by RRC accordingly and as defined in [7]				
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 maping table described in TS25.214				

### 9.3.1.1.2 Minimum Requirement - UE capability categories 11, 12

For the parameters specified in Table 9.24, the reported CQI value shall be in the range of  $\pm$ 0 of the reported median more than 90% of the time. If the HS-PDSCH (BLER) using transport format indicated by median CQI is less than 0.1, BLER using transport format indicated by (median CQI +2) shall be larger than 0.1. If the HS-PDSCH (BLER) using transport format indicated by median CQI is larger than 0.1, BLER using transport format indicated by (median CQI -1) shall be less than 0.1.

Table 9.24: Test Parameter for CQI: categories 11,12

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	
$HS ext{-}PDSCHE_c/I_{or}$ (*)	dB		-3	
$HS$ -SCCH_1 $E_c/I_{or}$	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 "Γ" is configured by RRC accordingly and as defined				
in [7]  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 maping table described in TS25.214				

### 9.3.1.1.3 Minimum Requirement - UE capability categories 7, 8

For the parameters specified in Table 9.24, 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 (BLER) using transport format indicated by median CQI is less than 0.1, BLER using transport format indicated by (median CQI +2) shall be larger than 0.1. If the HS-PDSCH (BLER) using transport format indicated by median CQI is larger than 0.1, BLER using transport format indicated by (median CQI -1) shall be less than 0.1.

<u>Table 9.25: Test Parameter for CQI: categories 7,8</u>

<u>dB</u>	<u>0</u>	<u>5</u>	<u>10</u>	
dBm/3.84 MHz		<u>-60</u>		
Ξ.		P-CPICH		
<u>dB</u>		<u>-3</u>		
<u>dB</u>		<u>-10</u>		
<u>dB</u>		<u>-10</u>		
	1			
Ξ.	1			
<u>ms</u>	2			
1	1			
-1	"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 "Γ" is configured by RRC accordingly and as defined				
Note2: in [7]  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 maping table described in TS25.214				
	dBm/3.84 MHz	dBm/3.84 MHz	dBm/3.84 MHz         -60           :         P-CPICH           dB         -3           dB         -10           dB         -10           :         1           :         1           ms         2           :         1           "XOOXOOX" to incorporate UEs, where "X" indicates The PDSCH is allocated to the indicates The PDSCH is allocated to the indicates DTD were offset "I" is configured by RRC accordingly in the reported CQI standard to the reported CQI standard to the reported CQI, median CQI -1, median CQI -2 are used.	

### 9.3.1.2 Fading propagation 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.

### 9.3.1.2.1 Minimum Requirement - UE capability categories 1-6

Table 9.265: Test Parameters for CQI test in fading: categories 1-6

Parameter	Unit	Test 1	Test 2	
$HS ext{-}PDSCHE_c/I_{or}$ (*)	dB	-8	-4	
$\hat{I}_{or}$ / $I_{oc}$	dB	0	5	
$I_{oc}$	dBm/3.84 MHz	-6	60	
Phase reference	-	P-CF	PICH	
HS-SCCH_1 $E_c/I_{or}$	dB	-8	.5	
DPCH $E_c/I_{or}$	dB	-1	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 "Γ" is configured by RRC accordingly and as defined in [7]				

defined in [7]

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 maping table described in TS25.214

Table 9.276: Minimum requirement for CQI test in fading for categories 1-6

Reported CQI	Maximum BLER		
Reported CQ1	Test 1	Test2	
CQI median	60%	60%	
CQI median + 3	15%	15%	

### 9.3.1.2.2. Minimum Requirement - UE capability categories 11,12

Table 9.287: Test Parameters for CQI test in fading: categories 11-12

Parameter	Unit	Test 1	Test 2	
$HS ext{-}PDSCHE_c/I_{or}(^*)$	dB	-8	-4	
$\hat{I}_{or}$ / $I_{oc}$	dB	0	5	
$I_{oc}$	dBm/3.84 MHz	-6	60	
Phase reference	-	P-CF	PICH	
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 "Γ" is configured by RRC accordingly and as				

defined in [7]

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 maping table described in TS25.214

Table 9.298: Minimum requirement for CQI test in fading for categories 11-12

Reported CQI	Maximum BLER		
Reported CQ1	Test 1	Test2	
CQI median	60%	60%	
CQI median + 3	15%	15%	

### 9.3.1.2.3. Minimum Requirement - UE capability categories 7,8

Table 9.30: Test Parameters for CQI test in fading: categories 7-8

<u>Parameter</u>	<u>Unit</u>	Test 1	Test 2	
$\underline{HS-PDSCH}E_c/I_{or}\underline{(^{\boldsymbol{\star}})}$	<u>dB</u>	<u>-8</u>	<u>-4</u>	
$\hat{I}_{or}/I_{oc}$	<u>dB</u>	<u>0</u>	<u>5</u>	
$I_{oc}$	<u>dBm/3.84 MHz</u>	<u>-6</u>	<u>60</u>	
Phase reference	<u>-</u>	P-CF	PICH PICH	
$\underline{HS\text{-SCCH}}_{\mathtt{1}}\underline{E}_{c}/I_{or}$	<u>dB</u>	<u>-8</u>	<u>.5</u>	
$\underline{DPCH}\ E_c/I_{or}$	<u>dB</u>	1	<u>6</u>	
Maximum number of H-ARQ transmission	=	1		
Number of HS-SCCH set to be monitored	Ξ	<u>1</u>		
CQI feedback cycle	<u>ms</u>	2		
CQI repetition factor	-			
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		Cas		
Note1: Measurement power offset "Γ" is configured by RRC accordingly and as				
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 maping table described in TS25.214				

Table 9.31: Minimum requirement for CQI test in fading for categories 7-8

Reported CQI	Maximum BLER		
<u>Reported CQI</u>	Test 1	Test2	
CQI median	<u>60%</u>	<u>60%</u>	
CQI median + 3	<u>15%</u>	<u>15%</u>	

## 9.3.2 Open Loop Diversity Performance

### 9.3.2.1 AWGN propagation conditions

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.

### 9.3.2.1.1 Minimum Requirement - UE capability categories 1-6

For the parameters specified in Table 9.23, the reported CQI value shall be in the range of  $\pm$ 0 of the reported median more than 90% of the time. If the HS-PDSCH (BLER) using transport format indicated by median CQI is less than 0.1, BLER using transport format indicated by (median CQI +2) shall be larger than 0.1. If the HS-PDSCH (BLER) using transport format indicated by median CQI is larger than 0.1, BLER using transport format indicated by (median CQI -1) shall be less than 0.1.

Table 9.3228: 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	
$HS ext{-}PDSCHE_c/I_{or}$ (*)	dB		-3	
HS-SCCH_1 $E_c/I_{or}$	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 "Γ" is configured by RRC accordingly and as defined				
in [7]  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 maping table described in TS25.214				

### 9.3.2.1.2 Minimum Requirement - UE capability categories 11,12

For the parameters specified in Table 9.24, the reported CQI value shall be in the range of  $\pm$ 0 of the reported median more than 90% of the time. If the HS-PDSCH (BLER) using transport format indicated by median CQI is less than 0.1, BLER using transport format indicated by (median CQI +2) shall be larger than 0.1. If the HS-PDSCH (BLER) using transport format indicated by median CQI is larger than 0.1, BLER using transport format indicated by (median CQI -1) shall be less than 0.1.

Table 9.3329: Test Parameter for CQI: categories 11,12

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	
$HS ext{-}PDSCHE_c/I_{or}(^*)$	dB		-3	
HS-SCCH_1 $E_c/I_{or}$	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 "Γ" is configured by RRC accordingly and as defined in [7]				
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 maping table described in TS25.214				

### 9.3.2.1.3 Minimum Requirement - UE capability categories 7,8

For the parameters specified in Table 9.24, 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 (BLER) using transport format indicated by median CQI is less than 0.1, BLER using transport format indicated by (median CQI +2) shall be larger than 0.1. If the HS-PDSCH (BLER) using transport format indicated by median CQI is larger than 0.1, BLER using transport format indicated by (median CQI -1) shall be less than 0.1.

Table 9.34: Test Parameter for CQI: categories 7,8

<u>dB</u>	<u>0</u>	<u>5</u>	<u>10</u>	
dBm/3.84 MHz		<u>-60</u>		
Ξ.		P-CPICH		
<u>dB</u>		<u>-3</u>		
<u>dB</u>		<u>-10</u>		
<u>dB</u>		<u>-10</u>		
	1			
Ξ.	1			
<u>ms</u>	2			
П	1			
-1	"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 "Γ" is configured by RRC accordingly and as defined				
Note2: in [7]  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 maping table described in TS25.214				
	dBm/3.84 MHz	dBm/3.84 MHz	dBm/3.84 MHz         -60           :         P-CPICH           dB         -3           dB         -10           dB         -10           :         1           :         1           ms         2           :         1           "XOOXOOX" to incorporate UEs, where "X" indicates The PDSCH is allocated to the indicates The PDSCH is allocated to the indicates DTD were offset "I" is configured by RRC accordingly in the reported CQI standard to the reported CQI standard to the reported CQI, median CQI -1, median CQI -2 are used.	

### 9.3.2.2 Fading propagation 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.

### 9.3.2.2.1 Minimum Requirement – UE capability categories 1-6

Table 9.350: Test Parameters for CQI test in fading: categories 1-6

Parameter	Unit	Test 1	Test 2	
$HS ext{-}PDSCHE_c/I_{or}$ (*)	dB	-8	-4	
$\hat{I}_{or}$ / $I_{oc}$	dB	0	5	
$I_{oc}$	dBm/3.84 MHz	-6	00	
Phase reference	-	P-CF	PICH	
HS-SCCH_1 $E_c/I_{or}$	dB	-8	.5	
DPCH $E_c/I_{or}$	dB	-1	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" indicate TTI in which HS-PDSCH is allocate to the UE, and "O" indicates DTX		
Propagation Channel				
Note1: Measurement power offset "Γ" is configured by RRC accordingly and as				

defined in [7]

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 maping table described in TS25.214

Table 9.364: Minimum requirement for CQI test in fading for categories 1-6

Reported CQI	Maximum BLER	
Reported CQ1	Test 1	Test2
CQI median	60%	60%
CQI median + 3	15%	15%

### 9.3.2.2.2 Minimum Requirement – UE capability categories 11,12

Table 9.372: Test Parameters for CQI test in fading: categories 11-12

Parameter	Unit	Test 1	Test 2
$HS ext{-}PDSCHE_{c}/I_{or}(^{\star})$	dB	-8	-4
$\hat{I}_{or}$ / $I_{oc}$	dB	0	5
$I_{oc}$	dBm/3.84 MHz	-6	0
Phase reference	-	P-CF	PICH
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" indicate TTI in which HS-PDSCH is allocate to the UE, and "O" indicates DTX	
Propagation Channel Case 8			e 8
Note1: Measurement power offset "Γ" is configured by RRC accordingly and as			

defined in [7]

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 maping table described in TS25.214

Table 9.383: Minimum requirement for CQI test in fading for categories 11-12

Reported CQI	Maximum BLER		
Reported CQ1	Test 1	Test2	
CQI median	60%	60%	
CQI median + 3	15%	15%	

#### 9.3.2.2.3 Minimum Requirement – UE capability categories 7,8

Table 9.39: Test Parameters for CQI test in fading: categories 7-8

<u>Parameter</u>	<u>Unit</u>	Test 1	Test 2		
$\underline{HS\text{-PDSCH}}E_c/I_{or}\underline{(^{\star})}$	<u>dB</u>	<u>-8</u>	<u>-4</u>		
$\hat{I}_{or}/I_{oc}$	<u>dB</u>	<u>0</u>	<u>5</u>		
$I_{oc}$	<u>dBm/3.84 MHz</u>	<u>-6</u>	<u>60</u>		
Phase reference	<u>=</u>	P-CF	PICH PICH		
$\underline{HS\text{-SCCH\_1}}_{E_c}/I_{or}$	<u>dB</u>	<u>-8</u>	<u>.5</u>		
$\underline{DPCH}_{E_c}/I_{or}$	<u>dB</u>	1	<u>6</u>		
Maximum number of H-ARQ transmission	=	1	<u> </u>		
Number of HS-SCCH set to be monitored	Ξ.	1			
CQI feedback cycle	<u>ms</u>	2	2		
CQI repetition factor	<u>-</u>	<u>1</u>			
HS-DSCH transmission pattern	=	"XOOXOOX" to incorporate inter-TTI=3 UEs, where "X" indicate TTI in which HS-PDSCH is allocate to the UE, and "O" indicates DTX			
Propagation Channel		Case 8			
Note1: Measurement power offset "Γ" is configured by RRC accordingly and as					
Note2: defined in [7]  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 accor	configured according to the CQI maping table described in TS25.214				

Table 9.40: Minimum requirement for CQI test in fading for categories 7-8

Reported CQI	<u>Maximu</u>	ım BLER
<u>Reported CQI</u>	Test 1	Test2
CQI median	<u>60%</u>	<u>60%</u>
CQI median + 3	<u>15%</u>	<u>15%</u>

### 9.3.3 Closed Loop Diversity Performance

### 9.3.3.1 AWGN propagation conditions

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.

### 9.3.3.1.1 Minimum Requirement - UE capability categories 1-6

For the parameters specified in Table 9.23, the reported CQI value shall be in the range of  $\pm$ 0 of the reported median more than 90% of the time. If the HS-PDSCH (BLER) using transport format indicated by median CQI is less than 0.1, BLER using transport format indicated by (median CQI +2) shall be larger than 0.1. If the HS-PDSCH (BLER) using transport format indicated by median CQI is larger than 0.1, BLER using transport format indicated by (median CQI -1) shall be less than 0.1.

Table 9.4134: 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	
$HS ext{-}PDSCHE_c/I_{or}$ (*)	dB		-3	
HS-SCCH_1 $E_c/I_{or}$	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 "Γ" is configured by RRC accordingly and as defined				
in [7]  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 maping table described in TS25.214				

### 9.3.3.1.2 Minimum Requirement - UE capability categories 11,12

For the parameters specified in Table 9.24, the reported CQI value shall be in the range of  $\pm$ 0 of the reported median more than 90% of the time. If the HS-PDSCH (BLER) using transport format indicated by median CQI is less than 0.1, BLER using transport format indicated by (median CQI +2) shall be larger than 0.1. If the HS-PDSCH (BLER) using transport format indicated by median CQI is larger than 0.1, BLER using transport format indicated by (median CQI -1) shall be less than 0.1.

Table 9.4235: Test Parameter for CQI: categories 11,12

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	
$HS ext{-}PDSCHE_c/I_{or}$ (*)	dB		-3	
HS-SCCH_1 $E_c/I_{or}$	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 "Γ" is configured by RRC accordingly and as defined				
in [7]  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 maping table described in TS25.214				

### 9.3.3.1.3 Minimum Requirement - UE capability categories 7,8

For the parameters specified in Table 9.24, 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 (BLER) using transport format indicated by median CQI is less than 0.1, BLER using transport format indicated by (median CQI +2) shall be larger than 0.1. If the HS-PDSCH (BLER) using transport format indicated by median CQI is larger than 0.1, BLER using transport format indicated by (median CQI -1) shall be less than 0.1.

Table 9.43: Test Parameter for CQI: categories 7,8

<u>Parameter</u>	<u>Unit</u>	Test 1	Test 2	Test 3
$\hat{I}_{or}$ / $I_{oc}$	<u>dB</u>	<u>0</u>	<u>5</u>	<u>10</u>
$I_{oc}$	<u>dBm/3.84 MHz</u>		<u>-60</u>	
Phase reference	Ξ		P-CPICH	
$\underline{HS\text{-PDSCH}}\underline{E_c/I_{or}}\underline{(^{\boldsymbol{*}})}$	<u>dB</u>		<u>-3</u>	
$\underline{HS\text{-SCCH\_1}}_{E_c}/I_{or}$	<u>dB</u>		<u>-10</u>	
$\underline{DPCH}_{E_c}/I_{or}$	<u>dB</u>		<u>-10</u>	
Maximum number of H-ARQ transmission	Ξ.		<u>1</u>	
Number of HS-SCCH set to be monitored	Ξ.		<u>1</u>	
CQI feedback cycle	<u>ms</u>	2		
CQI repetition factor	=		<u>1</u>	
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 "Γ" is configured by RRC accordingly and as defined				
Note2: in [7]  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 maping table described in TS25.214				

### 9.3.3.2 Fading propagation 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.

### 9.3.3.2.1 Minimum Requirement – UE capability categories 1-6

Table 9.4436: Test Parameters for CQI test in fading: categories 1-6

Parameter	Unit	Test 1	Test 2		
$HS ext{-}PDSCHE_c/I_{or}$ (*)	dB	-8	-4		
$\hat{I}_{or}$ / $I_{oc}$	dB	0	5		
$I_{oc}$	dBm/3.84 MHz	-6	60		
Phase reference	-	P-CF	PICH		
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	Propagation Channel Case 8				
Note1: Measurement power offset "\Gamma" is configured by RRC accordingly and as defined in [7]					

defined in [7]

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 maping table described in TS25.214

Table 9.4537: Minimum requirement for CQI test in fading for categories 1-6

Reported CQI	Maximu	ım BLER
Reported CQ1	Test 1	Test2
CQI median	60%	60%
CQI median + 3	15%	15%

### 9.3.3.2.2 Minimum Requirement – UE capability categories 11,12

Table 9.4638: Test Parameters for CQI test in fading: categories 11-12

Parameter	Unit	Test 1	Test 2
$HS ext{-}PDSCHE_c/I_{or}$ (*)	dB	-8	-4
$\hat{I}_{or}$ / $I_{oc}$	dB	0	5
$I_{oc}$	dBm/3.84 MHz	-6	00
Phase reference	-	P-CF	PICH
HS-SCCH_1 $E_c/I_{or}$	dB	-8	.5
DPCH $E_c/I_{or}$	dB	-1	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" indicate TTI in which HS-PDSCH is allocate to the UE, and "O" indicates DTX	
Propagation Channel		Cas	se 8
Note1: Measurement power offset "T" is configured by RRC accordingly and as			

defined in [7]

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 maping table described in TS25.214

Table 9.4739: Minimum requirement for CQI test in fading for categories 11-12

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

### 9.3.3.2.3 Minimum Requirement – UE capability categories 7,8

Table 9.48: Test Parameters for CQI test in fading: categories 7-8

<u>Parameter</u>	<u>Unit</u>	Test 1	Test 2	
$\underline{HS-PDSCH}E_c/I_{or}\overset{(*)}{}$	<u>dB</u>	<u>-8</u>	<u>-4</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>		
Phase reference	-1	P-CPICH		
$\underline{HS\text{-SCCH\_1}}E_c/I_{or}$	<u>dB</u>	<u>-8.5</u>		
$\underline{DPCH}\ E_c/I_{or}$	<u>dB</u>	T	<u>6</u>	
Maximum number of H-ARQ transmission	=	1		
Number of HS-SCCH set to be monitored	Ξ.	1		
CQI feedback cycle	<u>ms</u>	<u>2</u>		
CQI repetition factor		<u>1</u>		
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 "Γ" is configured by RRC accordingly and as				
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 maping table described in TS25.214				

Table 9.49: Minimum requirement for CQI test in fading for categories 7-8

Reported CQI	Maximum BLER		
<u>Reported CQI</u>	Test 1	Test2	
CQI median	<u>60%</u>	<u>60%</u>	
CQI median + 3	<u>15%</u>	<u>15%</u>	