TSG RAN Meeting #18 **RP-020803**
New Orleans, US, 3 - 6 December, 2002

Title **CRs (Rel-5) for WI "High Speed Downlink Packet Access (HSDPA) - RF Radio Transmission/ Reception, System Performance Requirements and Conformance Testing"**
Source **TSG RAN WG4**
Agenda Item **8.4.1**

RAN4 Tdoc	Spec	CR	R	Cat	Rel	Curr Ver	Title	Work Item
R4-021537	25.101	198		F	Rel-5	5.4.0	Correction to Specified TBS for HSDPA Reference Channels	HSDPA-RF
R4-021709	25.101	200	1	B	Rel-5	5.4.0	Introduction of requirements for HSDPA UE categories 11 and 12	HSDPA-RF
R4-021666	25.102	127	1	B	Rel-5	5.2.0	Addition of HSDPA UE requirements for 3,84 Mcps TDD option for 16QAM and QPSK for fixed reference channels	HSDPA-RF
R4-021669	25.102	128	1	B	Rel-5	5.2.0	Addition of HSDPA UE requirements for 3,84 Mcps TDD option for 16QAM and QPSK for variable reference channels	HSDPA-RF
R4-021638	25.102	132	1	F	Rel-5	5.2.0	HSDPA UE requirements for 1.28 Mcps TDD option for 16QAM and QPSK for fixed reference channels	HSDPA-RF
R4-021407	25.141	247		F	Rel-5	5.4.0	Correction on PN9 seed setting in Test Model 5	HSDPA-RF
R4-021670	25.142	146	1	F	Rel-5	5.2.0	Correction of 16QAM EVM/PCDE testing for HSDPA for 3,84 Mcps TDD option	HSDPA-RF

3GPP TSG RAN WG4 (Radio) Meeting #25 **R4-021537**

Secaucus, NJ, USA 11 - 15 November, 2002

CR-Form-v7

CHANGE REQUEST

⌘ **25.101** **CR** **198** ⌘ **rev** ⌘ Current version: **5.4.0** ⌘

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Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☒ Core Network ☐

Title:	⌘	Correction to Specified TBS for HSDPA Reference Channels
Source:	⌘	RAN WG4
Work item code:	⌘	HSDPA-RF
Date:	⌘	26/11/2002
Category:	⌘	F
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Recent agreement on the precise method of signalling the Transport Block Size (TBS) of HS-DSCH blocks means that the HS-DSCH Fixed Reference Channel (FRC) definitions for H-Sets 1/2/3 require minor corrections.
Summary of change:	⌘	The TBS's specified are mapped to the nearest value supported by the specified TBS signalling procedure.
Consequences if not approved:	⌘	Implementation of a practical test to assess HSDPA FRC receiver compliance will not be possible. It is not expected that any change in the performance requirements for H-Sets 1/2/3 will be required.

Clauses affected:	⌘	A.7
Other specs affected:	⌘	Y / N ☐ / ☒ Other core specifications ☐ / ☒ Test specifications ☐ / ☒ O&M Specifications
Other comments:	⌘	

A.7 DL reference channel parameters for HSDPA tests

A.7.1 Fixed Reference Channel (FRC)

A.7.1.1 Fixed Reference Channel Definition H-Set 1

Table A.25: Fixed Reference Channel H-Set 1

Parameter	Unit	Value	
Nominal Avg. Inf. Bit Rate	kbps	5343	77784
Inter-TTI Distance	TTI's	3	3
Number of HARQ Processes	Processes	2	2
Information Bit Payload (N_{INF})	Bits	32003202	47044664
Number Code Blocks	Blocks	1	1
Binary Channel Bits Per TTI	Bits	4800	7680
Total Available SML's in UE	SML's	19200	19200
Number of SML's per HARQ Proc.	SML's	9600	9600
Coding Rate		0.67	0.612
Number of Physical Channel Codes	Codes	5	4
Modulation		QPSK	16QAM

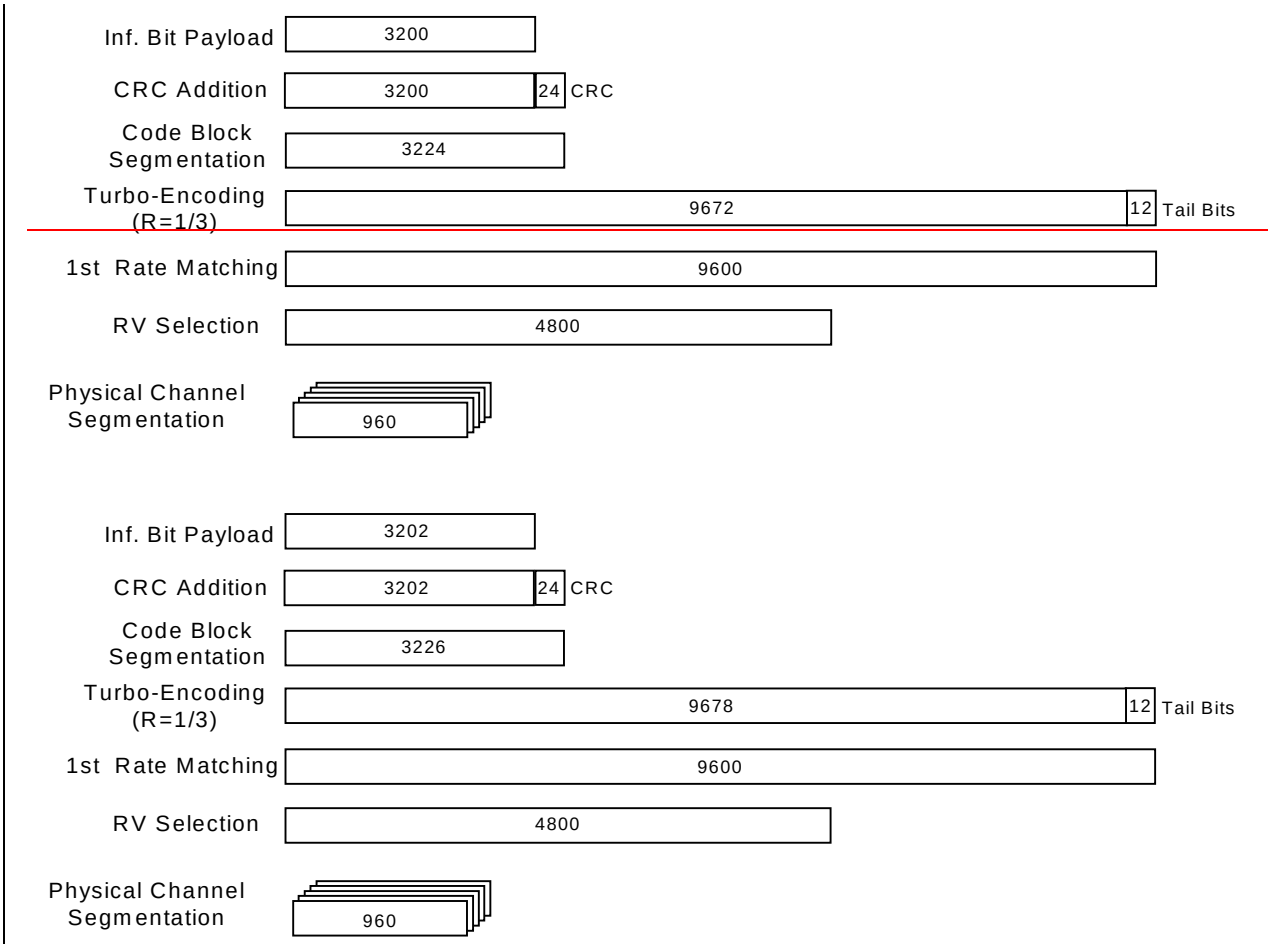

Figure A.12: Coding rate for Fixed reference Channel H-Set 1 (QPSK)

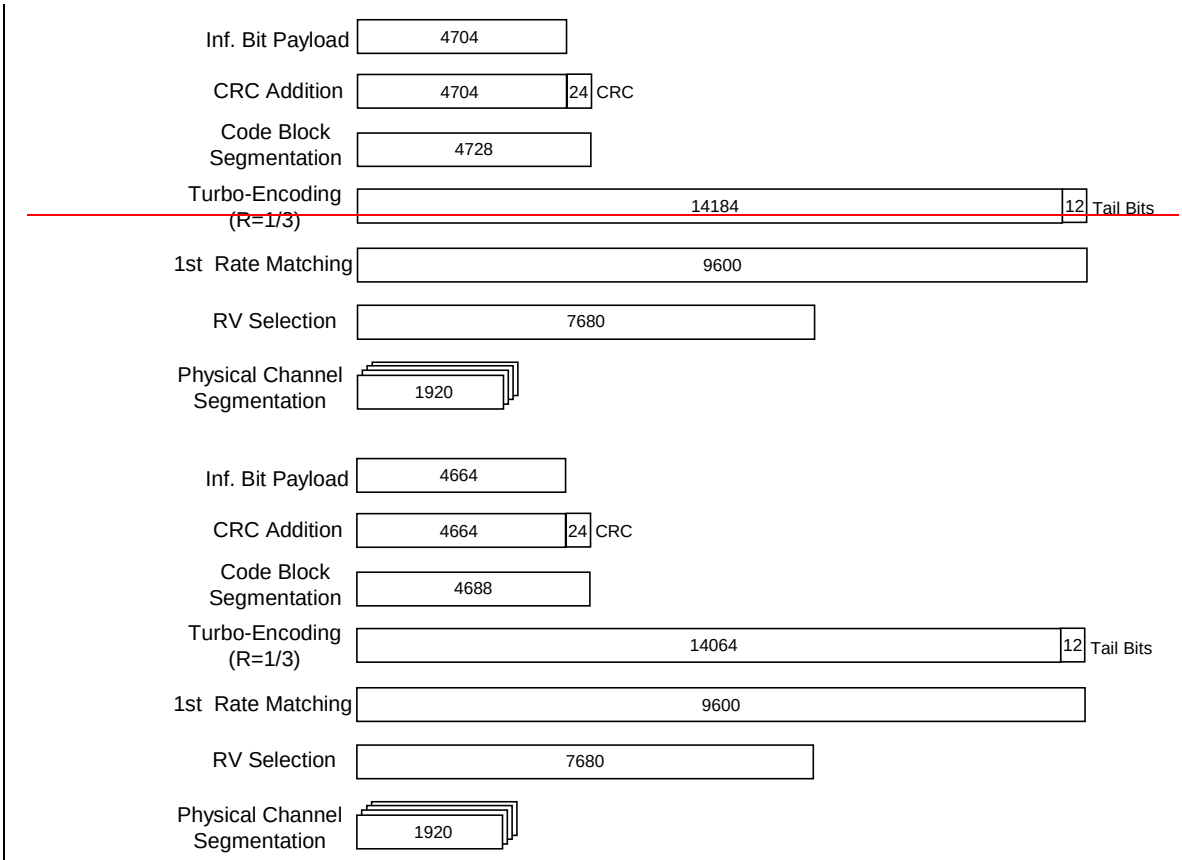

Figure A.13: Coding rate for Fixed reference Channel H-Set 1 (16 QAM)

A.7.1.2 Fixed Reference Channel Definition H-Set 2

Table A.26: Fixed Reference Channel H-Set 2

Parameter	Unit	Value	
Nominal Avg. Inf. Bit Rate	kbps	801~~0~~	1166~~76~~
Inter-TTI Distance	TTI's	2	2
Number of HARQ Processes	Processes	3	3
Information Bit Payload (N_{INF})	Bits	~~3200~~3202	~~4704~~4664
Number Code Blocks	Blocks	1	1
Binary Channel Bits Per TTI	Bits	4800	7680
Total Available SML's in UE	SML's	28800	28800
Number of SML's per HARQ Proc.	SML's	9600	9600
Coding Rate		0.67	0.61~~2~~
Number of Physical Channel Codes	Codes	5	4
Modulation		QPSK	16QAM

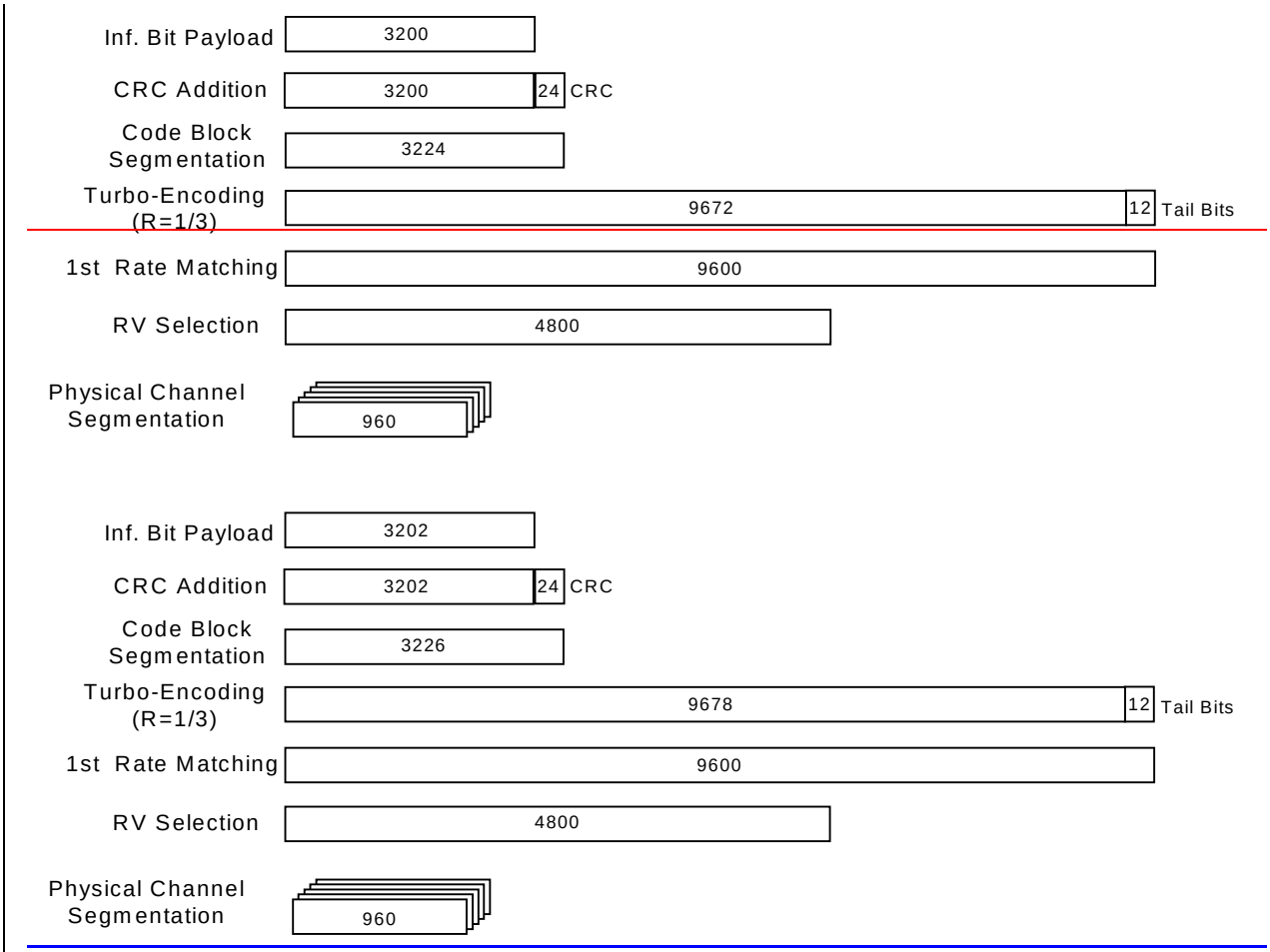

Figure A.14: Coding rate for Fixed Reference Channel H-Set 2 (QPSK)

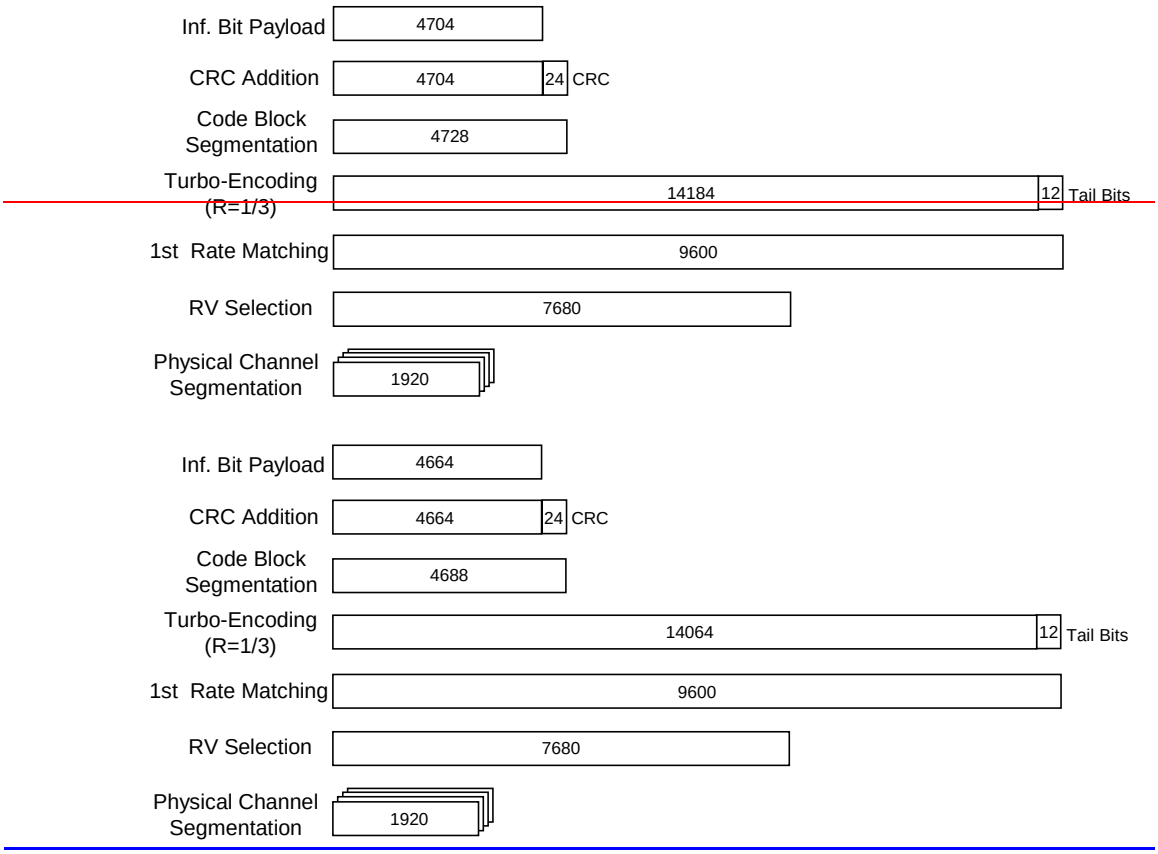

Figure A.15: Coding rate for Fixed Reference Channel H-Set 2 (16QAM)

A.7.1.3 Fixed Reference Channel Definition H-Set 3

Table A.27: Fixed Reference Channel H-Set 3

Parameter	Unit	Value	
Nominal Avg. Inf. Bit Rate	kbps	16010	233252
Inter-TTI Distance	TTI's	1	1
Number of HARQ Processes	Processes	6	6
Information Bit Payload (N_{INF})	Bits	32003202	47044664
Number Code Blocks	Blocks	1	1
Binary Channel Bits Per TTI	Bits	4800	7680
Total Available SML's,in UE	SML's	57600	57600
Number of SML's per HARQ Proc.	SML's	9600	9600
Coding Rate		0.67	0.612
Number of Physical Channel Codes	Codes	5	4
Modulation		QPSK	16QAM

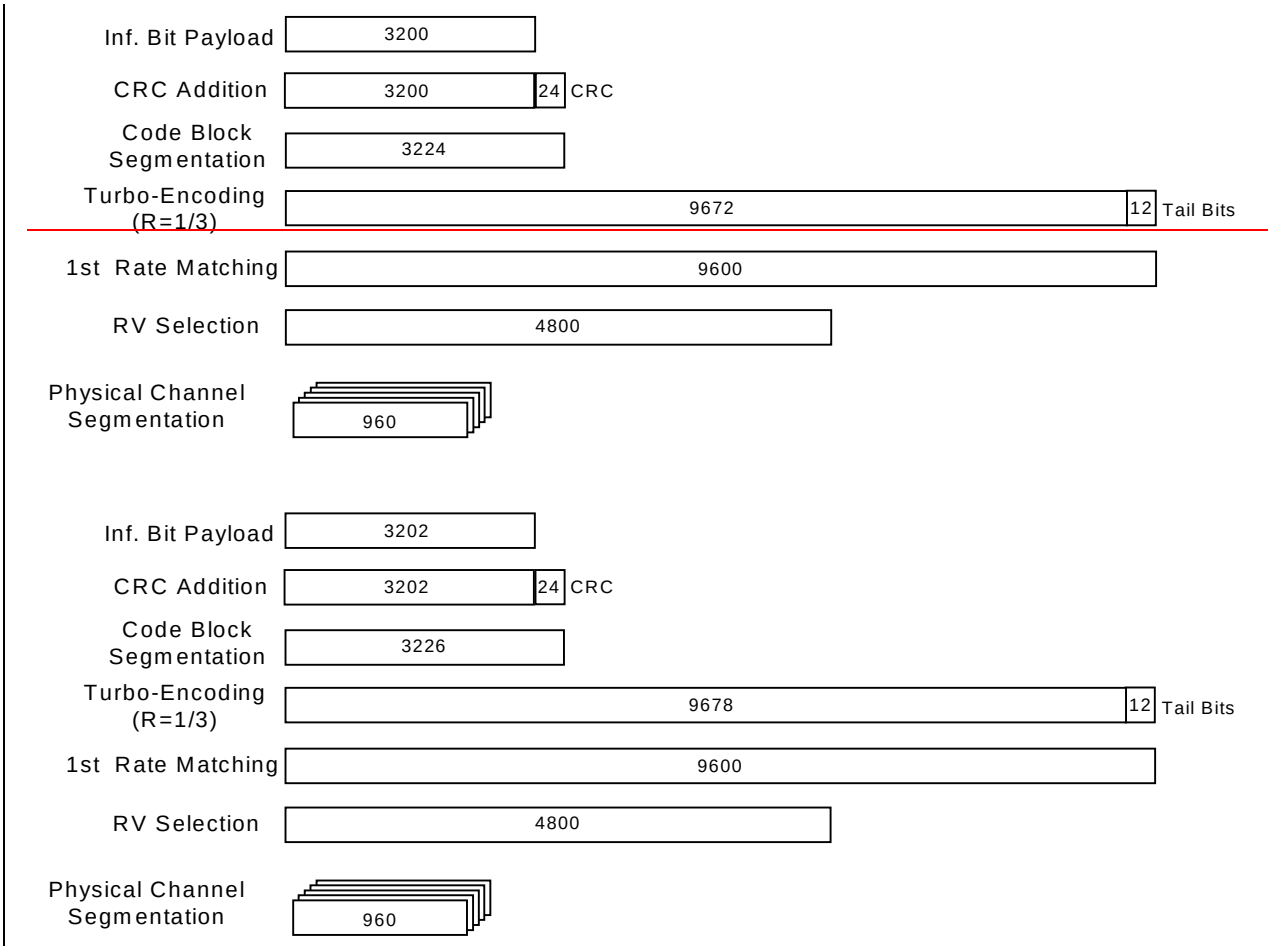

Figure A.16: Coding rate for Fixed reference Channel H-Set 3 (QPSK)

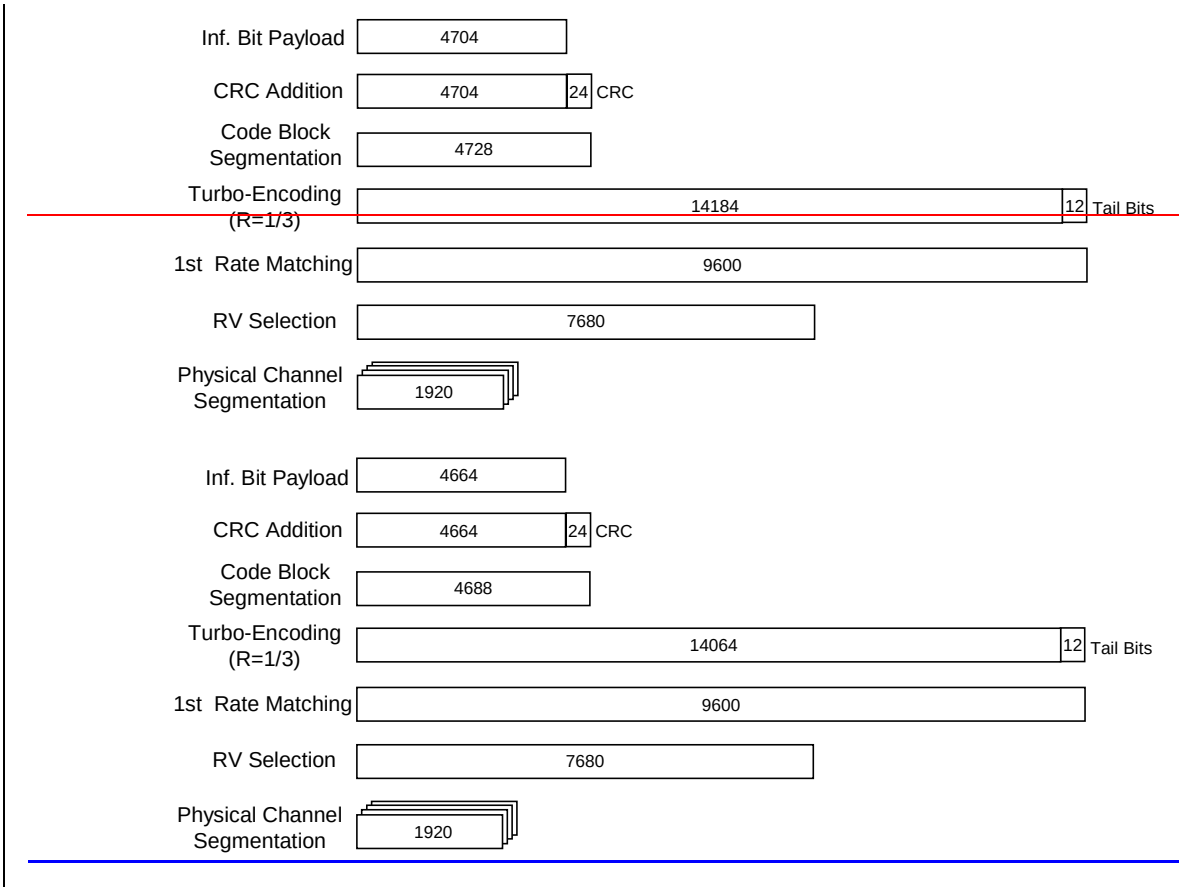

Figure A.17: Coding rate for Fixed reference Channel H-Set 3 (16QAM)

3GPP TSG RAN WG4 (Radio) Meeting #25 **R4-021709**

Secaucus, NJ, USA 11 - 15 November, 2002

CR-Form-v7

CHANGE REQUEST

⌘ **25.101** **CR** **200** ⌘ **rev** **1** ⌘ Current version: **5.4.0** ⌘

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Proposed change affects: UICC apps⌘ [ ] ME [X] Radio Access Network [ ] Core Network [ ]

Title:	⌘	Introduction of requirements for HSDPA UE categories 11 and 12 and open loop transmit diversity test
Source:	⌘	RAN WG4
Work item code:	⌘	HSDPA-RF
Date:	⌘	26/11/2002
Category:	⌘	**B**
Release:	⌘	Rel-5

Use one of the following categories:
- ***F*** *(correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(addition of feature),*
- ***C*** *(functional modification of feature)*
- ***D*** *(editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	1) No unambiguous mapping between the FDD HS-DSCH physical layer categories defined in 25.306 and the performance requirements for the HS-DSCH in 25.101 is given. 2) TSG RAN2 has determined two new UE 5 code capable UE categories (11 and 12) in 25.306. Currently no tests for these categories exist. 3) No test cases exist for HSDPA capable UE's in transmit diversity.
Summary of change:	⌘	1) Table clarifying the mapping between HSDPA performance requirements and the UE categories defined in 25.306 is introduced. 2) Tests for 5 code capable UE categories 11 and 12 and the measurement reference channels are defined. 3) Sections for test case and requirements are introduced for open loop transmit diversity test. Downlink physical channels for open loop transmit diversity are inserted in Annex C and some editorial corrections were done.
Consequences if not approved:	⌘	Requirements for HSDPA UE categories 11 and 12 missing. No requirements will exist for HSDPA capable UE's in transmit diversity in Rel-5.

Clauses affected:	⌘	9.2, A.7, C.5			
Other specs affected:	⌘	**Y** / **N**	Other core specifications	⌘	
		[ ] / [X]			
		[X] / [ ]	Test specifications		34.121
		[ ] / [X]	O&M Specifications		
Other comments:	⌘				

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

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

9 Performance requirement (HSDPA)

9.1 General

The performance requirements for the UE in this subclause apply for the reference measurement channels specified in Annex A.7, the propagation conditions specified in table B.1B of Annex B and the Down link Physical channels specified in Annex C.5.

9.2 Demodulation of HS-DSCH (fixed reference channel)

The performance requirement for a particular UE belonging to certain HS-DSCH category are determined according to Table 9.1.

Table 9.1

HS-DSCH category	Corresponding requirement
Category 1	H-Set 1
Category 2	H-Set 1
Category 3	H-Set 2
Category 4	H-Set 2
Category 5	H-Set 3
Category 6	H-Set 3
Category 11	H-Set 4
Category 12	H-Set 5

9.2.1 Single Link performance

The receiver single link performance of the High Speed Physical Downlink Shared Channel (HS-DSCH) in different multi-path fading environments are determined by the information bit throughput R.

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

For the parameters specified in Table 9.2~~1~~, the requirements are specified in terms of a minimum information bit throughput R as shown in Table 9.3~~2~~ for the DL reference channels specified in Annex A.7.1.

~~The performance requirement for a particular UE shall be the specified requirement corresponding to the largest H-Set index (i.e. H-Set index 1/2/3) that is supported by the UE.~~

Table 9.2~~1~~

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 9.32

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	147	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 shown in Table 9.32 is for the Fixed Reference Channel (FRC) H-Set 1 2) For Fixed Reference Channel (FRC) H-Set 2 the reference values for R in Table 9.32 should be scaled (multiplied by 1.5) 3) For Fixed Reference Channel (FRC) H-Set 3 the reference values for R in Table 9.32 should be scaled (multiplied by 3)				

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

For the parameters specified in Table 9.43, the requirements are specified in terms of a minimum information bit throughput R as shown in Table 9.54 for the DL reference channels specified in Annex A.7.1.

~~The performance requirement for a particular UE shall be the specified requirement corresponding to the largest H-Set index (i.e. H-Set index 1/2/3) that is supported by the UE.~~

Table 9.43

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		{6,2,1,5}			
Maximum number of HARQ transmission		4			

Table 9.54

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	198
		-3	368
2	PB3	-6	34
		-3	219
3	VA30	-6	47
		-3	214
4	VA120	-6	28
		-3	167
* Notes: 1)The reference value R shown in Table 9.54 is for the Fixed Reference Channel (FRC) H-Set 1 2) For Fixed Reference Channel (FRC) H-Set 2 the reference values for R in Table 9.54 should be scaled (multiplied by 1.5) 3) For Fixed Reference Channel (FRC) H-Set 3 the reference values for R in Table 9.54 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

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

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	TBD	TBD
		-3	TBD	TBD
2	PB3	-6	TBD	TBD
		-3	TBD	TBD
3	VA30	-6	TBD	TBD
		-3	TBD	TBD
4	VA120	-6	TBD	TBD
		-3	TBD	TBD
* Notes: 1) The reference value R shown in Table 9.7 is for the Fixed Reference Channel (FRC) H-Set 4				

Table 9.8

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	TBD	TBD
		-3	TBD	TBD
2	PB3	-6	TBD	TBD
		-3	TBD	TBD
3	VA30	-6	TBD	TBD
		-3	TBD	TBD
4	VA120	-6	TBD	TBD
		-3	TBD	TBD
* Notes: 1) The reference value R shown in Table 9.8 is for the Fixed Reference Channel (FRC) H-Set 5				

9.2.2 Open Loop Diversity performance

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

9.2.2.1 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

Void

Table 9.B

Void

9.2.2.2 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

Void

Table 9.D

Void

9.2.2.3 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 Table 9.F for the DL reference channels specified in Annex A.7.1.

Table 9.E

Void

Table 9.F

Void

-------- Change of Section ----------

A.7 DL reference channel parameters for HSDPA tests

A.7.1 Fixed Reference Channel (FRC)

A.7.1.1 Fixed Reference Channel Definition H-Set 1

Table A.25: Fixed Reference Channel H-Set 1

Parameter	Unit	Value	
Nominal Avg. Inf. Bit Rate	kbps	533	784
Inter-TTI Distance	TTI's	3	3
Number of HARQ Processes	Processes	2	2
Information Bit Payload (N_{INF})	Bits	3200	4704
Number Code Blocks	Blocks	1	1
Binary Channel Bits Per TTI	Bits	4800	7680
Total Available SML's in UE	SML's	19200	19200
Number of SML's per HARQ Proc.	SML's	9600	9600
Coding Rate		0.67	0.62
Number of Physical Channel Codes	Codes	5	4
Modulation		QPSK	16QAM

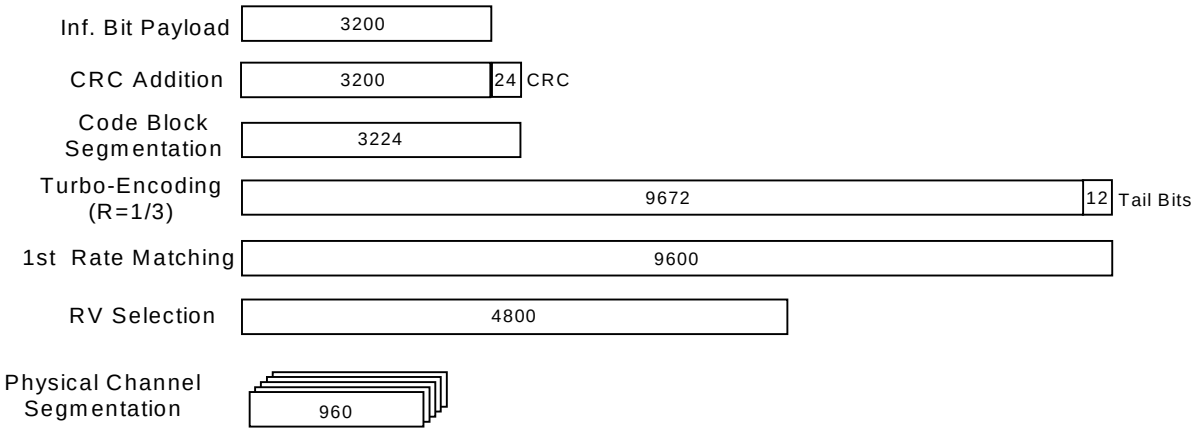

Figure A.12: Coding rate for Fixed reference Channel H-Set 1 (QPSK)

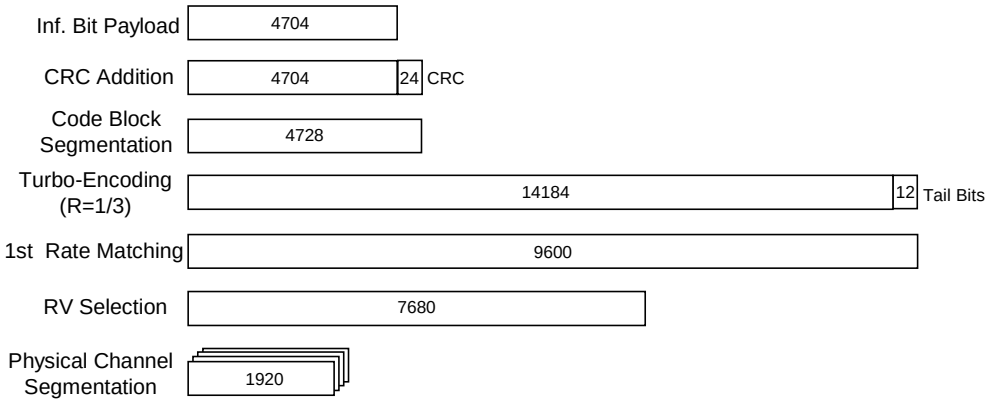

Figure A.13: Coding rate for Fixed reference Channel H-Set 1 (16 QAM)

A.7.1.2 Fixed Reference Channel Definition H-Set 2

Table A.26: Fixed Reference Channel H-Set 2

Parameter	Unit	Value	
Nominal Avg. Inf. Bit Rate	kbps	800	1176
Inter-TTI Distance	TTI's	2	2
Number of HARQ Processes	Processes	3	3
Information Bit Payload (N_{INF})	Bits	3200	4704
Number Code Blocks	Blocks	1	1
Binary Channel Bits Per TTI	Bits	4800	7680
Total Available SML's in UE	SML's	28800	28800
Number of SML's per HARQ Proc.	SML's	9600	9600
Coding Rate		0.67	0.62
Number of Physical Channel Codes	Codes	5	4
Modulation		QPSK	16QAM

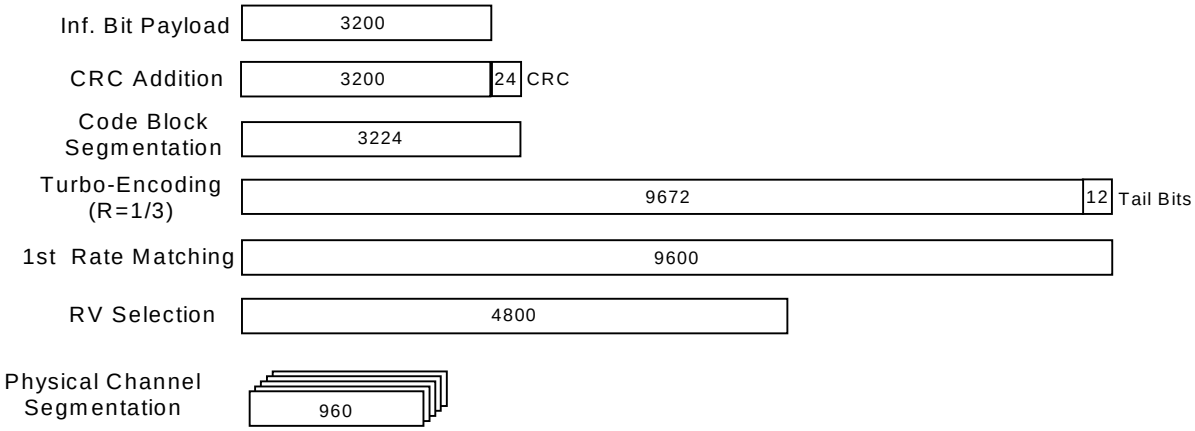

Figure A.14: Coding rate for Fixed Reference Channel H-Set 2 (QPSK)

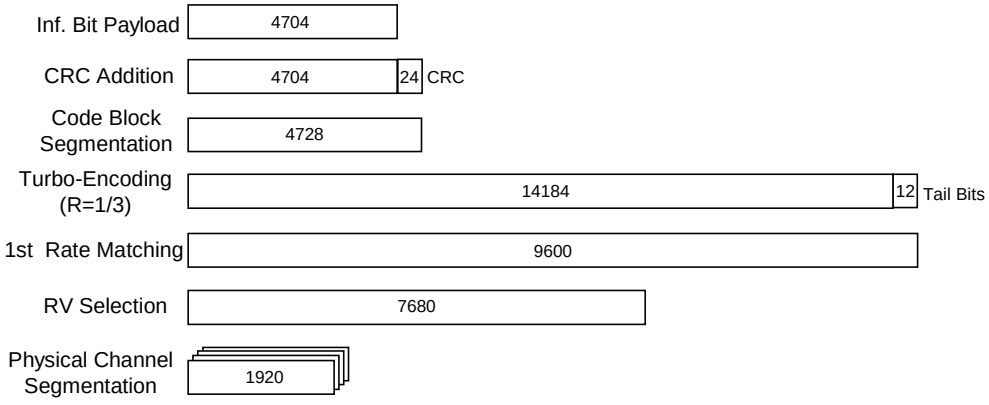

Figure A.15: Coding rate for Fixed Reference Channel H-Set 2 (16QAM)

A.7.1.3 Fixed Reference Channel Definition H-Set 3

Table A.27: Fixed Reference Channel H-Set 3

Parameter	Unit	Value	
Nominal Avg. Inf. Bit Rate	kbps	1600	2352
Inter-TTI Distance	TTI's	1	1
Number of HARQ Processes	Processes	6	6
Information Bit Payload (N_{INF})	Bits	3200	4704
Number Code Blocks	Blocks	1	1
Binary Channel Bits Per TTI	Bits	4800	7680
Total Available SML's,in UE	SML's	57600	57600
Number of SML's per HARQ Proc.	SML's	9600	9600
Coding Rate		0.67	0.62
Number of Physical Channel Codes	Codes	5	4
Modulation		QPSK	16QAM

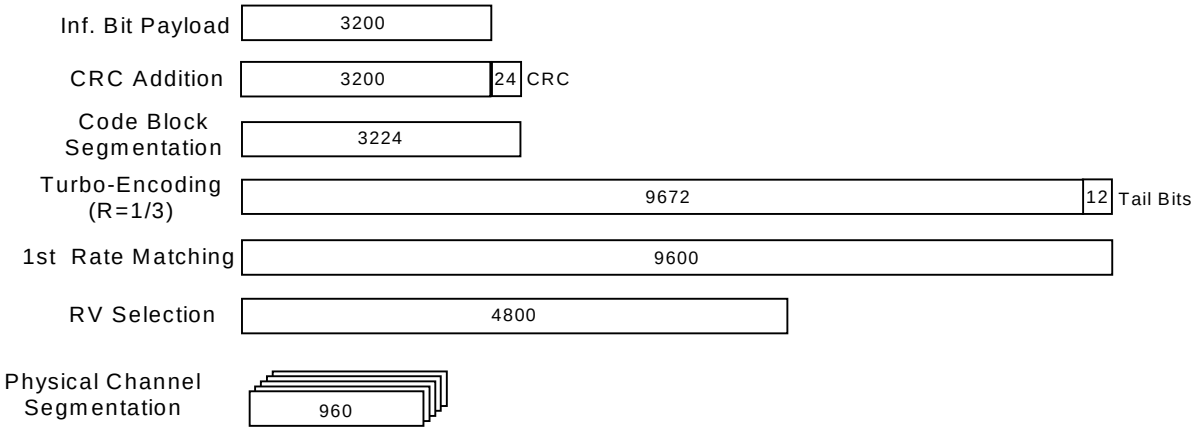

Figure A.16: Coding rate for Fixed reference Channel H-Set 3 (QPSK)

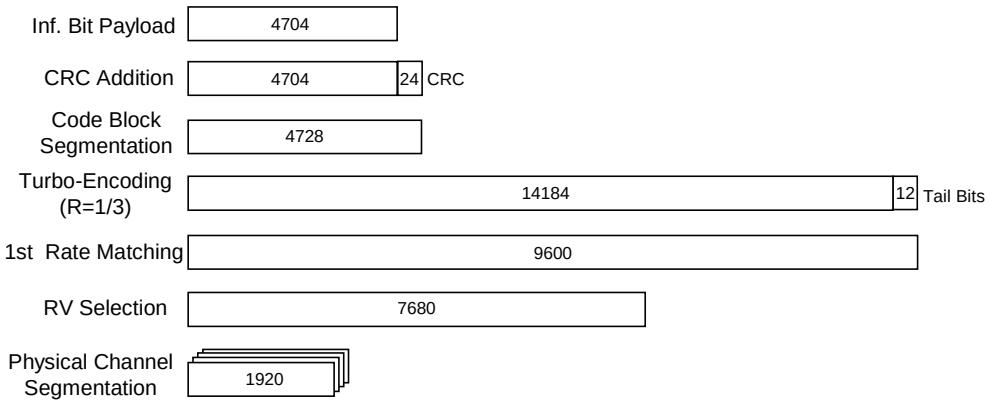

Figure A.17: Coding rate for Fixed reference Channel H-Set 3 (16QAM)

A.7.1.4 Fixed Reference Channel Definition H-Set 4

Table A.28: Fixed Reference Channel H-Set 4

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	534
Inter-TTI Distance	TTI's	2
Number of HARQ Processes	Processes	2
Information Bit Payload (N_{INF})	Bits	3202
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	4800
Total Available SML's in UE	SML's	14400
Number of SML's per HARQ Proc.	SML's	7200
Coding Rate		0.67
Number of Physical Channel Codes	Codes	5
Modulation		QPSK
Note: This test case verifies the minimum inter-TTI distance and therefore HS-PDSCH transmission shall be as follows: …00X0X000X0X…, where 'X' marks TTI in which HS-PDSCH is transmitted to the UE and '0' marks DTX.		

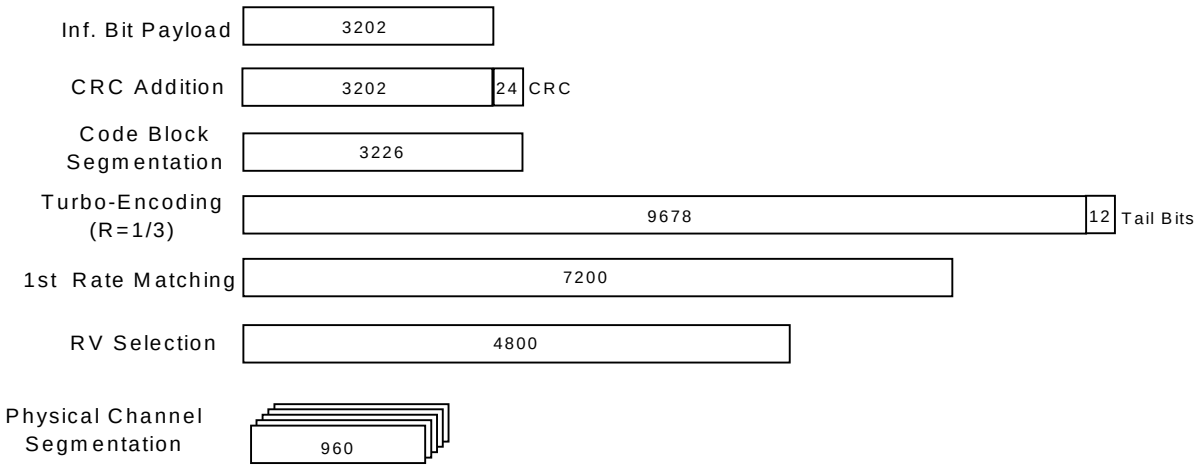

Figure A.18: Coding rate for Fixed Reference Channel H-Set 4

A.7.1.5 Fixed Reference Channel Definition H-Set 5

Table A.29: Fixed Reference Channel H-Set 5

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	801
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Processes	3
Information Bit Payload (N_{INF})	Bits	3202
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	4800
Total Available SML's in UE	SML's	28800
Number of SML's per HARQ Proc.	SML's	9600
Coding Rate		0.67
Number of Physical Channel Codes	Codes	5
Modulation		QPSK
Note: This test case verifies the minimum inter-TTI distance and therefore HS-PDSCH transmission shall be as follows: …00XXX000XXX…, where 'X' marks TTI in which HS-PDSCH is allocated to the UE and '0' marks DTX.		

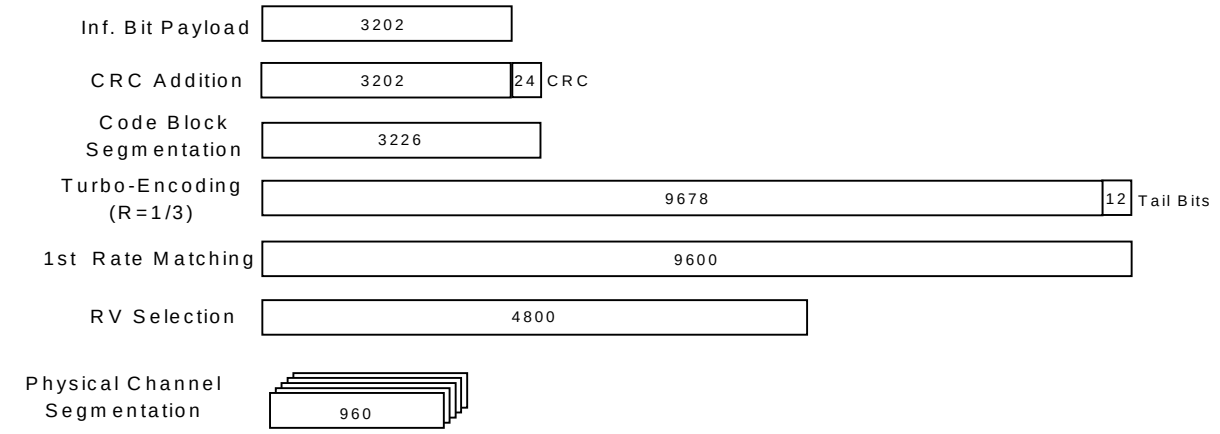

Figure A.19: Coding rate for Fixed Reference Channel H-Set 5

-------- Change of Section ----------

C.5 HSDPA DL Physical channels

C.5.1 Downlink Physical Channels connection set-up

Table C.8~~9~~ is applicable for the measurements for tests in subclause 9.2.1.~~table 9.1~~ 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~~9~~.

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~~9~~. The selected codes are designed to have a single length-16 parent code.

Table C.10~~9~~: 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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CHANGE REQUEST

⌘ **25.102** **CR** **127** ⌘ **rev** **1** ⌘ Current version: **5.2.0** ⌘

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Proposed change affects: UICC apps⌘ [ ] ME [X] Radio Access Network [ ] Core Network [ ]

Title:	⌘	Addition of HSDPA UE requirements for 3,84 Mcps TDD option for 16QAM and QPSK for fixed reference channels
Source:	⌘	RAN WG4
Work item code:	⌘	HSDPA-RF
Date:	⌘	26/11/2002
Category:	⌘	**B**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Requirements for HSDPA with fixed reference channels for QPSK and 16QAM are missing.
Summary of change:	⌘	Requirements for fixed reference channels for QPSK and 16QAM are added for PA3, PB3, VA30, VA120 Reference measurement channel mapping for QPSK and 16QAM are added in Annex A. PA3, PB3, VA30, VA120 reference added to Annex B.2.1.
Consequences if not approved:	⌘	HSDPA requirements for 3,84 Mcps TDD option will not be covered by the specification.

Clauses affected:	⌘	9.1, A.3, B.2.1

Other specs affected: ⌘	Y	N		⌘	
		X	Other core specifications	⌘	
	X		Test specifications		34.122
		X	O&M Specifications		

Other comments:	⌘	

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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 Performance requirements (HSDPA)

9.1 Performance requirement for 3.84 Mcps TDD option

~~void~~ The requirements are stated for the HSDPA UE reference combination classes specified in [2] and under the multipath propagation conditions specified in Annex B. The performance metric for HS-DSCH requirements in multi-path propagation conditions is the throughput R measured on HS-DSCH.

9.2.1 HS-DSCH throughput for fixed reference channels

The performance requirements in this subclause apply for the reference measurement channels specified in Annex A.3.2.

9.2.1.1 Minimum requirement QPSK, Fixed Reference Channel, 7,3 Mbps – Category 8 - UE

For the parameters specified in Table [9.1], the measured throughput R shall exceed the throughput specified in Table [9.2] for each radio condition.

Table [9.1]: Test parameters for fixed reference measurement channel requirements for 7,3 Mbps – Category 8 - UE (3,84 Mcps TDD Option) QPSK

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
HS-PDSCH Modulation	-	QPSK			
Scrambling code and basic midamble code number*	-	0, 1			
HS-PDSCH Channelization Codes*	C(k,Q)	C(i,16) i=1..16			C(i,16) i=1..14
Number of Hybrid ARQ processes	-	4			
Maximum number of Hybrid ARQ transmissions	-	4			
Redundancy and constellation version coding sequence**	-	{0,0,0,0} s=1, R=0, b=0			
$\frac{HS-PDSCH\_E_c}{I_{or}}$	dB	-12,04			-11.46
$\frac{\sum HS-PDSCH\_E_c}{I_{or}}$	dB	0			
I_{oc}	dBm/3,84 MHz	-60			
Note: *Refer to TS 25.223 for definition of channelization codes, scrambling code and basic midamble code. ** This sequence implies Chase combining					

Table [9.2]: Performance requirements for fixed reference measurement channel requirement in multipath channels for 7,3 Mbps – Category 8 - UE (3,84 Mcps TDD Option) QPSK

Test Number	Propagation conditions	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	R (Throughput) [kbps]
1	PA3	8,5	1300
2	PB3	9,0~~11,5~~	1300
3	VA30	9,75	1300
4	VA120	11,5	1400

9.2.1.2 Minimum requirement 16QAM, Fixed Reference Channel, 7,3 Mbps – Category 8 - UE

For the parameters specified in Table [9.3], the measured throughput R shall exceed the throughput specified in Table [9.4] for each radio condition.

Table [9.3]: Test parameters for fixed reference measurement channel requirements for 7,3 Mbps – Category 8 - UE (3,84 Mcps TDD Option) 16QAM

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
HS-PDSCH Modulation	-	16QAM			
Scrambling code and basic midamble code number*	-	0, 1			
HS-PDSCH Channelization Codes*	C(k,Q)	C(i,16) i=1..16			C(i,16) i=1..14
Number of Hybrid ARQ processes	-	4			
Maximum number of Hybrid ARQ transmissions	-	4			
Redundancy and constellation version coding sequence**	-	{0,0,0,0} s=1, r=0			
$\frac{HS-PDSCH\_E_c}{I_{or}}$	dB	-12,04			-11,46
$\frac{\sum HS-PDSCH\_E_c}{I_{or}}$	dB	0			
I_{oc}	dBm/3,84 MHz	-60			
Notes: *Refer to TS 25.223 for definition of channelization codes, scrambling code and basic midamble code. ** This sequence implies Chase combining					

Table [9.4]: Performance requirements for fixed reference measurement channel requirement in multipath channels for 7,3 Mbps – Category 8 - UE (3,84 Mcps TDD Option) 16QAM

Test Number	Propagation conditions	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	R (Throughput) [kbps]
1	PA3	16,0	2600
2	PB3	17,5~~20,5~~	2600
3	VA30	18,5	2600
4	VA120	14,5	1600

< Next changed section >

A.3 HSDPA reference measurement channels

A.3.1 ~~void~~ HSDPA reference measurement channels for 3,84 Mcps TDD option

A.3.1.1 Reference measurement channels for 7,3 Mbps – Category 8 - UE

A.3.1.1.1 QPSK modulation scheme for test 1, 2, 3

Table [A.9] HS-PDSCH fixed reference channel for the PA3, PB3, and VA30 Channel models - Category 8

Parameter	Unit	Value
Maximum information bit throughput	Mbps	2,6496
Number of HARQ Processes	Processes	4
Information Bit Payload (N_{INF})	Bits	26496
Number Code Blocks	Blocks	6
Total Available of Soft Channel bits in UE	Bits	353280
Number of Soft Channel bit per HARQ Proc.	Bits	88320
Number of coded bits per TTI	Bits	35328
Coding Rate		3/4
Number of HS-PDSCH Timeslots	Slots	8
Number of HS-PDSCH codes per TS	Codes	16
Spreading factor	SF	16

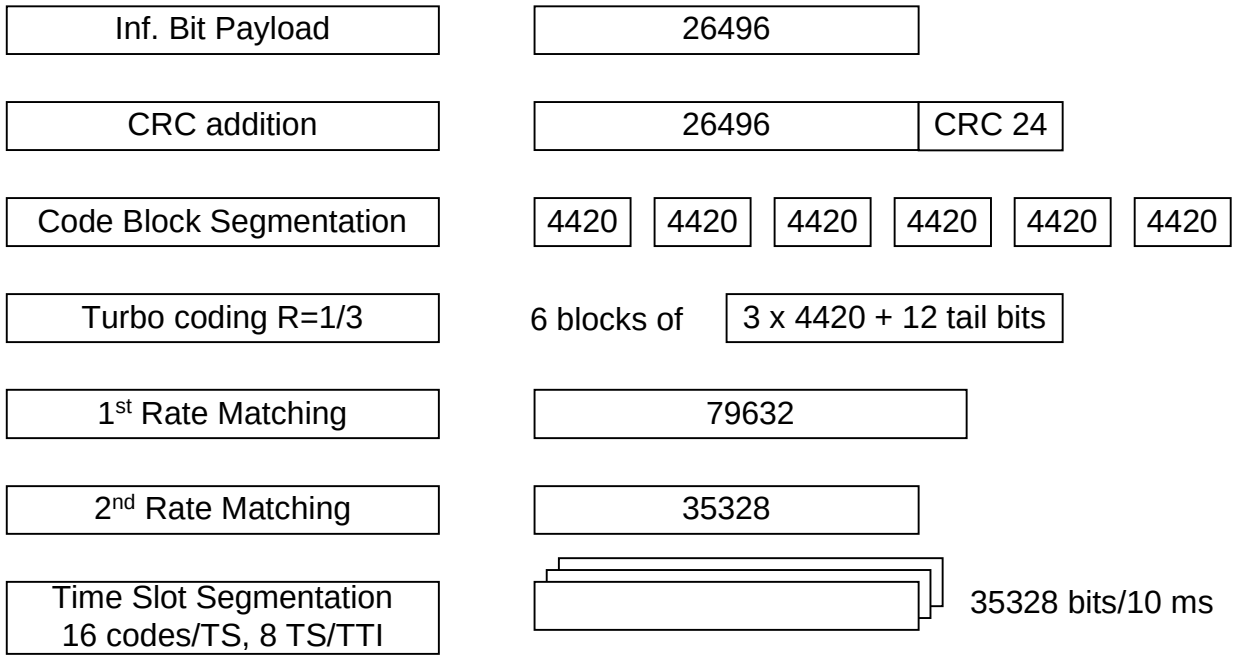

Figure [A.9] Coding for HS-PDSCH fixed reference channel with QPSK modulation for the PA3, PB3, and VA30 Channels – Category 8

A.3.1.1.2 QPSK modulation scheme for test 4

Table [A.9A] HS-PDSCH fixed reference channel for the VA120 Channel model - Category 8

Parameter	Unit	Value
Maximum information bit throughput	Mbps	2,3176
Number of HARQ Processes	Processes	4
Information Bit Payload (N_{INF})	Bits	23176
Number Code Blocks	Blocks	5
Total Available of Soft Channel bits in UE	Bits	353280
Number of Soft Channel bit per HARQ Proc.	Bits	88320
Number of coded bits per TTI	Bits	30912
Coding Rate		3/4
Number of HS-PDSCH Timeslots	Slots	8
Number of HS-PDSCH codes per TS	Codes	14
Spreading factor	SF	16

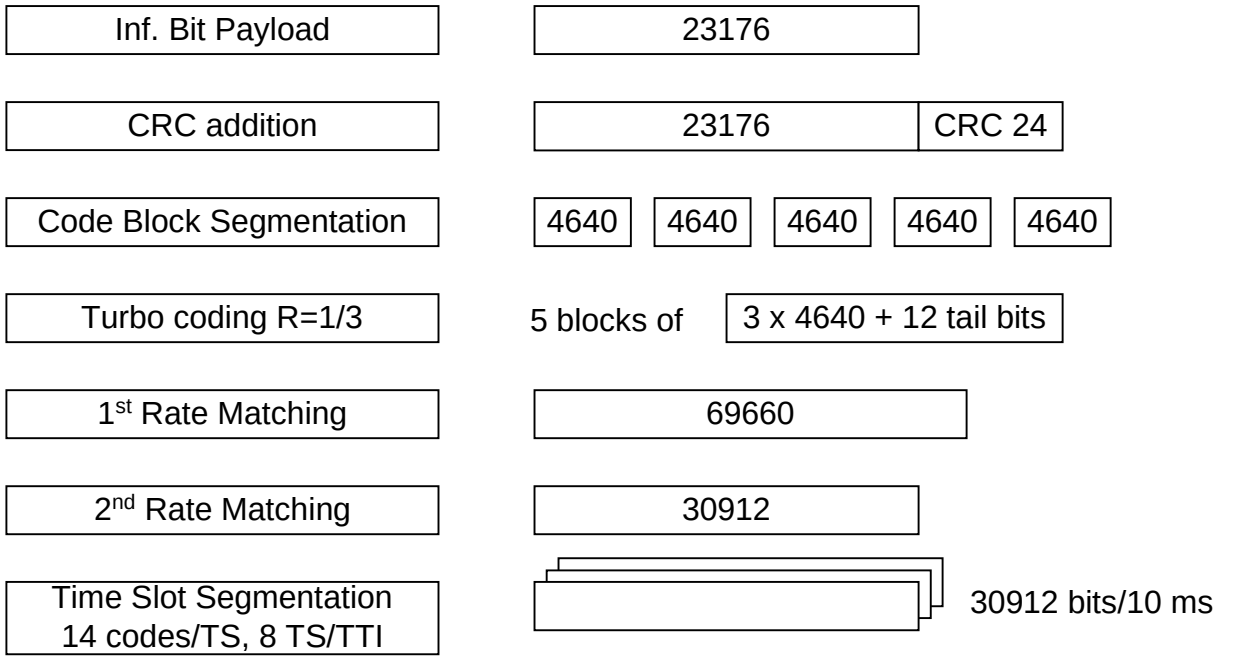

Figure [A.9A] Coding for HS-PDSCH fixed reference channel with QPSK modulation for the VA120 Channel – Category 8

A.3.1.1.3 16QAM modulation scheme for test 1, 2, 3

Table [A.10] HS-PDSCH fixed reference channel for the PA3, PB3, and VA30 Channel models - Category 8

Parameter	Unit	Value
Modulation		**16-QAM**
Maximum information bit throughput	Mbps	5,2996
Number of HARQ Processes	Processes	4
Information Bit Payload (N_{INF})	Bits	52996
Number Code Blocks	Blocks	11
Total Available of Soft Channel bits in UE	Bits	353280
Number of Soft Channel bit per HARQ Proc.	Bits	88320
Number of coded bits per TTI	Bits	70656
Coding Rate		3/4
Number of HS-PDSCH Timeslots	Slots	8
Number of HS-PDSCH codes per TS	Codes	16
Spreading factor	SF	16

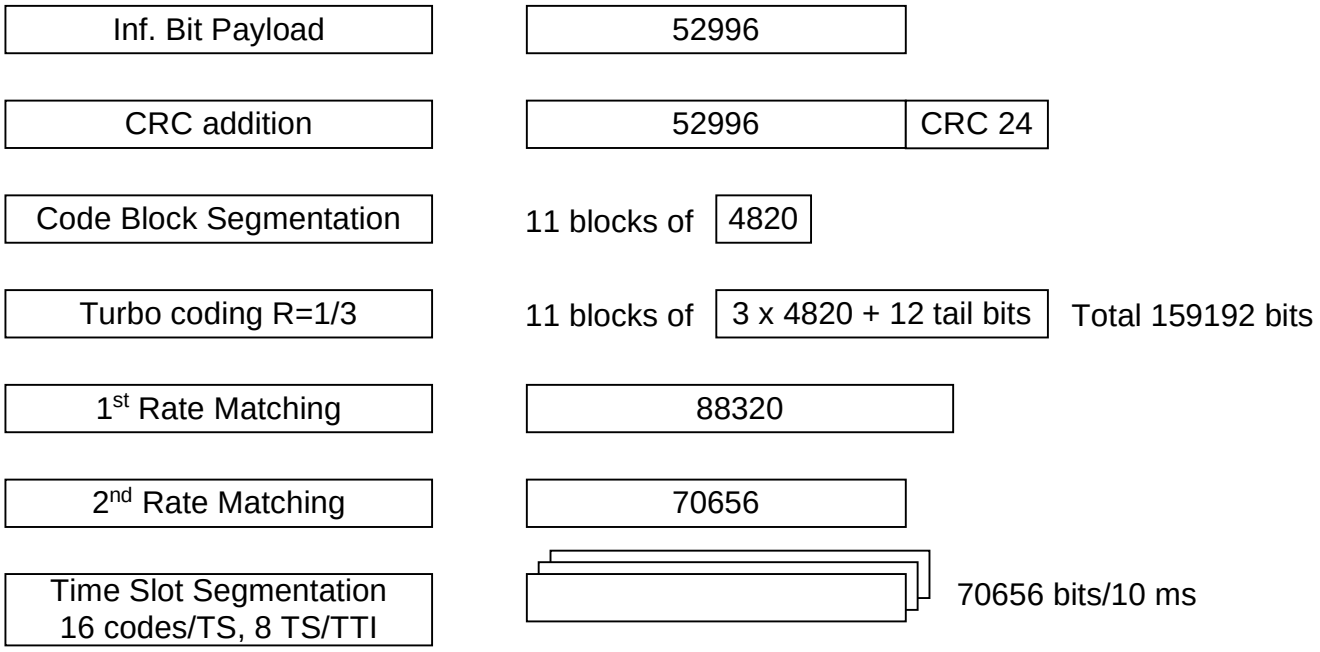

Figure [A.10] Coding for HS-PDSCH fixed reference channel with 16-QAM modulation for the PA3, PB3, and VA30 Channels – Category 8

A.3.1.1.4 16QAM modulation scheme for test 4

Table [A.10A] HS-PDSCH fixed reference channel for the PA3, PB3, and VA30 Channel models - Category 8

Parameter	Unit	Value
Modulation		**16-QAM**
Maximum information bit throughput	Mbps	3,4773
Number of HARQ Processes	Processes	4
Information Bit Payload (N_{INF})	Bits	34773
Number Code Blocks	Blocks	7
Total Available of Soft Channel bits in UE	Bits	353280
Number of Soft Channel bit per HARQ Proc.	Bits	88320
Number of coded bits per TTI	Bits	61824
Coding Rate		9/16
Number of HS-PDSCH Timeslots	Slots	8
Number of HS-PDSCH codes per TS	Codes	14
Spreading factor	SF	16

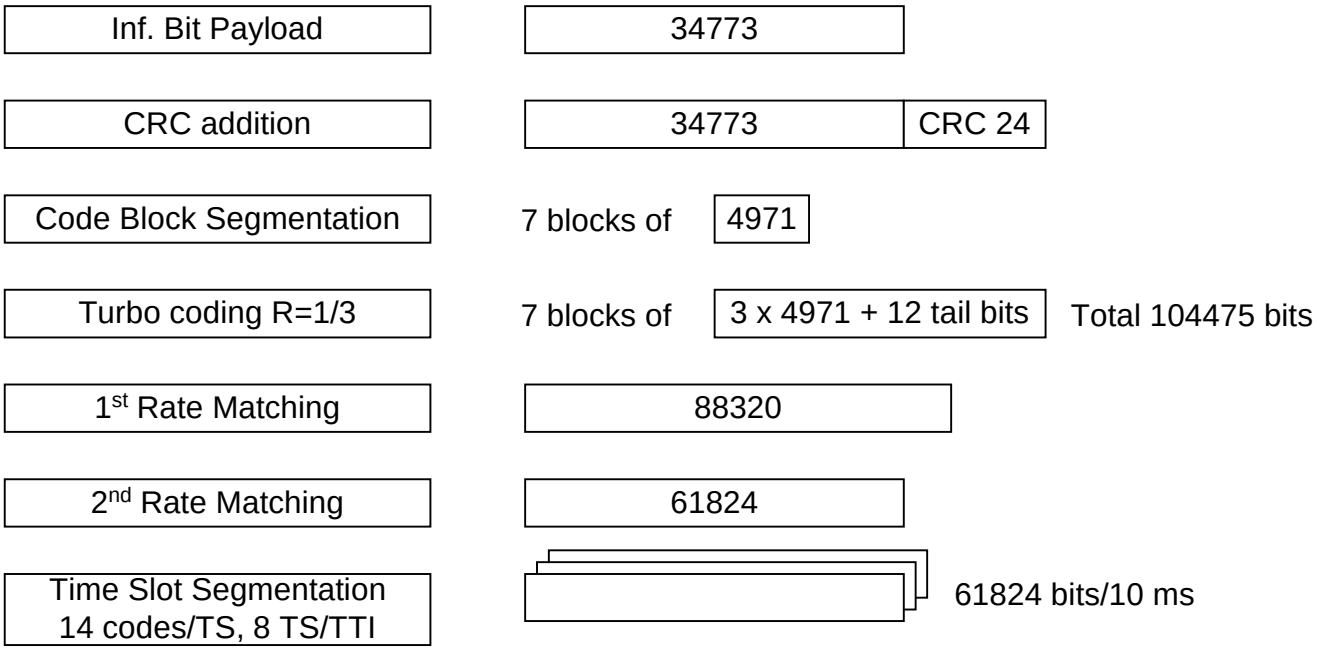

Figure [A.10A] Coding for HS-PDSCH fixed reference channel with 16-QAM modulation for the VA120 Channel – Category 8

< Next changed section >

B.2.1 3.84 Mcps TDD Option

Table B.1 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

Case 1 speed 3km/h		Case 2 speed 3 km/h		Case 3 speed 120 km/h		CASE 4 speed 50 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]
0	0	0	0	0	0	0	0
976	-10	976	0	260	-3	976	-10
		12000	0	521	-6		
				781	-9		

*NOTE: Case 4 is only used in TS25.123.

Table [B.2]: 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	2510	-20

3GPP TSG RAN WG4 (Radio) Meeting #25 **R4-021669**

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CHANGE REQUEST

⌘ **25.102** **CR** **128** ⌘ **rev** **1** ⌘ Current version: **5.2.0** ⌘

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Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Addition of HSDPA UE requirements for 3,84 Mcps TDD option for 16QAM and QPSK for Variable Reference Channel
Source:	⌘	RAN WG4
Work item code:	⌘	HSDPA-RF
Date:	⌘	26/11/2002
Category:	⌘	**B**
Release:	⌘	Rel-5

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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:	⌘	Requirements for HSDPA with variable reference channel for QPSK and 16QAM are missing.
Summary of change:	⌘	Requirements for variable reference channel for QPSK and 16QAM are added for PA3, PB3, VA30
Consequences if not approved:	⌘	HSDPA requirements for 3,84 Mcps TDD option will not be covered by the specification.

Clauses affected:	⌘	9.1			
Other specs affected:	⌘	**Y**	**N**		
			X	Other core specifications	⌘
		X		Test specifications	34.122
			X	O&M Specifications	
Other comments:	⌘				

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9.2.1.3 Minimum requirement Variable Reference Channel, 7,3 Mbps – Category 8 - UE

For the parameters specified in Table [9.5] the measured throughput R shall exceed the throughput specified in Table [9.6] for each radio condition.

Table [9.5]: Test parameters for variable reference measurement channel requirements for 7,3 Mbps – Category 8 - UE (3,84 Mcps TDD Option)

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
Scrambling code and basic midamble code number*	-	0, 1			
Number of TS	-	8			
HS-PDSCH Channelization Codes*	C(k,Q)	C(i,16) i=1..16			
Number of Hybrid ARQ processes**	-	4			
Maximum number of Hybrid ARQ transmissions	-	1			
Redundancy and constellation version coding sequence	(Xrv, s, r, b)	(0, 1, 0, 0)			
HS-PDSCH$_i$ _ Ec/Ior	dB	–12,04			
$\frac{\sum_{1}^{i} HS-PDSCH\_Ec_i}{Ior}$	dB	0			
I_{oc}	dBm/3,84MHz	-60			
Note: *Refer to TS 25.223 for definition of channelization codes, scrambling code and basic midamble code. ** For timing requirements, HARQ is not active					

Table [9.6]: Performance requirements for variable reference measurement channel requirement in multipath channels for 7,3 Mbps – Category 8 - UE (3,84 Mcps TDD Option)

Test Number	Propagation conditions	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	R (Throughput) [kbps]
1	PA3	8,8	1240
		14,8	2500
		18,8	3600
		24,8	5000
2	PB3	8,8	1220
		14,8	2430
		20,8	4030
		24,8	5080
3	VA30	10,1	1190
		16,1	2290
		20,1	3220
		24,1	4260
4	VA120	7,1	590
		11,1	1180
		15,1	1840
		19,1	2390

3GPP TSG RAN WG4 (Radio) Meeting #25 **R4-021638**

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CHANGE REQUEST

⌘ **25.102** **CR** **132** ⌘ **rev** **1** ⌘ Current version: **5.2.0** ⌘

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Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	HSDPA UE requirements for 1,28 Mcps TDD option for 16QAM and QPSK for fixed reference channels
Source:	⌘	RAN WG4
Work item code:	⌘	HSDPA-RF
Date:	⌘	26/11/2002
Category:	⌘	**F**
Release:	⌘	Rel-5

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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:	⌘	1. Requirement for fixed reference channel of VA120 both for QPSK and 16QAM is missing 2. To refine the values of performance requirements, the values based on averaged simulation results of Siemens, Panasonic, Samsung, and Motorola are proposed 3. At RAN#17, corrections to the HS-PDSCH channel coding in TS25.222 were agreed and the transport block size set was defined and incorporated to TS25.321
Summary of change:	⌘	1. Minimum requirement of QPSK in PA3, PB3, VA30 were updated. 2. Minimum requirement of 16 QAM in PA3, PB3, VA30 were updated. 3. Minimum requirement of VA120 for both QPSK and 16QAM was added to table [9.2]. 4. Channel mapping for QPSK and 16QAM were corrected. Valid transport block sizes are used.
Consequences if not approved:	⌘	There is no minimum requirement for QPSK and 16QAM in VA 120 for fixed reference channel in 25.102. The minimum requirement for 1.28 Mcps TDD option for fixed reference channels can't be more reliable. Inconsistencies between 25.102 and 25.222 will remain. HSDPA UE testing will be not feasible since transport block sizes are not supported.

Clauses affected:	⌘	9.2.1, Annex A.3.2				
		Y	**N**			
Other specs affected:	⌘		**X**	Other core specifications	⌘	
		X		Test specifications		34.122
			X	O&M Specifications		
Other comments:	⌘					

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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 Performance requirements for 1.28 Mcps TDD option

The requirements are stated for the HSDPA UE reference combination classes specified in [2] and under the multipath propagation conditions specified in Annex B. The performance metric for HS-DSCH requirements in multi-path propagation conditions is the throughput R measured on HS-DSCH.

9.2.1 HS-DSCH throughput for fixed reference channels

The performance requirements in this subclause apply for the reference measurement channels specified in Annex A.3.2.

9.2.1.1 Minimum requirement QPSK, Fixed Reference Channel, 1.4 Mbps UE class

For the parameters specified in Table [9.1], the measured throughput R shall exceed the throughput specified in Table [9.2] for each radio condition.

Table [9.1]: Test parameters for fixed reference measurement channel requirements for 1.4 Mbps UE class (1.28 Mcps TDD Option) QPSK

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
HS-PDSCH Modulation	-	QPSK			
Scrambling code and basic midamble code number*	-	0			
HS-PDSCH Channelization Codes*	C(k,Q)	C(i,16) i=1..10			
Number of Hybrid ARQ processes	-	4			
Maximum number of Hybrid ARQ transmissions	-	4			
Redundancy and constellation version coding sequence	-	{0,0,0,0}			
$\frac{HS-PDSCH\_E_c}{I_{or}}$	dB	-10			
I_{oc}	dBm/1.28 MHz	-60			
*Note: Refer to TS 25.223 for definition of channelization codes, scrambling code and basic midamble code.					

Table [9.2]: Performance requirements for fixed reference measurement channel requirement in multipath channels for 1.4 Mbps UE class (1.28 Mcps TDD Option) QPSK

Test Number	Propagation conditions	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	R (Throughput) [kbps]
1	PA3	10	~~355~~375
2	PB3	10	~~370~~378
3	VA30	10	~~325~~338
4	VA120	10	~~TBD~~281

9.2.1.2 Minimum requirement 16QAM, Fixed Reference Channel, 1.4 Mbps UE class

For the parameters specified in Table [9.3], the measured throughput R shall exceed the throughput specified in Table [9.4] for each radio condition.

Table [9.3]: Test parameters for fixed reference measurement channel requirements for 1.4 Mbps UE class (1.28 Mcps TDD Option) 16QAM

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
HS-PDSCH Modulation	-	16QAM			
Scrambling code and basic midamble code number*	-	0			
HS-PDSCH Channelization Codes*	C(k,Q)	C(i,16) i=1..9			
Number of Hybrid ARQ processes	-	4			
Maximum number of Hybrid ARQ transmissions	-	4			
Redundancy and constellation version coding sequence	-	{6,2,1,5}			
$\frac{HS-PDSCH\_E_c}{I_{or}}$	dB	-9.5			
I_{oc}	dBm/1.28 MHz	-60			
*Note: Refer to TS 25.223 for definition of channelization codes, scrambling code and basic midamble code.					

Table [9.4]: Performance requirements for fixed reference measurement channel requirement in multipath channels for 1.4 Mbps UE class (1.28 Mcps TDD Option) 16QAM

Test Number	Propagation conditions	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	R (Throughput) [kbps]
1	PA3	10	~~375~~379
2	PB3	10	~~360~~353
3	VA30	10	~~330~~326
4	VA120	10	~~TBD~~289

---NEXT SECTION---

A.3 HSDPA reference measurement channels

A.3.1 void

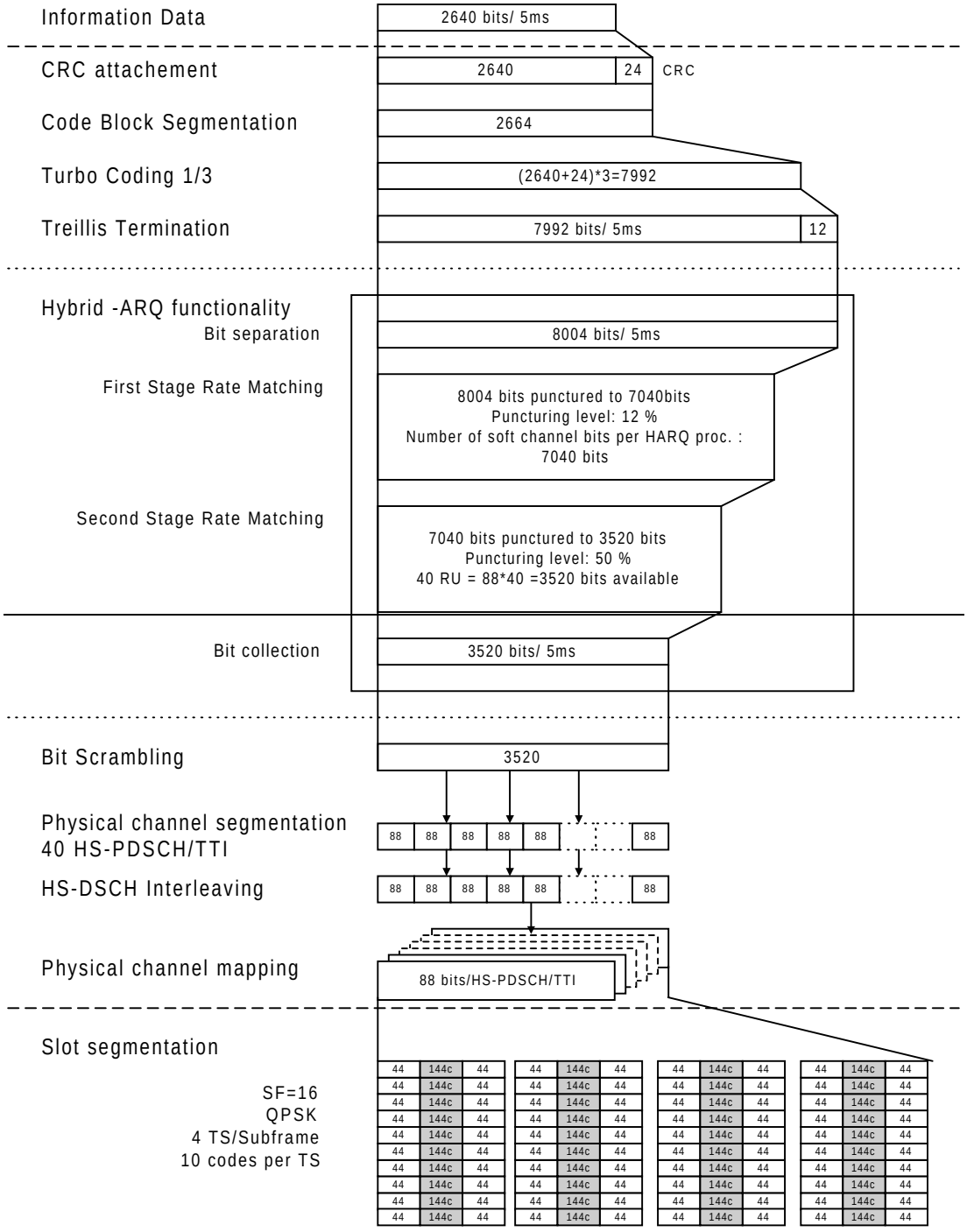
A.3.2 HSDPA reference measurement channels for 1.28 Mcps TDD option

A.3.2.1 Reference measurement channels for 1.4 Mbps UE class

A.3.2.1.1 QPSK modulation scheme

Table [A.9]

Parameter	Value
Maximum information data rate	526~~8~~ kbps
RU´s allocated	4TS (10*SF16) = 40RU/5ms
Midamble	144 chips
Puncturing level at code rate 1/3 : first stage/second stage	12% / 50%


Information Data
2640 bits/ 5ms
CRC attachement
2640
24
CRC
Code Block Segmentation
2664
Turbo Coding 1/3
(2640+24)*3=7992
Treillis Termination
7992 bits/ 5ms
12
Hybrid -ARQ functionality
Bit separation
8004 bits/ 5ms
First Stage Rate Matching
8004 bits punctured to 7040bits
Puncturing level: 12 %
Number of soft channel bits per HARQ proc. :
7040 bits
Second Stage Rate Matching
7040 bits punctured to 3520 bits
Puncturing level: 50 %
40 RU = 88*40 =3520 bits available
Bit collection
3520 bits/ 5ms
Bit Scrambling
3520
Physical channel segmentation
40 HS-PDSCH/TTI
88
HS-DSCH Interleaving
Physical channel mapping
88 bits/HS-PDSCH/TTI
Slot segmentation
SF=16
QPSK
4 TS/Subframe
10 codes per TS
44
144c

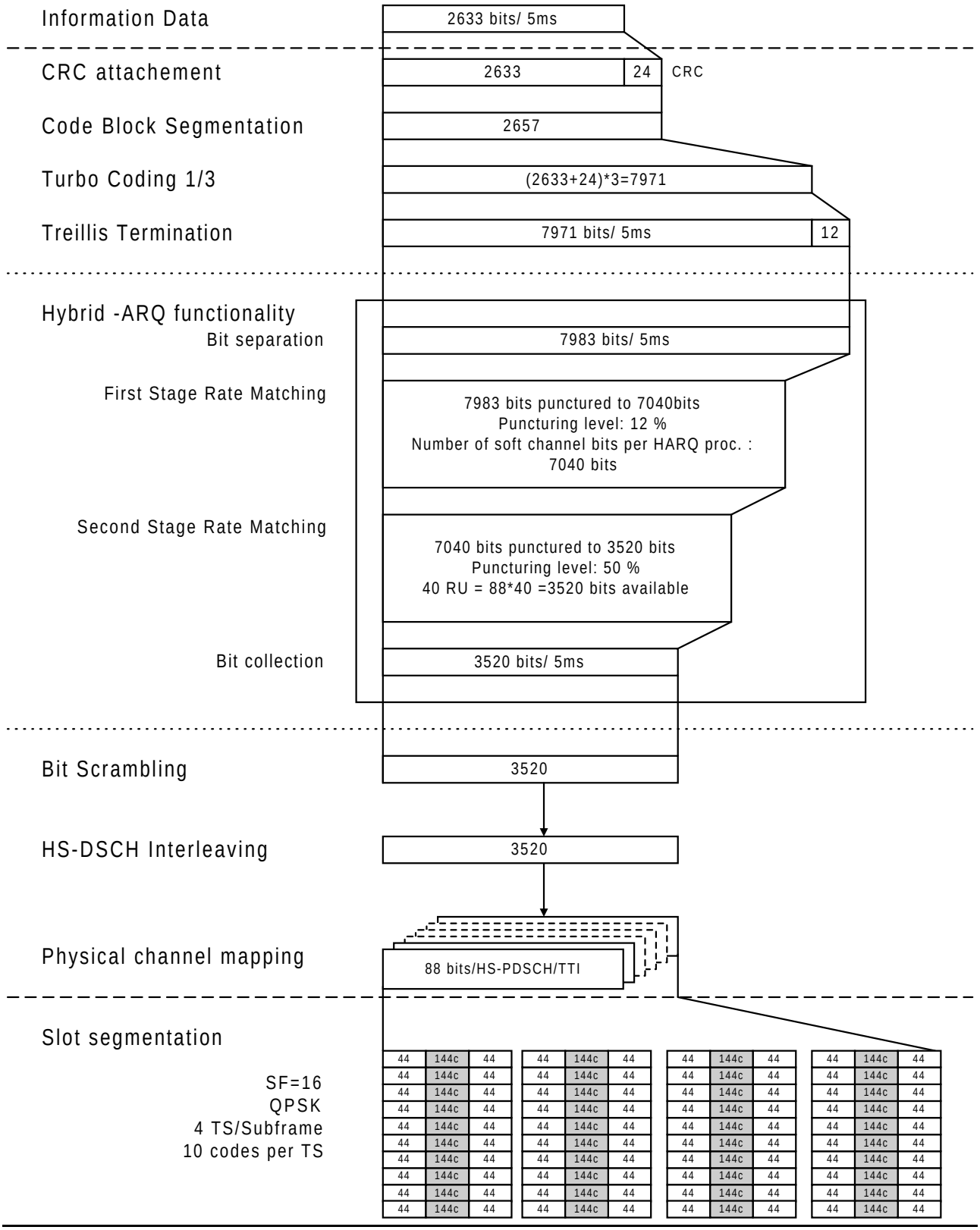
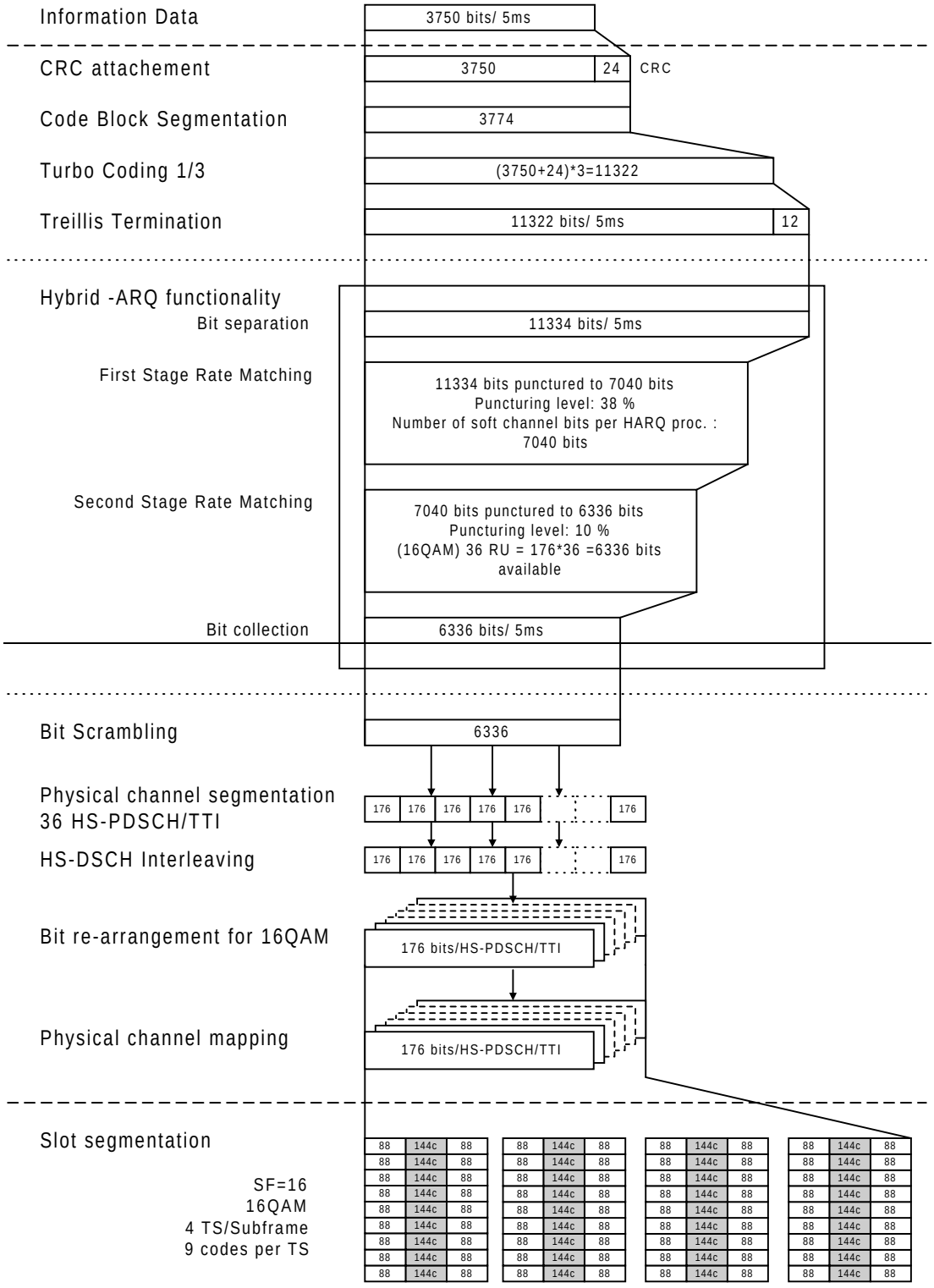

Information Data
2633 bits/ 5ms
CRC attachement
2633
24
CRC
Code Block Segmentation
2657
Turbo Coding 1/3
(2633+24)*3=7971
Treillis Termination
7971 bits/ 5ms
12
Hybrid -ARQ functionality
Bit separation
7983 bits/ 5ms
First Stage Rate Matching
7983 bits punctured to 7040bits
Puncturing level: 12 %
Number of soft channel bits per HARQ proc. :
7040 bits
Second Stage Rate Matching
7040 bits punctured to 3520 bits
Puncturing level: 50 %
40 RU = 88*40 =3520 bits available
Bit collection
3520 bits/ 5ms
Bit Scrambling
3520
HS-DSCH Interleaving
3520
Physical channel mapping
88 bits/HS-PDSCH/TTI
Slot segmentation
SF=16
QPSK
4 TS/Subframe
10 codes per TS
44
144c
44

Figure [A.9]

A.3.2.1.2 16QAM modulation scheme

Table [A.10]

Parameter	Value
Maximum information data rate	7350 kbps
RU´s allocated	4TS (9*SF16) = 36RU/5ms
Midamble	144 chips
Puncturing level at code rate 1/3 : first stage/second stage	368% / 10%


Information Data
3750 bits/ 5ms
CRC attachement
3750
24
CRC
Code Block Segmentation
3774
Turbo Coding 1/3
(3750+24)*3=11322
Treillis Termination
11322 bits/ 5ms
12
Hybrid -ARQ functionality
Bit separation
11334 bits/ 5ms
First Stage Rate Matching
11334 bits punctured to 7040 bits
Puncturing level: 38 %
Number of soft channel bits per HARQ proc. :
7040 bits
Second Stage Rate Matching
7040 bits punctured to 6336 bits
Puncturing level: 10 %
(16QAM) 36 RU = 176*36 =6336 bits
available
Bit collection
6336 bits/ 5ms
Bit Scrambling
6336
Physical channel segmentation
36 HS-PDSCH/TTI
176
HS-DSCH Interleaving
Bit re-arrangement for 16QAM
176 bits/HS-PDSCH/TTI
Physical channel mapping
176 bits/HS-PDSCH/TTI
Slot segmentation
88
144c
SF=16
16QAM
4 TS/Subframe
9 codes per TS

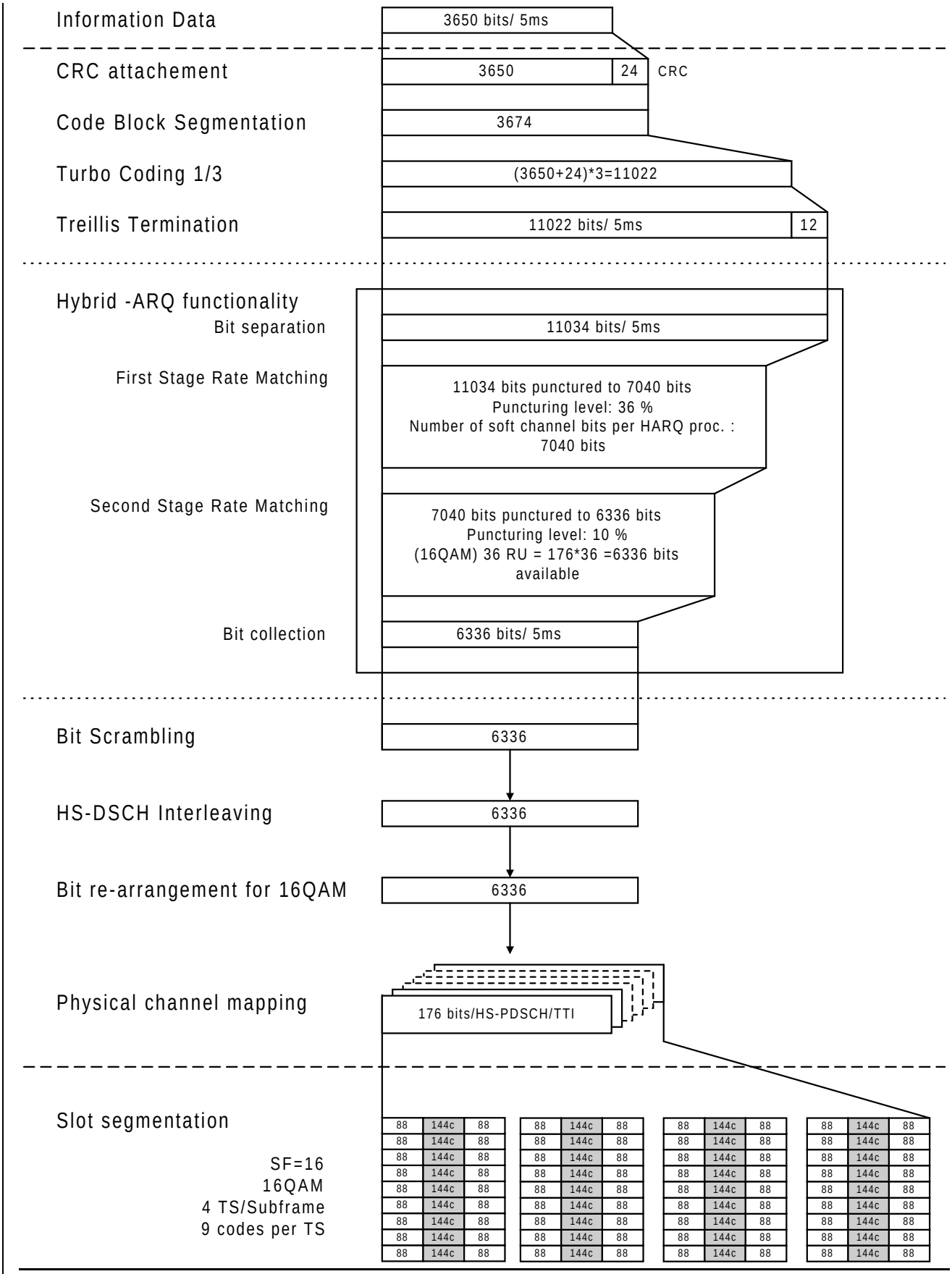

Information Data
3650 bits/ 5ms
CRC attachement
3650
24
CRC
Code Block Segmentation
3674
Turbo Coding 1/3
(3650+24)*3=11022
Treillis Termination
11022 bits/ 5ms
12
Hybrid -ARQ functionality
Bit separation
11034 bits/ 5ms
First Stage Rate Matching
11034 bits punctured to 7040 bits
Puncturing level: 36 %
Number of soft channel bits per HARQ proc. :
7040 bits
Second Stage Rate Matching
7040 bits punctured to 6336 bits
Puncturing level: 10 %
(16QAM) 36 RU = 176*36 =6336 bits
available
Bit collection
6336 bits/ 5ms
Bit Scrambling
6336
HS-DSCH Interleaving
6336
Bit re-arrangement for 16QAM
6336
Physical channel mapping
176 bits/HS-PDSCH/TTI
Slot segmentation
SF=16
16QAM
4 TS/Subframe
9 codes per TS
88
144c
88

Figure [A.10]

3GPP TSG RAN WG4 (Radio) Meeting #25 **R4-021407**

Secaucus, NJ, USA 11 - 15 November, 2002

CR-Form-v7

CHANGE REQUEST

⌘ **25.141** **CR** **247** ⌘ **rev** ⌘ Current version: **5.4.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☒ Core Network ☐

Title:	⌘	Correction on PN9 seed setting in Test Model 5
Source:	⌘	RAN WG4
Work item code:	⌘	HSDPA-RF
Date:	⌘	26/11/2002
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change:	⌘	Using Test Model 5 with 8 HS-PDSCH, the current PN9 seed setting (i.e. seed = channelization code) gives PAR results that are higher than those with random user data, which better represents realistic operating scenarios.
Summary of change:	⌘	1) To set the PN9 seed of each HS-PDSCH channel as its channelization code multiplied by 23 (i.e. seed = code x 23). 2) To set the 2 MSBs of the PN9 seed of each HS-SCCH channel to ONEs. 3) To remove the square brackets in Tables 6.6C and 6.6D for the zero timing offsets of the HS-SCCH and HS-PDSCH channels.
Consequences if not approved:	⌘	The PAR results using Test Model 5 will not be comparable to those with random user data that better represents realistic operating scenarios, and the higher PAR results from the current PN9 seed setting will translate to an unintended tighter EVM requirement for BS transmitting 16QAM.

Clauses affected:	⌘	6.1.1.4A, 6.1.1.7, 6.1.1.8

Other specs affected: ⌘	Y	N		⌘
		X	Other core specifications	
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘

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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.

6.1.1.4A Test Model 5

This model shall be used for tests on:

- EVM for base stations supporting HS-PDSCH transmission using 16QAM modulation (at Pmax)

Considering that not every base station implementation will support 8 HS-PDSCH + 30 DPCH, variants of this test model containing 4 HS-PDSCH + 14 DPCH and 2 HS-PDSCH + 6 DPCH are also specified. The conformance test shall be performed using the largest of these three options that can be supported by the equipment under test.

Each HS-PDSCH is modulated by 16QAM.

Table 6.6A: Test Model 5 Active Channels

Type	Number of Channels	Fraction of Power (%)	Level setting (dB)	Channelization Code	Timing offset ($x256T_{chip}$)
P-CCPCH+SCH	1	7.9	-11	1	0
Primary CPICH	1	7.9	-11	0	0
PICH	1	1.3	-19	16	120
S-CCPCH containing PCH (SF=256)	1	1.3	-19	3	0
DPCH (SF=128)	30/14/6(*)	14/14.2/14.4 in total	see table 6.b	see table 6.b	see table 6.b
HS-SCCH	2	4 in total	see table 6.c	see table 6.c	see table 6.c
HS-PDSCH (16QAM)	8/4/2(*)	63.6/63.4/63.2 in total	see table 6.d	see table 6.d	see table 6.d
Note *: 2 HS-PDSCH shall be taken together with 6 DPCH, 4 HS-PDSCH shall be taken with 14 DPCH, and 8 HS-PDSCH shall be taken together with 30 DPCH.					

Table 6.6B: DPCH Spreading Code, Timing offsets and level settings for Test Model 5

Code (SF=128)	Timing offset ($x256T_{chip}$)	Level settings (dB) (30 codes)	Level settings (dB) (14 codes)	Level settings (dB) (6 codes)
15	86	-20	-17	-17
23	134	-20	-19	-15
68	52	-21	-19	-15
76	45	-22	-20	-18
82	143	-24	-18	-16
90	112	-21	-20	-17
5	59	-23	-25	
11	23	-25	-23	
17	1	-23	-20	
27	88	-26	-22	
64	30	-24	-21	
72	18	-22	-22	
86	30	-24	-19	
94	61	-28	-20	
3	128	-27		
7	143	-26		
13	83	-27		
19	25	-25		
21	103	-21		
25	97	-21		
31	56	-23		
66	104	-26		
70	51	-25		
74	26	-24		
78	137	-27		
80	65	-26		
84	37	-23		
88	125	-25		
89	149	-22		
92	123	-24		

Table 6.6C: HS-SCCH Spreading Code, Timing offsets and level settings for Test Model 5

Code (SF=128)	Timing offset (x256T_{chip})	Level settings (dB)
9	[0]	-15
29	[0]	-21

Table 6.6D: HS-PDSCH Spreading Code, Timing offsets, level settings for Test Model 5

Code (SF=16)	Timing offset (x256T_{chip})	Level settings (dB) (8 codes)	Level settings (dB) (4 codes)	Level settings (dB) (2 codes)
4	[0]	-11	-8	-5
5	[0]	-11	-8	
6	[0]	-11		
7	[0]	-11		
12	[0]	-11	-8	-5
13	[0]	-11	-8	
14	[0]	-11		
15	[0]	-11		

6.1.1.7 HS-PDSCH Structure of the Downlink Test Model 5

There are 640 bits per slot in a 16QAM-modulated HS-PDSCH. The aggregate 15 x 640 = 9600 bits per frame are filled with repetitions of a PN9 sequence generated using the primitive trinomial $x^9 + x^4 + 1$. To ensure non-correlation of the PN9 sequences, each HS-PDSCH shall use its channelization code multiplied by 23 as the seed for the PN sequence at the start of each frame.

The generator shall be seeded so that the sequence begins with the channelization code starting from the LSB.

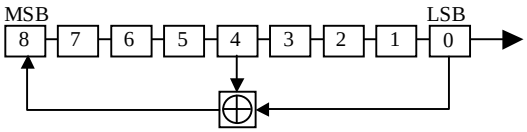

Figure 6.2

6.1.1.8 HS-SCCH Structure of the Downlink Test Model 5

There are 40 bits per time slot in a HS-SCCH. The aggregate 15 x 40 = 600 bits per frame are filled with repetitions of a PN9 sequence generated using the primitive trinomial $x^9 + x^4 + 1$. Channelization code of the HS-SCCH is used as the seed for the PN sequence at the start of each frame. The generator shall be seeded so that the sequence begins with the channelization code starting from the LSB, and followed by 2 consecutive ONEs.

3GPP TSG RAN WG4 (Radio) Meeting #25 **R4-021670**

Secaucus, NJ, USA 11 - 15 November, 2002

CR-Form-v7

CHANGE REQUEST

⌘ **25.142** **CR** **146** ⌘ **rev** **1** ⌘ Current version: **5.2.0** ⌘

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Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☒ Core Network ☐

Title:	⌘	Correction of 16QAM EVM/PCDE testing for HSDPA for 3,84 Mcps TDD option
Source:	⌘	RAN WG4
Work item code:	⌘	HSDPA-RF
Date:	⌘	26/11/2002
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
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D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Current spectum emission requirements do not include 16 QAM requirements for HSDPA 16 QAM for 3,84 Mpcs TDD
Summary of change:	⌘	Inclusion of spectrum emission mask, spurious emission, transmit intermodulation, ACLR and PCDE test requirements for 16-QAM channels (HS-DSCH) for 3,84 Mcps TDD option BS supporting 16-QAM.
Consequences if not approved:	⌘	Testing of Node B requirements for 16-QAM spectrum emissions and intermodulation will be missing from th specification.

Clauses affected:	⌘	6.6.2.1.4, 6.6.2.1.5, 6.6.2.2.4, 6.6.2.2.5, 6.6.3.4, 6.6.3.5, 6.7.4, 6.8.2

Other specs affected: ⌘	Y	N		⌘
		X	Other core specifications	
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
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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.

6.6.2 Out of band emission

Out of band emissions are unwanted emissions immediately outside the channel bandwidth resulting from the modulation process and non-linearity in the transmitter but excluding spurious emissions. This out of band emission requirement is specified both in terms of a spectrum emission mask and adjacent channel power ratio for the transmitter.

6.6.2.1 Spectrum emission mask

6.6.2.1.1 Definition and applicability

6.6.2.1.1.1 3,84 Mcps TDD option

The spectrum emission mask specifies the limit of the transmitter out of band emissions at frequency offsets from the assigned channel frequency of the wanted signal between 2,5 MHz and 12,5 MHz.

The mask defined in subclause 6.6.2.1.2.1 below may be mandatory in certain regions. In other regions this mask may not be applied.

For regions in which the mask is mandatory, the requirements shall apply to both Wide Area BS and Local Area BS.

6.6.2.1.1.2 1,28 Mcps TDD option

The spectrum emission mask specifies the limit of the transmitter out of band emissions at frequency offsets from the assigned channel frequency of the wanted signal between 0,8 MHz and 4 MHz.

The mask defined in subclause 6.6.2.1.2.2 below may be mandatory in certain regions. In other regions this mask may not be applied.

For regions in which the mask is mandatory, the requirements shall apply to both Wide Area BS and Local Area BS.

6.6.2.1.2 Minimum Requirements

6.6.2.1.2.1 3,84 Mcps TDD option

For regions where this subclause applies, the requirement shall be met by a base station transmitting on a single RF carrier configured in accordance with the manufacturer's specification. Emissions shall not exceed the maximum level specified in tables 6.13 to 6.16 in the frequency range of f_offset from 2,515 MHz to f_offset_{max} from the carrier frequency, where:

- f_offset is the separation between the carrier frequency and the centre of the measurement filter
- f_offset_{max} is either 12,5 MHz or the offset to the UMTS Tx band edge as defined in subclause 4.2, whichever is the greater.

Table 6.13: Spectrum emission mask values, BS maximum output power P ≥ 43 dBm

Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
2,515 MHz ≤ f_offset < 2,715 MHz	-14 dBm	30 kHz
2,715 MHz ≤ f_offset < 3,515 MHz	$-14dBm - 15 \cdot \left(\frac{f\_offset}{MHz} - 2{,}715 \right) dB$	30 kHz
3,515 MHz ≤ f_offset < 4,0 MHz	-26 dBm	30 kHz
4,0 MHz ≤ f_offset < 8,0 MHz	-13 dBm	1 MHz
8,0 MHz ≤ f_offset < f_offset_{max}	-13 dBm	1 MHz

Table 6.14: Spectrum emission mask values, BS maximum output power 39 ≤ P < 43 dBm

Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
2,515 MHz ≤ f_offset < 2,715 MHz	-14 dBm	30 kHz
2,715 MHz ≤ f_offset < 3,515 MHz	$-14dBm - 15 \cdot \left(\frac{f\_offset}{MHz} - 2{,}715 \right) dB$	30 kHz
3,515 MHz ≤ f_offset < 4,0 MHz	-26 dBm	30 kHz
4,0 MHz ≤ f_offset < 8,0 MHz	-13 dBm	1 MHz
8,0 MHz ≤ f_offset < f_offset_{max}	P – 56 dB	1 MHz

Table 6.15: Spectrum emission mask values, BS maximum output power 31 ≤ P < 39 dBm

Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
2,515 MHz ≤ f_offset < 2,715 MHz	P – 53 dB	30 kHz
2,715 MHz ≤ f_offset < 3,515 MHz	$P - 53dB - 15 \cdot \left(\frac{f\_offset}{MHz} - 2{,}715 \right) dB$	30 kHz
3,515 MHz ≤ f_offset < 4,0 MHz	P – 65 dB	30 kHz
4,0 MHz ≤ f_offset < 8,0 MHz	P – 52 dB	1 MHz
8,0 MHz ≤ f_offset < f_offset_{max}	P – 56 dB	1 MHz

Table 6.16: Spectrum emission mask values, BS maximum output power P < 31 dBm

Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
2,515 MHz ≤ f_offset < 2,715 MHz	-22 dBm	30 kHz
2,715 MHz ≤ f_offset < 3,515 MHz	$-22dBm - 15 \cdot \left(\frac{f\_offset}{MHz} - 2{,}715 \right) dB$	30 kHz
3,515 MHz ≤ f_offset < 4,0 MHz	-34 dBm	30 kHz
4,0 MHz ≤ f_offset < 8,0 MHz	-21 dBm	1 MHz
8,0 MHz ≤ f_offset < f_offset_{max}	-25 dBm	1 MHz

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.2.1.1

6.6.2.1.2.2 1,28 Mcps TDD option

For regions where this subclause applies, the requirement shall be met by a base station transmitting on a single RF carrier configured in accordance with the manufacturer's specification. Emissions shall not exceed the maximum level specified in tables 6.13A to 16A in the frequency range of f_offset from 0.815 MHz to f_offset_{max} from the carrier frequency, where:

- f_offset is the separation between the carrier frequency and the centre of the measurement filter
- f_offset_{max} is either 4 MHz or the offset to the UMTS Tx band edge as defined in subclause 4.2, whichever is the greater.

Table 6.13A: Spectrum emission mask values, BS maximum output power P ≥ 34 dBm for 1,28 Mcps TDD

Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
0.815MHz ≤ f_offset < 1.015MHz	-20 dBm	30 kHz
1.015MHz ≤ f_offset < 1.815MHz	$-20dBm - 10 \cdot \left(\frac{f\_offset}{MHz} - 1{,}015 \right) dB$	30 kHz
1.815MHz ≤ f_offset < 2.3MHz	-28 dBm	30 kHz
2.3MHz ≤ f_offset < f_offset_{max}	-13 dBm	1 MHz

Table 6.14A: Spectrum emission mask values, BS maximum output power 26 ≤ P < 34 dBm for 1,28 Mcps TDD

Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
0.815MHz ≤ f_offset < 1.015MHz	P-54 dB	30 kHz
1.015MHz ≤ f_offset < 1.815MHz	$P - 54dB - 10 \cdot \left(\frac{f\_offset}{MHz} - 1{,}015 \right) dB$	30 kHz
1.815MHz ≤ f_offset < 2.3MHz	P-62 dB	30 kHz
2.3MHz ≤ f_offset < f_offset_{max}	P - 47 dB	1 MHz

Table 6.16A: Spectrum emission mask values, BS maximum output power P < 26 dBm for 1,28 Mcps TDD

Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
0.815MHz ≤ f_offset < 1.015MHz	-28 dBm	30 kHz
1.015MHz ≤ f_offset < 1.815MHz	$-28dBm - 10 \cdot \left(\frac{f\_offset}{MHz} - 1{,}015 \right) dB$	30 kHz
1.815MHz ≤ f_offset < 2.3MHz	-36 dBm	30 kHz
2.3MHz ≤ f_offset < f_offset_{max}	-21 dBm	1 MHz

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.2.1.2.

6.6.2.1.3 Test purpose

The test purpose is to verify that the BS out of band emissions do not result in undue interference to any other system (wideband, narrowband) operating at frequencies close to the assigned channel bandwidth of the wanted signal.

This test is independent of the characteristics of possible victim systems and, therefore, complements the tests on occupied bandwidth in 6.6.1 (verifying the spectral concentration of the BS Tx emissions) and on ACLR in 6.6.2.2 (simulating the perception of other UTRA receivers).

6.6.2.1.4 Method of test

6.6.2.1.4.1 Initial conditions

For 3,84 Mcps BS supporting 16QAM, the spectrum emission mask requirements shall be tested with the general test set up specified in section 6.6.2.1.4.1.1 and also with the special test set up for 16QAM capable BS specified in section 6.6.2.1.4.1.4.

For 1,28 Mcps BS supporting 16QAM, the spectrum emission mask requirements shall be tested with the general test set up specified in section 6.6.2.1.4.1.2 and also with the special test set up for 16QAM capable BS specified in section 6.6.2.1.4.1.3.

6.6.2.1.4.1.0 General test conditions

Test environment: normal; see subclause 5.9.1.

RF channels to be tested: B, M and T; see subclause 5.3.

6.6.2.1.4.1.1 3,84 Mcps TDD option – General test set up

(1) Connect the measuring equipment to the antenna connector of the BS under test.

(2) Set the parameters of the BS transmitted signal according to table 6.17.

Table 6.17: Parameters of the BS transmitted signal for spectrum emission mask testing

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, ..., 14: transmit, if i is even; receive, if i is odd.
Time slot carrying SCH	TS0
Time slots under test	TS i, i even and non zero
BS output power setting	PRAT
Number of DPCH in each time slot under test	9
Power of each DPCH	1/9 of Base Station output power
Data content of DPCH	real life (sufficient irregular)

6.6.2.1.4.1.2 1,28 Mcps TDD option – General test set up

(1) Connect the measuring equipment to the antenna connector of the BS under test.

(2) Set the parameters of the BS transmitted signal according to table 6.17A.

Table 6.17A: Parameters of the BS transmitted signal for spectrum emission mask testing for 1,28 Mcps TDD

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, 3, 4, 5, 6: transmit, if i is 0,4,5,6; receive, if i is 1,2,3.
Time slots under test	TS4, TS5 and TS6
BS output power setting	PRAT
Number of DPCH in each time slot under test	8
Power of each DPCH	1/8 of Base Station output power
Data content of DPCH	real life (sufficient irregular)

6.6.2.1.4.1.3 1,28 Mcps TDD option – Special test set up for 16QAM capable BS

This test set up only applies for 16QAM capable BS.

(1) Connect the measuring equipment to the antenna connector of the BS under test.

(2) Set the parameters of the BS transmitted signal according to table 6.17B.

Table 6.17B: Parameters of the BS transmitted signal for spectrum emission mask testing for 1,28 Mcps TDD - 16QAM capable BS

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, 3, 4, 5, 6: transmit, if i is 0,4,5,6; receive, if i is 1,2,3.
Time slots under test	TS4, TS5 and TS6
BS output power setting	PRAT
HS-PDSCH modulation	16QAM
Number of HS-PDSCH in each time slot under test	8
Power of each HS-PDSCH	1/8 of Base Station output power
Data content of HS-PDSCH	real life (sufficient irregular)
Spreading factor	16

6.6.2.1.4.1.4 3,84 Mcps TDD option – Special test set up for 16QAM capable BS

This test set up only applies for 16QAM capable BS.

(1) Connect the measuring equipment to the antenna connector of the BS under test.

(2) Set the parameters of the BS transmitted signal according to table 6.17C.

Table 6.17C: Parameters of the BS transmitted signal for spectrum emission mask testing – 16QAM capable BS

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, ..., 14: transmit, if i is even; receive, if i is odd.
Time slot carrying SCH	TS0
Time slots under test	TS i, i even and non zero
BS output power setting	PRAT
HS-PDSCH modulation	16QAM
Number of HS-PDSCH in each time slot under test	9
Power of each HS-PDSCH	1/9 of Base Station output power
Data content of HS-PDSCH	real life (sufficient irregular)
Spreading factor	16

6.6.2.1.4.2 Procedure

6.6.2.1.4.2.1 3,84 Mcps TDD option

Measure the power of the BS spectrum emissions by applying measurement filters with bandwidths as specified in the relevant table in subclause 6.6.2.1.2.1. The characteristic of the filters shall be approximately Gaussian (typical spectrum analyzer filters). The centre frequency of the filter shall be stepped in contiguous steps over the ranges of frequency offsets f_offset as given in the tables. The step width shall be equal to the respective measurement bandwidth. The time duration of each step shall be sufficiently long to capture one active time slot.

For frequency offsets of the measurement filter centre frequency in the range 4,0 MHz ≤ f_offset < f_offset_{max}, the measurement shall be performed by applying filters with measurement bandwidth of 50 kHz or less and integrating the measured results over the nominal measurement bandwidth 1 MHz specified in the tables in subclause 6.6.2.1.2.1.

6.6.2.1.4.2.2 1,28 Mcps TDD option

Measure the power of the BS spectrum emissions by applying measurement filters with bandwidths as specified in the relevant table in subclause 6.6.2.1.2.2. The characteristic of the filters shall be approximately Gaussian (typical spectrum analyzer filters). The centre frequency of the filter shall be stepped in contiguous steps over the ranges of frequency offsets f_offset as given in the tables. The step width shall be equal to the respective measurement bandwidth. The time duration of each step shall be sufficiently long to capture one active time slot.

The measurement shall be performed by applying filters with measurement bandwidth of 50 kHz or less and integrating the measured results over the nominal measurement bandwidth 1 MHz specified in the tables in subclause 6.6.2.1.2.2 when the measurement bandwidth is 1MHz.

6.6.2.1.4.2.3 1,28 Mcps TDD option – 16QAM capable BS

The same procedure specified in 6.6.2.1.4.2.2 applies to 1,28 Mcps TDD option BS supporting 16QAM.

6.6.2.1.4.2.4 3,84 Mcps TDD option – 16QAM capable BS

The same procedure specified in 6.6.2.1.4.2.1 applies to 3,84 Mcps TDD option BS supporting 16QAM.

6.6.2.1.5 Test Requirements

NOTE: If the Test Requirements below differ from the Minimum Requirements, then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in subclause 5.11 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D.

6.6.2.1.5.1 3,84 Mcps TDD option

The spectrum emissions measured according to subclause 6.6.2.1.4.2.1 shall not exceed the maximum level specified in tables 6.18 to 6.21 for the appropriate BS maximum output power

Table 6.18: Test Requirements for spectrum emission mask values, BS maximum output power P ≥ 43 dBm

Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
2,515 MHz ≤ f_offset < 2,715 MHz	-12,5 dBm	30 kHz
2,715 MHz ≤ f_offset < 3,515 MHz	$-12{,}5dBm - 15 \cdot \left(\frac{f\_offset}{MHz} - 2{,}715 \right) dB$	30 kHz
3,515 MHz ≤ f_offset < 4,0 MHz	-24,5 dBm	30 kHz
4,0 MHz ≤ f_offset < 8,0 MHz	-11,5 dBm	1 MHz
8,0 MHz ≤ f_offset < f_offset_{max}	-11,5 dBm	1 MHz

Table 6.19: Test Requirements for spectrum emission mask values, BS maximum output power 39 ≤ P < 43 dBm

Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
2,515 MHz ≤ f_offset < 2,715 MHz	-12,5 dBm	30 kHz
2,715 MHz ≤ f_offset < 3,515 MHz	$-12{,}5dBm - 15 \cdot \left(\frac{f\_offset}{MHz} - 2{,}715 \right) dB$	30 kHz
3,515 MHz ≤ f_offset < 4,0 MHz	-24,5 dBm	30 kHz
4,0 MHz ≤ f_offset < 8,0 MHz	-11,5 dBm	1 MHz
8,0 MHz ≤ f_offset < f_offset_{max}	P – 54,5 dB	1 MHz

Table 6.20: Test Requirements for spectrum emission mask values, BS maximum output power 31 ≤ P < 39 dBm

Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
2,515 MHz ≤ f_offset < 2,715 MHz	P – 51,5 dB	30 kHz
2,715 MHz ≤ f_offset < 3,515 MHz	$P - 51{,}5dB - 15 \cdot \left(\frac{f\_offset}{MHz} - 2{,}715 \right) dB$	30 kHz
3,515 MHz ≤ f_offset < 4,0 MHz	P – 63,5 dB	30 kHz
4,0 MHz ≤ f_offset < 8,0 MHz	P – 50,5 dB	1 MHz
8,0 MHz ≤ f_offset < f_offset_{max}	P – 54,5 dB	1 MHz

Table 6.21: Test Requirements for spectrum emission mask values, BS maximum output power P < 31 dBm

Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
2,515 MHz ≤ f_offset < 2,715 MHz	-20,5 dBm	30 kHz
2,715 MHz ≤ f_offset < 3,515 MHz	$-20{,}5dBm - 15 \cdot \left(\frac{f\_offset}{MHz} - 2{,}715 \right) dB$	30 kHz
3,515 MHz ≤ f_offset < 4,0 MHz	-32,5 dBm	30 kHz
4,0 MHz ≤ f_offset < 8,0 MHz	-19,5 dBm	1 MHz
8,0 MHz ≤ f_offset < f_offset_{max}	-23,5 dBm	1 MHz

6.6.2.1.5.2 1,28 Mcps TDD option

The spectrum emissions measured according to subclause 6.6.2.1.4.2.2 shall be within the mask defined in the table 6.18A to 6.21A.

Table 6.18A: Test requirements for spectrum emission mask values, BS maximum output power P ≥ 34 dBm for 1,28 Mcps TDD

Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
0.815MHz ≤ f_offset < 1.015MHz	-18.5 dBm	30 kHz
1.015MHz ≤ f_offset < 1.815MHz	$-18.5dBm - 10 \cdot \left(\frac{f\_offset}{MHz} - 1{,}015 \right) dB$	30 kHz
1.815MHz ≤ f_offset < 2.3MHz	-26.5 dBm	30 kHz
2.3MHz ≤ f_offset < f_offset_{max}	-11.5 dBm	1 MHz

Table 6.19A: Test requirements for spectrum emission mask values, BS maximum output power 26 ≤ P < 34 dBm for 1,28 Mcps TDD

Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
0.815MHz ≤ f_offset < 1.015MHz	P-52.5 dB	30 kHz
1.015MHz ≤ f_offset < 1.815MHz	$P - 52.5dB - 10 \cdot \left(\frac{f\_offset}{MHz} - 1{,}015 \right) dB$	30 kHz
1.815MHz ≤ f_offset < 2.3MHz	P-60.5 dB	30 kHz
2.3MHz ≤ f_offset < f_offset_{max}	P – 45.5 dB	1 MHz

Table 6.21A: Test requirements for spectrum emission mask values, BS maximum output power P < 26 dBm for 1,28 Mcps TDD

Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
0.815MHz ≤ f_offset < 1.015MHz	-26.5 dBm	30 kHz
1.015MHz ≤ f_offset < 1.815MHz	$-26.5dBm - 10 \cdot \left(\frac{f\_offset}{MHz} - 1{,}015 \right) dB$	30 kHz
1.815MHz ≤ f_offset < 2.3MHz	-34.5 dBm	30 kHz
2.3MHz ≤ f_offset < f_offset_{max}	-19.5 dBm	1 MHz

6.6.2.1.5.3 1,28 Mcps TDD option – 16QAM capable BS

The spectrum emissions measured according to subclause 6.6.2.1.4.2.3 shall be within the mask defined in the table 6.18A to 6.21A in section 6.6.2.1.5.2.

6.6.2.1.5.4 3,84 Mcps TDD option – 16QAM capable BS

The spectrum emissions measured according to subclause 6.6.2.1.4.2.4 shall be within the mask defined in the table 6.18 to 6.21 in section 6.6.2.1.5.1.

6.6.2.2 Adjacent Channel Leakage power Ratio (ACLR)

6.6.2.2.1 Definition and applicability

Adjacent Channel Leakage power Ratio (ACLR) is the ratio of the RRC filtered mean power centered on the assigned channel frequency to the RRC filtered mean power centered on an adjacent channel frequency. The requirements shall apply for all configurations of BS (single carrier or multi-carrier), and for all operating modes foreseen by the manufacturer's specification.

In some cases the requirement is expressed as adjacent channel leakage power, which is t the RRC filtered mean power for the given bandwidth of the victim system on the adjacent channel frequency.

In this subclause, different requirements shall apply to Wide Area BS and Local Area BS.

6.6.2.2.2 Minimum Requirements

6.6.2.2.2.1 Minimum requirement

6.6.2.2.2.1.1 3,84 Mcps TDD option

The ACLR of a single carrier BS or a multi-carrier BS with contiguous carrier frequencies shall be equal to or greater than the limits given in table 6.22.

Table 6.22: BS ACLR limits

BS adjacent channel offset below the first or above the last carrier frequency used	ACLR limit
5 MHz	45 dB
10 MHz	55 dB

If a BS provides multiple non-contiguous single carriers or multiple non-contiguous groups of contiguous single carriers, the above requirements shall be applied individually to the single carriers or group of single carriers.

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.2.2.1.1.

6.6.2.2.2.1.2 1,28 Mcps TDD option

The ACLR of a single carrier BS or a multi-carrier BS with contiguous carrier frequencies shall be equal to or greater than the limits given in Table 6.22A.

Table 6.22A: BS ACLR limits for 1,28 Mcps TDD

BS adjacent channel offset below the first or above the last carrier frequency used	ACLR limit
1,6 MHz	40 dB
3,2 MHz	45 dB

If a BS provides multiple non-contiguous single carriers or multiple non-contiguous groups of contiguous single carriers, the above requirements shall be applied individually to the single carriers or group of single carriers.

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.2.2.1.2

6.6.2.2.2.2 Additional requirement for operation in the same geographic area with FDD or unsynchronised TDD on adjacent channels

6.6.2.2.2.2.1 3,84 Mcps TDD option

6.6.2.2.2.2.1.1 Additional requirement for operation in the same geographic area with unsynchronised TDD on adjacent channels

In case the equipment is operated in the same geographic area with an unsynchronised TDD BS operating on the first or second adjacent frequency, the adjacent channel leakage power of a single carrier BS or a multi-carrier BS with contiguous carrier frequencies shall not exceed the limits specified in table 6.23.

Table 6.23: Adjacent channel leakage power limits for operation in the same geographic area with unsynchronised TDD on adjacent channels

BS Class	BS adjacent channel offset below the first or above the last carrier frequency used	Maximum Level	Measurement Bandwidth
Wide Area BS	5 MHz	-29 dBm	3,84 MHz
Wide Area BS	10 MHz	-29 dBm	3,84 MHz
Local Area BS	5 MHz	-16 dBm	3,84 MHz
Local Area BS	10 MHz	-26 dBm	3,84 MHz

NOTE: The requirements in table 6.23 for the Wide Area BS are based on a coupling loss of 74 dB between the unsynchronised TDD base stations. The requirement in table 6.23 for the Local Area BS ACLR1 (± 5 MHz channel offset) is based on a coupling loss of 87 dB between unsynchronised Wide Area and Local Area TDD base stations. The requirement in table 6.23 for the Local Area BS ACLR2 (± 10 MHz channel offset) is based on a coupling loss of 77 dB between unsynchronised Wide Area and Local Area TDD base stations. The scenarios leading to these requirements are addressed in TR25.942 [9].

If a BS provides multiple non-contiguous single carriers or multiple non-contiguous groups of contiguous single carriers, the above requirements shall be applied to those adjacent channels of the single carriers or group of single channels which are used by the TDD BS in the same geographic area.

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.2.2.2.1.1.

NOTE: The necessary dynamic range to very the conformance requirements specified in table 6.23 is at the limits of the capability of state-of-art measuring equipment.

6.6.2.2.2.2.1.2 Additional requirement for operation in the same geographic area with FDD on adjacent channels

In case the equipment is operated in the same geographic area with a FDD BS operating on the first or second adjacent channel, the adjacent channel leakage power shall not exceed the limits specified in table 6.23AA.

Table 6.23AA: Adjacent channel leakage power limits for operation in the same geographic area with FDD on adjacent channels

BS Class	BS Adjacent Channel Offset	Maximum Level	Measurement Bandwidth
Wide Area BS	± 5 MHz	-36 dBm	3,84 MHz
Wide Area BS	± 10 MHz	-36 dBm	3,84 MHz
Local Area BS	± 5 MHz	-23 dBm	3,84 MHz
Local Area BS	± 10 MHz	-33 dBm	3,84 MHz

NOTE: The requirements in table 6.23AA for the Wide Area BS are based on a coupling loss of 74 dB between the FDD and TDD base stations. The requirements in table 6.23AA for the Local Area BS ACLR1 (± 5 MHz channel offset) are based on a relaxed coupling loss of 87 dB between TDD and FDD base stations. The requirement for the Local Area BS ACLR2 (± 10 MHz channel offset) are based on a relaxed coupling loss of 77 dB between TDD and FDD base stations. The scenarios leading to these requirements are addressed in TR 25.942 [9].

If a BS provides multiple non-contiguous single carriers or multiple non-contiguous groups of contiguous single carriers, the above requirements shall be applied to those adjacent channels of the single carriers or group of single channels which are used by the FDD BS in the same geographic area.

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.2.2.2.1.2.

6.6.2.2.2.2 1,28 Mcps TDD option

6.6.2.2.2.2.1 Additional requirement for operation in the same geographic area with unsynchronised TDD on adjacent channels

In case the equipment is operated in the same geographic area with an unsynchronised TDD BS operating on an adjacent channel, the requirement is specified in terms of adjacent channel leakage power. In geographic areas where only UTRA 1,28 Mcps TDD option is deployed, the adjacent channel leakage power limits shall not exceed the limits specified in table 6.23A, otherwise the limits in table 6.23B shall apply.

Table 6.23A: Adjacent channel leakage power limits for operation in the same geographic area with unsynchronised 1,28 Mcps TDD on adjacent channels

BS Class	BS Adjacent Channel Offset	Maximum Level	Measurement Bandwidth
Wide Area BS	± 1,6 MHz	-29 dBm	1,28 MHz
Wide Area BS	± 3,2 MHz	-29 dBm	1,28 MHz
Local Area BS	± 1,6 MHz	-16 dBm	1,28 MHz
Local Area BS	± 3,2 MHz	-16 dBm	1,28 MHz

Table 6.23B: Adjacent channel leakage power limits for operation in the same geographic area with unsynchronised TDD on adjacent channels

BS Class	BS Adjacent Channel Offset	Maximum Level	Measurement Bandwidth
Wide Area BS	± 3,4 MHz	-29 dBm	3,84 MHz
Local Area BS	± 3,4 MHz	-16 dBm	3,84 MHz

NOTE: The requirements in table 6.23A and 6.23B for the Wide Area BS are based on a coupling loss of 74 dB between the unsynchronised TDD base stations. The requirements in table 6.23A and 6.23B for the Local Area BS are based on a coupling loss of 87 dB between unsynchronised Wide Area and Local Area TDD base stations. The scenarios leading to these requirements are addressed in TR25.942 [9].

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.2.2.2.2.1.

6.6.2.2.2.2.2 Additional requirement for operation in the same geographic area with FDD on adjacent channels

In case the equipment is operated in the same geographic area with a FDD BS operating on an adjacent channel, the adjacent channel leakage power shall not exceed the limits specified in table 6.23C. This requirement is only applicable if the equipment is intended to operate in frequency bands specified in 4.2 a) and the highest carrier frequency used is in the range 1916,2 – 1920 MHz.

Table 6.23C: Adjacent channel leakage power limits for operation in the same geographic area with FDD on adjacent channels

BS Class	Center Frequency for Measurement	Maximum Level	Measurement Bandwidth
Wide Area BS	1922,6 MHz	-36 dBm	3,84 MHz
Local Area BS	1922,6 MHz	-23 dBm	3,84 MHz

NOTE: The requirement in table 6.23C for Wide Area BS is based on a relaxed coupling loss of 74 dB between the TDD and FDD base stations. The requirement in table 6.23C for Local Area BS is based on a relaxed coupling loss of 87 dB between TDD and FDD base stations. The scenarios leading to these requirements are addressed in TR 25.942 [9].

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.2.2.2.2.2.

6.6.2.2.2.3 Additional requirement in case of co-siting with unsynchronised TDD BS or FDD BS operating on an adjacent channel

6.6.2.2.2.3.1 3,84 Mcps TDD option

6.6.2.2.2.3.1.1 Additional requirement in case of co-siting with unsynchronised TDD BS operating on an adjacent channel

In case the equipment is co-sited to an unsynchronised TDD BS operating on the first or second adjacent frequency, the adjacent channel leakage power of a single carrier BS or a multi-carrier BS with contiguous carrier frequencies shall not exceed the limits specified in table 6.24.

Table 6.24: Adjacent channel leakage power limits in case of co-siting with unsynchronised TDD on adjacent channels

BS Class	BS adjacent channel offset below the first or above the last carrier frequency used	Maximum Level	Measurement Bandwidth
Wide Area BS	5 MHz	-73 dBm	3,84 MHz
Wide Area BS	10 MHz	-73 dBm	3,84 MHz
Local Area BS	5 MHz	-31 dBm	3,84 MHz
Local Area BS	10 MHz	-31 dBm	3,84 MHz

NOTE: The requirements in table 6.24 for the Wide Area BS are based on a minimum coupling loss of 30 dB between unsynchronised TDD base stations. The requirements in table 6.24 for the Local Area BS are based on a minimum coupling loss of 45 dB between unsynchronised Local Area base stations. The co-location of different base station classes is not considered.

If a BS provides multiple non-contiguous single carriers or multiple non-contiguous groups of contiguous single carriers, the above requirements shall be applied to those adjacent channels of the single carriers or group of single channels which are used by the co-sited TDD BS.

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.2.2.3.1.1.

NOTE: The necessary dynamic range of the measuring equipment to verify the conformance requirements specified in table 6.24 for the Wide Area BS is dependent on the BS output power. If the BS output power is larger than –10 dBm, the necessary dynamic range is beyond the capability of state-of-the-art measuring equipment; direct verification of the conformance requirements is not feasible. Alternatively, indirect measurement methods need to be defined.

6.6.2.2.2.3.1.2 Additional requirement in case of co-siting with FDD BS operating on adjacent channels

In case the equipment is co-sited to a FDD BS operating on the first or second adjacent channel, the adjacent channel leakage power shall not exceed the limits specified in table 6.24A.

Table 6.24A: Adjacent channel leakage power limits in case of co-siting with FDD on adjacent channels

BS Class	BS Adjacent Channel Offset	Maximum Level	Measurement Bandwidth
Wide Area BS	± 5 MHz	-80 dBm	3,84 MHz
Wide Area BS	± 10 MHz	-80 dBm	3,84 MHz

NOTE: The requirements in table 6.24A are based on a minimum coupling loss of 30 dB between base stations. The co-location of different base station classes is not considered. A co-location requirement for the Local Area TDD BS is intended to be part of a later release.

If a BS provides multiple non-contiguous single carriers or multiple non-contiguous groups of contiguous single carriers, the above requirements shall be applied to those adjacent channels of the single carriers or group of single channels which are used by the co-sited FDD BS.

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.2.2.3.1.2.

6.6.2.2.3.2 1,28 Mcps TDD option

6.6.2.2.3.2.1 Additional requirement in case of co-siting with unsynchronised TDD BS operating on an adjacent channel

In case the equipment is co-sited to an unsynchronised TDD BS operating on an adjacent channel, the requirement is specified in terms of adjacent channel leakage power. In geographic areas where only UTRA 1,28 Mcps TDD option is deployed, the adjacent channel leakage power shall not exceed the limits specified in table 6.24B, otherwise the limits in table 6.24C shall apply.

Table 6.24B: Adjacent channel leakage power limits in case of co-siting with unsynchronised 1,28 Mcps TDD on adjacent channels

BS Class	BS Adjacent Channel Offset	Maximum Level	Measurement Bandwidth
Wide Area BS	± 1,6 MHz	-73 dBm	1,28 MHz
Wide Area BS	± 3,2 MHz	-73 dBm	1,28 MHz
Local Area BS	± 1,6 MHz	-34 dBm	1,28 MHz
Local Area BS	± 3,2 MHz	-34 dBm	1,28 MHz

Table 6.24C: Adjacent channel leakage power limits in case of co-siting with unsynchronised TDD on an adjacent channel

BS Class	BS Adjacent Channel Offset	Maximum Level	Measurement Bandwidth
Wide Area BS	± 3,4 MHz	-73 dBm	3,84 MHz
Local Area BS	± 3,4 MHz	-31 dBm	3,84 MHz

NOTE: The requirements in table 6.24B and 6.24C for the Wide Area BS are based on a minimum coupling loss of 30 dB between unsynchronised TDD base stations. The requirements in table 6.24B and 6.24C for the Local Area BS are based on a minimum coupling loss of 45 dB between unsynchronised Local Area base stations. The co-location of different base station classes is not considered.

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.2.2.3.2.1.

6.6.2.2.3.2.2 Additional requirement in case of co-siting with FDD BS operating on an adjacent channel

In case the equipment is co-sited to a FDD BS operating on an adjacent channel, the adjacent channel leakage power shall not exceed the limits specified in table 6.24D. This requirement is only applicable if the equipment is intended to operate in frequency bands specified in 4.2 a) and the highest carrier frequency used is in the range 1916,2 – 1920 MHz.

Table 6.24D: Adjacent channel leakage power in case of co-siting with UTRA FDD on an adjacent channel

BS Class	Center Frequency for Measurement	Maximum Level	Measurement Bandwidth
Wide Area BS	1922,6 MHz	-80 dBm	3,84 MHz

NOTE: The requirements in table 6.24D are based on a minimum coupling loss of 30 dB between base stations. The co-location of different base station classes is not considered. A co-location requirement for the Local Area TDD BS is intended to be part of a later release.

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.2.2.3.2.2.

6.6.2.2.3 Test purpose

The test purpose is to verify the ability of the BS to limit the interference produced by the transmitted signal to other UTRA receivers operating at the first or second adjacent RF channel.

6.6.2.2.4 Method of test

6.6.2.2.4.1 Initial conditions

For 3,84 Mcps BS supporting 16QAM, the ALCR requirements shall be tested with the general test set up specified in section 6.6.2.2.4.1.1 and also with the special test set up for 16QAM capable BS specified in section 6.6.2.2.4.1.4.

For 1,28 Mcps BS supporting 16QAM, the ALCR requirements shall be tested with the general test set up specified in section 6.6.2.2.4.1.2 and also with the special test set up for 16QAM capable BS specified in section 6.6.2.2.4.1.3.

6.6.2.2.4.1.0 General test conditions

Test environment: normal; see subclause 5.9.1.

RF channels to be tested: B, M and T with multiple carriers if supported; see subclause 5.3.

6.6.2.2.4.1.1 3,84 Mcps TDD option – General test set up

(1) Connect the measuring equipment to the antenna connector of the BS under test.

(2) Set the parameters of the BS transmitted signal according to table 6.25.

Table 6.25: Parameters of the BS transmitted signal for ACLR testing

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, ..., 14: transmit, if i is even; receive, if i is odd.
Time slot carrying SCH	TS0
Time slots under test	TS i, i even and non zero
BS output power setting	PRAT
Number of DPCH in each time slot under test	9
Power of each DPCH	1/9 of Base Station output power
Data content of DPCH	Real life (sufficient irregular)

6.6.2.2.4.1.2 1,28 Mcps TDD option– General test set up

(1) Connect the measuring equipment to the antenna connector of the BS under test.

(2) Set the parameters of the BS transmitted signal according to table 6.25A.

Table 6.25A: Parameters of the BS transmitted signal for ACLR testing for 1,28 Mcps TDD

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, 3, 4, 5, 6: transmit, if i is 0,4,5,6; receive, if i is 1,2,3.
Time slots under test	TS4, TS5 and TS6
BS output power setting	PRAT
Number of DPCH in each time slot under test	8
Power of each DPCH	1/8 of Base Station output power
Data content of DPCH	real life (sufficient irregular)

6.6.2.2.4.1.3 1,28 Mcps TDD option – Special test set up for 16QAM capable BS

This test set up only applies for 16QAM capable BS.

(1) Connect the measuring equipment to the antenna connector of the BS under test.

(2) Set the parameters of the BS transmitted signal according to table 6.25B.

Table 6.25B: Parameters of the BS transmitted signal for ACLR testing for 1,28 Mcps TDD- 16QAM capable BS

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, 3, 4, 5, 6: transmit, if i is 0,4,5,6; receive, if i is 1,2,3.
Time slots under test	TS4, TS5 and TS6
BS output power setting	PRAT
HS-PDSCH modulation	16QAM
Number of HS-PDSCH in each time slot under test	8
Power of each HS-PDSCH	1/8 of Base Station output power
Data content of HS-PDSCH	real life (sufficient irregular)
Spreading factor	16

6.6.2.2.4.1.4 3,84 Mcps TDD option – Special test set up for 16QAM capable BS

This test set up only applies for 16QAM capable BS.

(1) Connect the measuring equipment to the antenna connector of the BS under test.

(2) Set the parameters of the BS transmitted signal according to table 6.25C.

Table 6.25C: Parameters of the BS transmitted signal for ACLR testing – 16QAM capable BS

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, ..., 14: transmit, if i is even; receive, if i is odd.
Time slot carrying SCH	TS0
Time slots under test	TS i, i even and non zero
BS output power setting	PRAT
HS-PDSCH modulation	16QAM
Number of HS-PDSCH in each time slot under test	9
Power of each HS-PDSCH	1/9 of Base Station output power
Data content of HS-PDSCH	real life (sufficient irregular)
Spreading factor	16

6.6.2.2.4.2 Procedure

6.6.2.2.4.2.1 3,84 Mcps TDD option

1) Measure the RRC filtered mean power centered on the lowest assigned channel frequency over the 2464 active chips of the even time slots TS i (this excludes the guard period).

2) Average over TBD time slots.

3) Measure the RRC filtered mean power at the first lower adjacent RF channel (center frequency 5 MHz below the lowest assigned channel frequency of the transmitted signal) over the useful part of the burst within the even time slots TS i (this excludes the guard period).

4) Average over TBD time slots.

5) Calculate the ACLR by the ratio

ACLR = average acc. to (2) / average interference power acc. to (4).

6) Repeat steps (3), (4) and (5) for the second lower adjacent RF channel (center frequency 10 MHz below the lowest assigned channel frequency of the transmitted signal).

7) In case of a multi-carrier Bs, repeat steps (1) and (2) for the highest assigned channel frequency. Otherwise, use the result obtained in step (2) above for further calculation in step (10).

8) Measure the RRC filtered mean power at the first higher adjacent RF channel (center frequency 5 MHz above the highest assigned channel frequency of the transmitted signal) over the useful part of the burst within the even time slots TS i (this excludes the guard period).

9) Average over TBD time slots.

10) Calculate the ACLR by the ratio

ACLR = average power acc. to (7) / average interference power acc. to (9).

11) Repeat steps (8) to (10) for the second upper adjacent RF channel (center frequency 10 MHz above the highest assigned channel frequency of the transmitted signal).

6.6.2.2.4.2.2 1,28 Mcps TDD option

1) Measure the RRC filtered mean power centered on the lowest assigned channel frequency over the 848 active chips of the transmit time slots TS i (this excludes the guard period).

2) Average over TBD time slots.

3) Measure the RRC filtered mean power at the first lower adjacent RF channel (center frequency 1,6 MHz below the assigned channel frequency of the transmitted signal) over the useful part of the burst within the transmit time slots TS i (this excludes the guard period).

4) Average over TBD time slots.

5) Calculate the ACLR by the ratio:

ACLR = average power acc. to (2) / average interference power acc. to (4).

6) Repeat steps (3), (4) and (5) for the second lower adjacent RF channel (center frequency 3,2 MHz below the lowest assigned channel frequency of the transmitted signal) and also for the first and second upper adjacent RF channel (center frequency 1,6 MHz and 3,2 MHz above the assigned channel frequency of the transmitted signal, respectively).

7) In case of a multi-carrier BS, repeat steps (1) and 2 for the highest assigned channel frequency. Otherwise, use the result obtained in step (2) above for further calculation in step (10).

8) Measure the RRC filtered mean power at the first higher adjacent RF channel (center frequency 1,6 MHz above the highest assigned channel frequency of the transmitted signal) over the useful part of the burst within the transmit time slots TS i (this excludes the guard period).

9) Average over TBD time slots.

10) Calculate the ACLR by the ratio

ACLR = average power acc. to (7) / average interference power acc. to (9).

11) Repeat steps (8) to (10) for the second upper adjacent RF channel (center frequency 3,2 MHz above the highest assigned channel frequency of the transmitted signal).

6.6.2.2.4.2.3 1,28 Mcps TDD option – 16QAM capable BS

The same procedure specified in 6.6.2.2.4.2.2 applies to 1,28 Mcps TDD option BS supporting 16QAM.

6.6.2.2.4.2.4 3,84 Mcps TDD option – 16QAM capable BS

The same procedure specified in 6.6.2.2.4.2.1 applies to 3,84 Mcps TDD option BS supporting 16QAM.

6.6.2.2.5 Test Requirements

NOTE: If the Test Requirements below differ from the Minimum Requirements, then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in subclause 5.11 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D.

6.6.2.2.5.1 3,84 Mcps TDD option

The ACLR calculated in steps (5) and (10) of subclause 6.6.2.2.4.2.1 shall be equal or greater than the limits given in table 6.26. In case the equipment is tested against the requirements defined for operation in the same geographic area or co-sited with unsynchronised TDD or FDD on adjacent channels, the adjacent channel leakage power measured according to steps (4) and (9) of subclause 6.6.2.2.4.2.1 shall not exceed the maximum levels specified in table 6.27, 6.27A, 6.28 or 6.28A, respectively.

Table 6.26: BS ACLR Test Requirements

BS adjacent channel offset below the first or above the last carrier frequency used	ACLR limit
5 MHz	44,2 dB
10 MHz	54,2 dB

Table 6.27: Adjacent channel leakage power Test Requirements for operation in the same geographic area with unsynchronised TDD on adjacent channels

BS Class	BS adjacent channel offset below the first or above the last carrier frequency used	Maximum Level	Measurement Bandwidth
Wide Area BS	5 MHz	-25 dBm	3,84 MHz
Wide Area BS	10 MHz	-25 dBm	3,84 MHz
Local Area BS	5 MHz	-15,2 dBm	3,84 MHz
Local Area BS	10 MHz	-25,2 dBm	3,84 MHz

Table 6.27A: Adjacent channel leakage power Test Requirements for operation in the same geographic area with FDD on adjacent channels

BS Class	BS Adjacent Channel Offset	Maximum Level	Measurement Bandwidth
Wide Area BS	± 5 MHz	-[36 dBm – TT]	3,84 MHz
Wide Area BS	± 10 MHz	-32 dBm	3,84 MHz
Local Area BS	± 5 MHz	-22,2 dBm	3,84 MHz
Local Area BS	± 10 MHz	-32,2 dBm	3,84 MHz

Table 6.28: Adjacent channel leakage power Test Requirements in case of co-siting with unsynchronised TDD on adjacent channels

BS Class	BS adjacent channel offset below the first or above the last carrier frequency used	Maximum Level	Measurement Bandwidth
Wide Area BS	5 MHz	-[73 dBm - TT]	3,84 MHz
Wide Area BS	10 MHz	-[73 dBm - TT]	3,84 MHz
Local Area BS	5 MHz	-30 dBm	3,84 MHz
Local Area BS	10 MHz	-30 dBm	3,84 MHz

Table 6.28A: Adjacent channel leakage power Test Requirements in case of co-siting with FDD on adjacent channels

BS Class	BS Adjacent Channel Offset	Maximum Level	Measurement Bandwidth
Wide Area BS	± 5 MHz	-80 dBm	3,84 MHz
Wide Area BS	± 10 MHz	-80 dBm	3,84 MHz

6.6.2.2.5.2 1,28 Mcps TDD option

The ACLR calculated in steps (5) and (10) of subclause 6.6.2.2.4.2.2 shall be equal or greater than the limits given in table 6.26A. In case the equipment is tested against the requirements defined for operation in the same geographic area or co-sited with unsynchronised TDD or FDD on adjacent channels, the adjacent channel leakage power measured according to steps (3) and (4) of subclause 6.6.2.2.4.2.2 shall not exceed the maximum levels specified in tables 6.27B, 6.27C, 6.27D, 6.28B, 6.28C or 6.28D, respectively.

Table 6.26A: BS ACLR Test Requirements (1,28 Mcps option)

BS adjacent channel offset below the first or above the last carrier frequency used	ACLR limit
1,6 MHz	39.2 dB
3,2 MHz	44.2 dB

Table 6.27B: Adjacent channel leakage power Test Requirements for operation in the same geographic area with unsynchronised 1,28 Mcps TDD on adjacent channels

BS Class	BS Adjacent Channel Offset	Maximum Level	Measurement Bandwidth
Wide Area BS	± 1,6 MHz	-28 dBm	1,28 MHz
Wide Area BS	± 3,2 MHz	-28 dBm	1,28 MHz
Local Area BS	± 1,6 MHz	-15,2 dBm	1,28 MHz
Local Area BS	± 3,2 MHz	-15,2 dBm	1,28 MHz

Table 6.27C: Adjacent channel leakage power Test Requirements for operation in the same geographic area with unsynchronised TDD on an adjacent channel

BS Class	BS Adjacent Channel Offset	Maximum Level	Measurement Bandwidth
Wide Area BS	± 3,4 MHz	-28 dBm	3,84 MHz
Local Area BS	± 3,4 MHz	-15,2 dBm	3,84 MHz

Table 6.27D: Adjacent channel leakage power Test Requirements for operation in the same geographic area with FDD on an adjacent channel

BS Class	Center Frequency for Measurement	Maximum Level	Measurement Bandwidth
Wide Area BS	1922,6 MHz	-32 dBm	3,84 MHz
Local Area BS	1922,6 MHz	-22,2 dBm	3,84 MHz

Table 6.28B: Adjacent channel leakage power Test Requirements in case of co-siting with unsynchronised 1,28 Mcps TDD on adjacent channels

BS Class	BS Adjacent Channel Offset	Maximum Level	Measurement Bandwidth
Wide Area BS	± 1,6 MHz	-[73 dBm – TT]	1,28 MHz
Wide Area BS	± 3,2 MHz	-[73 dBm – TT]	1,28 MHz
Local Area BS	± 1,6 MHz	-33 dBm	1,28 MHz
Local Area BS	± 3,2 MHz	-33 dBm	1,28 MHz

Table 6.28C: Adjacent channel leakage power Test Requirements for operation in the same geographic area with unsynchronised TDD on an adjacent channel

BS Class	BS Adjacent Channel Offset	Maximum Level	Measurement Bandwidth
Wide Area BS	± 3,4 MHz	-[73 dBm – TT]	3,84 MHz
Local Area BS	± 3,4 MHz	-30 dBm	3,84 MHz

Table 6.28D: Adjacent channel leakage power Test Requirements in case of co-siting with UTRA FDD on an adjacent channel

BS Class	Center Frequency for Measurement	Maximum Level	Measurement Bandwidth
Wide Area BS	1922,6 MHz	-[80 dBm – TT]	3,84 MHz

6.6.2.2.5.3 1,28 Mcps TDD option- 16QAM capable BS

The same test requirements specified in section 6.6.2.2.5.2 apply to 1,28 Mcps TDD option BS supporting 16QAM.

6.6.2.2.5.4 3,84 Mcps TDD option - 16QAM capable BS

The same test requirements specified in section 6.6.2.2.5.1 apply to 3,84 Mcps TDD option BS supporting 16QAM.

6.6.3 Spurious emissions

6.6.3.1 Definition and applicability

Spurious emissions are emissions which are caused by unwanted transmitter effects such as harmonics emission, parasitic emission, intermodulation products and frequency conversion products, but exclude out of band emissions. This is measured at the base station RF output port.

The requirements shall apply whatever the type of transmitter considered (single carrier or multiple carrier). It applies for all transmission modes foreseen by the manufacturer's specification.

For 3.84 Mcps TDD option, either requirement applies at frequencies within the specified frequency ranges which are more than 12,5 MHz under the first carrier frequency used or more than 12,5 MHz above the last carrier frequency used.

For 1,28 Mcps TDD option, either requirement applies at frequencies within the specified frequency ranges which are more than 4 MHz under the first carrier frequency used or more than 4 MHz above the last carrier frequency used.

Unless otherwise stated, all requirements are measured as mean power.

The requirements in this subclause shall apply to both Wide Area BS and Local Area BS, with the exception of the requirements which may be applied for co-existence with UTRA FDD; in this case, different requirements shall apply to Wide Area BS and Local Area BS.

6.6.3.2 Minimum Requirements

6.6.3.2.1 Mandatory requirements

The requirements of either subclause 6.6.3.2.1.1 or subclause 6.6.3.2.1.2 shall apply.

6.6.3.2.1.1 Spurious emissions (Category A)

The following requirements shall be met in cases where Category A limits for spurious emissions, as defined in ITU-R Recommendation SM.329-9 [6], are applied.

6.6.3.2.1.1.1 3,84 Mcps TDD option

The power of any spurious emission shall not exceed the maximum level given in Table 6.29.

Table 6.29: BS Mandatory spurious emissions limits, Category A

Band	Maximum level	Measurement bandwidth	Note
9 kHz – 150 kHz	-13 dBm	1 kHz	Bandwidth as in ITU-R SM.329-9, s4.1
150 kHz – 30 MHz		10 kHz	Bandwidth as in ITU-R SM.329-9, s4.1
30 MHz – 1 GHz		100 kHz	Bandwidth as in ITU-R SM.329-9, s4.1
1 GHz – 12,75 GHz		1 MHz	Upper frequency as in ITU-R SM.329-9, s2.5 table 1

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.3.1.1.1.1.

6.6.3.2.1.1.2 1,28 Mcps TDD option

The power of any spurious emission shall not exceed the maximum level given in Table 6.29A.

Table 6.29A: BS Mandatory spurious emissions limits, Category A

Band	Maximum level	Measurement bandwidth	Note
9 kHz – 150 kHz	-13 dBm	1 kHz	Bandwidth as in ITU-R SM.329-9, s4.1
150 kHz – 30 MHz		10 kHz	Bandwidth as in ITU-R SM.329-9, s4.1
30 MHz – 1 GHz		100 kHz	Bandwidth as in ITU-R SM.329-9, s4.1
1 GHz – 12,75 GHz		1 MHz	Upper frequency as in ITU-R SM.329-9, s2.5 table 1

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.3.1.1.1.2.

6.6.3.2.1.2 Spurious emissions (Category B)

The following requirements shall be met in cases where Category B limits for spurious emissions, as defined in ITU-R Recommendation SM.329-9 [6], are applied.

6.6.3.2.1.2.1 3,84 Mcps TDD option

The power of any spurious emission shall not exceed the maximum levels given in Table 6.30.

Table 6.30: BS Mandatory spurious emissions limits, Category B

Band	Maximum level	Measurement bandwidth	Note
9 kHz – 150 kHz	-36 dBm	1 kHz	Bandwidth as in ITU-R SM.329-9, s4.1
150 kHz – 30 MHz	-36 dBm	10 kHz	Bandwidth as in ITU-R SM.329-9, s4.1
30 MHz – 1 GHz	-36 dBm	100 kHz	Bandwidth as in ITU-R SM.329-9, s4.1
1 GHz – Fc1 - 60 MHz or Fl - 10 MHz *whichever is the higher*	-30 dBm	1 MHz	Bandwidth as in ITU-R SM.329-9, s4.1
Fc1 - 60 MHz or Fl - 10 MHz *whichever is the higher* – Fc1 - 50 MHz or Fl -10 MHz *whichever is the higher*	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329-9, s4.3 and Annex 7
Fc1 - 50 MHz or Fl -10 MHz *whichever is the higher* – Fc2 + 50 MHz or Fu +10 MHz *whichever is the lower*	-15 dBm	1 MHz	Specification in accordance with ITU-R SM.329-9, s4.3 and Annex 7
Fc2 + 50 MHz or Fu + 10 MHz *whichever is the lower* – Fc2 + 60 MHz or Fu + 10 MHz *whichever is the lower*	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329-9, s4.3 and Annex 7
Fc2 + 60 MHz or Fu + 10 MHz *whichever is the lower* – 12,75 GHz	-30 dBm	1 MHz	Bandwidth as in ITU-R SM.329-9, s4.1. Upper frequency as in ITU-R SM.329-9, s2.5 table 1

Fc1: Center frequency of emission of the first carrier transmitted by the BS

Fc2: Center frequency of emission of the last carrier transmitted by the BS

Fl : Lower frequency of the band in which TDD operates

Fu : Upper frequency of the band in which TDD operates

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.3.1.2.1.1.

6.6.3.2.1.2.2 1,28 Mcps TDD option

The power of any spurious emission shall not exceed the maximum levels given in Table 6.30A.

Table 6.30A: BS Mandatory spurious emissions limits, Category B for 1,28 Mcps TDD

Band	Maximum Level	Measurement Bandwidth	Note
9kHz – 150kHz	-36 dBm	1 kHz	Bandwidth as in ITU SM.329-9, s4.1
150kHz – 30MHz	- 36 dBm	10 kHz	Bandwidth as in ITU SM.329-9, s4.1
30MHz – 1GHz	-36 dBm	100 kHz	Bandwidth as in ITU SM.329-9, s4.1
1GHz ↔ Fc1-19,2 MHz or Fl –10 MHz *whichever is the higher*	-30 dBm	1 MHz	Bandwidth as in ITU SM.329-9, s4.1
Fc1 – 19,2 MHz or Fl -10 MHz *whichever is the higher* ↔ Fc1 - 16 MHz or Fl –10 MHz *whichever is the higher*	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329-9, s4.1
Fc1 - 16 MHz or Fl –10 MHz *whichever is the higher* ↔ Fc2 + 16 MHz or Fu +10 MHz *whichever is the lower*	-15 dBm	1 MHz	Specification in accordance with ITU-R SM.329-9, s4.1
Fc2 + 16 MHz or Fu + 10 MHz *whichever is the lower* ↔ Fc2 +19,2 MHz or Fu + 10 MHz *whichever is the lower*	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329-9, s4.1
Fc2 + 19,2 MHz or Fu +10 MHz *whichever is the lower* ↔ 12,75 GHz	-30 dBm	1 MHz	Bandwidth as in ITU-R SM.329-9, s4.1. Upper frequency as in ITU-R SM.329-9, s2.5 table 1

Fc1: Center frequency of emission of the first carrier transmitted by the BS

Fc2: Center frequency of emission of the last carrier transmitted by the BS

Fl : Lower frequency of the band in which TDD operates

Fu : Upper frequency of the band in which TDD operates

The reference for this requirement is TS 25.105 subclause 6.6.3.1.2.1.2.

6.6.3.2.2 Co-existence with GSM

6.6.3.2.2.1 Operation in the same geographic area

This requirement may be applied for the protection of GSM 900 MS in geographic areas in which both GSM 900 and UTRA are deployed.

The power of any spurious emission shall not exceed the maximum level given in Table 6.31.

Table 6.31: BS Spurious emissions limits for BS in geographic coverage area of GSM 900 MS receiver

Band	Maximum level	Measurement bandwidth	Note
921 MHz – 960 MHz	-57 dBm	100 kHz	

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.3.2.1.1.

6.6.3.2.2.2 Co-located base stations

This requirement may be applied for the protection of GSM 900 BTS receivers when GSM 900 BTS and UTRA BS are co-located.

The power of any spurious emission shall not exceed the maximum level given in table 6.32.

Table 6.32: BS Spurious emissions limits for protection of the GSM 900 BTS receiver

Band	Maximum level	Measurement bandwidth	Note
876 MHz – 915 MHz	–98 dBm	100 kHz	

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.3.2.2.1.

6.6.3.2.3 Co-existence with DCS 1800

6.6.3.2.3.1 Operation in the same geographic area

This requirement may be applied for the protection of DCS 1800 MS in geographic areas in which both DCS 1800 and UTRA are deployed.

The power of any spurious emission shall not exceed the maximum level given in table 6.33.

Table 6.33: BS Spurious emissions limits for BS in geographic coverage area of DCS 1800 MS receiver

Band	Maximum level	Measurement bandwidth	Note
1805 MHz – 1880 MHz	-47 dBm	100 kHz	

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.3.3.1.1.

6.6.3.2.3.2 Co-located base stations

This requirement may be applied for the protection of DCS 1800 BTS receivers when DCS 1800 BTS and UTRA BS are co-located.

The power of any spurious emission shall not exceed the maximum level given in table 6.34.

Table 6.34: BS Spurious emissions limits for BS co-located with DCS 1800 BTS

Band	Maximum level	Measurement bandwidth	Note
1710 MHz – 1785 MHz	-98 dBm	100 kHz	

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.3.3.2.1.

6.6.3.2.4 Co-existence with UTRA FDD

6.6.3.2.4.1 Operation in the same geographic area

This requirement may be applied to geographic areas in which both UTRA TDD and UTRA FDD are deployed.

For TDD base stations which use carrier frequencies within the band 2010 – 2025 MHz the requirements applies at all frequencies within the specified frequency bands in table 6.35. For 3,84 Mcps TDD option base stations which use a carrier frequency within the band 1900-1920 MHz, the requirement applies at frequencies within the specified frequency range which are more than 12,5 MHz above the last carrier used in the frequency band 1900-1920 MHz. For 1,28 Mcps TDD option base stations which use carrier frequencies within the band 1900-1920 MHz, the requirement

applies at frequencies within the specified frequency range which are more than 4 MHz above the last carrier used in the frequency band 1900-1920 MHz.

The power of any spurious emission shall not exceed the maximum level given in table 6.35.

Table 6.35: BS Spurious emissions limits for BS in geographic coverage area of UTRA FDD

BS Class	Band	Maximum Level	Measurement Bandwidth	Note
Wide Area BS	1920 – 1980 MHz	-43 dBm (*)	3,84 MHz	
Wide Area BS	2110 – 2170 MHz	-52 dBm	1 MHz	
Local Area BS	1920 – 1980 MHz	-40 dBm (*)	3,84 MHz	
Local Area BS	2110 – 2170 MHz	-52 dBm	1 MHz	
Note *: For 3,84 Mcps TDD option base stations, the requirement shall be measured with the lowest center frequency of measurement at 1922,6 MHz or 15 MHz above the last TDD carrier used, whichever is higher. For 1,28 Mcps TDD option base stations, the requirement shall be measured with the lowest center frequency of measurement at 1922,6 MHz or 6,6 MHz above the last TDD carrier used, whichever is higher.				

NOTE: The requirements for Wide Area BS in Table 6.35 are based on a coupling loss of 67 dB between the TDD and FDD base stations. The requirements for Local Area BS in Table 6.35 are based on a coupling loss of 70 dB between TDD and FDD Wide Area base stations. The scenarios leading to these requirements are addressed in TR 25.942 [9].

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.3.4.1.1.

6.6.3.2.4.2 Co-located base stations

This requirement may be applied for the protection of UTRA FDD BS receivers when UTRA TDD BS and UTRA FDD BS are co-located.

For TDD base stations which use carrier frequencies within the band 2010 – 2025 MHz the requirements applies at all frequencies within the specified frequency bands in table 6.36. For 3,84 Mcps TDD option base stations which use a carrier frequency within the band 1900-1920 MHz, the requirement applies at frequencies within the specified frequency range which are more than 12,5 MHz above the last carrier used in the frequency band 1900-1920 MHz. For 1,28 Mcps TDD option base stations which use carrier frequencies within the band 1900-1920 MHz, the requirement applies at frequencies within the specified frequency range which are more than 4 MHz above the last carrier used in the frequency band 1900-1920 MHz.

The power of any spurious emission shall not exceed the maximum level given in table 6.36.

Table 6.36: BS Spurious emissions limits for BS co-located with UTRA FDD

BS Class	Band	Maximum Level	Measurement Bandwidth	Note
Wide Area BS	1920 – 1980 MHz	-80 dBm (*)	3,84 MHz	
Wide Area BS	2110 – 2170 MHz	-52 dBm	1 MHz	
Note *: For 3,84 Mcps TDD option base stations, the requirement shall be measured with the lowest center frequency of measurement at 1922,6 MHz or 15 MHz above the last TDD carrier used, whichever is higher. For 1,28 Mcps TDD option base stations, the requirement shall be measured with the lowest center frequency of measurement at 1922,6 MHz or 6,6 MHz above the last TDD carrier used, whichever is higher.				

NOTE: The requirements in table 6.36 are based on a minimum coupling loss of 30 dB between base stations. The co-location of different base station classes is not considered. A co-location requirement for the Local Area TDD BS is intended to be part of a later release.

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.3.4.2.1.

6.6.3.3 Test purpose

6.6.3.3.1 3,84 Mcps TDD option

The test purpose is to verify the ability of the BS to limit the interference caused by unwanted transmitter effects to other systems operating at frequencies which are more than 12,5 MHz away from of the UTRA band used.

6.6.3.3.2 1,28 Mcps TDD option

The test purpose is to verify the ability of the BS to limit the interference caused by unwanted transmitter effects to other systems operating at frequencies which are more than 4 MHz away from of the UTRA band used.

6.6.3.4 Method of test

6.6.3.4.1 Initial conditions

For 3,84 Mcps BS supporting 16QAM, the spurious requirements shall be tested with the general test set up specified in section 6.6.3.4.1.1 and also with the special test set up for 16QAM capable BS specified in section 6.6.3.4.1.4.

For 1,28 Mcps BS supporting 16QAM, the spurious requirements shall be tested with the general test set up specified in section 6.6.3.4.1.2 and also with the special test set up for 16QAM capable BS specified in section 6.6.3.4.1.3.

6.6.3.4.1.0 General test conditions

Test environment: normal; see subclause 5.9.1.

RF channels to be tested: B, M and T with multiple carriers if supported; see subclause 5.3.

6.6.3.4.1.1 3,84 Mcps TDD option – General test set up

(1) Connect the measuring equipment to the antenna connector of the BS under test.

(2) Set the parameters of the BS transmitted signal according to table 6.37.

Table 6.37: Parameters of the BS transmitted signal for spurious emissions testing

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, ..., 14: transmit, if i is even; receive, if i is odd.
Time slot carrying SCH	TS0
Time slots under test	TS i, i even and non zero
BS output power setting	PRAT
Number of DPCH in each time slot under test	9
Power of each DPCH	1/9 of Base Station output power
Data content of DPCH	real life (sufficient irregular)

6.6.3.4.1.2 1,28 Mcps TDD option– General test set up

(1) Connect the measuring equipment to the antenna connector of the BS under test.

(2) Set the parameters of the BS transmitted signal according to table 6.37A.

Table 6.37A: Parameters of the BS transmitted signal for spurious emissions testing for 1,28 Mcps TDD

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, 3, 4, 5, 6: transmit, if i is 0,4,5,6; receive, if i is 1,2,3.
Time slots under test	TS4, TS5 and TS6
BS output power setting	PRAT
Number of DPCH in each each time slot under test	8
Power of each DPCH	1/8 of Base Station output power
Data content of DPCH	real life (sufficient irregular)

6.6.3.4.1.3 1,28 Mcps TDD option – Special test set up for 16QAM capable BS

This test set up only applies for 16QAM capable BS.

(1) Connect the measuring equipment to the antenna connector of the BS under test.

(2) Set the parameters of the BS transmitted signal according to table 6.37B.

Table 6.37B: Parameters of the BS transmitted signal for spurious emissions testing for 1,28 Mcps TDD – 16QAM capable BS

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, 3, 4, 5, 6: transmit, if i is 0,4,5,6; receive, if i is 1,2,3.
Time slots under test	TS4, TS5 and TS6
BS output power setting	PRAT
HS-PDSCH modulation	16QAM
Number of HS-PDSCH in each time slot under test	8
Power of each HS-PDSCH	1/8 of Base Station output power
Data content of HS-PDSCH	real life (sufficient irregular)
Spreading factor	16

6.6.3.4.1.4 3,84 Mcps TDD option – Special test set up for 16QAM capable BS

This test set up only applies for 16QAM capable BS.

(1) Connect the measuring equipment to the antenna connector of the BS under test.

(2) Set the parameters of the BS transmitted signal according to table 6.37C.

Table 6.37C: Parameters of the BS transmitted signal for spurious emissions testing – 16QAM capable BS

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, ..., 14: transmit, if i is even; receive, if i is odd.
Time slot carrying SCH	TS0
Time slots under test	TS i, i even and non zero
BS output power setting	PRAT
HS-PDSCH modulation	16QAM
Number of HS-PDSCH in each time slot under test	9
Power of each HS-PDSCH	1/9 of Base Station output power
Data content of HS-PDSCH	real life (sufficient irregular)
Spreading factor	16

6.6.3.4.2 Procedure

Measure the power of the spurious emissions by applying measurement filters with bandwidths as specified in the relevant tables of subclause 6.6.3.2. The characteristic of the filters shall be approximately Gaussian (typical spectrum analyzer filters). The center frequency of the filter shall be stepped in contiguous steps over the frequency bands as given in the tables. The step width shall be equal to the respective measurement bandwidth. The time duration of each step shall be sufficiently long to capture one active time slot.

6.6.3.5 Test Requirements

NOTE: If the Test Requirement below differs from the Minimum Requirement, then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in subclause 5.11 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D.

The spurious emissions measured according to subclause 6.6.3.4.2 shall not exceed the limits specified in the relevant tables of 6.6.3.2.

For 3,84 Mcps TDD BS supporting 16QAM, the measured spurious emissions shall not exceed the limits specified for 3,84 Mcps TDD option in section 6.6.3.2.

For 1,28 Mcps TDD BS supporting 16QAM, the measured spurious emissions shall not exceed the limits specified for 1,28 Mcps TDD option in section 6.6.3.2.

6.7 Transmit intermodulation

6.7.1 Definition and applicability

The transmit intermodulation performance is a measure of the capability of the transmitter to inhibit the generation of signals in its non linear elements caused by presence of the wanted signal and an interfering signal reaching the transmitter via the antenna.

The transmit intermodulation level is the power of the intermodulation products when a WCDMA modulated interference signal is injected into the antenna connector at a mean power level of 30 dB lower than that of the mean power of the subject signal.

The requirements are applicable for a single carrier.

The requirements in this subclause shall apply to both Wide Area BS and Local Area BS.

6.7.1.1 3,84 Mcps TDD option

The carrier frequency of the interference signal shall be ±5 MHz, ±10 MHz and ±15 MHz offset from the subject signal carrier frequency, but excluding interference carrier frequencies outside of the UTRA frequency bands specified in 4.2a, 4.2b or 4.2c, respectively.

6.7.1.2 1,28 Mcps TDD option

The carrier frequency of the interference signal shall be ±1,6 MHz, ±3,2 MHz and ±4,8 MHz offset from the subject signal carrier frequency, but excluding interference carrier frequencies outside of the UTRA frequency bands specified in 4.2a, 4.2b or 4.2c, respectively.

6.7.2 Minimum Requirements

The transmit intermodulation level shall not exceed the out of band or the spurious emission requirements of subclause 6.6.2 and 6.6.3, respectively.

The normative reference for this requirement is TS 25.105 [1] subclause 6.7.1.

6.7.3 Test purpose

The test purpose is to verify the ability of the BS transmitter to restrict the generation of intermodulation products in its non linear elements caused by presence of the wanted signal and an interfering signal reaching the transmitter via the antenna to below specified levels.

6.7.4 Method of test

6.7.4.1 Initial conditions

For 3,84 Mcps BS supporting 16QAM, the transmit intermodulation requirements shall be tested with the general test set up specified in section 6.7.4.1.1 and also with the special test set up for 16QAM capable BS specified in section 6.7.4.1.4.

For 1,28 Mcps BS supporting 16QAM, the transmit intermodulation requirements shall be tested with the general test set up specified in section 6.7.4.1.2 and also with the special test set up for 16QAM capable BS specified in section 6.7.4.1.3.

6.7.4.1.0 General test conditions

Test environment: normal; see subclause 5.9.1.

RF channels to be tested: B, M and T; see subclause 5.3.

6.7.4.1.1 3,84 Mcps TDD option – General test set up

(1) Connect the measuring equipment, the BS under test and the WCDMA signal generator as shown in figure 6.2.

(2) Set the parameters of the BS transmitted signal according to table 6.38.

(3) Configure the WCDMA signal generator to produce an interference signal with a mean power level according to subclause 6.7.5. The interference signal shall be like-modulated as the BS transmitted signal, and the active time slots of both signals shall be synchronized. The carrier frequency of the interference signal shall be ±5 MHz, ±10 MHz and ±15 MHz offset from the carrier frequency of the wanted signal, but excluding interference frequencies outside of the UTRA frequency bands specified in 4.2a, 4.2b or 4.2c, respectively.

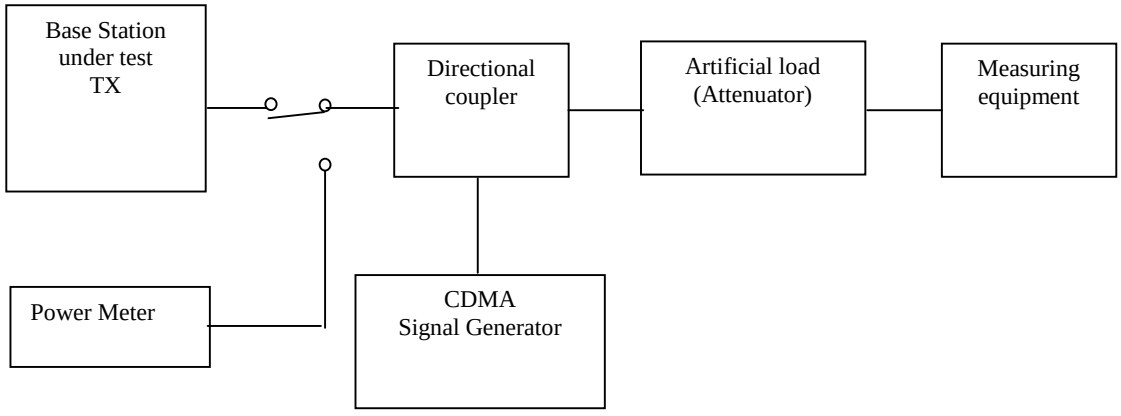

Figure 6.2: Measuring setup for Base Station transmit intermodulation testing

Table 6.38: Parameters of the BS transmitted signal for transmit intermodulation testing

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, ..., 14: transmit, if i is odd; receive, if i is even.
Time slot carrying SCH	TS0
Time slots under test	TS i, i even and non zero
BS output power setting	PRAT
Number of DPCH in each ~~each~~ time slot under test	9
Power of each DPCH	1/9 of Base Station output power
Data content of DPCH	real life (sufficient irregular)

6.7.4.1.2 1,28 Mcps TDD option– General test set up

(1) Connect the measuring equipment, the BS under test and the WCDMA signal generator as shown in figure 6.2A.

(2) Set the parameters of the BS transmitted signal according to table 6.38A.

(3) Configure the WCDMA signal generator to produce an interference signal with a mean power level according to subclause 6.7.5. The interference signal shall be like-modulated as the BS transmitted signal, and the active time slots of both signals shall be synchronized. The carrier frequency of the interference signal shall be ±1,6 MHz, ±3,2 MHz and ±4,8 MHz offset from the carrier frequency of the wanted signal, but excluding interference frequencies outside of the UTRA frequency bands specified in 4.2a, 4.2b or 4.2c, respectively.

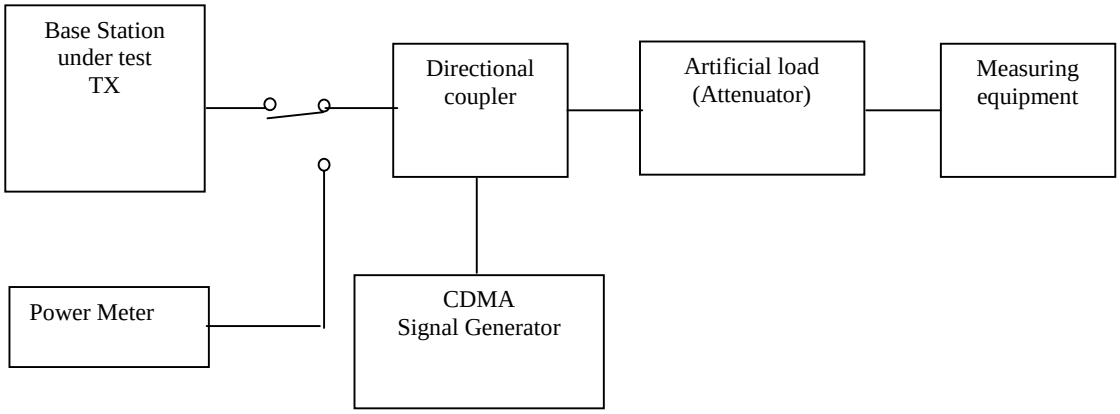

Figure 6.2A: Measuring set up for Base Station transmit intermodulation testing

Table 6.38A: Parameters of the BS transmitted signal for transmit intermodulation testing for 1,28 Mcps TDD

Parameter	Value/description
TDD Duty Cycle	TS i; I = 0, 1, 2, 3, 4, 5, 6: transmit, if i is 0,4,5,6; receive, if i is 1,2,3.
Time slots under test	TS4, TS5 and TS6
BS output power setting	PRAT
Number of DPCH in each time slot under test	8
Power of each DPCH	1/8 of Base Station output power
Data content of DPCH	real life (sufficient irregular)

6.7.4.1.3 1,28 Mcps TDD option – Special test set up for 16QAM capable BS

This test set up only applies for 16QAM capable BS.

(1) Connect the measuring equipment, the BS under test and the WCDMA signal generator as shown in figure 6.2B.

(2) Set the parameters of the BS transmitted signal according to table 6.38B.

(3) Configure the WCDMA signal generator to produce an interference signal with a mean power level according to subclause 6.7.5. The interference signal shall be like-modulated as the BS transmitted signal, and the active time slots of both signals shall be synchronized. The carrier frequency of the interference signal shall be ±1,6 MHz, ±3,2 MHz and ±4,8 MHz offset from the carrier frequency of the wanted signal, but excluding interference frequencies outside of the UTRA frequency bands specified in 4.2a, 4.2b or 4.2c, respectively.

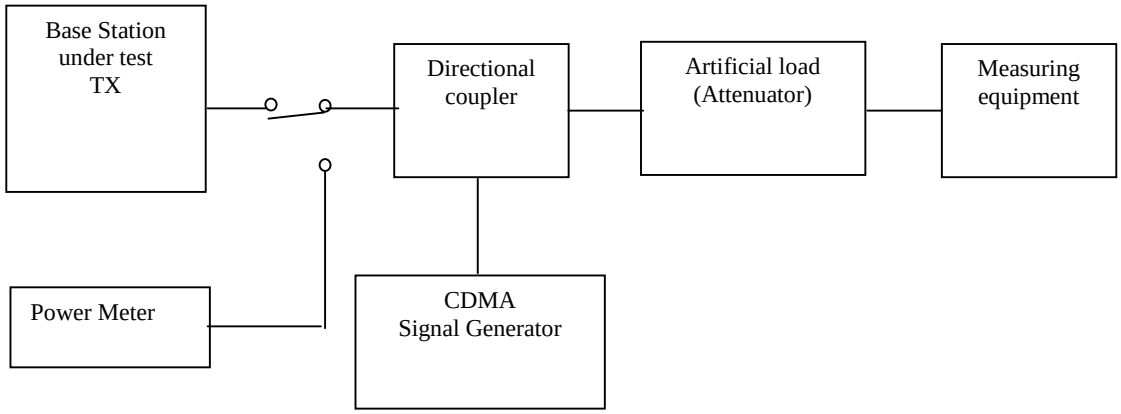

Figure 6.2B: Measuring setup for Base Station transmit intermodulation testing

Table 6.38B: Parameters of the BS transmitted signal for transmit intermodulation testing for 1,28 Mcps TDD- 16QAM capable BS

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, 3, 4, 5, 6: transmit, if i is 0,4,5,6; receive, if i is 1,2,3.
Time slots under test	TS4, TS5 and TS6
BS output power setting	PRAT
HS-PDSCH modulation	16QAM
Number of HS-PDSCH in each time slot under test	8
Power of each HS-PDSCH	1/8 of Base Station output power
Data content of HS-PDSCH	real life (sufficient irregular)
Spreading factor	16

6.7.4.1.4 3,84 Mcps TDD option – Special test set up for 16QAM capable BS

(1) Connect the measuring equipment, the BS under test and the WCDMA signal generator as shown in figure 6.2C.

(2) Set the parameters of the BS transmitted signal according to table 6.38C.

(3) Configure the WCDMA signal generator to produce an interference signal with a mean power level according to subclause 6.7.5. The interference signal shall be like-modulated as the BS transmitted signal, and the active time slots of both signals shall be synchronized. The carrier frequency of the interference signal shall be ±5 MHz, ±10 MHz and ±15 MHz offset from the carrier frequency of the wanted signal, but excluding interference frequencies outside of the UTRA frequency bands specified in 4.2a, 4.2b or 4.2c, respectively.

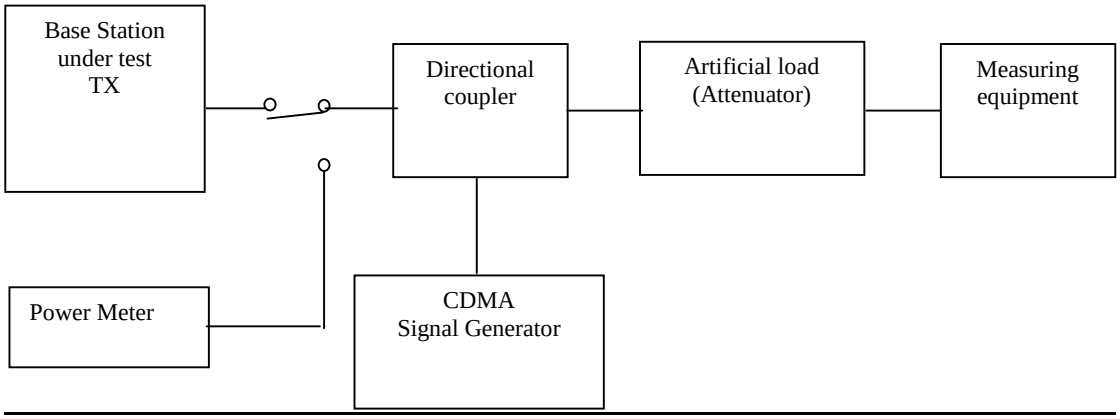

Figure 6.2C: Measuring setup for Base Station transmit intermodulation testing

Table 6.38C: Parameters of the BS transmitted signal for transmit intermodulation testing – 16QAM capable BS

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, ..., 14: transmit, if i is even; receive, if i is odd.
Time slot carrying SCH	TS0
Time slots under test	TS i, i even and non zero
BS output power setting	PRAT
HS-PDSCH modulation	16QAM
Number of HS-PDSCH in each time slot under test	9
Power of each HS-PDSCH	1/9 of Base Station output power
Data content of HS-PDSCH	real life (sufficient irregular)
Spreading factor	16

6.7.4.2 Procedure

Apply the test procedures for out of band and spurious emissions as described in 6.6.2 and 6.6.3, respectively, at the frequencies of all third and fifth order intermodulation products. The frequency band occupied by the interference signal are excluded from the measurements.

NOTE: The third order intermodulation products are at frequencies (F1 ± 2F2) and (2F1 ± F2), the fifth order intermodulation products are at frequencies (2F1 ± 3F2), (3F1 ± 2F2), (4F1 ± F2) and (F1 ± 4F2), where F1 represents the frequencies within the bandwidth of the wanted signal and F2 represents the frequencies within the bandwidth of the WCDMA modulated interference signal.

6.7.5 Test Requirements

NOTE: If the Test Requirement below differs from the Minimum Requirement, then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in subclause 5.11 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D.

The mean power level of the WCDMA modulated interference signal shall be 30 dB below the mean power level of the wanted signal.

At the frequencies of all third and fifth order intermodulation products, the Test Requirements for out of band and spurious emissions as specified in subclauses 6.6.2.1.5 (Spectrum emission mask), 6.6.2.2.5 (ACLR) and 6.6.3.5 (Spurious emissions) shall be met.

6.8 Transmit Modulation

6.8.1 Modulation accuracy

6.8.1.1 Definition and applicability

The Error Vector Magnitude is a measure of the difference between the reference waveform and the measured waveform. This difference is called the error vector. Both waveforms pass through a matched Root Raised Cosine filter with bandwidth corresponding to the considered chip rate and roll-off α =0,22. Both waveforms are then further modified by selecting the frequency, absolute phase, absolute amplitude and chip clock timing so as to minimise the error vector. The EVM result is defined as the square root of the ratio of the mean error vector power to the mean reference power expressed as a %. The measurement interval is one timeslot. The requirement is valid over the total power dynamic range as specified in section 3.1. See Annex C of this specification for further details.

The requirements in this subclause shall apply to both Wide Area BS and Local Area BS.

NOTE: The theoretical modulated waveform shall be calculated on the basis that the transmit pulse shaping filter is a root-raised cosine (RRC) with roll-off α =0,22 in the frequency domain. The impulse response of the chip impulse filter $RC_0(t)$ is

$$RC_0(t) = \frac{\sin\left(\pi \frac{t}{T_C}(1-\alpha)\right) + 4\alpha \frac{t}{T_C}\cos\left(\pi \frac{t}{T_C}(1+\alpha)\right)}{\pi \frac{t}{T_C}\left(1-\left(4\alpha \frac{t}{T_C}\right)^2\right)}$$

Where the roll-off factor α = 0,22 and T_C is the chip duration

6.8.1.2 Minimum Requirements

The error vector magnitude (EVM) shall not exceed 12,5 %. The requirement is valid over the total power dynamic range as specified in section 3.1.

The normative reference for this requirement is TS 25.105 [1] subclause 6.8.2.1.

6.8.1.3 Test purpose

The test purpose is to verify the ability of the BS transmitter to generate a sufficient precise waveform and thus to enable the UE receiver to achieve the specified error performance.

6.8.1.4 Method of test

6.8.1.4.1 Initial conditions

For 1,28 Mcps BS supporting 16QAM, the EVM requirements shall be tested with the general test set up specified in section 6.8.1.4.1.2 and also with the special test set up for 16QAM capable base station specified in section 6.8.1.4.1.2.

6.8.1.4.1.0 General test conditions

Test environment: normal; see subclause 5.9.1.

RF channels to be tested: B, M and T; see subclause 5.3.

6.8.1.4.1.1 3,84 Mcps TDD option

(1) Connect the measuring equipment to the antenna connector of the BS under test.

(2) Set the parameters of the BS transmitted signal according to table 6.39.

Table 6.39: Parameters of the BS transmitted signal for modulation accuracy testing

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, ..., 14: transmit, if i is even; receive, if i is odd.
Time slot carrying SCH	TS0
Time slots under test	TS i, i even and non zero
Number of DPCH in each time slot under test	1
BS power setting	PRAT
Data content of DPCH	real life (sufficient irregular)

6.8.1.4.1.2 1,28 Mcps TDD option– General test set up

(1) Connect the measuring equipment to the antenna connector of the BS under test.

(2) Set the parameters of the BS transmitted signal according to table 6.39A.

Table 6.39A: Parameters of the BS transmitted signal for modulation accuracy testing at maximum BS output power for 1,28 Mcps TDD

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, ..., 6: Transmit, if i is 0,4,5,6; receive, if i is 1,2,3.
Time slots under test	TS4, TS5 and TS6
Number of DPCH in each time slot under test	10
Power of each DPCH	1/10 of Base Station output power
Base station power	PRAT
Data content of DPCH	real life (sufficient irregular)

6.8.1.4.1.3 1,28 Mcps TDD option – Special test set up for 16QAM capable BS

This test set up only applies for 16QAM capable BS.

(1) Connect the measuring equipment to the antenna connector of the BS under test.

(2) Set the parameters of the BS transmitted signal according to table 6.39B.

Table 6.39B: Parameters of the BS transmitted signal for modulation accuracy testing at maximum BS output power setting for 1,28 Mcps TDD - 16QAM capable BS

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, 3, 4, 5, 6: transmit, if i is 0,4,5,6; receive, if i is 1,2,3.
Time slots under test	TS4, TS5 and TS6
HS-PDSCH modulation	16QAM
Number of HS-PDSCH in each time slot under test	10
Power of each HS-PDSCH	1/10 of Base Station output power
BS station power	PRAT
Data content of HS-PDSCH	Real life (sufficient irregular)
Spreading factor	16

6.8.1.4.2 Procedure

6.8.1.4.2.1 3,84 Mcps TDD option – General procedure

(1)Measure the error vector magnitude (EVM) by applying the global in-channel Tx test method described in Annex C.

(2) Set the BS output power to maximum output power – 30 dB and repeat step (1) above.

6.8.1.4.2.2 1,28 Mcps TDD option – General procedure

(1) Measure the error vector magnitude (EVM) by applying the global in-channel Tx test method described in Annex C with the BS transmitted signal set as described in Table 6.39A.

(2) Set the BS transmitted signal according Table 6.39C and measure the error vector magnitude (EVM) by applying the global in-channel Tx test method described in Annex C.

Table 6.39C: Parameters of the BS transmitted signal for modulation accuracy testing at minimum BS output power for 1,28 Mcps TDD

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, ..., 6: Transmit, if i is 0,4,5,6; receive, if i is 1,2,3.
Time slot under test	TS4, TS5 and TS6
Number of DPCH in each time slot under test	1
BS output power setting	Maximum output power – 30 dB
Data content of DPCH	Real life (sufficient irregular)

6.8.1.4.2.3 1,28 Mcps TDD option – Special procedure for 16QAM capable BS

(1) Measure the error vector magnitude (EVM) by applying the global in-channel Tx test method described in Annex C with the BS transmitted signal set as described in Table 6.39B.

(2) Set the BS transmitted signal according Table 6.39D and measure the error vector magnitude (EVM) by applying the global in-channel Tx test method described in Annex C.

Table 6.39D: Parameters of the BS transmitted signal for modulation accuracy testing at minimum BS output power setting for 1,28 Mcps TDD - 16QAM capable BS

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, 3, 4, 5, 6: transmit, if i is 0,4,5,6; receive, if i is 1,2,3.
HS-PDSCH modulation	16QAM
Time slots under test	TS4, TS5 and TS6
Number of HS-PDSCH in each time slot under test	1
BS output power setting	Maximum output power – 30 dB
Data content of HS-PDSCH	Real life (sufficient irregular)
Spreading factor	16

6.8.1.4.2.4 3,84 Mcps TDD option – Special test set up for 16QAM capable BS

This test set up only applies for 16QAM capable BS.

(1) Measure the error vector magnitude (EVM) by applying the global in-channel Tx test method described in Annex C.

(2) Set the BS transmitted signal according Table 6.39E and measure the error vector magnitude (EVM) by applying the global in-channel Tx test method described in Annex C.

Table 6.39E: Parameters of the BS transmitted signal for modulation accuracy testing at minimum BS output power setting for 3,84 Mcps TDD – 16QAM capable BS

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, ..., 14: transmit, if i is even; receive, if i is odd.
Time slot carrying SCH	TS0
Time slots under test	TS i, i even and non zero
BS output power setting	PRAT – 30 dB
HS-PDSCH modulation	16QAM
Number of HS-PDSCH in each time slot under test	1
Data content of HS-PDSCH	real life (sufficient irregular)
Spreading factor	16

6.8.1.5 Test Requirements

NOTE: If the Test Requirement below differs from the Minimum Requirement, then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in subclause 5.11 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D.

The error vector magnitude (EVM) measured according to subclause 6.8.1.4.2 shall not exceed 12,5 %.

6.8.2 Peak code domain error

6.8.2.1 Definition and applicability

The code domain error is computed by projecting the error vector power onto the code domain at a specific spreading factor. The error power for each code is defined as the ratio to the mean power of the reference waveform expressed in dB. And the Peak Code Domain Error is defined as the maximum value for Code Domain Error. The measurement interval is one timeslot.

The requirements in this subclause shall apply to both Wide Area BS and Local Area BS.

6.8.2.2 Minimum Requirements

The peak code domain error shall not exceed -28 dB at spreading factor 16.

The normative reference for this requirement is TS 25.105 [1] subclause 6.8.3.1.

6.8.2.3 Test purpose

The test purpose is to verify the ability of the BS transmitter to limit crosstalk among codes and thus to enable the UE receiver to achieve the specified error performance.

6.8.2.4 Method of test

6.8.2.4.1 Initial conditions

For 3,84 Mcps BS supporting 16QAM, the PCDE requirement shall be tested with the general test set up specified in section 6.8.2.4.1 and also with the special test set up for 16QAM capable BS specified in section 6.8.2.4.4.

For 1,28 Mcps BS supporting 16QAM, the PCDE requirement shall be tested with the general test set up specified in section 6.8.2.4.2 and also with the special test set up for 16QAM capable BS specified in section 6.8.2.4.3.

6.8.2.4.1.0 General test conditions

Test environment: normal; see subclause 5.9.1.

RF channels to be tested: B, M and T; see subclause 5.3.

6.8.2.4.1.1 3,84 Mcps TDD option – General test set up

(1) Connect the measuring equipment to the antenna connector of the BS under test.

(2) Set the parameters of the BS transmitted signal according to table 6.40.

Table 6.40: Parameters of the BS transmitted signal

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, ..., 14: transmit, if i is even; receive, if i is odd.
Time slot carrying SCH	TS0
Time slots under test	TS i, i even and non zero
BS output power setting	PRAT
Number of DPCH in each time slot under test	9
Power of each DPCH	1/9 of Base Station output power
Data content of DPCH	real life (sufficient irregular)
Spreading factor	16

6.8.2.4.1.2 1,28 Mcps TDD option– General test set up

(1) Connect the measuring equipment to the antenna connector of the BS under test.

(2) Set the parameters of the BS transmitted signal according to table 6.40A.

Table 6.40A: Parameters of the BS transmitted signal for 1,28 Mcps TDD

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, ..., 6: transmit, if i is 0,4,5,6; receive, if i is 1,2,3.
Time slots under test	TS4, TS5 and TS6
BS output power setting	PRAT
Number of DPCH in each time slot under test	10
Power of each DPCH	1/10 of Base Station output power
Data content of DPCH	real life (sufficient irregular)
Spreading factor	16

6.8.2.4.1.3 1,28 Mcps TDD option – Special test set up for 16QAM capable BS

This test set up only applies for 16QAM capable BS.

(1) Connect the measuring equipment to the antenna connector of the BS under test.

(2) Set the parameters of the BS transmitted signal according to table 6.40B.

Table 6.40B: Parameters of the BS transmitted signal for 1,28 Mcps TDD – 16QAM capable BS

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, ..., 6: transmit, if i is 0,4,5,6; receive, if i is 1,2,3.
Time slots under test	TS4, TS5 and TS6
HS-PDSCH modulation	16QAM
BS output power setting	PRAT
Number of HS-PDSCH in each time slot under test	10
Power of each HS-PDSCH	1/10 of Base Station output power
Data content of HS-DSCH	real life (sufficient irregular)
Spreading factor	16

6.8.2.4.1.4 3,84 Mcps TDD option – Special test set up for 16QAM capable BS

This test set up only applies for 16QAM capable BS.

(1) Connect the measuring equipment to the antenna connector of the BS under test.

(2) Set the parameters of the BS transmitted signal according to table 6.40C.

Table 6.40C: Parameters of the BS transmitted signal – 16QAM capable BS

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, ..., 14: transmit, if i is even; receive, if i is odd.
Time slot carrying SCH	TS0
Time slots under test	TS i, i even and non zero
BS output power setting	PRAT
HS-PDSCH modulation	16QAM
Number of HS-PDSCH in each time slot under test	9
Power of each HS-PDSCH	1/9 of Base Station output power
Data content of HS-PDSCH	real life (sufficient irregular)
Spreading factor	16

6.8.2.4.2 Procedure

Measure the peak code domain error by applying the global in-channel Tx test method described in Annex C.

6.8.2.5 Test Requirements

NOTE: If the Test Requirement below differs from the Minimum Requirement, then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in subclause 5.11 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D.

The peak code domain error measured according to subclause 6.8.2.4.2 shall not exceed –27 dB.