

TEST REPORT

Test Report No.: 1-4246/12-179-04

Testing Laboratory

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Accredited Test Laboratory:

The test laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025

DAkkS registration number: D-PL-12076-01-01

Area of Testing: Radio Satellite Communications

Applicant and Manufacturer

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Test Standards

**ETSI EN 301 908-1
V5.2.1**

Electromagnetic compatibility and Radio spectrum Matters(ERM);Base stations (BS), repeaters and user equipment (UE) for IMT-2000 third generation cellular networks;Part 1: Harmonised EN for IMT-2000,introduction and common requirements,covering essential requirements of article 3.2 of R&TTE Directive

**ETSI EN 301 908-2
V5.2.1**

Electromagnetic compatibility and Radio spectrum Matters(ERM);Base stations (BS), repeaters and user equipment (UE) for IMT-2000 third generation cellular networks;Part 2: Harmonised EN for IMT-2000,introduction and common requirements,CDMA Direct Spread(UTRA FDD)(UE)covering essential requirements of article 3.2 of R&TTE Directive

ETSI TS 134.121 V9.3.0

Universal Mobile Telecommunications System(UMTS);User Equipment(UE) conformance specification;Radio transmission and reception(FDD)

Test Item

Kind of test item: HSPA+ Module
Model name: EM820W
S/N serial number: W9V2B110A1400032
HW hardware status: MD1EM820WM
SW software status: 11.805.03.07.00
Frequency [MHz]: 2100MHz/900MHz
Type of Modulation: QPSK,BPSK,64QAM
Number of channels: 6
Antenna: Non- Integrated Antenna
Power Supply: Max 2.8 W
Temperature Range: -10°C - +55°C



Test performed:

Zhang Ting

Date: 2012-11-27
Name: zhangting

Test Report authorised:

Michael Berg

Date: 2012-12-10
Name: Michael Berg

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2 General information

2.1 Notes

The test results of this test report relate exclusively to the test item specified in this test report. CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalisations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of CETECOM ICT Services GmbH.

2.2 Application details

Date of receipt of order:	Nov.15,2010 and Nov.21,2012
Date of receipt of test item:	Nov.15,2010 and Nov.21,2012
Start of test:	Nov.20,2010 and Nov.21,2012
End of test:	Dec.07,2010 and Nov.21,2012

3 Test standard/s:

Test Standard	Version	Test Standard Description
ETSI EN 301 908-1	V5.2.1	Electromagnetic compatibility and Radio spectrum Matters(ERM);Base stations (BS), repeaters and user equipment (UE) for IMT-2000 third generation cellular networks;Part 1: Harmonised EN for IMT-2000,introduction and common requirements,covering essential requirements of article 3.2 of R&TTE Directive
ETSI EN 301 908-2	V5.2.1	Electromagnetic compatibility and Radio spectrum Matters(ERM);Base stations (BS), repeaters and user equipment (UE) for IMT-2000 third generation cellular networks;Part 2: Harmonised EN for IMT-2000,introduction and common requirements,CDMA Direct Spread(UTRA FDD)(UE)covering essential requirements of article 3.2 of R&TTE Directive
ETSI TS 134.121	V9.3.0	Universal Mobile Telecommunications System(UMTS);User Equipment(UE) conformance specification;Radio transmission and reception(FDD)

4 Test Environment

Temperature:	T_{nom}	25 °C during room temperature tests
	T_{max}	55 °C during high temperature test
	T_{min}	-10 °C during low temperature test
Relative humidity content:		from 5 %RH to 95 %RH
Air pressure:		not relevant for this kind of testing
Power supply:	V_{nom}	3.3 V
	V_{max}	3.6 V
	V_{min}	3.0 V

5 Test Laboratories sub-contracted

EMC LABORATORY OF RELIABILITY LABORATORY OF HUAWEI TECHNOLOGIES CO., LTD
Street: Bantian Longgang District Shenzhen
Country: P.R.China

6 Results

6.1 Test Plan / Test Summary

Conformance requirement according to ETSI EN 301 908-1 V5.2.1; ETSI EN 301 908-2 V5.2.1	Result
1 Transmitter maximum output power The requirements and tests accordance with EN 301 908-2, subclause 5.3.1 and 3GPP TS34.121 V9.3.0, subclause 5.2	PASS
2 Transmitter spectrum emission mask The requirements and tests accordance with EN 301 908-2, subclause 5.3.2 and 3GPP TS34.121 V9.3.0, subclause 5.9	PASS
3 Transmitter spurious emissions The requirements and tests accordance with EN 301 908-2, subclause 5.3.3 and 3GPP TS34.121 V9.3.0, subclause 5.11	PASS
4 Transmitter minimum output power The requirements and tests accordance with EN 301 908-2, subclause 5.3.4 and 3GPP TS34.121 V9.3.0, subclause 5.4.3	PASS
5 Transmitter adjacent channel leakage power ratio The requirements and tests accordance with EN 301 908-2, subclause 5.3.11 and 3GPP TS34.121 V9.3.0, subclause 5.10	PASS
6 Out-of-synchronization handling of output power The requirements and tests accordance with EN 301 908-2, subclause 5.3.10 and 3GPP TS34.121 V9.3.0, subclause 5.4.4	PASS
7 Maximum Output Power with HS-DPCCH The requirements sub clause 5.2A of 3GPP TS 34.121 V9.3.0.	PASS
8 Spectrum Emission Mask with HS-DPCCH The requirements sub clause 5.9A of 3GPP TS 34.121 V9.3.0.	PASS
9 Adjacent Channel Leakage Power Ratio (ACLR) with HS-DPCCH The requirements sub clause 5.10A of 3GPP TS 34.121 V9.3.0.	PASS
10 Error Vector Magnitude (EVM) with HS-DPCCH The requirements sub clause 5.13.1A of 3GPP TS 34.121 V9.3.0.	PASS
11 Maximum Output Power with HS-DPCCH and E-DCH The requirements sub clause 5.2B of 3GPP TS 34.121 V9.3.0.	PASS
12 Spectrum Emission Mask with HS-DPCCH and E-DCH The requirements sub clause 5.9B of 3GPP TS 34.121 V9.3.0.	PASS
13 Adjacent Channel Leakage Power Ratio (ACLR) with HS-DPCCH and E-DCH The requirements sub clause 5.10B of 3GPP TS 34.121 V9.3.0.	PASS
14 Receiver adjacent channel selectivity (ACS) The requirements and tests accordance with EN 301 908-2, subclause 5.3.5 and 3GPP TS34.121 V9.3.0, subclause 6.4	PASS
15 Receiver blocking characteristics The requirements and tests accordance with EN 301 908-2, subclause 5.3.6 and 3GPP TS34.121 V9.3.0, subclause 6.5	PASS
16 Receiver spurious response The requirements and tests accordance with EN 301 908-2, subclause 5.3.7 and 3GPP TS34.121 V9.3.0, subclause 6.6	PASS
17 Receiver Intermodulation characteristics The requirements and tests accordance with EN 301 908-2, subclause 5.3.8 and 3GPP TS34.121 V9.3.0, subclause 6.7	PASS
18 Receiver spurious emissions The requirements and tests accordance with EN 301 908-2, subclause 5.3.9 and 3GPP TS34.121 V9.3.0, subclause 6.8	PASS
19 Radiated spurious emissions The requirements and tests accordance with EN 301 908-1, subclause 5.3.1	PASS

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20 Control and Monitoring Function	PASS
The requirements and tests accordance with EN 301 908-1,subclause 5.3.3	

NOTE: Measurement taken is within the measurement uncertainty of measurement system.

7 Equipment Specification

7.1 General Description

EM820W HSPA+/HSUPA/HSDPA/WCDMA/EDGE/GPRS/GSM dual mode module is subscriber equipment in the UMTS/GSM system. But only WCDMA900MHz & WCDMA2100MHz bands test data included in this report. for 900MHz The TX frequency is 880MHz-915MHz and RX frequency is 925MHz-960MHz. for 2100MHz, the TX frequency is 1920MHz-1980MHz and the RX frequency is 2110MHz-2170MHz. EM820W implement such functions as RF signal receiving/transmitting, HSPA+/WCDMA and EDGE/GPRS/GSM protocol processing, data service etc. Externally it provides PCIE MINI CARD interface (to connect to the notebook etc.). EM820W has no internal antenna .

7.2 Technical Data

Description:	HSPA+ Module
Models:	EM820W
Input Rated Voltage:	+3.3V DC
Extreme voltage :	3.6 and 3.0V
Rated Power:	Max 2.8 W
Dimensions:	51 (length) × 30 (width) × 4.5 (height) (mm3)
Weight:	About 15g



Figure1. EUT Appearance of EM820W

7.3 Sub-Assembly Identity

Table 1. Sub-Assembly Identity

Model Name	Qty.	Hardware Version	Description
EM820W	1	MD1EM820WM	Main board of data card

7.4 Lists of Test Instruments

Table 2. List of instruments

Instrument name	Type	amount	Manufacturer	Calibration date	Cal Interval (month)
Wireless Communication Test	8960	1	Agilent	Mar. 23, 2010	12
Spectrum Analysis	FSU26	1	R&S	Mar. 07, 2010	12
Fading simulator	ABFS	1	R&S	May .02, 2010	12
Wireless Communication Test	CMU200	1	R&S	May. 21, 2010	12
CW signal Generator	E8257D	1	Agilent	Sep. 12, 2010	12
Vector Signal Generator	SMU200A	1	R&S	May .20, 2010	12
Directional couple	MB210140100	1	TAIGE	May .12, 2010	12
Tunable Band reject Filter	WRCT 1900/2200/5/40/10 EEK	1	Wainwright Instruments GmbH	May. 25, 2010	12
Tunable Band reject Filter	WRCT 880/960/5/10EEK	1	Wainwright Instruments GmbH	May. 25, 2010	12
Tunable Band reject Filter	WRCD 1700/1800 -0.2/40-5EEK	1	Wainwright Instruments GmbH	May. 25,2010	12
Power Division or Combine	11667A	3	Agilent	April .11, 2010	12
Climate Chamber	WK11-600/70	1	WEISS	Sep. 12, 2010	12

Equipment used for update tests to V5.2.1:

Equipment Description	Manufacturer	Model	Serial Number	Calibrated until
Power supply	KEITHLEY	2303	1288003	Sept., 27, 2013
Universal Radio Communication Tester	R&S	CMU200	117341	Jan., 12, 2013
Universal Radio Communication Tester	Agilent	E5515C	MY50260239	Aug., 31, 2013
Spectrum Analyzer	Agilent	E4440A	MY48250119	Jul., 17, 2013
Signal Analyzer	R&S	FSQ31	200021	Sept., 27, 2013
Temperature Chamber	WEISS	WKL64	24600294	Feb., 13, 2013
Signal generator	Agilent	E8257D	MY49281095	Jul., 09, 2013
Vector Signal Generator	R&S	SMU200A	104162	Sept., 07, 2013
Spectrum analyzer	R&S	FSU3	200474	Mar., 05, 2013
Spectrum analyzer	R&S	FSU43	100144	Mar., 05, 2013
Double-Ridged Waveguide Horn Antenna (1G~18GHz)	R&S	HF907	100304	Apr., 05, 2013
Double-Ridged Waveguide Horn Antenna (1G~18GHz)	R&S	HF907	100391	Apr., 05, 2013
Trilog Broadband Antenna (30M~3GHz)	SCHWARZBECK	VULB 9163	9163-521	Jul., 07, 2013
Pyramidal Horn Antenna(26GHz-40GHz)	ETS-Lindgren	3160-10	00123940	Feb., 27, 2013
Pyramidal Horn Antenna(18GHz-26.5GHz)	ETS-Lindgren	3160-09	00125912	Feb., 27, 2013

NOTE: All the test equipment are calibrated once a year.

8 Product Description

8.1 Type Designation

TYPE DESIGNATION (NOTE)
EM820W

NOTE: If the equipment comprises of two or more bands, then the following set of equipment definition tables shall be completed for each band.

- (1) This is the manufacturer's numeric or alphanumeric code or name that is specific to particular equipment. It may contain information in coded form on the characteristics of the equipment e.g. frequency, power. The manufacturer is free to choose the form of the type designation.
- (2) This is the number, code or trade name used by the manufacturer to describe a series or 'family' of equipment of substantially the same mechanical and electrical construction which will include a number of related equipments. This number is often referred to as the "model no."
- (3) This is the manufacturer's identification number given to specific equipment in the series or 'family' of equipments. It is often referred to as the "identification number".

8.2 Type of Equipment

TYPE OF EQUIPMENT	
☐	Mobile Handset
☒	Module
☐	<u>Other</u>

8.2.1 Frequency Range

TYPE OF EQUIPMENT	
Transmitter Frequency Range	
☒	WCDMA Band I
☒	WCDMA Band VIII
☐	
☐	
☐	Other

NOTE: About the specific frequency range, refer to ETSI TS 134.121 V9.3.0, clause 4.2 (3GPP TS 134.121 version 8.7.0 Release 7).

8.2.2 Technical Characteristics

TYPE OF EQUIPMENT:	Module
Max. Number of Transceivers:	1
MS Power Class:	3
Main Antenna Type :	Non- Integrated Antenna
Option Antenna Type :	Non- Integrated Antenna
Support data service:	HSDPA/HSUPA

8.2.3 Transmitter Technical Characteristics

METHOD OF FREQUENCY GENERATION	OTHER
Transmitter frequency range:	Band I: 1920 MHz ~ 1980 MHz Band VIII: 880 MHz ~ 915 MHz

8.2.4 Transmitter Modulation Characteristics

TRANSMITTER MODULATION INPUT CHARACTERISTICS		
Maximum Modulation bit rate	1	DL
Type of modulation:		
SUBCARRIER:	DIRECT:	
MSK	QPSK B PSK 64 QAM Other	

8.2.5 Receiver Technical Characteristics

RECEIVER TECHNICAL CHARACTERISTICS		
RECEIVER - FREQUENCY		
METHOD OF FREQUENCY GENERATION: OTHER		
INTERMEDIATE FREQUENCIES		
[]	1st	__ MHz
[]	2nd	__ MHz
[]	3rd	__ kHz
[✓]		None intermediate frequency
Is local oscillator injection frequency higher or lower than the receiver nominal frequency?		
[]	Higher (.....Hz to MHz)	
[]	Lower (.....Hz to MHz)	
[]	Identical Give details	
RECEIVER FREQUENCY RANGE		
Band I: 2110 MHz ~ 2170 MHz Band VIII: 925 MHz ~ 960 MHz		
[✓]	Receiver Diversity	

8.3 Common Technical Characteristics

TRANSMITTER AND RECEIVER CHARACTERISTICS	
Channel separation:	200 kHz
State the minimum channel spacing:	5 MHz

8.3.1 Temperature Range

EXTREME TEMPERATURE RANGE over which equipment is to be type tested	
Minimum Temperature:	[- 10°C]
Maximum Temperature:	[+ 55°C]

8.3.2 Construction of the Equipment

CONSTRUCTION OF EQUIPMENT: Multiple units

NOTE: Unit means a physically separate item of the equipment.

8.3.3 Power Source

POWER SOURCE		
[✓]	DC INPUT :	
	Rated Voltage:	=== 3.3V
	Range:	=== 3.0V and 3.6V
	Rated Power:	Max 2.8 W

CO SITING OPERATION		
Is the equipment suitable for co-sitting with:-		
GSM900	Yes [✓]	No[]
DCS1800	Yes [✓]	No[]
PCS1900	Yes [✓]	No[]
Others	Yes [✓]	No[]

FREQUENCY RANGE LIMITATIONS
Are there any differences between the configurations, if so please state:- (e.g. limited frequency range due to ancillaries, i.e. combiners, duplexers, etc.)
N.A

NOTE: The frequency shall be marked as not applicable if the equipment is able to operate on any designated channel within the specified frequency range.

9 Summary of Testing

IDENTIFICATION		DESCRIPTION	CONFIGURATION CODE			
			WCDMA			
EM820W		HSPA+ Module	√			
Conformance Requirements	Clause Number of Test Procedure	Conformance Requirements	TEST STATUS			
The requirements covered by EN 301 908-2 V5.2.1 (2011-07)						
4.2.2	5.3.1	Transmitter Maximum Output Power	√			
4.2.3	5.3.2	Transmitter spectrum emission mask	√			
4.2.4	5.3.3	Transmitter conducted spurious emissions	√			
4.2.5	5.3.4	Transmitter minimum output power	√			
4.2.6	5.3.5	Receiver adjacent channel selectivity (ACS)	√			
4.2.7	5.3.6	Receiver blocking characteristics	√			
4.2.8	5.3.7	Receiver spurious response	√			
4.2.9	5.3.8	Receiver Intermodulation characteristics	√			
4.2.10	5.3.9	Receiver spurious emissions	√			
4.2.11	5.3.10	Out of-synchronization handling of output power	√			
4.2.12	5.3.11	Transmitter adjacent channel leakage power ratio	√			
The requirements covered by 3GPP 134.121 V9.3.0 (2011-02)						
5.2A	5.2A	Maximum Output Power with HS-DPCCH	√			
5.2B	5.2B	Maximum Output Power with HS-DPCCH and E-DCH	√			
5.9A	5.9A	Spectrum Emission Mask with HS-DPCCH	√			
5.9B	5.9B	Spectrum Emission Mask with HS-DPCCH and E-DCH	√			
5.10A	5.10A	Adjacent Channel Leakage Power Ratio (ACLR) with HS-DPCCH	√			
5.10B	5.10B	Adjacent Channel Leakage Power Ratio (ACLR) with HS-DPCCH and E-DCH	√			
5.13.1A	5.13.1A	Error Vector Magnitude (EVM) with HS-DPCCH	√			
The requirements covered by EN 301 908-1 V5.2.1 (2011-05)						
4.2.2	5.3.1	Radiated emissions (UE)	√			
4.2.4	5.3.3	Control and monitoring functions (UE)	√			

NOTE: The clause of radiated emissions is in the standard of EN 301 908-1 V5.2.1 (2011-05). And the others are in the standard of EN 301 908-2 V5.2.1 (2011-07).and 3GPP 134.121 V9.3.0 (2011-02).

9.1 Common Configuration

9.1.1 Test Condition

	Channel (WCDMA Band I)	Channel (WCDMA Band VIII)	Temperature(°C)	Voltage (V)
High	9888	2863	55	3.6
Middle	9750	2788	25	3.3
Low	9612	2712	-10	3.0

10 Short Test plan

Test Item		Status
EN 301 908-2 V5.2.1 & 3GPP TS 34.121 V9.3.0		
6.1.3	Transmitter Maximum Output Power	P
6.1.4	Transmitter spectrum emission mask	P
6.1.5	Transmitter conducted spurious emissions	P
6.1.6	Transmitter minimum output power	P
6.1.7	Transmitter adjacent channel leakage power ratio	P
6.1.8	Out of-synchronization handling of output power	P
6.1.9	Maximum Output Power with HS-DPCCH	P
6.1.10	Spectrum Emission Mask with HS-DPCCH	P
6.1.11	Adjacent Channel Leakage Power Ratio (ACLR) with HS-DPCCH	P
6.1.12	Error Vector Magnitude (EVM) with HS-DPCCH	P
6.1.13	Maximum Output Power with HS-DPCCH and E-DCH	P
6.1.14	Spectrum Emission Mask with HS-DPCCH and E-DCH	P
6.1.15	Adjacent Channel Leakage Power Ratio (ACLR) with HS-DPCCH and E-DCH	P
6.2.2	Receiver adjacent channel selectivity (ACS)	P
6.2.3	Receiver blocking characteristics	P
6.2.4	Receiver spurious response	P
6.2.5	Receiver Intermodulation characteristics	P
6.2.6	Receiver spurious emissions	P
EN 301 908-1 V5.2.1		
6.3.1	Radiated emissions (UE)	P
6.3.2	Control and monitoring functions (UE)	P

NOTE: P = pass
F = fail
N.A. = not applicable

11 Measurements Result

11.1 Transmitter Test

11.1.1 Test Conditions and Channel Configuration for WCDMA

Transmitter performance test of the Module is implemented during communicating with the SS via air interface. The procedure is using normal call protocol until the Module is communicating on traffic channel basically. On the traffic channel, the Module provides special function for testing that is called Logical Test Interface and the Module is tested using this function. (Refer to TS 134.109 [4]).

Transmitting or receiving bit/symbol rate for test channel is shown in table below.

Bit / Symbol rate for Test Channel

Type of User Information	User bit rate	DL DPCH symbol rate	UL DPCH bit rate	Remarks
12.2 kbps reference measurement channel	12.2 kbps	30 kbps	60 kbps	Standard Test

All the parameters in this clause are defined using the UL reference measurement channel (12.2 kbps) and unless stated otherwise, with the UL power control ON.

The common RF test conditions of Tx Characteristics are defined in table below, and Individual test conditions are defined in the paragraph of each test.

TX Physical channel configuration

Physical channel	Reference level
$\hat{I}_{or}$	-93dBm/3.84MHz
CPICH	CPICH_Ec/DPCH_Ec =7dB
P-CCPCH	P-CCPCH_Ec/DPCH_Ec =5dB
SCH	SCH_Ec/DPCH_Ec =5dB
PICH	PICH_Ec/DPCH_Ec =2dB
DPCH	103.3dBm/3.84MHz

11.1.2 Maximum Output power

11.1.2.1 Test results

W2100

Test environment	UL channel(dBm)			Result
	9612	9750	9888	
Tnorm (°C)=25; Vnorm=3.3	22.52	21.93	22.85	PASS
Tmin(°C)=-10; Vmin=3.0	22.46	21.93	22.66	PASS
Tmin(°C)=-10; Vmax=3.6	22.54	21.92	22.75	PASS
Tmax(°C)=55; Vmin=3.0	22.56	21.95	22.76	PASS
Tmax(°C)=55; Vmax=3.6	22.43	21.98	22.73	PASS

W900

Test environment	UL channel(dBm)			Result
	2712	2788	2863	
Tnorm (°C)=25; Vnorm=3.3	23.15	23.12	22.65	PASS
Tmin(°C)=-10; Vmin=3.0	22.91	22.95	22.52	PASS
Tmin(°C)=-10; Vmax=3.6	23.08	22.92	22.55	PASS
Tmax(°C)=55; Vmin=3.0	23.17	23.11	22.73	PASS
Tmax(°C)=55; Vmax=3.6	23.11	23.07	22.75	PASS

11.1.3 Essential Conformance Requirements

Operating band	Rated power (dBm)	tolerance (dB)
Band I	24	+1.7/-3.7
Band VIII	24	+1.7/-3.7

11.1.4 Result

The equipment met the requirement of this clause.

One transceiver has been measured, however in above section only the requirements of EN 301 908-2 V5.2.1 has been considered.

11.1.5 Transmitter spectrum emission mask

11.1.5.1 Test data

W2100

Test environment	UL channel(dBc)			Result
	9612	9750	9888	
Tnorm (°C)=25; Vnorm=5.0	PASS	PASS	PASS	PASS

W900

Test environment	UL channel(dBc)			Result
	2712	2788	2863	
Tnorm (°C)=25; Vnorm=5.0	PASS	PASS	PASS	PASS

11.1.5.2 Essential Conformance Requirements

Δf in MHz (note 8)	Minimum requirement Band I, II, III, VIII	Measurement bandwidth
2,5 to 3,5	$\left\{ -35 - 15 \cdot \left(\frac{\Delta f}{\text{MHz}} - 2.5 \right) \right\} \text{dBc}$	30 kHz
3,5 to 7,5	$\left\{ -35 - 1 \cdot \left(\frac{\Delta f}{\text{MHz}} - 3.5 \right) \right\} \text{dBc}$	1 MHz
7,5 to 8,5	$\left\{ -39 - 10 \cdot \left(\frac{\Delta f}{\text{MHz}} - 7.5 \right) \right\} \text{dBc}$	1 MHz
8,5 to 12,5	-47,5dBc	1 MHz

11.1.5.3 Result

The equipment met the requirement of this clause.

For the measurement results refer to appendix B for EM820W, but only the worst case were listed in the appendix. One transceiver has been measured, however in above section only the requirements of EN 301 908-2 V5.2.1 has been considered.

11.1.6 Transmitter spurious emissions

11.1.6.1 Test data

W2100

Frequency bandwidth	RBW	Max.level	WCDMA Band I; Vnorm(V)=3.3 V			Notes
			Result			
			9612	9750	9888	Result
9 kHz ≤ f < 150 kHz	1kHz	-36dBm	PASS	PASS	PASS	See appendix C
150 kHz ≤ f < 30 MHz	10 kHz	-36dBm	PASS	PASS	PASS	See appendix C
30 MHz ≤ f <1GHz	100 kHz	-36dBm	PASS	PASS	PASS	See appendix C
1GHz ≤ f < 12.75Hz	1MHz	-30dBm	PASS	PASS	PASS	See appendix C
791 MHz ≤ f ≤ 821 MHz	3,84 MHz	-60dBm	PASS	PASS	PASS	See appendix C
921 MHz ≤ f < 925 MHz	100 kHz	-60 dBm	PASS	PASS	PASS	See appendix C
925 MHz ≤ f ≤ 935 MHz	100 kHz	-67 dBm	PASS	PASS	PASS	See appendix C
935 MHz < f ≤ 960 MHz	100 kHz	-79 dBm	PASS	PASS	PASS	See appendix C
1 805 MHz ≤ f ≤ 1 880 MHz	100 kHz	-71 dBm	PASS	PASS	PASS	See appendix C
2 110 MHz ≤ f ≤ 2 170 MHz	3,84 MHz	-60 dBm	PASS	PASS	PASS	See appendix C
2 585 MHz ≤ f ≤ 2 690 MHz	3,84 MHz	-60 dBm	PASS	PASS	PASS	See appendix C

W900

Frequency bandwidth	RBW	Max.level	WCDMA Band VIII; Vnorm(V)=3.3 V			Notes
			Result			
			2712	2788	2863	Result
9 kHz ≤ f < 150 kHz	1kHz	-36dBm	PASS	PASS	PASS	See appendix C
150 kHz ≤ f < 30 MHz	10 kHz	-36dBm	PASS	PASS	PASS	See appendix C
30 MHz ≤ f <1GHz	100 kHz	-36dBm	PASS	PASS	PASS	See appendix C
1GHz ≤ f < 12.75Hz	1MHz	-30dBm	PASS	PASS	PASS	See appendix C
791 MHz ≤ f ≤ 821 MHz	3.84 MHz	-60 dBm	PASS	PASS	PASS	See appendix C
925 MHz ≤ f ≤ 935 MHz	100 kHz	-67 dBm	PASS	PASS	PASS	See appendix C
	3.84 MHz	-60 dBm				
935 MHz ≤ f ≤ 960 MHz	100 kHz	-79 dBm	PASS	PASS	PASS	See appendix C
	3.84 MHz	-60 dBm				
1805 MHz ≤ f ≤ 1830 MHz	100 kHz	-71 dBm	PASS	PASS	PASS	See appendix C
	3.84 MHz	-60 dBm				
1830 MHz < f < 1880 MHz	100 kHz	-71 dBm	PASS	PASS	PASS	See appendix C
	3.84 MHz	-60 dBm				See appendix C
2110 MHz ≤ f ≤ 2170 MHz	3.84 MHz	-60 dBm	PASS	PASS	PASS	See appendix C
2585 MHz ≤ f ≤ 2640MHz	3.84 MHz	-60 dBm	PASS	PASS	PASS	See appendix C
2640 MHz ≤ f ≤ 2690 MHz	3.84 MHz	-60 dBm	PASS	PASS	PASS	See appendix C

f1,f2: UE centre carrier frequency

11.1.6.2 Essential Conformance Requirements

General spurious emissions requirements

Frequency Bandwidth	Measurement Bandwidth	Minimum requirement
$9 \text{ kHz} \leq f < 150 \text{ kHz}$	1 kHz	-36 dBm
$150 \text{ kHz} \leq f < 30 \text{ MHz}$	10 kHz	-36 dBm
$30 \text{ MHz} \leq f < 1\,000 \text{ MHz}$	100 kHz	-36 dBm
$1 \text{ GHz} \leq f < 12,75 \text{ GHz}$	1 MHz	-30 dBm

Additional spurious emissions requirements

Operating Band	Frequency Bandwidth	Measurement Bandwidth	Minimum requirement
I	$791 \text{ MHz} \leq f \leq 821 \text{ MHz}$	3.84 MHz	-60 dBm
	$921 \text{ MHz} \leq f \leq 925 \text{ MHz}$	100 kHz	-60 dBm
	$925 \text{ MHz} \leq f \leq 935 \text{ MHz}$	100 kHz	-67 dBm
	$935 \text{ MHz} < f \leq 960 \text{ MHz}$	100 kHz	-79 dBm
	$1805 \text{ MHz} \leq f \leq 1880 \text{ MHz}$	100 kHz	-71 dBm
	$2110 \text{ MHz} \leq f \leq 2170 \text{ MHz}$	3.84 MHz	-60 dBm
	$2585 \text{ MHz} < f < 2690 \text{ MHz}$	3.84 MHz	-60 dBm
VIII	$791 \text{ MHz} \leq f \leq 821 \text{ MHz}$	3.84 MHz	-60 dBm
	$925 \text{ MHz} \leq f \leq 935 \text{ MHz}$	100 kHz	-67 dBm
		3.84 MHz	-60 dBm
	$935 \text{ MHz} \leq f \leq 960 \text{ MHz}$	100 kHz	-79 dBm
		3.84 MHz	-60 dBm
	$1805 \text{ MHz} \leq f \leq 1830 \text{ MHz}$	100 kHz	-71 dBm
		3.84 MHz	-60 dBm
	$1830 \text{ MHz} \leq f \leq 1880 \text{ MHz}$	100 kHz	-71 dBm
		3.84 MHz	-60 dBm
	$2110 \text{ MHz} \leq f \leq 2170 \text{ MHz}$	3.84 MHz	-60 dBm
	$2585 \text{ MHz} \leq f \leq 2640 \text{ MHz}$	3.84 MHz	-60 dBm
	$2640 \text{ MHz} \leq f \leq 2690 \text{ MHz}$	3.84 MHz	-60 dBm

11.1.6.3 Result

The equipment met the requirement of this clause.

For the measurement results refer to appendix C for EM820W, but only the worst case were listed in the appendix. One transceiver has been measured, however in above section only the requirements of EN 301 908-2 V5.2.1 has been considered.

11.1.7 Transmitter minimum output power

11.1.7.1 Test data

W2100

Test environment	UL channel(dBm)			Result
	9612	9750	9888	
Tnorm(°C)=25; Vnorm=3.3	-57.73	-58.49	-56.11	PASS
Tmin(°C)=-10; Vmin=3.0	-56.36	-57.51	-57.08	PASS
Tmin(°C)=-10; Vmax=3.6	-56.34	-57.45	-57.06	PASS
Tmax(°C)=55; Vmin=3.0	-57.73	-58.45	-57.07	PASS
Tmax(°C)=55; Vmax=3.6	-57.78	-57.49	-56.09	PASS

W900

Test environment	UL channel(dBm)			Result
	2712	2788	2863	
Tnorm(°C)=25; Vnorm=3.3	-57.42	-57.66	-57.73	PASS
Tmin(°C)=-10; Vmin=3.0	-57.34	-57.55	-57.63	PASS
Tmin(°C)=-10; Vmax=3.6	-57.37	-57.60	-57.69	PASS
Tmax(°C)=55; Vmin=3.0	-57.48	-57.73	-57.86	PASS
Tmax(°C)=55; Vmax=3.6	-57.61	-57.85	-57.96	PASS

11.1.7.2 Essential Conformance Requirements

The measured power shall be less than -49dBm.

11.1.7.3 Result

The equipment met the requirement of this clause.

One transceiver has been measured, however in above section only the requirements of EN 301 908-2 V5.2.1 has been considered.

11.1.8 Transmitter adjacent channel leakage power ratio

11.1.8.1 Test data

W2100

Test environment	9612 (dBc)				result
	+5 MHz	-5 MHz	+10 MHz	-10 MHz	
Tnorm (°C)=25; Vnorm=3.3	-42.89	-41.24	-52.37	-52.28	PASS
Tmin(°C)=-10; Vmin=3.0	-42.95	-41.22	-52.24	-52.20	PASS
Tmin(°C)=-10; Vmax=3.6	-43.02	-41.52	-52.46	-52.32	PASS
Tmax(°C)=55; Vmin=3.0	-43.20	-41.27	-52.32	-52.25	PASS
Tmax(°C)=55; Vmax=3.6	-43.07	-41.57	-52.45	-52.46	PASS

Test environment	9750 (dBc)				result
	+5 MHz	-5 MHz	+10 MHz	-10 MHz	
Tnorm (°C)=25; Vnorm=3.3	-42.40	-41.92	-51.87	-52.36	PASS
Tmin(°C)=-10; Vmin=3.0	-42.31	-41.98	-51.80	-52.28	PASS
Tmin(°C)=-10; Vmax=3.6	-42.16	-41.57	-51.82	-52.24	PASS
Tmax(°C)=55; Vmin=3.0	-42.39	-41.81	-51.90	-52.35	PASS
Tmax(°C)=55; Vmax=3.6	-42.33	-41.82	-51.80	-52.25	PASS

Test environment	9888 (dBc)				result
	+5 MHz	-5 MHz	+10 MHz	-10 MHz	
Tnorm (°C)=25; Vnorm=3.3	-44.25	-44.62	-52.02	-52.40	PASS
Tmin(°C)=-10; Vmin=3.0	-44.35	-44.70	-52.07	-52.42	PASS
Tmin(°C)=-10; Vmax=3.6	-44.14	-44.33	-52.10	-52.45	PASS
Tmax(°C)=55; Vmin=3.0	-44.29	-44.70	-52.09	-52.47	PASS
Tmax(°C)=55; Vmax=3.6	-44.06	-44.38	-52.00	-52.29	PASS

W900

Test environment	2712 (dBc)				result
	+5 MHz	-5 MHz	+10 MHz	-10 MHz	
Tnorm (°C)=25; Vnorm=3.3	-45.24	-45.78	-53.05	-53.54	PASS
Tmin(°C)=-10; Vmin=3.0	-45.15	-46.07	-53.07	-53.51	PASS
Tmin(°C)=-10; Vmax=3.6	-45.12	-45.87	-53.05	-53.50	PASS
Tmax(°C)=55; Vmin=3.0	-45.29	-45.71	-53.02	-53.49	PASS
Tmax(°C)=55; Vmax=3.6	-45.27	-45.77	-53.11	-53.36	PASS

Test environment	2788 (dBc)				result
	+5 MHz	-5 MHz	+10 MHz	-10 MHz	
Tnorm (°C)=25; Vnorm=3.3	-46.41	-42.68	-52.82	-53.05	PASS
Tmin(°C)=-10; Vmin=3.0	-46.48	-42.73	-52.80	-53.03	PASS
Tmin(°C)=-10; Vmax=3.6	-46.40	-42.40	-52.77	-53.01	PASS
Tmax(°C)=55; Vmin=3.0	-46.32	-42.67	-52.82	-52.99	PASS
Tmax(°C)=55; Vmax=3.6	-46.31	-42.87	-52.81	-52.97	PASS

Test environment	2863 (dBc)				result
	+5 MHz	-5 MHz	+10 MHz	-10 MHz	
Tnorm (°C)=25; Vnorm=3.3	-46.81	-38.46	-53.43	-51.60	PASS
Tmin(°C)=-10; Vmin=3.0	-46.84	-38.62	-53.47	-51.48	PASS
Tmin(°C)=-10; Vmax=3.6	-46.69	-38.45	-53.45	-51.59	PASS
Tmax(°C)=55; Vmin=3.0	-46.79	-38.48	-53.42	-51.66	PASS
Tmax(°C)=55; Vmax=3.6	-46.91	-38.56	-53.39	-51.67	PASS

11.1.8.2 Essential Conformance Requirements

Power Class	MODE M channel	ACLR limit
3	+5 MHz or –5 MHz	32,2 dB
3	+10 MHz or –10 MHz	42,2 dB

11.1.8.3 Result

The equipment met the requirement of this clause.

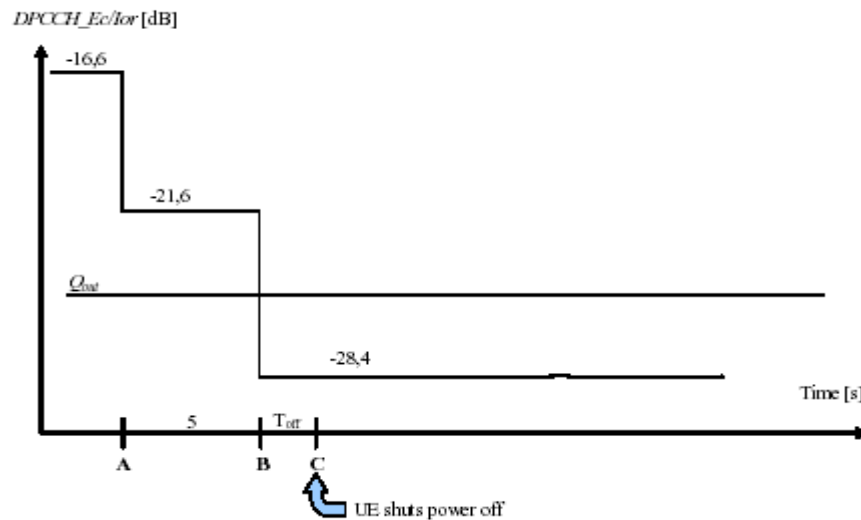
One transceiver has been measured, however in above section only the requirements of EN 301 908-2 V5.2.1 has been considered.

11.1.9 Out-of-synchronization handling of output power

11.1.9.1 Test data

Items	Test data	Result
Switch off power	-76.2dBm	PASS

11.1.9.2 Essential Conformance Requirements



Conditions for out-of-synch handling in the UE

The requirements for the Module are that it shall shut its transmitter off before point C.

The Module transmitter is considered to be OFF if the measured RRC filtered mean power is less than -55dBm.

11.1.9.3 Result

The equipment met the requirement of this clause.

One transceiver has been measured, however in above section only the requirements of EN 301 908-2 V5.2.1 has been considered.

11.1.10 Maximum Output Power with HS-DPCCH

11.1.10.1 Test data

W2100

Tnorm (°C)=25;Vnorm=3.3 V

β_c/β_d	Limit (dBm)	channel	9612 (dBm)	9750 (dBm)	9888 (dBm)	result
$\beta_c/\beta_d=2/15$	24 (+1.7,-3.7)	Case 1 Data	22.27	22.33	22.27	PASS
$\beta_c/\beta_d=12/15$	24 (+1.7,-3.7)	Case 2 Data	22.06	22.17	22.17	PASS
$\beta_c/\beta_d=15/8$	23 (+2.7,-3.7)	Case 3 Data	21.47	21.57	21.51	PASS
$\beta_c/\beta_d=15/4$	22 (+3.7,-3.7)	Case 4 Data	21.44	21.59	21.53	PASS

Tmin(°C)=-10;Vmin=3.0 V

β_c/β_d	Limit (dBm)	channel	9612 (dBm)	9750 (dBm)	9888 (dBm)	result
$\beta_c/\beta_d=2/15$	24 (+1.7,-3.7)	Case 1 Data	22.21	22.30	22.26	PASS
$\beta_c/\beta_d=12/15$	24 (+1.7,-3.7)	Case 2 Data	22.05	22.18	22.16	PASS
$\beta_c/\beta_d=15/8$	23 (+2.7,-3.7)	Case 3 Data	21.48	21.56	21.53	PASS
$\beta_c/\beta_d=15/4$	22 (+3.7,-3.7)	Case 4 Data	21.42	21.57	21.53	PASS

Tmin(°C)=-10;Vmax=3.6 V

β_c/β_d	Limit (dBm)	channel	9612 (dBm)	9750 (dBm)	9888 (dBm)	result
$\beta_c/\beta_d=2/15$	24 (+1.7,-3.7)	Case 1 Data	22.23	22.32	22.25	PASS
$\beta_c/\beta_d=12/15$	24 (+1.7,-3.7)	Case 2 Data	22.04	22.16	22.15	PASS
$\beta_c/\beta_d=15/8$	23 (+2.7,-3.7)	Case 3 Data	21.47	21.58	21.54	PASS
$\beta_c/\beta_d=15/4$	22 (+3.7,-3.7)	Case 4 Data	21.45	21.59	21.50	PASS

Tmax(°C)=55;Vmin=3.0 V

β_c/β_d	Limit (dBm)	channel	9612 (dBm)	9750 (dBm)	9888 (dBm)	result
$\beta_c/\beta_d=2/15$	24 (+1.7,-3.7)	Case 1 Data	22.39	22.43	22.40	PASS
$\beta_c/\beta_d=12/15$	24 (+1.7,-3.7)	Case 2 Data	22.18	22.26	22.26	PASS
$\beta_c/\beta_d=15/8$	23 (+2.7,-3.7)	Case 3 Data	21.62	21.68	21.65	PASS
$\beta_c/\beta_d=15/4$	22 (+3.7,-3.7)	Case 4 Data	21.55	21.69	21.60	PASS

Tmax(°C)=55;Vmax=3.6 V

β_c/β_d	Limit (dBm)	channel	9612 (dBm)	9750 (dBm)	9888 (dBm)	result
$\beta_c/\beta_d=2/15$	24 (+1.7,-3.7)	Case 1 Data	22.46	22.57	22.51	PASS
$\beta_c/\beta_d=12/15$	24 (+1.7,-3.7)	Case 2 Data	22.32	22.41	22.32	PASS
$\beta_c/\beta_d=15/8$	23 (+2.7,-3.7)	Case 3 Data	21.71	21.82	21.67	PASS
$\beta_c/\beta_d=15/4$	22 (+3.7,-3.7)	Case 4 Data	21.69	21.79	21.71	PASS

W900

Tnorm (°C)=25;Vnorm=3.3 V

β_c/β_d	Limit (dBm)	channel	2712 (dBm)	2788(dBm)	2863 (dBm)	result
$\beta_c/\beta_d=2/15$	24 (+1.7,-3.7)	Case 1 Data	21.74	21.86	21.64	PASS
$\beta_c/\beta_d=12/15$	24 (+1.7,-3.7)	Case 2 Data	21.50	21.67	21.41	PASS
$\beta_c/\beta_d=15/8$	23 (+2.7,-3.7)	Case 3 Data	20.94	21.08	20.91	PASS
$\beta_c/\beta_d=15/4$	22 (+3.7,-3.7)	Case 4 Data	20.94	21.06	20.92	PASS

Tmin(°C)=-10;Vmin=3.0 V

β_c/β_d	Limit (dBm)	channel	2712 (dBm)	2788(dBm)	2863 (dBm)	result
$\beta_c/\beta_d=2/15$	24 (+1.7,-3.7)	Case 1 Data	21.86	21.96	21.75	PASS
$\beta_c/\beta_d=12/15$	24 (+1.7,-3.7)	Case 2 Data	21.59	21.76	21.48	PASS
$\beta_c/\beta_d=15/8$	23 (+2.7,-3.7)	Case 3 Data	21.03	21.16	21.10	PASS
$\beta_c/\beta_d=15/4$	22 (+3.7,-3.7)	Case 4 Data	21.06	21.17	21.15	PASS

Tmin(°C)=-10;Vmax=3.6 V

β_c/β_d	Limit (dBm)	channel	2712 (dBm)	2788(dBm)	2863 (dBm)	result
$\beta_c/\beta_d=2/15$	24 (+1.7,-3.7)	Case 1 Data	21.82	21.90	21.69	PASS
$\beta_c/\beta_d=12/15$	24 (+1.7,-3.7)	Case 2 Data	21.54	21.73	21.45	PASS
$\beta_c/\beta_d=15/8$	23 (+2.7,-3.7)	Case 3 Data	20.98	21.12	20.97	PASS
$\beta_c/\beta_d=15/4$	22 (+3.7,-3.7)	Case 4 Data	21.01	21.12	20.95	PASS

Tmax(°C)=55;Vmin=3.0 V

β_c/β_d	Limit (dBm)	channel	2712 (dBm)	2788(dBm)	2863 (dBm)	result
$\beta_c/\beta_d=2/15$	24 (+1.7,-3.7)	Case 1 Data	21.73	21.82	21.61	PASS
$\beta_c/\beta_d=12/15$	24 (+1.7,-3.7)	Case 2 Data	21.43	21.61	21.38	PASS
$\beta_c/\beta_d=15/8$	23 (+2.7,-3.7)	Case 3 Data	20.87	21.01	20.88	PASS
$\beta_c/\beta_d=15/4$	22 (+3.7,-3.7)	Case 4 Data	20.88	21.02	20.86	PASS

Tmax(°C)=55;Vmax=3.6 V

β_c/β_d	Limit (dBm)	channel	2712 (dBm)	2788(dBm)	2863 (dBm)	result
$\beta_c/\beta_d=2/15$	24 (+1.7,-3.7)	Case 1 Data	22.01	21.98	21.67	PASS
$\beta_c/\beta_d=12/15$	24 (+1.7,-3.7)	Case 2 Data	21.77	21.67	21.65	PASS
$\beta_c/\beta_d=15/8$	23 (+2.7,-3.7)	Case 3 Data	21.13	21.07	21.00	PASS
$\beta_c/\beta_d=15/4$	22 (+3.7,-3.7)	Case 4 Data	21.06	21.04	20.96	PASS

11.1.10.2 Essential Conformance Requirements

Ratio of β_c to β_d for all values of β_{hs}	Power Class 3	
	Power (dBm)	Tol (dB)
$1/15 \leq \beta_c/\beta_d \leq 12/15$	+24	+1.7/-3.7
$13/15 \leq \beta_c/\beta_d \leq 15/8$	+23	+2.7/-3.7
$15/7 \leq \beta_c/\beta_d \leq 15/0$	+22	+3.7/-3.7

11.1.10.3 Result

The equipment met the requirement of this clause.

One transceiver has been measured, however in above section only the requirements of 3GPP TS134.121 V9.3.0 have been considered.

11.1.11 Spectrum Emission Mask with HS-DPCCH

11.1.11.1 Test data

W2100

Tnorm (°C)=25;Vnorm=5.0 V

Δf [MHz]	9612(dBc)	9750(dBc)	9888(dBc)	result
2.5 to 3.5	PASS	PASS	PASS	PASS
3.5 to 7.5	PASS	PASS	PASS	PASS
7.5 to 8.5	PASS	PASS	PASS	PASS
8.5 to 12.5 MHz	PASS	PASS	PASS	PASS

W900

Tnorm (°C)=25;Vnorm=5.0 V

Δf [MHz]	2712(dBc)	2788(dBc)	2863(dBc)	result
2.5 to 3.5	PASS	PASS	PASS	PASS
3.5 to 7.5	PASS	PASS	PASS	PASS
7.5 to 8.5	PASS	PASS	PASS	PASS
8.5 to 12.5 MHz	PASS	PASS	PASS	PASS

11.1.11.2 Essential Conformance Requirements

Δf in MHz (Note 8)	Minimum requirement Band I, II, III, IV, V, VI,VIII	
	Relative requirement	Absolute requirement
2.5 to 3.5	$\left\{ -35 - 15 \cdot \left(\frac{\Delta f}{\text{MHz}} - 2.5 \right) \right\} \text{dBc}$	-71.1 dBm
3.5 to 7.5	$\left\{ -35 - 1 \cdot \left(\frac{\Delta f}{\text{MHz}} - 3.5 \right) \right\} \text{dBc}$	-55.8 dBm
7.5 to 8.5	$\left\{ -39 - 10 \cdot \left(\frac{\Delta f}{\text{MHz}} - 7.5 \right) \right\} \text{dBc}$	-55.8 dBm
8.5 to 12.5 MHz	-49 dBc	-55.8 dBm

11.1.11.3 Result

The equipment met the requirement of this clause.

For the measurement results refer to appendix D for EM820W, but only the worst case were listed in the appendix. One transceiver has been measured, however in above section only the requirements of 3GPP TS134.121 V9.3.0 have been considered.

11.1.12 Adjacent Channel Leakage Power Ratio (ACLR) with HS-DPCCH

11.1.12.1 Test data

W2100

Tnorm (°C)=25;Vnorm=3.3 V

UE channel(MHz)	Limit(dB)	Channel(DL)	9612(dBc)	9750(dBc)	9888(dBc)	Result
5	33	Case 1 Data	-43.25	-40.70	-42.56	PASS
-5	33	Case 1 Data	-41.68	-40.60	-42.54	PASS
10	43	Case 1 Data	-51.02	-46.01	-50.74	PASS
-10	43	Case 1 Data	-50.84	-46.28	-50.71	PASS

Tmin(°C)=-10;Vmin=3.0 V

UE channel(MHz)	Limit(dB)	Channel(DL)	9612(dBc)	9750(dBc)	9888(dBc)	Result
5	33	Case 1 Data	-43.30	-40.26	-42.27	PASS
-5	33	Case 1 Data	-41.77	-40.37	-43.05	PASS
10	43	Case 1 Data	-51.00	-50.01	-50.97	PASS
-10	43	Case 1 Data	-50.83	-50.21	-51.15	PASS

Tmin(°C)=-10;Vmax=3.6 V

UE channel(MHz)	Limit(dB)	Channel(DL)	9612(dBc)	9750(dBc)	9888(dBc)	Result
5	33	Case 1 Data	-42.40	-40.27	-42.52	PASS
-5	33	Case 1 Data	-41.80	-40.38	-42.59	PASS
10	43	Case 1 Data	-47.05	-50.06	-50.75	PASS
-10	43	Case 1 Data	-47.48	-50.22	-50.74	PASS

Tmax(°C)=55;Vmin=3.0 V

UE channel(MHz)	Limit(dB)	Channel(DL)	9612(dBc)	9750(dBc)	9888(dBc)	Result
5	33	Case 1 Data	-42.28	-40.28	-42.57	PASS
-5	33	Case 1 Data	-41.70	-40.39	-42.49	PASS
10	43	Case 1 Data	-47.13	-50.01	-50.70	PASS
-10	43	Case 1 Data	-47.48	-50.20	-50.64	PASS

Tmax(°C)=55;Vmax=3.6 V

UE channel(MHz)	Limit(dB)	Channel(DL)	9612(dBc)	9750(dBc)	9888(dBc)	Result
5	33	Case 1 Data	-43.37	-40.31	-42.16	PASS
-5	33	Case 1 Data	-41.86	-40.39	-41.65	PASS
10	43	Case 1 Data	-51.08	-50.04	-47.29	PASS
-10	43	Case 1 Data	-50.90	-50.22	-46.74	PASS

W900

Tnorm (°C)=25;Vnorm=3.3 V

UE channel(MHz)	Limit(dB)	Channel(DL)	2712(dBc)	2788(dBc)	2863(dBc)	Result
5	33	Case 1 Data	-42.89	-44.78	-45.42	PASS
-5	33	Case 1 Data	-44.36	-42.22	-38.16	PASS
10	43	Case 1 Data	-51.49	-51.87	-52.69	PASS
-10	43	Case 1 Data	-52.56	-51.56	-49.55	PASS

Tmin(°C)=-10;Vmin=3.0 V

UE channel(MHz)	Limit(dB)	Channel(DL)	2712(dBc)	2788(dBc)	2863(dBc)	Result
5	33	Case 1 Data	-42.72	-44.80	-45.39	PASS
-5	33	Case 1 Data	-44.20	-42.14	-38.07	PASS
10	43	Case 1 Data	-51.47	-51.88	-52.72	PASS
-10	43	Case 1 Data	-52.60	-51.57	-49.51	PASS

Tmin(°C)=-10;Vmax=3.6 V

UE channel(MHz)	Limit(dB)	Channel(DL)	2712(dBc)	2788(dBc)	2863(dBc)	Result
5	33	Case 1 Data	-42.22	-44.78	-43.70	PASS
-5	33	Case 1 Data	-42.76	-42.18	-37.68	PASS
10	43	Case 1 Data	-47.15	-51.89	-48.58	PASS
-10	43	Case 1 Data	-48.88	-51.59	-45.93	PASS

Tmax(°C)=55;Vmin=3.0 V

UE channel(MHz)	Limit(dB)	Channel(DL)	2712(dBc)	2788(dBc)	2863(dBc)	Result
5	33	Case 1 Data	-42.62	-44.91	-43.73	PASS
-5	33	Case 1 Data	-44.23	-42.39	-37.71	PASS
10	43	Case 1 Data	-51.43	-51.85	-48.56	PASS
-10	43	Case 1 Data	-52.53	-51.54	-45.98	PASS

Tmax(°C)=55;Vmax=3.6 V

UE channel(MHz)	Limit(dB)	Channel(DL)	2712(dBc)	2788(dBc)	2863(dBc)	Result
5	33	Case 1 Data	-42.89	-45.08	-45.33	PASS
-5	33	Case 1 Data	-44.57	-42.66	-38.20	PASS
10	43	Case 1 Data	-51.54	-51.75	-52.56	PASS
-10	43	Case 1 Data	-52.64	-51.46	-49.44	PASS

11.1.12.2 Essential Conformance Requirements

Power Class	UE channel	ACLR limit
3	+5 MHz or –5 MHz	33 dB
3	+10 MHz or –10 MHz	43 dB

11.1.12.3 Result

The equipment met the requirement of this clause.

One transceiver has been measured, however in above section only the requirements of 3GPP TS34.121 V9.3.0 have been considered.

11.1.13 Error Vector Magnitude (EVM) with HS-DPCCH

11.1.13.1 Test data

W2100

Tnorm (°C)=25;Vnorm=3.3 V

Channel	Limit	Data(MAX POWER)	Data(-20dBm)	Result
9612	EVM≤17.5%	7.25%	5.61%	PASS
9750	EVM≤17.5%	6.52%	5.57%	PASS
9888	EVM≤17.5%	7.48%	6.38%	PASS

Tmin(°C)=-10;Vmin=3.0 V

Channel	Limit	Data(MAX POWER)	Data(-20dBm)	Result
9612	EVM≤17.5%	6.32%	5.54%	PASS
9750	EVM≤17.5%	6.64%	5.31%	PASS
9888	EVM≤17.5%	7.59%	6.11%	PASS

Tmin(°C)=-10;Vmax=3.6 V

Channel	Limit	Data(MAX POWER)	Data(-20dBm)	Result
9612	EVM≤17.5%	5.96%	5.79%	PASS
9750	EVM≤17.5%	6.32%	5.62%	PASS
9888	EVM≤17.5%	8.13%	6.23%	PASS

Tmax(°C)=55;Vmin=3.0 V

Channel	Limit	Data(MAX POWER)	Data(-20dBm)	Result
9612	EVM≤17.5%	6.44%	5.63%	PASS
9750	EVM≤17.5%	6.38%	5.52%	PASS
9888	EVM≤17.5%	7.51%	6%	PASS

Tmax(°C)=55;Vmax=3.6 V

Channel	Limit	Data(MAX POWER)	Data(-20dBm)	Result
9612	EVM≤17.5%	5.76%	5.76%	PASS
9750	EVM≤17.5%	6.22%	5.13%	PASS
9888	EVM≤17.5%	7.29%	6.11%	PASS

W900

Tnorm (°C)=25;Vnorm=3.3 V

Channel	Limit	Data(MAX POWER)	Data(-20dBm)	Result
2712	EVM≤17.5%	7.70%	7.27%	PASS
2788	EVM≤17.5%	5.98%	6.72%	PASS
2863	EVM≤17.5%	7.25%	7.11%	PASS

Tmin(°C)=-10;Vmin=3.0 V

Channel	Limit	Data(MAX POWER)	Data(-20dBm)	Result
2712	EVM≤17.5%	7.25%	6.61%	PASS
2788	EVM≤17.5%	6.12%	6.54%	PASS
2863	EVM≤17.5%	7.50%	6.81%	PASS

Tmin(°C)=-10;Vmax=3.6 V

Channel	Limit	Data(MAX POWER)	Data(-20dBm)	Result
2712	EVM≤17.5%	7.31%	6.64%	PASS
2788	EVM≤17.5%	6.02%	6.61%	PASS
2863	EVM≤17.5%	6.99%	6.76%	PASS

Tmax(°C)=55;Vmin=3.0 V

Channel	Limit	Data(MAX POWER)	Data(-20dBm)	Result
2712	EVM≤17.5%	10.60%	7.33%	PASS
2788	EVM≤17.5%	6.71%	6.69%	PASS
2863	EVM≤17.5%	7.05%	6.75%	PASS

Tmax(°C)=55;Vmax=3.6 V

Channel	Limit	Data(MAX POWER)	Data(-20dBm)	Result
2712	EVM≤17.5%	7.63%	7.49%	PASS
2788	EVM≤17.5%	7.32%	6.18%	PASS
2863	EVM≤17.5%	7.78%	7.67%	PASS

11.1.13.2 Essential Conformance Requirements

EVM ≤ 17.5%.

11.1.13.3 Result

The equipment met the requirement of this clause.

One transceiver has been measured, however in above section only the requirements of 3GPP TS134.121 V9.3.0 have been considered.

11.1.14 Maximum Output Power with HS-DPCCH and E-DCH

11.1.14.1 Test data

W2100

Tnorm (°C)=25;Vnorm=3.3 V

β_c/β_d	Limit (dBm)	channel	9612 (dBm)	9750 (dBm)	9888 (dBm)	result
11/15	24 (+1.7, -5.2)	Case 1 Data	20.66	20.45	21.36	PASS
6/15	22 (+3.7, -5.2)	Case 2 Data	19.68	19.50	20.25	PASS
15/9	23 (+2.7, -5.2)	Case 3 Data	20.45	19.93	20.33	PASS
2/15	22(+3.7, -5.2)	Case 4 Data	20.01	19.63	20.23	PASS
15/15	24(+1.7, -5.2)	Case 5 Data	20.51	20.35	21.25	PASS

Tmin(°C)=-10;Vmin=3.0 V

β_c/β_d	Limit (dBm)	channel	9612 (dBm)	9750 (dBm)	9888 (dBm)	result
11/15	24 (+1.7, -5.2)	Case 1 Data	20.67	20.38	21.32	PASS
6/15	22 (+3.7, -5.2)	Case 2 Data	19.70	19.59	20.29	PASS
15/9	23 (+2.7, -5.2)	Case 3 Data	20.37	19.89	20.81	PASS
2/15	22(+3.7, -5.2)	Case 4 Data	19.91	19.43	20.26	PASS
15/15	24(+1.7, -5.2)	Case 5 Data	20.49	20.32	21.33	PASS

Tmin(°C)=-10;Vmax=3.6 V

β_c/β_d	Limit (dBm)	channel	9612 (dBm)	9750 (dBm)	9888 (dBm)	result
11/15	24 (+1.7, -5.2)	Case 1 Data	20.66	20.43	21.34	PASS
6/15	22 (+3.7, -5.2)	Case 2 Data	19.74	19.60	19.76	PASS
15/9	23 (+2.7, -5.2)	Case 3 Data	20.47	19.92	20.82	PASS
2/15	22(+3.7, -5.2)	Case 4 Data	19.86	19.37	20.30	PASS
15/15	24(+1.7, -5.2)	Case 5 Data	20.50	20.32	21.32	PASS

Tmax(°C)=55;Vmin=3.0 V

β_c/β_d	Limit (dBm)	channel	9612 (dBm)	9750 (dBm)	9888 (dBm)	result
11/15	24 (+1.7, -5.2)	Case 1 Data	20.63	20.42	21.28	PASS
6/15	22 (+3.7, -5.2)	Case 2 Data	19.70	19.60	20.30	PASS
15/9	23 (+2.7, -5.2)	Case 3 Data	20.44	19.89	20.78	PASS
2/15	22(+3.7, -5.2)	Case 4 Data	19.99	19.35	20.13	PASS
15/15	24(+1.7, -5.2)	Case 5 Data	20.48	20.28	21.26	PASS

Tmax(°C)=55;Vmax=3.6 V

β_c/β_d	Limit (dBm)	channel	9612 (dBm)	9750 (dBm)	9888 (dBm)	result
11/15	24 (+1.7, -5.2)	Case 1 Data	20.84	20.50	21.28	PASS
6/15	22 (+3.7, -5.2)	Case 2 Data	19.92	19.53	20.27	PASS
15/9	23 (+2.7, -5.2)	Case 3 Data	20.66	19.94	20.35	PASS
2/15	22(+3.7, -5.2)	Case 4 Data	20.02	19.45	20.14	PASS
15/15	24(+1.7, -5.2)	Case 5 Data	20.54	20.30	21.27	PASS

W900

Tnorm (°C)=25;Vnorm=3.3 V

$\beta c/\beta d$	Limit (dBm)	channel	2712 (dBm)	2788(dBm)	2863 (dBm)	result
11/15	24 (+1.7,-5.2)	Case 1 Data	21.81	21.51	21.13	PASS
6/15	22 (+3.7, -5.2)	Case 2 Data	20.84	20.78	20.23	PASS
15/9	23 (+2.7, -5.2)	Case 3 Data	20.83	21.00	20.64	PASS
2/15	22(+3.7, -5.2)	Case 4 Data	20.75	20.72	20.38	PASS
15/15	24(+1.7, -5.2)	Case 5 Data	21.74	21.45	20.97	PASS

Tmin(°C)=-10;Vmin=3.0 V

$\beta c/\beta d$	Limit (dBm)	channel	2712 (dBm)	2788(dBm)	2863 (dBm)	result
11/15	24 (+1.7,-5.2)	Case 1 Data	21.83	21.58	21.19	PASS
6/15	22 (+3.7, -5.2)	Case 2 Data	20.30	20.93	20.49	PASS
15/9	23 (+2.7, -5.2)	Case 3 Data	20.91	21.09	20.82	PASS
2/15	22(+3.7, -5.2)	Case 4 Data	20.80	20.80	20.45	PASS
15/15	24(+1.7, -5.2)	Case 5 Data	21.83	21.54	21.07	PASS

Tmin(°C)=-10;Vmax=3.6 V

$\beta c/\beta d$	Limit (dBm)	channel	2712 (dBm)	2788(dBm)	2863 (dBm)	result
11/15	24 (+1.7,-5.2)	Case 1 Data	21.80	21.54	21.17	PASS
6/15	22 (+3.7, -5.2)	Case 2 Data	20.91	20.90	20.48	PASS
15/9	23 (+2.7, -5.2)	Case 3 Data	20.88	21.07	20.77	PASS
2/15	22(+3.7, -5.2)	Case 4 Data	20.74	20.70	20.39	PASS
15/15	24(+1.7, -5.2)	Case 5 Data	21.79	21.49	21.03	PASS

Tmax(°C)=55;Vmin=3.0 V

$\beta c/\beta d$	Limit (dBm)	channel	2712 (dBm)	2788(dBm)	2863 (dBm)	result
11/15	24 (+1.7,-5.2)	Case 1 Data	21.77	21.51	21.15	PASS
6/15	22 (+3.7, -5.2)	Case 2 Data	20.26	20.87	20.46	PASS
15/9	23 (+2.7, -5.2)	Case 3 Data	20.87	21.03	20.75	PASS
2/15	22(+3.7, -5.2)	Case 4 Data	20.68	20.72	20.38	PASS
15/15	24(+1.7, -5.2)	Case 5 Data	21.75	21.45	21.00	PASS

Tmax(°C)=55;Vmax=3.6 V

$\beta c/\beta d$	Limit (dBm)	channel	2712 (dBm)	2788(dBm)	2863 (dBm)	result
11/15	24 (+1.7,-5.2)	Case 1 Data	21.43	21.55	21.10	PASS
6/15	22 (+3.7, -5.2)	Case 2 Data	20.64	20.81	20.42	PASS
15/9	23 (+2.7, -5.2)	Case 3 Data	21.10	21.03	20.71	PASS
2/15	22(+3.7, -5.2)	Case 4 Data	20.81	20.70	20.32	PASS
15/15	24(+1.7, -5.2)	Case 5 Data	21.80	21.43	20.96	PASS

11.1.14.2 Essential Conformance Requirements

c	d	d (SF)	c/d	HS (Note1)	ec	ed (Note 5) (Note 6)	ed (SF)	ed (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 6)	E-TFCI
11/15	15/15	64	11/15	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
15/15	9/15	64	15/9	30/15	30/15	ed1: 47/15 ed2: 47/15	4	2	2.0	1.0	15	92
2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
15/15	15/15	64	15/15	30/15	24/15	134/15	4	1	1.0	0.0	21	81

11.1.14.3 Result

The equipment met the requirement of this clause.

One transceiver has been measured, however in above section only the requirements of 3GPP TS134.121 V9.3.0 have been considered.

11.1.15 Spectrum Emission Mask with HS-DPCCH and E-DCH

11.1.15.1 Test data

W2100

T_{norm} (°C)=25; V_{norm}=5.0 V

Δf[MHz]	9612(dBc)	9750(dBc)	9888(dBc)	result
2.5 to 3.5	PASS	PASS	PASS	PASS
3.5 to 7.5	PASS	PASS	PASS	PASS
7.5 to 8.5	PASS	PASS	PASS	PASS
8.5 to 12.5 MHz	PASS	PASS	PASS	PASS

W900

T_{norm} (°C)=25; V_{norm}=5.0 V

Δf[MHz]	2712(dBc)	2788(dBc)	2863(dBc)	result
2.5 to 3.5	PASS	PASS	PASS	PASS
3.5 to 7.5	PASS	PASS	PASS	PASS
7.5 to 8.5	PASS	PASS	PASS	PASS
8.5 to 12.5 MHz	PASS	PASS	PASS	PASS

11.1.15.2 Essential Conformance Requirements

Δf in MHz (Note 8)	Minimum requirement Band I, II, III, IV, V, VIII	
	Relative requirement	Absolute requirement
2.5 to 3.5	$\left\{ -35 - 15 \cdot \left(\frac{\Delta f}{\text{MHz}} - 2.5 \right) \right\} \text{dBc}$	-71.1 dBm
3.5 to 7.5	$\left\{ -35 - 1 \cdot \left(\frac{\Delta f}{\text{MHz}} - 3.5 \right) \right\} \text{dBc}$	-55.8 dBm
7.5 to 8.5	$\left\{ -39 - 10 \cdot \left(\frac{\Delta f}{\text{MHz}} - 7.5 \right) \right\} \text{dBc}$	-55.8 dBm
8.5 to 12.5 MHz	-49 dBc	-55.8 dBm

11.1.15.3 Result

The equipment met the requirement of this clause.

For the measurement results refer to appendix H for EM820W, but only the worst case were listed in the appendix. One transceiver has been measured, however in above section only the requirements of 3GPP TS134.121 V9.3.0 have been considered.

11.1.16 Adjacent Channel Leakage Power Ratio (ACLR) with HS-DPCCH and E-DCH

11.1.16.1 Test data

W2100

Tnorm (°C)=25;Vnorm=3.3 V

UE channel(MHz)	Limit(dB)	Channel(DL)	9612(dBc)	9750(dBc)	9888(dBc)	Result
5	33	Case 1 Data	-41.29	-40.58	-42.00	PASS
-5	33	Case 1 Data	-39.69	-40.38	-40.95	PASS
10	43	Case 1 Data	-54.03	-54.28	-54.25	PASS
-10	43	Case 1 Data	-52.49	-53.73	-53.23	PASS

Tmin(°C)=-10;Vmin=3.0 V

UE channel(MHz)	Limit(dB)	Channel(DL)	9612(dBc)	9750(dBc)	9888(dBc)	Result
5	33	Case 1 Data	-41.75	-40.53	-41.79	PASS
-5	33	Case 1 Data	-39.45	-40.06	-41.13	PASS
10	43	Case 1 Data	-53.18	-54.02	-53.72	PASS
-10	43	Case 1 Data	-51.93	-53.35	-52.85	PASS

Tmin(°C)=-10;Vmax=3.6 V

UE channel(MHz)	Limit(dB)	Channel(DL)	9612(dBc)	9750(dBc)	9888(dBc)	Result
5	33	Case 1 Data	-41.35	-40.86	-41.85	PASS
-5	33	Case 1 Data	-39.83	-40.32	-41.07	PASS
10	43	Case 1 Data	-53.56	-54.05	-53.76	PASS
-10	43	Case 1 Data	-52.13	-53.87	-52.90	PASS

Tmax(°C)=55;Vmin=3.0 V

UE channel(MHz)	Limit(dB)	Channel(DL)	9612(dBc)	9750(dBc)	9888(dBc)	Result
5	33	Case 1 Data	-41.38	-40.64	-42.09	PASS
-5	33	Case 1 Data	-39.62	-40.42	-41.03	PASS
10	43	Case 1 Data	-54.40	-54.17	-54.08	PASS
-10	43	Case 1 Data	-52.29	-53.86	-53.12	PASS

Tmax(°C)=55;Vmax=3.6 V

UE channel(MHz)	Limit(dB)	Channel(DL)	9612(dBc)	9750(dBc)	9888(dBc)	Result
5	33	Case 1 Data	-42.58	-40.48	-42.10	PASS
-5	33	Case 1 Data	-40.72	-40.14	-41.28	PASS
10	43	Case 1 Data	-55.16	-54.06	-54.33	PASS
-10	43	Case 1 Data	-54.15	-53.81	-53.16	PASS

W900

Tnorm (°C)=25;Vnorm=3.3 V

UE channel(MHz)	Limit(dB)	Channel(DL)	2712(dBc)	2788(dBc)	2863(dBc)	Result
5	33	Case 1 Data	-42.07	-46.23	-45.51	PASS
-5	33	Case 1 Data	-42.62	-41.82	-37.57	PASS
10	43	Case 1 Data	-54.23	-56.55	-60.25	PASS
-10	43	Case 1 Data	-58.47	-55.41	-50.95	PASS

Tmin(°C)=-10;Vmin=3.0 V

UE channel(MHz)	Limit(dB)	Channel(DL)	2712(dBc)	2788(dBc)	2863(dBc)	Result
5	33	Case 1 Data	-41.86	-46.06	-45.55	PASS
-5	33	Case 1 Data	-43.00	-42.48	-38.04	PASS
10	43	Case 1 Data	-53.77	-57.03	-60.37	PASS
-10	43	Case 1 Data	-58.85	-55.71	-51.07	PASS

Tmin(°C)=-10;Vmax=3.6 V

UE channel(MHz)	Limit(dB)	Channel(DL)	2712(dBc)	2788(dBc)	2863(dBc)	Result
5	33	Case 1 Data	-41.16	-46.10	-45.60	PASS
-5	33	Case 1 Data	-43.09	-41.99	-37.47	PASS
10	43	Case 1 Data	-53.33	-56.48	-60.25	PASS
-10	43	Case 1 Data	-58.62	-55.56	-51.04	PASS

Tmax(°C)=55;Vmin=3.0 V

UE channel(MHz)	Limit(dB)	Channel(DL)	2712(dBc)	2788(dBc)	2863(dBc)	Result
5	33	Case 1 Data	-41.38	-46.25	-45.84	PASS
-5	33	Case 1 Data	-43.29	-42.47	-37.86	PASS
10	43	Case 1 Data	-52.87	-56.70	-60.25	PASS
-10	43	Case 1 Data	-58.36	-55.96	-51.05	PASS

Tmax(°C)=55;Vmax=3.6 V

UE channel(MHz)	Limit(dB)	Channel(DL)	2712(dBc)	2788(dBc)	2863(dBc)	Result
5	33	Case 1 Data	-42.60	-46.00	-46.44	PASS
-5	33	Case 1 Data	-44.77	-42.27	-38.32	PASS
10	43	Case 1 Data	-53.61	-56.70	-60.21	PASS
-10	43	Case 1 Data	-59.20	-55.61	-51.58	PASS

11.1.16.2 Essential Conformance Requirements

Power Class	UE channel	ACLR limit
3	+5 MHz or –5 MHz	33 dB
3	+10 MHz or –10 MHz	43 dB

11.1.16.3 Result

The equipment met the requirement of this clause.

One transceiver has been measured, however in above section only the requirements of 3GPP TS34.121 V9.3.0 have been considered.

11.1.17 Receiver Test

11.1.17.1 Test Conditions and Channel Configuration for WCDMA

Receiving performance test of the Module is implemented during communicating with the SS via air interface. The procedure is using normal call protocol until the Module is communicating on traffic channel basically. On the traffic channel, the Module provides special function for testing that is called Logical Test Interface and the Module is tested using this function (Refer to TS 34.109 [4])

Transmitting or receiving bit/symbol rate for test channel is shown in table below.

Bit / Symbol rate for Test

Channel Type of User Information	User bit rate	DL DPCH symbol rate	UL DPCH bit rate	Remarks
12,2 kbps reference measurement channel	12,2 kbps	30 kbps	60 kbps	Standard Test

Unless otherwise stated the receiver characteristics are specified at the antenna connector of the UE. For UE(s) with an integral antenna only, a reference antenna with a gain of 0 dBi is assumed. Module with an integral antenna may be taken into account by converting these power levels into field strength requirements, assuming a 0 dBi gain antenna. Receiver characteristics for UE(s) with multiple antennas/antenna connectors are FFS. The Module antenna performance has a significant impact on system performance, and minimum requirements on the antenna efficiency are therefore intended to be included in future versions of the present document. It is recognised that different requirements and test methods are likely to be required for the different types of UE. All the parameters in this clause are defined using the DL reference measurement channel (12,2 kbps) and unless stated otherwise, with DL power control OFF.

The test conditions in this clause (this clause) should refer clause table below. Individual test conditions are defined in the paragraph of each test.

Physical channel	Reference level
CPICH	$CPICH_{Ec} / DPCH_{Ec} = 7 \text{ dB}$
P-CCPCH	$P-CCPCH_{Ec} / DPCH_{Ec} = 5 \text{ dB}$
SCH	$SCH_{Ec} / DPCH_{Ec} = 5 \text{ dB}$
PICH	$PICH_{Ec} / DPCH_{Ec} = 2 \text{ dB}$
DPCH	Test dependent power

11.1.18 Receiver adjacent channel selectivity (ACS)

11.1.18.1 Test data

ACS	Offset -5MHz	Offset 5MHz
BER	0%	0%
RESULT	PASS	PASS

11.1.18.2 Essential Conformance Requirements

The measured BER shall not exceed 0,1% for the parameters specified in the following table:

WCDMA Band I		
Parameter	Level / Status	Unit
DPCH E_c	-103	dBm / 3,84 MHz
$\hat{I}_{or}$	-92,7	dBm / 3,84 MHz
loac mean power (modulated)	-52	dBm
Fuw (offset)	-5 or +5	MHz
UE transmitted mean power	20 (for Power class 3)	dBm

WCDMA Band VIII		
Parameter	Level / Status	Unit
DPCH E_c	-100	dBm / 3,84 MHz
$\hat{I}_{or}$	-89,7	dBm / 3,84 MHz
loac mean power (modulated)	-52	dBm
Fuw (offset)	-5 or +5	MHz
UE transmitted mean power	20 (for Power class 3)	dBm

11.1.18.3 Result

The equipment met the requirement of this clause.

One transceiver has been measured, however in above section only the requirements of EN 301 908-2 V5.2.1 has been considered.

11.1.19 Receiver blocking characteristics

11.1.19.1 Test data

In-band blocking test

WCDMA Band I			
Parameter	Unit	Level	
DPCH_Ec	dBm/3.84MHz	-114	
Ior	dBm/3.84MHz	-103.7	
blocking mean power(modulated)	dBm	-56 (for Fuw offset ± 10 MHz)	-44 (for Fuw offset ± 15 MHz)
UE transmitted mean power	dBm	20dBm	
BER	%	0	0
Result		Pass	Pass

WCDMA Band VIII			
Parameter	Unit	Level	
DPCH_Ec	dBm/3.84MHz	-111	
Ior	dBm/3.84MHz	-100.7	
blocking mean power(modulated)	dBm	-56 (for Fuw offset ± 10 MHz)	-44 (for Fuw offset ± 15 MHz)
UE transmitted mean power	dBm	20dBm	
BER	%	0	0
Result		Pass	Pass

Out-of-band blocking test

WCDMA Band I				
Parameter	Unit	Frequency range 1	Frequency range 2	Frequency range 3
DPCH_Ec	dBm/3.84MHz	-114	-114	-114
Ior	dBm/3.84MHz	-103.7	-103.7	-103.7
blocking(cw)	dBm	-44	-30	-15
Fuw	MHz	2050<f<2095 2185<f<2230	2025<f<2050 2230<f<2255	1<f<2025 2255<f<12750
Spurious response frequency	MHz	Pass	Pass	Pass
Result		Pass	Pass	Pass

WCDMA Band VIII				
Parameter	Unit	Frequency range 1	Frequency range 2	Frequency range 3
DPCH_Ec	dBm/3.84MHz	-111	-111	-111
Ior	dBm/3.84MHz	-100.7	-100.7	-100.7
blocking(cw)	dBm	-44	-30	-15
Fuw	MHz	865<f<910 975<f<1020	840<f<865 1020<f<1045	1<f<840 1045<f<12750
Spurious response frequency	MHz	Pass	Pass	Pass
Result		Pass	Pass	Pass

11.1.19.2 Essential Conformance Requirements

The BER shall not exceed 0,001 for the parameters specified in tables above. For out band blocking test, up to 24 exceptions are allowed for spurious response frequencies in each assigned frequency channel when measured using a 1 MHz step size.

11.1.19.3 Result

The equipment met the requirement of this clause.

One transceiver has been measured, however in above section only the requirements of EN 301 908-2 V5.2.1 has been considered.

11.1.20 Receiver spurious response

11.1.20.1 Test data

All pass

11.1.20.2 Essential Conformance Requirements

The BER should not exceed 0.1% for the parameters specified in the following table:

WCDMA Band I		
Parameter	Level	Unit
DPCH_Ec	-114	dBm / 3,84MHz
$\hat{I}_{or}$	-103.7	dBm / 3,84MHz
blocking(CW)	-44	dBm
Fuw	Spurious response frequencies	MHz
UE transmitted mean power	20 (for Power class 3)	dBm

WCDMA Band VIII		
Parameter	Level	Unit
DPCH_Ec	-111	dBm / 3,84MHz
$\hat{I}_{or}$	-100.7	dBm / 3,84MHz
blocking(CW)	-44	dBm
Fuw	Spurious response frequencies	MHz
UE transmitted mean power	20 (for Power class 3)	dBm

11.1.20.3 Result

The equipment met the requirement of this clause.

One transceiver has been measured, however in above section only the requirements of EN 301 908-2 V5.2.1 has been considered.

11.1.21 Receiver Intermodulation characteristics

11.1.21.1 Test data

WCDMA Band I			
channel	level		Unit
DPCH_Ec	-114		dBm/3.84MHz
$\hat{I}_{or}$	-103.7		dBm/3.84MHz
Iouw1 (CW)	-46		dBm
Iouw2 (modulated)	-46		dBm/3.84MHz
Fuw1 (offset)	10	-10	MHz
Fuw2 (offset)	20	-20	MHz
UE transmitted mean power	20	20	dBm
BER	0%	0%	
Result	PASS	PASS	

WCDMA Band VIII			
channel	level		Unit
DPCH_Ec	-111		dBm/3.84MHz
$\hat{I}_{or}$	-100.7		dBm/3.84MHz
Iouw1 (CW)	-43		dBm
Iouw2 (modulated)	-43		dBm/3.84MHz
Fuw1 (offset)	3.6	-3.6	MHz
Fuw2 (offset)	6.0	-6.0	MHz
UE transmitted mean power	20	20	dBm
BER	0%	0%	
Result	PASS	PASS	

11.1.21.2 Essential Conformance Requirements

The measured BER shall not exceed 0.1% for the parameters specified in the following table:

WCDMA Band I			
channel	Unit	level	
DPCH_Ec	dBm/3.84MHz	-114	
I _{or}	dBm/3.84MHz	-103.7	
I _{ouw1} (CW)	dBm	-46	
I _{ouw2} (modulated)	dBm/3.84MHz	-46	
F _{uw1} (offset)	MHz	10	-10
F _{uw2} (offset)	MHz	20	-20
UE transmitted mean power	dBm	20(for power class 3) 18(for power class 4)	
NOTE13: I _{ouw2} (modulated) consists of the common channels and the 16 dedicated data channels as specified in TS 125 101 [11].			

WCDMA Band VIII			
channel	Unit	level	
DPCH_Ec	dBm/3.84MHz	-111	
I _{or}	dBm/3.84MHz	-100.7	
I _{ow1} (CW)	dBm	-43	
I _{ow2} (modulated)	dBm/3.84MHz	-43	
F _{uw1} (offset)	MHz	3.6	-3.6
F _{uw2} (offset)	MHz	6.0	-6.0
UE transmitted mean power	dBm	20(for power class 3) 18(for power class 4)	
NOTE13: I _{ow2} (modulated) consists of the common channels and the 16 dedicated data channels as specified in TS 125 101 [11].			

11.1.21.3 Result

The equipment met the requirement of this clause.

One transceiver has been measured, however in above section only the requirements of EN 301 908-2 V5.2.1 has been considered.

11.1.22 Receiver spurious emissions

11.1.22.1 Test data

W2100

Frequency bandwidth	RBW	Max.level	WCDMA Band I; Vnorm(V)=3.3 V	Notes
			Result	
			9750	Result
$30 \text{ MHz} \leq f < 1\text{GHz}$	100 kHz	-57dBm	PASS	See appendix G
$1\text{GHz} \leq f < 12.75\text{GHz}$	1MHz	-47dBm	PASS	See appendix G
$791 \text{ MHz} \leq f \leq 821 \text{ MHz}$	3,84 MHz	-60dBm	PASS	See appendix G
$921 \text{ MHz} \leq f < 925 \text{ MHz}$	100 kHz	-60 dBm	PASS	See appendix G
$925 \text{ MHz} \leq f \leq 935 \text{ MHz}$	100 kHz	-67 dBm	PASS	See appendix G
$935 \text{ MHz} < f \leq 960 \text{ MHz}$	100 kHz	-79 dBm	PASS	See appendix G
$1\ 805 \text{ MHz} \leq f \leq 1\ 880 \text{ MHz}$	100 kHz	-71 dBm	PASS	See appendix G
$1\ 920\text{MHz} \leq f \leq 1\ 980 \text{ MHz}$	3,84 MHz	-60 dBm	PASS	See appendix G
$2\ 110 \text{ MHz} \leq f \leq 2\ 170 \text{ MHz}$	3,84 MHz	-60 dBm	PASS	See appendix G
$2\ 585 \text{ MHz} \leq f \leq 2\ 690 \text{ MHz}$	3,84 MHz	-60 dBm	PASS	See appendix G

W900

Frequency bandwidth	RBW	Max.level	WCDMA Band VIII; Vnorm(V)=3.3 V	Notes
			Result	
			2788	Result
$30 \text{ MHz} \leq f < 1\text{GHz}$	100 kHz	-57dBm	PASS	See appendix G
$1\text{GHz} \leq f < 12.75\text{Hz}$	1MHz	-47dBm	PASS	See appendix G
$791 \text{ MHz} \leq f \leq 821 \text{ MHz}$	3.84 MHz	-60 dBm	PASS	See appendix G
$880 \text{ MHz} \leq f \leq 915 \text{ MHz}$	3.84 MHz	-60 dBm	PASS	See appendix G
$921 \text{ MHz} \leq f \leq 925 \text{ MHz}$	100 kHz	-60 dBm	PASS	See appendix G
$925 \text{ MHz} \leq f \leq 935 \text{ MHz}$	100 kHz	-67 dBm	PASS	See appendix G
	3.84 MHz	-60 dBm		
$935 \text{ MHz} \leq f \leq 960 \text{ MHz}$	100 kHz	-79 dBm	PASS	See appendix G
$1805 \text{ MHz} \leq f \leq 1880 \text{ MHz}$	3.84 MHz	-60 dBm	PASS	See appendix G
$2110 \text{ MHz} \leq f \leq 2170 \text{ MHz}$	3.84 MHz	-60 dBm	PASS	See appendix G
$2585 \text{ MHz} \leq f \leq 2690\text{MHz}$	3.84 MHz	-60 dBm	PASS	See appendix G

11.1.22.2 Essential Conformance Requirements

Frequency Band	Measurement Bandwidth	Maximum level	Note
$30 \text{ MHz} \leq f < 1 \text{ GHz}$	100 kHz	-57 dBm	
$1 \text{ GHz} \leq f \leq 12,75 \text{ GHz}$	1 MHz	-47 dBm	

Operating band	Frequency Band	Measurement Bandwidth	Maximum level	Note
I	$791 \text{ MHz} \leq f \leq 821 \text{ MHz}$	3.84 MHz	-60 dBm	
	$921 \text{ MHz} \leq f \leq 925 \text{ MHz}$	100 kHz	-60 dBm	
	$925 \text{ MHz} \leq f \leq 935 \text{ MHz}$	100 kHz	-67 dBm	
	$935 \text{ MHz} \leq f \leq 960 \text{ MHz}$	100 kHz	-79 dBm	
	$1\,805 \text{ MHz} \leq f \leq 1\,880 \text{ MHz}$	100 kHz	-71 dBm	
	$1\,920 \text{ MHz} \leq f \leq 1\,980 \text{ MHz}$	3.84 MHz	-60 dBm	
	$2\,110 \text{ MHz} \leq f \leq 2\,170 \text{ MHz}$	3.84 MHz	-60 dBm	
	$2\,620 \text{ MHz} \leq f \leq 2\,690 \text{ MHz}$	3.84 MHz	-60 dBm	
VIII	$791 \text{ MHz} \leq f \leq 821 \text{ MHz}$	3.84 MHz	-60 dBm	
	$880 \text{ MHz} \leq f \leq 915 \text{ MHz}$	3.84 MHz	-60 dBm	
	$921 \text{ MHz} \leq f \leq 925 \text{ MHz}$	100 kHz	-60 dBm	
	$925 \text{ MHz} \leq f \leq 935 \text{ MHz}$	100 kHz	-67 dBm	
		3.84 MHz	-60 dBm	
	$935 \text{ MHz} \leq f \leq 960 \text{ MHz}$	100 kHz	-79 dBm	
	$1\,805 \text{ MHz} \leq f \leq 1\,880 \text{ MHz}$	3.84 MHz	-60 dBm	
	$2\,110 \text{ MHz} \leq f \leq 2\,170 \text{ MHz}$	3.84 MHz	-60 dBm	
	$2\,620 \text{ MHz} \leq f \leq 2\,690 \text{ MHz}$	3.84 MHz	-60 dBm	

11.1.22.3 Result

The equipment met the requirement of this clause.

For the measurement results refer to appendix G for EM820W, but only the worst case were listed in the appendix. One transceiver has been measured, however in above section only the requirements of EN 301 908-2 V5.2.1 has been considered.

11.2 Common Test

11.2.1 Radiated spurious emissions

11.2.1.1 Test data

With internal antenna
Traffic mode

Frequency range	Max measure value (dBm)	Result
30 MHz to 1 GHz	<-36*	Pass
1 GHz to 12.75 GHz	<-30*	Pass

Idle mode

Frequency range	Max measure value (dBm)	Result
30 MHz to 1 GHz	<-57*	Pass
1 GHz to 12.75 Hz	<-47*	Pass

*Note14: The plots of radiated spurious emission are included in EMC test report, which report No. is SYBH(Z-E)045112010 EA-2

11.2.1.2 Essential Conformance Requirements

Frequency	Minimum requirement (e.r.p.) / Reference Bandwidth Idle mode	Minimum requirement (e.r.p.) / Reference Bandwidth Traffic mode
$30 \text{ MHz} \leq f < 1000 \text{ MHz}$	-57dBm / 100 kHz	-36 dBm / 100 kHz
$1 \text{ GHz} \leq f < 12.75 \text{ GHz}$	-47dBm / 1MHz	-30 dBm / 1 MHz
$f_c - 12.5 \text{ MHz} < f < f_c + 12.5 \text{ MHz}$	Not defined	Not defined

NOTE 15: f_c is the centre frequency of the carrier.

11.2.1.3 Result

The equipment met the requirement of this clause.

For the measurement results, please refer to EMC Test Report. One transceiver has been measured, however in above section only the requirements of EN 301 908-1 V5.2.1 has been considered.

11.2.2 Control and Monitoring Function

11.2.2.1 Test data

Test Item	For $ \Delta f $ Within the Range	Result		
		Channel 9612	Channel 9750	Channel 9888
Control and Monitoring Function	1920 MHz to 1980 MHz Transmit Band (dBm/1MHz)	pass	pass	pass

Test Item	For $ \Delta f $ Within the Range	Result		
		Channel 2712	Channel 2788	Channel 2863
Control and Monitoring Function	880 MHz to 915 MHz Transmit Band (dBm/1MHz)	pass	pass	pass

11.2.2.2 Essential Conformance Requirements

Test Item	For $ \Delta f $ Within the Range	Limit(dBm)
Control and Monitoring Function	1920 MHz to 1980 MHz Transmit Band(dBm/1MHz)	-30
Control and Monitoring Function	880 MHz to 915 MHz Transmit Band(dBm/1MHz)	-30

11.2.2.3 Result

The equipment met the requirement of this clause.
One transceiver has been measured, however in above section only the requirements of EN 301 908-1 V5.2.1 has been considered.

12 Uncertainty

Maximum measurement uncertainty of the test system

Parameter	Conditions	Test system uncertainty
Transmitter Maximum Output Power		0.4dB
Transmitter spectrum emission mask		1.0dB
Transmitter conducted spurious emissions	f<2.2GHz	1.0dB
	2.2GHz<f<4GHz	1.5dB
	f>4GHz	3.2dB
	co-existence band(>-60dBm)	1.5dB
	co-existence band(<-60dBm)	2.0dB
Transmitter minimum output power		0.4dB
Receiver adjacent channel selectivity (ACS)		0.6dB
Receiver blocking characteristics	f<15MHz offset;	0.5dB
	15MHz offset<f<2.2GHz	1.0dB
	2.2GHz<f<4GHz	1.0dB
	f>4GHz	2.2dB
Receiver spurious response	f<2.2GHz	0.5dB
	2.2GHz<f<4GHz	1.2dB
	f>4GHz	2.3dB
Receiver Intermodulation characteristics		1.0dB
Receiver spurious emissions	For Module receiver band(-60dBm)	2.1dB
	For Module transmit band(-60dBm)	2.3dB
	Outside the Module receive band:	
	f<2.2GHz	1.3dB
	2.2GHz<f<4GHz	1.5dB
Out of-synchronization handling of output power	DPCCH Ec/Ior	0.1dB
	Transmit OFF power	0.6dB
Transmitter adjacent channel leakage power ratio		0.5dB
Table1 Radiated emissions (UE)		2.2dB
Table2 Control and monitoring functions (UE)		0.6dB

13 Appendixes

Appendix A	Graphs of Maximum Output Power	N.A
Appendix B	Transmitter spectrum emission mask	4 Pages
Appendix C	Transmitter conducted spurious emissions	16 Pages
Appendix D	Spectrum Emission Mask with HS-DPCCH	4 Pages
Appendix E	Graphs of Transmitter minimum output power	N.A
Appendix F	Graphs of Transmitter adjacent channel leakage power ratio	N.A
Appendix G	Receiver spurious emissions	16Pages
Appendix H	Spectrum Emission Mask with HS-DPCCH and E-DCH	4Pages