Report No.: GTS201807000022E03

SPECTRUM REPORT (WCDMA)

Applicant:	Pointer Telocation Inc.
Address of Applicant:	Pointer Telocation 7751 NW 48th street suite 395 Doral Florida 33166 Doral USA
Manufacturer/Factory:	Pointer Telocation Inc.
Address of Manufacturer/Factory:	Pointer Telocation 7751 NW 48th street suite 395 Doral Florida 33166 Doral USA

Equipment Under Test (EUT)

Product Name:	Cello Family
Model No.:	Cello-CANiQ 3G EU K-Line - CT7800153-000, Cello-CANiQ 3G EU - CT7800151-000, Cello CANiQ 3G EU (DTCO) - CT7800154-000
Trade Mark:	Pointer
Applicable standards:	ETSI EN 301 908-1 V11.1.1 (2016-07) ETSI EN 301 908-2 V11.1.1 (2016-07)
Date of sample receipt:	December 03, 2018
Date of Test:	December 04-12, 2018
Date of report issued:	December 13, 2018
Test Result :	PASS *

***In the configuration tested, the EUT complied with the standards specified above.

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives. The protection requirements with respect to electromagnetic compatibility contained in Directive 2014/53/EU are considered.

Robinson Lo
Laboratory Manager

2 Version

Version No.	Date	Description
00	*December 13, 2018*	*Original*

Prepared By: *Tiger Chen* ***Date:*** *December 13, 2018*

Project Engineer

Check By: ***Date:*** *December 13, 2018*

Reviewer

3 Contents

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4 Test Summary

Test Item	Test Requirement	Test method	Limit/Severity	Result
Transmitter maximum output power	ETSI EN 301 908-2 section 4.2.2	ETSI EN 301 908-2 section 5.3.1	24dBm	Pass
Transmitter spectrum emission mask	ETSI EN 301 908-2 section 4.2.3	ETSI EN 301 908-2 section 5.3.2	Table 4.2.3.1.2-1	Pass
Transmitter spurious emissions	ETSI EN 301 908-2 section 4.2.4	ETSI EN 301 908-2 section 5.3.3	Table 4.2.4.1.2-1 Table 4.2.4.1.2-2	Pass
Transmitter minimum output power	ETSI EN 301 908-2 section 4.2.5	ETSI EN 301 908-2 section 5.3.4	-49dBm	Pass
Transmitter adjacent channel leakage power ratio	ETSI EN 301 908-2 section 4.2.12	ETSI EN 301 908-2 section 5.3.11	Table 4.2.12.1.2-1	Pass
Out-of-synchronization handling of output power	ETSI EN 301 908-2 section 4.2.11	ETSI EN 301 908-2 section 5.3.10	Table 4.2.11.2-1 Table 4.2.11.2-2	Pass
Receiver adjacent channel selectivity (ACS)	ETSI EN 301 908-2 section 4.2.6	ETSI EN 301 908-2 section 5.3.5	Table 4.2.6.2-1	Pass
Receiver blocking characteristics	ETSI EN 301 908-2 section 4.2.7	ETSI EN 301 908-2 section 5.3.6	Table 4.2.7.2-1	Pass
Receiver spurious response	ETSI EN 301 908-2 section 4.2.8	ETSI EN 301 908-2 section 5.3.7	Table 4.2.8.2-1	Pass
Receiver intermodulation characteristics	ETSI EN 301 908-2 section 4.2.9	ETSI EN 301 908-2 section 5.3.8	Table 4.2.9.2-1	Pass
Receiver Reference Sensitivity level	ETSI EN 301 908-2 section 4.2.13	ETSI EN 301 908-2 section 5.3.12	Table 4.2.13.2-1	Pass
Receiver spurious emissions	ETSI EN 301 908-2 section 4.2.10	ETSI EN 301 908-2 section 5.3.9	Table 4.2.10.2-1 Table 4.2.10.2-2	Pass
Radiated emissions	ETSI EN 301 908-1 Section 4.2.2	ETSI EN 301 908-1 Section 5.3.1	Table 4.2.2.2-1	Pass
Control and monitoring functions	ETSI EN 301 908-1 Section 4.2.4	ETSI EN 301 908-1 Section 5.3.3	-30dBm	Pass

Remark:

Pass: The EUT complies with the essential requirements in the standard.

5 General Information

5.1 General Description of EUT

Product Name:	Cello Family
Model No.:	Cello-CANiQ 3G EU K-Line - CT7800153-000, Cello-CANiQ 3G EU - CT7800151-000, Cello CANiQ 3G EU (DTCO) - CT7800154-000
Test Model No:	Cello-CANiQ 3G EU K-Line - CT7800153-000
The electrical circuit design, layout, components used and internal wiring were identical for all models, with only dfference being the model name	
Hardware Version:	PB1031 REV-E
Software Version:	38
Operation Frequency:	Band I:1920MHz~1980MHz Band VIII:880MHz~915MHz
Modulation Type:	WCDMA:QPSK HSDPA:QPSK, 16QAM HSUPA:QPSK, 16QAM
Antenna Type:	Integral Antenna
Antenna Gain:	2.00dBi
Power Supply:	DC 9-32V or DC 3.7V, 3.7Wh, 1000mAh by Lithium Ion Polymer Battery

5.2 Description of Support Units

The EUT was test as an independent unit

5.3 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **FCC —Registration No.: 381383**

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 381383, January 08, 2018.

● **Industry Canada (IC) —Registration No.: 9079A-2**

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. Has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-2, August 15, 2016.

5.4 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

Address: No. 301-309, 3/F., Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China

Tel: 0755-27798480

Fax: 0755-27798960

5.5 Deviation from Standards

None

5.6 Other Information Requested by the Customer

None.

6 Test Instruments List

Radiated Emission:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July. 03 2015	July. 02 2020
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June. 27 2018	June. 26 2019
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 27 2018	June. 26 2019
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 27 2018	June. 26 2019
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 27 2018	June. 26 2019
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 27 2018	June. 26 2019
9	Coaxial Cable	GTS	N/A	GTS211	June. 27 2018	June. 26 2019
10	Coaxial cable	GTS	N/A	GTS210	June. 27 2018	June. 26 2019
11	Coaxial Cable	GTS	N/A	GTS212	June. 27 2018	June. 26 2019
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 27 2018	June. 26 2019
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 27 2018	June. 26 2019
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 27 2018	June. 26 2019
15	Band filter	Amindeon	82346	GTS219	June. 27 2018	June. 26 2019
16	Power Meter	Anritsu	ML2495A	GTS540	June. 27 2018	June. 26 2019
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 27 2018	June. 26 2019
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 27 2018	June. 26 2019
19	Splitter	Agilent	11636B	GTS237	June. 27 2018	June. 26 2019
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 27 2018	June. 26 2019

General used equipment:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	June. 27 2018	June. 26 2019
2	Barometer	ChangChun	DYM3	GTS255	June. 27 2018	June. 26 2019

7 Radio Technical Requirements Specification in ETSI EN 301 908-1/-2

7.1 Test Environment Profile

Operating Environment:					
Item	Normal condition	Extreme condition			
		HVHT	LVHT	HVLT	LVLT
Temperature	+15ºC to + 35ºC	+55ºC	+55ºC	0ºC	0ºC
Voltage(DC)	12V	32V	9V	32V	9V
Humidity	20%-95%				
Atmospheric Pressure:	1008 mbar				

7.2 Transmitter maximum output power

Test Requirement:	ETSI EN 301 908-2 clause 4.2.2
Test Method:	ETSI EN 301 908-2 clause 5.3.1
Limit:	24dBm
Test procedure:	1. Connect the SS to the UE antenna connector. 2. A call is set up according to the Generic call setup procedure. 3. Enter the UE into loopback test mode and start the loopback test. 4. Set and send continuously Up power control commands to the UE. 5. Measure the mean power of the UE in a bandwidth of at least (1 + α) times the chip rate of the radio access mode. The mean power shall be averaged over at least one timeslot. 6. Transmitting or receiving bit/symbol rate for test channel is shown in table below.
Test Instruments:	Refer to section 6.0

Type of user information	User bit rate	DL DPCH symbol rate	UL DPCH Bit rate
12.2kbps reference measurement channel	12.2kbps	30kbps	60kbps

Measurement Data

Band I

Test environment	Maximum output power (dBm)			Limit (dBm)	Result
	9612	9750	9888		
NVNT	21.29	**21.58**	21.40	24.0+1,7/-3,7	Pass
HVHT	21.29	21.34	21.37		
LVHT	21.26	21.35	21.39		
HVLT	21.25	21.33	21.38		
LVLT	21.27	21.31	21.35		

HSUPA

Test environment	Maximum output power (dBm)			Limit (dBm)	Result
	9612	9750	9888		
NVNT	21.02	21.70	21.31	24.0+1,7/-3,7	Pass
HVHT	21.68	21.93	**22.04**		
LVHT	21.72	21.88	21.99		
HVLT	21.76	21.89	21.98		
LVLT	21.78	21.93	22.00		

HSDPA

Test environment	Maximum output power (dBm)			Limit (dBm)	Result
	9612	9750	9888		
NVNT	20.74	21.58	21.38	24.0+1,7/-3,7	Pass
HVHT	21.86	21.68	21.89		
LVHT	21.58	21.72	21.86		
HVLT	21.74	21.76	**21.95**		
LVLT	21.61	21.55	21.42		

Band VIII

Test environment	Maximum output power (dBm)			Limit (dBm)	Result
	2712	2788	2863		
NVNT	21.43	21.15	21.43	24.0+1,7/-3,7	Pass
HVHT	**21.84**	21.75	21.54		
LVHT	21.83	21.77	21.55		
HVLT	21.82	21.79	21.53		
LVLT	21.81	21.78	21.52		

HSUPA

Test environment	Maximum output power (dBm)			Limit (dBm)	Result
	2712	2788	2863		
NVNT	21.58	21.18	20.93	24.0+1,7/-3,7	Pass
HVHT	22.03	21.75	22.15		
LVHT	21.98	21.69	**22.16**		
HVLT	21.99	21.74	22.14		
LVLT	22.01	21.78	22.15		

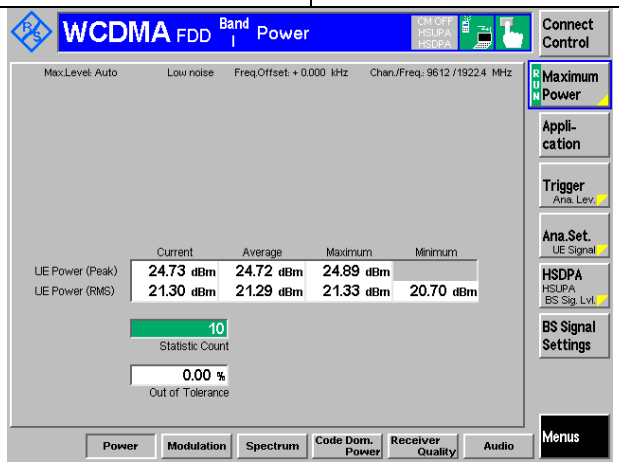
HSDPA

Test environment	Maximum output power (dBm)			Limit (dBm)	Result
	2712	2788	2863		
NVNT	21.73	21.08	21.04	24.0+1,7/-3,7	Pass
HVHT	**22.01**	21.69	21.42		
LVHT	21.99	21.81	21.36		
HVLT	21.98	21.78	21.35		
LVLT	21.79	21.55	21.38		

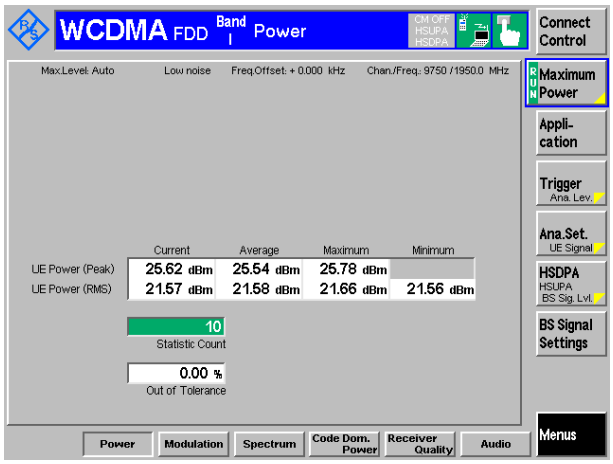
Test plot as follows:

Band I

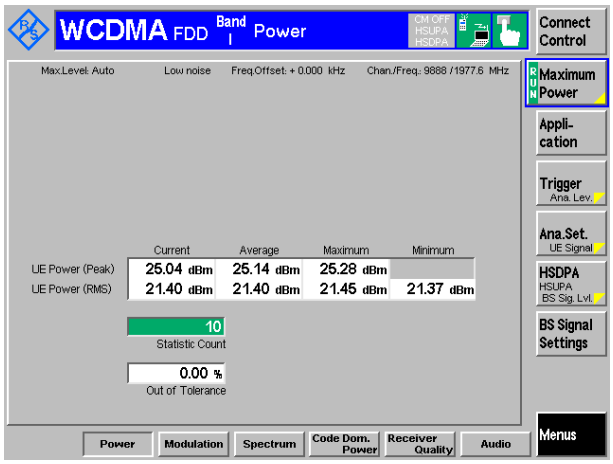
Test environment	V_{norm} / T_{norm}



Lowest channel



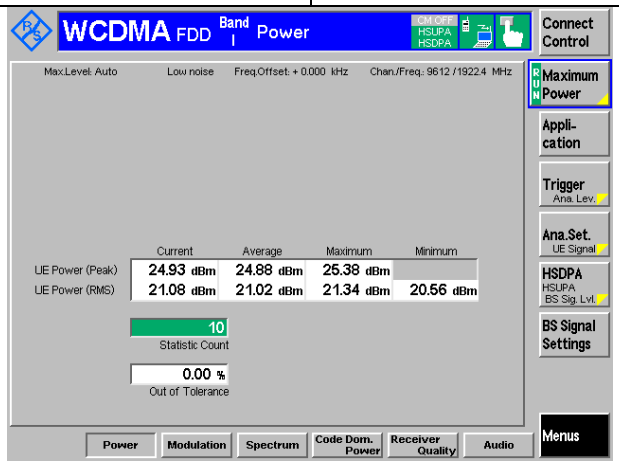
Middle channel



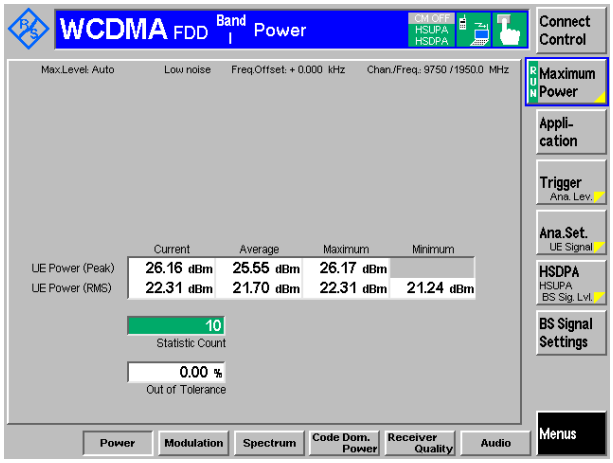
Highest channel

HSUPA

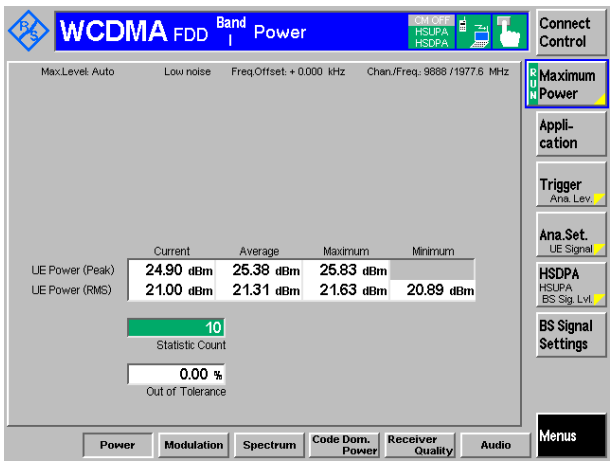
Test environment	V_{norm} / T_{norm}



Lowest channel



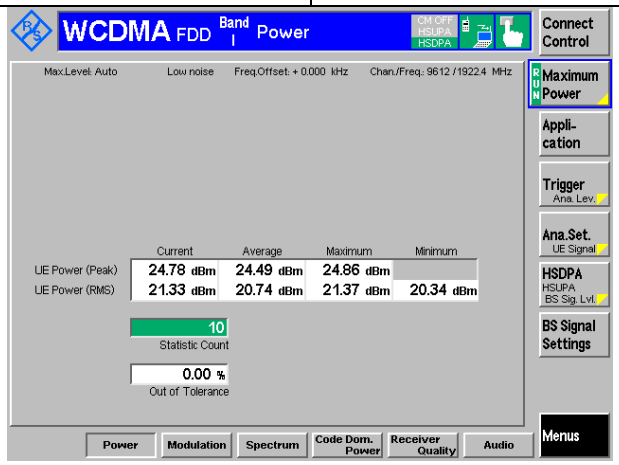
Middle channel



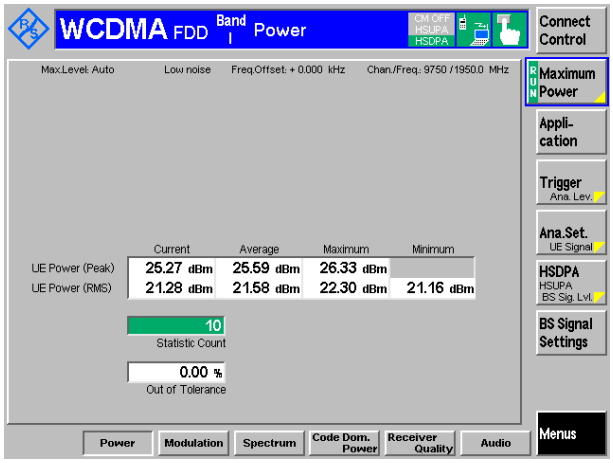
Highest channel

HSDPA

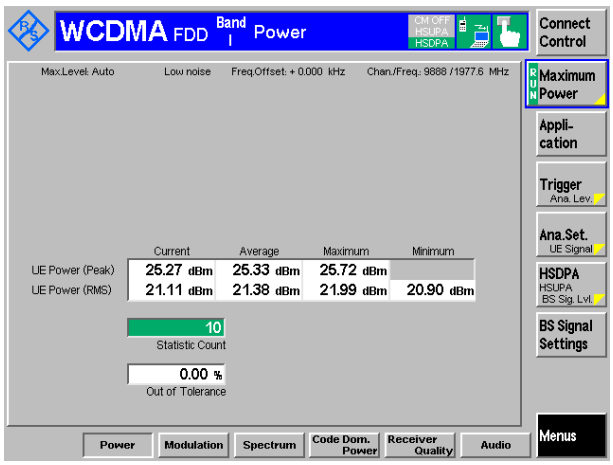
Test environment	V_{norm} / T_{norm}



Lowest channel



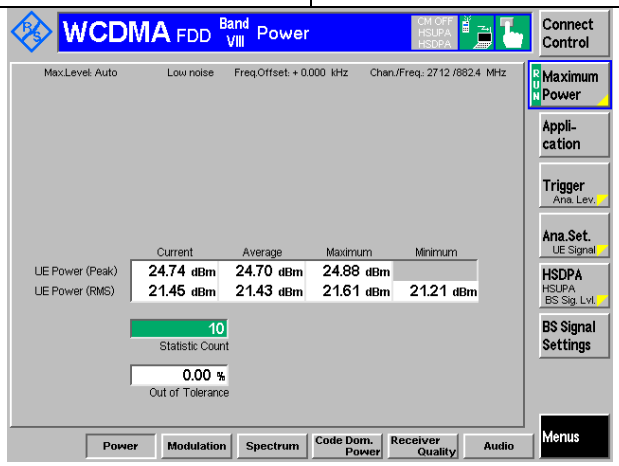
Middle channel



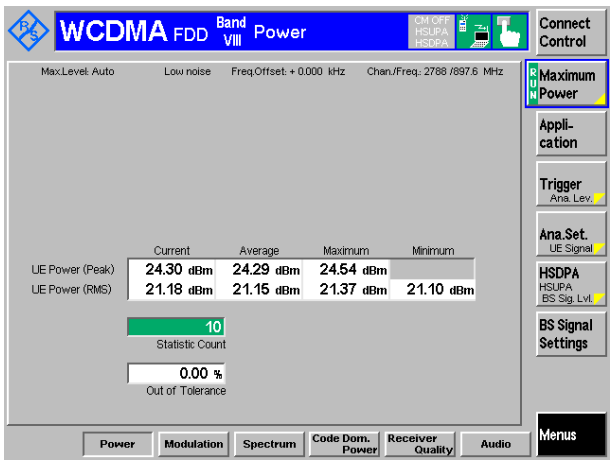
Highest channel

Band VIII

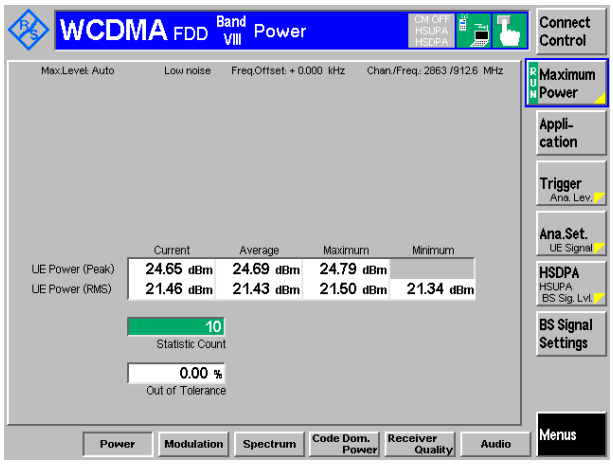
Test environment	V_{norm} / T_{norm}



Lowest channel



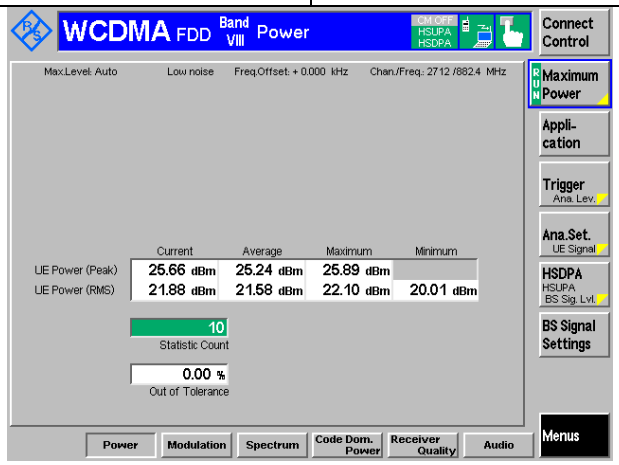
Middle channel



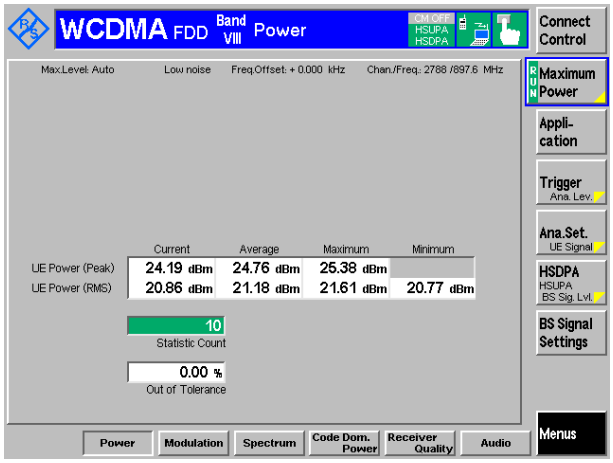
Highest channel

HSUPA

Test environment	V_{norm} / T_{norm}



Lowest channel



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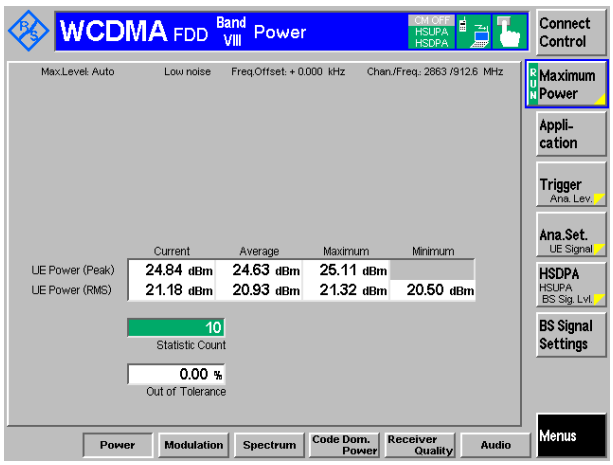
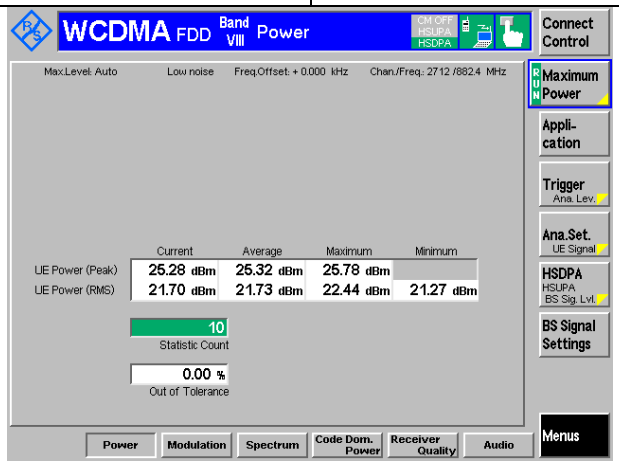


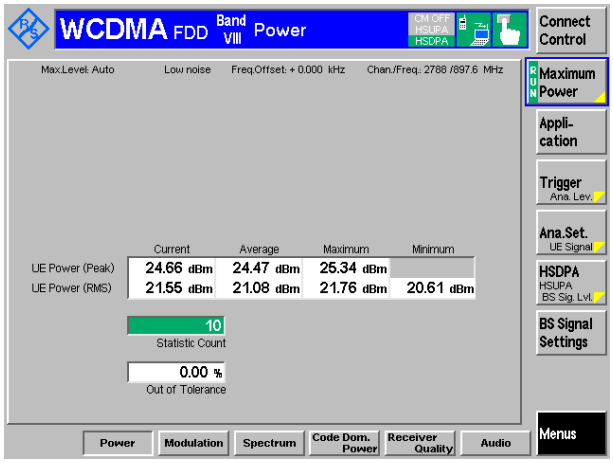
Highest channel

HSDPA

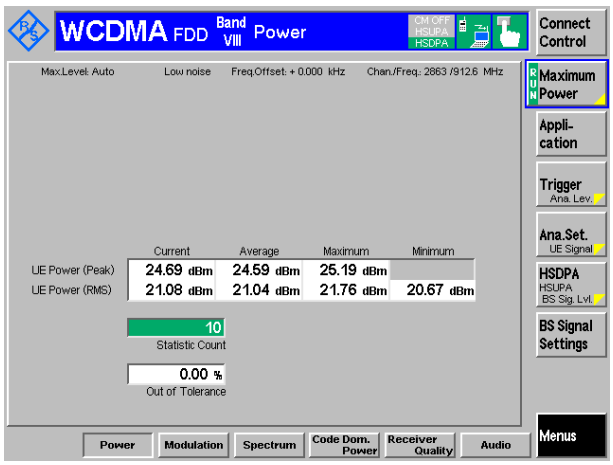
Test environment	V_{norm} / T_{norm}



Lowest channel



Middle channel



Highest channel

7.3 Transmitter spectrum emission mask

Test Requirement:	ETSI EN 301 908-2 clause 4.2.3
Test Method:	ETSI EN 301 908-2 clause 5.3.2
Limit:	See table below

Δf in MHz (note 1)	Minimum requirement (note 2)		Measurement bandwidth (note 5)
	Relative requirement	Absolute requirement (in measurement bandwidth)	
2,5 MHz to 3,5 MHz	$\left\{-33{,}5-15\cdot\left(\frac{\Delta f}{MHz}-2{,}5\right)\right\}dBc$	-69,6 dBm	30 kHz (see note 3)
3,5 MHz to 7,5 MHz	$\left\{-33{,}5-1\cdot\left(\frac{\Delta f}{MHz}-3{,}5\right)\right\}dBc$	-54,3 dBm	1 MHz (see note 4)
7,5 MHz to 8,5 MHz	$\left\{-37{,}5-10\cdot\left(\frac{\Delta f}{MHz}-7{,}5\right)\right\}dBc$	-54,3 dBm	1 MHz (see note 4)
8,5 MHz to 12,5 MHz	-47,5 dBc	-54,3 dBm	1 MHz (see note 4)

NOTE 1: Δf is the separation between the carrier frequency and the centre of the measurement bandwidth.
NOTE 2: The minimum requirement is calculated from the relative requirement or the absolute requirement, whichever is the higher power.
NOTE 3: The first and last measurement position with a 30 kHz filter is at Δf equals to 2,515 MHz and 3,485 MHz.
NOTE 4: The first and last measurement position with a 1 MHz filter is at Δf equals to 4 MHz and 12 MHz.
NOTE 5: As a general rule, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. However, to improve measurement accuracy, sensitivity and efficiency, the resolution bandwidth may be smaller than the measurement bandwidth. When the resolution bandwidth is smaller than the measurement bandwidth, the result should be integrated over the measurement bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth.

Test procedure:

1. Connect the SS to the UE antenna connector.
2. A call is set up according to the Generic call setup procedure.
3. Enter the UE into loopback test mode and start the loopback test.
4. Set and send continuously Up power control commands to the UE.
5. Transmitting or receiving bit/symbol rate for test channel is shown in table below.

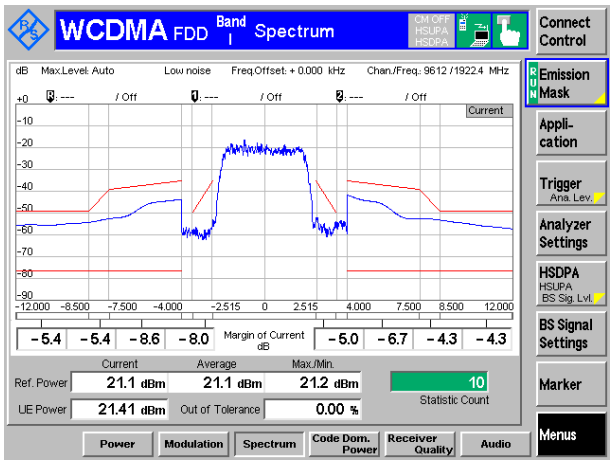
Type of user information	User bit rate	DL DPCH symbol rate	UL DPCH Bit rate
12.2kbps reference measurement channel	12.2kbps	30kbps	60kbps

Test Instruments: Refer to section 6.0

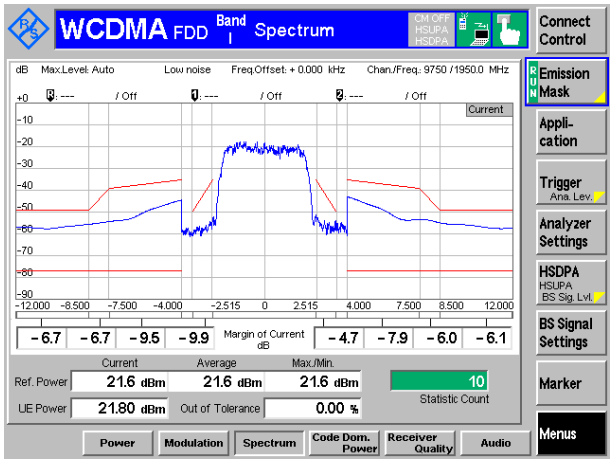
Measurement data:

Band I

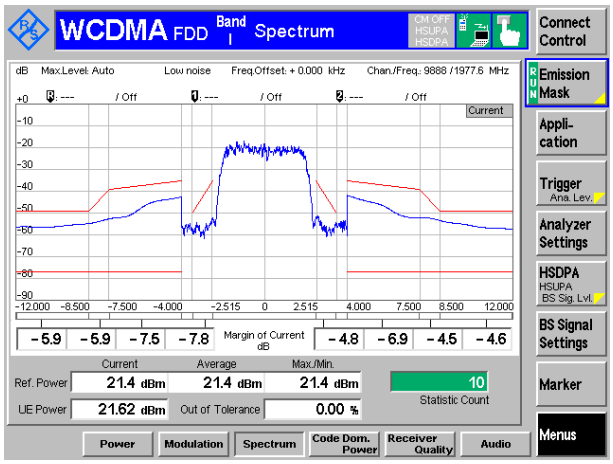
RMC Mode



Lowest channel

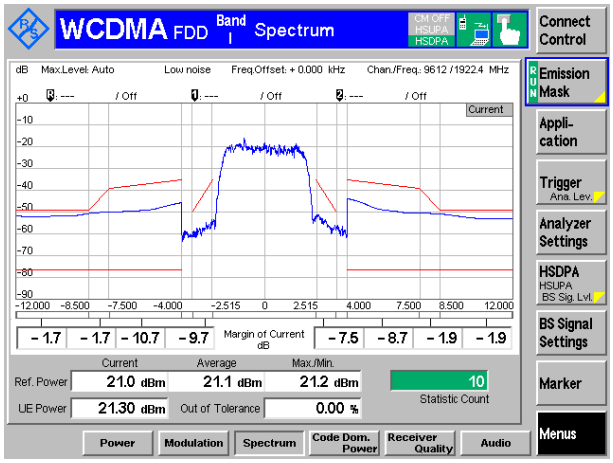


Middle channel

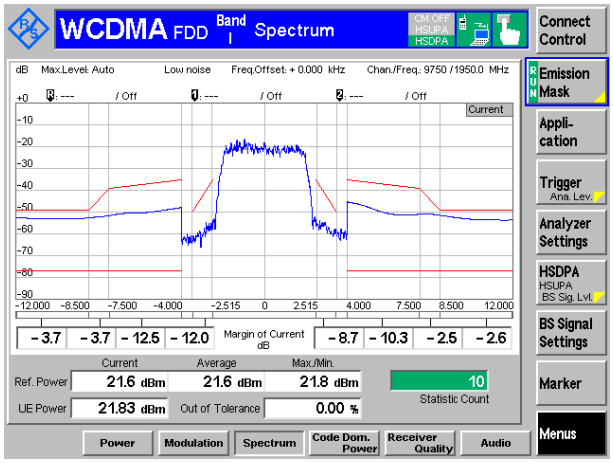


Highest channel

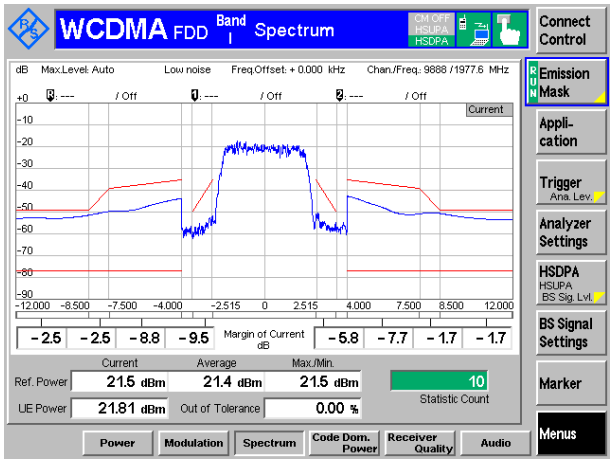
HSDPA Mode



Lowest channel

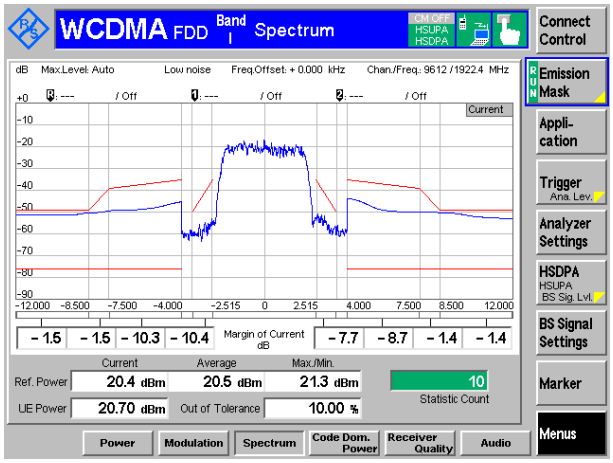


Middle channel

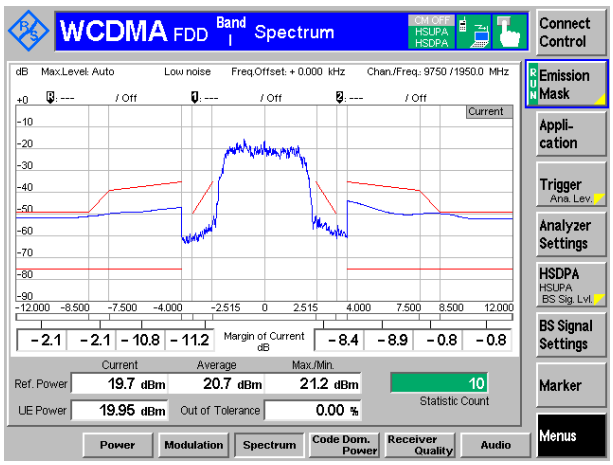


Highest channel

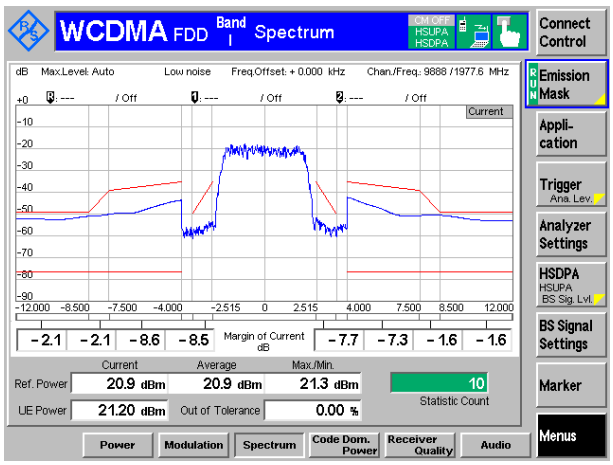
HSUPA Mode



Lowest channel



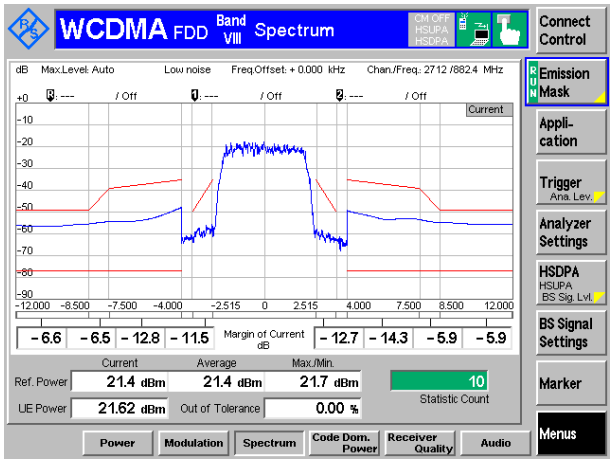
Middle channel



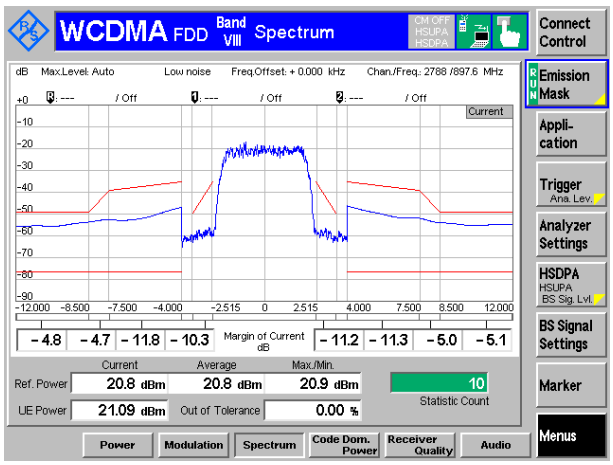
Highest channel

Band VIII

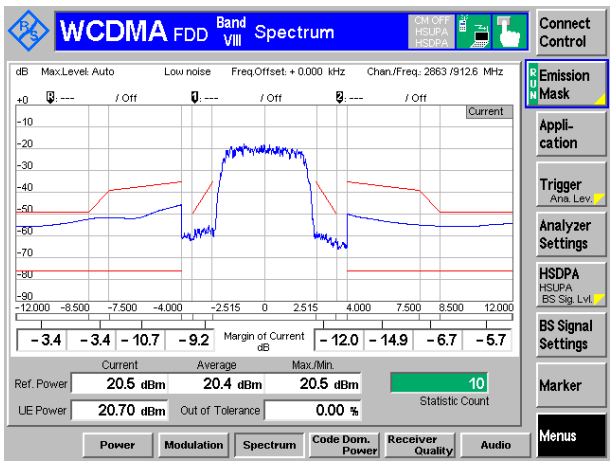
RMC Mode



Lowest channel

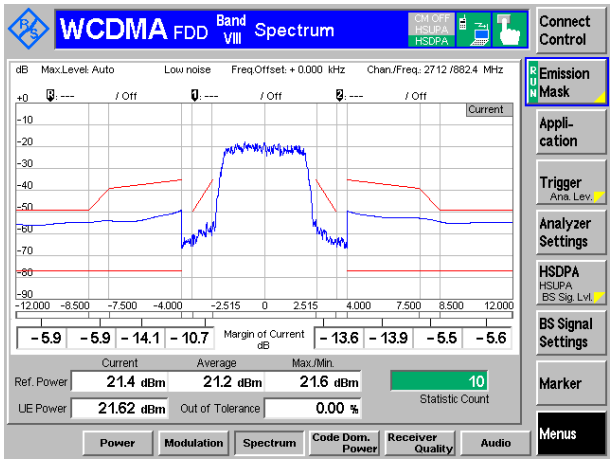


Middle channel

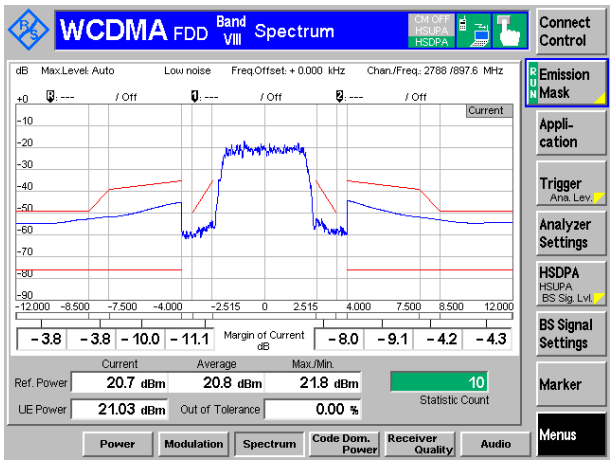


Highest channel

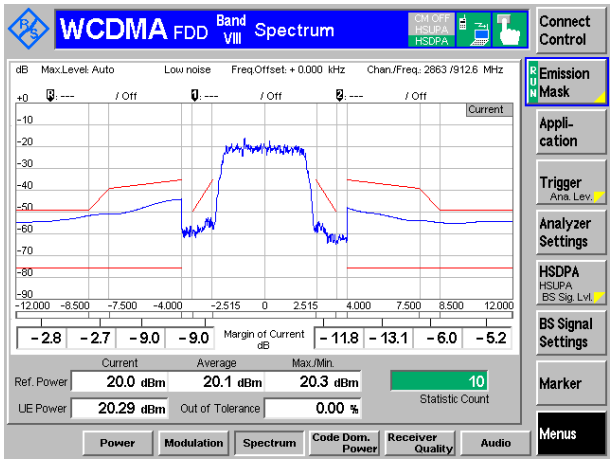
HSDPA Mode



Lowest channel

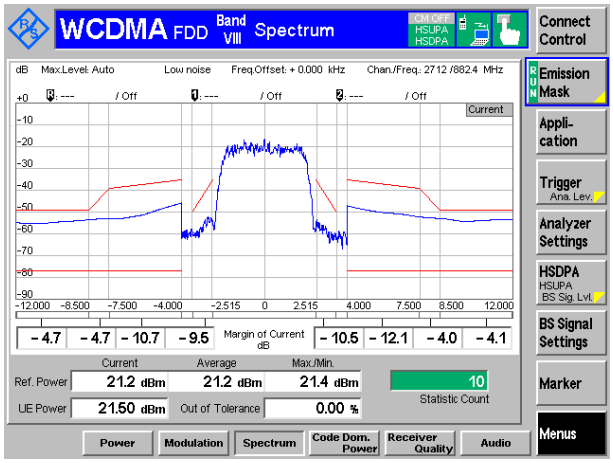


Middle channel

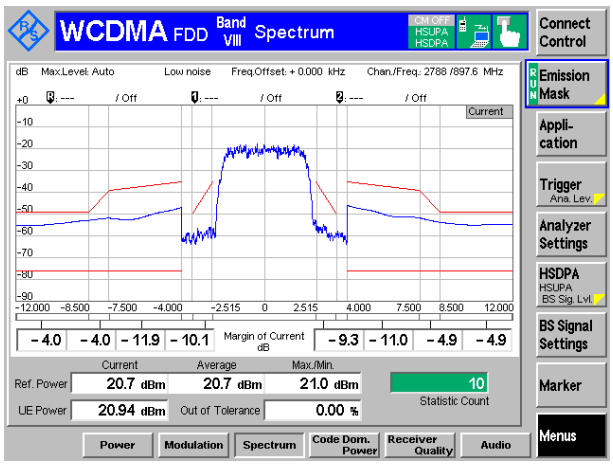


Highest channel

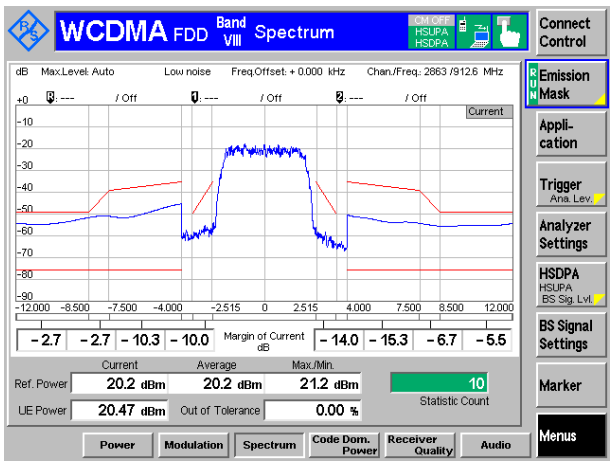
HSUPA Mode



Lowest channel



Middle channel



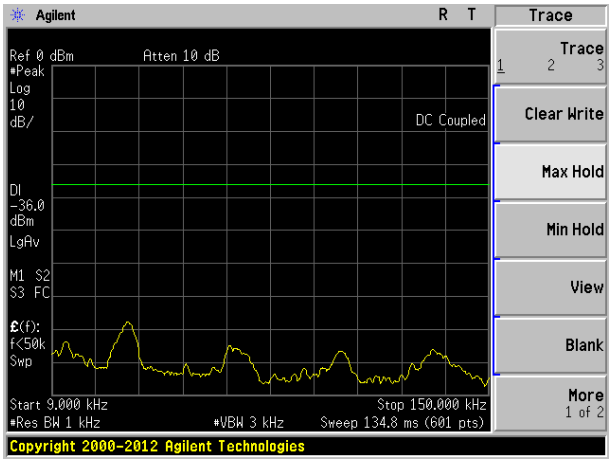
Highest channel

7.4 Transmitter spurious emissions

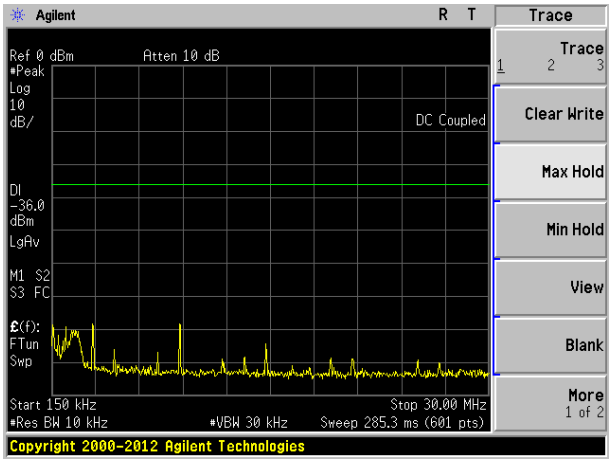
<table>
<tr><td>Test Requirement:</td><td>ETSI EN 301 908-2 clause 4.2.4</td></tr>
<tr><td>Test Method:</td><td>ETSI EN 301 908-2 clause 5.3.3</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><th>Frequency bandwidth</th><th>Measurement bandwidth</th><th>Minimum requirement</th></tr>
<tr><td>9 kHz ≤ f < 150 kHz</td><td>1 kHz</td><td>-36 dBm</td></tr>
<tr><td>150 kHz ≤ f < 30 MHz</td><td>10 kHz</td><td>-36 dBm</td></tr>
<tr><td>30 MHz ≤ f < 1 000 MHz</td><td>100 kHz</td><td>-36 dBm</td></tr>
<tr><td>1 GHz ≤ f < 12,75 GHz</td><td>1 MHz</td><td>-30 dBm</td></tr>
</table>
<table>
<tr><th>Operating band</th><th>Frequency bandwidth</th><th>Measurement bandwidth</th><th>Minimum requirement</th></tr>
<tr><td rowspan="8">I</td><td>791 MHz ≤ f ≤ 821 MHz</td><td>3,84 MHz</td><td>-60 dBm</td></tr>
<tr><td>921 MHz ≤ f < 925 MHz</td><td>100 kHz</td><td>-60 dBm (note 1)</td></tr>
<tr><td>925 MHz ≤ f ≤ 935 MHz</td><td>100 kHz</td><td>-67 dBm (note 1)</td></tr>
<tr><td>935 MHz < f ≤ 960 MHz</td><td>100 kHz</td><td>-79 dBm (note 1)</td></tr>
<tr><td>1 805 MHz ≤ f ≤ 1 880 MHz</td><td>100 kHz</td><td>-71 dBm (note 1)</td></tr>
<tr><td>2 110 MHz ≤ f ≤ 2 170 MHz</td><td>3,84 MHz</td><td>-60 dBm</td></tr>
<tr><td>2 585 MHz ≤ f ≤ 2 690 MHz</td><td>3,84 MHz</td><td>-60 dBm</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td rowspan="10">VIII</td><td>791 MHz ≤ f ≤ 821 MHz</td><td>3,84 MHz</td><td>-60 dBm</td></tr>
<tr><td>925 MHz ≤ f ≤ 935 MHz</td><td>100 kHz
3,84 MHz</td><td>-67 dBm (note 1)
-60 dBm</td></tr>
<tr><td>935 MHz < f ≤ 960 MHz</td><td>100 kHz
3,84 MHz</td><td>-79 dBm (note 1)
-60 dBm</td></tr>
<tr><td>1 805 MHz < f ≤ 1 830 MHz</td><td>100 kHz
3,84 MHz</td><td>-71 dBm (notes 1 and 2)
-60 dBm (note 2)</td></tr>
<tr><td>1 830 MHz < f ≤ 1 880 MHz</td><td>100 kHz
3,84 MHz</td><td>-71 dBm (note 1)
-60 dBm</td></tr>
<tr><td>2 110 MHz ≤ f ≤ 2 170 MHz</td><td>3,84 MHz</td><td>-60 dBm</td></tr>
<tr><td>2 585 MHz ≤ f ≤ 2 640 MHz</td><td>3,84 MHz</td><td>-60 dBm</td></tr>
<tr><td>2 640 MHz ≤ f ≤ 2 690 MHz</td><td>3,84 MHz</td><td>-60 dBm (note 2)</td></tr>
</table>
</td></tr>
<tr><td>Test procedure:</td><td>1. Connect the SS to the UE antenna connector.
2. A call is set up according to the Generic call setup procedure.
3. Enter the UE into loopback test mode and start the loopback test.
4. Set and send continuously Up power control commands to the UE, until the UE output power shall be maximum level.
5. Sweep the spectrum analyser (or equivalent equipment) over a frequency range and measure the average power of spurious emission.
6. Transmitting or receiving bit/symbol rate for test channel is shown in table below.
<table>
<tr><th>Type of user information</th><th>User bit rate</th><th>DL DPCH symbol rate</th><th>UL DPCH Bit rate</th></tr>
<tr><td>12.2kbps reference measurement channel</td><td>12.2kbps</td><td>30kbps</td><td>60kbps</td></tr>
</table>
</td></tr>
<tr><td>Test Instruments:</td><td>Refer to section 6.0</td></tr>
</table>

Measurement data:

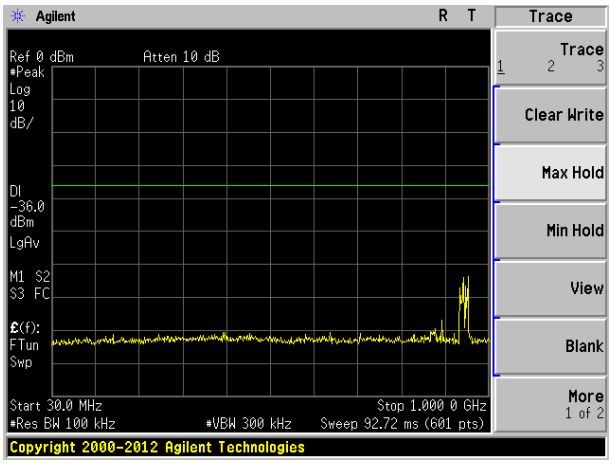
Band I



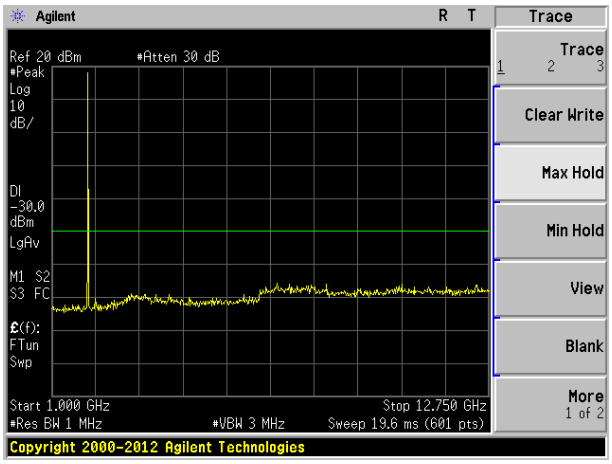
9K~150KHz



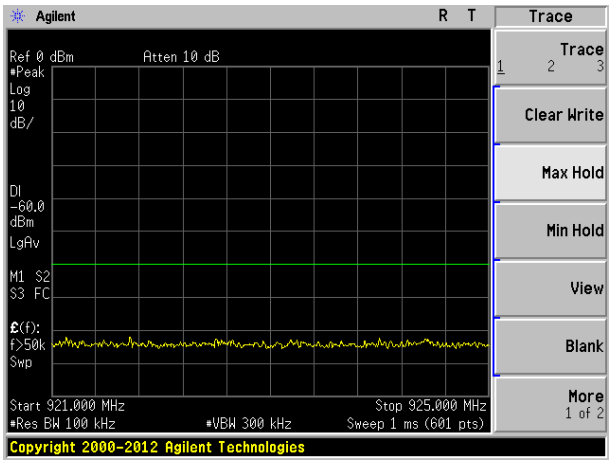
150K~30MHz



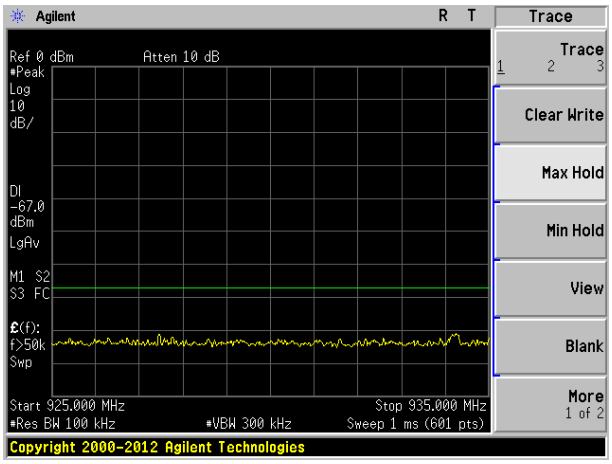
30MHz~1GHz



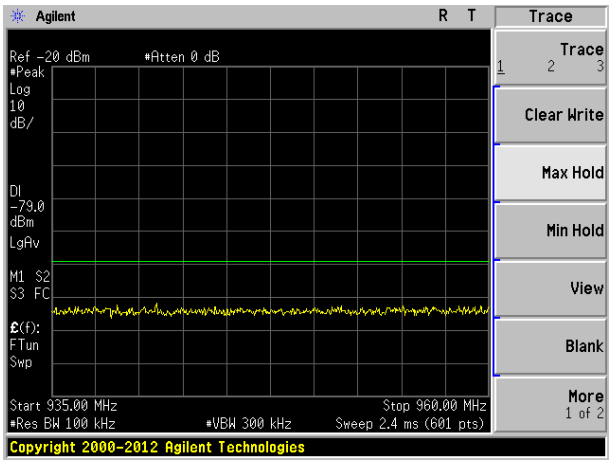
1GHz~12.75GHz



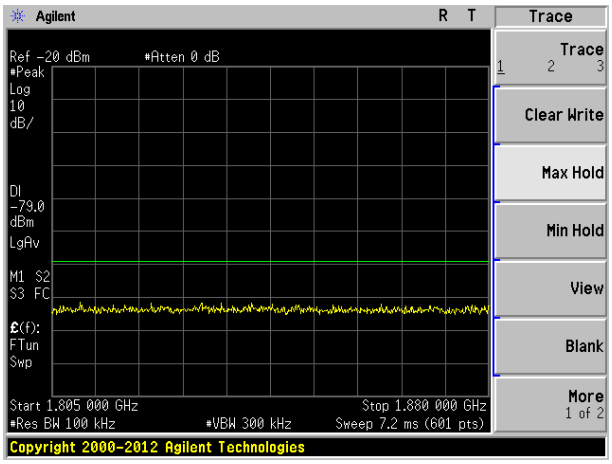
921MHz~925MHz



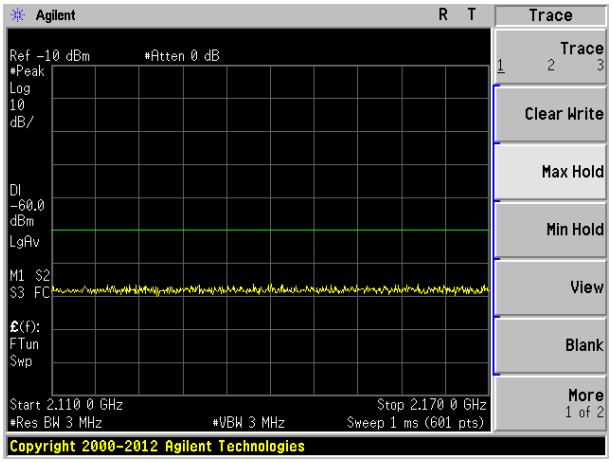
925MHz~935MHz



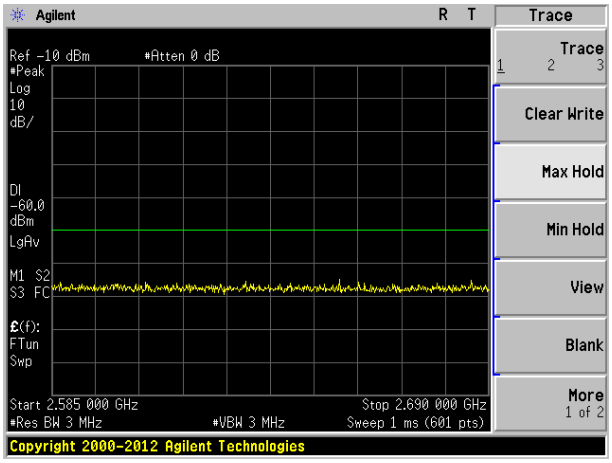
935MHz~960MHz



1805MHz~1880MHz

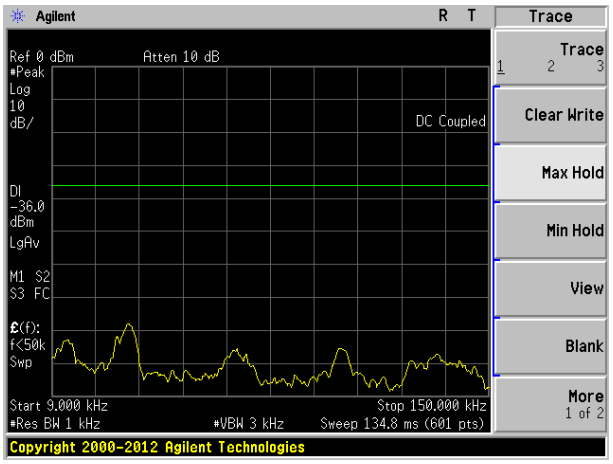


2110MHz~2170MHz

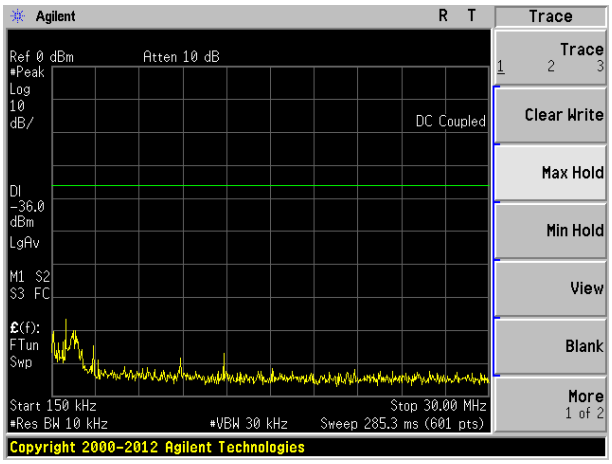


2585MHz~2690MHz

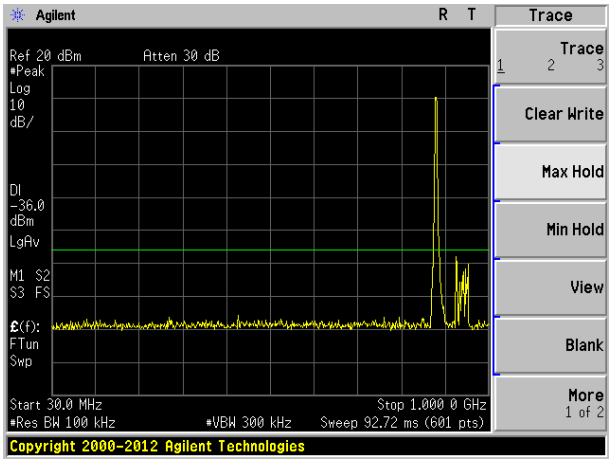
Band VIII



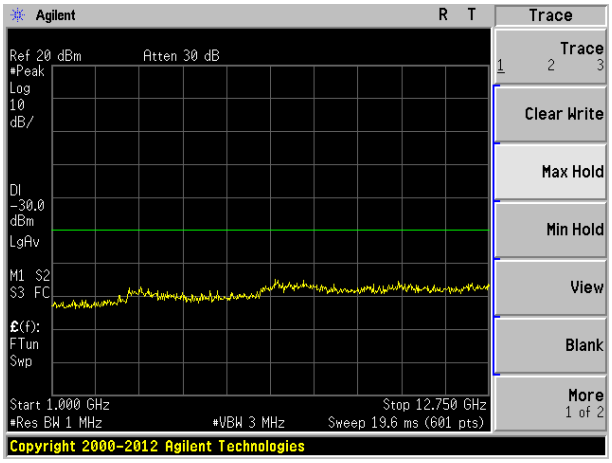
9K~150KHz



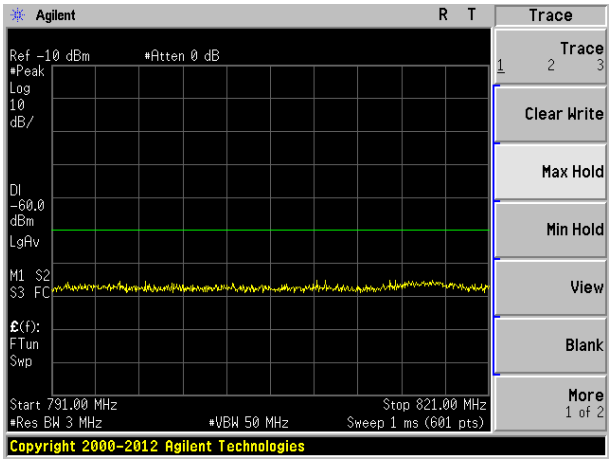
150K~30MHz



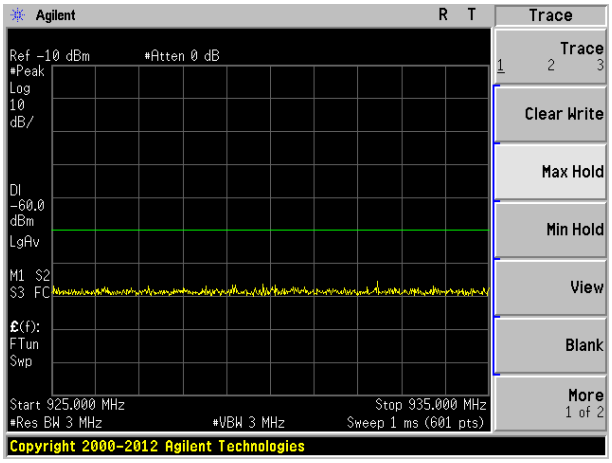
30MHz~1GHz



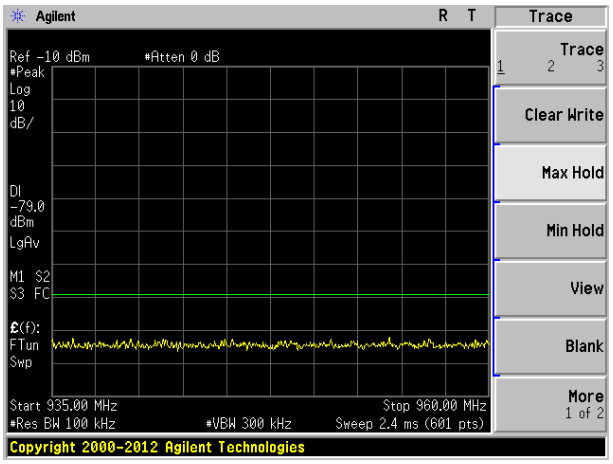
1GHz~12.75GHz



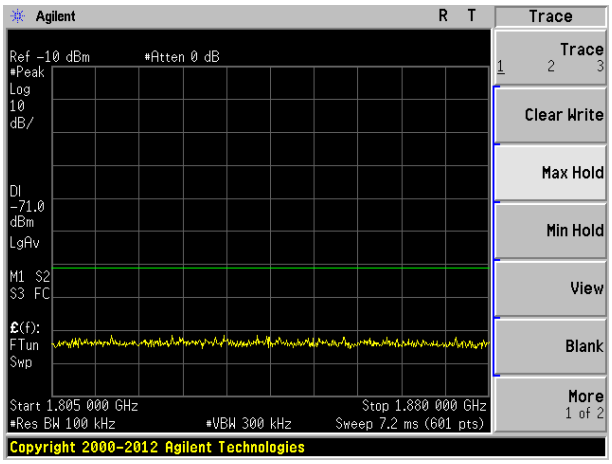
791MHz~821MHz



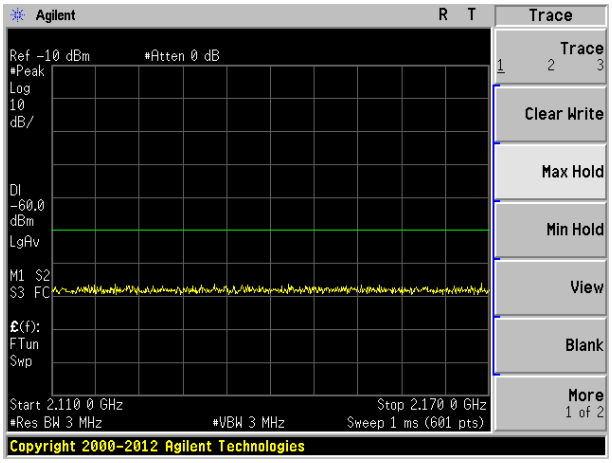
925MHz~935MHz



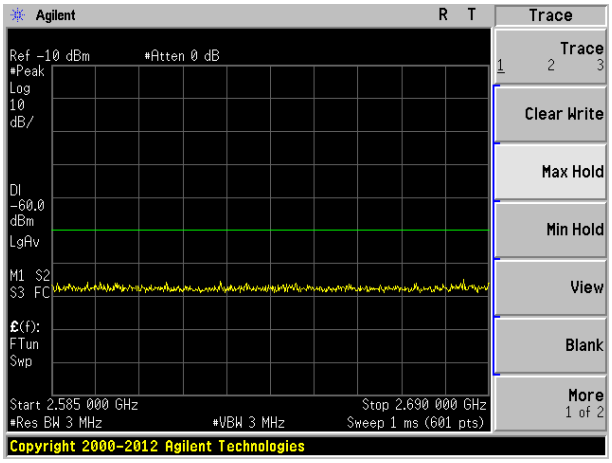
935MHz~960MHz



1805MHz~1880MHz



2110MHz~2170MHz



2585MHz~2690MHz

7.5 Transmitter minimum output power

<table>
<tr><td>Test Requirement:</td><td>ETSI EN 301 908-2 clause 4.2.5</td></tr>
<tr><td>Test Method:</td><td>ETSI EN 301 908-2 clause 5.3.4</td></tr>
<tr><td>Limit:</td><td>Less than -49dBm</td></tr>
<tr><td>Test procedure:</td><td>1. Connect the SS to the UE antenna connector.
2. A call is set up according to the Generic call setup procedure.
3. Enter the UE into loopback test mode and start the loopback test.
4. Transmitting or receiving bit/symbol rate for test channel is shown in table below.
<table>
<tr><th>Type of user information</th><th>User bit rate</th><th>DL DPCH symbol rate</th><th>UL DPCH Bit rate</th></tr>
<tr><td>12.2kbps reference measurement channel</td><td>12.2kbps</td><td>30kbps</td><td>60kbps</td></tr>
</table>
5. Set and send continuously Down power control commands to the UE
6. Measure the mean power of the UE.</td></tr>
<tr><td>Test Instruments:</td><td>Refer to section 6.0</td></tr>
</table>

Measurement Data:

Band I

Test environment	Minimum output power (dBm)			Limit (dBm)	Result
	9612	9750	9888		
NVNT	-55.94	-55.98	-55.41	Less than -49 dBm	Pass
HVHT	-53.95	-53.74	-53.65		
LVHT	-54.13	-53.46	-53.81		
HVLT	-54.02	-53.54	-53.72		
LVLT	-54.26	-53.50	-53.76		

HSDPA

Test environment	Minimum output power (dBm)			Limit (dBm)	Result
	9612	9750	9888		
NVNT	-56.18	-55.74	-55.81	Less than -49 dBm	Pass
HVHT	-54.11	-53.87	-53.13		
LVHT	-53.93	-53.46	-53.29		
HVLT	-53.86	-54.01	-53.06		
LVLT	-54.08	-53.53	-53.11		

HSUPA

Test environment	Minimum output power (dBm)			Limit (dBm)	Result
	9612	9750	9888		
NVNT	-56.95	-57.68	-57.51	Less than -49 dBm	Pass
HVHT	-52.86	-53.30	-53.42		
LVHT	-52.94	-53.54	-53.58		
HVLT	-52.99	-53.18	-53.94		
LVLT	-52.83	-53.42	-53.44		

Band VIII

Test environment	Minimum output power (dBm)			Limit (dBm)	Result
	2712	2788	2863		
NVNT	-53.91	-54.20	-54.42	Less than -49 dBm	Pass
HVHT	-52.66	-53.34	-52.85		
LVHT	-52.61	-53.56	-52.93		
HVLT	-52.89	-54.14	-52.71		
LVLT	-52.73	-53.22	-52.77		

HSDPA

Test environment	Minimum output power (dBm)			Limit (dBm)	Result
	2712	2788	2863		
NVNT	-53.73	-54.26	-54.77	Less than -49 dBm	Pass
HVHT	-52.56	-54.01	-53.84		
LVHT	-52.42	-53.75	-53.74		
HVLT	-52.44	-53.88	-53.69		
LVLT	-52.51	-53.84	-53.62		

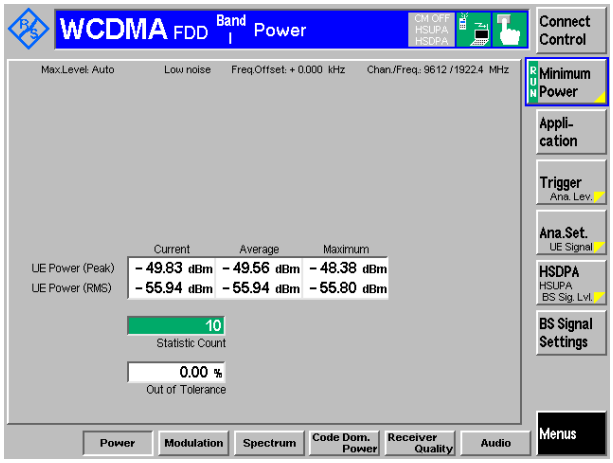
HSUPA

Test environment	Minimum output power (dBm)			Limit (dBm)	Result
	2712	2788	2863		
NVNT	-55.68	-55.64	-56.18	Less than -49 dBm	Pass
HVHT	-52.41	-53.01	-52.86		
LVHT	-52.36	-53.12	-52.85		
HVLT	-52.44	-53.05	-52.81		
LVLT	-52.47	-53.09	-52.89		

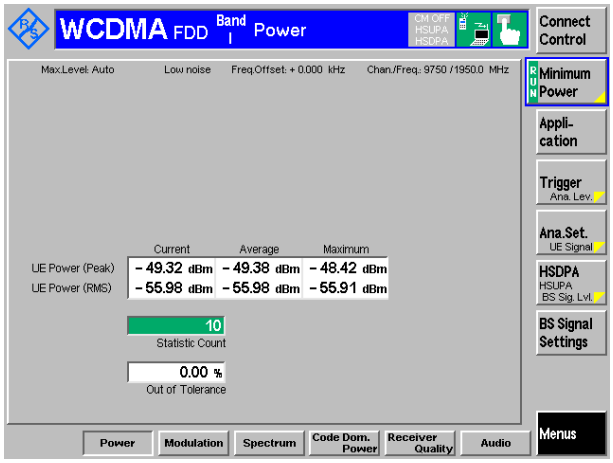
Test plot as follows:

Band I

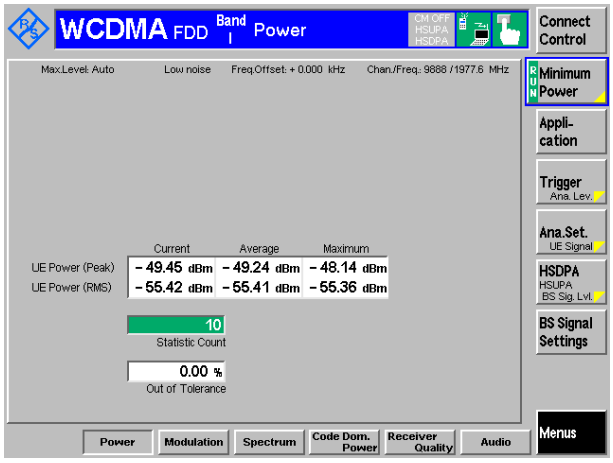
RMC mode:



Lowest channel

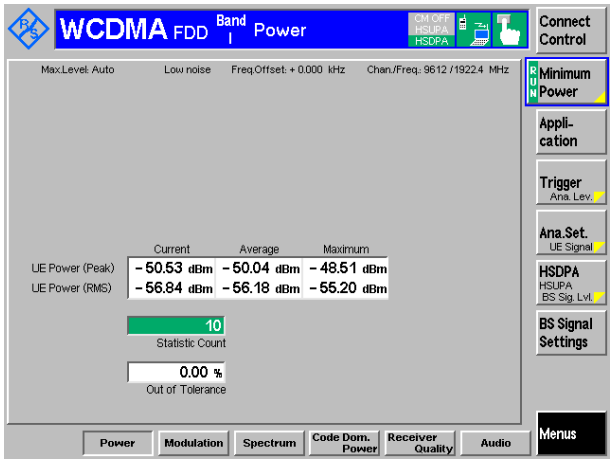


Middle channel

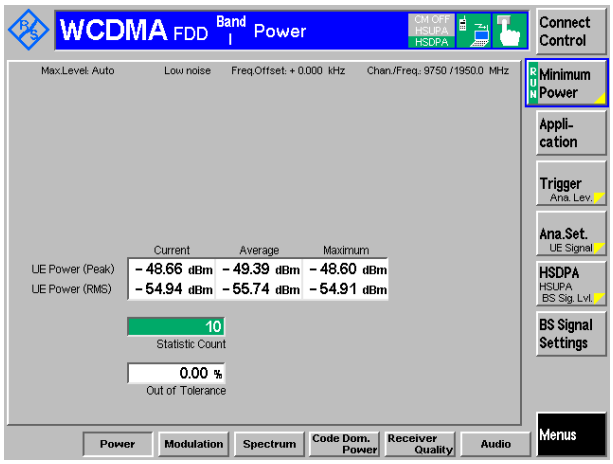


Highest channel

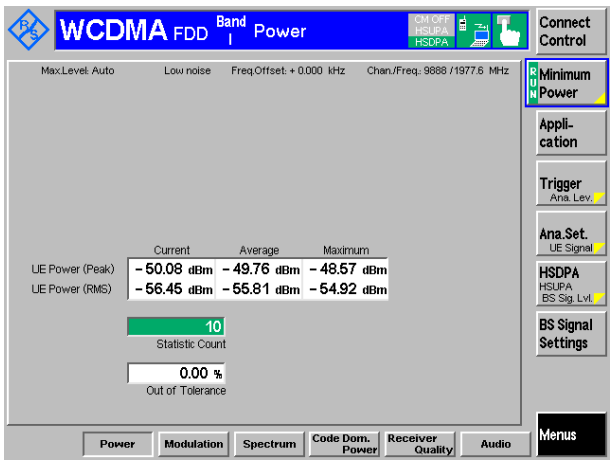
HSDPA mode:



Lowest channel

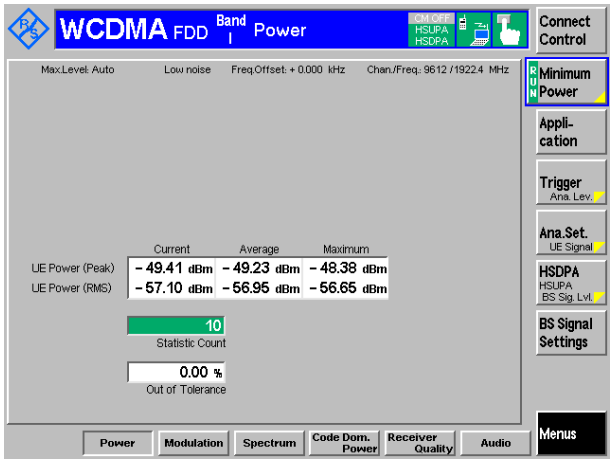


Middle channel

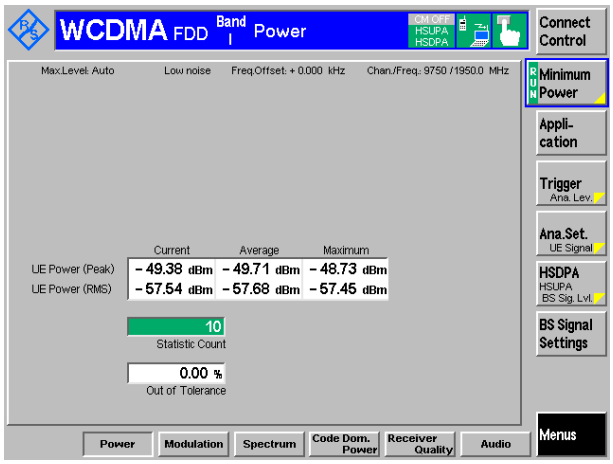


Highest channel

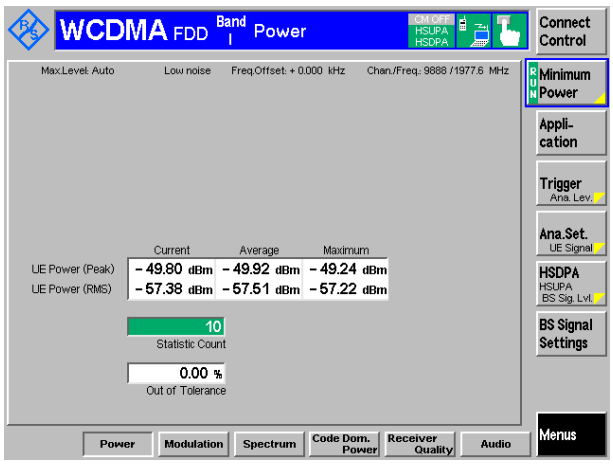
HSUPA mode:



Lowest channel



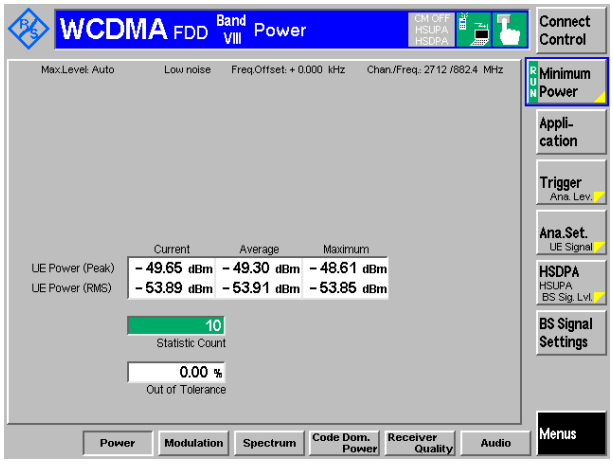
Middle channel



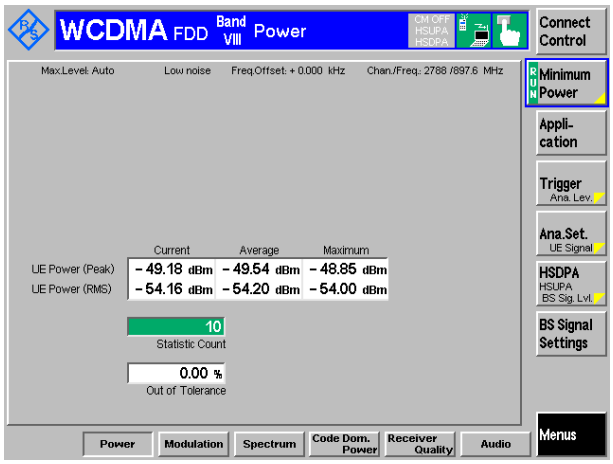
Highest channel

Band VIII

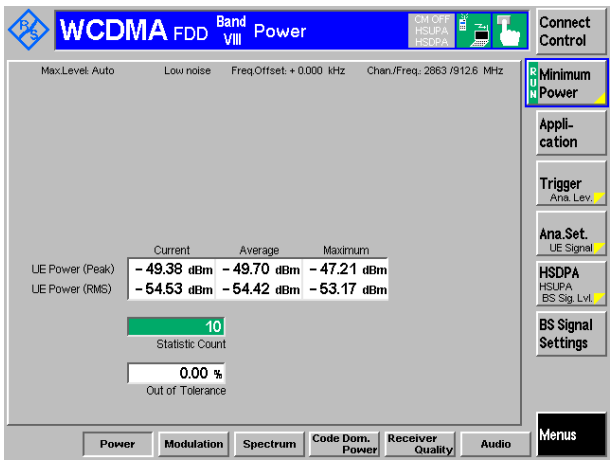
RMC mode:



Lowest channel

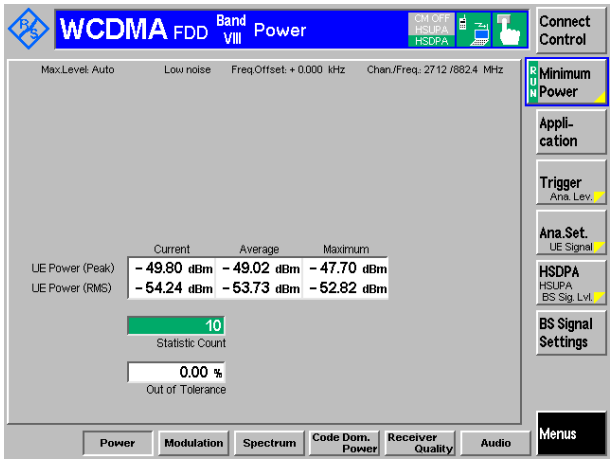


Middle channel

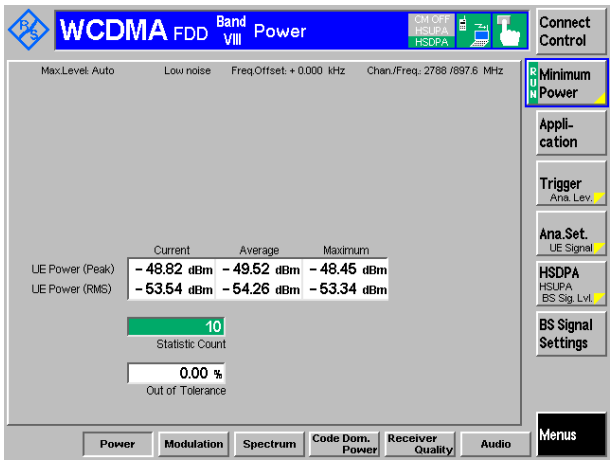


Highest channel

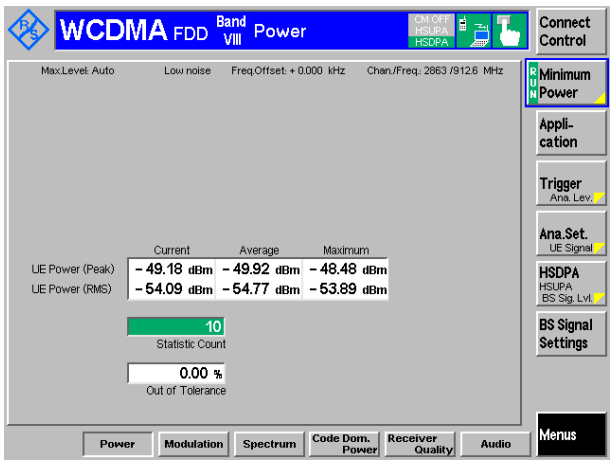
HSDPA mode:



Lowest channel

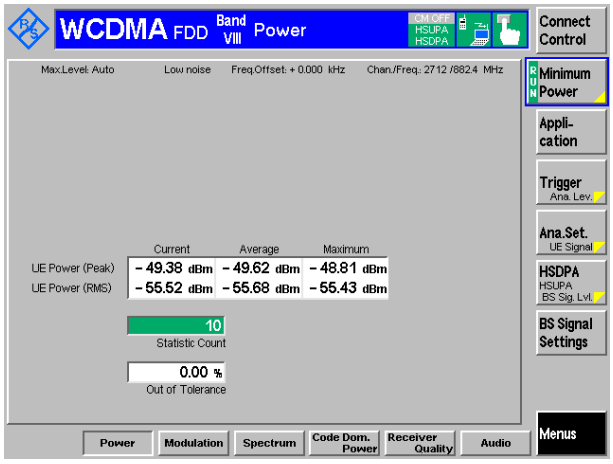


Middle channel

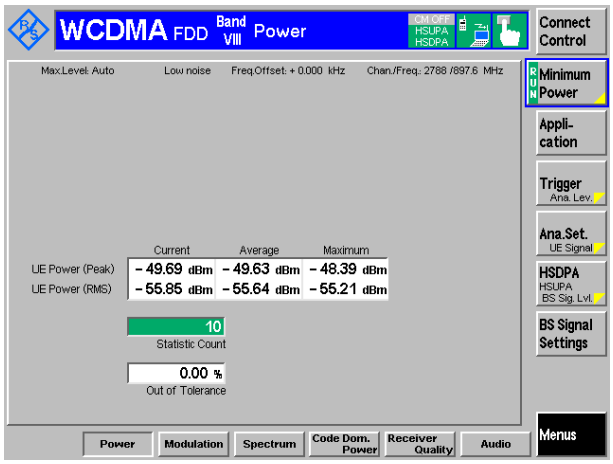


Highest channel

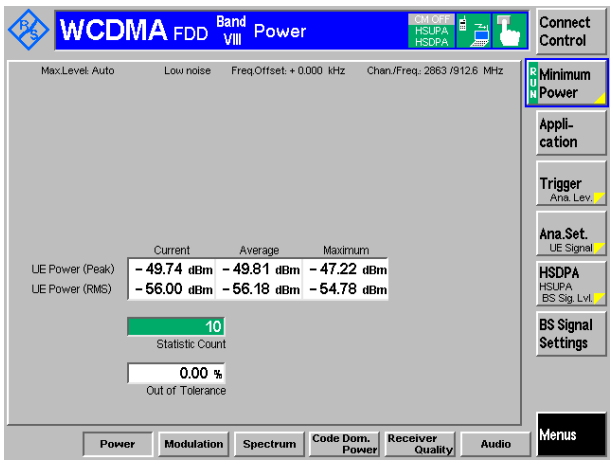
HSUPA mode:



Lowest channel



Middle channel



Highest channel

7.6 Transmitter adjacent channel leakage power ratio

Test Requirement:	ETSI EN 301 908-2 clause 4.2.12
Test Method:	ETSI EN 301 908-2 clause 5.3.11
Limit:	**Adjacent channel frequency relative to assigned channel frequency** / **ACLR limit** +5 MHz or -5 MHz / 32,2 dB +10 MHz or -10 MHz / 42,2 dB
Test procedure:	1. Connect the SS to the UE antenna connector. 2. A call is set up according to the Generic call setup procedure. 3. Enter the UE into loopback test mode and start the loopback test.
Test Instruments:	Refer to section 6.0

Measurement Data

Fill in RMC data below,

Band I

Test environment	Lowest channel (dBc)				Result
	+10MHz	+5MHz	-5MHz	-10MHz	
NVNT	-49.6	-38.8	-39.8	-49.5	Pass
HVHT	-45.4	-39.6	-41.3	-45.1	
LVHT	-45.6	-40.0	-40.9	-45.2	
HVLT	-45.7	-40.1	-41.1	-45.2	
LVLT	-45.7	-39.6	-41.0	-45.3	

Test environment	Middle channel (dBc)				Result
	+10MHz	+5MHz	-5MHz	-10MHz	
NVNT	-50.9	-39.9	-41.2	-50.8	Pass
HVHT	-46.8	-41.3	-42.8	-47.2	
LVHT	-46.8	-41.4	-42.9	-47.1	
HVLT	-46.7	-41.4	-43.0	-47.1	
LVLT	-46.9	-41.5	-43.0	-46.9	

Test environment	Highest channel (dBc)				Result
	+10MHz	+5MHz	-5MHz	-10MHz	
NVNT	-47.0	-38.1	-38.5	-47.1	Pass
HVHT	-46.8	-43.1	-44.6	-44.6	
LVHT	-46.9	-43.1	-44.5	-44.7	
HVLT	-46.6	-43.2	-44.6	-44.7	
LVLT	-46.6	-43.2	-44.6	-44.5	

Band VIII

Test environment	Lowest channel (dBc)				Result
	+10MHz	+5MHz	-5MHz	-10MHz	
NVNT	-49.9	-45.2	-44.6	-50.7	Pass
HVHT	-47.5	-43.2	-44.4	-47.7	
LVHT	-47.6	-42.6	-44.5	-47.5	
HVLT	-47.6	-42.5	-44.5	-47.8	
LVLT	-47.7	-42.5	-44.6	-47.8	

Test environment	Middle channel (dBc)				Result
	+10MHz	+5MHz	-5MHz	-10MHz	
NVNT	-49.2	-42.3	-42.5	-49.0	Pass
HVHT	-47.5	-41.8	-44.3	-47.5	
LVHT	-47.2	-41.8	-44.4	-47.5	
HVLT	-47.2	-41.9	-44.5	-47.6	
LVLT	-47.2	-41.6	-44.8	-47.2	

Test environment	Highest channel (dBc)				Result
	+10MHz	+5MHz	-5MHz	-10MHz	
NVNT	-49.9	-45.5	-41.9	-48.7	Pass
HVHT	-47.9	-42.3	-45.6	-48.2	
LVHT	-48.1	-45.2	-45.5	-48.1	
HVLT	-48.0	-45.6	-45.5	-48.2	
LVLT	-48.2	-45.3	-45.6	-47.9	

Fill in HSDPA data below,

Band I

Test environment	Lowest channel (dBc)				Result
	+10MHz	+5MHz	-5MHz	-10MHz	
NVNT	-46.2	-3915	-40.5	-45.8	Pass
HVHT	-46.2	-40.2	-41.6	-45.9	
LVHT	-46.2	-40.2	-41.8	-45.8	
HVLT	-46.1	-40.1	-41.9	-45.8	
LVLT	-46.3	-39.6	-41.9	-46.2	

Test environment	Middle channel (dBc)				Result
	+10MHz	+5MHz	-5MHz	-10MHz	
NVNT	-47.7	-40.8	-42.2	-47.6	Pass
HVHT	-45.6	-40.4	-41.8	-45.3	
LVHT	-45.8	-40.5	-41.9	-45.5	
HVLT	-45.6	-40.5	-41.9	-45.5	
LVLT	-45.3	-40.3	-42.0	-45.4	

Test environment	Highest channel (dBc)				Result
	+10MHz	+5MHz	-5MHz	-10MHz	
NVNT	-47.2	-39.8	-40.3	-47.1	Pass
HVHT	-45.7	-42.1	-44.2	-46.1	
LVHT	-45.8	-42.1	-44.2	-45.9	
HVLT	-45.8	-42.1	-44.3	-45.8	
LVLT	-45.9	-42.0	-44.2	-45.8	

Band VIII

Test environment	Lowest channel (dBc)				Result
	+10MHz	+5MHz	-5MHz	-10MHz	
NVNT	-49.3	-44.3	-43.1	-49.9	Pass
HVHT	-48.2	-42.6	-44.5	-48.3	
LVHT	-47.7	-42.6	-44.6	-48.2	
HVLT	-47.9	-42.6	-44.6	-47.9	
LVLT	-47.8	-42.5	-44.5	-47.8	

Test environment	Middle channel (dBc)				Result
	+10MHz	+5MHz	-5MHz	-10MHz	
NVNT	-48.7	-41.6	-41.4	-48.4	Pass
HVHT	-47.4	-42.1	-44.8	-47.6	
LVHT	-47.6	-42.2	-44.8	-47.5	
HVLT	-47.6	-42.2	-44.8	-47.5	
LVLT	-47.5	-42.1	-44.7	-47.4	

Test environment	Highest channel (dBc)				Result
	+10MHz	+5MHz	-5MHz	-10MHz	
NVNT	-49.0	-44.6	-40.7	-47.9	Pass
HVHT	-47.6	-45.1	-45.3	-47.6	
LVHT	-47.8	-45.2	-45.3	-47.5	
HVLT	-48.1	-45.2	-45.2	-47.5	
LVLT	-47.8	-44.9	-45.3	-47.6	

Fill in HSUPA data below,

Band I

Test environment	Lowest channel (dBc)				Result
	+10MHz	+5MHz	-5MHz	-10MHz	
NVNT	-46.5	-39.5	-40.8	-46.0	Pass
HVHT	-45.1	-40.2	-41.4	-44.6	
LVHT	-45.1	-40.1	-41.4	-44.6	
HVLT	-45.2	-40.1	-41.5	-44.4	
LVLT	-45.2	-38.9	-41.3	-44.5	

Test environment	Middle channel (dBc)				Result
	+10MHz	+5MHz	-5MHz	-10MHz	
NVNT	-46.4	-39.3	-40.5	-46.0	Pass
HVHT	-46.1	-40.2	-42.6	-46.2	
LVHT	-46.2	-40.2	-42.8	-46.1	
HVLT	-46.2	-40.3	-42.8	-45.8	
LVLT	-45.9	-40.5	-42.7	-45.9	

Test environment	Highest channel (dBc)				Result
	+10MHz	+5MHz	-5MHz	-10MHz	
NVNT	-47.3	-40.7	-42.1	-47.3	Pass
HVHT	-45.6	-42.0	-43.9	-46.2	
LVHT	-45.8	-42.0	-43.8	-46.3	
HVLT	-45.7	-42.1	-43.8	-46.2	
LVLT	-45.8	-41.8	-44.2	-45.8	

Band VIII

Test environment	Lowest channel (dBc)				Result
	+10MHz	+5MHz	-5MHz	-10MHz	
NVNT	-50.0	-44.7	-43.7	-50.7	Pass
HVHT	-47.5	-42.6	-44.4	-47.2	
LVHT	-47.2	-42.5	-44.2	-47.2	
HVLT	-47.3	-42.5	-44.5	-47.2	
LVLT	-47.2	-42.5	-44.3	-47.3	

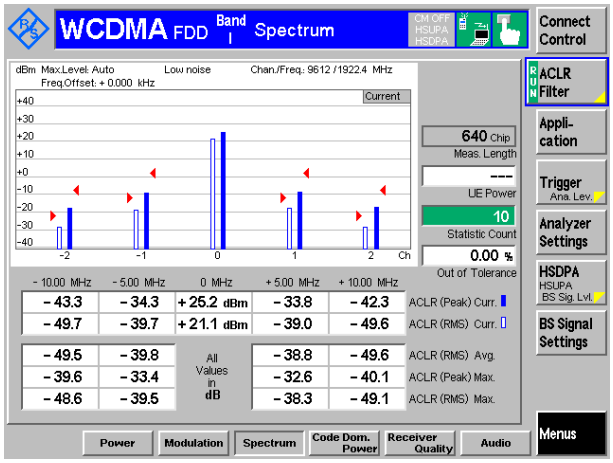
Test environment	Middle channel (dBc)				Result
	+10MHz	+5MHz	-5MHz	-10MHz	
NVNT	-49.2	-41.8	-41.5	-48.9	Pass
HVHT	-46.6	-41.5	-44.3	-46.4	
LVHT	-46.5	-41.5	-44.3	-46.3	
HVLT	-46.5	-41.2	-44.2	-46.5	
LVLT	-46.3	-41.1	-44.2	-46.5	

Test environment	Highest channel (dBc)				Result
	+10MHz	+5MHz	-5MHz	-10MHz	
NVNT	-49.6	-45.1	-40.6	-48.3	Pass
HVHT	-47.3	-44.7	-44.9	-47.4	
LVHT	-47.1	-44.8	-44.9	-47.1	
HVLT	-47.2	-44.7	-44.8	-47.1	
LVLT	-47.2	-44.8	-44.8	-46.9	

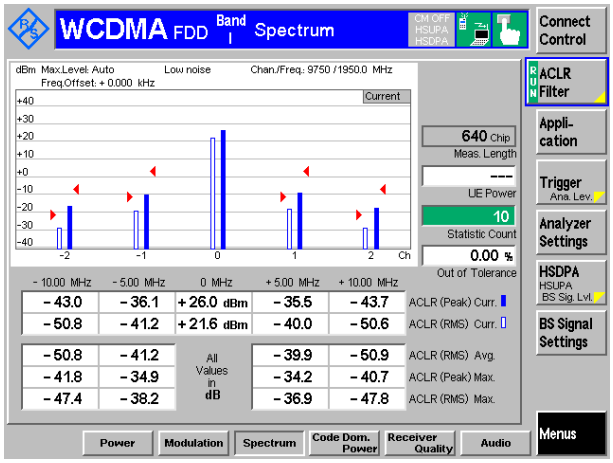
Test plot as follows:

Band I

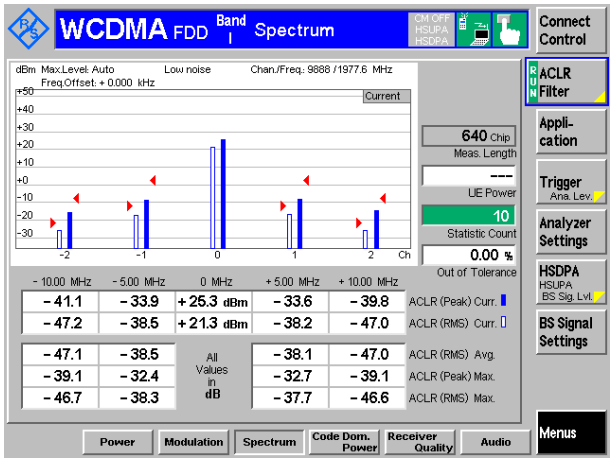
RMC mode:



Lowest channel

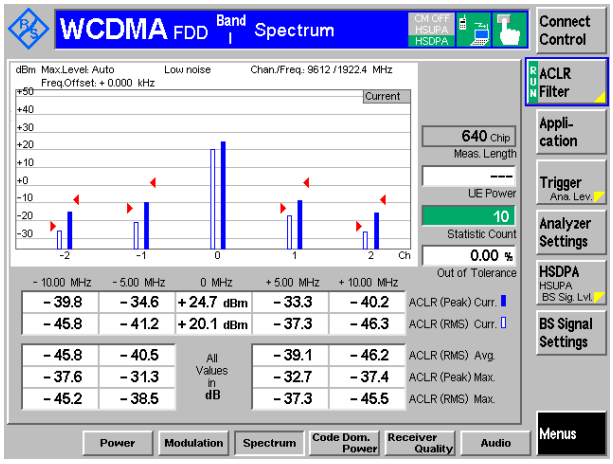


Middle channel

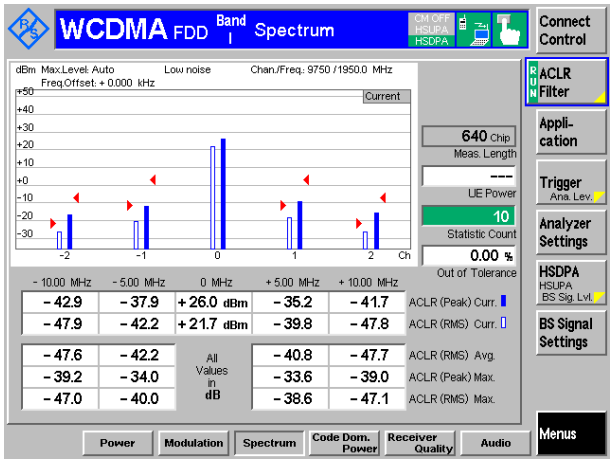


Highest channel

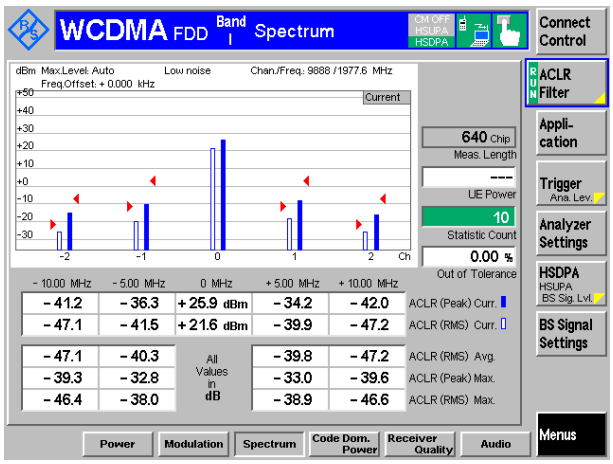
HSDPA mode:



Lowest channel

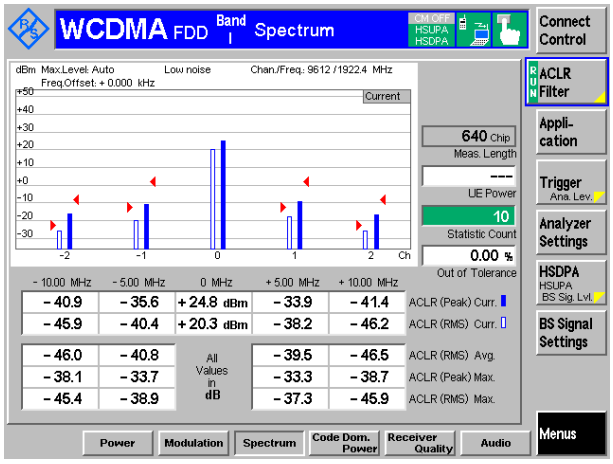


Middle channel

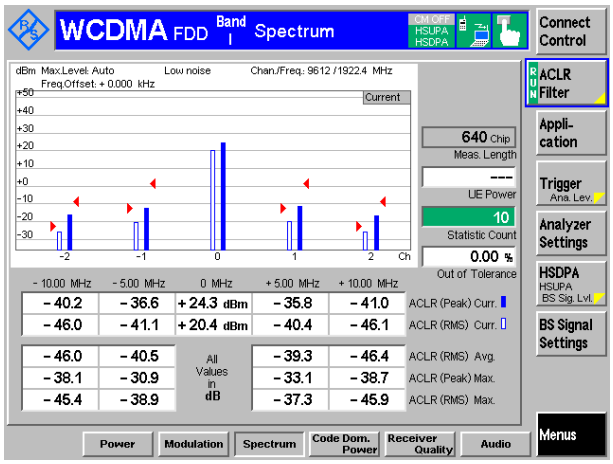


Highest channel

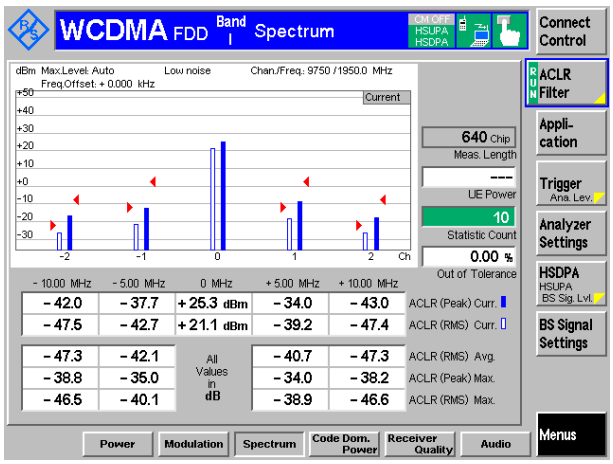
HSUPA mode:



Lowest channel



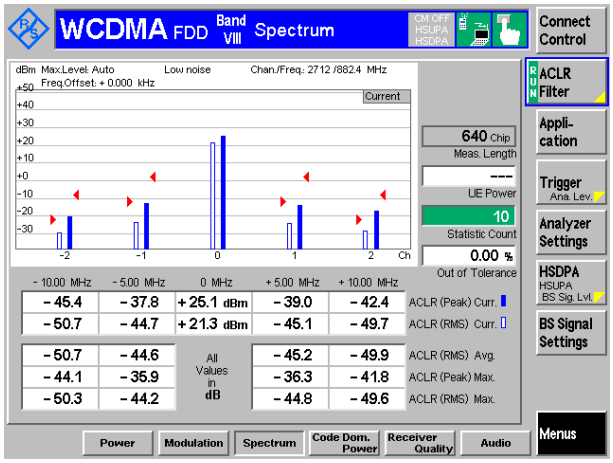
Middle channel



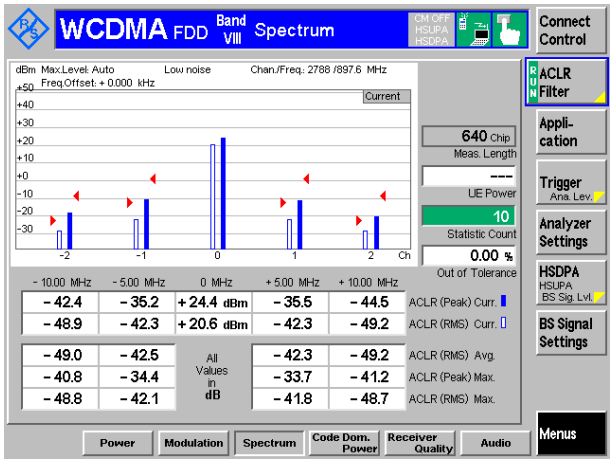
Highest channel

Band VIII

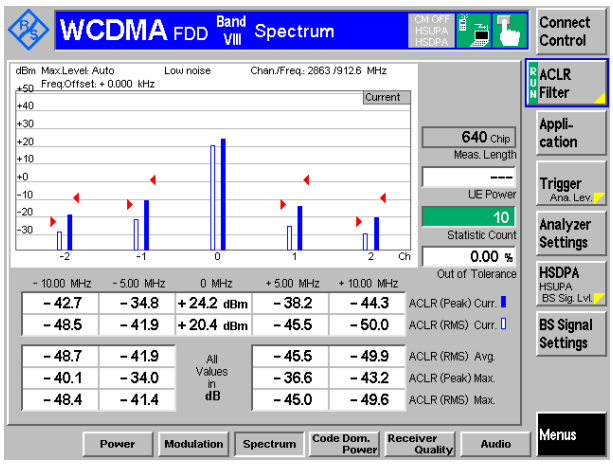
RMC mode:



Lowest channel

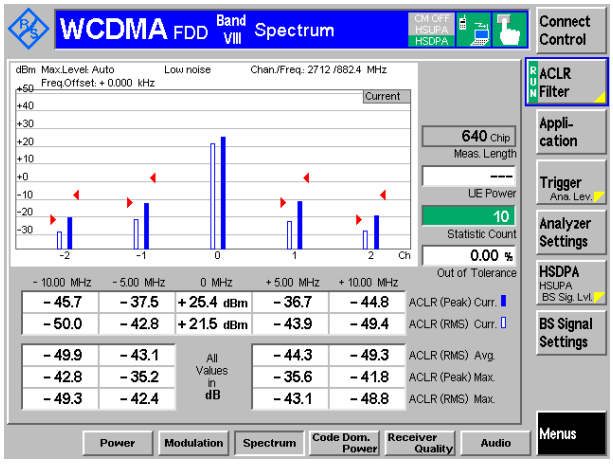


Middle channel

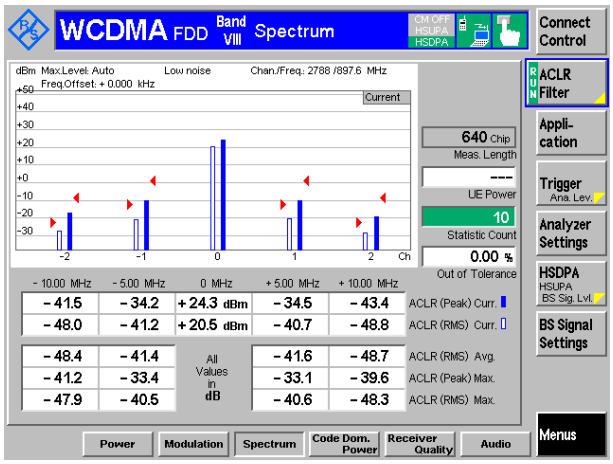


Highest channel

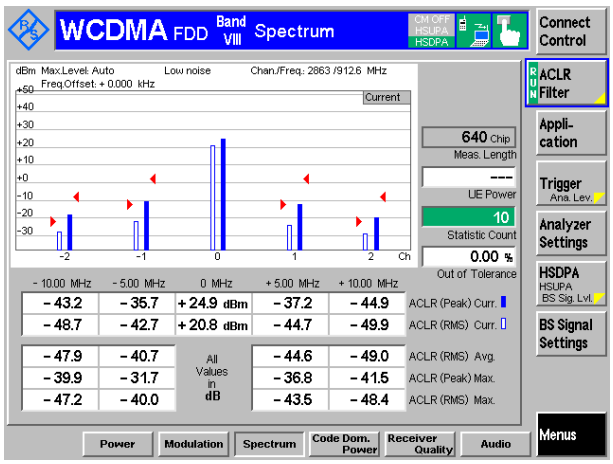
HSDPA mode:



Lowest channel

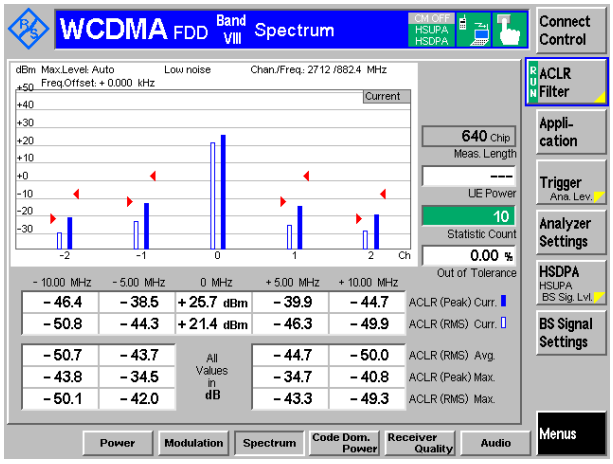


Middle channel

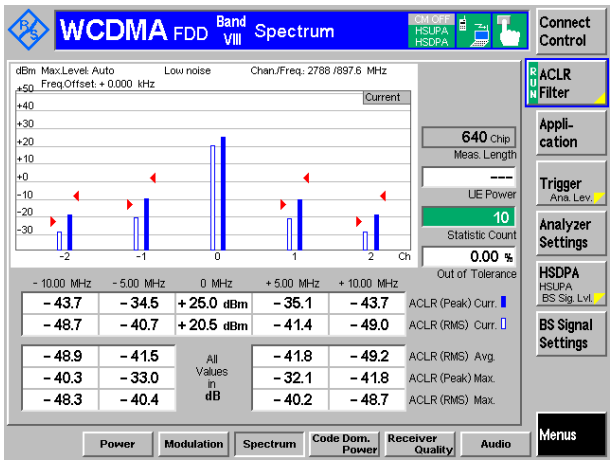


Highest channel

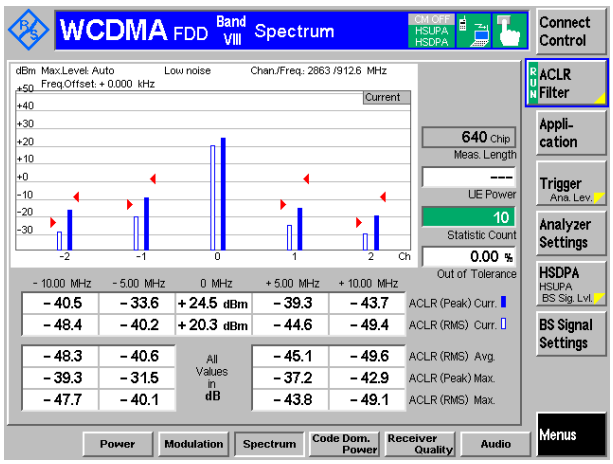
HSUPA mode:



Lowest channel



Middle channel



Highest channel

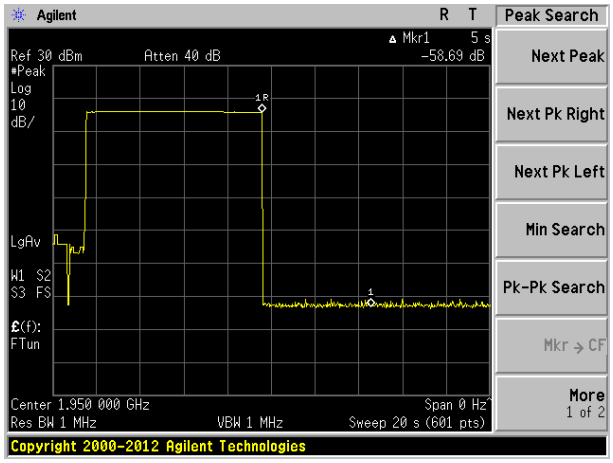
7.7 Out-of-synchronization handling of output power

<table>
<tr><td>Test Requirement:</td><td>ETSI EN 301 908-2 clause 4.2.11</td></tr>
<tr><td>Test Method:</td><td>ETSI EN 301 908-2 clause 5.3.10</td></tr>
<tr><td>Limit:</td><td>When the UE estimates the DPCCH quality over the last 160 ms period to be worse than a threshold Qout, the UE shall shut its transmitter off within 40 ms.</td></tr>
<tr><td>Test procedure:</td><td>1. Connect the SS to the UE antenna connector.
2. A call is set up according to the Generic call setup procedure, with the following exception according to table 5.3.10.1.1-1 for information elements in System Information Block type 1 found in TS 134 108 [3].
3. RF parameters are set up according to table 4.2.11.2-1 with DPCCH_Ec/Ior ratio level according to table 4.2.11.2-2, 'before A'.
4. Enter the UE into loopback test mode and start the loopback test.
5. The SS sends continuously up power control commands to the UE until the UE transmitter power reach maximum level.
6. The SS controls the DPCCH_Ec/Ior ratio level according to table 4.2.11.2-2, 'A to B'.
7. The SS controls the DPCCH_Ec/Ior ratio level according to table 4.2.11.2-2, 'after B'. The SS waits 200 ms and then verifies that the UE transmitter has been switched off.
8. The SS monitors the UE transmitted power for 5 s and verifies that the UE transmitter is not switched on during this time.
9. Transmitting or receiving bit/symbol rate for test channel is shown in table below.
<table>
<tr><td>Type of user information</td><td>User bit rate</td><td>DL DPCH symbol rate</td><td>UL DPCH Bit rate</td></tr>
<tr><td>12.2kbps reference measurement channel</td><td>12.2kbps</td><td>30kbps</td><td>60kbps</td></tr>
</table>
</td></tr>
<tr><td>Test Instruments:</td><td>Refer to section 6.0</td></tr>
</table>

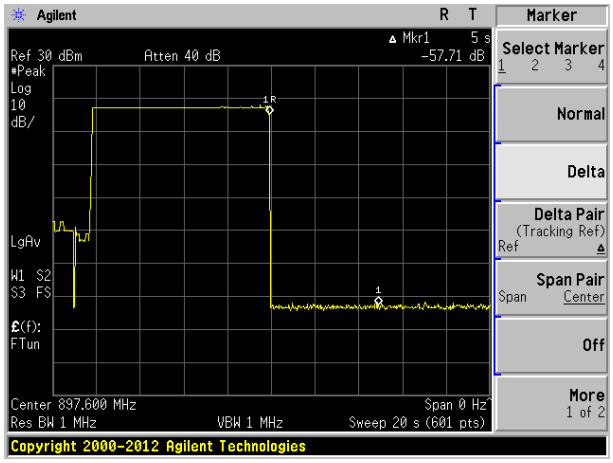
Measurement Result: Pass

Please refer to the plot below:

Band I



Band VIII



7.8 Receiver Adjacent Channel Selectivity (ACS)

Test Requirement:	ETSI EN 301 908-2 clause 4.2.6
Test Method:	ETSI EN 301 908-2 clause 5.3.5
Limit:	Less than 0.1% for the parameters specified in follow table:

Table 4.2.6.2-1: Test parameters for adjacent channel selectivity

Parameter	Unit	Case 1	Case 2
DPCH_Ec	dBm/3,84 MHz	<REFSENS> + 14 dB	<REFSENS> + 41 dB
$\hat{I}_{or}$	dBm/3,84 MHz	<REF$\hat{I}_{or}$> + 14 dB	<REF$\hat{I}_{or}$> + 41 dB
I_{oac} mean power (modulated)	dBm	-52	-25
F_{uw} (offset)	MHz	+5 or -5	+5 or -5
UE transmitted mean power	dBm	20 (for Power class 3) 18 (for Power class 4)	20 (for Power class 3) 18 (for Power class 4)
NOTE 1: <REFSENS> and <REF$\hat{I}_{or}$> as specified in ETSI TS 134 121-1 [1]. NOTE 2: The I_{oac} (modulated) signal consists of the common channels and the 16 dedicated data channels as specified in ETSI TS 125 101 [4].			

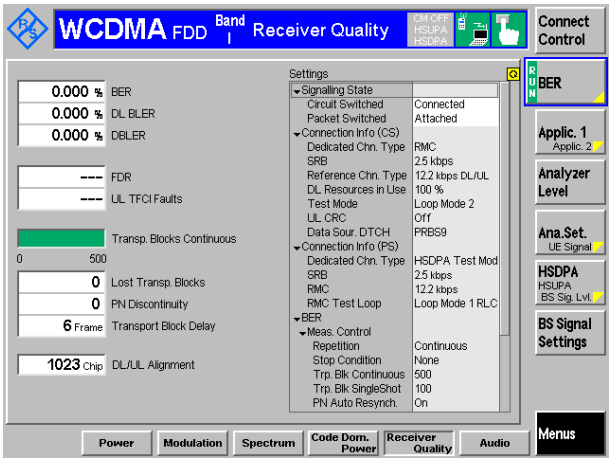
Test procedure:	1. Connect the SS to the UE antenna connector. 2. A call is set up according to the Generic call setup procedure. 3. Enter the UE into loopback test mode and start the loopback test. 4. Set the parameters of the interference signal generator as shown in table 4.2.6.2-1 case 1. 5. Set the power level of UE according to the table 4.2.6.2-1 case 1 with ± 1 dB tolerance. 6. Measure the BER of DCH received from the UE at the SS.
Test Instruments:	Refer to section 6.0

Measurement Data:

Band I

	ACS	BER	Limit	Result
Case 1	Offset -5MHz	0%	0.1%	Pass
	Offset 5MHz	0%	0.1%	Pass
Case 2	Offset -5MHz	0%	0.1%	Pass
	Offset 5MHz	0%	0.1%	Pass

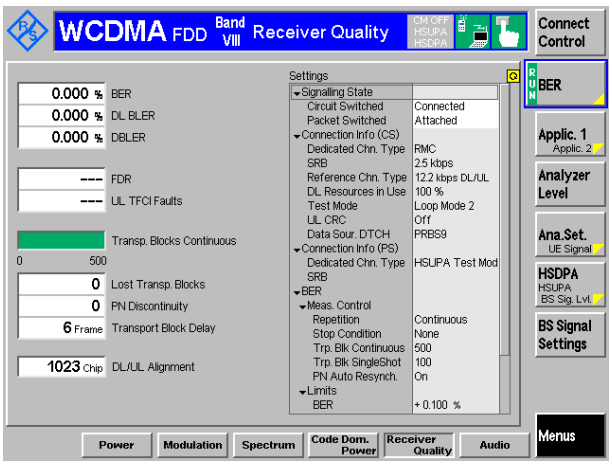
Test plot as follows:



Band VIII

	ACS	BER	Limit	Result
Case 1	Offset -5MHz	0%	0.1%	Pass
	Offset 5MHz	0%	0.1%	Pass
Case 2	Offset -5MHz	0%	0.1%	Pass
	Offset 5MHz	0%	0.1%	Pass

Test plot as follows:



7.9 Receiver blocking characteristics

Test Requirement:	ETSI EN 301 908-2 clause 4.2.7
Test Method:	ETSI EN 301 908-2 clause 5.3.6
Limit:	Less than 0.1% for the parameters specified in follow table:

Table 4.2.7.2-1: Test parameters for in-band blocking characteristics

Parameter	Unit	Level	
DPCH_Ec	dBm/3,84 MHz	<REFSENS> + 3 dB	
$\hat{I}_{or}$	dBm/3,84 MHz	<REF$\hat{I}_{or}$> + 3 dB	
$I_{blocking}$ mean power (modulated)	dBm	-56 (for F_{uw} offset ±10 MHz)	-44 (for F_{uw} offset ±15 MHz)
F_{uw} (Band I operation)	MHz	2 102,4 ≤ f ≤ 2 177,6	2 095 ≤ f ≤ 2 185
F_{uw} (Band VIII operation)	MHz	917,4 ≤ f ≤ 967,6	910 ≤ f ≤ 975

Table 4.2.7.2-2: Test parameters for out-of-band blocking characteristics

Parameter	Unit	Frequency range 1	Frequency range 2	Frequency range 3
DPCH_Ec	dBm/3,84 MHz	<REFSENS> + 3 dB	<REFSENS> + 3 dB	<REFSENS> + 3 dB
$\hat{I}_{or}$	dBm/3,84 MHz	<REF$\hat{I}_{or}$> + 3 dB	<REF$\hat{I}_{or}$> + 3 dB	<REF$\hat{I}_{or}$> + 3 dB
$I_{blocking}$ (CW)	dBm	-44	-30	-15
F_{uw} (Band I operation)	MHz	2 050 < f < 2 095 2 185 < f < 2 230	2 025 < f ≤ 2 050 2 230 ≤ f < 2 255	1 < f ≤ 2 025 2 255 ≤ f < 12 750
F_{uw} (Band VIII operation)	MHz	865 < f < 910 975 < f < 1 020	840 < f < 865 1 020 ≤ f < 1 045	1 < f ≤ 840 1 045 ≤ f < 12 750

Test procedure:	1. Connect the SS to the UE antenna connector. 2. A call is set up according to the Generic call setup procedure. 3. Enter the UE into loopback test mode and start the loopback test. 4. Set the parameters of the CW generator or the interference signal generator as shown in tables 4.2.7.2-1, 4.2.7.2-2 and 4.2.7.2-3. For table 4.2.7.2-2 the frequency step size is 1 MHz. 5. Set the power level of the UE according to tables 4.2.7.2-1, 4.2.7.2-2 and 4.2.7.2-3 with a ±1 dB tolerance. 6. Measure the BER of DCH received from the UE at the SS. 7. For table 4.2.7.2-2, record the frequencies for which the BER exceeds the test requirements.
Test mode:	Refer to section 6.2
Test Instruments:	Refer to section 6.0
Measurement Record:	Uncertainty: ±1 x 10^{-7}

Measurement Data:

In-band blocking

Middle channel

Band I

CW power Interferer(dBm)	Offset(MHz)	BER	Limit
-44	-15MHz	0	0.1%
-44	+15MHz	0	0.1%
-56	-10MHz	0	0.1%
-56	+10MHz	0	0.1%

Band VIII

CW power Interferer(dBm)	Offset(MHz)	BER	Limit
-44	-15MHz	0	0.1%
-44	+15MHz	0	0.1%
-56	-10MHz	0	0.1%
-56	+10MHz	0	0.1%

Out-of-band blocking

Band I

CW power Interferer(dBm)	CW interferer power(dBm)	BER	Limit
-44	Range 1	0	0.1%
-30	Range 2	0	0.1%
-15	Range 3	0	0.1%

Band VIII

CW power Interferer(dBm)	CW interferer power(dBm)	BER	Limit
-44	Range 1	0	0.1%
-30	Range 2	0	0.1%
-15	Range 3	0	0.1%

Out-of-band blocking CW interferer frequency is 1MHz step according to table 4.2.7.2-2

7.10 Receiver spurious response

<table>
<tr><td>Test Requirement:</td><td>ETSI EN 301 908-2 clause 4.2.8</td></tr>
<tr><td>Test Method:</td><td>ETSI EN 301 908-2 clause 5.3.9</td></tr>
<tr><td>Limit:</td><td>Less than 0.1% for the parameters specified in follow table:
Table 4.2.8.2-1: Test parameters for spurious response
<table>
<tr><th>Parameter</th><th>Level</th><th>Unit</th></tr>
<tr><td>DPCH_Ec</td><td><REFSENS> + 3 dB</td><td>dBm/3,84 MHz</td></tr>
<tr><td>$\hat{I}_{or}$</td><td><REF$\hat{I}_{or}$> + 3 dB</td><td>dBm/3,84 MHz</td></tr>
<tr><td>$I_{blocking}$(CW)</td><td>-44</td><td>dBm</td></tr>
<tr><td>F_{uw}</td><td>Spurious response frequencies</td><td>MHz</td></tr>
<tr><td>UE transmitted mean power</td><td>20 (for Power class 3)
18 (for Power class 4)
(note 2)</td><td>dBm</td></tr>
<tr><td colspan="3">NOTE 1: <REFSENS> and <REF$\hat{I}_{or}$> as specified in ETSI TS 134 121-1 [1].
NOTE 2: The UE transmitted mean power shall be reduced by 0,5 dB, for a UE operating in band XXII.</td></tr>
</table></td></tr>
<tr><td>Test procedure:</td><td>1. Connect the SS to the UE antenna connector.
2. A call is set up according to the Generic call setup procedure.
3. Enter the UE into loopback test mode and start the loopback test.
4. Set the parameter of the CW generator as shown in table 4.2.8.2-1. The spurious response frequencies are determined in step 4) of clause 5.3.6.1.2.
5. Set the power level of the UE according to table 4.2.8.2-1 with a ±1 dB tolerance.
6. Measure the BER of DCH received from the UE at the SS.</td></tr>
<tr><td>Test Instruments:</td><td>Refer to section 6.0</td></tr>
<tr><td>Result:</td><td>Not applicable, for there is no frequency for which the BER exceeds the test requirement in out of band blocking test</td></tr>
</table>

7.11 Receiver Intermodulation characteristics

<table>
<tr><td>Test Requirement:</td><td>ETSI EN 301 908-2 clause 4.2.9</td></tr>
<tr><td>Test Method:</td><td>ETSI EN 301 908-2 clause 5.3.8</td></tr>
<tr><td>Limit:</td><td>Less than 0.1% for the parameters specified in follow table:
Table 4.2.9.2-1: Receive intermodulation characteristics
<table>
<tr><th>Parameter</th><th colspan="2">Level</th><th>Unit</th></tr>
<tr><td>DPCH_Ec</td><td colspan="2"><REFSENS> + 3 dB</td><td>dBm/3,84 MHz</td></tr>
<tr><td>$\hat{I}_{or}$</td><td colspan="2"><REF$\hat{I}_{or}$> + 3 dB</td><td>dBm/3,84 MHz</td></tr>
<tr><td>I_{ouw1} (CW)</td><td colspan="2">-46</td><td>dBm</td></tr>
<tr><td>I_{ouw2} mean power (modulated)</td><td colspan="2">-46</td><td>dBm</td></tr>
<tr><td>F_{uw1} (offset)</td><td>10</td><td>-10</td><td>MHz</td></tr>
<tr><td>F_{uw2} (offset)</td><td>20</td><td>-20</td><td>MHz</td></tr>
<tr><td>UE transmitted mean power</td><td colspan="2">20 (for Power class 3)
18 (for Power class 4)
(note 3)</td><td>dBm</td></tr>
<tr><td colspan="4">NOTE 1: I_{ouw2} (modulated) consists of the common channels and the 16 dedicated data channels as specified in ETSI TS 125 101 [4].
NOTE 2: <REFSENS> and <REF$\hat{I}_{or}$> as specified in ETSI TS 134 121-1 [1].
NOTE 3: The UE transmitted mean power shall be reduced by 0,5 dB for a UE operating in band XXII.</td></tr>
</table></td></tr>
<tr><td>Test procedure:</td><td>1. Connect the SS to the UE antenna connector.
2. A call is set up according to the Generic call setup procedure.
3. Enter the UE into loopback test mode and start the loopback test.
4. Set the parameters of the CW generator and interference generator as shown in tables 4.2.9.2-1 and 4.2.9.2-2.
5. Set the power level of the UE according to tables 4.2.9.2-1 and 4.2.9.2-2 with a ±1 dB tolerance.
6. Measure the BER of DCH received from the UE at the SS.</td></tr>
<tr><td>Test Instruments:</td><td>Refer to section 6.0</td></tr>
</table>

Measurement Data:

Band I

Mid channel

Interference Signals	Offset	Interferer power(dBm)	BER	Limit
F_{UW1}	-10	-46	0	0.1%
	+10	-46		
F_{UW2}	-20	-46	0	
	+20	-46		

Band VIII

Mid channel

Interference Signals	Offset	Interferer power(dBm)	BER	Limit
F_{UW1}	-10	-46	0	0.1%
	+10	-46		
F_{UW2}	-20	-46	0	
	+20	-46		

7.12 Receiver Reference Sensitivity level

Test Requirement:	ETSI EN 301 908-2 clause 4.2.13
Test Method:	ETSI EN 301 908-2 clause 5.3.12.1
Limit:	The measured BER shall not exceed 0,001. **Table 4.2.13.2-1: Test parameters for Reference Sensitivity Level**

Operating Band	Unit	DPCH_Ec <REFSENS>	<REFIor>
I	dBm/3,84 MHz	-116,3	-106
III	dBm/3,84 MHz	-113,3	-103
VII	dBm/3,84 MHz	-114,3	-104
VIII	dBm/3,84 MHz	-113,3	-103
XX	dBm/3,84 MHz	-113,3	-103
XXII	dBm/3,84 MHz	-113,3	-103
NOTE 1: For Power class 3 and 3bis this shall be at the maximum output power. NOTE 2: For Power class 4 this shall be at the maximum output power.			

Test procedure:	1. Connect the SS to the UE antenna connector. 2. Channel conditions are initially set up with received CPICH_RSCP >-85 dBm. The relative power level of downlink physical channels to Ior are set up according to clause E.2.1. The parameter settings of the cell are set up according to TS 34.108 [3], clause 6.1.5 for "Default settings for a serving cell in a single cell environment". 3. Switch on the phone. 4. A call is set up according to the Generic call setup procedure in TS34.108 [3] sub clause 7.3.2. 5. The RF parameters are set up according to table 6.2.2. 6. Set the power level of the UE according to tables 4.2.9.2-1 and 4.2.9.2-2 with a ±1 dB tolerance. 7. Measure the BER of DCH received from the UE at the SS.
Test Instruments:	Refer to section 6.0

Measurement Data:

Band 1

Test Set	$REFI_{or}$(dBm)	Error	Limit	Result
Lowest	-106	0	0.1%	Pass
Middle	-106	0	0.1%	Pass
Highest	-106	0	0.1%	Pass

Band VIII

Test Set	$REFI_{or}$(dBm)	Error	Limit	Result
Lowest	-103	0	0.1%	Pass
Middle	-103	0	0.1%	Pass
Highest	-103	0	0.1%	Pass

7.13 Receiver spurious emissions

Test Requirement:	ETSI EN 301 908-1 clause 4.2.10
Test Method:	ETSI EN 301 908-2 clause 5.3.9
Limit:	**Table 4.2.10.2-1: General receiver spurious emission requirements**

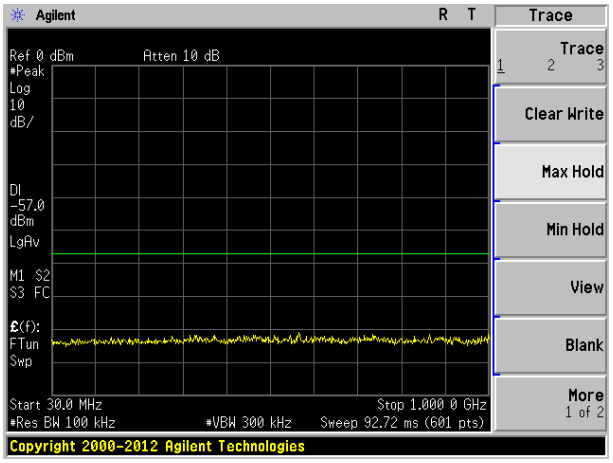
Frequency band	Measurement bandwidth	Maximum level
30 MHz ≤ f < 1 GHz	100 kHz	-57 dBm
1 GHz ≤ f ≤ 12,75 GHz	1 MHz	-47 dBm

Band	Frequency Range	Measurement Bandwidth	Maximum level
I	791 MHz ≤ f ≤ 821 MHz	3,84 MHz	-60 dBm
	921 MHz ≤ f < 925 MHz	100 kHz	-60 dBm (see note)
	925 MHz ≤ f ≤ 935 MHz	100 kHz	-67 dBm (see note)
	935 MHz < f ≤ 960 MHz	100 kHz	-79 dBm (see note)
	1 805 MHz ≤ f ≤ 1 880 MHz	100 kHz	-71 dBm (see note)
	1 920 MHz ≤ f ≤ 1 980 MHz	3,84 MHz	-60 dBm
	2 110 MHz ≤ f ≤ 2 170 MHz	3,84 MHz	-60 dBm
	2 585 MHz ≤ f ≤ 2 690 MHz	3,84 MHz	-60 dBm
VIII	791 MHz ≤ f ≤ 821 MHz	3,84 MHz	-60 dBm
	925 MHz ≤ f ≤ 935 MHz	100 kHz 3,84 MHz	-67 dBm (note 1) -60 dBm
	935 MHz < f ≤ 960 MHz	100 kHz 3,84 MHz	-79 dBm (note 1) -60 dBm
	1 805 MHz < f ≤ 1 830 MHz	100 kHz 3,84 MHz	-71 dBm (notes 1 and 2) -60 dBm (note 2)
	1 830 MHz < f ≤ 1 880 MHz	100 kHz 3,84 MHz	-71 dBm (note 1) -60 dBm
	2 110 MHz ≤ f ≤ 2 170 MHz	3,84 MHz	-60 dBm
	2 585 MHz ≤ f ≤ 2 640 MHz	3,84 MHz	-60 dBm
	2 640 MHz ≤ f ≤ 2 690 MHz	3,84 MHz	-60 dBm (note 2)

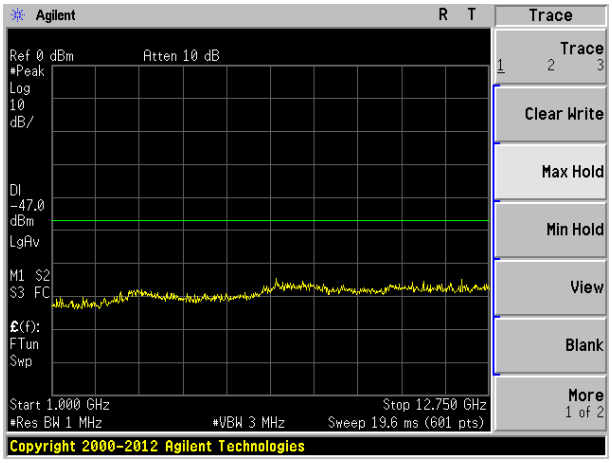
Test Frequency range:	30MHz to 12.75GHz
Test procedure:	1. Connect a spectrum analyser (or other suitable test equipment) to the UE antenna connector. 2. UE shall be in CELL_FACH state. 3. The UE shall be setup such that UE will not transmit during the measurement. (For guidance see TS 134 121-1 [2]). 4. Sweep the spectrum analyser (or other suitable test equipment) over a frequency range from 30 MHz to 12,75 GHz and measure the average power of the spurious emissions.
Test Instruments:	Refer to section 6.0

Measurement Data:

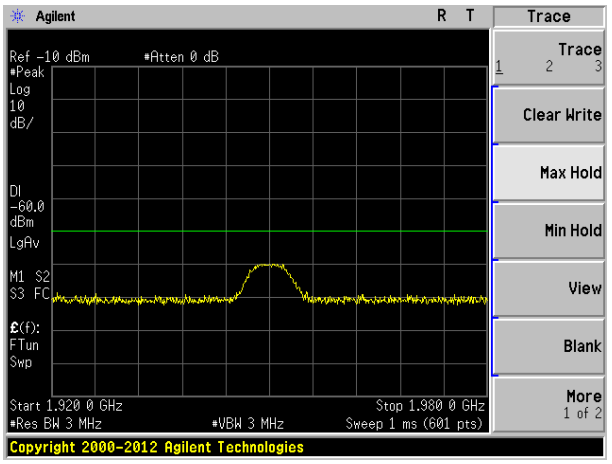
Band I



30MHz~1GHz

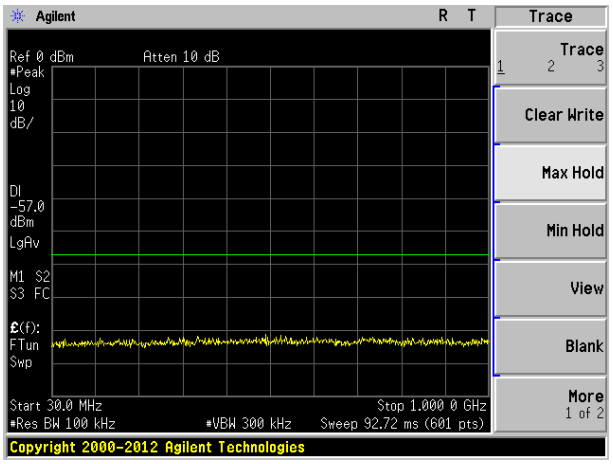


1GHz~12.75GHz

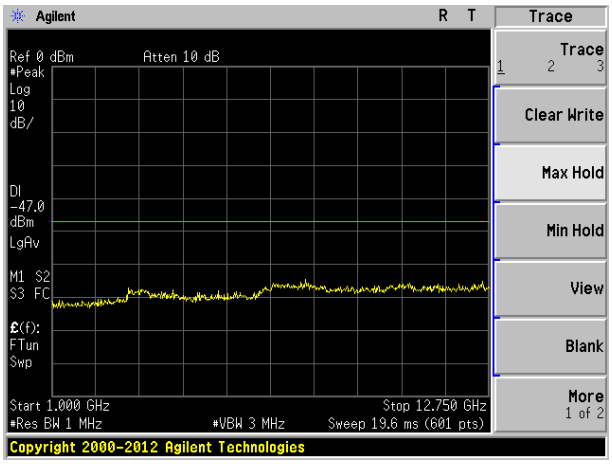


1920MHz -1980 MHz

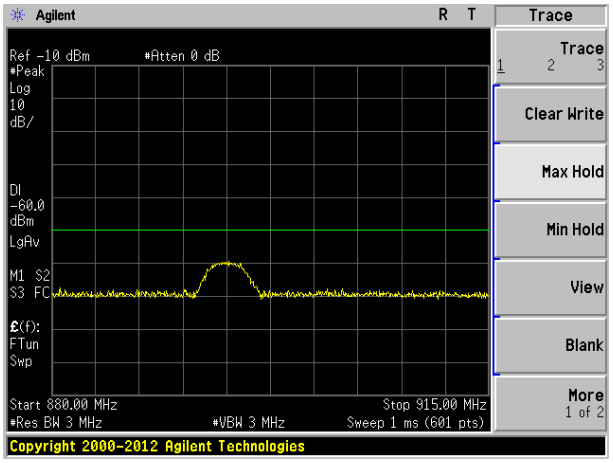
Band VIII



30MHz~1GHz

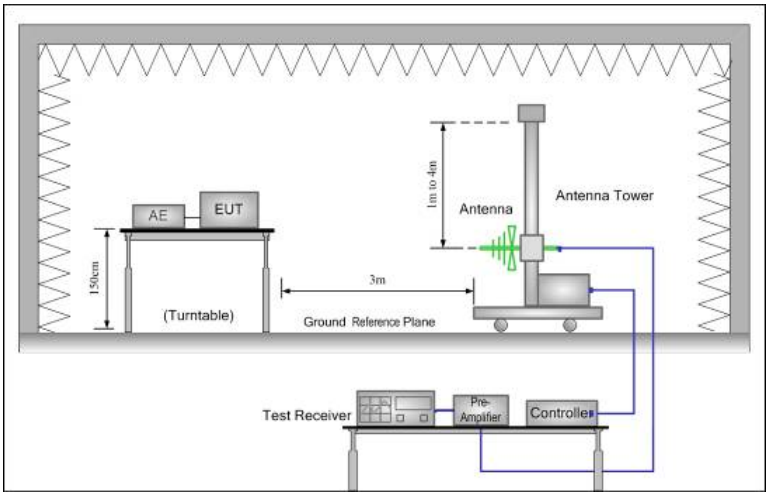
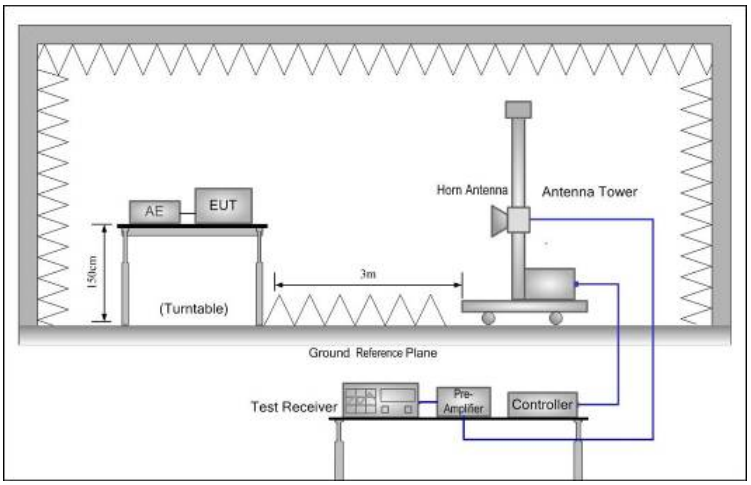


1GHz~12.75GHz



880MHz~915MHz

7.14 Radiated emissions

Test Requirement:	ETSI EN 301 908-1 clause 4.2.2
Test Method:	ETSI EN 301 908-1 clause 5.3.1
Receiver setup:	Below 1GHz :RBW=100KHz, VBW=30KHz, Detector= peak Above 1GHz :RBW=1MHz, VBW=3MHz,Detector=Peak
Limit:	Frequency: Limit 30MHz to 1000 MHz: -36dBm 1GHz to 12.75GHz: -30dBm
Test mode:	Kept UE in Transmitting mode
Test Instruments:	See section 6.0
Test Frequency range:	30MHz to 12.75GHz
Test setup:	Below 1GHz  Above 1GHz 
Test procedure:	Substitution method was performed to determine the actual ERP emission levels of the EUT. The following test procedure as below:

	1>.Below 1GHz test procedure: 1. On the test site as test setup graph above,the EUT shall be placed at the 1.5m support on the turntable and in the position closest to normal use as declared by the provider. 2. The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter.The output of the test antenna shall be connected to the measuring receiver. 3. The transmitter shall be switched on, if possible, without modulation and the measuring receiver shall be tuned to the frequency of the transmitter under test. 4. The test antenna shall be raised and lowered from 1m to 4m until a maximum signal level is detected by the measuring receiver. Then the turntable should be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver. 5. Repeat step 4 for test frequency with the test antenna polarized horizontally. 6. Remove the transmitter and replace it with a substitution antenna (the antenna should be half-wavelength for each frequency involved). The center of the substitution antenna should be approximately at the same location as the center of the transmitter. At the lower frequencies, where the substitution antenna is very long, this will be impossible to achieve when the antenna is polarized vertically. In such case the lower end of the antenna should be 0.3 m above the ground. 7. Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a nonradiating cable. With the antennas at both ends vertically polarized, and with the signal generator tuned to a particular test frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained. This should be done carefully repeating the adjustment of the test antenna and generator output. 8. Repeat step 7 with both antennas horizontally polarized for each test frequency. 9. Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained in steps 7 and 8 by the power loss in the cable between the generator and the antenna, and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna by the following formula: ERP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBd) where: Pg is the generator output power into the substitution antenna. 2>.Above 1GHz test procedure: Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber, and the test antenna do not need to raise from 1 to 4m, just test in 1.5m height.
Measurement Record:	Uncertainty: ± 6dB

Measurement Data:

Traffic mode:

Band I

Frequency (MHz)	Spurious Emission		Limit (dBm)	Test Result
	polarization	Level(dBm)		
184.74	Vertical	-75.94	-36 dBm below 1GHz, -30 dBm above 1GHz.	Pass
422.41	V	-70.33		
4100.00	V	-54.05		
5865.00	V	-53.60		
7868.00	V	-53.65		
175.60	Horizontal	-75.37		
451.48	H	-69.50		
4100.00	H	-53.71		
5865.00	H	-53.95		
7868.00	H	-54.45		

Band VIII

Frequency (MHz)	Spurious Emission		Limit (dBm)	Test Result
	polarization	Level(dBm)		
169.08	Vertical	-75.76	-36 dBm below 1GHz, -30 dBm above 1GHz.	Pass
345.66	V	-72.97		
4414.00	V	-58.95		
6179.00	V	-53.34		
8182.00	V	-52.57		
74.88	Horizontal	-75.31		
559.76	H	-76.36		
4414.00	H	-56.37		
6179.00	H	-54.09		
8182.00	H	-52.45		

Idle mode:

Band I

Frequency (MHz)	Spurious Emission		Limit (dBm)	Test Result
	polarization	Level(dBm)		
304.19	Vertical	-76.41	-57 dBm below 1GHz, -47 dBm above 1GHz.	Pass
685.02	V	-71.81		
4100.00	V	-55.97		
5865.00	V	-58.71		
7868.00	V	-55.55		
366.18	Horizontal	-74.71		
689.26	H	-72.81		
4100.00	H	-57.22		
5865.00	H	-55.84		
7868.00	H	-55.98		

Band VIII

Frequency (MHz)	Spurious Emission		Limit (dBm)	Test Result
	polarization	Level(dBm)		
326.92	Vertical	-78.02	-57 dBm below 1GHz, -47 dBm above 1GHz.	Pass
613.44	V	-75.38		
4414.00	V	-56.48		
6179.00	V	-59.16		
8182.00	V	-55.90		
165.05	Horizontal	-75.29		
685.21	H	-73.33		
4414.00	H	-57.67		
6179.00	H	-56.23		
8182.00	H	-56.29		

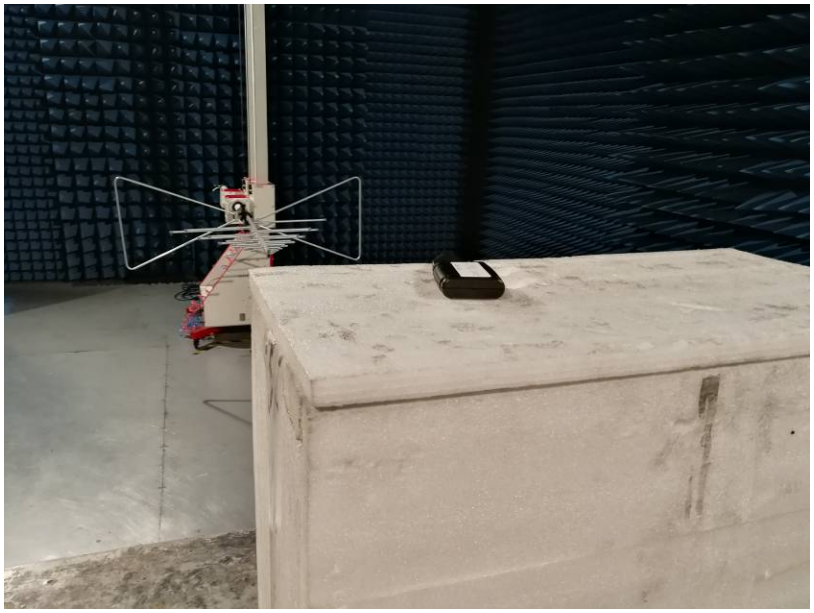
7.15 Control and monitoring functions

Test Requirement:	ETSI EN 301 908-1 clause 4.2.4
Test Method:	ETSI EN 301 908-2 clause 5.3.3
Limit:	The maximum measured power during the duration of the test shall not exceed -30 dBm.
Test Frequency range:	1920MHz~1980MHz
Test procedure:	1. At the start of the test, the UE shall be switched off. The UE antenna connector shall be connected to a power measuring equipment, with the following characteristics: - the RF bandwidth shall exceed the total operating transmit frequency range of the UE for operation with an applicable part; - the response time of the power measuring equipment shall be such that the measured power has reached within 1 dB of its steady state value within 100 µs of a CW signal being applied; - it shall record the maximum power measured. 2. The UE shall be switched on for a period of approximately fifteen minutes, and then switched off. 3. The EUT shall remain switched off for a period of at least thirty seconds, and shall then be switched on for a period of approximately one minute. 4. The maximum power emitted from the UE throughout the duration of the test shall be recorded.
Test Instruments:	Refer to section 6.0

Measurement Data:

WCDMA Band 1				
Test Condition	Observed Frequency Range (MHz)	Maximum Measured Power (dBm)	Limit (dBm)	Result
Normal	F_{UL}_low to F_{UL}_high	-67.94	-30	Pass
WCDMA Band 8				
Test Condition	Observed Frequency Range (MHz)	Maximum Measured Power (dBm)	Limit (dBm)	Result
Normal	F_{UL}_low to F_{UL}_high	-66.73	-30	Pass

8 Test Setup Photo



9 EUT Constructional Details

Reference to the test report No. GTS201807000022E01

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