TEST REPORT

No. 2012TAR241

for

Sony Mobile Communications AB

GSM/UMTS/LTE mobile phone

Type: PM-0520-BV

FCC ID: PY7PM-0520

IC No.: 4170B-PM0520

with

Hardware Version: A

Software Version: 10.2.G.0.4

Issued Date: Mar. 20th, 2013

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of TMC Beijing.

Test Laboratory:

DAkks accreditation (DIN EN ISO/IEC 17025): No. D-PL-12123-01-01

FCC 2.948 Listed: No.733176

IC O.A.T.S listed: No.6629A-1

TMC Beijing, Telecommunication Metrology Center of Ministry of Industry and Information Technology

No. 52, Huayuan Bei Road, Haidian District, Beijing, P. R. China 100191.

Tel:+86(0) 10-62304633-2678, Fax:+86(0)10-62304633-2504 Email:welcome@emcite.com. www.emcite.com

CONTENTS

1. Test Laboratory

1.1. Testing Location

Company Name:	TMC Beijing, Telecommunication Metrology Center of MIIT
Address:	No 52, Huayuan Bei Road, Haidian District, Beijing, P.R.China
Postal Code:	100191
Telephone:	+86-10-62304633-2678
Fax:	+86-10-62304633-2504

1.2. Testing Environment

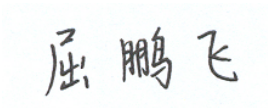
Normal Temperature:	15-35℃
Relative Humidity:	20-75%
Air pressure	980 - 1040 hPa

The climatic requirements above are general exclude the special requirements for dedicated test environments listed in section 5 and some specific test cases in other parts of this report.

1.3. Project data

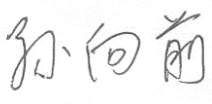
Receipt of Sample	Mar 04th, 2013
Testing Start Date:	Mar 04th, 2013
Testing End Date:	Mar 09th, 2013

1.4. Signature



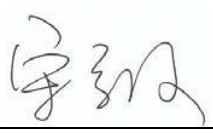
Qu Pengfei

(Prepared this test report)



Sun Xiangqian

(Reviewed this test report)



Song Chongwen

(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	Sony Mobile Communications (China) Co. Ltd
Address /Post:	Sony Mobile R&D Center, No. 16, Guangshun South Street, Chaoyang District
City:	Beijing
Postal Code:	100102
Country:	China
Contact Person:	Ma, Gang
Telephone:	+86-10-58656312
Fax:	+86-10-58659049

2.2. Manufacturer Information

Company Name:	Sony Mobile Communications AB
Address /Post:	Nya Vattentornet, 22188 Lund, Sweden
City:	Lund
Postal Code:	22188
Country:	Sweden
Contact Person:	Nordlof, Anders
Telephone:	+46-10-802 3919
Fax:	+46-10-800 2441

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	GSM 850/900/1800/1900, GPRS, EDGE, WCDMA FDD Band 1/2/4/5/8, HSDPA, HSUPA, LTE FDD Band 4 Bluetooth EDR & BLE, WLAN (802.11 a/b/g/n), FM, NFC, GPS receiver mobile phone
Type	PM-0520-BV
FCC ID	PY7PM-0520
IC No.	4170B-PM0520
Frequency range	GSM 850: 824.2 MHz - 848.8 MHz PCS 1900: 1850.2 MHz -1909.8 MHz WCDMA 850:824 MHz - 849 MHz WCDMA 1700: 1710 MHz -1755 MHz WCDMA 1900:1850 MHz -1910 MHz LTE Band 4: 1710MHz-1755MHz
Antenna	Internal
Power supply	Battery or charger (travel adaptor / vehicle adaptor)
Output power	30.32 dBm maximum ERP measured for GSM850 30.72 dBm maximum EIRP measured for PCS1900 21.71 dBm maximum ERP measured for WCDMA 850 22.22 dBm maximum EIRP measured for WCDMA 1700 22.87 dBm maximum EIRP measured for WCDMA 1900 22.92 dBm maximum EIRP measured for LTE Band 4
Extreme vol. Limits	3.5VDC to 4.1VDC (nominal: 3.7VDC)
Extreme temp. Tolerance	-30°C to +50°C

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of Telecommunication Metrology Center of MIIT of People's Republic of China.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN	IMEI	HW Version	SW Version
#23830	BX903DK1RL	004402450816685	A	10.2.G.0.4
#23829	BX903DKQSP	004402450817105	A	10.2.G.0.4

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

AE ID*	Description	SN	Revision
#23498	Travel Charger	8512W24400476	1C
#23812	USB Cable	123107D1000A4AE	1

#23498

Type	EP880
Manufacturer	SALCOMP
Length of cable	/

#23812

Commercial name	EC801
Type	AI-0401
Manufacturer	Sony Mobile
Length of cable	96.5cm

*AE ID: is used to identify the test sample in the lab internally.

3.4. General Description

The Equipment Under Test (EUT) is a model of GSM/UMTS/LTE mobile phone with integrated antenna and inbuilt Li-Polymer battery.

The EUT supports GSM 850/900/1800/1900MHz bands, WCDMA FDD bands 1/2/4/5/8 and LTE FDD bands 4. It also supports GPRS service with multi-slots class 33 and EGPRS service with multi-slots class 33 too. The HSDPA and HSUPA features are also supported.

It has MP3, camera, FM radio, USB memory, GPS receiver, NFC, Mobile High-Definition Link (MHL), Bluetooth (EDR and Bluetooth 4.0), WLAN (802.11 a/b/g/n) and Wi-Fi hotspot functions.

It consists of normal option: travel charger and USB cable.

Manual and specifications of the EUT were provided to fulfil the test.

Samples undergoing test were selected by the client.

3.5. EUT set-ups

EUT Set-up No.	Combination of EUT and AE	Remarks
Set. 1	#23830 + #23498+ #23812	Tests with travel charger
Set. 2	#23830	ERP/EIRP/RSE tests
Set. 3	#23829	Conducted RF tests

4. Reference Documents

4.1. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part 27	MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES	10-1-11 Edition
FCC Part 24	PERSONAL COMMUNICATIONS SERVICES	10-1-11 Edition
FCC Part 22	PUBLIC MOBILE SERVICES	10-1-11 Edition
RSS-132	Cellular Telephones Employing New Technologies Operating in the Bands 824-849 MHz and 869-894 MHz	Issue3
RSS-133	2 GHz Personal Communications Services	Issue6
RSS-139	Advanced Wireless Services Equipment Operating in the Bands 1710-1755 MHz and 2110-2155 MHz	Issue2
ANSI/TIA-603-C	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards	2004
ANSI C63.4	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2003

5. LABORATORY ENVIRONMENT

Control room/ conducted chamber did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ˚C, Max. = 35 ˚C
Relative humidity	Min. =20 %, Max. = 80 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 0.5 Ω

Fully-anechoic chamber 2 (8.6 meters×6.1 meters×3.85 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ˚C, Max. = 30 ˚C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 1 Ω
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 18GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 4000 MHz

Semi-anechoic chamber 2 / Fully-anechoic chamber 3 (10 meters×6.7 meters×6.15 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ˚C, Max. = 30 ˚C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 0.5 Ω
Normalised site attenuation (NSA)	< ±3.5 dB, 3 m distance
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 18GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 3000 MHz

6. SUMMARY OF TEST RESULTS

6.1. Summary of test results

Abbreviations used in this clause:

P	Pass
NA	Not applicable
F	Fail

WCDMA Band V

Items	Test Name	Clause in FCC rules	Clause in IC rules	Section in this report	Verdict
1	Output Power	22.913(a)	4.4	A.1	P
2	Emission Limit	22.917, 2.1051	4.5	A.2	P
3	Conducted Emission	15.107/207	/	A.3	P
4	Frequency Stability	22.235, 2.1055	4.3	A.4	P
5	Occupied Bandwidth	2.1049(h)(i)	4.5	A.5	P
6	Emission Bandwidth	22.917(b)	4.5	A.6	P
7	Band Edge Compliance	22.917(b)	4.5	A.7	P
8	Conducted Spurious Emission	22.917, 2.1057	4.5	A.8	P

WCDMA Band II

Items	Test Name	Clause in FCC rules	Clause in IC rules	Section in this report	Verdict
1	Output Power	24.232(b)	6.4	A.1	P
2	Emission Limit	24.238, 2.1051	6.5	A.2	P
3	Conducted Emission	15.107/207	/	A.3	P
4	Frequency Stability	24.235, 2.1055	6.3	A.4	P
5	Occupied Bandwidth	2.1049(h)(i)	6.5	A.5	P
6	Emission Bandwidth	24.238(a)	6.5	A.6	P
7	Band Edge Compliance	24.238(a)	6.5	A.7	P
8	Conducted Spurious Emission	24.238, 2.1057	6.5	A.8	P

WCDMA Band IV

Items	Test Name	Clause in FCC rules	Clause in IC rules	Section in this report	Verdict
1	Output Power	27.50(d)(2)	6.4	A.1	P
2	Emission Limit	27.53(h), 2.1051	6.5	A.2	P
3	Conducted Emission	15.107/15.207	/	A.3	P
4	Frequency Stability	27.54, 2.1055	6.3	A.4	P
5	Occupied Bandwidth	2.1049(h)(i)	6.5	A.5	P
6	Emission Bandwidth	27.53(h)	6.5	A.6	P
7	Band Edge Compliance	27.53(h)	6.5	A.7	P
8	Conducted Spurious Emission	27.53(h), 2.1057	6.5	A.8	P

Receiver Radiated Emission

Items	Test Name	Section in this report	Verdict
1	Receiver Radiated Emissions	A.9	P

6.2. Statements

The test cases listed in section 6.1 of this report for the EUT specified in section 3 were performed by TMC according to the standards or reference documents in section 4.1

The EUT met all applicable requirements of the standards or reference documents in section 4.1.

This report only deals with the WCDMA functions among the features described in section 3.

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE
1	Test Receiver	ESCI	100344	R&S	2013-03-28
3	Test Receiver	ESU26	100376	R&S	2013-11-07
4	EMI Antenna	VULB 9163	514	Schwarzbeck	2014-11-10
5	EMI Antenna	3117	00139065	ETS-Lindgren	2014-07-31
6	LISN	ESH2-Z5	829991/012	R&S	2013-04-16
7	Universal Radio Communication Tester	CMU200	102228	R&S	2013-07-07
8	Universal Radio Communication Tester	E5515C	MY48361083	Agilent	2013-03-16
9	Spectrum Analyzer	E4440A	MY48250642	Agilent	2014-03-04
10	EMI Antenna	9117	177	Schwarzbeck	2014-06-29
11	EMI Antenna	VULB 9163	482	Schwarzbeck	2014-02-17
12	EMI Antenna	3117	00119024	ETS-Lindgren	2014-02-02
13	EMI Antenna	3117	00058889	ETS-Lindgren	2014-02-02
14	Signal Generator	N5183A	MY49060052	Agilent	2013-03-19
15	Climatic chamber	PL-2G	343074	ESPEC	2013-05-12

ANNEX A: MEASUREMENT RESULTS

A.1 OUTPUT POWER

Reference

FCC: CFR Part 22.913(a), 24.232(b), 27.50(d)(2).

IC: RSS-132 Issue 3, Section 4.4. RSS-133 Issue 6, Section 6.4. RSS-139 Issue 2, Section 6.4.

A.1.1 Summary

During the process of testing, the EUT was controlled via Rhode & Schwarz Digital Radio Communication tester (CMU-200) to ensure max power transmission and proper modulation.

This result contains peak output power and EIRP measurements for the EUT.

In all cases, output power is within the specified limits.

A.1.2 Conducted

A.1.2.1 Method of Measurements

The EUT was set up for the max output power with pseudo random data modulation.

The power was measured with spectrum analyzer's peak detector.

These measurements were done at 3 frequencies (bottom, middle and top of operational frequency range) for each band: 1852.4 MHz, 1880.0 MHz and 1907.6 MHz for WCDMA Band II; 826.4 MHz, 836.6 MHz and 846.6 MHz for WCDMA Band V; 1712.4MHz, 1740.0 MHz and 1752.6 MHz for WCDMA Band IV.

A.1.2.2 Measurement result

WCDMA Band II

	Channel number	Frequency(MHz)	output power(dBm)
WCDMA (Band II)	9262	1852.4	**22.97**
	9400	1880.0	22.91
	9538	1907.6	22.93

WCDMA Band IV

	Channel number	Frequency(MHz)	output power(dBm)
WCDMA (Band IV)	4132	826.4	23.39
	4183	836.6	23.46
	4233	846.6	23.37

WCDMA Band V

	Channel number	Frequency(MHz)	output power(dBm)
WCDMA (Band V)	1312	1712.40	24.42
	1450	1740.00	**24.46**
	1513	1752.60	24.39

A.1.3 Radiated

A.1.3.1 Description

This is the test for the maximum radiated power from the EUT.

Rule Part 22.913(a) specifies ”Maximum ERP. The effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 500 Watts. The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.”

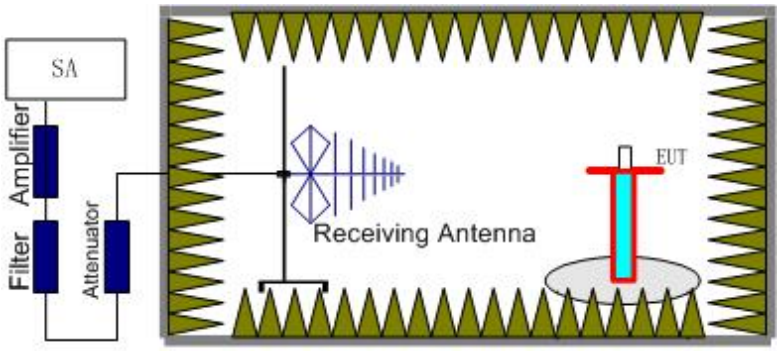
Rule Part 24.232(b) specifies, "Mobile/portable stations are limited to 2 watts e.i.r.p. Peak power" and 24.232(c) specifies that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage."

Rule Part 27.50(d) specifies “Fixed, mobile, and portable (handheld) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP”.

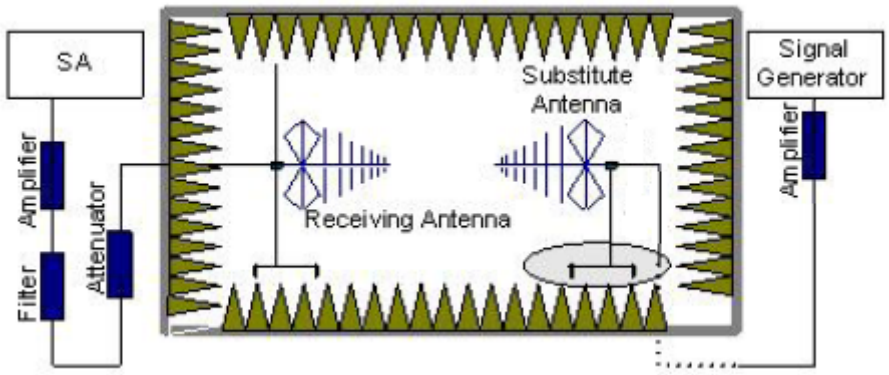
A.1.3.2 Method of Measurement

The measurements procedures in TIA-603C-2004 are used.

1. EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.5m. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.



2. The EUT is then put into continuously transmitting mode at its maximum power level during the test. And the maximum value of the receiver should be recorded as (Pr).
3. The EUT shall be replaced by a substitution antenna. The test setup refers to figure below.



In the chamber, a substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the substitution antenna. Adjust the level of the signal generator output until the value of the receiver reaches the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

4. An amplifier should be connected to the Signal Source output port. And the cable should be connected between the amplifier and the substitution antenna.
   The cable loss (P_{cl}), the substitution antenna Gain (G_a) and the amplifier Gain (P_{Ag}) should be recorded after test.
   The measurement results are obtained as described below:
   Power (EIRP) = P_{Mea} - P_{Ag} - P_{cl} - G_a
5. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
6. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15.

For test layout photo, please refer to Pic.1 in Annex B.

WCDMA Band II- EIRP

Limits

	Burst Peak EIRP (dBm)
WCDMA Band II	≤33dBm (2W)

Measurement result

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Peak EIRP(dBm)	Polarization
1852.40	-29.16	3.18	-50.00	-4.55	22.21	Horizontal
1880.00	-28.61	3.11	-50.00	-4.43	22.71	Horizontal
1907.60	-28.26	3.18	-50.00	-4.31	**22.87**	Horizontal

Sample calculation: 1852.40MHz

Peak EIRP (dBm) = P_{Mea}(-29.16 dBm) - G_a (-4.55 dBi) - P_{Ag} (-50.00 dB) - P_{cl} (3.18 dB)
= 22.21dBm

ANALYZER SETTINGS: RBW = VBW = 5MHz

Note: Expanded measurement uncertainty for WCDMA Band II is *U* = 1.07dB, k=2.

WCDMA Band IV- EIRP

Limits

	Burst Peak EIRP (dBm)
WCDMA Band IV	≤30dBm (1W)

Measurement result

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Peak EIRP(dBm)	Polarization
1712.40	-31.77	2.97	-50.00	-5.17	20.43	Horizontal
1740.00	-30.69	2.99	-50.00	-5.04	21.36	Horizontal
1752.60	-29.76	3.01	-50.00	-4.99	**22.22**	Horizontal

Sample calculation: 1752.60MHz

Peak EIRP (dBm) = P_{Mea}(-31.77 dBm) - G_a (-5.17dBi) - P_{Ag} (-50.00 dB) - P_{cl} (2.97 dB)
= 20.43 dBm

ANALYZER SETTINGS: RBW = VBW = 5MHz

Note: Expanded measurement uncertainty for WCDMA Band II is *U* = 1.07dB, k=2.

WCDMA Band V- ERP

Limits

	Burst Peak ERP (dBm)
WCDMA Band V	≤38.45dBm

Measurement result

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	Peak ERP(dBm)	Polarization
826.40	-26.22	2.07	-53.00	0.85	2.15	**21.71**	Vertical
836.60	-27.16	2.08	-53.00	0.90	2.15	20.71	Vertical
846.60	-26.90	2.09	-53.00	0.94	2.15	20.92	Vertical

Sample calculation: 836.6 MHz

Peak ERP(dBm) = P_{Mea}(-26.90 dBm) - G_a (0.94 dBi) - P_{Ag} (-53.00 dB) - P_{cl} (2.09 dB) -2.15 dB
= 20.92 dBm

ANALYZER SETTINGS: RBW = VBW = 5MHz

Note: Expanded measurement uncertainty for WCDMA Band V is *U* = 0.96dB, k=2.

A.2 EMISSION LIMT

Reference

FCC: CFR 2.1051, Part 22.917(a), 24.238(a), 27.53(h).

IC: RSS-132 Issue 3, Section 4.4. RSS-133 Issue 6, Section 6.4. RSS-139 Issue 2, Section 6.4.

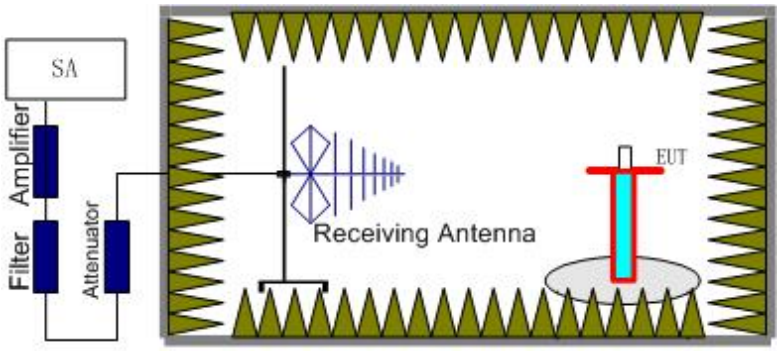
A.2.1 Measurement Method

The measurements procedures in TIA-603C-2004 are used. This measurement is carried out in fully-anechoic chamber 3.

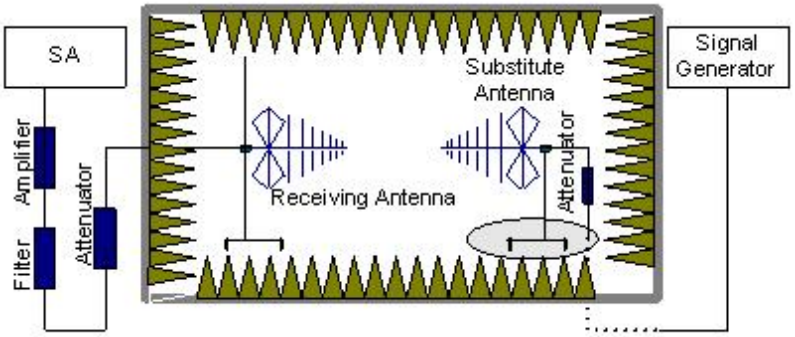
The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier that can be as high as 1910 MHz. The resolution bandwidth is set 1MHz as outlined in Part 24.238, Part 22.917 and Part 27.53(h). The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of WCDMA Band II, WCDMA Band IV and WCDMA Band V.

The procedure of radiated spurious emissions is as follows:

1. EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.5m. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all non-harmonic and harmonics of the transmit frequency through the 10th harmonic were measured with peak detector.



2. The EUT is then put into continuously transmitting mode at its maximum power level during the test. And the maximum value of the receiver should be recorded as (Pr).
3. The EUT shall be replaced by a substitution antenna. The test setup refers to figure below.



In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the substitution antenna. Adjust the level of the signal generator output until the value of the receiver reaches the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

4. The Path loss (P_{pl}) between the Signal Source with the Substitution Antenna and the Substitution Antenna Gain (G_a) should be recorded after test.
   An amplifier should be connected in for the test.
   The Path loss (P_{pl}) is the summation of the cable loss and the gain of the amplifier.
   The measurement results are obtained as described below:
   Power (EIRP) = P_{Mea}+ P_{pl} + G_a
5. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
6. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15dB.

A.2.2 Measurement Limit

Part 22.917(a), 24.238(a) and 27.53(h) all specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

A.2.3 Measurement Results

Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of the WCDMA Band II (1852.4 MHz, 1880.0MHz and 1907.6MHz), WCDMA Band IV(1712.4MHz, 1740.0 MHz and 1752.6 MHz) and WCDMA Band V (826.4MHz, 836.6MHz and 846.6MHz). It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the

significant spurs occur well outside the band and no radiation was seen from a carrier in one block of the WCDMA Band II, WCDMA Band IV or WCDMA Band V into any of the other blocks. The equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this.

WCDMA BAND II, Channel 9262/1852.4MHz

Frequency (MHz)	P_{Mea} (dBm)	P_{pl} (dB)	G_a (dBi)	Peak EIRP (dBm)	Limit （dBm）	Polarity
3702.75	-60.30	4.43	-8.14	-56.59	-13.00	Horizontal
5153.70	-63.20	5.23	-9.79	-58.64	-13.00	Vertical
6263.06	-61.27	5.83	-10.41	-56.69	-13.00	Vertical
10319.72	-59.96	7.84	-12.46	-55.34	-13.00	Vertical
13792.99	-58.21	9.11	-13.92	-53.40	-13.00	Vertical
15033.61	-55.99	9.67	-13.49	-52.17	-13.00	Vertical

WCDMA BAND II, Channel 9400/1880MHz

Frequency (MHz)	P_{Mea} (dBm)	P_{pl} (dB)	G_a (dBi)	Peak EIRP (dBm)	Limit （dBm）	Polarity
3920.12	-61.75	4.50	-8.40	-57.85	-13.00	Vertical
6055.69	-62.31	5.79	-10.24	-57.86	-13.00	Horizontal
7962.02	-60.50	6.94	-11.86	-55.58	-13.00	Horizontal
10552.54	-59.58	8.18	-12.49	-55.27	-13.00	Horizontal
13057.48	-56.27	9.27	-13.36	-52.18	-13.00	Vertical
15655.36	-53.76	10.37	-13.28	-50.85	-13.00	Vertical

WCDMA BAND II, Channel 9538/1907.6MHz

Frequency (MHz)	P_{Mea} (dBm)	P_{pl} (dB)	G_a (dBi)	Peak EIRP (dBm)	Limit （dBm）	Polarity
3816.05	-57.56	4.49	-8.28	-53.77	-13.00	Horizontal
6647.83	-63.18	6.07	-10.75	-58.50	-13.00	Horizontal
8788.47	-61.59	7.46	-12.43	-56.62	-13.00	Horizontal
10119.53	-60.09	8.08	-12.42	-55.75	-13.00	Vertical
11542.26	-55.99	8.58	-12.41	-52.16	-13.00	Vertical
13174.27	-55.98	9.25	-13.47	-51.76	-13.00	Vertical

WCDMA BAND V, Channel 4132/826.4MHz

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP(dBm)	Limit （dBm）	Polarization
1581.58	-60.57	2.88	-5.74	2.15	-59.86	-13.00	Horizontal
3463.28	-62.85	4.24	-7.81	2.15	-61.43	-13.00	Horizontal
4135.15	-62.74	4.68	-8.58	2.15	-60.99	-13.00	Vertical
6023.41	-62.94	5.64	-10.22	2.15	-60.51	-13.00	Vertical
6868.63	-62.26	6.07	-10.97	2.15	-59.51	-13.00	Vertical
8629.08	-59.93	7.36	-12.30	2.15	-57.14	-13.00	Vertical

WCDMA BAND V, Channel 4183/836.6MHz

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP(dBm)	Limit （dBm）	Polarization
3381.68	-63.47	4.23	-7.62	2.15	-62.23	-13.00	Horizontal
4089.17	-63.24	4.74	-8.55	2.15	-61.58	-13.00	Vertical
5041.71	-62.11	5.21	-9.73	2.15	-59.74	-13.00	Horizontal
5814.89	-61.88	5.71	-10.13	2.15	-59.61	-13.00	Horizontal
7650.07	-61.86	6.55	-11.55	2.15	-59.01	-13.00	Horizontal
9081.56	-61.79	7.49	-12.60	2.15	-58.83	-13.00	Vertical

WCDMA BAND V, Channel 4233/846.6MHz

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP(dBm)	Limit （dBm）	Polarization
1695.20	-59.44	2.95	-5.24	2.15	-59.30	-13.00	Vertical
3186.45	-61.87	4.09	-7.15	2.15	-60.96	-13.00	Vertical
4157.86	-64.38	4.67	-8.59	2.15	-62.61	-13.00	Vertical
5077.45	-62.08	5.20	-9.75	2.15	-59.68	-13.00	Horizontal
6364.43	-61.19	5.83	-10.49	2.15	-58.68	-13.00	Horizontal
7953.13	-63.36	6.85	-11.85	2.15	-60.51	-13.00	Horizontal

WCDMA BAND IV, Channel 1312/1712.4MHz

Frequency (MHz)	P_{Mea} (dBm)	P_{pl} (dB)	G_a (dBi)	Peak EIRP (dBm)	Limit （dBm）	Polarity
4407.99	-62.93	4.85	-8.74	-59.04	-13.00	Horizontal
6881.52	-61.80	6.07	-10.98	-56.89	-13.00	Horizontal
8608.45	-60.00	7.48	-12.29	-55.19	-13.00	Vertical
10222.86	-57.49	7.54	-12.44	-52.59	-13.00	Horizontal
13691.14	-45.30	9.03	-13.88	-40.45	-13.00	Horizontal
16848.47	-52.25	10.55	-12.40	-50.40	-13.00	Horizontal

WCDMA BAND IV, Channel 1450/1740.0MHz

Frequency (MHz)	P_{Mea} (dBm)	P_{pl} (dB)	G_a (dBi)	Peak EIRP (dBm)	Limit （dBm）	Polarity
3826.63	-62.05	4.51	-8.29	-58.27	-13.00	Vertical
5145.96	-61.09	5.24	-9.79	-56.54	-13.00	Horizontal
8523.41	-59.86	7.09	-12.22	-54.73	-13.00	Vertical
9742.50	-60.50	7.86	-12.50	-55.86	-13.00	Horizontal
12180.12	-55.92	8.86	-12.57	-52.21	-13.00	Horizontal
13927.35	-49.22	9.24	-13.97	-44.49	-13.00	Horizontal

WCDMA BAND IV, Channel1513/1752.6MHz

Frequency (MHz)	P_{Mea} (dBm)	P_{pl} (dB)	G_a (dBi)	Peak EIRP (dBm)	Limit （dBm）	Polarity
3949.89	-60.74	4.54	-8.44	-56.84	-13.00	Vertical
5259.92	-57.61	5.29	-9.86	-53.04	-13.00	Horizontal
7147.45	-59.83	6.38	-11.19	-55.02	-13.00	Horizontal
9149.00	-60.69	7.61	-12.60	-55.70	-13.00	Horizontal
10096.50	-58.17	8.22	-12.42	-53.97	-13.00	Vertical
11648.90	-55.95	8.60	-12.43	-52.12	-13.00	Vertical

Note: Expanded measurement uncertainty for this test item is *U* = 4.21dB, k=2.

A.3 CONDUCTED EMISSION

Reference

FCC: CFR Part 15.107/207

IC: RSS-132 Issue 3, Section 4.4. RSS-133 Issue 6, Section 6.4. RSS-139 Issue 2, Section 6.4.

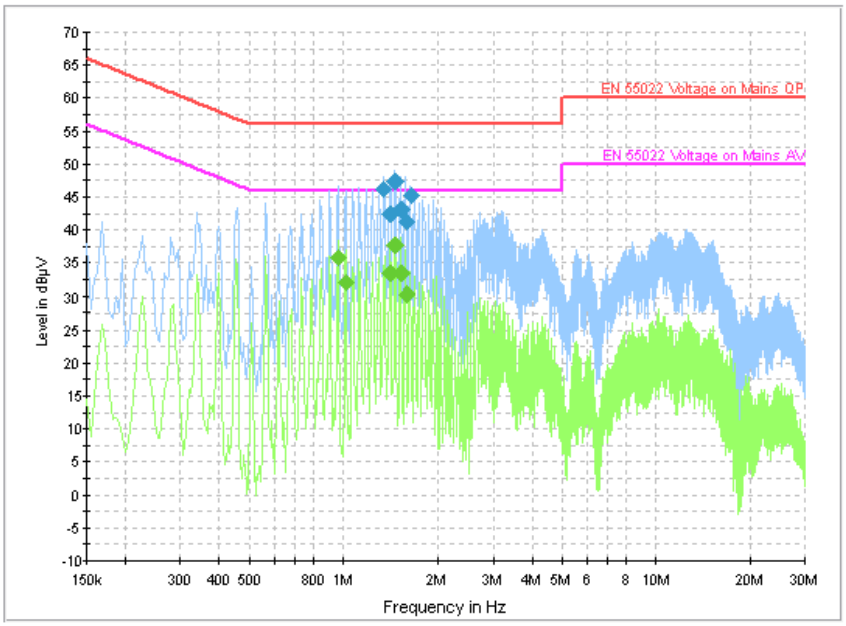
The measurement procedure in ANSI C63.4-2003 is used. Conducted Emission is measured with travel charger. For test layout photo, please refer to Pic.2 in Annex B.

A.3.1 Limit

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi -Peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30	60	50
* Decreases with logarithm of the frequency		

A.3.2 Measurement result

WCDMA Band II



IF bandwidth 9 kHz

Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

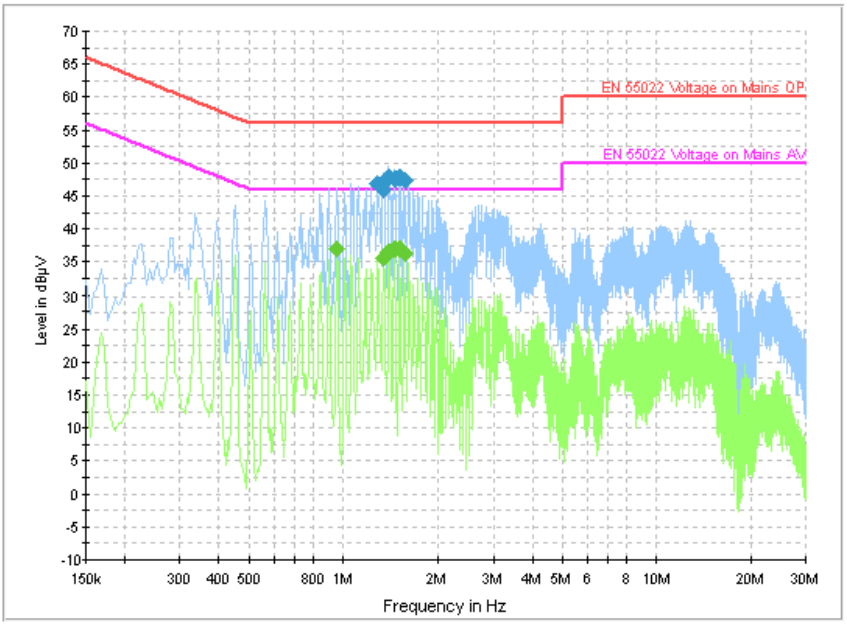
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.351500	46.2	GND	L1	10.0	9.8	56.0
1.414500	42.4	GND	L1	10.0	13.6	56.0
1.464000	47.2	GND	L1	10.0	8.8	56.0
1.522500	43.2	GND	L1	10.0	12.8	56.0
1.581000	41.3	GND	L1	10.0	14.7	56.0
1.630500	45.1	GND	L1	10.0	10.9	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.960000	35.8	GND	L1	10.0	10.2	46.0
1.018500	32.1	GND	L1	10.0	14.0	46.0
1.414500	33.5	GND	L1	10.0	12.5	46.0
1.464000	37.6	GND	L1	10.0	8.4	46.0
1.522500	33.3	GND	L1	10.0	12.7	46.0
1.581000	30.3	GND	L1	10.0	15.7	46.0

WCDMA Band V



IF bandwidth 9 kHz

Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

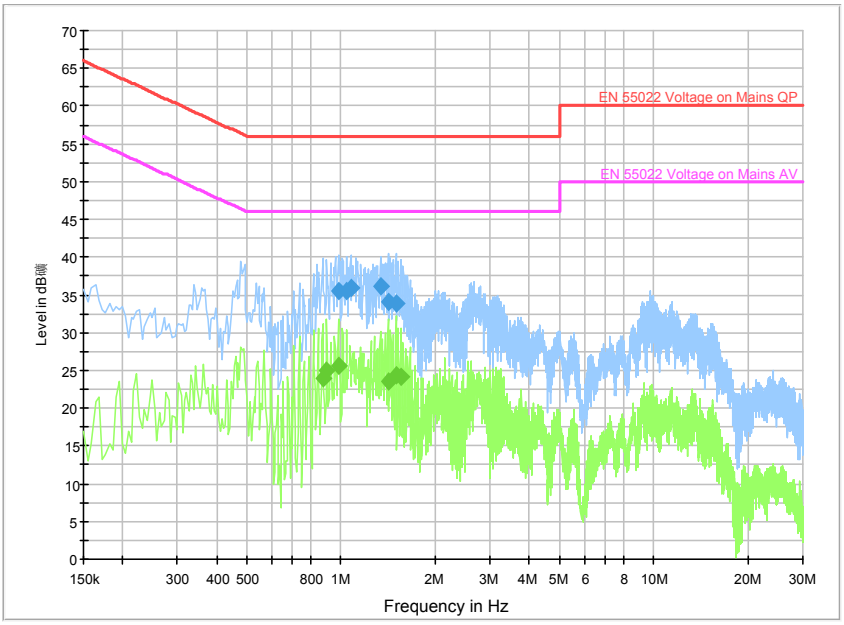
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.288500	46.9	GND	L1	10.0	9.1	56.0
1.347000	46.0	GND	L1	10.0	10.0	56.0
1.401000	47.7	GND	L1	10.0	8.3	56.0
1.459500	47.5	GND	L1	10.0	8.5	56.0
1.509000	47.8	GND	L1	10.0	8.2	56.0
1.567500	47.2	GND	L1	10.0	8.8	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.955500	36.9	GND	L1	10.0	9.1	46.0
1.347000	35.5	GND	L1	10.0	10.5	46.0
1.401000	36.5	GND	L1	10.0	9.5	46.0
1.459500	37.1	GND	L1	10.0	8.9	46.0
1.513500	37.1	GND	L1	10.0	8.9	46.0
1.567500	36.2	GND	L1	10.0	9.8	46.0

WCDMA Band IV



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.982500	35.5	GND	L1	10.0	20.5	56.0
1.041000	35.6	GND	L1	10.0	20.4	56.0
1.072500	35.9	GND	L1	10.0	20.1	56.0
1.333500	36.2	GND	L1	10.0	19.8	56.0
1.414500	34.0	GND	L1	10.0	22.0	56.0
1.495500	33.9	GND	L1	10.0	22.1	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.874500	23.9	GND	L1	10.0	22.1	46.0
0.901500	25.0	GND	L1	10.0	21.0	46.0
0.982500	25.7	GND	L1	10.0	20.3	46.0
1.414500	23.6	GND	L1	10.0	22.4	46.0
1.495500	24.3	GND	L1	10.0	21.7	46.0
1.554000	24.2	GND	L1	10.0	21.8	46.0

A.4 FREQUENCY STABILITY

Reference

FCC: CFR Part 2.1055, 22.235, 24.235, 27.54.

IC: RSS-132 Issue 3, Section 4.4. RSS-133 Issue 6, Section 6.4. RSS-139 Issue 2, Section 6.4.

A.4.1 Method of Measurement

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the EUT in a “call mode”. This is accomplished with the use of R&S CMU200 DIGITAL RADIO COMMUNICATION TESTER.

1. Measure the carrier frequency at room temperature.
2. Subject the EUT to overnight soak at -30℃.
3. With the EUT, powered via nominal voltage, connected to the CMU200 and in a simulated call on mid channel of WCDMA Band II,WCDMA IV and WCDMA Band V, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
4. Repeat the above measurements at 10℃ increments from -30℃ to +50℃. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.
5. Re-measure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments re-measuring carrier frequency at each voltage. Pause at nominal voltage for 1 1/2 hours unpowered, to allow any self-heating to stabilize, before continuing.
6. Subject the EUT to overnight soak at +50℃.
7. With the EUT, powered via nominal voltage, connected to the CMU200 and in a simulated call on the centre channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
8. Repeat the above measurements at 10 C increments from +50℃ to -30℃. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.
9. At all temperature levels hold the temperature to +/- 0.5℃ during the measurement procedure.

A.4.2 Measurement Limit

A.4.2.1 For Hand carried battery powered equipment

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. As this transceiver is considered "Hand carried, battery powered equipment" Section 2.1055(d)(2) applies. This requires that the lower voltage for frequency stability testing be specified by the manufacturer. This transceiver is specified to operate with an input voltage of between 3.5VDC and 4.1VDC, with a nominal voltage of 3.7VDC. Operation above or below these voltage limits is prohibited by transceiver software in order to prevent improper operation as well as to protect components from overstress. These voltages represent a tolerance of -5.4 % and +10.8 %. For the purposes of

measuring frequency stability these voltage limits are to be used.

A.4.2.2 For equipment powered by primary supply voltage

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet section 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. For this EUT section 2.1055(d)(1) applies. This requires varying primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

A.4.3 Measurement results

WCDMA Band II

Room Temperature: 24 ℃

Frequency Error vs Voltage

Voltage(V)	Frequency error(Hz)	Frequency error(ppm)
3.5	-25	0.013
3.7	-9	0.005
4.1	-9	0.005

Frequency Error vs Temperature

temperature(℃)	Frequency error(Hz)	Frequency error(ppm)
50°	-11	0.006
40°	-10	0.005
30°	-10	0.006
20°	-11	0.006
10°	-8	0.004
0°	-10	0.005
- 10°	-10	0.005
- 20°	-8	0.004
- 30°	-7	0.004

Expanded measurement uncertainty for this test item is 10 Hz, k=2

WCDMA Band V

Room Temperature: 24℃

Frequency Error vs Voltage

Voltage(V)	Frequency error(Hz)	Frequency error(ppm)
3.5	-3	0.004
3.7	4	0.005
4.1	4	0.005

Frequency Error vs Temperature

temperature(℃)	Frequency error(Hz)	Frequency error(ppm)
50°	5	0.006
40°	-6	0.008
30°	4	0.005
20°	4	0.005
10°	-16	0.019
0°	3	0.003
- 10°	5	0.006
- 20°	2	0.002
- 30°	4	0.004

Expanded measurement uncertainty for this test item is 10 Hz, k=2

WCDMA Band IV

Room Temperature: 24℃

Frequency Error vs Voltage

Voltage(V)	Frequency error(Hz)	Frequency error(ppm)
3.5	-11	0.006
3.7	-11	0.006
4.1	-11	0.006

Frequency Error vs Temperature

temperature(℃)	Frequency error(Hz)	Frequency error(ppm)
50°	-11	0.006
40°	-12	0.007
30°	-15	0.008
20°	-12	0.007
10°	-13	0.007
0°	-12	0.007
- 10°	-10	0.006
- 20°	-10	0.006
- 30°	-10	0.006

Expanded measurement uncertainty for this test item is 10 Hz, k=2

A.5 OCCUPIED BANDWIDTH

Reference

FCC: CFR Part 2.1049(h)(i)

IC: RSS-132 Issue 3, Section 4.4. RSS-133 Issue 6, Section 6.4. RSS-139 Issue 2, Section 6.4.

A.5.1 Occupied Bandwidth Results

Occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of WCDMA Band II, WCDMA Band IV and WCDMA Band V. The table below lists the measured -20dBc BW (99%). Spectrum analyzer plots are included on the following pages.

Measurement Parameters:

RBW = 50 kHz, VBW = 100 kHz

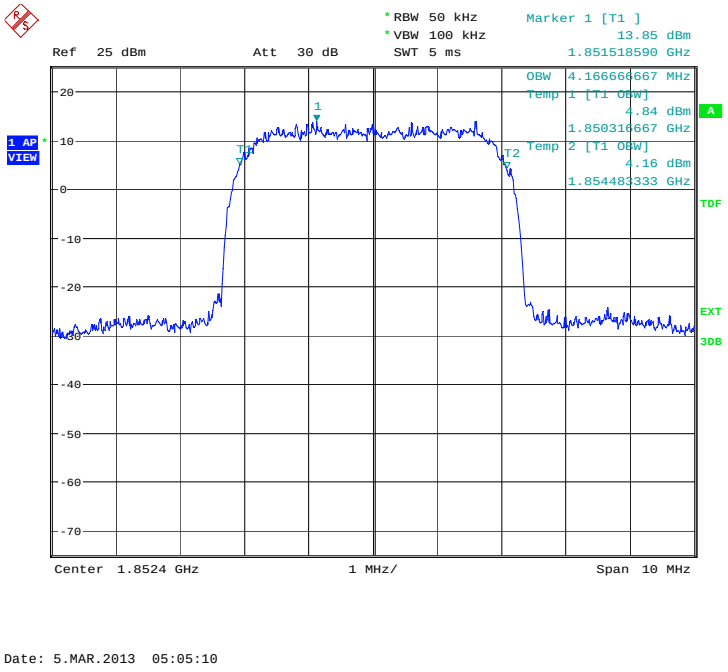
WCDMA Band II (-20dBc)

Frequency(MHz)	Occupied Bandwidth (-20dBc BW)(MHz)
1852.4	4.167
1880.0	4.151
1907.6	4.183

Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

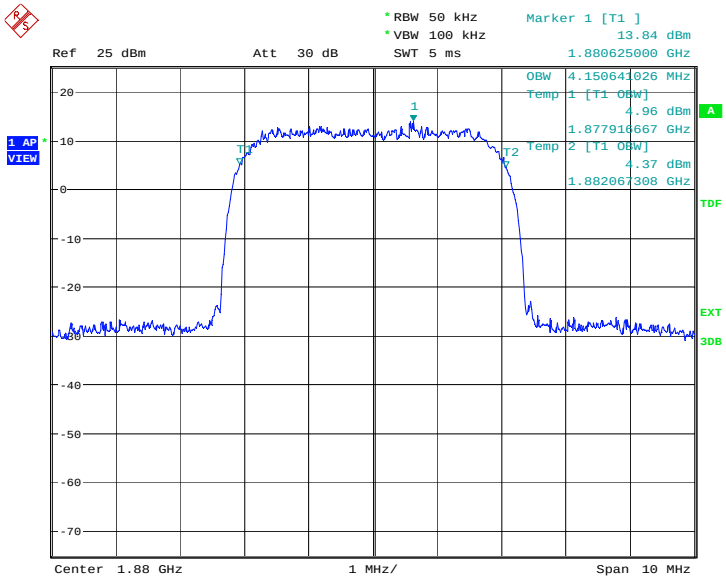
WCDMA Band II

Channel 9262-Occupied Bandwidth (-20dBc BW)



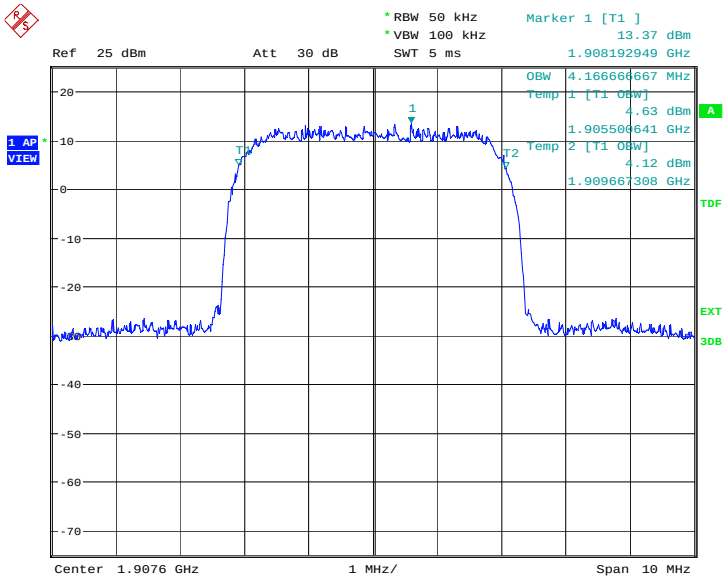
Date: 5.MAR.2013 05:05:10

Channel 9400-Occupied Bandwidth (-20dBc BW)



Date: 5.MAR.2013 05:05:45

Channel 9538-Occupied Bandwidth (-20dBc BW)



Date: 5.MAR.2013 05:06:20

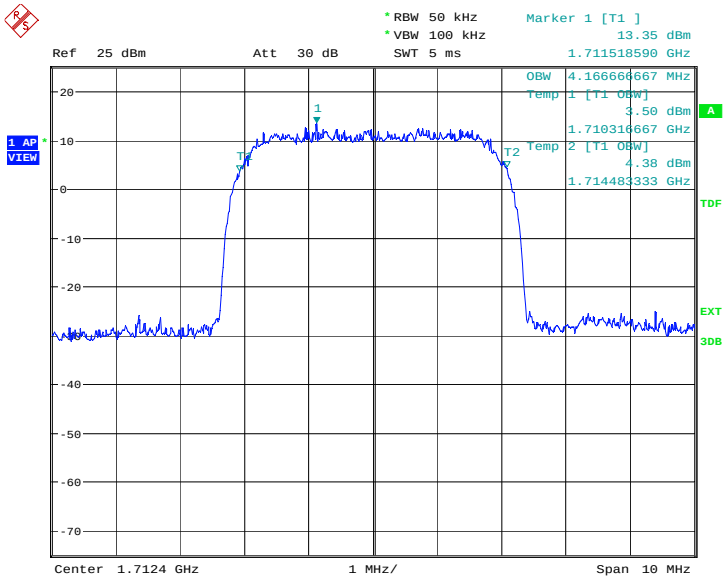
WCDMA Band IV (-20dBc)

Frequency(MHz)	Occupied Bandwidth (-20dBc BW)(MHz)
826.4	4.167
836.6	4.183
846.6	4.167

Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

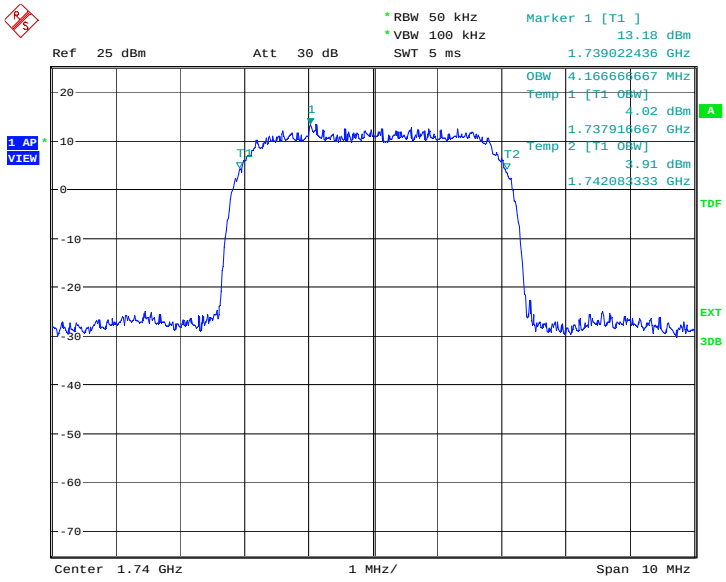
WCDMA Band IV

Channel 1312-Occupied Bandwidth (-20dBc BW)



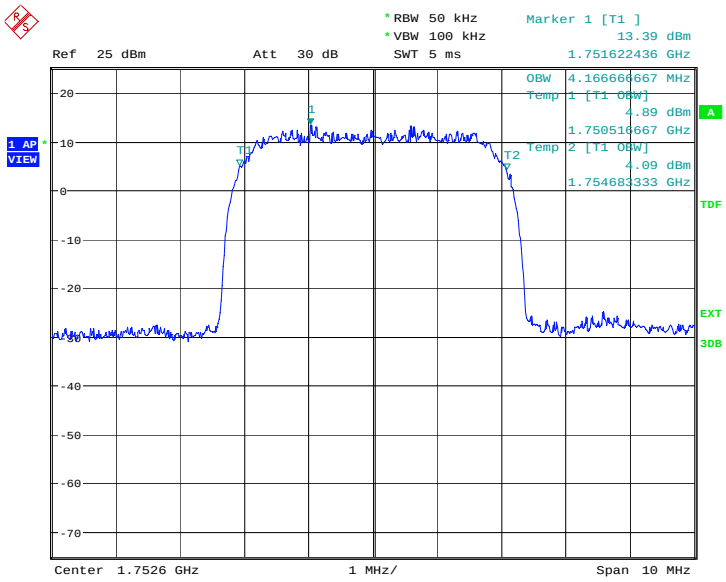
Date: 6.MAR.2013 07:34:01

Channel 1450-Occupied Bandwidth (-20dBc BW)



Date: 6.MAR.2013 07:34:36

Channel 1513-Occupied Bandwidth (-20dBc BW)



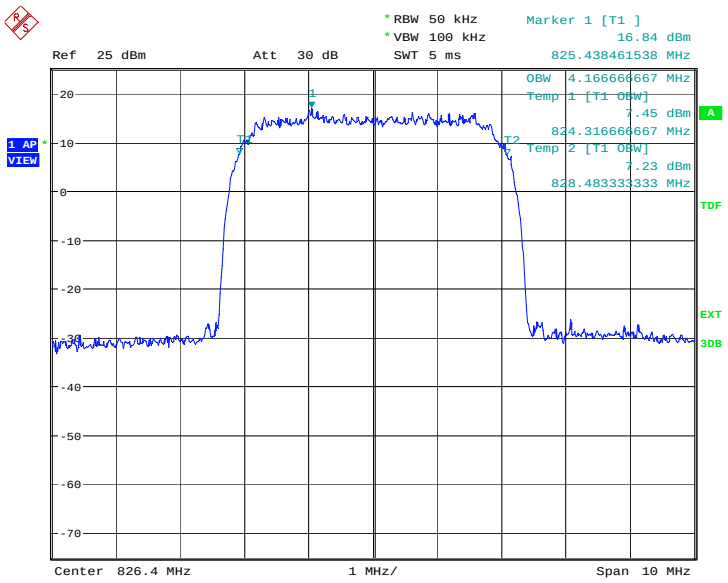
Date: 6.MAR.2013 07:35:10

WCDMA Band V(-20dBc)

Frequency(MHz)	Occupied Bandwidth (-20dBc BW)(MHz)
826.4	4.183
836.6	4.183
846.6	4.183

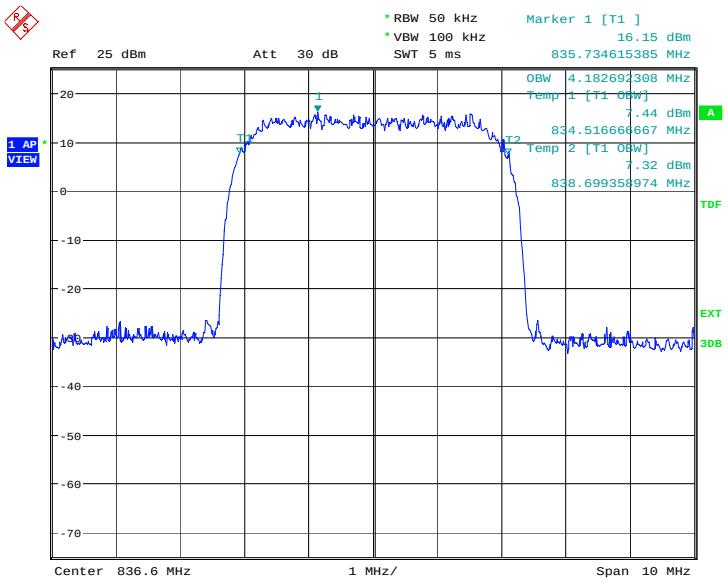
WCDMA Band V

Channel 4132-Occupied Bandwidth (-20dBc BW)



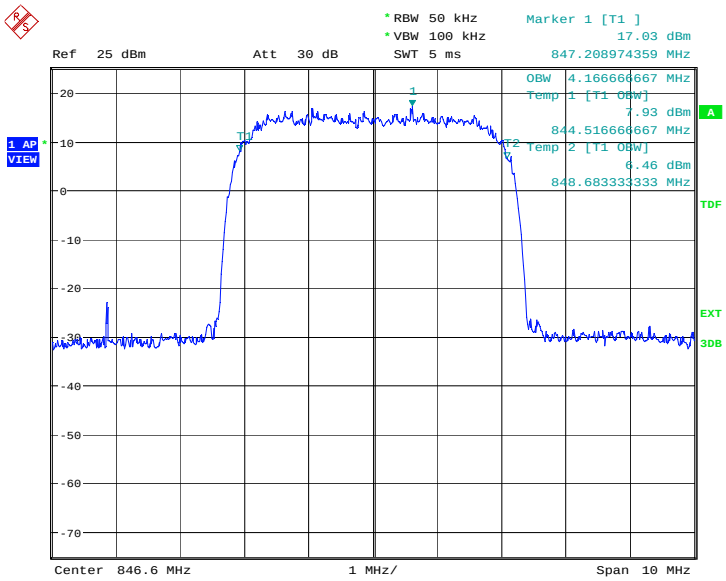
Date: 5.MAR.2013 05:32:38

Channel 4183-Occupied Bandwidth (-20dBc BW)



Date: 5.MAR.2013 05:33:12

Channel 4233-Occupied Bandwidth (-20dBc BW)



Date: 5.MAR.2013 05:33:47

A.6 EMISSION BANDWIDTH

Reference

FCC: CFR Part 22.917(b), 24.238(a), 27.53(h)

IC: RSS-132 Issue 3, Section 4.4. RSS-133 Issue 6, Section 6.4. RSS-139 Issue 2, Section 6.4.

A.6.1Emission Bandwidth Results

Emission bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of WCDMA Band II, WCDMA Band IV and WCDMA Band V. Table below lists the measured -26dBc BW. Spectrum analyzer plots are included on the following pages.

Measurement Parameters:

RBW = 50 kHz, VBW = 100 kHz

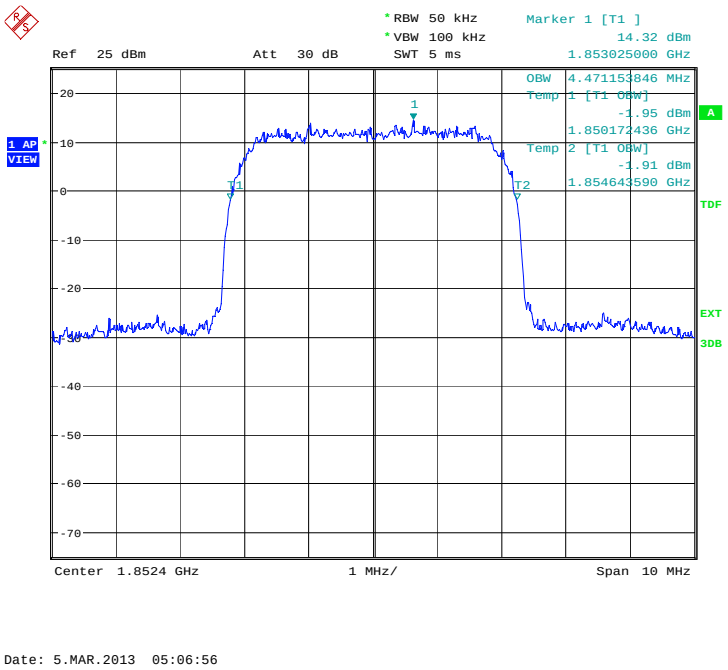
WCDMA Band II (-26dBc)

Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(MHz)
1852.4	4.487
1880.0	4.471
1907.6	4.471

Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

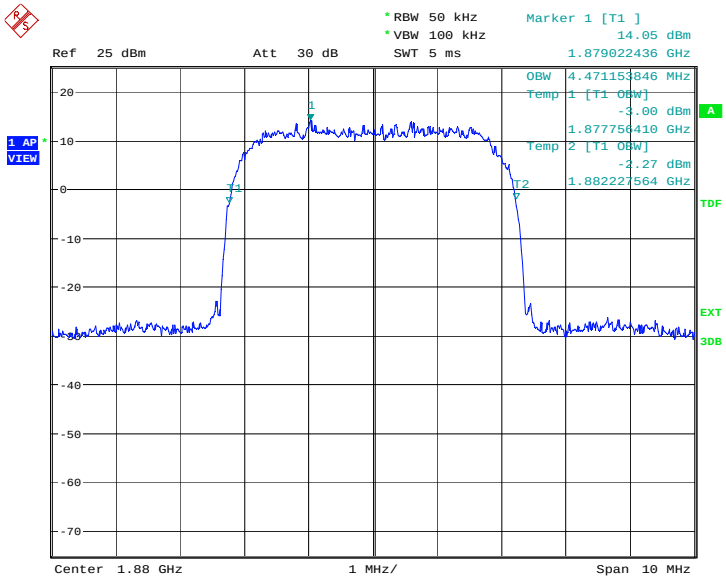
WCDMA Band II

Channel 9262-Occupied Bandwidth (-26dBc BW)



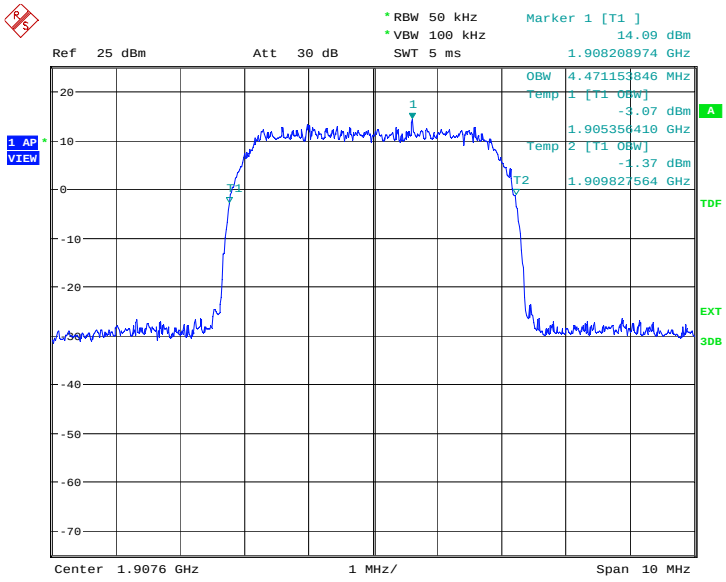
Date: 5.MAR.2013 05:06:56

Channel 9400-Occupied Bandwidth (-26dBc BW)



Date: 5.MAR.2013 05:07:31

Channel 9538-Occupied Bandwidth (-26dBc BW)



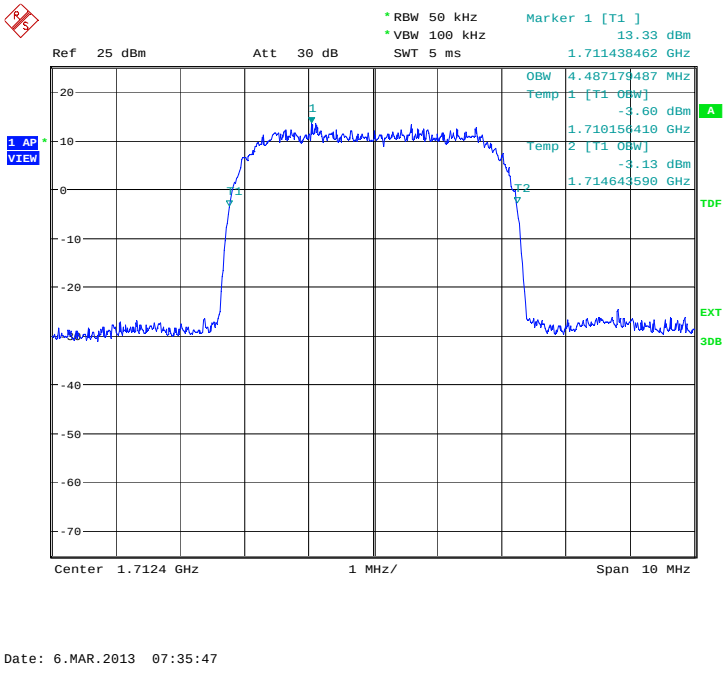
Date: 5.MAR.2013 05:08:05

WCDMA Band IV(-26dBc)

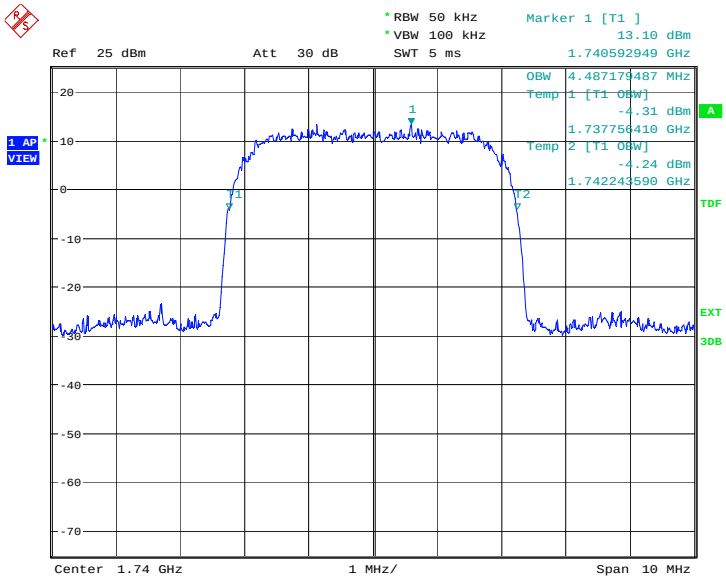
Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(MHz)
1712.4	4.487
1740	4.471
1752.6	4.487

WCDMA Band IV

Channel 1312-Occupied Bandwidth (-26dBc BW)

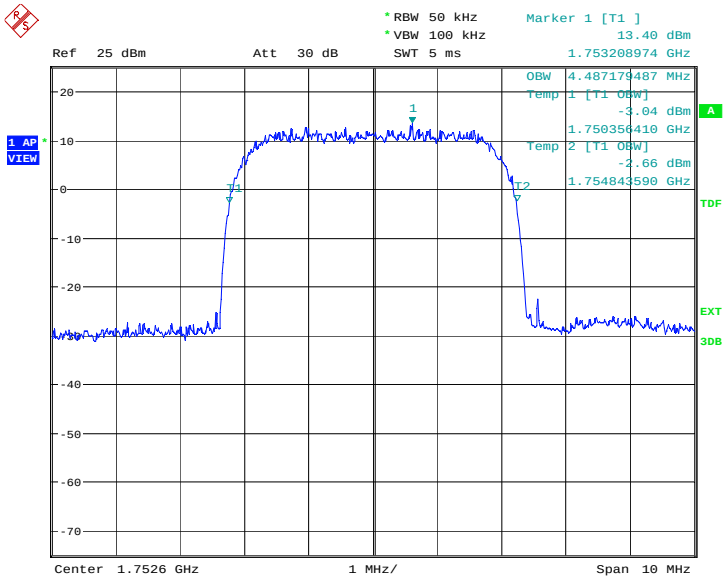


Channel 1450-Occupied Bandwidth (-26dBc BW)



Date: 6.MAR.2013 07:36:21

Channel 1513-Occupied Bandwidth (-26dBc BW)



Date: 6.MAR.2013 07:36:56

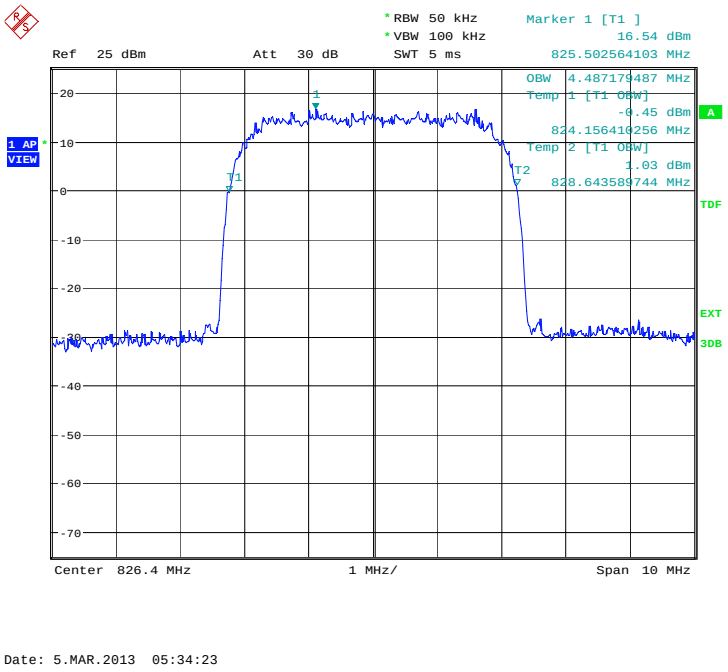
WCDMA Band V (-26dBc)

Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(MHz)
826.40	4.471
836.60	4.455
846.60	4.471

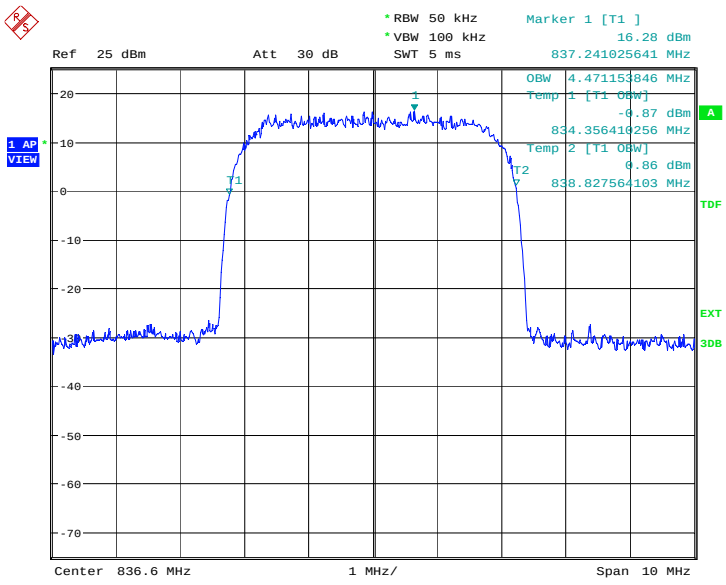
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

WCDMA Band V

Channel 4132-Occupied Bandwidth (-26dBc BW)

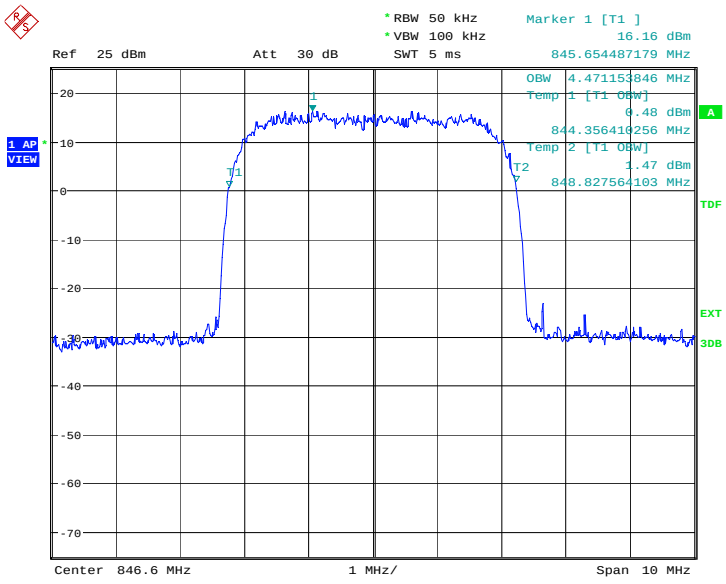


Channel 4183-Occupied Bandwidth (-26dBc BW)



Date: 5.MAR.2013 05:34:58

Channel 4233-Occupied Bandwidth (-26dBc BW)



Date: 5.MAR.2013 05:35:32

A.7 BAND EDGE COMPLIANCE

Reference

FCC: CFR Part 22.917(b), 24.238(a), 27.53(h).

IC: RSS-132 Issue 3, Section 4.4. RSS-133 Issue 6, Section 6.4. RSS-139 Issue 2, Section 6.4.

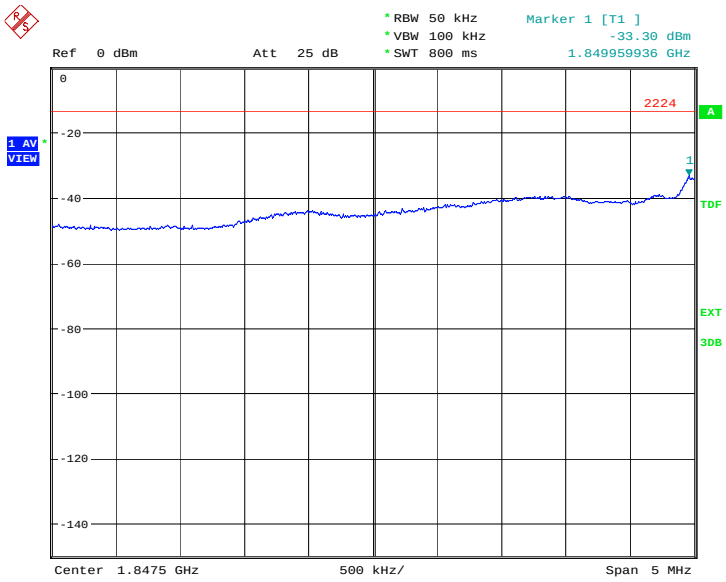
A.7.1 Measurement limit

On any frequency outside frequency band of the US Cellular/PCS/AWS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least 43+10Log (P) dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

A.7.2 Measurement result

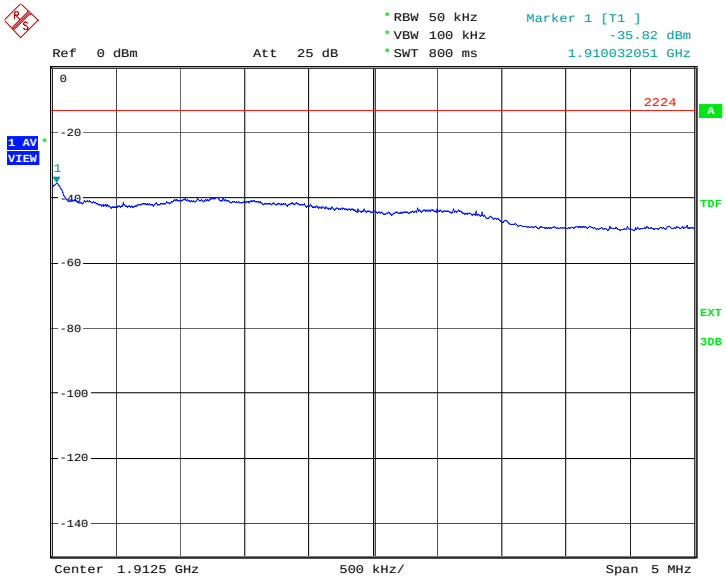
WCDMA Band II

LOW BAND EDGE BLOCK-A (WCDMA Band II)-Channel 9262



Date: 5.MAR.2013 05:08:21

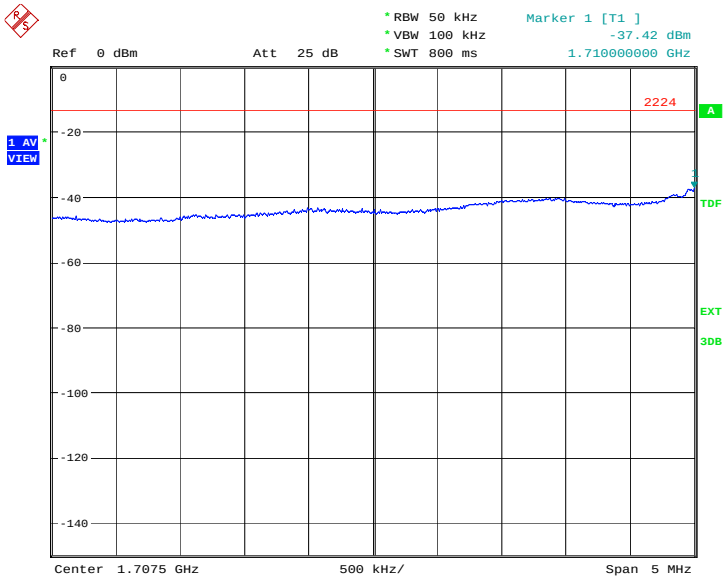
HIGH BAND EDGE BLOCK-C (WCDMA Band II) –Channel 9538



Date: 5.MAR.2013 05:08:38

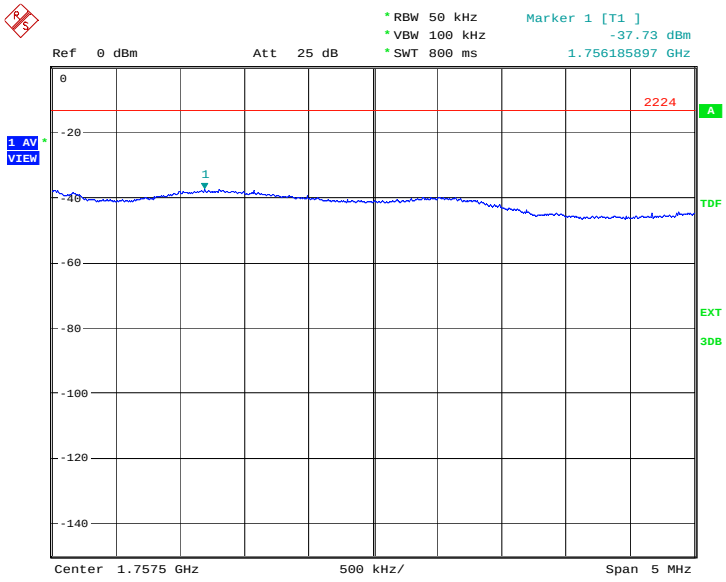
WCDMA Band IV

LOW BAND EDGE BLOCK-A (WCDMA Band IV)-Channel 1312



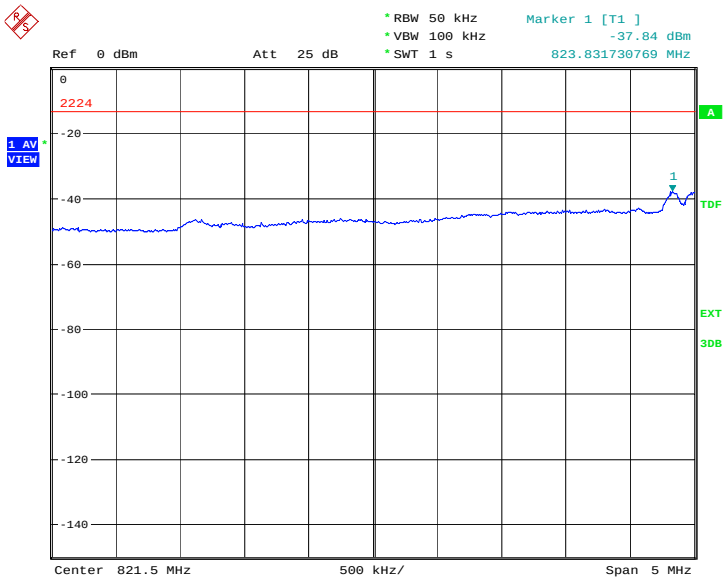
Date: 6.MAR.2013 07:37:12

HIGH BAND EDGE BLOCK-C (WCDMA Band IV) –Channel 1513



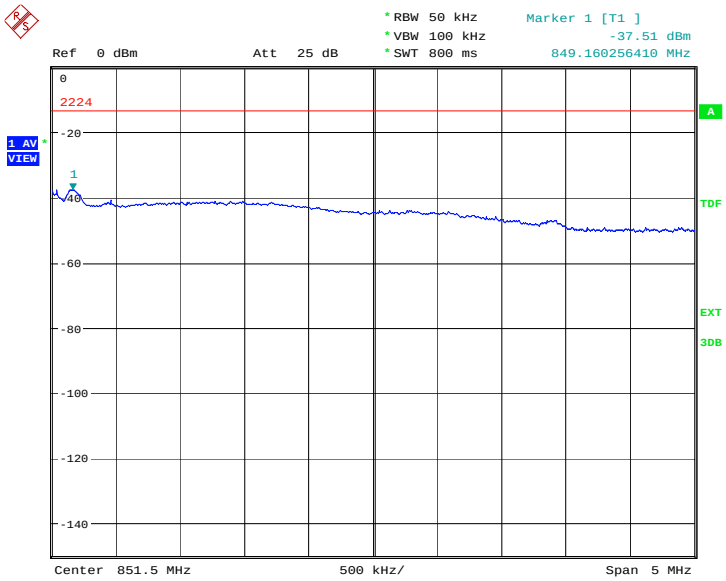
WCDMA Band V

LOW BAND EDGE BLOCK-A (WCDMA Band V)-Channel 4132



Date: 5.MAR.2013 05:35:49

HIGH BAND EDGE BLOCK-C (WCDMA Band V) –Channel 4233



Date: 5.MAR.2013 05:36:05

A.8 CONDUCTED SPURIOUS EMISSION

Reference

FCC: CFR Part 2.1057, 22.917, 24.238, 27.53(h).

IC: RSS-132 Issue 3, Section 4.4. RSS-133 Issue 6, Section 6.4. RSS-139 Issue 2, Section 6.4.

A.8.1 Measurement Method

The following steps outline the procedure used to measure the conducted emissions from the EUT.

1. Determine frequency range for measurements: From CFR 2.1057 the spectrum should be investigated from the lowest radio frequency generated in the equipment up to at least the 10th harmonic of the carrier frequency. For the equipment of WCDMA Band II, this equates to a frequency range of 30 MHz to 19.1 GHz, data are taken from 30 MHz to 20 GHz. For WCDMA Band V, data are taken from 30 MHz to 10 GHz. For WCDMA Band IV, data are taken from 30 MHz to 20 GHz.
2. Determine EUT transmit frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.

WCDMA Band II Transmitter

Channel	Frequency (MHz)
9262	1852.40
9400	1880.00
9538	1907.60

WCDMA Band IV Transmitter

Channel	Frequency (MHz)
1312	1712.40
1450	1740.00
1513	1752.60

WCDMA Band V Transmitter

Channel	Frequency (MHz)
4132	826.40
4183	836.60
4233	846.60

A. 8.2 Measurement Limit

Part 22.917, Part 24.238 and Part 27.53 specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried

out.

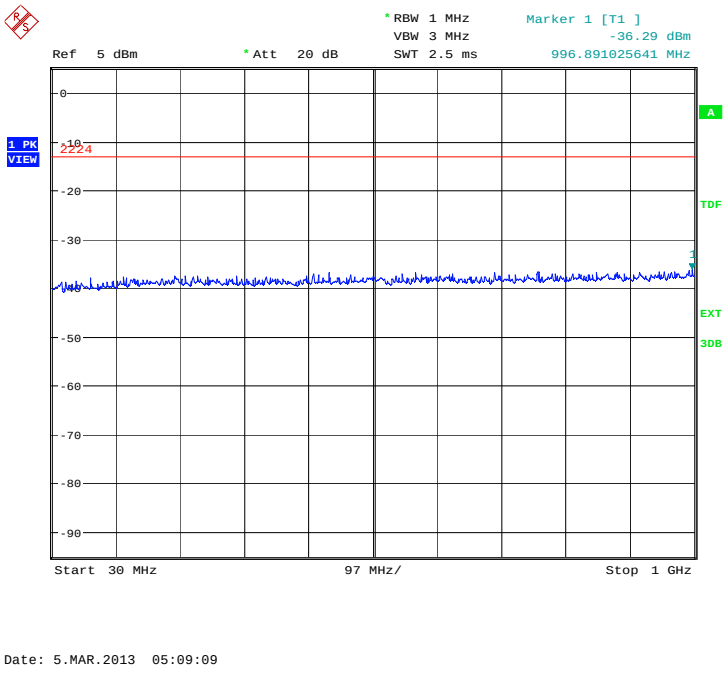
A. 8.3 Measurement result

Measurement Uncertainty: 0.3dB

WCDMA Band II

A. 8.3.1 Channel 9262: 30MHz –1GHz

Spurious emission limit –13dBm.

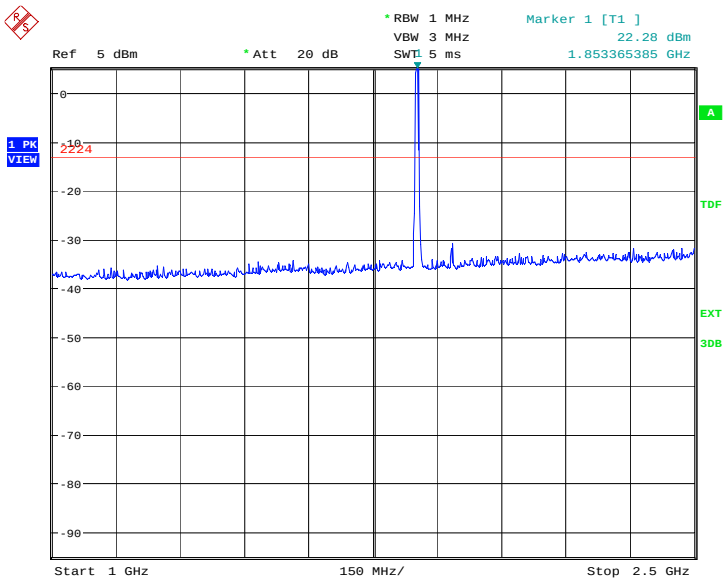


Date: 5.MAR.2013 05:09:09

A.8.3.2 Channel 9262: 1GHz –2.5GHz

Spurious emission limit –13dBm.

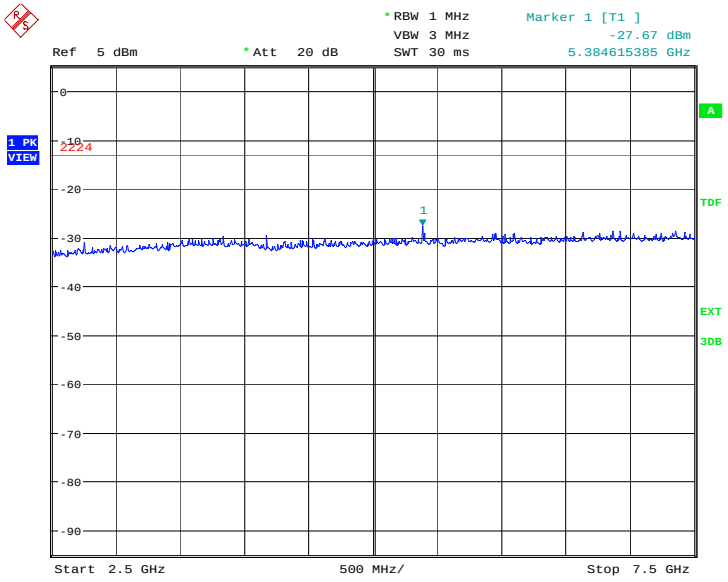
NOTE: peak above the limit line is the carrier frequency.



Date: 5.MAR.2013 05:09:37

A.8.3.3 Channel 9262: 2.5GHz –7.5GHz

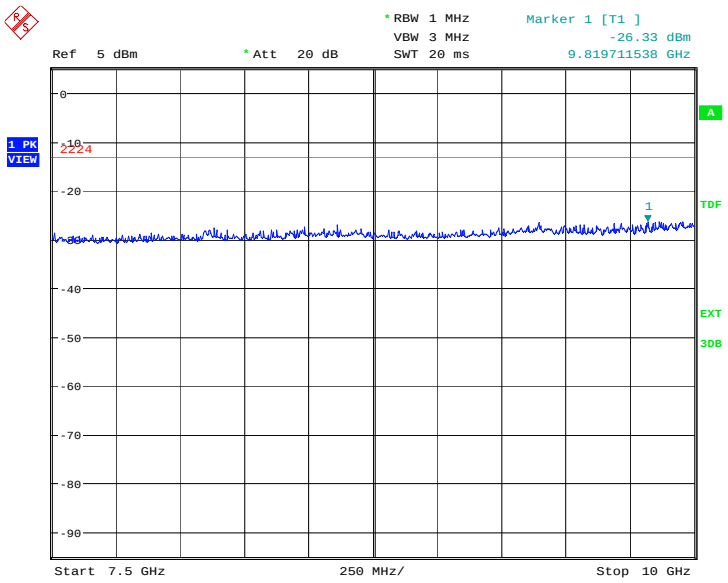
Spurious emission limit –13dBm.



Date: 5.MAR.2013 05:10:05

A.8.3.4 Channel 9262: 7.5GHz –10GHz

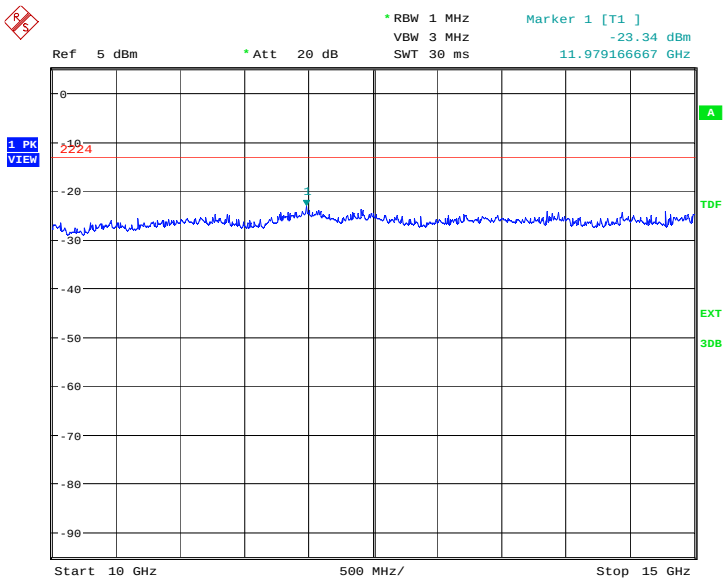
Spurious emission limit –13dBm.



Date: 5.MAR.2013 05:10:33

A.8.3.5 Channel 9262: 10GHz –15GHz

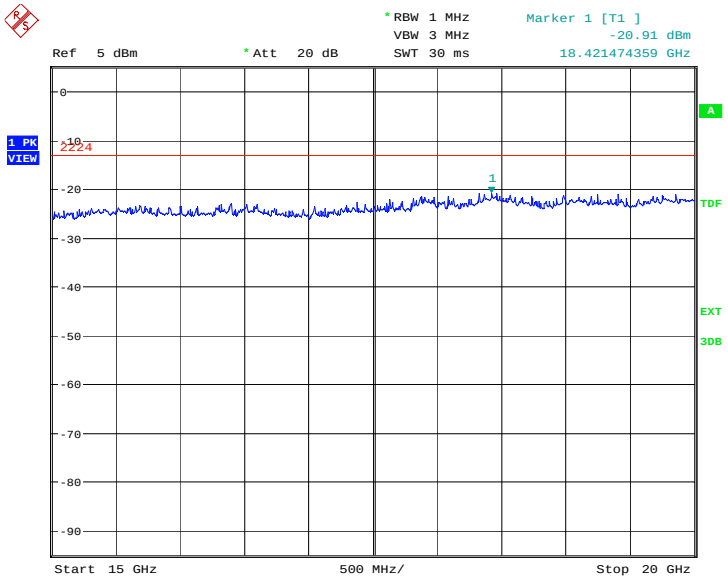
Spurious emission limit –13dBm.



Date: 5.MAR.2013 05:11:01

A.8.3.6 Channel 9262: 15GHz –20GHz

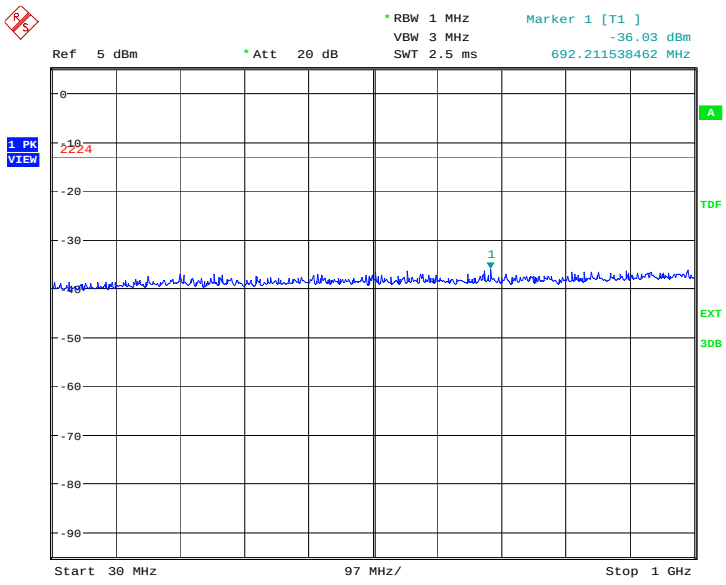
Spurious emission limit –13dBm.



Date: 5.MAR.2013 05:11:30

A. 8.3.7 Channel 9400: 30MHz –1GHz

Spurious emission limit –13dBm.

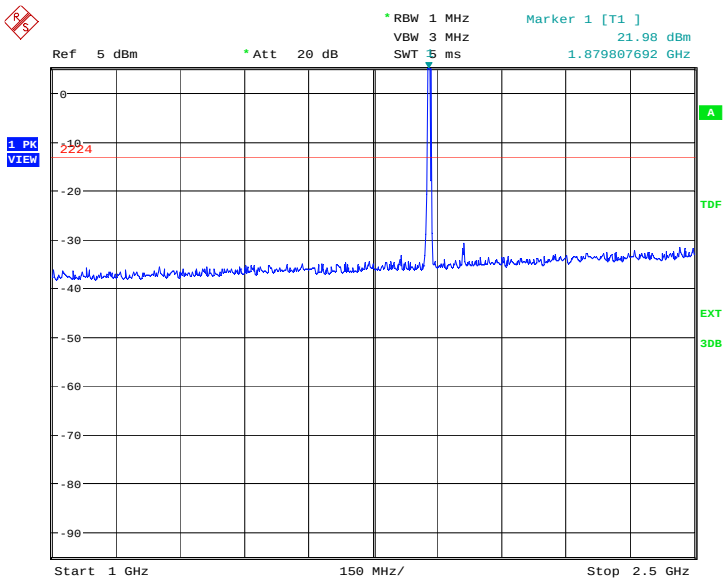


Date: 5.MAR.2013 05:12:01

A.8.3.8 Channel 9400: 1GHz –2.5GHz

Spurious emission limit –13dBm.

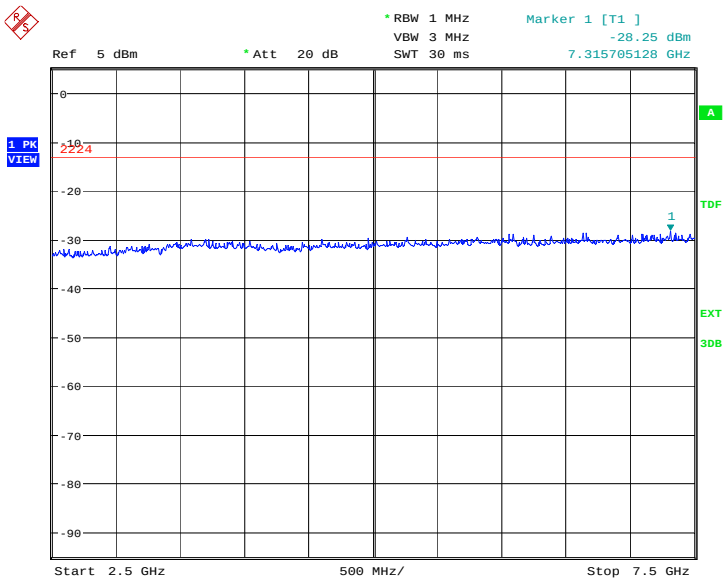
NOTE: peak above the limit line is the carrier frequency.



Date: 5.MAR.2013 05:12:29

A.8.3.9 Channel 9400: 2.5GHz –7.5GHz

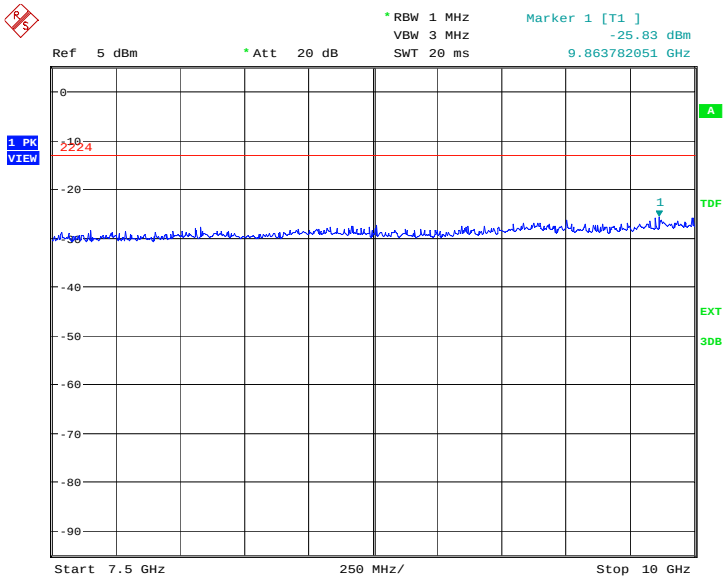
Spurious emission limit –13dBm.



Date: 5.MAR.2013 05:12:57

A.8.3.10 Channel 9400: 7.5GHz –10GHz

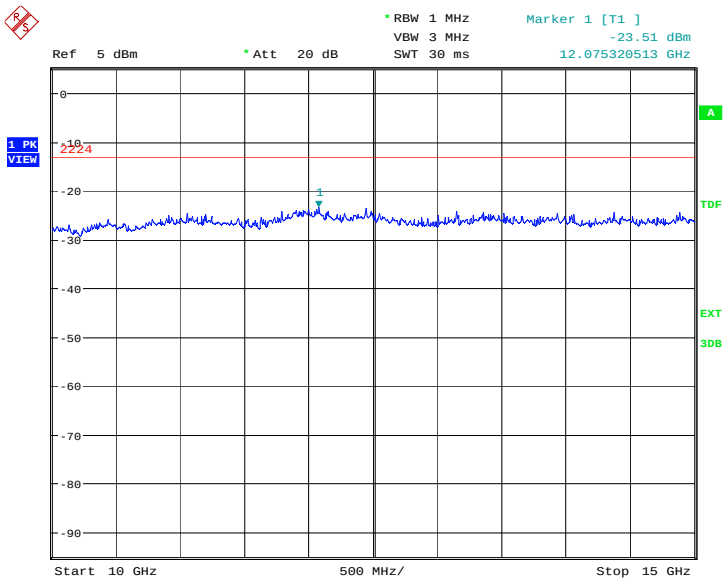
Spurious emission limit –13dBm.



Date: 5.MAR.2013 05:13:25

A.8.3.11 Channel 9400: 10GHz –15GHz

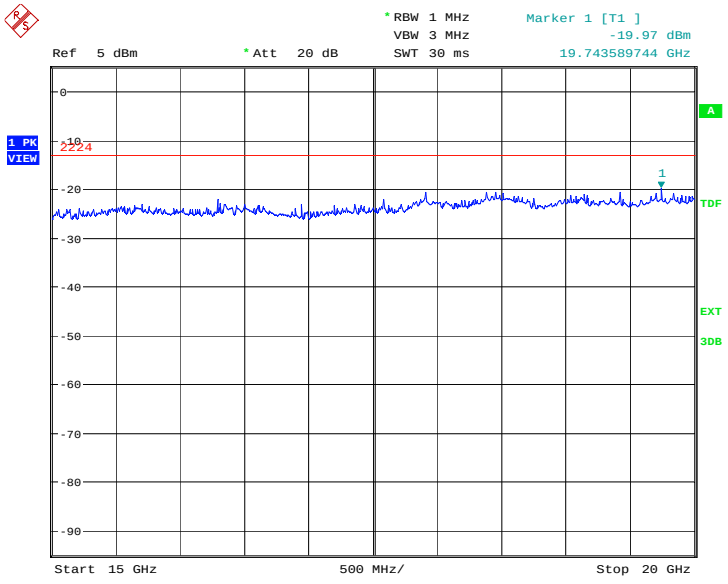
Spurious emission limit –13dBm.



Date: 5.MAR.2013 05:13:53

A.8.3.12 Channel 9400: 15GHz –20GHz

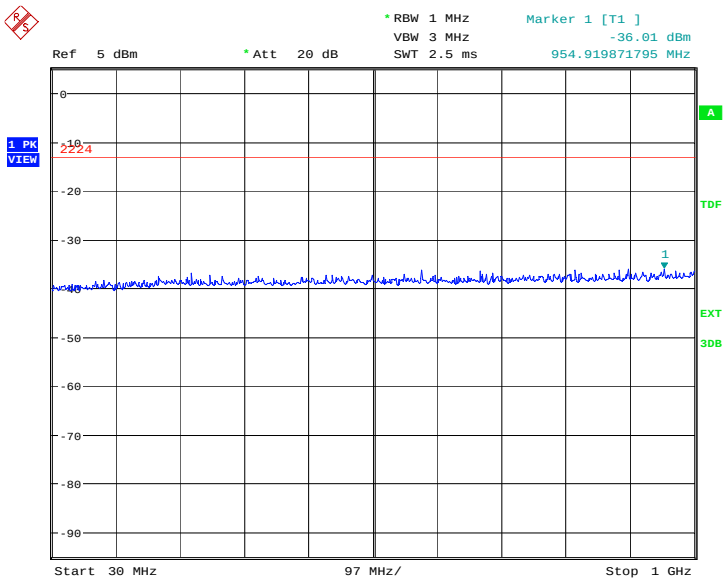
Spurious emission limit –13dBm.



Date: 5.MAR.2013 05:14:22

A. 8.3.13 Channel 9538: 30MHz –1GHz

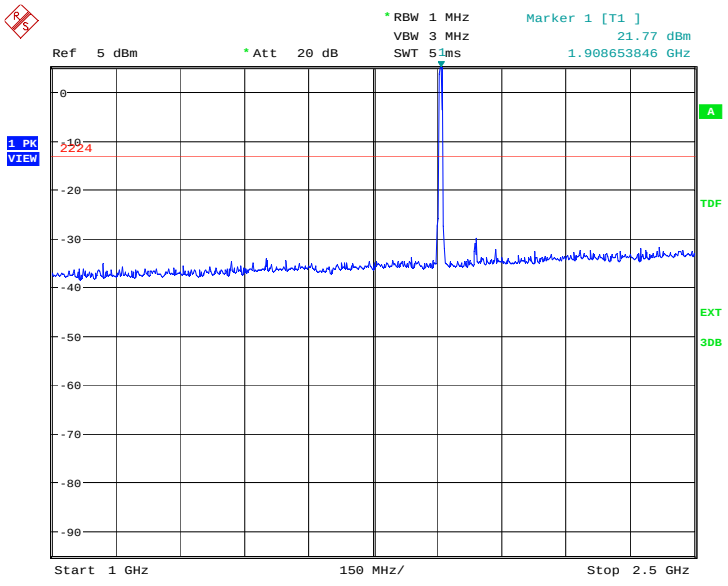
Spurious emission limit –13dBm.



A.8.3.14 Channel 9538: 1GHz –2.5GHz

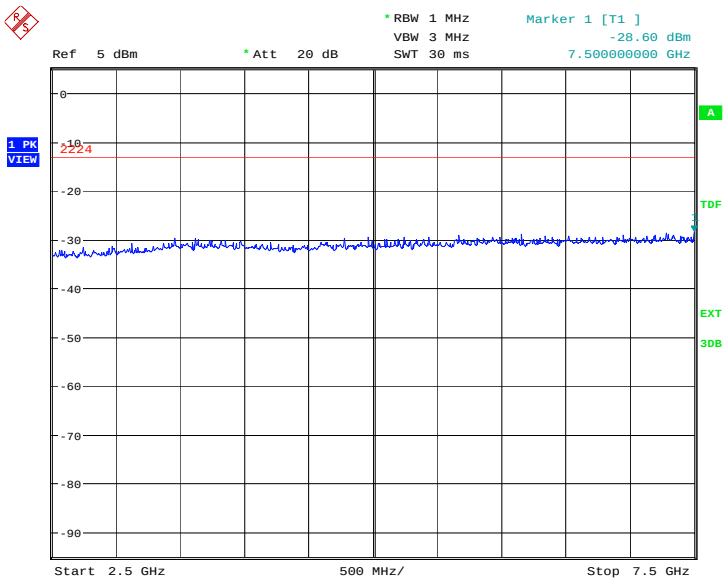
Spurious emission limit –13dBm.

NOTE: peak above the limit line is the carrier frequency.



A.8.3.15 Channel 9538: 2.5GHz –7.5GHz

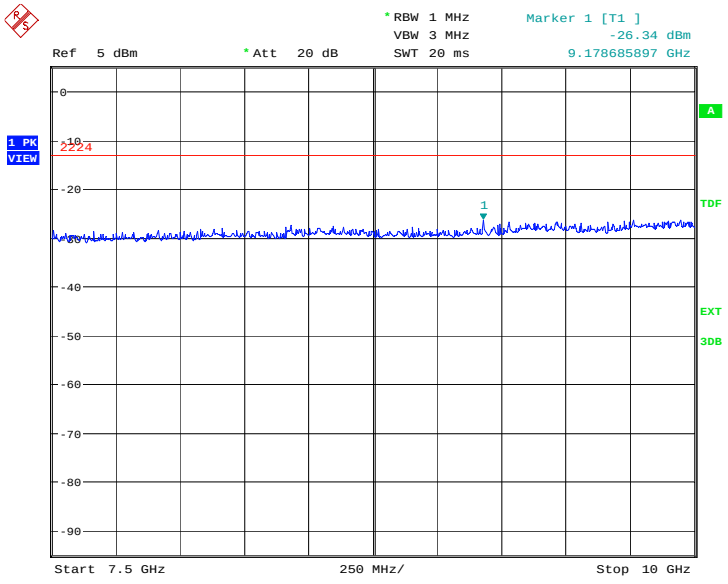
Spurious emission limit –13dBm.



Date: 5.MAR.2013 05:15:49

A.8.3.16 Channel 9538: 7.5GHz –10GHz

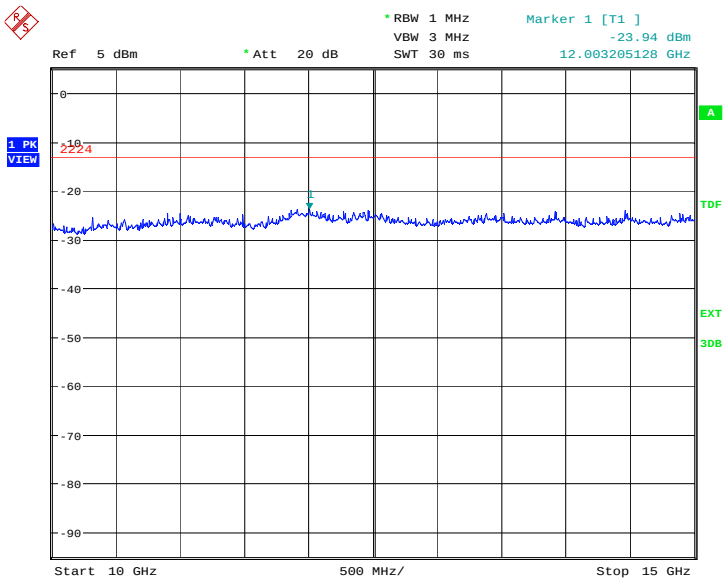
Spurious emission limit –13dBm.



Date: 5.MAR.2013 05:16:17

A.8.3.17 Channel 9538: 10GHz –15GHz

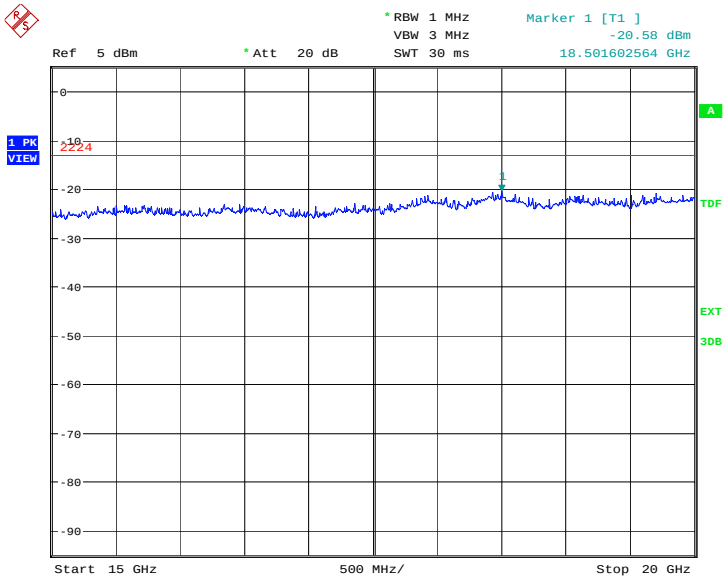
Spurious emission limit –13dBm.



Date: 5.MAR.2013 05:16:45

A.8.3.18 Channel 9538: 15GHz –20GHz

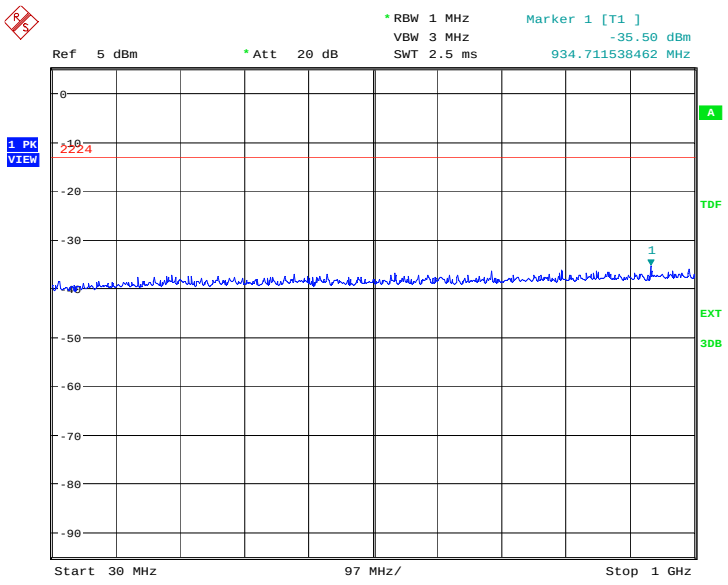
Spurious emission limit –13dBm.



Date: 5.MAR.2013 05:17:14

A. 8.3.19 Idle mode: 30MHz –1GHz

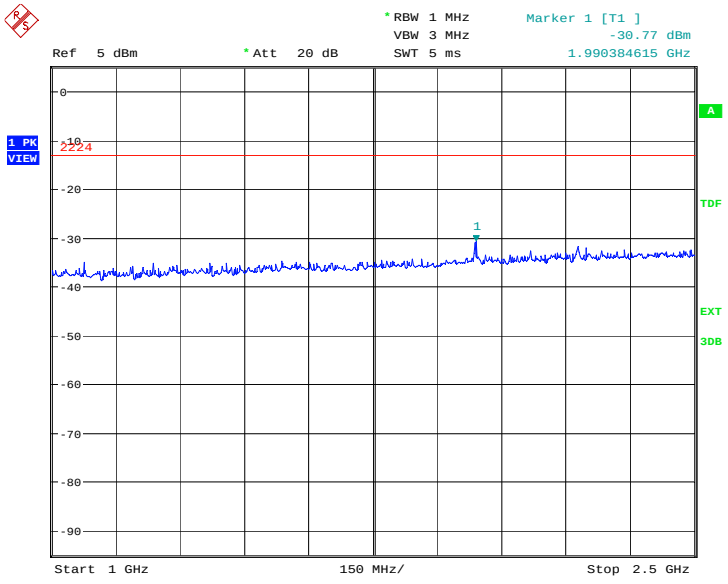
Spurious emission limit –13dBm.



Date: 5.MAR.2013 05:17:43

A.8.3.20 Idle mode: 1GHz –2.5GHz

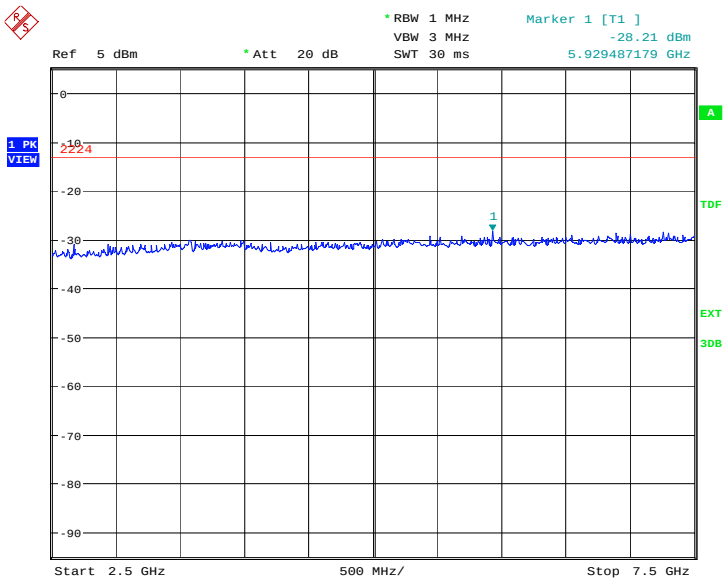
Spurious emission limit –13dBm.



Date: 5.MAR.2013 05:18:11

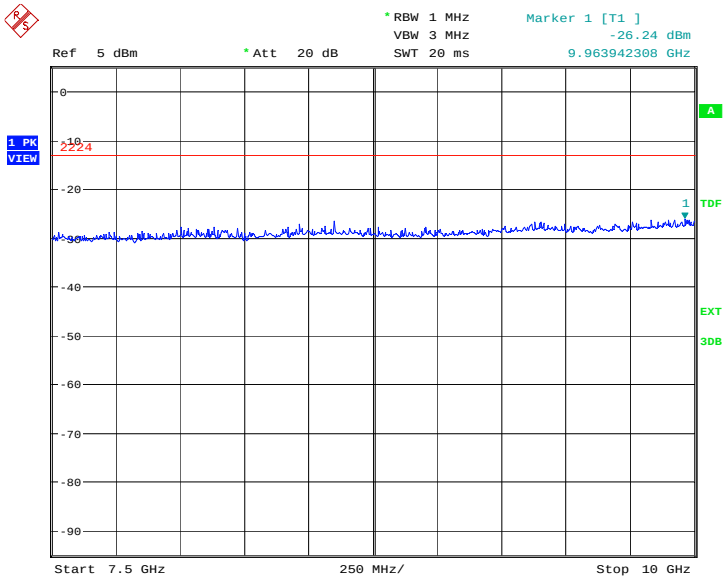
A.8.3.21 Idle mode: 2.5GHz –7.5GHz

Spurious emission limit –13dBm.



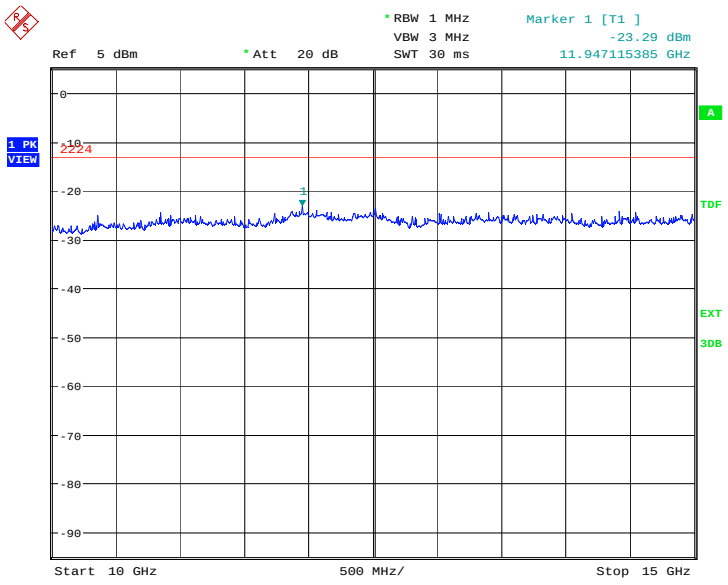
A.8.3.22 Idle mode: 7.5GHz –10GHz

Spurious emission limit –13dBm.



A.8.3.23 Idle mode: 10GHz –15GHz

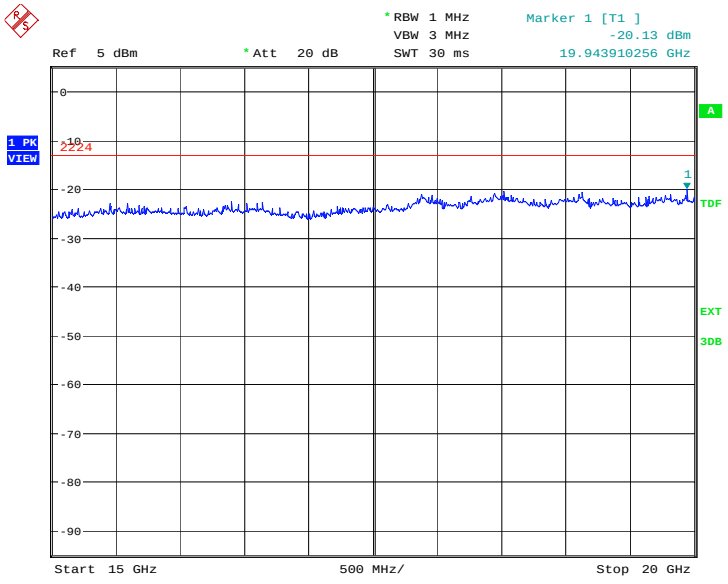
Spurious emission limit –13dBm.



Date: 5.MAR.2013 05:19:35

A.8.3.24 Idle mode: 15GHz –20GHz

Spurious emission limit –13dBm.

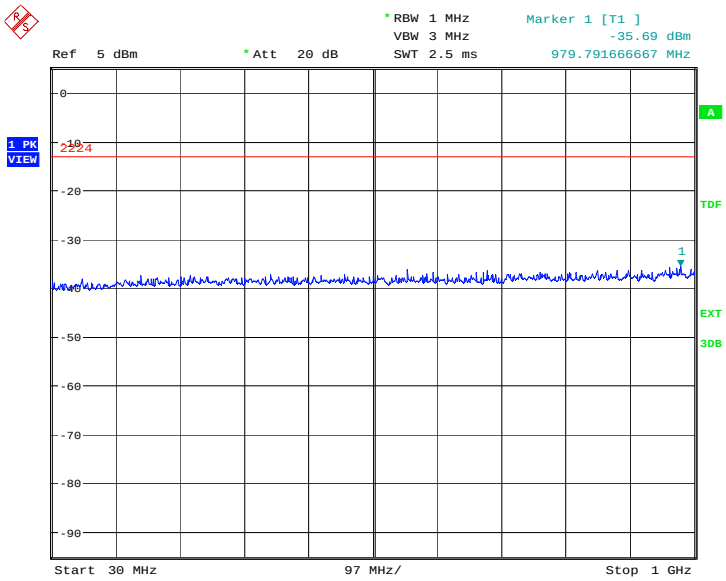


Date: 5.MAR.2013 05:20:03

WCDMA Band IV

A.8.3.25 Channel 1312: 30MHz –1GHz

Spurious emission limit –13dBm.

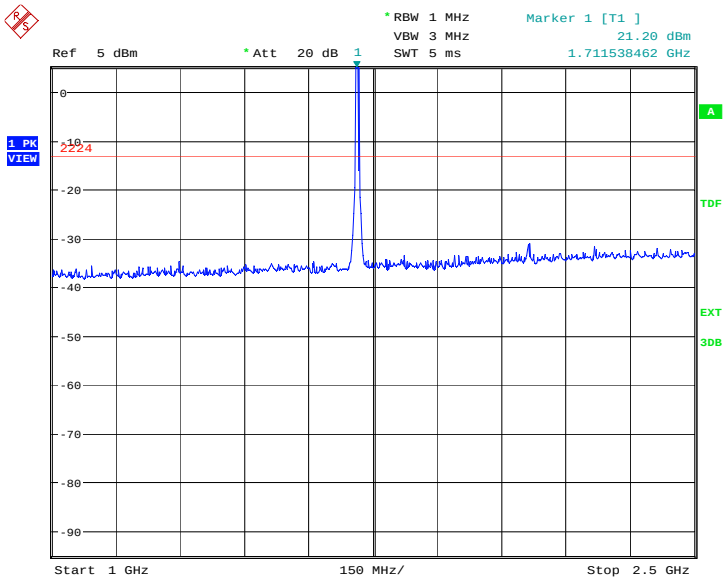


Date: 6.MAR.2013 07:37:59

A.8.3.26 Channel 1312: 1GHz –2.5GHz

Spurious emission limit –13dBm.

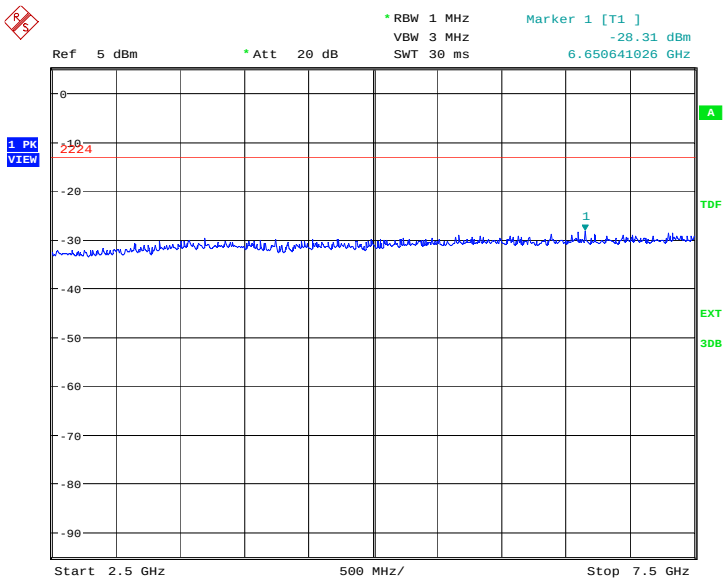
NOTE: peak above the limit line is the carrier frequency.



Date: 6.MAR.2013 07:38:28

A.8.3.27 Channel 1312: 2.5GHz –7.5GHz

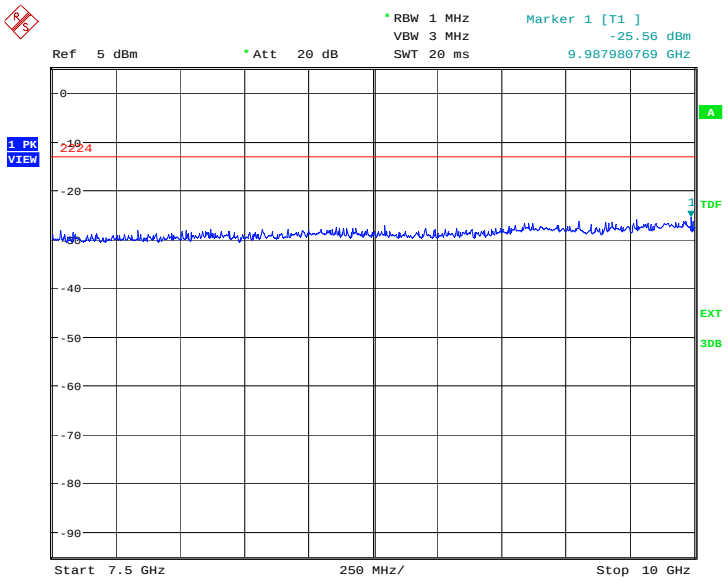
Spurious emission limit –13dBm.



Date: 6.MAR.2013 07:38:56

A.8.3.28 Channel 1312: 7.5GHz –10GHz

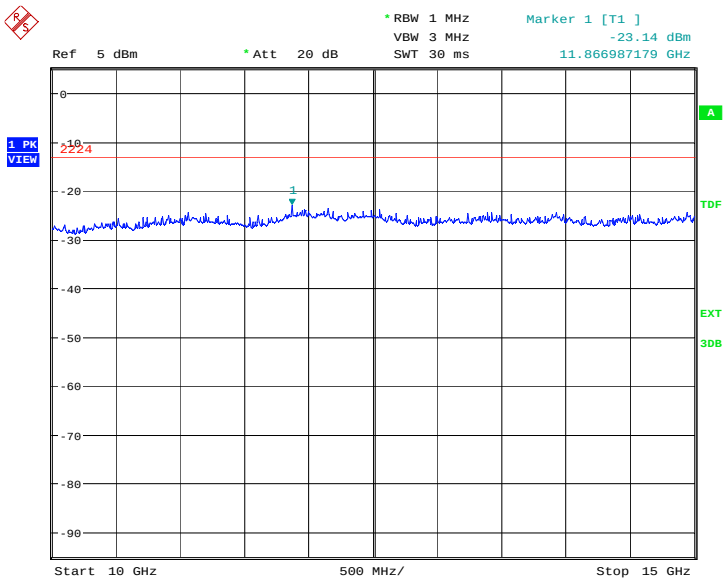
Spurious emission limit –13dBm.



Date: 6.MAR.2013 07:39:24

A.8.3.29 Channel 1312: 10GHz –15GHz

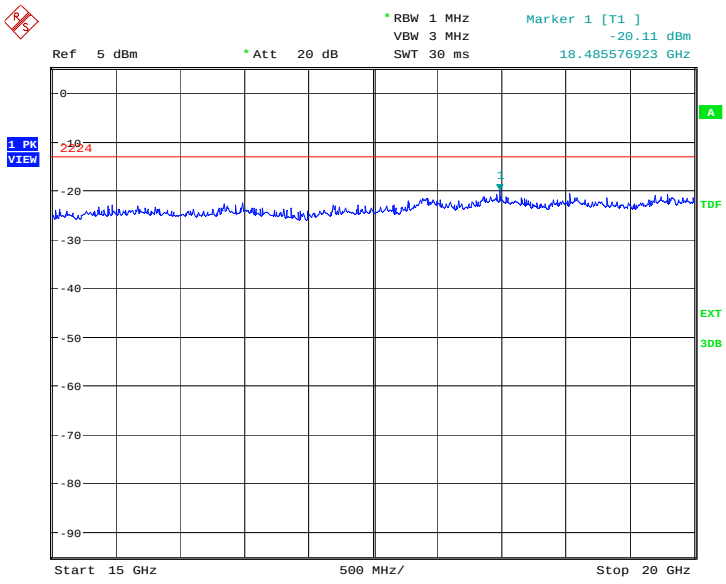
Spurious emission limit –13dBm.



Date: 6.MAR.2013 07:39:52

A.8.3.30 Channel 1312: 15GHz –20GHz

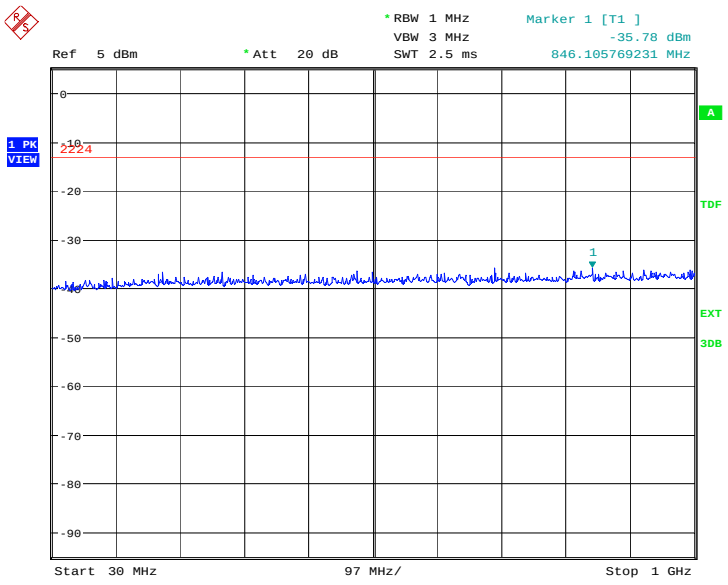
Spurious emission limit –13dBm.



Date: 6.MAR.2013 07:40:20

A.8.3.31 Channel 1450: 30MHz –1GHz

Spurious emission limit –13dBm.

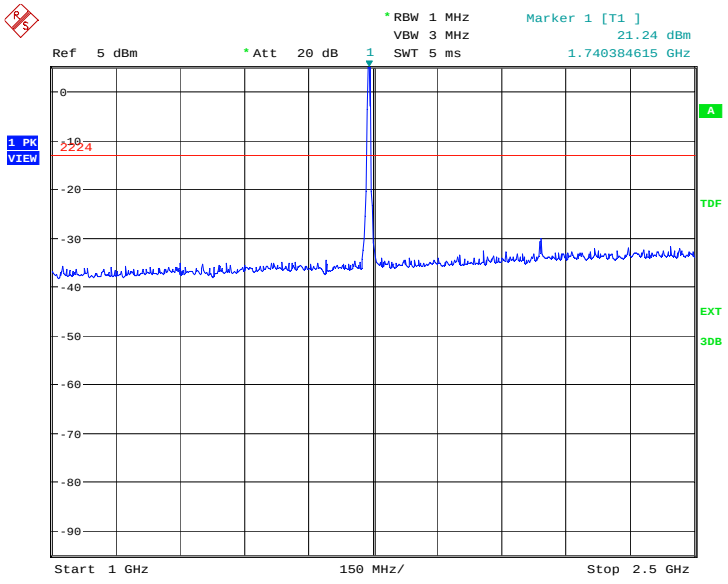


Date: 6.MAR.2013 07:40:51

A.8.3.32 Channel 1450: 1GHz –2.5GHz

Spurious emission limit –13dBm.

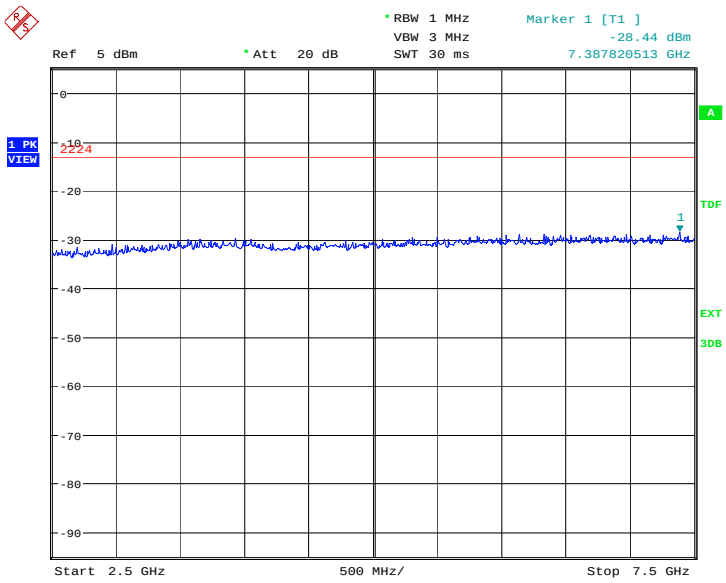
NOTE: peak above the limit line is the carrier frequency.



Date: 6.MAR.2013 07:41:19

A.8.3.33 Channel 1450: 2.5GHz –7.5GHz

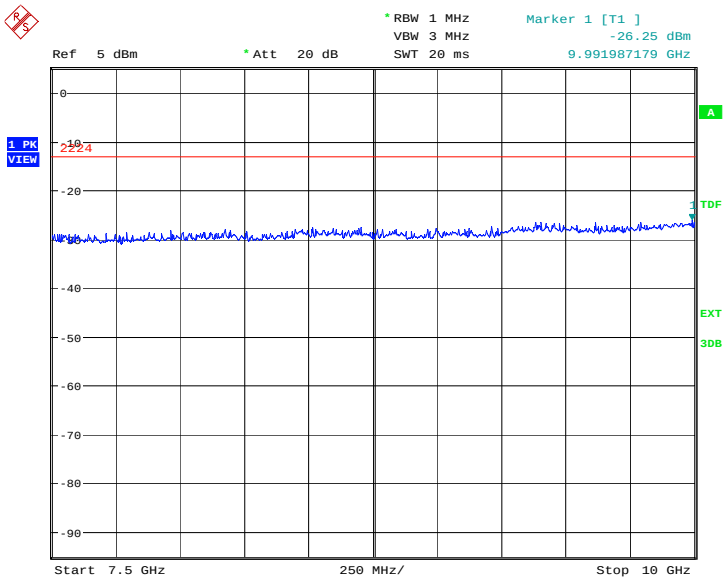
Spurious emission limit –13dBm.



Date: 6.MAR.2013 07:41:47

A.8.3.34 Channel 1450: 7.5GHz –10GHz

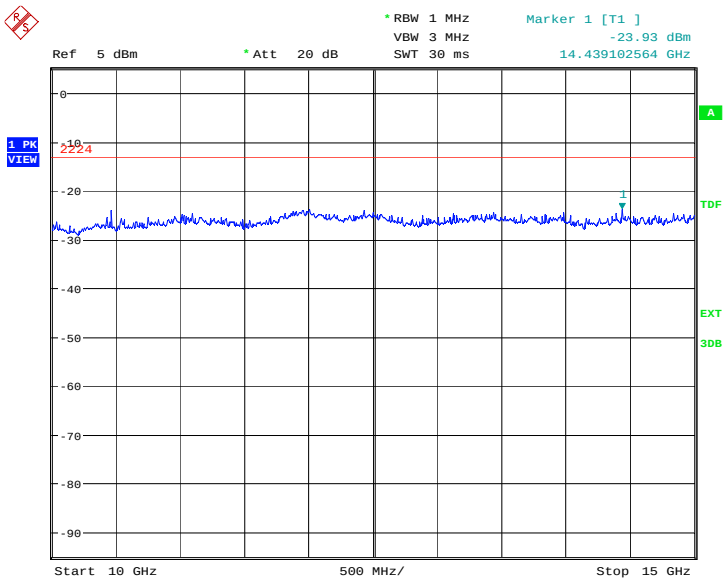
Spurious emission limit –13dBm.



Date: 6.MAR.2013 07:42:16

A.8.3.35 Channel 1450: 10GHz –15GHz

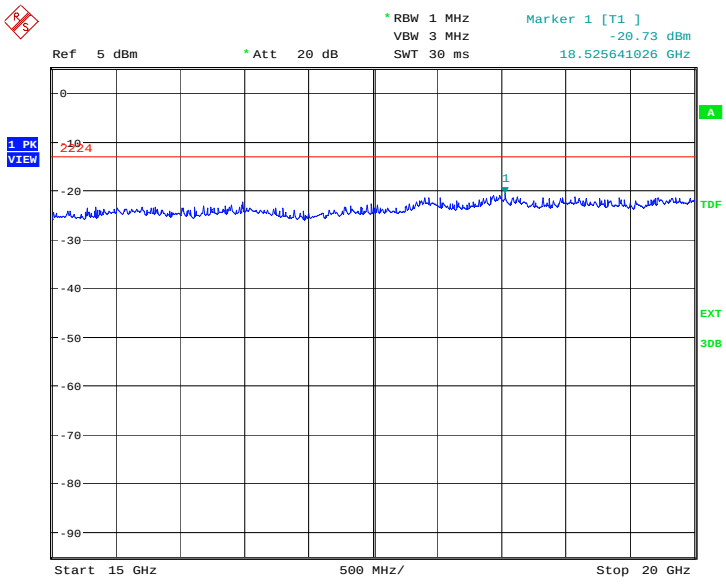
Spurious emission limit –13dBm.



Date: 6.MAR.2013 07:42:44

A.8.3.36 Channel 1450: 15GHz –20GHz

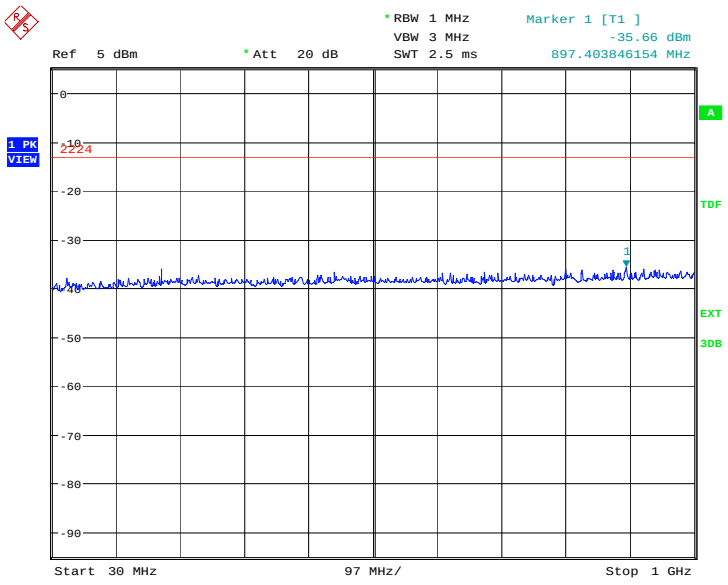
Spurious emission limit –13dBm.



Date: 6.MAR.2013 07:43:12

A.8.3.37 Channel 1513: 30MHz –1GHz

Spurious emission limit –13dBm.

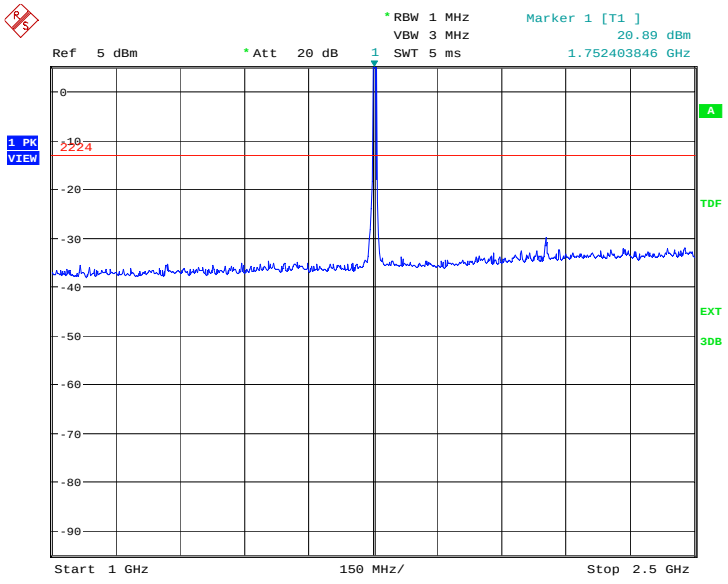


Date: 6.MAR.2013 07:43:43

A.8.3.38 Channel 1513: 1GHz –2.5GHz

Spurious emission limit –13dBm.

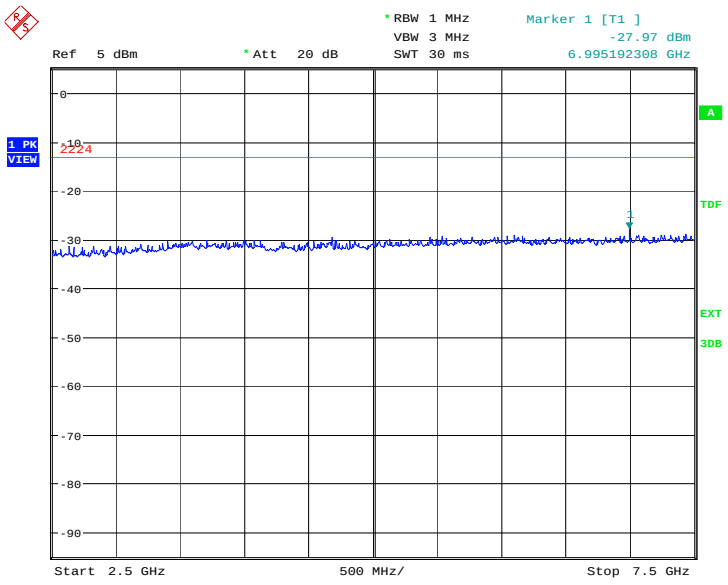
NOTE: peak above the limit line is the carrier frequency.



Date: 6.MAR.2013 07:44:11

A.8.3.39 Channel 1513: 2.5GHz –7.5GHz

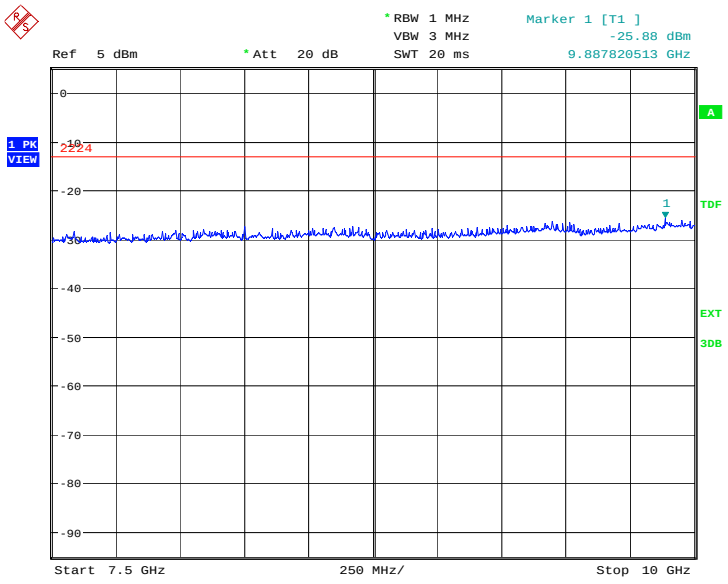
Spurious emission limit –13dBm.



Date: 6.MAR.2013 07:44:39

A.8.3.40 Channel 1513: 7.5GHz –10GHz

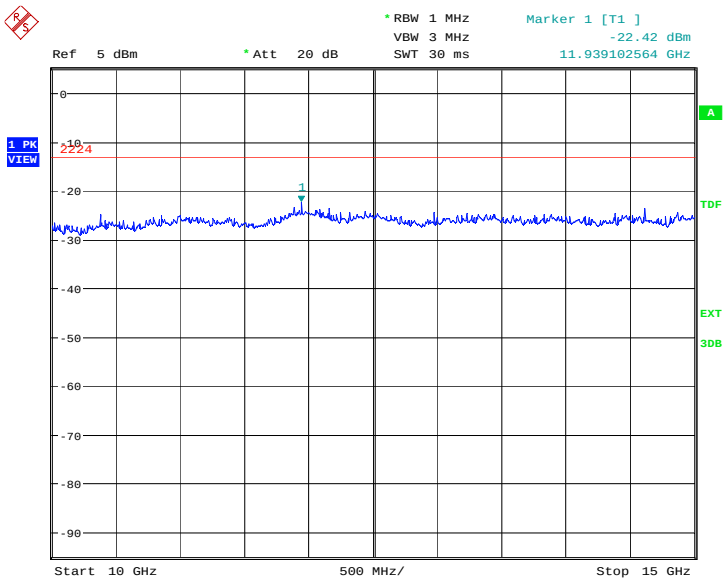
Spurious emission limit –13dBm.



Date: 6.MAR.2013 07:45:08

A.8.3.41 Channel 1513: 10GHz –15GHz

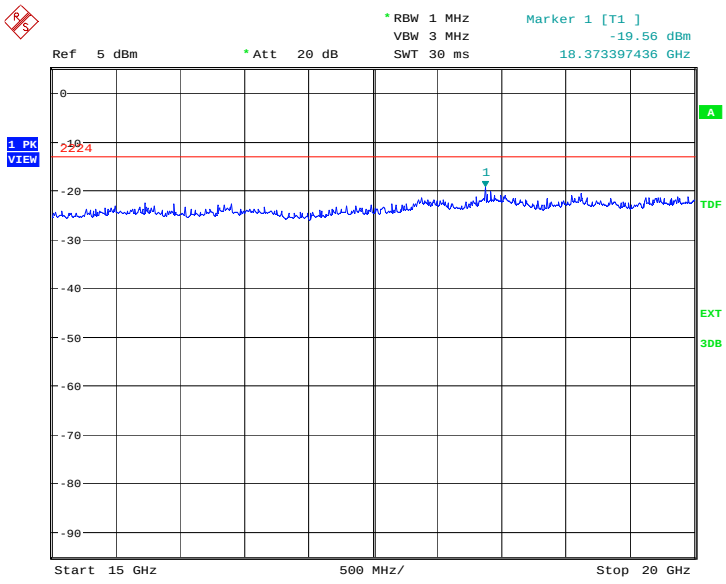
Spurious emission limit –13dBm.



Date: 6.MAR.2013 07:45:36

A.8.3.42 Channel 1513: 15GHz –20GHz

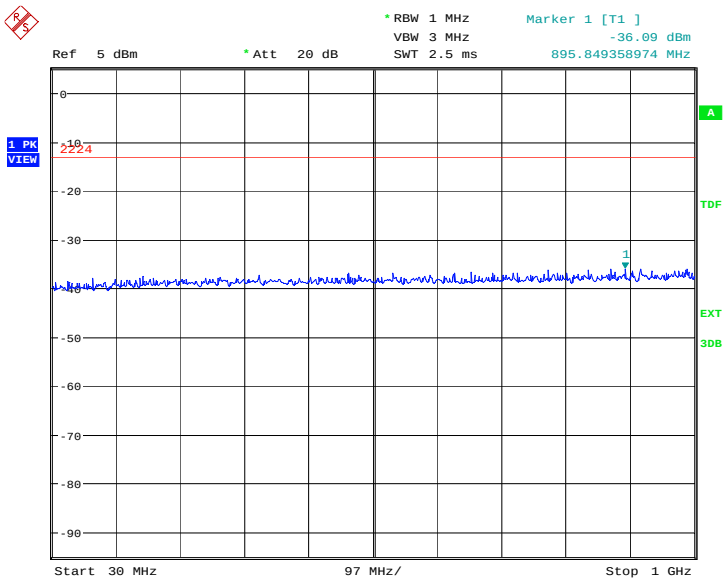
Spurious emission limit –13dBm.



Date: 6.MAR.2013 07:46:04

A.8.3.43 Idle mode: 30MHz –1GHz

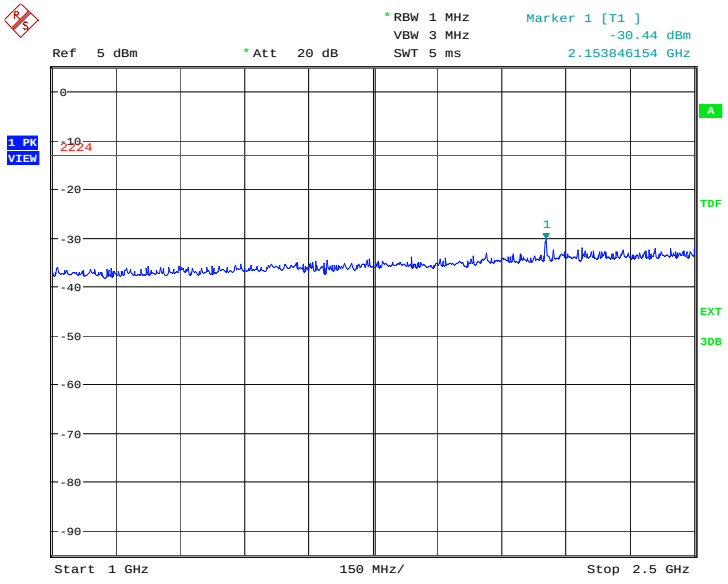
Spurious emission limit –13dBm.



Date: 6.MAR.2013 07:46:33

A.8.3.44 Idle mode: 1GHz –2.5GHz

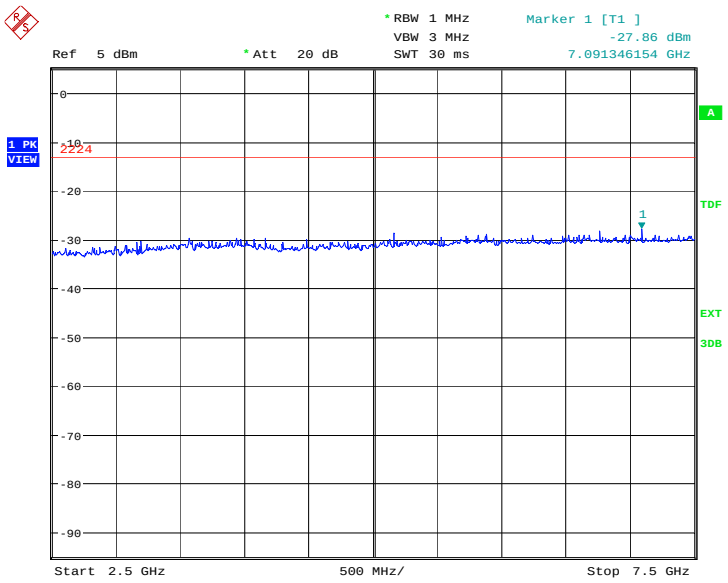
Spurious emission limit –13dBm.



Date: 6.MAR.2013 07:47:01

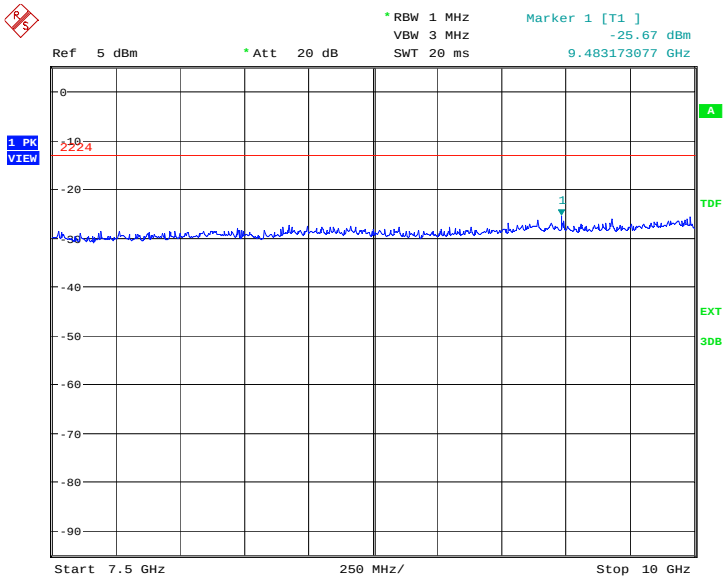
A.8.3.45 Idle mode: 2.5GHz –7.5GHz

Spurious emission limit –13dBm.



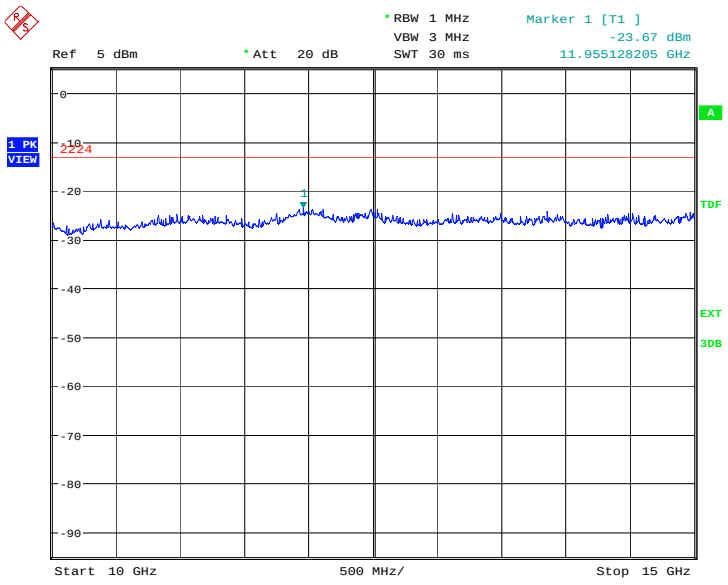
A.8.3.46 Idle mode: 7.5GHz –10GHz

Spurious emission limit –13dBm.



A.8.3.47 Idle mode: 10GHz –15GHz

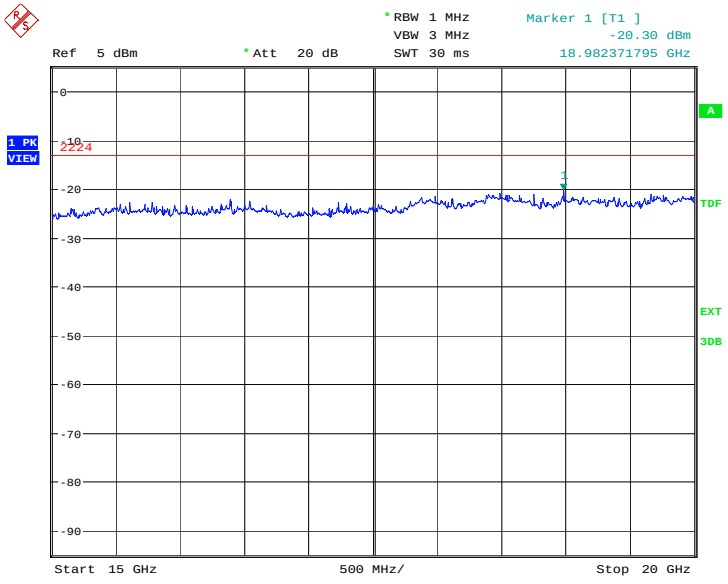
Spurious emission limit –13dBm.



Date: 6.MAR.2013 07:48:26

A.8.3.48 Idle mode: 15GHz –20GHz

Spurious emission limit –13dBm.



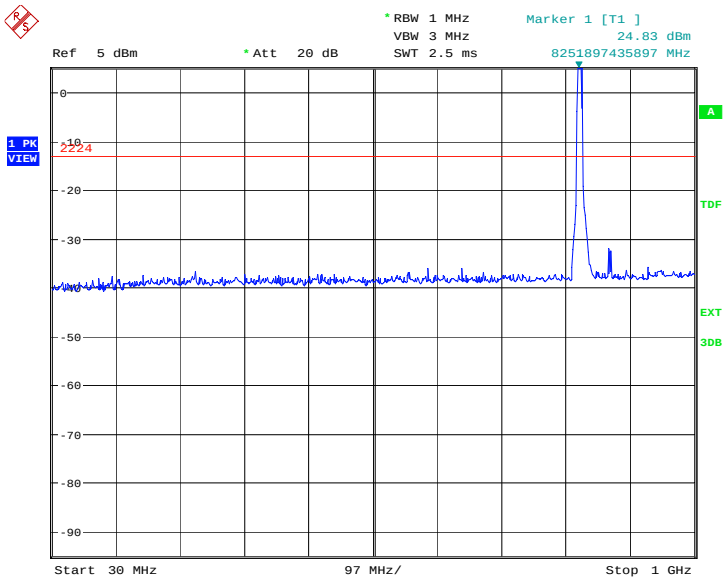
Date: 6.MAR.2013 07:48:54

WCDMA Band Ⅴ

A.8.3.49 Channel 4132: 30MHz –1GHz

Spurious emission limit –13dBm.

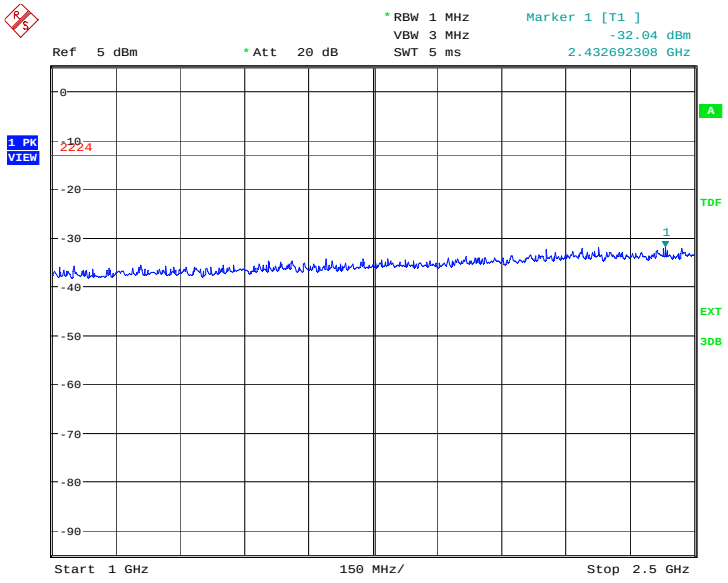
NOTE: peak above the limit line is the carrier frequency.



Date: 5.MAR.2013 05:36:36

A.8.3.50 Channel 4132: 1GHz – 2.5GHz

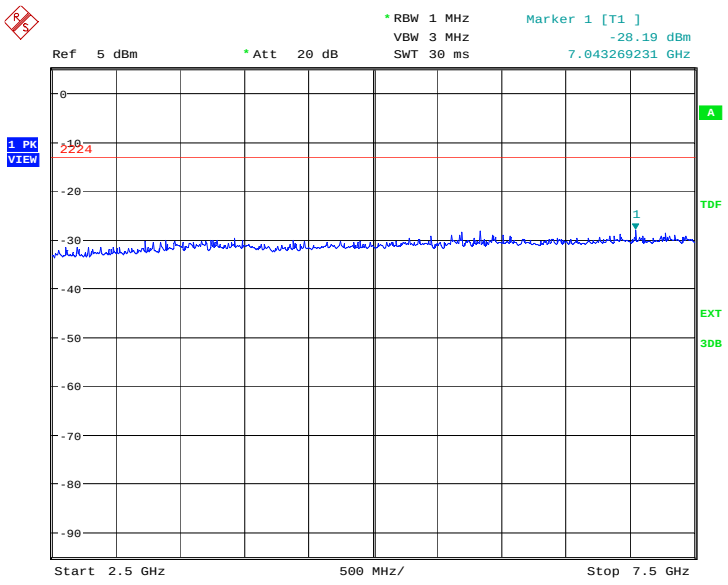
Spurious emission limit –13dBm.



Date: 5.MAR.2013 05:37:04

A.8.3.51 Channel 4132: 2.5GHz –7.5GHz

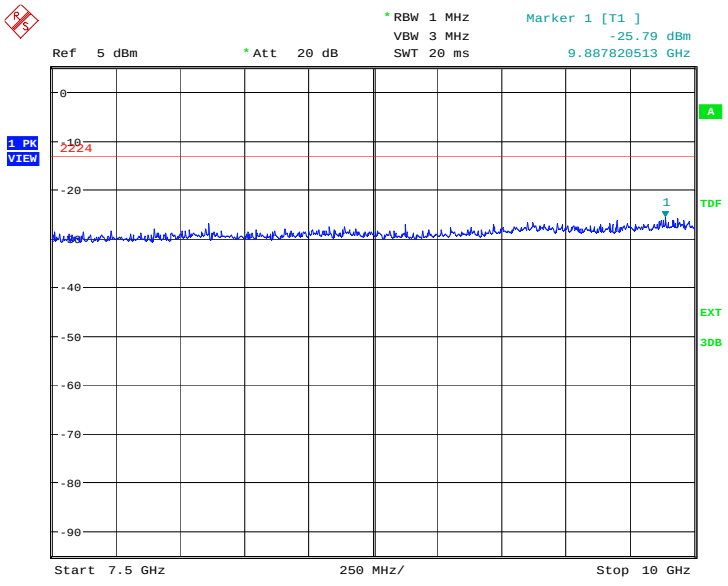
Spurious emission limit –13dBm.



Date: 5.MAR.2013 05:37:32

A.8.3.52 Channel 4132: 7.5GHz – 10GHz

Spurious emission limit –13dBm.

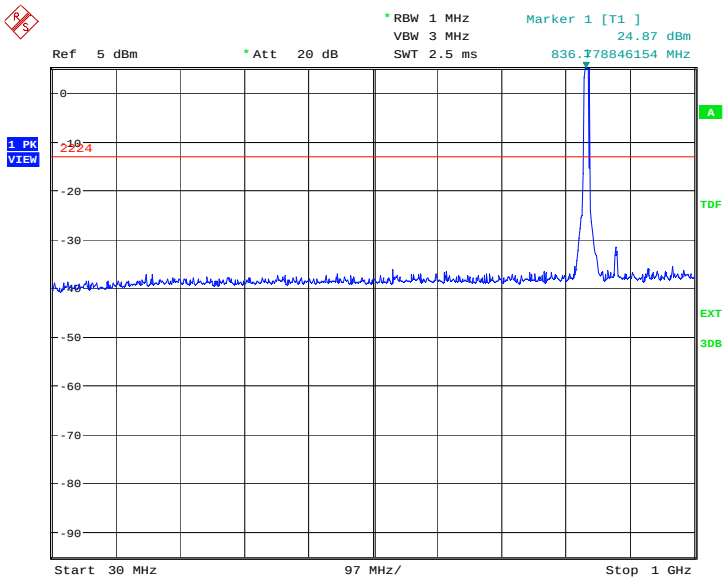


Date: 5.MAR.2013 05:38:00

A.8.3.53 Channel 4183: 30MHz –1GHz

Spurious emission limit –13dBm.

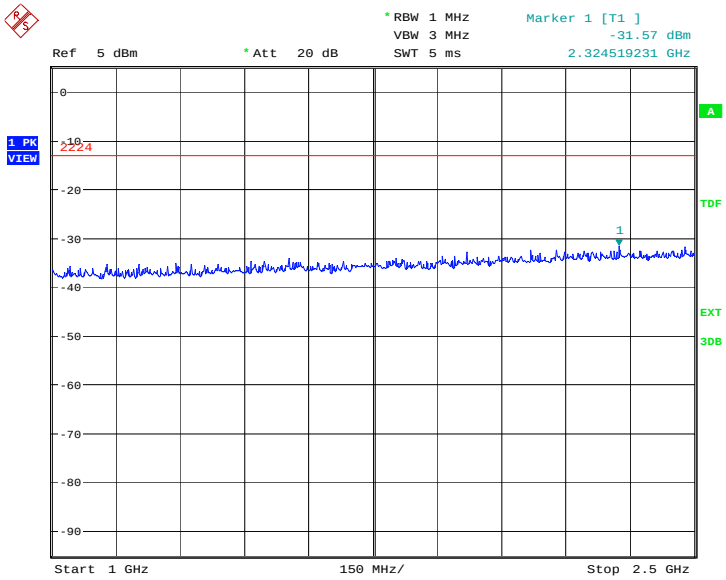
NOTE: peak above the limit line is the carrier frequency.



Date: 5.MAR.2013 05:38:32

A.8.3.54 Channel 4183: 1GHz – 2.5GHz

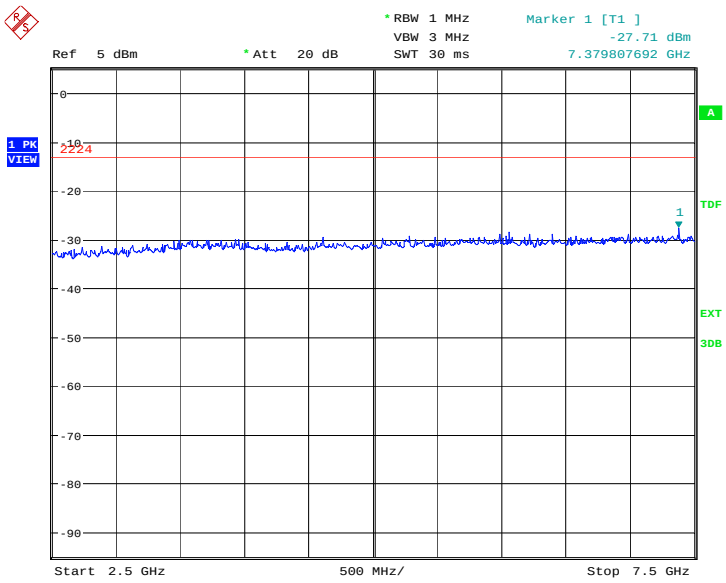
Spurious emission limit –13dBm.



Date: 5.MAR.2013 05:39:00

A.8.3.55 Channel 4183: 2.5GHz –7.5GHz

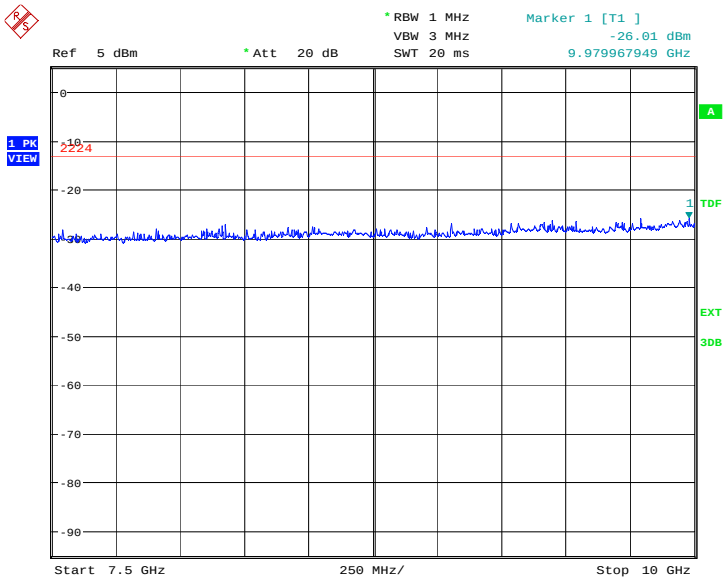
Spurious emission limit –13dBm.



Date: 5.MAR.2013 05:39:28

A.8.3.56 Channel 4183: 7.5GHz – 10GHz

Spurious emission limit –13dBm.

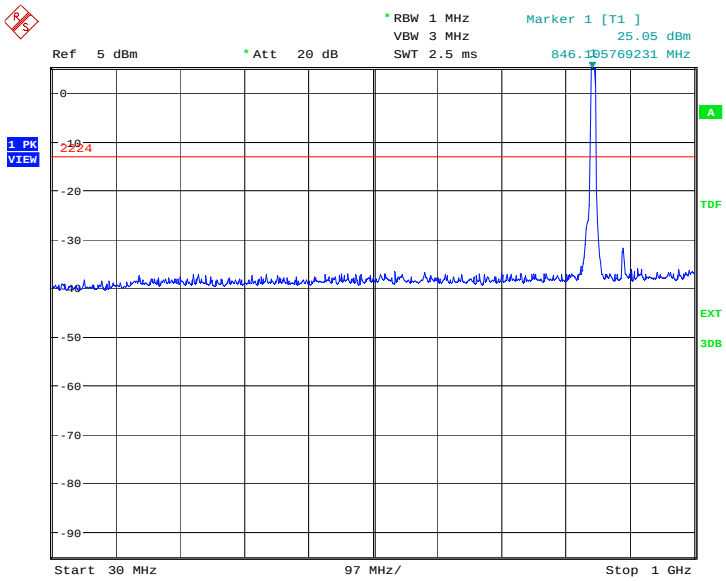


Date: 5.MAR.2013 05:39:56

A.8.3.57 Channel 4233: 30MHz –1GHz

Spurious emission limit –13dBm.

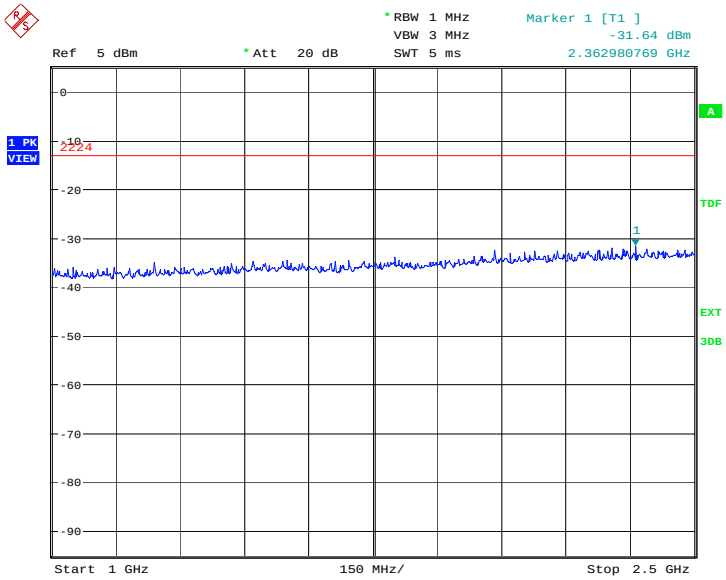
NOTE: peak above the limit line is the carrier frequency.



Date: 5.MAR.2013 05:40:27

A.8.3.58 Channel 4233: 1GHz – 2.5GHz

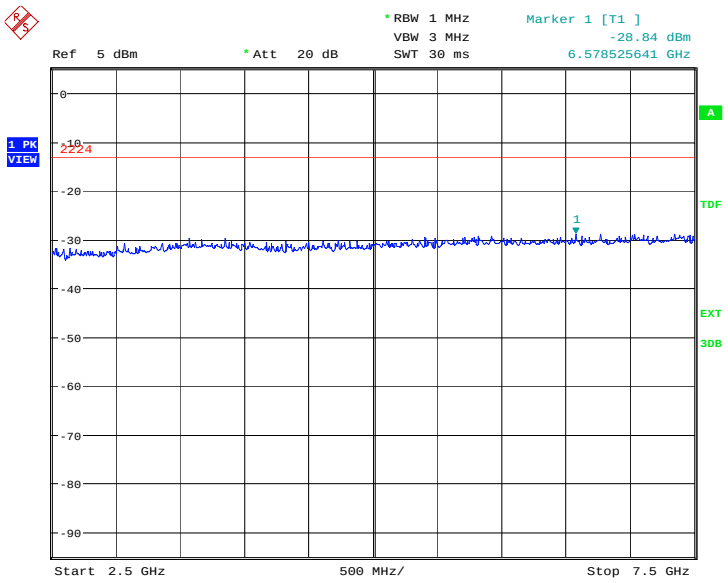
Spurious emission limit –13dBm.



Date: 5.MAR.2013 05:40:55

A.8.3.59 Channel 4233: 2.5GHz –7.5GHz

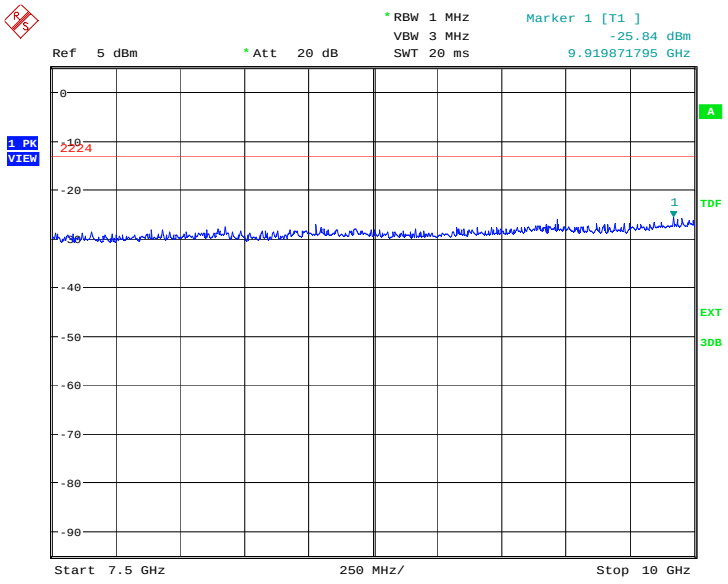
Spurious emission limit –13dBm.



Date: 5.MAR.2013 05:41:23

A.8.3.60 Channel 4233: 7.5GHz – 10GHz

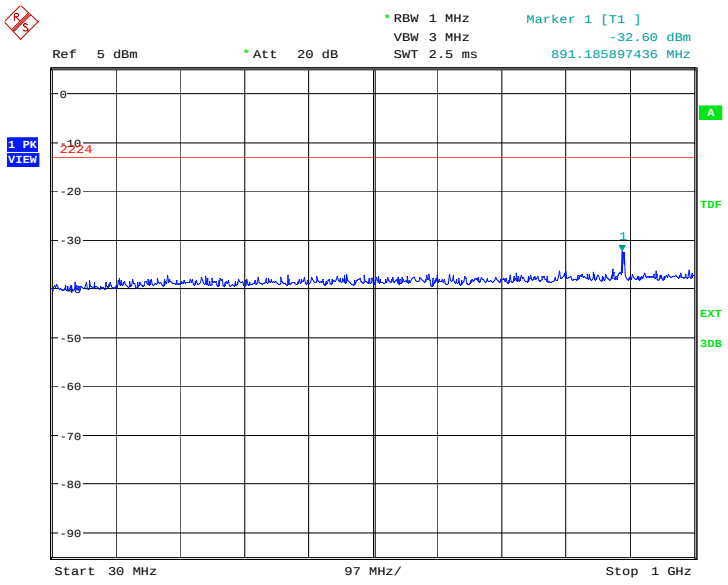
Spurious emission limit –13dBm.



Date: 5.MAR.2013 05:41:52

A.8.3.61 Idle mode: 30MHz – 1GHz

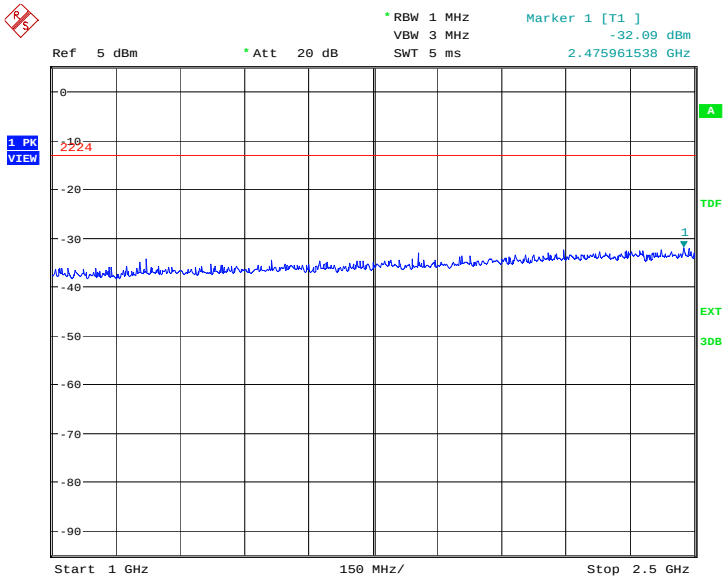
Spurious emission limit -13dBm.



Date: 5.MAR.2013 05:42:21

A.8.3.62 Idle mode: 1GHz – 2.5GHz

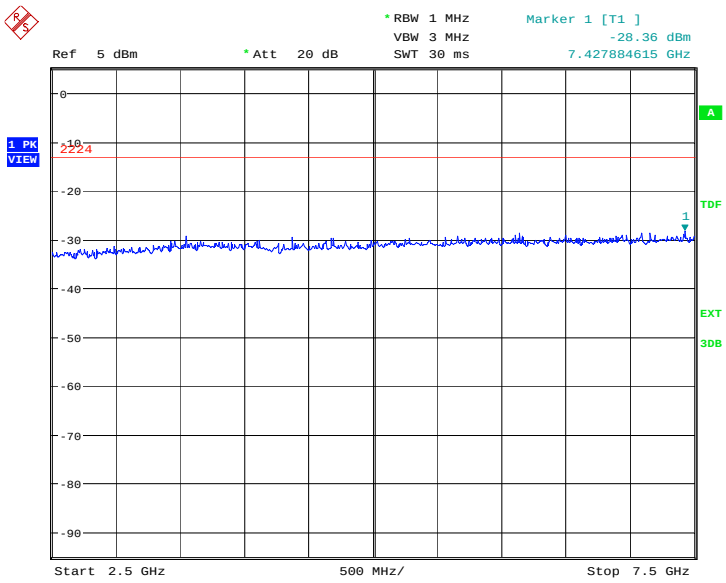
Spurious emission limit -13dBm.



Date: 5.MAR.2013 05:42:49

A.8.3.63 Idle mode: 2.5GHz – 7.5GHz

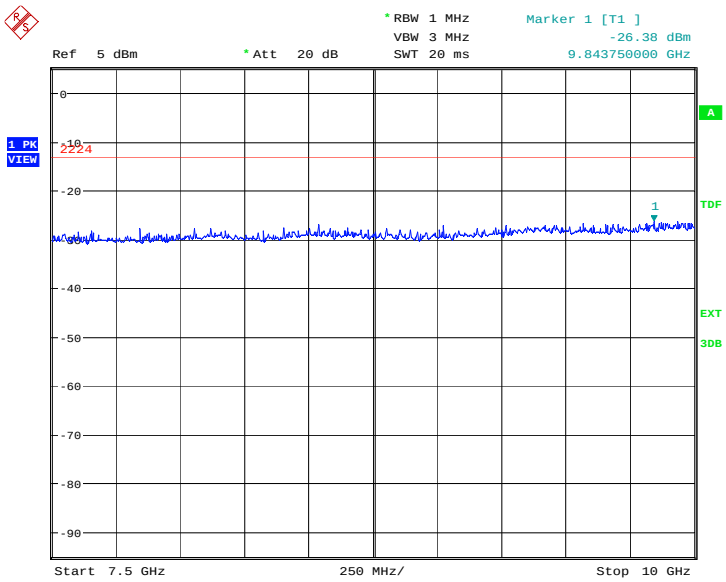
Spurious emission limit -13dBm.



Date: 5.MAR.2013 05:43:17

A.8.3.64 Idle mode: 7.5GHz – 10GHz

Spurious emission limit -13dBm.



Date: 5.MAR.2013 05:43:45

A.9 RECEIVER RADIATION EMISSION

Reference

FCC: CFR Part 2.1053, 15.109.

IC: RSS-139 Issue 2, Section 6.6.

A.9.1 Method of Measurement

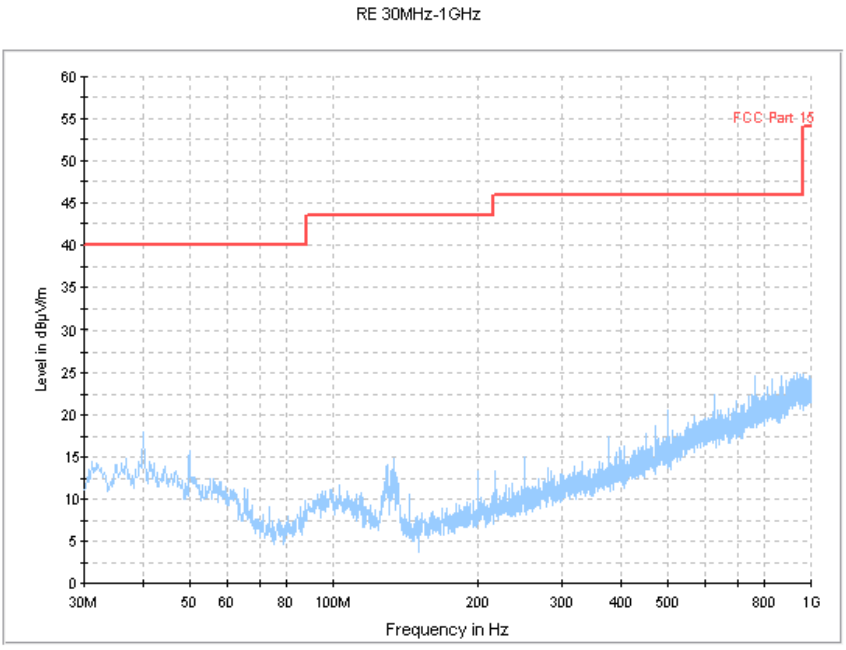
The measurement procedure in ANSI C63.4-2003 is used. The EUT is placed on an 80cm height non-conductive table locating on the center of turntable. From 30MHz-1GHz, the measurement distance is 3 m. For frequency range above 1GHz, the measurement distance is 3m.

The EUT is measured with travel charger and the operating mode is idle without CMU200's signaling.

A.9.2 Method of Measurement

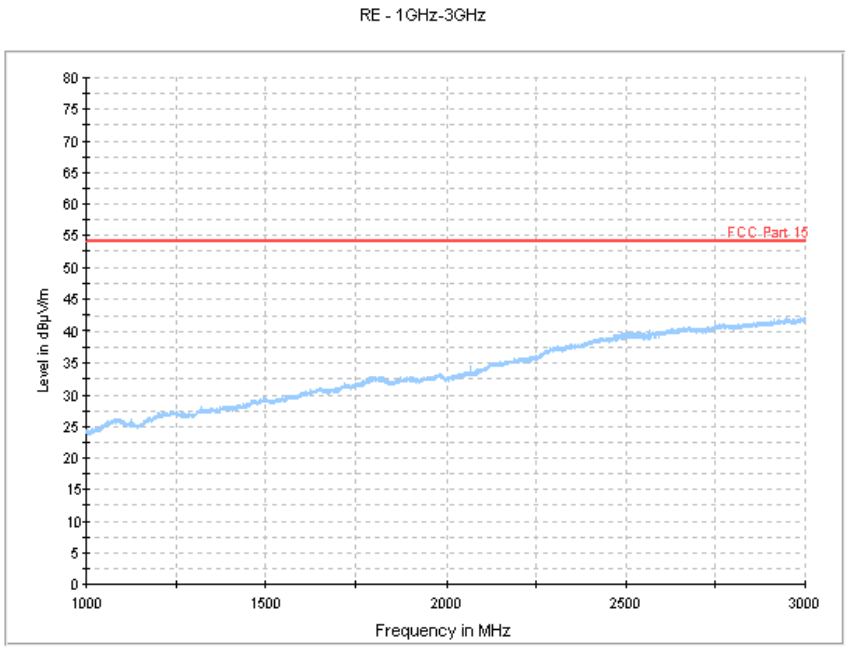
Frequency of Emission (MHz)	Limit (dBμV/m)	Measurement Distance (m)
30-88	40	3
88-216	43.5	3
216-960	46	3
960-1000	54	3
>1000	54	3

A. 9.3 Measurement results



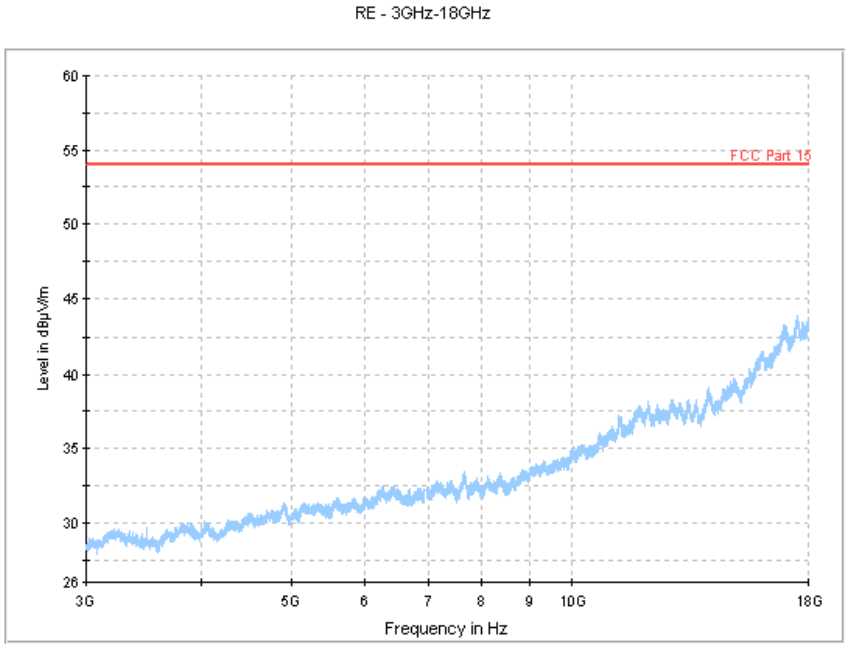
IF bandwidth: 120 kHz

Idle Mode: 30MHz-1GHz



RBW / VBW 1 MHz

Idle Mode: 1GHz-3GHz



RBW / VBW 1 MHz

Idle Mode: 3GHz-18GHz

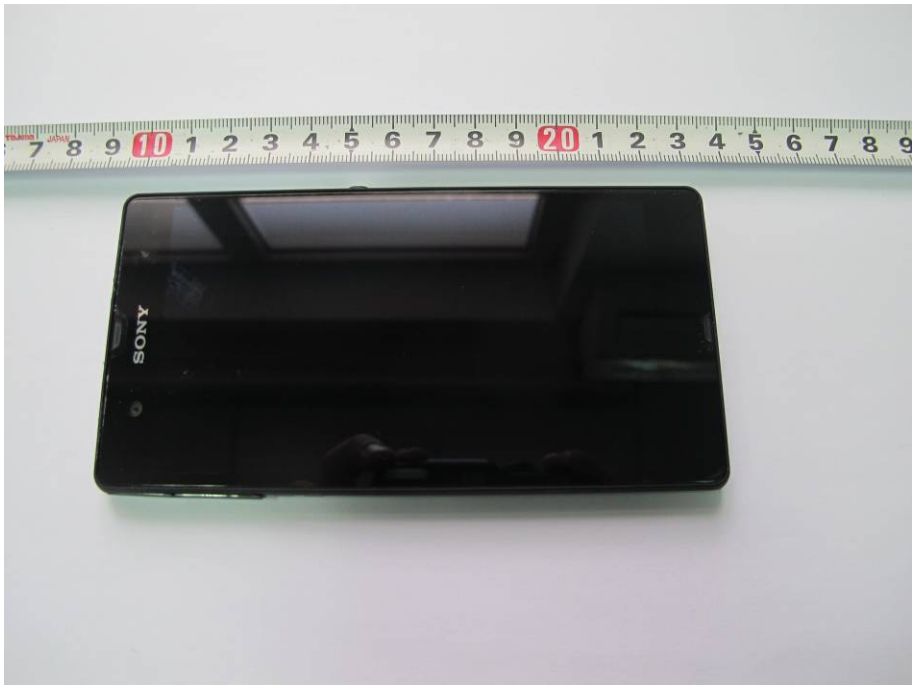
ANNEX B: TEST LAYOUT

Pic.1 Radiated spurious emission

Note: the charger is not connected to LISN directly since the length of USB cable is less than 80cm.

Pic.2 Conducted emission

ANNEX C: EUT photograph

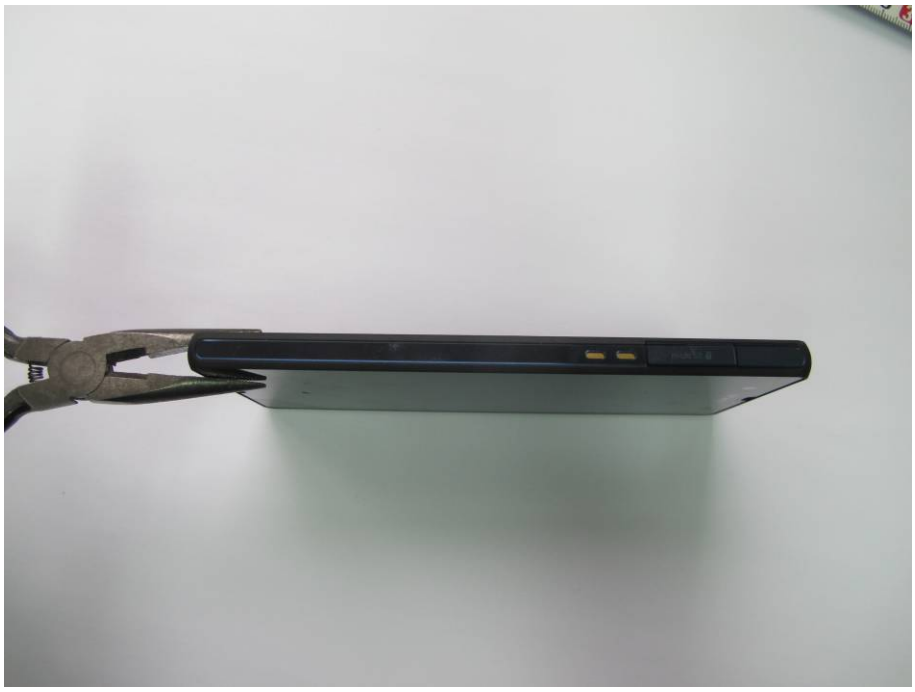


Mobile Phone

Mobile Phone

Mobile Phone

Mobile Phone



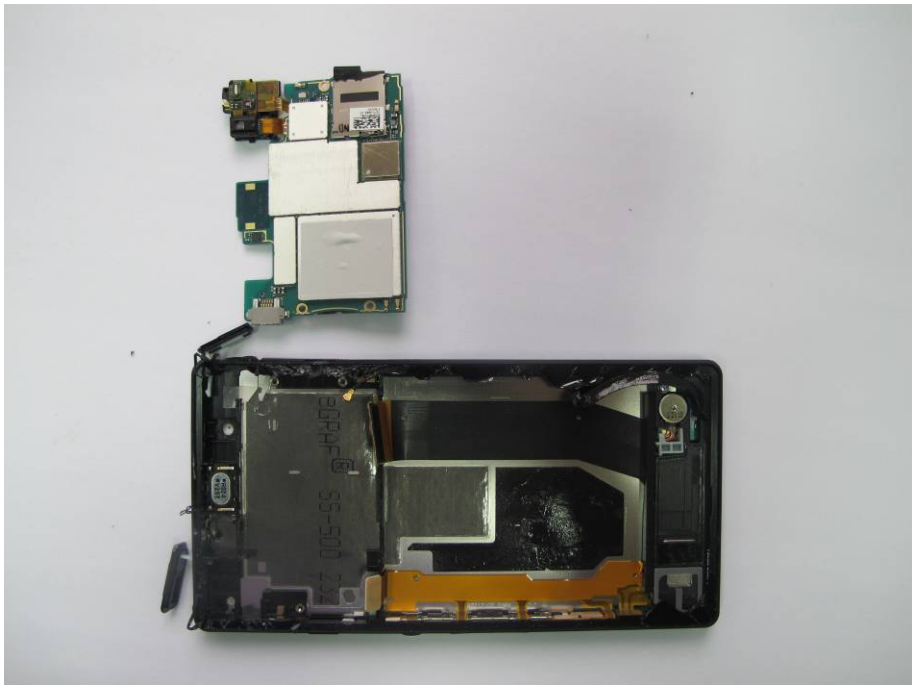
Mobile Phone

Mobile Phone

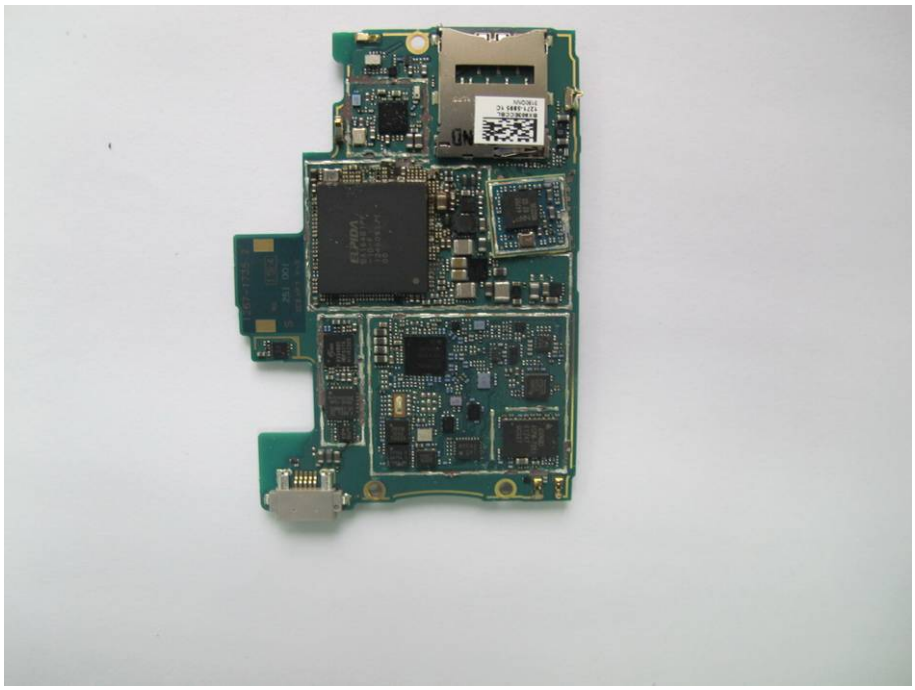
Label of Mobile Phone

Mobile Phone Disassembly

Mobile Phone Disassembly

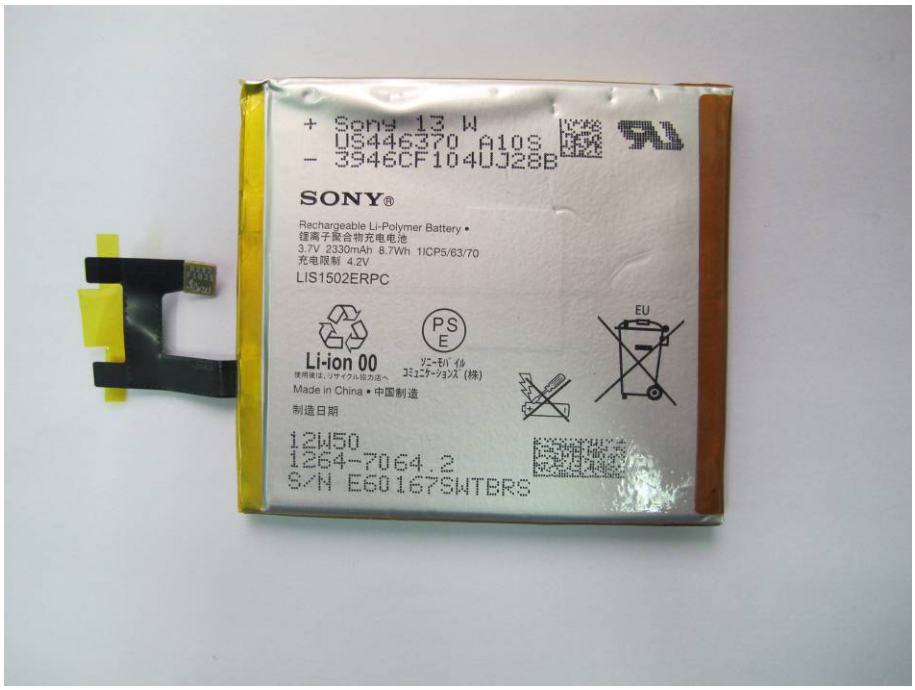


Mobile Phone Disassembly



Mobile Phone Disassembly

Mobile Phone Disassembly



Li-Polymer Battery

Travel Charger

Label of Travel Charger

USB Cable

*****END OF REPORT*****