



TEST REPORT

No. 2013TAR896

for

Sony Mobile Communications AB

GSM/WCDMA/LTE Mobile Phone

Type: PM-0763-BV

FCC ID: PY7PM-0763

IC No.: 4170B-PM0763

with

Hardware Version: AP1

Software Version: 19.0.A.0.261

Issued Date: Jan. 28th, 2014

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

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1. Test Laboratory

1.1. Testing Location

Location A

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT
Address: No 52, Huayuan Bei Road, Haidian District, Beijing, P.R. China
Postal Code: 100191

Location B

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT
Address: Building Shouxian, No.51, Xueyuan Road, Haidian District, Beijing, China
Postal Code: 100191

1.2. Testing Environment

Normal Temperature: 15-35°C
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.

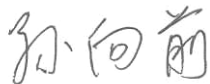
1.3. Project data

Receipt of Sample Jan. 06th, 2014
Testing Start Date: Jan. 08th, 2014
Testing End Date: Jan. 27th, 2014

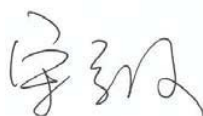
1.4. Signature



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: Mobilvägen, 22188 Lund, Sweden
City: Lund
Postal Code: 22188
Country: Sweden
Contact Person: Nilsson, Mikael
Telephone: +46 703 227503
Fax: +46 706 127385

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

3.1. About EUT

Description	GSM 850/900/1800/1900 quad bands, GPRS, EDGE, WCDMA FDD bands 1/2/4/5/8, HSDPA, HSUPA, LTE FDD bands 2/4/7/17, Bluetooth (EDR and 4.0), ANT+, WLAN (802.11 a/b/g/n), NFC, FM, GPS mobile phone
Type	PM-0763-BV
FCC ID	PY7PM-0763
IC No.	4170B-PM0763
GSM Frequency Band	GSM 850/900/1800/1900
UMTS Frequency Band	FDD Band 1 / FDD Band 2 / FDD Band 4/ FDD Band 5/ FDD Band 8
LTE Frequency Band	FDD Band 2 / FDD Band 4 / FDD Band 7 / FDD Band 17
Output power	25.13 dBm maximum EIRP measured for WCDMA Band 2 25.72 dBm maximum EIRP measured for WCDMA Band 4 21.95 dBm maximum ERP measured for WCDMA Band 5
Antenna	Internal
Power supply	Battery (charged by travel adapter or vehicle charger)
Extreme vol. Limits	3.5VDC to 4.1VDC (nominal: 3.7VDC)
Extreme temp. Tolerance	-20°C to +55°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
EUT2	CB51268CHN	004402451853752	AP1	19.0.A.0.261
EUT3	CB51268CUC	004402451853299	AP1	19.0.A.0.261

*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
AE1	Travel Charger	4413W 18 511285	1
AE3	USB Cable	131307D20BE8904	1
AE4	Embedded Battery	/	1C

AE1

Commercial name	EP880
Type	AC-0400-EU
Manufacturer	SALCOMP
Length of cable	98.5 cm (length of USB cable)

AE3

Commercial name	EC801
Type	AI-0401
Manufacturer	Sony Mobile
Length of cable	98.5 cm

AE4

Model name	1277-4767
Manufacturer	Sony Mobile
Minimum Capacitance	3000 mAh
Nominal Voltage	3.8V

*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/WCDMA/LTE Mobile Phone with integrated antenna and embedded battery.

The EUT supports GSM 850/900/1800/1900MHz bands, WCDMA FDD bands 1/2/4/5/8 and LTE FDD bands 2/4/7/17. It supports GPRS service with multi-slots class 33 and EGPRS service with multi-slots class 33. The HSDPA and HSUPA (Cat 6) features are also supported.

It has MP3, camera, USB memory, FM radio, GPS receiver, NFC, Bluetooth (EDR and Bluetooth 4.0), ANT+, WLAN (802.11 a/b/g/n) and Wi-Fi hotspot functions. For WLAN 802.11n, it supports 20MHz and 40MHz bandwidths on both 2.4GHz band and 5GHz/5.8GHz bands.

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

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.3	EUT2 + AE1 + AE3 + AE4	Tests with travel charger
Set.4	EUT2 + AE4	ERP/EIRP/RSE tests
Set.5	EUT3 + AE4	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 15	Radio frequency devices	10-1-12 Edition
FCC Part 22	PUBLIC MOBILE SERVICES	10-1-13 Edition
FCC Part 24	PERSONAL COMMUNICATIONS SERVICES	10-1-13 Edition
FCC Part 27	MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES	10-1-13 Edition
RSS-Gen	General Requirements and Information for the Certification of Radiocommunication Equipment	Issue 3
RSS-132	Cellular Telephones Employing New Technologies Operating in the Bands 824-849 MHz and 869-894 MHz	Issue 3
RSS-133	2 GHz Personal Communications Services	Issue 6
RSS-139	Advanced Wireless Services Equipment Operating in the Bands 1710-1755 MHz and 2110-2155 MHz	Issue 2
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	2009
KDB 971168 D01	Measurement Guidance for Certification of Licensed Digital Transmitters	v02r01

5. LABORATORY ENVIRONMENT

Semi-anechoic chamber SAC-1 (23 meters×17meters×10meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 15 %, Max. = 75 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4Ω
Normalised site attenuation (NSA)	< ± 4 dB, 3m/10m distance, from 30 to 1000 MHz
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

Fully-anechoic chamber FAC-3 (9 meters×6.5 meters×4 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 15 %, Max. = 75 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 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

Shielded room did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω

6. SUMMARY OF TEST RESULTS

6.1. Summary of test results

Abbreviations used in this clause:		
Verdict Column	P	Pass
	F	Fail
	NA	Not applicable
	NM	Not measured
Location Column	A/B/C/D	The test is performed in test location A, B, C or D which are described in section 1.1 of this report

WCDMA Band II

Items	Test Name	Clause in FCC rules	Clause in IC rules	Section in this report	Verdict	Test Location
1	Output Power	24.232(c)	6.4	A.1	P	B
2	Emission Limit	24.238(a), 2.1051	6.5	A.2	P	B
3	Conducted Emission	15.107/207	7.2.2	A.3	P	A
4	Frequency Stability	24.235, 2.1055	6.3	A.4	P	B
5	Occupied Bandwidth	2.1049(h)(i)	6.5	A.5	P	B
6	Emission Bandwidth	24.238(a)	6.5	A.6	P	B
7	Band Edge Compliance	24.238(a)	6.5	A.7	P	B
8	Conducted Spurious Emission	24.238(a), 2.1057	6.5	A.8	P	B
9	Receiver Spurious Emissions	15.109, 2.1053	6.6	A.9	P	A

WCDMA Band IV

Items	Test Name	Clause in FCC rules	Clause in IC rules	Section in this report	Verdict	Test Location
1	Output Power	27.50(d)(4)	6.4	A.1	P	B
2	Emission Limit	27.53(h), 2.1051	6.5	A.2	P	B
3	Conducted Emission	15.107/15.207	7.2.2	A.3	P	A
4	Frequency Stability	27.54, 2.1055	6.3	A.4	P	B
5	Occupied Bandwidth	2.1049(h)(i)	6.5	A.5	P	B
6	Emission Bandwidth	27.53(h)	6.5	A.6	P	B
7	Band Edge Compliance	27.53(h)	6.5	A.7	P	B
8	Conducted Spurious Emission	27.53(h), 2.1057	6.5	A.8	P	B
9	Receiver Spurious Emissions	15.109, 2.1053	6.6	A.9	P	A

WCDMA Band V

Items	Test Name	Clause in FCC rules	Clause in IC rules	Section in this report	Verdict	Test Location
1	Output Power	22.913(a)	5.4	A.1	P	B
2	Emission Limit	22.917, 2.1051	5.5	A.2	P	B
3	Conducted Emission	15.107/207	7.2.2	A.3	P	A
4	Frequency Stability	22.355, 2.1055	5.3	A.4	P	B
5	Occupied Bandwidth	2.1049(h)(i)	5.5	A.5	P	B
6	Emission Bandwidth	22.917(b)	5.5	A.6	P	B
7	Band Edge Compliance	22.917(b)	5.5	A.7	P	B
8	Conducted Spurious Emission	22.917, 2.1057	5.5	A.8	P	B
9	Receiver Spurious Emissions	15.109, 2.1053	5.6	A.9	P	A

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	2014-03-28
2.	Test Receiver	ESCI 7	100948	R&S	2014-07-18
3.	Spectrum Analyzer	FSV40	101047	R&S	2014-06-30
4.	Spectrum Analyzer	E4440A	MY48250642	Agilent	2014-03-04
5.	LISN	ESH2-Z5	829991/012	R&S	2014-04-14
6.	EMI Antenna	VULB 9163	9163-482	Schwarzbeck	2014-02-17
7.	EMI Antenna	VULB 9163	9163-483	Schwarzbeck	2014-02-17
8.	EMI Antenna	3117	00119024	ETS-Lindgren	2014-02-02
9.	EMI Antenna	3117	00058889	ETS-Lindgren	2014-02-02
10.	EMI Antenna	3115	6914	ETS-Lindgren	2014-12-16
11.	EMI Antenna	VUBA 9117	167	Schwarzbeck	2014-04-01
12.	Signal Generator	N5183A	MY49060052	Agilent	2014-03-19
13.	Power Amplifier	5S1G4	0341863	AR	2016-03-01
14.	Climatic chamber	SH-241	92003546	ESPEC	2014-05-11
15.	Universal Radio Communication Tester	CMU200	116455	R&S	2014-05-19
16.	Universal Radio Communication Tester	E5515C	MY48363198	Agilent	2014-07-08

ANNEX A: MEASUREMENT RESULTS

A.1 OUTPUT POWER

Reference

FCC: CFR Part 22.913(a), 24.232(b), 27.50(d)(4).

IC: RSS-132 Issue 3, Section 5.4. 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 (CMU200) to ensure max power transmission and proper modulation.

This result contains peak output power, ERP/EIRP measurements and peak-to-average power ratio (PAPR) 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	23.16
	9400	1880.0	23.32
	9538	1907.6	23.27

WCDMA Band IV

	Channel number	Frequency(MHz)	output power(dBm)
WCDMA (Band IV)	4132	826.4	23.98
	4183	836.6	24.20
	4233	846.6	24.34

WCDMA Band V

	Channel number	Frequency(MHz)	output power(dBm)
WCDMA (Band V)	1312	1712.40	22.91
	1450	1740.00	23.09
	1513	1752.60	23.05

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."

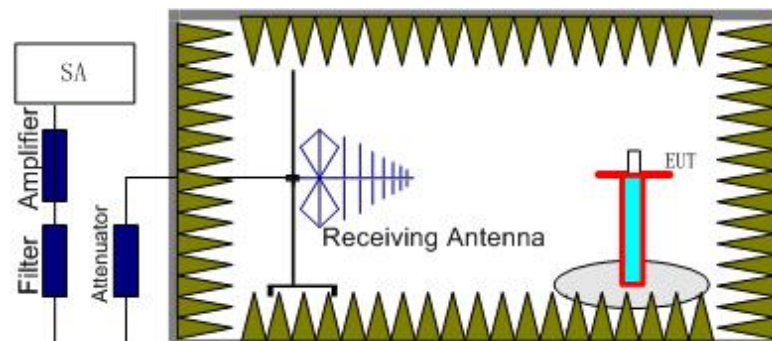
Rule Part 24.232(b) specifies, "Mobile/portable stations are limited to 2 watts e.i.r.p. Peak power" and 24.232(c) specifies that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage."

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".

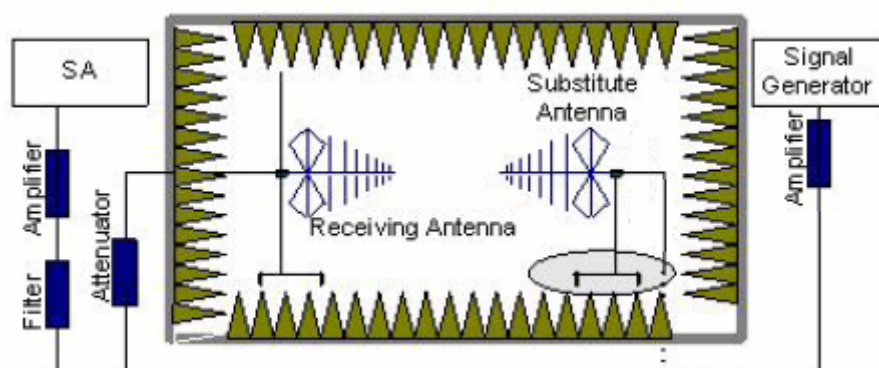
A.1.3.2 Method of Measurement

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 (Unit 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

Band	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
1852.4	-26.55	3.18	-50.00	-4.55	24.82	Horizontal
1880.0	-26.49	3.11	-50.00	-4.43	24.83	Horizontal
1907.6	-26.00	3.18	-50.00	-4.31	25.13	Horizontal

Sample calculation: 1907.6 MHz

$$\begin{aligned} \text{Peak EIRP (dBm)} &= P_{Mea}(-26.00 \text{ dBm}) - G_a(-4.31 \text{ dBi}) - P_{Ag}(-50.00 \text{ dB}) - P_{cl}(3.18 \text{ dB}) \\ &= 25.13 \text{ dBm} \end{aligned}$$

ANALYZER SETTINGS: RBW = VBW = 5MHz

Note: Expanded measurement uncertainty for WCDMA Band II is $U = 1.07\text{dB}$, $k = 2$.

WCDMA Band IV- EIRP

Limits

Band	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
1712.4	-27.72	2.97	-50.00	-5.17	24.48	Horizontal
1740.0	-26.33	2.99	-50.00	-5.04	25.72	Horizontal
1752.6	-26.27	3.01	-50.00	-4.99	25.71	Horizontal

Sample calculation: 1740.0 MHz

$$\begin{aligned} \text{Peak EIRP (dBm)} &= P_{\text{Mea}}(-26.33 \text{ dBm}) - G_a(-5.04 \text{ dBi}) - P_{\text{Ag}}(-50.00 \text{ dB}) - P_{\text{cl}}(2.99 \text{ dB}) \\ &= 25.72 \text{ dBm} \end{aligned}$$

ANALYZER SETTINGS: RBW = VBW = 5MHz

Note: Expanded measurement uncertainty for WCDMA Band II is $U = 1.07\text{dB}$, $k=2$.

WCDMA Band V- ERP

Limits

Band	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
826.4	-26.83	2.07	-53.00	0.85	2.15	21.10	Horizontal
836.6	-26.04	2.08	-53.00	0.90	2.15	21.83	Horizontal
846.6	-25.87	2.09	-53.00	0.94	2.15	21.95	Horizontal

Sample calculation: 846.6 MHz

$$\begin{aligned} \text{Peak ERP(dBm)} &= P_{\text{Mea}}(-25.87 \text{ dBm}) - G_a(0.94 \text{ dBi}) - P_{\text{Ag}}(-53.00 \text{ dB}) - P_{\text{cl}}(2.09 \text{ dB}) - 2.15 \text{ dB} \\ &= 21.95 \text{ dBm} \end{aligned}$$

ANALYZER SETTINGS: RBW = VBW = 5MHz

Note: Expanded measurement uncertainty for WCDMA Band V is $U = 0.96 \text{ dB}$, $k=2$.

A.1.4 Peak-to-Average Power Ratio (PAPR)**A1.4.1 Description**

According to RSS-132/133/139, the transmitter's peak-to-average power ratio (PAPR) shall not exceed 13 dB for more than 0.1% of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

The parameter of spectrum analyzer: RBW = 10MHz, detector = sample

A.1.4.2 Measurement results**WCDMA Band II**

Frequency (MHz)	PAPR Measurement Result (dB)
1880.0	3.65

WCDMA Band IV

Frequency (MHz)	PAPR Measurement Result (dB)
1740.0	3.33

WCDMA Band V

Frequency (MHz)	PAPR Measurement Result (dB)
836.6	3.46

Note: Expanded measurement uncertainty for PCS1900 is $U = 0.83$ dB, $k = 2$.

A.2 EMISSION LIMIT

Reference

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

IC: RSS-132 Issue 3, Section 5.5. RSS-133 Issue 6, Section 6.5. RSS-139 Issue 2, Section 6.5.

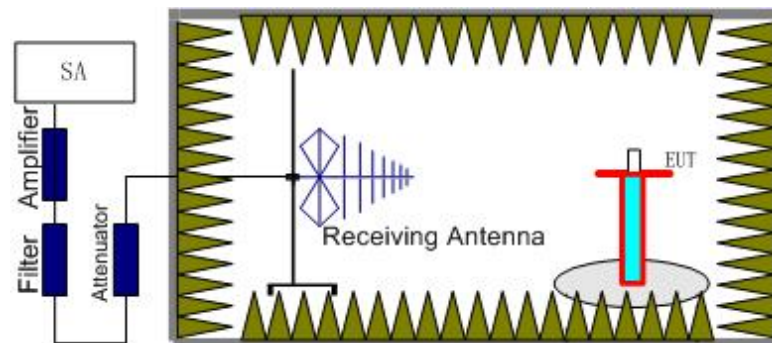
A.2.1 Measurement Method

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

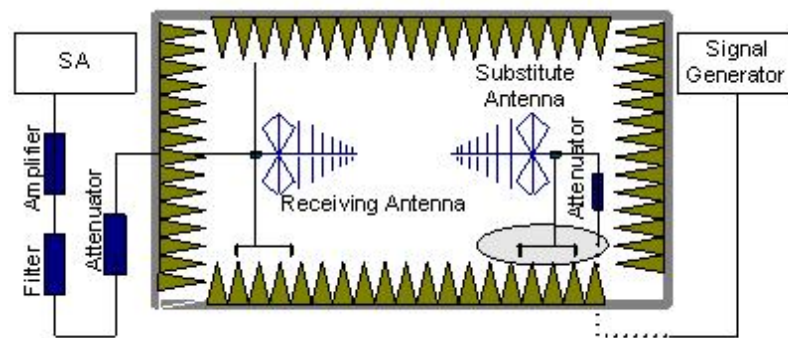
The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier that can be as high as 1910 MHz. The resolution bandwidth is set 1MHz as outlined in Part 22.917, Part 24.238 and Part 27.53(h). The spectrum was scanned 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:

$$\text{Power (EIRP)} = P_{Mea} + P_{pl} + G_a$$

5. This value is EIRP since the measurement is calibrated using an antenna of known gain (unit: dBi) and known input power.
6. ERP can be calculated from EIRP by subtracting the gain of the dipole, $ERP = EIRP - 2.15\text{dB}$.

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
3766.58	-66.22	4.51	-8.22	-62.51	-13.00	Vertical
5564.48	-67.97	5.43	-10.03	-63.37	-13.00	Horizontal
7081.33	-67.87	6.50	-11.15	-63.22	-13.00	Horizontal
10105.13	-64.84	8.19	-12.42	-60.61	-13.00	Vertical
13341.18	-63.35	9.03	-13.64	-58.74	-13.00	Vertical
15036.07	-65.55	9.66	-13.49	-61.72	-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
3557.98	-68.89	4.32	-7.97	-65.24	-13.00	Vertical
4943.58	-66.63	5.11	-9.60	-62.14	-13.00	Vertical
9101.71	-67.81	7.54	-12.60	-62.75	-13.00	Vertical
10311.42	-62.45	7.74	-12.46	-57.73	-13.00	Horizontal
13016.59	-66.17	9.15	-13.32	-62.00	-13.00	Vertical
15638.48	-61.75	10.28	-13.29	-58.74	-13.00	Horizontal

WCDMA BAND II, Channel 9538/1907.6MHz

Frequency (MHz)	P _{Mea} (dBm)	P _{pl} (dB)	G _a (dBi)	Peak EIRP (dBm)	Limit (dBm)	Polarity
3608.57	-65.94	4.39	-8.03	-62.30	-13.00	Horizontal
5418.43	-66.01	5.40	-9.95	-61.46	-13.00	Vertical
6577.75	-69.44	6.14	-10.68	-64.90	-13.00	Vertical
8725.17	-63.86	7.41	-12.38	-58.89	-13.00	Horizontal
10203.89	-64.34	7.65	-12.44	-59.55	-13.00	Horizontal
11932.20	-62.90	8.57	-12.49	-58.98	-13.00	Vertical

WCDMA BAND IV, Channel 1312/1712.4MHz

Frequency (MHz)	P _{Mea} (dBm)	P _{pl} (dB)	G _a (dBi)	Peak EIRP (dBm)	Limit (dBm)	Polarity
3913.57	-67.77	4.51	-8.40	-63.88	-13.00	Horizontal
5115.98	-69.25	5.24	-9.77	-64.72	-13.00	Vertical
6876.44	-64.70	6.07	-10.98	-59.79	-13.00	Vertical
8631.27	-66.06	7.36	-12.31	-61.11	-13.00	Vertical
10234.83	-65.09	7.50	-12.45	-60.14	-13.00	Horizontal
11991.03	-59.43	8.69	-12.50	-55.62	-13.00	Vertical

WCDMA BAND IV, Channel 1450/1740.0MHz

Frequency (MHz)	P _{Mea} (dBm)	P _{pl} (dB)	G _a (dBi)	Peak EIRP (dBm)	Limit (dBm)	Polarity
3482.71	-61.58	4.25	-7.86	-57.97	-13.00	Vertical
5131.78	-67.59	5.25	-9.78	-63.06	-13.00	Vertical
6896.59	-64.57	6.09	-11.00	-59.66	-13.00	Horizontal
8610.41	-67.30	7.49	-12.29	-62.50	-13.00	Horizontal
10458.87	-67.67	8.14	-12.49	-63.32	-13.00	Horizontal
12121.49	-63.27	8.81	-12.55	-59.53	-13.00	Horizontal

WCDMA BAND IV, Channel 1513/1752.6MHz

Frequency (MHz)	P _{Mea} (dBm)	P _{pl} (dB)	G _a (dBi)	Peak EIRP (dBm)	Limit (dBm)	Polarity
3474.98	-72.04	4.24	-7.84	-68.44	-13.00	Vertical
4698.91	-66.53	4.94	-9.16	-62.31	-13.00	Vertical
8933.31	-68.72	7.38	-12.55	-63.55	-13.00	Horizontal
11335.08	-64.31	8.55	-12.40	-60.46	-13.00	Vertical
13162.24	-65.33	9.16	-13.46	-61.03	-13.00	Vertical
17273.12	-62.32	10.75	-12.89	-60.18	-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
2475.51	-46.36	3.56	-5.33	2.15	-46.74	-13.00	Vertical
3328.96	-68.94	4.15	-7.49	2.15	-67.75	-13.00	Horizontal
4042.70	-68.95	4.65	-8.53	2.15	-67.22	-13.00	Horizontal
5244.49	-67.35	5.26	-9.85	2.15	-64.91	-13.00	Horizontal
6177.00	-69.10	5.79	-10.34	2.15	-66.70	-13.00	Horizontal
6991.43	-65.70	6.22	-11.09	2.15	-62.98	-13.00	Horizontal

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
2513.93	-45.99	3.59	-5.44	2.15	-46.29	-13.00	Vertical
4314.12	-68.54	4.92	-8.69	2.15	-66.92	-13.00	Horizontal
5065.32	-70.61	5.22	-9.74	2.15	-68.24	-13.00	Vertical
5923.53	-67.45	5.55	-10.17	2.15	-64.98	-13.00	Vertical
6874.52	-65.01	6.07	-10.97	2.15	-62.26	-13.00	Vertical
7794.94	-65.68	6.70	-11.69	2.15	-62.84	-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
2537.55	-45.27	3.62	-5.50	2.15	-45.54	-13.00	Vertical
3420.10	-68.30	4.19	-7.71	2.15	-66.93	-13.00	Vertical
4307.67	-68.27	4.93	-8.68	2.15	-66.67	-13.00	Vertical
5141.49	-67.37	5.24	-9.78	2.15	-64.98	-13.00	Vertical
6168.76	-65.69	5.80	-10.34	2.15	-63.30	-13.00	Vertical
7061.11	-67.42	6.54	-11.14	2.15	-64.97	-13.00	Horizontal

Note: Expanded measurement uncertainty for this test item is $U = 4.2$ dB, $k = 2$.

A.3 CONDUCTED EMISSION

Reference

FCC: CFR Part 15.107/207

IC: RSS-Gen Issue 3, Section 7.2.2.

The measurement procedure in ANSI C63.4-2009 is used. Conducted Emission is measured with travel charger. The EUT is working under WCDMA 850/1700/1900MHz traffic mode which is the worst case of conducted emission measurement.

For test layout photo, please refer to Pic.2 in Annex B.

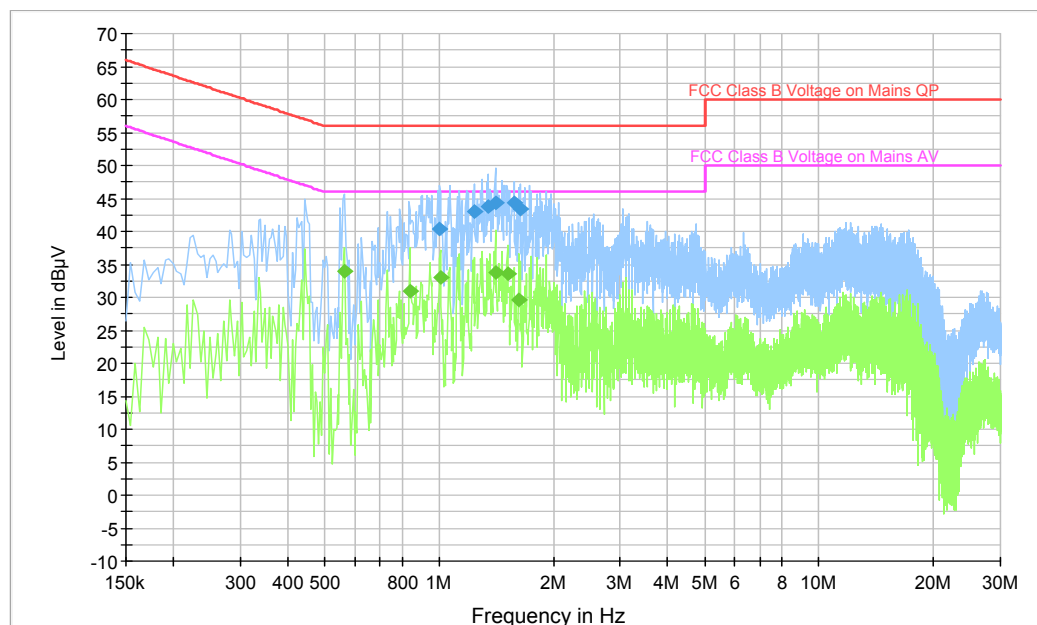
A.3.1 Limit

Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
	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.

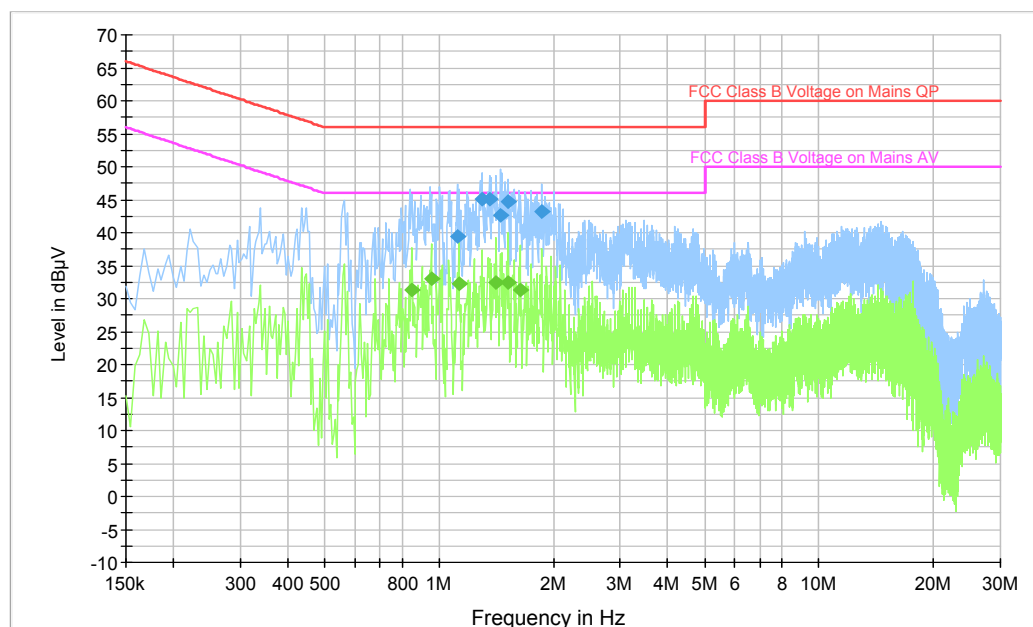
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
1.005000	40.3	GND	N	9.7	15.7	56.0
1.239000	43.1	GND	L1	9.7	12.9	56.0
1.347000	43.7	GND	L1	9.7	12.3	56.0
1.405500	44.4	GND	L1	9.7	11.6	56.0
1.576500	44.4	GND	L1	9.7	11.6	56.0
1.635000	43.4	GND	L1	9.7	12.6	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.564000	33.9	GND	L1	9.8	12.1	46.0
0.838500	30.9	GND	L1	9.8	15.1	46.0
1.009500	33.0	GND	L1	9.7	13.0	46.0
1.405500	33.8	GND	L1	9.7	12.2	46.0
1.513500	33.5	GND	L1	9.7	12.5	46.0
1.621500	29.7	GND	L1	9.7	16.3	46.0

WCDMA Band IV



IF bandwidth 9 kHz

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

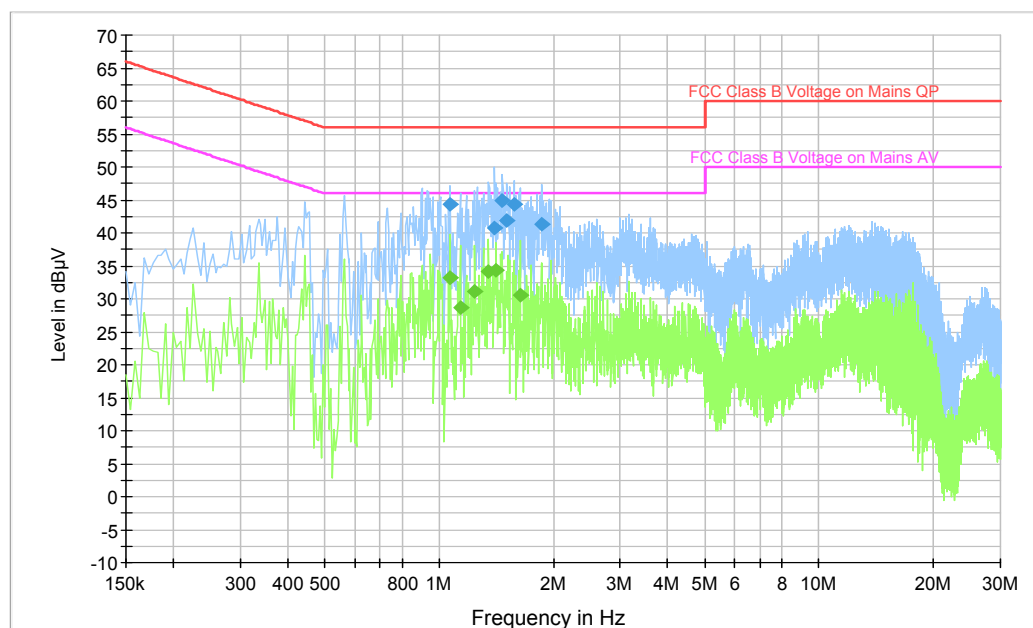
Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
1.117500	39.4	GND	N	9.7	16.6	56.0
1.297500	45.0	GND	L1	9.7	11.0	56.0
1.356000	45.2	GND	L1	9.7	10.8	56.0
1.450500	42.6	GND	N	9.7	13.4	56.0
1.522500	44.8	GND	L1	9.7	11.2	56.0
1.860000	43.2	GND	L1	9.7	12.8	56.0

Final Result 2

Frequency (MHz)	Average (dB μ V)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.847500	31.4	GND	L1	9.8	14.6	46.0
0.955500	33.0	GND	L1	9.7	13.0	46.0
1.126500	32.3	GND	L1	9.7	13.7	46.0
1.414500	32.4	GND	L1	9.7	13.6	46.0
1.522500	32.4	GND	L1	9.7	13.6	46.0
1.630500	31.2	GND	L1	9.7	14.8	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 (dB μ V)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
1.072500	44.4	GND	L1	9.7	11.6	56.0
1.401000	40.7	GND	N	9.7	15.3	56.0
1.468500	44.9	GND	L1	9.7	11.1	56.0
1.509000	41.9	GND	N	9.7	14.1	56.0
1.576500	44.4	GND	L1	9.7	11.6	56.0
1.869000	41.2	GND	L1	9.7	14.8	56.0

Final Result 2

Frequency (MHz)	Average (dB μ V)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
1.072500	33.2	GND	L1	9.7	12.8	46.0
1.135500	28.6	GND	L1	9.7	17.4	46.0
1.243500	31.1	GND	L1	9.7	14.9	46.0
1.351500	34.1	GND	L1	9.7	11.9	46.0
1.410000	34.3	GND	L1	9.7	11.7	46.0
1.639500	30.6	GND	L1	9.7	15.4	46.0

Note: The maximum value of expanded measurement uncertainty for this test item is $U = 2.9$ dB, $k=2$.

A.4 FREQUENCY STABILITY

Reference

FCC: CFR Part 2.1055, 22.355, 24.235, 27.54.

IC: RSS-132 Issue 3, Section 5.3. RSS-133 Issue 6, Section 6.3. RSS-139 Issue 2, Section 6.3.

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°C.
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°C increments from -30°C to +50°C. Allow at least 1.5 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 1.5 hours unpowered, to allow any self-heating to stabilize, before continuing.
6. Subject the EUT to overnight soak at +50°C.
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°C to -30°C. Allow at least 1.5 hours at each temperature, unpowered, before making measurements.
9. At all temperature levels hold the temperature to +/- 0.5°C during the measurement procedure.

A.4.2 Measurement Limit

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 from -5.4% to 10.8%. For the purposes of measuring frequency stability these voltage limits are to be used.

A.4.3 Measurement results

WCDMA Band II

Room Temperature: 24 °C

Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)	Frequency error (ppm)
3.7	8	0.004
4.1	13	0.007
3.5	10	0.006

Frequency Error vs Temperature

Temperature (°C)	Frequency error (Hz)	Frequency error (ppm)
50°	7	0.004
40°	12	0.007
30°	6	0.003
20°	6	0.003
10°	14	0.007
0°	6	0.003
- 10°	6	0.003
- 20°	7	0.004
- 30°	4	0.002

WCDMA Band IV

Room Temperature: 24°C

Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)	Frequency error (ppm)
3.7	8	0.004
4.1	7	0.004
3.5	6	0.004

Frequency Error vs Temperature

Temperature (°C)	Frequency error (Hz)	Frequency error (ppm)
50°	7	0.004
40°	-6	0.003
30°	7	0.004
20°	5	0.003
10°	8	0.005
0°	6	0.003
- 10°	-17	0.010
- 20°	5	0.003
- 30°	10	0.006

WCDMA Band V

Room Temperature: 24 °C

Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)	Frequency error (ppm)
3.7	-5	0.006
4.1	-5	0.006
3.5	6	0.007

Frequency Error vs Temperature

Temperature (°C)	Frequency error (Hz)	Frequency error (ppm)
50°	9	0.010
40°	-4	0.005
30°	-5	0.006
20°	-5	0.006
10°	3	0.004
0°	4	0.005
- 10°	-4	0.005
- 20°	-6	0.007
- 30°	-5	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 5.5. RSS-133 Issue 6, Section 6.5. RSS-139 Issue 2, Section 6.5.

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 99% BW. Spectrum analyzer plots are included on the following pages.

Measurement Parameters:

RBW = 50 kHz, VBW = 100 kHz

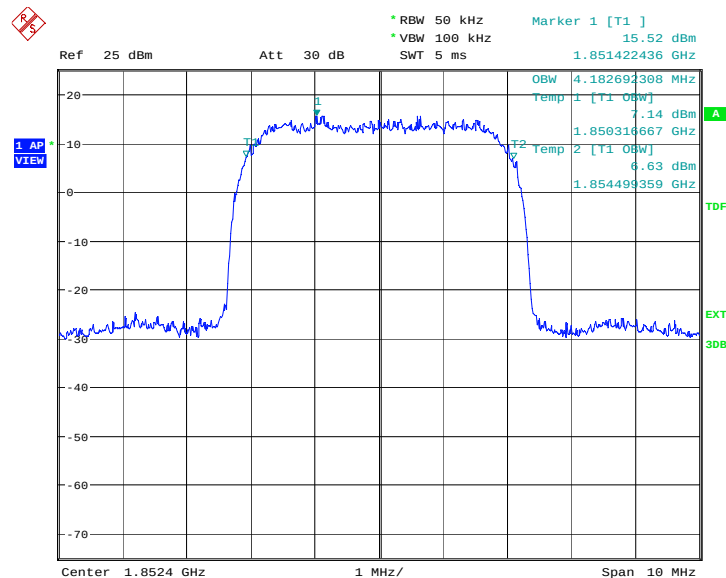
WCDMA Band II (99% BW) per FCC rules

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)
1852.4	4.183
1880.0	4.167
1907.6	4.183

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

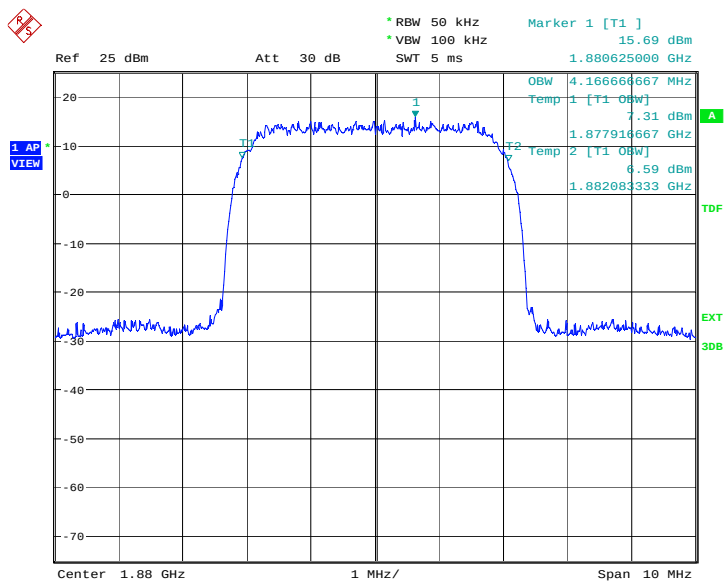
WCDMA Band II

Channel 9262-Occupied Bandwidth (99% BW)



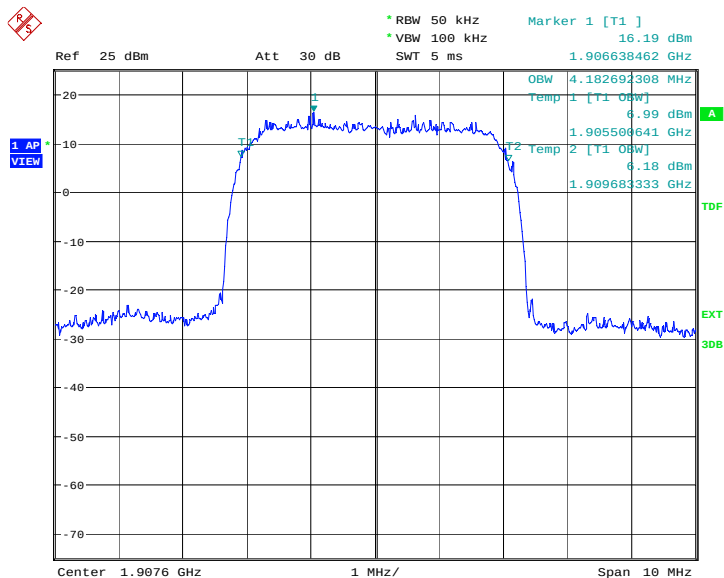
Date: 16.JAN.2014 13:58:42

Channel 9400-Occupied Bandwidth (99% BW)



Date: 16.JAN.2014 13:59:16

Channel 9538-Occupied Bandwidth (99% BW)



Date: 16.JAN.2014 13:59:51

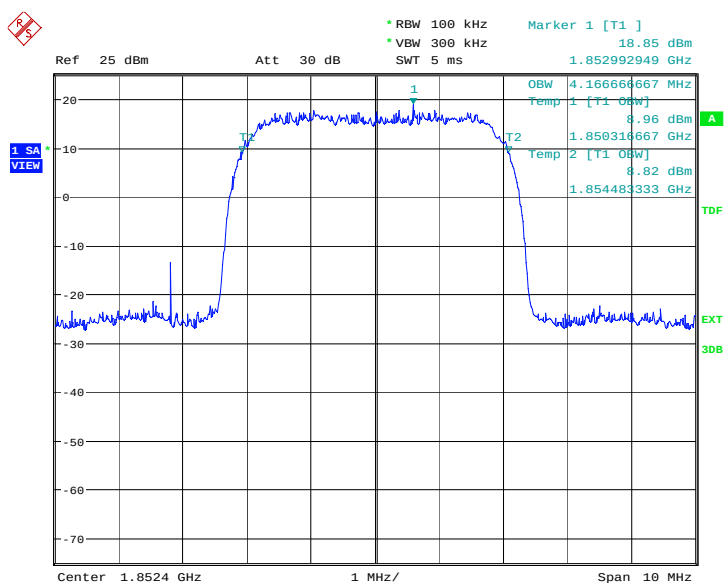
WCDMA Band II (99% BW) per IC rules

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)
1852.4	4.167
1880.0	4.183
1907.6	4.199

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

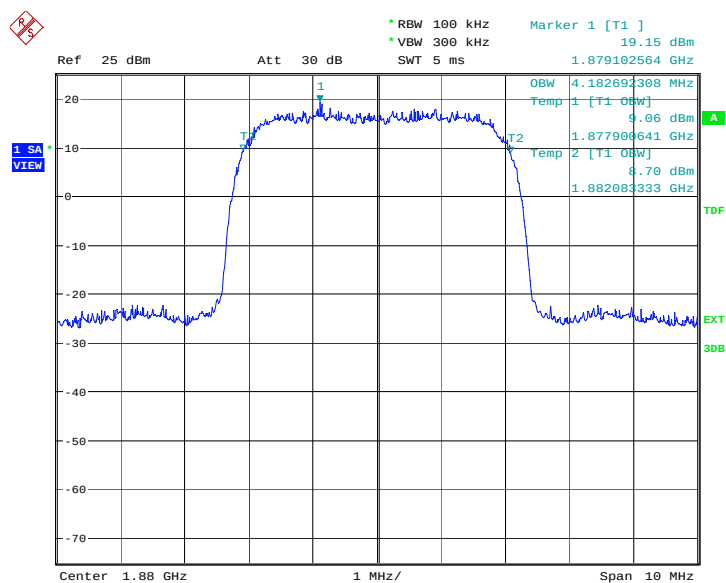
WCDMA Band II

Channel 9262-Occupied Bandwidth (99% BW)



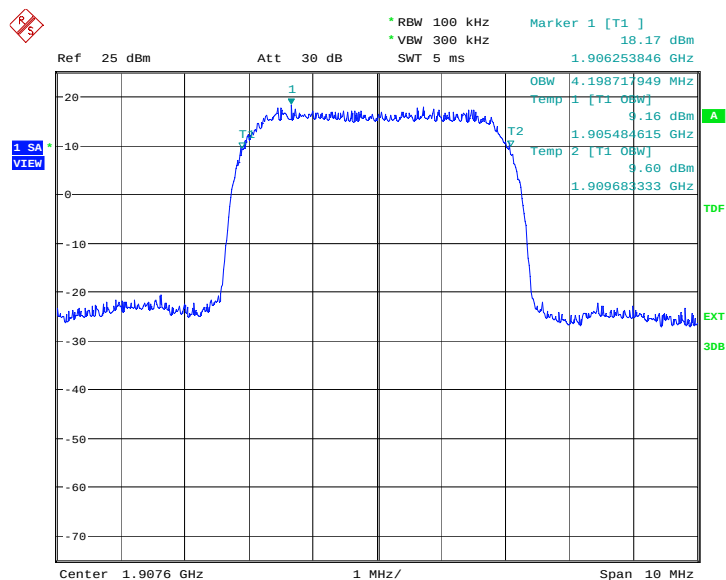
Date: 16.JAN.2014 14:02:45

Channel 9400-Occupied Bandwidth (99% BW)



Date: 16.JAN.2014 14:03:20

Channel 9538-Occupied Bandwidth (99% BW)



Date: 16.JAN.2014 14:03:54

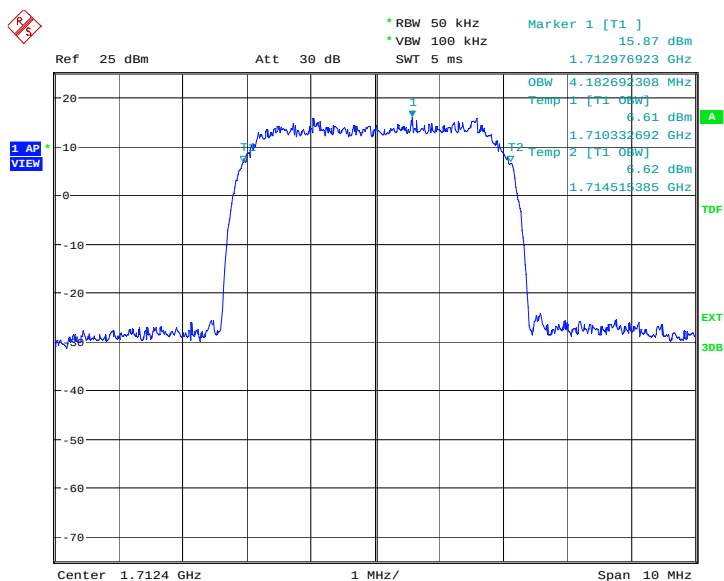
WCDMA Band IV (99% BW) per FCC rules

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)
1712.4	4.183
1740.0	4.167
1752.6	4.183

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

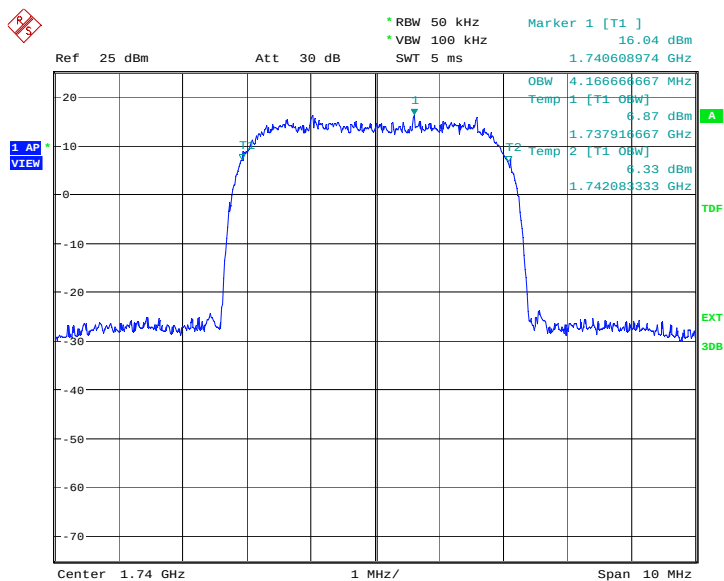
WCDMA Band IV

Channel 1312-Occupied Bandwidth (99% BW)



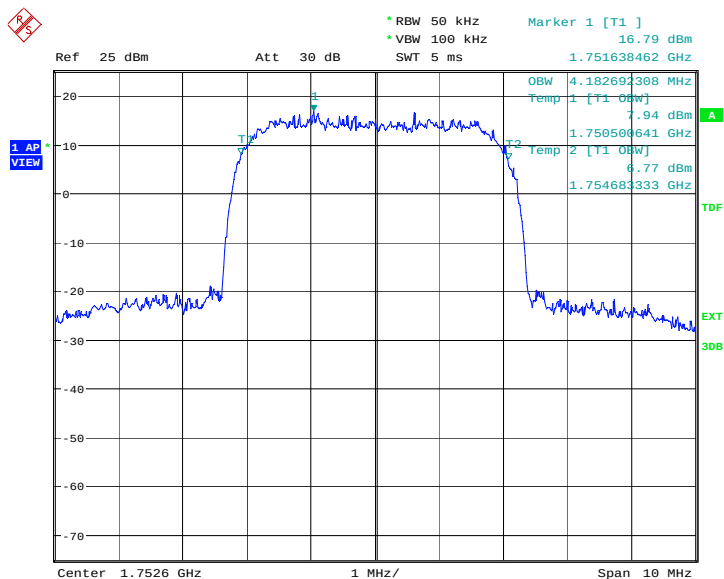
Date: 16.JAN.2014 14:38:59

Channel 1450-Occupied Bandwidth (99% BW)



Date: 16.JAN.2014 14:39:34

Channel 1513-Occupied Bandwidth (99% BW)



Date: 16.JAN.2014 14:40:09

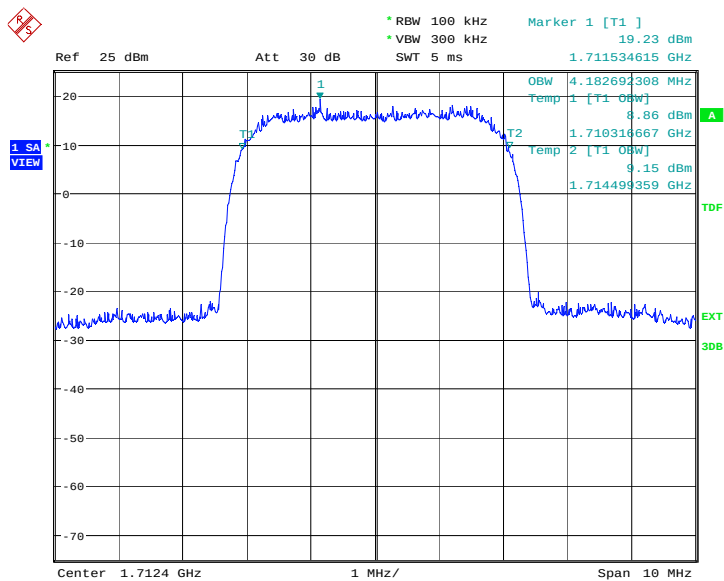
WCDMA Band IV (99% BW) per IC rules

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)
1712.4	4.183
1740.0	4.183
1752.6	4.167

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

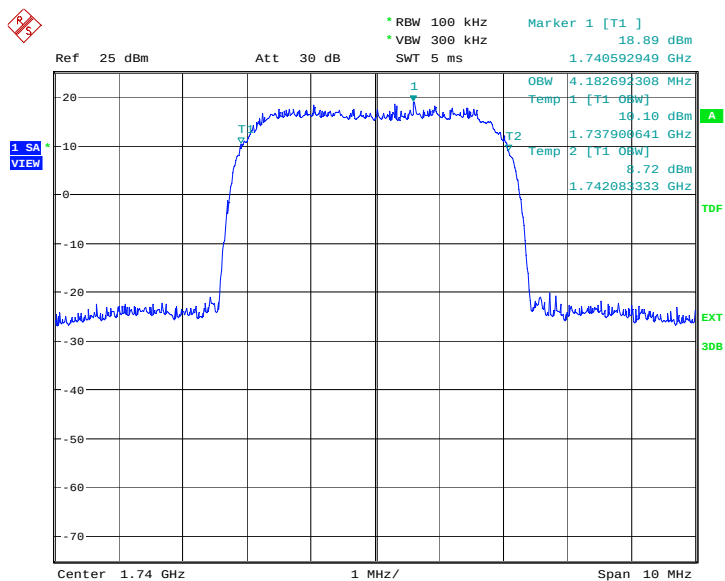
WCDMA Band IV

Channel 1312-Occupied Bandwidth (99% BW)



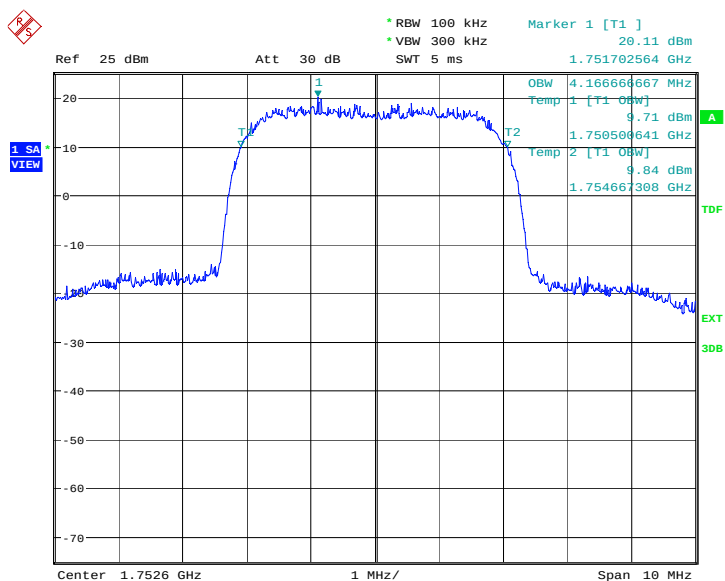
Date: 16.JAN.2014 14:43:03

Channel 1450-Occupied Bandwidth (99% BW)



Date: 16.JAN.2014 14:43:37

Channel 1513-Occupied Bandwidth (99% BW)



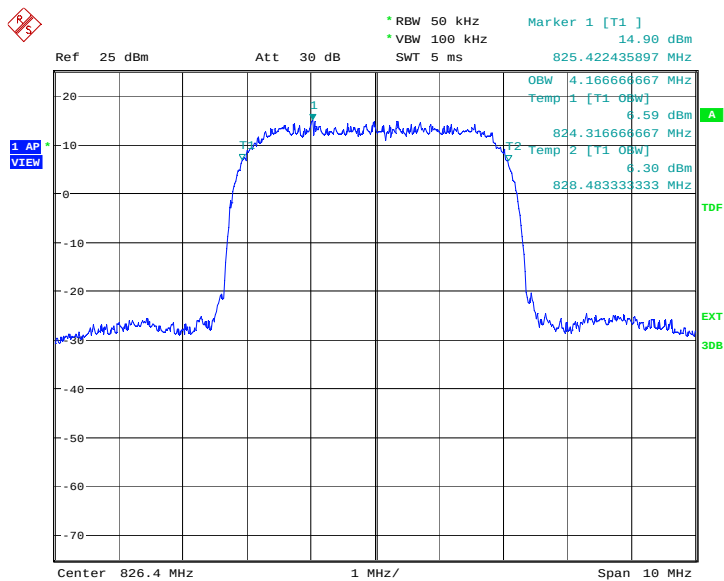
Date: 16.JAN.2014 14:44:12

WCDMA Band V (99% BW) per FCC rules

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)
826.4	4.167
836.6	4.167
846.6	4.183

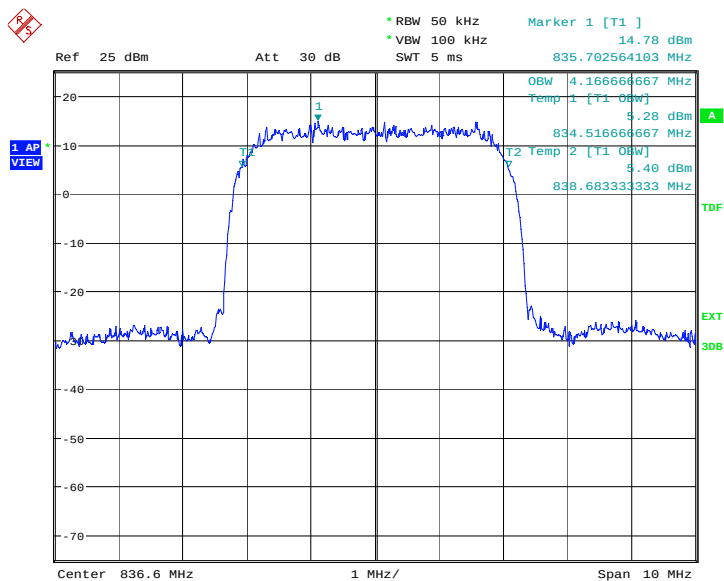
WCDMA Band V

Channel 4132-Occupied Bandwidth (99% BW)



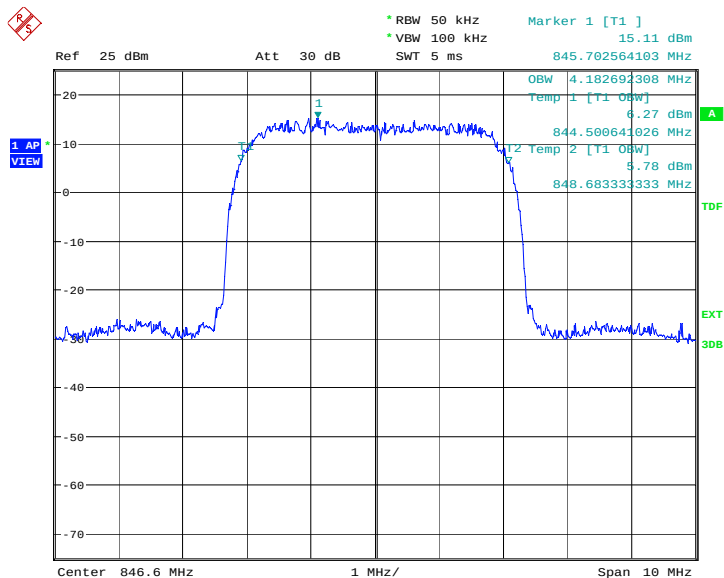
Date: 16.JAN.2014 15:25:09

Channel 4183-Occupied Bandwidth (99% BW)



Date: 16. JAN. 2014 15:25:44

Channel 4233-Occupied Bandwidth (99% BW)



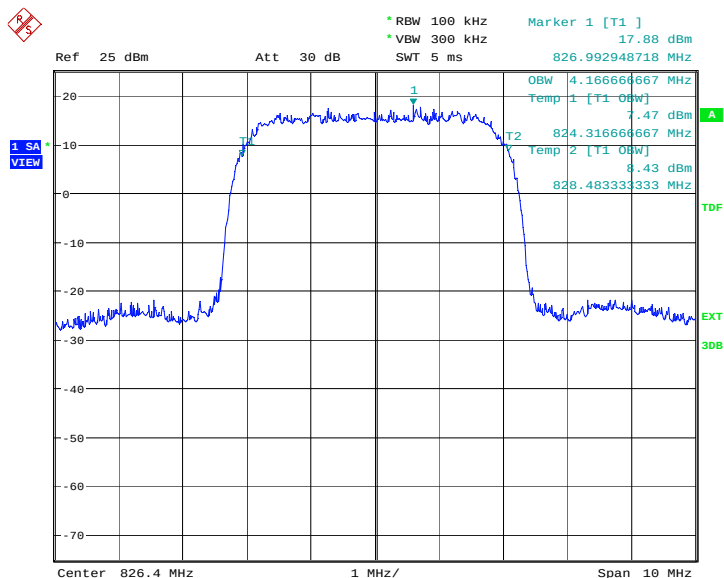
Date: 16. JAN. 2014 15:26:19

WCDMA Band V (99% BW) per IC rules

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)
826.4	4.167
836.6	4.167
846.6	4.167

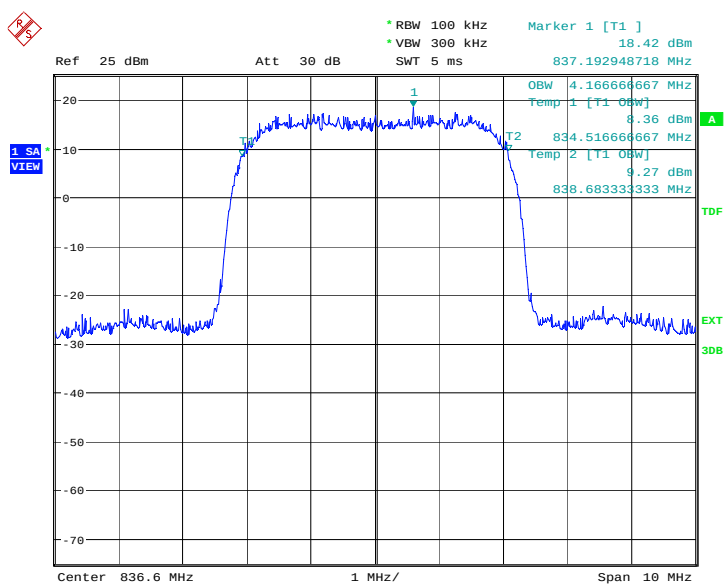
WCDMA Band V

Channel 4132-Occupied Bandwidth (99% BW)



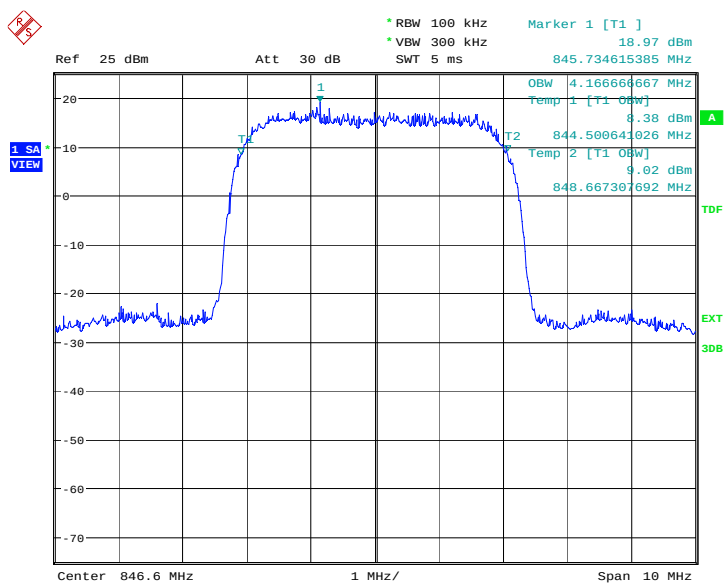
Date: 16.JAN.2014 15:29:13

Channel 4183-Occupied Bandwidth (99% BW)



Date: 16.JAN.2014 15:29:47

Channel 4233-Occupied Bandwidth (99% BW)



Date: 16.JAN.2014 15:30:22

A.6 EMISSION BANDWIDTH

Reference

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

IC: RSS-132 Issue 3, Section 5.5. RSS-133 Issue 6, Section 6.5. RSS-139 Issue 2, Section 6.5.

A.6.1 Emission 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 100% BW. Spectrum analyzer plots are included on the following pages.

Measurement Parameters:

RBW = 50 kHz, VBW = 100 kHz

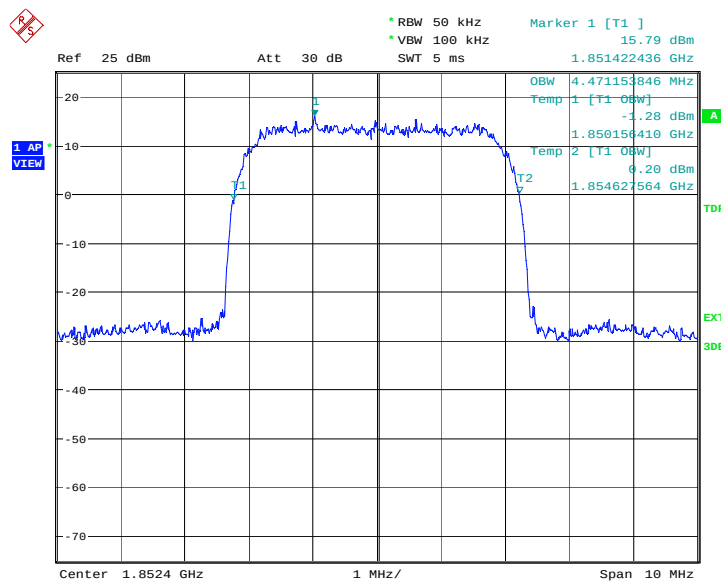
WCDMA Band II (100% BW)

Frequency(MHz)	Occupied Bandwidth (100% BW)(MHz)
1852.4	4.471
1880.0	4.471
1907.6	4.503

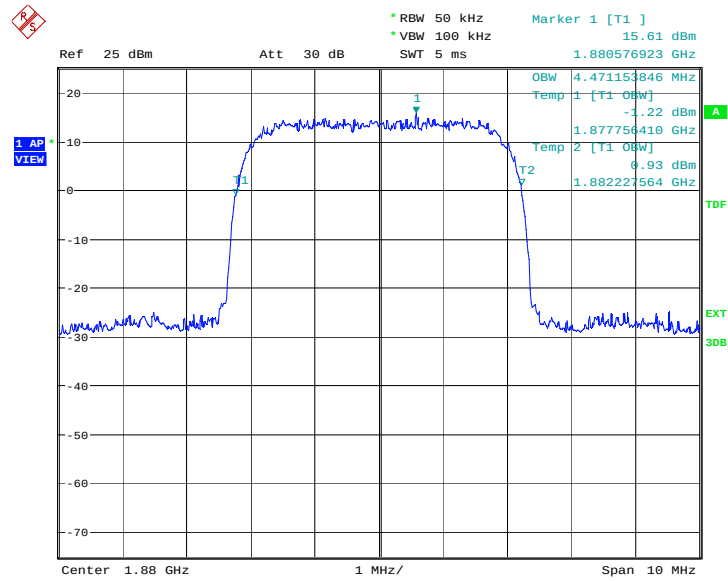
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2.

WCDMA Band II

Channel 9262-Occupied Bandwidth (100% BW)

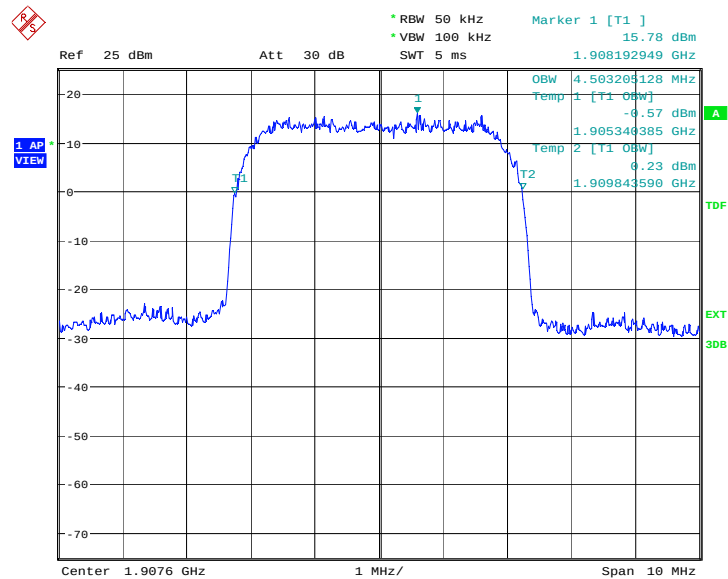


Channel 9400-Occupied Bandwidth (100% BW)



Date: 16.JAN.2014 14:01:02

Channel 9538-Occupied Bandwidth (100% BW)



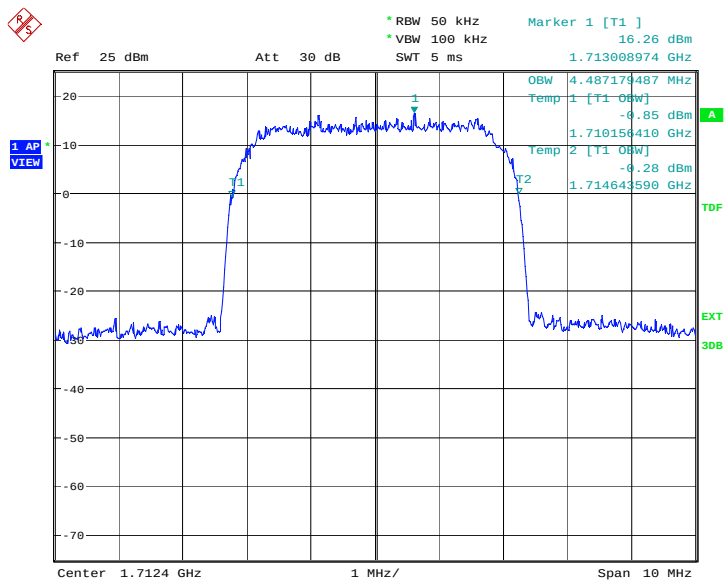
Date: 16.JAN.2014 14:01:36

WCDMA Band IV (100% BW)

Frequency(MHz)	Occupied Bandwidth (100% BW)(MHz)
1712.4	4.487
1740.0	4.471
1752.6	4.519

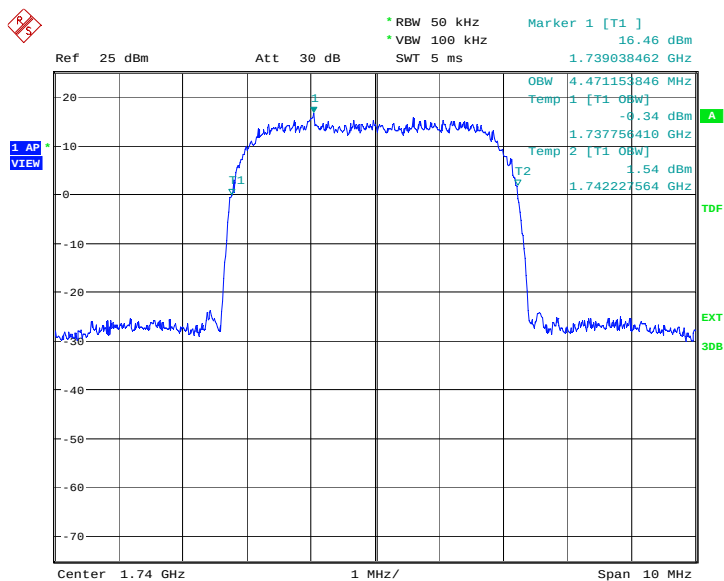
WCDMA Band IV

Channel 1312-Occupied Bandwidth (100% BW)



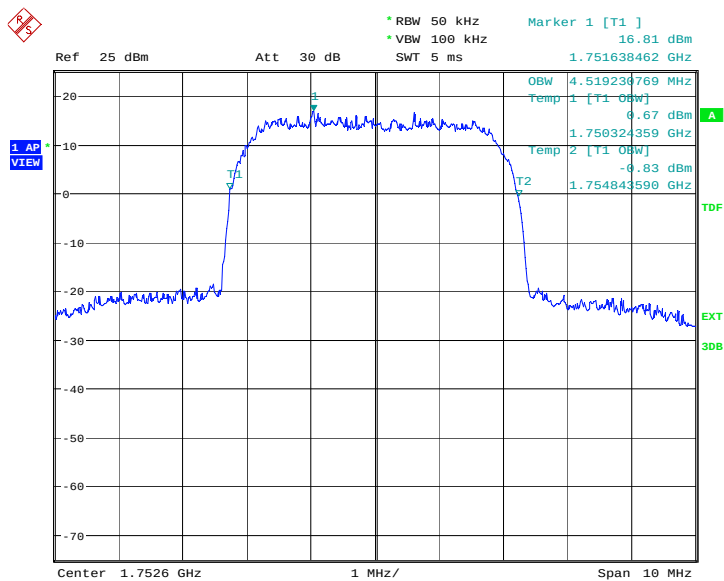
Date: 16.JAN.2014 14:40:45

Channel 1450-Occupied Bandwidth (100% BW)



Date: 16.JAN.2014 14:41:19

Channel 1513-Occupied Bandwidth (100% BW)



Date: 16.JAN.2014 14:41:54

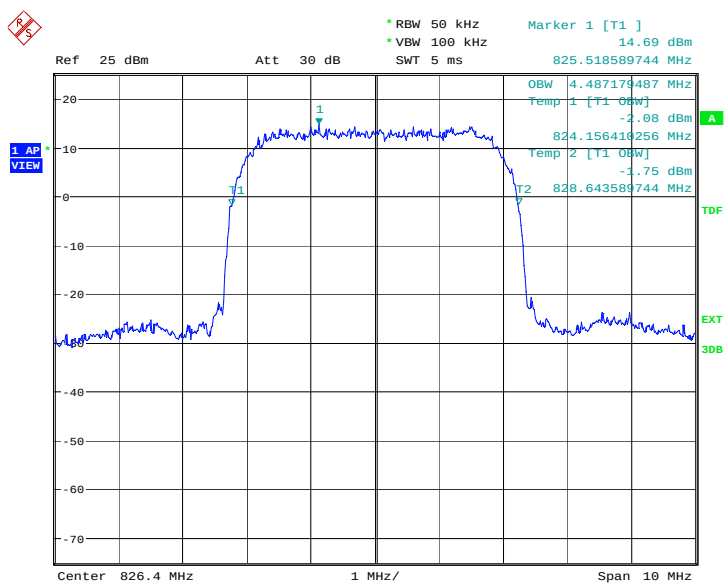
WCDMA Band V (100% BW)

Frequency(MHz)	Occupied Bandwidth (100% BW)(MHz)
826.40	4.487
836.60	4.455
846.60	4.471

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

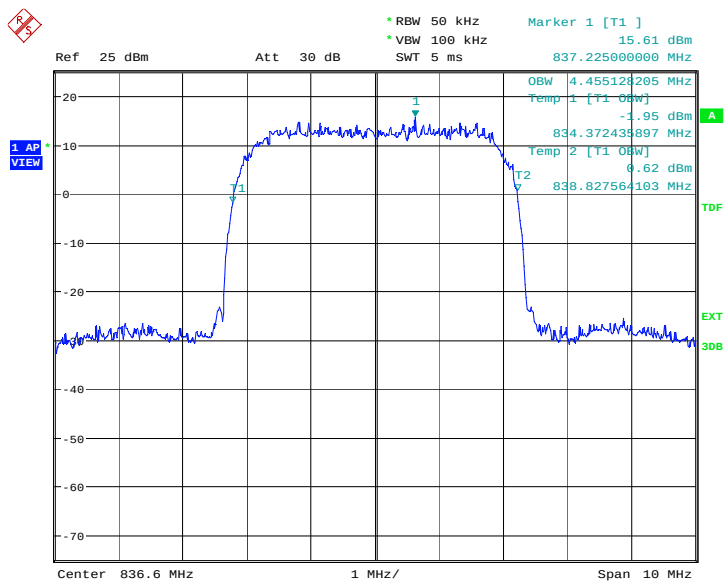
WCDMA Band V

Channel 4132-Occupied Bandwidth (100% BW)



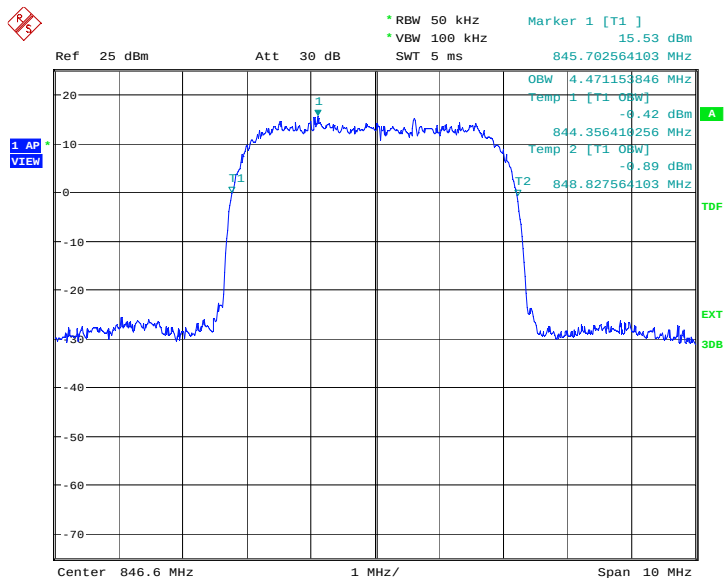
Date: 16. JAN. 2014 15:26:55

Channel 4183-Occupied Bandwidth (100% BW)



Date: 16.JAN.2014 15:27:29

Channel 4233-Occupied Bandwidth (100% BW)



Date: 16.JAN.2014 15:28:04

A.7 BAND EDGE COMPLIANCE

Reference

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

IC: RSS-132 Issue 3, Section 5.5. RSS-133 Issue 6, Section 6.5. RSS-139 Issue 2, Section 6.5.

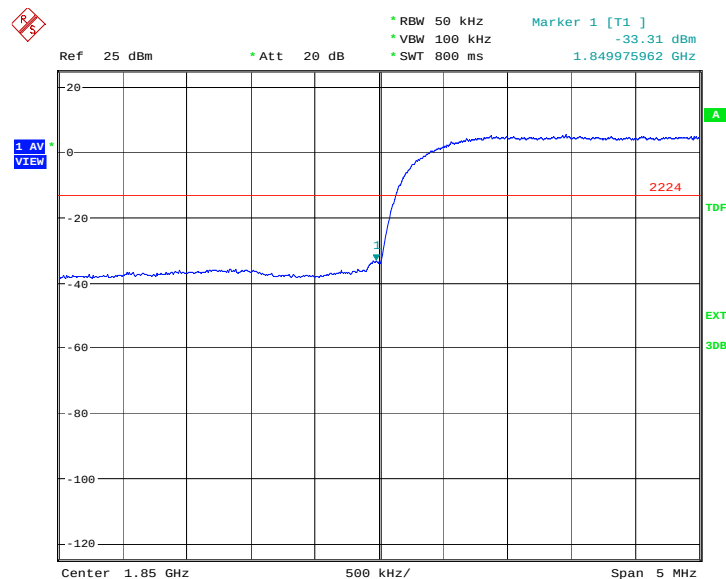
A.7.1 Measurement limit

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 $43 + 10 \log(P)$ dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

A.7.2 Measurement result

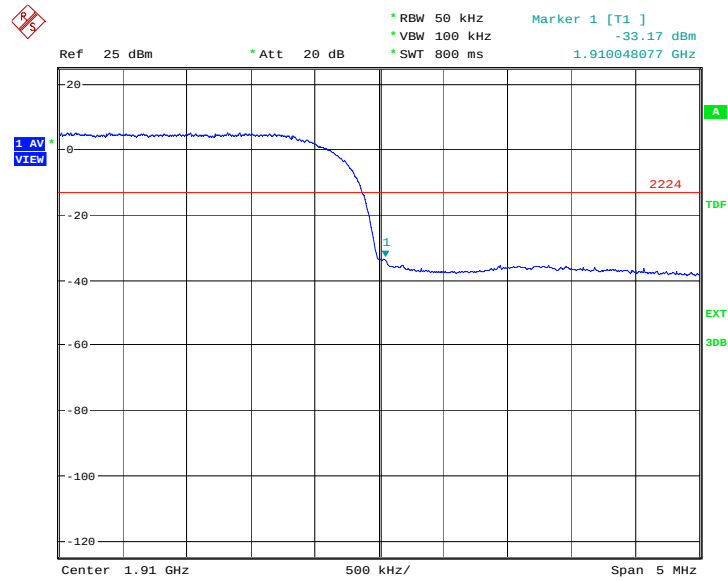
WCDMA Band II

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



Date: 16.JAN.2014 14:01:53

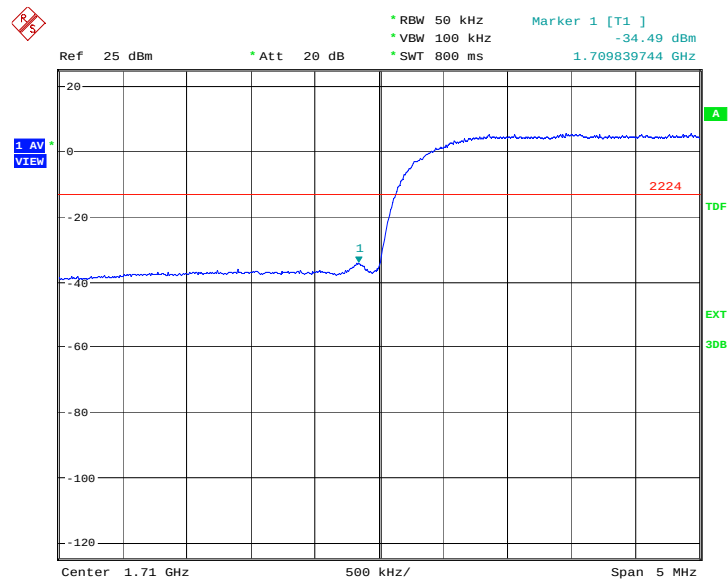
HIGH BAND EDGE BLOCK-C (WCDMA Band II) –Channel 9538



Date: 16. JAN. 2014 14:02:09

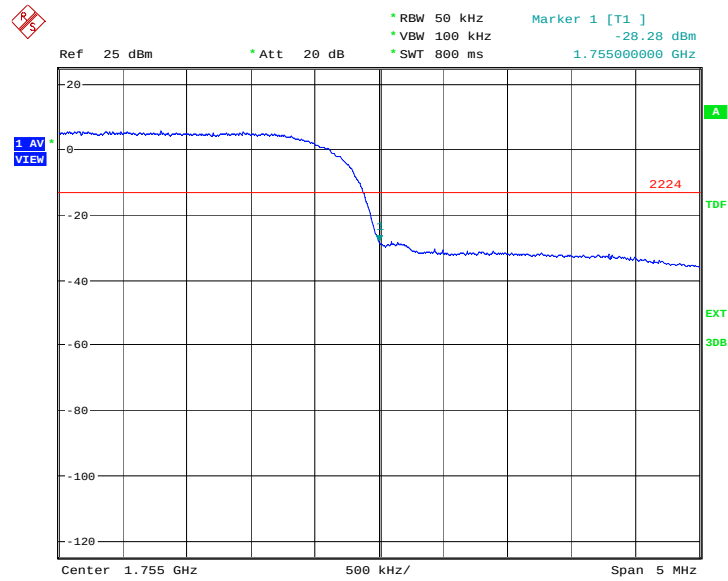
WCDMA Band IV

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



Date: 16. JAN. 2014 14:42:10

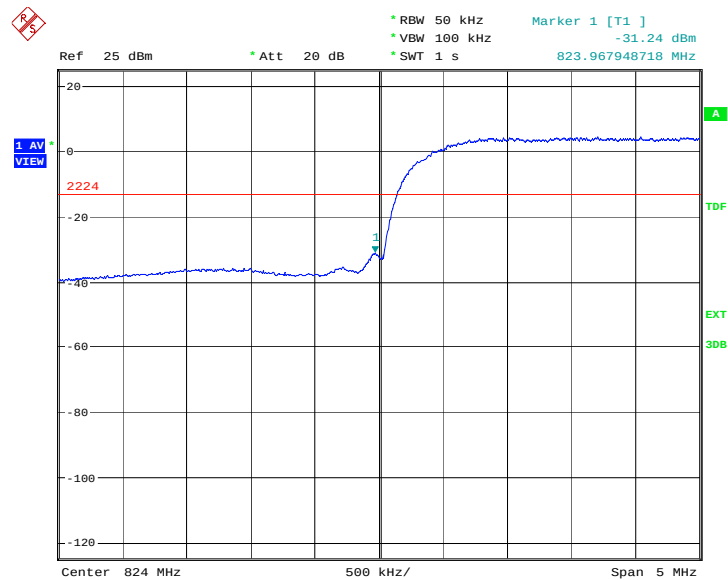
HIGH BAND EDGE BLOCK-C (WCDMA Band IV) –Channel 1513



Date: 16.JAN.2014 14:42:27

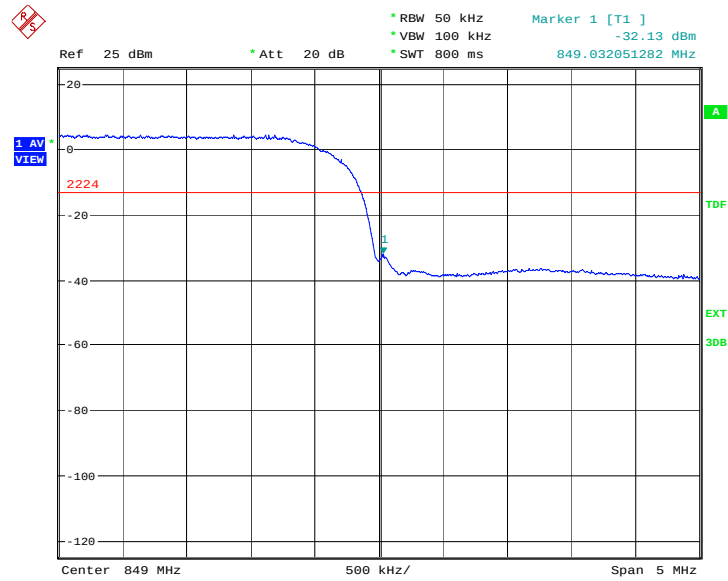
WCDMA Band V

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



Date: 16.JAN.2014 15:28:20

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



Date: 16.JAN.2014 15:28:37

A.8 CONDUCTED SPURIOUS EMISSION

Reference

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

IC: RSS-132 Issue 3, Section 5.5. RSS-133 Issue 6, Section 6.5. RSS-139 Issue 2, Section 6.5.

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.

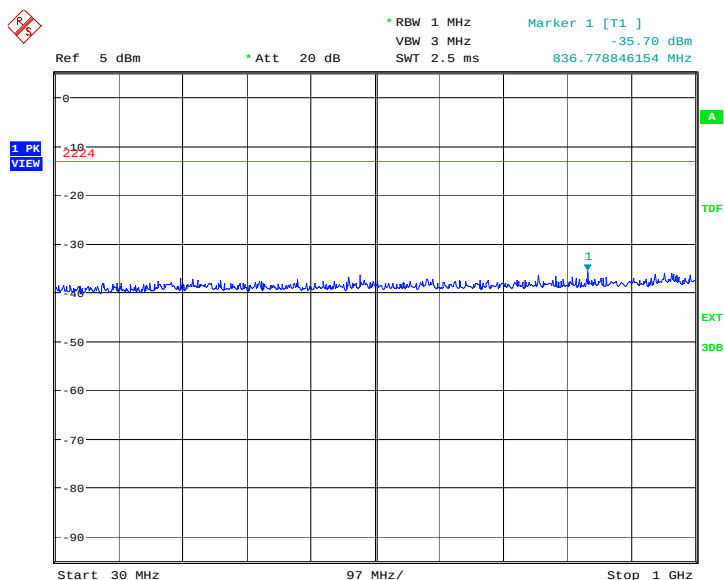
A. 8.3 Measurement result

Measurement Uncertainty: 0.3dB

WCDMA Band II

A.8.3.1 Channel 9262: 30MHz –1GHz

Spurious emission limit –13dBm.

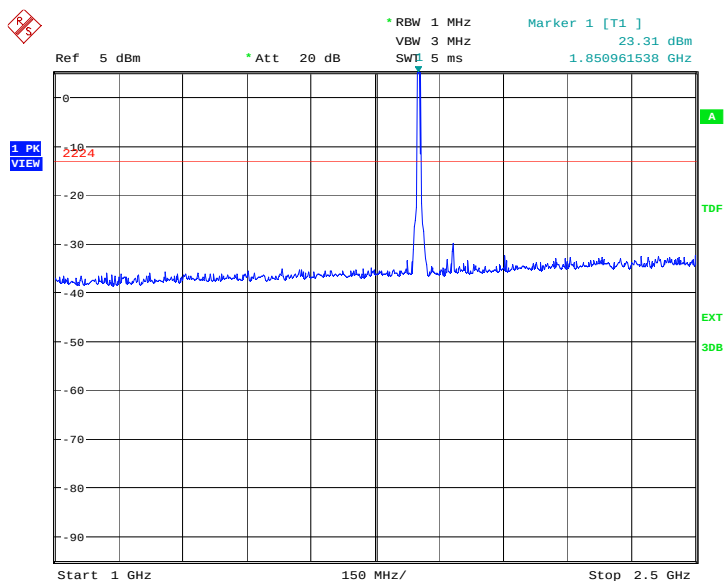


Date: 16.JAN.2014 14:04:34

A.8.3.2 Channel 9262: 1GHz –2.5GHz

Spurious emission limit –13dBm.

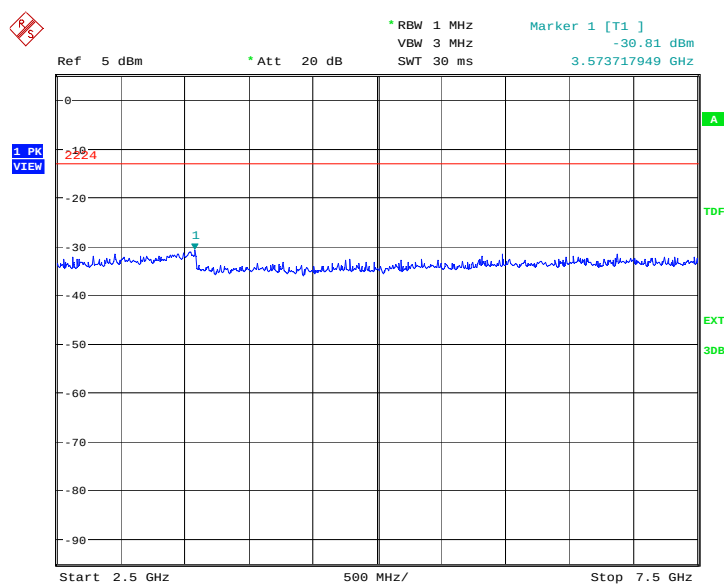
NOTE: peak above the limit line is the carrier frequency.



Date: 16.JAN.2014 14:05:02

A.8.3.3 Channel 9262: 2.5GHz –7.5GHz

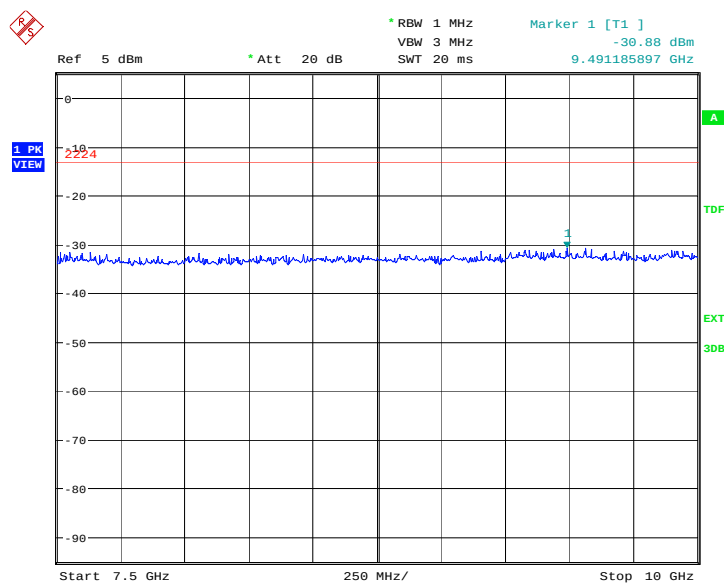
Spurious emission limit –13dBm.



Date: 16.JAN.2014 14:05:30

A.8.3.4 Channel 9262: 7.5GHz –10GHz

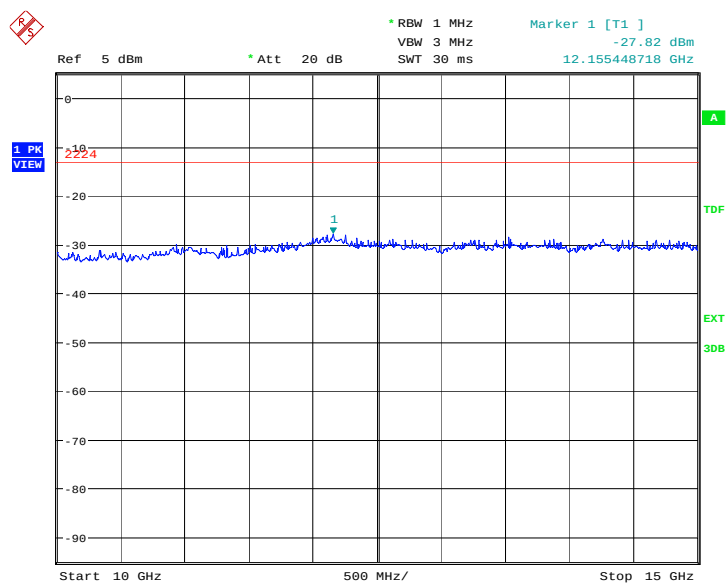
Spurious emission limit –13dBm.



Date: 16.JAN.2014 14:05:58

A.8.3.5 Channel 9262: 10GHz –15GHz

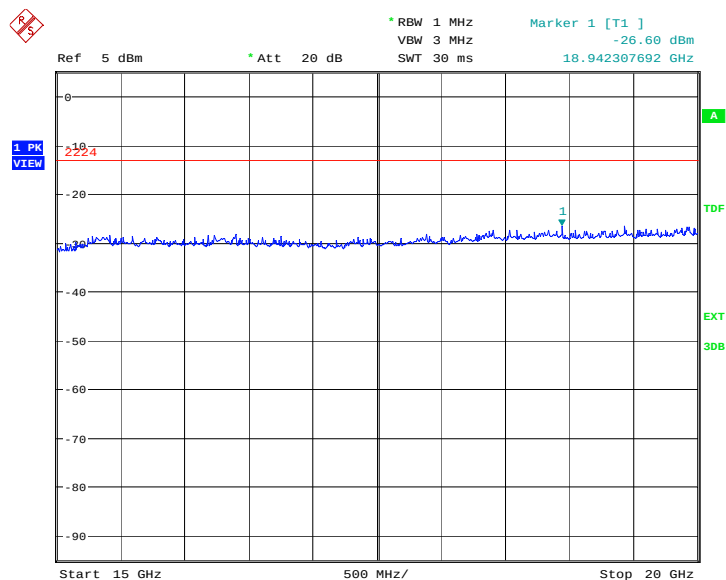
Spurious emission limit –13dBm.



Date: 16. JAN. 2014 14:06:26

A.8.3.6 Channel 9262: 15GHz –20GHz

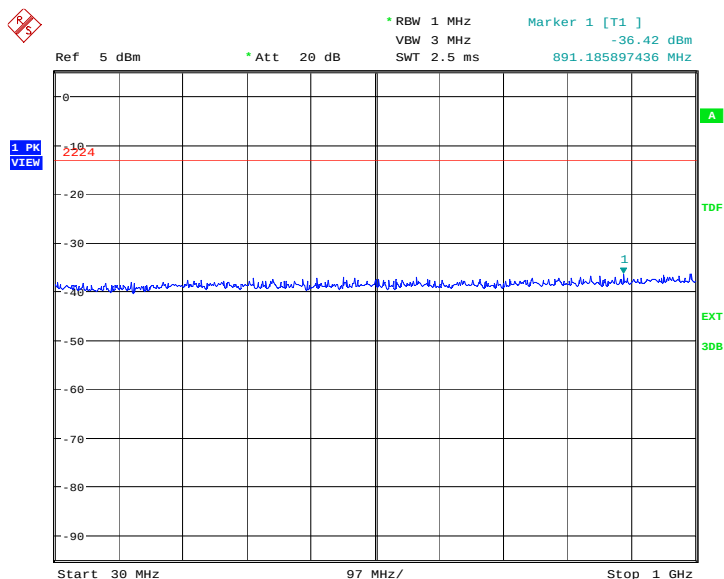
Spurious emission limit –13dBm.



Date: 16. JAN. 2014 14:06:55

A.8.3.7 Channel 9400: 30MHz –1GHz

Spurious emission limit –13dBm.

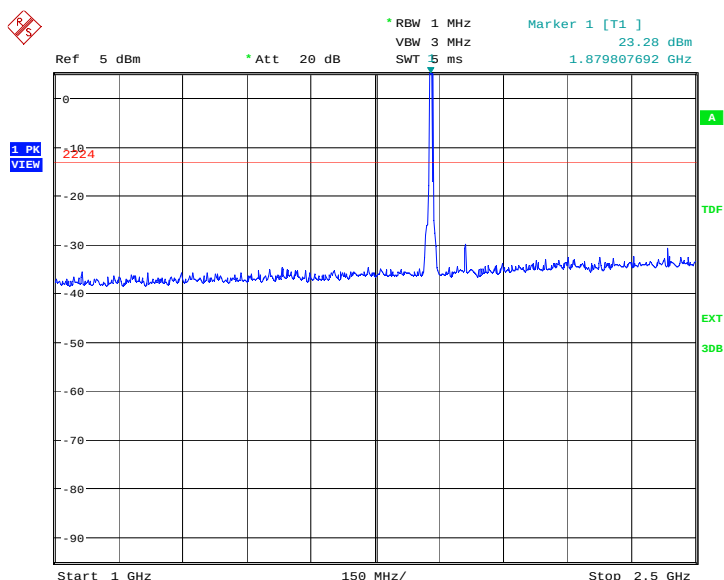


Date: 16. JAN. 2014 14:07:26

A.8.3.8 Channel 9400: 1GHz –2.5GHz

Spurious emission limit –13dBm.

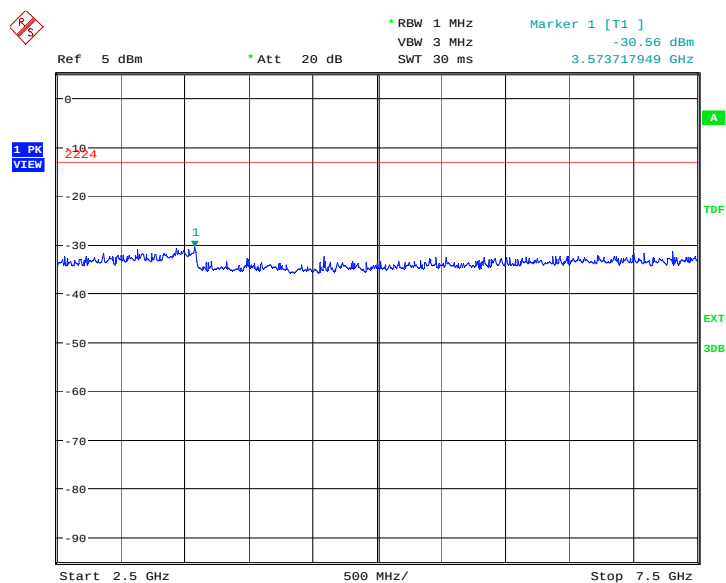
NOTE: peak above the limit line is the carrier frequency.



Date: 16. JAN. 2014 14:07:54

A.8.3.9 Channel 9400: 2.5GHz –7.5GHz

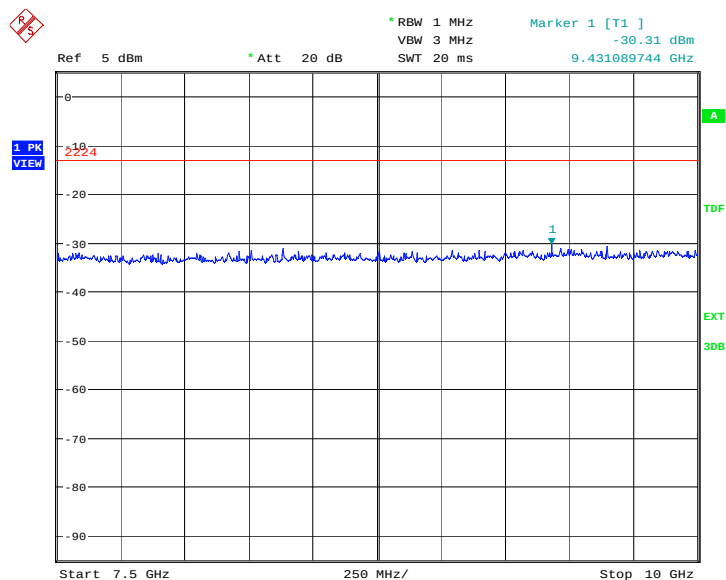
Spurious emission limit –13dBm.



Date: 16. JAN. 2014 14:08:22

A.8.3.10 Channel 9400: 7.5GHz –10GHz

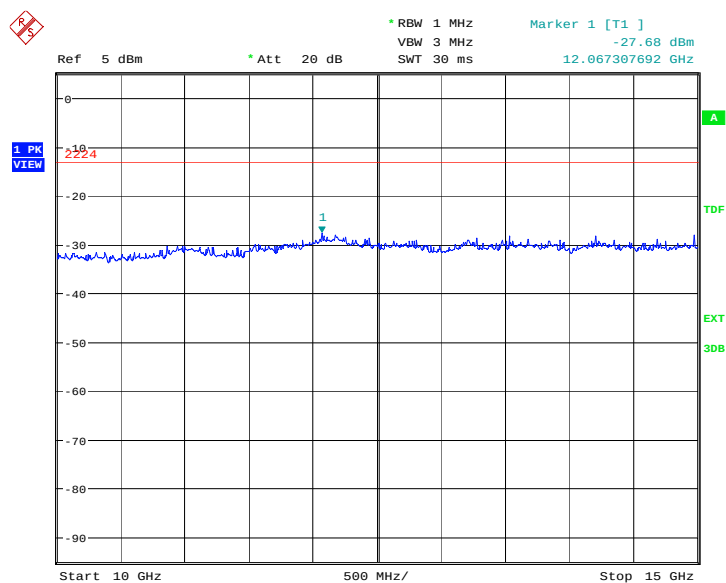
Spurious emission limit –13dBm.



Date: 16. JAN. 2014 14:08:50

A.8.3.11 Channel 9400: 10GHz –15GHz

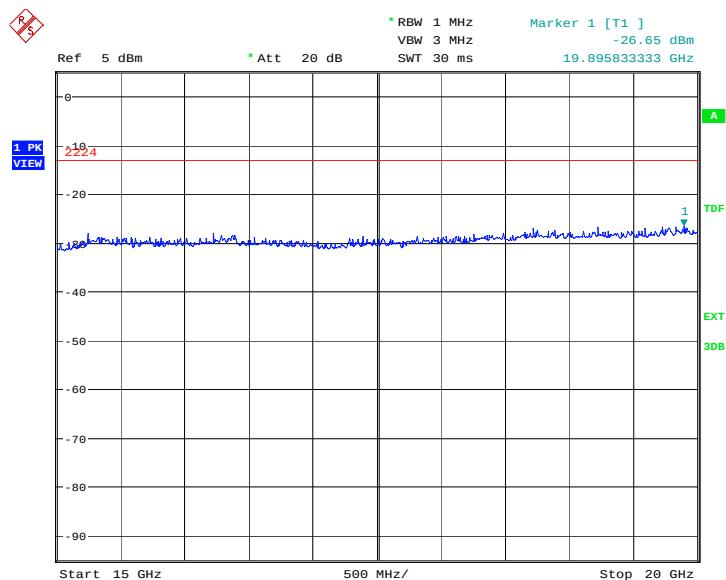
Spurious emission limit –13dBm.



Date: 16. JAN. 2014 14:09:18

A.8.3.12 Channel 9400: 15GHz –20GHz

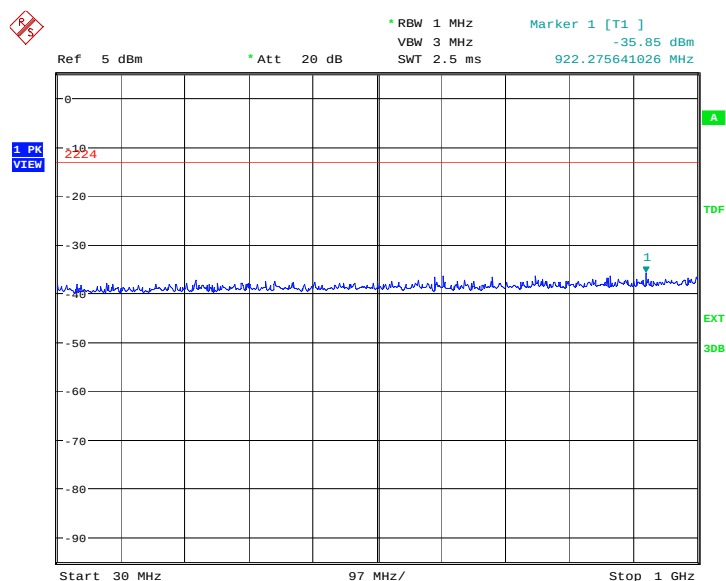
Spurious emission limit –13dBm.



Date: 16. JAN. 2014 14:09:46

A.8.3.13 Channel 9538: 30MHz –1GHz

Spurious emission limit –13dBm.

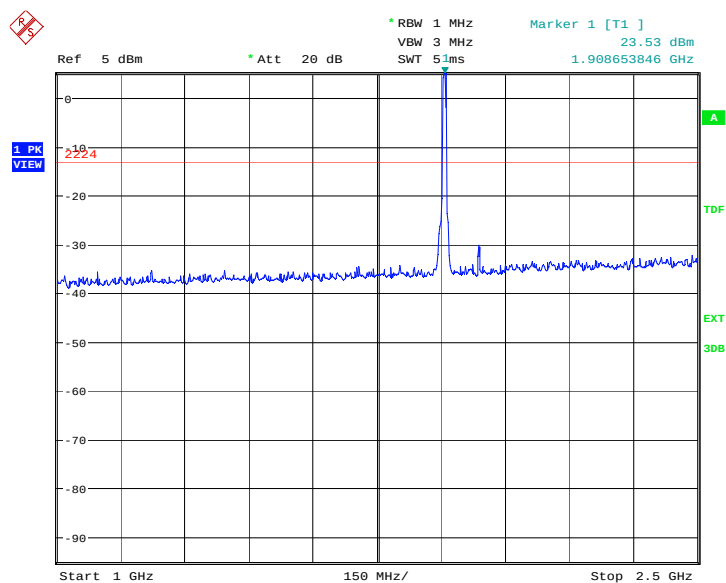


Date: 16. JAN. 2014 14:10:17

A.8.3.14 Channel 9538: 1GHz –2.5GHz

Spurious emission limit –13dBm.

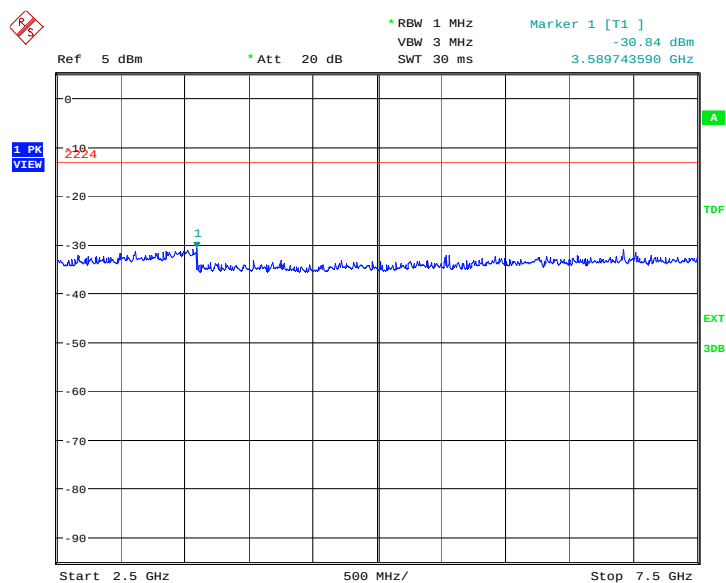
NOTE: peak above the limit line is the carrier frequency.



Date: 16. JAN. 2014 14:10:46

A.8.3.15 Channel 9538: 2.5GHz –7.5GHz

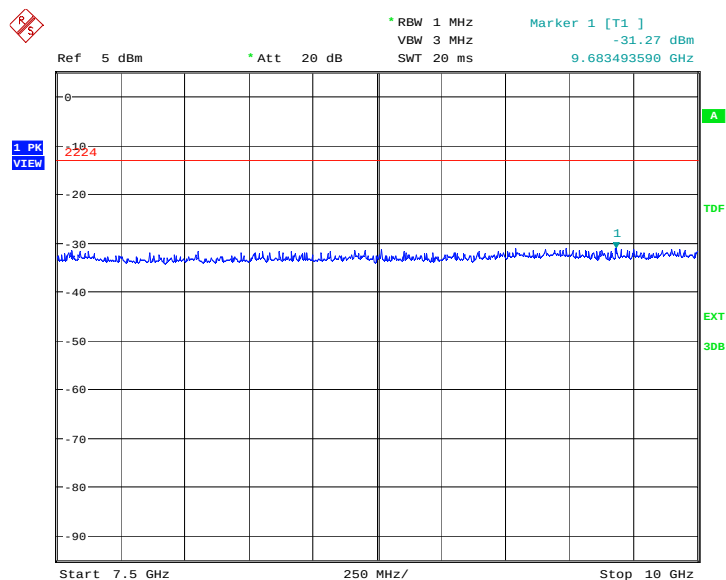
Spurious emission limit –13dBm.



Date: 16. JAN. 2014 14:11:14

A.8.3.16 Channel 9538: 7.5GHz –10GHz

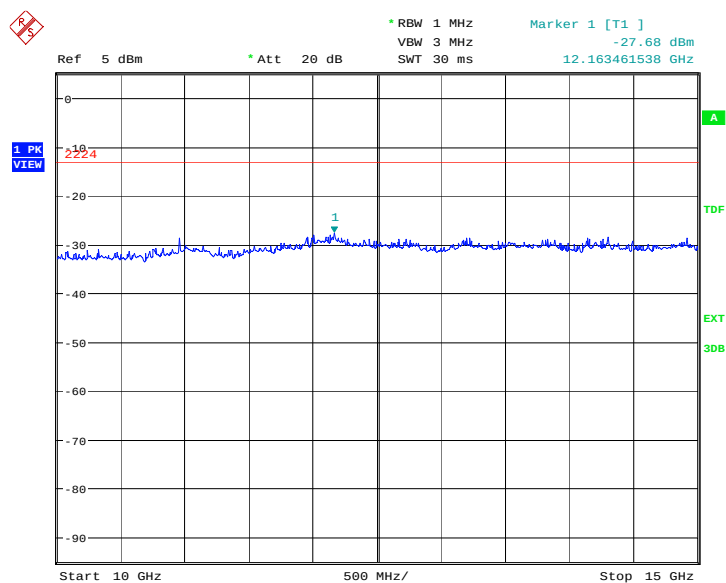
Spurious emission limit –13dBm.



Date: 16. JAN. 2014 14:11:42

A.8.3.17 Channel 9538: 10GHz –15GHz

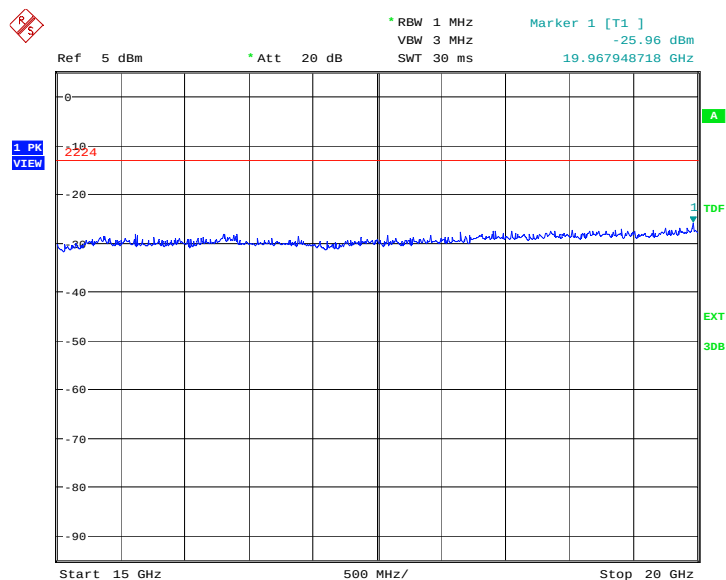
Spurious emission limit –13dBm.



Date: 16. JAN. 2014 14:12:10

A.8.3.18 Channel 9538: 15GHz –20GHz

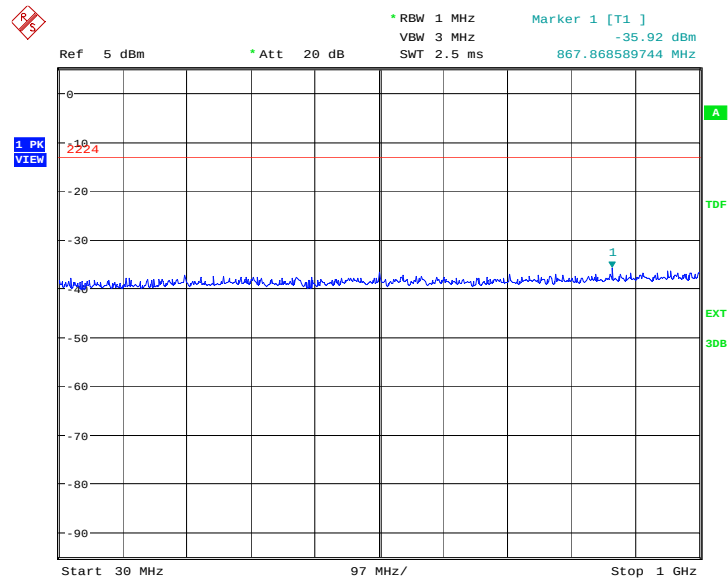
Spurious emission limit –13dBm.



Date: 16. JAN. 2014 14:12:38

A.8.3.19 Idle mode: 30MHz –1GHz

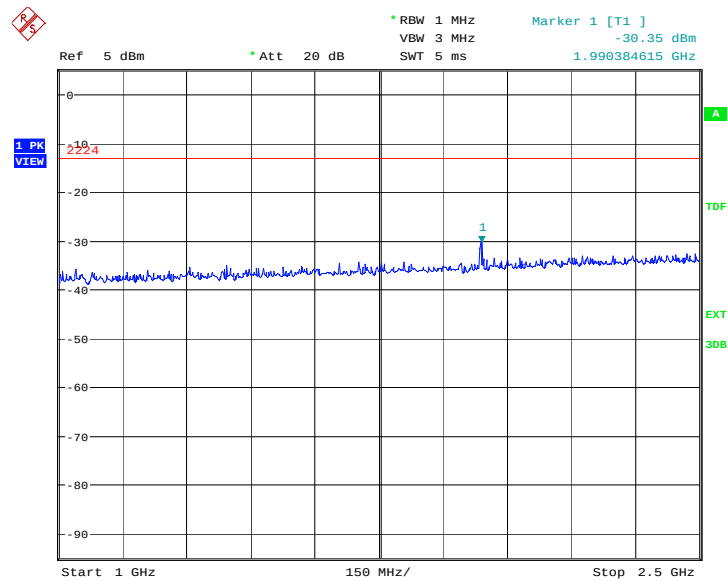
Spurious emission limit –13dBm.



Date: 16. JAN. 2014 14:13:08

A.8.3.20 Idle mode: 1GHz –2.5GHz

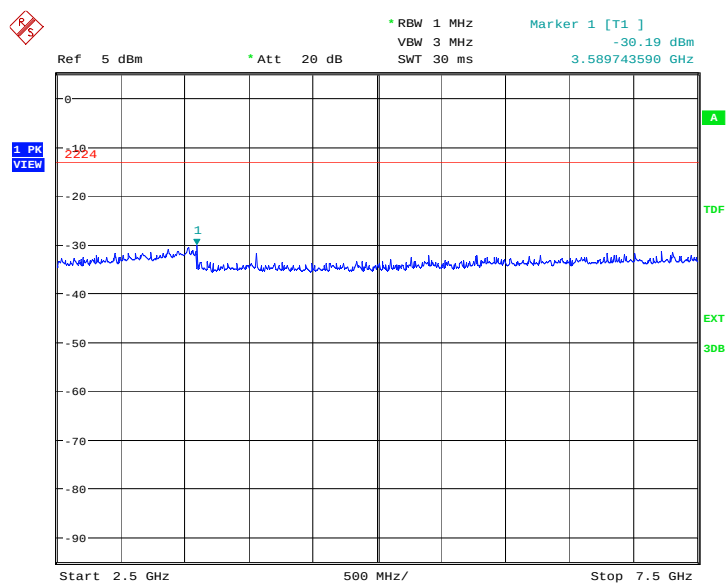
Spurious emission limit –13dBm.



Date: 16. JAN. 2014 14:13:36

A.8.3.21 Idle mode: 2.5GHz –7.5GHz

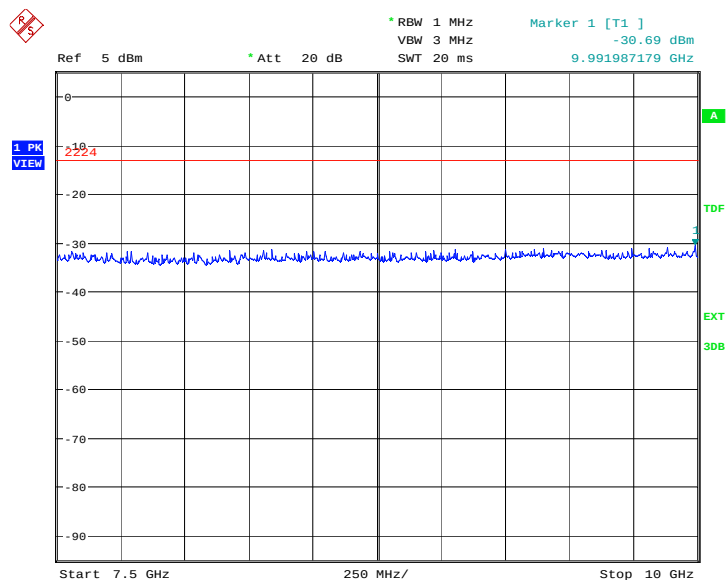
Spurious emission limit –13dBm.



Date: 16. JAN. 2014 14:14:04

A.8.3.22 Idle mode: 7.5GHz –10GHz

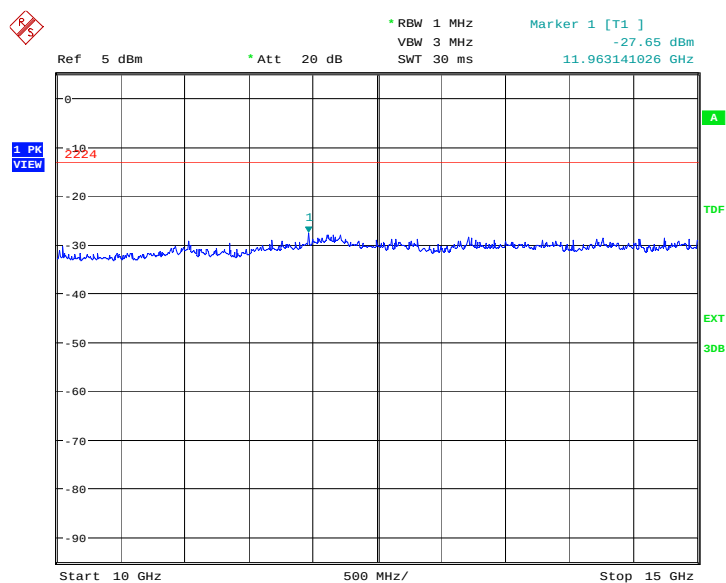
Spurious emission limit –13dBm.



Date: 16. JAN. 2014 14:14:32

A.8.3.23 Idle mode: 10GHz –15GHz

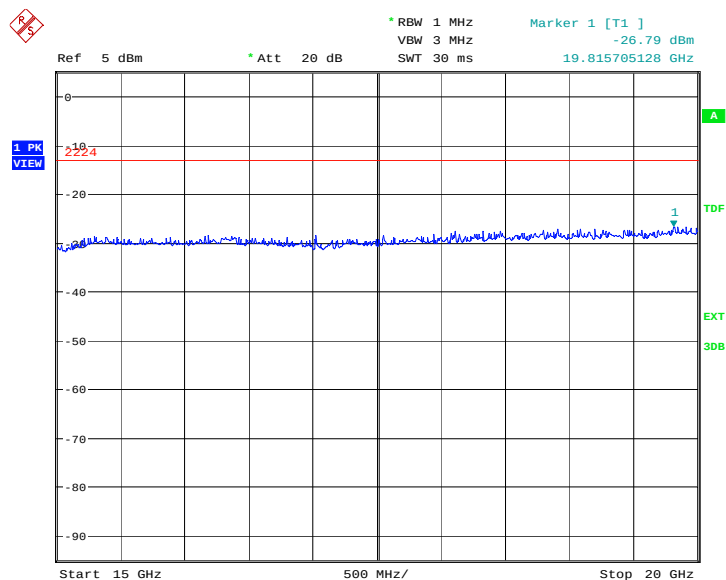
Spurious emission limit –13dBm.



Date: 16. JAN. 2014 14:15:00

A.8.3.24 Idle mode: 15GHz –20GHz

Spurious emission limit –13dBm.

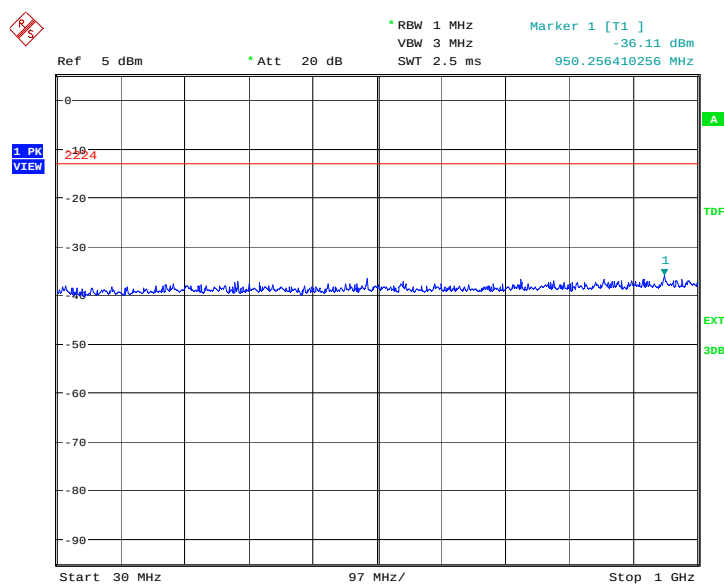


Date: 16. JAN. 2014 14:15:28

WCDMA Band IV

A. 8.3.25 Channel 1312: 30MHz –1GHz

Spurious emission limit –13dBm.

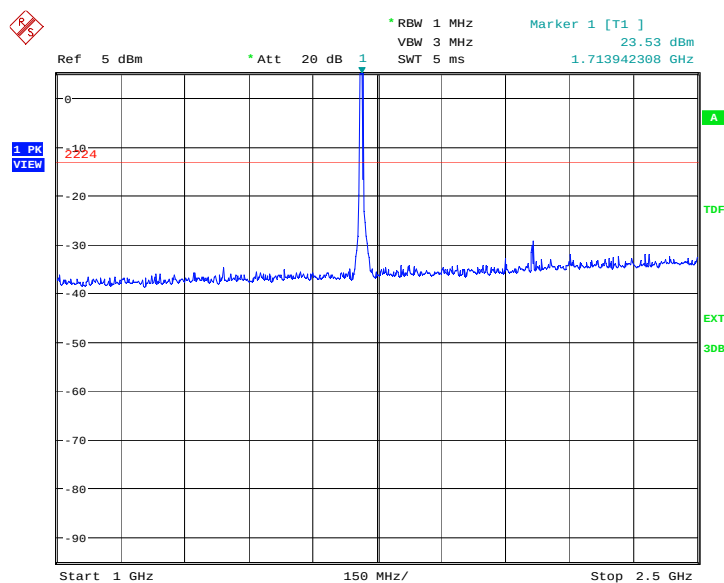


Date: 16. JAN. 2014 14:44:51

A. 8.3.26 Channel 1312: 1GHz –2.5GHz

Spurious emission limit –13dBm.

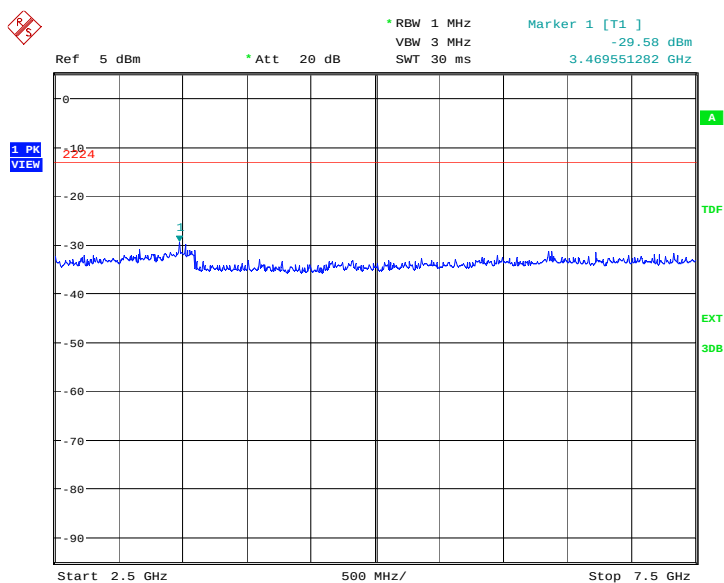
NOTE: peak above the limit line is the carrier frequency.



Date: 16. JAN. 2014 14:45:19

A. 8.3.27 Channel 1312: 2.5GHz –7.5GHz

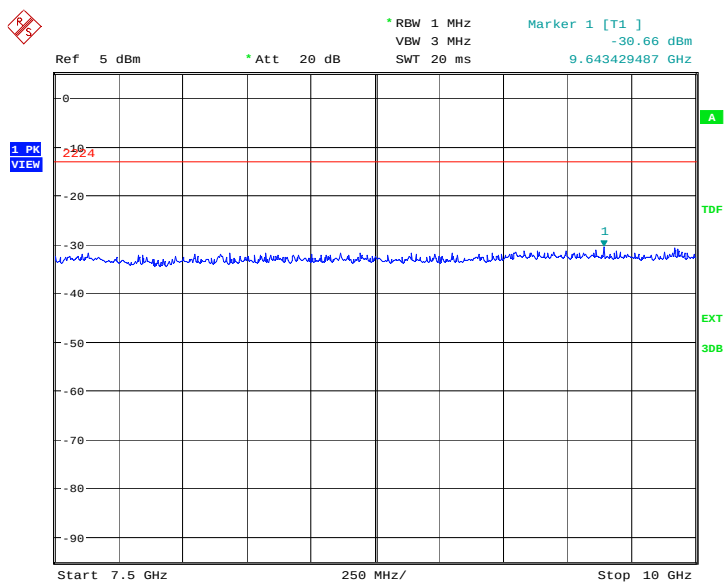
Spurious emission limit –13dBm.



Date: 16. JAN. 2014 14:45:47

A. 8.3.28 Channel 1312: 7.5GHz –10GHz

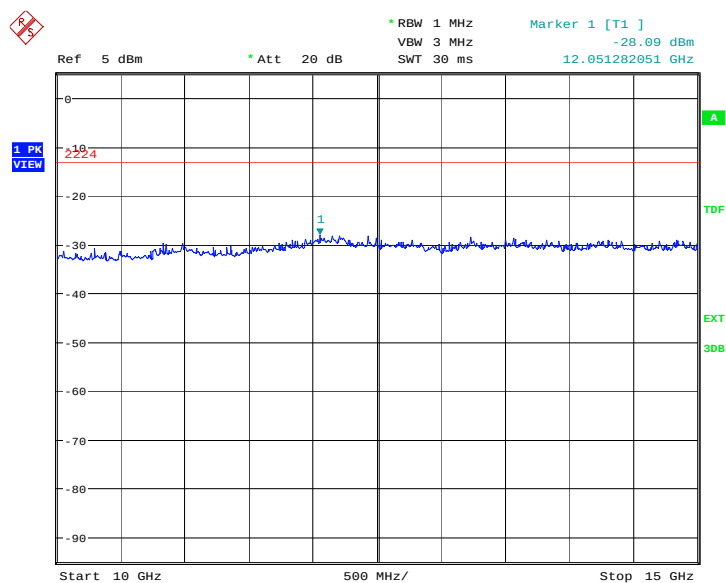
Spurious emission limit –13dBm.



Date: 16. JAN. 2014 14:46:16

A. 8.3.29 Channel 1312: 10GHz –15GHz

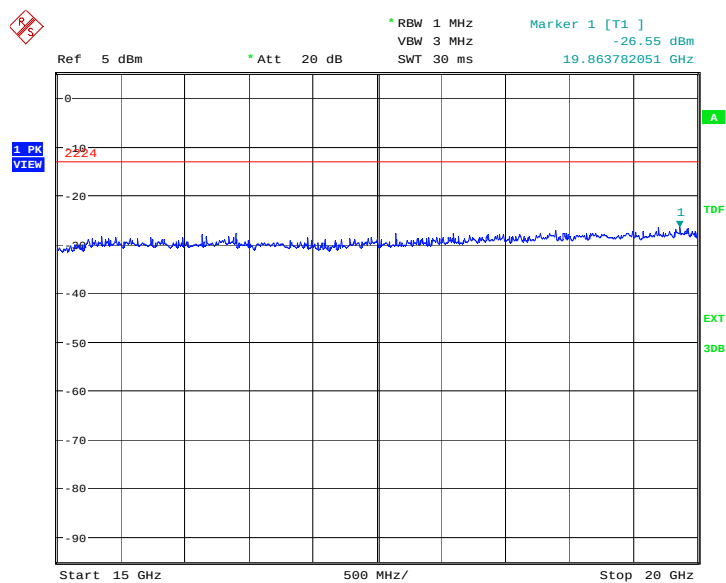
Spurious emission limit –13dBm.



Date: 16.JAN.2014 14:46:44

A. 8.3.30 Channel 1312: 15GHz –20GHz

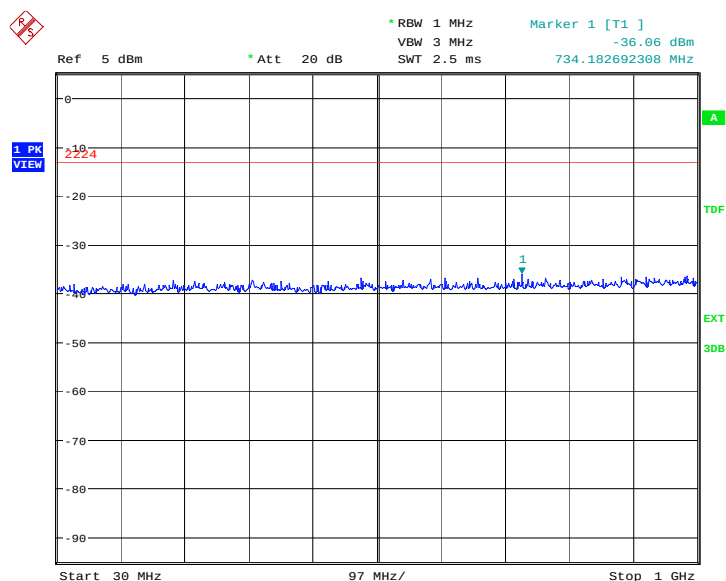
Spurious emission limit –13dBm.



Date: 16.JAN.2014 14:47:12

A. 8.3.31 Channel 1450: 30MHz –1GHz

Spurious emission limit –13dBm.

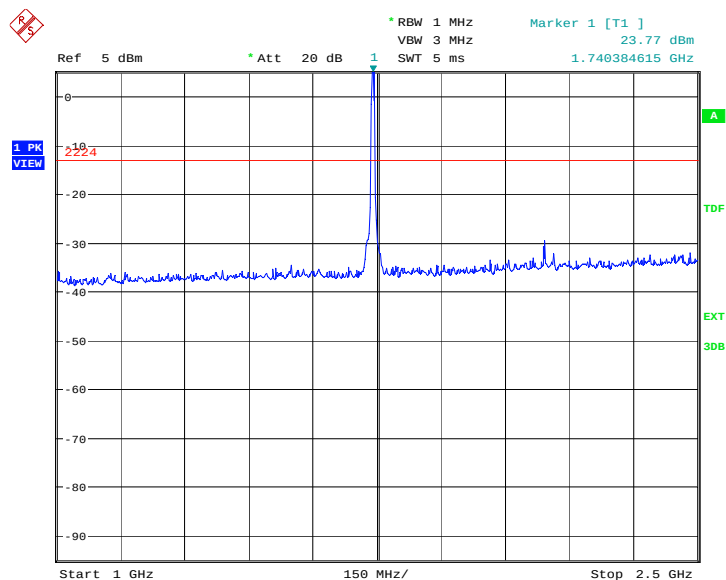


Date: 16. JAN. 2014 14:47:43

A. 8.3.32 Channel 1450: 1GHz –2.5GHz

Spurious emission limit –13dBm.

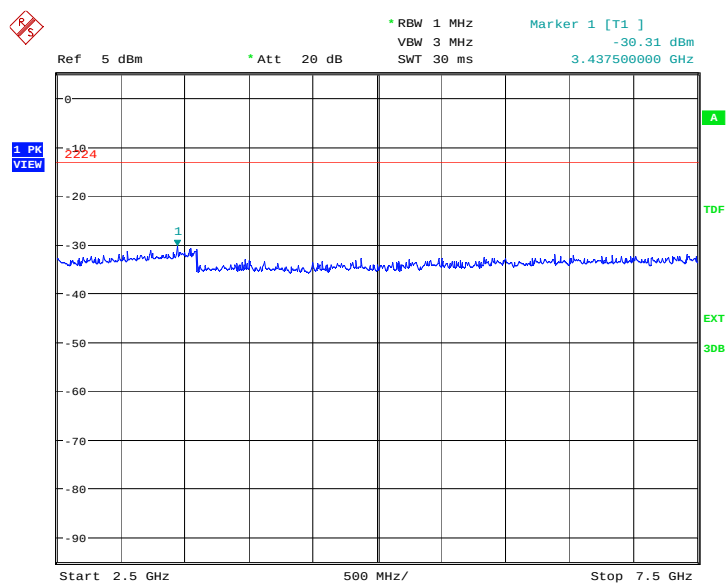
NOTE: peak above the limit line is the carrier frequency.



Date: 16. JAN. 2014 14:48:11

A. 8.3.33 Channel 1450: 2.5GHz –7.5GHz

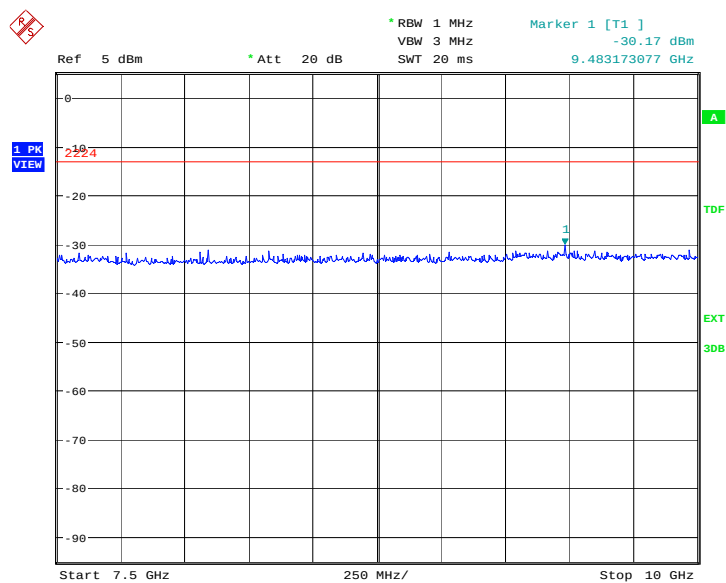
Spurious emission limit –13dBm.



Date: 16.JAN.2014 14:48:39

A. 8.3.34 Channel 1450: 7.5GHz –10GHz

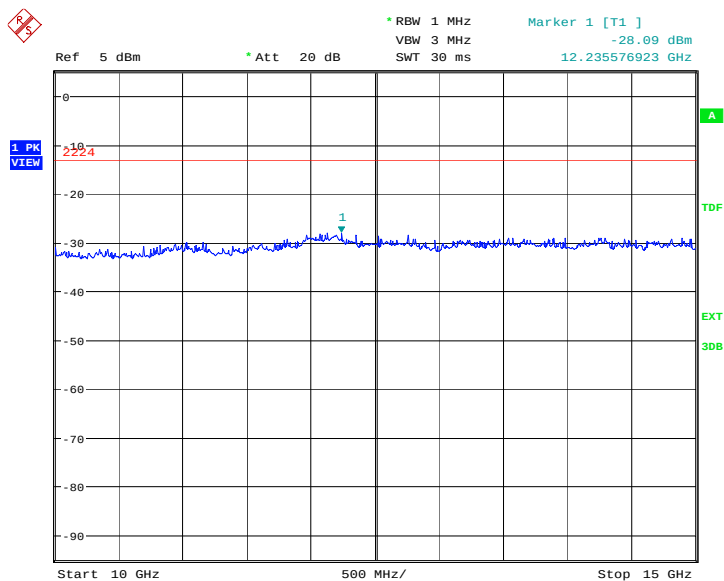
Spurious emission limit –13dBm.



Date: 16.JAN.2014 14:49:07

A. 8.3.35 Channel 1450: 10GHz –15GHz

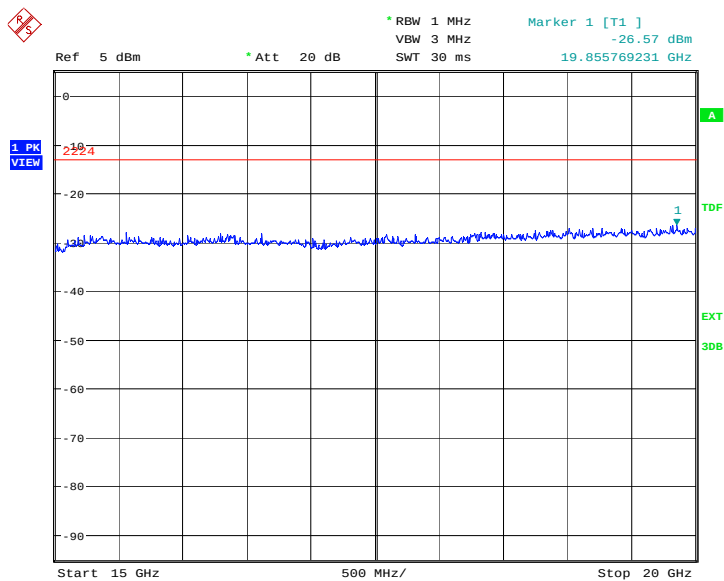
Spurious emission limit –13dBm.



Date: 16.JAN.2014 14:49:36

A. 8.3.36 Channel 1450: 15GHz –20GHz

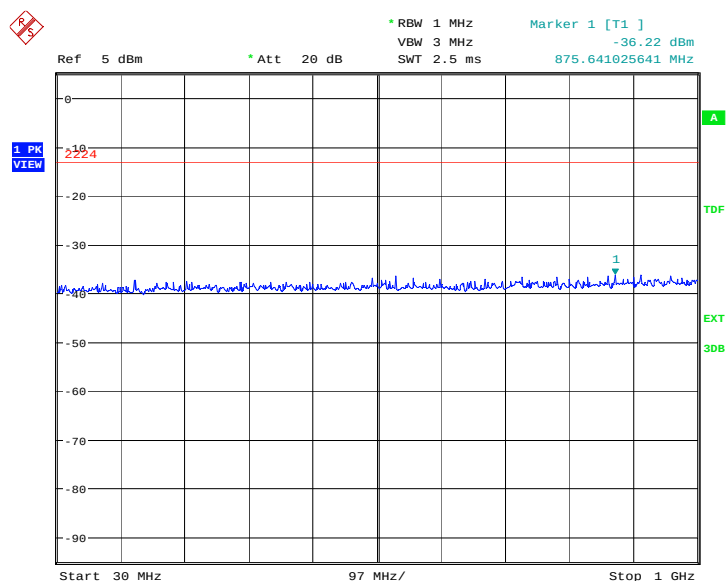
Spurious emission limit –13dBm.



Date: 16.JAN.2014 14:50:04

A. 8.3.37 Channel 1513: 30MHz –1GHz

Spurious emission limit –13dBm.

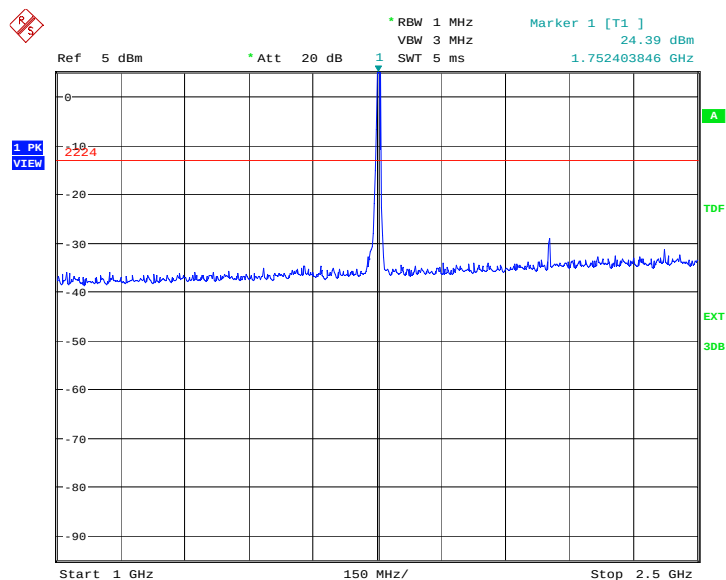


Date: 16. JAN. 2014 14:50:35

A. 8.3.38 Channel 1513: 1GHz –2.5GHz

Spurious emission limit –13dBm.

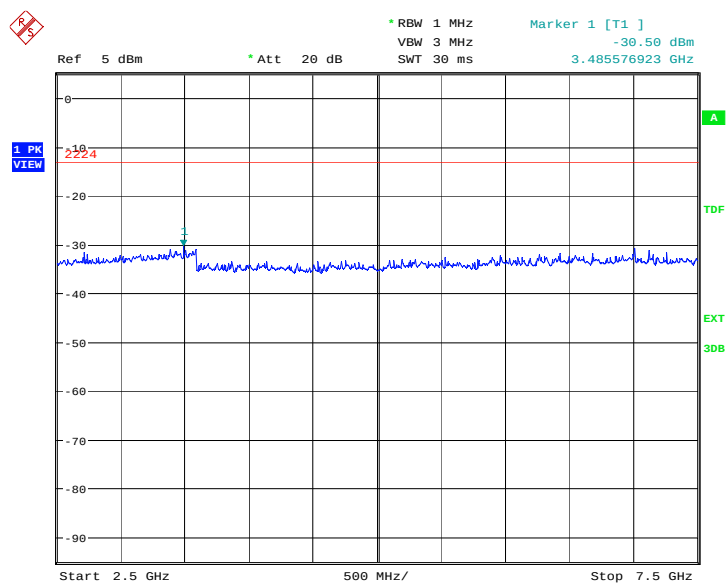
NOTE: peak above the limit line is the carrier frequency.



Date: 16. JAN. 2014 14:51:03

A. 8.3.39 Channel 1513: 2.5GHz –7.5GHz

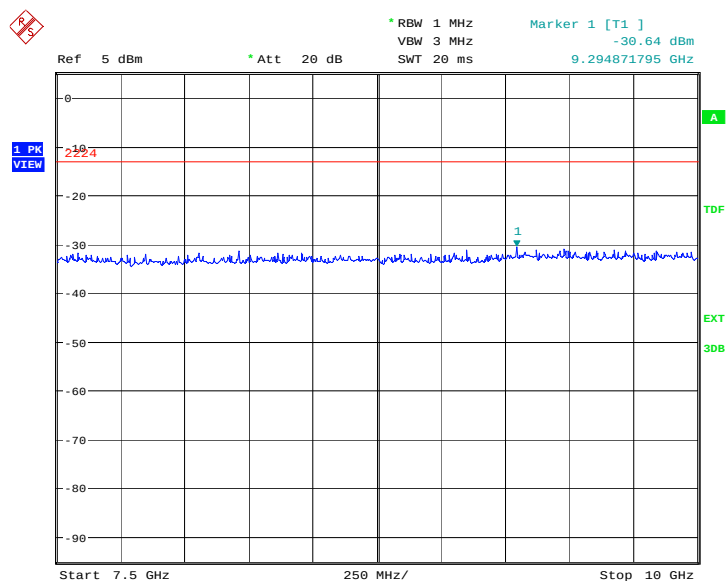
Spurious emission limit –13dBm.



Date: 16.JAN.2014 14:51:31

A. 8.3.40 Channel 1513: 7.5GHz –10GHz

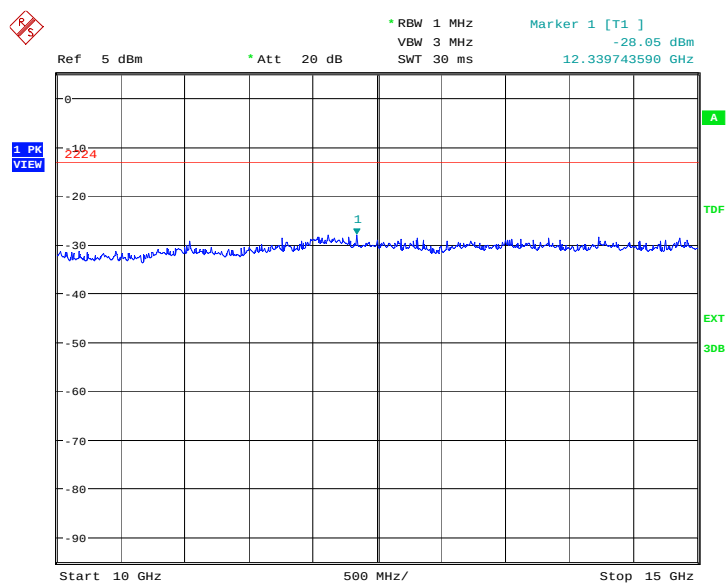
Spurious emission limit –13dBm.



Date: 16.JAN.2014 14:51:59

A. 8.3.41 Channel 1513: 10GHz –15GHz

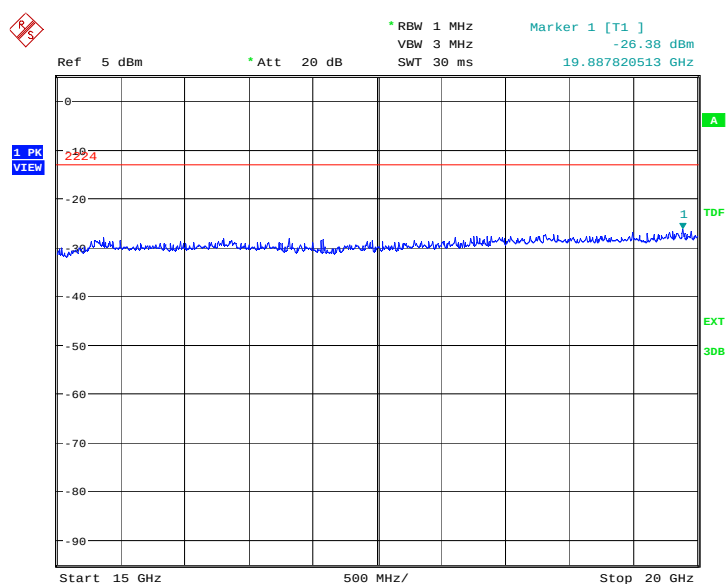
Spurious emission limit –13dBm.



Date: 16. JAN. 2014 14:52:27

A. 8.3.42 Channel 1513: 15GHz –20GHz

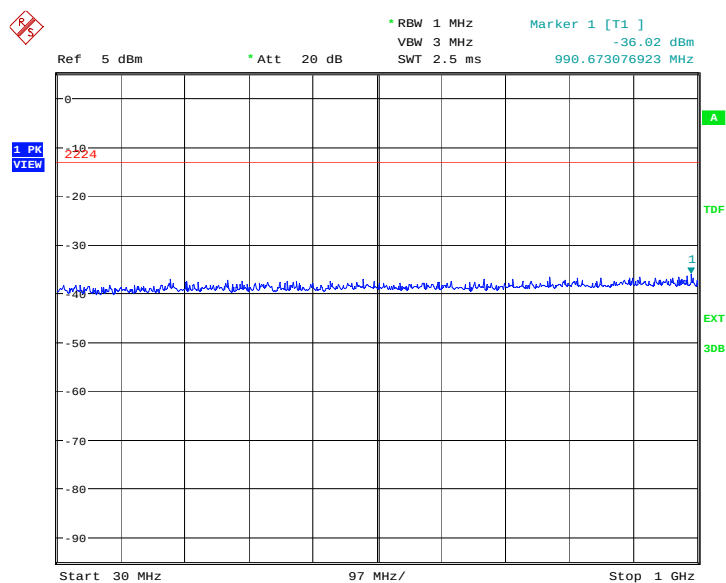
Spurious emission limit –13dBm.



Date: 16. JAN. 2014 14:52:56

A. 8.3.43 Idle mode: 30MHz –1GHz

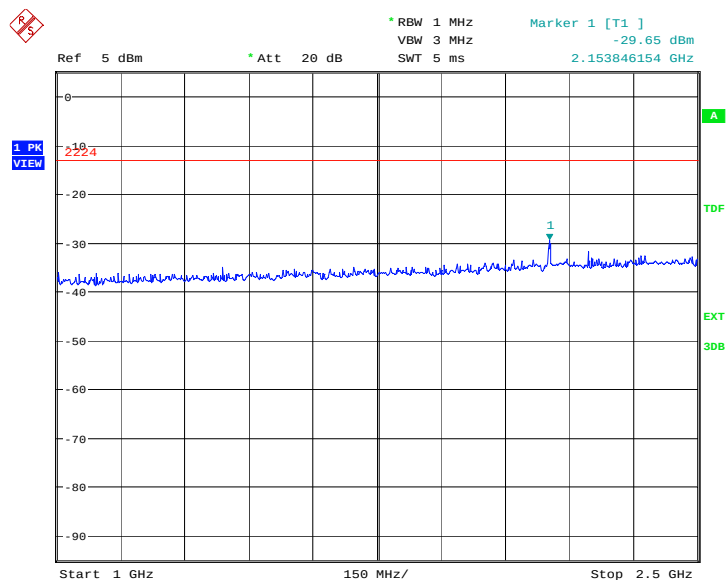
Spurious emission limit –13dBm.



Date: 16. JAN. 2014 14:53:25

A.8.3.44 Idle mode: 1GHz –2.5GHz

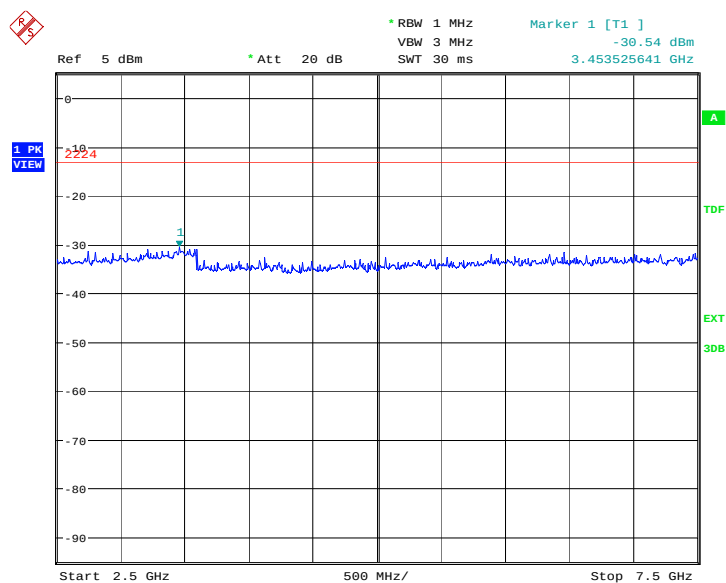
Spurious emission limit –13dBm.



Date: 16. JAN. 2014 14:53:53

A.8.3.45 Idle mode: 2.5GHz –7.5GHz

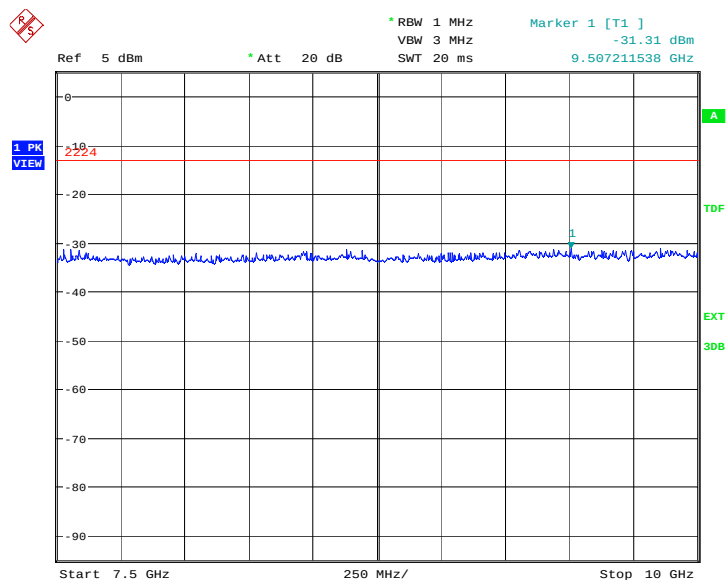
Spurious emission limit –13dBm.



Date: 16. JAN. 2014 14:54:21

A.8.3.46 Idle mode: 7.5GHz –10GHz

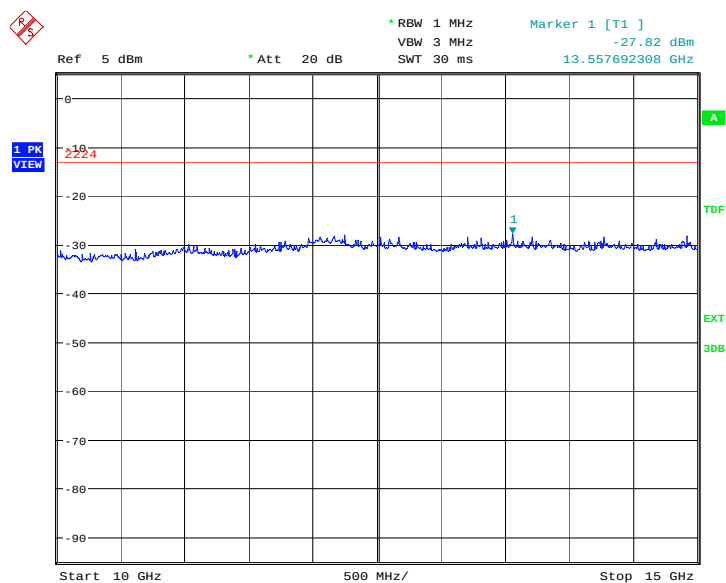
Spurious emission limit –13dBm.



Date: 16. JAN. 2014 14:54:49

A.8.3.47 Idle mode: 10GHz –15GHz

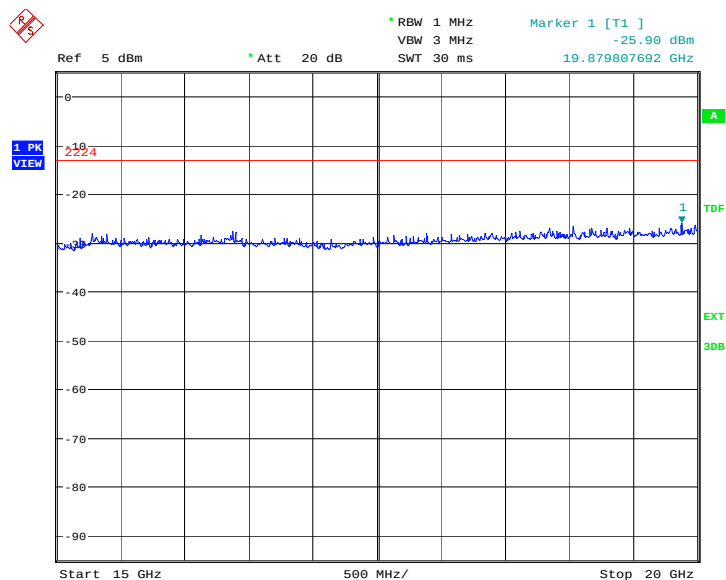
Spurious emission limit –13dBm.



Date: 16. JAN. 2014 14:55:17

A.8.3.48 Idle mode: 15GHz –20GHz

Spurious emission limit –13dBm.



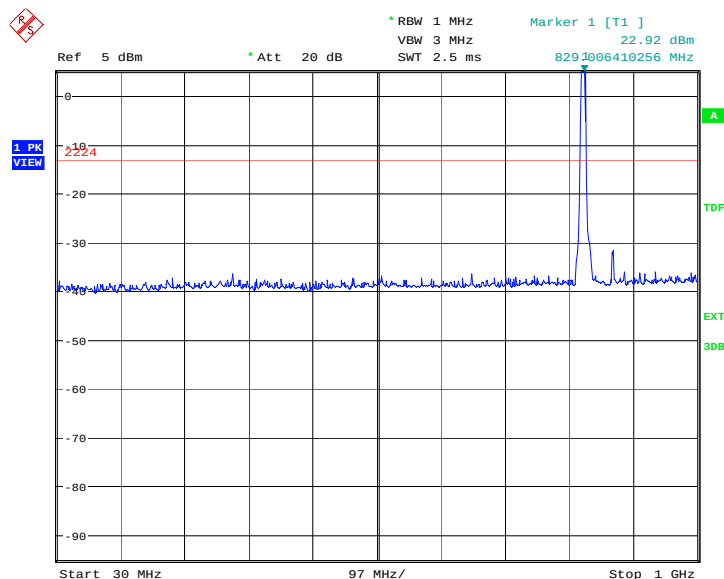
Date: 16. JAN. 2014 14:55:45

WCDMA Band V

A.8.3.49 Channel 4132: 30MHz –1GHz

Spurious emission limit –13dBm.

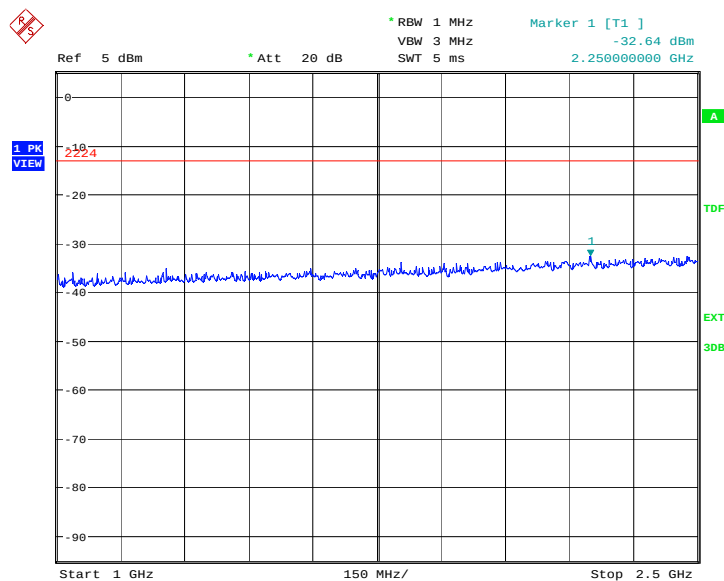
NOTE: peak above the limit line is the carrier frequency.



Date: 16.JAN.2014 15:31:02

A.8.3.50 Channel 4132: 1GHz – 2.5GHz

Spurious emission limit –13dBm.

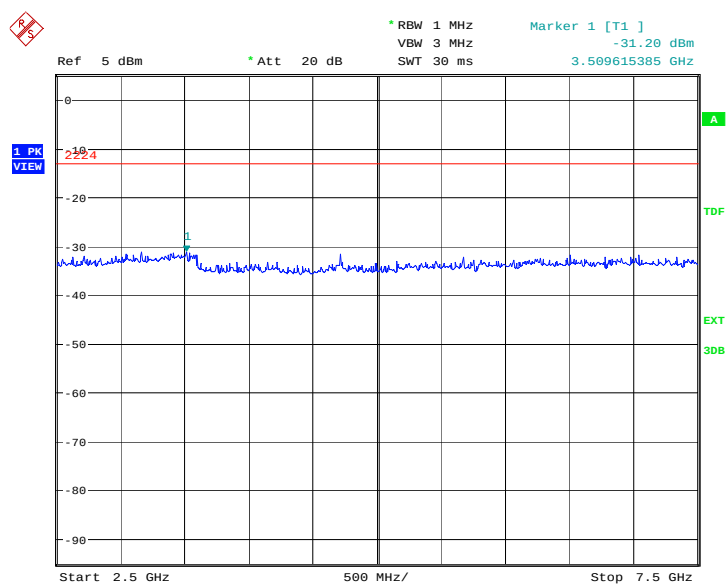


Date: 16.JAN.2014 15:31:30

A.8.3.51 Channel 4132: 2.5GHz –7.5GHz

Spurious emission limit –13dBm.

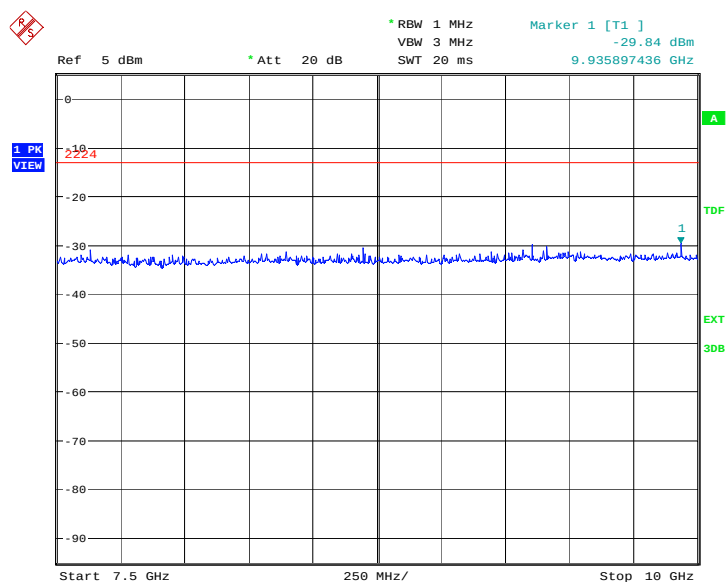
NOTE: peak above the limit line is the carrier frequency.



Date: 16.JAN.2014 15:31:58

A.8.3.52 Channel 4132: 7.5GHz – 10GHz

Spurious emission limit –13dBm.

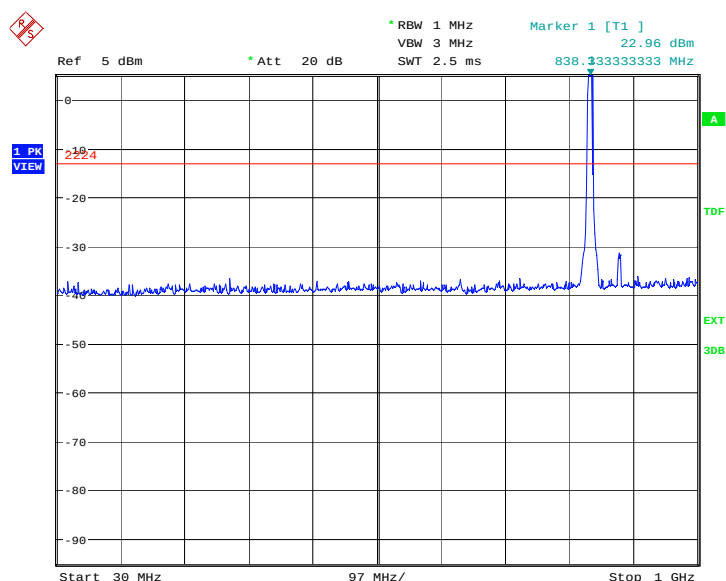


Date: 16.JAN.2014 15:32:26

A.8.3.53 Channel 4183: 30MHz –1GHz

Spurious emission limit –13dBm.

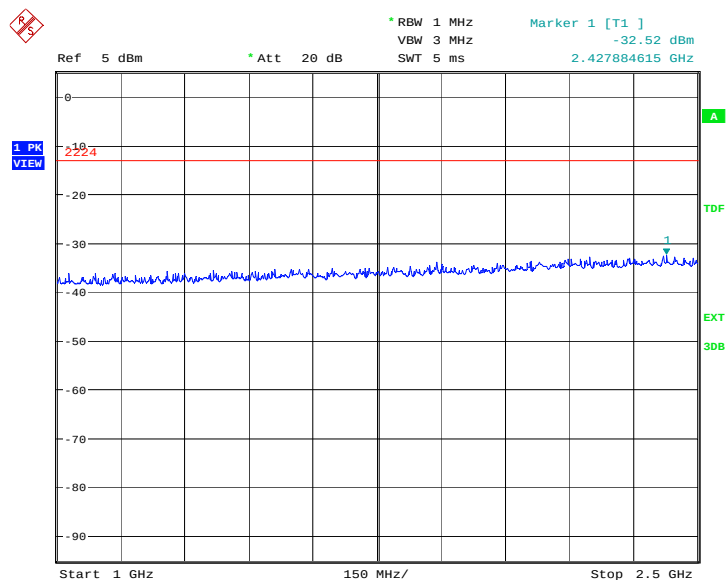
NOTE: peak above the limit line is the carrier frequency.



Date: 16. JAN. 2014 15:32:57

A.8.3.54 Channel 4183: 1GHz – 2.5GHz

Spurious emission limit –13dBm.

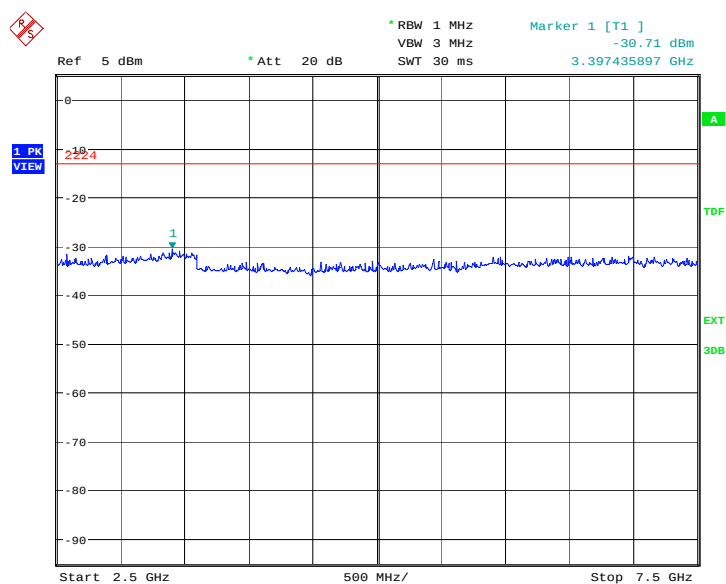


Date: 16. JAN. 2014 15:33:25

A.8.3.55 Channel 4183: 2.5GHz –7.5GHz

Spurious emission limit –13dBm.

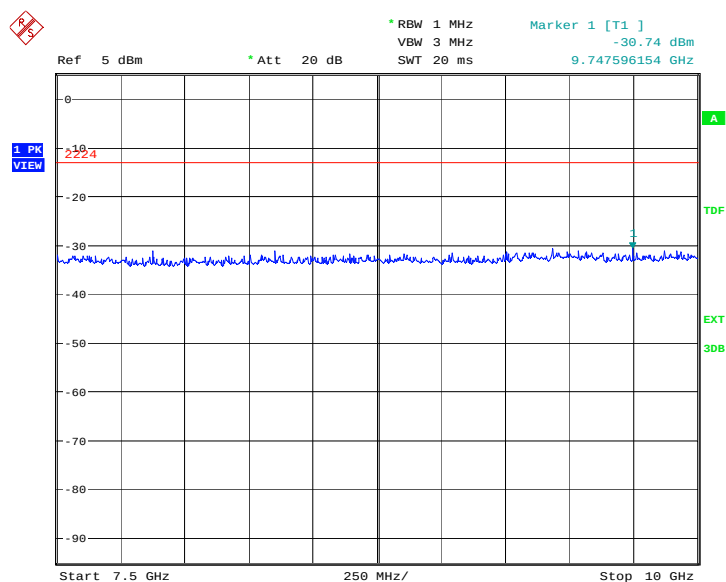
NOTE: peak above the limit line is the carrier frequency.



Date: 16. JAN. 2014 15:33:53

A.8.3.56 Channel 4183: 7.5GHz – 10GHz

Spurious emission limit –13dBm.

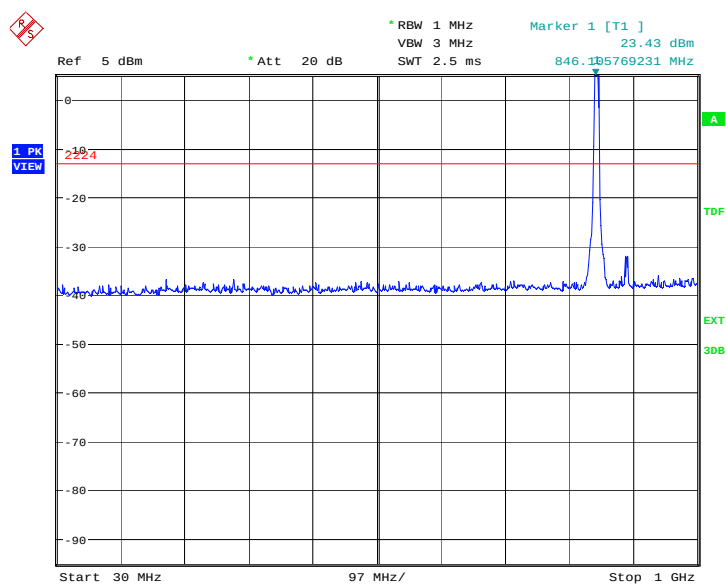


Date: 16. JAN. 2014 15:34:21

A.8.3.57 Channel 4233: 30MHz –1GHz

Spurious emission limit –13dBm.

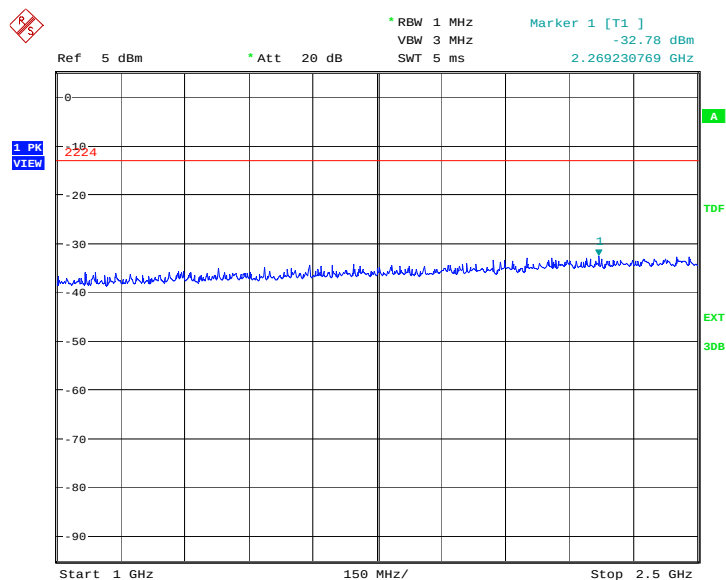
NOTE: peak above the limit line is the carrier frequency.



Date: 16. JAN. 2014 15:34:52

A.8.3.58 Channel 4233: 1GHz – 2.5GHz

Spurious emission limit –13dBm.

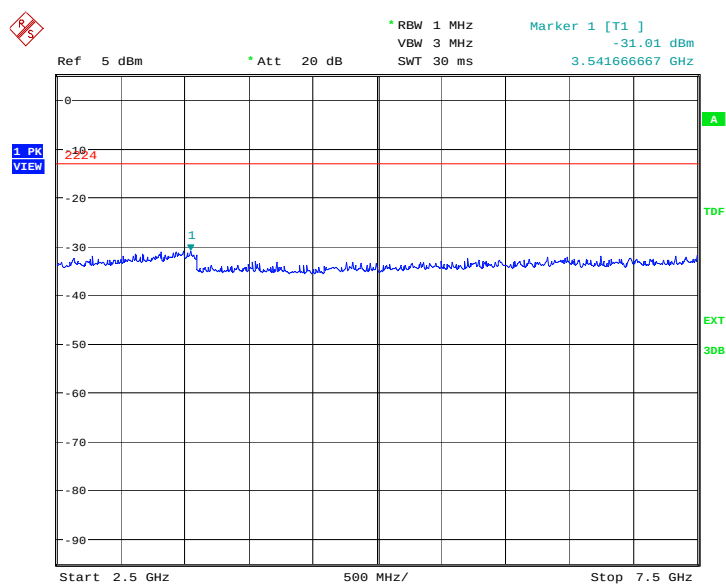


Date: 16. JAN. 2014 15:35:21

A.8.3.59 Channel 4233: 2.5GHz –7.5GHz

Spurious emission limit –13dBm.

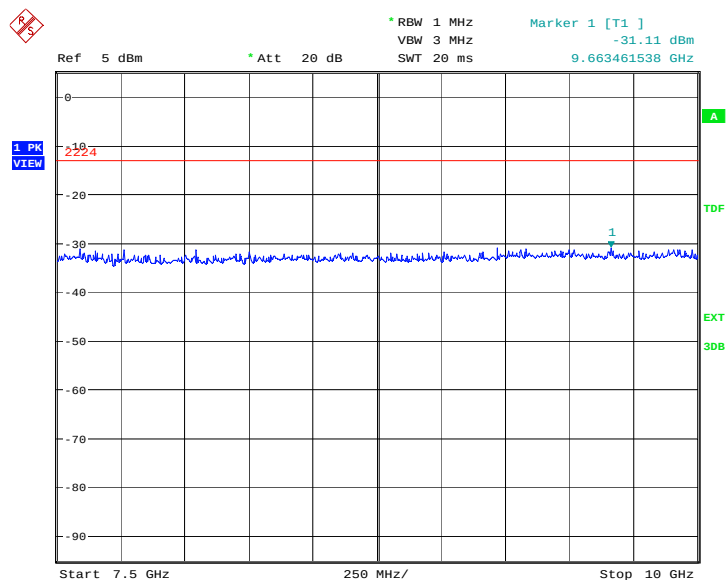
NOTE: peak above the limit line is the carrier frequency.



Date: 16.JAN.2014 15:35:49

A.8.3.60 Channel 4233: 7.5GHz – 10GHz

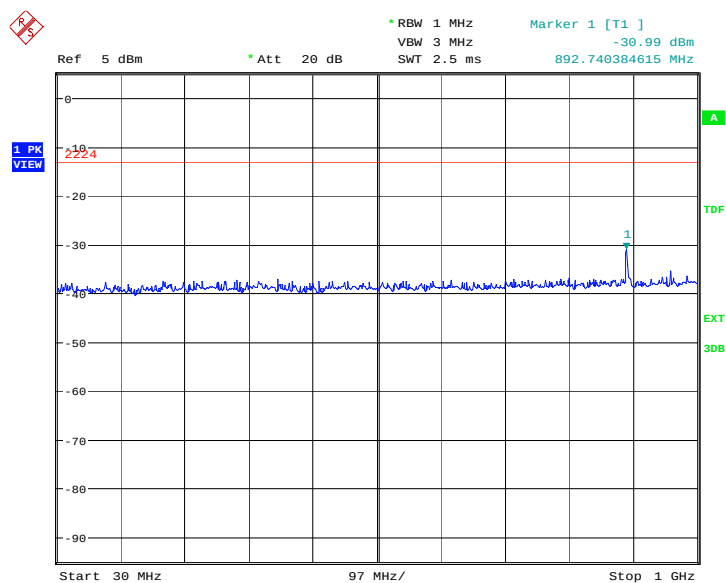
Spurious emission limit –13dBm.



Date: 16.JAN.2014 15:36:17

A.8.3.61 Idle mode: 30MHz – 1GHz

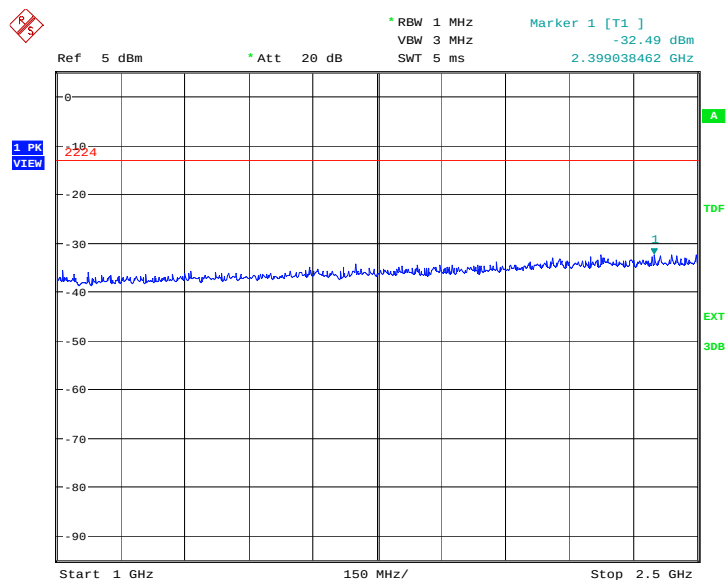
Spurious emission limit -13dBm.



Date: 16. JAN. 2014 15:36:46

A.8.3.62 Idle mode: 1GHz – 2.5GHz

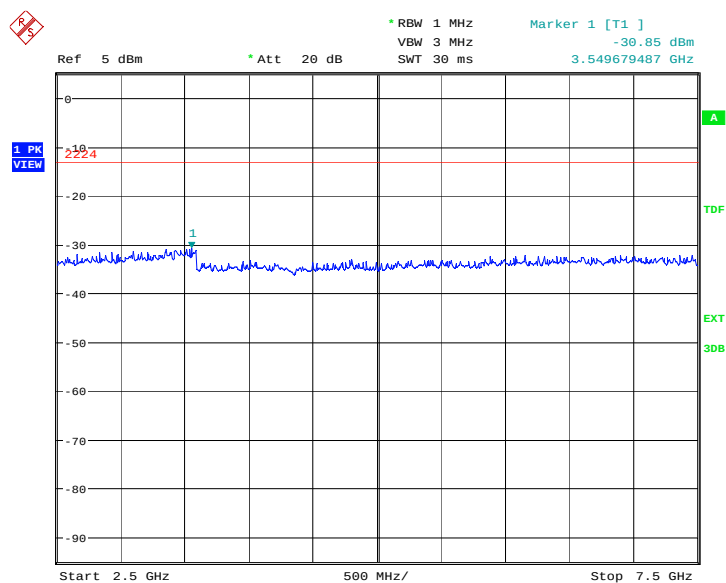
Spurious emission limit -13dBm.



Date: 16. JAN. 2014 15:37:14

A.8.3.63 Idle mode: 2.5GHz – 7.5GHz

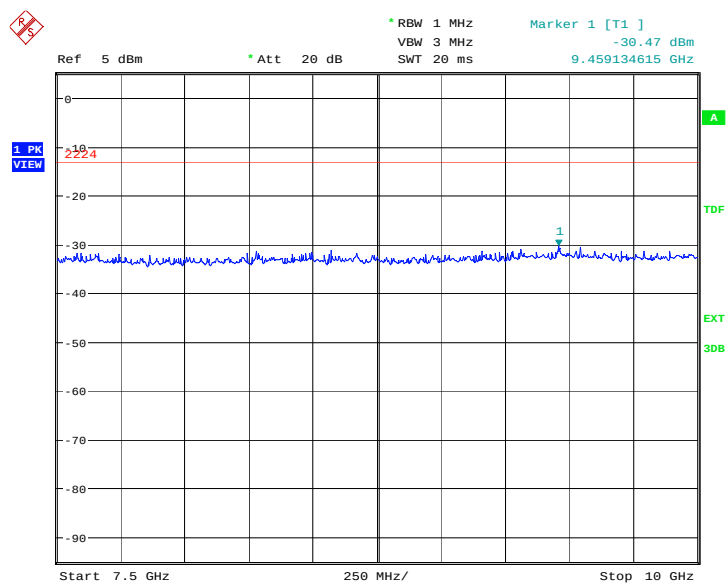
Spurious emission limit -13dBm.



Date: 16. JAN. 2014 15:37:42

A.8.3.64 Idle mode: 7.5GHz – 10GHz

Spurious emission limit -13dBm.



Date: 16. JAN. 2014 15:38:10

A.9 RECEIVER RADIATION EMISSION

Reference

FCC: CFR Part 2.1053, 15.109

IC: RSS-132 Issue 3, Section 5.6. RSS-133 Issue 6, Section 6.6. RSS-139 Issue 2, Section 6.6.

A.9.1 Method of Measurement

The measurement procedure in ANSI C63.4-2009 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 10 m. For frequency range above 1GHz, the measurement distance is 3 m.

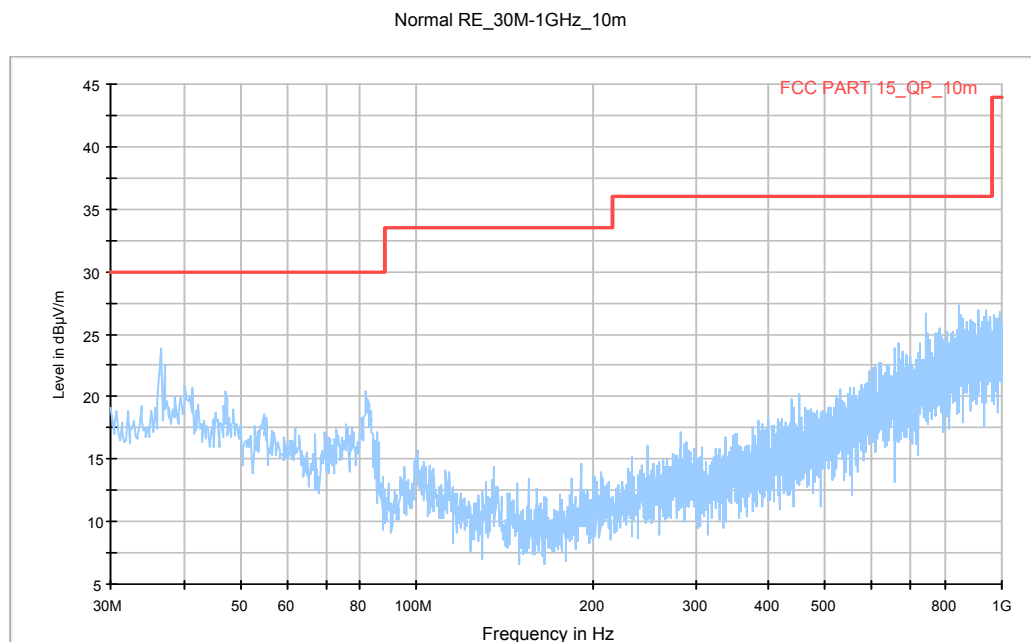
The EUT is measured with travel charger and the operating mode is idle without CMU200's signaling.

A.9.2 Measurement Limit

Limit from RSS-Gen

Frequency range (MHz)	Field strength limit ($\mu\text{V}/\text{m}$)		
	Quasi-peak	Average	Peak
30-88	100		
88-216	150		
216-960	200		
960-1000	500		
>1000		500	5000

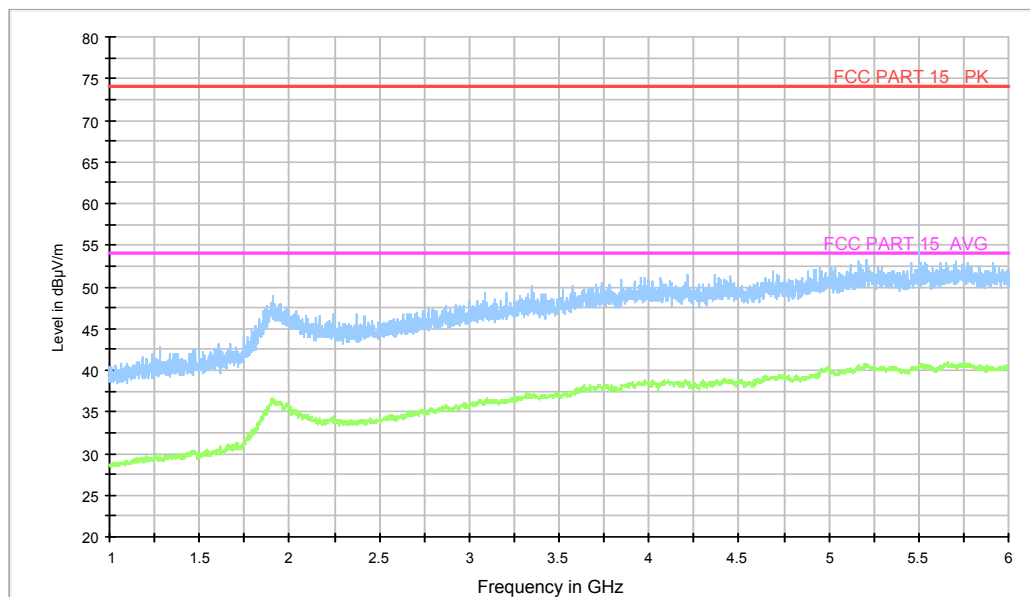
A. 9.3 Measurement results



IF bandwidth: 120 kHz

Idle Mode: 30MHz-1GHz

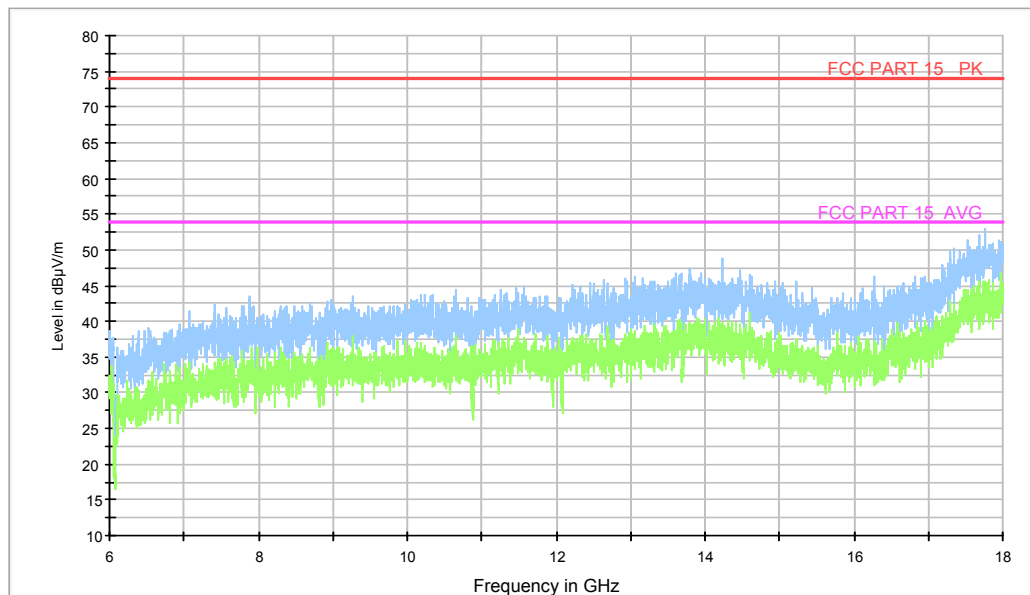
Normal RE_1G-6GHz



RBW 1MHz, VBW 3MHz

Idle Mode: 1GHz-6GHz

Normal RE_6G-18GHz



RBW 1MHz, VBW 3MHz

Idle Mode: 4GHz-18GHz

ANNEX B: TEST LAYOUT

No Display.

Pic.1 Radiated spurious emission

No Display.

Pic.2 Conducted emission

ANNEX C: EUT photograph

No Display.

Mobile Phone

No Display.

Mobile Phone

No Display.

Mobile Phone

No Display.

Mobile Phone

No Display.

Mobile Phone

No Display.

Mobile Phone

No Display.

Mobile Phone Disassembly and Inbuilt Battery

No Display.

Mobile Phone Disassembly and Inbuilt Battery

No Display.

Mobile Phone Disassembly and Inbuilt Battery

No Display.

Mobile Phone Disassembly

No Display.

Mobile Phone Disassembly

No Display.

Mobile Phone Disassembly

No Display.

Travel Charger

No Display.

Label of Travel Charger

No Display.

USB Cable

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