TEST REPORT

No. 2012TAR159

for

ZTE CORPORATION

WCDMA/GSM（GPRS） Dual-Mode Digital Mobile Phone

Model Name: ZTE V768

FCC ID: Q78-ZTEV768

with

Hardware Version: gcnb

Software Version: V768V1.0.0B01

Issued Date: May 04, 2012

Test Laboratory:

DAR accreditation (DIN EN ISO/IEC 17025): No. DGA-PL-114/01-02

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

3/F Shou Xiang Technology Building, No.51 Xueyuan Road, Hai Dian District, Beijing, P. R. China,100191.

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CONTENTS

1. Test Laboratory

1.1. Testing Location

Company Name:	TMC Beijing, Telecommunication Metrology Center of MIIT
Address:	3/F Shou Xiang Technology Building, No.51 Xueyuan Road, Hai Dian District, Beijing, P. R. China
Postal Code:	100191
Telephone:	00861062304633
Fax:	00861062304793

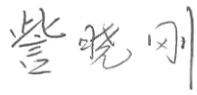
1.2. Testing Environment

Normal Temperature:	15-35℃
Relative Humidity:	20-75%

1.3. Project data

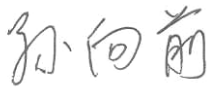
Testing Start Date:	Apr 20, 2012
Testing End Date:	May 04, 2012

1.4. Signature



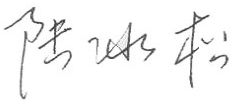
Zi Xiaogang

(Prepared this test report)



Sun Xiangqian

(Reviewed this test report)



Lu Bingsong

Deputy Director of the laboratory

(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	ZTE CORPORATION
Address /Post:	ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China
City:	Shenzhen
Country:	China
Telephone:	0086-21-61460890
Fax:	0086-21-61460602

2.2. Manufacturer Information

Company Name:	ZTE CORPORATION
Address /Post:	ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China
City:	Shenzhen
Country:	China
Telephone:	0086-21-61460890
Fax:	0086-21-61460602

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

3.1. About EUT

Description	WCDMA/GSM（GPRS） Dual-Mode Digital Mobile Phone
Model Name	ZTE V768
FCC ID	Q78-ZTEV768
Frequency	PCS 1900MHz; WCDMA BAND IV;
Antenna	Internal
Power supply	Battery or Charger (AC Adaptor)
Output power	23.05 dBm maximum EIRP measured for WCDMA BAND IV
Extreme vol. Limits	3.5VDC to 4.2VDC (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 or IMEI	HW Version	SW Version
N06	004401782381772	gcnb	V768V1.0.0B01
N07	004401782382887	gcnb	V768V1.0.0B01

*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
AE1	Battery	
AE2	Charger	

AE1

Model	Li3715T42P3h504857
Manufacturer	SCUD
Capacitance	3400mAh
Nominal Voltage	3.7V

AE2

Model	STC-A22O501700M5-C
Manufacturer	Ruide
Length of DC line	182.5cm

*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 WCDMA/GSM（GPRS） Dual-Mode Digital Mobile Phone with integrated antenna. It consists of normal options: lithium battery, charger. Manual and specifications of the EUT were provided to fulfil the test. Samples undergoing test were selected by the Client.

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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	V 10.1.09
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

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

Temperature	Min. = 15 ℃, Max. = 30 ℃
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω
Normalised site attenuation (NSA)	< ±3.2 dB, 10 m distance, from 30 to 1000 MHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 2000 MHz

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

Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. =30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω

Conducted chamber did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 30 ℃
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω

Fully-anechoic chamber (6.8 meters×3.08 meters×3.53 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 30 ℃
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω
Uniformity of field strength	Between 0 and 6 dB, from 80 to 2000 MHz

6. SUMMARY OF TEST RESULTS

Items	List	Clause in FCC rules	Verdict
1	Output Power	27.50(d)(2)	P
2	Emission Limit	27.53(h)	P
3	CONDUCTED EMISSION	15.107/15.207	P
4	Frequency Stability	27.54	P
5	Occupied Bandwidth	2.1049(h)(i)	P
6	Emission Bandwidth	27.53(g)	P
7	Band Edge Compliance	27.53(g)	P
8	Conducted Spurious Emission	2.1057/27.53(g)	P

7. Test Equipments Utilized

NO.	NAME	TYPE	SERIES NUMBER	PRODUCER	CAL DUE DATE
1	Test Receiver	ESCI	100766	R&S	2013-03-06
2	Test Receiver	ESI40	831564/002	R&S	2013-02-12
3	BiLog Antenna	VULB9163	9163-175	Schwarzbeck	2013-02-05
4	BiLog Antenna	VULB9163	9163-302	Schwarzbeck	2013-02-10
5	Signal Generator	SMB100A	102063	R&S	2013-02-05
7	LISN	ESH2-Z5	829991/012	R&S	2013-02-20
8	Spectrum Analyzer	FSU26	200030	R&S	2013-02-18
9	Spectrum Analyzer	FSU46	100054	R&S	2013-02-14
10	Universal Radio Communication Tester	CMU200	100680	R&S	2013-02-23
11	Universal Radio Communication Tester	CMU200	109914	R&S	2013-02-21
12	Dual-Ridge Waveguide Horn Antenna	3117	00119024	ETS	2013-02-31
13	Dual-Ridge Waveguide Horn Antenna	3117	00119021	ETS	2013-02-09
14	Dual-Ridge Waveguide Horn Antenna	3116	2663	EMCO	2013-02-01
15	Dual-Ridge Waveguide Horn Antenna	3116	2661	EMCO	2013-02-01
16	Climatic chamber	PL-2G	343074	ESPEC	2013-02-15

ANNEX A: MEASUREMENT RESULTS

A.1 OUTPUT POWER

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 Rhode & Schwarz Spectrum Analyzer FSU (RMS)

These measurements were done at 3 frequencies, 1712.4MHz, 1740MHz, and 1752.6MHz for WCDMA Band IV(bottom, middle and top of operational frequency range).

Limit

A.1.2.2 Test Condition

RBW	VBW	Sweep Time	Span
10MHz	10MHz	800ms	50MHz

WCDMA Band IV

Measurement result

	CH	Frequency(MHz)	output power(dBm)
WCDMA (Band IV)	1312	1712.4	22.93
	1450	1740	23.01
	1513	1752.6	**23.03**

ANALYZER SETTINGS: VBW=RBW=10MHz; SPAN=50MHz;SWT=800ms

A.1.3 Radiated

A.1.3.1 Description

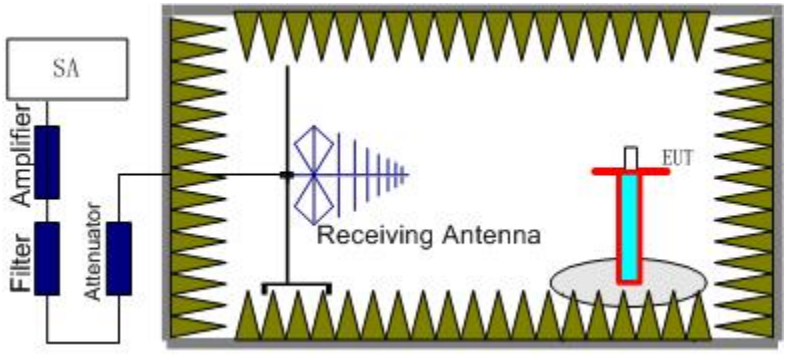
This is the test for the maximum radiated power from the EUT.

Rule Part 27.50(d)(2) specifies, "Fixed, mobile, and portable (handheld) stations operating in the 1710–1755 MHz band are limited to a peak EIRP of 1 watt."

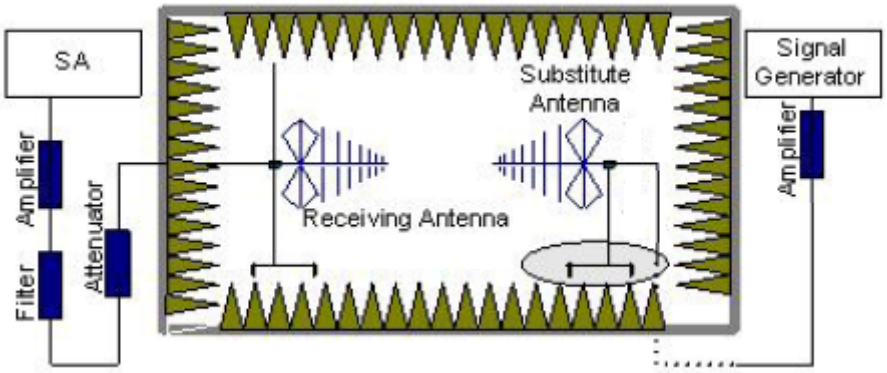
A.1.3.2 Method of Measurement

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, 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, and adjust the level of the signal generator output until the value of the receiver reach 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. A amplifier should be connected to the Signal Source output port. And the cable should be connect 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 -2.15dBi.

WCDMA Band IV-EIRP

Limits

	Burst Peak EIRP (dBm)
WCDMA Band IV	30dBm (2W)

Measurement result

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a Antenna Gain(dB)	Peak EIRP(dBm)	Polarization
1712.4	-29.27	3.66	-50.00	-5.17	22.24	H
1740.0	-27.63	4.36	-50.00	-5.04	**23.05**	H
1752.6	-28.95	3.85	-50.00	-4.99	22.19	H

Frequency**:**1740.0 MHz

Peak EIRP(dBm)= P_{Mea}(-27.63dBm)- P_{cl}(4.36dB)- P_{Ag}(-50.00dB)- G_a (-5.04dB) =23.05dBm

ANALYZER SETTINGS: RBW = VBW = 3MHz

A.2 EMISSION LIMT

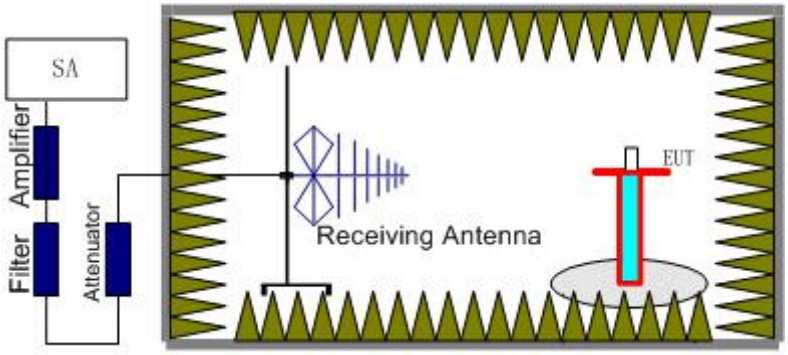
A.2.1 Measurement Method

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

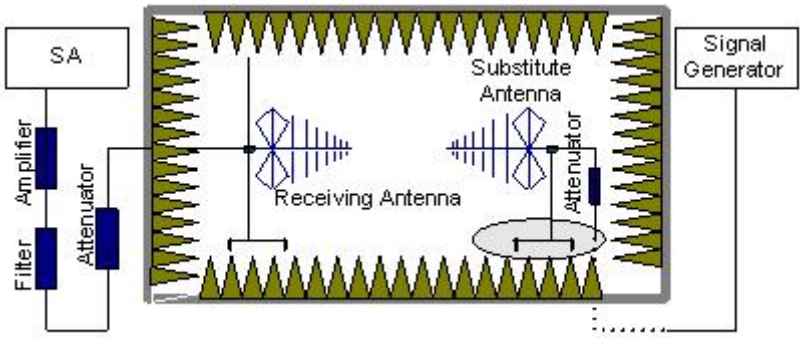
The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment. The resolution bandwidth is set as outlined in Part 27.53. The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of WCDMA Band IV.

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, and adjust the level of the signal generator output until the value of the receiver reach 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.
   A 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 -2.15dBi.

A.2.2 Measurement Limit

Part 27.53(g) 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 WCDMA Band IV(1712.4MHz, 1740MHz and 1752.6MHz). 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 WCDMA Band IV 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.

A.2.4 Measurement Results Table

Frequency	Channel	Frequency Range	Result
WCDMA Band IV	Low	30MHz-20GHz	Pass
	Middle	30MHz-20GHz	Pass
	High	30MHz-20GHz	Pass

A.2.5 Sweep Table

Working Frequency	Subrange (GHz)	RBW	VBW	Sweep time (s)
WCDMA Band IV	0.03~1	100KHz	300KHz	10
	1-2	1 MHz	3 MHz	2
	2~5	1 MHz	3 MHz	3
	5~8	1 MHz	3 MHz	3
	8~11	1 MHz	3 MHz	3
	11~14	1 MHz	3 MHz	3
	14~18	1 MHz	3 MHz	3
	18~20	1 MHz	3 MHz	2

WCDMA BAND IV Mode Channel 1312/1712.4MHz

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit （dBm）	Polarization
3423.25	-44.48	4.96	-7.72	-41.72	-13.00	H
5133.23	-52.10	6.96	-9.78	-49.28	-13.00	H
6277.80	-67.57	9.11	-10.42	-66.26	-13.00	V
8852.42	-67.92	7.98	-12.48	-63.42	-13.00	H
13042.34	-63.28	10.17	-13.34	-60.11	-13.00	V
15928.42	-64.90	11.07	-13.06	-62.91	-13.00	H

WCDMA BAND IV Mode Channel 1450/1740MHz

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit （dBm）	Polarization
3482.41	-49.26	5.27	-7.86	-46.67	-13.00	H
5223.48	-53.08	7.52	-9.83	-50.77	-13.00	H
5979.21	-67.58	13.70	-10.19	-71.09	-13.00	H
6864.61	-68.72	7.54	-10.96	-65.30	-13.00	V
10203.48	-68.88	8.59	-12.44	-65.03	-13.00	H
12959.71	-62.77	9.98	-13.25	-59.50	-13.00	V

WCDMA BAND IV Mode Channel 1513/1752.6MHz

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit （dBm）	Polarization
3502.36	-49.71	5.14	-7.90	-46.95	-13.00	V
5254.29	-51.97	7.59	-9.85	-49.71	-13.00	H
7149.27	-65.64	8.82	-11.19	-63.27	-13.00	V
8885.49	-67.70	8.15	-12.51	-63.34	-13.00	V
10129.72	-66.94	8.48	-12.43	-62.99	-13.00	V
13174.47	-64.98	10.27	-13.47	-61.78	-13.00	V

A.3 CONDUCTED EMISSION

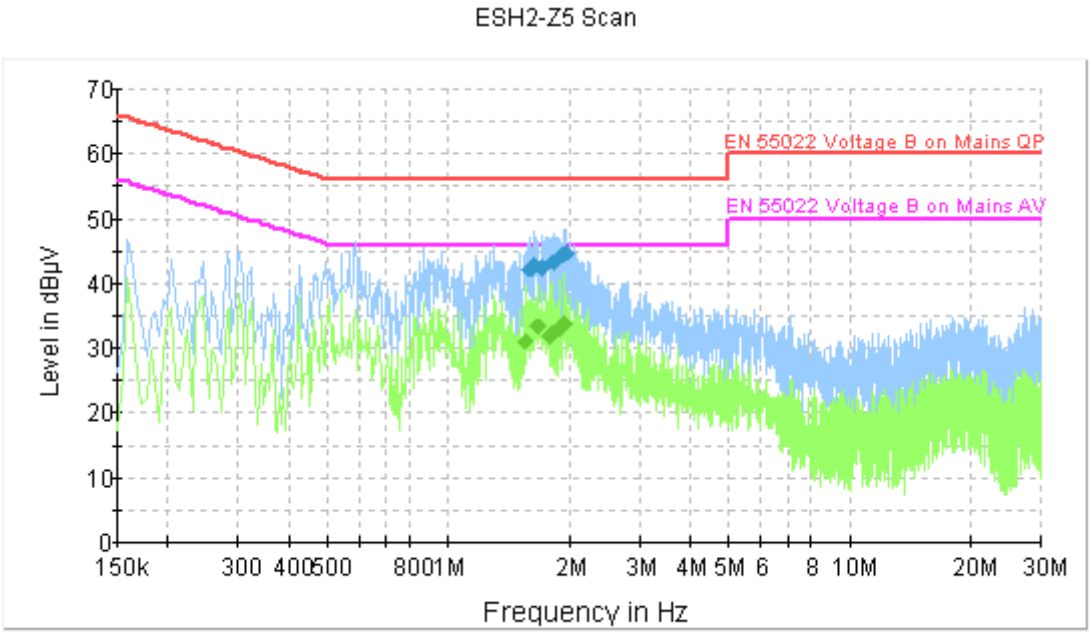
The measurement procedure in ANSI C63.4-2003 is used. Conducted Emission is measured with travel charger.

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 IV



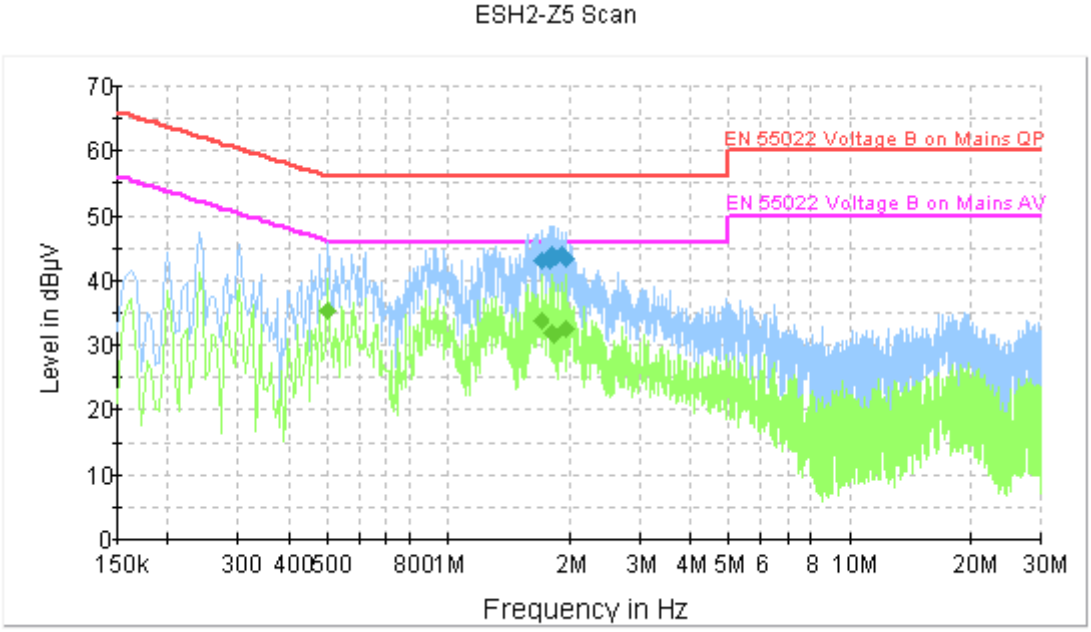
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.599000	42.2	GND	L1	10.0	13.8	56.0
1.644000	42.8	GND	L1	10.0	13.2	56.0
1.716000	42.5	GND	L1	10.0	13.5	56.0
1.833000	43.1	GND	L1	10.0	12.9	56.0
1.927500	44.6	GND	L1	10.0	11.4	56.0
1.972500	44.7	GND	L1	10.0	11.3	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.554000	30.9	GND	L1	10.0	15.1	46.0
1.671000	33.3	GND	L1	10.0	12.7	46.0
1.788000	31.7	GND	L1	10.0	14.3	46.0
1.810500	32.2	GND	L1	10.0	13.8	46.0
1.905000	33.1	GND	L1	10.0	12.9	46.0
1.927500	33.7	GND	L1	10.0	12.3	46.0

MP3



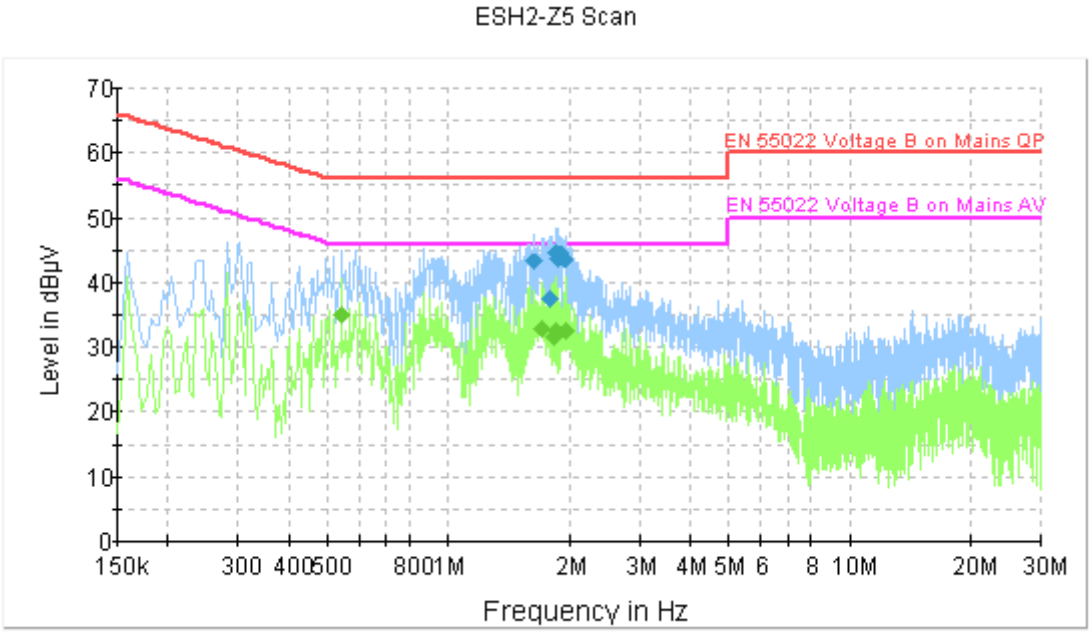
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.720500	42.9	GND	L1	10.0	13.1	56.0
1.788000	43.0	GND	L1	10.0	13.0	56.0
1.815000	43.9	GND	L1	10.0	12.1	56.0
1.837500	43.6	GND	L1	10.0	12.4	56.0
1.909500	43.8	GND	L1	10.0	12.2	56.0
1.977000	43.1	GND	L1	10.0	12.9	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.501000	35.2	GND	L1	10.0	10.8	46.0
1.698000	33.7	GND	L1	10.0	12.3	46.0
1.815000	31.8	GND	L1	10.0	14.2	46.0
1.837500	31.6	GND	L1	10.0	14.4	46.0
1.954500	32.5	GND	L1	10.0	13.5	46.0
1.977000	32.5	GND	L1	10.0	13.5	46.0

CAMERA



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.644000	43.2	GND	L1	10.0	12.8	56.0
1.801500	37.6	GND	N	10.0	18.4	56.0
1.855500	44.7	GND	L1	10.0	11.3	56.0
1.878000	43.7	GND	L1	10.0	12.3	56.0
1.900500	44.5	GND	L1	10.0	11.5	56.0
1.950000	43.3	GND	L1	10.0	12.7	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.541500	35.0	GND	L1	10.0	11.0	46.0
1.716000	32.9	GND	L1	10.0	13.1	46.0
1.833000	31.5	GND	L1	10.0	14.5	46.0
1.855500	32.6	GND	L1	10.0	13.4	46.0
1.950000	32.4	GND	L1	10.0	13.6	46.0
1.972500	32.5	GND	L1	10.0	13.5	46.0

A.4 FREQUENCY STABILITY

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 IV, 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. Remeasure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments remeasuring 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 4.2VDC, 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 -10 % and +12.5 %. 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 Sec. 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 IV

Frequency Error vs Voltage

Voltage(V)	Frequency error(Hz)	Frequency error(ppm)
3.5	-9	0.030
3.7	-8	0.027
4.2	-11	0.037

Frequency Error vs Temperature

temperature(℃)	Frequency error(Hz)	Frequency error(ppm)
-30	-11	0.037
-20	-9	0.030
-10	-9	0.030
0	-8	0.027
10	-8	0.027
20	-8	0.027
30	-9	0.030
40	-9	0.030
50	-11	0.037

A.5 OCCUPIED BANDWIDTH

A.5.1 Occupied Bandwidth Results

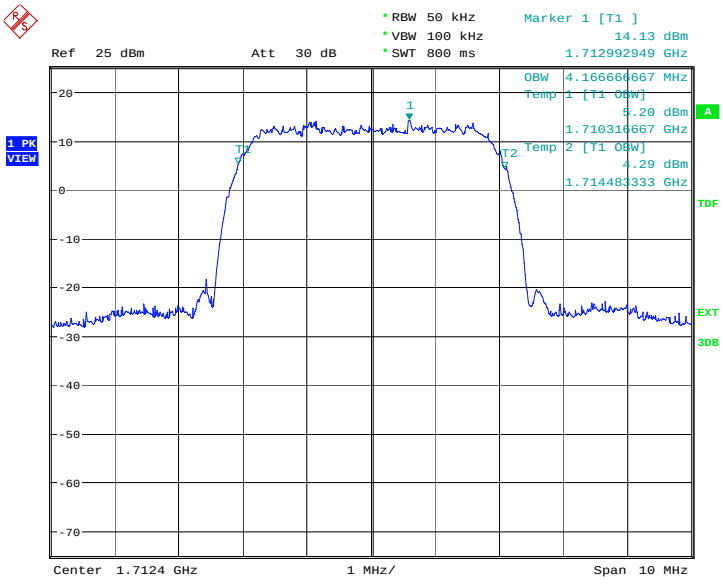
Similar to conducted emissions; occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of WCDMA IV. The table below lists the measured -20dBc BW. Spectrum analyzer plots are included on the following pages.

WCDMA Band IV(-20dBc)

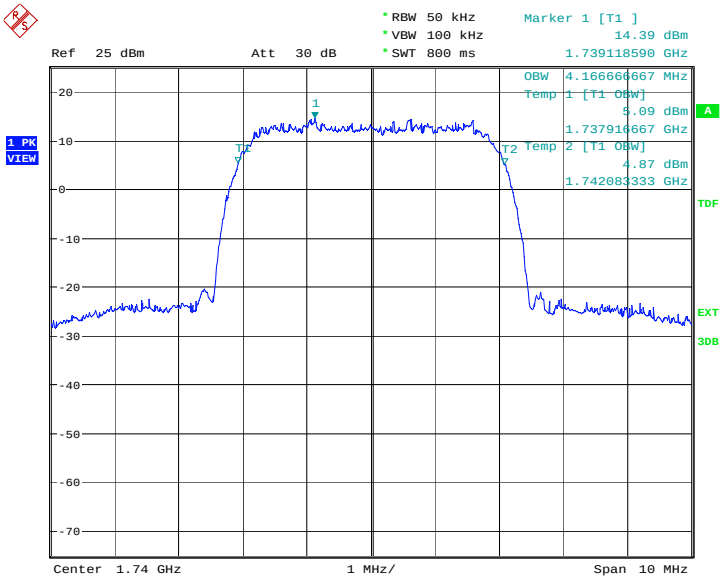
Frequency(MHz)	Occupied Bandwidth (-20dBc BW)(MHz)
1712.4	4.166
1740	4.166
1752.6	4.166

WCDMA Band IV

Channel 1312-Occupied Bandwidth (-20dBc BW)

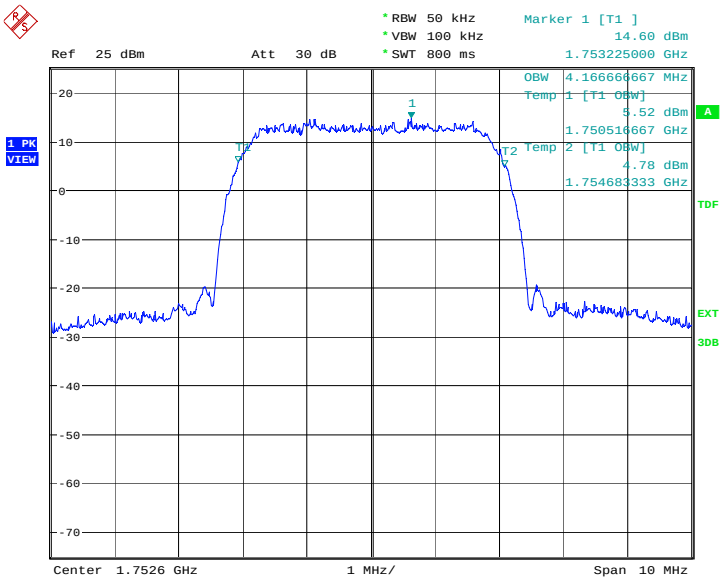


Channel 1450-Occupied Bandwidth (-20dBc BW)



Date: 20.MAR.2012 01:09:43

Channel 1513-Occupied Bandwidth (-20dBc BW)



Date: 20.MAR.2012 01:10:18

A.6 EMISSION BANDWIDTH

A.6.1Emission Bandwidth Results

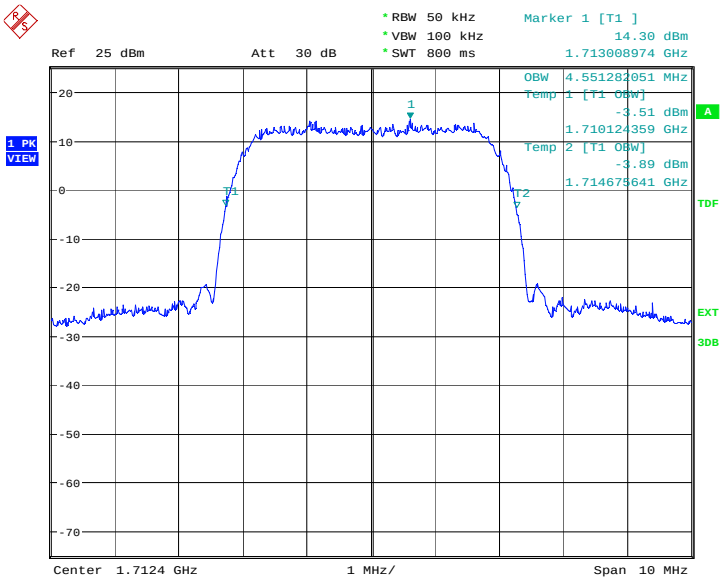
Similar to conducted emissions; Emission bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of WCDMA Band IV. Table below lists the measured -26dBc BW. Spectrum analyzer plots are included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

WCDMA Band IV(-26dBc)

Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(MHz)
1712.4	4.551
1740	4.551
1752.6	4.551

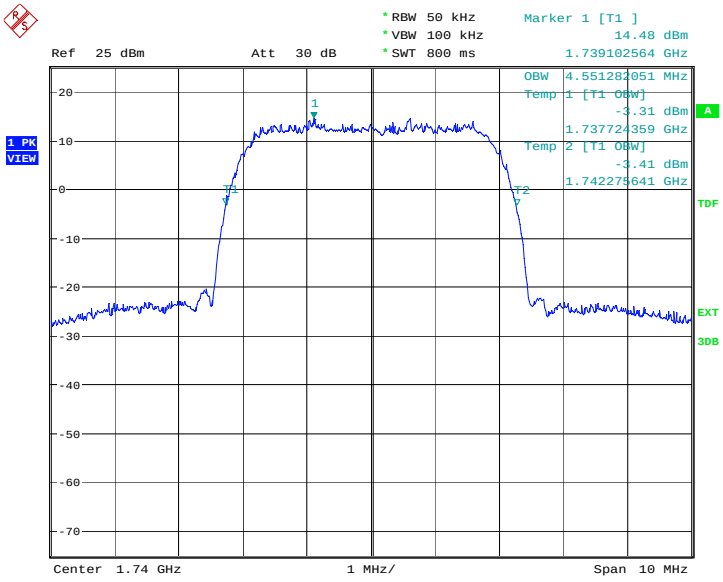
WCDMA Band IV

Channel 1312-Occupied Bandwidth (-26dBc BW)



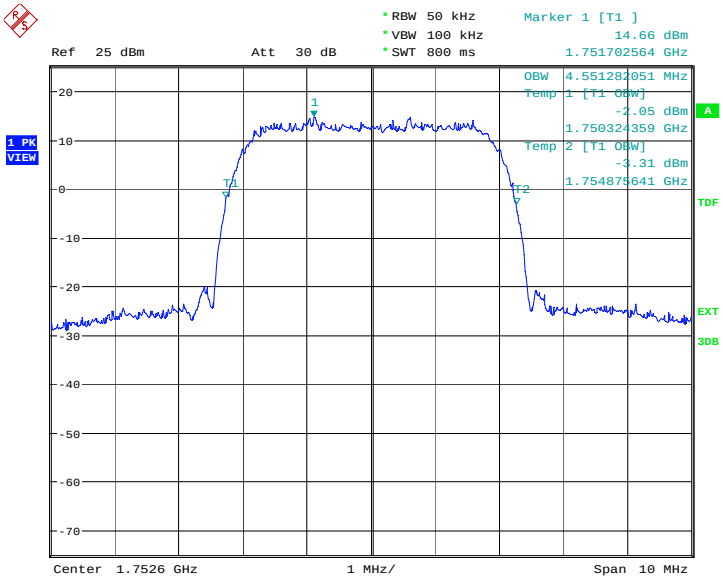
Date: 20.MAR.2012 01:10:54

Channel 1450-Occupied Bandwidth (-26dBc BW)



Date: 20.MAR.2012 01:11:28

Channel 1513-Occupied Bandwidth (-26dBc BW)

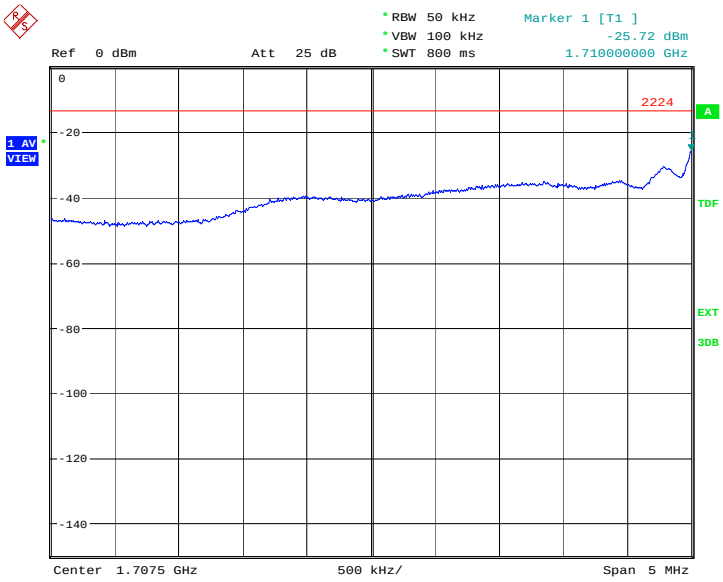


Date: 20.MAR.2012 01:12:03

A.7 BAND EDGE COMPLIANCE

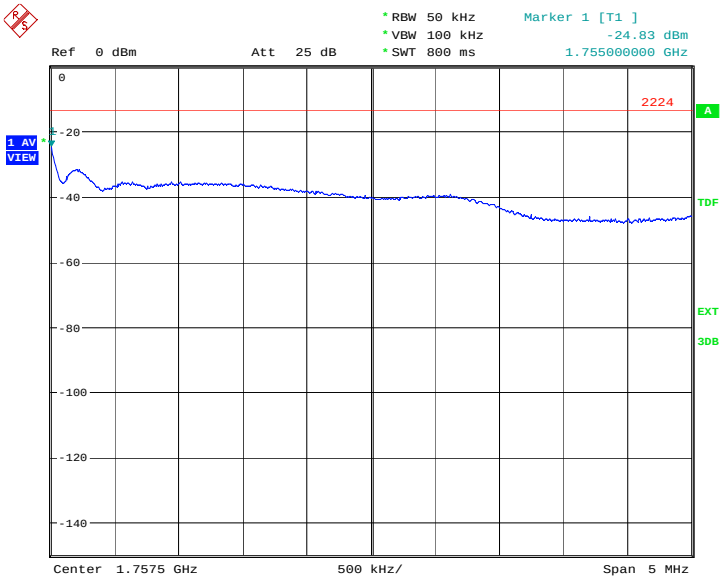
WCDMA Band IV

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



Date: 20.MAR.2012 01:12:14

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



Date: 20.MAR.2012 01:12:25

A.8 CONDUCTED SPURIOUS EMISSION

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 IV, this equates to a frequency range of 30 MHz to 17.55 GHz, data taken from 30 MHz to 20 GHz.
2. The sweep time is set automatically by instrument itself. That should be the optimal sweep time for the span and the RBW. If the sweep time is too short, that is sweep is too fast, the sweep result is not accurate; If the sweep time is too long, that is sweep is too low, some frequency components may be lost. The instrument will give a optimal sweep time according the selected span and RBW.
3. The procedure to get the conducted spurious emission is as follows:
   The trace mode is set to MaxHold to get the highest signal at each frequency;
   Wait 25 seconds;
   Get the result.
4. Determine EUT transmit frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.

WCDMA Band IV Transmitter

Channel	Frequency (MHz)
1312	1712.40
1450	1740.00
1513	1752.60

A. 8.2 Measurement Limit

Part 27.53(h) 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.

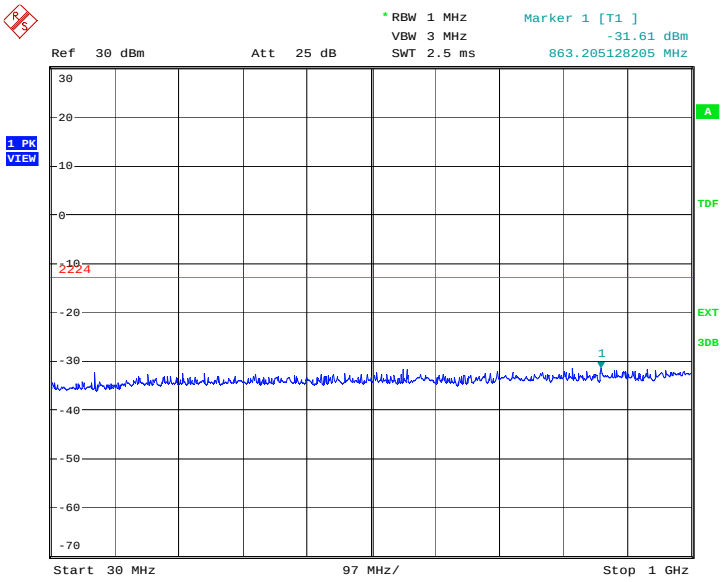
The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. 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

WCDMA Band IV

A. 8.3.1 Channel 1312: 30MHz –1GHz

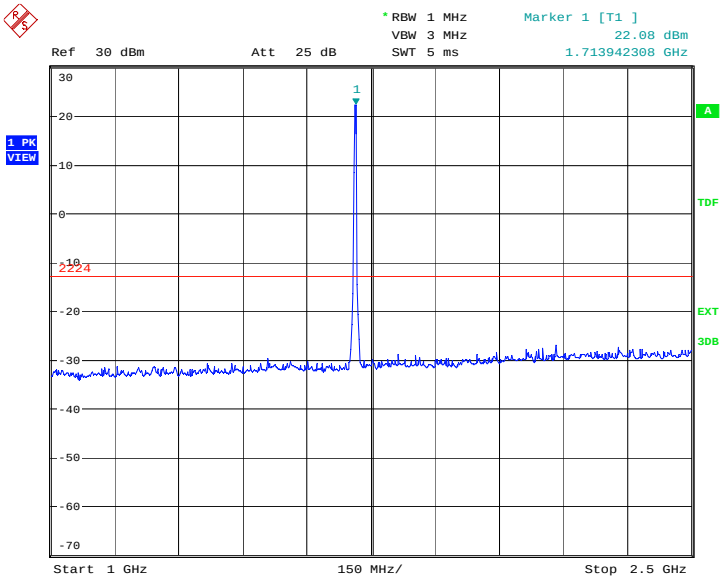
Spurious emission limit –13dBm.



A. 8.3.2 Channel 1312: 1GHz –2.5GHz

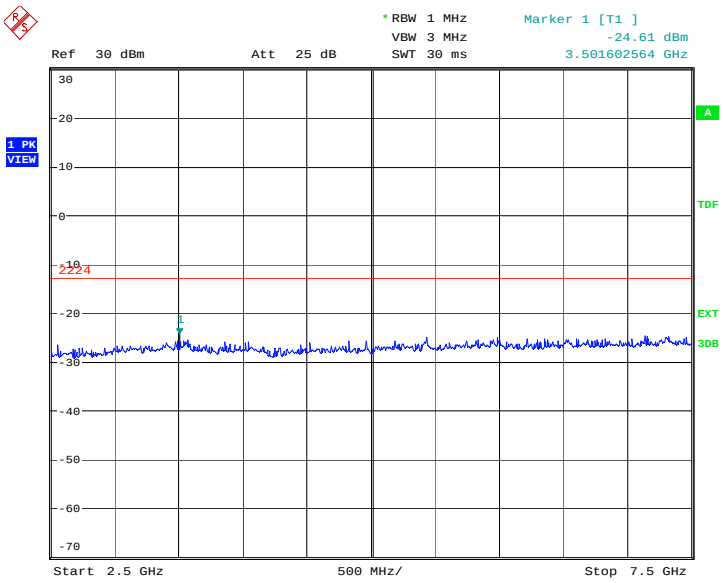
Spurious emission limit –13dBm.

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



A. 8.3.3 Channel 1312: 2.5GHz –7.5GHz

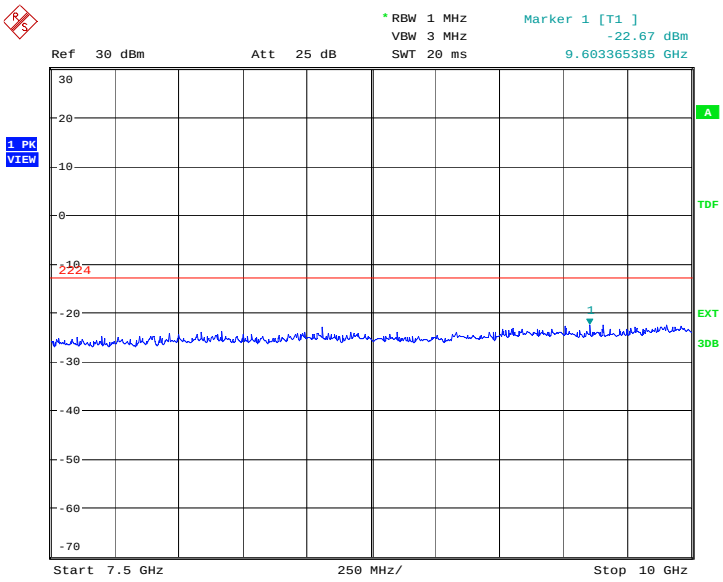
Spurious emission limit –13dBm.



Date: 20.MAR.2012 01:13:52

A. 8.3.4 Channel 1312: 7.5GHz –10GHz

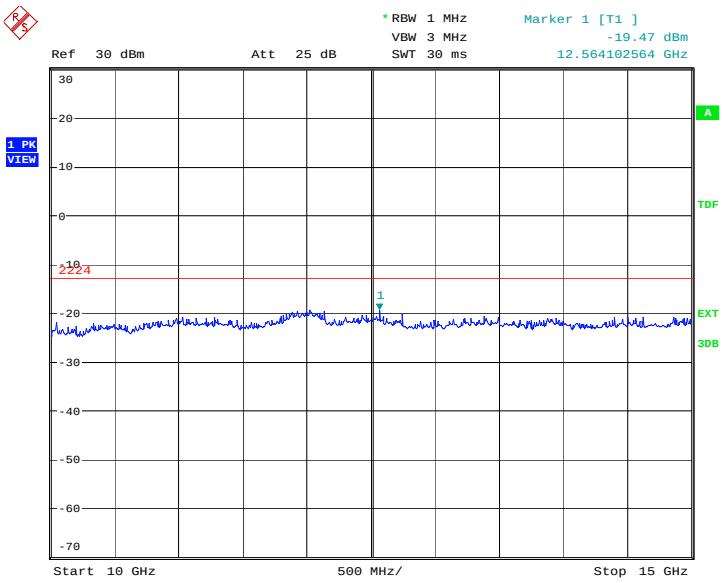
Spurious emission limit –13dBm.



Date: 20.MAR.2012 01:14:20

A. 8.3.5 Channel 1312: 10GHz –15GHz

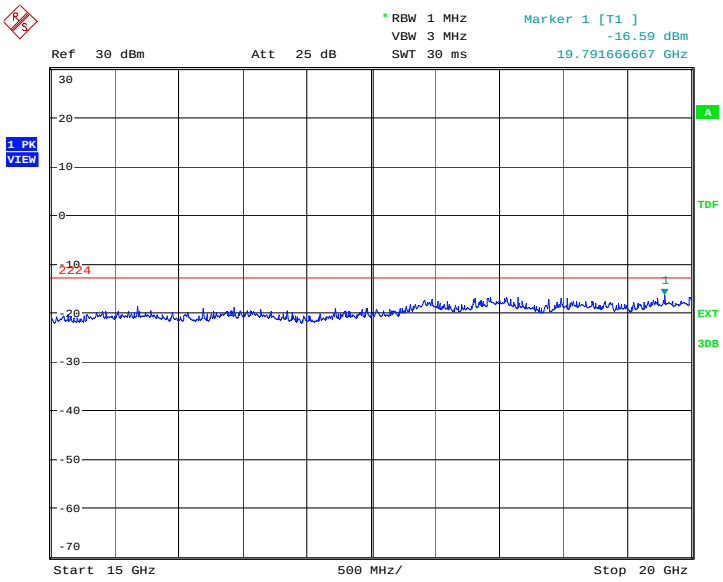
Spurious emission limit –13dBm.



Date: 20.MAR.2012 01:14:49

A. 8.3.6 Channel 1312: 15GHz –20GHz

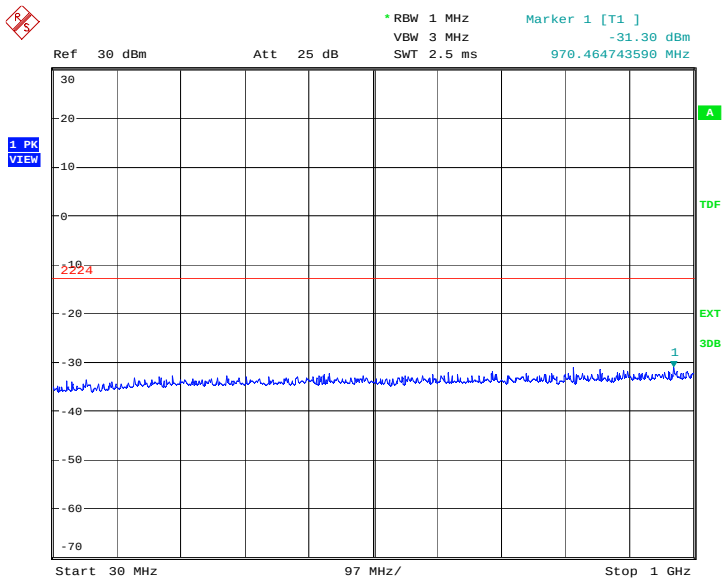
Spurious emission limit –13dBm.



Date: 20.MAR.2012 01:15:17

A. 8.3.7 Channel 1450: 30MHz –1GHz

Spurious emission limit –13dBm.

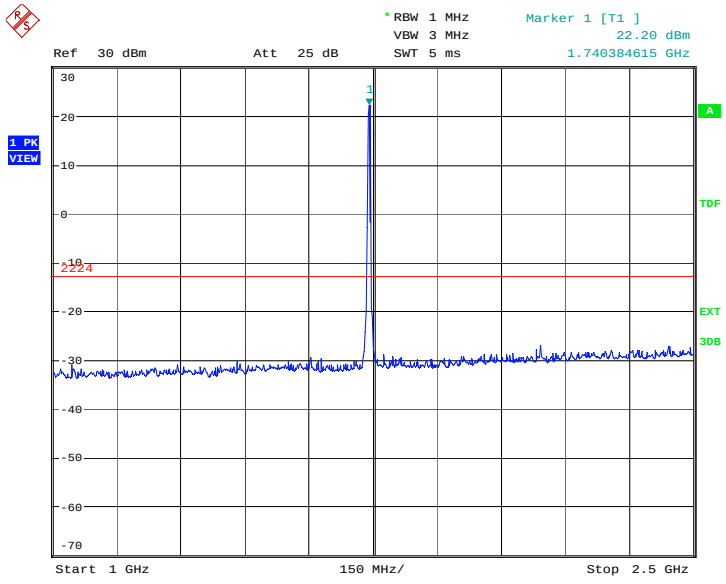


Date: 20.MAR.2012 01:15:48

A. 8.3.8 Channel 1450: 1GHz –2.5GHz

Spurious emission limit –13dBm.

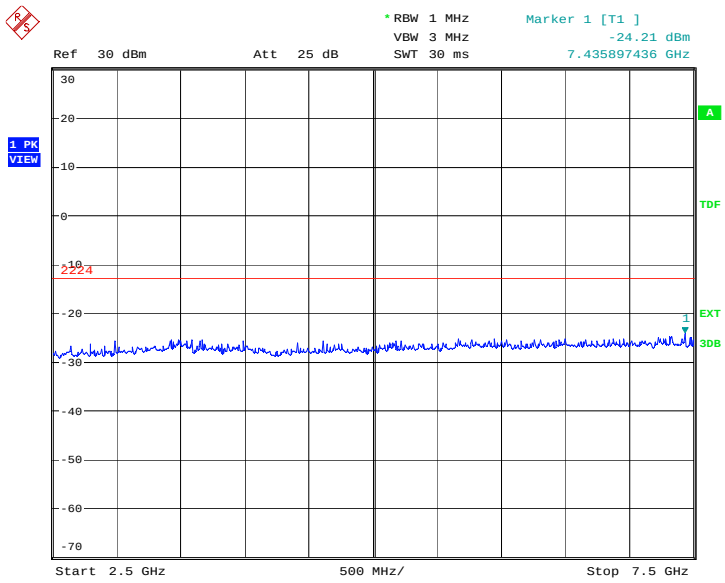
NOTE: peak above the limit line is the carrier frequency.



Date: 20.MAR.2012 01:16:16

A. 8.3.9 Channel 1450: 2.5GHz –7.5GHz

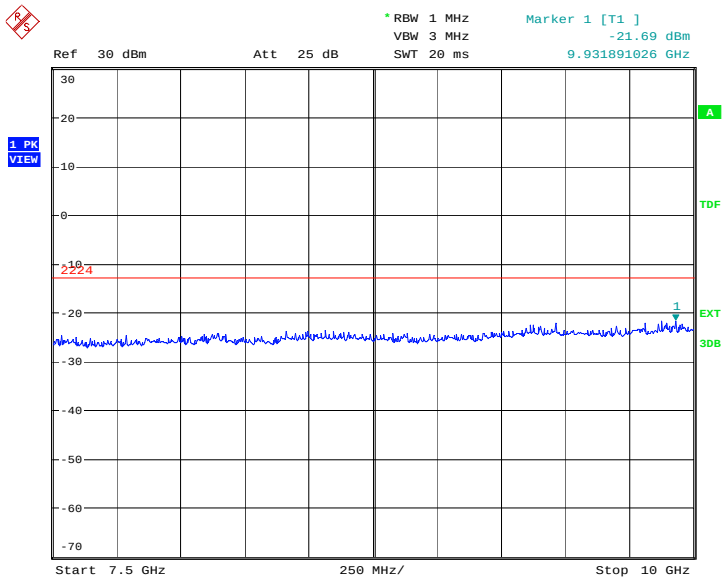
Spurious emission limit –13dBm.



Date: 20.MAR.2012 01:16:45

A. 8.3.10 Channel 1450: 7.5GHz –10GHz

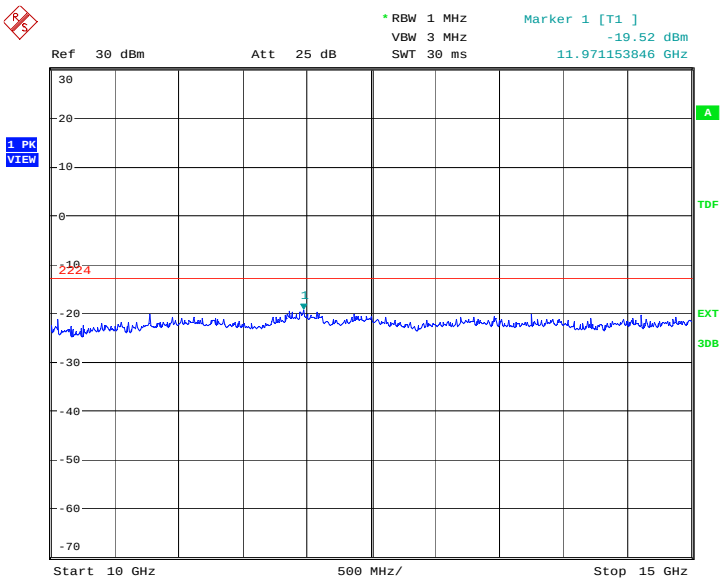
Spurious emission limit –13dBm.



Date: 20.MAR.2012 01:17:13

A. 8.3.11 Channel 1450: 10GHz –15GHz

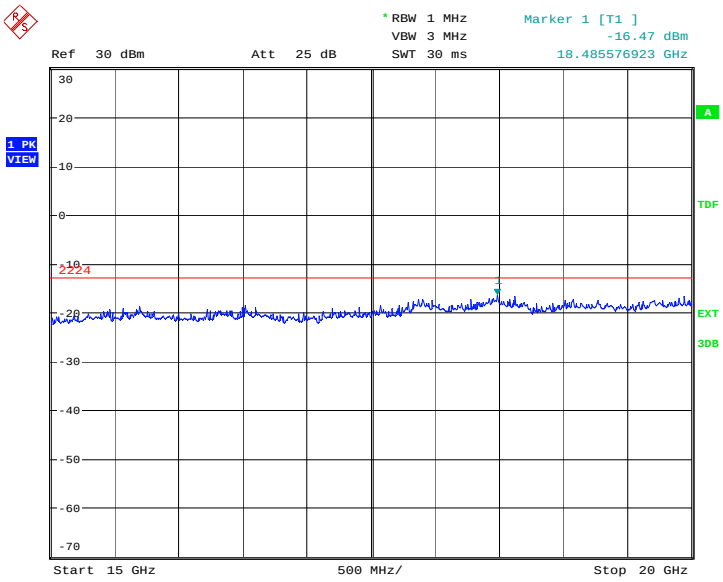
Spurious emission limit –13dBm.



Date: 20.MAR.2012 01:17:41

A. 8.3.12 Channel 1450: 15GHz –20GHz

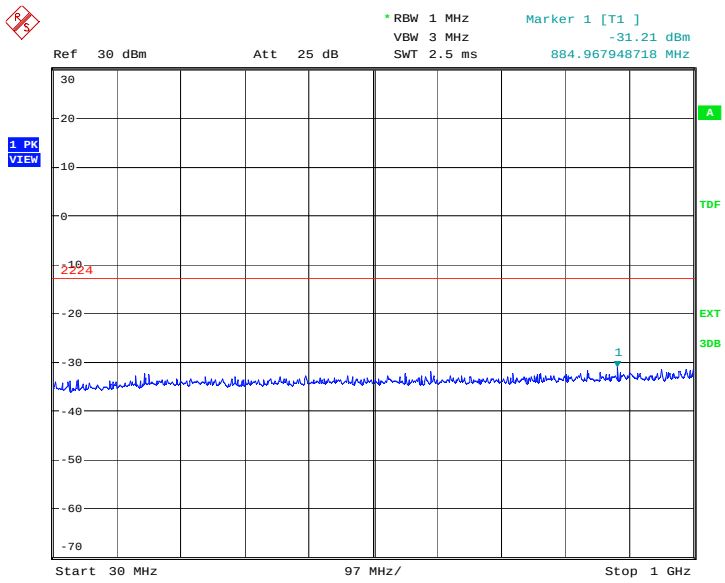
Spurious emission limit –13dBm.



Date: 20.MAR.2012 01:18:09

A. 8.3.13 Channel 1513: 30MHz –1GHz

Spurious emission limit –13dBm.

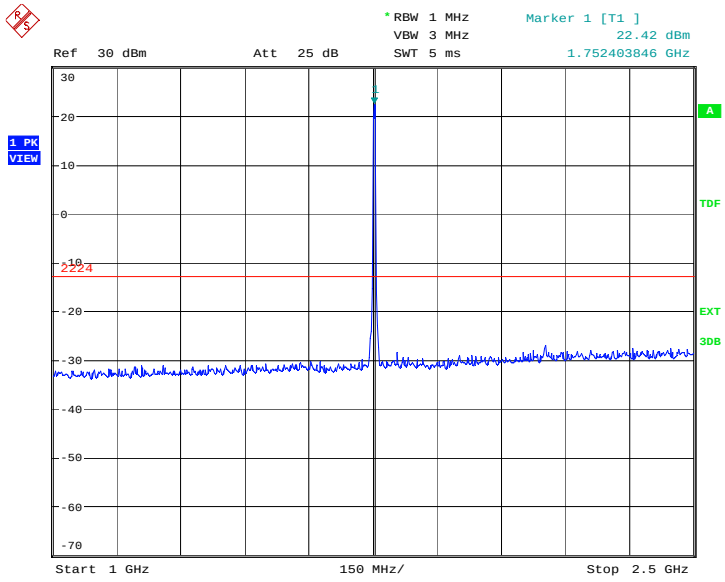


Date: 20.MAR.2012 01:18:40

A. 8.3.14 Channel 1513: 1GHz –2.5GHz

Spurious emission limit –13dBm.

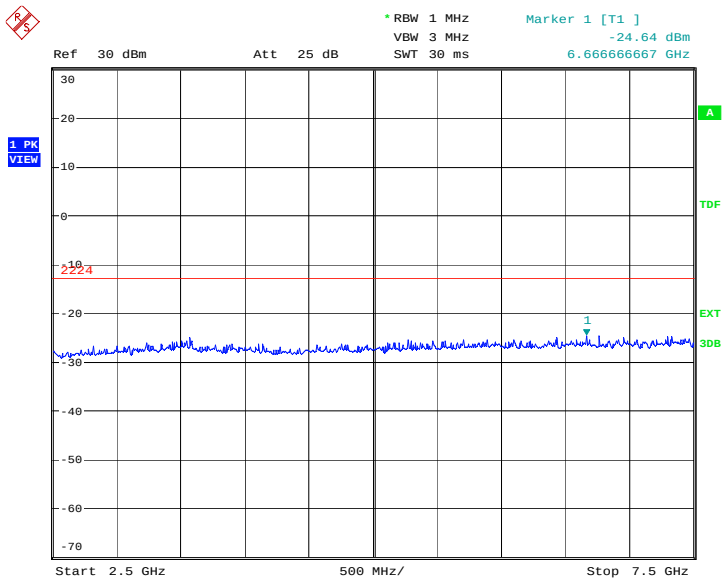
NOTE: peak above the limit line is the carrier frequency.



Date: 20.MAR.2012 01:19:09

A. 8.3.15 Channel 1513: 2.5GHz –7.5GHz

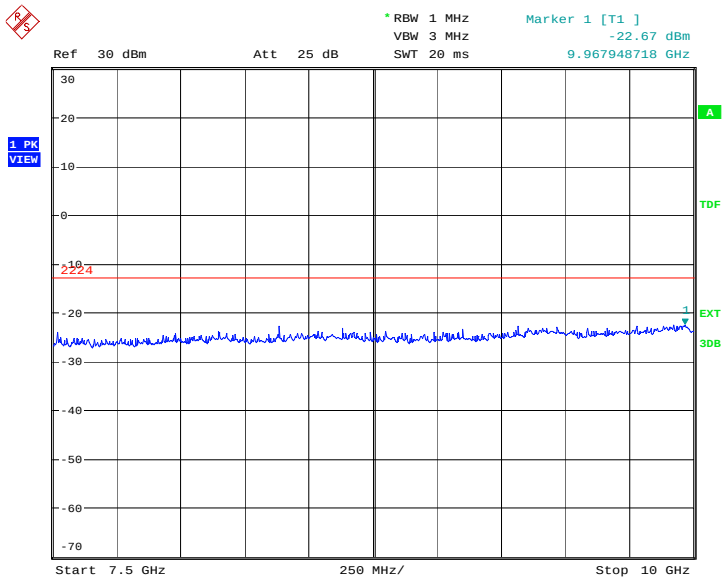
Spurious emission limit –13dBm.



Date: 20.MAR.2012 01:19:37

A. 8.3.16 Channel 1513: 7.5GHz –10GHz

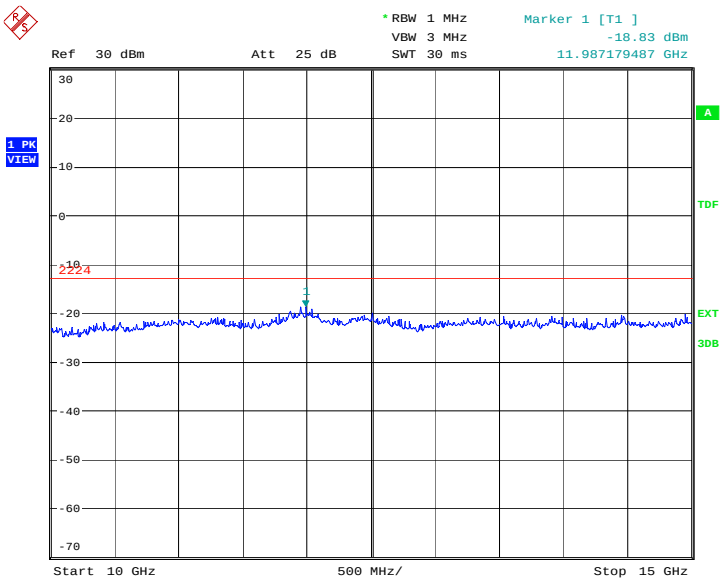
Spurious emission limit –13dBm.



Date: 20.MAR.2012 01:20:05

A. 8.3.17 Channel 1513: 10GHz –15GHz

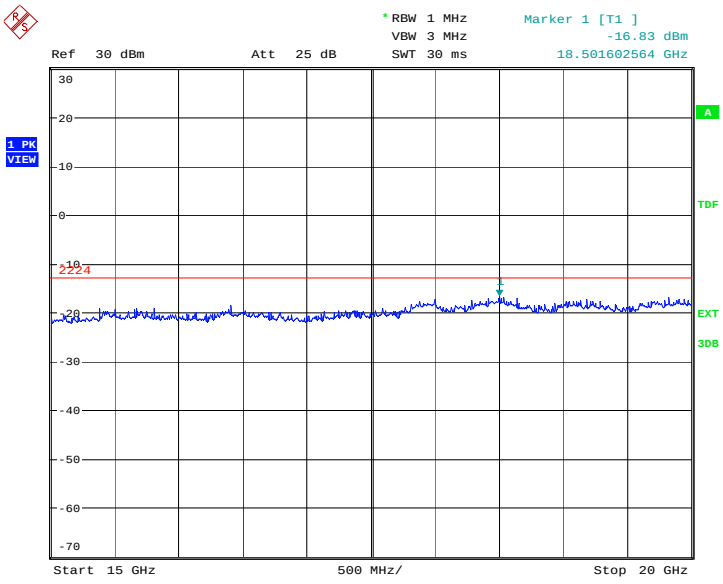
Spurious emission limit –13dBm.



Date: 20.MAR.2012 01:20:33

A. 8.3.18 Channel 1513: 15GHz –20GHz

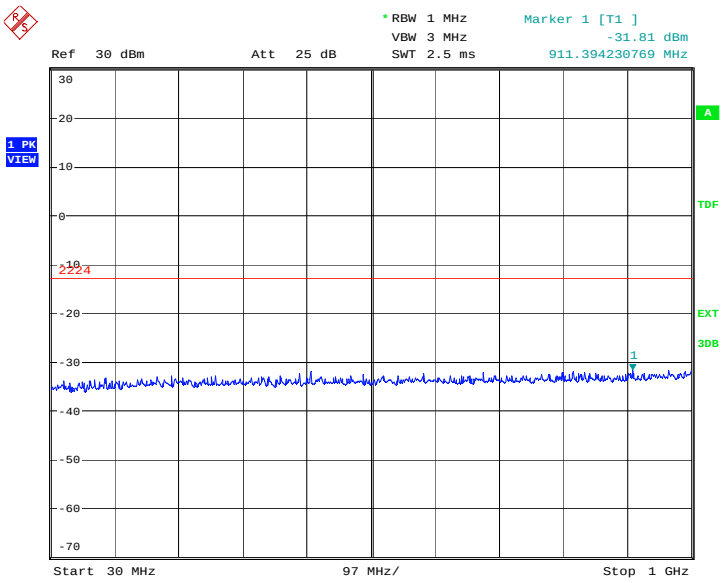
Spurious emission limit –13dBm.



Date: 20.MAR.2012 01:21:01

A. 8.3.19 Idle mode: 30MHz –1GHz

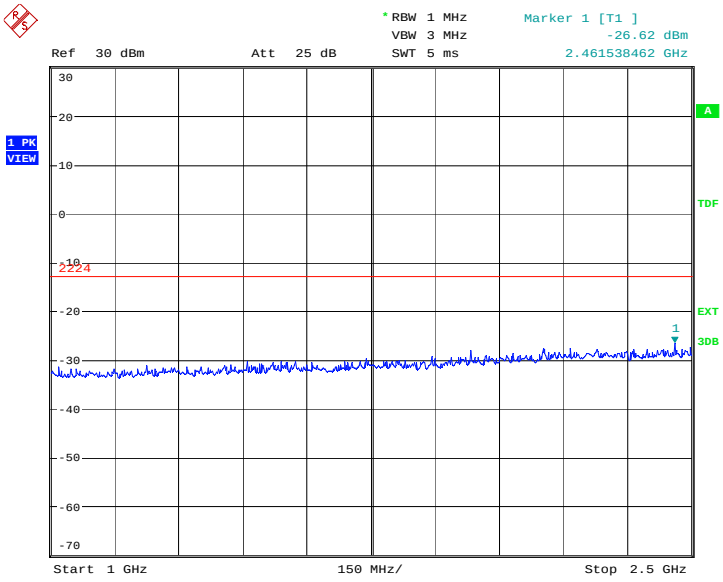
Spurious emission limit –13dBm.



Date: 20.MAR.2012 01:21:31

A.8.3.20 Idle mode: 1GHz –2.5GHz

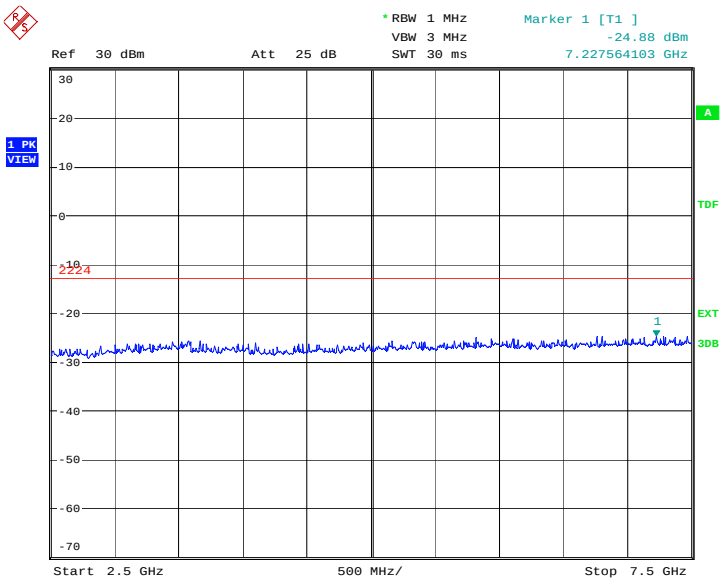
Spurious emission limit –13dBm.



Date: 20.MAR.2012 01:21:59

A.8.3.21 Idle mode: 2.5GHz –7.5GHz

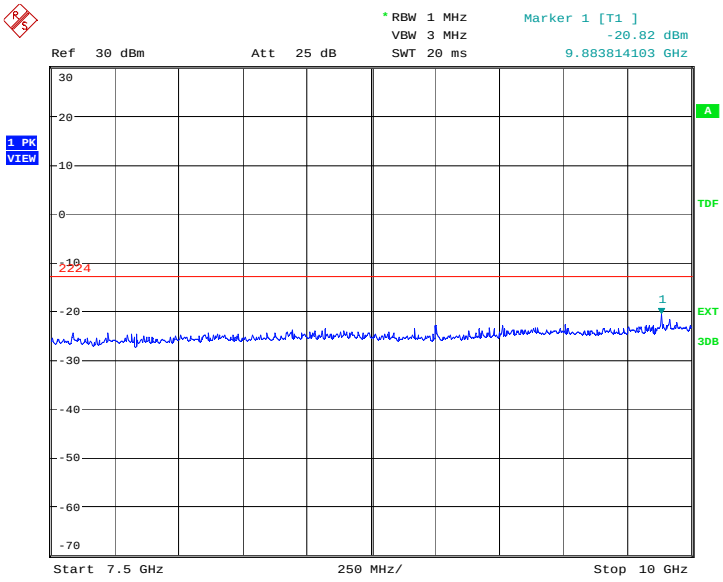
Spurious emission limit –13dBm.



Date: 20.MAR.2012 01:22:27

A.8.3.22 Idle mode: 7.5GHz –10GHz

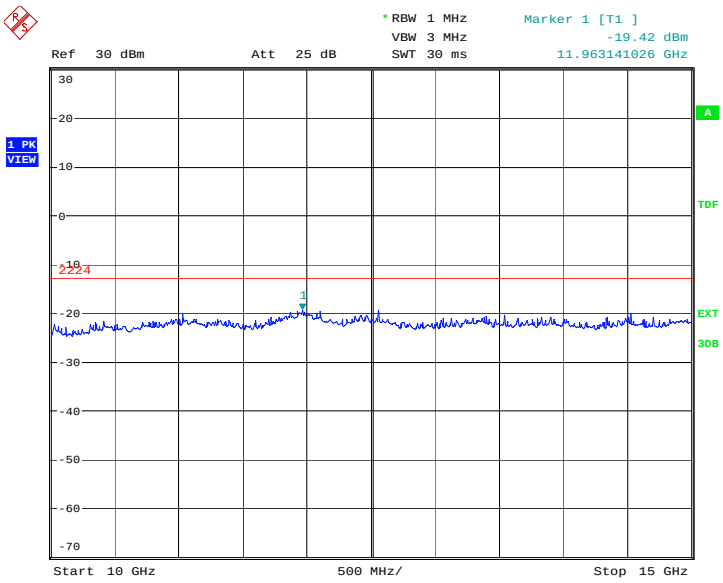
Spurious emission limit –13dBm.



Date: 20.MAR.2012 01:22:55

A.8.3.23 Idle mode: 10GHz –15GHz

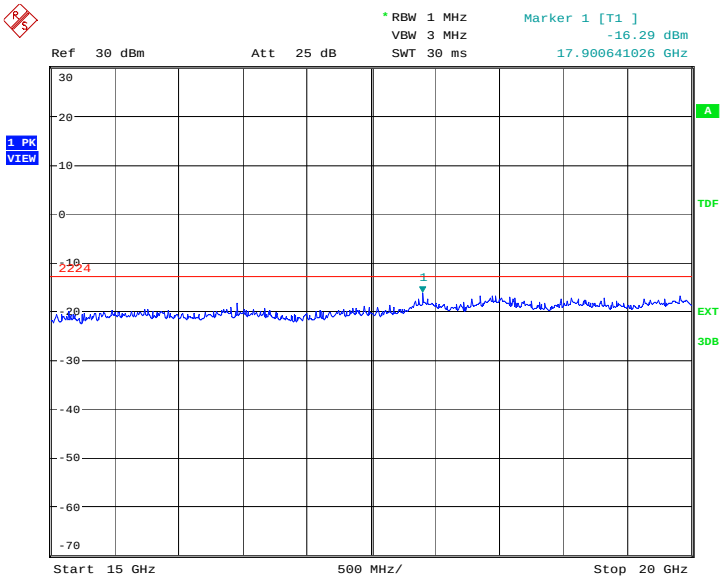
Spurious emission limit –13dBm.



Date: 20.MAR.2012 01:23:23

A.8.3.24 Idle mode: 15GHz –20GHz

Spurious emission limit –13dBm.



Date: 20.MAR.2012 01:23:52

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