TEST REPORT

No. I14Z45782-GTE02

for

TCT Mobile Limited

HSUPA/HSDPA/UMTS trilband/GSM quadband mobile phone

Model Name: 4035A

FCC ID: RAD453

with

Hardware Version: PIO

Software Version: v9H26

Issued Date: 2014-05-23

Test Laboratory:
DAR 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.6629B
TMC Beijing, Telecommunication Metrology Center of Ministry of Industry and Information Technology
No.18A，Kangding Street，Beijing Economical Development Area， Beijing，China 100176
Tel:+86(0)10-67857376, Fax:+86(0)10-67857376 Email:welcome@emcite.com. www.emcite.com

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1. Test Laboratory

1.1. Testing Location

Company Name:	TMC Beijing, Telecommunication Metrology Center of MIIT
Address:	No.18A，Kangding Street，Beijing Economical Development Area，Beijing，China
Postal Code:	100176
Telephone:	00861067857376
Fax:	00861067857376

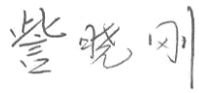
1.2. Testing Environment

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

1.3. Project data

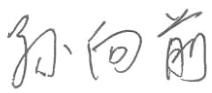
Testing Start Date:	2014-05-06
Testing End Date:	2014-05-20

1.4. Signature



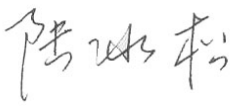
Zi Xiaogang

(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:	TCT Mobile Limited
Address /Post:	5F, C building, No. 232, Liang Jing Road ZhangJiang High-Tech Park, Pudong Area Shanghai, P.R. China. 201203
City:	Shanghai
Postal Code:	201203
Country:	China
Contact Person:	Gong Zhizhou
Contact Email	zhizhou.gong@tcl.com
Telephone:	0086-21-61460890
Fax:	0086-21-61460602

2.2. Manufacturer Information

Company Name:	TCT Mobile Limited
Address /Post:	5F, C building, No. 232, Liang Jing Road ZhangJiang High-Tech Park, Pudong Area Shanghai, P.R. China. 201203
City:	Shanghai
Postal Code:	201203
Country:	China
Telephone:	0086-21-61460890
Fax:	0086-21-61460602

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

3.1. About EUT

Description	HSUPA/HSDPA/UMTS trilband/GSM quadband mobile phone
Model Name	4035A
FCC ID	RAD453
Frequency	GSM850; PCS1900; WCDMA Band II; WCDMA Band V
Antenna	Integrated
Output power	25.52dBm maximum EIRP measured for WCDMA Band II
Extreme vol. Limits	3.5VDC to 4.2VDC (nominal: 3.8VDC)
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
UT31a	014013000100237	PIO	v9H26
UT23a	014013000100112	PIO	v9H26

*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		
AE1	Battery	/	
AE2	Battery	/	
AE3	Battery	/	
AE4	Battery	/	
AE5	Battery	/	
AE6	Travel Adapter	/	
AE7	Travel Adapter	/	/

AE1

Model	CAB60B0000C 1
Manufacturer	BYD
Capacitance	1400mAh
Nominal voltage	3.7V

AE2

Model	CAB60BA000C1
Manufacturer	SCUD
Capacitance	1400mAh
Nominal voltage	3.7V

AE3

Model	CAB60B0000CB
Manufacturer	OS
Capacitance	1400mAh

Nominal voltage	3.7V
AE4	
Model	CAB1400002C1
Manufacturer	BYD
Capacitance	1400mAh
Nominal voltage	3.7V
AE5	
Model	CAB31P0000C1
Manufacturer	BYD
Capacitance	1300mAh
Nominal voltage	3.7V
AE6	
Model	CBA3007AG0C1
Manufacturer	BYD
Length of cable	/
AE7	
Model	CBA3007AG0C2
Manufacturer	TEN PAO
Length of cable	/

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

3.4. Normal Accessory setting

Fully charged battery was used during the test.

3.5. General Description

The Equipment Under Test (EUT) is a model of HSUPA/HSDPA/UMTS trilband/GSM quadband 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.

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 24	PERSONAL COMMUNICATIONS SERVICES	10-1-13 Edition
FCC Part 22	PUBLIC MOBILE SERVICES	10-1-13 Edition
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
KDB971168 D01	Procedures for Compliance Measurement of the Fundamental Emission Power of Licensed Wideband (> 1 MHz) Digital Transmission Systems	2011

5. LABORATORY ENVIRONMENT

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

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

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

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

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

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

6. SUMMARY OF TEST RESULTS

WCDMA Band II

Items	Test Name	Clause in FCC rules	Verdict
1	Output Power	24.232(b)	P
2	Emission Limit	24.238, 2.1051	P
3	CONDUCTED EMISSION	15.107/15.207	P
4	Frequency Stability	24.235, 2.1055	P
5	Occupied Bandwidth	2.1049(h)(i)	P
6	Emission Bandwidth	24.238(b)	P
7	Band Edge Compliance	24.238(b)	P
8	Conducted Spurious Emission	24.238, 2.1057	P

WCDMA Band V

Items	Test Name	Clause in FCC rules	Verdict
1	Output Power	§2.1046(a), 22.913(a)	P
2	Emission Limit	22.917, 2.1051	P
3	CONDUCTED EMISSION	15.107/15.207	P
4	Frequency Stability	22.235, 2.1055	P
5	Occupied Bandwidth	2.1049(h)(i)	P
6	Emission Bandwidth	22.917(b)	P
7	Band Edge Compliance	22.917(b)	P

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE
1	Test Receiver	ESCI	100344	R&S	2015-03-03
2	Test Receiver	ESU26	100376	R&S	2014-11-05
3	EMI Antenna	VULB 9163	514	Schwarzbeck	2014-11-10
4	EMI Antenna	3117	00139065	ETS-Lindgren	2014-07-31
5	LISN	NV216	101200	R&S	2014-07-11
6	Universal Radio Communication Tester	CMU200	102228	R&S	2014-06-23
7	Universal Radio Communication Tester	E5515C	MY48361083	Agilent	2015-02-27
8	Spectrum Analyzer	E4440A	MY48250642	Agilent	2015-02-27
9	EMI Antenna	9117	177	Schwarzbeck	2014-06-29
10	EMI Antenna	VULB 9163	9163 175	Schwarzbeck	2014-07-13
11	EMI Antenna	3117	00119024	ETS-Lindgren	2016-01-20
12	Signal Generator	N5183A	MY49060052	Agilent	2015-03-02
13	Climate chamber	SH-241	92007454	ESPEC	2014-12-14
14	Loop Antenna	HFH2-Z2	829324/007	R&S	2014-12-12

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 Digital Radio Communication tester (CMU-200)
These measurements were done at 3 frequencies, 1852.4 MHz, 1880.0MHz and 1907.6MHz for WCDMA Band II; 826.4MHz, 836.6MHz and 846.6MHz for WCDMA Band V. (bottom, middle and top of operational frequency range).

Limit

According to FCC§2.1046.

A.1.2.2 Test Condition

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

WCDMA Band II

Measurement result

	CH	Frequency(MHz)	output power(dBm)
WCDMA (Band II)	9262	1852.4	23.06
	9400	1880.0	22.96
	9538	1907.6	23.16

WCDMA Band V

Measurement result

	CH	Frequency(MHz)	output power(dBm)
WCDMA (Band V)	4132	826.4	23.30
	4183	836.6	23.30
	4233	846.6	23.26

A.1.3 Radiated

A.1.3.1 Description

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

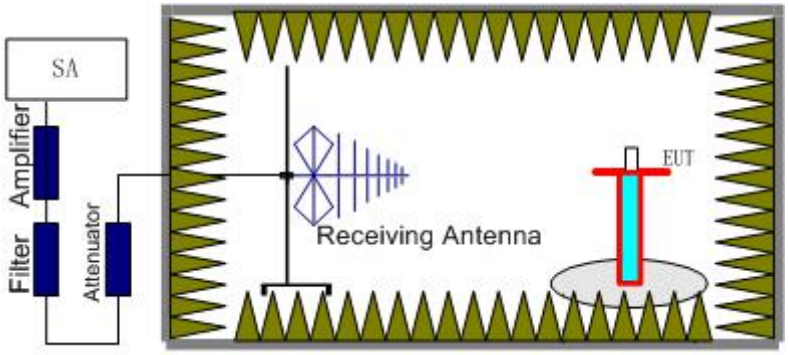
Rule Part 24.232(c) specifies, "Mobile/portable stations are limited to 2 watts e.i.r.p. Peak power" and 24.232(c) specifies that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage."

Rule Part 22.913(a) specifies ” The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.”

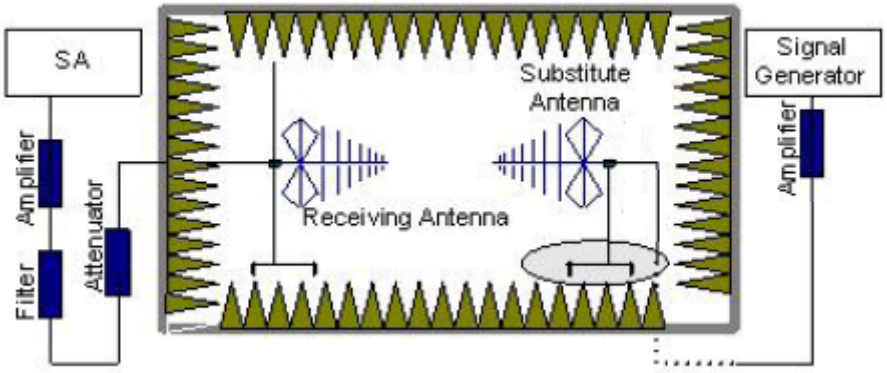
A.1.3.2 Method of Measurement

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 II-EIRP

Limits

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

Measurement result

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
1852.40	-26.98	3.18	-50.00	-4.55	24.39	33.00	8.61	H
1880.00	-25.93	3.11	-50.00	-4.43	25.39	33.00	7.61	H
1907.60	-25.61	3.18	-50.00	-4.31	25.52	33.00	7.48	H

Frequency: 1907.60MHz

Peak EIRP(dBm)= P_{Mea}(-25.61dBm)- P_{cl}(3.18dB)- P_{Ag}(-50.00dB)-G_a(-4.31dB) =25.52dBm

ANALYZER SETTINGS: RBW = VBW = 5MHz

WCDMA Band V-ERP

Limits

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

Measurement result

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a Antenna Gain(dB)	Correction (dB)	ERP(dBm)	Limit(dBm)	Margin(dB)	Polarization
826.40	-25.63	2.07	-53.00	0.85	2.15	22.30	38.45	16.15	H
836.60	-25.38	2.08	-53.00	0.90	2.15	22.49	38.45	15.96	H
846.60	-25.59	2.09	-53.00	0.94	2.15	22.23	38.45	16.22	H

Frequency: 836.60MHz

Peak ERP(dBm)= P_{Mea}(-25.38dBm)- P_{cl}(2.08dB)- P_{Ag}(-53.00dB)-G_a (0.90dB)-2.15dB=22.49dBm

ANALYZER SETTINGS: RBW = VBW = 5MHz

A.2 EMISSION LIMIT

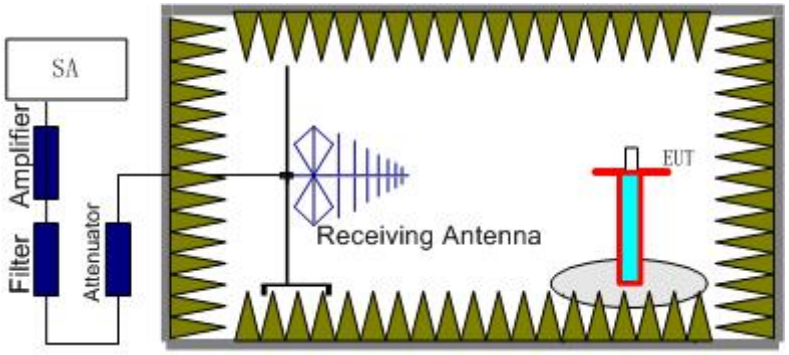
A.2.1 Measurement Method

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

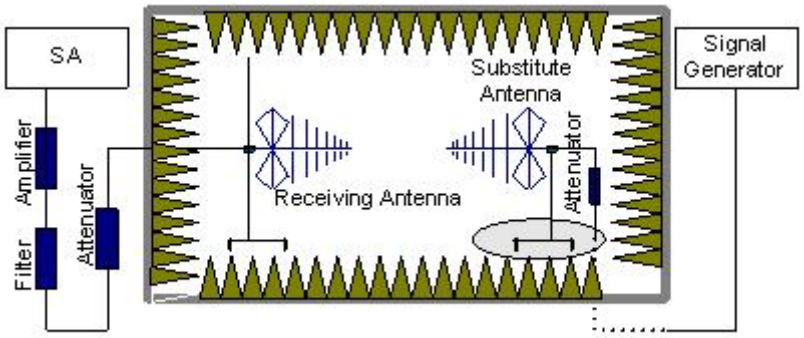
The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment. The resolution bandwidth is set as outlined in Part 24.238 and Part 24.917. The spectrum is scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of WCDMA Band II 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, 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 24.238 and Part 22.917 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) 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 and 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.

A.2.4 Measurement Results Table

Frequency	Channel	Frequency Range	Result
WCDMA Band V	Low	30MHz-10GHz	Pass
	Middle	30MHz-10GHz	Pass
	High	30MHz-10GHz	Pass
WCDMA Band II	Low	30MHz-20GHz	Pass
	Middle	30MHz-10GHz	Pass
	High	30MHz-20GHz	Pass

A.2.5 Sweep Table

Working Frequency	Subrange (GHz)	RBW	VBW	Sweep time (s)
WCDMA Band V	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
	8~10	1 MHz	3 MHz	3
WCDMA Band II	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 II Mode Channel 9262/1852.4MHz

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit （dBm）	Margin(dB)	Polarization
3703.12	-49.30	4.43	-8.14	-45.59	-13.00	32.59	H
5554.79	-52.96	5.45	-10.02	-48.39	-13.00	35.39	H
8453.21	-57.31	6.91	-12.17	-52.05	-13.00	39.05	V
10748.44	-55.66	7.84	-12.45	-51.05	-13.00	38.05	V
13627.26	-49.14	9.21	-13.85	-44.50	-13.00	31.50	V
15842.21	-50.98	10.00	-13.13	-47.85	-13.00	34.85	V

WCDMA BAND II Mode Channel 9400/1880MHz

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit （dBm）	Margin(dB)	Polarization
3758.34	-50.15	4.53	-8.21	-46.47	-13.00	33.47	H
5642.14	-54.35	5.45	-10.06	-49.74	-13.00	36.74	V
8537.84	-59.15	7.19	-12.23	-54.11	-13.00	41.11	H
12340.71	-54.64	8.73	-12.64	-50.73	-13.00	37.73	V
13656.64	-51.89	9.05	-13.86	-47.08	-13.00	34.08	V
15362.65	-50.86	9.83	-13.43	-47.26	-13.00	34.26	V

WCDMA BAND II Mode Channel 9538/1907.6MHz

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit （dBm）	Margin(dB)	Polarization
3812.80	-49.68	4.48	-8.28	-45.88	-13.00	32.88	H
5726.52	-48.92	5.54	-10.09	-44.37	-13.00	31.37	V
8555.58	-58.32	7.24	-12.24	-53.32	-13.00	40.32	V
9851.86	-58.41	7.54	-12.46	-53.49	-13.00	40.49	H
12737.56	-54.18	8.93	-12.99	-50.12	-13.00	37.12	V
16390.52	-50.22	10.63	-12.53	-48.32	-13.00	35.32	H

WCDMA BAND V Mode Channel 4132/826.4MHz

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Correction (dB)	Peak ERP(dBm)	Limit （dBm）	Margin(dB)	Polarization
1650.46	-53.96	2.91	-5.44	2.15	-53.58	-13.00	40.58	V
3316.16	-65.95	4.15	-7.46	2.15	-64.79	-13.00	51.79	H
4680.89	-60.38	4.93	-9.13	2.15	-58.33	-13.00	45.33	H
5594.70	-66.32	5.42	-10.04	2.15	-63.85	-13.00	50.85	H
6810.03	-65.38	6.15	-10.91	2.15	-62.77	-13.00	49.77	H
8428.82	-58.59	7.11	-12.16	2.15	-55.69	-13.00	42.69	V

WCDMA BAND V Mode Channel 4183/836.6MHz

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Correction (dB)	Peak ERP(dBm)	Limit （dBm）	Margin(dB)	Polarization
1674.95	-51.29	2.97	-5.33	2.15	-51.08	-13.00	38.08	V
3240.29	-64.87	4.17	-7.28	2.15	-63.91	-13.00	50.91	H
4325.92	-64.42	4.83	-8.70	2.15	-62.70	-13.00	49.70	H
5649.02	-61.30	5.44	-10.06	2.15	-58.83	-13.00	45.83	V
7089.01	-63.02	6.46	-11.15	2.15	-60.48	-13.00	47.48	H
8468.29	-63.98	6.92	-12.18	2.15	-60.87	-13.00	47.87	H

WCDMA BAND V Mode Channel 4233/846.6MHz

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Correction (dB)	Peak ERP(dBm)	Limit （dBm）	Margin(dB)	Polarization
1694.53	-52.45	2.95	-5.24	2.15	-52.31	-13.00	39.31	V
3357.96	-60.98	4.24	-7.56	2.15	-59.81	-13.00	46.81	V
3891.34	-60.59	4.51	-8.37	2.15	-58.88	-13.00	45.88	V
4657.19	-65.71	4.94	-9.08	2.15	-63.72	-13.00	50.72	H
5804.07	-67.79	5.68	-10.12	2.15	-65.50	-13.00	52.50	H
6703.14	-59.22	6.09	-10.80	2.15	-56.66	-13.00	43.66	V

A.3 CONDUCTED EMISSION

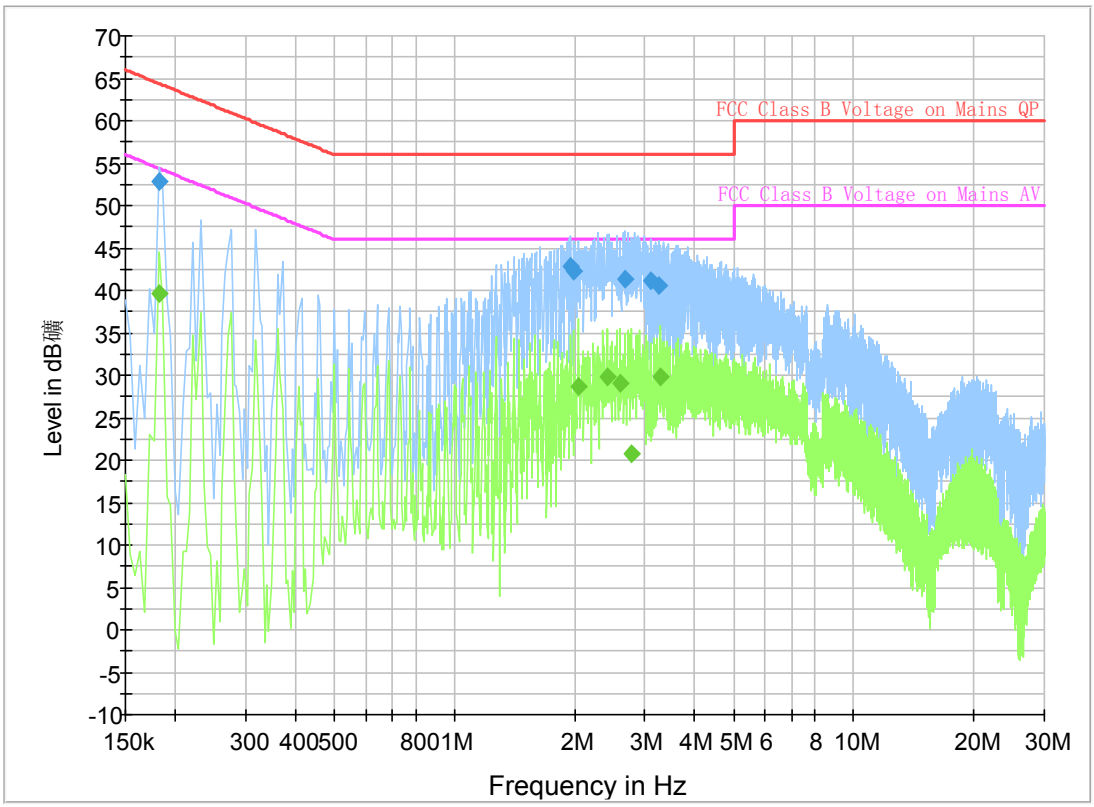
The measurement procedure in ANSI C63.4-2003 is used. Conducted Emission is measured with travel charger.

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 II



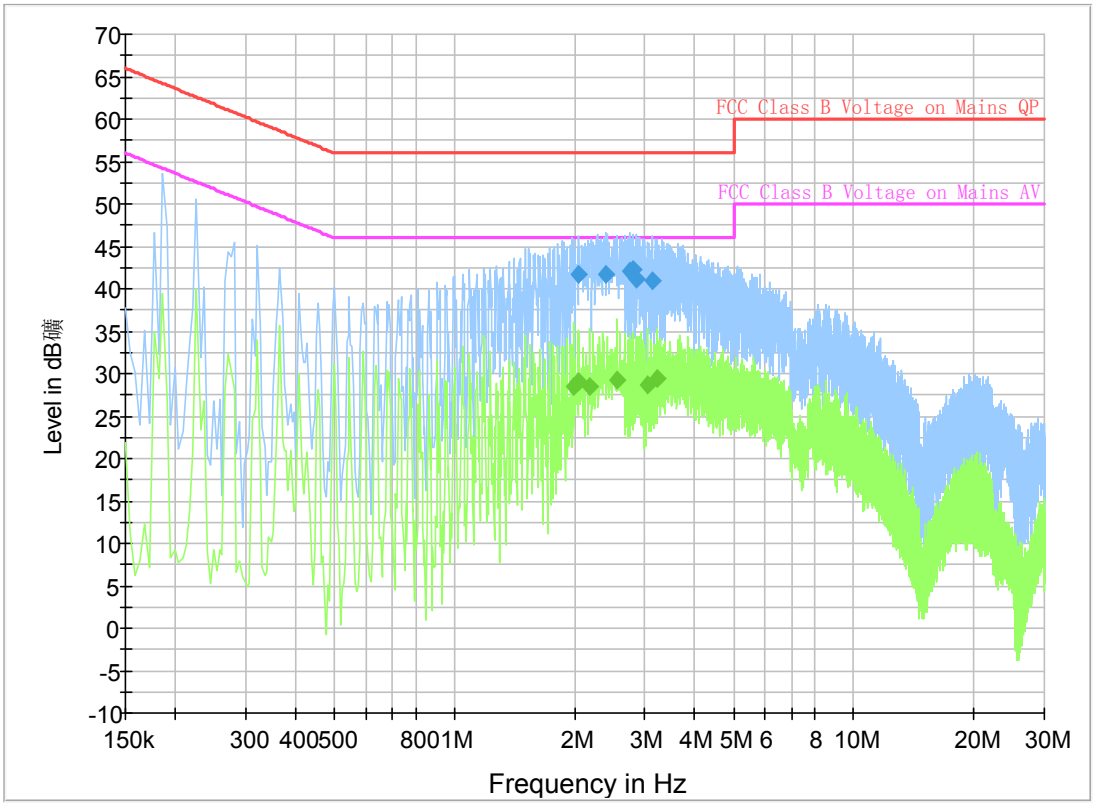
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.181500	52.8	GND	L1	9.8	11.6	64.4
1.959000	42.9	GND	L1	9.7	13.1	56.0
1.990500	42.3	GND	L1	9.7	13.8	56.0
2.679000	41.3	GND	L1	9.7	14.7	56.0
3.088500	41.1	GND	L1	9.7	14.9	56.0
3.246000	40.5	GND	L1	9.7	15.5	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.181500	39.6	GND	L1	9.8	14.8	54.4
2.040000	28.6	GND	L1	9.7	17.4	46.0
2.418000	29.8	GND	L1	9.7	16.2	46.0
2.593500	29.0	GND	L1	9.7	17.0	46.0
2.782500	20.7	GND	L1	9.7	25.3	46.0
3.277500	29.8	GND	L1	9.7	16.2	46.0

WCDMA Band V



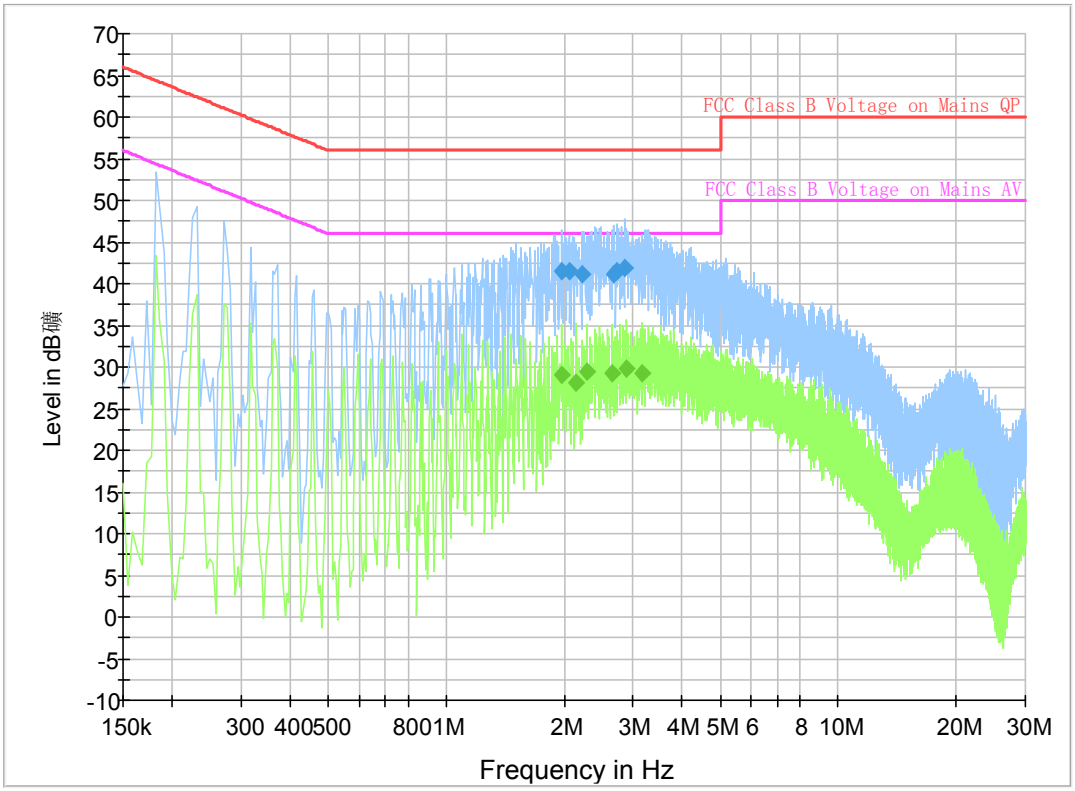
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
2.053500	41.6	GND	L1	9.7	14.4	56.0
2.386500	41.6	GND	L1	9.7	14.4	56.0
2.737500	42.0	GND	L1	9.7	14.0	56.0
2.809500	42.3	GND	L1	9.7	13.7	56.0
2.841000	41.1	GND	L1	9.7	14.9	56.0
3.129000	41.0	GND	L1	9.7	15.0	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.995000	28.6	GND	L1	9.7	17.4	46.0
2.040000	29.1	GND	L1	9.7	16.9	46.0
2.184000	28.5	GND	L1	9.7	17.6	46.0
2.548500	29.2	GND	L1	9.7	16.8	46.0
3.043500	28.6	GND	L1	9.7	17.4	46.0
3.232500	29.5	GND	L1	9.7	16.5	46.0

MP3



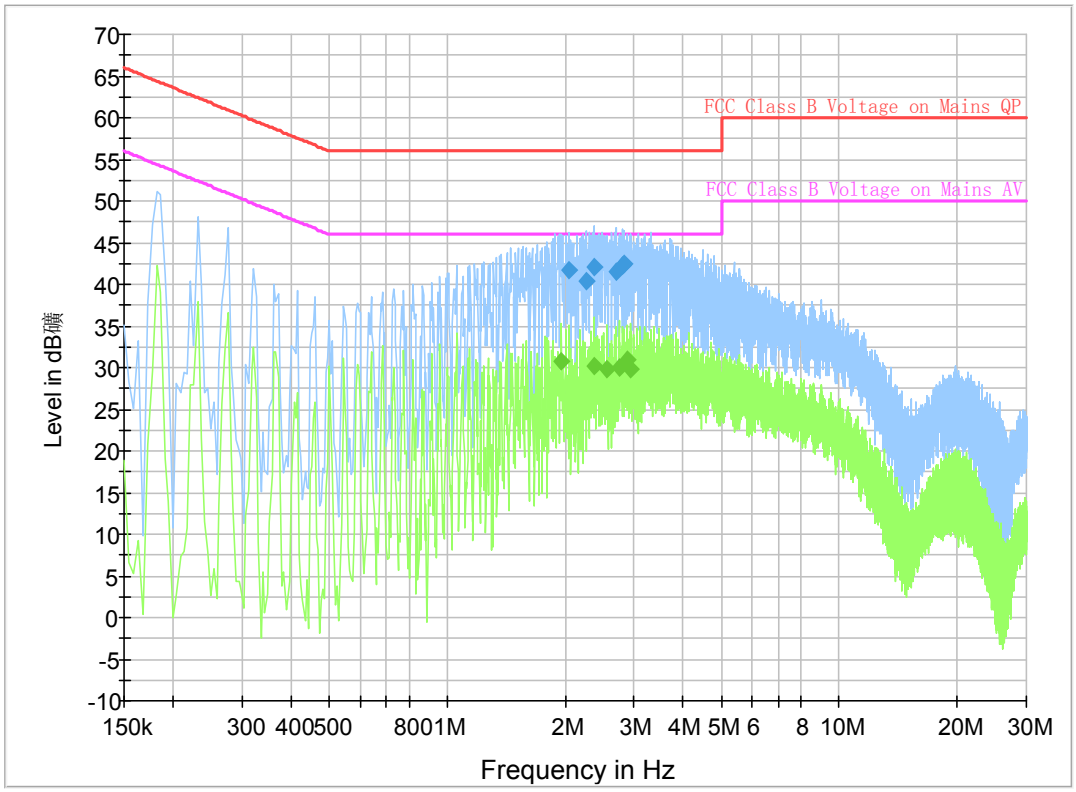
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.968000	41.4	GND	L1	9.7	14.6	56.0
2.058000	41.6	GND	L1	9.7	14.4	56.0
2.220000	41.1	GND	L1	9.7	14.9	56.0
2.670000	41.2	GND	L1	9.7	14.8	56.0
2.715000	41.6	GND	L1	9.7	14.5	56.0
2.845500	41.8	GND	L1	9.7	14.2	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.968000	29.1	GND	L1	9.7	16.9	46.0
2.148000	28.2	GND	L1	9.7	17.8	46.0
2.278500	29.5	GND	L1	9.7	16.5	46.0
2.643000	29.2	GND	L1	9.7	16.8	46.0
2.890500	29.8	GND	L1	9.7	16.2	46.0
3.151500	29.2	GND	L1	9.7	16.8	46.0

CAMERA



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
2.053500	41.7	GND	L1	9.7	14.3	56.0
2.256000	40.4	GND	L1	9.7	15.6	56.0
2.373000	42.1	GND	L1	9.7	13.9	56.0
2.692500	41.5	GND	L1	9.7	14.5	56.0
2.796000	42.2	GND	L1	9.7	13.8	56.0
2.823000	42.5	GND	L1	9.7	13.5	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.959000	30.8	GND	L1	9.7	15.2	46.0
2.373000	30.2	GND	L1	9.7	15.8	46.0
2.548500	29.9	GND	L1	9.7	16.1	46.0
2.737500	30.0	GND	L1	9.7	16.0	46.0
2.868000	30.9	GND	L1	9.7	15.1	46.0
2.926500	29.9	GND	L1	9.7	16.1	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 II and WCDMA Band V, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
4. Repeat the above measurements at 10℃ increments from -30℃ to +50℃. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.
5. 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 3.8VDC. 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 Ⅱ

Frequency Error vs Voltage

Voltage(V)	Frequency error(Hz)	Frequency error(ppm)
3.5	-8	0.004
3.8	-6	0.003
4.2	-6	0.003

Frequency Error vs Temperature

temperature(℃)	Frequency error(Hz)	Frequency error(ppm)
-30	-17	0.009
-20	-7	0.004
-10	7	0.004
0	5	0.003
10	9	0.005
20	6	0.003
30	-3	0.002
40	6	0.003
50	-8	0.004

WCDMA Band Ⅴ

Frequency Error vs Voltage

Voltage(V)	Frequency error(Hz)	Frequency error(ppm)
3.5	-6	0.007
3.8	-4	0.005
4.2	6	0.007

Frequency Error vs Temperature

temperature(℃)	Frequency error(Hz)	Frequency error(ppm)
-30	5	0.006
-20	7	0.009
-10	-4	0.005
0	-5	0.006
10	-8	0.009
20	-6	0.007
30	4	0.005
40	-6	0.007
50	-5	0.007

A.5 OCCUPIED BANDWIDTH

A.5.1 Occupied Bandwidth Results

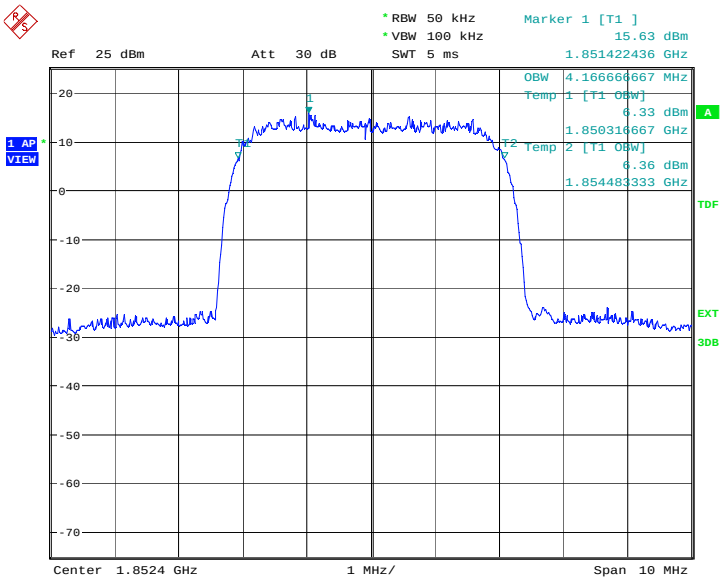
Similar to conducted emissions; occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of WCDMA Band II and WCDMA Band V. The table below lists the measured 99% BW. Spectrum analyzer plots are included on the following pages.

WCDMA Band II (99% BW)

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

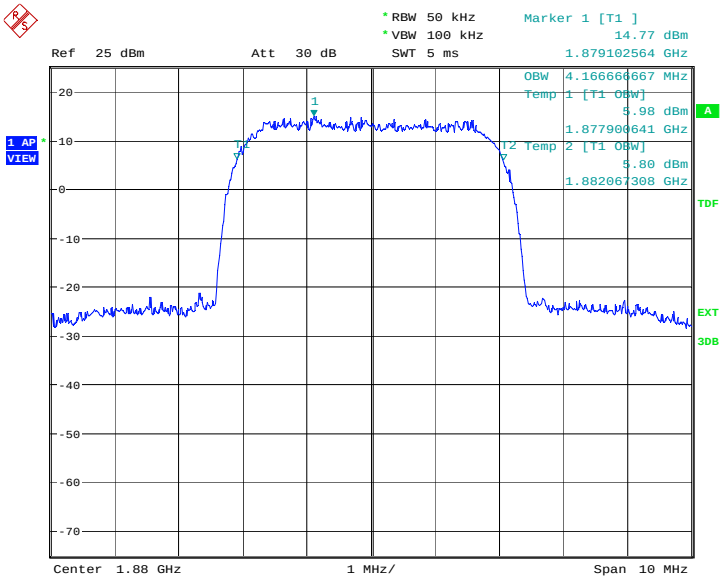
WCDMA Band Ⅱ

Channel 9262-Occupied Bandwidth (99% BW)



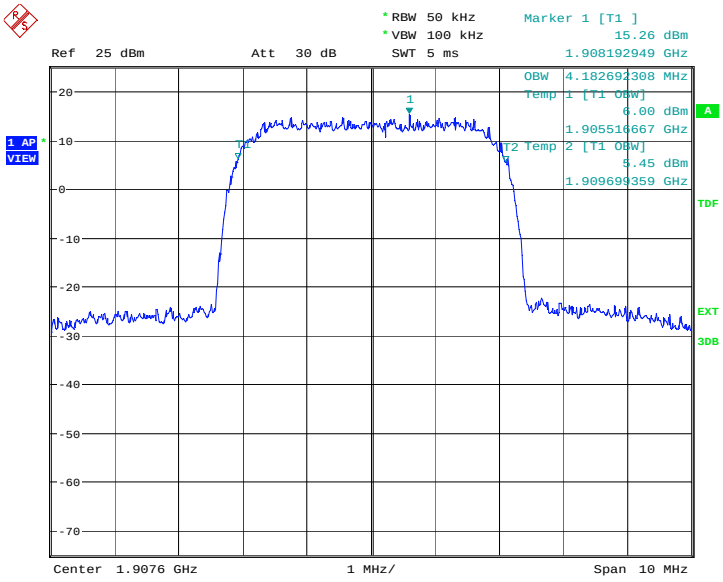
Date: 15.MAY.2014 11:59:33

Channel 9400-Occupied Bandwidth (99% BW)



Date: 15.MAY.2014 12:00:07

Channel 9538-Occupied Bandwidth (99% BW)



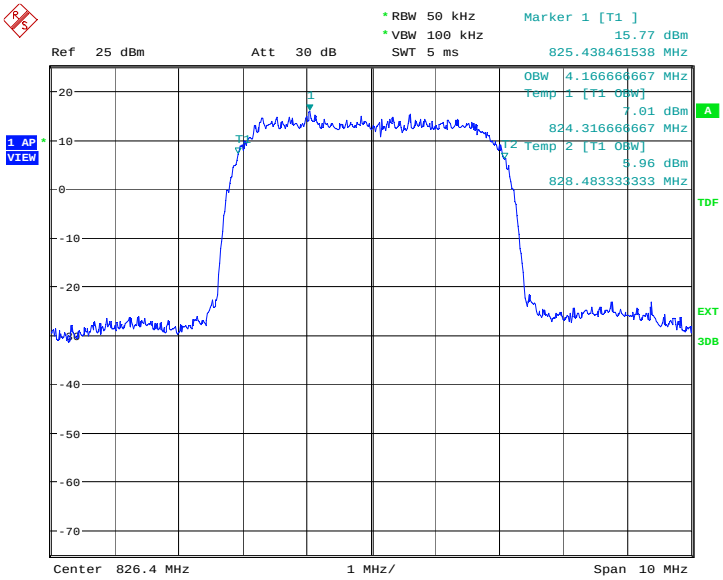
Date: 15.MAY.2014 12:00:42

WCDMA Band V(99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)
826.4	4.167
836.6	4.151
846.6	4.151

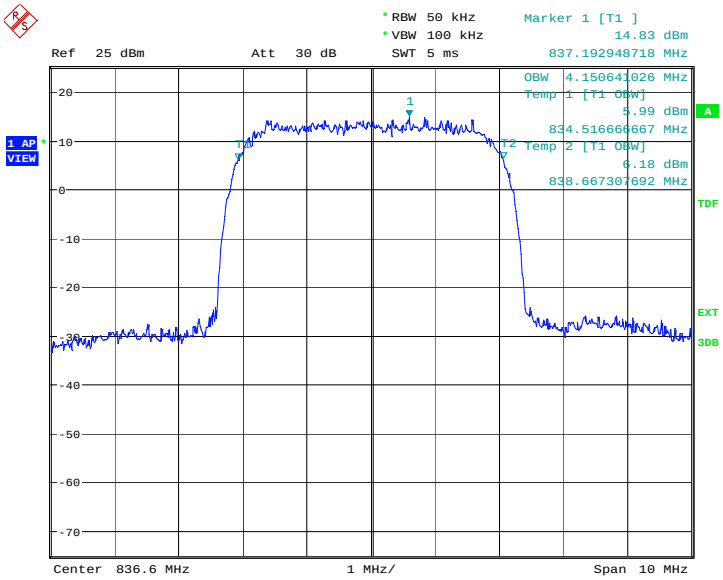
WCDMA Band V

Channel 4132-Occupied Bandwidth (99% BW)



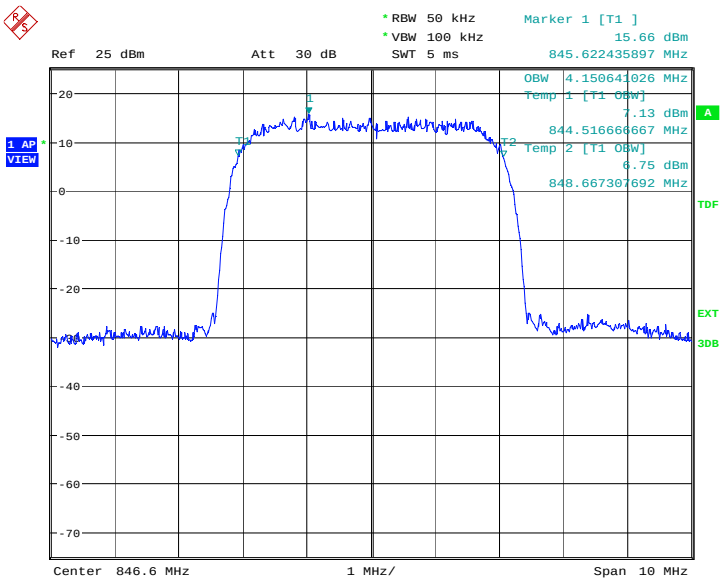
Date: 15.MAY.2014 12:20:04

Channel 4183-Occupied Bandwidth (99% BW)



Date: 15.MAY.2014 12:20:39

Channel 4233-Occupied Bandwidth (99% BW)



Date: 15.MAY.2014 12:21:13

A.6 EMISSION BANDWIDTH

A.6.1Emission Bandwidth Results

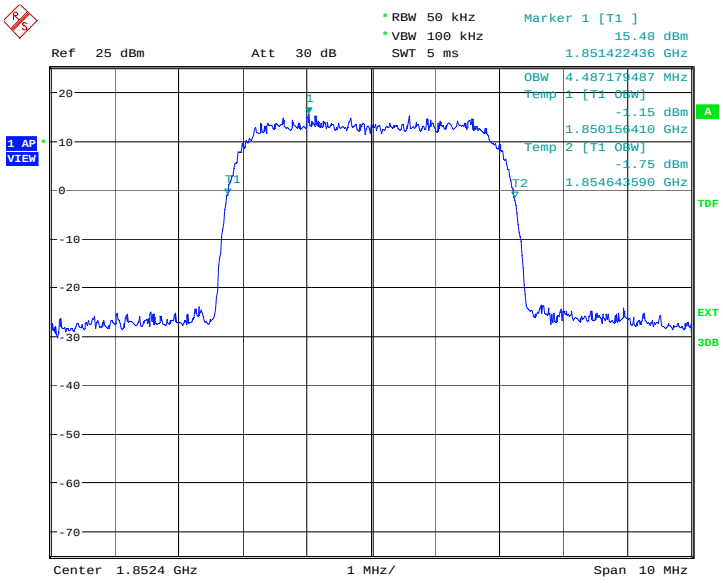
Similar to conducted emissions; Emission bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of WCDMA Band II and WCDMA Band V. Table below lists the measured 100% BW. Spectrum analyzer plots are included on the following pages.

WCDMA Band II (100% BW)

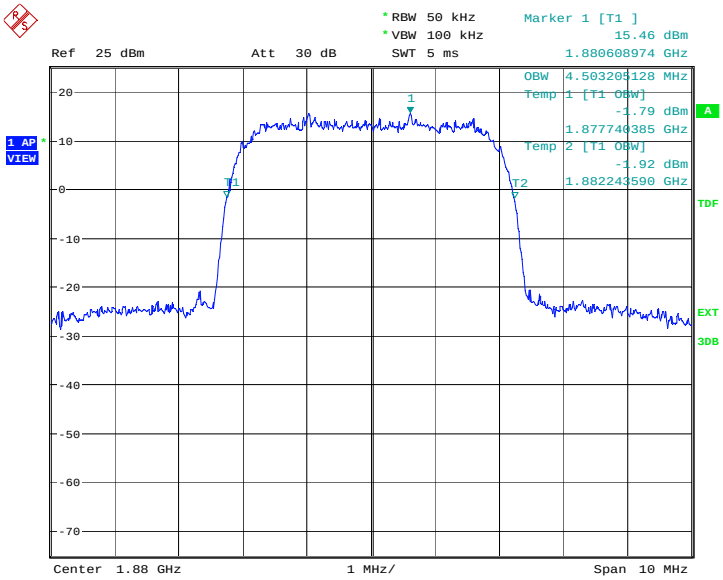
Frequency(MHz)	Emission Bandwidth (100% BW)(MHz)
1852.4	4.487
1880.0	4.503
1907.6	4.503

WCDMA Band II

Channel 9262-Emission Bandwidth (100% BW)

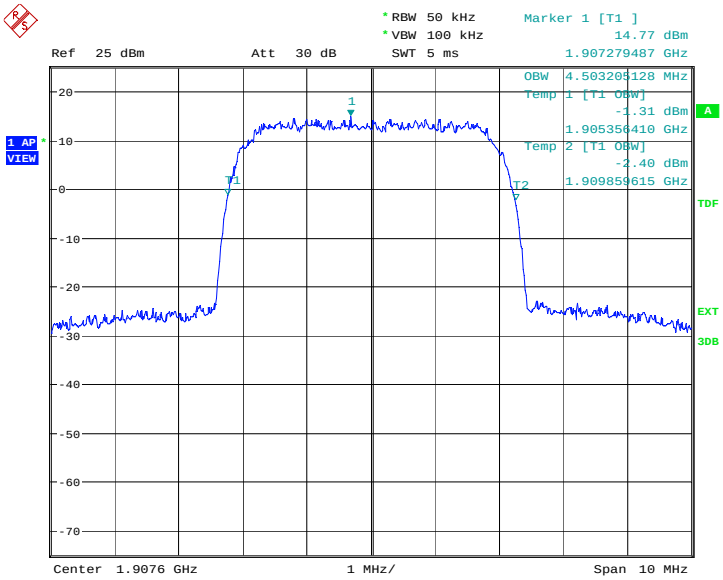


Channel 9400-Emission Bandwidth (100% BW)



Date: 15.MAY.2014 12:01:52

Channel 9538-Emission Bandwidth (100% BW)



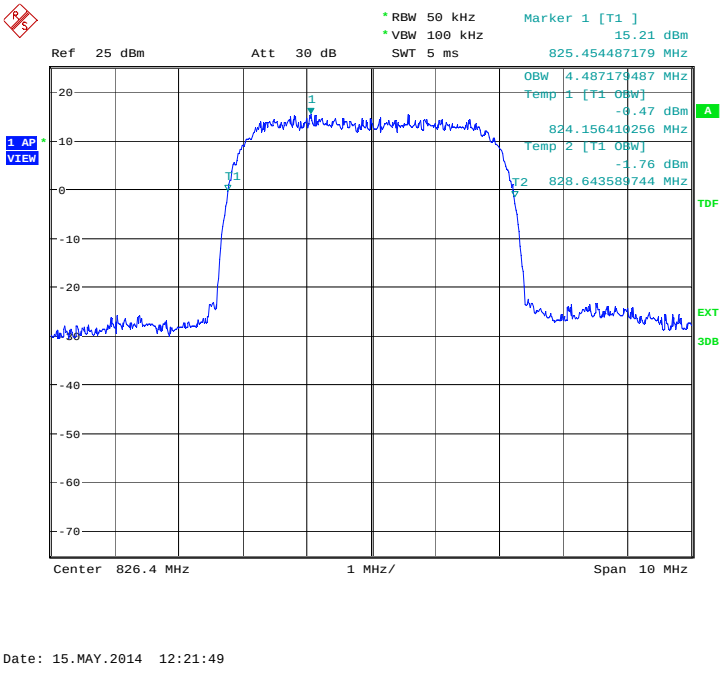
Date: 15.MAY.2014 12:02:27

WCDMA Band V(100% BW)

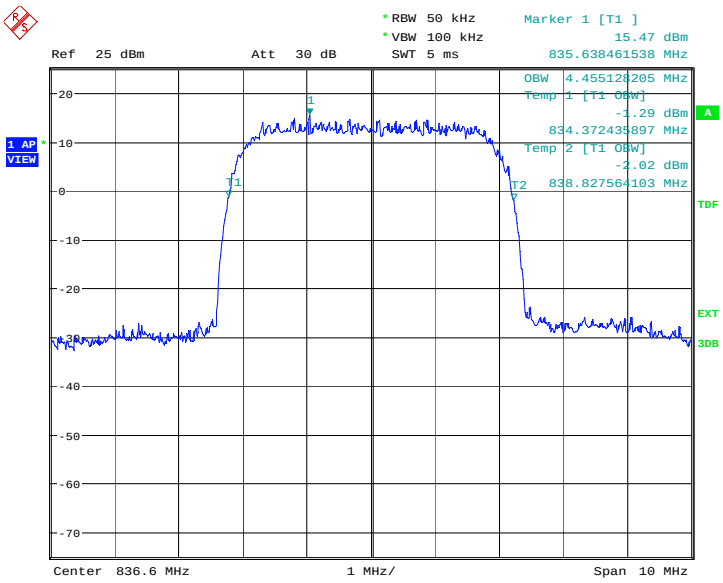
Frequency(MHz)	Emission Bandwidth (100% BW)(MHz)
826.40	4.487
836.60	4.455
846.60	4.487

WCDMA Band V

Channel 4132-Emission Bandwidth (100% BW)

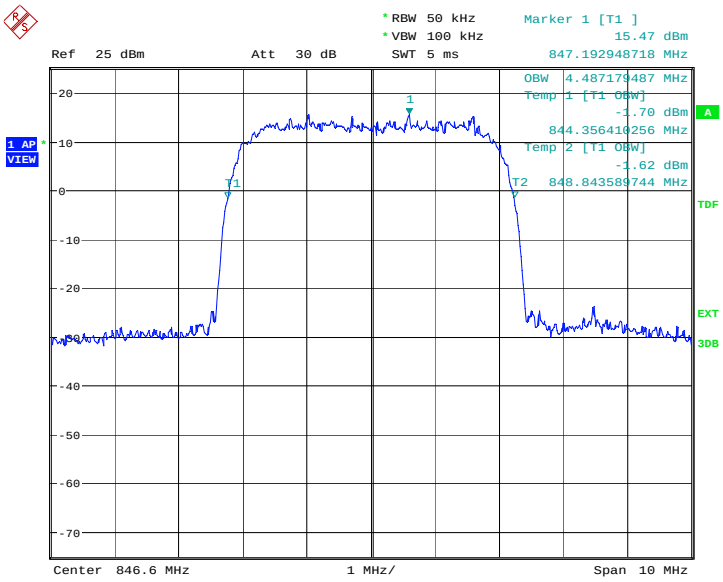


Channel 4183-Emission Bandwidth (100% BW)



Date: 15.MAY.2014 12:22:24

Channel 4233-Emission Bandwidth (100% BW)

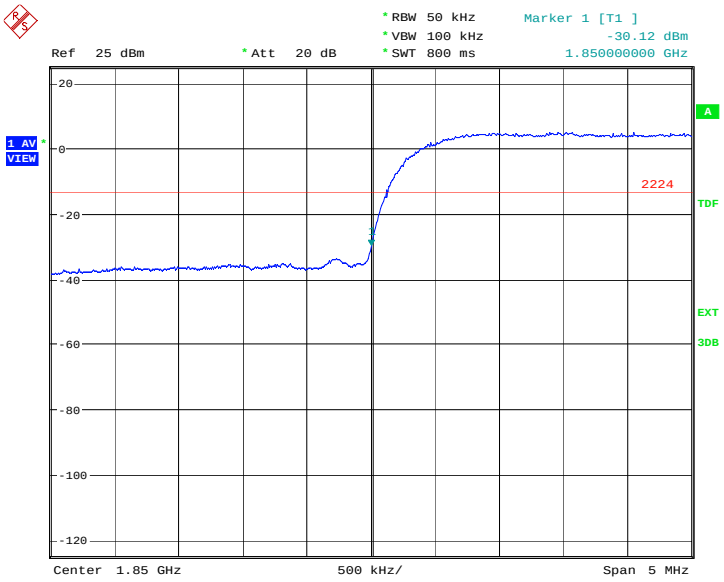


Date: 15.MAY.2014 12:22:58

A.7 BAND EDGE COMPLIANCE

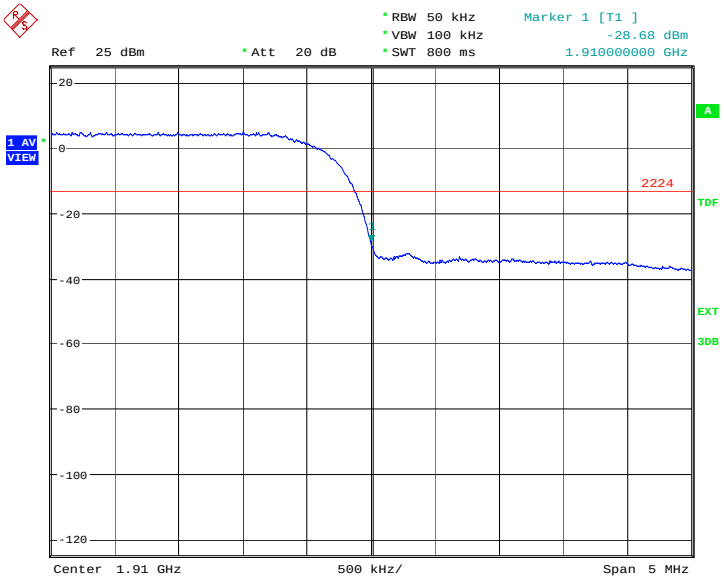
WCDMA Band Ⅱ

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



Date: 15.MAY.2014 12:02:43

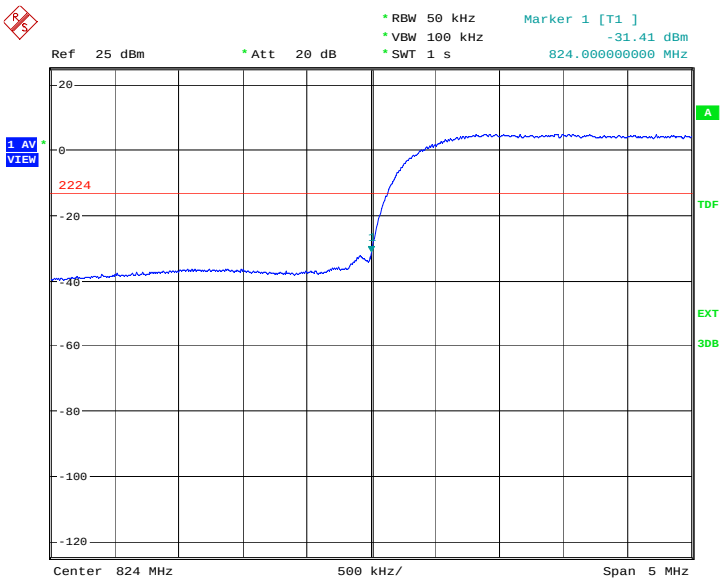
HIGH BAND EDGE BLOCK-C (WCDMA Band Ⅱ) –Channel 9538



Date: 15.MAY.2014 12:02:59

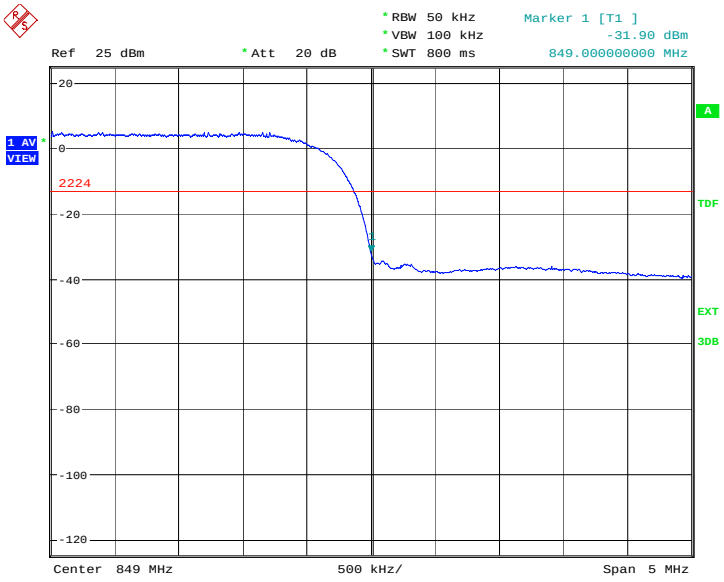
WCDMA Band Ⅴ

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



Date: 15.MAY.2014 12:23:14

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



Date: 15.MAY.2014 12:23:31

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 II, this equates to a frequency range of 30 MHz to 19.1 GHz, data taken from 30 MHz to 20 GHz. For WCDMA Band V, data taken from 30 MHz to 10GHz.
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 Ⅱ Transmitter

Channel	Frequency (MHz)
9262	1852.40
9400	1880.00
9538	1907.60

WCDMA Band Ⅴ Transmitter

Channel	Frequency (MHz)
4132	826.40
4183	836.60
4233	846.60

A. 8.2 Measurement Limit

Part 24.238 and Part 22.917 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.

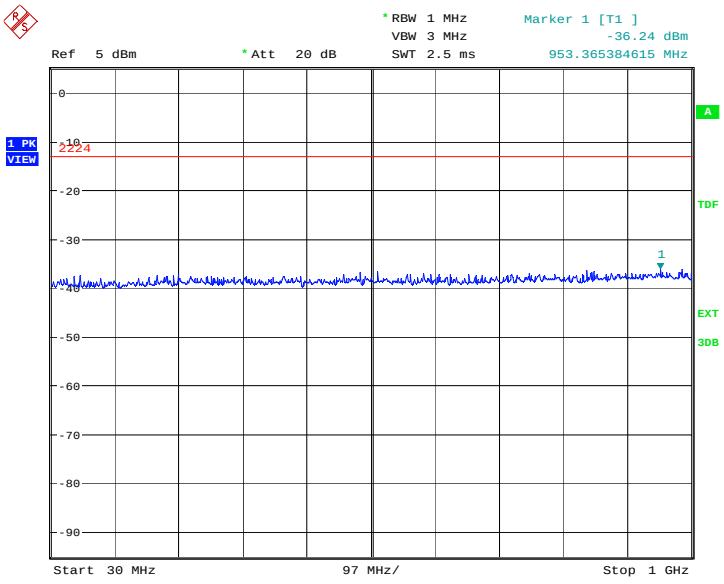
The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm.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

A. 8.3.1 Channel 9262: 30MHz –1GHz

Spurious emission limit –13dBm.

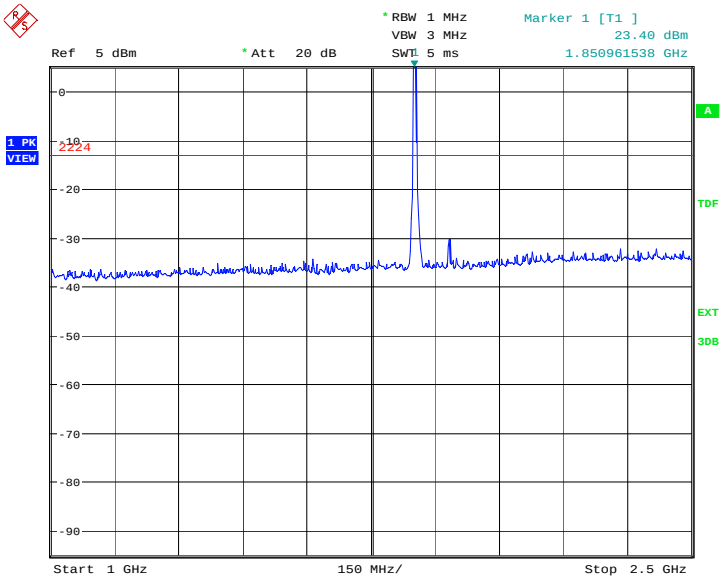


Date: 15.MAY.2014 12:05:24

A.8.3.2 Channel 9262: 1GHz –2.5GHz

Spurious emission limit –13dBm.

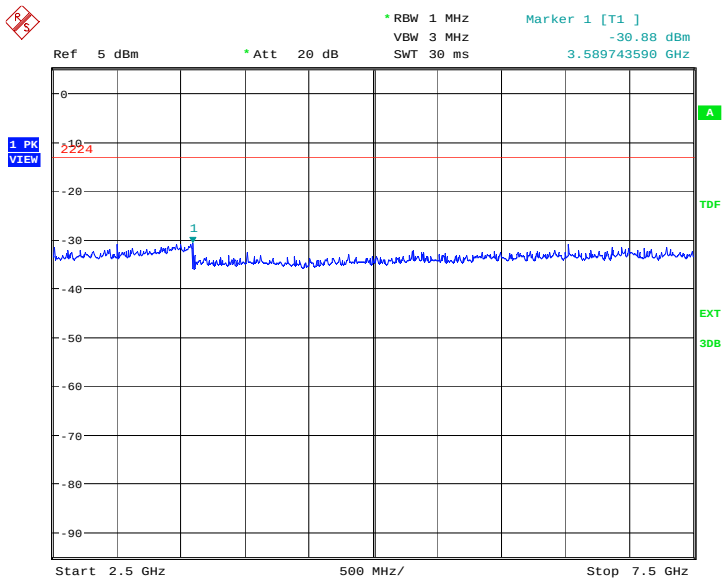
NOTE: peak above the limit line is the carrier frequency.



Date: 15.MAY.2014 12:05:52

A.8.3.3 Channel 9262: 2.5GHz –7.5GHz

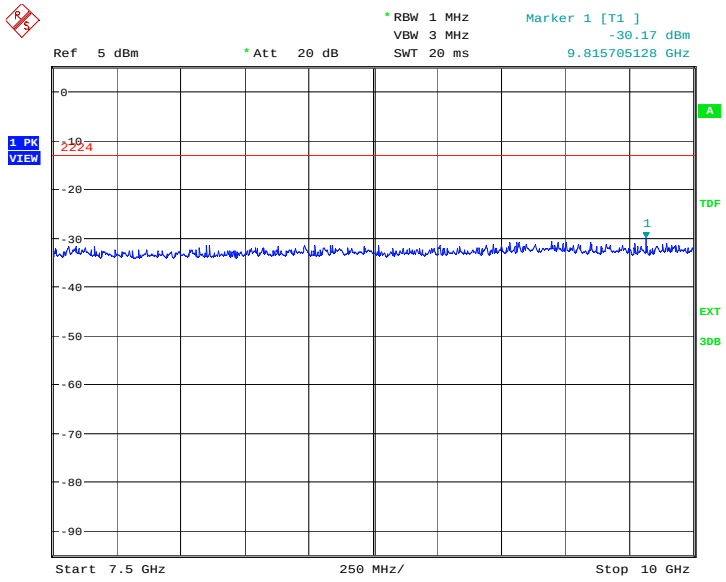
Spurious emission limit –13dBm.



Date: 15.MAY.2014 12:06:20

A.8.3.4 Channel 9262: 7.5GHz –10GHz

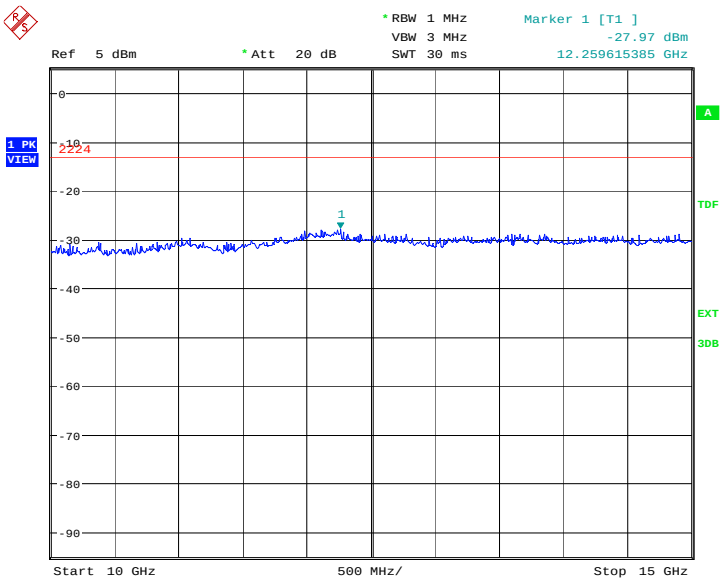
Spurious emission limit –13dBm.



Date: 15.MAY.2014 12:06:48

A.8.3.5 Channel 9262: 10GHz –15GHz

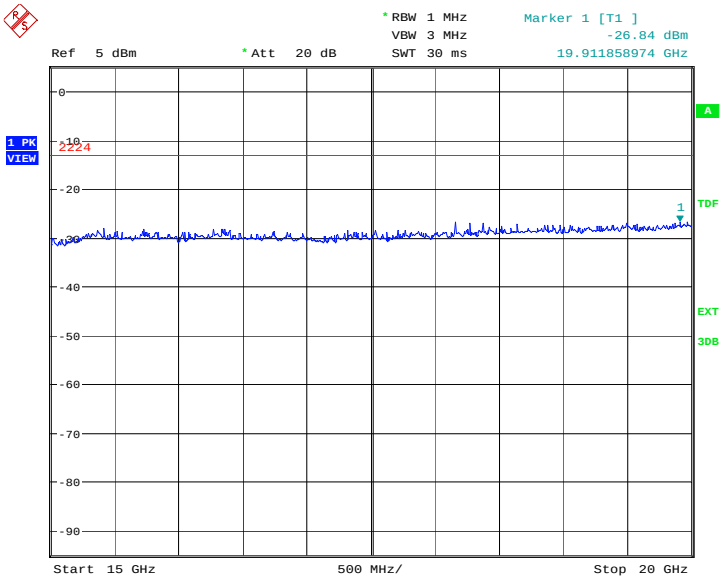
Spurious emission limit –13dBm.



Date: 15.MAY.2014 12:07:17

A.8.3.6 Channel 9262: 15GHz –20GHz

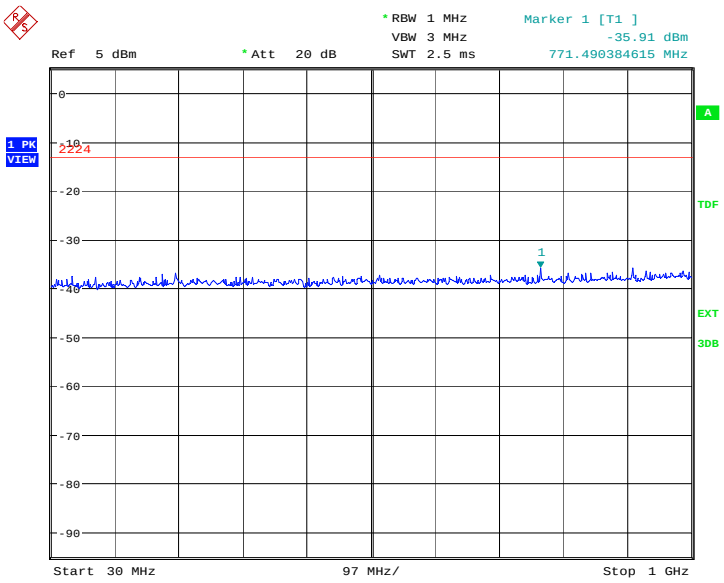
Spurious emission limit –13dBm.



Date: 15.MAY.2014 12:07:45

A. 8.3.7 Channel 9400: 30MHz –1GHz

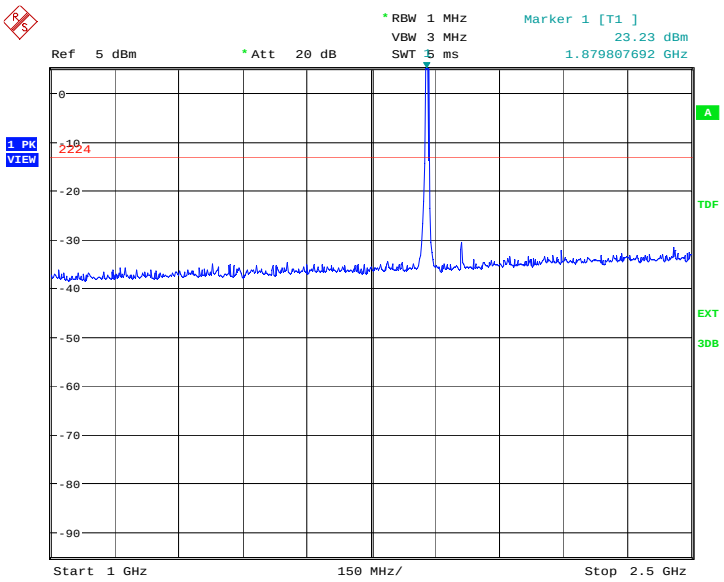
Spurious emission limit –13dBm.



A.8.3.8 Channel 9400: 1GHz –2.5GHz

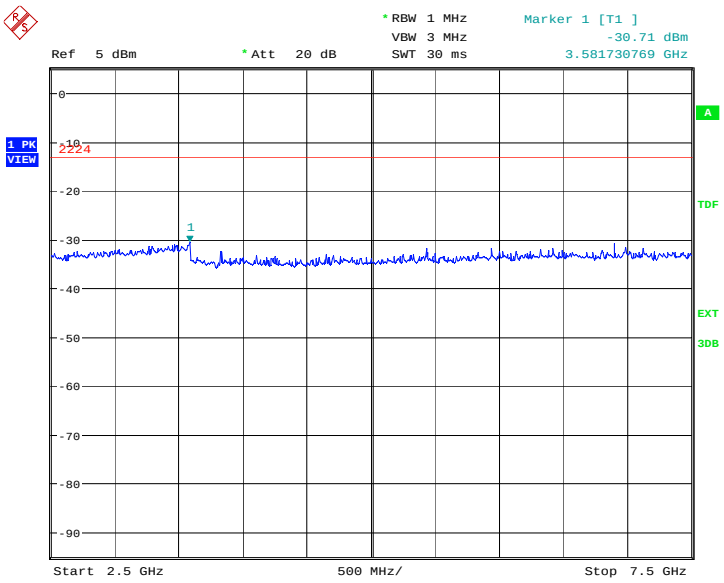
Spurious emission limit –13dBm.

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



A.8.3.9 Channel 9400: 2.5GHz –7.5GHz

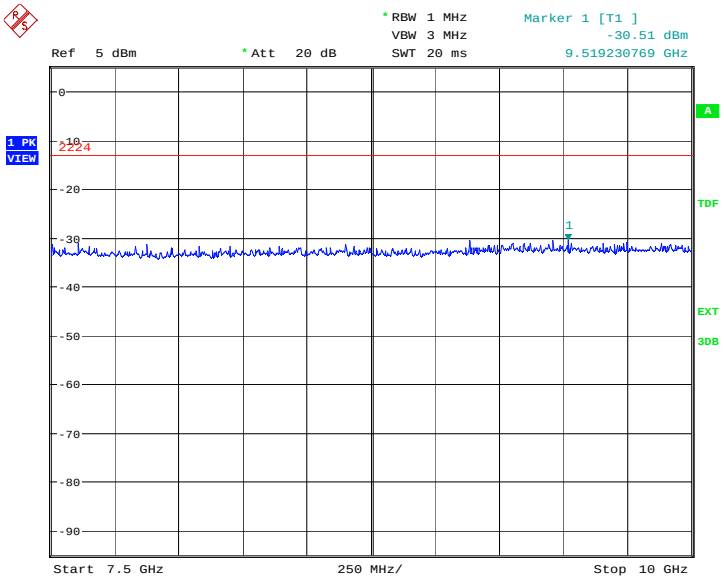
Spurious emission limit –13dBm.



Date: 15.MAY.2014 12:09:12

A.8.3.10 Channel 9400: 7.5GHz –10GHz

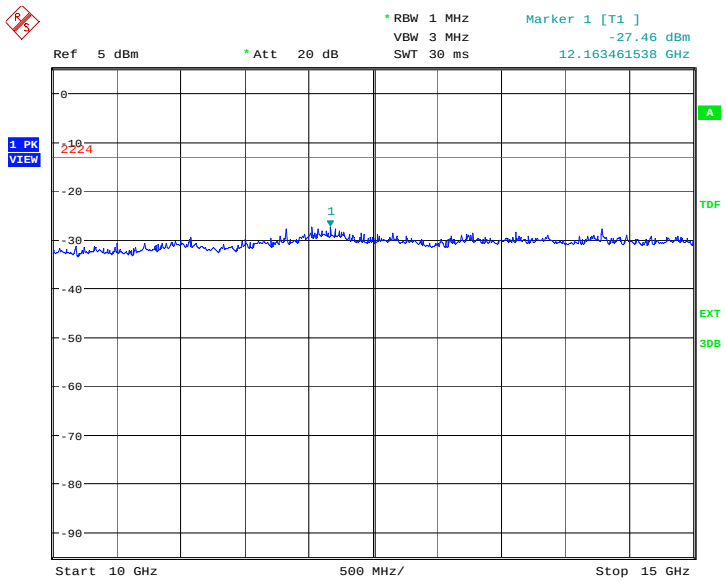
Spurious emission limit –13dBm.



Date: 15.MAY.2014 12:09:40

A.8.3.11 Channel 9400: 10GHz –15GHz

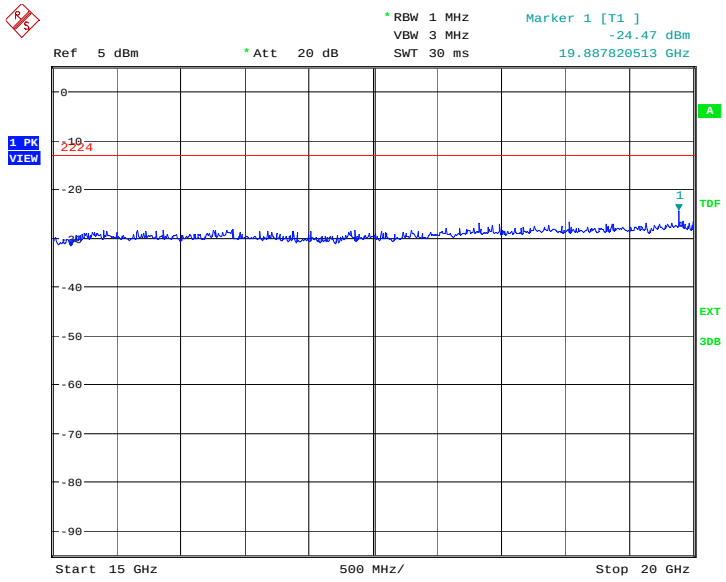
Spurious emission limit –13dBm.



Date: 15.MAY.2014 12:10:08

A.8.3.12 Channel 9400: 15GHz –20GHz

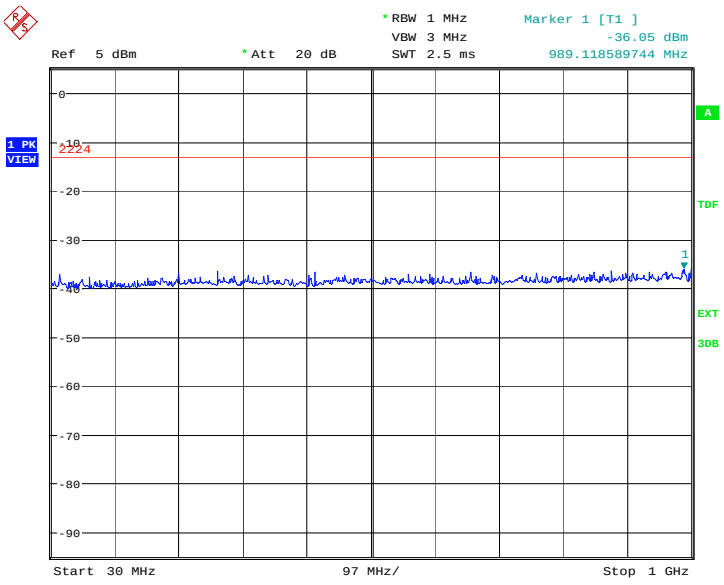
Spurious emission limit –13dBm.



Date: 15.MAY.2014 12:10:37

A. 8.3.13 Channel 9538: 30MHz –1GHz

Spurious emission limit –13dBm.

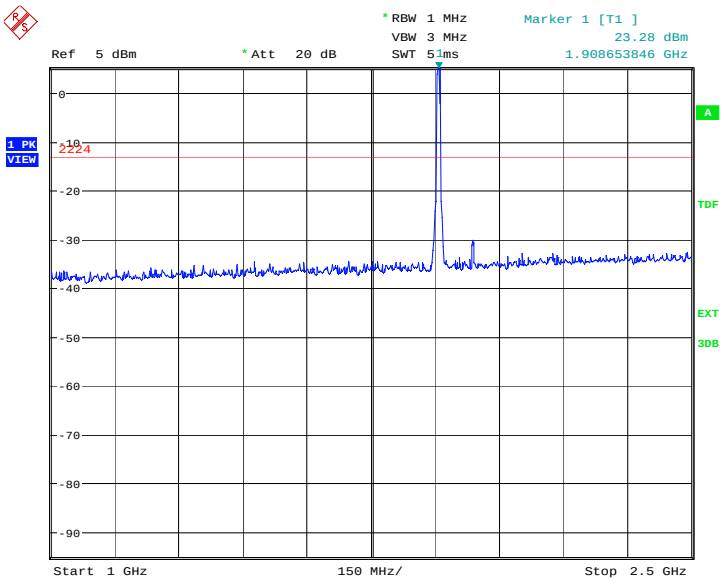


Date: 15.MAY.2014 12:11:08

A.8.3.14 Channel 9538: 1GHz –2.5GHz

Spurious emission limit –13dBm.

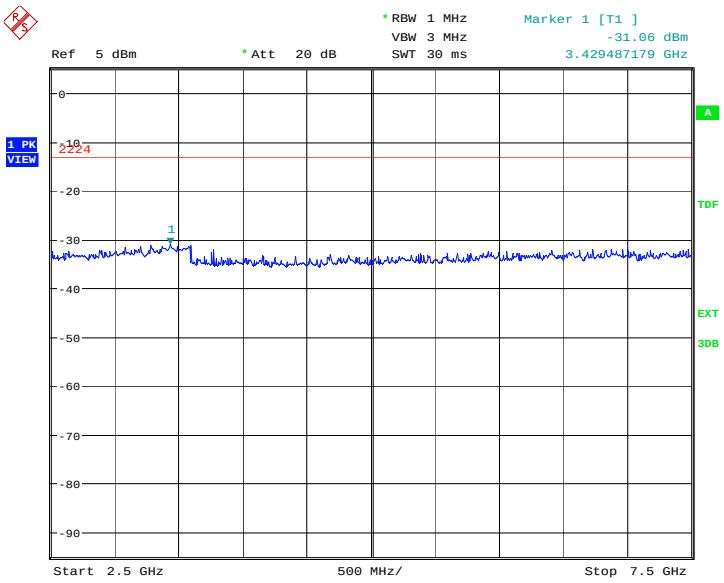
NOTE: peak above the limit line is the carrier frequency.



Date: 15.MAY.2014 12:11:36

A.8.3.15 Channel 9538: 2.5GHz –7.5GHz

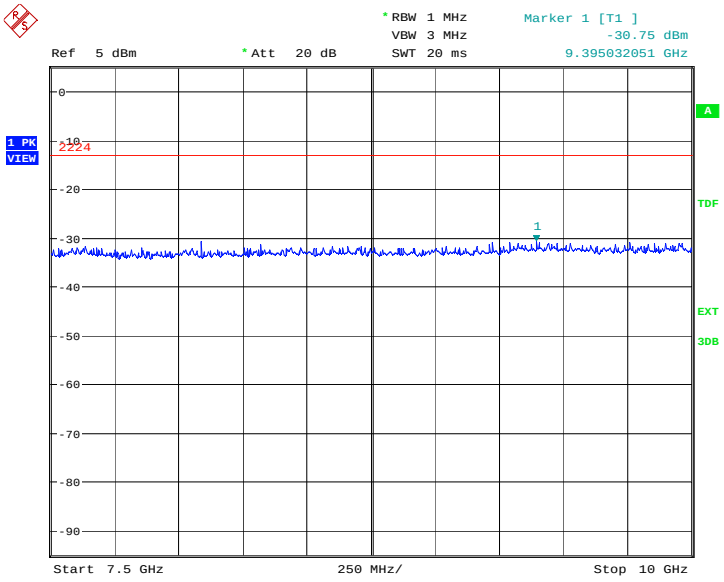
Spurious emission limit –13dBm.



Date: 15.MAY.2014 12:12:04

A.8.3.16 Channel 9538: 7.5GHz –10GHz

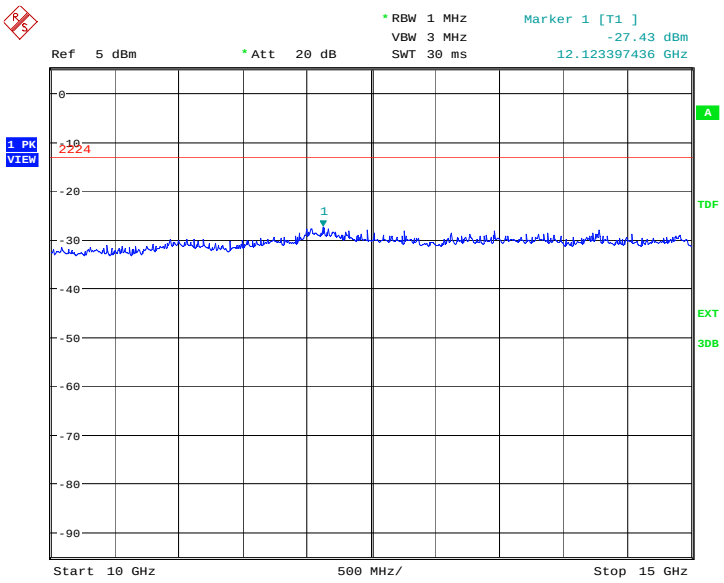
Spurious emission limit –13dBm.



Date: 15.MAY.2014 12:12:32

A.8.3.17 Channel 9538: 10GHz –15GHz

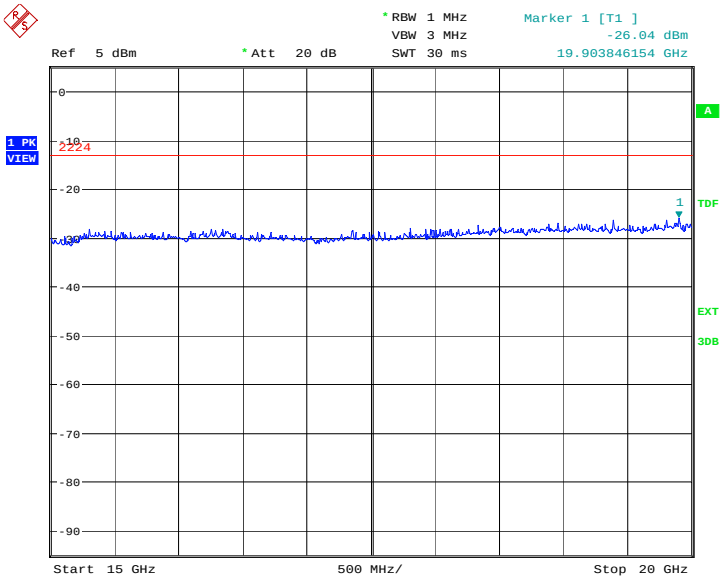
Spurious emission limit –13dBm.



Date: 15.MAY.2014 12:13:00

A.8.3.18 Channel 9538: 15GHz –20GHz

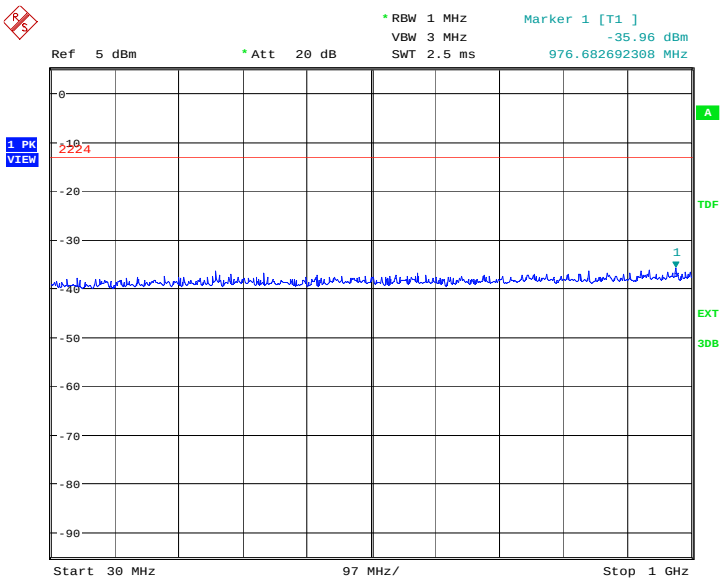
Spurious emission limit –13dBm.



Date: 15.MAY.2014 12:13:29

A. 8.3.19 Idle mode: 30MHz –1GHz

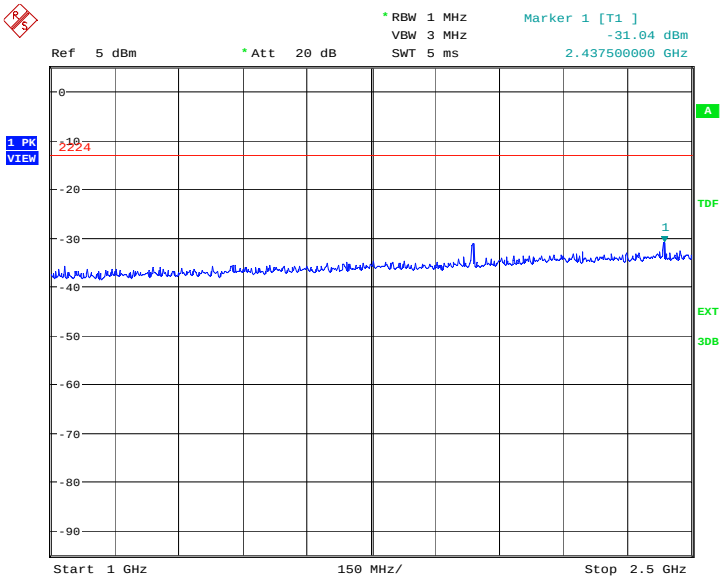
Spurious emission limit –13dBm.



Date: 15.MAY.2014 12:13:58

A.8.3.20 Idle mode: 1GHz –2.5GHz

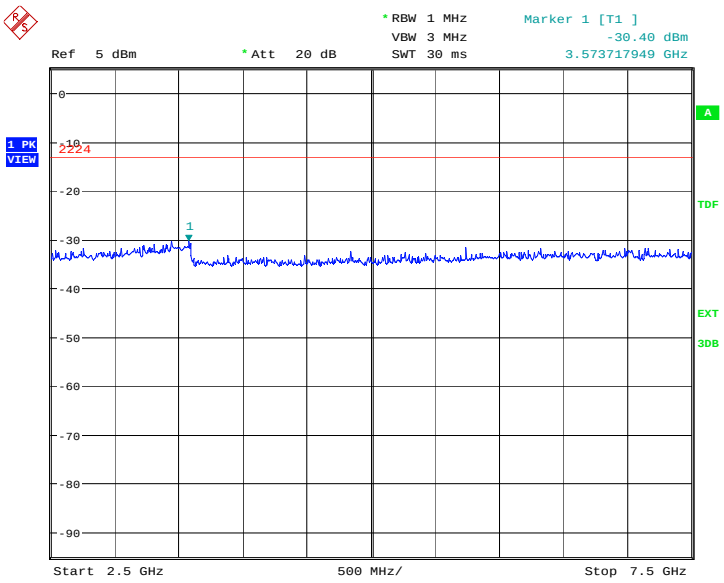
Spurious emission limit –13dBm.



Date: 15.MAY.2014 12:14:26

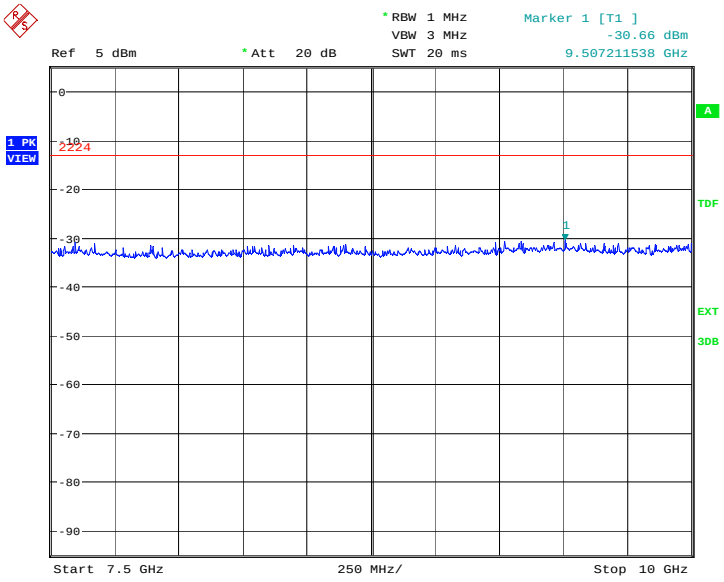
A.8.3.21 Idle mode: 2.5GHz –7.5GHz

Spurious emission limit –13dBm.



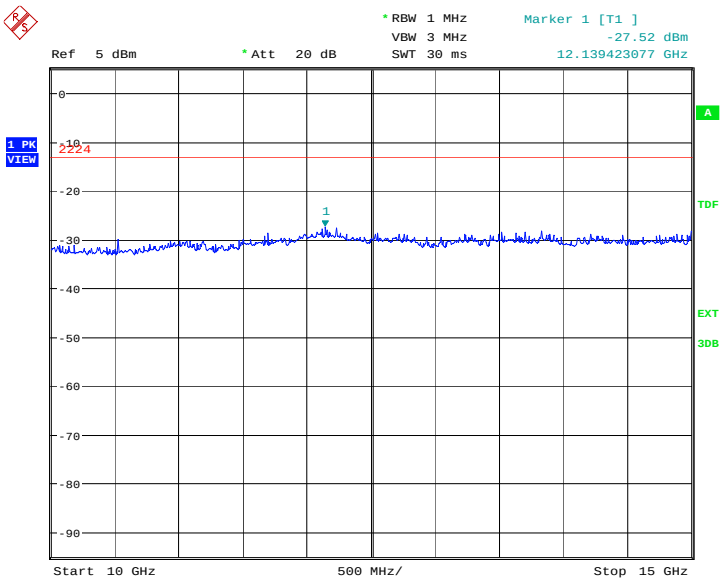
A.8.3.22 Idle mode: 7.5GHz –10GHz

Spurious emission limit –13dBm.



A.8.3.23 Idle mode: 10GHz –15GHz

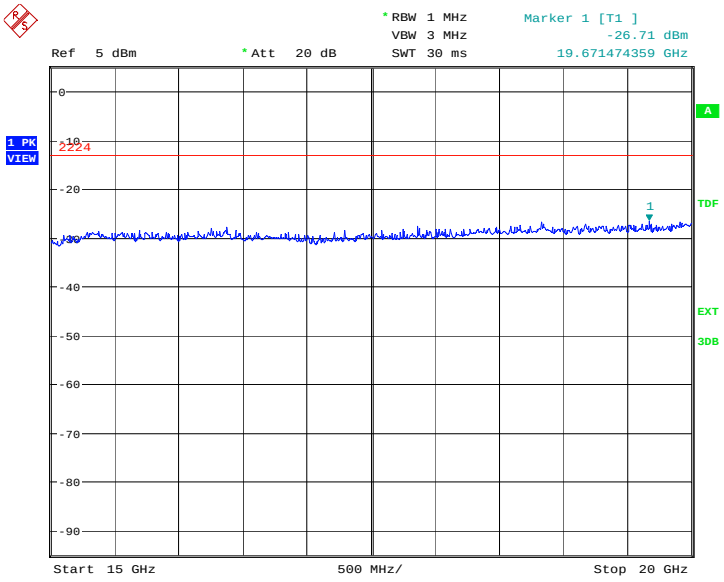
Spurious emission limit –13dBm.



Date: 15.MAY.2014 12:15:50

A.8.3.24 Idle mode: 15GHz –20GHz

Spurious emission limit –13dBm.



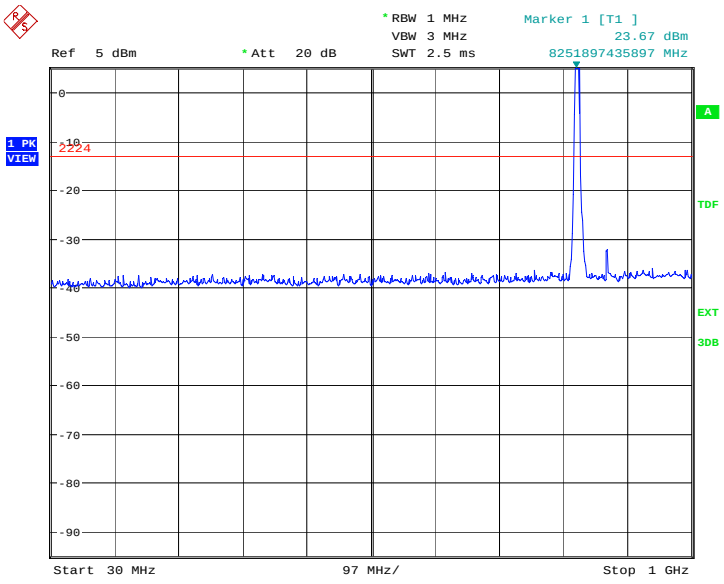
Date: 15.MAY.2014 12:16:18

WCDMA Band Ⅴ

A. 8.3.25 Channel 4132: 30MHz –1GHz

Spurious emission limit –13dBm.

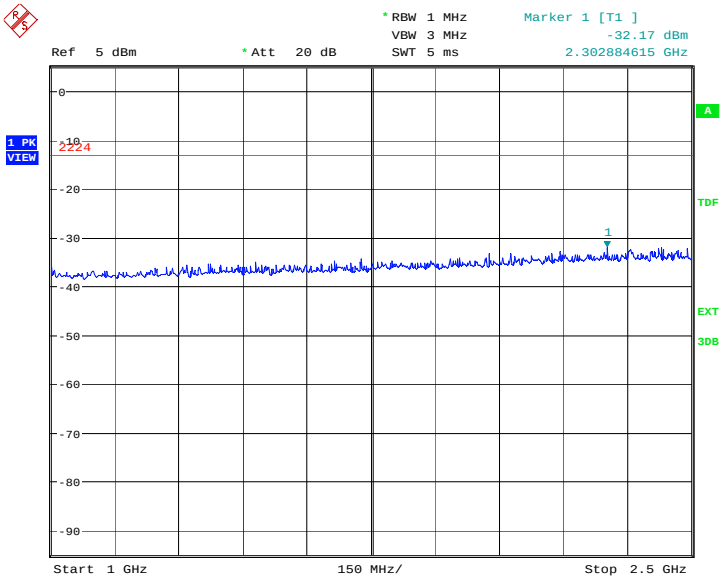
NOTE: peak above the limit line is the carrier frequency.



Date: 15.MAY.2014 12:25:55

A. 8.3.26 Channel 4132: 1GHz – 2.5GHz

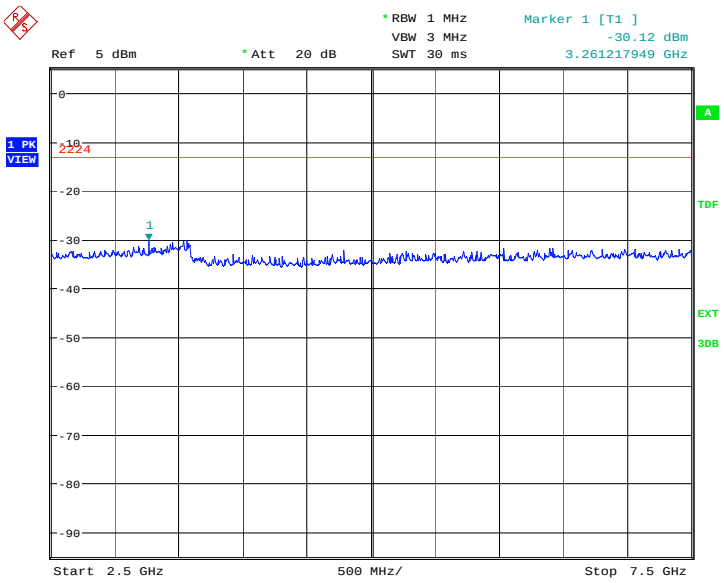
Spurious emission limit –13dBm.



Date: 15.MAY.2014 12:26:23

A. 8.3.27 Channel 4132: 2.5GHz –7.5GHz

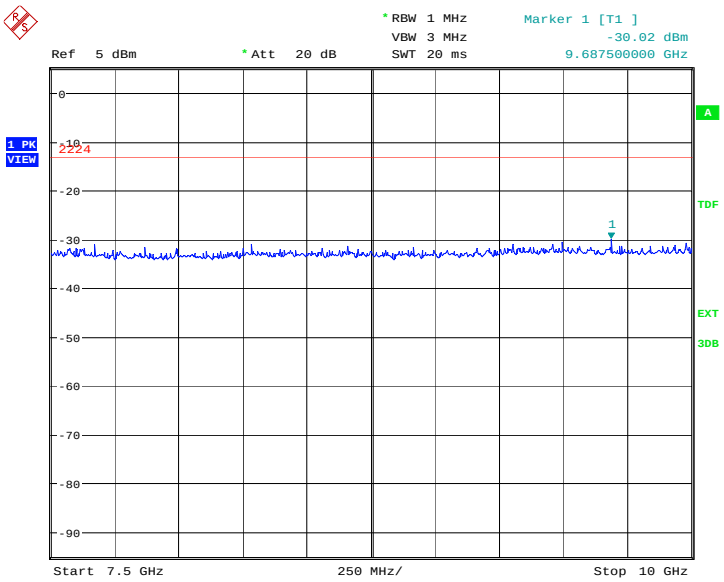
Spurious emission limit –13dBm.



Date: 15.MAY.2014 12:26:52

A. 8.3.28 Channel 4132: 7.5GHz – 10GHz

Spurious emission limit –13dBm.

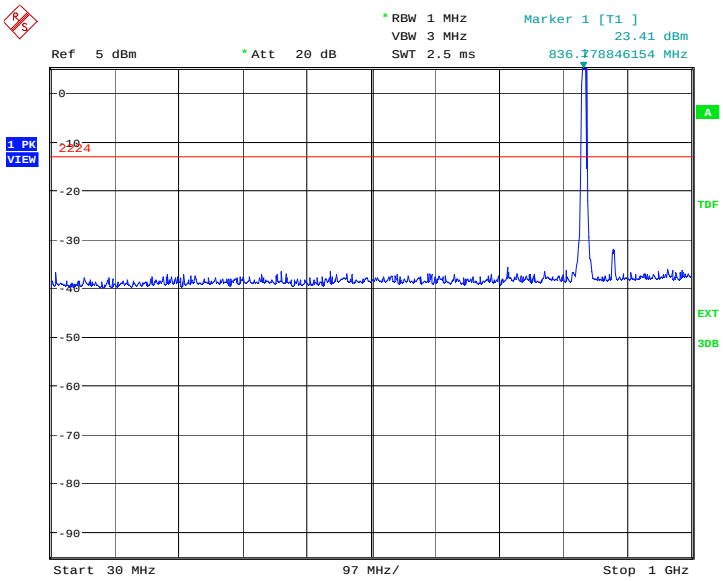


Date: 15.MAY.2014 12:27:20

A. 8.3.29 Channel 4183: 30MHz –1GHz

Spurious emission limit –13dBm.

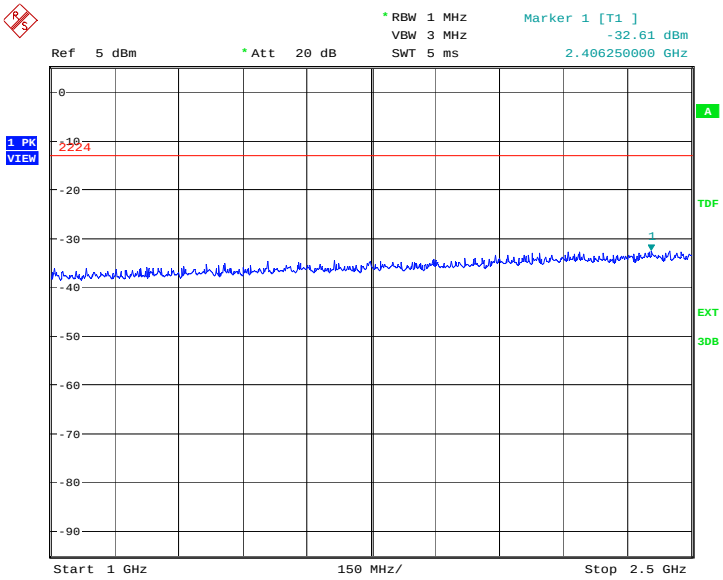
NOTE: peak above the limit line is the carrier frequency.



Date: 15.MAY.2014 12:27:51

A.8.3.30 Channel 4183: 1GHz – 2.5GHz

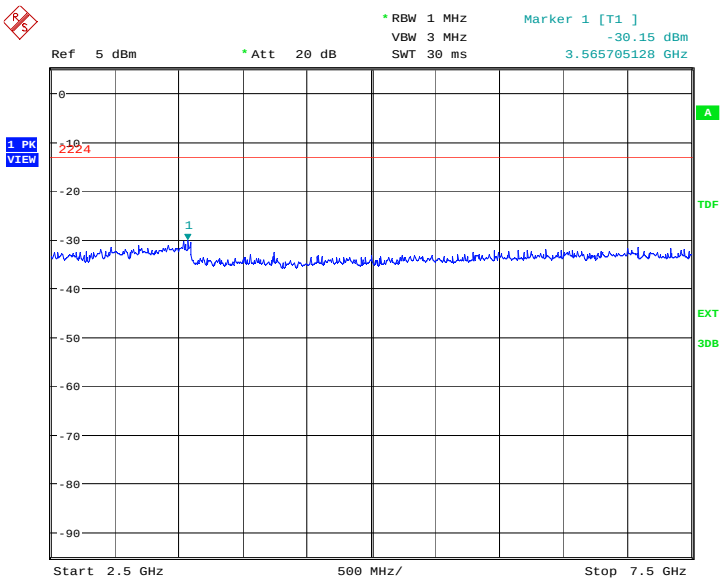
Spurious emission limit –13dBm.



Date: 15.MAY.2014 12:28:19

A. 8.3.31 Channel 4183: 2.5GHz –7.5GHz

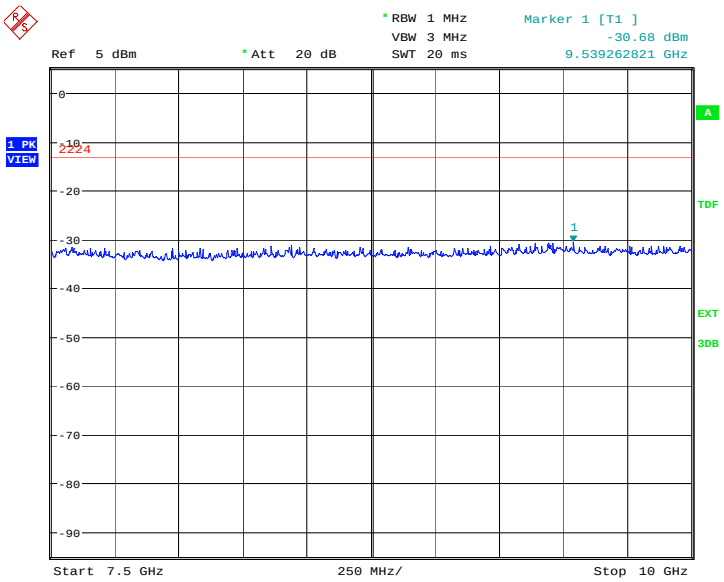
Spurious emission limit –13dBm.



Date: 15.MAY.2014 12:28:47

A. 8.3.32 Channel 4183: 7.5GHz – 10GHz

Spurious emission limit –13dBm.

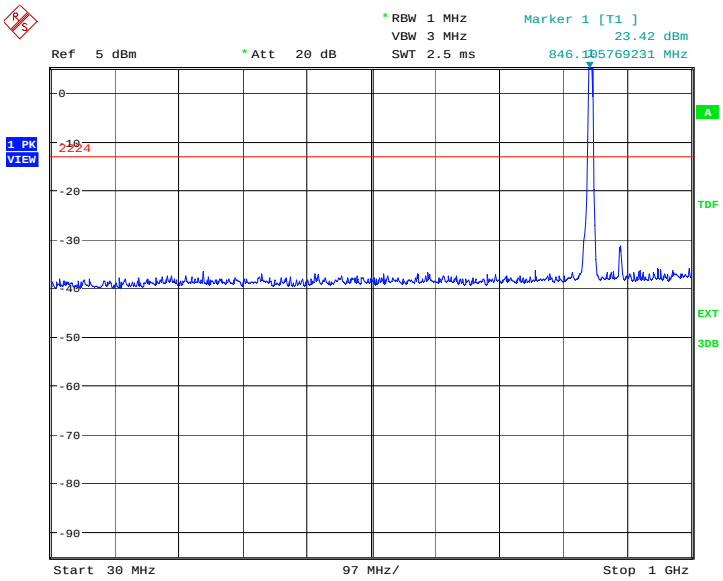


Date: 15.MAY.2014 12:29:15

A. 8.3.33 Channel 4233: 30MHz –1GHz

Spurious emission limit –13dBm.

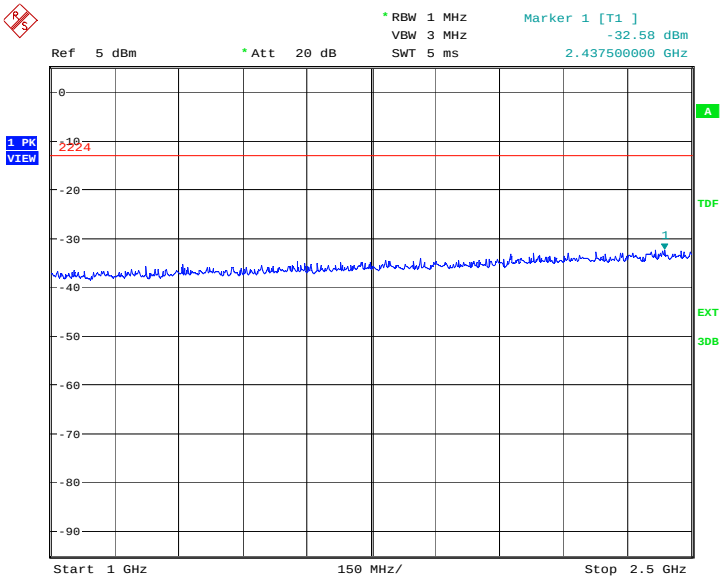
NOTE: peak above the limit line is the carrier frequency.



Date: 15.MAY.2014 12:29:46

A. 8.3.34 Channel 4233: 1GHz – 2.5GHz

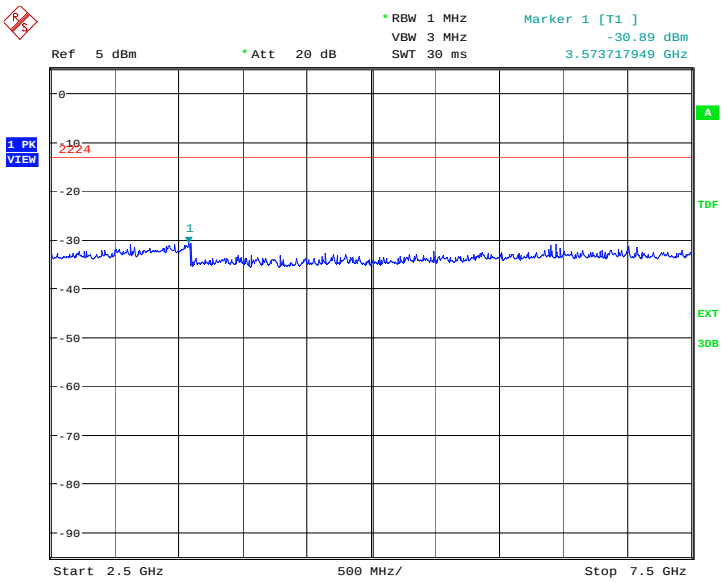
Spurious emission limit –13dBm.



Date: 15.MAY.2014 12:30:14

A. 8.3.35 Channel 4233: 2.5GHz –7.5GHz

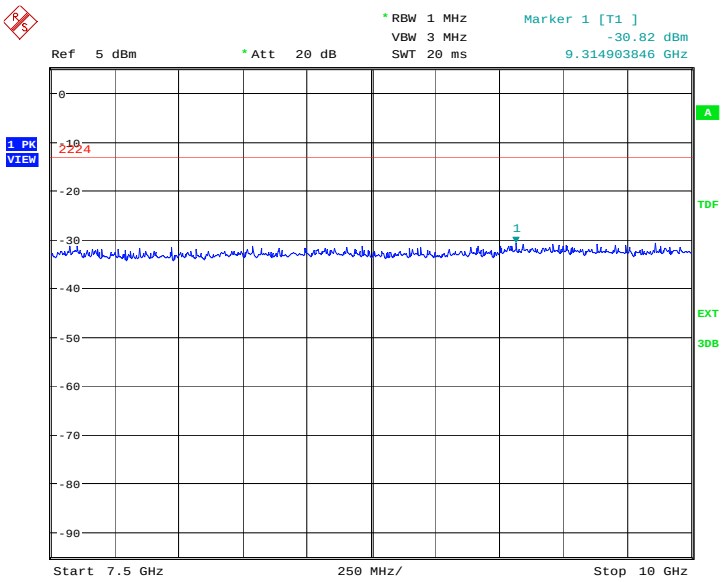
Spurious emission limit –13dBm.



Date: 15.MAY.2014 12:30:42

A. 8.3.36 Channel 4233: 7.5GHz – 10GHz

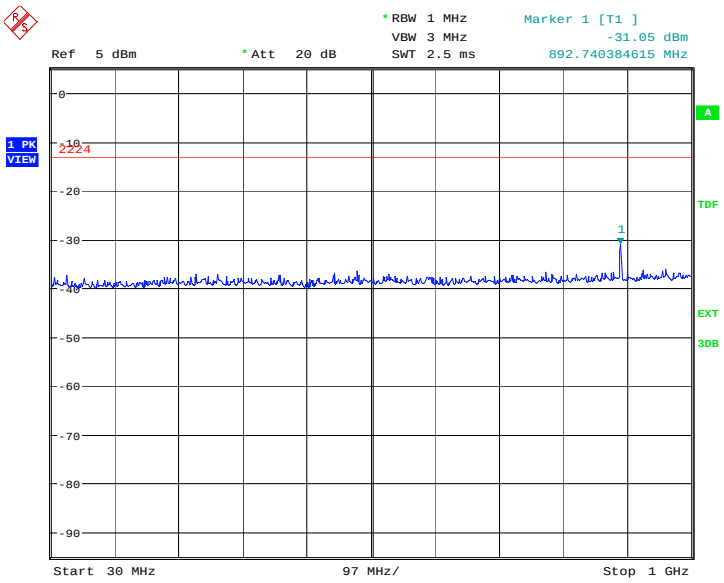
Spurious emission limit –13dBm.



Date: 15.MAY.2014 12:31:10

A. 8.3.37 Idle mode: 30MHz – 1GHz

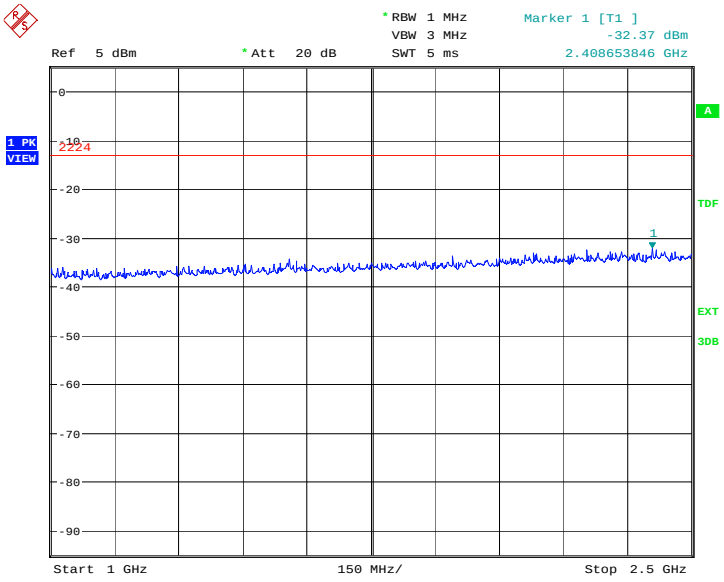
Spurious emission limit -13dBm.



Date: 15.MAY.2014 12:31:39

A.8.3.38 Idle mode: 1GHz – 2.5GHz

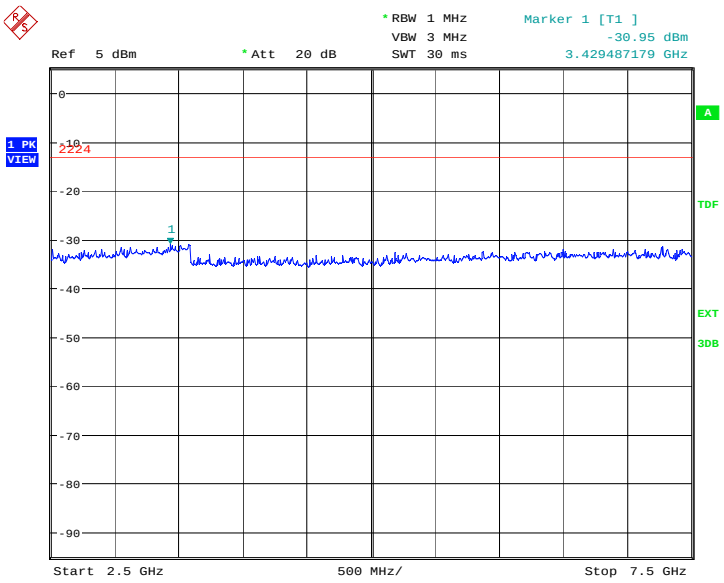
Spurious emission limit -13dBm.



Date: 15.MAY.2014 12:32:08

A.8.3.39 Idle mode: 2.5GHz – 7.5GHz

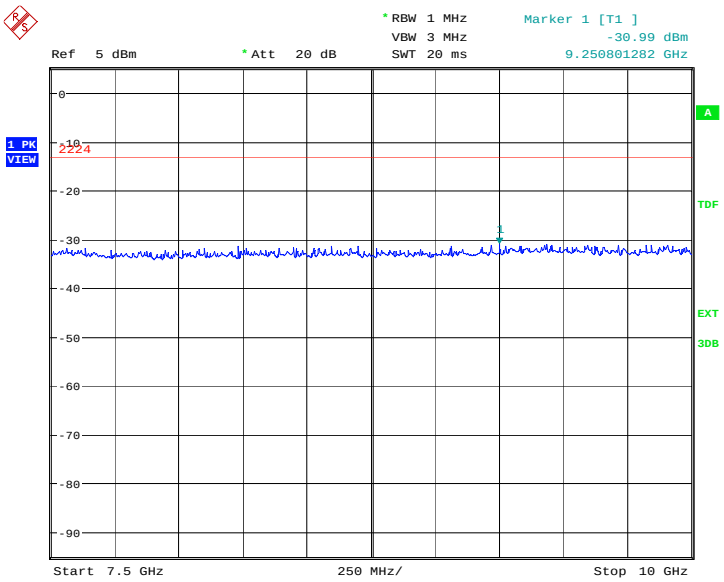
Spurious emission limit -13dBm.



Date: 15.MAY.2014 12:32:36

A.8.3.40 Idle mode: 7.5GHz – 10GHz

Spurious emission limit -13dBm.



Date: 15.MAY.2014 12:33:04

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