

FCC 47 CFR PART 27 SUBPART L

TEST REPORT

For

Zonar Connect

Model: 20081

Trade Name: ZONAR

Issued to

**Zonar Systems Inc
18200 Cascade Ave South Suite 200
Seattle Washington United States**

Issued by

**Compliance Certification Services Inc.
No.11, Wugong 6th Rd., Wugu Dist.,
New Taipei City 24891, Taiwan. (R.O.C.)
<http://www.ccsrf.com>
service@ccsrf.com
Issued Date: October 28, 2016**



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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	October 28, 2016	Initial Issue	ALL	Doris Chu

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1 TEST RESULT CERTIFICATION

Applicant: Zonar Systems Inc
 18200 Cascade Ave South Suite 200
 Seattle Washington United States

Manufacturer: First International Computer
 8F, No.300, Yang Guang St., NeiHu, Taipei, Taiwan 114

Equipment Under Test: Zonar Conneck

Model: 20081

Trade Name: ZONAR

Date of Test: September 22 ~ October 27, 2016

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR PART 27 SUBPART L	No non-compliance noted

We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in TIA/EIA-603-D:2010 and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rule FCC PART 27 Subpart L.

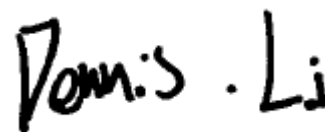
The test results of this report relate only to the tested sample identified in this report.

Approved by:



 Sam Chuang
 Manager
 Compliance Certification Services Inc.

Tested by:



 Dennis Li
 Engineer
 Compliance Certification Services Inc.

2 EUT DESCRIPTION

Product	Zonar Connect
Model Number	20081
Trade Name	ZONAR
Received Date	April 15, 2016
Power Supply	VDC from Power Adapter DARFON / B112-51(SOY-0500250US) I/P: 100-240Vac, 0.4A, 50-60Hz O/P: 5Vdc, 2.5A
Frequency Range	WCDMA / HSDPA / HSUPA Band IV: 1712.4-1752.6 MHz
Antenna Gain	Dipole Antenna WCDMA band IV: -1.78 dBi

Remark: 1. The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.
 2. For test mode WCDMA, HSUPA and HSDPA were pretest. The worst case was WCDMA in this test report

Emission Designator				
System	Band	Frequency Range(MHz)	Emission Designator (99% OBW)	Maximum EIRP (W)
WCDMA 12.2K RMC	IV	1712.4MHz ~1752.6MHz	4M13F9W	0.144

3 TEST METHODOLOGY

Both conducted and radiated testing were performed according to the procedures document on TIA/EIA-603-D: 2010 and FCC CFR 47, Part 27 Subpart L.

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2 DESCRIPTION OF TEST MODES

The EUT (model: 20081) had been tested under operating condition.

The EUT be set in maximum power transmission via call box during testing.

3.2.1 The worst mode of measurement

Radiated Emission Measurement	
Test Condition	Band edge, Emission for Unwanted and Fundamental
Voltage/Hz	120V/60Hz
Test Mode	Mode 1: Adapter Mode Mode 2: USB Charge Mode(Link mode)
Worst Mode	<input checked="" type="checkbox"/> Mode 1 <input type="checkbox"/> Mode 2
Position	<input type="checkbox"/> Placed in fixed position. <input checked="" type="checkbox"/> Placed in fixed position at X-Plane (E2-Plane) <input type="checkbox"/> Placed in fixed position at Y-Plane (E1-Plane) <input type="checkbox"/> Placed in fixed position at Z-Plane (H-Plane)

Remark: The worst mode was record in this test report.

4 INSTRUMENT CALIBRATION

4.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

4.2 MEASUREMENT EQUIPMENT USED

Equipment Used for Emissions Measurement

Remark: Each piece of equipment is scheduled for calibration

Conducted Emissions Test Site					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Spectrum Analyzer	R&S	FSV 40	101073	2015/10/04	2016/10/03
Spectrum Analyzer	R&S	FSV 40	0229	2016/05/11	2017/05/10
Communication Analyzer	Anritsu	MT-8820C	6201240043	2016/2/18	2017/2/17

Wugu 966 Chamber A					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Signal Analyzer	Agilent	E4407B	MY44212686	2016/4/9	2017/4/8
Pre-Amplifier	MITEQ	AFS44-00102 650-42-10P-4 4	1042473	2016/7/6	2017/7/5
Bilog Antenna	Sunol Sciences	JB1	A052609	2016/3/20	2017/3/21
Horn Antenna	SCHWARZBECK	BBHA 9120D	779	2016/3/9	2017/3/8
Pre-Amplifier	MITEQ	AMF-6F-2604 00-40-8P	985646	2016/1/14	2017/1/13
Horn Antenna	EMCO	3116	26370	2016/1/15	2017/1/14
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R
Communication Analyzer	Anritsu	MT-8820C	6201240043	2016/2/18	2017/2/17
Software	EZ-EMC (CCS-3A1RE)				

4.3 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
Powerline Conducted Emission	+/-1.2159
3M Semi Anechoic Chamber / 30M~200M	+/-4.0138
3M Semi Anechoic Chamber / 200M~1000M	+/-3.9483
3M Semi Anechoic Chamber / 1G~8G	+/-2.5975
3M Semi Anechoic Chamber / 8G~18G	+/-2.6112
3M Semi Anechoic Chamber / 18G~26G	+/-2.7389
3M Semi Anechoic Chamber / 26G~40G	+/-2.9683

Remark: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

5 FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

- No.199, Chungsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.
Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029
- No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)
Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045
- No.81-1, Lane 210, Bade 2nd Rd., Luchu Hsiang, Taoyuan Hsien 338, Taiwan
Tel: 886-3-324-0332 / Fax: 886-3-324-5235

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10: 2013 and CISPR Publication 22.

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.




Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

5.3 LABORATORY ACCREDITATIONS AND LISTING

The test facilities used to perform radiated and conducted emissions tests are accredited by American Association for Laboratory Accreditation Program for the specific scope accreditation under Lab Code: 0824-01 to perform Electromagnetic Interference tests according to FCC Part 15 and CISPR 22 requirements. In addition, the test facilities are listed with Industry Canada, Certification and Engineering Bureau, IC 2324G-1 for 3M Semi Anechoic Chamber A, 2324G-2 for 3M Semi Anechoic Chamber B.

5.4 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3M Semi Anechoic Chamber (FCC MRA: TW1039) to perform FCC Part 15 measurements	
Taiwan	TAF	LP0002, RTTE01, FCC Method-47 CFR Part 15 Subpart C, D, E, RSS-210, RSS-310 IDA TS SRD, AS/NZS 4268, AS/NZS 4771, TS 12.1 & 12.2, ETSI EN 300 440-1, ETSI EN 300 440-2, ETSI EN 300 328, ETSI EN 300 220-1, ETSI EN 300 220-2, ETSI EN 301 893, ETSI EN 301 489-1/3/7/17 FCC OET Bulletin 65 + Supplement C, EN 50360, EN 50361, EN 50371, RSS 102, EN 50383, EN 50385, EN 50392, IEC 62209, CNS 14958-1, CNS 14959 FCC Method -47 CFR Part 15 Subpart B IEC / EN 61000-3-2, IEC / EN 61000-3-3, IEC / EN 61000-4-2/3/4/5/6/8/11	
Canada	Industry Canada	3M Semi Anechoic Chamber (IC 2324G-1 / IC 2324G-2) to perform	

** No part of this report may be used to claim or imply product endorsement by A2LA or any agency of the US Government.*

6 SETUP OF EQUIPMENT UNDER TEST

6.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix II for the actual connections between EUT and support equipment.

6.2 SUPPORT EQUIPMENT

No	Equipment	Brand	Model	Series No.	FCC ID	Data Cable	Power Cord
1	Zonar Connect Dock	ZONAR	20082	N/A	N/A	N/A	N/A

Remark:

1. *All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.*
2. *Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.*

7 FCC PART 27 REQUIREMENTS

7.1 AVERAGE POWER

LIMIT

For reporting purposes only.

Test Procedures

CONDUCTED POWER MEASUREMENT:

1. The transmitter output power was connected to the call box.
2. Set EUT at maximum output power via call box.
3. Set Call box at lowest, middle and highest channels for each band and modulation.

TEST RESULTS

No non-compliance noted.

WCDMA 12.2K RMC

Band	Mode	Frequency (MHz)	CH	AVG Power (dBm)	Output Power (W)
IV	WCDMA 12.2K RMC	1712.4	1312	23.1	0.204
		1732.6	1413	22.7	0.186
		1752.6	1513	23.2	0.209

HSDPA

Band	Mode	Frequency (MHz)	CH	AVG Power (dBm)	Output Power (W)
IV	Subtest 1	1712.4	1312	23.0	0.200
		1732.6	1413	22.6	0.182
		1752.6	1513	23.0	0.200
	Subtest 2	1712.4	1312	22.8	0.191
		1732.6	1413	22.4	0.174
		1752.6	1513	22.8	0.191
	Subtest 3	1712.4	1312	22.4	0.174
		1732.6	1413	22.0	0.159
		1752.6	1513	22.4	0.174
	Subtest 4	1712.4	1312	22.4	0.174
		1732.6	1413	22.0	0.159
		1752.6	1513	22.3	0.170

HSUPA

Band	Mode	Frequency (MHz)	CH	AVG Power (dBm)	Output Power (W)
IV	Subtest 1	1712.4	1312	23.0	0.200
		1732.6	1413	22.6	0.182
		1752.6	1513	23.0	0.200
	Subtest 2	1712.4	1312	21.5	0.141
		1732.6	1413	21.1	0.129
		1752.6	1513	21.4	0.138
	Subtest 3	1712.4	1312	22.4	0.174
		1732.6	1413	22.0	0.159
		1752.6	1513	22.3	0.170
	Subtest 4	1712.4	1312	21.4	0.138
		1732.6	1413	21.1	0.129
		1752.6	1513	21.4	0.138
	Subtest 5	1712.4	1312	23.0	0.200
		1732.6	1413	22.6	0.182
		1752.6	1513	23.0	0.200

Remark: The value of factor includes both the loss of cable and external attenuator

7.2 ERP & EIRP MEASUREMENT

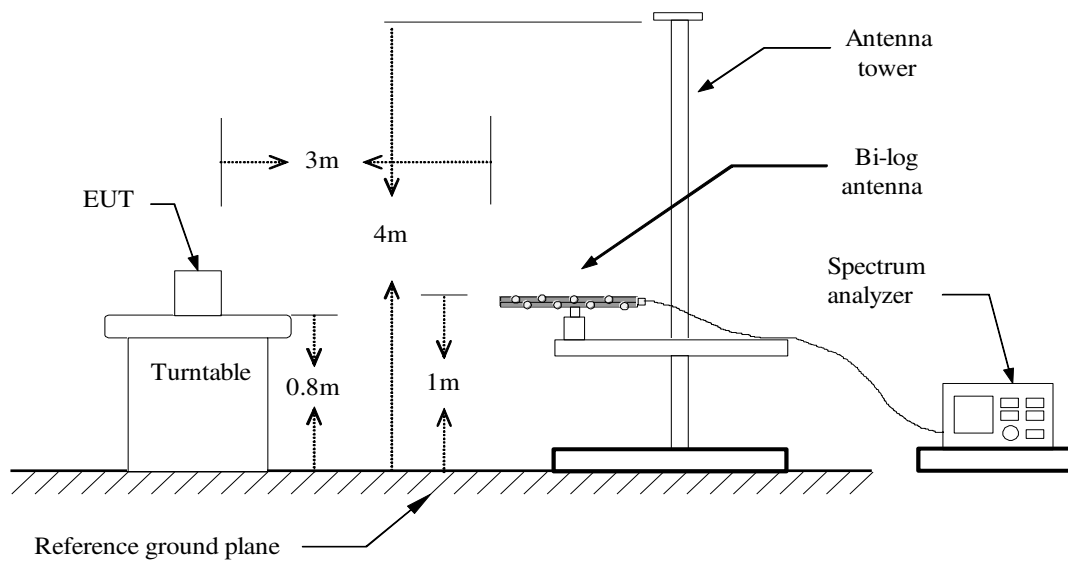
LIMIT

FCC Part 27.50(d)(4)

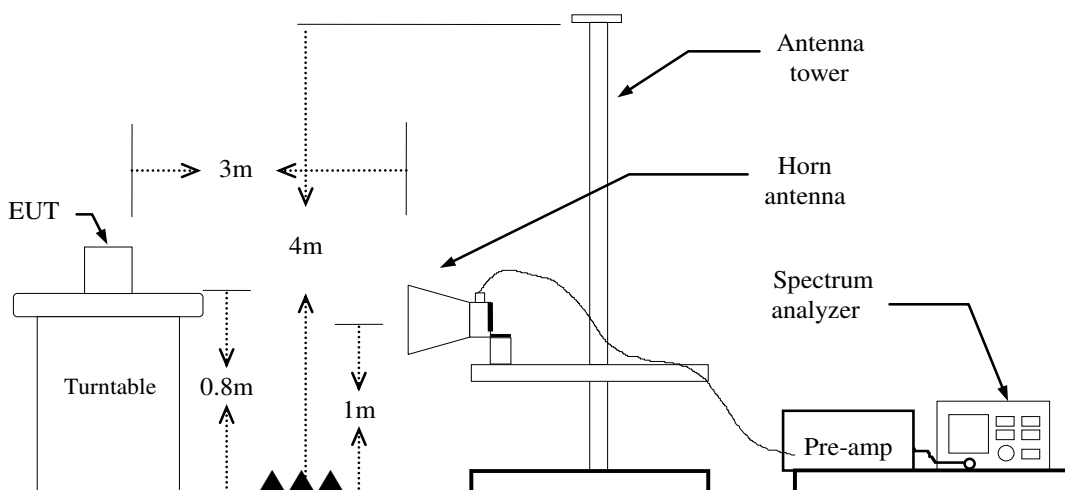
Fixed, mobile, and portable (handheld) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

Test Configuration

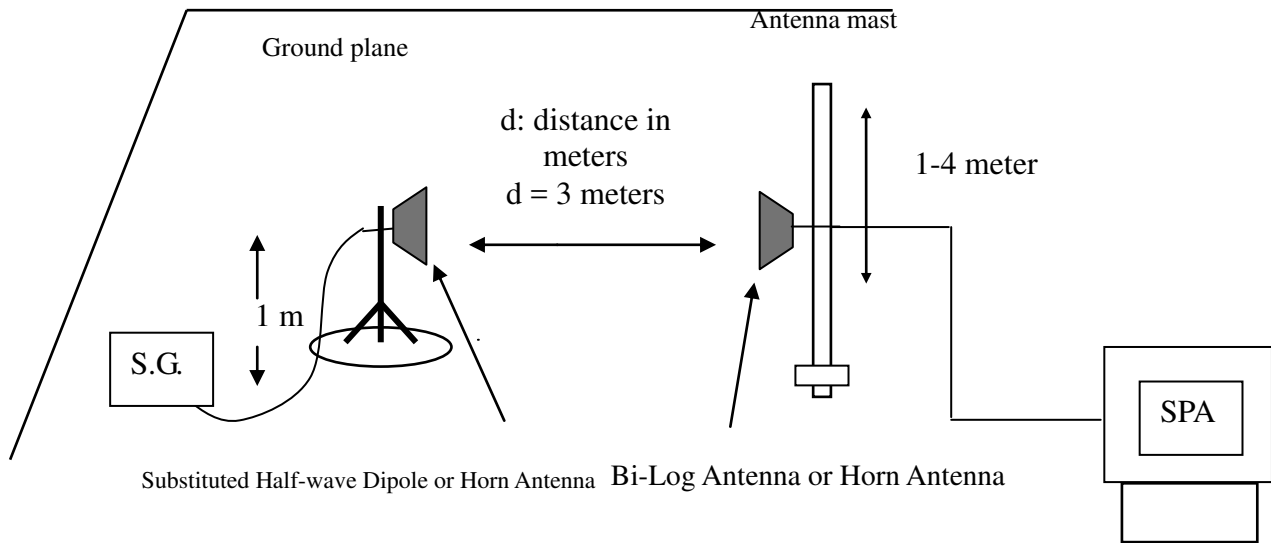
Below 1 GHz



Above 1 GHz



For Substituted Method Test Set-UP



TEST PROCEDURE

1. The EUT was placed on a non-conductive rotating platform (0.8m for below 1G above 1G) in a semi-chamber. The radiated emission at the fundamental frequency was measured at 3m and SA with RMS detector per section 5, KDB 971168 D01.
2. During the measurement, the call box parameters were set to get the maximum output power of the EUT. The maximum emission was recorded from spectrum analyzer power level (LVL) from 360 degrees rotation of turntable and the test antenna raised and lowered over a range from 1m to 4m in both horizontally and vertically polarized orientations.
3. EIRP was measured method according to TIA/EIA-603-D:2010. The EUT was replaced by the substitution antenna at same location, and then record the maximum Analyzer reading through raised and lowered the test antenna.

ERP = S.G. output (dBm) + Antenna Gain (dBd) – Cable (dB)
 EIRP = S.G. output (dBm) + Antenna Gain (dBi) – Cable (dB)

TEST RESULTS

No non-compliance noted.

WCDMA 12.2K RMC

Test Mode	Channel	Vertical		Horizontal	
		EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
WCDMA 12.2K RMC (Band IV)	Lowest	21.52	0.142	19.93	0.098
	Middle	21.13	0.130	19.18	0.083
	Highest	21.58	0.144	19.05	0.080

7.3 OCCUPIED BANDWIDTH MEASUREMENT LIMIT

For Reporting purpose only.

TEST PROCEDURE

KDB 971168 v02r02 - Section 4.2

1. The occupied bandwidth was measured with the spectrum analyzer at the lowest, middle and highest channels in each band and different modulation. The 99% and -26dB bandwidth was measured and recorded.
2. RBW = 1-5% of the expected OBW
3. VBW \geq 3 x RBW
4. Detector = Peak
5. Trace mode = max. hold

TEST RESULTS

No non-compliance noted

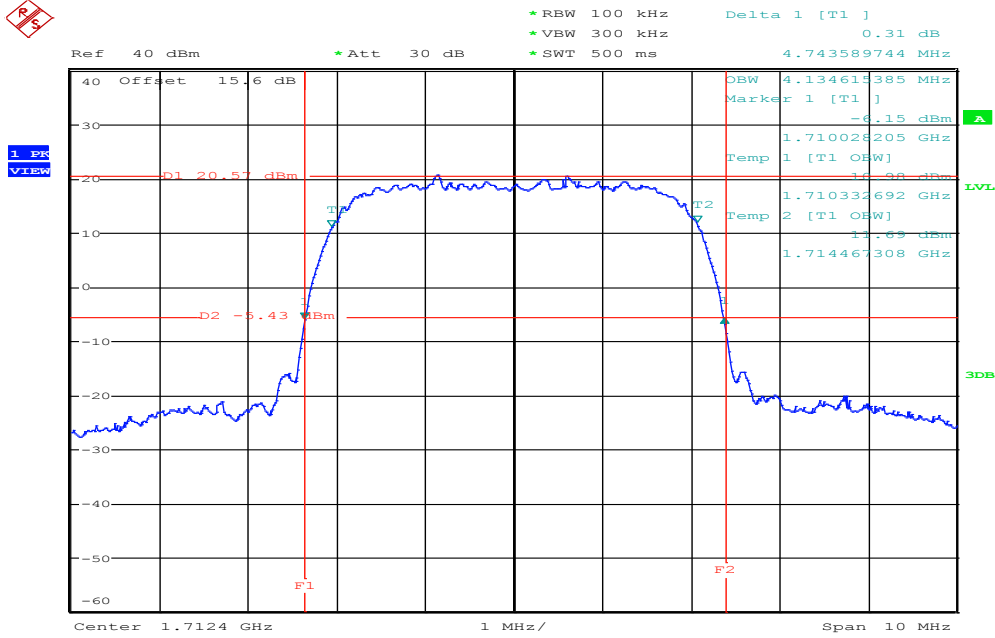
Test Data

Test Mode	Channel	99% Bandwidth (MHz)	26 dB Bandwidth (MHz)
WCDMA 12.2K RMC (Band IV)	Lowest	4.1346	4.7435
	Middle	4.1346	4.7276
	Highest	4.1346	4.7276

Test Plot

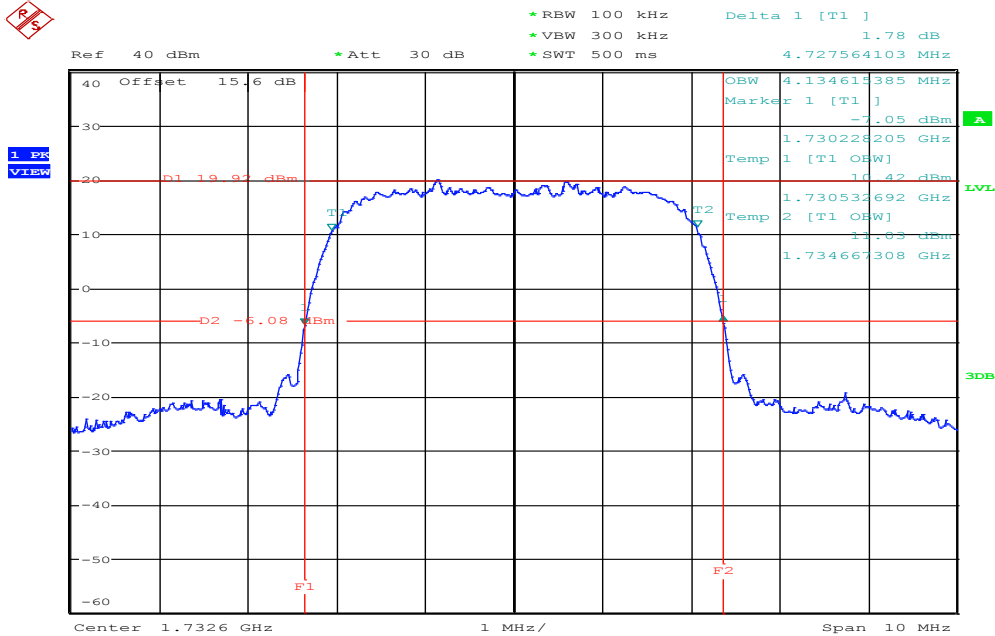
WCDMA 12.2K RMC (BAND IV)

Low CH



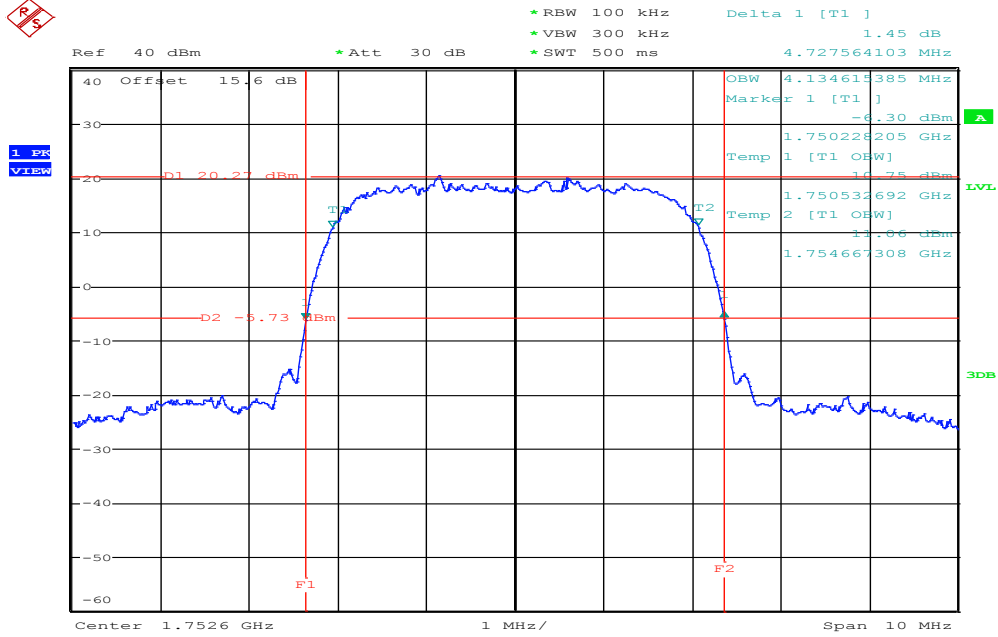
Date: 27.OCT.2016 22:42:53

Mid CH



Date: 27.OCT.2016 22:46:56

High CH



Date: 27.OCT.2016 22:49:29

7.4 CONDUCTED BAND EDGE MEASUREMENT

LIMIT

FCC §27.53 (h)

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10} (P)$ dB.

TEST PROCEDURE

According to KDB 971168 D01, section 6.0

1. The EUT was connected to spectrum analyzer and call box.
2. The RF output of EUT was connected to the spectrum analyzer.
3. Start and stop frequency were set such that the band edge would be placed in the center of the plot
4. Span was set large enough so as to capture all out of band emissions near the band edge
5. Set the spectrum analyzer, RBW=100kHz, VBW=300kHz.
6. Record the Band edge emission.

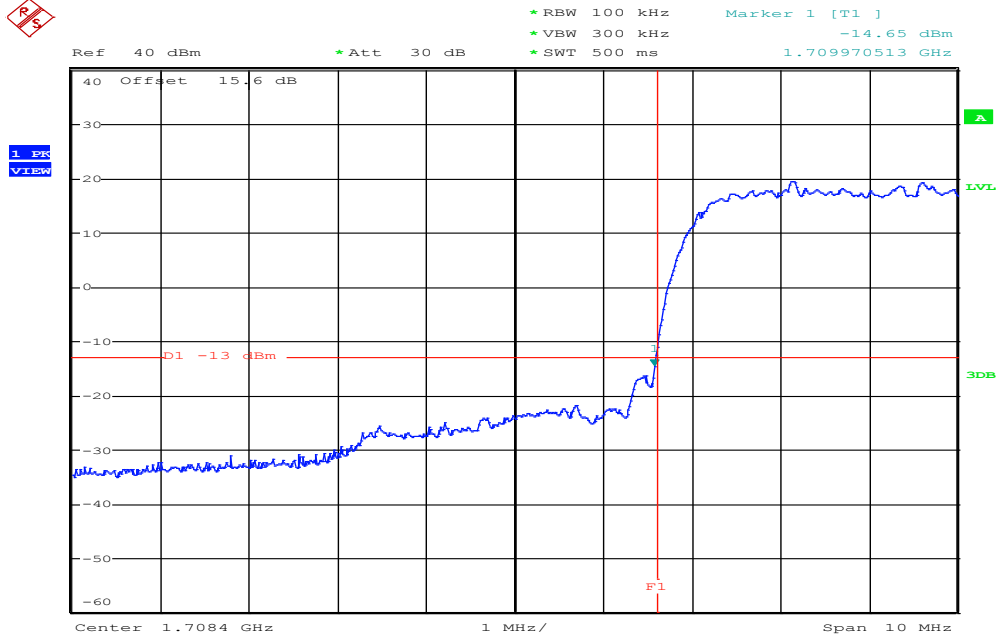
TEST RESULTS

No non-compliance noted.

Test Data

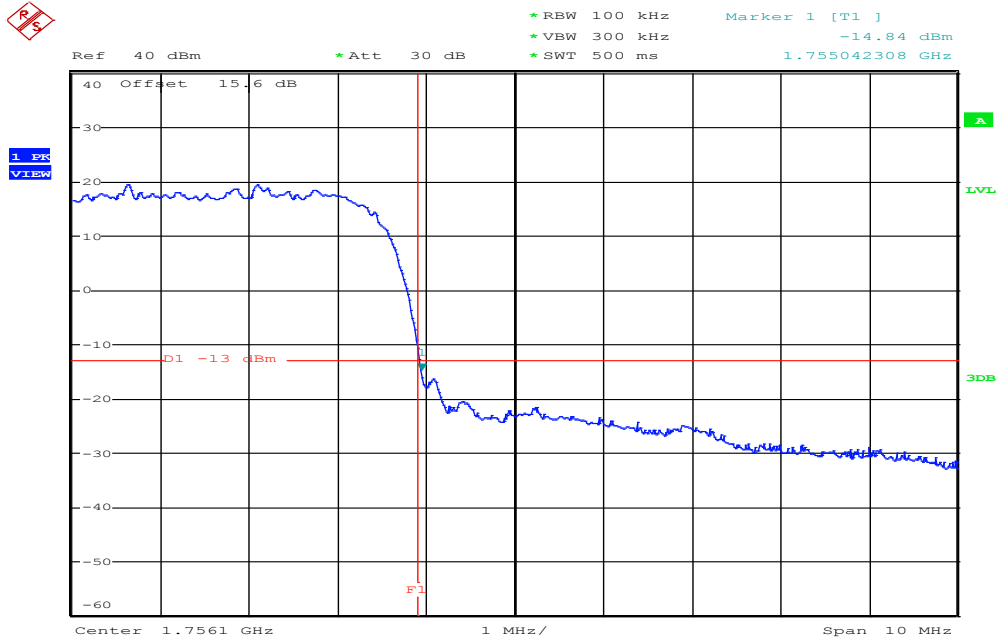
WCDMA 12.2K RMC (BAND IV)

Low CH



Date: 22.SEP.2016 13:36:46

High CH



Date: 22.SEP.2016 13:33:50

7.5 CONDUCTED SPURIOUS EMISSIONS

LIMIT

FCC §27.53 (h)

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10} (P)$ dB.

TEST PROCEDURE

According to KDB 971168 D01, section 6.0

1. The EUT was connected to spectrum analyzer and call box.
2. The RF output of EUT was connected to the spectrum analyzer.
3. Set the spectrum analyzer, RBW=1MHz, VBW=3MHz.
4. Record the maximum spurious emission.
5. The fundamental frequency should be excluded against the limit in operating band.

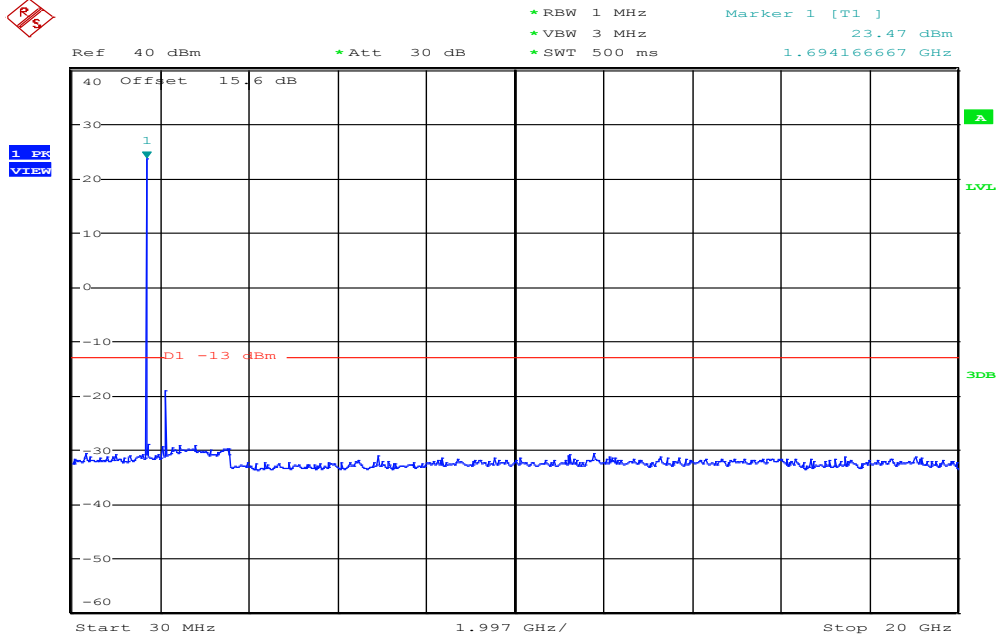
TEST RESULTS

No non-compliance noted.

Test Data

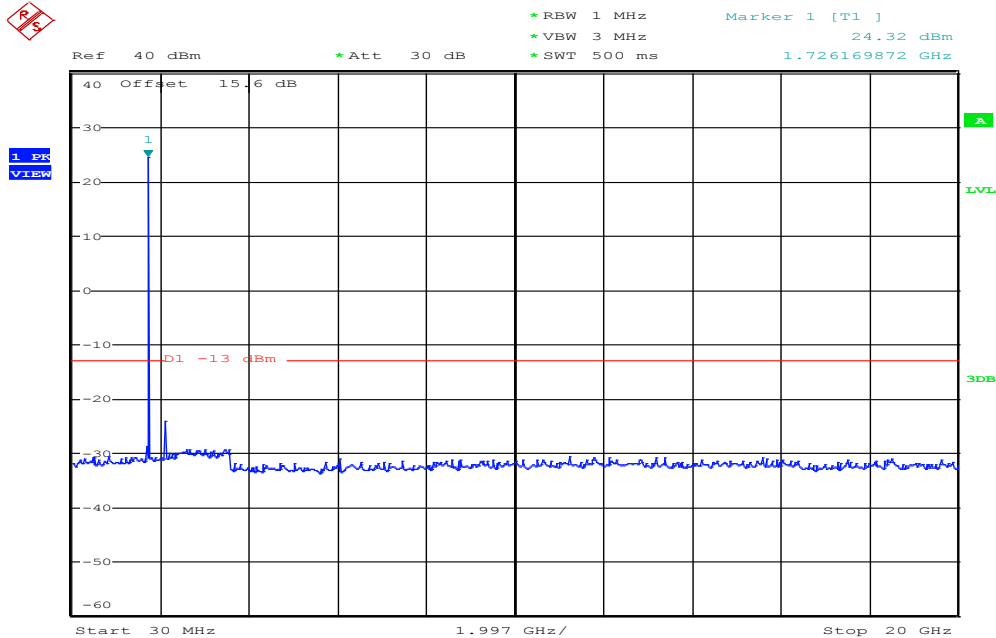
WCDMA 12.2K RMC (BAND IV)

Low CH



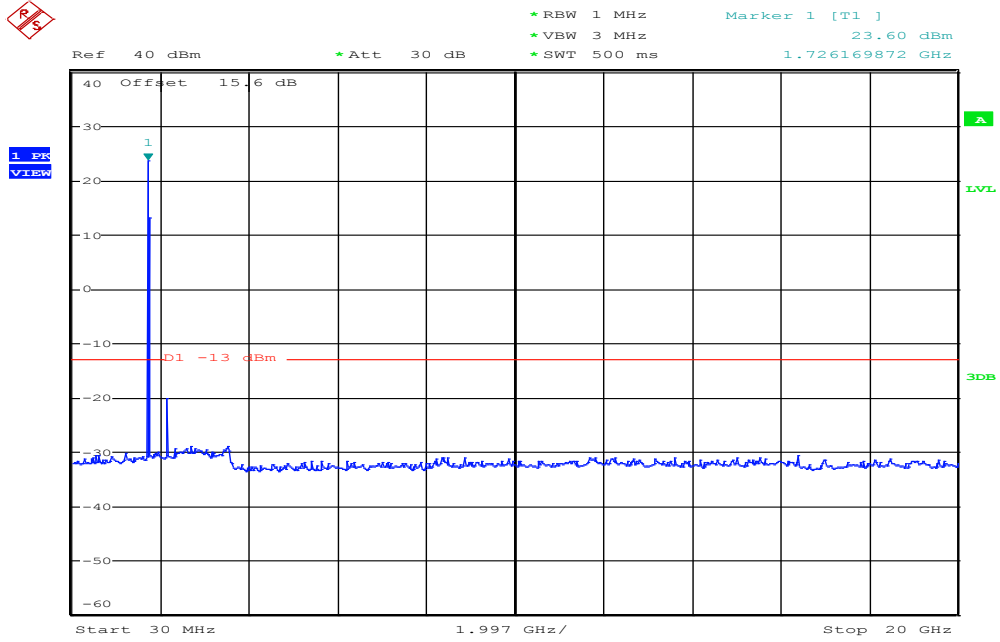
Date: 22.SEP.2016 13:27:20

Mid CH



Date: 22.SEP.2016 13:25:55

High CH



Date: 22.SEP.2016 13:24:00

7.6 SPURIOUS RADIATION MEASUREMENT

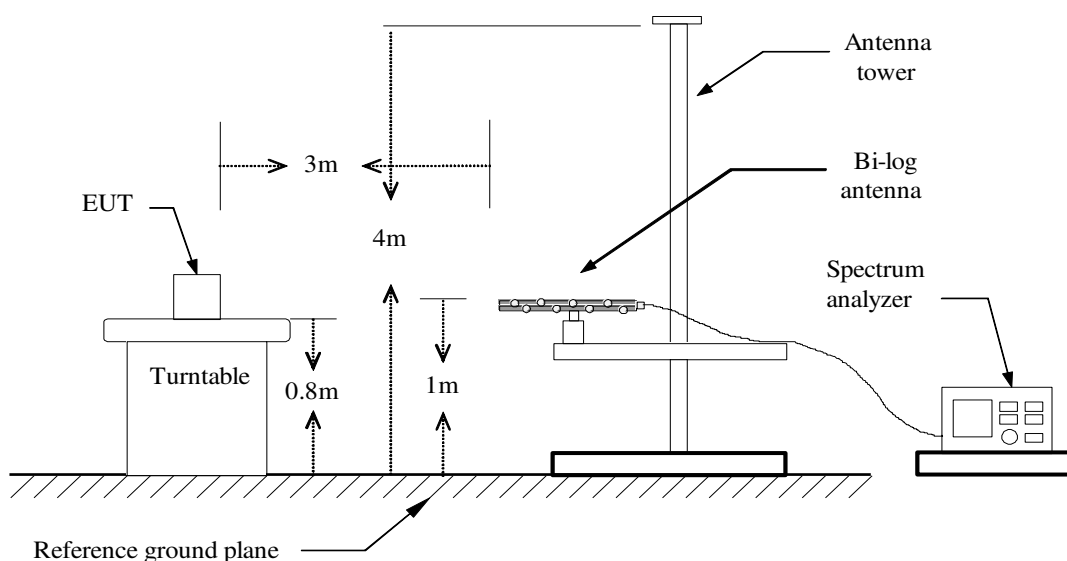
LIMIT

FCC §27.53 (h)

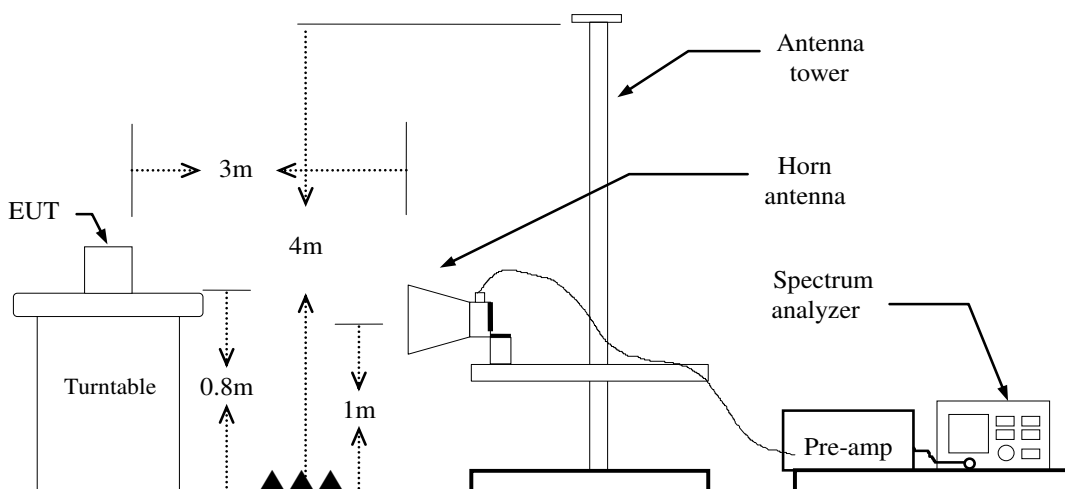
The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10} (P)$ dB.

Test Configuration

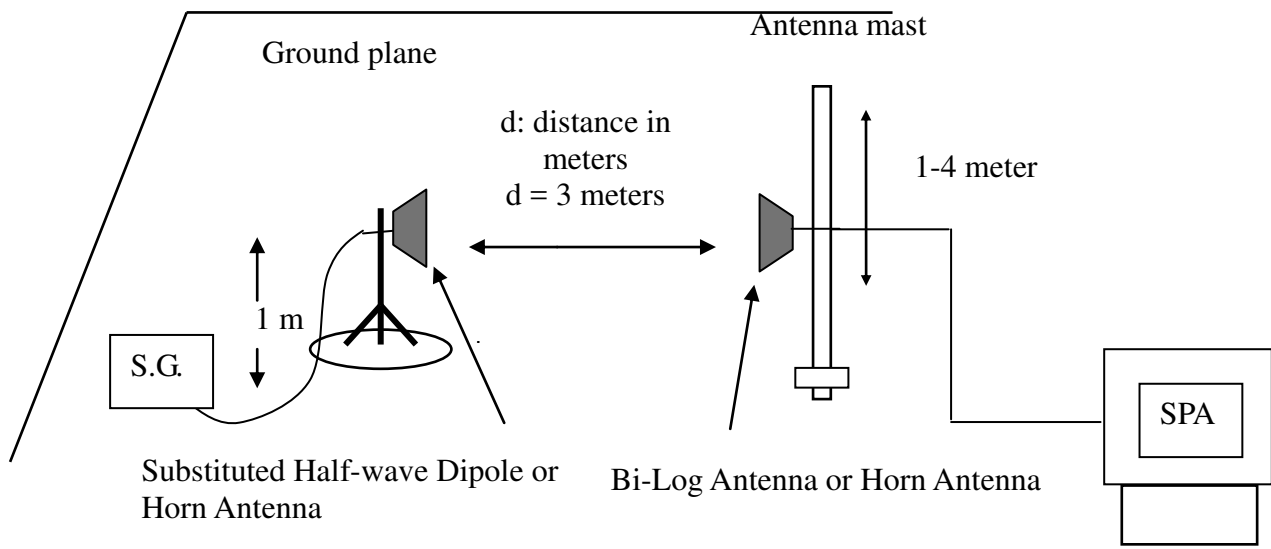
Below 1 GHz



Above 1 GHz



Substituted Method Test Set-up



TEST PROCEDURE

1. According to KDB 971168 D01. section 5.8 and TIA-603-D:2010 section 2.2.12.
2. The EUT was placed on a turntable
 - (1) Below 1G : 0.8m
 - (2) Above 1G : 0.8m
 - (3) EUT set 3m from the receiving antenna
 - (4) The table was rotated 360 degrees of the highest spurious emission to determine the position.
3. Set the spectrum analyzer , RBW=1MHz, VBW=3MHz.
4. A horn antenna was driven by a signal generator.
5. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission

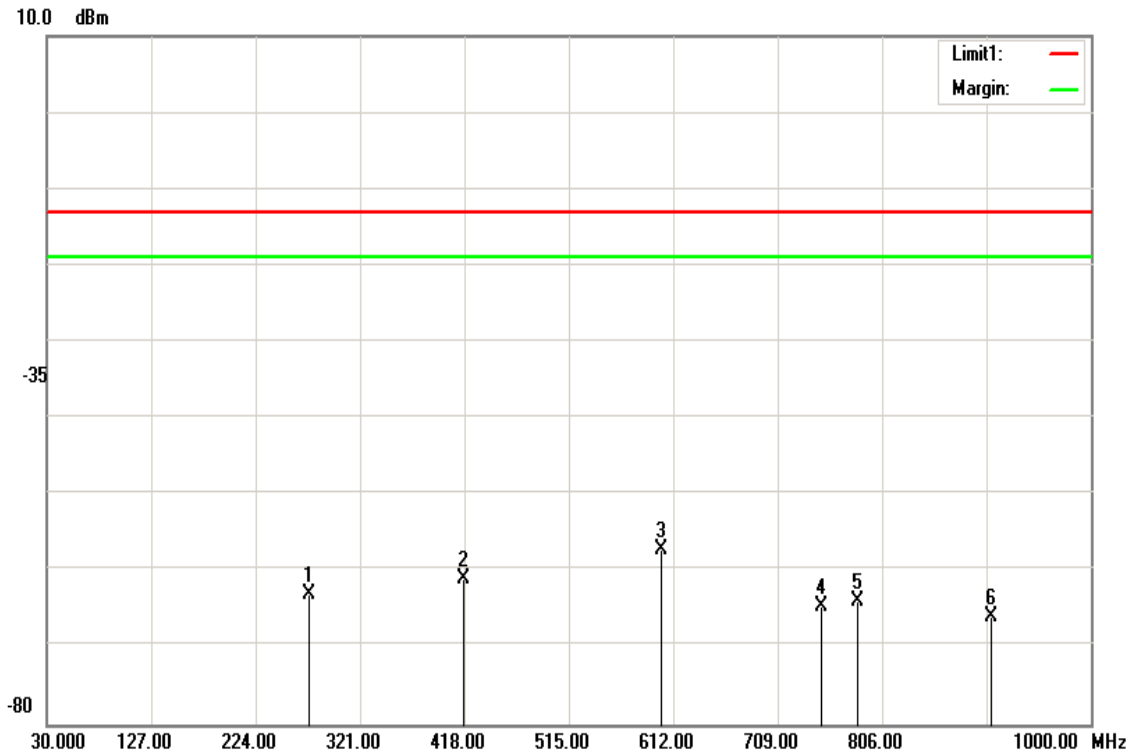
$$\text{ERP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBd)} - \text{Cable (dB)}$$

$$\text{EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable (dB)}$$

TEST RESULTS

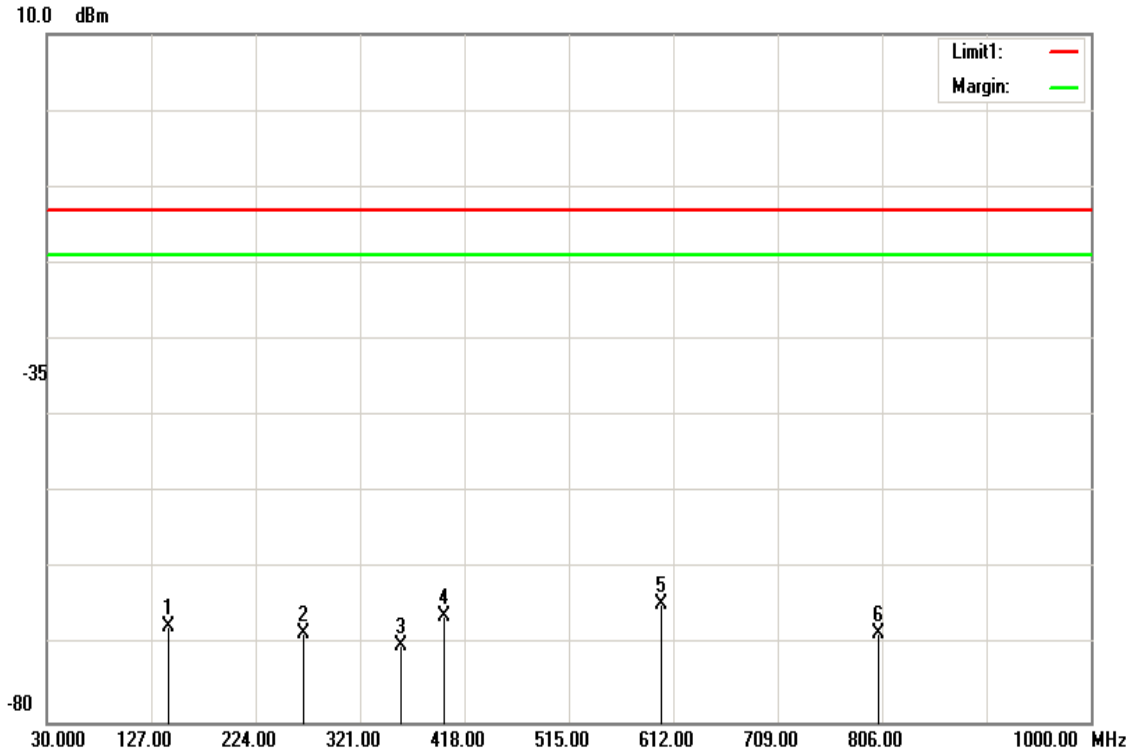
Refer to the attached tabular data sheets.

Operation Mode: WCDMA 12.2k RMC Band IV / TX /Mid CH **Test Date:** September 23, 2016
Temperature: 22.6°C **Tested by:** Dennis Li
Humidity: 57.2 % RH **Polarity:** Ver.



Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
273.4700	-80.14	1.75	18.87	-63.02	-13.00	-50.02	V
417.0300	-80.52	2.15	21.67	-61.00	-13.00	-48.00	V
600.3600	-78.97	2.59	24.41	-57.15	-13.00	-44.15	V
749.7400	-88.31	2.89	26.7	-64.50	-13.00	-51.50	V
782.7200	-87.95	2.96	27.03	-63.88	-13.00	-50.88	V
907.8500	-90.98	3.18	28.18	-65.98	-13.00	-52.98	V

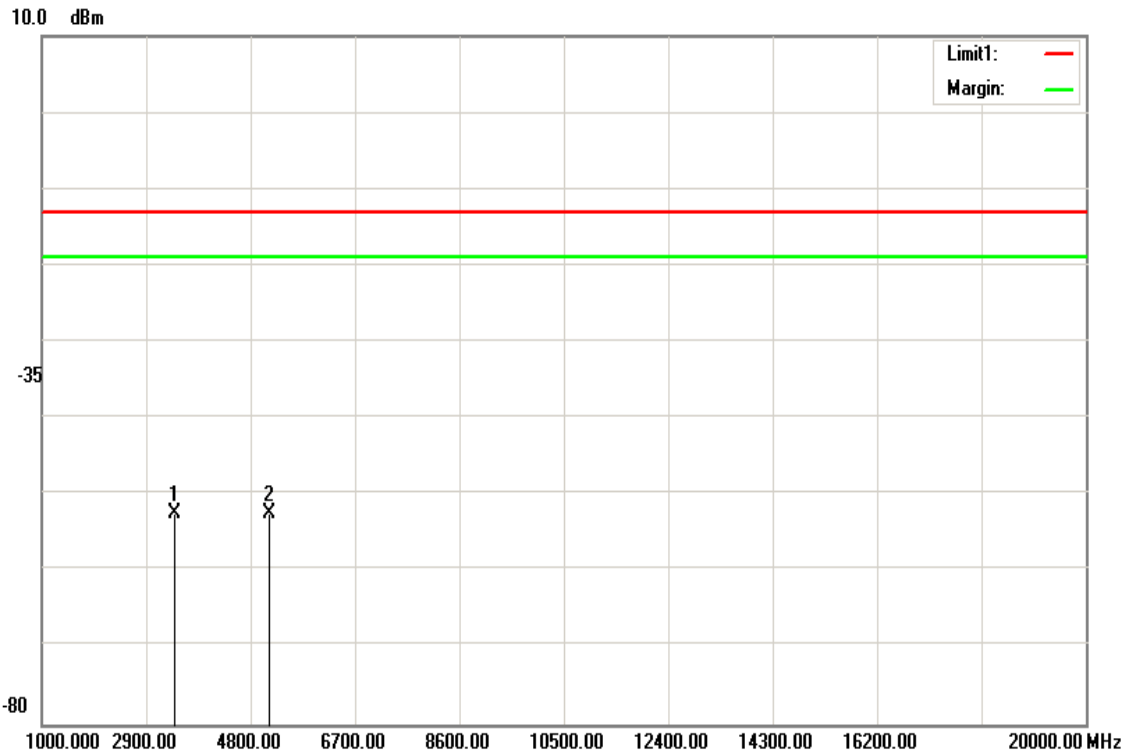
Operation Mode: WCDMA 12.2k RMC Band IV / TX /Mid CH **Test Date:** September 23, 2016
Temperature: 22.6°C **Tested by:** Dennis Li
Humidity: 57.2 % RH **Polarity:** Hor.



Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
143.4900	-84.55	1.28	18.33	-67.50	-13.00	-54.50	H
268.6200	-85.32	1.74	18.66	-68.40	-13.00	-55.40	H
358.8300	-88.42	2	20.48	-69.94	-13.00	-56.94	H
399.5700	-85.26	2.11	21.29	-66.08	-13.00	-53.08	H
600.3600	-86.5	2.59	24.41	-64.68	-13.00	-51.68	H
803.0900	-92.75	3	27.23	-68.52	-13.00	-55.52	H

Above 1GHz

Operation Mode: WCDMA 12.2k RMC Band IV / TX /Low CH **Test Date:** September 26, 2016
Temperature: 22.6°C **Tested by:** Dennis Li
Humidity: 57.2 % RH **Polarity:** Ver.

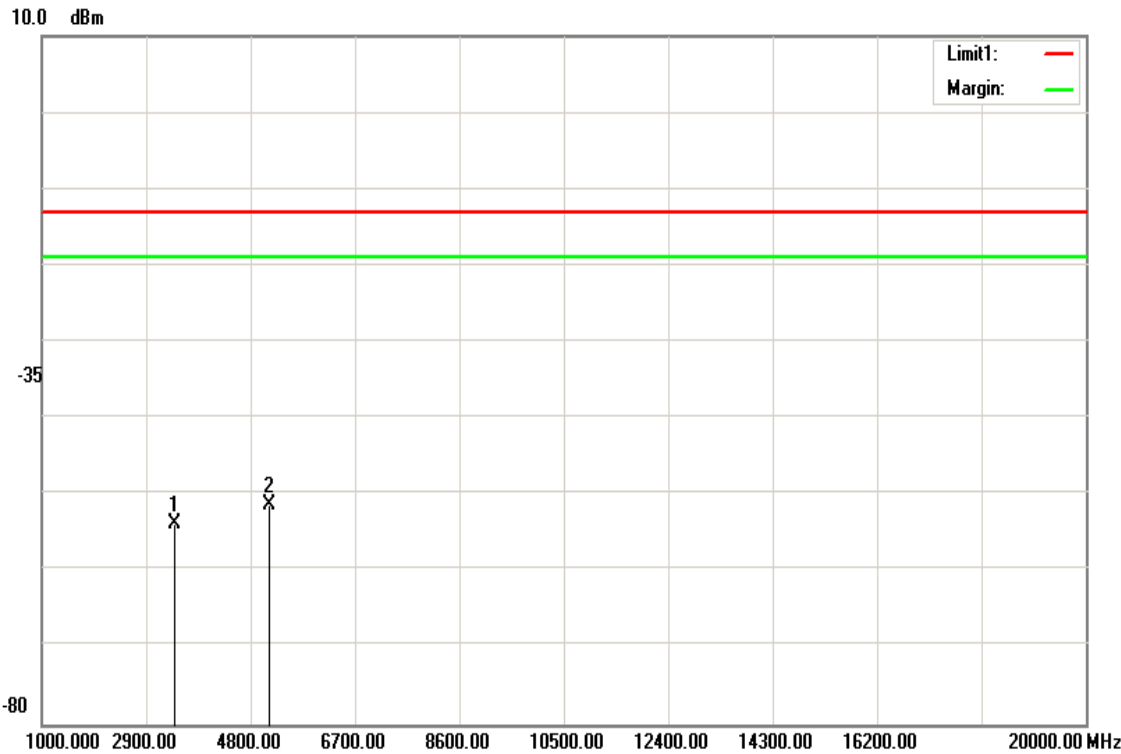


Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3424.000	-58.08	6.61	12.3	-52.39	-13.00	-39.39	V
5137.000	-56.85	8.26	12.61	-52.50	-13.00	-39.50	V
N/A							

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Operation Mode: WCDMA 12.2k RMC Band IV / TX /Low CH **Test Date:** September 26, 2016
Temperature: 22.6°C **Tested by:** Dennis Li
Humidity: 57.2 % RH **Polarity:** Hor.

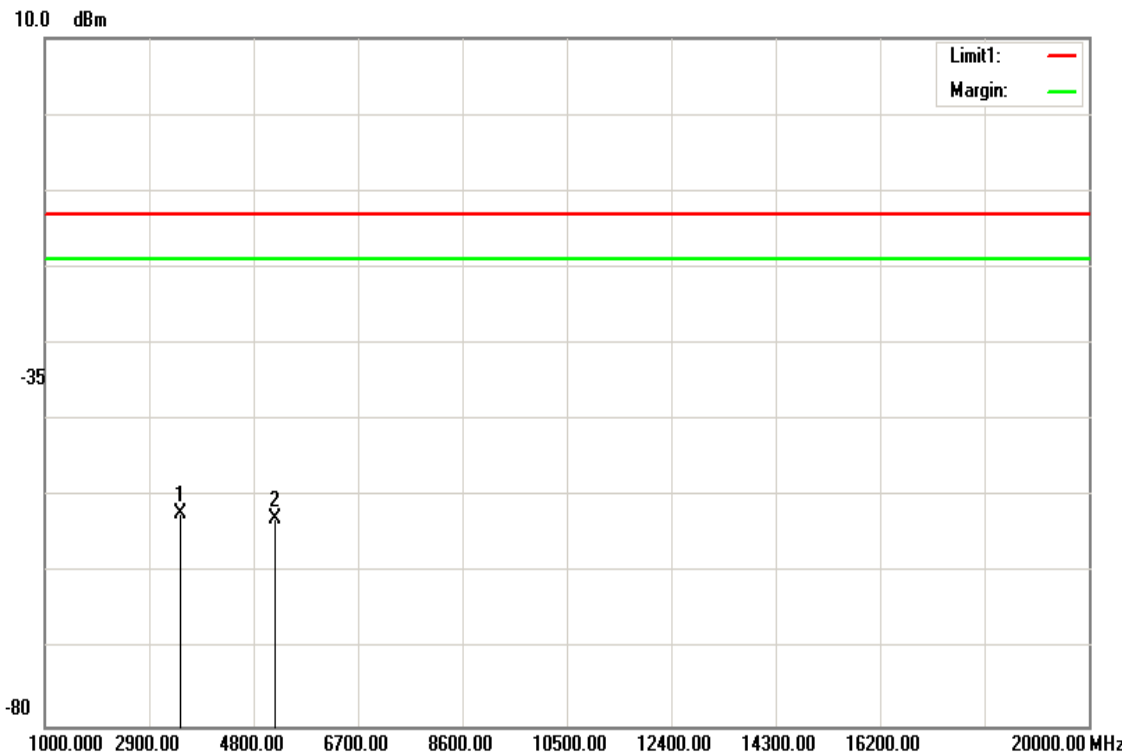


Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3424.000	-59.54	6.61	12.3	-53.85	-13.00	-40.85	H
5137.000	-55.72	8.26	12.61	-51.37	-13.00	-38.37	H
N/A							

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Operation Mode: WCDMA 12.2k RMC Band IV / TX/Mid CH **Test Date:** September 26, 2016
Temperature: 22.6°C **Tested by:** Dennis Li
Humidity: 57.2 % RH **Polarity:** Ver.



Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3465.000	-58.04	6.65	12.41	-52.28	-13.00	-39.28	V
5197.000	-57.25	8.31	12.66	-52.90	-13.00	-39.90	V
N/A							

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

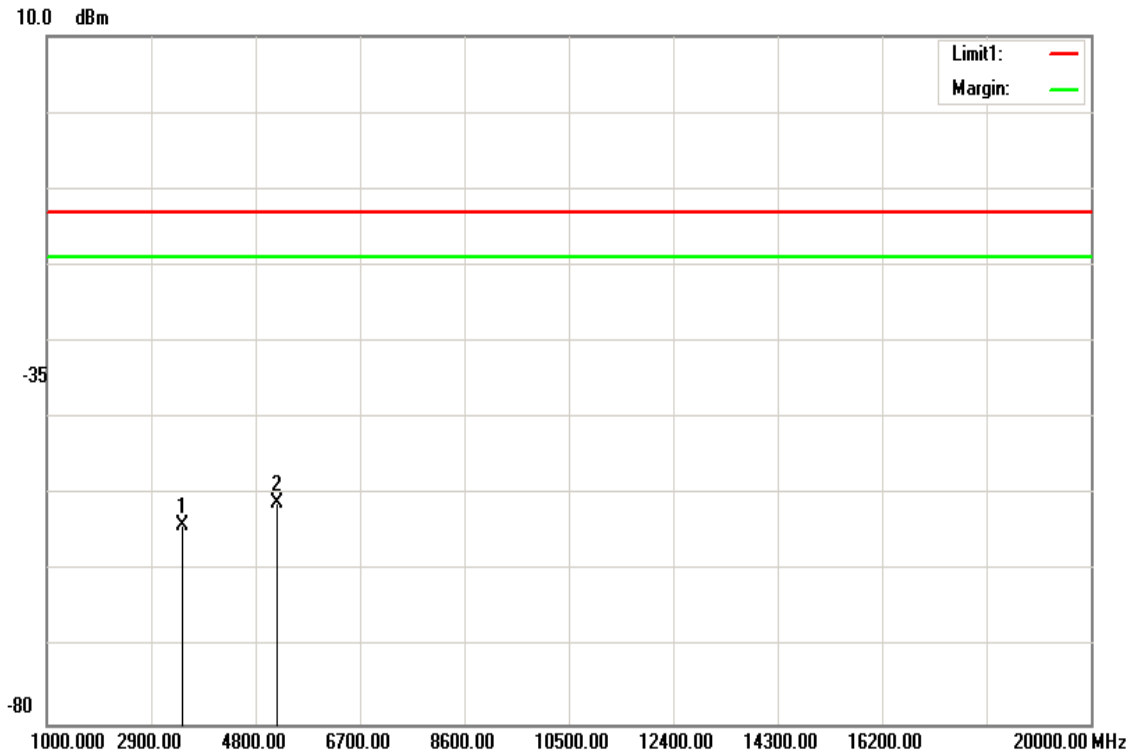
Operation Mode: WCDMA 12.2k RMC Band IV / TX/Mid CH **Test Date:** September 26, 2016

Temperature: 22.6°C

Tested by: Dennis Li

Humidity: 57.2 % RH

Polarity: Hor.

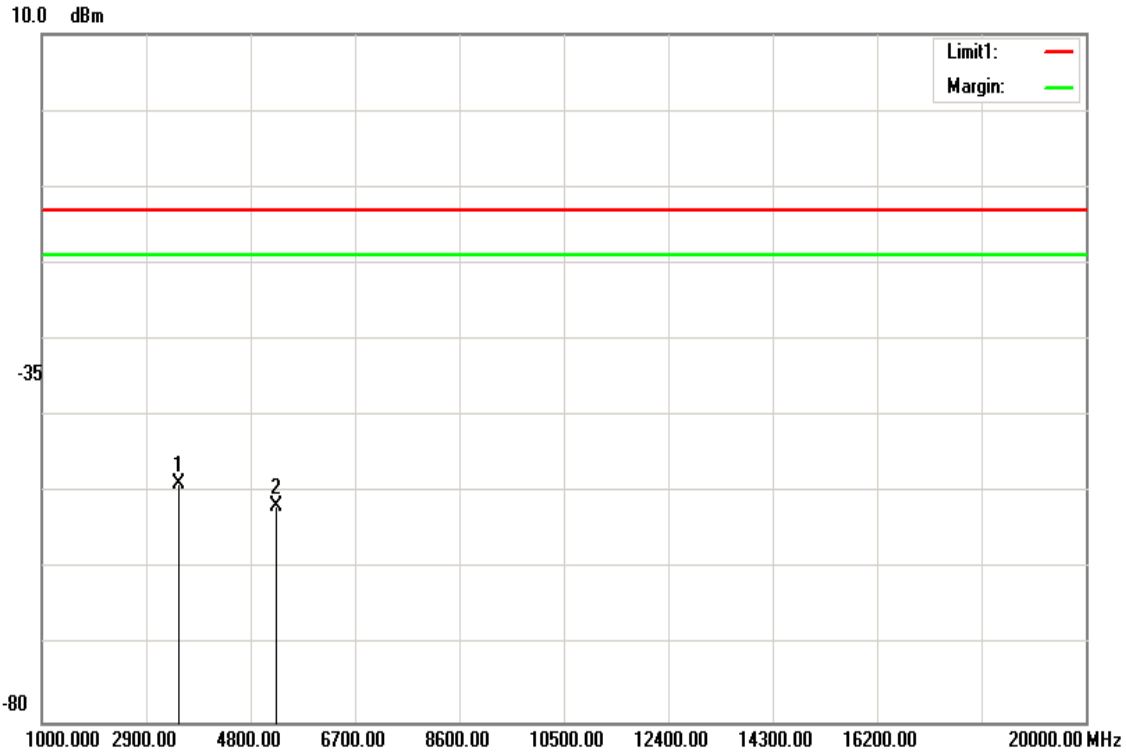


Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3465.000	-59.72	6.65	12.41	-53.96	-13.00	-40.96	H
5197.000	-55.5	8.31	12.66	-51.15	-13.00	-38.15	H
N/A							

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Operation Mode: WCDMA 12.2k RMC Band IV / TX /High CH **Test Date:** September 26, 2016
Temperature: 22.6°C **Tested by:** Dennis Li
Humidity: 57.2 % RH **Polarity:** Ver.

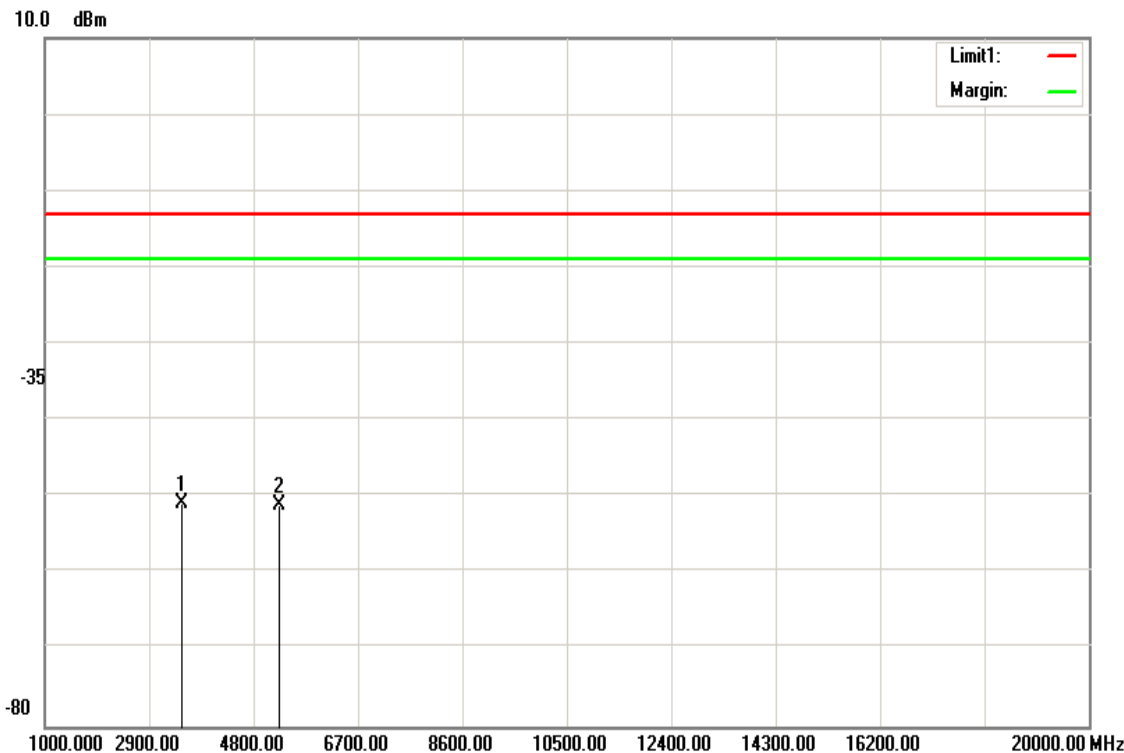


Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3505.000	-54.66	6.7	12.5	-48.86	-13.00	-35.86	V
5257.000	-56.19	8.37	12.71	-51.85	-13.00	-38.85	V
N/A							

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Operation Mode: WCDMA 12.2k RMC Band IV / TX /High CH **Test Date:** September 26, 2016
Temperature: 22.6°C **Tested by:** Dennis Li
Humidity: 57.2 % RH **Polarity:** Hor.



Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3505.000	-56.57	6.7	12.5	-50.77	-13.00	-37.77	H
5257.000	-55.53	8.37	12.71	-51.19	-13.00	-38.19	H
N/A							

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

7.7 FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT

LIMIT

According to the FCC part 27.54 shall be tested the frequency stability. The rule is defined that” The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

Test Procedure

Use Anritsu 8820 with frequency Error measurement capability.

Temp = -30 to +50°C

Voltage= 85% to 115% of the nominal value for AC powered equipment.

NOTE: The frequency error was recorded frequency error from the communication simulator.

TEST RESULTS

No non-compliance noted.

Reference Frequency: WCDMA 12.2k RMC Band IV Mid Channel 1732.6 MHz at 20(°C)				
Limit: ± 2.5 ppm = 4700Hz				
Power Supply (Vac)	Environment Temperature (°C)	BW: 20M Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
120	50	-4.00	-0.0023	+/- 2.5
120	40	3.00	0.0017	
120	30	0.00	0.0000	
120	20	-1.00	-0.0006	
120	10	-5.00	-0.0029	
120	0	0.00	0.0000	
120	-10	-4.00	-0.0023	
120	-20	-1.23	-0.0007	
120	-30	-1.09	-0.0006	

FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT:

Reference Frequency: WCDMA 12.2k RMC Band IV Mid Channel 1732.6 MHz at 20(°C)				
Limit: ± 2.5 ppm = 2091.25Hz				
Power Supply (Vac)	Environment Temperature (°C)	BW: 20M Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
138	20	-2.00	-0.0012	+/- 2.5
120		-1.00	-0.0006	
102		0.00	0.0000	