

**FCC 47 CFR PART 22 SUBPART H AND PART 24 SUBPART E  
(Class II Permissive Change)**

**TEST REPORT**

**For**

**Radio Module**

**Model: EM7565-9**

**Trade Name: DURABOOK**

*Issued to*

**TWINHEAD INTERNATIONAL CORP.  
11F, No. 550, Rueiguang Rd., Neihu, Taipei, Taiwan 114, R.O.C.**

*Issued by*

**Compliance Certification Services Inc.**

**Wugu Laboratory**

**No.11, Wugong 6th Rd., Wugu Dist.,  
New Taipei City 24891, Taiwan. (R.O.C.)**

**<http://www.ccsrf.com>**

**Issued Date: March 26, 2018**



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**Revision History**

Rev	Issue Date	Revisions	Effect Page	Revised By
00	March 26, 2018	Initial Issue	ALL	Doris Chu
01	April 27, 2018	1.Revise TIA 603-D: 2010 to TIA 603-E: 2016.	P.4, P.6, P.14, P.17	Doris Chu

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# 1. TEST RESULT CERTIFICATION

**Applicant:** TWINHEAD INTERNATIONAL CORP.  
11F, No. 550, Rueiguang Rd., Neihu, Taipei, Taiwan 114, R.O.C.

**Manufacturer:** TWINHEAD INTERNATIONAL CORP.  
11F, No. 550, Rueiguang Rd., Neihu, Taipei, Taiwan 114, R.O.C.

**Equipment Under Test:** Radio Module

**Trade Name:** DURABOOK

**Model:** EM7565-9

**Date of Test:** March 8 ~ 9, 2018

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 22 Subpart H & Part 24 Subpart E	No non-compliance noted


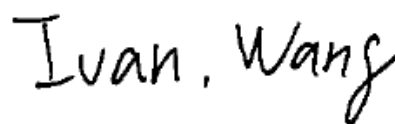
**We hereby certify that:**

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 603-E: 2016 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rule FCC PART 22 Subpart H and PART 24 Subpart E

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

*Approved by:*

*Tested by:*


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Sam Chuang  
Manager  
Compliance Certification Services Inc.

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Ivan Wang  
Engineer  
Compliance Certification Services Inc.

## 2. EUT DESCRIPTION

<b>Product</b>	Radio Module
<b>Model No.</b>	EM7565-9
<b>Model Discrepancy</b>	All the model number was just for marketing purpose only.
<b>Trade Name</b>	DURABOOK
<b>Received Date</b>	December 21, 2017
<b>Power Supply</b>	Power form Adapter FSP / FSP065-REBN2 I/P: 100-240VAC, 50-60Hz, 1.5A O/P: 19VDC, 3.42A
<b>Frequency Range</b>	WCDMA Band II: 1852.4 ~ 1907.6 MHz WCDMA Band V: 826.4 ~ 846.6MHz
<b>Antenna Gain</b>	Monopole Antenna Sinbon Technology Co., Ltd Band II: P/N: 22+600761+00 (Main) / 2.49dBi 22+600762+00 (Aux) / 2.52dBi Band V: P/N: 22+600761+00 (Main) / 0.8dBi 22+600762+00 (Aux) / 2.08dBi
<b>Class II Permissive Change</b>	1. The subject approved module is being used in a specific host. [Product: Fully-Rugged Tablet PC, brand name/model: DURABOOK / X11XXXXXX(X=0~9,A~Z,a~z,Blank), U11XXXXXX(X=0~9,A~Z,a~z,Blank), R11(R5)]. 2. Power reduction per tune-up procedure is applied in order to comply with exposure requirements. 3. The product only installs a WLAN module [X11XXXXXX(X=0~9,A~Z,a~z,Blank), U11XXXXXX(X=0~9,A~Z,a~z,Blank), R11(R5)]

**Remark:**

1. Client consigns only one sample to test (model number: X11BK). Therefore, the testing Lab. just guarantees the unit, which has been tested.

### 3. TEST METHODOLOGY

Both conducted and radiated testing were performed according to TIA 603-E: 2016 and FCC CFR 47, Part 2, Part 22 Subpart H and Part 24 Subpart E

#### 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 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

##### WCDMA Band II

Radiated Emission Measurement	
<b>Test Condition</b>	<b>Band edge, Emission for Unwanted and Fundamental</b>
<b>Voltage/Hz</b>	<b>230V /50Hz</b>
<b>Test Mode</b>	<b>Mode 1: EUT Power by Adapter</b>
<b>Worst Mode</b>	<input checked="" type="checkbox"/> <b>Mode 1</b> <input type="checkbox"/> <b>Mode 2</b> <input type="checkbox"/> <b>Mode 3</b> <input type="checkbox"/> <b>Mode 4</b>
<b>Position</b>	<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:*

1. The worst mode was record in this test report.
2. The EUT pre-scanned in three axis ,X,Y, Z and two polarity, Horizontal and Vertical for radiated measurement. The worst case (X-Plane) were recorded in this report.

##### WCDMA Band V

Radiated Emission Measurement	
<b>Test Condition</b>	<b>Band edge, Emission for Unwanted and Fundamental</b>
<b>Voltage/Hz</b>	<b>230V /50Hz</b>
<b>Test Mode</b>	<b>Mode 1: EUT Power by Adapter</b>
<b>Worst Mode</b>	<input checked="" type="checkbox"/> <b>Mode 1</b> <input type="checkbox"/> <b>Mode 2</b> <input type="checkbox"/> <b>Mode 3</b> <input type="checkbox"/> <b>Mode 4</b>
<b>Position</b>	<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:*

1. The worst mode was record in this test report.
2. The EUT pre-scanned in three axis ,X,Y, Z and two polarity, Horizontal and Vertical for radiated measurement. The worst case (X-Plane) were recorded in this 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 once a year and Loop Antenna is scheduled for calibration once three years.

Wugu 966 Chamber A					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Signal Analyzer	Agilent	E4407B	MY44212686	04/07/2017	04/06/2018
Pre-Amplifier	EMEC	EM01M62G	60570	08/01/2017	07/31/2018
Bilog Antenna	Sunol Sciences	JB3	A030105	06/20/2017	06/19/2018
Horn Antenna	EMCO	3115	9602-4659	06/22/2017	06/21/2018
Pre-Amplifier	Anritsu	MH648A	M89145	06/27/2017	06/26/2018
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
WiFi signal cable	HUBER SUHNER	SUCOFLEX 104PEA	23452	07/31/2017	07/30/2018
Filter	N/A	800-1G	N/A	N/A	N/A
Filter	N/A	1800-2000	N/A	N/A	N/A
Radio Communication Analyzer	Anritsu	MT-8820C	6201240043	07/11/2017	07/10/2018
Wireless Communication Test Set	Anritsu	8960	MY48363204	07/26/2017	07/25/2018

### 4.3 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
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**

- No.199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.
- No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan, R.O.C
- No.81-1, Lane 210, Bade 2nd Rd., Lujhu Township, Taoyuan County 33841, Taiwan, R.O.C

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 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."



## 6. SETUP OF EQUIPMENT UNDER TEST

### 6.1 SETUP CONFIGURATION OF EUT

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

### 6.2 SUPPORT EQUIPMENT

No	Equipment	Brand	Model	Series No.	FCC ID	Data Cable
	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 22 & 24 REQUIREMENTS

### 7.1 AVERAGE POWER

#### 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.

*No non-compliance noted.*

#### Test Data

#### WCDMA 12.2K RMC

Band	Mode	Frequency (MHz)	CH	AVG Power (dBm)	Output Power (W)
II	WCDMA 12.2K RMC	1852.4	9262	23.10	0.2042
		1880.0	9400	23.30	0.2138
		1907.6	9538	23.20	0.2089
V		826.4	4132	23.00	0.1995
		836.4	4183	23.10	0.2042
		846.6	4233	23.00	0.1995

**HSDPA**

**Band II**

Band	Mode	Frequency (MHz)	CH	AVG Power (dBm)	Output Power (W)
II	Subtest 1	1852.4	9262	22.90	0.1950
		1880.0	9400	23.10	0.2042
		1907.6	9538	23.00	0.1995
	Subtest 2	1852.4	9262	22.40	0.1738
		1880.0	9400	22.60	0.1820
		1907.6	9538	22.50	0.1778
	Subtest 3	1852.4	9262	21.90	0.1549
		1880.0	9400	22.10	0.1622
		1907.6	9538	22.00	0.1585
	Subtest 4	1852.4	9262	21.90	0.1549
		1880.0	9400	22.10	0.1622
		1907.6	9538	22.00	0.1585

**Band V**

Band	Mode	Frequency (MHz)	CH	AVG Power (dBm)	Output Power (W)
V	Subtest 1	826.4	4132	22.80	0.1905
		836.4	4182	22.90	0.1950
		846.4	4233	22.90	0.1950
	Subtest 2	826.4	4132	22.30	0.1698
		836.4	4182	22.40	0.1738
		846.4	4233	22.40	0.1738
	Subtest 3	826.4	4132	21.80	0.1514
		836.4	4182	21.90	0.1549
		846.4	4233	21.90	0.1549
	Subtest 4	826.4	4132	21.80	0.1514
		836.4	4182	21.90	0.1549
		846.4	4233	21.90	0.1549

**HSUPA**

**Band II**

Band	Mode	Frequency(MHz)	CH	AVG Power(dBm)	Output Power(W)
II	Subtest 1	1852.4	9262	22.90	0.1950
		1880.0	9400	23.10	0.2042
		1907.6	9538	23.00	0.1995
	Subtest 2	1852.4	9262	20.90	0.1230
		1880.0	9400	21.10	0.1288
		1907.6	9538	21.00	0.1259
	Subtest 3	1852.4	9262	21.90	0.1549
		1880.0	9400	22.10	0.1622
		1907.6	9538	22.00	0.1585
	Subtest 4	1852.4	9262	20.90	0.1230
		1880.0	9400	21.10	0.1288
		1907.6	9538	21.00	0.1259
	Subtest 5	1852.4	9262	22.90	0.1950
		1880.0	9400	23.10	0.2042
		1907.6	9538	23.00	0.1995

**Band V**

Band	Mode	Frequency(MHz)	CH	AVG Power(dBm)	Output Power(W)
V	Subtest 1	826.4	4132	22.80	0.1905
		836.4	4182	22.90	0.1950
		846.4	4233	22.90	0.1950
	Subtest 2	826.4	4132	20.80	0.1202
		836.4	4182	20.90	0.1230
		846.4	4233	20.90	0.1230
	Subtest 3	826.4	4132	21.80	0.1514
		836.4	4182	21.90	0.1549
		846.4	4233	21.90	0.1549
	Subtest 4	826.4	4132	20.80	0.1202
		836.4	4182	20.90	0.1230
		846.4	4233	20.90	0.1230
	Subtest 5	826.4	4132	22.80	0.1905
		836.4	4182	22.90	0.1950
		846.4	4233	22.90	0.1950

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

## 7.2 ERP & EIRP MEASUREMENT

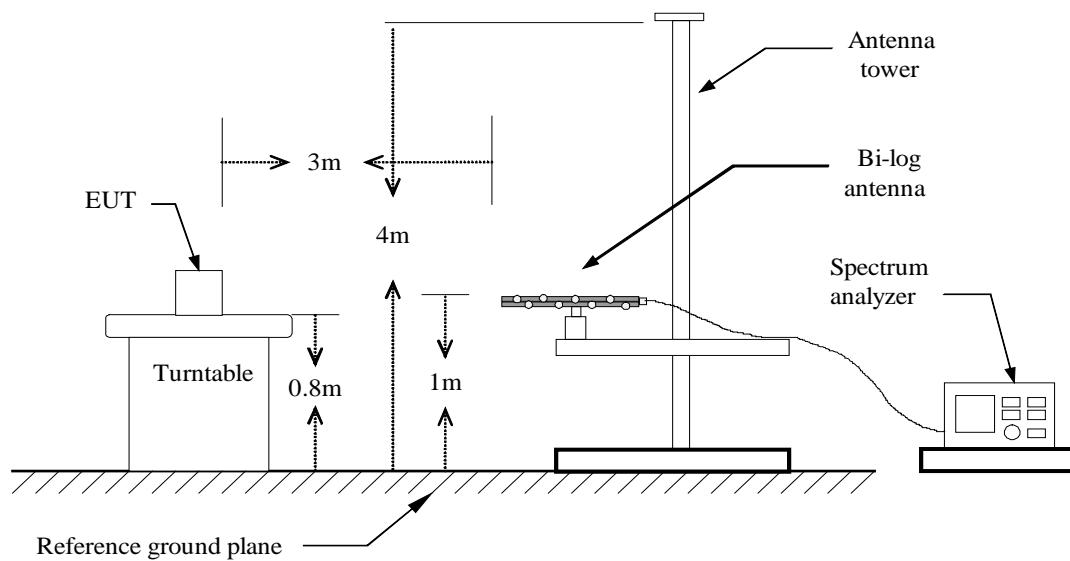
### LIMIT

According to FCC 22.913(a): The Effective Radiated Power (ERP) of mobile transmitters must not exceed 7 Watts.

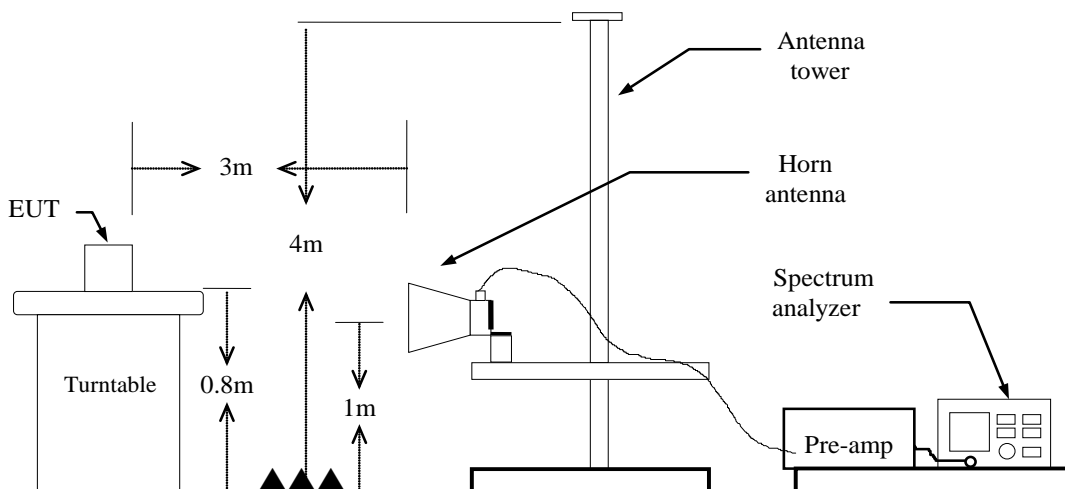
According to FCC 24.232(b): The equivalent Isotropic Radiated Power (EIRP) must not exceed 2 Watts.

### Test Configuration

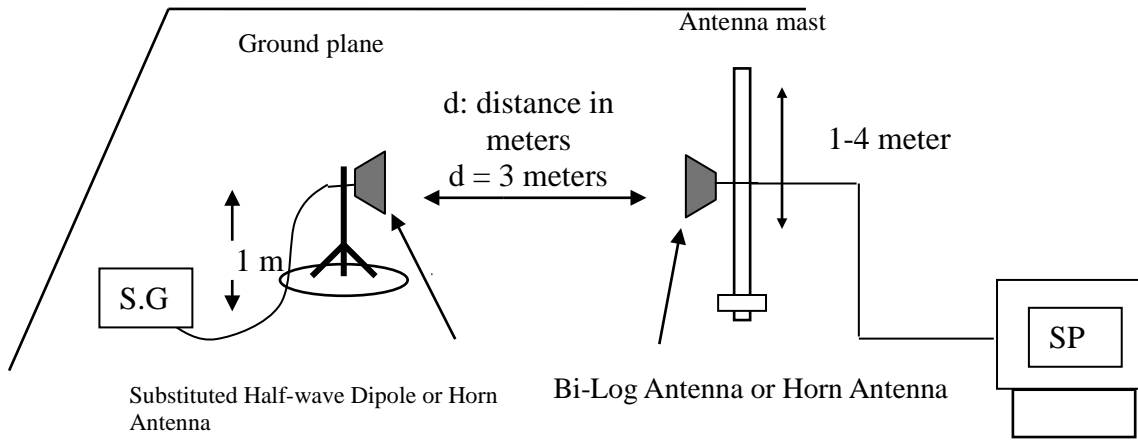
#### Below 1 GHz



#### 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 and 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 603-E: 2016. 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.

$ERP = S.G. \text{ output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable (dB)} - 2.15$

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

**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 II)	Lowest	16.66	0.046	24.34	0.271
	Middle	13.35	0.021	24.41	0.276
	Highest	14.74	0.029	24.65	0.291

**WCDMA 12.2K RMC**

Test Mode	Channel	Vertical		Horizontal	
		ERP(dBm)	ERP(W)	ERP(dBm)	ERP(W)
WCDMA 12.2K RMC (Band V)	Lowest	14.05	0.025	22.46	0.176
	Middle	6.02	0.004	22.00	0.158
	Highest	15.00	0.031	22.94	0.196

### 7.3 SPURIOUS RADIATION MEASUREMENT

#### Limit

##### **FCC §22.917(a), Band 5**

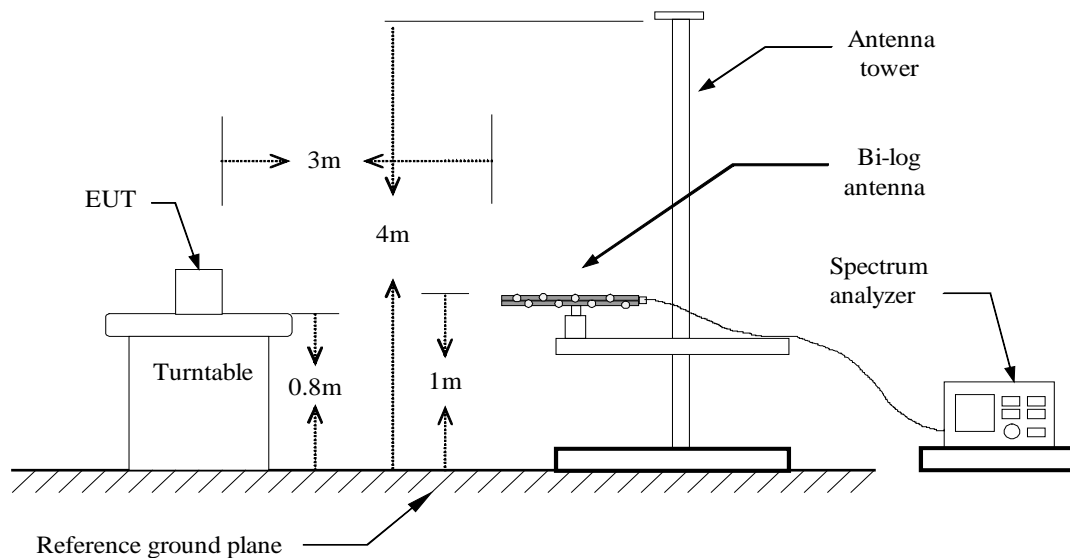
For operations in the 824-849 MHz band, out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

##### **FCC §24.238(a), Band 2**

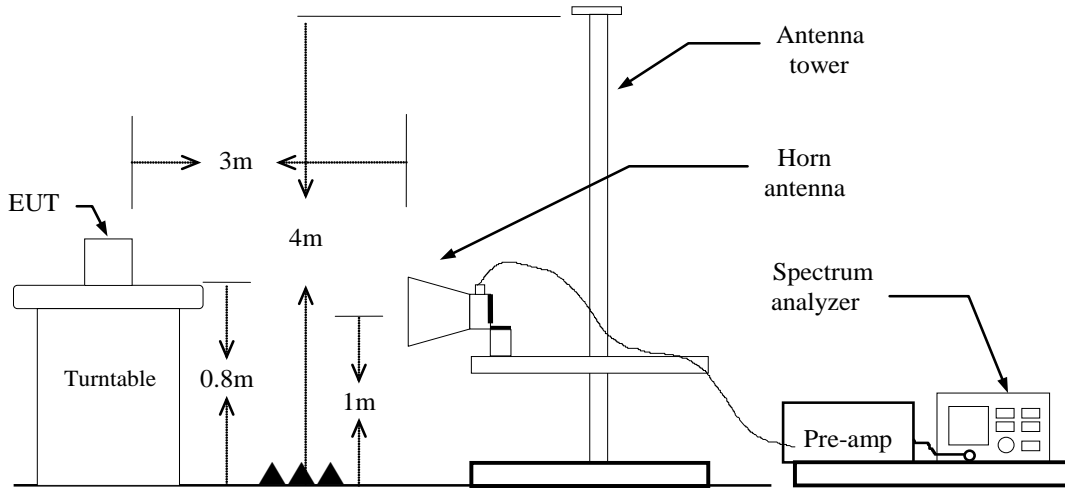
For operations in the 1850-1910 and 1930-1950 MHz band, out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

#### Test Configuration

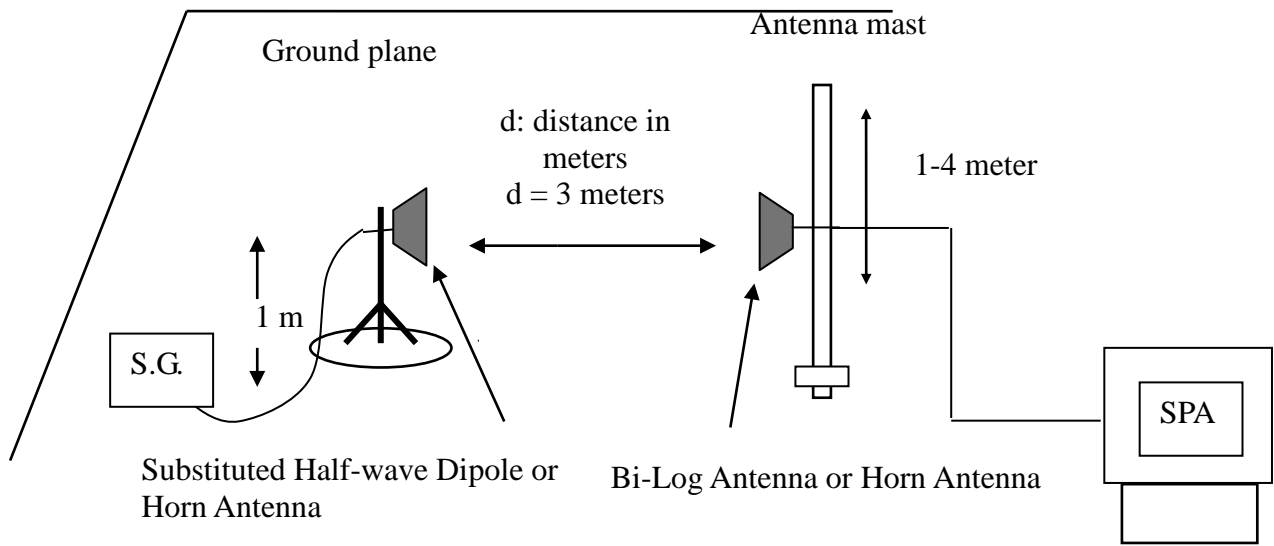
##### **Below 1 GHz**



**Above 1 GHz**



**Substituted Method Test Set-up**





## **TEST PROCEDURE**

1. According to KDB 971168 D01. section 5.8 and TIA 603-E: 2016 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

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

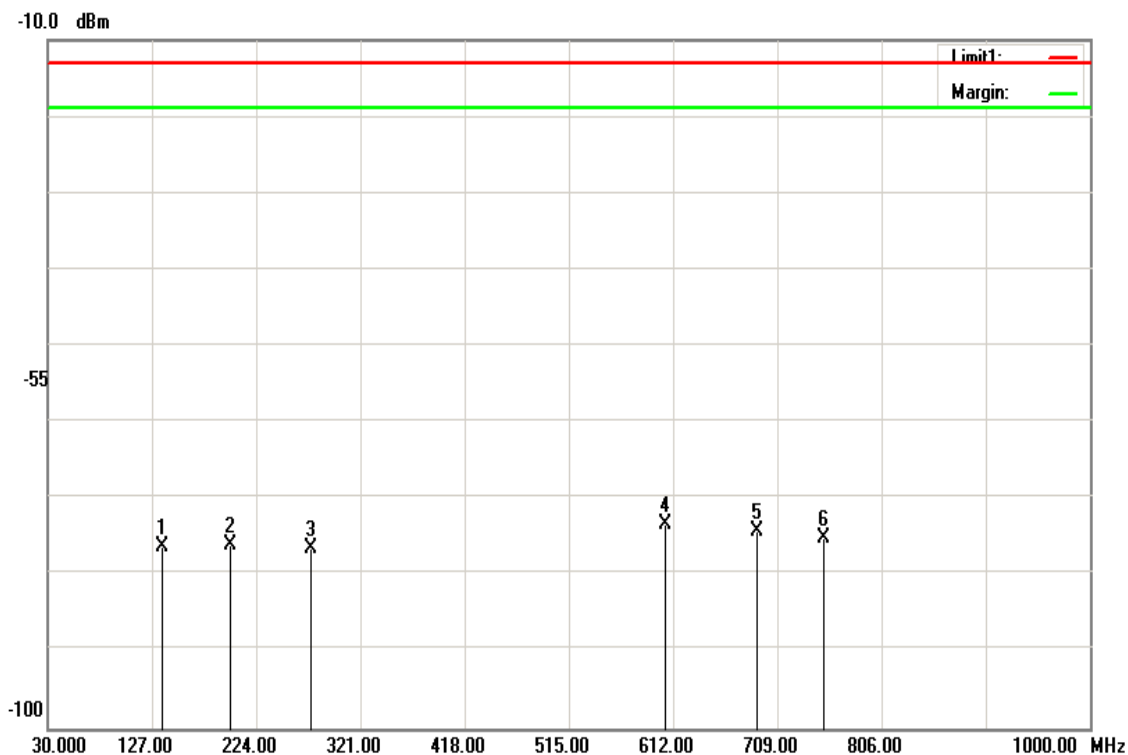
EIRP = S.G. output (dBm) + Antenna Gain (dBi) – Cable (dB)

## **TEST RESULTS**

*Refer to the attached tabular data sheets.*

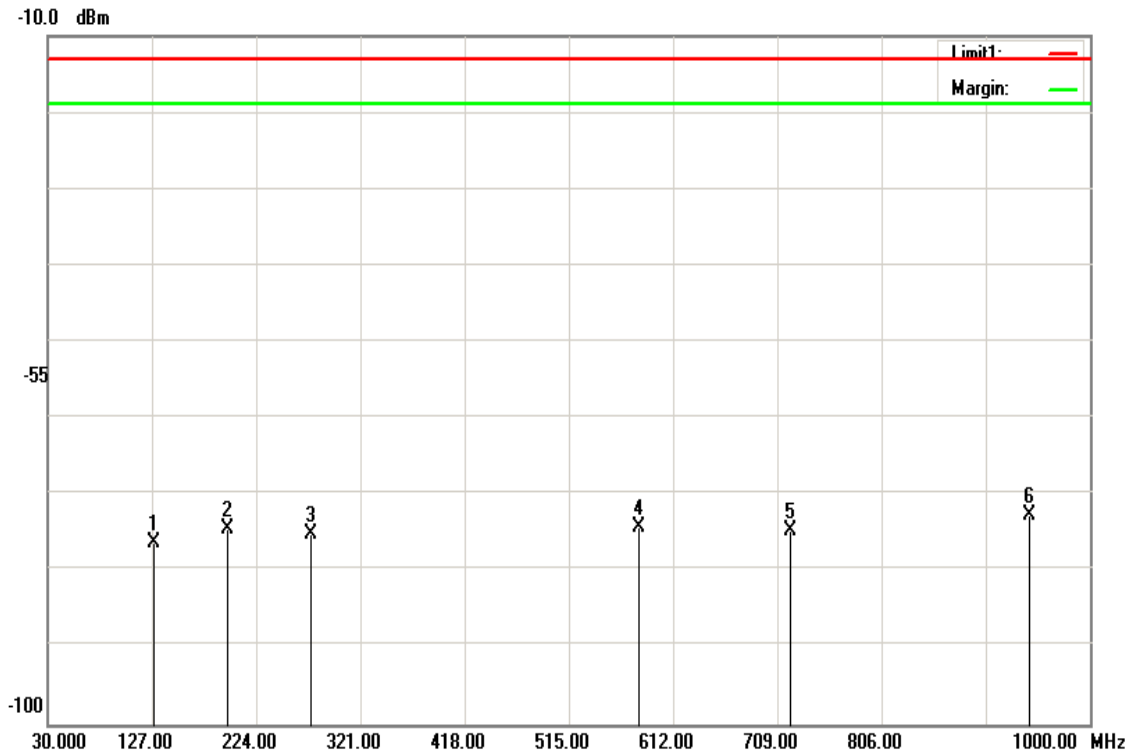
**Radiated Spurious Emission Measurement Result / Below 1GHz**

**Operation Mode:** WCDMA 12.2k RMC Band II / TX /Mid CH      **Test Date:** March 8, 2018  
**Temperature:** 21°C      **Tested by:** Ivan Wang  
**Humidity:** 54 % RH      **Polarity:** Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
136.7000	-77.37	1.15	-76.22	-13.00	-63.22	V
199.7500	-80.1	4.1	-76.00	-13.00	-63.00	V
274.9250	-83.54	7.15	-76.39	-13.00	-63.39	V
604.7250	-72.12	-1.31	-73.43	-13.00	-60.43	V
689.6000	-76.24	1.89	-74.35	-13.00	-61.35	V
752.6500	-76.79	1.65	-75.14	-13.00	-62.14	V

**Operation Mode:** WCDMA 12.2k RMC Band II / TX /Mid CH      **Test Date:** March 8, 2018  
**Temperature:** 21°C      **Tested by:** Ivan Wang  
**Humidity:** 54 % RH      **Polarity:** Hor.



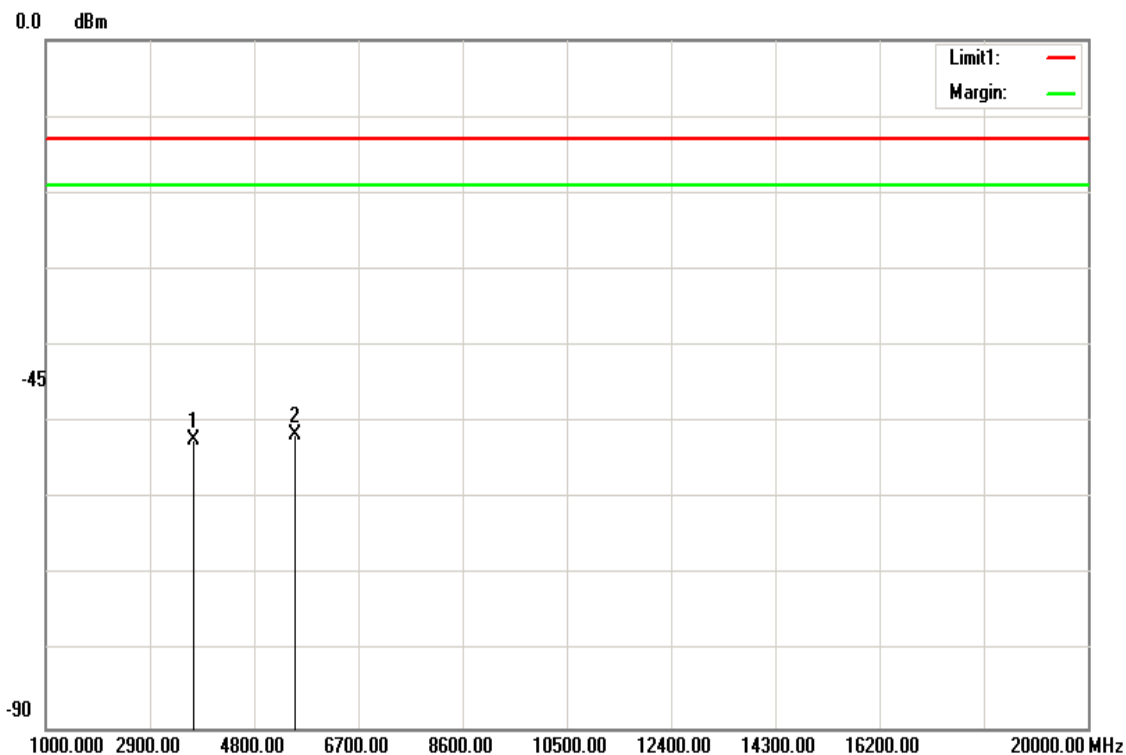
Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
129.4250	-77.33	1.04	-76.29	-13.00	-63.29	H
197.3250	-78.53	4.1	-74.43	-13.00	-61.43	H
274.9250	-82.3	7.15	-75.15	-13.00	-62.15	H
580.4750	-75.9	1.71	-74.19	-13.00	-61.19	H
721.1250	-76.58	1.89	-74.69	-13.00	-61.69	H
944.2250	-74.07	1.33	-72.74	-13.00	-59.74	H

**Above 1GHz**

**Operation Mode:** WCDMA 12.2k RMC  
 Band II / TX / Low CH **Test Date:** March 8, 2018

**Temperature:** 21°C **Tested by:** Ivan Wang

**Humidity:** 52 % RH **Polarity:** Ver.

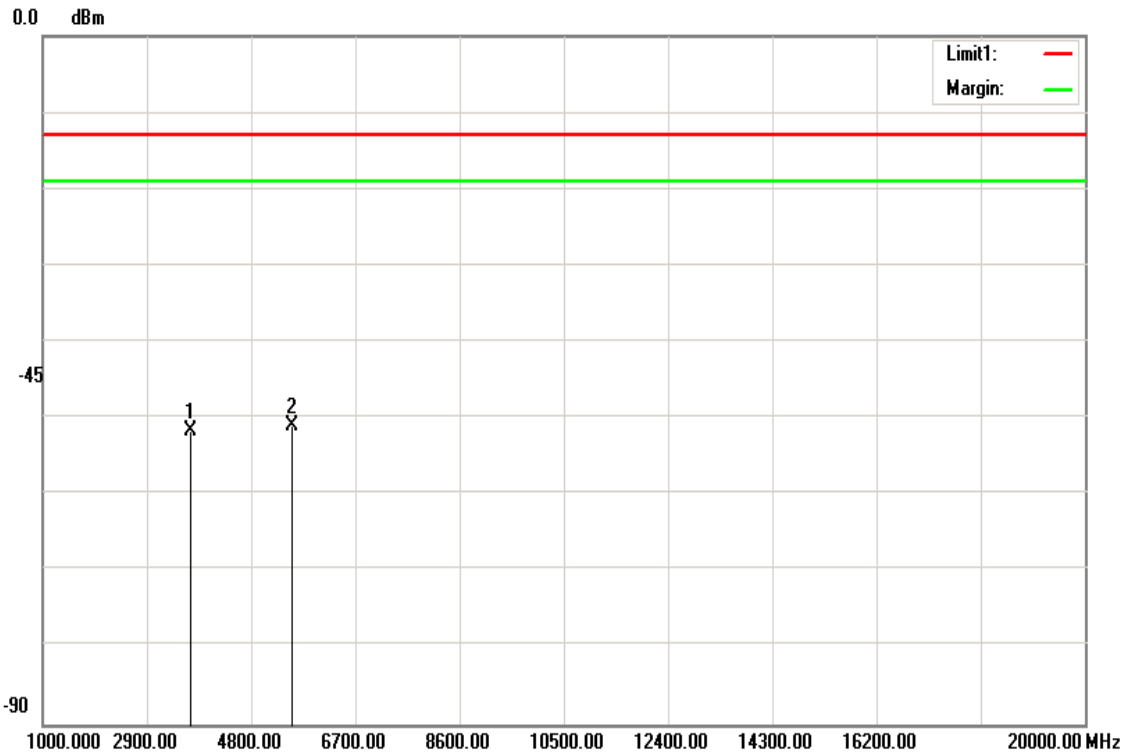


Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3704.000	-64.92	12.54	-52.38	-13.00	-39.38	V
5557.000	-64.5	12.88	-51.62	-13.00	-38.62	V
N/A						

**Remark:**

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

**Operation Mode:** WCDMA 12.2k RMC  
 Band II / TX / Low CH **Test Date:** March 8, 2018  
**Temperature:** 21°C **Tested by:** Ivan Wang  
**Humidity:** 52 % RH **Polarity:** Hor.

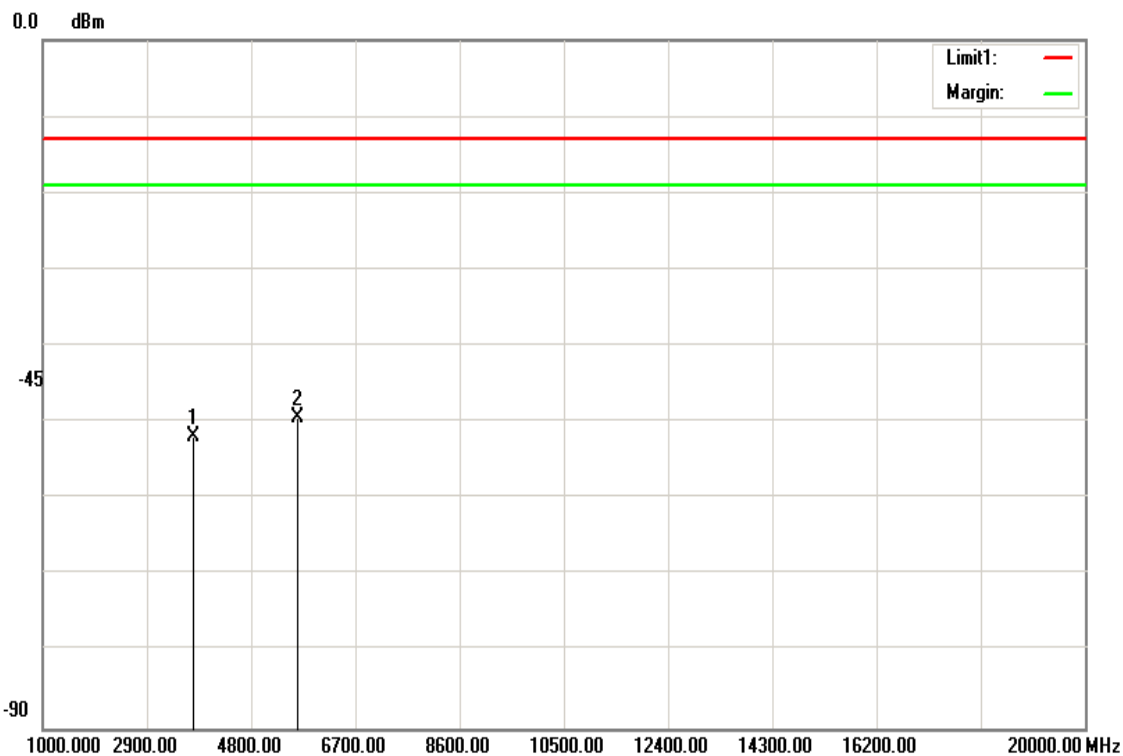


Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3704.000	-64.21	12.54	-51.67	-13.00	-38.67	H
5557.000	-63.91	12.88	-51.03	-13.00	-38.03	H
N/A						

**Remark:**

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

**Operation Mode:** WCDMA 12.2k RMC Band II / TX / Mid CH **Test Date:** March 8, 2018  
**Temperature:** 21°C **Tested by:** Ivan Wang  
**Humidity:** 54 % RH **Polarity:** Ver.

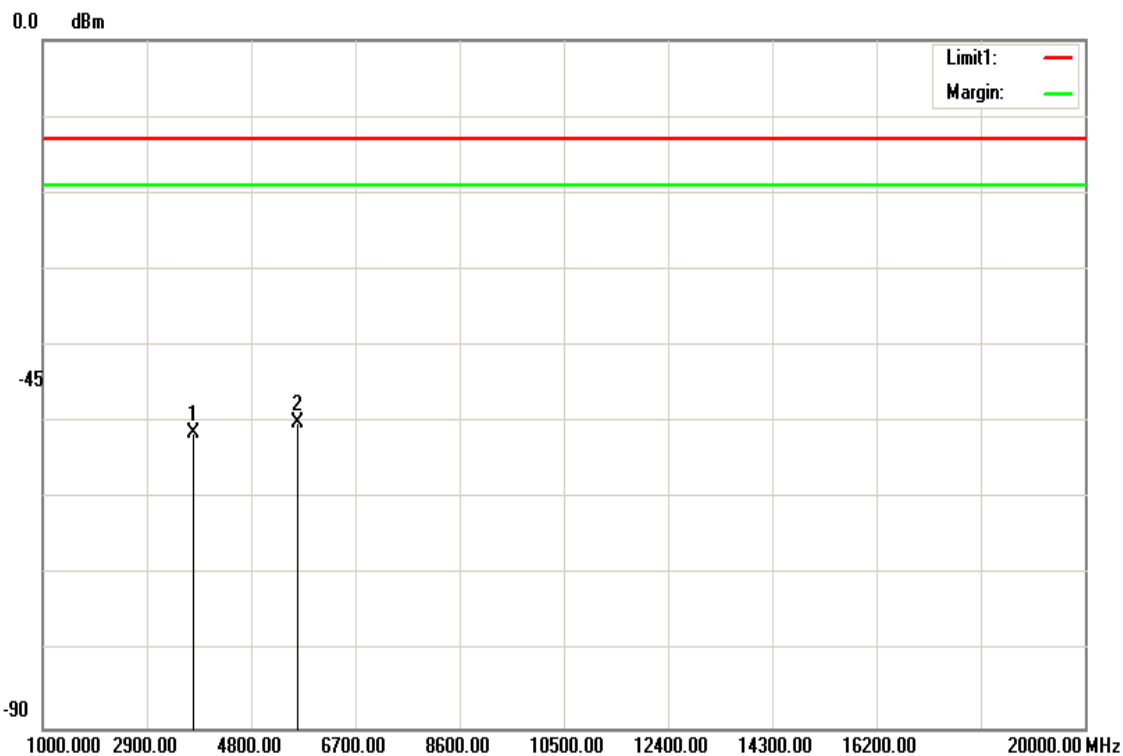


Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3760.000	-64.49	12.55	-51.94	-13.00	-38.94	V
5640.000	-62.33	12.84	-49.49	-13.00	-36.49	V
N/A						

**Remark:**

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

**Operation Mode:** WCDMA 12.2k RMC  
 Band II / TX / Mid CH **Test Date:** March 8, 2018  
**Temperature:** 21°C **Tested by:** Ivan Wang  
**Humidity:** 54 % RH **Polarity:** Hor.

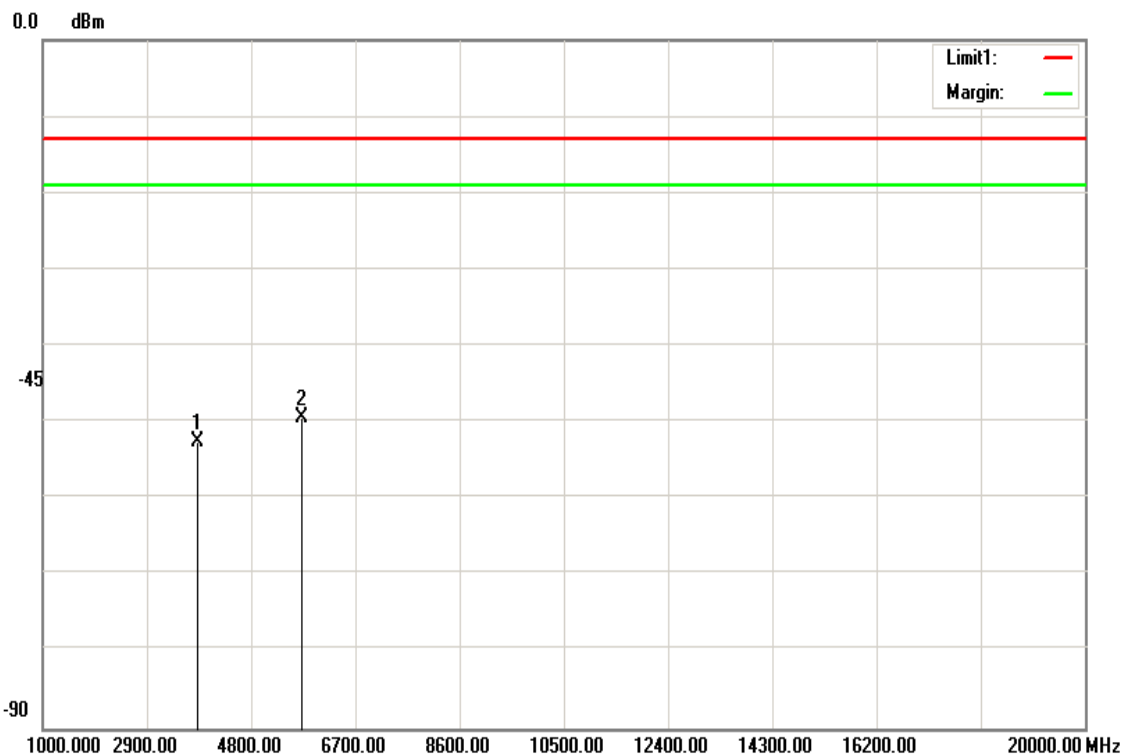


Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3760.000	-63.93	12.55	-51.38	-13.00	-38.38	H
5640.000	-62.9	12.84	-50.06	-13.00	-37.06	H
N/A						

**Remark:**

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

**Operation Mode:** WCDMA 12.2k RMC Band II / TX / High CH **Test Date:** March 8, 2018  
**Temperature:** 21°C **Tested by:** Ivan Wang  
**Humidity:** 54 % RH **Polarity:** Ver.



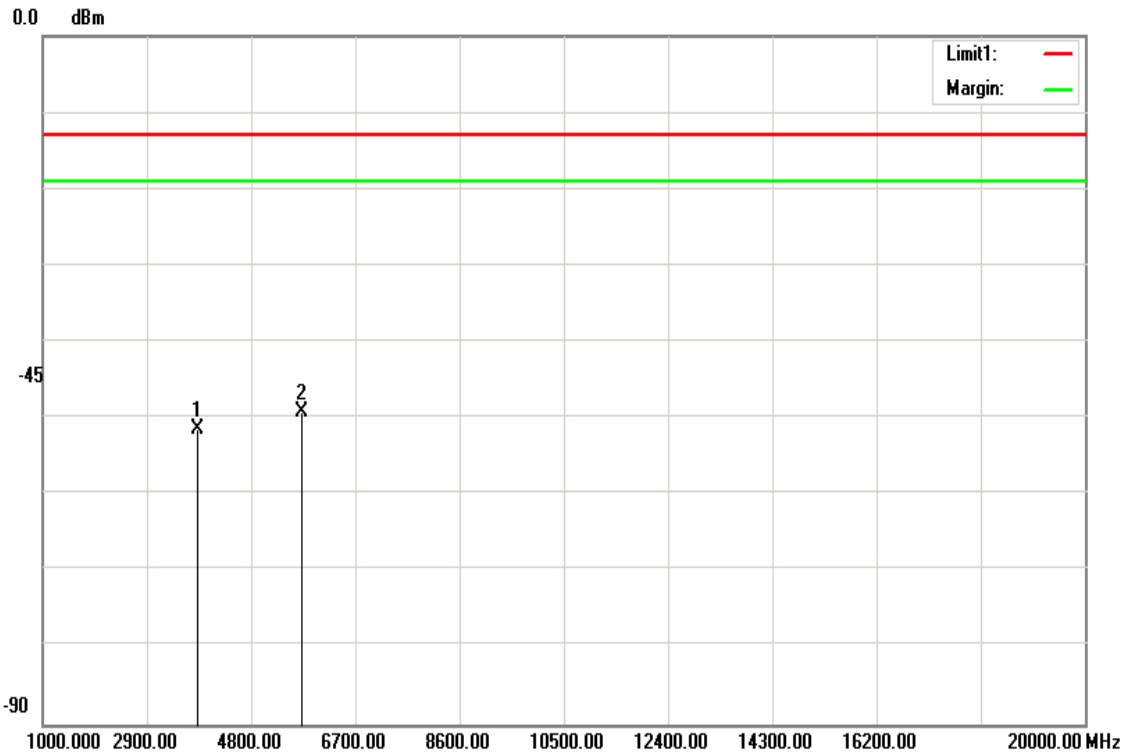
Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3814.000	-65	12.56	-52.44	-13.00	-39.44	V
5721.000	-62.25	12.81	-49.44	-13.00	-36.44	V
N/A						

**Remark:**

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



**Operation Mode:** WCDMA 12.2k RMC Band II / TX / High CH **Test Date:** March 8, 2018  
**Temperature:** 21°C **Tested by:** Ivan Wang  
**Humidity:** 54 % RH **Polarity:** Hor.



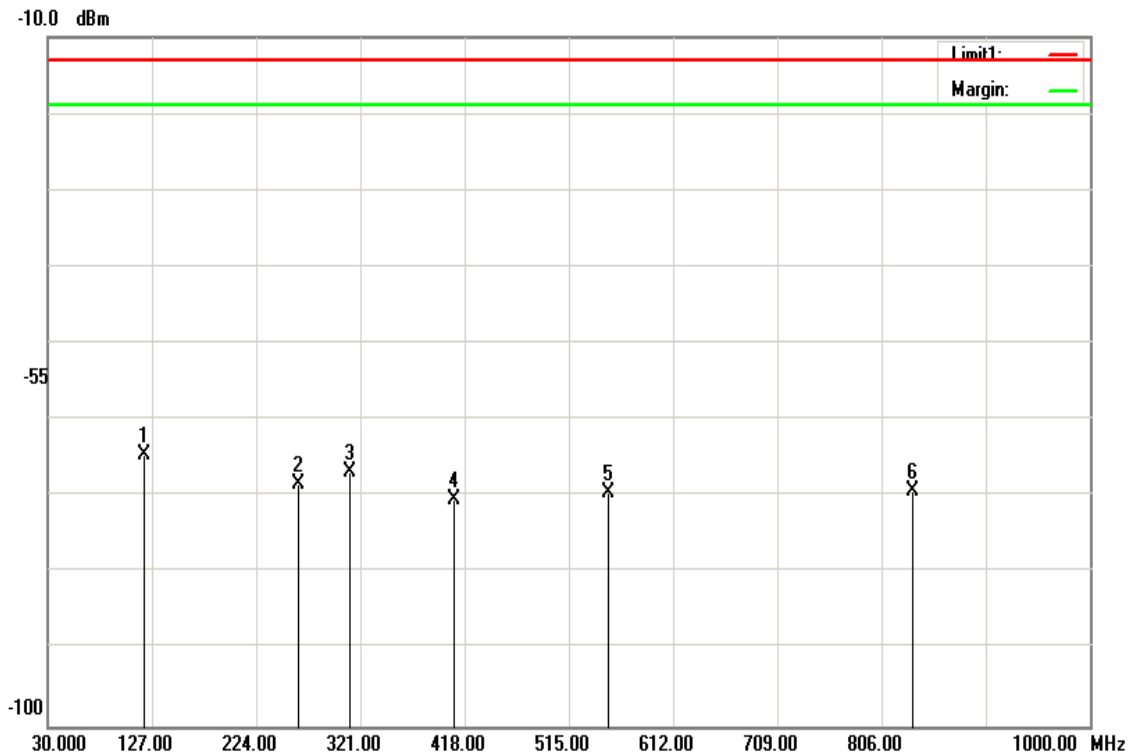
Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3814.000	-64.02	12.56	-51.46	-13.00	-38.46	H
5721.000	-61.92	12.81	-49.11	-13.00	-36.11	H
N/A						

**Remark:**

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

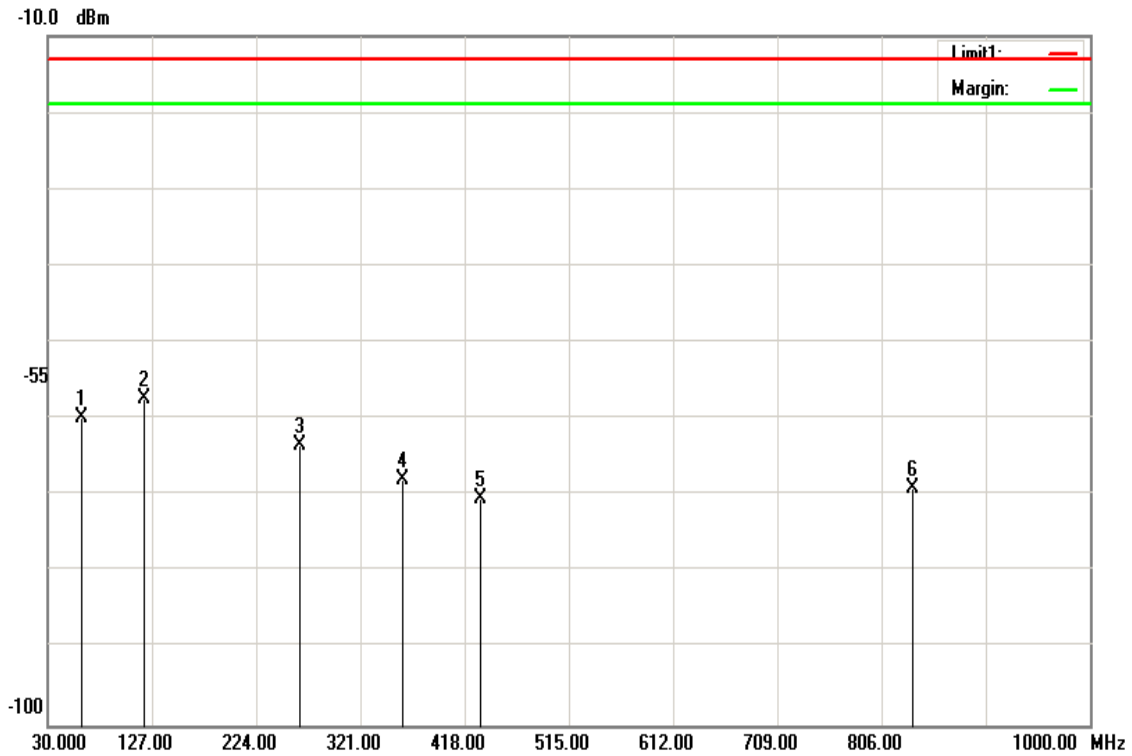
**Radiated Spurious Emission Measurement Result / Below 1GHz**

**Operation Mode:** WCDMA 12.2k RMC Band V / TX /Mid CH      **Test Date:** March 9, 2018  
**Temperature:** 21°C      **Tested by:** Ivan Wang  
**Humidity:** 52 % RH      **Polarity:** Ver.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
119.7250	-65.45	0.89	-64.56	-13.00	-51.56	V
262.8000	-75.73	7.27	-68.46	-13.00	-55.46	V
311.3000	-73.69	6.95	-66.74	-13.00	-53.74	V
408.3000	-77.74	7.26	-70.48	-13.00	-57.48	V
551.3750	-76.03	6.62	-69.41	-13.00	-56.41	V
835.1000	-70.45	1.21	-69.24	-13.00	-56.24	V

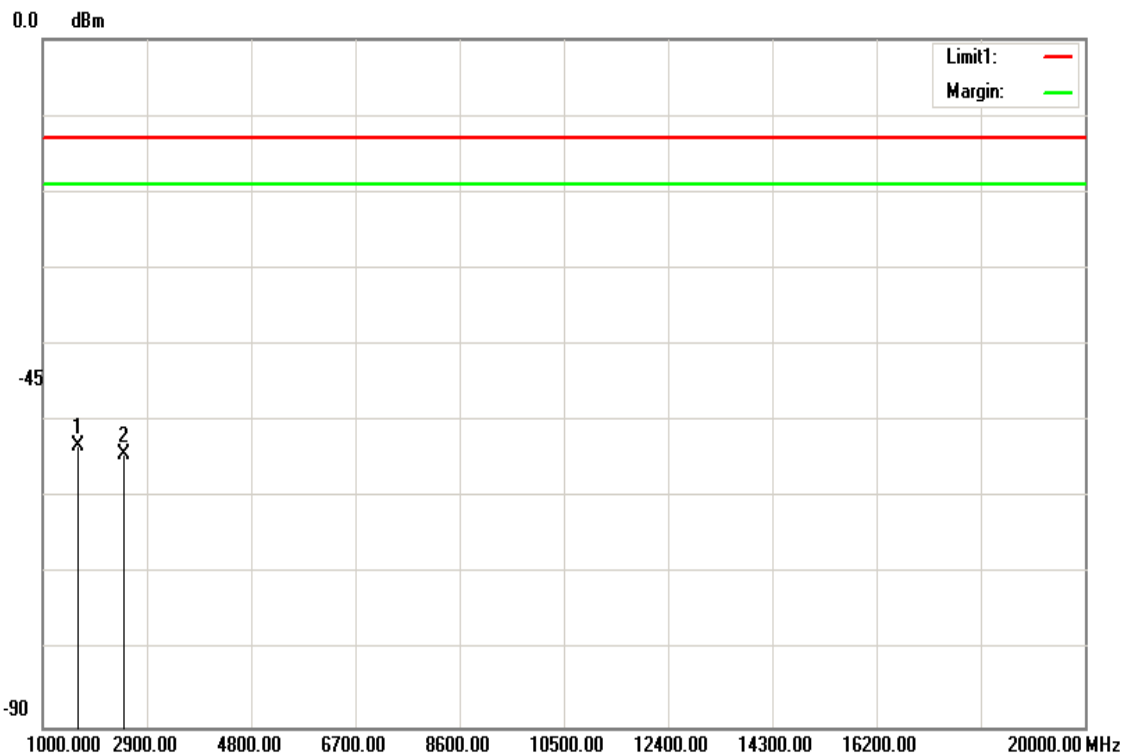
**Operation Mode:** WCDMA 12.2k RMC  
 Band V / TX /Mid CH      **Test Date:** March 9, 2018  
**Temperature:** 21°C      **Tested by:** Ivan Wang  
**Humidity:** 54 % RH      **Polarity:** Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
61.5250	-58.79	-1	-59.79	-13.00	-46.79	H
119.7250	-58.17	0.89	-57.28	-13.00	-44.28	H
265.2250	-70.79	7.25	-63.54	-13.00	-50.54	H
359.8000	-75.16	7.14	-68.02	-13.00	-55.02	H
432.5500	-77.55	7.14	-70.41	-13.00	-57.41	H
835.1000	-70.26	1.21	-69.05	-13.00	-56.05	H

**Above 1GHz**

**Operation Mode:** WCDMA 12.2k RMC Band V / TX / Low CH **Test Date:** March 9, 2018  
**Temperature:** 21°C **Tested by:** Ivan Wang  
**Humidity:** 54 % RH **Polarity:** Ver.

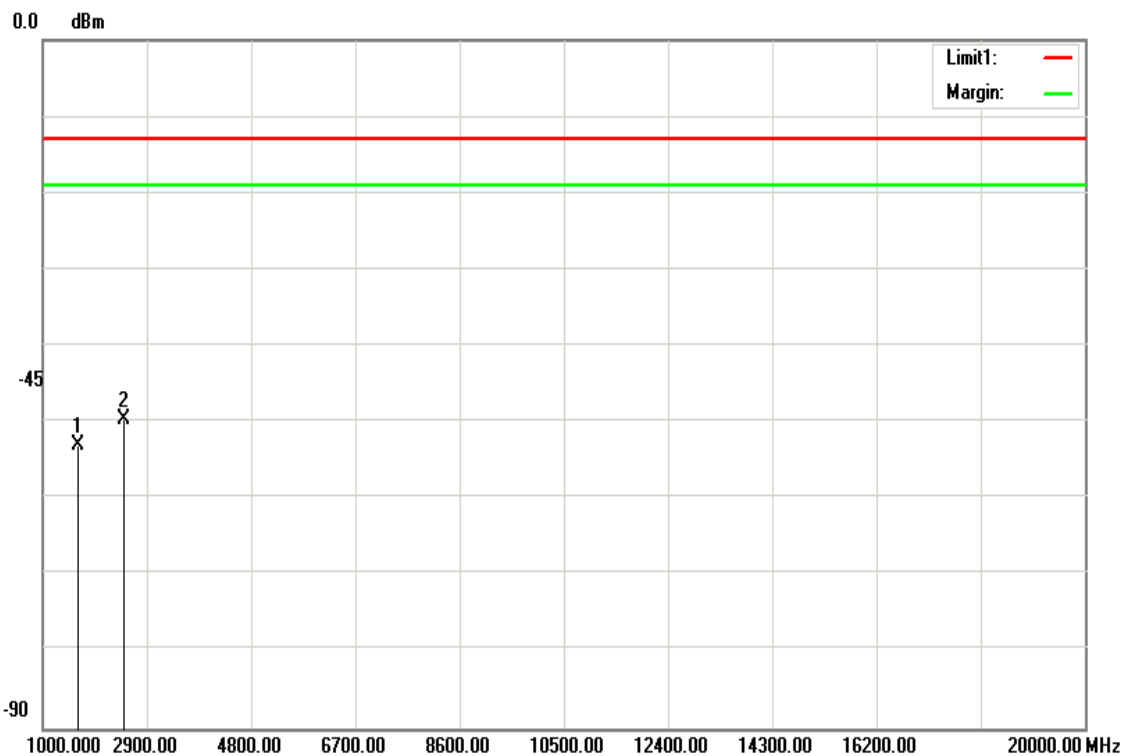


Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1652.000	-54.77	1.52	-53.25	-13.00	-40.25	V
2479.000	-56.15	1.83	-54.32	-13.00	-41.32	V
N/A						

**Remark:**

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

**Operation Mode:** WCDMA 12.2k RMC  
 Band V / TX / Low CH **Test Date:** March 9, 2018  
**Temperature:** 21°C **Tested by:** Ivan Wang  
**Humidity:** 52 % RH **Polarity:** Hor.

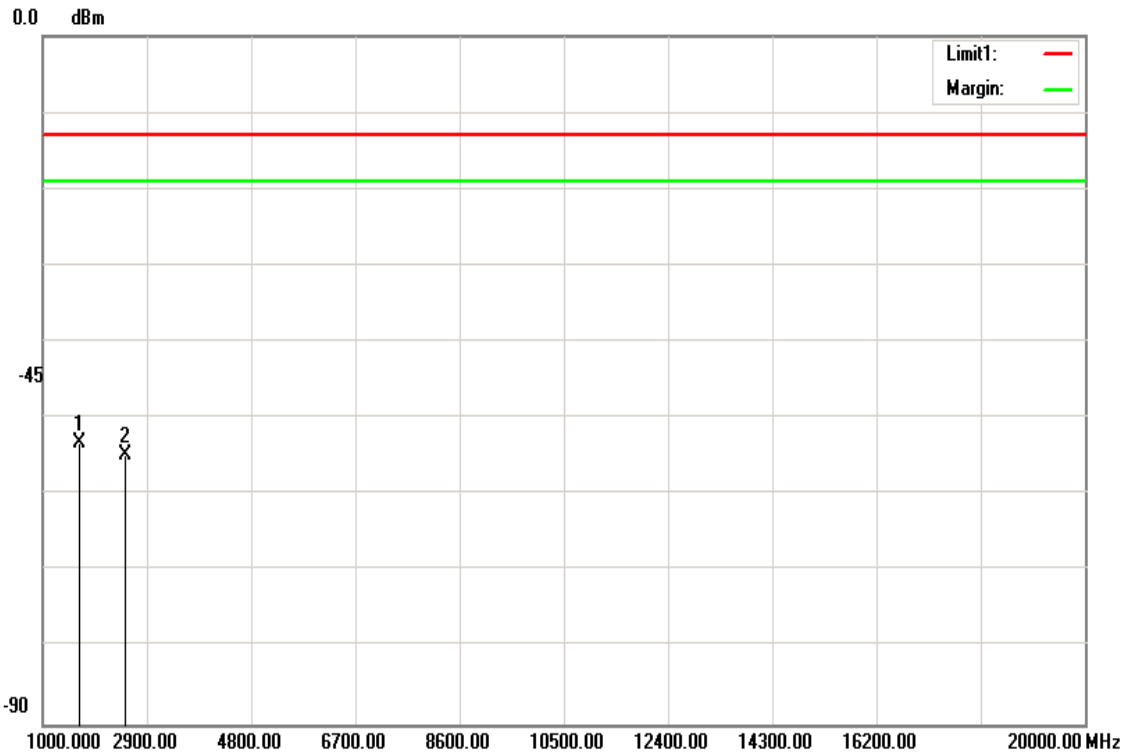


Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1652.000	-54.57	1.52	-53.05	-13.00	-40.05	H
2479.000	-51.43	1.83	-49.60	-13.00	-36.60	H
N/A						

**Remark:**

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

**Operation Mode:** WCDMA 12.2k RMC Band V / TX / Mid CH **Test Date:** March 9, 2018  
**Temperature:** 21°C **Tested by:** Ivan Wang  
**Humidity:** 52 % RH **Polarity:** Ver.

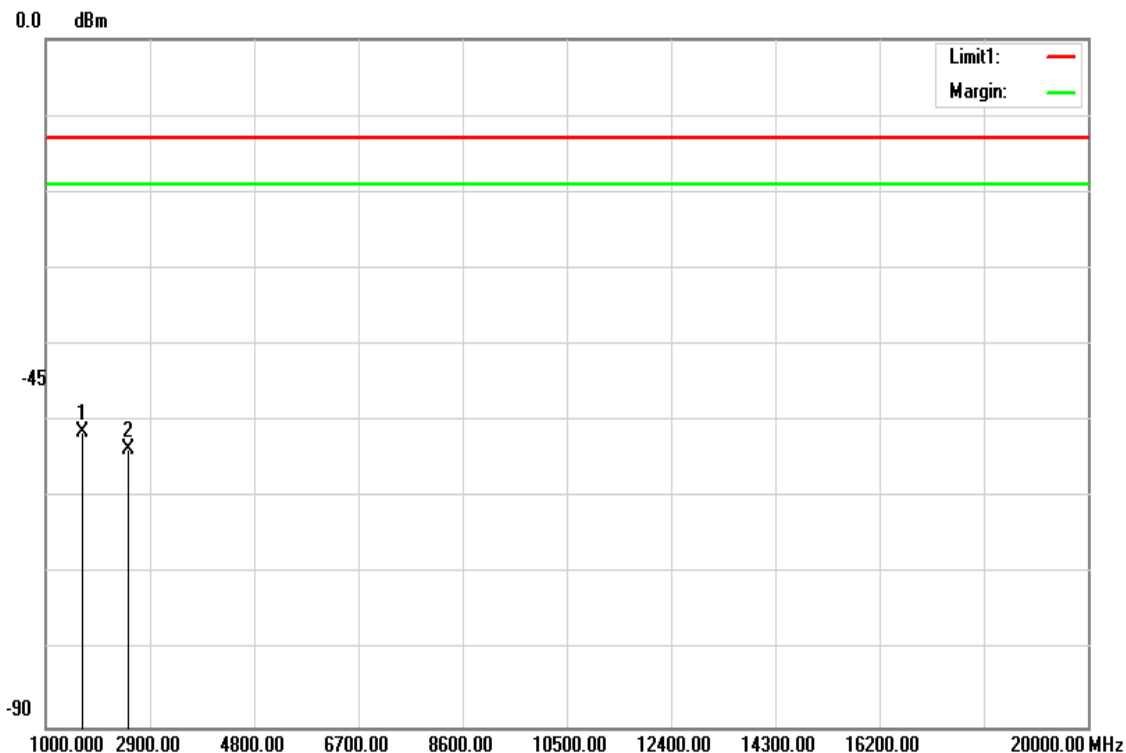


Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1672.000	-54.84	1.52	-53.32	-13.00	-40.32	V
2509.000	-56.81	2.02	-54.79	-13.00	-41.79	V
N/A						

**Remark:**

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

**Operation Mode:** WCDMA 12.2k RMC  
 Band V / TX / Mid CH **Test Date:** March 9, 2018  
 4182  
**Temperature:** 21°C **Tested by:** Ivan Wang  
**Humidity:** 52 % RH **Polarity:** Hor.

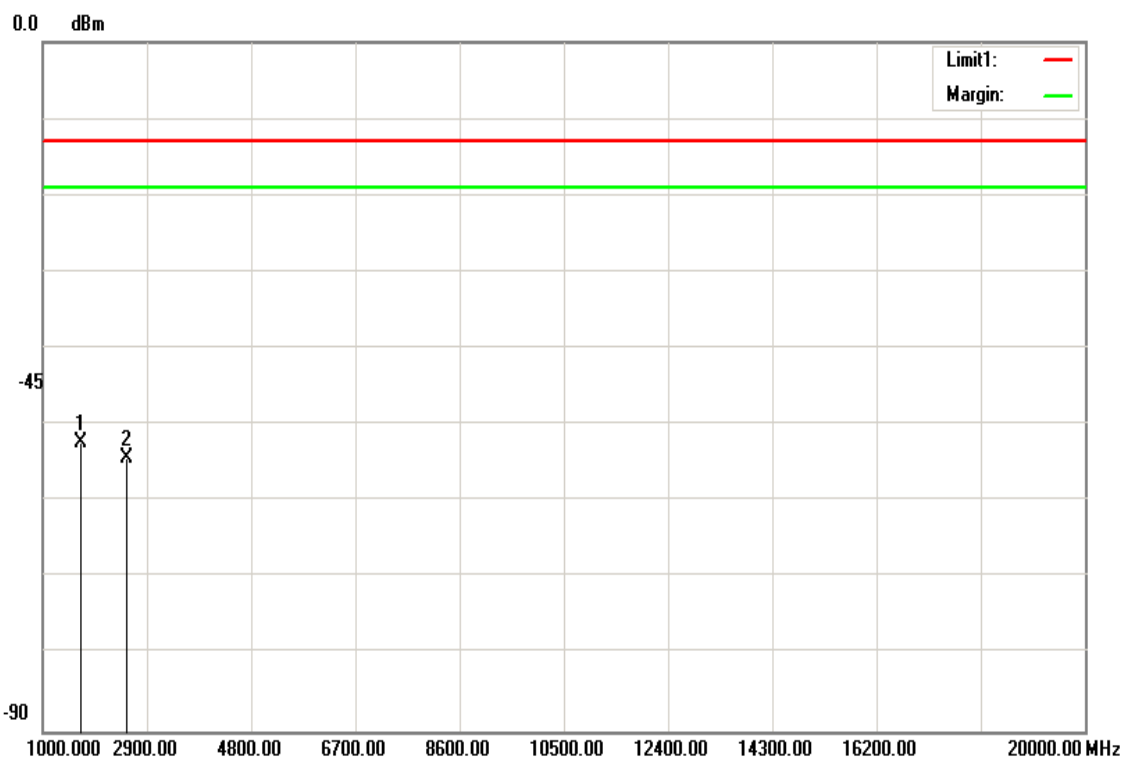


Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1672.000	-53.02	1.52	-51.50	-13.00	-38.50	H
2509.000	-55.79	2.02	-53.77	-13.00	-40.77	H
N/A						

**Remark:**

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

**Operation Mode:** WCDMA 12.2k RMC Band V / TX /High CH **Test Date:** March 9, 2018  
**Temperature:** 21°C **Tested by:** Ivan Wang  
**Humidity:** 52 % RH **Polarity:** Ver.



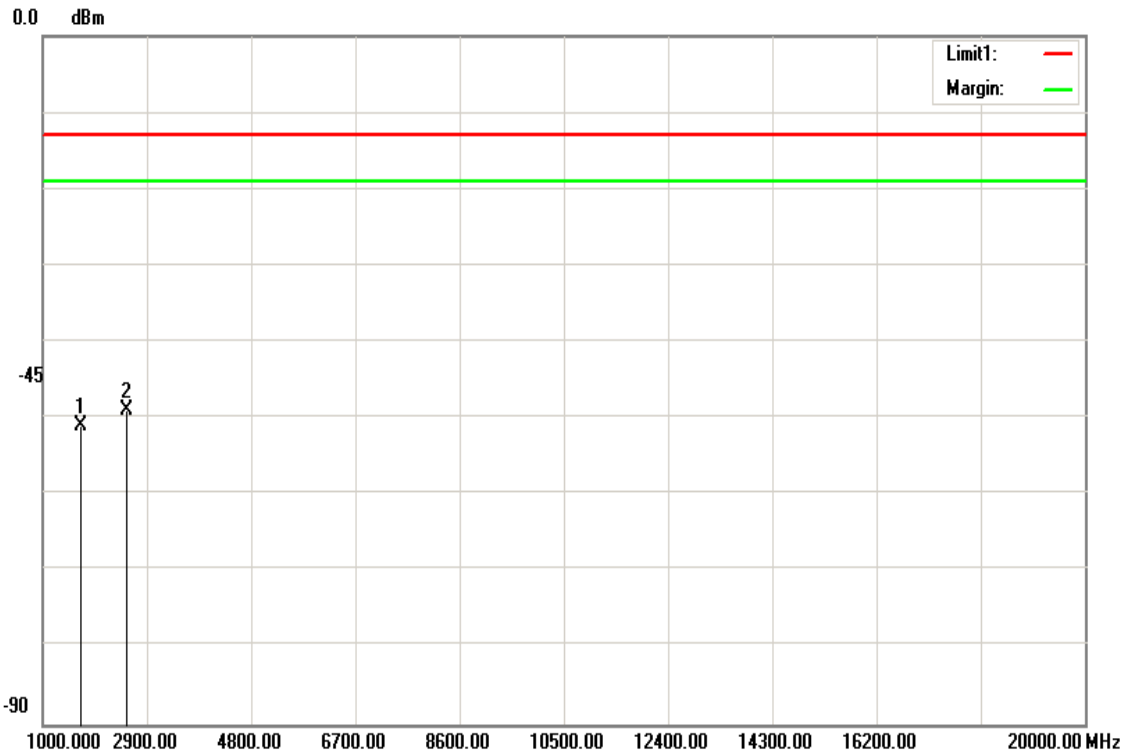
Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1693.000	-53.77	1.51	-52.26	-13.00	-39.26	V
2539.000	-56.89	2.58	-54.31	-13.00	-41.31	V
N/A						

**Remark:**

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



**Operation Mode:** WCDMA 12.2k RMC Band V / TX /High CH **Test Date:** March 9, 2018  
**Temperature:** 21°C **Tested by:** Ivan Wang  
**Humidity:** 52 % RH **Polarity:** Hor.



Frequency (MHz)	S.G. (dBm)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1693.000	-52.57	1.51	-51.06	-13.00	-38.06	H
2539.000	-51.5	2.58	-48.92	-13.00	-35.92	H
N/A						

**Remark:**

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