FCC 47 CFR PART 27 SUBPART L
+
INDUSTRY CANADA RSS-139

TEST REPORT

For

Tablet PC

Model No.:
FCC: AIM-75S-6; AIM-75H-6; AIM-75S-6XXXXXXXXXXXXXXXX; AIM-75H-6XXXXXXXXXXXXXXXX; AIM75S-6XXXXXXXXXXXXXXXX; AIM75H-6XXXXXXXXXXXXXXXX (where "X" may be any alphanumeric character, "-" or blank)

IC: AIM-75S-6; AIM-75H-6

Trade Name: ADVANTECH

Issued to

Advantech Co., Ltd.
No. 1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 114, Taiwan, 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.)
Issued Date: September 7, 2021

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
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Revision History

Rev.		Issue Date		Revisions	Effect Page	Revised By
00		September 7, 2021		Initial Issue	ALL	Doris Chu

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APPENDIX 1 - PHOTOGRAPHS OF EUT

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1 TEST RESULT CERTIFICATION

Applicant:	Advantech Co., Ltd. No. 1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 114, Taiwan, R.O.C.
Manufacturer:	Advantech Co., Ltd. No. 1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 114, Taiwan, R.O.C.
Equipment Under Test:	Tablet PC
Trade Name:	ADVANTECH
Model No.:	FCC: AIM-75S-6; AIM-75H-6; AIM-75S-6XXXXXXXXXXXXXXXX; AIM-75H-6XXXXXXXXXXXXXXXX; AIM75S-6XXXXXXXXXXXXXXXX; AIM75H-6XXXXXXXXXXXXXXXX (where “X” may be any alphanumeric character, “-” or blank) IC: AIM-75S-6; AIM-75H-6
Date of Test:	December 14, 2020 ~ May 25, 2021

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APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
FCC 47 CFR PART 27 SUBPART L + RSS-139 Issue 3 2015	No non-compliance noted
Statements of Conformity	
Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.	

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 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 and IC RSS-139 Issue 3.

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

Approved by:

Kevin Tsai
Deputy Manager
Compliance Certification Services Inc.

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2 EUT DESCRIPTION

Product	Tablet PC
Model No.	FCC: AIM-75S-6; AIM-75H-6; AIM-75S-6XXXXXXXXXXXXXXXX; AIM-75H-6XXXXXXXXXXXXXXXX; AIM75S-6XXXXXXXXXXXXXXXX; AIM75H-6XXXXXXXXXXXXXXXX (where “X” may be any alphanumeric character, “-” or blank) IC: AIM-75S-6; AIM-75H-6
Model Discrepancy	Please see remark as below.
Trade	ADVANTECH
Received Date	November 2, 2020
Power Supply	1. EUT Power by Adapter. (1) FSP / FSP045-A1BR I/P: 100-240Vac, 50-60Hz, 1.2A O/P: 5Vdc, 3.0A, 15.0W; 9.0Vdc, 3.0A, 27.0W; 12.0Vdc, 3.0A, 36.0W; 15.0Vdc, 3.0A, 45.0W; 20.0Vdc, 2.25A, 45.0W (2) GlobTek, Inc / GTM96605-GEN2-A1-T2 I/P: 100-240Vac, 50-60Hz, 1.5A O/P: 5Vdc, 4.6A; 5.8Vdc, 4.6A; 9Vdc, 4.4A; 12Vdc, 4A; 15Vdc, 3.6A; 20Vdc, 3A (3) DELTA / MEA-045AA2C I/P: 100-240V~1.0A Max. 50-60Hz O/P: 5VDC, 3A; 9VDC, 3A; 10VDC, 3A; 12VDC, 3A; 15VDC, 3A; 20VDC, 2.25A 2. EUT Power by Rechargeable Li-ion Battery. ADVANTECH / AIM-BAT-8 Rating: 3.8Vdc, 4900mAh, 18.62Wh
Frequency Range	WCDMA / HSDPA / HSUPA Band IV: 1712.4-1752.6 MHz
Transmit Power (EIRP Power)	WCDMA Band IV: 25.50 dBm
Antenna Specification	Antenna type: PIFA 1. YAGEO / 6036B0281601 / Main (TX) Band IV: 2.14 dBi 2. YAGEO / 6036B0281701 / Aux Band IV: 0.76 dBi
HW Version	AX2
SW Version	0.3.6.9_20201021.021551
EUT Serial #	200CT32E00162
Module	Quectel / EM06-A

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Remark:

1. For more details, refer to the User's manual of the EUT.
2. Disclaimer: Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.
3. Disclaimer: Variant information between/among model numbers / trademarks are provided by the applicant, test results of this report are applicable to the sample EUT received of main test model name.
4. Model Discrepancy:

Model	Adapter	Tablet color
AIM-75H-6	1. GlobTek, Inc / GTM96605-GEN2-A1-T2 I/P: 100-240VAC, 50-60Hz, 1.5A O/P: 5VDC, 4.6A; 5.8VDC, 4.6A; 9VDC, 4.4A; 12VDC, 4A; 15VDC, 3.6A; 20VDC, 3A 2. DELTA / MEA-045AA2C IP: 100-240V~1.0A Max. 50-60Hz O/P: 5VDC, 3A; 9VDC, 3A; 10VDC, 3A; 12VDC, 3A; 15VDC, 3A; 20VDC, 2.25A	White
AIM-75S-6	1. FSP / FSP045-A1BR I/P: 100-240VAC, 50-60Hz, 1.2A O/P: 5.0VDC, 3.0A 15.0W; 9.0VDC, 3.0A 27.0W; 12.0VDC, 3.0A 36.0W; 15.0VDC, 3.0A 45.0W; 20.0VDC, 2.25A 45.0W	Black
AIM-75S-6XXXXXXXXXXXXXXXX; AIM-75H-6XXXXXXXXXXXXXXXX; AIM75S-6XXXXXXXXXXXXXXXX; AIM75H-6XXXXXXXXXXXXXXXX (where "X" may be any alphanumeric character, "-" or blank)	All the above models are identical except for the designation of model numbers. The suffix of (where "X" may be any alphanumeric character , "-" or blank) on model number is just for marketing purpose only.	

Emission Designator				
System	**Band**	**Frequency Range(MHz)**	**Emission Designator (99% OBW)**	**Maximum EIRP (W)**
WCDMA 12.2K RMC	**IV**	**1712.4MHz ~1752.6MHz**	**4M15F9W**	**0.3548**

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3 TEST METHODOLOGY

Both conducted and radiated testing were performed according to the procedures document on ANSI C63.26 and FCC CFR 47, Part 27 Subpart L.

Both conducted and radiated testing were performed according to the procedures document on ANSI C63.26: 2015 and RSS-139.

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.

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3.2 DESCRIPTION OF TEST MODES

The EUT (model: AIM-75S-6) 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 Above 1G	
Test Condition	**Radiated Emission Above 1G**
Power supply Mode	**Mode 1: EUT power by Adapter. (GlobTek)** **Mode 2: EUT power by Adapter. (FSP)** **Mode 3: EUT power by Adapter. (DELTA)** **Mode 4: EUT power by Battery**
Worst Mode	☐ **Mode 1** ☒ **Mode 2** ☐ **Mode 3** ☐ **Mode 4**
Worst Position	☐ **Placed in fixed position.** ☒ **Placed in fixed position at X-Plane (E2-Plane)** ☐ **Placed in fixed position at Y-Plane (E1-Plane)** ☐ **Placed in fixed position at Z-Plane (H-Plane)**

Radiated Emission Measurement Below 1G	
Test Condition	**Radiated Emission Below 1G**
Power supply Mode	**Mode 1: EUT power by Adapter. (GlobTek)** **Mode 2: EUT power by Adapter. (FSP)** **Mode 3: EUT power by Adapter. (DELTA)** **Mode 4: EUT power by Battery**
Worst Mode	☐ **Mode 1** ☒ **Mode 2** ☐ **Mode 3** ☐ **Mode 4**

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

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4 TEST SUMMERY

FCC Standard Section	IC Standard Secction	Report Section	Test Item	Result
-	-	2	Antenna Requirement	Pass
27.50(d)	RSS-139 section 6.5	8.1	EIRP Measurement	Pass
2.1049	RSS-GEN 6.7	8.2	Occupied Bandwidth Measurement	Pass
27.53(h)	RSS-139 section 6.5	8.3	Peak to Average Ratio	Pass
27.50(a)	RSS-139 section 6.6	8.4	Out of Band Emission at Antenna Terminals	Pass
27.53(h)	RSS-139 section 6.6	8.5	Spurious Radiation Measurement	Pass
2.1055, 27.54	RSS-139 section 6.4	8.6	Frequency Stability v.s. temperature measurement	Pass

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5 INSTRUMENT CALIBRATION

5.1 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.

5.2 MEASUREMENT EQUIPMENT USED

Equipment Used for Emissions Measurement

Remark: *Each piece of equipment is scheduled for calibration*

RF Conducted Test Site					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal Date**	**Cal Due**
Coaxial Cable	Woken	WC12	CC003	06/29/2020	06/28/2021
Power Divider	Solvang Technology	STI08-0015	008	08/05/2020	08/04/2021
Radio Communication Analyzer	Anritsu	MT-8820C	6201240043	07/17/2020	07/16/2021
Thermostatic/Humidity Chamber	TAICHY	MHG-150LF	930619	09/24/2020	09/23/2021
EXA Signal Analyzer	KEYSIGHT	N9010B	MY55460167	09/07/2020	09/06/2021
Software	N/A				

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3M 966 Chamber Test Site					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal Date**	**Cal Due**
Band Reject Filters	MICRO TRONICS	BRM 50702	120	02/25/2020	02/24/2021
Bilog Antenna	Sunol Sciences	JB3	A030105	07/24/2020	07/23/2021
Coaxial Cable	HUBER SUHNER	SUCOFLEX 104PEA	20995	02/25/2020	02/24/2021
Coaxial Cable	EMCI	EMC105	190914+327109/4	09/19/2020	09/18/2021
Digital Thermo-Hygro Meter	WISEWIND	1206	D07	01/15/2020	01/14/2021
double Ridged Guide Horn Antenna	ETC	MCTD 1209	DRH13M02003	09/30/2020	09/29/2021
Loop Ant	COM-POWER	AL-130	121051	03/27/2020	03/26/2021
Pre-Amplifier	EMEC	EM330	060609	02/25/2020	02/24/2021
Pre-Amplifier	EMEC	EM01G26G	060570	06/29/2020	06/28/2021
PSA Series Spectrum Analyzer	Agilent	E4446A	MY46180323	07/24/2020	07/23/2021
S.G.	Agilent	E8257C	US42340383	07/21/2020	07/20/2021
Bilog Antenna	Sunol Sciences	JB1	A052609	07/24/2020	07/23/2021
Horn Antenna	ETS LINDGREN	3117	00055165	07/22/2020	07/21/2021
Horn Antenna	EMCO	3116	2487	05/11/2020	05/10/2021
Horn Antenna	ETS LINDGREN	3116	00026370	12/11/2020	12/10/2021
K Type Cable	Huber+Suhner	SUCOFLEX 102	29406/2	12/09/2020	12/08/2021
K Type Cable	Huber+Suhner	SUCOFLEX 102	22470/2	12/09/2020	12/08/2021
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
Software	e3 6.11-20180413				

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5.3 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	+/- 1.2575
Emission bandwidth, 20dB bandwidth	+/- 0.0014
RF output power, conducted	+/- 1.14
Power density, conducted	+/- 1.40
3M Semi Anechoic Chamber / 30M~200M	+/- 4.12
3M Semi Anechoic Chamber / 200M~1000M	+/- 4.68
3M Semi Anechoic Chamber / 1G~8G	+/- 5.18
3M Semi Anechoic Chamber / 8G~18G	+/- 5.47
3M Semi Anechoic Chamber / 18G~26G	+/- 3.81
3M Semi Anechoic Chamber / 26G~40G	+/- 3.87

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

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6 FACILITIES AND ACCREDITATIONS

6.1 FACILITIES

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

☐ No.199, Chunghsen 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.

6.2 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.”

6.3 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.

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7 SETUP OF EQUIPMENT UNDER TEST

7.1 SETUP CONFIGURATION OF EUT

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

7.2 SUPPORT EQUIPMENT

No	Equipment	Brand	Model	Series No.	FCC ID	IC
1	NB(J)	TOSHIBA	PT345T-00L002	N/A	PD97260H	1000M-7260H

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.*

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8 FCC PART 27 REQUIREMENTS & INDUSTRY CANADA RSS-139

8.1 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.

RSS-139 section 6.5

The equivalent isotropically radiated power (e.i.r.p.) for mobile and portable transmitters shall not exceed one watt. The e.i.r.p. for fixed and base stations in the band 1710-1780 MHz shall not exceed 1 watt.

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.

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

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WCDMA 12.2K RMC

Temperature: 25℃ **Humidity:** 57% RH

Tested by: Jerry Chang **Test Date:** May 25, 2021

WCDMA Band IV

Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Max. Meas. Avg Pwr (dBm)	Reduced Meas. Avg Pwr	EIRP (dBm)
W-CDMA Band IV	Rel 99	RMC, 12.2 kbps	1312	1712.4	N/A	23.07	19.19	25.21
			1413	1732.6	N/A	23.32	19.33	25.46
			1513	1752.6	N/A	23.36	19.65	**25.50**
	HSDPA	Subtest 1	1312	1712.4	0	22.20	18.87	24.34
			1413	1732.6	0	22.24	19.08	24.38
			1513	1752.6	0	22.17	19.35	24.31
		Subtest 2	1312	1712.4	0	23.05	18.89	25.19
			1413	1732.6	0	22.30	19.06	24.44
			1513	1752.6	0	22.75	19.36	24.89
		Subtest 3	1312	1712.4	0.5	22.75	18.46	24.89
			1413	1732.6	0.5	21.87	18.53	24.01
			1513	1752.6	0.5	22.76	18.84	24.90
		Subtest 4	1312	1712.4	0.5	22.84	18.43	24.98
			1413	1732.6	0.5	21.83	18.51	23.97
			1513	1752.6	0.5	22.77	18.85	24.91
	HSUPA	Subtest 1	1312	1712.4	0	22.66	18.83	24.80
			1413	1732.6	0	22.25	19.03	24.39
			1513	1752.6	0	22.83	19.31	24.97
		Subtest 2	1312	1712.4	2	21.86	18.34	24.00
			1413	1732.6	2	21.45	18.53	23.59
			1513	1752.6	2	21.20	18.79	23.34
		Subtest 3	1312	1712.4	1	22.86	18.86	25.00
			1413	1732.6	1	22.37	19.02	24.51
			1513	1752.6	1	22.81	19.31	24.95
		Subtest 4	1312	1712.4	2	21.81	18.80	23.95
			1413	1732.6	2	21.62	19.03	23.76
			1513	1752.6	2	21.90	19.30	24.04
		Subtest 5	1312	1712.4	0	22.96	18.80	25.10
			1413	1732.6	0	22.26	19.00	24.40
			1513	1752.6	0	23.07	19.33	25.21

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8.2 OCCUPIED BANDWIDTH MEASUREMENT

LIMIT

For Reporting purpose only.

TEST PROCEDURE

According to KDB 971168 D01 Power Meas License Digital System and TIA-603-E Section 2.2.12.

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 ≥ 3 x RBW
4. Detector = Peak
5. Trace mode = max. hold

TEST RESULTS

No non-compliance noted

Test Data

Temperature: 25℃ **Humidity:** 57% RH

Tested by: Jerry Chang **Test Date:** May 25, 2021

Test Mode	Channel	99% Bandwidth (MHz)	26 dB Bandwidth (MHz)
WCDMA 12.2K RMC (Band IV)	Lowest	4.1500	4.7400
	Middle	4.1446	4.7320
	Highest	4.1350	4.7360

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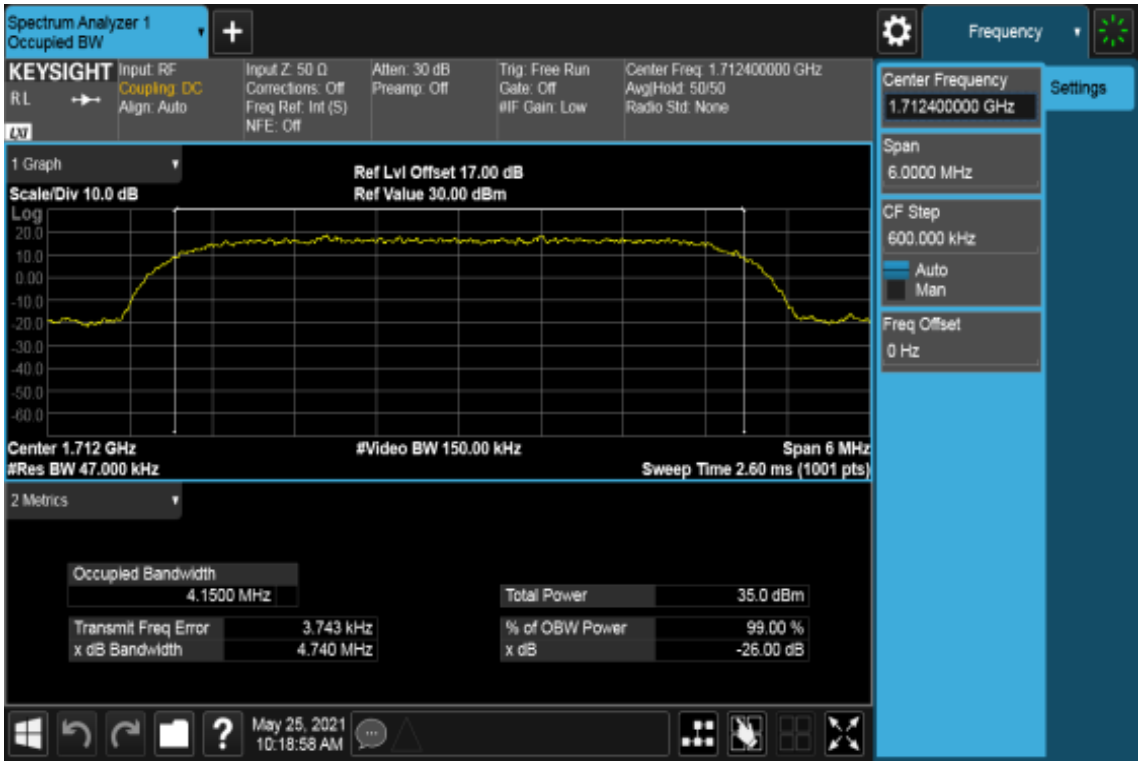
Test Plot

WCDMA 12.2K RMC (BAND IV)

Low CH



Mid CH

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High CH

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8.3 PEAK TO AVERAGE POWER RATIO

Limit

In measuring transmissions in this band using an average power technique, peak-to-average power ratio (PAPR) of the transmission may not exceed 13 dB.

Test Procedures

1. According to KDB 971168 D01.
2. The EUT was connect to spectrum analyzer and call box.
3. Set the CCDF function in spectrum analyzer.
4. The highest RF output power were measured and recorded the maximum PAPR level associated with a probability of 0.1%.
5. Record the Peak to Average Power Ratio.

Test Results

Temperature:	25℃	**Humidity:**	57% RH
Tested by:	Jerry Chang	**Test Date:**	May 25, 2021

WCDMA 12.2K RMC (Band IV)

Freq. (MHz)	CH	Peak-to-Average Ratio (dB)
		WCDMA IV
1712.4	1312	2.68
1732.6	1413	2.48
1752.6	1513	2.67

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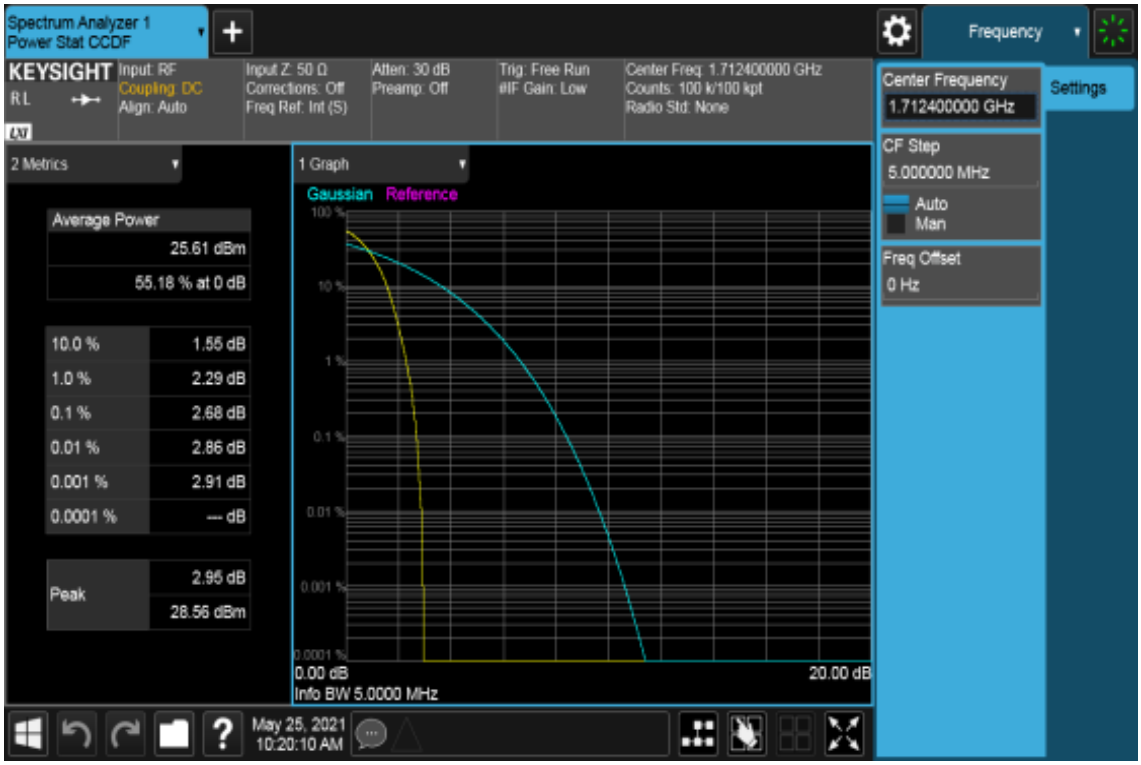
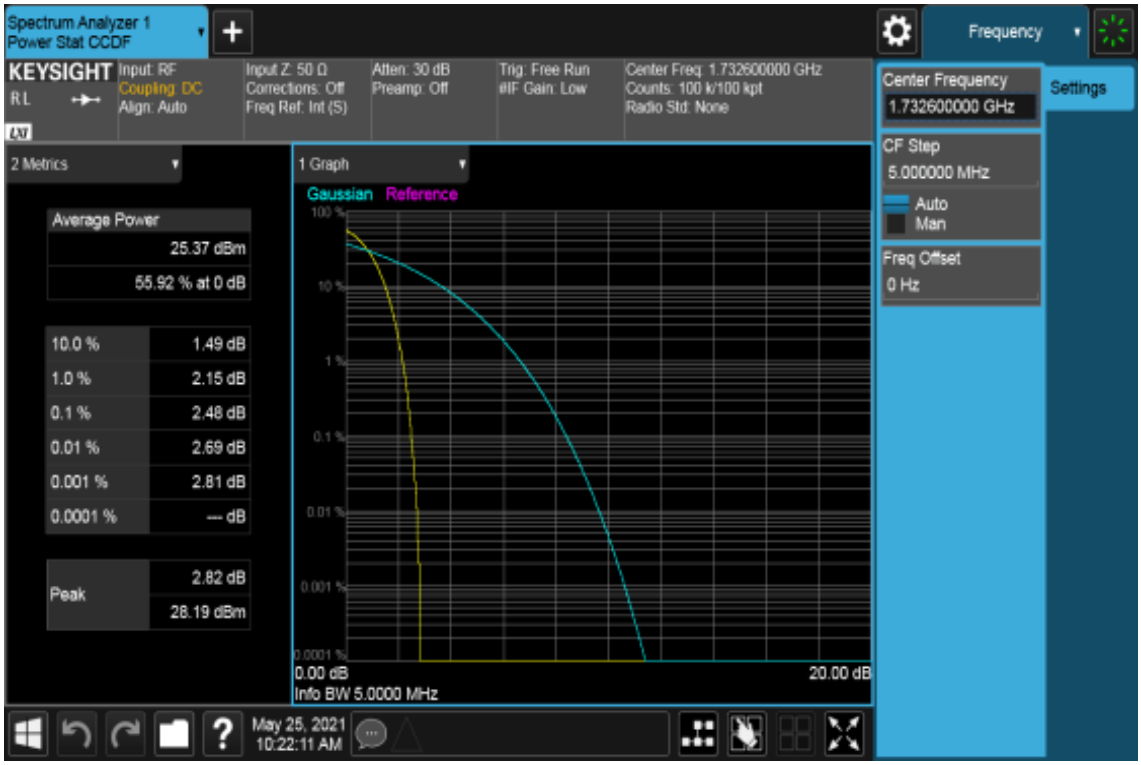
Test Plot

WCDMA 12.2K RMC (BAND IV)

Low CH



Mid CH



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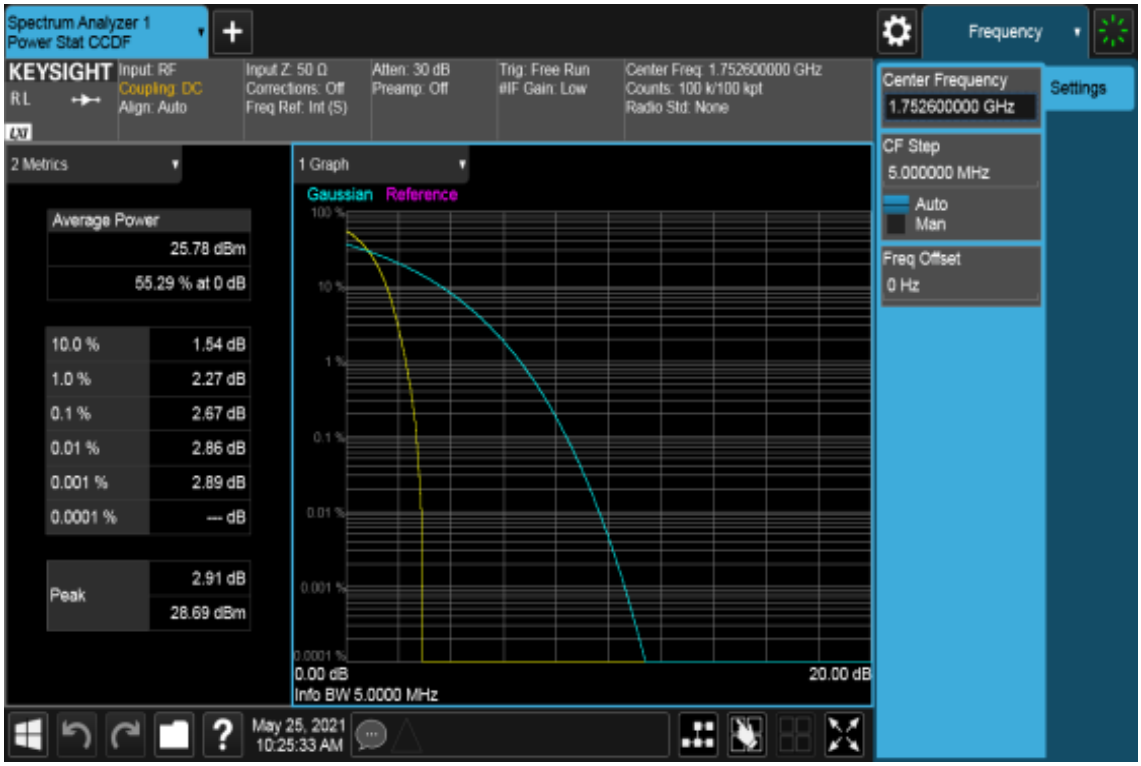
High CH



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8.4 OUT OF BAND EMISSION AT ANTENNA TERMINALS

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 log10 (P) dB.

RSS-139 section 6.6

The mean power of emission must be attenuated below the mean power of the non-modulated carrier (P) on any frequency twice or more than twice the fundamental frequency by at least 43 + 10 log P dB.

TEST PROCEDURE

a) Conducted Emission
The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation The resolution bandwidth of the spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic.
1. To connect Antenna Port of EUT to Spectrum.
2. Set RBW = 1MHz & VBW = 1MHz on Spectrum.
3. Allow trace to fully stabilize
4. Repeat above procedures until all default test channel measured were complete.

b) Band Edge
1. To connect Antenna Port of EUT to Spectrum.
2. The band edge of low and high channels for the highest RF powers was measured. Setting RBW ≥ 1% EBW.
3. Allow trace to fully stabilize
4. Repeat above procedures until all default test channel measured were complete.

TEST RESULTS

No non-compliance noted.

Test Data

Temperature:	25℃	**Humidity:**	57% RH
Tested by:	Jerry Chang	**Test Date:**	May 25, 2021

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Band Edge

WCDMA 12.2K RMC (BAND IV)

Low CH

High CH

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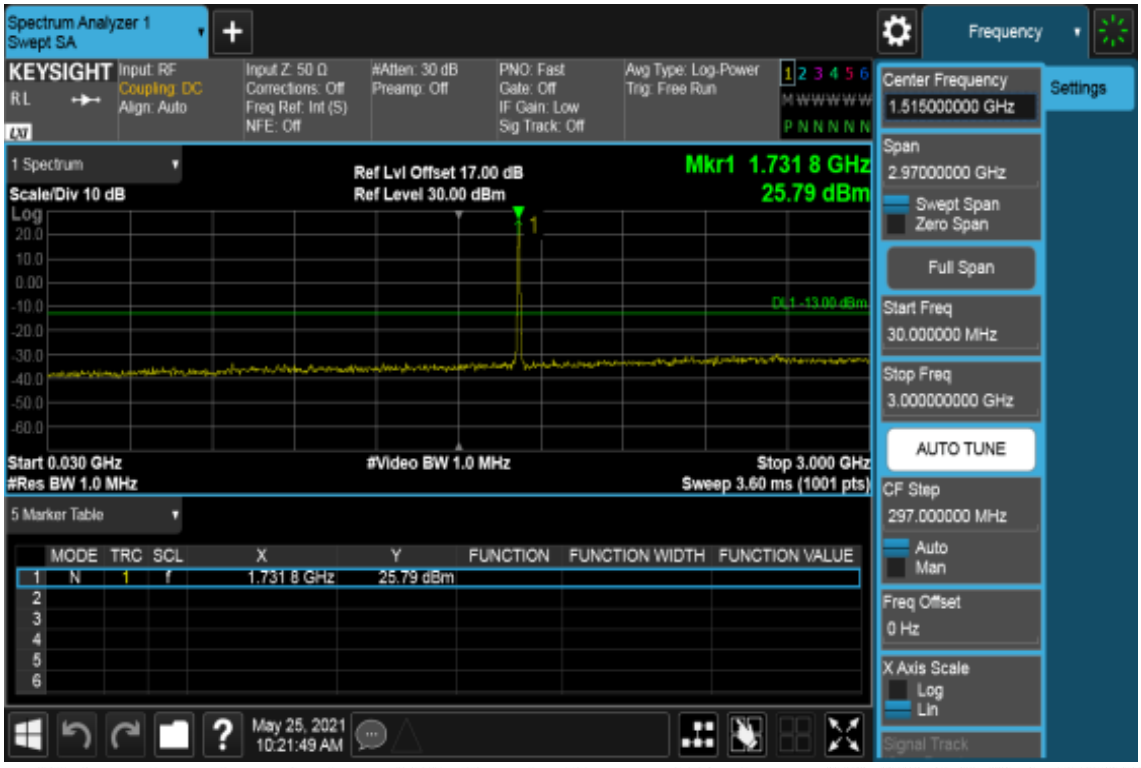
Spurious Emission

WCDMA 12.2K RMC Low (BAND IV)

Low CH

Mid CH



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High CH

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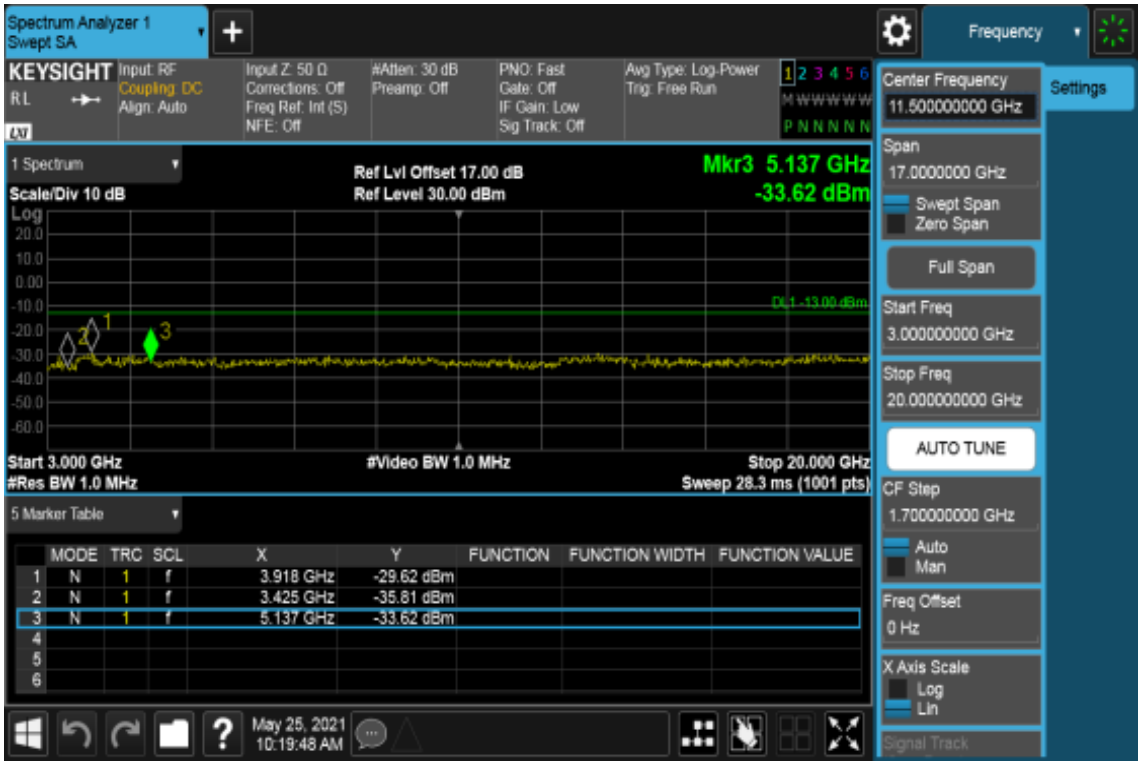
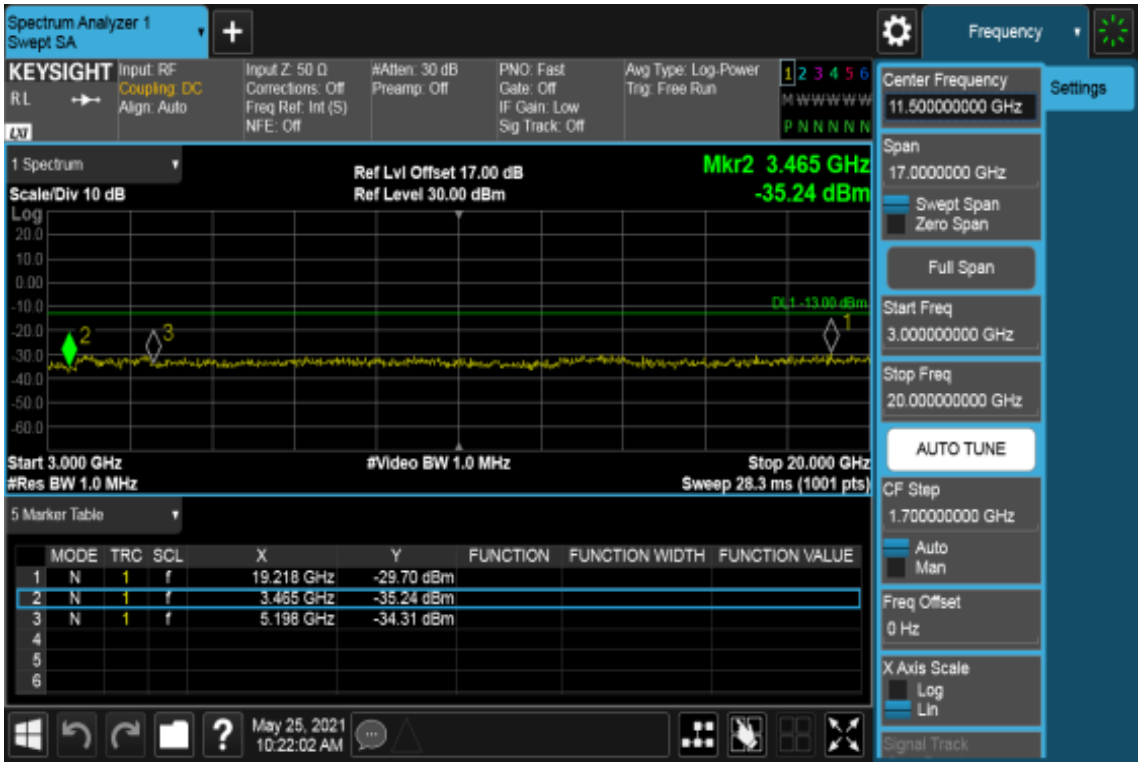
WCDMA 12.2K RMC High (BAND IV)

Low CH



Mid CH



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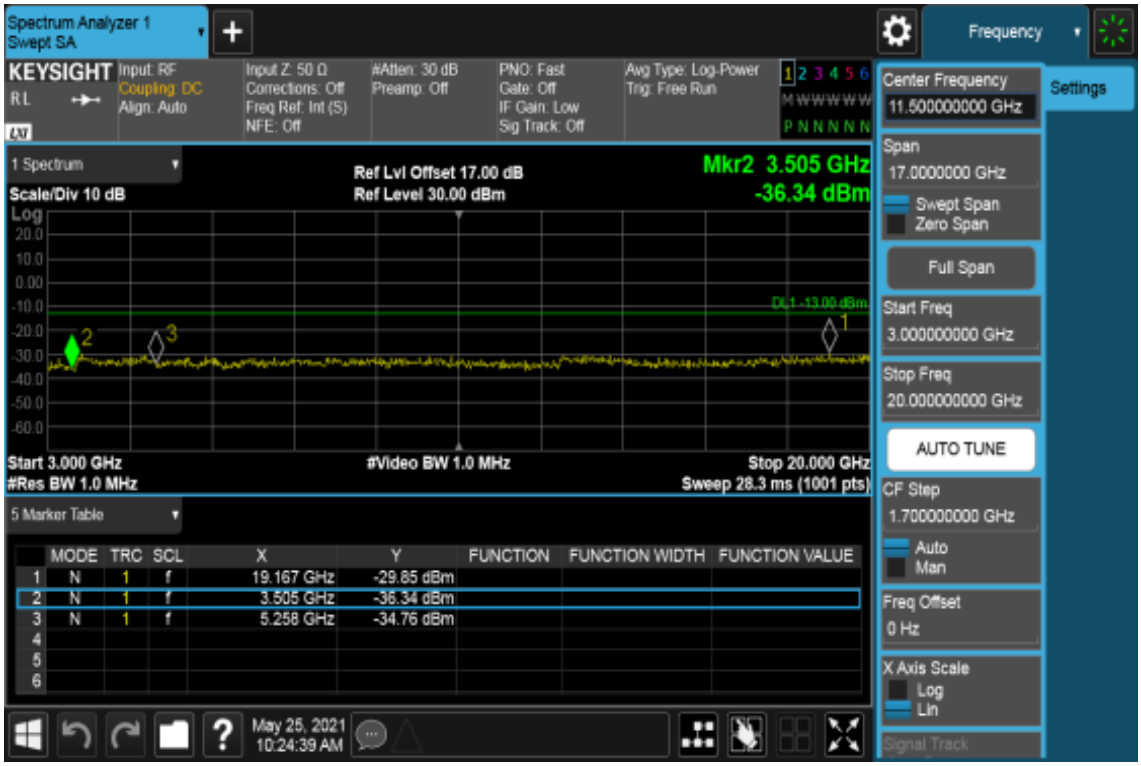
High CH



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8.5 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 log10 (P) dB.

RSS-139 section 6.6

The mean power of emission must be attenuated below the mean power of the non-modulated carrier (P) on any frequency twice or more than twice the fundamental frequency by at least 43 + 10 log P dB.

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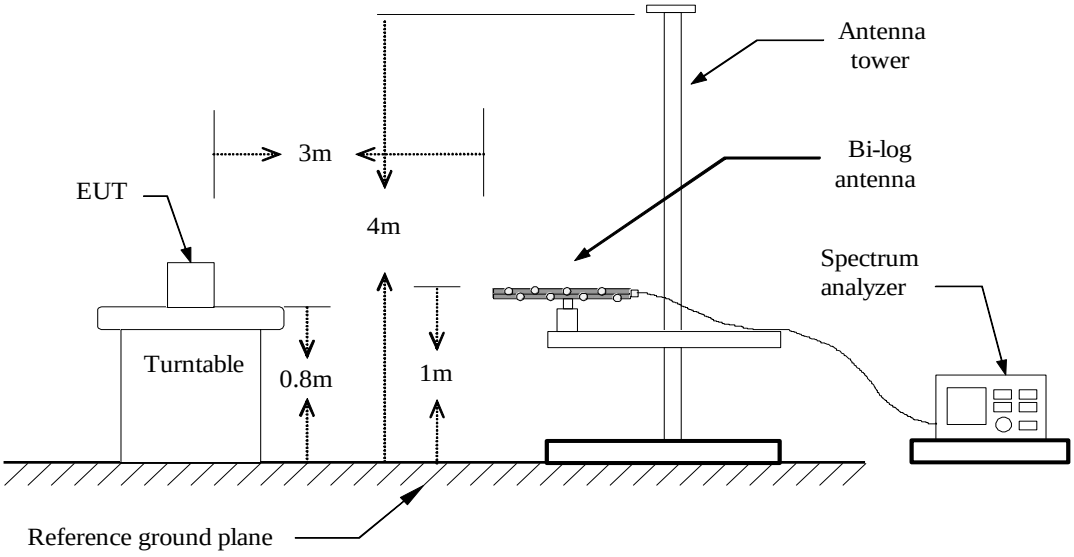
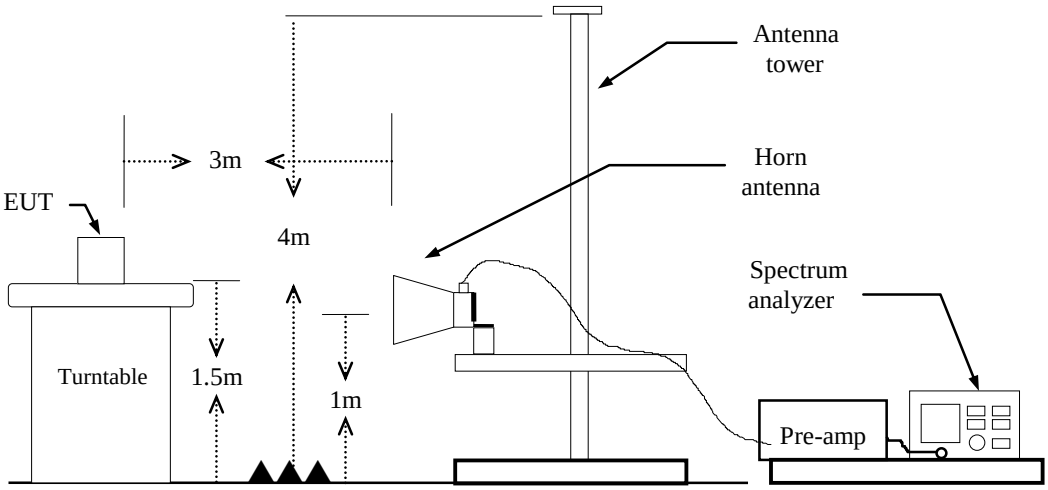
Test Configuration

Below 1 GHz



Above 1 GHz



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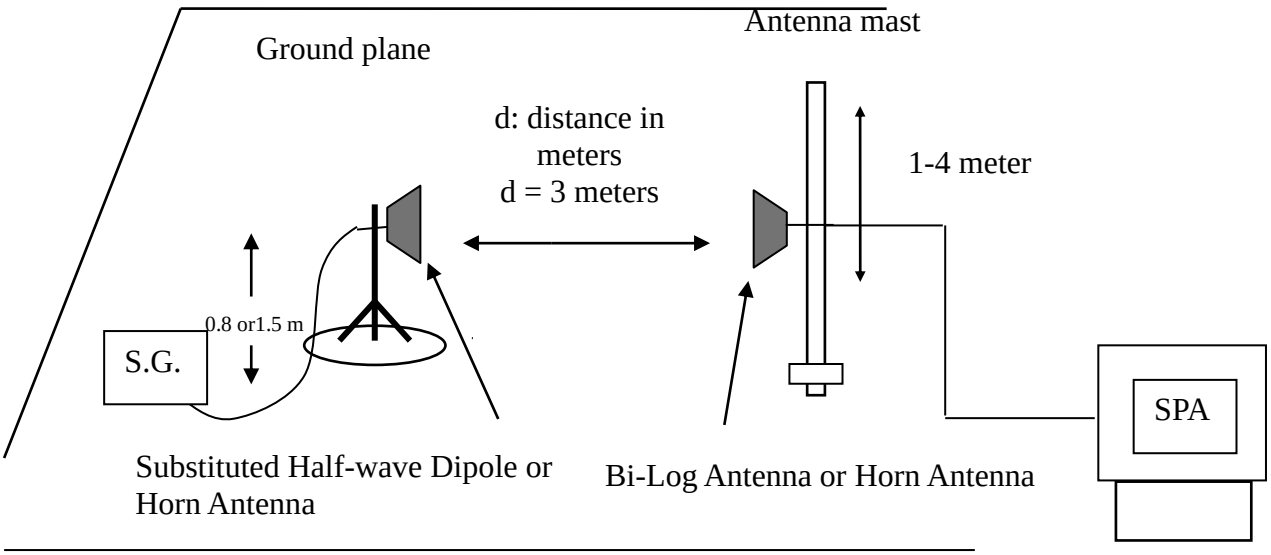
Substituted Method Test Set-up



TEST PROCEDURE

1. According to KDB 971168 D01 Power Meas License Digital System.
2. The EUT was placed on a turntable
   (1) Below 1G : 0.8m
   (2) Above 1G : 1.5m
   (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 (dBi) – Cable (dB)-2.15

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

TEST RESULTS

Refer to the attached tabular data sheets.

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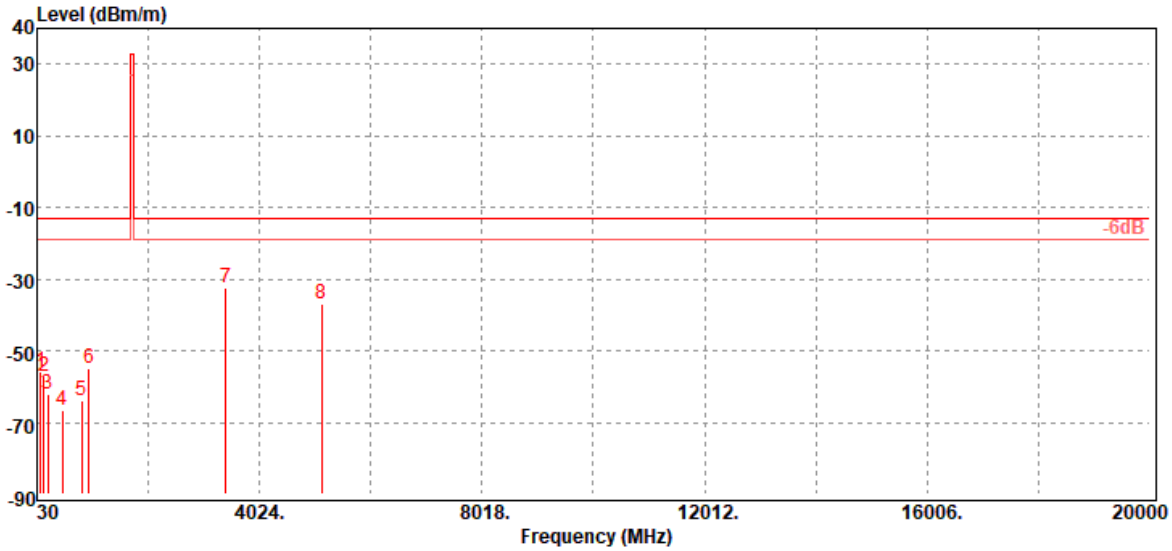
Radiated Spurious Emission Measurement Result

Operation Mode:	WCDMA 12.2k RMC Band IV / TX / Low CH	**Test Date:**	December 14, 2020
Temperature:	21.9℃	**Tested by:**	Ray Li
Humidity:	61 % RH	**Polarity:**	Ver.



Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
95.96	-56.02	-47.82	-7.40	-0.80	-13.00	-43.02	V
152.22	-57.02	-49.15	-6.86	-1.01	-13.00	-44.02	V
219.15	-62.01	-58.77	-2.02	-1.22	-13.00	-49.01	V
490.75	-66.82	-62.80	-2.17	-1.85	-13.00	-53.82	V
833.16	-63.84	-59.91	-1.50	-2.43	-13.00	-50.84	V
956.35	-54.94	-51.09	-1.23	-2.62	-13.00	-41.94	V
3424.80	-32.33	-39.58	12.75	-5.50	-13.00	-19.33	V
5137.20	-36.88	-42.86	12.67	-6.69	-13.00	-23.88	V

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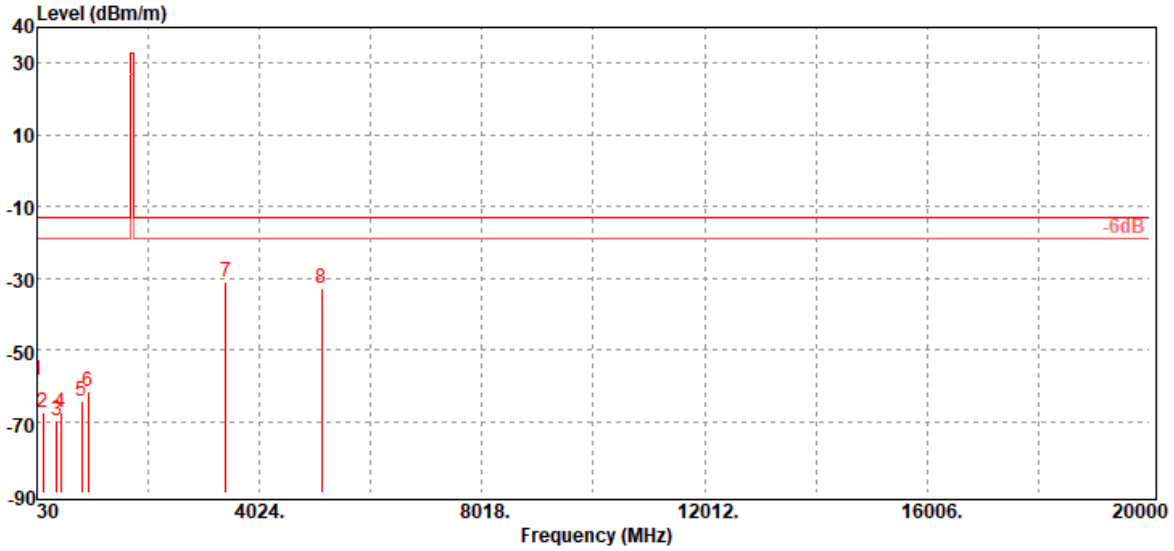
Operation Mode:	WCDMA 12.2k RMC Band IV / TX / Low CH	**Test Date:**	December 14, 2020
Temperature:	21.9℃	**Tested by:**	Ray Li
Humidity:	61 % RH	**Polarity:**	Hor.



Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
31.94	-58.66	-30.03	-28.16	-0.47	-13.00	-45.66	H
143.49	-67.70	-58.72	-8.00	-0.98	-13.00	-54.70	H
385.99	-69.93	-66.90	-1.40	-1.63	-13.00	-56.93	H
459.71	-67.45	-63.57	-2.10	-1.78	-13.00	-54.45	H
827.34	-64.25	-60.33	-1.50	-2.42	-13.00	-51.25	H
953.44	-61.88	-58.06	-1.20	-2.62	-13.00	-48.88	H
3424.80	-30.96	-38.21	12.75	-5.50	-13.00	-17.96	H
5137.20	-32.92	-38.90	12.67	-6.69	-13.00	-19.92	H

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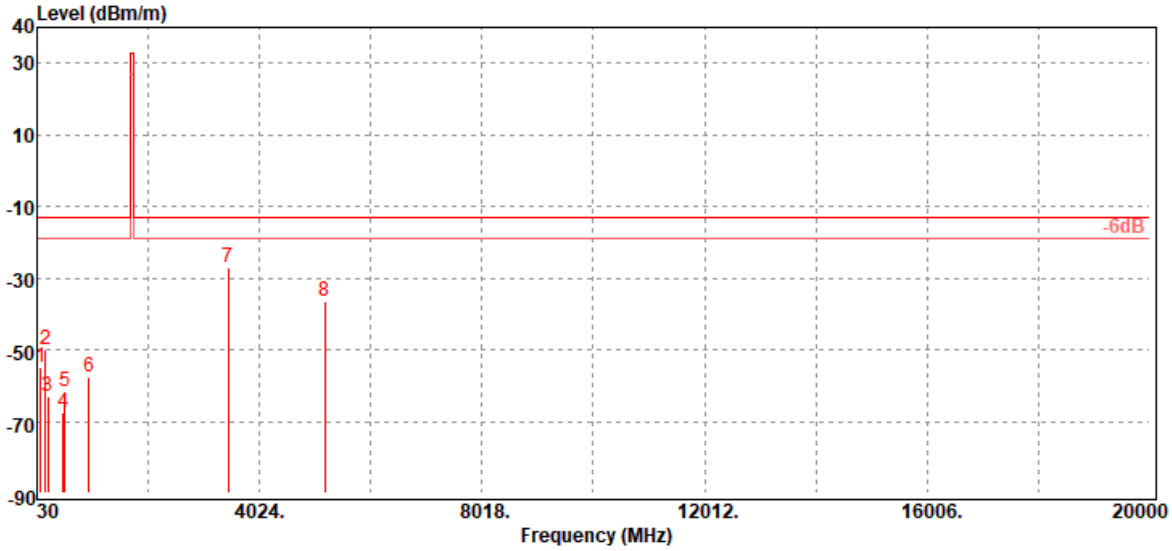
Operation Mode:	WCDMA 12.2k RMC Band IV / TX / Mid CH	**Test Date:**	December 14, 2020
Temperature:	21.9℃	**Tested by:**	Ray Li
Humidity:	61 % RH	**Polarity:**	Ver.



Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
88.20	-54.95	-47.02	-7.16	-0.77	-13.00	-41.95	V
178.41	-49.83	-44.17	-4.56	-1.10	-13.00	-36.83	V
222.06	-62.88	-59.70	-1.96	-1.22	-13.00	-49.88	V
492.69	-67.56	-63.62	-2.09	-1.85	-13.00	-54.56	V
531.49	-61.62	-58.40	-1.30	-1.92	-13.00	-48.62	V
956.35	-57.54	-53.69	-1.23	-2.62	-13.00	-44.54	V
3465.20	-27.20	-34.31	12.64	-5.53	-13.00	-14.20	V
5197.80	-36.26	-42.50	12.99	-6.75	-13.00	-23.26	V

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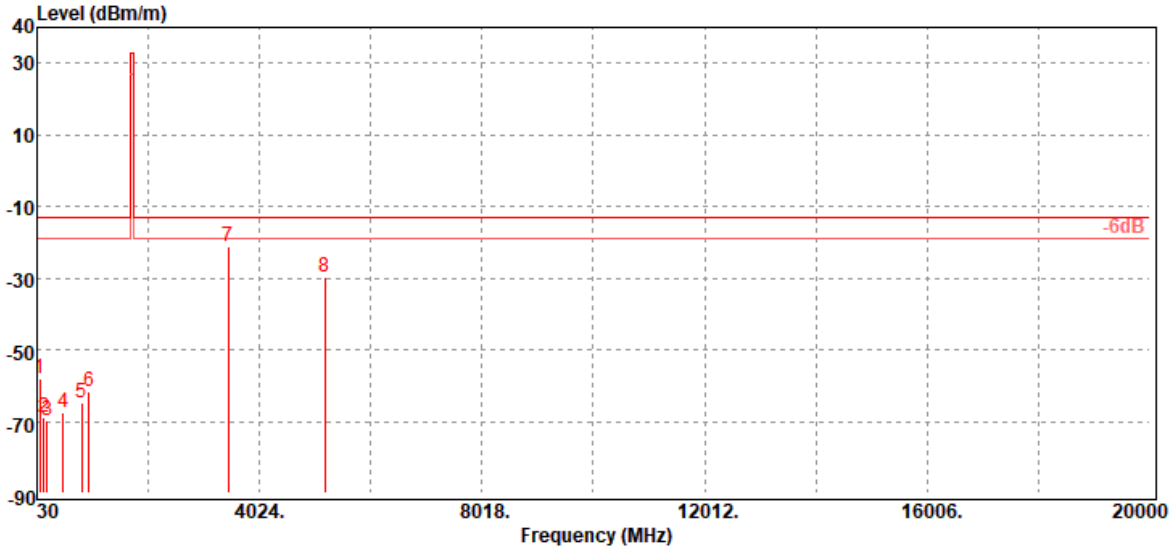
Operation Mode:	WCDMA 12.2k RMC Band IV / TX / Mid CH	**Test Date:**	December 14, 2020
Temperature:	21.9℃	**Tested by:**	Ray Li
Humidity:	61 % RH	**Polarity:**	Hor.



Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
73.65	-58.05	-48.25	-9.10	-0.70	-13.00	-45.05	H
149.31	-68.90	-60.73	-7.17	-1.00	-13.00	-55.90	H
209.45	-69.89	-66.52	-2.18	-1.19	-13.00	-56.89	H
498.51	-67.65	-63.78	-2.00	-1.87	-13.00	-54.65	H
833.16	-64.76	-60.83	-1.50	-2.43	-13.00	-51.76	H
968.96	-61.54	-57.60	-1.30	-2.64	-13.00	-48.54	H
3465.20	-21.19	-28.30	12.64	-5.53	-13.00	-8.19	H
5197.80	-29.83	-36.07	12.99	-6.75	-13.00	-16.83	H

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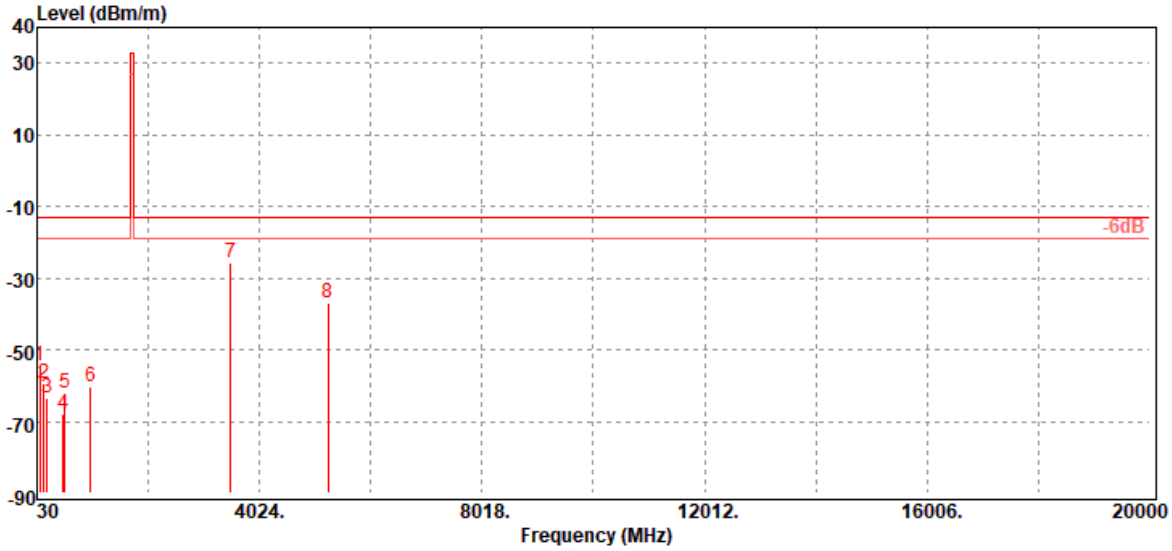
Operation Mode:	WCDMA 12.2k RMC Band IV / TX / High CH	**Test Date:**	December 15, 2020
Temperature:	21.9℃	**Tested by:**	Ray Li
Humidity:	61 % RH	**Polarity:**	Ver.



Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
86.26	-54.31	-46.00	-7.55	-0.76	-13.00	-41.31	V
153.19	-59.60	-51.86	-6.72	-1.02	-13.00	-46.60	V
217.21	-63.43	-60.16	-2.06	-1.21	-13.00	-50.43	V
500.45	-68.17	-64.31	-1.99	-1.87	-13.00	-55.17	V
527.61	-62.12	-58.90	-1.30	-1.92	-13.00	-49.12	V
990.30	-60.41	-56.35	-1.40	-2.66	-13.00	-47.41	V
3505.20	-25.89	-32.82	12.49	-5.56	-13.00	-12.89	V
5257.80	-37.02	-43.41	13.20	-6.81	-13.00	-24.02	V

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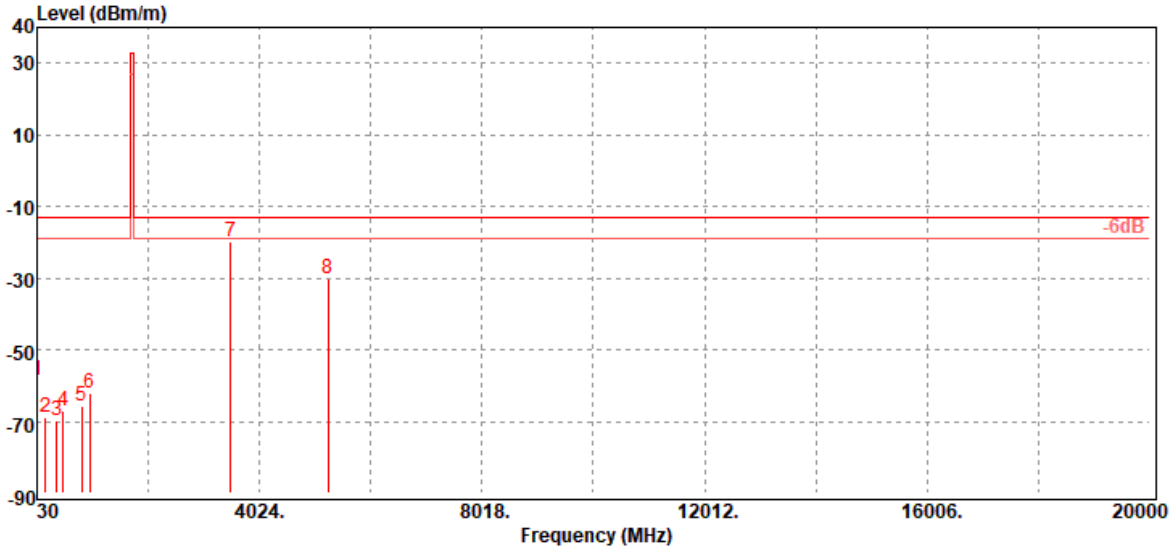
Operation Mode:	WCDMA 12.2k RMC Band IV / TX / High CH	**Test Date:**	December 15, 2020
Temperature:	21.9℃	**Tested by:**	Ray Li
Humidity:	61 % RH	**Polarity:**	Hor.



Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
31.94	-58.60	-29.97	-28.16	-0.47	-13.00	-45.60	H
175.50	-68.81	-62.87	-4.85	-1.09	-13.00	-55.81	H
381.14	-69.98	-66.88	-1.48	-1.62	-13.00	-56.98	H
497.54	-66.88	-63.02	-2.00	-1.86	-13.00	-53.88	H
833.16	-65.54	-61.61	-1.50	-2.43	-13.00	-52.54	H
983.51	-62.00	-57.98	-1.37	-2.65	-13.00	-49.00	H
3505.20	-19.93	-26.86	12.49	-5.56	-13.00	-6.93	H
5257.80	-30.17	-36.56	13.20	-6.81	-13.00	-17.17	H

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8.6 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.

RSS-139 section 6.4

Test Procedure

Use Anritsu 8820 with frequency Error measurement capability.

Temp = -30 to +50℃

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

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

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TEST RESULTS

No non-compliance noted.

Temperature: 25℃ **Humidity:** 57% RH

Tested by: Jerry Chang **Test Date:** May 25, 2021

WCDMA IV Mid Channel 1732.6 MHz				
Limit: +/- 2.5 ppm				
Vdc	Temp. (℃)	Freq. (MHz)	Delta (Hz)	Limit (Hz)
FREQUENCY ERROR vs. VOLTAGE				
5.5	20	1732.599985	-15	4331
5	20	1732.599964	-36	4331
4.75	20	1732.600035	35	4331
3.7 (End point)	20	1732.600045	45	4331
FREQUENCY ERROR vs. Temp.				
5	50	1732.599975	-25	4331
5	40	1732.599959	-41	4331
5	30	1732.600036	36	4331
5	20	1732.600019	19	4331
5	10	1732.600032	32	4331
5	0	1732.599982	-18	4331
5	-10	1732.600022	22	4331
5	-20	1732.599969	-31	4331
5	-30	1732.60001	10	4331

- End of Test Report -

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