FCC 47 CFR PART 22 SUBPART H AND PART 24 SUBPART E

TEST REPORT

For

Module

Model:WP7610

Trade Name: Advantech; Advantech Service-IoT

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.
No.11, Wugong 6th Rd., Wugu Dist.,
New Taipei City 24891, Taiwan. (R.O.C.)
Issued Date: January 7, 2021

Note: *This document may be altered or revised by Compliance Certification Services Inc. personnel only, and shall be noted in the revision section of the document. The client should not use it to claim product endorsement by TAF, A2LA, NIST or any government agencies. The test results in the report only apply to the tested sample.*

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.
除非另有說明，此報告結果僅對測試之樣品負責，同時此樣品僅保留90天。本報告未經本公司書面許可，不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at http://www.sgs.com.tw/Terms-and-Conditions and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com.tw/Terms-and-Conditions. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Revision History

Rev.		Issue Date		Revisions	Effect Page	Revised By
00		August 12, 2020		Initial Issue	ALL	Angel Cheng
01		November 12, 2020		1. Revised temperature、humidity and test date. 2. Added Host device information.	P.5, P.14	Angel Cheng
02		December 22, 2020		1. Revised section 7.1.	P.14-16	Angel Cheng
03		December 30, 2020		1. Revised section 7.1.	P.14-16	Angel Cheng
04		January 6, 2021		1. Revised section 7.1.	P.15-16	Angel Cheng
05		January 7, 2021		1. Revised section 7.1.	P.15-16	Angel Cheng

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

TABLE OF CONTENTS

1. TEST RESULT CERTIFICATION 4

2. EUT DESCRIPTION 5

3. TEST METHODOLOGY 6

3.1 EUT CONFIGURATION 6
3.2 DESCRIPTION OF TEST MODES 6

4. INSTRUMENT CALIBRATION 7

4.1 MEASURING INSTRUMENT CALIBRATION 7
4.2 MEASUREMENT EQUIPMENT USED 7
4.3 MEASUREMENT UNCERTAINTY 8
4.4 FACILITIES AND TEST LOCATION 8

5. FACILITIES AND ACCREDITATIONS 9

5.1 FACILITIES 9
5.2 EQUIPMENT 9

6. SETUP OF EQUIPMENT UNDER TEST 10

6.1 SETUP CONFIGURATION OF EUT 10
6.2 SUPPORT EQUIPMENT 10

7. FCC PART 22 & 24 REQUIREMENTS 11

7.1 ERP & EIRP MEASUREMENT 11
7.2 FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT 17

APPENDIX I PHOTOGRAPHS OF TEST SETUP 31

APPENDIX 1 - PHOTOGRAPHS OF EUT

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

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: Module

Trade Name: Advantech; Advantech Service-IoT

Model Number: WP7610

Date of Test: February 21 ~ July 16, 2020

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/EIA-603-C: 2004 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:

Kevin Tsai
Deputy Manager
Compliance Certification Services Inc.

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

2. EUT DESCRIPTION

Product	Module
Trade Name	Advantech; Advantech Service-IoT
Model Number	WP7610
Received Date	February 7, 2020
Power Supply	Powered from host device.
Frequency Range	WCDMA / HSDPA / HSUPA Band II: 1852.4 ~ 1907.6 MHz WCDMA / HSDPA / HSUPA Band V: 826.4 ~ 846.6MHz
Cellular Phone Protocol	WCDMA: Quadrature Phase Shift Keying (QPSK) with Root-raised cosine pulse shaping filters (roll off = 0.22)
Antenna Gain	Part No.: MA231.LBC.002 PIFA Antenna Band II Antenna gain: 1.37 dBi Band V Antenna gain: 2.26 dBi
Host device information	Product : Computer Trade name: ADVANTECH Model: TREK-572

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, HSDPA and HSPA+ were pretest. The worst case was WCDMA in this test report.*
3. *Disclaimer*
   Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

3. TEST METHODOLOGY

Both conducted and radiated testing were performed according to the procedures document on chapter 13 of ANSI C63.10: 2013, TIA/EIA-603-C: 2004 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 (model: WP7610) 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**
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**
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

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

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.*

Conducted Emissions Test Site					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
Coaxial Cable	Woken	WC12	CC003	06/29/2020	06/28/2021
Coaxial Cable	Woken	WC12	CC001	06/29/2020	06/28/2021
Power Divider	Solvang Technology	STI08-0015	008	08/06/2019	08/05/2020
Signal Analyzer	R&S	FSV 40	101073	09/25/2019	09/24/2020
Wideband Radio Communication Tester	R&S	CMW 500	116875	07/29/2019	07/28/2020
Software	N/A				

Wugu 966 Chamber A					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
Band Reject Filters	MICRO TRONICS	BRM 50702	120	02/26/2019	02/25/2020
Bilog Antenna	Sunol Sciences	JB3	A030105	07/26/2019	07/25/2020
Coaxial Cable	HUBER SUHNER	SUCOFLEX 104PEA	20995	02/26/2019	02/25/2020
Coaxial Cable	EMCI	EMC105	190914+25111	09/20/2019	09/19/2020
Digital Thermo-Hygro Meter	WISEWIND	1206	D07	01/15/2020	01/14/2021
double Ridged Guide Horn Antenna	ETC	MCTD 1209	DRH13M02003	10/04/2019	10/03/2020
Loop Ant	COM-POWER	AL-130	121051	03/22/2019	03/21/2020
Pre-Amplifier	EMEC	EM330	060609	02/26/2019	02/25/2020
Pre-Amplifier	HP	8449B	3008A00965	02/26/2019	02/25/2020
Wideband Radio Communication Tester	R&S	CMW 500	116875	07/29/2019	07/28/2020
PSA Series Spectrum Analyzer	Agilent	E4446A	MY46180323	05/29/2019	05/28/2020
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				

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

4.3 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
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.*

4.4 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at *No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)*

Test site	Test Engineer	Remark
Radiation	Jerry Chang	-
RF Conducted	Jane Wang	-

***Remark:** The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.*

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

☐ 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., Lujhu Township, Taoyuan County 33841, TAIWAN, R.O.C.
Tel: 886-3-324-0332 / Fax: 886-3-324-5235

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

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

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.	Device Type	Brand	Model	FCC ID	Series No.	Data Cable	Power Cord
	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.*

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

7. FCC PART 22 & 24 REQUIREMENTS

7.1 ERP & EIRP MEASUREMENT

LIMIT

According to FCC §2.1046

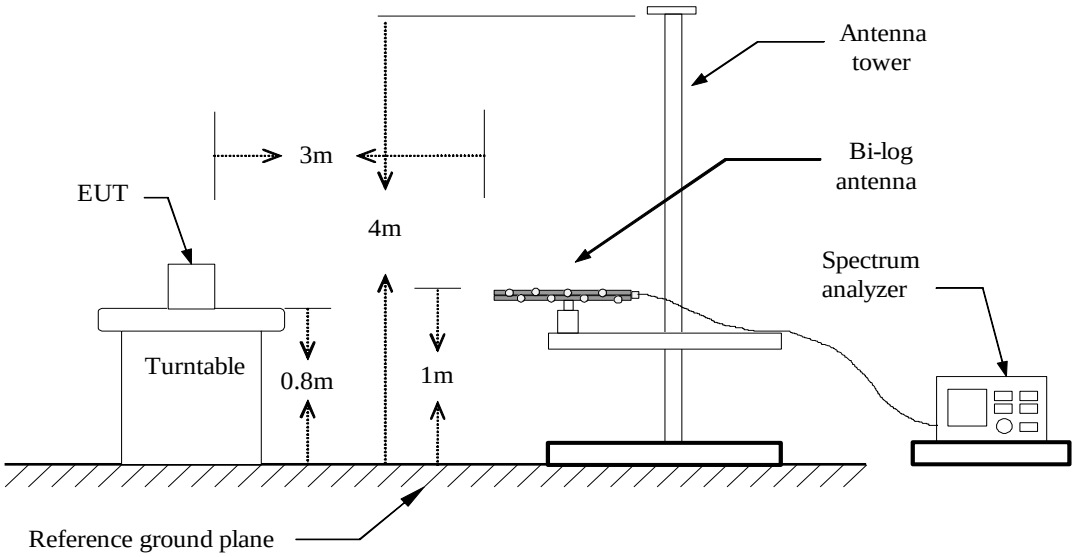
FCC 22.913(a): The Effective Radiated Power (ERP) of mobile transmitters must not exceed 7 Watts.

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

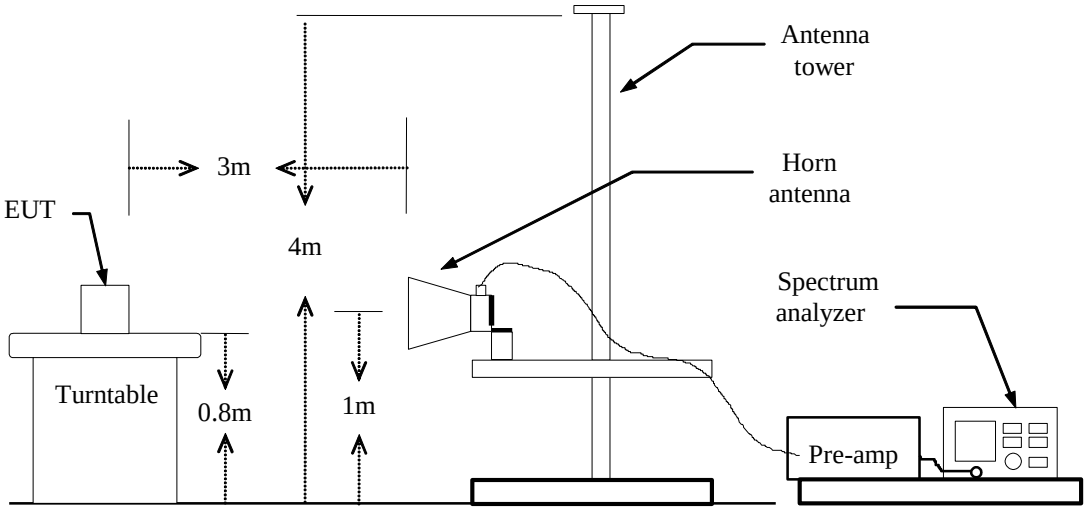
This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

Test Configuration

Below 1 GHz

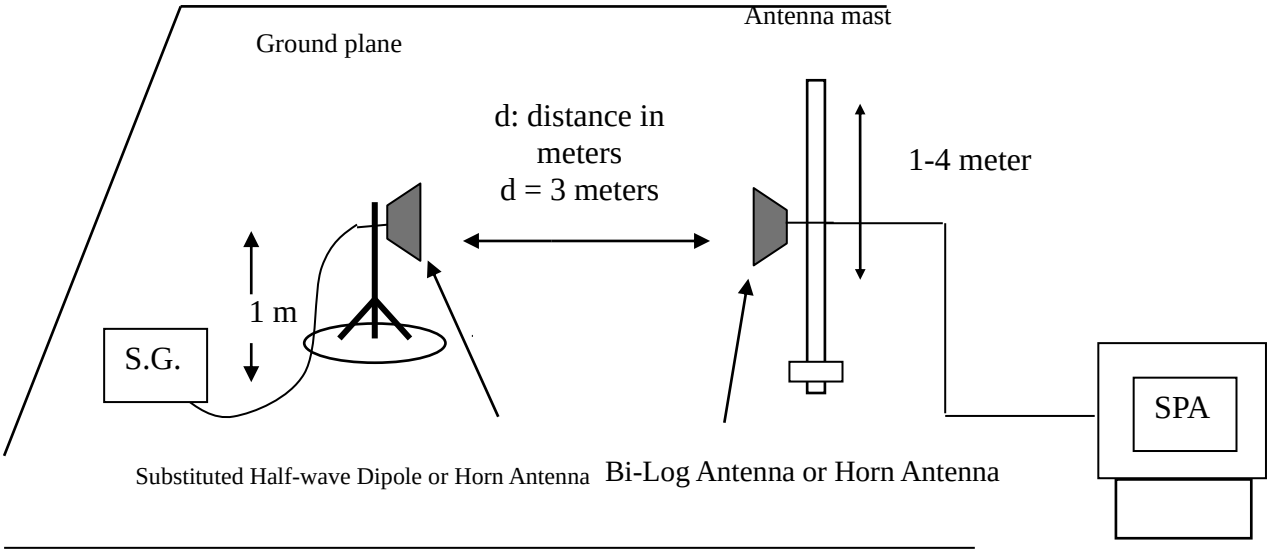


Above 1 GHz



This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

For Substituted Method Test Set-UP



TEST PROCEDURE

The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer.

During the measurement of the EUT, the resolution bandwidth was set to 5MHz and the average bandwidth was set to 50MHz. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna. The reading was recorded and the field strength (E in dBuV/m) was calculated.

ERP in frequency band 824-849MHz, and EIRP in frequency band 1851.25 –1910MHz were measured using a substitution method. The EUT was replaced by half-wave dipole (824-849MHz) or horn antenna (1851.25-1910MHz) connected to a signal generator. The spectrum analyzer reading was recorded and ERP/EIRP was calculated as follows:

ERP = S.G. output (dBm) + Antenna Gain (dBi) – Cable (dB)-2.15
EIRP = S.G. output (dBm) + Antenna Gain (dBi) – Cable (dB)

TEST RESULTS

No non-compliance noted.

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

Report No.: T200207D01-RP1

Temperature:	24℃	**Test Date:**	July 16, 2020
Humidity:	50 % RH	**Tested by:**	Jane Wang

Band	Data Rate or Sub-test	UL/DL Channel No.	Frequency (MHz)	Average power (dBm)	EIRP (dBm)
WCDMA Band 2	RMC 12.2Kbps	9262/9662	1852.4	23.0	24.4
		9400/9800	1880.0	22.0	23.4
		9538/9938	1907.6	21.5	22.9

Band	Data Rate or Sub-test	UL/DL Channel No.	Frequency (MHz)	Average power (dBm)	ERP (dBm)
WCDMA Band 5	RMC 12.2Kbps	4132/4357	826.4	23.5	23.6
		4182/4407	836.4	22.8	22.9
		4233/4458	846.6	21.8	21.9

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

Band	Data Rate or Sub-test	UL/DL Channel No.	Frequency(MHz)	Average power(dBm)	E.I.R.P. Power
HSUPA II	1	9262/9662	1852.4	23.0	24.4
		9400/9800	1880.0	21.7	23.1
		9538/9938	1907.6	21.0	22.4
	2	9262/9662	1852.4	22.9	24.3
		9400/9800	1880.0	21.6	23.0
		9538/9938	1907.6	20.9	22.3
	3	9262/9662	1852.4	22.9	24.3
		9400/9800	1880.0	21.7	23.1
		9538/9938	1907.6	20.9	22.3
	4	9262/9662	1852.4	22.9	24.3
		9400/9800	1880.0	21.8	23.2
		9538/9938	1907.6	21.0	22.4
	5	9262/9662	1852.4	22.8	24.2
		9400/9800	1880.0	21.8	23.2
		9538/9938	1907.6	20.9	22.3

Band	Data Rate or Sub-test	UL/DL Channel No.	Frequency(MHz)	Average power(dBm)	E.R.P. Power
HSUPA V	1	4132/4357	826.4	23.4	23.5
		4182/4407	836.4	22.7	22.8
		4233/4458	846.6	22.1	22.2
	2	4132/4357	826.4	23.3	23.4
		4182/4407	836.4	22.6	22.7
		4233/4458	846.6	22.0	22.1
	3	4132/4357	826.4	23.4	23.5
		4182/4407	836.4	22.6	22.7
		4233/4458	846.6	22.0	22.1
	4	4132/4357	826.4	23.3	23.4
		4182/4407	836.4	22.5	22.6
		4233/4458	846.6	22.0	22.1
	5	4132/4357	826.4	23.4	23.5
		4182/4407	836.4	22.6	22.7
		4233/4458	846.6	22.1	22.2

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

Band	Data Rate or Sub-test	UL/DL Channel No.	Frequency(MHz)	Average power(dBm)	E.I.R.P. Power
HSDPA II	1	9262/9662	1852.4	22.8	24.2
		9400/9800	1880.0	21.7	23.1
		9538/9938	1907.6	20.8	22.2
	2	9262/9662	1852.4	22.8	24.2
		9400/9800	1880.0	21.8	23.2
		9538/9938	1907.6	20.8	22.2
	3	9262/9662	1852.4	22.7	24.1
		9400/9800	1880.0	21.7	23.1
		9538/9938	1907.6	20.7	22.1
	4	9262/9662	1852.4	22.6	24.0
		9400/9800	1880.0	21.7	23.1
		9538/9938	1907.6	20.7	22.1

Band	Data Rate or Sub-test	UL/DL Channel No.	Frequency(MHz)	Average power(dBm)	E.R.P. Power
HSDPA V	1	4132/4357	826.4	23.3	23.4
		4182/4407	836.4	22.6	22.7
		4233/4458	846.6	22.2	22.3
	2	4132/4357	826.4	23.2	23.3
		4182/4407	836.4	22.6	22.7
		4233/4458	846.6	22.2	22.3
	3	4132/4357	826.4	22.3	22.4
		4182/4407	836.4	22.7	22.8
		4233/4458	846.6	22.2	22.3
	4	4132/4357	826.4	23.2	23.3
		4182/4407	836.4	22.5	22.6
		4233/4458	846.6	22.2	22.3

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

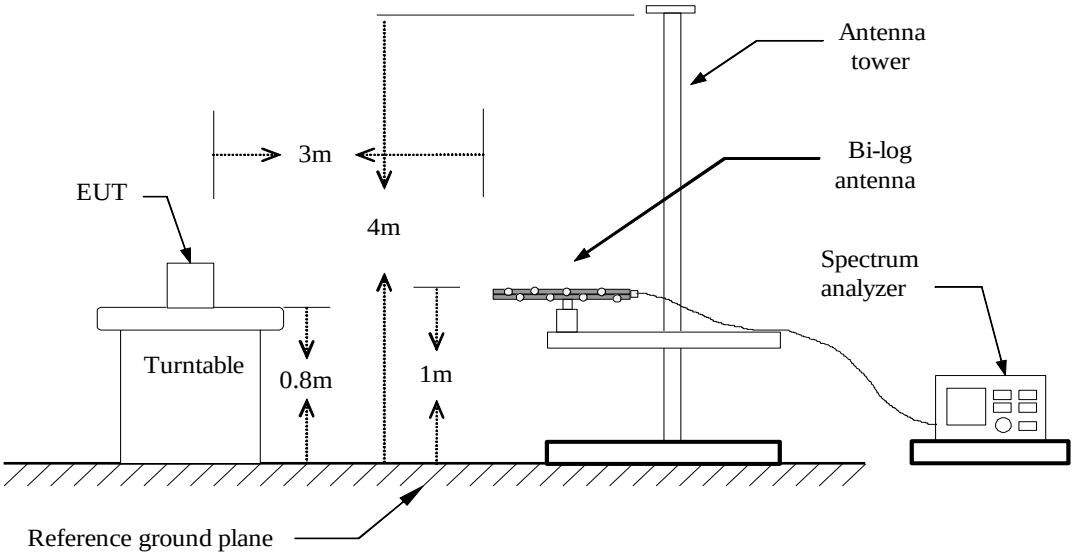
7.2 FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

LIMIT

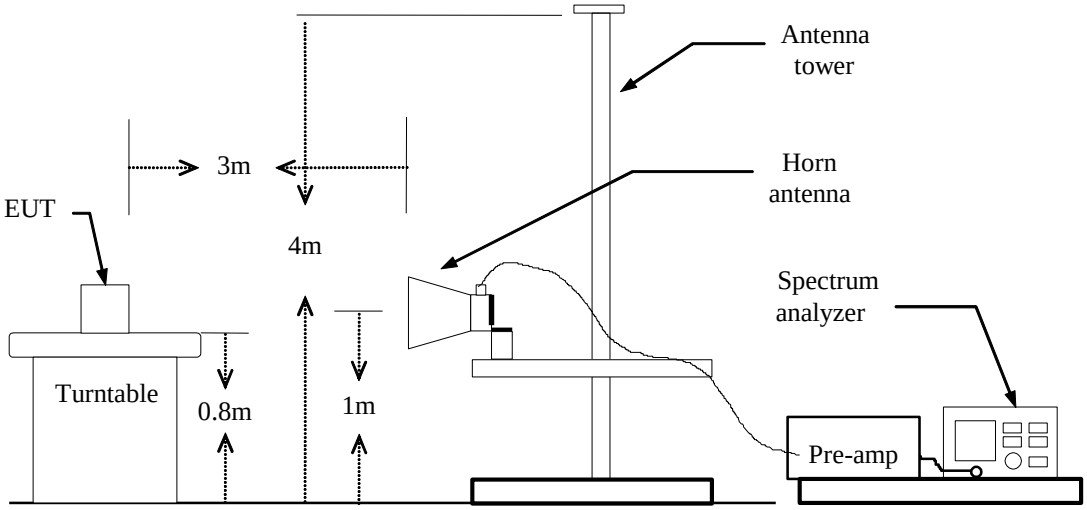
According to FCC §2.1053

Test Configuration

Below 1 GHz

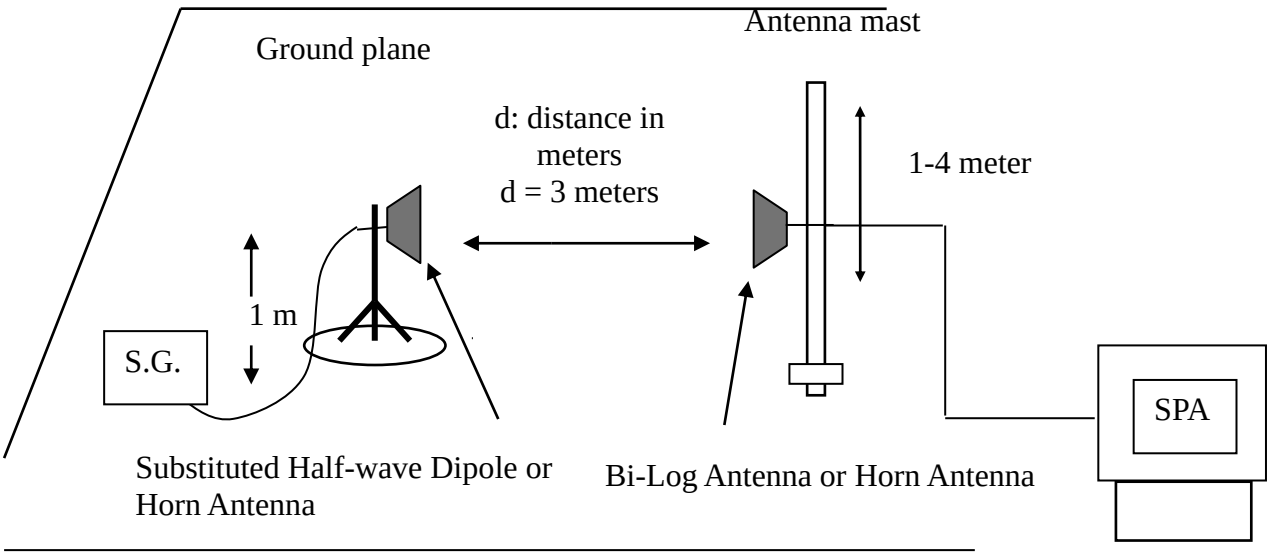


Above 1 GHz



This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

Substituted Method Test Set-up



TEST PROCEDURE

The EUT was placed on a non-conductive, the measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission were identified, the power of the emission was determined using the substitution method.

The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency.

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

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

TEST RESULTS

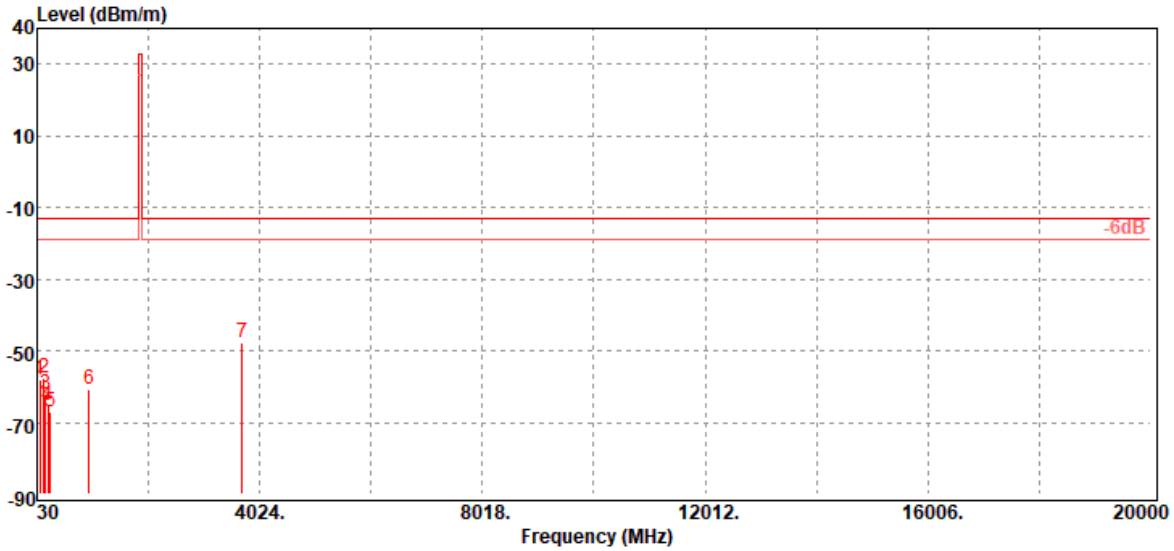
Refer to the attached tabular data sheets.

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

Report No.: T200207D01-RP1

Radiated Spurious Emission Measurement Result

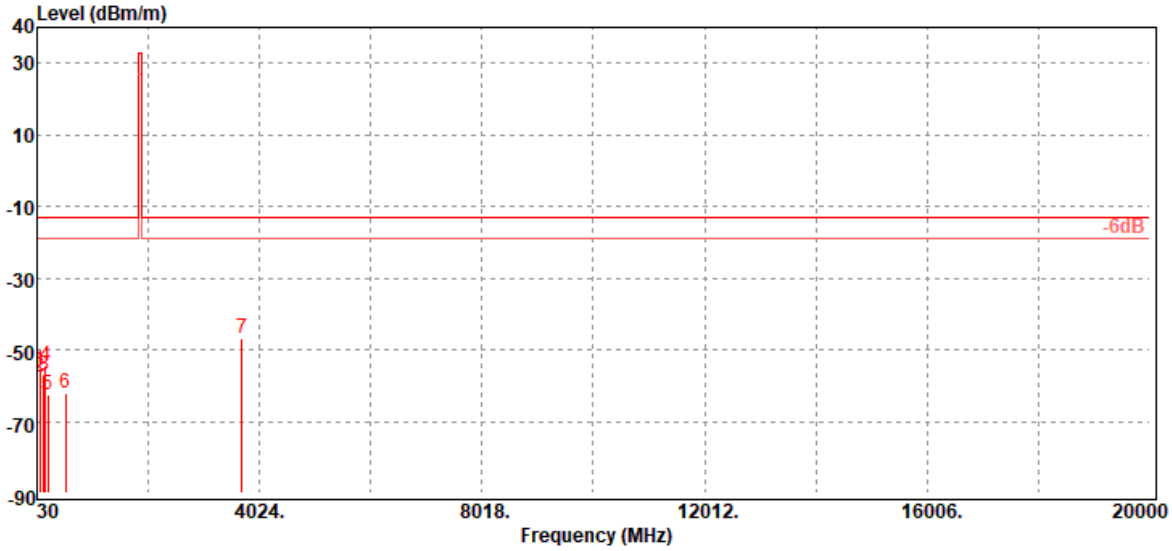
Operation Mode:	WCDMA 12.2k RMC Band II / TX /Low CH	**Test Date:**	February 21, 2020
Temperature:	21.4℃	**Tested by:**	Jerry Chang
Humidity:	51 % RH	**Polarity:**	Ver.



Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
80.44	-58.08	-48.89	-8.46	-0.73	-13.00	-45.08	V
153.19	-57.70	-49.96	-6.72	-1.02	-13.00	-44.70	V
182.29	-62.22	-56.91	-4.20	-1.11	-13.00	-49.22	V
225.94	-65.13	-61.96	-1.94	-1.23	-13.00	-52.13	V
272.50	-67.20	-63.24	-2.60	-1.36	-13.00	-54.20	V
968.96	-60.68	-56.74	-1.30	-2.64	-13.00	-47.68	V
3704.80	-47.68	-54.45	12.49	-5.72	-13.00	-34.68	V

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

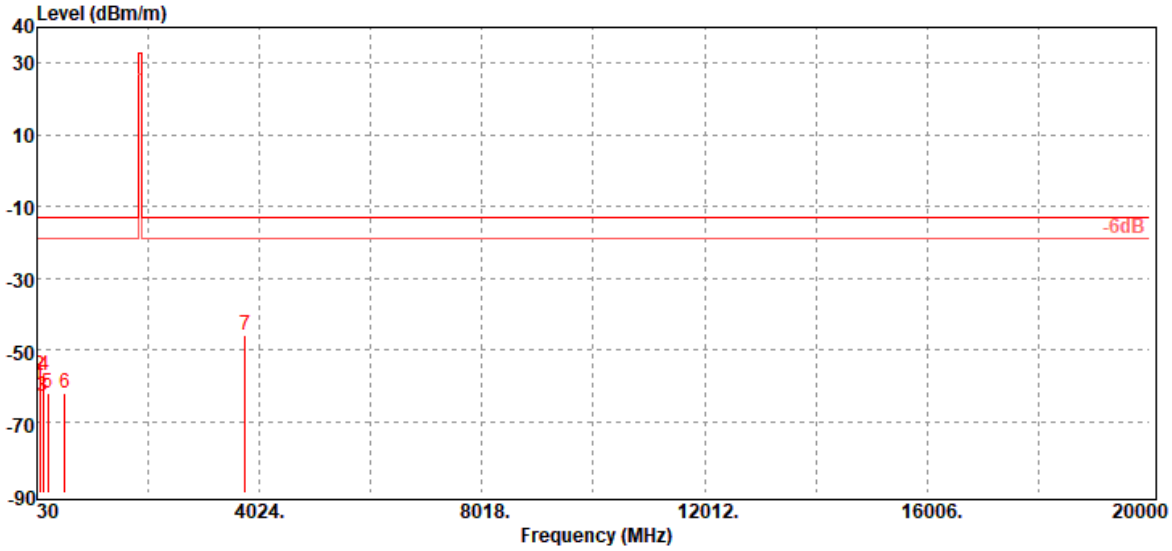
Operation Mode:	WCDMA 12.2k RMC Band II / TX /Low CH	**Test Date:**	February 21, 2020
Temperature:	21.4℃	**Tested by:**	Jerry Chang
Humidity:	51 % RH	**Polarity:**	Hor.



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	-56.02	-46.22	-9.10	-0.70	-13.00	-43.02	H
80.44	-57.64	-48.45	-8.46	-0.73	-13.00	-44.64	H
154.16	-57.06	-49.26	-6.78	-1.02	-13.00	-44.06	H
175.50	-54.31	-48.37	-4.85	-1.09	-13.00	-41.31	H
222.06	-62.73	-59.55	-1.96	-1.22	-13.00	-49.73	H
537.31	-62.08	-58.85	-1.30	-1.93	-13.00	-49.08	H
3704.80	-46.92	-53.69	12.49	-5.72	-13.00	-33.92	H

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

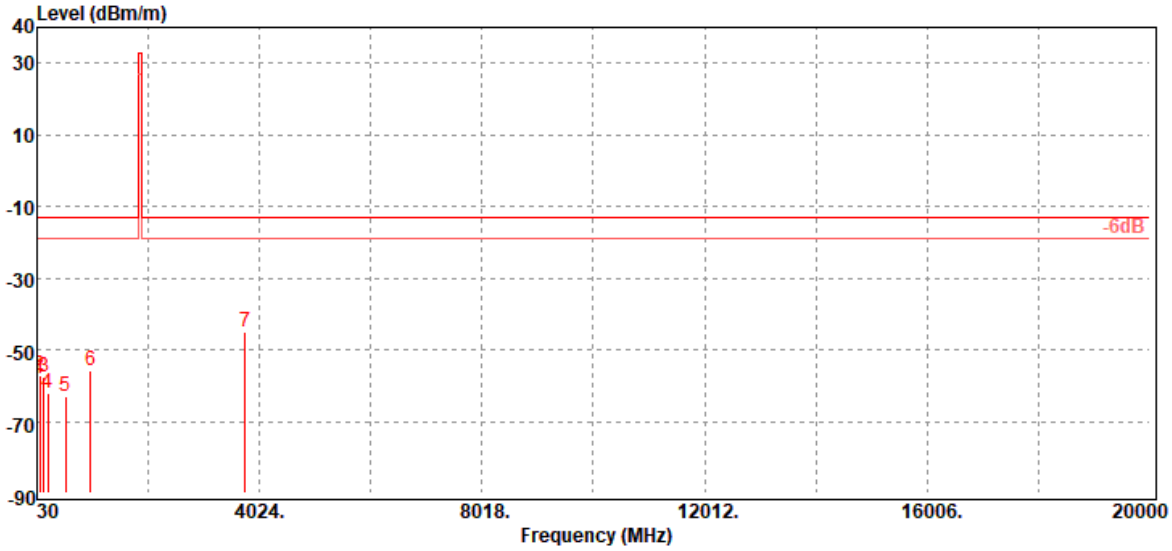
Operation Mode:	WCDMA 12.2k RMC Band II / TX /Mid CH	**Test Date:**	February 21, 2020
Temperature:	21.4℃	**Tested by:**	Jerry Chang
Humidity:	51 % RH	**Polarity:**	Ver.



Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
73.65	-59.68	-49.88	-9.10	-0.70	-13.00	-46.68	V
80.44	-56.96	-47.77	-8.46	-0.73	-13.00	-43.96	V
133.79	-63.00	-52.53	-9.52	-0.95	-13.00	-50.00	V
153.19	-57.01	-49.27	-6.72	-1.02	-13.00	-44.01	V
224.00	-61.97	-58.82	-1.92	-1.23	-13.00	-48.97	V
532.46	-61.97	-58.75	-1.30	-1.92	-13.00	-48.97	V
3760.00	-46.10	-52.76	12.42	-5.76	-13.00	-33.10	V

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

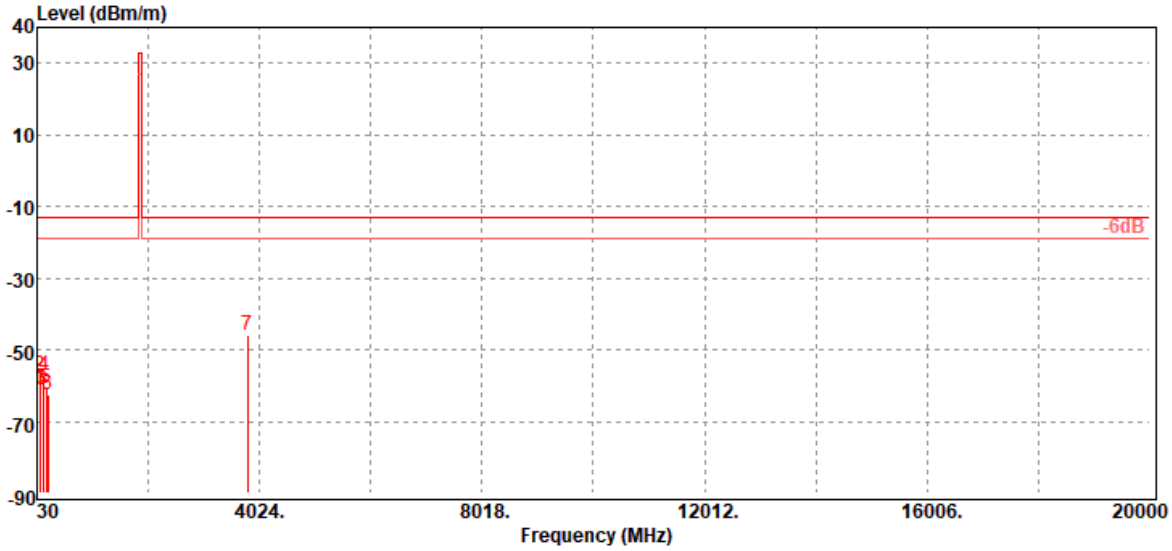
Operation Mode:	WCDMA 12.2k RMC Band II / TX /Mid CH	**Test Date:**	February 21, 2020
Temperature:	21.4℃	**Tested by:**	Jerry Chang
Humidity:	51 % RH	**Polarity:**	Hor.



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	-58.12	-48.32	-9.10	-0.70	-13.00	-45.12	H
80.44	-57.12	-47.93	-8.46	-0.73	-13.00	-44.12	H
153.19	-57.72	-49.98	-6.72	-1.02	-13.00	-44.72	H
225.94	-62.15	-58.98	-1.94	-1.23	-13.00	-49.15	H
536.34	-62.84	-59.61	-1.30	-1.93	-13.00	-49.84	H
997.09	-55.60	-51.52	-1.40	-2.68	-13.00	-42.60	H
3760.00	-44.86	-51.52	12.42	-5.76	-13.00	-31.86	H

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

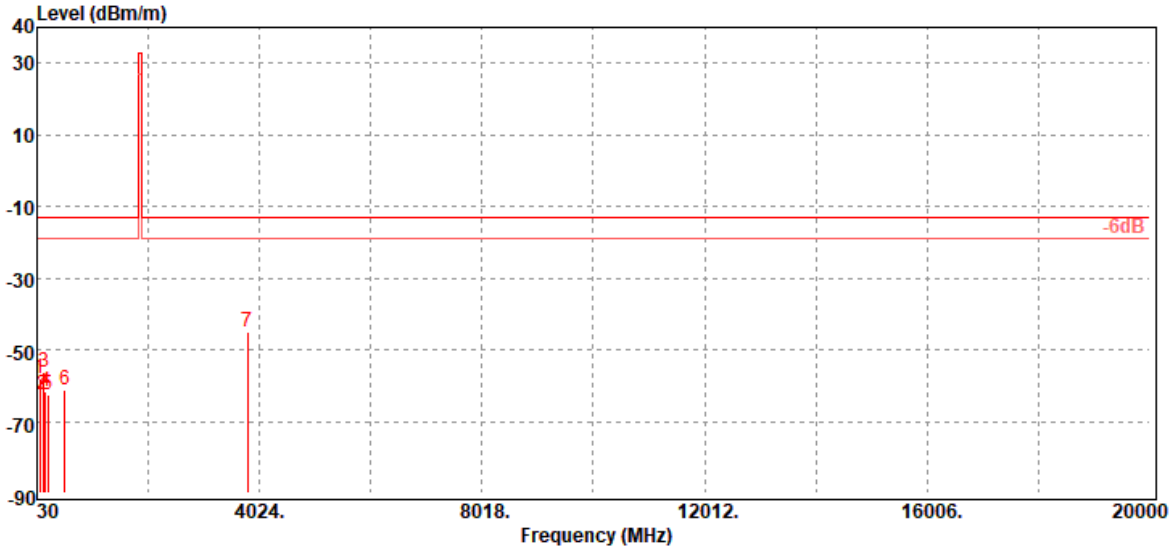
Operation Mode:	WCDMA 12.2k RMC Band II / TX /High CH	**Test Date:**	February 21, 2020
Temperature:	21.4℃	**Tested by:**	Jerry Chang
Humidity:	51 % RH	**Polarity:**	Ver.



Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
73.65	-60.63	-50.83	-9.10	-0.70	-13.00	-47.63	V
81.41	-57.11	-47.97	-8.40	-0.74	-13.00	-44.11	V
134.76	-61.13	-50.83	-9.35	-0.95	-13.00	-48.13	V
153.19	-56.95	-49.21	-6.72	-1.02	-13.00	-43.95	V
190.05	-60.94	-55.81	-4.00	-1.13	-13.00	-47.94	V
225.94	-62.44	-59.27	-1.94	-1.23	-13.00	-49.44	V
3815.20	-45.81	-52.48	12.47	-5.80	-13.00	-32.81	V

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

Operation Mode:	WCDMA 12.2k RMC Band II / TX / High CH	**Test Date:**	February 21, 2020
Temperature:	21.4℃	**Tested by:**	Jerry Chang
Humidity:	51 % RH	**Polarity:**	Hor.

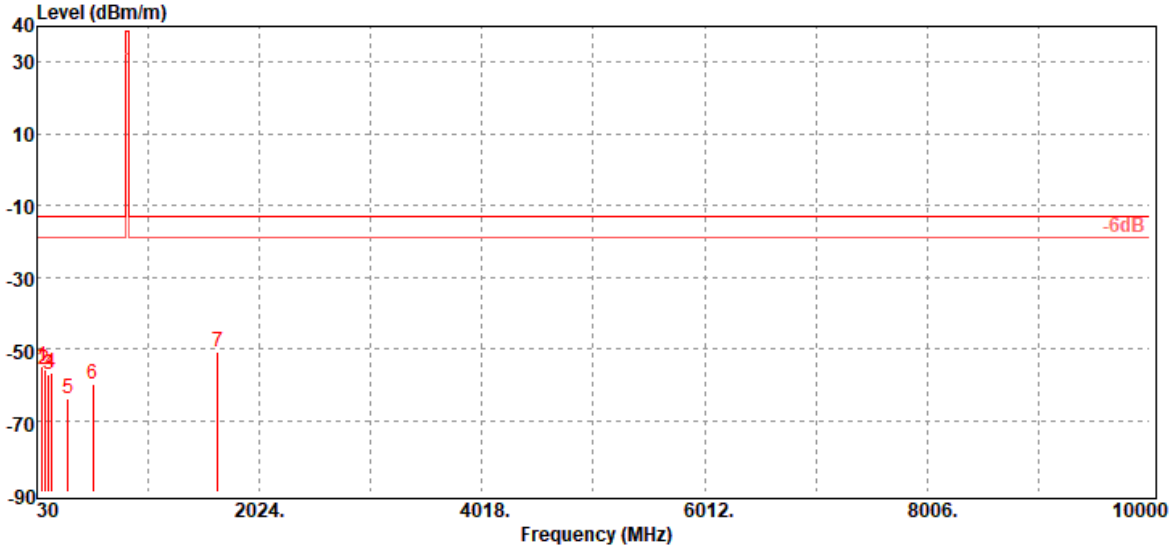


Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
80.44	-57.98	-48.79	-8.46	-0.73	-13.00	-44.98	H
133.79	-62.63	-52.16	-9.52	-0.95	-13.00	-49.63	H
153.19	-56.44	-48.7	-6.72	-1.02	-13.00	-43.44	H
178.41	-61.86	-56.2	-4.56	-1.10	-13.00	-48.86	H
222.06	-62.73	-59.55	-1.96	-1.22	-13.00	-49.73	H
532.46	-61.24	-58.02	-1.30	-1.92	-13.00	-48.24	H
3815.20	-45.01	-51.68	12.47	-5.80	-13.00	-32.01	H

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

Radiated Spurious Emission Measurement Result

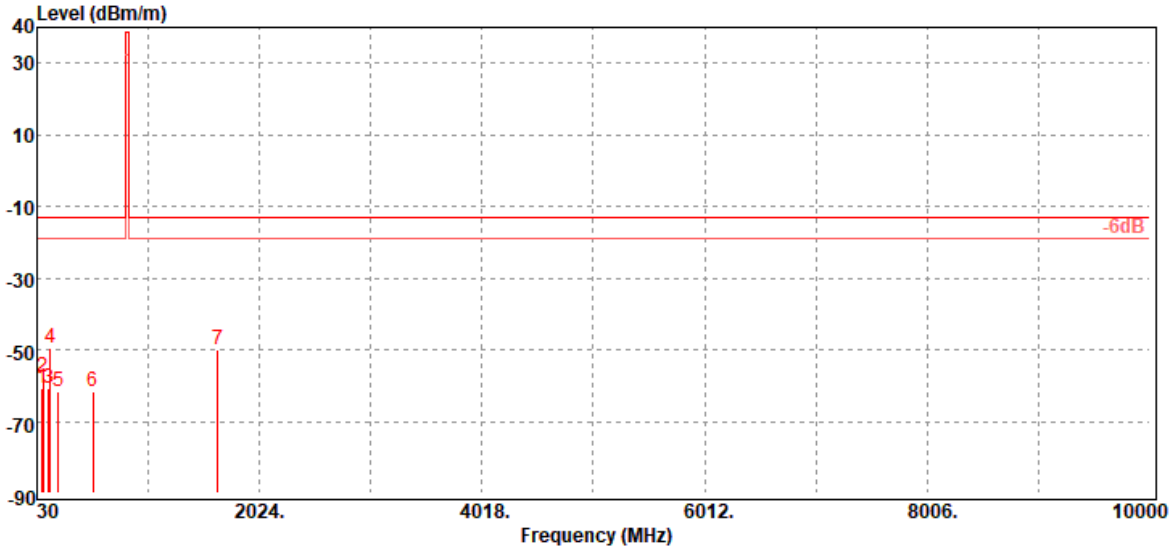
Operation Mode:	WCDMA 12.2k RMC Band V / TX / Low CH	**Test Date:**	February 21, 2020
Temperature:	21.4℃	**Tested by:**	Jerry Chang
Humidity:	51 % RH	**Polarity:**	Ver.



Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
80.44	-55.04	-45.85	-8.46	-0.73	-13.00	-42.04	V
94.99	-55.75	-47.65	-7.30	-0.80	-13.00	-42.75	V
133.79	-57.33	-46.86	-9.52	-0.95	-13.00	-44.33	V
153.19	-56.93	-49.19	-6.72	-1.02	-13.00	-43.93	V
304.51	-63.89	-60.54	-1.91	-1.44	-13.00	-50.89	V
529.55	-59.86	-56.64	-1.30	-1.92	-13.00	-46.86	V
1652.80	-50.69	-56.86	9.72	-3.55	-13.00	-37.69	V

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

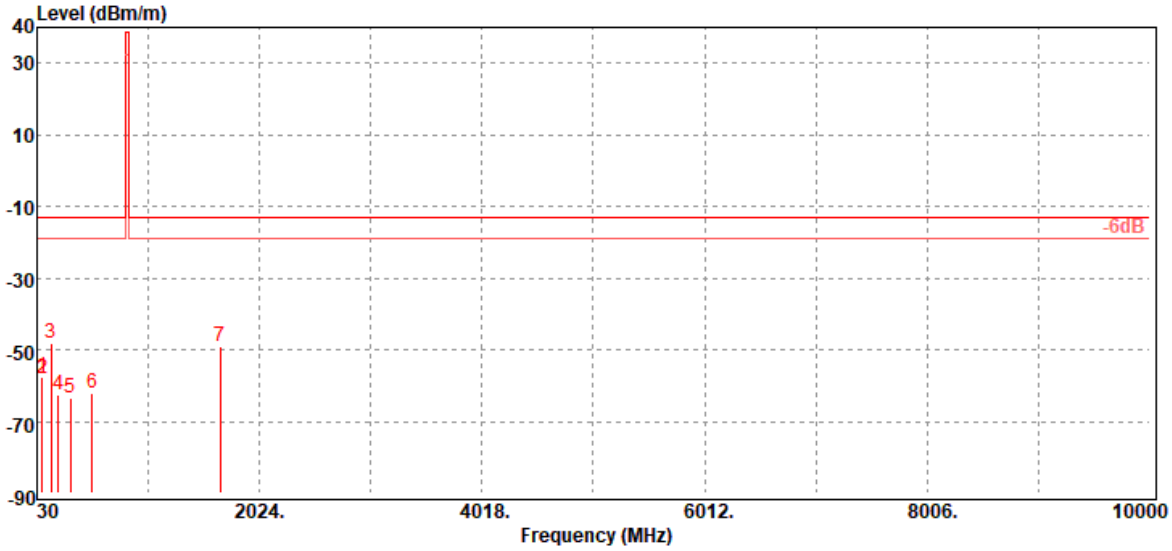
Operation Mode:	WCDMA 12.2k RMC Band V / TX / Low CH	**Test Date:**	February 21, 2020
Temperature:	21.4℃	**Tested by:**	Jerry Chang
Humidity:	51 % RH	**Polarity:**	Hor.



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	-60.73	-50.93	-9.10	-0.70	-13.00	-47.73	H
81.41	-57.71	-48.57	-8.40	-0.74	-13.00	-44.71	H
133.79	-60.58	-50.11	-9.52	-0.95	-13.00	-47.58	H
149.31	-49.60	-41.43	-7.17	-1.00	-13.00	-36.60	H
222.06	-61.87	-58.69	-1.96	-1.22	-13.00	-48.87	H
532.46	-61.60	-58.38	-1.30	-1.92	-13.00	-48.60	H
1652.80	-50.11	-56.28	9.72	-3.55	-13.00	-37.11	H

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

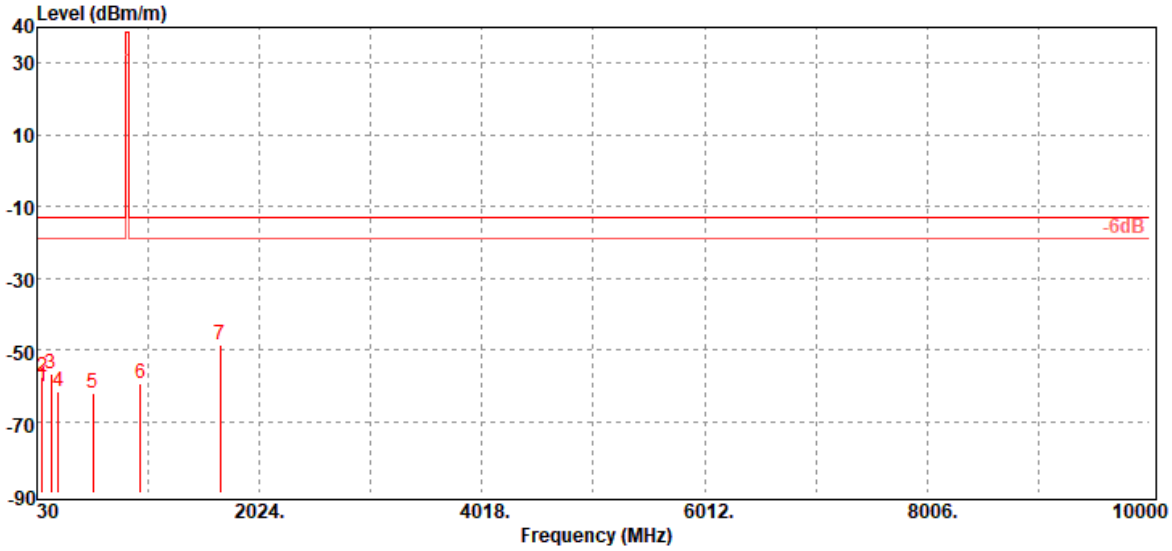
Operation Mode:	WCDMA 12.2k RMC Band V / TX / Mid CH	**Test Date:**	February 21, 2020
Temperature:	21.4℃	**Tested by:**	Jerry Chang
Humidity:	51 % RH	**Polarity:**	Ver.



Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
73.65	-57.45	-47.65	-9.10	-0.70	-13.00	-44.45	V
80.44	-58.01	-48.82	-8.46	-0.73	-13.00	-45.01	V
156.10	-47.99	-40.37	-6.59	-1.03	-13.00	-34.99	V
224.00	-62.61	-59.46	-1.92	-1.23	-13.00	-49.61	V
330.70	-63.48	-60.29	-1.69	-1.50	-13.00	-50.48	V
527.61	-62.13	-58.91	-1.30	-1.92	-13.00	-49.13	V
1672.80	-48.98	-55.24	9.84	-3.58	-13.00	-35.98	V

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

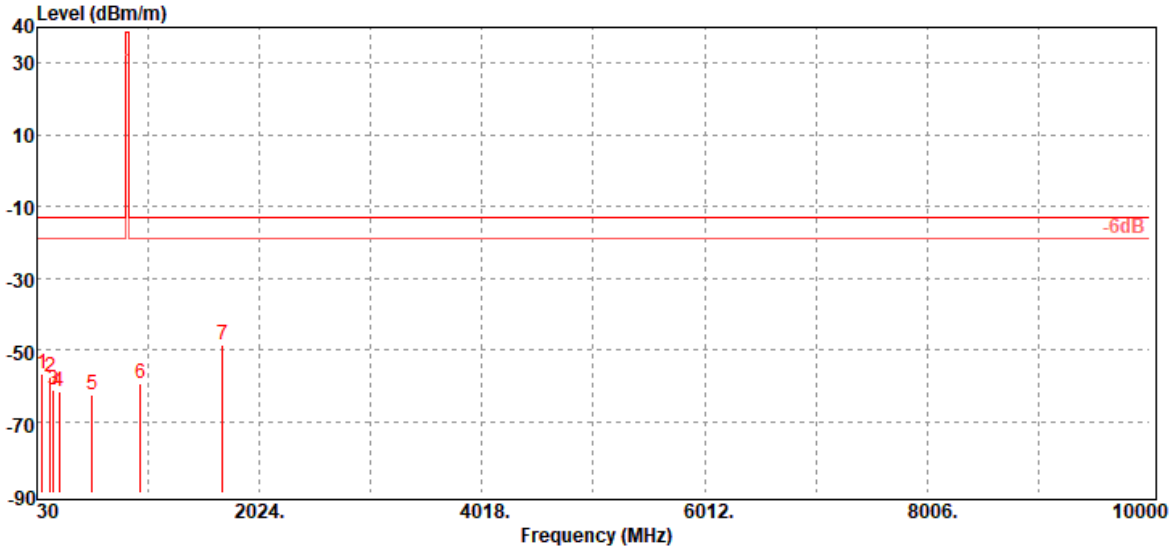
Operation Mode:	WCDMA 12.2k RMC Band V / TX / Mid CH	**Test Date:**	February 21, 2020
Temperature:	21.4℃	**Tested by:**	Jerry Chang
Humidity:	51 % RH	**Polarity:**	Hor.



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	-60.42	-50.62	-9.10	-0.70	-13.00	-47.42	H
80.44	-57.77	-48.58	-8.46	-0.73	-13.00	-44.77	H
153.19	-56.73	-48.99	-6.72	-1.02	-13.00	-43.73	H
219.15	-61.84	-58.6	-2.02	-1.22	-13.00	-48.84	H
529.55	-61.90	-58.68	-1.30	-1.92	-13.00	-48.90	H
956.35	-59.48	-55.63	-1.23	-2.62	-13.00	-46.48	H
1672.80	-48.58	-54.84	9.84	-3.58	-13.00	-35.58	H

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

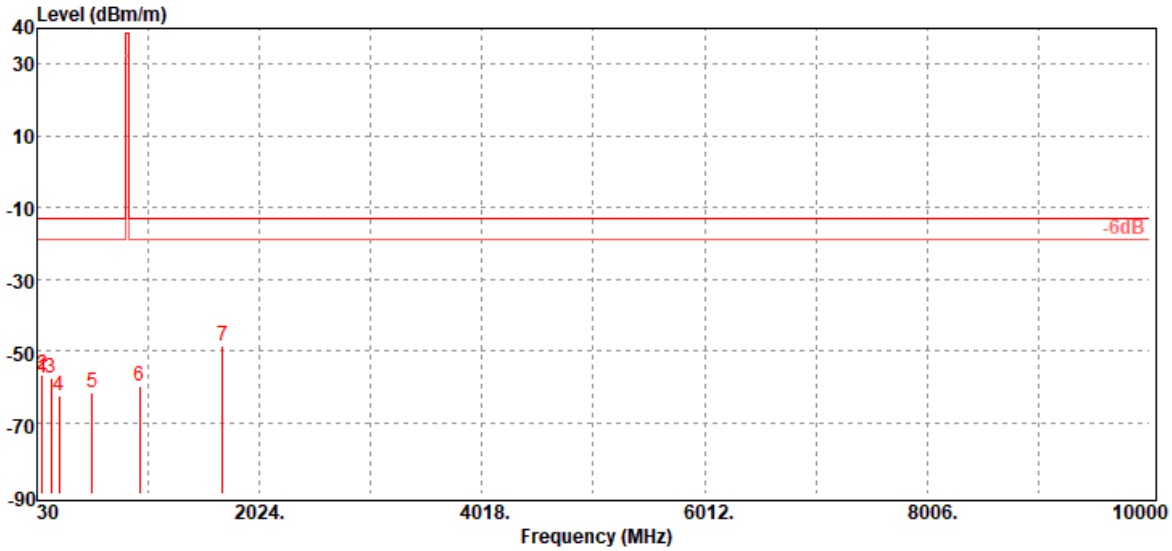
Operation Mode:	WCDMA 12.2k RMC Band V / TX / High CH	**Test Date:**	February 21, 2020
Temperature:	21.4℃	**Tested by:**	Jerry Chang
Humidity:	51 % RH	**Polarity:**	Ver.



Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
80.44	-56.70	-47.51	-8.46	-0.73	-13.00	-43.70	V
151.25	-57.45	-49.39	-7.05	-1.01	-13.00	-44.45	V
177.44	-61.29	-55.54	-4.66	-1.09	-13.00	-48.29	V
225.94	-61.49	-58.32	-1.94	-1.23	-13.00	-48.49	V
527.61	-62.48	-59.26	-1.30	-1.92	-13.00	-49.48	V
954.41	-59.62	-55.8	-1.20	-2.62	-13.00	-46.62	V
1693.20	-48.75	-55.11	9.96	-3.60	-13.00	-35.75	V

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

Operation Mode:	WCDMA 12.2k RMC Band V / TX / High CH	**Test Date:**	February 21, 2020
Temperature:	21.4℃	**Tested by:**	Jerry Chang
Humidity:	51 % 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	-57.73	-47.93	-9.10	-0.70	-13.00	-44.73	H
80.44	-56.87	-47.68	-8.46	-0.73	-13.00	-43.87	H
154.16	-57.73	-49.93	-6.78	-1.02	-13.00	-44.73	H
225.94	-62.46	-59.29	-1.94	-1.23	-13.00	-49.46	H
527.61	-61.82	-58.6	-1.30	-1.92	-13.00	-48.82	H
946.65	-59.64	-55.83	-1.20	-2.61	-13.00	-46.64	H
1693.20	-48.40	-54.76	9.96	-3.60	-13.00	-35.40	H

- End of Test Report -

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。