

TEST REPORT

CERTIFICATE OF CONFORMITY

Standard: 47 CFR FCC Part 15, Subpart C (Section 15.247)
47 CFR FCC Part 15, Subpart E (Section 15.407)
47 CFR FCC Part 22
47 CFR FCC Part 24
47 CFR FCC Part 27
47 CFR FCC Part 90
47 CFR FCC Part 2

Report No.: RFCVSF-WTW-P25090814A-6

FCC ID: PKRISGM4010

Product: Wireless Hotspot

Brand: Inseego

Model No.: M4010

Received Date: 2026/4/20

Test Date: 2026/5/28

Issued Date: 2026/6/11

Applicant: Inseego Corp.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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FCC Registration /

Designation Number: 788550 / TW0003

Approved by: _____

Jeremy Lin

Date: _____

2026/6/11

Jeremy Lin / Senior Engineer

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Prepared by : Pettie Chen / Senior Specialist

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Release Control Record

Issue No.	Description	Date Issued
RFCVSF-WTW-P25090814A-6	Original release.	2026/6/11

1 Certificate

Product: Wireless Hotspot

Brand: Inseego

Model No.: M4010

Sample Status: Engineering sample

Applicant: Inseego Corp.

Test Date: 2026/5/28

Standard: 47 CFR FCC Part 15, Subpart C (Section 15.247)
47 CFR FCC Part 15, Subpart E (Section 15.407)
47 CFR FCC Part 22
47 CFR FCC Part 24
47 CFR FCC Part 27
47 CFR FCC Part 90
47 CFR FCC Part 2

Measurement procedure: ANSI C63.10-2020

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

2 Summary of Test Results

Standard / Clause	Test Item	Result	Remark
15.205 /15.209 /15.247(d) 15.407(b)(9)	Unwanted Emissions below 1 GHz	Pass	Meet the requirement of limit.
Part 2.1053	Radiated Spurious Emissions below 1GHz	Pass	Meet the requirement of limit.
15.205 /15.209 /15.247(d) 15.407(b) (1/2/3/4(i)/10)	Unwanted Emissions above 1 GHz	Pass	Meet the requirement of limit.
Part 2.1053	Radiated Spurious Emissions above 1GHz	Pass	Meet the requirement of limit.
15.247(d)	Conducted Out of Band Emissions	Pass	Meet the requirement of limit.

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Parameter	Specification	Uncertainty (±)
Radiated Spurious Emissions below 1GHz	9 kHz ~ 30 MHz	2.44 dB
	30 MHz ~ 1 GHz	2.95 dB
Radiated Spurious Emissions above 1GHz	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB
Conducted Out of Band Emissions	9 kHz ~ 40 GHz	2.79 dB

The other instruments specified are routine verified to remain within the calibrated levels, no measurement uncertainty is required to be calculated.

2.2 Supplementary Information

There is not any deviation from the test standards for the test method, and no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Wireless Hotspot	
Brand	Inseego	
Model No.	M4010	
Market Model Name	M4000, M4040	
Model Difference	Marketing purpose	
Modulation Technology	WLAN	DSSS, OFDM, OFDMA
	LTE	OFDM, OFDMA, SC-FDMA
	5G NR	CP-OFDM, DFT-s-OFDM
Operating Frequency	WLAN	2412 ~ 2462 MHz, 5180 ~ 5250MHz, 5250 ~ 5320 MHz, 5500 ~ 5720 MHz, 5745 ~ 5825 MHz
	LTE	LTE Band 2 : 1850 ~ 1910 MHz LTE Band 4 : 1710 ~ 1755 MHz LTE Band 5 : 824 ~ 849 MHz LTE Band 7 : 2500 ~ 2570 MHz LTE Band 12 : 698 ~ 716 MHz LTE Band 13 : 777 ~ 787 MHz LTE Band 14 : 788 ~ 798 MHz LTE Band 17 : 704 ~ 716 MHz LTE Band 25 : 1850 ~ 1915 MHz LTE Band 26 : 814 ~ 849 MHz LTE Band 30 : 2305 ~ 2315 MHz LTE Band 38 : 2570 ~ 2620 MHz LTE Band 41 : 2496 ~ 2690 MHz LTE Band 48 : 3550 ~ 3700 MHz LTE Band 66 : 1710 ~ 1780 MHz LTE Band 71 : 663 ~ 698 MHz
	5G NR	NR Band 2: 1850 ~ 1910 MHz NR Band 5: 824 ~ 849 MHz NR Band 7: 2500 ~ 2570 MHz NR Band 12: 698 ~ 716 MHz NR Band 14: 788 ~ 798 MHz NR Band 25: 1850 ~ 1915 MHz NR Band 26: 814 ~ 849 MHz NR Band 30: 2305 ~ 2315 MHz NR Band 38: 2570 ~ 2620 MHz NR Band 41: 2496 ~ 2690 MHz NR Band 48: 3550 ~ 3700 MHz NR Band 66: 1710 ~ 1780 MHz NR Band 70: 1695 ~ 1720 MHz NR Band 71: 663 ~ 698 MHz NR Band 77: 3450 ~ 3550 MHz, 3700 ~ 3980 MHz NR Band 78: 3450 ~ 3550 MHz, 3700 ~ 3800 MHz

Note:

1. This report is issued as a supplementary report to BV CPS report no.: RFCVSF-WTW-P25090814-5. The difference compared to the original report is adding LTE Band 4, 17, 25, 5GNR Band n7, n12, n25, n26, n38, n48 (MIMO), n70, n78, CA Band 2C, 5B, 7C, 12B, 41C, 66B, 66C. The co-located test is performed for the addendum.

2. The EUT uses following accessories.

Item	Brand	Model	Specification	P/N
AC Adapter	SUNUN	P181	AC Input: 100-240 Vac, 50/60 Hz, 0.5 A max DC Output: 5 Vdc, 3 A; 9 Vdc, 2 A; 12 Vdc, 1.5 A	-
USB Cable	inseego	-	Signal Line: 1.0 m, shielded	CAB-60723090
Battery	inseego	754685	3.85 Vdc, 5050 mAh, 19.44 Wh	-

3. Simultaneously transmission combination.

Combination	Technology		
1	WLAN 2.4 GHz		WWAN
2	WLAN 5 GHz		WWAN
3	WLAN 2.4 GHz	WLAN 5 GHz	WWAN

Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.

4. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

3.2 Antenna Description of EUT

1. The antenna information is listed as below.

Antenna No.	Antenna Gain (dBi)	Frequency range	Antenna Type	Connector Type
0	1.92	2.4 GHz ~ 2.4835 GHz	FPC	Contact spring
	1.94	5.15 GHz ~ 5.25 GHz	FPC	Contact spring
	1.88	5.25 GHz ~ 5.35 GHz	FPC	Contact spring
	1.85	5.47 GHz ~ 5.725 GHz	FPC	Contact spring
	1.94	5.725 GHz ~ 5.85 GHz	FPC	Contact spring
1	1.95	2.4 GHz ~ 2.4835 GHz	FPC	Contact spring
	1.91	5.15 GHz ~ 5.25 GHz	FPC	Contact spring
	1.94	5.25 GHz ~ 5.35 GHz	FPC	Contact spring
	1.96	5.47 GHz ~ 5.725 GHz	FPC	Contact spring
	1.96	5.725 GHz ~ 5.85 GHz	FPC	Contact spring

* Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

* The EUT will be used in outdoor areas. The maximum antenna gain from the horizon above 30 degrees is as specified in the antenna information for frequencies above 5150~5250MHz.

2. The EUT incorporates a MIMO function:

2.4 GHz Band		
Modulation Mode	Tx & Rx Configuration	
802.11b	1TX (Diversity)	2RX
802.11g	1TX (Diversity)	2RX
802.11n (HT20)	2TX	2RX
802.11n (HT40)	2TX	2RX
VHT20	2TX	2RX
VHT40	2TX	2RX
802.11ax (HE20)	2TX	2RX
802.11ax (HE40)	2TX	2RX
802.11be (EHT20)	2TX	2RX
802.11be (EHT40)	2TX	2RX
802.11ax (RU26/52/106/242/484)	2TX	2RX
802.11be (RU26/52/106/242/484 MRU52+26/106+26)	2TX	2RX

Note:

1. All of modulation mode support beamforming function except 802.11b/g modulation mode.
2. The EUT support Beamforming and CDD mode, therefore both mode were investigated and the worst case scenario was identified. The worst case data were presented in test report.
3. The modulation and bandwidth are similar for 802.11n mode for 20 MHz (40 MHz), VHT mode for 20 MHz (40 MHz), 802.11ax mode for 20 MHz (40 MHz) and 802.11be mode for 20 MHz (40 MHz). Therefore, the investigated worst case is the representative mode in test report.

5 GHz Band		
Modulation Mode	Tx & Rx Configuration	
802.11a	1TX (Diversity)	2RX
802.11n (HT20)	2TX	2RX
802.11n (HT40)	2TX	2RX
802.11ac (VHT20)	2TX	2RX
802.11ac (VHT40)	2TX	2RX
802.11ac (VHT80)	2TX	2RX
802.11ac (VHT160)	2TX	2RX
802.11ax (HE20)	2TX	2RX
802.11ax (HE40)	2TX	2RX
802.11ax (HE80)	2TX	2RX
802.11ax (HE160)	2TX	2RX
802.11be (EHT20)	2TX	2RX
802.11be (EHT40)	2TX	2RX
802.11be (EHT80)	2TX	2RX
802.11be (EHT160)	2TX	2RX
802.11ax (RU26/52/106/242/484/996/996x2)	2TX	2RX
802.11be (RU26/52/106/242/484/996/996x2 MRU52+26/106+26/484+242/996+484)	2TX	2RX

- Note:
1. All of modulation mode support beamforming function except 802.11a modulation mode.
 2. The EUT support Beamforming and CDD mode, therefore both mode were investigated and the worst case scenario was identified. The worst case data were presented in test report.
 3. The modulation and bandwidth are similar for 802.11n mode for 20 MHz (40 MHz), 802.11ac mode for 20 MHz (40 MHz, 80 MHz, 160 MHz), 802.11ax mode for 20 MHz (40 MHz, 80 MHz, 160 MHz) and 802.11be mode for 20 MHz (40 MHz, 80 MHz, 160 MHz). Therefore the investigated worst case is the representative mode in test report.

Type		PIFA				
Connector		Contact spring				
Band		Freq. Range (MHz)	Gain (dBi)			
			WWAN (A0-TX0)	WWAN (A1-TX0)	WWAN (A1-TX1)	WWAN (A5-TX0)
LTE B2	1TX (Diversity)	1850 ~ 1910	1.87	-	1.92	-
LTE B4	1TX (Diversity)	1710 ~ 1755	1.87	-	1.92	-
LTE B5	1TX	824 ~ 849	-	-3.95	-	-
LTE B7	1TX (Diversity)	2500 ~ 2570	3.15	-	2.6	-
LTE B12	1TX	698 ~ 716	-	-6.37	-	-
LTE B13	1TX	777 ~ 787	-	-4.97	-	-
LTE B14	1TX	788 ~ 798	-	-4.97	-	-
LTE B17	1TX	704 ~ 716	-	-6.37	-	-
LTE B25	1TX (Diversity)	1850 ~ 1915	1.03	-	1.92	-
LTE B26	1TX	814 ~ 849	-	-3.95	-	-
LTE B30	1TX	2305 ~ 2315	-	-	-	0.88
LTE B38	1TX (Diversity)	2570 ~ 2620	3.05	-	2.6	-
LTE B41	1TX (Diversity)	2496 ~ 2690	3.15	-	2.6	-
LTE B66	1TX (Diversity)	1710 ~ 1780	1.87	-	1.92	-
LTE B71	1TX	663 ~ 698	-4.59	-	-	-

* Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

3. The WWAN antenna information and evaluations regarding the certification modules contained by the EUT are primarily based on the manufacturer provided.

3.3 Test Mode Applicability and Tested Channel Detail

Pre-Scan:	1. EUT can be used in the following ways: X-axis/ Y-axis/ Z-axis. Pre-scan these ways and find the worst case as a representative test condition. Pre-Scan has been conducted to determine the worst-case from all possible combinations of EUT configure mode (1TX or 2TX if available), channel, bandwidth, modulation and RB mode. See below table(s) for details.
Worst Case:	X-axis/ Y-axis/ Z-axis Worst Condition: Y-axis

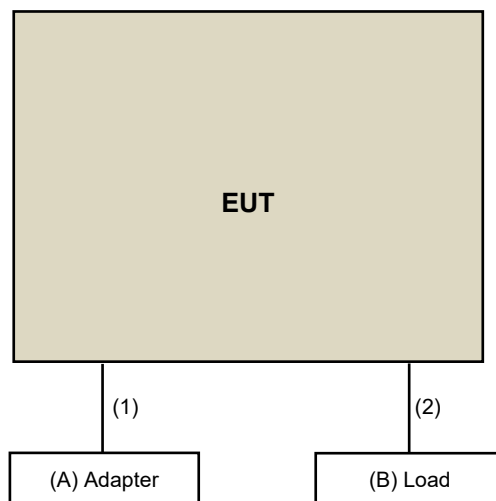
Following channel(s) was (were) selected for the final test as listed below:

Test Item	Combination	Mode	Tested Channel
Unwanted Emissions below 1 GHz	1	802.11be (EHT40)	9
		802.11be (EHT80)	155
Radiated Spurious Emissions below 1GHz	1	5G NR n77_BW: 100MHz QPSK	633334
Unwanted Emissions above 1 GHz	1	802.11be (EHT40)	9
		802.11be (EHT80)	155
Radiated Spurious Emissions above 1GHz	1	5G NR n77_BW: 100MHz QPSK	633334
Conducted Out of Band Emissions	1	802.11be (EHT40)	9
		802.11be (EHT80)	155
		5G NR n77_BW: 100MHz QPSK	633334

3.4 Test Program Used and Operation Descriptions

There is no need to controlling software during the test, and the EUT can be paired with the Radio Communication Analyzer to test the connection when it is powered on.

3.5 Connection Diagram of EUT and Peripheral Devices



Remote Site



3.6 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Adapter	SUNUN	P181	N/A	N/A	Accessory of EUT
B	Load	N/A	N/A	N/A	N/A	Provided by Lab
C	Radio Communication Analyzer	Anritsu	MT8000A	6272278596	N/A	Provided by Lab

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	USB Cable	1	1.0	Yes	0	Accessory of EUT
2	RJ45 Cable	1	1.5	No	0	Provided by Lab

4 Test Instruments

The calibration interval of the all test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.1 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Max-Full	MFA-440H	AT93021705	N/A	N/A
Bi_Log Antenna Schwarzbeck	VULB 9168	9168-472	2025/9/16	2026/9/15
Loop Antenna TESEQ	HLA 6121	45745	2025/9/1	2026/8/31
MXE EMI Receiver Agilent	N9038A	MY51210203	2025/8/27	2026/8/26
Preamplifier EMCI	EMC 330H	980112	2025/9/21	2026/9/20
	EMC001340	980201	2025/9/21	2026/9/20
RF Coaxial Cable Woken	8D-FB	Cable-Ch10-01	2025/9/21	2026/9/20
Signal & Spectrum Analyzer R&S	FSVA3044	100904	2025/7/1	2026/6/30
Software BV ADT	ADT_Radiated_ V7.7.1.1.1	N/A	N/A	N/A
Turn Table Max-Full	MFT-201SS	N/A	N/A	N/A
Turn Table Controller Max-Full	MG-7802	N/A	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 5(Hwaya).
2. Tested Date: 2026/5/28

4.2 Radiated Spurious Emissions below 1GHz

Refer to section 4.1 to get the tested date and information of the instruments.

4.3 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Max-Full	MFA-440H	AT93021705	N/A	N/A
Boresight antenna tower fixture BV	BAF-02	7	N/A	N/A
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-969	2025/11/9	2026/11/8
	BBHA 9170	148	2025/11/9	2026/11/8
MXE EMI Receiver Agilent	N9038A	MY51210203	2025/8/27	2026/8/26
Preamplifier EMCI	EMC 184045	980116	2025/9/21	2026/9/20
	EMC118A45SE	980809	2026/4/18	2027/4/17
RF Coaxial Cable EMCI	EMC102-KM-KM-600	150928	2025/6/30	2026/6/29
	EMC102-KM-KM-3000	150929	2025/6/30	2026/6/29
	EMC104-SM-SM- 8000+3000	171005	2025/9/21	2026/9/20
RF Coaxial Cable HUBER+SUHNER	SUCOFLEX 104	EMC104-SM-SM- 1000(140807)	2025/9/21	2026/9/20
Signal & Spectrum Analyzer R&S	FSVA3044	100904	2025/7/1	2026/6/30
Software BV ADT	ADT_Radiated_ V7.7.1.1.1	N/A	N/A	N/A
Turn Table Max-Full	MFT-201SS	N/A	N/A	N/A
Turn Table Controller Max-Full	MG-7802	N/A	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 5(Hwaya).
2. Tested Date: 2026/5/28

4.4 Radiated Spurious Emissions above 1GHz

Refer to section 4.3 to get the tested date and information of the instruments.

4.5 Conducted Out of Band Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Fixed Attenuator Woken	00800A1K01A-10	00800A1K01A-10-01	2026/5/21	2027/5/20
Signal & Spectrum Analyzer R&S	FSV3044	101504	2025/6/18	2026/6/17
Software BV	ADT_RF Test Software V7.6.5.4	N/A	N/A	N/A

Notes:

1. The test was performed in HY - Oven room(Hwaya).
2. Tested Date: 2026/5/28

5 Limits of Test Items

5.1 Unwanted Emissions below 1 GHz

For FCC 15.247:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).

For FCC 15.407:

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).

5.2 Radiated Spurious Emissions below 1GHz

For Part 27:

According to FCC 47 CFR part 27.53(n), for operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz.

5.3 Unwanted Emissions above 1 GHz

For FCC 15.247:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
Above 960	500	3

Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

For FCC 15.407 transmitters operating in the 5.150-5.850 GHz band:

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
Above 960	500	3

Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

Limits of unwanted emission out of the restricted bands

Applicable To	Limit	
789033 D02 General UNII Test Procedure New Rules v02r01	Field Strength at 3 m	
	PK: 74 (dBμV/m)	AV: 54 (dBμV/m)

Applicable To	EIRP Limit	Equivalent Field Strength at 3 m
15.407(b)(1)	PK: -27 (dBm/MHz)	PK: 68.2 (dBμV/m) *
15.407(b)(2)	PK: -27 (dBm/MHz)	PK: 68.2 (dBμV/m) *
15.407(b)(3)	PK: -27 (dBm/MHz)	PK: 68.2 (dBμV/m) *
15.407(b)(4)(i)	PK: -27 (dBm/MHz) ^{*1} PK: 10 (dBm/MHz) ^{*2} PK: 15.6 (dBm/MHz) ^{*3} PK: 27 (dBm/MHz) ^{*4}	PK: 68.2 (dBμV/m) ^{*1} PK: 105.2 (dBμV/m) ^{*2} PK: 110.8 (dBμV/m) ^{*3} PK: 122.2 (dBμV/m) ^{*4}

^{*1} beyond 75 MHz or more above of the band edge.

^{*2} below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.

^{*3} below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.

^{*4} from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Note: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000 \sqrt{30P}}{3} \mu\text{V/m, where P is the eirp (Watts).}$$

5.4 Radiated Spurious Emissions above 1GHz

For Part 27:

According to FCC 47 CFR part 27.53(n), for operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz.

5.5 Conducted Out of Band Emissions

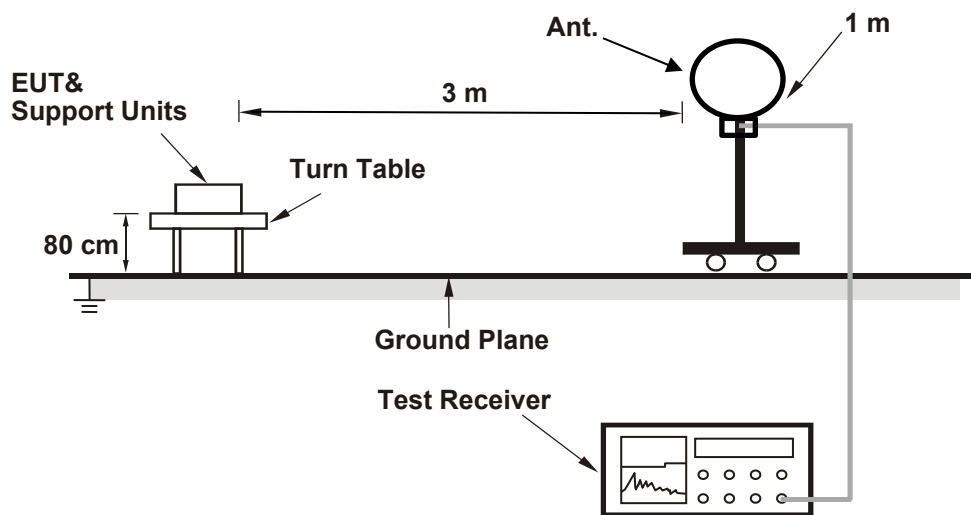
Below 30 dB of the highest emission level of operating band (in 100 kHz Resolution Bandwidth).

6 Test Arrangements

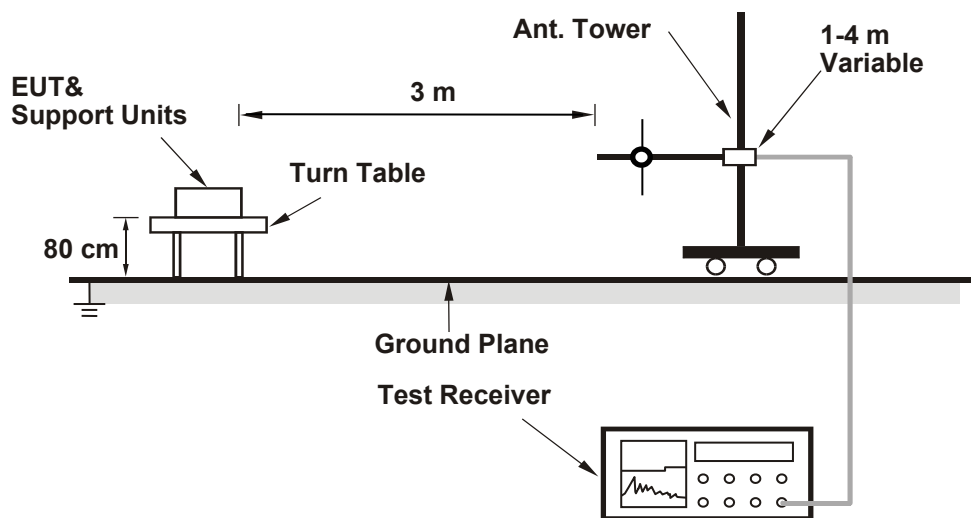
6.1 Unwanted Emissions below 1 GHz

6.1.1 Test Setup

For Radiated emission below 30 MHz



For Radiated emission above 30 MHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.1.2 Test Procedure

For Radiated emission below 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode, except for the frequency band (9 kHz to 90 kHz and 110 kHz to 490 kHz) set to average detect function and peak detect function.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 200 Hz at frequency below 150 kHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz or 10 kHz at frequency (150 kHz to 30 MHz).
3. All modes of operation were investigated and the worst-case emissions are reported.

For Radiated emission above 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

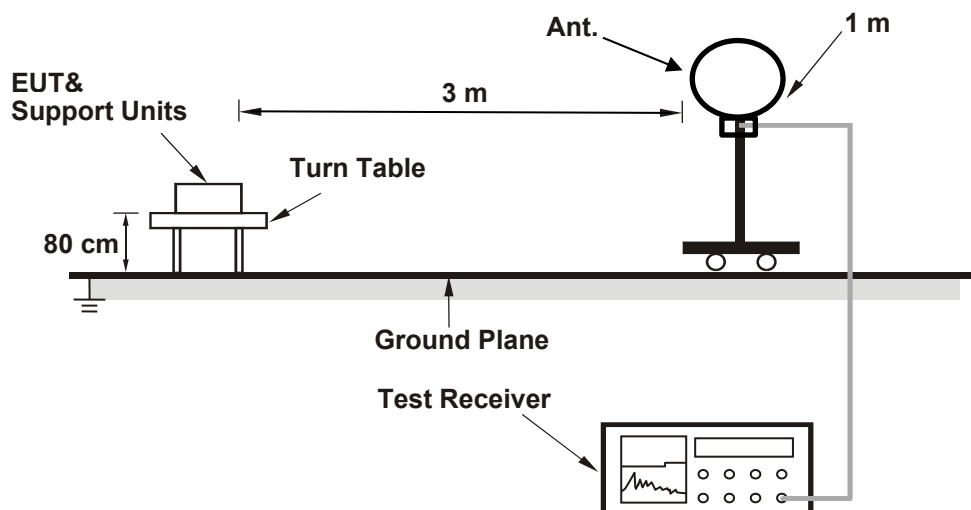
Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

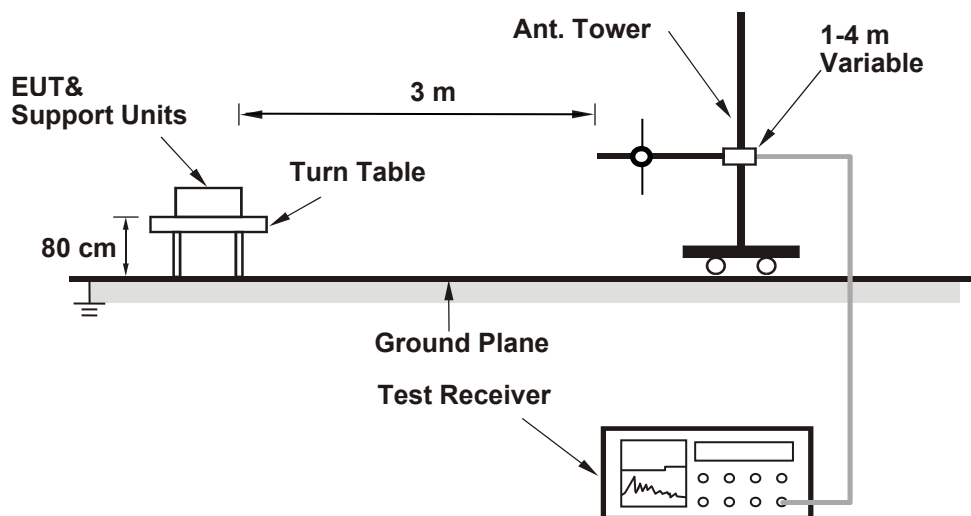
6.2 Radiated Spurious Emissions below 1GHz

6.2.1 Test Setup

For Radiated emission below 30 MHz



For Radiated emission above 30 MHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.2.2 Test Procedure

The EUT is configured to set data modulation and maximum power using WWAN technology.

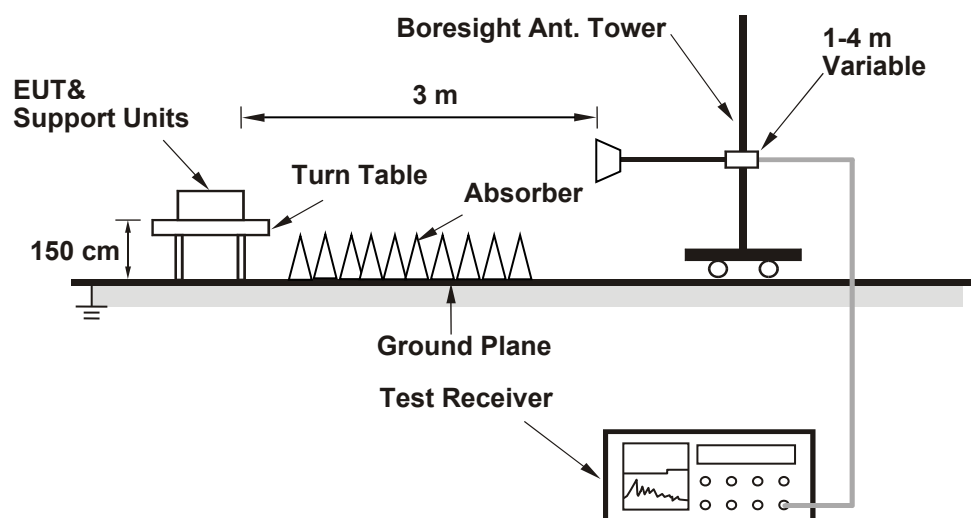
- a. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or equal 1 GHz) height of turn table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- b. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- c. Perform a field strength measurement and record the worse read value, is the field strength value via a spectrum reading obtained corrected for antenna factor, cable loss and pre-amplifier factor and then mathematically convert the measured field strength level to EIRP/ERP level.
- d. Following ANSI C63.26 section 5.5 and 5.2.7
- e. $EIRP (dBm) = E (dB\mu V/m) + 20\log(D) - 104.8$; where D is the measurement distance (in the far field region) in m.
- f. $ERP (dBm) = E (dB\mu V/m) + 20\log(D) - 104.8 - 2.15$; where D is the measurement distance (in the far field region) in m.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz/3 MHz. Set detector = average.
2. The amplitude of spurious emissions in the range 9 kHz to 30 MHz which are attenuated more than 20 dB below the permissible value need not be reported.

6.3 Unwanted Emissions above 1 GHz

6.3.1 Test Setup



For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.3.2 Test Procedure

- The EUT was placed on the top of a rotating table 1.5 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

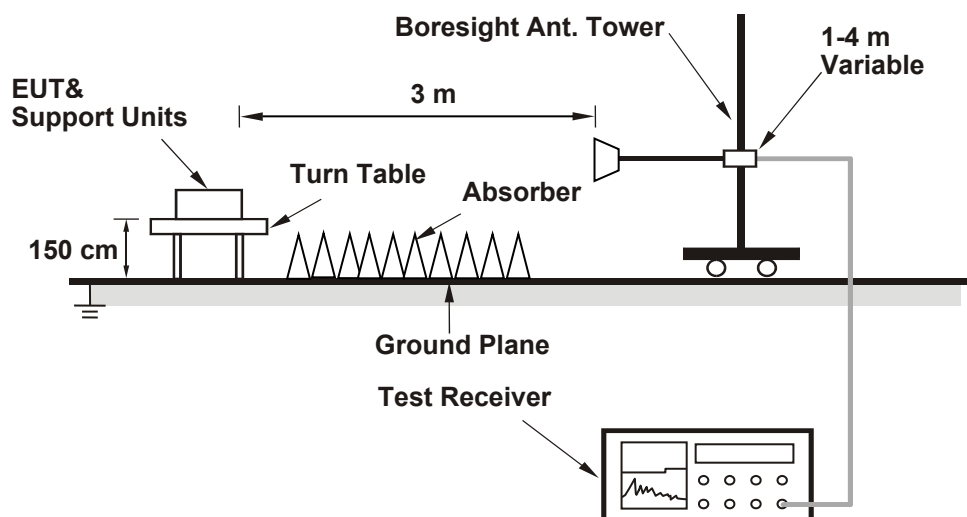
Notes:

- The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) and Average detection (AV) at frequency above 1 GHz.
- All modes of operation were investigated and the worst-case emissions are reported.

6.4 Radiated Spurious Emissions above 1GHz

6.4.1 Test Setup

For radiated emission above 1 GHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.4.2 Test Procedure

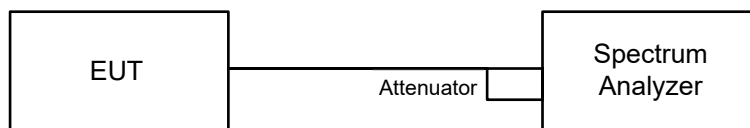
The EUT is configured to set data modulation and maximum power using WWAN technology.

- In the semi-anechoic chamber, EUT placed on the 1.5 m height of turn table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- Perform a field strength measurement and record the worse read value, is the field strength value via a spectrum reading obtained corrected for antenna factor, cable loss and pre-amplifier factor and then mathematically convert the measured field strength level to EIRP/ERP level.
- Following ANSI C63.26 section 5.5 and 5.2.7
- $EIRP (dBm) = E (dB\mu V/m) + 20\log(D) - 104.8$; where D is the measurement distance (in the far field region) in m.
- $ERP (dBm) = E (dB\mu V/m) + 20\log(D) - 104.8 - 2.15$; where D is the measurement distance (in the far field region) in m.

Note: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz/3 MHz. Set detector = average.

6.5 Conducted Out of Band Emissions

6.5.1 Test Setup



6.5.2 Test Procedure

MEASUREMENT PROCEDURE REF

- Set instrument center frequency to DTS channel center frequency.
- Set the span to ≥ 1.5 times the DTS bandwidth.
- Set the RBW = 100 kHz.
- Set the VBW ≥ 300 kHz.
- Detector = peak.
- Sweep time = No faster than coupled (auto) time.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum PSD level.

MEASUREMENT PROCEDURE OOB

- Set the center frequency and span to encompass frequency range to be measured. Note that the frequency range might need to be divided into multiple frequency ranges to retain frequency resolution.
- Set RBW = 100 kHz.
- Set VBW ≥ 300 kHz.
- Detector = peak.
- Sweep = No faster than coupled (auto) time.
- Trace Mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level.

7 Test Results of Test Item

7.1 Unwanted Emissions below 1 GHz

FCC 15.247

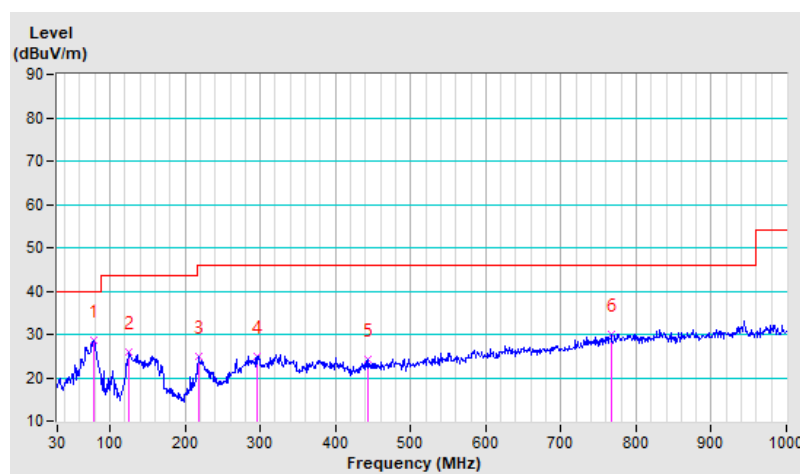
FCC 15.407

Combination	1		
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22 °C, 69% RH
Tested By	Thomas Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	77.53	28.6 QP	40.0	-11.4	2.00 H	16	45.1	-16.5
2	125.06	25.8 QP	43.5	-17.7	1.00 H	32	39.6	-13.8
3	217.21	24.9 QP	46.0	-21.1	2.00 H	79	40.3	-15.4
4	294.81	25.0 QP	46.0	-21.0	1.50 H	92	36.8	-11.8
5	442.25	24.2 QP	46.0	-21.8	1.00 H	17	32.0	-7.8
6	767.2	30.0 QP	46.0	-16.0	1.00 H	47	30.4	-0.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

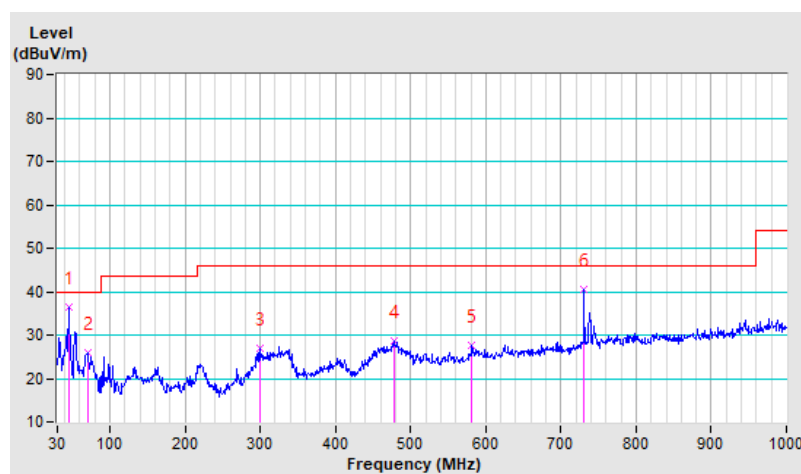


Combination	1		
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22 °C, 69% RH
Tested By	Thomas Cheng		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	44.55	36.3 QP	40.0	-3.7	1.50 V	171	48.3	-12.0
2	69.77	26.0 QP	40.0	-14.0	1.50 V	111	40.5	-14.5
3	298.69	27.1 QP	46.0	-18.9	1.00 V	145	38.8	-11.7
4	478.14	28.7 QP	46.0	-17.3	2.00 V	33	35.6	-6.9
5	581.93	27.6 QP	46.0	-18.4	1.00 V	226	32.6	-5.0
6	730.34	40.6 QP	46.0	-5.4	2.00 V	66	42.1	-1.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.



7.2 Radiated Spurious Emissions below 1GHz

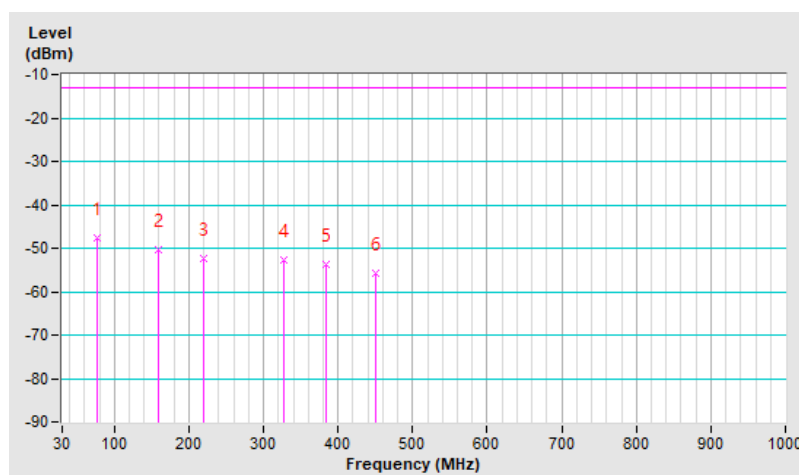
FCC Part 27

Combination	1		
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power	120 Vac, 60 Hz	Environmental Conditions	22 °C, 69% RH
Tested By	Thomas Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	77.53	-47.50	-13.00	-34.50	1.50 H	13	64.32	-111.82
2	159.01	-50.31	-13.00	-37.31	1.00 H	13	57.18	-107.49
3	220.12	-52.50	-13.00	-39.50	2.00 H	77	58.29	-110.79
4	327.79	-52.77	-13.00	-39.77	1.00 H	270	53.28	-106.05
5	384.05	-53.80	-13.00	-40.80	1.50 H	272	50.99	-104.79
6	450.01	-55.90	-13.00	-42.90	2.50 H	257	46.90	-102.80

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = ERP - Limit\ value$
4. The other ERP levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

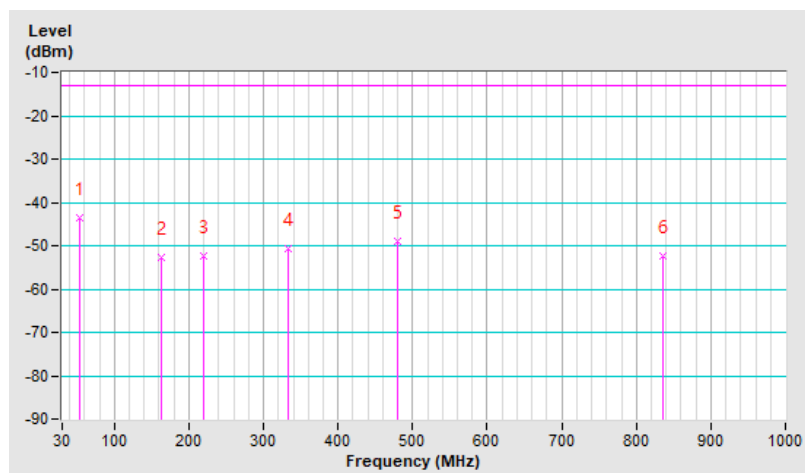


Combination	1		
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power	120 Vac, 60 Hz	Environmental Conditions	22 °C, 69% RH
Tested By	Thomas Cheng		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	53.28	-43.70	-13.00	-30.70	1.00 V	87	63.73	-107.43
2	162.89	-52.87	-13.00	-39.87	1.00 V	184	54.76	-107.63
3	219.15	-52.40	-13.00	-39.40	2.00 V	65	58.36	-110.76
4	332.64	-50.60	-13.00	-37.60	2.00 V	163	55.41	-106.01
5	480.08	-48.98	-13.00	-35.98	1.00 V	40	53.18	-102.16
6	835.1	-52.30	-13.00	-39.30	1.50 V	214	42.99	-95.29

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = ERP – Limit value
4. The other ERP levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.



7.3 Unwanted Emissions above 1 GHz

FCC 15.247

Combination	1		
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22 °C, 68% RH
Tested By	Thomas Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452	106.6 PK			2.14 H	136	70.2	36.4
2	*2452	105.2 AV			2.14 H	136	68.8	36.4
3	2483.5	67.6 PK	74.0	-6.4	2.14 H	136	31.3	36.3
4	2483.5	53.4 AV	54.0	-0.6	2.14 H	136	17.1	36.3
5	4904	54.7 PK	74.0	-19.3	1.10 H	215	42.1	12.6
6	4904	39.9 AV	54.0	-14.1	1.10 H	215	27.3	12.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452	109.5 PK			1.28 V	112	73.1	36.4
2	*2452	95.1 AV			1.28 V	112	58.7	36.4
3	2483.5	68.9 PK	74.0	-5.1	1.28 V	112	32.6	36.3
4	2483.5	53.5 AV	54.0	-0.5	1.28 V	112	17.2	36.3
5	4904	55.0 PK	74.0	-19.0	2.07 V	172	42.4	12.6
6	4904	40.2 AV	54.0	-13.8	2.07 V	172	27.6	12.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

FCC 15.407

Combination	1		
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	24 °C, 67% RH
Tested By	Thomas Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5775	105.9 PK			2.04 H	281	63.5	42.4
2	*5775	93.0 AV			2.04 H	281	50.6	42.4
3	11550	59.5 PK	74.0	-14.5	3.10 H	251	47.1	12.4
4	11550	47.2 AV	54.0	-6.8	3.10 H	251	34.8	12.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5775	102.2 PK			1.84 V	130	59.8	42.4
2	*5775	89.1 AV			1.84 V	130	46.7	42.4
3	11550	58.7 PK	74.0	-15.3	1.83 V	65	46.3	12.4
4	11550	46.7 AV	54.0	-7.3	1.83 V	65	34.3	12.4

Remarks:

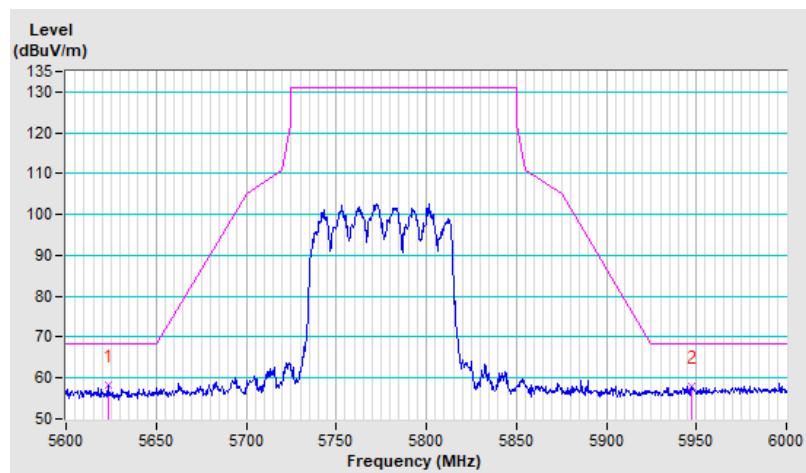
1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

Combination	1		
Frequency Range	5.6 GHz ~ 6 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	24 °C, 67% RH
Tested By	Thomas Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5623.2	58.2 PK	68.2	-10.0	2.04 H	281	52.3	5.9
2	5947.2	58.0 PK	68.2	-10.2	2.04 H	281	51.5	6.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

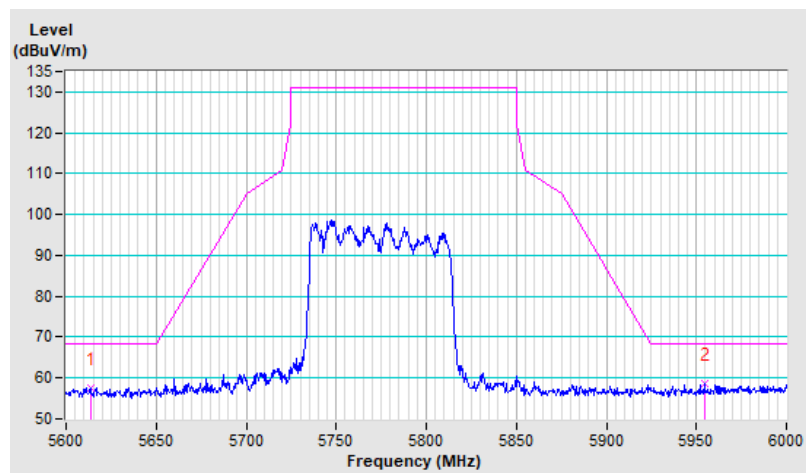


Combination	1		
Frequency Range	5.6 GHz ~ 6 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	24 °C, 67% RH
Tested By	Thomas Cheng		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5613.6	57.7 PK	68.2	-10.5	1.84 V	130	51.7	6.0
2	5954.4	58.6 PK	68.2	-9.6	1.84 V	130	52.0	6.6

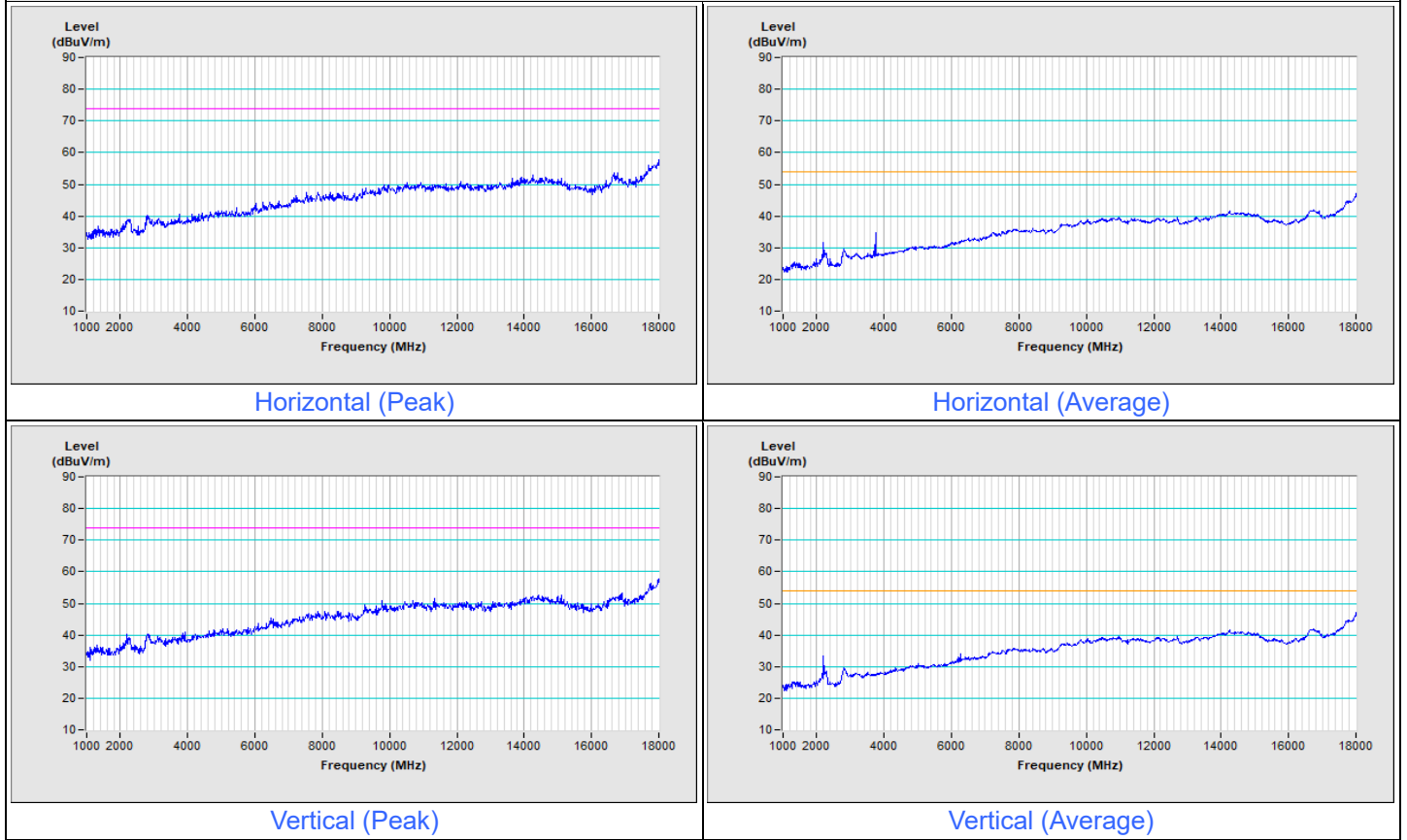
Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.



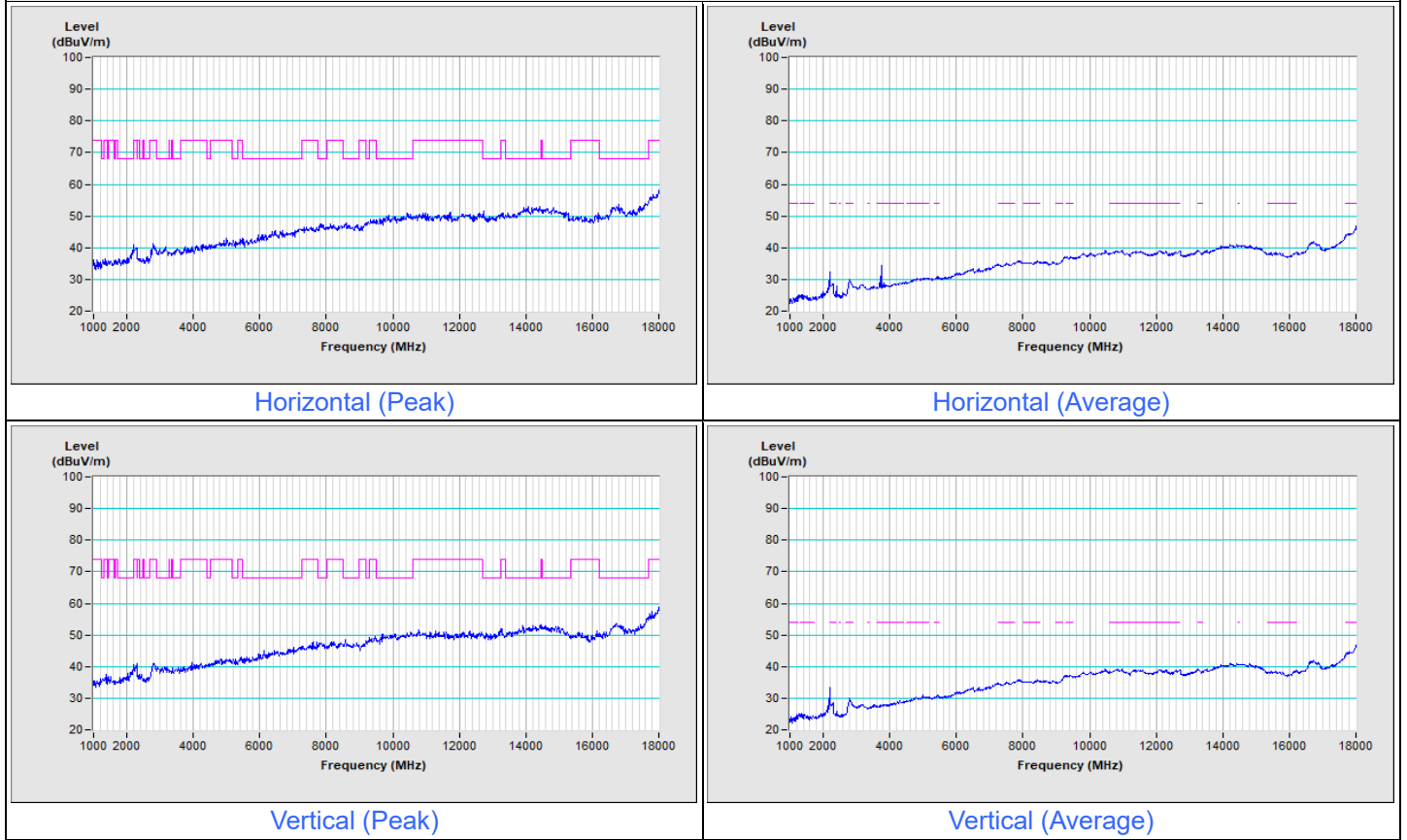
Frequency Range	1 GHz ~ 18 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
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FCC 15.247 Combination 1



Frequency Range	1 GHz ~ 18 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
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FCC 15.407 Combination 1



7.4 Radiated Spurious Emissions above 1GHz

FCC Part 27

Combination	1		
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power	120 Vac, 60 Hz	Environmental Conditions	24 °C, 67% RH
Tested By	Thomas Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7000.02	-43.1	-13.0	-30.1	2.65 H	185	42.5	-85.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7000.02	-42.5	-13.0	-29.5	3.06 V	25	43.1	-85.6

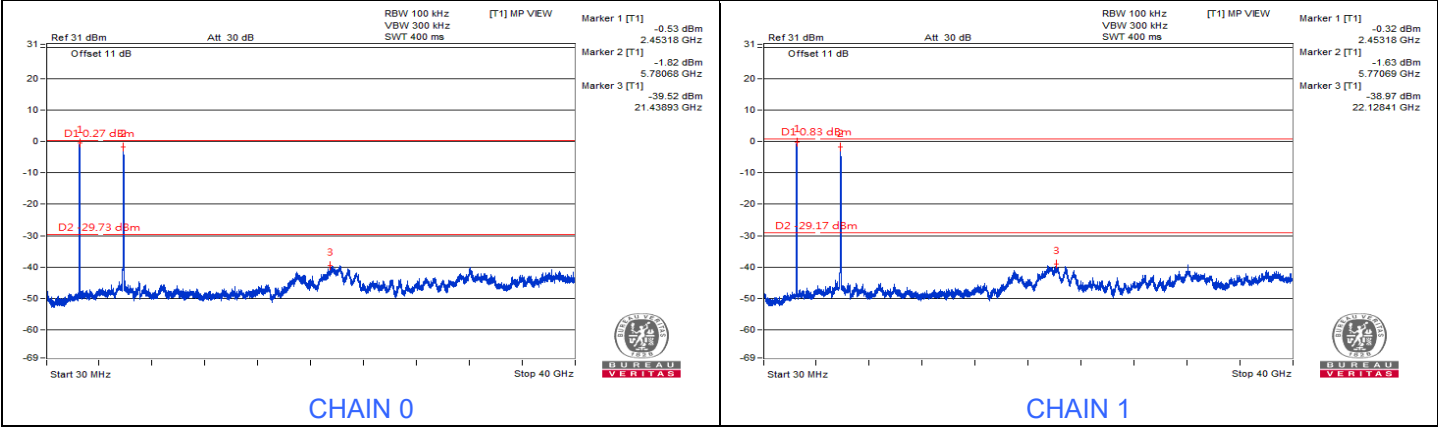
Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit.

7.5 Conducted Out of Band Emissions

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 65% RH	Tested By:	Wayne Lin
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Combination 1



8 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo)

9 Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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Web Site: <http://ee.bureauveritas.com.tw>

The address and road map of all our labs can be found in our web site also.

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