



**CFR 47 FCC PART 15 SUBPART C  
ISED RSS-247 ISSUE 2**

**CERTIFICATION TEST REPORT**

*For*

**WiFi Module**

**MODEL NUMBER: SI07A**

**FCC ID: 2AFG6-SI07A**

**IC: 22166- SI07A**

**REPORT NUMBER: 4789708221-2**

**ISSUE DATE: January 21, 2021**

*Prepared for*

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Revision History

Rev.	Issue Date	Revisions	Revised By
V0	01/21/2021	Initial Issue	

Note: This is a spot check report base on 4789708215-5 which is issued by UL Verification Services (Guangzhou) Co., Ltd, Song Shan Lake Branch on November 30, 2020. The WiFi module SI07 had already applied for FCC ID (2AFG6-SI07A) and IC (22166- SI07), the new WiFi module SI07A and SI07 are the same except to except for one less module SKI.WB7668CU.1, so we only follow the KDB KDB484596 D01 to add the spot check in this report. For other data, please refer to the original report 4789708215-5.

Parent Model SI07 FCC ID: 2AFG6-SI07, IC: 22166 -SI07

variant model SI07A, FCC ID: 2AFG6-SI07A, IC: 22166 -SI07A

Test Report	802.11 2.4GHz WIFI (DTS)	BLE (DTS)	Bluetooth DSS	802.11 5G WIFI UNII
SI07 Parent	Report #4789708215-6 #4789708215-7	Report #4789708215-5	Report #4789708215-4	Report #4789708215-8 #4789708215-9
SI07A Variant	Report #4789708221-3	Report #4789708221-2	Report #4789708221-1	Report #4789708221-4



Summary of Test Results			
Clause	Test Items	FCC/ISED Rules	Test Results
1	Conducted Output Power	FCC Part 15.247 (b) (3) RSS-247 Clause 5.4 (d)	Pass
2	Radiated Bandedge and Spurious Emission Spot Check	FCC Part 15.247 (d) FCC Part 15.209 FCC Part 15.205 RSS-247 Clause 5.5 RSS-GEN Clause 8.9	Pass
3	Antenna Requirement	FCC Part 15.203 RSS-GEN Clause 6.8	Pass
<p>Note:</p> <p>1. This test report is only published to and used by the applicant, and it is not for evidence purpose in China.</p> <p>2. The measurement result for the sample received is &lt;Pass&gt; according to &lt; CFR 47 FCC PART 15 SUBPART C &gt;&gt; ISED RSS-247 &gt; when &lt;Accuracy Method&gt; decision rule is applied.</p>			

Test worst case of Conducted Output Power Spot Check				
Test Mode	Frequency (MHz)	Result[dBm]	original report Result[dBm]	Deviation(dB)
LE 1M	2402	4.19	4.36	-0.17

The worst case of Radiated Bandedge and Spurious Emission Spot Check					
Test Mode	Test Item	Frequency (MHz)	Result[dBuV/m]	original report Result[dBuV/m]	Deviation(dB)
LE 2M	Band Edge	2483.525	51.19	51.64	-0.45
LE 1M	RSE	2006	51.71	52.74	-1.03

Note: Comparison of two models, upper deviation is within 3 dB range and all test results are under FCC Technical limits.



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# 1. ATTESTATION OF TEST RESULTS

## Applicant Information

Company Name: Guangzhou Shirui Electronics Co Ltd  
Address: 192 Kezhu Road, Sciencetech Park, Guangzhou Economic Technology Development District Guangzhou China

## Manufacturer Information

Company Name: Guangzhou Shirui Electronics Co Ltd  
Address: 192 Kezhu Road, Sciencetech Park, Guangzhou Economic Technology Development District Guangzhou China

## EUT Information

EUT Name: WiFi Module  
Model: SI07A  
Sample Received Date: January 11, 2021  
Sample Status: Normal  
Sample ID: 3616600  
Date of Tested: January 12, 2021~ January 20, 2021

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 FCC PART 15 SUBPART C	PASS
ISED RSS-247 Issue 2	PASS
ISED RSS-GEN Issue 5	PASS

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## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with KDB 558074 D01 15.247 Meas Guidance v05r02, 414788 D01 Radiated Test Site v01r01, CFR 47 FCC Part 2, CFR 47 FCC Part 15, ANSI C63.10-2013, ISED RSS-247 Issue 2 and ISED RSS-GEN Issue 5.

## 3. FACILITIES AND ACCREDITATION

Accreditation Certificate	<p><b>A2LA (Certificate No.: 4102.01)</b> UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA.</p> <p><b>FCC (FCC Designation No.: CN1187)</b> UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules</p> <p><b>ISED (Company No.: 21320)</b> UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with ISED. The Company Number is 21320 and the test lab Conformity Assessment Body Identifier (CABID) is CN0046.</p> <p><b>VCCI (Registration No.: G-20019, R-20004, C-20012 and T-20011)</b> UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the Membership No. is 3793. Facility Name: Chamber D, the VCCI registration No. is G-20019 and R-20004 Shielding Room B, the VCCI registration No. is C-20012 and T-20011</p>
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Note 1: All tests measurement facilities use to collect the measurement data are located at Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China

Note 2: The test anechoic chamber in UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.

Note 3: For below 30 MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. And these measurements below 30 MHz had been correlated to measurements performed on an OFS.



## 4. CALIBRATION AND UNCERTAINTY

### 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations and is traceable to recognize national standards.

### 4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Uncertainty
Conduction emission	3.62 dB
Radiated Emission (Included Fundamental Emission) (9 kHz ~ 30 MHz)	2.2 dB
Radiated Emission (Included Fundamental Emission) (30 MHz ~ 1 GHz)	4.00 dB
Radiated Emission (Included Fundamental Emission) (1 GHz to 26 GHz)	5.78 dB (1 GHz ~ 18 GHz)
	5.23 dB (18 GHz ~ 26 GHz)

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

## 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

EUT Name	WiFi Module		
Model	SI07A		
Technology	Bluetooth - Low Energy		
Transmit Frequency Range	2402 MHz ~ 2480 MHz		
Modulation	GFSK		
Data Rate	LE	1 Mbps	
	LE 2M	2 Mbps	
Power Supply	DC State	Rate Input:	DC 5 V
Wireless Module	SKI.WB8822CU.1		

### 5.2. CHANNEL LIST

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	11	2424	22	2446	33	2468
1	2404	12	2426	23	2448	34	2470
2	2406	13	2428	24	2450	35	2472
3	2408	14	2430	25	2452	36	2474
4	2410	15	2432	26	2454	37	2476
5	2412	16	2434	27	2456	38	2478
6	2414	17	2436	28	2458	39	2480
7	2416	18	2438	29	2460	/	/
8	2418	19	2440	30	2462	/	/
9	2420	20	2442	31	2464	/	/
10	2422	21	2444	32	2468	/	/

### 5.3. MAXIMUM PEAK OUTPUT POWER

Test Mode	Frequency (MHz)	Channel Number	Maximum Peak Output Power (dBm)	Maximum EIRP (dBm)
LE 1M	2402 ~ 2480	0-39[40]	4.19	7.94
LE 2M	2402 ~ 2480	0-39[40]	4.12	7.87

### 5.4. TEST CHANNEL CONFIGURATION

Test Mode	Test Channel	Frequency
LE 1M	CH 0(Low Channel), CH 19(MID Channel), CH 39(High Channel)	2402 MHz, 2440 MHz, 2480 MHz
LE 2M	CH 0(Low Channel), CH 19(MID Channel), CH 39(High Channel)	2402 MHz, 2440 MHz, 2480 MHz



### 5.5. THE WORSE CASE POWER SETTING PARAMETER

The Worst Case Power Setting Parameter under 2402 ~ 2480MHz Band				
Test Software Version		RTLBTAPP		
Test Mode	Transmit Antenna Number	Test Software Setting Value		
		CH 0	CH 19	CH 39
LE 1M	1	Default	Default	Default
LE 2M	1	Default	Default	Default

### 5.6. DESCRIPTION OF AVAILABLE ANTENNAS

Antenna	Frequency (MHz)	Antenna Type	MAX Antenna Gain (dBi)
1	2402-2480	FPC antenna	3.75

Note: The value of the antenna gain was declared by customer.

Test Mode	Transmit and Receive Mode	Description
LE 1M	<input checked="" type="checkbox"/> 1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna.
LE 2M	<input checked="" type="checkbox"/> 1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna.

Note: BT & 2.4 GHz WLAN & 5 GHz WLAN can't transmit simultaneously. (Declared by customer.)

## 5.7. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	P/N
1	PC	Dell	Vostro 3902	8KNDDDB2

### I/O CABLES

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	USB	/	/	1.0	/

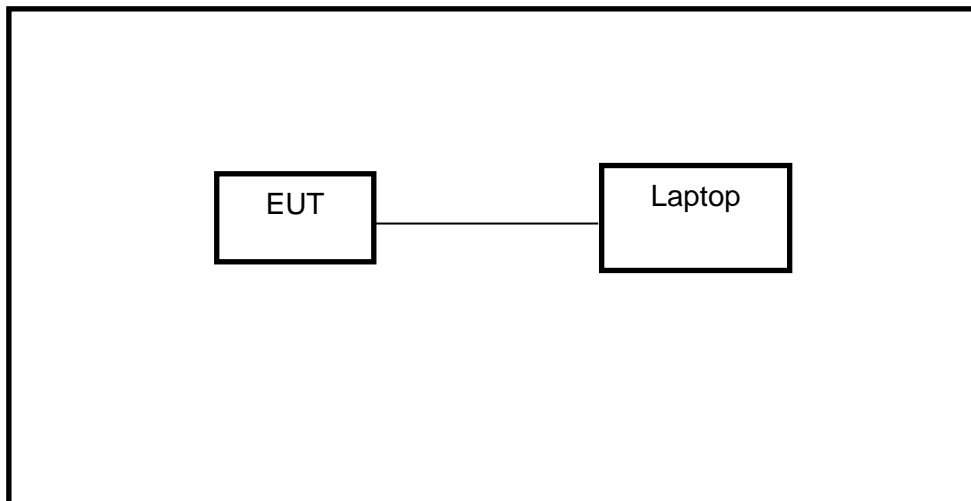
### ACCESSORIES

Item	Accessory	Brand Name	Model Name	Description
/	/	/	/	/

### TEST SETUP

The EUT can work in engineering mode with a software through a Laptop.

### SETUP DIAGRAM FOR TESTS



**6. MEASURING INSTRUMENT AND SOFTWARE USED**

Radiated Emissions					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
MXE EMI Receiver	KESIGHT	N9038A	MY56400036	Nov. 12, 2020	Nov. 11, 2021
Hybrid Log Periodic Antenna	TDK	HLP-3003C	130960	Aug. 11, 2018	Aug. 10, 2021
Preamplifier	HP	8447D	2944A09099	Nov. 12, 2020	Nov. 11, 2021
EMI Measurement Receiver	R&S	ESR26	101377	Nov. 12, 2020	Nov. 11, 2021
Horn Antenna	TDK	HRN-0118	130939	Sept. 17, 2018	Sept. 17, 2021
Preamplifier	TDK	PA-02-0118	TRS-305-00067	Nov. 20, 2020	Nov. 19, 2021
Horn Antenna	Schwarzbeck	BBHA9170	#691	Aug. 11, 2018	Aug. 11, 2021
Preamplifier	TDK	PA-02-2	TRS-307-00003	Nov. 12, 2020	Nov. 11, 2021
Preamplifier	TDK	PA-02-3	TRS-308-00002	Nov. 12, 2020	Nov. 11, 2021
Loop antenna	Schwarzbeck	1519B	00008	Jan.17, 2019	Jan.17,2022
Preamplifier	TDK	PA-02-001-3000	TRS-302-00050	Nov. 12, 2020	Nov. 11, 2021
Preamplifier	Mini-Circuits	ZX60-83LN-S+	SUP01201941	Nov. 20, 2020	Nov. 19, 2021
High Pass Filter	Wi	WHKX10-2700-3000-18000-40SS	23	Nov. 12, 2020	Nov. 11, 2021
Software					
Description		Manufacturer	Name	Version	
Test Software for Radiated Emissions		Farad	EZ-EMC	Ver. UL-3A1	

Other Instruments					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer	Keysight	N9020A	MY49100060	Nov. 20, 2020	Nov. 19, 2021
Dual Channel Power Meter	Keysight	N1912A	MY55416024	Nov. 20, 2020	Nov. 19, 2021
Power Sensor	Keysight	USB Wideband Power Sensor	MY5100022	Nov. 20, 2020	Nov. 19, 2021

## 7. ANTENNA PORT TEST RESULTS

### 7.1. CONDUCTED OUTPUT POWER

#### LIMITS

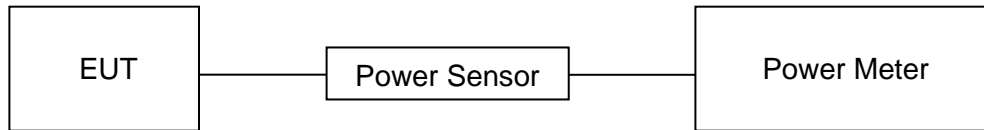
CFR 47 FCC Part15 (15.247) Subpart C ISED RSS-247 ISSUE 2			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC 15.247(b)(3) ISED RSS-247 5.4 (d)	Peak Conducted Output Power	1 watt or 30 dBm	2400-2483.5

#### TEST PROCEDURE

Connect the EUT to a low loss RF cable from the antenna port to the power sensor (video bandwidth is greater than the occupied bandwidth).

Measure peak emission level, the indicated level is the peak output power, after any corrections for external attenuators and cables.

#### TEST SETUP



#### TEST ENVIRONMENT

Temperature	22.2 °C	Relative Humidity	51 %
Atmosphere Pressure	101 kPa	Test Voltage	DC 5 V

#### RESULTS

Test Mode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
LE 1M	Ant1	2402	4.19	<=30	PASS
		2440	4.03	<=30	PASS
		2480	3.91	<=30	PASS
LE 2M	Ant1	2402	4.12	<=30	PASS
		2440	4.01	<=30	PASS
		2480	3.87	<=30	PASS

#### Test worst case results of Spot Check

Test Mode	Frequency (MHz)	Result[dBm]	original report Result[dBm]	Deviation(dB)
LE 1M	2402	4.19	4.36	-0.17

## 7.2. RADIATED TEST RESULTS

### LIMITS

Please refer to CFR 47 FCC §15.205 and §15.209.

Please refer to ISED RSS-GEN Clause 8.9 and Clause 8.10.

Radiation Disturbance Test Limit for FCC (Class B) (9 kHz-1 GHz)

Emissions radiated outside of the specified frequency bands above 30 MHz			
Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m	
		Quasi-Peak	
30 - 88	100	40	
88 - 216	150	43.5	
216 - 960	200	46	
Above 960	500	54	
Above 1000	500	Peak	Average
		74	54

FCC Emissions radiated outside of the specified frequency bands below 30 MHz		
Frequency (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

ISED General field strength limits at frequencies below 30 MHz

Table 6 – General field strength limits at frequencies below 30 MHz		
Frequency	Magnetic field strength (H-Field) (µA/m)	Measurement distance (m)
9 - 490 kHz <sup>Note 1</sup>	6.37/F (F in kHz)	300
490 - 1705 kHz	63.7/F (F in kHz)	30
1.705 - 30 MHz	0.08	30

**Note 1:** The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.



ISED Restricted bands please refer to ISED RSS-GEN Clause 8.10

Table 7 – Restricted frequency bands <sup>Note 1</sup>		
MHz	MHz	GHz
0.090 - 0.110	149.9 - 150.05	9.0 - 9.2
0.495 - 0.505	156.52475 - 156.52525	9.3 - 9.5
2.1735 - 2.1905	156.7 - 156.9	10.6 - 12.7
3.020 - 3.028	162.0125 - 167.17	13.25 - 13.4
4.125 - 4.128	167.72 - 173.2	14.47 - 14.5
4.17725 - 4.17775	240 - 285	15.35 - 16.2
4.20725 - 4.20775	322 - 335.4	17.7 - 21.4
5.677 - 5.683	399.9 - 410	22.01 - 23.12
6.215 - 6.218	608 - 614	23.6 - 24.0
6.26775 - 6.26825	960 - 1427	31.2 - 31.8
6.31175 - 6.31225	1435 - 1626.5	36.43 - 36.5
8.291 - 8.294	1645.5 - 1646.5	Above 38.6
8.362 - 8.366	1660 - 1710	
8.37625 - 8.38675	1718.8 - 1722.2	
8.41425 - 8.41475	2200 - 2300	
12.29 - 12.293	2310 - 2390	
12.51975 - 12.52025	2483.5 - 2500	
12.57675 - 12.57725	2690 - 2900	
13.36 - 13.41	3260 - 3267	
16.42 - 16.423	3332 - 3339	
16.80475 - 16.80525	3345.8 - 3358	
16.80425 - 16.80475	3500 - 4400	
25.5 - 25.67	4500 - 5150	
37.5 - 38.25	5350 - 5400	
73 - 74.6	7250 - 7750	
74.8 - 75.2	8025 - 8500	
108 - 138		

Note 1: Certain frequency bands listed in table 7 and in bands above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to related devices are set out in the 200 and 300 series of RSSs.

FCC Restricted bands of operation refer to FCC §15.205 (a):

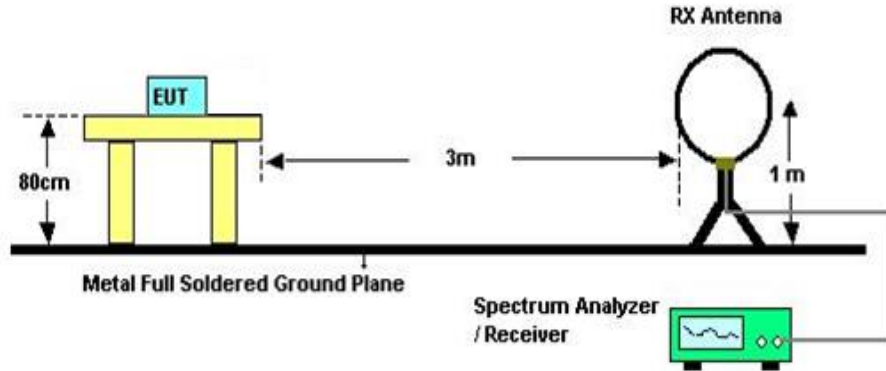
MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
<sup>1</sup> 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	( <sup>2</sup> )
13.36-13.41			

Note: <sup>1</sup>Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

<sup>2</sup>Above 38.6c

**TEST SETUP AND PROCEDURE**

Below 30 MHz

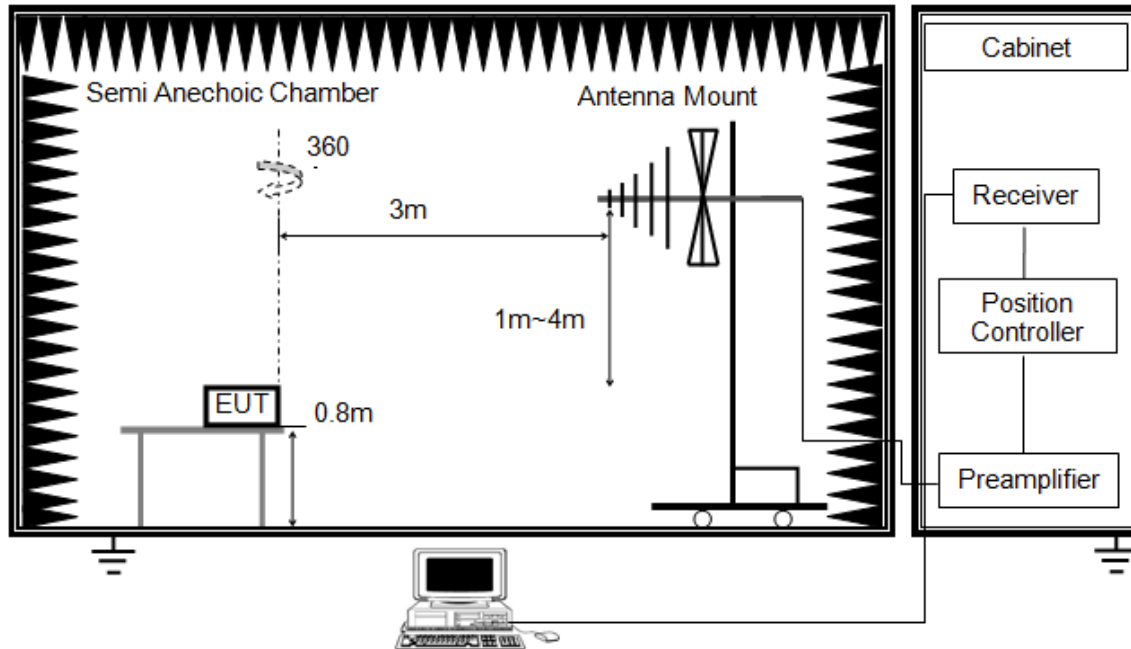


The setting of the spectrum analyser

RBW	200 Hz (From 9 kHz to 0.15 MHz)/ 9 kHz (From 0.15 MHz to 30 MHz)
VBW	200 Hz (From 9 kHz to 0.15 MHz)/ 9 kHz (From 0.15 MHz to 30 MHz)
Sweep	Auto
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013 clause 11.11.
2. The EUT was arranged to its worst case and then turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both Horizontal, Face-on and Face-off polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 80 cm above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a 1 m height antenna tower.
5. The radiated emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.
6. For measurement below 1 GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak and average detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak and average detector and reported.
7. Although these tests were performed other than open field site, adequate comparison measurements were confirmed against 30m open field site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field site based on KDB 414788.

Below 1 GHz and above 30 MHz



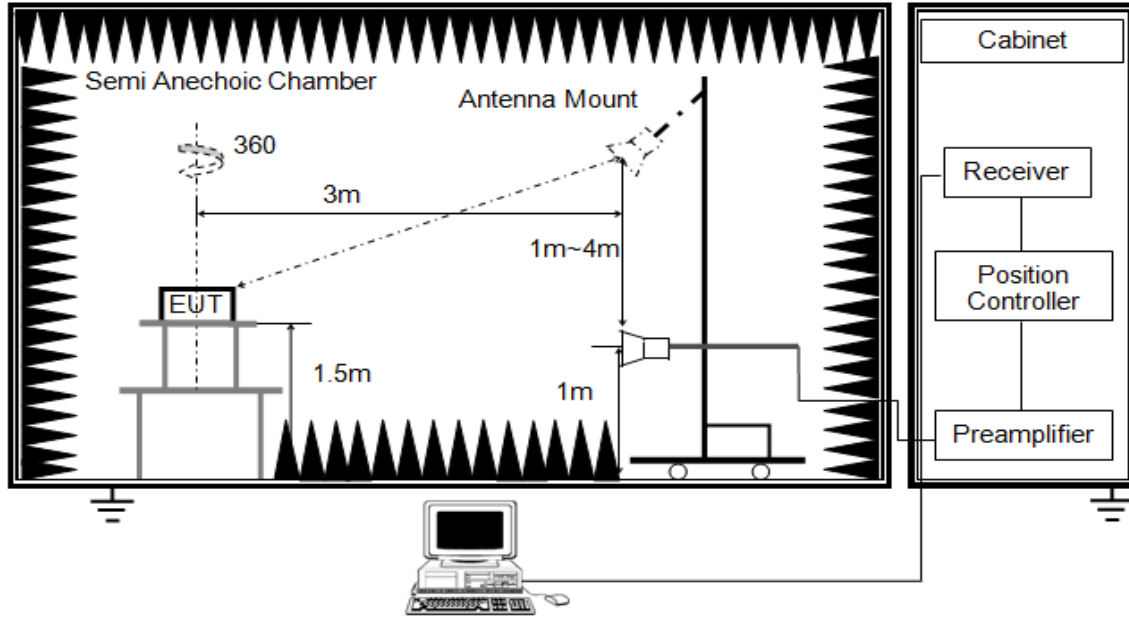
The setting of the spectrum analyser

RBW	120 kHz
VBW	300 kHz
Sweep	Auto
Detector	Peak/QP
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013 clause 11.11.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 80 cm above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. For measurement below 1 GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.



Above 1GHz

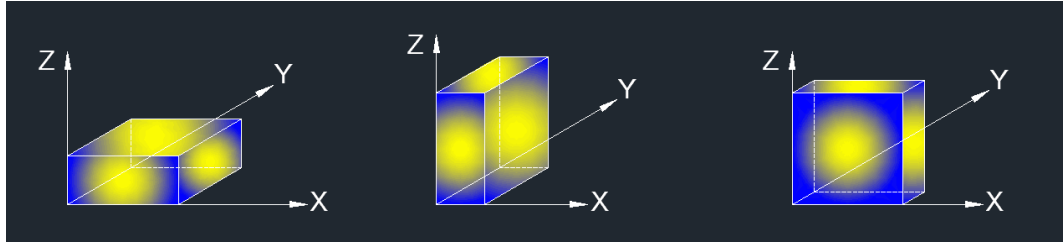


The setting of the spectrum analyser

RBW	1 MHz
VBW	PEAK: 3 MHz AVG: see note 6
Sweep	Auto
Detector	Peak
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013 clause 11.11 and 11.12.
2. The EUT was arranged to its worst case and then tune the antenna tower (1.5 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 1.5 m above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. For measurement above 1 GHz, the emission measurement will be measured by the peak detector. This peak level, once corrected, must comply with the limit specified in Section 15.209.
6. For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector for average measurements. For the Duty Cycle please refer to clause 7.1.ON TIME AND DUTY CYCLE.

X axis, Y axis, Z axis positions:



Note 1: For all radiated test, EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

**TEST ENVIRONMENT**

Temperature	19.3 °C	Relative Humidity	50.6 %
Atmosphere Pressure	101 kPa	Test Voltage	DC 5 V

**RESULTS**

Test worst case results of Spot Check					
Test Mode	Test Item	Frequency (MHz)	Result[dBuV/m]	original report Result[dBuV/m]	Deviation(dB)
LE 2M	Band Edge	2483.525	51.19	51.64	-0.45
LE 1M	RSE	2006	51.71	52.74	-1.03

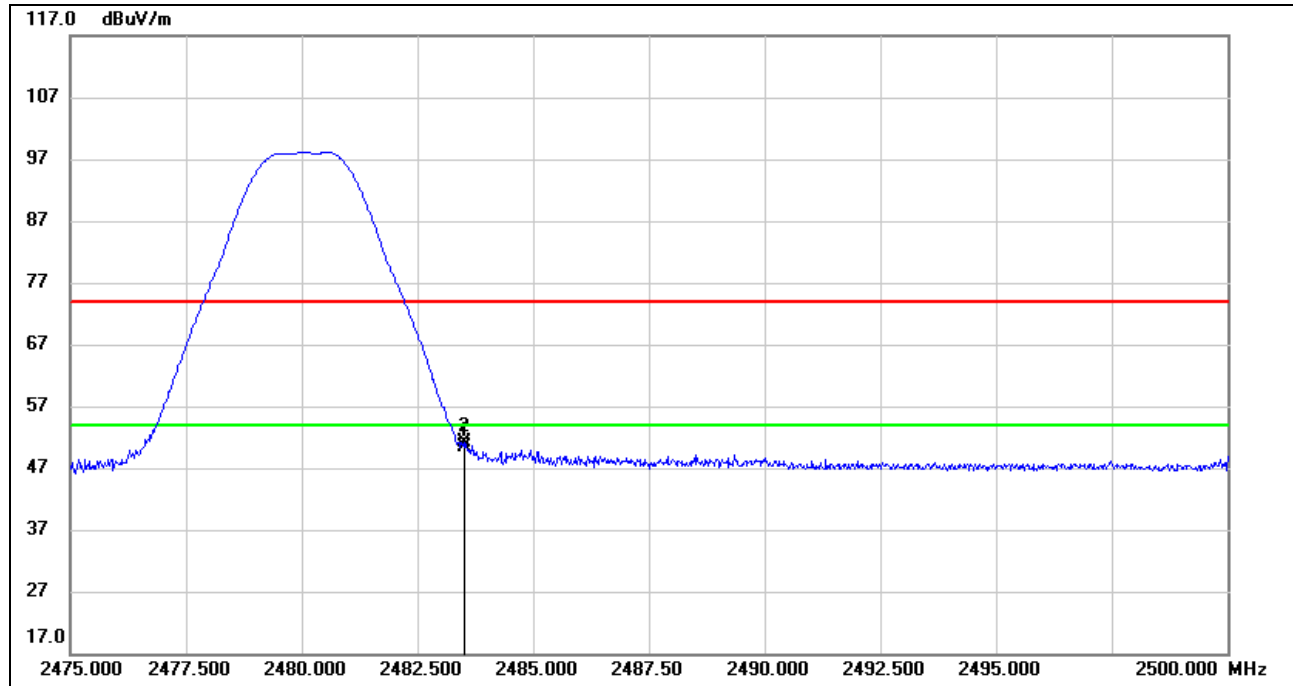
Note: Comparison of two models, upper deviation is within 3 dB range and all test results are under FCC Technical limits.

## 7.1. RESTRICTED BANDEDGE

### 7.1.1. LE 2M MODE

#### RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

#### PEAK



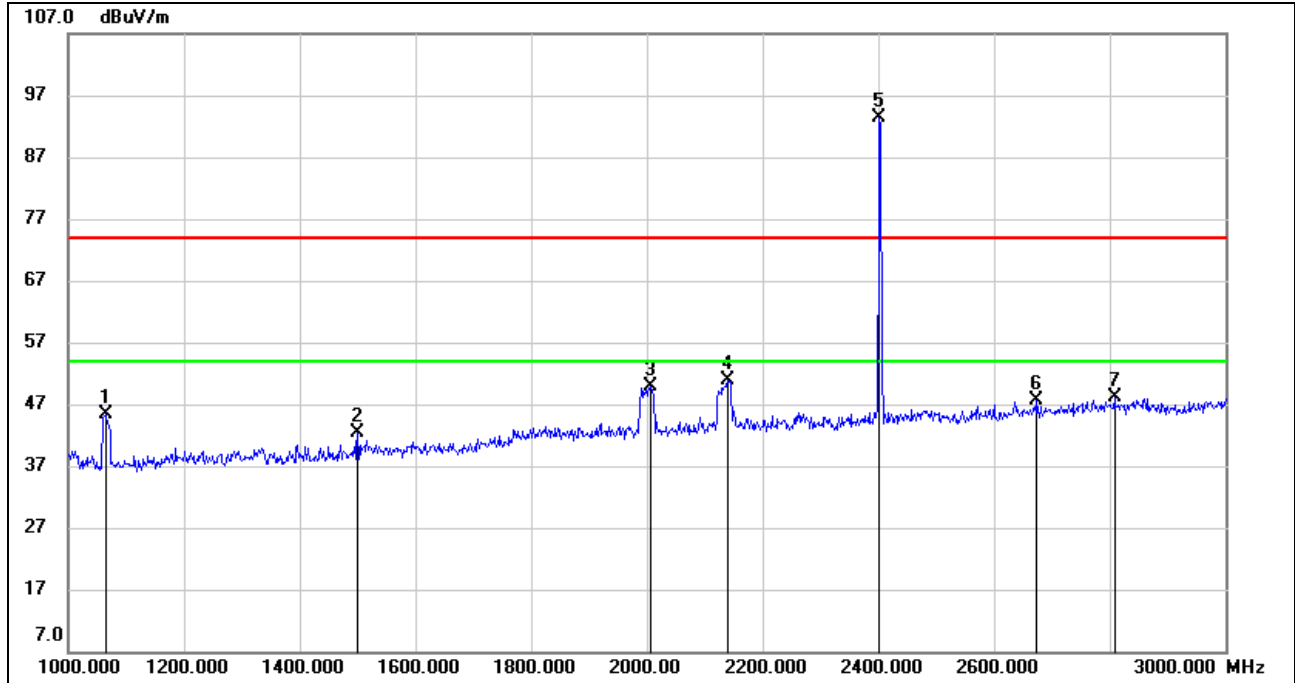
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	16.68	33.58	50.26	74.00	-23.74	peak
2	2483.525	17.61	33.58	51.19	74.00	-22.81	peak

- Note:
1. Measurement = Reading Level + Correct Factor.
  2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
  3. Peak: Peak detector.
  4. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

## 7.2. SPURIOUS EMISSIONS (1 GHz ~ 3 GHz)

### 7.2.1. LE 1M MODE

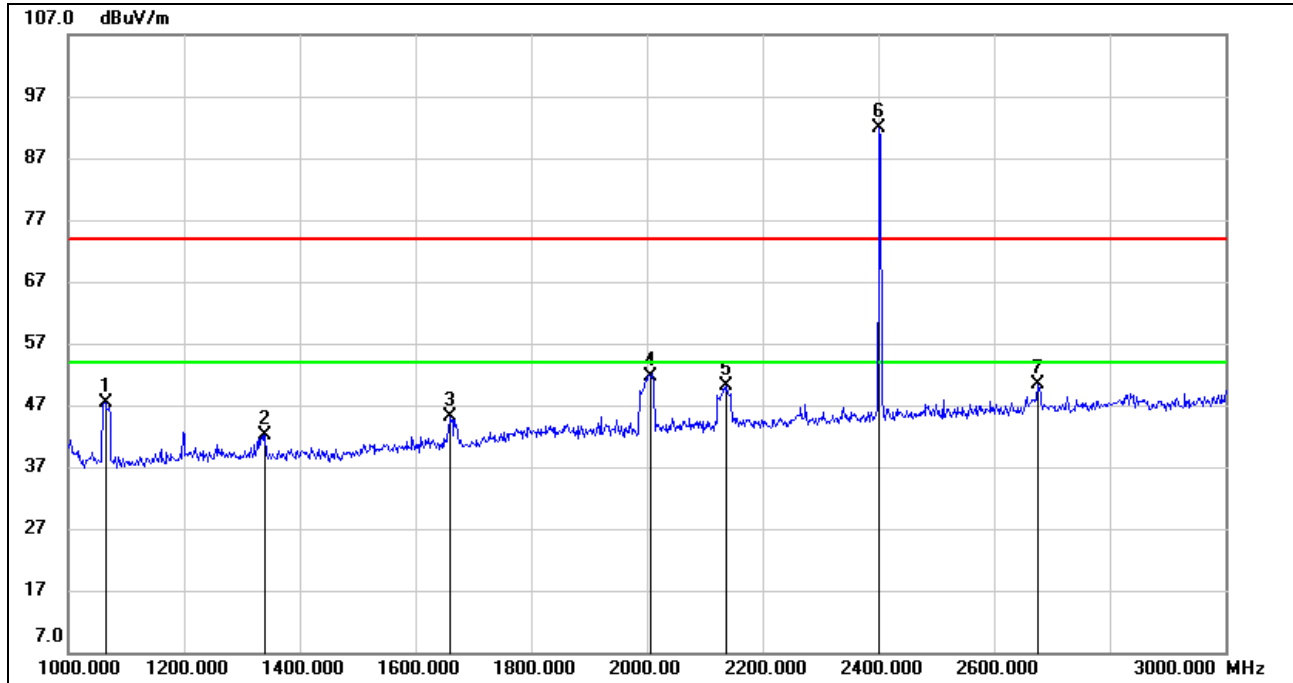
#### HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, WORST-CASE CONFIGURATION, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1064.000	40.01	5.30	45.31	74.00	-28.69	peak
2	1500.000	35.56	6.94	42.50	74.00	-31.50	peak
3	2006.000	39.69	10.07	49.76	74.00	-24.24	peak
4	2140.000	40.10	10.87	50.97	74.00	-23.03	peak
5	2402.000	81.76	11.66	93.42	/	/	fundamental
6	2674.000	35.33	12.37	47.70	74.00	-26.30	peak
7	2808.000	34.88	13.25	48.13	74.00	-25.87	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.  
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
 3. Peak: Peak detector.

**HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, WORST-CASE CONFIGURATION, VERTICAL)**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1064.000	42.19	5.30	47.49	74.00	-26.51	peak
2	1340.000	35.36	6.68	42.04	74.00	-31.96	peak
3	1660.000	37.02	8.03	45.05	74.00	-28.95	peak
4	2006.000	41.64	10.07	51.71	74.00	-22.29	peak
5	2138.000	39.15	10.87	50.02	74.00	-23.98	peak
6	2402.000	80.17	11.66	91.83	/	/	fundamental
7	2676.000	37.90	12.37	50.27	74.00	-23.73	peak

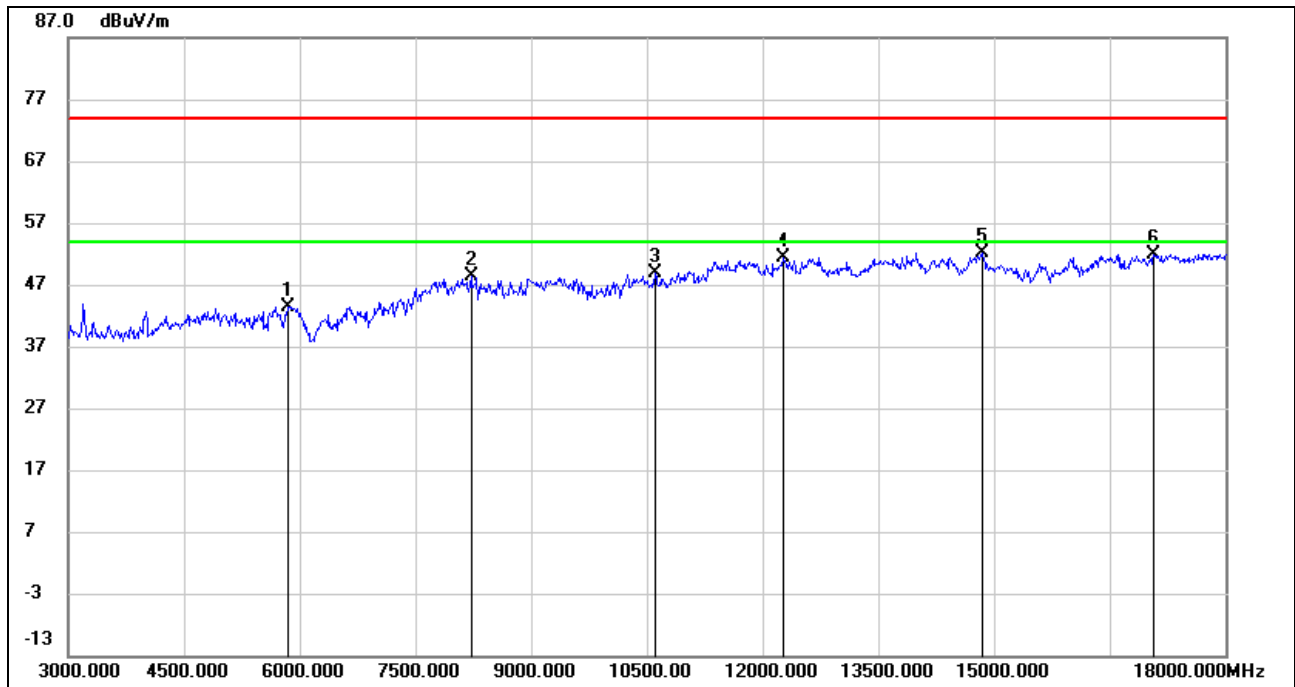
- Note: 1. Peak Result = Reading Level + Correct Factor.  
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
 3. Peak: Peak detector.

Note: All the modes and channels have been tested, only the worst data was recorded in the report.

### 7.3. SPURIOUS EMISSIONS (3 GHz ~ 18 GHz)

#### 7.3.1. LE 1M MODE

#### HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, WORST-CASE CONFIGURATION, HORIZONTAL)

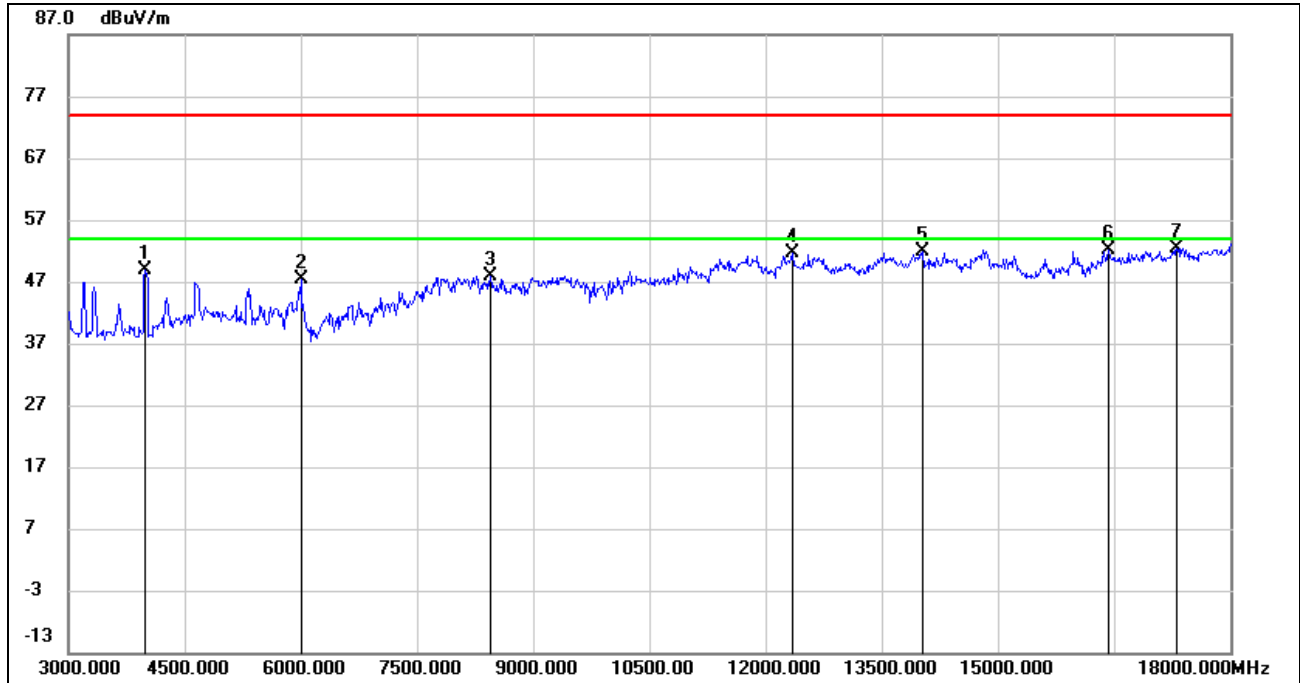


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5850.000	39.46	4.00	43.46	74.00	-30.54	peak
2	8220.000	38.53	9.79	48.32	74.00	-25.68	peak
3	10605.000	36.14	12.69	48.83	74.00	-25.17	peak
4	12270.000	35.37	16.04	51.41	74.00	-22.59	peak
5	14850.000	34.49	17.71	52.20	74.00	-21.80	peak
6	17070.000	30.15	21.71	51.86	74.00	-22.14	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.  
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
 3. Peak: Peak detector.  
 4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.  
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



**HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, WORST-CASE CONFIGURATION, VERTICAL)**



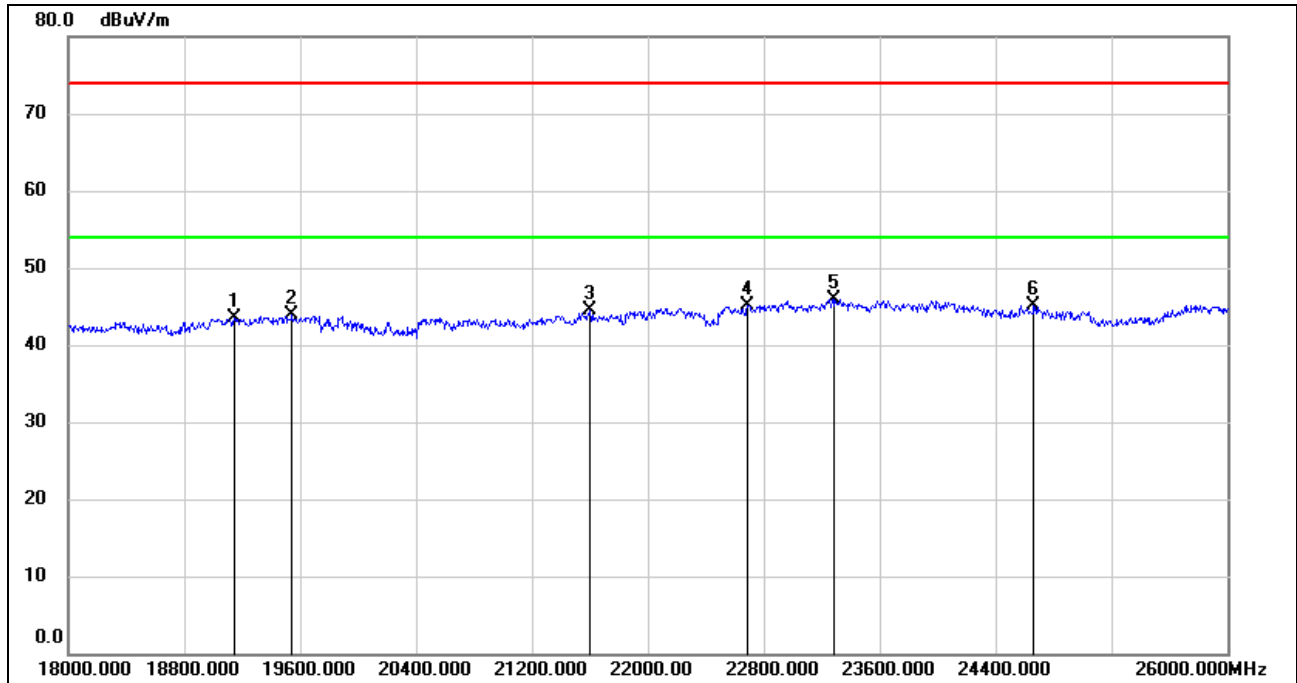
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3990.000	51.35	-2.51	48.84	74.00	-25.16	peak
2	6000.000	43.39	4.00	47.39	74.00	-26.61	peak
3	8445.000	38.74	9.24	47.98	74.00	-26.02	peak
4	12345.000	35.62	16.03	51.65	74.00	-22.35	peak
5	14025.000	34.26	17.61	51.87	74.00	-22.13	peak
6	16425.000	32.40	19.68	52.08	74.00	-21.92	peak
7	17310.000	29.94	22.54	52.48	74.00	-21.52	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.  
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
 3. Peak: Peak detector.  
 4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.  
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

## 7.4. SPURIOUS EMISSIONS (18 GHz ~ 26 GHz)

### 7.4.1. LE 1M MODE

#### SPURIOUS EMISSIONS (LOW CHANNEL, WORST-CASE CONFIGURATION, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	19144.000	48.88	-5.43	43.45	74.00	-30.55	peak
2	19544.000	49.38	-5.50	43.88	74.00	-30.12	peak
3	21600.000	49.02	-4.54	44.48	74.00	-29.52	peak
4	22688.000	48.91	-3.74	45.17	74.00	-28.83	peak
5	23280.000	49.21	-3.34	45.87	74.00	-28.13	peak
6	24664.000	47.40	-2.33	45.07	74.00	-28.93	peak

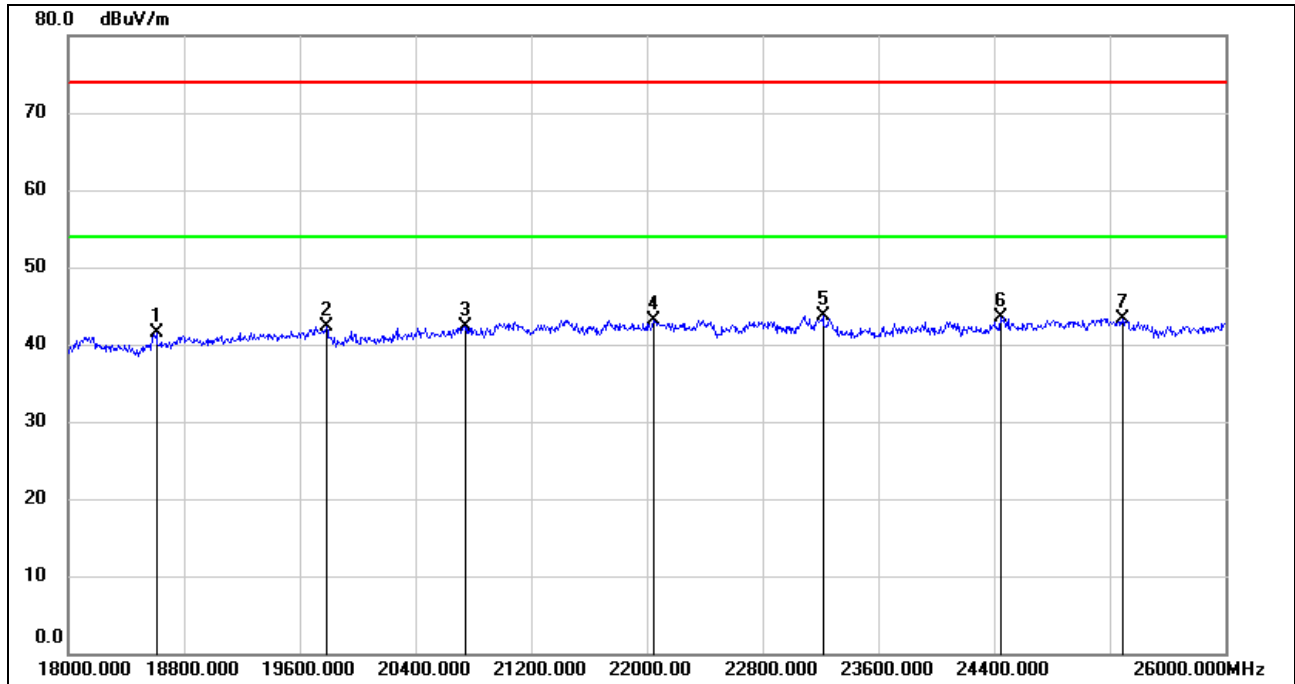
Note: 1. Peak Result = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.



**SPURIOUS EMISSIONS (LOW CHANNEL, WORST-CASE CONFIGURATION, VERTICAL)**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	18608.000	46.81	-5.33	41.48	74.00	-32.52	peak
2	19784.000	47.57	-5.28	42.29	74.00	-31.71	peak
3	20744.000	47.42	-5.12	42.30	74.00	-31.70	peak
4	22048.000	47.62	-4.43	43.19	74.00	-30.81	peak
5	23216.000	47.01	-3.38	43.63	74.00	-30.37	peak
6	24448.000	45.92	-2.42	43.50	74.00	-30.50	peak
7	25288.000	45.06	-1.68	43.38	74.00	-30.62	peak

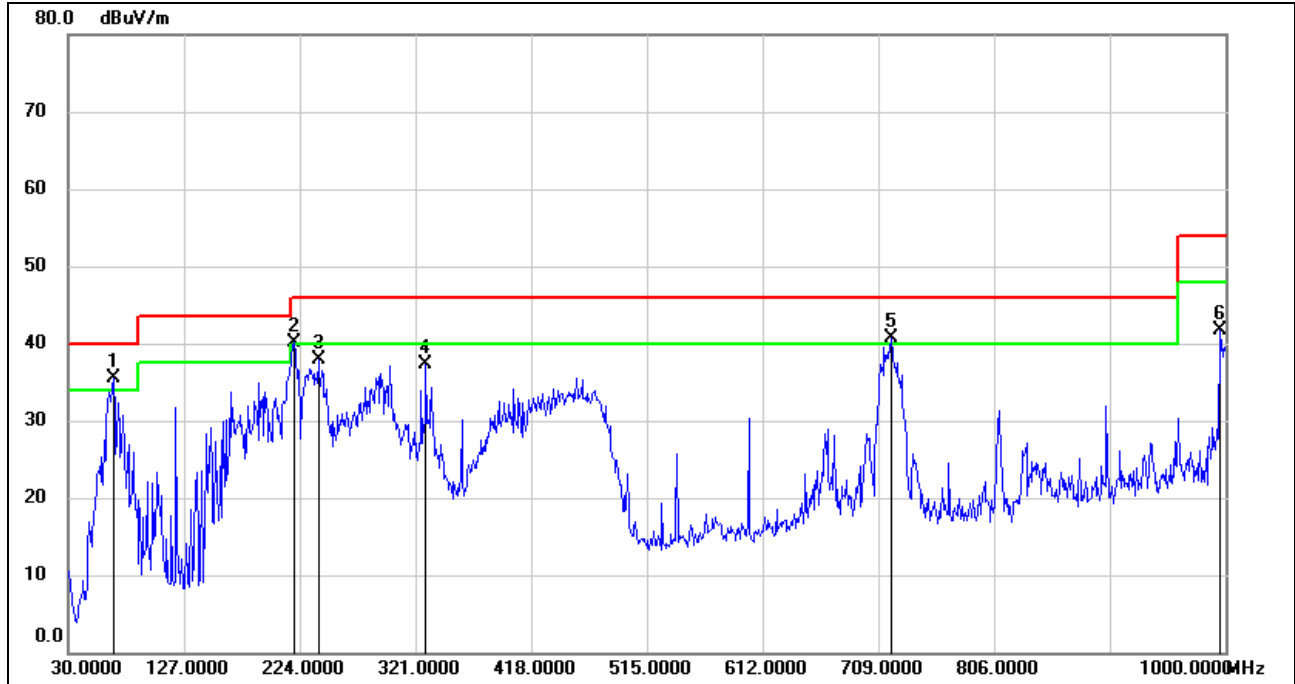
- Note: 1. Peak Result = Reading Level + Correct Factor.  
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
 3. Peak: Peak detector.

Note: All the modes have been tested, only the worst data was recorded in the report.

## 7.5. SPURIOUS EMISSIONS (30 MHz ~ 1 GHz)

### 7.5.1. LE 1M MODE

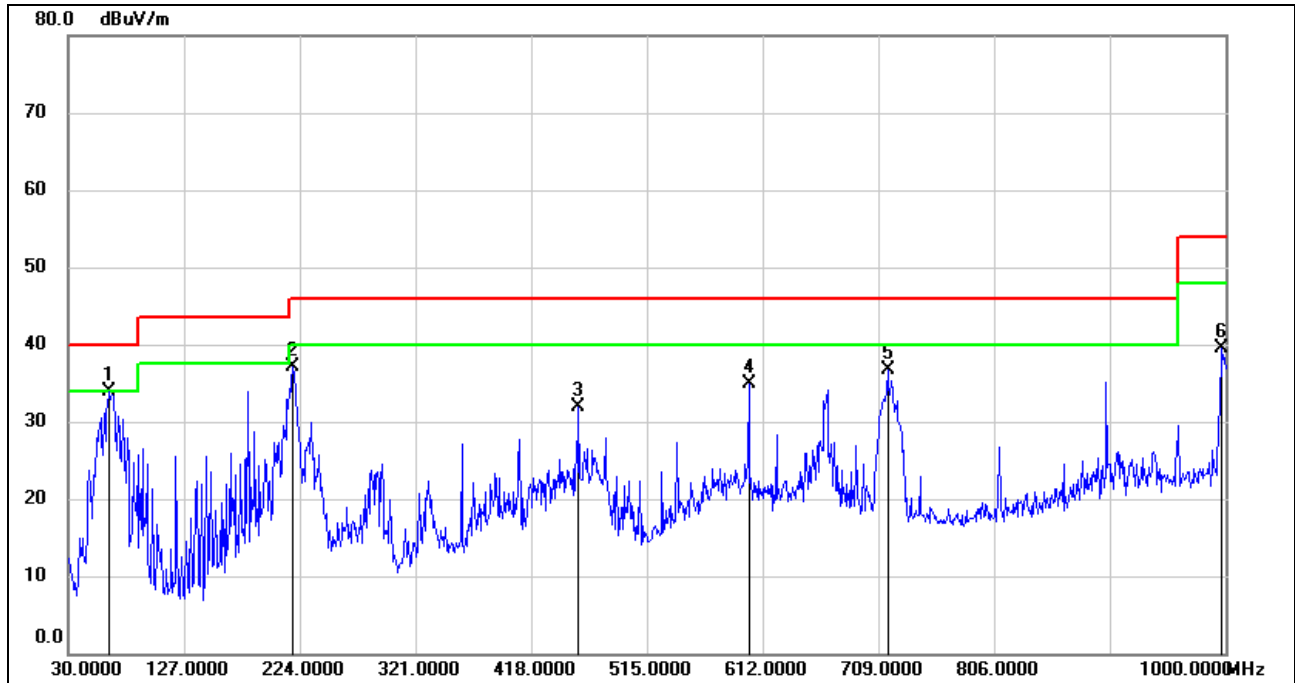
#### SPURIOUS EMISSIONS (LOW CHANNEL, WORST-CASE CONFIGURATION, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	67.8300	56.14	-20.55	35.59	40.00	-4.41	QP
2	219.1500	58.21	-18.10	40.11	46.00	-5.89	QP
3	239.5200	56.99	-19.16	37.83	46.00	-8.17	QP
4	329.7300	52.04	-14.69	37.35	46.00	-8.65	QP
5	719.6700	48.88	-8.08	40.80	46.00	-5.20	QP
6	995.1500	45.87	-4.20	41.67	54.00	-12.33	QP

- Note: 1. Result Level = Read Level + Correct Factor.  
 2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.  
 3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

**SPURIOUS EMISSIONS (LOW CHANNEL, WORST-CASE CONFIGURATION, VERTICAL)**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	63.9500	54.52	-20.53	33.99	40.00	-6.01	QP
2	218.1800	55.13	-18.02	37.11	46.00	-8.89	QP
3	457.7700	44.06	-12.20	31.86	46.00	-14.14	QP
4	600.3600	44.42	-9.54	34.88	46.00	-11.12	QP
5	716.7600	44.90	-8.14	36.76	46.00	-9.24	QP
6	997.0900	43.72	-4.18	39.54	54.00	-14.46	QP

- Note: 1. Result Level = Read Level + Correct Factor.  
 2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.  
 3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto

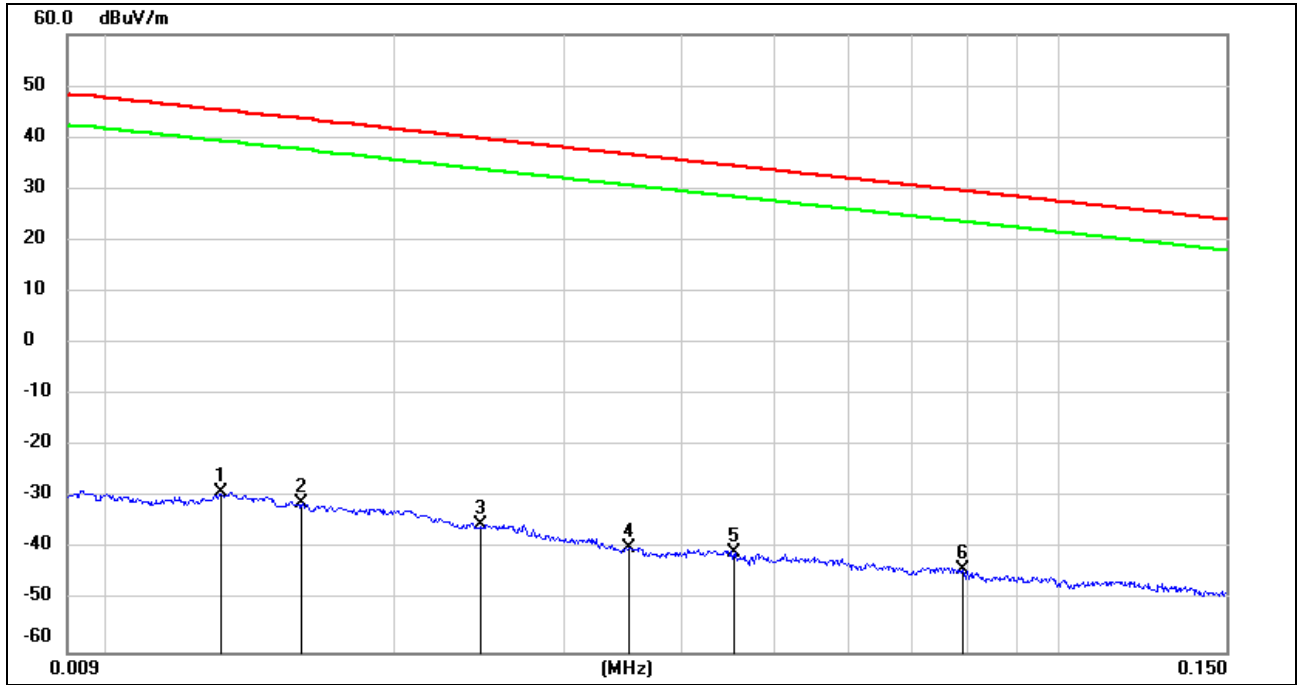
Note: All the modes have been tested, only the worst data was recorded in the report.

## 7.6. SPURIOUS EMISSIONS BELOW 30 MHz

### 7.6.1. LE 1M MODE

#### SPURIOUS EMISSIONS (LOW CHANNEL, LOOP ANTENNA FACE ON TO THE EUT, WORST-CASE CONFIGURATION)

9 kHz~ 150 kHz



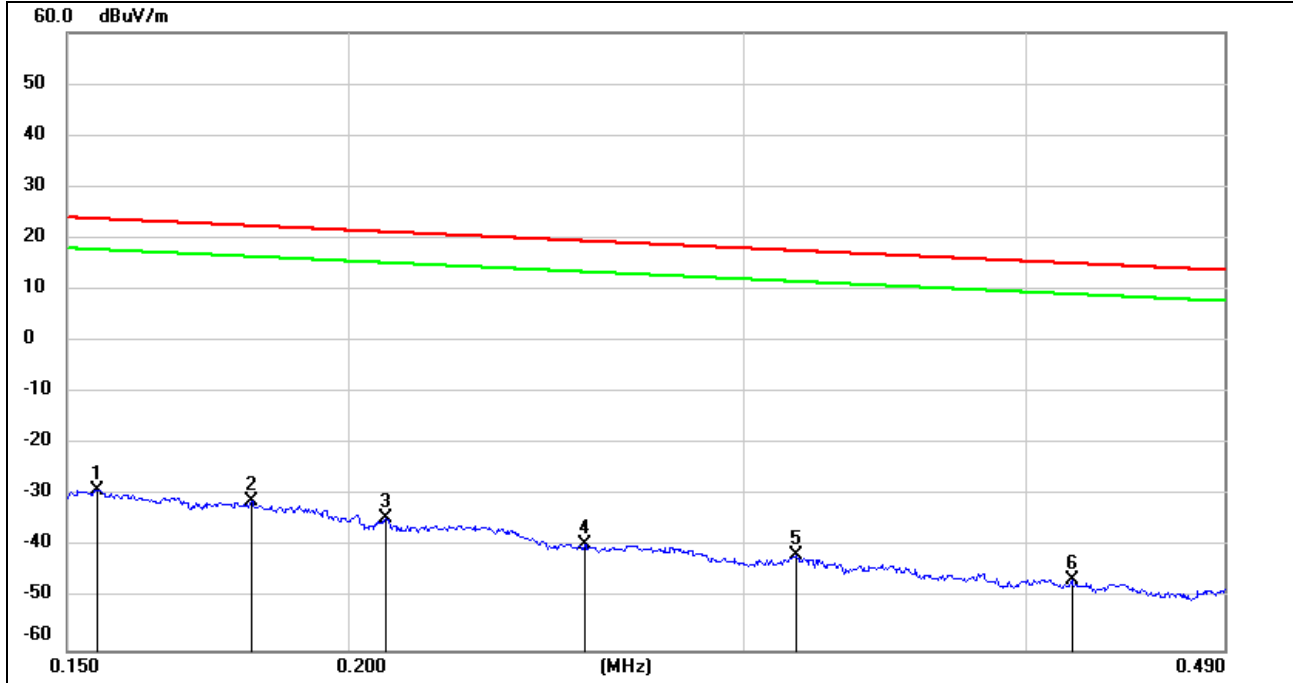
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	FCC Result (dBuV/m)	FCC Limit (dBuV/m)	ISED Result (dBuA/m)	ISED Limit (dBuA/m)	Margin (dB)	Remark
1	0.0131	72.45	-101.38	-28.93	45.25	-80.43	-6.25	-74.18	peak
2	0.0159	70.36	-101.37	-31.01	43.57	-82.51	-7.93	-74.58	peak
3	0.0246	66.20	-101.36	-35.16	39.78	-86.66	-11.72	-74.94	peak
4	0.0352	61.73	-101.41	-39.68	36.67	-91.18	-14.83	-76.35	peak
5	0.0454	60.73	-101.46	-40.73	34.46	-92.23	-17.04	-75.19	peak
6	0.0791	57.71	-101.63	-43.92	29.64	-95.42	-21.86	-73.56	peak

Note: 1. Measurement = Reading Level + Correct Factor (dBuA/m= dBuV/m- 20Log10[120π] = dBuV/m- 51.5).

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

3. All 3 polarizations (Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

**150 kHz ~ 490 kHz**



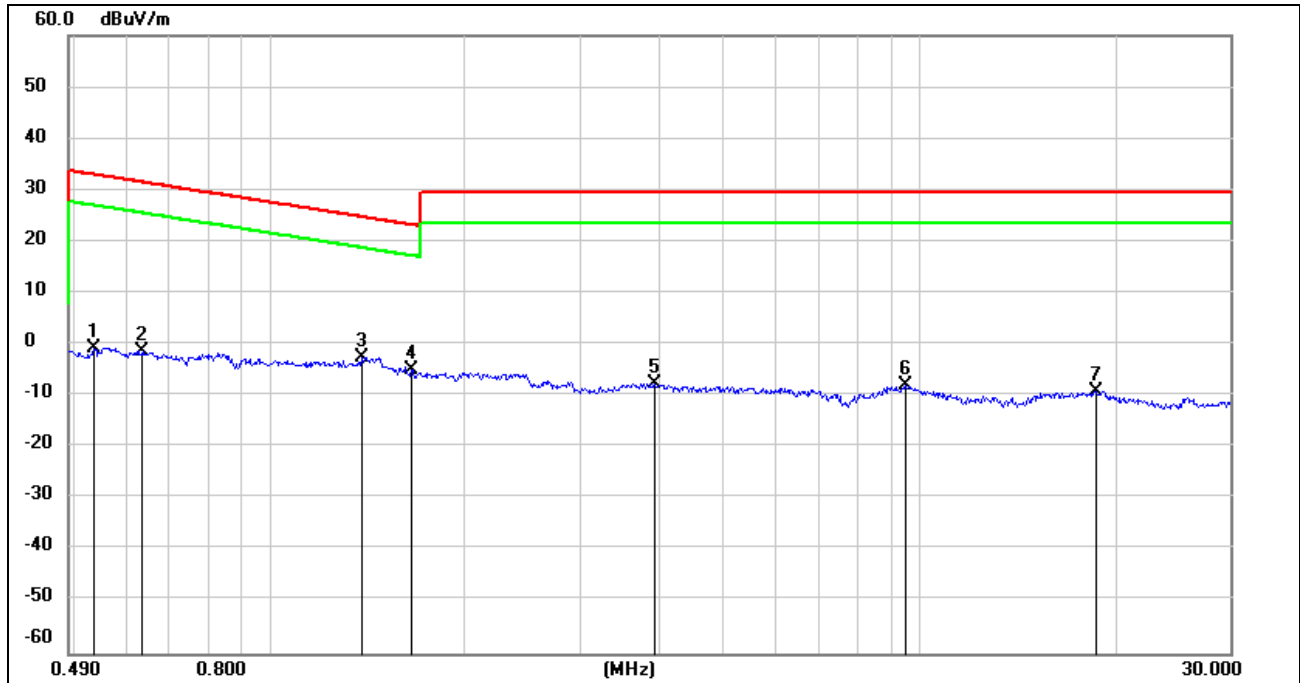
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	FCC Result (dBuV/m)	FCC Limit (dBuV/m)	ISED Result (dBuA/m)	ISED Limit (dBuA/m)	Margin (dB)	Remark
1	0.1547	72.81	-101.65	-28.84	23.81	-80.34	-27.69	-52.65	peak
2	0.1811	70.55	-101.68	-31.13	22.45	-82.63	-29.05	-53.58	peak
3	0.2078	67.24	-101.73	-34.49	21.25	-85.99	-30.25	-55.74	peak
4	0.2545	62.40	-101.80	-39.40	19.49	-90.90	-32.01	-58.89	peak
5	0.3163	60.20	-101.87	-41.67	17.60	-93.17	-33.90	-59.27	peak
6	0.4193	55.68	-101.98	-46.30	15.15	-97.80	-36.35	-61.45	peak

Note: 1. Measurement = Reading Level + Correct Factor (dBuA/m= dBuV/m- 20Log10[120π] = dBuV/m- 51.5).

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

3. All 3 polarizations (Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

**490 kHz ~ 30 MHz**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	FCC Result (dBuV/m)	FCC Limit (dBuV/m)	ISED Result (dBuA/m)	ISED Limit (dBuA/m)	Margin (dB)	Remark
1	0.5361	61.46	-62.08	-0.62	33.02	-52.12	-18.48	-33.64	peak
2	0.6370	60.75	-62.10	-1.35	31.52	-52.85	-19.98	-32.87	peak
3	1.3810	59.47	-62.10	-2.63	24.80	-54.13	-26.70	-27.43	peak
4	1.6491	57.05	-61.98	-4.93	23.26	-56.43	-28.24	-28.19	peak
5	3.9131	53.72	-61.35	-7.63	29.54	-59.13	-21.96	-37.17	peak
6	9.4905	52.94	-60.87	-7.93	29.54	-59.43	-21.96	-37.47	peak
7	18.7271	51.79	-60.88	-9.09	29.54	-60.59	-21.96	-38.63	peak

Note: 1. Measurement = Reading Level + Correct Factor (dBuA/m= dBuV/m- 20Log10[120π] = dBuV/m- 51.5).

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

3. All 3 polarizations (Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

Note: All the modes have been tested, only the worst data was recorded in the report.



## 8. ANTENNA REQUIREMENTS

### APPLICABLE REQUIREMENTS

Please refer to FCC §15.203

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Please refer to FCC §15.247(b)(4)

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### RESULTS

Complies

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**END OF REPORT**