



CFR 47 FCC PART 15 SUBPART C
CERTIFICATION TEST REPORT

For

Wonderlove remote control

MODEL NUMBER: 6031353

FCC ID: 2AILYC08HM8

REPORT NUMBER: 4788670639.1-5

ISSUE DATE: October 19, 2018

Prepared for

**JM Sunflower Ltd.
7th Floor, Goldsland Building 22-26 Minden
Avenue Tsim Sha Tsui Kowloon Hong Kong**

Prepared by

**UL Verification Services (Guangzhou) Co., Ltd, Song Shan Lake Branch
Room 101, Building 10, Innovation Technology Park,
Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China
Tel: +86 769 33817100
Fax: +86 769 33244054
Website: www.ul.com**



Revision History

Rev.	Issue Date	Revisions	Revised By
--	10/19/2018	Initial Issue	



Summary of Test Results			
Clause	Test Items	FCC Rules	Test Results
1	Transmitter Timeout	FCC 15.231 (a) (1)	PASS
2	20dB Bandwidth	FCC 15.231 (c)	PASS
3	Radiated emission	FCC 15.231 (b) FCC 15.209 FCC 15.205	PASS
4	Antenna Requirement	FCC Part 15.203	PASS



TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	5
2. TEST METHODOLOGY	6
3. FACILITIES AND ACCREDITATION	6
4. CALIBRATION AND UNCERTAINTY	7
4.1. MEASURING INSTRUMENT CALIBRATION	7
4.2. MEASUREMENT UNCERTAINTY	7
5. EQUIPMENT UNDER TEST	8
5.1. DESCRIPTION OF EUT	8
5.2. CHANNEL LIST	8
5.3. TEST CHANNEL CONFIGURATION	8
5.4. THE WORSE CASE POWER SETTING PARAMETER	8
5.5. DESCRIPTION OF AVAILABLE ANTENNAS	8
5.6. DESCRIPTION OF TEST SETUP	9
6. MEASURING INSTRUMENT AND SOFTWARE USED	10
7. ANTENNA PORT TEST RESULTS	11
7.1. ON TIME AND DUTY CYCLE	11
7.2. TRANSMITTER TIMEOUT	15
7.3. 20 dB BANDWIDTH	17
8. RADIATED TEST RESULTS	19
8.1. LIMITS AND PROCEDURE	19
8.2. FUNDAMENTAL FIELD STRENGTH	26
8.3. SPURIOUS EMISSIONS 1~10GHz	28
8.4. SPURIOUS EMISSIONS 30M ~ 1 GHz	30
8.5. SPURIOUS EMISSIONS BELOW 30M	32
9. ANTENNA REQUIREMENTS	36



1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: JM Sunflower Ltd.
7th Floor, Goldsland Building 22-26 Minden Avenue Tsim
Address: Sha Tsui Kowloon Hong Kong

Manufacturer Information

Company Name: JM Sunflower Ltd.
7th Floor, Goldsland Building 22-26 Minden Avenue Tsim
Address: Sha Tsui Kowloon Hong Kong

EUT Name: Wonderlove remote control
Brand: /
Model: 6031353
Sample ID: 1840523
Sample Status: Normal
Sample Received Date: September 29, 2018
Date of Tested: September 30, 2018~ October 17, 2018

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	PASS

Prepared By:

Denny Huang
Engineer Project Associate

Checked By:

Shawn Wen
Laboratory Leader

Approved By:

Stephen Guo
Laboratory Manager



2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with KDB 414788 D01 Radiated Test site v01r01, FCC CFR 47 Part 2, FCC CFR 47 Part 15 and ANSI C63.10-2013.

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	A2LA (Certificate No.: 4102.01) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA. FCC (FCC Designation No.: CN1187) 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 IC(Company No.: 21320) 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. VCCI (Registration No.: G-20019, R-20004, C-20012 and T-20011) 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
---------------------------	---

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



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 recognized 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
Uncertainty for Conduction emission test	2.90dB
Uncertainty for Radiation Emission test(include Fundamental emission) (9KHz-30MHz)	2.2dB
Uncertainty for Radiation Emission test(include Fundamental emission) (30MHz-1GHz)	4.52dB
Uncertainty for Radiation Emission test (1GHz to 26GHz)(include Fundamental emission)	5.04dB(1-6GHz)
	5.30dB (6GHz-18Gz)
	5.23dB (18GHz-26Gz)
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	Wonderlove remote control	
Model	6031353	
Product Description	Operation Frequency	433.92 MHz
	Modulation Type	
	ASK	
Battery	DC 3.0 V	

5.2. CHANNEL LIST

Channel	Frequency (MHz)
1	433.92

5.3. TEST CHANNEL CONFIGURATION

Test Mode	Test Channel	Frequency
ASK	CH 1	433.92 MHz

5.4. THE WORSE CASE POWER SETTING PARAMETER

The Worse Case Power Setting Parameter		
Test Software		/
Modulation Type	Transmit Antenna Number	Test Channel
		CH 1
ASK	1	Default

5.5. DESCRIPTION OF AVAILABLE ANTENNAS

Ant.	Frequency (MHz)	Antenna Type	Antenna Gain (dBi)
1	433.92	PCB Antenna	0dBi

Test Mode	Transmit and Receive Mode	Description
ASK	☒ 1TX	Chain 1 can be used as transmitting antenna.



5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	P/N
1	/	/	/	/

I/O CABLES

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

ACCESSORY

Item	Accessory	Brand Name	Model Name	Description
1	/	/	/	/

TEST SETUP

1. A fully charged battery was used for all tests.
2. The test sample can be set into a transmission mode when power on.

SETUP DIAGRAM FOR TESTS



**6. MEASURING INSTRUMENT AND SOFTWARE USED**

Conducted Emissions							
Instrument							
Used	Equipment	Manufacturer	Model No.	Serial No.	Upper Last Cal.	Last Cal.	Next Cal.
☒	EMI Test Receiver	R&S	ESR3	101961	Dec.20, 2016	Dec.12, 2017	Dec.11, 2018
☒	Two-Line V-Network	R&S	ENV216	101983	Dec.20, 2016	Dec.12, 2017	Dec.11, 2018
☒	Artificial Mains Networks	Schwarzbeck	NSLK 8126	8126465	Feb.10, 2017	Dec.12, 2017	Dec.11, 2018
Software							
Used	Description		Manufacturer	Name	Version		
☒	Test Software for Conducted disturbance		Farad	EZ-EMC	Ver. UL-3A1		
Radiated Emissions							
Instrument							
Used	Equipment	Manufacturer	Model No.	Serial No.	Upper Last Cal.	Last Cal.	Next Cal.
☒	MXE EMI Receiver	KESIGHT	N9038A	MY56400036	Feb. 24, 2017	Dec.12, 2017	Dec.11, 2018
☒	Hybrid Log Periodic Antenna	TDK	HLP-3003C	130960	Jan.09, 2016	Jan.09, 2016	Jan.09, 2019
☒	Preamplifier	HP	8447D	2944A09099	Feb. 13, 2017	Dec.12, 2017	Dec.11, 2018
☒	EMI Measurement Receiver	R&S	ESR26	101377	Dec. 20, 2016	Dec.12, 2017	Dec.11, 2018
☒	Horn Antenna	TDK	HRN-0118	130939	Jan. 09, 2016	Jan. 09, 2016	Jan. 09, 2019
☒	High Gain Horn Antenna	Schwarzbeck	BBHA-9170	691	Jan.06, 2016	Jan.06, 2016	Jan.06, 2019
☒	Preamplifier	TDK	PA-02-0118	TRS-305-00066	Jan. 14, 2017	Dec.12, 2017	Dec.11, 2018
☒	Preamplifier	TDK	PA-02-2	TRS-307-00003	Dec. 20, 2016	Dec.12, 2017	Dec.11, 2018
☒	Loop antenna	Schwarzbeck	1519B	00008	Mar. 26, 2016	Mar. 26, 2016	Mar. 26, 2019
Software							
Used	Description			Manufacturer	Name	Version	
☒	Test Software for Radiated disturbance			Farad	EZ-EMC	Ver. UL-3A1	
Other instruments							
Used	Equipment	Manufacturer	Model No.	Serial No.	Upper Last Cal.	Last Cal.	Next Cal.
☒	Spectrum Analyzer	Keysight	N9030A	MY55410512	Dec. 20, 2016	Dec.12, 2017	Dec.11, 2018
☒	Power Meter	Keysight	N9031A	MY55416024	Feb. 13, 2017	Dec.12, 2017	Dec.11, 2018
☒	Power Sensor	Keysight	N9323A	MY55440013	Feb. 13, 2017	Dec.12, 2017	Dec.11, 2018



7. ANTENNA PORT TEST RESULTS

7.1. ON TIME AND DUTY CYCLE

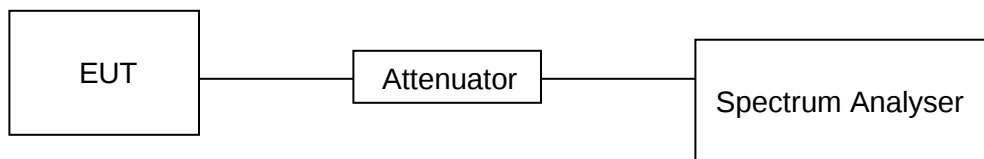
LIMITS

None; for reporting purposes only

PROCEDURE

FCC Reference:	Part 15.35(c)
Test Method Used:	ANSI C63.10 Section 7.5

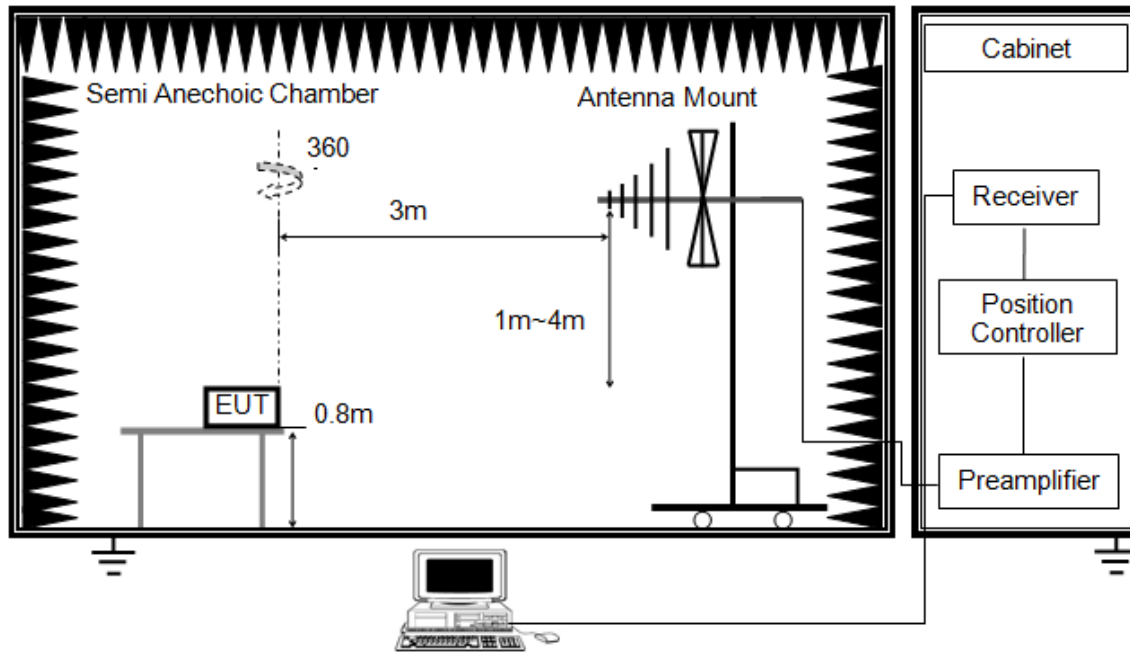
TEST SETUP



TEST ENVIRONMENT

Temperature	22.3°C	Relative Humidity	63%
Atmosphere Pressure	101kPa	Test Voltage	DC 3.0V

RESULTS



- Set RBW of spectrum analyzer to 100KHz and VBW to 100KHz.
- Use a video trigger with the trigger level set to enable triggering only on full pulses.
- Sweep Time is at least a 100 ms.
- Set the center frequency on any frequency would be measure and set the frequency span to zero span.
- Measure the maximum time duration of one single pulse.



RESULTS

	On Time (ms)	Times	Ton (ms)	Total Ton times (ms)
Ton 1	5.30	2	10.60	67.30
Ton 2	2.30	6	13.80	
Ton 3	1.30	33	42.90	

Note: Total Ton times= Ton 1*2 + Ton 2*6 + Ton 3*33 = 67.30

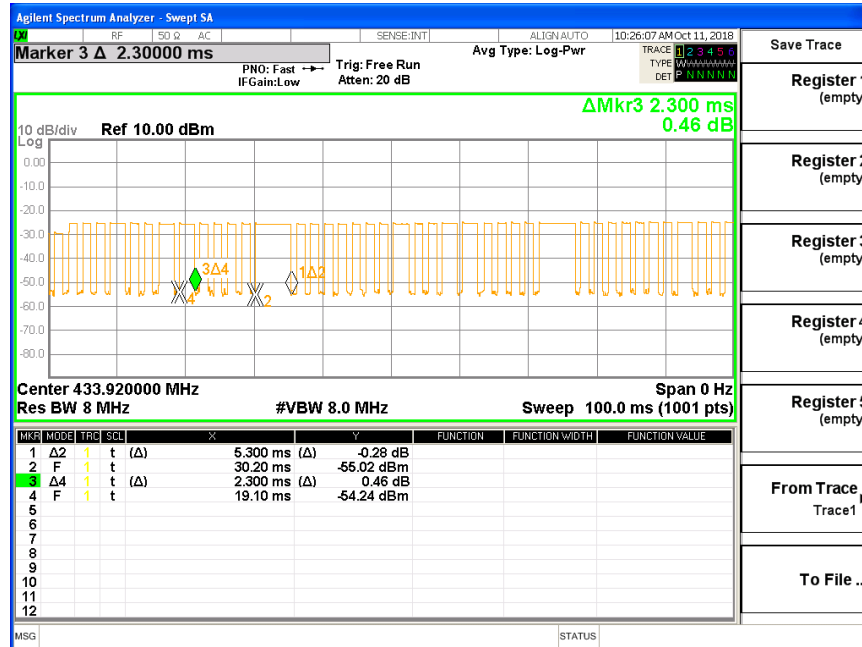
Total Ton times (ms)	Period (ms)	Duty Cycle (Linear)	Duty Cycle Correction Factor
67.30	100	0.673	-3.44

Note: Duty Cycle Correction Factor=20log(x).
Where: x is Duty Cycle

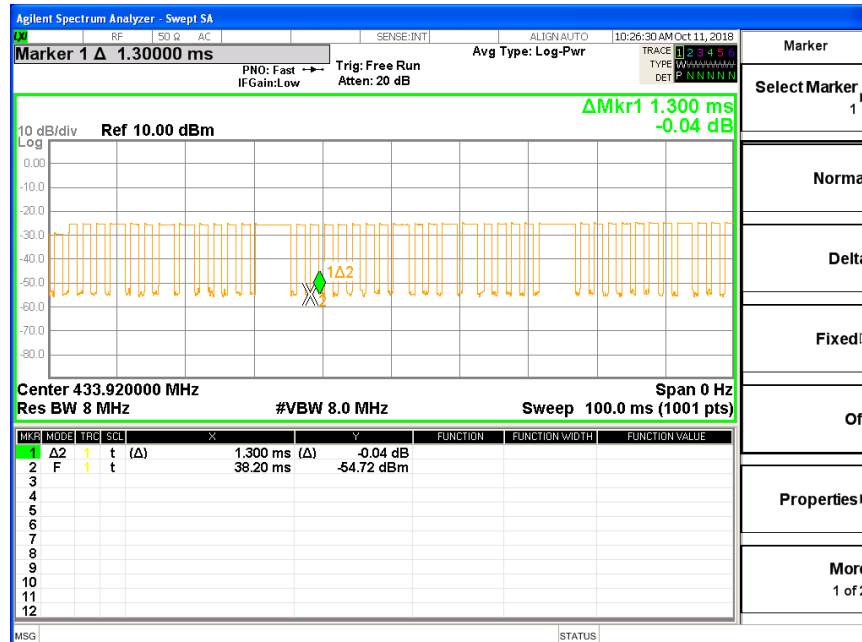
Note: All the modes had been tested, but only the worst data recorded in the report.



ON TIME AND DUTY CYCLE - 1



ON TIME AND DUTY CYCLE - 2



7.2. TRANSMITTER TIMEOUT

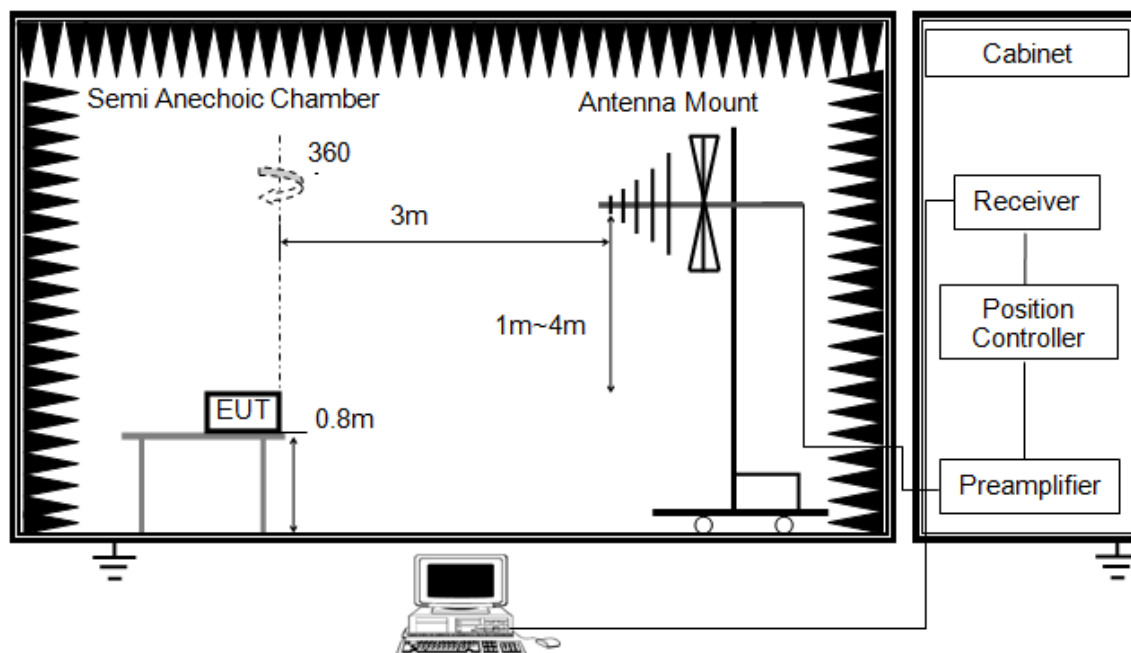
LIMITS

A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

TEST PROCEDURE

FCC Reference:	Part 15.231(a)
Test Method Used:	The EUT transmitter was activated and monitored using a spectrum analyser for a period of 10 seconds.

TEST SETUP

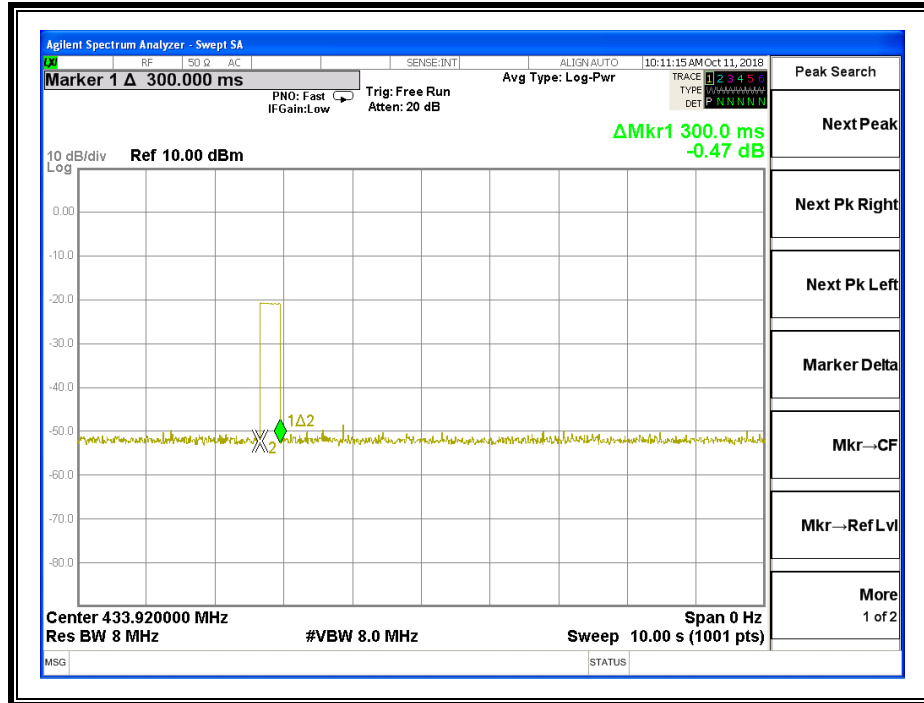


- Set RBW of spectrum analyzer to 8MHz and VBW to 8MHz.
- Use a video trigger with the trigger level set to enable triggering only on full pulses.
- Set Sweep Time to 10 s.
- Set the center frequency on any frequency would be measure and set the frequency span to zero span.
- Measure the maximum time duration of one single pulse.



RESULTS

Deactivation Time (seconds)	Limit (seconds)	Margin (seconds)	Result
0.30	5.00	4.70	PASS



Note: All the modes had been tested, but only the worst data recorded in the report.

7.3. 20 dB BANDWIDTH

LIMITS

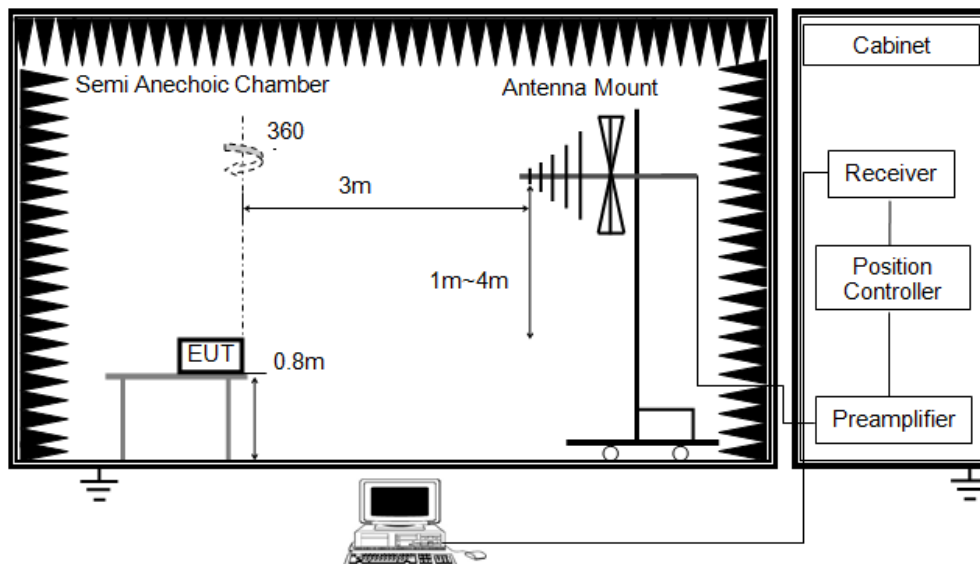
1. The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz.
2. The limit has been calculated as: $0.0025 * 433.92 \text{ MHz} = 1.0848 \text{ MHz}$

TEST PROCEDURE

FCC Reference:	Part 15.231(c)
Test Method Used:	ANSI C63.10 Section 6.9.2

1. 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.
2. The EUT was placed on a turntable with 0.8 meter above ground.
3. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower
4. Set the spectrum analyzer in the following setting as:
RBW = 30 KHz and VBW = 100 KHz.

TEST SETUP

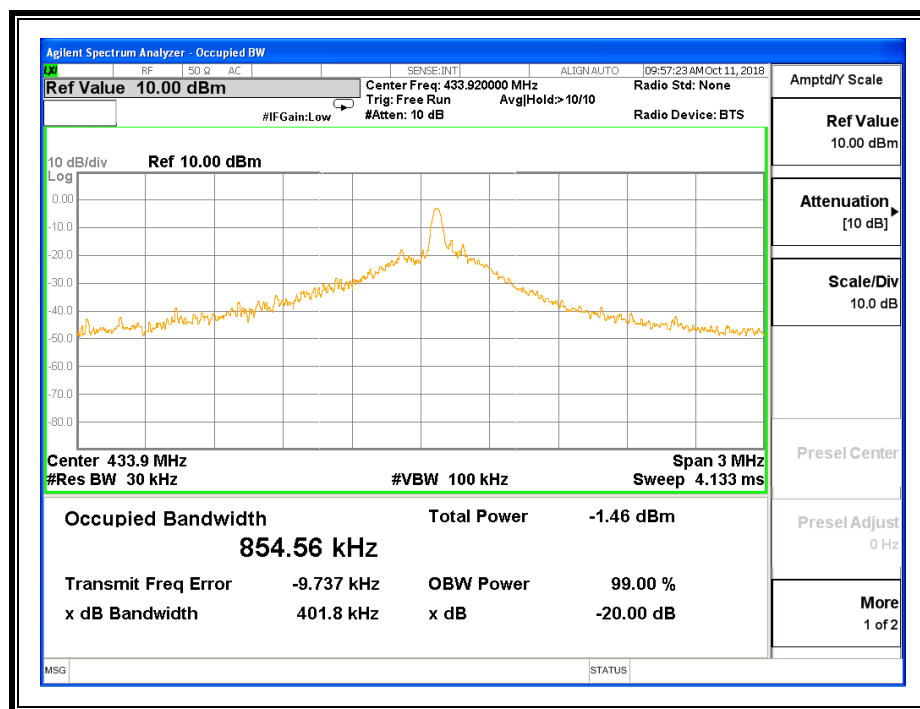


**TEST ENVIRONMENT**

Temperature	22.3°C	Relative Humidity	63%
Atmosphere Pressure	101kPa	Test Voltage	DC 3.0V

RESULTS

20 dB Bandwidth (MHz)	Limit (MHz)	Result
0.85456	1.0848	Pass



Note: All the modes had been tested, but only the worst data recorded in the report.



8. RADIATED TEST RESULTS

8.1. LIMITS AND PROCEDURE

In addition to the provisions of §15.205, the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

Fundamental frequency (MHz)	Field strength of fundamental (microvolts/meter)	Field strength of spurious emissions (microvolts/meter)
40.66-40.70	2,250	225
70-130	1,250	125
130-174	¹ 1,250 to 3,750	¹ 125 to 375
174-260	3,750	375
260-470	¹ 3,750 to 12,500	¹ 375 to 1,250
Above 470	12,500	1,250

Note:

1. To obtain the average limit at the test frequency the values given in the table of FCC part 15.231(b) have to be linear interpolated and then converted to dBμV/m. The limit at 260 MHz is 3750 μV/m and at 470 MHz it is 12500 μV/m. Limit at 433.92 MHz is calculated as shown in ANSI C63.10 Section 7.6.2:

For fundamental:

$$\text{Limit } [\mu\text{V/m}] = \text{Limlower} + \Delta F [(\text{Limupper} - \text{Limlower}) / (f_{\text{upper}} - f_{\text{lower}})]$$

$$\text{where } \Delta F = f_c - f_{\text{lower}} = 433.92 - 260 = 173.92$$

$$\text{Limit} = 3750 + 173.92 * [(12500 - 3750) / (470 - 260)]$$

$$= 3750 + 173.92 * [8750 / 210]$$

$$= 10996.7 \mu\text{V/m}$$

$$\text{dB}\mu\text{V/m} = 20 * \log (\mu\text{V/m})$$

$$= 20 * \log (10996.7)$$

$$\text{Average Limit at 433.92 MHz} = 80.8 \text{ dB}\mu\text{V/m}$$

For spurious emissions:

$$\text{Limit } [\mu\text{V/m}] = \text{Limlower} + \Delta F [(\text{Limupper} - \text{Limlower}) / (f_{\text{upper}} - f_{\text{lower}})]$$

$$\text{where } \Delta F = f_c - f_{\text{lower}} = 433.92 - 260 = 173.92$$

$$\text{Limit} = 375 + 173.92 * [(1250 - 375) / (470 - 260)]$$

$$= 375 + 173.92 * [875 / 210]$$

$$= 1099.67 \mu\text{V/m}$$

$$\text{dB}\mu\text{V/m} = 20 * \log (\mu\text{V/m})$$

$$= 20 * \log (1099.67)$$

$$\text{Average Limit at 867.84 MHz} = 60.8 \text{ dB}\mu\text{V/m}$$

If the average limit is specified for the EUT, the peak limit is 20 dB above the average limit as specified in FCC 15.35 (b)



Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

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
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§15.231 and 15.241.

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

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
30~88	100	3
88~216	150	3
216~960	200	3
960~1000	500	3

Note: 1) At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

(2) At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). This paragraph (f) shall not apply to Access BPL devices operating below 30 MHz.



Restricted bands of operation

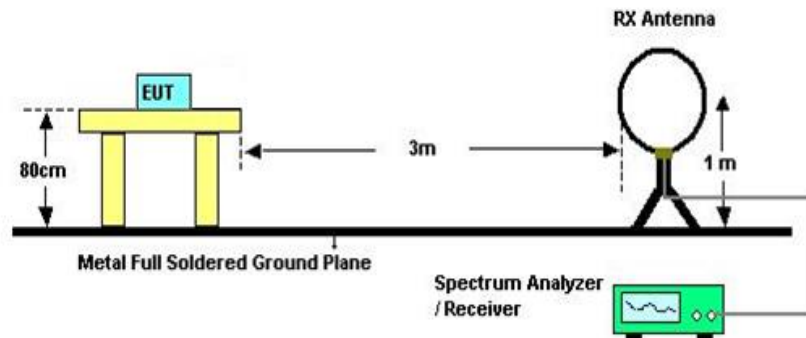
MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	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	(²)
13.36-13.41			

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

²Above 38.6c

TEST SETUP AND PROCEDURE

Below 30MHz

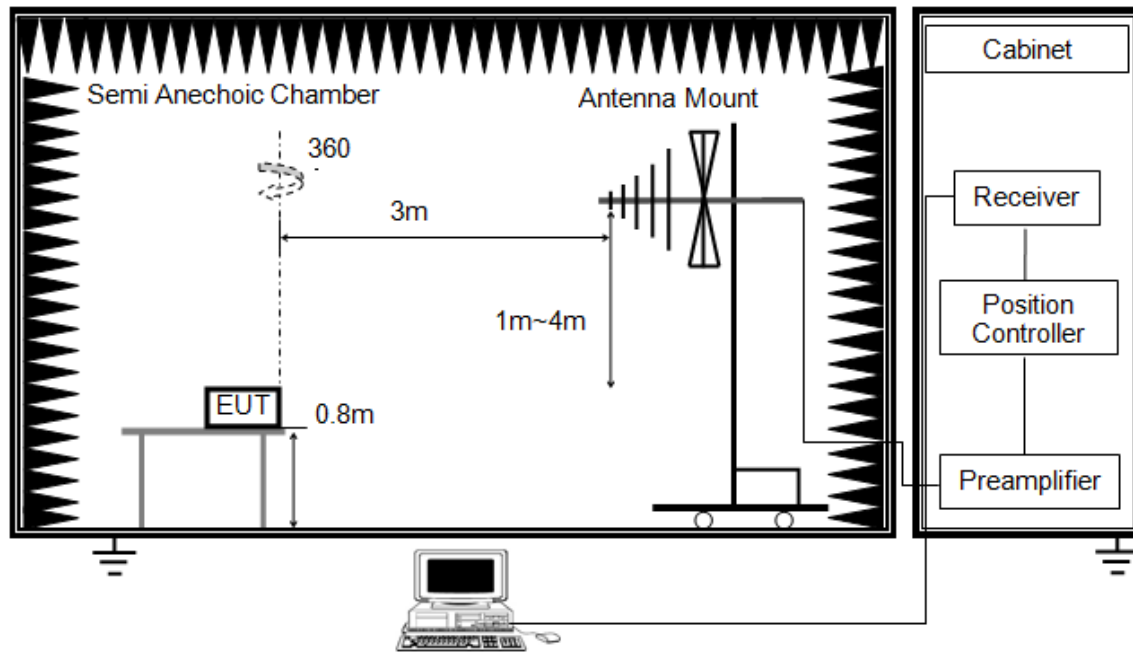


The setting of the spectrum analyser

RBW	200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz)
VBW	200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz)
Sweep	Auto
Detector	Peak/QP/ Average
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013 and 414788 D01 Radiated Test Site v01.
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 and vertical polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 80cm meter 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. 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 1GHz, 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.
7. Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30m open area test 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 based on KDB 414788.

Below 1G

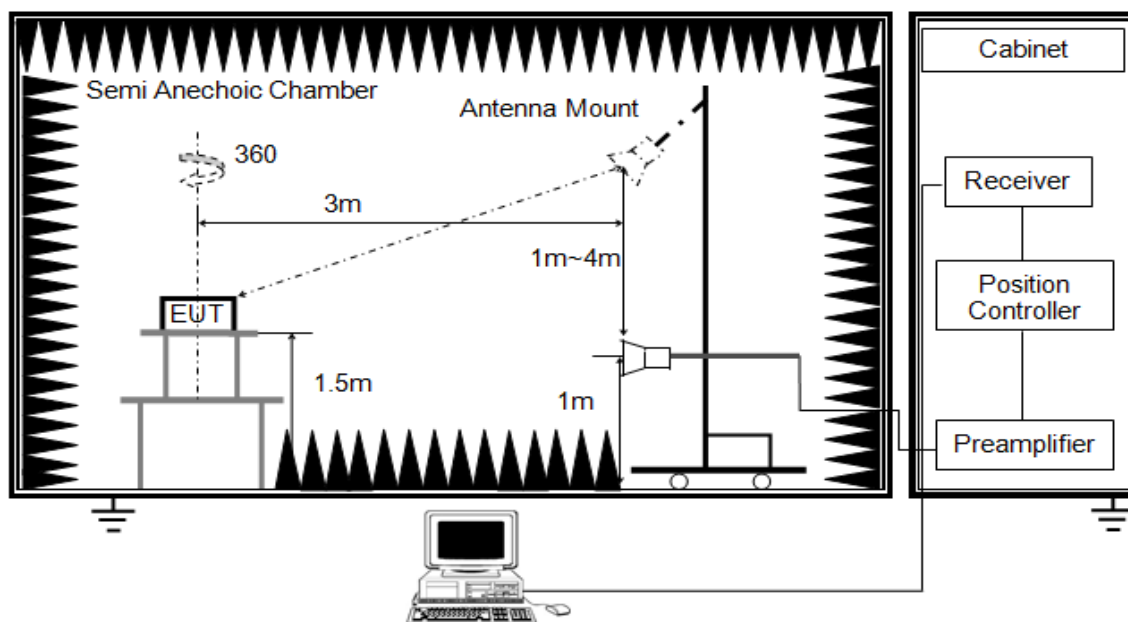


The setting of the spectrum analyser

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

1. The testing follows the guidelines in ANSI C63.10-2013.
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 0.8 meter 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 1GHz, 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 1G

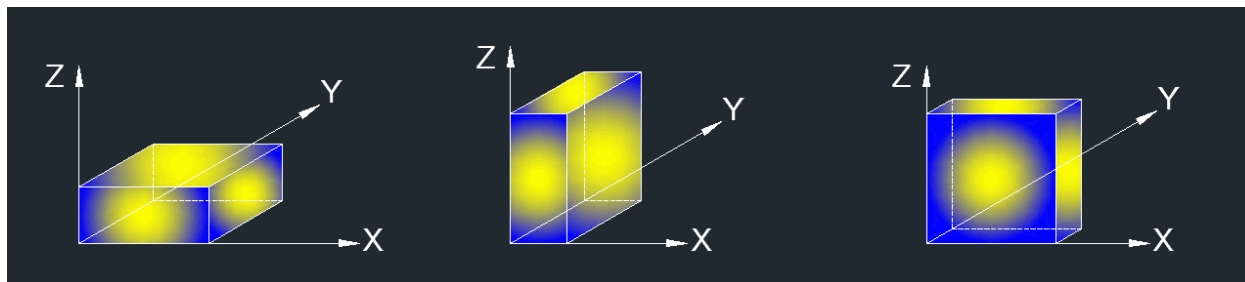


The setting of the spectrum analyser

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

1. The testing follows the guidelines in ANSI C63.10-2013.
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 1.5m 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 1GHz, 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 Average Value=Peak Value +Duty Correction Factor, For the Duty Cycle and Correction Factor please refer to clause 7.1.ON TIME AND DUTY CYCLE.

X axis, Y axis, Z axis positions:



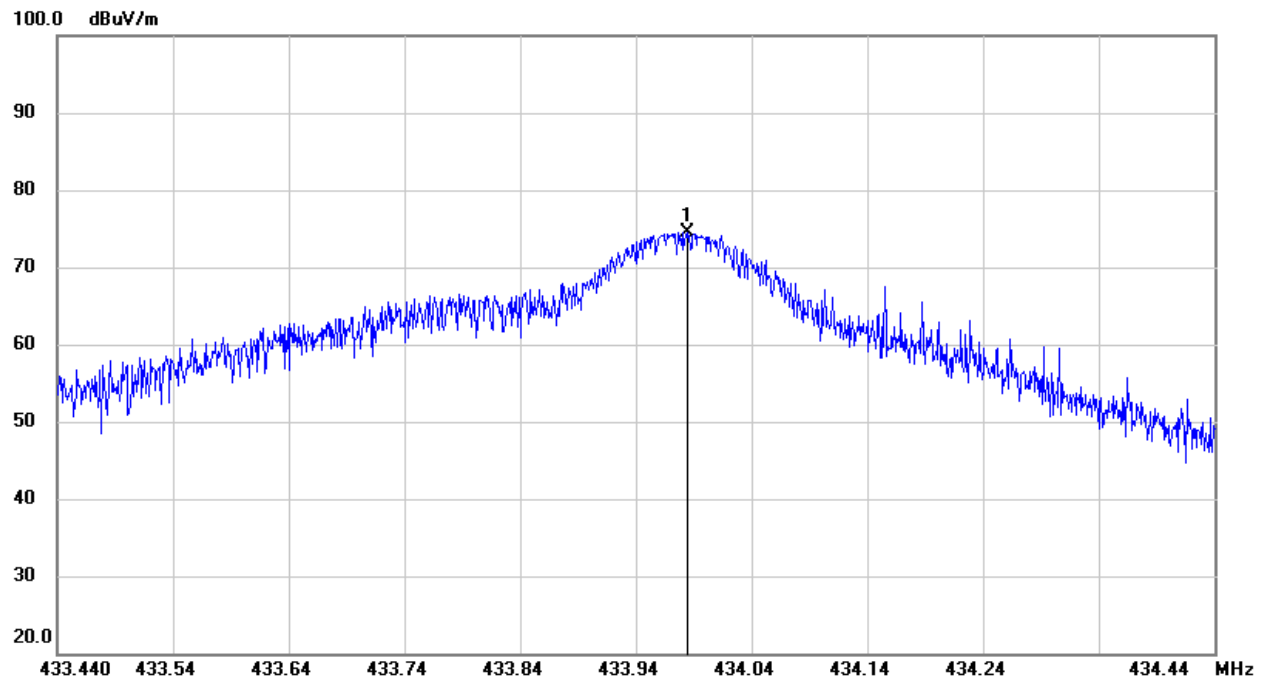
TEST ENVIRONMENT

Temperature	22.3°C	Relative Humidity	63%
Atmosphere Pressure	101kPa	Test Voltage	DC 3.0V



8.2. FUNDAMENTAL FIELD STRENGTH

FUNDAMENTAL FIELD STRENGTH (HORIZONTAL)

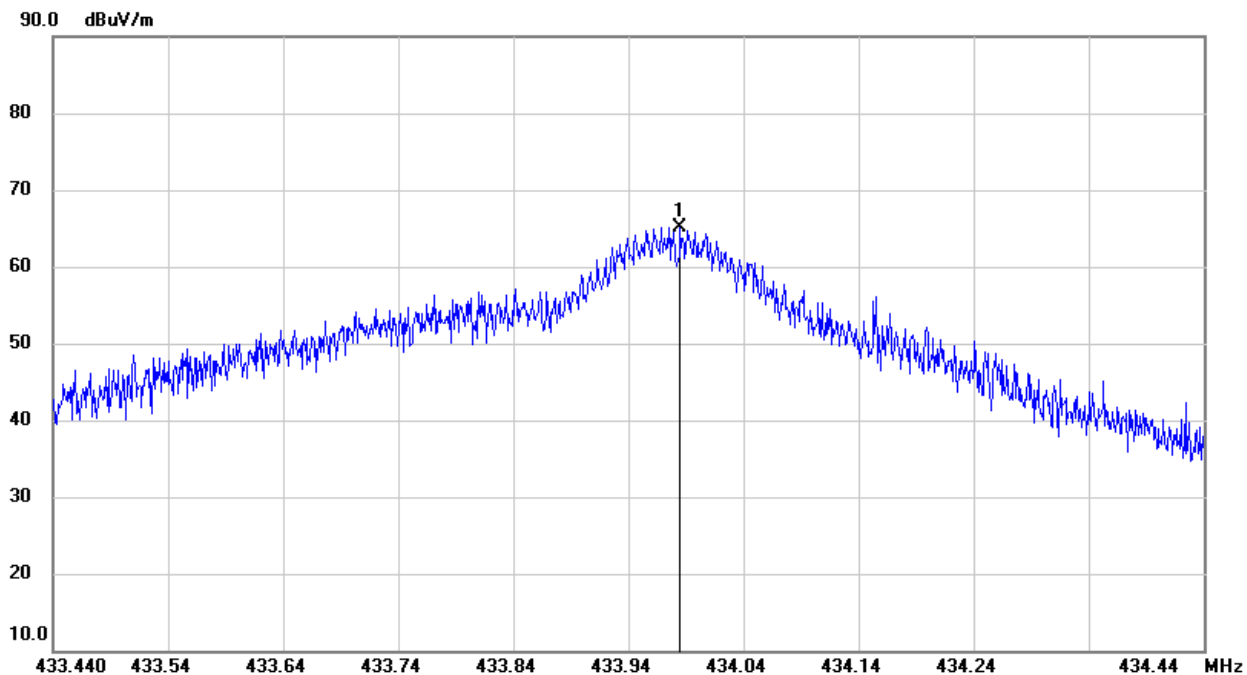


Frequency	Reading	Correct	Peak Result	Average Result	Limit	Margin	Remark
(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
433.9840	86.57	-12.03	74.54	/	100.8	-26.26	peak
433.9840	86.57	-12.03	/	71.10	80.8	-9.70	Average

- Note: 1. Peak Result = Reading+ Correction Factor
2. Average Result = Peak Result + Duty Correction Factor.
3. For more information about Duty Correction Factor, please refer to clause 7.1 .



FUNDAMENTAL FIELD STRENGTH (VERTICAL)



Frequency	Reading	Correct	Peak Result	Average Result	Limit	Margin	Remark
(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
433.9850	77.11	-12.03	65.08	/	100.8	-35.72	peak
433.9850	77.11	-12.03	/	61.64	80.8	-19.16	Average

Note: 1. Peak Result = Reading+ Correction Factor
2. Average Result = Peak Result + Duty Correction Factor.
3. For more information about Duty Correction Factor, please refer to clause 7.1 .

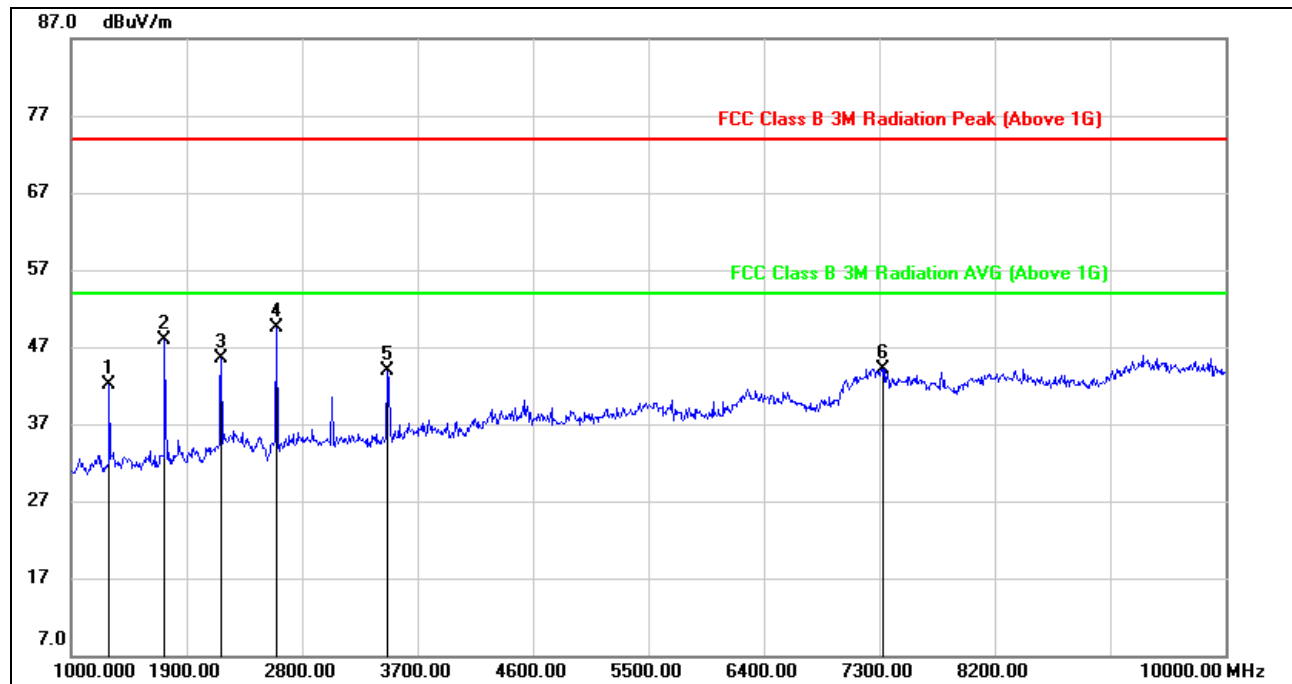
Note: All the modes had been tested, but only the worst data recorded in the report.

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



8.3. SPURIOUS EMISSIONS 1~10GHz

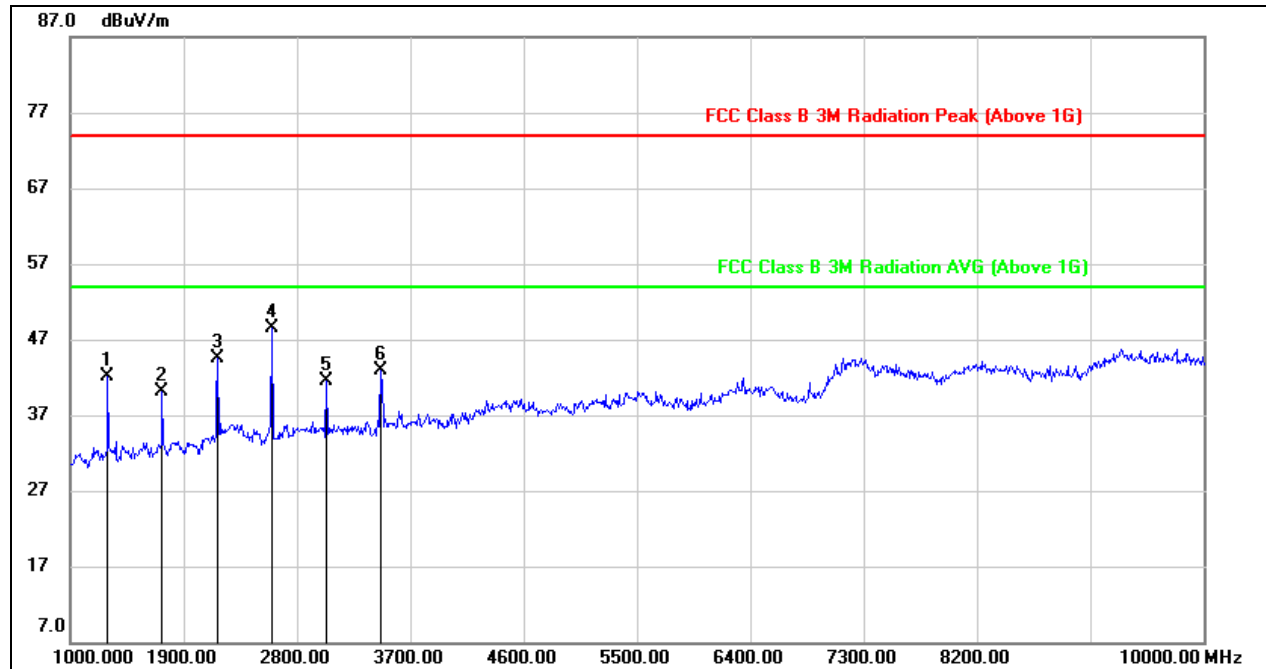
HARMONICS AND SPURIOUS EMISSIONS (HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1297.000	54.88	-12.69	42.19	74.00	-31.81	peak
2	1729.000	59.83	-11.99	47.84	74.00	-26.16	peak
3	2170.000	54.87	-9.28	45.59	74.00	-28.41	peak
4	2602.000	58.34	-8.86	49.48	74.00	-24.52	peak
5	3466.000	50.10	-6.24	43.86	74.00	-30.14	peak
6	7327.000	38.00	6.15	44.15	74.00	-29.85	peak

Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

2. Peak Result = Reading Level + Correct Factor.

**HARMONICS AND SPURIOUS EMISSIONS (VERTICAL)**

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1297.000	55.02	-12.97	42.05	74.00	-31.95	peak
2	1729.000	52.05	-11.99	40.06	74.00	-33.94	peak
3	2170.000	53.79	-9.34	44.45	74.00	-29.55	peak
4	2602.000	57.40	-8.87	48.53	74.00	-25.47	peak
5	3034.000	48.76	-7.18	41.58	74.00	-32.42	peak
6	3466.000	49.04	-6.20	42.84	74.00	-31.16	peak

Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

2. Peak Result = Reading Level + Correct Factor.

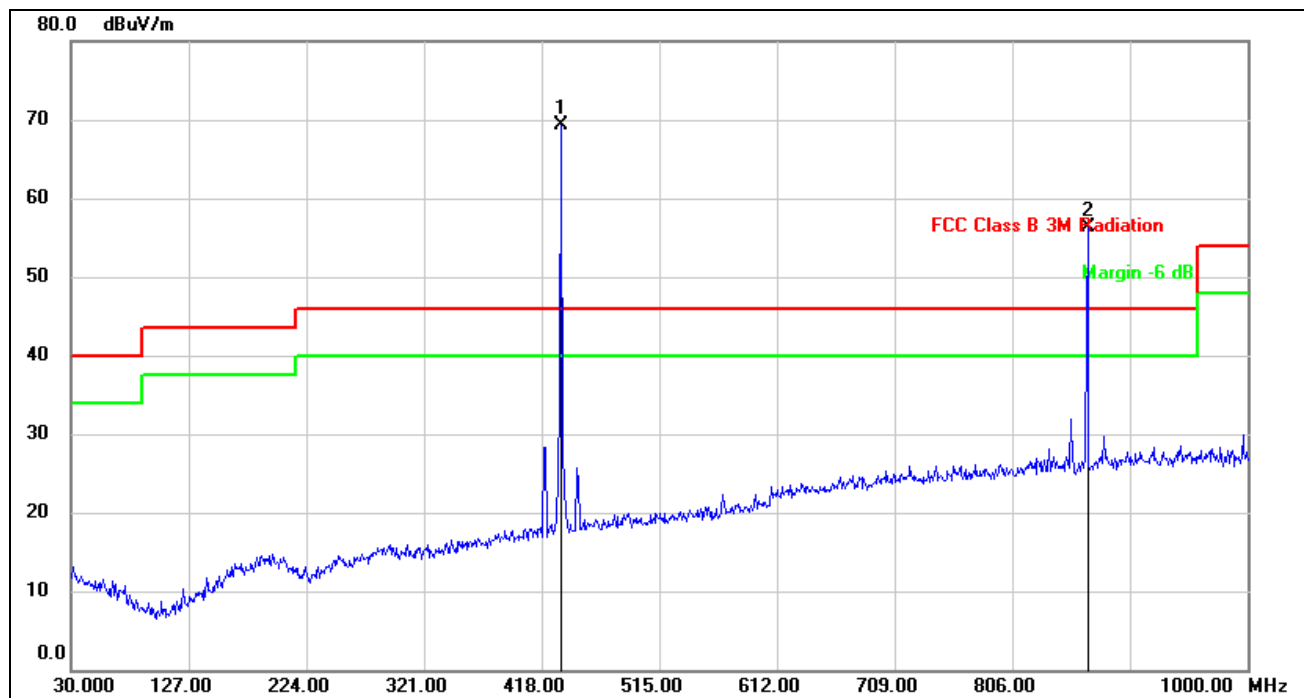
Note: All the modes had been tested, but only the worst data recorded in the report.

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



8.4. SPURIOUS EMISSIONS 30M ~ 1 GHz

SPURIOUS EMISSIONS (HORIZONTAL)

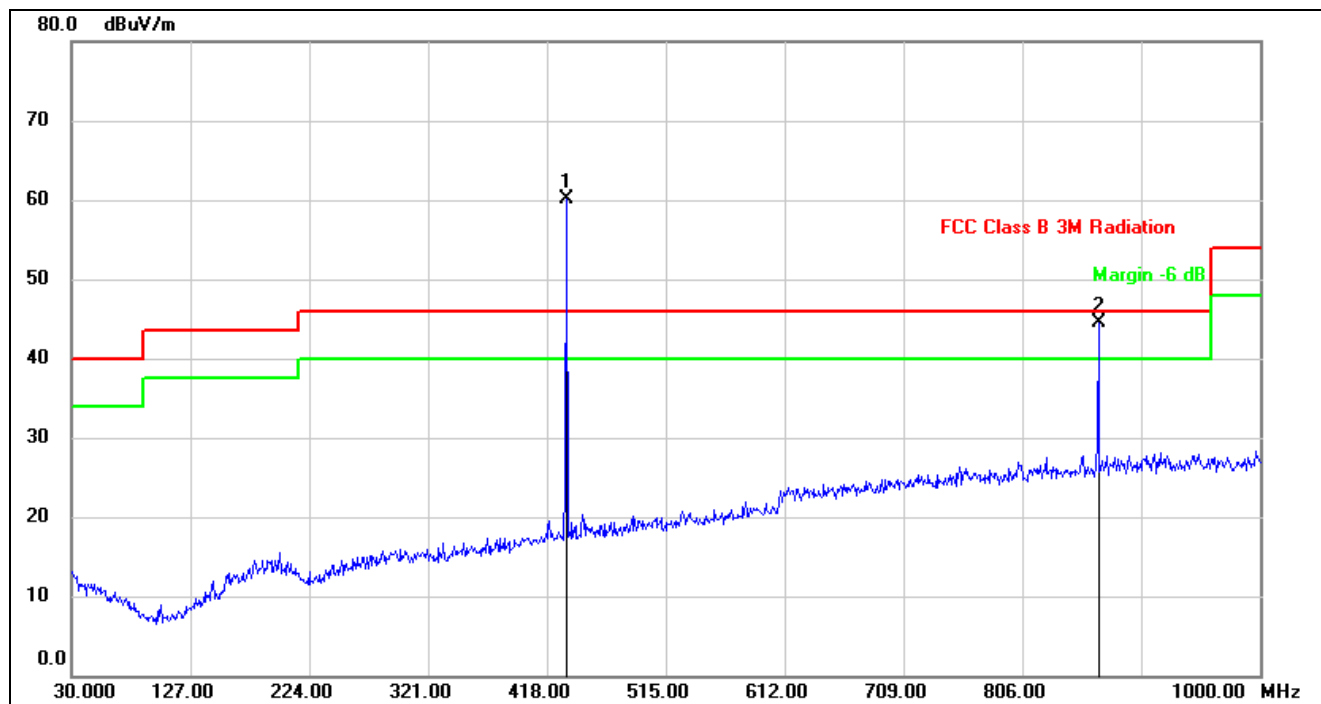


No.	Frequency	Reading	Correct	Peak Result	Average Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
2	868.0800	60.96	-4.64	56.32	/	80.8	-24.48	peak
2	868.0800	60.96	-4.64	/	52.88	60.8	-7.92	Average

Note: 1. Peak Result = Reading Level + Correct Factor.
2. Average Result = Peak Result + Duty Correction Factor.
3. Mark 1 is the fundamental frequency and mark 2 is the 2th harmonic.



SPURIOUS EMISSIONS (VERTICAL)



No.	Frequency	Reading	Correct	Peak Result	Average Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
2	868.0800	49.14	-4.64	44.50	/	80.8	-36.30	peak
2	868.0800	49.14	-4.64	/	41.06	60.8	-19.74	Average

- Note: 1. Peak Result = Reading Level + Correct Factor.
2. Average Result = Peak Result + Duty Correction Factor.
3. Mark 1 is the fundamental frequency and mark 2 is the 2th harmonic.

Note: All the modes had been tested, but only the worst data recorded in the report.

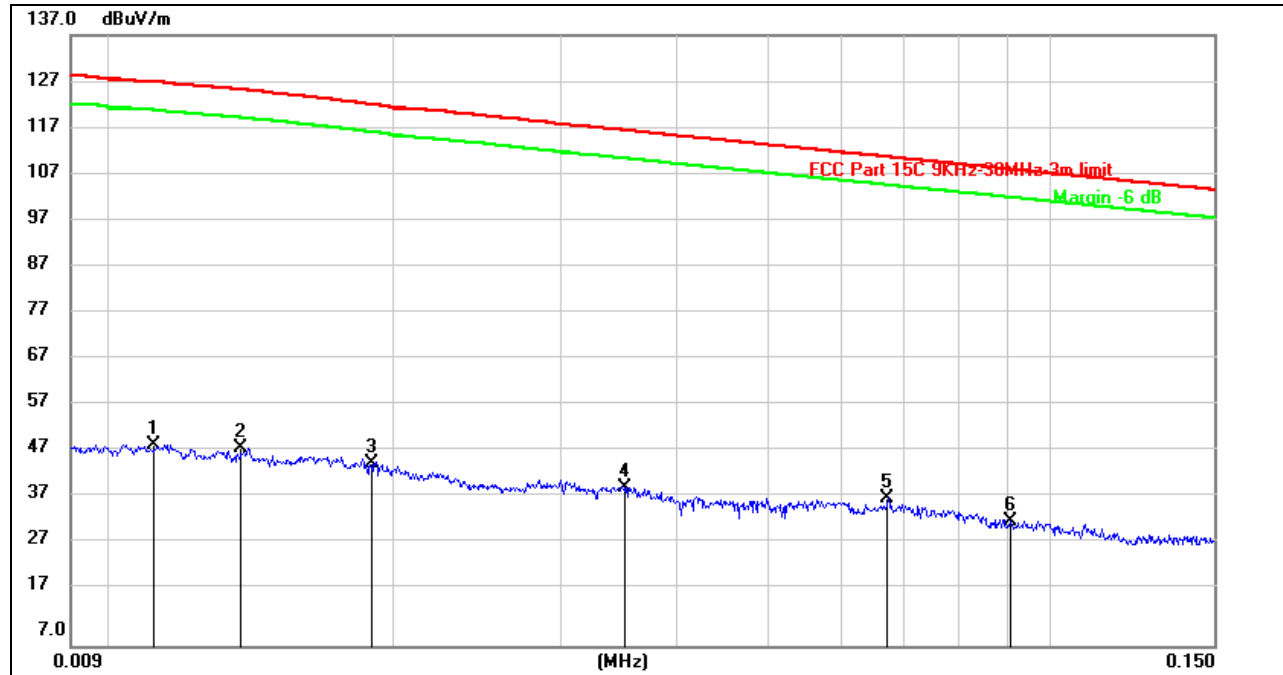
Note: EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.



8.5. SPURIOUS EMISSIONS BELOW 30M

SPURIOUS EMISSIONS (VERTICAL)

0.09KHz~ 150KHz

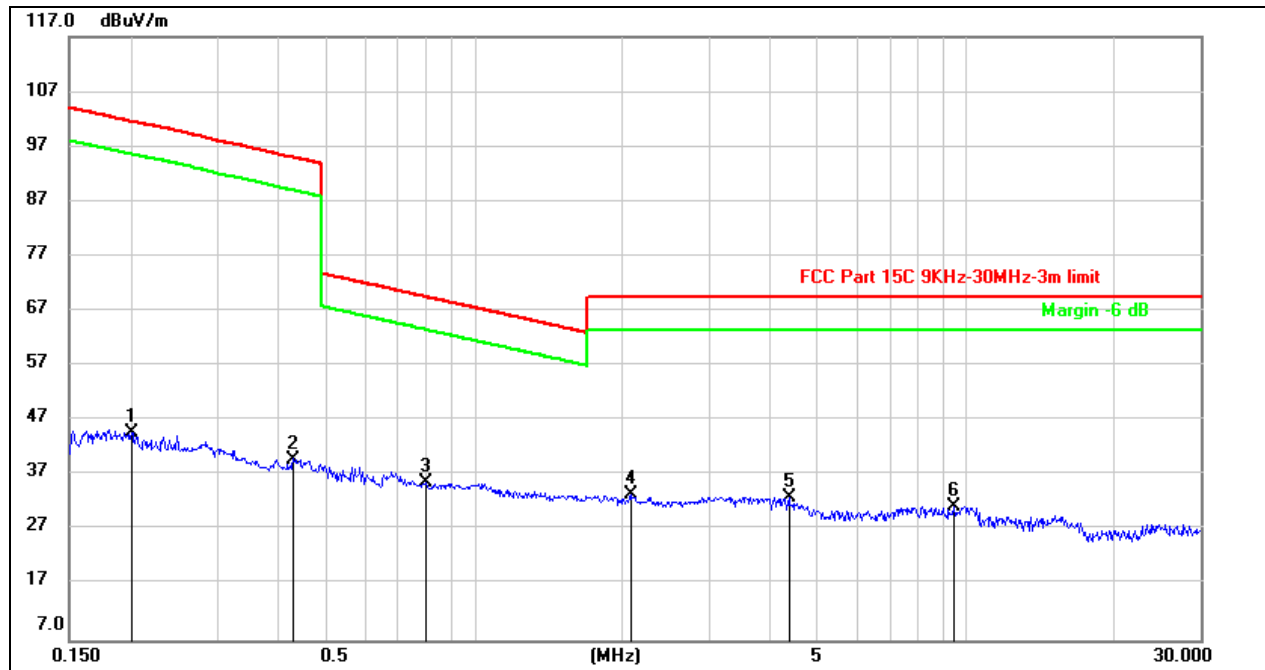


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.0111	29.55	20.22	49.77	126.94	-77.17	peak
2	0.0137	28.77	20.25	49.02	125.37	-76.35	peak
3	0.0189	25.70	20.30	46.00	122.24	-76.24	peak
4	0.0352	20.41	20.31	40.72	116.76	-76.04	peak
5	0.0670	18.21	20.31	38.52	111.10	-72.58	peak
6	0.0908	13.24	20.26	33.50	108.45	-74.95	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.

150KHz ~ 30M

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.2006	24.45	20.37	44.82	101.56	-56.74	peak
2	0.4282	19.73	20.27	40.00	95.01	-55.01	peak
3	0.7960	15.25	20.36	35.61	69.59	-33.98	peak
4	2.0767	12.70	20.75	33.45	69.54	-36.09	peak
5	4.3605	11.93	20.97	32.90	69.54	-36.64	peak
6	9.4512	10.25	21.03	31.28	69.54	-38.26	peak

Note: 1. Measurement = Reading Level + Correct Factor.

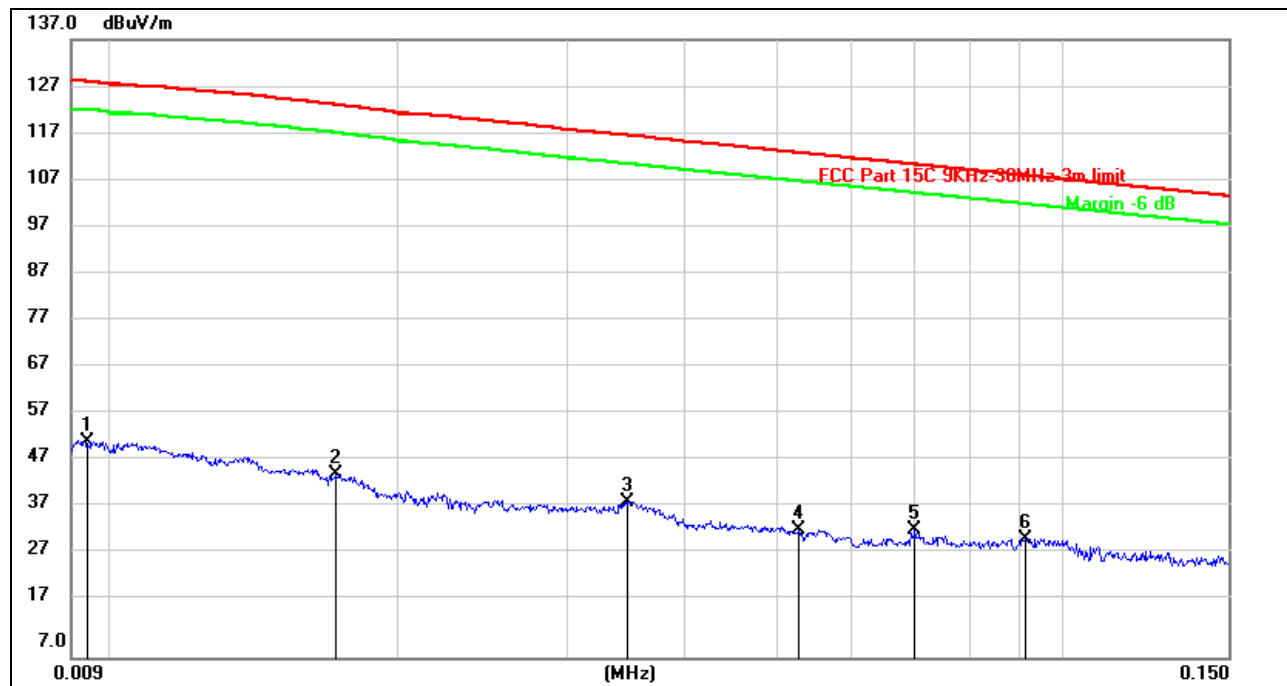
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.



SPURIOUS EMISSIONS (HORIZONTAL)

0.09KHz~ 150KHz

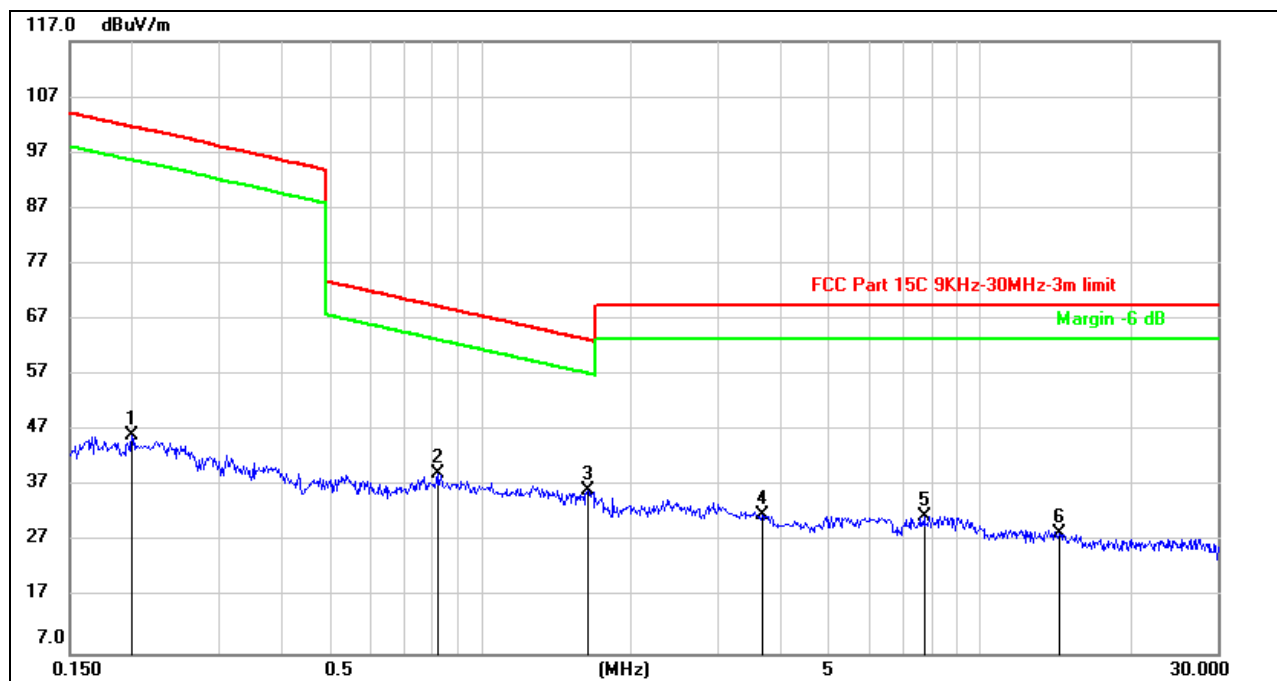


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.0094	32.03	20.26	52.29	128.06	-75.77	peak
2	0.0171	25.08	20.28	45.36	123.33	-77.97	peak
3	0.0347	19.46	20.31	39.77	116.89	-77.12	peak
4	0.0526	13.63	20.31	33.94	113.21	-79.27	peak
5	0.0700	13.40	20.31	33.71	110.70	-76.99	peak
6	0.0916	11.69	20.25	31.94	108.37	-76.43	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.



150KHz ~ 30M



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.1995	25.85	20.37	46.22	101.60	-55.38	peak
2	0.8174	18.96	20.36	39.32	69.36	-30.04	peak
3	1.6363	15.65	20.60	36.25	63.33	-27.08	peak
4	3.6610	10.85	21.01	31.86	69.54	-37.68	peak
5	7.7278	10.67	20.95	31.62	69.54	-37.92	peak
6	14.4404	7.65	20.94	28.59	69.54	-40.95	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.

Note: All the modes had been tested, but only the worst data recorded in the report.

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



9. ANTENNA REQUIREMENTS

APPLICABLE REQUIREMENTS

Please refer to FCC §15.203

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. 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 FCC rule.

ANTENNA CONNECTOR

EUT has a PCB antenna without antenna connector.

ANTENNA GAIN

The antenna gain of EUT is less than 6 dBi.

END OF REPORT