



**EUROFINS ELECTRICAL TESTING SERVICE (SHENZHEN) CO., LTD.**

# **RADIO TEST - REPORT**

**FCC/IC Compliance Test Report**

**Test Report Number: EFGX19120067-IE-01-E01**

## Content

|          |                                                                                       |          |
|----------|---------------------------------------------------------------------------------------|----------|
| <b>1</b> | <b>General Information</b>                                                            | <b>3</b> |
| 1.1      | Notes                                                                                 | 3        |
| 1.2      | Testing laboratory                                                                    | 4        |
| 1.3      | Details of approval holder                                                            | 4        |
| 1.4      | Details of Manufacturer                                                               | 4        |
| 1.5      | Application details                                                                   | 4        |
| 1.6      | Test item                                                                             | 4        |
| 1.7      | Test standards                                                                        | 5        |
| <b>2</b> | <b>Technical test</b>                                                                 | <b>6</b> |
| 2.1      | Summary of test results                                                               | 6        |
| 2.2      | Test environment                                                                      | 6        |
| 2.3      | Measurement uncertainty                                                               | 6        |
| 2.4      | Test mode                                                                             | 6        |
| 2.5      | Test equipment utilized                                                               | 7        |
| 2.6      | Auxiliary Equipment Used during Test:                                                 | 7        |
| 2.7      | Test software information                                                             | 7        |
| 2.8      | Customized Configurations                                                             | 7        |
| 2.9      | Test Environments                                                                     | 7        |
| 2.10     | Test results                                                                          | 8        |
| <b>3</b> | <b>Technical Requirement</b>                                                          | <b>9</b> |
| 3.1      | Conducted Emission                                                                    | 9        |
| 3.2      | Automatically Deactivate                                                              | 10       |
| 3.3      | 20dB & 99% bandwidth                                                                  | 12       |
| 3.4      | Frequency Stability                                                                   | 14       |
| 3.5      | Field strength of fundamental and Field strength of spurious emission for transmitter | 16       |

## 1 General Information

### 1.1 Notes

The results of this test report relate exclusively to the item tested as specified in chapter "Description of test item" and are not transferable to any other test items.

Eurofins Product Testing Service (Shenzhen) Co., Ltd. is not responsible for any generalisations and conclusions drawn from this report. Any modification of the test item can lead to invalidity of test results and this test report may therefore be not applicable to the modified test item.

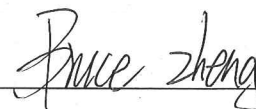
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#### Operator:

2019-12-19

Bruce Zheng / Project Engineer



Date

Eurofins-Lab.

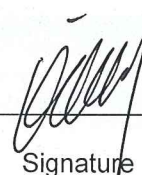
Name / Title

Signature

#### Technical responsibility for area of testing:

2019-12-19

Oliver Lai / RF Supervisor



Date

Eurofins-Lab.

Name / Title

Signature

## 1.2 Testing laboratory

### **Eurofins Electrical Testing Service (Shenzhen) Co., Ltd.**

1st Floor, Building 2, Chungu, Meisheng Huigu Science and Technology Park, No. 83 Dabao Road, Bao'an District, Shenzhen. P.R.China.

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The Laboratory has passed the Accreditation by the American Association for Laboratory Accrediation (A2LA). The Accreditation number is 5376.01

The Laboratory has been listed by industry Canada to perform electromagnetic emission measurements, The CAB identifier is CN0088

## 1.3 Details of approval holder

Name : Ningbo EverFlourish Smart Technology Corp.,Ltd  
 Address : 77 Wuxiang East Road,Yinzhou,Ningbo, 315111, China  
 Telephone : N/A  
 Fax : N/A

## 1.4 Details of Manufacturer

Name : Ningbo EverFlourish Smart Technology Corp.,Ltd  
 Address : 77 Wuxiang East Road,Yinzhou,Ningbo, 315111, China  
 Telephone : N/A  
 Fax : N/A

## 1.5 Application details

Date of receipt of application : December 10, 2019  
 Date of receipt of test item : December 10, 2019  
 Date of test : December 10, 2019 – December 19, 2019  
 Date of issue : December 19, 2019

## 1.6 Test item

Product type : Remote Control Transmitter  
 Model name : EMW202T-1  
 Brand : Everflourish  
 Serial number : N/A  
 Ratings : 3.0Vdc supplied by a type "CR2032" Battery  
 Test voltage : 3.0Vdc  
 FCC ID : VBA-EFEMW202T-1  
 IC : 7098A-EFEMW202T11  
 PMN : Remote Control Transmitter  
 HVIN : EMW202T-1  
 Additional information : N/A

### **RadioTechnical data**

Frequency range : 433.92MHz  
 Radio Tech. : N/A  
 Frequency channel : 1 Channel  
 Modulation : ASK  
 Antenna type : PCB antenna  
 Antenna gain : 1dBi

## 1.7 Test standards

| Test Standards                        |                                                                        |
|---------------------------------------|------------------------------------------------------------------------|
| FCC Part 15 Subpart C<br>2018 Edition | PART 15 - RADIO FREQUENCY DEVICES<br>Subpart C - Intentional Radiators |
| RSS-210 Issue 9<br>August 2016        | Licence-Exempt Radio Apparatus: Category I Equipment                   |
| RSS-GEN Issue 5<br>March 2019         | RSS-Gen — General Requirements for Compliance of Radio Apparatus       |

### Test Method

- 1: ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.
- 2: ANSI C63.10-2013, American National Standard for Testing Unlicensed Wireless Devices.

## 2 Technical test

### 2.1 Summary of test results

No deviations from the technical specification(s) were ascertained in the course of the tests performed.



or

The deviations as specified were ascertained in the course of the tests performed.



### 2.2 Test environment

Temperature : 20 ... 25°C  
 Relative humidity content : 30 ... 60%  
 Air pressure : 100 ... 101kPa

### 2.3 Measurement uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

| System Measurement Uncertainty                               |                                                                                       |
|--------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Test Items                                                   | Extended Uncertainty                                                                  |
| Uncertainty for Conducted RF test                            | RF Power Conducted: 1.16dB<br>Frequency test involved:<br>1.05×10 <sup>-7</sup> or 1% |
| Uncertainty for Radiated Spurious Emission 25MHz-3000MHz     | Horizontal: 4.46dB;<br>Vertical: 4.54dB;                                              |
| Uncertainty for Radiated Spurious Emission 3000MHz-18000MHz  | Horizontal: 4.42dB;<br>Vertical: 4.41dB;                                              |
| Uncertainty for Radiated Spurious Emission 18000MHz-40000MHz | Horizontal: 4.63dB;<br>Vertical: 4.62dB;                                              |

### 2.4 Test mode

The EUT was set at continuously transmitting during the test.

## 2.5 Test equipment utilized

| EQUIPMENT ID | EQUIPMENT NAME           | MODEL NO.         | CAL. DUE DATE |
|--------------|--------------------------|-------------------|---------------|
| 23-2-13-01   | EMI Test Receiver        | ESR7              | 2020-04-04    |
| 23-2-13-02   | Signal Analyzer          | N9020B-544        | 2020-05-05    |
| 23-2-12-01   | Active Loop Antenna      | FMZB 1519B        | 2020-04-20    |
| 23-2-12-02   | TRILOG Broadband Antenna | VULB9168          | 2020-04-13    |
| 23-2-12-03   | Horn Antenna             | 3117              | 2020-04-13    |
| 23-2-12-04   | Horn Antenna             | BBHA 9170         | 2020-04-17    |
| 23-2-12-05   | Universal Antenna Stand  | CLSA0110          | 2020-04-13    |
| 23-2-10-01   | Preamplifier             | BBV9745           | 2020-04-15    |
| 23-2-10-02   | Preamplifier             | EMC001330         | 2020-04-15    |
| 23-2-10-03   | Preamplifier             | EMC051845SE       | 2020-05-06    |
| 23-2-10-14   | Switch and Control Unit  | ERIT-E-JS0806-SF1 | N/A           |

## 2.6 Auxiliary Equipment Used during Test:

| DESCRIPTION | MANUFACTURER | MODEL NO. | S/N |
|-------------|--------------|-----------|-----|
| N/A         | N/A          | N/A       | N/A |

## 2.7 Test software information

|                       |                  |            |             |
|-----------------------|------------------|------------|-------------|
| Test Software Version | N/A              |            |             |
| Modulation            | Setting TX Power | TX Pattern | Packet Type |
| ASK                   | Default          | Default    | Default     |

Remark: The EUT has six buttons with same duty cycle and it was setted to continue transmitting by debug software, therefore we pressed one button to transmitting 433.92MHz Fundamental frequency during Testing.

## 2.8 Customized Configurations

| EUT Conf. | Signal Description | Operating Frequency | Duty Cycle |
|-----------|--------------------|---------------------|------------|
| TM1       | ASK                | 433.92MHz           | 35 %       |

## 2.9 Test Environments

| Enviroment Parameter | Temperature | Voltage | Relative Humidity |
|----------------------|-------------|---------|-------------------|
| 101.7Kpa             | 26.5℃       | 3.0Vdc  | 68.3%             |

## 2.10 Test results

☒ 1<sup>st</sup> test

☐ test after modification

☐ production test

| Technical Requirements                                 |                                                             |                                     |             |         |           |
|--------------------------------------------------------|-------------------------------------------------------------|-------------------------------------|-------------|---------|-----------|
| FCC Part 15 Subpart C/ RSS-210 Issue 9/RSS-Gen Issue 5 |                                                             |                                     |             |         |           |
| Test Condition                                         |                                                             |                                     | Test Result | Verdict | Test Site |
| §15.207                                                | RSS-GEN 8.8                                                 | Conducted emission AC power port    | --          | N/A     | --        |
| §15.231(a)(1)                                          | RSS-210 A1.1                                                | Automatically Deactivate            | Page 11     | Pass    | Site 1    |
| §15.231(b)(3)                                          | RSS-210 A1.2                                                | Field strength of fundamental       | Page 20     | Pass    | Site 1    |
| §15.231(b)(3)<br>§15.209 &<br>§15.205                  | RSS-210 A1.2<br>RSS-GEN 6.13<br>RSS-GEN 8.9<br>RSS-GEN 8.10 | Field strength of spurious emission | Page 22     | Pass    | Site 1    |
| §15.231(c)                                             | --                                                          | -20dB Bandwidth                     | Page 13     | Pass    | Site 1    |
| --                                                     | RSS-GEN 6.7                                                 | 99% Occupied Bandwidth              | Page 13     | Pass    | Site 1    |
| --                                                     | RSS-GEN 8.11                                                | Frequency stability                 | Page 15     | Pass    | Site 1    |
| §15.203                                                | RSS-GEN 6.8                                                 | Antenna requirement                 | See note 1  | Pass    | --        |

Remark 1: N/A – Not Applicable.

Note 1: The EUT uses a PCB antenna, the gain: 1dBi. According to §15.203/RSS-GEN 6.8, it is considered sufficiently to comply with the provisions of this section.

### 3 Technical Requirement

#### 3.1 Conducted Emission

##### Test Method:

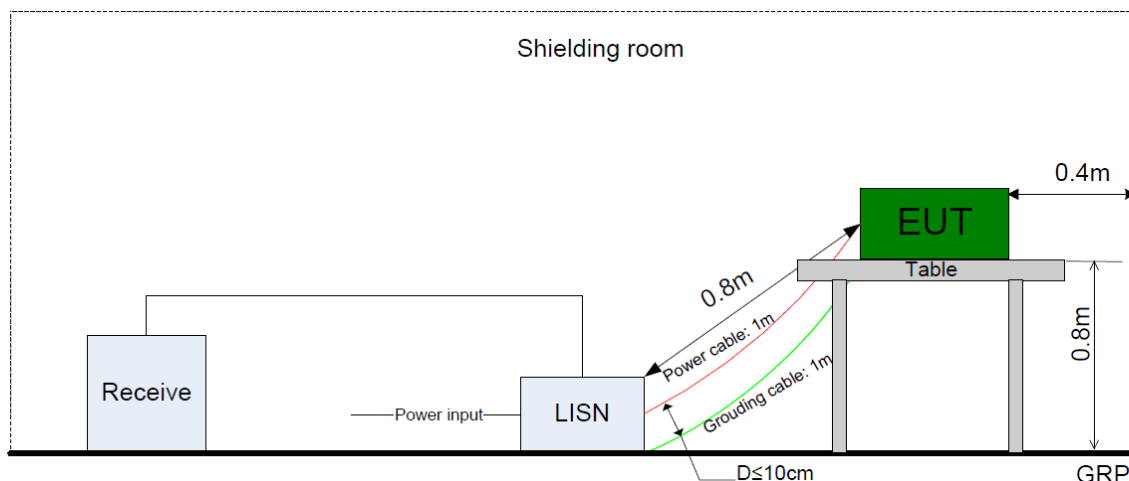
The test method was referred to the subclause 5.2 of ANSI C63.4-2014.

1. The EUT was placed on a table, which is 0.8m above ground plane
2. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.).
3. Maximum procedure was performed to ensure EUT compliance
4. A EMI test receiver is used to test the emissions from both sides of AC line

##### Test Setup:

The mains cable of the EUT (per AC/DC Adapter) must be connected to LISN. The LISN shall be placed 0.8 m from the boundary of EUT and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance is between the closest points of the LISN and the EUT. All other units of the EUT and associated equipment shall be at least 0.8m from the LISN.

Ground connections, where required for safety purposes, shall be connected to the reference ground point of the LISN and, where not otherwise provided or specified by the manufacturer, shall be of same length as the mains cable and run parallel to the mains connection at a separation distance of not more than 0.1 m.



##### Limit:

| Frequency<br>MHz | QP Limit<br>dB $\mu$ V | AV Limit<br>dB $\mu$ V |
|------------------|------------------------|------------------------|
| 0.150-0.500      | 66-56*                 | 56-46*                 |
| 0.500-5          | 56                     | 46                     |
| 5-30             | 60                     | 50                     |

Decreasing linear.

##### Test Result:

Not Applicable, the EUT was supplied by 3VDC from a type "CR2025" Battery.

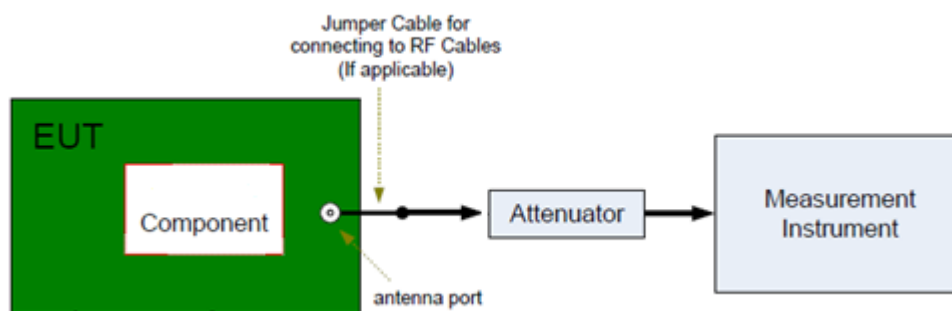
### 3.2 Automatically Deactivate

#### Test Method

1. Connect EUT test port to spectrum analyzer.
2. Set the EUT to transmit maximum output power at 433.92MHz.
3. RBW=1MHz, VBW $\geq$ 3RBW, Span=0MHz, Sweep = 10s, Detector function = Average, Sweep time = single
4. Remark transmission time and record test plot.

#### Test Setup:

The component's antenna ports(s) of the EUT are connected to the measurement instrument per an appropriate attenuator. The press a button of the EUT is to emit the specified signals for the purpose of measurements.



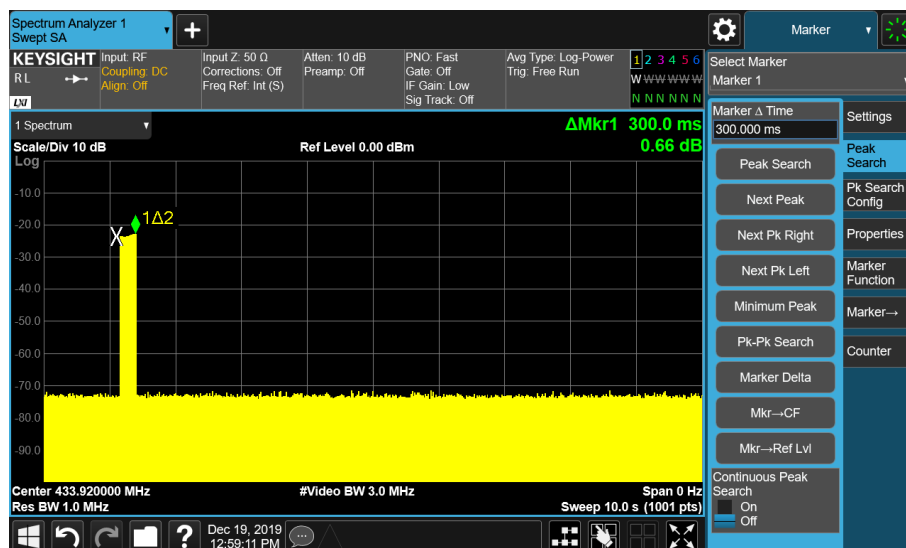
#### Limits:

According to §15.231 (a) (1), automatically deactivate limit as below:

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

**Test Data:**

| Time of Transmitting (ms) | Limit (sec) | Result |
|---------------------------|-------------|--------|
| 300                       | 5           | Pass   |


**Test Result: Pass**

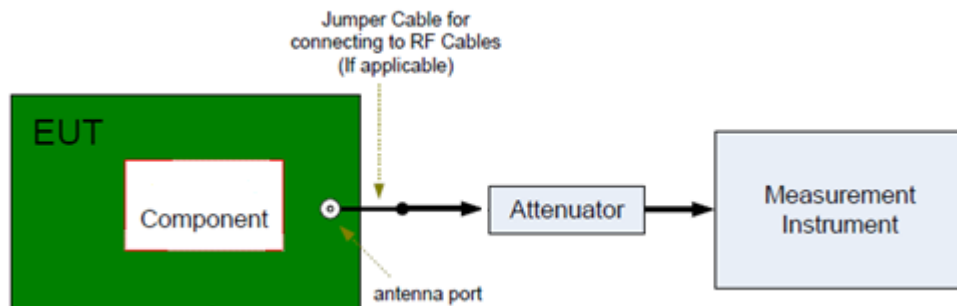
### 3.3 20dB & 99% bandwidth

#### Test Method:

1. Connect EUT test port to spectrum analyzer.
2. Set the EUT to transmit maximum output power at 433.92MHz.
3. Then set the EUT to transmit at high, middle and low frequency separately.
4. Set Span = approximately 1.5 to 5 times the 99% bandwidth.
5. Set RBW  $\geq$  1% to 5% of the 99% bandwidth, VBW  $\geq$  RBW.
6. Set Sweep = auto.
7. Set Detector function = Average.
8. Allow the trace to stabilize.
9. Repeat above procedures until all frequencies measured were complete.

#### Test Setup:

The component's antenna ports(s) of the EUT are connected to the measurement instrument per an appropriate attenuator. The press a button of the EUT is to emit the specified signals for the purpose of measurements.



#### Limit:

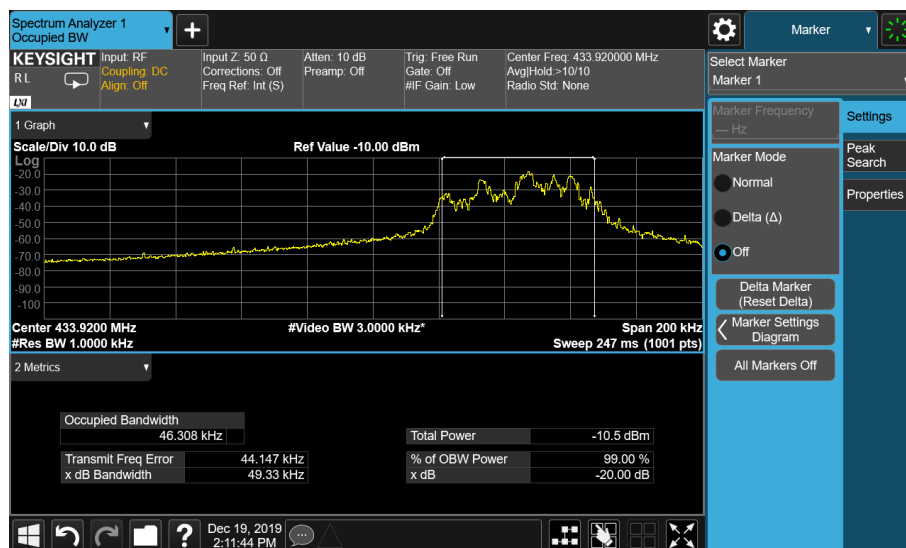
According to §15.231 (c), automatically deactivate limit as below:

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.

According to RSS-GEN 6.7, no limit for 99% bandwidth:

## Test Result

| 20dB Bandwidth (KHz) | 99% Bandwidth (KHz) | Limit (KHz) | Result |
|----------------------|---------------------|-------------|--------|
| 44.147               | 46.308              | 1084.80     | Pass   |



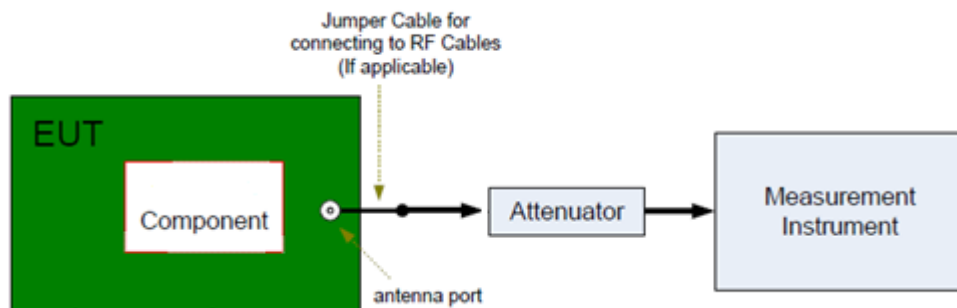
### 3.4 Frequency Stability

#### Test Method:

1. Connect EUT test port to spectrum analyzer.
2. Set the EUT to transmit maximum output power at 433.92MHz.
3. RBW=1K, VBW $\geq$ 3RBW, Sweep = auto, Detector function = peak, Trace = max hold
4. Allow the trace to stabilize, record the frequency value.

#### Test Setup:

The component's antenna ports(s) of the EUT are connected to the measurement instrument per an appropriate attenuator. The press a button of the EUT is to emit the specified signals for the purpose of measurements.



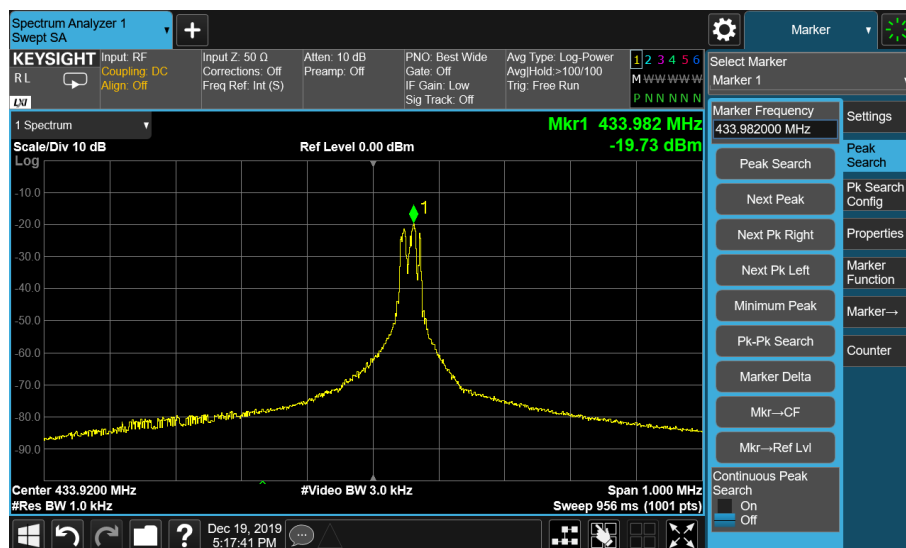
#### Limit:

According to RSS-GEN 8.11 limit as below:

the fundamental emissions of the radio apparatus should be kept within at least the central 80% of its permitted operating frequency band in order to minimize the possibility of out-of-band operation.

## Test Result

| Test Frequency (MHz) | Limit                                 | Result |
|----------------------|---------------------------------------|--------|
| 433.982              | ±80% of Permitted operating frequency | Pass   |



### 3.5 Field strength of fundamental and Field strength of spurious emission for transmitter

#### Test Method:

- 1: The EUT was placed on a turn table which is 1.5m above ground plane for above 1GHz and 0.8m above ground for below 1GHz at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- 2: The EUT was set 3 meters away from the interference – receiving antenna, which was mounted on the top of a variable – height antenna tower.
- 3: 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.
- 4: 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.
- 5: Use the following spectrum analyzer settings According to C63.10:  
For Above 1GHz  
Span = wide enough to capture the peak level of the in-band emission and all spurious  
RBW = 1MHz, VBW ≥ RBW for peak measurement and VBW = 10Hz for average measurement, Sweep = auto, Detector function = peak, Trace = max hold.  
For Below 1GHz  
Use the following spectrum analyzer settings:  
Span = wide enough to capture the peak level of the in-band emission and all spurious  
RBW = 100 KHz, VBW ≥ RBW for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.  
For Below 30MHz  
Use the following spectrum analyzer settings:  
Span = wide enough to capture the peak level of the in-band emission and all spurious  
RBW = 200 Hz, VBW ≥ RBW from 9KHz to 0.15MHz, RBW 9KHz VBW ≥ RBW from 0.15MHz to 30MHz for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.

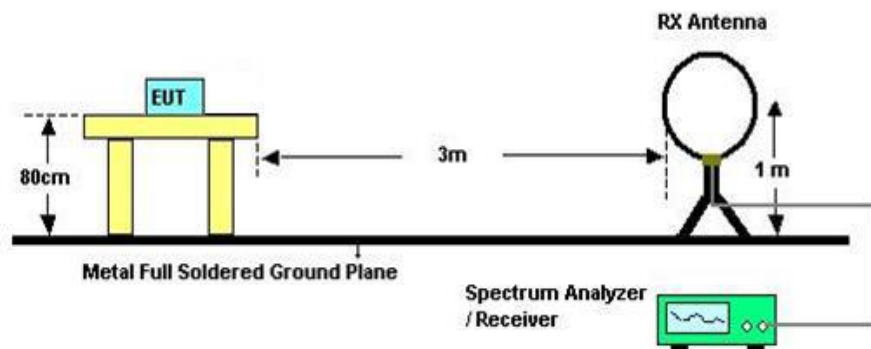
#### Note:

- 1: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 KHz for Quasi-peak detection (QP) at frequency below 1GHz.
- 2: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for peak detection (PK) at frequency above 1GHz.
- 3: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average ((duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ( $20\log(1/\text{duty cycle})$ ).
- 4: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.

#### Test Setup:

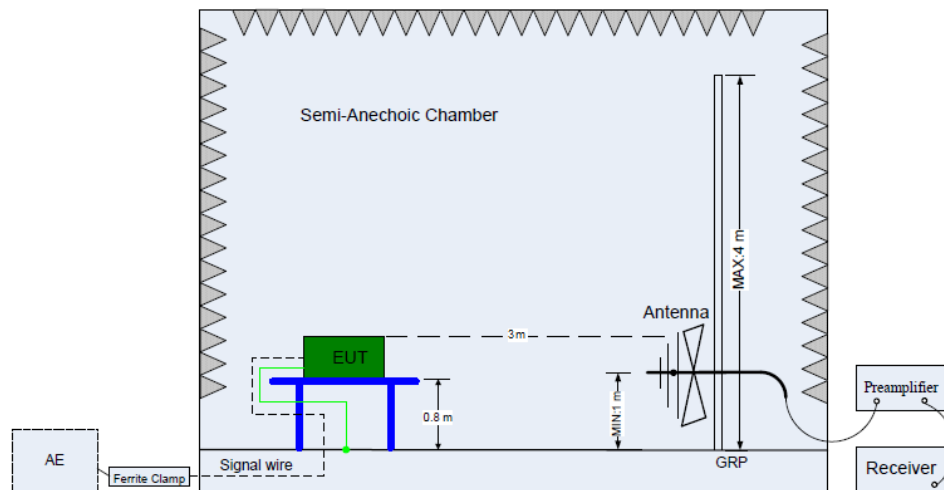
##### Test Setup 1: Radiated Emission test below 30MHz

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.4. The test distance is 3m. The setup is according to ANSI C63.4.



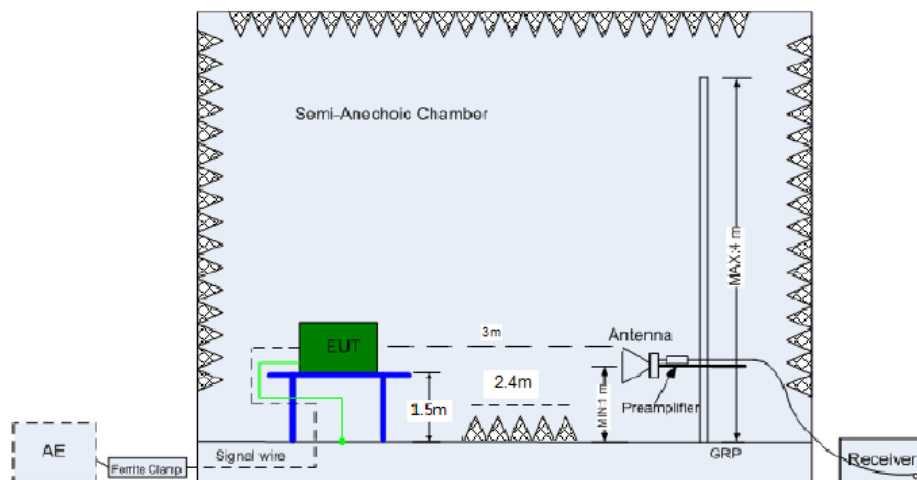
### Test Setup 2: Radiated Emission test below 1GHz

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.4. The test distance is 3m. The setup is according to ANSI C63.4.



### Test Setup 3: Radiated Emission test above 1GHz

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.4. The test distance is 3m. The setup is according to ANSI C63.4.



**Limit:**

Radiated emissions which fall in the restricted bands, as defined in section 15.205, must comply with the radiated emission limits specified in section 15.209.

**§ 15.209**

| Frequency<br>MHz | Field Strength<br>uV/m | Field Strength<br>dBµV/m | Detector |
|------------------|------------------------|--------------------------|----------|
| 30-88            | 100                    | 40                       | QP       |
| 88-216           | 150                    | 43.5                     | QP       |
| 216-960          | 200                    | 46                       | QP       |
| 960-1000         | 500                    | 54                       | QP       |
| Above 1000       | 500                    | 54                       | AV       |
| Above 1000       | 5000                   | 74                       | PK       |

**§15.205 Restricted bands of operation**

| MHz               | MHz                 | MHz           | GHz              |
|-------------------|---------------------|---------------|------------------|
| 0.090-0.110       | 16.42-16.423        | 399.9-410     | 4.5-5.15         |
| 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       |                     |               |                  |

**RSS-GEN 8.10**

| MHz                 | MHz                   | MHz             | GHz           |
|---------------------|-----------------------|-----------------|---------------|
| 0.090 - 0.110       | 16.42 - 16.423        | 1660 - 1710     | 9.0 - 9.2     |
| 0.495 - 0.505       | 16.69475 - 16.69525   | 1718.8 - 1722.2 | 9.3 - 9.5     |
| 2.1735 - 2.1905     | 25.5 - 25.67          | 2200 - 2300     | 10.6 - 12.7   |
| 3.020 - 3.026       | 37.5 - 38.25          | 2310 - 2390     | 13.25 - 13.4  |
| 4.125 - 4.128       | 73 - 74.6             | 2483.5 - 2500   | 14.47 - 14.5  |
| 4.17725 - 4.17775   | 74.8 - 75.2           | 2655 - 2900     | 15.35 - 16.2  |
| .20725 - 4.20775    | 108 - 138             | 3260 - 3267     | 17.7 - 21.4   |
| 5.677 - 5.683       | 149.9 - 150.05        | 3332 - 3339     | 22.01 - 23.12 |
| 6.215 - 6.218       | 156.52475 - 156.52525 | 3345.8 - 3358   | 23.6 - 24.0   |
| 6.26775 - 6.26825   | 156.7 - 156.9         | 3500 - 4400     | 31.2 - 31.8   |
| 6.31175 - 6.31225   | 162.0125 - 167.17     | 4500 - 5150     | 36.43 - 36.5  |
| 8.291 - 8.294       | 167.72 - 173.2        | 5350 - 5460     | Above 38.6    |
| 8.362 - 8.366       | 240 - 285             | 7250 - 7750     |               |
| 8.37625 - 8.38675   | 322 - 335.4           | 8025 - 8500     |               |
| 8.41425 - 8.41475   | 399.9 - 410           |                 |               |
| 12.29 - 12.293      | 608 - 614             |                 |               |
| 12.51975 - 12.52025 | 960 - 1427            |                 |               |

|                     |                 |  |  |
|---------------------|-----------------|--|--|
| 12.57675 - 12.57725 | 1435 - 1626.5   |  |  |
| 13.36 - 13.41       | 1645.5 - 1646.5 |  |  |

§15.231 (b) 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                     | <sup>1</sup> 1,250 to 3,750                      | <sup>1</sup> 125 to 375                                 |
| 174-260                     | 3,750                                            | 375                                                     |
| 260-470                     | <sup>1</sup> 3,750 to 12,500                     | <sup>1</sup> 375 to 1,250                               |
| Above 470                   | 12,500                                           | 1,250                                                   |

RSS-210 A1.2 (b) Unwanted emissions shall be 10 times below the fundamental emissions field strength limits in Table A1 or comply with the limits specified in RSS-Gen, whichever is less stringent.

| Fundamental Frequency (MHz), Excluding Restricted Frequency Bands Specified in RSS-Gen | Field Strength of the Fundamental Emissions (μV/m at 3m) |
|----------------------------------------------------------------------------------------|----------------------------------------------------------|
| 70-130                                                                                 | 1,250                                                    |
| 130-174                                                                                | 1,250 to 3,750*                                          |
| 174-260 <sup>(Note 1)</sup>                                                            | 3,750                                                    |
| 260-470 <sup>(Note 1)</sup>                                                            | 3,750 to 12,500*                                         |
| Above 470                                                                              | 12,500                                                   |

\* Linear interpolation with frequency, f, in MHz:

For 130-174 MHz: Field Strength (μV/m) = (56.82 × f) – 6136

For 260-470 MHz: Field Strength (μV/m) = (41.67 × f) – 7083

**Note 1:** Frequency bands 225-328.6 MHz and 335.4-399.9 MHz are designated for the exclusive use of the Government of Canada. Manufacturers should be aware of possible harmful interference and degradation of their licence-exempt radio equipment in these frequency bands.

#### Field Strength of the Fundamental Emissions

The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit.

Fundamental Average (dBμV/m) = 20log (41.67×433.92)-7083=80.83dBuV/m (Average)

Fundamental Peak (dBμV/m) = 80.83dBuV/m + 20 = 100.83dBuV/m

#### Remark:

- (1) “\*” means the emission(s) appear within the restrict bands shall follow the requirement of section 15.205.
- (2) Data of measurement within this frequency range shown “--” in the table above means the reading of emissions are the noise floor or attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Above 1GHz: Corrector factor = Antenna Factor + Cable Loss - Amplifier Gain.
- (4) Below 1GHz: Corrector factor = Antenna Factor + Cable Loss - Amplifier Gain.
- (5) Note: The low frequency, which started from 9 kHz to 30MHz with X/Y/Z axis, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

### Field Strength of the Fundamental Emissions

Horizontal

PK

| Freq. [MHz] | PK Level [dBμV/m] | Factor [dB] | Limit [dBμV/m] | Margin [dB] | Height [cm] | Angle [°] | Polarity   |
|-------------|-------------------|-------------|----------------|-------------|-------------|-----------|------------|
| 433.923     | 87.65             | -13.01      | 100.83         | 13.18       | 100         | 95        | Horizontal |

PK with Duty factor (AV)

| Freq. [MHz] | PK Level [dBμV/m] | Factor (dB) | Duty Factor (dB) | Limit [dBμV/m] | Margin [dB] | Height [cm] | Angle [°] | Polarity   |
|-------------|-------------------|-------------|------------------|----------------|-------------|-------------|-----------|------------|
| 433.92      | 87.65             | -13.01      | -9.1             | 80.83          | 2.28        | 100         | 95        | Horizontal |

Vertical

PK

| Freq. [MHz] | PK Level [dBμV/m] | Factor [dB] | Limit [dBμV/m] | Margin [dB] | Height [cm] | Angle [°] | Polarity |
|-------------|-------------------|-------------|----------------|-------------|-------------|-----------|----------|
| 433.923     | 74.48             | -13.01      | 100.83         | 26.35       | 100         | 95        | Vertical |

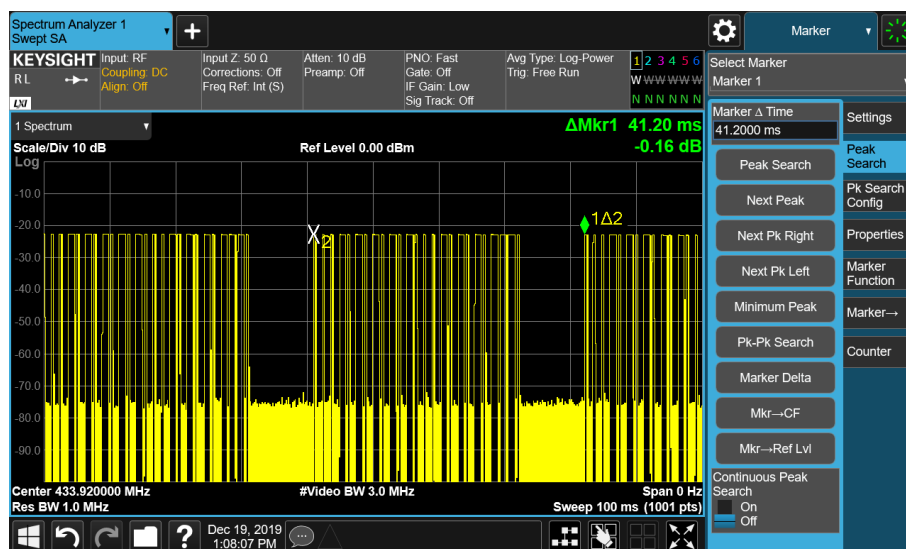
PK with Duty factor (AV)

| Freq. [MHz] | PK Level [dBμV/m] | Factor (dB) | Duty Factor (dB) | Limit [dBμV/m] | Margin [dB] | Height [cm] | Angle [°] | Polarity |
|-------------|-------------------|-------------|------------------|----------------|-------------|-------------|-----------|----------|
| 433.92      | 74.48             | -13.01      | -9.1             | 80.83          | 15.45       | 100         | 95        | Vertical |

Result of PK=Reading Level +Antenna Factor + Cable Loss - Amplifier Gain.

Result of AV= Reading Level +Antenna Factor + Cable Loss - Amplifier Gain+Duty factor.

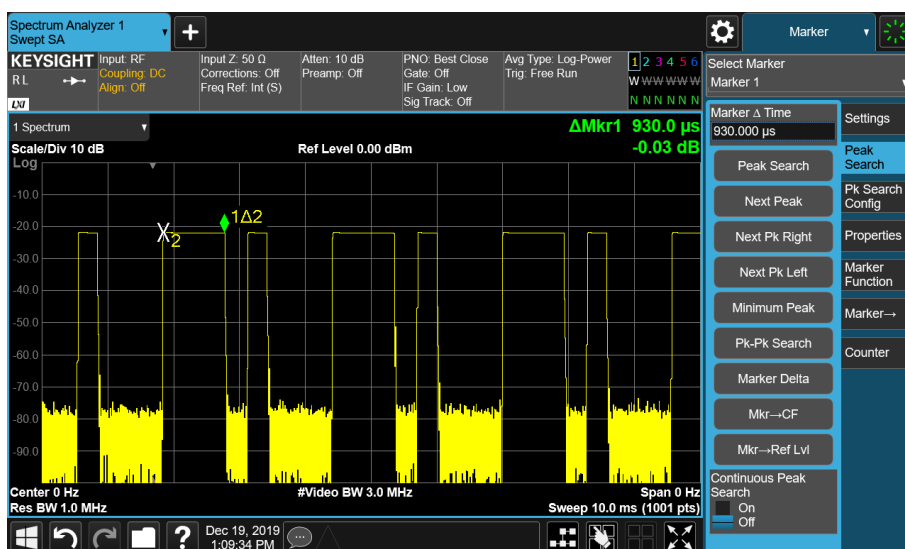
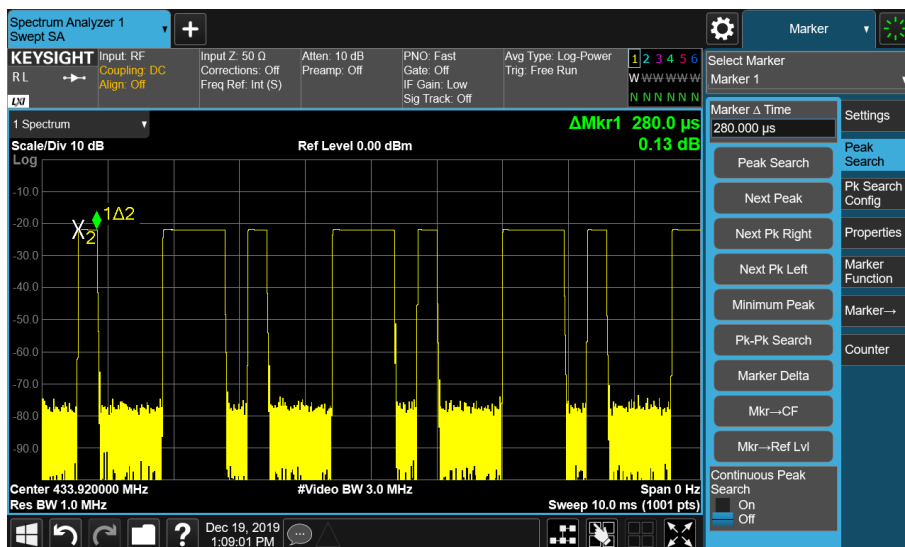
Duty factor=20 log (14.43/41.20)=-9.1dB



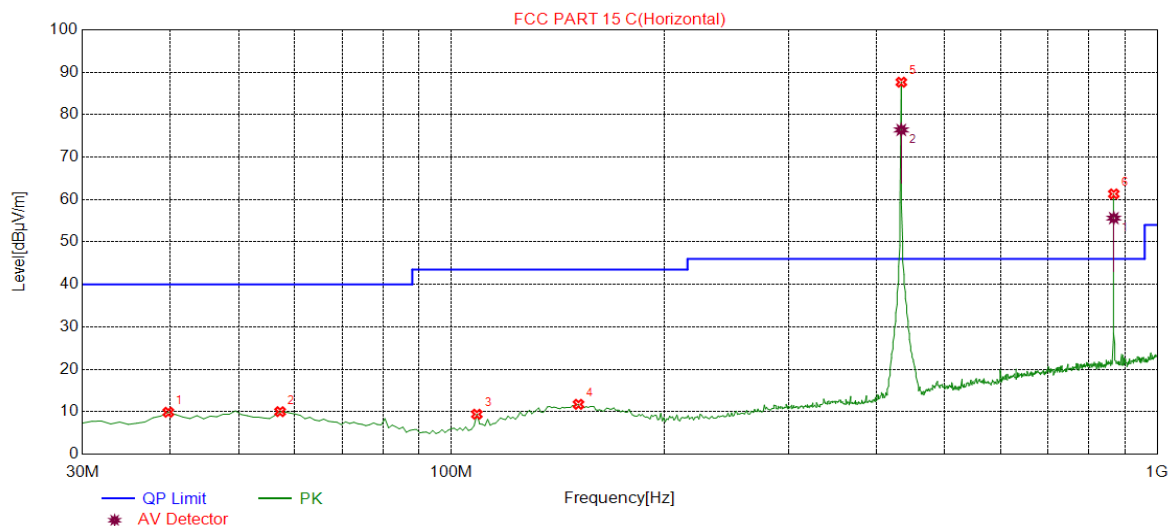
Test Report No.: EFGX19120067-IE-01-E01

Eurofins Electrical Testing Service (Shenzhen) Co., Ltd.

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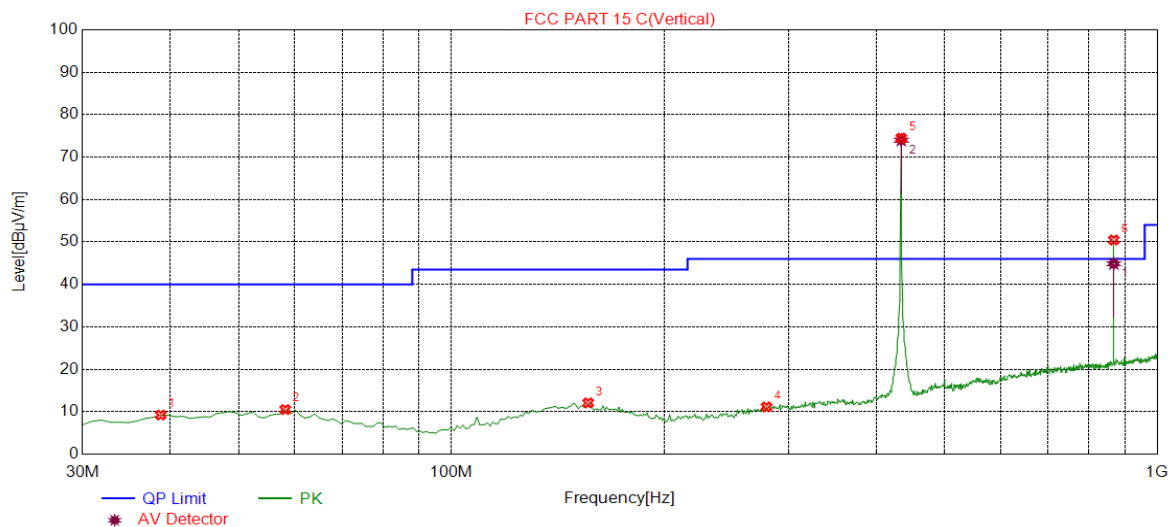


# Field strength of spurious emission for transmitter 30MHz – 1GHz



| Freq. [MHz] | Level [dBμV/m] | Factor [dB] | Limit [dBμV/m] | Margin [dB] | Height [cm] | Angle [°] | Polarity   | Detector |
|-------------|----------------|-------------|----------------|-------------|-------------|-----------|------------|----------|
| 39.7097     | 9.88           | -16.44      | 40.00          | 30.12       | 100         | 232       | Horizontal | QP       |
| 57.1872     | 10.02          | -16.37      | 40.00          | 29.98       | 100         | 59        | Horizontal | QP       |
| 108.648     | 9.42           | -19.54      | 43.50          | 34.08       | 100         | 213       | Horizontal | QP       |
| 151.371     | 11.75          | -14.90      | 43.50          | 31.75       | 100         | 280       | Horizontal | QP       |
| 867.947     | 61.33          | -6.07       | 80.83          | 19.50       | 100         | 118       | Horizontal | QP       |

| Freq. [MHz] | QP Level [dBμV/m] | Duty factor (dB) | Limit [dBμV/m] | Margin [dB] | Height [cm] | Angle [°] | Polarity   | Detector |
|-------------|-------------------|------------------|----------------|-------------|-------------|-----------|------------|----------|
| 867.947     | 61.33             | -9.10            | 60.83          | 8.60        | 100         | 118       | Horizontal | AV       |

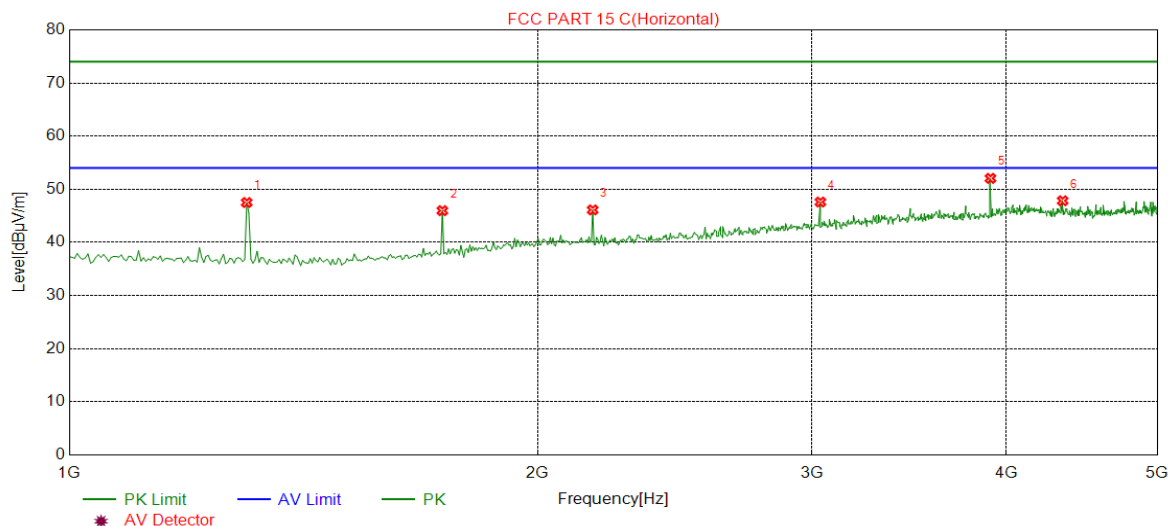


| Freq. [MHz] | Level [dBμV/m] | Factor [dB] | Limit [dBμV/m] | Margin [dB] | Height [cm] | Angle [°] | Polarity | Detector |
|-------------|----------------|-------------|----------------|-------------|-------------|-----------|----------|----------|
| 38.7387     | 9.23           | -16.63      | 40.00          | 30.77       | 100         | 308       | Vertical | QP       |
| 58.1582     | 10.51          | -16.41      | 40.00          | 29.49       | 100         | 346       | Vertical | QP       |
| 156.226     | 12.08          | -15.08      | 43.50          | 31.42       | 100         | 286       | Vertical | QP       |
| 279.539     | 11.14          | -16.23      | 46.00          | 34.86       | 100         | 24        | Vertical | QP       |
| 867.947     | 50.47          | -6.07       | 80.83          | 30.36       | 100         | 60        | Vertical | QP       |

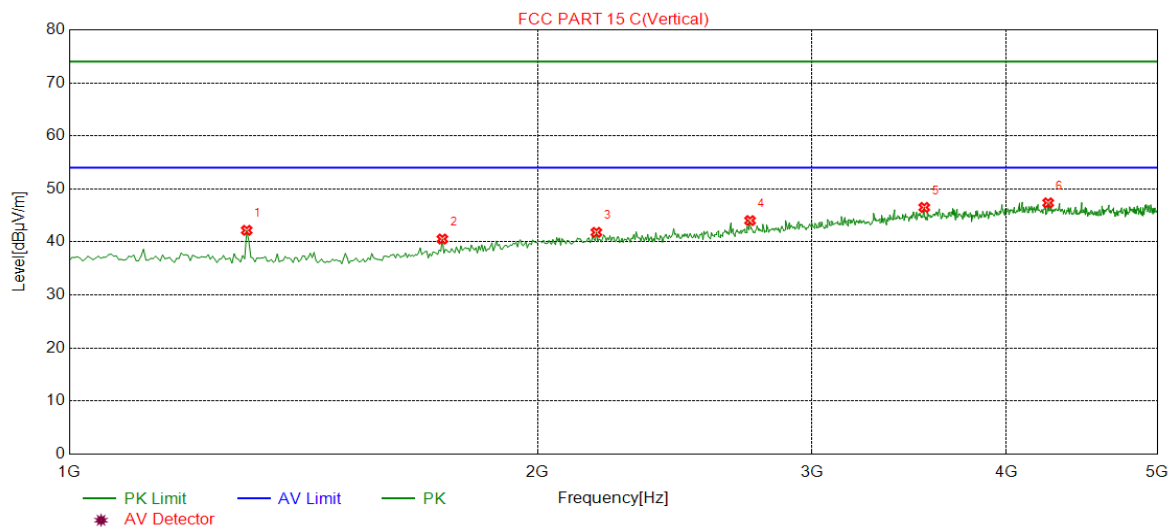
| Freq. [MHz] | QP Level [dBμV/m] | Duty factor (dB) | Limit [dBμV/m] | Margin [dB] | Height [cm] | Angle [°] | Polarity   | Detector |
|-------------|-------------------|------------------|----------------|-------------|-------------|-----------|------------|----------|
| 867.947     | 50.47             | -9.10            | 60.83          | 19.46       | 100         | 60        | Horizontal | AV       |

Field strength of spurious emission for transmitter above 1GHz

According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.



| Freq.<br>[MHz] | Level<br>[dBμV/m] | Factor<br>[dB] | Limit<br>[dBμV/m] | Margin<br>[dB] | Height<br>[cm] | Angle<br>[°] | Polarity   | Detector |
|----------------|-------------------|----------------|-------------------|----------------|----------------|--------------|------------|----------|
| 1300.30        | 47.51             | -27.62         | 74.00             | 26.49          | 150            | 29           | Horizontal | PK       |
| 1736.73        | 45.98             | -26.04         | 74.00             | 28.02          | 150            | 206          | Horizontal | PK       |
| 2169.16        | 46.12             | -23.47         | 74.00             | 27.88          | 150            | 135          | Horizontal | PK       |
| 3038.03        | 47.60             | -20.18         | 74.00             | 26.40          | 150            | 110          | Horizontal | PK       |
| 3906.90        | 52.06             | -16.60         | 74.00             | 21.94          | 150            | 83           | Horizontal | PK       |
| 4347.34        | 47.84             | -15.86         | 74.00             | 26.16          | 150            | 277          | Horizontal | PK       |



| Freq.<br>[MHz] | Level<br>[dBμV/m] | Factor<br>[dB] | Limit<br>[dBμV/m] | Margin<br>[dB] | Height<br>[cm] | Angle<br>[°] | Polarity | Detector |
|----------------|-------------------|----------------|-------------------|----------------|----------------|--------------|----------|----------|
| 1300.30        | 42.20             | -27.62         | 74.00             | 31.80          | 150            | 24           | Vertical | PK       |
| 1736.73        | 40.56             | -26.04         | 74.00             | 33.44          | 150            | 5            | Vertical | PK       |
| 2181.18        | 41.82             | -23.46         | 74.00             | 32.18          | 150            | 256          | Vertical | PK       |
| 2737.73        | 44.04             | -21.51         | 74.00             | 29.96          | 150            | 60           | Vertical | PK       |
| 3542.54        | 46.52             | -18.13         | 74.00             | 27.48          | 150            | 338          | Vertical | PK       |
| 4255.25        | 47.38             | -16.15         | 74.00             | 26.62          | 150            | 189          | Vertical | PK       |

END