




# TEST REPORT

## FCC ID: FU5AN189

|   |   |   |
|---|---|---|
| Product Name  | : | In Wall On/Off Module   |
| Model Name  | : | AN189-1   |
| Brand Name  | : | <br>EVERSPRING<br><i>Smarter. Safer. Greener.</i> |
| Report No.  | : | PTC19011800705E-FC01  |
| <b>Prepared for</b>   |   |   |
| Everspring Industry Co., Ltd  |   |   |
| 3F., No.50, Sec. 1, Zhonghua Rd., Tucheng Dist., New Taipei City 236, Taiwan (R.O.C.)   |   |   |
| <b>Prepared by</b>  |   |   |
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|   |   |   |



## 1TEST RESULT CERTIFICATION

Applicant's name : Everspring Industry Co., Ltd  
Address : 3F., No.50, Sec. 1, Zhonghua Rd., Tucheng Dist., New Taipei City  
236, Taiwan (R.O.C.)  
Manufacture's name : Everspring Industry Co., Ltd  
Address : 3F., No.50, Sec. 1, Zhonghua Rd., Tucheng Dist., New Taipei City  
236, Taiwan (R.O.C.)  
Product name : In Wall On/Off Module  
Model name : AN189-1  
Standards : FCC CFR47 Part 15 Section 15.249 (Part 15C)  
Test procedure : ANSI C63.10: 2013  
Test Date : Mar 01, 2019 to Mar 30, 2019  
Date of Issue : Apr 17, 2019  
Test Result : Pass

This device described above has been tested by PTC, and the test results show that the equipment under test (EUT) is in compliance with the requirements. And it is applicable only to the tested sample identified in the report.

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Test Engineer:

Handwritten signature of Leo Yang in black ink.

Leo Yang / Engineer

Technical Manager:

Handwritten signature of Chris Du in black ink.

Chris Du / Manager



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## 2 Test Summary

| Test Items                              | Test Requirement       | Result |
|---|------------------------|--------|
| AC Power Conducted Emission             | 15.207                 | PASS   |
| 20dB Bandwidth                          | 15.215(c)              | PASS   |
| Band edge                               | 15.249(d)              | PASS   |
| Field Strength of Fundamental Emissions | 15.249(a)<br>15.249(c) | PASS   |
| Radiated Spurious Emissions             | 15.205(a)<br>15.209(a) | PASS   |
| Antenna Requirement                     | 15.203                 | PASS   |



Report No.: PTC19011800705E-FC01

### **3 TEST FACILITY**

DongGuan Precise testing &Certification Corp. Ltd

Building D,Baoding Technology Park,Guangming Road2, Dongcheng District, Dongguan, Guangdong,  
China, Dongguan, 523129

FCC Registration Number: 790290

A2LA Certificate No.: 4408.01

IC Registration Number: 12191A-1



## 4 General Information

### 4.1 General Description of E.U.T.

|                     |   |                       |
|---------------------|---|-----------------------|
| Product Name        | : | In Wall On/Off Module |
| Model Name          | : | AN189-1               |
| Operating frequency | : | 923MHz                |
| Numbers of Channel  | : | 1                     |
| Antenna Type        | : | Internal Antenna      |
| Antenna Gain        | : | 0dBI                  |
| Type of Modulation  | : | FSK                   |
| Power supply        | : | AC 120V 60Hz          |



## 5 Equipment During Test

### 5.1 Equipments List

#### RF Conducted Test

| Name of Equipment   | Manufacturer | Model  | Serial No. | Characteristics | Calibration Due |
|---------------------|--------------|--------|------------|-----------------|-----------------|
| MXG Signal Analyzer | Agilent      | N9020A | MY56070279 | 10Hz-30GHz      | Sep.19, 2019    |
| Coaxial Cable       | CDS          | 79254  | 46107086   | 10Hz-30GHz      | Sep.19, 2019    |

Remark: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

#### Radiated Emissions

| Name of Equipment            | Manufacturer  | Model      | Serial No.   | Characteristics | Calibration Due |
|------------------------------|---------------|------------|--------------|-----------------|-----------------|
| EMI Test Receiver            | Rohde&Schwarz | ESCI       | 101417       | 9KHz-3GHz       | Sep.19, 2019    |
| Loop Antenna                 | Schwarzbeck   | FMZB 1519  | 012          | 9 KHz -30MHz    | Sep.19, 2019    |
| Bilog Antenna                | SCHWARZBECK   | VULB9160   | 9160-3355    | 25MHz-2GHz      | Sep.19, 2019    |
| Preamplifier (low frequency) | SCHWARZBECK   | BBV 9475   | 9745-0013    | 1MHz-1GHz       | Sep.19, 2019    |
| Cable                        | Schwarzbeck   | PLF-100    | 549489       | 9KHz-3GHz       | Sep.19, 2019    |
| Spectrum Analyzer            | Agilent       | E4407B     | MY45109572   | 9KHz-40GHz      | Sep.19, 2019    |
| Horn Antenna                 | SCHWARZBECK   | 9120D      | 9120D-1246   | 1GHz-18GHz      | Sep.19, 2019    |
| Power Amplifier              | LUNAR EM      | LNA1G18-40 | J10100000081 | 1GHz-26.5GHz    | Sep.19, 2019    |
| Horn Antenna                 | SCHWARZBECK   | BBHA 9170  | 9170-181     | 14GHz-40GHz     | Sep.25, 2019    |
| Amplifier                    | SCHWARZBECK   | BBV 9721   | 9721-205     | 18GHz-40GHz     | Sep.19, 2019    |
| Cable                        | H+S           | CBL-26     | N/A          | 1GHz-26.5GHz    | Sep.19, 2019    |
| RF Cable                     | R&S           | R204       | R21X         | 1GHz-40GHz      | Sep.19, 2019    |



Conducted Emissions

| <b>Name of Equipment</b> | <b>Manufacturer</b> | <b>Model</b> | <b>Serial No.</b> | <b>Characteristics</b> | <b>Calibration Due</b> |
|--------------------------|---------------------|--------------|-------------------|------------------------|------------------------|
| EMI Test Receiver        | Rohde&Schwarz       | ESCI         | 101417            | 9KHz-3GHz              | Sep.19, 2019           |
| Artificial Mains Network | Rohde&Schwarz       | L2-16B       | 000WX31025        | 9KHz-300MHz            | Sep.19, 2019           |
| Artificial Mains Network | Rohde&Schwarz       | ENV216       | 101342            | 9KHz-300MHz            | Sep.19, 2019           |





## 5.2 Measurement Uncertainty

| Parameter   | Uncertainty              |
|---|--------------------------|
| RF output power, conducted  | ±1.0dB                   |
| Power Spectral Density, conducted   | ±2.2dB                   |
| Radio Frequency   | ± 1 x 10 <sup>-6</sup>   |
| Bandwidth   | ± 1.5 x 10 <sup>-6</sup> |
| Time  | ±2%                      |
| Duty Cycle  | ±2%                      |
| Temperature   | ±1°C                     |
| Humidity  | ±5%                      |
| DC and low frequency voltages   | ±3%                      |
| Conducted Emissions (150kHz~30MHz)  | ±3.64dB                  |
| Radiated Emission(30MHz~1GHz)   | ±5.03dB                  |
| Radiated Emission(1GHz~25GHz)   | ±4.74dB                  |
| Remark: The coverage Factor (k=2), and measurement Uncertainty for a level of Confidence of 95% |                          |



### 5.3 Description of Support Units

| Equipment | Model No. | Series No. |
|-----------|-----------|------------|
| N/A       | N/A       | N/A        |



## 6 Conducted Emission

Test Requirement: : FCC CFR 47 Part 15 Section 15.207  
Test Method: : ANSI C63.10:2013  
Test Result: : PASS  
Frequency Range: : 150kHz to 30MHz  
Class/Severity: : Class B  
Detector: : Peak for pre-scan (9kHz Resolution Bandwidth)

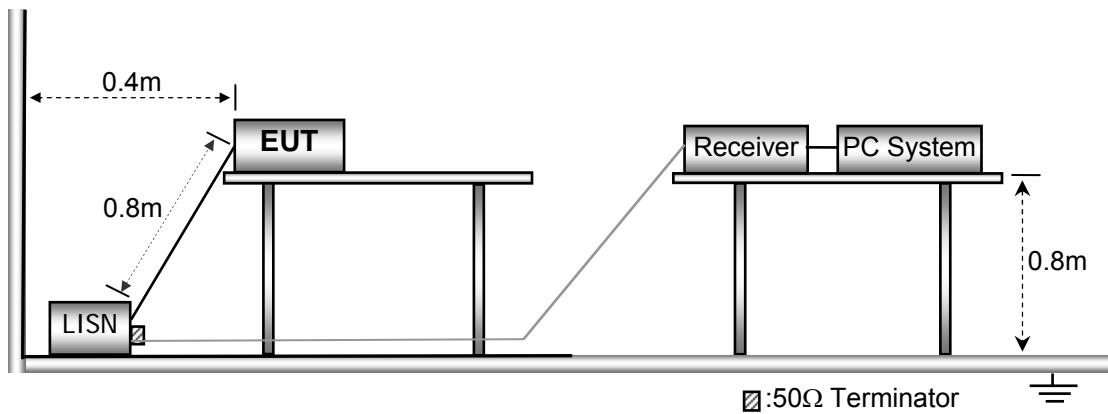
### 6.1 E.U.T. Operation

Operating Environment :

Temperature: : 25.5 °C  
Humidity: : 51 % RH  
Atmospheric Pressure: : 101.2kPa

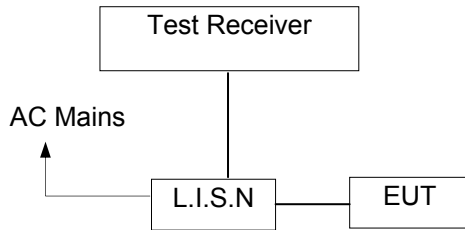
### 6.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10: 2013.





### 6.3 Test SET-UP (Block Diagram of Configuration)



### 6.4 Measurement Procedure:

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured was complete.

### 6.5 Conducted Emission Limit

#### Conducted Emission

| Frequency(MHz) | Quasi-peak | Average |
|----------------|------------|---------|
| 0.15-0.5       | 66-56      | 56-46   |
| 0.5-5.0        | 56         | 46      |
| 5.0-30.0       | 60         | 50      |

#### Note:

1. The lower limit shall apply at the transition frequencies
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

### 6.6 Measurement Description

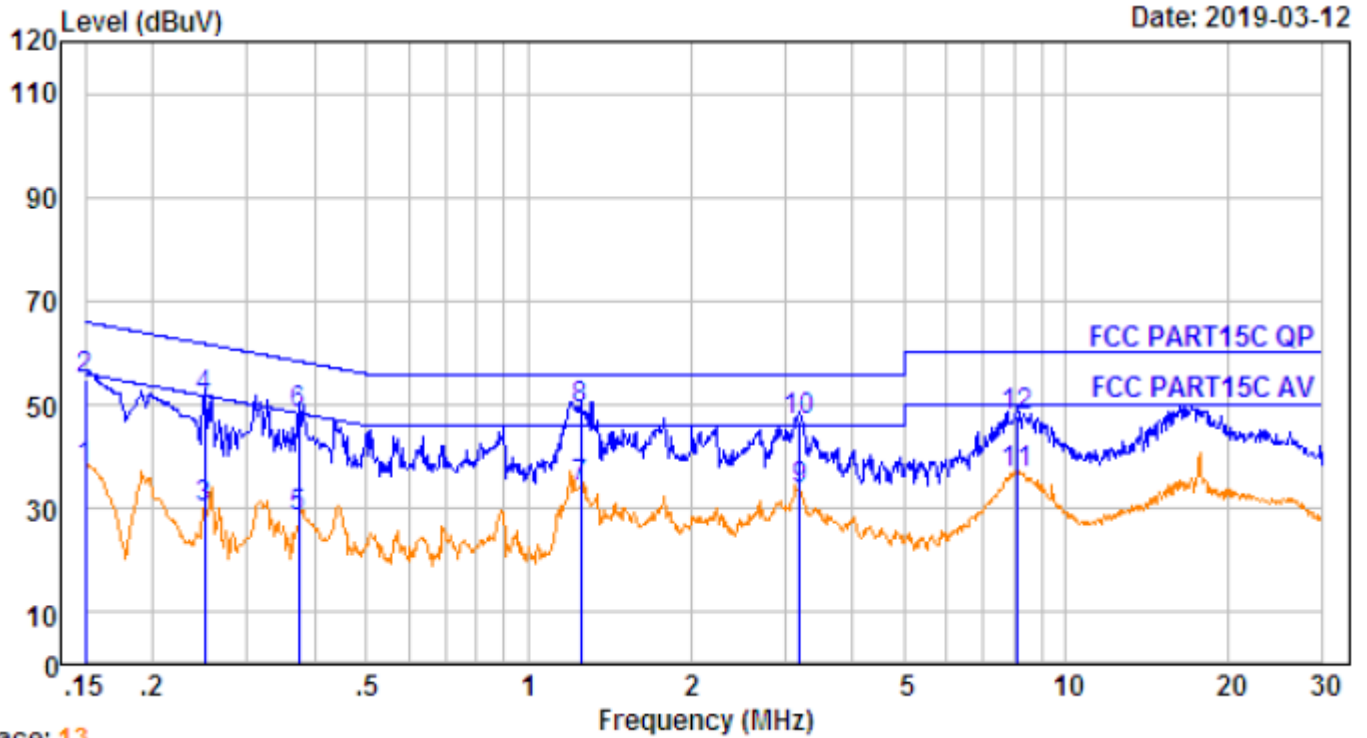
The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

### 6.7 Conducted Emission Test Result

|                 |           |             |             |
|-----------------|-----------|-------------|-------------|
| Operation Mode: | TX 923MHz | Test Data : | Mar 12,2019 |
| Test Result:    | Pass      | Test By :   | LSM         |



Line -120V/60Hz:



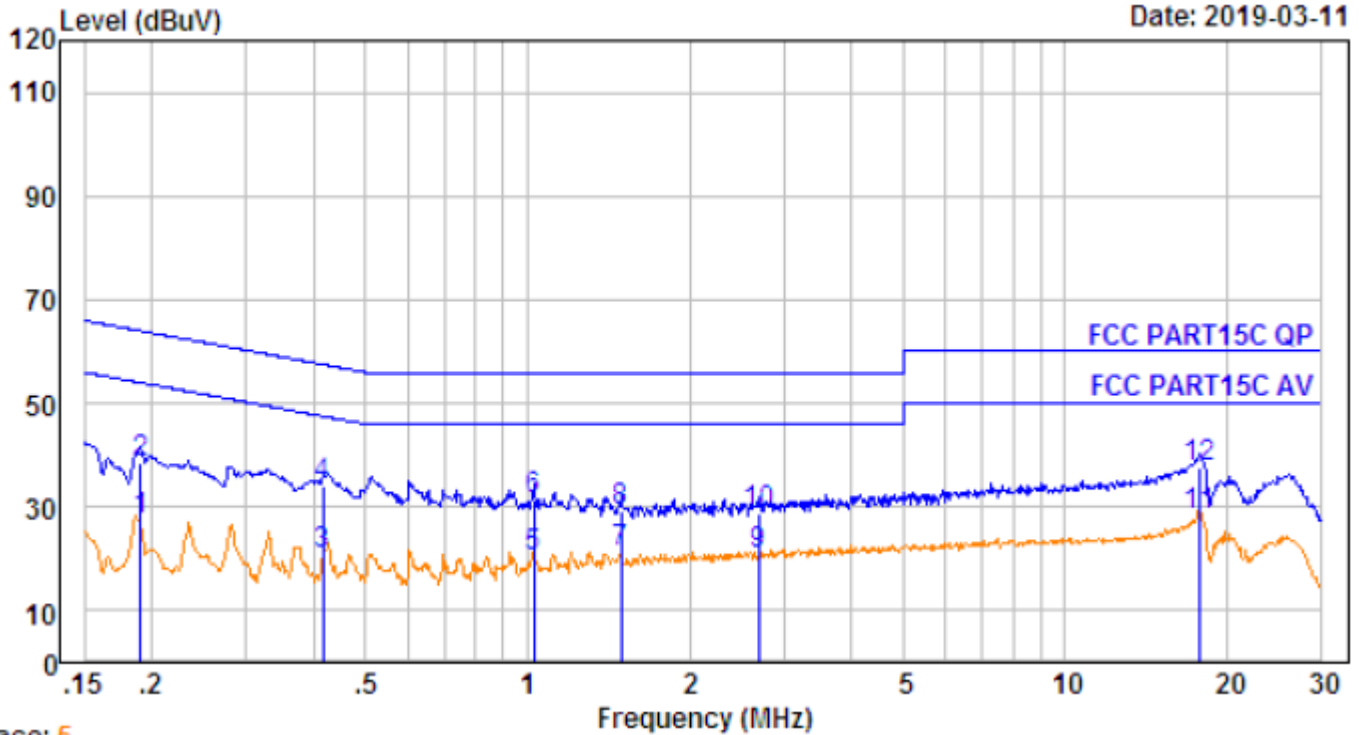
Trace: 13

| No. | Freq MHz | Cable Loss dB | AMN Factor dB | Receiver Reading dBUV | Emission Level dBUV | Limit dBUV | Over Limit dB | Remark  |
|-----|----------|---------------|---------------|-----------------------|---------------------|------------|---------------|---------|
| 1.  | 0.190    | 0.27          | 9.57          | 15.84                 | 25.68               | 54.02      | -28.34        | Average |
| 2.  | 0.190    | 0.27          | 9.57          | 28.88                 | 38.72               | 64.02      | -25.30        | QP      |
| 3.  | 0.277    | 0.35          | 9.66          | 13.96                 | 23.97               | 50.90      | -26.93        | Average |
| 4.  | 0.277    | 0.35          | 9.66          | 25.99                 | 36.00               | 60.90      | -24.90        | QP      |
| 5.  | 0.510    | 0.43          | 9.78          | 11.50                 | 21.71               | 46.00      | -24.29        | Average |
| 6.  | 0.510    | 0.43          | 9.78          | 23.47                 | 33.68               | 56.00      | -22.32        | QP      |
| 7.  | 1.037    | 0.46          | 9.82          | 10.69                 | 20.97               | 46.00      | -25.03        | Average |
| 8.  | 1.037    | 0.46          | 9.82          | 21.66                 | 31.94               | 56.00      | -24.06        | QP      |
| 9.  | 6.153    | 0.53          | 9.96          | 12.48                 | 22.97               | 50.00      | -27.03        | Average |
| 10. | 6.153    | 0.53          | 9.96          | 19.45                 | 29.94               | 60.00      | -30.06        | QP      |
| 11. | 17.849   | 0.46          | 9.91          | 17.25                 | 27.62               | 50.00      | -22.38        | Average |
| 12. | 17.849   | 0.46          | 9.91          | 26.28                 | 36.65               | 60.00      | -23.35        | QP      |



Neutral -120V/60Hz:

Date: 2019-03-11



Trace: 5

| No. | Freq MHz | Cable Loss dB | AMN Factor dB | Receiver Reading dBUV | Emission Level dBUV | Limit dBUV | Over Limit dB | Remark  |
|-----|----------|---------------|---------------|-----------------------|---------------------|------------|---------------|---------|
| 1.  | 0.190    | 0.27          | 9.60          | 17.55                 | 27.42               | 54.02      | -26.60        | Average |
| 2.  | 0.190    | 0.27          | 9.60          | 28.58                 | 38.45               | 64.02      | -25.57        | QP      |
| 3.  | 0.417    | 0.41          | 9.77          | 10.70                 | 20.88               | 47.51      | -26.63        | Average |
| 4.  | 0.417    | 0.41          | 9.77          | 23.75                 | 33.93               | 57.51      | -23.58        | QP      |
| 5.  | 1.027    | 0.46          | 9.85          | 10.15                 | 20.46               | 46.00      | -25.54        | Average |
| 6.  | 1.027    | 0.46          | 9.85          | 21.18                 | 31.49               | 56.00      | -24.51        | QP      |
| 7.  | 1.495    | 0.47          | 9.87          | 11.06                 | 21.40               | 46.00      | -24.60        | Average |
| 8.  | 1.495    | 0.47          | 9.87          | 19.09                 | 29.43               | 56.00      | -26.57        | QP      |
| 9.  | 2.692    | 0.47          | 9.91          | 10.34                 | 20.72               | 46.00      | -25.28        | Average |
| 10. | 2.692    | 0.47          | 9.91          | 18.38                 | 28.76               | 56.00      | -27.24        | QP      |
| 11. | 17.849   | 0.46          | 10.01         | 18.01                 | 28.48               | 50.00      | -21.52        | Average |
| 12. | 17.849   | 0.46          | 10.01         | 27.04                 | 37.51               | 60.00      | -22.49        | QP      |



## 7 Field Strength of Fundamental Emission and Radiated Spurious Emissions

Test Requirement: : FCC Part C section 15.205 & 15.209 & 15.249  
 Test Method: : ANSI C63.10: 2013  
 Test Result: : PASS  
 Measurement Distance: : 3m  
 Limit: : See the follow table  
 15.209 limit:

| Frequency (MHz) | Field Strength |              | Field Strength Limit at 3m Measurement Dist |                                      |
|-----------------|----------------|--------------|---|--------------------------------------|
|                 | uV/m           | Distance (m) | uV/m  | dBuV/m                               |
| 0.009 ~ 0.490   | 2400/F(kHz)    | 300          | 10000 * 2400/F(kHz)                         | 20log <sup>(2400/F(kHz))</sup> + 80  |
| 0.490 ~ 1.705   | 24000/F(kHz)   | 30           | 100 * 24000/F(kHz)                          | 20log <sup>(24000/F(kHz))</sup> + 40 |
| 1.705 ~ 30      | 30             | 30           | 100 * 30                                    | 20log <sup>(30)</sup> + 40           |
| 30 ~ 88         | 100            | 3            | 100   | 20log <sup>(100)</sup>               |
| 88 ~ 216        | 150            | 3            | 150   | 20log <sup>(150)</sup>               |
| 216 ~ 960       | 200            | 3            | 200   | 20log <sup>(200)</sup>               |
| Above 960       | 500            | 3            | 500   | 20log <sup>(500)</sup>               |

Note: 1. Emission level in dBuV/m=20 log (uV/m)

2. Measurement was performed at an antenna to the closed point of EUT distance of meters.

The field strength of emission from intentional radiators operated within these frequency bands shall comply with the following:

15.249(a) Limit:

| Fundamental Frequency (MHz) | Field strength of fundamental |        | Field strength of harmonics |        |
|-----------------------------|-------------------------------|--------|-----------------------------|--------|
|                             | mV/m                          | dBuV/m | uV/m                        | dBuV/m |
| 902-928                     | 50                            | 94     | 500                         | 54     |
| 2400-2483.5                 | 50                            | 94     | 500                         | 54     |
| 5725-5875                   | 50                            | 94     | 500                         | 54     |
| 24000-24250                 | 250                           | 108    | 2500                        | 68     |

### 7.1 EUT Operation

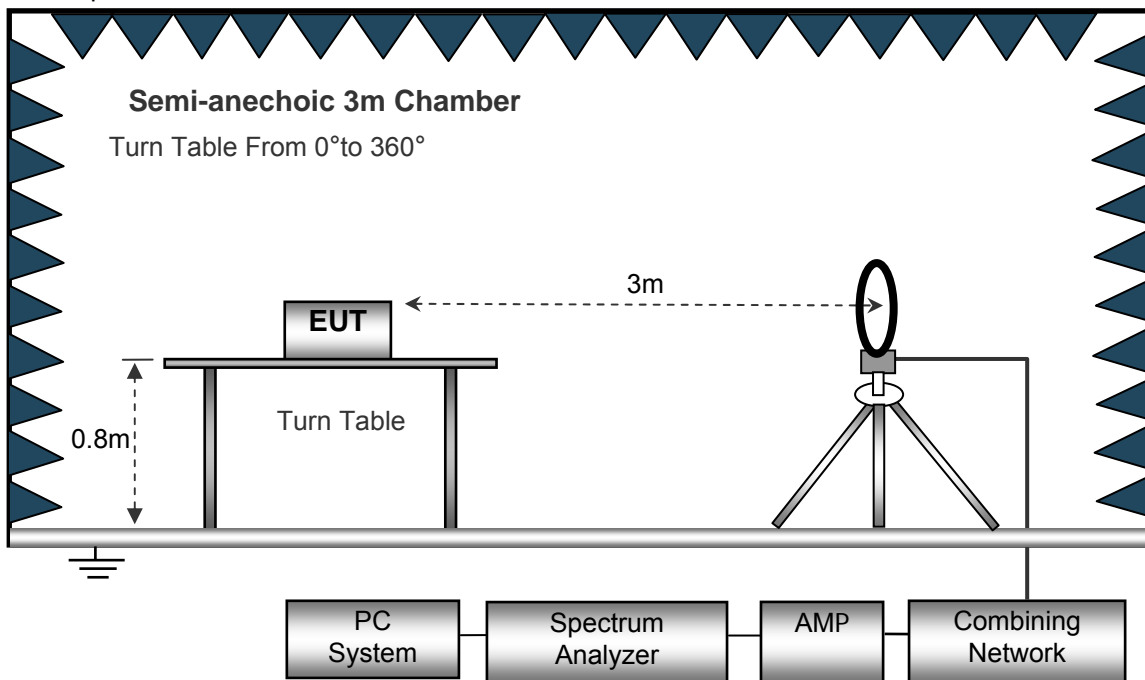
Operating Environment :

- Temperature: : 23.5 °C
- Humidity: : 51.1 % RH
- Atmospheric Pressure: : 101.2kPa
- Test Voltage : 120V

### 7.2 Test Setup

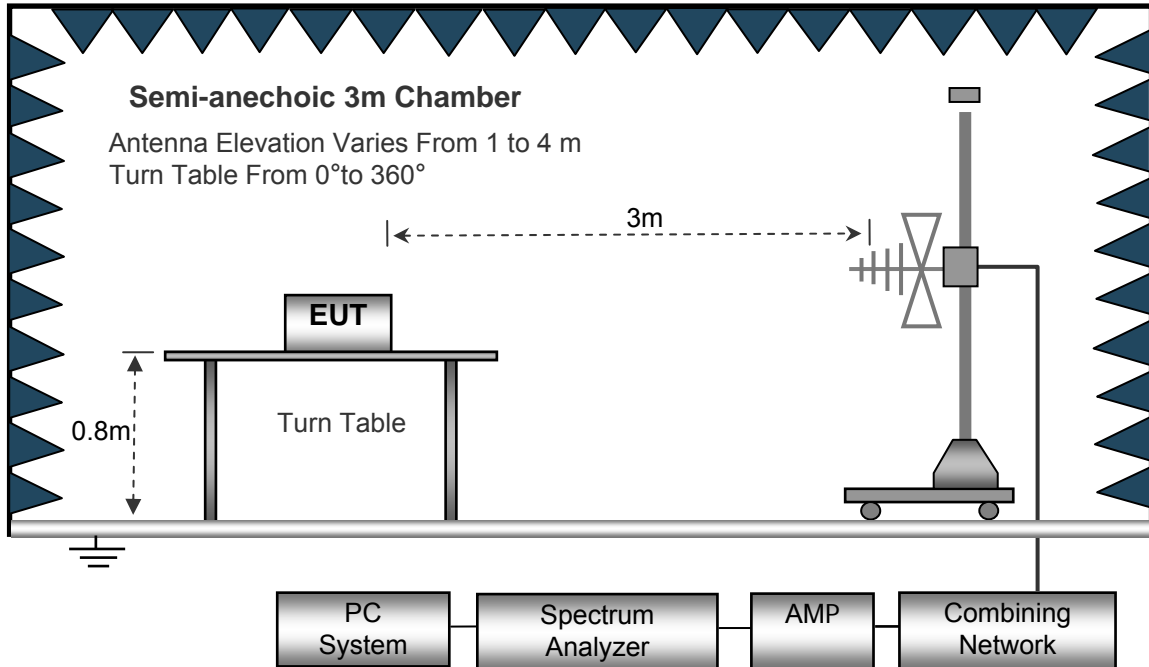
The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site

The test setup for emission measurement below 30MHz.

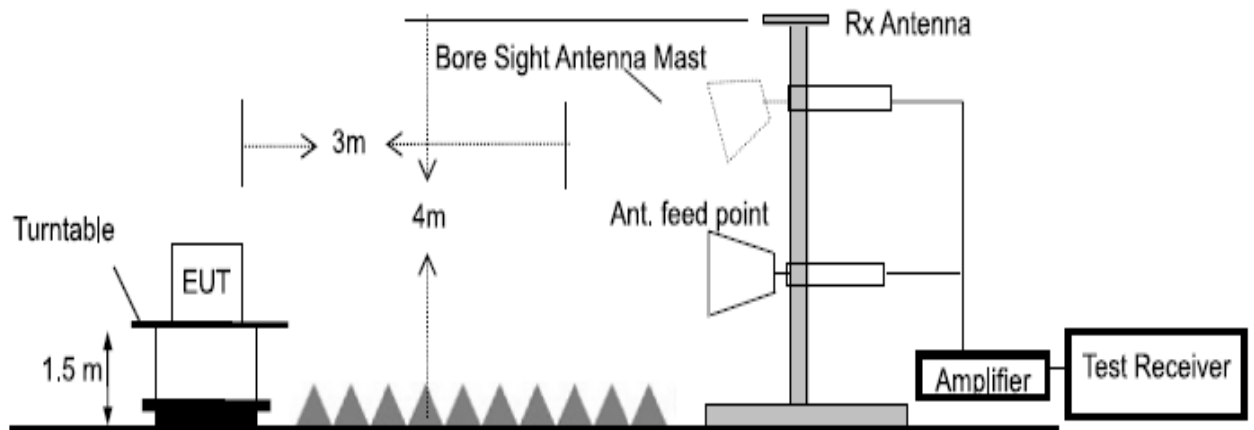




The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.





### 7.3 Spectrum Analyzer Setup

|                | Frequency    | Detector   | RBW    | VBW    | Remark           |
|----------------|--------------|------------|--------|--------|------------------|
| Receiver Setup | Below 30MHz  | --         | 10kHz  | 10kHz  | --               |
|                | 30MHz ~ 1GHz | Quasi-peak | 120kHz | 300kHz | Quasi-peak Value |
|                | Above 1GHz   | Peak       | 1MHz   | 3MHz   | Peak Value       |
|                |              | RMS        | 1MHz   | 3MHz   | Average Value    |

### 7.4 Test Procedure

1. The testing follows the guidelines in Spurious Radiated Emissions of ANSI C63.10-2013.
2. Below 1000MHz, The EUT was placed on a turn table which is 0.8m above ground plane. And above 1000MHz, The EUT was placed on a styrofoam table which is 1.5m above ground plane.
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. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (From 1m to 4m) and turntable (from 0 degree to 360 degree) 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 to comply with the guidelines.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. Final measurement (Above 1GHz): The frequency range will be divided into different sub ranges depending of the frequency range of the used horn antenna. The EMI Receiver set to peak and average mode and a resolution bandwidth of 1MHz. The measurement will be performed in horizontal and vertical polarization of the measuring antenna and while rotating the EUT in its vertical axis in the range of 0 degree to 360 degree in order to have the antenna inside the cone of radiation.
7. Test Procedure of measurement (For Above 1GHz):
  - 1) Monitor the frequency range at horizontal polarization and move the antenna over all sides of the EUT(if necessary move the EUT to another orthogonal axis).
  - 2) Change the antenna polarization and repeat 1) with vertical polarization.
  - 3) Make a hardcopy of the spectrum.
  - 4) Measure the frequency of the detected emissions with a lower span and resolution bandwidth to increase the accuracy and note the frequency value.
  - 5) Change the analyser mode to Clear/ Write and found the cone of emission.
  - 6) Rotate and move the EUT, so that the measuring distance can be enlarged to 3m and the antenna will be still inside the cone of emission.



- 7) Measure the level of the detected frequency with the correct resolution bandwidth, with the antenna polarization and azimuth and the peak and average detector, which causes the maximum emission.
- 8) Repeat steps 1) to 7) for the next antenna spot if the EUT is larger than the antenna beamwidth.
- 8. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.

**7.5 Summary of Test Results**

|                 |           |             |            |
|-----------------|-----------|-------------|------------|
| Operation Mode: | TX 923MHz | Test Data : | Mar 6,2019 |
| Test Result:    | Pass      | Test By :   | LJM        |

**Test Frequency: 9KHz-30MHz**

| Freq.<br>(MHz) | Ant.Pol.<br>H/V | Emission Level<br>(dBuV/m) | Limit 3m<br>(dBuV/m) | Over<br>(dB) |
|----------------|-----------------|----------------------------|----------------------|--------------|
| --             | --              | --                         | --                   | >20          |

Note:

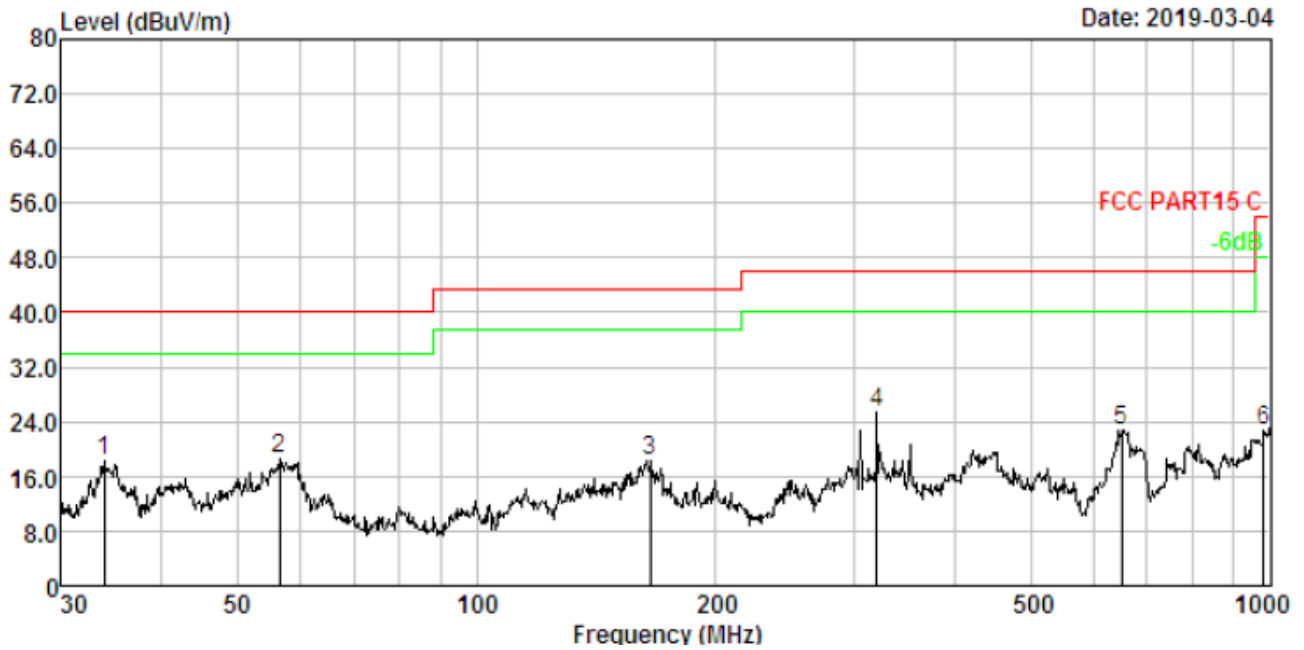
The amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

Distance extrapolation factor = $40\log(\text{Specific distance/ test distance})$ ( dB);  
 Limit line=Specific limits(dBuV) + distance extrapolation factor.

**Test Frequency: 30MHz ~ 1GHz**



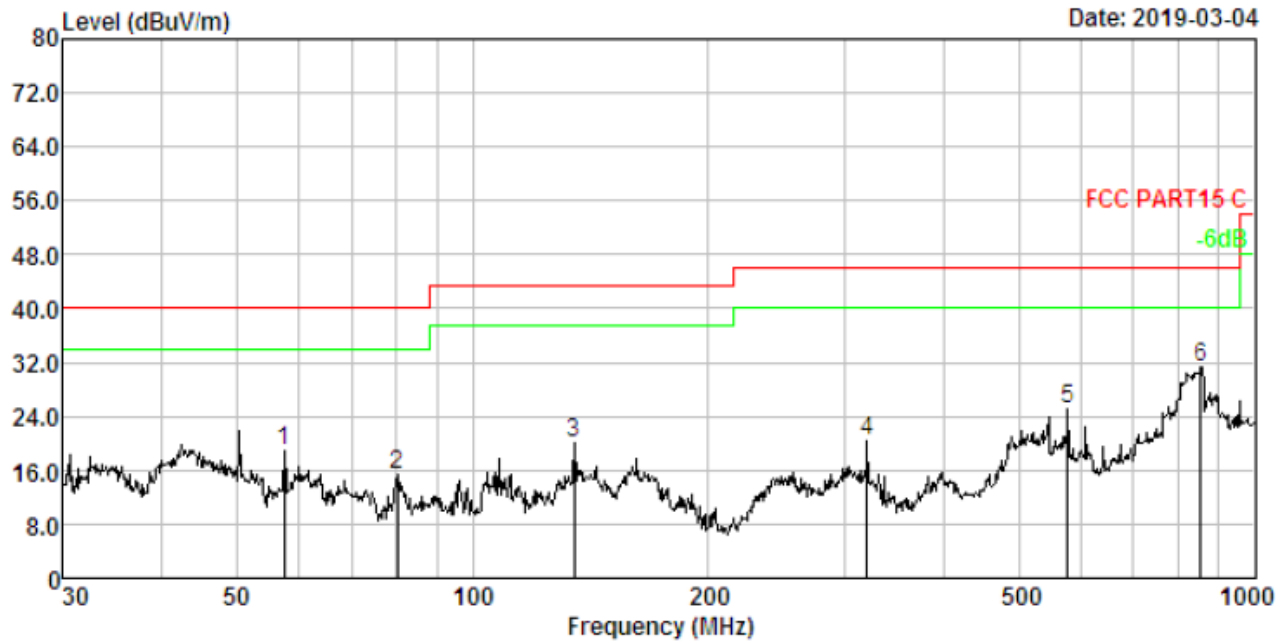
Test plot for Horizontal: FSK (TX 923.0MHz)



| No. | Freq MHz | Cable Loss dB | ANT Factor dB/m | Receiver Reading dBUV | Preamp Factor dB | Emission Level dBUV/m | Limit dBUV/m | Over Limit dB | Remark |
|-----|----------|---------------|-----------------|-----------------------|------------------|-----------------------|--------------|---------------|--------|
| 1.  | 33.917   | 1.17          | 13.32           | 33.70                 | 30.01            | 18.18                 | 40.00        | -21.82        | QP     |
| 2.  | 56.395   | 1.63          | 11.98           | 35.09                 | 30.19            | 18.51                 | 40.00        | -21.49        | QP     |
| 3.  | 165.487  | 2.60          | 13.57           | 32.63                 | 30.56            | 18.24                 | 43.50        | -25.26        | QP     |
| 4.  | 319.937  | 3.20          | 13.65           | 39.37                 | 30.79            | 25.43                 | 46.00        | -20.57        | QP     |
| 5.  | 649.660  | 3.84          | 19.59           | 30.45                 | 31.04            | 22.84                 | 46.00        | -23.16        | QP     |
| 6.  | 982.620  | 4.21          | 23.43           | 26.32                 | 31.18            | 22.78                 | 54.00        | -31.22        | QP     |



Test plot for Vertical: FSK (TX 923.0MHz)



| No. | Freq MHz | Cable Loss dB | ANT Factor dB/m | Receiver Reading dBuV | Preamp Factor dB | Emission Level dBuV/m | Limit dBuV/m | Over Limit dB | Remark |
|-----|----------|---------------|-----------------|-----------------------|------------------|-----------------------|--------------|---------------|--------|
| 1.  | 57.392   | 1.64          | 12.03           | 35.49                 | 30.20            | 18.96                 | 40.00        | -21.04        | QP     |
| 2.  | 80.081   | 1.94          | 8.77            | 34.98                 | 30.31            | 15.38                 | 40.00        | -24.62        | QP     |
| 3.  | 135.032  | 2.42          | 13.00           | 35.00                 | 30.49            | 19.93                 | 43.50        | -23.57        | QP     |
| 4.  | 319.937  | 3.20          | 13.65           | 34.42                 | 30.79            | 20.48                 | 46.00        | -25.52        | QP     |
| 5.  | 576.644  | 3.73          | 18.55           | 33.89                 | 31.00            | 25.17                 | 46.00        | -20.83        | QP     |
| 6.  | 854.025  | 4.09          | 22.06           | 36.28                 | 31.14            | 31.29                 | 46.00        | -14.71        | QP     |



**Test Frequency 1GHz-10GHz:**

| Freq.<br>(MHz) | Ant.Pol.<br>H/V | Emission<br>Level(dBuV/m) |       | Limit 3m(dBuV/m) |       | Margin(dB) |        |
|----------------|-----------------|---------------------------|-------|------------------|-------|------------|--------|
|                |                 | PK                        | AV    | PK               | AV    | PK         | AV     |
| 1846.0         | V               | 56.23                     | 44.98 | 74.00            | 54.00 | -17.77     | -9.02  |
| 2769.0         | V               | 55.11                     | 43.56 | 74.00            | 54.00 | -18.89     | -10.44 |
| 3692.0         | V               | 53.79                     | 42.45 | 74.00            | 54.00 | -20.21     | -11.55 |
| 4615.0         | V               | 50.42                     | 40.26 | 74.00            | 54.00 | -23.58     | -13.74 |
| 5538.0         | V               | 52.88                     | 41.77 | 74.00            | 54.00 | -21.12     | -12.23 |
| 1846.0         | H               | 51.91                     | 40.34 | 74.00            | 54.00 | -22.09     | -13.66 |
| 2769.0         | H               | 52.08                     | 42.10 | 74.00            | 54.00 | -21.92     | -11.90 |
| 3692.0         | H               | 51.45                     | 41.76 | 74.00            | 54.00 | -22.55     | -12.24 |
| 4615.0         | H               | 51.17                     | 40.57 | 74.00            | 54.00 | -22.83     | -13.43 |
| 5538.0         | H               | 50.89                     | 39.89 | 74.00            | 54.00 | -23.11     | -14.11 |

Remark:

1. Margin= Emission Level - Limit
2. "\*" means the test results were attenuated more than 20dB below the permissible limits, so the results don't record in the report.



## 8 20 dB Bandwidth Measurement

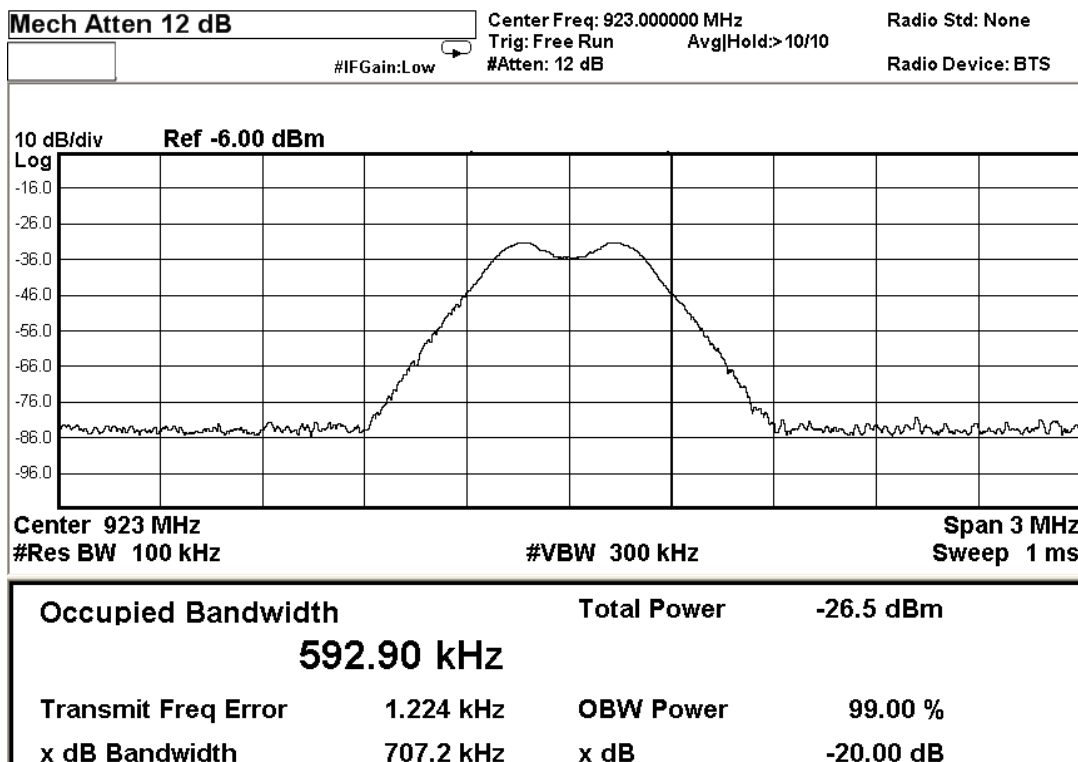
Test Method : ANSI C63.10: 2013

### 8.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz

### 8.2 Test Result

| Channel frequency (MHz) | 20dB Down BW(KHz) |
|-------------------------|-------------------|
| 923                     | 707.2KHz          |





## 9 Band edges Requirement

|                   |   |
|-------------------|---|
| Test Requirement: | FCC Part 15 C section 15.249(d)<br><br>(d) Emission radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in 15.209, whichever is the lesser attenuation. |
| Test Method:      | ANSI C63.10: Clause 6.10  |
| Test Status:      | Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports(if EUT with antenna diversity architecture). The lowest, middle and highest channels were selected for the final test as listed below.  |

### 9.1 Test Result

#### Fundamental and Band edges and Harmonics Result

|                 |           |             |              |
|-----------------|-----------|-------------|--------------|
| Operation Mode: | TX 923MHz | Test Data : | Mar 14, 2019 |
| Test Result:    | Pass      | Test By :   | LJM          |

| Frequency | Emission Level | Limit          | Margin | Ant. Polar | Detector |
|-----------|----------------|----------------|--------|------------|----------|
| (MHz)     | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)   | H/V        |          |
| 923.0     | 84.69          | 94             | -9.31  | H          | QP       |
| 923.0     | 86.92          | 94             | -7.08  | V          | QP       |
| 902.0     | 26.32          | 46             | -19.68 | V          | QP       |
| 928.0     | 25.97          | 46             | -20.03 | V          | QP       |





## 10 Antenna Requirement

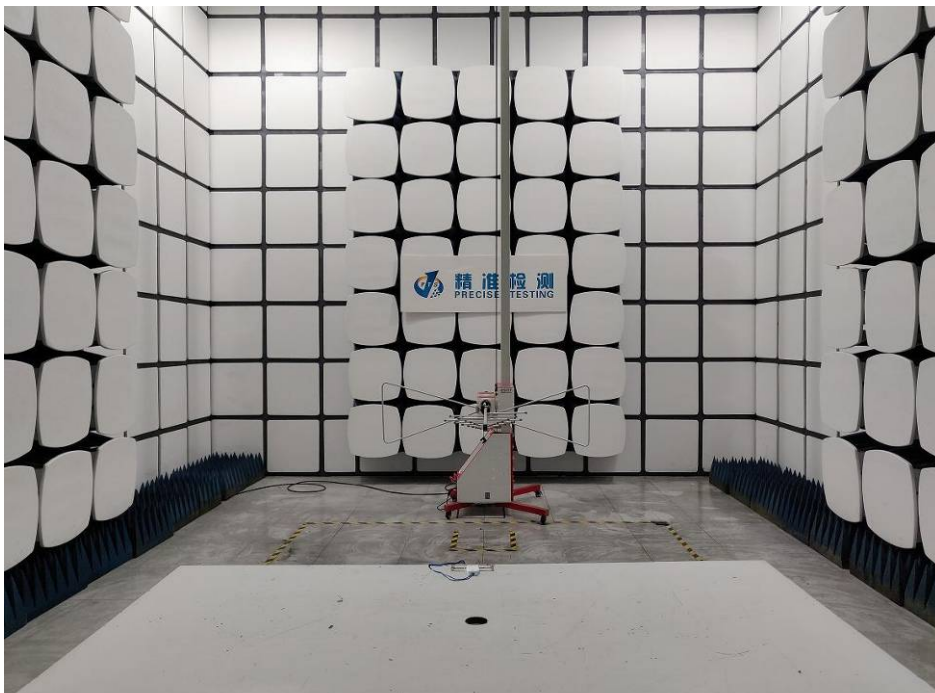
The antenna is permanently attached on PCB, no consideration of replacement. Please refer to internal Photos for details.

## 11 TEST PHOTOS

Conducted Emissions

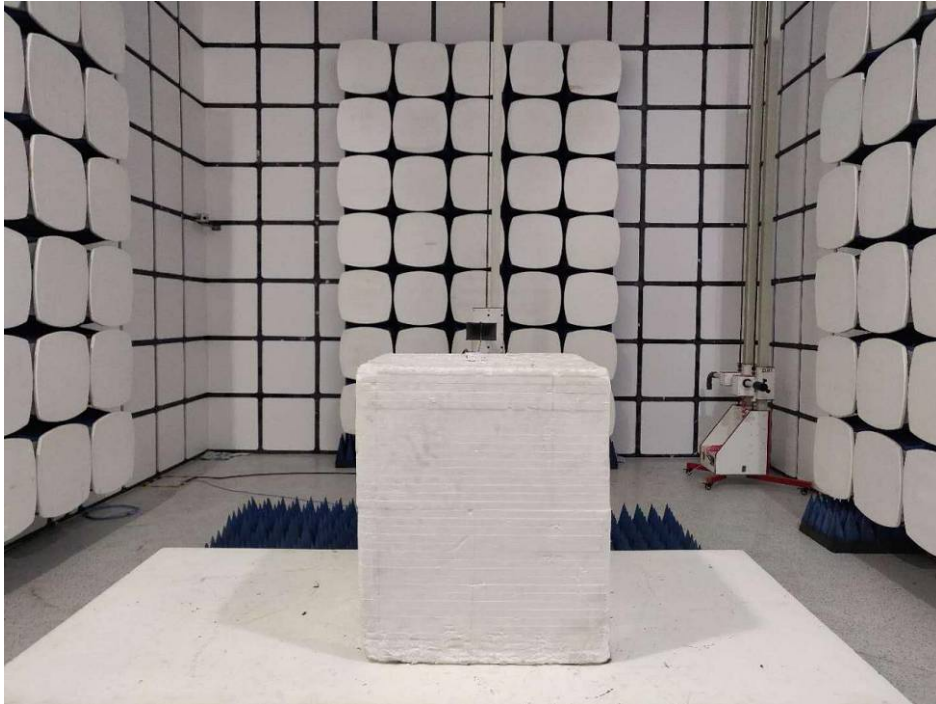


Radiated Spurious Emissions From 30MHz-1000MHz





Test frequency Above 1G







### 12 EUT PHOTOS



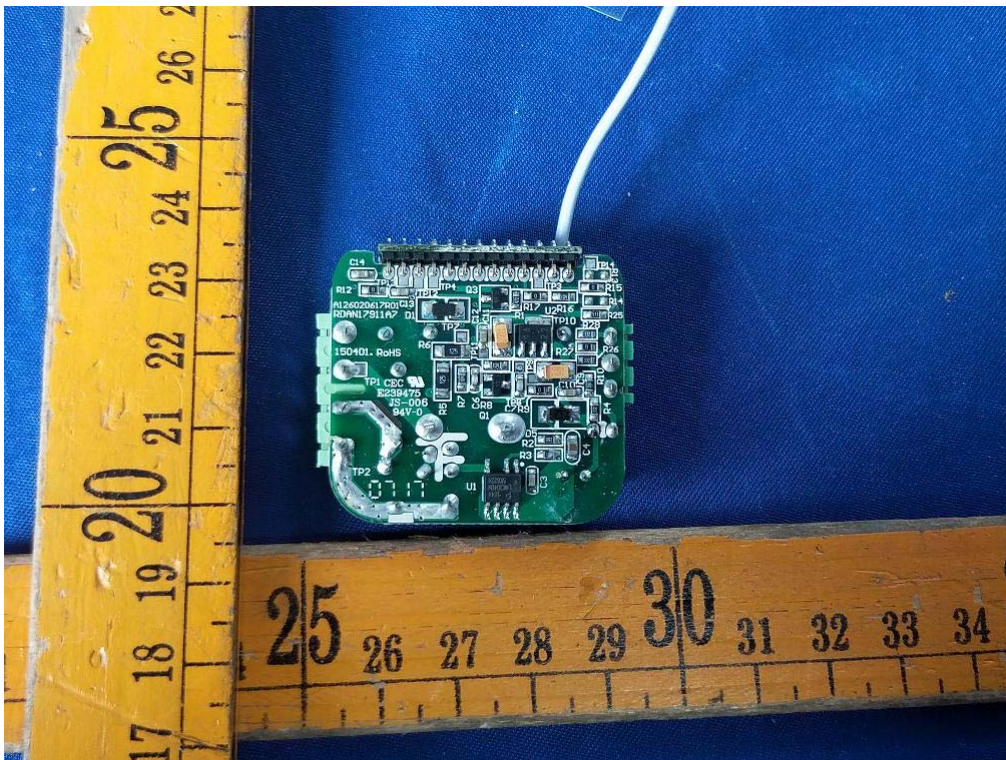
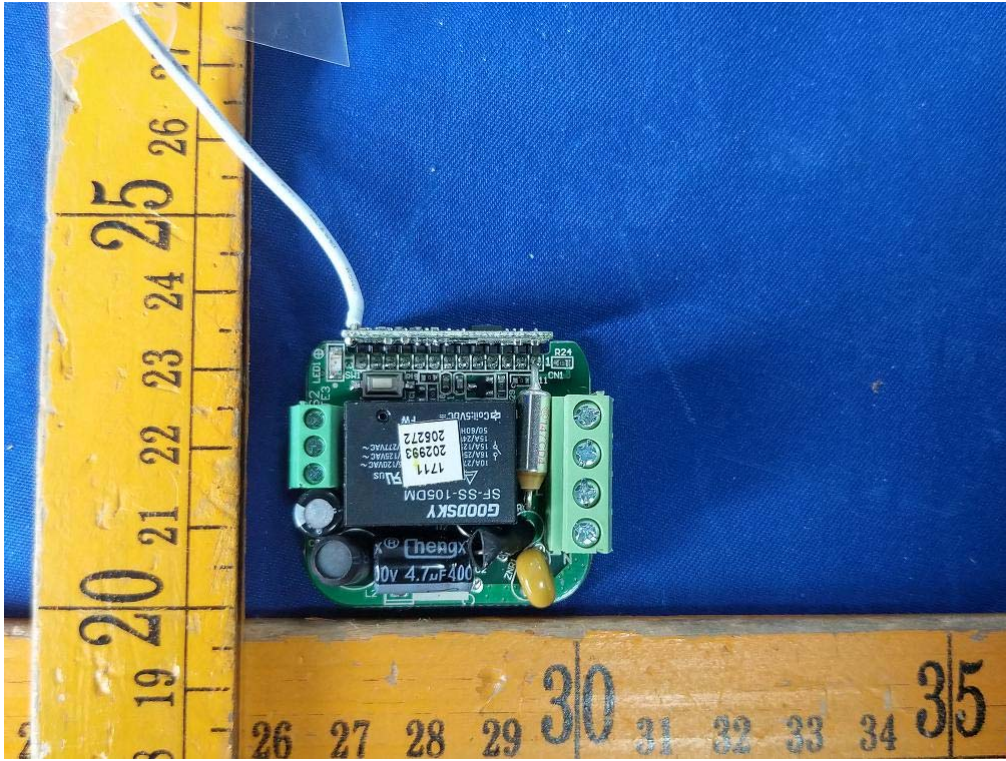














\*\*\*\*\*THE END REPORT\*\*\*\*\*