

# FCC REPORT

**Applicant:** Autel Intelligent Tech. Corp., Ltd.

**Address of Applicant:** 6th - 10th Floor, Bldg. B1, Zhiyuan, Xueyuan Rd., Xili, Nanshan, Shenzhen, China

**Equipment Under Test (EUT)**

Product Name: TPMS diagnostic and service tool

Model No.: MaxiTPMS TS601, MaxiTPMS TS501

Trade Mark: AUTEL

**FCC ID:** WQ82016501601

**Applicable standards:** FCC CFR Title 47 Part 15 Subpart C:2015

**Date of sample receipt:** September 09, 2016

**Date of Test:** September 10-14, 2016

**Date of report issued:** September 18, 2016

**Test Result :** PASS \*

\* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



**Robinson Lo**

**Laboratory Manager**

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the GTS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

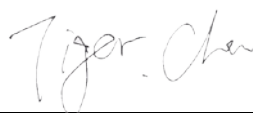
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## 2 Version

| Version No. | Date               | Description |
|-------------|--------------------|-------------|
| 00          | September 18, 2016 | Original    |
|             |                    |             |
|             |                    |             |
|             |                    |             |
|             |                    |             |

Prepared By:

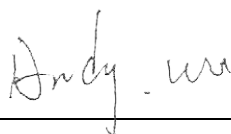


Date:

September 18, 2016

Project Engineer

Check By:



Date:

September 18, 2016

Reviewer

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## 4 Test Summary

| Test Item                        | Section in CFR 47 | Result |
|----------------------------------|-------------------|--------|
| Antenna requirement              | 15.203            | Pass   |
| AC Power Line Conducted Emission | 15.207            | Pass   |
| Radiated Emission                | 15.209            | Pass   |
| 20dB Bandwidth                   | 15.205            | Pass   |

*Pass: The EUT complies with the essential requirements in the standard.*

*Remark: Test according to ANSI C63.10 2013 and ANSI C63.4: 2014*

### 4.1 Measurement Uncertainty

| Test Item                        | Frequency Range | Measurement Uncertainty | Notes |
|----------------------------------|-----------------|-------------------------|-------|
| Radiated Emission                | 9kHz ~ 30MHz    | $\pm 4.34\text{dB}$     | (1)   |
| Radiated Emission                | 30MHz ~ 1000MHz | $\pm 4.24\text{dB}$     | (1)   |
| Radiated Emission                | 1GHz ~ 26.5GHz  | $\pm 4.68\text{dB}$     | (1)   |
| AC Power Line Conducted Emission | 0.15MHz ~ 30MHz | $\pm 3.45\text{dB}$     | (1)   |

Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

## 5 General Information

### 5.1 Client Information

|                                   |                                                                                  |
|-----------------------------------|----------------------------------------------------------------------------------|
| Applicant:                        | Autel Intelligent Tech. Corp., Ltd.                                              |
| Address of Applicant:             | 6th - 10th Floor, Bldg. B1, Zhiyuan, Xueyuan Rd., Xili, Nanshan, Shenzhen, China |
| Manufacturer/ Factory:            | Autel Intelligent Tech. Corp., Ltd.                                              |
| Address of Manufacturer/ Factory: | 6th - 10th Floor, Bldg. B1, Zhiyuan, Xueyuan Rd., Xili, Nanshan, Shenzhen, China |

### 5.2 General Description of EUT

|                      |                                                                                                                                                                         |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product Name:        | TPMS diagnostic and service tool                                                                                                                                        |
| Model No.:           | MaxiTPMS TS601, MaxiTPMS TS501                                                                                                                                          |
| Test model           | MaxiTPMS TS601                                                                                                                                                          |
| Remark:              | <i>All above models are identical in the same PCB layout, interior structure and electrical circuits. The only difference is the model name for commercial purpose.</i> |
| Operation Frequency: | 125KHz                                                                                                                                                                  |
| Modulation type:     | ASK                                                                                                                                                                     |
| Antenna Type:        | Integral antenna                                                                                                                                                        |
| Antenna gain:        | 0dBi (declared by manufacturer)                                                                                                                                         |
| Power supply:        | Adapter:<br>Model: HK-AR-050A200-US<br>Input: 100-240V, 50/60Hz, 0.35A<br>Output: 5V, 2.0A<br>or<br>DC 3.7V Li-ion Battery                                              |

Note:

In section 15.31(m), regards to the operating frequency range less than 1 MHz, only the middle frequency of channel was selected to perform the test, and the selected channel see below:

| Channel      | Frequency |
|--------------|-----------|
| Test channel | 125KHz    |

### 5.3 Test mode

|                   |                                                             |
|-------------------|-------------------------------------------------------------|
| Transmitting mode | Keep the EUT in continuously transmitting and charging mode |
|-------------------|-------------------------------------------------------------|

### 5.4 Description of Support Units

| Manufacturer | Description       | Model      | Serial Number | FCC Approval |
|--------------|-------------------|------------|---------------|--------------|
| GS           | Lead-Acid battery | S5D26R-MFZ | 9442804454    | N/A          |

### 5.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC —Registration No.: 600491**

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 600491, June 22, 2016.

- **Industry Canada (IC) —Registration No.: 9079A-2**

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-2, August 15, 2016.

### 5.6 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

Address: No. 301-309, 3/F., Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

Tel: 0755-27798480

Fax: 0755-27798960

### 5.7 Other Information Requested by the Customer

None.

## 6 Test Instruments list

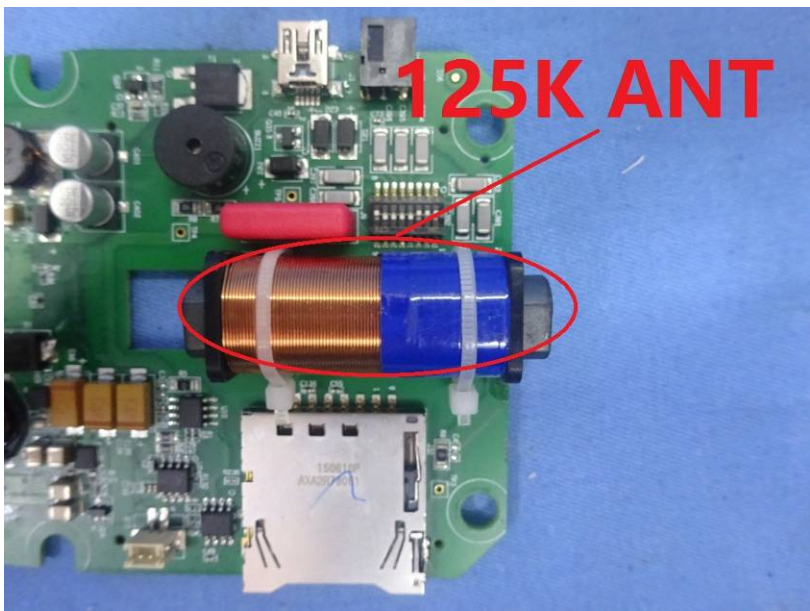
| Radiated Emission: |                               |                                |                             |               |                     |                         |
|--------------------|-------------------------------|--------------------------------|-----------------------------|---------------|---------------------|-------------------------|
| Item               | Test Equipment                | Manufacturer                   | Model No.                   | Inventory No. | Cal.Date (mm-dd-yy) | Cal.Due date (mm-dd-yy) |
| 1                  | 3m Semi- Anechoic Chamber     | ZhongYu Electron               | 9.0(L)*6.0(W)* 6.0(H)       | GTS250        | July. 03 2015       | July. 02 2020           |
| 2                  | Control Room                  | ZhongYu Electron               | 6.2(L)*2.5(W)* 2.4(H)       | GTS251        | N/A                 | N/A                     |
| 3                  | Spectrum Analyzer             | Agilent                        | E4440A                      | GTS533        | Jun. 29 2016        | Jun. 28 2017            |
| 4                  | EMI Test Receiver             | Rohde & Schwarz                | ESU26                       | GTS203        | Jun. 29 2016        | Jun. 28 2017            |
| 5                  | BiConiLog Antenna             | SCHWARZBECK<br>MESS-ELEKTRONIK | VULB9163                    | GTS214        | Jun. 29 2016        | Jun. 28 2017            |
| 6                  | Double -ridged waveguide horn | SCHWARZBECK<br>MESS-ELEKTRONIK | 9120D-829                   | GTS208        | Jun. 25 2016        | Jun. 24 2017            |
| 7                  | Horn Antenna                  | ETS-LINDGREN                   | 3160                        | GTS217        | Mar. 26 2016        | Mar. 25 2017            |
| 8                  | EMI Test Software             | AUDIX                          | E3                          | N/A           | N/A                 | N/A                     |
| 9                  | Coaxial Cable                 | GTS                            | N/A                         | GTS213        | Mar. 26 2016        | Mar. 25 2017            |
| 10                 | Coaxial Cable                 | GTS                            | N/A                         | GTS211        | Mar. 26 2016        | Mar. 25 2017            |
| 11                 | Coaxial cable                 | GTS                            | N/A                         | GTS210        | Mar. 26 2016        | Mar. 25 2017            |
| 12                 | Coaxial Cable                 | GTS                            | N/A                         | GTS212        | Mar. 26 2016        | Mar. 25 2017            |
| 13                 | Amplifier(100kHz-3GHz)        | HP                             | 8347A                       | GTS204        | Jun. 29 2016        | Jun. 28 2017            |
| 14                 | Amplifier(2GHz-20GHz)         | HP                             | 8349B                       | GTS206        | Jun. 29 2016        | Jun. 28 2017            |
| 15                 | Amplifier (18-26GHz)          | Rohde & Schwarz                | AFS33-18002<br>650-30-8P-44 | GTS218        | Jun. 25 2016        | Jun. 24 2017            |
| 16                 | Band filter                   | Amindeon                       | 82346                       | GTS219        | Mar. 26 2016        | Mar. 25 2017            |

| Conducted Emission: |                          |                     |                      |               |                     |                         |
|---------------------|--------------------------|---------------------|----------------------|---------------|---------------------|-------------------------|
| Item                | Test Equipment           | Manufacturer        | Model No.            | Inventory No. | Cal.Date (mm-dd-yy) | Cal.Due date (mm-dd-yy) |
| 1                   | Shielding Room           | ZhongYu Electron    | 7.3(L)x3.1(W)x2.9(H) | GTS252        | May.16 2014         | May.15 2019             |
| 2                   | EMI Test Receiver        | R&S                 | ESCI 7               | GTS552        | June. 29 2016       | June. 28 2017           |
| 3                   | Coaxial Switch           | ANRITSU CORP        | MP59B                | GTS225        | June. 29 2016       | June. 28 2017           |
| 4                   | Artificial Mains Network | SCHWARZBECK<br>MESS | NSLK8127             | GTS226        | June. 29 2016       | June. 28 2017           |
| 5                   | Coaxial Cable            | GTS                 | N/A                  | GTS227        | N/A                 | N/A                     |
| 6                   | EMI Test Software        | AUDIX               | E3                   | N/A           | N/A                 | N/A                     |
| 7                   | Thermo meter             | KTJ                 | TA328                | GTS233        | June. 29 2016       | June. 28 2017           |

| General used equipment: |                |              |           |               |                     |                         |
|-------------------------|----------------|--------------|-----------|---------------|---------------------|-------------------------|
| Item                    | Test Equipment | Manufacturer | Model No. | Inventory No. | Cal.Date (mm-dd-yy) | Cal.Due date (mm-dd-yy) |
| 1                       | Barometer      | ChangChun    | DYM3      | GTS257        | July 06 2016        | July 05 2017            |

## 7 Test results and Measurement Data

### 7.1 Antenna requirement:

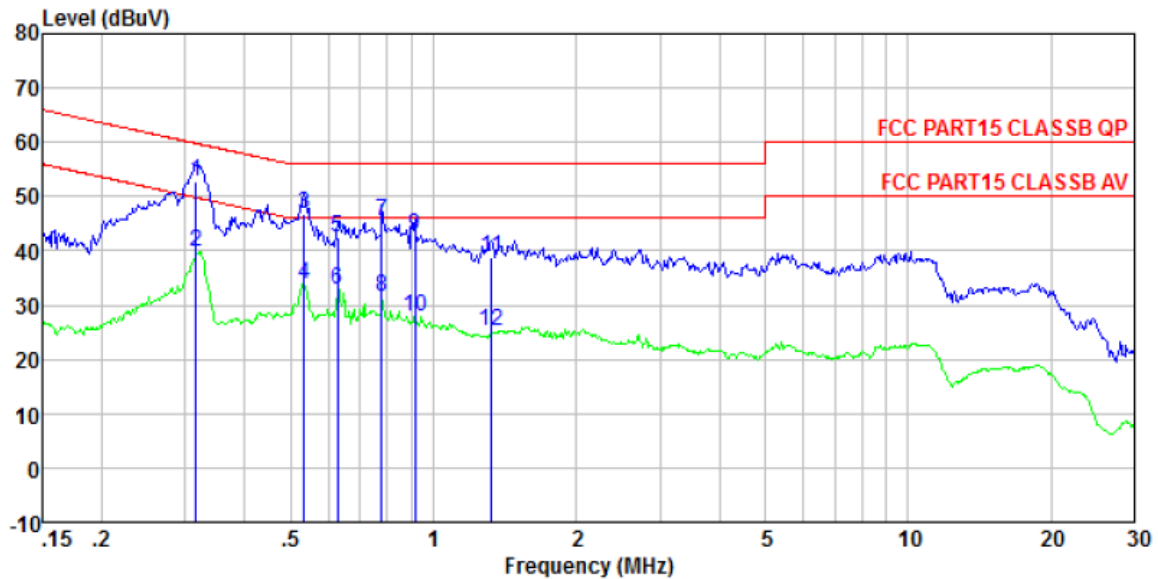
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| <b>Standard requirement:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                            | FCC Part15 C Section 15.203 |
| <b>15.203 requirement:</b><br><p>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</p> |                             |
| <b>E.U.T Antenna:</b><br><p><i>The antenna is Integral Antenna, the best case gain of the antenna is 0dBi</i></p>                                                                                                                                                                                                                                                                                    |                             |

## 7.2 Conducted Emissions

| Test Requirement:     | FCC Part15 C Section 15.207                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |  |                       |              |  |            |         |          |           |           |       |    |    |      |    |    |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--|-----------------------|--------------|--|------------|---------|----------|-----------|-----------|-------|----|----|------|----|----|
| Test Method:          | ANSI C63.10:2013                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |  |                       |              |  |            |         |          |           |           |       |    |    |      |    |    |
| Test Frequency Range: | 150KHz to 30MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |  |                       |              |  |            |         |          |           |           |       |    |    |      |    |    |
| Class / Severity:     | Class B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |           |  |                       |              |  |            |         |          |           |           |       |    |    |      |    |    |
| Receiver setup:       | RBW=9KHz, VBW=30KHz, Sweep time=auto                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |           |  |                       |              |  |            |         |          |           |           |       |    |    |      |    |    |
| Limit:                | <table><tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBuV)</th></tr><tr><th>Quasi-peak</th><th>Average</th></tr><tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr><tr><td>0.5-5</td><td>56</td><td>46</td></tr><tr><td>5-30</td><td>60</td><td>50</td></tr></table> <p>* Decreases with the logarithm of the frequency.</p>                                                                                                                                                                                                                                                                                                                                                                       |           |  | Frequency range (MHz) | Limit (dBuV) |  | Quasi-peak | Average | 0.15-0.5 | 66 to 56* | 56 to 46* | 0.5-5 | 56 | 46 | 5-30 | 60 | 50 |
| Frequency range (MHz) | Limit (dBuV)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |  |                       |              |  |            |         |          |           |           |       |    |    |      |    |    |
|                       | Quasi-peak                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Average   |  |                       |              |  |            |         |          |           |           |       |    |    |      |    |    |
| 0.15-0.5              | 66 to 56*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 56 to 46* |  |                       |              |  |            |         |          |           |           |       |    |    |      |    |    |
| 0.5-5                 | 56                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 46        |  |                       |              |  |            |         |          |           |           |       |    |    |      |    |    |
| 5-30                  | 60                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 50        |  |                       |              |  |            |         |          |           |           |       |    |    |      |    |    |
| Test setup:           | <div><p style="text-align: center;"><b>Reference Plane</b></p><p style="text-align: center;">Test table/Insulation plane</p><p><i>Remark</i><br/>E.U.T: Equipment Under Test<br/>LISN: Line Impedance Stabilization Network<br/>Test table height=0.8m</p></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |  |                       |              |  |            |         |          |           |           |       |    |    |      |    |    |
| Test procedure:       | <div><div>1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.</div><div>2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).</div><div>3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.</div></div> |           |  |                       |              |  |            |         |          |           |           |       |    |    |      |    |    |
| Test Instruments:     | Refer to section 6.0 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |  |                       |              |  |            |         |          |           |           |       |    |    |      |    |    |
| Test mode:            | Refer to section 5.3 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |  |                       |              |  |            |         |          |           |           |       |    |    |      |    |    |
| Test results:         | Pass                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |           |  |                       |              |  |            |         |          |           |           |       |    |    |      |    |    |

### Measurement data:

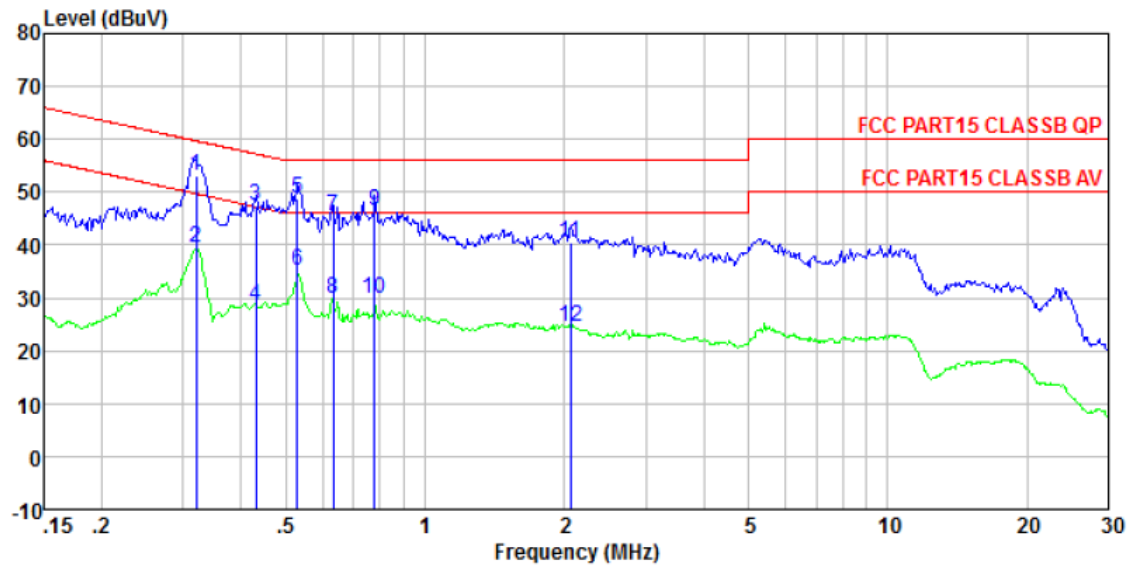
Line:



Site : Shielded room  
 Condition : FCC PART15 CLASSB QP LISN-2013 LINE  
 Job No. : 0217  
 Test mode : Transmitting mode  
 Test Engineer: Boy

|    | Freq  | Read Level | LISN Factor | Cable Loss | Level | Limit Line | Over Limit | Remark  |
|----|-------|------------|-------------|------------|-------|------------|------------|---------|
|    | MHz   | dBuV       | dB          | dB         | dBuV  | dBuV       | dB         |         |
| 1  | 0.317 | 52.53      | 0.11        | 0.10       | 52.74 | 59.80      | -7.06      | QP      |
| 2  | 0.317 | 39.74      | 0.11        | 0.10       | 39.95 | 49.80      | -9.85      | Average |
| 3  | 0.535 | 46.44      | 0.13        | 0.11       | 46.68 | 56.00      | -9.32      | QP      |
| 4  | 0.535 | 33.68      | 0.13        | 0.11       | 33.92 | 46.00      | -12.08     | Average |
| 5  | 0.627 | 42.34      | 0.13        | 0.12       | 42.59 | 56.00      | -13.41     | QP      |
| 6  | 0.627 | 32.60      | 0.13        | 0.12       | 32.85 | 46.00      | -13.15     | Average |
| 7  | 0.779 | 45.11      | 0.14        | 0.13       | 45.38 | 56.00      | -10.62     | QP      |
| 8  | 0.779 | 31.38      | 0.14        | 0.13       | 31.65 | 46.00      | -14.35     | Average |
| 9  | 0.914 | 42.39      | 0.14        | 0.13       | 42.66 | 56.00      | -13.34     | QP      |
| 10 | 0.914 | 27.66      | 0.14        | 0.13       | 27.93 | 46.00      | -18.07     | Average |
| 11 | 1.324 | 38.72      | 0.12        | 0.13       | 38.97 | 56.00      | -17.03     | QP      |
| 12 | 1.324 | 24.98      | 0.12        | 0.13       | 25.23 | 46.00      | -20.77     | Average |

**Neutral:**

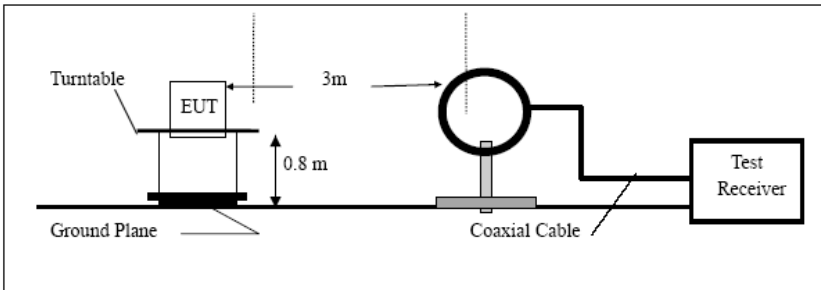
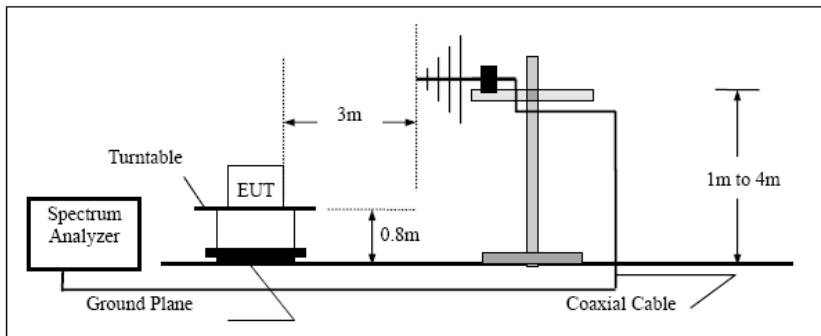


Site : Shielded room  
 Condition : FCC PART15 CLASSB QP LISN-2013 NEUTRAL  
 Job No. : 0217  
 Test mode : Transmitting mode  
 Test Engineer: Boy

|    | Freq  | Read Level | LISN Factor | Cable Loss | Level | Limit Line | Over Limit | Remark  |
|----|-------|------------|-------------|------------|-------|------------|------------|---------|
|    | MHz   | dBuV       | dB          | dB         | dBuV  | dBuV       | dB         |         |
| 1  | 0.320 | 53.02      | 0.06        | 0.10       | 53.18 | 59.71      | -6.53      | QP      |
| 2  | 0.320 | 39.18      | 0.06        | 0.10       | 39.34 | 49.71      | -10.37     | Average |
| 3  | 0.431 | 47.17      | 0.06        | 0.11       | 47.34 | 57.24      | -9.90      | QP      |
| 4  | 0.431 | 28.34      | 0.06        | 0.11       | 28.51 | 47.24      | -18.73     | Average |
| 5  | 0.529 | 48.71      | 0.07        | 0.11       | 48.89 | 56.00      | -7.11      | QP      |
| 6  | 0.529 | 34.88      | 0.07        | 0.11       | 35.06 | 46.00      | -10.94     | Average |
| 7  | 0.634 | 45.36      | 0.07        | 0.13       | 45.56 | 56.00      | -10.44     | QP      |
| 8  | 0.634 | 29.55      | 0.07        | 0.13       | 29.75 | 46.00      | -16.25     | Average |
| 9  | 0.779 | 46.31      | 0.07        | 0.13       | 46.51 | 56.00      | -9.49      | QP      |
| 10 | 0.779 | 29.51      | 0.07        | 0.13       | 29.71 | 46.00      | -16.29     | Average |
| 11 | 2.066 | 40.16      | 0.09        | 0.15       | 40.40 | 56.00      | -15.60     | QP      |
| 12 | 2.066 | 24.39      | 0.09        | 0.15       | 24.63 | 46.00      | -21.37     | Average |

## 7.3 Radiated Emission Method

|                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                    |                         |                  |                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------------------------|------------------|------------------|
| Test Requirement:                                                                                                                                                                                                                                                                                    | FCC Part15 C Section 15.209                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                    |                         |                  |                  |
| Test Method:                                                                                                                                                                                                                                                                                         | ANSI C63.4:2014                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                    |                         |                  |                  |
| Test Frequency Range:                                                                                                                                                                                                                                                                                | 9kHz to 1GHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                    |                         |                  |                  |
| Test site:                                                                                                                                                                                                                                                                                           | Measurement Distance: 3m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |                         |                  |                  |
| Receiver setup:                                                                                                                                                                                                                                                                                      | Frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Detector           | RBW                     | VBW              | Remark           |
|                                                                                                                                                                                                                                                                                                      | 9kHz - 30MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Quasi-peak         | 10kHz                   | 30kHz            | Quasi-peak Value |
|                                                                                                                                                                                                                                                                                                      | 30MHz-1GHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Quasi-peak         | 120kHz                  | 300kHz           | Quasi-peak Value |
|                                                                                                                                                                                                                                                                                                      | Remark: For the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission test in these three bands are based on measurements employing an average detector.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                    |                         |                  |                  |
| Limit:<br>(Spurious Emissions)                                                                                                                                                                                                                                                                       | <b>Limits for frequency below 30MHz</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                    |                         |                  |                  |
|                                                                                                                                                                                                                                                                                                      | Frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Limit (uV/m)       | Measurement Distance(m) | Remark           |                  |
|                                                                                                                                                                                                                                                                                                      | 0.009-0.490                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2400/F(kHz)        | 300                     | Quasi-peak Value |                  |
|                                                                                                                                                                                                                                                                                                      | 0.490-1.705                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 24000/F(kHz)       | 30                      | Quasi-peak Value |                  |
|                                                                                                                                                                                                                                                                                                      | 1.705-30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 30                 | 30                      | Quasi-peak Value |                  |
|                                                                                                                                                                                                                                                                                                      | <b>Limits for frequency Above 30MHz</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                    |                         |                  |                  |
|                                                                                                                                                                                                                                                                                                      | Frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Limit (dBuV/m @3m) | Remark                  |                  |                  |
|                                                                                                                                                                                                                                                                                                      | 30MHz-88MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 40.00              | Quasi-peak Value        |                  |                  |
|                                                                                                                                                                                                                                                                                                      | 88MHz-216MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 43.50              | Quasi-peak Value        |                  |                  |
|                                                                                                                                                                                                                                                                                                      | 216MHz-960MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 46.00              | Quasi-peak Value        |                  |                  |
| 960MHz-1GHz                                                                                                                                                                                                                                                                                          | 54.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Quasi-peak Value   |                         |                  |                  |
| Above 1GHz                                                                                                                                                                                                                                                                                           | 54.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Average Value      |                         |                  |                  |
|                                                                                                                                                                                                                                                                                                      | 74.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Peak Value         |                         |                  |                  |
| Remark: The emission limits shown in the above table 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. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                    |                         |                  |                  |
| Test Procedure:                                                                                                                                                                                                                                                                                      | <div>1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.</div> <div>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.</div> <div>3. The antenna height 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.</div> <div>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 rota table was turned from 0 degrees to 360 degrees to find the maximum reading.</div> <div>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</div> <div>6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have</div> |                    |                         |                  |                  |

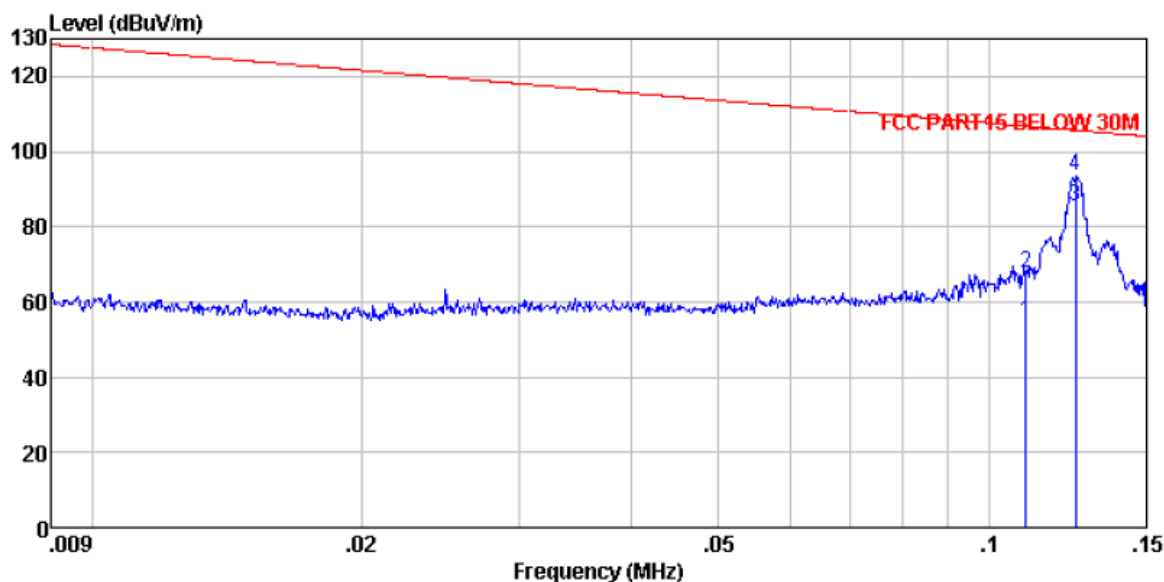
|                   |                                                                                                                                                                                                                                                                                                                                             |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | <p>10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.</p> <p>7. The radiation measurements are performed in X, Y, Z axis positioning. And found the Y axis positioning which it is worse case, only the test worst case mode is recorded in the report.</p> |
| Test setup:       | <p>Below 30MHz</p>  <p>30MHz ~ 1000MHz</p>                                                                                                                             |
| Test Instruments: | Refer to section 6.0 for details                                                                                                                                                                                                                                                                                                            |
| Test mode:        | Refer to section 5.3 for details                                                                                                                                                                                                                                                                                                            |
| Test results:     | Pass                                                                                                                                                                                                                                                                                                                                        |

## Measurement data:

Note: Limit dBuV/m @3m = Limit dBuV/m @300m+ 80

Limit dBuV/m @3m = Limit dBuV/m @30m + 40

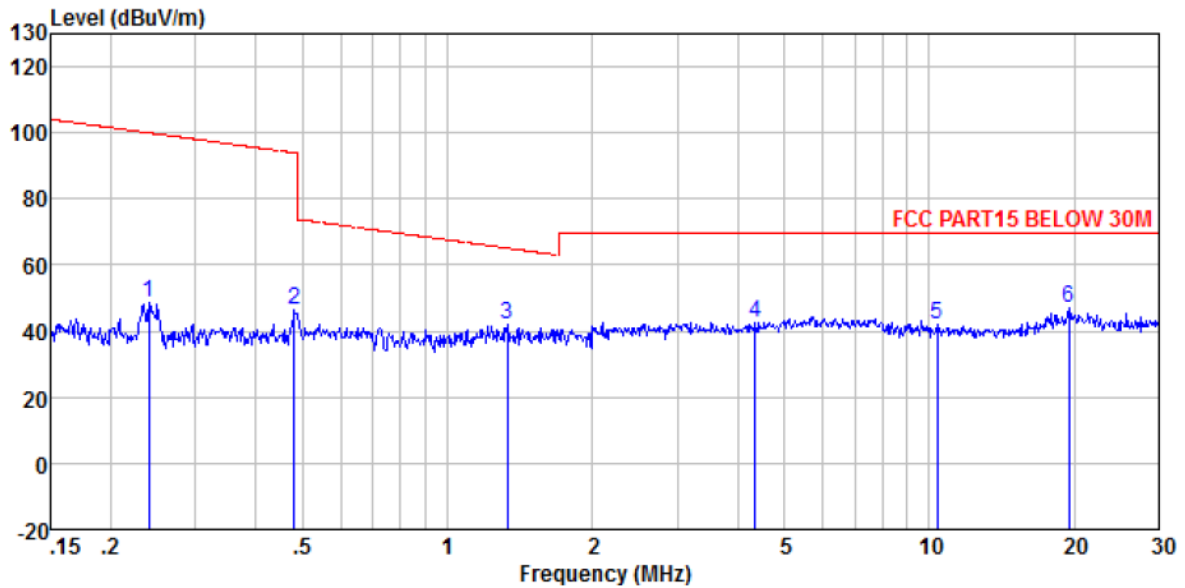
9kHz ~ 30MHz



Site : 3m chamber  
Condition : FCC PART15 BELOW 30M 3m  
No job : 0217  
Test Mode : Transmitting mode  
Test Engineer: Sky

|   | Freq  | ReadAntenna | Preamp | Cable | Limit  | Over   |        |
|---|-------|-------------|--------|-------|--------|--------|--------|
|   | Level | Factor      | Factor | Loss  | Level  | Line   | Limit  |
|   | dBuV  | dB/m        | dB     | dB    | dBuV/m | dBuV/m | dB     |
|   | MHz   |             |        |       |        |        |        |
| 1 | 0.110 | 30.26       | 24.12  | 0.00  | 0.17   | 54.55  | 106.78 |
| 2 | 0.110 | 43.47       | 24.12  | 0.00  | 0.17   | 67.76  | 106.78 |
| 3 | 0.125 | 61.34       | 23.64  | 0.00  | 0.18   | 85.16  | 105.66 |
| 4 | 0.125 | 69.53       | 23.64  | 0.00  | 0.18   | 93.35  | 105.66 |

## 150kHz~30MHz

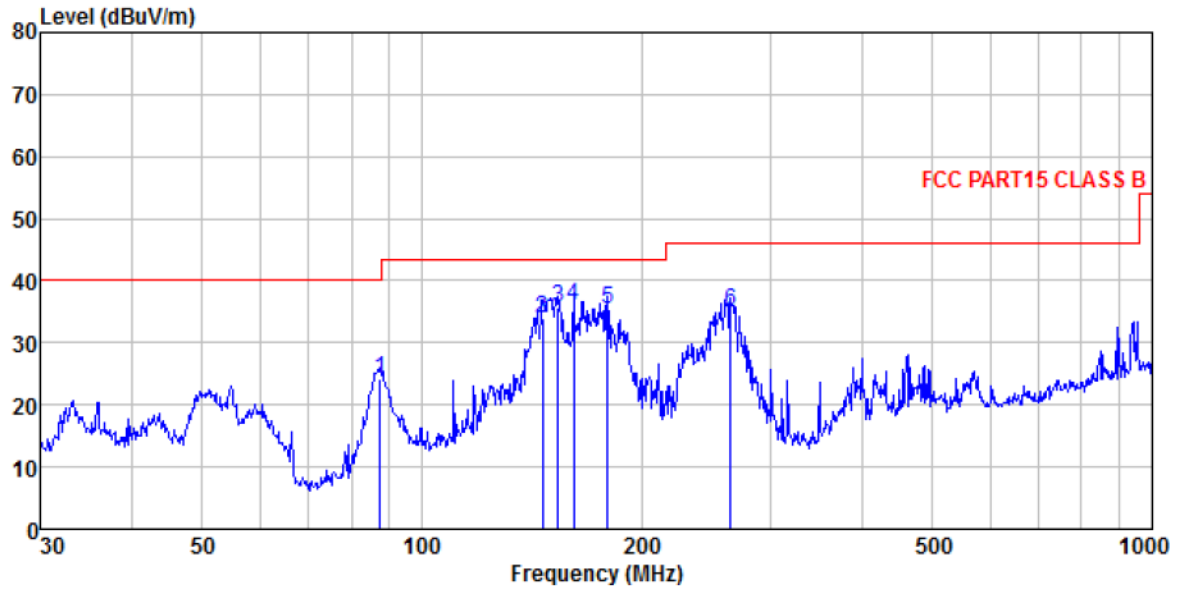


Site : 3m chamber  
 Condition : FCC PART15 BELOW 30M 3m  
 No job : 0217  
 Test Mode : Transmitting mode  
 Test Engineer: Sky

|      | ReadAntenna | Cable  | Preamp | Limit  | Over   |        |
|------|-------------|--------|--------|--------|--------|--------|
| Freq | Level       | Factor | Loss   | Factor | Level  | Line   |
| MHz  | dBuV        | dB/m   | dB     | dB     | dBuV/m | dBuV/m |
| 1    | 0.240       | 26.38  | 21.80  | 0.23   | 0.00   | 48.41  |
| 2    | 0.481       | 25.61  | 20.75  | 0.27   | 0.00   | 46.63  |
| 3    | 1.331       | 20.55  | 20.88  | 0.34   | 0.00   | 41.77  |
| 4    | 4.361       | 20.43  | 21.87  | 0.43   | 0.00   | 42.73  |
| 5    | 10.397      | 18.06  | 23.25  | 0.49   | 0.00   | 41.80  |
| 6    | 19.532      | 18.75  | 27.64  | 0.53   | 0.00   | 46.92  |

30MHz~1GHz

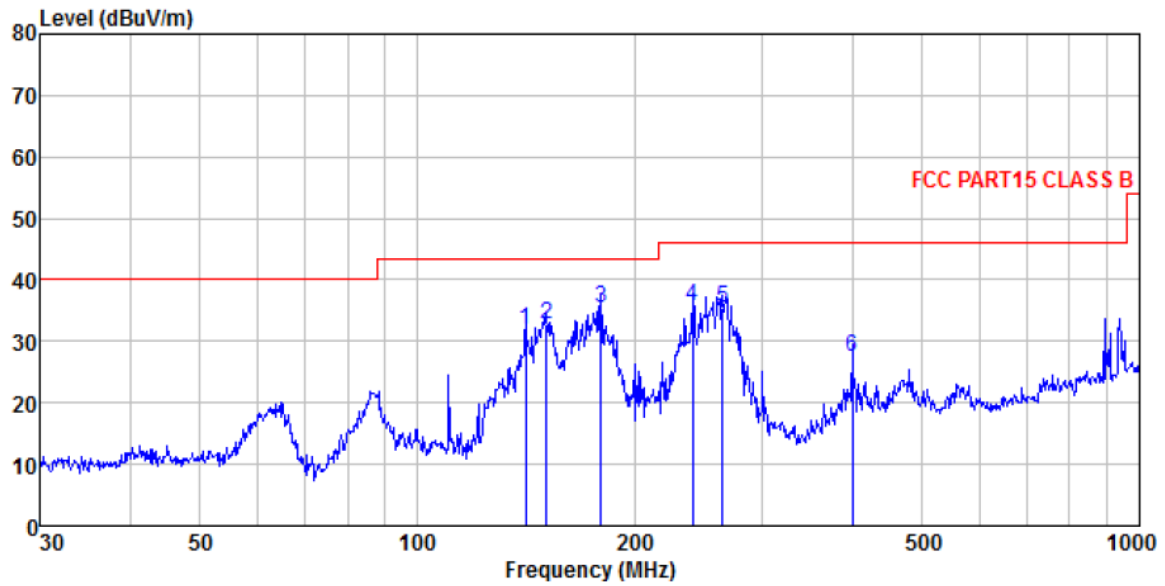
Vertical:



Site : 3m chamber  
 Condition : FCC PART15 CLASS B 3m VERTICAL  
 Job No. : 0217  
 Test Mode : Transmitting mode  
 Test Engineer: Sky

|      | ReadAntenna | Cable  | Preamp |        | Limit  | Over   |       |
|------|-------------|--------|--------|--------|--------|--------|-------|
| Freq | Level       | Factor | Loss   | Factor | Level  | Line   | Limit |
| MHz  | dBuV        | dB/m   | dB     | dB     | dBuV/m | dBuV/m | dB    |
| 1    | 87.725      | 39.60  | 13.18  | 1.09   | 29.76  | 24.11  | 40.00 |
| 2    | 146.374     | 51.62  | 10.23  | 1.55   | 29.43  | 33.97  | 43.50 |
| 3    | 153.739     | 52.97  | 10.42  | 1.59   | 29.39  | 35.59  | 43.50 |
| 4    | 161.474     | 53.13  | 10.72  | 1.64   | 29.35  | 36.14  | 43.50 |
| 5    | 179.386     | 51.48  | 11.62  | 1.74   | 29.28  | 35.56  | 43.50 |
| 6    | 264.746     | 48.42  | 14.22  | 2.19   | 29.75  | 35.08  | 46.00 |

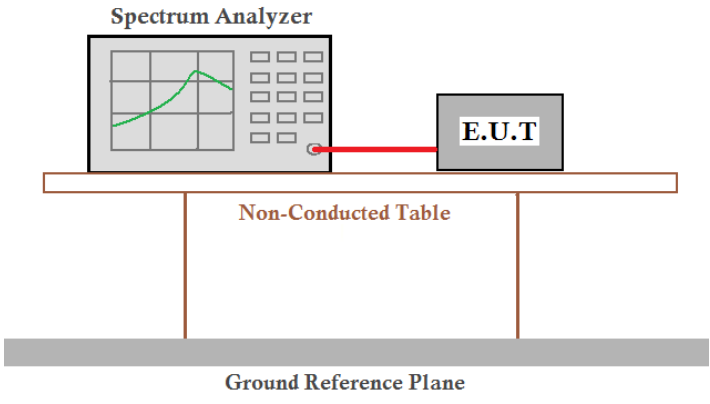
**Horizontal:**



Site : 3m chamber  
 Condition : FCC PART15 CLASS B 3m HORIZONTAL  
 Job No. : 0217  
 Test Mode : Transmitting mode  
 Test Engineer: Sky

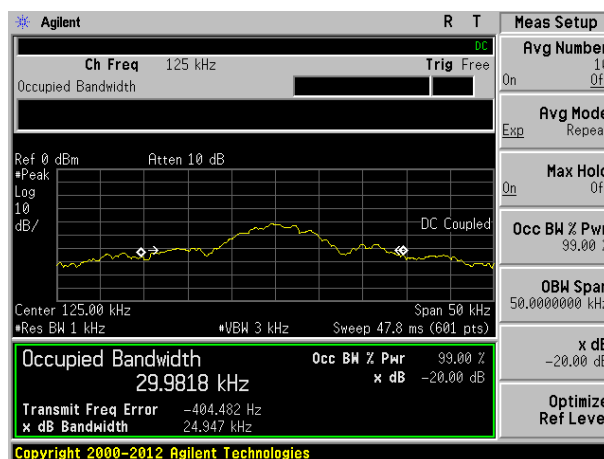
|   |         | ReadAntenna | Cable  | Preamp |        | Limit  | Over   |           |
|---|---------|-------------|--------|--------|--------|--------|--------|-----------|
|   | Freq    | Level       | Factor | Loss   | Factor | Level  | Line   | Limit     |
|   | MHz     | dBuV        | dB/m   | dB     | dB     | dBuV/m | dBuV/m | dB        |
| 1 | 141.330 | 49.52       | 10.20  | 1.51   | 29.45  | 31.78  | 43.50  | -11.72 QP |
| 2 | 151.067 | 50.21       | 10.29  | 1.58   | 29.40  | 32.68  | 43.50  | -10.82 QP |
| 3 | 179.386 | 51.42       | 11.62  | 1.74   | 29.28  | 35.50  | 43.50  | -8.00 QP  |
| 4 | 240.830 | 49.24       | 14.09  | 2.08   | 29.57  | 35.84  | 46.00  | -10.16 QP |
| 5 | 264.746 | 48.80       | 14.22  | 2.19   | 29.75  | 35.46  | 46.00  | -10.54 QP |
| 6 | 400.432 | 36.96       | 17.10  | 2.85   | 29.50  | 27.41  | 46.00  | -18.59 QP |

## 7.4 20dB Occupy Bandwidth

|                   |                                                                                    |
|-------------------|------------------------------------------------------------------------------------|
| Test Requirement: | FCC Part15 C Section 15.215                                                        |
| Test Method:      | ANSI C63.10: 2013                                                                  |
| Test setup:       |  |
| Test Instruments: | Refer to section 6.0 for details                                                   |
| Test mode:        | Refer to section 5.3 for details                                                   |
| Test results:     | Pass                                                                               |

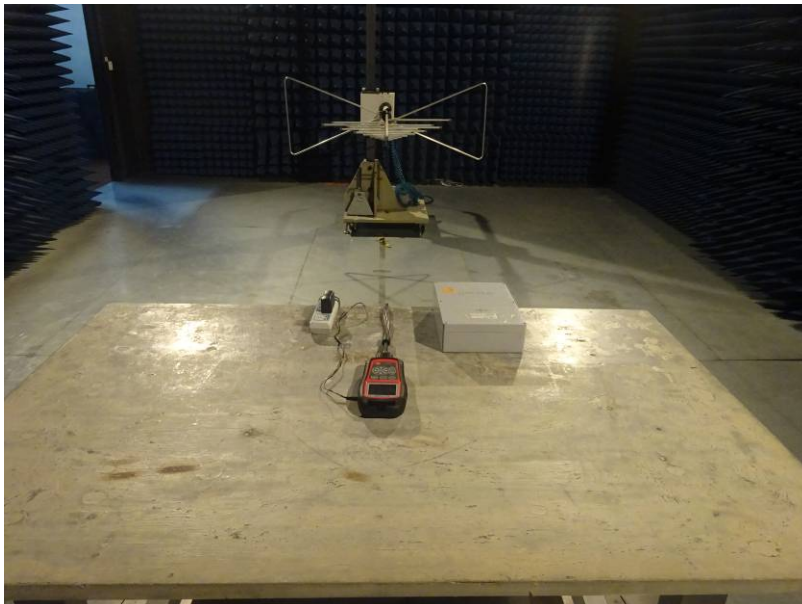
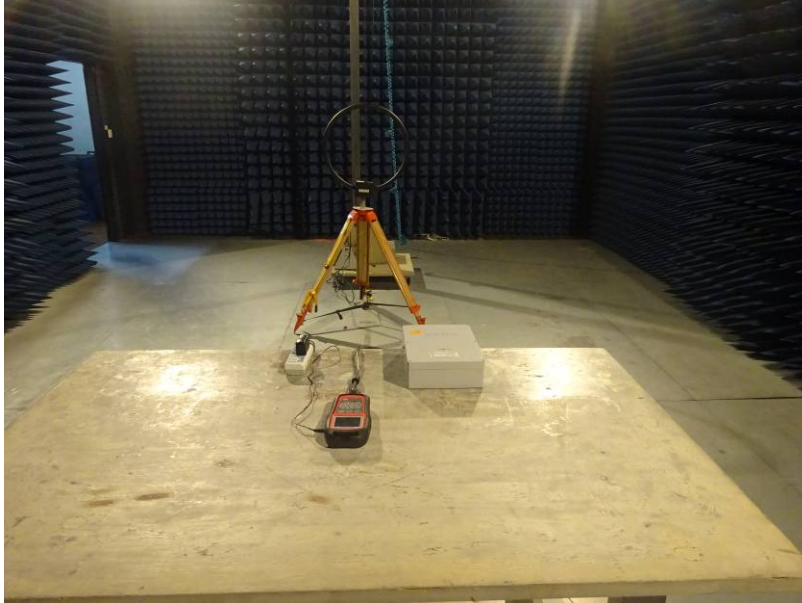
### Measurement Data

| Test frequency | 20dB bandwidth(KHz) | Result |
|----------------|---------------------|--------|
| 125KHz         | 24.947              | Pass   |



## 8 Test Setup Photo

Radiated Emission



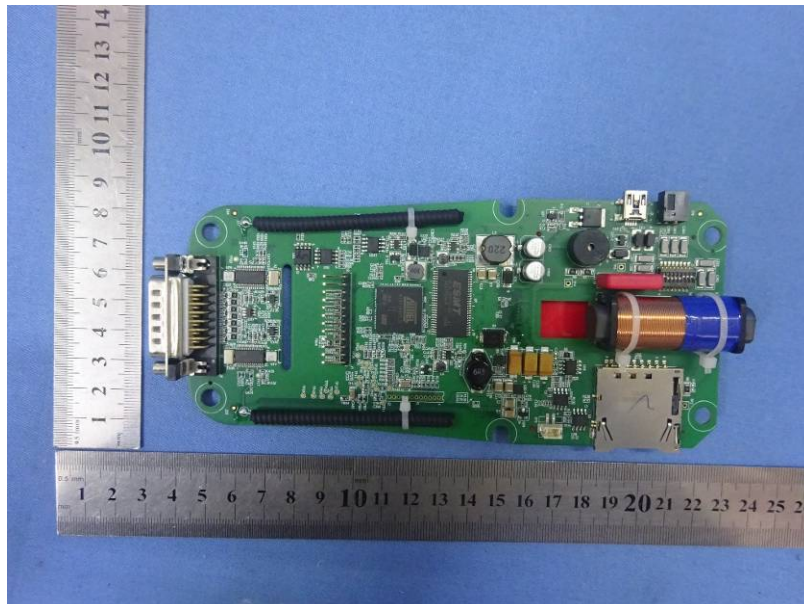
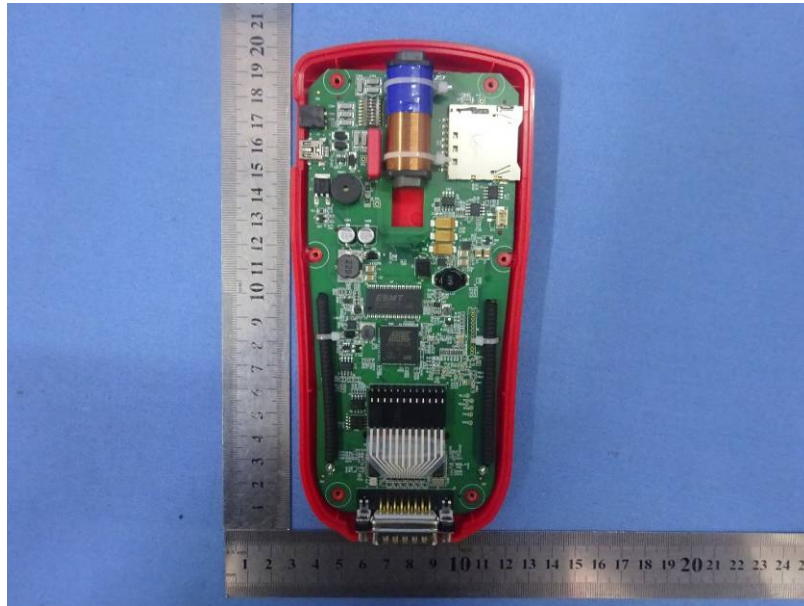
## 9 EUT Constructional Details

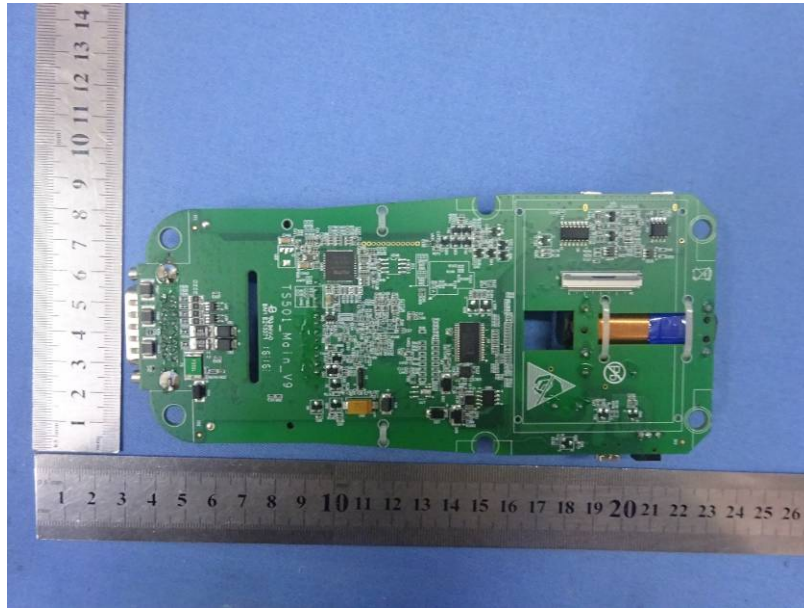














-----End-----