

# TEST REPORT

**Applicant:** MARVALSTAR SCIENTIFIC TECHNOLOGY CO.,LTD  
**Address of Applicant:** 11th Floor, 9th Building, CYG New Materials Harbor Area,  
Gaoxinzhong First Rd, Nanshan District, ShenZhen City,  
GuangDong Province, China.

### Equipment Under Test (EUT)

**Product Name:** Tablet PC  
**Model No.:** MR775, MM781, MR792, MR793, MR1071, MM872, MM881,  
MQ892, MM794, MG795

**FCC ID:** 2ABCQMR775

**Applicable standards:** FCC CFR Title 47 Part 15 Subpart B:2012

**Date of sample receipt:** November 04, 2013

**Date of Test:** November 04-11, 2013

**Date of report issue:** November 11, 2013

**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.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of GTS International Electrical Approvals or testing done by GTS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by GTS International Electrical Approvals in writing.

This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only."

## 2 Version

| Version No. | Date              | Description |
|-------------|-------------------|-------------|
| 00          | November 11, 2013 | Original    |
|             |                   |             |
|             |                   |             |
|             |                   |             |
|             |                   |             |

Prepared By:

*Sam. Gao*

Date:

November 11, 2013

**Project Engineer**

Check By:

*Hans. Hu*

Date:

November 11, 2013

**Reviewer**

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## 4 Test Summary

| Test Item          | Section in CFR 47 | Result |
|--------------------|-------------------|--------|
| Conducted Emission | Part15.107        | PASS   |
| Radiated Emissions | Part15.109        | PASS   |

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

## 5 General Information

### 5.1 Client Information

|                           |  |
|---------------------------|--|
| Applicant:                | MARVALSTAR SCIENTIFIC TECHNOLOGY CO.,LTD   |
| Address of Applicant:     | 11th Floor, 9th Building, CYG New Materials Harbor Area, Gaoxinzhong First Rd, Nanshan District, ShenZhen City, GuangDong Province, China. |
| Manufacturer :            | MARVALSTAR SCIENTIFIC TECHNOLOGY CO.,LTD   |
| Address of Manufacturer : | 11th Floor, 9th Building, CYG New Materials Harbor Area, Gaoxinzhong First Rd, Nanshan District, ShenZhen City, GuangDong Province, China. |
| Factory:                  | shenzhen suonaide technology Co.LTD  |
| Address of Factory :      | 4/F,No.2 Building,Shenhuaye baoan Industry, Western Development Area ,Xixiang Town,Baoan District ,shenzhen city                           |

### 5.2 General Description of EUT

|                 |   |
|-----------------|---|
| Product Name:   | Tablet PC   |
| Model No.:      | MR775, MM781, MR792, MR793, MR1071, MM872, MM881, MQ892, MM794, MG795   |
| Test Model No.: | MR775   |
| Remark:         | <i>All above models are identical in the same PCB layout, interior structure and electrical circuits. The only difference is model name for commercial purpose.</i> |
| Power supply:   | Adapter:<br>Model No.:JY-05200<br>Input: AC 100-240V 50/60Hz 0.3A Max.<br>Output: DC 5V, 2.0A<br>Or 3.7V Lithium-ion battery  |

### 5.3 Test mode

|                   |  |
|-------------------|--|
| Test mode:        |  |
| Playing mode      | Keep the EUT in Playing mode                         |
| Video Record mode | Keep the EUT in Video Recording mode                 |
| PC mode           | Keep the EUT in data exchanging mode.                |
| HDMI mode         | Keep the EUT in video playing with HDMI output mode. |

## 5.4 Test Facility

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

- **CNAS —Registration No.: CNAS L5775**

CNAS has accredited Global United Technology Services Co., Ltd. To ISO/IEC 17025 General Requirements for the competence of testing and calibration laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **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 28, 2013.

- **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, June 26, 2013.

## 5.5 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

Address: 2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road Baoan District, Shenzhen, China

Tel: 0755-27798480

Fax: 0755-27798960

## 5.6 Description of Support Units

| Manufacturer | Description | Model   | Serial Number | FCC ID/DoC |
|--------------|-------------|---------|---------------|------------|
| HP           | Printer     | CB495A  | 05257893      | DoC        |
| Lenovo       | PC Host     | M6900   | EA05257893    | DoC        |
| DELL         | MONITOR     | E178FPC | N/A           | DoC        |
| DELL         | KEYBOARD    | SK-8115 | N/A           | DoC        |
| DELL         | MOUSE       | MOC5UO  | N/A           | DoC        |

## 5.7 Deviation from Standards

Biconical, log.per. antenna and horn antenna were used instead of dipole antenna. Semi-anechoic Chamber was used as alternation of open air test sites, and all test suites were performed with radiated method in it.

## 5.8 Abnormalities from Standard Conditions

None.

## 5.9 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        | Mar. 29 2013        | Mar. 28 2014            |
| 2                  | Control Room                  | ZhongYu Electron | 6.2(L)*2.5(W)* 2.4(H) | GTS251        | N/A                 | N/A                     |
| 3                  | ESU EMI Test Receiver         | R&S              | ESU26                 | GTS203        | Jul. 06 2013        | Jul. 05 2014            |
| 4                  | BiConiLog Antenna             | SCHWARZBECK      | VULB9163              | GTS214        | Mar. 09 2013        | Mar. 08 2014            |
| 5                  | Double -ridged waveguide horn | SCHWARZBECK      | 9120D                 | GTS208        | Mar. 09 2013        | Mar. 08 2014            |
| 6                  | RF Amplifier                  | HP               | 8347A                 | GTS204        | Jul. 06 2013        | Jul. 05 2014            |
| 7                  | Preamplifier                  | HP               | 8349B                 | GTS206        | Jul. 06 2013        | Jul. 05 2014            |
| 8                  | EMI Test Software             | AUDIX            | E3                    | N/A           | N/A                 | N/A                     |
| 9                  | Coaxial cable                 | GTS              | N/A                   | GTS210        | Jul. 06 2013        | Jul. 05 2014            |
| 10                 | Coaxial Cable                 | GTS              | N/A                   | GTS211        | Jul. 06 2013        | Jul. 05 2014            |
| 11                 | Thermo meter                  | N/A              | N/A                   | GTS256        | Jul. 06 2013        | Jul. 05 2014            |

| 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               | 7.0(L)x3.0(W)x3.0(H) | GTS264        | Sep. 07 2013        | Sep. 06 2014            |
| 2                   | EMI Test Receiver | Rohde & Schwarz                | ESCS30               | GTS223        | Jul. 02 2013        | Jul. 01 2014            |
| 3                   | 10dB Pulse Limita | Rohde & Schwarz                | N/A                  | GTS224        | Jul. 02 2013        | Jul. 01 2014            |
| 4                   | Coaxial Switch    | ANRITSU CORP                   | MP59B                | GTS225        | Jul. 02 2013        | Jul. 01 2014            |
| 5                   | LISN              | SCHWARZBECK<br>MESS-ELEKTRONIK | NSLK 8127            | GTS226        | Jul. 02 2013        | Jul. 01 2014            |
| 6                   | Coaxial Cable     | GTS                            | N/A                  | GTS227        | Jul. 02 2013        | Jul. 01 2014            |
| 7                   | EMI Test Software | AUDIX                          | E3                   | N/A           | N/A                 | N/A                     |

| 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 09 2013        | July 08 2014            |

## 7 Test Results and Measurement Data

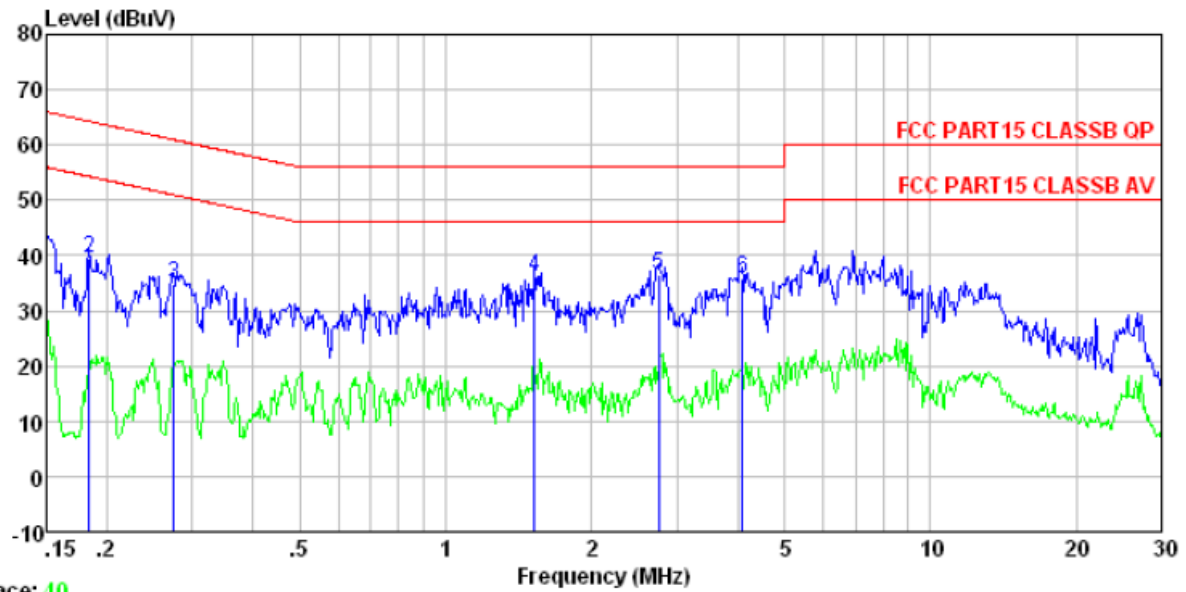
### 7.1 Conducted Emissions

| Test Requirement:     | FCC Part15 B Section 15.107  |           |  |                       |              |  |            |         |          |           |           |       |    |    |      |    |    |
|-----------------------|--|-----------|--|-----------------------|--------------|--|------------|---------|----------|-----------|-----------|-------|----|----|------|----|----|
| Test Method:          | ANSI C63.4:2003  |           |  |                       |              |  |            |         |          |           |           |       |    |    |      |    |    |
| 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></div> <p><i>Remark:<br/>E.U.T: Equipment Under Test<br/>LISN: Line Impedance Stabilization Network<br/>Test table height=0.8m</i></p>   |           |  |                       |              |  |            |         |          |           |           |       |    |    |      |    |    |
| Test procedure:       | <ol style="list-style-type: none"><li>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.</li><li>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).</li><li>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 C63.4: 2003 on conducted measurement.</li></ol> |           |  |                       |              |  |            |         |          |           |           |       |    |    |      |    |    |
| Test Instruments:     | Refer to section 6 for details   |           |  |                       |              |  |            |         |          |           |           |       |    |    |      |    |    |
| Test mode:            | Pre-scan all modes in section 5.3, and found the PC mode which is the worst mode, so only the data of worst mode was show on the test report.  |           |  |                       |              |  |            |         |          |           |           |       |    |    |      |    |    |
| Test results:         | Pass   |           |  |                       |              |  |            |         |          |           |           |       |    |    |      |    |    |



## Measurement Data

Line:



Trace: 40

Condition : FCC PART15 CLASSB QP LISN-2012 LINE

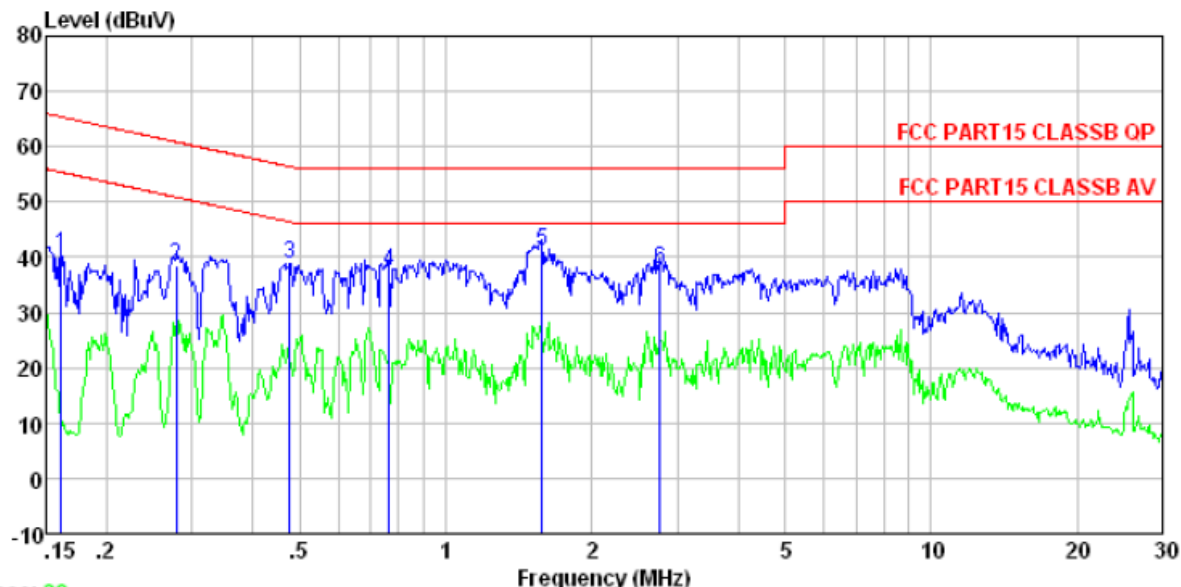
Job No. : 1776RF

Test mode : PC mode

Test Engineer: Bing

|   | Freq  | Read Level | LISN Factor | Cable Loss | Level | Limit Line | Over Limit | Remark |
|---|-------|------------|-------------|------------|-------|------------|------------|--------|
|   | MHz   | dBuV       | dB          | dB         | dBuV  | dBuV       | dB         |        |
| 1 | 0.150 | 41.81      | -0.26       | 0.10       | 41.65 | 66.00      | -24.35     | QP     |
| 2 | 0.183 | 39.51      | -0.23       | 0.10       | 39.38 | 64.33      | -24.95     | QP     |
| 3 | 0.274 | 34.91      | -0.22       | 0.10       | 34.79 | 60.98      | -26.19     | QP     |
| 4 | 1.527 | 36.35      | -0.23       | 0.10       | 36.22 | 56.00      | -19.78     | QP     |
| 5 | 2.750 | 36.63      | -0.25       | 0.10       | 36.48 | 56.00      | -19.52     | QP     |
| 6 | 4.092 | 36.10      | -0.29       | 0.10       | 35.91 | 56.00      | -20.09     | QP     |

**Neutral:**



Trace: 38

Condition : FCC PART15 CLASSB QP LISN-2012 NEUTRAL  
 Job No. : 1776RF  
 Test mode : PC mode  
 Test Engineer: Bing

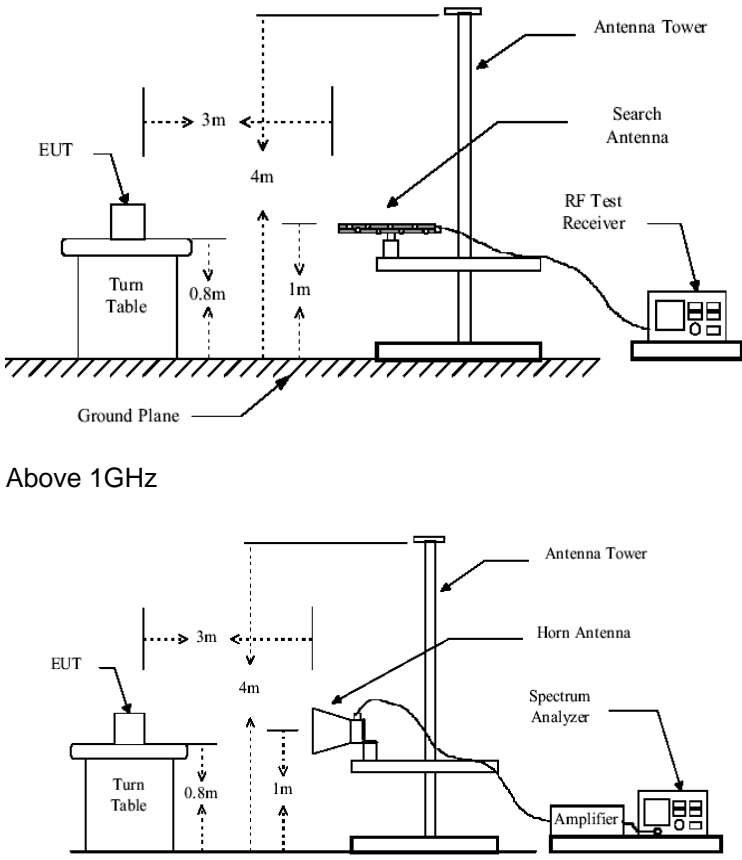
|   | Freq  | Read Level | LISN Factor | Cable Loss | Level | Limit Line | Over Limit | Remark |
|---|-------|------------|-------------|------------|-------|------------|------------|--------|
|   | MHz   | dBuV       | dB          | dB         | dBuV  | dBuV       | dB         |        |
| 1 | 0.162 | 40.46      | -0.13       | 0.10       | 40.43 | 65.38      | -24.95     | QP     |
| 2 | 0.279 | 38.47      | -0.09       | 0.10       | 38.48 | 60.85      | -22.37     | QP     |
| 3 | 0.476 | 38.86      | -0.08       | 0.10       | 38.88 | 56.41      | -17.53     | QP     |
| 4 | 0.763 | 37.45      | -0.08       | 0.10       | 37.47 | 56.00      | -18.53     | QP     |
| 5 | 1.577 | 41.20      | -0.10       | 0.10       | 41.20 | 56.00      | -14.80     | QP     |
| 6 | 2.765 | 37.70      | -0.12       | 0.10       | 37.68 | 56.00      | -18.32     | QP     |

**Notes:**

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss
4. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.

## 7.2 Radiated Emission

|                       |  |                    |                  |                  |  |           |          |                    |        |        |             |            |        |                  |                  |              |      |       |                  |            |               |      |       |                  |  |             |  |       |                  |  |            |  |       |               |  |       |            |  |
|-----------------------|--|--------------------|------------------|------------------|--|-----------|----------|--------------------|--------|--------|-------------|------------|--------|------------------|------------------|--------------|------|-------|------------------|------------|---------------|------|-------|------------------|--|-------------|--|-------|------------------|--|------------|--|-------|---------------|--|-------|------------|--|
| Test Requirement:     | FCC Part15 B Section 15.109  |                    |                  |                  |  |           |          |                    |        |        |             |            |        |                  |                  |              |      |       |                  |            |               |      |       |                  |  |             |  |       |                  |  |            |  |       |               |  |       |            |  |
| Test Method:          | ANSI C63.4:2003  |                    |                  |                  |  |           |          |                    |        |        |             |            |        |                  |                  |              |      |       |                  |            |               |      |       |                  |  |             |  |       |                  |  |            |  |       |               |  |       |            |  |
| Test Frequency Range: | 30MHz to 9GHz  |                    |                  |                  |  |           |          |                    |        |        |             |            |        |                  |                  |              |      |       |                  |            |               |      |       |                  |  |             |  |       |                  |  |            |  |       |               |  |       |            |  |
| Test site:            | Measurement Distance: 3m (Semi-Anechoic Chamber)   |                    |                  |                  |  |           |          |                    |        |        |             |            |        |                  |                  |              |      |       |                  |            |               |      |       |                  |  |             |  |       |                  |  |            |  |       |               |  |       |            |  |
| Receiver setup:       | <table><tr><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Remark</td></tr><tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>120kHz</td><td>300kHz</td><td>Quasi-peak Value</td></tr><tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr><tr><td>Peak</td><td>1MHz</td><td>10Hz</td><td>Average Value</td></tr></table>   |                    |                  |                  |  | Frequency | Detector | RBW                | VBW    | Remark | 30MHz-1GHz  | Quasi-peak | 120kHz | 300kHz           | Quasi-peak Value | Above 1GHz   | Peak | 1MHz  | 3MHz             | Peak Value | Peak          | 1MHz | 10Hz  | Average Value    |  |             |  |       |                  |  |            |  |       |               |  |       |            |  |
| Frequency             | Detector   | RBW                | VBW              | Remark           |  |           |          |                    |        |        |             |            |        |                  |                  |              |      |       |                  |            |               |      |       |                  |  |             |  |       |                  |  |            |  |       |               |  |       |            |  |
| 30MHz-1GHz            | Quasi-peak   | 120kHz             | 300kHz           | Quasi-peak Value |  |           |          |                    |        |        |             |            |        |                  |                  |              |      |       |                  |            |               |      |       |                  |  |             |  |       |                  |  |            |  |       |               |  |       |            |  |
| Above 1GHz            | Peak   | 1MHz               | 3MHz             | Peak Value       |  |           |          |                    |        |        |             |            |        |                  |                  |              |      |       |                  |            |               |      |       |                  |  |             |  |       |                  |  |            |  |       |               |  |       |            |  |
|                       | Peak   | 1MHz               | 10Hz             | Average Value    |  |           |          |                    |        |        |             |            |        |                  |                  |              |      |       |                  |            |               |      |       |                  |  |             |  |       |                  |  |            |  |       |               |  |       |            |  |
| Limit:                | <table><tr><td colspan="2">Frequency</td><td>Limit (dBuV/m @3m)</td><td colspan="2">Remark</td></tr><tr><td colspan="2">30MHz-88MHz</td><td>40.00</td><td colspan="2">Quasi-peak Value</td></tr><tr><td colspan="2">88MHz-216MHz</td><td>43.50</td><td colspan="2">Quasi-peak Value</td></tr><tr><td colspan="2">216MHz-960MHz</td><td>46.00</td><td colspan="2">Quasi-peak Value</td></tr><tr><td colspan="2">960MHz-1GHz</td><td>54.00</td><td colspan="2">Quasi-peak Value</td></tr><tr><td colspan="2" rowspan="2">Above 1GHz</td><td>54.00</td><td colspan="2">Average Value</td></tr><tr><td>74.00</td><td colspan="2">Peak Value</td></tr></table>  |                    |                  |                  |  | 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 |  |
| 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       |                  |  |           |          |                    |        |        |             |            |        |                  |                  |              |      |       |                  |            |               |      |       |                  |  |             |  |       |                  |  |            |  |       |               |  |       |            |  |
| 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 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.</div> |                    |                  |                  |  |           |          |                    |        |        |             |            |        |                  |                  |              |      |       |                  |            |               |      |       |                  |  |             |  |       |                  |  |            |  |       |               |  |       |            |  |
| Test setup:           | Below 1GHz   |                    |                  |                  |  |           |          |                    |        |        |             |            |        |                  |                  |              |      |       |                  |            |               |      |       |                  |  |             |  |       |                  |  |            |  |       |               |  |       |            |  |

|                     |   |
|---------------------|---|
|                     |  <p>Above 1GHz</p>   |
| Test environment:   | Temp.: 25 °C Humid.: 52% Press.: 1 012mbar  |
| Measurement Record: | Uncertainty: ± 4.5dB  |
| Test Instruments:   | Refer to section 6 for details  |
| Test mode:          | Pre-scan all modes in section 5.3, and found the PC mode which is the worst mode, so only the data of worst mode was show on the test report. |
| Test results:       | Pass  |

**Note:**

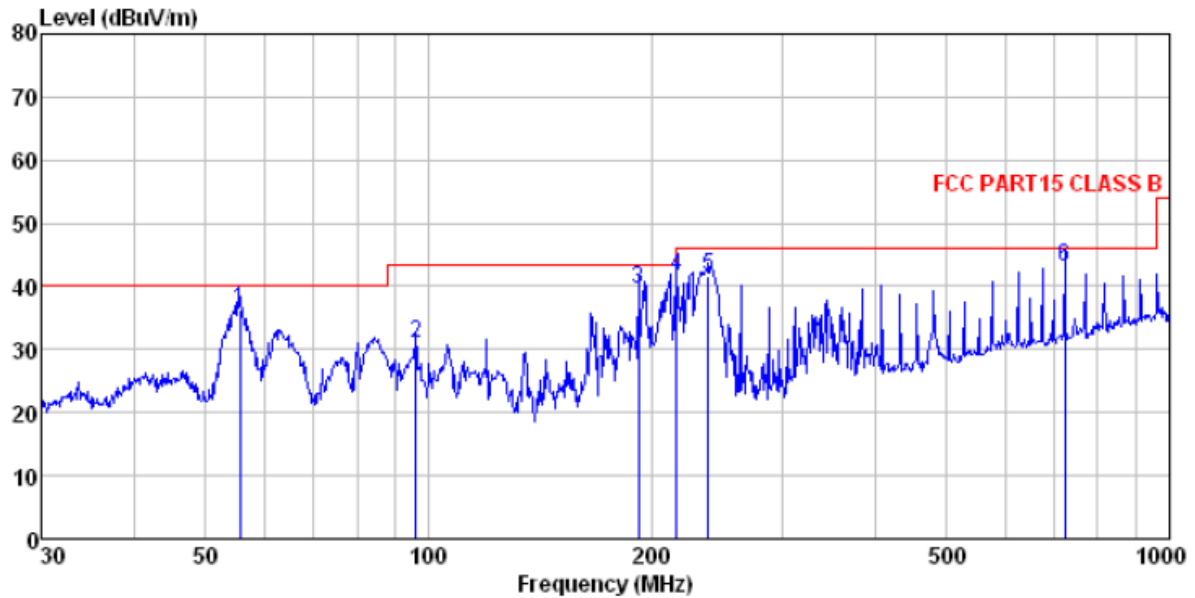
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

$$\text{Final Test Level} = \text{Receiver Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Preamplifier Factor}$$

## Measurement Data

Below 1GHz

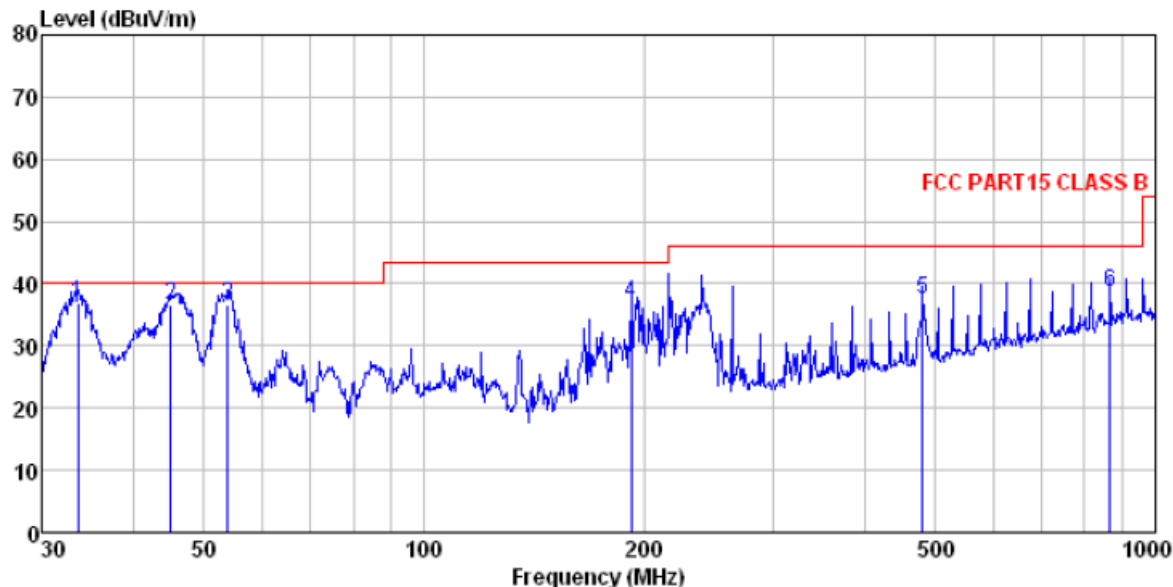
Horizontal:



Site : 3m chamber  
 Condition : FCC PART15 CLASS B 3m VULB9163-2013M HORIZONTAL  
 Job No. : 1776RF  
 Test Mode : PC mode  
 Test Engineer: Yang

|   | Freq    | ReadAntenna | Cable Preamp |             | Limit | Over   |        |           |
|---|---------|-------------|--------------|-------------|-------|--------|--------|-----------|
|   |         | Level       | Factor       | Loss Factor | Level | Line   | Limit  | Remark    |
|   | MHz     | dBuV        | dB/m         | dB          | dB    | dBuV/m | dBuV/m | dB        |
| 1 | 55.609  | 52.42       | 14.97        | 0.82        | 31.95 | 36.26  | 40.00  | -3.74 QP  |
| 2 | 96.099  | 46.59       | 14.90        | 1.16        | 31.75 | 30.90  | 43.50  | -12.60 QP |
| 3 | 191.745 | 57.39       | 12.56        | 1.80        | 32.12 | 39.63  | 43.50  | -3.87 QP  |
| 4 | 216.024 | 58.82       | 13.07        | 1.93        | 32.15 | 41.67  | 46.00  | -4.33 QP  |
| 5 | 238.310 | 57.77       | 13.99        | 2.06        | 32.16 | 41.66  | 46.00  | -4.34 QP  |
| 6 | 721.726 | 48.95       | 21.10        | 4.17        | 31.22 | 43.00  | 46.00  | -3.00 QP  |

Vertical:

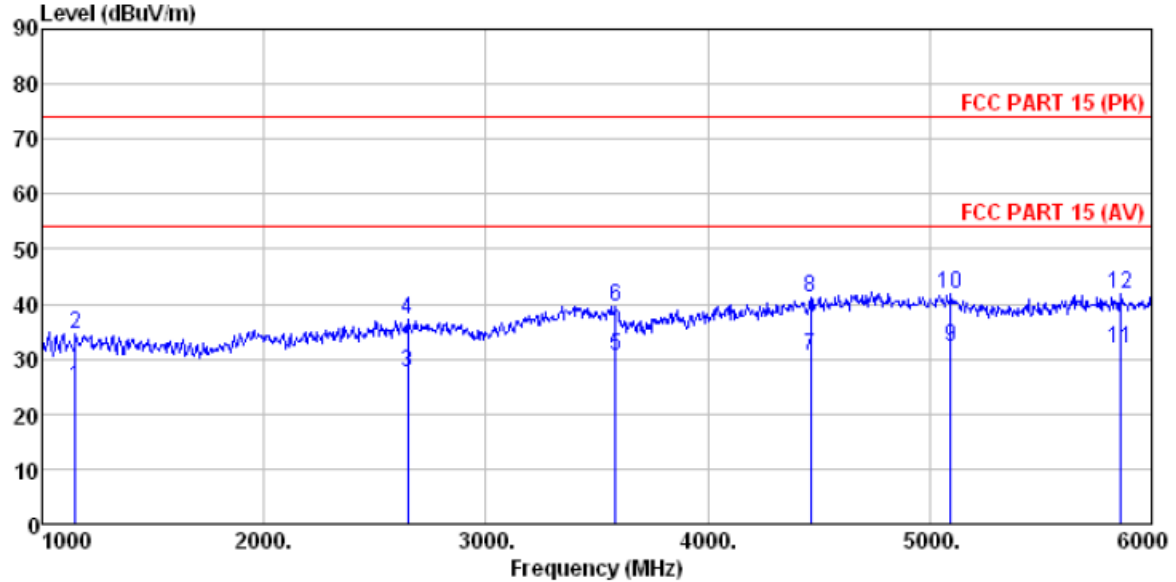


Site : 3m chamber  
 Condition : FCC PART15 CLASS B 3m VULB9163-2013M VERTICAL  
 Job No. : 1776RF  
 Test Mode : PC mode  
 Test Engineer: Yang

|   | Freq    | ReadAntenna | Cable | Preamp | Level | Limit  | Over   |          |
|---|---------|-------------|-------|--------|-------|--------|--------|----------|
|   |         | Level       | Loss  | Factor |       | Line   | Limit  | Remark   |
|   | MHz     | dBuV        | dB/m  | dB     | dB    | dBuV/m | dBuV/m | dB       |
| 1 | 33.680  | 54.07       | 14.31 | 0.59   | 32.06 | 36.91  | 40.00  | -3.09 QP |
| 2 | 45.058  | 52.25       | 15.55 | 0.72   | 32.01 | 36.51  | 40.00  | -3.49 QP |
| 3 | 53.882  | 52.64       | 15.07 | 0.81   | 31.95 | 36.57  | 40.00  | -3.43 QP |
| 4 | 191.745 | 54.57       | 12.56 | 1.80   | 32.12 | 36.81  | 43.50  | -6.69 QP |
| 5 | 480.528 | 47.77       | 18.07 | 3.22   | 31.62 | 37.44  | 46.00  | -8.56 QP |
| 6 | 866.088 | 42.45       | 22.78 | 4.73   | 31.23 | 38.73  | 46.00  | -7.27 QP |

Above 1GHz

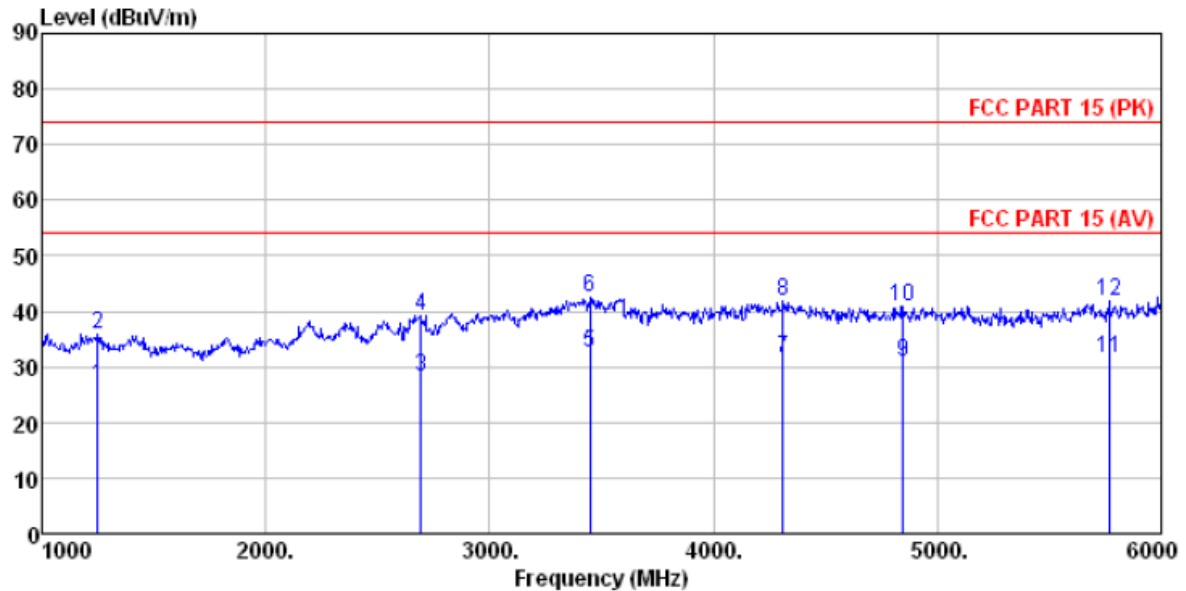
Horizontal:



Site : 3m chamber  
 Condition : FCC PART 15 (PK) 3m BBHA9120D ANT(>1GHZ) HORIZONTAL  
 Job No. : 1776RF  
 Test Mode : PC mode  
 Test Engineer: Sam

|    | Freq     | ReadAntenna | Cable  | Preamp | Limit  | Over   |        |
|----|----------|-------------|--------|--------|--------|--------|--------|
|    | MHz      | Level       | Factor | Loss   | Factor | Level  | Line   |
|    | MHz      | dBuV        | dB/m   | dB     | dB     | dBuV/m | dBuV/m |
|    |          |             |        |        |        |        |        |
| 1  | 1150.000 | 28.46       | 25.01  | 4.42   | 33.01  | 24.88  | 54.00  |
| 2  | 1150.000 | 38.02       | 25.01  | 4.42   | 33.01  | 34.44  | 74.00  |
| 3  | 2650.000 | 27.83       | 27.92  | 5.63   | 33.72  | 27.66  | 54.00  |
| 4  | 2650.000 | 37.46       | 27.92  | 5.63   | 33.72  | 37.29  | 74.00  |
| 5  | 3585.000 | 26.85       | 29.12  | 7.13   | 32.66  | 30.44  | 54.00  |
| 6  | 3585.000 | 36.05       | 29.12  | 7.13   | 32.66  | 39.64  | 74.00  |
| 7  | 4465.000 | 23.01       | 31.26  | 8.31   | 31.92  | 30.66  | 54.00  |
| 8  | 4465.000 | 33.54       | 31.26  | 8.31   | 31.92  | 41.19  | 74.00  |
| 9  | 5095.000 | 23.46       | 32.03  | 8.90   | 32.23  | 32.16  | 54.00  |
| 10 | 5095.000 | 33.08       | 32.03  | 8.90   | 32.23  | 41.78  | 74.00  |
| 11 | 5860.000 | 21.46       | 32.72  | 10.02  | 32.21  | 31.99  | 54.00  |
| 12 | 5860.000 | 31.48       | 32.72  | 10.02  | 32.21  | 42.01  | 74.00  |

Vertical:



Site : 3m chamber  
 Condition : FCC PART 15 (PK) 3m BBHA9120D ANT(>1GHZ) VERTICAL  
 Job No. : 1776RF  
 Test Mode : PC mode  
 Test Engineer: Sam

|    | Freq     | ReadAntenna | Cable Preamp |       | Limit  | Over   |                      |
|----|----------|-------------|--------------|-------|--------|--------|----------------------|
|    | Level    | Factor      | Loss Factor  | Level | Line   | Limit  | Remark               |
|    | MHz      | dBuV        | dB/m         | dB    | dBuV/m | dBuV/m | dB                   |
| 1  | 1250.000 | 29.72       | 25.52        | 4.50  | 33.18  | 26.56  | 54.00 -27.44 Average |
| 2  | 1250.000 | 39.15       | 25.52        | 4.50  | 33.18  | 35.99  | 74.00 -38.01 Peak    |
| 3  | 2695.000 | 28.01       | 28.16        | 5.67  | 33.66  | 28.18  | 54.00 -25.82 Average |
| 4  | 2695.000 | 38.97       | 28.16        | 5.67  | 33.66  | 39.14  | 74.00 -34.86 Peak    |
| 5  | 3450.000 | 29.84       | 28.80        | 6.86  | 32.81  | 32.69  | 54.00 -21.31 Average |
| 6  | 3450.000 | 39.50       | 28.80        | 6.86  | 32.81  | 42.35  | 74.00 -31.65 Peak    |
| 7  | 4310.000 | 24.47       | 30.77        | 8.16  | 31.85  | 31.55  | 54.00 -22.45 Average |
| 8  | 4310.000 | 34.63       | 30.77        | 8.16  | 31.85  | 41.71  | 74.00 -32.29 Peak    |
| 9  | 4845.000 | 22.59       | 31.82        | 8.63  | 32.11  | 30.93  | 54.00 -23.07 Average |
| 10 | 4845.000 | 32.66       | 31.82        | 8.63  | 32.11  | 41.00  | 74.00 -33.00 Peak    |
| 11 | 5765.000 | 21.21       | 32.59        | 9.88  | 32.27  | 31.41  | 54.00 -22.59 Average |
| 12 | 5765.000 | 31.53       | 32.59        | 9.88  | 32.27  | 41.73  | 74.00 -32.27 Peak    |