



FCC ID: APYHRO00273  
Report No.: T190322E03-F

Page 1 / 48  
Rev. 01

## FCC 47 CFR PART 15 SUBPART B TEST REPORT

For

Smart phone

Issued for

**Sharp Corporation, Mobile Communication B.U.**

2-13-1, Hachihonmatsu-lida, Higashi-hiroshima-shi, Hiroshima, 739-0192, Japan

Issued By:

**Compliance Certification Services Inc.**

**Wugu Laboratory**

No.11, Wugong 6th Rd., Wugu Dist.,  
New Taipei City 24891, Taiwan. (R.O.C.)

**Issued Date: April 12, 2019**

**Note:** This document may be altered or revised by Compliance Certification Services Inc. personnel only, and shall be noted in the revision section of the document. The client should not use it to claim product endorsement by TAF, A2LA, NIST or any government agencies. The test results in the report only apply to the tested sample.

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.  
除非另有說明，此報告結果僅對測試之樣品負責，同時此樣品僅保留90天。本報告未經本公司書面許可，不可部分複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. 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.



Report No.: T190322E03-F

Page 2 / 50  
Rev. 01

**Revision History**

| Rev. |  | Issue Date     |  | Revisions                                            | Effect Page | Revised By |
|------|--|----------------|--|------------------------------------------------------|-------------|------------|
| 00   |  | April 11, 2019 |  | Initial Issue                                        | ALL         | May Lin    |
| 01   |  | April 12, 2019 |  | 1. Revised the pre-test mode and peripherals devices | P.6, P.9    | May Lin    |



Report No.: T190322E03-F

Page 3 / 50  
Rev. 01

## TABLE OF CONTENTS

|                                        |                                              |            |
|----------------------------------------|----------------------------------------------|------------|
| <b>1</b>                               | <b>TEST RESULT CERTIFICATION</b>             | <b>4</b>   |
| <b>2</b>                               | <b>EUT DESCRIPTION</b>                       | <b>5</b>   |
| <b>3</b>                               | <b>TEST METHODOLOGY</b>                      | <b>6</b>   |
| 3.1.                                   | DECISION OF FINAL TEST MODE                  | 6          |
| 3.2.                                   | EUT SYSTEM OPERATION                         | 7          |
| <b>4</b>                               | <b>SETUP OF EQUIPMENT UNDER TEST</b>         | <b>8</b>   |
| 4.1.                                   | DESCRIPTION OF SUPPORT UNITS                 | 8          |
| 4.2.                                   | CONFIGURATION OF SYSTEM UNDER TEST           | 10         |
| <b>5</b>                               | <b>FACILITIES AND ACCREDITATIONS</b>         | <b>13</b>  |
| 5.1.                                   | FACILITIES                                   | 13         |
| 5.2.                                   | ACCREDITATIONS                               | 13         |
| 5.3.                                   | MEASUREMENT UNCERTAINTY                      | 14         |
| <b>6</b>                               | <b>CONDUCTED EMISSION MEASUREMENT</b>        | <b>15</b>  |
| 6.1.                                   | LIMITS OF CONDUCTED EMISSION MEASUREMENT     | 15         |
| 6.2.                                   | TEST INSTRUMENTS                             | 15         |
| 6.3.                                   | TEST PROCEDURES                              | 16         |
| 6.4.                                   | TEST SETUP                                   | 17         |
| 6.5.                                   | DATA SAMPLE:                                 | 17         |
| 6.6.                                   | TEST RESULTS                                 | 18         |
| <b>7</b>                               | <b>RADIATED EMISSION MEASUREMENT</b>         | <b>26</b>  |
| 7.1.                                   | LIMITS OF RADIATED EMISSION MEASUREMENT      | 26         |
| 7.2.                                   | TEST INSTRUMENTS                             | 28         |
| 7.3.                                   | TEST PROCEDURES                              | 29         |
| 7.4.                                   | TEST SETUP                                   | 31         |
| 7.5.                                   | DATA SAMPLE:                                 | 32         |
| 7.6.                                   | TEST RESULTS                                 | 33         |
| <b>8</b>                               | <b>PHOTOGRAPHS OF THE TEST CONFIGURATION</b> | <b>A-1</b> |
| <b>APPENDIX 1 - PHOTOGRAPHS OF EUT</b> |                                              |            |



Report No.: T190322E03-F

Page 4 / 50  
Rev. 01

## 1 TEST RESULT CERTIFICATION

|                      |                                                                                                                               |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------|
| <b>Product:</b>      | Smart phone                                                                                                                   |
| <b>Applicant:</b>    | Sharp Corporation, Mobile Communication B.U.<br>2-13-1, Hachihonmatsu-lida, Higashi-hiroshima-shi, Hiroshima, 739-0192, Japan |
| <b>Manufacturer:</b> | Sharp Corporation<br>1 Takumi-cho, Sakai-ku, Sakai City, Osaka 590-8522, Japan                                                |
| <b>Tested:</b>       | March 22 ~ April 01, 2019                                                                                                     |
| <b>Test Voltage:</b> | 120Vac, 60Hz                                                                                                                  |

| EMISSION                                                                  |                        |        |                    |
|---------------------------------------------------------------------------|------------------------|--------|--------------------|
| Standard                                                                  | Item                   | Result | Remarks            |
| FCC 47 CFR Part 15 Subpart B,<br>ICES-003 Issue 6-2016<br>ANSI C63.4-2014 | Conducted (Power Port) | PASS   | Meet Class B limit |
|                                                                           | Radiated               | PASS   | Meet Class B limit |

Note: 1. The statements of test result on the above are decided by the request of test standard only; the measurement uncertainties are not factored into this compliance determination.  
2. The information of measurement uncertainty is available upon the customer's request.

| Deviation from Applicable Standard |
|------------------------------------|
| None                               |

The above equipment has been tested by Compliance Certification Services Inc., and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

**Approved by:**

Hex Chiang  
Supervisor

**Tested by:**

Wiz Chang  
Engineer



Report No.: T190322E03-F

Page 5 / 50  
Rev. 01

## 2 EUT DESCRIPTION

|                  |                                              |
|------------------|----------------------------------------------|
| Product          | Smart phone                                  |
| Applicant        | Sharp Corporation, Mobile Communication B.U. |
| Housing material | Plastic                                      |
| Identify Number  | T190322E03                                   |
| Received Date    | March 22, 2019                               |
| Power Supply     | AC 100 ~ 240V, 50 / 60Hz                     |
| Battery          | 3.85V, 3200mAh, 12.4Wh                       |

**Note:**

1. Client consigns only one sample to test). Therefore, the testing Lab. just guarantees the unit, which has been tested.
2. Worst case:

| FCC ID: APYHRO00273 | DDR      | UFS      | PCB      | (Select which one is worst case) |
|---------------------|----------|----------|----------|----------------------------------|
| 1st Source          | Vender A | Vender B | Vender A | Worst case                       |
| 2nd Source          | Vender B | Vender B | Vender A | V                                |
| 3rd Source          | Vender C | Vender A | Vender B | V                                |

### I/O Port

| I/O PORT TYPES   | Q'TY | TESTED WITH |
|------------------|------|-------------|
| 1. Type-C Port   | 1    | 1           |
| 2. Audio Port    | 1    | 1           |
| 3. SIM Card      | 1    | 1           |
| 4. Micro SD Card | 1    | 1           |

### 3 TEST METHODOLOGY

#### 3.1. DECISION OF FINAL TEST MODE

- The following test modes were scanned during the preliminary test:

| Pre-Test Mode                                                                                                            |                                                                                        |                           |                                              |                                    |                                                 |
|--------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|---------------------------|----------------------------------------------|------------------------------------|-------------------------------------------------|
| Accessories List:<br>AC Charger: Salom / XN-2QC25<br>Data Cable:<br>Luxshare-ICT/L6KU2007-CS-H<br>PHF: Sony / MDR-EX15AP | Mode 1                                                                                 | Mode 2                    | Mode 3                                       | Mode 4                             | Mode 5                                          |
| Qi Wireless Charger Set:<br>Charger board: SB / Wireless Charging Base<br>AC Charger: PHIHONG / AA18A-120E               |                                                                                        |                           |                                              |                                    |                                                 |
| Applicable standard                                                                                                      |                                                                                        |                           |                                              |                                    |                                                 |
| Accessories                                                                                                              | EUT<br>+AC Adaptor<br>+USB Cable<br>+PHF                                               | EUT<br>+USB Cable<br>+PHF | EUT<br>+AC Adaptor<br>+USB Cable<br>+PHF     | EUT<br>+Qi Wireless<br>Charger Set | EUT<br>+ AC Adaptor<br>+USB Cable<br>+PHF       |
| Main function                                                                                                            | Speech                                                                                 | Data Link                 | Camera                                       | Charger                            | RX Receiver                                     |
| Additional function                                                                                                      | BT + WIFI + GPS + NFC                                                                  |                           |                                              |                                    |                                                 |
| Description                                                                                                              |                                                                                        |                           |                                              |                                    |                                                 |
| Radiated emission                                                                                                        | GSM 850 / 1900<br>WCDMA BII / IV / V<br>LTE B 02 / 04 / 05 /<br>07 / 12 / 13 / 17 / 38 | Data R/W                  | MP3; REC mode<br>(Front / Back);<br>play REC | Charger                            | GSM 850<br>WCDMA B V<br>LTE B 05 / 12 / 13 / 17 |
| Conducted emission (DC Power)                                                                                            | N/A                                                                                    | N/A                       | N/A                                          | N/A                                | N/A                                             |
| Conducted emission (AC Power)                                                                                            | GSM 850 / 1900<br>WCDMA BII / IV / V<br>LTE B 02 / 04 / 05 /<br>07 / 12 / 13 / 17 / 38 | Data R/W                  | MP3; REC mode<br>(Front / Back);<br>play REC | Charger                            | GSM 850<br>WCDMA B V<br>LTE B05 / 12 / 13 / 17  |

#### 3.2. After the preliminary scan, the following test modes were found to produce the highest emission level.

| Final Test Mode |                                     |                   |
|-----------------|-------------------------------------|-------------------|
| Emission        | Conducted Emission                  | <b>Mode 1 ~ 4</b> |
|                 | Radiated Emission                   | <b>Mode 1 ~ 4</b> |
| Test Mode       |                                     |                   |
| Emission        | Radiated Emission<br>(30MHz ~ 1GHz) | <b>Mode 5</b>     |

Then, the above highest emission mode of the configuration of the EUT and cable was chosen for all final test items.

### 3.3. EUT SYSTEM OPERATION

**Mode 1 & Mode 5:**

1. Setup the EUT and simulators as shown on 4.2.
2. Turn on the power of all equipment.
3. The EUT communicates with Notebook PC Bluetooth radio.
4. The EUT communicates with CMW 500 by Link radio.
5. The EUT communicates with CMU 200 by Link radio.
6. The EUT communicates with GPS Simulator by Link radio
7. Setup the condition for test mode, and begin the test.

**Note:** Test program is self-repeating throughout the test.

**Mode 2:**

1. Setup the EUT and simulators as shown on 4.2.
2. Turn on the power of all equipment.
3. The EUT communicates with Notebook PC by Bluetooth radio.
4. The EUT communicates with GPS Simulator by Link radio
5. Setup the condition for test mode, and begin the test.

**Note:** Test program is self-repeating throughout the test.

**Mode 3:**

1. Setup the EUT and simulators as shown on 4.2.
2. Turn on the power of all equipment.
3. Setup the condition for test mode, and begin the test.

**Note:** Test program is self-repeating throughout the test.

**Mode 4:**

1. Setup the EUT and simulators as shown on 4.2.
2. Turn on the power of all equipment.
3. Setup the condition for test mode, and begin the test.

**Note:** Test program is self-repeating throughout the test.

## 4 SETUP OF EQUIPMENT UNDER TEST

### 4.1. DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

#### Peripherals Devices:

##### Mode 1 & Mode 5:

| No. | Equipment                              | Trade Name | Model No.    | Serial No. | FCC ID / BSMI ID |
|-----|----------------------------------------|------------|--------------|------------|------------------|
| 1   | SIM Card                               | N/A        | N/A          | N/A        | N/A              |
| 2   | Micro SD 2G                            | CAPSTONE   | N/A          | N/A        | N/A              |
| 3   | Earphone                               | Sony       | MDR-EX15AP   | N/A        | N/A              |
| 4   | Notebook PC (Remote)                   | HP         | Pavilion dv6 | CNF9491GLJ | R33022           |
| 5   | Universal Radio Communication (Remote) | R & S      | CMW 500      | N/A        | N/A              |
| 6   | Universal Radio Communication (Remote) | R & S      | CMU 200      | N/A        | N/A              |
| 7   | GPS Simulator (Remote)                 | IFR        | GPS-101      | N/A        | N/A              |

| No. | Cable Name     | Unit | Shielded                                                                   | Length | With Core                                                                        |
|-----|----------------|------|----------------------------------------------------------------------------|--------|----------------------------------------------------------------------------------|
| (A) | USB Cable      | 1    | <input checked="" type="checkbox"/> Shielded, <input type="checkbox"/> Non | 1.5 m  | <input type="checkbox"/> With Core×____, <input checked="" type="checkbox"/> Non |
| (B) | Earphone Cable | 1    | <input checked="" type="checkbox"/> Shielded, <input type="checkbox"/> Non | 1.8 m  | <input type="checkbox"/> With Core×____, <input checked="" type="checkbox"/> Non |

##### Mode 2:

| No. | Equipment              | Trade Name | Model No.     | Serial No.               | FCC ID / BSMI ID |
|-----|------------------------|------------|---------------|--------------------------|------------------|
| 1   | SIM Card               | N/A        | N/A           | N/A                      | N/A              |
| 2   | Micro SD 2G            | CAPSTONE   | N/A           | N/A                      | N/A              |
| 3   | Earphone               | Sony       | MDR-EX15AP    | N/A                      | N/A              |
| 4   | Notebook PC (Remote)   | HP         | Pavilion dv6  | CNF9491GLJ               | R33022           |
| 5   | GPS Simulator (Remote) | IFR        | GPS-101       | N/A                      | N/A              |
| 6   | Notebook PC            | DELL       | INSPIRON 640m | CN-0MG532-70166-75G-03AP | R33002           |
| 7   | Mouse                  | DELL       | MS111-L       | CN-0HRG26-44751-21U-05YA | T41126           |

| No. | Cable Name      | Unit | Shielded                                                                   | Length | With Core                                                                        |
|-----|-----------------|------|----------------------------------------------------------------------------|--------|----------------------------------------------------------------------------------|
| (A) | USB Cable       | 1    | <input checked="" type="checkbox"/> Shielded, <input type="checkbox"/> Non | 1.5 m  | <input type="checkbox"/> With Core×____, <input checked="" type="checkbox"/> Non |
| (B) | Earphone Cable  | 1    | <input checked="" type="checkbox"/> Shielded, <input type="checkbox"/> Non | 1.8 m  | <input type="checkbox"/> With Core×____, <input checked="" type="checkbox"/> Non |
| (C) | USB Mouse Cable | 1    | <input checked="" type="checkbox"/> Shielded, <input type="checkbox"/> Non | 1.8 m  | <input type="checkbox"/> With Core×____, <input checked="" type="checkbox"/> Non |

**Mode 3:**

| No. | Equipment   | Trade Name | Model No.  | Serial No. | FCC ID / BSMI ID |
|-----|-------------|------------|------------|------------|------------------|
| 1   | SIM Card    | N/A        | N/A        | N/A        | N/A              |
| 2   | Micro SD 2G | CAPSTONE   | N/A        | N/A        | N/A              |
| 3   | Earphone    | Sony       | MDR-EX15AP | N/A        | N/A              |

| No. | Cable Name     | Unit | Shielded                                                                   | Length | With Core                                                                        |
|-----|----------------|------|----------------------------------------------------------------------------|--------|----------------------------------------------------------------------------------|
| (A) | USB Cable      | 1    | <input checked="" type="checkbox"/> Shielded, <input type="checkbox"/> Non | 1.5 m  | <input type="checkbox"/> With Core×____, <input checked="" type="checkbox"/> Non |
| (B) | Earphone Cable | 1    | <input checked="" type="checkbox"/> Shielded, <input type="checkbox"/> Non | 1.8 m  | <input type="checkbox"/> With Core×____, <input checked="" type="checkbox"/> Non |

**Mode 4:**

| No. | Equipment                   | Trade Name | Model No.              | Serial No. | FCC ID / BSMI ID |
|-----|-----------------------------|------------|------------------------|------------|------------------|
| 1   | SIM Card                    | N/A        | N/A                    | N/A        | N/A              |
| 2   | Micro SD 2G                 | CAPSTONE   | N/A                    | N/A        | N/A              |
| 3   | Qi Wireless Charger board   | SB         | Wireless Charging Base | N/A        | N/A              |
| 4   | Qi Wireless Charger Adapter | PHIHONG    | AA18A-120E             | N/A        | N/A              |

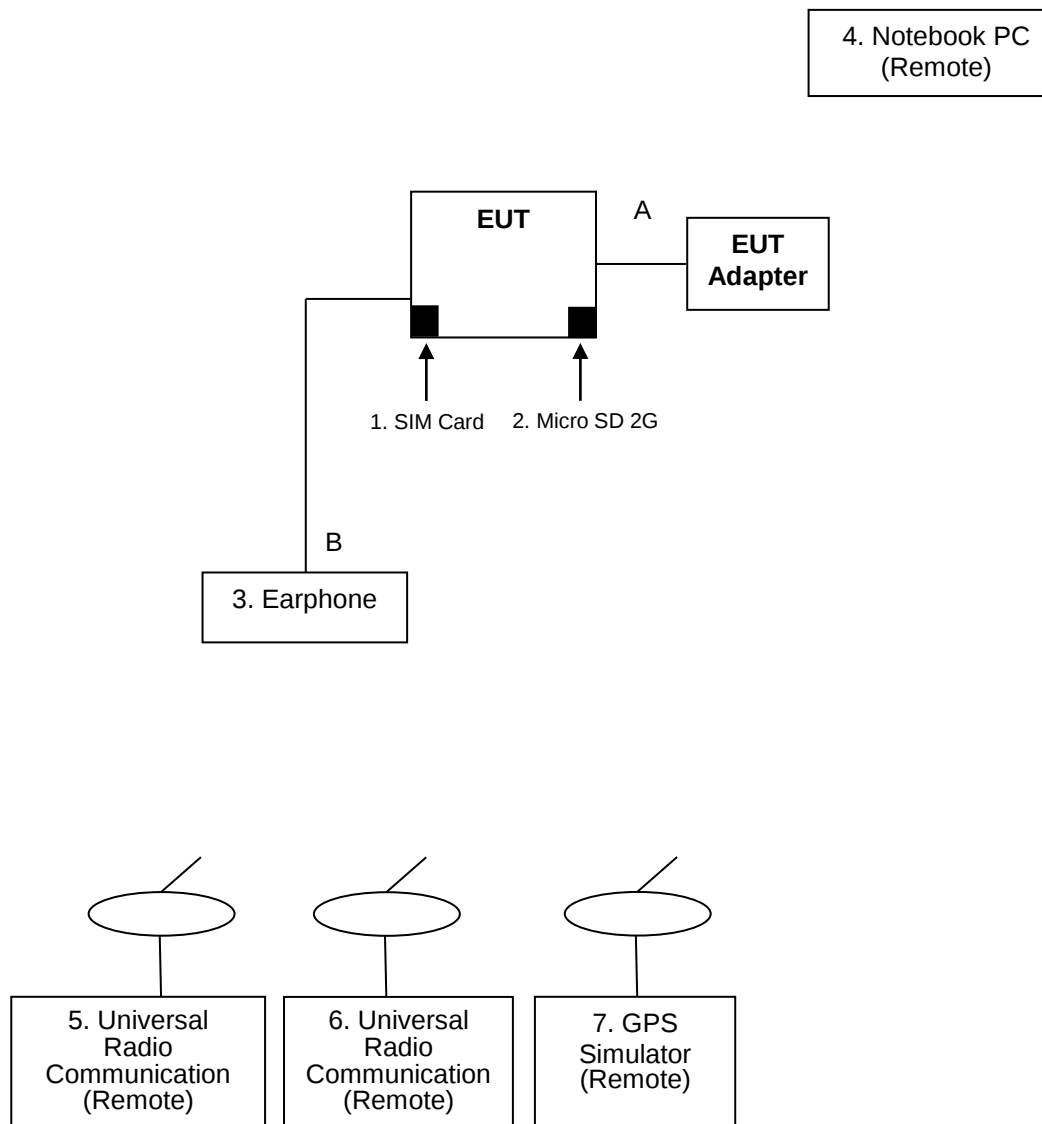
| No. | Cable Name | Unit | Shielded                                                                   | Length | With Core                                                                        |
|-----|------------|------|----------------------------------------------------------------------------|--------|----------------------------------------------------------------------------------|
| (A) | USB Cable  | 1    | <input checked="" type="checkbox"/> Shielded, <input type="checkbox"/> Non | 1.8 m  | <input type="checkbox"/> With Core×____, <input checked="" type="checkbox"/> Non |

**Note:**

- 1) All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
- 2) Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

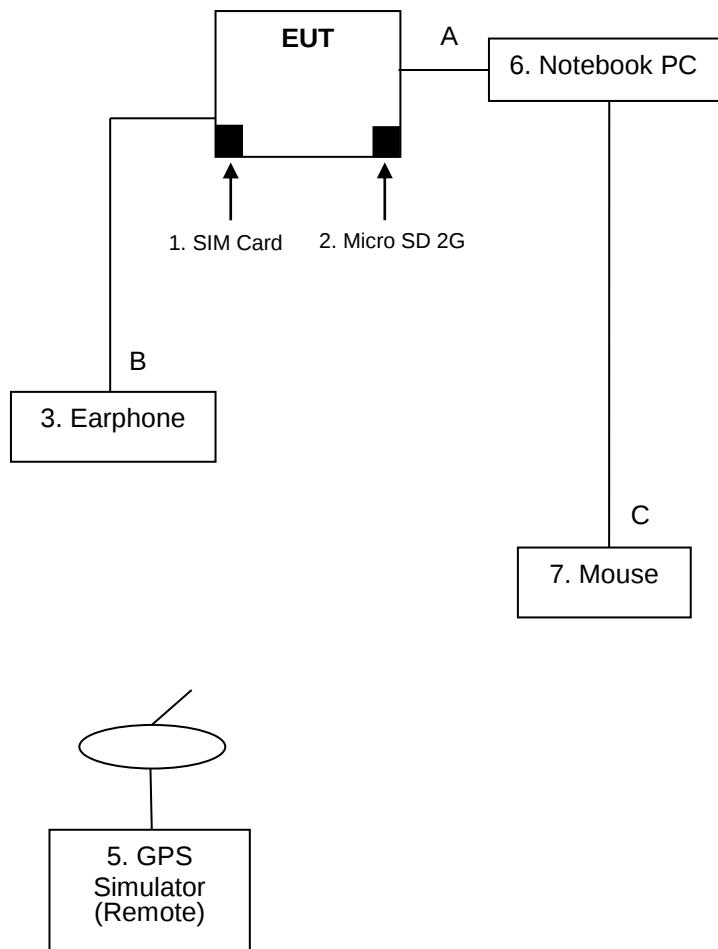
## 4.2. CONFIGURATION OF SYSTEM UNDER TEST

### Mode 1 & Mode 5

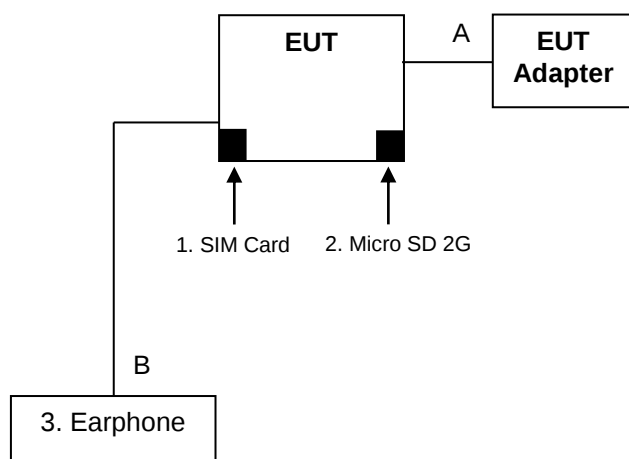


## Mode 2

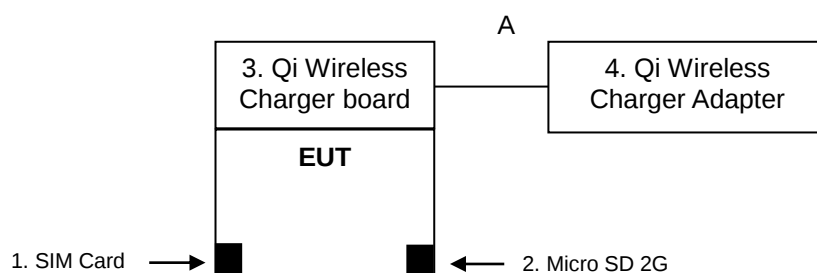
4. Notebook PC  
(Remote)



### Mode 3



### Mode 4





Report No.: T190322E03-F

Page 13 / 50  
Rev. 01

## 5 FACILITIES AND ACCREDITATIONS

### 5.1. FACILITIES

All measurement facilities used to collect the measurement data are located at:

- ☐ No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan (R.O.C.)
- ☒ No.139, Wugong Rd., Wugu Dist., New Taipei City 24886, Taiwan (R.O.C.)
- ☐ No.163-1, Zhongsheng Rd., Sindian City, Taipei County 23151, Taiwan.

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR 22. All receiving equipment conforms to CISPR 16-1-1, CISPR 16-1-2, CISPR 16-1-3, CISPR 16-1-4, CISPR 16-1-5.

### 5.2. ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

|               |                |
|---------------|----------------|
| <b>Taiwan</b> | TAF (TAF 1309) |
| <b>USA</b>    | A2LA (0824.01) |

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

|               |                                                                                                                      |
|---------------|----------------------------------------------------------------------------------------------------------------------|
| <b>Canada</b> | Industry Canada<br>(10M Semi Anechoic Chamber: IC 2324G-1 / IC 2324G-2 / 2324J-1 / 2324J-2 to perform)               |
| <b>Japan</b>  | VCCI<br>Radiated emissions: 30 MHz -1000 MHz: R-14343 / Above 1GHz: G-10945<br>Conducted Emission B: C-3700 / T-1839 |
| <b>USA</b>    | FCC<br>(10M Semi Anechoic Chamber (FCC MRA: TW1039) to perform FCC Part 15 measurements)                             |

Copies of granted accreditation certificates are available for downloading from our web site, <http://www.ccsrf.com>

### 5.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

| Measurement                         | Frequency        | Uncertainty   |
|-------------------------------------|------------------|---------------|
| Conducted emissions #B              | 0.15MHz ~ 30MHz  | $\pm 2.96$ dB |
| Radiated emissions<br>(10M Chamber) | 30MHz ~ 200MHz   | $\pm 4.45$ dB |
|                                     | 200MHz ~ 1000MHz | $\pm 4.80$ dB |
|                                     | 1GHz ~ 6GHz      | $\pm 4.80$ dB |
|                                     | 6GHz ~ 18GHz     | $\pm 5.25$ dB |
|                                     | 18GHz ~ 26GHz    | $\pm 3.93$ dB |
|                                     | 26GHz ~ 40GHz    | $\pm 3.97$ dB |

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .

Consistent with industry standard (e.g. CISPR 22:2008, clause 11, Measurement Uncertainty) determining compliance with the limits shall be based on the results of the compliance measurement. Consequently the measured emissions being less than the maximum allowed emission result in this being a compliant test or passing test.

The listed uncertainties of above table are the worst case values for the entire range of measurement. Please note that the uncertainty values are only provided for informational purpose and aren't used in determining the PASS/FAIL results.

## 6 CONDUCTED EMISSION MEASUREMENT

### 6.1. LIMITS OF CONDUCTED EMISSION MEASUREMENT

| FREQUENCY<br>(MHz) | Class A (dBuV) |         | Class B (dBuV) |         |
|--------------------|----------------|---------|----------------|---------|
|                    | Quasi-peak     | Average | Quasi-peak     | Average |
| 0.15 - 0.5         | 79             | 66      | 66 - 56        | 56 - 46 |
| 0.50 - 5.0         | 73             | 60      | 56             | 46      |
| 5.0 - 30.0         | 73             | 60      | 60             | 50      |

**NOTE:**

- (1) The lower limit shall apply at the transition frequencies.
- (2) The limit decreases in line with the logarithm of the frequency in the range 0.15 to 0.50 MHz
- (3) All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

### 6.2. TEST INSTRUMENTS

| Conducted Emission Room #B |              |          |               |                  |                 |
|----------------------------|--------------|----------|---------------|------------------|-----------------|
| Name of Equipment          | Manufacturer | Model    | Serial Number | Calibration Date | Calibration Due |
| EMI Test Receiver          | R&S          | ESCI     | 101073        | 07/17/2018       | 07/16/2019      |
| LISN                       | R&S          | ENV216   | 101054        | 05/02/2018       | 05/01/2019      |
| LISN                       | Schwarzbeck  | NSLK8128 | 5012          | 04/23/2018       | 04/22/2019      |
| Software                   | CCS-3A1-CE   |          |               |                  |                 |

**Note:** The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

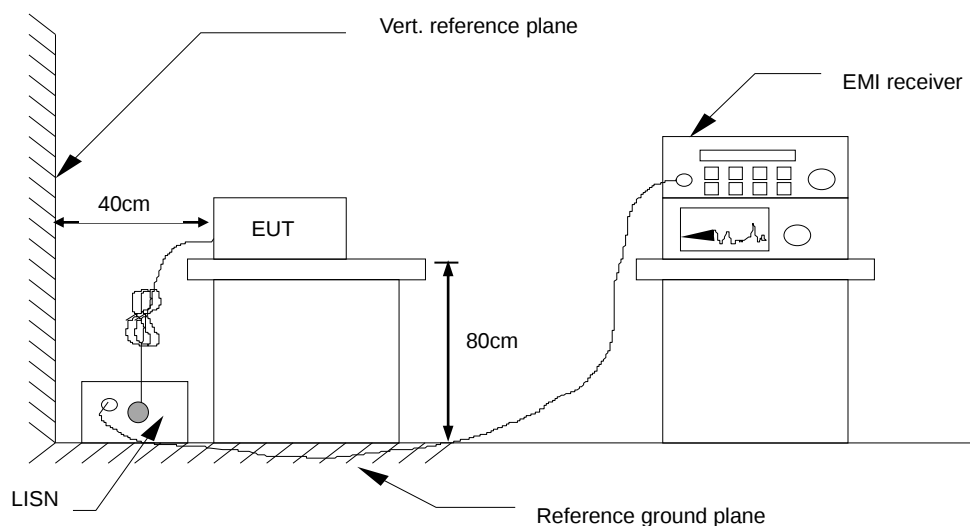
**6.3. TEST PROCEDURES** (please refer to measurement standard or CCS SOP PA-031)**Procedure of Preliminary Test**

- The EUT and support equipment, if needed, were set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor standing equipment, it is placed on the ground plane, which has a 12 mm non-conductive covering to insulate the EUT from the ground plane.
- All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- The test equipment EUT installed by AC 120VAC/60Hz main power, through a Line Impedance Stabilization Network (LISN), which was supplied power source and was grounded to the ground plane.
- All support equipment power by from a second LISN.
- The test program of the EUT was started. Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.
- The Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
- During the above scans, the emissions were maximized by cable manipulation.
- The test mode(s) described in Item 3.1 were scanned during the preliminary test.
- After the preliminary scan, we found the test mode described in Item 3.1 producing the highest emission level.
- The worst configuration of EUT and cable of the above highest emission level were recorded for reference of the final test.

**Procedure of Final Test**

- EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.
- A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.
- The test data of the worst-case condition(s) was recorded.

## 6.4. TEST SETUP



- For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

## 6.5. DATA SAMPLE:

| Frequency (MHz) | QuasiPeak reading (dBuV) | Average reading (dBuV) | Correcrion factor (dB) | QuasiPeak result (dBuV) | Average result (dBuV) | QuasiPeak. limit (dBuV) | Average limit (dBuV) | QuasiPeak margin (dB) | Average margin (dB) | Remark |
|-----------------|--------------------------|------------------------|------------------------|-------------------------|-----------------------|-------------------------|----------------------|-----------------------|---------------------|--------|
| x.xx            | 43.95                    | 33.00                  | 10.00                  | 53.95                   | 43.00                 | 56.00                   | 46.00                | -2.05                 | -3.00               | Pass   |

Frequency (MHz)

= Emission frequency in MHz

Reading (dBuV)

= Uncorrected Analyzer/Receiver reading + Insertion loss of LISN, if it > 0.5 dB

Correction Factor (dB)

= LISN Factor + Cable Loss

Result (dBuV)

= Raw reading converted to dBuV and CF added

Limit (dBuV)

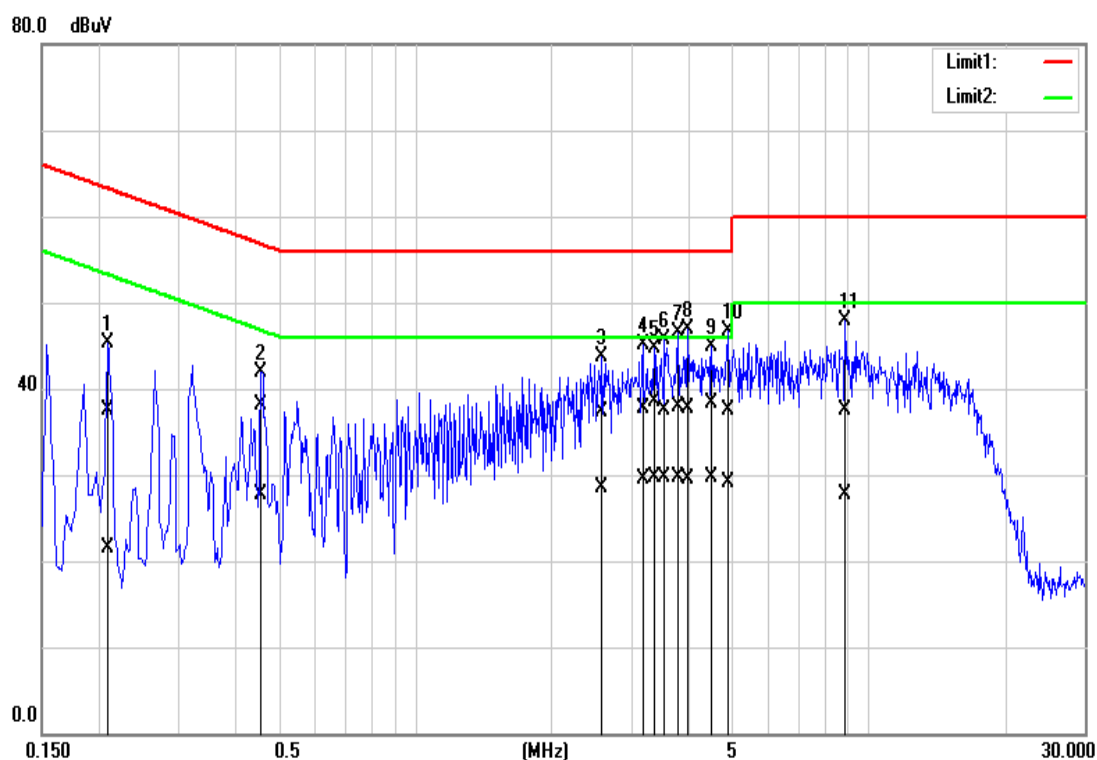
= Limit stated in standard

Margin (dB)

= Result (dBuV) – Limit (dBuV)

## 6.6. TEST RESULTS

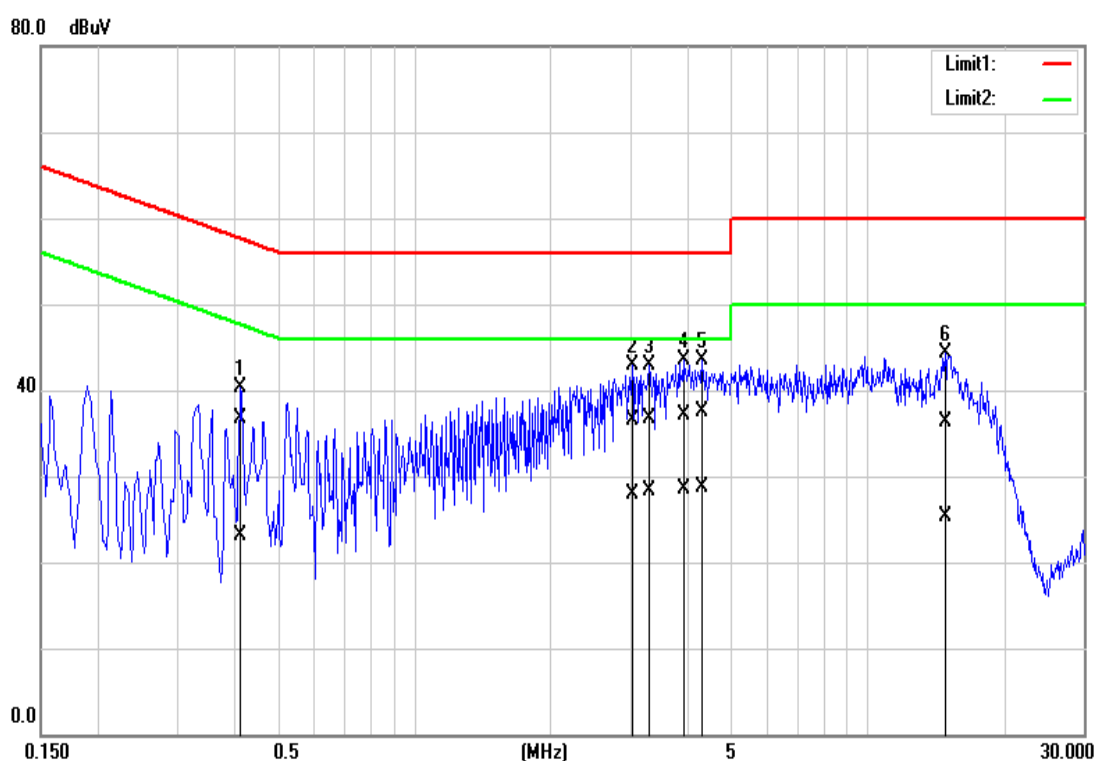
|                          |              |           |            |
|--------------------------|--------------|-----------|------------|
| Test Mode                | Mode 1       | Line:     | L1         |
| Environmental Conditions | 24°C, 50% RH | Test Date | 2019/03/22 |
| 6dB Bandwidth            | 9 kHz        | Tested by | Eason Liu  |



| NO. | Frequency<br>(MHz) | Quasi<br>Peak<br>reading<br>(dBuV) | Average<br>reading<br>(dBuV) | Correction<br>factor<br>(dB) | Quasi<br>Peak<br>result<br>(dBuV) | Average<br>result<br>(dBuV) | Quasi<br>Peak<br>limit<br>(dBuV) | Average<br>limit<br>(dBuV) | Quasi<br>Peak<br>margin<br>(dB) | Average<br>margin<br>(dB) | Remark |
|-----|--------------------|------------------------------------|------------------------------|------------------------------|-----------------------------------|-----------------------------|----------------------------------|----------------------------|---------------------------------|---------------------------|--------|
| 1   | 0.2100             | 27.69                              | 11.78                        | 9.76                         | 37.45                             | 21.54                       | 63.20                            | 53.21                      | -25.75                          | -31.67                    | Pass   |
| 2   | 0.4580             | 28.44                              | 17.91                        | 9.76                         | 38.20                             | 27.67                       | 56.73                            | 46.73                      | -18.53                          | -19.06                    | Pass   |
| 3   | 2.5860             | 27.58                              | 18.74                        | 9.80                         | 37.38                             | 28.54                       | 56.00                            | 46.00                      | -18.62                          | -17.46                    | Pass   |
| 4   | 3.1820             | 27.88                              | 19.64                        | 9.82                         | 37.70                             | 29.46                       | 56.00                            | 46.00                      | -18.30                          | -16.54                    | Pass   |
| 5   | 3.3660             | 28.63                              | 19.89                        | 9.82                         | 38.45                             | 29.71                       | 56.00                            | 46.00                      | -17.55                          | -16.29                    | Pass   |
| 6   | 3.5500             | 27.71                              | 19.80                        | 9.82                         | 37.53                             | 29.62                       | 56.00                            | 46.00                      | -18.47                          | -16.38                    | Pass   |
| 7*  | 3.8140             | 28.02                              | 19.94                        | 9.82                         | 37.84                             | 29.76                       | 56.00                            | 46.00                      | -18.16                          | -16.24                    | Pass   |
| 8   | 3.9980             | 27.80                              | 19.73                        | 9.82                         | 37.62                             | 29.55                       | 56.00                            | 46.00                      | -18.38                          | -16.45                    | Pass   |
| 9   | 4.5020             | 28.53                              | 19.81                        | 9.83                         | 38.36                             | 29.64                       | 56.00                            | 46.00                      | -17.64                          | -16.36                    | Pass   |
| 10  | 4.9180             | 27.60                              | 19.19                        | 9.84                         | 37.44                             | 29.03                       | 56.00                            | 46.00                      | -18.56                          | -16.97                    | Pass   |
| 11  | 8.8700             | 27.56                              | 17.85                        | 9.93                         | 37.49                             | 27.78                       | 60.00                            | 50.00                      | -22.51                          | -22.22                    | Pass   |

REMARKS: L1 = Line One (Live Line)

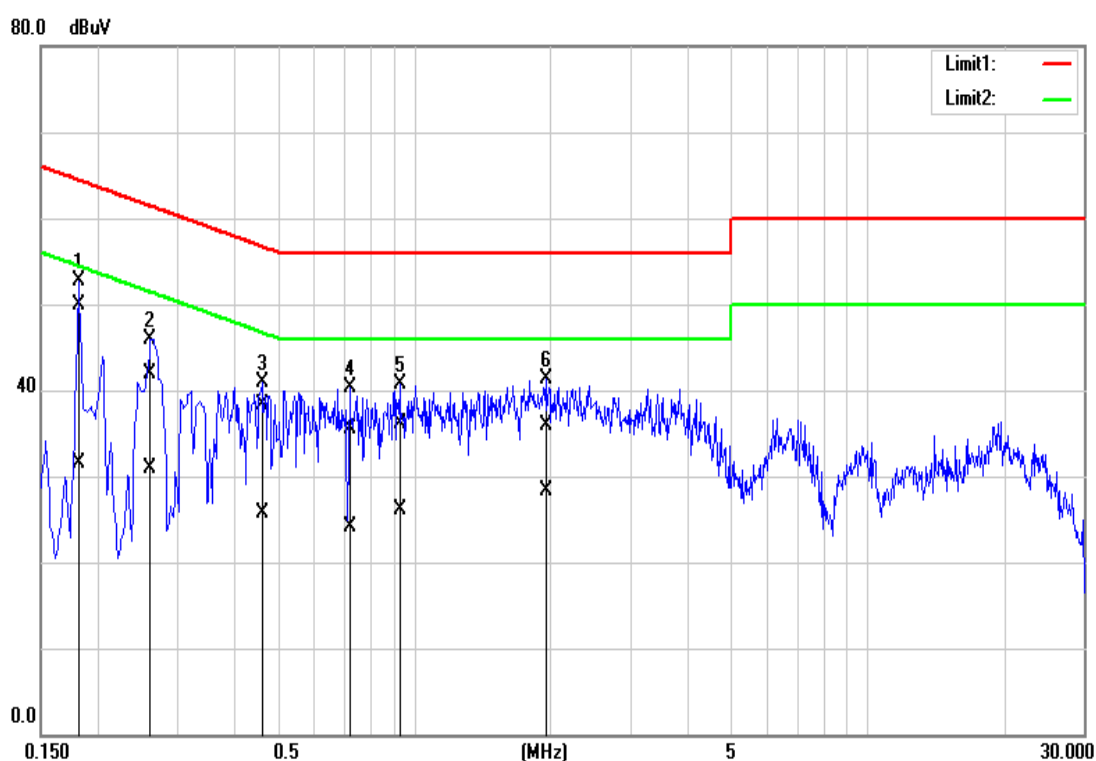
|                          |              |           |            |
|--------------------------|--------------|-----------|------------|
| Test Mode                | Mode 1       | Line:     | L2         |
| Environmental Conditions | 24°C, 50% RH | Test Date | 2019/03/22 |
| 6dB Bandwidth            | 9 kHz        | Tested by | Eason Liu  |



| NO. | Frequency<br>(MHz) | Quasi<br>Peak<br>reading<br>(dBuV) | Average<br>reading<br>(dBuV) | Correction<br>factor<br>(dB) | Quasi<br>Peak<br>result<br>(dBuV) | Average<br>result<br>(dBuV) | Quasi<br>Peak<br>limit<br>(dBuV) | Average<br>limit<br>(dBuV) | Quasi<br>Peak<br>margin<br>(dB) | Average<br>margin<br>(dB) | Remark |
|-----|--------------------|------------------------------------|------------------------------|------------------------------|-----------------------------------|-----------------------------|----------------------------------|----------------------------|---------------------------------|---------------------------|--------|
| 1   | 0.4140             | 26.95                              | 13.29                        | 9.74                         | 36.69                             | 23.03                       | 57.57                            | 47.57                      | -20.88                          | -24.54                    | Pass   |
| 2   | 3.0300             | 26.68                              | 18.05                        | 9.79                         | 36.47                             | 27.84                       | 56.00                            | 46.00                      | -19.53                          | -18.16                    | Pass   |
| 3   | 3.3060             | 26.99                              | 18.55                        | 9.79                         | 36.78                             | 28.34                       | 56.00                            | 46.00                      | -19.22                          | -17.66                    | Pass   |
| 4   | 3.9340             | 27.35                              | 18.67                        | 9.80                         | 37.15                             | 28.47                       | 56.00                            | 46.00                      | -18.85                          | -17.53                    | Pass   |
| 5*  | 4.3260             | 27.63                              | 18.89                        | 9.80                         | 37.43                             | 28.69                       | 56.00                            | 46.00                      | -18.57                          | -17.31                    | Pass   |
| 6   | 14.9060            | 26.29                              | 15.36                        | 10.02                        | 36.31                             | 25.38                       | 60.00                            | 50.00                      | -23.69                          | -24.62                    | Pass   |

REMARKS: L2 = Line Two (Neutral Line)

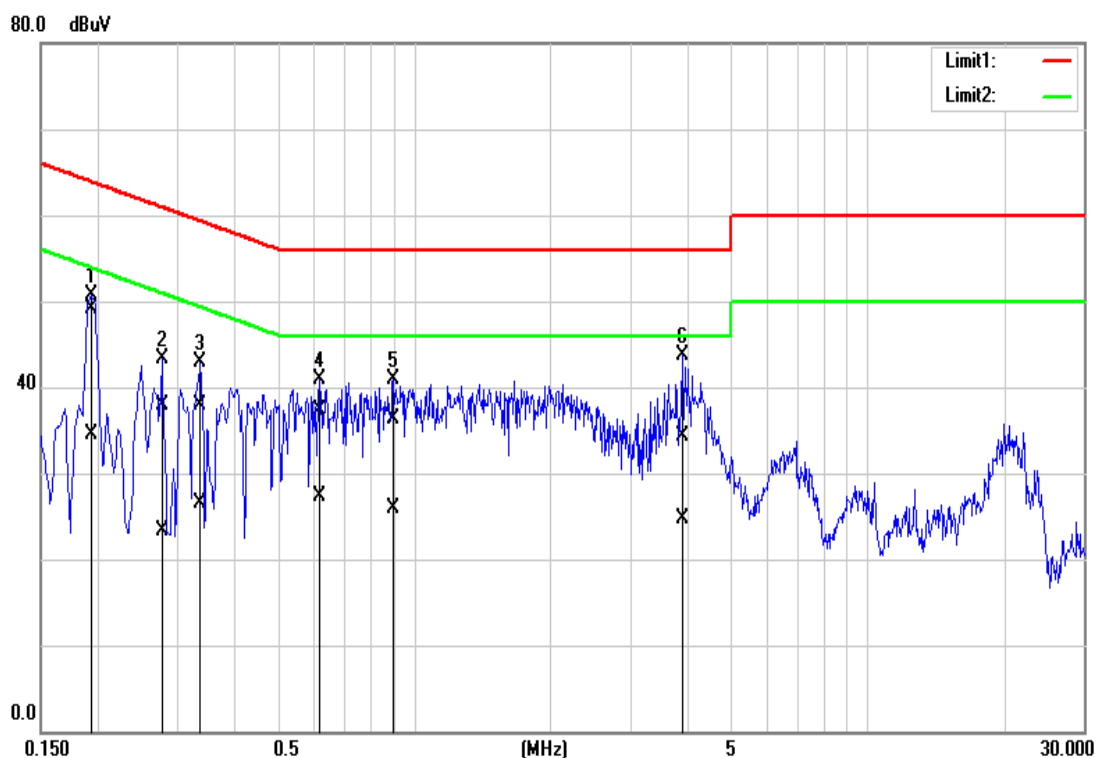
|                          |              |           |            |
|--------------------------|--------------|-----------|------------|
| Test Mode                | Mode 2       | Line:     | L1         |
| Environmental Conditions | 24°C, 50% RH | Test Date | 2019/03/22 |
| 6dB Bandwidth            | 9 kHz        | Tested by | Eason Liu  |



| NO. | Frequency<br>(MHz) | Quasi<br>Peak<br>reading<br>(dBuV) | Average<br>reading<br>(dBuV) | Correction<br>factor<br>(dB) | Quasi<br>Peak<br>result<br>(dBuV) | Average<br>result<br>(dBuV) | Quasi<br>Peak<br>limit<br>(dBuV) | Average<br>limit<br>(dBuV) | Quasi<br>Peak<br>margin<br>(dB) | Average<br>margin<br>(dB) | Remark |
|-----|--------------------|------------------------------------|------------------------------|------------------------------|-----------------------------------|-----------------------------|----------------------------------|----------------------------|---------------------------------|---------------------------|--------|
| 1*  | 0.1819             | 40.15                              | 21.75                        | 9.76                         | 49.91                             | 31.51                       | 64.39                            | 54.40                      | -14.48                          | -22.89                    | Pass   |
| 2   | 0.2620             | 32.05                              | 21.12                        | 9.76                         | 41.81                             | 30.88                       | 61.36                            | 51.37                      | -19.55                          | -20.49                    | Pass   |
| 3   | 0.4620             | 28.61                              | 15.98                        | 9.76                         | 38.37                             | 25.74                       | 56.66                            | 46.66                      | -18.29                          | -20.92                    | Pass   |
| 4   | 0.7220             | 25.81                              | 14.30                        | 9.78                         | 35.59                             | 24.08                       | 56.00                            | 46.00                      | -20.41                          | -21.92                    | Pass   |
| 5   | 0.9300             | 26.26                              | 16.24                        | 9.78                         | 36.04                             | 26.02                       | 56.00                            | 46.00                      | -19.96                          | -19.98                    | Pass   |
| 6   | 1.9580             | 26.04                              | 18.59                        | 9.80                         | 35.84                             | 28.39                       | 56.00                            | 46.00                      | -20.16                          | -17.61                    | Pass   |

REMARKS: L1 = Line One (Live Line)

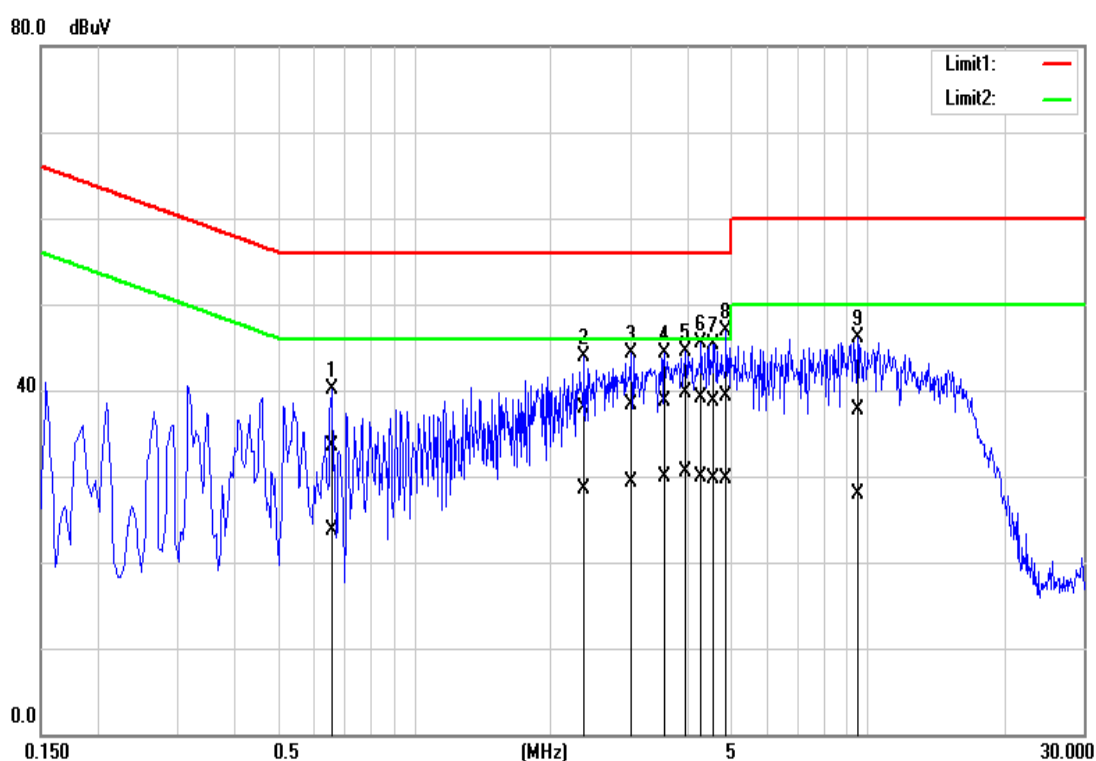
|                          |              |           |            |
|--------------------------|--------------|-----------|------------|
| Test Mode                | Mode 2       | Line:     | L2         |
| Environmental Conditions | 24°C, 50% RH | Test Date | 2019/03/22 |
| 6dB Bandwidth            | 9 kHz        | Tested by | Eason Liu  |



| NO. | Frequency<br>(MHz) | Quasi<br>Peak<br>reading<br>(dBuV) | Average<br>reading<br>(dBuV) | Correction<br>factor<br>(dB) | Quasi<br>Peak<br>result<br>(dBuV) | Average<br>result<br>(dBuV) | Quasi<br>Peak<br>limit<br>(dBuV) | Average<br>limit<br>(dBuV) | Quasi<br>Peak<br>margin<br>(dB) | Average<br>margin<br>(dB) | Remark |
|-----|--------------------|------------------------------------|------------------------------|------------------------------|-----------------------------------|-----------------------------|----------------------------------|----------------------------|---------------------------------|---------------------------|--------|
| 1*  | 0.1940             | 39.39                              | 24.78                        | 9.73                         | 49.12                             | 34.51                       | 63.86                            | 53.86                      | -14.74                          | -19.35                    | Pass   |
| 2   | 0.2779             | 28.16                              | 13.67                        | 9.73                         | 37.89                             | 23.40                       | 60.88                            | 50.88                      | -22.99                          | -27.48                    | Pass   |
| 3   | 0.3379             | 28.24                              | 16.85                        | 9.74                         | 37.98                             | 26.59                       | 59.25                            | 49.25                      | -21.27                          | -22.66                    | Pass   |
| 4   | 0.6180             | 27.60                              | 17.54                        | 9.74                         | 37.34                             | 27.28                       | 56.00                            | 46.00                      | -18.66                          | -18.72                    | Pass   |
| 5   | 0.9020             | 26.58                              | 16.16                        | 9.75                         | 36.33                             | 25.91                       | 56.00                            | 46.00                      | -19.67                          | -20.09                    | Pass   |
| 6   | 3.9100             | 24.58                              | 14.92                        | 9.80                         | 34.38                             | 24.72                       | 56.00                            | 46.00                      | -21.62                          | -21.28                    | Pass   |

REMARKS: L2 = Line Two (Neutral Line)

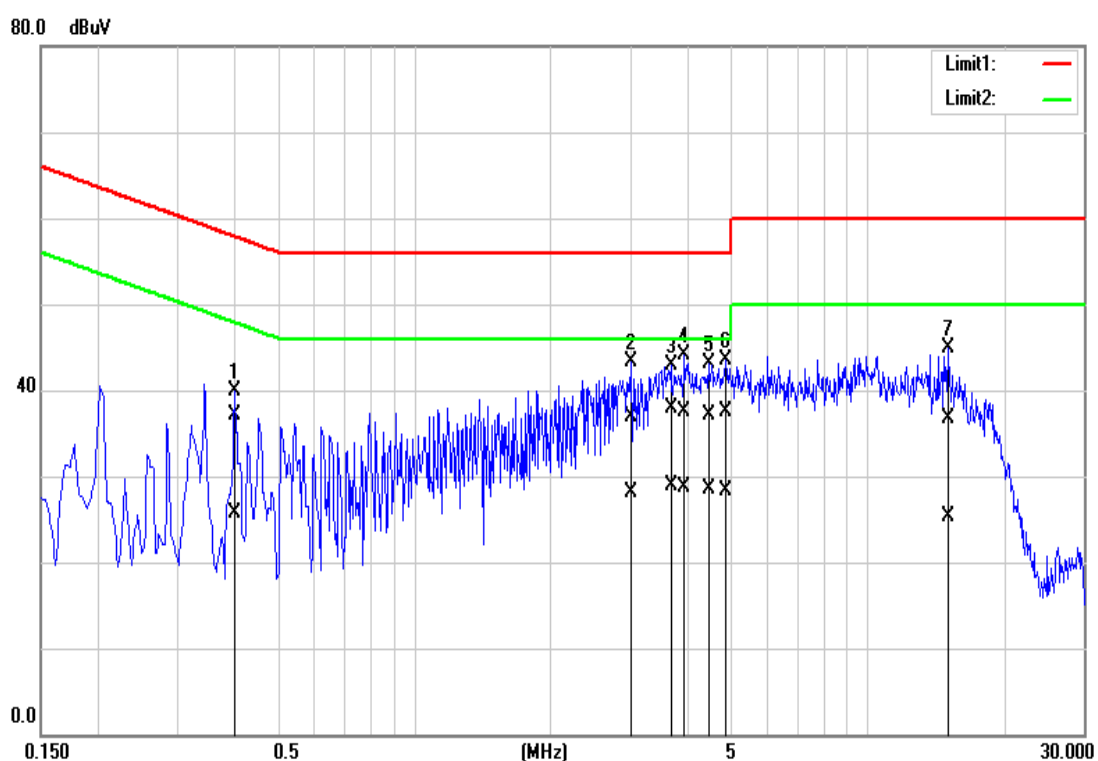
|                          |              |           |            |
|--------------------------|--------------|-----------|------------|
| Test Mode                | Mode 3       | Line:     | L1         |
| Environmental Conditions | 24°C, 50% RH | Test Date | 2019/03/22 |
| 6dB Bandwidth            | 9 kHz        | Tested by | Eason Liu  |



| NO. | Frequency<br>(MHz) | Quasi<br>Peak<br>reading<br>(dBuV) | Average<br>reading<br>(dBuV) | Correction<br>factor<br>(dB) | Quasi<br>Peak<br>result<br>(dBuV) | Average<br>result<br>(dBuV) | Quasi<br>Peak<br>limit<br>(dBuV) | Average<br>limit<br>(dBuV) | Quasi<br>Peak<br>margin<br>(dB) | Average<br>margin<br>(dB) | Remark |
|-----|--------------------|------------------------------------|------------------------------|------------------------------|-----------------------------------|-----------------------------|----------------------------------|----------------------------|---------------------------------|---------------------------|--------|
| 1   | 0.6580             | 23.83                              | 13.99                        | 9.76                         | 33.59                             | 23.75                       | 56.00                            | 46.00                      | -22.41                          | -22.25                    | Pass   |
| 2   | 2.3780             | 28.17                              | 18.62                        | 9.80                         | 37.97                             | 28.42                       | 56.00                            | 46.00                      | -18.03                          | -17.58                    | Pass   |
| 3   | 3.0220             | 28.41                              | 19.43                        | 9.81                         | 38.22                             | 29.24                       | 56.00                            | 46.00                      | -17.78                          | -16.76                    | Pass   |
| 4   | 3.5740             | 28.86                              | 20.18                        | 9.82                         | 38.68                             | 30.00                       | 56.00                            | 46.00                      | -17.32                          | -16.00                    | Pass   |
| 5*  | 3.9740             | 29.96                              | 20.63                        | 9.82                         | 39.78                             | 30.45                       | 56.00                            | 46.00                      | -16.22                          | -15.55                    | Pass   |
| 6   | 4.2940             | 29.20                              | 20.16                        | 9.82                         | 39.02                             | 29.98                       | 56.00                            | 46.00                      | -16.98                          | -16.02                    | Pass   |
| 7   | 4.5739             | 28.82                              | 19.88                        | 9.83                         | 38.65                             | 29.71                       | 56.00                            | 46.00                      | -17.35                          | -16.29                    | Pass   |
| 8   | 4.8940             | 29.47                              | 19.85                        | 9.84                         | 39.31                             | 29.69                       | 56.00                            | 46.00                      | -16.69                          | -16.31                    | Pass   |
| 9   | 9.5020             | 27.69                              | 17.93                        | 9.95                         | 37.64                             | 27.88                       | 60.00                            | 50.00                      | -22.36                          | -22.12                    | Pass   |

REMARKS: L1 = Line One (Live Line)

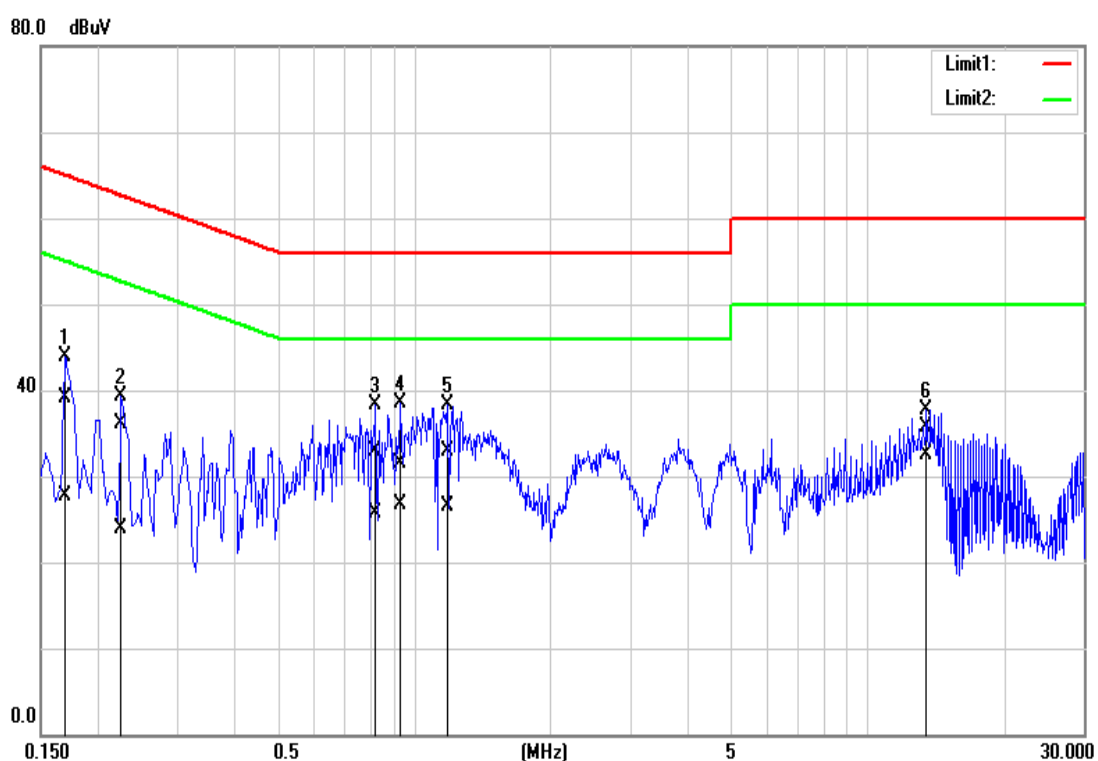
|                          |              |           |            |
|--------------------------|--------------|-----------|------------|
| Test Mode                | Mode 3       | Line:     | L2         |
| Environmental Conditions | 24°C, 50% RH | Test Date | 2019/03/22 |
| 6dB Bandwidth            | 9 kHz        | Tested by | Eason Liu  |



| NO. | Frequency<br>(MHz) | Quasi<br>Peak<br>reading<br>(dBuV) | Average<br>reading<br>(dBuV) | Correction<br>factor<br>(dB) | Quasi<br>Peak<br>result<br>(dBuV) | Average<br>result<br>(dBuV) | Quasi<br>Peak<br>limit<br>(dBuV) | Average<br>limit<br>(dBuV) | Quasi<br>Peak<br>margin<br>(dB) | Average<br>margin<br>(dB) | Remark |
|-----|--------------------|------------------------------------|------------------------------|------------------------------|-----------------------------------|-----------------------------|----------------------------------|----------------------------|---------------------------------|---------------------------|--------|
| 1   | 0.4020             | 27.33                              | 15.94                        | 9.74                         | 37.07                             | 25.68                       | 57.81                            | 47.81                      | -20.74                          | -22.13                    | Pass   |
| 2   | 3.0220             | 27.04                              | 18.28                        | 9.79                         | 36.83                             | 28.07                       | 56.00                            | 46.00                      | -19.17                          | -17.93                    | Pass   |
| 3*  | 3.6980             | 28.15                              | 19.20                        | 9.80                         | 37.95                             | 29.00                       | 56.00                            | 46.00                      | -18.05                          | -17.00                    | Pass   |
| 4   | 3.9500             | 27.69                              | 19.00                        | 9.80                         | 37.49                             | 28.80                       | 56.00                            | 46.00                      | -18.51                          | -17.20                    | Pass   |
| 5   | 4.4580             | 27.34                              | 18.70                        | 9.82                         | 37.16                             | 28.52                       | 56.00                            | 46.00                      | -18.84                          | -17.48                    | Pass   |
| 6   | 4.8740             | 27.72                              | 18.50                        | 9.82                         | 37.54                             | 28.32                       | 56.00                            | 46.00                      | -18.46                          | -17.68                    | Pass   |
| 7   | 15.1140            | 26.62                              | 15.34                        | 10.02                        | 36.64                             | 25.36                       | 60.00                            | 50.00                      | -23.36                          | -24.64                    | Pass   |

REMARKS: L2 = Line Two (Neutral Line)

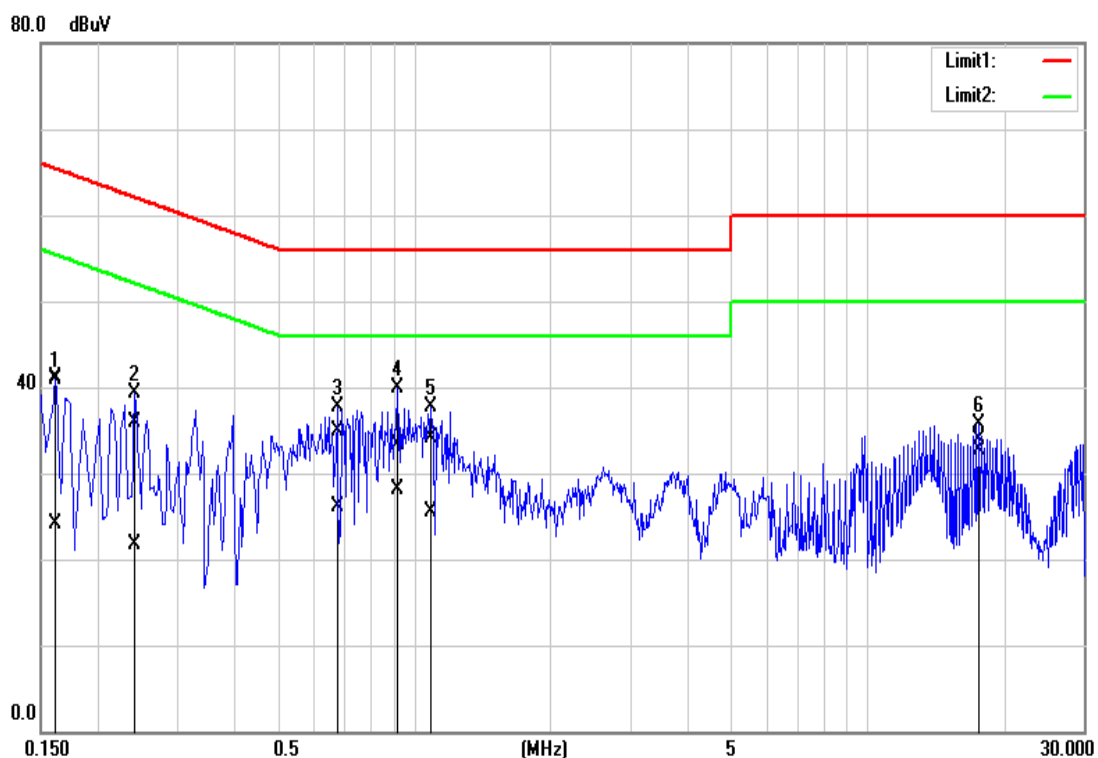
|                          |              |           |            |
|--------------------------|--------------|-----------|------------|
| Test Mode                | Mode 4       | Line:     | L1         |
| Environmental Conditions | 24°C, 50% RH | Test Date | 2019/03/22 |
| 6dB Bandwidth            | 9 kHz        | Tested by | Eason Liu  |



| NO. | Frequency<br>(MHz) | Quasi<br>Peak<br>reading<br>(dBuV) | Average<br>reading<br>(dBuV) | Correction<br>factor<br>(dB) | Quasi<br>Peak<br>result<br>(dBuV) | Average<br>result<br>(dBuV) | Quasi<br>Peak<br>limit<br>(dBuV) | Average<br>limit<br>(dBuV) | Quasi<br>Peak<br>margin<br>(dB) | Average<br>margin<br>(dB) | Remark |
|-----|--------------------|------------------------------------|------------------------------|------------------------------|-----------------------------------|-----------------------------|----------------------------------|----------------------------|---------------------------------|---------------------------|--------|
| 1   | 0.1700             | 29.30                              | 17.85                        | 9.76                         | 39.06                             | 27.61                       | 64.96                            | 54.96                      | -25.90                          | -27.35                    | Pass   |
| 2   | 0.2260             | 26.33                              | 14.18                        | 9.76                         | 36.09                             | 23.94                       | 62.59                            | 52.60                      | -26.50                          | -28.66                    | Pass   |
| 3   | 0.8220             | 23.16                              | 15.93                        | 9.78                         | 32.94                             | 25.71                       | 56.00                            | 46.00                      | -23.06                          | -20.29                    | Pass   |
| 4   | 0.9340             | 21.82                              | 16.93                        | 9.78                         | 31.60                             | 26.71                       | 56.00                            | 46.00                      | -24.40                          | -19.29                    | Pass   |
| 5   | 1.1860             | 23.18                              | 16.75                        | 9.78                         | 32.96                             | 26.53                       | 56.00                            | 46.00                      | -23.04                          | -19.47                    | Pass   |
| 6*  | 13.5460            | 25.78                              | 22.45                        | 10.00                        | 35.78                             | 32.45                       | 60.00                            | 50.00                      | -24.22                          | -17.55                    | Pass   |

REMARKS: L1 = Line One (Live Line)

|                          |              |           |            |
|--------------------------|--------------|-----------|------------|
| Test Mode                | Mode 4       | Line:     | L2         |
| Environmental Conditions | 24°C, 50% RH | Test Date | 2019/03/22 |
| 6dB Bandwidth            | 9 kHz        | Tested by | Eason Liu  |



| NO. | Frequency<br>(MHz) | Quasi<br>Peak<br>reading<br>(dBuV) | Average<br>reading<br>(dBuV) | Correction<br>factor<br>(dB) | Quasi<br>Peak<br>result<br>(dBuV) | Average<br>result<br>(dBuV) | Quasi<br>Peak<br>limit<br>(dBuV) | Average<br>limit<br>(dBuV) | Quasi<br>Peak<br>margin<br>(dB) | Average<br>margin<br>(dB) | Remark |
|-----|--------------------|------------------------------------|------------------------------|------------------------------|-----------------------------------|-----------------------------|----------------------------------|----------------------------|---------------------------------|---------------------------|--------|
| 1   | 0.1620             | 31.30                              | 14.43                        | 9.73                         | 41.03                             | 24.16                       | 65.36                            | 55.36                      | -24.33                          | -31.20                    | Pass   |
| 2   | 0.2420             | 26.25                              | 12.02                        | 9.73                         | 35.98                             | 21.75                       | 62.02                            | 52.03                      | -26.04                          | -30.28                    | Pass   |
| 3   | 0.6780             | 25.09                              | 16.29                        | 9.74                         | 34.83                             | 26.03                       | 56.00                            | 46.00                      | -21.17                          | -19.97                    | Pass   |
| 4   | 0.9220             | 23.65                              | 18.35                        | 9.75                         | 33.40                             | 28.10                       | 56.00                            | 46.00                      | -22.60                          | -17.90                    | Pass   |
| 5   | 1.0900             | 24.43                              | 15.79                        | 9.75                         | 34.18                             | 25.54                       | 56.00                            | 46.00                      | -21.82                          | -20.46                    | Pass   |
| 6*  | 17.6340            | 23.88                              | 22.71                        | 10.06                        | 33.94                             | 32.77                       | 60.00                            | 50.00                      | -26.06                          | -17.23                    | Pass   |

REMARKS: L2 = Line Two (Neutral Line)

## 7 RADIATED EMISSION MEASUREMENT

### 7.1. LIMITS OF RADIATED EMISSION MEASUREMENT

According to FCC Part 15.33 (b), for an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

| Highest frequency generated or used in the device or on which the device operates or tunes (MHz) | Upper frequency of measurement range (MHz)                                     |
|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| Below 1.75                                                                                       | 30                                                                             |
| 1.75-108                                                                                         | 1000                                                                           |
| 108-500                                                                                          | 2000                                                                           |
| 500-1000                                                                                         | 5000                                                                           |
| Above 1000                                                                                       | 5 <sup>th</sup> harmonic of the highest frequency or 40GHz, whichever is lower |

#### Below 1GHz (for digital device)

| FREQUENCY (MHz) | dBuV/m (At 10m) |         |
|-----------------|-----------------|---------|
|                 | Class A         | Class B |
| 30 ~ 230        | 40              | 30      |
| 230 ~ 1000      | 47              | 37      |

#### Limit tables for digital device:

##### Class A Radiated Emission limit at 10m (for others)

| Frequency (MHz) | Field Strength Limit (uV/m)Q.P. | Field Strength Limit (dBuV/m)Q.P. |
|-----------------|---------------------------------|-----------------------------------|
| 30 - 88         | 90                              | 39                                |
| 88 - 216        | 150                             | 43.5                              |
| 216 - 960       | 210                             | 46.4                              |
| Above 960       | 300                             | 49.5                              |

##### Class B Radiated Emission limit at 3m (for others)

| Frequency (MHz) | Field Strength Limit (uV/m)Q.P. | Field Strength Limit (dBuV/m)Q.P. |
|-----------------|---------------------------------|-----------------------------------|
| 30 - 88         | 100                             | 40                                |
| 88 - 216        | 150                             | 43.5                              |
| 216 - 960       | 200                             | 46                                |
| Above 960       | 500                             | 54                                |

### Above 1GHz (for all device)

| Frequency (MHz) | Class A (dBuV/m) (At 10m) |      | Class B (dBuV/m) (At 3m) |      |
|-----------------|---------------------------|------|--------------------------|------|
|                 | Average                   | Peak | Average                  | Peak |
| Above 1000      | 49.5                      | 69.5 | 54                       | 74   |

**NOTE:** (1) The lower limit shall apply at the transition frequencies.  
(2) Emission level (dBuV/m) = 20 log Emission level (uV/m).  
(3) The measurement above 1GHz is at close-in distances 3m, and determine the limit **L<sub>2</sub>** corresponding to the close-in distance **d<sub>2</sub>** by applying the following relation: **L<sub>2</sub> = L<sub>1</sub> (d<sub>1</sub>/d<sub>2</sub>)**, where **L<sub>1</sub>** is the specified limit in microvolts per metre (**uV/m**) at the distance **d<sub>1</sub> (10m)**, **L<sub>2</sub>** is the new limit for distance **d<sub>2</sub> (3m)**.  
So the new Class A limit above 1GHz at 3m is as following table:

| Frequency (MHz) | Class A (dBuV/m) (At 3m) |      |
|-----------------|--------------------------|------|
|                 | Average                  | Peak |
| Above 1000      | 60                       | 80   |

## 7.2. TEST INSTRUMENTS

| Wugu 10M Chamber  |                    |                     |               |                  |                 |
|-------------------|--------------------|---------------------|---------------|------------------|-----------------|
| Name of Equipment | Manufacturer       | Model               | Serial Number | Calibration Date | Calibration Due |
| Bilog Antenna     | TESEQ              | CBL 6112D           | 31674         | 03/06/2019       | 03/05/2020      |
| Bilog Antenna     | TESEQ              | CBL 6112D           | 31675         | 03/22/2019       | 03/21/2020      |
| Coaxial Cable     | Huber+Suhner       | SUCOFLEX 104PEA     | 330029        | 05/02/2018       | 05/01/2019      |
| Coaxial Cable     | Huber+Suhner       | SUCOFLEX 104PEA     | 329383        | 05/02/2018       | 05/01/2019      |
| Coaxial Cable     | Huber+Suhner       | 104PEA              | 33948/4PEA    | 05/02/2018       | 05/01/2019      |
| Coaxial Cable     | Huber+Suhner       | 104PEA              | 33949/4PEA    | 05/02/2018       | 05/01/2019      |
| EMI Test Receiver | R&S                | ESCI                | 100961        | 07/04/2018       | 07/03/2019      |
| EMI Test Receiver | R&S                | ESCI                | 100962        | 07/10/2018       | 07/09/2019      |
| Horn Antenna      | ETS LINDGREN       | 3116                | 00026370      | 12/26/2018       | 12/25/2019      |
| Horn Antenna      | EMCO               | 3117                | 00055167      | 12/24/2018       | 12/23/2019      |
| Pre-Amplifier     | HP                 | 8447D               | 2944A07754    | 05/02/2018       | 05/01/2019      |
| Pre-Amplifier     | HP                 | 8447D               | 2944A08150    | 05/02/2018       | 05/01/2019      |
| Pre-Amplifier     | EMCI               | EMC051845           | 980040        | 05/02/2018       | 05/01/2019      |
| Pre-Amplifier     | MITEQ              | AMF-6F-260400-40-8P | 985646        | 06/21/2018       | 06/20/2019      |
| Spectrum Analyzer | Agilent            | E4446A              | MY48250297    | 08/30/2018       | 08/29/2019      |
| AC POWER SOURE    | APE                | AFC-130             | 991259        | N.C.R            | N.C.R           |
| Antenna Tower     | CCS                | CC-A-1F             | N/A           | N.C.R            | N.C.R           |
| Antenna Tower     | Sunol Sciences     | TLT2                | 031010-5      | N.C.R            | N.C.R           |
| Controller        | CCS                | CC-C-1F             | N/A           | N.C.R            | N.C.R           |
| Controller        | Sunol Sciences     | SC104V              | 031010-1      | N.C.R            | N.C.R           |
| Turn Table        | CCS                | CC-T-1F             | N/A           | N.C.R            | N.C.R           |
| Software          | EZ-EMC (CCS-3A1RE) |                     |               |                  |                 |

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. N.C.R. = No Calibration Required.

**7.3. TEST PROCEDURES** (please refer to measurement standard or CCS SOP PA-031)

The basic test procedure was in accordance with ANSI C63.4-2014 and ICES-003-2016.

**Frequency range 30MHz ~ 1GHz**

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter semi-anechoic chamber room. The table was rotated 360 degrees to determine the position.
2. The EUT was set 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The height of antenna is varied from one meter to four meter above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was turned to heights for 1 meter to 4 meters and the turn table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1GHz.

NOTE: The resolution bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1GHz.

**Frequency range above 1GHz**

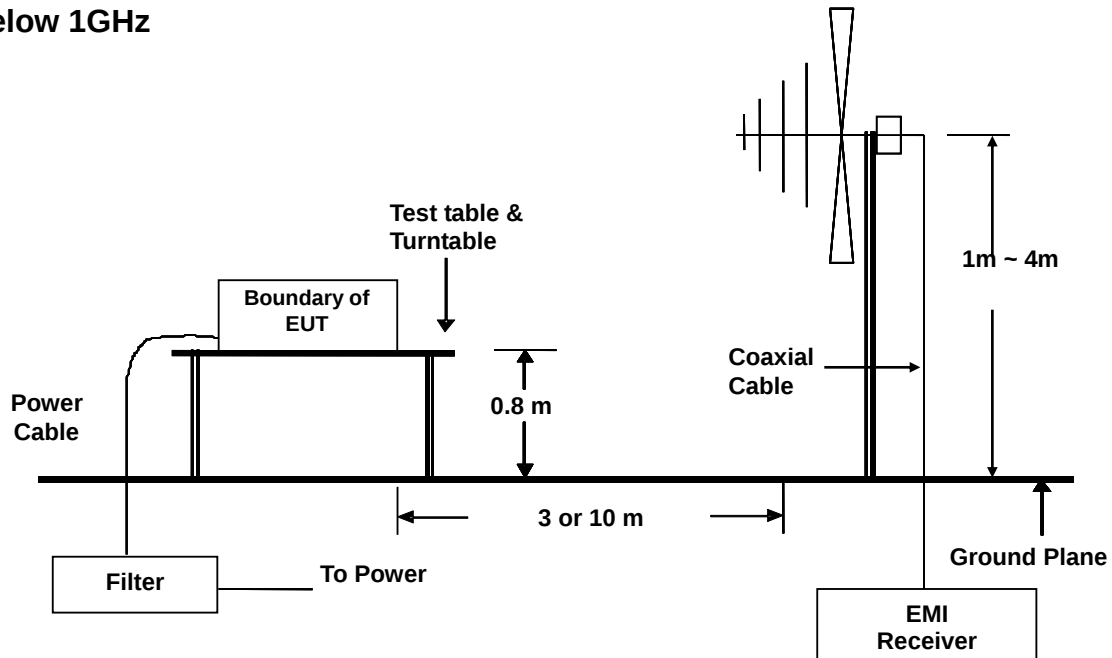
1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber room. The table was rotated 360 degrees to determine the position.
2. The EUT was set 3 meters away from the directional antenna, which was pointed towards the source of the emission within the EUT. This could be done by either pointing the antenna at an angle towards the source of the emission, or by rotating the EUT, in both height and polarization, to maximize the measured emission.
3. The height of antenna can be varied from one meter to four meters, the height of adjustment depends on the EUT height and the antenna 3 dB beam width both, to detect the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was turned to heights and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1GHz.

**NOTE:**

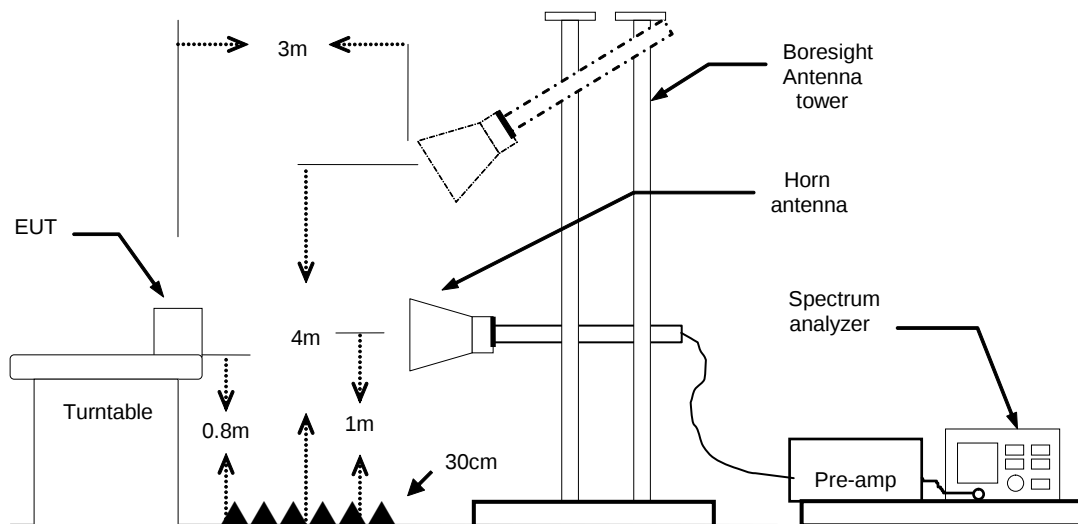
1. The resolution bandwidth is 1MHz and video bandwidth of test spectrum analyzer is 1 MHz for peak detection at above 1GHz. The resolution bandwidth is 1MHz and video bandwidth of test spectrum analyzer is 100Hz for average detection at frequency above 1 GHz.
2. For measurement of frequency above 1GHz, the EUT was set 3 meters away from the directional antenna.

## 7.4. TEST SETUP

### Below 1GHz



### Above 1GHz



- For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

## 7.5. DATA SAMPLE:

### Below 1GHz

| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|-------------|------------|--------|
| xx.xx           | 16.49          | 9.86                     | 26.35           | 30.00          | -3.65       | 116.00      | 101.00     | QP     |

### Above 1GHz

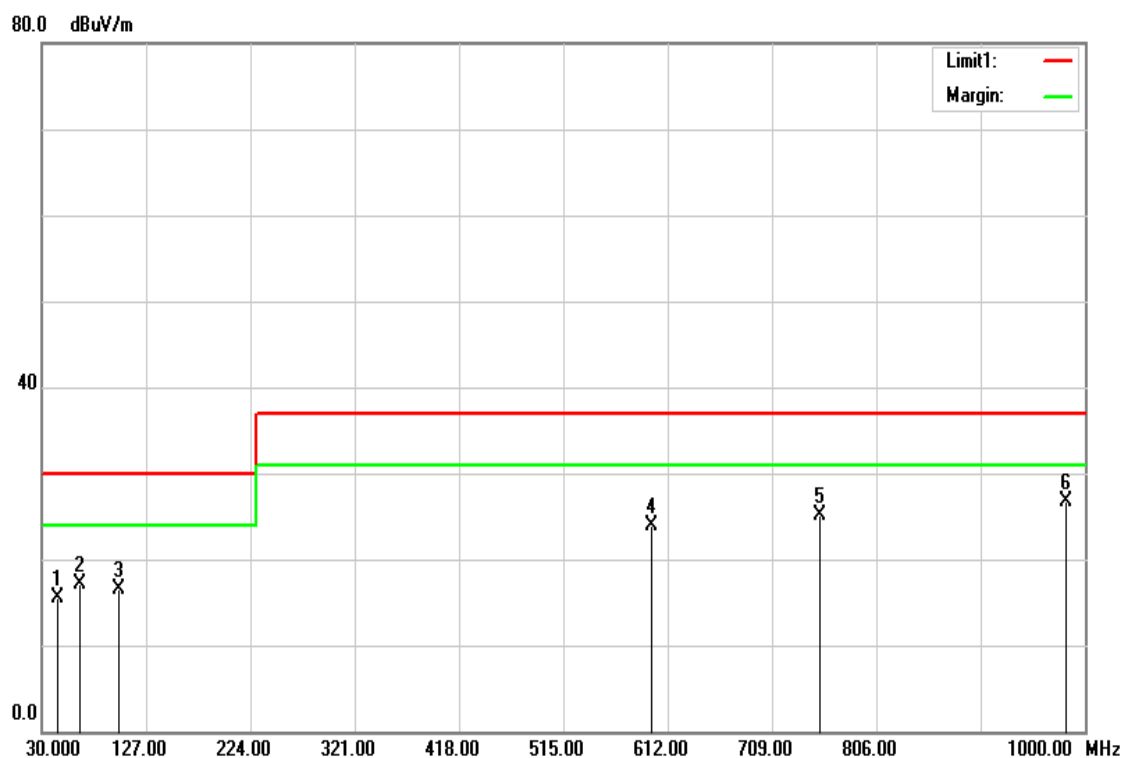
| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|-------------|------------|--------|
| xx.xx           | 60.80          | -14.59                   | 46.21           | 74.00          | -27.79      | 200         | 351        | peak   |
| xx.xx           | 52.05          | -13.17                   | 38.88           | 54.00          | -15.12      | 200         | 135        | AVG    |

Frequency (MHz) = Emission frequency in MHz  
 Reading (dBuV) = Uncorrected Analyzer / Receiver reading  
 Correction Factor (dB/m) = Antenna factor + Cable loss – Amplifier gain  
 Result (dBuV/m) = Reading (dBuV) + Corr. Factor (dB/m)  
 Limit (dBuV/m) = Limit stated in standard  
 Margin (dB) = Result (dBuV/m) – Limit (dBuV/m)  
 Q.P. = Quasi-Peak

## 7.6. TEST RESULTS

## Below 1GHz

|                          |              |                  |            |
|--------------------------|--------------|------------------|------------|
| Test Mode                | Mode 1       | 6dB Bandwidth    | 120 kHz    |
| Environmental Conditions | 26°C, 60% RH | Test Date        | 2019/03/23 |
| Antenna Pole             | Vertical     | Antenna Distance | 10m        |
| Detector Function        | Quasi-peak.  | Tested by        | Wiz Chang  |

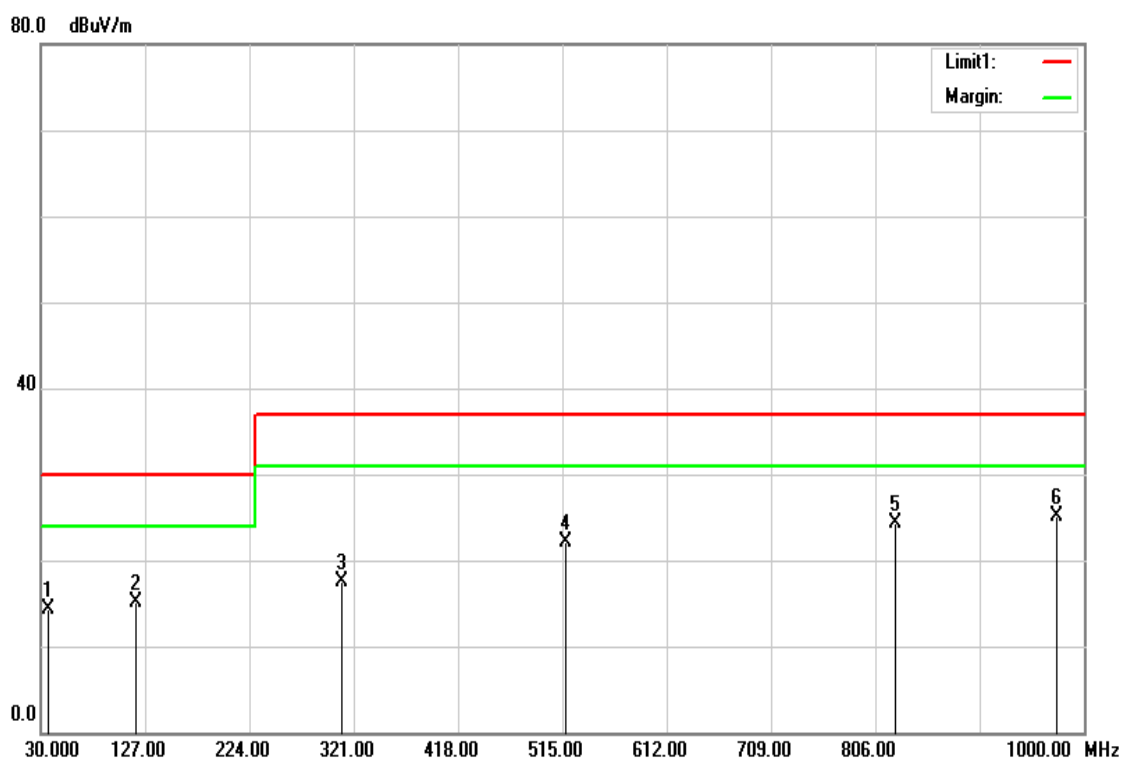


| No. | Frequency (MHz) | Reading (dBuV) | Correction Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----|-----------------|----------------|-------------------------|-----------------|----------------|-------------|-------------|------------|--------|
| 1   | 44.5500         | 25.75          | -10.27                  | 15.48           | 30.00          | -14.52      | 100         | 217        | QP     |
| 2   | 65.8900         | 31.51          | -14.40                  | 17.11           | 30.00          | -12.89      | 200         | 359        | QP     |
| 3   | 101.7800        | 25.72          | -9.28                   | 16.44           | 30.00          | -13.56      | 100         | 360        | QP     |
| 4   | 597.4500        | 22.84          | 1.13                    | 23.97           | 37.00          | -13.03      | 299         | 310        | QP     |
| 5   | 753.6200        | 21.82          | 3.22                    | 25.04           | 37.00          | -11.96      | 100         | 7          | QP     |
| 6   | 982.5400        | 20.27          | 6.52                    | 26.79           | 37.00          | -10.21      | 299         | 3          | QP     |

## REMARKS:

1. The other emission levels were very low against the limit.
2. 30MHz to 1000MHz test is Applicable CISPR 22 standard.

|                          |              |                  |            |
|--------------------------|--------------|------------------|------------|
| Test Mode                | Mode 1       | 6dB Bandwidth    | 120 kHz    |
| Environmental Conditions | 26°C, 60% RH | Test Date        | 2019/03/23 |
| Antenna Pole             | Horizontal   | Antenna Distance | 10m        |
| Detector Function        | Quasi-peak.  | Tested by        | Wiz Chang  |

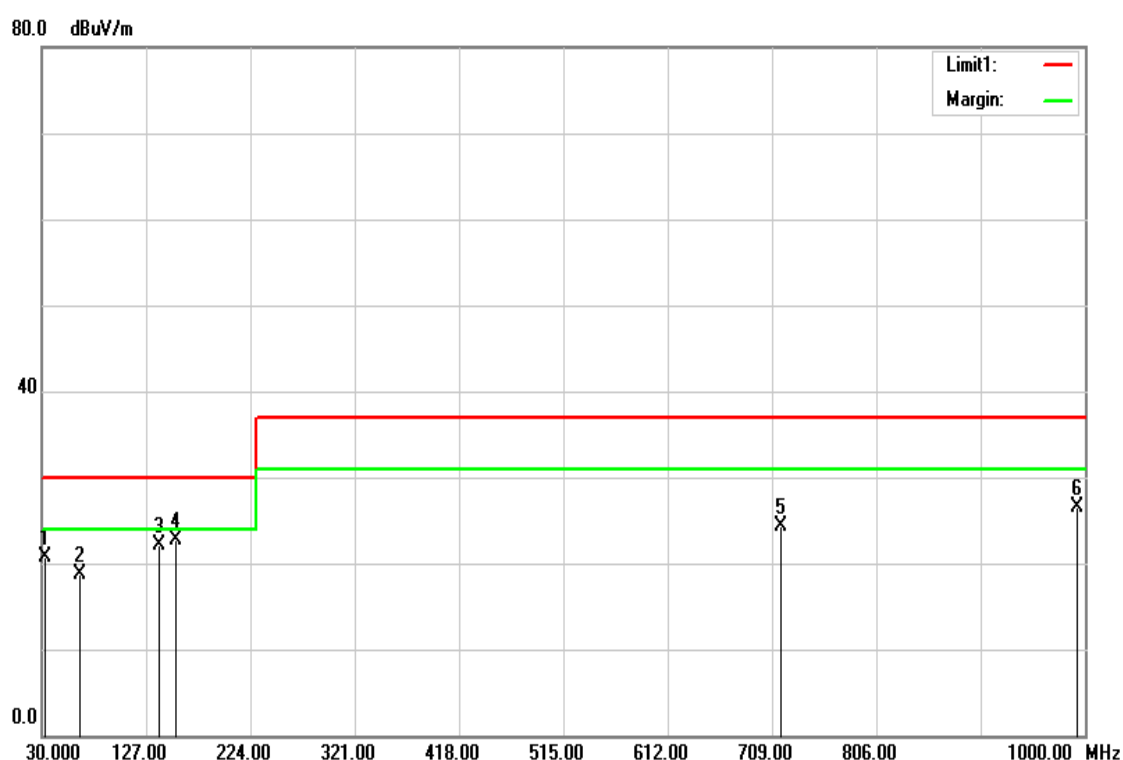


| No. | Frequency (MHz) | Reading (dBuV) | Correction Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----|-----------------|----------------|-------------------------|-----------------|----------------|-------------|-------------|------------|--------|
| 1   | 36.7900         | 21.02          | -6.75                   | 14.27           | 30.00          | -15.73      | 300         | 63         | QP     |
| 2   | 118.2700        | 23.97          | -8.77                   | 15.20           | 30.00          | -14.80      | 200         | 72         | QP     |
| 3   | 310.3300        | 23.36          | -5.78                   | 17.58           | 37.00          | -19.42      | 100         | 172        | QP     |
| 4   | 517.9100        | 23.55          | -1.51                   | 22.04           | 37.00          | -14.96      | 399         | 317        | QP     |
| 5   | 824.4300        | 22.36          | 1.95                    | 24.31           | 37.00          | -12.69      | 234         | 0          | QP     |
| 6   | 974.7800        | 21.35          | 3.81                    | 25.16           | 37.00          | -11.84      | 291         | 0          | QP     |

# REMARKS:

1. The other emission levels were very low against the limit.
2. 30MHz to 1000MHz test is Applicable CISPR 22 standard.

|                          |              |                  |            |
|--------------------------|--------------|------------------|------------|
| Test Mode                | Mode 2       | 6dB Bandwidth    | 120 kHz    |
| Environmental Conditions | 26°C, 60% RH | Test Date        | 2019/03/23 |
| Antenna Pole             | Vertical     | Antenna Distance | 10m        |
| Detector Function        | Quasi-peak.  | Tested by        | Wiz Chang  |

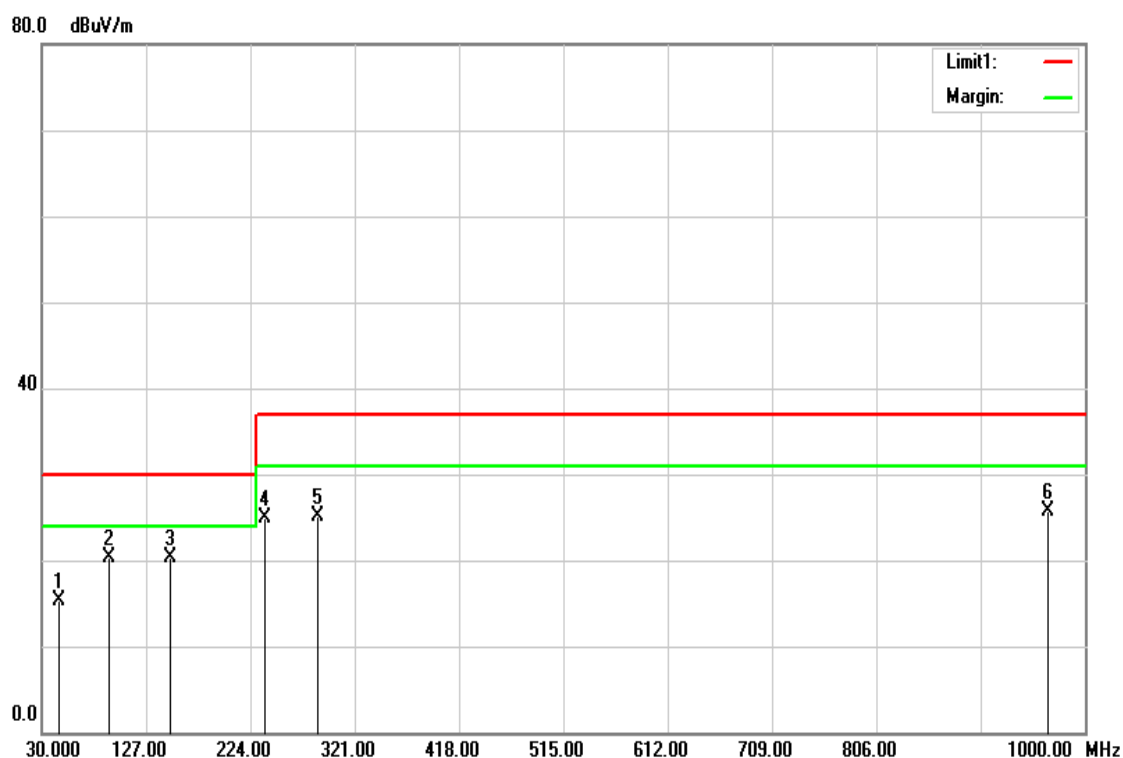


| No. | Frequency (MHz) | Reading (dBuV) | Correction Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----|-----------------|----------------|-------------------------|-----------------|----------------|-------------|-------------|------------|--------|
| 1   | 32.9100         | 24.49          | -3.82                   | 20.67           | 30.00          | -9.33       | 100         | 3          | QP     |
| 2   | 65.8900         | 33.12          | -14.40                  | 18.72           | 30.00          | -11.28      | 200         | 22         | QP     |
| 3   | 139.6100        | 30.42          | -8.26                   | 22.16           | 30.00          | -7.84       | 200         | 323        | QP     |
| 4   | 154.1600        | 31.57          | -8.79                   | 22.78           | 30.00          | -7.22       | 200         | 258        | QP     |
| 5   | 716.7600        | 21.81          | 2.46                    | 24.27           | 37.00          | -12.73      | 200         | 14         | QP     |
| 6   | 992.2400        | 19.71          | 6.71                    | 26.42           | 37.00          | -10.58      | 399         | 0          | QP     |

#### REMARKS:

1. The other emission levels were very low against the limit.
2. 30MHz to 1000MHz test is Applicable CISPR 22 standard.

|                          |              |                  |            |
|--------------------------|--------------|------------------|------------|
| Test Mode                | Mode 2       | 6dB Bandwidth    | 120 kHz    |
| Environmental Conditions | 26°C, 60% RH | Test Date        | 2019/03/23 |
| Antenna Pole             | Horizontal   | Antenna Distance | 10m        |
| Detector Function        | Quasi-peak.  | Tested by        | Wiz Chang  |

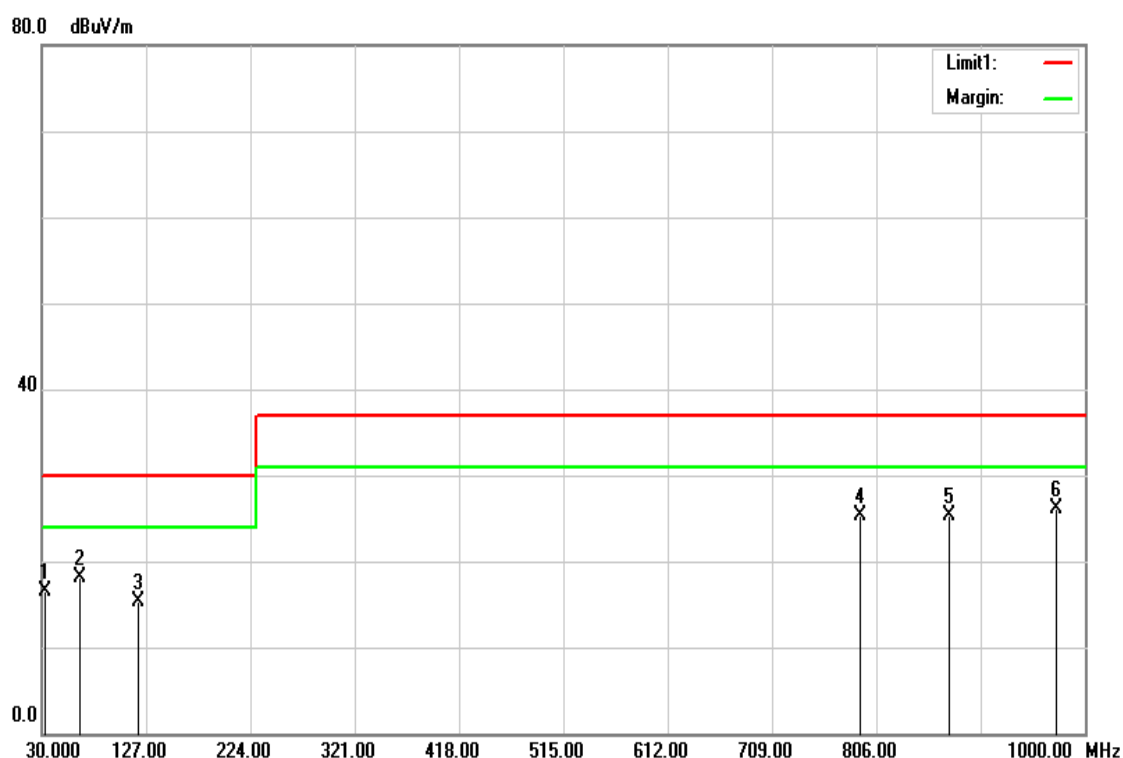


| No. | Frequency (MHz) | Reading (dBuV) | Correction Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----|-----------------|----------------|-------------------------|-----------------|----------------|-------------|-------------|------------|--------|
| 1   | 45.5200         | 26.75          | -11.48                  | 15.27           | 30.00          | -14.73      | 399         | 187        | QP     |
| 2   | 92.0800         | 32.12          | -11.76                  | 20.36           | 30.00          | -9.64       | 300         | 100        | QP     |
| 3   | 149.3100        | 30.03          | -9.67                   | 20.36           | 30.00          | -9.64       | 399         | 230        | QP     |
| 4   | 237.5800        | 33.29          | -8.45                   | 24.84           | 37.00          | -12.16      | 399         | 36         | QP     |
| 5   | 286.0800        | 31.39          | -6.26                   | 25.13           | 37.00          | -11.87      | 300         | 0          | QP     |
| 6   | 966.0500        | 21.99          | 3.67                    | 25.66           | 37.00          | -11.34      | 399         | 0          | QP     |

#### REMARKS:

1. The other emission levels were very low against the limit.
2. 30MHz to 1000MHz test is Applicable CISPR 22 standard.

|                          |              |                  |            |
|--------------------------|--------------|------------------|------------|
| Test Mode                | Mode 3       | 6dB Bandwidth    | 120 kHz    |
| Environmental Conditions | 26°C, 60% RH | Test Date        | 2019/03/23 |
| Antenna Pole             | Vertical     | Antenna Distance | 10m        |
| Detector Function        | Quasi-peak.  | Tested by        | Wiz Chang  |

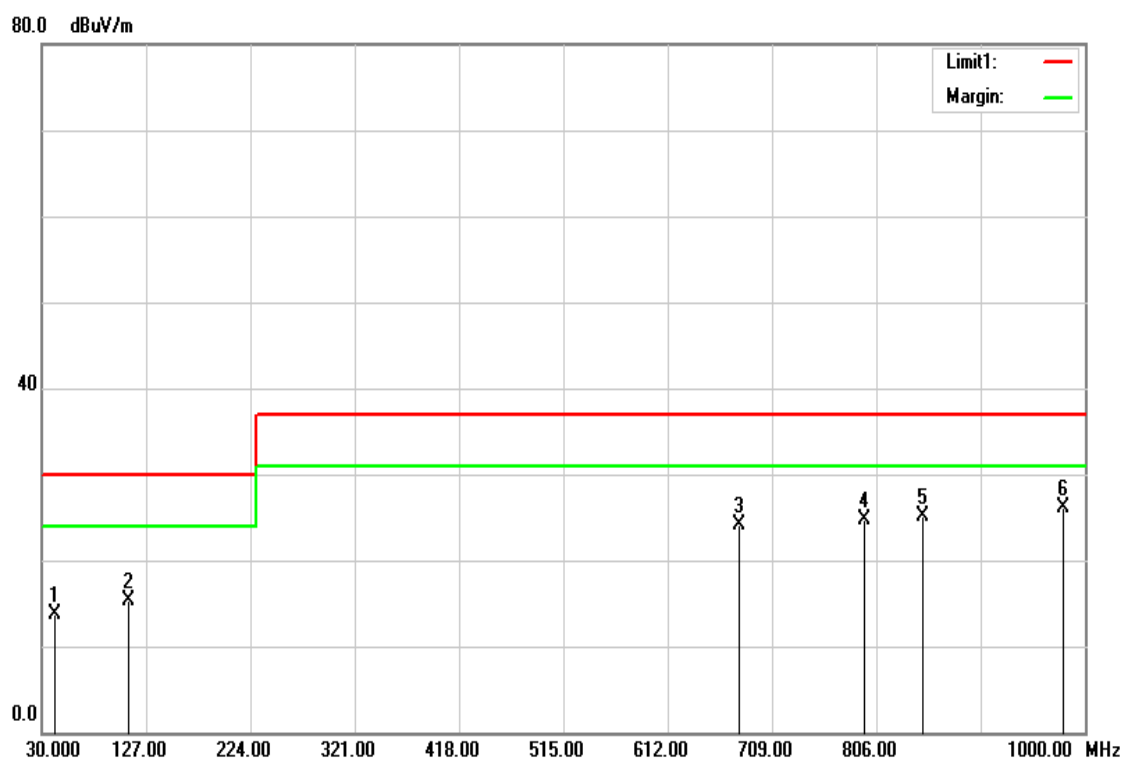


| No. | Frequency (MHz) | Reading (dBuV) | Correction Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----|-----------------|----------------|-------------------------|-----------------|----------------|-------------|-------------|------------|--------|
| 1   | 32.9100         | 20.28          | -3.82                   | 16.46           | 30.00          | -13.54      | 100         | 359        | QP     |
| 2   | 65.8900         | 32.41          | -14.40                  | 18.01           | 30.00          | -11.99      | 200         | 0          | QP     |
| 3   | 120.2100        | 23.04          | -7.77                   | 15.27           | 30.00          | -14.73      | 100         | 208        | QP     |
| 4   | 791.4500        | 21.56          | 3.71                    | 25.27           | 37.00          | -11.73      | 162         | 360        | QP     |
| 5   | 873.9000        | 20.39          | 4.92                    | 25.31           | 37.00          | -11.69      | 299         | 1          | QP     |
| 6   | 973.8100        | 19.83          | 6.36                    | 26.19           | 37.00          | -10.81      | 399         | 315        | QP     |

#### REMARKS:

1. The other emission levels were very low against the limit.
2. 30MHz to 1000MHz test is Applicable CISPR 22 standard.

|                          |              |                  |            |
|--------------------------|--------------|------------------|------------|
| Test Mode                | Mode 3       | 6dB Bandwidth    | 120 kHz    |
| Environmental Conditions | 26°C, 60% RH | Test Date        | 2019/03/23 |
| Antenna Pole             | Horizontal   | Antenna Distance | 10m        |
| Detector Function        | Quasi-peak.  | Tested by        | Wiz Chang  |

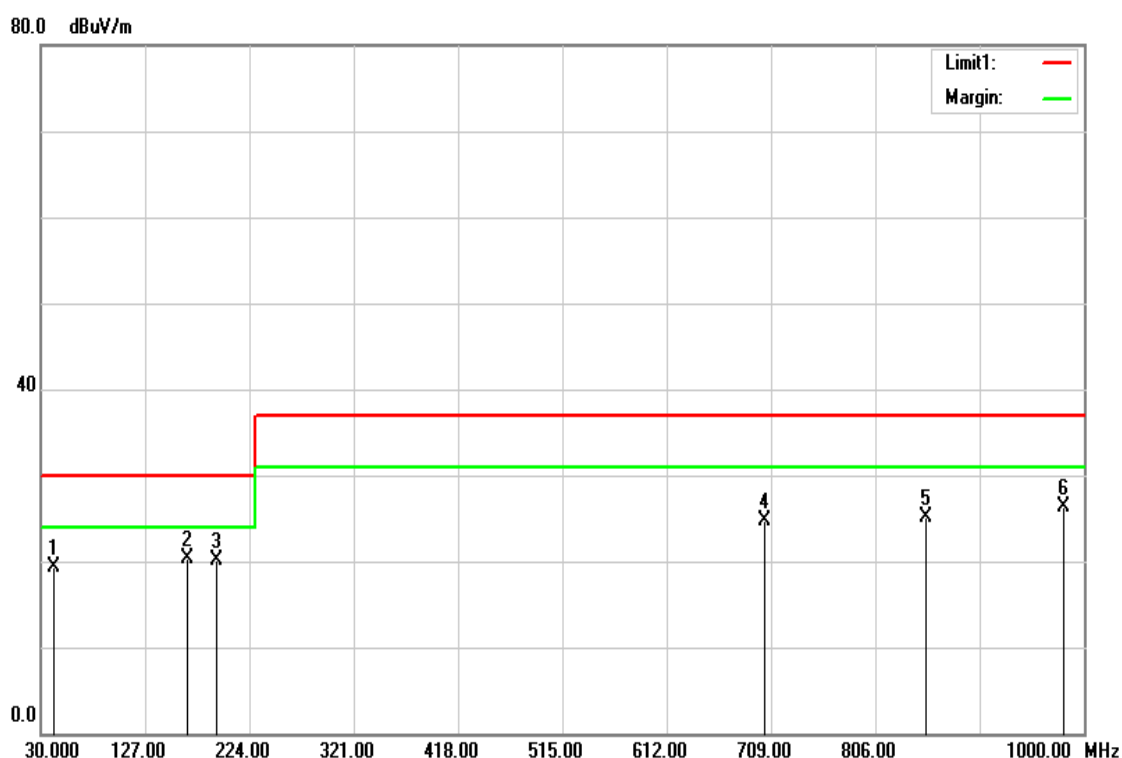


| No. | Frequency (MHz) | Reading (dBuV) | Correction Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----|-----------------|----------------|-------------------------|-----------------|----------------|-------------|-------------|------------|--------|
| 1   | 41.6400         | 23.27          | -9.51                   | 13.76           | 30.00          | -16.24      | 250         | 360        | QP     |
| 2   | 110.5100        | 24.65          | -9.38                   | 15.27           | 30.00          | -14.73      | 250         | 356        | QP     |
| 3   | 678.9300        | 24.06          | -0.01                   | 24.05           | 37.00          | -12.95      | 250         | 267        | QP     |
| 4   | 794.3600        | 23.06          | 1.62                    | 24.68           | 37.00          | -12.32      | 250         | 150        | QP     |
| 5   | 848.6800        | 22.85          | 2.19                    | 25.04           | 37.00          | -11.96      | 250         | 65         | QP     |
| 6   | 979.6300        | 22.21          | 3.91                    | 26.12           | 37.00          | -10.88      | 250         | 0          | QP     |

#### REMARKS:

1. The other emission levels were very low against the limit.
2. 30MHz to 1000MHz test is Applicable CISPR 22 standard.

|                          |              |                  |            |
|--------------------------|--------------|------------------|------------|
| Test Mode                | Mode 4       | 6dB Bandwidth    | 120 kHz    |
| Environmental Conditions | 26°C, 60% RH | Test Date        | 2019/03/23 |
| Antenna Pole             | Vertical     | Antenna Distance | 10m        |
| Detector Function        | Quasi-peak.  | Tested by        | Wiz Chang  |

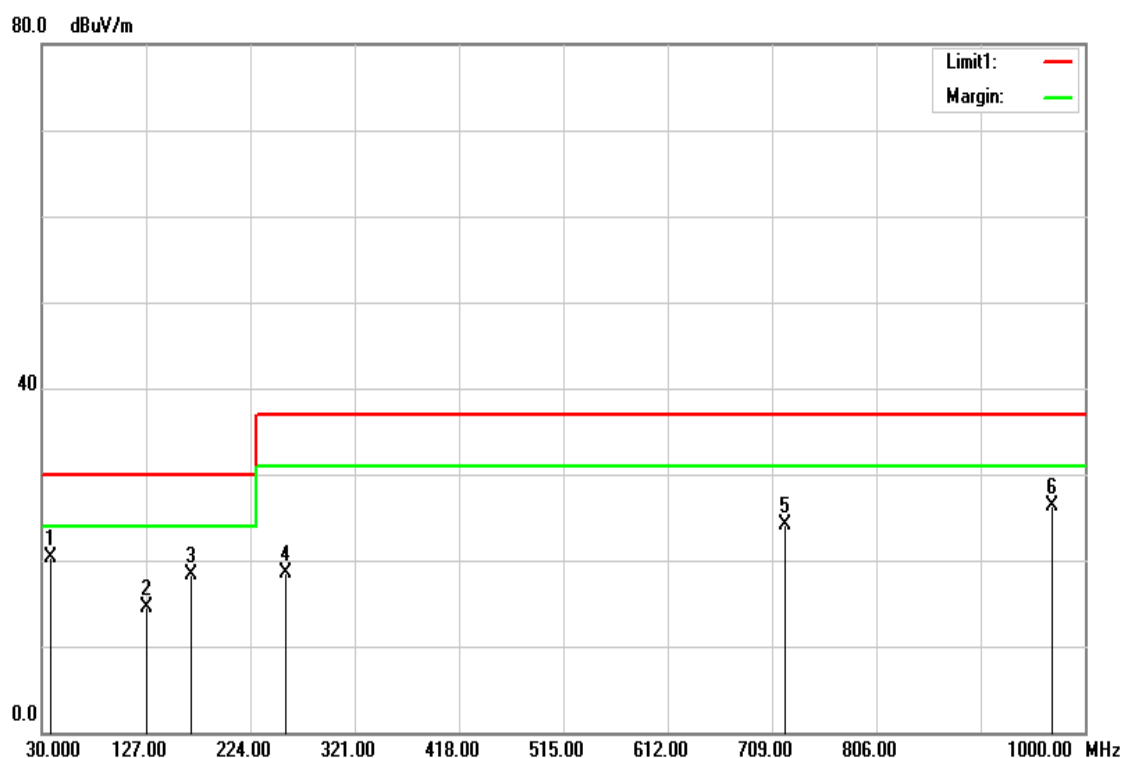


| No. | Frequency (MHz) | Reading (dBuV) | Correction Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----|-----------------|----------------|-------------------------|-----------------|----------------|-------------|-------------|------------|--------|
| 1   | 42.6100         | 28.55          | -9.24                   | 19.31           | 30.00          | -10.69      | 300         | 238        | QP     |
| 2   | 166.7700        | 29.51          | -9.25                   | 20.26           | 30.00          | -9.74       | 100         | 101        | QP     |
| 3   | 192.9600        | 29.57          | -9.50                   | 20.07           | 30.00          | -9.93       | 100         | 1          | QP     |
| 4   | 703.1800        | 22.49          | 2.15                    | 24.64           | 37.00          | -12.36      | 278         | 0          | QP     |
| 5   | 852.5600        | 20.58          | 4.60                    | 25.18           | 37.00          | -11.82      | 400         | 90         | QP     |
| 6   | 981.5700        | 19.83          | 6.51                    | 26.34           | 37.00          | -10.66      | 200         | 356        | QP     |

#### REMARKS:

1. The other emission levels were very low against the limit.
2. 30MHz to 1000MHz test is Applicable CISPR 22 standard.

|                          |              |                  |            |
|--------------------------|--------------|------------------|------------|
| Test Mode                | Mode 4       | 6dB Bandwidth    | 120 kHz    |
| Environmental Conditions | 26°C, 60% RH | Test Date        | 2019/03/23 |
| Antenna Pole             | Horizontal   | Antenna Distance | 10m        |
| Detector Function        | Quasi-peak.  | Tested by        | Wiz Chang  |

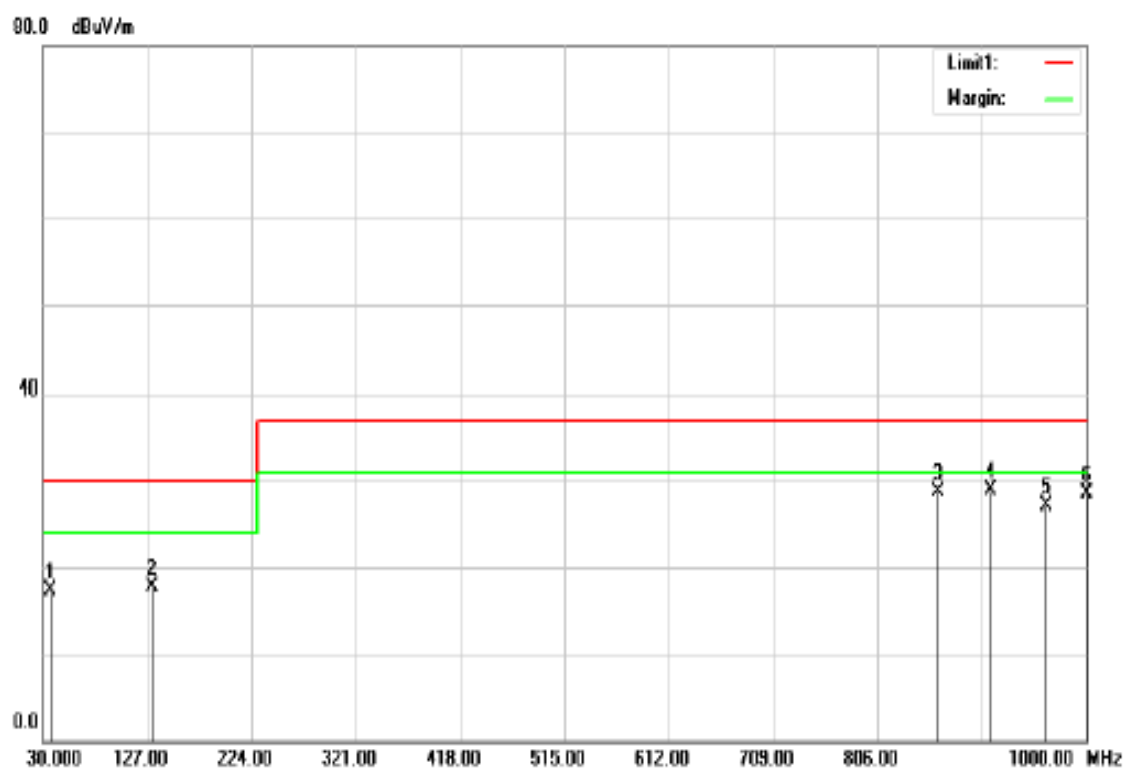


| No. | Frequency (MHz) | Reading (dBuV) | Correction Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----|-----------------|----------------|-------------------------|-----------------|----------------|-------------|-------------|------------|--------|
| 1   | 38.7300         | 28.18          | -7.91                   | 20.27           | 30.00          | -9.73       | 337         | 360        | QP     |
| 2   | 127.9700        | 23.28          | -8.87                   | 14.41           | 30.00          | -15.59      | 399         | 360        | QP     |
| 3   | 168.7100        | 28.88          | -10.54                  | 18.34           | 30.00          | -11.66      | 399         | 360        | QP     |
| 4   | 256.9800        | 24.42          | -6.00                   | 18.42           | 37.00          | -18.58      | 188         | 360        | QP     |
| 5   | 720.6400        | 23.68          | 0.47                    | 24.15           | 37.00          | -12.85      | 399         | 0          | QP     |
| 6   | 968.9600        | 22.62          | 3.72                    | 26.34           | 37.00          | -10.66      | 399         | 218        | QP     |

#### REMARKS:

1. The other emission levels were very low against the limit.
2. 30MHz to 1000MHz test is Applicable CISPR 22 standard.

|                          |              |                  |            |
|--------------------------|--------------|------------------|------------|
| Test Mode                | Mode 5       | 6dB Bandwidth    | 120 kHz    |
| Environmental Conditions | 26°C, 60% RH | Test Date        | 2019/04/01 |
| Antenna Pole             | Vertical     | Antenna Distance | 10m        |
| Detector Function        | Quasi-peak.  | Tested by        | Wiz Chang  |

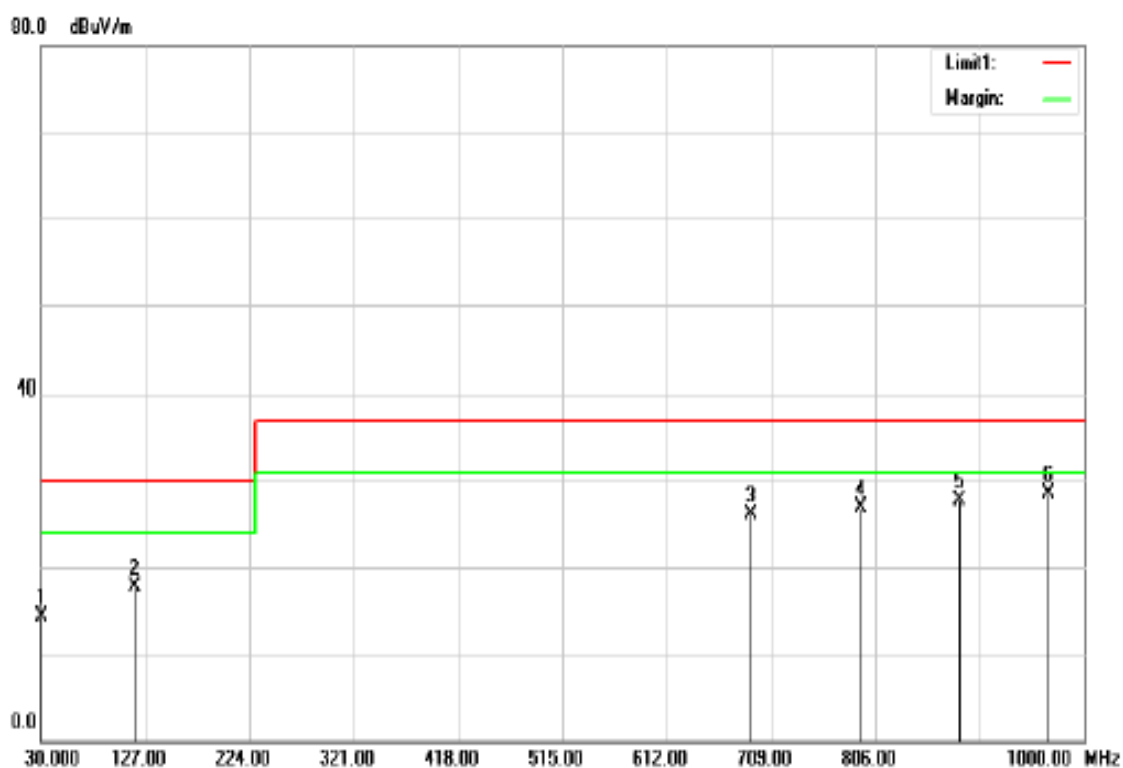


| No. | Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----|-----------------|----------------|--------------------------|-----------------|----------------|-------------|-------------|------------|--------|
| 1   | 36.7900         | 23.14          | -5.86                    | 17.28           | 30.00          | -12.72      | 300         | 52         | QP     |
| 2   | 130.8800        | 25.59          | -7.95                    | 17.64           | 30.00          | -12.36      | 300         | 229        | QP     |
| 3   | 862.2600        | 23.94          | 4.67                     | 28.61           | 37.00          | -8.39       | 200         | 260        | QP     |
| 4   | 911.7300        | 23.72          | 5.26                     | 28.98           | 37.00          | -8.02       | 100         | 121        | QP     |
| 5   | 963.1400        | 21.19          | 5.93                     | 27.12           | 37.00          | -9.88       | 400         | 282        | QP     |
| 6   | 1000.0000       | 21.89          | 6.66                     | 28.55           | 37.00          | -8.45       | 200         | 159        | QP     |

**REMARKS:**

- The other emission levels were very low against the limit.
- Margin (dB) = Result (dBuV/m) – Limit (dBuV/m)

|                          |              |                  |            |
|--------------------------|--------------|------------------|------------|
| Test Mode                | Mode 5       | 6dB Bandwidth    | 120 kHz    |
| Environmental Conditions | 26°C, 60% RH | Test Date        | 2019/04/01 |
| Antenna Pole             | Horizontal   | Antenna Distance | 10m        |
| Detector Function        | Quasi-peak.  | Tested by        | Wiz Chang  |



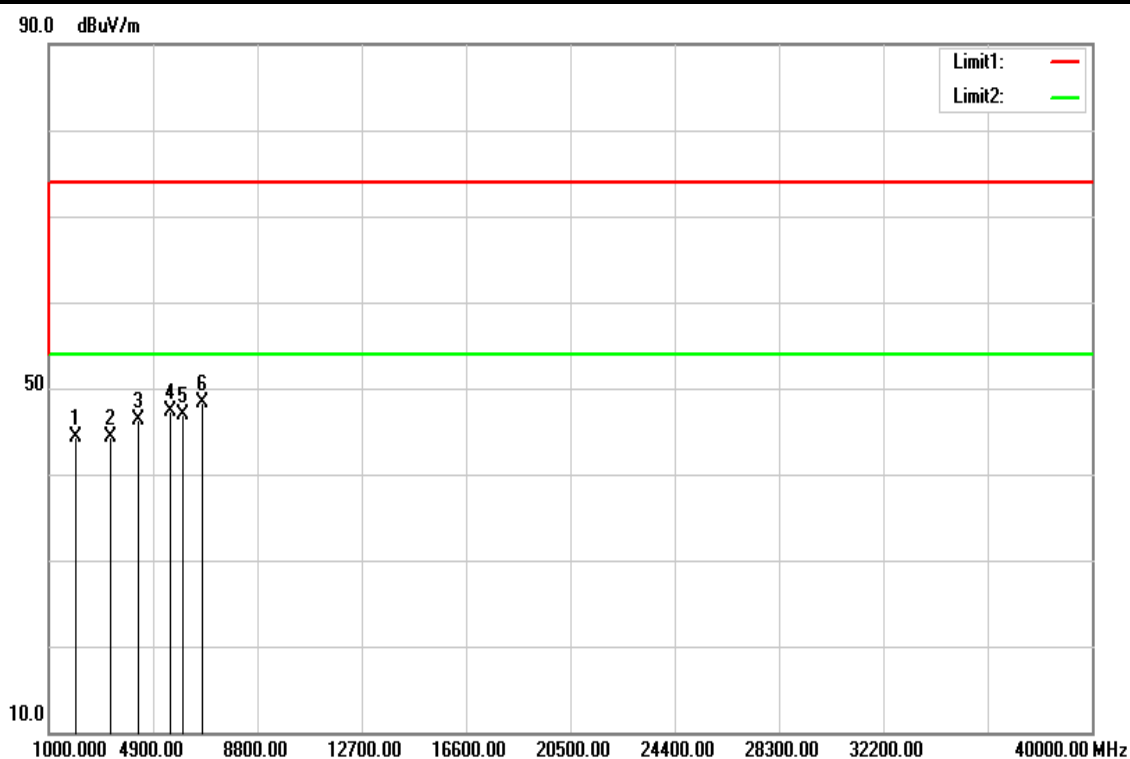
| No. | Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----|-----------------|----------------|--------------------------|-----------------|----------------|-------------|-------------|------------|--------|
| 1   | 30.9700         | 17.96          | -3.57                    | 14.39           | 30.00          | -15.61      | 399         | 360        | QP     |
| 2   | 117.3000        | 26.51          | -8.80                    | 17.71           | 30.00          | -12.29      | 400         | 250        | QP     |
| 3   | 690.5700        | 25.92          | 0.13                     | 26.05           | 37.00          | -10.95      | 300         | 359        | QP     |
| 4   | 792.4200        | 25.30          | 1.59                     | 26.89           | 37.00          | -10.11      | 100         | 223        | QP     |
| 5   | 883.6000        | 24.96          | 2.72                     | 27.68           | 37.00          | -9.32       | 202         | 0          | QP     |
| 6   | 967.0200        | 24.71          | 3.75                     | 28.46           | 37.00          | -8.54       | 200         | 3          | QP     |

**REMARKS:**

- The other emission levels were very low against the limit.
- Margin (dB) = Result (dBuV/m) – Limit (dBuV/m)

**Above 1GHz**

|                                            |              |                         |            |
|--------------------------------------------|--------------|-------------------------|------------|
| <b>Test Mode</b>                           | Mode 1       | <b>6dB Bandwidth</b>    | 1 MHz      |
| <b>Environmental Conditions</b>            | 26°C, 60% RH | <b>Test Date</b>        | 2019/03/25 |
| <b>Antenna Pole</b>                        | Vertical     | <b>Antenna Distance</b> | 3m         |
| <b>Highest frequency generated or used</b> | 2.48GHz      | <b>Upper frequency</b>  | 12.4GHz    |
| <b>Detector Function</b>                   | Peak         | <b>Tested by</b>        | Wiz Chang  |

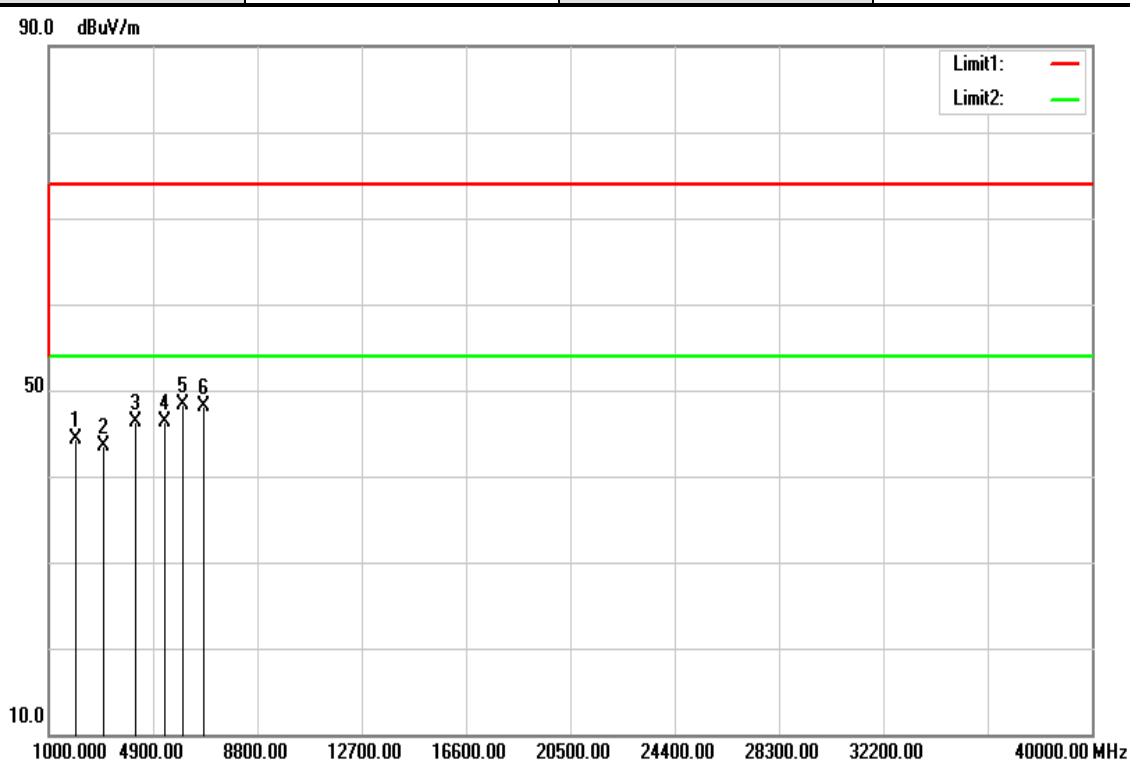


| No. | Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----|-----------------|----------------|--------------------------|-----------------|----------------|-------------|-------------|------------|--------|
| 1   | 1998.000        | 58.78          | -14.42                   | 44.36           | 74.00          | -29.64      | 100         | 57         | peak   |
| 2   | 3320.500        | 56.54          | -12.29                   | 44.25           | 74.00          | -29.75      | 100         | 304        | peak   |
| 3   | 4354.000        | 55.91          | -9.68                    | 46.23           | 74.00          | -27.77      | 100         | 155        | peak   |
| 4   | 5524.000        | 54.26          | -7.03                    | 47.23           | 74.00          | -26.77      | 100         | 81         | peak   |
| 5   | 6031.000        | 52.47          | -5.49                    | 46.98           | 74.00          | -27.02      | 100         | 62         | peak   |
| 6   | 6752.500        | 52.08          | -3.76                    | 48.32           | 74.00          | -25.68      | 100         | 104        | peak   |

**REMARKS:**

1. The other emission levels were very low against the limit.
2.  $\text{Margin (dB)} = \text{Result (dBuV/m)} - \text{Limit (dBuV/m)}$

|                                     |              |                  |            |
|-------------------------------------|--------------|------------------|------------|
| Test Mode                           | Mode 1       | 6dB Bandwidth    | 1 MHz      |
| Environmental Conditions            | 26°C, 60% RH | Test Date        | 2019/03/25 |
| Antenna Pole                        | Horizontal   | Antenna Distance | 3m         |
| Highest frequency generated or used | 2.48GHz      | Upper frequency  | 12.4GHz    |
| Detector Function                   | Peak         | Tested by        | Wiz Chang  |

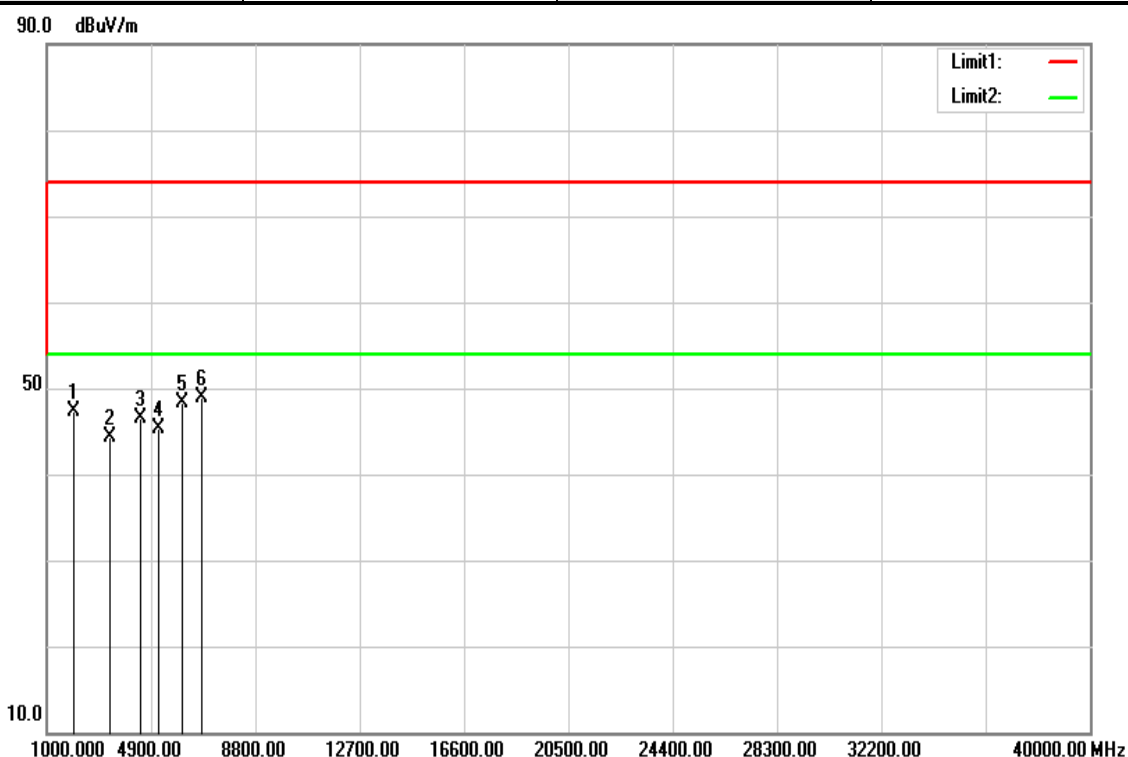


| No. | Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----|-----------------|----------------|--------------------------|-----------------|----------------|-------------|-------------|------------|--------|
| 1   | 1998.000        | 58.95          | -14.63                   | 44.32           | 74.00          | -29.68      | 100         | 56         | peak   |
| 2   | 3067.000        | 56.28          | -12.72                   | 43.56           | 74.00          | -30.44      | 100         | 241        | peak   |
| 3   | 4256.500        | 56.66          | -10.45                   | 46.21           | 74.00          | -27.79      | 100         | 351        | peak   |
| 4   | 5348.500        | 54.32          | -8.05                    | 46.27           | 74.00          | -27.73      | 100         | 280        | peak   |
| 5   | 6011.500        | 54.19          | -5.87                    | 48.32           | 74.00          | -25.68      | 100         | 284        | peak   |
| 6   | 6791.500        | 52.52          | -4.50                    | 48.02           | 74.00          | -25.98      | 100         | 4          | peak   |

**REMARKS:**

- The other emission levels were very low against the limit.
- Margin (dB) = Result (dBuV/m) – Limit (dBuV/m)

|                                     |              |                  |            |
|-------------------------------------|--------------|------------------|------------|
| Test Mode                           | Mode 2       | 6dB Bandwidth    | 1 MHz      |
| Environmental Conditions            | 26°C, 60% RH | Test Date        | 2019/03/25 |
| Antenna Pole                        | Vertical     | Antenna Distance | 3m         |
| Highest frequency generated or used | 2.48GHz      | Upper frequency  | 12.4GHz    |
| Detector Function                   | Peak         | Tested by        | Wiz Chang  |

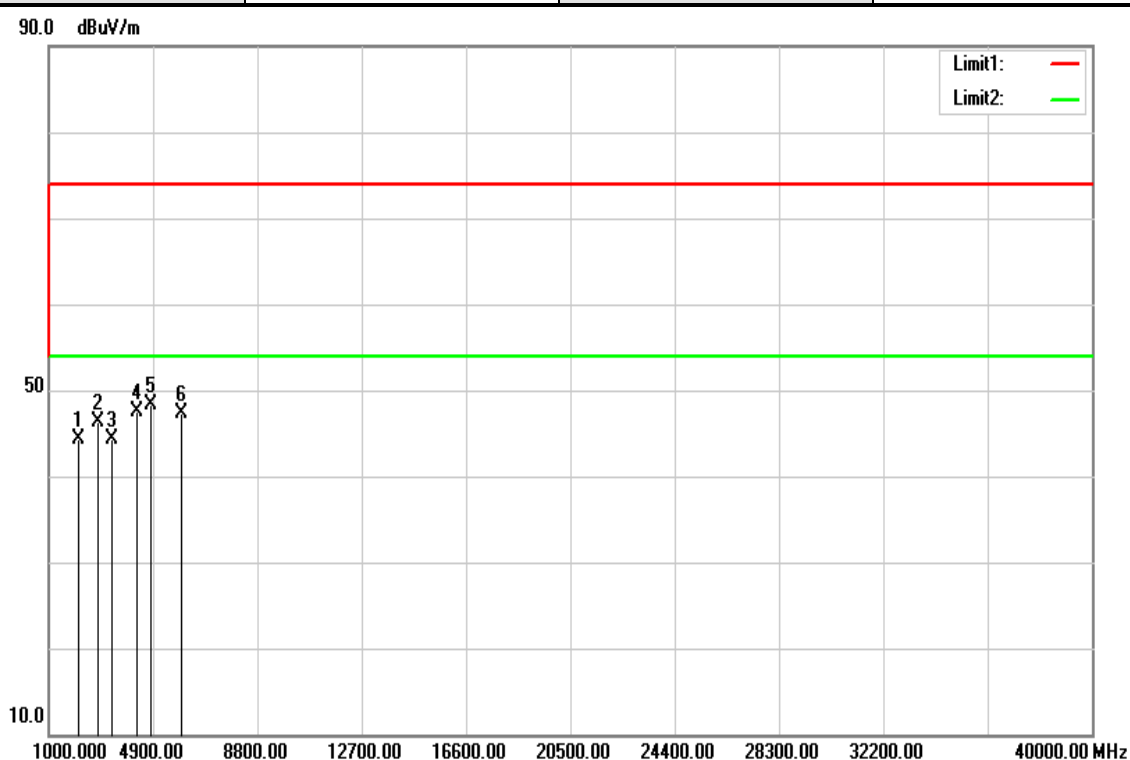


| No. | Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----|-----------------|----------------|--------------------------|-----------------|----------------|-------------|-------------|------------|--------|
| 1   | 1998.000        | 61.78          | -14.42                   | 47.36           | 74.00          | -26.64      | 100         | 71         | peak   |
| 2   | 3398.500        | 56.46          | -12.25                   | 44.21           | 74.00          | -29.79      | 100         | 250        | peak   |
| 3   | 4510.000        | 55.60          | -9.09                    | 46.51           | 74.00          | -27.49      | 100         | 42         | peak   |
| 4   | 5192.500        | 53.22          | -7.86                    | 45.36           | 74.00          | -28.64      | 100         | 216        | peak   |
| 5   | 6070.000        | 53.72          | -5.36                    | 48.36           | 74.00          | -25.64      | 100         | 180        | peak   |
| 6   | 6811.000        | 52.68          | -3.72                    | 48.96           | 74.00          | -25.04      | 100         | 56         | peak   |

#### REMARKS:

- The other emission levels were very low against the limit.
- Margin (dB) = Result (dBuV/m) – Limit (dBuV/m)

|                                     |              |                  |            |
|-------------------------------------|--------------|------------------|------------|
| Test Mode                           | Mode 2       | 6dB Bandwidth    | 1 MHz      |
| Environmental Conditions            | 26°C, 60% RH | Test Date        | 2019/03/25 |
| Antenna Pole                        | Horizontal   | Antenna Distance | 3m         |
| Highest frequency generated or used | 2.48GHz      | Upper frequency  | 12.4GHz    |
| Detector Function                   | Peak         | Tested by        | Wiz Chang  |

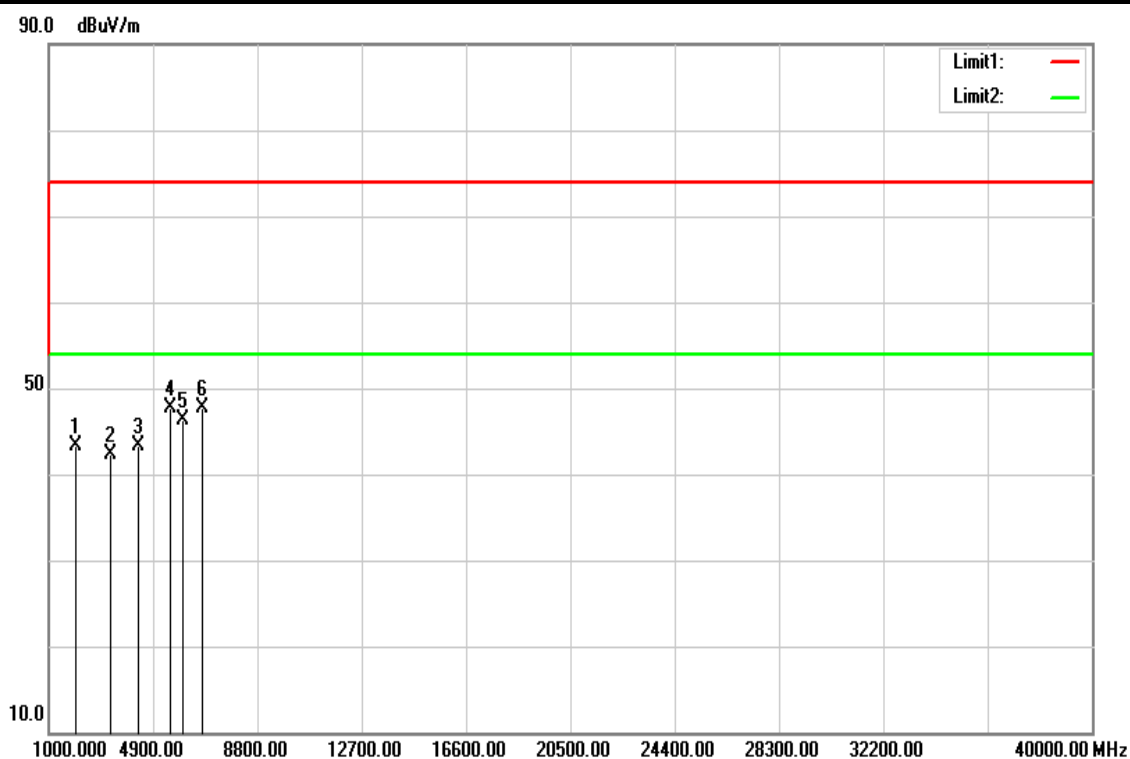


| No. | Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----|-----------------|----------------|--------------------------|-----------------|----------------|-------------|-------------|------------|--------|
| 1   | 2092.000        | 58.77          | -14.52                   | 44.25           | 74.00          | -29.75      | 100         | 106        | peak   |
| 2   | 2852.500        | 59.40          | -13.15                   | 46.25           | 74.00          | -27.75      | 100         | 344        | peak   |
| 3   | 3398.500        | 56.84          | -12.63                   | 44.21           | 74.00          | -29.79      | 100         | 321        | peak   |
| 4   | 4276.000        | 57.91          | -10.39                   | 47.52           | 74.00          | -26.48      | 100         | 256        | peak   |
| 5   | 4841.500        | 57.37          | -9.05                    | 48.32           | 74.00          | -25.68      | 100         | 324        | peak   |
| 6   | 5953.000        | 53.31          | -6.06                    | 47.25           | 74.00          | -26.75      | 100         | 117        | peak   |

**REMARKS:**

- The other emission levels were very low against the limit.
- Margin (dB) = Result (dBuV/m) – Limit (dBuV/m)

|                                     |              |                  |            |
|-------------------------------------|--------------|------------------|------------|
| Test Mode                           | Mode 3       | 6dB Bandwidth    | 1 MHz      |
| Environmental Conditions            | 26°C, 60% RH | Test Date        | 2019/03/25 |
| Antenna Pole                        | Vertical     | Antenna Distance | 3m         |
| Highest frequency generated or used | 2.48GHz      | Upper frequency  | 12.4GHz    |
| Detector Function                   | Peak         | Tested by        | Wiz Chang  |

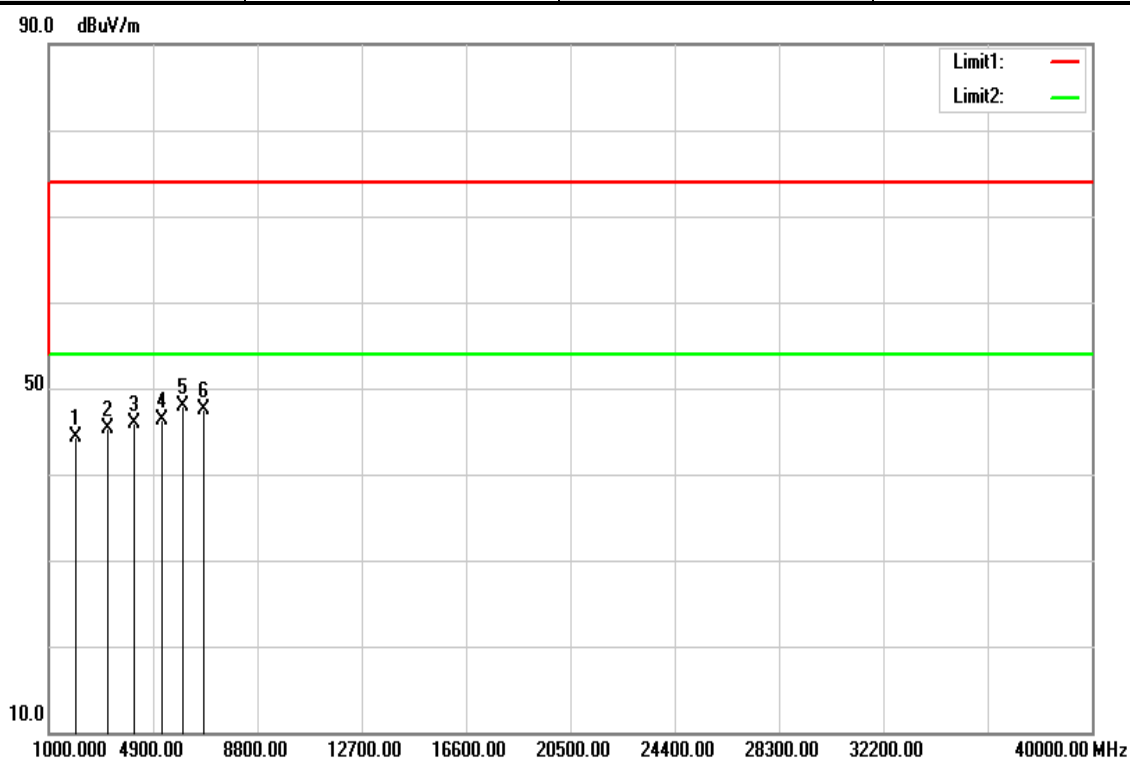


| No. | Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----|-----------------|----------------|--------------------------|-----------------|----------------|-------------|-------------|------------|--------|
| 1   | 1998.000        | 57.78          | -14.42                   | 43.36           | 74.00          | -30.64      | 100         | 113        | peak   |
| 2   | 3320.500        | 54.54          | -12.29                   | 42.25           | 74.00          | -31.75      | 100         | 260        | peak   |
| 3   | 4354.000        | 52.91          | -9.68                    | 43.23           | 74.00          | -30.77      | 100         | 61         | peak   |
| 4   | 5524.000        | 54.66          | -7.03                    | 47.63           | 74.00          | -26.37      | 100         | 345        | peak   |
| 5   | 6031.000        | 51.85          | -5.49                    | 46.36           | 74.00          | -27.64      | 100         | 289        | peak   |
| 6   | 6752.500        | 51.39          | -3.76                    | 47.63           | 74.00          | -26.37      | 100         | 90         | peak   |

#### REMARKS:

- The other emission levels were very low against the limit.
- Margin (dB) = Result (dBuV/m) – Limit (dBuV/m)

|                                     |              |                  |            |
|-------------------------------------|--------------|------------------|------------|
| Test Mode                           | Mode 3       | 6dB Bandwidth    | 1 MHz      |
| Environmental Conditions            | 26°C, 60% RH | Test Date        | 2019/03/25 |
| Antenna Pole                        | Horizontal   | Antenna Distance | 3m         |
| Highest frequency generated or used | 2.48GHz      | Upper frequency  | 12.4GHz    |
| Detector Function                   | Peak         | Tested by        | Wiz Chang  |



| No. | Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----|-----------------|----------------|--------------------------|-----------------|----------------|-------------|-------------|------------|--------|
| 1   | 1998.000        | 58.99          | -14.63                   | 44.36           | 74.00          | -29.64      | 100         | 144        | peak   |
| 2   | 3223.000        | 58.03          | -12.67                   | 45.36           | 74.00          | -28.64      | 100         | 88         | peak   |
| 3   | 4198.000        | 56.57          | -10.68                   | 45.89           | 74.00          | -28.11      | 100         | 85         | peak   |
| 4   | 5251.000        | 54.58          | -8.26                    | 46.32           | 74.00          | -27.68      | 100         | 160        | peak   |
| 5   | 6050.500        | 53.61          | -5.79                    | 47.82           | 74.00          | -26.18      | 100         | 86         | peak   |
| 6   | 6791.500        | 52.06          | -4.50                    | 47.56           | 74.00          | -26.44      | 100         | 166        | peak   |

**REMARKS:**

- The other emission levels were very low against the limit.
- Margin (dB) = Result (dBuV/m) – Limit (dBuV/m)

|                                     |              |                  |            |
|-------------------------------------|--------------|------------------|------------|
| Test Mode                           | Mode 4       | 6dB Bandwidth    | 1 MHz      |
| Environmental Conditions            | 26°C, 60% RH | Test Date        | 2019/03/25 |
| Antenna Pole                        | Vertical     | Antenna Distance | 3m         |
| Highest frequency generated or used | 2.48GHz      | Upper frequency  | 12.4GHz    |
| Detector Function                   | Peak         | Tested by        | Wiz Chang  |

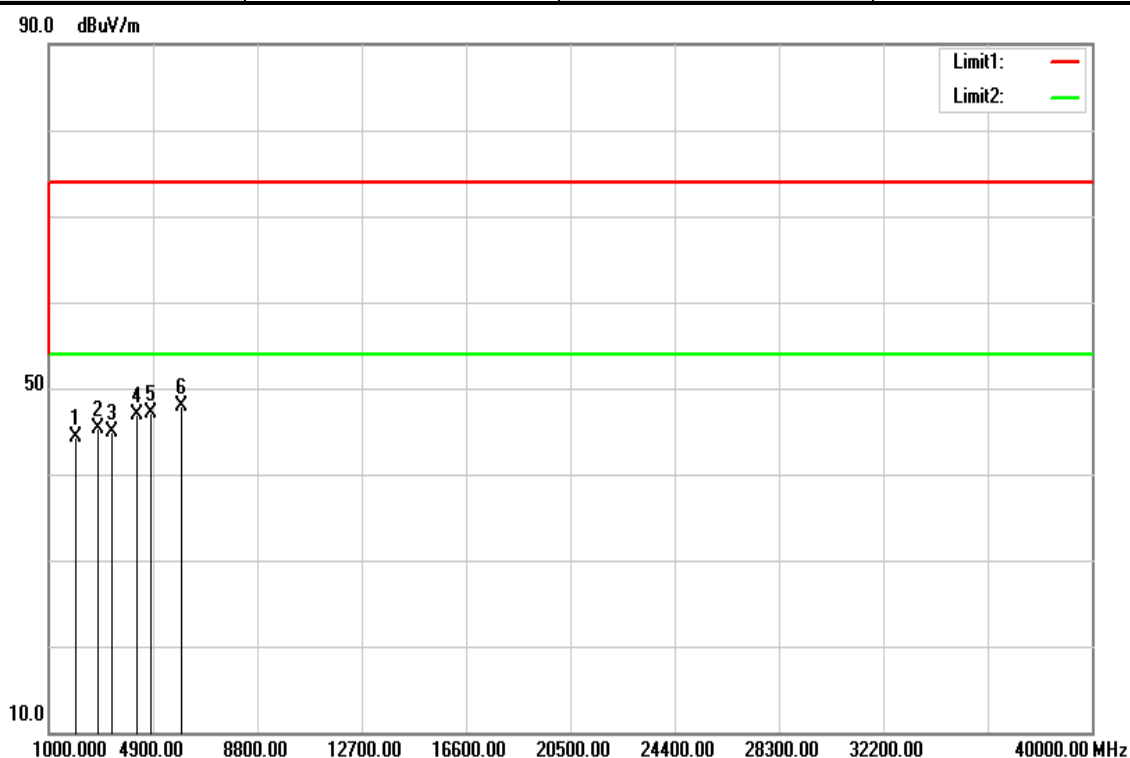


| No. | Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----|-----------------|----------------|--------------------------|-----------------|----------------|-------------|-------------|------------|--------|
| 1   | 1998.000        | 56.78          | -14.42                   | 42.36           | 74.00          | -31.64      | 100         | 134        | peak   |
| 2   | 3320.500        | 58.81          | -12.29                   | 46.52           | 74.00          | -27.48      | 100         | 108        | peak   |
| 3   | 4354.000        | 57.04          | -9.68                    | 47.36           | 74.00          | -26.64      | 100         | 170        | peak   |
| 4   | 5524.000        | 54.44          | -7.03                    | 47.41           | 74.00          | -26.59      | 100         | 97         | peak   |
| 5   | 6031.000        | 51.69          | -5.49                    | 46.20           | 74.00          | -27.80      | 100         | 173        | peak   |
| 6   | 6752.500        | 51.45          | -3.76                    | 47.69           | 74.00          | -26.31      | 100         | 3          | peak   |

**REMARKS:**

- The other emission levels were very low against the limit.
- Margin (dB) = Result (dBuV/m) – Limit (dBuV/m)

|                                     |              |                  |            |
|-------------------------------------|--------------|------------------|------------|
| Test Mode                           | Mode 4       | 6dB Bandwidth    | 1 MHz      |
| Environmental Conditions            | 26°C, 60% RH | Test Date        | 2019/03/25 |
| Antenna Pole                        | Horizontal   | Antenna Distance | 3m         |
| Highest frequency generated or used | 2.48GHz      | Upper frequency  | 12.4GHz    |
| Detector Function                   | Peak         | Tested by        | Wiz Chang  |



| No. | Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----|-----------------|----------------|--------------------------|-----------------|----------------|-------------|-------------|------------|--------|
| 1   | 1998.000        | 58.94          | -14.63                   | 44.31           | 74.00          | -29.69      | 100         | 330        | peak   |
| 2   | 2852.500        | 58.40          | -13.15                   | 45.25           | 74.00          | -28.75      | 100         | 186        | peak   |
| 3   | 3398.500        | 57.53          | -12.63                   | 44.90           | 74.00          | -29.10      | 100         | 353        | peak   |
| 4   | 4276.000        | 57.23          | -10.39                   | 46.84           | 74.00          | -27.16      | 100         | 297        | peak   |
| 5   | 4841.500        | 56.07          | -9.05                    | 47.02           | 74.00          | -26.98      | 100         | 237        | peak   |
| 6   | 5953.000        | 54.06          | -6.06                    | 48.00           | 74.00          | -26.00      | 100         | 315        | peak   |

#### REMARKS:

- The other emission levels were very low against the limit.
- Margin (dB) = Result (dBuV/m) – Limit (dBuV/m)

--End of Report--