

# FCC 47 CFR PART 15 SUBPART C TEST REPORT

For

Product Name: 4G LTE Mobile Router

Brand Name: macaroon

Model No.: macaroon M1

Series Model.:N/A

FCC ID: 2AMIWM1

Test Report Number:

C170614R01-RPB

Issued for

Beijing ULINK Technology Co., Ltd.

East Area of 5F, No.16 Wangjing North Rd., Chaoyang District, Beijing, China

Issued by

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## 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       | EUT CONFIGURATION .....                                    | 6         |
| 3.2       | EXERCISEEUT.....                                           | 6         |
| 3.3       | GENERAL TEST PROCEDURES.....                               | 6         |
| 3.4       | TEST MODE.....                                             | 7         |
| 3.5       | FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS.....        | 8         |
| 3.6       | ANTENNA DESCRIPTION .....                                  | 9         |
| <b>4.</b> | <b>INSTRUMENT CALIBRATION .....</b>                        | <b>9</b>  |
| <b>5.</b> | <b>FACILITIES AND ACCREDITATIONS .....</b>                 | <b>10</b> |
| 5.1       | FACILITIES.....                                            | 10        |
| 5.2       | EQUIPMENT.....                                             | 10        |
| 5.3       | LABORATORY ACCREDITATIONS AND LISTING .....                | 10        |
| 5.4       | TABLE OF ACCREDITATIONS .....                              | 11        |
| 5.5       | LIST OF MEASURING EQUIPMENT .....                          | 12        |
| 5.6       | SETUP CONFIGURATION .....                                  | 13        |
| 5.7       | SUPPORT EQUIPMENT .....                                    | 13        |
| <b>6.</b> | <b>FCC PART 15.247 REQUIREMENTS .....</b>                  | <b>14</b> |
| 6.1       | PEAK POWER.....                                            | 14        |
| 6.2       | 20DB BANDWIDTH .....                                       | 16        |
| 6.3       | HOPPING CHANNEL SEPARATION.....                            | 21        |
| 6.4       | NUMBER OF HOPPING FREQUENCY .....                          | 24        |
| 6.5       | TIME OF OCCUPANCY (DWELL TIME) .....                       | 27        |
| 6.6       | CONDUCTED BAND EDGES MEASUREMENT .....                     | 32        |
| 6.7       | CONDUCTED SPURIOUS EMISSION MEASUREMENT .....              | 37        |
| 6.8       | RADIATED BAND EDGE AND SPURIOUS EMISSION MEASUREMENT ..... | 44        |
| 6.9       | POWERLINE CONDUCTED EMISSIONS .....                        | 60        |

### Revision History

| Rev. | Issue Date    | Report NO.     | Effect Page | Contents |
|------|---------------|----------------|-------------|----------|
| 00   | July 26, 2017 | C170614R01-RPB | ALL         | N/A      |

## 1. TEST RESULT CERTIFICATION

|                               |                                                                                                                |
|-------------------------------|----------------------------------------------------------------------------------------------------------------|
| <b>Product Name:</b>          | 4G LTE Mobile Router                                                                                           |
| <b>Trade Name:</b>            | macaroon                                                                                                       |
| <b>Model Name:</b>            | macaroon M1                                                                                                    |
| <b>Series Model:</b>          | N/A                                                                                                            |
| <b>Applicant Discrepancy:</b> | Initial                                                                                                        |
| <b>Device Category:</b>       | portable unit                                                                                                  |
| <b>Date of Test:</b>          | June 23, 2017~July 24, 2017                                                                                    |
| <b>Applicant:</b>             | Beijing ULINK Technology Co., Ltd.<br>East Area of 5F,No.16 Wangjing North Rd.,Chaoyang District,Beijing,China |
| <b>Manufacturer:</b>          | Beijing ULINK Technology Co., Ltd.<br>East Area of 5F,No.16 Wangjing North Rd.,Chaoyang District,Beijing,China |
| <b>Application Type:</b>      | Certification                                                                                                  |

| APPLICABLE STANDARDS         |                         |
|------------------------------|-------------------------|
| STANDARD                     | TEST RESULT             |
| FCC 47 CFR Part 15 Subpart C | No non-compliance noted |

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10:2013 and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247.

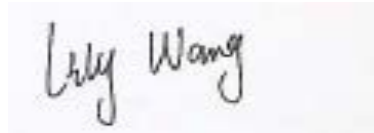
The test results of this report relate only to the tested sample EUT identified in this report.

**Approved by:**



Jeff.Fang  
RF Manager  
Compliance Certification Services Inc.

**Tested by:**



Lily.Wang  
Test Engineer  
Compliance Certification Services Inc.

## 2. EUT DESCRIPTION

|                               |                                                                                                                                              |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product Name:</b>          | 4G LTE Mobile Router                                                                                                                         |
| <b>Brand Name:</b>            | macaroon                                                                                                                                     |
| <b>Model Name:</b>            | macaroon M1                                                                                                                                  |
| <b>Series Model:</b>          | N/A                                                                                                                                          |
| <b>Model Discrepancy:</b>     | N/A                                                                                                                                          |
| <b>Power Adapter:</b>         | Power Adapter:<br>Model :TUUS050100-K00<br>Input: 100-240V~50/60Hz, 0.2A<br>Output: 5V --- 1A<br>Battery (rating) :<br>capacity: 11.4WH 3.8V |
| <b>Frequency Range :</b>      | Bluetooth:2402 ~ 2480 MHz                                                                                                                    |
| <b>Transmit Power :</b>       | Bluetooth:8.55dBm                                                                                                                            |
| <b>Modulation Technique :</b> | Bluetooth: FHSS                                                                                                                              |
| <b>Transmit Data Rate :</b>   | Bluetooth: GFSK(1 Mbps), $\pi/4$ -DQPSK(2 Mbps),8-DPSK(3 Mbps)                                                                               |
| <b>Number of Channels :</b>   | Bluetooth: 79 Channels                                                                                                                       |
| <b>Antenna Specification:</b> | Internal Antenna Gain: 2.62 dBi                                                                                                              |

**Remark:**

- 1.The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.
- 2.This submittal(s) (test report) is intended for **FCC ID: 2AMIWM1** filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.

### 3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, 15.207, 15.209, 15.247.

#### 3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

#### 3.2 EXERCISE EUT

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

#### 3.3 GENERAL TEST PROCEDURES

##### Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.10 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

##### Radiated Emissions

Under 1GHz

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.10.

Above 1GHz

The EUT is placed on a turn table, which is 1.5 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.10.

### 3.4 TEST Mode

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

| Test Items                    | Mode           | Data Rate | Channel | Antenna |
|-------------------------------|----------------|-----------|---------|---------|
| Peak Output Power             | GFSK           | 1 Mbps    | 0/39/78 | 1       |
|                               | 8DPSK          | 3 Mbps    |         |         |
| Hopping Channel Bandwidth     | GFSK           | 1 Mbps    | 0/39/78 | 1       |
|                               | 8DPSK          | 3 Mbps    |         |         |
| Hopping Channel Separation    | GFSK           | 1 Mbps    | 38-39   | 1       |
|                               | 8DPSK          | 3 Mbps    |         |         |
| Number of Hopping Frequency   | GFSK           | 1 Mbps    | 0-78    | 1       |
|                               | 8DPSK          | 3 Mbps    |         |         |
| Dwell Time                    | DH1/DH3/DH5    | 1 Mbps    | 39      | 1       |
|                               | 3DH1/3DH3/3DH5 | 3 Mbps    |         |         |
| Spurious Emission             | GFSK           | 1 Mbps    | 0/39/78 | 1       |
|                               | 8DPSK          | 3 Mbps    |         |         |
| Band Edge Emissions           | GFSK           | 1 Mbps    | 0/78    | 1       |
|                               | 8DPSK          | 3 Mbps    |         |         |
| Radiated Emissions Below 1GHz | GFSK           | 1 Mbps    | 78      | 1       |
| Radiated Emissions Above 1GHz | GFSK           | 1 Mbps    | 0/39/78 | 1       |
|                               | 8DPSK          | 3 Mbps    |         |         |
| AC Power Conducted Emissions  | CTX            | -         | -       | -       |

Remark1: For radiated test cases below 1 GHz, the worst mode data rate channel 78 of 1Mbps was reported only, because this data rate has the highest RF output power at preliminary tests.

Remark2:After the preliminary san the EUT with Adapter 1 was the worst mode, which mode data was recorded.

### 3.5 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| MHz                           | MHz                   | MHz             | GHz                         |
|-------------------------------|-----------------------|-----------------|-----------------------------|
| 0.0900 - 0.1100               | 16.420 - 16.423       | 399.9 - 410.0   | 4.50 - 5.15                 |
| 0.4950 - 0.505 <sup>(1)</sup> | 16.69475 - 16.69525   | 608 - 614       | 5.35 - 5.46                 |
| 2.1735 - 2.1905               | 16.80425 - 16.80475   | 960.0 - 1240    | 7.25 - 7.75                 |
| 4.1250 - 4.1280               | 25.50 - 25.67         | 1300 - 1427     | 8.025 - 8.500               |
| 4.17725 - 4.17775             | 37.50 - 38.25         | 1435.0 - 1626.5 | 9.0 - 9.2                   |
| 4.20725 - 4.20775             | 73.0 - 74.6           | 1645.5 - 1646.5 | 9.3 - 9.5                   |
| 6.2150 - 6.2180               | 74.8 - 75.2           | 1660 - 1710     | 10.6 - 12.7                 |
| 6.26775 - 6.26825             | 108.00 - 121.94       | 1718.8 - 1722.2 | 13.25 - 13.40               |
| 6.31175 - 6.31225             | 123 - 138             | 2200 - 2300     | 14.47 - 14.50               |
| 8.2910 - 8.2940               | 149.90 - 150.05       | 2310 - 2390     | 15.35 - 16.20               |
| 8.3620 - 8.3660               | 156.52475 - 156.52525 | 2483.5 - 2500.0 | 17.7 - 21.4                 |
| 8.37625 - 8.38675             | 156.7 - 156.9         | 2655 - 2900     | 22.01 - 23.12               |
| 8.41425 - 8.41475             | 162.0125 - 167.1700   | 3260 - 3267     | 23.6 - 24.0                 |
| 12.2900 - 12.2930             | 167.72 - 173.20       | 3332 - 3339     | 31.2 - 31.8                 |
| 12.51975 - 12.52025           | 240 - 285             | 3345 - 3358     | 36.43 - 36.5 <sup>(2)</sup> |
| 12.57675 - 12.57725           | 322.0 - 335.4         | 3600 - 4400     |                             |
| 13.3600 - 13.4100             |                       |                 |                             |

<sup>1</sup> Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

<sup>2</sup> Above 38.6

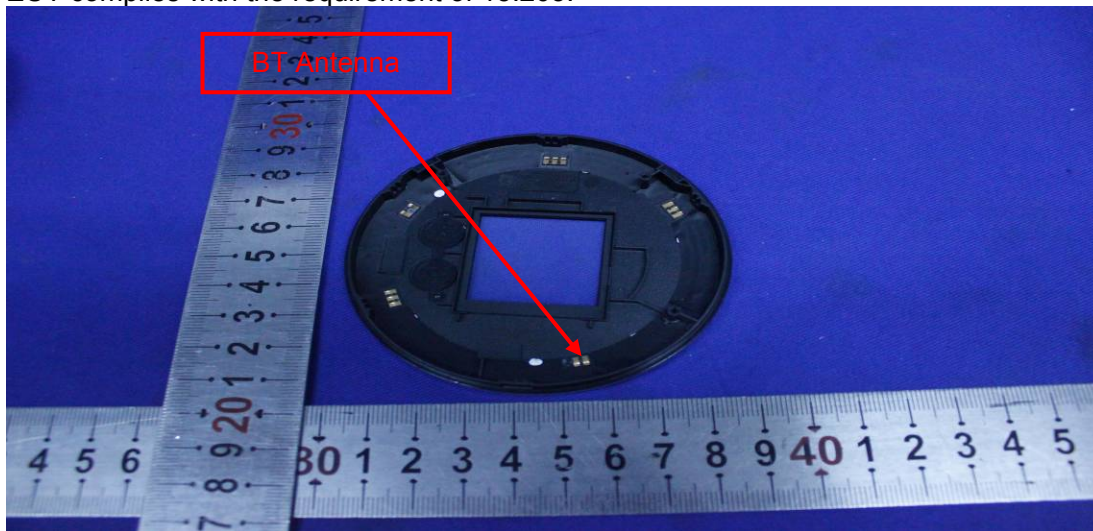
(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

### 3.6 Antenna Description

#### According to FCC 47 CFR 15.203

“an intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached or an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section”

As the photo below, the EUT use a unique coupling to the intentional radiator attached antenna, so the EUT complies with the requirement of 15.203.



## 4. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards. facilities and accreditations

## 5. FACILITIES AND ACCREDITATIONS

### 5.1 FACILTIES

All measurement facilities used to collect the measurement data are located at CCS China Kunshan Lab at 10#Weiye Rd, Innovation Park Eco. & Tec. Development Zone Kunshan city JiangSu, (215300), CHINA.

The sites are constructed in conformance with the requirements of ANSI C63.10 and CISPR Publication 22.

### 5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

### 5.3 LABORATORY ACCREDITATIONS AND LISTING

FCC –Designation Number: CN1172.

Compliance Certification Services Inc. Kun shan Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Designation Number: CN1172.

## 5.4 TABLE OF ACCREDITATIONS

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

|               |      |
|---------------|------|
| <b>Taiwan</b> | TAF  |
| <b>USA</b>    | A2LA |

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

|               |                 |
|---------------|-----------------|
| <b>Canada</b> | Industry Canada |
| <b>Japan</b>  | VCCI            |
| <b>Taiwan</b> | BSMI            |
| <b>USA</b>    | FCC             |

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

**5.5 LIST OF MEASURING EQUIPMENT**

| Conducted Emissions Test Site |               |          |               |                  |                 |
|-------------------------------|---------------|----------|---------------|------------------|-----------------|
| Name of Equipment             | Manufacturer  | Model    | Serial Number | Calibration Data | Calibration Due |
| Spectrum Analyzer             | Agilent       | E4446A   | MY44020154    | 2016-9-10        | 2017-9-9        |
| Spectrum Analyzer             | RS            | FSU26    | 200789        | 2016-7-21        | 2017-7-20       |
| Spectrum Analyzer             | RS            | FSU26    | 200789        | 2017-7-20        | 2018-7-19       |
| Power meter                   | Anritsu       | ML2495A  | 1445010       | 2017-4-26        | 2018-4-25       |
| Power sensor                  | Anritsu       | MA2411B  | 1339220       | 2017-4-26        | 2018-4-25       |
| Power SPLITTER                | Mini-Circuits | ZN2PD-9G | SF078500430   | N.C.R            | N.C.R           |
| DC Power Supply               | AGILENT       | E3632A   | MY50340053    | N.C.R            | N.C.R           |
| Temp. / Humidity Gauge        | Anymetre      | TH603    | CCS007        | 2016-11-1        | 2017-10-31      |
| Test Software                 |               |          | EZ-EMC        |                  |                 |

| 977 Chamber             |              |                      |               |                  |                 |
|-------------------------|--------------|----------------------|---------------|------------------|-----------------|
| Name of Equipment       | Manufacturer | Model                | Serial Number | Calibration Data | Calibration Due |
| Spectrum Analyzer       | Agilent      | E4446A               | MY44020154    | 2016-9-10        | 2017-9-9        |
| Spectrum Analyzer       | RS           | FSU26                | 200789        | 2016-7-21        | 2017-7-20       |
| Spectrum Analyzer       | RS           | FSU26                | 200789        | 2017-7-20        | 2018-7-19       |
| EMI Test Receiver       | R&S          | ESCI                 | 101378        | 2017-1-5         | 2018-1-4        |
| Pre-Amplifier           | MITEQ        | AMF-6F-260400-40-8P  | 1037496       | 2016-11-15       | 2017-11-14      |
| Amplifier               | MITEQ        | JS41-00101800-32-10P | 1675713       | 2017-7-20        | 2018-7-19       |
| Broad-Band Horn Antenna | SCHWARZBECK  | BBHA 9170            | 9170-515      | 2017-3-6         | 2018-3-5        |
| Bilog Antenna           | Sunol        | JB1                  | A062604       | 2017-5-27        | 2018-5-26       |
| Bilog Antenna           | Sunol        | JB1                  | A110204-1     | 2017-5-27        | 2018-5-26       |
| Loop Antenna            | Hengweiyi    | 39501C               | 2014012       | 2017-1-5         | 2018-1-4        |
| Horn-antenna            | SCHWARZBECK  | 9120D                | D:266         | 2017-2-28        | 2018-2-27       |
| Horn-antenna            | SCHWARZBECK  | 9120D                | D:267         | 2016-11-10       | 2017-11-9       |
| Turn Table              | CT           | CT123                | 4165          | N.C.R            | N.C.R           |
| Antenna Tower           | CT           | CTERG23              | 3256          | N.C.R            | N.C.R           |
| Controller              | CT           | CT100                | 95637         | N.C.R            | N.C.R           |
| Test Software           |              |                      | EZ-EMC        |                  |                 |

| Conducted Emission |              |           |               |                  |                 |
|--------------------|--------------|-----------|---------------|------------------|-----------------|
| Name of Equipment  | Manufacturer | Model     | Serial Number | Calibration Data | Calibration Due |
| EMI TEST RECEIVER  | R&S          | ESCI      | 100781        | 2017-2-28        | 2018-2-27       |
| V (V-LISN)         | SCHWARZBECK  | NNLK 8129 | 8129-143      | 2016-11-1        | 2017-10-31      |
| TWO-LINE V-NETWORK | R&S          | ENV216    | 101604        | 2016-11-1        | 2017-10-31      |
| Pulse LIMITER      | R&S          | ESH3-Z2   | 100524        | 2017-1-5         | 2018-1-4        |
| Test Software      |              |           | EZ-EMC        |                  |                 |

**Remark:** Each piece of equipment is scheduled for calibration once a year.

## 5.6 SETUP CONFIGURATION

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

## 5.7 SUPPORT EQUIPMENT

| No. | Device Type | Brand | Model | Series No. | FCC ID |
|-----|-------------|-------|-------|------------|--------|
| 1   | N/A         | N/A   | N/A   | N/A        | N/A    |

**Remark:**

- 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.

## 6. FCC PART 15.247 REQUIREMENTS

### 6.1 PEAK POWER

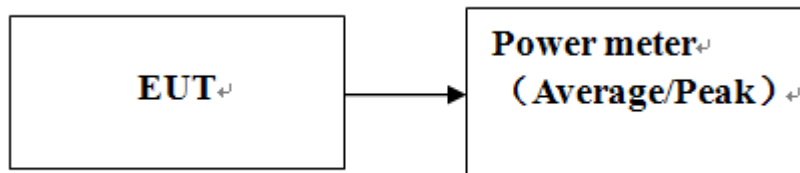
#### Limit

The maximum peak output power of the intentional radiator shall not exceed the following:

1. According to §15.247(a)(1), Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.
2. According to §15.247(b)(1), For frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725–5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125 watts.
3. According to §15.247(b)(3), for systems using digital modulation in the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz: 1 Watt.
4. According to §15.247(b)(4), the conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

**Remark:** Each piece of equipment is scheduled for calibration once a year.

#### Test Configuration



#### Test Procedure

1. The testing follows ANSI63.10-2013 clause 7.8.5.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.

**Test Results***No non-compliance noted***Test RESULTS****1M GFSK Modulation mode**

| Channel | Frequency (MHz) | Peak Output Power (dBm) | Peak Output Power (mW) | Limit (mW) | Result |
|---------|-----------------|-------------------------|------------------------|------------|--------|
| Low     | 2402            | 6.68                    | 4.656                  | 125        | PASS   |
| Mid     | 2441            | 8.55                    | 7.161                  |            | PASS   |
| High    | 2480            | 7.61                    | 5.768                  |            | PASS   |

**3M 8-DPSK Modulation mode**

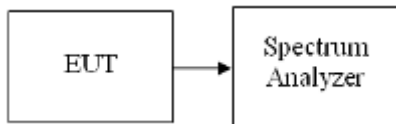
| Channel | Frequency (MHz) | Peak Output Power (dBm) | Peak Output Power (mW) | Limit (mW) | Result |
|---------|-----------------|-------------------------|------------------------|------------|--------|
| Low     | 2402            | 6.03                    | 4.009                  | 125        | PASS   |
| Mid     | 2441            | 7.90                    | 6.166                  |            | PASS   |
| High    | 2480            | 6.99                    | 5.000                  |            | PASS   |

## 6.2 20DB BANDWIDTH

### Limit

According to §15.247(a)(1), Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

### Test Configuration



### Test Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW = 30kHz, VBW = 300kHz, Span = 3MHz, Sweep = auto.
4. Max hold, mark 2 peaks of hopping channel and record the 2 peaks frequency.

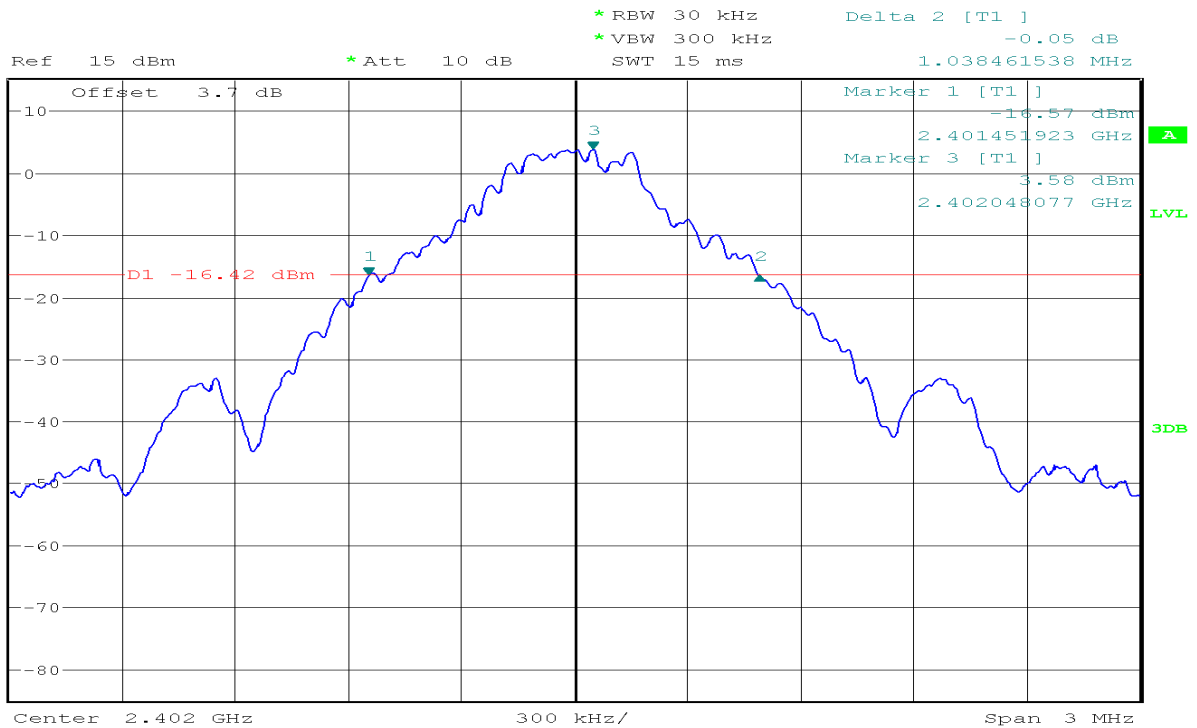
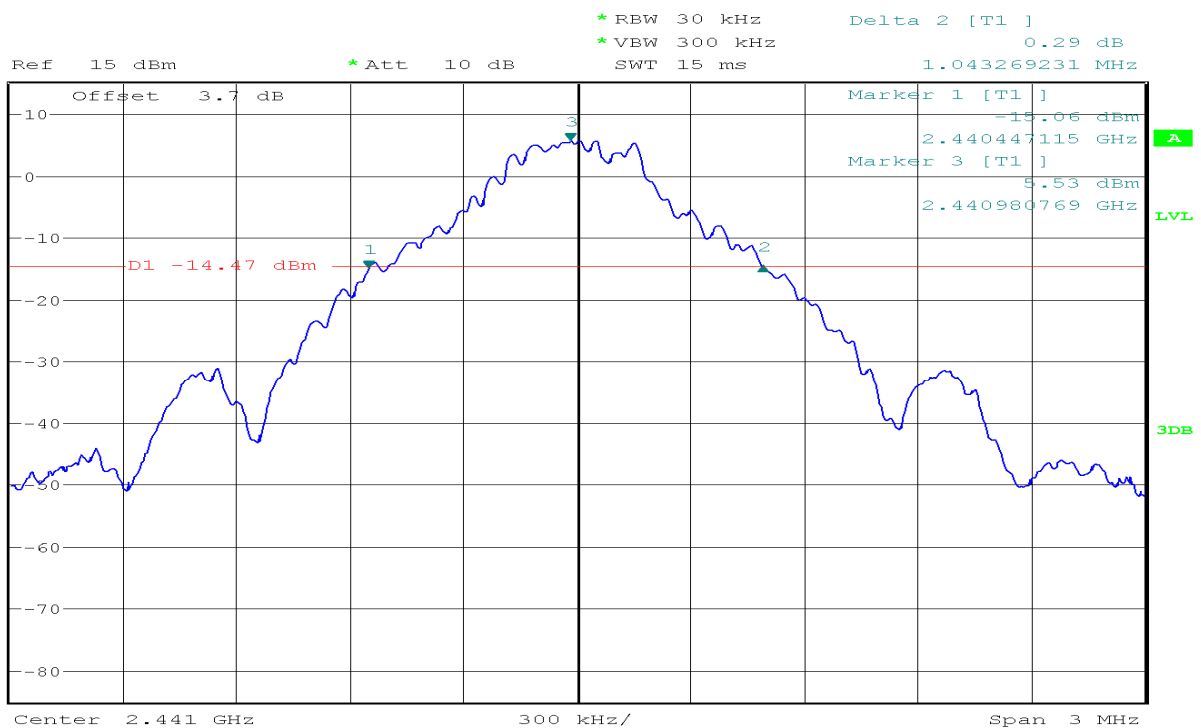
**Test Results of Bandwidth***No non-compliance noted*

|                 |        |            |           |
|-----------------|--------|------------|-----------|
| Operation Mode: | 1 Mbps | Test Date: | 2017-6-24 |
| Temperature:    | 24°C   | Tested by: | Lily.Wang |

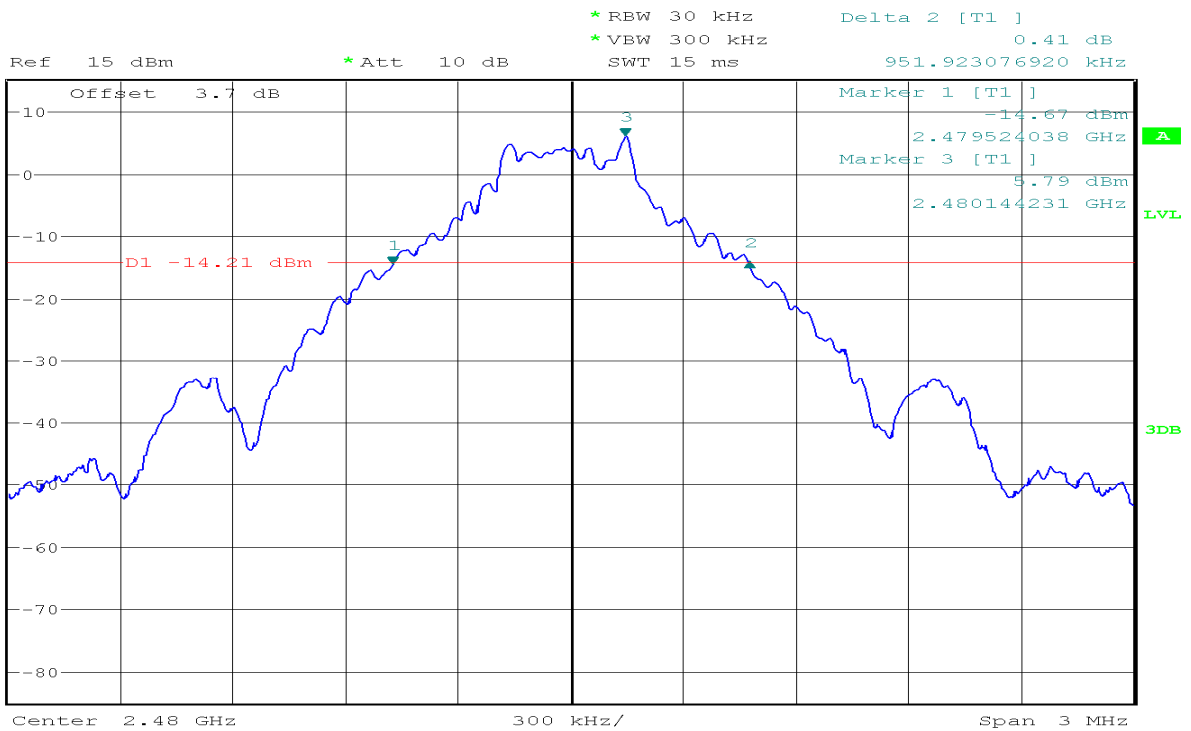
| Channel | Frequency (MHz) | 20dB Bandwidth (B) (MHz) |
|---------|-----------------|--------------------------|
| 00      | 2402            | 1.038                    |
| 39      | 2441            | 1.043                    |
| 78      | 2480            | 0.952                    |

|                 |        |            |           |
|-----------------|--------|------------|-----------|
| Operation Mode: | 3 Mbps | Test Date: | 2017-6-24 |
| Temperature:    | 24°C   | Tested by: | Lily.Wang |

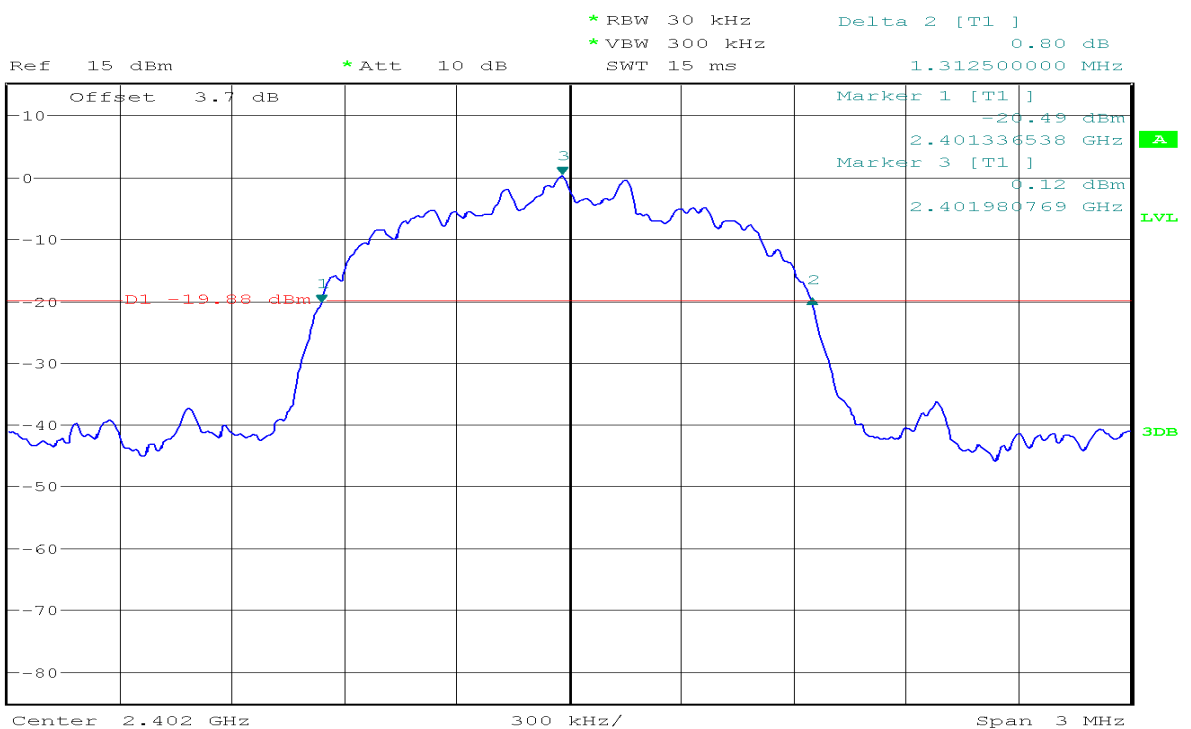
| Channel | Frequency (MHz) | 20dB Bandwidth (B) (MHz) |
|---------|-----------------|--------------------------|
| 00      | 2402            | 1.313                    |
| 39      | 2441            | 1.313                    |
| 78      | 2480            | 1.313                    |

**Test Plot****1M Channel 00****1M Channel 39**

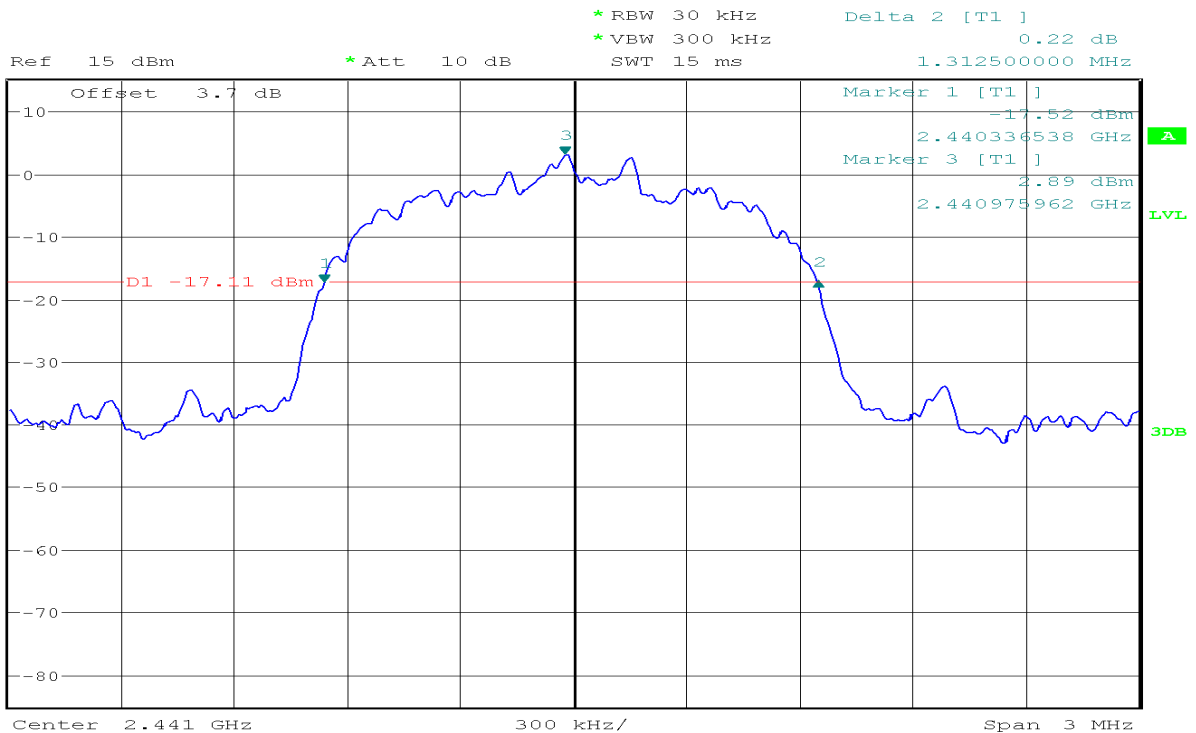
## 1M Channel 78



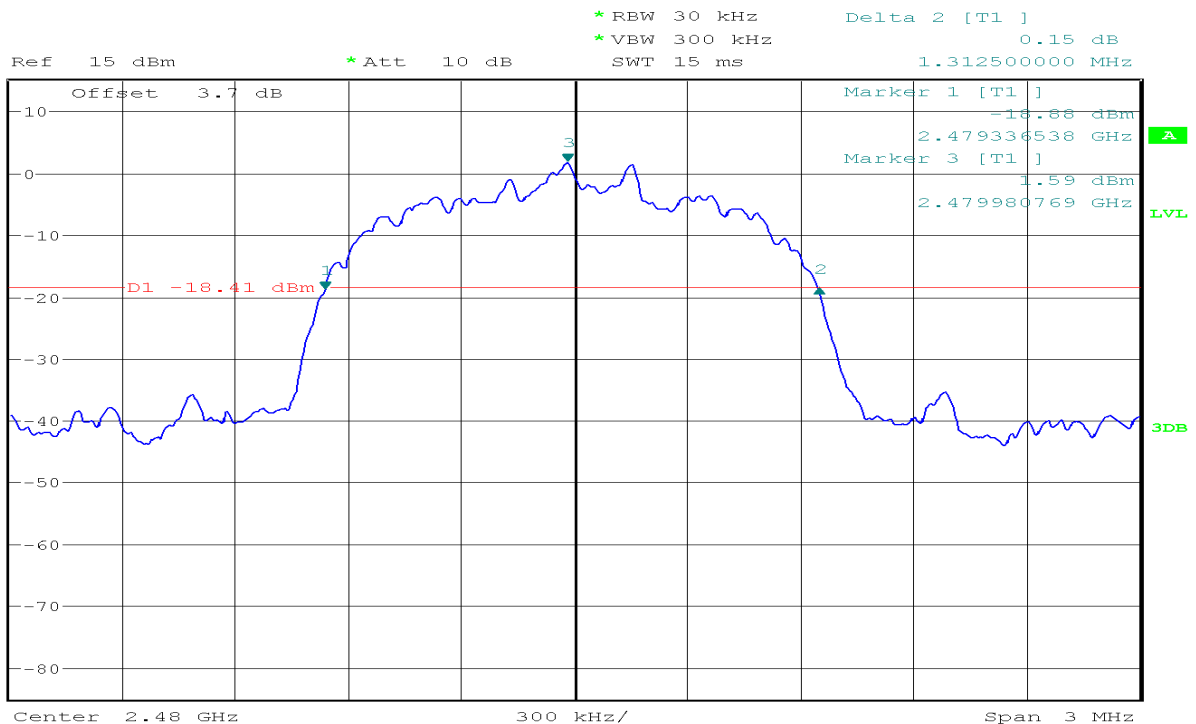
## 3M Channel 00



## 3M Channel 39



## 3M Channel 78

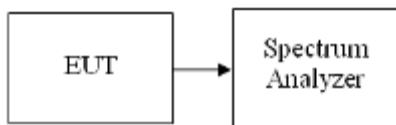


## 6.3 HOPPING CHANNEL SEPARATION

### LIMIT

According to §15.247(a)(1) Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

### Test Configuration



### TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set center frequency of spectrum analyzer = middle of hopping channel.
4. Set the spectrum analyzer as RBW = 30kHz, VBW = 100kHz, Span = 3MHz, Sweep = auto.
5. Max hold, mark 2 peaks of hopping channel and record the 2 peaks frequency.

**TEST RESULTS**

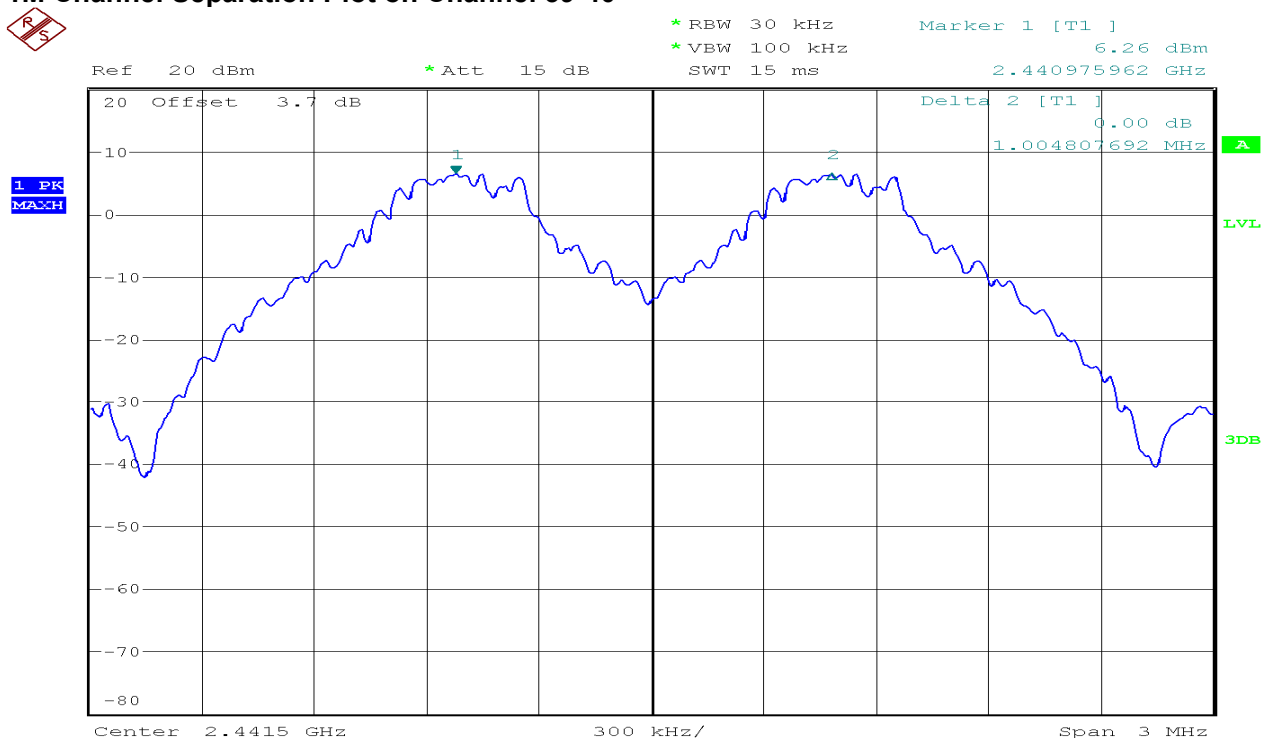
No non-compliance noted

|                 |        |            |           |
|-----------------|--------|------------|-----------|
| Operation Mode: | 1 Mbps | Test Date: | 2017-6-24 |
| Temperature:    | 24°C   | Tested by: | Lily.Wang |

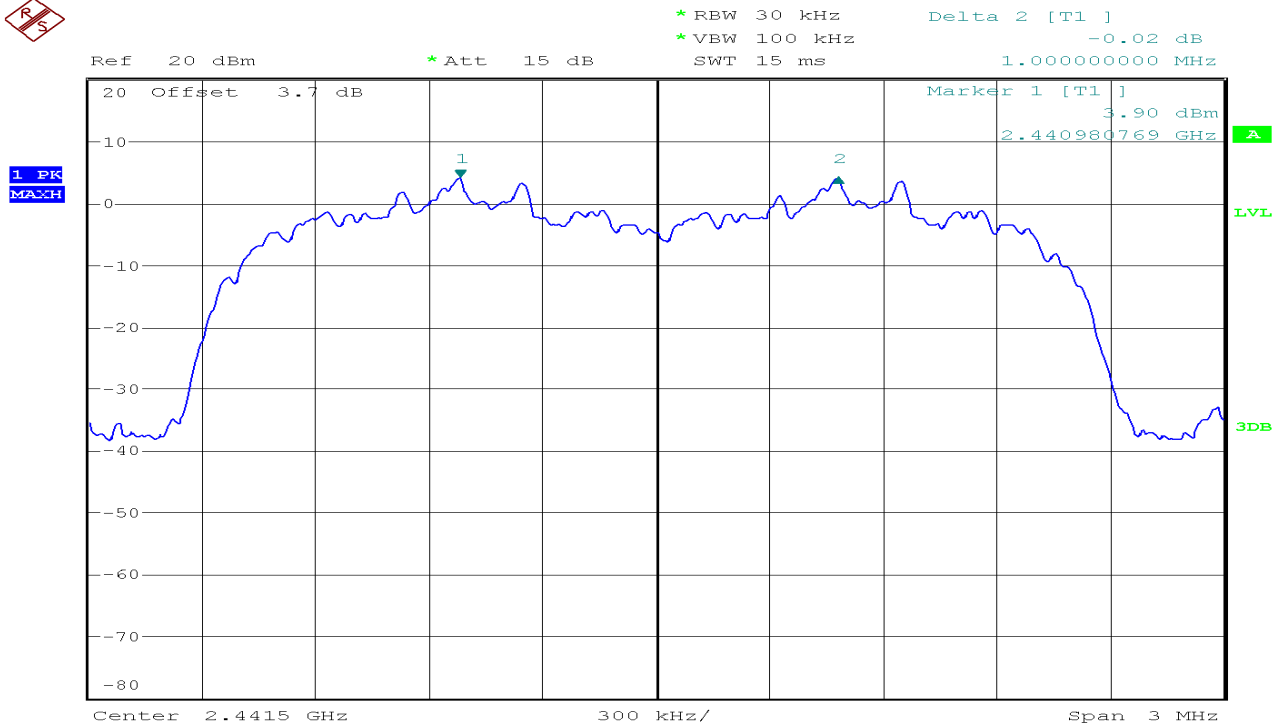
| Channel | Frequency | Separation | (2/3 of 20dB BW) | Result |
|---------|-----------|------------|------------------|--------|
|         | (MHz)     | (MHz)      | Limits (MHz)     |        |
| 39~40   | 2441~2442 | 1.005      | 0.695            | Pass   |

|                 |        |            |           |
|-----------------|--------|------------|-----------|
| Operation Mode: | 3 Mbps | Test Date: | 2017-6-24 |
| Temperature:    | 24°C   | Tested by: | Lily.Wang |

| Channel | Frequency | Separation | (2/3 of 20dB BW) | Result |
|---------|-----------|------------|------------------|--------|
|         | (MHz)     | (MHz)      | Limits (MHz)     |        |
| 39~40   | 2441~2442 | 1.000      | 0.875            | Pass   |

**1M Channel Separation Plot on Channel 39-40**

## 3M Channel Separation Plot on Channel 39-40

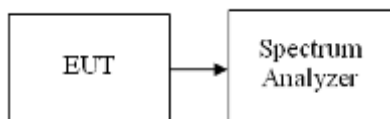


## 6.4 NUMBER OF HOPPING FREQUENCY

### LIMIT

According to §15.247(a)(1)(iii), Frequency hopping systems operating in the 2400MHz-2483.5 MHz bands shall use at least 15 hopping frequencies.

### Test Configuration



### TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set spectrum analyzer Start=2400MHz, Stop = 2441.5MHz, Sweep = auto and Start=2441.5MHz, Stop = 2483.5MHz, Sweep = auto.
4. Set the spectrum analyzer as RBW, VBW=1MHz.
5. Max hold, view and count how many channel in the band.

### TEST RESULTS

*No non-compliance noted*

### Test Data

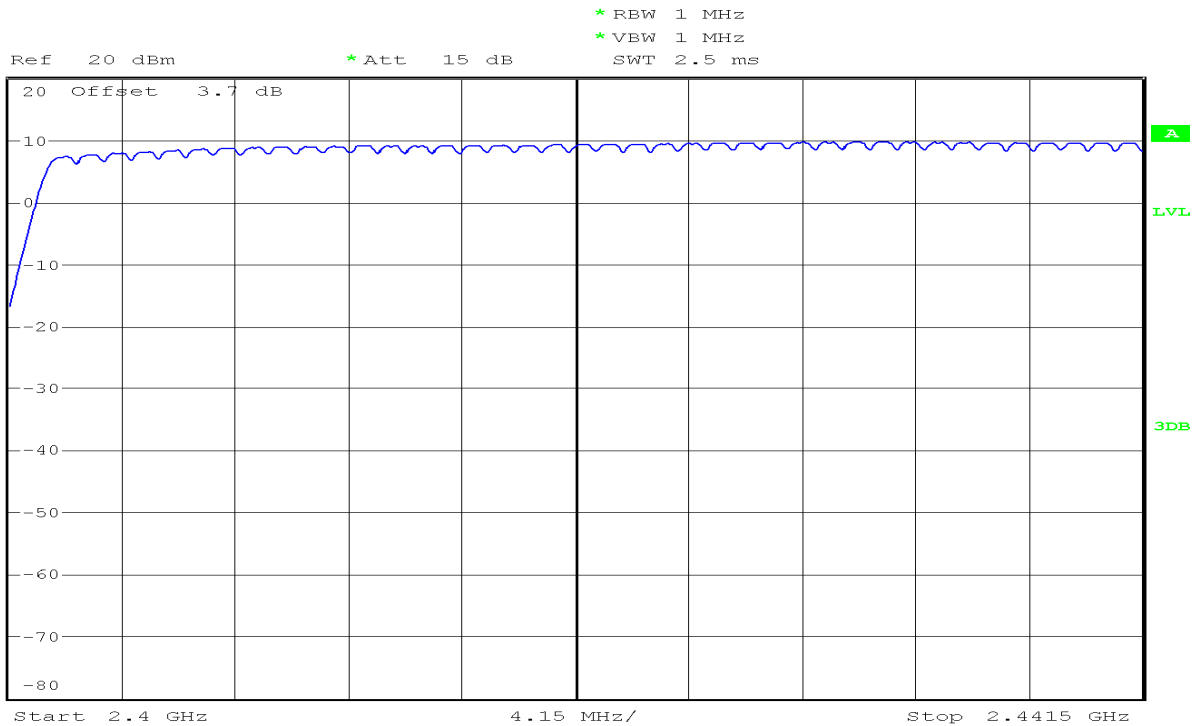
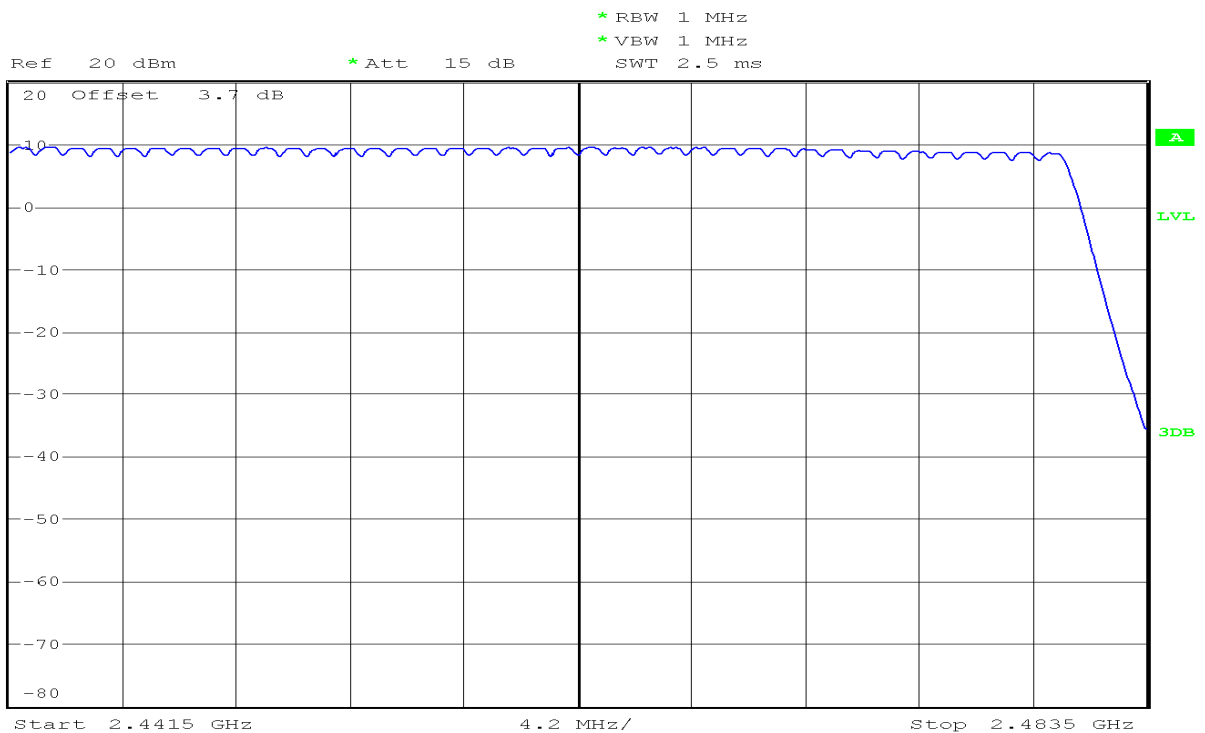
|                 |        |            |           |
|-----------------|--------|------------|-----------|
| Operation Mode: | 1 Mbps | Test Date: | 2017-6-24 |
| Temperature:    | 24°C   | Tested by: | Lily.Wang |

| Result (No. of CH) | Limit (No. of CH) | Result |
|--------------------|-------------------|--------|
| 79                 | >15               | PASS   |

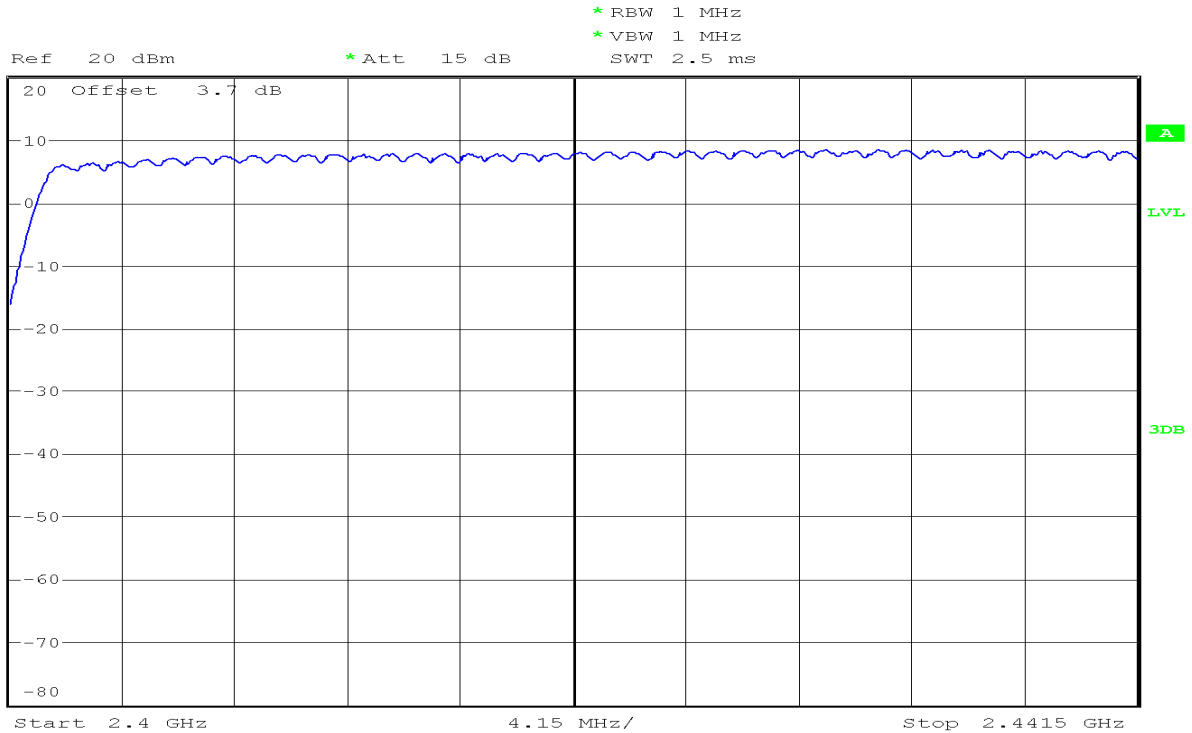
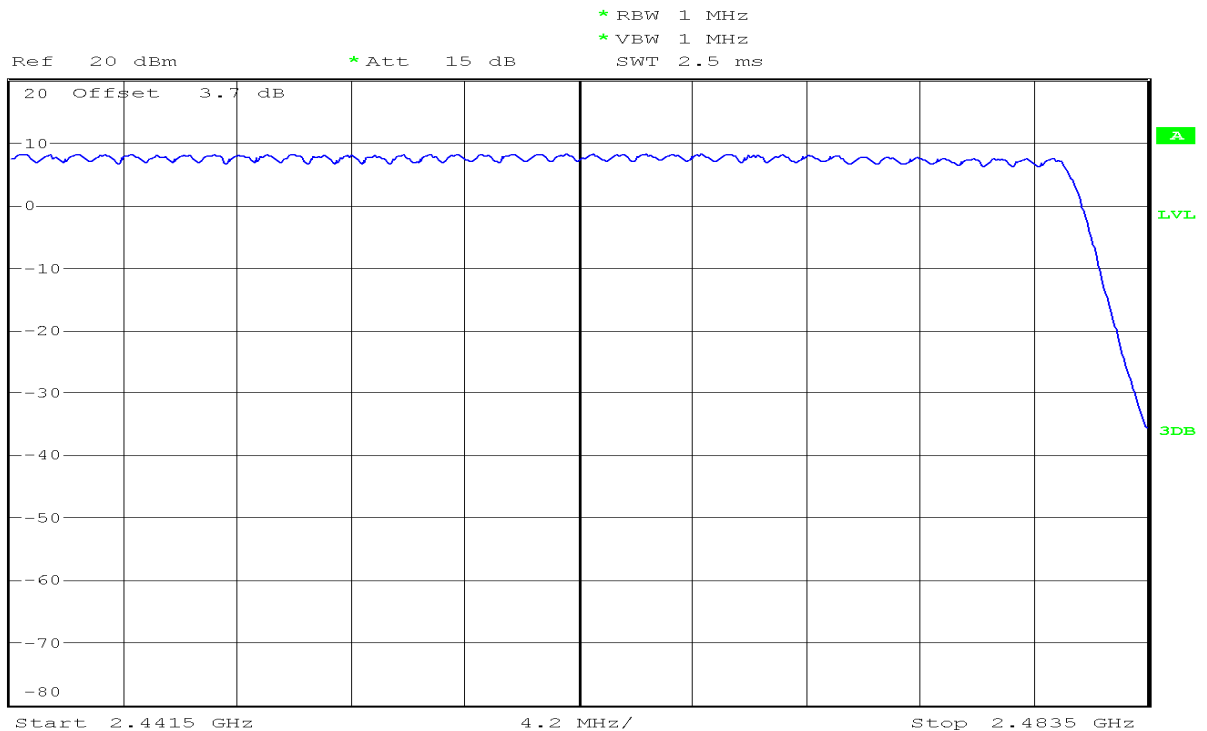
|                 |        |            |           |
|-----------------|--------|------------|-----------|
| Operation Mode: | 3 Mbps | Test Date: | 2017-6-24 |
| Temperature:    | 24°C   | Tested by: | Lily.Wang |

| Result (No. of CH) | Limit (No. of CH) | Result |
|--------------------|-------------------|--------|
| 79                 | >15               | PASS   |

## Test Plot:1M

Channel Number 2.4 GHz – 2.4415 GHzChannel Number 2.4415 GHz – 2.4835 GHz

## Test Plot:3M

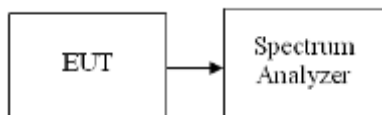
Channel Number 2.4 GHz – 2.4415 GHzChannel Number 2.4415 GHz – 2.4835 GHz

## 6.5 TIME OF OCCUPANCY (DWELL TIME)

### LIMIT

According to §15.247(a)(1)(iii), Frequency hopping systems operating in the 2400MHz-2483.5 MHz bands. The average time of occupancy on any channels shall not greater than 0.4 s within a period 0.4 s multiplied by the number of hopping channels employed.

### Test Configuration



### TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set center frequency of spectrum analyzer = operating frequency.
4. Set the spectrum analyzer as RBW, VBW=1MHz, Span = 0Hz, Sweep = auto.
5. Repeat above procedures until all frequency measured were complete.

### TEST RESULTS

*No non-compliance noted*

#### Test Data

1M

DH 1

$$0.401 * (1600/2)/79 * 31.6 = 128.32(\text{ms})$$

| Pulse Time (ms) | Total of Dwell (ms) | Period Time (s) | Limit (ms) | Result |
|-----------------|---------------------|-----------------|------------|--------|
| 0.401           | 128.32              | 31.60           | 400        | PASS   |

DH 3

$$1.659 * (1600/4)/79 * 31.6 = 265.44(\text{ms})$$

| Pulse Time (ms) | Total of Dwell (ms) | Period Time (s) | Limit (ms) | Result |
|-----------------|---------------------|-----------------|------------|--------|
| 1.659           | 265.44              | 31.60           | 400        | PASS   |

DH 5

$$2.933 * (1600/6)/79 * 31.6 = 312.85(\text{ms})$$

| Pulse Time (ms) | Total of Dwell (ms) | Period Time (s) | Limit (ms) | Result |
|-----------------|---------------------|-----------------|------------|--------|
| 2.933           | 312.85              | 31.60           | 400        | PASS   |

3M

DH 1

$$0.405 * (1600/2)/79 * 31.6 = 129.60 \text{ (ms)}$$

| Pulse Time<br>(ms) | Total of Dwell<br>(ms) | Period Time<br>(s) | Limit<br>(ms) | Result |
|--------------------|------------------------|--------------------|---------------|--------|
| 0.405              | 129.60                 | 31.60              | 400           | PASS   |

DH 3

$$1.663 * (1600/4)/79 * 31.6 = 266.08 \text{ (ms)}$$

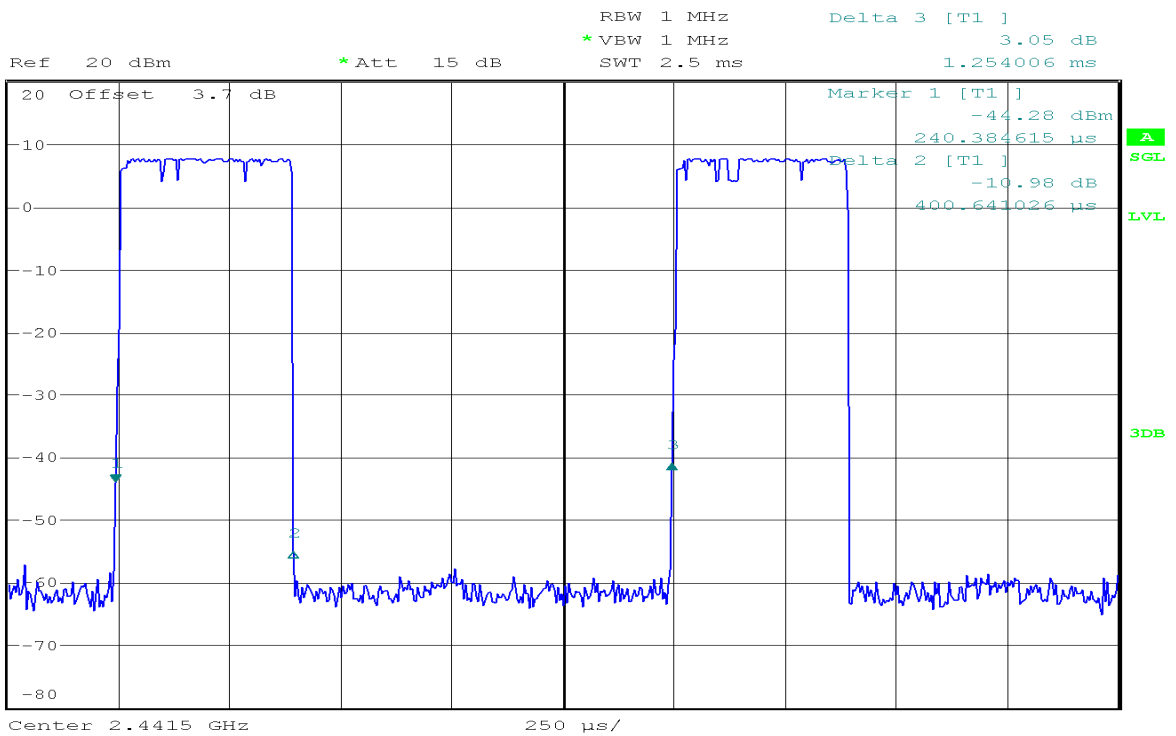
| Pulse Time<br>(ms) | Total of Dwell<br>(ms) | Period Time<br>(s) | Limit<br>(ms) | Result |
|--------------------|------------------------|--------------------|---------------|--------|
| 1.663              | 266.08                 | 31.60              | 400           | PASS   |

DH 5

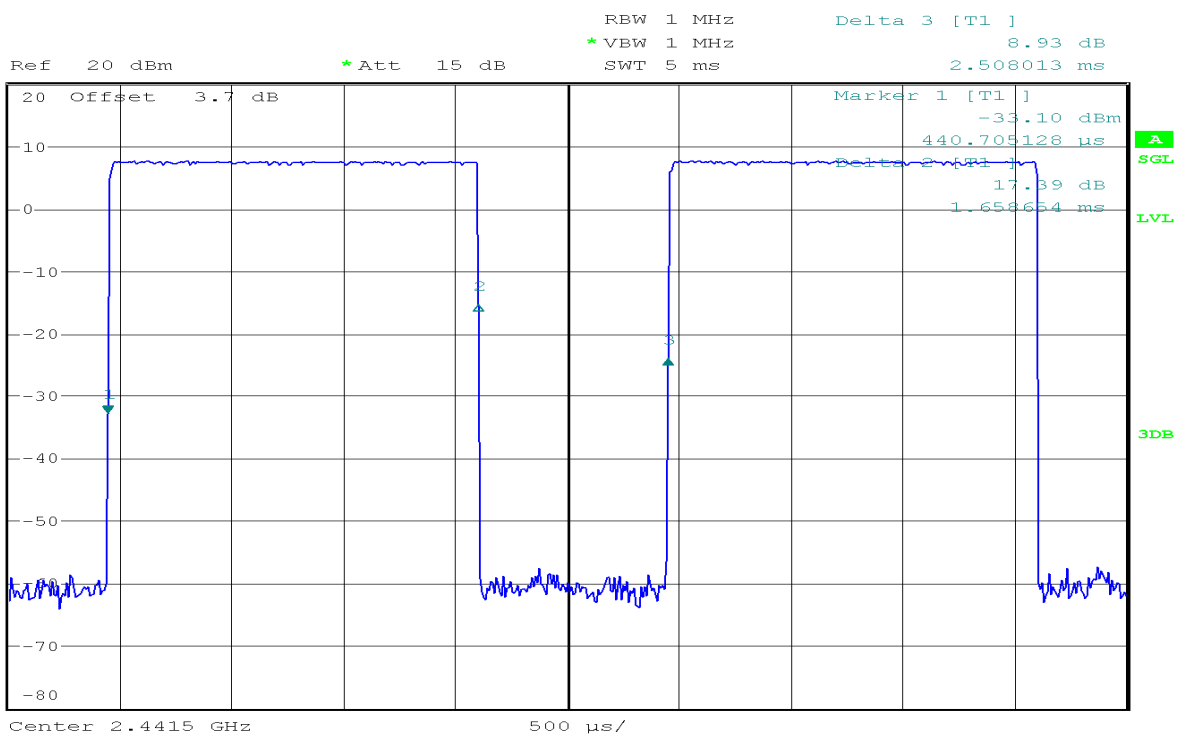
$$2.929 * (1600/6)/79 * 31.6 = 312.43 \text{ (ms)}$$

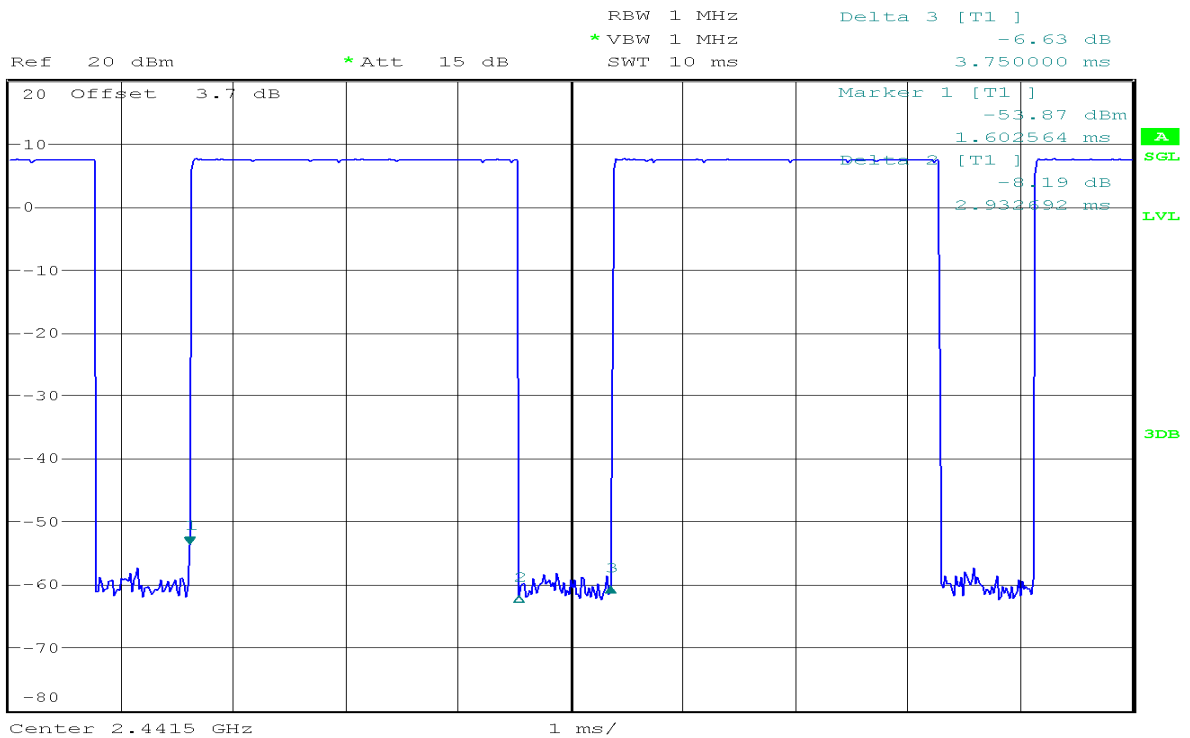
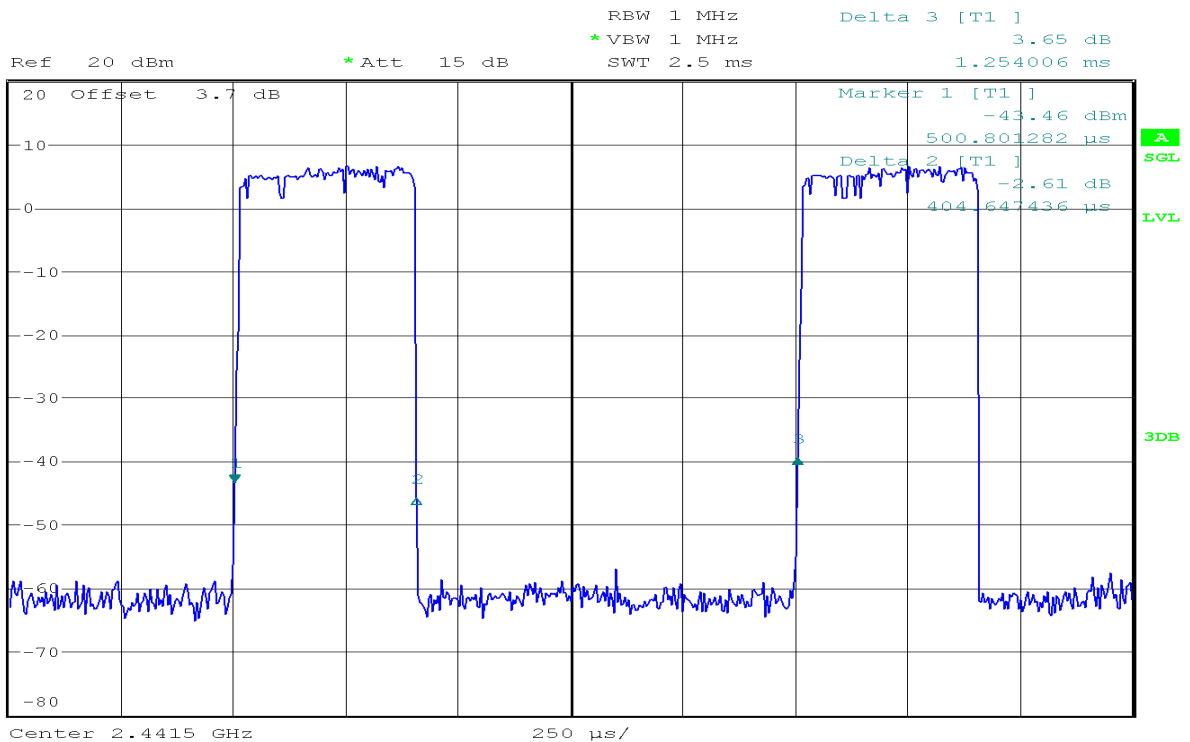
| Pulse Time<br>(ms) | Total of Dwell<br>(ms) | Period Time<br>(s) | Limit<br>(ms) | Result |
|--------------------|------------------------|--------------------|---------------|--------|
| 2.929              | 312.43                 | 31.60              | 400           | PASS   |

## 1M-DH1

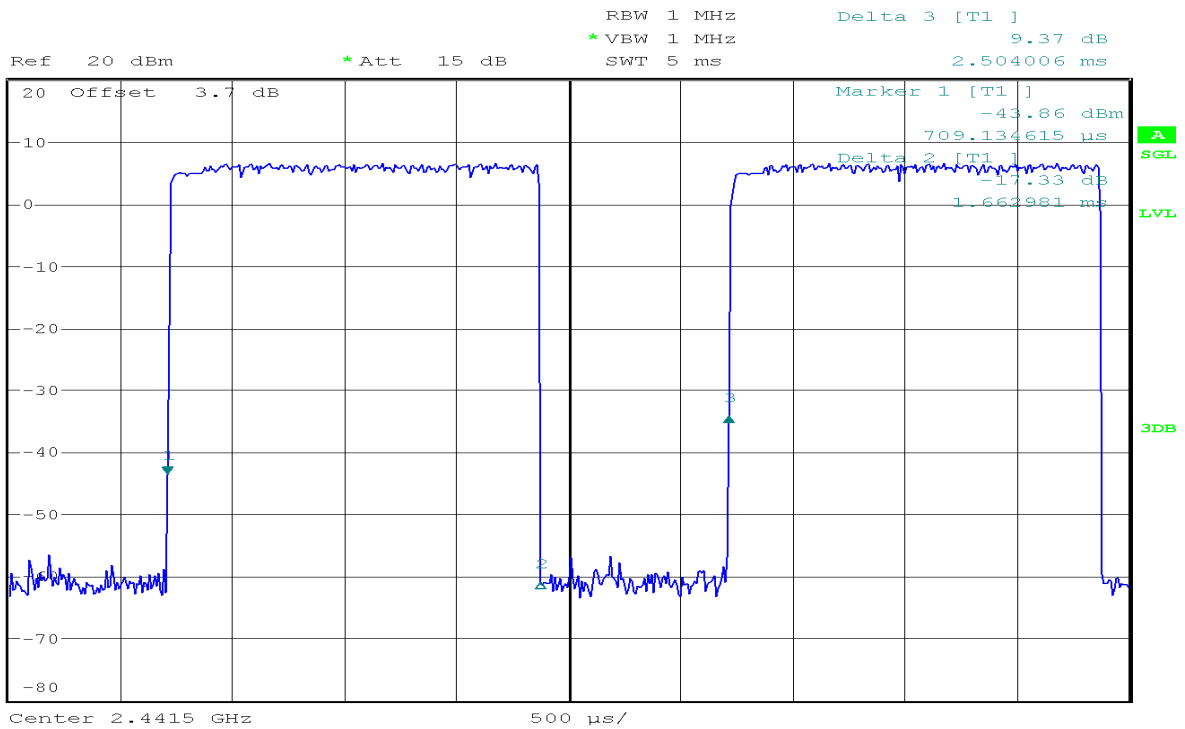


## 1M-DH3

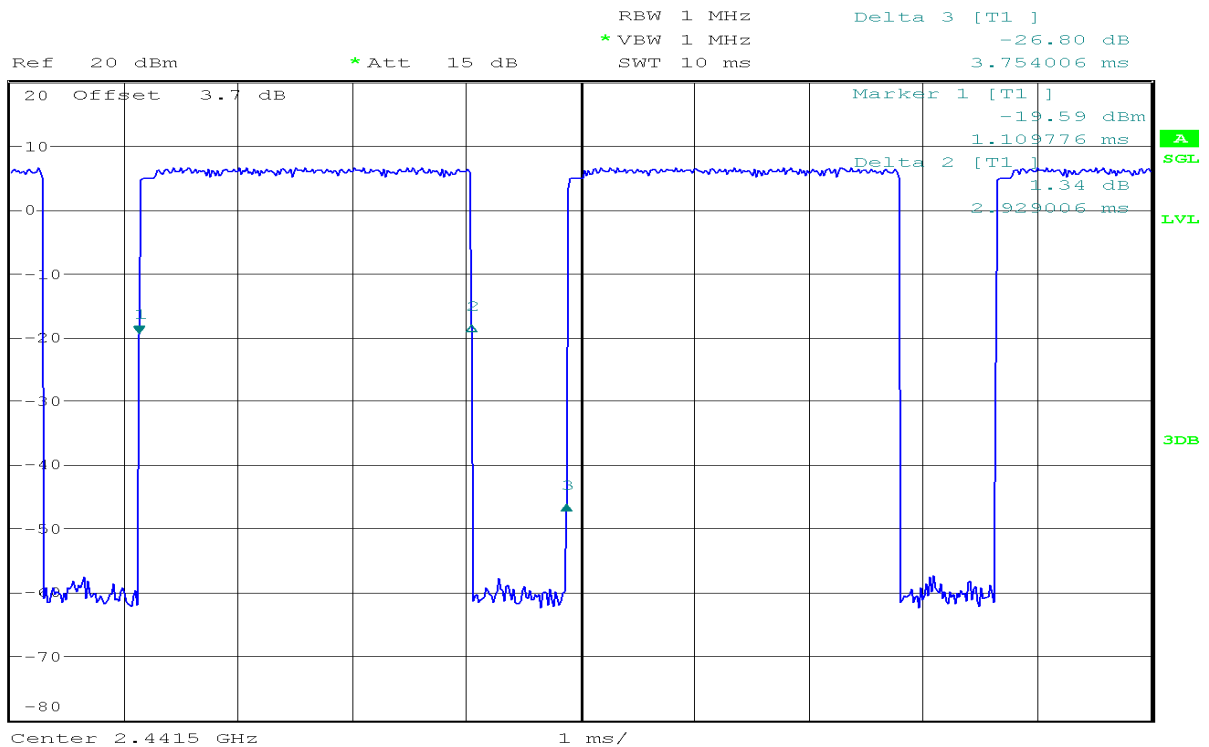


**1M-DH5****3M-DH1**

## 3M-DH3



## 3M-DH5

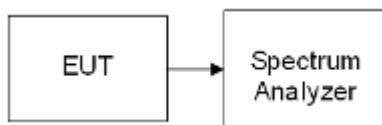


## 6.6 Conducted Band Edges Measurement

### LIMIT

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.

### Test Configuration



### TEST PROCEDURE

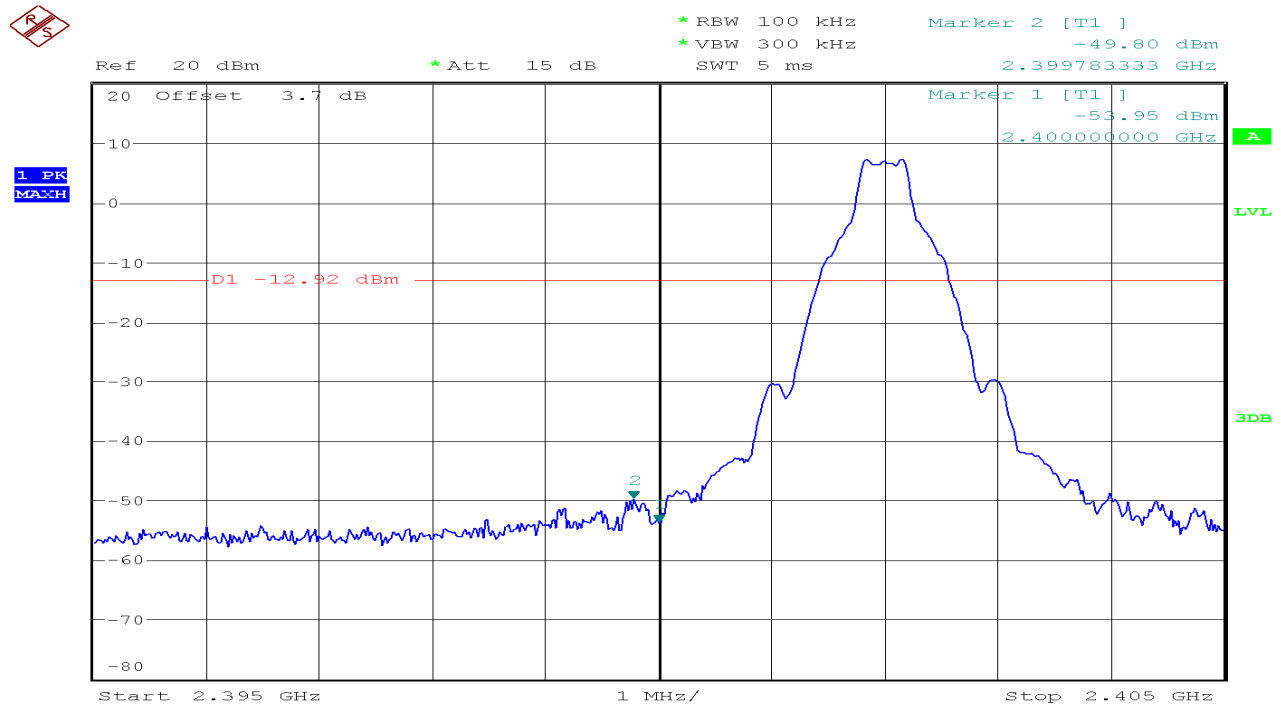
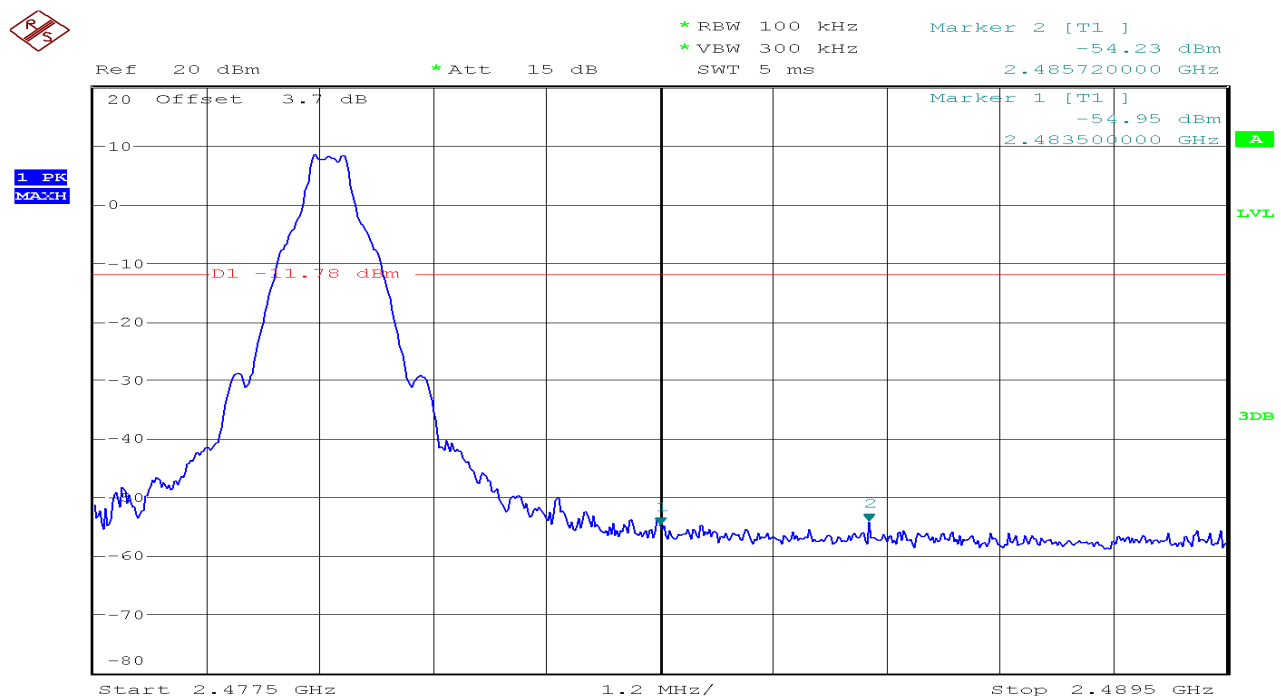
1. The testing follows the guidelines in Band-edge Compliance of RF Conducted Emissions of FCC Public Notice DA 00-705 Measurement Guidelines.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Set RBW = 100kHz ( $\geq 1\%$  span=10MHz), VBW = 300kHz ( $\geq 3$ RBW). Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100kHz RBW. The attenuation shall be 30 dB instead of 20 dB when RMS conducted output power procedure is used.
4. Enable hopping function of the EUT and then repeat step 2. and 3.
5. Measure and record the results in the test report.

### TEST RESULTS

*No non-compliance noted*

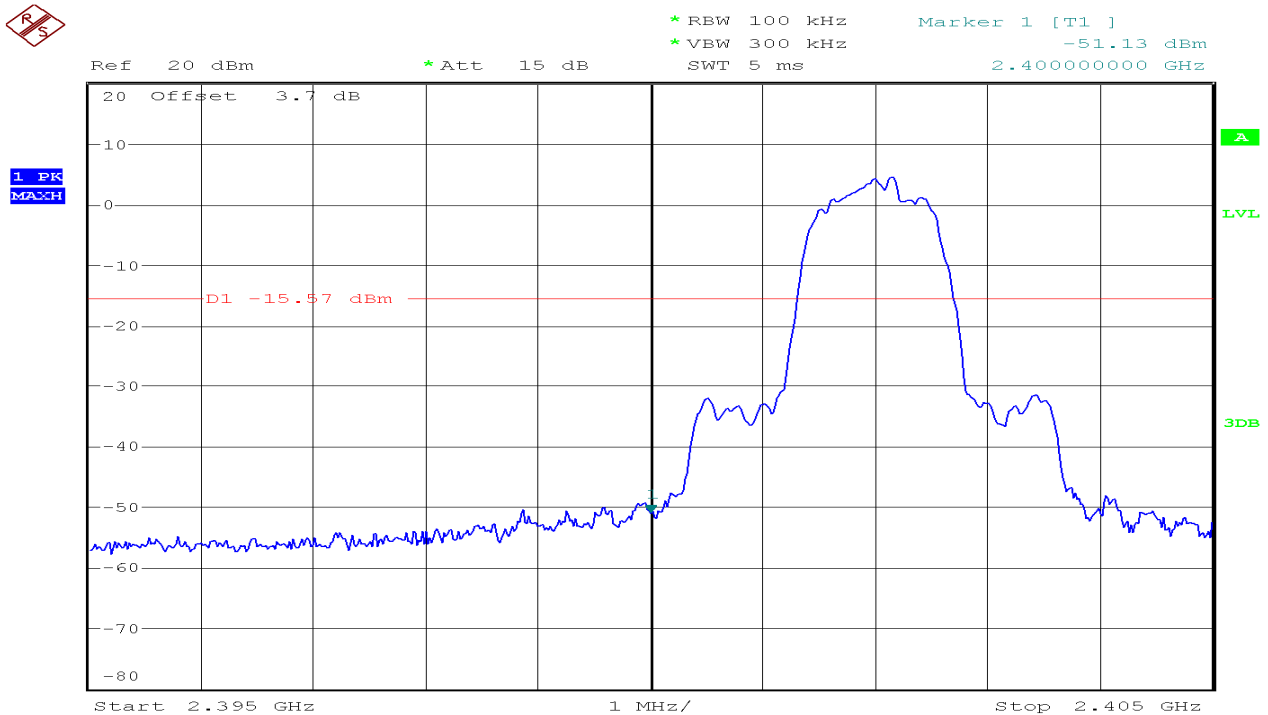
**Test Result of Conducted Band Edges**

|                 |           |              |           |
|-----------------|-----------|--------------|-----------|
| Operation Mode: | 1 Mbps    | Test Date:   | 2017-6-24 |
| Test Channel:   | 00 and 78 | Tested by:   | Lily.Wang |
| Humidity:       | 52 % RH   | Temperature: | 24°C      |

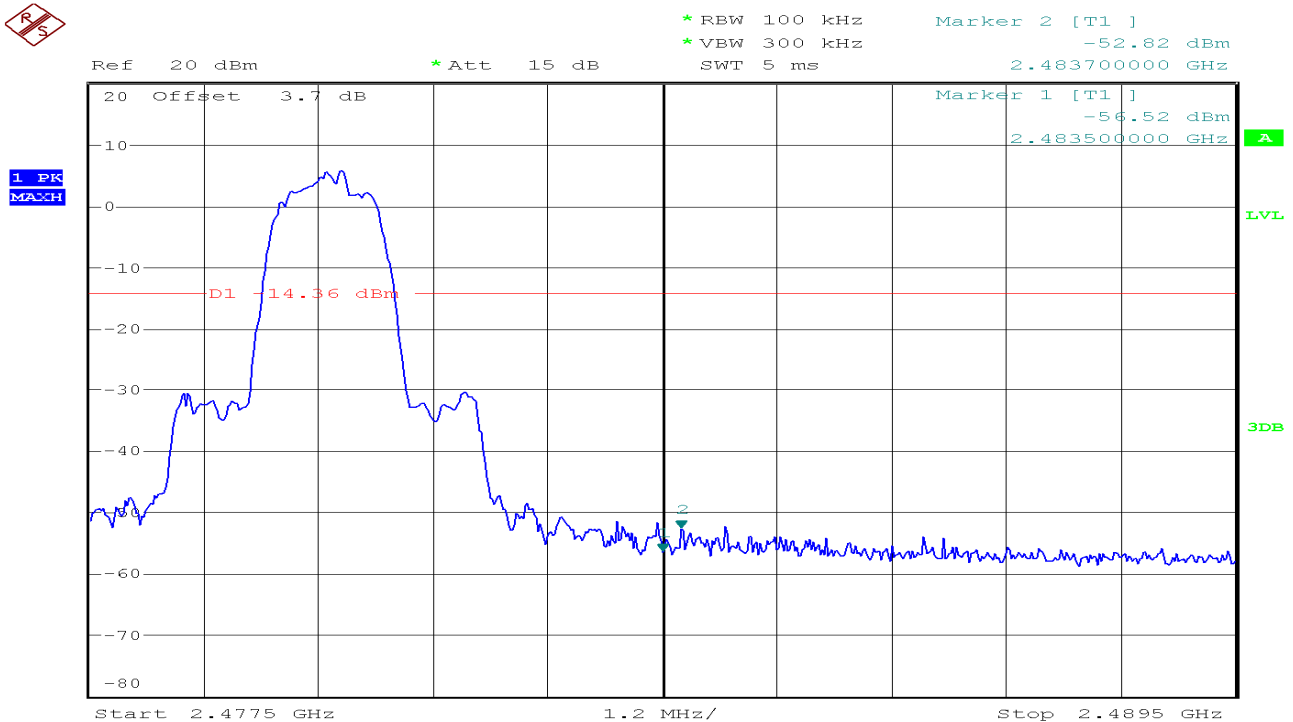
**Low Band Edge Plot on Channel 00****High Band Edge Plot on Channel 78**

|                 |           |              |           |
|-----------------|-----------|--------------|-----------|
| Operation Mode: | 3 Mbps    | Test Date:   | 2017-6-24 |
| Test Channel:   | 00 and 78 | Tested by:   | Lily.Wang |
| Humidity:       | 52 % RH   | Temperature: | 24°C      |

## Low Band Edge Plot on Channel 00

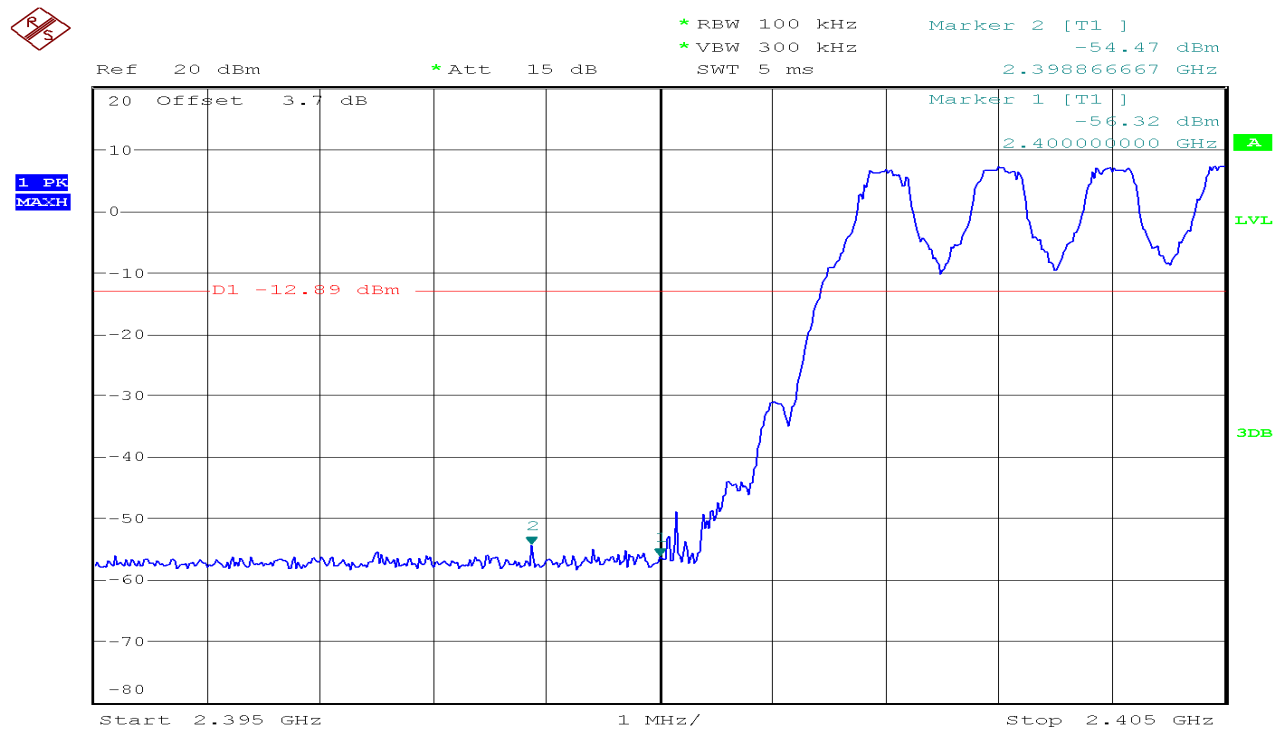
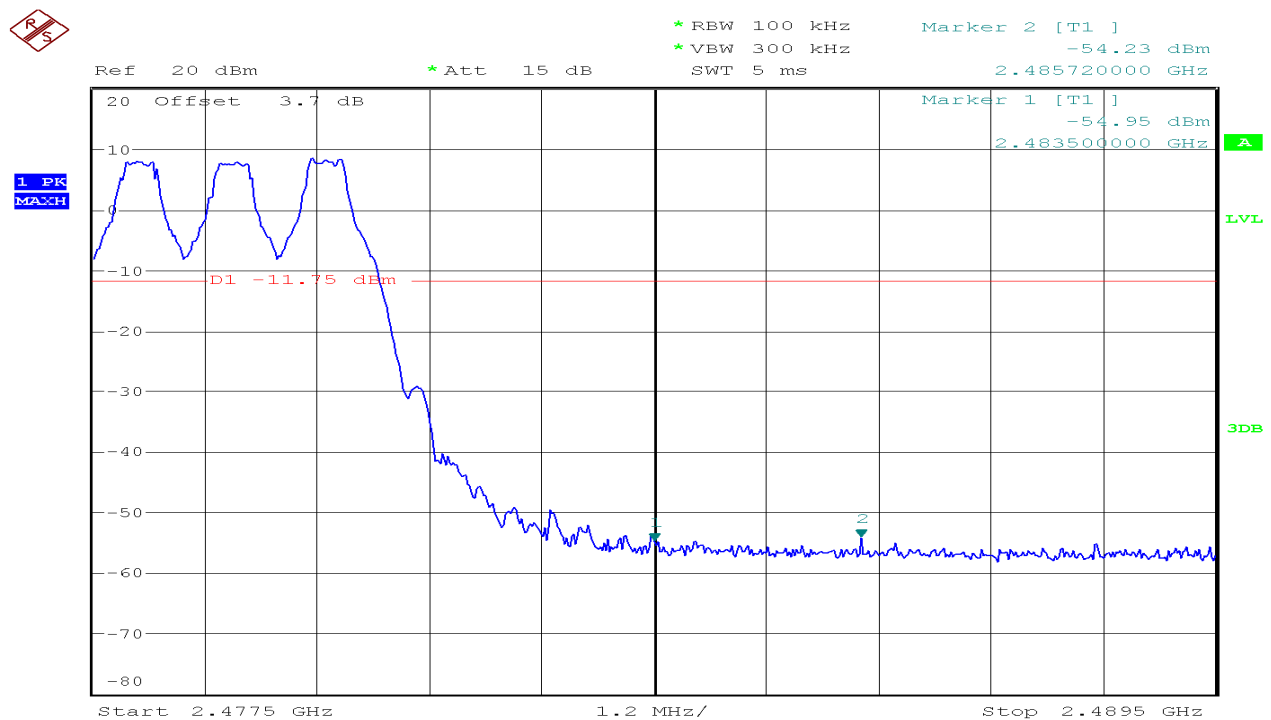


## High Band Edge Plot on Channel 78

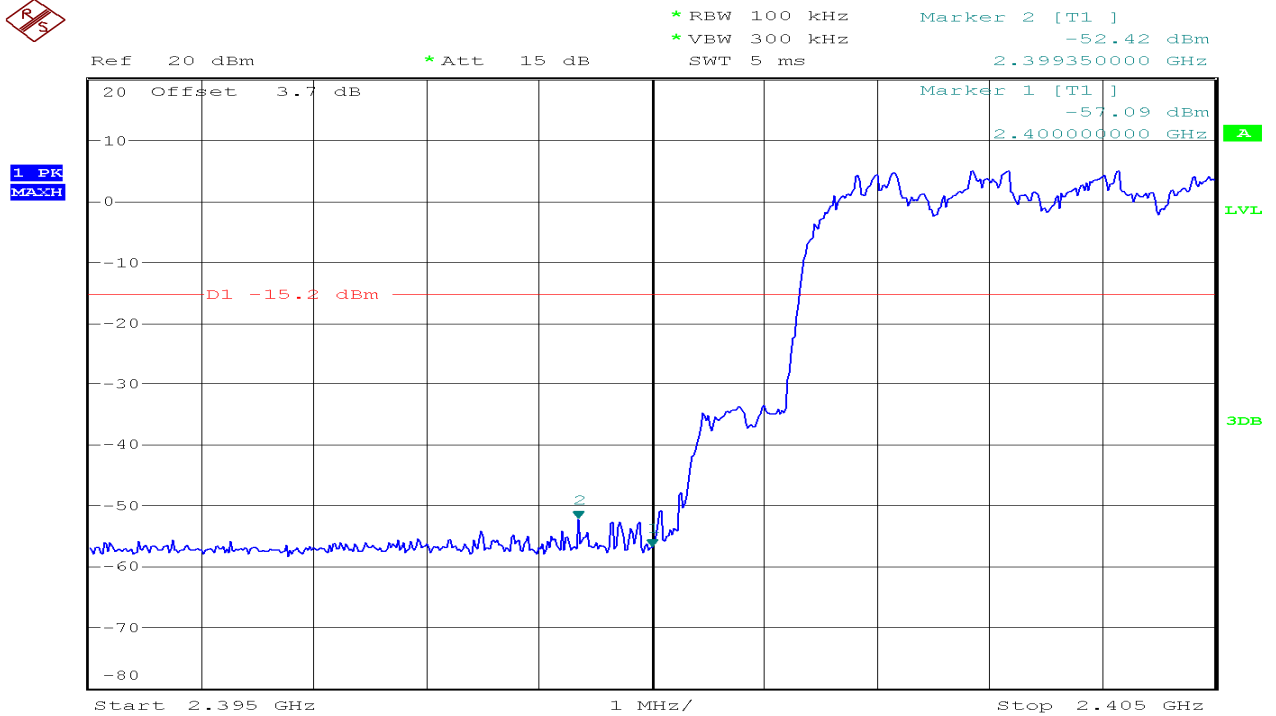
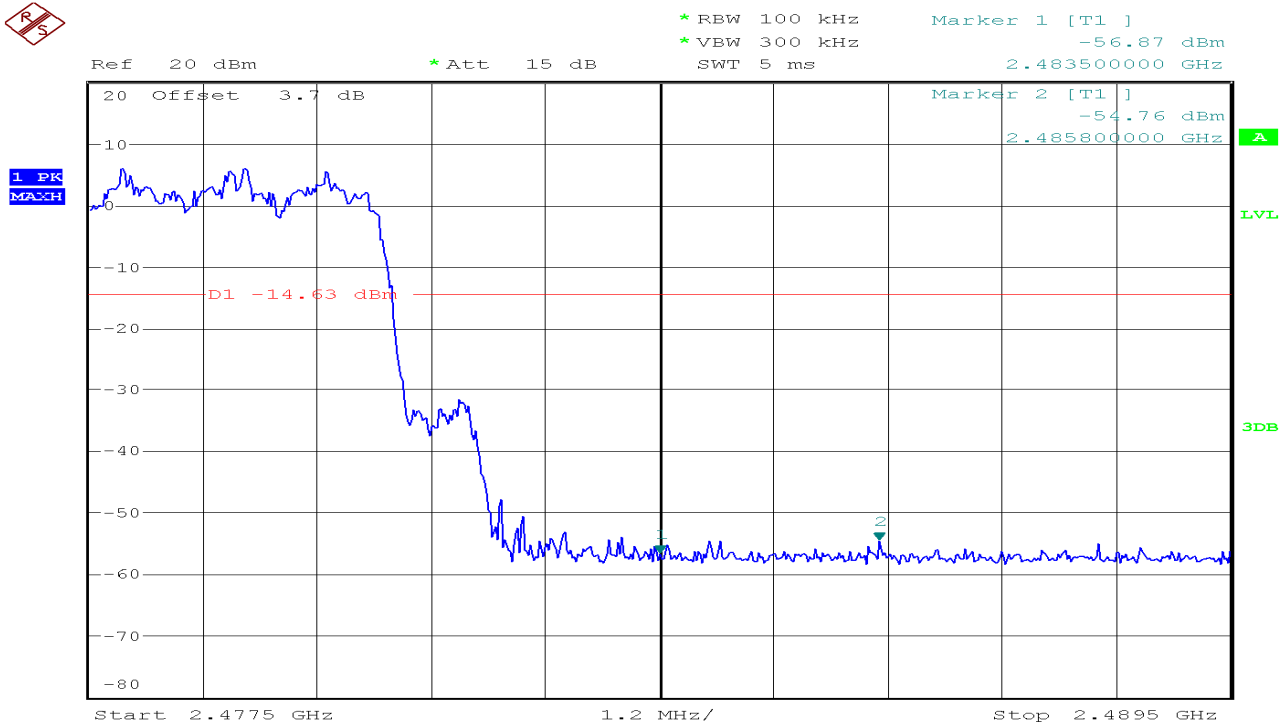


**Test Result of Conducted Hopping Mode Band Edges**

|                 |         |              |           |
|-----------------|---------|--------------|-----------|
| Operation Mode: | 1 Mbps  | Test Date:   | 2017-6-24 |
| Humidity:       | 52 % RH | Temperature: | 24°C      |

**1Mbps Hopping Mode Low Band Edge Plot****1Mbps Hopping Mode High Band Edge Plot**

|                 |         |              |           |
|-----------------|---------|--------------|-----------|
| Operation Mode: | 3 Mbps  | Test Date:   | 2017-6-24 |
| Humidity:       | 52 % RH | Temperature: | 24°C      |

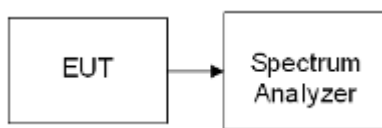
**3Mbps Hopping Mode Low Band Edge Plot****3Mbps Hopping Mode High Band Edge Plot**

## 6.7 Conducted Spurious Emission Measurement

### LIMIT

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

### Test Configuration



### TEST PROCEDURE

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

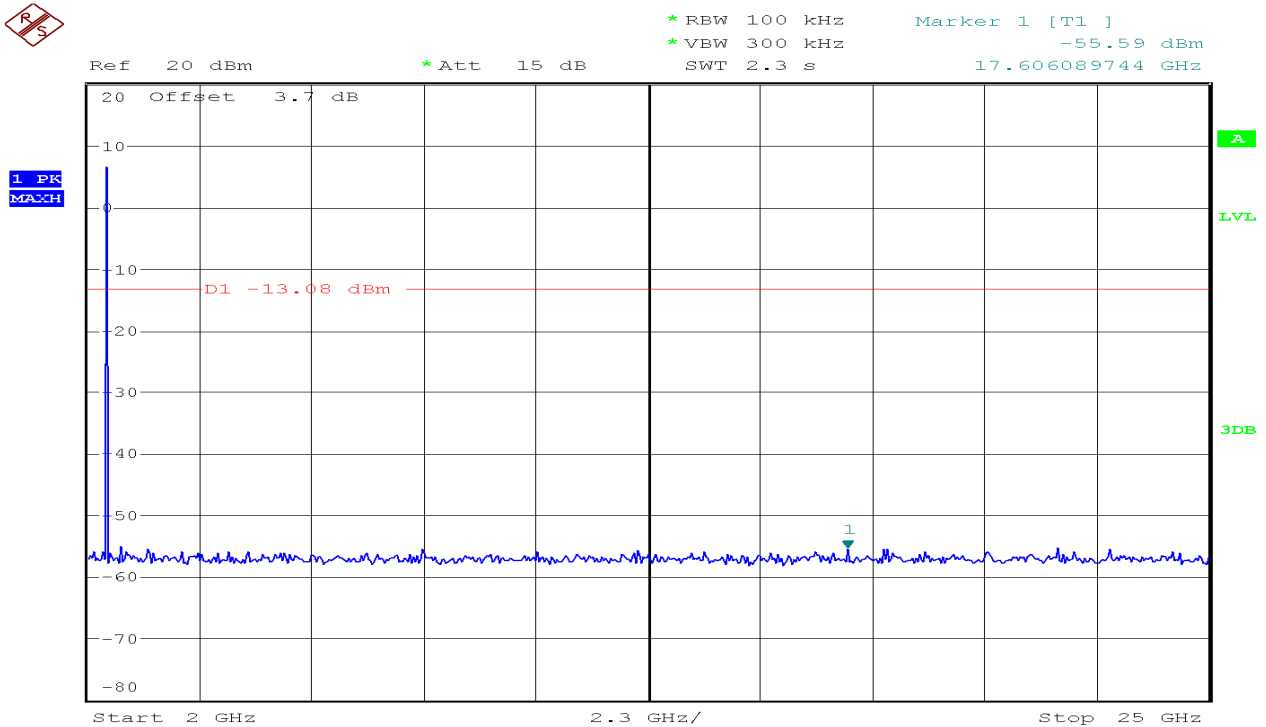
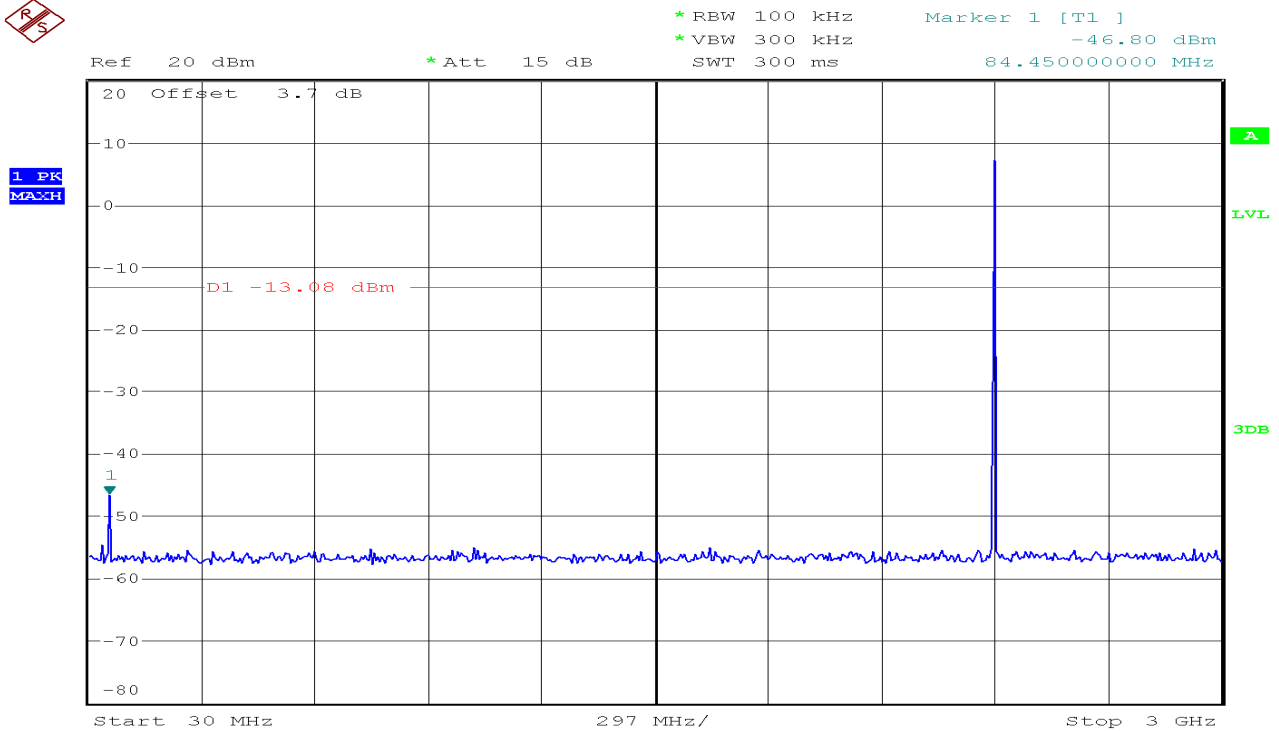
The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 KHz. The video bandwidth is set to 300 KHz.

Measurements are made over the 30MHz to 26GHz range with the transmitter set to the lowest, middle, and highest channels.

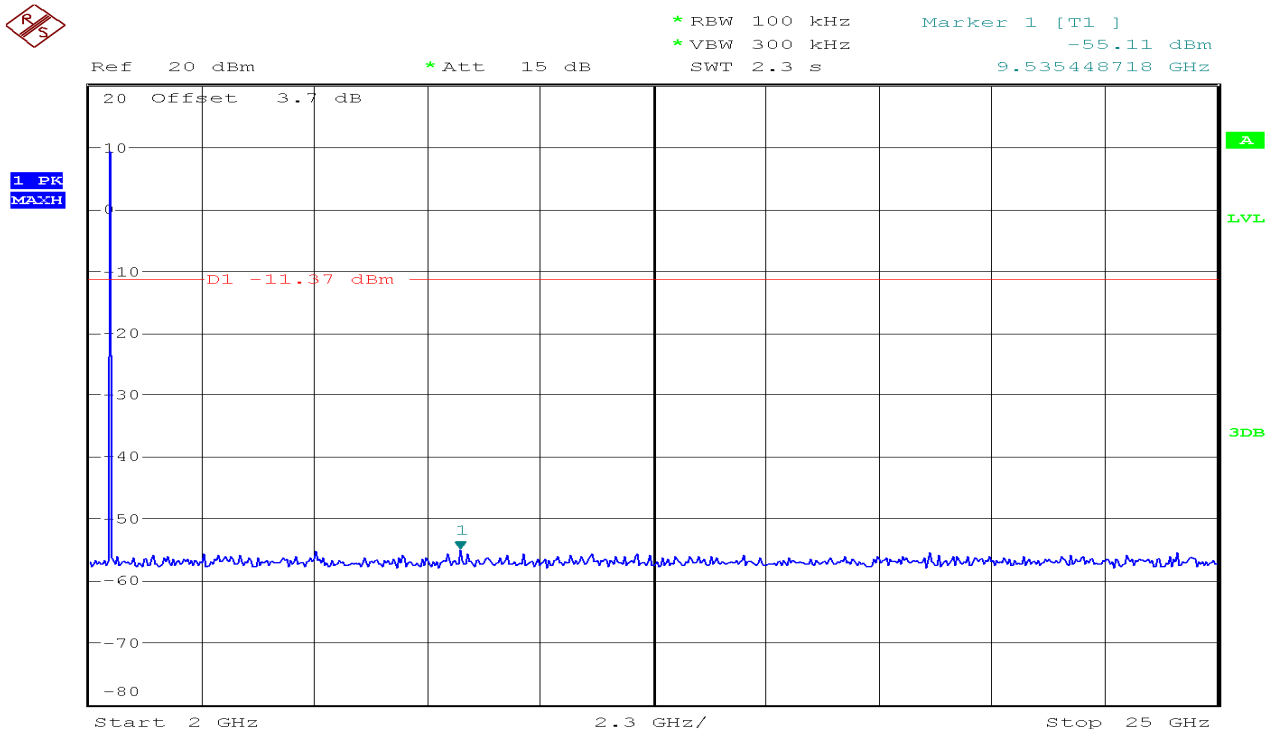
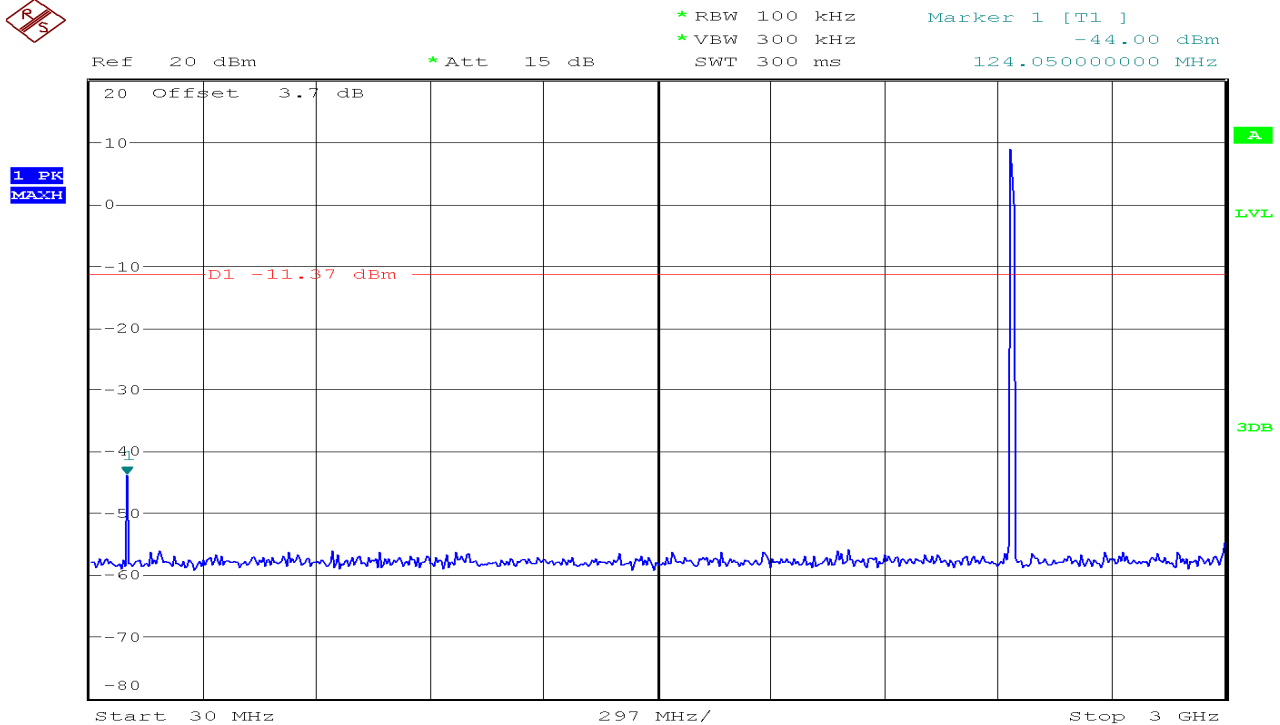
### TEST RESULTS

*No non-compliance noted*

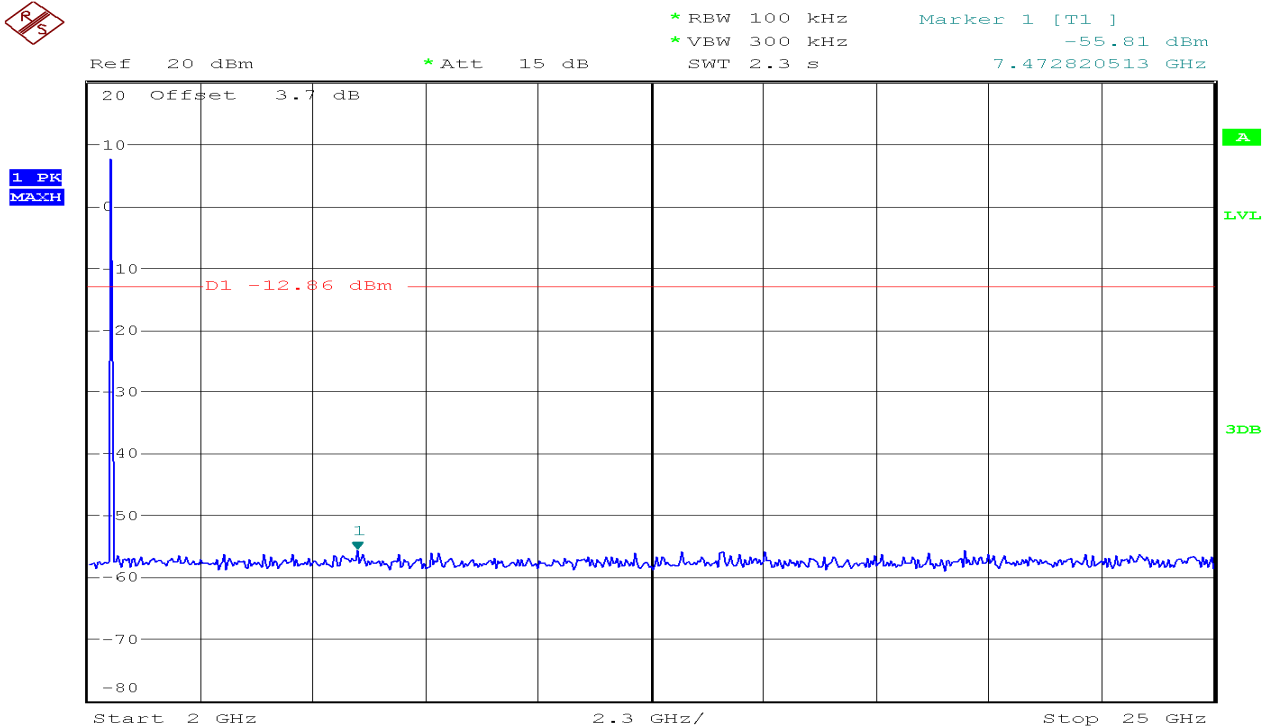
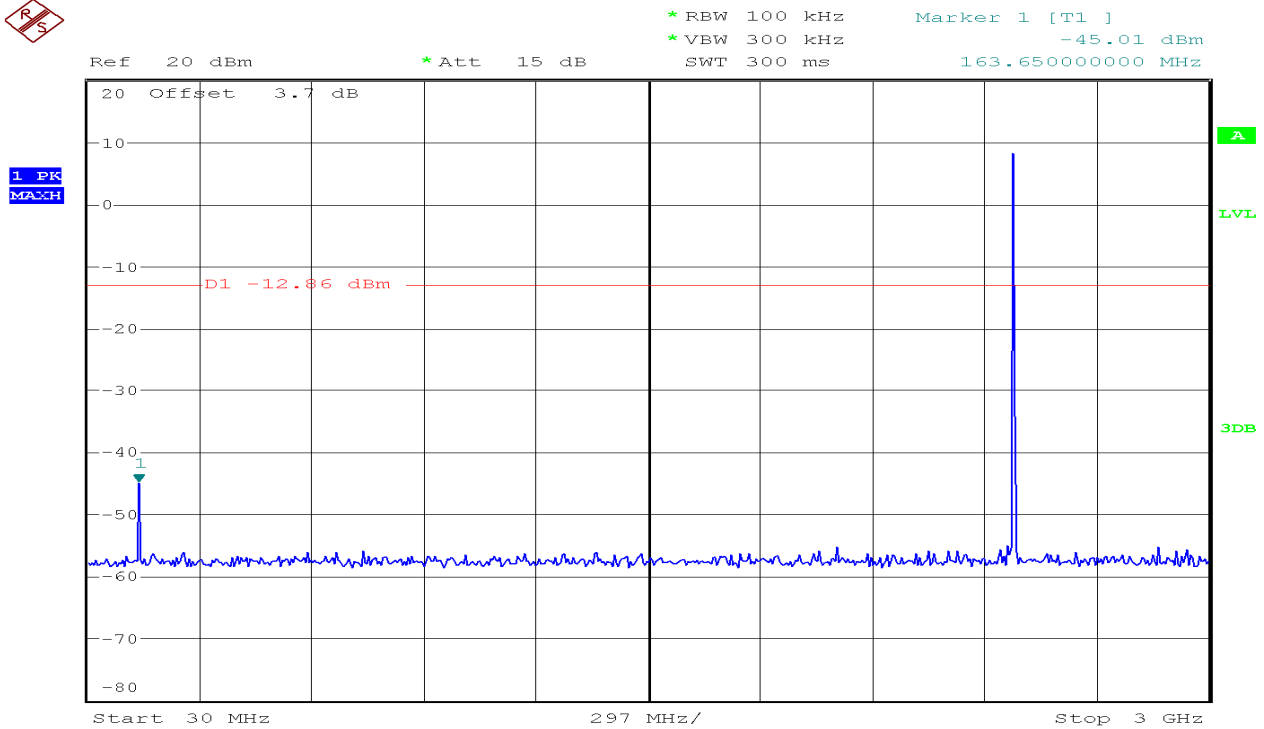
|                 |         |              |           |
|-----------------|---------|--------------|-----------|
| Operation Mode: | 1 Mbps  | Test Date:   | 2017-6-24 |
| Test Channel:   | 00      | Tested by:   | Lily.Wang |
| Humidity:       | 52 % RH | Temperature: | 24°C      |



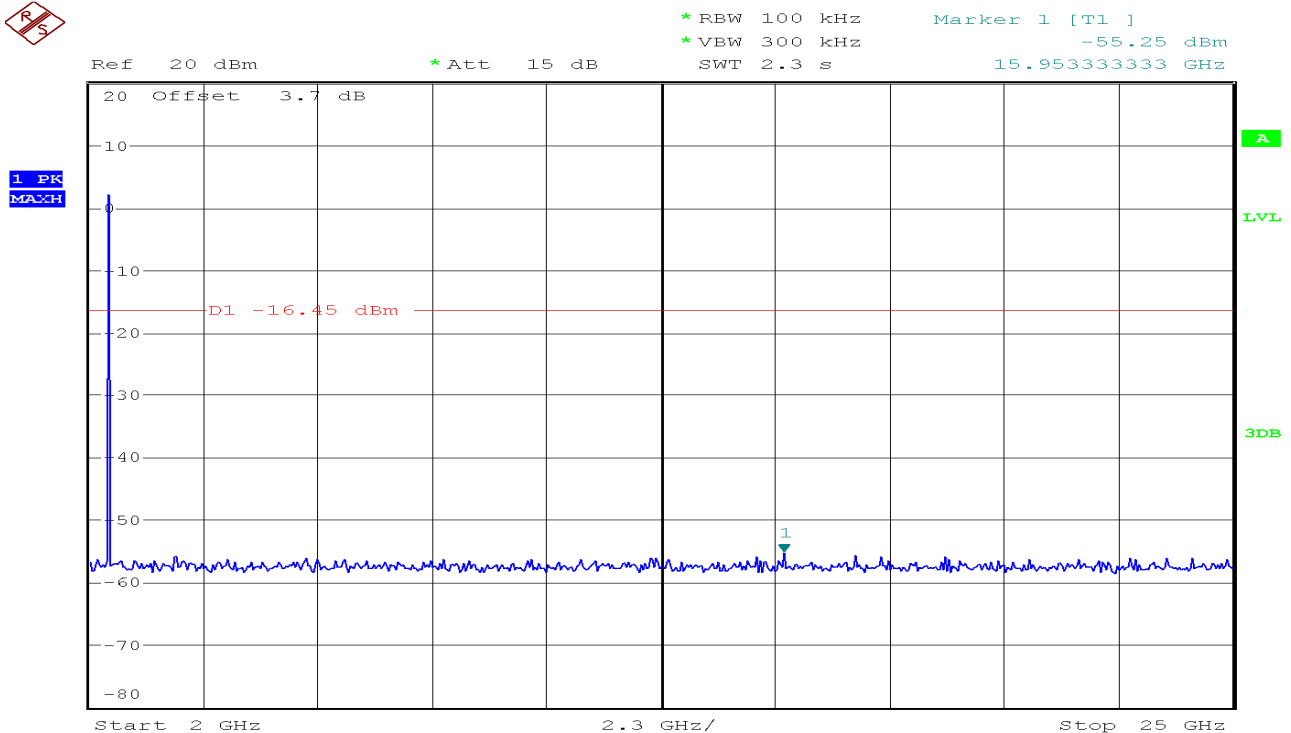
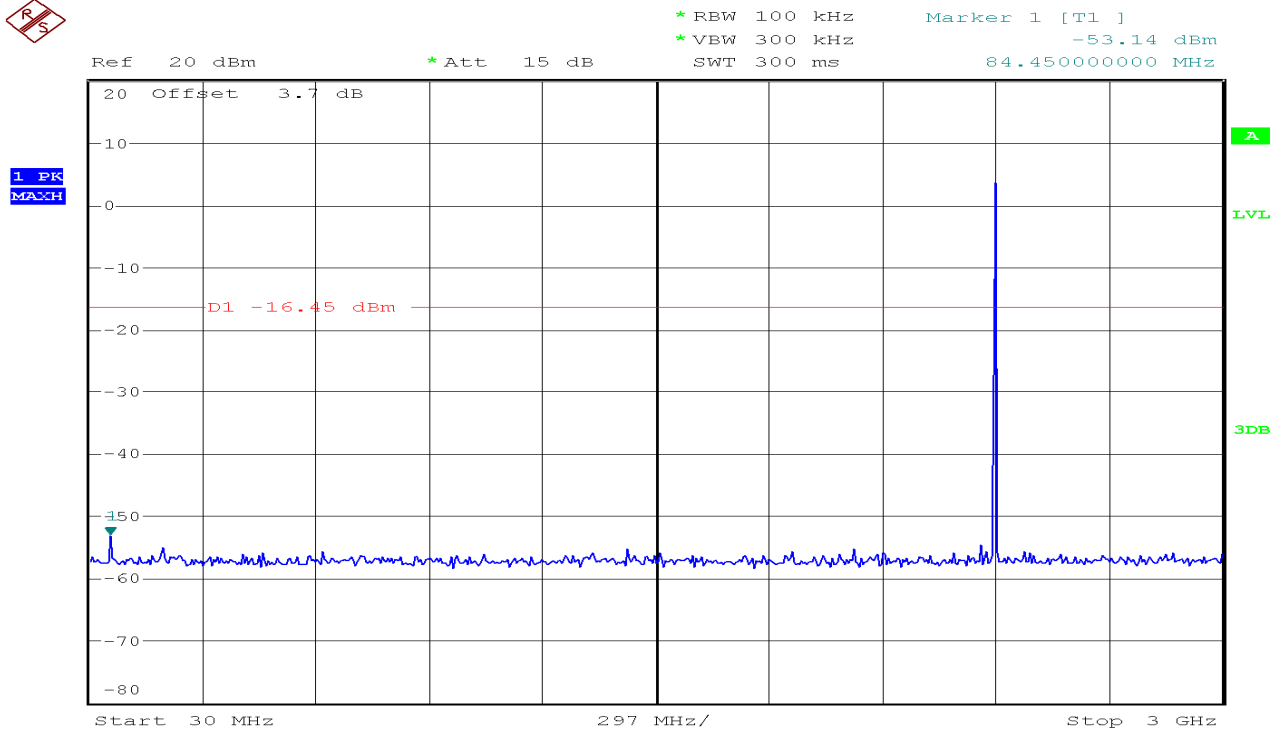
|                 |         |              |           |
|-----------------|---------|--------------|-----------|
| Operation Mode: | 1 Mbps  | Test Date:   | 2017-6-24 |
| Test Channel:   | 39      | Tested by:   | Lily.Wang |
| Humidity:       | 52 % RH | Temperature: | 24°C      |



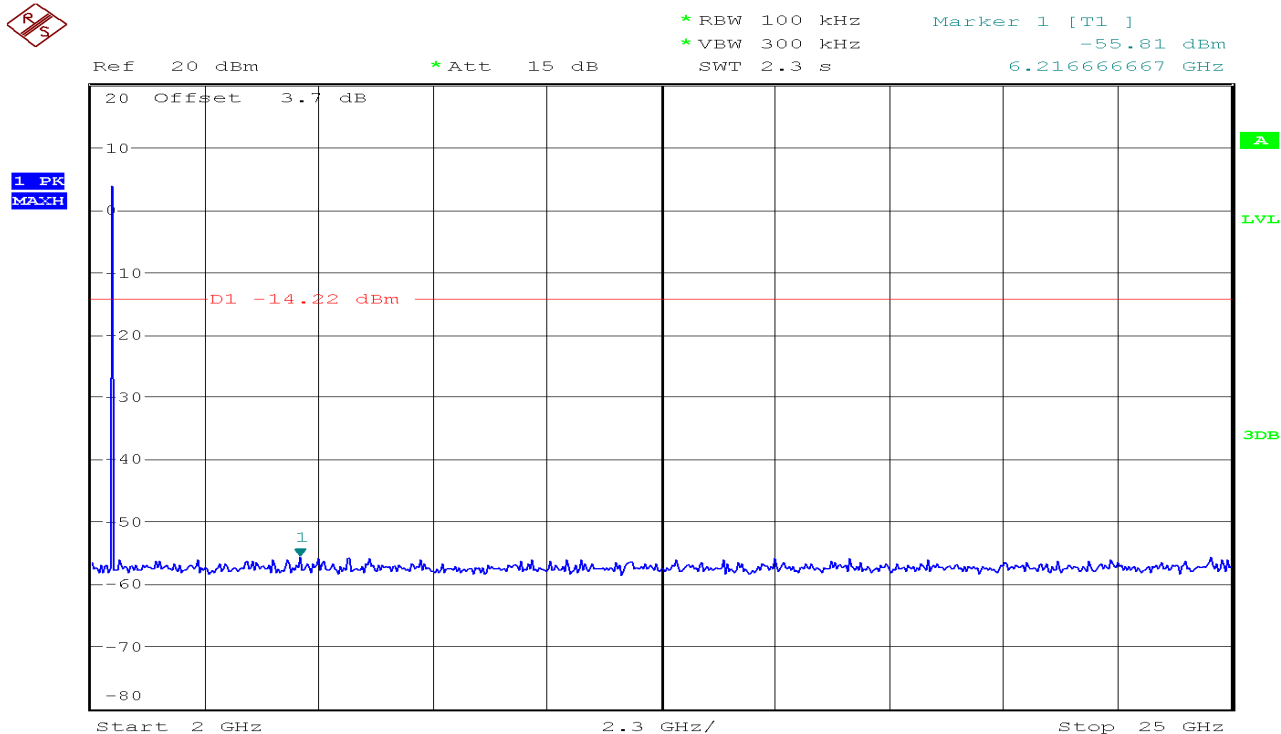
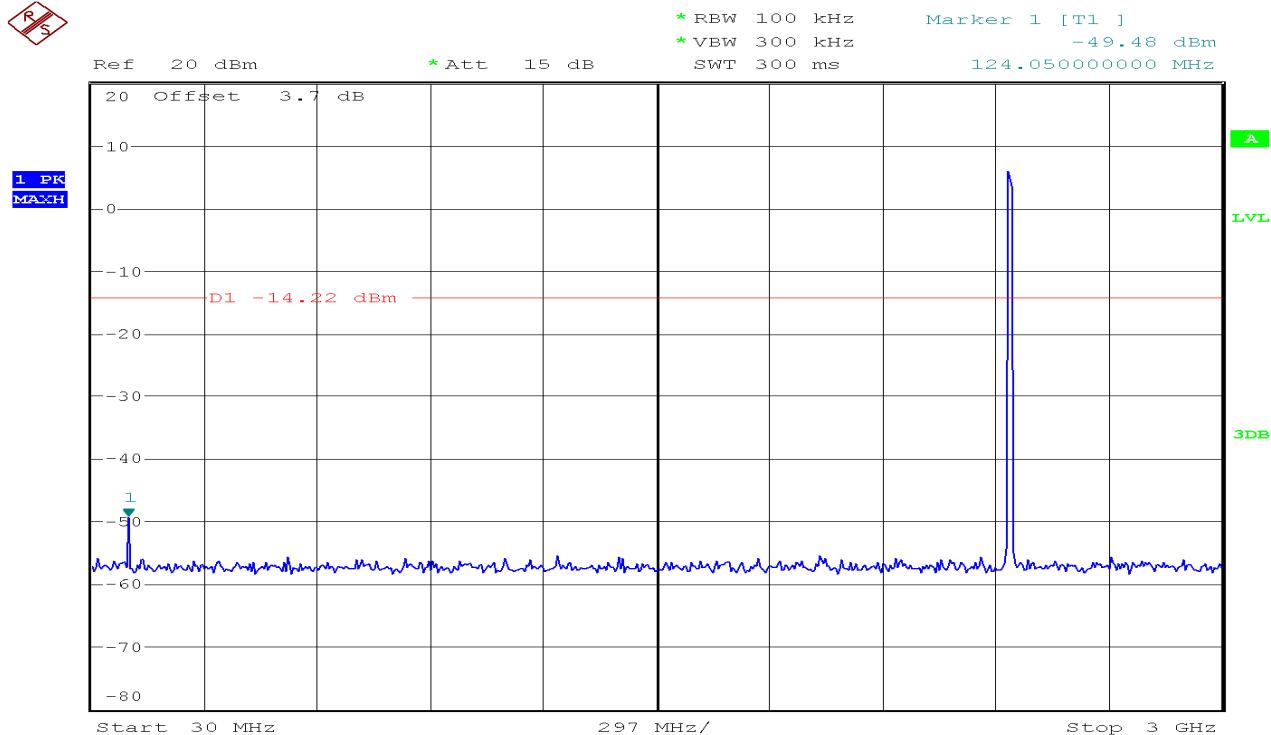
|                 |         |              |           |
|-----------------|---------|--------------|-----------|
| Operation Mode: | 1 Mbps  | Test Date:   | 2017-6-24 |
| Test Channel:   | 78      | Tested by:   | Lily.Wang |
| Humidity:       | 52 % RH | Temperature: | 24°C      |



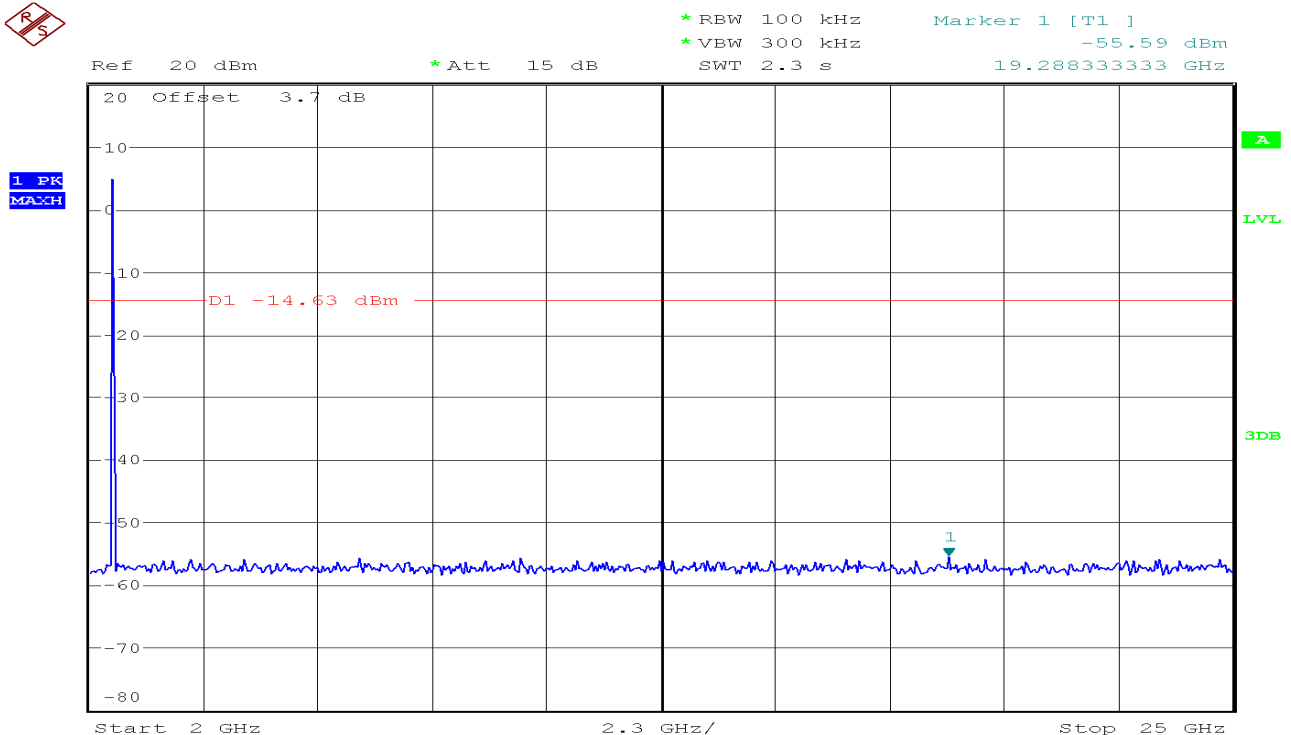
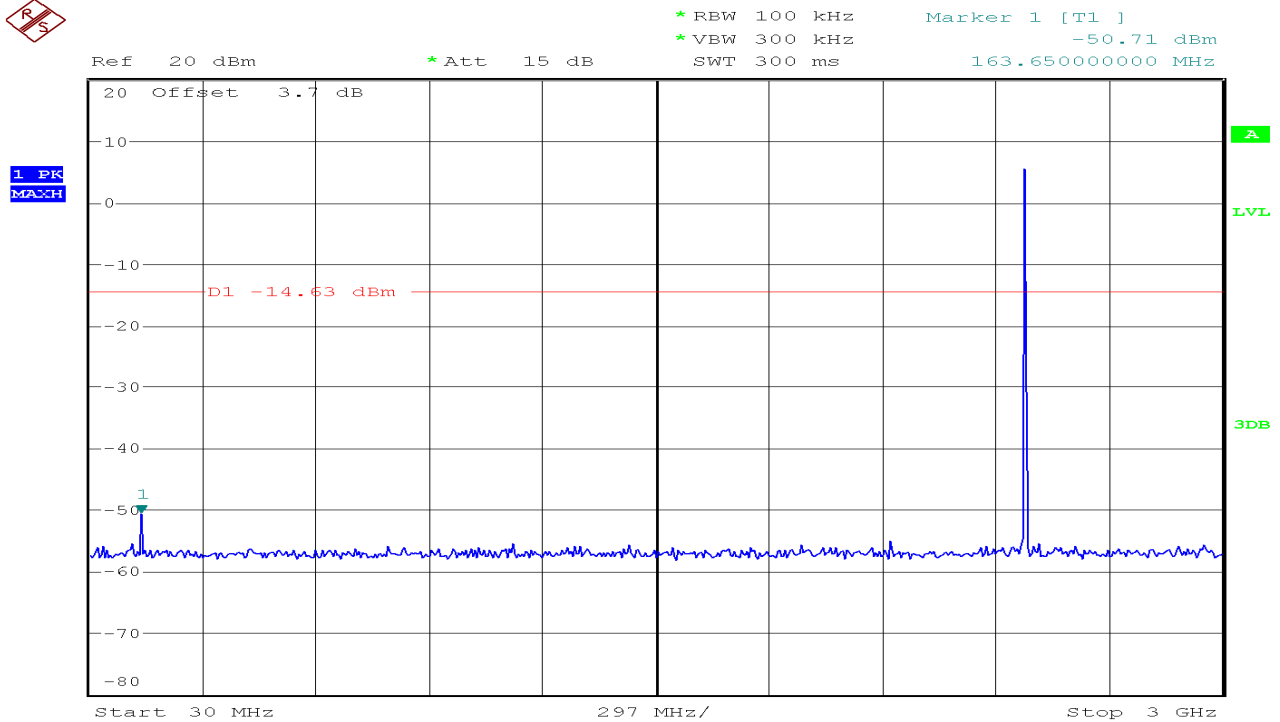
|                 |         |              |           |
|-----------------|---------|--------------|-----------|
| Operation Mode: | 3 Mbps  | Test Date:   | 2017-6-24 |
| Test Channel:   | 00      | Tested by:   | Lily.Wang |
| Humidity:       | 52 % RH | Temperature: | 24°C      |



|                 |         |              |           |
|-----------------|---------|--------------|-----------|
| Operation Mode: | 3 Mbps  | Test Date:   | 2017-6-24 |
| Test Channel:   | 39      | Tested by:   | Lily.Wang |
| Humidity:       | 52 % RH | Temperature: | 24°C      |



|                 |         |              |           |
|-----------------|---------|--------------|-----------|
| Operation Mode: | 3 Mbps  | Test Date:   | 2017-6-24 |
| Test Channel:   | 78      | Tested by:   | Lily.Wang |
| Humidity:       | 52 % RH | Temperature: | 24°C      |



## 6.8 Radiated Band Edge and Spurious Emission Measurement

### LIMIT

1. Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

| Frequency (MHz) | Field Strength (mV/m) | Measurement Distance (m) |
|-----------------|-----------------------|--------------------------|
| 30-88           | 100*                  | 3                        |
| 88-216          | 150*                  | 3                        |
| 216-960         | 200*                  | 3                        |
| Above 960       | 500                   | 3                        |

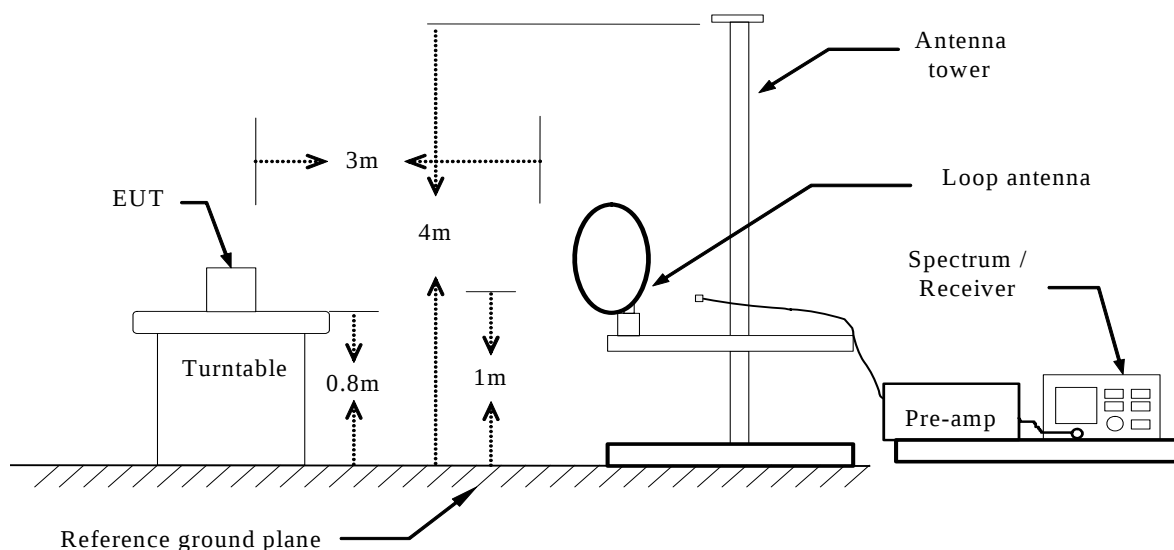
**Remark:** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

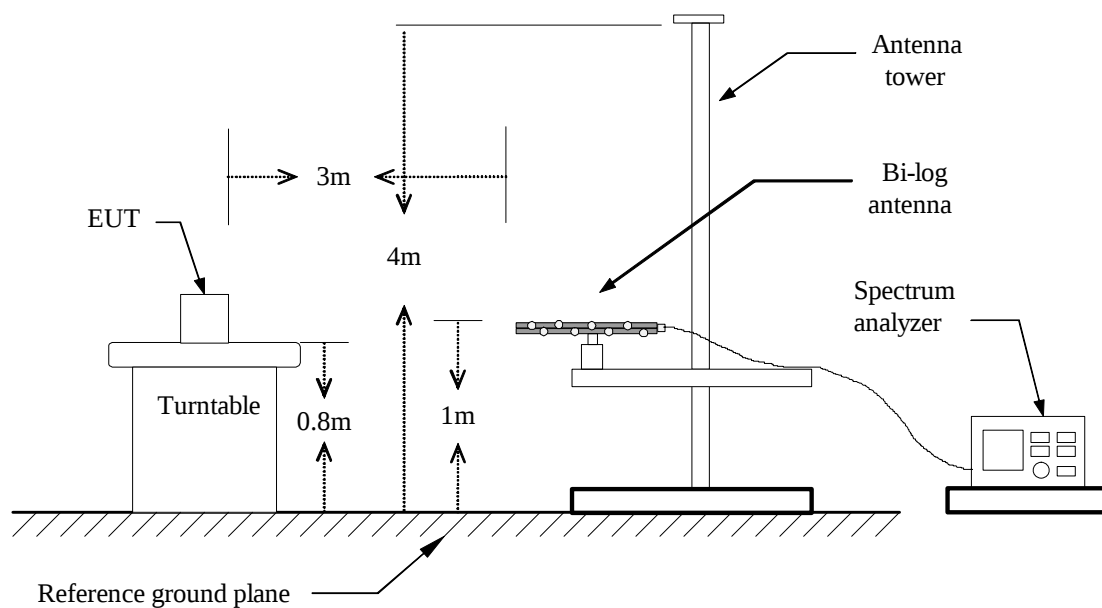
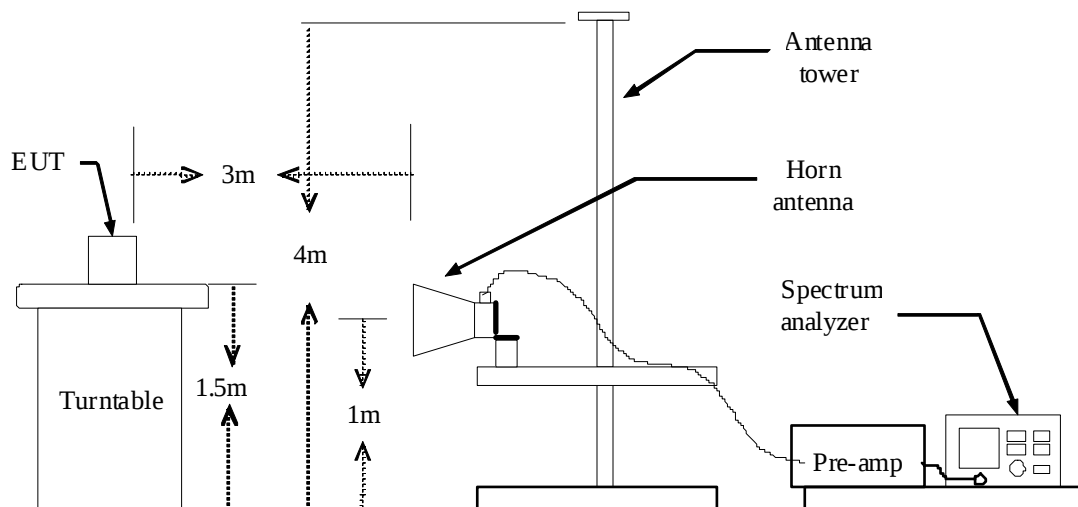
2. In the above emission table, the tighter limit applies at the band edges.

| Frequency (Hz) | Field Strength ( $\mu\text{V/m}$ at 3-meter) | Field Strength (dB $\mu\text{V/m}$ at 3-meter) |
|----------------|----------------------------------------------|------------------------------------------------|
| 30-88          | 100                                          | 40                                             |
| 88-216         | 150                                          | 43.5                                           |
| 216-960        | 200                                          | 46                                             |
| Above 960      | 500                                          | 54                                             |

### Test Configuration

#### Below 30MHz

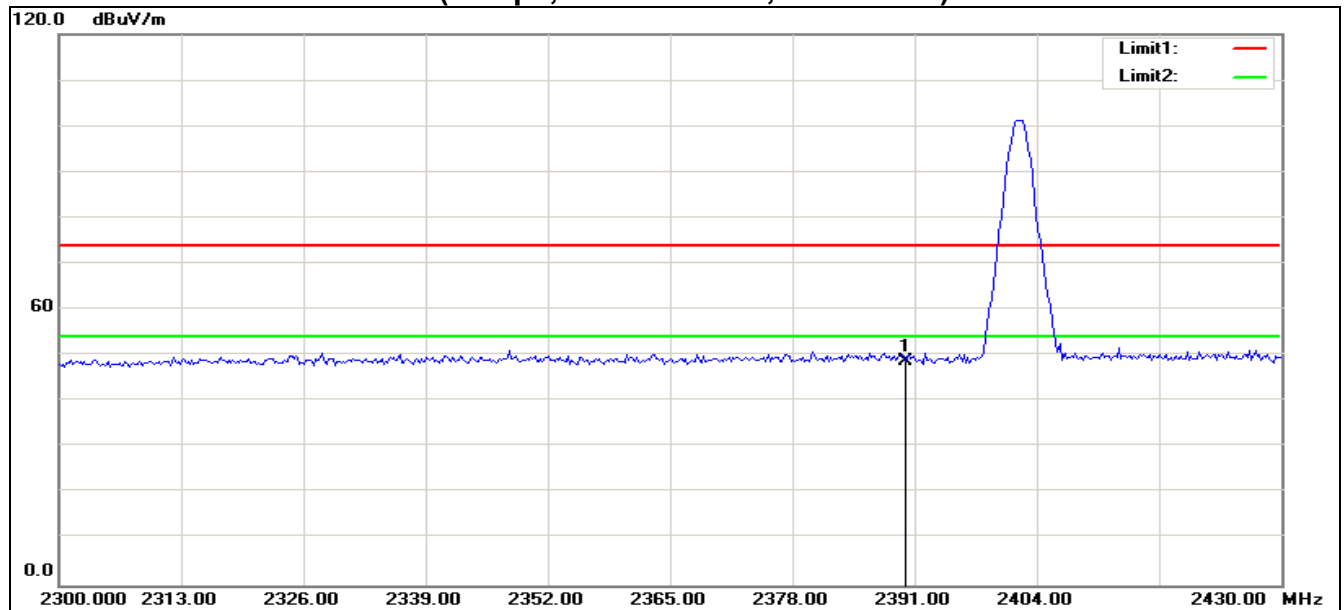


**Below 1 GHz****Above 1 GHz**

**TEST PROCEDURE**

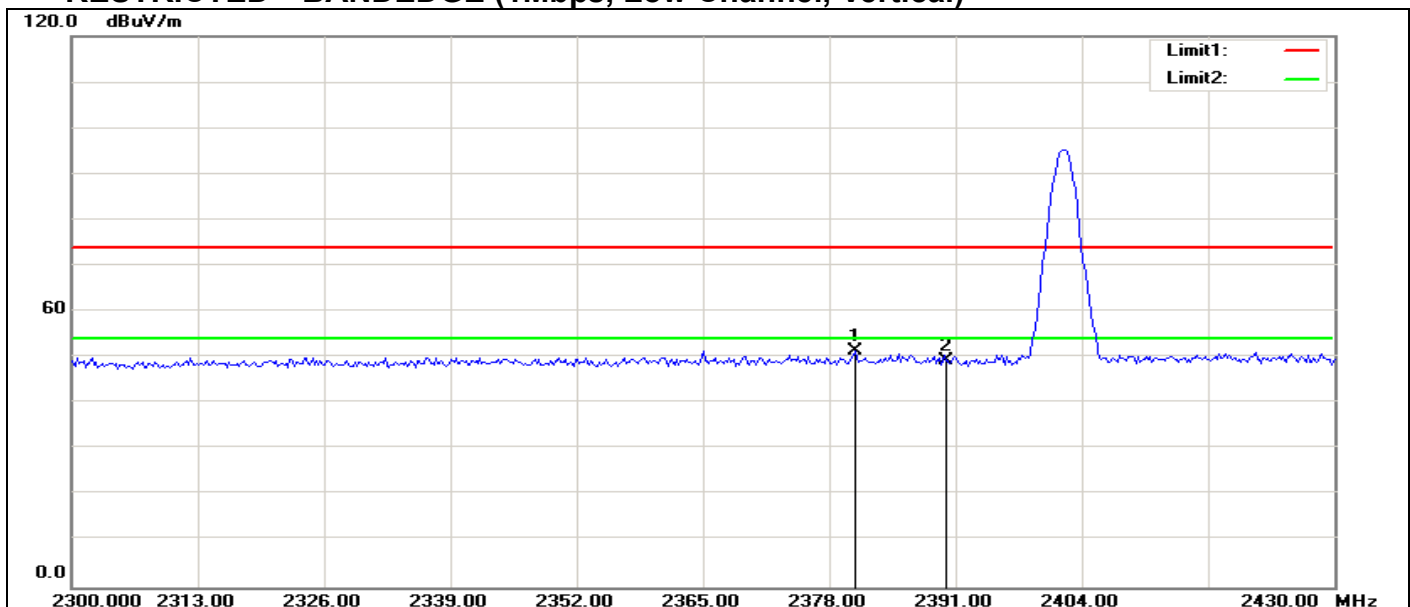
1. The EUT is placed on a turntable above ground plane, which is 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:  
Below 1GHz:  
RBW=100kHz / VBW=300kHz / Sweep=AUTO  
Above 1GHz:  
(a) PEAK: RBW=VBW=1MHz / Sweep=AUTO  
(b) AVERAGE: RBW=1MHz, VBW = 10 Hz, when duty cycle is no less than 98 percent.  
VBW  $\geq 1/T$ , when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
7. Repeat above procedures until the measurements for all frequencies are complete.

## RESTRICTED BANDEDGE (1Mbps, Low Channel, Horizontal)

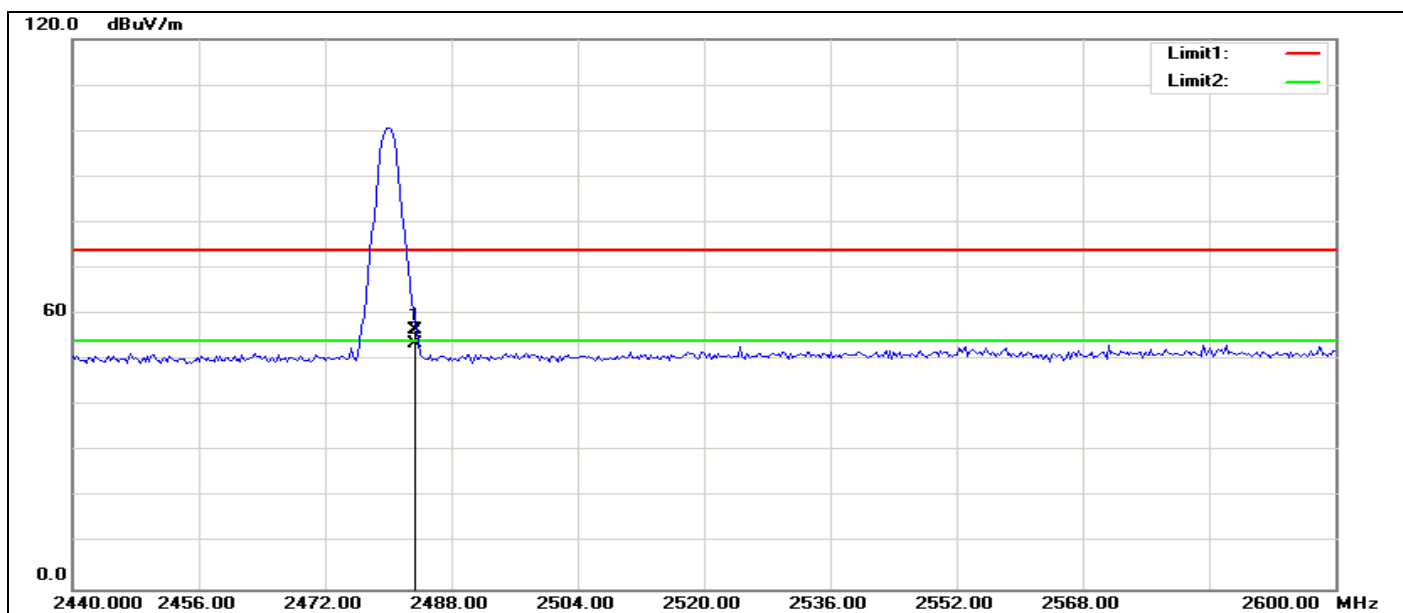


| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (deg.) | Remark |
|-----|-----------------|----------------|----------------------|-----------------|----------------|-------------|-------------|---------------|--------|
| 1   | 2390.000        | 56.10          | -7.31                | 48.79           | 74.00          | -25.21      | 100         | 360           | peak   |

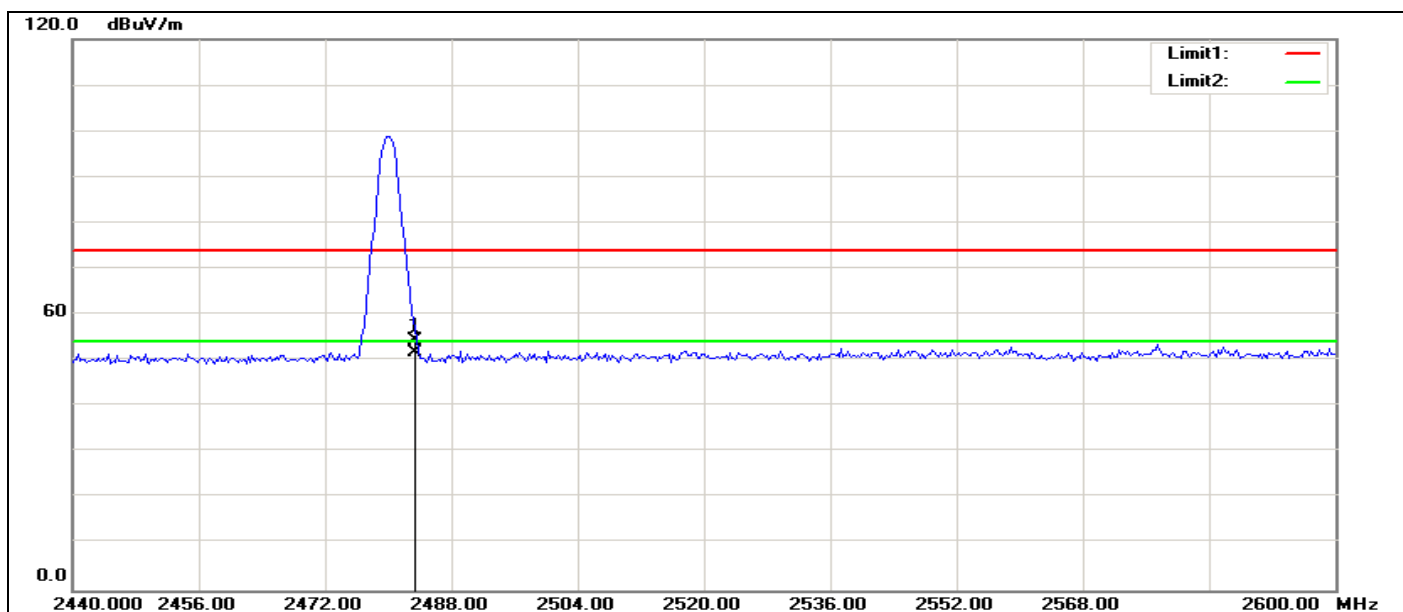
## RESTRICTED BANDEDGE (1Mbps, Low Channel, Vertical)



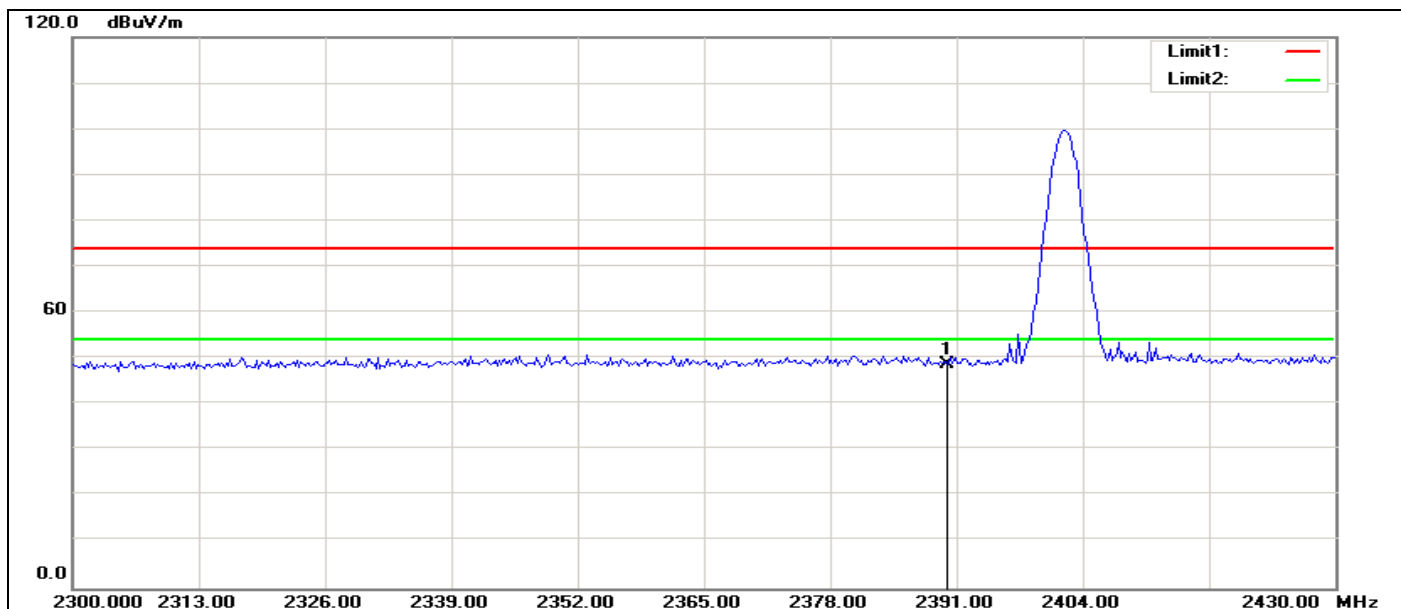
| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (deg.) | Remark |
|-----|-----------------|----------------|----------------------|-----------------|----------------|-------------|-------------|---------------|--------|
| 1   | 2380.625        | 58.71          | -7.40                | 51.31           | 74.00          | -22.69      | 100         | 63            | peak   |
| 2   | 2390.000        | 56.66          | -7.31                | 49.35           | 74.00          | -24.65      | 100         | 189           | peak   |

**RESTRICTED BANDEDGE (1Mbps Mode, High Channel, Horizontal)**

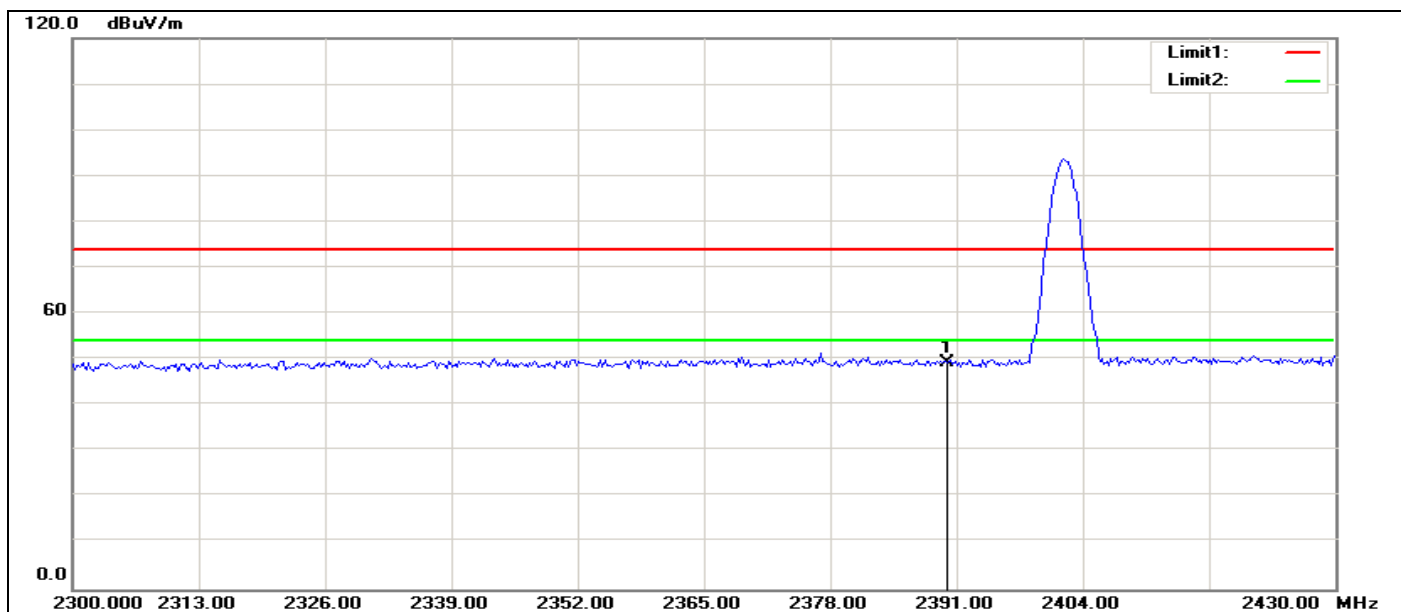
| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|------------------|--------|
| 1   | 2483.500           | 62.86             | -6.44                   | 56.42              | 74.00             | -17.58         | 100            | 176              | peak   |
| 2   | 2483.500           | 59.64             | -6.44                   | 53.20              | 54.00             | -0.80          | 100            | 0                | AVG    |

**RESTRICTED BANDEDGE (1Mbps, High Channel, Vertical)**

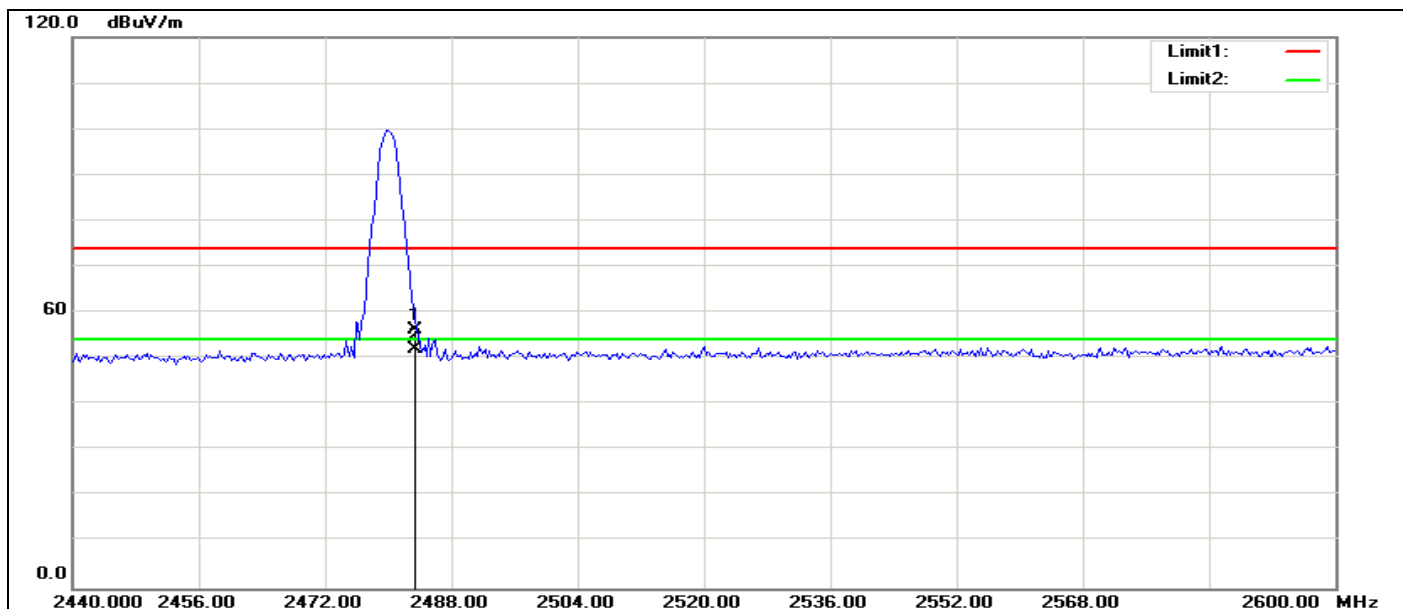
| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|------------------|--------|
| 1   | 2483.500           | 60.93             | -6.44                   | 54.49              | 74.00             | -19.51         | 100            | 196              | peak   |
| 2   | 2483.500           | 58.06             | -6.44                   | 51.62              | 54.00             | -2.38          | 100            | 240              | AVG    |

**RESTRICTED BANDEDGE (3Mbps, Low Channel, Horizontal)**

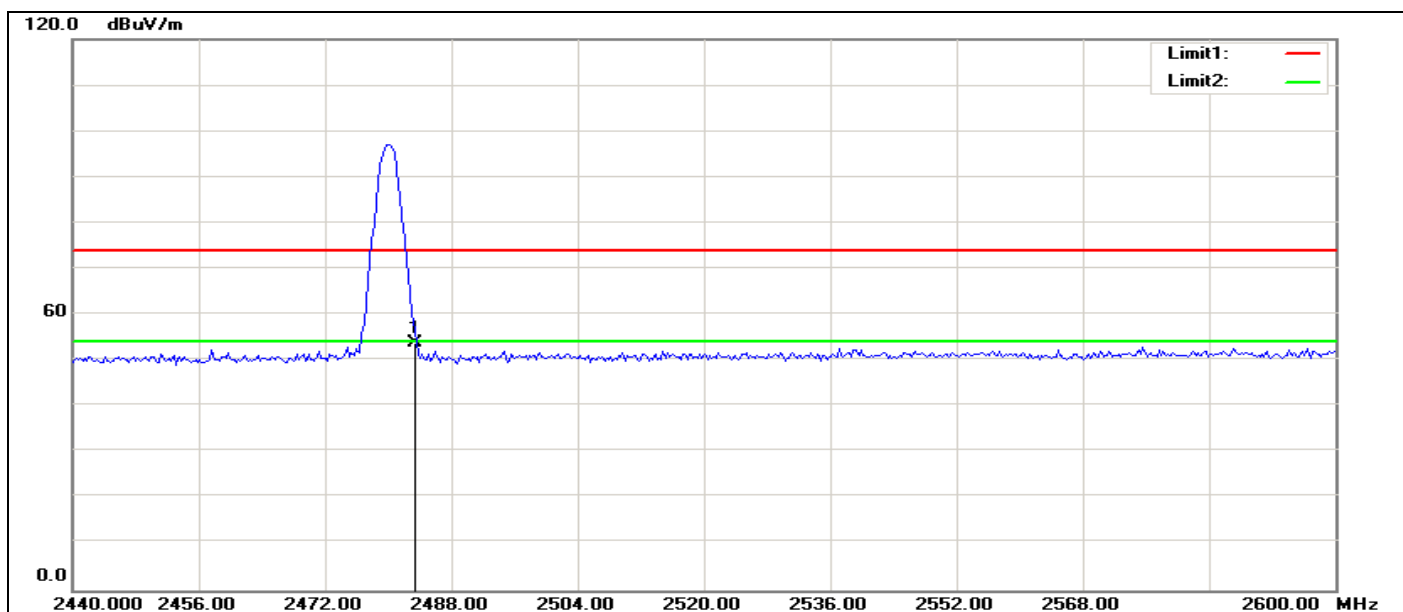
| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|------------------|--------|
| 1   | 2390.000           | 56.20             | -7.31                   | 48.89              | 74.00             | -25.11         | 100            | 192              | peak   |

**RESTRICTED BANDEDGE (3Mbps, Low Channel, Vertical)**

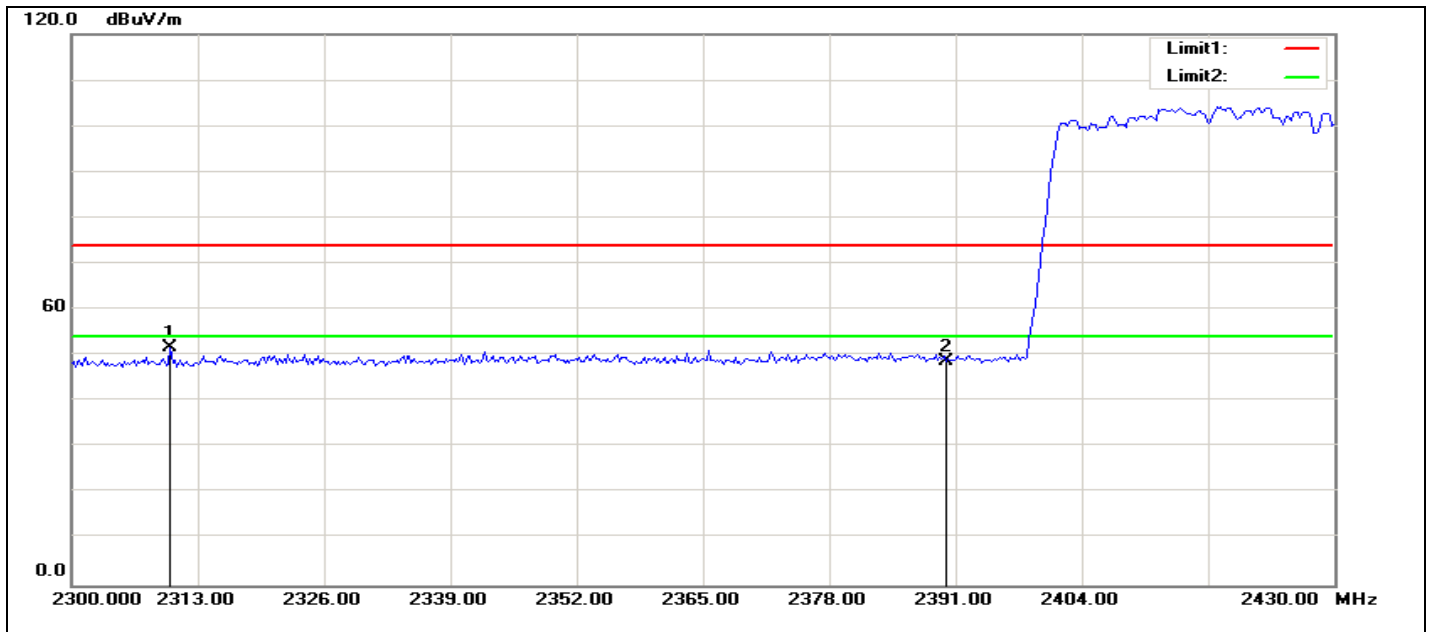
| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|------------------|--------|
| 1   | 2390.000           | 56.51             | -7.31                   | 49.20              | 74.00             | -24.80         | 100            | 181              | peak   |

**RESTRICTED BANDEDGE (3Mbps, High Channel, Horizontal)**

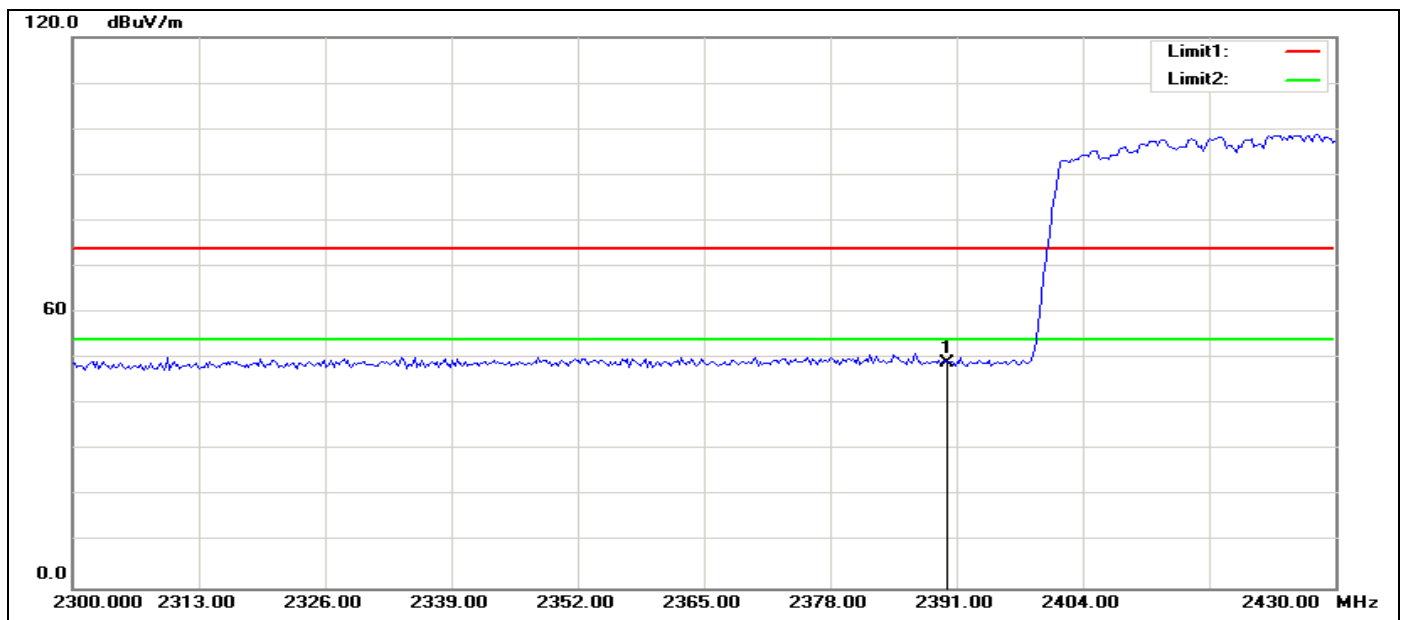
| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (deg.) | Remark |
|-----|-----------------|----------------|----------------------|-----------------|----------------|-------------|-------------|---------------|--------|
| 1   | 2483.500        | 62.75          | -6.44                | 56.31           | 74.00          | -17.69      | 100         | 165           | peak   |
| 2   | 2483.500        | 58.52          | -6.44                | 52.08           | 54.00          | -1.92       | 100         | 159           | AVG    |

**RESTRICTED BANDEDGE (3Mbps, High Channel, Vertical)**

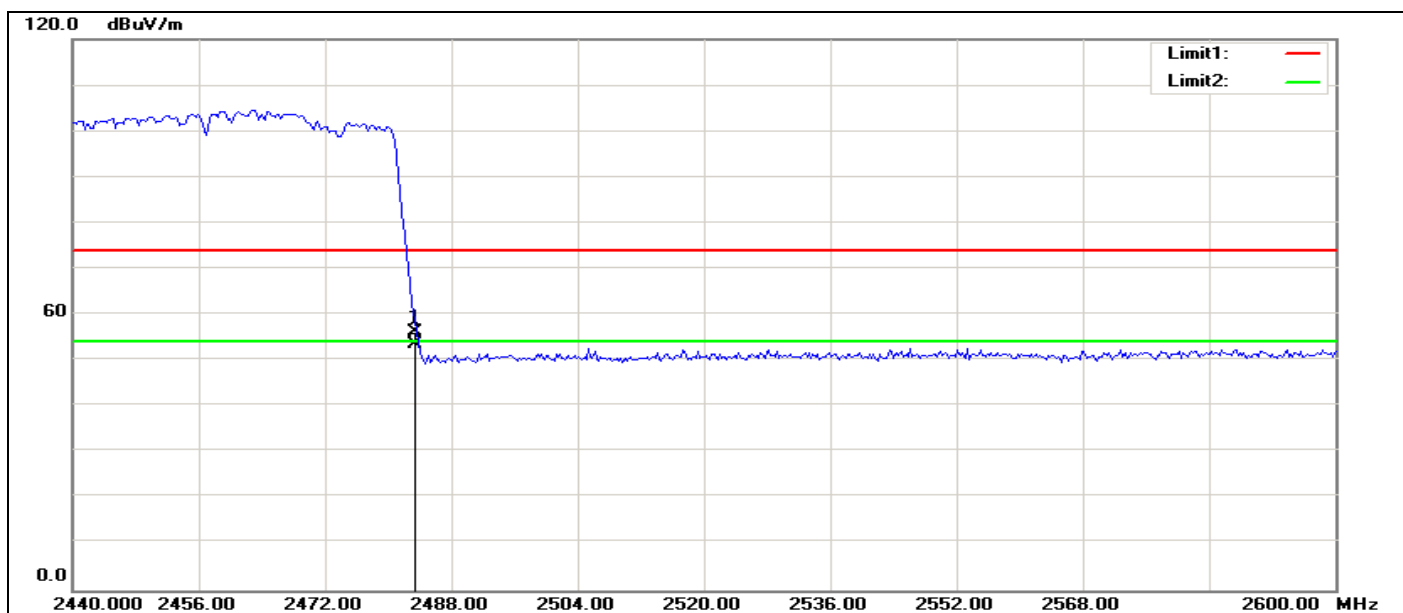
| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (deg.) | Remark |
|-----|-----------------|----------------|----------------------|-----------------|----------------|-------------|-------------|---------------|--------|
| 1   | 2483.500        | 60.24          | -6.44                | 53.80           | 74.00          | -20.20      | 100         | 121           | peak   |

**RESTRICTED BANDEDGE (1Mbps, Low Channel, Horizontal, hopping)**

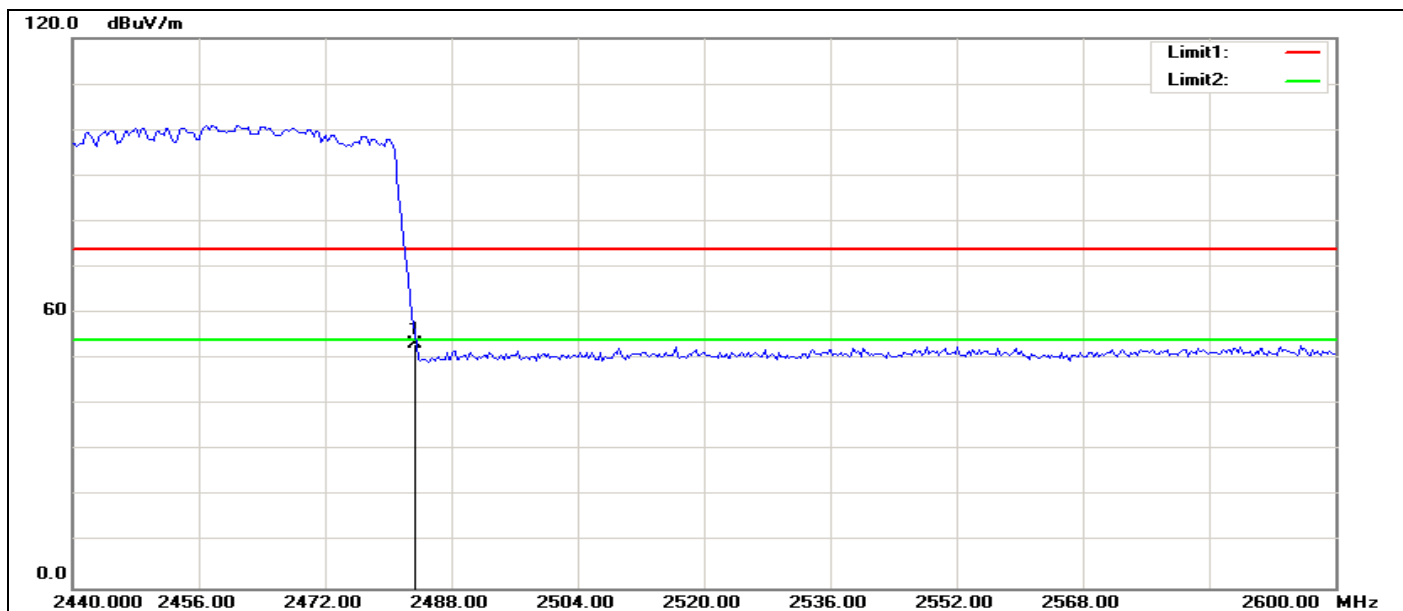
| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (deg.) | Remark |
|-----|-----------------|----------------|----------------------|-----------------|----------------|-------------|-------------|---------------|--------|
| 1   | 2310.208        | 59.66          | -8.05                | 51.61           | 74.00          | -22.39      | 100         | 189           | peak   |
| 2   | 2390.000        | 56.20          | -7.31                | 48.89           | 74.00          | -25.11      | 100         | 107           | peak   |

**RESTRICTED BANDEDGE (1Mbps, Low Channel, Vertical, hopping)**

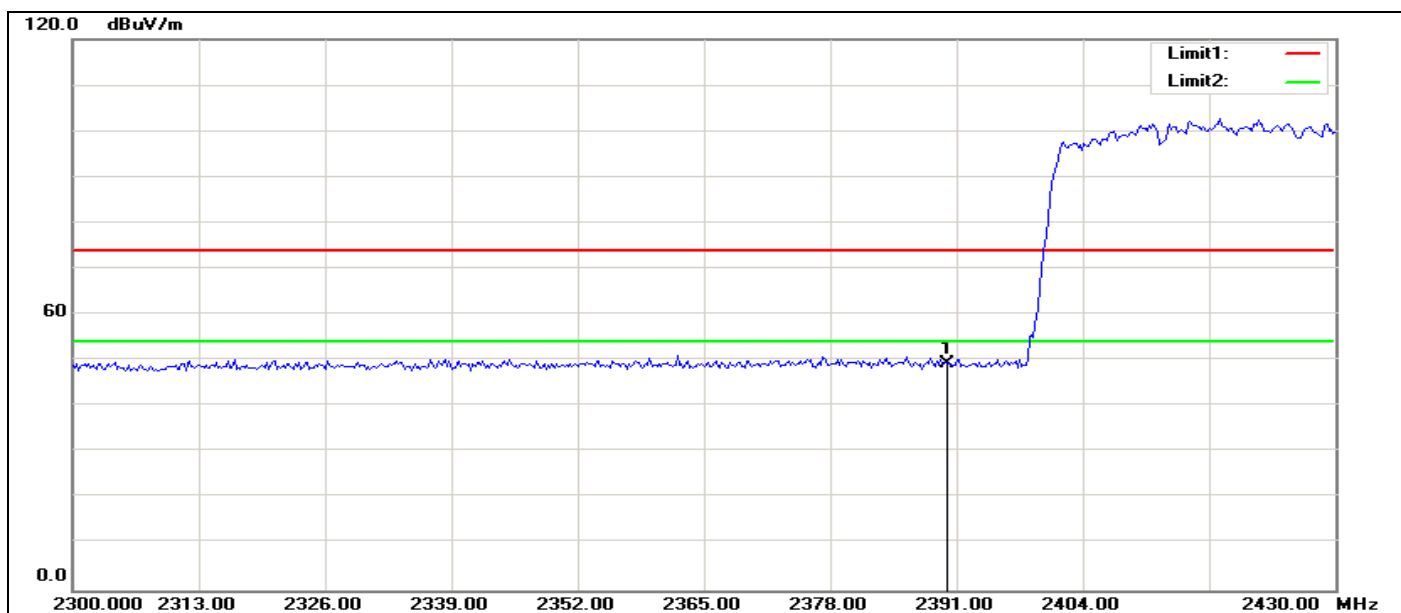
| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (deg.) | Remark |
|-----|-----------------|----------------|----------------------|-----------------|----------------|-------------|-------------|---------------|--------|
| 1   | 2390.000        | 56.24          | -7.31                | 48.93           | 74.00          | -25.07      | 100         | 285           | peak   |

**RESTRICTED BANDEDGE (1Mbps Mode, High Channel, Horizontal, hopping)**

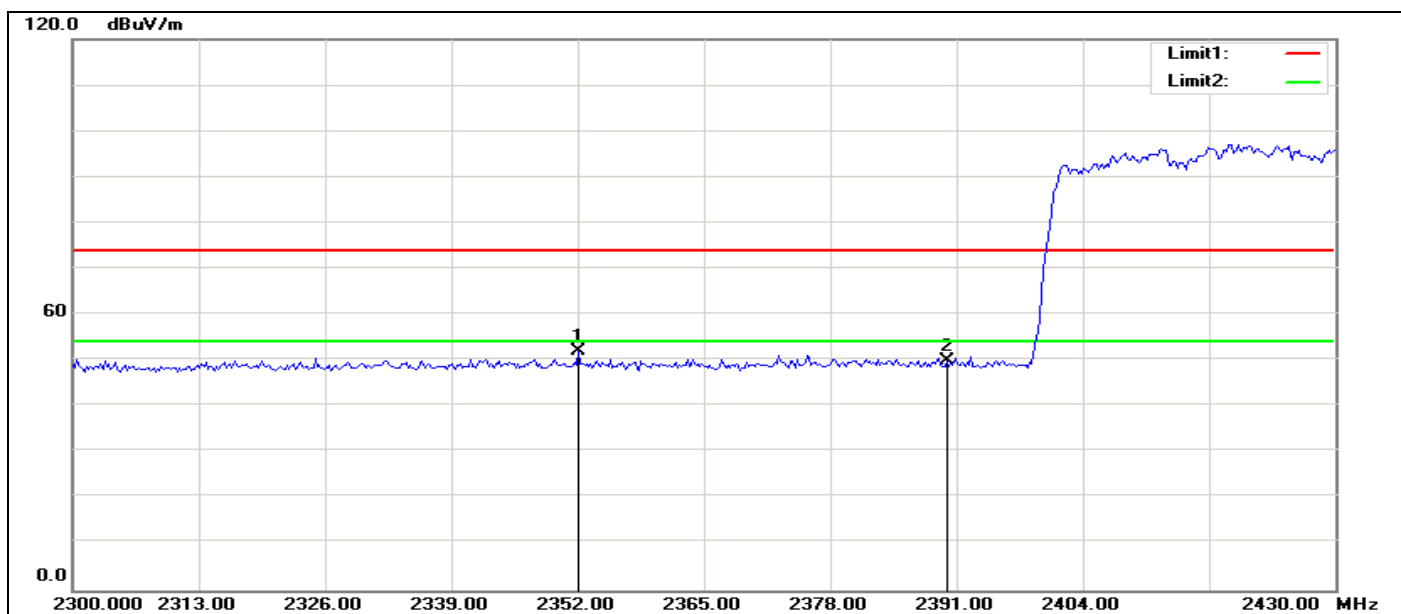
| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|------------------|--------|
| 1   | 2483.500           | 62.77             | -6.44                   | 56.33              | 74.00             | -17.67         | 100            | 171              | peak   |
| 2   | 2483.500           | 60.10             | -6.44                   | 53.66              | 54.00             | -0.34          | 100            | 0                | AVG    |

**RESTRICTED BANDEDGE (1Mbps, High Channel, Vertical, hopping)**

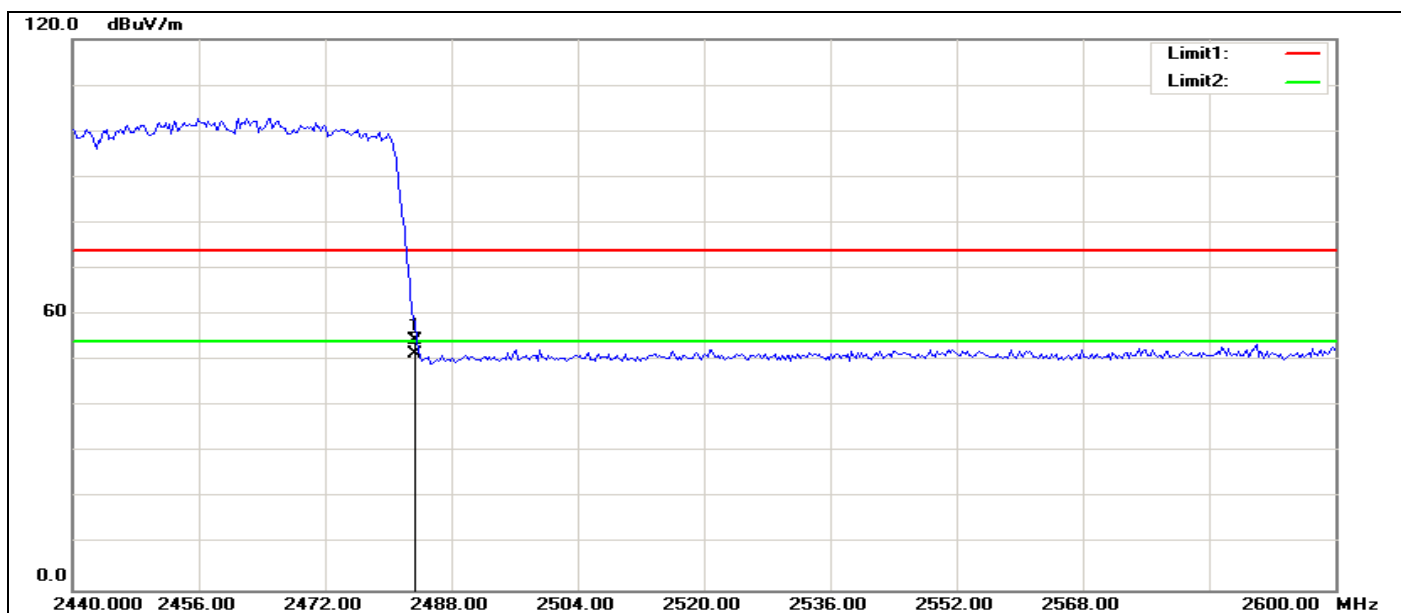
| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|------------------|--------|
| 1   | 2483.500           | 59.79             | -6.44                   | 53.35              | 74.00             | -20.65         | 100            | 167              | peak   |

**RESTRICTED BANDEDGE (3Mbps, Low Channel, Horizontal, hopping)**

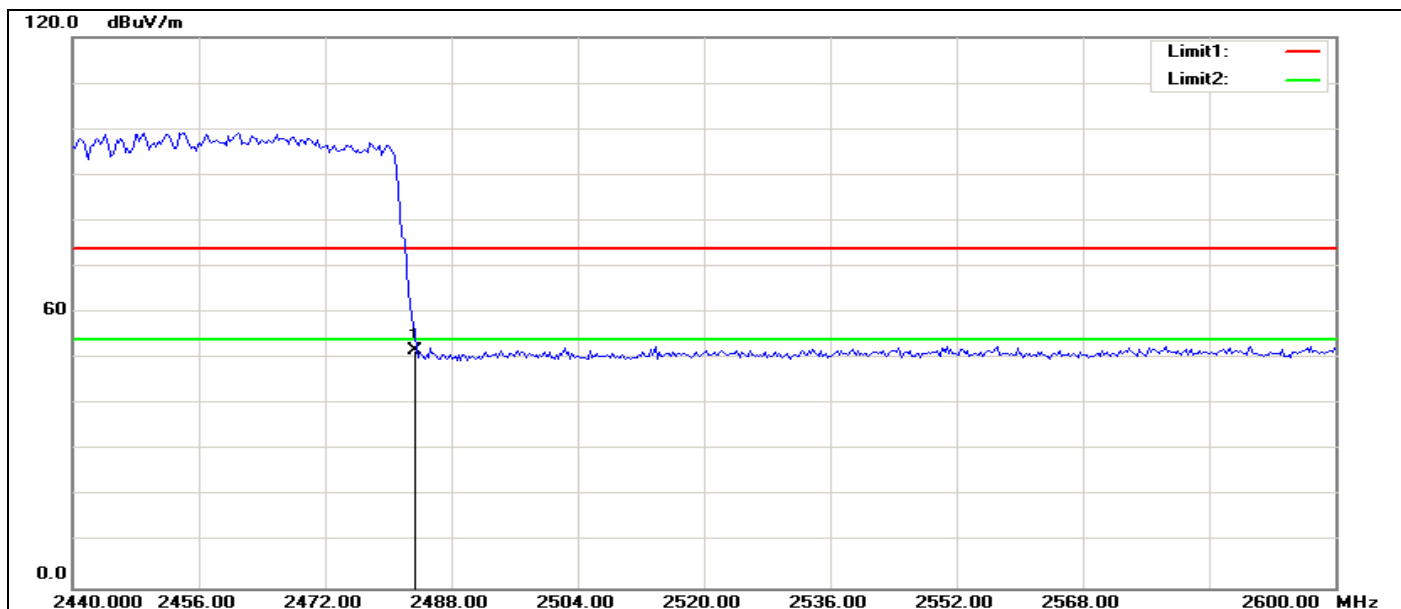
| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (deg.) | Remark |
|-----|-----------------|----------------|----------------------|-----------------|----------------|-------------|-------------|---------------|--------|
| 1   | 2390.000        | 56.73          | -7.31                | 49.42           | 74.00          | -24.58      | 100         | 360           | peak   |

**RESTRICTED BANDEDGE (3Mbps, Low Channel, Vertical, hopping)**

| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (deg.) | Remark |
|-----|-----------------|----------------|----------------------|-----------------|----------------|-------------|-------------|---------------|--------|
| 1   | 2352.083        | 59.67          | -7.66                | 52.01           | 74.00          | -21.99      | 100         | 349           | peak   |
| 2   | 2390.000        | 57.19          | -7.31                | 49.88           | 74.00          | -24.12      | 100         | 111           | peak   |

**RESTRICTED BANDEDGE (3Mbps, High Channel, Horizontal, hopping)**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|------------------|--------|
| 1   | 2483.500           | 60.84             | -6.44                   | 54.40              | 74.00             | -19.60         | 100            | 143              | peak   |
| 2   | 2483.500           | 58.02             | -6.44                   | 51.58              | 54.00             | -2.42          | 100            | 131              | AVG    |

**RESTRICTED BANDEDGE (3Mbps, High Channel, Vertical, hopping)**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|------------------|--------|
| 1   | 2483.500           | 58.10             | -6.44                   | 51.66              | 74.00             | -22.34         | 100            | 234              | peak   |

**TEST RESULT OF RADIATED EMISSION**

The interference of the frequency value is lower than the limit below 20 dB, measured as the background noise values and will not be recorded.

|                        |             |                   |             |
|------------------------|-------------|-------------------|-------------|
| <b>Operation Mode:</b> | Normal Link | <b>Test Date:</b> | 2017-7-22   |
| <b>Temperature:</b>    | 25°C        | <b>Tested by:</b> | Lily.Wang   |
| <b>Humidity:</b>       | 48% RH      | <b>Polarity:</b>  | Ver. / Hor. |

| Frequency (MHz) | Ant. Pol. (H/V) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----------------|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------|
| 45.3300         | V               | 16.46          | 13.37                    | 29.83           | 40.00          | -10.17      | QP     |
| 171.6200        | V               | 8.70           | 15.12                    | 23.82           | 43.50          | -19.68      | peak   |
| 650.8000        | V               | 6.19           | 24.45                    | 30.64           | 46.00          | -15.36      | peak   |
| 763.3200        | V               | 6.40           | 25.96                    | 32.36           | 46.00          | -13.64      | peak   |
| 851.5900        | V               | 5.42           | 26.14                    | 31.56           | 46.00          | -14.44      | peak   |
| 993.2100        | V               | 4.76           | 27.47                    | 32.23           | 54.00          | -21.77      | peak   |
| 168.7100        | H               | 9.54           | 15.05                    | 24.59           | 43.50          | -18.91      | peak   |
| 673.1100        | H               | 5.47           | 24.62                    | 30.09           | 46.00          | -15.91      | peak   |
| 748.7700        | H               | 5.31           | 26.42                    | 31.73           | 46.00          | -14.27      | peak   |
| 870.9900        | H               | 5.27           | 26.06                    | 31.33           | 46.00          | -14.67      | peak   |
| 929.1900        | H               | 5.53           | 26.43                    | 31.96           | 46.00          | -14.04      | peak   |
| 998.0600        | H               | 5.30           | 27.55                    | 32.85           | 54.00          | -21.15      | peak   |

**Notes:**

1. Measurements above show only up to maximum emissions noted, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
2. Radiated emissions measured in frequency range from 9 KHz to 1000MHz were made with an instrument using Peak detector mode.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. The IF bandwidth of SPA between 30MHz to 1GHz was 100kHz.

## Above 1 GHz

Operation Mode: 1 Mbps

Test Date: 2017-7-22

Test Channel: CH00

Tested by: Lily.Wang

Temperature: 25°C

Polarity: Ver. / Hor.

## Horizontal

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|------------------|--------|
| 1   | 5004.808           | 44.58             | -5.09                   | 39.49              | 74.00             | -34.51         | 100            | 192              | peak   |
| 2   | 7102.564           | 43.96             | 6.20                    | 50.16              | 74.00             | -23.84         | 100            | 202              | peak   |
| N/A |                    |                   |                         |                    |                   |                |                |                  |        |
|     |                    |                   |                         |                    |                   |                |                |                  |        |
|     |                    |                   |                         |                    |                   |                |                |                  |        |

## Vertical

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|------------------|--------|
| 1   | 5032.051           | 44.57             | -4.96                   | 39.61              | 74.00             | -34.39         | 100            | 274              | peak   |
| 2   | 7157.051           | 44.25             | 6.25                    | 50.50              | 74.00             | -23.50         | 100            | 109              | peak   |
| N/A |                    |                   |                         |                    |                   |                |                |                  |        |
|     |                    |                   |                         |                    |                   |                |                |                  |        |
|     |                    |                   |                         |                    |                   |                |                |                  |        |

Operation Mode: 1 Mbps

Test Date: 2017-7-22

Test Channel: CH39

Tested by: Lily.Wang

Temperature: 25°C

Polarity: Ver. / Hor.

## Horizontal

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|------------------|--------|
| 1   | 5032.051           | 44.43             | -4.96                   | 39.47              | 74.00             | -34.53         | 100            | 217              | peak   |
| 2   | 7238.782           | 43.57             | 6.32                    | 49.89              | 74.00             | -24.11         | 100            | 325              | peak   |
| N/A |                    |                   |                         |                    |                   |                |                |                  |        |
|     |                    |                   |                         |                    |                   |                |                |                  |        |
|     |                    |                   |                         |                    |                   |                |                |                  |        |

## Vertical

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|------------------|--------|
| 1   | 5032.051           | 44.21             | -4.96                   | 39.25              | 74.00             | -34.75         | 100            | 177              | peak   |
| 2   | 7565.705           | 43.65             | 6.62                    | 50.27              | 74.00             | -23.73         | 100            | 171              | peak   |
| N/A |                    |                   |                         |                    |                   |                |                |                  |        |
|     |                    |                   |                         |                    |                   |                |                |                  |        |
|     |                    |                   |                         |                    |                   |                |                |                  |        |

Operation Mode: 1 Mbps

Test Date: 2017-7-22

Test Channel: CH78

Tested by: Lily.Wang

Temperature: 25°C

Polarity: Ver. / Hor.

## Horizontal

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|------------------|--------|
| 1   | 4923.077           | 45.30             | -5.17                   | 40.13              | 74.00             | -33.87         | 100            | 38               | peak   |
| 2   | 7293.269           | 44.10             | 6.37                    | 50.47              | 74.00             | -23.53         | 100            | 258              | peak   |
| N/A |                    |                   |                         |                    |                   |                |                |                  |        |
|     |                    |                   |                         |                    |                   |                |                |                  |        |
|     |                    |                   |                         |                    |                   |                |                |                  |        |

## Vertical

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|------------------|--------|
| 1   | 5141.026           | 43.80             | -4.44                   | 39.36              | 74.00             | -34.64         | 100            | 252              | peak   |
| 2   | 7129.808           | 44.47             | 6.23                    | 50.70              | 74.00             | -23.30         | 100            | 51               | peak   |
| N/A |                    |                   |                         |                    |                   |                |                |                  |        |
|     |                    |                   |                         |                    |                   |                |                |                  |        |
|     |                    |                   |                         |                    |                   |                |                |                  |        |

Operation Mode: 3 Mbps

Test Date: 2017-7-22

Test Channel: CH00

Tested by: Lily.Wang

Temperature: 25°C

Polarity: Ver. / Hor.

## Horizontal

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|------------------|--------|
| 1   | 4568.910           | 44.28             | -5.46                   | 38.82              | 74.00             | -35.18         | 100            | 138              | peak   |
| 2   | 6966.346           | 44.48             | 5.89                    | 50.37              | 74.00             | -23.63         | 100            | 29               | peak   |
| N/A |                    |                   |                         |                    |                   |                |                |                  |        |
|     |                    |                   |                         |                    |                   |                |                |                  |        |
|     |                    |                   |                         |                    |                   |                |                |                  |        |

## Vertical

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|------------------|--------|
| 1   | 4732.372           | 44.51             | -5.33                   | 39.18              | 74.00             | -34.82         | 100            | 7                | peak   |
| 2   | 7456.731           | 43.71             | 6.52                    | 50.23              | 74.00             | -23.77         | 100            | 267              | peak   |
| N/A |                    |                   |                         |                    |                   |                |                |                  |        |
|     |                    |                   |                         |                    |                   |                |                |                  |        |
|     |                    |                   |                         |                    |                   |                |                |                  |        |

Operation Mode: 3 Mbps

Test Date: 2017-7-22

Test Channel: CH39

Tested by: Lily.Wang

Temperature: 25°C

Polarity: Ver. / Hor.

## Horizontal

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|------------------|--------|
| 1   | 4895.833           | 44.82             | -5.19                   | 39.63              | 74.00             | -34.37         | 100            | 41               | peak   |
| 2   | 7157.051           | 44.20             | 6.25                    | 50.45              | 74.00             | -23.55         | 100            | 159              | peak   |
| N/A |                    |                   |                         |                    |                   |                |                |                  |        |
|     |                    |                   |                         |                    |                   |                |                |                  |        |
|     |                    |                   |                         |                    |                   |                |                |                  |        |

## Vertical

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|------------------|--------|
| 1   | 4841.346           | 44.56             | -5.24                   | 39.32              | 74.00             | -34.68         | 100            | 216              | peak   |
| 2   | 7157.051           | 43.78             | 6.25                    | 50.03              | 74.00             | -23.97         | 100            | 64               | peak   |
| N/A |                    |                   |                         |                    |                   |                |                |                  |        |
|     |                    |                   |                         |                    |                   |                |                |                  |        |
|     |                    |                   |                         |                    |                   |                |                |                  |        |

Operation Mode: 3 Mbps

Test Date: 2017-7-22

Test Channel: CH78

Tested by: Lily.Wang

Temperature: 25°C

Polarity: Ver. / Hor.

## Horizontal

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|------------------|--------|
| 1   | 4923.077           | 45.17             | -5.17                   | 40.00              | 74.00             | -34.00         | 100            | 309              | peak   |
| 2   | 7102.564           | 43.71             | 6.20                    | 49.91              | 74.00             | -24.09         | 100            | 10               | peak   |
| N/A |                    |                   |                         |                    |                   |                |                |                  |        |
|     |                    |                   |                         |                    |                   |                |                |                  |        |
|     |                    |                   |                         |                    |                   |                |                |                  |        |

## Vertical

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|------------------|--------|
| 1   | 5141.026           | 43.88             | -4.44                   | 39.44              | 74.00             | -34.56         | 100            | 195              | peak   |
| 2   | 7402.244           | 43.68             | 6.47                    | 50.15              | 74.00             | -23.85         | 100            | 157              | peak   |
| N/A |                    |                   |                         |                    |                   |                |                |                  |        |
|     |                    |                   |                         |                    |                   |                |                |                  |        |
|     |                    |                   |                         |                    |                   |                |                |                  |        |

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
  - a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.
  - b. AV Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep time = Auto.

## 6.9 POWERLINE CONDUCTED EMISSIONS

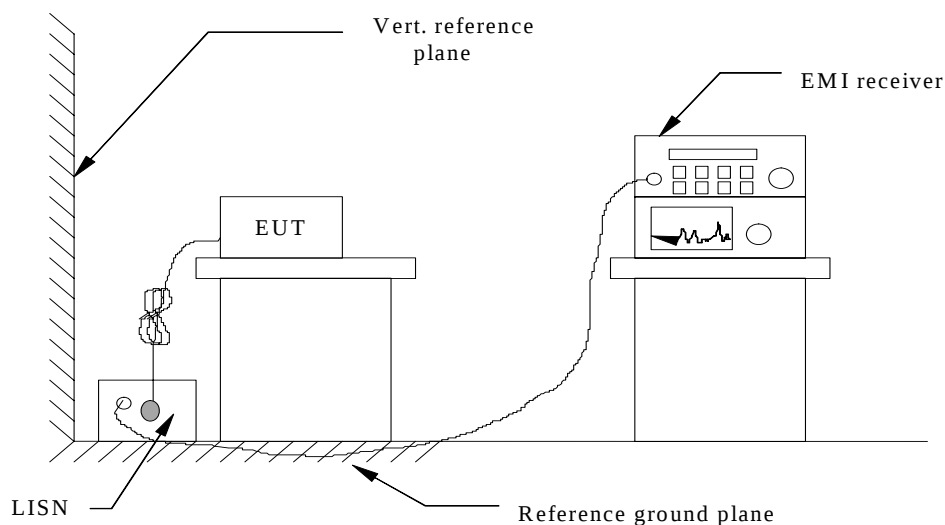
### LIMIT

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

| Frequency Range (MHz) | Limits (dB $\mu$ V) |          |
|-----------------------|---------------------|----------|
|                       | Quasi-peak          | Average  |
| 0.15 to 0.50          | 66 to 56            | 56 to 46 |
| 0.50 to 5             | 56                  | 46       |
| 5 to 30               | 60                  | 50       |

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

### Test Configuration



See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

### TEST PROCEDURE

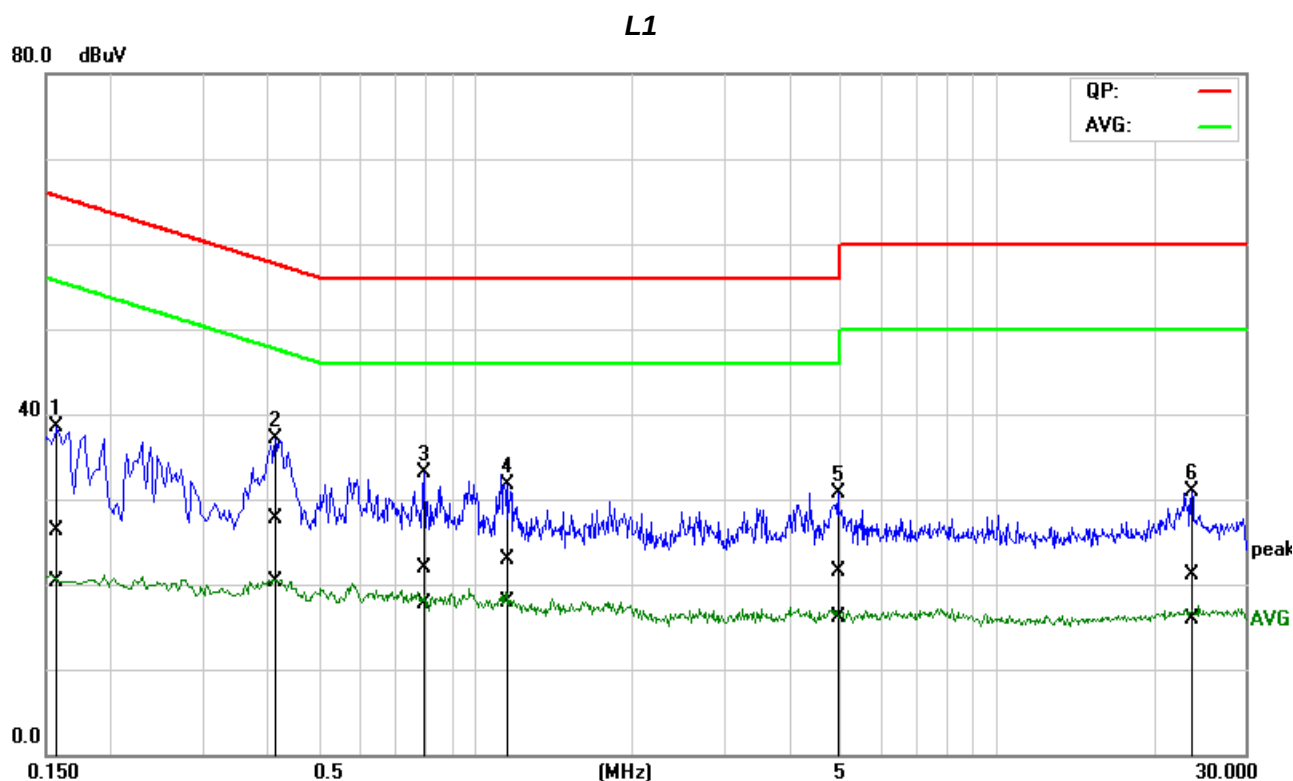
1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

### TEST RESULTS

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

**Test Data**

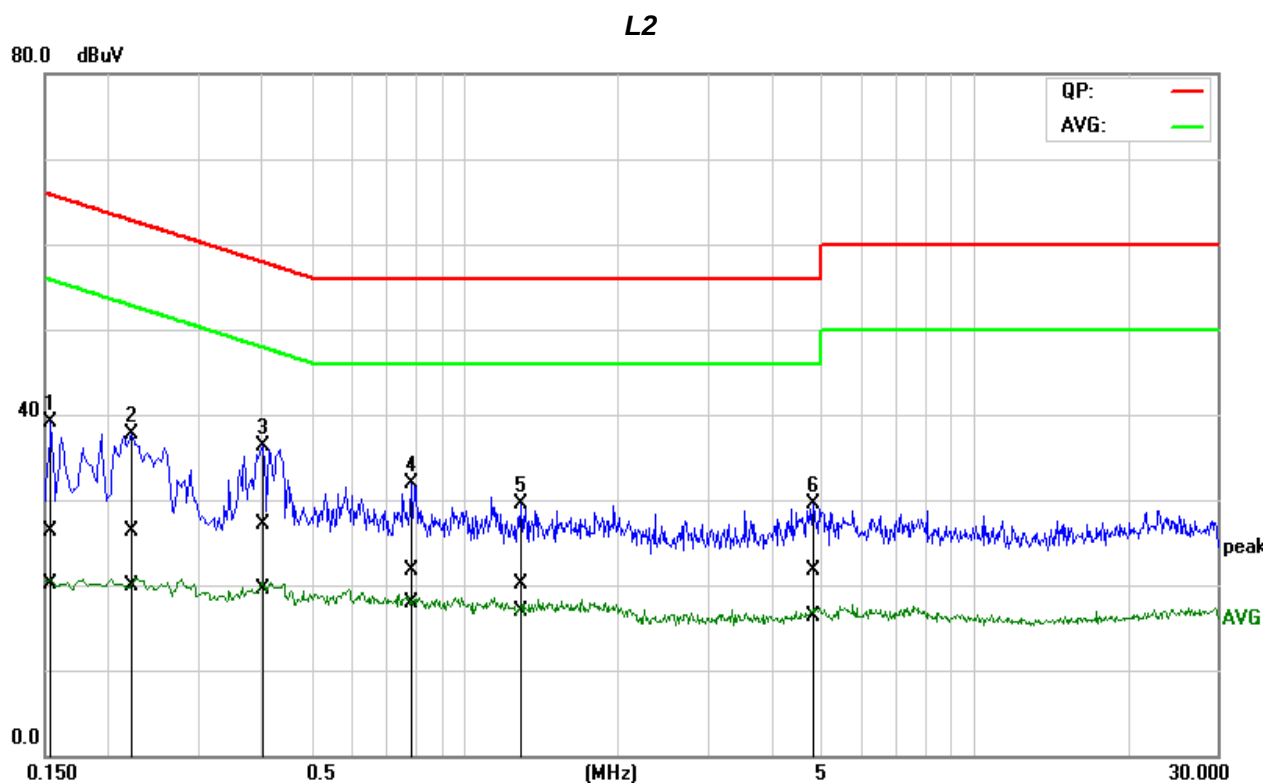
|            |                 |                   |              |
|------------|-----------------|-------------------|--------------|
| Job No.:   | C170614R01      | Date:             | 2017/7/1     |
| Model No.: | macaroon M1     | Time:             | AM 10:12:25  |
| Standard:  | FCC Class B     | Temp.(C)/Hum.(%): | 22(C)/48%    |
| Test item: | Conduction test | Test By:          | Lily.Wang    |
| Line:      | L1              | Test Voltage:     | AC 120V/60Hz |
| Model:     |                 | Description:      |              |



| No. | Frequency<br>(MHz) | QuasiPeak<br>reading<br>(dBuV) | Average<br>reading<br>(dBuV) | Correction<br>factor<br>(dB) | QuasiPeak<br>result<br>(dBuV) | Average<br>result<br>(dBuV) | QuasiPeak<br>limit<br>(dBuV) | Average<br>limit<br>(dBuV) | QuasiPeak<br>margin<br>(dB) | Average<br>margin<br>(dB) | Remark |
|-----|--------------------|--------------------------------|------------------------------|------------------------------|-------------------------------|-----------------------------|------------------------------|----------------------------|-----------------------------|---------------------------|--------|
| 1   | 0.1581             | 5.68                           | -0.33                        | 20.58                        | 26.26                         | 20.25                       | 65.56                        | 55.56                      | -39.30                      | -35.31                    | Pass   |
| 2*  | 0.4145             | 7.14                           | -0.26                        | 20.53                        | 27.67                         | 20.27                       | 57.56                        | 47.56                      | -29.89                      | -27.29                    | Pass   |
| 3   | 0.7927             | 1.34                           | -2.74                        | 20.50                        | 21.84                         | 17.76                       | 56.00                        | 46.00                      | -34.16                      | -28.24                    | Pass   |
| 4   | 1.1601             | 2.52                           | -2.49                        | 20.44                        | 22.96                         | 17.95                       | 56.00                        | 46.00                      | -33.04                      | -28.05                    | Pass   |
| 5   | 4.9717             | 0.93                           | -4.57                        | 20.61                        | 21.54                         | 16.04                       | 56.00                        | 46.00                      | -34.46                      | -29.96                    | Pass   |
| 6   | 23.6432            | 0.33                           | -4.88                        | 20.86                        | 21.19                         | 15.98                       | 60.00                        | 50.00                      | -38.81                      | -34.02                    | Pass   |

**Note:** 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

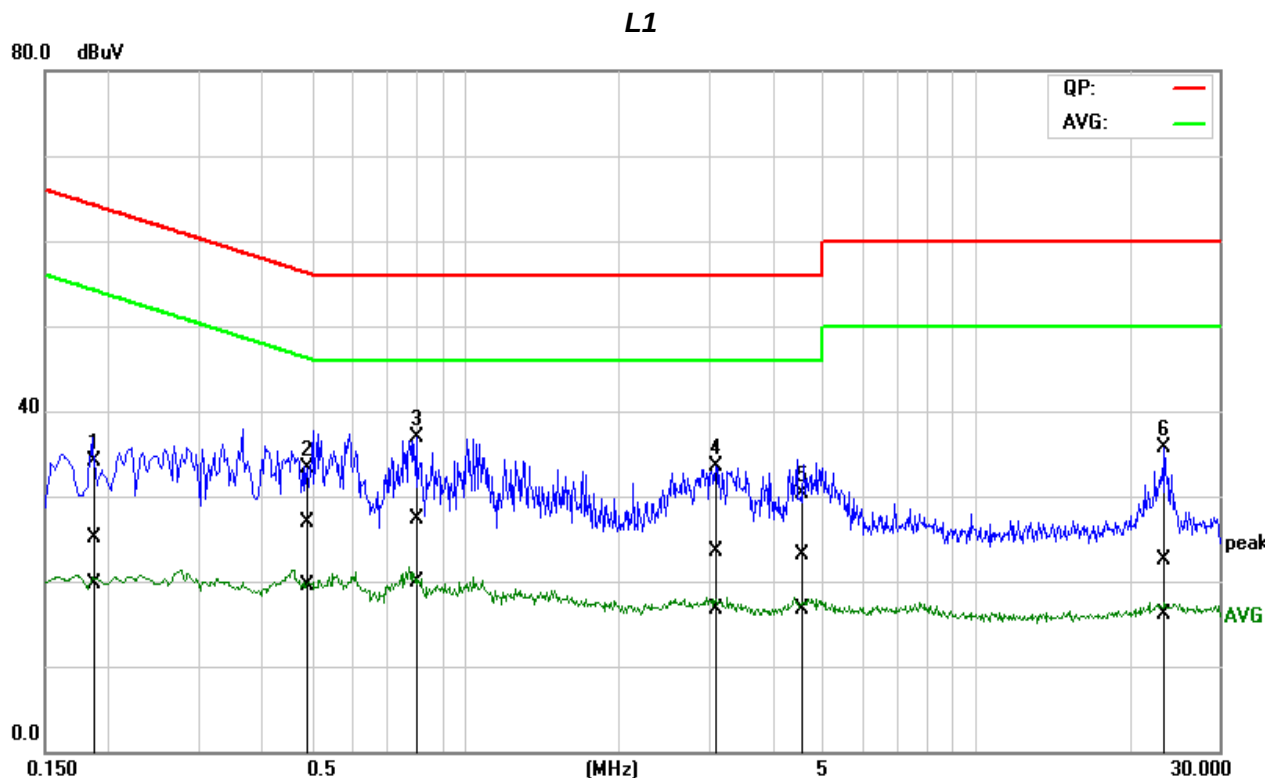
|            |                 |                   |              |
|------------|-----------------|-------------------|--------------|
| Job No.:   | C170614R01      | Date:             | 2017/7/1     |
| Model No.: | macaroon M1     | Time:             | AM 10:17:44  |
| Standard:  | FCC Class B     | Temp.(C)/Hum.(%): | 22(C)/48%    |
| Test item: | Conduction test | Test By:          | Lily.Wang    |
| Line:      | L2              | Test Voltage:     | AC 120V/60Hz |
| Model:     |                 | Description:      |              |



| No. | Frequency<br>(MHz) | QuasiPeak<br>reading<br>(dBuV) | Average<br>reading<br>(dBuV) | Correction<br>factor<br>(dB) | QuasiPeak<br>result<br>(dBuV) | Average<br>result<br>(dBuV) | QuasiPeak<br>limit<br>(dBuV) | Average<br>limit<br>(dBuV) | QuasiPeak<br>margin<br>(dB) | Average<br>margin<br>(dB) | Remark |
|-----|--------------------|--------------------------------|------------------------------|------------------------------|-------------------------------|-----------------------------|------------------------------|----------------------------|-----------------------------|---------------------------|--------|
| 1   | 0.1547             | 5.86                           | -0.26                        | 20.36                        | 26.22                         | 20.10                       | 65.74                        | 55.74                      | -39.52                      | -35.64                    | Pass   |
| 2   | 0.2236             | 5.83                           | -0.49                        | 20.42                        | 26.25                         | 19.93                       | 62.68                        | 52.68                      | -36.43                      | -32.75                    | Pass   |
| 3   | 0.4052             | 6.61                           | -1.05                        | 20.46                        | 27.07                         | 19.41                       | 57.75                        | 47.75                      | -30.68                      | -28.34                    | Pass   |
| 4*  | 0.7867             | 1.30                           | -2.53                        | 20.46                        | 21.76                         | 17.93                       | 56.00                        | 46.00                      | -34.24                      | -28.07                    | Pass   |
| 5   | 1.2947             | -0.31                          | -3.50                        | 20.47                        | 20.16                         | 16.97                       | 56.00                        | 46.00                      | -35.84                      | -29.03                    | Pass   |
| 6   | 4.8494             | 0.99                           | -4.36                        | 20.74                        | 21.73                         | 16.38                       | 56.00                        | 46.00                      | -34.27                      | -29.62                    | Pass   |

**Note:** 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

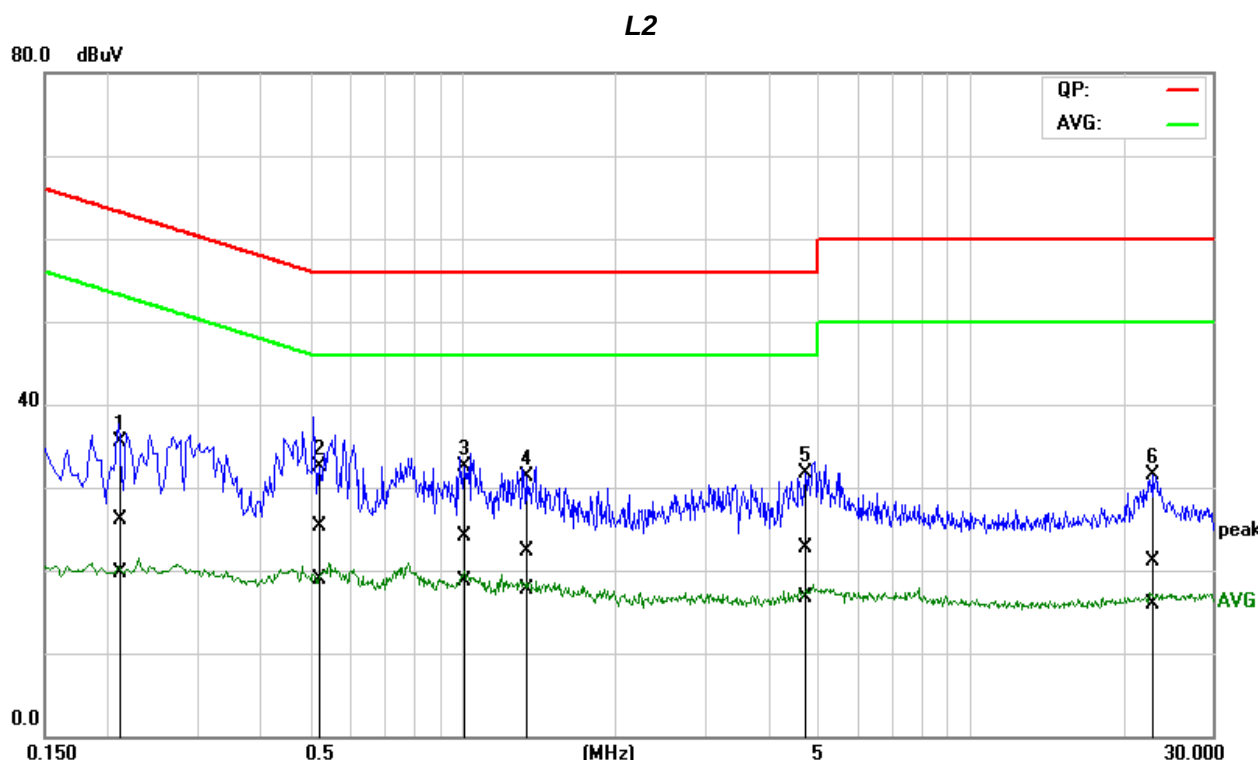
|            |                 |                   |              |
|------------|-----------------|-------------------|--------------|
| Job No.:   | C170614R01      | Date:             | 2017/7/1     |
| Model No.: | macaroon M1     | Time:             | AM 10:02:30  |
| Standard:  | FCC Class B     | Temp.(C)/Hum.(%): | 22(C)/48%    |
| Test item: | Conduction test | Test By:          | Lily.Wang    |
| Line:      | L1              | Test Voltage:     | AC 240V/60Hz |
| Model:     |                 | Description:      |              |



| No. | Frequency<br>(MHz) | QuasiPeak<br>reading<br>(dBuV) | Average<br>reading<br>(dBuV) | Correction<br>factor<br>(dB) | QuasiPeak<br>result<br>(dBuV) | Average<br>result<br>(dBuV) | QuasiPeak<br>limit<br>(dBuV) | Average<br>limit<br>(dBuV) | QuasiPeak<br>margin<br>(dB) | Average<br>margin<br>(dB) | Remark |
|-----|--------------------|--------------------------------|------------------------------|------------------------------|-------------------------------|-----------------------------|------------------------------|----------------------------|-----------------------------|---------------------------|--------|
| 1   | 0.1882             | 4.58                           | -0.76                        | 20.53                        | 25.11                         | 19.77                       | 64.12                        | 54.12                      | -39.01                      | -34.35                    | Pass   |
| 2   | 0.4904             | 6.41                           | -1.07                        | 20.49                        | 26.90                         | 19.42                       | 56.16                        | 46.16                      | -29.26                      | -26.74                    | Pass   |
| 3*  | 0.7947             | 6.74                           | -0.52                        | 20.50                        | 27.24                         | 19.98                       | 56.00                        | 46.00                      | -28.76                      | -26.02                    | Pass   |
| 4   | 3.0876             | 2.93                           | -3.89                        | 20.52                        | 23.45                         | 16.63                       | 56.00                        | 46.00                      | -32.55                      | -29.37                    | Pass   |
| 5   | 4.5040             | 2.44                           | -3.95                        | 20.59                        | 23.03                         | 16.64                       | 56.00                        | 46.00                      | -32.97                      | -29.36                    | Pass   |
| 6   | 23.4295            | 1.72                           | -4.83                        | 20.86                        | 22.58                         | 16.03                       | 60.00                        | 50.00                      | -37.42                      | -33.97                    | Pass   |

**Note:** 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

|            |                 |                  |              |
|------------|-----------------|------------------|--------------|
| Job No.:   | C170614R01      | Date:            | 2017/7/1     |
| Model No.: | macaroon M1     | Time:            | AM 10:07:28  |
| Standard:  | FCC Class B     | Temp.(C)/Hum.(%) | 22(C)/48%    |
| Test item: | Conduction test | Test By:         | Lily.Wang    |
| Line:      | L2              | Test Voltage:    | AC 240V/60Hz |
| Model:     |                 | Description:     |              |



| No. | Frequency<br>(MHz) | QuasiPeak<br>reading<br>(dBuV) | Average<br>reading<br>(dBuV) | Correction<br>factor<br>(dB) | QuasiPeak<br>result<br>(dBuV) | Average<br>result<br>(dBuV) | QuasiPeak<br>limit<br>(dBuV) | Average<br>limit<br>(dBuV) | QuasiPeak<br>margin<br>(dB) | Average<br>margin<br>(dB) | Remark |
|-----|--------------------|--------------------------------|------------------------------|------------------------------|-------------------------------|-----------------------------|------------------------------|----------------------------|-----------------------------|---------------------------|--------|
| 1   | 0.2121             | 5.79                           | -0.76                        | 20.41                        | 26.20                         | 19.65                       | 63.12                        | 53.12                      | -36.92                      | -33.47                    | Pass   |
| 2*  | 0.5159             | 4.91                           | -1.63                        | 20.45                        | 25.36                         | 18.82                       | 56.00                        | 46.00                      | -30.64                      | -27.18                    | Pass   |
| 3   | 1.0129             | 3.56                           | -1.80                        | 20.45                        | 24.01                         | 18.65                       | 56.00                        | 46.00                      | -31.99                      | -27.35                    | Pass   |
| 4   | 1.3487             | 1.84                           | -2.81                        | 20.48                        | 22.32                         | 17.67                       | 56.00                        | 46.00                      | -33.68                      | -28.33                    | Pass   |
| 5   | 4.7531             | 1.92                           | -3.99                        | 20.73                        | 22.65                         | 16.74                       | 56.00                        | 46.00                      | -33.35                      | -29.26                    | Pass   |
| 6   | 22.9604            | 0.30                           | -5.06                        | 20.87                        | 21.17                         | 15.81                       | 60.00                        | 50.00                      | -38.83                      | -34.19                    | Pass   |

**Note:** 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

Remark:

- 1.The measuring frequencies range between 0.15 MHz and 30 MHz.
- 2.The emissions measured in the frequency range between 0.15 MHz and 30MHz were made with an instrument using Quasi-peak detector and Average detector.
- 3.“—” denotes the emission level was or more than 2dB below the Average limit, and no re-check was made.
- 4.The IF bandwidth of SPA between 0.15MHz and 30MHz was 10KHz. The IF bandwidth of Test Receiver between 0.15MHz and 30MHz was 9kHz.

**END OF REPORT**