



## CTC Laboratories, Inc.

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# TEST REPORT

Report No. ....: CTC2024200105

FCC ID.....: 2APPZ-I60K


Applicant .....: Fanvil Technology Co., Ltd

Address.....: 10/F Block A, Dualshine Global Science Innovation Center,  
Honglang North 2nd Road, Bao'an District, Shenzhen, China

Manufacturer.....: Fanvil Technology Co., Ltd

Address.....: 10/F Block A, Dualshine Global Science Innovation Center,  
Honglang North 2nd Road, Bao'an District, Shenzhen, China

Product Name .....: Video Door Phone

Trade Mark .....: 

Model/Type reference.....: i60k

Listed Model(s).....: /

Standard .....: FCC CFR Title 47 Part 15 Subpart C Section 15.247

Date of receipt of test sample.....: Aug. 27, 2024

Date of testing.....: Aug. 27, 2024 ~ Sep. 04, 2024

Date of issue.....: Sep. 04, 2024

Result.....: PASS

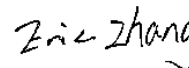
Compiled by:

(Printed name+signature) Lucy Lan



Supervised by:

(Printed name+signature) Eric Zhang



Approved by:

(Printed name+signature) Totti Zhao



Testing Laboratory Name .....: CTC Laboratories, Inc.

Address.....: Room 101 Building B, No. 7, Lanqing 1st Road, Luhuhu  
Community, Guanhu Subdistrict, Longhua District, Shenzhen,  
Guangdong, China

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## 1. TEST SUMMARY

### 1.1. Test Standards

The tests were performed according to following standards:

[FCC Rules Part 15.247](#): Operation within the bands 902–928MHz, 2400–2483.5MHz, and 5725–5850MHz.

[ANSI C63.10-2013](#): American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

### 1.2. Report Version

| Revised No. | Report No.    | Date of issue | Description |
|-------------|---------------|---------------|-------------|
| 01          | CTC2024200105 | Sep. 04, 2024 | Original    |
|             |               |               |             |
|             |               |               |             |

### 1.3. Test Description

| FCC Part 15 Subpart C (15.247)             |                         |        |               |
|--|-------------------------|--------|---------------|
| Test Item                                  | Standard Section        | Result | Test Engineer |
| Antenna Requirement                        | 15.203                  | Pass   | Lucy Lan      |
| Conducted Emission                         | 15.207                  | Pass   | Cary          |
| Conducted Band Edge and Spurious Emissions | 15.247(d)               | Pass   | Alicia        |
| Radiated Band Edge and Spurious Emissions  | 15.205&15.209&15.247(d) | Pass   | Alicia        |
| 6dB Bandwidth                              | 15.247(a)(2)            | Pass   | Alicia        |
| Conducted Max Output Power                 | 15.247(b)(3)            | Pass   | Alicia        |
| Power Spectral Density                     | 15.247(e)               | Pass   | Alicia        |
| Transmitter Radiated Spurious              | 15.209&15.247(d)        | Pass   | Alicia        |

Note:

1. The measurement uncertainty is not included in the test result.
2. N/A: means this test item is not applicable for this device according to the technology characteristic of device.



## 1.4. Test Facility

### Address of the report laboratory

#### CTC Laboratories, Inc.

Add: Room 101 of Building B, Room 107, 108, 207, 208 of Building A, No. 7, Lanqing 1st Road, Luhuhu Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China

### Laboratory accreditation

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

#### A2LA-Lab Cert. No.: 4340.01

CTC Laboratories, Inc. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

#### Industry Canada (Registration No.: 9783A, CAB Identifier: CN0029)

CTC Laboratories, Inc. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 9783A on Jan, 2016.

#### FCC (Registration No.: 951311, Designation Number CN1208)

CTC Laboratories, Inc. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 951311, Aug 26, 2017.



## 1.5. Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2" and is documented in the CTC Laboratories, Inc. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Below is the best measurement capability for CTC Laboratories, Inc.

| Test Items                                      | Measurement Uncertainty                                 | Notes |
|---|---|-------|
| DTS Bandwidth                                   | $\pm 0.0196\%$  | (1)   |
| Maximum Conducted Output Power                  | $\pm 0.686$ dB  | (1)   |
| Maximum Power Spectral Density Level            | $\pm 0.743$ dB  | (1)   |
| Band-edge Compliance                            | $\pm 1.328$ dB  | (1)   |
| Unwanted Emissions In Non-restricted Freq Bands | 9kHz-1GHz: $\pm 0.746$ dB<br>1GHz-26GHz: $\pm 1.328$ dB | (1)   |
| Conducted Emissions 9kHz~30MHz                  | $\pm 3.08$ dB   | (1)   |
| Radiated Emissions 30~1000MHz                   | $\pm 4.51$ dB   | (1)   |
| Radiated Emissions 1~18GHz                      | $\pm 5.84$ dB   | (1)   |
| Radiated Emissions 18~40GHz                     | $\pm 6.12$ dB   | (1)   |

Note (1): This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .

## 1.6. Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

|                    |                |
|--------------------|----------------|
| Temperature:       | 15 °C to 35 °C |
| Relative Humidity: | 20 % to 75 %   |
| Air Pressure:      | 101 kPa        |




## 2. GENERAL INFORMATION

### 2.1. Client Information

|               |   |
|---------------|---|
| Applicant:    | Fanvil Technology Co., Ltd  |
| Address:      | 10/F Block A, Dualshine Global Science Innovation Center, Honglang North 2nd Road, Bao'an District, Shenzhen, China |
| Manufacturer: | Fanvil Technology Co., Ltd  |
| Address:      | 10/F Block A, Dualshine Global Science Innovation Center, Honglang North 2nd Road, Bao'an District, Shenzhen, China |
| Factory:      | Fanvil Technology Co., Ltd  |
| Address:      | 10/F Block A, Dualshine Global Science Innovation Center, Honglang North 2nd Road, Bao'an District, Shenzhen, China |

### 2.2. General Description of EUT

|                            |   |
|----------------------------|---|
| Product Name:              | Video Door Phone  |
| Trade Mark:                |  |
| Model/Type reference:      | i60k  |
| Listed Model(s):           | /   |
| Power Supply:              | DC 12V/1A or POE 48V/0.3A   |
| Hardware Version:          | /   |
| Software Version:          | /   |
| <b>Bluetooth 5.0 / BLE</b> |   |
| Modulation:                | GFSK  |
| Operation Frequency:       | 2402MHz~2480MHz   |
| Channel Number:            | 40  |
| Channel Separation:        | 2MHz  |
| Data Rate:                 | 1Mbps, 2Mbps  |
| Antenna Type:              | FPC Antenna   |
| Antenna Gain:              | 3dBi  |



## 2.3. Accessory Equipment Information

| Equipment Information     |                  |              |              |
|---------------------------|------------------|--------------|--------------|
| Name                      | Model            | S/N          | Manufacturer |
| Notebook                  | ThinkPad T460s   | /            | Lenovo       |
| Adapter                   | YS-SKY120150B01P | ---          | ---          |
| POE Supply                | H3C S1208-PWR    | ---          | ---          |
| Cable Information         |                  |              |              |
| Name                      | Shielded Type    | Ferrite Core | Length       |
| LAN Cable                 | Unshielded       | NO           | 150cm        |
| Test Software Information |                  |              |              |
| Name                      | Version          | /            | /            |
| EMI_Test_Tool             | V1.8             | /            | /            |



## 2.4. Operation State

Operation Frequency List: The EUT has been tested under typical operating condition. The Applicant provides communication tools software to control the EUT for staying in continuous transmitting and receiving mode for testing. BT BLE, 40 channels are provided to the EUT. Channels 00/19/39 were selected for testing.

Operation Frequency List:

| Channel   | Frequency (MHz) |
|-----------|-----------------|
| <b>00</b> | <b>2402</b>     |
| 01        | 2404            |
| :         | :               |
| 18        | 2438            |
| <b>19</b> | <b>2440</b>     |
| 20        | 2442            |
| :         | :               |
| 38        | 2478            |
| <b>39</b> | <b>2480</b>     |

Note: The display in grey were the channel selected for testing.

Test Mode:

|  |
|--|
| For RF test items:   |
| The engineering test program was provided and enabled to make EUT continuous transmit.   |
| For AC power line conducted emissions:   |
| The EUT was set to connect with the Bluetooth instrument under large package sizes transmission.   |
| For Radiated spurious emissions test item:   |
| The engineering test program was provided and enabled to make EUT continuous transmit. The EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report. |





## 2.5. Measurement Instruments List

| RF Test System - SRD |                     |              |           |            |                  |
|----------------------|---------------------|--------------|-----------|------------|------------------|
| Item                 | Test Equipment      | Manufacturer | Model No. | Serial No. | Calibrated Until |
| 1                    | Spectrum Analyzer   | R&S          | FSV40-N   | 101331     | Mar. 21 2025     |
| 2                    | MXA Signal Analyzer | Keysight     | N9020A    | MY46471737 | Dec. 12, 2024    |
| 3                    | RF Control Unit     | Tonscend     | JS0806-2  | /          | Aug. 21, 2025    |
| 4                    | Test Software       | Tonscend     | JS1120-3  | V3.3.38    | /                |

| Radiated emission |                          |              |            |            |                  |
|-------------------|--------------------------|--------------|------------|------------|------------------|
| Item              | Test Equipment           | Manufacturer | Model No.  | Serial No. | Calibrated Until |
| 1                 | Trilog-Broadband Antenna | Schwarzbeck  | VULB 9168  | 9168-1013  | Dec. 07, 2024    |
| 2                 | Horn Antenna             | Schwarzbeck  | BBHA 9120D | 9120D-648  | Dec. 07, 2024    |
| 3                 | Spectrum Analyzer        | R&S          | FSU26      | 100105     | Dec. 12, 2024    |
| 4                 | Spectrum Analyzer        | R&S          | FSV40-N    | 101331     | Mar. 15 2025     |
| 5                 | Pre-Amplifier            | SONOMA       | 310        | 186194     | Dec. 12, 2024    |
| 6                 | Low Noise Pre-Amplifier  | EMCI         | EMC051835  | 980075     | Dec. 12, 2024    |
| 7                 | Test Receiver            | R&S          | ESCI7      | 100967     | Dec. 12, 2024    |
| 8                 | 3m chamber 2             | Frankonia    | EE025      | /          | Oct. 23, 2024    |
| 9                 | Test Software            | FARA         | EZ-EMC     | FA-03A2    | /                |

| Radiated emission |                              |              |            |            |                  |
|-------------------|------------------------------|--------------|------------|------------|------------------|
| Item              | Test Equipment               | Manufacturer | Model No.  | Serial No. | Calibrated Until |
| 1                 | Trilog-Broadband Antenna     | Schwarzbeck  | VULB 9163  | 01026      | Dec. 18, 2024    |
| 2                 | Horn Antenna                 | Schwarzbeck  | BBHA 9120D | 9120D-647  | Sep. 25, 2025    |
| 3                 | Test Receiver                | Keysight     | N9038A     | MY56400071 | Dec. 12, 2024    |
| 4                 | Broadband Amplifier          | SCHWARZBECK  | BBV9743B   | 259        | Dec. 12, 2024    |
| 5                 | Mirowave Broadband Amplifier | SCHWARZBECK  | BBV9718C   | 111        | Dec. 12, 2024    |
| 6                 | 3m chamber 3                 | YIHENG       | EE106      | /          | Aug. 28, 2026    |
| 7                 | Test Software                | FARA         | EZ-EMC     | FA-03A2    | /                |

| Conducted emission |                   |              |           |                |                  |
|--------------------|-------------------|--------------|-----------|----------------|------------------|
| Item               | Test Equipment    | Manufacturer | Model No. | Serial No.     | Calibrated until |
| 1                  | LISN              | R&S          | ENV216    | 101112         | Dec. 12, 2024    |
| 2                  | LISN              | R&S          | ENV216    | 101113         | Dec. 12, 2024    |
| 3                  | EMI Test Receiver | R&S          | ESCS30    | 100353         | Dec. 12, 2024    |
| 4                  | ISN CAT6          | Schwarzbeck  | NTFM 8158 | CAT6-8158-0046 | Dec. 12, 2024    |
| 5                  | ISN CAT5          | Schwarzbeck  | NTFM 8158 | CAT5-8158-0046 | Dec. 12, 2024    |
| 6                  | Test Software     | R&S          | EMC32     | 6.10.10        | /                |

Note: 1. The Cal. Interval was one year.

2. The Cal. Interval was three years of the antenna.

3. The cable loss has been calculated in test result which connection between each test instruments.

### 3. TEST ITEM AND RESULTS

#### 3.1. Conducted Emission

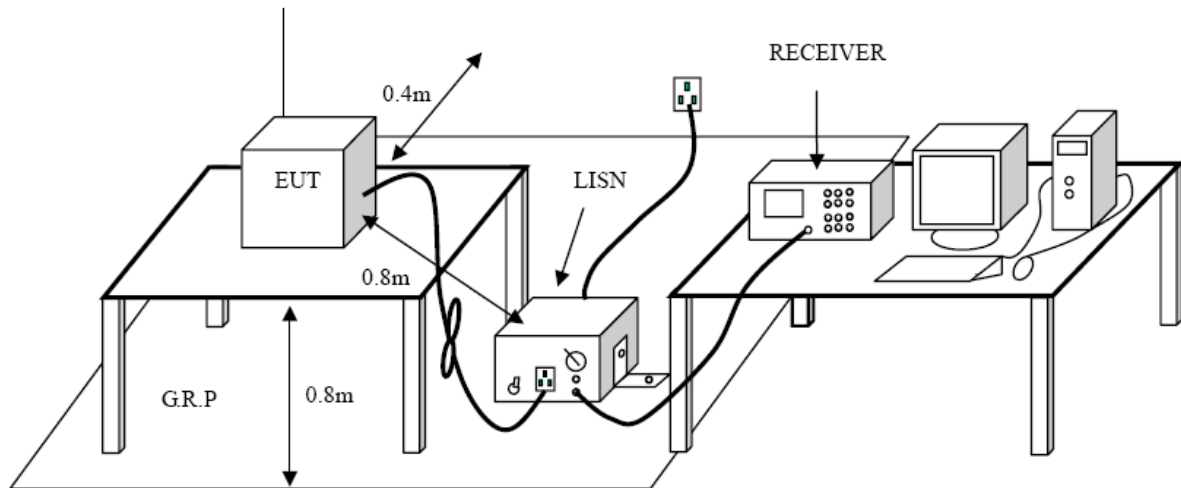
##### Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.207

| Frequency (MHz) | Conducted Limit (dBμV) |            |
|-----------------|------------------------|------------|
|                 | Quasi-peak             | Average    |
| 0.15 - 0.5      | 66 to 56 *             | 56 to 46 * |
| 0.5 - 5         | 56                     | 46         |
| 5 - 30          | 60                     | 50         |

\* Decreases with the logarithm of the frequency.

##### Test Configuration



##### Test Procedure

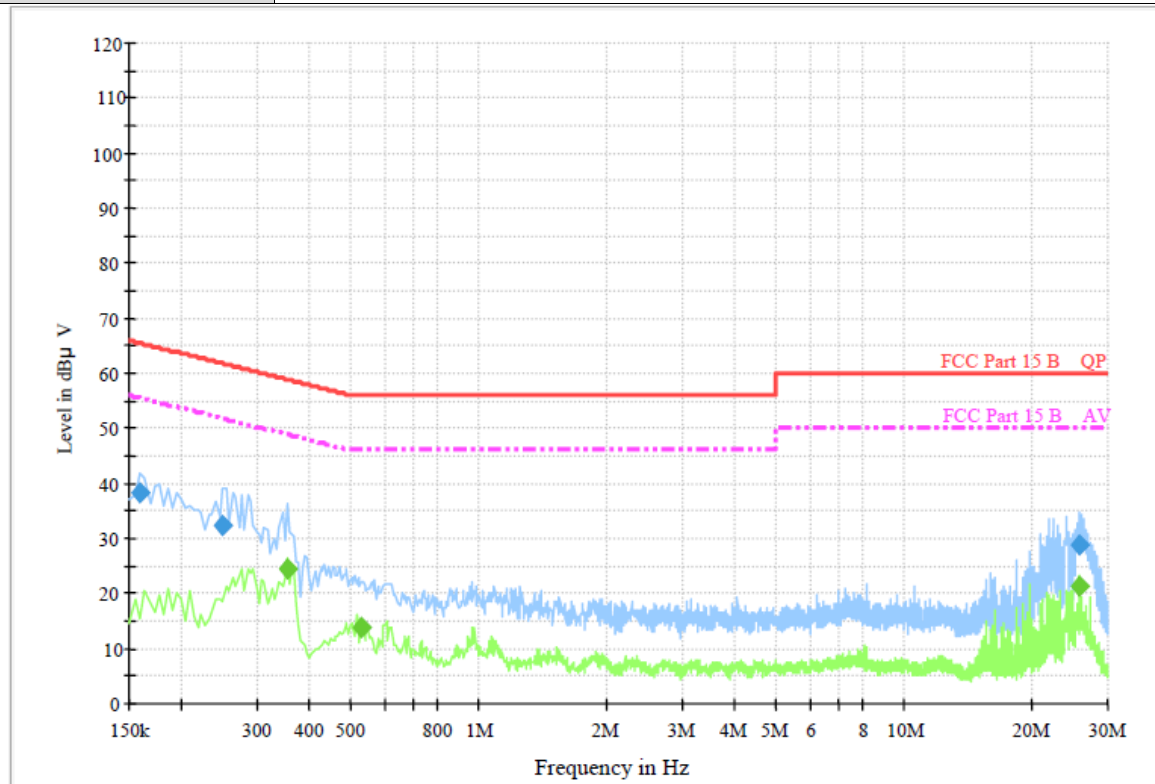
1. The EUT was setup according to ANSI C63.10:2013 requirements.
2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
3. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm / 50 μH coupling impedance for the measuring equipment.
4. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
5. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
6. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
7. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
8. During the above scans, the emissions were maximized by cable manipulation.

##### Test Mode

Please refer to the clause 2.4.

**Test Result**

|               |                             |
|---------------|-----------------------------|
| Test Voltage: | AC 120V/60Hz                |
| Terminal:     | Line                        |
| Remark:       | Only worse case is reported |

**Final Measurement Detector 1**

| Frequency (MHz) | QuasiPeak (dBμ V) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμ V) | Comment |
|-----------------|-------------------|-----------------|-----------------|--------|------|------------|-------------|---------------|---------|
| 0.159000        | 38.3              | 1000.00         | 9.000           | On     | L1   | 9.5        | 27.2        | 65.5          |         |
| 0.249000        | 32.2              | 1000.00         | 9.000           | On     | L1   | 9.5        | 29.6        | 61.8          |         |
| 25.692000       | 29.0              | 1000.00         | 9.000           | On     | L1   | 9.7        | 31.0        | 60.0          |         |

**Final Measurement Detector 2**

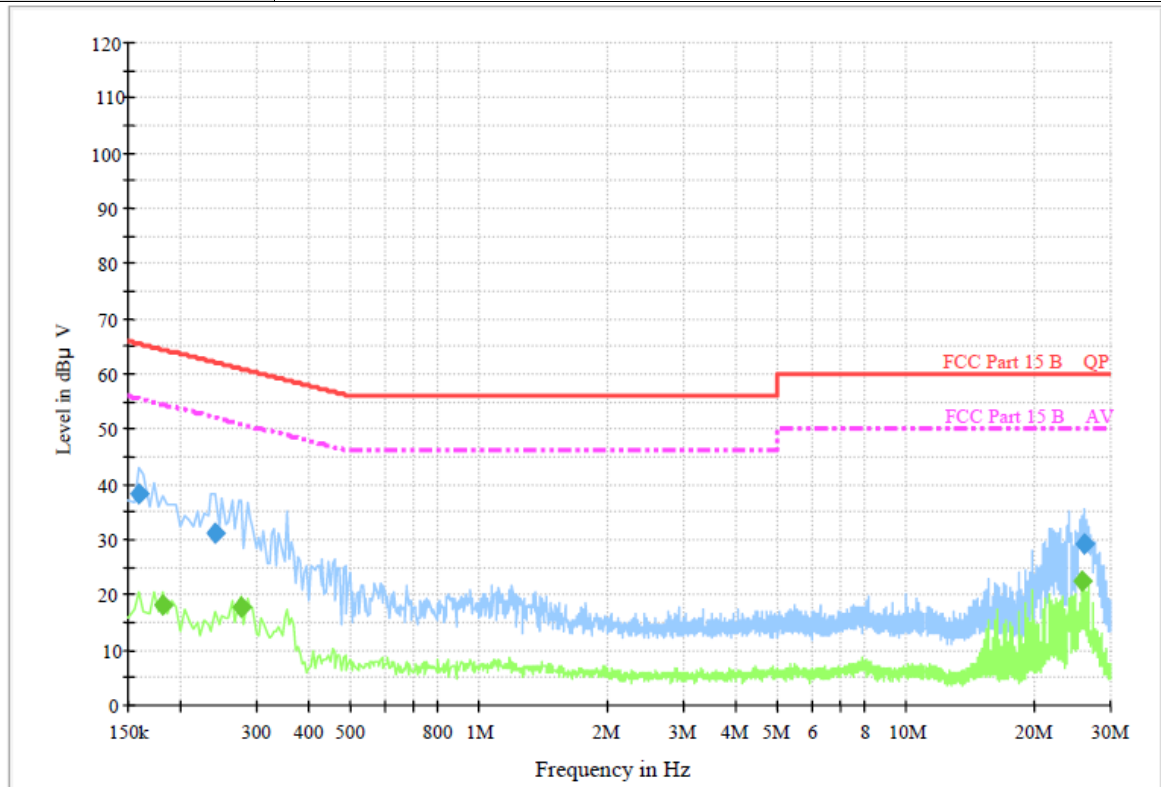
| Frequency (MHz) | Average (dBμ V) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμ V) | Comment |
|-----------------|-----------------|-----------------|-----------------|--------|------|------------|-------------|---------------|---------|
| 0.352500        | 24.4            | 1000.00         | 9.000           | On     | L1   | 9.5        | 24.5        | 48.9          |         |
| 0.528000        | 13.8            | 1000.00         | 9.000           | On     | L1   | 9.5        | 32.2        | 46.0          |         |
| 25.692000       | 21.2            | 1000.00         | 9.000           | On     | L1   | 9.7        | 28.8        | 50.0          |         |

Emission Level = Read Level + Correct Factor





|               |                             |
|---------------|-----------------------------|
| Test Voltage: | AC 120V/60Hz                |
| Terminal:     | Neutral                     |
| Remark:       | Only worse case is reported |



### Final Measurement Detector 1

| Frequency (MHz) | QuasiPeak (dBμ V) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμ V) | Comment |
|-----------------|-------------------|-----------------|-----------------|--------|------|------------|-------------|---------------|---------|
| 0.159000        | 38.2              | 1000.00         | 9.000           | On     | N    | 9.5        | 27.3        | 65.5          |         |
| 0.240000        | 31.2              | 1000.00         | 9.000           | On     | N    | 9.4        | 30.9        | 62.1          |         |
| 26.002500       | 29.2              | 1000.00         | 9.000           | On     | N    | 9.5        | 30.8        | 60.0          |         |

### Final Measurement Detector 2

| Frequency (MHz) | Average (dBμ V) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμ V) | Comment |
|-----------------|-----------------|-----------------|-----------------|--------|------|------------|-------------|---------------|---------|
| 0.181500        | 18.3            | 1000.00         | 9.000           | On     | N    | 9.5        | 36.1        | 54.4          |         |
| 0.276000        | 17.9            | 1000.00         | 9.000           | On     | N    | 9.4        | 33.0        | 50.9          |         |
| 25.692000       | 22.5            | 1000.00         | 9.000           | On     | N    | 9.5        | 27.5        | 50.0          |         |

Emission Level = Read Level + Correct Factor



## 3.2. Radiated Emission

### Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.209

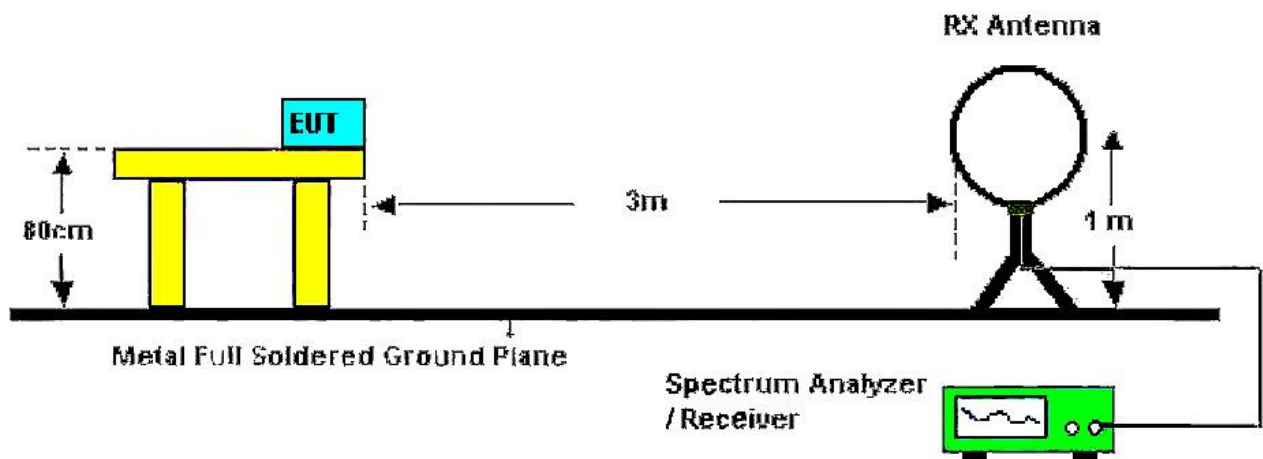
| Frequency (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|-----------------|-----------------------------------|-------------------------------|
| 0.009~0.490     | 2400/F (kHz)                      | 300                           |
| 0.490~1.705     | 24000/F (kHz)                     | 30                            |
| 1.705~30.0      | 30                                | 30                            |
| 30~88           | 100                               | 3                             |
| 88~216          | 150                               | 3                             |
| 216~960         | 200                               | 3                             |
| 960~1000        | 500                               | 3                             |

| Frequency Range (MHz) | dBμV/m (at 3 meters) |         |
|-----------------------|----------------------|---------|
|                       | Peak                 | Average |
| Above 1000            | 74                   | 54      |

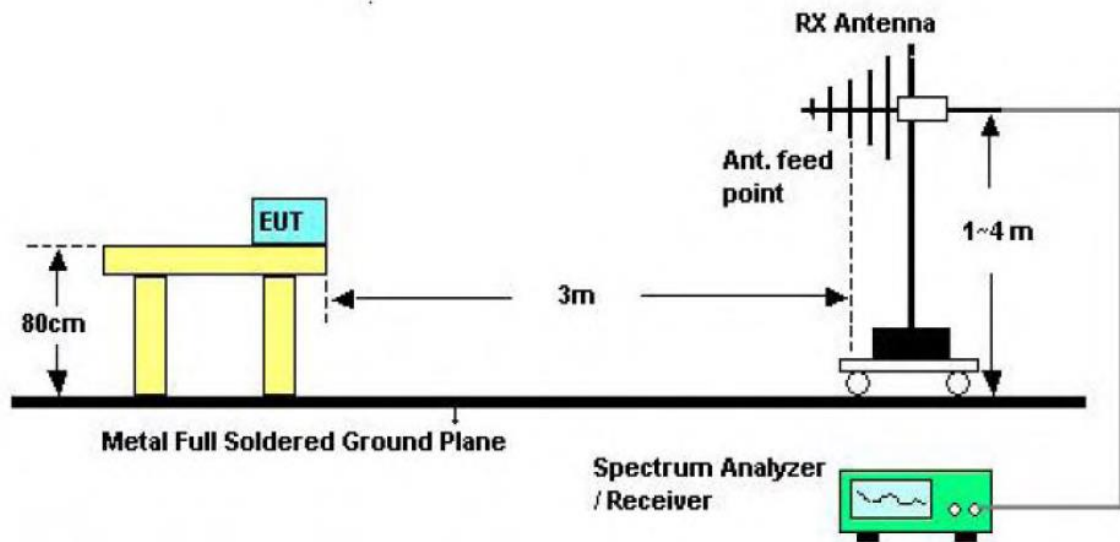
Note:

- (1) The tighter limit applies at the band edges.
- (2) Emission Level (dBμV/m)=20log Emission Level (μV/m).

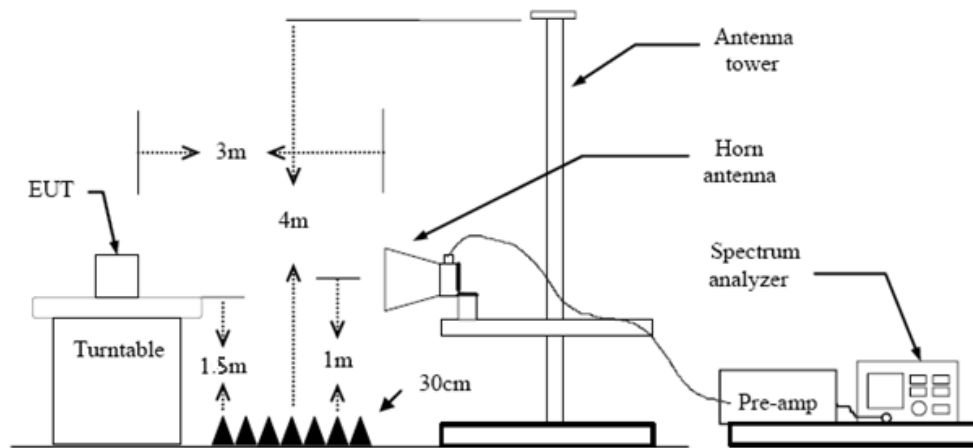
### Test Configuration



Below 30MHz Test Setup



30-1000MHz Test Setup



Above 1GHz Test Setup

### Test Procedure

1. The EUT was setup and tested according to ANSI C63.10:2013.
  2. The EUT is placed on a turn table which is 0.8 meter above ground for below 1 GHz, and 1.5 m for above 1 GHz. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
  3. The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable height antenna tower.
  4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
  5. Set to the maximum power setting and enable the EUT transmit continuously.
  6. Use the following spectrum analyzer settings
    - (1) Span shall wide enough to fully capture the emission being measured;
    - (2) 9k – 150kHz:  
RBW=300 Hz, VBW=1 kHz, Sweep=auto, Detector function=peak, Trace=max hold
    - (3) 0.15M – 30MHz:  
RBW=10 kHz, VBW=30 kHz, Sweep=auto, Detector function=peak, Trace=max hold
    - (4) 30M - 1 GHz:  
RBW=120 kHz, VBW=300 kHz, Sweep=auto, Detector function=peak, Trace=max hold
- If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the





peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

(5) From 1 GHz to 10<sup>th</sup> harmonic:

RBW=1MHz, VBW=3MHz Peak detector for Peak value.

RBW=1MHz, VBW see note 1 with Peak Detector for Average Value.

Note 1: For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector for average measurements. For the Duty Cycle please refer to clause 3.8 Duty Cycle.

### **Test Mode**

Please refer to the clause 2.4.

### **Test Result**

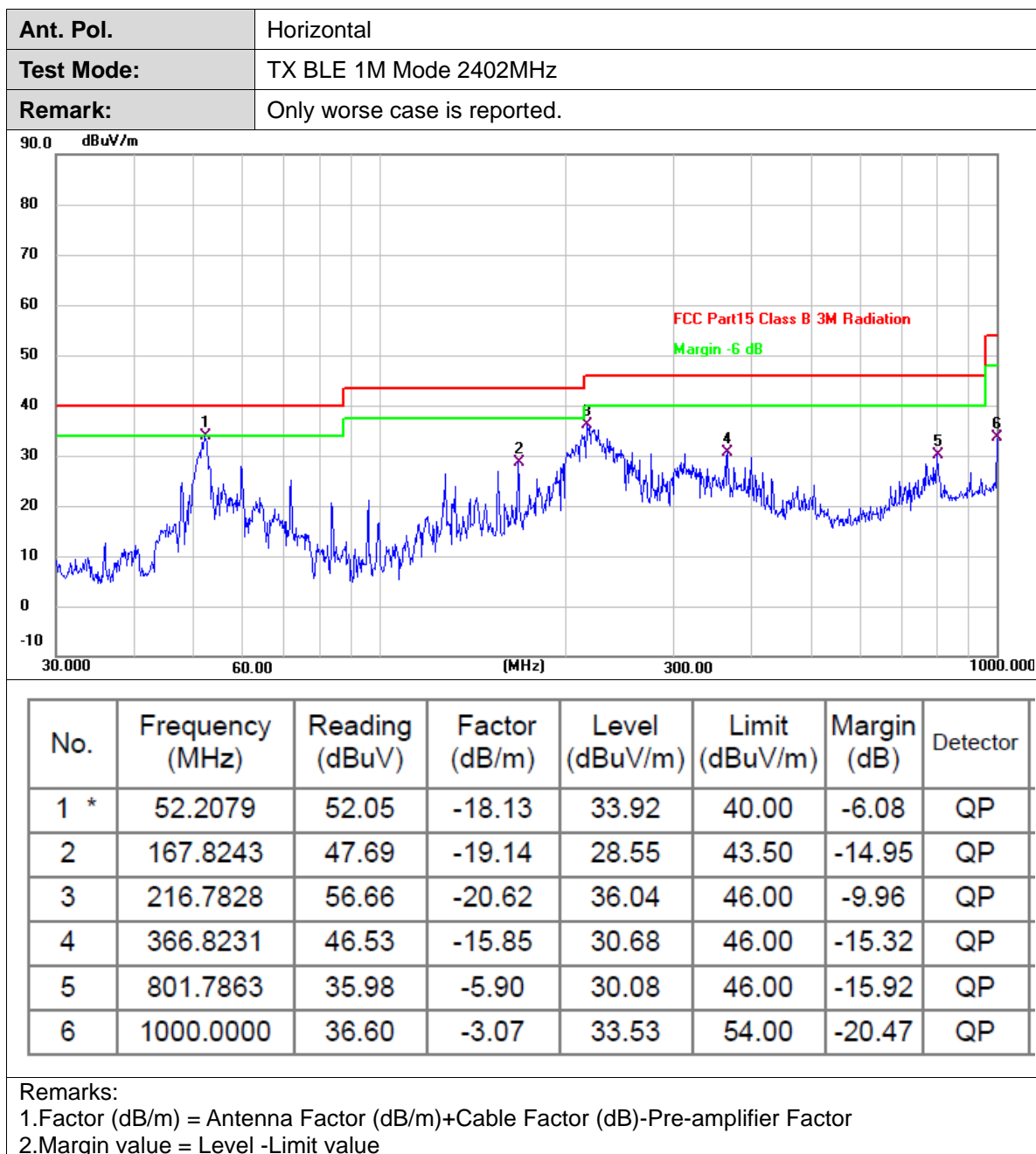
#### **9 kHz~30 MHz**

From 9 kHz to 30 MHz: The conclusion is PASS.

Note: The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



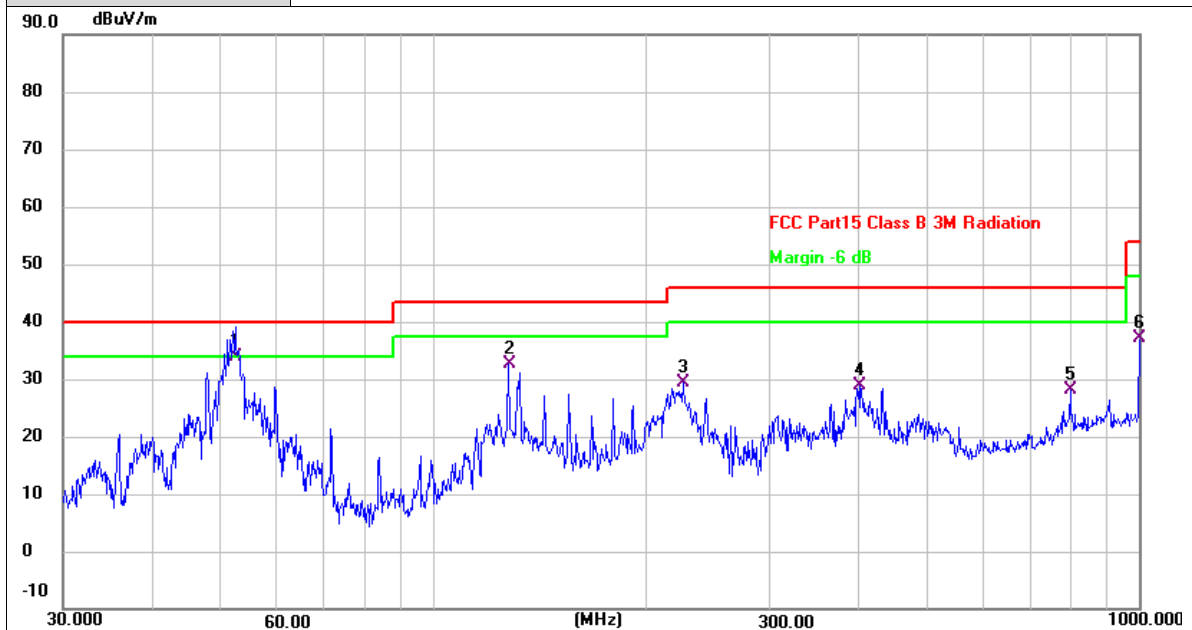
## 30MHz-1GHz







|            |                              |
|------------|------------------------------|
| Ant. Pol.  | Vertical                     |
| Test Mode: | TX BLE 1M Mode 2402MHz       |
| Remark:    | Only worse case is reported. |



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1 * | 52.5753         | 52.08          | -18.18        | 33.90          | 40.00          | -6.10       | QP       |
| 2   | 128.1129        | 52.63          | -20.07        | 32.56          | 43.50          | -10.94      | QP       |
| 3   | 226.0994        | 49.55          | -20.29        | 29.26          | 46.00          | -16.74      | QP       |
| 4   | 403.2500        | 43.94          | -14.96        | 28.98          | 46.00          | -17.02      | QP       |
| 5   | 798.9797        | 34.00          | -5.94         | 28.06          | 46.00          | -17.94      | QP       |
| 6   | 1000.0000       | 40.19          | -3.07         | 37.12          | 54.00          | -16.88      | QP       |

## Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value



## Above 1GHz

|   |  |                |               |                |                |             |          |
|---|--|----------------|---------------|----------------|----------------|-------------|----------|
| Ant. Pol.   | Horizontal   |                |               |                |                |             |          |
| Test Mode:  | TX BLE 1M Mode 2402MHz   |                |               |                |                |             |          |
| Remark:   | No report for the emission which more than 20 dB below the prescribed limit. |                |               |                |                |             |          |
|   |  |                |               |                |                |             |          |
| No.   | Frequency (MHz)  | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
| 1   | 4803.854   | 46.84          | -3.40         | 43.44          | 74.00          | -30.56      | peak     |
| 2 *   | 4804.182   | 33.72          | -3.40         | 30.32          | 54.00          | -23.68      | AVG      |
|   |  |                |               |                |                |             |          |
| Remarks:<br>1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor<br>2.Margin value = Level -Limit value |  |                |               |                |                |             |          |

|   |  |                |               |                |                |             |          |
|---|--|----------------|---------------|----------------|----------------|-------------|----------|
| Ant. Pol.   | Vertical   |                |               |                |                |             |          |
| Test Mode:  | TX BLE 1M Mode 2402MHz   |                |               |                |                |             |          |
| Remark:   | No report for the emission which more than 20 dB below the prescribed limit. |                |               |                |                |             |          |
|   |  |                |               |                |                |             |          |
| No.   | Frequency (MHz)  | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
| 1 *   | 4804.229   | 37.26          | -3.40         | 33.86          | 54.00          | -20.14      | AVG      |
| 2   | 4804.234   | 48.46          | -3.40         | 45.06          | 74.00          | -28.94      | peak     |
|   |  |                |               |                |                |             |          |
| Remarks:<br>1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor<br>2.Margin value = Level -Limit value |  |                |               |                |                |             |          |



|   |  |                |               |                |                |             |          |
|---|--|----------------|---------------|----------------|----------------|-------------|----------|
| Ant. Pol.   | Horizontal   |                |               |                |                |             |          |
| Test Mode:  | TX BLE 1M Mode 2440MHz   |                |               |                |                |             |          |
| Remark:   | No report for the emission which more than 20 dB below the prescribed limit. |                |               |                |                |             |          |
|   |  |                |               |                |                |             |          |
| No.   | Frequency (MHz)  | Reading (dBUV) | Factor (dB/m) | Level (dBUV/m) | Limit (dBUV/m) | Margin (dB) | Detector |
| 1   | 4879.928   | 46.39          | -3.26         | 43.13          | 74.00          | -30.87      | peak     |
| 2 *   | 4880.006   | 33.24          | -3.26         | 29.98          | 54.00          | -24.02      | AVG      |
|   |  |                |               |                |                |             |          |
| Remarks:<br>1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor<br>2.Margin value = Level -Limit value |  |                |               |                |                |             |          |

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| Ant. Pol.  | Vertical   |  |  |  |  |  |  |
| Test Mode: | TX BLE 1M Mode 2440MHz   |  |  |  |  |  |  |
| Remark:    | No report for the emission which more than 20 dB below the prescribed limit. |  |  |  |  |  |  |
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|            |  |
|------------|--|
| Ant. Pol.  | Horizontal   |
| Test Mode: | TX BLE 1M Mode 2480MHz   |
| Remark:    | No report for the emission which more than 20 dB below the prescribed limit. |

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1 * | 4960.262        | 32.87          | -3.10         | 29.77          | 54.00          | -24.23      | AVG      |
| 2   | 4960.461        | 46.26          | -3.10         | 43.16          | 74.00          | -30.84      | peak     |

Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

|            |  |
|------------|--|
| Ant. Pol.  | Vertical   |
| Test Mode: | TX BLE 1M Mode 2480MHz   |
| Remark:    | No report for the emission which more than 20 dB below the prescribed limit. |

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1   | 4959.694        | 46.03          | -3.10         | 42.93          | 74.00          | -31.07      | peak     |
| 2 * | 4960.000        | 32.88          | -3.10         | 29.78          | 54.00          | -24.22      | AVG      |

Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value



|            |  |
|------------|--|
| Ant. Pol.  | Horizontal   |
| Test Mode: | TX BLE 2M Mode 2402MHz   |
| Remark:    | No report for the emission which more than 20 dB below the prescribed limit. |

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1 * | 4803.542        | 33.68          | -3.40         | 30.28          | 54.00          | -23.72      | AVG      |
| 2   | 4803.936        | 46.41          | -3.40         | 43.01          | 74.00          | -30.99      | peak     |

Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

|            |  |
|------------|--|
| Ant. Pol.  | Vertical   |
| Test Mode: | TX BLE 2M Mode 2402MHz   |
| Remark:    | No report for the emission which more than 20 dB below the prescribed limit. |

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1   | 4804.000        | 48.39          | -3.40         | 44.99          | 74.00          | -29.01      | peak     |
| 2 * | 4804.000        | 37.10          | -3.40         | 33.70          | 54.00          | -20.30      | AVG      |

Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value



|   |  |                |               |                |                |             |          |
|---|--|----------------|---------------|----------------|----------------|-------------|----------|
| Ant. Pol.   | Horizontal   |                |               |                |                |             |          |
| Test Mode:  | TX BLE 2M Mode 2440MHz   |                |               |                |                |             |          |
| Remark:   | No report for the emission which more than 20 dB below the prescribed limit. |                |               |                |                |             |          |
|   |  |                |               |                |                |             |          |
| No.   | Frequency (MHz)  | Reading (dBUV) | Factor (dB/m) | Level (dBUV/m) | Limit (dBUV/m) | Margin (dB) | Detector |
| 1 *   | 4880.011   | 33.23          | -3.26         | 29.97          | 54.00          | -24.03      | AVG      |
| 2   | 4880.114   | 45.93          | -3.26         | 42.67          | 74.00          | -31.33      | peak     |
|   |  |                |               |                |                |             |          |
| Remarks:<br>1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor<br>2.Margin value = Level -Limit value |  |                |               |                |                |             |          |

|   |  |                |               |                |                |             |          |
|---|--|----------------|---------------|----------------|----------------|-------------|----------|
| Ant. Pol.   | Vertical   |                |               |                |                |             |          |
| Test Mode:  | TX BLE 2M Mode 2440MHz   |                |               |                |                |             |          |
| Remark:   | No report for the emission which more than 20 dB below the prescribed limit. |                |               |                |                |             |          |
|   |  |                |               |                |                |             |          |
| No.   | Frequency (MHz)  | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
| 1   | 4880.000   | 45.75          | -3.26         | 42.49          | 74.00          | -31.51      | peak     |
| 2 *   | 4880.000   | 33.04          | -3.26         | 29.78          | 54.00          | -24.22      | AVG      |
|   |  |                |               |                |                |             |          |
| Remarks:<br>1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor<br>2.Margin value = Level -Limit value |  |                |               |                |                |             |          |



|            |  |
|------------|--|
| Ant. Pol.  | Horizontal   |
| Test Mode: | TX BLE 2M Mode 2480MHz   |
| Remark:    | No report for the emission which more than 20 dB below the prescribed limit. |

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1 * | 4959.723        | 32.98          | -3.10         | 29.88          | 54.00          | -24.12      | AVG      |
| 2   | 4959.736        | 45.85          | -3.10         | 42.75          | 74.00          | -31.25      | peak     |

Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

|            |  |
|------------|--|
| Ant. Pol.  | Vertical   |
| Test Mode: | TX BLE 2M Mode 2480MHz   |
| Remark:    | No report for the emission which more than 20 dB below the prescribed limit. |

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1   | 4960.000        | 46.10          | -3.10         | 43.00          | 74.00          | -31.00      | peak     |
| 2 * | 4960.000        | 32.75          | -3.10         | 29.65          | 54.00          | -24.35      | AVG      |

Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

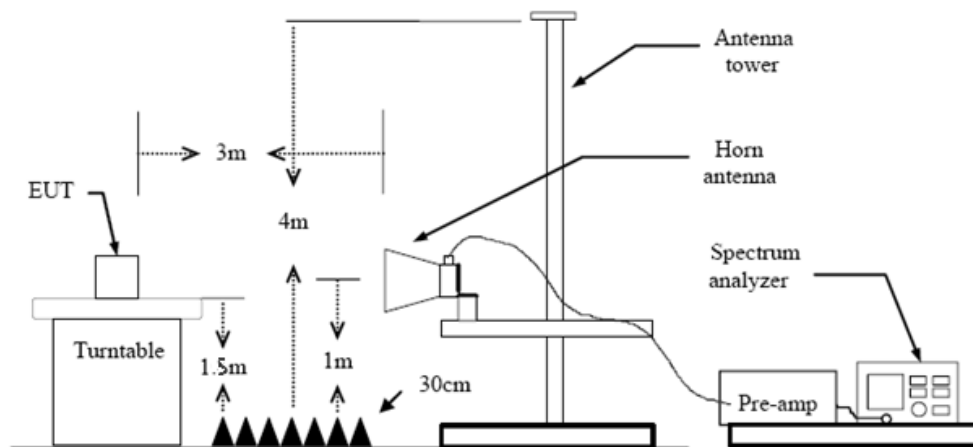
### 3.3. Band Edge Emissions (Radiated)

## Limit

**FCC CFR Title 47 Part 15 Subpart C Section 15.247 (d)**

| Restricted Frequency Band<br>(MHz) | (dBµV/m) (at 3m) |         |
|------------------------------------|------------------|---------|
|                                    | Peak             | Average |
| 2310 ~ 2390                        | 74               | 54      |
| 2483.5 ~ 2500                      | 74               | 54      |

## Test Configuration



### Test Procedure

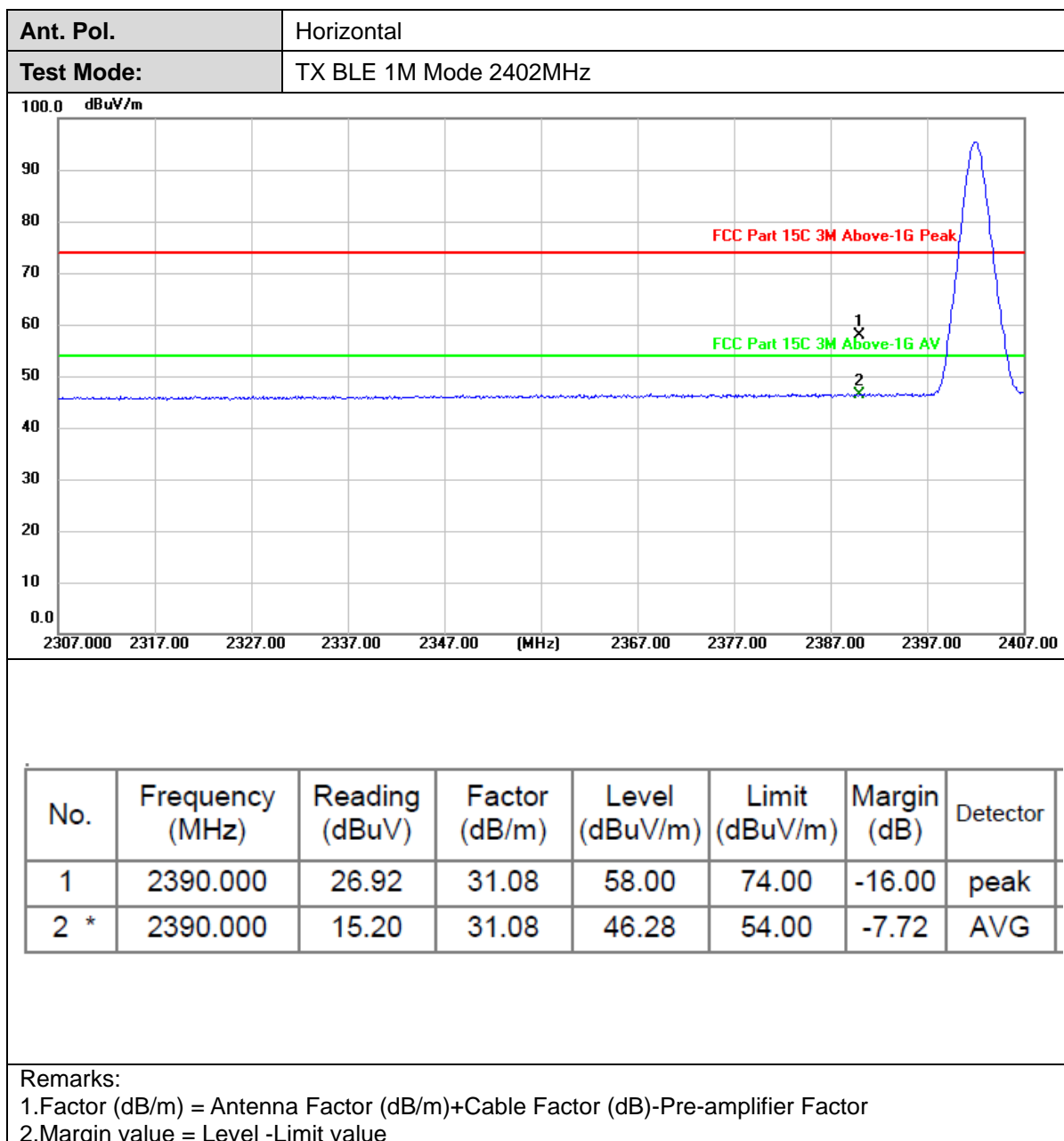
1. The EUT was setup and tested according to ANSI C63.10:2013 requirements.
2. The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.
5. The receiver set as follow:  
RBW=1MHz, VBW=3MHz Peak detector for Peak value.  
RBW=1MHz, VBW see note 1 with Peak Detector for Average Value.

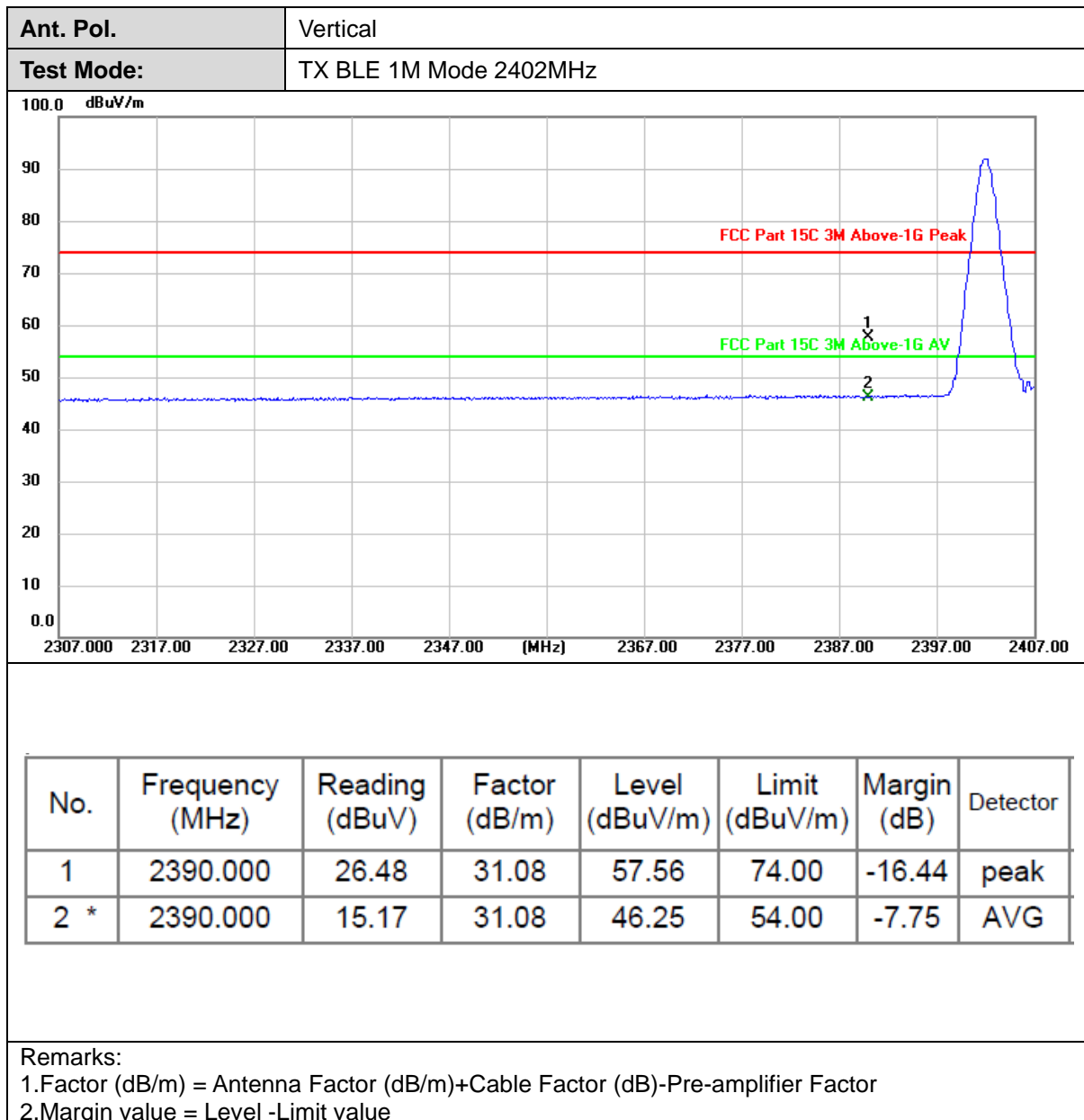
Note 1: For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector for average measurements. For the Duty Cycle please refer to clause 3.8 Duty Cycle.

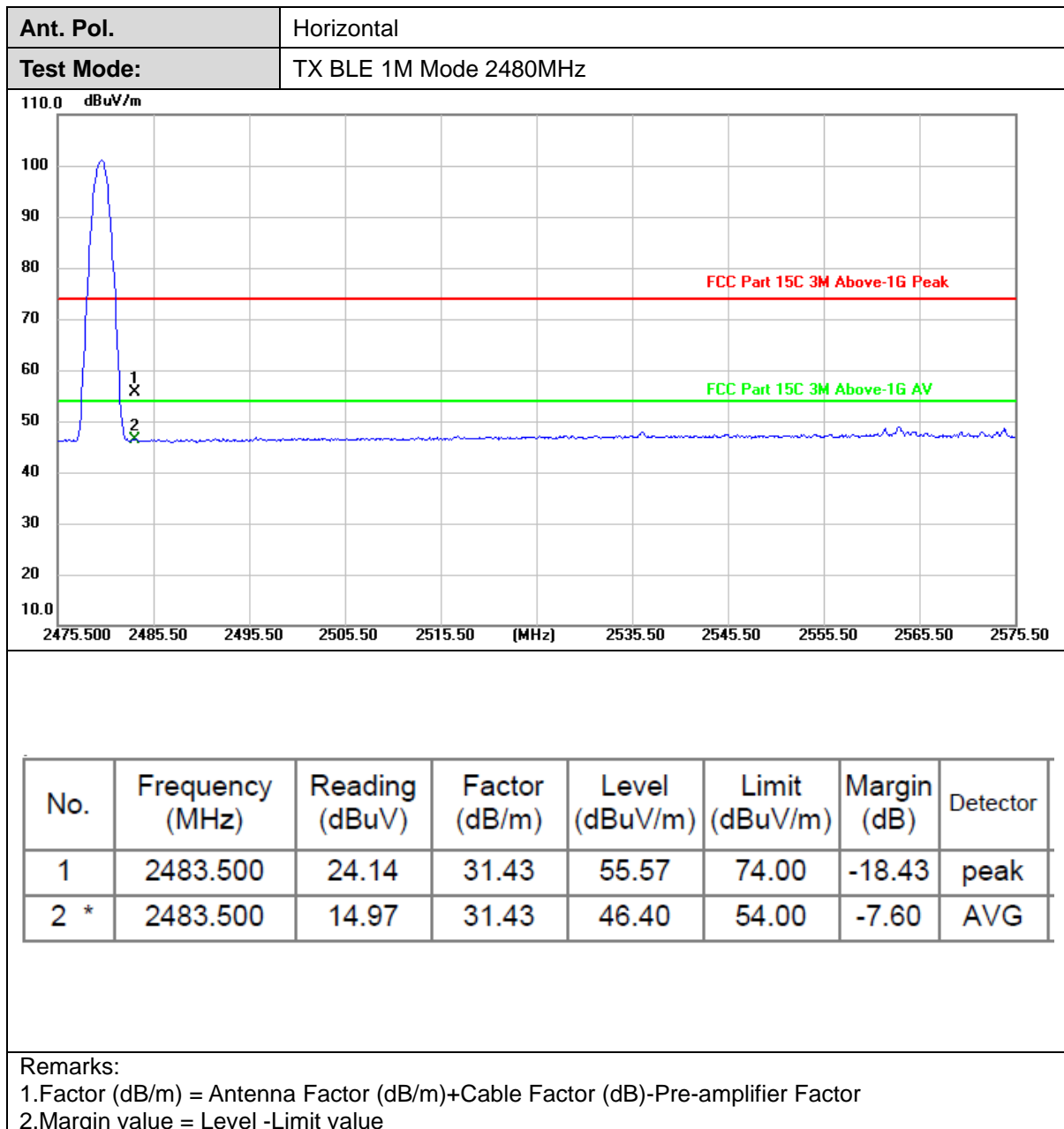
## Test Mode

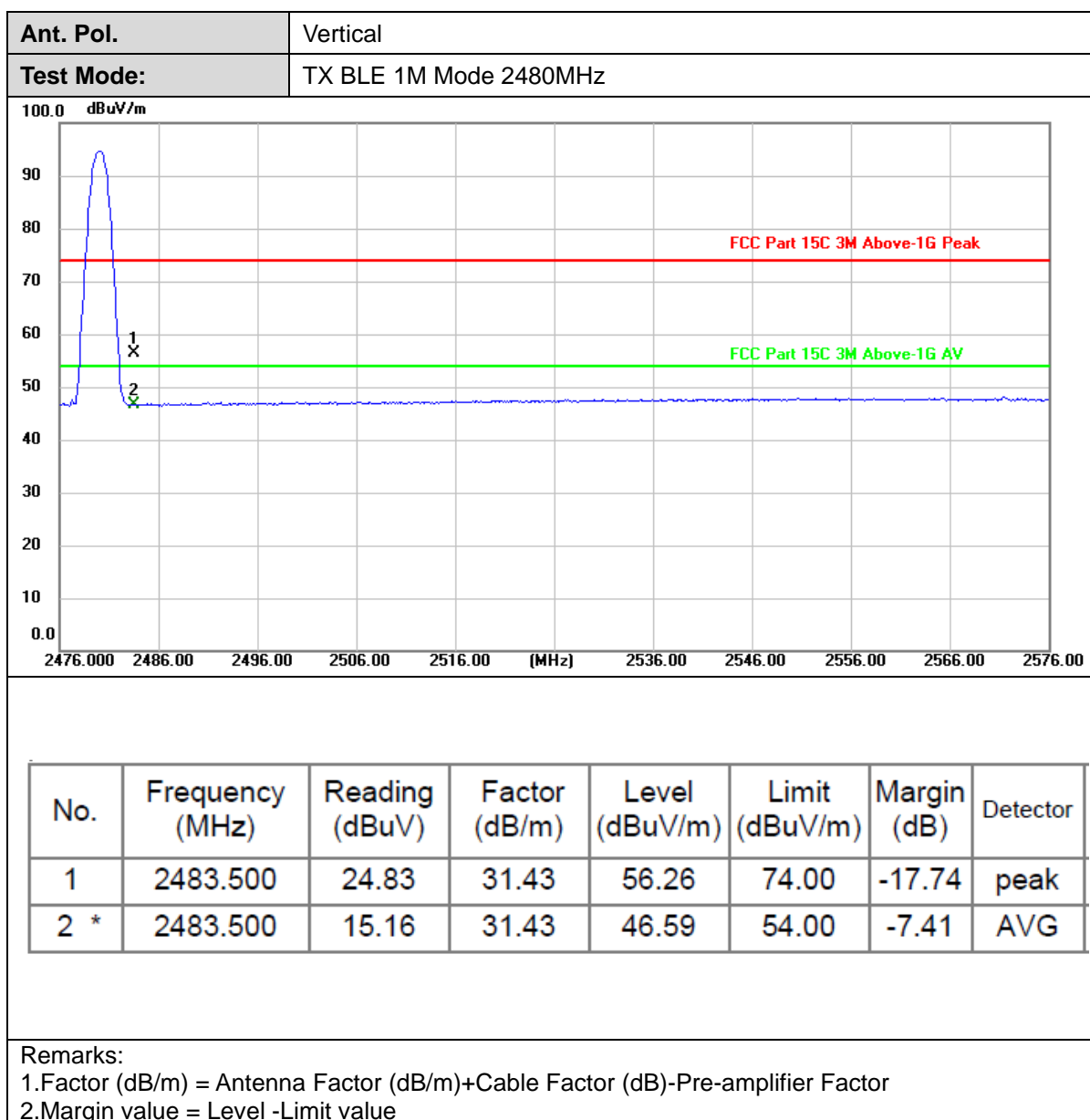
Please refer to the clause 2.4.

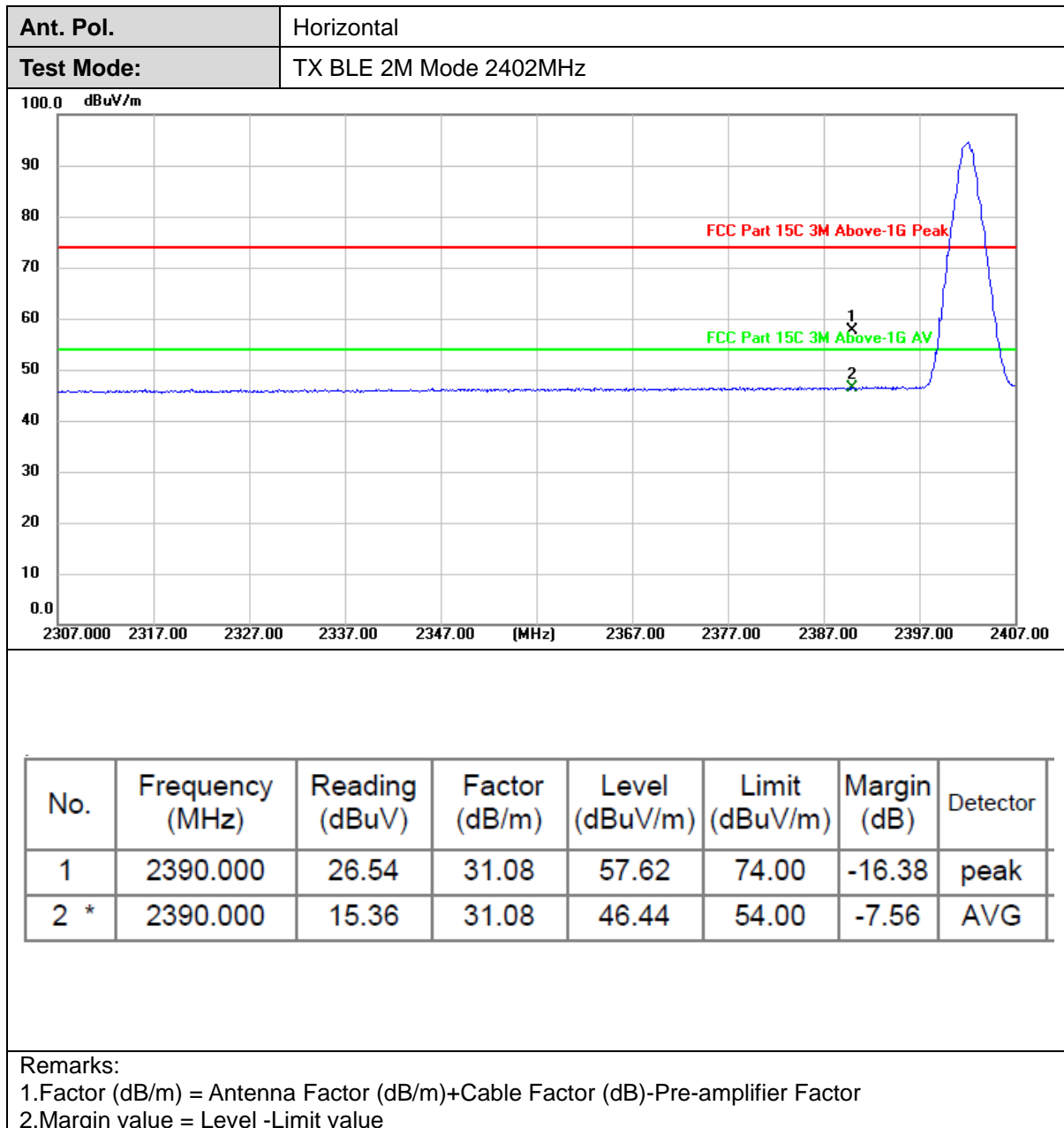


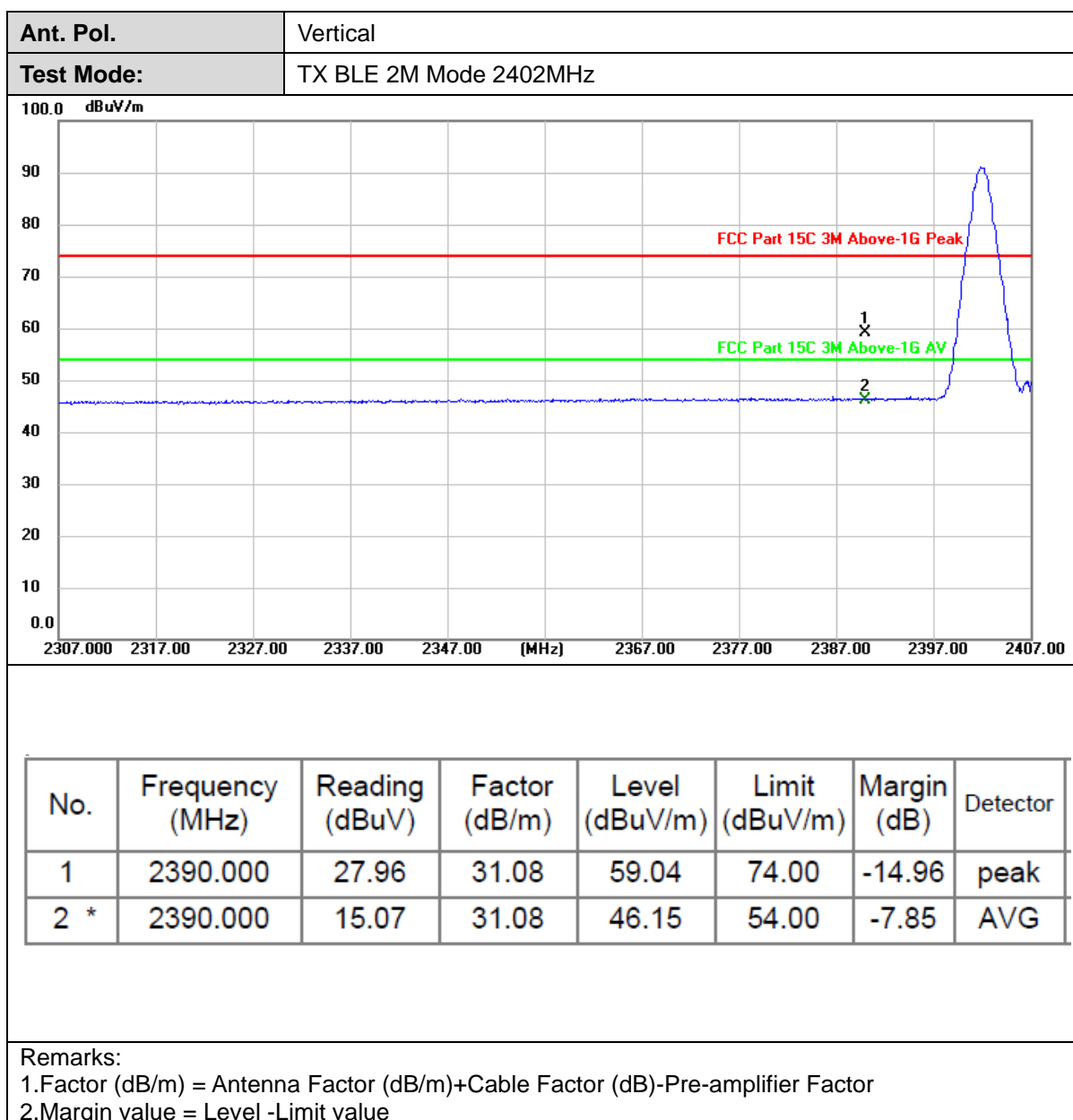
**Test Result**

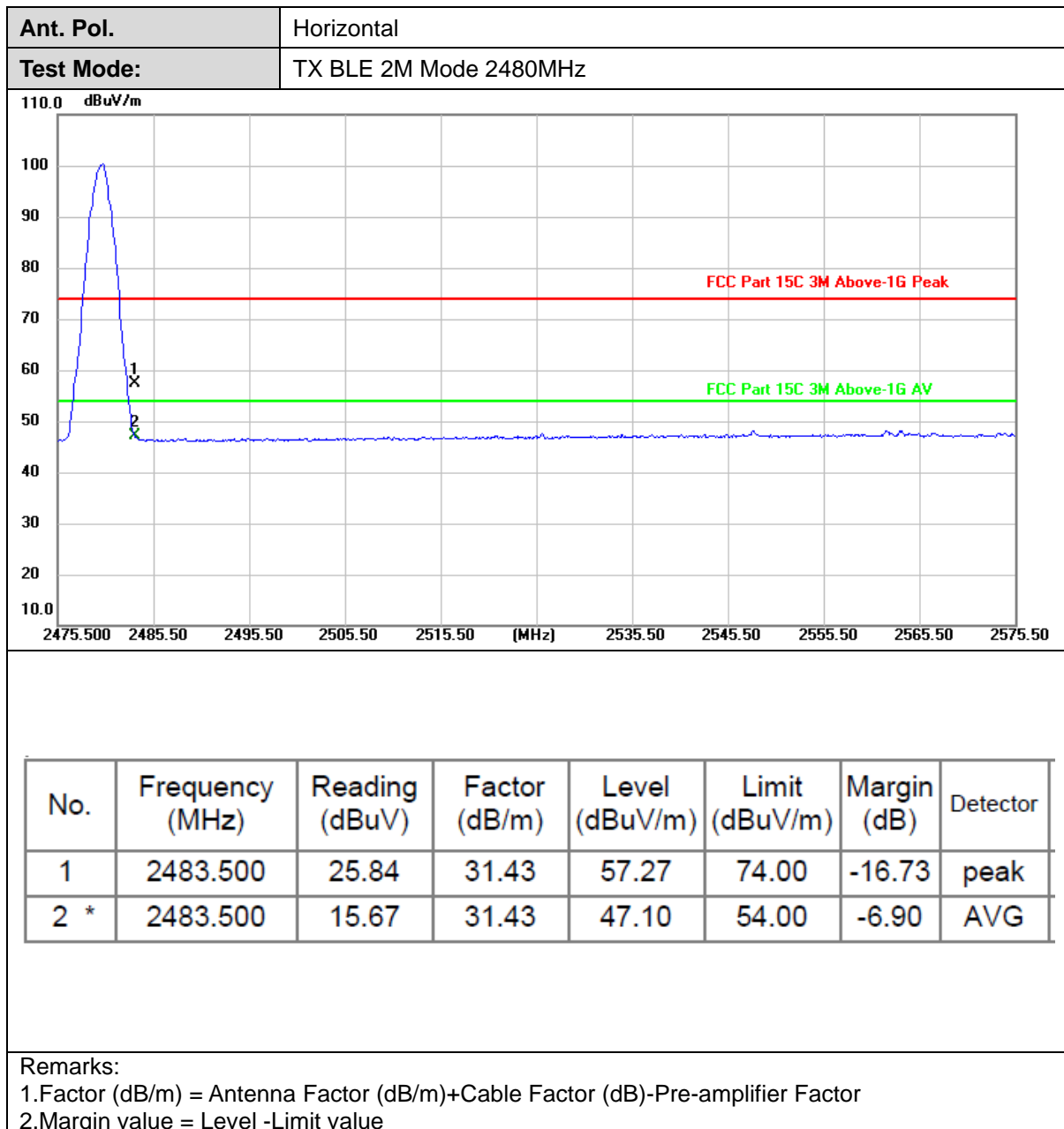


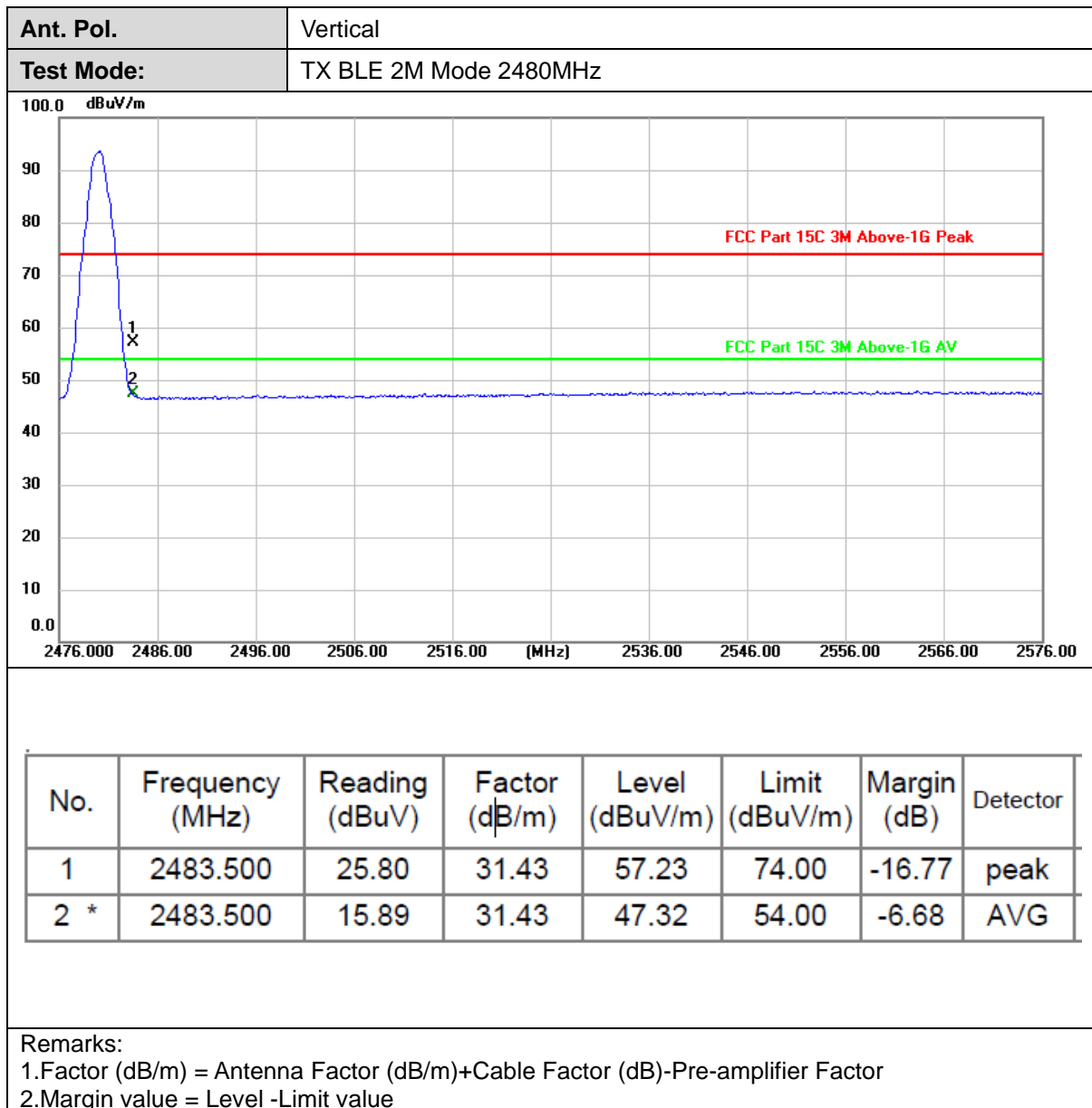
















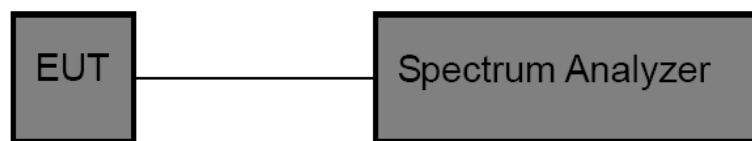
### 3.4. Band Edge and Spurious Emissions (Conducted)

#### Limit

##### **FCC CFR Title 47 Part 15 Subpart C Section 15.247 (d)**

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

#### Test Configuration



#### Test Procedure

1. The transmitter output was connected to the spectrum analyzer through an attenuator, the path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Use the following spectrum analyzer settings:  
RBW = 100 kHz, VBW ≥ RBW, scan up through 10<sup>th</sup> harmonic.  
Sweep = auto, Detector function = peak, Trace = max hold.
4. Measure and record the results in the test report.

#### Test Mode

Please refer to the clause 2.4.

#### Test Result

##### **Band Edge Conducted Test**

| TestMode | Antenna | ChName | Freq(MHz) | RefLevel[dBm] | Result[dBm] | Limit[dBm] | Verdict |
|----------|---------|--------|-----------|---------------|-------------|------------|---------|
| BLE_1M   | Ant1    | Low    | 2402      | 4.15          | -47.41      | ≤-15.85    | PASS    |
|          |         | High   | 2480      | 3.59          | -46.48      | ≤-16.41    | PASS    |
| BLE_2M   | Ant1    | Low    | 2402      | 2.84          | -29.85      | ≤-17.16    | PASS    |
|          |         | High   | 2480      | 2.41          | -46.76      | ≤-17.59    | PASS    |

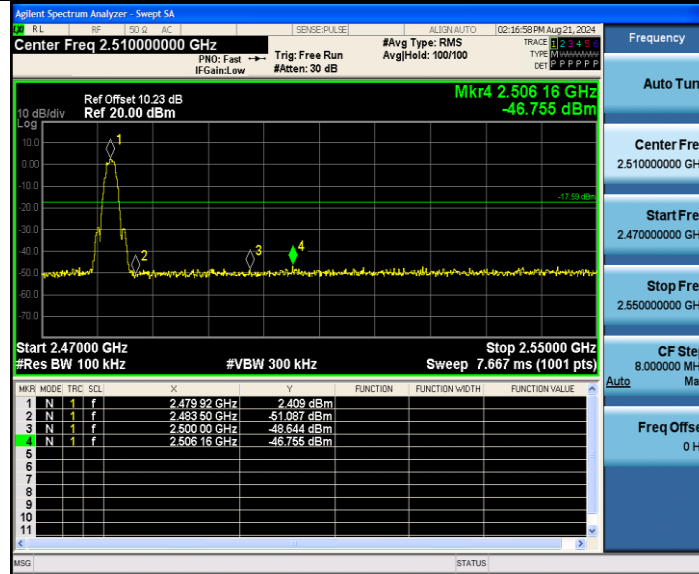
**Conducted Spurious Emissions Test**

| TestMode | Antenna | Freq(MHz) | FreqRange<br>[MHz] | RefLevel<br>[dBm] | Result[dBm] | Limit[dBm] | Verdict |
|----------|---------|-----------|--------------------|-------------------|-------------|------------|---------|
| BLE_1M   | Ant1    | 2402      | Reference          | 3.48              | 3.48        | ---        | PASS    |
|          |         |           | 30~1000            | 3.48              | -53.53      | ≤-16.52    | PASS    |
|          |         |           | 1000~26500         | 3.48              | -39.73      | ≤-16.52    | PASS    |
|          |         | 2440      | Reference          | 2.71              | 2.71        | ---        | PASS    |
|          |         |           | 30~1000            | 2.71              | -53.63      | ≤-17.29    | PASS    |
|          |         |           | 1000~26500         | 2.71              | -39.27      | ≤-17.29    | PASS    |
|          |         | 2480      | Reference          | 2.80              | 2.80        | ---        | PASS    |
|          |         |           | 30~1000            | 2.80              | -53.09      | ≤-17.2     | PASS    |
|          |         |           | 1000~26500         | 2.80              | -40.24      | ≤-17.2     | PASS    |
| BLE_2M   | Ant1    | 2402      | Reference          | 1.25              | 1.25        | ---        | PASS    |
|          |         |           | 30~1000            | 1.25              | -53.13      | ≤-18.75    | PASS    |
|          |         |           | 1000~26500         | 1.25              | -39.73      | ≤-18.75    | PASS    |
|          |         | 2440      | Reference          | 1.51              | 1.51        | ---        | PASS    |
|          |         |           | 30~1000            | 1.51              | -52.79      | ≤-18.49    | PASS    |
|          |         |           | 1000~26500         | 1.51              | -39.88      | ≤-18.49    | PASS    |
|          |         | 2480      | Reference          | 1.69              | 1.69        | ---        | PASS    |
|          |         |           | 30~1000            | 1.69              | -53.06      | ≤-18.31    | PASS    |
|          |         |           | 1000~26500         | 1.69              | -39.45      | ≤-18.31    | PASS    |



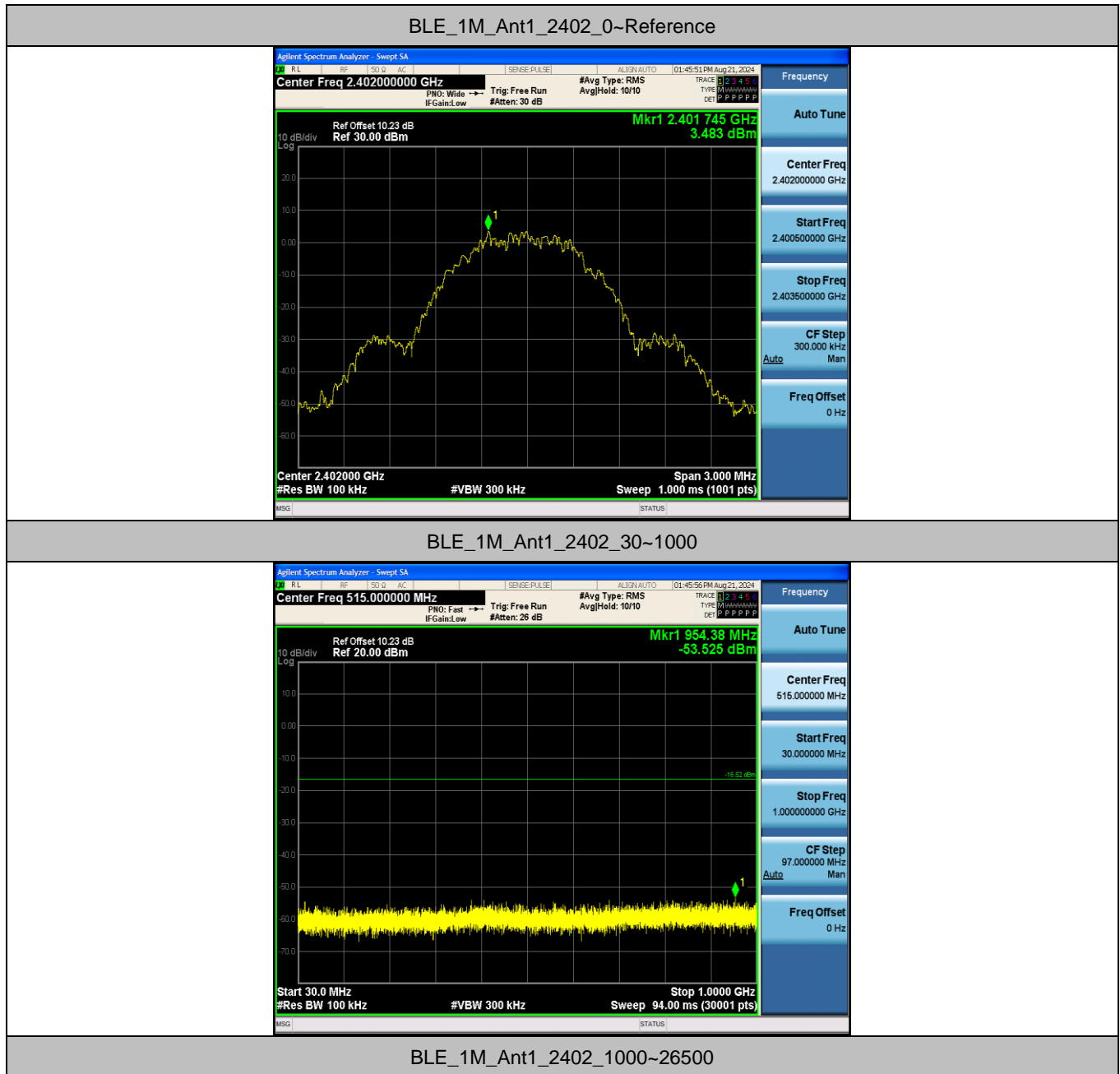


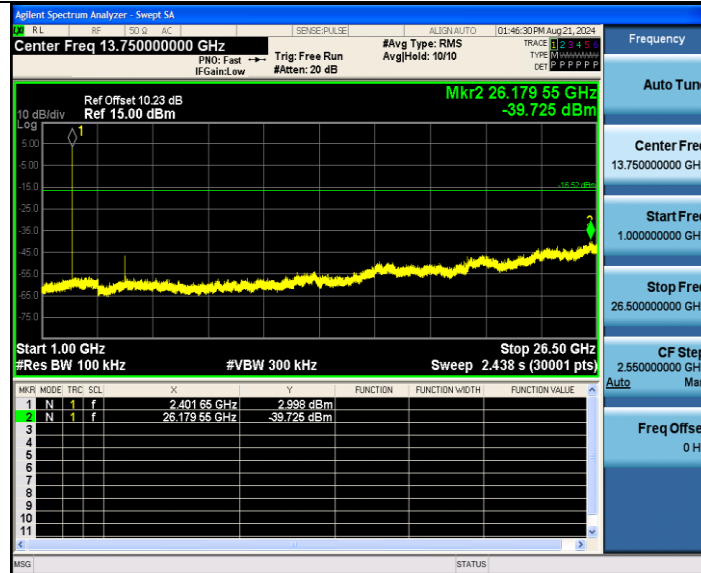
BLE\_2M\_Ant1\_High\_2480





Conducted Spurious Emissions Test plot as follows:

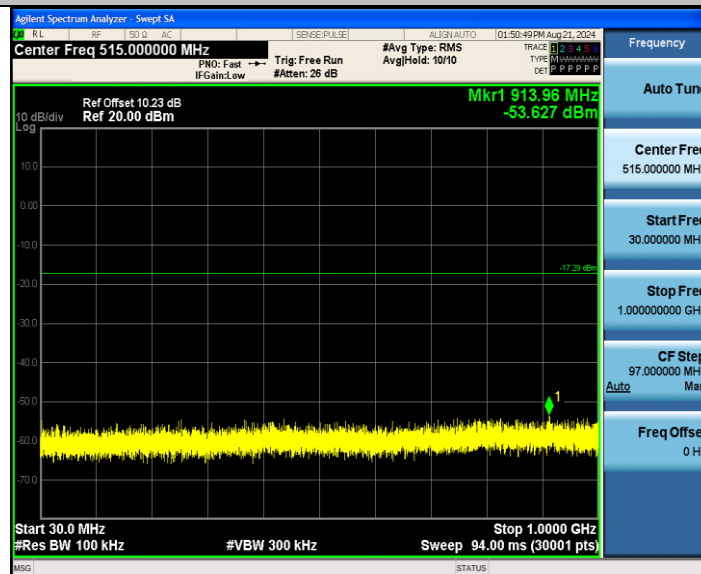




BLE\_1M\_Ant1\_2440\_0~Reference



BLE\_1M\_Ant1\_2440\_30~1000



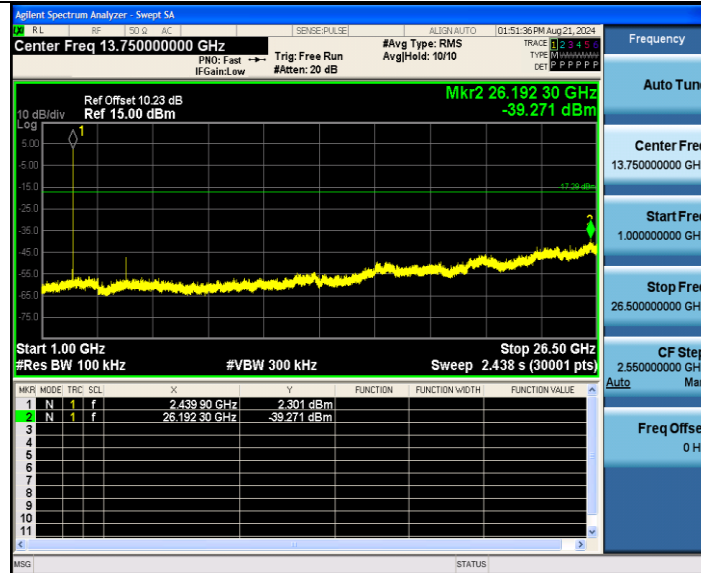
BLE\_1M\_Ant1\_2440\_1000~26500

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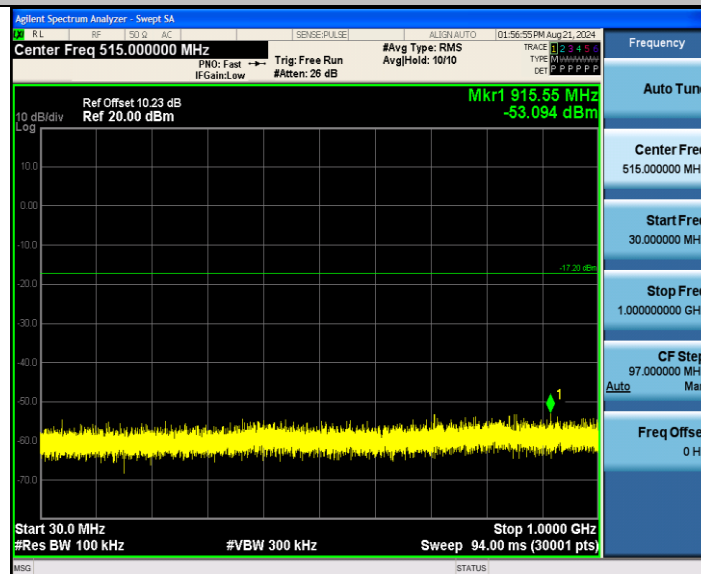




BLE\_1M\_Ant1\_2480\_0~Reference



BLE\_1M\_Ant1\_2480\_30~1000



BLE\_1M\_Ant1\_2480\_1000~26500

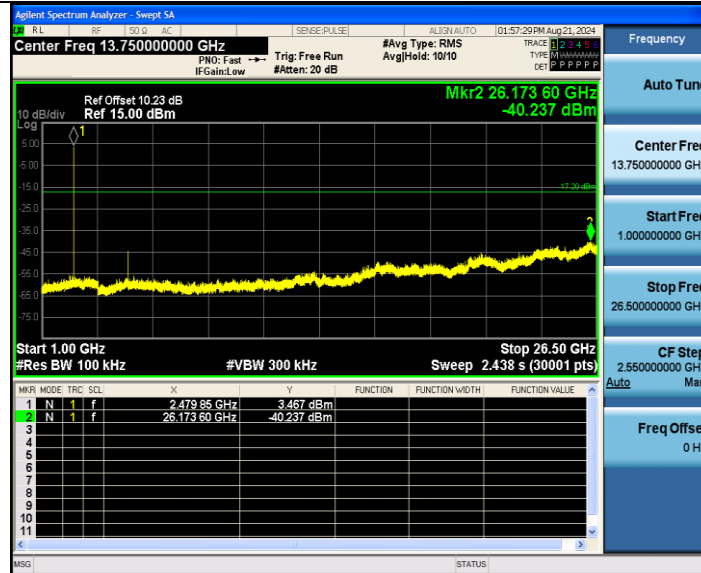
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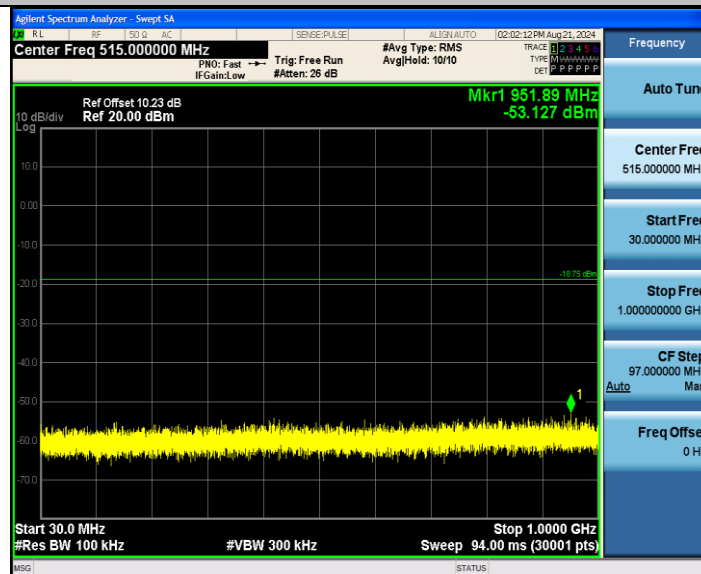




BLE\_2M\_Ant1\_2402\_0~Reference



BLE\_2M\_Ant1\_2402\_30~1000



BLE\_2M\_Ant1\_2402\_1000~26500

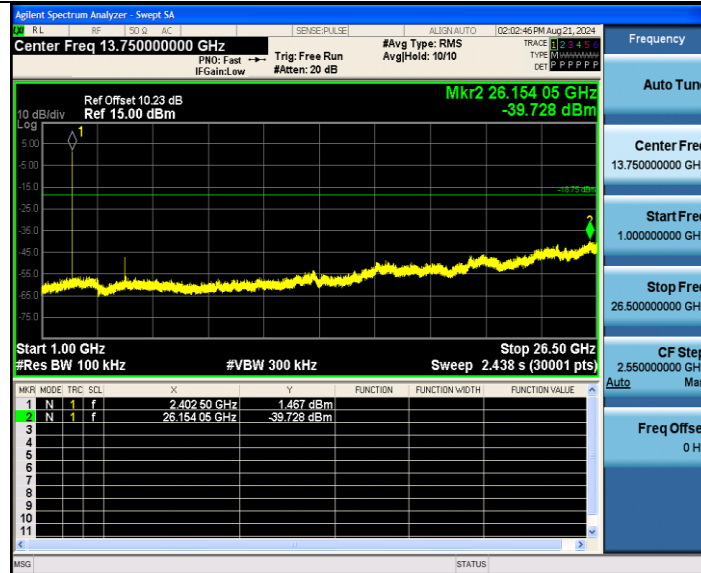
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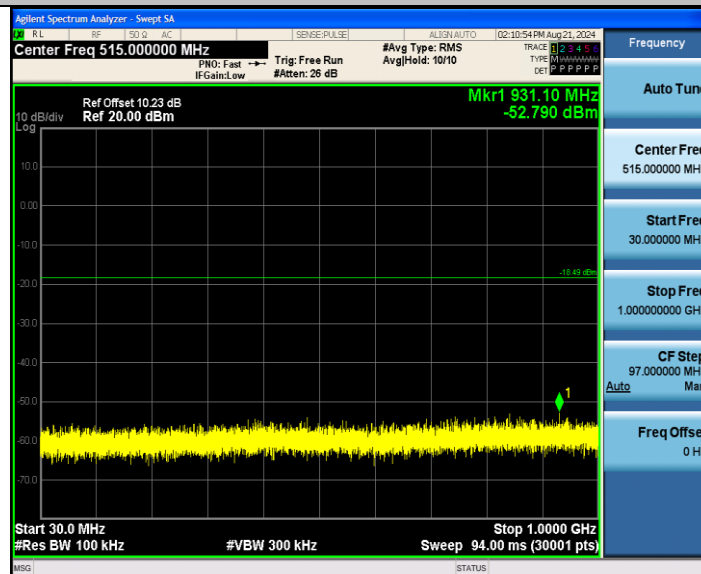




BLE\_2M\_Ant1\_2440\_0~Reference



BLE\_2M\_Ant1\_2440\_30~1000



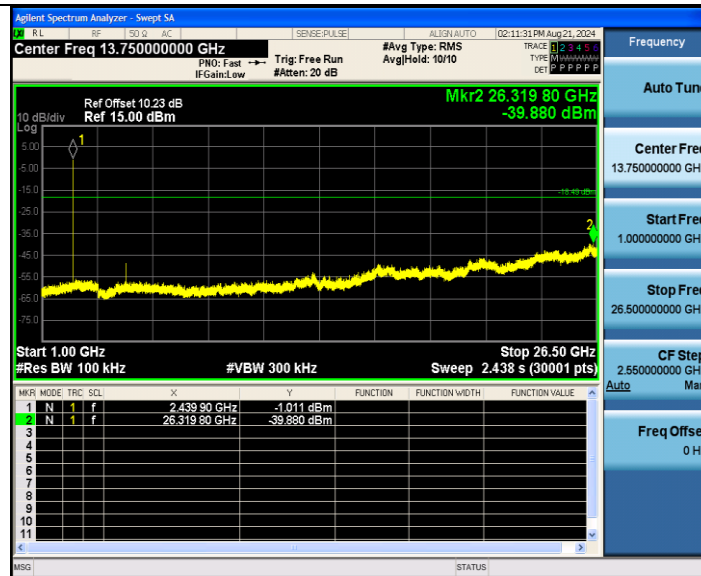
BLE\_2M\_Ant1\_2440\_1000~26500

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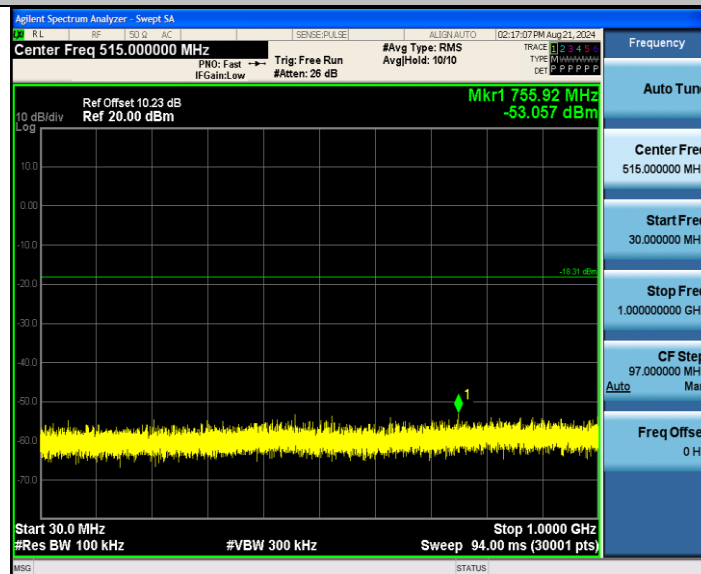
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BLE\_2M\_Ant1\_2480\_0~Reference



BLE\_2M\_Ant1\_2480\_30~1000



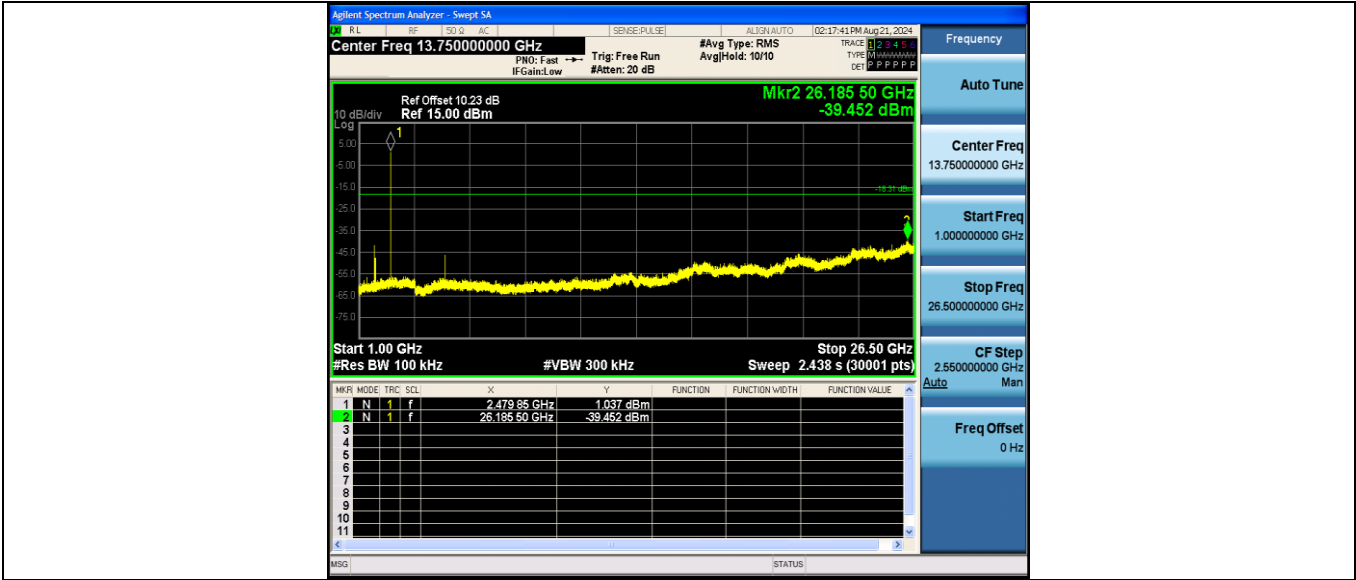
BLE\_2M\_Ant1\_2480\_1000~26500

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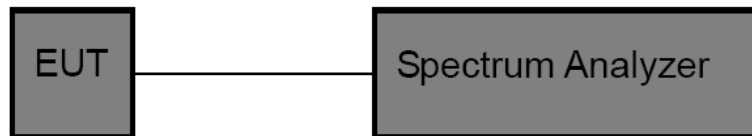
### 3.5. DTS Bandwidth

#### Limit

#### FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(2)

| Test Item     | Limit                             | Frequency Range (MHz) |
|---------------|-----------------------------------|-----------------------|
| DTS Bandwidth | $\geq 500$ kHz<br>(6dB bandwidth) | 2400~2483.5           |

#### Test Configuration



#### Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
2. DTS Spectrum Setting:
  - (1) Set RBW = 100 kHz.
  - (2) Set the video bandwidth (VBW)  $\geq 3$  RBW.
  - (3) Detector = Peak.
  - (4) Trace mode = Max hold.
  - (5) Sweep = Auto couple.OCB Spectrum Setting:
  - (1) Set RBW = 1% ~ 5% occupied bandwidth.
  - (2) Set the video bandwidth (VBW)  $\geq 3$  RBW.
  - (3) Detector = Peak.
  - (4) Trace mode = Max hold.
  - (5) Sweep = Auto couple.

NOTE: The EUT was set to continuously transmitting in each mode and low, Middle and high channel for the test.

#### Test Mode

Please refer to the clause 2.4.

#### Test Result



## 99% Bandwidth:

| TestMode | Antenna | Freq(MHz) | OCB [MHz] | FL[MHz]   | FH[MHz]   | Limit[MHz] | Verdict |
|----------|---------|-----------|-----------|-----------|-----------|------------|---------|
| BLE_1M   | Ant1    | 2402      | 1.0329    | 2401.4653 | 2402.4982 | ---        | ---     |
|          |         | 2440      | 1.0387    | 2439.4563 | 2440.4950 | ---        | ---     |
|          |         | 2480      | 1.0192    | 2479.4598 | 2480.4790 | ---        | ---     |
| BLE_2M   | Ant1    | 2402      | 2.0651    | 2400.9424 | 2403.0075 | ---        | ---     |
|          |         | 2440      | 2.0295    | 2438.9516 | 2440.9811 | ---        | ---     |
|          |         | 2480      | 2.0479    | 2478.9547 | 2481.0026 | ---        | ---     |

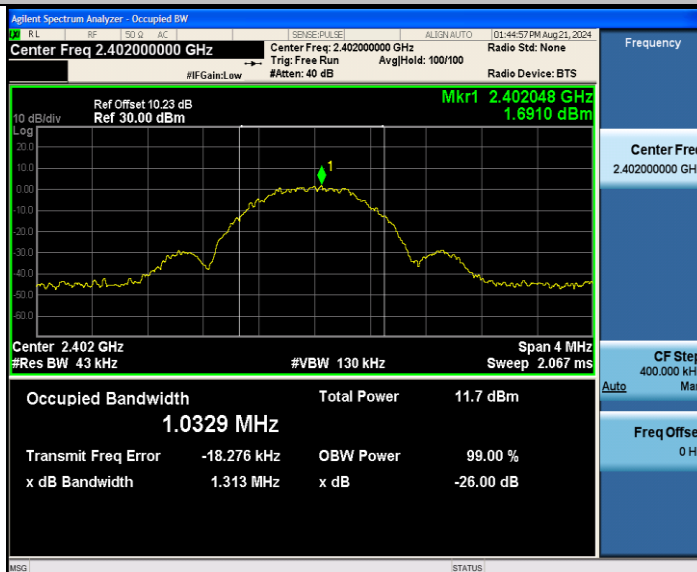
## DTS Bandwidth:

| TestMode | Antenna | Freq(MHz) | DTS BW [MHz] | FL[MHz]  | FH[MHz]  | Limit[MHz] | Verdict |
|----------|---------|-----------|--------------|----------|----------|------------|---------|
| BLE_1M   | Ant1    | 2402      | 0.712        | 2401.620 | 2402.332 | 0.5        | PASS    |
|          |         | 2440      | 0.696        | 2439.636 | 2440.332 | 0.5        | PASS    |
|          |         | 2480      | 0.668        | 2479.652 | 2480.320 | 0.5        | PASS    |
| BLE_2M   | Ant1    | 2402      | 1.128        | 2401.408 | 2402.536 | 0.5        | PASS    |
|          |         | 2440      | 1.392        | 2439.300 | 2440.692 | 0.5        | PASS    |
|          |         | 2480      | 1.156        | 2479.384 | 2480.540 | 0.5        | PASS    |

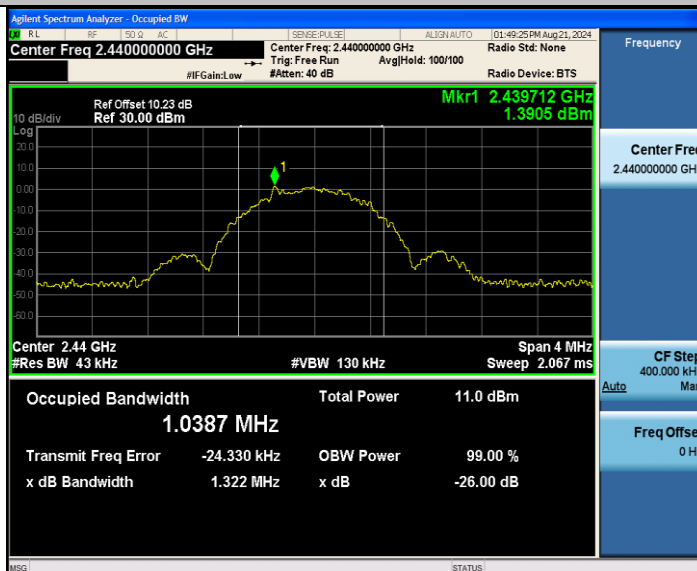


99% Bandwidth:

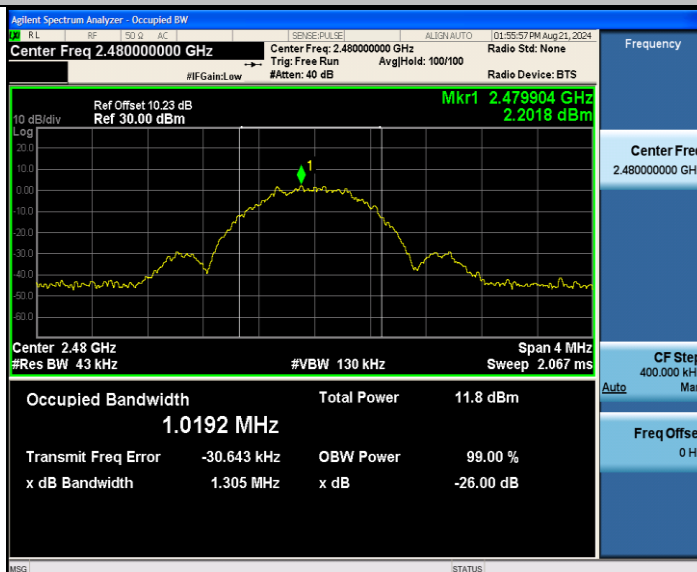
## BLE\_1M\_Ant1\_2402



## BLE\_1M\_Ant1\_2440



## BLE\_1M\_Ant1\_2480



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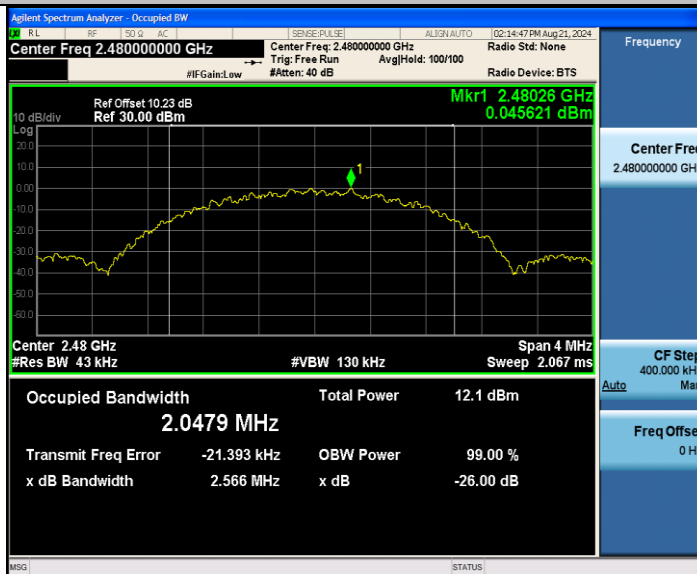
## BLE\_2M\_Ant1\_2402



## BLE\_2M\_Ant1\_2440



## BLE\_2M\_Ant1\_2480



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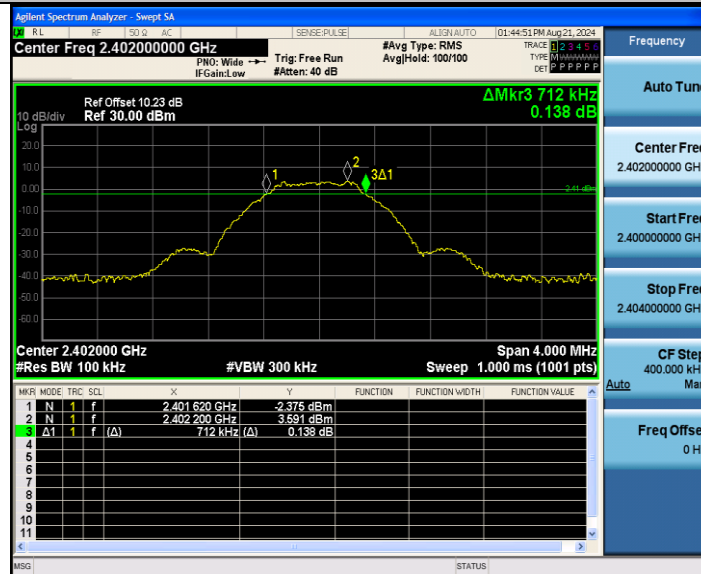
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DTS Bandwidth:

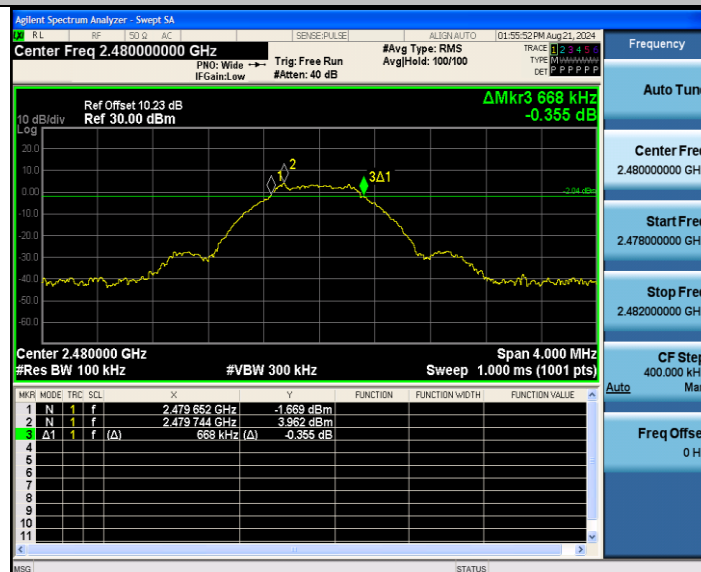
## BLE\_1M\_Ant1\_2402



## BLE\_1M\_Ant1\_2440



## BLE\_1M\_Ant1\_2480



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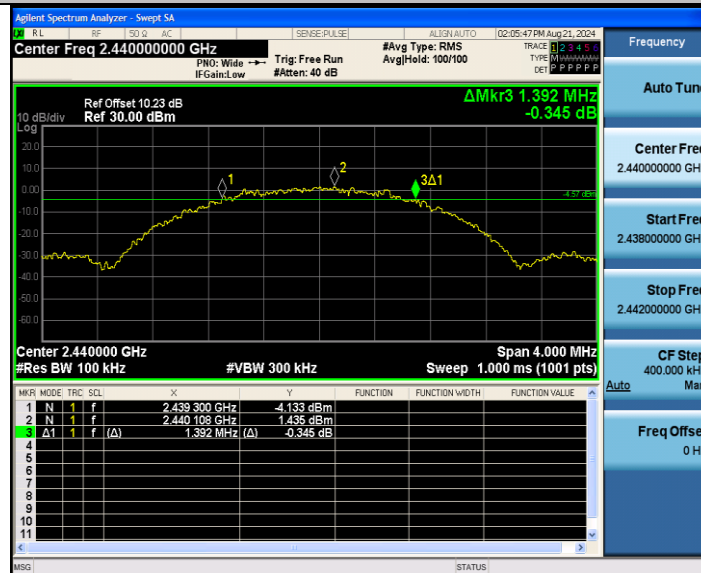




## BLE\_2M\_Ant1\_2402



## BLE\_2M\_Ant1\_2440



## BLE\_2M\_Ant1\_2480



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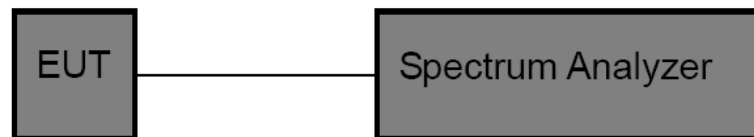
### 3.6. Peak Output Power

#### Limit

#### FCC CFR Title 47 Part 15 Subpart C Section 15.247 (b)(3)

| Section                         | Test Item                         | Limit           | Frequency Range (MHz) |
|---------------------------------|-----------------------------------|-----------------|-----------------------|
| FCC CFR 47<br>Part15.247 (b)(3) | Maximum Conducted<br>Output Power | 1 Watt or 30dBm | 2400~2483.5           |

#### Test Configuration



#### Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
2. Spectrum Setting:
  - (1) Set RBW  $\geq$  DTS Bandwidth.
  - (2) Set VBW  $\geq$  3\*RBW.
  - (3) Set Span  $\geq$  3\*RBW.
  - (4) Sweep time = Auto couple.
  - (5) Detector = Peak.
  - (6) Trace mode = Max hold.Allow trace to fully stabilize. Then use the peak marker function to determine the maximum amplitude level.

#### Test Mode

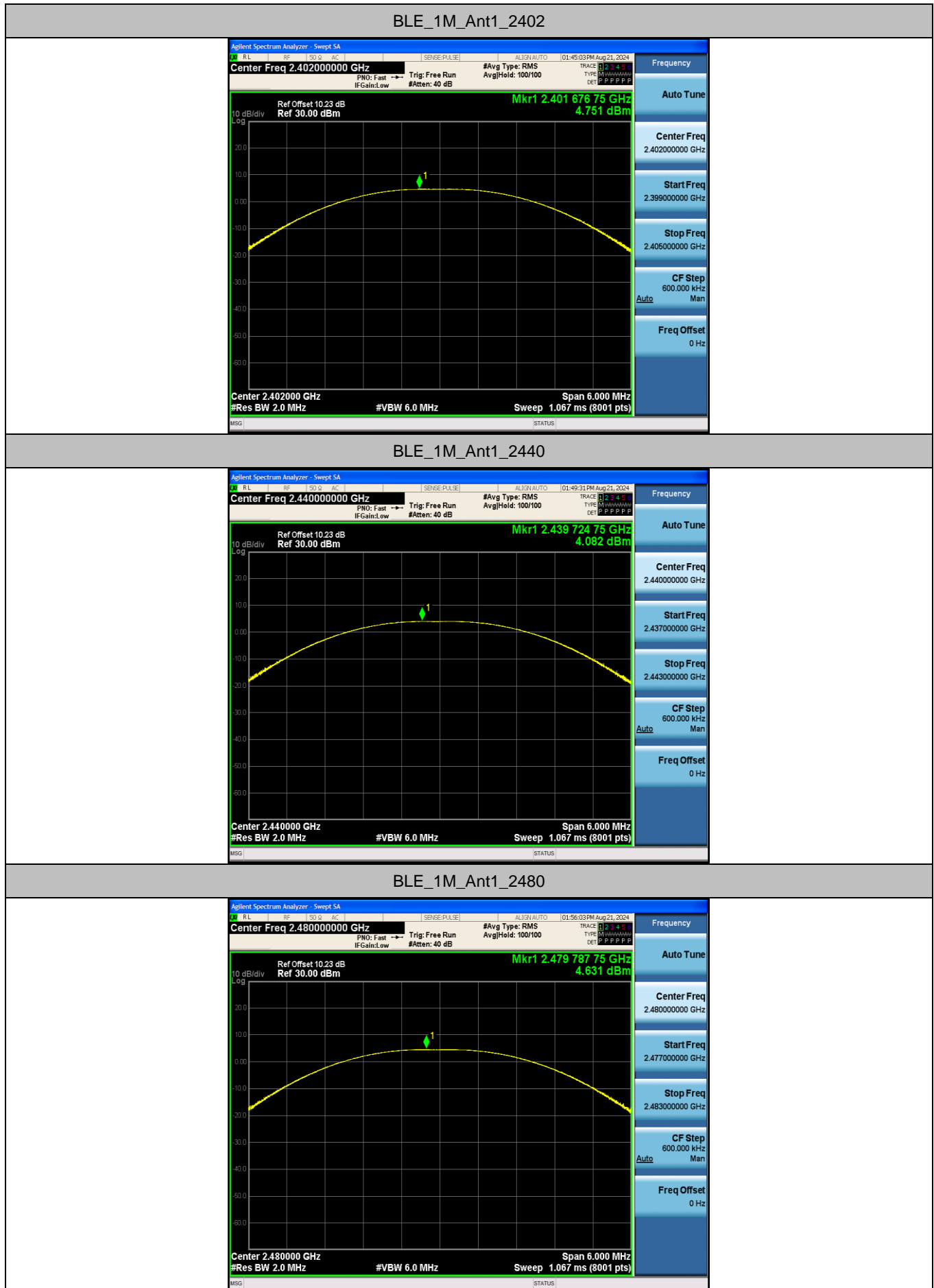
Please refer to the clause 2.4.

#### Test Result

| Test Mode | Frequency (MHz) | Conducted Output Power (dBm) | FCC Limit (dBm) | Verdict |
|-----------|-----------------|------------------------------|-----------------|---------|
| BLE_1M    | 2402            | 4.75                         | $\leq 30$       | Pass    |
|           | 2440            | 4.08                         | $\leq 30$       | Pass    |
|           | 2480            | 4.63                         | $\leq 30$       | Pass    |
| BLE_2M    | 2402            | 4.79                         | $\leq 30$       | Pass    |
|           | 2440            | 4.12                         | $\leq 30$       | Pass    |
|           | 2480            | 4.55                         | $\leq 30$       | Pass    |



Test plot as follows:



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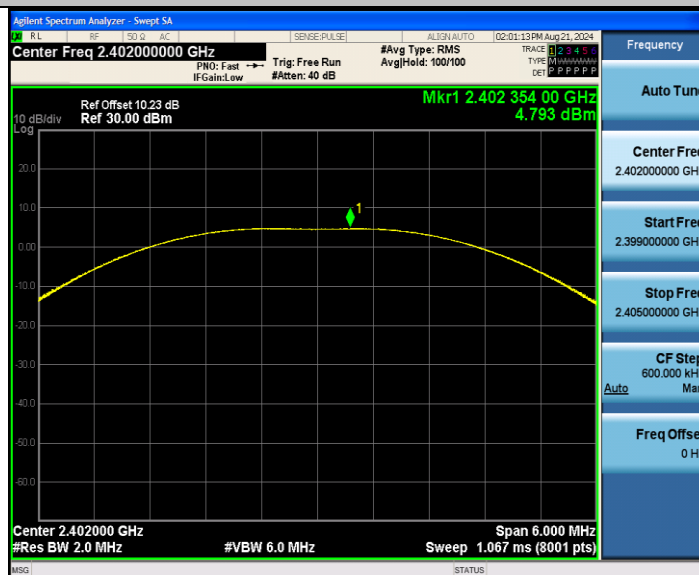
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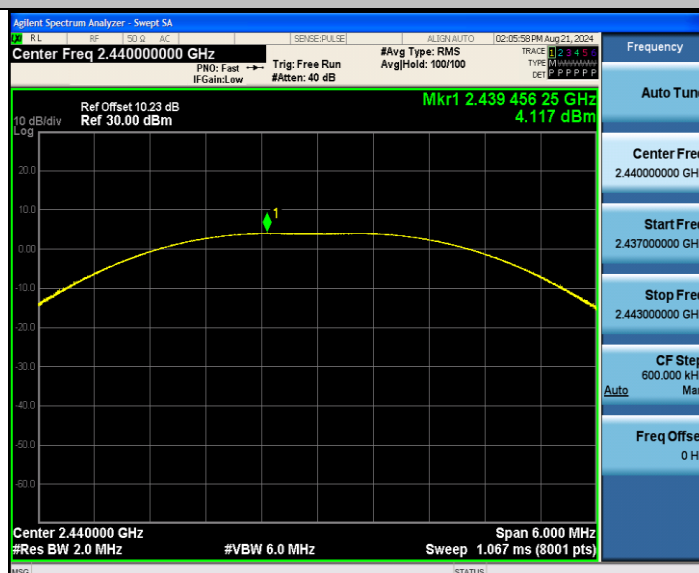
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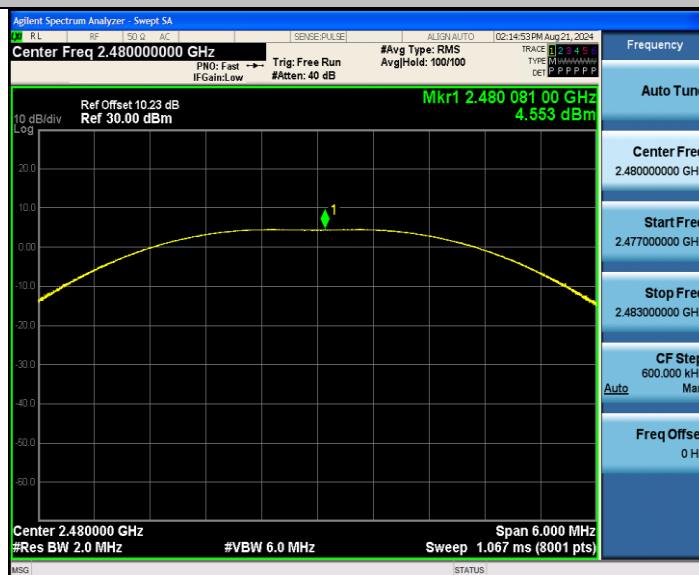
## BLE\_2M\_Ant1\_2402



## BLE\_2M\_Ant1\_2440



## BLE\_2M\_Ant1\_2480



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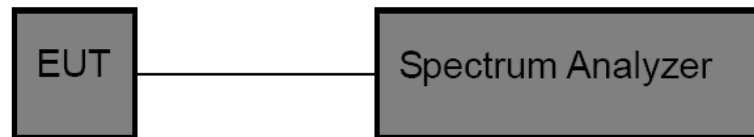
### 3.7. Power Spectral Density

#### Limit

#### FCC CFR Title 47 Part 15 Subpart C Section 15.247 (e)

| Test Item              | Limit                | Frequency Range (MHz) |
|------------------------|----------------------|-----------------------|
| Power Spectral Density | 8 dBm (in any 3 kHz) | 2400~2483.5           |

#### Test Configuration



#### Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
2. The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement according to section 10.2 of KDB 558074 D01 DTS Meas Guidance v05r02.
3. Spectrum Setting:  
Set analyzer center frequency to DTS channel center frequency.  
Set the span to 1.5 times the DTS bandwidth.  
Set the RBW to: 3 kHz.  
Set the VBW to: 10 kHz.  
Detector: peak.  
Sweep time: auto.  
Allow trace to fully stabilize. Then use the peak marker function to determine the maximum amplitude level.

#### Test Mode

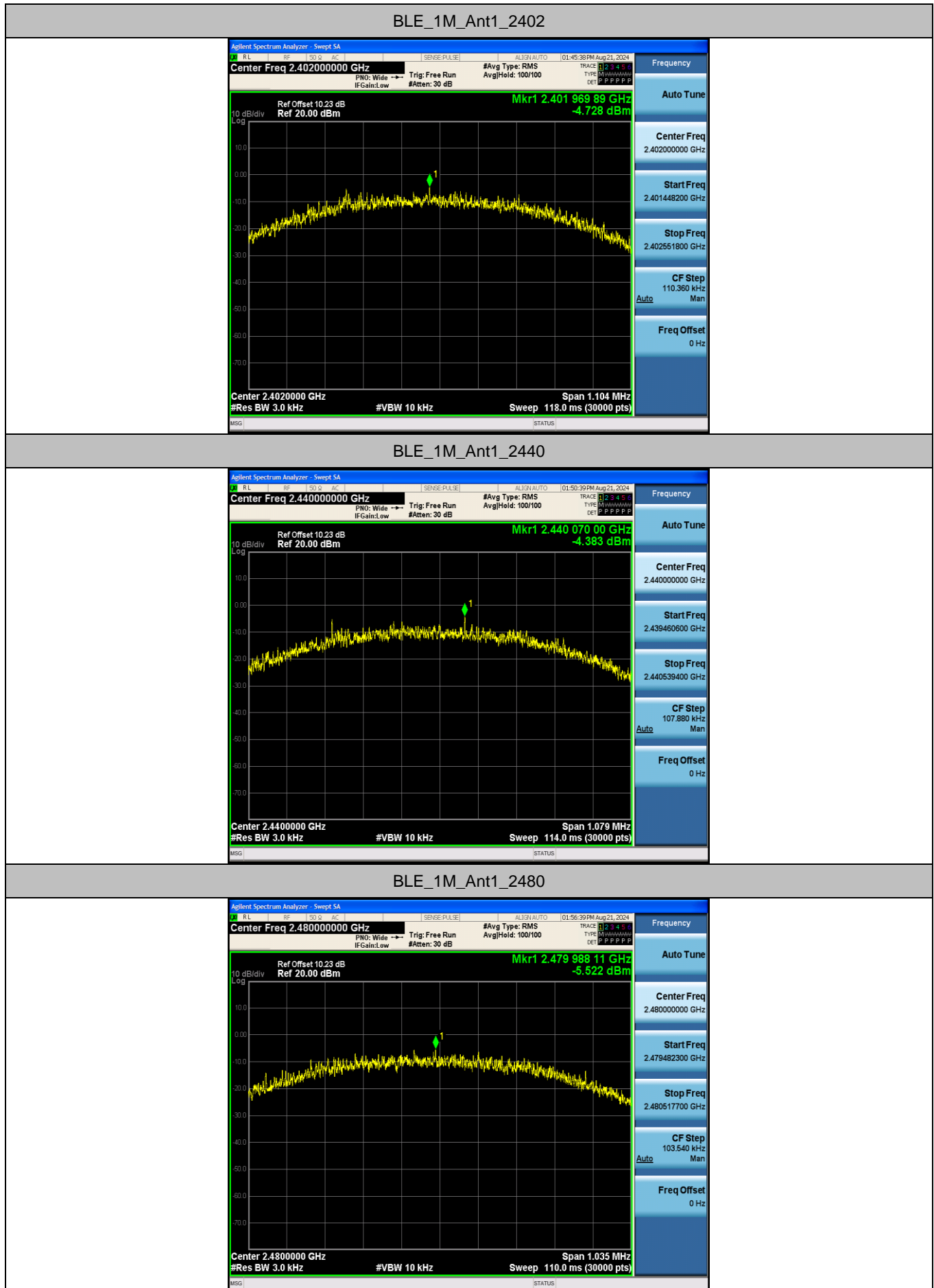
Please refer to the clause 2.4.

#### Test Result

| TestMode | Antenna | Freq(MHz) | Result[dBm/3kHz] | Limit[dBm/3kHz] | Verdict |
|----------|---------|-----------|------------------|-----------------|---------|
| BLE_1M   | Ant1    | 2402      | -4.73            | ≤8.00           | PASS    |
|          |         | 2440      | -4.38            | ≤8.00           | PASS    |
|          |         | 2480      | -5.52            | ≤8.00           | PASS    |
| BLE_2M   | Ant1    | 2402      | -8.50            | ≤8.00           | PASS    |
|          |         | 2440      | -8.33            | ≤8.00           | PASS    |
|          |         | 2480      | -7.56            | ≤8.00           | PASS    |



Test plot as follows:



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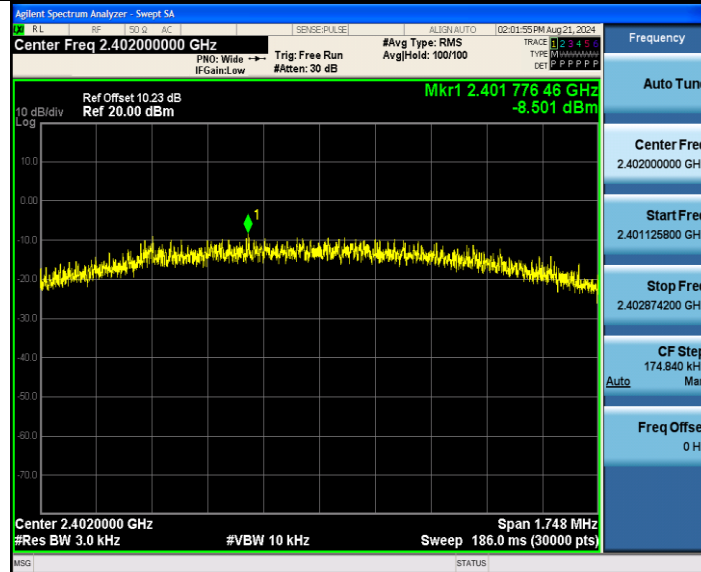
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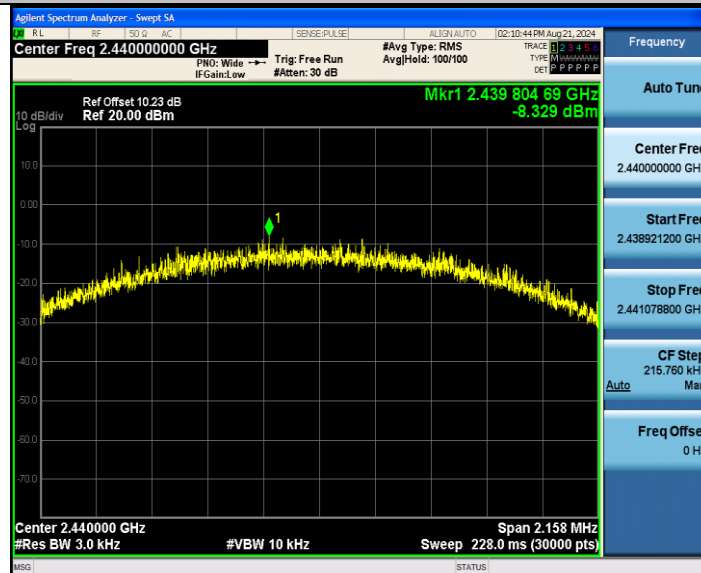
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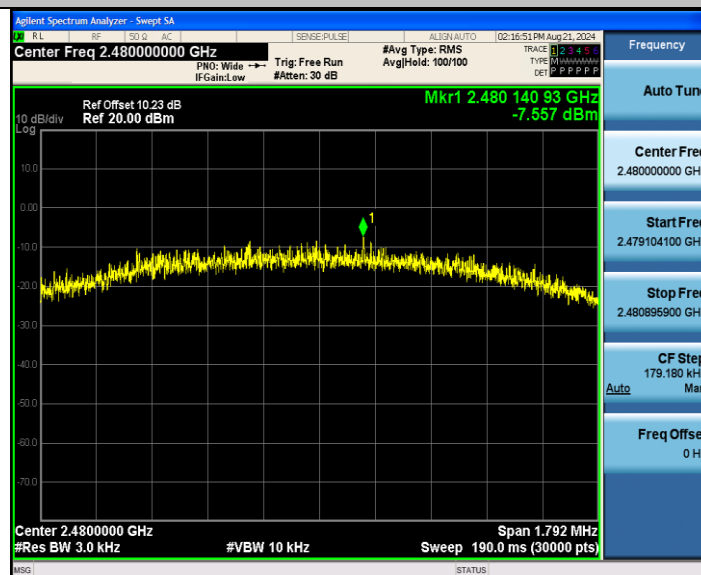
## BLE\_2M\_Ant1\_2402



## BLE\_2M\_Ant1\_2440



## BLE\_2M\_Ant1\_2480



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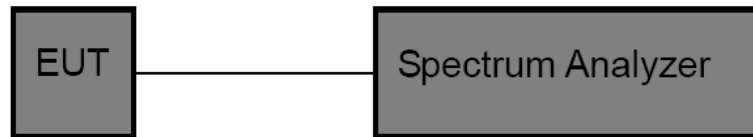


### 3.8. Duty Cycle

#### Limit

None, for report purposes only.

#### Test Configuration



#### Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
2. The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement according to section 10.2 of KDB 558074 D01 DTS Meas Guidance v05r02.
3. Spectrum Setting:  
Set analyzer center frequency to test channel center frequency.  
Set the span to 0Hz.  
Set the RBW to 10MHz.  
Set the VBW to 10MHz.  
Detector: Peak.  
Sweep time: Auto.  
Allow trace to fully stabilize. Then use the peak marker function to determine the maximum amplitude level.

#### Test Mode

Please refer to the clause 2.4.

#### Test Result

| Test Mode | Frequency (MHz) | Transmission Duration (ms) | Transmission Period (ms) | Duty Cycle (%) | Final Setting for VBW (kHz) |
|-----------|-----------------|----------------------------|--------------------------|----------------|-----------------------------|
| BLE_1M    | 2402            | /                          | /                        | 100%           | 1                           |
|           | 2440            | /                          | /                        | 100%           | 1                           |
|           | 2480            | /                          | /                        | 100%           | 1                           |
| BLE_2M    | 2402            | /                          | /                        | 100%           | 1                           |
|           | 2440            | /                          | /                        | 100%           | 1                           |
|           | 2480            | /                          | /                        | 100%           | 1                           |





Test plot as follows:



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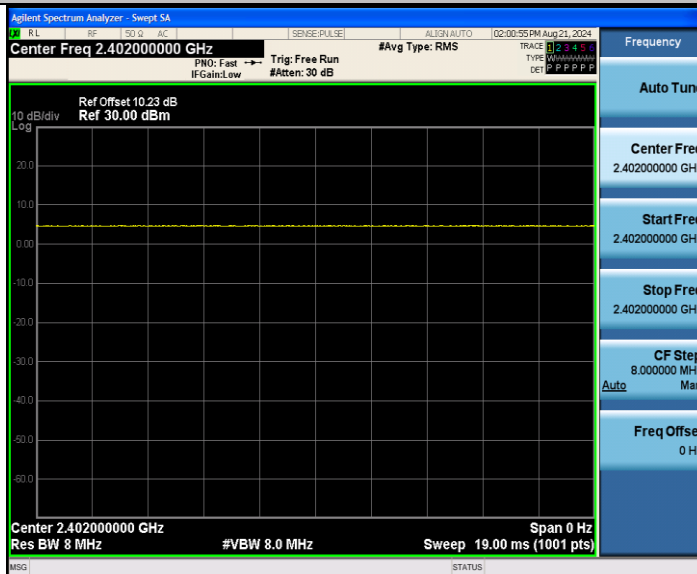
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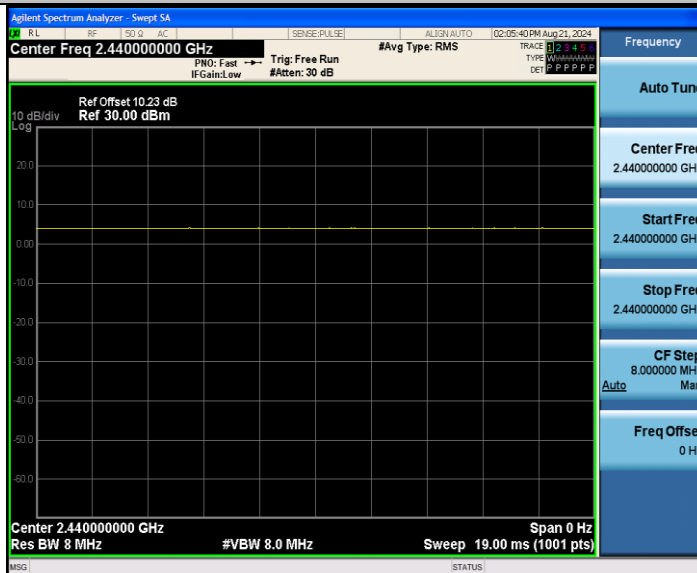
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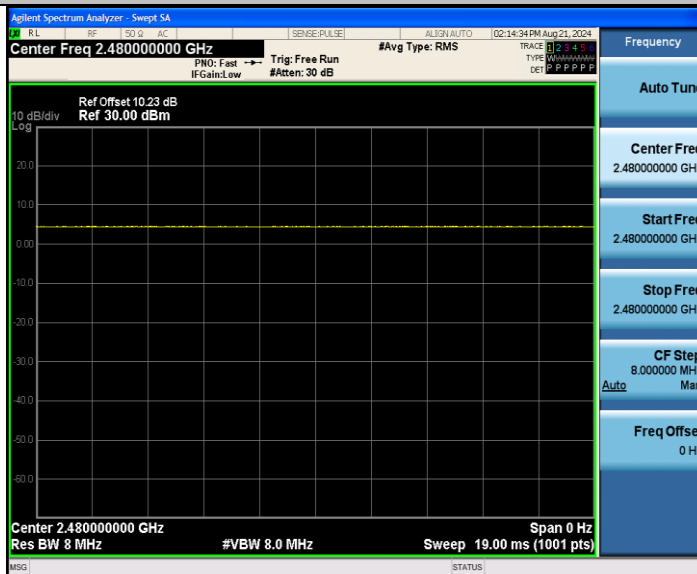
## BLE\_2M\_Ant1\_2402



## BLE\_2M\_Ant1\_2440



## BLE\_2M\_Ant1\_2480



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### 3.9. Antenna Requirement

#### Requirement

##### **FCC CFR Title 47 Part 15 Subpart C Section 15.203**

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

##### **FCC CFR Title 47 Part 15 Subpart C Section 15.247(c) (1)(i)**

(i) Systems operating in the 2400~2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

#### Test Result

The directional gain of the antenna is less than 6dBi, please refer to the EUT internal photographs antenna photo.

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