

# TEST REPORT

**Applicant:** Bang & Olufsen a/s  
**Address:** Bang og Olufsen Alle 1, 7600 Struer, Denmark  
**Equipment Type:** Wireless Speaker  
**Model Name:** Beosound A5  
**Brand Name:** N/A  
**FCC ID:** TTUBSA5  
**Test Standard:** 47 CFR Part 15, Subpart C  
(refer section 3.1)  
**Sample Arrival Date:** Dec. 02, 2022  
**Test Date:** Dec. 12, 2022 - Mar. 28, 2023  
**Date of Issue:** Mar. 29, 2023

## ISSUED BY:

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### Revision History

| Version        | Issue Date           | Revisions                                                                  |
|----------------|----------------------|----------------------------------------------------------------------------|
| <u>Rev. 01</u> | <u>Mar. 29, 2023</u> | <u>Initial Issue</u>                                                       |
| <u>Rev. 02</u> | <u>Mar. 29, 2023</u> | <u>1. Corrected the Operating Frequency in Section 2.5.</u>                |
|                |                      | <u>2. Corrected the description in Section 5.6.1.</u>                      |
|                |                      | <u>3. Updated the Section A.5 Peak Emissions within a 50MHz Bandwidth.</u> |

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## 1 GENERAL INFORMATION

### 1.1 Test Laboratory

|              |                                                                                                                              |
|--------------|------------------------------------------------------------------------------------------------------------------------------|
| Name         | Shenzhen BALUN Technology Co., Ltd.                                                                                          |
| Address      | Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China |
| Phone Number | +86 755 6685 0100                                                                                                            |

### 1.2 Test Location

|                           |                                                                                                                                                                                                                         |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name                      | Shenzhen BALUN Technology Co., Ltd.                                                                                                                                                                                     |
| Location                  | <input checked="" type="checkbox"/> Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China                                                        |
|                           | <input type="checkbox"/> 1/F, Building B, Ganghongji High-tech Intelligent Industrial Park, No. 1008, Songbai Road, Yangguang Community, Xili Sub-district, Nanshan District, Shenzhen, Guangdong Province, P. R. China |
| Accreditation Certificate | The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1196.                                                                                        |

## 2 PRODUCT INFORMATION

### 2.1 Applicant Information

|           |                                              |
|-----------|----------------------------------------------|
| Applicant | Bang & Olufsen a/s                           |
| Address   | Bang og Olufsen Alle 1, 7600 Struer, Denmark |

### 2.2 Manufacturer Information

|              |                                              |
|--------------|----------------------------------------------|
| Manufacturer | Bang & Olufsen a/s                           |
| Address      | Bang og Olufsen Alle 1, 7600 Struer, Denmark |

### 2.3 Factory Information

|           |                                                                                                   |
|-----------|---------------------------------------------------------------------------------------------------|
| Factory 1 | DONGGUAN TYMPHANY ACOUSTIC TECHNOLOGY CO. LTD                                                     |
| Address 1 | Unit 9, No.135, Shijie Keji East Road, Shijie Town, Dongguan City, Guangdong Province, P.R. China |
| Factory 2 | Tymphany Acoustic Technology (Thailand)Co., Ltd.(Head office)                                     |
| Address 2 | 888/9 M.7 Klongkiew Sub-District Banbueng District Chonburi 202220, Thailand.                     |

### 2.4 General Description for Equipment under Test (EUT)

|                                           |                  |
|-------------------------------------------|------------------|
| EUT Name                                  | Wireless Speaker |
| Model Name Under Test                     | Beosound A5      |
| Series Model Name                         | N/A              |
| Description of Model name differentiation | N/A              |
| Serial Number                             | EST-E202212006-1 |
| Hardware Version                          | N/A              |
| Software Version                          | N/A              |
| Dimensions (Approx.)                      | N/A              |
| Weight (Approx.)                          | N/A              |

## 2.5 Technical Information

|                                   |     |
|-----------------------------------|-----|
| Network and Wireless connectivity | UWB |
|-----------------------------------|-----|

The requirement for the following technical information of the EUT was tested in this report:

|                     |                                                                                                                          |
|---------------------|--------------------------------------------------------------------------------------------------------------------------|
| Modulation Type     | BPM-BPSK                                                                                                                 |
| Product Type        | <input checked="" type="checkbox"/> Mobile<br><input type="checkbox"/> Portable<br><input type="checkbox"/> Fix Location |
| Operating Frequency | 6489.6 MHz                                                                                                               |
| Antenna Type        | Integral Antenna                                                                                                         |
| Antenna Gain        | 2.83 dBi                                                                                                                 |

All channel was listed on the following table:

| Channel number | Freq. (MHz) |
|----------------|-------------|
| 5              | 6489.6      |

Note: The above EUT information in section 2.4 and 2.5 was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

### 3 SUMMARY OF TEST RESULTS

#### 3.1 Test Standards

| No. | Identity                  | Document Title                                                     |
|-----|---------------------------|--------------------------------------------------------------------|
| 1   | 47 CFR Part 15, Subpart C | Miscellaneous Wireless Communications Services                     |
| 2   | ANSI C63.10-2013          | American National Standard for Testing Unlicensed Wireless Devices |

#### 3.2 Test Verdict

| No. | Description                              | FCC Part No.     | Test Result | Verdict | Remark            |
|-----|------------------------------------------|------------------|-------------|---------|-------------------|
| 1   | Antenna Requirement                      | 15.203           | --          | Pass    | Note <sup>1</sup> |
| 2   | 10 dB Bandwidth                          | 15.250(a)&(b)    | ANNEX A.1   | Pass    | --                |
| 3   | Frequency Stability                      | 15.250(a)        | ANNEX A.2   | Pass    | --                |
| 4   | AC Conducted Emission                    | 15.207           | ANNEX A.3   | Pass    | --                |
| 5   | Radiated Emissions                       | 15.250(d)&15.209 | ANNEX A.4   | Pass    | --                |
| 6   | Peak Emissions within a 50 MHz Bandwidth | 15.250(d)(3)     | ANNEX A.5   | Pass    | --                |

Note: The EUT has a permanently and irreplaceable attached antenna, which complies with the requirement FCC 15.203.

## 4 GENERAL TEST CONFIGURATIONS

### 4.1 Test Environments

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

|                            |                         |                    |
|----------------------------|-------------------------|--------------------|
| Relative Humidity          | 42% to 60%              |                    |
| Atmospheric Pressure       | 100 kPa to 102 kPa      |                    |
| Temperature                | NT (Normal Temperature) | +20.1°C to +20.9°C |
|                            | LT (Low Temperature)    | 0°C                |
|                            | HT (High Temperature)   | +45°C              |
| Working Voltage of the EUT | NV (Normal Voltage)     | 7.4 V              |
|                            | LV (Low Voltage)        | 6.6 V              |
|                            | HV (High Voltage)       | 8.1 V              |

### 4.2 Test Equipment List

| Description          | Manufacturer            | Model             | Serial No.  | Cal. Date  | Cal. Due   |
|----------------------|-------------------------|-------------------|-------------|------------|------------|
| Spectrum Analyzer    | ROHDE&SCHWARZ           | FSV-40            | 101544      | 2022.12.28 | 2023.12.27 |
| Spectrum Analyzer    | KEYSIGHT                | N9020A            | MY50330200  | 2022.05.19 | 2023.05.18 |
| Spectrum Analyzer    | KEYSIGHT                | N9020A            | MY52510065  | 2022.09.06 | 2023.09.05 |
| Signaling Unit       | ROHDE&SCHWARZ           | CMW500            | 171150      | 2022.06.29 | 2023.06.28 |
| Test Antenna-Horn    | SCHWARZBECK             | BBHA 9120D        | 01631       | 2022.02.03 | 2025.02.02 |
| Test Antenna-Horn    | A-INFO                  | LB-180400KF       | J211060273  | 2021.07.02 | 2024.07.01 |
| Anechoic Chamber     | RAINFORD                | 9m*6m*6m          | N/A         | 2021.09.04 | 2024.09.03 |
| EMI Receiver         | ROHDE&SCHWARZ           | ESRP              | 101036      | 2022.09.09 | 2023.09.08 |
| Test Antenna-Loop    | SCHWARZBECK             | FMZB 1519         | 1519-037    | 2021.04.16 | 2024.04.15 |
| Anechoic Chamber     | EMC Electronic Co., Ltd | 20.10*11.60*7.35m | N/A         | 2021.08.15 | 2024.08.14 |
| Amplifier (30-1GHz)  | COM-MV                  | ZT30-1000M        | B2017119081 | 2020.09.09 | 2023.09.08 |
| Amplifier (1-12GHz)  | COM-MV                  | LSCX_LNA 1-12G-01 | 180602      | 2020.09.08 | 2023.09.07 |
| Amplifier (7-18GHz)  | COM-MV                  | XKu_LNA7-18G-01   | 180601      | 2020.09.08 | 2023.09.07 |
| Amplifier (18-40GHz) | COM-MV                  | KA_LNA18-40G-01   | 18050001    | 2020.09.08 | 2023.09.07 |
| EMI Receiver         | KEYSIGHT                | N9038A            | MY55330120  | 2022.09.09 | 2023.09.08 |
| Test Antenna-Bi-Log  | SCHWARZBECK             | VULB 9168         | 9168-00867  | 2022.04.12 | 2025.04.11 |
| Anechoic Chamber     | YiHeng                  | 9m*6m*6m          | N/A         | 2021.08.19 | 2024.08.18 |
| EMI Receiver         | KEYSIGHT                | N9010B            | MY57110309  | 2022.09.09 | 2023.09.08 |

| Description         | Manufacturer               | Model          | Serial No.             | Cal. Date  | Cal. Due   |
|---------------------|----------------------------|----------------|------------------------|------------|------------|
| LISN                | SCHWARZBECK                | NSLK 8127      | 8127-687               | 2022.06.01 | 2023.05.31 |
| Shielded Enclosure  | YiHeng Electronic Co., Ltd | 3.5m*3.1m*2.8m | N/A                    | 2022.02.19 | 2025.02.18 |
| multimeter          | CEM                        | DT-9915        | 12104971               | 2022.12.28 | 2023.12.27 |
| DC power supply     | ITECH                      | IT6863A        | 80001402075<br>7810006 | 2022.09.25 | 2023.09.24 |
| Temperature Chamber | AHK                        | NTH64-40A      | 1310                   | 2022.12.28 | 2023.12.27 |

### 4.3 Measurement Uncertainty

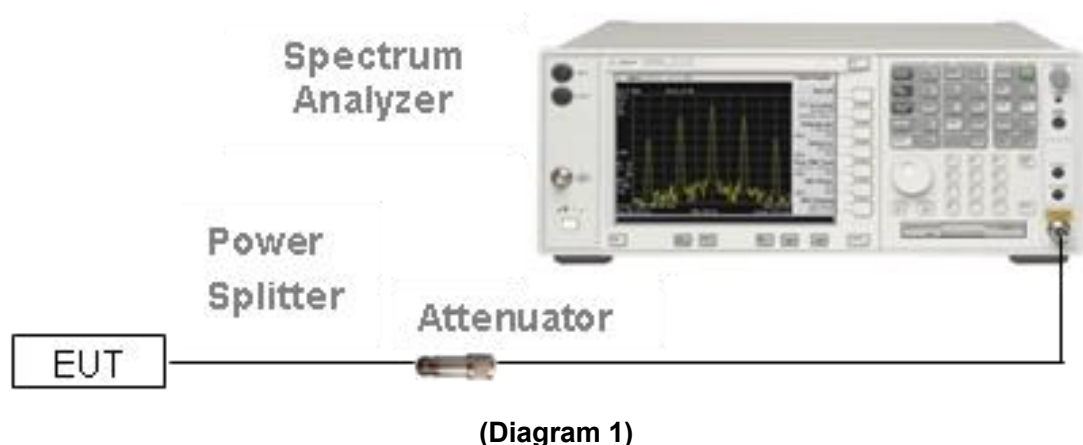
The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2.

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

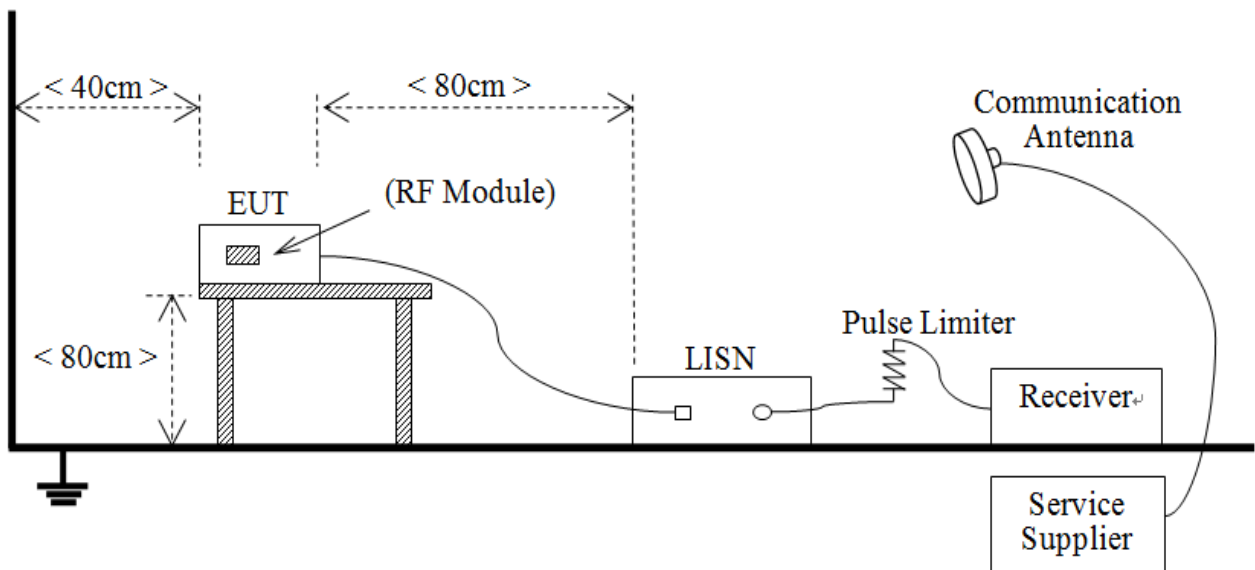
| Parameters                        | Uncertainty |
|-----------------------------------|-------------|
| Occupied Channel Bandwidth        | 2.8%        |
| RF output power, conducted        | 1.28 dB     |
| Power Spectral Density, conducted | 1.30 dB     |
| Unwanted Emissions, conducted     | 1.84 dB     |
| All emissions, radiated           | 5.36 dB     |
| Temperature                       | 0.82°C      |
| Humidity                          | 4.1%        |

### 4.4 Description of Test Setup

#### 4.4.1 For Antenna Port Test

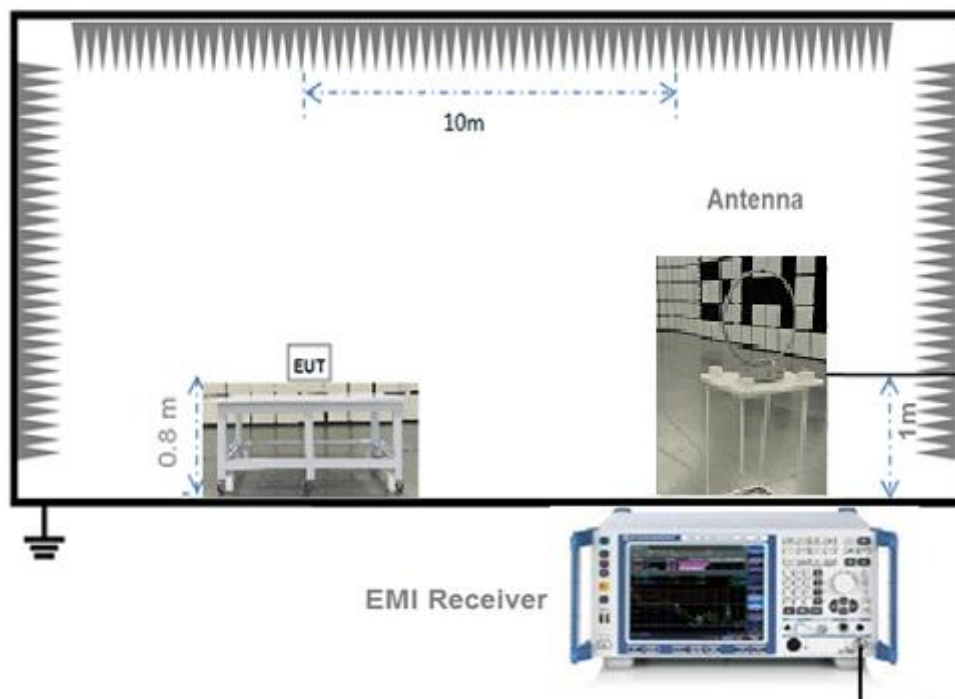


#### 4.4.2 For AC Power Supply Port Test



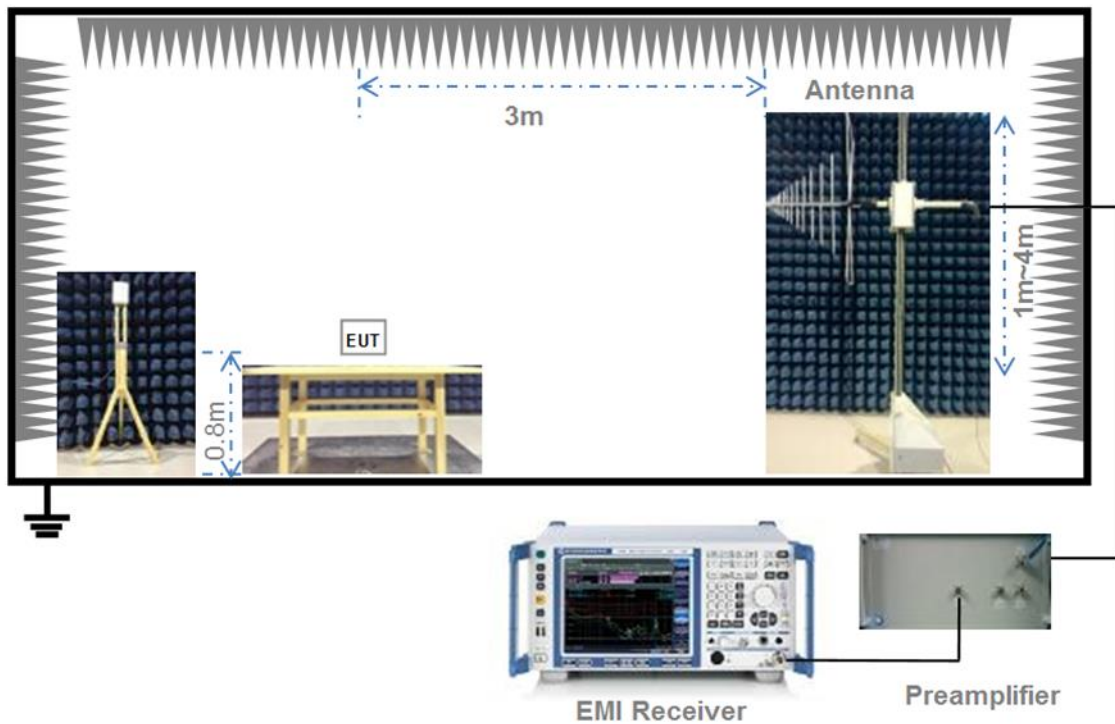
(Diagram 2)

#### 4.4.3 For Radiated Test (Below 30 MHz)

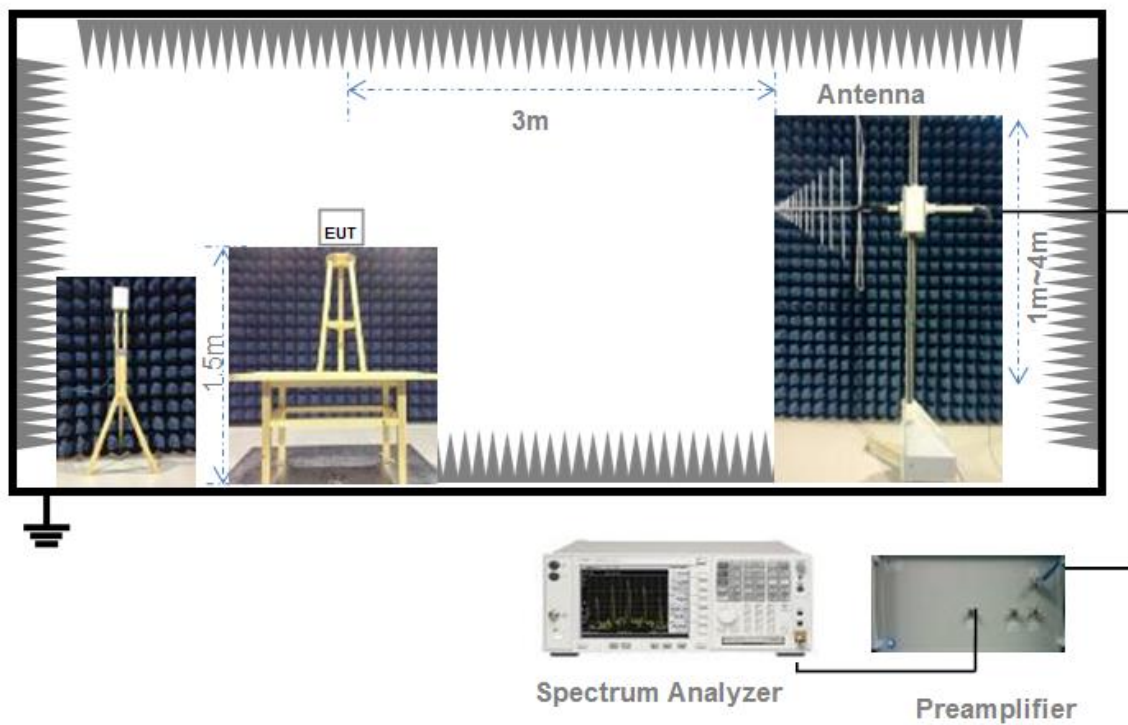


(Diagram 3)

## 4.4.4 For Radiated Test (30 MHz-1 GHz)

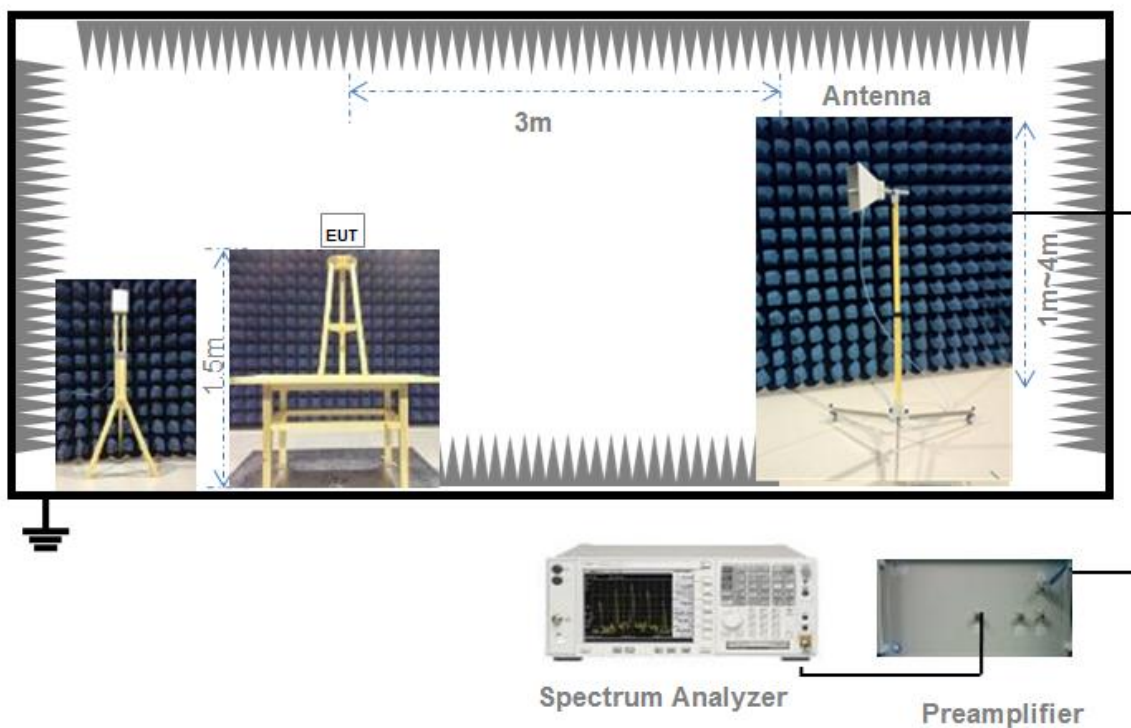


(Diagram 4)



(Diagram 5)

## 4.4.5 For Radiated Test (Above 1 GHz)



(Diagram 6)

## 5 TEST ITEMS

### 5.1 Antenna Requirements

#### 5.1.1 Relevant Standards

FCC §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 an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. 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. This requirement does not apply to carrier current devices or to devices operated under the provisions of § 15.211, § 15.213, § 15.217, § 15.219, or § 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

#### 5.1.2 Antenna Anti-Replacement Construction

The Antenna Anti-Replacement as following method:

| Protected Method                        | Description                            |
|-----------------------------------------|----------------------------------------|
| The antenna is embedded in the product. | An embedded-in antenna design is used. |

| Reference Documents | Item                                     |
|---------------------|------------------------------------------|
| Photo               | Please refer to the EUT Photo documents. |

## 5.2 10 dB Bandwidth

### 5.2.1 Limit

FCC §15.250(a);

The -10 dB bandwidth of a device operating under the provisions of this section must be contained within the 5925-7250 MHz band under all conditions of operation including the effects from stepped frequency, frequency hopping or other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage.

FCC §15.250(b);

The -10 dB bandwidth of the fundamental emission shall be at least 50 MHz. For transmitters that employ frequency hopping, stepped frequency or similar modulation types, measurement of the -10 dB minimum bandwidth specified in this paragraph shall be made with the frequency hop or step function disabled and with the transmitter operating continuously at a fundamental frequency following the provisions of §15.31(m).

### 5.2.2 Test Setups

See section 4.4.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

### 5.2.3 Test Procedure

Use the following spectrum analyzer settings:

RBW = 1 MHz

VBW  $\geq$  3 MHz

Sweep = auto

Detector function = peak

Trace = max hold

### 5.2.4 Test Result

Please refer to ANNEX A.1.

## 5.3 Frequency Stability

### 5.3.1 Limit

FCC §15.250(a);

The -10 dB bandwidth of a device operating under the provisions of this section must be contained within the 5925-7250 MHz band under all conditions of operation including the effects from stepped frequency, frequency hopping or other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage.

### 5.3.2 Test Setups

See section 4.4.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

### 5.3.3 Test Procedure

Use the following spectrum analyzer settings:

RBW = 1 MHz

VBW  $\geq$  3 MHz

Sweep = auto

Detector function = peak

Trace = max hold

### 5.3.4 Test Result

Please refer to ANNEX A.2.

## 5.4 AC Conducted Emission

### 5.4.1 Limit

FCC §15.207;

For an intentional radiator that 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 within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 $\mu$ H/50 $\Omega$  line impedance stabilization network (LISN).

| Frequency range (MHz) | Conducted Limit (dB $\mu$ V) |          |
|-----------------------|------------------------------|----------|
|                       | Quai-peak                    | Average  |
| 0.15 - 0.50           | 66 to 56                     | 56 to 46 |
| 0.50 - 5              | 56                           | 46       |
| 0.50 - 30             | 60                           | 50       |

### 5.4.2 Test Setup

See section 4.4.2 for test setup description for the AC power supply port. The photo of test setup please refer to ANNEX B.

### 5.4.3 Test Procedure

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Refer to recorded points and plots below.

Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz) for which the device is capable of operation. A device rated for 50/60 Hz operation need not be tested at both frequencies provided the radiated and line conducted emissions are the same at both frequencies.

### 5.4.4 Test Result

Please refer to ANNEX A.3.

## 5.5 Radiated Emissions

### 5.5.1 Limit

#### FCC §15.250(d)(1)

The radiated emissions above 960 MHz from a device operating under the provisions of this section shall not exceed the following RMS average limits based on measurements using a 1 MHz resolution bandwidth:

| Frequency in MHz | EIPR in dBm |
|------------------|-------------|
| 960–1610         | -75.3       |
| 1610–1990        | -63.3       |
| 1990–3100        | -61.3       |
| 3100–5925        | -51.3       |
| 5925–7250        | -41.3       |
| 7250–10600       | -51.3       |
| Above 10600      | -61.3       |

#### FCC §15.250(d)(2)

In addition to the radiated emission limits specified in the table in paragraph (d)(1) of this section, transmitters operating under the provisions of this section shall not exceed the following RMS average limits when measured using a resolution bandwidth of no less than 1 kHz:

| Frequency in MHz | EIPR in dBm |
|------------------|-------------|
| 1164–1240        | -85.3       |
| 1559–1610        | -85.3       |

#### FCC §15.250(d)(4)&FCC §15.209;

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 (μV/m) | Measurement Distance(m) |
|----------------|-----------------------|-------------------------|
| 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                       |
| Above 960      | 500                   | 3                       |

### 5.5.2 Test Setups

See section 4.4.3 to 4.4.5 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

### 5.5.3 Test Procedure

The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. The height of the antenna was varied from 1 to 4 meters. For each suspected emissions, the antenna tower was scan (from 1m to 4m) and the the turntables

was turned (from 0° to 360°) to find the maximum reading.

All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Use the following spectrum analyzer settings:

9 kHz to 960 MHz:

Span = wide enough to fully capture the emission being measured

RBW = 100 kHz

VBW = 300 kHz

Sweep time = auto

Detector function = peak (Margin which is less than 3 dB will be repeated one by one using the quasi-peak)

Trace = max hold

960 MHz to 40 GHz:

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz

VBW = 3 MHz

Sweep time = 1s

Detector function = RMS

Trace = max hold

#### 5.5.4 Test Result

Please refer to ANNEX A.4.

## 5.6 Peak Emissions within a 50MHz Bandwidth

### 5.6.1 Limit

FCC §15.250(d)(3);

There is a limit on the peak level of the emissions contained within a 50 MHz bandwidth centered on the frequency at which the highest radiated emission occurs and this 50 MHz bandwidth must be contained within the 5925-7250 MHz band. The peak EIRP limit is  $20 \log (RBW/50)$  dBm where RBW is the resolution bandwidth in megahertz that is employed by the measurement instrument. RBW shall not be lower than 1 MHz or greater than 50 MHz. The video bandwidth of the measurement instrument shall not be less than RBW. For example, the peak power limit could be expressed in a 8 MHz bandwidth as follows in Equation :

$$EIRP_{8\text{ MHz}} = 20\log (8/50) = -15.9\text{ dBm}$$

### 5.6.2 Test Setups

See section 4.4.5 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

### 5.6.3 Test Procedure

The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. The height of the antenna was varied from 1 to 4 meters. For each suspected emissions, the antenna tower was scan (from 1m to 4m) and the the turntables was turned (from 0° to 360° ) to find the maximum reading.

All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Use the following spectrum analyzer settings:

Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured

RBW = 8 MHz

VBW = 20 MHz

Sweep = auto

Detector function = peak

Trace = max hold

### 5.6.4 Test Result

Please refer to ANNEX A.5.

## ANNEX A TEST RESULT

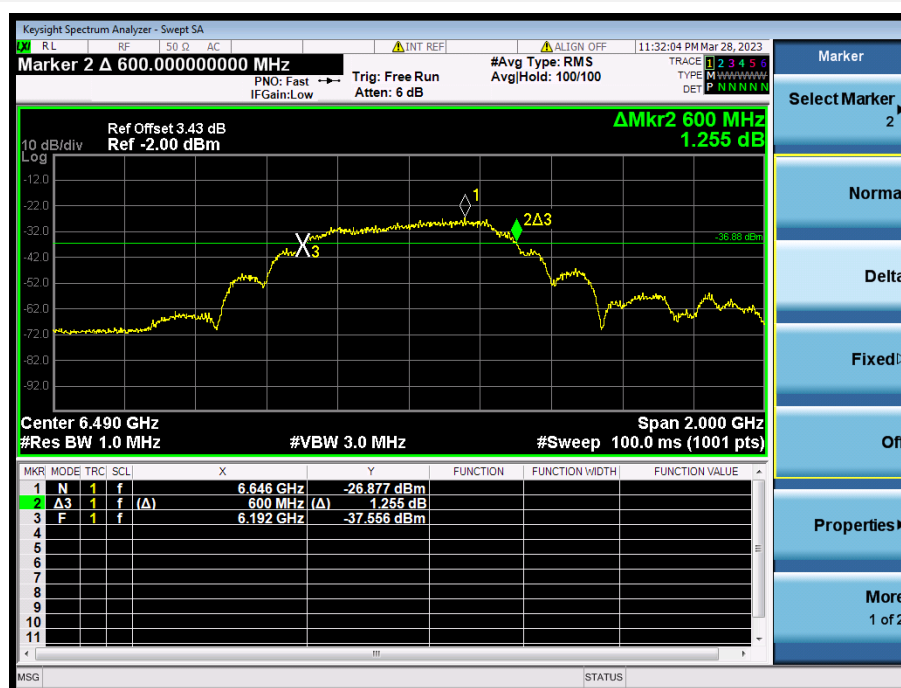
### A.1 10 dB Bandwidth

#### Test Data

| $F_L$<br>(MHz) | $F_H$<br>(MHz) | 10 dB<br>Bandwidth<br>(MHz) | Limit                                                                             | Verdict |
|----------------|----------------|-----------------------------|-----------------------------------------------------------------------------------|---------|
| 6192           | 6792           | 600                         | 10 dB Bandwidth > 50 MHz<br>10 dB bandwidth contained between<br>5925 to 7250 MHz | Pass    |

#### Test plots

##### 10 dB Bandwidth



## A.2 Frequency Stability

### Test Data

#### Temperature Variation

| Temperature | F <sub>L</sub><br>(MHz) | F <sub>H</sub><br>(MHz) | Limit                                                    | Verdict |
|-------------|-------------------------|-------------------------|----------------------------------------------------------|---------|
| LT          | 6186                    | 6794                    | 10 dB bandwidth<br>contained between<br>5925 to 7250 MHz | Pass    |
| NT          | 6192                    | 6792                    |                                                          | Pass    |
| HT          | 6194                    | 6790                    |                                                          | Pass    |

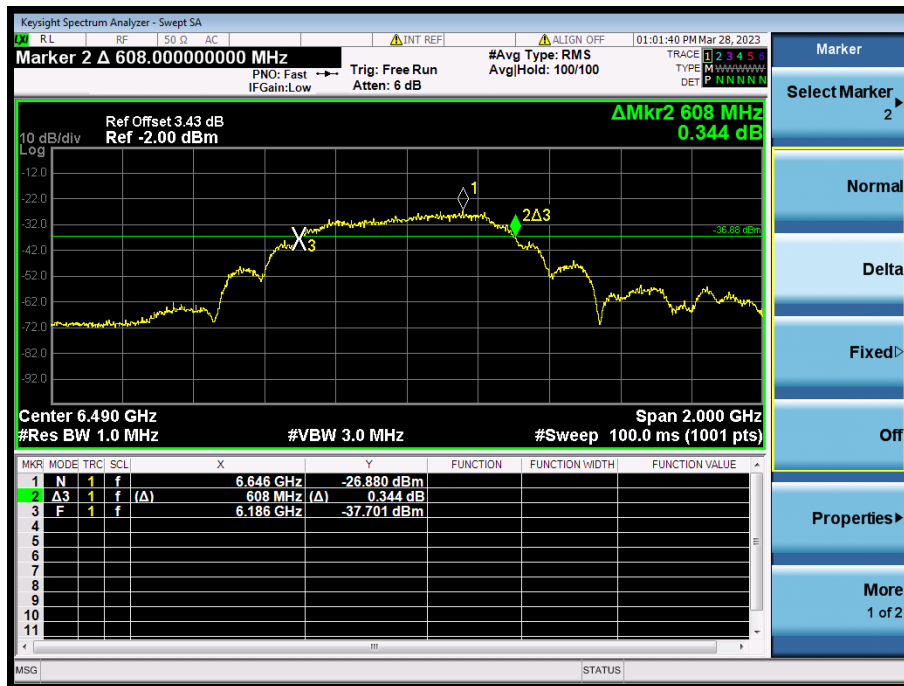
#### Voltage Variation

| Voltage | F <sub>L</sub><br>(MHz) | F <sub>H</sub><br>(MHz) | Limit                                                    | Verdict |
|---------|-------------------------|-------------------------|----------------------------------------------------------|---------|
| LV      | 6194                    | 6792                    | 10 dB bandwidth<br>contained between<br>5925 to 7250 MHz | Pass    |
| NV      | 6194                    | 6792                    |                                                          | Pass    |
| HV      | 6194                    | 6792                    |                                                          | Pass    |

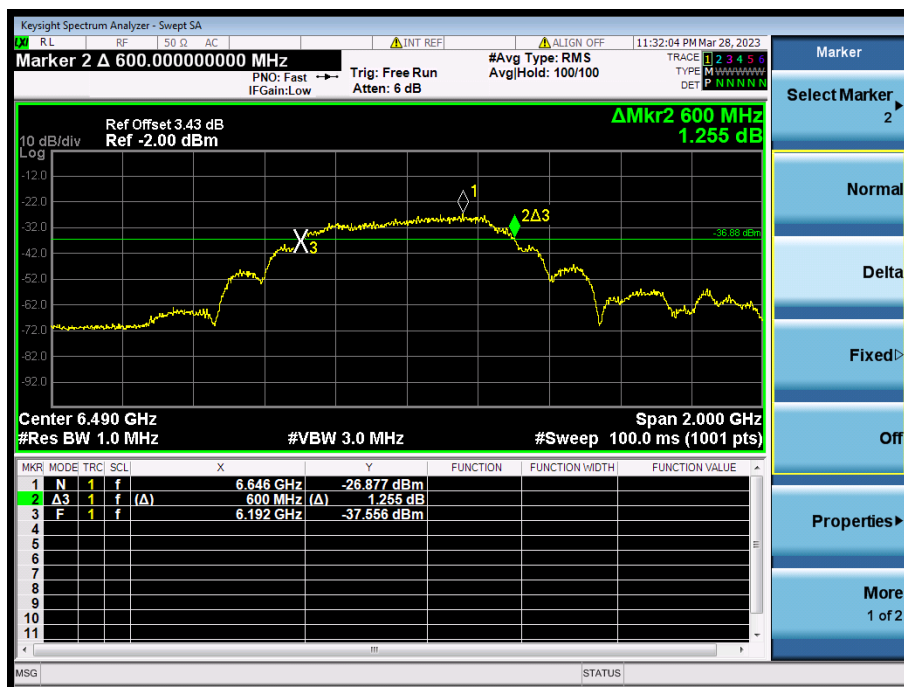
## Test plots

## Temperature Variation

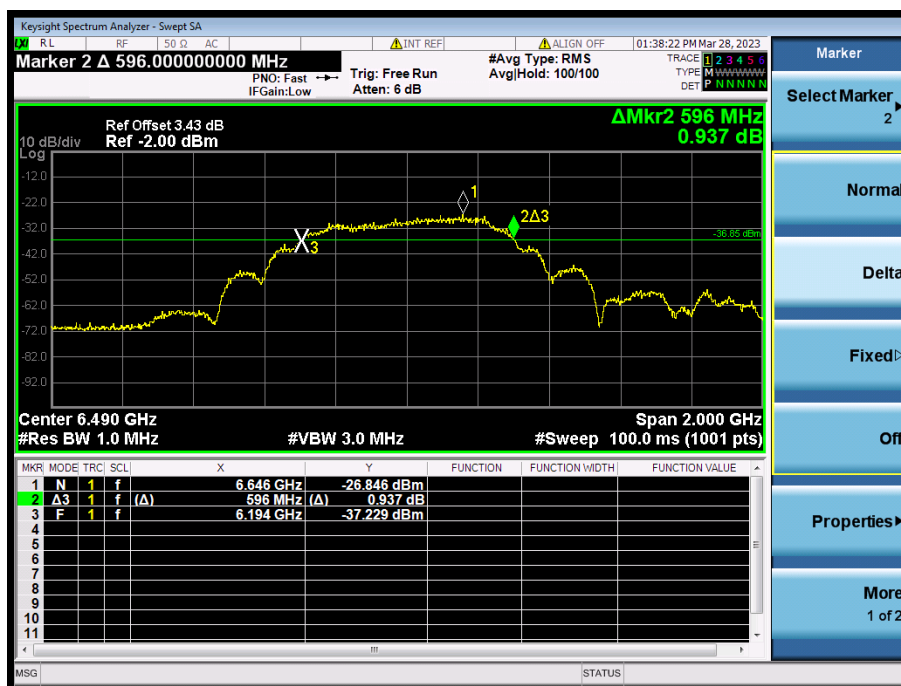
## Temperature (LT)



## Temperature (NT)

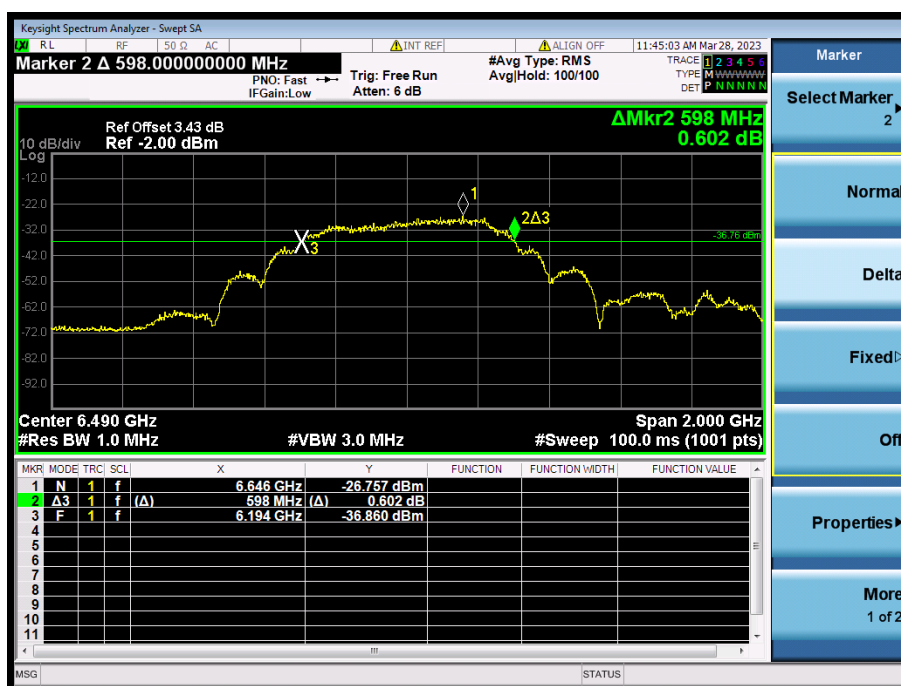


## Temperature (HT)

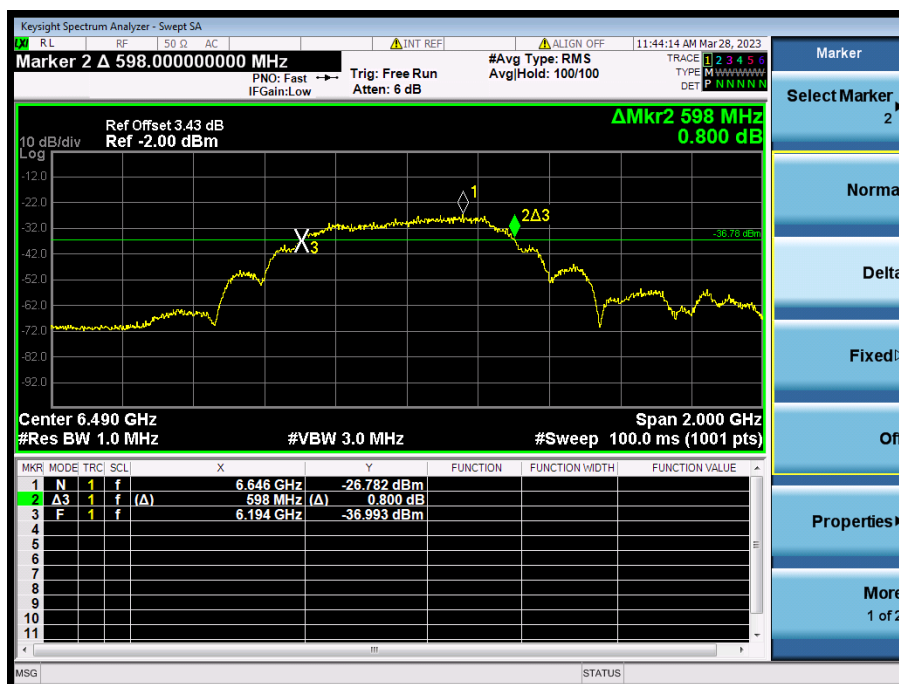


## Voltage Variation

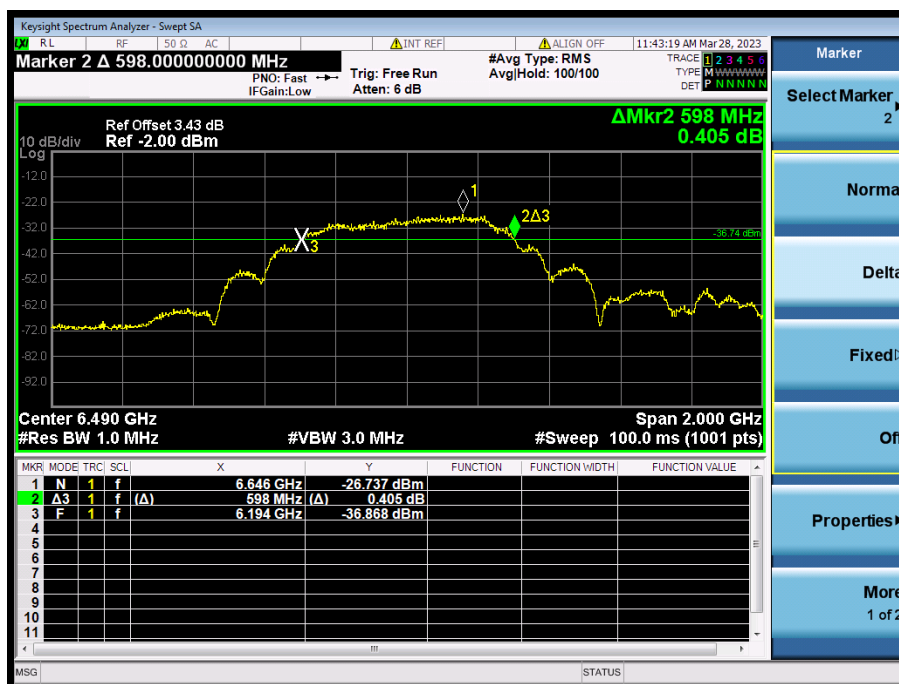
## Voltage (LV)



## Voltage (NV)



## Voltage (HV)



## A.3 AC Conducted Emissions

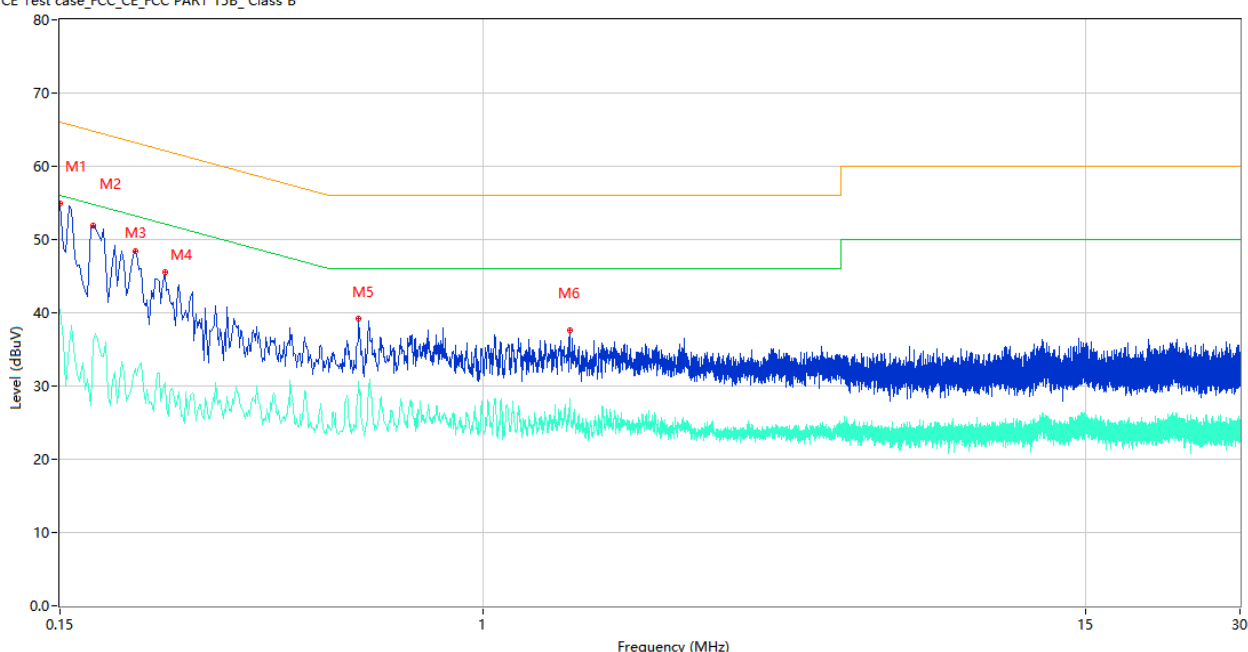
Note <sup>1</sup>: The EUT is working in the Normal link mode. All modes have been tested and normal link mode is worst.

Note <sup>2</sup>: Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 60 Hz and 240 VAC, 50 Hz) for which the device is capable of operation. So, The configuration 120 VAC, 60 Hz and 240 VAC, 50 Hz were tested respectively, but only the worst configuration (120 VAC, 60 Hz ) shown here.

### Test Data and Plots

#### PHASE L

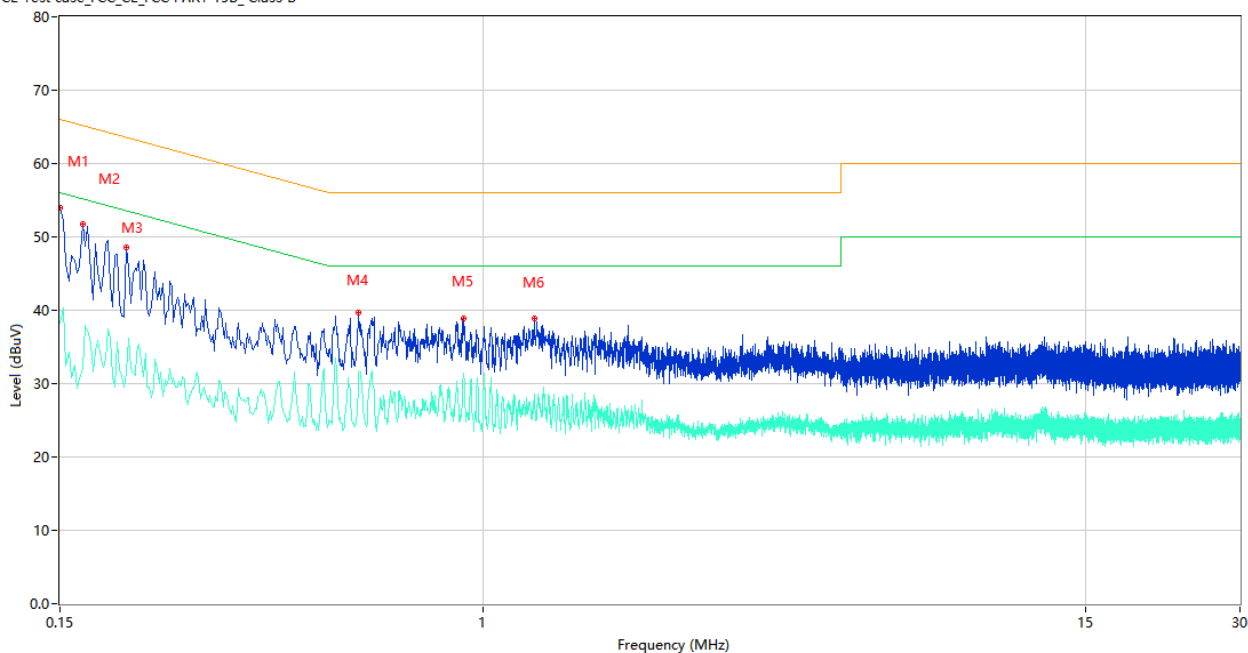
CE Test case\_FCC\_CE\_FCC PART 15B\_Class B



| No. | Frequency (MHz) | Results (dBuV) | Factor (dB) | Limit (dBuV) | Margin (dB) | Detector | Line | Verdict |
|-----|-----------------|----------------|-------------|--------------|-------------|----------|------|---------|
| 1   | 0.150           | 54.85          | 10.09       | 66.00        | 11.15       | Peak     | L    | Pass    |
| 1** | 0.150           | 40.47          | 10.09       | 56.00        | 15.53       | AV       | L    | Pass    |
| 2   | 0.174           | 51.97          | 10.07       | 64.77        | 12.80       | Peak     | L    | Pass    |
| 2** | 0.174           | 36.20          | 10.07       | 54.77        | 18.57       | AV       | L    | Pass    |
| 3   | 0.210           | 48.38          | 10.05       | 63.21        | 14.83       | Peak     | L    | Pass    |
| 3** | 0.210           | 32.32          | 10.05       | 53.21        | 20.89       | AV       | L    | Pass    |
| 4   | 0.240           | 45.63          | 10.02       | 62.10        | 16.47       | Peak     | L    | Pass    |
| 4** | 0.240           | 30.44          | 10.02       | 52.10        | 21.66       | AV       | L    | Pass    |
| 5   | 0.574           | 39.24          | 10.27       | 56.00        | 16.76       | Peak     | L    | Pass    |
| 5** | 0.574           | 30.67          | 10.27       | 46.00        | 15.33       | AV       | L    | Pass    |
| 6   | 1.478           | 37.67          | 10.28       | 56.00        | 18.33       | Peak     | L    | Pass    |
| 6** | 1.478           | 28.23          | 10.28       | 46.00        | 17.77       | AV       | L    | Pass    |

## PHASE N

CE Test case\_FCC\_CE\_FCC PART 15B\_Class B



| No. | Frequency (MHz) | Results (dBuV) | Factor (dB) | Limit (dBuV) | Margin (dB) | Detector | Line | Verdict |
|-----|-----------------|----------------|-------------|--------------|-------------|----------|------|---------|
| 1   | 0.150           | 53.92          | 10.09       | 66.00        | 12.08       | Peak     | N    | Pass    |
| 1** | 0.150           | 38.29          | 10.09       | 56.00        | 17.71       | AV       | N    | Pass    |
| 2   | 0.166           | 51.74          | 10.08       | 65.16        | 13.42       | Peak     | N    | Pass    |
| 2** | 0.166           | 32.00          | 10.08       | 55.16        | 23.16       | AV       | N    | Pass    |
| 3   | 0.202           | 48.63          | 10.05       | 63.53        | 14.90       | Peak     | N    | Pass    |
| 3** | 0.202           | 31.54          | 10.05       | 53.53        | 21.99       | AV       | N    | Pass    |
| 4   | 0.572           | 39.71          | 10.27       | 56.00        | 16.29       | Peak     | N    | Pass    |
| 4** | 0.572           | 30.16          | 10.27       | 46.00        | 15.84       | AV       | N    | Pass    |
| 5   | 0.920           | 38.92          | 10.25       | 56.00        | 17.08       | Peak     | N    | Pass    |
| 5** | 0.920           | 31.39          | 10.25       | 46.00        | 14.61       | AV       | N    | Pass    |
| 6   | 1.260           | 38.86          | 10.56       | 56.00        | 17.14       | Peak     | N    | Pass    |
| 6** | 1.260           | 28.51          | 10.56       | 46.00        | 17.49       | AV       | N    | Pass    |

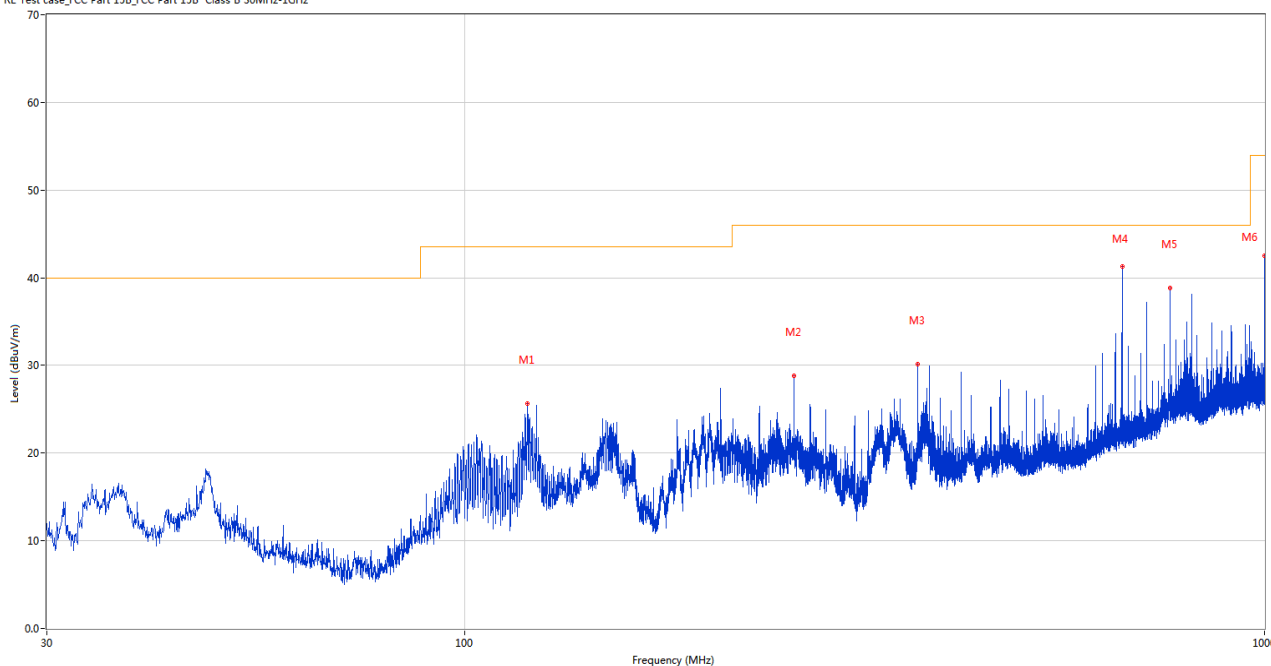
## A.4 Radiated Emissions

Note: The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.209 was not reported.

### Test Data and Plots

#### 30 MHz to 1 GHz, ANT H

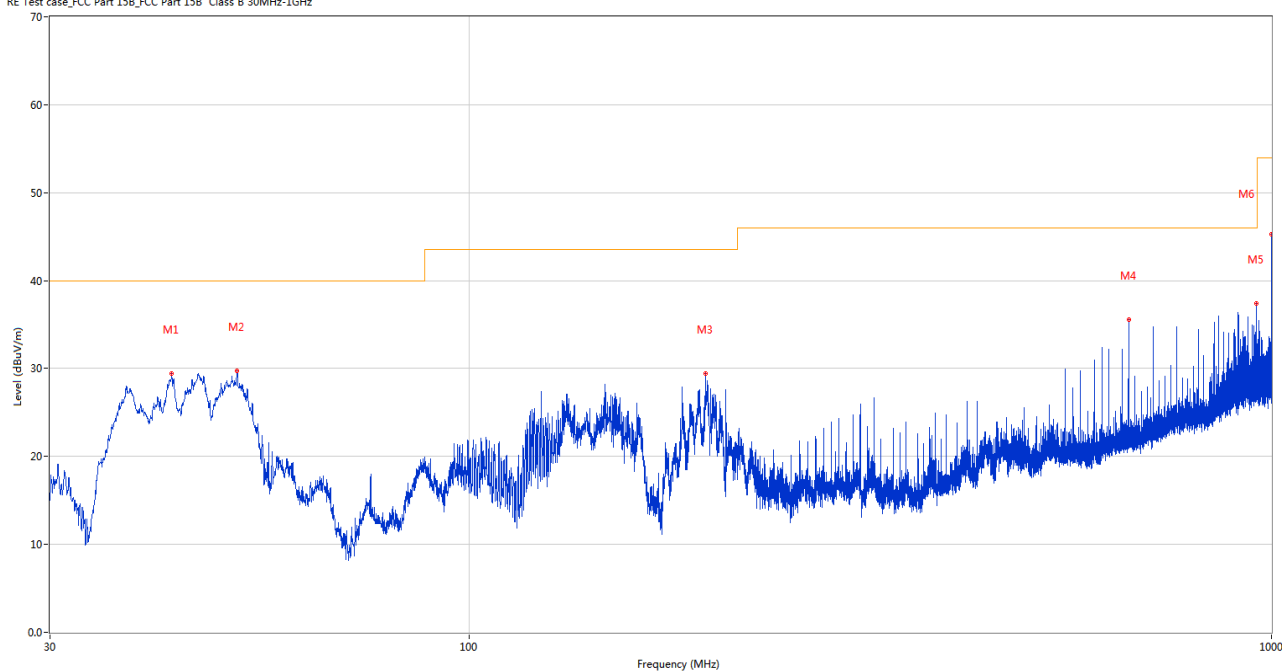
RE Test case\_FCC Part 15B\_FCC Part 15B Class B 30MHz-1GHz



| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Margin (dB) | Detector | Table (Degree) | Height (cm) | Antenna    | Verdict |
|-----|-----------------|------------------|-------------|----------------|-------------|----------|----------------|-------------|------------|---------|
| 1   | 119.773         | 25.61            | -27.22      | 43.5           | 17.89       | Peak     | 166.00         | 200         | Horizontal | Pass    |
| 2   | 258.047         | 28.78            | -26.08      | 46.0           | 17.22       | Peak     | 216.00         | 100         | Horizontal | Pass    |
| 3   | 368.627         | 30.17            | -22.31      | 46.0           | 15.83       | Peak     | 181.00         | 200         | Horizontal | Pass    |
| 4   | 663.555         | 41.24            | -14.86      | 46.0           | 4.76        | Peak     | 0.00           | 100         | Horizontal | Pass    |
| 5   | 761.865         | 38.83            | -13.60      | 46.0           | 7.17        | Peak     | 174.00         | 100         | Horizontal | Pass    |
| 6   | 1000.000        | 42.50            | -10.59      | 54.0           | 11.50       | Peak     | 228.00         | 200         | Horizontal | Pass    |

## 30 MHz to 1 GHz, ANT V

RE Test case\_FCC Part 15B\_FCC Part 15B Class B 30MHz-1GHz

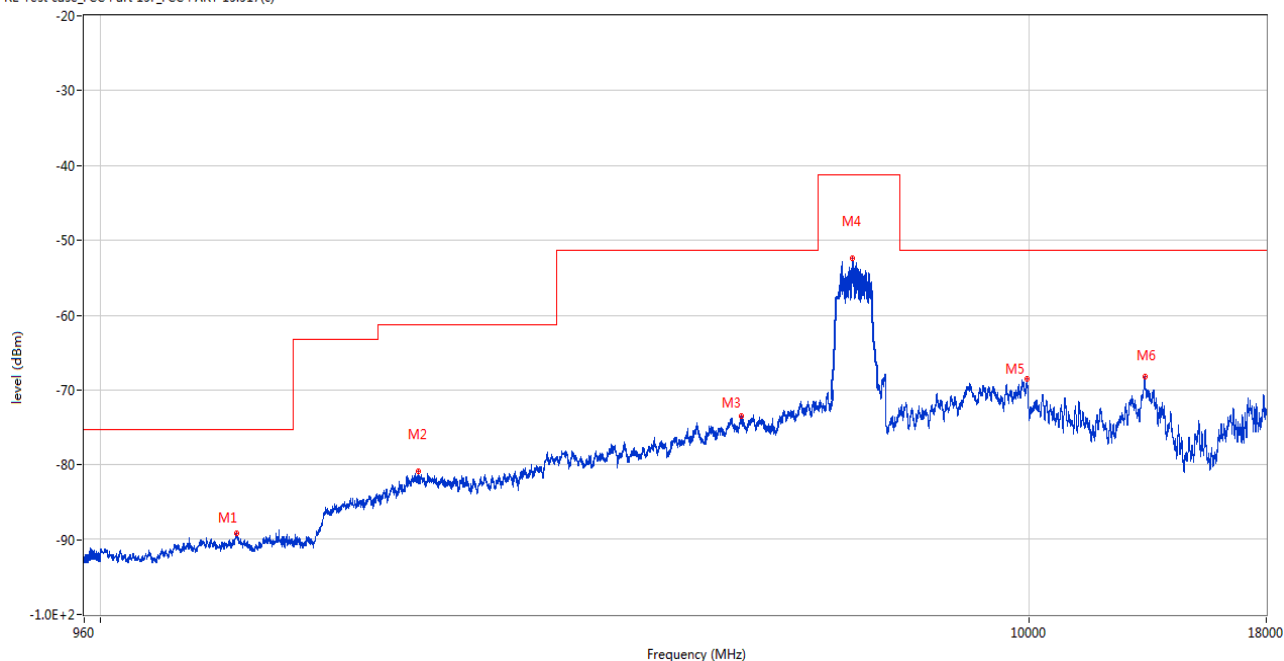


| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Margin (dB) | Detector | Table (Degree) | Height (cm) | Antenna  | Verdict |
|-----|-----------------|------------------|-------------|----------------|-------------|----------|----------------|-------------|----------|---------|
| 1   | 42.562          | 29.39            | -26.48      | 40.0           | 10.61       | Peak     | 218.00         | 100         | Vertical | Pass    |
| 2   | 51.340          | 29.70            | -26.87      | 40.0           | 10.30       | Peak     | 236.00         | 100         | Vertical | Pass    |
| 3   | 197.131         | 29.47            | -28.74      | 43.5           | 14.03       | Peak     | 11.00          | 100         | Vertical | Pass    |
| 4   | 663.555         | 35.54            | -14.86      | 46.0           | 10.46       | Peak     | 273.00         | 100         | Vertical | Pass    |
| 5   | 958.387         | 37.43            | -10.82      | 46.0           | 8.57        | Peak     | 338.00         | 100         | Vertical | Pass    |
| 6   | 1000.000        | 45.28            | -10.59      | 54.0           | 8.72        | Peak     | 0.00           | 100         | Vertical | Pass    |

Note: The spurious above 18G is noise only, do not show on the report.

### 960 MHz to 18 GHz, ANT H

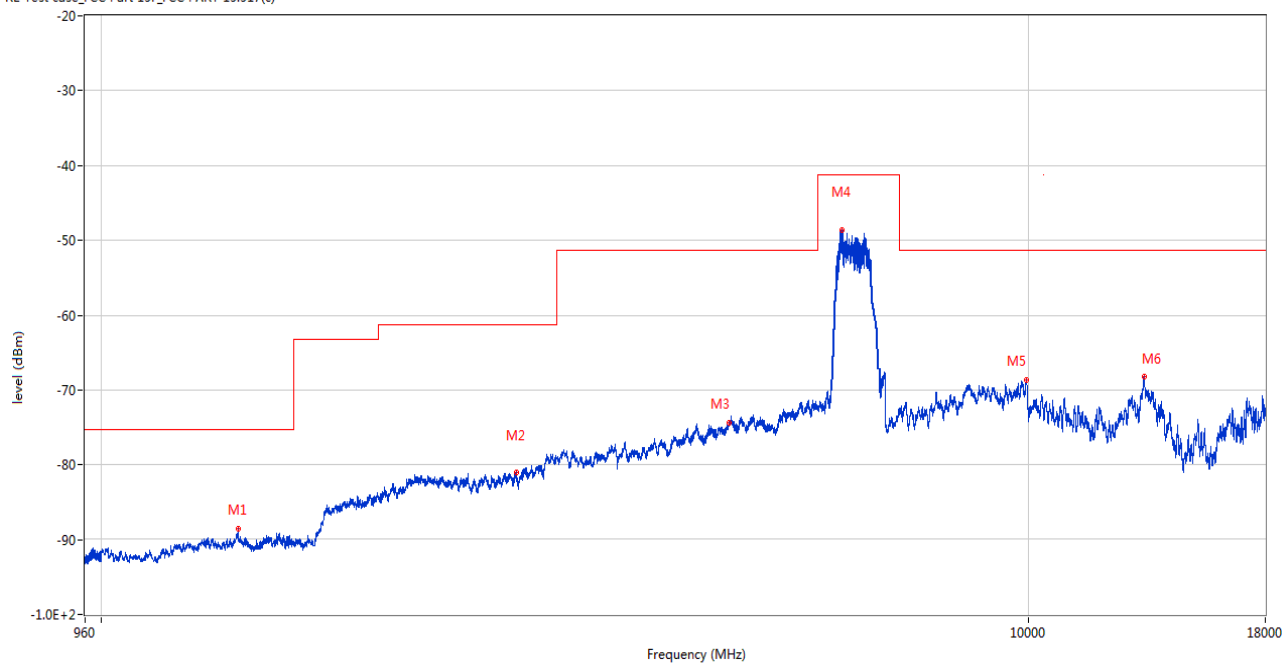
RE Test case\_FCC Part 15F\_FCC PART 15.517(c)



| Frequency (MHz) | Result (dBm) | Factor (dB) | Limit (dBm) | Margin (dB) | Table (o) | ANT        | EUT        | Verdict |
|-----------------|--------------|-------------|-------------|-------------|-----------|------------|------------|---------|
| 1402.000        | -89.17       | -17.82      | -75.3       | 13.87       | 154.00    | Horizontal | Horizontal | Pass    |
| 2201.000        | -80.93       | -10.03      | -61.3       | 19.63       | 170.00    | Horizontal | Horizontal | Pass    |
| 4892.000        | -73.49       | -0.02       | -51.3       | 22.19       | 284.00    | Horizontal | Horizontal | Pass    |
| 6450.000        | -52.45       | 7.01        | -41.3       | 11.15       | 156.00    | Horizontal | Horizontal | Pass    |
| 9944.001        | -68.59       | 6.78        | -51.3       | 17.29       | 27.00     | Horizontal | Horizontal | Pass    |
| 13315.687       | -68.31       | 5.66        | -51.3       | 17.01       | 121.00    | Horizontal | Horizontal | Pass    |

## 960 MHz to 18 GHz, ANT V

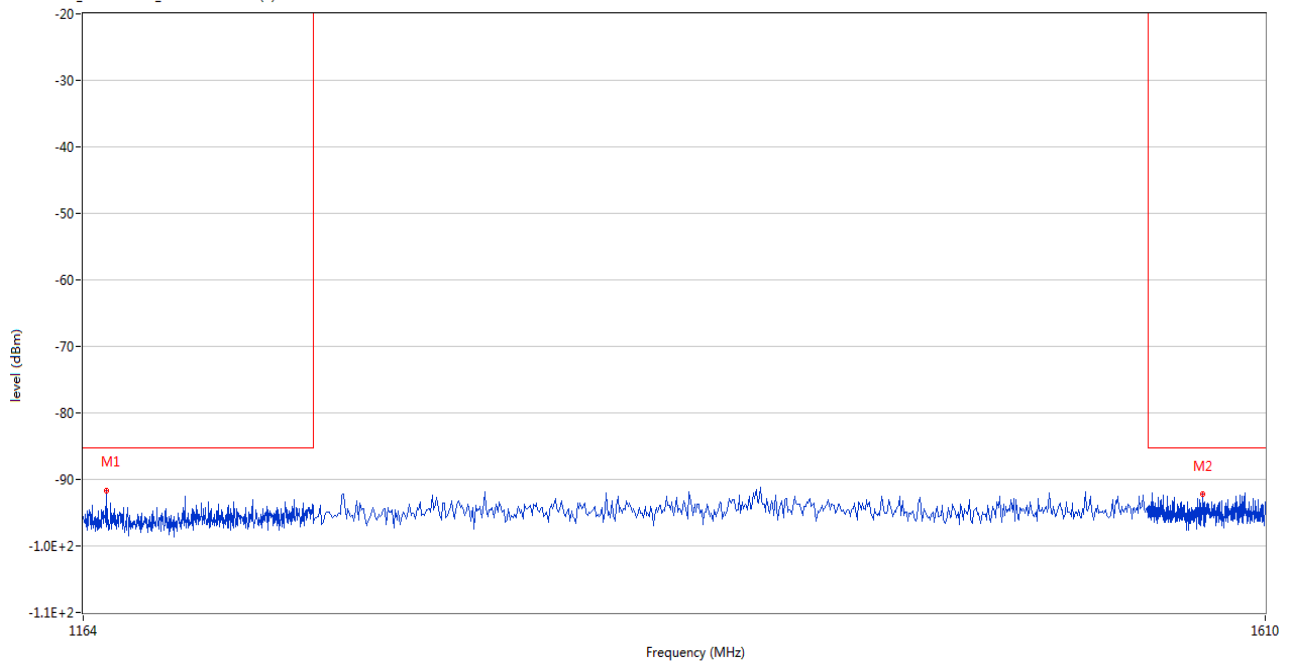
RE Test case\_FCC Part 15F\_FCC PART 15.517(c)



| Frequency (MHz) | Result (dBm) | Factor (dB) | Limit (dBm) | Margin (dB) | Table (o) | ANT      | EUT        | Verdict |
|-----------------|--------------|-------------|-------------|-------------|-----------|----------|------------|---------|
| 1404.000        | -88.56       | -18.01      | -75.3       | 13.26       | 6.00      | Vertical | Horizontal | Pass    |
| 2800.500        | -81.05       | -8.44       | -61.3       | 19.75       | 199.00    | Vertical | Horizontal | Pass    |
| 4752.000        | -74.38       | 0.13        | -51.3       | 23.08       | 339.00    | Vertical | Horizontal | Pass    |
| 6292.000        | -48.57       | 5.12        | -41.3       | 7.27        | 274.00    | Vertical | Horizontal | Pass    |
| 9939.687        | -68.72       | 6.67        | -51.3       | 17.42       | 334.00    | Vertical | Horizontal | Pass    |
| 13317.000       | -68.23       | 5.68        | -51.3       | 16.93       | 10.00     | Vertical | Horizontal | Pass    |

## 1.164 GHz to 1.61 GHz, ANT H

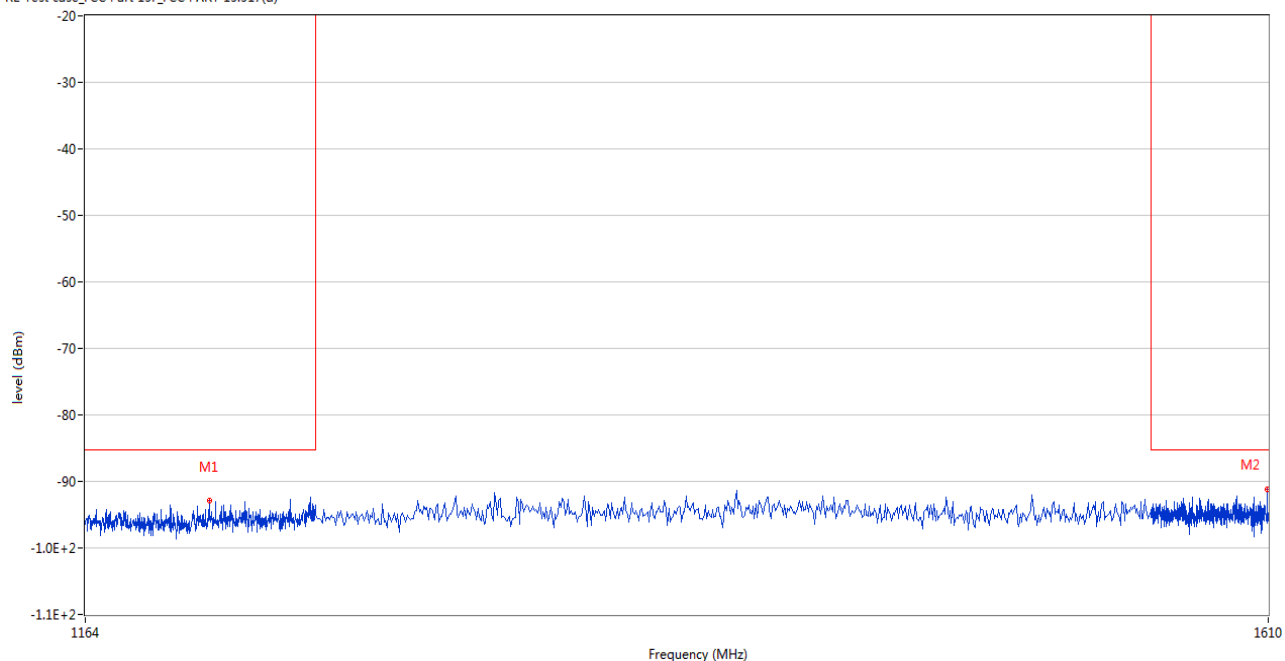
RE Test case\_FCC Part 15F\_FCC PART 15.517(d)



| Frequency (MHz) | Result (dBm) | Factor (dB) | Limit (dBm) | Margin (dB) | Table (o) | ANT        | EUT        | Verdict |
|-----------------|--------------|-------------|-------------|-------------|-----------|------------|------------|---------|
| 1171.347        | -91.70       | -6.41       | -85.3       | 6.40        | 99.00     | Horizontal | Horizontal | Pass    |
| 1582.715        | -92.12       | -5.82       | -85.3       | 6.82        | 84.00     | Horizontal | Horizontal | Pass    |

## 1.164 GHz to 1.61 GHz, ANT V

RE Test case\_FCC Part 15F\_FCC PART 15.517(d)



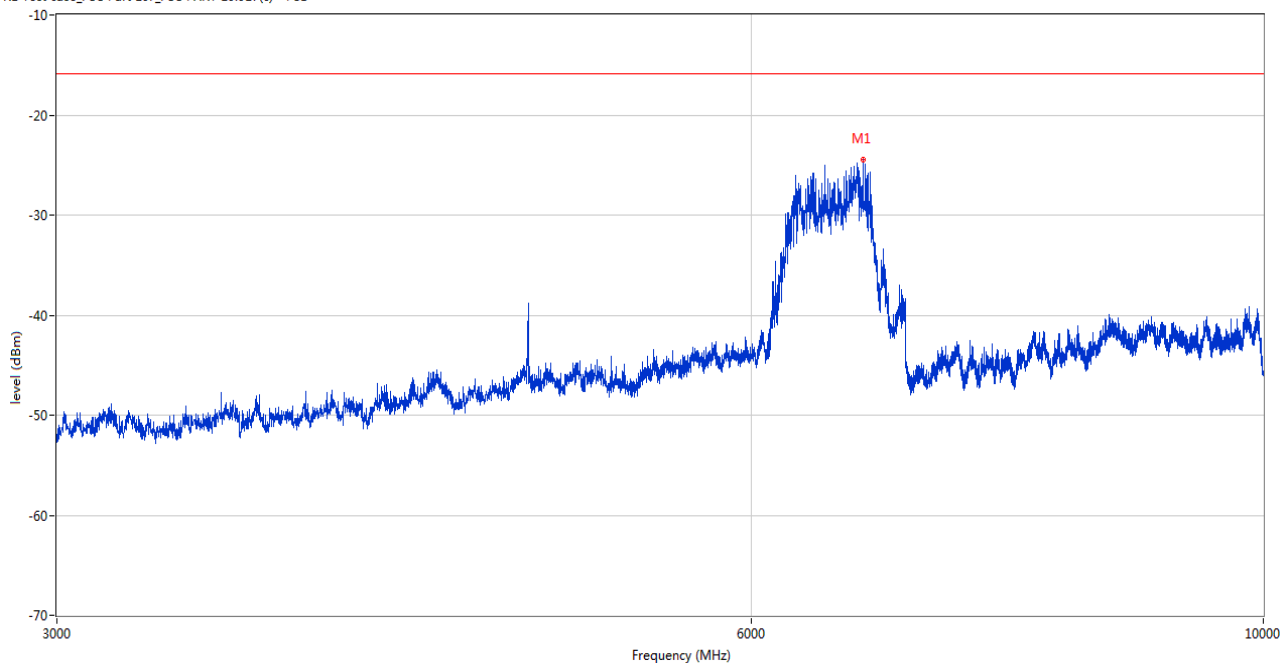
| Frequency (MHz) | Result (dBm) | Factor (dB) | Limit (dBm) | Margin (dB) | Table (o) | ANT      | EUT        | Verdict |
|-----------------|--------------|-------------|-------------|-------------|-----------|----------|------------|---------|
| 1204.280        | -92.91       | -6.27       | -85.3       | 7.61        | 88.00     | Vertical | Horizontal | Pass    |
| 1609.490        | -91.11       | -5.91       | -85.3       | 5.81        | 122.00    | Vertical | Horizontal | Pass    |

## A.5 Peak Emissions within a 50MHz Bandwidth

### Test Data and Plot

#### ANT H

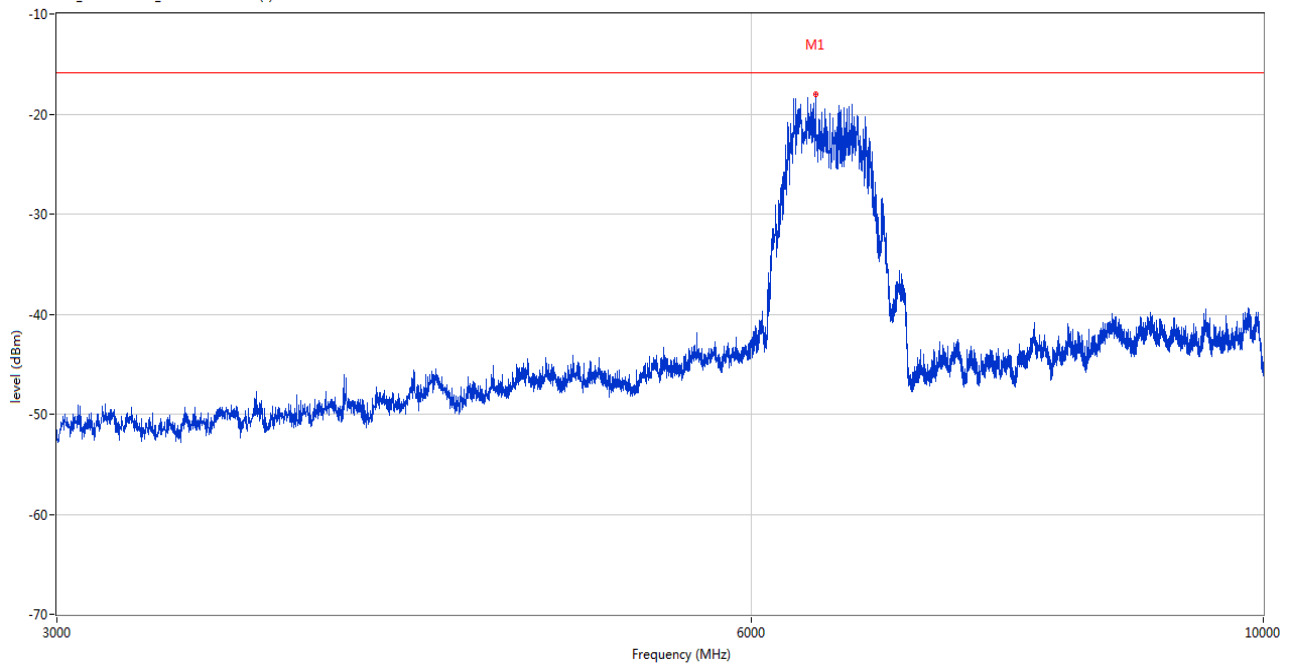
RE Test case\_FCC Part 15F\_FCC PART 15.517(c) - PSD



| Frequency (MHz) | Result (dBm/8 MHz) | Factor (dB) | Limit (dBm/8 MHz) | Margin (dB) | Table (o) | ANT        | EUT        | Verdict |
|-----------------|--------------------|-------------|-------------------|-------------|-----------|------------|------------|---------|
| 6707.000        | -24.42             | 4.96        | -15.9             | 8.52        | 112.00    | Horizontal | Horizontal | Pass    |

**ANT V**

RE Test case\_FCC Part 15F\_FCC PART 15.517(c) - PSD



| Frequency (MHz) | Result (dBm/8 MHz) | Factor (dB) | Limit (dBm/8 MHz) | Margin (dB) | Table (o) | ANT      | EUT        | Verdict |
|-----------------|--------------------|-------------|-------------------|-------------|-----------|----------|------------|---------|
| 6396.000        | -18.05             | 4.41        | -15.9             | 2.15        | 193.00    | Vertical | Horizontal | Pass    |

## **ANNEX B TEST SETUP PHOTOS**

Please refer the document “BL-SZ2331260-AR.PDF”.

## Statement

1. The laboratory guarantees the scientificity, accuracy and impartiality of the test, and is responsible for all the information in the report, except the information provided by the customer. The customer is responsible for the impact of the information provided on the validity of the results.
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5. The test data and results are only valid for the tested samples provided by the customer.
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7. Any objection shall be raised to the laboratory within 30 days after receiving the report.

--END OF REPORT--