

# FCC TEST REPORT(Bluetooth)

for

Dongguan Meiloon Acoustic Equipments Co., Ltd.

active loudspeaker

Model Number : PW300

FCC ID: 2AJAAPW300BT

IC :21761PW300BT

Prepared for : Dongguan Meiloon Acoustic Equipments Co., Ltd.  
Address : 77, Yuanlin Road Fenghuanggang Ind, Estate, Tangxia Town,  
523727 Dongguan City, Guangdong Province, China

Prepared by : Keyway Testing Technology Co., Ltd.  
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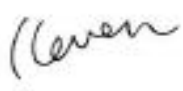
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Report No. : 17KWE045386F  
Date of Test : June. 01~16, 2017  
Date of Report : June. 17, 2017

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## Keyway Testing Technology Co., Ltd.

|                                                                                                                                                                                                              |                                                                                                                                                                                         |                                                                                                                      |                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|-------------------|
| <b>Address:</b>                                                                                                                                                                                              | Dongguan Meiloon Acoustic Equipments Co., Ltd.<br>77, Yuanlin Road Fenghuanggang Ind, Estate, Tangxia Town,<br>523727 Dongguan City, Guangdong Province, China                          |                                                                                                                      |                   |
| <b>Manufacturer:</b><br><b>Address:</b>                                                                                                                                                                      | Paradigm Electronics Inc.<br>205 Annagem Blvd, Mississauga, L5T2V1, Canada                                                                                                              |                                                                                                                      |                   |
| <b>Factor:</b><br><b>Address:</b>                                                                                                                                                                            | Dongguan Meiloon Acoustic Equipments Co., Ltd.<br>77, Yuanlin Road Fenghuanggang Ind, Estate, Tangxia Town,<br>523727 Dongguan City, Guangdong Province,<br>PEOPLE'S REPUBLIC OF CHINA. |                                                                                                                      |                   |
| <b>E.U.T:</b>                                                                                                                                                                                                | active loudspeaker                                                                                                                                                                      |                                                                                                                      |                   |
| <b>Model Number:</b>                                                                                                                                                                                         | PW300                                                                                                                                                                                   |                                                                                                                      |                   |
| <b>Trade Name:</b>                                                                                                                                                                                           | Paradigm                                                                                                                                                                                | <b>Serial No.:</b>                                                                                                   | -----             |
| <b>Date of Receipt:</b>                                                                                                                                                                                      | Apr. 06, 2017                                                                                                                                                                           | <b>Date of Test:</b>                                                                                                 | June. 01~16, 2017 |
| <b>Test Specification:</b>                                                                                                                                                                                   | FCC Part 15, Subpart C Section 15.247: 2016<br>ANSI C63.10:2013<br>RSS-247 Issue 2,2017<br>RSS-Gen Issue 4 November 2014                                                                |                                                                                                                      |                   |
| <b>Test Result:</b>                                                                                                                                                                                          | The equipment under test was found to be compliance with the requirements of the standards applied.                                                                                     |                                                                                                                      |                   |
| <b>Issue Date: June. 17, 2017</b>                                                                                                                                                                            |                                                                                                                                                                                         |                                                                                                                      |                   |
| Tested by:                                                                                                                                                                                                   | Reviewed by:                                                                                                                                                                            | Approved by:                                                                                                         |                   |
| <br><hr/> Keven Wu / Engineer                                                                                             | <br><hr/> Mark Li / Supervisor                                                                       | <br><hr/> Andy Gao / Supervisor |                   |
| <b>Other Aspects:</b><br>None.                                                                                                                                                                               |                                                                                                                                                                                         |                                                                                                                      |                   |
| Abbreviations: OK/P=passed    fail/F=failed    n.a/N=not applicable    E.U.T=equipment under tested                                                                                                          |                                                                                                                                                                                         |                                                                                                                      |                   |
| This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Keyway Testing Technology Co., Ltd. |                                                                                                                                                                                         |                                                                                                                      |                   |

# 1. TEST SUMMARY

| Test Items                  | Test Requirement                                  | Result |
|-----------------------------|---------------------------------------------------|--------|
| Conducted Emissions         | 15.207/ RSS-Gen §8.8                              | PASS   |
| Radiated Emissions          | 15.205(a)/15.209<br>15.247(d) / RSS-Gen §6.13     | PASS   |
| 20dB Bandwidth              | 15.247(a)(1) /<br>RSS-247 §5.1(1)<br>&RSS-Gen§6.6 | PASS   |
| 99% Bandwidth               | RSS-247 §5.1(1)<br>&RSS-Gen§6.6                   | PASS   |
| Frequency Separation        | 15.247(a)(1) /<br>RSS-247 §5.1(2)                 | PASS   |
| Maximum Peak Output Power   | 15.247(b)(1) /<br>RSS-247§5.4(2)<br>&RSS-Gen§6.12 | PASS   |
| Number of Hopping Frequency | 15.247(a)(1)(iii) /<br>RSS-247 §5.1(4)            | PASS   |
| Dwell time                  | 15.247(a)(1)(iii) /<br>RSS-247 §5.1(4)            | PASS   |
| Emissions from out of band  | 15.247(d) / RSS-247 §5.5                          | PASS   |
| Antenna Requirement         | 15.203/ RSS-Gen§8.3                               | PASS   |

## 2.GENERAL PRODUCT INFORMATION

### 2.1. Product Function

Refer to Technical Construction Form and User Manual.

### 2.2. Description of Device (EUT)

|                         |                                                                           |
|-------------------------|---------------------------------------------------------------------------|
| Product Name:           | active loudspeaker                                                        |
| Model No.:              | PW300                                                                     |
| Operation Frequency:    | 2402MHz ~2480MHz                                                          |
| Channel numbers:        | 79 Channels                                                               |
| Channel spacing         | 1MHz                                                                      |
| Modulation technology:  | BT(1Mbps): GFSK<br>BT EDR(2Mbps): $\pi/4$ -DQPSK<br>BT EDR(3Mbps): 8-DPSK |
| Bit Rate of Transmitter | 1Mbps/2Mbps/3Mbps                                                         |
| Antenna Type:           | PCB                                                                       |
| Antenna gain:           | 1.0dBi                                                                    |
| Power supply:           | AC 100-240V,50/60Hz                                                       |

### 2.3. Difference between Model Numbers

None.

### 2.4. Independent Operation Modes

The basic operation modes are:

2.4.1. EUT work BT mode and Test mode as below:

| Pretest Mode | Description |
|--------------|-------------|
| Mode 1       | CH00        |
| Mode 2       | CH39        |
| Mode 3       | CH78        |
| Mode 4       | BT link     |

### 2.5. Test Supporting System

N/A.

### 2.6. Product Version

|                             |               |
|-----------------------------|---------------|
| Product SW version          | V5.17         |
| Product HW version          | PW300_main    |
| Radio SW version            | 4.4           |
| Radio HW version            | VT2.1         |
| Test SW Version             | Blue Test 3   |
| RF power setting in TEST SW | GFSK 2.940dBm |

Note: SW means software, HW means hardware.

## 2.7. Test Facilities

Lab Qualifications : 944 Shielded Room built by ETS-Lindgren, USA  
Date of completion: March 28, 2011

966 Chamber built by ETS-Lindgren, USA  
Date of completion: March 28, 2011

Certificated by TUV Rheinland, Germany.  
Registration No.: UA 50207153  
Date of registration: July 13, 2011

Certificated by UL, USA  
Registration No.: 100567-237  
Date of registration: September 1, 2011

Certificated by Intertek  
Registration No.: 2011-RTL-L1-31  
Date of registration: October 11, 2011

Certificated by Industry Canada  
Registration No.: 9868A  
Date of registration: December 8, 2011

Certificated by FCC, USA  
Registration No.: 370994  
Date of registration: February 21, 2012

Certificated by CNAS China  
Registration No.: CNAS L5783  
Date of registration: August 8, 2012

Name of Firm : Keyway Testing Technology Co., Ltd.

Site Location : Building 1, Baishun Industrial Zone, Zhangmutou  
Town, Dongguan, Guangdong, China

## 2.8. List of Test and Measurement Instruments

### 2.8.1. For conducted emission at the mains terminals test

| Equipment                | Manufacturer  | Model No. | Serial No. | Last Cal.  | Next Cal.  |
|--------------------------|---------------|-----------|------------|------------|------------|
| EMI Test Receiver        | Rohde&Schwarz | ESCI      | 101156     | Apr. 08,17 | Apr. 08,18 |
| Artificial Mains Network | Rohde&Schwarz | ENV216    | 101315     | Apr. 08,17 | Apr. 08,18 |
| RF Cable                 | FUJIKURA      | 3D-2W     | 944 Cable  | Apr. 08,17 | Apr. 08,18 |

### 2.8.2. For radiated emission test

| Equipment                             | Manufacturer  | Model No.     | Serial No.   | Last Cal.  | Next Cal.  |
|---------------------------------------|---------------|---------------|--------------|------------|------------|
| EMI Test Receiver                     | Rohde&Schwarz | ESCI          | 101156       | Apr. 08,17 | Apr. 08,18 |
| Bilog Antenna                         | ETS-LINDGREEN | 3142D         | 135452       | Apr. 12,17 | Apr. 12,18 |
| Spectrum Analyzer                     | Agilent       | E4411B        | MY4511304    | Apr. 08,17 | Apr. 08,18 |
| 3m Semi-anechoic Chamber              | ETS-LINDGREEN | 966           | KW01         | Apr. 09,17 | Apr. 09,18 |
| Signal Amplifier                      | SONOMA        | 310           | 187016       | Apr. 08,17 | Apr. 08,18 |
| Signal Amplifier                      | Agilent       | 8449B         | 3008A00251   | Apr. 08,17 | Apr. 08,18 |
| RF Cable                              | IMRO          | IMRO-400      | 966 Cable 1# | N/A        | N/A        |
| MULTI-DEVICE Controller               | ETS-LINDGREEN | 2090          | 126913       | N/A        | N/A        |
| Horn Antenna                          | SCHWARZBECK   | BBHA9170      | 9170-068     | Apr. 12,17 | Apr. 12,18 |
| Spectrum Analyzer                     | Agilent       | E4408B        | MY44211125   | Apr. 08,17 | Apr. 08,18 |
| High Pass filter                      | Micro         | HPM50111      | 324216       | Apr. 08,17 | Apr. 08,18 |
| Constant temperature and humidity box | GF            | GTH-800-40-1P | MAA9906-005  | Apr. 08,17 | Apr. 08,18 |
| Attenuation                           | MCE           | 24-10-34      | BN9258       | Apr. 08,17 | Apr. 08,18 |
| Loop Antenna                          | ARA           | PLA-1030/B    | 1029         | Apr. 08,17 | Apr. 08,18 |

### 3. TEST SET-UP AND OPERATION MODES

#### 3.1. Principle of Configuration Selection

**Emission:** The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the Operating Instructions.

#### 3.2. Block Diagram of Test Set-up

System Diagram of Connections between EUT and Simulators

Conducted Emission:



Radiated Emission:



*(EUT: active loudspeaker)*

#### 3.3. Test Software

|          |             |
|----------|-------------|
| Software | Blue Test 3 |
|----------|-------------|

#### 3.4. Special Accessories and Auxiliary Equipment

None.

#### 3.5. Countermeasures to Achieve EMC Compliance

None.

#### 3.6. Test Environment:

Ambient conditions in the test laboratory:

| Items            | Actual |
|------------------|--------|
| Temperature (°C) | 21~23  |
| Humidity (%RH)   | 50~65  |

## 4. MAXIMUM PEAK OUTPUT POWER

### 4.1. Limits

FCC: For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

IC: RSS-247§5.4(2)

For FHSS operating in the band 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1.0 W and the e.i.r.p. shall not exceed 4 W if the hopset uses 75 or more hopping channels; the maximum peak conducted output power shall not exceed 0.125 W and the e.i.r.p. shall not exceed 0.5 W if the hopset uses less than 75 hopping channels (see Section 5.4(5) for exceptions).

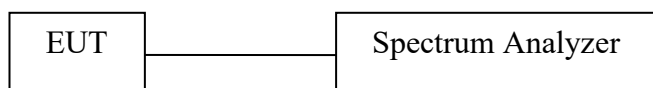
### 4.2. Test Procedure

For Peak power

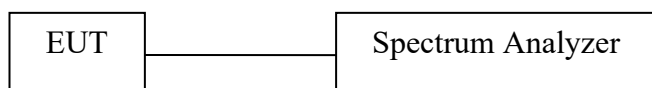
- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below
- b. Spectrum Setting : RBW > the 20 dB bandwidth of the emission being measured  
Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel  
VBW  $\geq$  RBW  
Sweep = auto  
Detector function = peak  
Trace = max hold  
For AV power
  - a. The Transmitter output (antenna port) was connected to the power meter.
  - b. Turn on the EUT and power meter and then record the power value.  
Repeat above procedures on all channels needed to be tested.

### 4.3. Test setup

Peak power:



AV power:

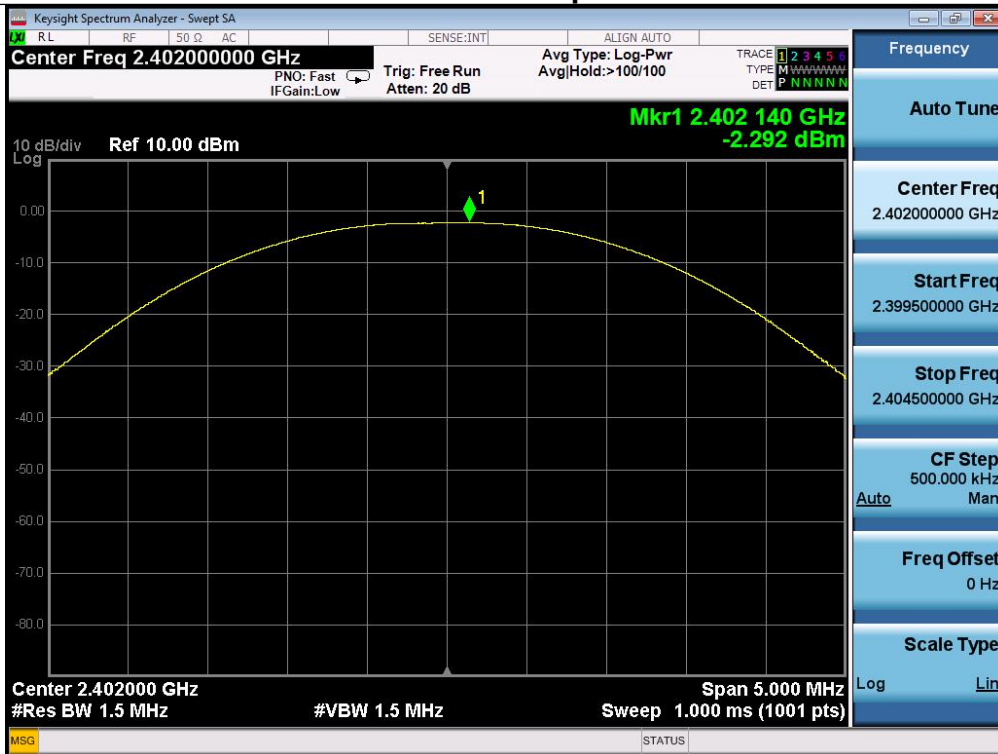


Test data:

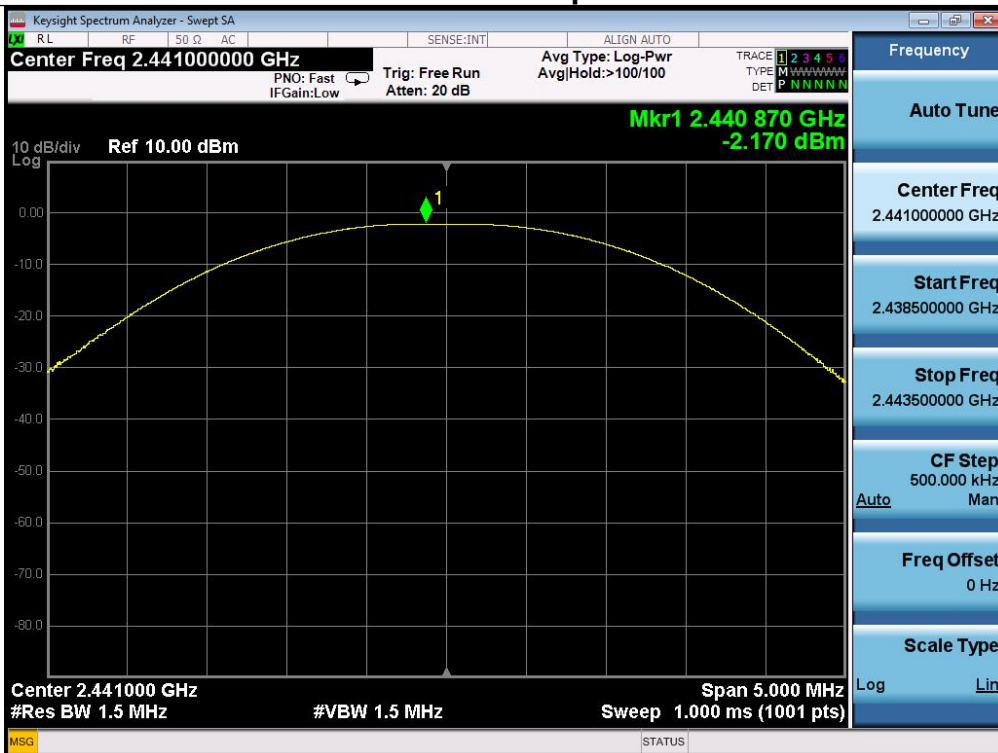
|           | Channel<br>Frequency<br>(MHz) | Peak output<br>Power<br>dBm | Limit<br>dBm | AV<br>Output<br>power<br>dBm | EIRP<br>dBm | Limit<br>dBm |
|-----------|-------------------------------|-----------------------------|--------------|------------------------------|-------------|--------------|
| GFSK      | 2402                          | -2.292                      | 30           | -3.864                       | -2.864      | 36           |
|           | 2441                          | -2.170                      | 30           | -3.257                       | -2.257      | 36           |
|           | 2480                          | -3.130                      | 30           | -4.528                       | -3.528      | 36           |
| Pi/4DQPSK | 2402                          | -3.352                      | 20.96        | -4.623                       | -3.623      | 36           |
|           | 2441                          | -3.274                      | 20.96        | -4.414                       | -3.414      | 36           |
|           | 2480                          | -4.590                      | 20.96        | -5.328                       | -4.328      | 36           |
| 8-DPSK    | 2402                          | -3.051                      | 20.96        | -4.255                       | -3.255      | 36           |
|           | 2441                          | -3.033                      | 20.96        | -4.171                       | -3.171      | 36           |
|           | 2480                          | -4.148                      | 20.96        | -5.251                       | -4.251      | 36           |

Note: EIRP(dBm)= AV Output Power+antenna gain

### CH00 -1Mbps



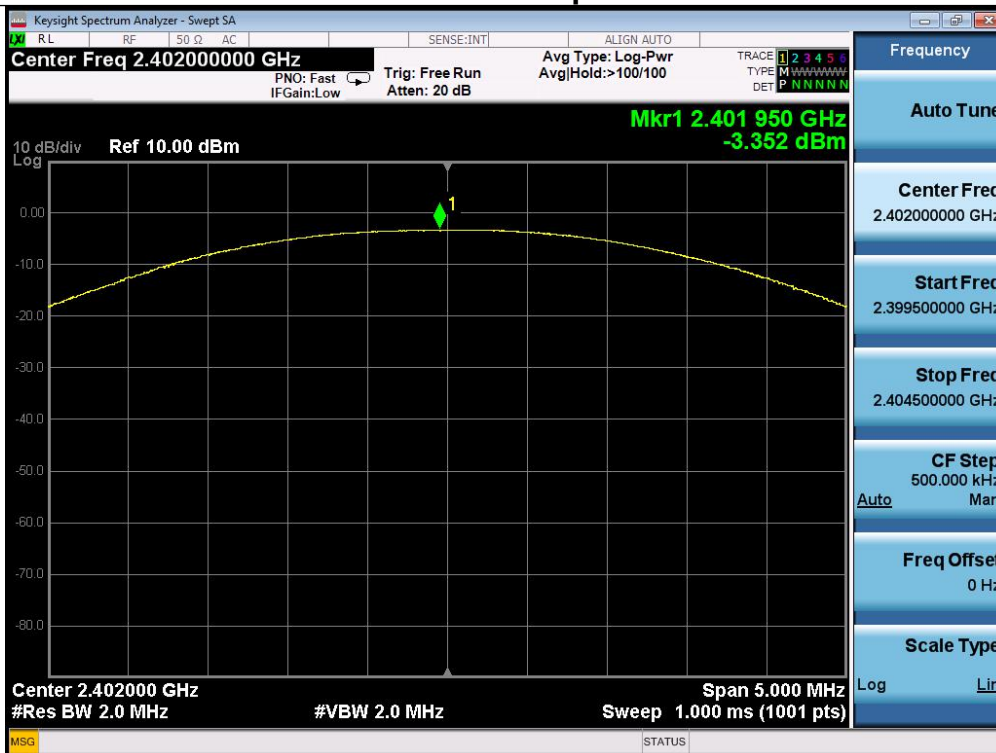
### CH39 -1Mbps



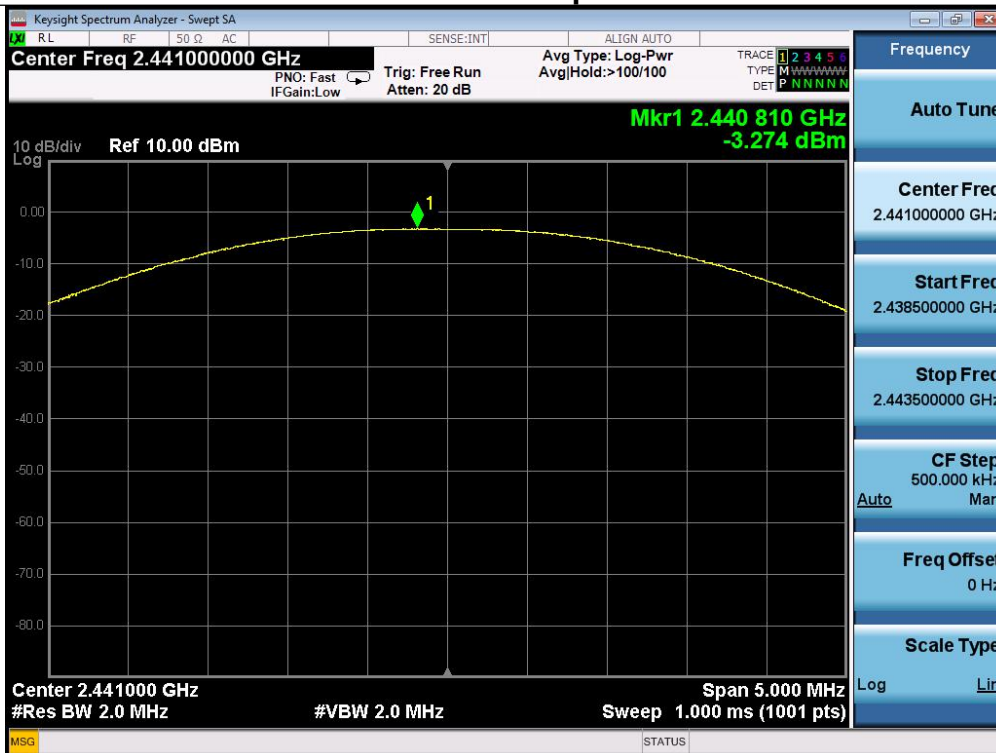
### CH78 -1Mbps



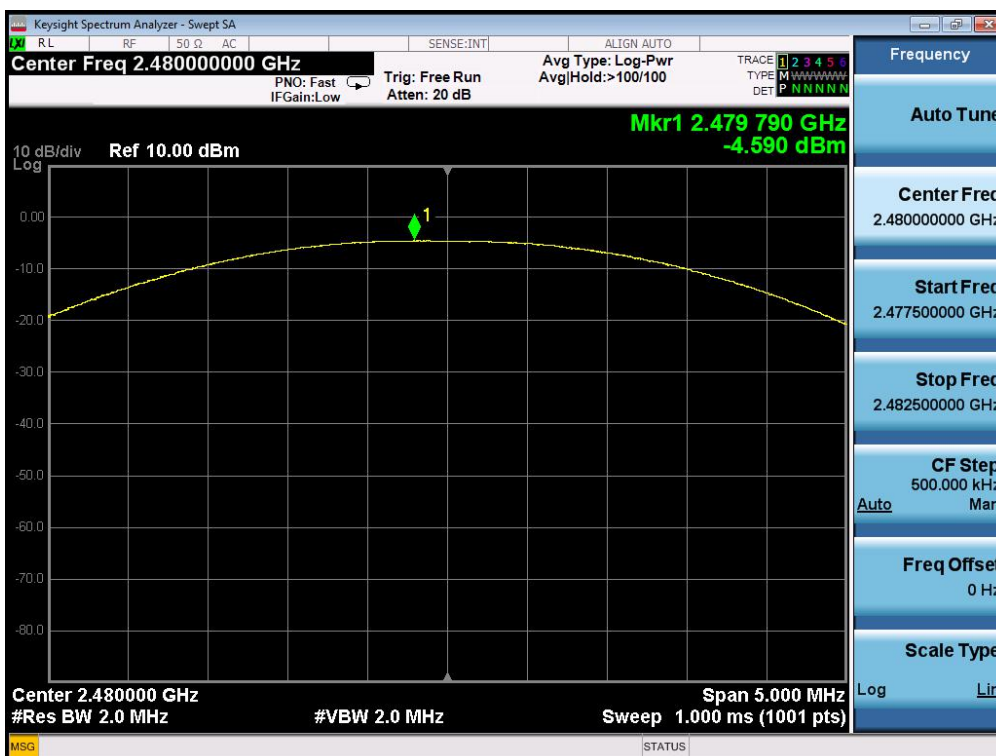
### CH00 -2Mbps

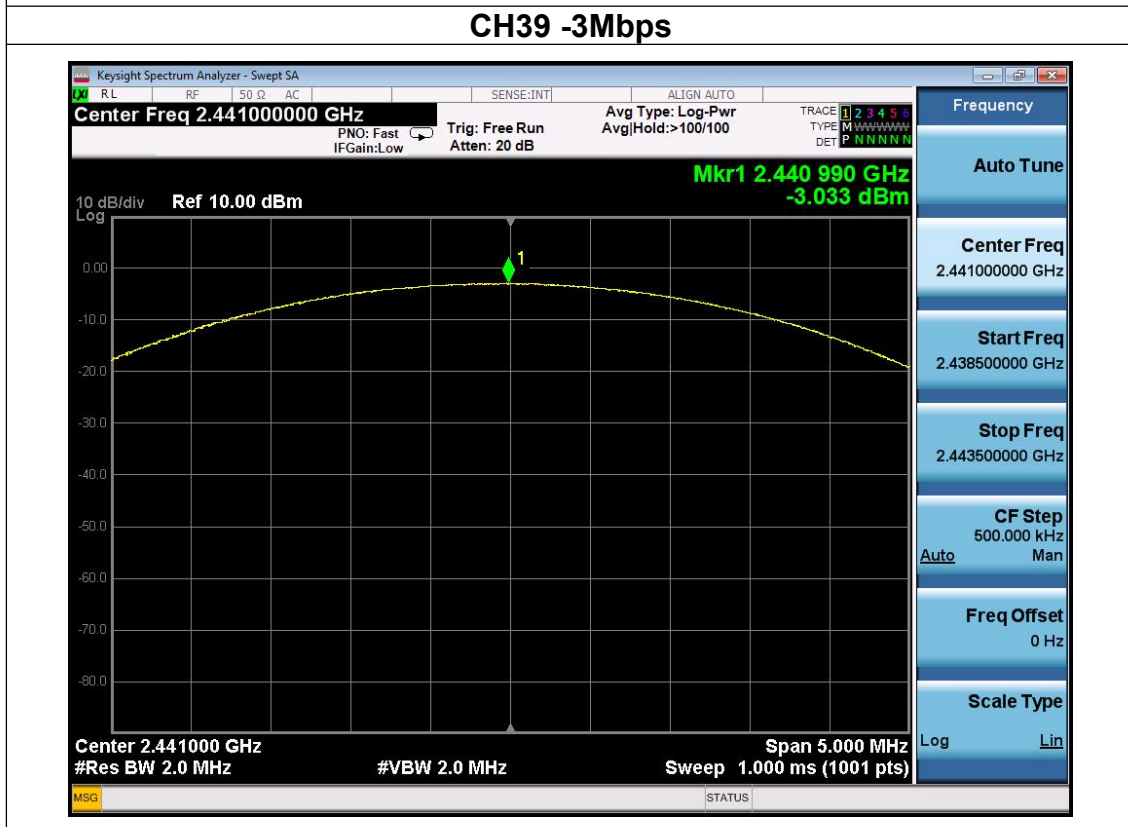
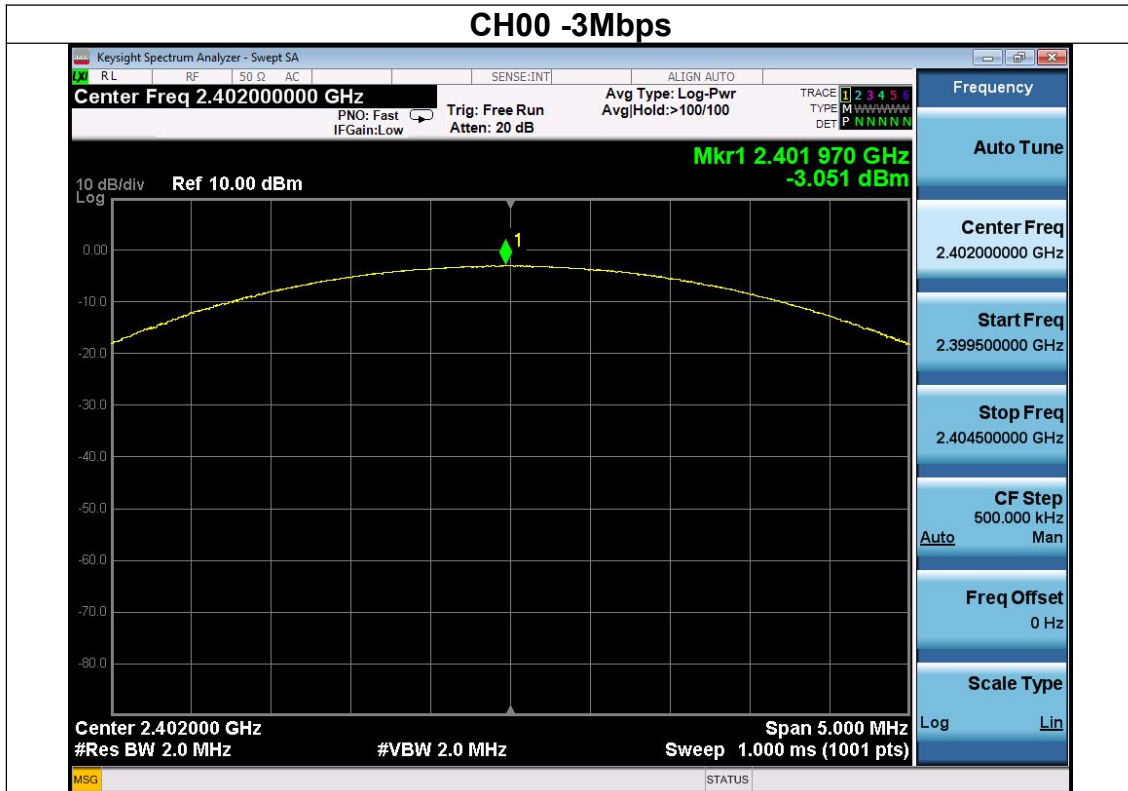


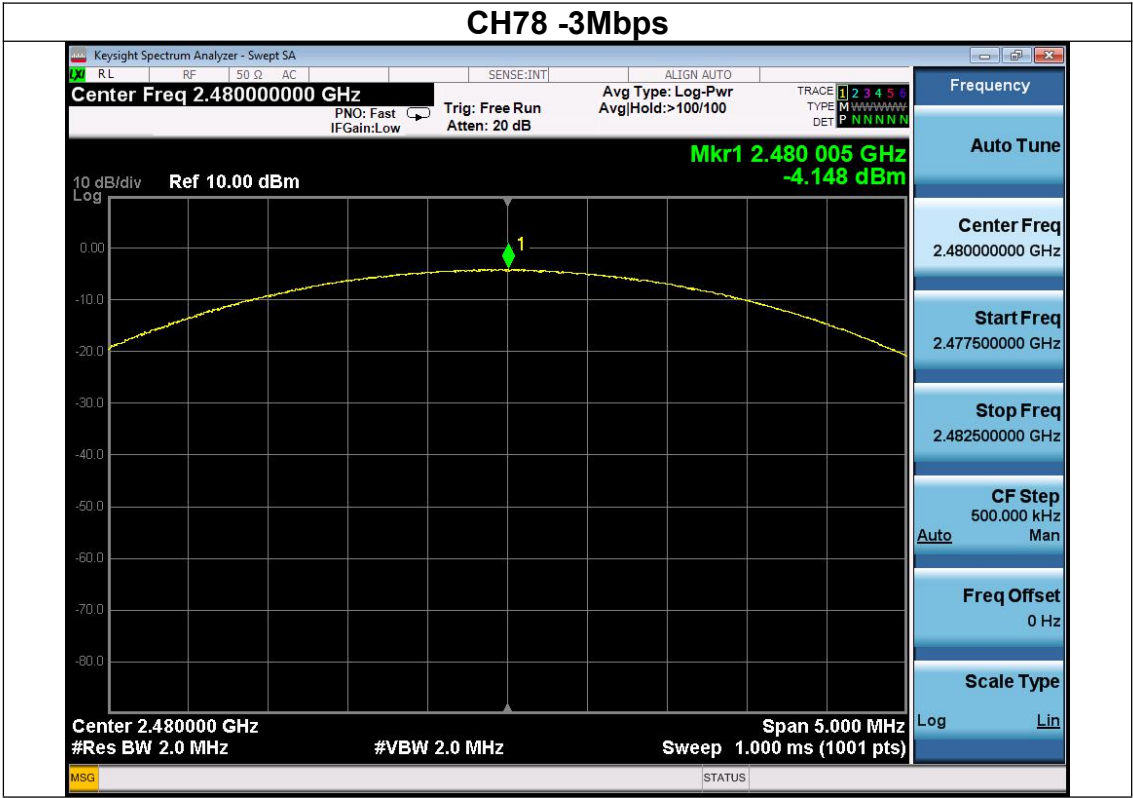
### CH39 -2Mbps



### CH78 -2Mbps







## 5. EMISSION TEST RESULTS

### 5.1. Conducted Emission at the Mains Terminals Test

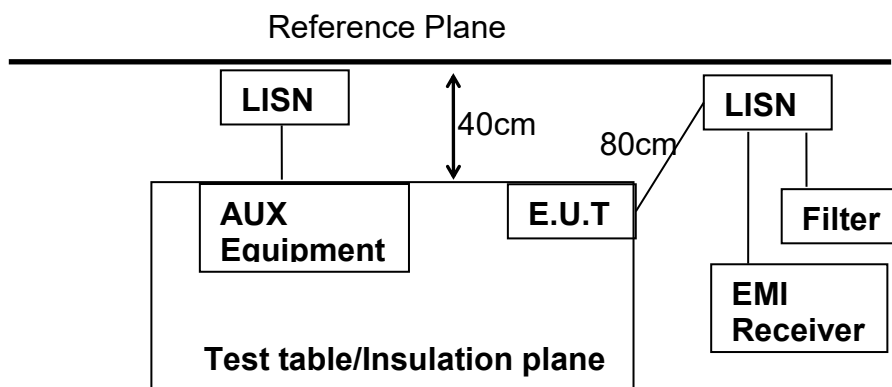
#### 5.1.1. Limit 15.207 limits & RSS-Gen §8.8

| Frequency<br>MHz | Limit (dBuV) |          |
|------------------|--------------|----------|
|                  | Quasi-peak   | Average  |
| 0.15-0.5         | 66 to 56     | 56 to 46 |
| 0.5-5            | 56           | 46       |
| 5-30             | 60           | 50       |

NOTE: 1.The lower limit shall apply at the transition frequencies.  
2.The limit decreases linearly with the logarithm of the frequency in the range 0,15 MHz to 0,50 MHz.

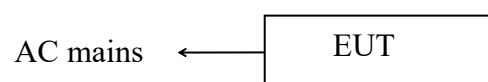
#### 5.1.2. Test Setup

- 1.The EUT was put on a wooden table which was 0.8 m high above the ground and connected to the AC mains through the Artificial Mains Network (AMN). Where the mains cable supplied by the manufacture was longer than 0.8 m, the excess was folded back and forth parallel to the cable at the center so as to form a bundle no longer than 0.4 m.
- 2.The EUT was kept 0.4 m from any other earthed conducting surface. Both sides of AC line were checked to find out the maximum conducted emission levels according to the test procedure during the conducted emission test.
- 3.The frequency range from 150 kHz to 30 MHz was investigated.
- 4.The bandwidth of the test receiver was set at 9 kHz.
- 5.Pretest for all mode, The test data of the worst case condition(s) was reported on the following page.



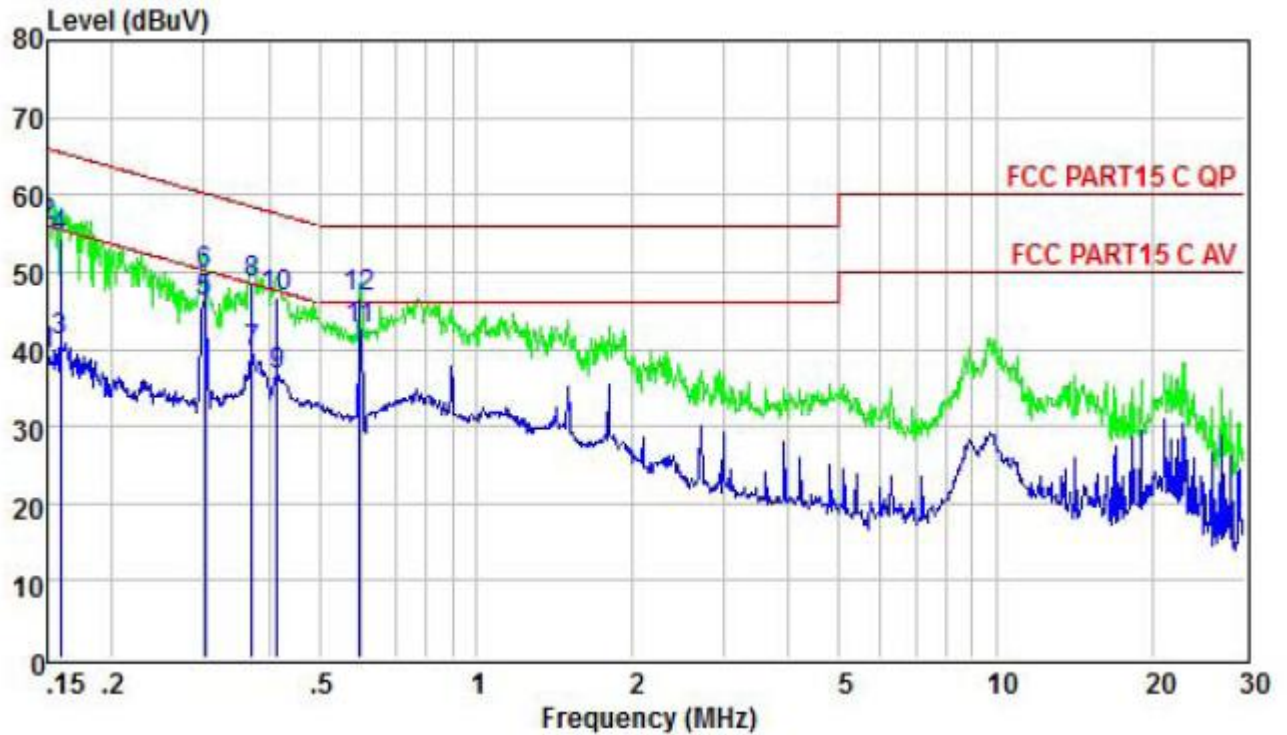
Remark: E.U.T. :Equipment Under Test  
LISN: Line Impedance Stabilization Network  
Test table height: 0.8m.

#### Test block



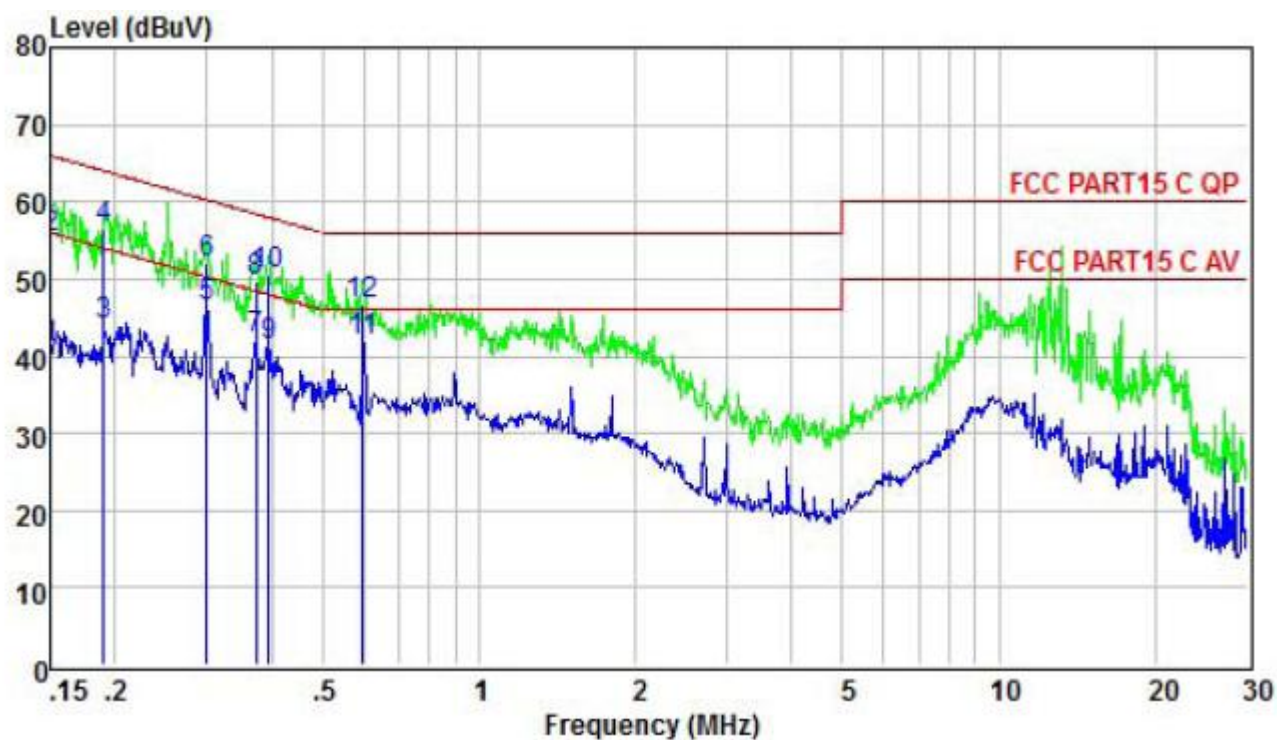
### 5.1.3. Test result

|                |                    |                     |        |
|----------------|--------------------|---------------------|--------|
| EUT :          | active loudspeaker | Model Name :        | PW300  |
| Temperature :  | 26 °C              | Relative Humidity : | 54%    |
| Pressure :     | 1010hPa            | Phase :             | L      |
| Test Voltage : | AC 120V/60Hz       | Test Mode :         | Mode 4 |



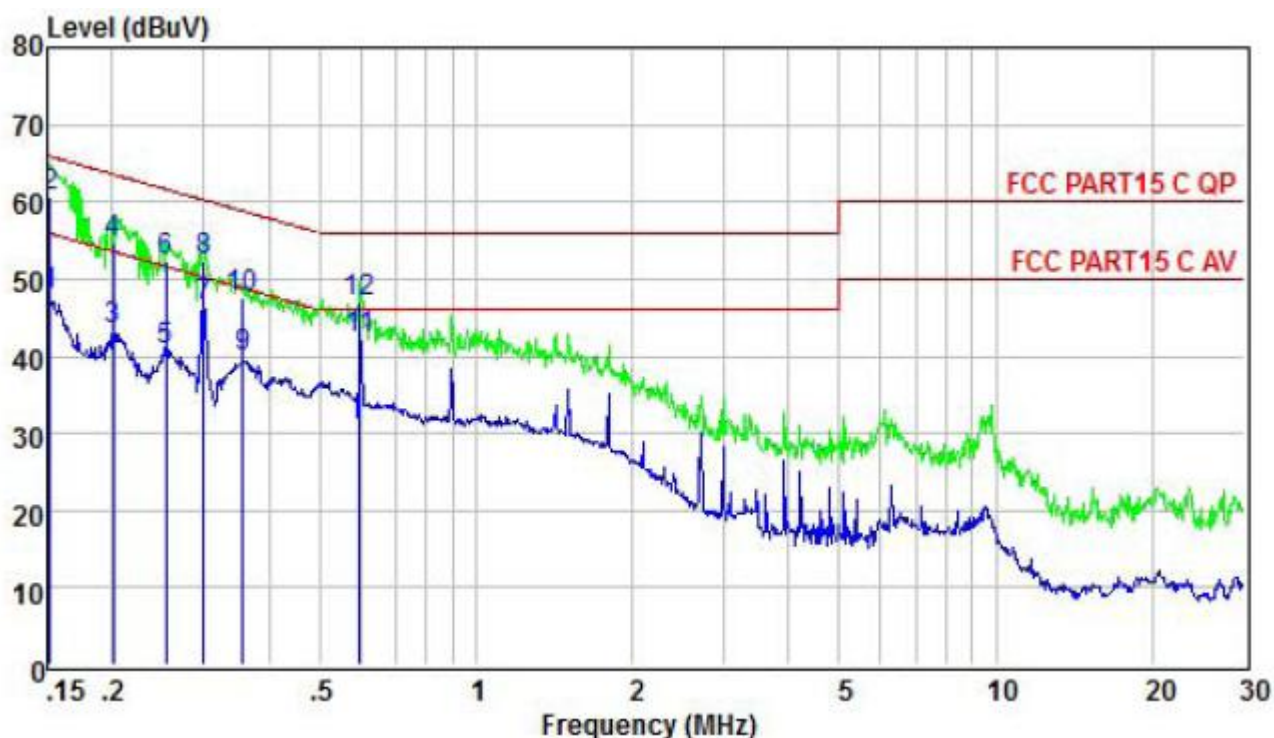
|    | Freq  | Level | Limit | Over   | Remark  |
|----|-------|-------|-------|--------|---------|
|    | MHz   | dBuV  | dBuV  | dB     |         |
| 1  | 0.150 | 39.40 | 56.00 | -16.60 | Average |
| 2  | 0.150 | 55.83 | 66.00 | -10.17 | QP      |
| 3  | 0.159 | 40.98 | 55.52 | -14.54 | Average |
| 4  | 0.159 | 54.36 | 65.52 | -11.16 | QP      |
| 5  | 0.302 | 46.05 | 50.19 | -4.14  | Average |
| 6  | 0.302 | 49.63 | 60.19 | -10.56 | QP      |
| 7  | 0.371 | 39.57 | 48.47 | -8.90  | Average |
| 8  | 0.371 | 48.59 | 58.47 | -9.88  | QP      |
| 9  | 0.415 | 36.68 | 47.55 | -10.87 | Average |
| 10 | 0.415 | 46.59 | 57.55 | -10.96 | QP      |
| 11 | 0.598 | 42.64 | 46.00 | -3.36  | Average |
| 12 | 0.598 | 46.83 | 56.00 | -9.17  | QP      |

|                |                    |                     |        |
|----------------|--------------------|---------------------|--------|
| EUT :          | active loudspeaker | Model Name :        | PW300  |
| Temperature :  | 26 °C              | Relative Humidity : | 54%    |
| Pressure :     | 1010hPa            | Phase :             | N      |
| Test Voltage : | AC 120V/60Hz       | Test Mode :         | Mode 4 |



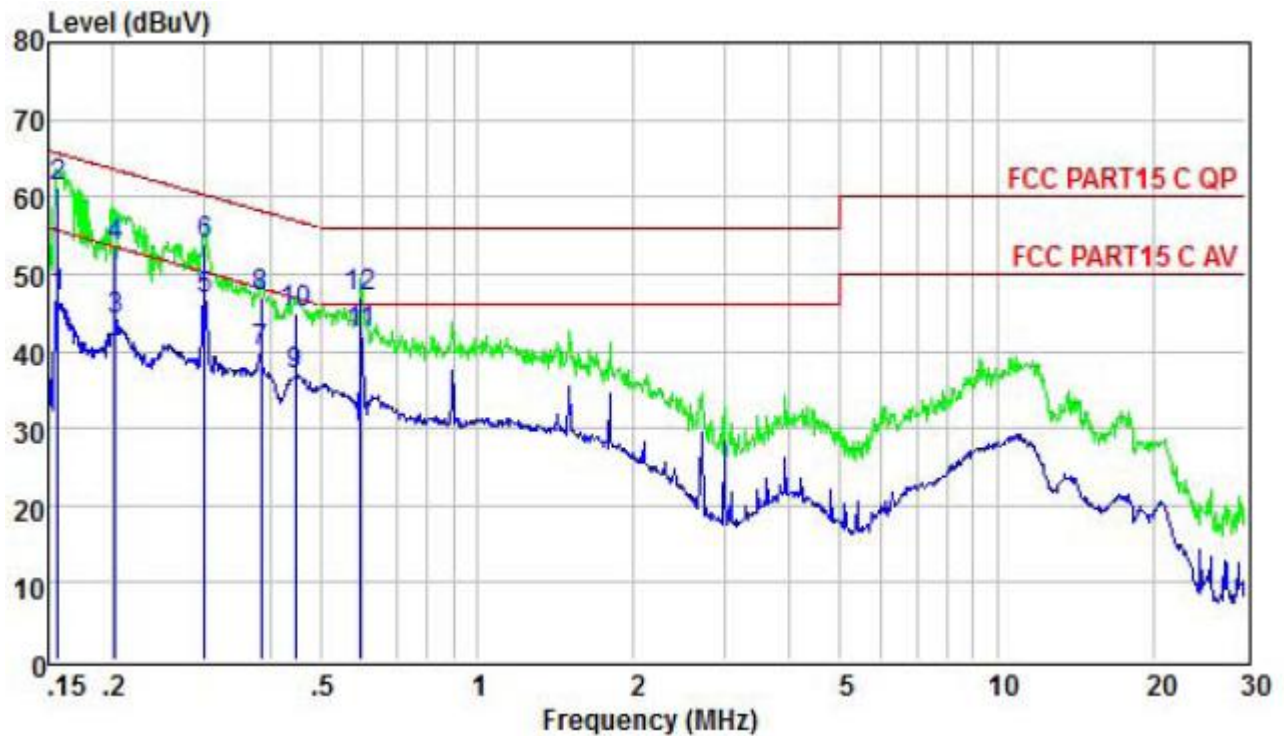
|    | Freq  | Level | Limit | Over   | Remark  |
|----|-------|-------|-------|--------|---------|
|    | MHz   | dBuV  | dBuV  | dB     |         |
| 1  | 0.150 | 41.13 | 56.00 | -14.87 | Average |
| 2  | 0.150 | 55.39 | 66.00 | -10.61 | QP      |
| 3  | 0.190 | 43.91 | 54.02 | -10.11 | Average |
| 4  | 0.190 | 56.59 | 64.02 | -7.43  | QP      |
| 5  | 0.300 | 46.39 | 50.24 | -3.85  | Average |
| 6  | 0.300 | 52.16 | 60.24 | -8.08  | QP      |
| 7  | 0.373 | 42.20 | 48.43 | -6.23  | Average |
| 8  | 0.373 | 49.68 | 58.43 | -8.75  | QP      |
| 9  | 0.393 | 41.26 | 47.99 | -6.73  | Average |
| 10 | 0.393 | 50.63 | 57.99 | -7.36  | QP      |
| 11 | 0.598 | 41.85 | 46.00 | -4.15  | Average |
| 12 | 0.598 | 46.73 | 56.00 | -9.27  | QP      |

|                |                    |                     |        |
|----------------|--------------------|---------------------|--------|
| EUT :          | active loudspeaker | Model Name :        | PW300  |
| Temperature :  | 26 °C              | Relative Humidity : | 54%    |
| Pressure :     | 1010hPa            | Phase :             | L      |
| Test Voltage : | AC 240V/60Hz       | Test Mode :         | Mode 4 |



|    | Freq  | Level | Limit | Over   | Remark  |
|----|-------|-------|-------|--------|---------|
|    | MHz   | dBuV  | Line  | Limit  |         |
|    |       |       | dBuV  | dB     |         |
| 1  | 0.152 | 48.02 | 55.91 | -7.89  | Average |
| 2  | 0.152 | 60.73 | 65.91 | -5.18  | QP      |
| 3  | 0.201 | 43.45 | 53.58 | -10.13 | Average |
| 4  | 0.201 | 54.61 | 63.58 | -8.97  | QP      |
| 5  | 0.253 | 40.81 | 51.64 | -10.83 | Average |
| 6  | 0.253 | 52.39 | 61.64 | -9.25  | QP      |
| 7  | 0.300 | 46.38 | 50.24 | -3.86  | Average |
| 8  | 0.300 | 52.39 | 60.24 | -7.85  | QP      |
| 9  | 0.356 | 39.71 | 48.83 | -9.12  | Average |
| 10 | 0.356 | 47.59 | 58.83 | -11.24 | QP      |
| 11 | 0.598 | 42.13 | 46.00 | -3.87  | Average |
| 12 | 0.598 | 46.85 | 56.00 | -9.15  | QP      |

|                |                    |                     |        |
|----------------|--------------------|---------------------|--------|
| EUT :          | active loudspeaker | Model Name :        | PW300  |
| Temperature :  | 26 °C              | Relative Humidity : | 54%    |
| Pressure :     | 1010hPa            | Phase :             | N      |
| Test Voltage : | AC 240V/60Hz       | Test Mode :         | Mode 4 |



|    | Freq  | Level | Limit | Over   | Remark  |
|----|-------|-------|-------|--------|---------|
|    | MHz   | dBuV  | dBuV  | Limit  |         |
|    |       |       |       | dB     |         |
| 1  | 0.156 | 46.94 | 55.65 | -8.71  | Average |
| 2  | 0.156 | 61.29 | 65.65 | -4.36  | QP      |
| 3  | 0.202 | 43.97 | 53.54 | -9.57  | Average |
| 4  | 0.202 | 53.62 | 63.54 | -9.92  | QP      |
| 5  | 0.300 | 46.78 | 50.24 | -3.46  | Average |
| 6  | 0.300 | 53.84 | 60.24 | -6.40  | QP      |
| 7  | 0.385 | 39.72 | 48.17 | -8.45  | Average |
| 8  | 0.385 | 46.87 | 58.17 | -11.30 | QP      |
| 9  | 0.447 | 36.92 | 46.93 | -10.01 | Average |
| 10 | 0.447 | 44.81 | 56.93 | -12.12 | QP      |
| 11 | 0.598 | 42.22 | 46.00 | -3.78  | Average |
| 12 | 0.598 | 47.03 | 56.00 | -8.97  | QP      |

## 5.2. Radiated Emission Test

### 5.2.1. Limit 15.209 limits

| Frequency<br>MHZ | Distance<br>Meters | Filed Strengths Limit                                                 |                                   |
|------------------|--------------------|-----------------------------------------------------------------------|-----------------------------------|
|                  |                    | $\mu\text{V}/\text{m}$                                                | $\text{dB}(\mu\text{V})/\text{m}$ |
| 30~88            | 3                  | 100                                                                   | 40.0                              |
| 88~216           | 3                  | 150                                                                   | 43.5                              |
| 216~960          | 3                  | 200                                                                   | 46.0                              |
| 960~1000         | 3                  | 500                                                                   | 54.0                              |
| Above 1000       | 3                  | 74.0dB( $\mu\text{V}$ )/m(Peak)<br>54.0dB( $\mu\text{V}$ )/m(Average) |                                   |

### 5.2.2. Restricted bands of operation

| MHz                                                                                                                                                                                                                            | MHz                 | MHz           | GHz         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------|-------------|
| 0.009-0.110                                                                                                                                                                                                                    | 16.42-16.423        | 399.9-410     | 4.5-5.15    |
| 0.495-0.505                                                                                                                                                                                                                    | 16.69475-16.69525   | 608-614       | 5.35-5.46   |
| 2.1735-2.1905                                                                                                                                                                                                                  | 16.80425-16.80475   | 960-1240      | 7.25-7.75   |
| 4.125-4.128                                                                                                                                                                                                                    | 25.5-25.67          | 1300-1427     | 8.025-8.5   |
| 4.17725-4.17775                                                                                                                                                                                                                | 37.5-38.25          | 1435-1626.5   | 9.0-9.2     |
| 4.20725-4.20775                                                                                                                                                                                                                | 73-74.6             | 1645.5-1646.5 | 9.3-9.5     |
| 6.215-6.218                                                                                                                                                                                                                    | 74.8-75.2           | 1660-1710     | 10.6-12.7   |
| 6.26775-6.26825                                                                                                                                                                                                                | 108-121.94          | 1718.8-1722.2 | 13.25-13.4  |
| 6.31175-6.31225                                                                                                                                                                                                                | 123-138             | 2200-2300     | 14.47-14.5  |
| 8.291-8.294                                                                                                                                                                                                                    | 149.9-150.05        | 2310-2390     | 15.35-16.2  |
| 8.362-8.366                                                                                                                                                                                                                    | 156.52475-156.52525 | 2483.5-2500   | 17.7-21.4   |
| 8.37625-8.38675                                                                                                                                                                                                                | 156.7-156.9         | 2690-2900     | 22.01-23.12 |
| 8.41425-8.41475                                                                                                                                                                                                                | 162.0125-167.17     | 3260-3267     | 23.6-24.0   |
| 12.29-12.293                                                                                                                                                                                                                   | 167.72-173.2        | 3332-3339     | 31.2-31.8   |
| 12.51975-12.52025                                                                                                                                                                                                              | 240-285             | 3345.8-3358   | 36.43-36.5  |
| 12.57675-12.57725                                                                                                                                                                                                              | 322-335.4           | 3600-4400     |             |
| All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209,all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits. |                     |               |             |

### 5.2.3. Test setup

The EUT was placed on a turn table which was 0.8 m above the ground blow 1G and 1.5m above 1G. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was set 3 m away from the receiving antenna which was mounted on an antenna tower. The measuring antenna moved up and down to find out the maximum emission level. It moved from 1 m to 4 m for both horizontal and vertical polarizations.

The EUT was tested in the Chamber Site. It was pre-scanned with a Peak detector from the spectrum, and all the final readings from the test receiver were measured with the Quasi-Peak detector.

The bandwidth of the EMI test receiver is set at 120kHz for frequency range from 30MHz to 1000 MHz.

The bandwidth of the Spectrum's VBW is set at 3MHz and RBW is set at 1MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure above 1GHz, the EUT was placed on a turn table which was 1.5 m above the ground, for all test, used peak detector.

The frequency range from 30MHz to 10<sup>th</sup> harmonic (25GHz) are checked. and no any emissions were found from 18GHz to 25 GHz, So the radiated emissions from 18GHz to 25GHz were not record.

Notes: 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading-Preamp Factor.

2. Measurement Uncertainty:  $\pm 3.2$  dB at a level of confidence of 95%.

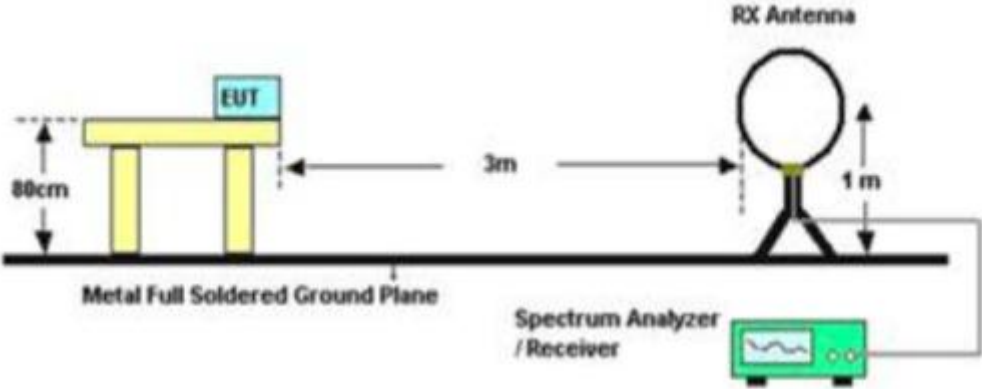
3. For emissions above 1GHz, if peak level comply with average limit, then the average level is deemed to comply with average limit.

4. For emissions below 1GHz, pretest for all mode, The test data of the worst case condition(s) was reported on the following pages.

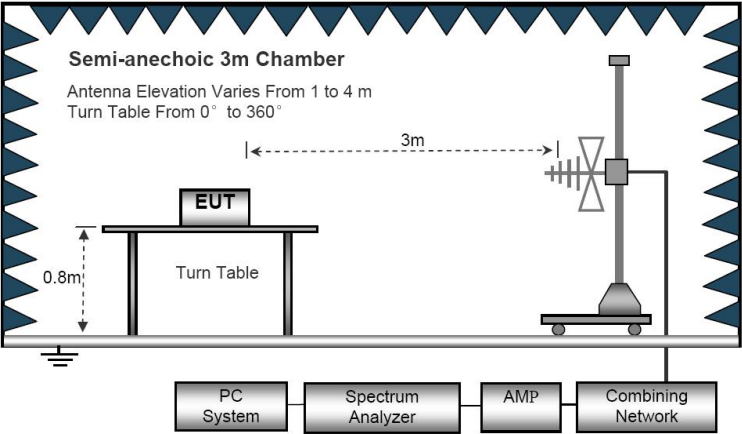
5. EUT Pre-scan X/Y/Z orientation, only worst case is presented in the report (Z orientation).

6. We pretest all modulation, The worst was GFSK, the worst data was show in the report.

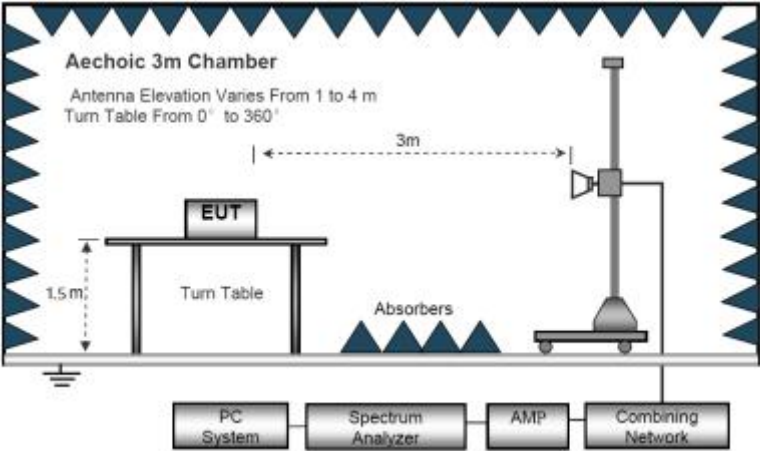
**Radiated Emission Test-Up Frequency Below 30MHz**



**30MHz- 1GHz**



**Above 1GHz**



|                |                    |                     |       |
|----------------|--------------------|---------------------|-------|
| EUT :          | active loudspeaker | Model Name :        | PW300 |
| Temperature :  | 20 °C              | Relative Humidity : | 48%   |
| Pressure :     | 1010hPa            | Test Mode :         | TX    |
| Test Voltage : | AC 120V/60Hz       |                     |       |

**Below 30MHz**

| Freq. | Reading  | Limit    | Margin | State    |
|-------|----------|----------|--------|----------|
| (MHz) | (dBuV/m) | (dBuV/m) | (dB)   | P/F      |
| --    | --       | --       | --     | <b>P</b> |
| --    | --       | --       | --     | <b>P</b> |

**Note:**

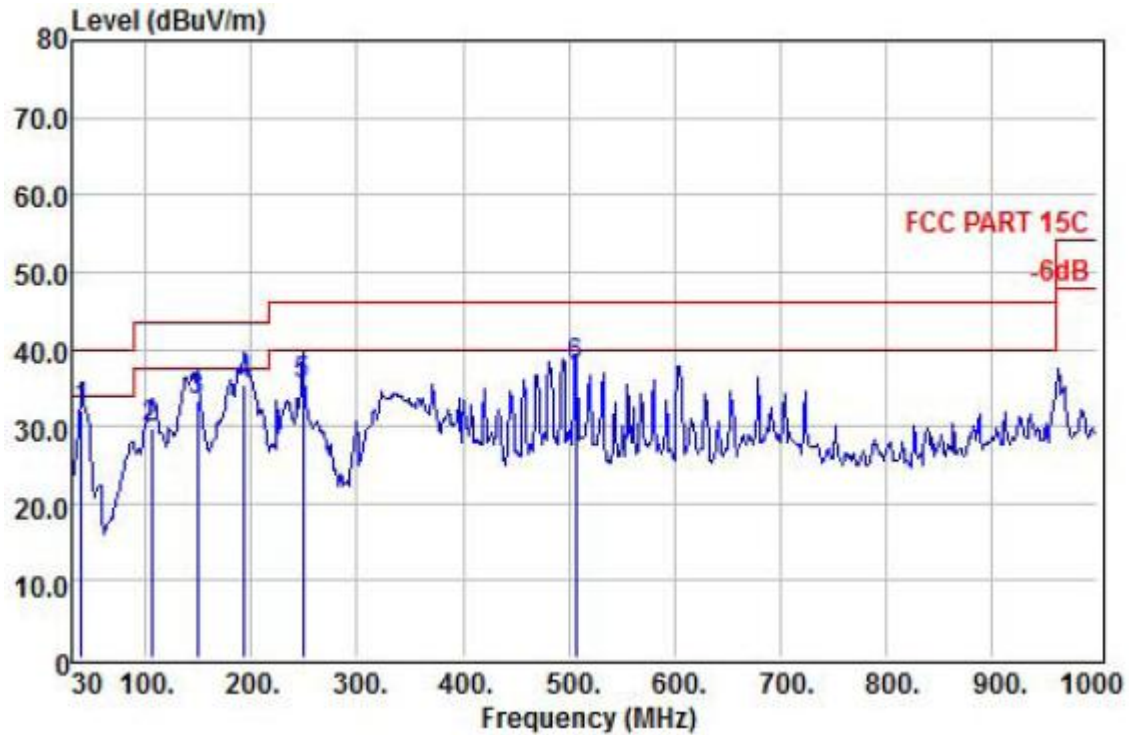
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor =  $40 \log (\text{specific distance/test distance})(\text{dB})$ ;

Limit line = specific limits(dBuv) + distance extrapolation factor.

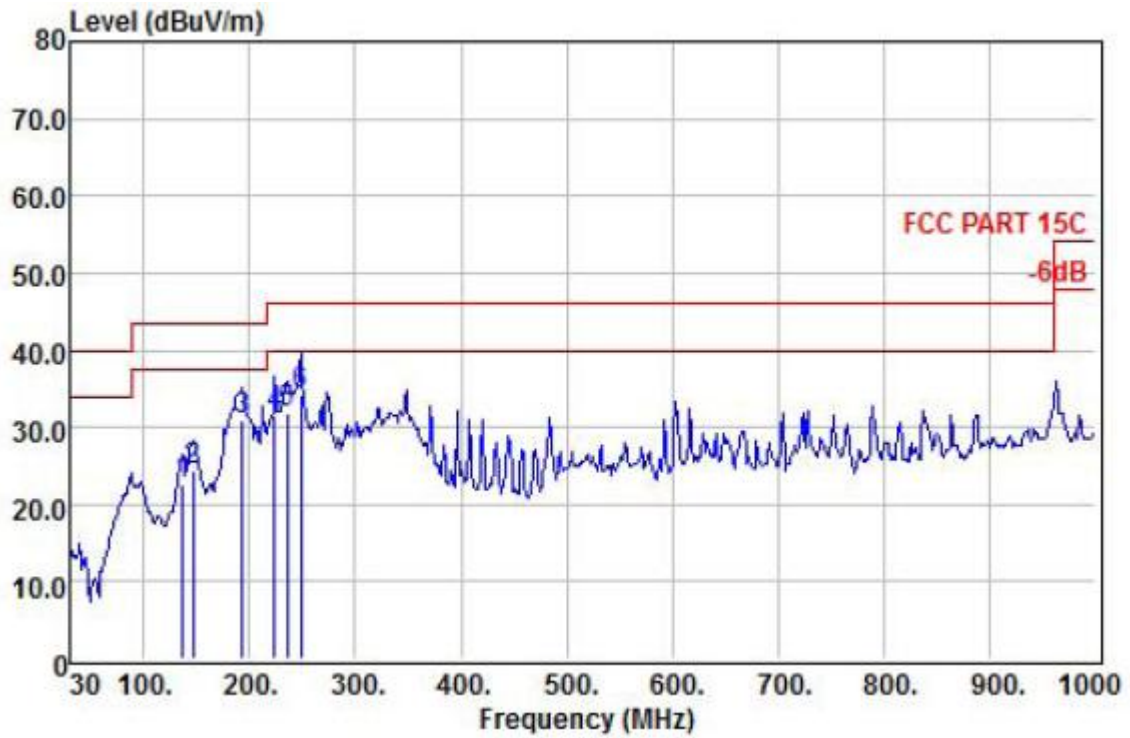
| 30MHz - 1GHz   |                    |                     |              |
|----------------|--------------------|---------------------|--------------|
| EUT :          | active loudspeaker | Model Name :        | PW300        |
| Temperature :  | 20 °C              | Relative Humidity : | 48%          |
| Pressure :     | 1010hPa            | Test Mode :         | TX-GFSK-2480 |
| Test Voltage : | AC 120V/60Hz       |                     |              |

### Vertical



|   | Freq   | ReadAntenna | Cable  | Preamp |        | Limit  | Over   |           |
|---|--------|-------------|--------|--------|--------|--------|--------|-----------|
|   |        | Level       | Factor | Loss   | Factor | Level  | Line   | Limit     |
|   | MHz    | dBuV        | dB/m   | dB     | dB     | dBuV/m | dBuV/m | dB        |
| 1 | 39.70  | 50.28       | 13.08  | 0.13   | 31.37  | 32.12  | 40.00  | -7.88 QP  |
| 2 | 105.66 | 51.53       | 9.43   | 0.18   | 31.33  | 29.81  | 43.50  | -13.69 QP |
| 3 | 148.34 | 55.40       | 8.90   | 0.23   | 31.24  | 33.29  | 43.50  | -10.21 QP |
| 4 | 192.96 | 55.72       | 10.37  | 0.29   | 31.12  | 35.26  | 43.50  | -8.24 QP  |
| 5 | 248.25 | 52.97       | 12.85  | 0.40   | 30.96  | 35.26  | 46.00  | -10.74 QP |
| 6 | 507.24 | 48.25       | 18.84  | 1.18   | 30.61  | 37.66  | 46.00  | -8.34 QP  |

# Horizontal



|   | Freq   | ReadAntenna<br>Level | Factor | Cable<br>Loss | Preamp<br>Factor | Level  | Limit<br>Line | Over<br>Limit | Remark |
|---|--------|----------------------|--------|---------------|------------------|--------|---------------|---------------|--------|
|   | MHz    | dBuV                 | dB/m   | dB            | dB               | dBuV/m | dBuV/m        | dB            |        |
| 1 | 136.70 | 45.27                | 8.37   | 0.23          | 31.20            | 22.67  | 43.50         | -20.83        | QP     |
| 2 | 146.40 | 46.48                | 8.78   | 0.23          | 31.23            | 24.26  | 43.50         | -19.24        | QP     |
| 3 | 192.96 | 51.26                | 10.37  | 0.29          | 31.12            | 30.80  | 43.50         | -12.70        | QP     |
| 4 | 224.00 | 49.97                | 12.15  | 0.40          | 30.95            | 31.57  | 46.00         | -14.43        | QP     |
| 5 | 235.64 | 49.90                | 12.50  | 0.40          | 30.94            | 31.86  | 46.00         | -14.14        | QP     |
| 6 | 248.25 | 51.83                | 12.85  | 0.40          | 30.96            | 34.12  | 46.00         | -11.88        | QP     |

NOTE: 1.Absolute Level= ReadingLevel+antenna Factor+cable loss-preamp factor.  
2. Over Limit= Absolute Level – Limit.  
3. GFSK (CH78 channel) is the worst mode, only worst data is presented in the report.

| Above 1GHz     |                    |                     |       |
|----------------|--------------------|---------------------|-------|
| EUT :          | active loudspeaker | Model Name :        | PW300 |
| Temperature :  | 20 °C              | Relative Humidity : | 48%   |
| Pressure :     | 1010hPa            | Test Mode :         | 1Mbps |
| Test Voltage : | AC 120V/60Hz       |                     |       |

| Frequency | Meter Reading | Antenna Factor | Cable loss | Preamplifier factor | Emission Level | Limits   | Margin | Detector Type | Comment    |
|-----------|---------------|----------------|------------|---------------------|----------------|----------|--------|---------------|------------|
| (MHz)     | (dBμV)        | (dB)           | (dB)       | (dB)                | (dBμV/m)       | (dBμV/m) | (dB)   |               |            |
| TX-2402   |               |                |            |                     |                |          |        |               |            |
| 4804      | 30.17         | 32.94          | 11.94      | 27.49               | 47.56          | 54       | -6.44  | Average       | Vertical   |
| 4804      | 40.21         | 32.94          | 11.94      | 27.49               | 57.60          | 74       | -16.40 | peak          | Vertical   |
| 7206      | 31.35         | 25.28          | 18.04      | 27.94               | 46.73          | 54       | -7.27  | Average       | Vertical   |
| 7206      | 42.11         | 25.28          | 18.04      | 27.94               | 57.49          | 74       | -16.51 | peak          | Vertical   |
| 4804      | 30.21         | 32.94          | 11.94      | 27.49               | 47.60          | 54       | -6.40  | Average       | Horizontal |
| 4804      | 39.78         | 32.94          | 11.94      | 27.49               | 57.17          | 74       | -16.83 | peak          | Horizontal |
| 7206      | 29.87         | 25.28          | 18.04      | 27.94               | 45.25          | 54       | -8.75  | Average       | Horizontal |
| 7206      | 40.85         | 25.28          | 18.04      | 27.94               | 56.23          | 74       | -17.77 | peak          | Horizontal |
| TX-2441   |               |                |            |                     |                |          |        |               |            |
| 4882      | 30.12         | 32.11          | 12.15      | 27.53               | 46.85          | 54       | -7.15  | Average       | Vertical   |
| 4882      | 40.17         | 32.11          | 12.15      | 27.53               | 56.90          | 74       | -17.10 | peak          | Vertical   |
| 7323      | 31.18         | 24.33          | 18.09      | 27.96               | 45.64          | 54       | -8.36  | Average       | Vertical   |
| 7323      | 40.76         | 24.33          | 18.09      | 27.96               | 55.22          | 74       | -18.78 | peak          | Vertical   |
| 4882      | 31.18         | 32.11          | 12.15      | 27.53               | 47.91          | 54       | -6.09  | Average       | Horizontal |
| 4882      | 40.85         | 32.11          | 12.15      | 27.53               | 57.58          | 74       | -16.42 | peak          | Horizontal |
| 7323      | 30.14         | 24.33          | 18.09      | 27.96               | 44.60          | 54       | -9.40  | Average       | Horizontal |
| 7323      | 40.26         | 24.33          | 18.09      | 27.96               | 54.72          | 74       | -19.28 | peak          | Horizontal |
| TX-2480   |               |                |            |                     |                |          |        |               |            |
| 4960      | 30.51         | 31.32          | 12.31      | 27.58               | 46.56          | 54       | -7.44  | Average       | Vertical   |
| 4960      | 40.28         | 31.32          | 12.31      | 27.58               | 56.33          | 74       | -17.67 | peak          | Vertical   |
| 7440      | 30.19         | 24.38          | 18.16      | 27.99               | 44.74          | 54       | -9.26  | Average       | Vertical   |
| 7440      | 40.62         | 24.38          | 18.16      | 27.99               | 55.17          | 74       | -18.83 | peak          | Vertical   |
| 4960      | 30.18         | 31.32          | 12.31      | 27.58               | 46.23          | 54       | -7.77  | Average       | Horizontal |
| 4960      | 41.25         | 31.32          | 12.31      | 27.58               | 57.30          | 74       | -16.70 | peak          | Horizontal |
| 7440      | 31.15         | 24.38          | 18.16      | 27.99               | 45.70          | 54       | -8.30  | Average       | Horizontal |
| 7440      | 41.29         | 24.38          | 18.16      | 27.99               | 55.84          | 74       | -18.16 | peak          | Horizontal |

NOTE:1.Absolute Level= ReadingLevel+antenna Factor+cable loss-preamplifier factor.

2.Over Limit= Absolute Level – Limit.

3.The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has not to be reported.

4.EUT Pre-scan X/Y/Z orientation, only worst case is presented in the report (Z orientation)

| Above 1GHz     |                    |                     |       |
|----------------|--------------------|---------------------|-------|
| EUT :          | active loudspeaker | Model Name :        | PW300 |
| Temperature :  | 20 °C              | Relative Humidity : | 48%   |
| Pressure :     | 1010hPa            | Test Mode :         | 2Mbps |
| Test Voltage : | AC 120V/60Hz       |                     |       |

| Frequency | Meter Reading | Antenna Factor | Cable loss | Preamplifier factor | Emission Level | Limits   | Margin | Detector Type | Comment    |
|-----------|---------------|----------------|------------|---------------------|----------------|----------|--------|---------------|------------|
| (MHz)     | (dBμV)        | (dB)           | (dB)       | (dB)                | (dBμV/m)       | (dBμV/m) | (dB)   |               |            |
| TX-2402   |               |                |            |                     |                |          |        |               |            |
| 4804      | 29.53         | 32.94          | 11.94      | 27.49               | 46.92          | 54       | -7.08  | Average       | Vertical   |
| 4804      | 39.62         | 32.94          | 11.94      | 27.49               | 57.01          | 74       | -16.99 | peak          | Vertical   |
| 7206      | 31.15         | 25.28          | 18.04      | 27.94               | 46.53          | 54       | -7.47  | Average       | Vertical   |
| 7206      | 40.23         | 25.28          | 18.04      | 27.94               | 55.61          | 74       | -18.39 | peak          | Vertical   |
| 4804      | 29.84         | 32.94          | 11.94      | 27.49               | 47.23          | 54       | -6.77  | Average       | Horizontal |
| 4804      | 40.58         | 32.94          | 11.94      | 27.49               | 57.97          | 74       | -16.03 | peak          | Horizontal |
| 7206      | 30.26         | 25.28          | 18.04      | 27.94               | 45.64          | 54       | -8.36  | Average       | Horizontal |
| 7206      | 42.05         | 25.28          | 18.04      | 27.94               | 57.43          | 74       | -16.57 | peak          | Horizontal |
| TX-2441   |               |                |            |                     |                |          |        |               |            |
| 4882      | 29.71         | 32.11          | 12.15      | 27.53               | 46.44          | 54       | -7.56  | Average       | Vertical   |
| 4882      | 40.09         | 32.11          | 12.15      | 27.53               | 56.82          | 74       | -17.18 | peak          | Vertical   |
| 7323      | 31.28         | 24.33          | 18.09      | 27.96               | 45.74          | 54       | -8.26  | Average       | Vertical   |
| 7323      | 39.93         | 24.33          | 18.09      | 27.96               | 54.39          | 74       | -19.61 | peak          | Vertical   |
| 4882      | 32.61         | 32.11          | 12.15      | 27.53               | 49.34          | 54       | -4.66  | Average       | Horizontal |
| 4882      | 41.72         | 32.11          | 12.15      | 27.53               | 58.45          | 74       | -15.55 | peak          | Horizontal |
| 7323      | 29.61         | 24.33          | 18.09      | 27.96               | 44.07          | 54       | -9.93  | Average       | Horizontal |
| 7323      | 40.73         | 24.33          | 18.09      | 27.96               | 55.19          | 74       | -18.81 | peak          | Horizontal |
| TX-2480   |               |                |            |                     |                |          |        |               |            |
| 4960      | 31.07         | 31.32          | 12.31      | 27.58               | 47.12          | 54       | -6.88  | Average       | Vertical   |
| 4960      | 41.18         | 31.32          | 12.31      | 27.58               | 57.23          | 74       | -16.77 | peak          | Vertical   |
| 7440      | 31.72         | 24.38          | 18.16      | 27.99               | 46.27          | 54       | -7.73  | Average       | Vertical   |
| 7440      | 41.61         | 24.38          | 18.16      | 27.99               | 56.16          | 74       | -17.84 | peak          | Vertical   |
| 4960      | 30.14         | 31.32          | 12.31      | 27.58               | 46.19          | 54       | -7.81  | Average       | Horizontal |
| 4960      | 41.26         | 31.32          | 12.31      | 27.58               | 57.31          | 74       | -16.69 | peak          | Horizontal |
| 7440      | 31.04         | 24.38          | 18.16      | 27.99               | 45.59          | 54       | -8.41  | Average       | Horizontal |
| 7440      | 39.96         | 24.38          | 18.16      | 27.99               | 54.51          | 74       | -19.49 | peak          | Horizontal |

NOTE:1.Absolute Level= ReadingLevel+antenna Factor+cable loss-preamplifier factor.

2.Over Limit= Absolute Level – Limit.

3.The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has not to be reported.

4.EUT Pre-scan X/Y/Z orientation, only worst case is presented in the report (Z orientation)

| Above 1GHz     |                    |                     |       |
|----------------|--------------------|---------------------|-------|
| EUT :          | active loudspeaker | Model Name :        | PW300 |
| Temperature :  | 20 °C              | Relative Humidity : | 48%   |
| Pressure :     | 1010hPa            | Test Mode :         | 3Mbps |
| Test Voltage : | AC 120V/60Hz       |                     |       |

| Frequency | Meter Reading | Antenna Factor | Cable loss | Preamp factor | Emission Level | Limits   | Margin | Detector Type | Comment    |
|-----------|---------------|----------------|------------|---------------|----------------|----------|--------|---------------|------------|
| (MHz)     | (dBμV)        | (dB)           | (dB)       | (dB)          | (dBμV/m)       | (dBμV/m) | (dB)   |               |            |
| TX-2402   |               |                |            |               |                |          |        |               |            |
| 4804      | 31.75         | 32.94          | 11.94      | 27.49         | 49.14          | 54       | -4.86  | Average       | Vertical   |
| 4804      | 39.51         | 32.94          | 11.94      | 27.49         | 56.90          | 74       | -17.10 | peak          | Vertical   |
| 7206      | 30.71         | 25.28          | 18.04      | 27.94         | 46.09          | 54       | -7.91  | Average       | Vertical   |
| 7206      | 42.71         | 25.28          | 18.04      | 27.94         | 58.09          | 74       | -15.91 | peak          | Vertical   |
| 4804      | 31.41         | 32.94          | 11.94      | 27.49         | 48.80          | 54       | -5.20  | Average       | Horizontal |
| 4804      | 41.28         | 32.94          | 11.94      | 27.49         | 58.67          | 74       | -15.33 | peak          | Horizontal |
| 7206      | 31.56         | 25.28          | 18.04      | 27.94         | 46.94          | 54       | -7.06  | Average       | Horizontal |
| 7206      | 40.82         | 25.28          | 18.04      | 27.94         | 56.20          | 74       | -17.80 | peak          | Horizontal |
| TX-2441   |               |                |            |               |                |          |        |               |            |
| 4882      | 31.59         | 32.11          | 12.15      | 27.53         | 48.32          | 54       | -5.68  | Average       | Vertical   |
| 4882      | 40.61         | 32.11          | 12.15      | 27.53         | 57.34          | 74       | -16.66 | peak          | Vertical   |
| 7323      | 32.38         | 24.33          | 18.09      | 27.96         | 46.84          | 54       | -7.16  | Average       | Vertical   |
| 7323      | 41.42         | 24.33          | 18.09      | 27.96         | 55.88          | 74       | -18.12 | peak          | Vertical   |
| 4882      | 30.51         | 32.11          | 12.15      | 27.53         | 47.24          | 54       | -6.76  | Average       | Horizontal |
| 4882      | 40.17         | 32.11          | 12.15      | 27.53         | 56.90          | 74       | -17.10 | peak          | Horizontal |
| 7323      | 30.68         | 24.33          | 18.09      | 27.96         | 45.14          | 54       | -8.86  | Average       | Horizontal |
| 7323      | 39.42         | 24.33          | 18.09      | 27.96         | 53.88          | 74       | -20.12 | peak          | Horizontal |
| TX-2480   |               |                |            |               |                |          |        |               |            |
| 4960      | 30.79         | 31.32          | 12.31      | 27.58         | 46.84          | 54       | -7.16  | Average       | Vertical   |
| 4960      | 41.38         | 31.32          | 12.31      | 27.58         | 57.43          | 74       | -16.57 | peak          | Vertical   |
| 7440      | 31.54         | 24.38          | 18.16      | 27.99         | 46.09          | 54       | -7.91  | Average       | Vertical   |
| 7440      | 41.56         | 24.38          | 18.16      | 27.99         | 56.11          | 74       | -17.89 | peak          | Vertical   |
| 4960      | 31.25         | 31.32          | 12.31      | 27.58         | 47.30          | 54       | -6.70  | Average       | Horizontal |
| 4960      | 41.26         | 31.32          | 12.31      | 27.58         | 57.31          | 74       | -16.69 | peak          | Horizontal |
| 7440      | 31.95         | 24.38          | 18.16      | 27.99         | 46.50          | 54       | -7.50  | Average       | Horizontal |
| 7440      | 42.67         | 24.38          | 18.16      | 27.99         | 57.22          | 74       | -16.78 | peak          | Horizontal |

NOTE:1.Absolute Level= ReadingLevel+antenna Factor+cable loss-preamp factor.

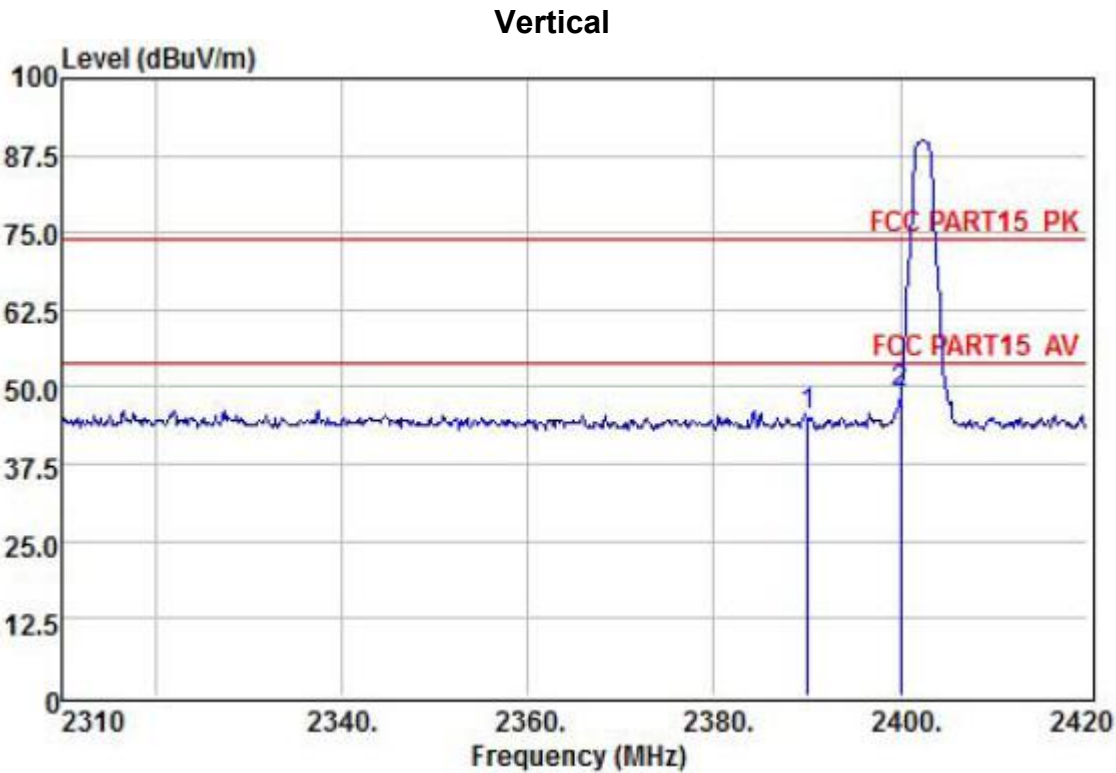
2.Over Limit= Absolute Level – Limit.

3.The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has not to be reported.

4.EUT Pre-scan XY/Z orientation, only worst case is presented in the report (Z orientation)

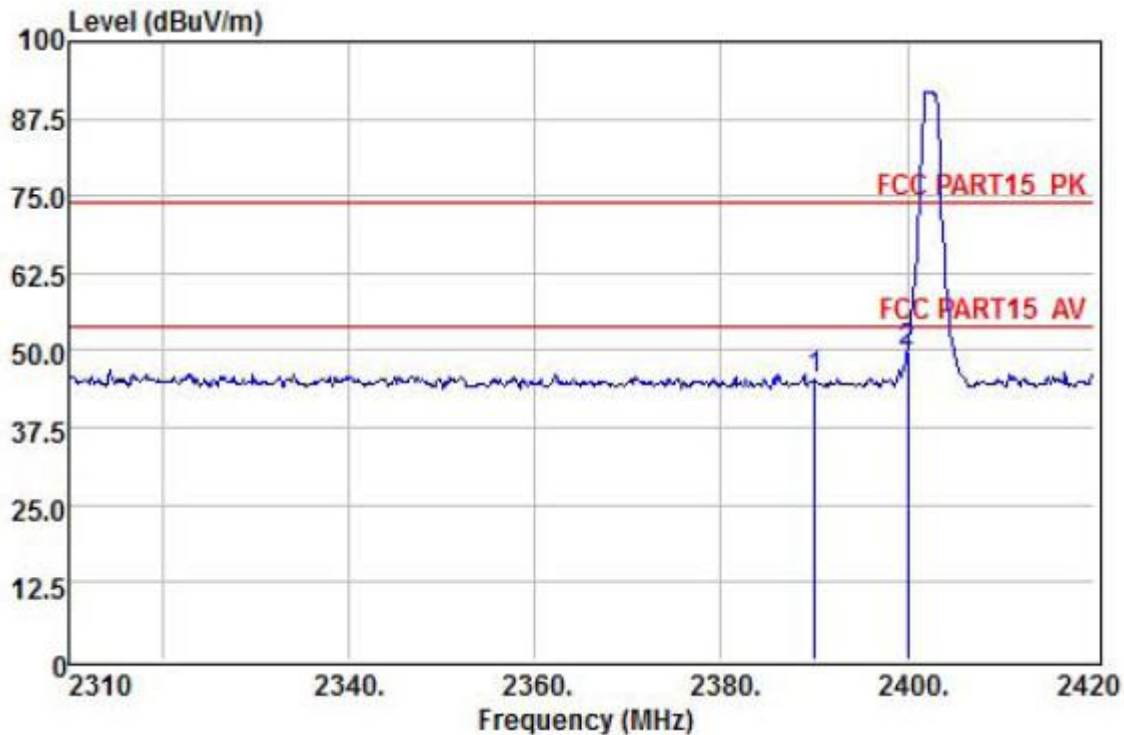
For radiated Bandedge test as follows:

| 1M bps         |                    |                     |         |
|----------------|--------------------|---------------------|---------|
| EUT :          | active loudspeaker | Model Name :        | PW300   |
| Temperature :  | 20 °C              | Relative Humidity : | 48%     |
| Pressure :     | 1010hPa            | Test Mode :         | TX-2402 |
| Test Voltage : | AC 120V/60Hz       |                     |         |



|   | Freq    | Read<br>Level | Antenna<br>Factor | Cable<br>Loss | Preamp<br>Factor | Level  | Limit<br>Line | Over<br>Limit | Remark |
|---|---------|---------------|-------------------|---------------|------------------|--------|---------------|---------------|--------|
|   | MHz     | dBuV          | dB/m              | dB            | dB               | dBuV/m | dBuV/m        | dB            |        |
| 1 | 2390.00 | 39.60         | 28.72             | 3.36          | 26.32            | 45.36  | 74.00         | -28.64        | Peak   |
| 2 | 2400.00 | 43.26         | 28.72             | 3.38          | 26.32            | 49.04  | 74.00         | -24.96        | Peak   |

### Horizontal

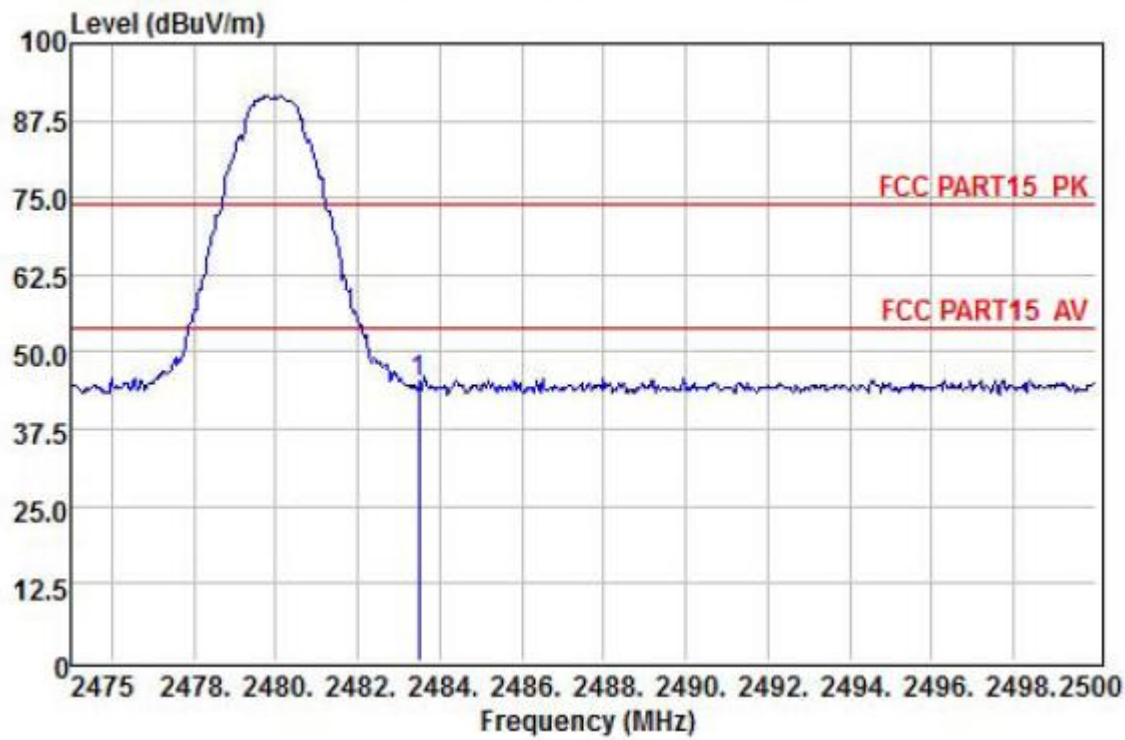


|   | Freq    | ReadAntenna<br>Level | Antenna<br>Factor | Cable<br>Loss | Preamp<br>Factor | Level  | Limit<br>Line | Over<br>Limit | Remark |
|---|---------|----------------------|-------------------|---------------|------------------|--------|---------------|---------------|--------|
|   | MHz     | dBuV                 | dB/m              | dB            | dB               | dBuV/m | dBuV/m        | dB            |        |
| 1 | 2390.00 | 39.61                | 28.72             | 3.36          | 26.32            | 45.37  | 74.00         | -28.63        | Peak   |
| 2 | 2400.00 | 43.88                | 28.72             | 3.38          | 26.32            | 49.66  | 74.00         | -24.34        | Peak   |

NOTE: 1.Absolute Level= Reading Level+antenna Factor+cable loss-preamp factor,  
Over Limit= Absolute Level – Limit;  
2.The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has not to be reported.  
3.If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.

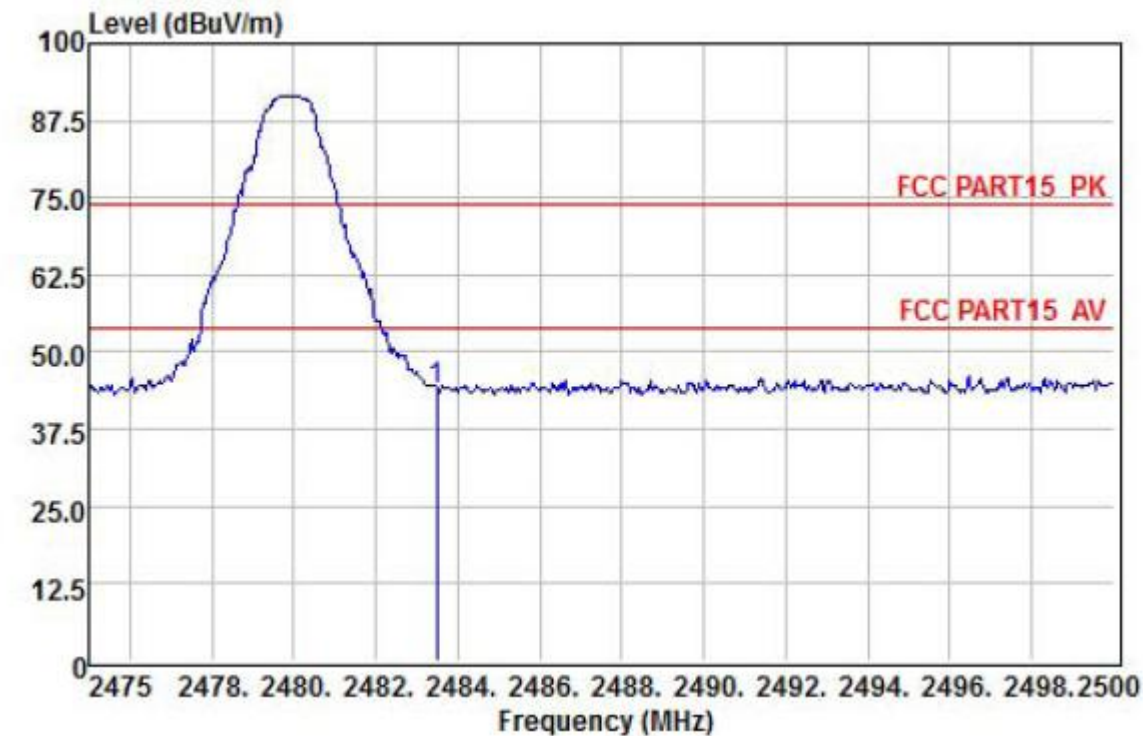
| 1M bps        |                    |                    |         |
|---------------|--------------------|--------------------|---------|
| EUT：          | active loudspeaker | Model Name：        | PW300   |
| Temperature：  | 20℃                | Relative Humidity： | 48%     |
| Pressure：     | 1010hPa            | Test Mode：         | TX-2480 |
| Test Voltage： | AC 120V/60Hz       |                    |         |

Vertical



|   | Freq    | Read<br>Level | Antenna<br>Factor | Cable<br>Loss | Preamp<br>Factor | Level  | Limit  | Over<br>Limit | Remark |
|---|---------|---------------|-------------------|---------------|------------------|--------|--------|---------------|--------|
|   | MHz     | dBuV          | dB/m              | dB            | dB               | dBuV/m | dBuV/m | dB            |        |
| 1 | 2483.50 | 38.88         | 28.79             | 3.48          | 26.34            | 44.81  | 74.00  | -29.19        | Peak   |

Horizontal

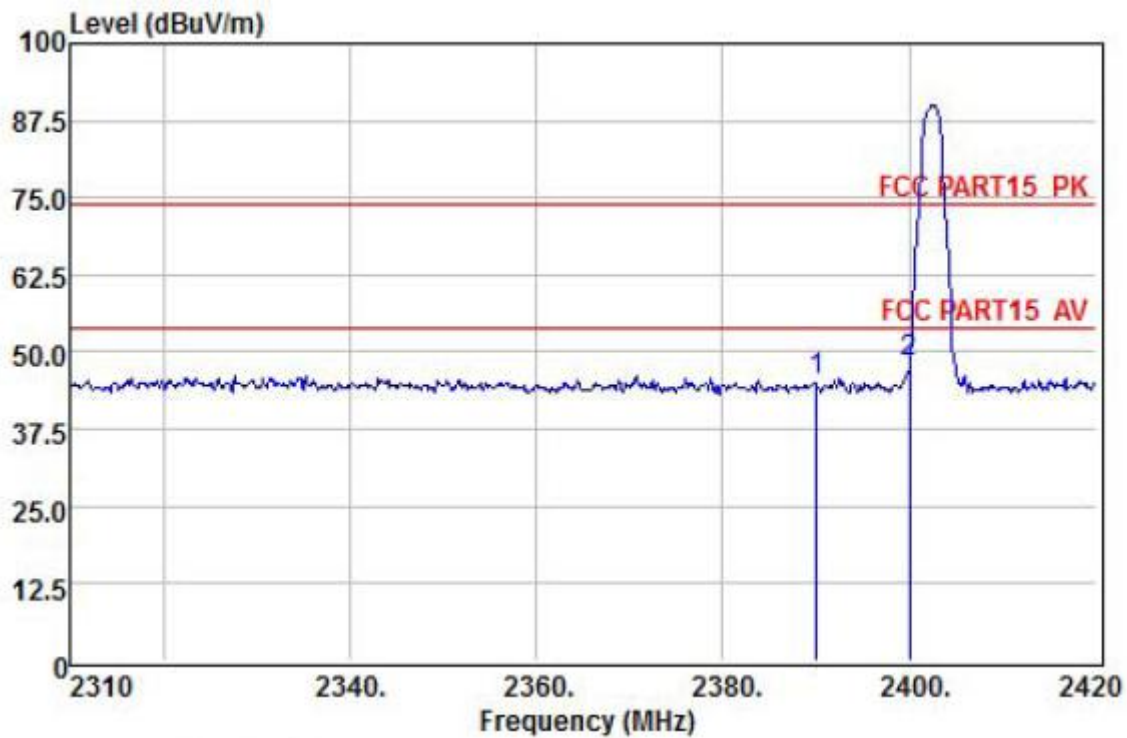


|   | Freq    | ReadAntenna | Cable | Preamp |       | Limit  | Over   |             |
|---|---------|-------------|-------|--------|-------|--------|--------|-------------|
|   | Level   | Factor      | Loss  | Factor | Level | Line   | Limit  | Remark      |
|   | MHz     | dBuV        | dB/m  | dB     | dB    | dBuV/m | dBuV/m | dB          |
| 1 | 2483.50 | 37.85       | 28.79 | 3.48   | 26.34 | 43.78  | 74.00  | -30.22 Peak |

NOTE: 1.Absolute Level= Reading Level+antenna Factor+cable loss-preamp factor,  
Over Limit= Absolute Level – Limit;  
2.The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has not to be reported.  
3.If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.

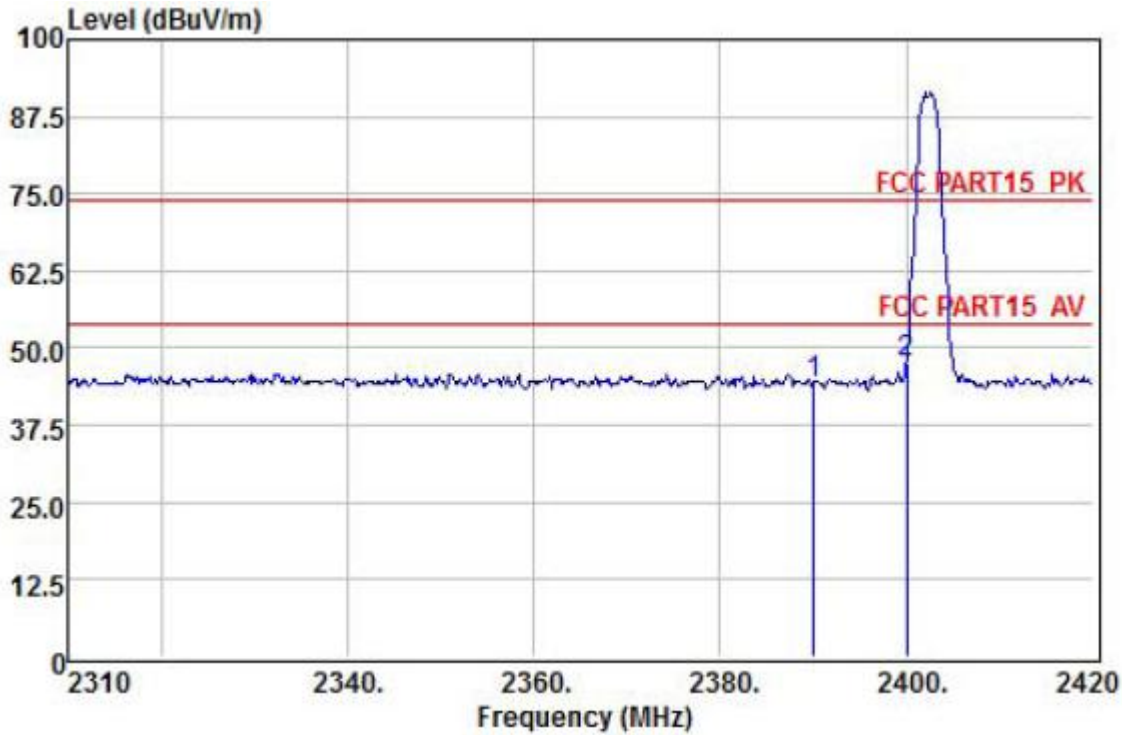
| 2M bps         |                    |                     |         |
|----------------|--------------------|---------------------|---------|
| EUT :          | active loudspeaker | Model Name :        | PW300   |
| Temperature :  | 20 °C              | Relative Humidity : | 48%     |
| Pressure :     | 1010hPa            | Test Mode :         | TX-2402 |
| Test Voltage : | AC 120V/60Hz       |                     |         |

### Vertical



|   | Freq    | ReadAntenna | Cable  | Preamp |        | Limit  | Over   |        |        |
|---|---------|-------------|--------|--------|--------|--------|--------|--------|--------|
|   |         | Level       | Factor | Loss   | Factor | Level  | Line   | Limit  | Remark |
|   | MHz     | dBuV        | dB/m   | dB     | dB     | dBuV/m | dBuV/m | dB     |        |
| 1 | 2390.00 | 39.44       | 28.72  | 3.36   | 26.32  | 45.20  | 74.00  | -28.80 | Peak   |
| 2 | 2400.00 | 42.45       | 28.72  | 3.38   | 26.32  | 48.23  | 74.00  | -25.77 | Peak   |

Horizontal

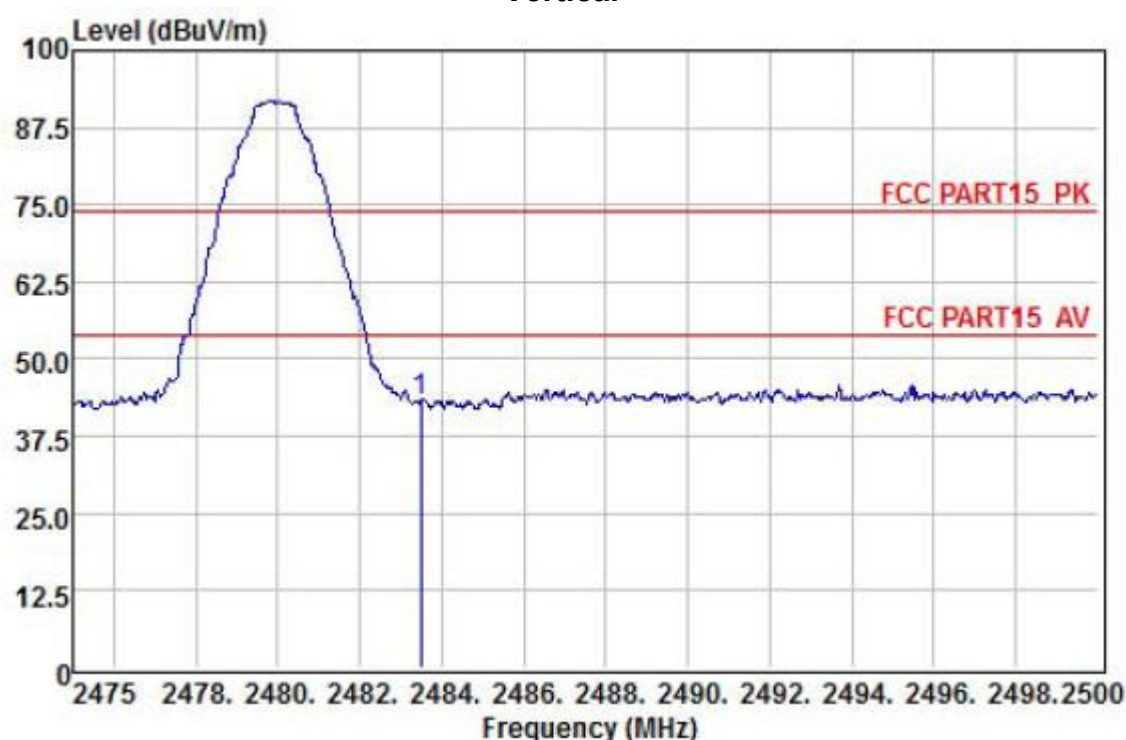


|   | Freq    | ReadAntenna | Cable | Preamp |       | Limit  | Over   |             |
|---|---------|-------------|-------|--------|-------|--------|--------|-------------|
|   | Level   | Factor      | Loss  | Factor | Level | Line   | Limit  | Remark      |
|   | MHz     | dBuV        | dB/m  | dB     | dB    | dBuV/m | dBuV/m | dB          |
| 1 | 2390.00 | 38.37       | 28.72 | 3.36   | 26.32 | 44.13  | 74.00  | -29.87 Peak |
| 2 | 2400.00 | 41.85       | 28.72 | 3.38   | 26.32 | 47.63  | 74.00  | -26.37 Peak |

NOTE: 1.Absolute Level= Reading Level+antenna Factor+cable loss-preamp factor,  
Over Limit= Absolute Level – Limit;  
2.The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has not to be reported.  
3.If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.

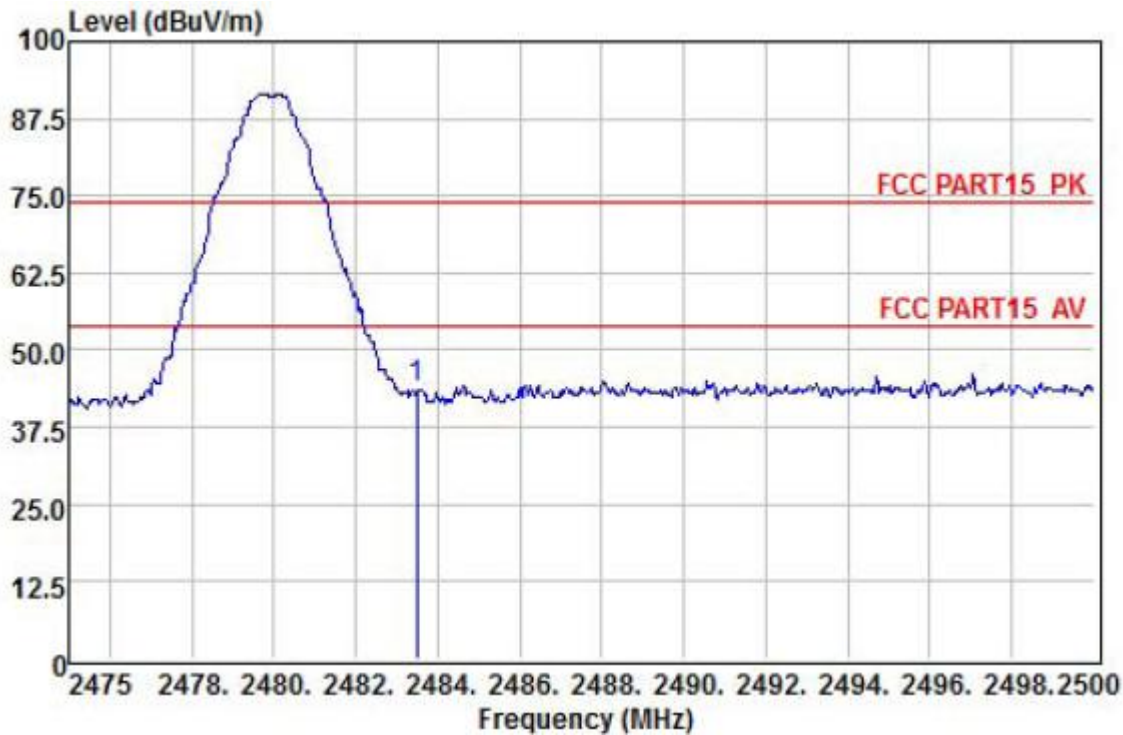
| 2M bps         |                    |                     |         |
|----------------|--------------------|---------------------|---------|
| EUT :          | active loudspeaker | Model Name :        | PW300   |
| Temperature :  | 20 °C              | Relative Humidity : | 48%     |
| Pressure :     | 1010hPa            | Test Mode :         | TX-2480 |
| Test Voltage : | AC 120V/60Hz       |                     |         |

### Vertical



|   | Freq    | ReadAntenna<br>Level | Cable<br>Factor | Preamp<br>Loss | Factor | Limit<br>Level | Over<br>Line | Limit  | Over<br>Limit | Remark |
|---|---------|----------------------|-----------------|----------------|--------|----------------|--------------|--------|---------------|--------|
|   | MHz     | dBuV                 | dB/m            | dB             | dB     | dBuV/m         | dBuV/m       | dB     |               |        |
| 1 | 2483.50 | 37.30                | 28.79           | 3.48           | 26.34  | 43.23          | 74.00        | -30.77 | Peak          |        |

Horizontal

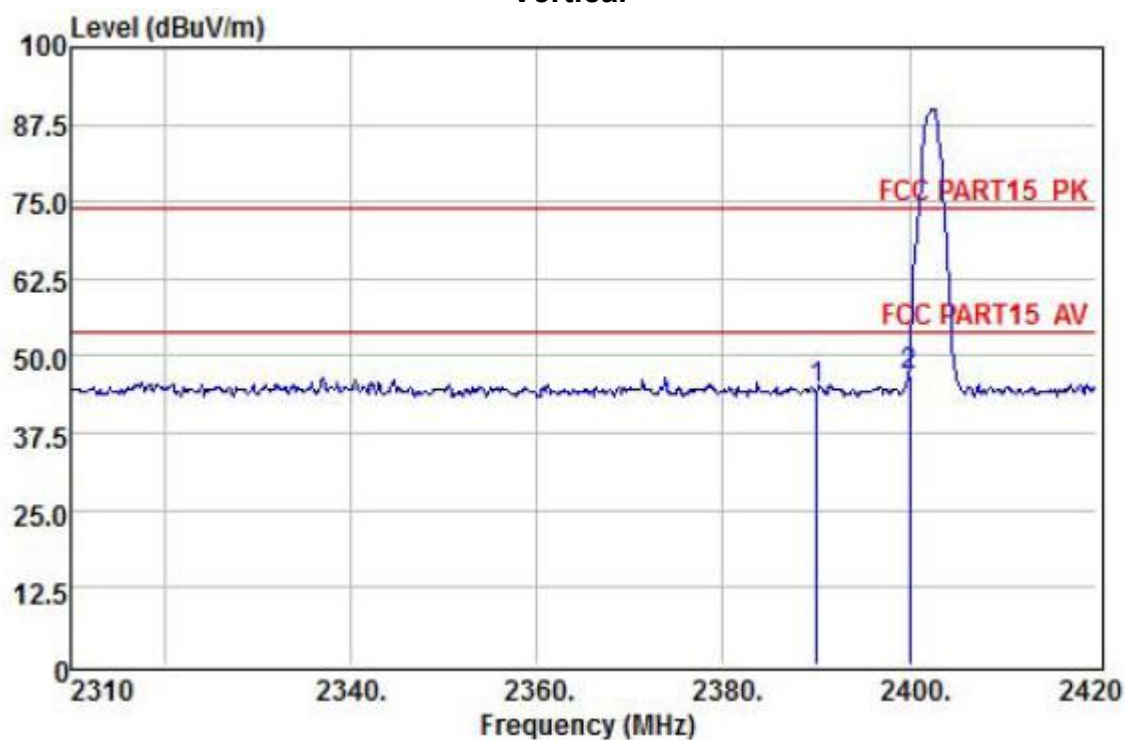


|   | Freq    | ReadAntenna<br>Level | Antenna<br>Factor | Cable<br>Loss | Preamp<br>Factor | Level  | Limit<br>Line | Over<br>Limit | Remark |
|---|---------|----------------------|-------------------|---------------|------------------|--------|---------------|---------------|--------|
|   | MHz     | dBuV                 | dB/m              | dB            | dB               | dBuV/m | dBuV/m        | dB            |        |
| 1 | 2483.50 | 37.83                | 28.79             | 3.48          | 26.34            | 43.76  | 74.00         | -30.24        | Peak   |

NOTE: 1.Absolute Level= Reading Level+antenna Factor+cable loss-preamp factor,  
Over Limit= Absolute Level – Limit;  
2.The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has not to be reported.  
3.If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.

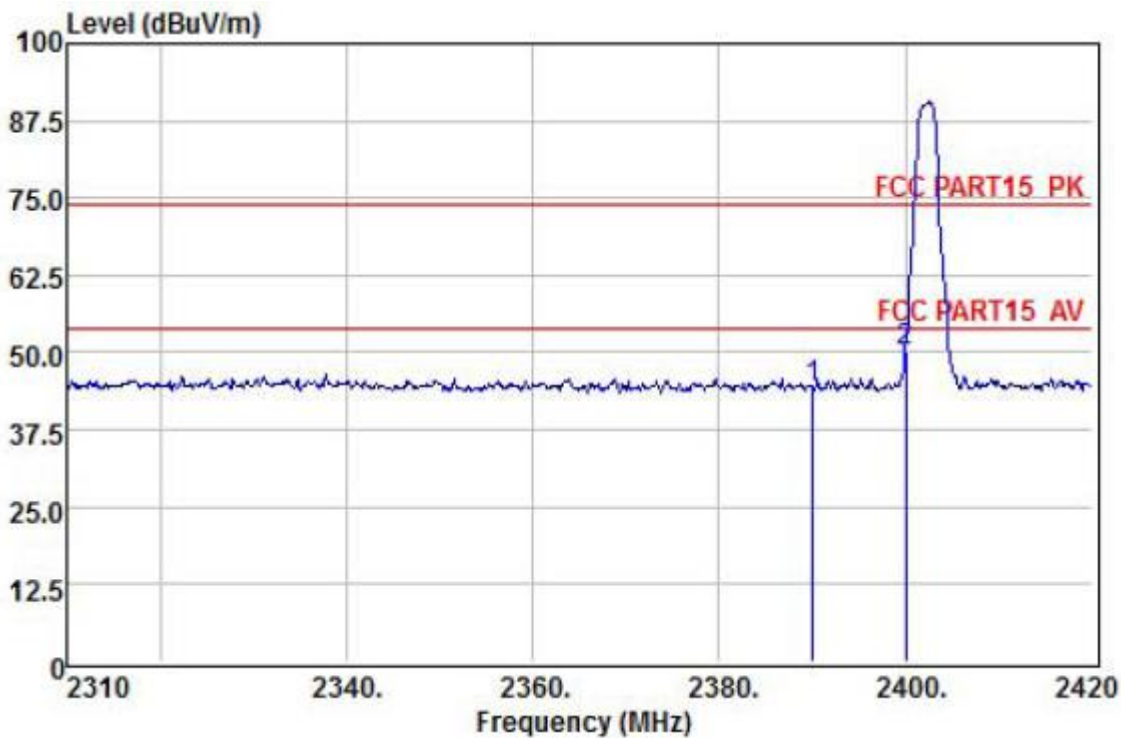
| 3M bps         |                    |                     |         |
|----------------|--------------------|---------------------|---------|
| EUT :          | active loudspeaker | Model Name :        | PW300   |
| Temperature :  | 20 °C              | Relative Humidity : | 48%     |
| Pressure :     | 1010hPa            | Test Mode :         | TX-2402 |
| Test Voltage : | AC 120V/60Hz       |                     |         |

### Vertical



|   | Freq    | ReadAntenna<br>Level | Antenna<br>Factor | Cable<br>Loss | Preamplifier<br>Factor | Level  | Limit<br>Line | Over<br>Limit | Remark |
|---|---------|----------------------|-------------------|---------------|------------------------|--------|---------------|---------------|--------|
|   | MHz     | dBuV                 | dB/m              | dB            | dB                     | dBuV/m | dBuV/m        | dB            |        |
| 1 | 2390.00 | 38.78                | 28.72             | 3.36          | 26.32                  | 44.54  | 74.00         | -29.46        | Peak   |
| 2 | 2400.00 | 40.90                | 28.72             | 3.38          | 26.32                  | 46.68  | 74.00         | -27.32        | Peak   |

### Horizontal

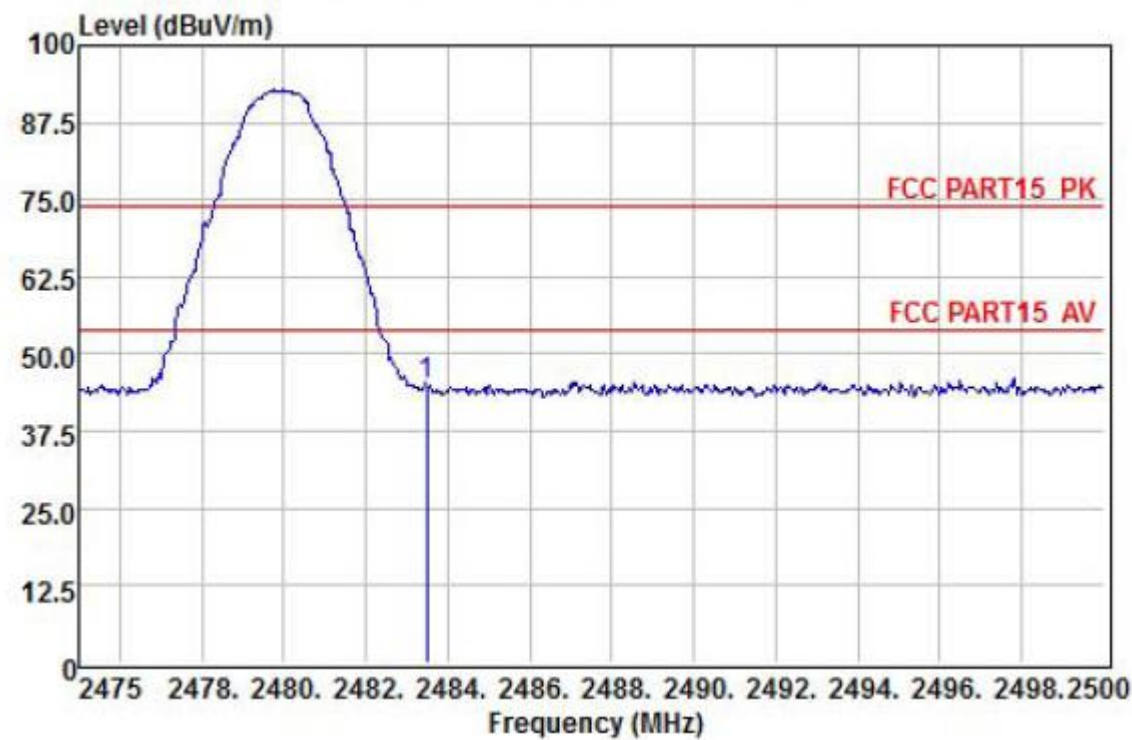


|   | Freq    | ReadAntenna<br>Level | Antenna<br>Factor | Cable<br>Loss | Preamp<br>Factor | Level  | Limit<br>Line | Over<br>Limit | Remark |
|---|---------|----------------------|-------------------|---------------|------------------|--------|---------------|---------------|--------|
|   | MHz     | dBuV                 | dB/m              | dB            | dB               | dBuV/m | dBuV/m        | dB            |        |
| 1 | 2390.00 | 38.52                | 28.72             | 3.36          | 26.32            | 44.28  | 74.00         | -29.72        | Peak   |
| 2 | 2400.00 | 44.38                | 28.72             | 3.38          | 26.32            | 50.16  | 74.00         | -23.84        | Peak   |

NOTE: 1.Absolute Level= Reading Level+antenna Factor+cable loss-preamp factor,  
Over Limit= Absolute Level – Limit;  
2.The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has not to be reported.  
3.If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.

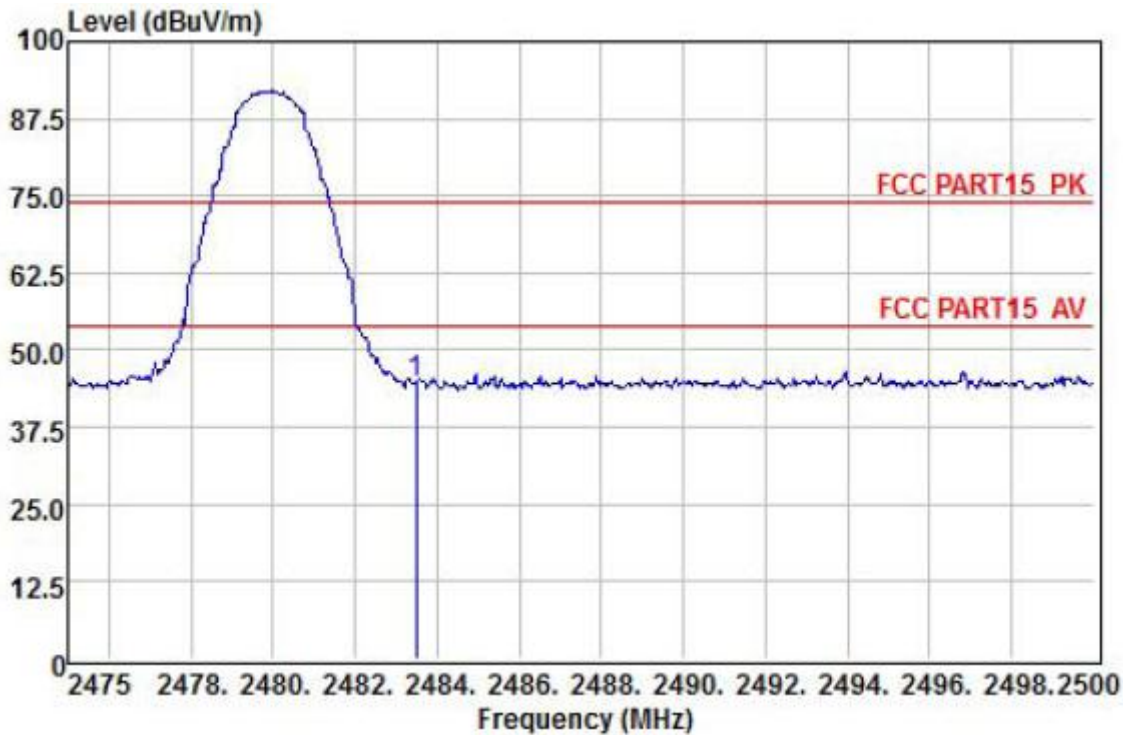
| 3M bps         |                    |                     |         |
|----------------|--------------------|---------------------|---------|
| EUT :          | active loudspeaker | Model Name :        | PW300   |
| Temperature :  | 20 °C              | Relative Humidity : | 48%     |
| Pressure :     | 1010hPa            | Test Mode :         | TX-2480 |
| Test Voltage : | AC 120V/60Hz       |                     |         |

Vertical



|   | Freq    | ReadAntenna<br>Level | Cable<br>Factor | Preamp<br>Loss | Factor | Level  | Limit<br>Line | Over<br>Limit | Remark |
|---|---------|----------------------|-----------------|----------------|--------|--------|---------------|---------------|--------|
|   | MHz     | dBuV                 | dB/m            | dB             | dB     | dBuV/m | dBuV/m        | dB            |        |
| 1 | 2483.50 | 38.98                | 28.79           | 3.48           | 26.34  | 44.91  | 74.00         | -29.09        | Peak   |

Horizontal



|   | Freq    | ReadAntenna | Cable | Preamp |       | Limit  | Over   |             |
|---|---------|-------------|-------|--------|-------|--------|--------|-------------|
|   | Level   | Factor      | Loss  | Factor | Level | Line   | Limit  | Remark      |
|   | MHz     | dBuV        | dB/m  | dB     | dB    | dBuV/m | dBuV/m | dB          |
| 1 | 2483.50 | 38.81       | 28.79 | 3.48   | 26.34 | 44.74  | 74.00  | -29.26 Peak |

NOTE: 1.Absolute Level= Reading Level+antenna Factor+cable loss-preamp factor,  
Over Limit= Absolute Level – Limit;  
2.The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has not to be reported.  
3.If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.

**Spurious Emission in Restricted Band:(1-25G)**

All the modulation modes have been tested and all other emissions more than 20dB below the limit, the worst result was report as below:

| Polar<br>(H/V)    | Frequency | Meter<br>Reading | Antenna<br>Factor | Cable<br>loss | Preamp<br>factor | Emission<br>Level | Limits   | Margin | Detector<br>Type |
|-------------------|-----------|------------------|-------------------|---------------|------------------|-------------------|----------|--------|------------------|
|                   | (MHz)     | (dBuV)           | (dB)              | (dB)          | (dB)             | (dBuV/m)          | (dBuV/m) | (dB)   |                  |
| 1Mbps Non-hopping |           |                  |                   |               |                  |                   |          |        |                  |
| Vertical          | 3262      | 37.13            | 30.26             | 10.68         | 26.63            | 51.44             | 74       | -22.56 | PK               |
| Horizontal        | 3262      | 37.82            | 30.26             | 10.68         | 26.63            | 52.13             | 74       | -21.87 | PK               |
| Vertical          | 4032      | 37.28            | 31.55             | 10.52         | 27.02            | 52.33             | 74       | -21.67 | PK               |
| Horizontal        | 4032      | 36.63            | 31.55             | 10.52         | 27.02            | 51.68             | 74       | -22.32 | PK               |
| 1Mbps hopping     |           |                  |                   |               |                  |                   |          |        |                  |
| Vertical          | 3351      | 34.76            | 30.34             | 10.78         | 26.67            | 49.21             | 74       | -24.79 | PK               |
| Horizontal        | 3351      | 35.83            | 30.34             | 10.78         | 26.67            | 50.28             | 74       | -23.72 | PK               |
| Vertical          | 4130      | 37.58            | 30.69             | 10.95         | 27.08            | 52.14             | 74       | -21.86 | PK               |
| Horizontal        | 4130      | 36.79            | 30.69             | 10.95         | 27.08            | 51.35             | 74       | -22.65 | PK               |

## 6. 20DB& 99% OCCUPY BANDWIDTH

### 6.1. Limits

According to FCC Section 15.247(a)(1)& RSS-247 §5.1(1)&RSS-Gen§6.6, the 20dB bandwidth is known as the 99% emission bandwidth, or 20dB bandwidth( $10 \cdot \log 1\% = 20\text{dB}$ )taking the RF output power

### 6.2. Test setup

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum, during the measurement, the Bluetooth module of the EUT is activated and controlled by the software, and is set to operate under test mode transmitting.

2. Set the spectrum analyzer:

Span: approximately 2 to 3 times the 20dB bandwidth, centered on a hopping channel

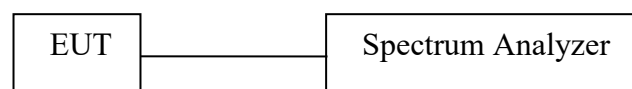
RBW  $\geq 1\%$  of the 20dB bandwidth

VBW  $\geq$  RBW

Sweep=auto

Detector function=peak

Trace=max hold

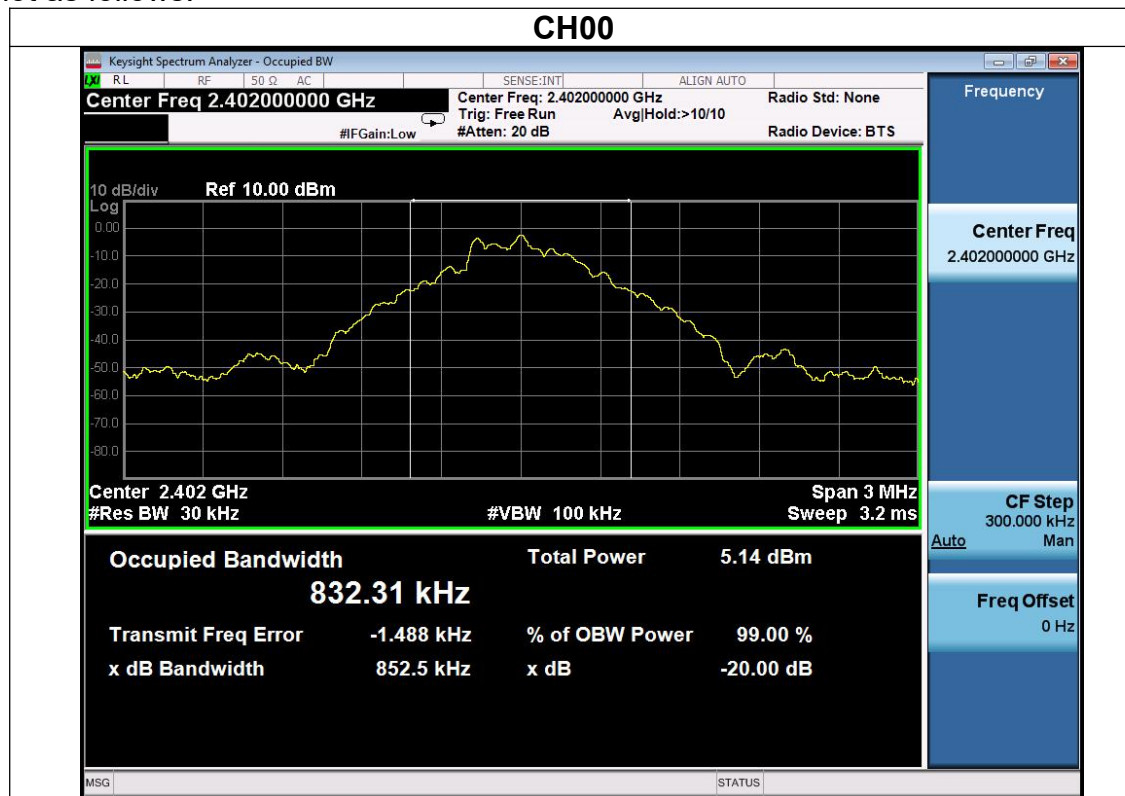


Test data:

|               |                         |                     |              |
|---------------|-------------------------|---------------------|--------------|
| EUT :         | active loudspeaker      | Model Name :        | PW300        |
| Temperature : | 25 °C                   | Relative Humidity : | 60%          |
| Pressure :    | 1012 hPa                | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | CH00 / CH39 /C78(1Mbps) |                     |              |

| Frequency | 20dB Bandwidth (kHz) | 99% Bandwidth (KHz) | Result |
|-----------|----------------------|---------------------|--------|
| 2402 MHz  | 852.5                | 832.3               | PASS   |
| 2441 MHz  | 845.9                | 832.1               | PASS   |
| 2480 MHz  | 838.4                | 829.6               | PASS   |

Test plot as follows:



CH39 -1Mbps

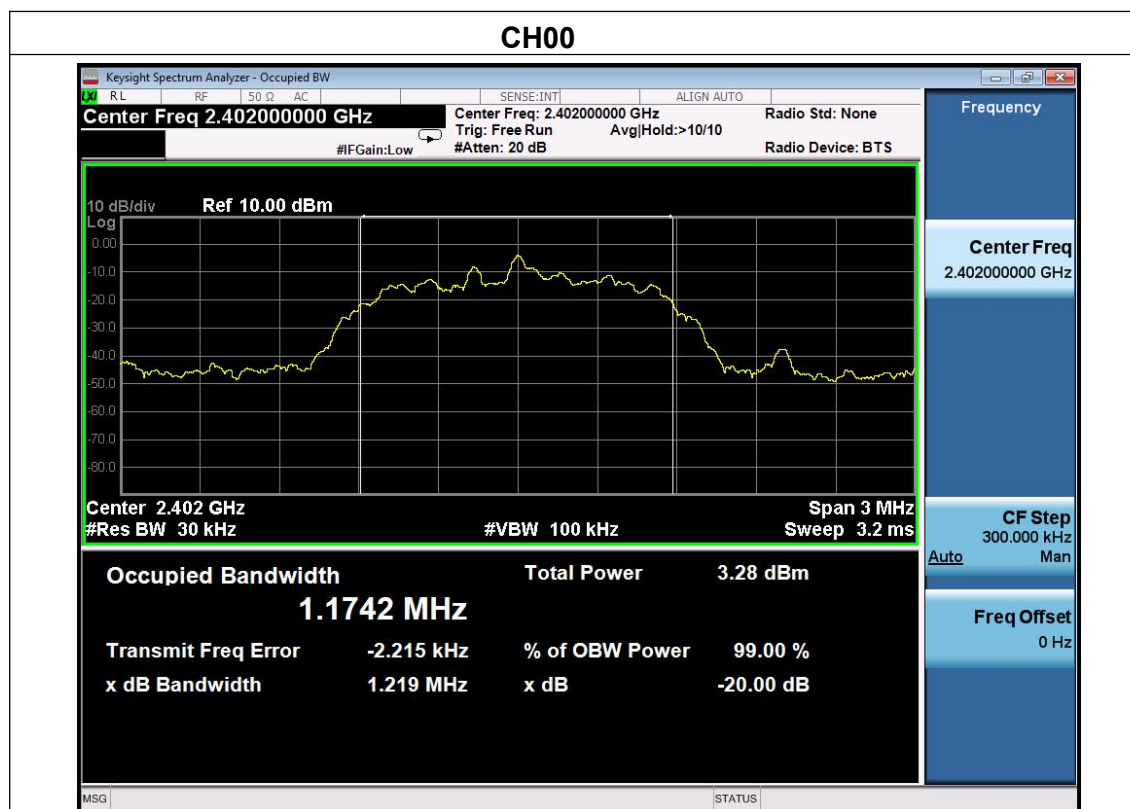


CH78 -1Mbps

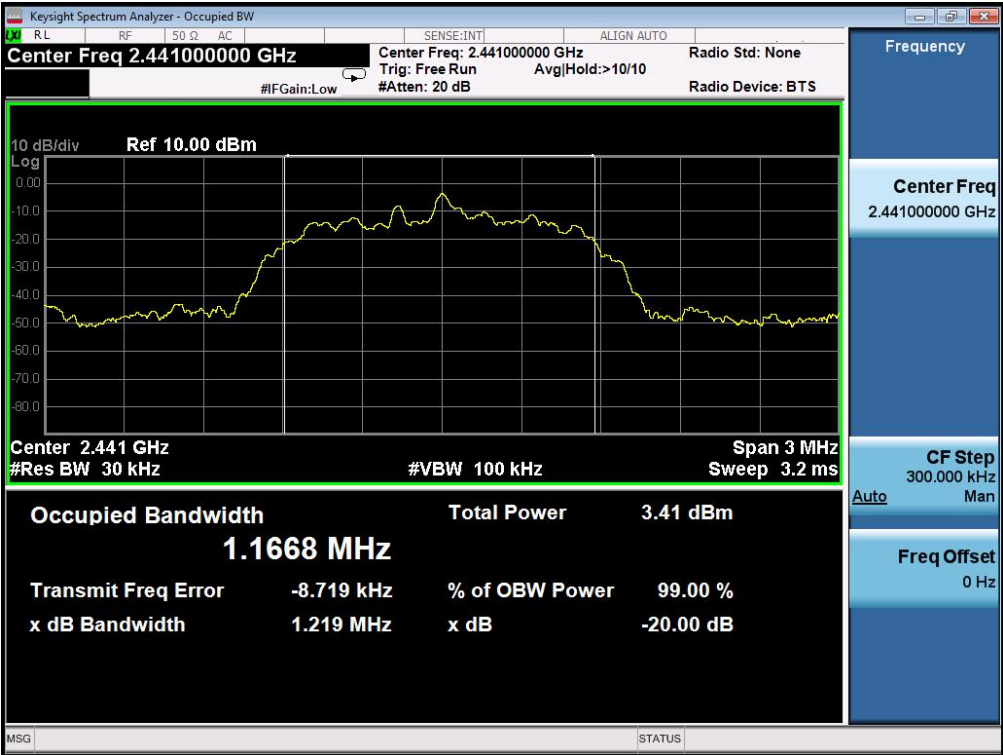


|               |                         |                     |              |
|---------------|-------------------------|---------------------|--------------|
| EUT :         | active loudspeaker      | Model Name :        | PW300        |
| Temperature : | 25 °C                   | Relative Humidity : | 60%          |
| Pressure :    | 1012 hPa                | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | CH00 / CH39 /C78(2Mbps) |                     |              |

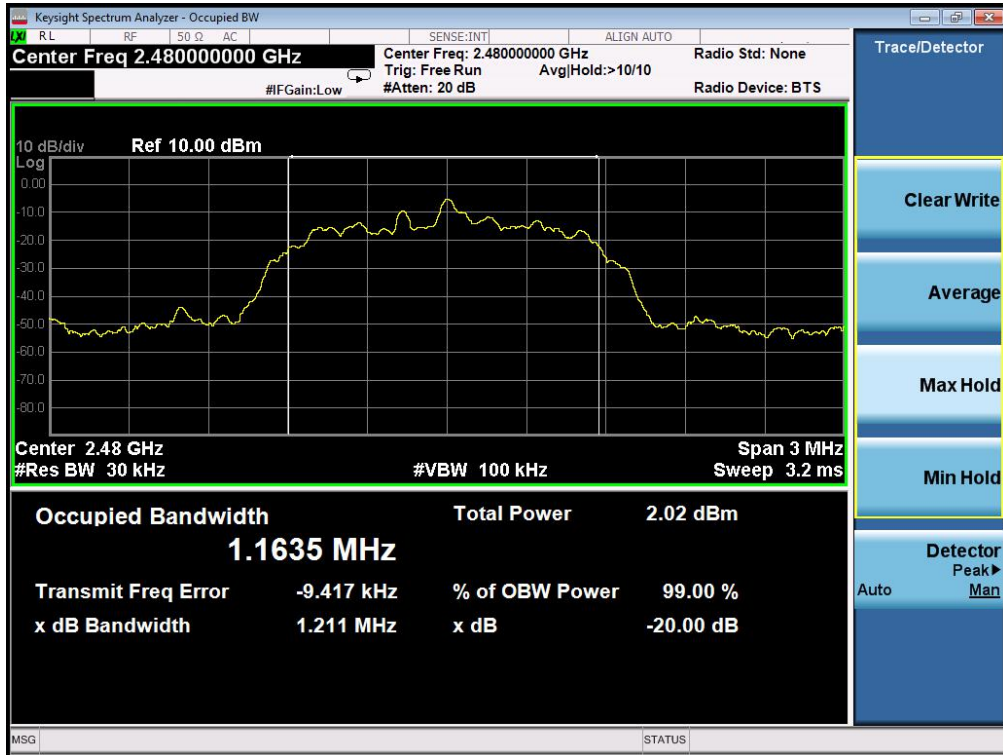
| Frequency | 20dB Bandwidth (MHz) | 99% Bandwidth (KHz) | Result |
|-----------|----------------------|---------------------|--------|
| 2402 MHz  | 1.219                | 1.174               | PASS   |
| 2441 MHz  | 1.219                | 1.167               | PASS   |
| 2480 MHz  | 1.211                | 1.164               | PASS   |



CH39

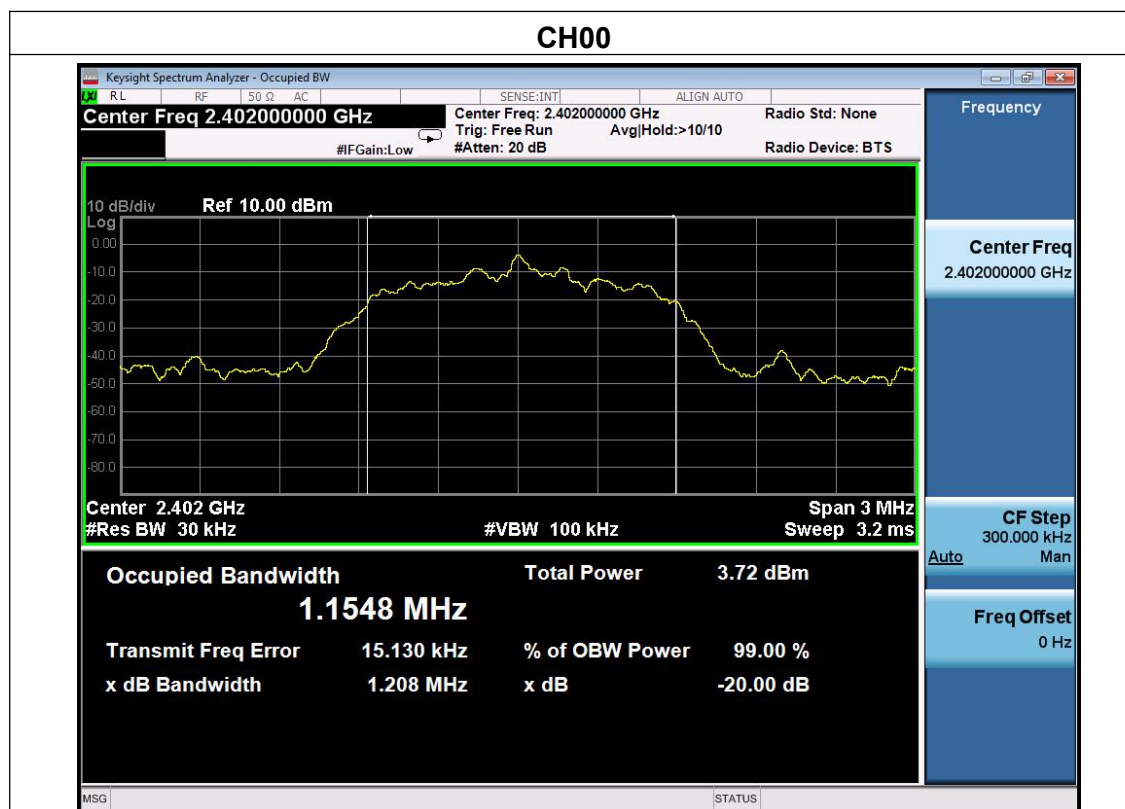


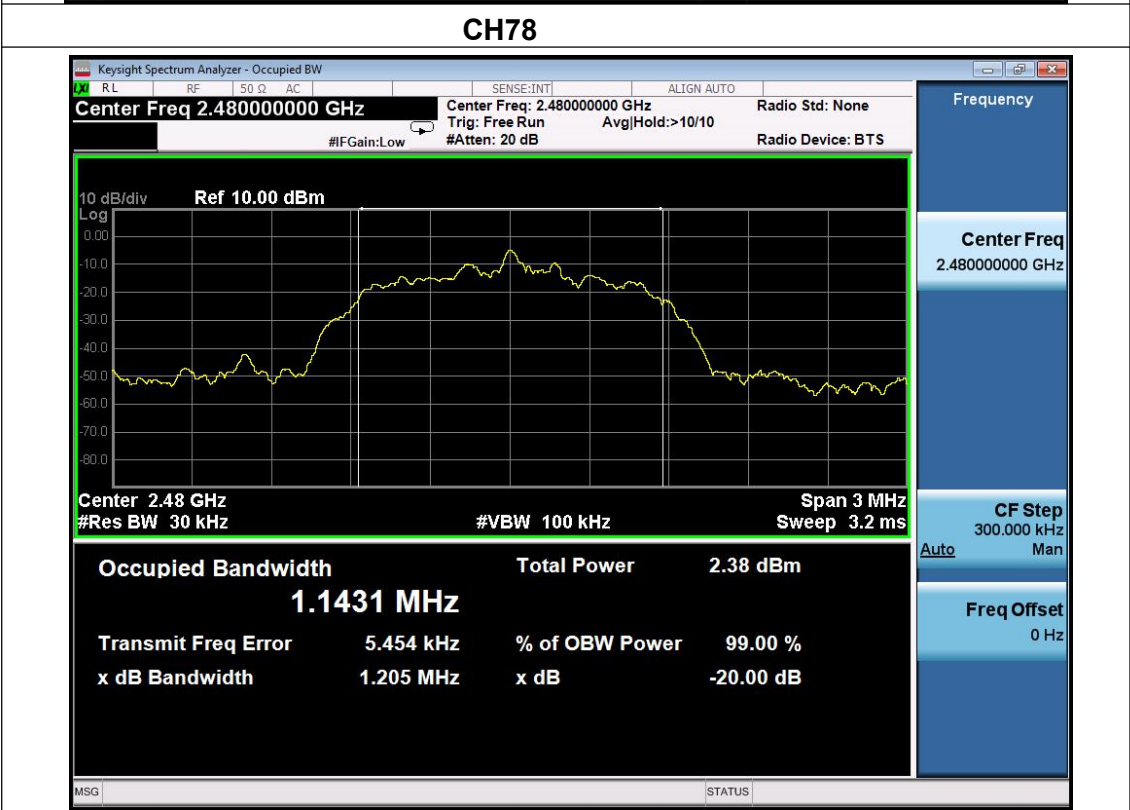
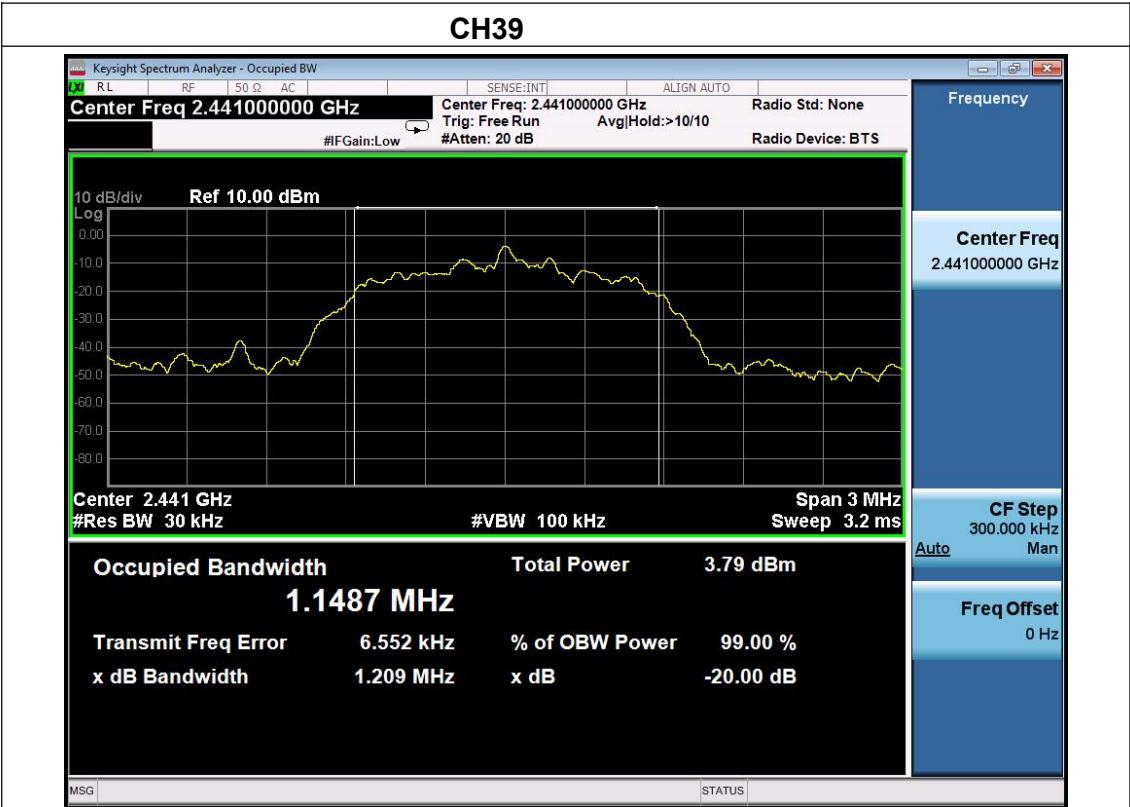
CH78



|               |                          |                     |              |
|---------------|--------------------------|---------------------|--------------|
| EUT :         | active loudspeaker       | Model Name :        | PW300        |
| Temperature : | 25 °C                    | Relative Humidity : | 60%          |
| Pressure :    | 1012 hPa                 | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | CH00 / CH39 /CH78(3Mbps) |                     |              |

| Frequency | 20dB Bandwidth (MHz) | 99% Bandwidth (KHz) | Result |
|-----------|----------------------|---------------------|--------|
| 2402 MHz  | 1.208                | 1.155               | PASS   |
| 2441 MHz  | 1.209                | 1.149               | PASS   |
| 2480 MHz  | 1.205                | 1.143               | PASS   |





## 7. FREQUENCY SEPARATION

### 7.1. Limits

According to FCC Section 15.247(a)(1)& RSS-247 §5.1(2), Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

### 7.2. Test setup

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum, During the measurement, the Bluetooth module of the EUT is activated and controlled by the software, and is set to operate under test mode .

2. Set the spectrum analyzer:

Span: wide enough to capture the peaks of two adjacent channels

RBW  $\geq 1\%$  of the span(30KHz)

VBW  $\geq$  RBW(100KHz)

Sweep=auto

Detector function=peak

Trace=max hold



Test data:

|               |                          |                     |              |
|---------------|--------------------------|---------------------|--------------|
| EUT :         | active loudspeaker       | Model Name :        | PW300        |
| Temperature : | 24 °C                    | Relative Humidity : | 58%          |
| Pressure :    | 1010hPa                  | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | CH00 / CH39 /CH78(1Mbps) |                     |              |

| Frequency | Ch. Separation (MHz) | Limit (KHz) | Result   |
|-----------|----------------------|-------------|----------|
| 2402 MHz  | 1.000                | 852.5       | Complies |
| 2441 MHz  | 0.998                | 845.9       | Complies |
| 2480 MHz  | 1.000                | 838.4       | Complies |

**Ch. Separation Limits: > 20dB bandwidth**  
Test plot as follows:



### CH39



### CH78

