# FCC PART 15C TEST REPORT FOR CERTIFICATION

On Behalf of

Sony Group Corporation

System Name: Sound Bar

Model No.: HT-S400

Active Speaker System: SA-S400

Active Subwoofer: SA-WS400

| EUT Name | EUT Model No. |
|---|---|
| Active Speaker System | SA-S400 |

FCC ID: AK8SAS400

Prepared for : Sony Group Corporation
1-7-1 Konan Minato-ku Tokyo, 108-0075 Japan

Prepared By : Audix Technology (Shenzhen) Co., Ltd.
No. 6, Kefeng Road, Science & Technology Park,
Nanshan District , Shenzhen, Guangdong, China

Tel: (0755) 26639496

**TESTING**

**NVLAP LAB CODE 200372-0**

| | | |
|---|---|---|
| Report Number | : | ACS-F21270 |
| Date of Test | : | Sep.15 ~ Oct.20, 2021 |
| Date of Report | : | Oct.21, 2021 |

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Appendix A. Photograph of Test
Appendix B. Photo of the EUT

# TEST REPORT

| | | |
|---|---|---|
| Applicant | : | Sony Group Corporation |
| Manufacturer | : | Sony Group Corporation |
| System Name | : | Sound Bar |
| Model No. | : | HT-S400 |
| Active Speaker System | : | SA-S400 |
| Active Subwoofer | : | SA-WS400 |
| FCC ID | : | AK8SAS400 |

| | | |
|---|---|---|
| (A) EUT Name | : | Active Speaker System |
| (B) EUT Model No. | : | SA-S400 |
| (C) Test Voltage | : | AC 120V/60Hz |

Tested for comply with:

FCC CFR47 Part 15 Subpart C
Test procedure used: ANSI C63.10: 2013;
KDB 558074 D01v05r01

The device described above is tested by AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. to confirm comply with all the FCC Part 15 Subpart C requirements. The test results are contained in this test report and AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. is assumed full responsibility for the accuracy and completeness of these tests. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements. This report contains data that are not covered by the NVLAP accreditation.
This Report is made under FCC Part 2.1074. No modifications were required during testing to bring this product into compliance.
This report applies to single evaluation of one sample of above mentioned product. And shall not be reproduced in part without written approval of Audix Technology (Shenzhen) Co., Ltd..
The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

Date of Test : Sep.15 ~ Oct.20, 2021 Report of date: Oct.21, 2021

Prepared by : Brave Zhang / Assistant

Reviewed by : Sunny Lu/ Deputy Manager

信華科技（深圳）有限公司
Audix Technology (Shenzhen) Co., Ltd.
EMC 部門報告專用章
Stamp only for EMC Dept. Report

Approved & Authorized Signer: Signature: David Jin
David Jin / Deputy General Manager

# 1. SUMMARY OF STANDARDS AND RESULTS

## 1.1. Description of Standards and Results

The EUT has been tested according to the applicable standards as referenced below.

| EMISSION | | |
|---|---|---|
| **Description of Test Item** | **Standard** | **Results** |
| Power Line Conducted Emission Test | FCC Part 15: 15.207<br>ANSI C63.10 :2013 | PASS |
| Radiated Emission Test | FCC Part 15: 15.209<br>FCC Part 15: 15.205<br>FCC Part 15: 15.247(d)<br>ANSI C63.10 : 2013 | PASS |
| Conducted Spurious Emissions | FCC Part 15: 15.247(d)<br>ANSI C63.10 : 2013 | PASS |
| Carrier Frequency Separation Test | FCC Part 15: 15.247(a)(2)<br>ANSI C63.10 : 2013 | N/A |
| 6dB & 99% Bandwidth Test | FCC Part 15: 15.247(b)(3)<br>ANSI C63.10 : 2013 | PASS |
| Maximum Peak Output Power Test | FCC Part 15: 15.247(d)<br>ANSI C63.10 : 2013 | PASS |
| Band Edge Compliance Test | FCC Part 15: 15.247(e)<br>ANSI C63.10 : 2013 | PASS |
| Power Spectral Density Test | FCC Part 15: 15.207<br>ANSI C63.10 :2013 | PASS |
| Note: Measurement uncertainty affection to the result is considered, the EUT is technically compliant with standard requirements. | | |

# 2. GENERAL INFORMATION

## 2.1. Description of Equipment Under Test

| | |
|---|---|
| Applicant | Sony Group Corporation |
| Applicant Address | 1-7-1 Konan Minato-ku Tokyo, 108-0075 Japan |
| Manufacturer | Sony Group Corporation |
| Manufacturer Address | 1-7-1 Konan Minato-ku Tokyo, 108-0075 Japan |
| System Name | Sound Bar |
| Model No. | HT-S400 |
| Active Speaker System | SA-S400 |
| Active Subwoofer | SA-WS400 |
| EUT Name | Active Speaker System |
| EUT Model No. | SA-S400 |
| FCC ID | AK8SAS400 |
| Radio | General 2.4GHz wireless |
| Frequency Range | 2404-2476MHz |
| Type of Modulation | GFSK |
| Channel Separation | 2MHz |
| Remote Control | Manufacturer: Sony; Model: RMT-AH513U |
| Power Cable | Unshielded, Detachable, 1.5m (2 pins) |
| Optical Cable | Unshielded, Detachable, 1.5m |
| HDMI Cable | Shielded, Detachable, 1.5m (with two cores) |
| Hardware version | Bluetooth :1.01<br>2.4G SRD: V1 |
| Software version | Bluetooth :B1.00<br>2.4G SRD: T1.01 |
| Sample Type | Prototype production |
| Date of Receipt | Sep.13,2021 |
| Date of Test | Sep.15 ~ Oct.20, 2021 |
| The Product covered in this report is Active Speaker System; This product consists of Active Speaker System (SA-S400) and Active Subwoofer (SA-WS400). | |

| **Antenna System** | |
|---|---|
| Type of Antenna | PCB Antenna |
| Antenna Peak Gain | Sound Bar BT=2.1 dBi<br>Subwoofer SRD=2.95 dBi<br>Sound Bar SRD=4.23 dBi |

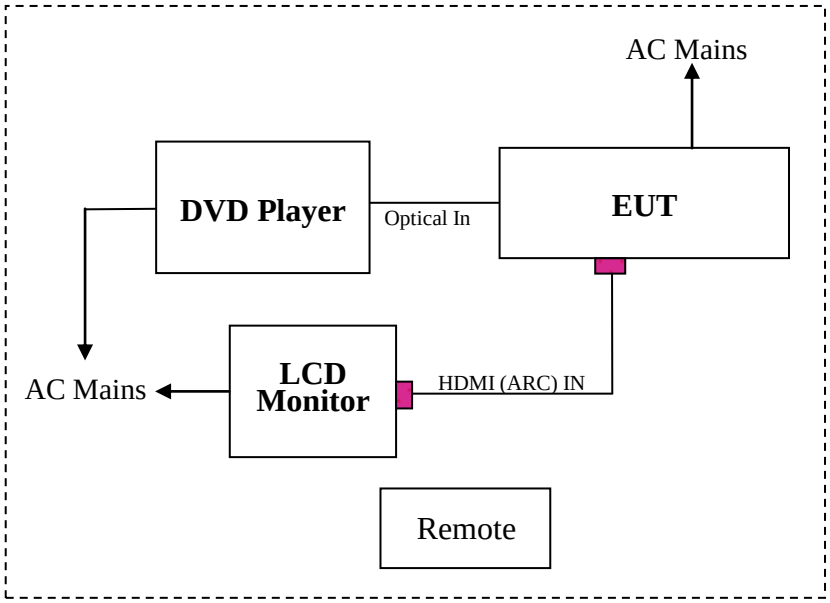
## 2.2. Channel list of EUT

| Channel list | Frequency | Channel list | Frequency |
|---|---|---|---|
| 1 | 2404MHz | 20 | 2442MHz |
| 2 | 2406MHz | 21 | 2444MHz |
| 3 | 2408MHz | 22 | 2446MHz |
| 4 | 2410MHz | 23 | 2448MHz |
| 5 | 2412MHz | 24 | 2450MHz |
| 6 | 2414MHz | 25 | 2452MHz |
| 7 | 2416MHz | 26 | 2454MHz |
| 8 | 2418MHz | 27 | 2456MHz |
| 9 | 2420MHz | 28 | 2458MHz |
| 10 | 2422MHz | 29 | 2460MHz |
| 11 | 2424MHz | 30 | 2462MHz |
| 12 | 2426MHz | 31 | 2464MHz |
| 13 | 2428MHz | 32 | 2466MHz |
| 14 | 2430MHz | 33 | 2468MHz |
| 15 | 2432MHz | 34 | 2470MHz |
| 16 | 2434MHz | 35 | 2472MHz |
| 17 | 2436MHz | 36 | 2474MHz |
| 18 | 2438MHz | 37 | 2476MHz |
| 19 | 2440MHz | -- | -- |

## 2.3.Tested Supporting System Details

| No. | Description | ACS No. | Manufacturer | Model | Serial Number |
|---|---|---|---|---|---|
| 1. | DVD Player | N/A | Pioneer | DV-310NC-K | MKTL011942CN |
| 2. | LCD Monitor | N/A | Fujitsu | P27T-7 UHD | S26361-K1564-V140 |
| 3. | HDMI IN Cable: Shielded, Detachable,1.5m.<br>Optical Cable: Unshielded, Detachable, 1.5m. | | | | |

## 2.4. Block Diagram of connection between EUT and simulators




:Core

**(EUT: Active Speaker System)**

## 2.5.Test information

A Special Test Software(Syncomm Debug Tool v21.03.24) was used to control EUT work in Continuous TX mode(GFSK modulation), and select test channel.

| Tested mode, channel, and Power setting information | | | |
|---|---|---|---|
| Mode | Channel | Power setting | Frequency (MHz) |
| Tx Mode<br>GFSK modulation | Low :CH 1 | RF Power=0x0F<br>RF iCurrent=0xD9 | 2404 |
| | Middle: CH19 | | 2440 |
| | High: CH37 | | 2476 |

Remark: The radiated emission, power line conducted emission and bandedge compliance tested use the sample with serial number 000076, the conductive test items use the sample with serial number 000070.

## 2.6.Test Facility

Site Description

| | | |
|---|---|---|
| Name of Firm | : | Audix Technology (Shenzhen) Co., Ltd.<br>No. 6, Kefeng Road, Science & Technology Park,<br>Nanshan District , Shenzhen, Guangdong, China |
| EMC Lab. | : | Certificated by ISED, Canada<br>Company Number: 5183A<br>CAB identifier: CN0034<br>Valid Date: Mar.31, 2022 |
| | : | Certificated by FCC, USA<br>Designation No.: CN5022<br>Valid Date: Mar.31, 2022 |
| | : | Accredited by NVLAP, USA<br>NVLAP Code: 200372-0<br>Valid Date: Mar.31, 2022 |

## 2.7. Measurement Uncertainty (95% confidence levels, k=2)

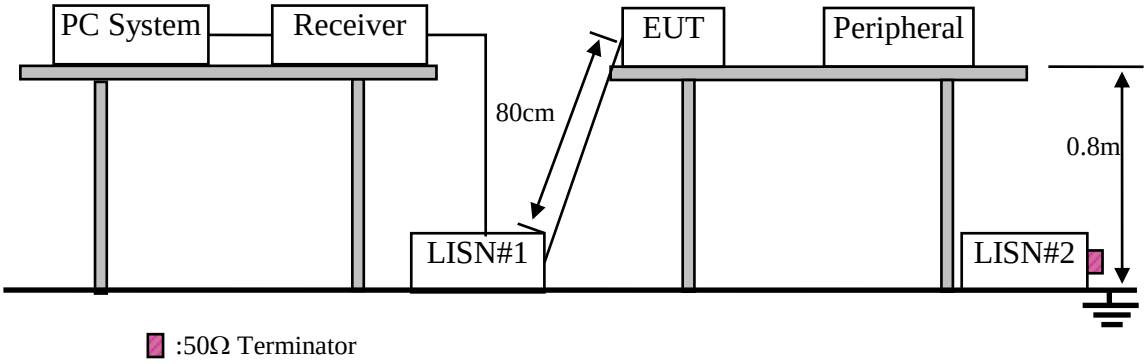
| Test Item | Uncertainty |
|---|---|
| Uncertainty for Conduction emission test in No. 1 Conduction | 2.6dB(150kHz to 30MHz) |
| Uncertainty for Radiation Emission test in 3m chamber | 3.2dB(30~200MHz, Polarization: H) |
| | 3.6dB(30~200MHz, Polarization: V) |
| | 3.4dB(200M~1GHz, Polarization: H) |
| | 3.4dB(200M~1GHz, Polarization: V) |
| Uncertainty for Radiation Emission test in 3m chamber (1GHz~18GHz) | 5.0dB(1GHz~6GHz) |
| | 5.2dB(6GHz~18GHz) |
| Uncertainty for Conduction Spurious emission test | 2.0dB |
| Uncertainty for Output power test | 0.8dB |
| Uncertainty for Bandwidth test | 83kHz |
| Uncertainty for DC power test | 1.0% |
| Uncertainty for test site temperature and humidity | 0.6℃ |
| | 3% |

# 3. POWER LINE CONDUCTED EMISSION TEST

## 3.1.Test Equipments

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|
| 1. | 1# Shielding Room | AUDIX | N/A | N/A | May.17,18 | 5 Year |
| 2. | EMI Test Receiver | Rohde & Schwarz | ESCI | 100842 | Apr.07,21 | 1 Year |
| 3. | L.I.S.N.#1 | Rohde & Schwarz | ENV216 | 102160 | Oct.11,20 | 1 Year |
| 4. | L.I.S.N.#2 | Kyoritsu | KNW-407 | 8-1636-1 | Apr.06,21 | 1 Year |
| 5. | Terminator | Hubersuhner | 50Ω | No.1 | Apr.06,21 | 1 Year |
| 6. | Terminator | Hubersuhner | 50Ω | No.2 | Apr.06,21 | 1 Year |
| 7. | RF Cable | EMCI | EMCCFD300-BM-NM-2000 | 190422 | Apr.08,21 | 1 Year |
| 8. | Test Software | AUDIX | e3 | 6.100913a | N/A | N/A |
| Note: N/A means Not applicable. | | | | | | |

## 3.2.Block Diagram of Test Setup




## 3.3.Power Line Conducted Emission Test Limits

| Frequency | Maximum RF Line Voltage | |
|---|---|---|
| | Quasi-Peak Level dB(μV) | Average Level dB(μV) |
| 150kHz ~ 500kHz | 66 ~ 56* | 56 ~ 46* |
| 500kHz ~ 5MHz | 56 | 46 |
| 5MHz ~ 30MHz | 60 | 50 |

Notes: 1. * Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.
3. Emission Level (dBμV) = Factor (L.I.S.N.) (dB) + Cable Loss (dB)+Reading (Receiver) (dBμV)

## 3.4.Configuration of EUT on Test

The following equipment are installed on Power Line Conducted Emission Test to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

3.4.1. Sound Bar (EUT)

Model Number : HT-S400
Serial Number : N/A

3.4.2. Support Equipment: As Tested Supporting System Details, in Section 2.2.

## 3.5.Operating Condition of EUT

3.5.1. Setup the EUT and simulator as shown as Section 3.2.

3.5.2. Turn on the power of all equipments.

3.5.3. PC run test software to control EUT work in Tx mode.

## 3.6.Test Procedure

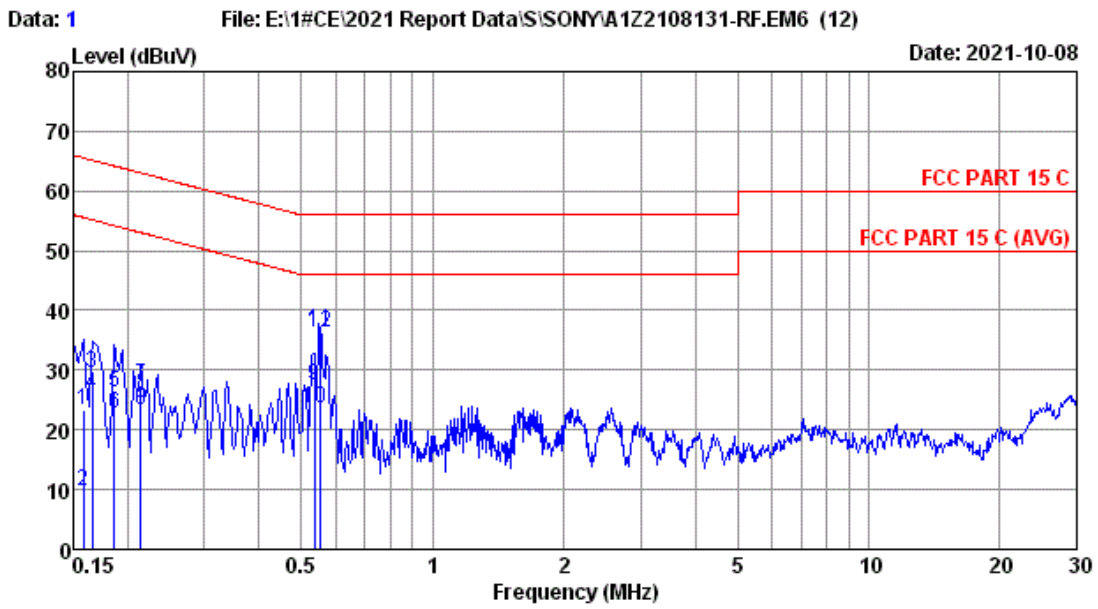
The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power Via AC unit connected to the power mains through a line impedance stabilization network (L.I.S.N. 1#). This provides a 50 ohm coupling impedance for the EUT (Please refer the block diagram of the test setup and photographs). The AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10: 2013 on Conducted Emission Test.

The bandwidth of test receiver (R & S ESCI) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

## 3.7.Power Line Conducted Emission Test Results

**PASS.** **(**All emissions not reported below are too low against the prescribed limits.)



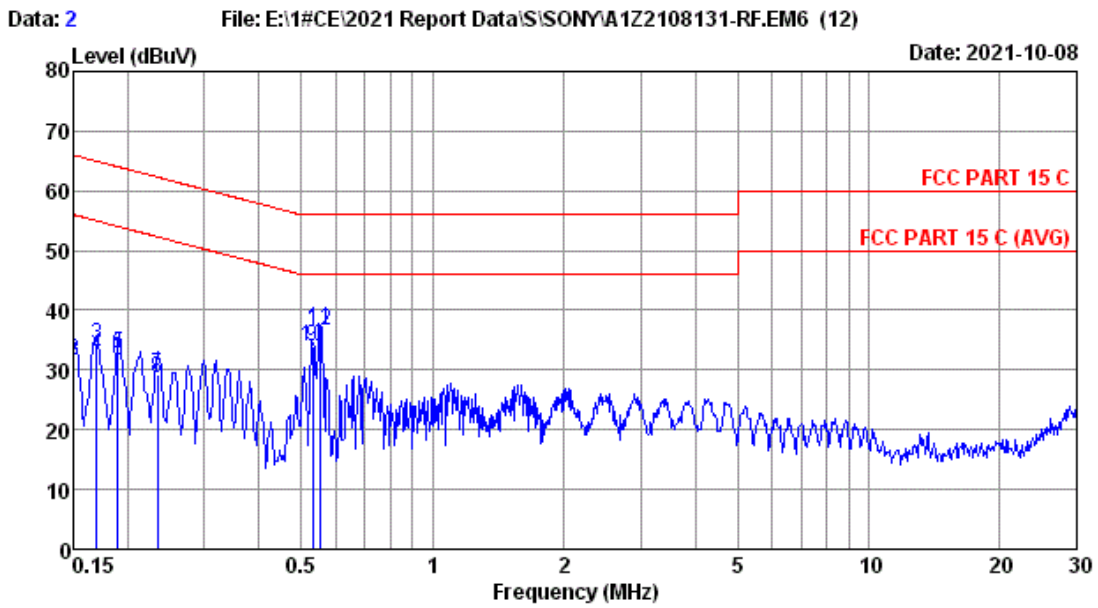

Site no :1# Conduction
Dis./Lisn :2020 ENV216-L
Limit :FCC PART 15 C
Env./Ins. :24.7*C/56%
Power Rating :AC 120V/60Hz
Test Mode :Soundbar:Generic 2.4G

Data No :1
LISN phase:

Engineer :Evan

| No | Freq (MHz) | LISN Factor (dB) | Cable loss (dB) | Reading (dBuV) | Emission Level (dBuV) | Limits (dBuV) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|
| 1 | 0.158 | 9.70 | 0.01 | 13.50 | 23.21 | 65.56 | 42.35 | QP |
| 2 | 0.158 | 9.70 | 0.01 | 0.00 | 9.71 | 55.56 | 45.85 | Average |
| 3 | 0.166 | 9.70 | 0.01 | 19.70 | 29.41 | 65.16 | 35.75 | QP |
| 4 | 0.166 | 9.70 | 0.01 | 16.40 | 26.11 | 55.16 | 29.05 | Average |
| 5 | 0.186 | 9.70 | 0.01 | 16.50 | 26.21 | 64.20 | 37.99 | QP |
| 6 | 0.186 | 9.70 | 0.01 | 12.90 | 22.61 | 54.20 | 31.59 | Average |
| 7 | 0.214 | 9.70 | 0.01 | 17.80 | 27.51 | 63.05 | 35.54 | QP |
| 8 | 0.214 | 9.70 | 0.01 | 13.70 | 23.41 | 53.05 | 29.64 | Average |
| 9 | 0.535 | 9.70 | 0.01 | 17.60 | 27.31 | 56.00 | 28.69 | QP |
| 10 | 0.535 | 9.70 | 0.01 | 13.90 | 23.61 | 46.00 | 22.39 | Average |
| 11 | 0.550 | 9.70 | 0.01 | 27.00 | 36.71 | 56.00 | 19.29 | QP |
| 12 | 0.550 | 9.70 | 0.01 | 26.70 | 36.41 | 46.00 | 9.59 | Average |

Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.
2.If the average limit is met when using a quasi-peak detector. the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.




Site no :1# Conduction
Dis./Lisn :2020 ENV216-N
Limit :FCC PART 15 C
Env./Ins. :24.7*C/56%
Power Rating :AC 120V/60Hz
Test Mode :Soundbar:Generic 2.4G

Data No :2
LISN phase:

Engineer :Evan

| No | Freq (MHz) | LISN Factor (dB) | Cable loss (dB) | Reading (dBuV) | Emission Level (dBuV) | Limits (dBuV) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|
| 1 | 0.150 | 9.70 | 0.01 | 25.10 | 34.81 | 66.00 | 31.19 | QP |
| 2 | 0.150 | 9.70 | 0.01 | 21.90 | 31.61 | 56.00 | 24.39 | Average |
| 3 | 0.170 | 9.70 | 0.01 | 24.60 | 34.31 | 64.96 | 30.65 | QP |
| 4 | 0.170 | 9.70 | 0.01 | 22.90 | 32.61 | 54.96 | 22.35 | Average |
| 5 | 0.190 | 9.70 | 0.01 | 23.20 | 32.91 | 64.04 | 31.13 | QP |
| 6 | 0.190 | 9.70 | 0.01 | 21.80 | 31.51 | 54.04 | 22.53 | Average |
| 7 | 0.234 | 9.70 | 0.01 | 19.60 | 29.31 | 62.31 | 33.00 | QP |
| 8 | 0.234 | 9.70 | 0.01 | 18.80 | 28.51 | 52.31 | 23.80 | Average |
| 9 | 0.530 | 9.70 | 0.01 | 24.30 | 34.01 | 56.00 | 21.99 | QP |
| 10 | 0.530 | 9.70 | 0.01 | 24.20 | 33.91 | 46.00 | 12.09 | Average |
| 11 | 0.550 | 9.70 | 0.01 | 27.20 | 36.91 | 56.00 | 19.09 | QP |
| 12 | 0.550 | 9.70 | 0.01 | 27.00 | 36.71 | 46.00 | 9.29 | Average |

Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.
2.If the average limit is met when using a quasi-peak detector. the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

# 4. RADIATED EMISSION MEASUREMENT

## 4.1. Test Equipment

Frequency range: 30~1000MHz

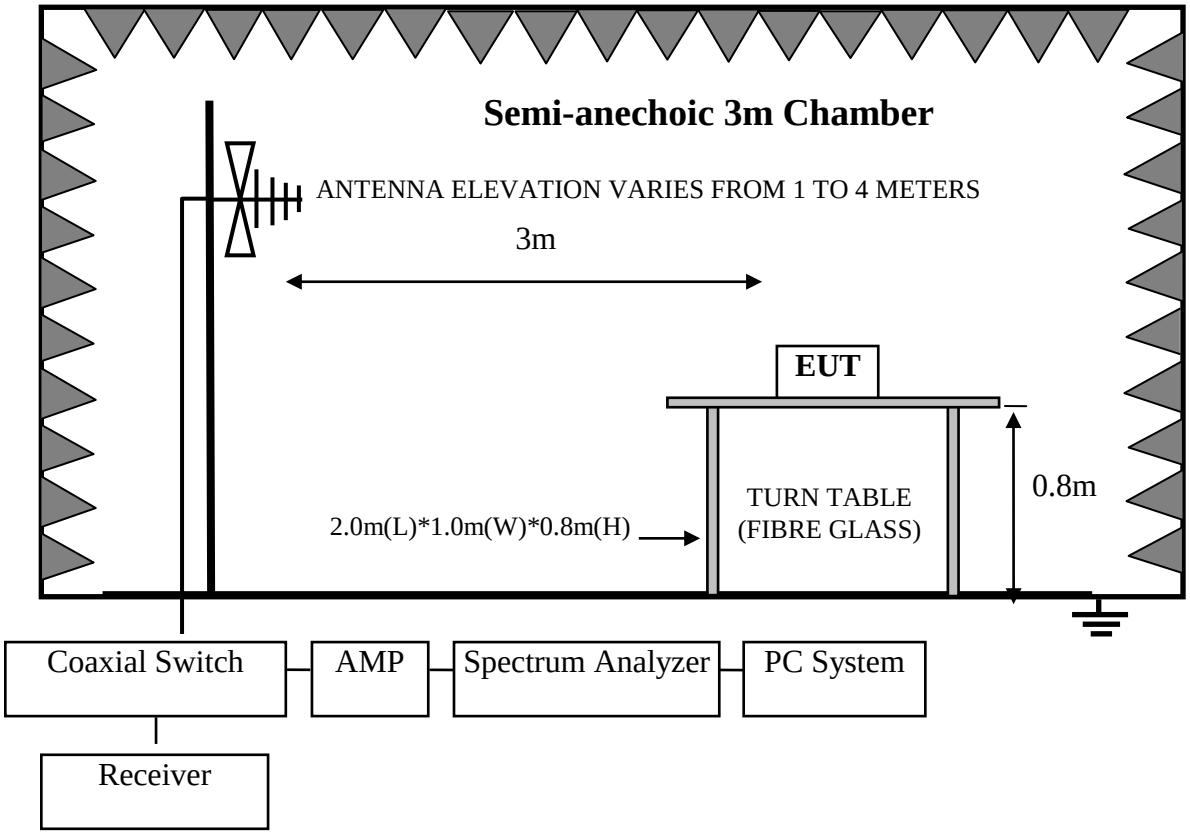
| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|
| 1. | 3#Chamber(NSA) | AUDIX | N/A | N/A | May.02,21 | 1 Year |
| 2. | 3#Chamber(SE) | AUDIX | N/A | N/A | May.17,18 | 5 Year |
| 3. | Signal Analyzer | Rohde & Schwarz | FSV30 | 104050 | Apr.07,21 | 1 Year |
| 4. | EMI Test Receiver | Rohde & Schwarz | ESR7 | 101547 | Apr.07,21 | 1 Year |
| 5. | Amplifier | HP | 8447D | 2648A04738 | Apr.08,21 | 1 Year |
| 6. | Bi log Antenna | TESEQ | CBL6112D | 25237 | Dec.22,20 | 1 Year |
| 7. | NSA Cable | HUBER+SUHNER | CFD400NL-LW | No.3 | Oct.11,20 | 1 Year |
| 8. | Coaxial Switch | Anritsu | MP59B | 6201397223 | Apr.07,21 | 1 Year |
| Note: N/A means Not applicable. | | | | | | |

Frequency range: above 1000MHz

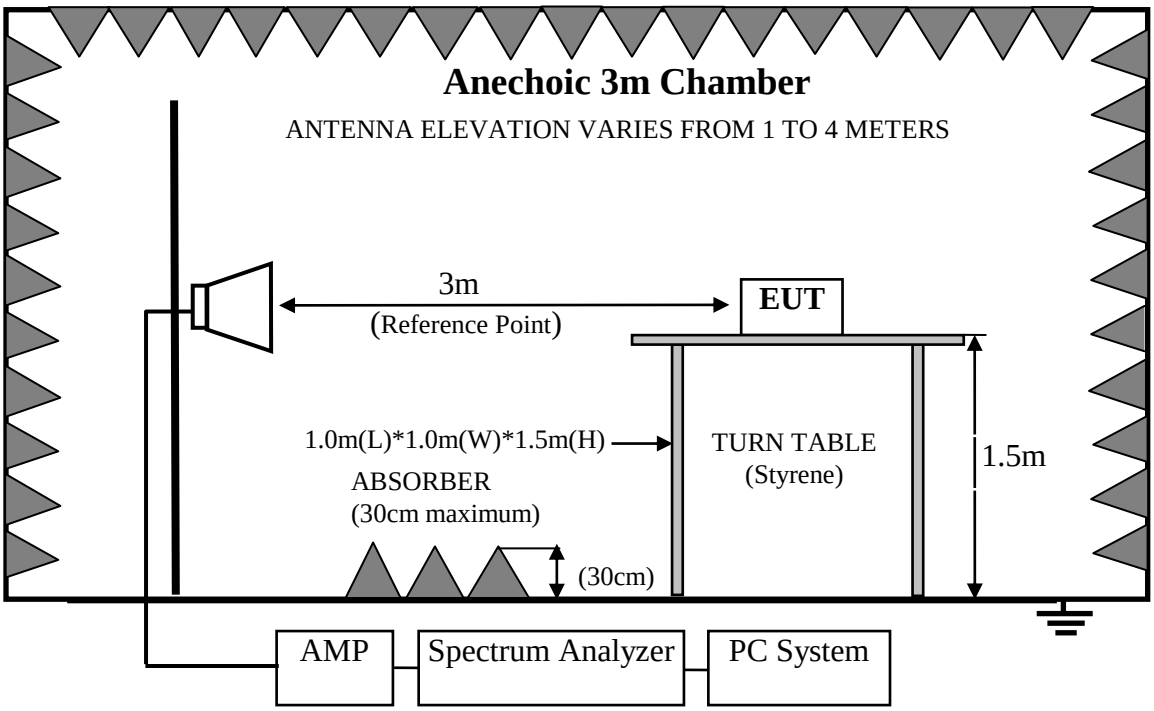
| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|
| 1. | 3#Chamber(Svswr) | AUDIX | N/A | N/A | Apr.14,21 | 1 Year |
| 2. | 3#Chamber(SE) | AUDIX | N/A | N/A | May.17,18 | 5 Year |
| 3. | Signal Analyzer | Rohde & Schwarz | FSV30 | 104050 | Apr.07,21 | 1 Year |
| 4. | Horn Antenna | ETC | MCTD 1209 | DRH15F03006 | Jul.26,21 | 1 Year |
| 5. | Horn Antenna | ETS | 3116 | 00060089 | Dec.09,20 | 1 Year |
| 6. | Amplifier | Agilent | 83017A | MY53270084 | Oct.11,20 | 1 Year |
| 7. | Amplifier | Agilent | 83017A | MY53270084 | Oct.09,21 | 1 Year |
| 8. | RF Cable | Hubersuhner | SUCOFLEX-106 | 505238/6 | Apr.07,21 | 1 Year |
| 9. | Test Software | AUDIX | e3 | 6.100913a | N/A | N/A |
| Note: N/A means Not applicable. | | | | | | |

4.2.Block Diagram of Test Setup

For frequency range 30MHz-1000MHz




For frequency range 1GHz-25GHz



4.3.Radiated Emission Limit Standard:

| FREQUENCY MHz | DISTANCE Meters | FIELD STRENGTHS LIMIT | |
|---|---|---|---|
| | | μV/m | dB(μV)/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 1000MHz | 3 | 74.0 dB(μV)/m (Peak)<br>54.0 dB(μV)/m (Average) | |

Remark： (1) Emission level dBμV = 20 log Emission level μV/m

(2) Emission Level (dBμV/m) = Reading (Receiver) (dBμV) + Antenna Factor (dB/m) + Cable Loss (dB)
Emission Level (dBμV/m) = Reading (Spectrum) (dBμV) + Antenna Factor (dB/m) – Amp Factor (dB) + Cable Loss (dB)(above 1000MHz)

(3) The smaller limit shall apply at the cross point between two frequency bands.

(4) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

(5) The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

4.4.EUT Configuration on Test

The following equipment are installed on Radiated Emission Test to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

4.4.1. Sound Bar (EUT)

Model Number : HT-S400
Serial Number : N/A

4.5.Operating Condition of EUT

4.5.1. Setup the EUT and simulator as shown as Section 4.2.

4.5.2. Turn on the power of all equipments.

4.5.3. Let EUT work in Tx mode.

4.6.Test Procedure

**Frequency below 30MHz:**

The EUT setup on the turn table which has 0.8 m height to the ground. The turn table rotated 360 degrees and antenna fixed to 1 m to find the maximum emission level. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10-2013 regulation.

EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground for frequency 30MHz~1000MHz, 1.5 meter high above ground for frequency above 1GHz and put the absorbing with 2.4m(L)*2.4m(W)*0.3m(H) on the ground . The turn table can rotate 360 degrees to determine the position of the maximum emission level. Power on the EUT and let it working in test mode, then test it.EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna for frequency 30MHz~1000MHz, and the Horm antenna is used as receiving antenna for frequency above 1GHz. Both horizontal and vertical polarization of the

antenna is set on Test. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.10-2013 on radiated emission Test.

This test was performed with EUT in X, Y, Z position, and the worse case was found when EUT in X position as the test photo indicated.

The bandwidth of the EMI test receiver (R&S ESR7) is set at 120kHz for frequency range from 30MHz to 1000 MHz.

The bandwidth of the Spectrum's RBW is set at 1MHz and VBW is set at 3MHz for peak emissions measurement above 1GHz.

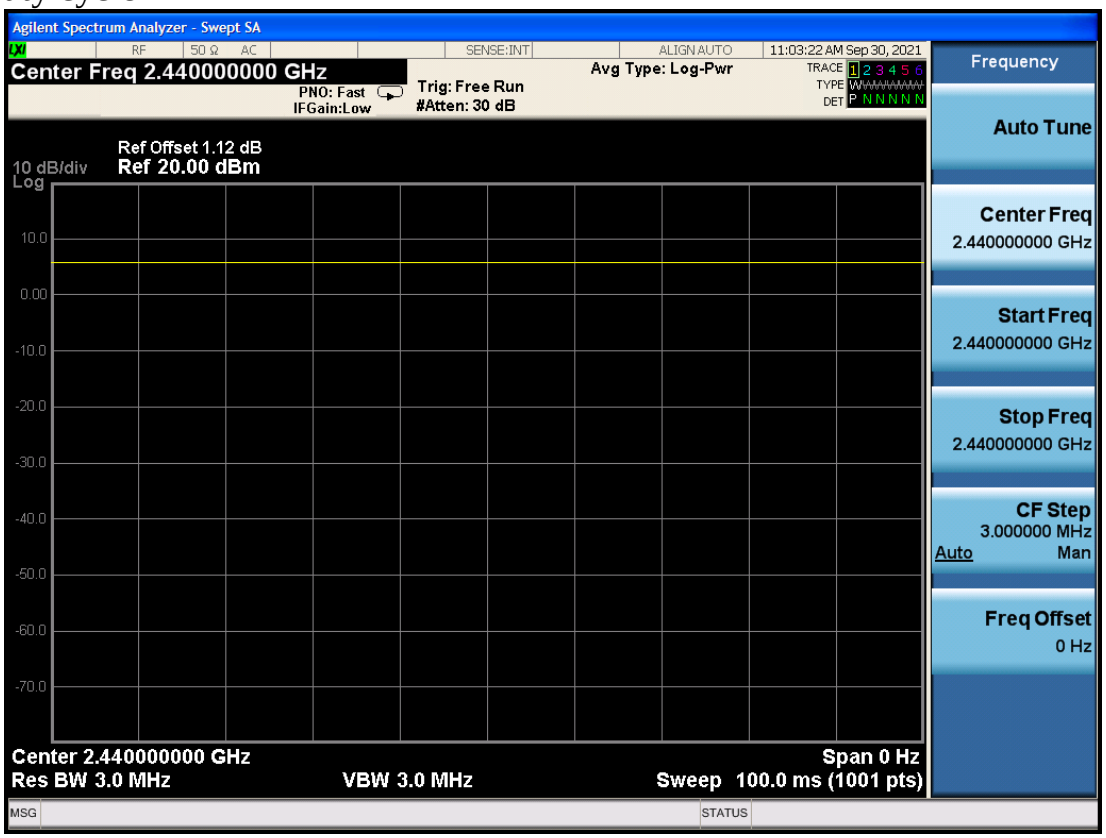
The frequency range from 30MHz to 10th harmonic (25GHz) are checked. and no any emissions were found from 18GHz to 25 GHz, So the radiated emissions from 18GHz to 25GHz were not record.

## 4.7. Radiated Emission Test Results

**PASS.**

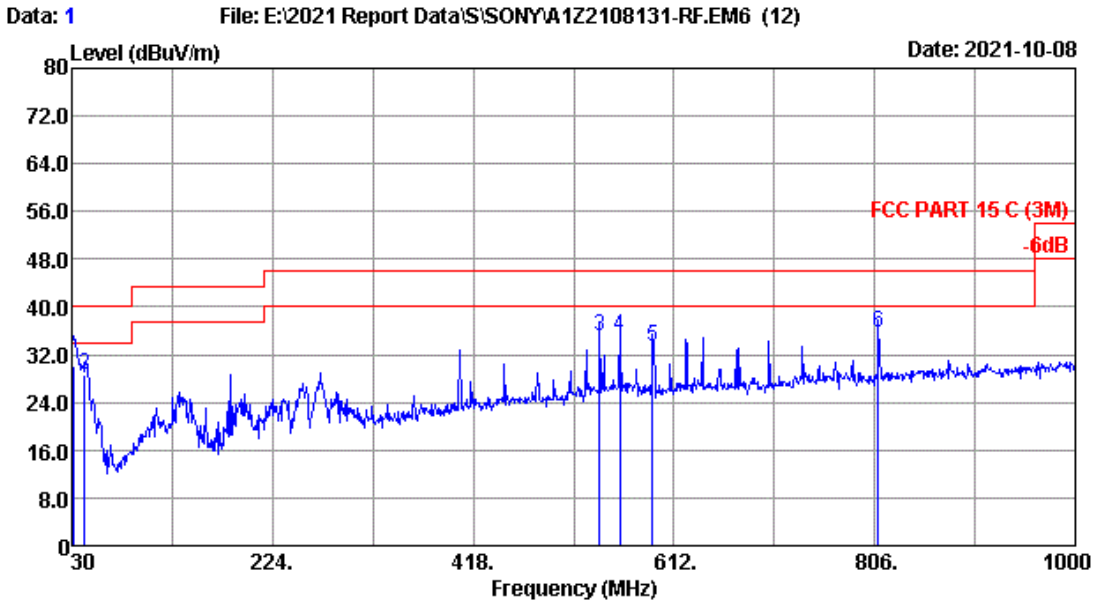
All the emissions from 30MHz to 25GHz were comply with the 15.209 Limit.

Duty cycle




Note: The duty cycle of the test signal is 100%.

**Frequency: 30MHz~1GHz**

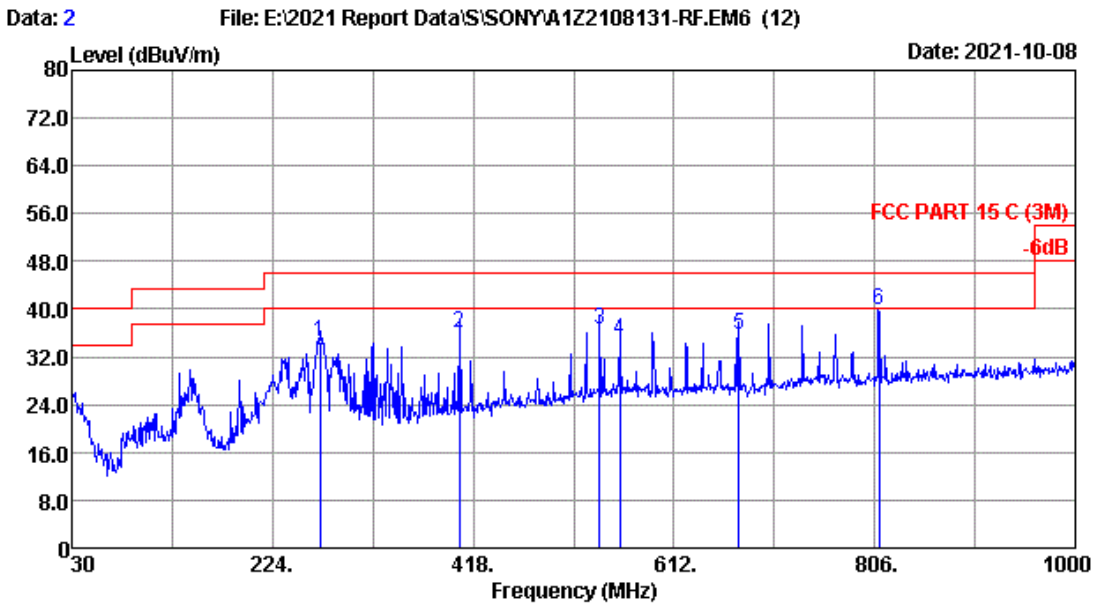



Site no. : 3m Chamber
Dis. / Ant. : 3m 2020 CBL6112D-25237
Limit : FCC PART 15 C (3M)
Env. / Ins. : 23.5*C/52%
Power rating : AC 120V/60Hz
Test Mode : Soundbar: Generic 2.4G

Data no. : 1
Ant. pol. : VERTICAL
Engineer : Jack

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|
| 1 | 30.872 | 24.26 | 0.64 | 5.20 | 30.10 | 40.00 | 9.90 | QP |
| 2 | 42.610 | 17.95 | 0.71 | 10.07 | 28.73 | 40.00 | 11.27 | QP |
| 3 | 540.220 | 24.39 | 2.43 | 8.24 | 35.06 | 46.00 | 10.94 | QP |
| 4 | 559.620 | 24.60 | 2.48 | 8.05 | 35.13 | 46.00 | 10.87 | QP |
| 5 | 591.630 | 24.29 | 2.55 | 6.65 | 33.49 | 46.00 | 12.51 | QP |
| 6 | 809.880 | 25.62 | 3.16 | 6.99 | 35.77 | 46.00 | 10.23 | QP |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

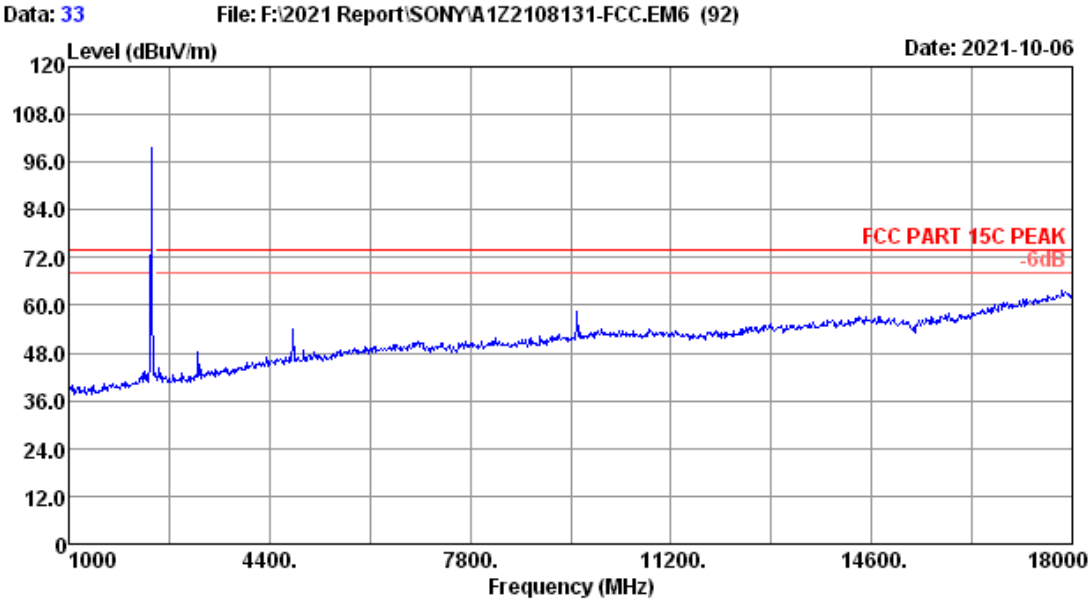



Site no. : 3m Chamber Data no. : 2
Dis. / Ant. : 3m 2020 CBL6112D-25237 Ant. pol. : HORIZONTAL
Limit : FCC PART 15 C (3M)
Env. / Ins. : 23.5*C/52% Engineer : Jack
Power rating : AC 120V/60Hz
Test Mode : Soundbar: Generic 2.4G

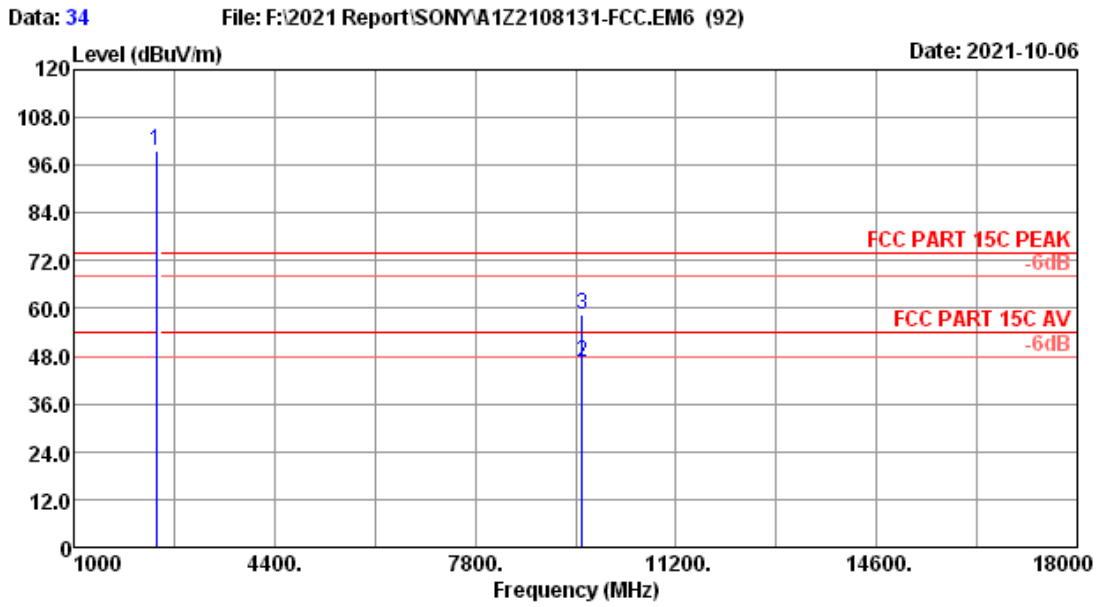
| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|
| 1 | 269.590 | 18.54 | 1.64 | 14.26 | 34.44 | 46.00 | 11.56 | QP |
| 2 | 404.420 | 21.52 | 2.04 | 12.37 | 35.93 | 46.00 | 10.07 | QP |
| 3 | 540.220 | 24.39 | 2.43 | 9.76 | 36.58 | 46.00 | 9.42 | QP |
| 4 | 559.620 | 24.60 | 2.48 | 7.65 | 34.73 | 46.00 | 11.27 | QP |
| 5 | 675.050 | 24.70 | 2.74 | 8.34 | 35.78 | 46.00 | 10.22 | QP |
| 6 | 809.999 | 25.62 | 3.16 | 10.99 | 39.77 | 46.00 | 6.23 | QP |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

**Frequency: 1GHz~18GHz**




| | | | |
|---|---|---|---|
| Site no. | : 3m Chamber | Data no. | : 33 |
| Dis. / Ant. | : 3m 2021 MCTD1209-3006 | Ant. pol. | : VERTICAL |
| Limit | : FCC PART 15C PEAK | | |
| Env. / Ins. | : 23.8*C/53.5% | Engineer | : Winter |
| Power rating | : AC 120V/60Hz | | |
| Test Mode | : Soundbar: SRD 2404MHz Tx | | |

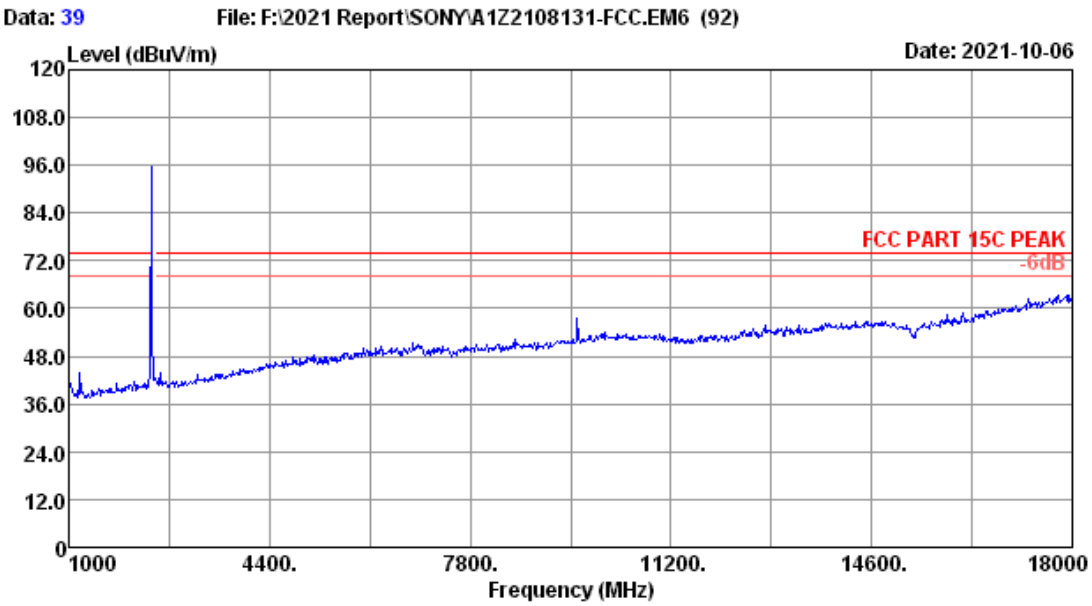



Site no. : 3m Chamber
Dis. / Ant. : 3m 2021 MCTD1209-3006
Limit : FCC PART 15C PEAK
Env. / Ins. : 23.8*C/53.5%
Power rating : AC 120V/60Hz
Test Mode : Soundbar: SRD 2404MHz Tx

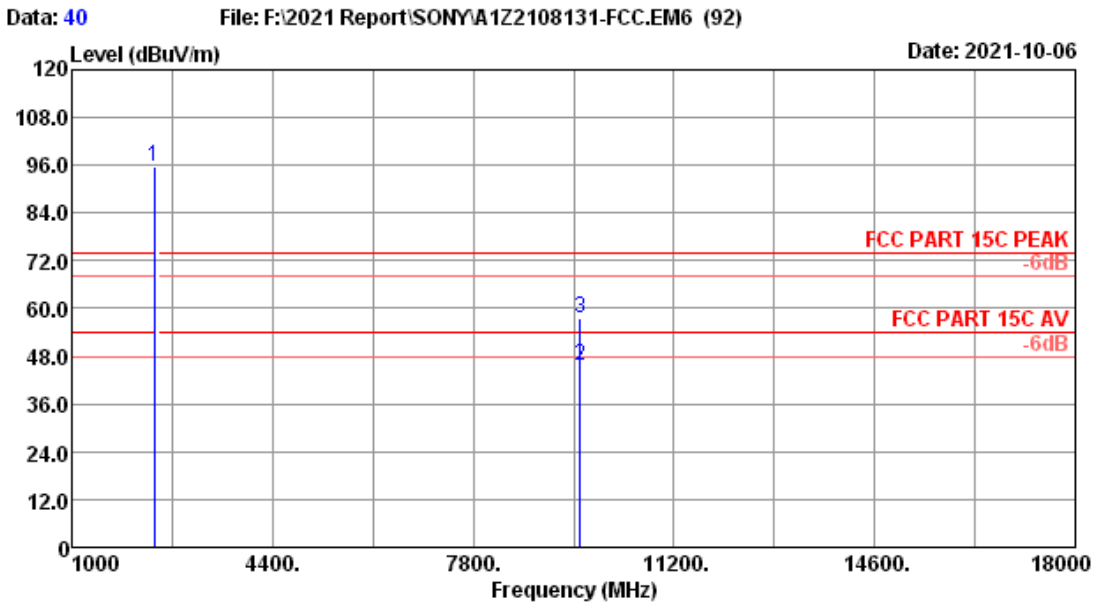
Data no. : 34
Ant. pol. : VERTICAL
Engineer : Winter

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2404.00 | 27.93 | 1.66 | 105.14 | 35.24 | 99.49 | ------ | ------ | Peak |
| 2 | 9616.00 | 37.47 | 3.90 | 39.69 | 34.68 | 46.38 | 54.00 | 7.62 | Average |
| 3 | 9616.00 | 37.47 | 3.90 | 51.54 | 34.68 | 58.23 | 74.00 | 15.77 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.
2. The emission levels that are 20dB below the official limit are not reported.




| | | | |
|---|---|---|---|
| Site no. | : 3m Chamber | Data no. | : 39 |
| Dis. / Ant. | : 3m 2021 MCTD1209-3006 | Ant. pol. | : HORIZONTAL |
| Limit | : FCC PART 15C PEAK | | |
| Env. / Ins. | : 23.8*C/53.5% | Engineer | : Winter |
| Power rating | : AC 120V/60Hz | | |
| Test Mode | : Soundbar: SRD 2404MHz Tx | | |

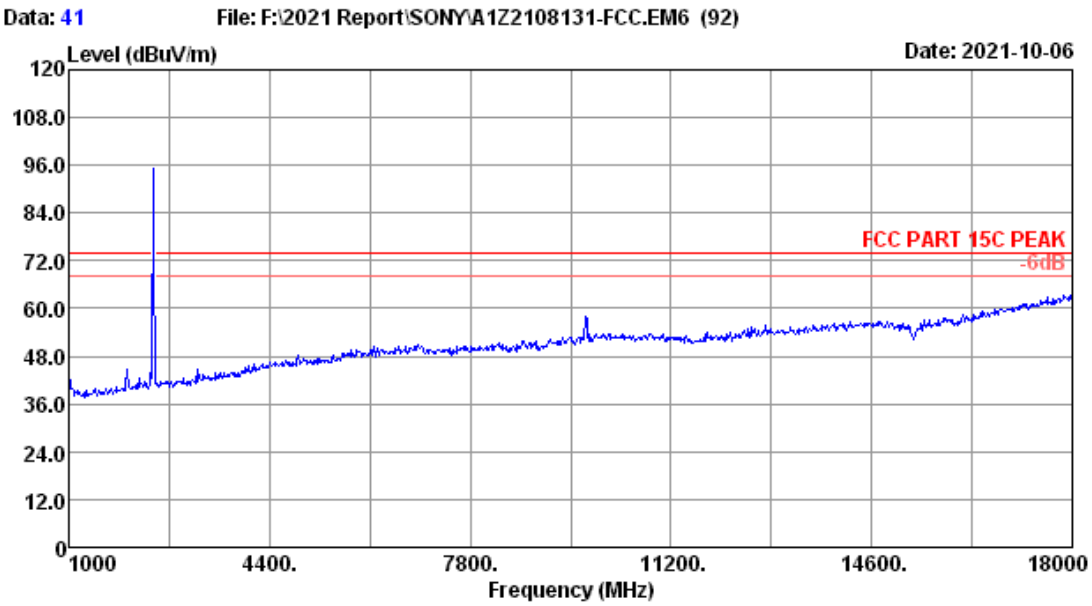



Site no. : 3m Chamber
Dis. / Ant. : 3m 2021 MCTD1209-3006
Limit : FCC PART 15C PEAK
Env. / Ins. : 23.8*C/53.5%
Power rating : AC 120V/60Hz
Test Mode : Soundbar: SRD 2404MHz Tx

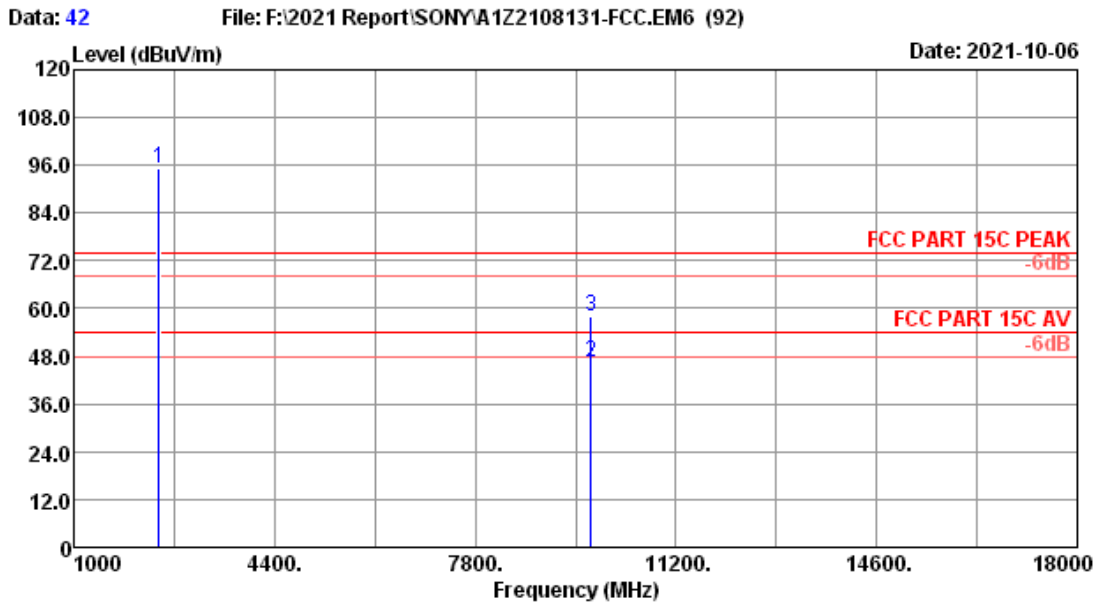
Data no. : 40
Ant. pol. : HORIZONTAL
Engineer : Winter

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2404.00 | 27.93 | 1.66 | 101.20 | 35.24 | 95.55 | ------ | ------ | Peak |
| 2 | 9616.00 | 37.47 | 3.90 | 38.98 | 34.68 | 45.67 | 54.00 | 8.33 | Average |
| 3 | 9616.00 | 37.47 | 3.90 | 51.06 | 34.68 | 57.75 | 74.00 | 16.25 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.
2. The emission levels that are 20dB below the official limit are not reported.




| | | | |
|---|---|---|---|
| Site no. | : 3m Chamber | Data no. | : 41 |
| Dis. / Ant. | : 3m 2021 MCTD1209-3006 | Ant. pol. | : HORIZONTAL |
| Limit | : FCC PART 15C PEAK | | |
| Env. / Ins. | : 23.8*C/53.5% | Engineer | : Winter |
| Power rating | : AC 120V/60Hz | | |
| Test Mode | : Soundbar: SRD 2440MHz Tx | | |

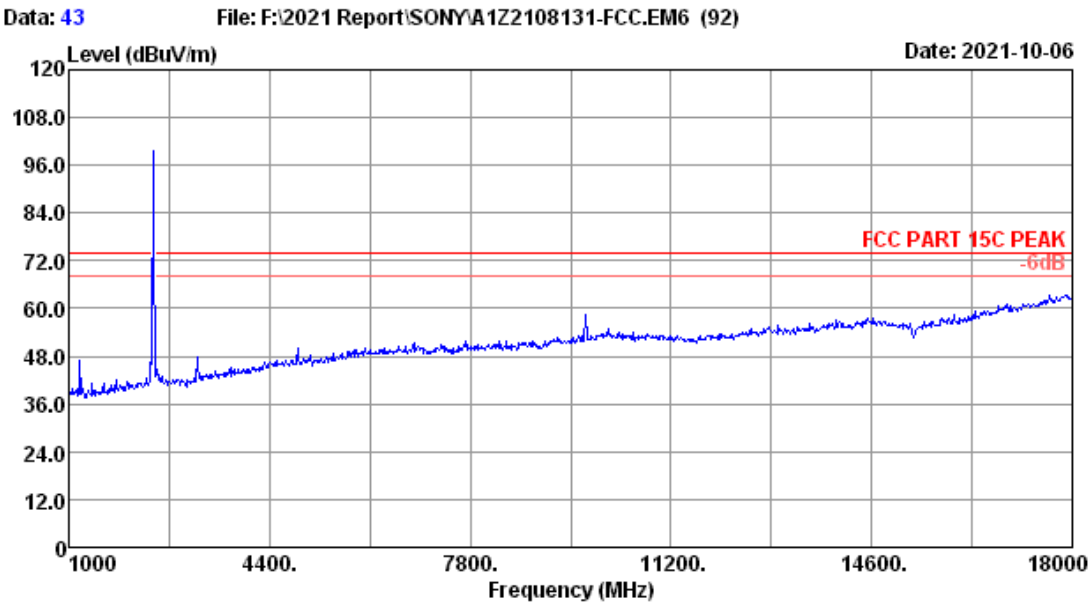



Site no. : 3m Chamber
Dis. / Ant. : 3m 2021 MCTD1209-3006
Limit : FCC PART 15C PEAK
Env. / Ins. : 23.8*C/53.5%
Power rating : AC 120V/60Hz
Test Mode : Soundbar: SRD 2440MHz Tx

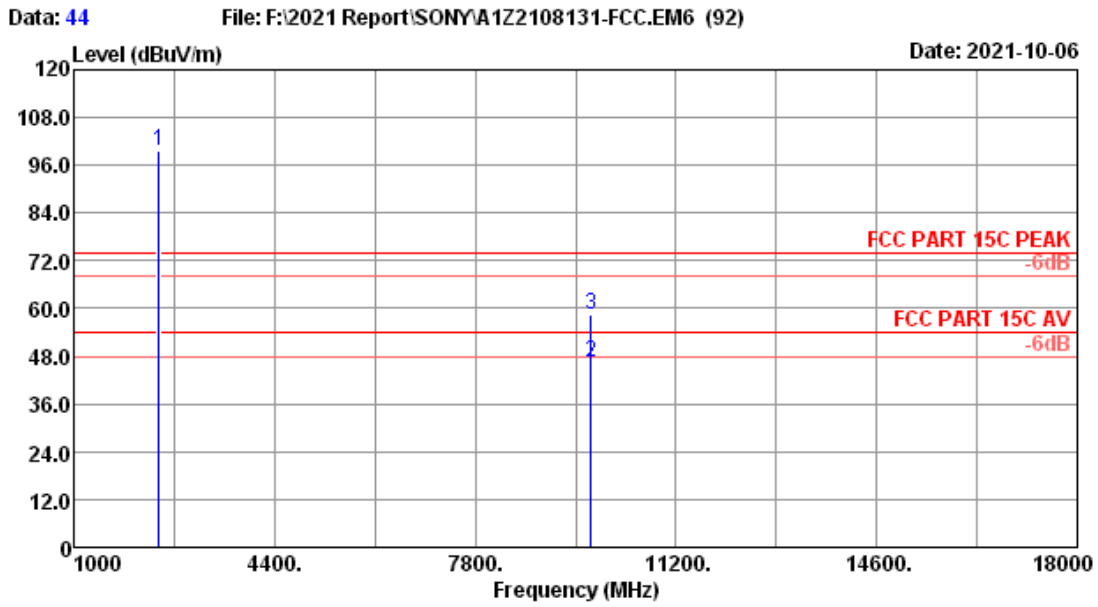
Data no. : 42
Ant. pol. : HORIZONTAL
Engineer : Winter

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2440.00 | 28.00 | 1.68 | 100.82 | 35.24 | 95.26 | ------ | ------ | Peak |
| 2 | 9760.00 | 37.56 | 3.94 | 39.40 | 34.53 | 46.37 | 54.00 | 7.63 | Average |
| 3 | 9760.00 | 37.56 | 3.94 | 51.25 | 34.53 | 58.22 | 74.00 | 15.78 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.
2. The emission levels that are 20dB below the official limit are not reported.




| | | | |
|---|---|---|---|
| Site no. | : 3m Chamber | Data no. | : 43 |
| Dis. / Ant. | : 3m 2021 MCTD1209-3006 | Ant. pol. | : VERTICAL |
| Limit | : FCC PART 15C PEAK | | |
| Env. / Ins. | : 23.8*C/53.5% | Engineer | : Winter |
| Power rating | : AC 120V/60Hz | | |
| Test Mode | : Soundbar: SRD 2440MHz Tx | | |

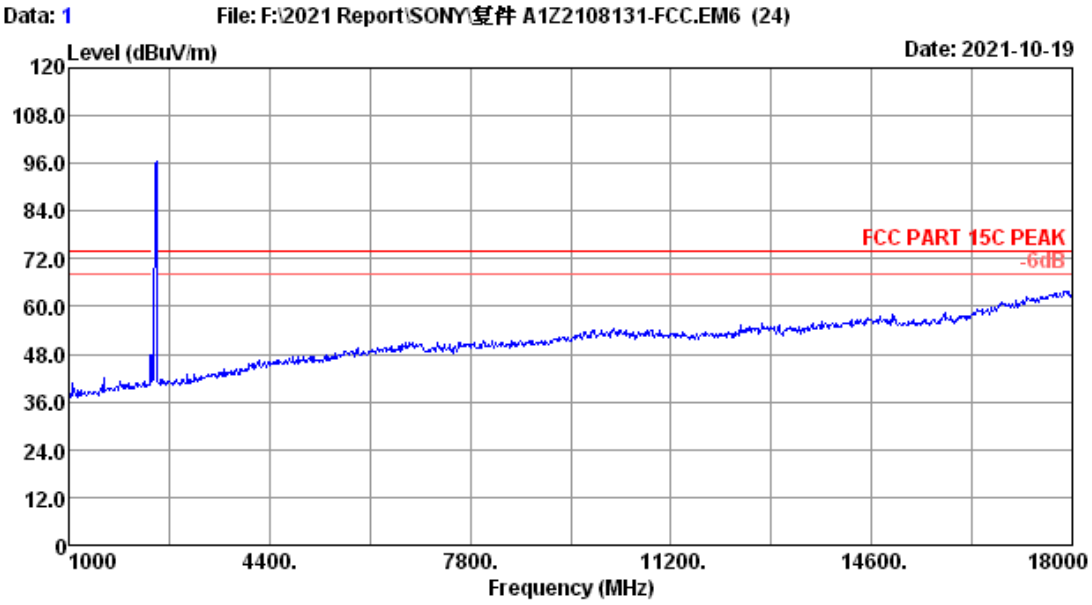



Site no. : 3m Chamber
Dis. / Ant. : 3m 2021 MCTD1209-3006
Limit : FCC PART 15C PEAK
Env. / Ins. : 23.8*C/53.5%
Power rating : AC 120V/60Hz
Test Mode : Soundbar: SRD 2440MHz Tx

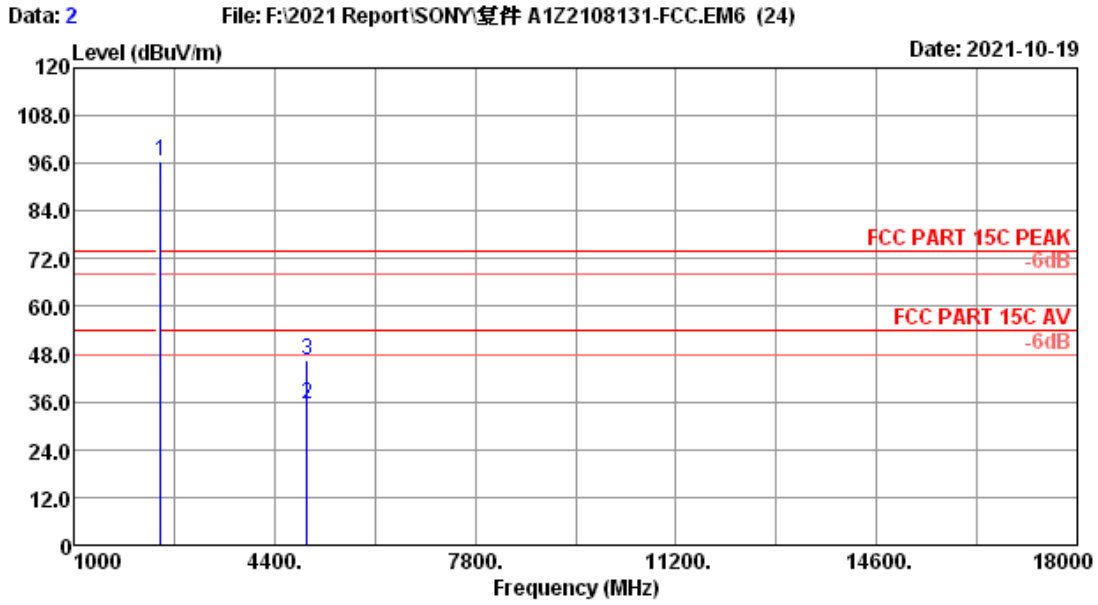
Data no. : 44
Ant. pol. : VERTICAL
Engineer : Winter

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2440.00 | 28.00 | 1.68 | 105.07 | 35.24 | 99.51 | ------ | ------ | Peak |
| 2 | 9760.00 | 37.56 | 3.94 | 39.43 | 34.53 | 46.40 | 54.00 | 7.60 | Average |
| 3 | 9760.00 | 37.56 | 3.94 | 51.47 | 34.53 | 58.44 | 74.00 | 15.56 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.
2. The emission levels that are 20dB below the official limit are not reported.



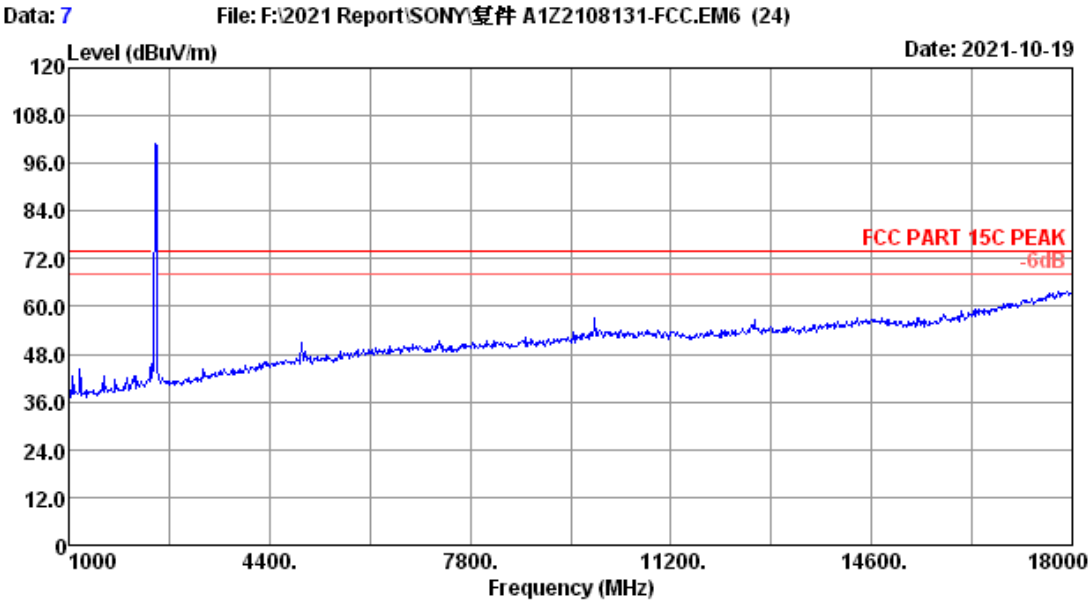

| | | | |
|---|---|---|---|
| Site no. | : 3m Chamber | Data no. | : 1 |
| Dis. / Ant. | : 3m 2021 MCTD1209-3006 | Ant. pol. | : HORIZONTAL |
| Limit | : FCC PART 15C PEAK | | |
| Env. / Ins. | : 23.8*C/53.5% | Engineer | : Winter |
| Test Mode | : Soundbar: SRD 2476MHz Tx | | |



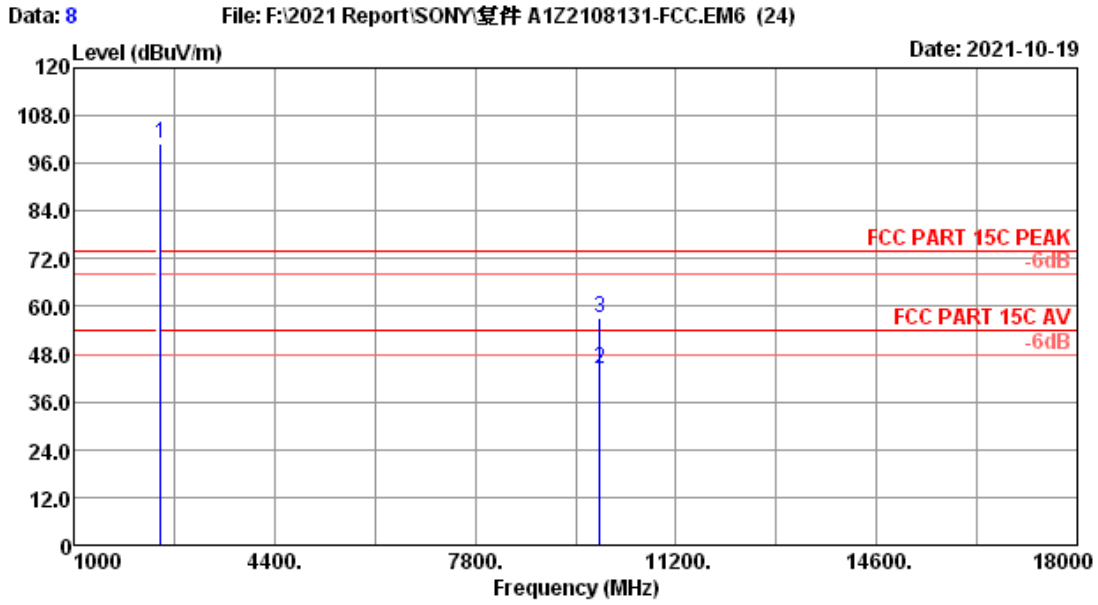

Site no. : 3m Chamber Data no. : 2
Dis. / Ant. : 3m 2021 MCTD1209-3006 Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23.8*C/53.5% Engineer : Winter
Test Mode : Soundbar: SRD 2476MHz Tx

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2476.00 | 28.07 | 1.69 | 101.87 | 35.25 | 96.38 | ------ | ------ | Peak |
| 2 | 4952.00 | 32.77 | 2.73 | 34.29 | 34.49 | 35.30 | 54.00 | 18.70 | Average |
| 3 | 4952.00 | 32.77 | 2.73 | 45.49 | 34.49 | 46.50 | 74.00 | 27.50 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.
2. The emission levels that are 20dB below the official limit are not reported.




| | | | |
|---|---|---|---|
| Site no. | : 3m Chamber | Data no. | : 7 |
| Dis. / Ant. | : 3m 2021 MCTD1209-3006 | Ant. pol. | : VERTICAL |
| Limit | : FCC PART 15C PEAK | | |
| Env. / Ins. | : 23.8*C/53.5% | Engineer | : Winter |
| Test Mode | : Soundbar: SRD 2476MHz Tx | | |




Site no. : 3m Chamber
Dis. / Ant. : 3m 2021 MCTD1209-3006
Limit : FCC PART 15C PEAK
Env. / Ins. : 23.8*C/53.5%
Test Mode : Soundbar: SRD 2476MHz Tx

Data no. : 8
Ant. pol. : VERTICAL
Engineer : Winter

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2476.00 | 28.07 | 1.69 | 106.60 | 35.25 | 101.11 | ------ | ------ | Peak |
| 2 | 9904.00 | 37.65 | 3.98 | 37.20 | 34.40 | 44.43 | 54.00 | 9.57 | Average |
| 3 | 9904.00 | 37.65 | 3.98 | 49.95 | 34.40 | 57.18 | 74.00 | 16.82 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.
2. The emission levels that are 20dB below the official limit are not reported.

# 5. CONDUCTED SPURIOUS EMISSIONS

## 5.1. Test Equipment

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|
| 1. | PXA Signal Analyzer | Agilent | N9030A | MY51380221 | Apr.07,21 | 1Year |
| 2. | Attenuator | Agilent | 8491B | MY39269201 | Oct.12,20 | 1 Year |
| 3. | Attenuator | Agilent | 8491B | MY39269201 | Oct.09,21 | 1 Year |
| 4. | RF Cable | Hubersuhner | SUCOFLEX-106 | 505238/6 | Apr.07,21 | 1 Year |

## 5.2. Block Diagram of Test Setup

## 5.3. Limit

In any 100kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.

## 5.4. Test Procedure

Use the test method descried in ANSI C63.10:
The transmitter output was connected to a spectrum analyzer, The resolution bandwidth is set to 100 kHz, The video bandwidth is set to 300 kHz and measure all the emissions With peak detector.

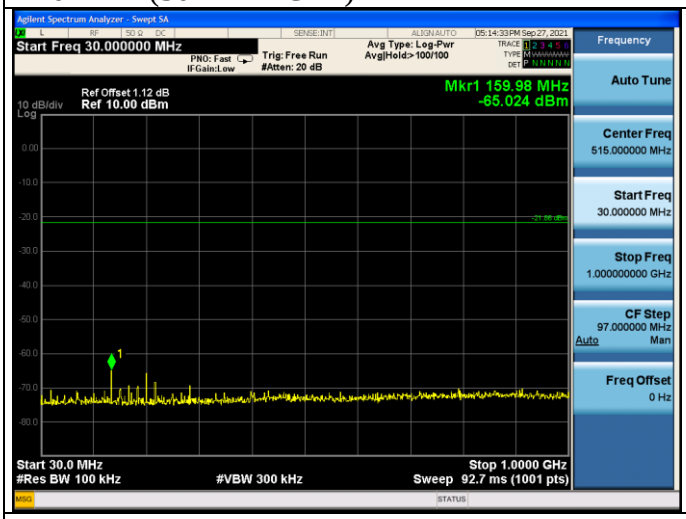
## 5.5. Test result

**PASS** (The testing data was attached in the next pages.)

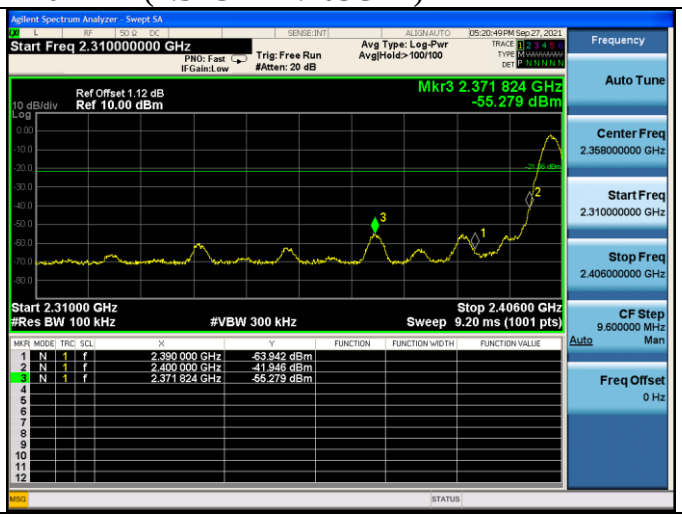
| | | |
|---|---|---|
| EUT: Active Speaker System | | |
| M/N: SA-S400 | | |
| Test date: 2021-09-27 ~ 10-19 | Pressure: 102.1±1.0 kpa | Humidity: 53.2±3.0% |
| Tested by: Lynn | Test site: RF site | Temperature: 22.3±0.6℃ |

GFSK

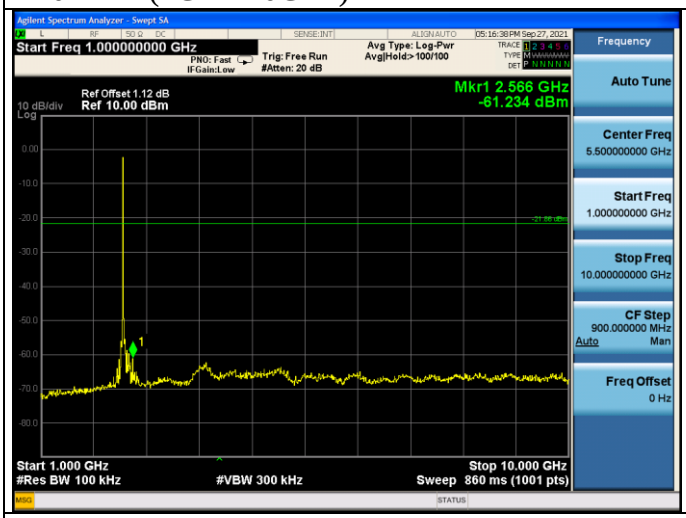
2404MHz(30MHz-1GHz)



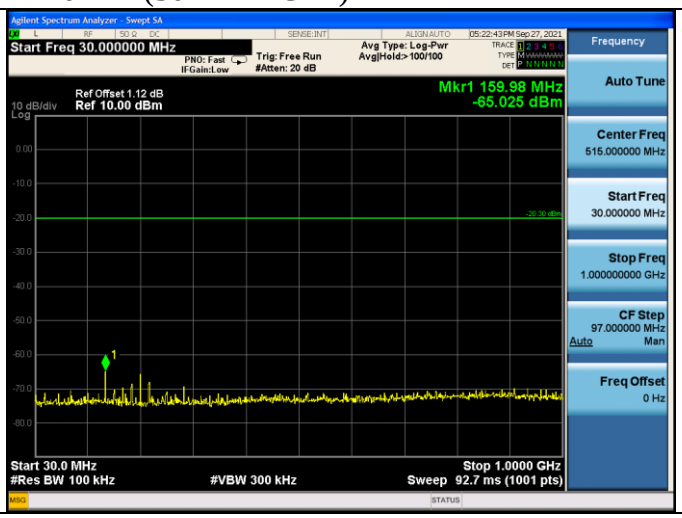

2404MHz(2.31GHz-2.405GHz)




2404MHz(1GHz-10GHz)

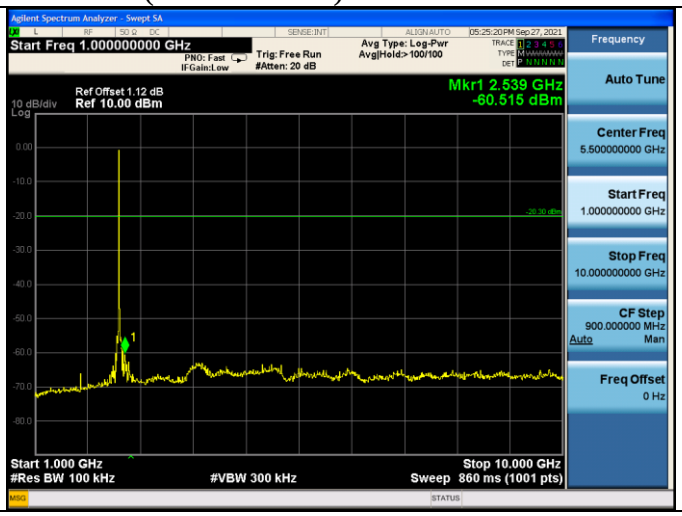



2440MHz(30MHz-1GHz)




2404MHz(10GHz-26GHz)

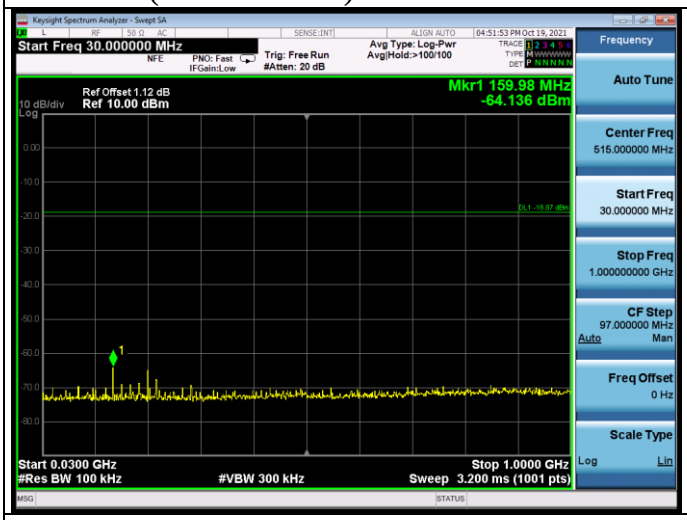
2440MHz(1GHz-10GHz)



2440MHz(10GHz-26GHz)

2476MHz(10GHz-26GHz)

2476MHz(30MHz-1GHz)




2476MHz(2.477GHz-2.51GHz)

2476MHz(1GHz-10GHz)

# 6. 6dB & 99% BANDWIDTH TEST

## 6.1. Test Equipment

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|
| 1. | PXA Signal Analyzer | Agilent | N9030A | MY51380221 | Apr.07,21 | 1Year |
| 2. | Attenuator | Agilent | 8491B | MY39269201 | Oct.12,20 | 1 Year |
| 3. | Attenuator | Agilent | 8491B | MY39269201 | Oct.09,21 | 1 Year |
| 4. | RF Cable | Hubersuhner | SUCOFLEX-106 | 505238/6 | Apr.07,21 | 1 Year |

## 6.2. Limit

For direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz.

## 6.3. Test Procedure

Use the test method descried in ANSI C63.10 clause 11.8.2:
The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 6 dB, if the functionality described in 11.8.1 (i.e., RBW = 100 kHz, VBW ≥ 3 × RBW, and peak detector with maximum hold) is implemented by the instrumentation function. When using this capability, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be ≥6 dB.

Use the test method descried in ANSI C63.10 clause 6.9.2:
The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring 99% power bandwidth:

a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.
c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2.
d) Step a) through step c) might require iteration to adjust within the specified range.
e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.

g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.

h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

## 6.4. Test Results

**6 dB bandwidth:**

| | | |
|---|---|---|
| EUT: Active Speaker System | | |
| M/N: SA-S400 | | |
| Test date: 2021-09-15 ~ 10-20 | Pressure: 102.5±1.0 kpa | Humidity: 51.5±3.0% |
| Tested by: THOMAX | Test site: RF site | Temperature:22.5±0.6 ℃ |

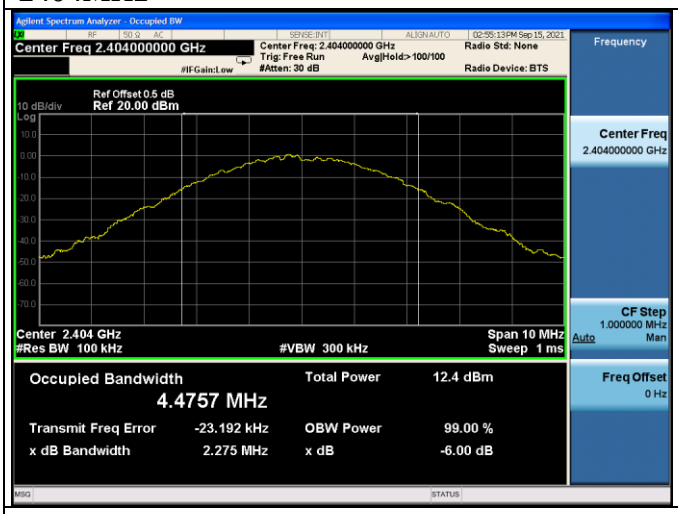
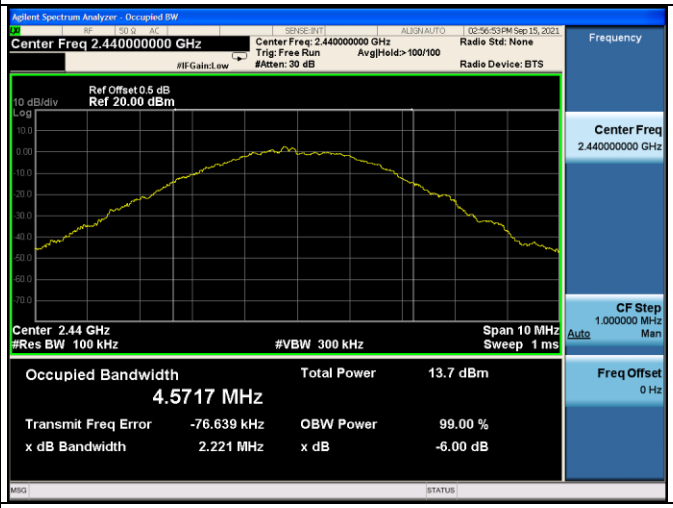
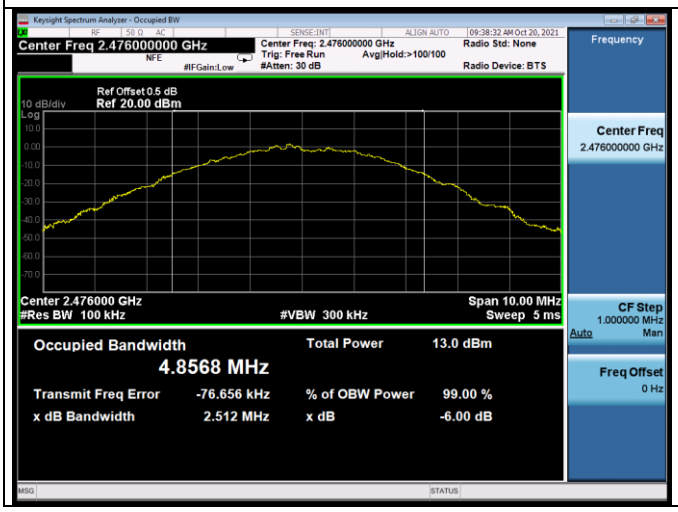
**99% Occupied bandwidth:**

| | | |
|---|---|---|
| EUT: Active Speaker System | | |
| M/N: SA-S400 | | |
| Test date: 2021-09-15 ~ 10-20 | Pressure: 102.5±1.0 kpa | Humidity: 51.5±3.0% |
| Tested by: THOMAX | Test site: RF site | Temperature:22.5±0.6 ℃ |

| Test Mode | Frequency (MHz) | 6 dB bandwidth (kHz) | Limit (KHz) |
|---|---|---|---|
| 2.4G | 2404 | 2275 | ≧500 |
| | 2440 | 2221 | ≧500 |
| | 2476 | 2512 | ≧500 |
| Conclusion：PASS | | | |
| | | | |
| Test Mode | Frequency （MHz） | 99% bandwidth （MHz） | Limit (KHz) |
| 2.4G | 2404 | 4.4757 | N/A |
| | 2440 | 4.5717 | N/A |
| | 2476 | 4.8568 | N/A |
| Conclusion：PASS | | | |

## 6dB and 99% Bandwidth

### GFSK

| 2404MHz | 2440MHz |
|---|---|
|  |  |
| | |
| 2476MHz | --- |
|  | --- |

# 7. MAXIMUM PEAK OUTPUT POWER TEST

## 7.1. Test Equipment

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|
| 1. | PXA Signal Analyzer | Agilent | N9030A | MY51380221 | Apr.07,21 | 1Year |
| 2. | Power meter | Anritsu | ML2487A | 6K00002472 | Apr.07,21 | 1Year |
| 3. | Power sensor | Anritsu | MA2491A | 033005 | Apr.06,21 | 1Year |
| 4. | Attenuator | Agilent | 8491B | MY39269201 | Oct.12,20 | 1 Year |
| 5. | Attenuator | Agilent | 8491B | MY39269201 | Oct.09,21 | 1 Year |
| 6. | RF Cable | HUBER+SUHNER | SUCOFLEX-106 | 505238/6 | Apr.07,21 | 1 Year |

## 7.2. Limit

For systems using digital modulation in the 2400—2483.5MHz, The Peak output Power shall not exceed 1W(30dBm).

## 7.3. Test Procedure

Use the test method descried in ANSI C63.10 clause 11.9.1.3:
Connected the EUT's antenna port to Power Sensor, and use power meter to test peak output power.

## 7.4. Test Results

| | | |
|---|---|---|
| EUT: Active Speaker System | | |
| M/N: SA-S400 | | |
| Test date: 2021-09-24 | Pressure: 102.5±1.0 kpa | Humidity: 53.5±3.0% |
| Tested by: THOMAX | Test site: RF site | Temperature: 25.5±0.6℃ |

| Test Mode | Frequency (MHz) | Power Set | Peak output Power (dBm) | Limit (dBm) |
|---|---|---|---|---|
| 2.4G | 2404 | RF Power=0x0F<br>RF iCurrent=0xD9 | 2.569 | 30 |
| | 2440 | | 3.835 | 30 |
| | 2476 | | 4.585 | 30 |
| Conclusion: PASS | | | | |

# 8. BAND EDGE COMPLIANCE TEST

## 8.1. Test Equipment

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|
| 1. | PXA Signal Analyzer | Agilent | N9030A | MY51380221 | Apr.07,21 | 1Year |
| 2. | Amplifier | Agilent | 8449B | 3008A02495 | Apr.07,21 | 1 Year |
| 3. | Horn Antenna | ETC | MCTD 1209 | DRH15F03006 | Jul.26,21 | 1 Year |
| 4. | RF Cable | HUBER+SUHNER | SUCOFLEX-106 | 505238/6 | Apr.07,21 | 1 Year |

## 8.2. Limit

All the lower and upper band-edges emissions appearing within 2310MHz to 2390MHz and 2483.5MHz to 2500MHz restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation frequency band 2400MHz to 2483.5MHz shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

## 8.3. Test Produce

Use the test method descried in ANSI C63.10 clause 6.10:

For upper band emissions that are up to two bandwidths(2MHz) away (2483.5MHz to 2485.5MHz）from the band-edge use below produce:

1. Choose a spectrum analyzer span that encompasses both the peak of the fundamental emission and the band-edge emission under investigation. Set the analyzer RBW to 100KHz and with a video bandwidth 300KHz. Record the peak levels of the fundamental emission and the relevant band-edge emission, Observe the stored trace and measure the amplitude delta between the peak of the fundamental and the peak of the band-edge emission. This is not a field strength measurement, it is only a relative measurement to determine the amount by which the emission drops at the band edge relative to the highest fundamental emission level.
2. Subtract the delta measured in step (1) from the maximum field strengths measured in clause 4 .The resultant field strengths are then used to determine band-edge compliance as required by Section 15.205

   For emissions above two bandwidths away from the band-edge use below produce:

   1. The EUT is placed on a turntable, which is 0.8m above the ground plane and worked at highest radiated power.
   2. The turntable was rotated for 360 degrees to determine the position of maximum emission level.
   3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
   4. Set the spectrum analyzer in the following setting in order to capture the lower and upperband-edges of the emission:

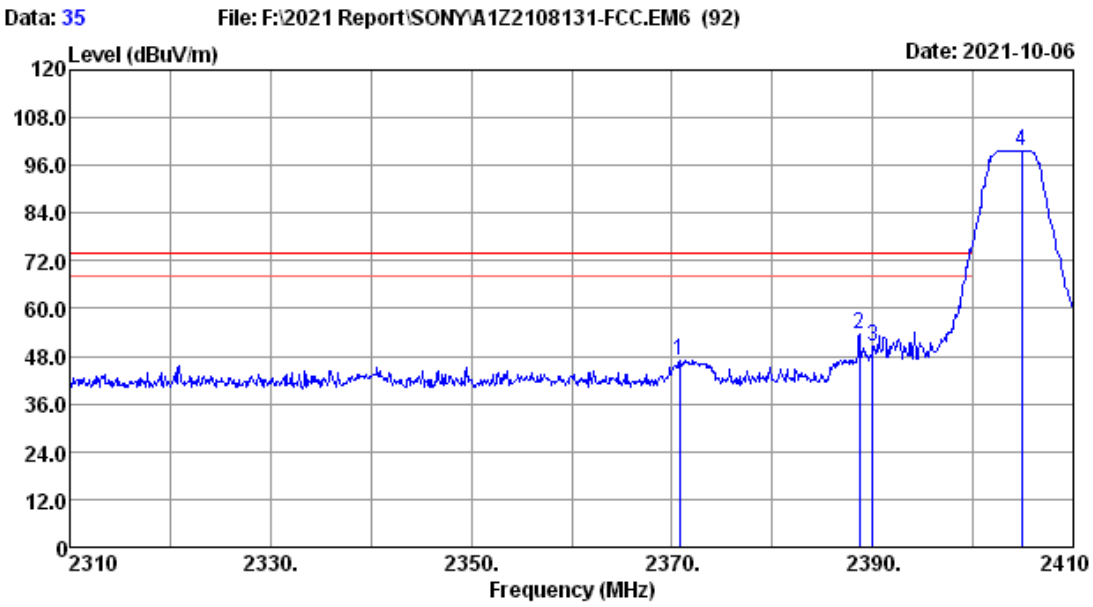
      (a) PEAK: RBW=1MHz ;VBW=3MHz, PK detector, Sweep=AUTO

      (b) Average: RBW=1MHz , VBW=10Hz,Sweep time=Auto

## 8.4. Test Results

Pass (The testing data was attached in the next pages.)

Note: If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.

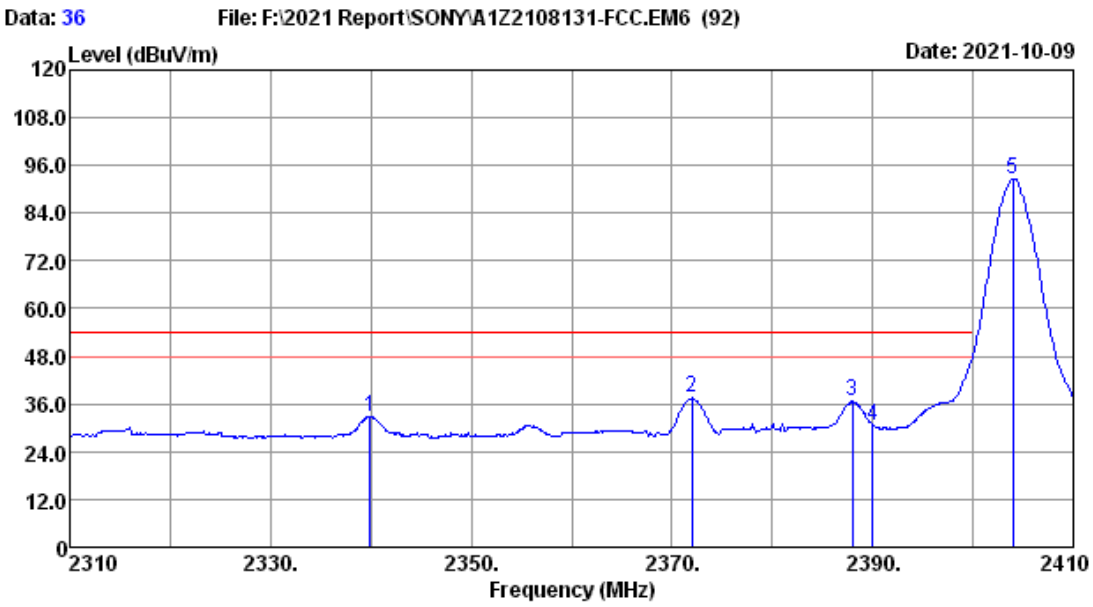



Site no. : 3m Chamber
Dis. / Ant. : 3m 2021 MCTD1209-3006
Limit : FCC PART 15C PEAK
Env. / Ins. : 23.8*C/53.5%
Power rating : AC 120V/60Hz
Test Mode : Soundbar: SRD 2404MHz Tx

Data no. : 35
Ant. pol. : VERTICAL
Engineer : Winter

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2370.80 | 27.86 | 1.64 | 52.61 | 35.24 | 46.87 | 74.00 | 27.13 | Peak |
| 2 | 2388.70 | 27.89 | 1.65 | 59.12 | 35.24 | 53.42 | 74.00 | 20.58 | Peak |
| 3 | 2390.00 | 27.89 | 1.65 | 56.36 | 35.24 | 50.66 | 74.00 | 23.34 | Peak |
| 4 | 2404.90 | 27.93 | 1.66 | 105.48 | 35.24 | 99.83 | ------ | ------ | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.
2. The emission levels that are 20dB below the official limit are not reported.

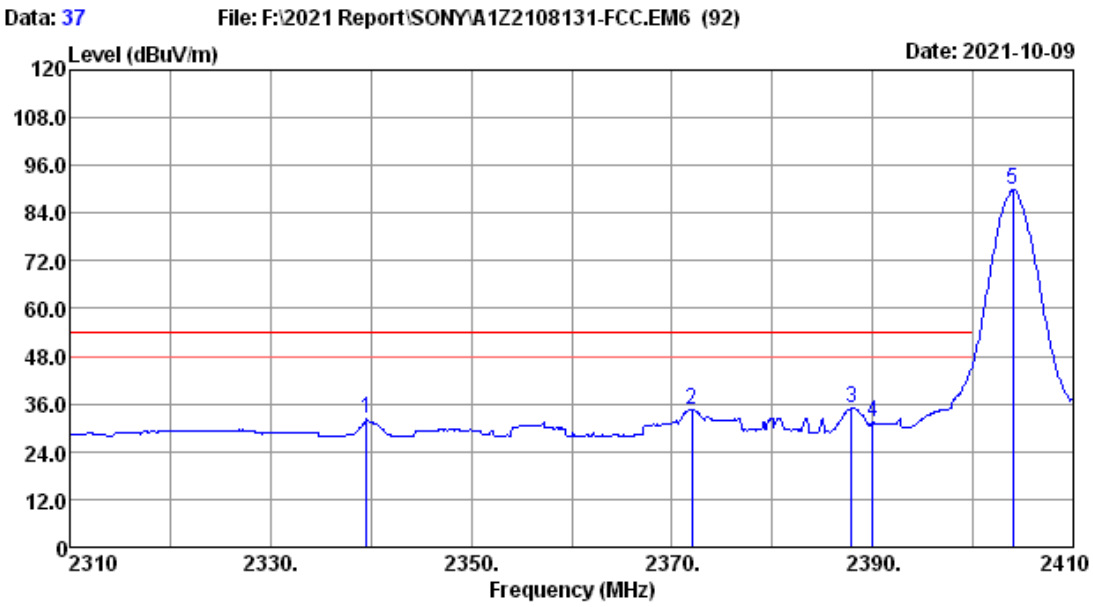



Site no. : 3m Chamber
Dis. / Ant. : 3m 2021 MCTD1209-3006
Limit : FCC PART 15C AV
Env. / Ins. : 23.8*C/53.5%
Power rating : AC 120V/60Hz
Test Mode : Soundbar: SRD 2404MHz Tx

Data no. : 36
Ant. pol. : VERTICAL
Engineer : Winter

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2339.90 | 27.79 | 1.64 | 38.53 | 35.24 | 32.72 | 54.00 | 21.28 | Average |
| 2 | 2372.00 | 27.86 | 1.64 | 43.17 | 35.24 | 37.43 | 54.00 | 16.57 | Average |
| 3 | 2388.00 | 27.89 | 1.65 | 42.32 | 35.24 | 36.62 | 54.00 | 17.38 | Average |
| 4 | 2390.00 | 27.89 | 1.65 | 36.39 | 35.24 | 30.69 | 54.00 | 23.31 | Average |
| 5 | 2404.00 | 27.93 | 1.66 | 98.40 | 35.24 | 92.75 | ------ | ------ | Average |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.
2. The emission levels that are 20dB below the official limit are not reported.

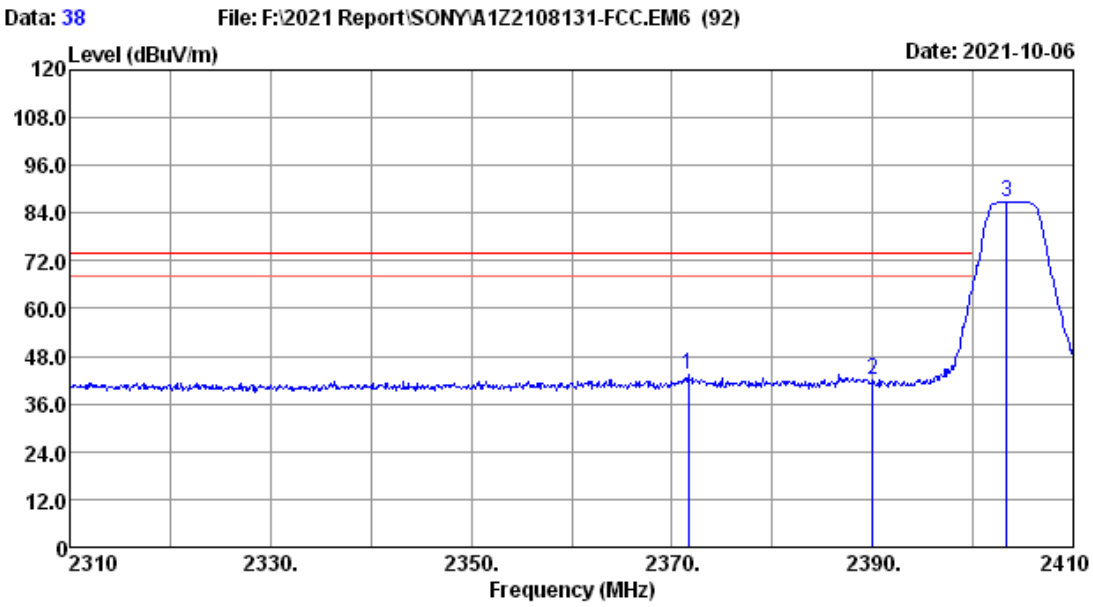



Site no. : 3m Chamber
Dis. / Ant. : 3m 2021 MCTD1209-3006
Limit : FCC PART 15C AV
Env. / Ins. : 23.8*C/53.5%
Power rating : AC 120V/60Hz
Test Mode : Soundbar: SRD 2404MHz Tx

Data no. : 37
Ant. pol. : HORIZONTAL
Engineer : Winter

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2339.60 | 27.79 | 1.64 | 38.01 | 35.24 | 32.20 | 54.00 | 21.80 | Average |
| 2 | 2372.00 | 27.86 | 1.64 | 40.45 | 35.24 | 34.71 | 54.00 | 19.29 | Average |
| 3 | 2387.90 | 27.89 | 1.65 | 40.71 | 35.24 | 35.01 | 54.00 | 18.99 | Average |
| 4 | 2390.00 | 27.89 | 1.65 | 37.07 | 35.24 | 31.37 | 54.00 | 22.63 | Average |
| 5 | 2404.00 | 27.93 | 1.66 | 95.59 | 35.24 | 89.94 | ------ | ------ | Average |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.
2. The emission levels that are 20dB below the official limit are not reported.

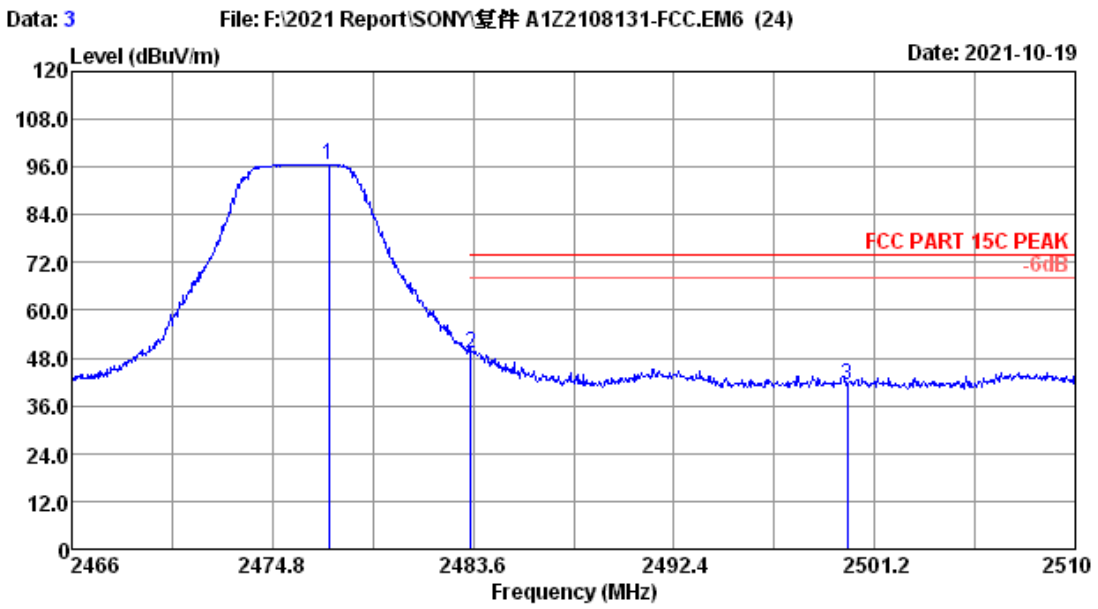



Site no. : 3m Chamber
Dis. / Ant. : 3m 2021 MCTD1209-3006
Limit : FCC PART 15C PEAK
Env. / Ins. : 23.8*C/53.5%
Power rating : AC 120V/60Hz
Test Mode : Soundbar: SRD 2404MHz Tx

Data no. : 38
Ant. pol. : HORIZONTAL
Engineer : Winter

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2371.60 | 27.86 | 1.64 | 49.09 | 35.24 | 43.35 | 74.00 | 30.65 | Peak |
| 2 | 2390.00 | 27.89 | 1.65 | 47.56 | 35.24 | 41.86 | 74.00 | 32.14 | Peak |
| 3 | 2403.40 | 27.93 | 1.66 | 92.35 | 35.24 | 86.70 | ------ | ------ | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.
2. The emission levels that are 20dB below the official limit are not reported.

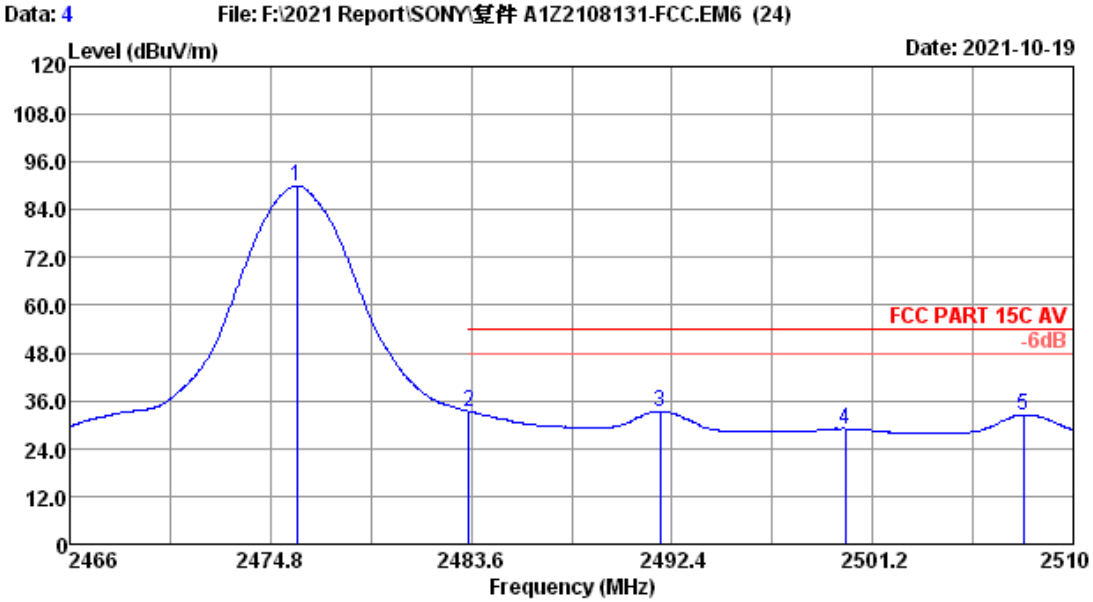



Site no. : 3m Chamber
Dis. / Ant. : 3m 2021 MCTD1209-3006
Limit : FCC PART 15C PEAK
Env. / Ins. : 23.8*C/53.5%
Test Mode : Soundbar: SRD 2476MHz Tx

Data no. : 3
Ant. pol. : HORIZONTAL
Engineer : Winter

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2477.26 | 28.07 | 1.69 | 102.09 | 35.25 | 96.60 | ------ | ------ | Peak |
| 2 | 2483.50 | 28.07 | 1.69 | 54.80 | 35.25 | 49.31 | 74.00 | 24.69 | Peak |
| 3 | 2500.00 | 28.10 | 1.70 | 46.81 | 35.25 | 41.36 | 74.00 | 32.64 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.
2. The emission levels that are 20dB below the official limit are not reported.

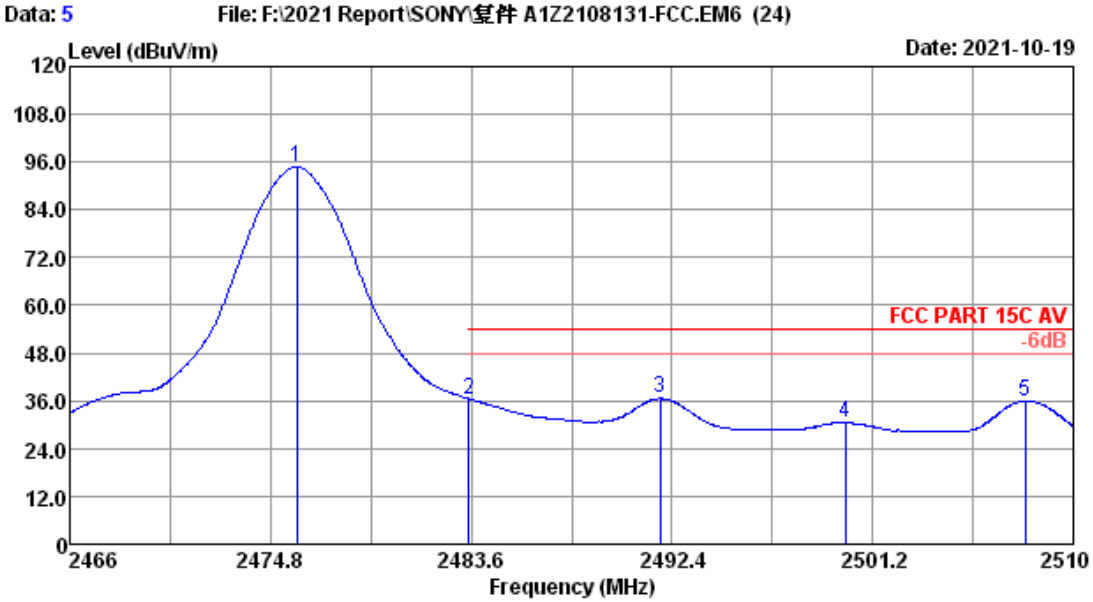



Site no. : 3m Chamber
Dis. / Ant. : 3m 2021 MCTD1209-3006
Limit : FCC PART 15C AV
Env. / Ins. : 23.8*C/53.5%
Test Mode : Soundbar: SRD 2476MHz Tx

Data no. : 4
Ant. pol. : HORIZONTAL
Engineer : Winter

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2475.94 | 28.07 | 1.69 | 95.53 | 35.25 | 90.04 | ------ | ------ | Average |
| 2 | 2483.50 | 28.07 | 1.69 | 38.79 | 35.25 | 33.30 | 54.00 | 20.70 | Average |
| 3 | 2491.87 | 28.10 | 1.70 | 38.77 | 35.25 | 33.32 | 54.00 | 20.68 | Average |
| 4 | 2500.00 | 28.10 | 1.70 | 34.45 | 35.25 | 29.00 | 54.00 | 25.00 | Average |
| 5 | 2507.80 | 28.11 | 1.70 | 37.83 | 35.25 | 32.39 | 54.00 | 21.61 | Average |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.
2. The emission levels that are 20dB below the official limit are not reported.

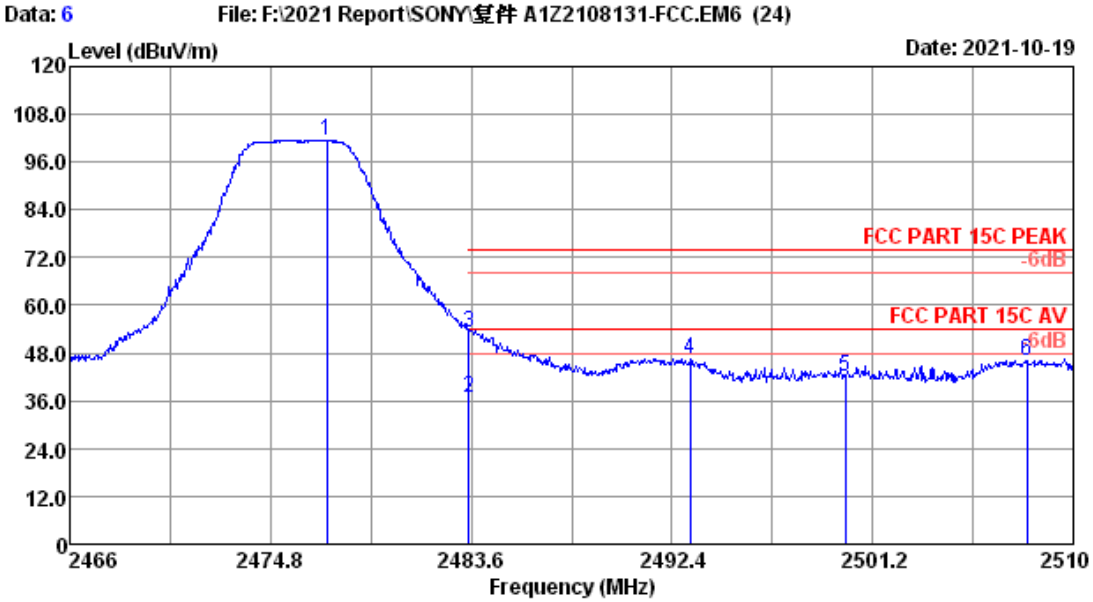



Site no. : 3m Chamber
Dis. / Ant. : 3m 2021 MCTD1209-3006
Limit : FCC PART 15C AV
Env. / Ins. : 23.8*C/53.5%
Test Mode : Soundbar: SRD 2476MHz Tx

Data no. : 5
Ant. pol. : VERTICAL
Engineer : Winter

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2475.94 | 28.07 | 1.69 | 100.37 | 35.25 | 94.88 | ------ | ------ | Average |
| 2 | 2483.50 | 28.07 | 1.69 | 42.01 | 35.25 | 36.52 | 54.00 | 17.48 | Average |
| 3 | 2491.87 | 28.10 | 1.70 | 42.04 | 35.25 | 36.59 | 54.00 | 17.41 | Average |
| 4 | 2500.00 | 28.10 | 1.70 | 35.92 | 35.25 | 30.47 | 54.00 | 23.53 | Average |
| 5 | 2507.89 | 28.11 | 1.70 | 41.39 | 35.25 | 35.95 | 54.00 | 18.05 | Average |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.
2. The emission levels that are 20dB below the official limit are not reported.




Site no. : 3m Chamber
Dis. / Ant. : 3m 2021 MCTD1209-3006
Limit : FCC PART 15C PEAK
Env. / Ins. : 23.8*C/53.5%
Test Mode : Soundbar: SRD 2476MHz Tx

Data no. : 6
Ant. pol. : VERTICAL
Engineer : Winter

| No. | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Amp factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2477.26 | 28.07 | 1.69 | 106.85 | 35.25 | 101.36 | ------ | ------ | Peak |
| 2 | 2483.50 | 28.07 | 1.69 | 42.28 | 35.25 | 36.79 | 54.00 | 17.21 | Average |
| 3 | 2483.50 | 28.07 | 1.69 | 58.45 | 35.25 | 52.96 | 74.00 | 21.04 | Peak |
| 4 | 2493.19 | 28.10 | 1.70 | 51.99 | 35.25 | 46.54 | 74.00 | 27.46 | Peak |
| 5 | 2500.00 | 28.10 | 1.70 | 47.31 | 35.25 | 41.86 | 74.00 | 32.14 | Peak |
| 6 | 2507.98 | 28.11 | 1.70 | 51.49 | 35.25 | 46.05 | 74.00 | 27.95 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.
2. The emission levels that are 20dB below the official limit are not reported.

# 9. POWER SPECTRAL DENSITY TEST

## 9.1. Test Equipment

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|
| 1. | PXA Signal Analyzer | Agilent | N9030A | MY51380221 | Apr.07,21 | 1 Year |
| 2. | Attenuator | Agilent | 8491B | MY39269201 | Oct.12,20 | 1 Year |
| 3. | Attenuator | Agilent | 8491B | MY39269201 | Oct.09,21 | 1 Year |
| 4. | RF Cable | HUBER+SUHNER | SUCOFLEX-106 | 505238/6 | Apr.07,21 | 1 Year |

## 9.2. Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

## 9.3. Test Procedure

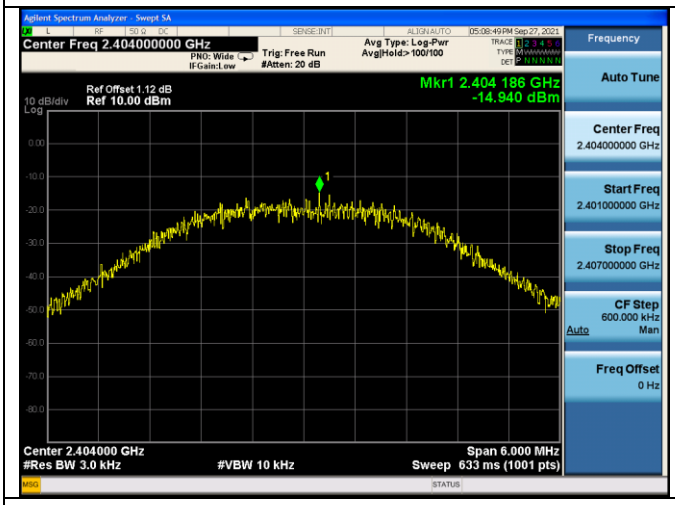
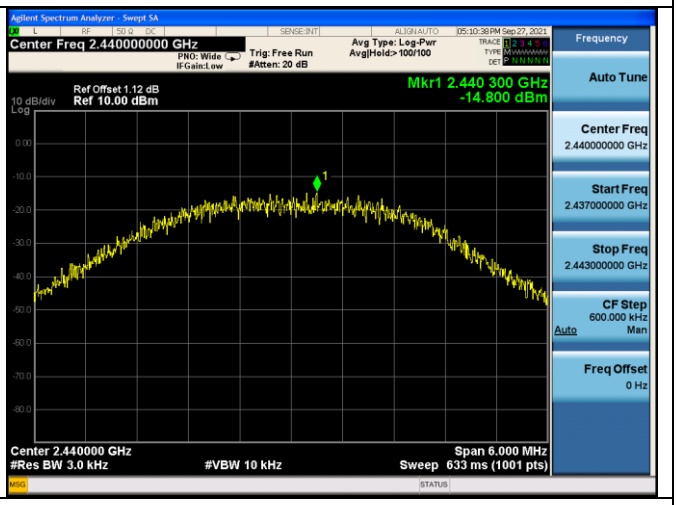
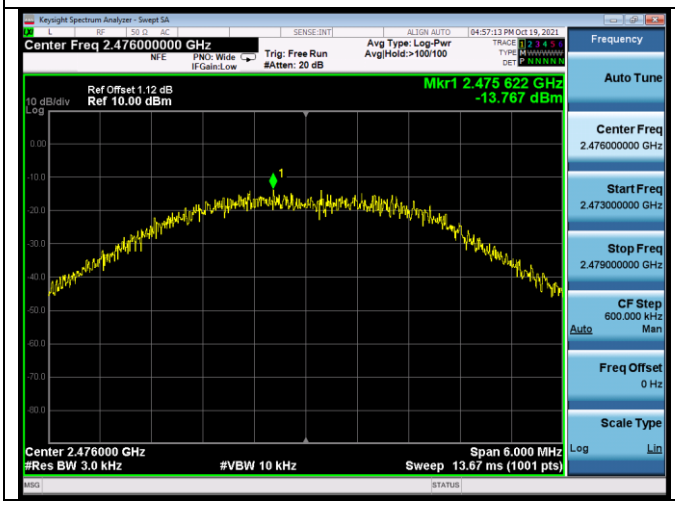
Use the test method descried in ANSI C63.10 clause 11.10.2:

a) Set analyzer center frequency to DTS channel center frequency.
b) Set the span to 1.5 times the DTS bandwidth.
c) Set the RBW to 3 kHz ≤ RBW ≤ 100 kHz.
d) Set the VBW ≥ [3 × RBW].
e) Detector = peak.
f) Sweep time = auto couple.
g) Trace mode = max hold.
h) Allow trace to fully stabilize.
i) Use the peak marker function to determine the maximum amplitude level within the RBW.
j) If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.

## 9.4. Test Results

| | | |
|---|---|---|
| EUT: Active Speaker System | | |
| M/N: SA-S400 | | |
| Test date: 2021-09-27 ~ 10-19 | Pressure: 102.1±1.0 kpa | Humidity: 51.1±3.0% |
| Tested by: THOMAX | Test site: RF site | Temperature:22.8±0.6 ℃ |

| Test Mode | Frequency (MHz) | Power density (dBm/3kHz) | Limit (dBm/3kHz) |
|---|---|---|---|
| 2.4G | 2404 | -14.940 | 8 |
| | 2440 | -14.800 | 8 |
| | 2476 | -13.767 | 8 |
| Conclusion：PASS | | | |

| 2404MHz | 2440MHz |
|---|---|
|  |  |
| | |
| 2476MHz | --- |
|  | --- |

# 10. ANTENNA REQUIREMENT

## 10.1. STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

## 10.2. ANTENNA CONNECTED CONSTRUCTION

The antennas used for this product are Chip Antenna that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna Sound Bar BT is 2.1 dBi, Subwoofer SRD is 2.95 dBi and Sound Bar SRD is 4.23 dBi.

# 11. DEVIATION TO TEST SPECIFICATIONS

[NONE]