

FCC PART 15C TEST REPORT FOR CERTIFICATION

On Behalf of

Sony Group Corporation

Product: Home Theatre System

Model No.: YY2089C

Speaker System: YY2089C1; YY2089C4

Active Subwoofer: YY2089C2

Wireless Amplifier: YY2089C3

FCC ID: AK8YY2089C2

Brand: SONY

EUT Name	EUT Model No.
Active Subwoofer	YY2089C2

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

Prepared By : Audix Technology (Shenzhen) Co., Ltd.
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Report Number : ACS-F24196
Date of Test : Aug.29~Oct.10, 2024
Date of Report : Oct.30, 2024

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Appendix B. General Appearance of the EUT

Appendix C. Inside Configuration of the EUT

TEST REPORT

Applicant : Sony Group Corporation
Product : Home Theatre System
Model No. : YY2089C
Speaker System : YY2089C1; YY2089C4
Active Subwoofer : YY2089C2
Wireless Amplifier : YY2089C3
Brand : SONY
FCC ID : AK8YY2089C2
Test Voltage : AC 120V/60Hz

Tested for comply with:
FCC CFR47 Part 15 Subpart C

Test procedure used:
ANSI C63.10:2020+COR1:2023;
KDB 558074 D01v05r02

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 U.S. Government.

Date of Test : Aug.29~Oct.10, 2024 Date of Report: Oct.30, 2024

Prepared by :

Dora Yang

Reviewed by :

Thomas Chen

Dora Yang / Assistant

Thomas Chen / Assistant 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:

Sunny Lu

Sunny Lu / 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 ANSI C63.10:2020+COR1:2023	PASS
Radiated Emission Test	FCC Part 15: 15.209 FCC Part 15: 15.205 FCC Part 15: 15.247(d) ANSI C63.10:2020+COR1:2023	PASS
Conducted Spurious Emissions	FCC Part 15: 15.247(d) ANSI C63.10:2020+COR1:2023	PASS
6dB Bandwidth Test	FCC Part 15: 15.247(a)(2) ANSI C63.10:2020+COR1:2023	PASS
Maximum Peak Output Power Test	FCC Part 15: 15.247(b)(1) ANSI C63.10:2020+COR1:2023	PASS
Band Edge Compliance Test	FCC Part 15: 15.247(d) ANSI C63.10:2020+COR1:2023	PASS
Power Spectral Density Test	FCC Part 15: 15.247(e) ANSI C63.10:2020+COR1:2023	PASS
Antenna requirement	FCC Part 15: 15.203	PASS
Note : Measurement uncertainty affection to the result is not considered, the EUT is technically compliant with standard requirements.		

2. GENERAL INFORMATION

2.1. Description of Equipment Under Test

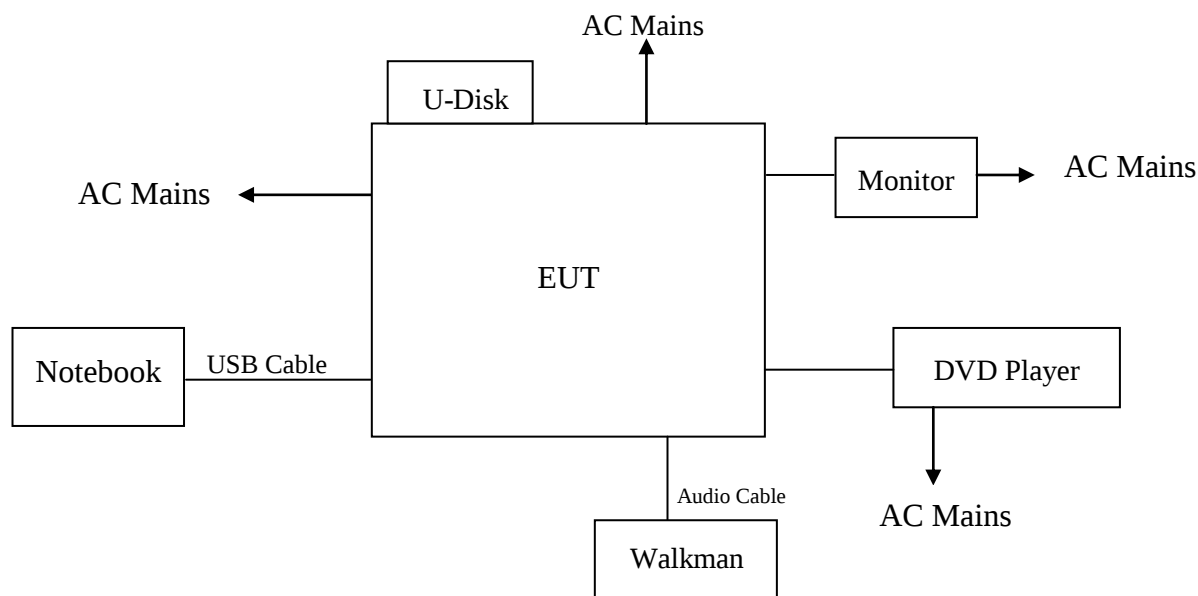
Applicant	Sony Group Corporation
Applicant Address	1-7-1 Konan Minato-ku Tokyo, 108-0075 Japan
Manufacturer	Sony Group Corporation
Manufacturer Address	1-7-1 Konan Minato-ku Tokyo, 108-0075 Japan
Product	Home Theatre System
Model No.	YY2089C
Speaker System	YY2089C1; YY2089C4
Active Subwoofer	YY2089C2
Wireless Amplifier	YY2089C3
Brand	SONY
EUT Name	Active Subwoofer
EUT Model No.	YY2089C2
FCC ID	AK8YY2089C2
Radio	BDR+EDR, BLE, SRD
Frequency Range	BT(BDR+EDR, BLE): 2402-2480MHz SRD: 2403-2479MHz
Type of Modulation(BT)	GFSK, $\pi/4$ DQPSK, 8DPSK
Type of Modulation(SRD)	GFSK
Remote Control	Manufacturer: Sony; Model: RMT-AH513U
Power Cord	Unshielded, Detachable, 1.5m (2 pins)
HDMI Cable	Shielded, Detachable, 1.5m
Sample Type	Prototype production
Date of Receipt	Aug.20, 2024
Date of Test	Aug.29~Oct.10, 2024
The EUT covered in this report is Active Subwoofer; This product (YY2089C) Home Theatre System consists of Speaker System (YY2089C1; YY2089C4), Active Subwoofer (YY2089C2) and Wireless Amplifier (YY2089C3).	

Antenna System	
Type of Antenna	Active Subwoofer SRD: PCB Antenna Active Subwoofer BT: PCB Antenna Wireless Amplifier SRD: PCB Antenna
Antenna Peak Gain	Active Subwoofer SRD: 2.61dBi Active Subwoofer BT: 2.1dBi Wireless Amplifier SRD: 2.5dBi

2.2. Tested Supporting System Details

No.	Description	ACS No.	Manufacturer	Model	Serial Number
1.	Monitor#1 (For CE Test)	ACS-EMC-Lenovo	Lenovoe	L2264W+	N/A
		Power Cord(3C): Unshielded, Detachabled, 1.8m			
2.	Monitor#2 (For RE& Band Edge Test)	---	Lenovoe	A24240WT	N/A
		Power Cord(3C): Unshielded, Detachabled, 1.8m			
3.	DVD Player	N/A	Pioneer	DV-310NC-K	N/A
		Power Cord(3C): Unshielded, Detachabled, 1.8m			
4.	Notebook	N/A	ACER	ZOW	N/A
		Power Cord(3C): Unshielded, Detachabled, 1.8m			
		Power Adaptor: Manufacturer: Lite-On, M/N: PA-1900-32 Cable: Unshielded, Undetectable, 4.0m(Bond one ferrite core)			
5.	Walkman	---	Sony	NWZ-E360	---
6.	U-Disk	---	Sandisk	CZ73	---

2.3. Block Diagram of connection between EUT and simulators



(EUT: Active Subwoofer)

2.4. Test information

A special software (BT FCC Tool V2.24) was used to control EUT work in TX mode (GFSK modulation), and select test channel.

Tested mode, channel, and data rate information			
Mode	data rate (Mbps)	Channel	Frequency (MHz)
Tx Mode GFSK modulation	1	Low :CH0	2402
	1	Middle: CH19	2440
	1	High: CH39	2480
	2	Low :CH0	2402
	2	Middle: CH19	2440
	2	High: CH39	2480

2.5. Test Facility

Site Description

Name of Firm

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

EMC Lab.

: Certificated by ISED, Canada
Company Number: 5183A
CAB identifier: CN0034
Valid Date: Mar.31, 2025

Certificated by FCC, USA
Designation No.: CN5022
Valid Date: Mar.31, 2025

Accredited by NVLAP, USA
NVLAP Code: 200372-0
Valid Date: Mar.31, 2026

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

Test Item	Uncertainty
Uncertainty for Conduction emission test in No. 1 Conduction	$\pm 2.6\text{dB}(150\text{KHz to } 30\text{MHz})$
Uncertainty for Radiation Emission test in 3m chamber	$\pm 3.8\text{dB}(30\sim 200\text{MHz, Polarization: H})$
	$\pm 3.8\text{dB}(30\sim 200\text{MHz, Polarization: V})$
	$\pm 4.0\text{dB}(200\text{M}\sim 1\text{GHz, Polarization: H})$
	$\pm 4.0\text{dB}(200\text{M}\sim 1\text{GHz, Polarization: V})$
Uncertainty for Radiation Emission test in 3m chamber(1GHz-18GHz)	$\pm 4.0\text{dB}(1\sim 6\text{GHz, Distance: } 3\text{m})$
	$\pm 4.0\text{dB}(6\sim 18\text{GHz, Distance: } 3\text{m})$
Uncertainty for S_{vswr} in 3m Chamber	$\pm 2.8\text{dB}(1\sim 6\text{GHz})$
	$\pm 2.8\text{dB}(6\sim 18\text{GHz})$
Uncertainty for Radiated Spurious Emission test in RF chamber	$\pm 3.7\text{dB}(30\text{MHz}\sim 1000\text{MHz})$
	$\pm 3.3\text{dB}(1\sim 26.5\text{GHz})$
Uncertainty for Conduction Spurious emission test	$\pm 2.0\text{dB}$
Uncertainty for Output power test	$\pm 0.8\text{dB}$
Uncertainty for Bandwidth test	$\pm 4.6\%$
Uncertainty for DC power test	$\pm 0.1\%$
Uncertainty for test site temperature and humidity	$\pm 0.6^{\circ}\text{C}$
	$\pm 3\%$

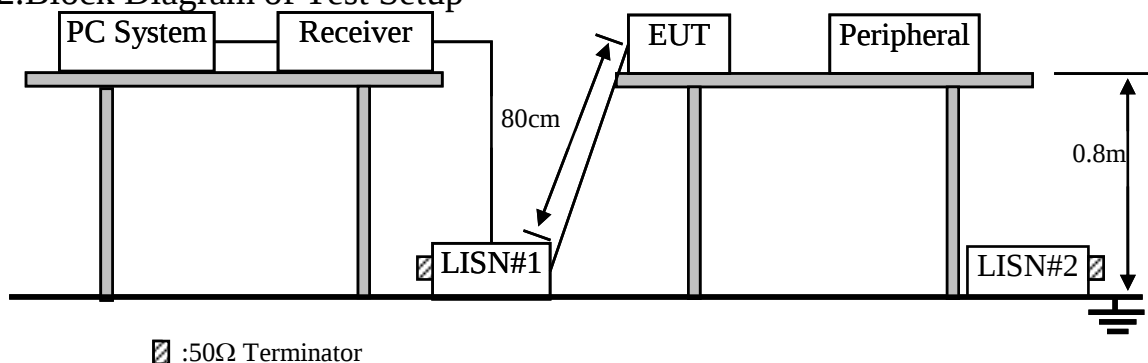
3. POWER LINE CONDUCTED EMISSION TEST

3.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	1# Shielding Room	AUDIX	N/A	N/A	Nov.09,22	3 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESCI	100842	Mar.16,24	1 Year
3.	L.I.S.N.#1	Rohde & Schwarz	ENV216	102160	Jun.19,24	1 Year
4.	RF Cable	Eastsheep	RG223	190424	Sep.12,24	1 Year
5.	Test Software	AUDIX	e3	6.100913a	N/A	N/A

Note: N/A means Not applicable.

3.2. Block Diagram of Test Setup



□ :50Ω Terminator

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 limits 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. Active Subwoofer (EUT)

Model No. : YY2089C2

Serial No. : N/A

3.4.2. Support Equipment: As Tested Supporting System Details, in Section 2.3.

3.5. Operating Condition of EUT

- 3.5.1. Setup the EUT as shown as Section 3.2.
- 3.5.2. Turn on the power of EUT.
- 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 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 on Conducted Emission Test.

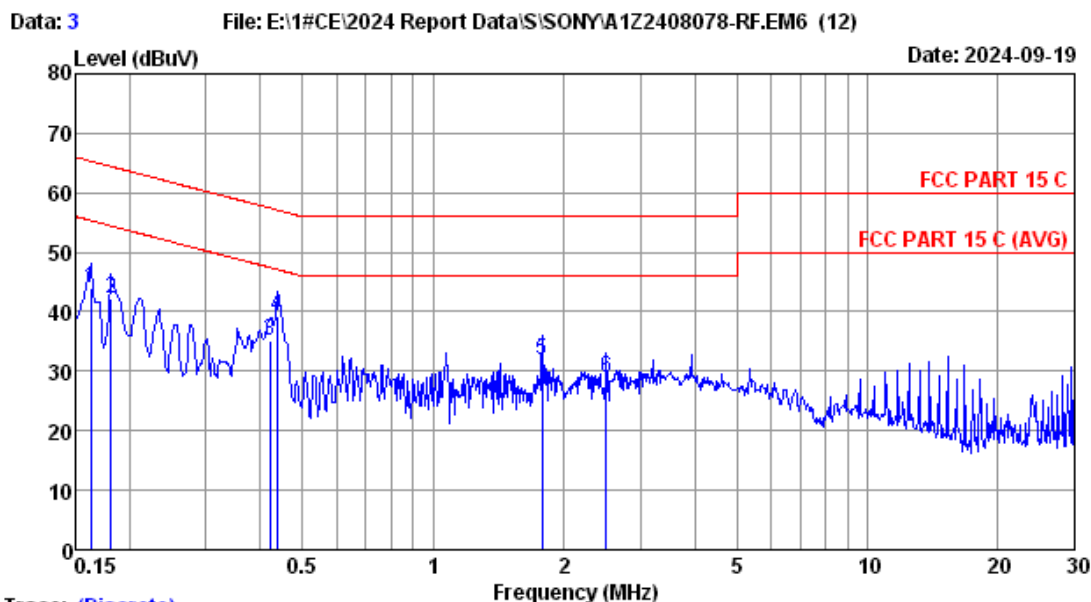
The bandwidth of test receiver (R & S ESCI) is set at 9kHz.

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.)

BLE-1Mbps:

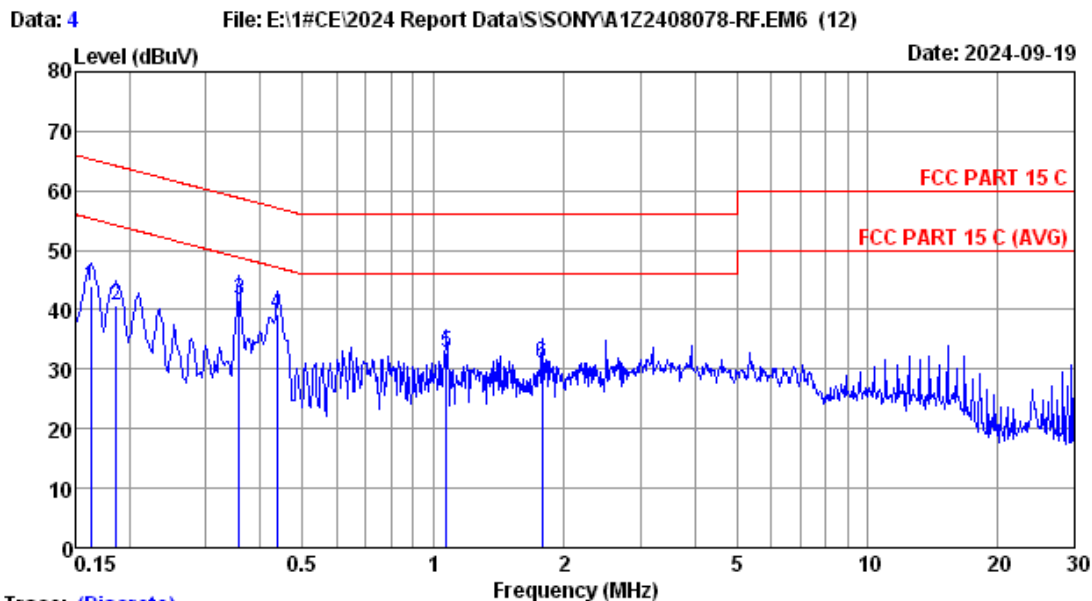


Trace: (Discrete)

Site no :1# CE Data No :3
 Dis./Lisn :2024 ENV216-N
 Limit :FCC PART 15 C
 Env./Ins. :24.2*C/54% Engineer :Hongjie
 EUT :
 Power Rating :AC 120V/60Hz
 Test Mode :BLE1M TX Mode

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.162	9.76	0.01	34.31	44.08	65.34	21.26	QP
2	0.182	9.77	0.01	32.50	42.28	64.42	22.14	QP
3	0.421	9.78	0.02	25.19	34.99	57.42	22.43	QP
4	0.437	9.78	0.02	29.48	39.28	57.11	17.83	QP
5	1.781	9.80	0.04	22.14	31.98	56.00	24.02	QP
6	2.500	9.81	0.04	19.19	29.04	56.00	26.96	QP

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.



Trace: (Discrete)

Site no :1# CE Data No :4
 Dis./Lisn :2024 ENV216-L
 Limit :FCC PART 15 C
 Env./Ins. :24.2°C/54% Engineer :Hongjie
 EUT :
 Power Rating :AC 120V/60Hz
 Test Mode :BLE1M TX Mode

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.162	9.77	0.01	34.07	43.85	65.34	21.49	QP
2	0.186	9.76	0.01	30.97	40.74	64.20	23.46	QP
3	0.358	9.76	0.02	31.86	41.64	58.78	17.14	QP
4	0.437	9.76	0.02	29.42	39.20	57.11	17.91	QP
5	1.071	9.78	0.02	22.87	32.67	56.00	23.33	QP
6	1.781	9.78	0.04	21.26	31.08	56.00	24.92	QP

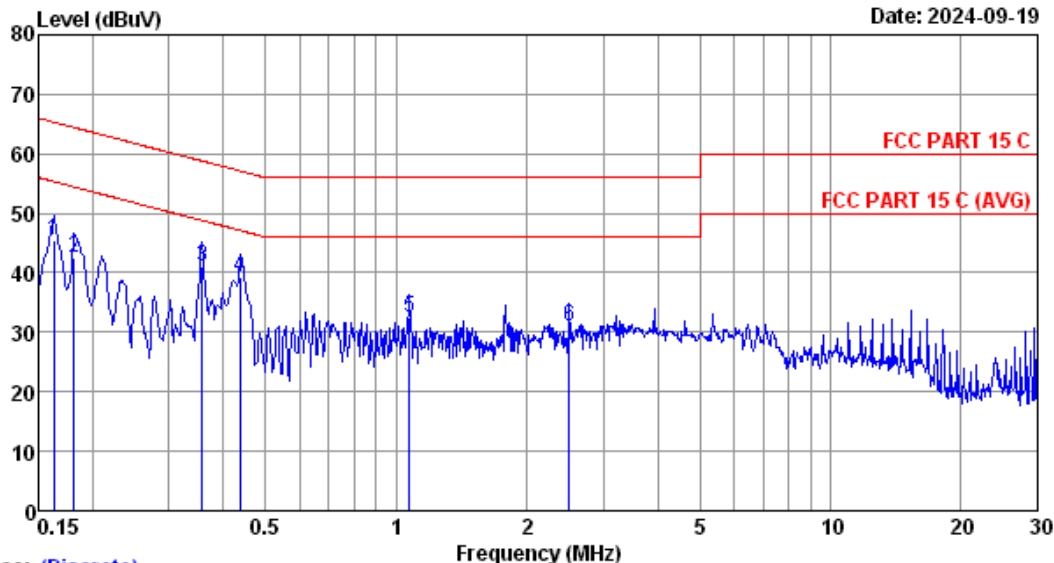
Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.
 2.If the average limit is met when using a quasi-peak detector,
 the EUT shall be deemed to meet both limits and measurement
 with average detector is unnecessary.

BLE-2Mbps:

Data: 5

File: E:\1#CE\2024 Report Data\SI\SONYA1Z2408078-RF.EM6 (12)

Date: 2024-09-19



Trace: (Discrete)

Site no :1# CE
Dis./Lisn :2024 ENV216-L
Limit :FCC PART 15 C
Env./Ins. :24.2°C/54%
EUT :
Power Rating :AC 120V/60Hz
Test Mode :BLE2M TX Mode

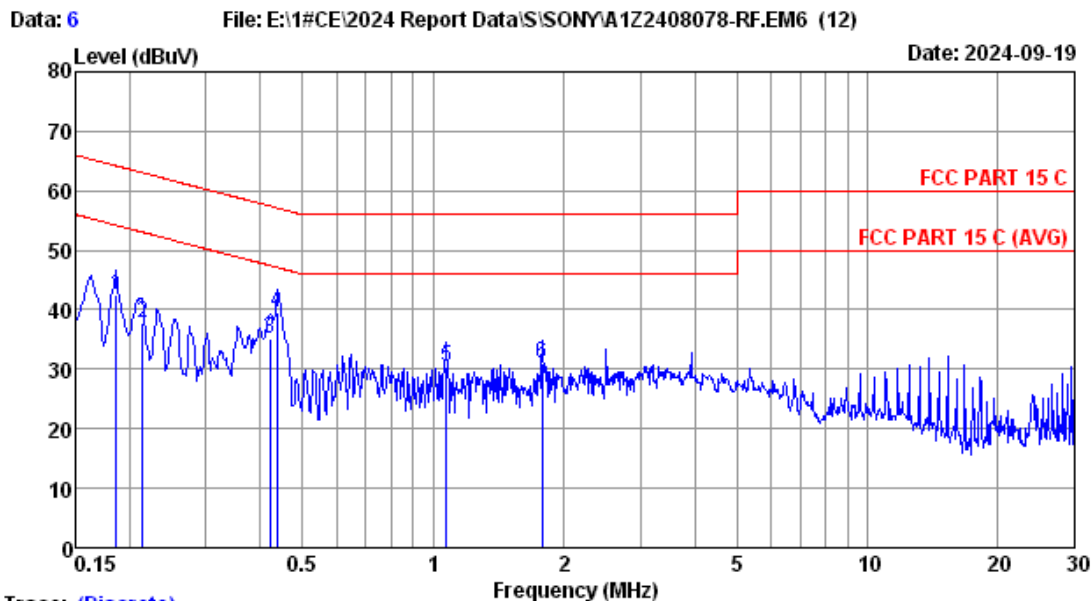
Data No :5

Engineer :Hongjie

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.162	9.77	0.01	35.73	45.51	65.34	19.83	QP
2	0.182	9.76	0.01	32.84	42.61	64.42	21.81	QP
3	0.358	9.76	0.02	31.37	41.15	58.78	17.63	QP
4	0.437	9.76	0.02	29.36	39.14	57.11	17.97	QP
5	1.071	9.78	0.02	22.55	32.35	56.00	23.65	QP
6	2.500	9.79	0.04	21.09	30.92	56.00	25.08	QP

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.



Trace: (Discrete)

Site no :1# CE Data No :6
 Dis./Lisn :2024 ENV216-N
 Limit :FCC PART 15 C
 Env./Ins. :24.2°C/54% Engineer :Hongjie
 EUT :
 Power Rating :AC 120V/60Hz
 Test Mode :BLE2M TX Mode

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.186	9.77	0.01	32.75	42.53	64.20	21.67	QP
2	0.214	9.78	0.01	28.14	37.93	63.05	25.12	QP
3	0.421	9.78	0.02	25.33	35.13	57.42	22.29	QP
4	0.437	9.78	0.02	29.61	39.41	57.11	17.70	QP
5	1.071	9.80	0.02	20.67	30.49	56.00	25.51	QP
6	1.781	9.80	0.04	21.14	30.98	56.00	25.02	QP

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 Equipments

Frequency range: 30~1000MHz

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	3m Chamber(NSA)	AUDIX	N/A	N/A	Aug.11,22	3Year
2.	3m Chamber(SE)	AUDIX	N/A	N/A	Sep.16,22	3 Year
3.	Signal Analyzer	Rohde & Schwarz	FSV40	101608	Nov.07,23	1 Year
4.	Tri-log-Broadband Antenna	SCHWARZBECK	VULB 9168	429	Oct.10,23	1 Year
5.	NSA Cable	HUBER+SUHNER	CFD400NL-LW	No.3+190411	Sep.13,24	1 Year
6.	Coaxial Switch	Anritsu	MP59B	6201397223	Mar.17,24	1 Year
7.	EMI Test Receiver	Rohde & Schwarz	ESR3	101931	Mar.17,24	1 Year
8.	Amplifier	HP	8447D	2944A11159	Mar.17,24	1 Year
9.	Test Software	AUDIX	e3	6.100913a	N/A	N/A

Note: N/A means Not applicable.

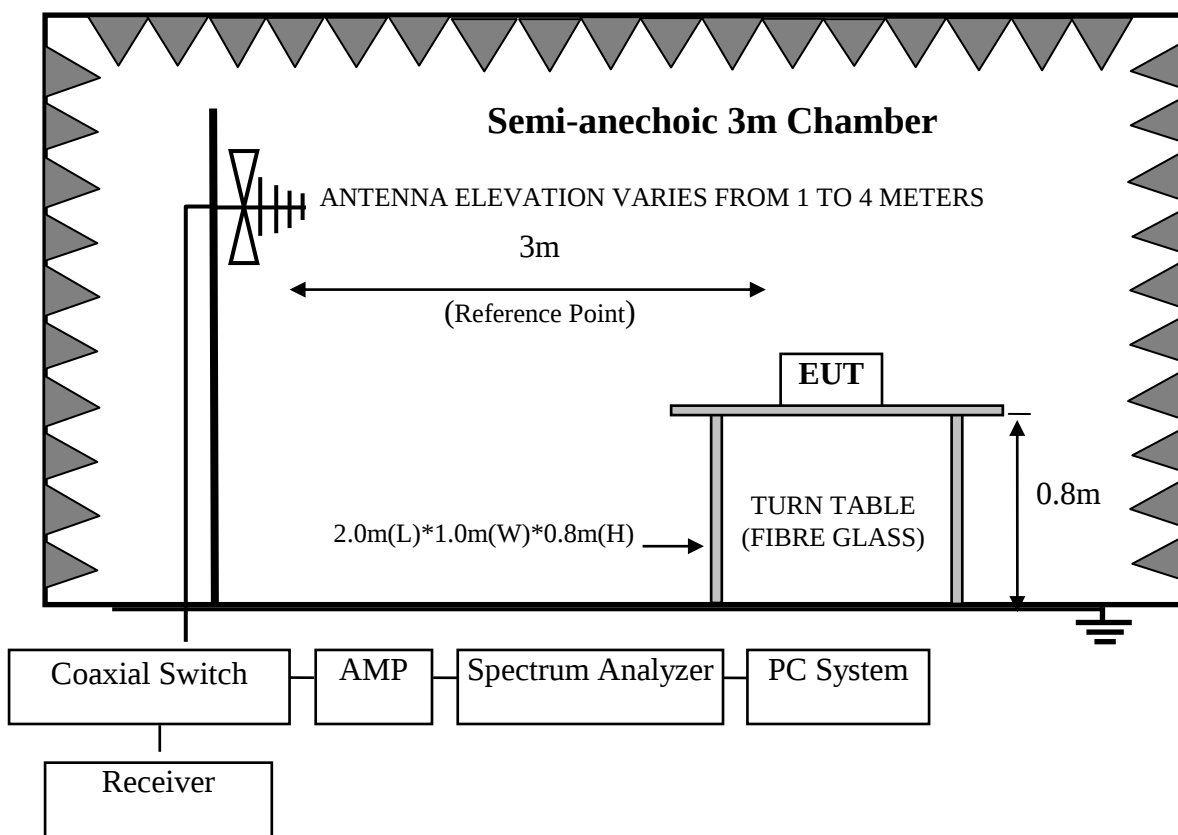
Frequency range: above 1000MHz

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	3mChamber(Svswr)	AUDIX	N/A	N/A	Aug.09,22	3Year
2.	3mChamber(SE)	AUDIX	N/A	N/A	Sep.16,22	3Year
3.	Signal Analyzer	Rohde & Schwarz	FSV40	101608	Nov.07,23	1 Year
4.	Amplifier	EMCI	EMC0518A45S E	980965	Aug.13,24	1 Year
5.	RF Cable	TIMES MICROWAVE	SFT205-NMSM- 10.00M	689241	Aug.13,24	1 Year
6.	Test Software	AUDIX	e3	6.100913a	N/A	N/A
7.	Horn Antenna	EMCO	3115	9510-4580	Jan.08,22	3 Year

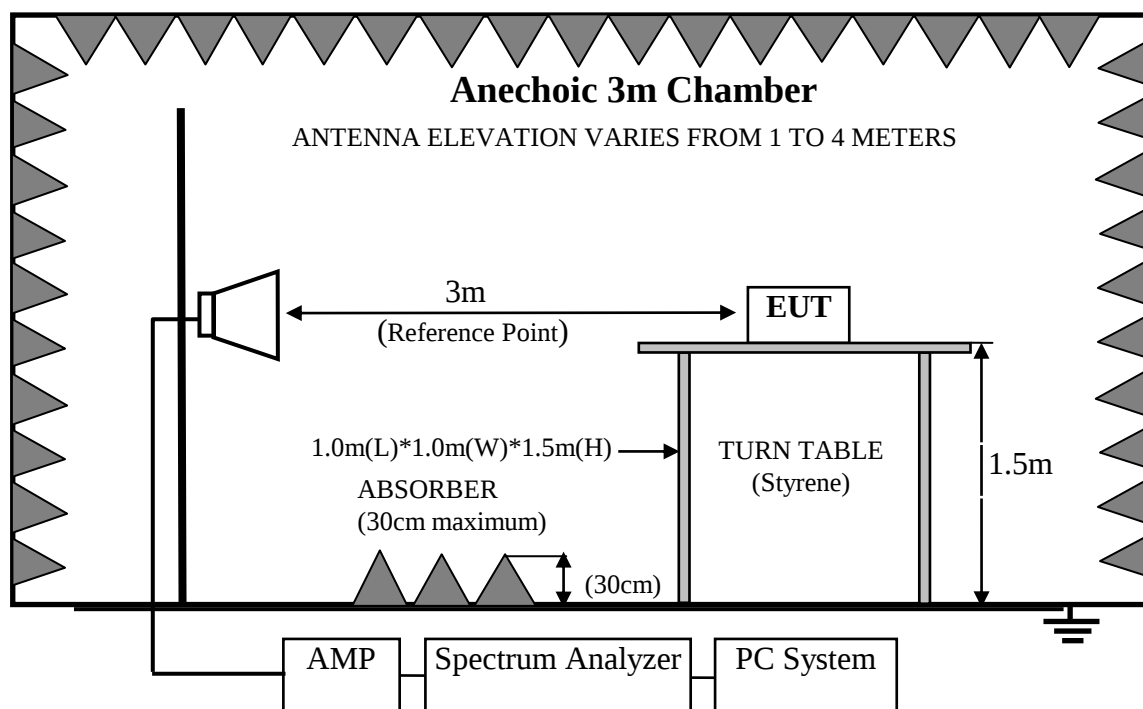
Note: N/A means Not applicable.

4.2. Block Diagram of Test Setup

For frequency range 30MHz-1000MHz



For frequency range 1GHz-25GHz



4.3. Radiated Emission Limits Standard:

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V/m}$	$\text{dB}(\mu\text{V})/\text{m}$
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 1000MHz	3	74.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak) 54.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average)	

- Remark :
- (1) Emission Level ($\text{dB}\mu\text{V}/\text{m}$) = Reading (Receiver) ($\text{dB}\mu\text{V}$) + Antenna Factor (dB/m) + Cable Loss (dB)
Emission Level ($\text{dB}\mu\text{V}/\text{m}$) = Reading (Spectrum) ($\text{dB}\mu\text{V}$) + Antenna Factor (dB/m) – Amp Factor (dB) + Cable Loss (dB)(above 1000MHz)
 - (2) The smaller limits shall apply at the cross point between two frequency bands.
 - (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.
 - (4) 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 1000MHz. 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. Active Subwoofer (EUT)

Model Number : YY2089C2
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 BLE 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 regulation.

Frequency Above 30MHz:

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 Horn 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 on radiated emission Test.

The bandwidth of the EMI test receiver (R&S ESR3) 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.

This device is pulse Modulated, a duty cycle factor was used to calculated average level based measured peak level.

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.

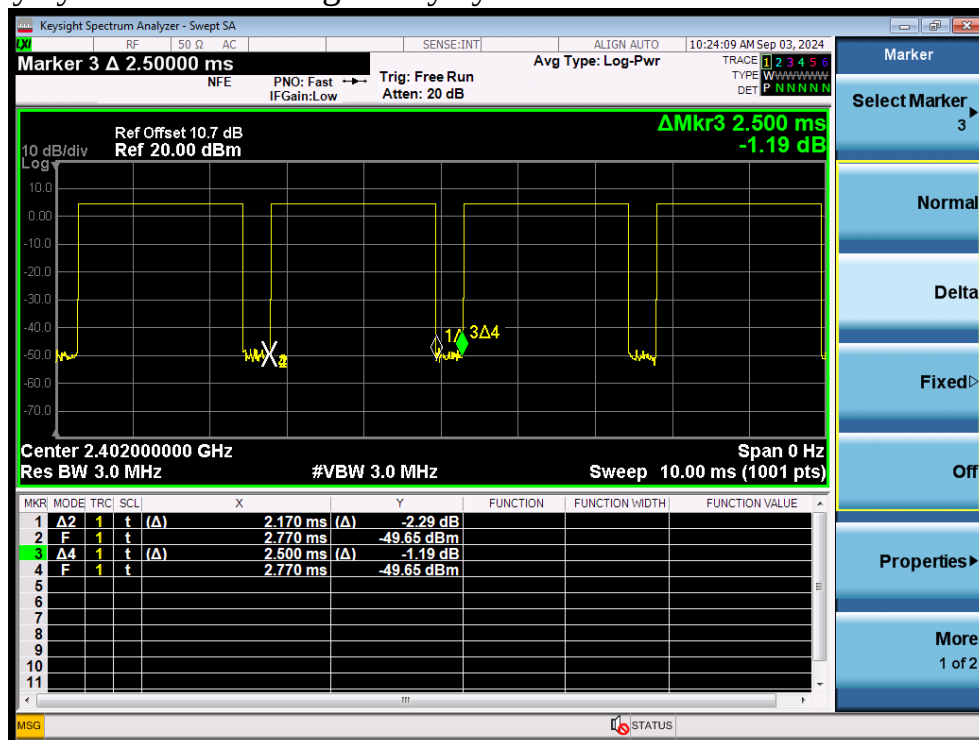
All the emissions from 30MHz to 25GHz were comply with the 15.209 Limit.

Note1: The duty cycle factor for calculate average level is BLE-1Mbps: -1.230dB;
BLE-2Mbps: -1.096dB.

Note 2: The emissions (9kHz~30MHz) not reported for there is no emission be found.

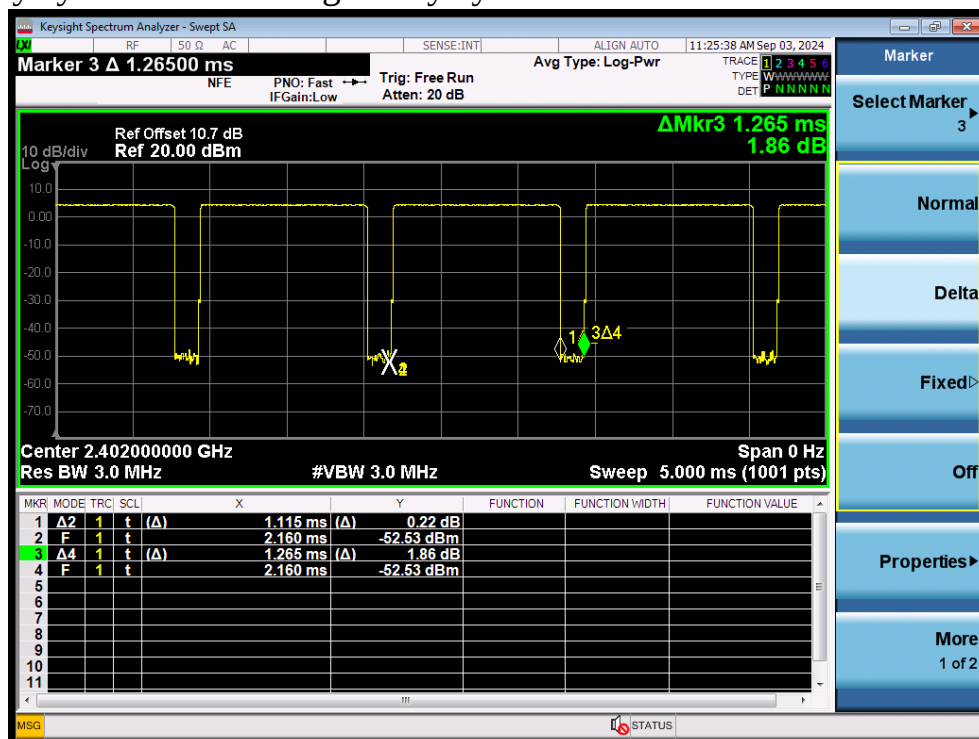
BLE-1Mbps:

Duty cycle factor = $20\log(\text{duty cycle}) = -1.230\text{dB}$



BLE-2Mbps:

Duty cycle factor = $20\log(\text{duty cycle}) = -1.096\text{dB}$



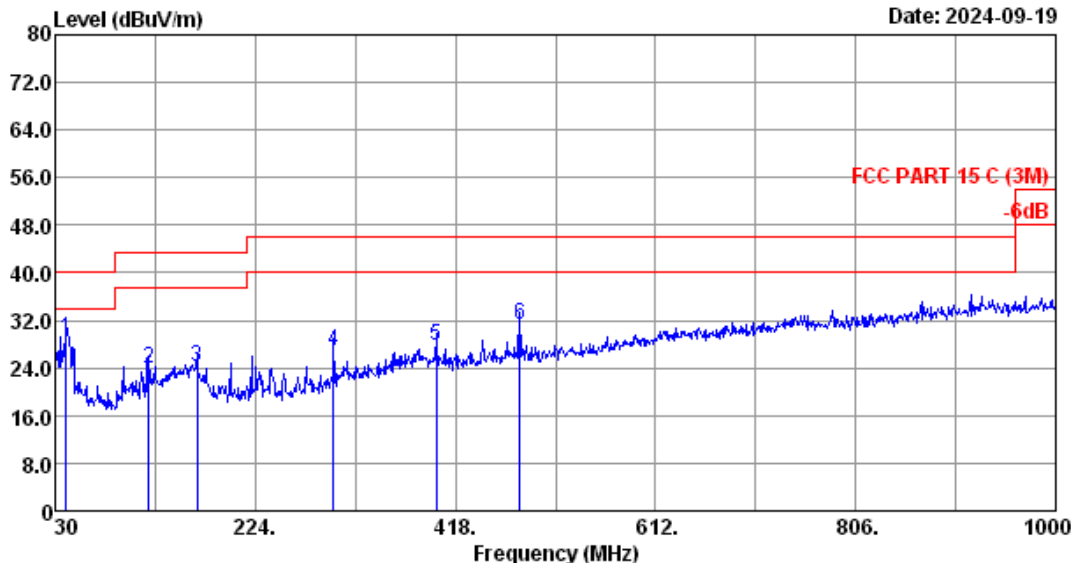
Frequency: 30MHz~1GHz

BLE-1Mbps:

Data: 3

File: F:\2024 Report\SI\SONYA\1Z2408078\A1Z2408078-FCC-RF.EM6 (12)

Date: 2024-09-19



Site no. : 3m Chamber

Data no. : 3

Dis. / Ant. : 3m 2023 VULB 9168-429

Ant. pol. : VERTICAL

Limit : FCC PART 15 C (3M)

Env. / Ins. : 20.1°C/52%

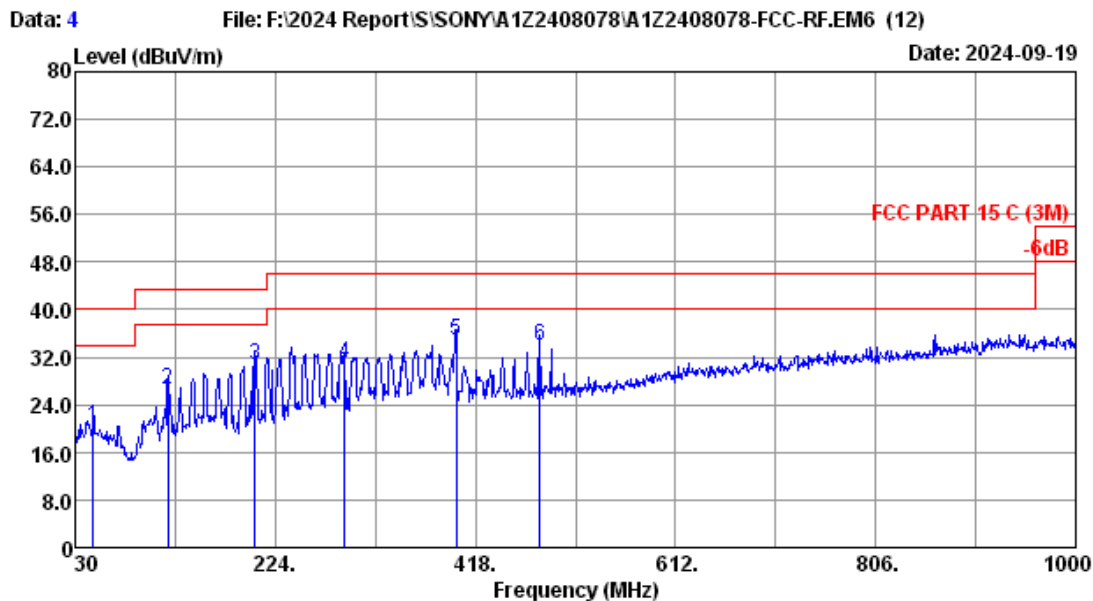
Engineer : Abel

Test Mode : BLE1M TX MODE

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	40.67	19.30	0.77	8.82	28.89	40.00	11.11	QP
2	121.18	17.44	1.22	5.20	23.86	43.50	19.64	QP
3	167.74	18.90	1.45	3.79	24.14	43.50	19.36	QP
4	299.66	19.39	2.16	5.30	26.85	46.00	19.15	QP
5	399.57	21.49	2.79	3.48	27.76	46.00	18.24	QP
6	480.08	23.40	3.17	4.81	31.38	46.00	14.62	QP

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.

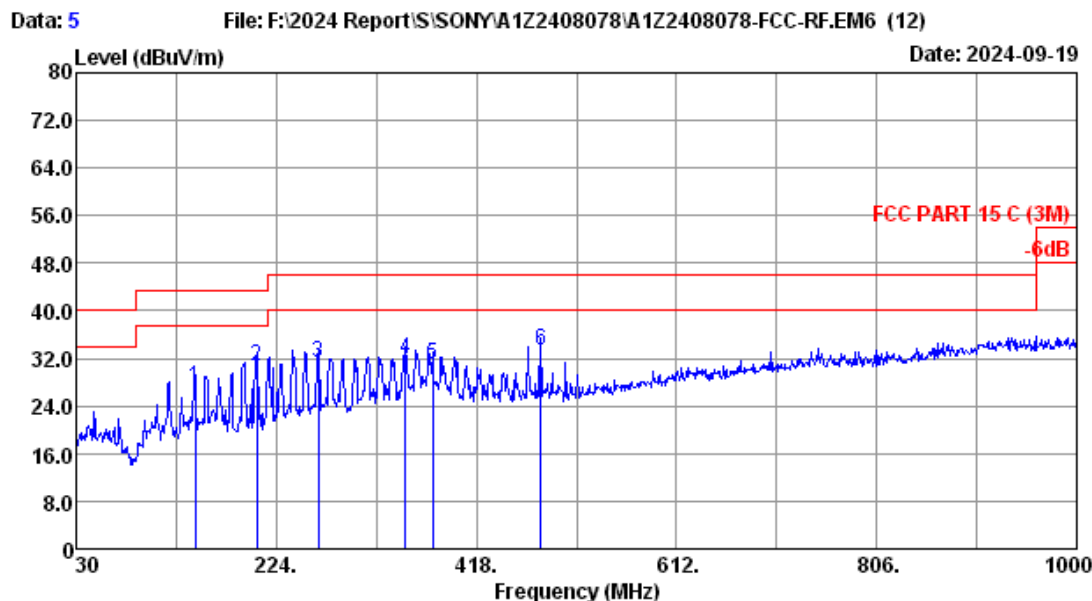


Site no. : 3m Chamber Data no. : 4
 Dis. / Ant. : 3m 2023 VULB 9168-429 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 C (3M)
 Env. / Ins. : 20.1°C/52% Engineer : Abel
 Test Mode : BLE1M TX MODE

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	47.46	19.65	0.81	-0.16	20.30	40.00	19.70	QP
2	120.21	17.32	1.21	7.91	26.44	43.50	17.06	QP
3	204.60	15.72	1.63	13.42	30.77	43.50	12.73	QP
4	290.93	19.22	2.11	9.52	30.85	46.00	15.15	QP
5	399.57	21.49	2.79	10.45	34.73	46.00	11.27	QP
6	480.08	23.40	3.17	7.25	33.82	46.00	12.18	QP

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.

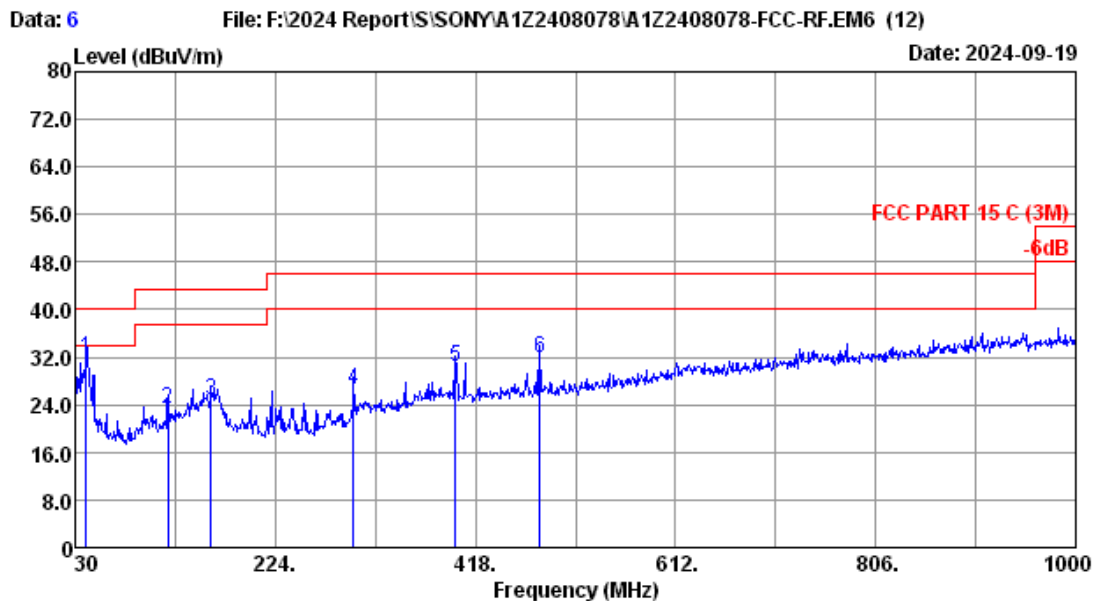
BLE-2Mbps:



Site no. : 3m Chamber Data no. : 5
 Dis. / Ant. : 3m 2023 VULB 9168-429 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 C (3M)
 Env. / Ins. : 20.1°C/52% Engineer : Abel
 Test Mode : BLE2M TX MODE

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	145.43	19.30	1.34	6.59	27.23	43.50	16.27	QP
2	205.57	15.69	1.63	13.45	30.77	43.50	12.73	QP
3	264.74	18.28	1.95	11.16	31.39	46.00	14.61	QP
4	349.13	20.28	2.47	9.21	31.96	46.00	14.04	QP
5	375.32	21.21	2.63	7.21	31.05	46.00	14.95	QP
6	480.08	23.40	3.17	6.83	33.40	46.00	12.60	QP

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. : 6
 Dis. / Ant. : 3m 2023 VULB 9168-429 Ant. pol. : VERTICAL
 Limit : FCC PART 15 C (3M)
 Env. / Ins. : 20.1°C/52% Engineer : Abel
 Test Mode : BLE2M TX MODE

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	40.67	19.30	0.77	11.67	31.74	40.00	8.26	QP
2	120.21	17.32	1.21	4.93	23.46	43.50	20.04	QP
3	161.92	19.10	1.42	4.37	24.89	43.50	18.61	QP
4	299.66	19.39	2.16	4.98	26.53	46.00	19.47	QP
5	398.60	21.47	2.78	6.03	30.28	46.00	15.72	QP
6	480.08	23.40	3.17	5.28	31.85	46.00	14.15	QP

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.

Frequency: 1GHz~18GHz

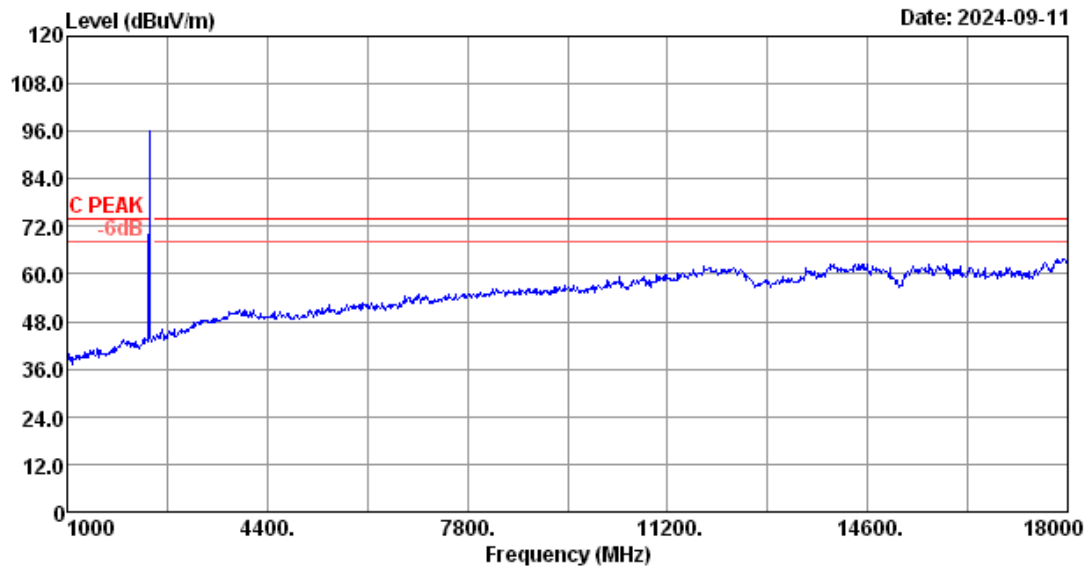
Test Mode	ANT. PLO.	Frequency (MHz)	Peak(dBuv/m)		Margin	Duty cycle factor (dB)	AV(dBuv/m)		Margin	Conclusion
			Emission Level	Limit			Emission Level	Limit		
BLE-1M	H	4804	47.78	74	26.220	-1.230	46.550	54	7.450	Pass
BLE-1M	V	4804	47.70	74	26.300	-1.230	46.470	54	7.530	Pass
BLE-1M	H	4880	48.82	74	25.180	-1.230	47.590	54	6.410	Pass
BLE-1M	V	4880	48.78	74	25.220	-1.230	47.550	54	6.450	Pass
BLE-1M	V	4960	48.66	74	25.340	-1.230	47.430	54	6.570	Pass
BLE-1M	H	4960	48.62	74	25.380	-1.230	47.390	54	6.610	Pass
BLE-2M	V	4804	48.19	74	25.810	-1.096	47.094	54	6.906	Pass
BLE-2M	H	4804	48.43	74	25.570	-1.096	47.334	54	6.666	Pass
BLE-2M	V	4880	48.77	74	25.230	-1.096	47.674	54	6.326	Pass
BLE-2M	H	4880	48.89	74	25.110	-1.096	47.794	54	6.206	Pass
BLE-2M	H	4960	49.00	74	25.000	-1.096	47.904	54	6.096	Pass
BLE-2M	V	4960	49.04	74	24.960	-1.096	47.944	54	6.056	Pass

BLE-1Mbps:

Data: 33

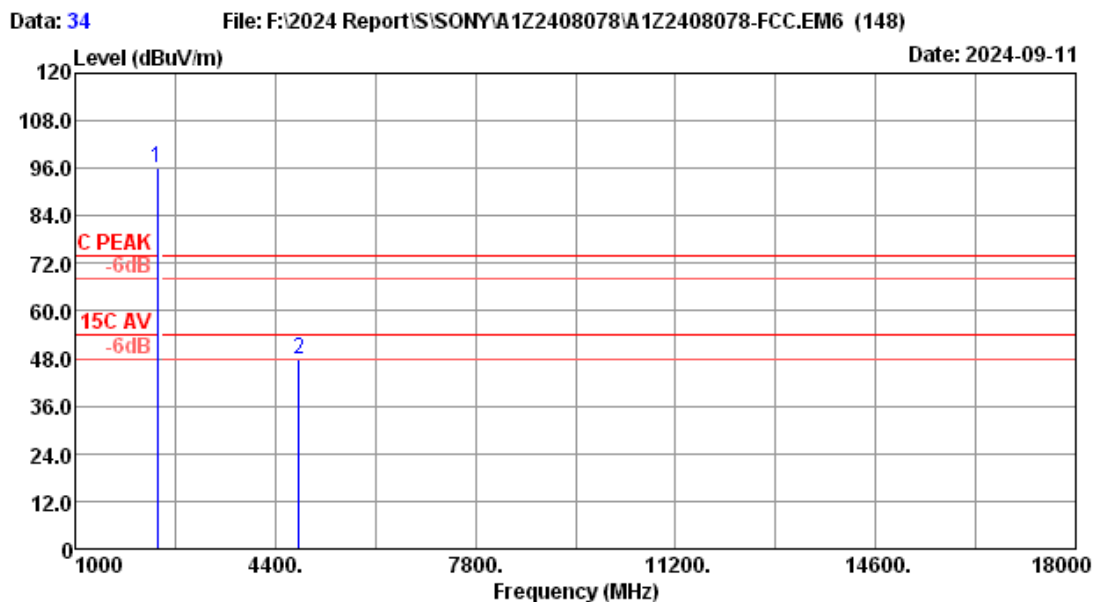
File: F:\2024 Report\SI\SONYA\1Z2408078\A1Z2408078-FCC.EM6 (148)

Date: 2024-09-11



Site no. : 3m Chamber
 Dis. / Ant. : 3m 2022 3115-4580
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23.2°C/52.5%
 Test Mode : BLE1M 2402 TX Mode

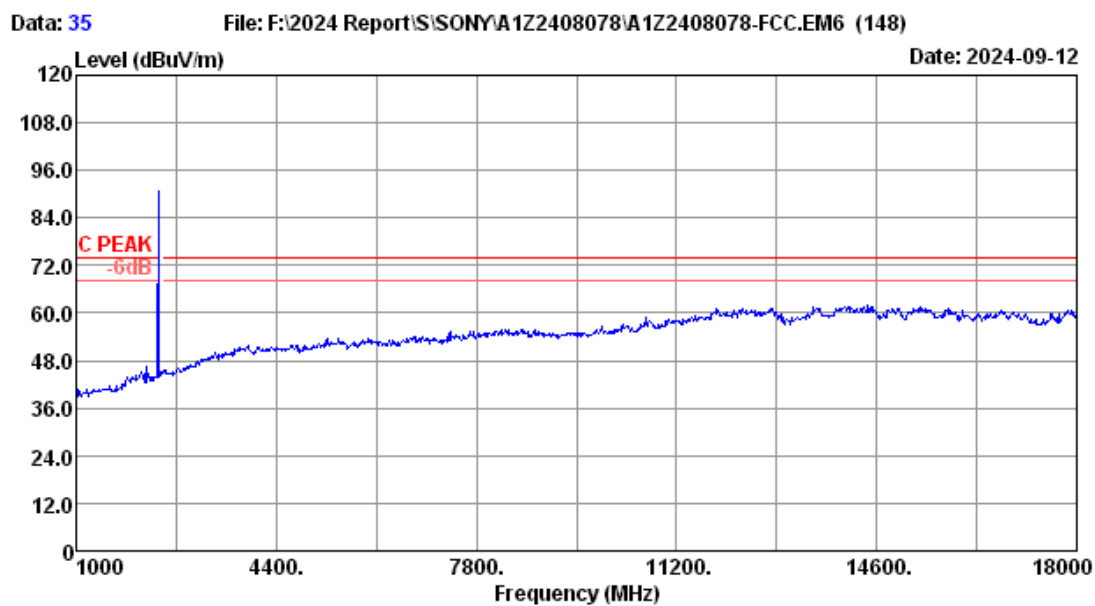
Data no. : 33
 Ant. pol. : HORIZONTAL
 Engineer : WINTER



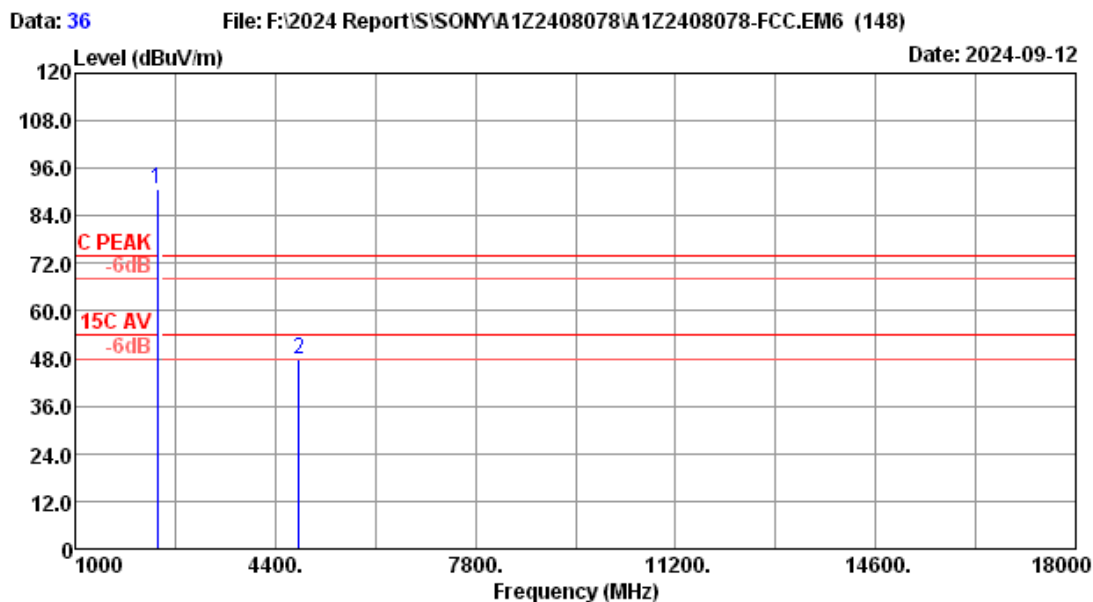
Site no. : 3m Chamber Data no. : 34
 Dis. / Ant. : 3m 2022 3115-4580 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23.2°C/52.5% Engineer : WINTER
 Test Mode : BLE1M 2402 TX Mode

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	2402.00	28.11	5.32	94.36	31.70	96.09	-----	-----	Peak
2	4804.00	32.71	7.41	38.08	30.42	47.78	74.00	26.22	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.



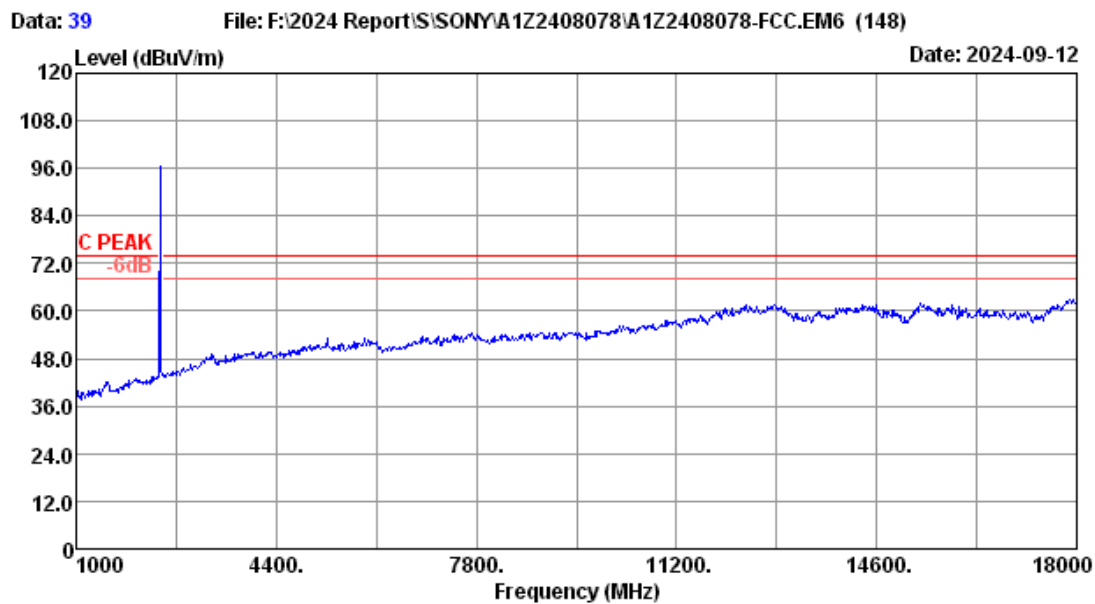
Site no.	: 3m Chamber	Data no.	: 35
Dis. / Ant.	: 3m 2022 3115-4580	Ant. pol.	: VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23.2°C/52.5%	Engineer	: WINTER
Test Mode	: BLE1M 2402 TX Mode		



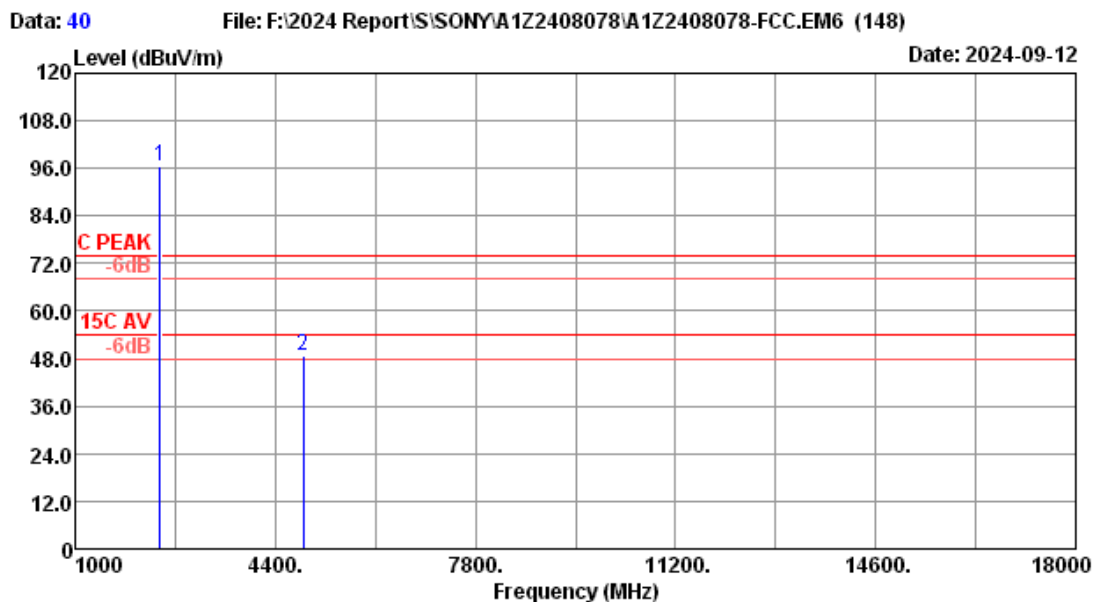
Site no. : 3m Chamber Data no. : 36
 Dis. / Ant. : 3m 2022 3115-4580 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23.2°C/52.5% Engineer : WINTER
 Test Mode : BLE1M 2402 TX Mode

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	2402.00	28.11	5.32	88.85	31.70	90.58	-----	-----	Peak
2	4804.00	32.71	7.41	38.00	30.42	47.70	74.00	26.30	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.



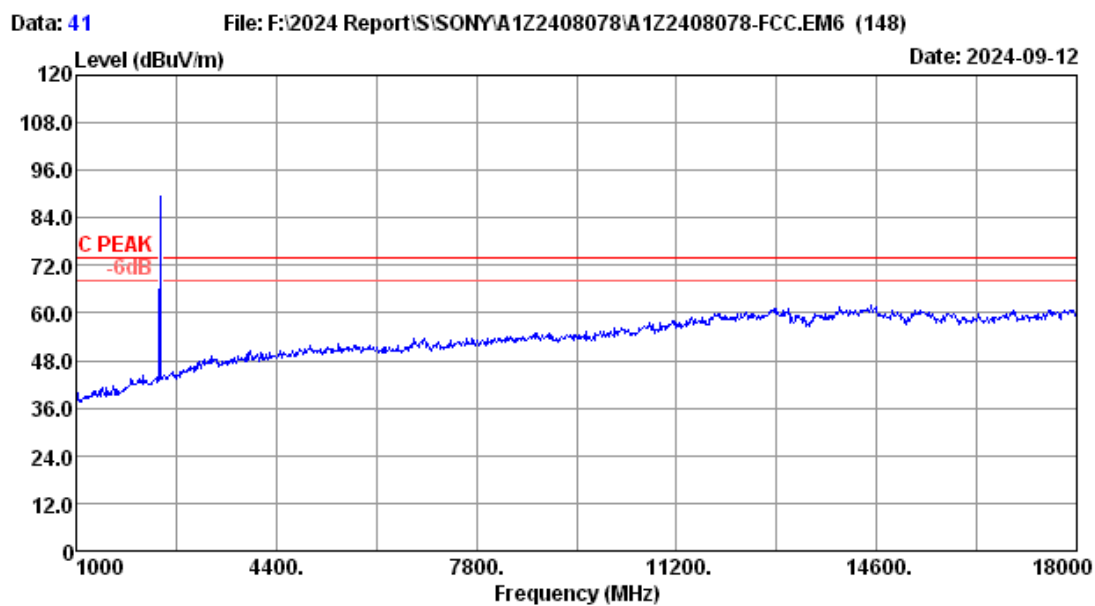
Site no.	: 3m Chamber	Data no.	: 39
Dis. / Ant.	: 3m 2022 3115-4580	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23.2°C/52.5%	Engineer	: WINTER
Test Mode	: BLE1M 2440 TX Mode		



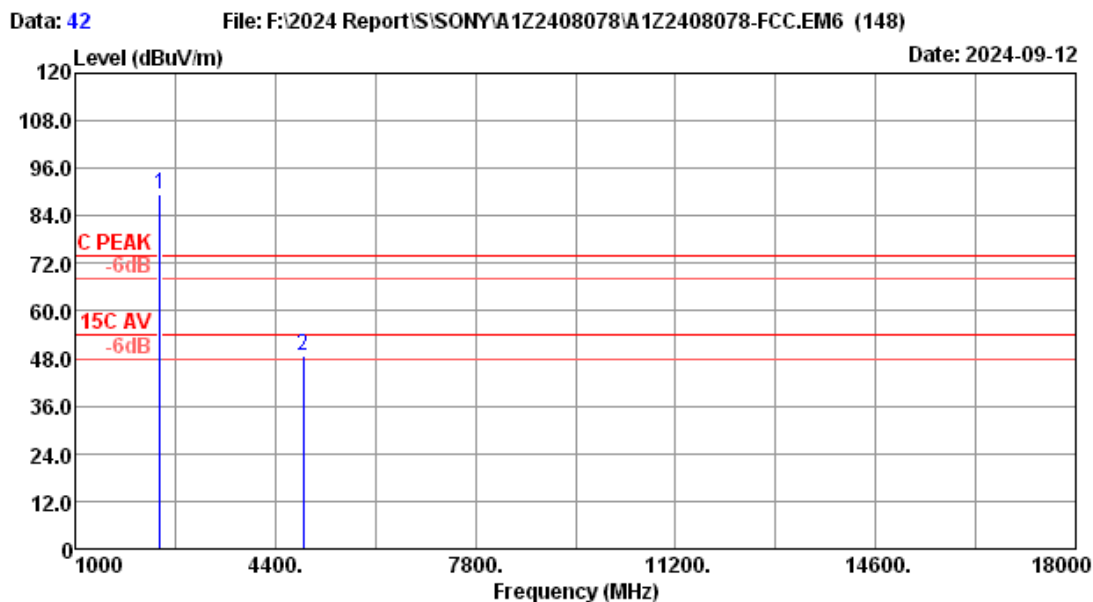
Site no. : 3m Chamber Data no. : 40
 Dis. / Ant. : 3m 2022 3115-4580 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23.2°C/52.5% Engineer : WINTER
 Test Mode : BLE1M 2440 TX Mode

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	28.26	5.37	94.70	31.68	96.65	-----	-----	Peak
2	4880.00	32.86	7.45	38.92	30.41	48.82	74.00	25.18	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.



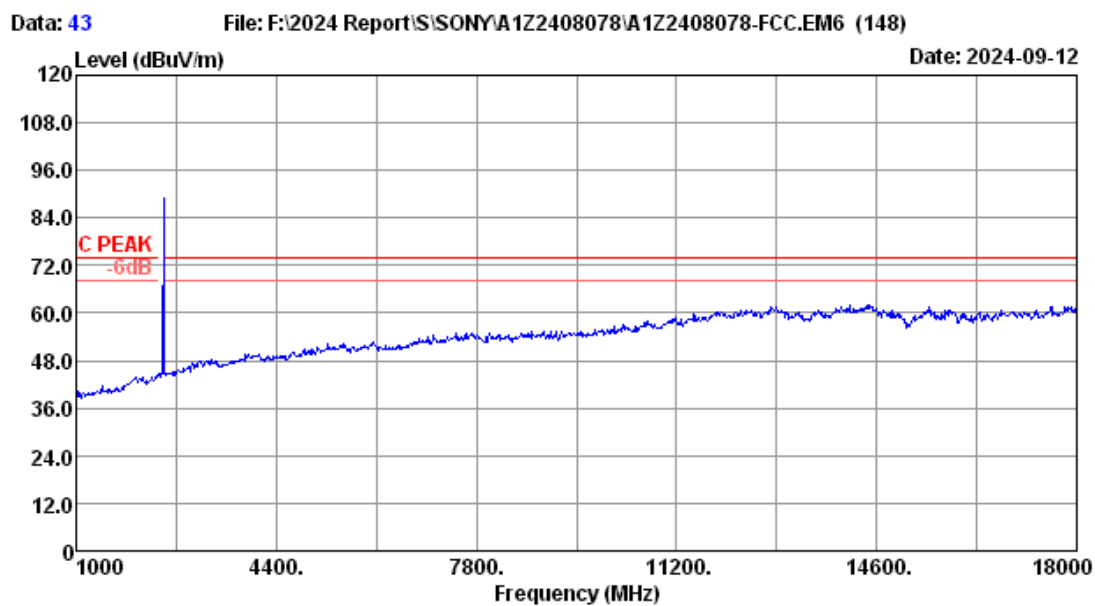
Site no.	: 3m Chamber	Data no.	: 41
Dis. / Ant.	: 3m 2022 3115-4580	Ant. pol.	: VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23.2°C/52.5%	Engineer	: WINTER
Test Mode	: BLE1M 2440 TX Mode		



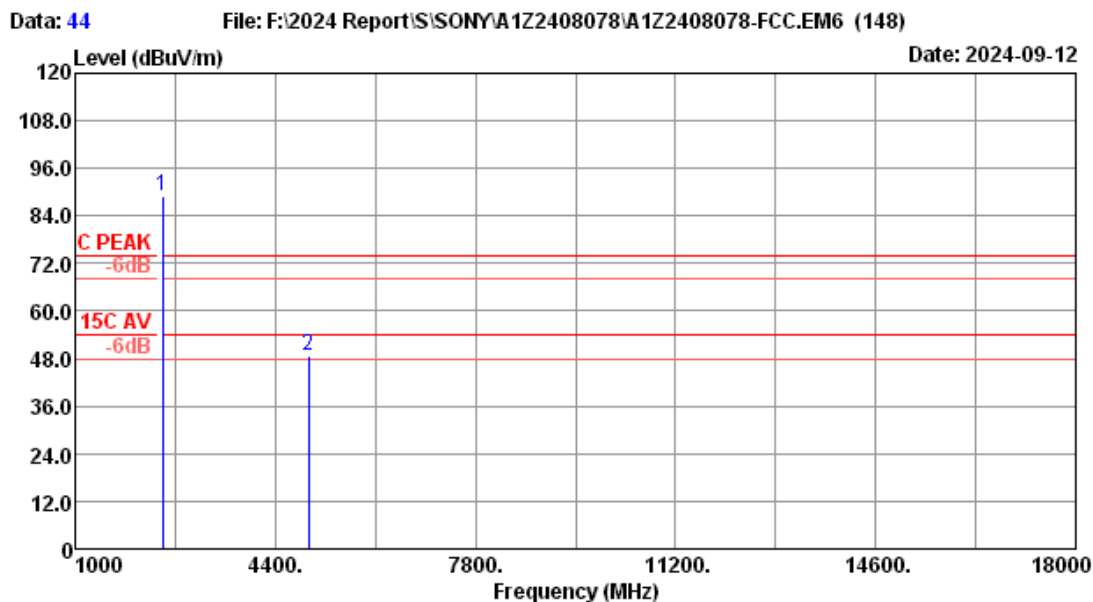
Site no. : 3m Chamber Data no. : 42
 Dis. / Ant. : 3m 2022 3115-4580 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23.2°C/52.5% Engineer : WINTER
 Test Mode : BLE1M 2440 TX Mode

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	28.26	5.37	87.60	31.68	89.55	-----	-----	Peak
2	4880.00	32.86	7.45	38.88	30.41	48.78	74.00	25.22	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.



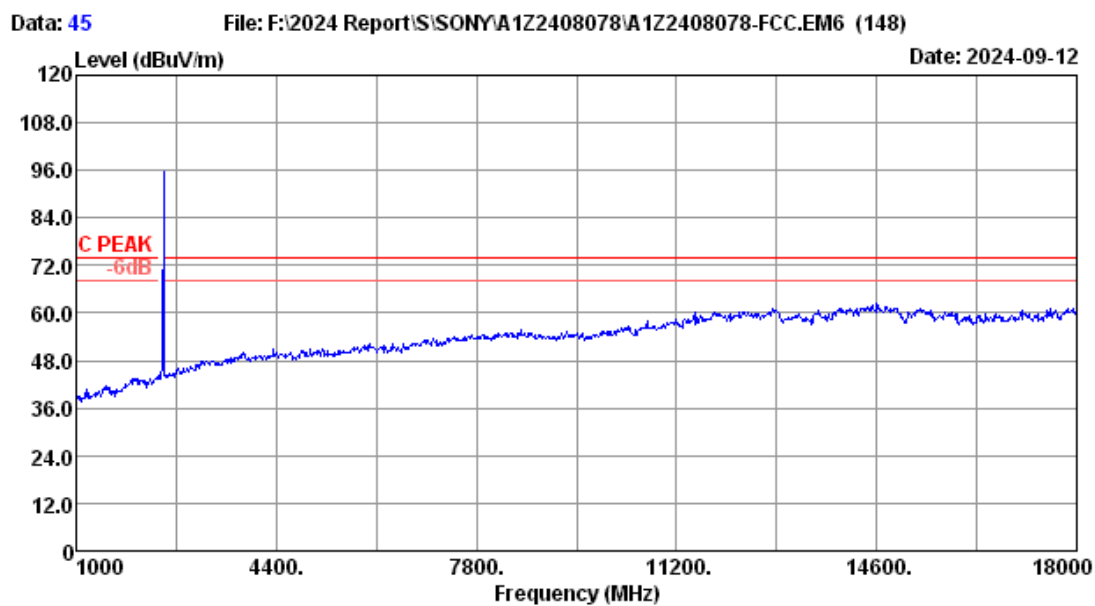
Site no.	: 3m Chamber	Data no.	: 43
Dis. / Ant.	: 3m 2022 3115-4580	Ant. pol.	: VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23.2°C/52.5%	Engineer	: WINTER
Test Mode	: BLE1M 2480 TX Mode		



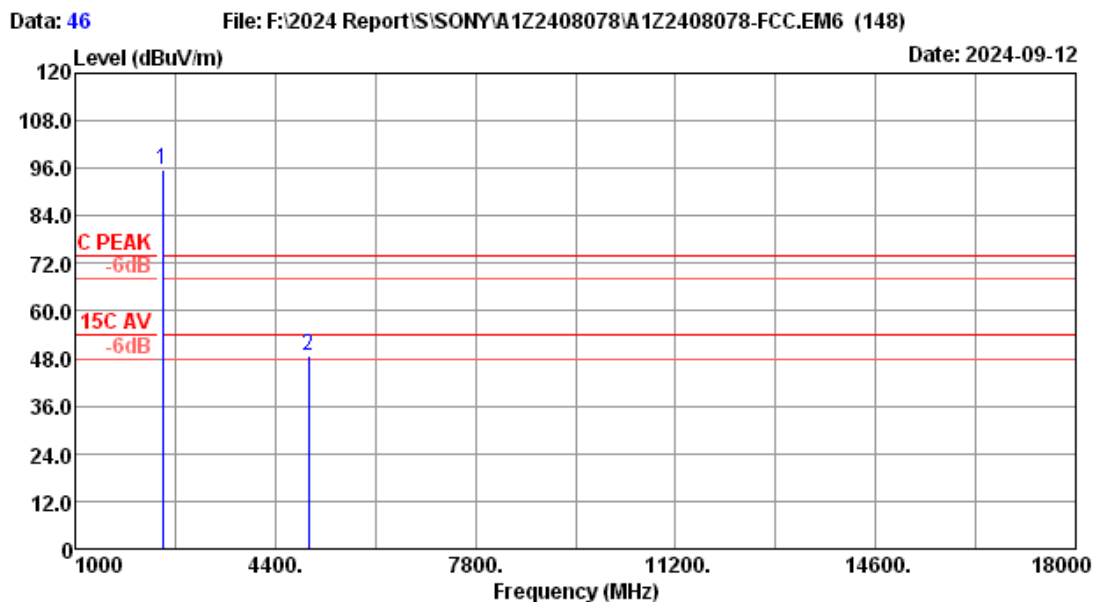
Site no. : 3m Chamber Data no. : 44
 Dis. / Ant. : 3m 2022 3115-4580 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23.2°C/52.5% Engineer : WINTER
 Test Mode : BLE1M 2480 TX Mode

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	2480.00	28.30	5.41	86.80	31.66	88.85	-----	-----	Peak
2	4960.00	33.02	7.50	38.54	30.40	48.66	74.00	25.34	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.	: 45
Dis. / Ant.	: 3m 2022 3115-4580	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23.2°C/52.5%	Engineer	: WINTER
Test Mode	: BLE1M 2480 TX Mode		



Site no. : 3m Chamber Data no. : 46
 Dis. / Ant. : 3m 2022 3115-4580 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23.2°C/52.5% Engineer : WINTER
 Test Mode : BLE1M 2480 TX Mode

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	2480.00	28.30	5.41	93.43	31.66	95.48	-----	-----	Peak
2	4960.00	33.02	7.50	38.50	30.40	48.62	74.00	25.38	Peak

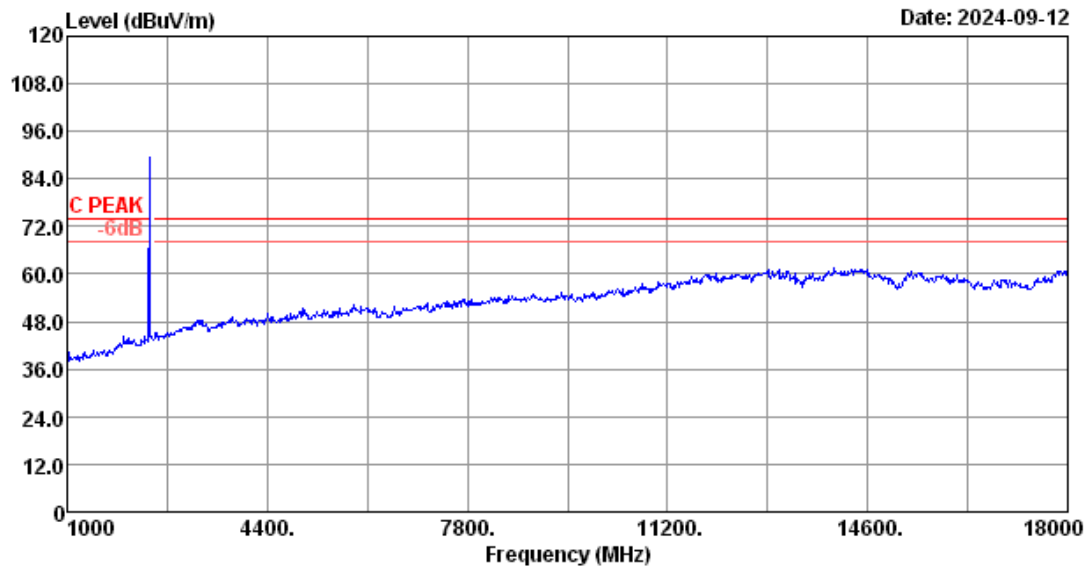
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp factor.
 2. The emission levels that are 20dB below the official
 limit are not reported.

BLE-2Mbps:

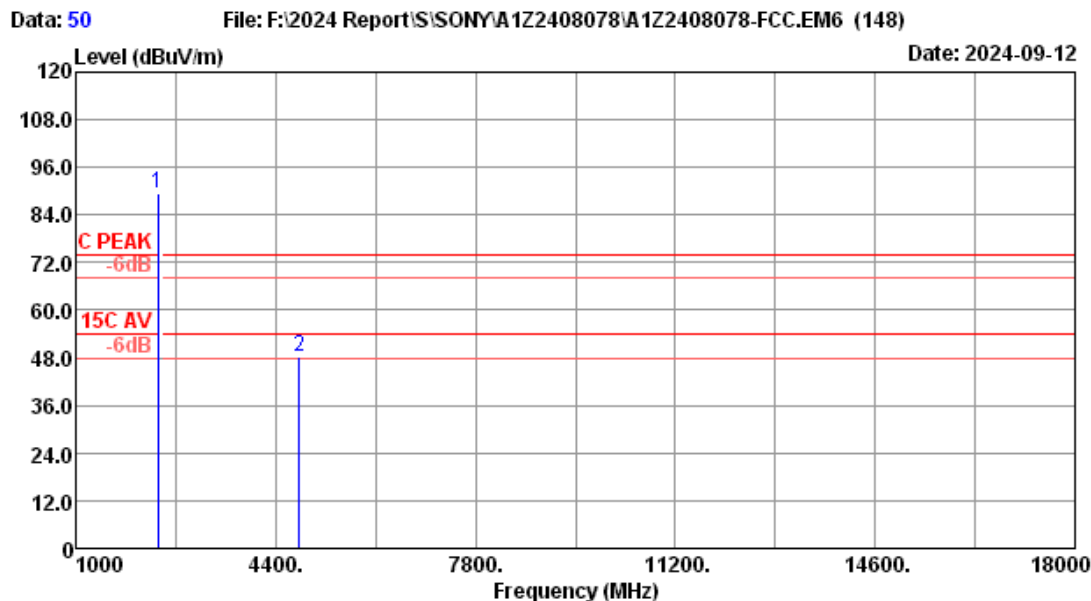
Data: 49

File: F:\2024 Report\SONY\A1Z2408078\A1Z2408078-FCC.EM6 (148)

Date: 2024-09-12



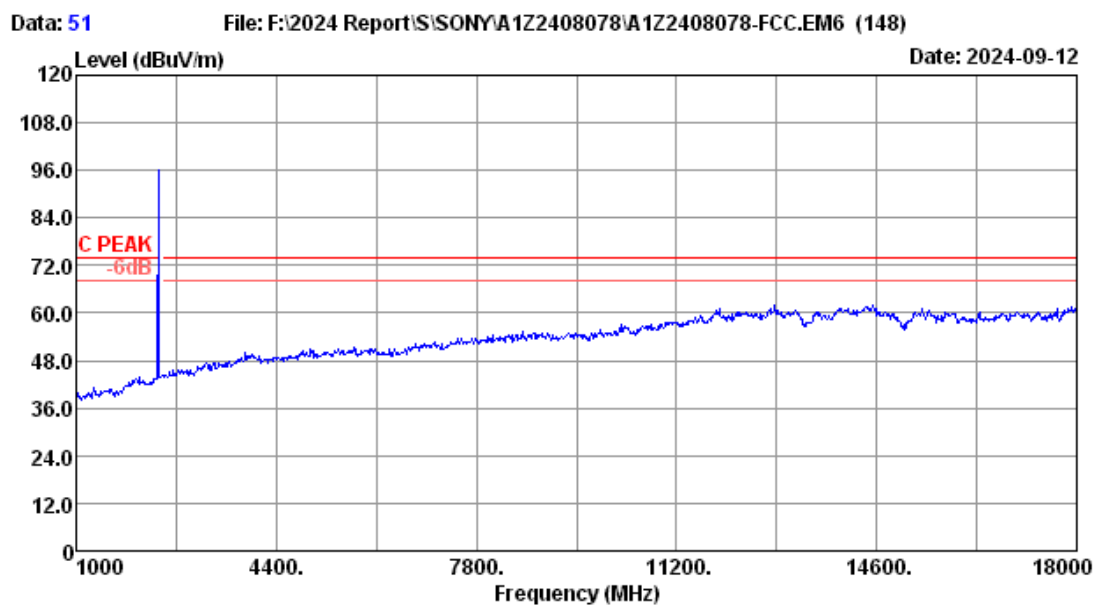
Site no.	: 3m Chamber	Data no.	: 49
Dis. / Ant.	: 3m 2022 3115-4580	Ant. pol.	: VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23.2°C/52.5%	Engineer	: WINTER
Test Mode	: BLE2M 2402 TX Mode		



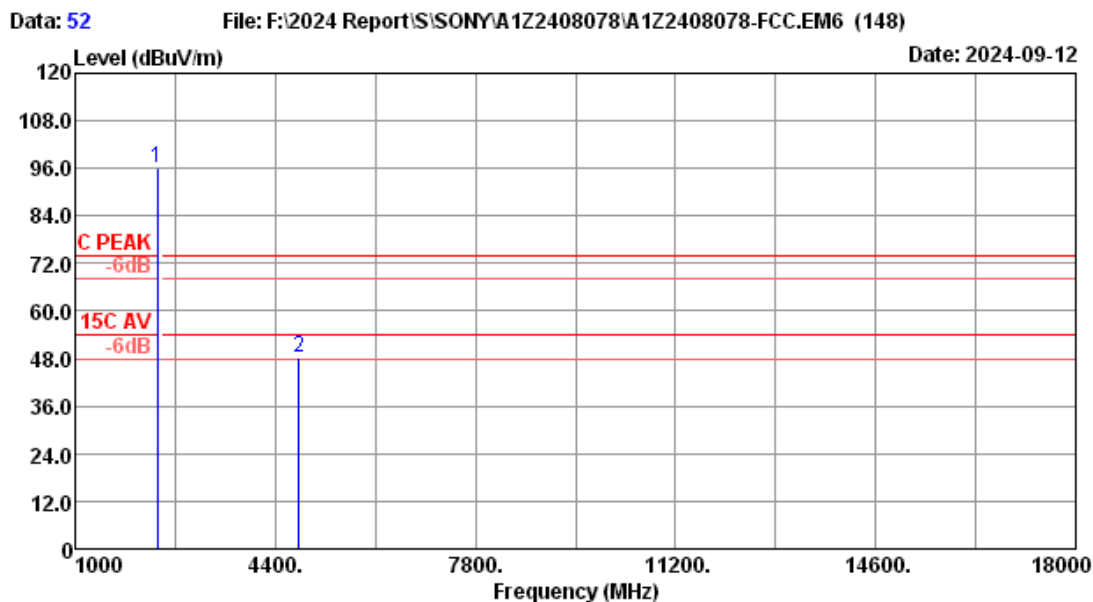
Site no. : 3m Chamber Data no. : 50
 Dis. / Ant. : 3m 2022 3115-4580 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23.2°C/52.5% Engineer : WINTER
 Test Mode : BLE2M 2402 TX Mode

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	2402.00	28.11	5.32	87.60	31.70	89.33	-----	-----	Peak
2	4804.00	32.71	7.41	38.49	30.42	48.19	74.00	25.81	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.



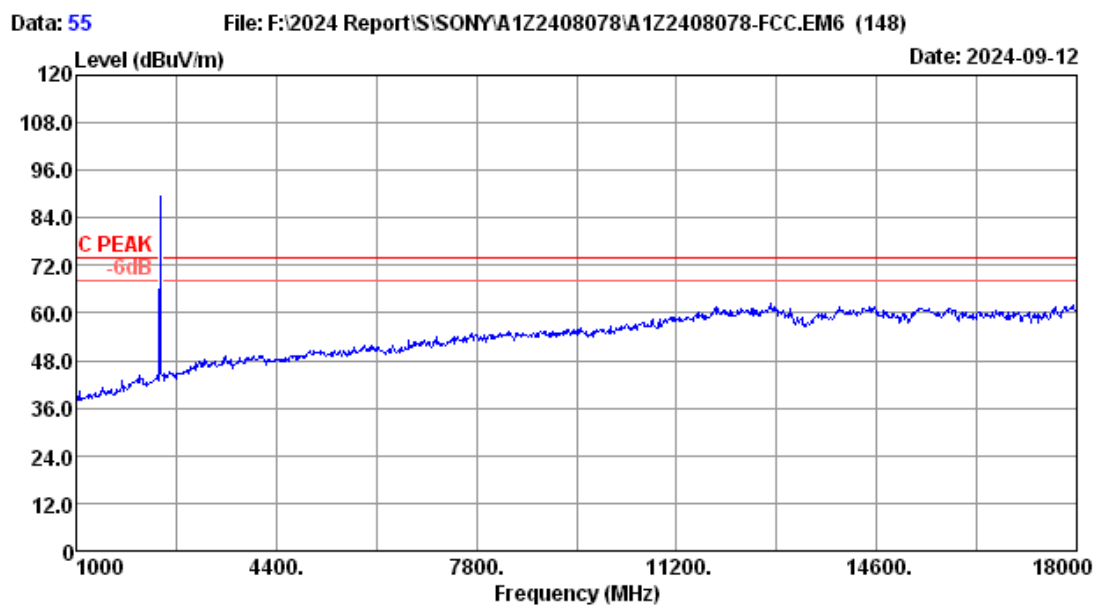
Site no.	: 3m Chamber	Data no.	: 51
Dis. / Ant.	: 3m 2022 3115-4580	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23.2°C/52.5%	Engineer	: WINTER
Test Mode	: BLE2M 2402 TX Mode		



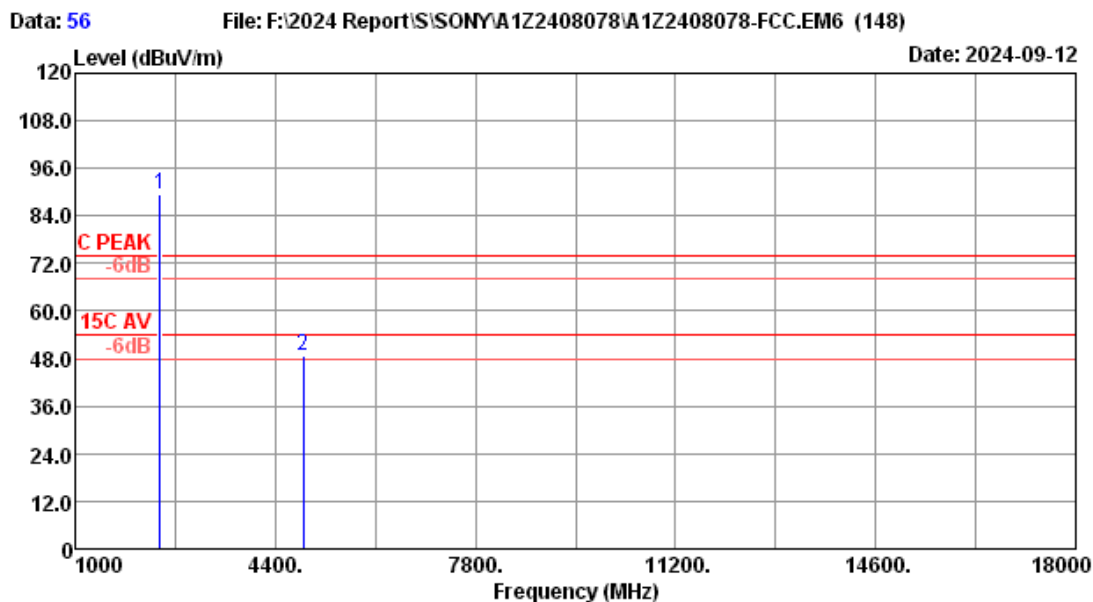
Site no. : 3m Chamber Data no. : 52
 Dis. / Ant. : 3m 2022 3115-4580 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23.2°C/52.5% Engineer : WINTER
 Test Mode : BLE2M 2402 TX Mode

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	2402.00	28.11	5.32	94.58	31.70	96.31	-----	-----	Peak
2	4804.00	32.71	7.41	38.73	30.42	48.43	74.00	25.57	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.



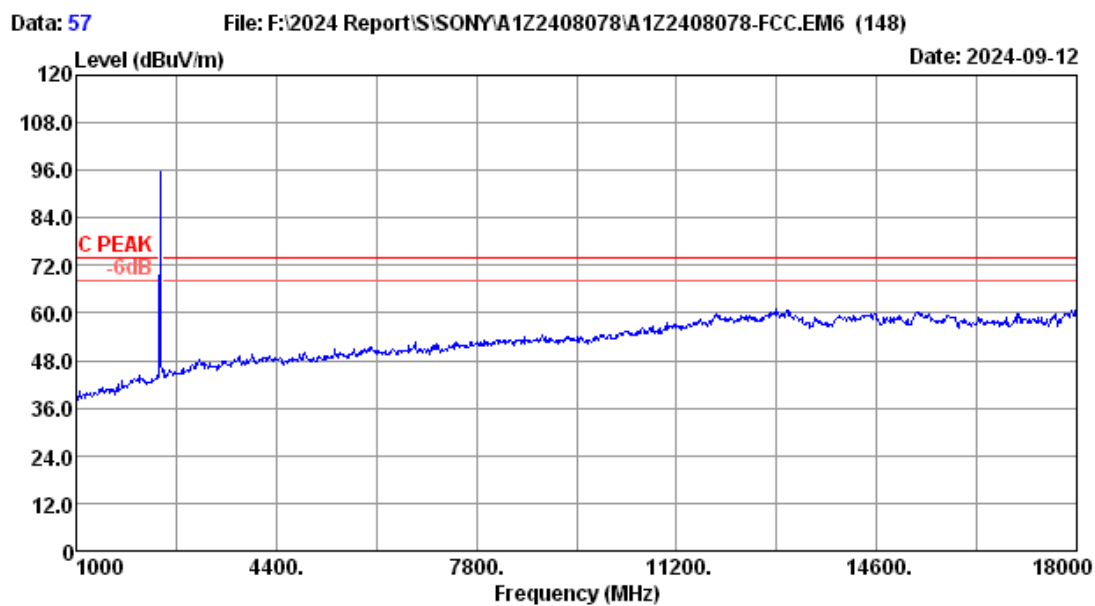
Site no.	: 3m Chamber	Data no.	: 55
Dis. / Ant.	: 3m 2022 3115-4580	Ant. pol.	: VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23.2°C/52.5%	Engineer	: WINTER
Test Mode	: BLE2M 2440 TX Mode		



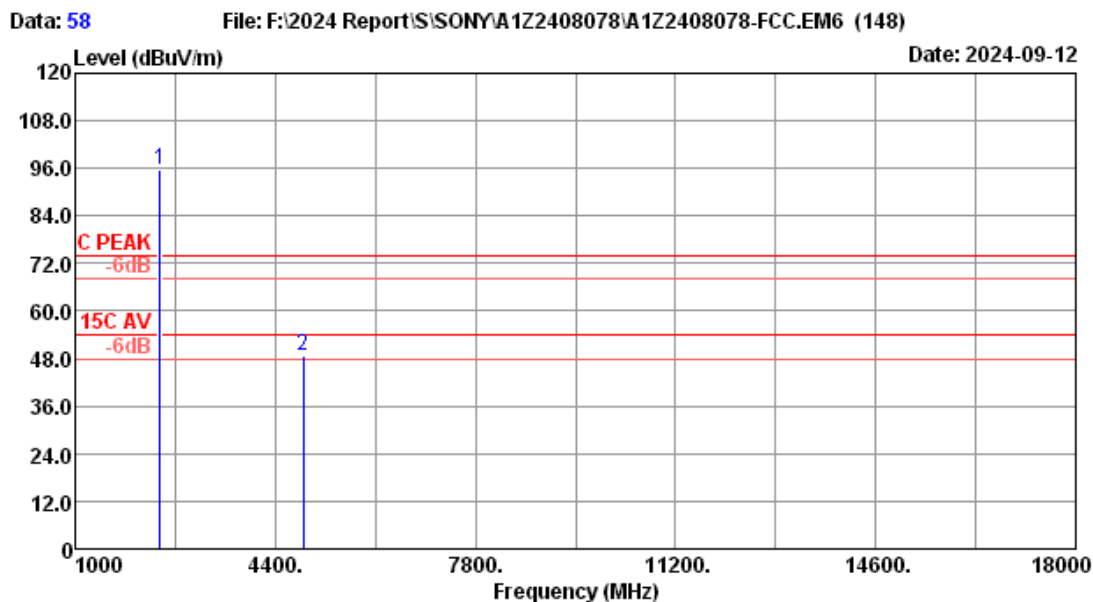
Site no. : 3m Chamber Data no. : 56
 Dis. / Ant. : 3m 2022 3115-4580 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23.2°C/52.5% Engineer : WINTER
 Test Mode : BLE2M 2440 TX Mode

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	28.26	5.37	87.35	31.68	89.30	-----	-----	Peak
2	4880.00	32.86	7.45	38.87	30.41	48.77	74.00	25.23	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.



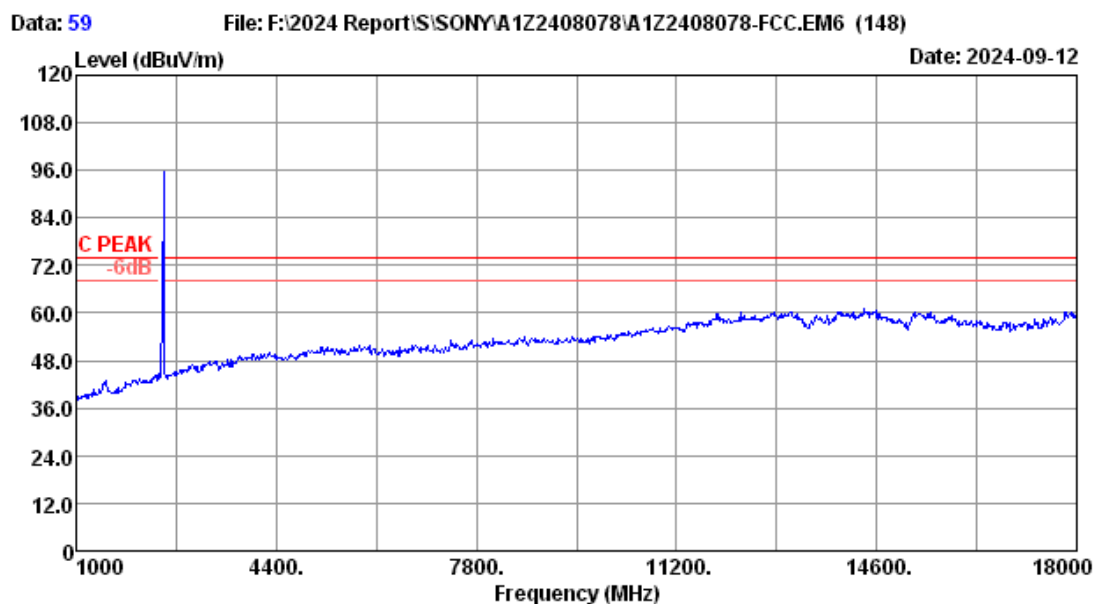
Site no.	: 3m Chamber	Data no.	: 57
Dis. / Ant.	: 3m 2022 3115-4580	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23.2°C/52.5%	Engineer	: WINTER
Test Mode	: BLE2M 2440 TX Mode		



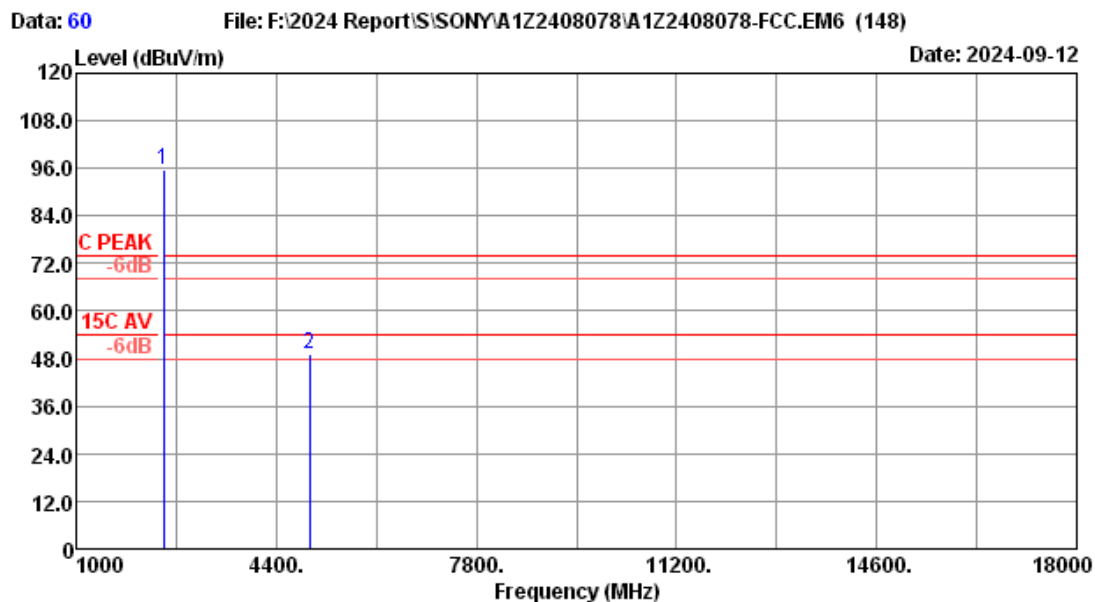
Site no.	: 3m Chamber	Data no.	: 58
Dis. / Ant.	: 3m 2022 3115-4580	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23.2°C/52.5%	Engineer	: WINTER
Test Mode	: BLE2M 2440 TX Mode		

No.	Freq. (MHz)	Ant.	Cable	Reading (dBuV)	Amp	Emission	Limits (dBuV/m)	Margin (dB)	Remark
		Factor (dB/m)	Loss (dB)		factor (dB)	Level (dBuV/m)			
1	2440.00	28.26	5.37	93.50	31.68	95.45	-----	-----	Peak
2	4880.00	32.86	7.45	38.99	30.41	48.89	74.00	25.11	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.



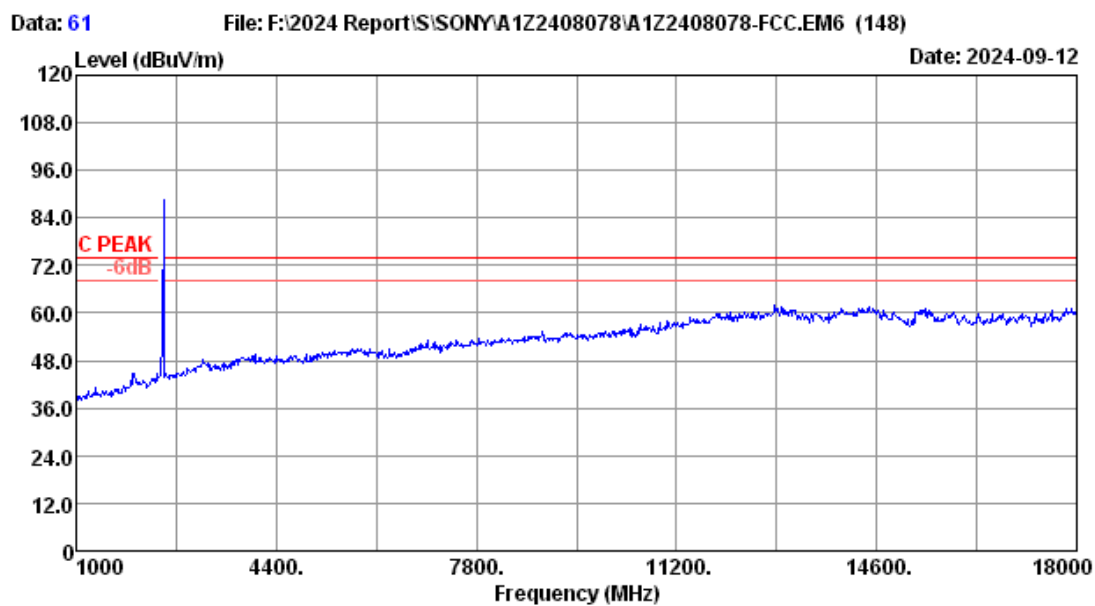
Site no.	: 3m Chamber	Data no.	: 59
Dis. / Ant.	: 3m 2022 3115-4580	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23.2°C/52.5%	Engineer	: WINTER
Test Mode	: BLE2M 2480 TX Mode		



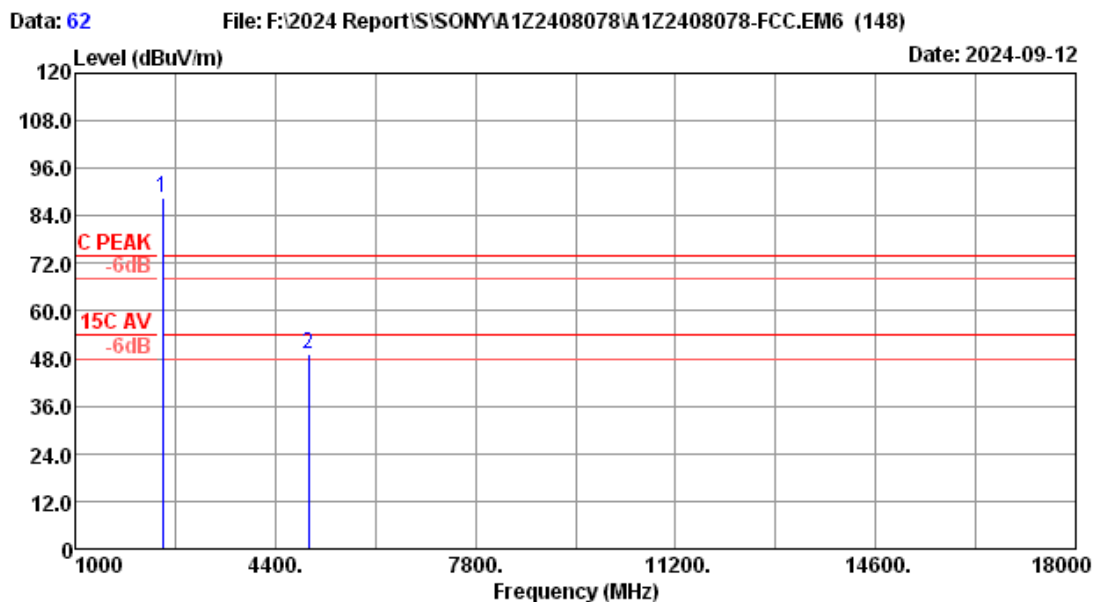
Site no. : 3m Chamber Data no. : 60
 Dis. / Ant. : 3m 2022 3115-4580 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23.2°C/52.5% Engineer : WINTER
 Test Mode : BLE2M 2480 TX Mode

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	2480.00	28.30	5.41	93.54	31.66	95.59	-----	-----	Peak
2	4960.00	33.02	7.50	38.88	30.40	49.00	74.00	25.00	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.	: 61
Dis. / Ant.	: 3m 2022 3115-4580	Ant. pol.	: VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23.2°C/52.5%	Engineer	: WINTER
Test Mode	: BLE2M 2480 TX Mode		



Site no. : 3m Chamber Data no. : 62
 Dis. / Ant. : 3m 2022 3115-4580 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23.2°C/52.5% Engineer : WINTER
 Test Mode : BLE2M 2480 TX Mode

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	2480.00	28.30	5.41	86.38	31.66	88.43	-----	-----	Peak
2	4960.00	33.02	7.50	38.92	30.40	49.04	74.00	24.96	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 Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	PXA Signal Analyzer	Agilent	N9030A	MY51380221	Mar.16,24	1 Year
2.	RF Cable	Eastsheep	RM086-SMA/N-JJ-2000	NO.1	Jun.19,24	1 Year
3.	Attenuator(10dB)	Agilent	8491B	MY39269201	Mar.16,24	1 Year

5.2. Limit

In any 100kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is 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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30dB instead of 20dB.

5.3. Test Procedure

Use the test method described 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.

5.4. Test result

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

EUT: Active Subwoofer		
M/N: YY2089C2		
Test date: 2024-09-03	Pressure: 102.4±1.0 kpa	Humidity: 54.7±3.0%
Tested by: Winter	Test site: RF site	Temperature:23.6±0.6 °C

BLE-1Mbps:

GFSK

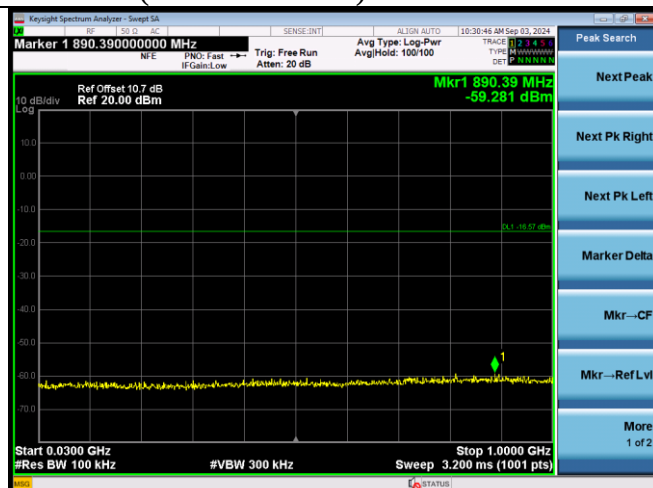
2402MHz



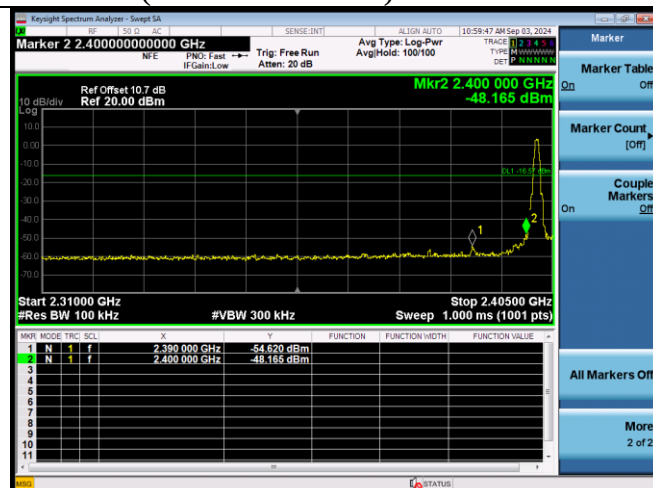
2402MHz(10GHz – 26GHz)



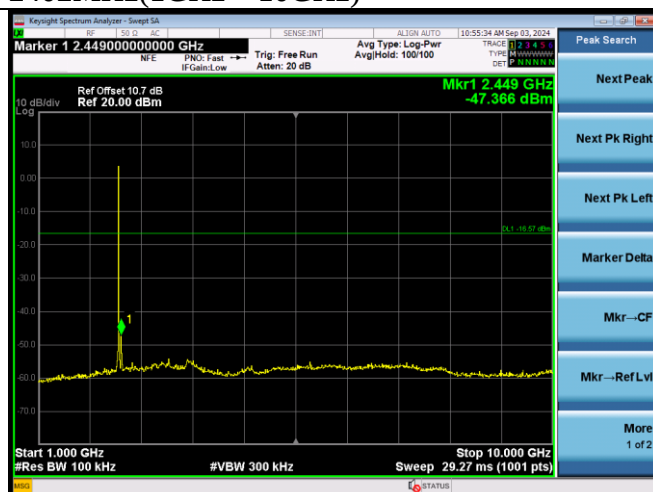
2402MHz(30MHz – 1GHz)



2402MHz(2.3GHz – 2.4GHz)



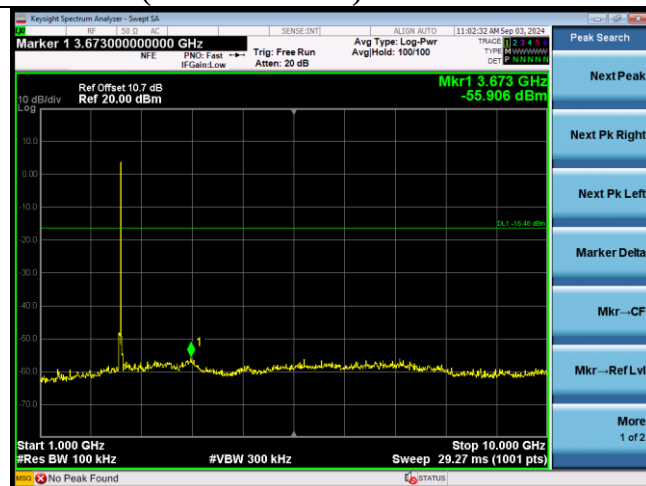
2402MHz(1GHz – 10GHz)



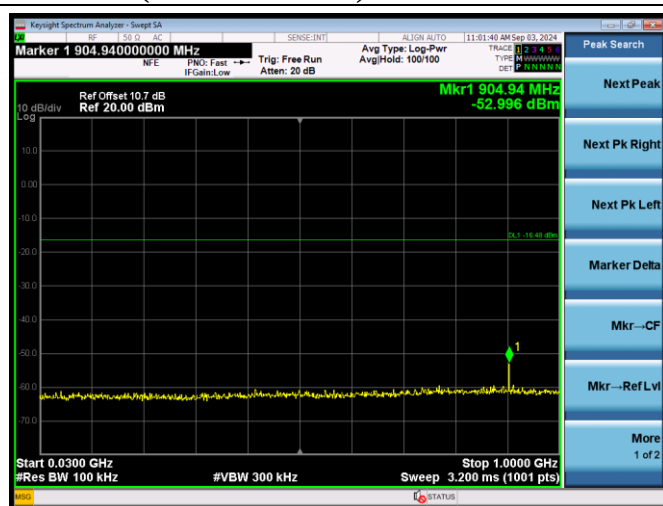
2440MHz



2440MHz(1GHz – 10GHz)



2440MHz(30MHz – 1GHz)



2440MHz(10GHz – 26GHz)



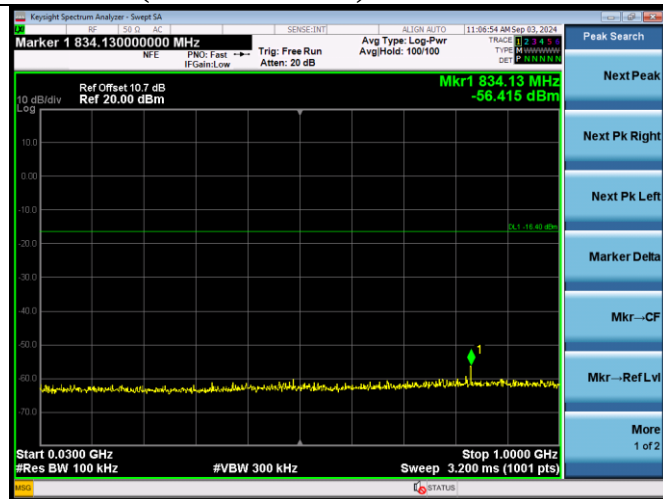
2480MHz



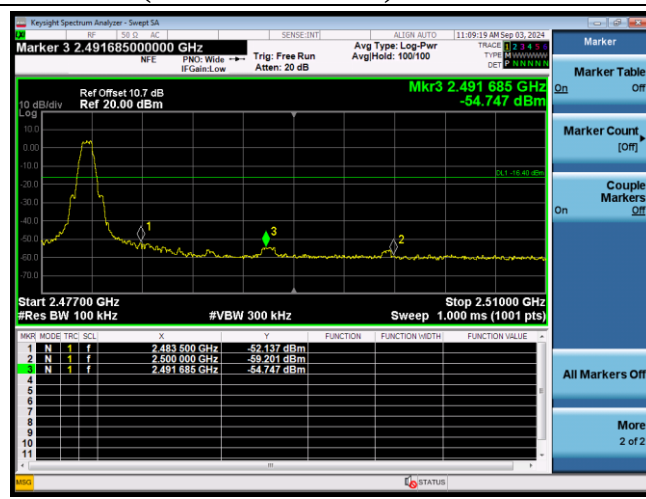
2480MHz(10GHz – 26GHz)



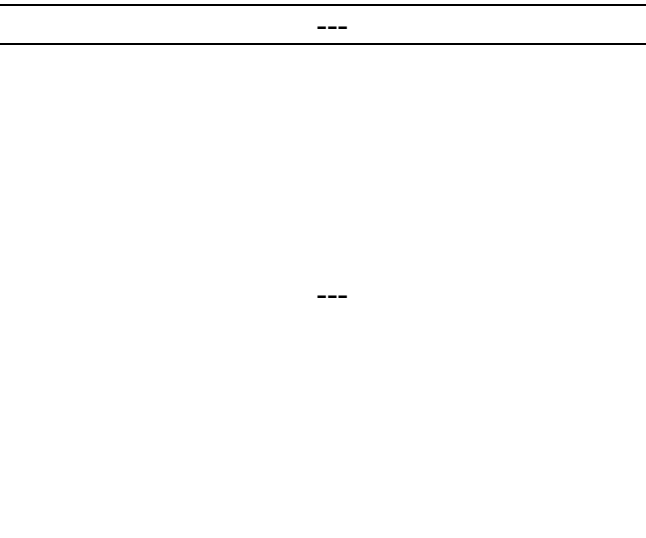
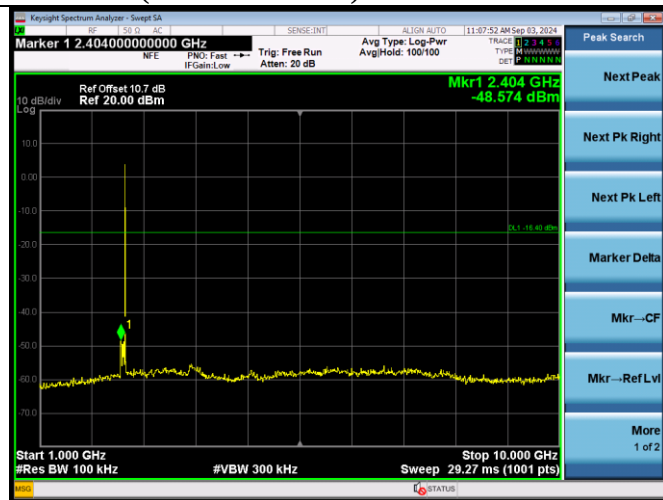
2480MHz(30MHz – 1GHz)



2480MHz(2.4GHz – 2.5GHz)



2480MHz(1GHz – 10GHz)



BLE-2Mbps:

GFSK

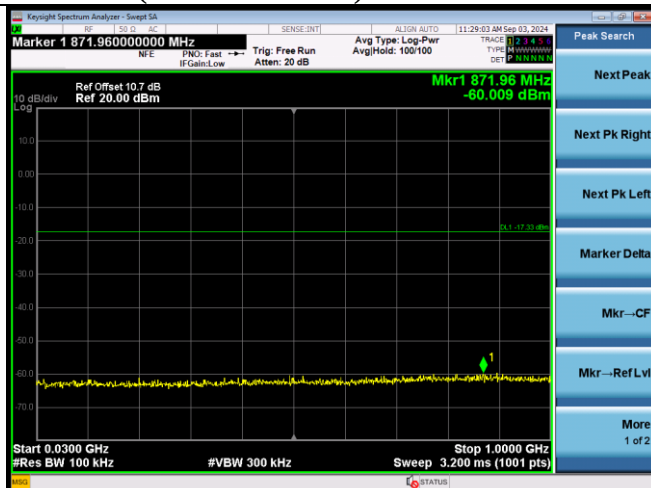
2402MHz



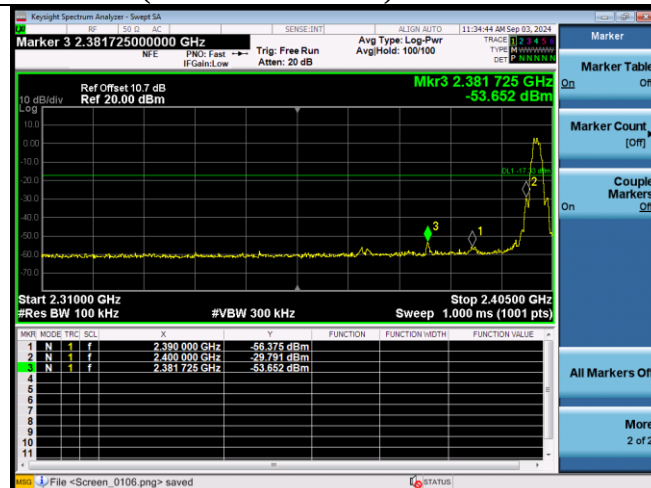
2402MHz(10GHz – 26GHz)



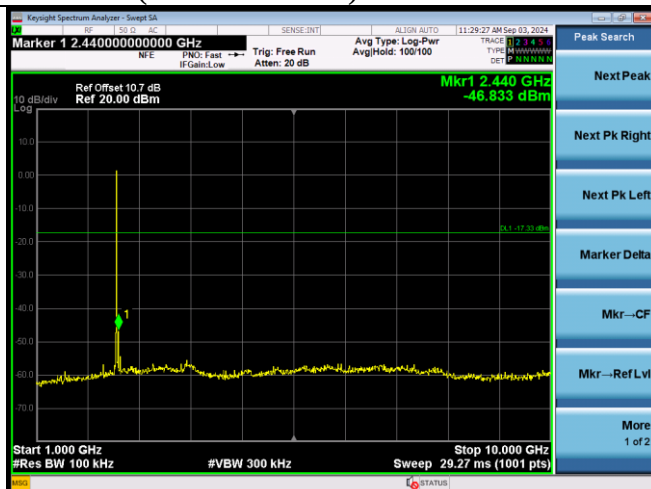
2402MHz(30MHz – 1GHz)



2402MHz(2.3GHz – 2.4GHz)



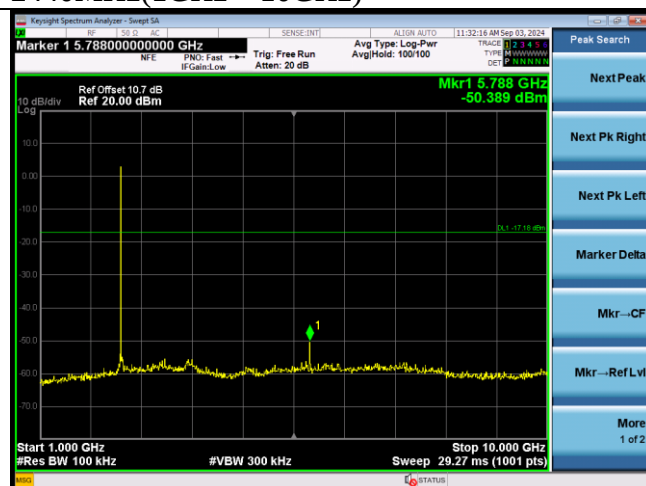
2402MHz(1GHz – 10GHz)



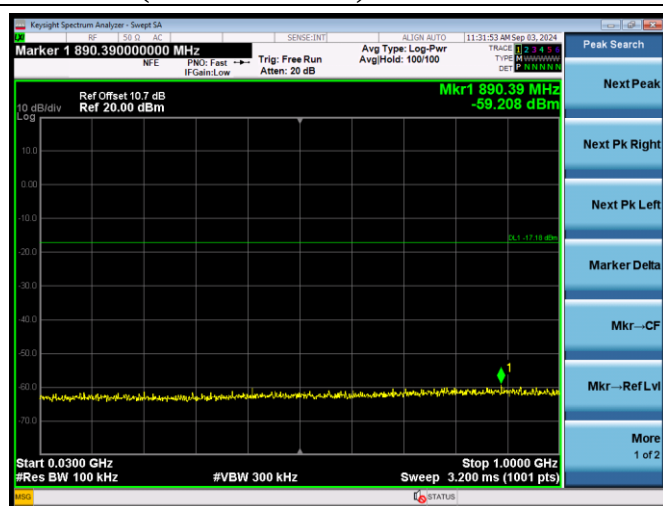
2440MHz



2440MHz(1GHz – 10GHz)



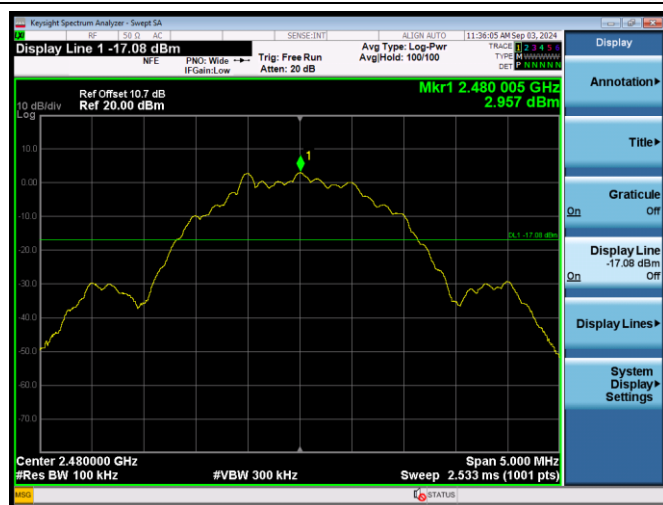
2440MHz(30MHz – 1GHz)



2440MHz(10GHz – 26GHz)



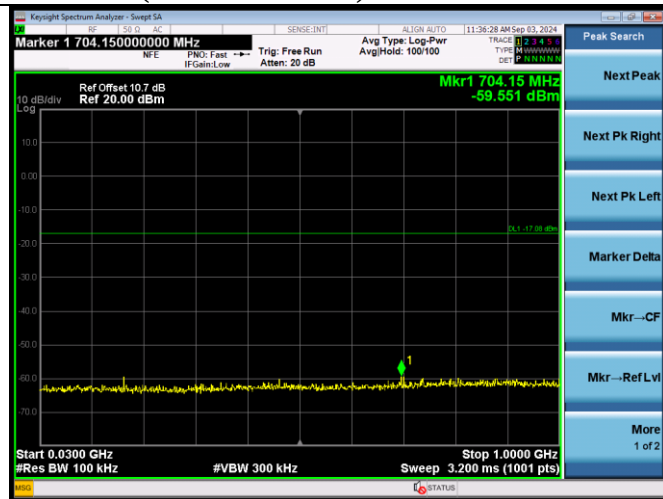
2480MHz



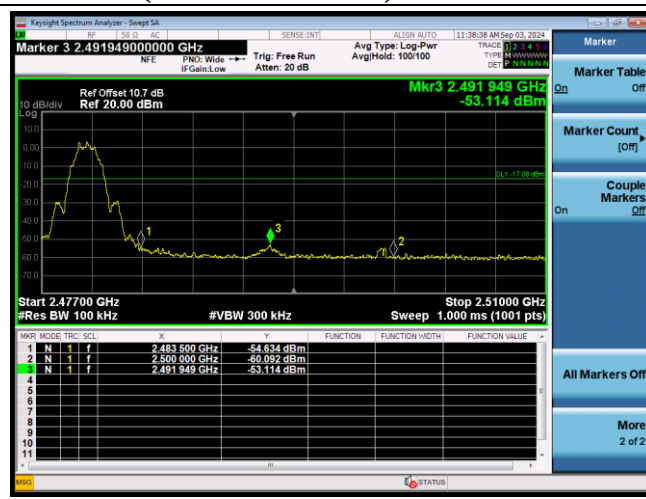
2480MHz(10GHz – 26GHz)



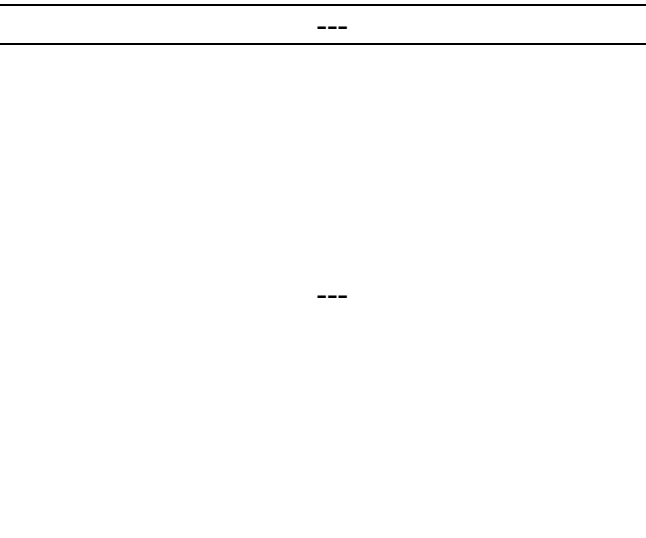
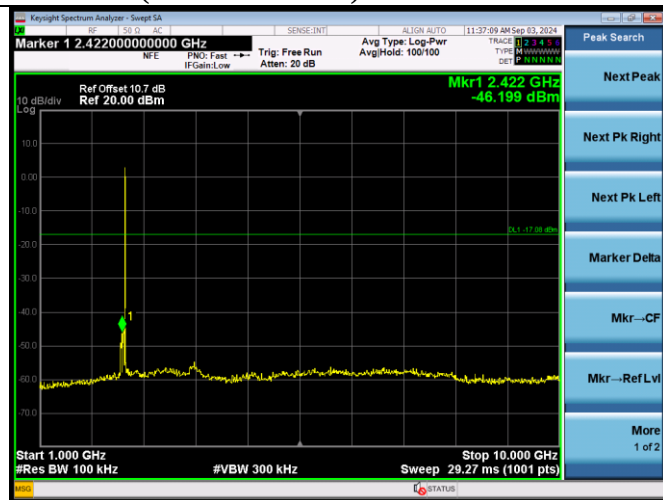
2480MHz(30MHz – 1GHz)



2480MHz(2.4GHz – 2.5GHz)



2480MHz(1GHz – 10GHz)



6. 6DB & 99% BANDWIDTH TEST

6.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	PXA Signal Analyzer	Agilent	N9030A	MY51380221	Mar.16,24	1 Year
2.	RF Cable	Eastsheep	RM086-SMA/ N-JJ-2000	NO.1	Jun.19,24	1 Year
3.	Attenuator(10dB)	Agilent	8491B	MY39269201	Mar.16,24	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 described 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., $RBW = 100 \text{ kHz}$, $VBW \geq 3 \times RBW$, 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 $\geq 6 \text{ dB}$.

Use the test method described 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:

- 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.
- 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.
- 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.
- Step a) through step c) might require iteration to adjust within the specified range.
- 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.
- 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

BLE-1Mbps:

EUT: Active Subwoofer

M/N: YY2089C2

Test date: 2024-09-03

Pressure: 101.3±1.0 kpa

Humidity: 52.4±3.0%

Tested by: Winter

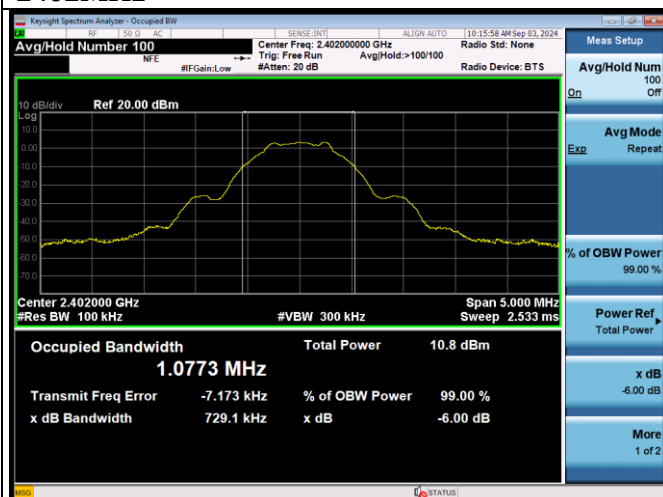
Test site: RF site

Temperature: 23.1±0.6°C

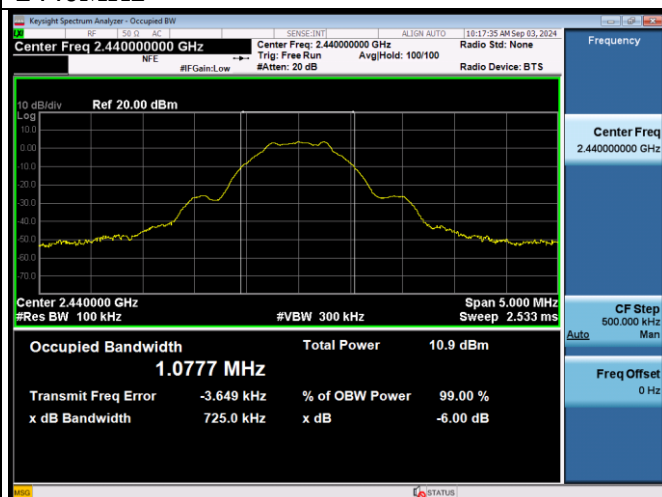
Test Mode	Frequency (MHz)	6dB Bandwidth (KHz)	Limit (KHz)
GFSK	2402	729.1	≥500
	2440	725.0	≥500
	2480	730.3	≥500
Conclusion : PASS			

GFSK

2402MHz



2440MHz



2480MHz



BLE-1Mbps:

EUT: Active Subwoofer

M/N: YY2089C2

Test date: 2024-09-03

Pressure: 101.3±1.0 kpa

Humidity: 52.4±3.0%

Tested by: Winter

Test site: RF site

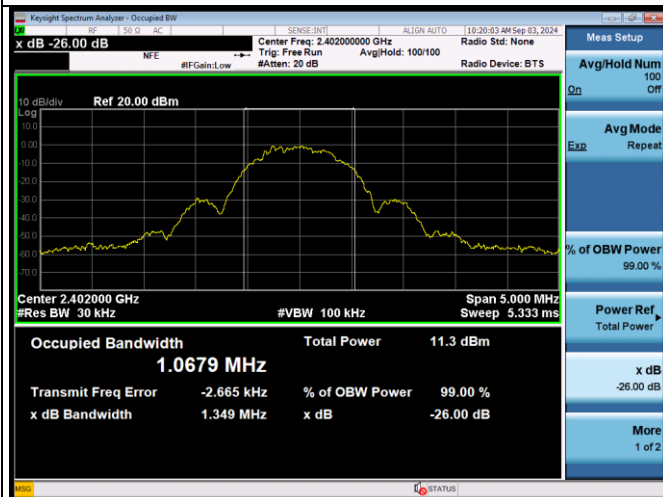
Temperature: 23.1±0.6℃

Test Mode	Frequency (MHz)	99% Bandwidth (MHz)	Limit (MHz)
GFSK	2402	1.0679	N/A
	2440	1.0687	
	2480	1.0691	

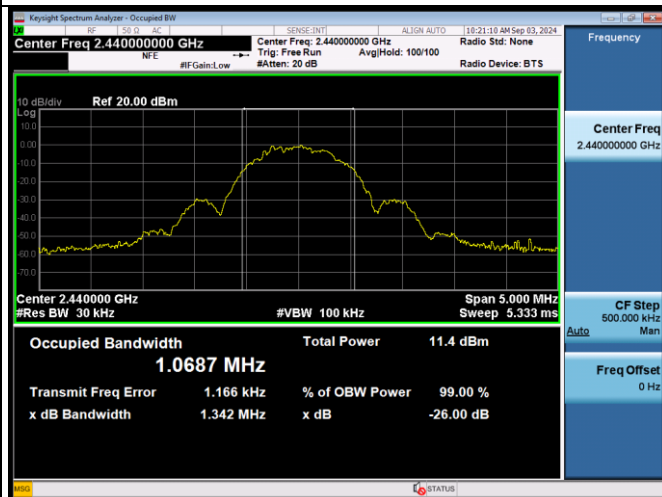
Conclusion: Pass

GFSK

2402MHz



2440MHz



2480MHz



BLE-2Mbps:

EUT: Active Subwoofer

M/N: YY2089C2

Test date: 2024-09-03

Pressure: 101.3±1.0 kpa

Humidity: 52.4±3.0%

Tested by: Winter

Test site: RF site

Temperature: 23.1±0.6℃

Test Mode	Frequency (MHz)	6dB Bandwidth (KHz)	Limit (KHz)
GFSK	2402	1245	≥500
	2440	1245	≥500
	2480	1240	≥500
Conclusion : PASS			

GFSK

2402MHz



2440MHz



2480MHz

