

FCC PART 15C TEST REPORT FOR CERTIFICATION

On Behalf of

Sony Group Corporation

Wireless Stereo Headset

YY2957

FCC ID: AK8YY2957

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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TEST REPORT

Applicant Sony Group Corporation Manufacturer Sony Group Corporation Product Wireless Stereo Headset

FCC ID **AK8YY2957**

> : YY2957 (A) Model No.

(1)DC 5V From PC input AC 120V/60Hz (B) Test Voltage

(2)DC 3.7V From battery

Tested for comply with:

FCC CFR47 Part 15 Subpart C

Test procedure used: ANSI C63.10: 2013;

Date of Test: Sep.01~20,2021 Report of date:

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.

Prepared by:	Brane	Reviewed by:	Sum	Mm
	Brave Zhang / As	Sistant® 信奉科技(深圳): Audix Technology EMC 部門報告	有限公司 Lu/ De (Shenzhen) Co., Ltd.	putly Manager
Approved & A	uthorized Signer: _	Stamp only for EMC Signature: David Jin / Depu	Dept. Report	

Sep.22,2021



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 :2013	PASS		
Radiated Emission Test	FCC Part 15: 15.209 FCC Part 15: 15.205 FCC Part 15: 15.247(d) ANSI C63.10: 2013	PASS		
Conducted Spurious Emissions	FCC Part 15: 15.247(d) ANSI C63.10 : 2013	PASS		
Carrier Frequency Separation Test	FCC Part 15: 15.247(a)(2) ANSI C63.10 : 2013	N/A		
6dB & 99% Bandwidth Test	FCC Part 15: 15.247(b)(3) ANSI C63.10: 2013	PASS		
Maximum Peak Output Power Test	FCC Part 15: 15.247(d) ANSI C63.10 : 2013	PASS		
Band Edge Compliance Test	FCC Part 15: 15.247(e) ANSI C63.10 : 2013	PASS		
Power Spectral Density Test	FCC Part 15: 15.207 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
Product	Wireless Stereo Headset
Model No.	YY2957
FCC ID	AK8YY2957
Sample Type	Prototype production
Date of Receipt	Aug.17,2021
Date of Test	Sep.01~20,2021
Remark: This report only fo	r BLE.



Product Feature & Specification				
Product	Wireless Stereo Headset			
Model No.	YY2957			
	Commercial Power	AC 100~240 V		
Power Source	External Power Source	DC 5V		
Power Source		DC 3.7V		
	UM battery	DC V		

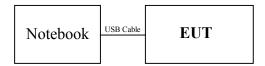
Bluetooth				
Radio Bluetooth V3.0+EDR; BLE				
Frequency Range	2402-2480MHz			
Type of Modulation	GFSK, π/4DQPSK, 8DPSK			
Data Rate	1Mbps, 2Mbps, 3Mbps			
Quantity of Channels	79/40			
Channel Separation 1MHz/2MHz				
Antenna System				
Type of Antenna	Chip Antenna			
Antenna Peak Gain	2.28dBi			



2.2. Tested Supporting System Details

No.	Description	ACS No.	Manufacturer	Model	Serial Number
		N/A	DELL	PP09S	N/A
1.	Notebook	Power Cord: Unshielded, Detachabled, 1.8m Power Adapter: Manufacturer: DELL, M/N: LA65NS1-00 Cable: Unshielded, Detachabled, 4.0m(Bond one ferrite core)			
2.	USB Cable	Unshielded, Detachable, 0.3m			

2.3. Block Diagram of connection between EUT and simulators



(EUT: Wireless Stereo Headset)

2.4. Test information

A Special Test Software(Airoha Tool Kit-V1.5.1.0203) was used to control EUT work in Continuous TX mode (GFSK modulation) and select test channel

	Continuous 174	mode (Of SIX I	nodulation), and s	cicci test citatilici	L.	
	Tested mode, data rate, channel, and Power setting information					
			Frequency (MHz)			
	Tx Mode	1	Low:CH 0	43	2402	
	GFSK	1	Middle: CH19	43	2440	
	modulation	1	High: CH39	43	2480	

2.5. Test Facility

Site Description

Audix Technology (Shenzhen) Co., Ltd.

No. 6, Kefeng Road, Science & Technology Park, Name of Firm

Nanshan District, Shenzhen, Guangdong, China

Certificated by ISED, Canada Company Number: 5183A EMC Lab.

CAB identifier: CN0034 Valid Date: Mar.31, 2022

Certificated by FCC, USA Designation No.: CN5022 Valid Date: Mar.31, 2022

Accredited by NVLAP, USA NVLAP Code: 200372-0



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

Test Item	Uncertainty
Uncertainty for Conduction emission test in No. 1 Conduction	2.6dB(150kHz to 30MHz)
	3.2dB(30~200MHz, Polarization: H)
Uncertainty for Radiation Emission test	3.6dB(30~200MHz, Polarization: V)
in 3m chamber	3.4dB(200M~1GHz, Polarization: H)
	3.4dB(200M~1GHz, Polarization: V)
Uncertainty for Radiation Emission test	5.0dB(1GHz~6GHz)
in 3m chamber (1GHz~18GHz)	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	0.6℃
humidity	3%

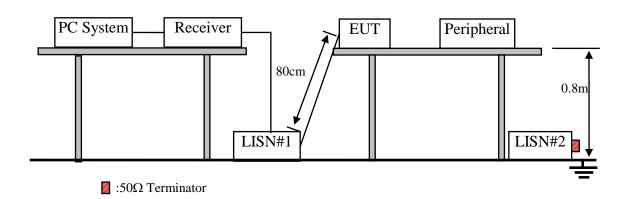


3. POWER LINE CONDUCTED EMISSION TEST

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-B M-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

	Maximum RF Line Voltage		
Frequency	Quasi-Peak Level	Average Level	
	$dB(\mu V)$	$dB(\mu V)$	
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 (dB μ V) = Factor (L.I.S.N.) (dB) + Cable Loss (dB)+Reading (Receiver) (dB μ V)



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. Wireless Stereo Headset (EUT)

Model Number : YY2957 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 BLE 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.

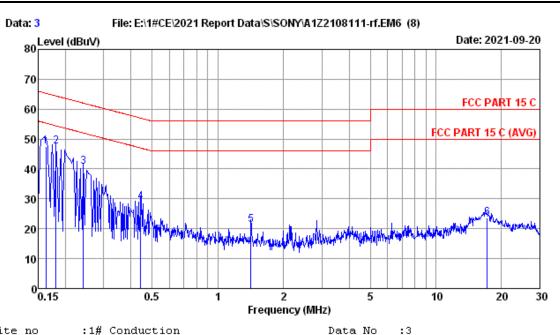
The bandwidth of test receiver (R & S ESCI) is set at 9kHz.

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 Data No : Dis./Lisn :2020 ENV216-L LISN phase:

Limit :FCC PART 15 C

Env./Ins. :25.2*C/56% Engineer :Evan

EUT : Wireless Stereo Headset

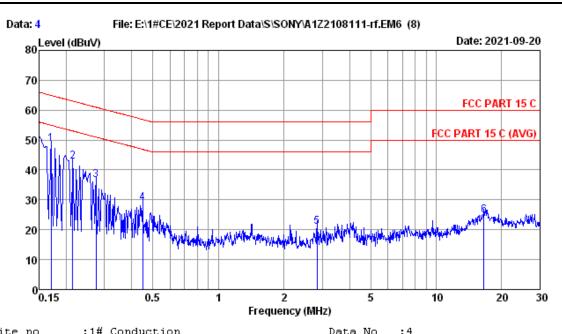
Power Rating :AC 120V/60Hz Test Mode :BLE Tx

No	Freq (MHz)	LISN Factor (dB)	Cable loss (dB)	Reading (dBuV)	Emissior Level (dBuV)	n Limits (dBuV)	Margin (dB)	Remark
1	0.162	9.70	0.01	37.87	47.58	65.34	17.76	QP
2	0.182	9.70	0.01	37.76	47.47	64.42	16.95	QP
3	0.242	9.70	0.01	31.17	40.88	62.04	21.16	QP
4	0.442	9.70	0.01	19.21	28.92	57.02	28.10	QP
5	1.418	9.70	0.02	11.40	21.12	56.00	34.88	QP
6	17.199	9.84	0.09	13.83	23.76	60.00	36.24	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.





Engineer : Evan

Site no :1# Conduction Data No :
Dis./Lisn :2020 ENV216-N LISN phase:

Limit :FCC PART 15 C

Env./Ins. :25.2*C/56%

EUT :Wireless Stereo Headset

Power Rating :AC 120V/60Hz Test Mode :BLE Tx

No	Freq (MHz)	LISN Factor (dB)	Cable loss (dB)	Reading (dBuV)	Emissior Level (dBuV)	n Limits (dBuV)	Margin (dB)	Remark	
1	0.170	9.70	0.01	38.97	48.68	64.94	16.26	QP	
2	0.214	9.70	0.01	33.05	42.76	63.05	20.29	QP	
3	0.274	9.70	0.01	26.82	36.53	60.98	24.45	QP	
4	0.449	9.70	0.01	19.14	28.85	56.89	28.04	QP	
5	2.839	9.70	0.03	11.29	21.02	56.00	34.98	QP	
6	16.573	9.83	0.09	14.87	24.79	60.00	35.21	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 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:	Note: N/A means Not applicable										

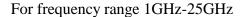
Frequency range: above 1000MHz

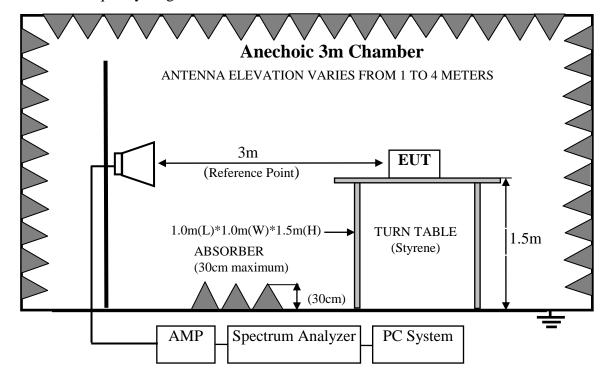
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval					
1.	3#Chamber(Svswr)	AUDIX	N/A	N/A	Apr.14,21	1 Year					
2.	3#Chamber(SE)	AUDIX	N/A	N/A	May.17,18	5 Year					
3.	Signal Analyzer	Rohde & Schwarz	FSV30	104050	Apr.07,21	1 Year					
4.	Horn Antenna	ETC	MCTD 1209	DRH15F03006	Jul.26,21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

Note: N/A means Not applicable.



4.2. Block Diagram of Test Setup For frequency range 30MHz-1000MHz Semi-anechoic 3m Chamber ANTENNA ELEVATION VARIES FROM 1 TO 4 METERS 3m TURN TABLE (FIBRE GLASS) Coaxial Switch AMP Spectrum Analyzer PC System







4.3. Radiated Emission Limit Standard:

FREQ	[U]	ENCY	DISTANCE	FIELD STRENGTHS LIMIT			
N	ИΗ	[z	Meters	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		1000MHz	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)			

Remark: (1) Emission level $dB\mu V = 20 \log Emission$ level $\mu V/m$

- (2) Emission Level (dB μ V/m) = Reading (Receiver) (dB μ V) + Antenna Factor (dB/m) + Cable Loss (dB)
 - Emission Level ($dB\mu V/m$) = Reading (Spectrum) ($dB\mu V$) + 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. Wireless Stereo Headset (EUT)

Model Number : YY2957 Serial Number : N/A

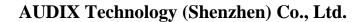
- 4.5. Operating Condition of EUT
 - 4.5.1. Setup the EUT and simulator as shown as Section 4.2.
 - 4.5.2. Turn on the power of all equipments.
 - 4.5.3. Let EUT work in BLE Tx mode.

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 C63.10-2013 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.

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

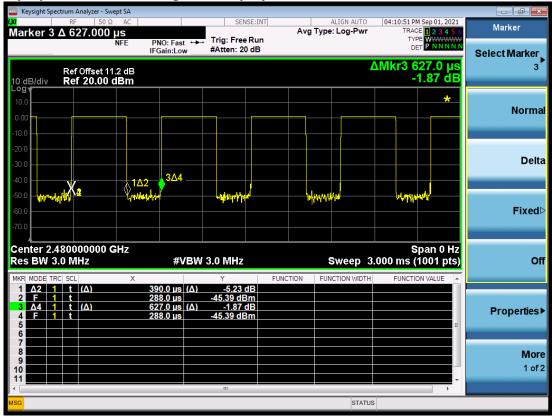
PASS.

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

Note: The duty cycle factor for calculate average level is -4.124dB, and average limit is 20dB below peak limit, so if peak measured level comply with average limit, the average level was deemed to comply with average limit.

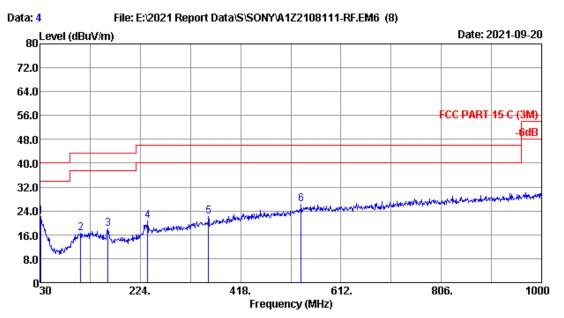


Duty cycle factor = 20log (1/duty cycle) =-4.124dB





Frequency: 30MHz~1GHz



Site no. : 3m Chamber Data no. : 4

Dis. / Ant. : 3m 2020 CBL6112D-25237 Ant. pol. : HORIZONTAL

Limit : FCC PART 15 C (3M)

Env. / Ins. : 22.6*C/54% Engineer : Hogrn

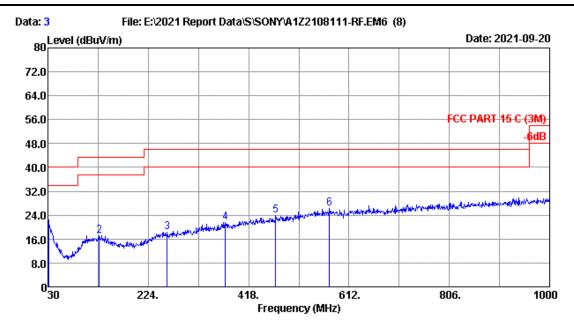
Test Mode : BLE Tx

_	No.	Freq. (MHz)	Factor (dB/m)	Loss (dB)	Reading (dBuV)	Lmission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
	1	31.940	23.72	0.64	-2.11	22.25	40.00	17.75	QP
	2	108.570	17.81	1.06	-2.33	16.54	43.50	26.96	QP
	3	161.920	15.64	1.29	1.18	18.11	43.50	25.39	QP
	4	238.550	17.54	1.54	1.66	20.74	46.00	25.26	QP
	5	355.920	20.34	1.90	-0.09	22.15	46.00	23.85	QP
	6	535.370	24.23	2.42	-0.43	26.22	46.00	19.78	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. : 3

Dis. / Ant. : 3m 2020 CBL6112D-25237 Ant. pol. : VERTICAL

Limit : FCC PART 15 C (3M)

Env. / Ins. : 22.6*C/54% Engineer : Hogrn

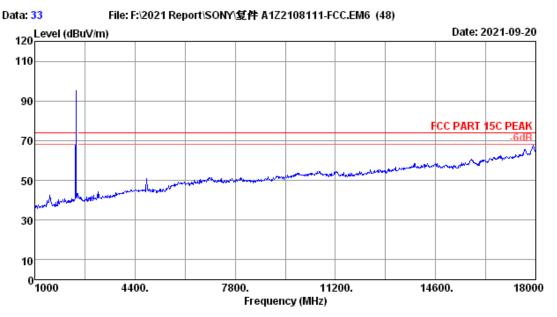
Test Mode : BLE Tx

_	No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)		Margin (dB)	Remark
	1	30.970	24.26	0.64	-2.37	22.53	40.00	17.47	QP
	2	128.940	17.89	1.14	-1.80	17.23	43.50	26.27	QP
	3	260.860	18.43	1.61	-1.72	18.32	46.00	27.68	QP
	4	373.380	20.76	1.95	-1.14	21.57	46.00	24.43	QP
	5	470.380	22.80	2.25	-1.02	24.03	46.00	21.97	QP
	6	574.170	24.46	2.51	-0.57	26.40	46.00	19.60	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.



Frequency: 1GHz~18GHz



Site no. : 3m Chamber

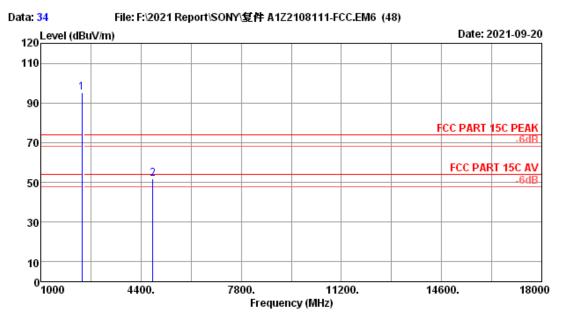
Data no. : 33 Ant. pol. : HORIZONTAL Dis. / Ant. : 3m 2021 MCTD1209-3006

: FCC PART 15C PEAK

Env. / Ins. : 23.8*C/53.5% Engineer : Lynn

Test Mode : BLE1M 2402MHz Tx





Site no. : 3m Chamber Data no. : 34

Dis. / Ant. : 3m 2021 MCTD1209-3006 Ant. pol. : HORIZONTAL

Limit : FCC PART 15C PEAK

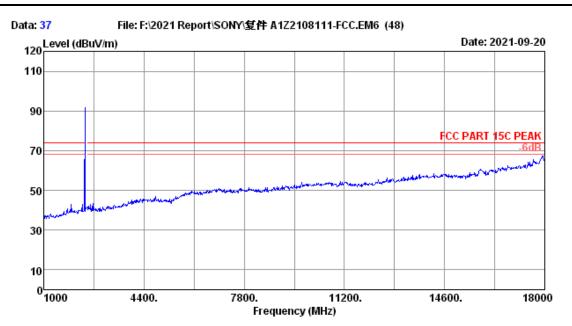
Env. / Ins. : 23.8*C/53.5% Engineer : Lynn

Test Mode : BLE1M 2402MHz Tx

No.	Freq.	Factor	Cable Loss (dB)	Reading (dBuV)	factor	Emission Level (dBuV/m)		Margin (dB)	Remark
_	2402.00 4804.00				35.24 34.46	95.11 51.63	74.00	22.37	Peak Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.





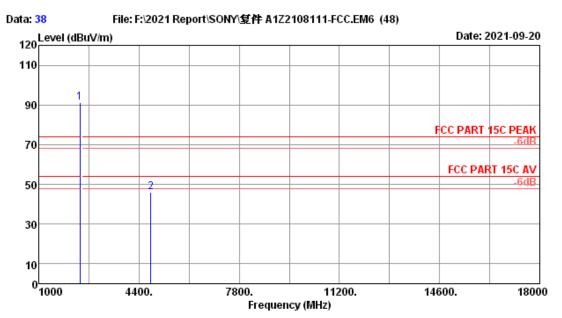
Site no. : 3m Chamber Data no. : 37
Dis. / Ant. : 3m 2021 MCTD1209-3006 Ant. pol. : VERTICAL

Limit : FCC PART 15C PEAK

Env. / Ins. : 23.8*C/53.5% Engineer : Lynn

Test Mode : BLE1M 2402MHz Tx





Site no. : 3m Chamber Data no. : 38
Dis. / Ant. : 3m 2021 MCTD1209-3006 Ant. pol. : VERTICAL

Limit : FCC PART 15C PEAK

Env. / Ins. : 23.8 * C / 53.5 * Engineer : Lynn

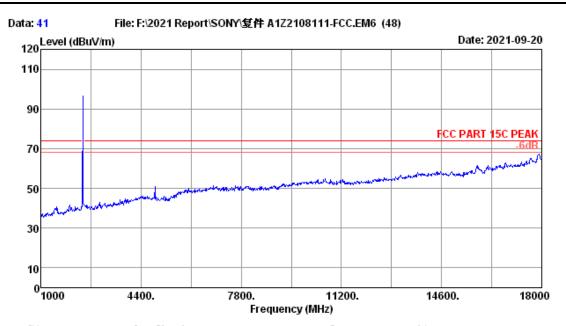
Test Mode : BLE1M 2402MHz Tx

No.	Freq.	Ant. Factor (dB/m)		Reading (dBuV)	factor		Limits	Margin (dB)	Remark	
_	2402.00 4804.00		1.66 2.66	96.74 44.97		91.05 45.86	74.00	28.14	Peak 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

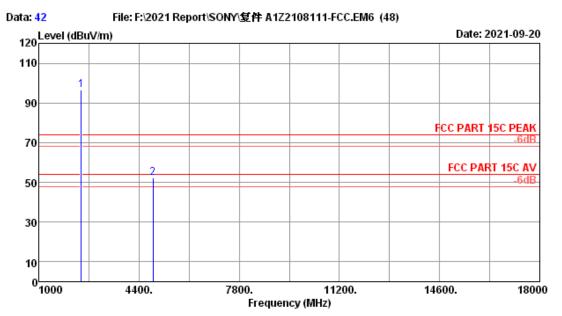
Dis. / Ant. : 3m 2021 MCTD1209-3006 Ant. pol. : HORIZONTAL

Limit : FCC PART 15C PEAK

Env. / Ins. : 23.8*C/53.5% Engineer : Lynn

Test Mode : BLE1M 2440MHz Tx





Site no. : 3m Chamber Data no. : 42

Dis. / Ant. : 3m 2021 MCTD1209-3006 Ant. pol. : HORIZONTAL

Limit : FCC PART 15C PEAK

Env. / Ins. : 23.8*C/53.5% Engineer : Lynn

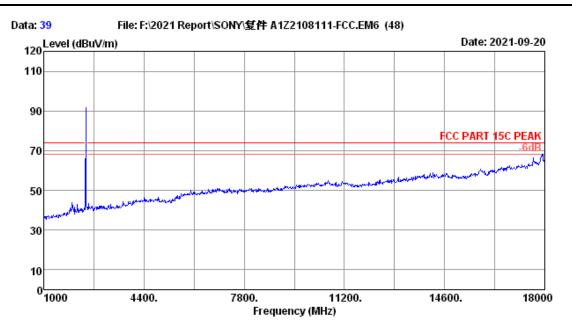
Test Mode : BLE1M 2440MHz Tx

No.	Freq.	Factor	Reading (dBuV)	factor		Limits	Margin (dB)	Remark
_	2440.00 4880.00		 101.94 51.12		96.38 52.07	74.00	21.93	Peak 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.





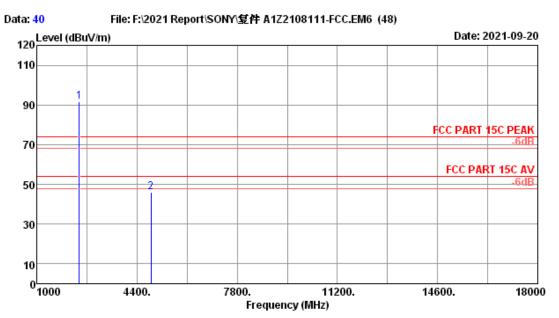
Site no. : 3m Chamber Data no. : 39
Dis. / Ant. : 3m 2021 MCTD1209-3006 Ant. pol. : VERTICAL

Limit : FCC PART 15C PEAK

Env. / Ins. : 23.8*C/53.5% Engineer : Lynn

Test Mode : BLE1M 2440MHz Tx





Site no. : 3m Chamber Data no. : 40
Dis. / Ant. : 3m 2021 MCTD1209-3006 Ant. pol. : VERTICAL

Limit : FCC PART 15C PEAK

Env. / Ins. : 23.8 * C / 53.5 * Engineer : Lynn

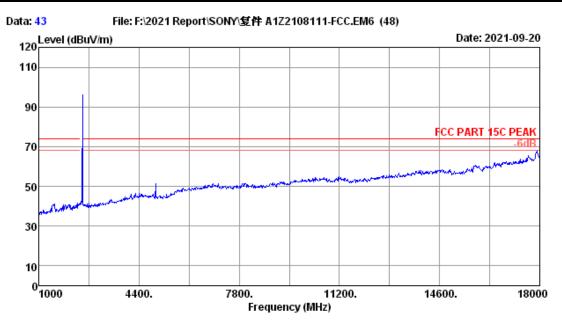
Test Mode : BLE1M 2440MHz Tx

No.	Freq.	Ant. Factor (dB/m)		Reading (dBuV)	factor		Limits	Margin (dB)	Remark	
_	2440.00 4880.00		1.68 2.69	97.02 45.07	35.24 34.47	91.46 46.02	74.00	27.98	Peak 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

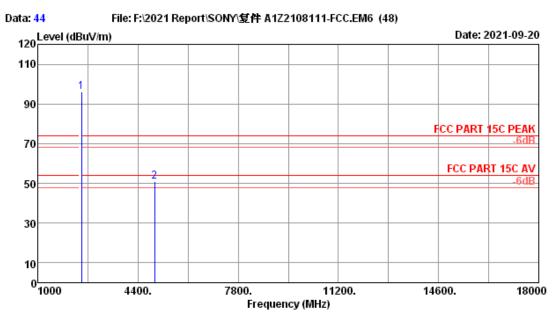
Dis. / Ant. : 3m 2021 MCTD1209-3006 Ant. pol. : HORIZONTAL

Limit : FCC PART 15C PEAK

Env. / Ins. : 23.8*C/53.5% Engineer : Lynn

Test Mode : BLE1M 2480MHz Tx





Site no. : 3m Chamber Data no. : 44

Dis. / Ant. : 3m 2021 MCTD1209-3006 Ant. pol. : HORIZONTAL

Limit : FCC PART 15C PEAK

Env. / Ins. : 23.8 * C / 53.5 * Engineer : Lynn

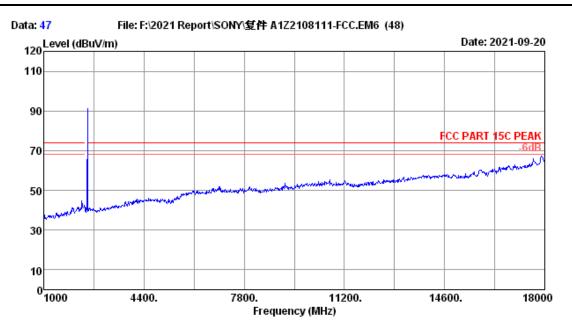
Test Mode : BLE1M 2480MHz Tx

No.	Freq. (MHz)	Factor	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)		Margin (dB)	Remark	
_	2480.00 4960.00				 95.93 50.96	74.00	23.04	Peak 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.





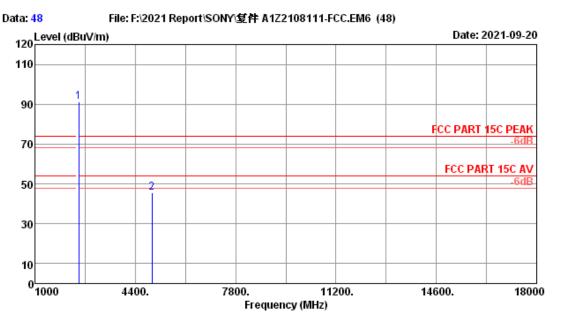
Site no. : 3m Chamber Data no. : 47
Dis. / Ant. : 3m 2021 MCTD1209-3006 Ant. pol. : VERTICAL

Limit : FCC PART 15C PEAK

Env. / Ins. : 23.8*C/53.5% Engineer : Lynn

Test Mode : BLE1M 2480MHz Tx





Site no. : 3m Chamber Data no. : 48
Dis. / Ant. : 3m 2021 MCTD1209-3006 Ant. pol. : VERTICAL

Limit : FCC PART 15C PEAK

Env. / Ins. : 23.8*C/53.5% Engineer : Lynn

Test Mode : BLE1M 2480MHz Tx

No.	Freq. (MHz)	Factor	Cable Loss (dB)	Reading (dBuV)	factor	Emission Level (dBuV/m)	Limits	Margin (dB)	Remark	
_	2480.00 4960.00			96.88 44.42			74.00	 28.56	Peak Peak	_

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading - Amp factor.



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.	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:

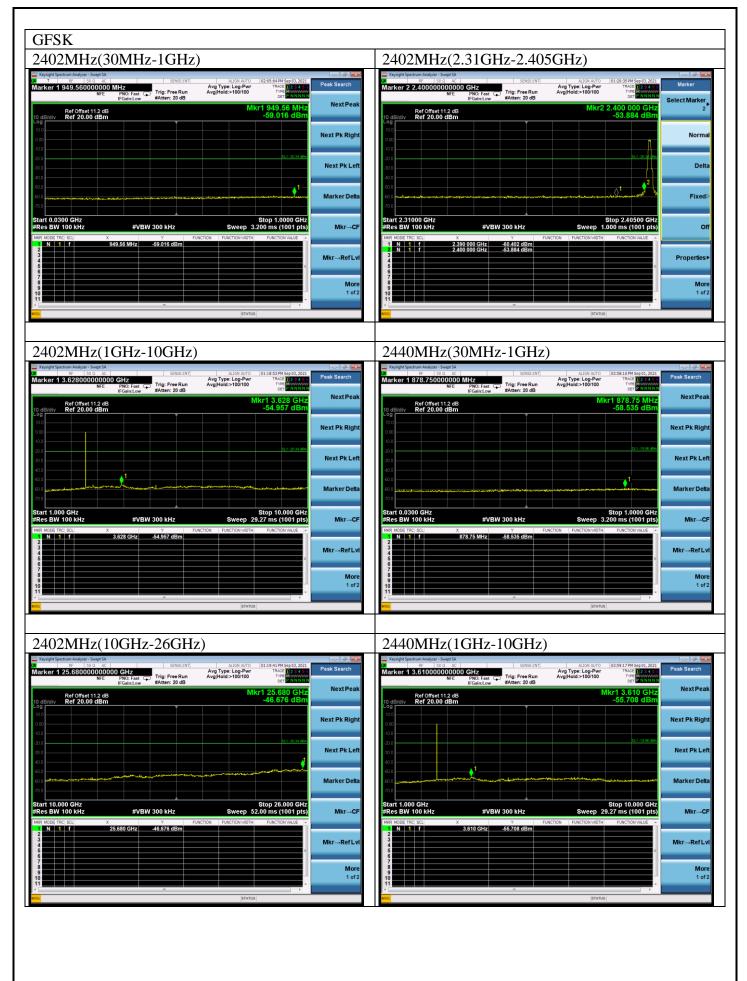
The transmitter output was connected to a spectrum analyzer, The resolution bandwidth is set to 100 kHz, The video bandwidth is set to 300 kHz and measure all the emissions With peak detector.

5.5. Test result

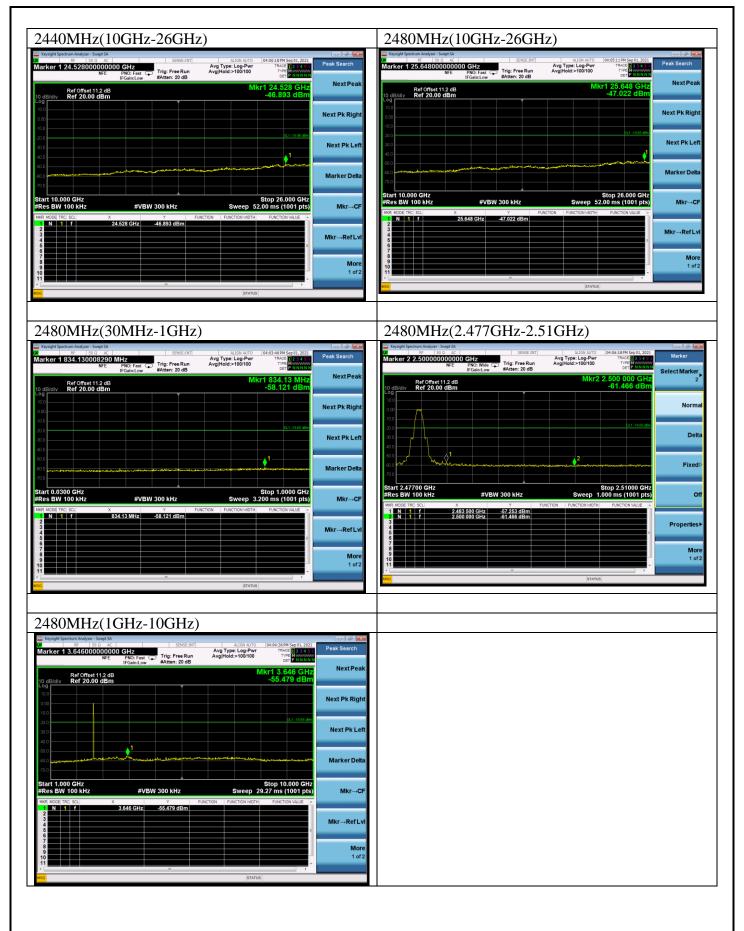
PASS (The testing data was attached in the next pages.)

EUT: Wireless Stereo Headset					
M/N: YY2957					
Test date: 2021-09-01~03	Pressure: 102.1±1.0 kpa	Humidity: 53.2±3.0%			
Tested by: Lynn	Test site: RF site	Temperature: 22.3±0.6℃			











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.	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 $\geq 3 \times \text{RBW}$, 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 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: Wireless Stereo Headset						
M/N: YY2957						
Test date: 2021-09-01	Pressure: 102.1±1.0 kpa	Humidity: 53.2±3.0%				
Tested by: Lynn	Test site: RF site	Temperature: 22.3±0.6℃				

Test Mode	Frequency (MHz)	6 dB bandwidth (kHz)	Limit (KHz)
	2402	721.5	≥ 500
GFSK	2440	722.9	≥ 500
	2480	723.0	≧ 500
Conclusion: PASS			

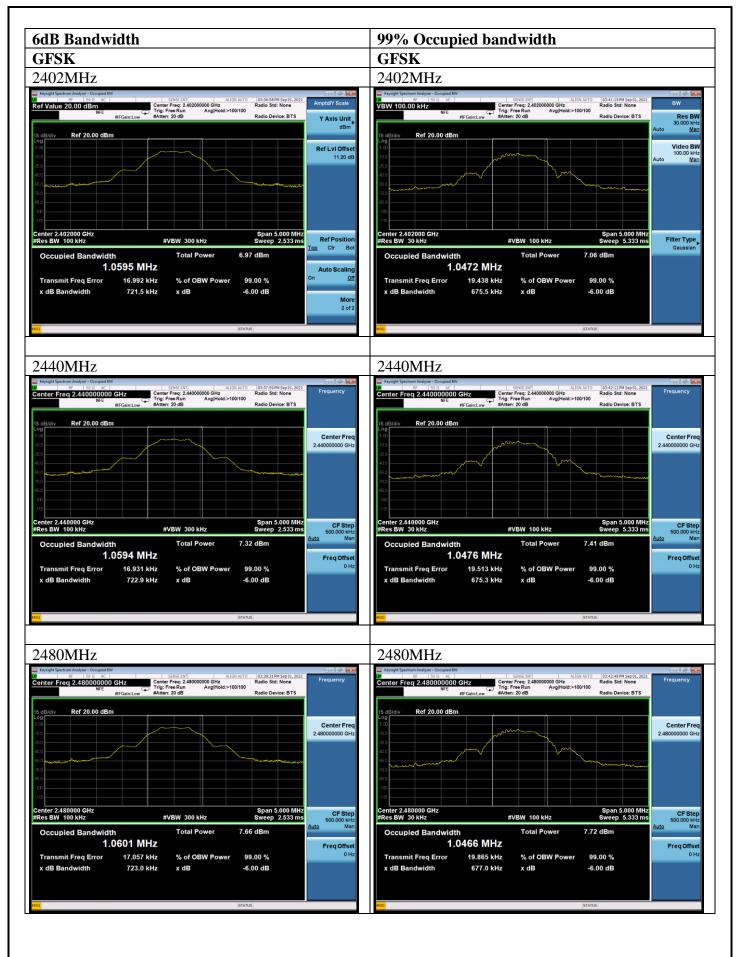
Conclusion . PASS

99% Occupied bandwidth:

EUT: Wireless Stereo Headset		
M/N: YY2957		
Test date: 2021-09-01	Pressure: 102.1±1.0 kpa	Humidity: 53.2±3.0%
Tested by: Lynn	Test site: RF site	Temperature: 22.3±0.6℃

Test Mode	Frequency (MHz)	99% Occupied bandwidth (kHz)	Limit (kHz)
	2402	1047.2	N/A
GFSK	2440	1047.6	N/A
	2480	1046.6	N/A
Conclusion: PASS			







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.	RF Cable	HUBER+SUHN ER	SUCOFLE X-106	505238/6	Apr.07,21	1 Year

7.2.Limit

For systems using digital modulation in the 2400—2483.5MHz, The Peak out put 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: Wireless Stereo Headset						
M/N: YY2957						
Test date: 2021-09-01	Pressure: 102.1±1.0 kpa	Humidity: 53.2±3.0%				
Tested by: Lynn	Test site: RF site	Temperature: 22.3±0.6°C				

Test Mode	Frequency (MHz)	Peak output Power (dBm)	Limit (dBm)
	2402	0.522	30
GFSK	2440	0.877	30
	2480	1.214	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+SU HNER	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:

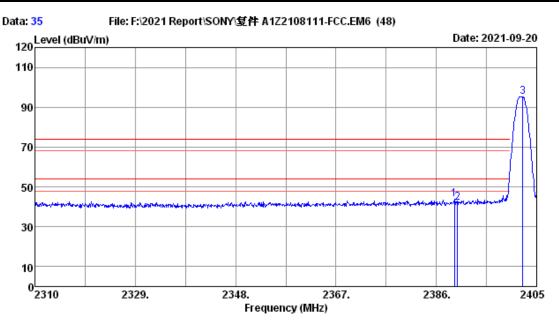
- 1. The EUT is placed on a turntable, which is 0.8m above the ground plane and worked at highest radiated power.
- 2. The turntable was rotated for 360 degrees to determine the position of maximum emission level
- 3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find 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) This is pulse Modulation device a duty cycle factor was used to calculate average level based measured peak level.

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

Data no. : 35 Ant. pol. : HORIZONTAL Dis. / Ant. : 3m 2021 MCTD1209-3006

: FCC PART 15C PEAK Limit

Env. / Ins. : 23.8*C/53.5% Engineer : Lynn

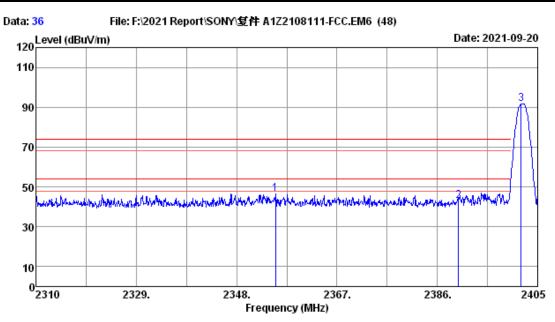
Test Mode : BLE1M 2402MHz Tx

		Ant.	Cable		Amp	Emission			
No.	Freq.	Factor	Loss	Reading	factor	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
1	2389.42	27.89	1.65	49.32	35.24	43.62	74.00	30.38	Peak
2	2390.00	27.89	1.65	47.99	35.24	42.29	74.00	31.71	Peak
3	2402.34	27.89	1.66	100.94	35.24	95.25			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. : 36

Dis. / Ant. : 3m 2021 MCTD1209-3006 Ant. pol. : VERTICAL

Limit : FCC PART 15C PEAK

Env. / Ins. : 23.8*C/53.5% Engineer : Lynn

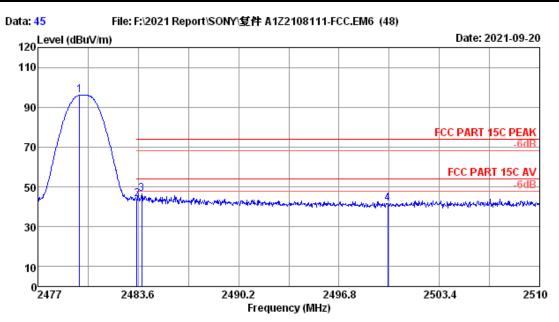
Test Mode : BLE1M 2402MHz Tx

No.	Freq. (MHz)	Ant. Factor (dB/m)		_	factor	Emission Level (dBuV/m)	Limits	Margin (dB)	Remark
1	 2355.41	27.82	1.64	52.38	35.24	46.60	74.00	 27.40	Peak
_	2390.00		1.65	48.45	35.24	42.75	74.00	31.25	Peak
3	2401.87	27.89	1.66	97.22	35.24	91.53			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 Ant. pol. : HORIZONTAL Dis. / Ant. : 3m 2021 MCTD1209-3006

: FCC PART 15C PEAK Limit

Env. / Ins. : 23.8*C/53.5% Engineer : Lynn

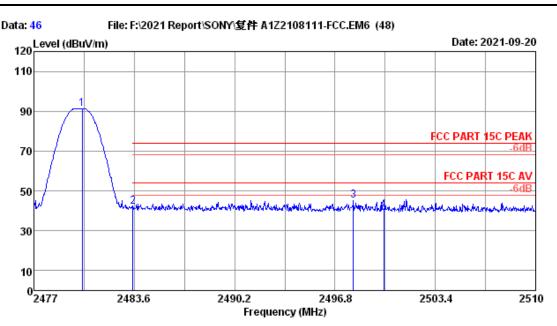
Test Mode : BLE1M 2480MHz Tx

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	2479.74	28.07	1.69	101.45	35.25	95.96			Peak
2	2483.50	28.07	1.69	49.53	35.25	44.04	74.00	29.96	Peak
3	2483.83	28.07	1.69	52.09	35.25	46.60	74.00	27.40	Peak
4	2500.00	28.10	1.70	47.11	35.25	41.66	74.00	32.34	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. : 46 Ant. pol. : VERTICAL Dis. / Ant. : 3m 2021 MCTD1209-3006

: FCC PART 15C PEAK Limit

Env. / Ins. : 23.8*C/53.5% Engineer : Lynn

Test Mode : BLE1M 2480MHz 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	2480.17	28.07	1.69	96.87	35.25	91.38			Peak
2	2483.50	28.07	1.69	47.37	35.25	41.88	74.00	32.12	Peak
3	2498.02	28.10	1.70	50.71	35.25	45.26	74.00	28.74	Peak
4	2500.00	28.10	1.70	45.71	35.25	40.26	74.00	33.74	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.	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:

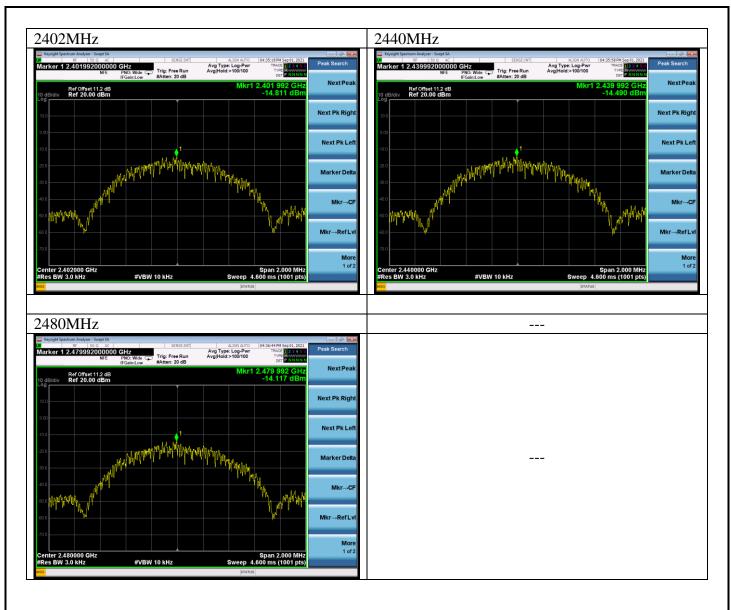
- a) Set analyzer center frequency to DTS channel center frequency.
- b) Set the span to 1.5 times the DTS bandwidth.
- c) Set the RBW to $3 \text{ kHz} \le \text{RBW} \le 100 \text{ kHz}$.
- d) Set the VBW \geq [3 × RBW].
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = max hold.
- 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: Wireless Stereo Headset					
M/N: YY2957					
Test date: 2021-09-01	Pressure: 102.1±1.0 kpa	Humidity: 53.2±3.0%			
Tested by: Lynn	Test site: RF site	Temperature: 22.3±0.6°C			

Test Mode	Frequency	Power density	Limit	
Test Mode	(MHz)	(dBm/3kHz)	(dBm/3kHz)	
	2402	-14.811	8	
GFSK	2440	-14.490	8	
	2480	-14.117	8	
Conclusion: P.	ASS			







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 is 2.28dBi.



11.	DEVIATION TO TEST SPE	ECIFICA'	TIONS	
	[NONE]			
		THE END		