FCC TEST REPORT(Bluetooth)

for

Dongguan Meiloon Acoustic Equipments Co., Ltd.

active loudspeaker

Model Number : PW300

FCC ID: 2AJAAPW300BT
IC :21761PW300BT

Prepared for	:	Dongguan Meiloon Acoustic Equipments Co., Ltd.
Address	:	77, Yuanlin Road Fenghuanggang Ind, Estate, Tangxia Town, 523727 Dongguan City, Guangdong Province, China
Prepared by	:	Keyway Testing Technology Co., Ltd.
Address	:	Building 1, Baishun Industrial Zone, Zhangmutou Town, Dongguan, Guangdong, China
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Report No.	:	17KWE045386F
Date of Test	:	June. 01~16, 2017
Date of Report	:	June. 17, 2017

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Test Report Declaration Page

Keyway Testing Technology Co., Ltd.

Address:	Dongguan Meiloon Acoustic Equipments Co., Ltd. 77, Yuanlin Road Fenghuanggang Ind, Estate, Tangxia Town, 523727 Dongguan City, Guangdong Province, China
Manufacturer: **Address:**	Paradigm Electronics Inc. 205 Annagem Blvd, Mississauga, L5T2V1, Canada
Factor: **Address:**	Dongguan Meiloon Acoustic Equipments Co., Ltd. 77, Yuanlin Road Fenghuanggang Ind, Estate, Tangxia Town, 523727 Dongguan City, Guangdong Province, PEOPLE'S REPUBLIC OF CHINA.
E.U.T:	active loudspeaker
Model Number:	PW300
Trade Name:	ParadIgm **Serial No.:** ------
Date of Receipt:	Apr. 06, 2017 **Date of Test:** June. 01~16, 2017
Test Specification:	FCC Part 15, Subpart C Section 15.247: 2016 ANSI C63.10:2013 RSS-247 Issue 2,2017 RSS-Gen Issue 4 November 2014
Test Result:	The equipment under test was found to be compliance with the requirements of the standards applied. **Issue Date: June. 17, 2017**

Tested by:	Reviewed by:	Approved by:
Keven Wu / Engineer	Mark Li / Supervisor	Andy Gao / Supervisor

Other Aspects:
None.

Abbreviations: OK/P=passed fail/F=failed n.a/N=not applicable E.U.T=equipment under tested

This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Keyway Testing Technology Co., Ltd.

1. TEST SUMMARY

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

2.GENERAL PRODUCT INFORMATION

2.1. Product Function

Refer to Technical Construction Form and User Manual.

2.2. Description of Device (EUT)

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

2.3. Difference between Model Numbers

None.

2.4. Independent Operation Modes

The basic operation modes are:

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

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

2.5. Test Supporting System

N/A.

2.6. Product Version

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

Note: SW means software, HW means hardware.

2.7. Test Facilities

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

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

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

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

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

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

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

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

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

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

2.8. List of Test and Measurement Instruments

2.8.1. For conducted emission at the mains terminals test

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

2.8.2. For radiated emission test

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

3. TEST SET-UP AND OPERATION MODES

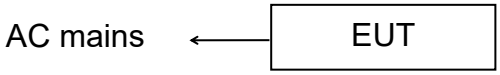
3.1. Principle of Configuration Selection

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

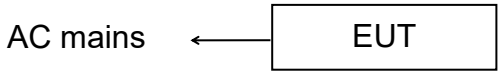
3.2. Block Diagram of Test Set-up

System Diagram of Connections between EUT and Simulators

Conducted Emission:



Radiated Emission:



(EUT: active loudspeaker)

3.3. Test Software

Software	Blue Test 3

3.4. Special Accessories and Auxiliary Equipment

None.

3.5. Countermeasures to Achieve EMC Compliance

None.

3.6. Test Environment:

Ambient conditions in the test laboratory:

Items	Actual
Temperature (℃)	21~23
Humidity (%RH)	50~65

4. MAXIMUM PEAK OUTPUT POWER

4.1. Limits

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

IC: RSS-247§5.4(2)

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

4.2. Test Procedure

For Peak power

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below

b. Spectrum Setting : RBW > the 20 dB bandwidth of the emission being measured
Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel
VBW $\geq$ RBW
Sweep = auto
Detector function = peak
Trace = max hold

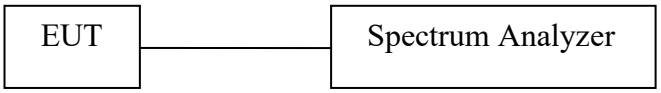
For AV power

a The Transmitter output (antenna port) was connected to the power meter.

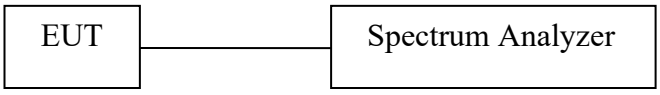
b Turn on the EUT and power meter and then record the power value.
Repeat above procedures on all channels needed to be tested.

4.3. Test setup

Peak power:



AV power:

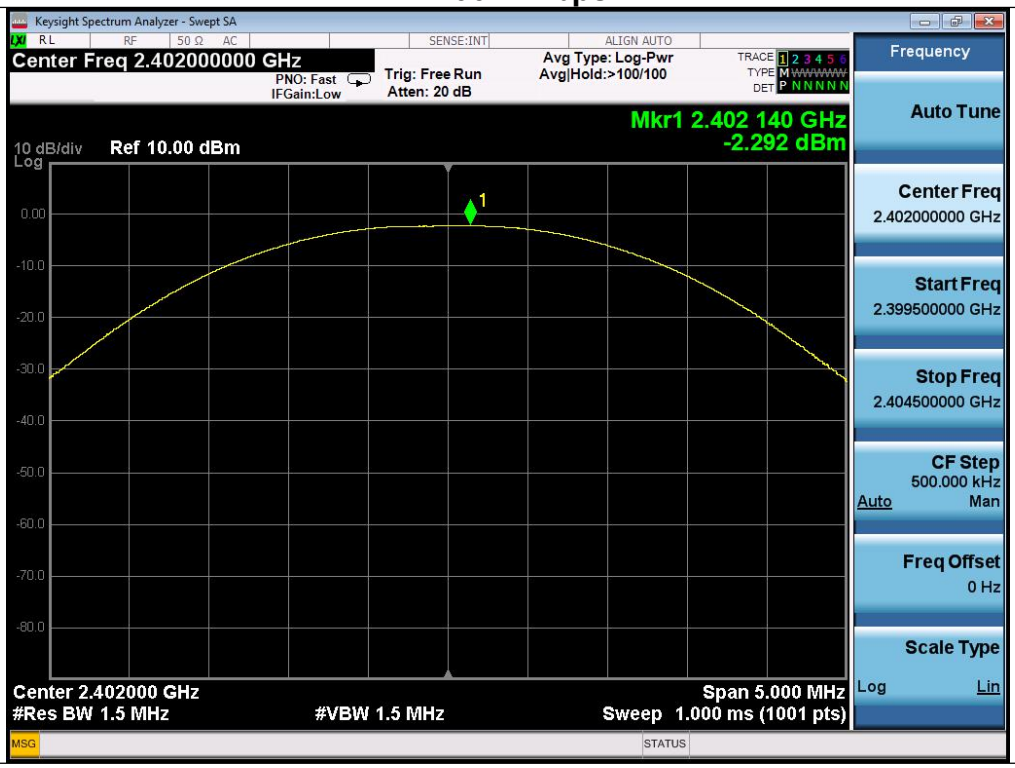


Test data:

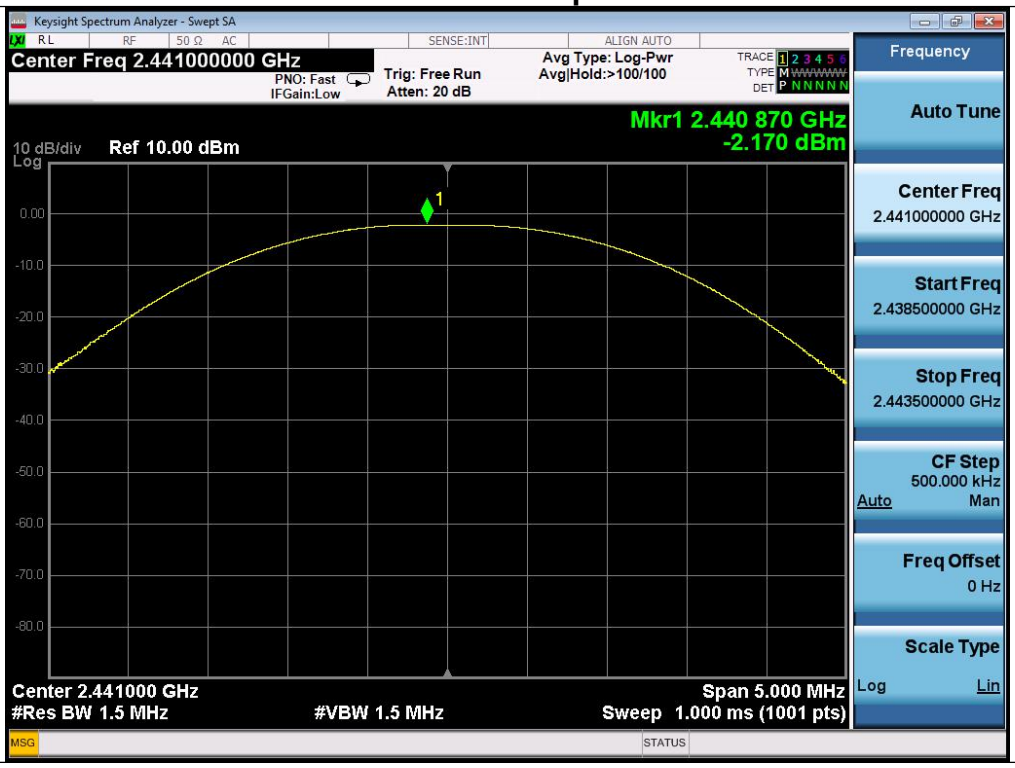
	Channel Frequency (MHz)	**Peak output Power dBm**	**Limit dBm**	**AV Output power dBm**	**EIRP dBm**	**Limit dBm**
GFSK	2402	-2.292	30	-3.864	-2.864	36
	2441	-2.170	30	-3.257	-2.257	36
	2480	-3.130	30	-4.528	-3.528	36
Pi/4DQPSK	2402	-3.352	20.96	-4.623	-3.623	36
	2441	-3.274	20.96	-4.414	-3.414	36
	2480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

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

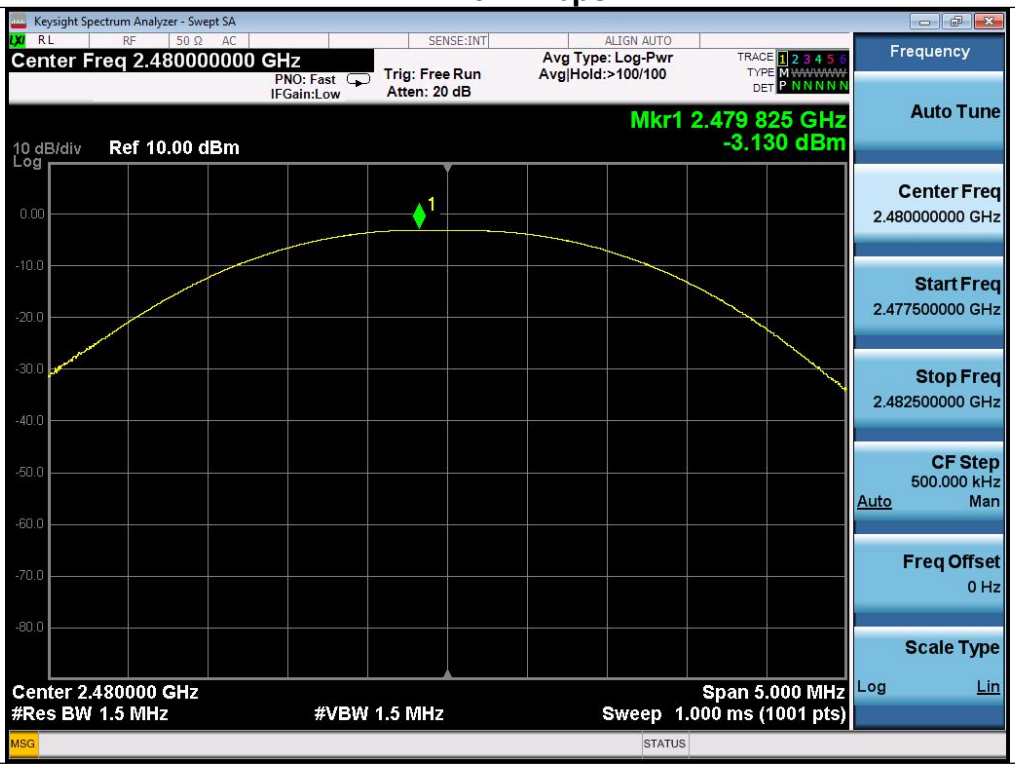
CH00 -1Mbps



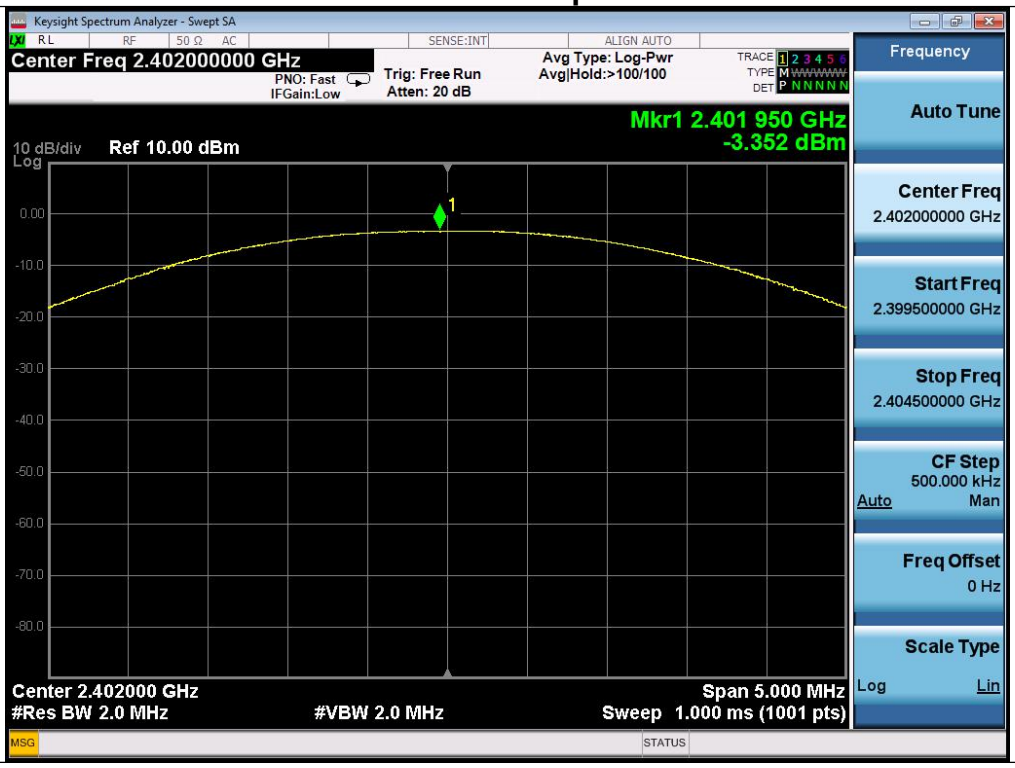
CH39 -1Mbps



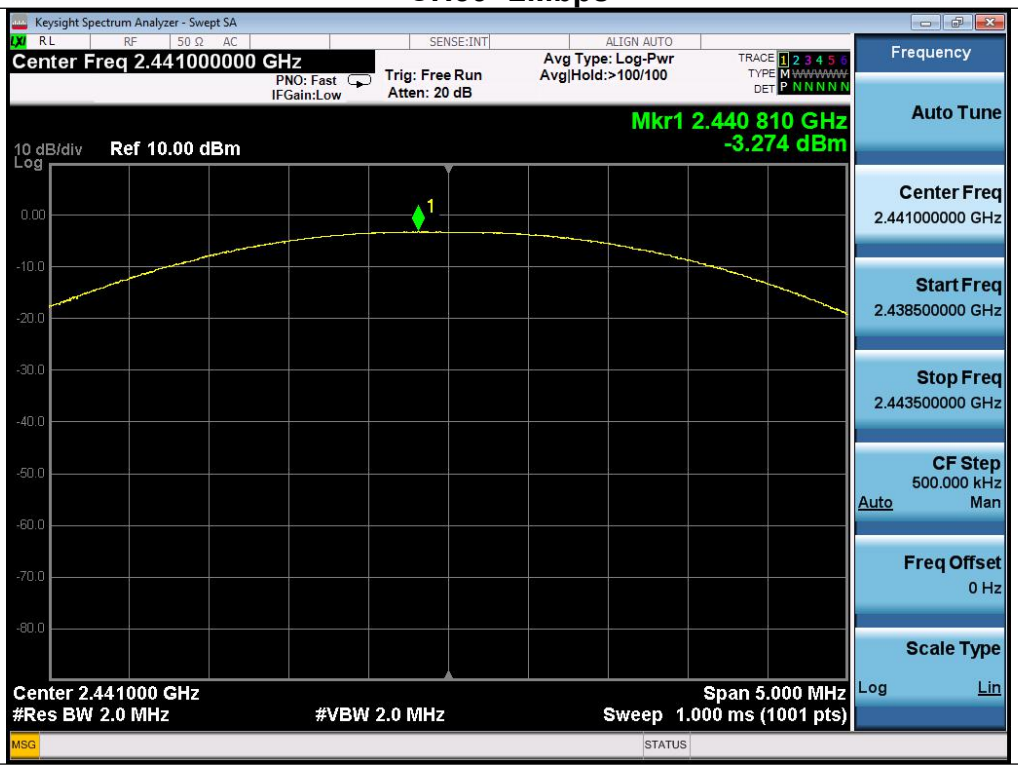
CH78 -1Mbps



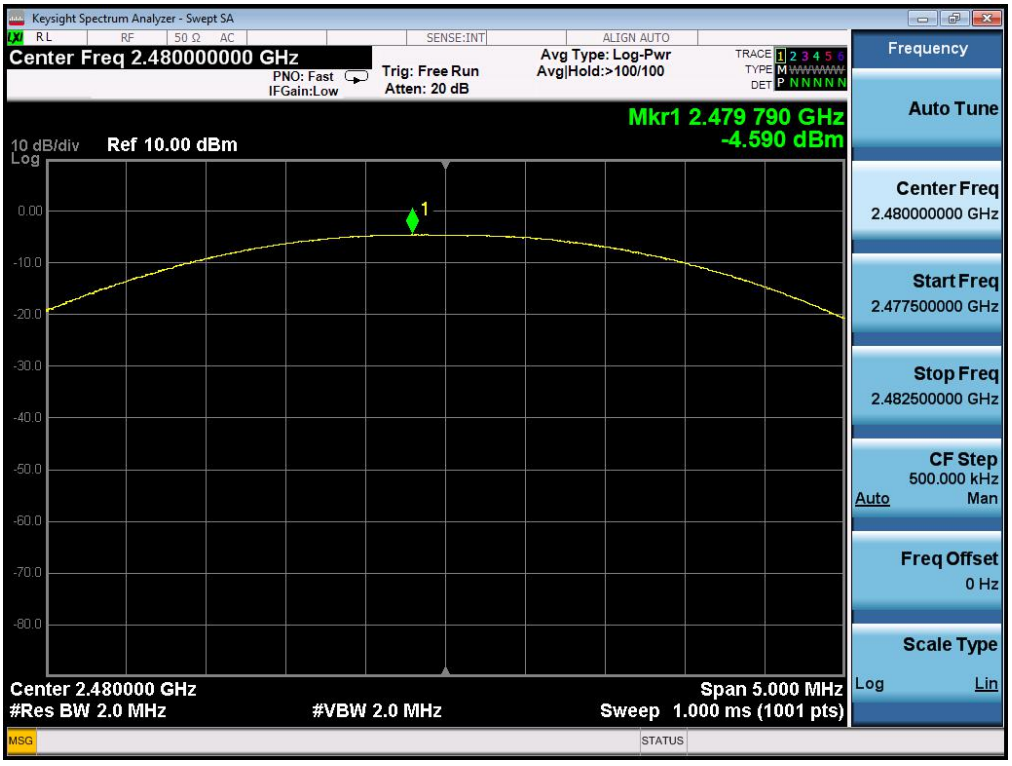
CH00 -2Mbps



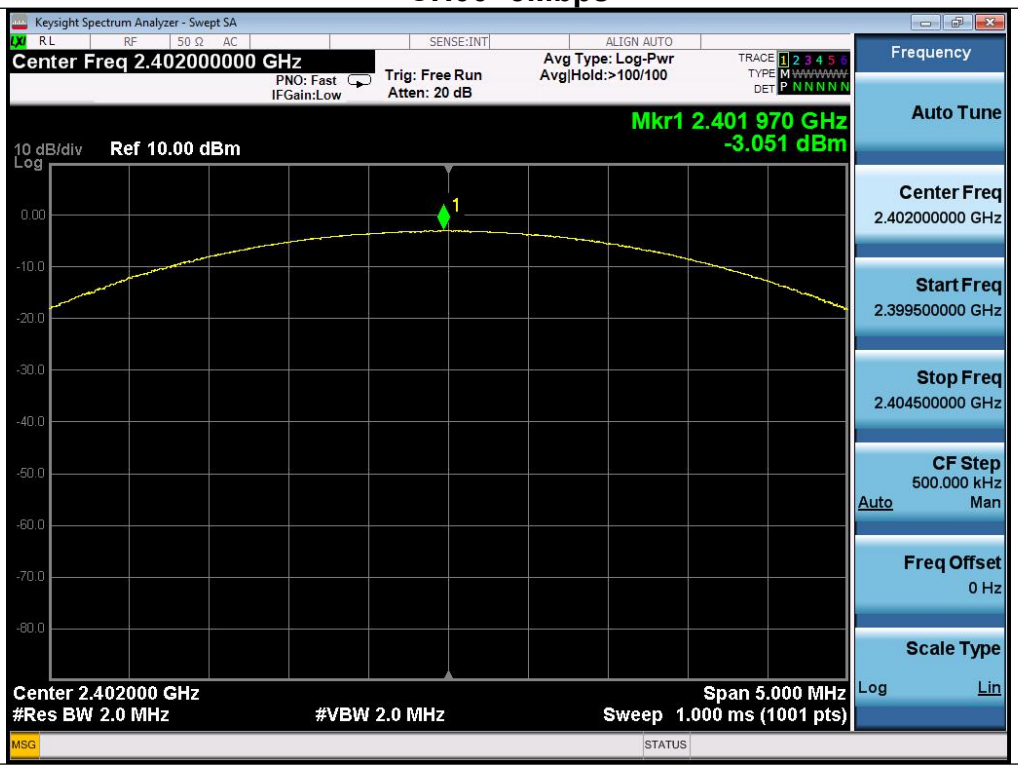
CH39 -2Mbps



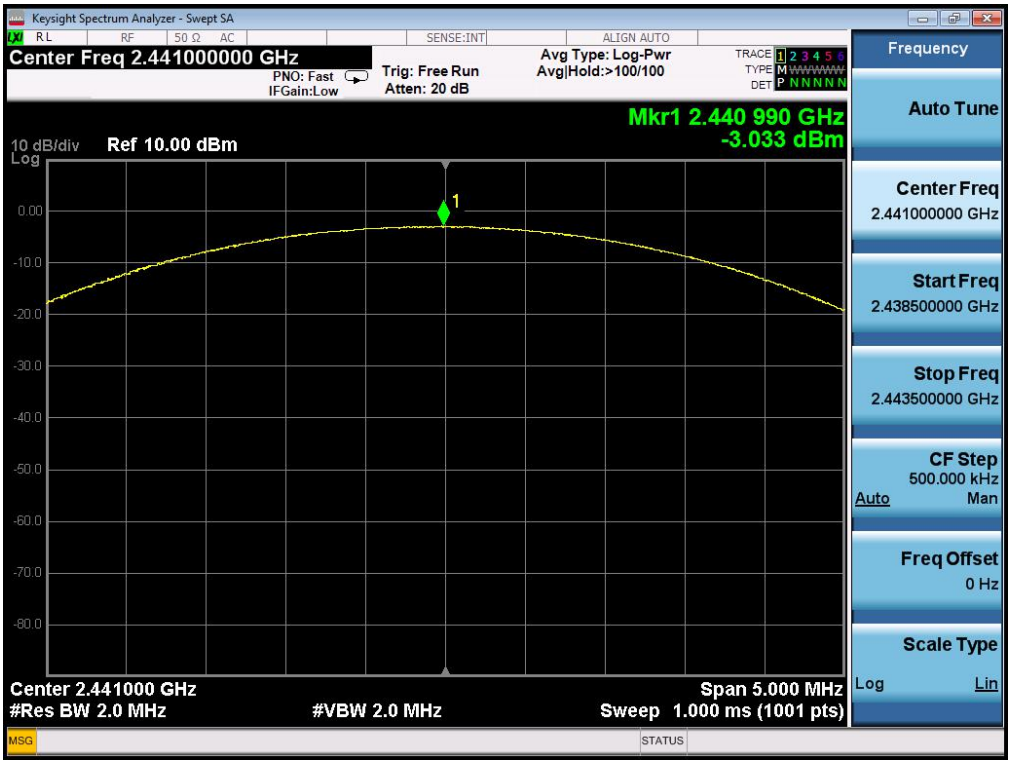
CH78 -2Mbps



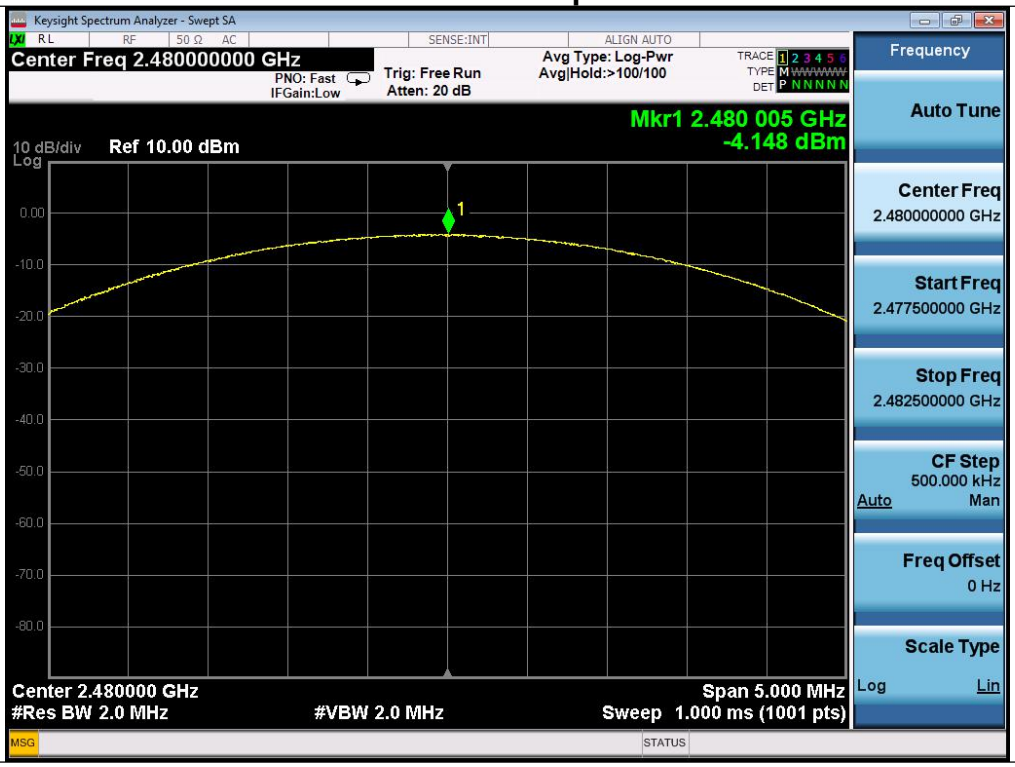
CH00 -3Mbps



CH39 -3Mbps



CH78 -3Mbps


Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω
AC
SENSE:INT
ALIGN AUTO
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Mkr1 2.480 005 GHz
-4.148 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
Center 2.480000 GHz
#Res BW 2.0 MHz
#VBW 2.0 MHz
Span 5.000 MHz
Sweep 1.000 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.477500000 GHz
Stop Freq
2.482500000 GHz
CF Step
500.000 kHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin
MSG
STATUS

5. EMISSION TEST RESULTS

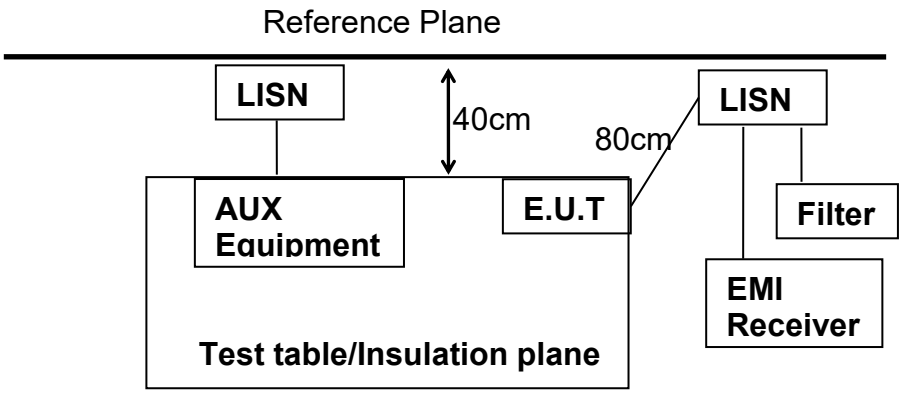
5.1. Conducted Emission at the Mains Terminals Test

5.1.1. Limit 15.207 limits & RSS-Gen §8.8

Frequency	Limit (dBuV)	
MHz	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50
NOTE: 1.The lower limit shall apply at the transition frequencies. 2.The limit decreases linearly with the logarithm of the frequency in the range 0,15 MHz to 0,50 MHz.		

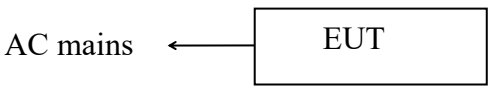
5.1.2. Test Setup

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



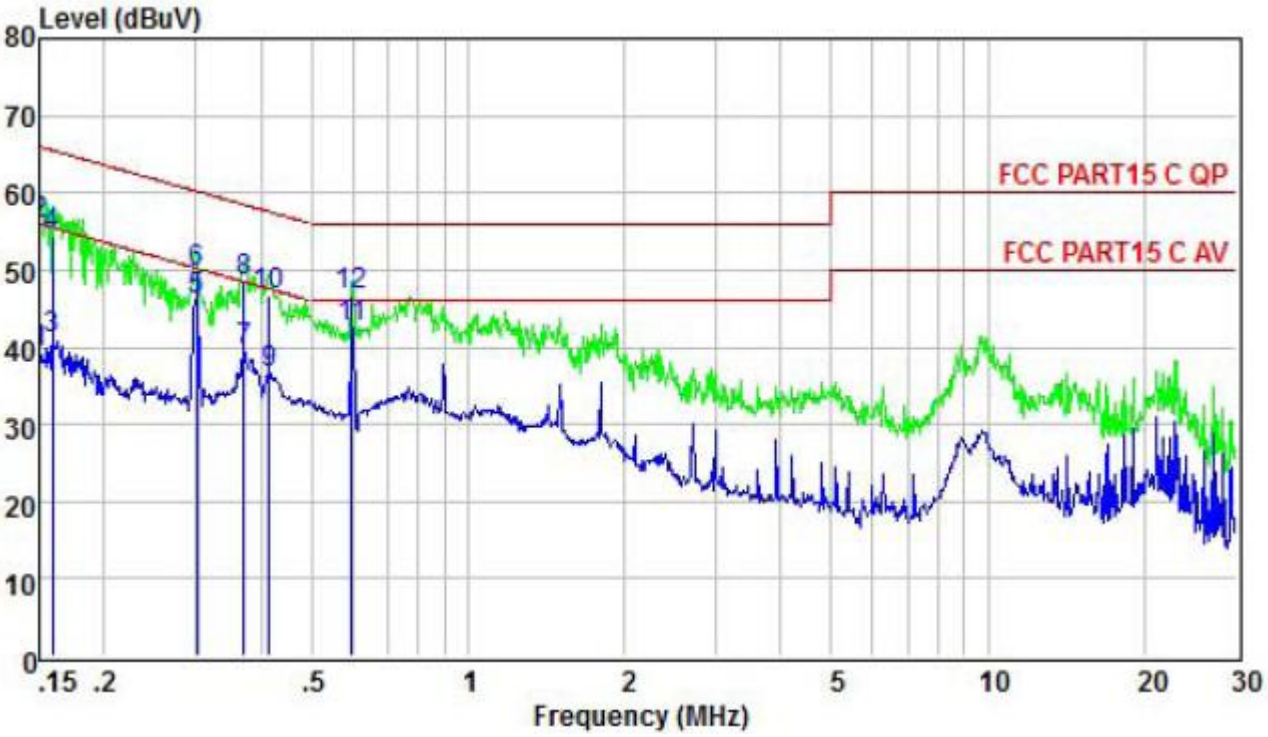
Remark: E.U.T. :Equipment Under Test
LISN: Line Impedance Stabilization Network
Test table height: 0.8m.

Test block



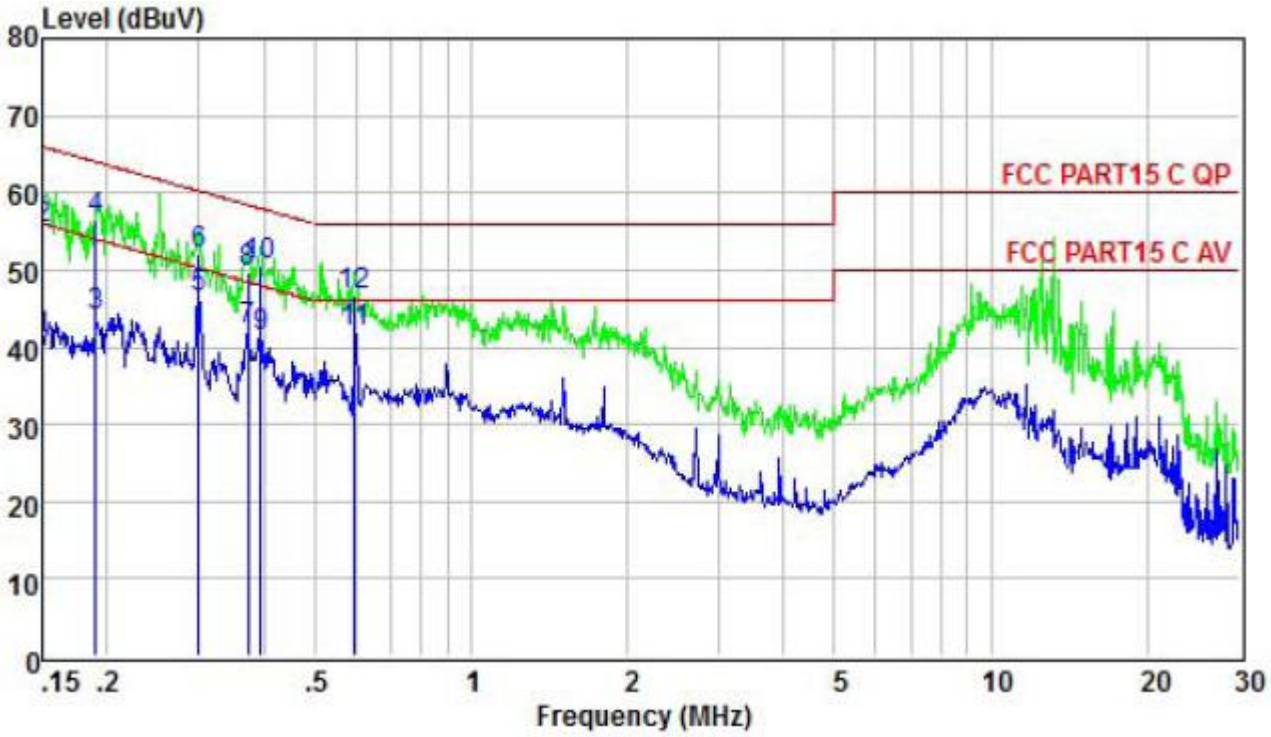
5.1.3. Test result

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



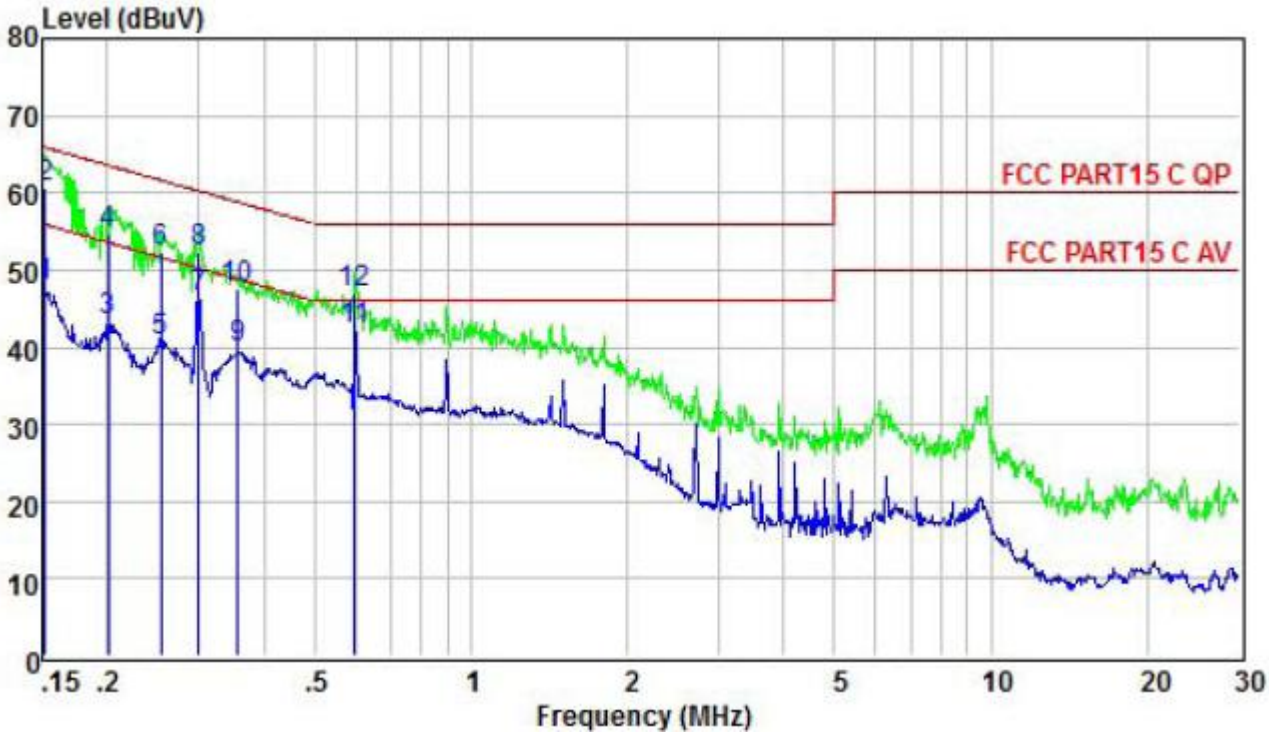
	Freq	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	
1	0.150	39.40	56.00	-16.60	Average
2	0.150	55.83	66.00	-10.17	QP
3	0.159	40.98	55.52	-14.54	Average
4	0.159	54.36	65.52	-11.16	QP
5	0.302	46.05	50.19	-4.14	Average
6	0.302	49.63	60.19	-10.56	QP
7	0.371	39.57	48.47	-8.90	Average
8	0.371	48.59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

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



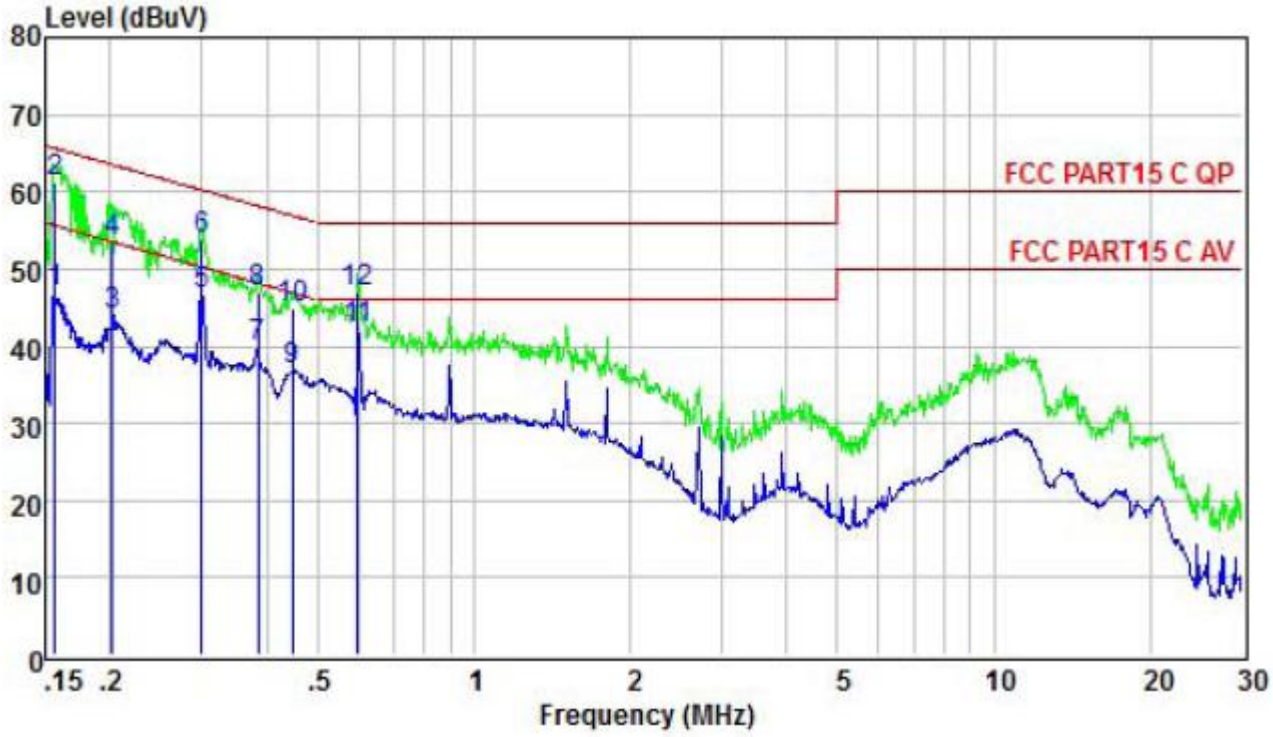
	Freq	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	
1	0.150	41.13	56.00	-14.87	Average
2	0.150	55.39	66.00	-10.61	QP
3	0.190	43.91	54.02	-10.11	Average
4	0.190	56.59	64.02	-7.43	QP
5	0.300	46.39	50.24	-3.85	Average
6	0.300	52.16	60.24	-8.08	QP
7	0.373	42.20	48.43	-6.23	Average
8	0.373	49.68	58.43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

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



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

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



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

5.2. Radiated Emission Test

5.2.1. Limit 15.209 limits

Frequency MHZ	Distance Meters	Filed 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 1000	3	74.0dB(μV)/m(Peak) 54.0dB(μV)/m(Average)	

5.2.2. Restricted bands of operation

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

5.2.3. Test setup

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

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

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

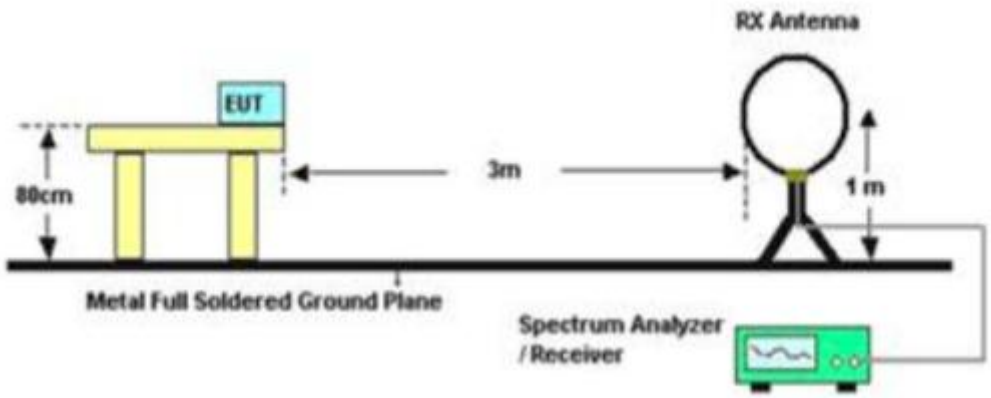
The bandwidth of the Spectrum's VBW is set at 3MHz and RBW is set at 1MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure above 1GHz, the EUT was placed on a turn table which was 1.5 m above the ground, for all test, used peak detector.

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

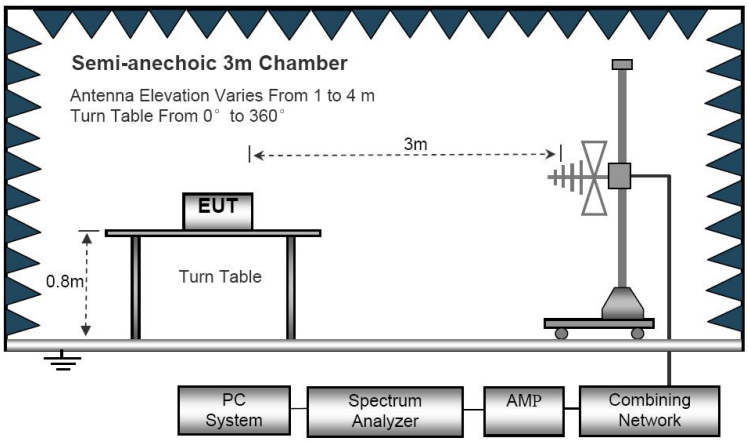
Notes: 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading-Preamp Factor.

2. Measurement Uncertainty: ±3.2 dB at a level of confidence of 95%.
3. For emissions above 1GHz, if peak level comply with average limit, then the average level is deemed to comply with average limit.
4. For emissions below 1GHz, pretest for all mode, The test data of the worst case condition(s) was reported on the following pages.
5. EUT Pre-scan X/Y/Z orientation, only worst case is presented in the report (Z orientation).
6. We pretest all modulation, The worst was GFSK, the worst data was show in the report.

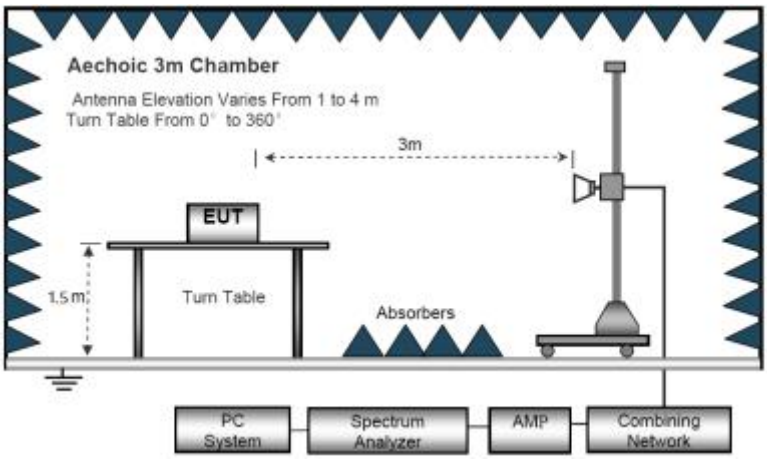
Radiated Emission Test-Up Frequency Below 30MHz



30MHz- 1GHz



Above 1GHz



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

Below 30MHz

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

Note:

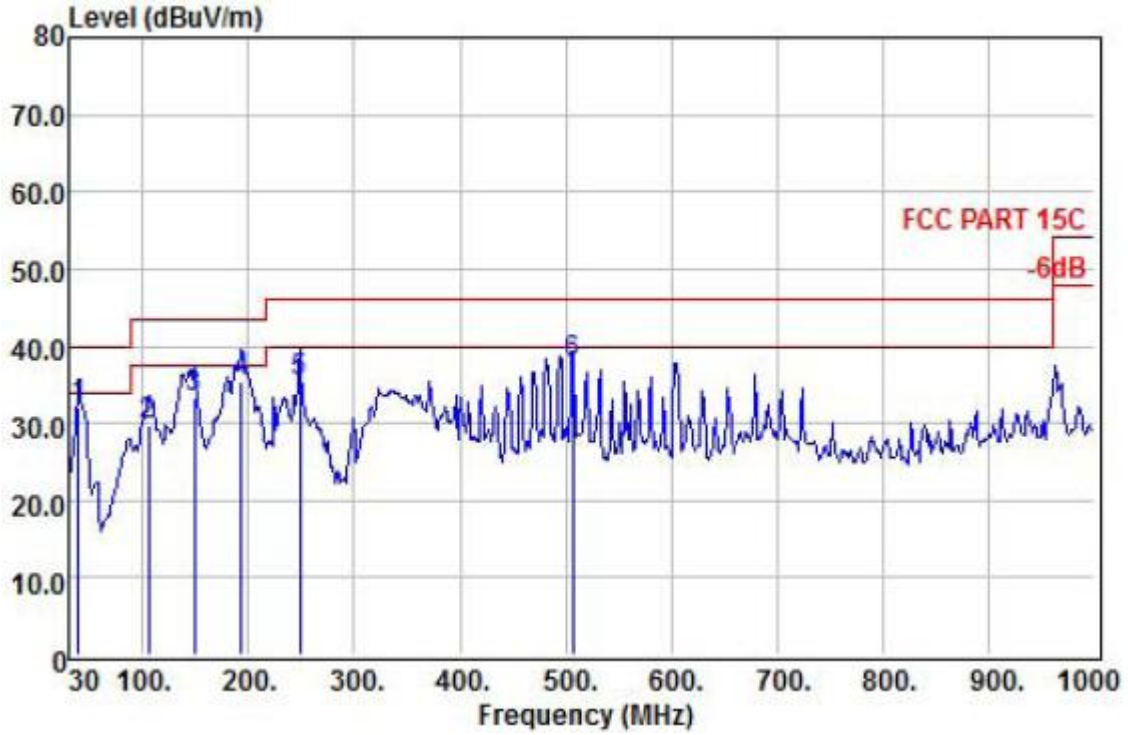
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor =40 log (specific distance/test distance)(dB);

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

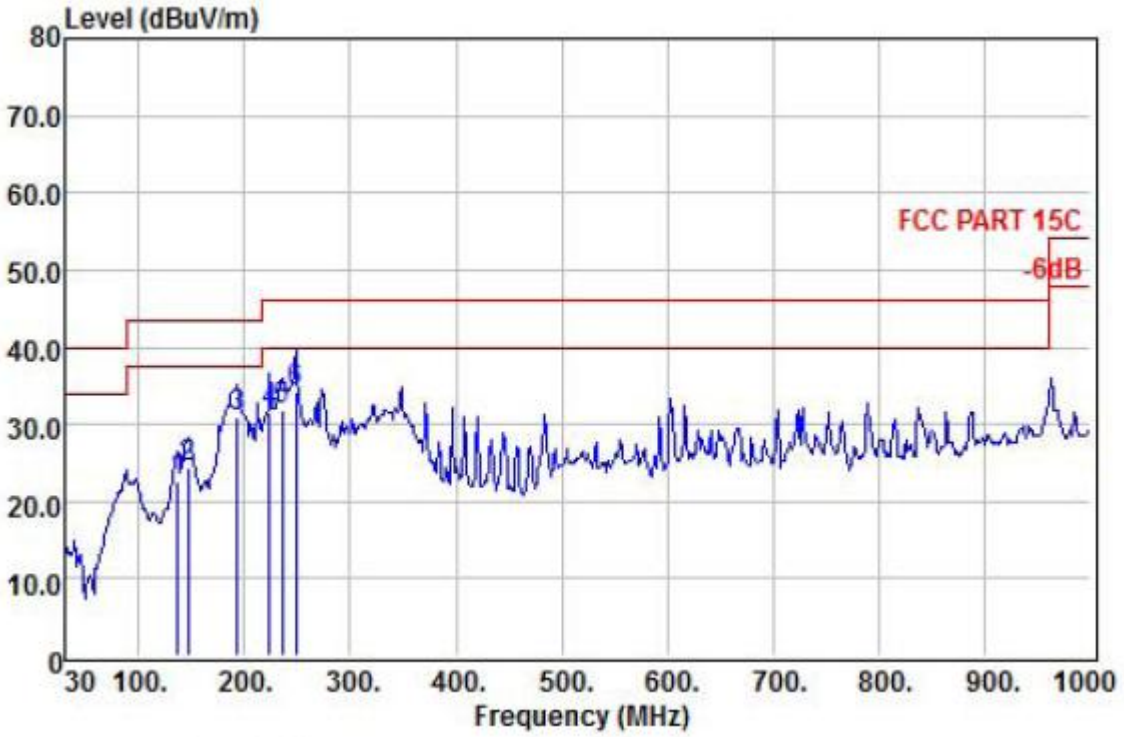
30MHz - 1GHz			
EUT：	active loudspeaker	Model Name ：	PW300
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010hPa	Test Mode：	TX-GFSK-2480
Test Voltage ：	AC 120V/60Hz		

Vertical



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

Horizontal



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

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

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

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

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

2.Over Limit= Absolute Level – Limit.

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

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

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

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

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

2.Over Limit= Absolute Level – Limit.

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

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

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

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

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

2.Over Limit= Absolute Level – Limit.

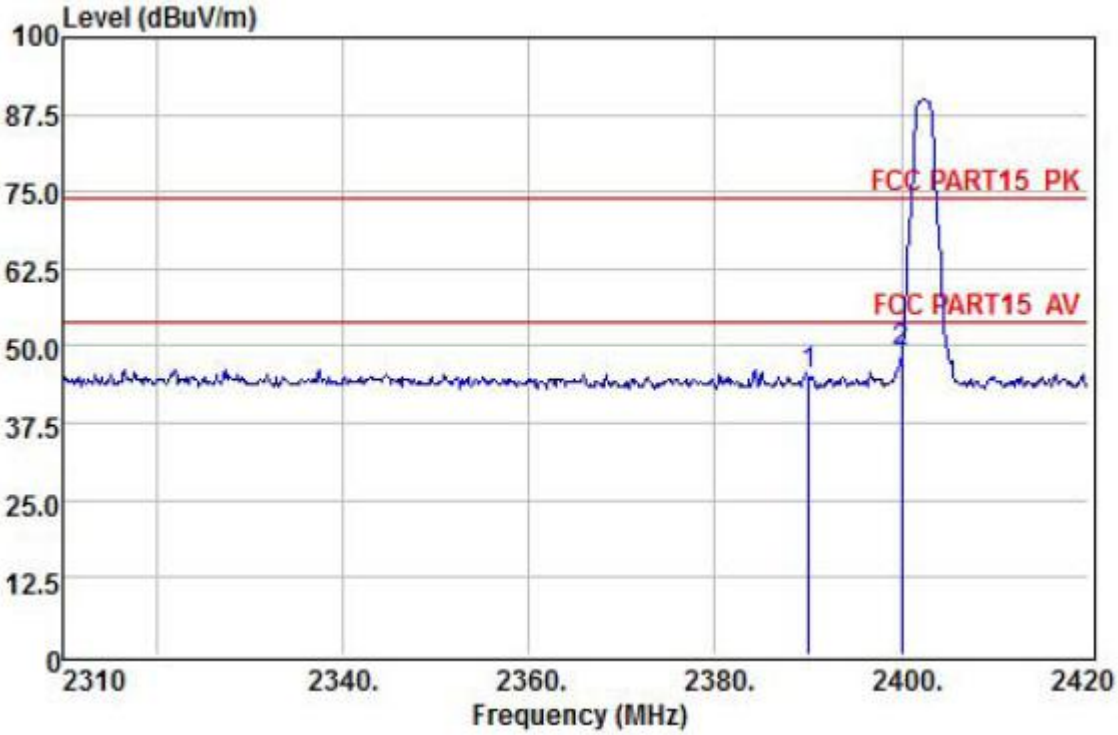
3.The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has not to be reported.

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

For radiated Bandedge test as follows:

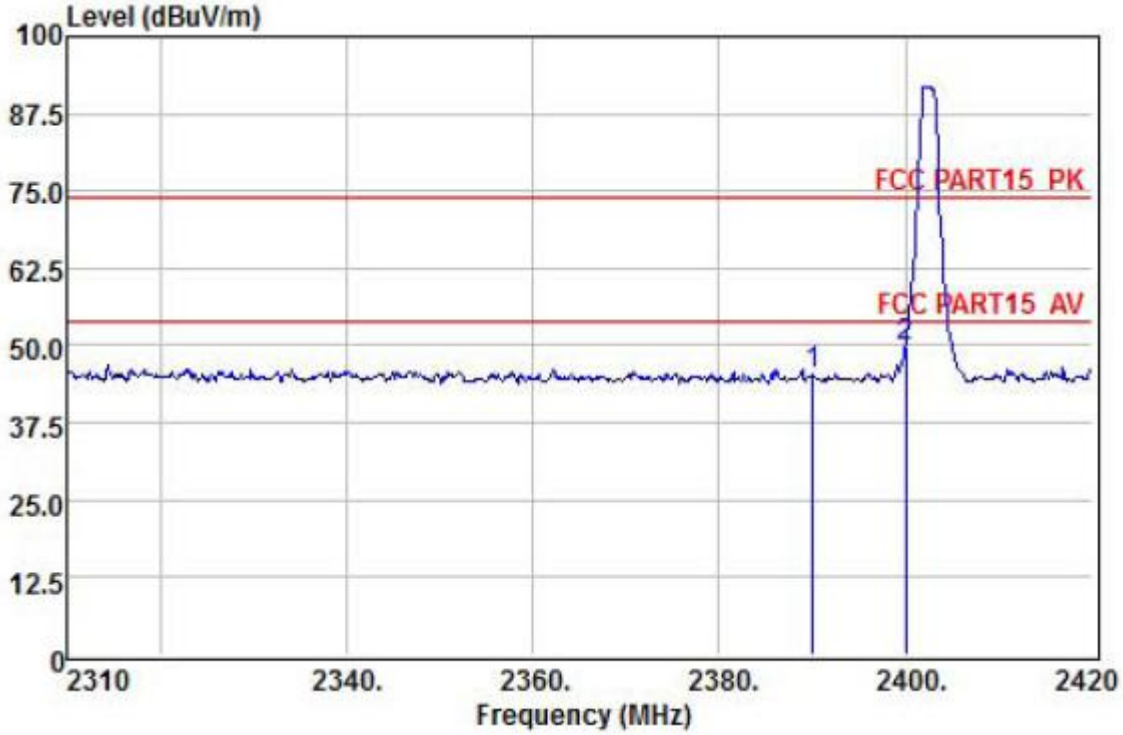
1M bps			
EUT：	active loudspeaker	Model Name ：	PW300
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010hPa	Test Mode：	TX-2402
Test Voltage ：	AC 120V/60Hz		

Vertical



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

Horizontal

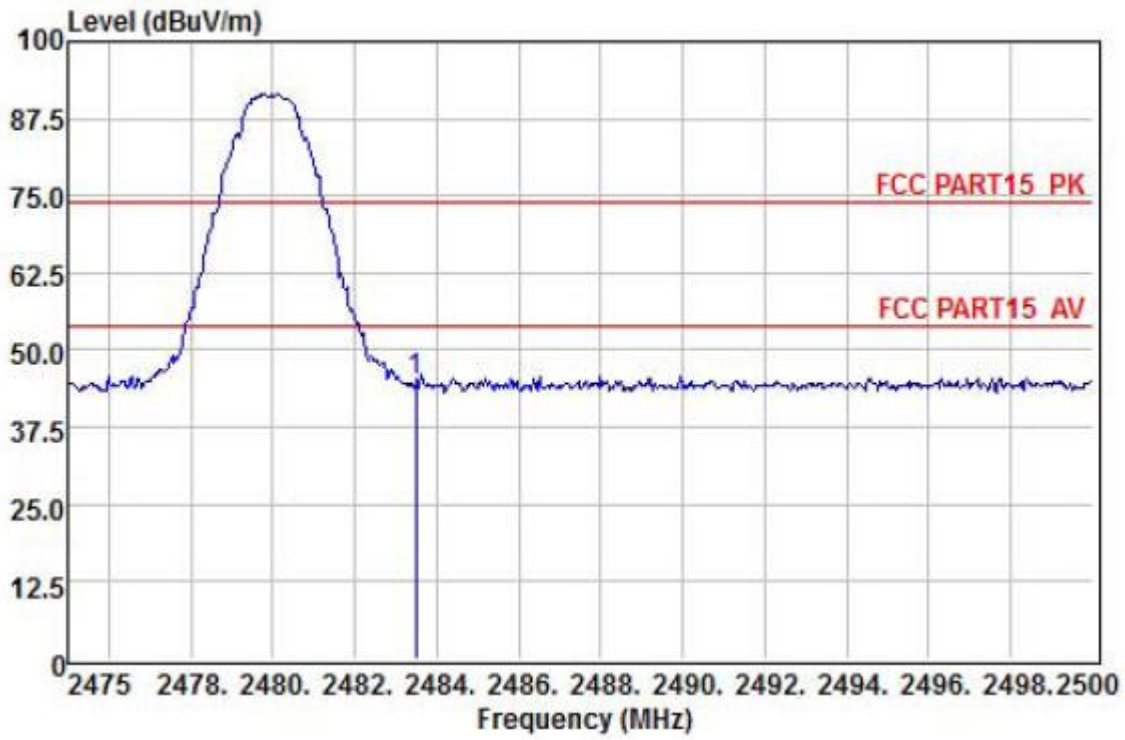


	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2390.00	39.61	28.72	3.36	26.32	45.37	74.00	-28.63	Peak
2	2400.00	43.88	28.72	3.38	26.32	49.66	74.00	-24.34	Peak

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

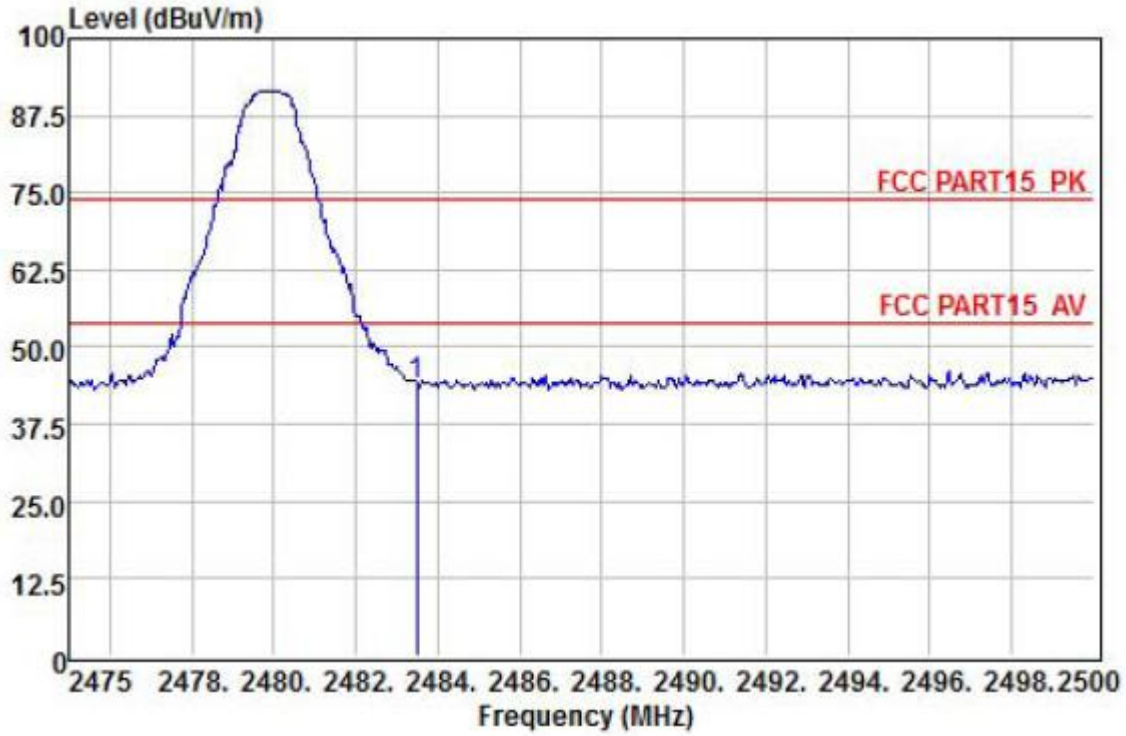
1M bps			
EUT：	active loudspeaker	Model Name ：	PW300
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010hPa	Test Mode：	TX-2480
Test Voltage ：	AC 120V/60Hz		

Vertical



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

Horizontal

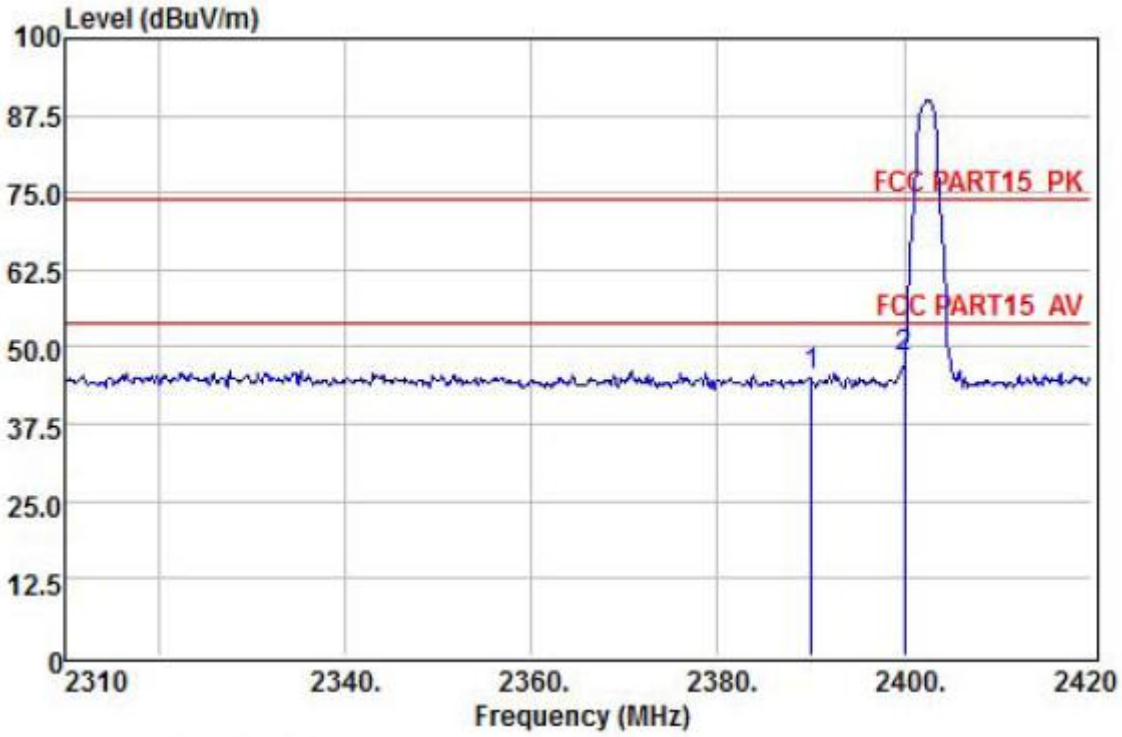


	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2483.50	37.85	28.79	3.48	26.34	43.78	74.00	-30.22	Peak

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

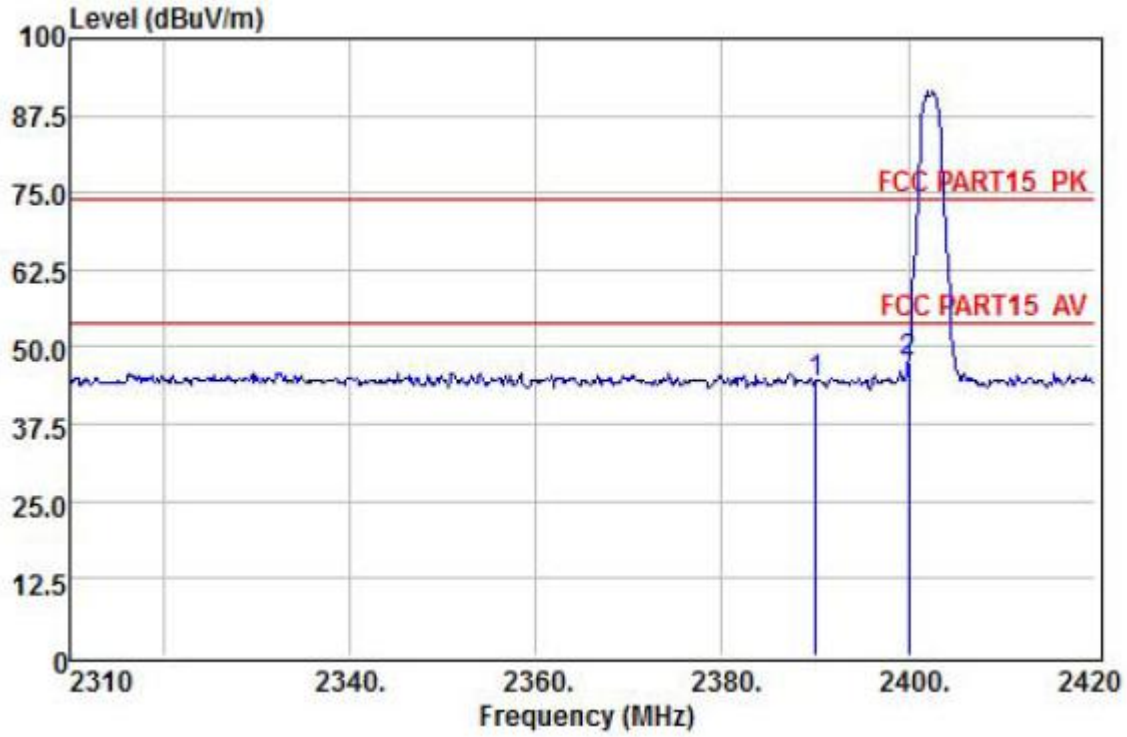
2M bps			
EUT：	active loudspeaker	Model Name ：	PW300
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010hPa	Test Mode：	TX-2402
Test Voltage ：	AC 120V/60Hz		

Vertical



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

Horizontal

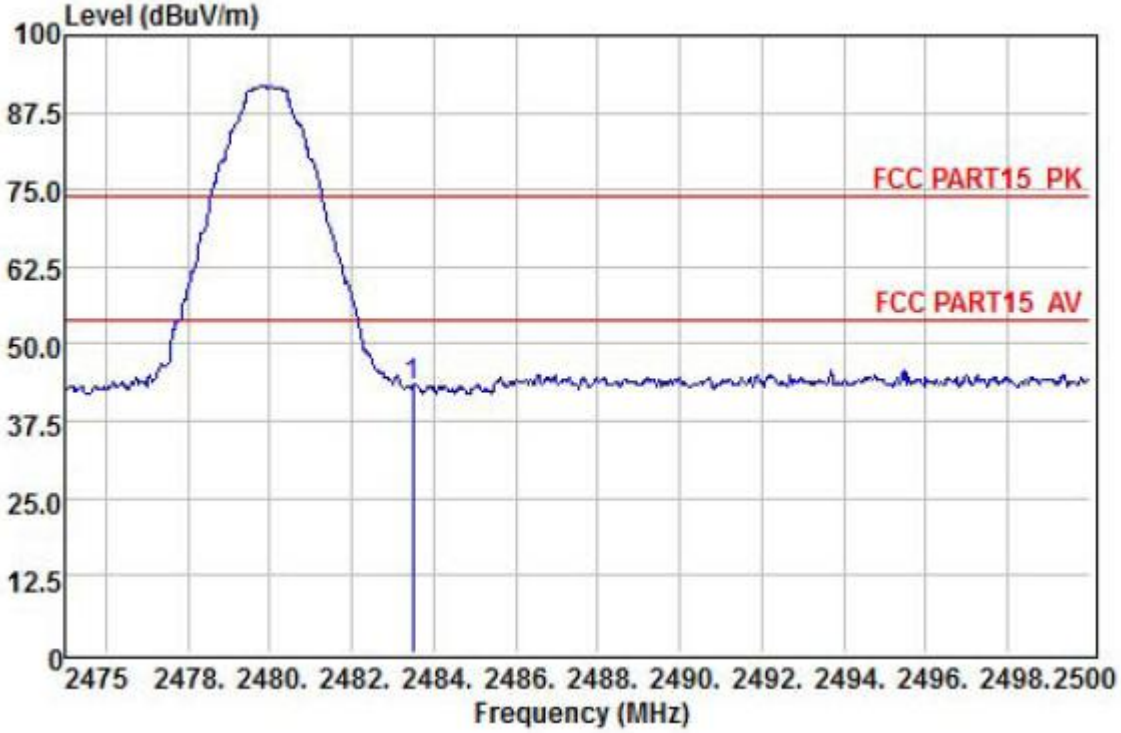


	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2390.00	38.37	28.72	3.36	26.32	44.13	74.00	-29.87	Peak
2	2400.00	41.85	28.72	3.38	26.32	47.63	74.00	-26.37	Peak

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

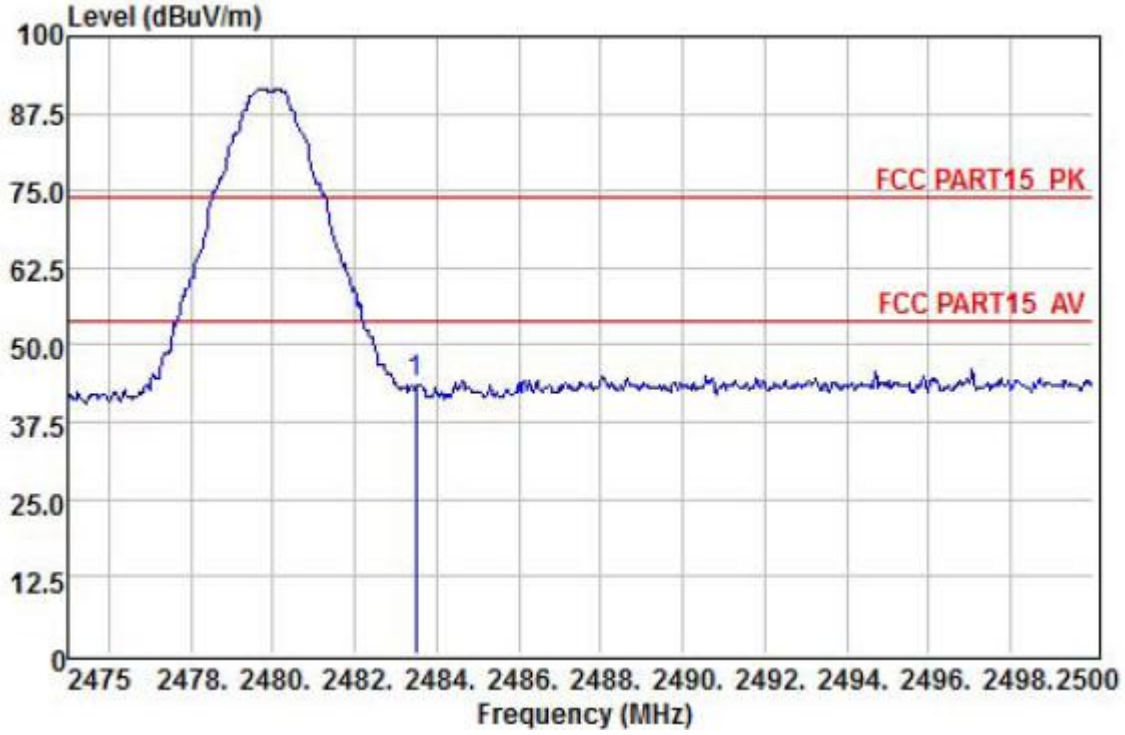
2M bps			
EUT：	active loudspeaker	Model Name ：	PW300
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010hPa	Test Mode：	TX-2480
Test Voltage ：	AC 120V/60Hz		

Vertical



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

Horizontal

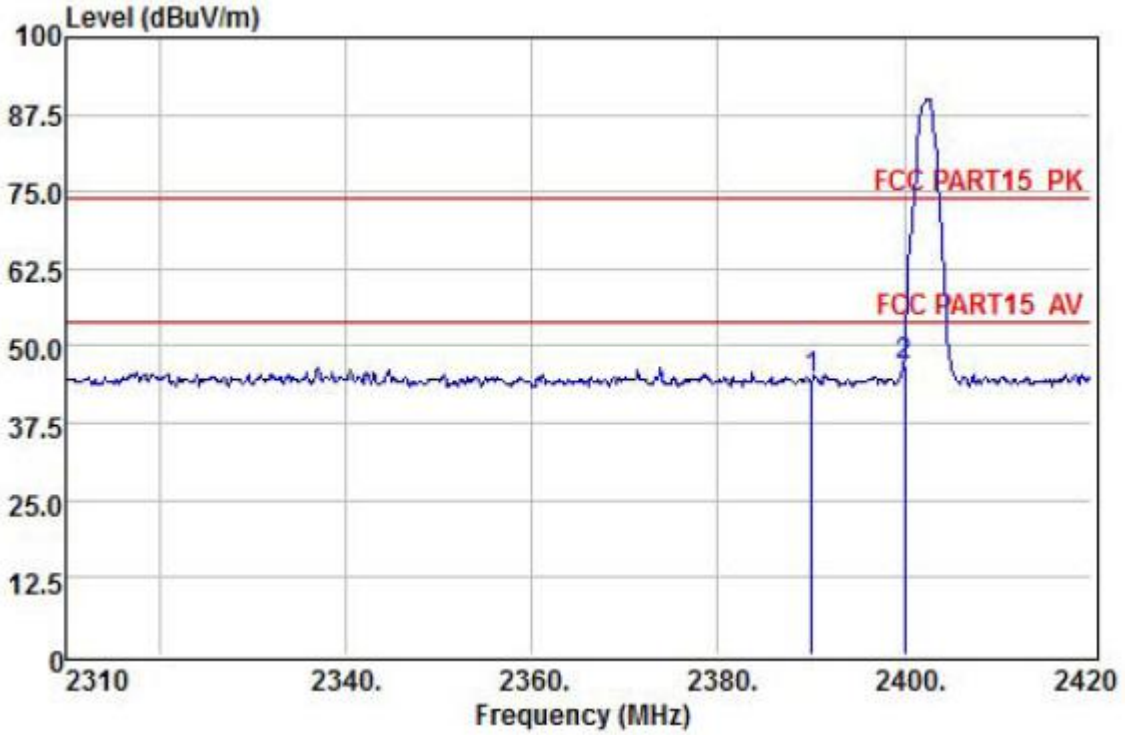


	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2483.50	37.83	28.79	3.48	26.34	43.76	74.00	-30.24	Peak

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

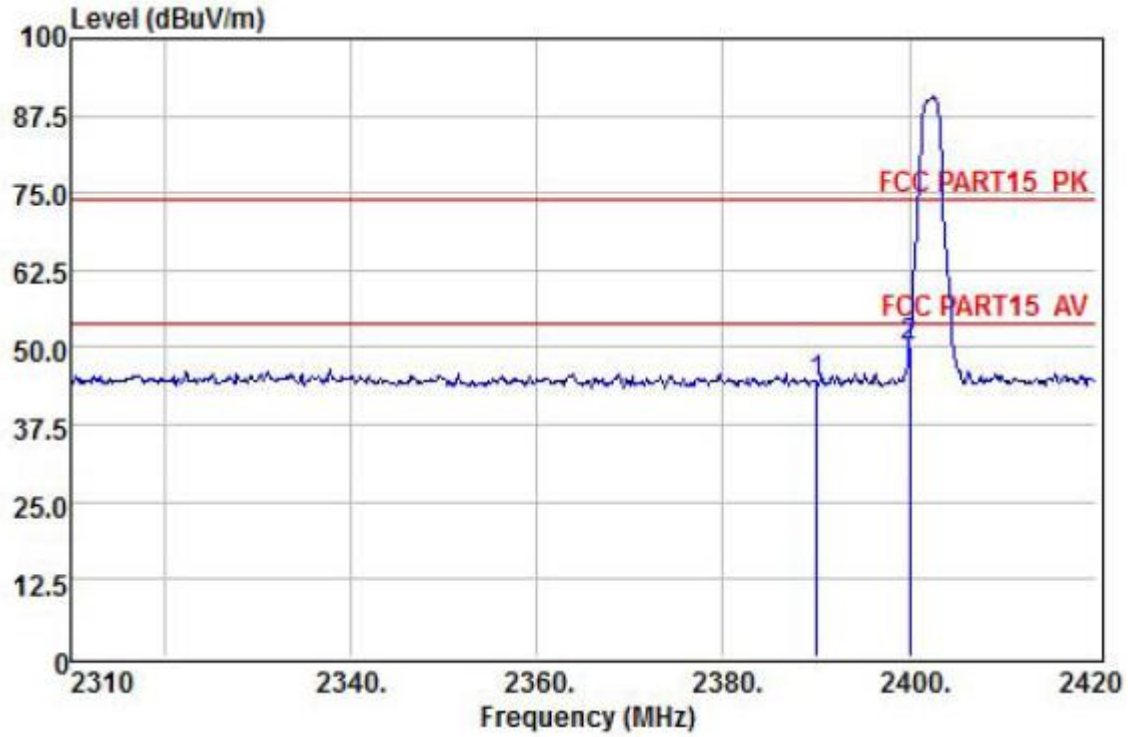
3M bps			
EUT：	active loudspeaker	Model Name ：	PW300
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010hPa	Test Mode：	TX-2402
Test Voltage ：	AC 120V/60Hz		

Vertical



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

Horizontal

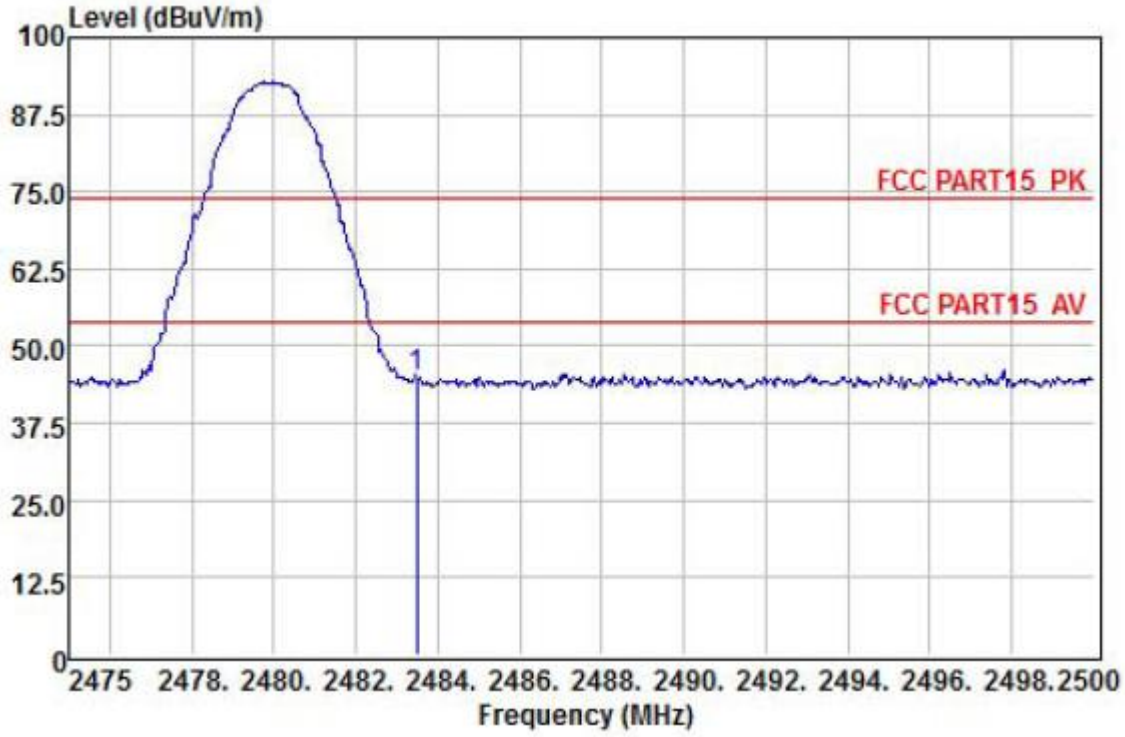


	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2390.00	38.52	28.72	3.36	26.32	44.28	74.00	-29.72	Peak
2	2400.00	44.38	28.72	3.38	26.32	50.16	74.00	-23.84	Peak

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

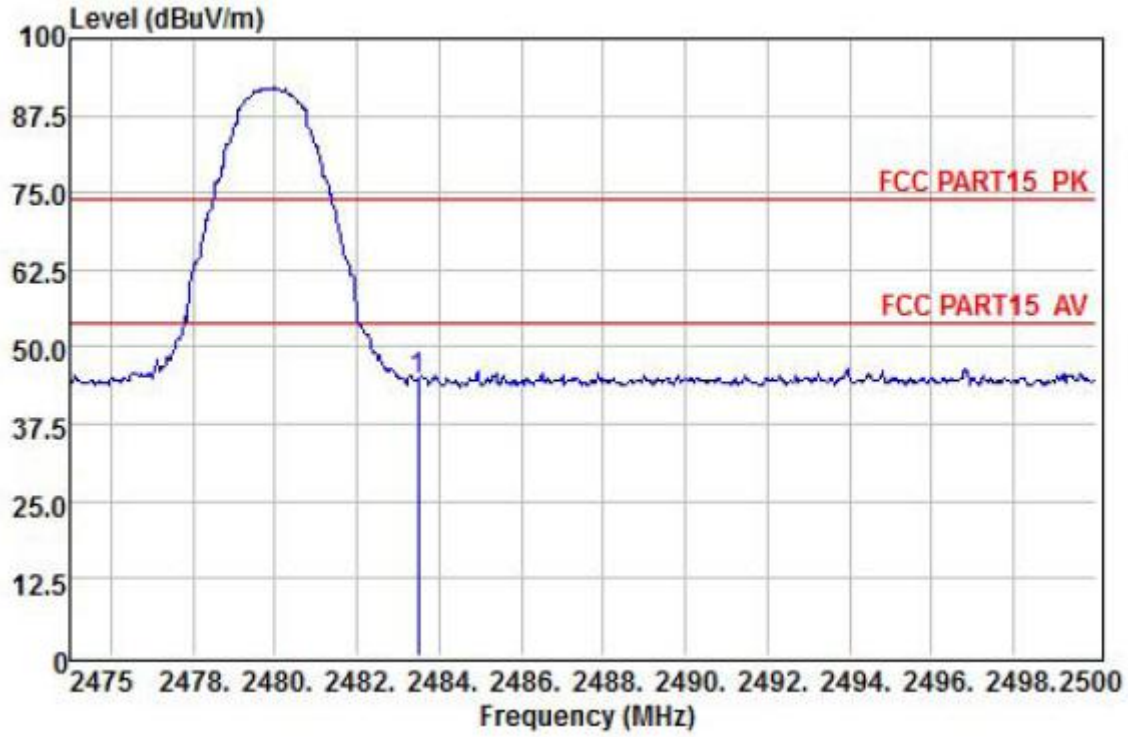
3M bps			
EUT：	active loudspeaker	Model Name ：	PW300
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010hPa	Test Mode：	TX-2480
Test Voltage ：	AC 120V/60Hz		

Vertical



	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2483.50	38.98	28.79	3.48	26.34	44.91	74.00	-29.09	Peak

Horizontal



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

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

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

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

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

6. 20DB& 99% OCCUPY BANDWIDTH

6.1. Limits

According to FCC Section 15.247(a)(1)& RSS-247 §5.1(1)&RSS-Gen§6.6, the 20dB bandwidth is known as the 99% emission bandwidth, or 20dB bandwidth(10*log1%=20dB)taking the RF output power

6.2. Test setup

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

2. Set the spectrum analyzer:

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

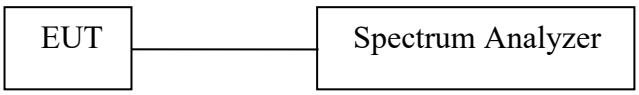
RBW ≥1% of the 20dB bandwidth

VBW ≥ RBW

Sweep=auto

Detector function=peak

Trace=max hold



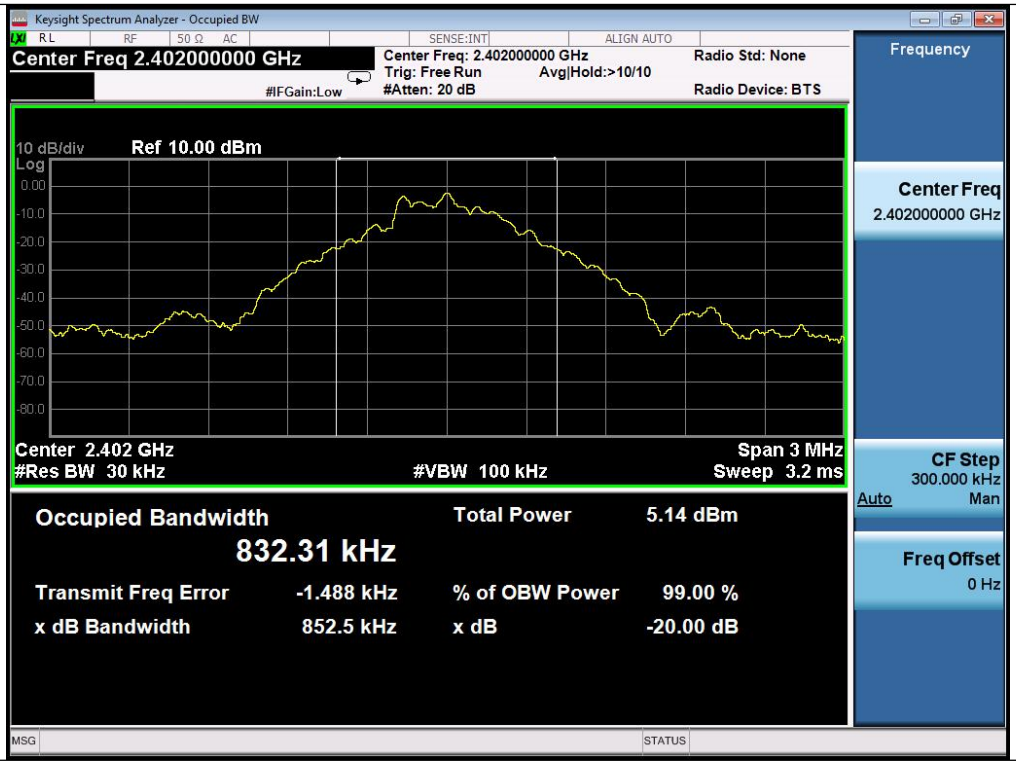
Test data:

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

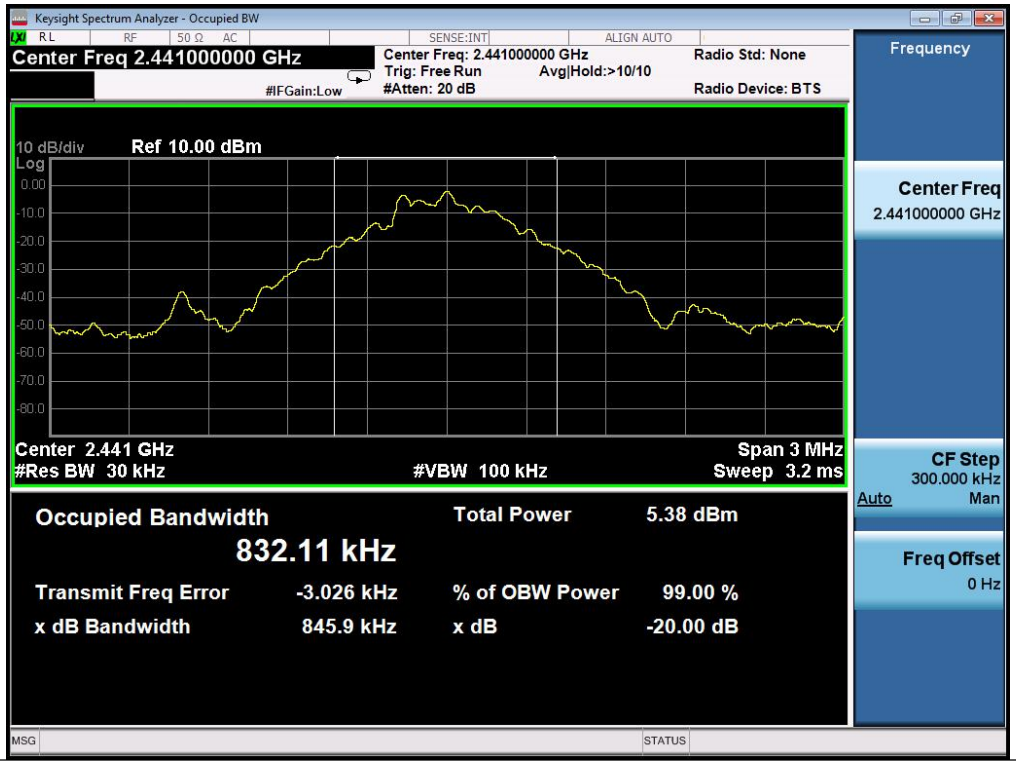
Frequency	20dB Bandwidth (kHz)	99% Bandwidth (KHz)	Result
2402 MHz	852.5	832.3	**PASS**
2441 MHz	845.9	832.1	**PASS**
2480 MHz	838.4	829.6	**PASS**

Test plot as follows:

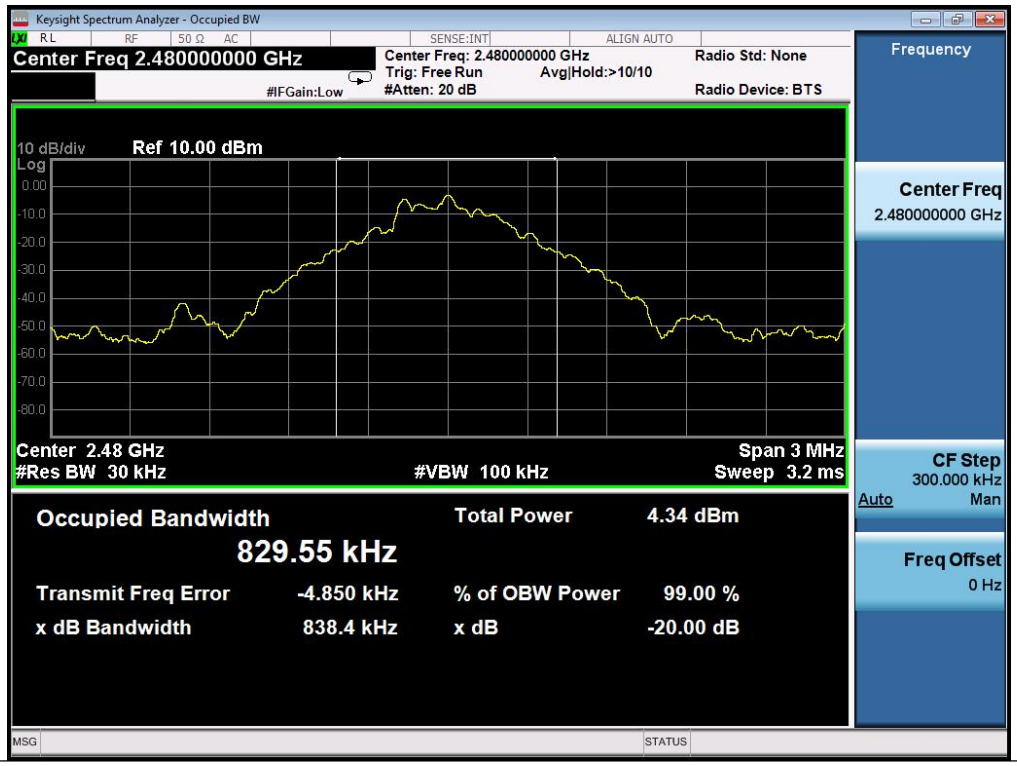
CH00



CH39 -1Mbps



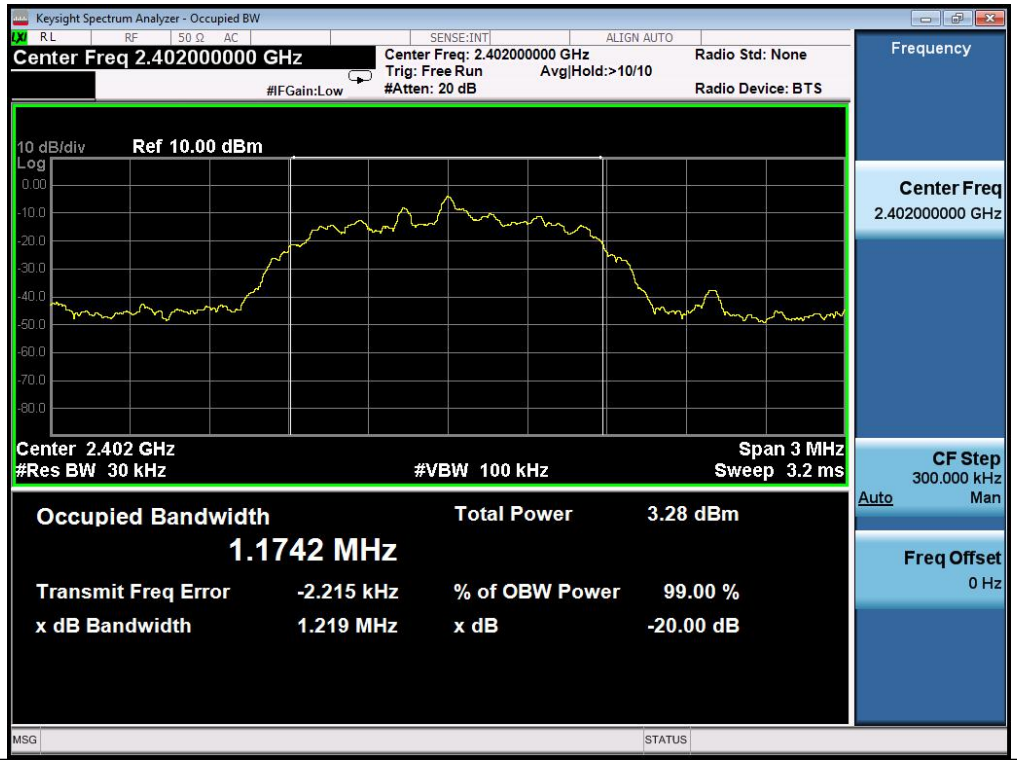
CH78 -1Mbps



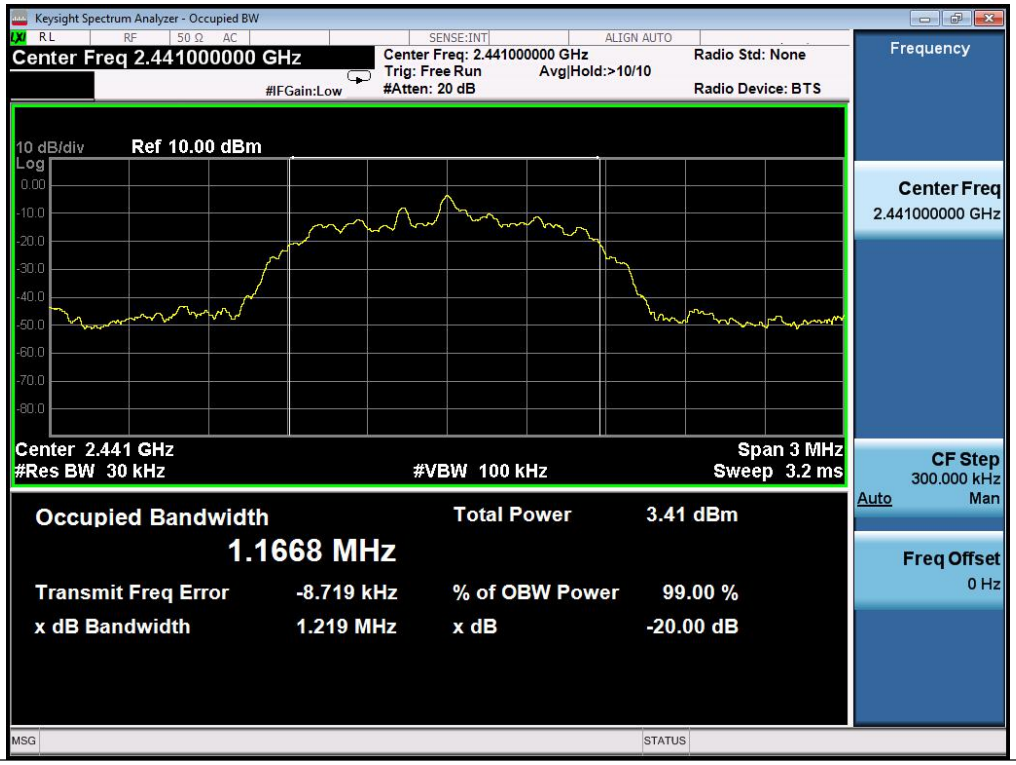
EUT :	active loudspeaker	Model Name :	PW300
Temperature :	25 ℃	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	CH00 / CH39 /C78**(2Mbps)**		

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

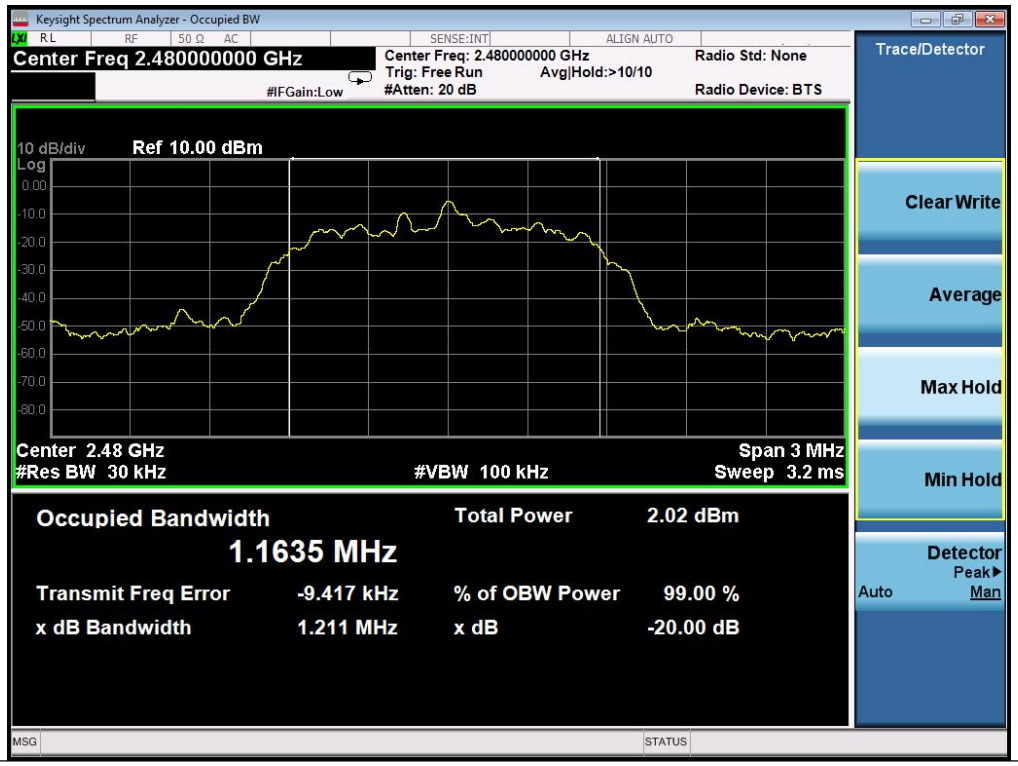
CH00



CH39


Keysight Spectrum Analyzer - Occupied BW
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
Center Freq 2.441000000 GHz
Center Freq: 2.441000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#IFGain:Low
#Atten: 20 dB
Radio Std: None
Radio Device: BTS
Frequency
10 dB/div
Ref 10.00 dBm
Log
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
Center 2.441 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 3 MHz
Sweep 3.2 ms
Occupied Bandwidth
1.1668 MHz
Total Power
3.41 dBm
Transmit Freq Error
-8.719 kHz
% of OBW Power
99.00 %
x dB Bandwidth
1.219 MHz
x dB
-20.00 dB
Center Freq
2.441000000 GHz
CF Step
300.000 kHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

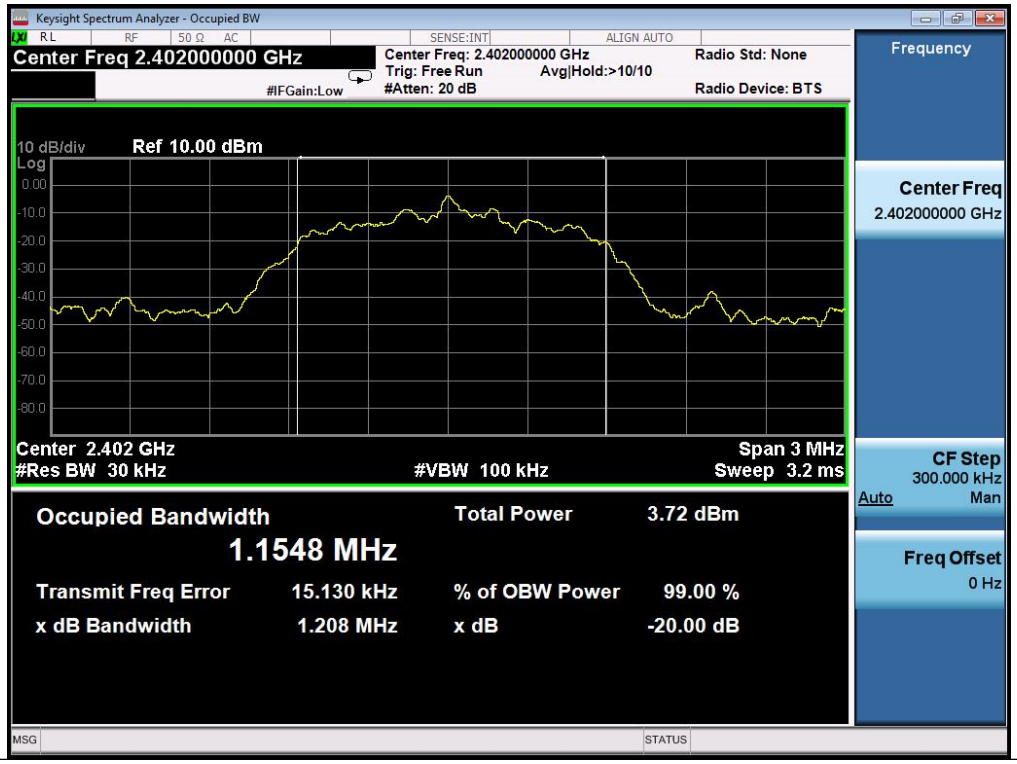
CH78


Keysight Spectrum Analyzer - Occupied BW
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
Center Freq 2.480000000 GHz
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#IFGain:Low
#Atten: 20 dB
Radio Std: None
Radio Device: BTS
Trace/Detector
10 dB/div
Ref 10.00 dBm
Log
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
Center 2.48 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 3 MHz
Sweep 3.2 ms
Occupied Bandwidth
1.1635 MHz
Total Power
2.02 dBm
Transmit Freq Error
-9.417 kHz
% of OBW Power
99.00 %
x dB Bandwidth
1.211 MHz
x dB
-20.00 dB
Clear Write
Average
Max Hold
Min Hold
Detector
Peak
Auto
Man
MSG
STATUS

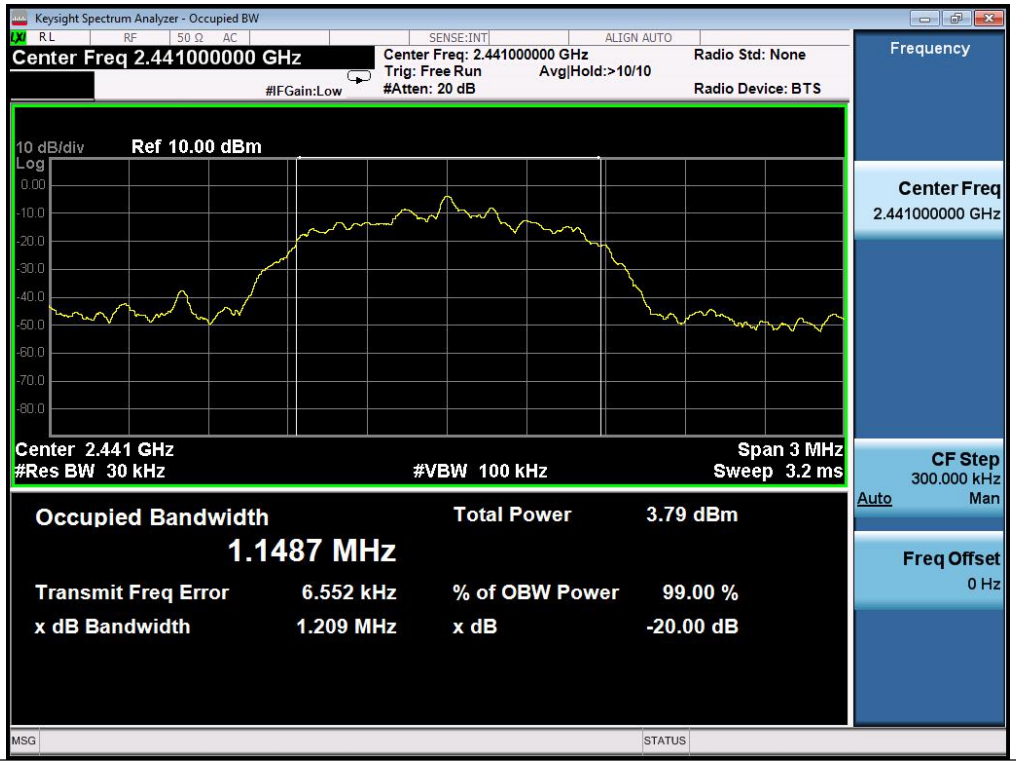
EUT :	active loudspeaker	Model Name :	PW300
Temperature :	25 ℃	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	CH00 / CH39 /CH78**(3Mbps)**		

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

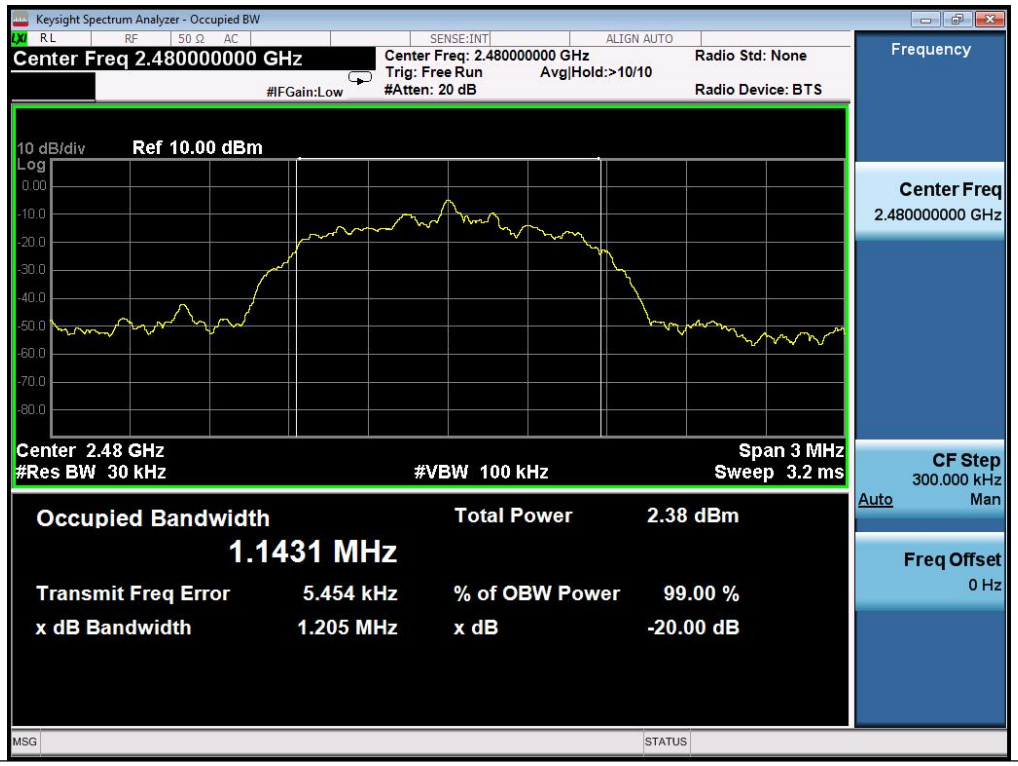
CH00



CH39


Keysight Spectrum Analyzer - Occupied BW
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
Center Freq 2.441000000 GHz
Center Freq: 2.441000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#IFGain:Low
#Atten: 20 dB
Radio Std: None
Radio Device: BTS
Frequency
10 dB/div
Ref 10.00 dBm
Log
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
Center 2.441 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 3 MHz
Sweep 3.2 ms
Occupied Bandwidth
1.1487 MHz
Total Power
3.79 dBm
Transmit Freq Error
6.552 kHz
% of OBW Power
99.00 %
x dB Bandwidth
1.209 MHz
x dB
-20.00 dB
Center Freq
2.441000000 GHz
CF Step
300.000 kHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

CH78


Keysight Spectrum Analyzer - Occupied BW
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
Center Freq 2.480000000 GHz
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#IFGain:Low
#Atten: 20 dB
Radio Std: None
Radio Device: BTS
Frequency
10 dB/div
Ref 10.00 dBm
Log
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
Center 2.48 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 3 MHz
Sweep 3.2 ms
Occupied Bandwidth
1.1431 MHz
Total Power
2.38 dBm
Transmit Freq Error
5.454 kHz
% of OBW Power
99.00 %
x dB Bandwidth
1.205 MHz
x dB
-20.00 dB
Center Freq
2.480000000 GHz
CF Step
300.000 kHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

7. FREQUENCY SEPARATION

7.1. Limits

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

7.2. Test setup

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

2. Set the spectrum analyzer:

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

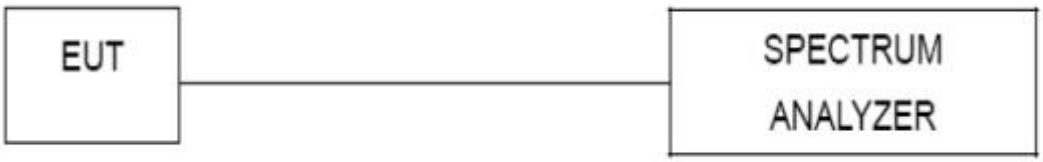
RBW ≥1% of the span(30KHz)

VBW ≥ RBW(100KHz)

Sweep=auto

Detector function=peak

Trace=max hold



Test data:

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

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

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

CH00

CH39


Keysight Spectrum Analyzer - Swept SA
Marker 1 Δ 998.000000 kHz
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
ΔMkr1 998 kHz
0.050 dB
10 dB/div
Log
Ref 10.00 dBm
Center 2.441500 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 2.000 MHz
Sweep 2.133 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

CH78


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.479500000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
ΔMkr1 1.000 MHz
-0.273 dB
10 dB/div
Log
Ref 10.00 dBm
Center 2.479500 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 2.000 MHz
Sweep 2.133 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.479500000 GHz
Start Freq
2.478500000 GHz
Stop Freq
2.480500000 GHz
CF Step
200.000 kHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin