FCC PART 15C TEST REPORT FOR CERTIFICATION
On Behalf of

ION Audio, LLC

Speaker

Model Number: TOTAL PA

FCC ID: 2AB3E-IPA61

Prepared for : ION Audio, LLC
200 Scenic View Drive, Suite 201 Cumberland
RI 02864 U.S.A.

Prepared By : EST Technology Co., Ltd.
Santun(guantai Road), Houjie Town, DongGuan City,
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Tel: 86-769-83081888-808

Report Number: ESTE-R1407038
Date of Test : July 14,2014~ July 27, 2014
Date of Report : July 29, 2014

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Description Page

Test Report Verification

Applicant: **Address:**	ION Audio, LLC 200 Scenic View Drive, Suite 201 Cumberland RI 02864 U.S.A.		
Manufacturer **Address:**	ION Audio, LLC 200 Scenic View Drive, Suite 201 Cumberland RI 02864 U.S.A.		
E.U.T:	Speaker		
Model Number:	TOTAL PA		
Power Supply:	AC 120V/60Hz		
Test Voltage:	AC 120V/60Hz		
Trade Name:	ION	Serial No.:	------
Date of Receipt:	July 14, 2014	Date of Test:	July 14,2014~ July 27, 2014
Test Specification:	FCC Rules and Regulations Part 15 Subpart C:2013 ANSI C63.4:2009		
Test Result:	The device described above is tested by EST Technology Co., Ltd.. The measurement results were contained in this test report and EST Technology Co., Ltd. was assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliance with the FCC Rules and Regulations Part 15 Subpart C requirements. This report applies to above tested sample only and shall not be reproduced in part without written approval of EST Technology Co., Ltd. Date: July 29, 2014		

Prepared by:	Tested by:	Approved by:
Ada / Assistant	Tony.Tang/ Engineer	IcemanHu / Manager

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 EST Technology Co., Ltd.

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Product Name : Speaker

Model Number : TOTAL PA

FCC ID : 2AB3E-IPA61

Operation frequency : 2402MHz~2480MHz

Number of channel : 79

Antenna : Internal antenna, 0 dBi gain

Modulation : FHSS (GFSK)

Sample Type : Prototype production

2. SUMMARY OF TEST

2.1. Summary of test result

Description of Test Item	Standard	Results
Maximum Peak Output Power	FCC Part 15: 15.247(b)(1) DA 00-705	PASS
20dB Bandwidth	FCC Part 15: 15.215 DA 00-705	PASS
Carrier Frequency Separation	FCC Part 15: 15.247(a)(1) DA 00-705	PASS
Number Of Hopping Channel	FCC Part 15: 15.247(a)(1)(iii) DA 00-705	PASS
Dwell Time	FCC Part 15: 15.247(a)(1)(iii) DA 00-705	PASS
Radiated Emission	FCC Part 15: 15.209 FCC Part 15: 15.247(d) ANSI C63.4: 2003 DA 00-705	PASS
Band Edge Compliance	FCC Part 15: 15.247(d) DA 00-705	PASS
Power Line Conducted Emissions	FCC Part 15: 15.207 ANSI C63.4: 2009 DA 00-705	PASS
Antenna requirement	FCC Part 15: 15.203	PASS

2.2. Test Facilities

EMC Lab : Certificated by CNAL, CHINA
Registration No.: L5288
Date of registration: October 28, 2011

Certificated by FCC, USA
Registration No.: 989591
Date of registration: December 07, 2010

Certificated by Industry Canada
Registration No.: 9405A-1
Date of registration: December 16, 2010

Certificated by VCCI, Japan
Registration No.: R-3663 & C-4103
Date of registration: July 25, 2011

Certificated by TUV Rheinland, Germany
Registration No.: UA 50195514 0001
Date of registration: January 07, 2011

Certificated by TUV/PS, Shenzhen
Registration No.: SCN1017
Date of registration: January 27, 2011

Certificated by Intertek ETL SEMKO
Registration No.: 2011-RTL-L1-18
Date of registration: April 28, 2011

Certificated by Siemic, Inc.
Registration No.: SLCN021
Date of registration: November 8, 2011

Certificated by Nemko, Hong Kong
Registration No.: 175193
Date of registration: May 4, 2011

Name of Firm : EST Technology Co., Ltd.

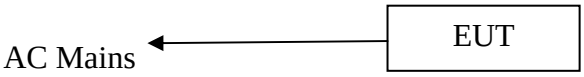
Site Location : San Tun Management Zone, Houjie Town, Dongguan, Guangdong, China

2.3. Assistant equipment used for test

2.3.1. N/A

2.4. Block Diagram

For radiated emissions test: EUT was placed on a turn table, which is 10 cm high above ground.EUT was be set into BT test mode by software before test.



(EUT: Speaker)

2.5. Test mode

The test software was used to control EUT work in Continuous TX mode, and select test channel, wireless mode

Mode	Channel	Frequency
GFSK	Low	2402MHz
	Middle	2441MHz
	High	2480MHz

2.6. Channel List for Bluetooth

Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
1	2402	2	2403	3	2404	4	2405
5	2406	6	2407	7	2408	8	2409
9	2410	10	2411	11	2412	12	2413
13	2414	14	2415	15	2416	16	2417
17	2418	18	2419	19	2420	20	2421
21	2422	22	2423	23	2424	24	2425
25	2426	26	2427	27	2428	28	2429
29	2430	30	2431	31	2432	32	2433
33	2434	34	2435	35	2436	36	2437
37	2438	38	2439	39	2440	40	2441
41	2442	42	2443	43	2444	44	2445
45	2446	46	2447	47	2448	48	2449
49	2450	50	2451	51	2452	52	2453
53	2454	54	2455	55	2456	56	2457
57	2458	58	2459	59	2460	60	2461
61	2462	62	2463	63	2464	64	2465
65	2466	66	2467	67	2468	68	2469
69	2470	70	2471	71	2472	72	2473
73	2474	74	2475	75	2476	76	2477
77	2478	78	2479	79	2480	-	-

2.7. Test Equipment

2.7.1. For conducted emission test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESHS30	832354	June,28,14	1 Year
Artificial Mains Networ	Rohde & Schwarz	ENV216	101260	June,28,14	1 Year
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	101100	June,28,14	1 Year

2.7.2. For radiated emission test(30-1000MHz)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESVS10	100004	June,28,14	1 Year
Spectrum Analyzer	Agilent	E4411B	MY50140697	June,28,14	1 Year
Bilog Antenna	Teseq	CBL 6111D	27090	June,28,14	1 Year
Signal Amplifier	Agilent	310N	187037	June,28,14	1 Year

2.7.3. For radiated emission test(above 1GHz)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA9120D1002	June,28,14	1 Year
Signal Amplifier	SCHWARZBECK	BBV9718	9718-212	June,28,14	1 Year
Spectrum Analyzer	Agilent	E4408B	MY44211139	June,28,14	1 Year
RF Cable	Hubersuhner	RG 214/U	513423	June,28,14	1 Year

3. MAXIMUM PEAK OUTPUT POWER

3.1. Limit

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, the e.i.r.p shall not exceed 4W

3.2. Test Procedure

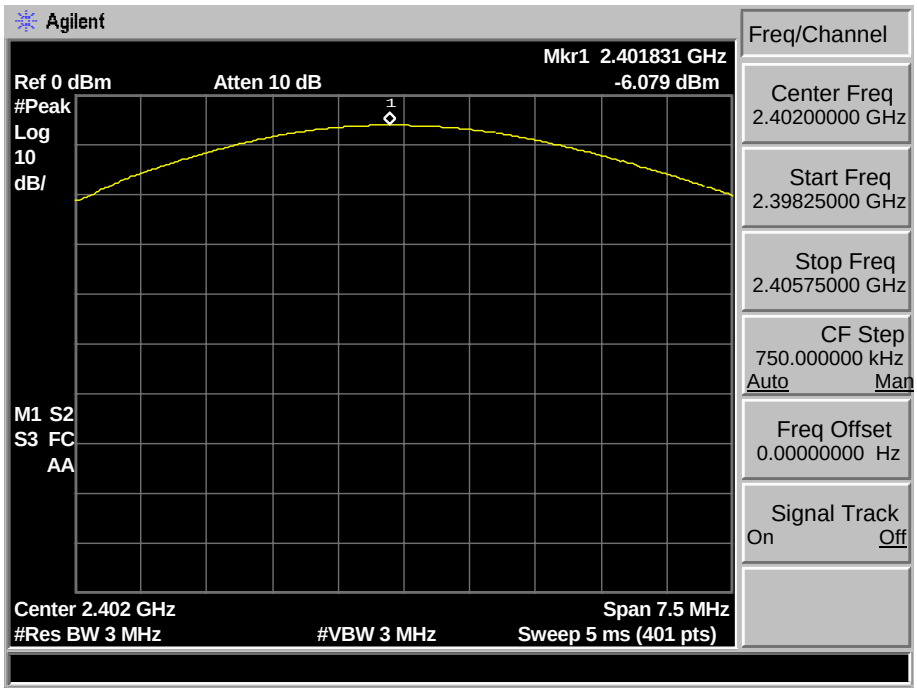
The transmitter output (antenna port) was connected to the spectrum analyzer

3.3. Test Result

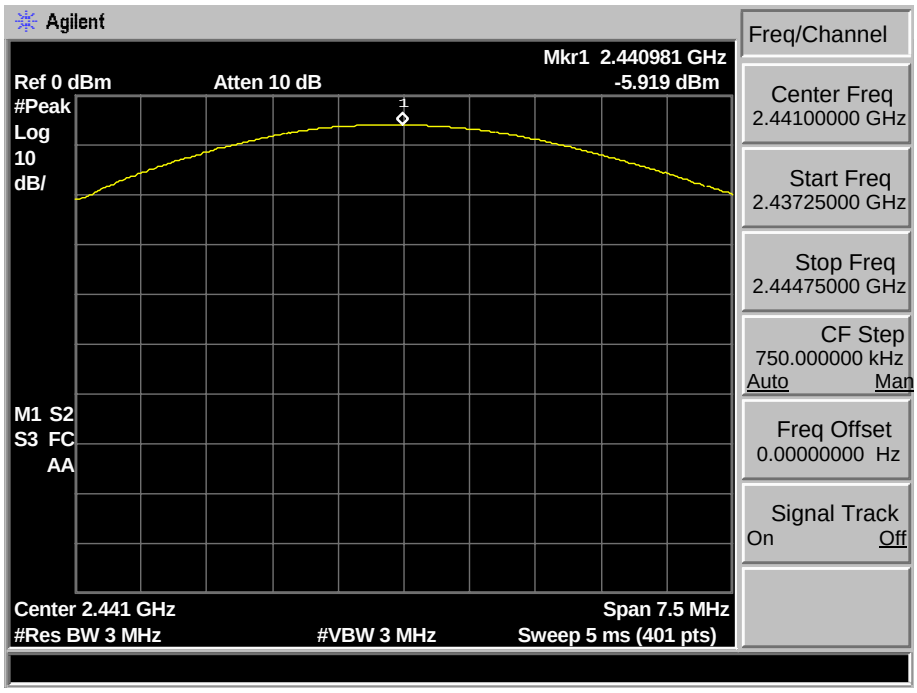
EUT: Speaker M/N: TOTAL PA					
Test date: 2014-07-21		Test site: RF site	Tested by: Tony Tang		
Mode	Freq (MHz)	Result (dBm)	Limit		Margin (dB)
			dBm	W	
GFSK	2402	-6.079	21.00	0.125	27.079
	2441	-5.919	21.00	0.125	26.919
	2480	-5.884	21.00	0.125	26.884
Conclusion: PASS					

3.4. Test Data

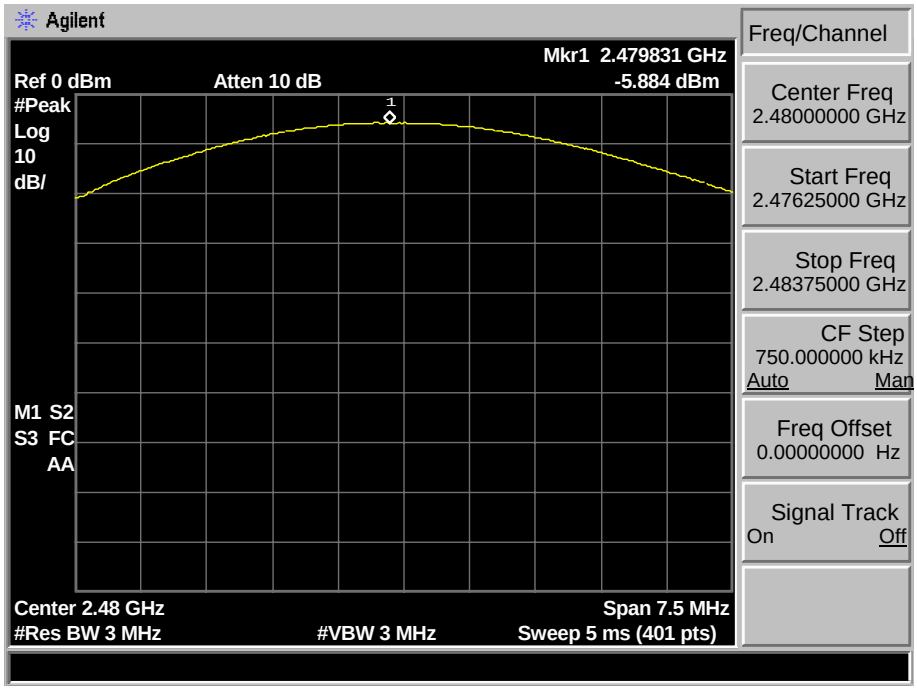
GFSK 2402 MHz



GFSK 2441 MHz



GFSK 2480 MHz



4. 20 DB BANDWIDTH

4.1. Limit

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

4.2. Test Procedure

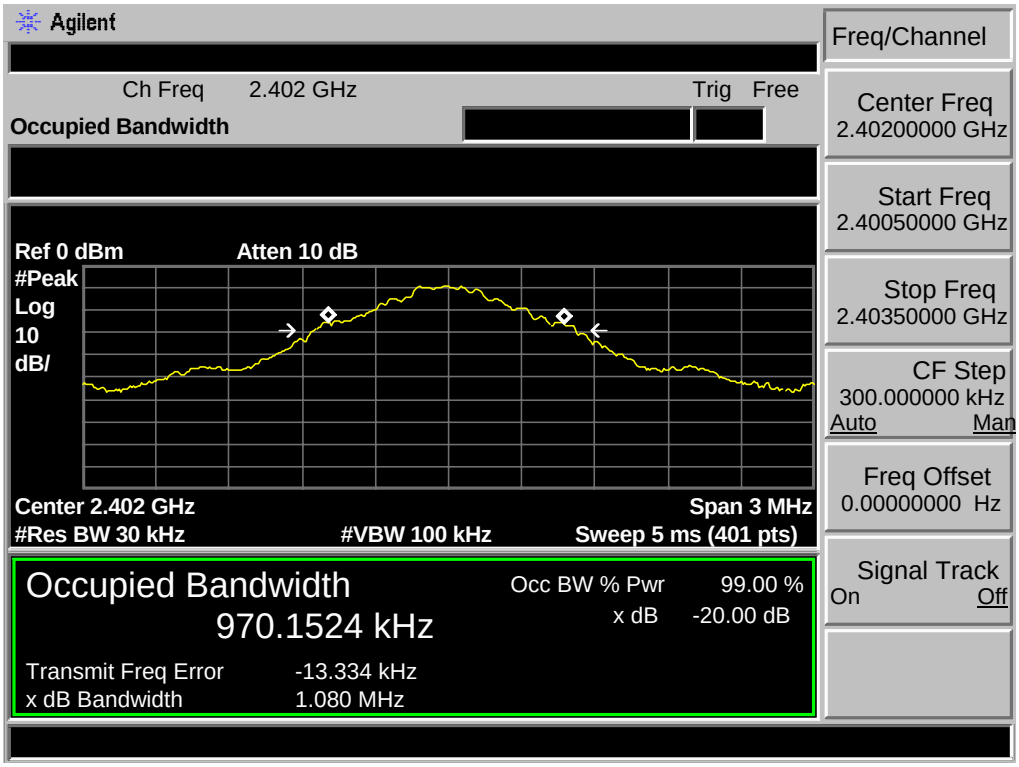
The transmitter output was coupled to a spectrum analyzer via a antenna. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 30kHz RBW and 100kHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

4.3. Test Result

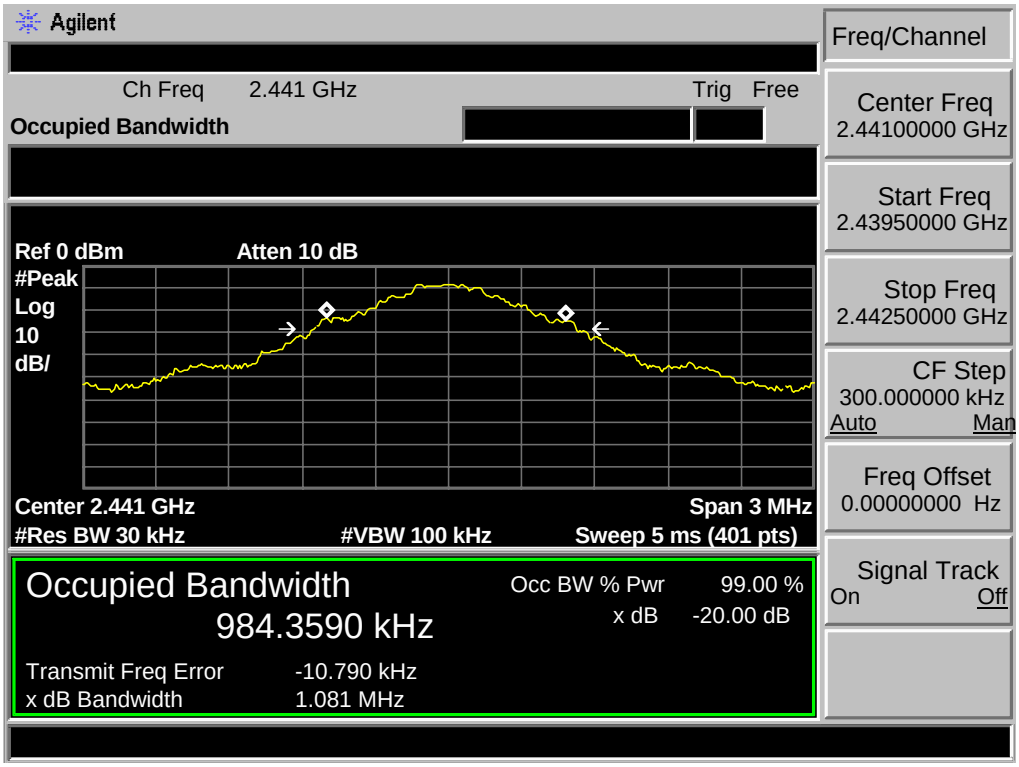
EUT: Speaker M/N: TOTAL PA				
Test date: 2014-07-21		Test site: RF site		Tested by: Tony Tang
Mode	Freq (MHz)	20dB Bandwidth (MHz)	Limit (kHz)	Conclusion
GFSK	2402	1.080	/	PASS
	2441	1.081	/	PASS
	2480	1.064	/	PASS

4.4. Test Data

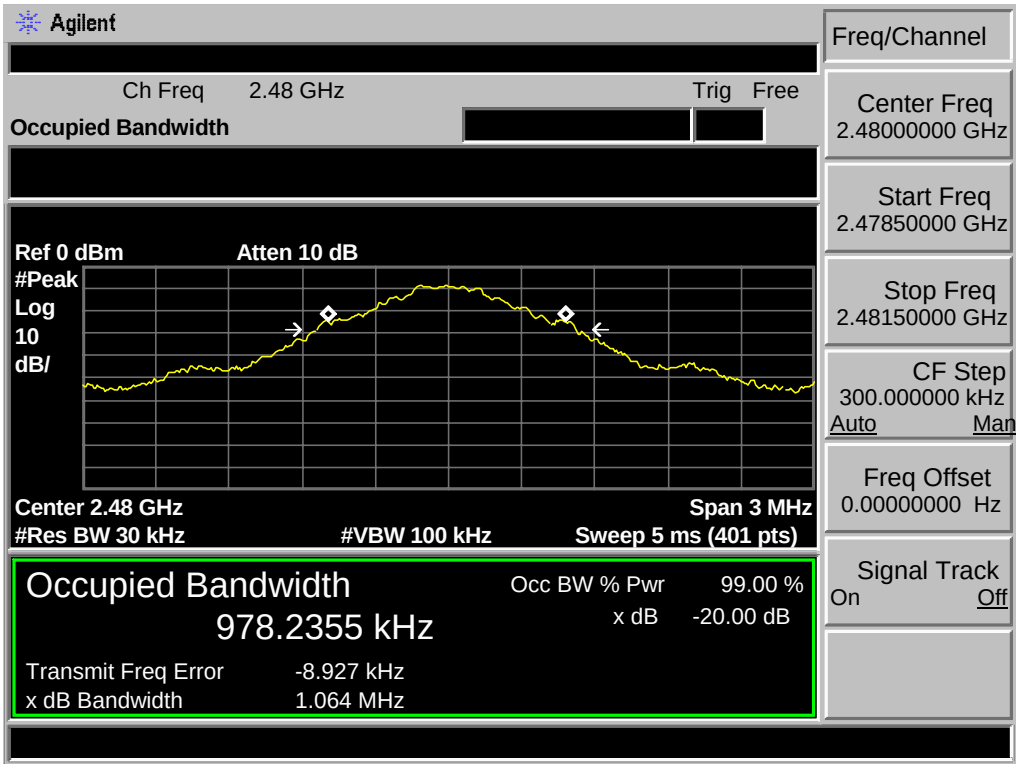
GFSK 2402MHz



GFSK 2441MHz



GFSK 2480MHz



5. CARRIER FREQUENCY SEPARATION

5.1. Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW

5.2. Test Procedure

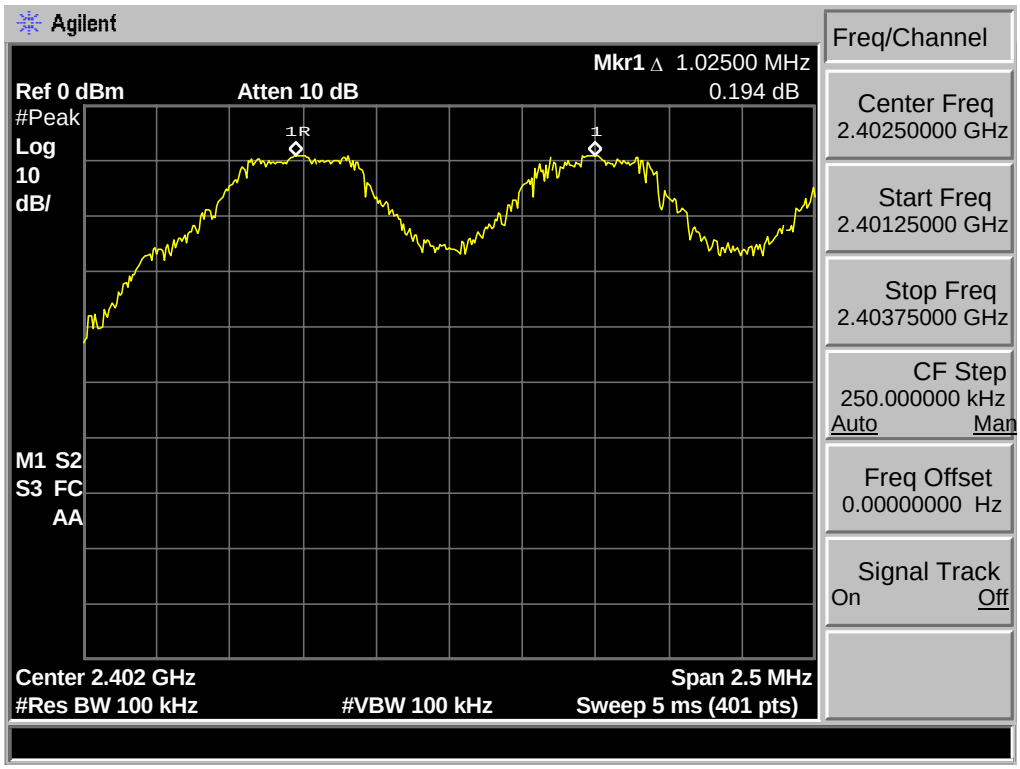
The transmitter output was coupled to a spectrum analyzer via a antenna. The carrier frequency was measured by spectrum analyzer with 100kHz RBW and 100kHz VBW.

5.3. Test Result

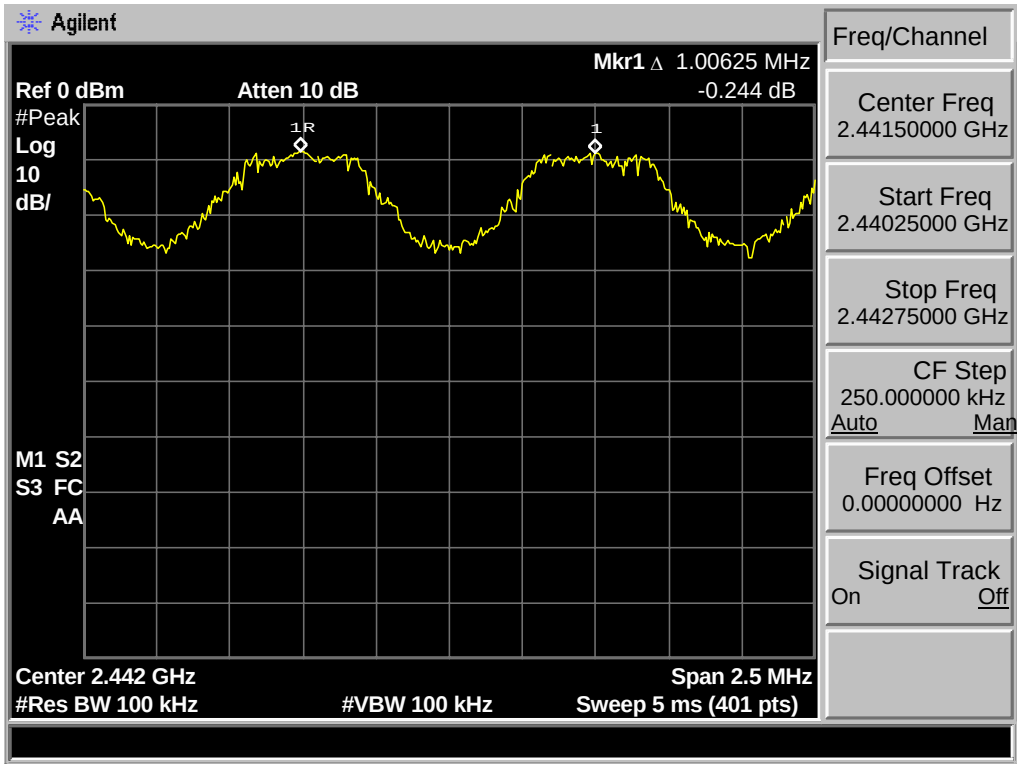
EUT: Speaker M/N: TOTAL PA				
Test date: 2014-07-21			Test site: RF site Tested by: Tony Tang	
Mode	Channel	Channel separation (MHz)	Limit	Conclusion
GFSK	Low CH	1.025	> 2/3 of the 20dB Bandwidth or 25[kHz](whichever is greater)	PASS
	Mid CH	1.006		PASS
	High CH	1.006		PASS

5.4. Test Data

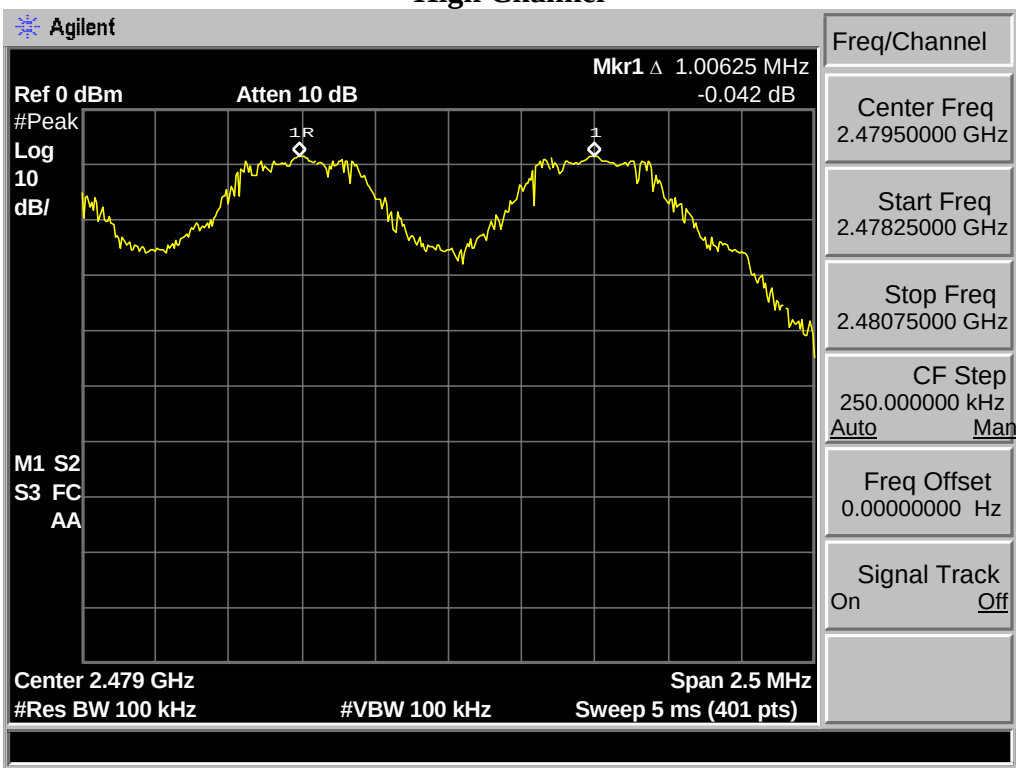
GFSK
Low Channel



Mid Channel



High Channel



6. NUMBER OF HOPPING CHANNEL

6.1. Limit

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels

6.2. Test Procedure

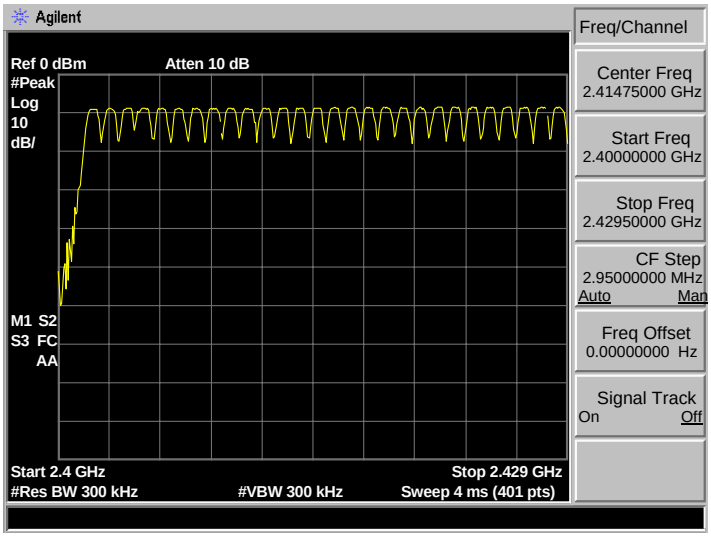
The transmitter output was coupled to a spectrum analyzer via a antenna. The number of hopping channel was measured by spectrum analyzer with 300kHz RBW and 300kHz VBW.

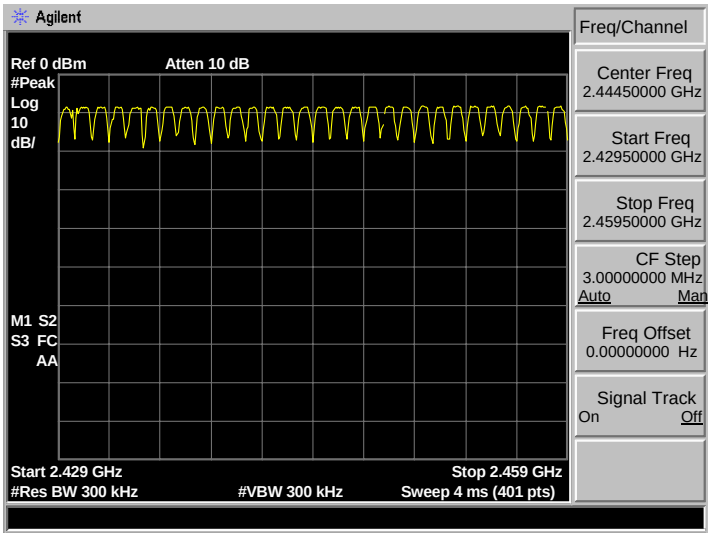
6.3. Test Result

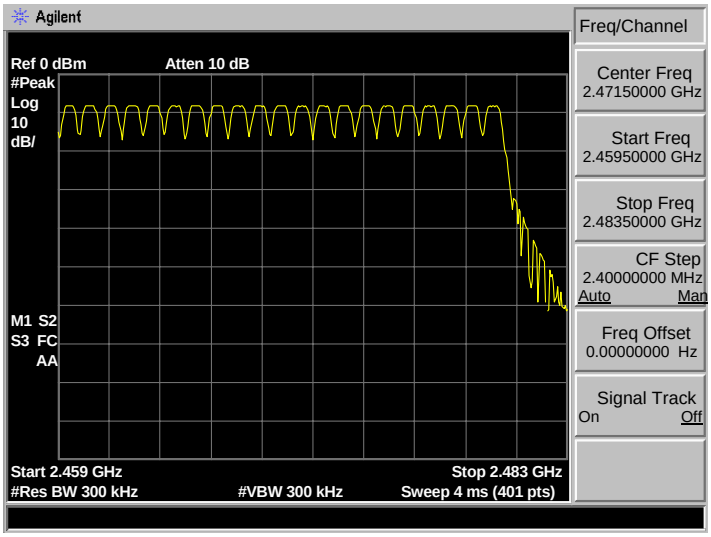
EUT: Speaker M/N: TOTAL PA			
Test date: 2014-07-21	Test site: RF site	Tested by: Tony.Tang	
Mode	Number of hopping channel	Limit	Conclusion
GFSK	79	>15	PASS

6.4. Test Data

GFSK







7. DWELL TIME

7.1. Limit

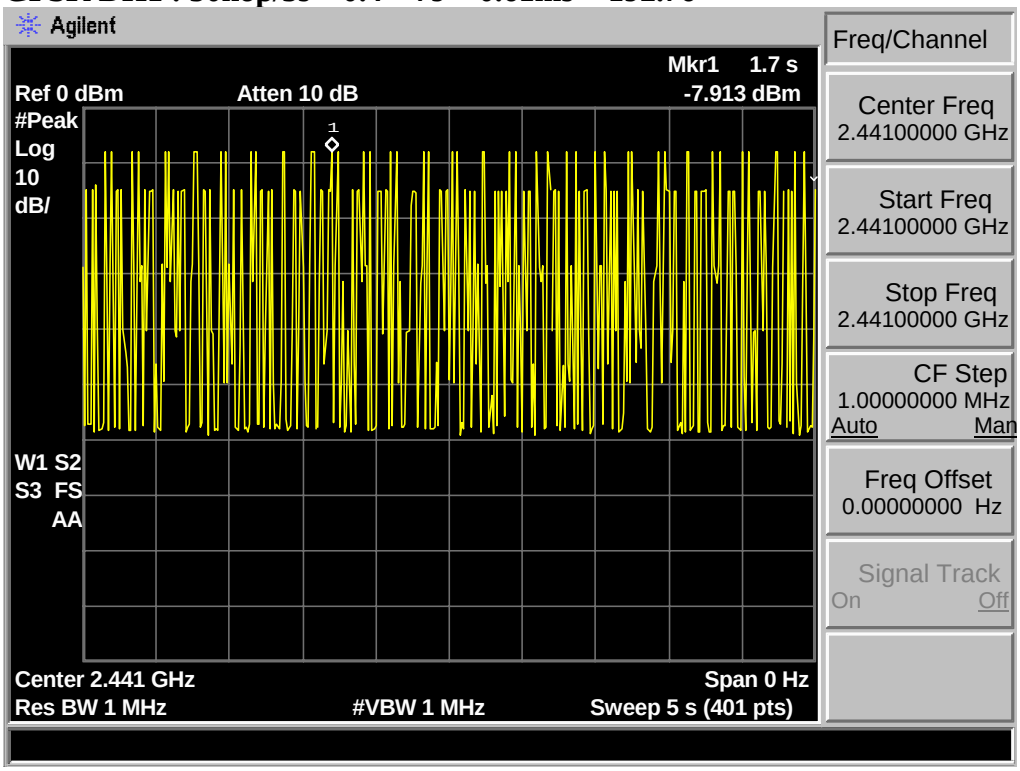
The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

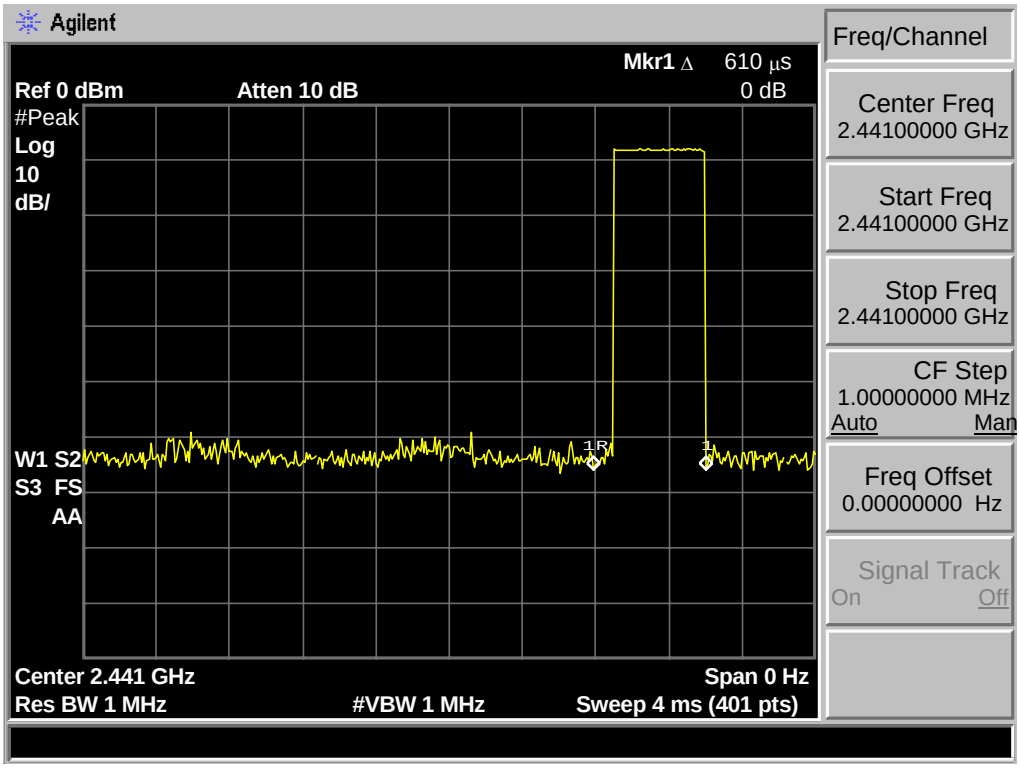
7.2. Test Result

EUT: Speaker M/N: TOTAL PA			
Test date: 2014-07-21	Test site: RF site	Tested by: Tony Tang	
Mode	Dwell time (ms)	Limit	Conclusion
GFSK DH1	192.76	<400ms	PASS
GFSK DH3	295.78	<400ms	PASS
GFSK DH5	292.93	<400ms	PASS

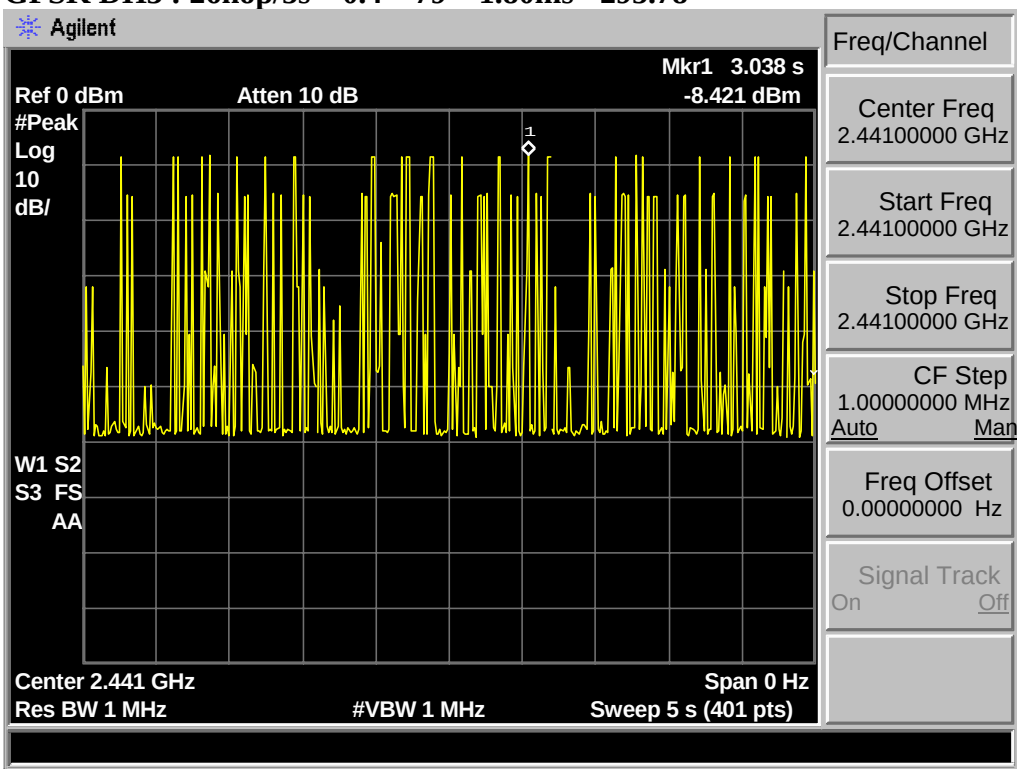
7.3. Test Data

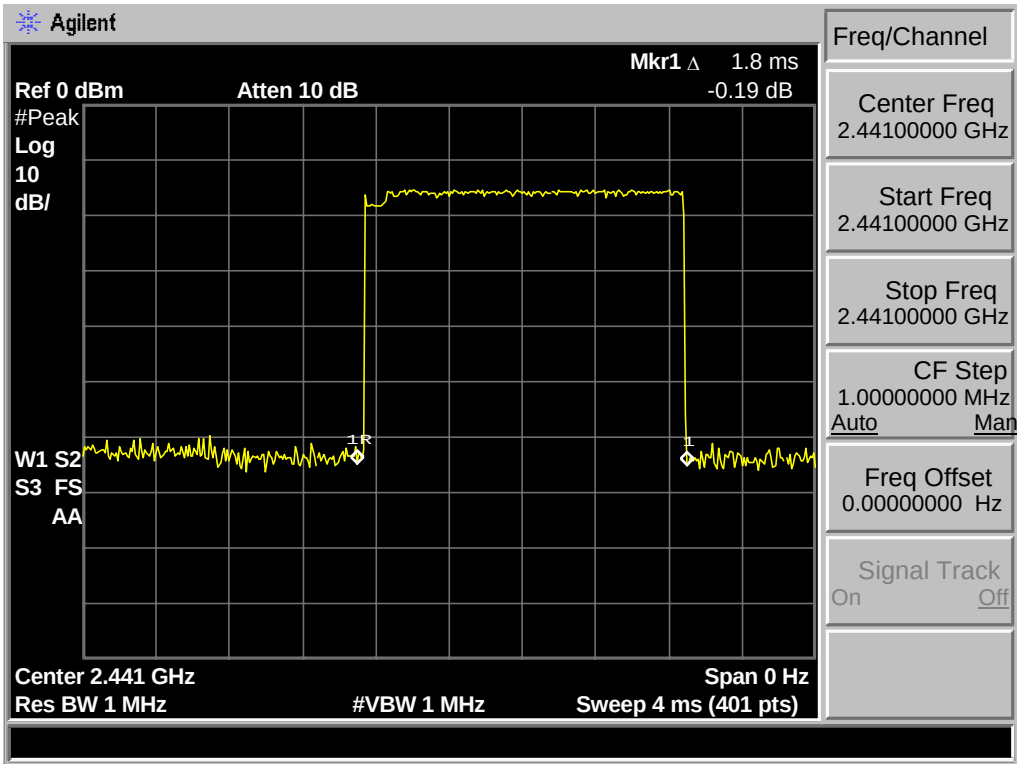
GFSK DH1 : 50hop/5s * 0.4 * 79 * 0.61ms = 192.76



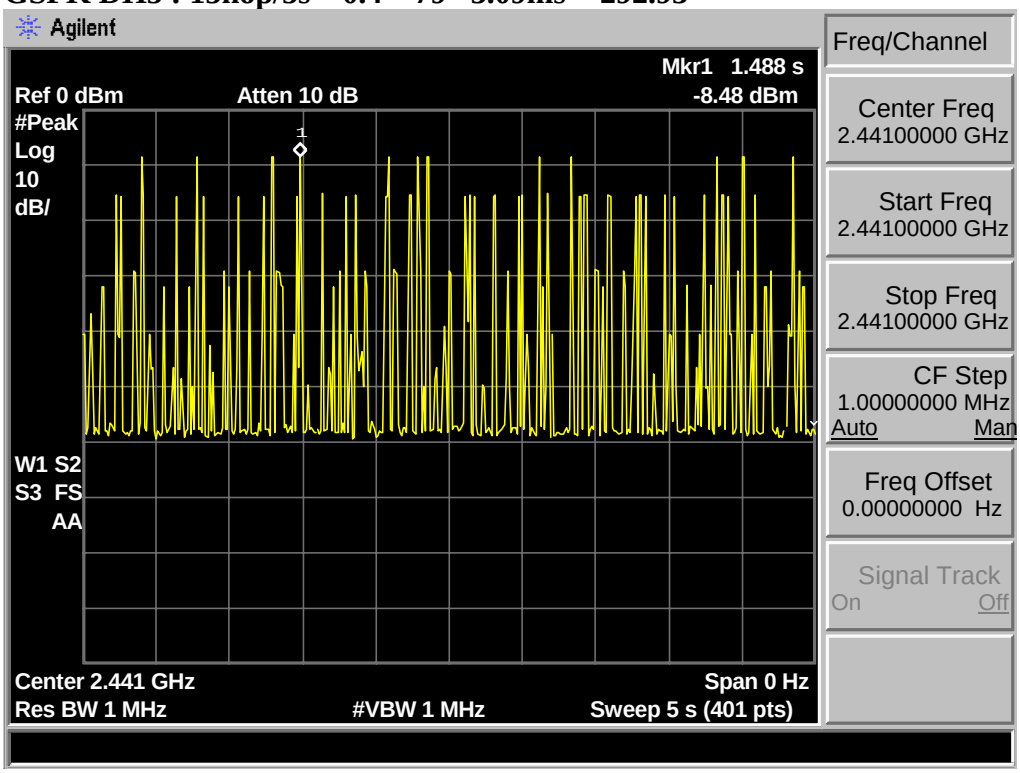


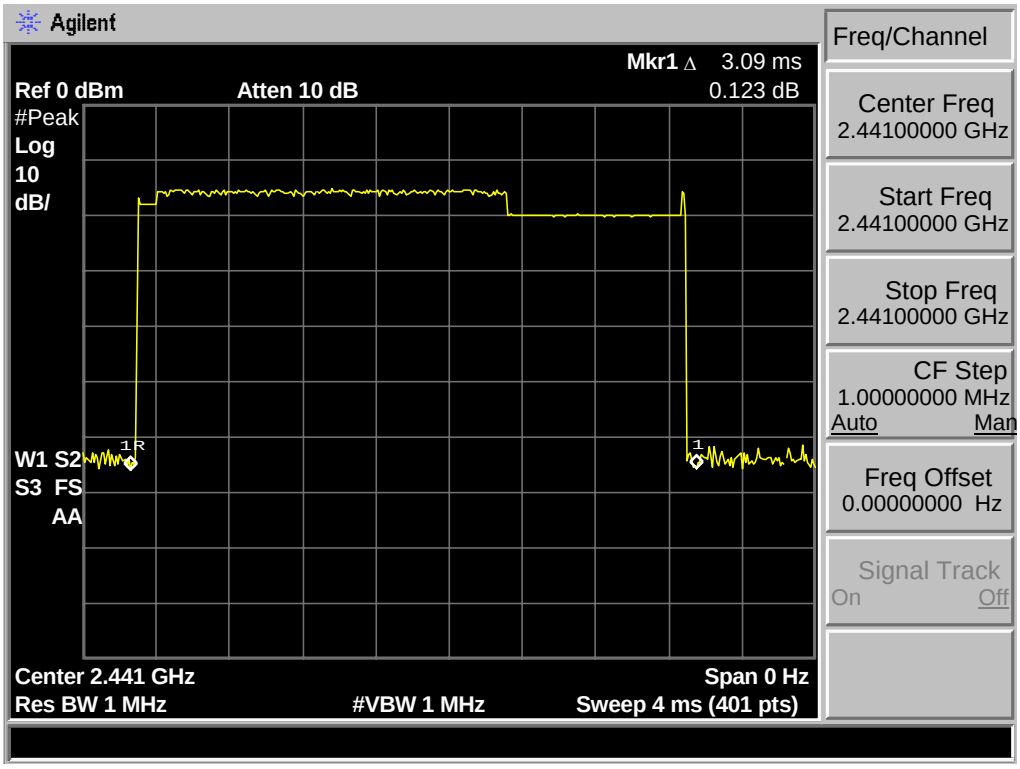
GFSK DH3 : 26hop/5s * 0.4 * 79 * 1.80ms= 295.78





GSFK DH5 : 15hop/5s * 0.4 * 79 *3.09ms = 292.93





8. RADIATED EMISSIONS

8.1. Limit

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.

15.205 Restricted frequency band

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]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	([2])

15.209 Limit

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/m
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

8.2. Test Procedure

EUT was placed on a turn table, which is 10 cm high above 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. Both horizontal and vertical polarization of the antenna are set on test.

The bandwidth of the EMI test receiver (R&S ESVS10) is set at 120kHz for frequency range from 30MHz to 1000 MHz.

The bandwidth of the Spectrum's VBW is set at 1MHz and RBW is set at 1MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure above 1GHz

The frequency range from 30MHz to 10th harmonic (25GHz) are checked.

8.3. Test Result

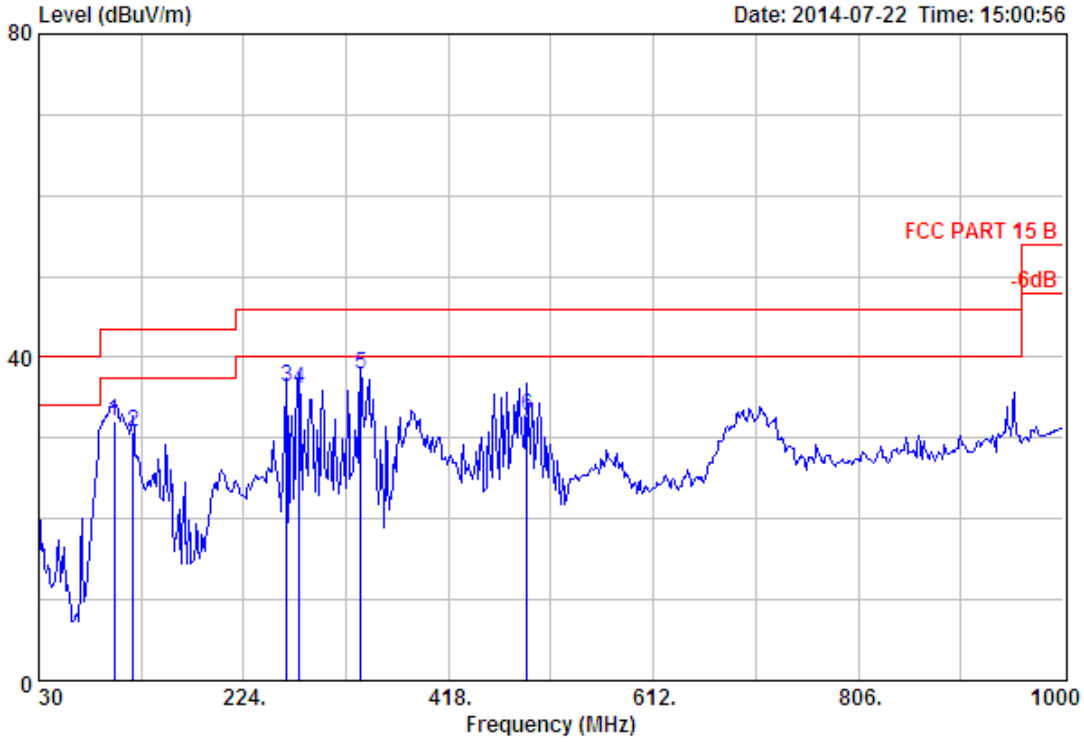
30MHz—25GHz Radiated emissison Test result
EUT: Speaker M/N: TOTAL PA
Power: AC 120V/60Hz
Test date: 2014-07-20~2014-07-22 Test site: 3m Chamber Tested by: Tony Tang
Test mode: Tx Mode
Pass

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

2、 The frequency 2402MHz 、2441MHz and 2480MHz is fundamental frequency which no limit, the limit on plots is automatically generated by the software, it's not fundamental limit, we can't remove it.

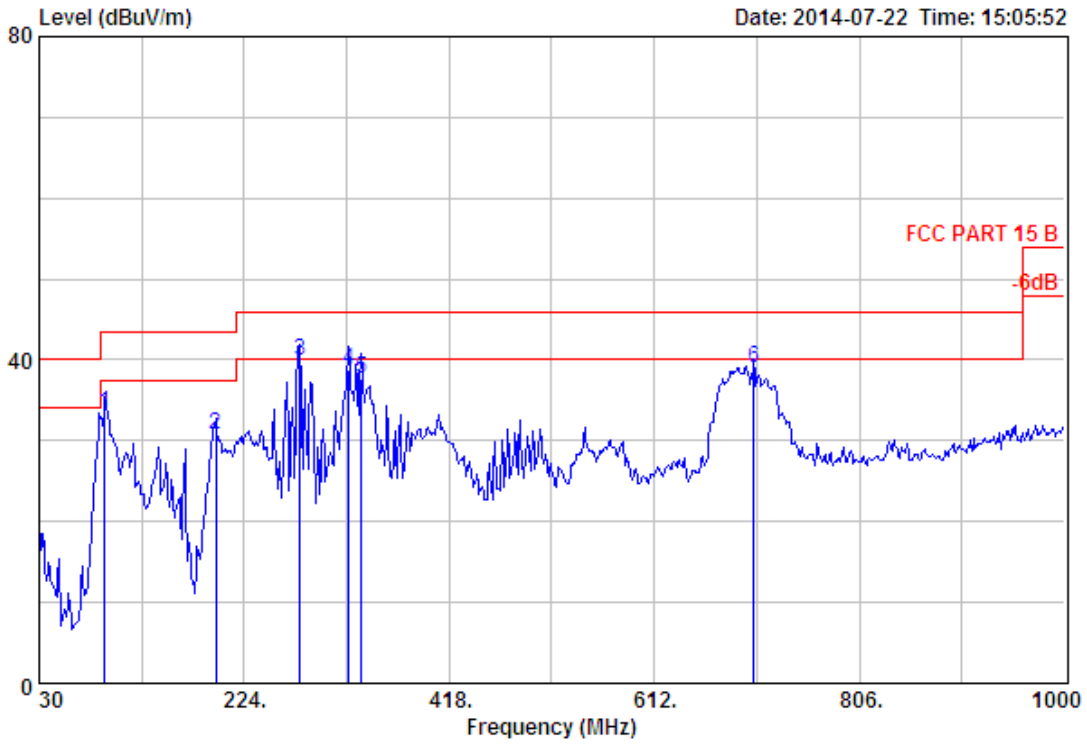
8.4. Test Data

30 MHz – 1000 MHz



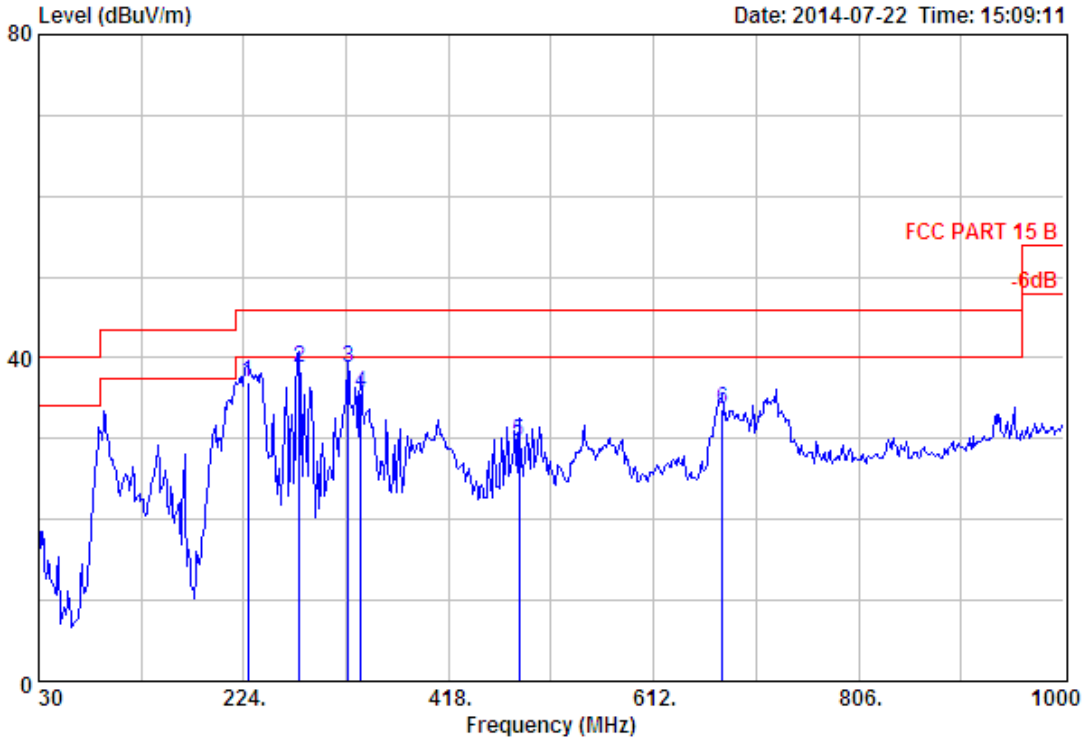
Site no. : 3m Chamber Data no. : 69
Dis. / Ant. : 3m 27137 Ant. pol. : VERTICAL
Limit : FCC PART 15 B
Env. / Ins. : Temp:24.6';Humi:56%;Press:101.52kPa
Engineer : Tony
EUT : Speaker
Power : AC 120V/60Hz
M/N : TOTAL PA
Test Mode : GFSK TX 2402MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	101.78	9.65	1.31	21.21	32.17	43.50	11.33	QP
2	119.24	11.11	1.42	18.26	30.79	43.50	12.71	QP
3	264.74	12.94	2.28	21.17	36.39	46.00	9.61	QP
4	276.38	12.36	2.26	21.54	36.16	46.00	9.84	QP
5	334.58	13.99	2.50	21.30	37.79	46.00	8.21	QP
6	492.69	17.83	3.15	11.75	32.73	46.00	13.27	QP



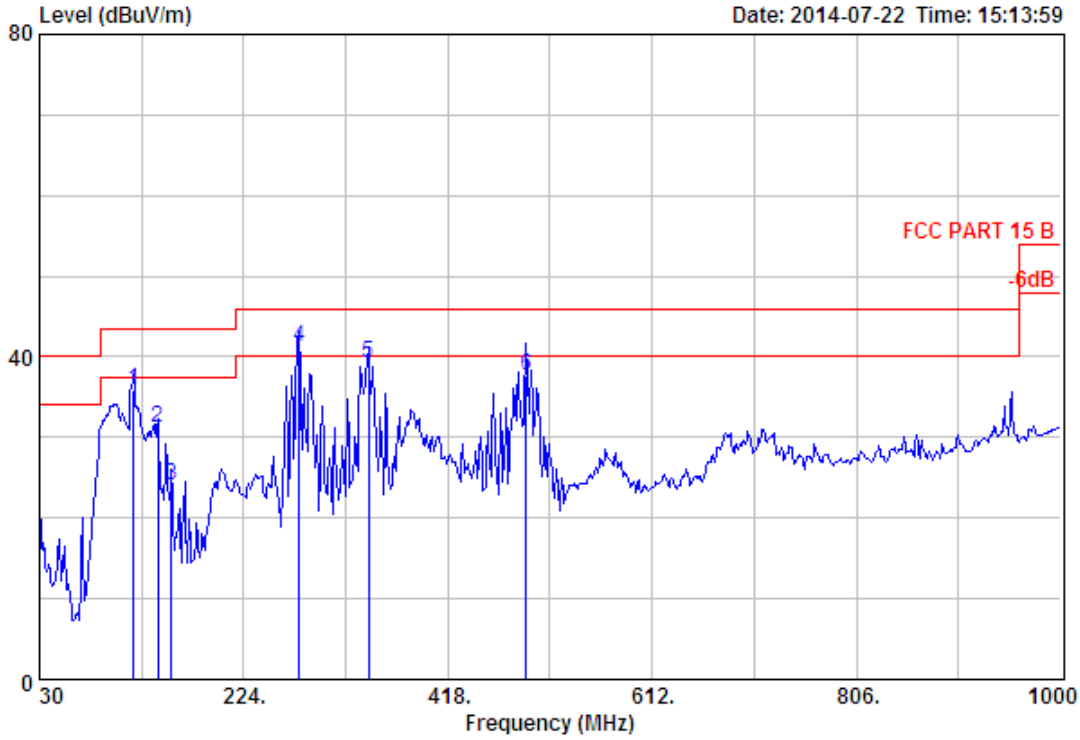
Site no. : 3m Chamber Data no. : 70
Dis. / Ant. : 3m 27137 Ant. pol. : HORIZONTAL
Limit : FCC PART 15 B
Env. / Ins. : Temp:24.6';Humi:56%;Press:101.52kPa
Engineer : Tony
EUT : Speaker
Power : AC 120V/60Hz
M/N : TOTAL PA
Test Mode : GFSK TX 2402MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	92.08	8.45	1.26	23.72	33.43	43.50	10.07	QP
2	196.84	7.72	1.81	21.15	30.68	43.50	12.82	QP
3	276.38	12.36	2.26	25.23	39.85	46.00	6.15	QP
4	322.94	13.65	2.43	22.61	38.69	46.00	7.31	QP
5	334.58	13.99	2.50	21.27	37.76	46.00	8.24	QP
6	706.09	20.84	3.71	14.53	39.08	46.00	6.92	QP



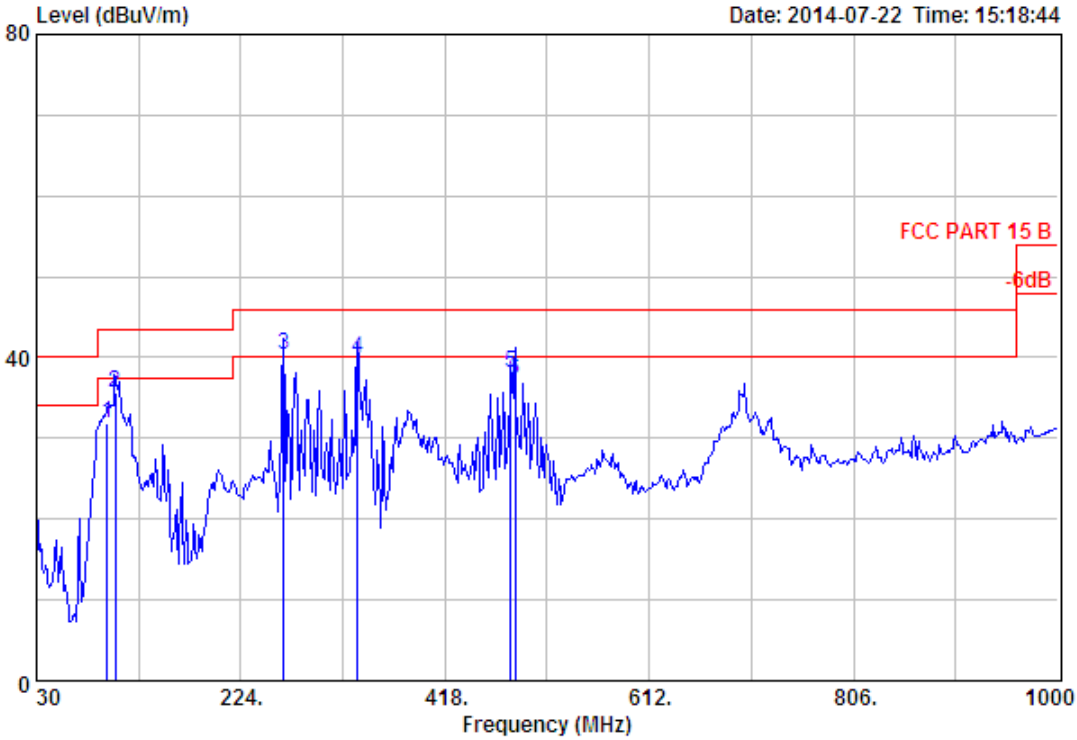
Site no. : 3m Chamber Data no. : 71
Dis. / Ant. : 3m 27137 Ant. pol. : HORIZONTAL
Limit : FCC PART 15 B
Env. / Ins. : Temp:24.6';Humi:56%;Press:101.52kPa
Engineer : Tony
EUT : Speaker
Power : AC 120V/60Hz
M/N : TOTAL PA
Test Mode : GFSK TX 2441MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	227.88	9.46	2.09	25.55	37.10	46.00	8.90	QP
2	276.38	12.36	2.26	24.23	38.85	46.00	7.15	QP
3	322.94	13.65	2.43	22.61	38.69	46.00	7.31	QP
4	334.58	13.99	2.50	19.27	35.76	46.00	10.24	QP
5	484.93	17.63	3.07	8.91	29.61	46.00	16.39	QP
6	676.99	20.27	3.64	9.70	33.61	46.00	12.39	QP



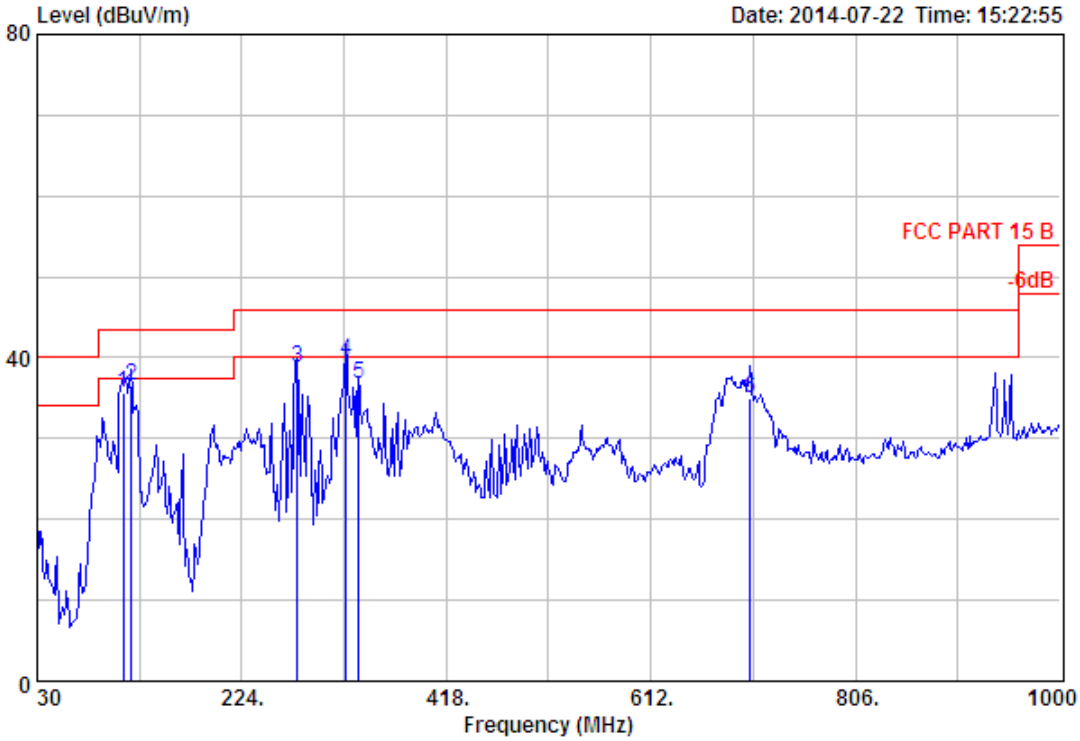
Site no. : 3m Chamber Data no. : 72
Dis. / Ant. : 3m 27137 Ant. pol. : VERTICAL
Limit : FCC PART 15 B
Env. / Ins. : Temp:24.6';Humi:56%;Press:101.52kPa
Engineer : Tony
EUT : Speaker
Power : AC 120V/60Hz
M/N : TOTAL PA
Test Mode : GFSK TX 2441MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	119.24	11.11	1.42	23.26	35.79	43.50	7.71	QP
2	142.52	11.33	1.53	18.40	31.26	43.50	12.24	QP
3	155.13	10.67	1.69	11.63	23.99	43.50	19.51	QP
4	276.38	12.36	2.26	26.54	41.16	46.00	4.84	QP
5	342.34	14.22	2.54	22.39	39.15	46.00	6.85	QP
6	492.69	17.83	3.15	16.75	37.73	46.00	8.27	QP



Site no. : 3m Chamber Data no. : 73
Dis. / Ant. : 3m 27137 Ant. pol. : VERTICAL
Limit : FCC PART 15 B
Env. / Ins. : Temp:24.6';Humi:56%;Press:101.52kPa
Engineer : Tony
EUT : Speaker
Power : AC 120V/60Hz
M/N : TOTAL PA
Test Mode : GFSK TX 2480MHz

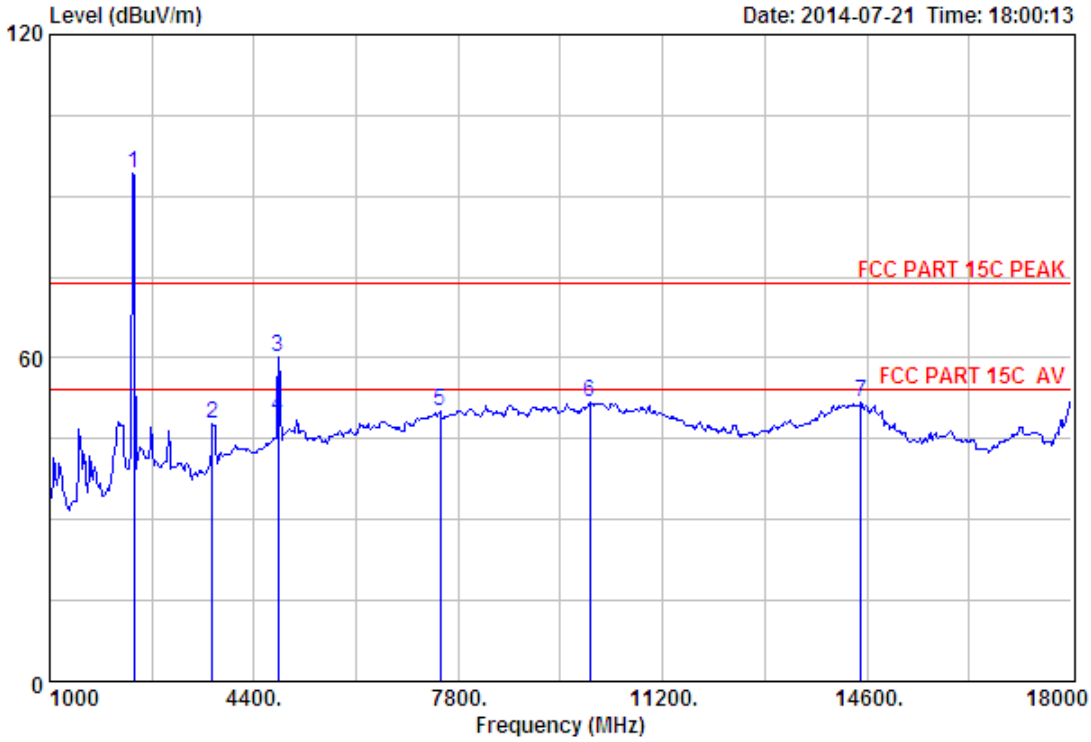
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	96.93	8.92	1.33	21.72	31.97	43.50	11.53	QP
2	104.69	9.95	1.44	24.26	35.65	43.50	7.85	QP
3	264.74	12.94	2.28	25.17	40.39	46.00	5.61	QP
4	334.58	13.99	2.50	23.30	39.79	46.00	6.21	QP
5	480.08	17.45	3.10	17.46	38.01	46.00	7.99	QP
6	484.93	17.63	3.07	16.46	37.16	46.00	8.84	QP



Site no. : 3m Chamber Data no. : 74
Dis. / Ant. : 3m 27137 Ant. pol. : HORIZONTAL
Limit : FCC PART 15 B
Env. / Ins. : Temp:24.6';Humi:56%;Press:101.52kPa
Engineer : Tony
EUT : Speaker
Power : AC 120V/60Hz
M/N : TOTAL PA
Test Mode : GFSK TX 2480MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	111.48	10.60	1.44	23.57	35.61	43.50	7.89	QP
2	119.24	11.11	1.42	24.08	36.61	43.50	6.89	QP
3	276.38	12.36	2.26	24.23	38.85	46.00	7.15	QP
4	322.94	13.65	2.43	23.61	39.69	46.00	6.31	QP
5	334.58	13.99	2.50	20.27	36.76	46.00	9.24	QP
6	706.09	20.84	3.71	10.53	35.08	46.00	10.92	QP

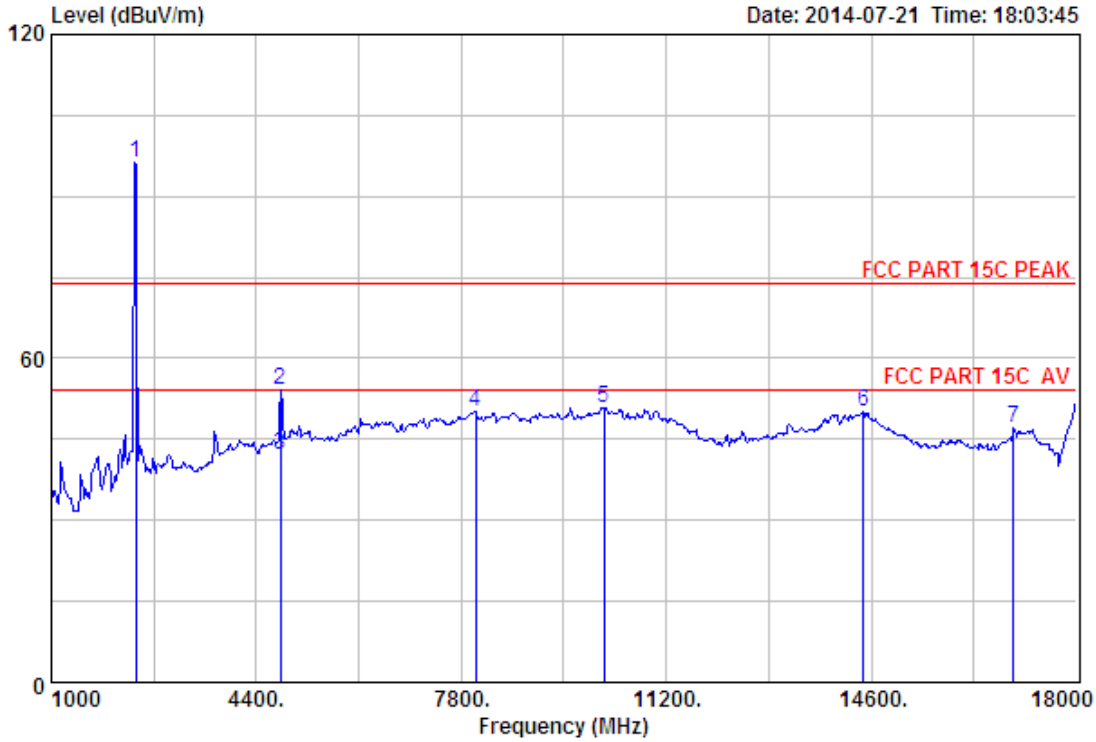
1000 MHz – 18000MHz




```
Site no.      : 3m Chamber                  Data no. : 17
Dis. / Ant.   : 3m   ANT 1-18G              Ant. pol. : VERTICAL
Limit         : FCC PART 15C PEAK
Env. / Ins.   : Temp:24.6';Humi:56%;Press:101.52kPa
Engineer      : Tony
EUT           : Speaker
Power         : AC 120V/60Hz
M/N           : TOTAL PA
Test Mode     : GFSK TX 2402MHz
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Emission Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2402.00	27.61	6.62	34.18	94.20	94.25	74.00	-20.25	Peak
2	3703.00	28.89	9.60	32.66	41.92	47.75	74.00	26.25	Peak
3	4804.00	31.25	11.77	31.81	48.91	60.12	74.00	13.88	Peak
4	4804.00	31.25	11.77	31.81	37.89	49.10	54.00	4.90	Average
5	7494.00	36.48	11.62	31.87	33.82	50.05	74.00	23.95	Peak
6	9993.00	38.12	11.59	31.78	33.82	51.75	74.00	22.25	Peak
7	14498.00	41.88	10.93	33.08	32.00	51.73	74.00	22.27	Peak

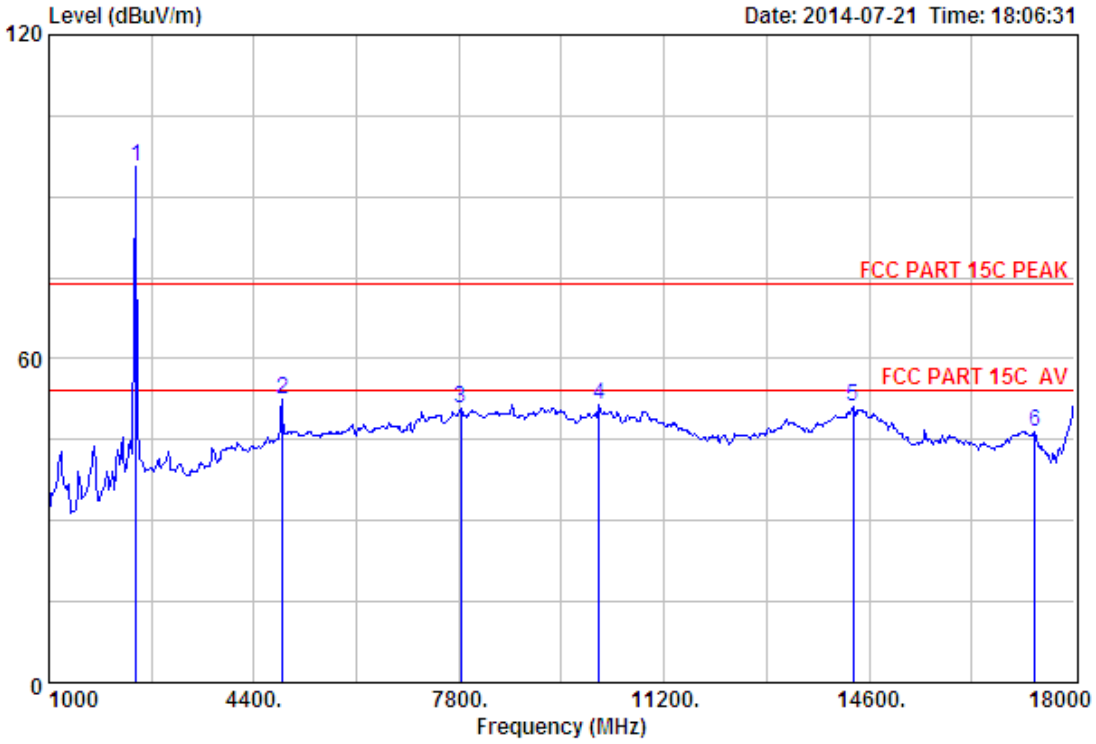
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 18
Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : Temp:24.6';Humi:56%;Press:101.52kPa
Engineer : Tony
EUT : Speaker
Power : AC 120V/60Hz
M/N : TOTAL PA
Test Mode : GFSK TX 2402MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2402.00	27.61	6.62	34.18	96.30	96.35	74.00	-22.35	Peak
2	4804.00	31.25	11.77	31.81	42.86	54.07	74.00	19.93	Peak
3	4804.00	31.25	11.77	31.81	30.82	42.03	54.00	11.97	Average
4	8038.00	36.95	11.40	31.28	33.17	50.24	74.00	23.76	Peak
5	10163.00	38.39	11.50	32.08	33.07	50.88	74.00	23.12	Peak
6	14464.00	41.85	10.93	32.96	30.20	50.02	74.00	23.98	Peak
7	16963.00	39.64	10.96	33.42	29.98	47.16	74.00	26.84	Peak

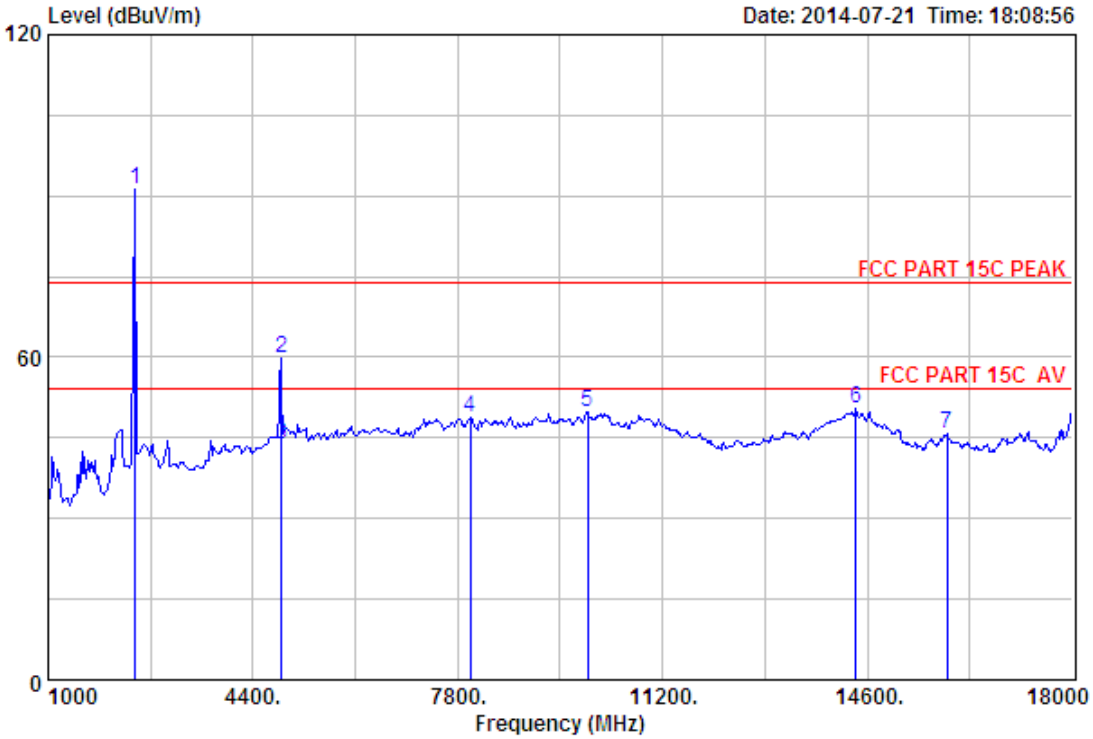
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 19
Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : Temp:24.6';Humi:56%;Press:101.52kPa
Engineer : Tony
EUT : Speaker
Power : AC 120V/60Hz
M/N : TOTAL PA
Test Mode : GFSK TX 2441MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2441.00	27.60	6.67	34.12	95.57	95.72	74.00	-21.72	Peak
2	4882.00	31.37	12.07	31.90	40.91	52.45	74.00	21.55	Peak
3	7834.00	36.68	11.47	31.40	34.02	50.77	74.00	23.23	Peak
4	10129.00	38.33	11.52	32.01	33.63	51.47	74.00	22.53	Peak
5	14328.00	41.74	10.92	32.98	31.36	51.04	74.00	22.96	Peak
6	17354.00	41.04	10.86	34.29	28.98	46.59	74.00	27.41	Peak

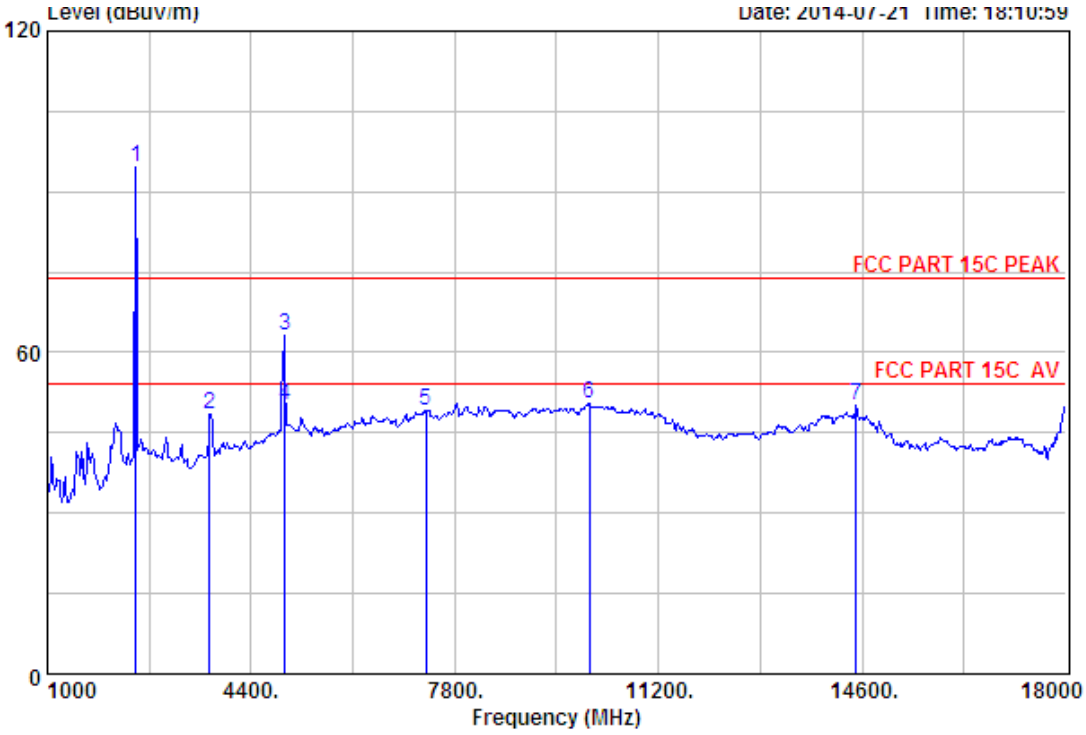
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 20
Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : Temp:24.6';Humi:56%;Press:101.52kPa
Engineer : Tony
EUT : Speaker
Power : AC 120V/60Hz
M/N : TOTAL PA
Test Mode : GFSK TX 2441MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2441.00	27.60	6.67	34.12	90.97	91.12	74.00	-17.12	Peak
2	4882.00	31.37	12.07	31.90	48.35	59.89	74.00	14.11	Peak
3	4882.00	31.37	12.07	31.90	32.12	43.66	54.00	10.34	Average
4	8004.00	37.01	11.40	31.22	31.66	48.85	74.00	25.15	Peak
5	9959.00	38.13	11.60	31.77	32.01	49.97	74.00	24.03	Peak
6	14413.00	41.80	10.92	32.78	30.52	50.46	74.00	23.54	Peak
7	15926.00	37.19	10.73	33.11	31.08	45.89	74.00	28.11	Peak

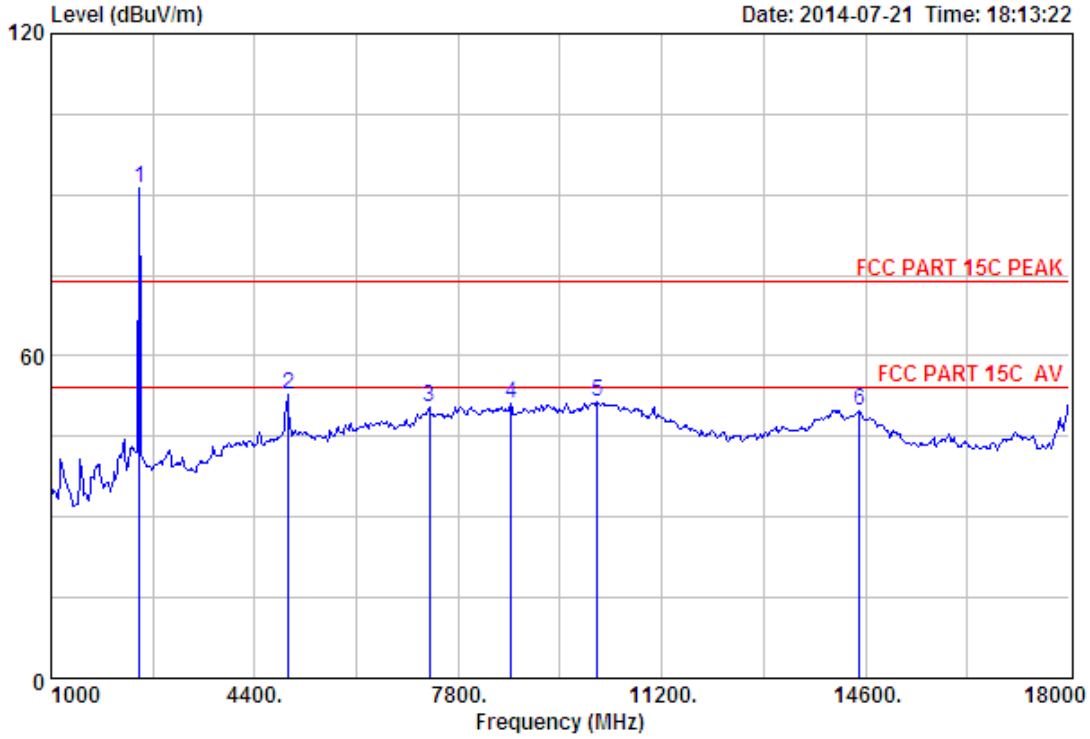
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 21
Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : Temp:24.6';Humi:56%;Press:101.52kPa
Engineer : Tony
EUT : Speaker
Power : AC 120V/60Hz
M/N : TOTAL PA
Test Mode : GFSK TX 2480MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2480.00	27.58	6.71	34.03	94.38	94.64	74.00	-20.64	Peak
2	3703.00	28.89	9.60	32.66	42.67	48.50	74.00	25.50	Peak
3	4960.00	31.49	12.44	31.97	51.37	63.33	74.00	10.67	Peak
4	4960.00	31.49	12.44	31.97	38.05	50.01	54.00	3.99	Average
5	7324.00	36.55	11.57	31.99	33.10	49.23	74.00	24.77	Peak
6	10044.00	38.18	11.56	31.85	32.57	50.46	74.00	23.54	Peak
7	14498.00	41.88	10.93	33.08	30.55	50.28	74.00	23.72	Peak

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

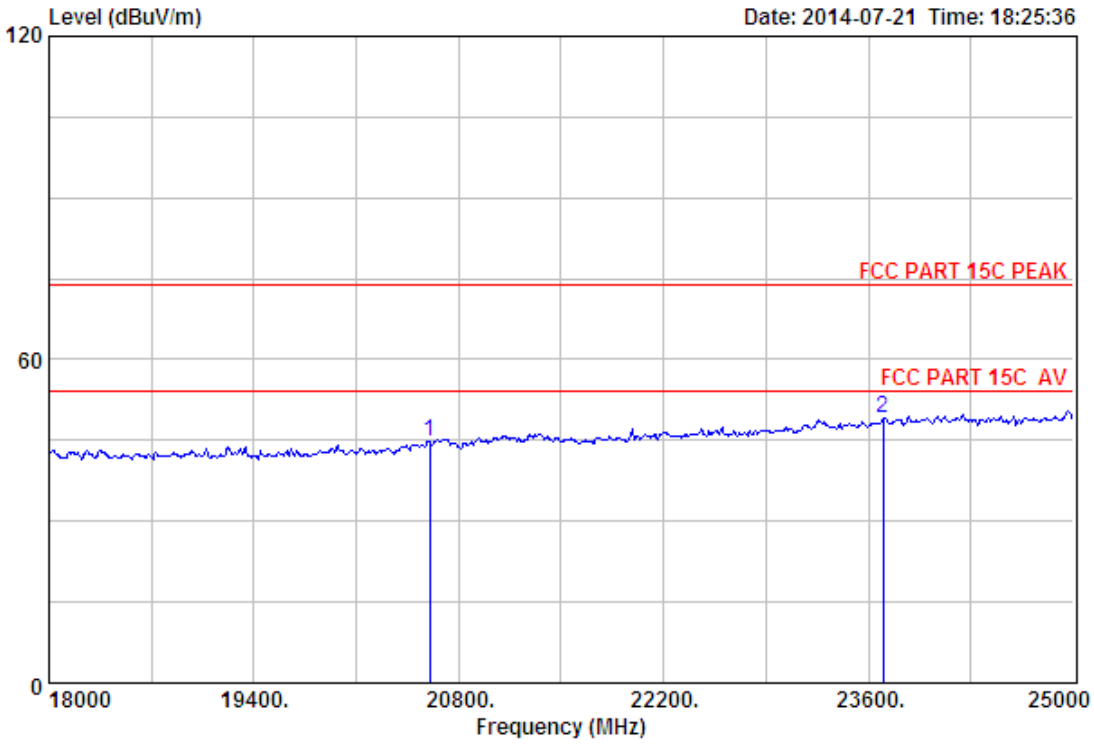


Site no. : 3m Chamber Data no. : 22
Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : Temp:24.6';Humi:56%;Press:101.52kPa
Engineer : Tony
EUT : Speaker
Power : AC 120V/60Hz
M/N : TOTAL PA
Test Mode : GFSK TX 2480MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Emission Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2480.00	27.58	6.71	34.03	91.00	91.26	74.00	-17.26	Peak
2	4960.00	31.49	12.44	31.97	40.80	52.76	74.00	21.24	Peak
3	7324.00	36.55	11.57	31.99	34.34	50.47	74.00	23.53	Peak
4	8684.00	37.32	11.45	32.43	34.96	51.30	74.00	22.70	Peak
5	10129.00	38.33	11.52	32.01	33.54	51.38	74.00	22.62	Peak
6	14498.00	41.88	10.93	33.08	30.19	49.92	74.00	24.08	Peak

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

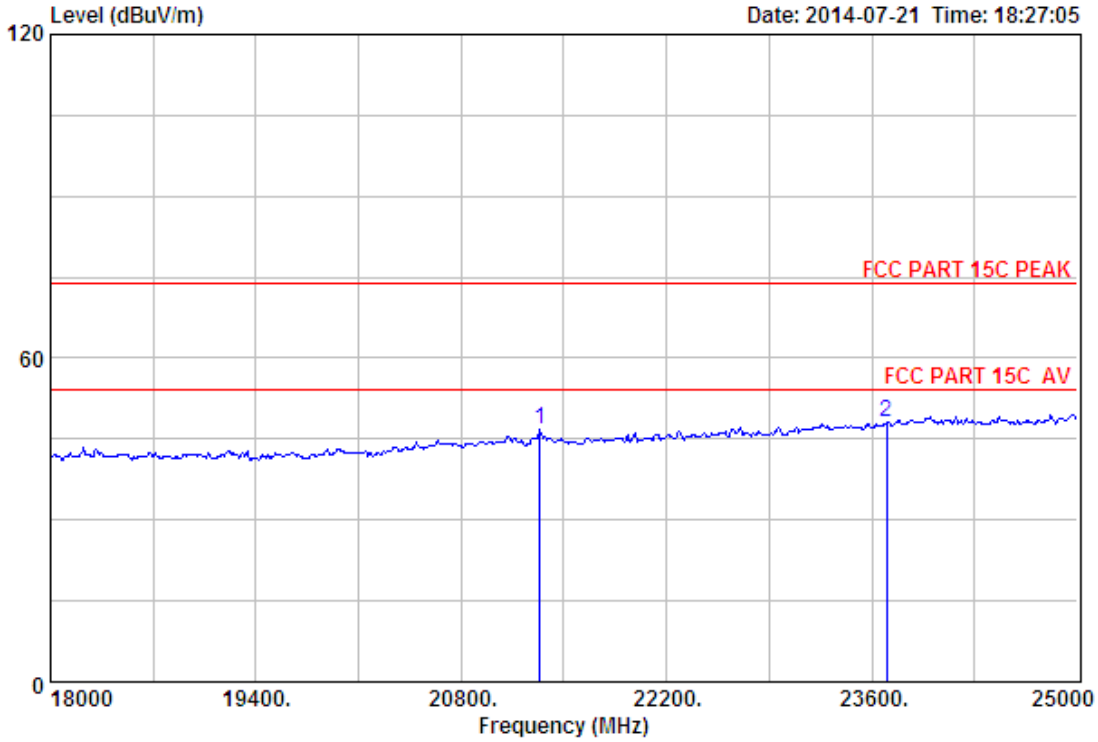
18000MHz – 25000MHz



Site no. : 3m Chamber Data no. : 27
Dis. / Ant. : 3m ANT ABVOE 18G Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : Temp:24.6';Humi:56%;Press:101.52kPa
Engineer : Tony
EUT : Speaker
Power : AC 120V/60Hz
M/N : TOTAL PA
Test Mode : GFSK TX 2402MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	20604.00	46.05	19.95	36.16	14.98	44.82	74.00	29.18	Peak
2	23698.00	45.66	21.77	33.11	14.91	49.23	74.00	24.77	Peak

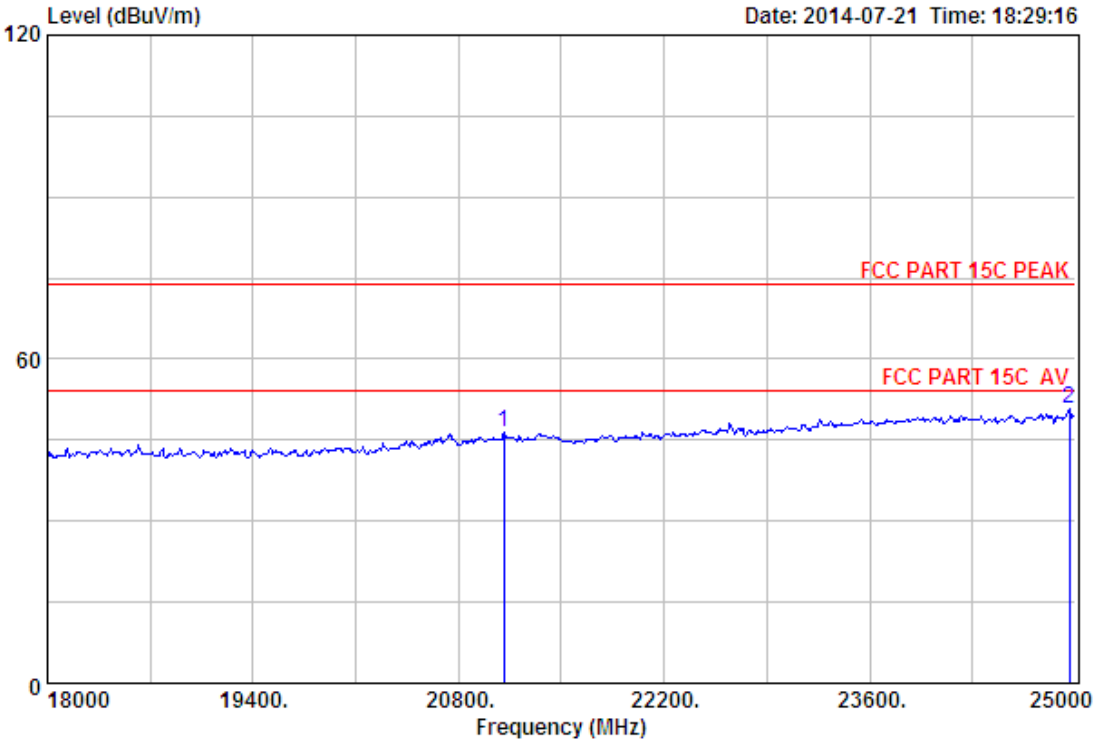
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 28
Dis. / Ant. : 3m ANT ABOVE 18G Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : Temp:24.6';Humi:56%;Press:101.52kPa
Engineer : Tony
EUT : Speaker
Power : AC 120V/60Hz
M/N : TOTAL PA
Test Mode : GFSK TX 2402MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	21339.00	46.09	20.28	35.49	15.80	46.68	74.00	27.32	Peak
2	23698.00	45.66	21.77	33.11	13.91	48.23	74.00	25.77	Peak

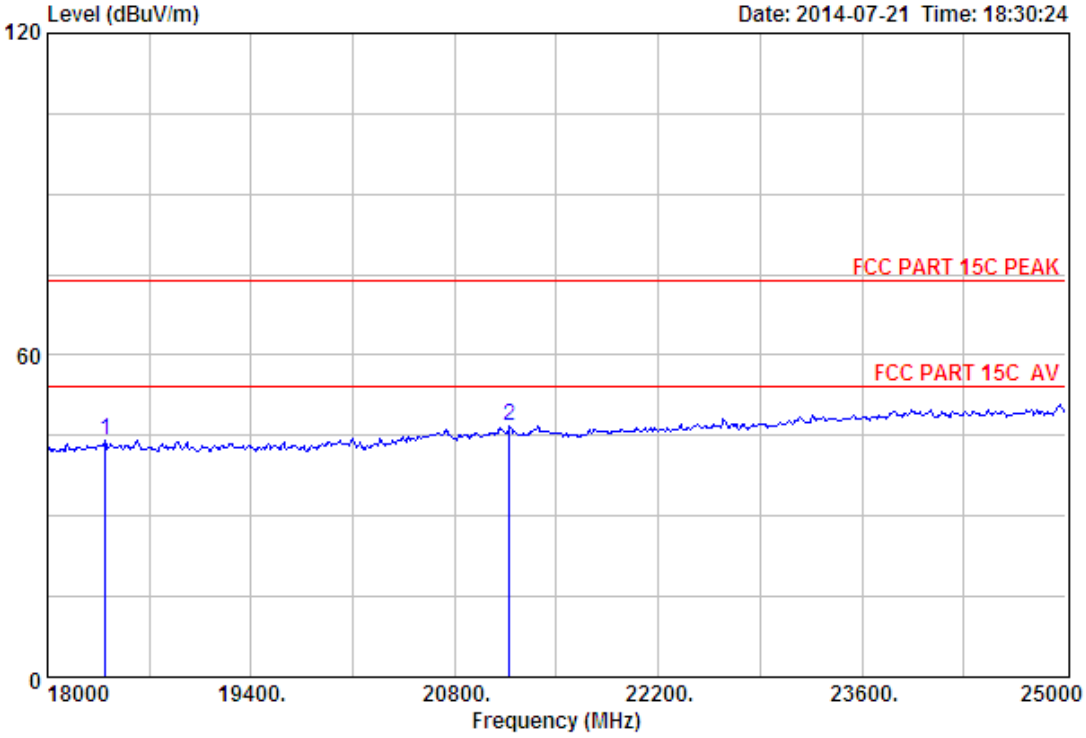
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 29
Dis. / Ant. : 3m ANT ABOVE 18G Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : Temp:24.6';Humi:56%;Press:101.52kPa
Engineer : Tony
EUT : Speaker
Power : AC 120V/60Hz
M/N : TOTAL PA
Test Mode : GFSK TX 2441MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	21108.00	46.23	20.18	35.71	15.67	46.37	74.00	27.63	Peak
2	24958.00	46.07	22.57	34.27	16.39	50.76	74.00	23.24	Peak

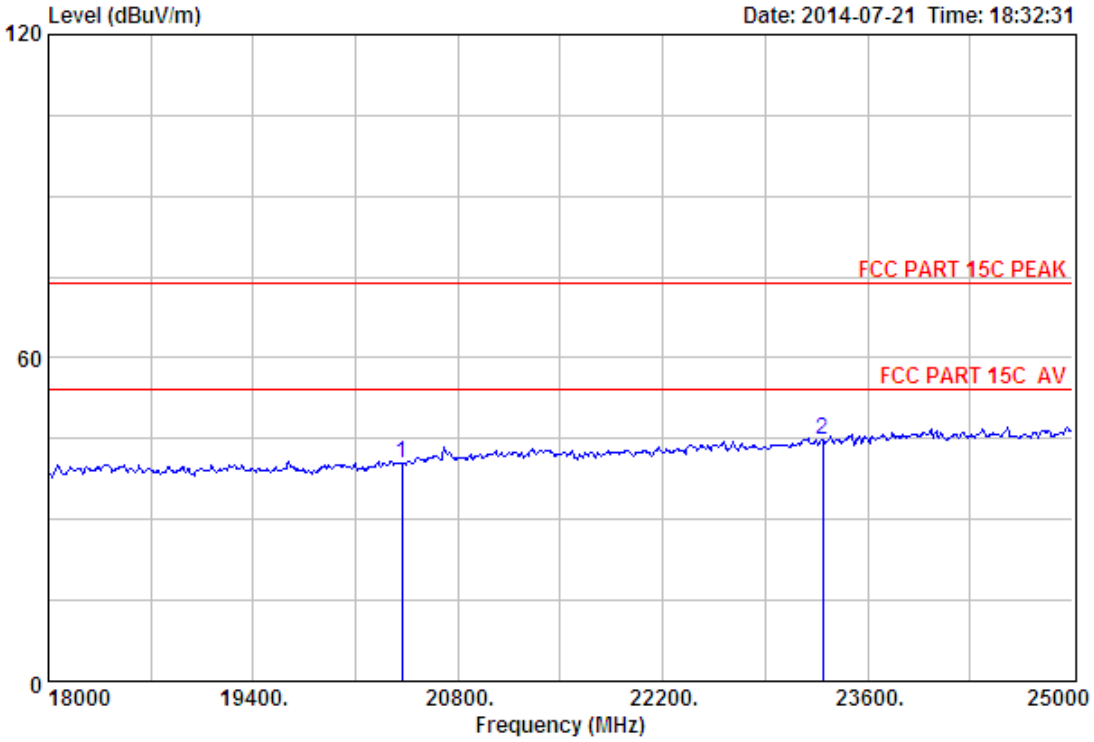
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 30
Dis. / Ant. : 3m ANT ABVOE 18G Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : Temp:24.6';Humi:56%;Press:101.52kPa
Engineer : Tony
EUT : Speaker
Power : AC 120V/60Hz
M/N : TOTAL PA
Test Mode : GFSK TX 2441MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	18399.00	44.75	17.80	35.34	16.97	44.18	74.00	29.82	Peak
2	21178.00	46.20	20.21	35.64	15.97	46.74	74.00	27.26	Peak

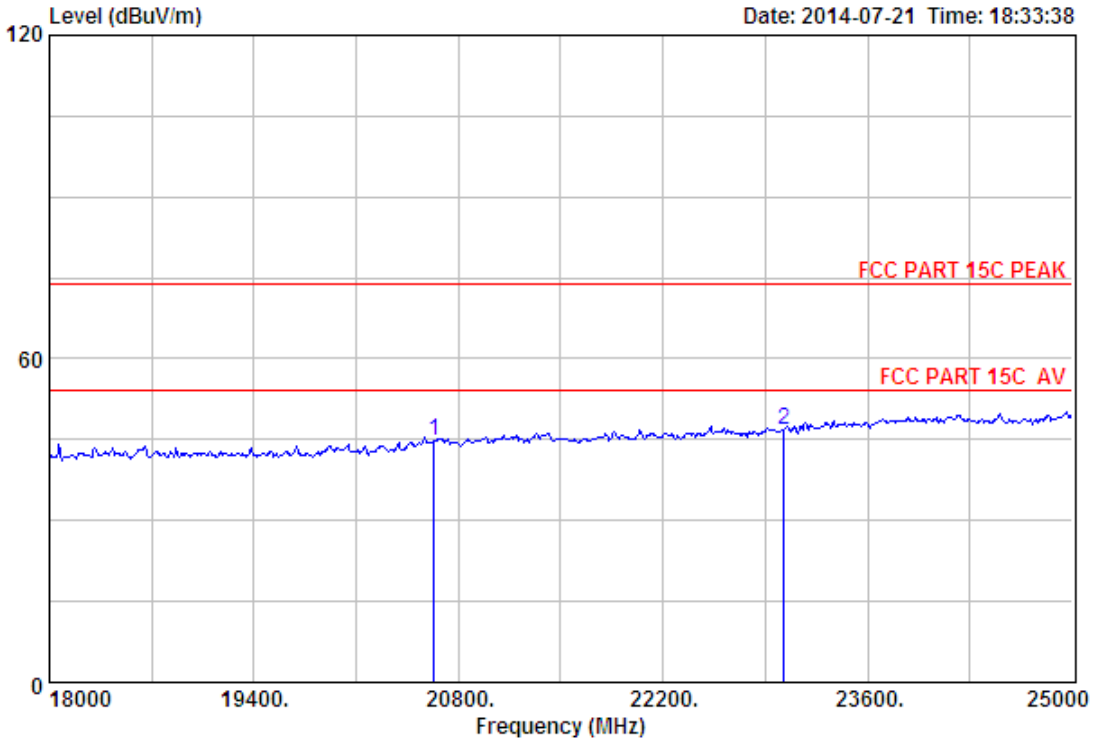
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 31
Dis. / Ant. : 3m ANT ABVOE 18G Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : Temp:24.6';Humi:56%;Press:101.52kPa
Engineer : Tony
EUT : Speaker
Power : AC 120V/60Hz
M/N : TOTAL PA
Test Mode : GFSK TX 2480MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	20415.00	46.02	19.87	36.32	10.85	40.42	74.00	33.58	Peak
2	23292.00	45.66	21.41	33.53	11.22	44.76	74.00	29.24	Peak

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



Site no. : 3m Chamber Data no. : 32
Dis. / Ant. : 3m ANT ABOVE 18G Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : Temp:24.6';Humi:56%;Press:101.52kPa
Engineer : Tony
EUT : Speaker
Power : AC 120V/60Hz
M/N : TOTAL PA
Test Mode : GFSK TX 2480MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	20632.00	46.08	19.96	36.14	14.84	44.74	74.00	29.26	Peak
2	23026.00	45.60	21.17	33.82	13.96	46.91	74.00	27.09	Peak

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

9. BAND EDGE COMPLIANCE

9.1. 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.

9.2. Test Procedure

EUT was placed on a turn table, which is 10cm high above 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. Both horizontal and vertical polarization of the antenna are set on test.

Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of emissions

(a) PEAK: RBW=VBW=1MHz / Sweep=AUTO

(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO

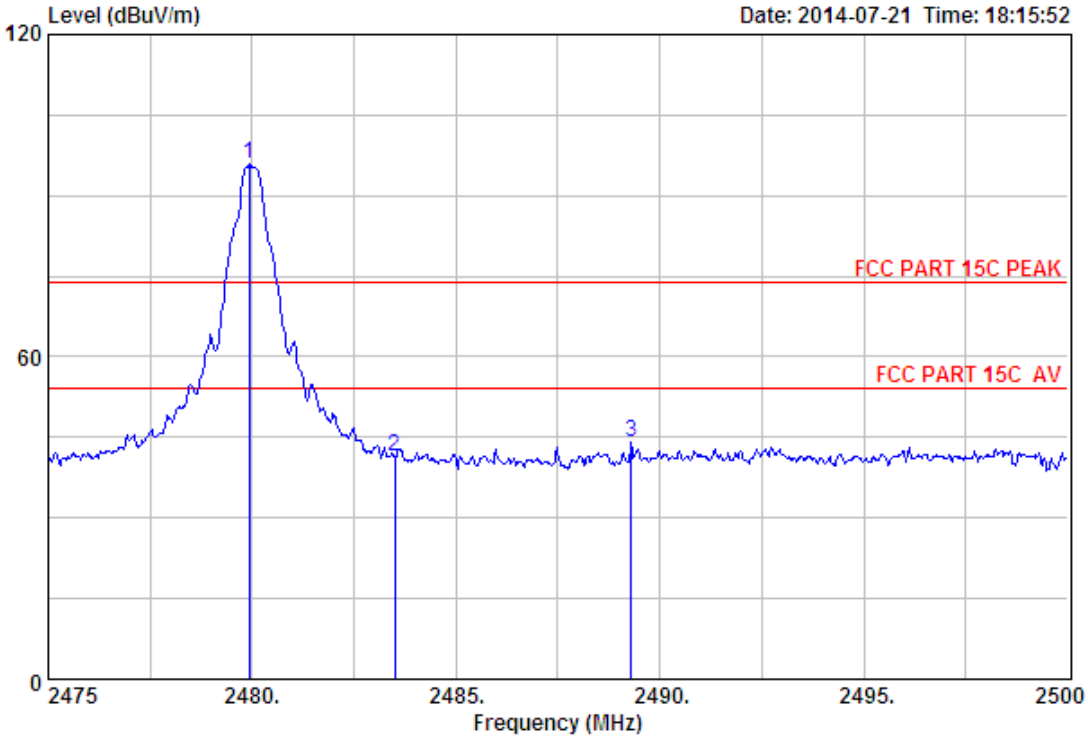
9.3. Test Result

EUT: Speaker M/N: TOTAL PA
Power: AC 120V/60Hz
Test date: 2014-07-21 Test site: 3m Chamber Tested by: Tony Tang
Test mode: Tx Mode (Hopping On & No Hopping)
Pass

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

2、 The frequency 2402MHz 、2441MHz and 2480MHz is fundamental frequency which no limit, the limit on plots is automatically generated by the software, it's not fundamental limit, we can't remove it.

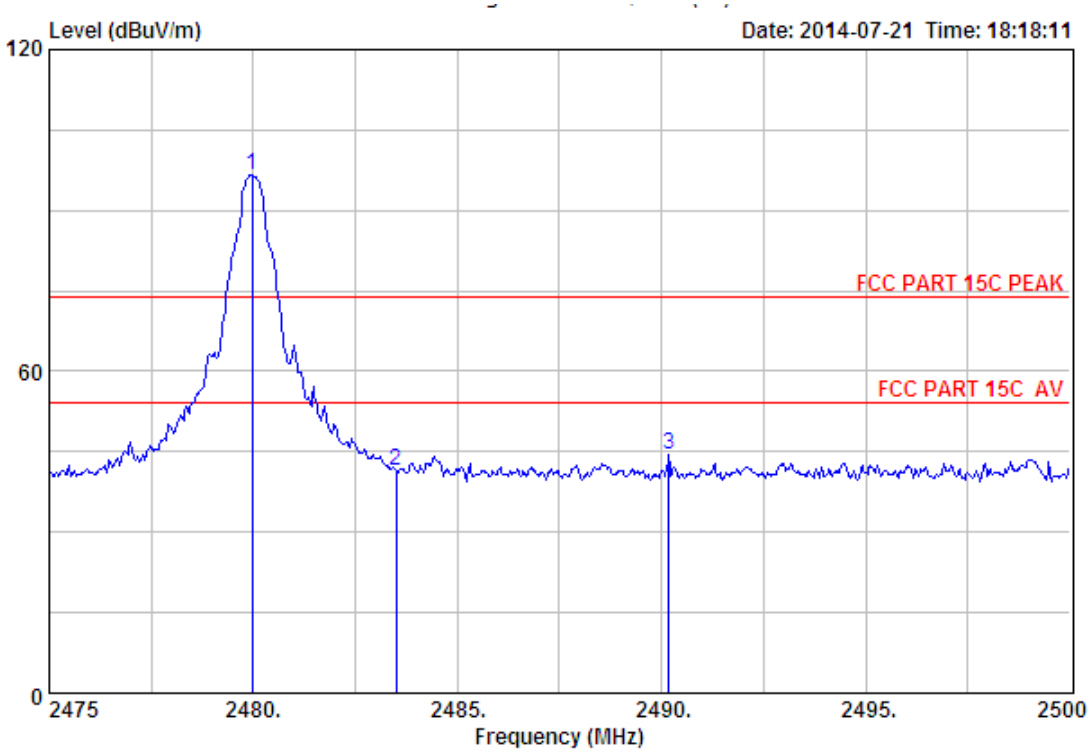
9.4. Test Data




```
Site no.      : 3m Chamber                  Data no. : 23
Dis. / Ant.   : 3m   ANT 1-18G              Ant. pol. : HORIZONTAL
Limit         : FCC PART 15C PEAK
Env. / Ins.   : Temp:24.6';Humi:56%;Press:101.52kPa
Engineer      : Tony
EUT           : Speaker
Power         : AC 120V/60Hz
M/N           : TOTAL PA
Test Mode     : GFSK TX 2480MHz(No Hopping)
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2479.93	27.58	6.71	34.03	95.78	96.04	74.00	-22.04	Peak
2	2483.50	27.58	6.71	34.03	41.17	41.43	74.00	32.57	Peak
3	2489.30	27.58	6.73	34.03	43.84	44.12	74.00	29.88	Peak

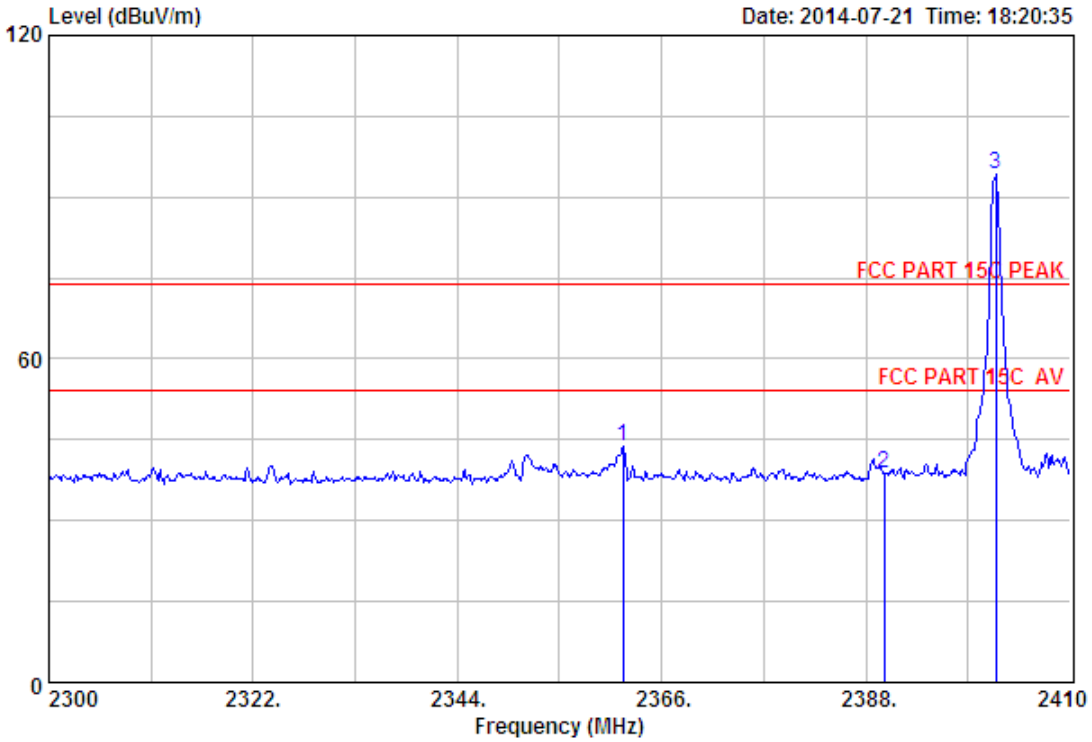
```
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
         2. The emission levels that are 20dB below the official
            limit are not reported.
```



Site no. : 3m Chamber Data no. : 24
Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : Temp:24.6';Humi:56%;Press:101.52kPa
Engineer : Tony
EUT : Speaker
Power : AC 120V/60Hz
M/N : TOTAL PA
Test Mode : GFSK TX 2480MHz(No Hopping)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2479.98	27.58	6.71	34.03	96.49	96.75	74.00	-22.75	Peak
2	2483.50	27.58	6.71	34.03	41.29	41.55	74.00	32.45	Peak
3	2490.18	27.58	6.73	34.03	44.11	44.39	74.00	29.61	Peak

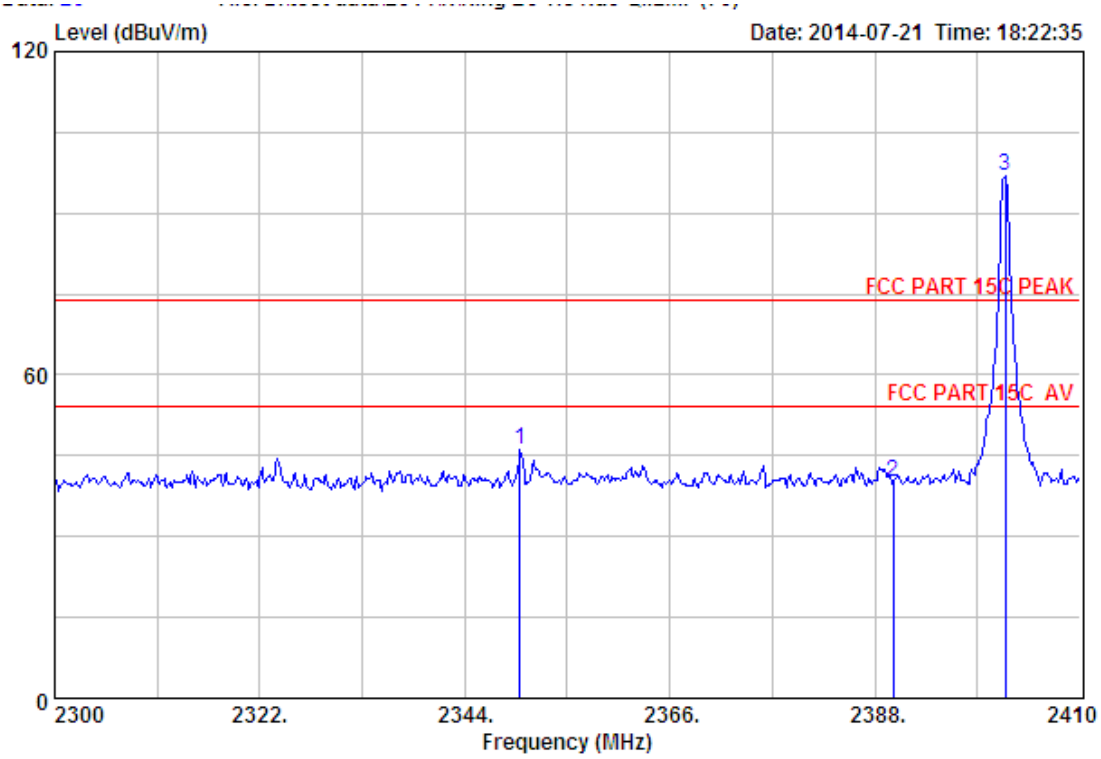
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 25
Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : Temp:24.6';Humi:56%;Press:101.52kPa
Engineer : Tony
EUT : Speaker
Power : AC 120V/60Hz
M/N : TOTAL PA
Test Mode : GFSK TX 2402MHz(No Hopping)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2361.82	27.67	6.58	34.20	43.63	43.68	74.00	30.32	Peak
2	2390.00	27.64	6.62	34.19	38.77	38.84	74.00	35.16	Peak
3	2401.97	27.61	6.62	34.18	94.12	94.17	74.00	-20.17	Peak

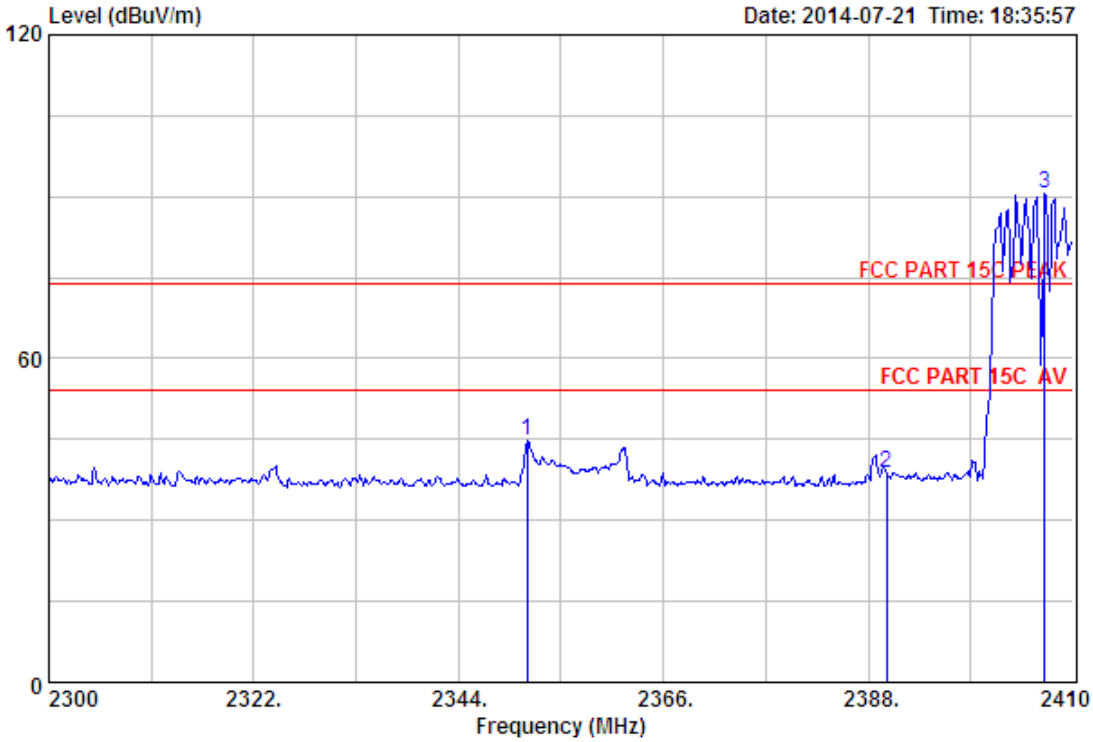
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 26
Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : Temp:24.6';Humi:56%;Press:101.52kPa
Engineer : Tony
EUT : Speaker
Power : AC 120V/60Hz
M/N : TOTAL PA
Test Mode : GFSK TX 2402MHz(No Hopping)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2349.94	27.70	6.56	34.22	45.96	46.00	74.00	28.00	Peak
2	2390.00	27.64	6.62	34.19	40.16	40.23	74.00	33.77	Peak
3	2401.97	27.61	6.62	34.18	96.94	96.99	74.00	-22.99	Peak

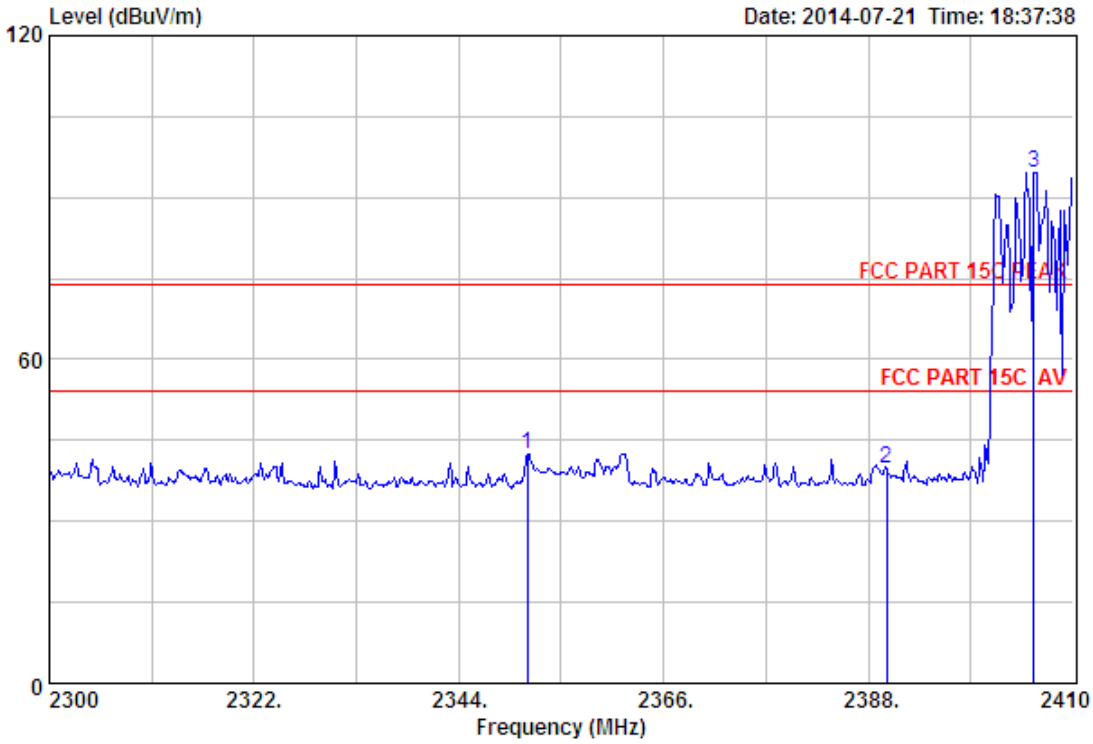
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 33
Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : Temp:24.6';Humi:56%;Press:101.52kPa
Engineer : Tony
EUT : Speaker
Power : AC 120V/60Hz
M/N : TOTAL PA
Test Mode : GFSK TX 2402MHz(Hopping On)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2351.37	27.70	6.56	34.22	44.78	44.82	74.00	29.18	Peak
2	2390.00	27.64	6.62	34.19	38.70	38.77	74.00	35.23	Peak
3	2406.92	27.61	6.64	34.18	90.39	90.46	74.00	-16.46	Peak

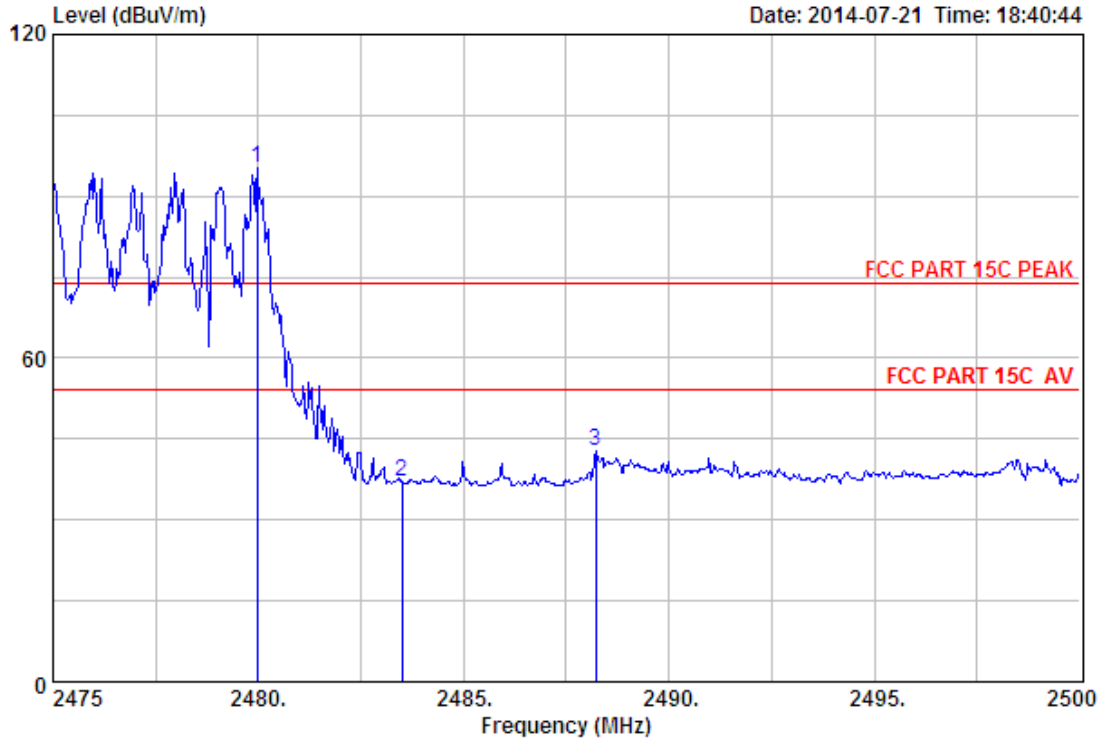
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.




```
Site no.      : 3m Chamber                  Data no. : 34
Dis. / Ant.   : 3m   ANT 1-18G              Ant. pol. : HORIZONTAL
Limit         : FCC PART 15C PEAK
Env. / Ins.   : Temp:24.6';Humi:56%;Press:101.52kPa
Engineer      : Tony
EUT           : Speaker
Power         : AC 120V/60Hz
M/N           : TOTAL PA
Test Mode     : GFSK TX 2402MHz(Hopping On)
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2351.37	27.70	6.56	34.22	42.57	42.61	74.00	31.39	Peak
2	2390.00	27.64	6.62	34.19	39.61	39.68	74.00	34.32	Peak
3	2405.82	27.61	6.64	34.18	94.59	94.66	74.00	-20.66	Peak

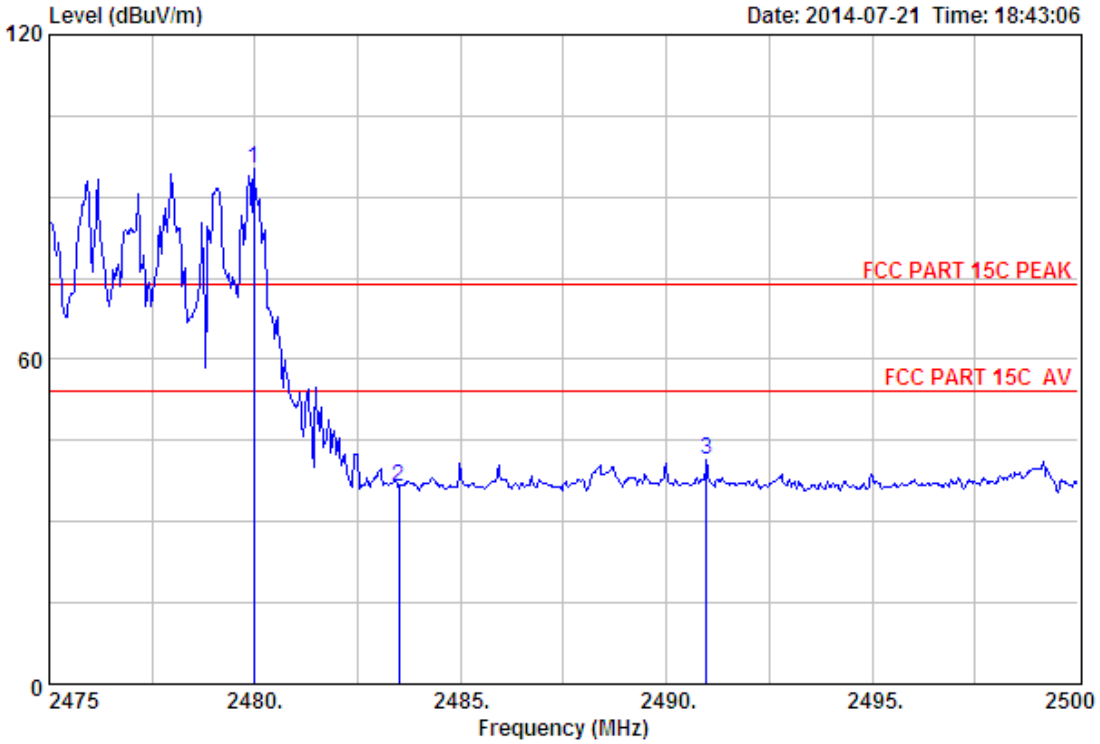
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 35
Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : Temp:24.6';Humi:56%;Press:101.52kPa
Engineer : Tony
EUT : Speaker
Power : AC 120V/60Hz
M/N : TOTAL PA
Test Mode : GFSK TX 2480MHz(Hopping On)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2479.98	27.58	6.71	34.03	94.97	95.23	74.00	-21.23	Peak
2	2483.50	27.58	6.71	34.03	36.84	37.10	74.00	36.90	Peak
3	2488.23	27.58	6.73	34.03	42.66	42.94	74.00	31.06	Peak

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




```
Site no.      : 3m Chamber                  Data no. : 36
Dis. / Ant.   : 3m   ANT 1-18G              Ant. pol. : VERTICAL
Limit         : FCC PART 15C PEAK
Env. / Ins.   : Temp:24.6';Humi:56%;Press:101.52kPa
Engineer      : Tony
EUT           : Speaker
Power         : AC 120V/60Hz
M/N           : TOTAL PA
Test Mode     : GFSK TX 2480MHz(Hopping On)
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2479.98	27.58	6.71	34.03	94.97	95.23	74.00	-21.23	Peak
2	2483.50	27.58	6.71	34.03	36.20	36.46	74.00	37.54	Peak
3	2490.98	27.58	6.73	34.03	41.07	41.35	74.00	32.65	Peak

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

10. POWER LINE CONDUCTED EMISSIONS

10.1.Limit

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

Notes: 1. * Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

10.2.Test Procedure

The EUT was placed on a non-metallic table, 10cm above the ground plane. The EUT was charged form PC's USB port which connected to the power mains through a line impedance stabilization network (L.I.S.N. 1#).. Both sides of 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 C63.4: 2009 on Conducted Emission Test.

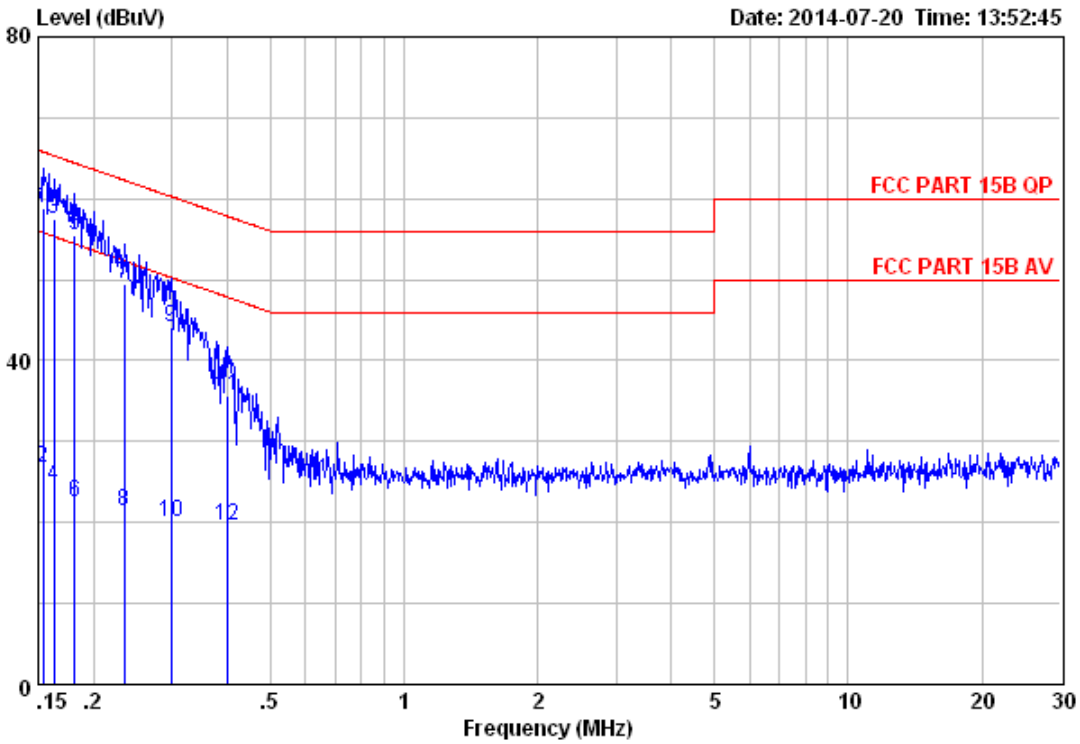
The bandwidth of test receiver (R & S ESHS30) is set at 10kHz.

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

10.3.Test Result

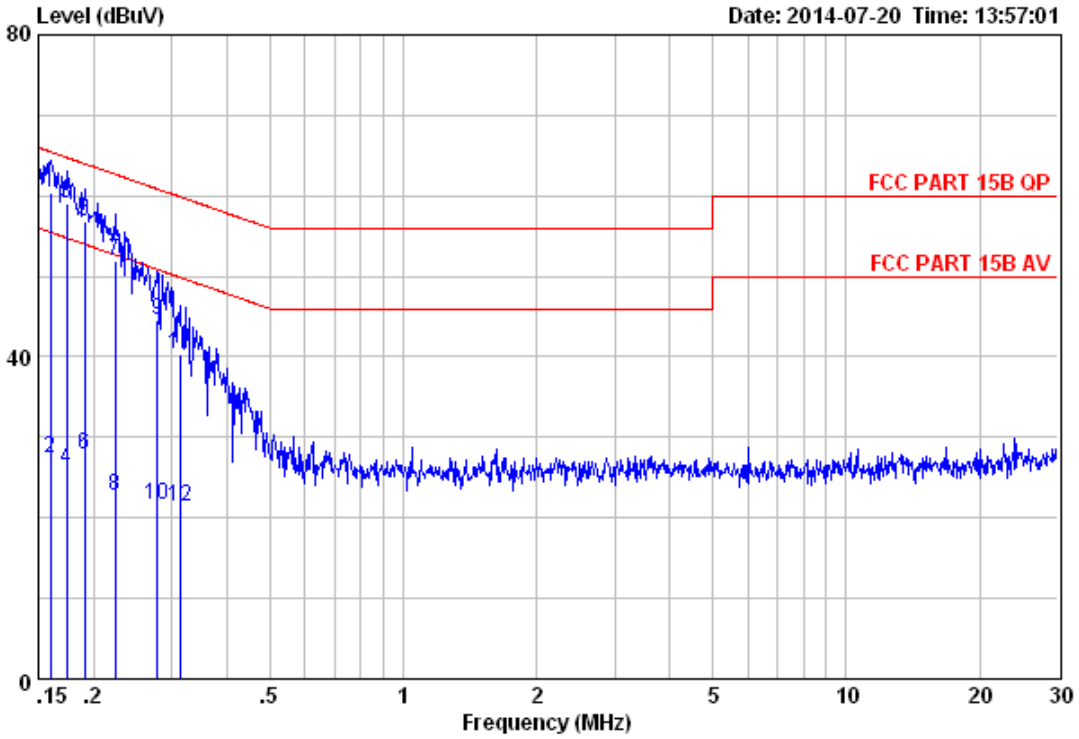
0.15MHz—30MHz Conducted emissison Test result
EUT: Speaker M/N: TOTAL PA
Power: AC 120V/60Hz
Test date: 2014-07-20 Test site: 3m Chamber Tested by: Tony.Tang
Test mode: TX Mode
Pass

10.4.Test data



Site no. : EST Conduction Shielded RoomData no. : 53
Limit : FCC PART 15B QP LINE Phase : LINE
Env. / Ins. : Temp:25.3'C Humi:58% Press:101.50kPa
Engineer : Tony
EUT : Speaker
Power : AC 120V/60Hz
M/N : TOTAL PA
Test Mode : TX Mode

	Freq. (MHz)	LISN Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuv/m)	Limits (dBuv/m)	Margin (dB)	Remark
1	0.15	9.61	9.81	39.36	58.78	65.78	7.00	QP
2	0.15	9.61	9.81	7.36	26.78	55.78	29.00	Average
3	0.16	9.61	9.81	38.01	57.43	65.34	7.91	QP
4	0.16	9.61	9.81	5.01	24.43	55.34	30.91	Average
5	0.18	9.61	9.80	36.18	55.59	64.42	8.83	QP
6	0.18	9.61	9.80	3.18	22.59	54.42	31.83	Average
7	0.23	9.61	9.82	29.95	49.38	62.30	12.92	QP
8	0.23	9.61	9.82	1.95	21.38	52.30	30.92	Average
9	0.30	9.61	9.83	24.72	44.16	60.28	16.12	QP
10	0.30	9.61	9.83	0.72	20.16	50.28	30.12	Average
11	0.40	9.61	9.82	16.18	35.61	57.86	22.25	QP
12	0.40	9.61	9.82	0.18	19.61	47.86	28.25	Average



Site no. : EST Conduction Shielded RoomData no. : 55
Limit : FCC PART 15B QP LINE Phase : NEUTRAL
Env. / Ins. : Temp:25.3'C Humi:58% Press:101.50kPa
Engineer : Tony
EUT : Speaker
Power : AC 120V/60Hz
M/N : TOTAL PA
Test Mode : TX Mode

	Freq. (MHz)	LISN Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuv/m)	Limits (dBuv/m)	Margin (dB)	Remark
1	0.16	9.49	9.81	41.09	60.39	65.47	5.08	QP
2	0.16	9.49	9.81	8.09	27.39	55.47	28.08	Average
3	0.17	9.53	9.80	39.70	59.03	64.77	5.74	QP
4	0.17	9.53	9.80	6.70	26.03	54.77	28.74	Average
5	0.19	9.58	9.80	37.39	56.77	64.02	7.25	QP
6	0.19	9.58	9.80	8.39	27.77	54.02	26.25	Average
7	0.22	9.60	9.80	32.42	51.82	62.70	10.88	QP
8	0.22	9.60	9.80	3.42	22.82	52.70	29.88	Average
9	0.28	9.60	9.83	25.24	44.67	60.85	16.18	QP
10	0.28	9.60	9.83	2.24	21.67	50.85	29.18	Average
11	0.31	9.60	9.83	20.96	40.39	59.84	19.45	QP
12	0.31	9.60	9.83	1.96	21.39	49.84	28.45	Average

11. ANTENNA REQUIREMENTS

11.1. Limit

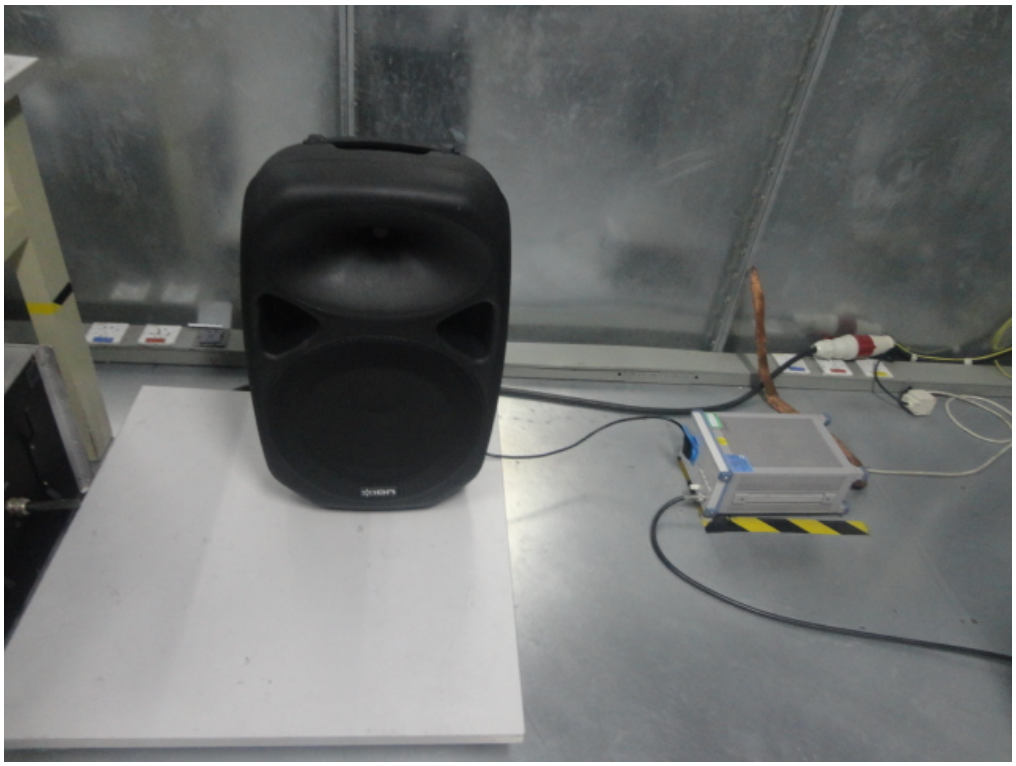
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional 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.

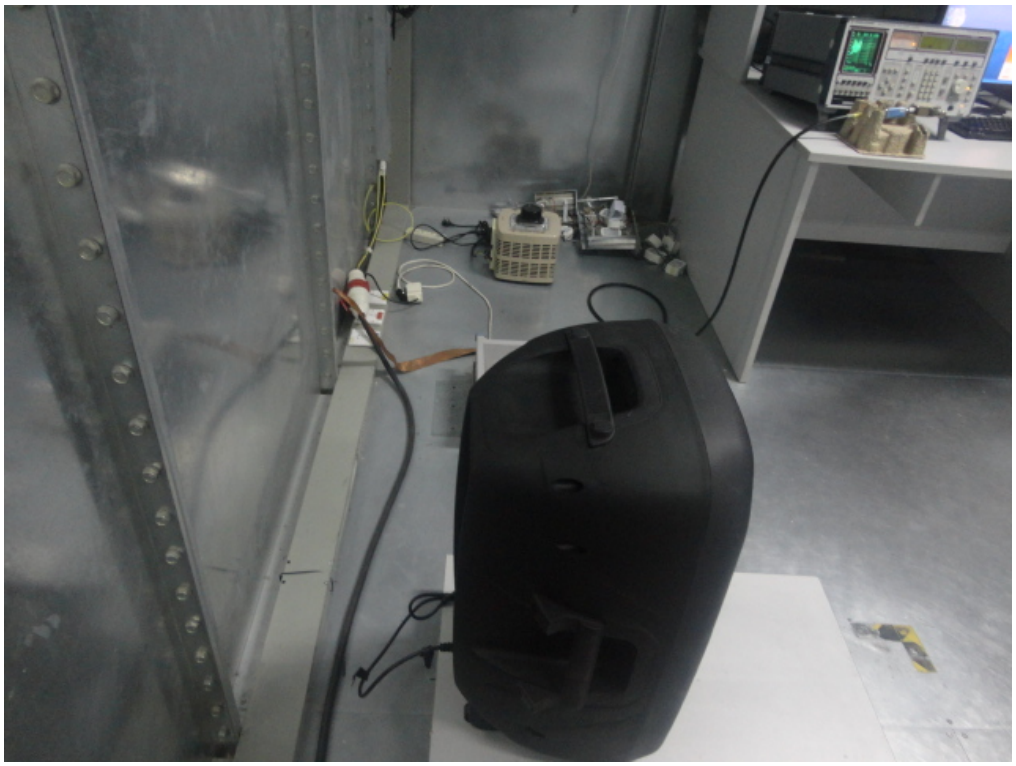
11.2. Result

The antennas used for this product are integral Patch Antenna and 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 only 0dBi.

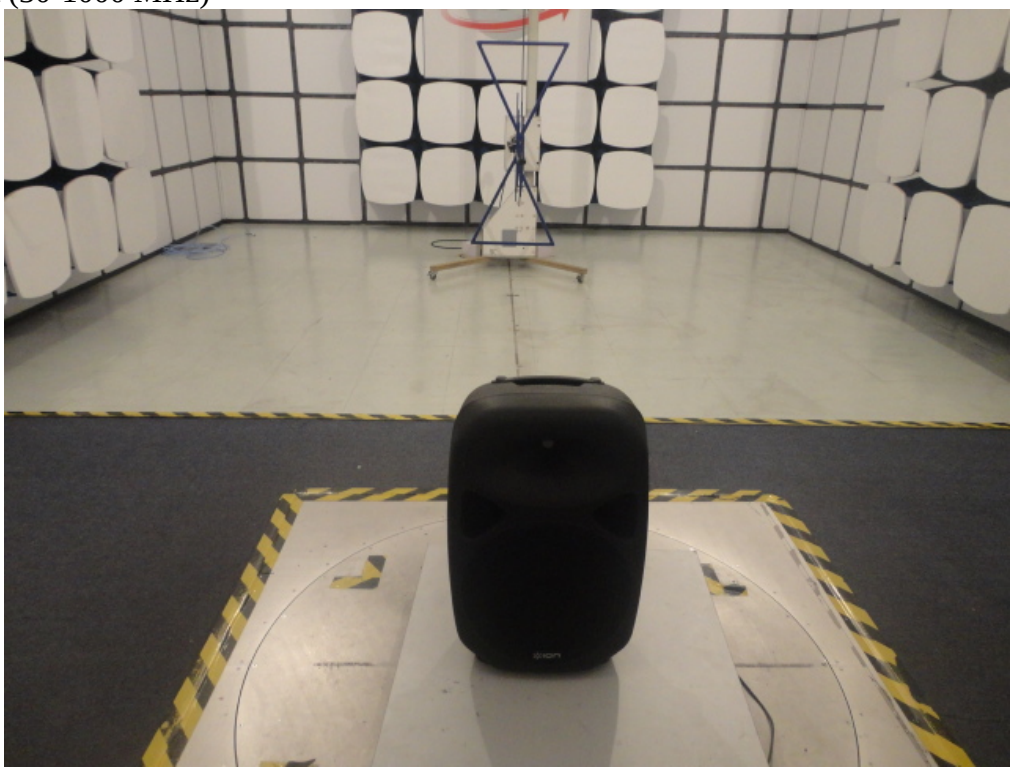
12. TEST SETUP PHOTO

Conducted Test

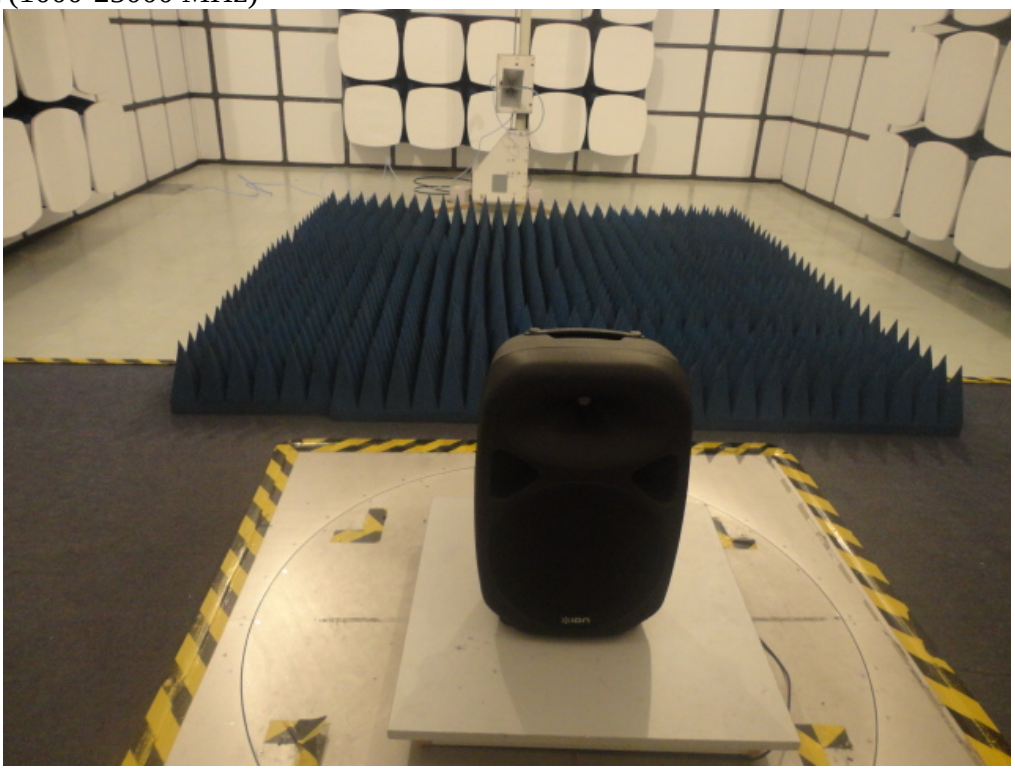




Radiated Test (30-1000 MHz)



Radiated Test (1000-25000 MHz)



13. PHOTOS OF EUT

External Photos
M/N: TOTAL PA

External Photos

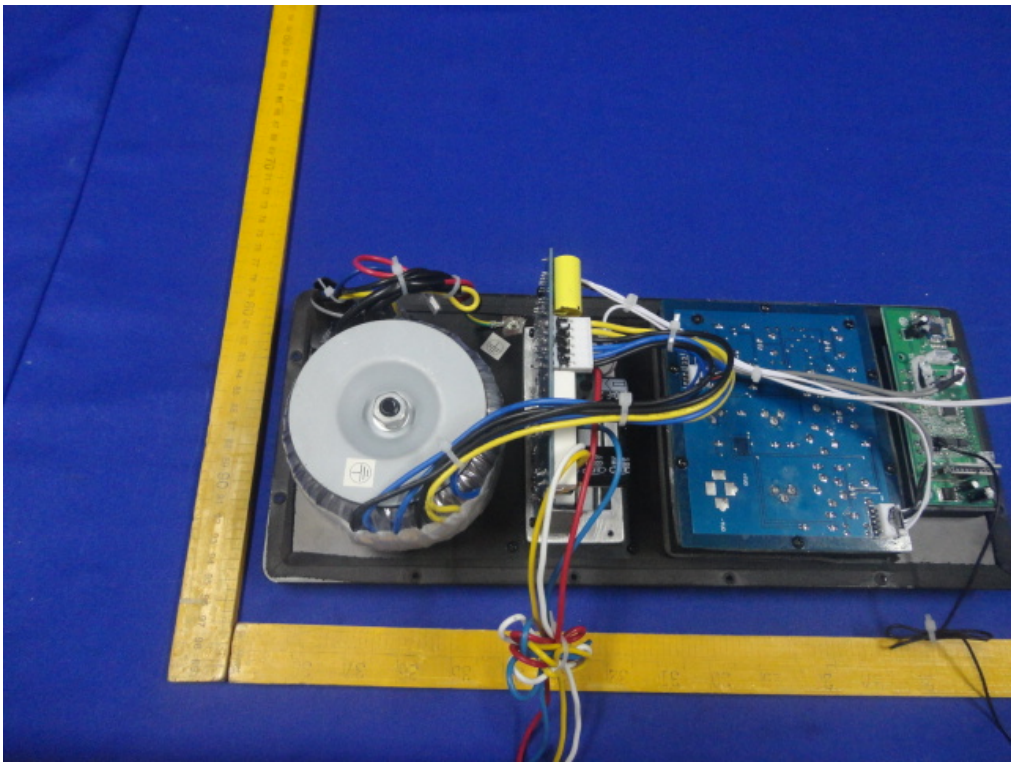
M/N: TOTAL PA

External Photos

M/N: TOTAL PA

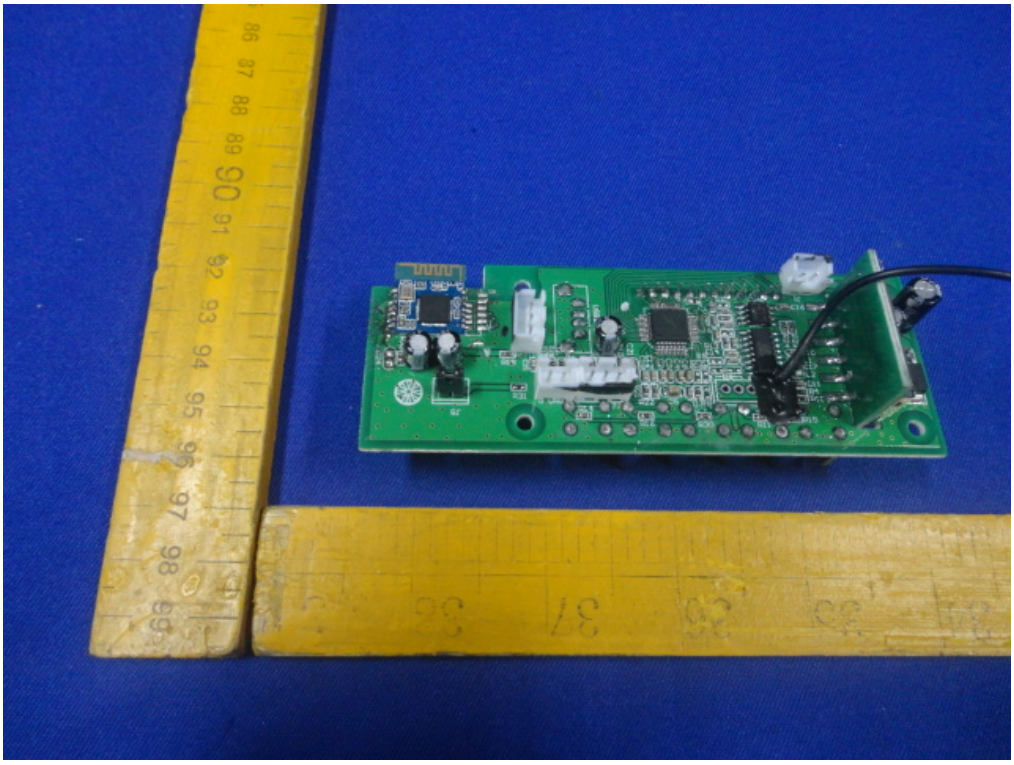
Internal Photos

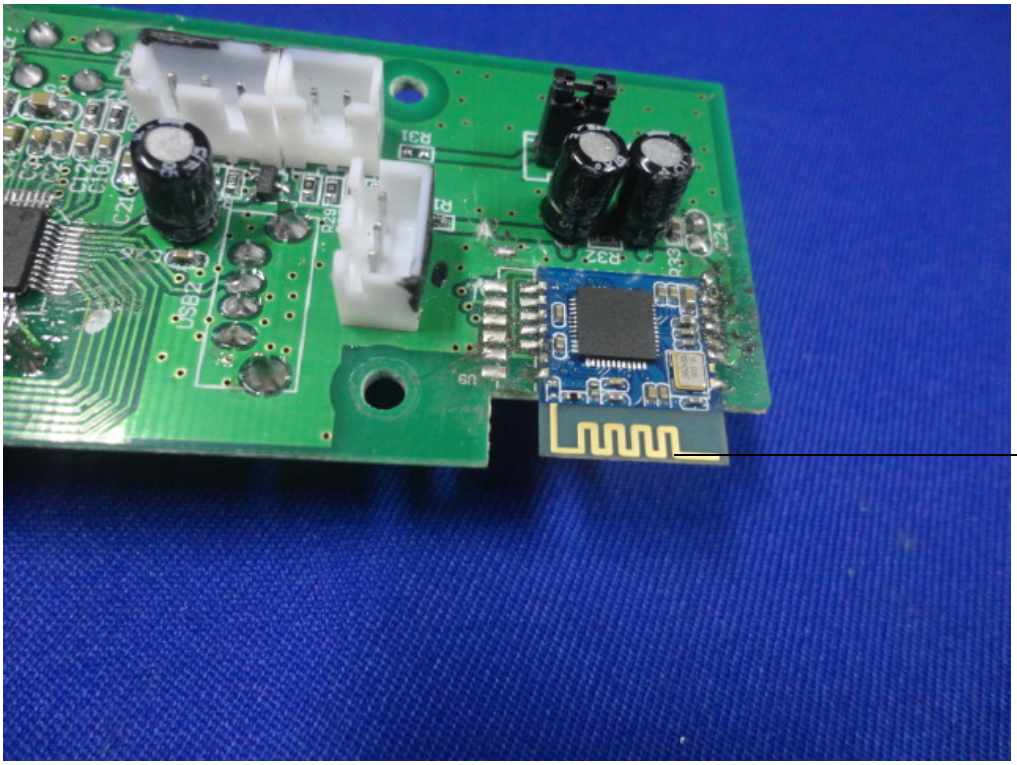
M/N: TOTAL PA



Internal Photos

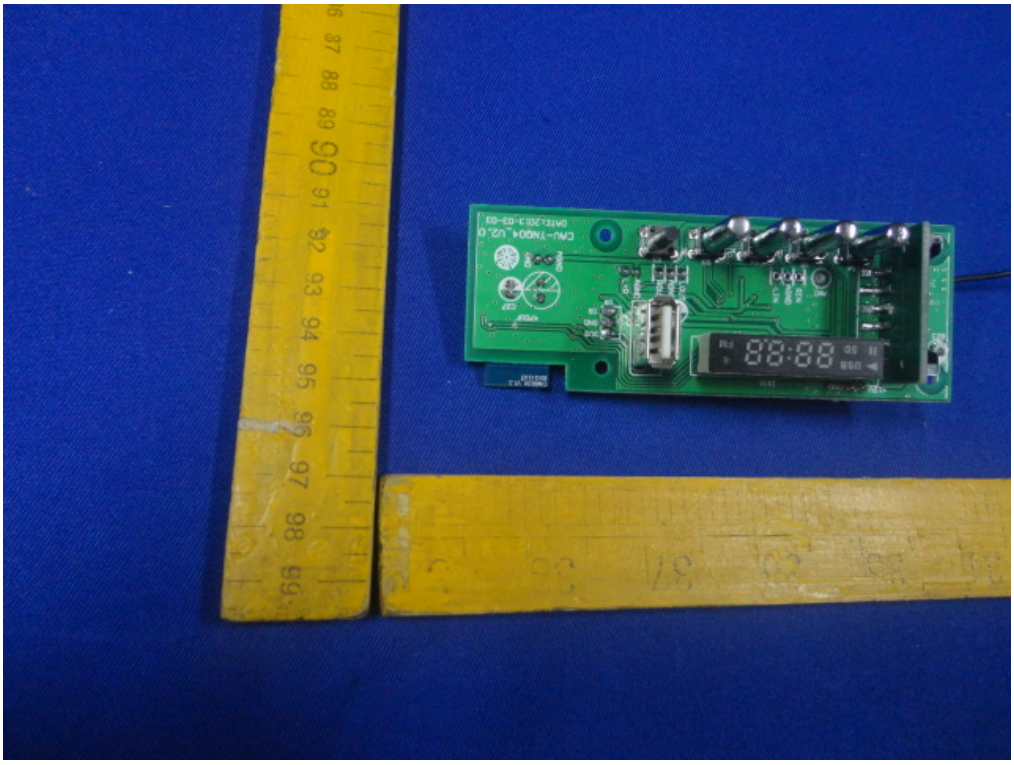
M/N: TOTAL PA

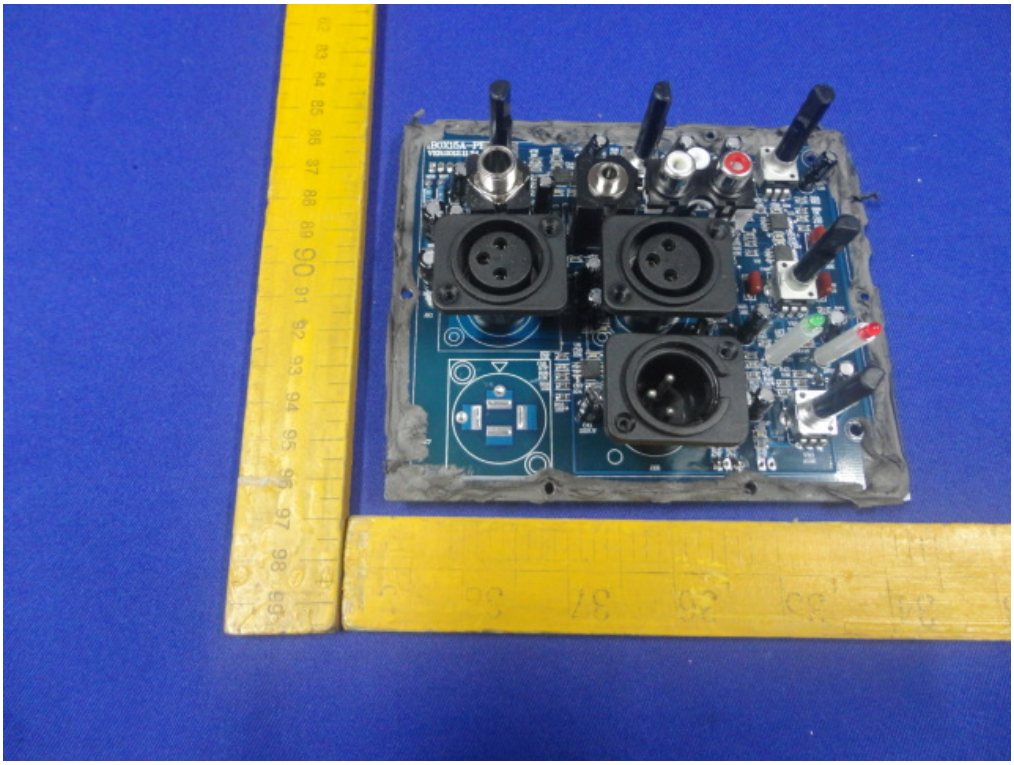




Internal Photos

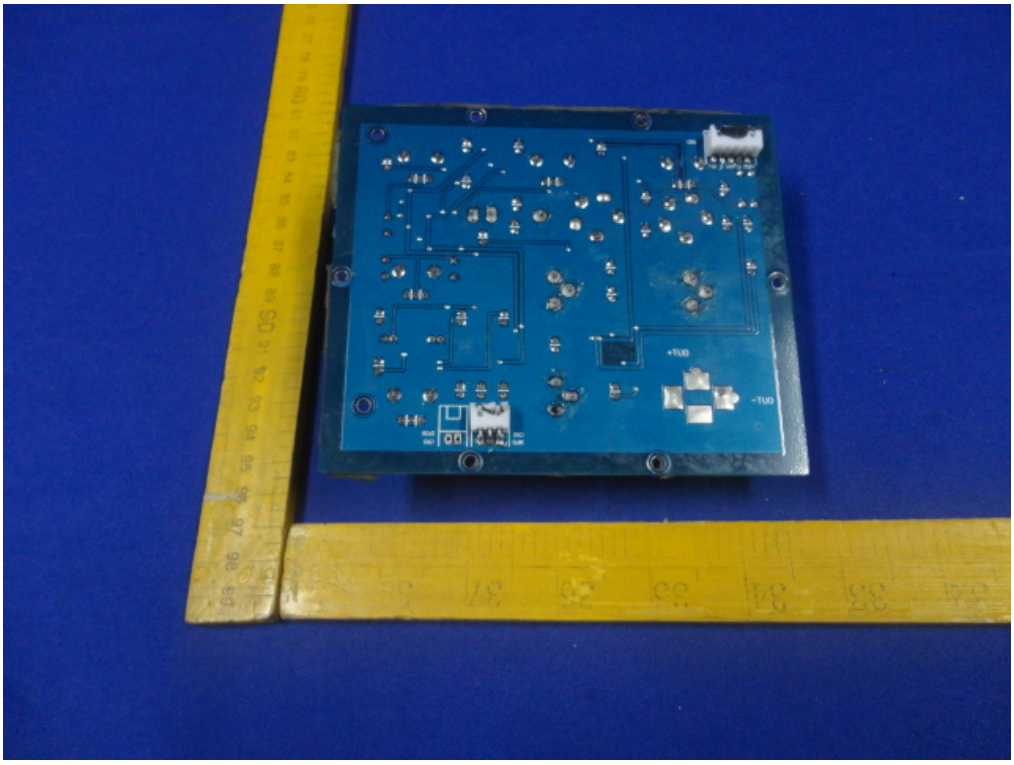
M/N: TOTAL PA

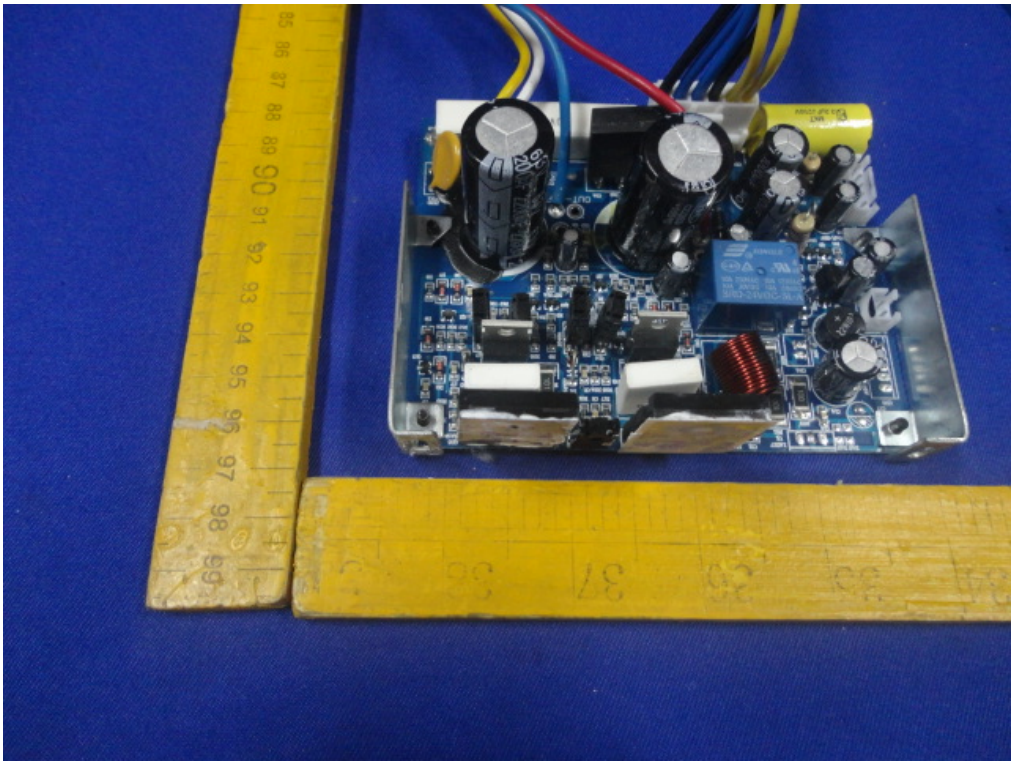




Internal Photos

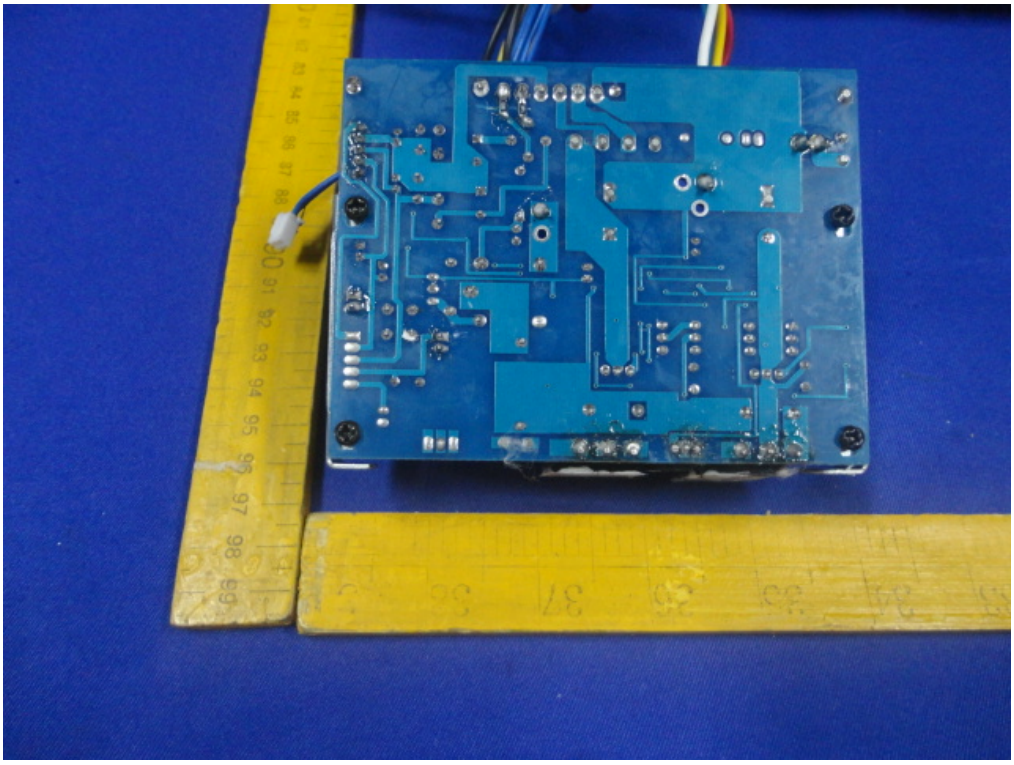
M/N: TOTAL PA

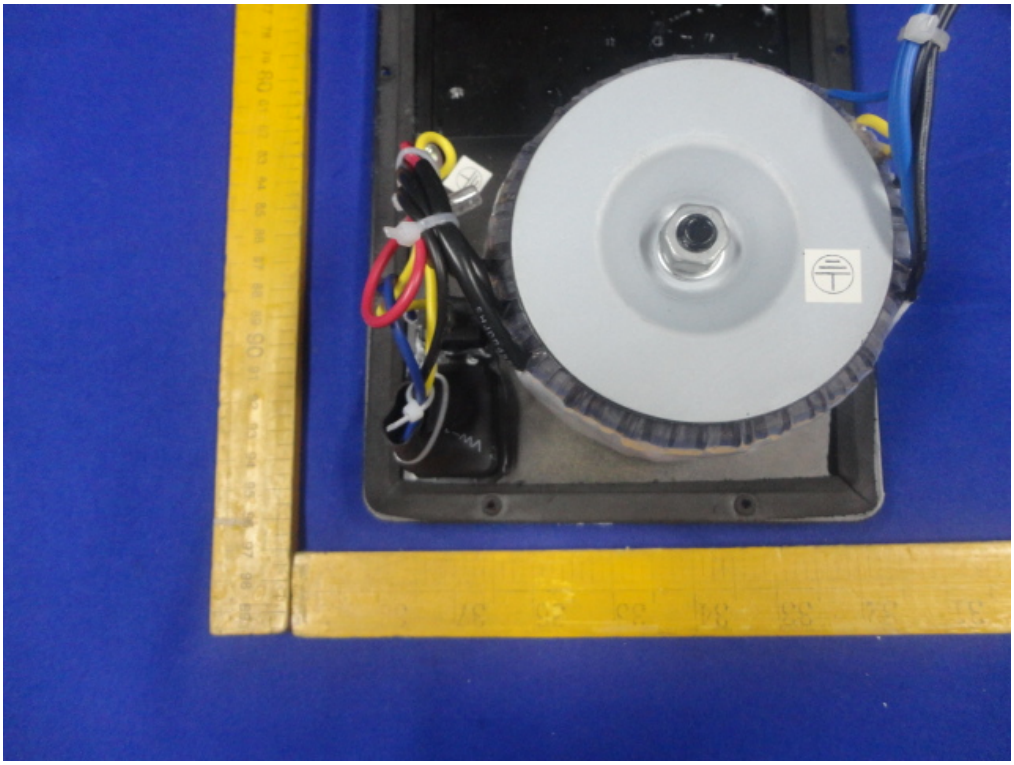




Internal Photos

M/N: TOTAL PA





Internal Photos

M/N: TOTAL PA