

FCC PART 15C TEST REPORT FOR CERTIFICATION
On Behalf of

Polk Audio

Surroundbar 5000 Instant Home Theater

Model Number: SB5000 IHT SPEAKER

FCC ID: WLQSB5000CDTX

Prepared for : Polk Audio

5601 Metro Drive, Baltimore, Maryland, United States, 21215

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-R1307006

Date of Test : June 21~ July 9, 2013


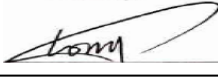
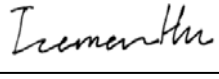
Date of Report : July 11, 2013

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Test Report Verification

Applicant:	Polk Audio		
Address:	5601 Metro Drive, Baltimore, Maryland, United States, 21215		
Manufacturer Address:	Zhao Yang Electronic (Shenzhen) Co.,Ltd Section A, 4th Floor, Building 1& Building 2, De Yong Jia Industrial Park, Guang Qiao Road, Yu Lv Community, Gong Ming Street, Guang Ming New District, Shenzhen		
E.U.T:	Surroundbar 5000 Instant Home Theater		
Model Number:	SB5000 IHT SPEAKER		
Power Supply:	DC 20V From Adapter Input AC 100-240V~50/60Hz		
Test Voltage:	DC 20V From Adapter Input AC 120V/60Hz		
Trade Name:	Polk	Serial No.:	-----
Date of Receipt:	June 20, 2013	Date of Test:	June 21~ July 9, 2013
Test Specification:	FCC Rules and Regulations Part 15 Subpart C:2012 ANSI C63.4:2009		
Test Result:	<p>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 ETSI EN FCC Rules and Regulations Part 15 Subpart C requirements.</p> <p style="text-align: right;">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 11, 2013</p>		
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	: Surroundbar 5000 Instant Home Theater
Model Number	: SB5000 IHT SPEAKER
FCC ID	: WLQSB5000CDTX
Operation frequency	: 2403.5MHz~2477.3MHz
Number of channel	: 49
Antenna	: Internal antenna, 3.3 dBi gain
Modulation	: FHSS (GFSK)
Power Supply	: DC 20V From Adapter Input AC 120V/60Hz
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: 2003 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.: 46405-9405 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

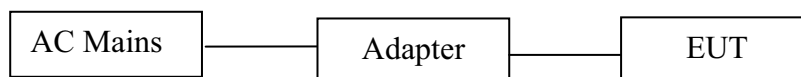
2.3. Assistant equipment used for test

2.3.1. Adapter

M/N	:	S065BP2000220	
Input	:	AC 100-240V~50/60Hz	1800mA Max
Output	:	DC 20V/2200mA	

2.4. Block Diagram

For radiated emissions test: EUT was placed on a turn table, which is 0.8 meter high above ground. EUT was be set into BT test mode by software before test.



(EUT: Surroundbar 5000 Instant Home Theater)

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	2403.5MHz
	Middle	2440.4MHz
	High	2477.3MHz

2.6. Channel List for FHSS

1	2.4035	26	2.4420
2	2.4051	27	2.4435
3	2.4066	28	2.4450
4	2.4081	29	2.4466
5	2.4097	30	2.4481
6	2.4112	31	2.4496
7	2.4128	32	2.4512
8	2.4143	33	2.4527
9	2.4158	34	2.4543
10	2.4174	35	2.4558
11	2.4189	36	2.4573
12	2.4204	37	2.4589
13	2.4220	38	2.4604
14	2.4235	39	2.4619
15	2.4251	40	2.4635
16	2.4266	41	2.4650
17	2.4281	42	2.4666
18	2.4297	43	2.4681
19	2.4312	44	2.4696
20	2.4327	45	2.4712
21	2.4343	46	2.4727
22	2.4358	47	2.4742
23	2.4374	48	2.4758
24	2.4389	49	2.4773
25	2.4404		

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	May,30,13	1 Year
Artificial Mains Networ	Rohde & Schwarz	ENV216	101260	May,30,13	1 Year
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	101100	July.25,12	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	May,30,13	1 Year
Spectrum Analyzer	Agilent	E4411B	MY50140697	May,30,13	1 Year
Bilog Antenna	Teseq	CBL 6111D	25872	Nov,08,12	1.5 Year
Signal Amplifier	Agilent	310N	187037	July.25,12	1 Year

2.7.3. For radiated emission test(above 1GHz)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Temperature controller	Terchy	MHQ	120	May.08,13	1 Year
Spectrum Analyzer	Agilent	E4408B	MY44211139	May.08,13	1 Year
Vector Signal Generator	R&S	SMBV100A	1407.6004K02	May.08,13	1 Year
Double Ridged Horn Antenna	R&S	HF907	100276	Jan.16.13	2 Year
Double Ridged Horn Antenna	R&S	HF907	100268	Jan.16.13	2 Year
Log-periodic Dipole Antenna	R&S	HL223	100435	Jan.16.13	2 Year
Biconical Antenna	R&S	HK116	100431	Jan.16.13	2 Year
Trilog Broadband Antenna	Schwarzbeck	VULB 9163	9163-462	Jan.16.13	2 Year
Pre-amplifier	AH	PAM-0118	10008	May.08,13	1 Year
Pre-amplifier	R&S	SCU-01	10049	May.08,13	1 Year
High Pass filter	Micro	HPM50111	324455	May.08,13	1 Year
RF Cable	Hubersuhner	W10.02	534096	May.08,13	1 Year
RF Cable	Hubersuhner	W10.02	534123	May.08,13	1 Year
RF Cable	Hubersuhner	RG 214/U	513423	May.08,13	1 Year
RF Cable	Hubersuhner	RG 214/U	523455	May.08,13	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

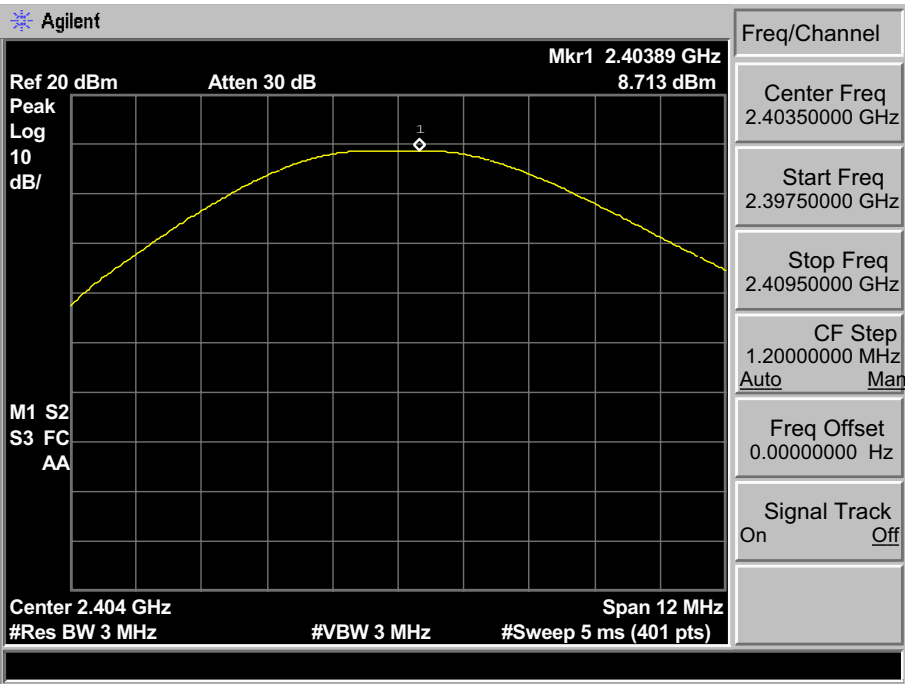
The transmitter output (antenna port) was connected to the spectrum analyzer

3.3. Test Result

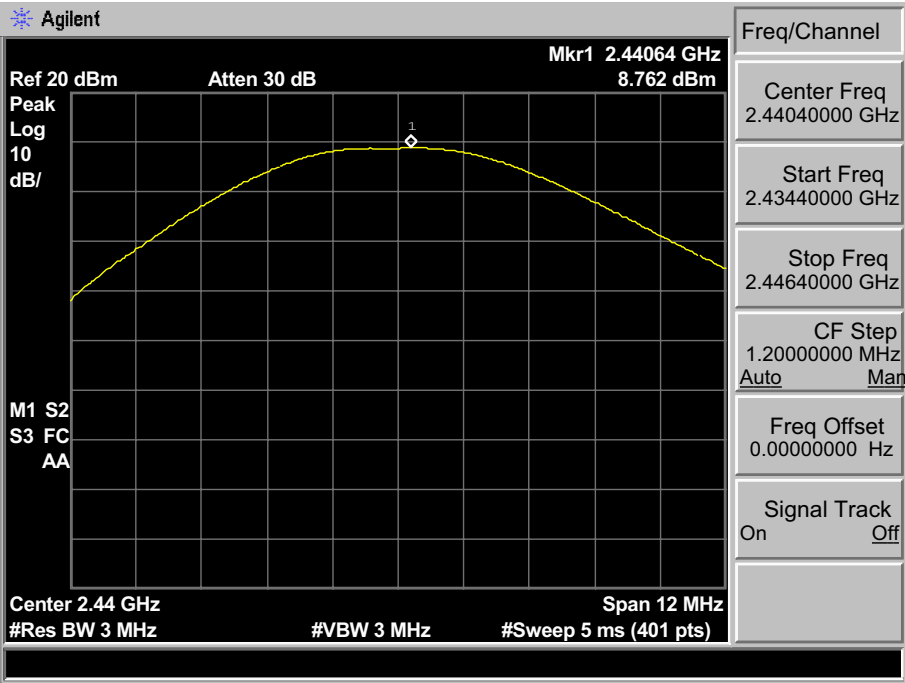
EUT: Surroundbar 5000 Instant Home Theater					
M/N: SB5000 IHT SPEAKER					
Test date: 2013-07-07		Test site: RF site		Tested by: Tony Tang	
Mode	Freq (MHz)	Result (dBm)	Limit		Margin (dB)
			dBm	W	
GFSK	2403.5	8.713	21.00	0.125	12.287
	2440.4	8.762	21.00	0.125	12.238
	2477.3	8.821	21.00	0.125	12.179
Conclusion: PASS					

3.4. Test Data

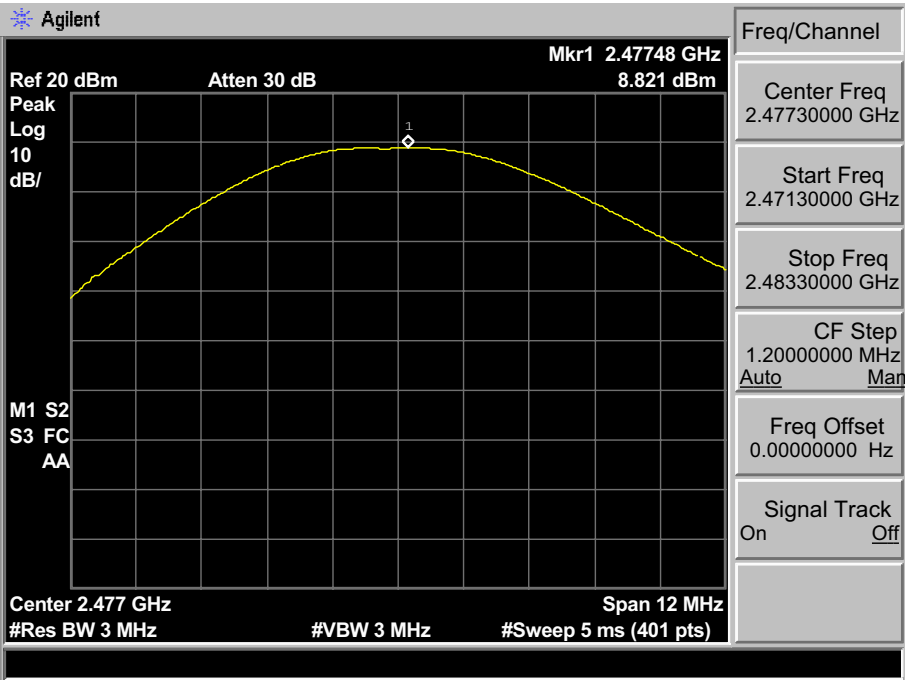
GFSK 2403.5 MHz



GFSK 2440.4 MHz



GFSK 2477.3 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

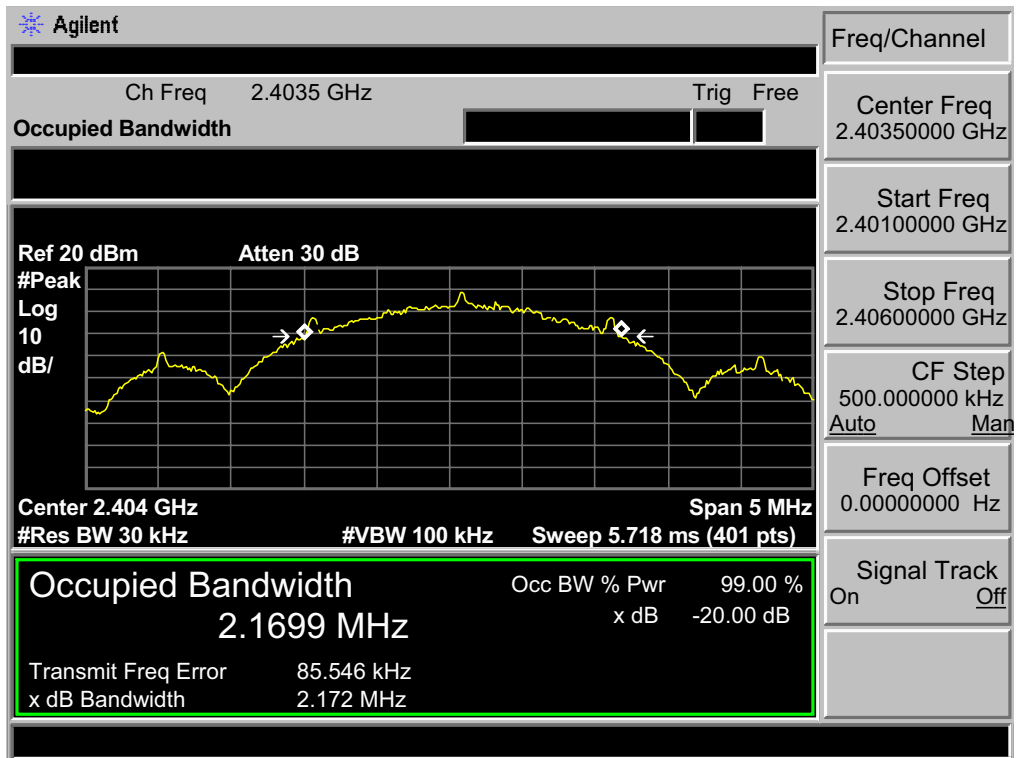
The transmitter output was coupled to a spectrum analyzer via a antenna. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 100kHz VBW. The 20Db bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20Db.

4.3. Test Result

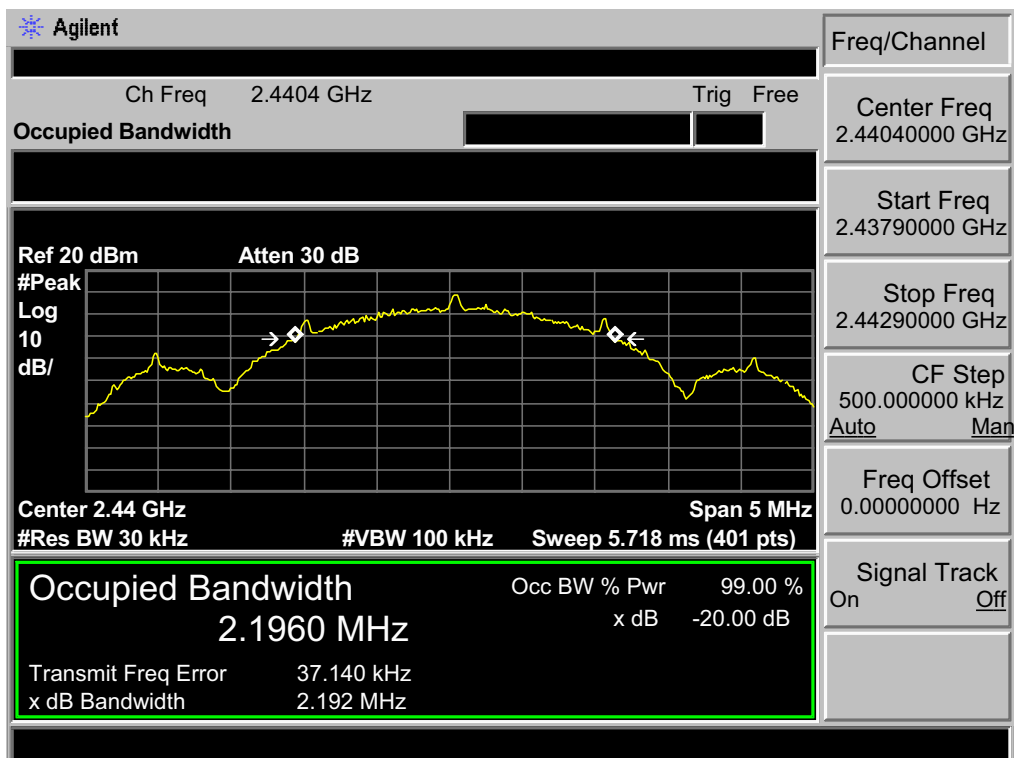
EUT: Surroundbar 5000 Instant Home Theater				
M/N: SB5000 IHT SPEAKER				
Test date: 2013-07-07		Test site: RF site		Tested by: Tony Tang
Mode	Freq (MHz)	20Db Bandwidth (MHz)	Limit (kHz)	Conclusion
GFSK	2403.5	2.172	/	PASS
	2440.4	2.192	/	PASS
	2477.3	2.185	/	PASS

4.4. Test Data

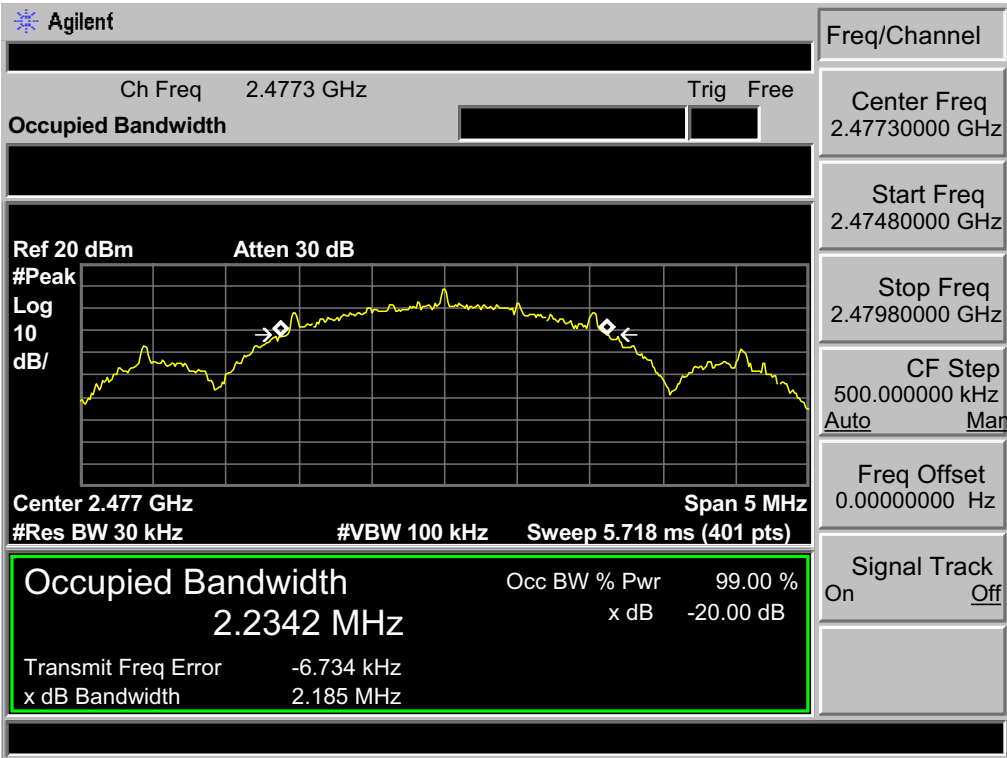
GFSK 2403.5MHz



GFSK 2440.4MHz



GFSK 2477.3MHz



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.

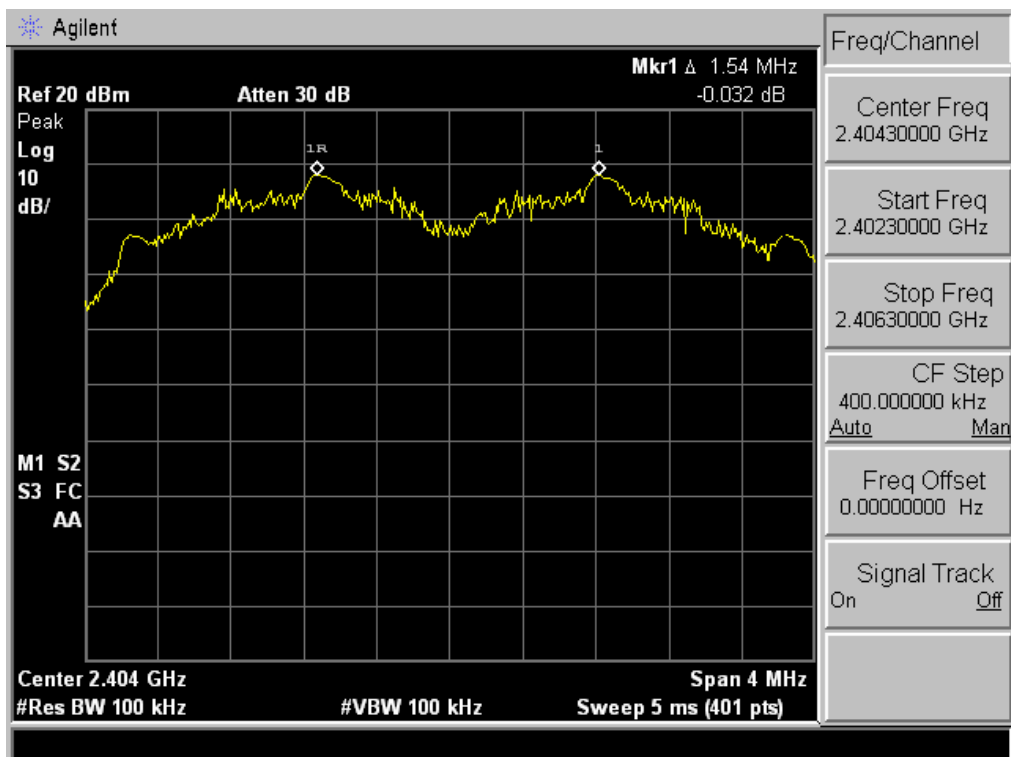
5.3. Test Result

EUT: Surroundbar 5000 Instant Home Theater				
M/N: SB5000 IHT SPEAKER				
Test date: 2013-07-07			Test site: RF site	Tested by: Tony Tang
Mode	Channel	Channel separation (MHz)	Limit	Conclusion
GFSK	Low CH	1.54	> 2/3 of the 20dB Bandwidth or 25[kHz](whichever is greater)	PASS
	Mid CH	1.53		PASS
	High CH	1.54		PASS

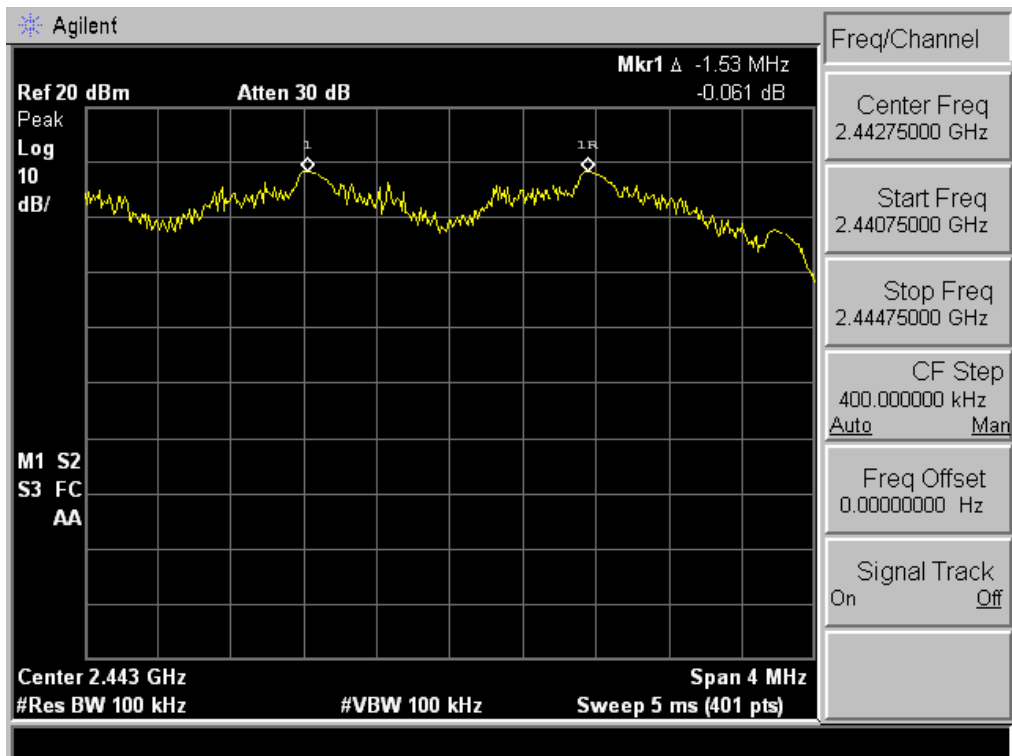
5.4. Test Data

GFSK

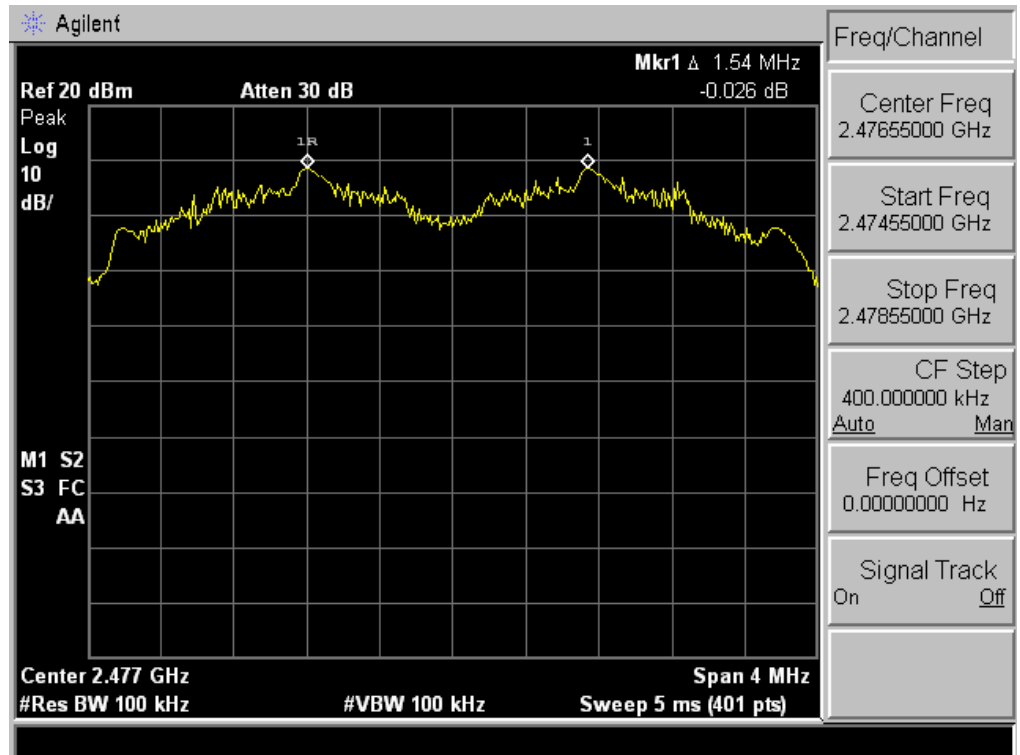
Low Channel



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

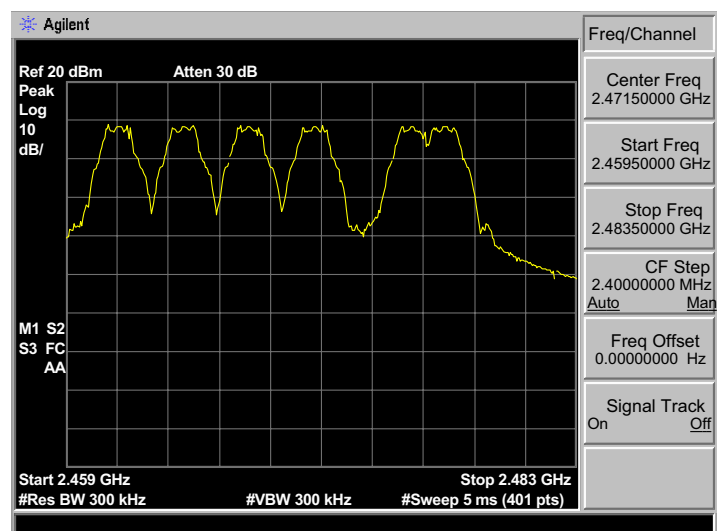
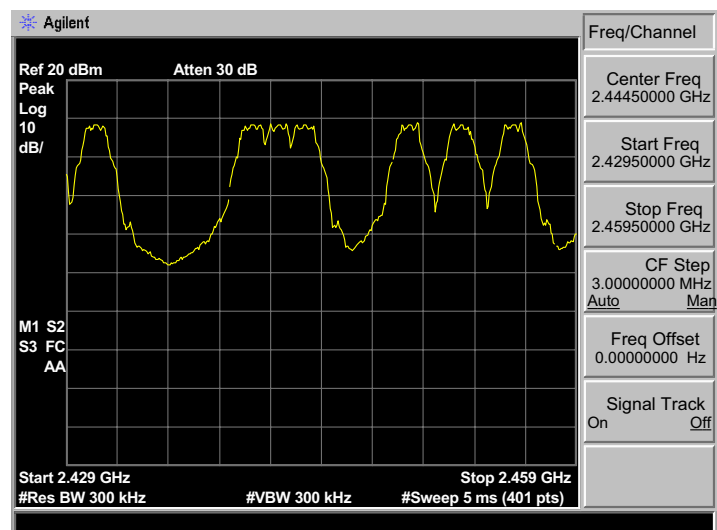
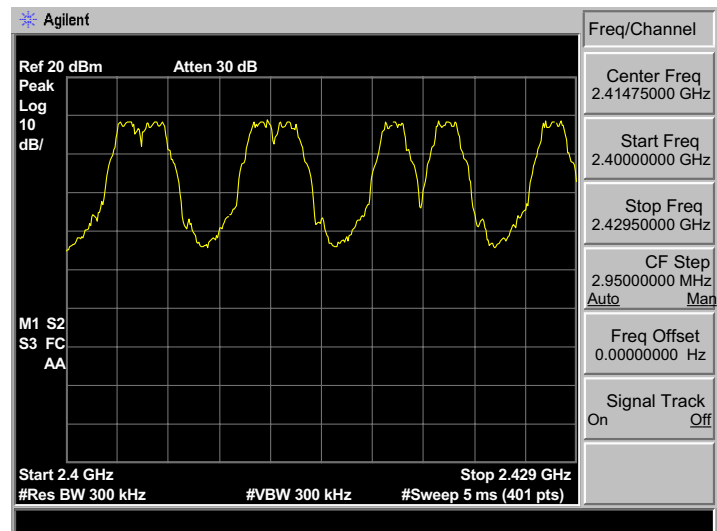
The transmitter output was coupled to a spectrum analyzer via a antenna. The number of hopping channel was measured by spectrum analyzer with 300kHz RBW and 300kHz VBW.

6.3. Test Result

EUT: Surroundbar 5000 Instant Home Theater			
M/N: SB5000 IHT SPEAKER			
Test date: 2013-07-07		Test site: RF site	Tested by: Tony.Tang
Mode	Number of hopping channel	Limit	Conclusion
GFSK	20	>15	PASS

6.4. Test Data

GFSK



7. DWELL TIME

7.1. Limit

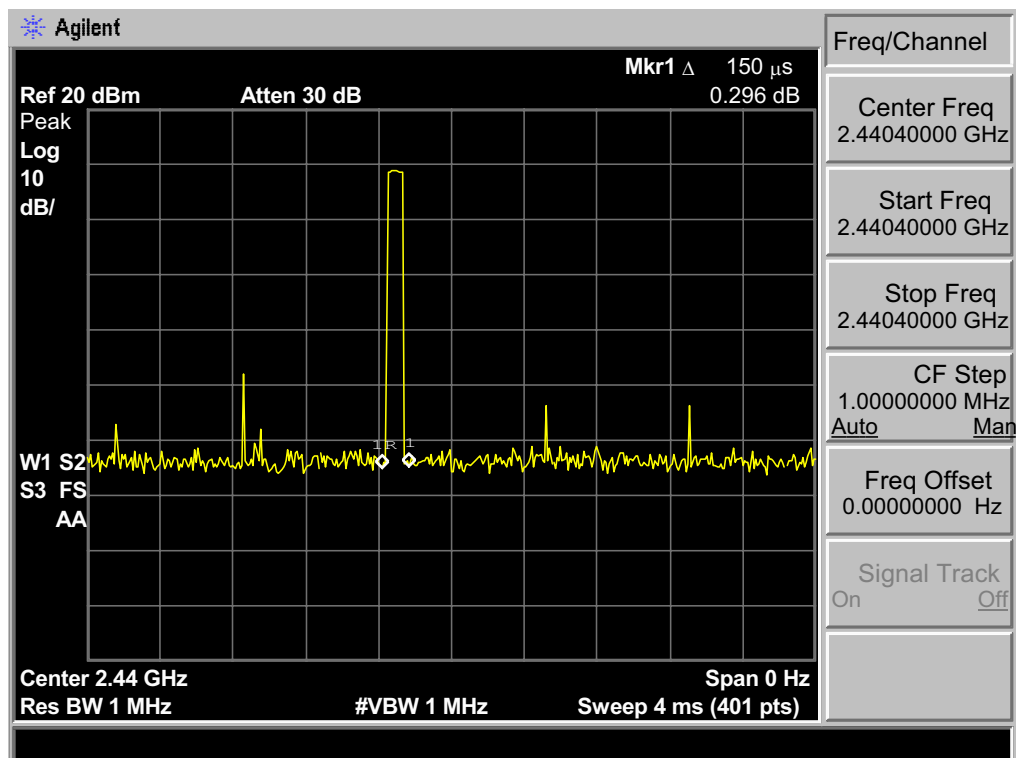
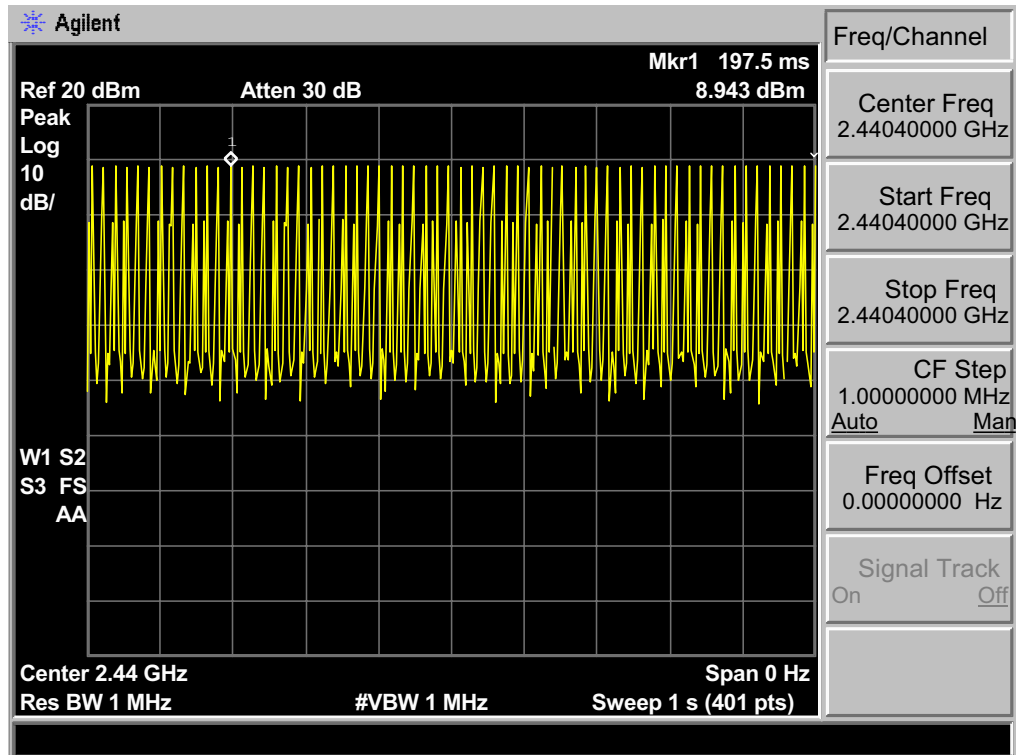
The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

7.2. Test Result

EUT: Surroundbar 5000 Instant Home Theater			
M/N: SB5000 IHT SPEAKER			
Test date: 2013-07-07		Test site: RF site	Tested by: Tony Tang
Mode	Dwell time	Limit	Conclusion
GFSK	76.8	<400ms	PASS

7.3. Test Data

$$\text{GFSK} : 64\text{hop}/1\text{s} * 0.4 * 20 * 0.15\text{ms} = 76.8$$



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.

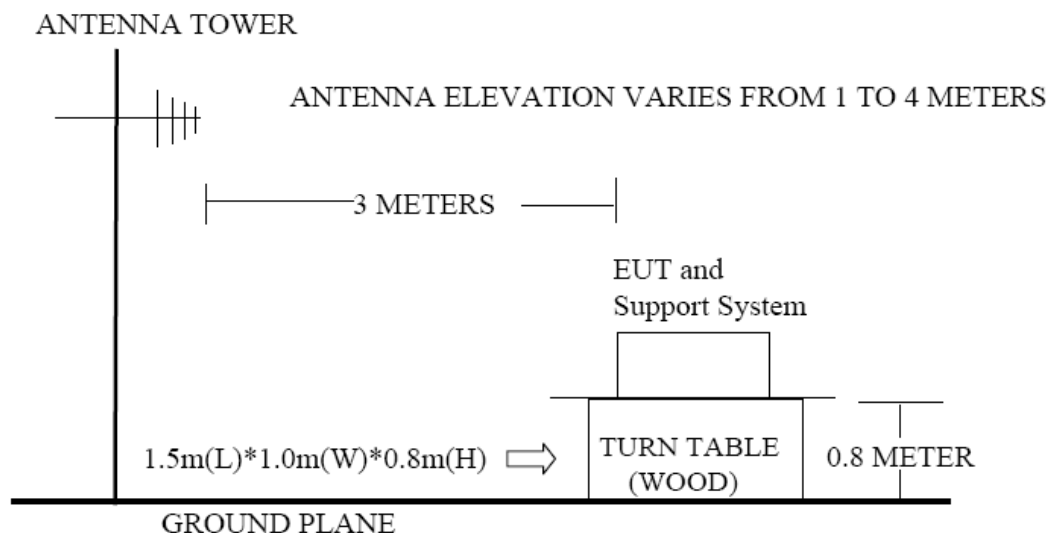
15.205 Restricted frequency band

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. Block Diagram of Test setup



8.3. Test Procedure

EUT was placed on a turn table, which is 0.8 meter 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.

8.4. Test Result

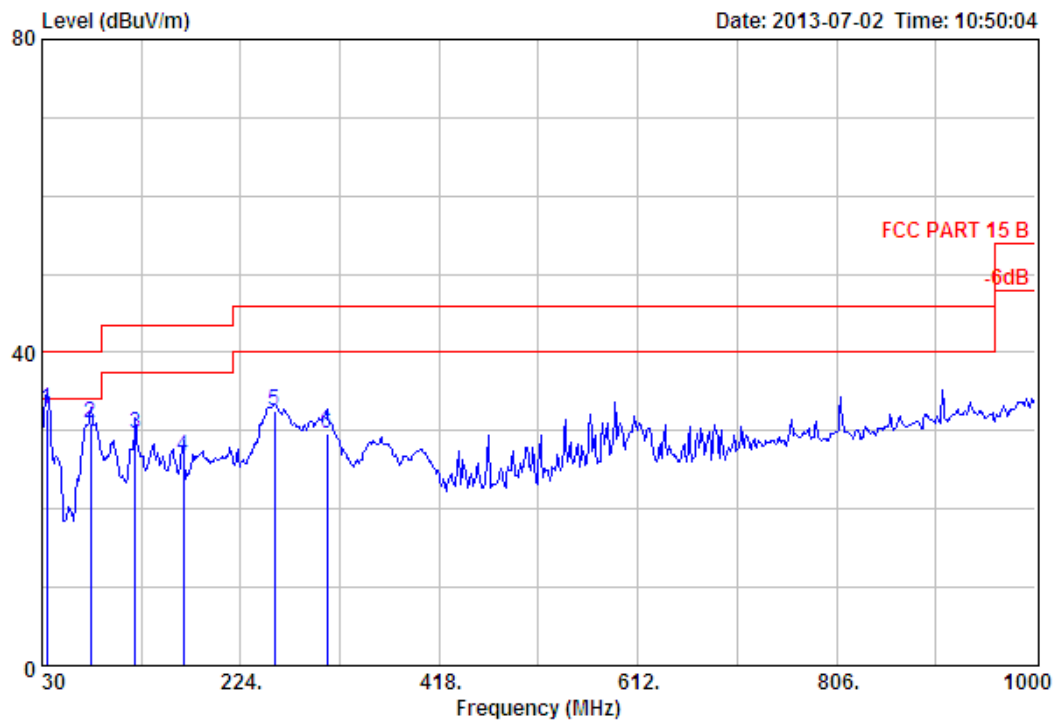
30MHz—25GHz Radiated emissison Test result		
EUT: Surroundbar 5000 Instant Home Theater		
M/N: SB5000 IHT SPEAKER		
Power: DC 12V From Adapter Input AC 120V/60Hz		
Test date: 2013-07-02	Test site: 3m Chamber	Tested by: Tony Tang
Test mode: Tx Mode		
Pass		

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 2403.5MHz 、 2440.4MHz and 2477.3MHz 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.

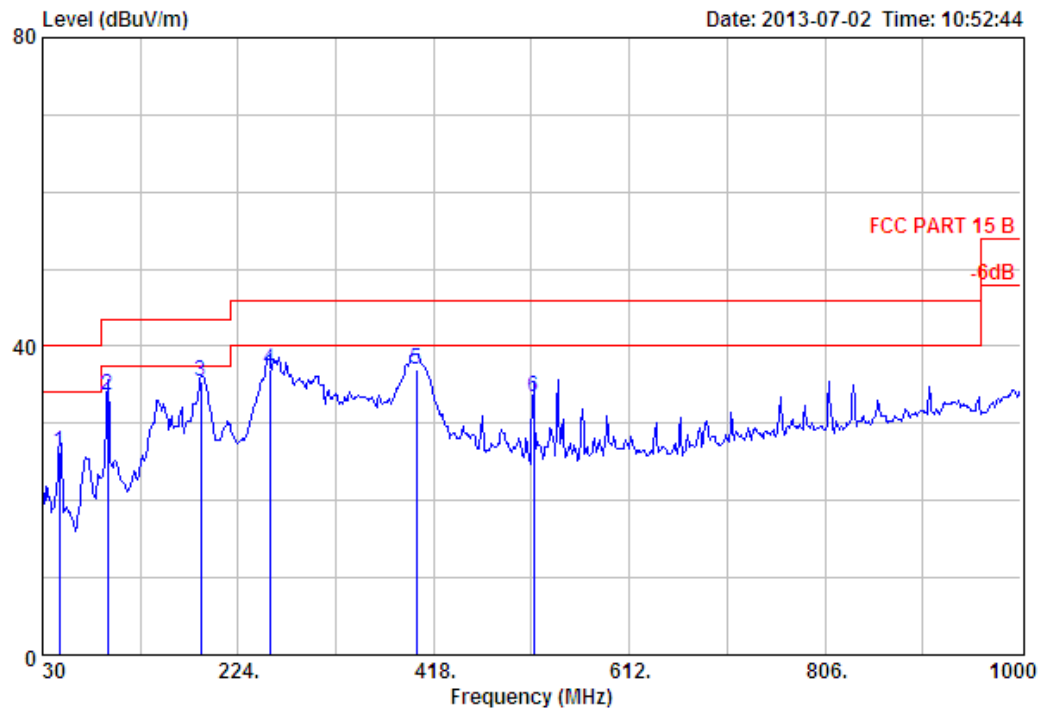
8.5. Test Data

30 MHz – 1000 MHz



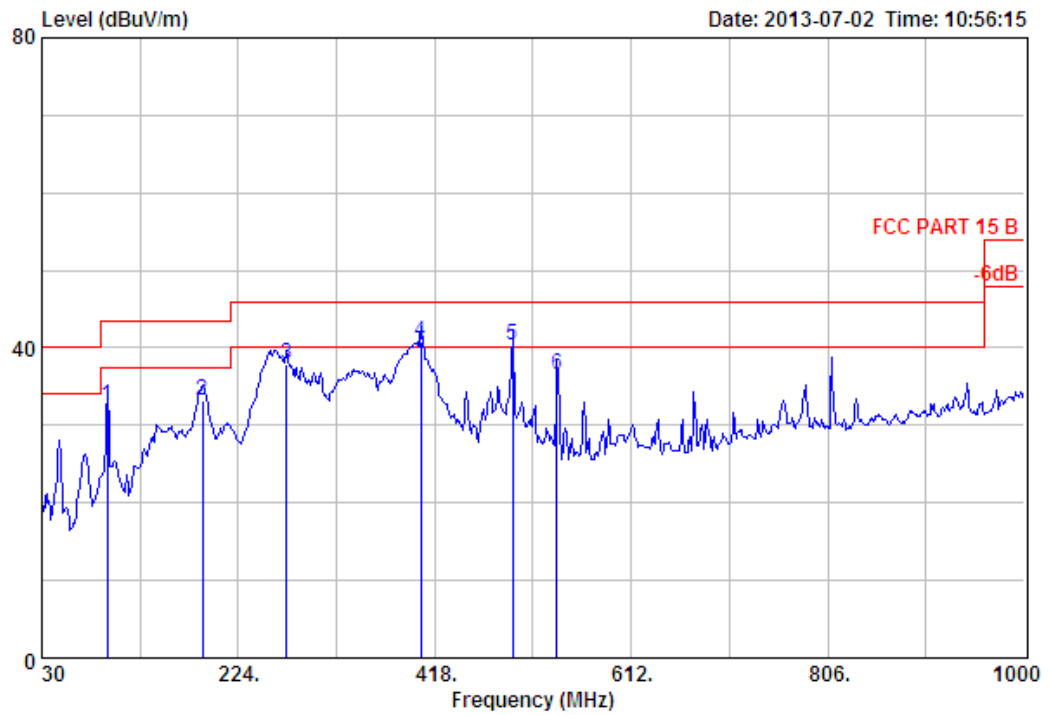
Site no. : 3m Chamber Data no. : 51
 Dis. / Ant. : 3m 27137 Ant. pol. : VERTICAL
 Limit : FCC PART 15 B
 Env. / Ins. : Temp:25.6';Humi:56%;Press:101.52kPa
 Engineer : Tony
 EUT : Surroundbar 5000 Instant Home Theater
 Power : DC 20V From Adapter Input AC 120V/60Hz
 M/N : SB5000 IHT SPEAKER
 Test Mode : TX 2403.5MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark (dB)
1	34.85	15.55	2.01	15.26	32.82	40.00	7.18	QP
2	77.53	6.80	2.83	21.28	30.91	40.00	9.09	QP
3	121.18	11.20	3.38	15.14	29.72	43.50	13.78	QP
4	167.74	9.43	3.97	13.40	26.80	43.50	16.70	QP
5	256.98	12.63	4.91	14.90	32.44	46.00	13.56	QP
6	308.39	13.17	5.30	11.21	29.68	46.00	16.32	QP



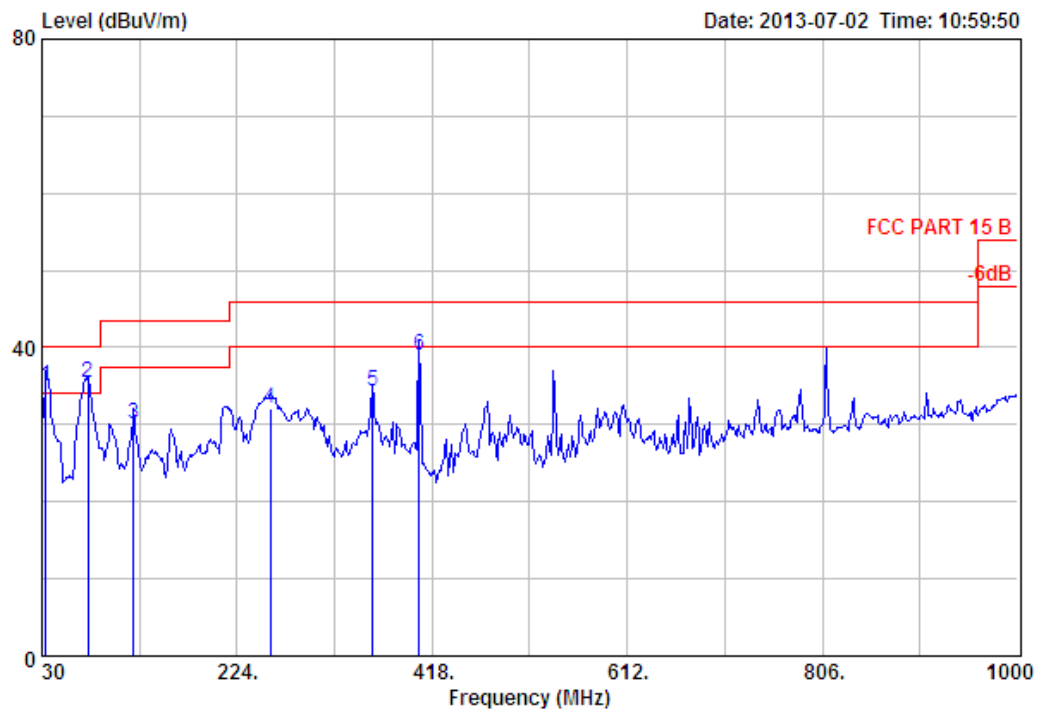
Site no. : 3m Chamber Data no. : 52
 Dis. / Ant. : 3m 27137 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 B
 Env. / Ins. : Temp:25.6';Humi:56%;Press:101.52kPa
 Engineer : Tony
 EUT : Surroundbar 5000 Instant Home Theater
 Power : DC 20V From Adapter Input AC 120V/60Hz
 M/N : SB5000 IHT SPEAKER
 Test Mode : TX 2403.5MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission		Margin	Remark
					Level (dBuV/m)	Limits (dBuV/m)		
1	46.49	9.20	2.28	14.81	26.29	40.00	13.71	QP
2	94.99	8.83	2.99	21.82	33.64	43.50	9.86	QP
3	187.14	8.26	4.19	22.94	35.39	43.50	8.11	QP
4	255.04	12.41	4.87	19.82	37.10	46.00	8.90	QP
5	400.54	16.07	5.98	15.00	37.05	46.00	8.95	QP
6	516.94	17.95	6.85	8.64	33.44	46.00	12.56	QP



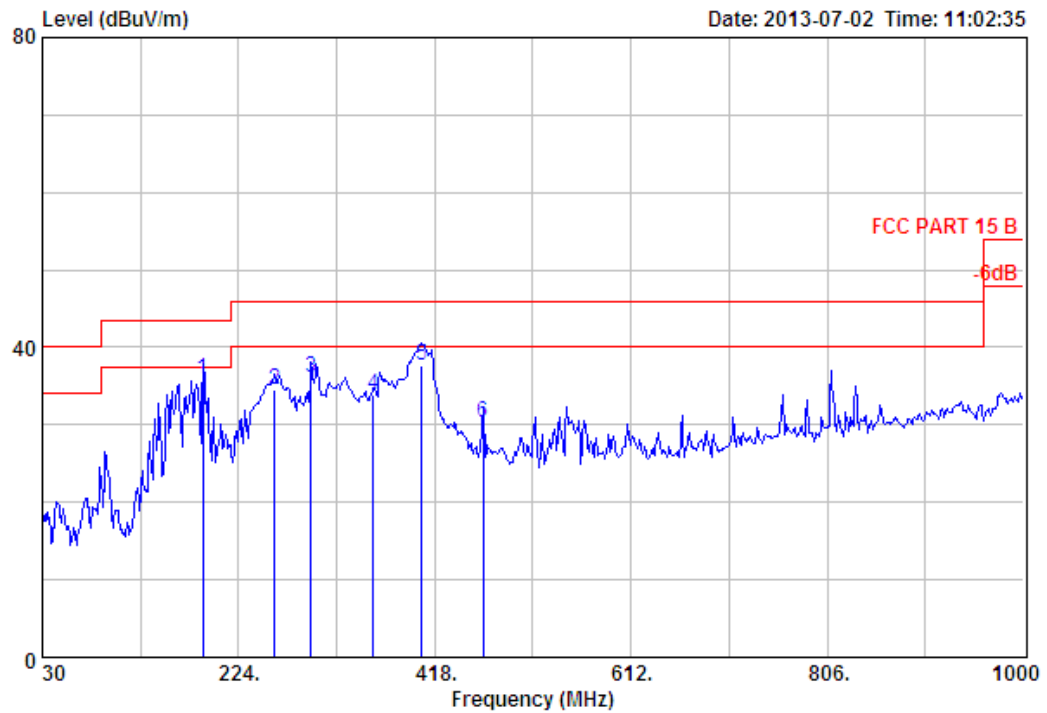
Site no. : 3m Chamber Data no. : 53
 Dis. / Ant. : 3m 27137 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 B
 Env. / Ins. : Temp:25.6';Humi:56%;Press:101.52kPa
 Engineer : Tony
 EUT : Surroundbar 5000 Instant Home Theater
 Power : DC 20V From Adapter Input AC 120V/60Hz
 M/N : SB5000 IHT SPEAKER
 Test Mode : TX 2440.4MHz

	Freq.	Ant.	Cable		Emission			
	(MHz)	Factor	Loss	Reading	Level	Limits	Margin	Reamark
		(dB/m)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	(dB)
1	94.99	8.83	2.99	20.70	32.52	43.50	10.98	QP
2	189.08	8.05	4.20	21.06	33.31	43.50	10.19	QP
3	271.53	12.49	5.02	20.26	37.77	46.00	8.23	QP
4	404.42	16.16	6.04	18.64	40.84	46.00	5.16	QP
5	494.63	17.84	6.70	15.88	40.42	46.00	5.58	QP
6	538.28	19.24	6.97	10.31	36.52	46.00	9.48	QP



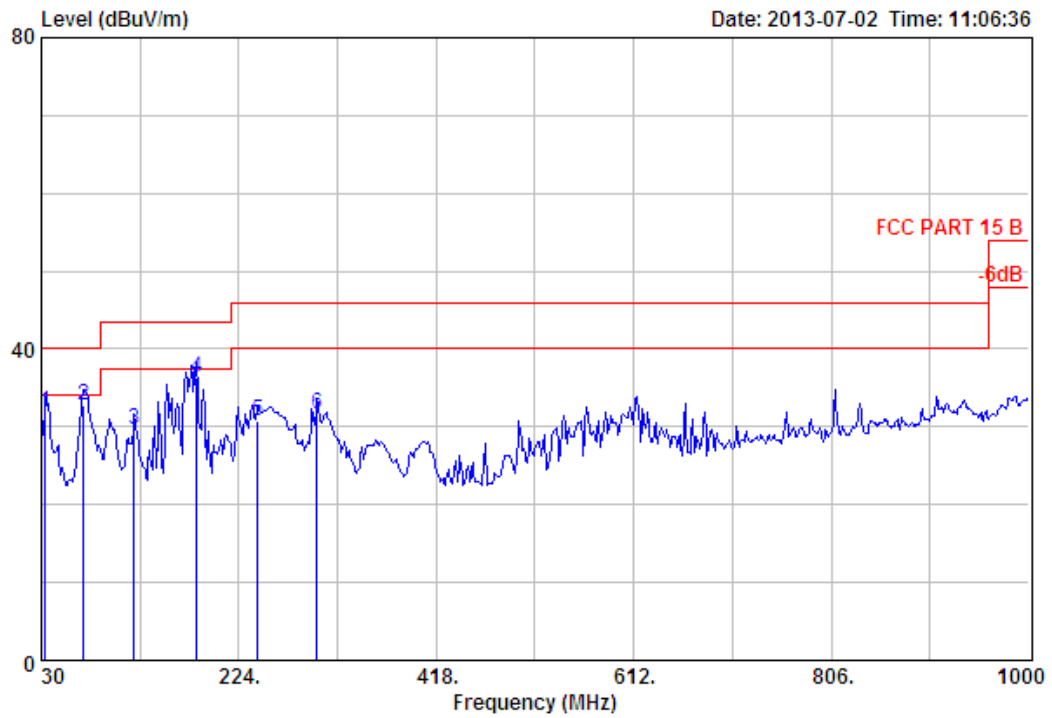
Site no. : 3m Chamber Data no. : 54
 Dis. / Ant. : 3m 27137 Ant. pol. : VERTICAL
 Limit : FCC PART 15 B
 Env. / Ins. : Temp:25.6°;Humi:56%;Press:101.52kPa
 Engineer : Tony
 EUT : Surroundbar 5000 Instant Home Theater
 Power : DC 20V From Adapter Input AC 120V/60Hz
 M/N : SB5000 IHT SPEAKER
 Test Mode : TX 2440.4MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBUV)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark (dB)
1	33.88	16.11	1.99	16.92	35.02	40.00	4.98	QP
2	75.59	6.51	2.80	26.10	35.41	40.00	4.59	QP
3	121.18	11.20	3.38	15.55	30.13	43.50	13.37	QP
4	256.98	12.63	4.91	14.57	32.11	46.00	13.89	QP
5	358.83	14.45	5.73	14.13	34.31	46.00	11.69	QP
6	405.39	16.18	6.05	16.67	38.90	46.00	7.10	QP



Site no. : 3m Chamber Data no. : 55
 Dis. / Ant. : 3m 27137 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 B
 Env. / Ins. : Temp:25.6';Humi:56%;Press:101.52kPa
 Engineer : Tony
 EUT : Surroundbar 5000 Instant Home Theater
 Power : DC 20V From Adapter Input AC 120V/60Hz
 M/N : SB5000 IHT SPEAKER
 Test Mode : TX 2477.3MHz

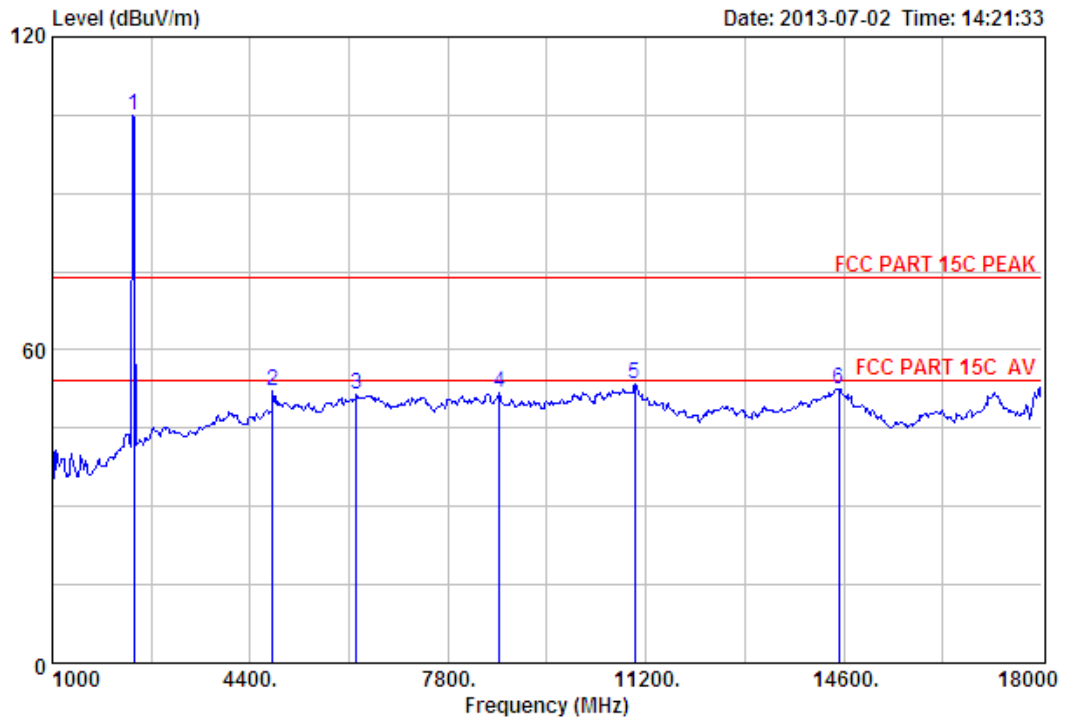
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reamark (dB)
1	189.08	8.05	4.20	23.62	35.87	43.50	7.63	QP
2	259.89	12.97	4.93	16.61	34.51	46.00	11.49	QP
3	295.78	12.98	5.21	18.00	36.19	46.00	9.81	QP
4	356.89	14.46	5.72	13.69	33.87	46.00	12.13	QP
5	405.39	16.18	6.05	15.42	37.65	46.00	8.35	QP
6	465.53	17.04	6.51	6.66	30.21	46.00	15.79	QP



Site no. : 3m Chamber Data no. : 56
 Dis. / Ant. : 3m 27137 Ant. pol. : VERTICAL
 Limit : FCC PART 15 B
 Env. / Ins. : Temp:25.6';Humi:56%;Press:101.52kPa
 Engineer : Tony
 EUT : Surroundbar 5000 Instant Home Theater
 Power : DC 20V From Adapter Input AC 120V/60Hz
 M/N : SB5000 IHT SPEAKER
 Test Mode : TX 2477.3MHz

	Freq.	Ant.	Cable		Emission			
	(MHz)	Factor	Loss	Reading	Level	Limits	Margin	Reamark
		(dB/m)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	(dB)
1	33.88	16.11	1.99	13.85	31.95	40.00	8.05	QP
2	71.71	6.03	2.76	23.92	32.71	40.00	7.29	QP
3	121.18	11.20	3.38	14.97	29.55	43.50	13.95	QP
4	182.29	8.76	4.15	23.46	36.37	43.50	7.13	QP
5	242.43	10.64	4.72	15.42	30.78	46.00	15.22	QP
6	300.63	13.03	5.24	13.38	31.65	46.00	14.35	QP

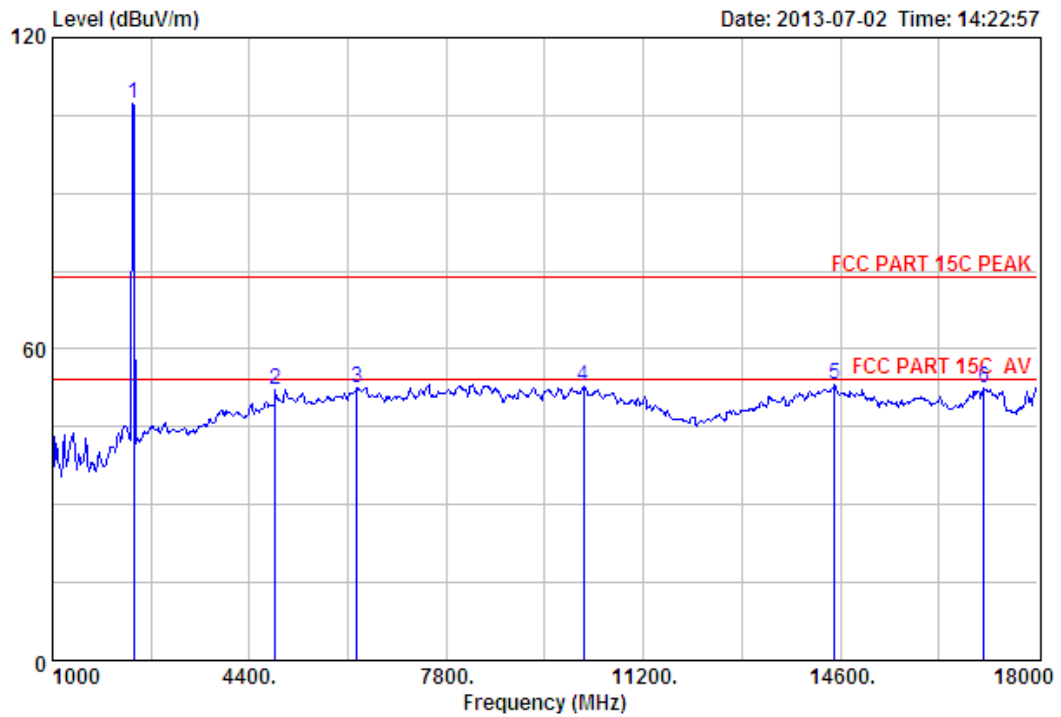
1000 MHz – 18000MHz



Site no. : 3m Chamber Data no. : 103
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : Temp:25.6';Humi:56%;Press:101.52kPa
 Engineer : Tony
 EUT : Surroundbar 5000 Instant Home Theater
 Power : DC 20V From Adapter Input AC 120V/60Hz
 M/N : SB5000 IHT SPEAKER
 Test Mode : TX 2403.5MHz

	Freq.	Ant.	Cable	Amp	Emission				
	(MHz)	Factor	Loss	Factor	Reading	Level	Limits	Margin	Remark
		(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2403.50	27.61	6.64	34.18	104.98	105.05	74.00	-31.05	Peak
2	4791.00	31.22	11.69	31.80	41.14	52.25	74.00	21.75	Peak
3	6219.00	33.29	12.17	31.99	37.87	51.34	74.00	22.66	Peak
4	8684.00	37.32	11.45	32.43	35.37	51.71	74.00	22.29	Peak
5	11013.00	39.51	11.28	33.68	36.47	53.58	74.00	20.42	Peak
6	14515.00	41.89	10.93	33.14	32.83	52.51	74.00	21.49	Peak

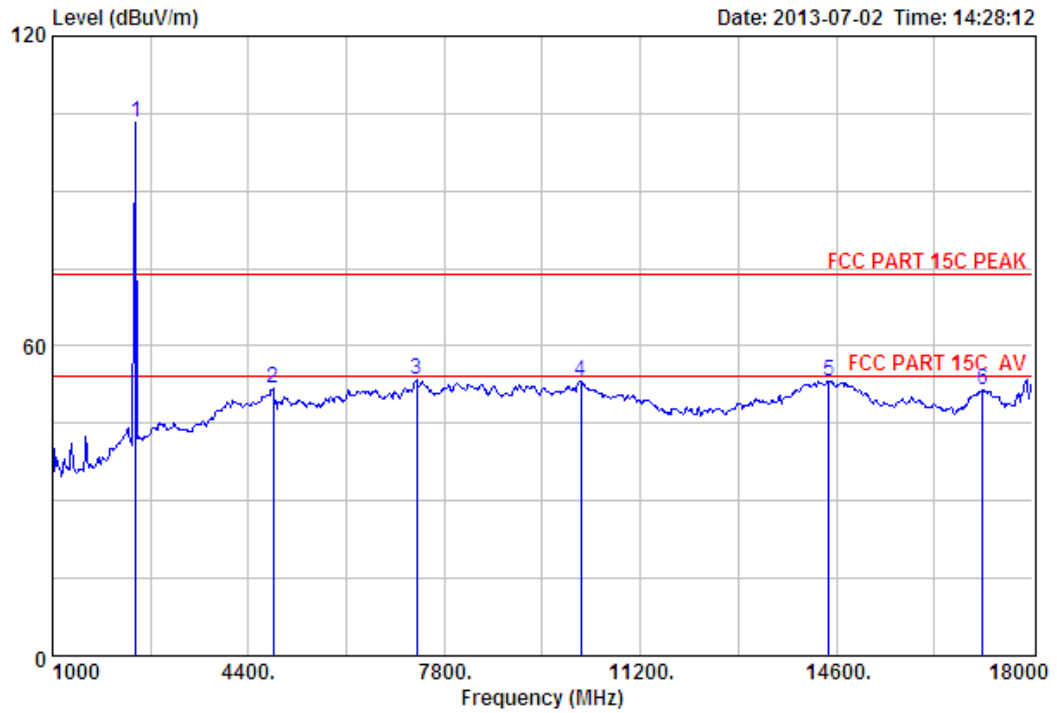
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 104
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : Temp:25.6';Humi:56%;Press:101.52kPa
 Engineer : Tony
 EUT : Surroundbar 5000 Instant Home Theater
 Power : DC 20V From Adapter Input AC 120V/60Hz
 M/N : SB5000 IHT SPEAKER
 Test Mode : TX 2403.5MHz

	Freq.	Ant.	Cable	Amp	Emission				
	(MHz)	Factor	Loss	Factor	Reading	Level	Limits	Margin	Remark
		(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2403.50	27.61	6.64	34.18	107.19	107.26	74.00	-33.26	Peak
2	4842.00	31.31	11.92	31.85	40.93	52.31	74.00	21.69	Peak
3	6253.00	33.42	12.17	31.96	38.90	52.53	74.00	21.47	Peak
4	10163.00	38.39	11.50	32.08	34.96	52.77	74.00	21.23	Peak
5	14498.00	41.88	10.93	33.08	33.43	53.16	74.00	20.84	Peak
6	17082.00	40.06	10.96	33.00	34.30	52.32	74.00	21.68	Peak

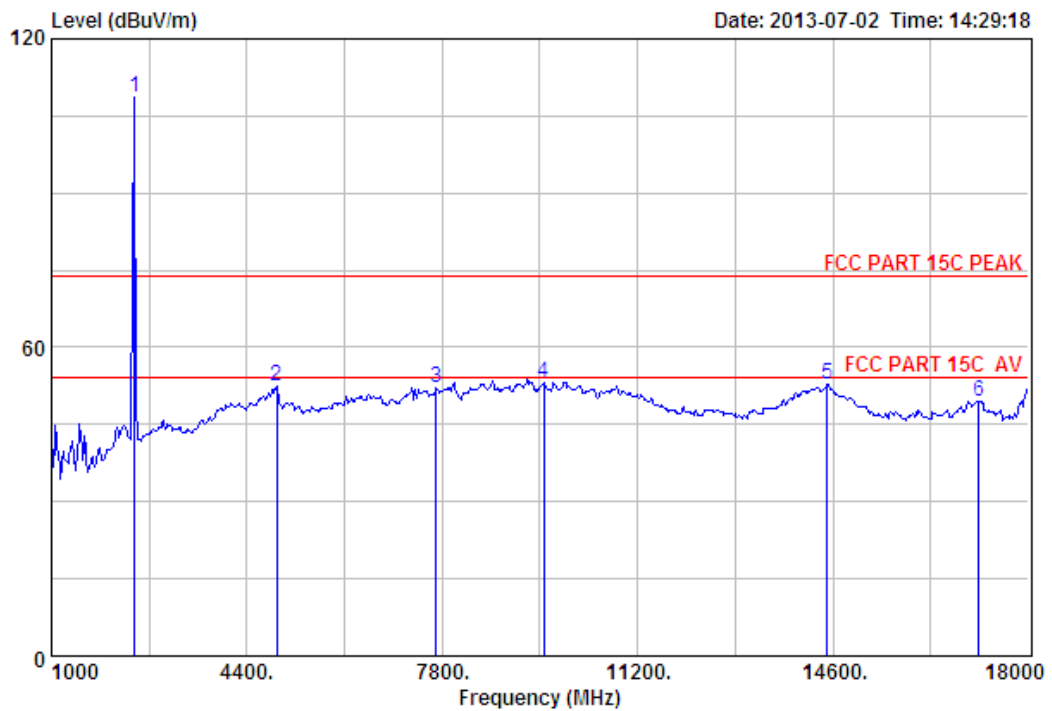
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 105
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : Temp:25.6';Humi:56%;Press:101.52kPa
 Engineer : Tony
 EUT : Surroundbar 5000 Instant Home Theater
 Power : DC 20V From Adapter Input AC 120V/60Hz
 M/N : SB5000 IHT SPEAKER
 Test Mode : TX 2440.4MHz

	Freq.	Ant.	Cable	Amp	Emission				
	(MHz)	Factor	Loss	Factor	Reading	Level	Limits	Margin	Remark
		(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2440.40	27.60	6.67	34.12	103.10	103.25	74.00	-29.25	Peak
2	4825.00	31.28	11.84	31.83	40.57	51.86	74.00	22.14	Peak
3	7324.00	36.55	11.57	31.99	37.28	53.41	74.00	20.59	Peak
4	10163.00	38.39	11.50	32.08	35.30	53.11	74.00	20.89	Peak
5	14464.00	41.85	10.93	32.96	33.44	53.26	74.00	20.74	Peak
6	17133.00	40.26	10.94	33.03	33.46	51.63	74.00	22.37	Peak

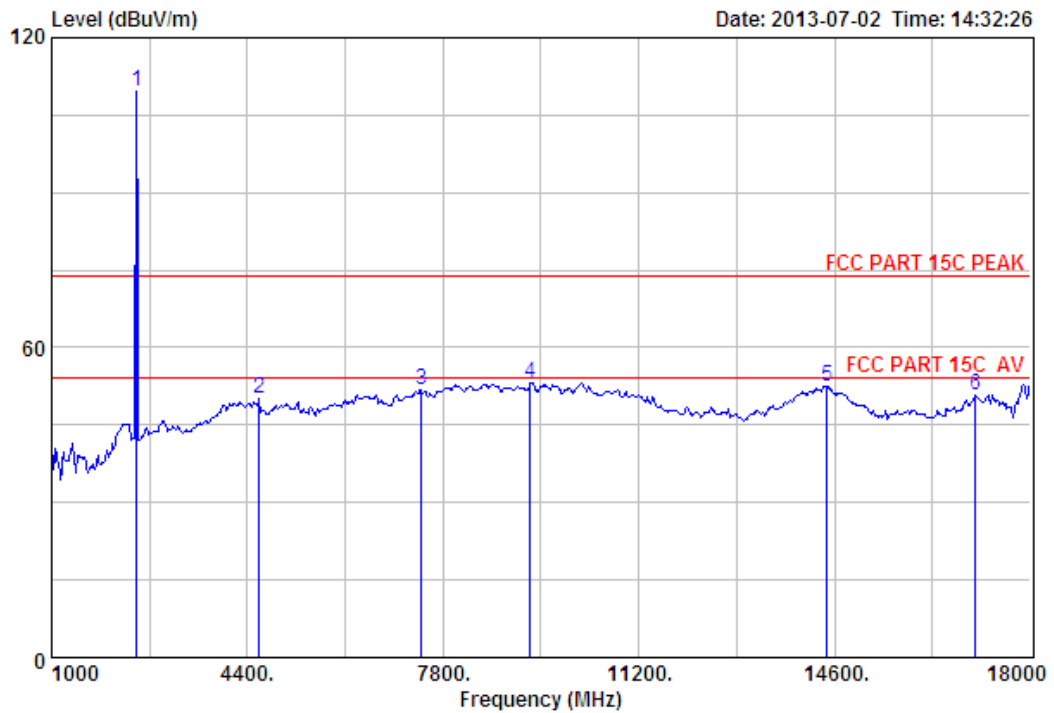
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 106
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : Temp:25.6';Humi:56%;Press:101.52kPa
 Engineer : Tony
 EUT : Surroundbar 5000 Instant Home Theater
 Power : DC 20V From Adapter Input AC 120V/60Hz
 M/N : SB5000 IHT SPEAKER
 Test Mode : TX 2440.4MHz

	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	2440.40	27.60	6.67	34.12	108.59	108.74	74.00	-34.74	Peak
2	4927.00	31.45	12.29	31.95	40.53	52.32	74.00	21.68	Peak
3	7698.00	36.49	11.53	31.53	35.57	52.06	74.00	21.94	Peak
4	9568.00	37.94	11.69	31.93	35.43	53.13	74.00	20.87	Peak
5	14498.00	41.88	10.93	33.08	33.19	52.92	74.00	21.08	Peak
6	17133.00	40.26	10.94	33.03	31.42	49.59	74.00	24.41	Peak

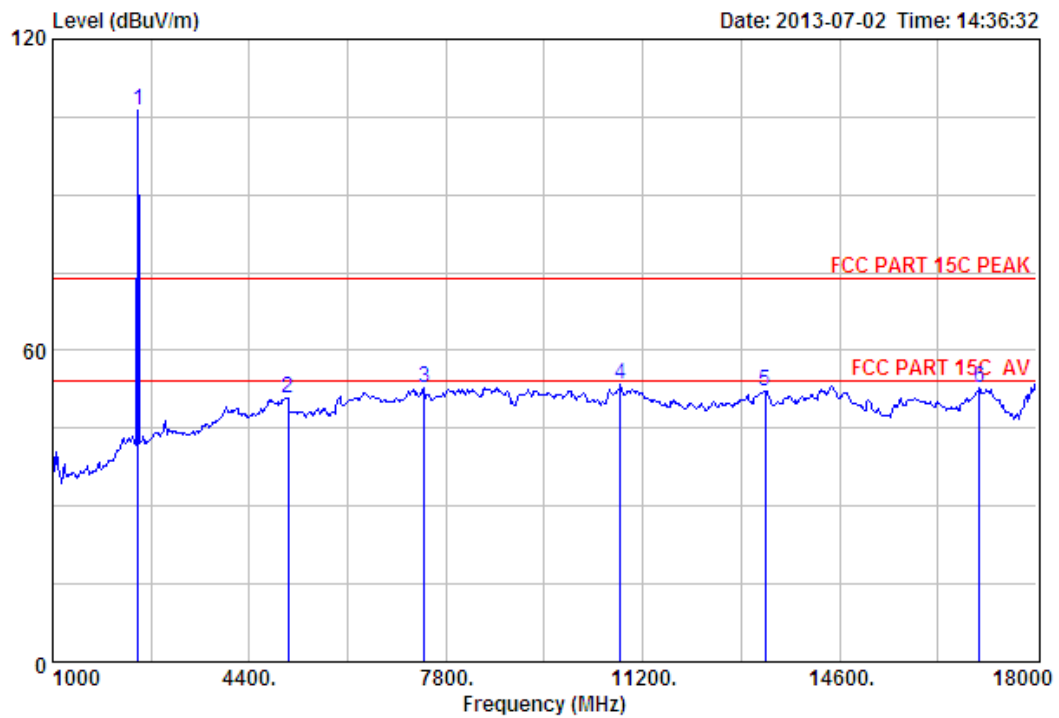
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 107
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : Temp:25.6';Humi:56%;Press:101.52kPa
 Engineer : Tony
 EUT : Surroundbar 5000 Instant Home Theater
 Power : DC 20V From Adapter Input AC 120V/60Hz
 M/N : SB5000 IHT SPEAKER
 Test Mode : TX 2477.3MHz

	Freq.	Ant.	Cable	Amp	Emission				
	(MHz)	Factor	Loss	Factor	Reading	Level	Limits	Margin	Remark
		(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2477.30	27.58	6.71	34.03	109.30	109.56	74.00	-35.56	Peak
2	4604.00	30.80	10.87	31.66	39.99	50.00	74.00	24.00	Peak
3	7426.00	36.56	11.60	31.95	35.73	51.94	74.00	22.06	Peak
4	9313.00	37.94	11.62	32.15	35.80	53.21	74.00	20.79	Peak
5	14464.00	41.85	10.93	32.96	32.69	52.51	74.00	21.49	Peak
6	17048.00	39.93	10.97	33.09	33.10	50.91	74.00	23.09	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.

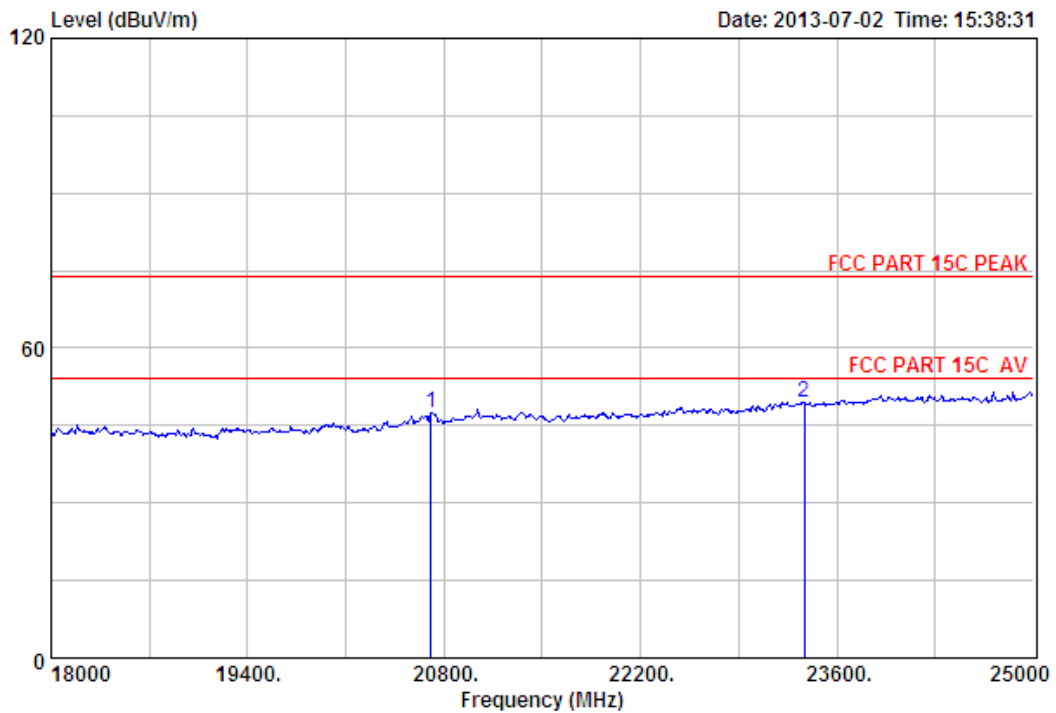


Site no. : 3m Chamber Data no. : 108
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : Temp:25.6';Humi:56%;Press:101.52kPa
 Engineer : Tony
 EUT : Surroundbar 5000 Instant Home Theater
 Power : DC 20V From Adapter Input AC 120V/60Hz
 M/N : SB5000 IHT SPEAKER
 Test Mode : TX 2477.3MHz

	Freq.	Ant.	Cable	Amp	Emission				
	(MHz)	Factor	Loss	Factor	Reading	Level	Limits	Margin	Remark
		(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2477.30	27.58	6.71	34.03	106.06	106.32	74.00	-32.32	Peak
2	5063.00	31.58	12.51	32.11	38.75	50.73	74.00	23.27	Peak
3	7426.00	36.56	11.60	31.95	36.70	52.91	74.00	21.09	Peak
4	10809.00	39.31	11.30	33.30	36.01	53.32	74.00	20.68	Peak
5	13308.00	39.62	11.47	34.86	36.03	52.26	74.00	21.74	Peak
6	17014.00	39.80	10.98	33.17	35.22	52.83	74.00	21.17	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.

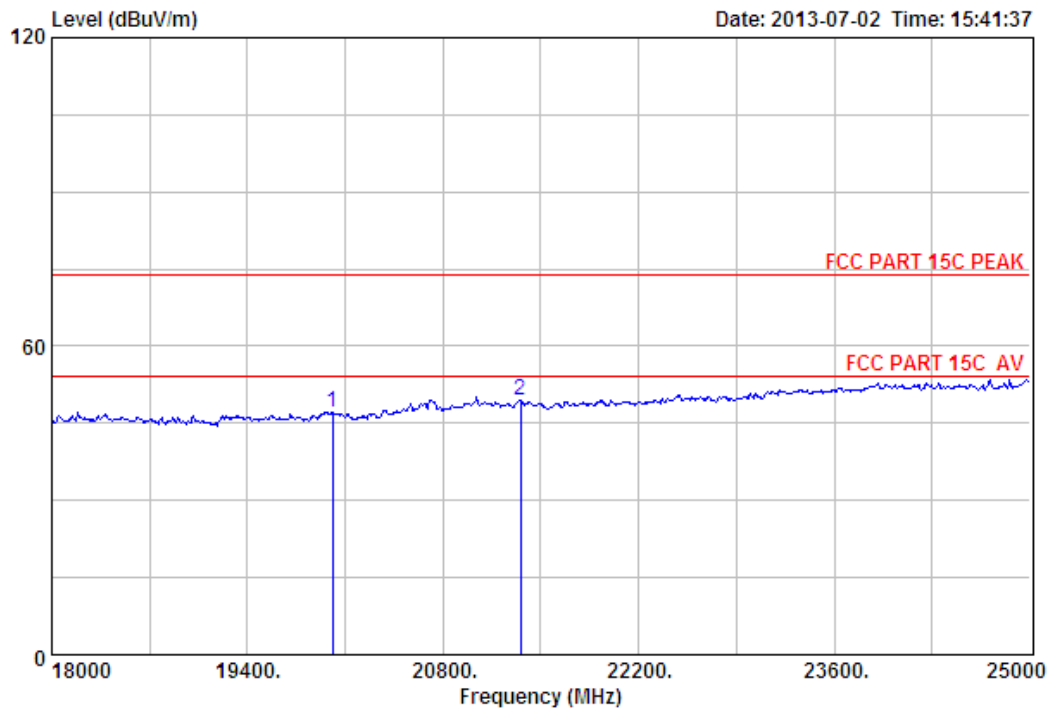
18000MHz – 25000MHz



Site no. : 3m Chamber Data no. : 123
 Dis. / Ant. : 3m ANT ABVOE 18G Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : Temp:25.6';Humi:56%;Press:101.52kPa
 Engineer : Tony
 EUT : Surroundbar 5000 Instant Home Theater
 Power : DC 20V From Adapter Input AC 120V/60Hz
 M/N : SB5000 IHT SPEAKER
 Test Mode : TX 2403.5MHz

	Freq.	Ant.	Cable	Amp	Emission				
	(MHz)	Factor	Loss	Factor	Reading	Level	Limits	Margin	Remark
		(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	20709.00	46.12	20.00	36.07	17.48	47.53	74.00	26.47	Peak
2	23369.00	45.67	21.48	33.46	15.78	49.47	74.00	24.53	Peak

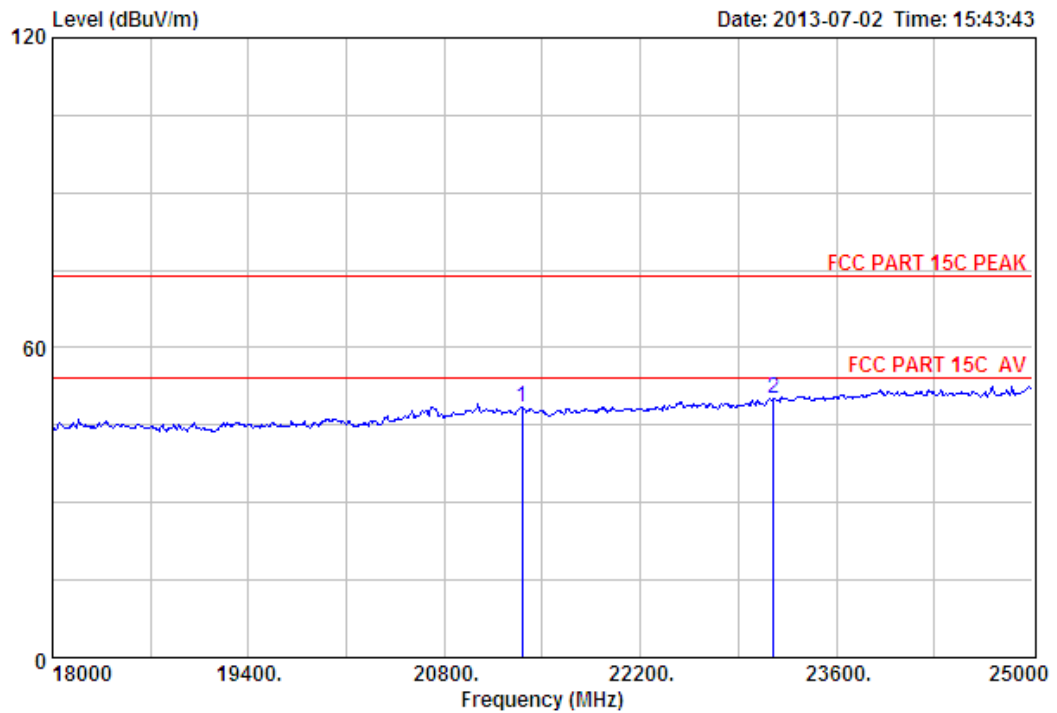
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 124
 Dis. / Ant. : 3m ANT ABOVE 18G Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : Temp:25.6';Humi:56%;Press:101.52kPa
 Engineer : Tony
 EUT : Surroundbar 5000 Instant Home Theater
 Power : DC 20V From Adapter Input AC 120V/60Hz
 M/N : SB5000 IHT SPEAKER
 Test Mode : TX 2403.5MHz

	Freq. (MHz)	Ant.	Cable	Amp	Emission				Remark
		Factor (dB/m)	Loss (dB)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	
1	20009.00	46.10	19.68	36.70	18.21	47.29	74.00	26.71	Peak
2	21353.00	46.09	20.28	35.49	18.72	49.60	74.00	24.40	Peak

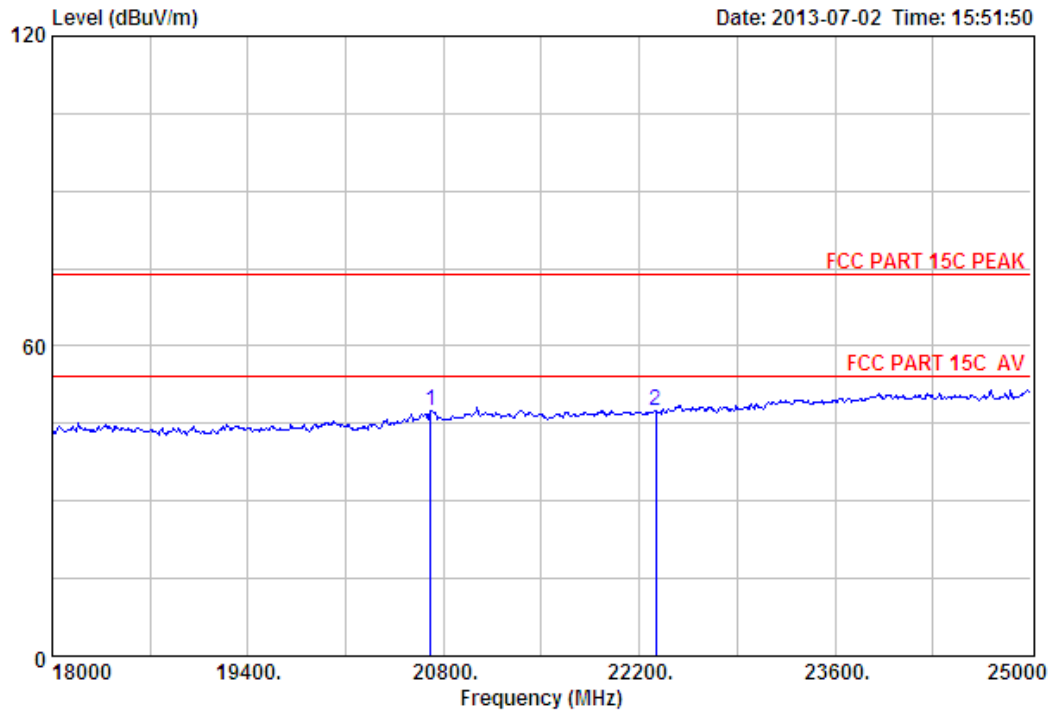
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 125
 Dis. / Ant. : 3m ANT ABOVE 18G Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : Temp:25.6';Humi:56%;Press:101.52kPa
 Engineer : Tony
 EUT : Surroundbar 5000 Instant Home Theater
 Power : DC 20V From Adapter Input AC 120V/60Hz
 M/N : SB5000 IHT SPEAKER
 Test Mode : TX 2440.4MHz

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Emission		Limits (dBuV/m)	Margin (dB)	Remark
				Reading (dBuV)	Level (dBuV/m)			
1 21353.00	46.09	20.28	35.49	17.72	48.60	74.00	25.40	Peak
2 23152.00	45.63	21.28	33.69	16.88	50.10	74.00	23.90	Peak

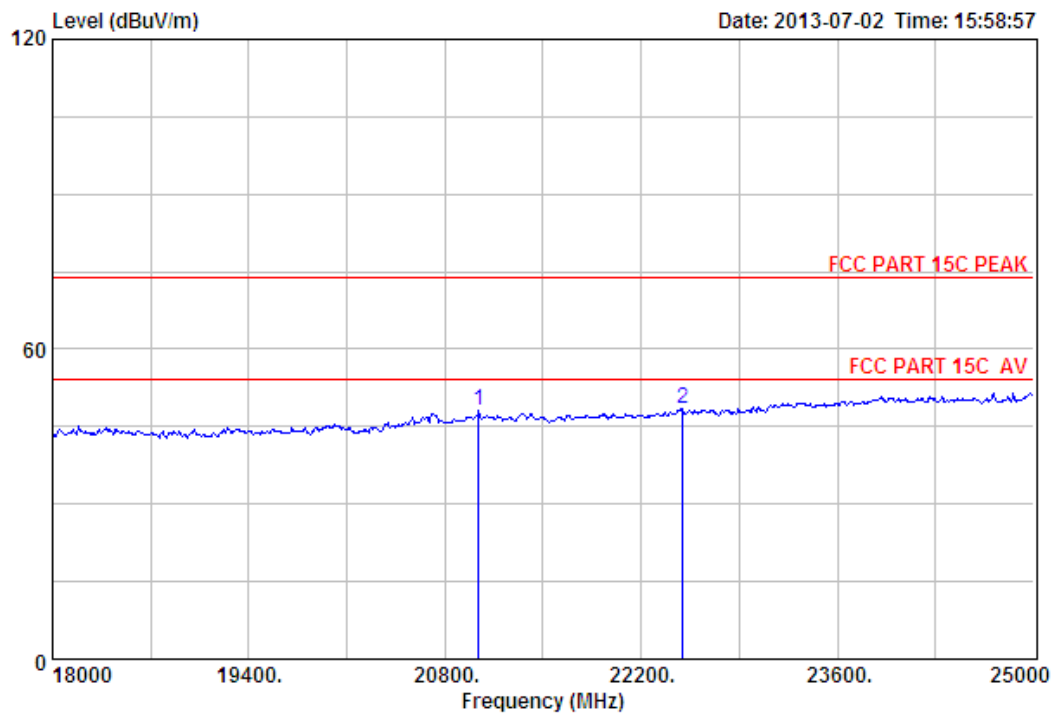
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 126
 Dis. / Ant. : 3m ANT ABVOE 18G Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : Temp:25.6';Humi:56%;Press:101.52kPa
 Engineer : Tony
 EUT : Surroundbar 5000 Instant Home Theater
 Power : DC 20V From Adapter Input AC 120V/60Hz
 M/N : SB5000 IHT SPEAKER
 Test Mode : TX 2440.4MHz

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Emission		Limits (dBuV/m)	Margin (dB)	Remark
				Reading (dBuV)	Level (dBuV/m)			
1 20709.00	46.12	20.00	36.07	17.48	47.53	74.00	26.47	Peak
2 22319.00	45.76	20.75	34.56	15.60	47.55	74.00	26.45	Peak

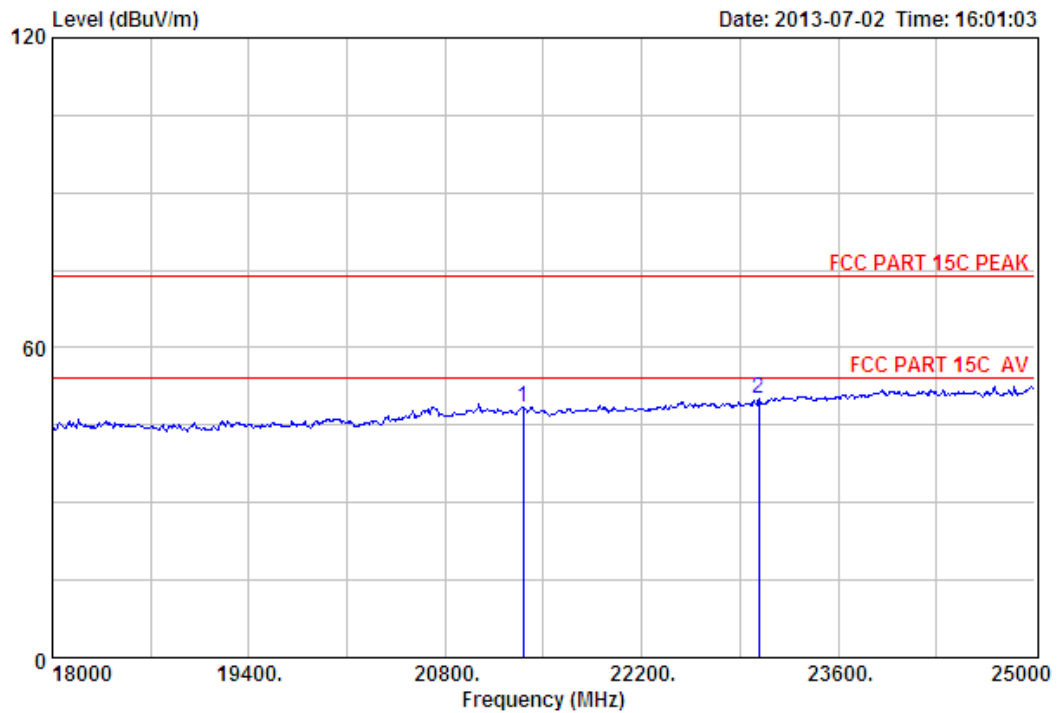
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 127
 Dis. / Ant. : 3m ANT ABVOE 18G Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : Temp:25.6';Humi:56%;Press:101.52kPa
 Engineer : Tony
 EUT : Surroundbar 5000 Instant Home Theater
 Power : DC 20V From Adapter Input AC 120V/60Hz
 M/N : SB5000 IHT SPEAKER
 Test Mode : TX 2477.3MHz

	Freq. (MHz)	Ant.	Cable	Amp	Emission				Remark
		Factor (dB/m)	Loss (dB)	Factor (dB)	Reading	Level	Limits	Margin	
					(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	21038.00	46.27	20.15	35.76	17.43	48.09	74.00	25.91	Peak
2	22494.00	45.80	20.85	34.38	16.13	48.40	74.00	25.60	Peak

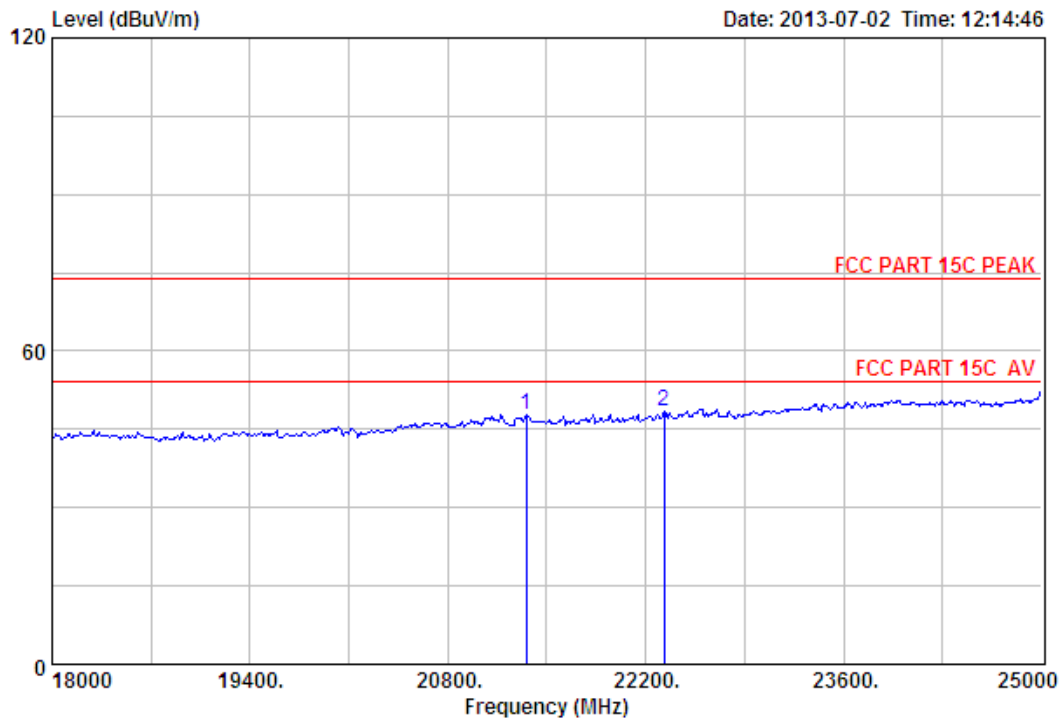
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 128
 Dis. / Ant. : 3m ANT ABOVE 18G Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : Temp:25.6';Humi:56%;Press:101.52kPa
 Engineer : Tony
 EUT : Surroundbar 5000 Instant Home Theater
 Power : DC 20V From Adapter Input AC 120V/60Hz
 M/N : SB5000 IHT SPEAKER
 Test Mode : TX 2477.3MHz

	Freq.	Ant.	Cable	Amp	Emission				
	(MHz)	Factor	Loss	Factor	Reading	Level	Limits	Margin	Remark
		(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	21353.00	46.09	20.28	35.49	17.72	48.60	74.00	25.40	Peak
2	23033.00	45.61	21.17	33.82	17.18	50.14	74.00	23.86	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. : 74
 Dis. / Ant. : 3m ANT ABVOE 18G Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : Temp:25.6';Humi:56%;Press:101.52kPa
 Engineer : Tony
 EUT : Surroundbar 5000 Instant Home Theater
 Power : DC 20V From Adapter Input AC 120V/60Hz
 M/N : SB5000 IHT SPEAKER
 Test Mode : GFSK TX 2480MHz

		Ant.	Cable	Amp	Emission				
	Freq.	Factor	Loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	21353.00	46.09	20.28	35.49	16.93	47.81	74.00	26.19	Peak
2	22333.00	45.77	20.75	34.56	16.51	48.47	74.00	25.53	Peak

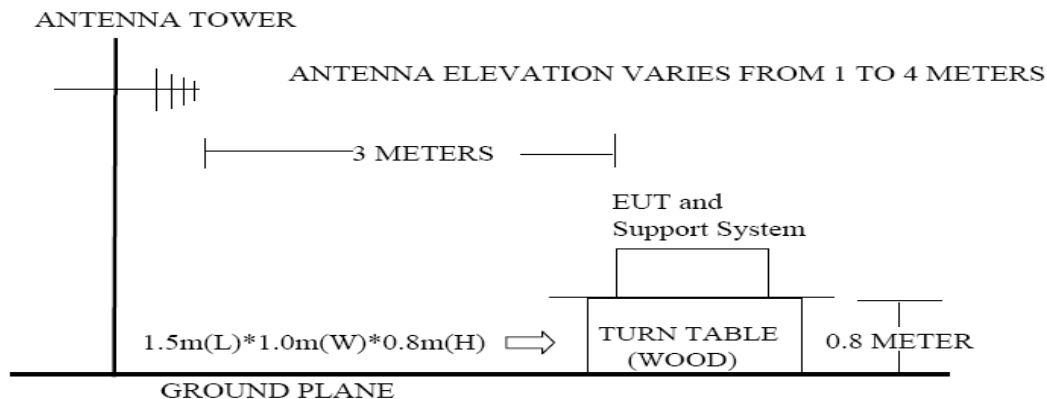
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

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. Block Diagram of Test setup



9.3. Test Procedure

EUT was placed on a turn table, which is 0.8 meter 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

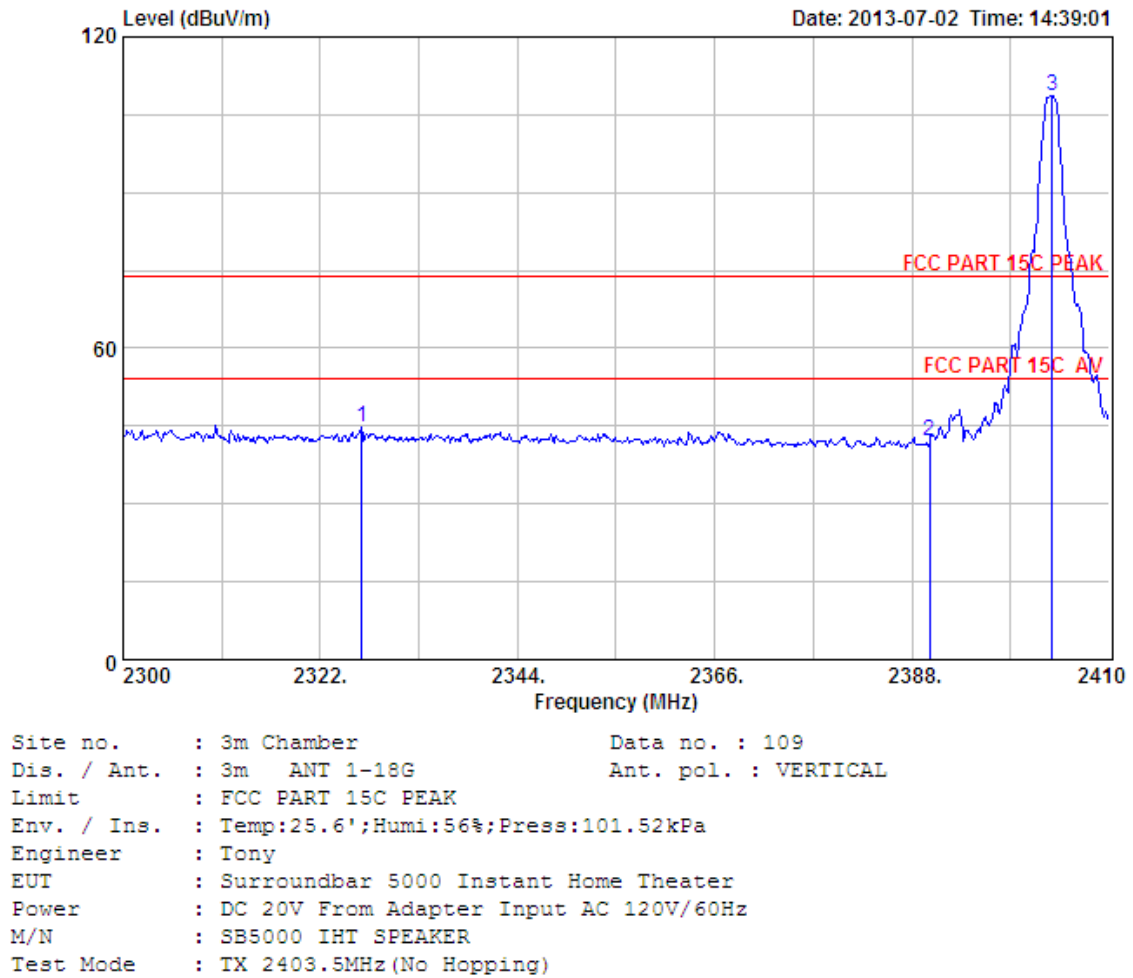
9.4. Test Result

EUT: Surroundbar 5000 Instant Home Theater
M/N: SB5000 IHT SPEAKER
Power: DC 12V From Adapter Input AC 120V/60Hz
Test date: 2013-07-02 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.

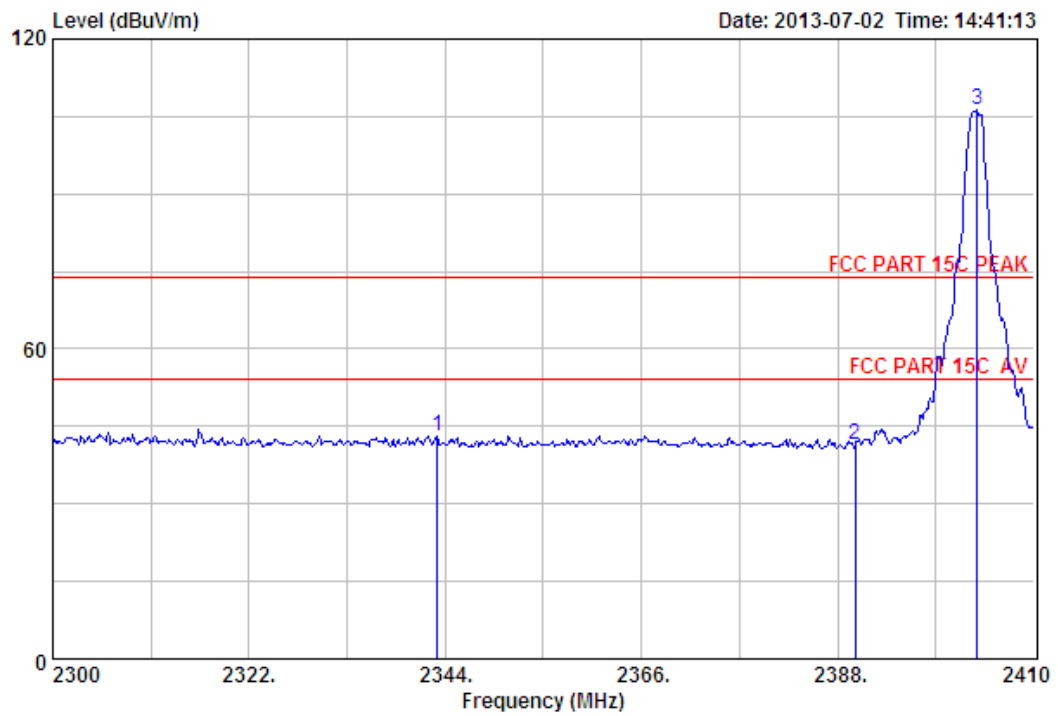
- 2、 The frequency 2403.5MHz 、 2440.4MHz and 2477.3MHz is fundamental frequency which no limit, the limit on plots is automatically generated by the software, it's not fundamental limit, we can't remove it.

9.5. Test Data



	Ant.	Cable	Amp	Emission					
Freq.	Factor	Loss	Factor	Reading	Level	Limits	Margin	Remark	
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)		
1	2326.62	27.73	6.54	34.23	44.67	44.71	74.00	29.29	Peak
2	2390.00	27.64	6.62	34.19	42.17	42.24	74.00	31.76	Peak
3	2403.62	27.61	6.64	34.18	108.60	108.67	74.00	-34.67	Peak

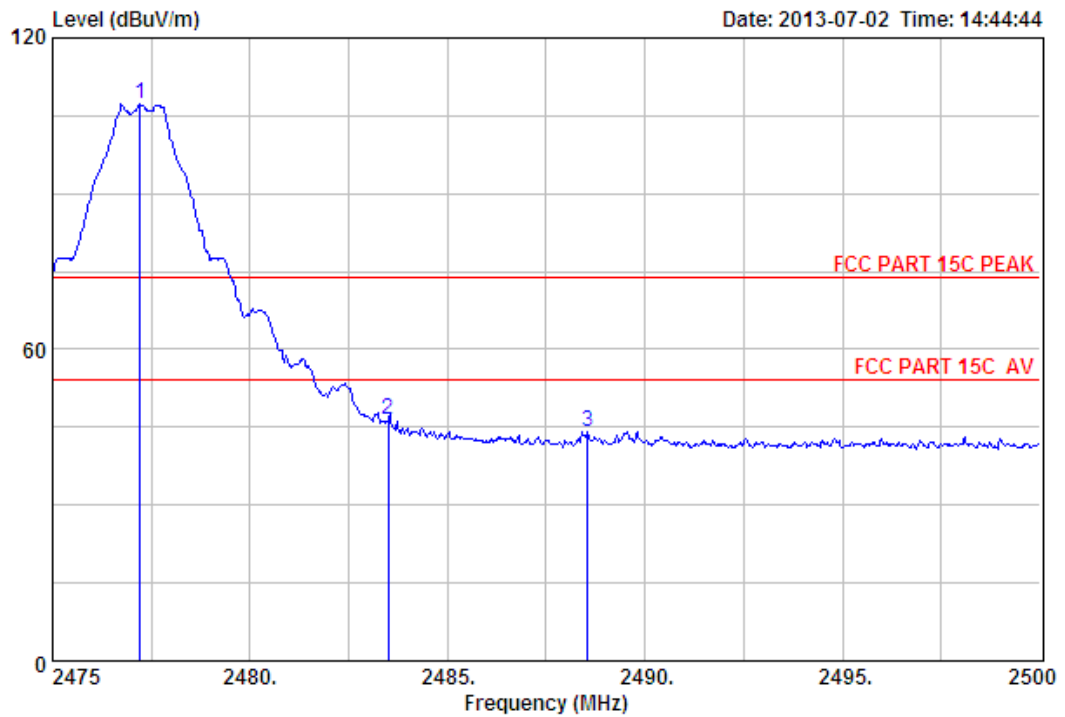
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 110
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : Temp:25.6';Humi:56%;Press:101.52kPa
 Engineer : Tony
 EUT : Surroundbar 5000 Instant Home Theater
 Power : DC 20V From Adapter Input AC 120V/60Hz
 M/N : SB5000 IHT SPEAKER
 Test Mode : TX 2403.5MHz (No Hopping)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Emission				Remark
					Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	
1	2343.12	27.70	6.56	34.22	43.21	43.25	74.00	30.75	Peak
2	2390.00	27.64	6.62	34.19	41.27	41.34	74.00	32.66	Peak
3	2403.62	27.61	6.64	34.18	106.09	106.16	74.00	-32.16	Peak

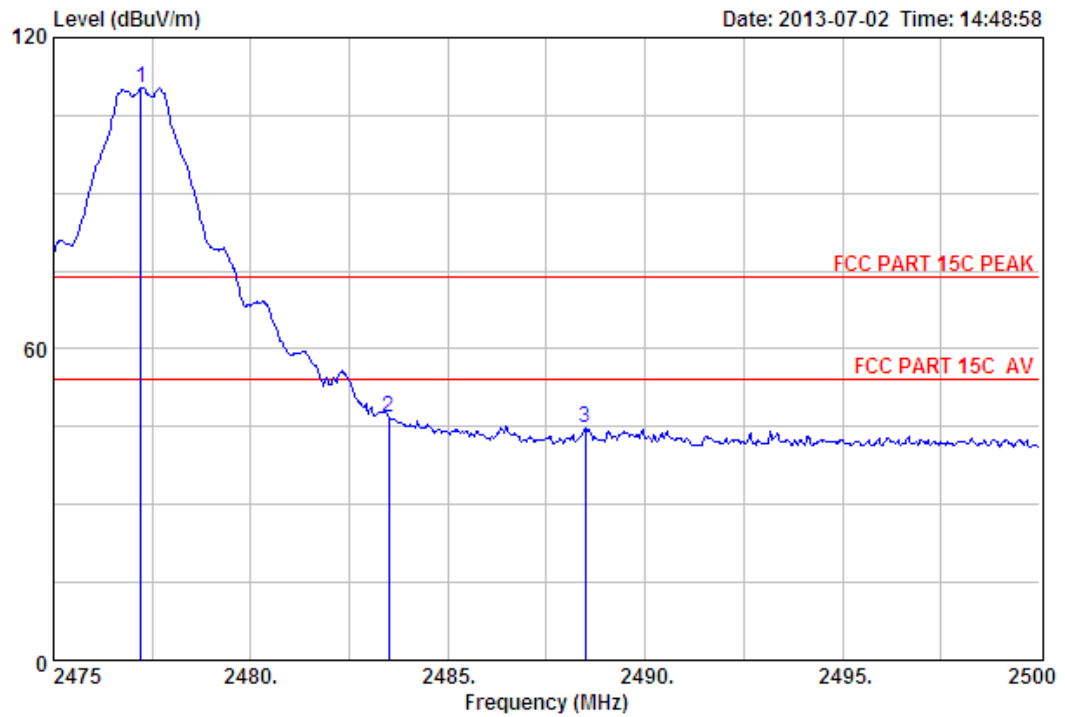
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 111
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : Temp:25.6';Humi:56%;Press:101.52kPa
 Engineer : Tony
 EUT : Surroundbar 5000 Instant Home Theater
 Power : DC 20V From Adapter Input AC 120V/60Hz
 M/N : SB5000 IHT SPEAKER
 Test Mode : TX 2477.3MHz(No Hopping)

	Freq.	Ant.	Cable	Amp	Emission				
	(MHz)	Factor	Loss	Factor	Reading	Level	Limits	Margin	Remark
		(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2477.23	27.58	6.71	34.03	106.92	107.18	74.00	-33.18	Peak
2	2483.50	27.58	6.71	34.03	46.22	46.48	74.00	27.52	Peak
3	2488.55	27.58	6.73	34.03	43.87	44.15	74.00	29.85	Peak

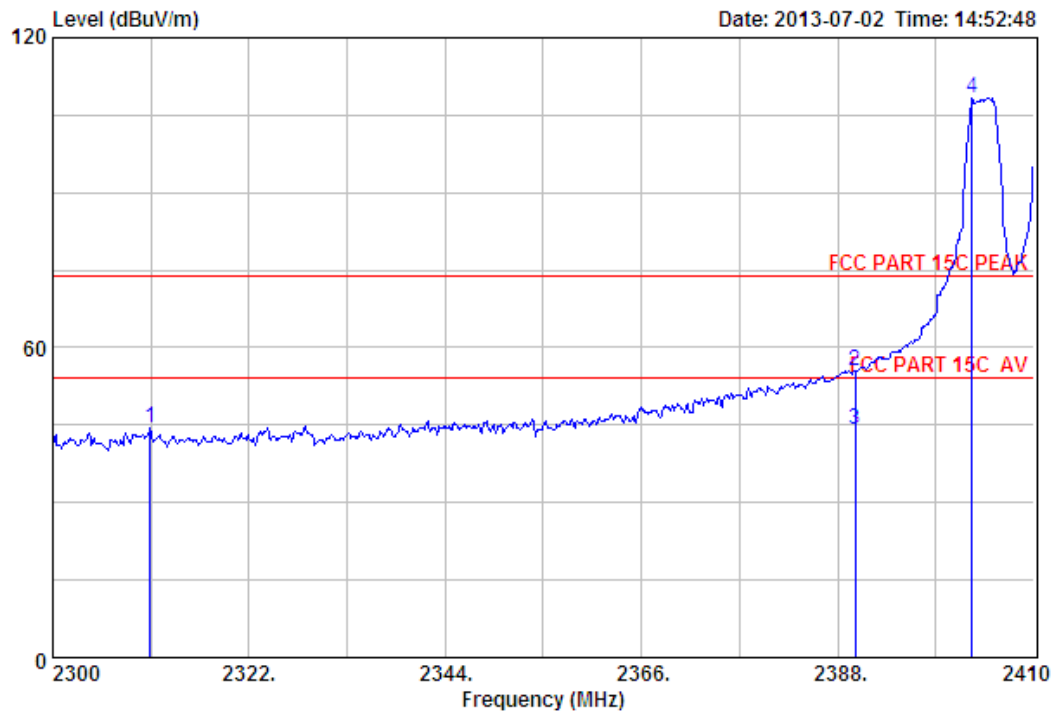
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 112
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : Temp:25.6';Humi:56%;Press:101.52kPa
 Engineer : Tony
 EUT : Surroundbar 5000 Instant Home Theater
 Power : DC 20V From Adapter Input AC 120V/60Hz
 M/N : SB5000 IHT SPEAKER
 Test Mode : TX 2477.3MHz(No Hopping)

	Freq.	Ant.	Cable	Amp	Emission				
	(MHz)	Factor	Loss	Factor	Reading	Level	Limits	Margin	Remark
		(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2477.23	27.58	6.71	34.03	110.03	110.29	74.00	-36.29	Peak
2	2483.50	27.58	6.71	34.03	46.59	46.85	74.00	27.15	Peak
3	2488.48	27.58	6.73	34.03	44.40	44.68	74.00	29.32	Peak

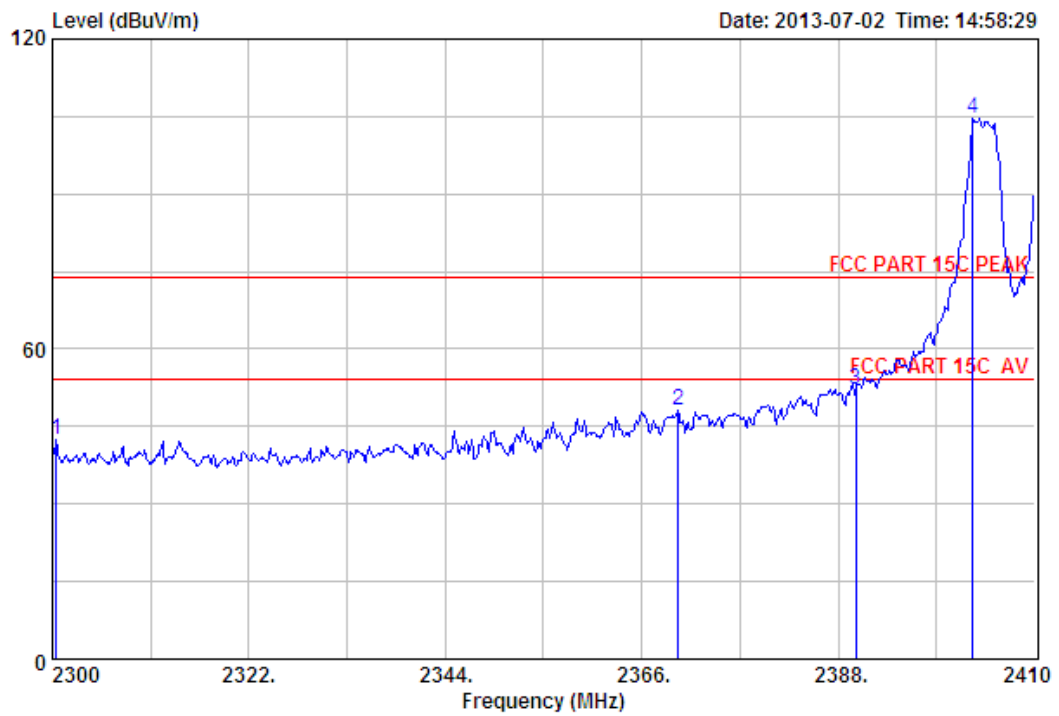
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 113
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : Temp:25.6°;Humi:56%;Press:101.52kPa
 Engineer : Tony
 EUT : Surroundbar 5000 Instant Home Theater
 Power : DC 20V From Adapter Input AC 120V/60Hz
 M/N : SB5000 IHT SPEAKER
 Test Mode : 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	2310.89	27.76	6.53	34.24	44.50	44.55	74.00	29.45	Peak
2	2390.00	27.64	6.62	34.19	55.48	55.55	74.00	18.45	Peak
3	2390.00	27.64	6.62	34.19	44.14	44.21	54.00	9.79	Average
4	2403.07	27.61	6.64	34.18	108.37	108.44	74.00	-34.44	Peak

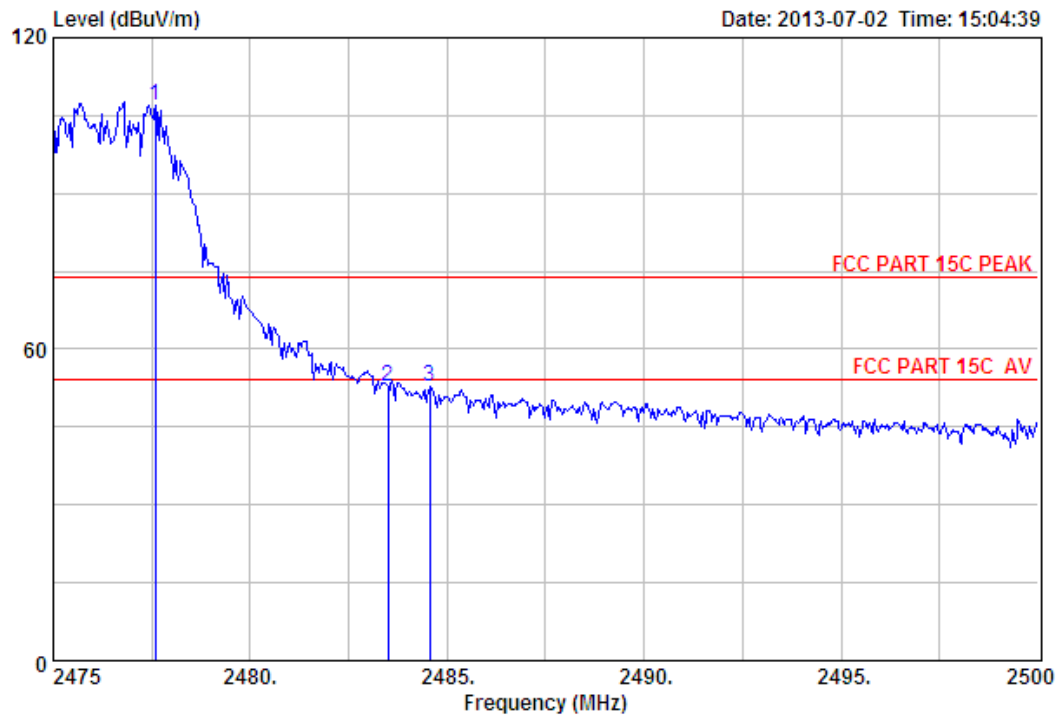
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 114
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : Temp:25.6';Humi:56%;Press:101.52kPa
 Engineer : Tony
 EUT : Surroundbar 5000 Instant Home Theater
 Power : DC 20V From Adapter Input AC 120V/60Hz
 M/N : SB5000 IHT SPEAKER
 Test Mode : 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	2300.44	27.79	6.51	34.25	42.36	42.41	74.00	31.59	Peak
2	2370.07	27.67	6.60	34.20	48.07	48.14	74.00	25.86	Peak
3	2390.00	27.64	6.62	34.19	52.13	52.20	74.00	21.80	Peak
4	2403.07	27.61	6.64	34.18	104.58	104.65	74.00	-30.65	Peak

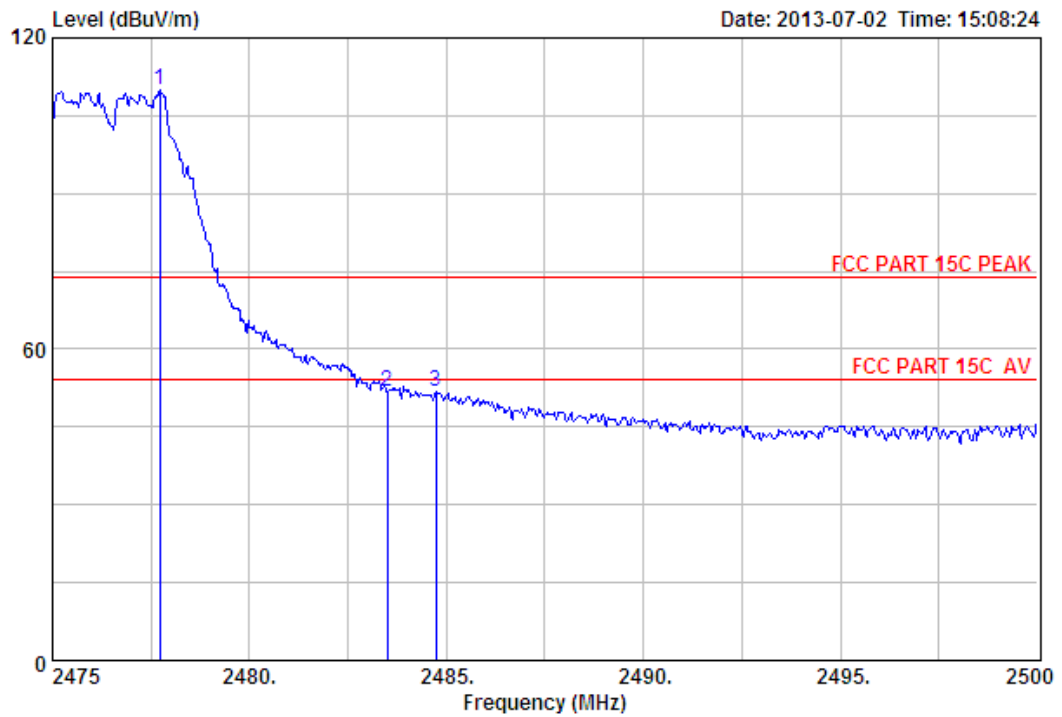
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 115
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : Temp:25.6';Humi:56%;Press:101.52kPa
 Engineer : Tony
 EUT : Surroundbar 5000 Instant Home Theater
 Power : DC 20V From Adapter Input AC 120V/60Hz
 M/N : SB5000 IHT SPEAKER
 Test Mode : Hopping On

		Ant.	Cable	Amp	Emission				
	Freq.	Factor	Loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2477.60	27.58	6.71	34.03	106.68	106.94	74.00	-32.94	Peak
2	2483.50	27.58	6.71	34.03	52.50	52.76	74.00	21.24	Peak
3	2484.55	27.58	6.71	34.03	52.64	52.90	74.00	21.10	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. : 116
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : Temp:25.6';Humi:56%;Press:101.52kPa
 Engineer : Tony
 EUT : Surroundbar 5000 Instant Home Theater
 Power : DC 20V From Adapter Input AC 120V/60Hz
 M/N : SB5000 IHT SPEAKER
 Test Mode : Hopping On

	Freq.	Ant.	Cable	Amp	Emission				
	(MHz)	Factor	Loss	Factor	Reading	Level	Limits	Margin	Remark
		(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2477.73	27.58	6.71	34.03	109.74	110.00	74.00	-36.00	Peak
2	2483.50	27.58	6.71	34.03	51.65	51.91	74.00	22.09	Peak
3	2484.73	27.58	6.71	34.03	51.66	51.92	74.00	22.08	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.

10. POWER LINE CONDUCTED EMISSIONS

10.1. Limit

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

Notes: 1. * Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

10.2. Test Procedure

The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT was charged from 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: 2003 on Conducted Emission Test.

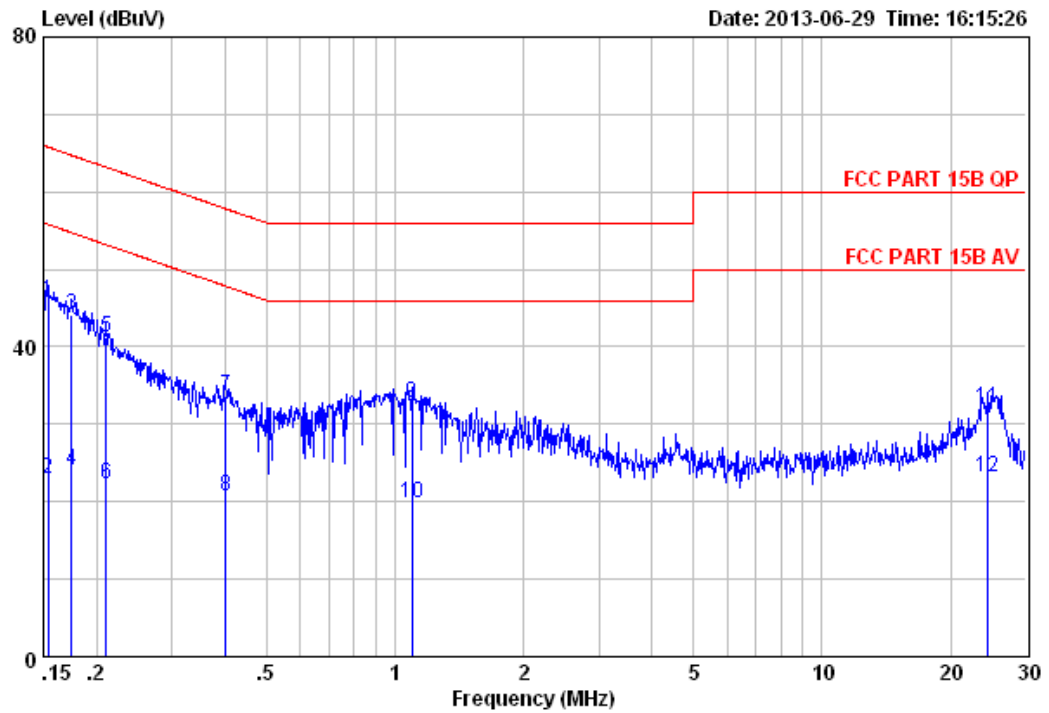
The bandwidth of test receiver (R & S ESHS30) is set at 10kHz.

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

10.3. Test Result

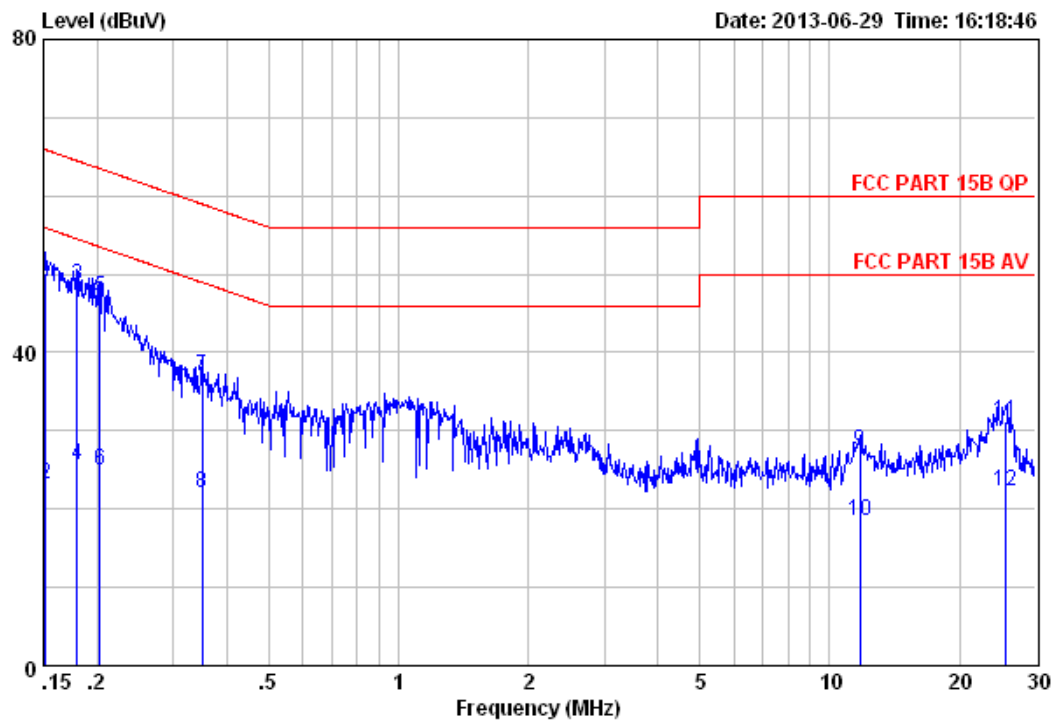
0.15MHz—30MHz Conducted emission Test result		
EUT: Surroundbar 5000 Instant Home Theater		
M/N: SB5000 IHT SPEAKER		
Power: DC 12V From Adapter Input AC 120V/60Hz		
Test date: 2013-06-29	Test site: 3m Chamber	Tested by: Tony.Tang
Test mode: Tx Mode		
Pass		

10.4. Test data



Site no. : EST Conduction Shielded Room
 Data no. : 77
 Limit : FCC PART 15B QP
 LINE Phase : LINE
 Env. / Ins. : Temp:25.3'C Humi:58% Press:101.50kPa
 Engineer : Tony
 EUT : Surroundbar 5000 Instant Homse Theater
 Power : DC 20V From Adapter Input AC 120V/60Hz
 M/N : SB5000 IHT SPEAKER
 Test Mode : TX Mode

		LISN	Cable		Emission			
Freq.	Factor	Loss	Reading	Level	Limits	Margin	Remark	
(MHz)	(dB/m)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)		
1	0.15	9.61	9.81	26.47	45.89	65.78	19.89	QP
2	0.15	9.61	9.81	3.47	22.89	55.78	32.89	Average
3	0.17	9.61	9.80	24.74	44.15	64.72	20.57	QP
4	0.17	9.61	9.80	4.74	24.15	54.72	30.57	Average
5	0.21	9.61	9.80	21.80	41.21	63.18	21.97	QP
6	0.21	9.61	9.80	2.80	22.21	53.18	30.97	Average
7	0.40	9.61	9.82	14.25	33.68	57.81	24.13	QP
8	0.40	9.61	9.82	1.25	20.68	47.81	27.13	Average
9	1.09	9.64	9.83	13.39	32.86	56.00	23.14	QP
10	1.09	9.64	9.83	0.39	19.86	46.00	26.14	Average
11	24.53	9.66	10.00	12.53	32.19	60.00	27.81	QP
12	24.53	9.66	10.00	3.53	23.19	50.00	26.81	Average



Site no. : EST Conduction Shielded Room Data no. : 79
 Limit : FCC PART 15B QP LINE Phase : NEUTRAL
 Env. / Ins. : Temp:25.3'C Humi:58% Press:101.50kPa
 Engineer : Tony
 EUT : Surroundbar 5000 Instant Homse Theater
 Power : DC 20V From Adapter Input AC 120V/60Hz
 M/N : SB5000 IHT SPEAKER
 Test Mode : TX Mode

		LISN	Cable	Emission				
	Freq.	Factor	Loss	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	0.15	9.46	9.81	30.88	50.15	65.91	15.76	QP
2	0.15	9.46	9.81	3.88	23.15	55.91	32.76	Average
3	0.18	9.55	9.80	29.20	48.55	64.50	15.95	QP
4	0.18	9.55	9.80	6.20	25.55	54.50	28.95	Average
5	0.20	9.60	9.80	27.57	46.97	63.49	16.52	QP
6	0.20	9.60	9.80	5.57	24.97	53.49	28.52	Average
7	0.35	9.59	9.83	17.58	37.00	58.96	21.96	QP
8	0.35	9.59	9.83	2.58	22.00	48.96	26.96	Average
9	11.74	9.72	9.90	7.87	27.49	60.00	32.51	QP
10	11.74	9.72	9.90	-1.13	18.49	50.00	31.51	Average
11	25.59	9.81	10.03	11.42	31.26	60.00	28.74	QP
12	25.59	9.81	10.03	2.42	22.26	50.00	27.74	Average

11. ANTENNA REQUIREMENTS

11.1. Limit

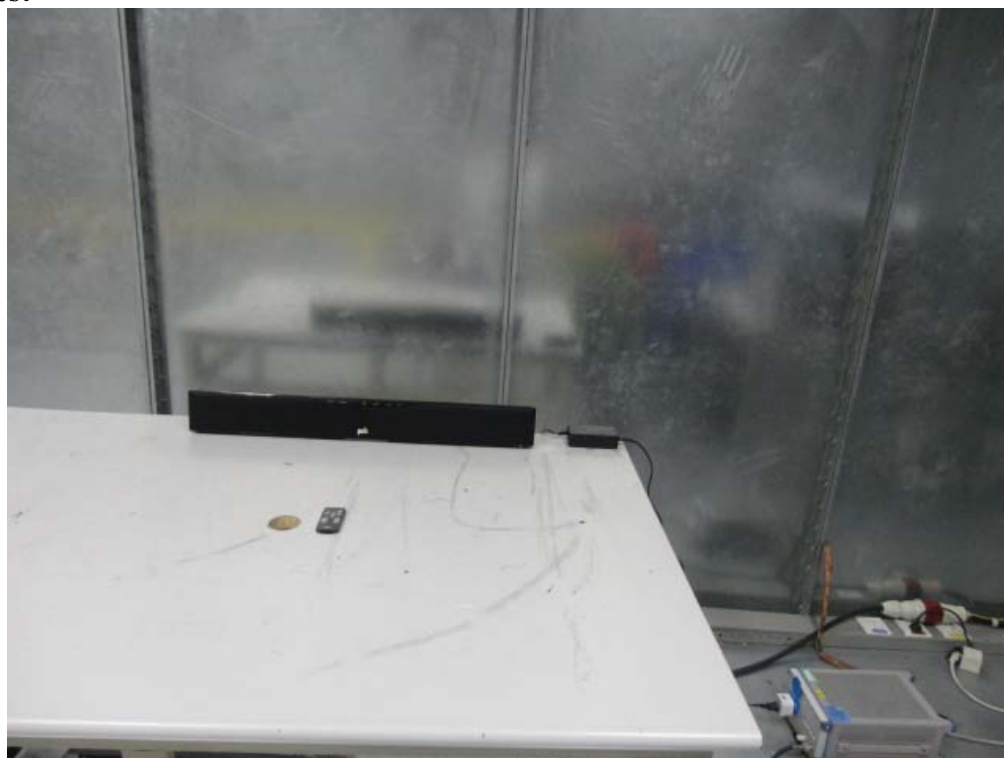
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional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

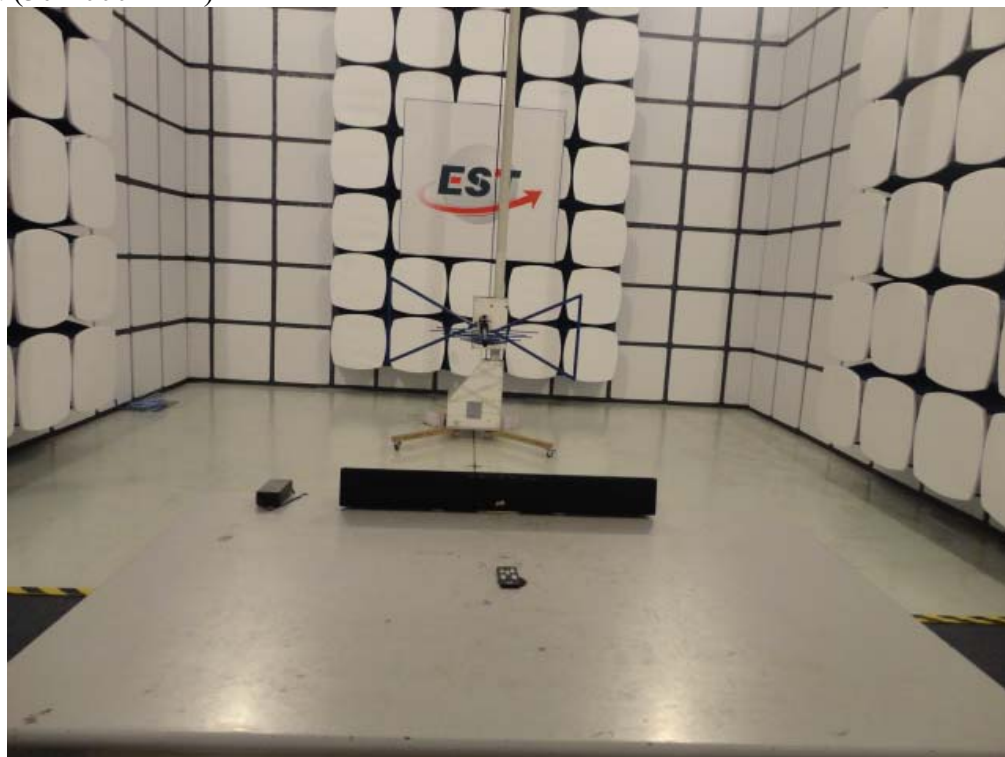
The antennas used for this product are integral Patch Antenna and that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is only 3.3dBi.

12. TEST SETUP PHOTO

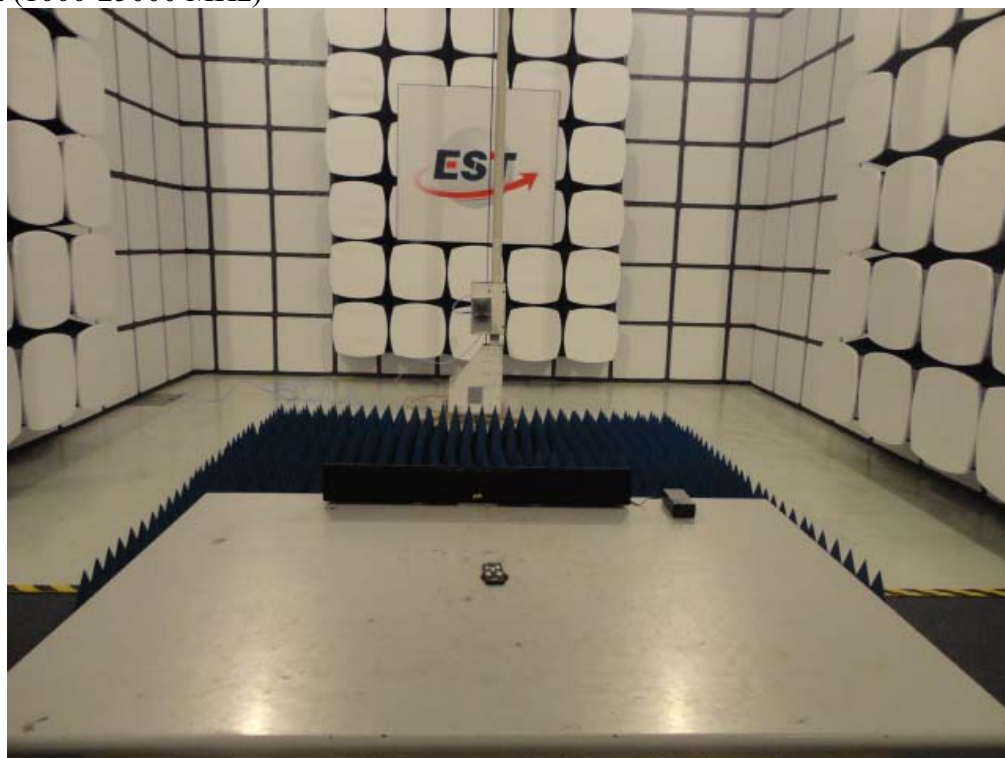
Conducted Test



Radiated Test (30-1000 MHz)



Radiated Test (1000-25000 MHz)

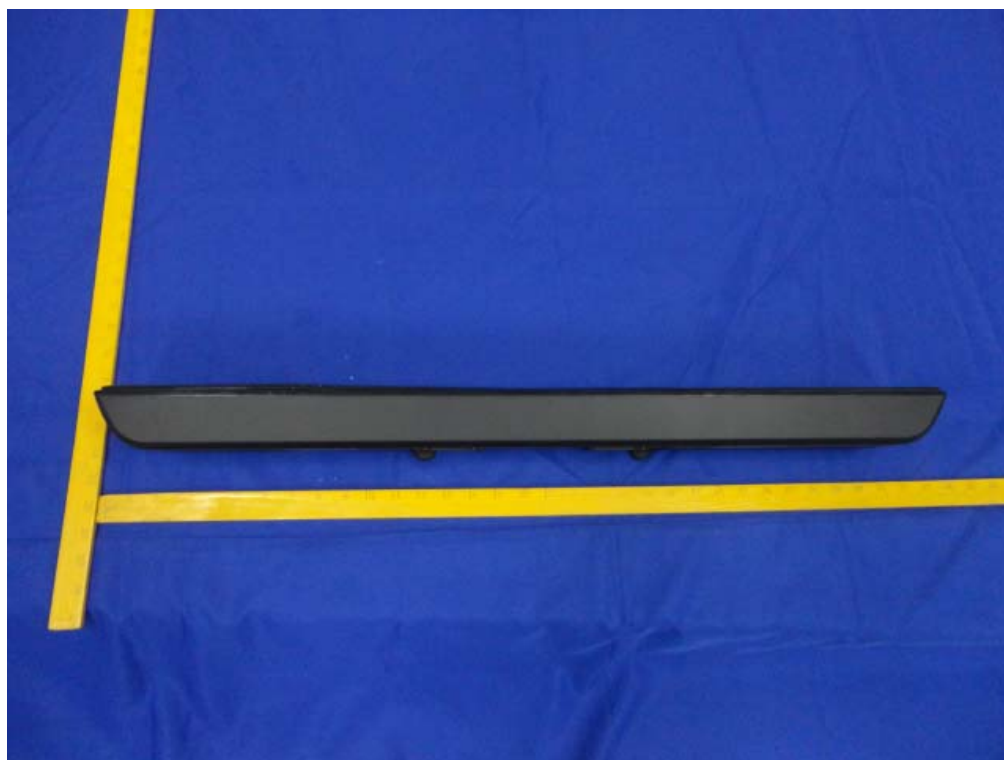


13. PHOTOS OF EUT

External Photos
M/N: SB5000 IHT SPEAKER



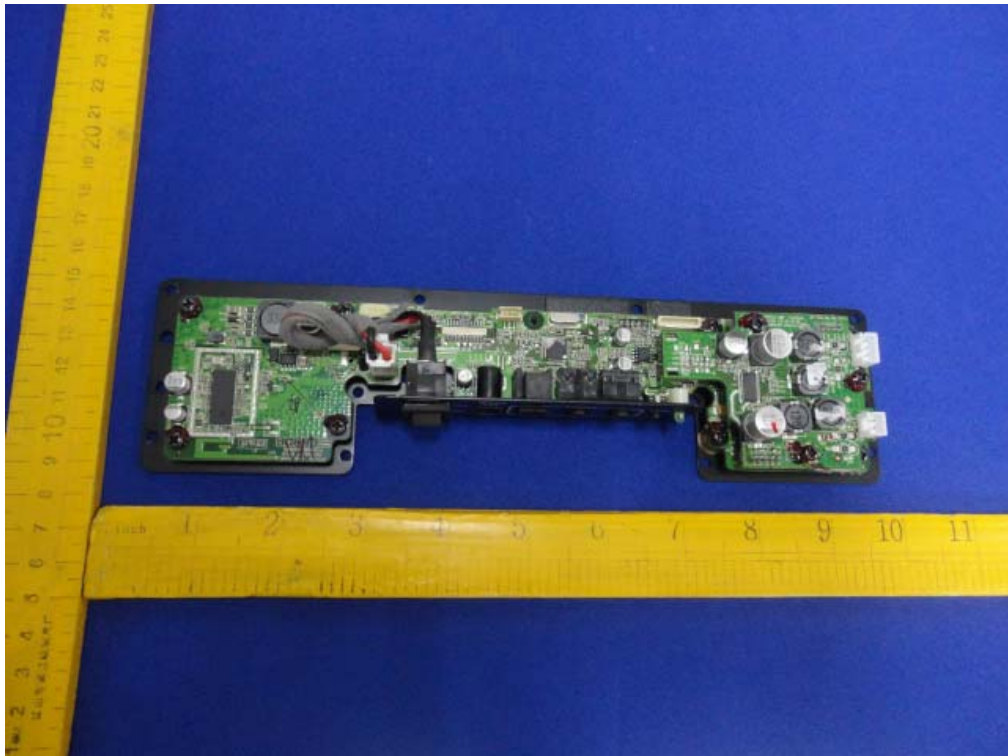
External Photos
M/N: SB5000 IHT SPEAKER



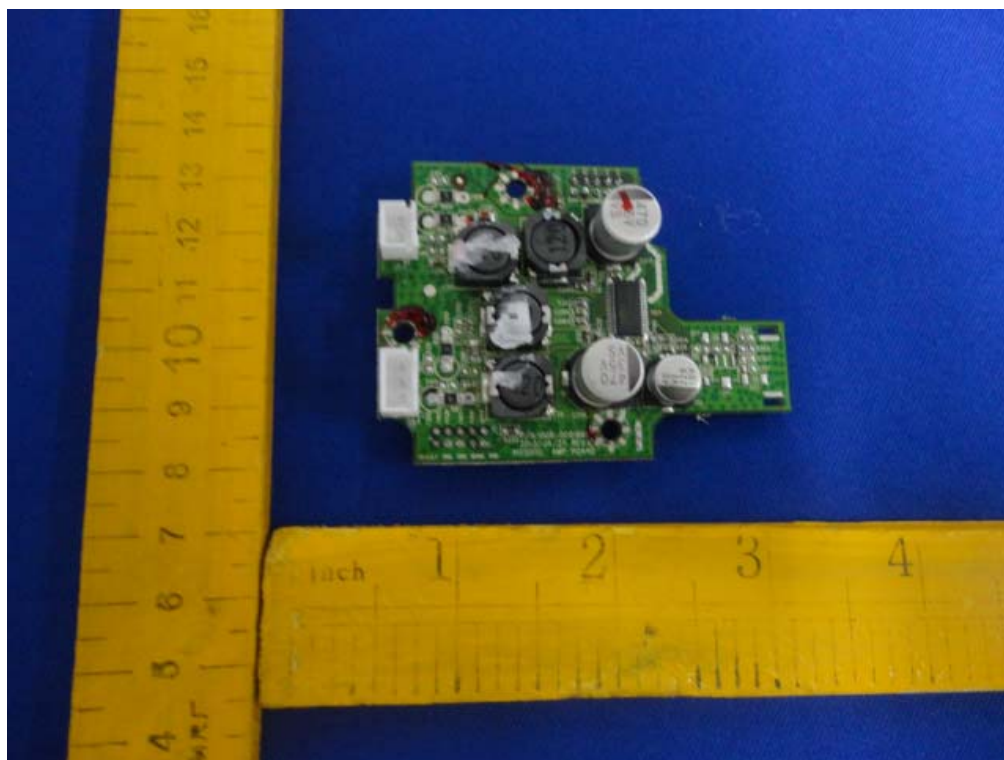
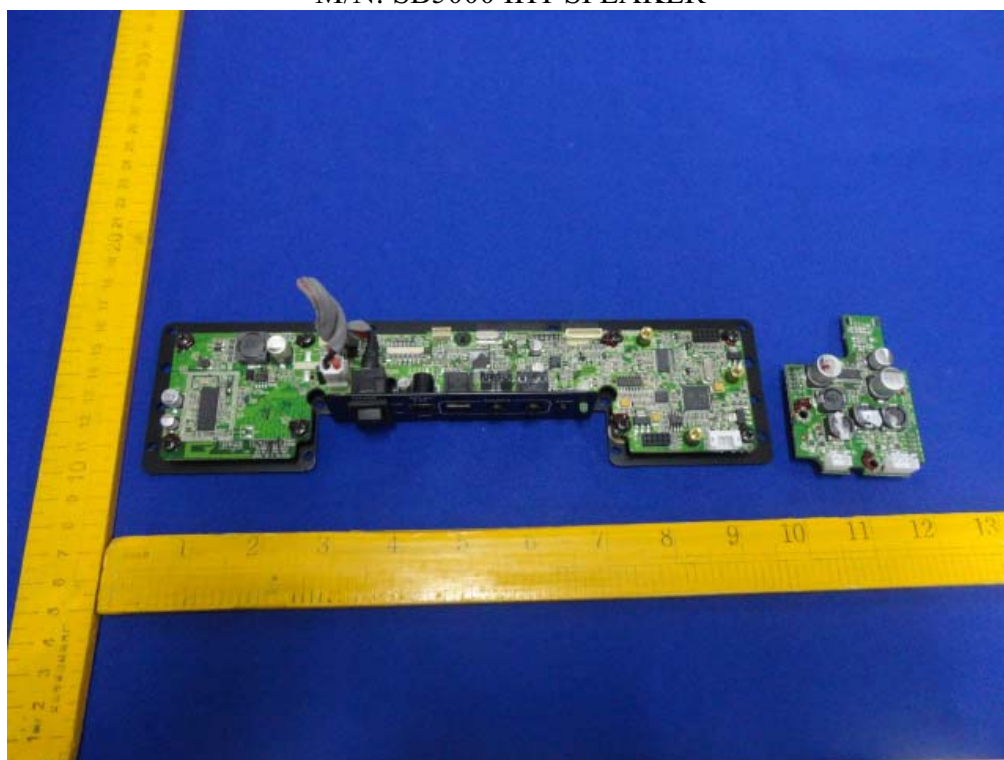
External Photos
M/N: SB5000 IHT SPEAKER



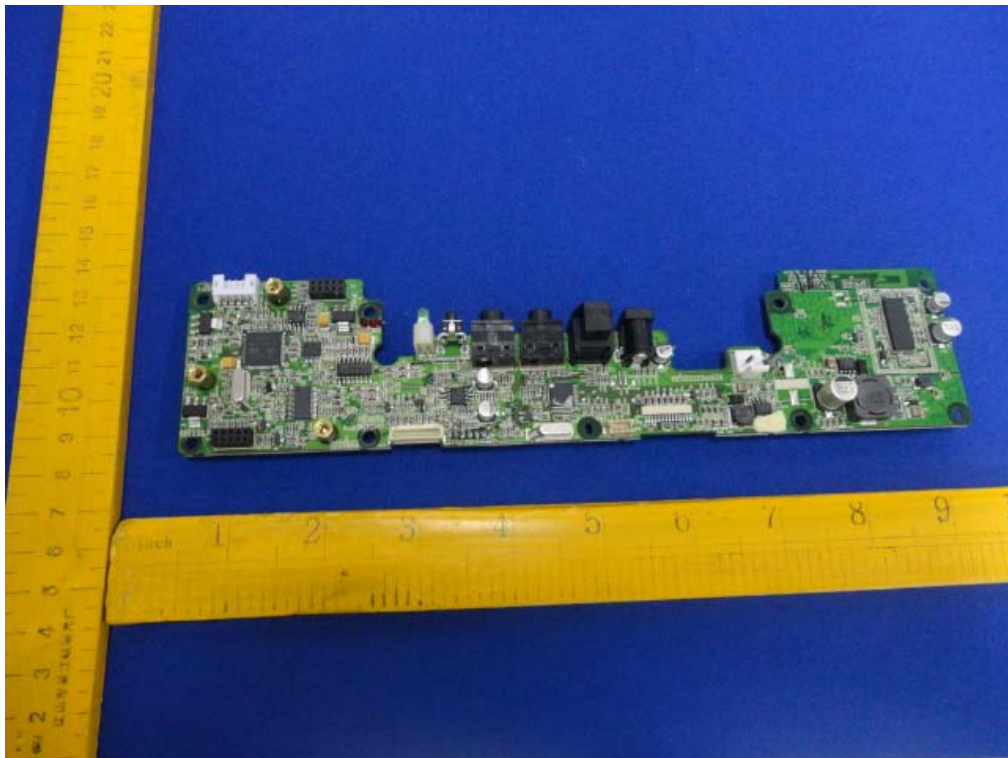
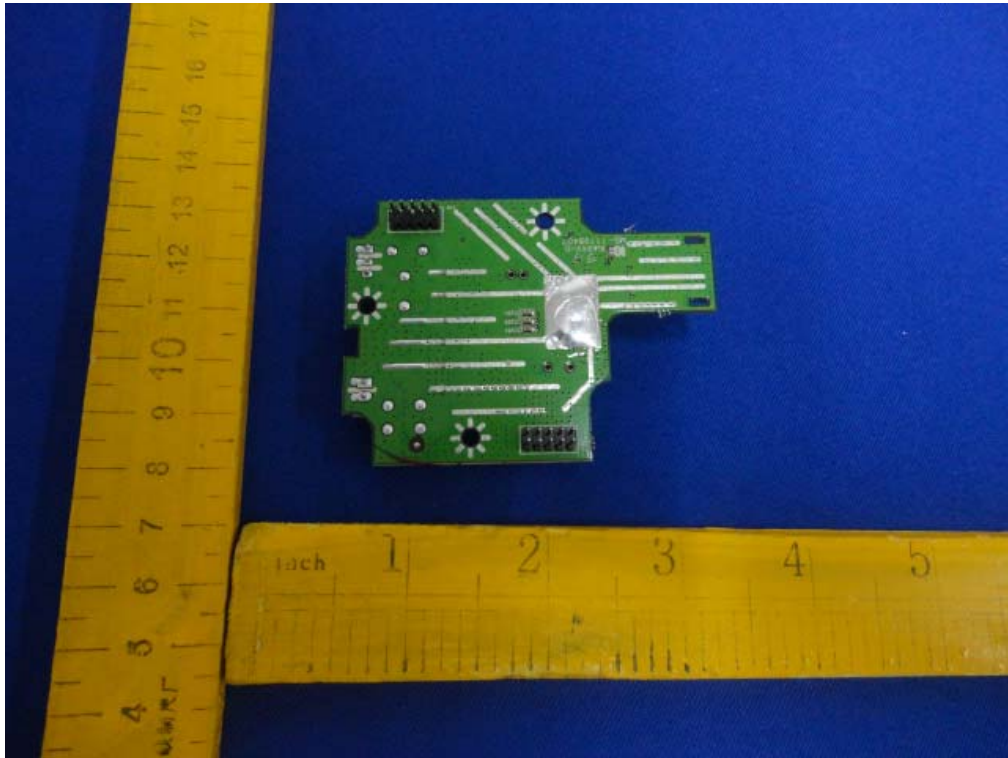
Internal Photos
M/N: SB5000 IHT SPEAKER



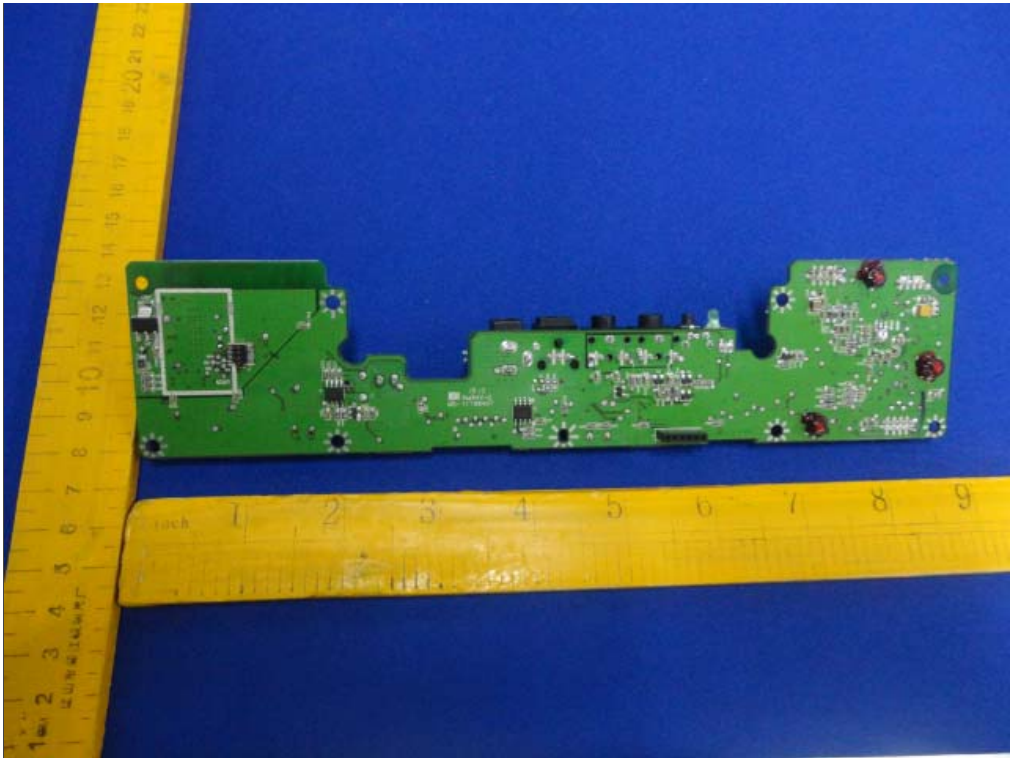
Internal Photos
M/N: SB5000 IHT SPEAKER



Internal Photos
M/N: SB5000 IHT SPEAKER

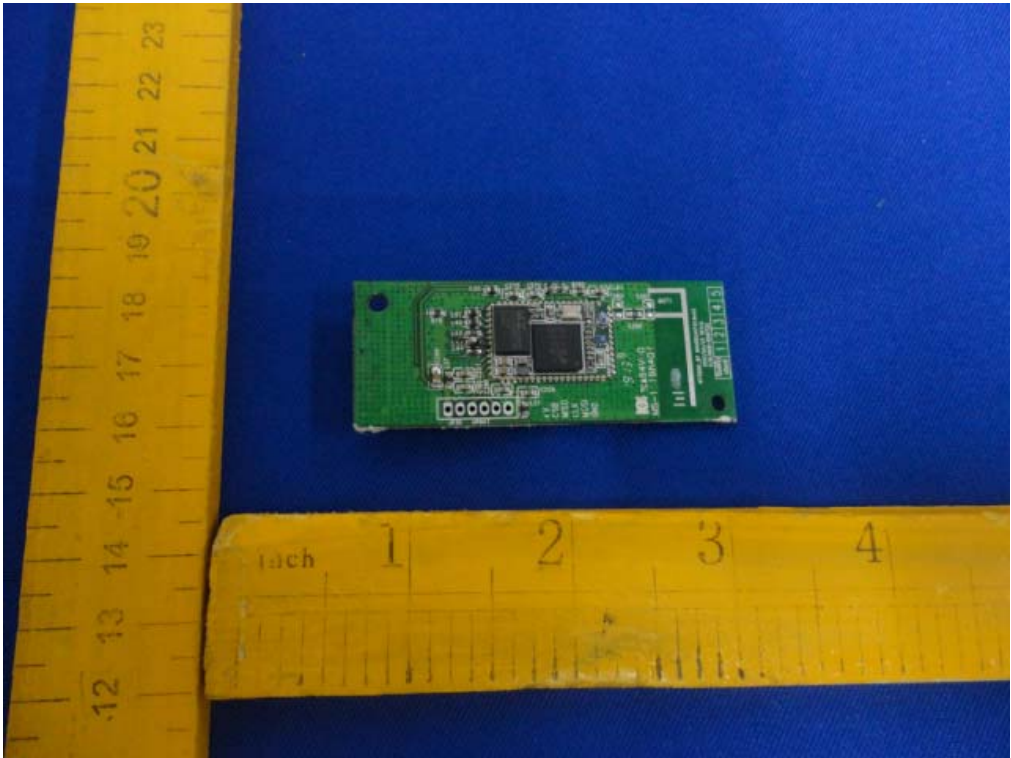


Internal Photos
M/N: SB5000 IHT SPEAKER

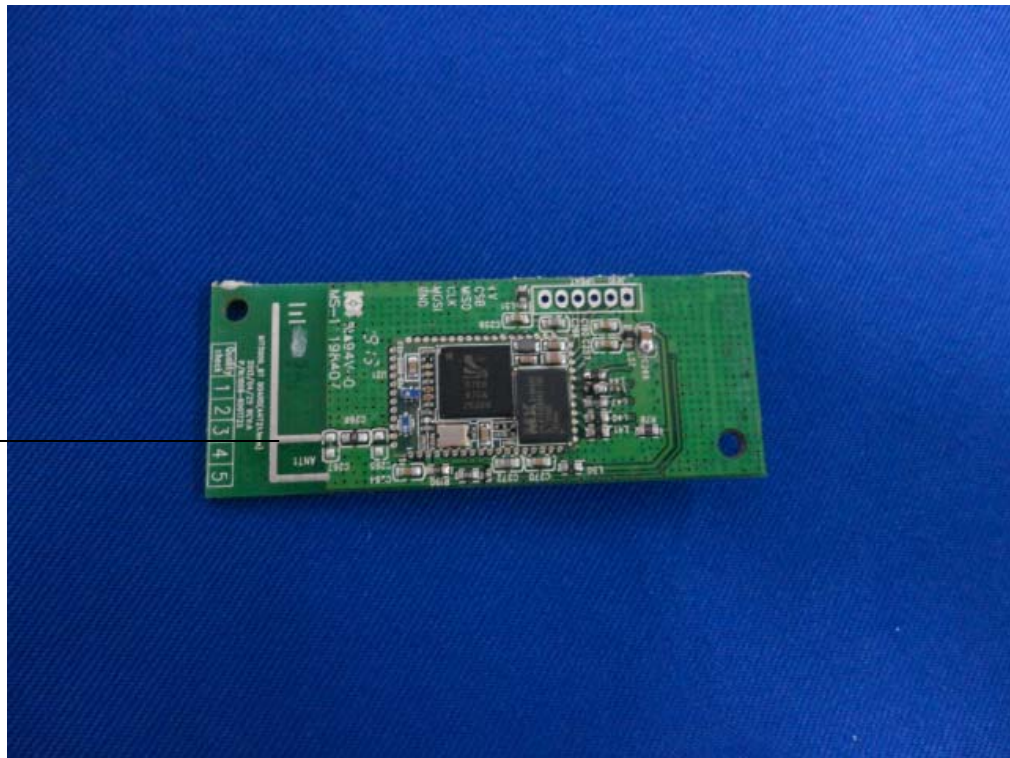
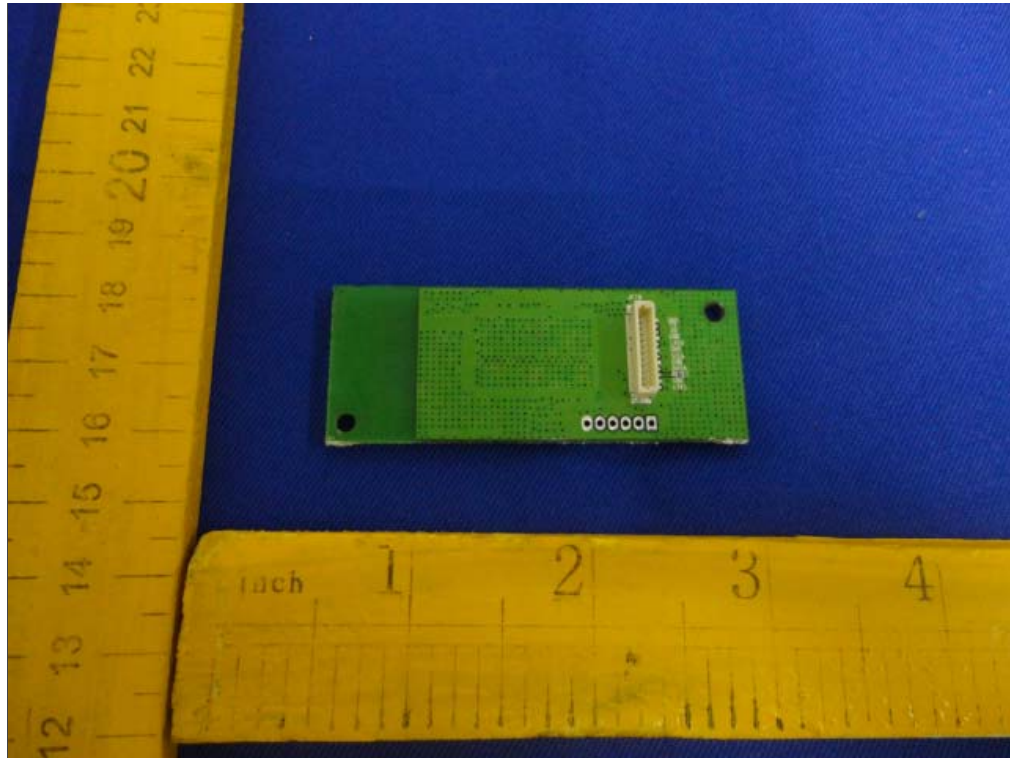


FHSS
Antenna

Internal Photos
M/N: SB5000 IHT SPEAKER

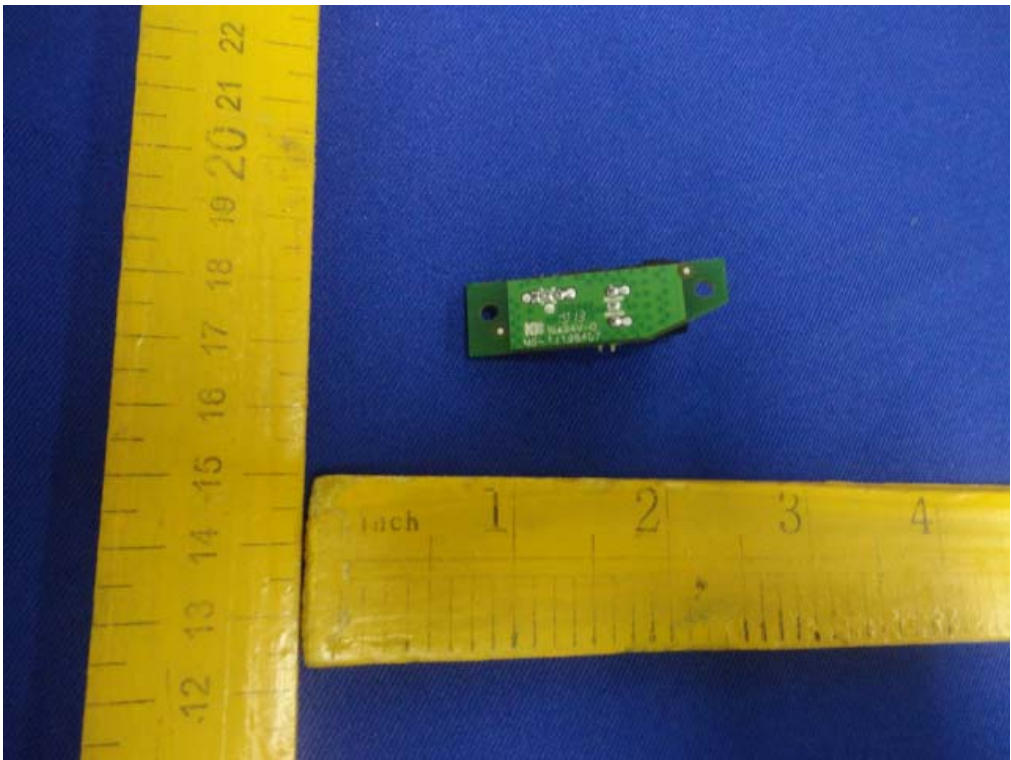
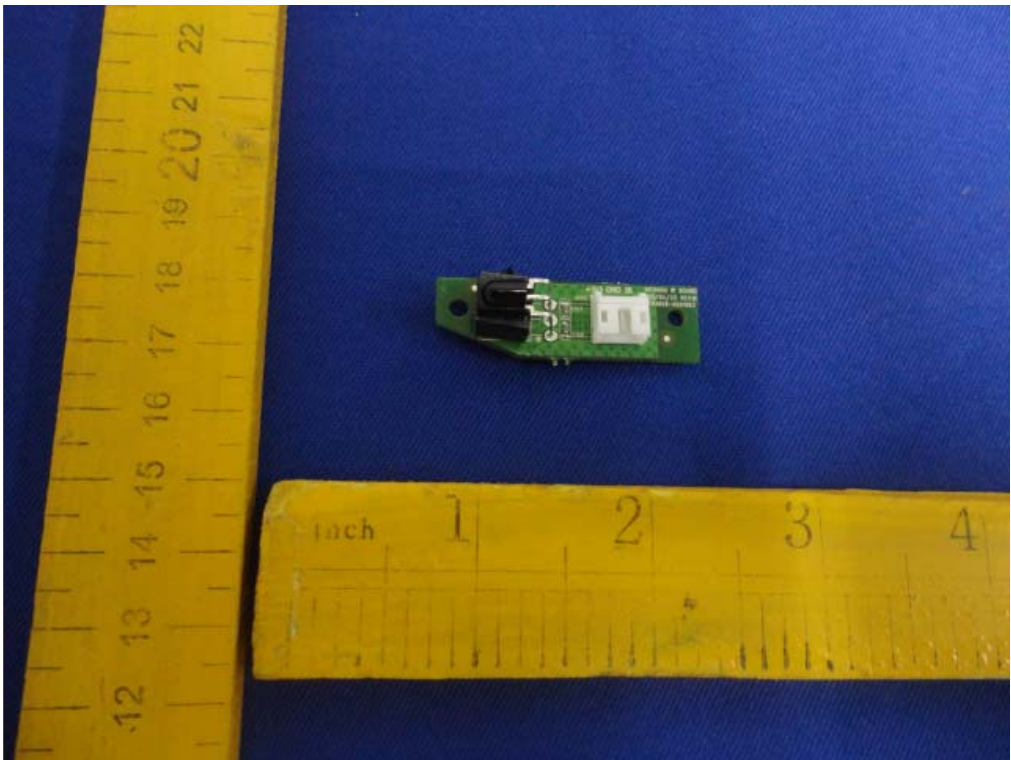


Internal Photos
M/N: SB5000 IHT SPEAKER

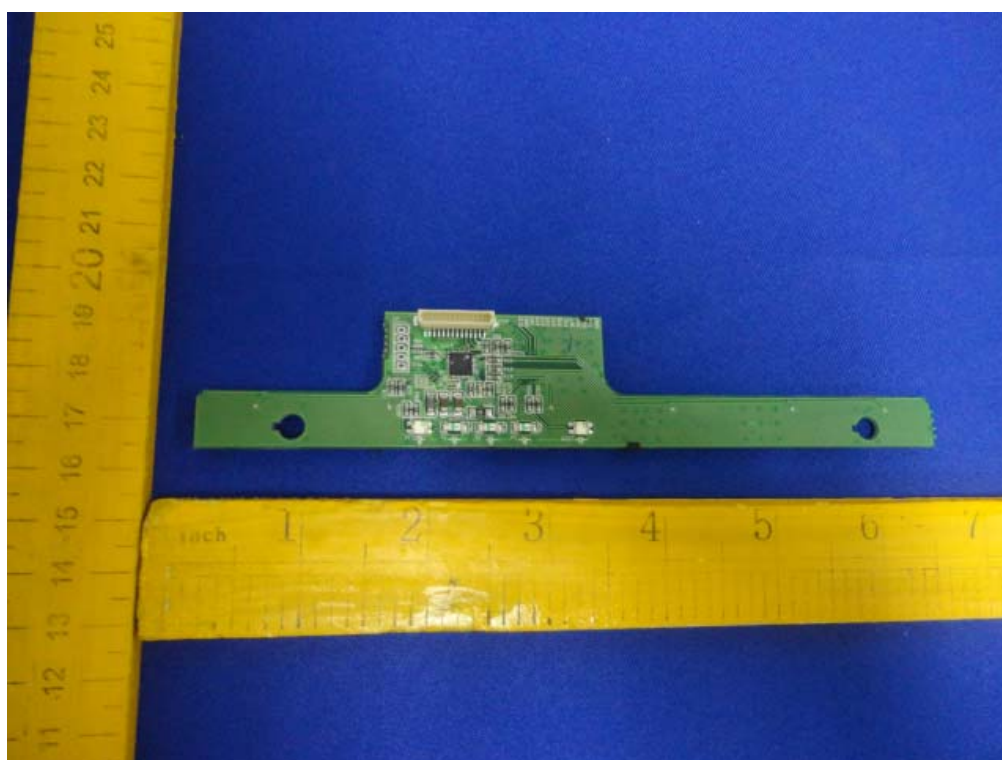
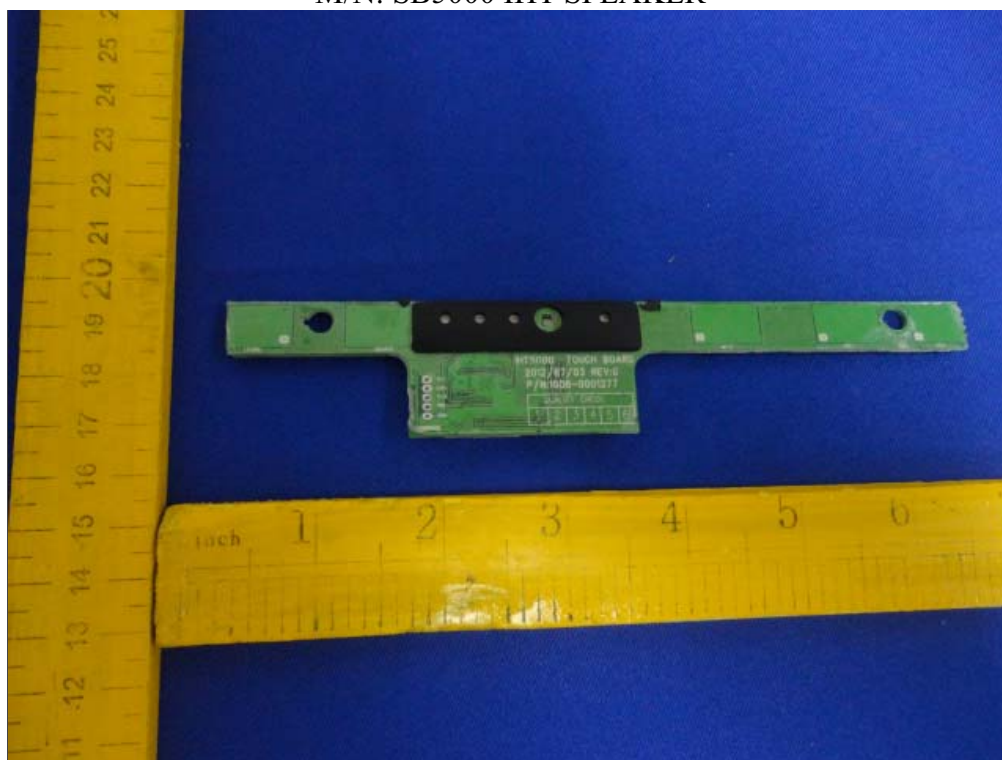


Bluetooth
Antenna

Internal Photos
M/N: SB5000 IHT SPEAKER



Internal Photos
M/N: SB5000 IHT SPEAKER



Adapter Photos
M/N: SB5000 IHT SPEAKER



Remote Control Photos
M/N: SB5000 IHT SPEAKER

