

FCC PART 15C TEST REPORT FOR CERTIFICATION

On Behalf of

Tymphany HK Limited

Wireless Soundbar

Model Number: R-4B Soundbar

FCC ID: 2AAGJR4BBAR

Prepared for : Tymphany HK Limited

Room 1307-8 Dominion Centre 43-59 Queens Road East, WanChai,  
Hong Kong

Prepared By : EST Technology Co., Ltd.

Santun(guantai Road), Houjie Town, DongGuan City, GuangDong,  
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Report Number : ESTE-R1508017

Date of Test : July 22 ~ August 13,2015

Date of Report : August 15, 2015

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## Test Report Verification

<b>Applicant:</b>	Tymphany HK Limited		
<b>Address:</b>	Room 1307-8, Dominon Centre, 43-59 Queen's Road East, WanChai, Hong Kong		
<b>Manufacturer</b>	Klipsch Group, Inc.		
<b>Address:</b>	3502 Woodview Trace, Indianapolis, IN 46268		
<b>E.U.T:</b>	Wireless Soundbar		
<b>Model Number:</b>	R-4B Soundbar		
<b>Power Supply:</b>	DC 18V From Adapter Input AC 100-240V~50/60Hz		
<b>Test Voltage:</b>	AC 120V/AC 240V		
<b>Trade Name:</b>	Klipsch	Serial No.:	-----
<b>Date of Receipt:</b>	July 22 ,2015	Date of Test:	July 22 ~ August 13,2015
<b>Test Specification:</b>	FCC Rules and Regulations Part 15 Subpart C:2014 ANSI C63.10:2013		
<b>Test Result:</b>	<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 FCC Rules and Regulations Part 15 Subpart C requirements.</p> <p>This report applies to above tested sample only and shall not be reproduced in part without written approval of EST Technology Co., Ltd.</p>		
Date: August 15, 2015			
Prepared by:	Tested by:	Approved by:	
			
Ada / Assistant	Tony.Tang/ Engineer	IcemanHu / Manager	
<b>Other Aspects:</b>	None.		
Abbreviations: OK/P=passed      fail/F=failed      n.a/N=not applicable      E.U.T=equipment under tested			
<i>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.</i>			

## 1. GENERAL INFORMATION

### 1.1. Description of Device (EUT)

**Product Name** : Wireless Soundbar

**Model Number** : R-4B Soundbar

**FCC ID** : 2AAGJR4BBAR

**Operation frequency** : 2402MHz~2480MHz

**Number of channel** : 79

**Antenna** : Integrated PCB antenna, 3.14 dBi gain

**Modulation** : FHSS  
BT BDR: GFSK  
BT EDR:  $\pi/4$ -DQPSK  
BT EDR: 8-DPSK

**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 C63.10: 2013 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: November 13, 2014

Certificated by FCC, USA  
Registration No.: 989591  
Date of registration: November 20, 2013

Certificated by Industry Canada  
Registration No.: 46405-9405  
Test Side Number: 9405A-1  
Date of registration: January 03, 2013

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. Measurement uncertainty

Test Item	Uncertainty
Uncertainty for Conduction emission test	2.54dB
Uncertainty for Radiation Emission test (30MHz-1GHz)	3.62
Uncertainty for Radiation Emission test (1GHz to 18GHz)	4.86
Uncertainty for radio frequency	$7 \times 10^{-8}$
Uncertainty for conducted RF Power	0.20dB
Uncertainty for Power density test	0.26dB

Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

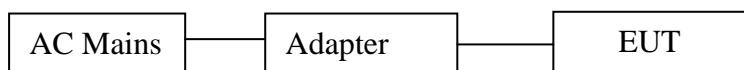
### 2.4. Assistant equipment used for test

#### 2.4.1. Adapter

M / N : DYS40-180200W-1  
 Manufacturer : DYS  
 INPUT : AC 100-240V, 50/60Hz, 1.0A Max.  
 OUTPUT : DC 18.0V, 2.0A

### 2.5. Block Diagram

For radiated emissions test: EUT was placed on a turn table, which is 0.8 (or 1.5) meter high above ground. EUT was set into BT test mode by software before test.



(EUT: Wireless Soundbar)

## 2.6. 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
8-DPSK	Low	2402MHz
	Middle	2441MHz
	High	2480MHz

## 2.7. Channel List for Bluetooth

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	-	-

## 2.8. Test Equipment

### 2.8.1. For conducted emission test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESHS30	832354	June,28,15	1 Year
Artificial Mains Network	Rohde & Schwarz	ENV216	101260	June,28,15	1 Year
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	101100	June,28,15	1 Year

### 2.8.2. For radiated emission test(30-1000MHz)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESVS10	100004	June,28,15	1 Year
Spectrum Analyzer	Agilent	E4411B	MY5014069 7	June,28,15	1 Year
Bilog Antenna	Teseq	CBL 6111D	27090	June,28,15	1 Year
Signal Amplifier	Agilent	310N	187037	June,28,15	1 Year

### 2.8.3. For radiated emission test(above 1GHz)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA9120D1 002	June,28,15	1 Year
Signal Amplifier	SCHWARZBECK	BBV9718	9718-212	June,28,15	1 Year
Spectrum Analyzer	Agilent	E4408B	MY44211139	June,28,15	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

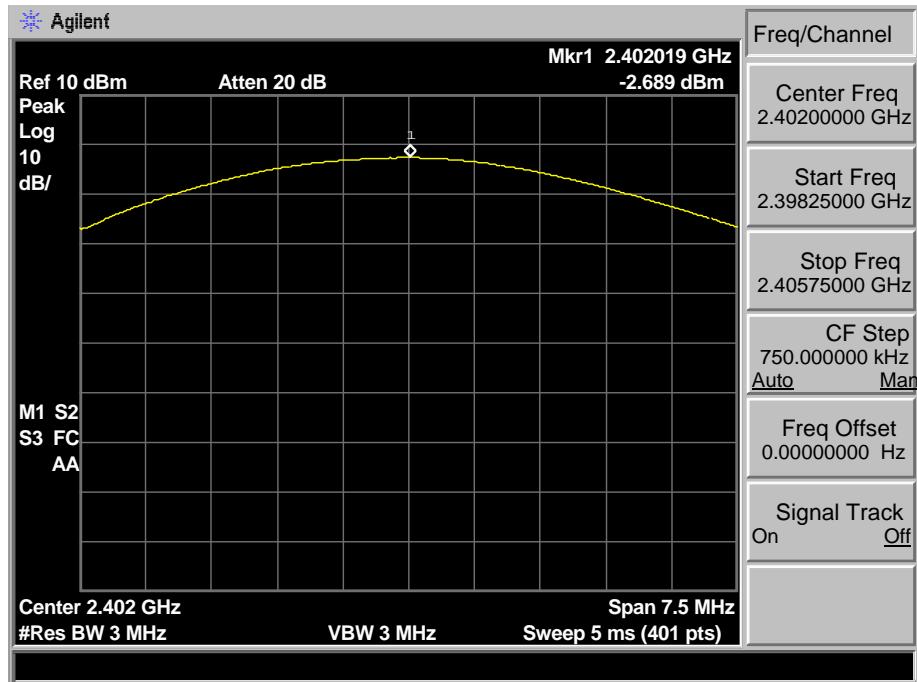
#### 3.3. Test Result

EUT: Wireless Soundbar M/N: R-4B Soundbar					
Test date: 2015-08-03		Test site: RF site		Tested by: Tony Tang	
Mode	Freq (MHz)	Result (dBm)	Limit		Margin (dB)
			dBm	W	
GFSK	2402	-2.689	30.00	1	32.689
	2441	0.775	30.00	1	29.225
	2480	0.457	30.00	1	29.543
8-DPSK	2402	-2.815	21.00	0.125	23.815
	2441	1.040	21.00	0.125	19.960
	2480	0.698	21.00	0.125	20.302

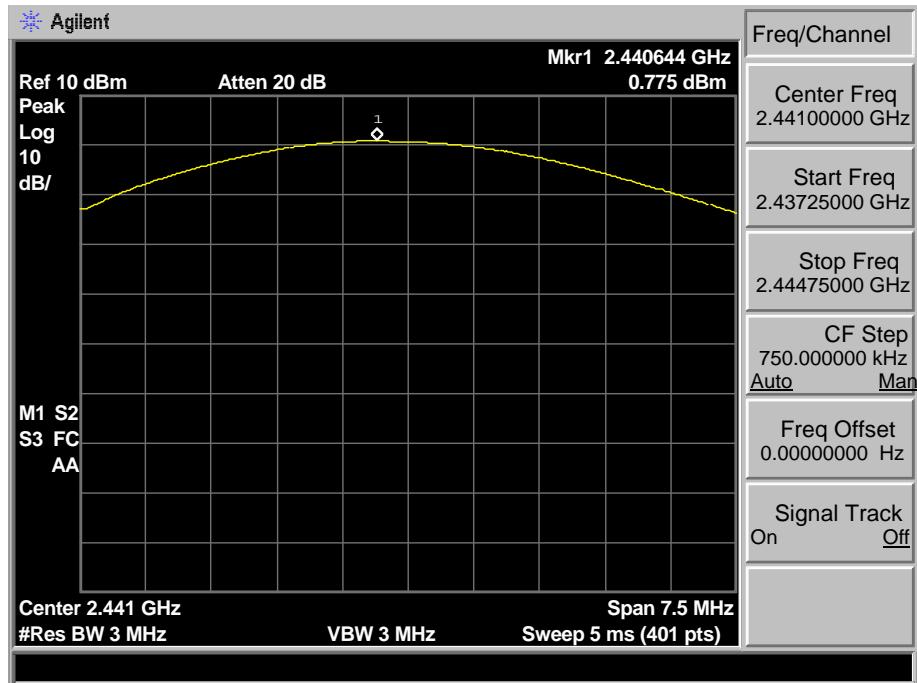
Conclusion: PASS

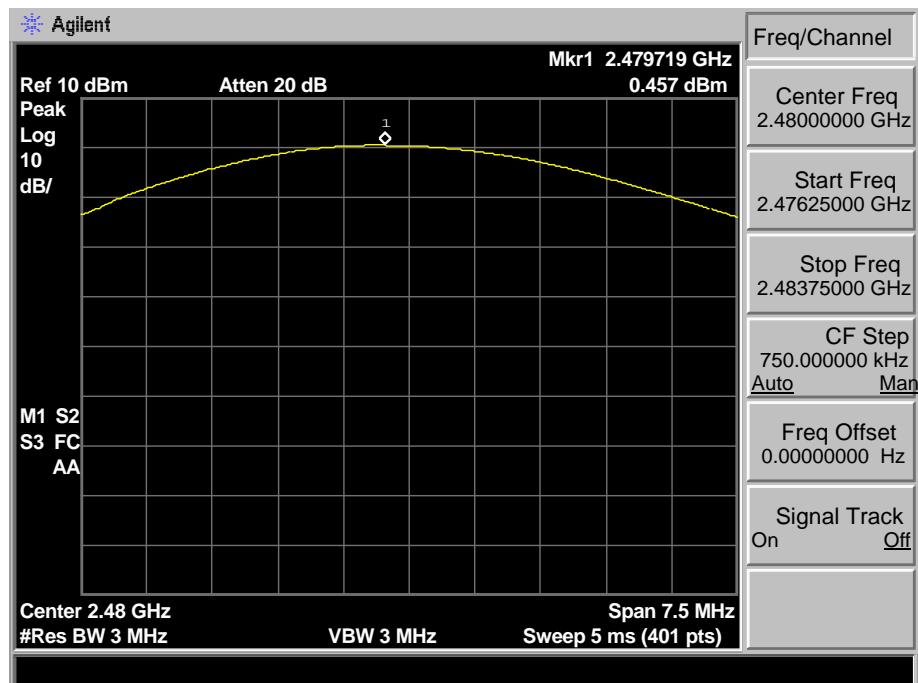
### 3.4. Test Data

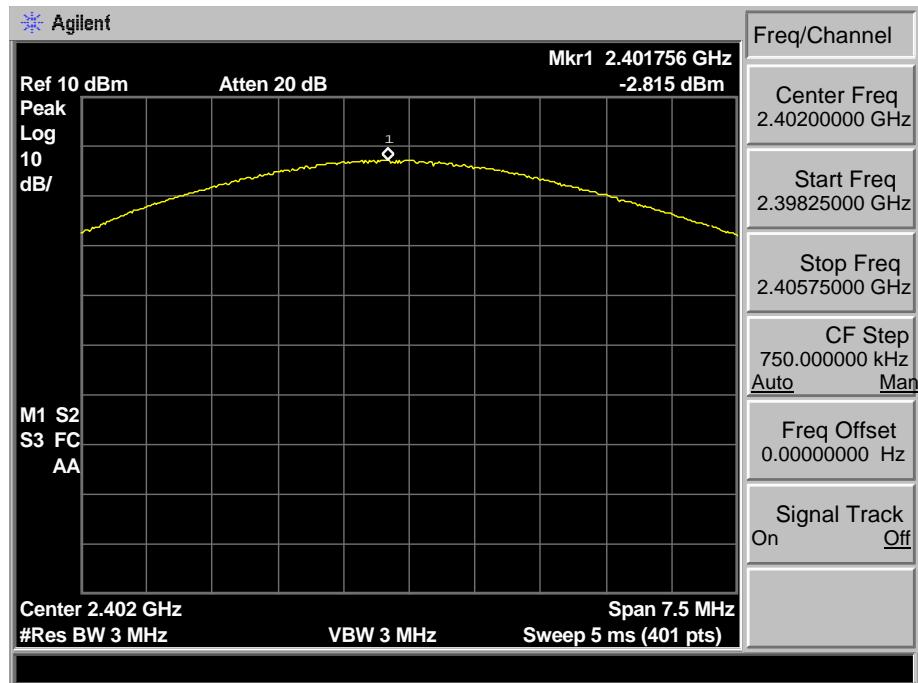
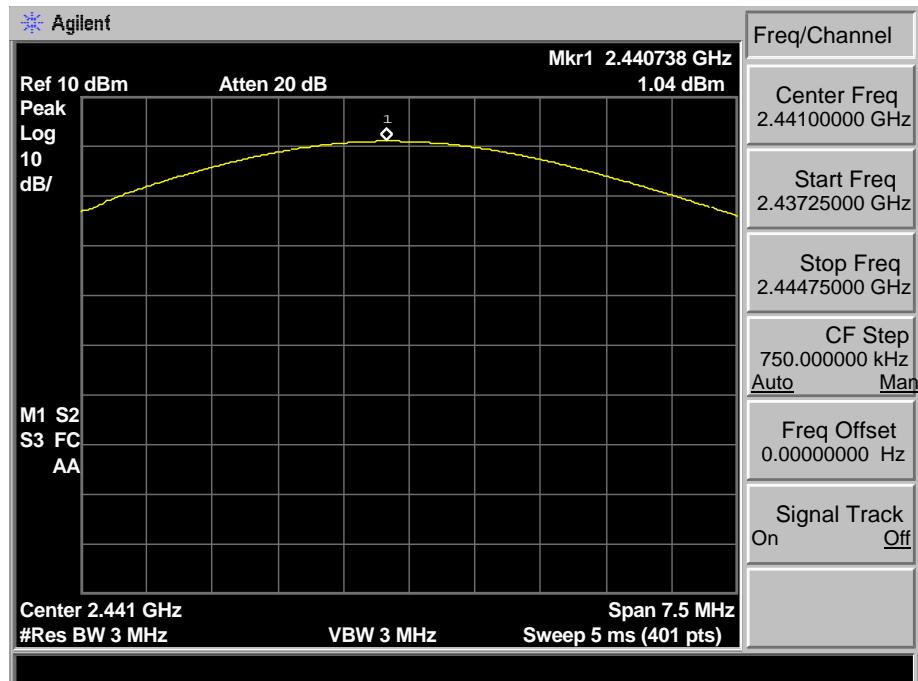
#### GFSK 2402 MHz

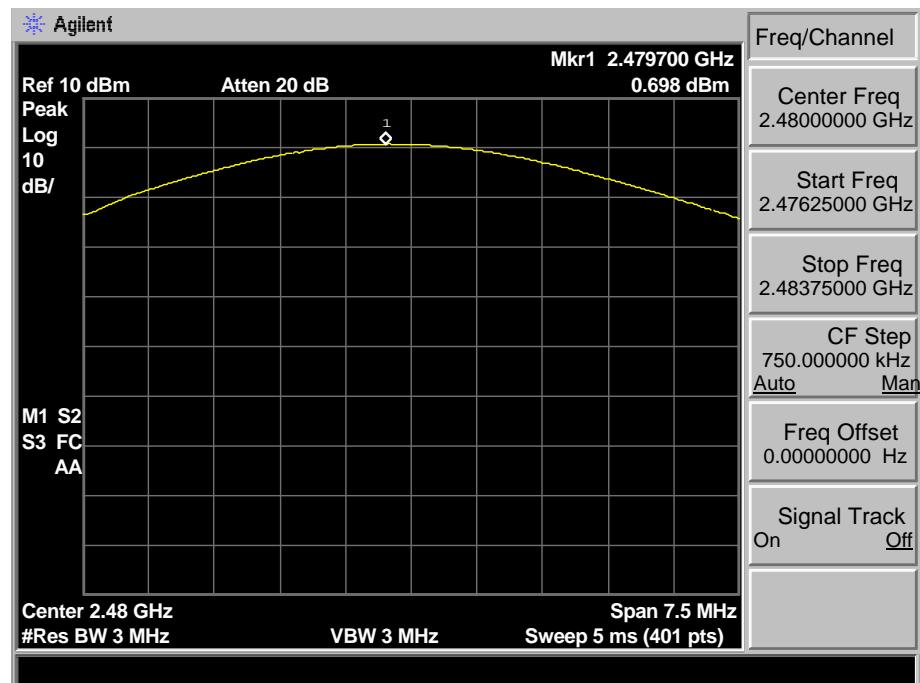


#### GFSK 2441 MHz



**GFSK 2480 MHz**

**8-DPSK 2402 MHz****8-DPSK 2441 MHz**

**8-DPSK 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

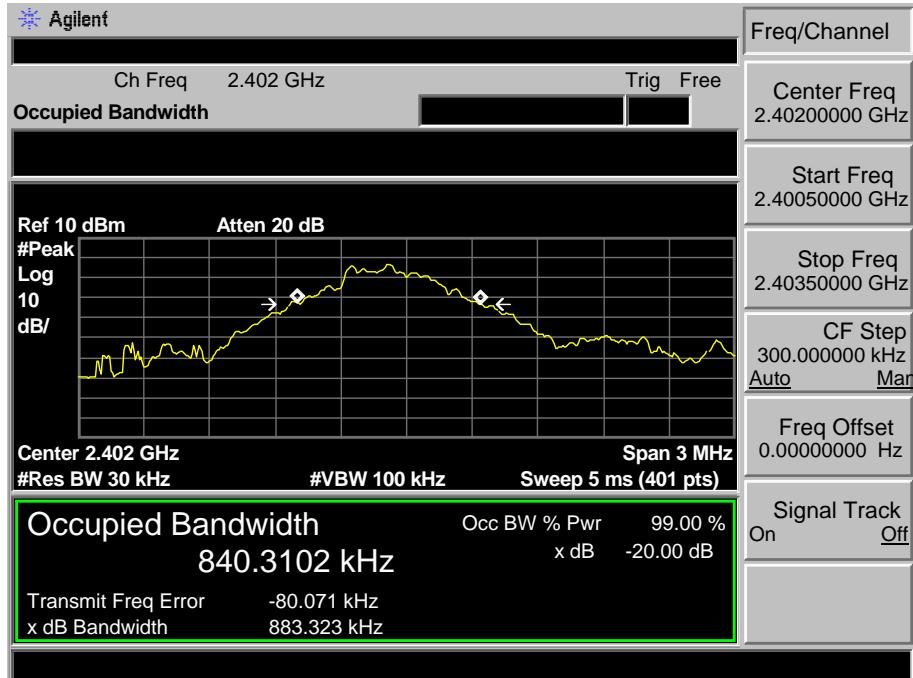
The transmitter output was coupled to a spectrum analyzer via a antenna. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 30kHz RBW and 100kHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

### 4.3. Test Result

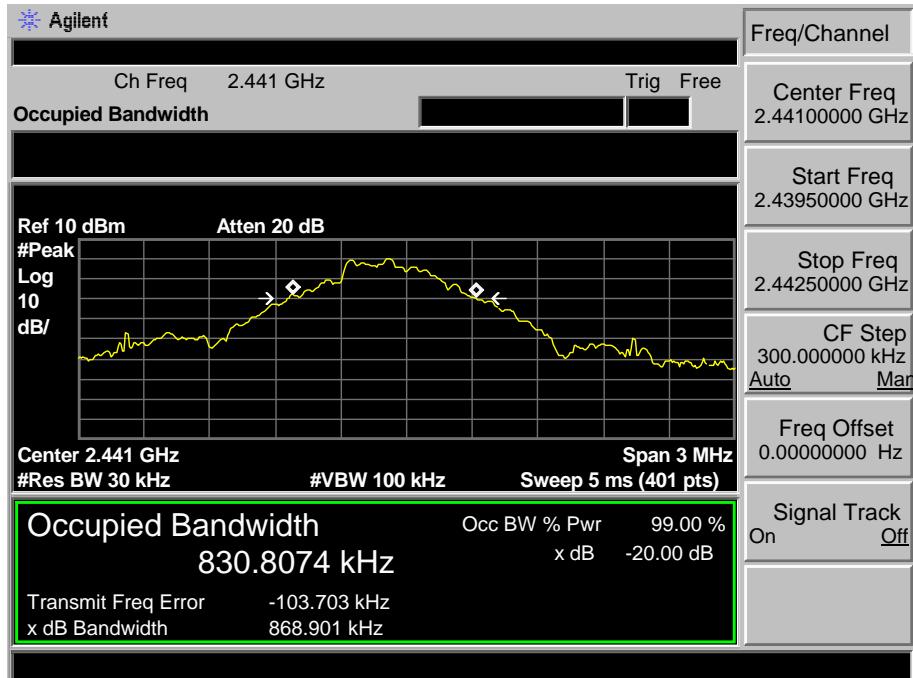
EUT: Wireless Soundbar M/N: R-4B Soundbar				
Test date: 2015-08-03		Test site: RF site	Tested by: Tony Tang	
Mode	Freq (MHz)	20dB Bandwidth (MHz)	Limit (kHz)	Conclusion
GFSK	2402	0.883	/	PASS
	2441	0.869	/	PASS
	2480	0.869	/	PASS
8-DPSK	2402	1.216	/	PASS
	2441	1.226	/	PASS
	2480	1.213	/	PASS

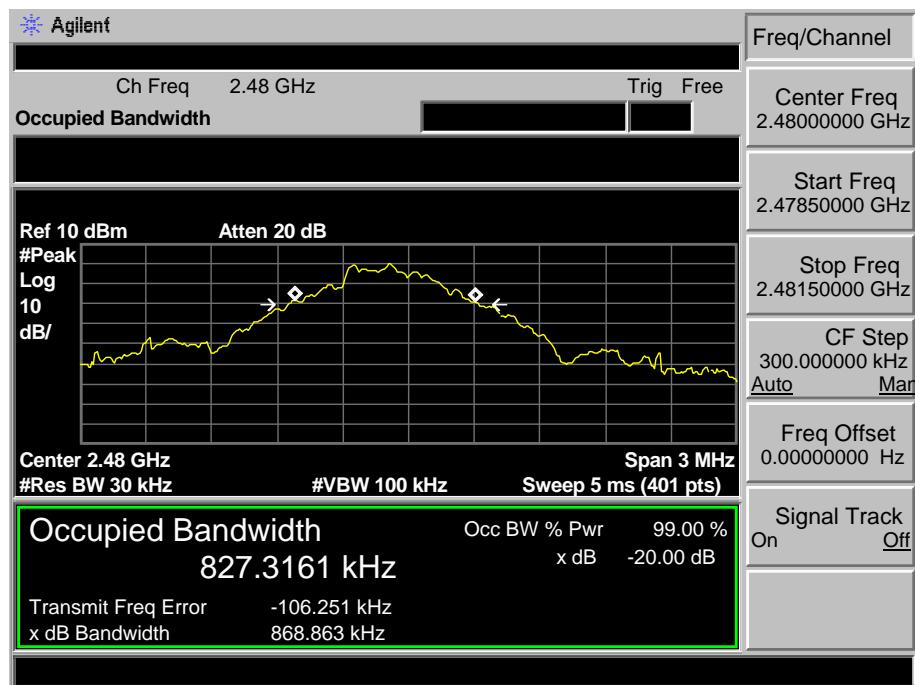
## 4.4. Test Data

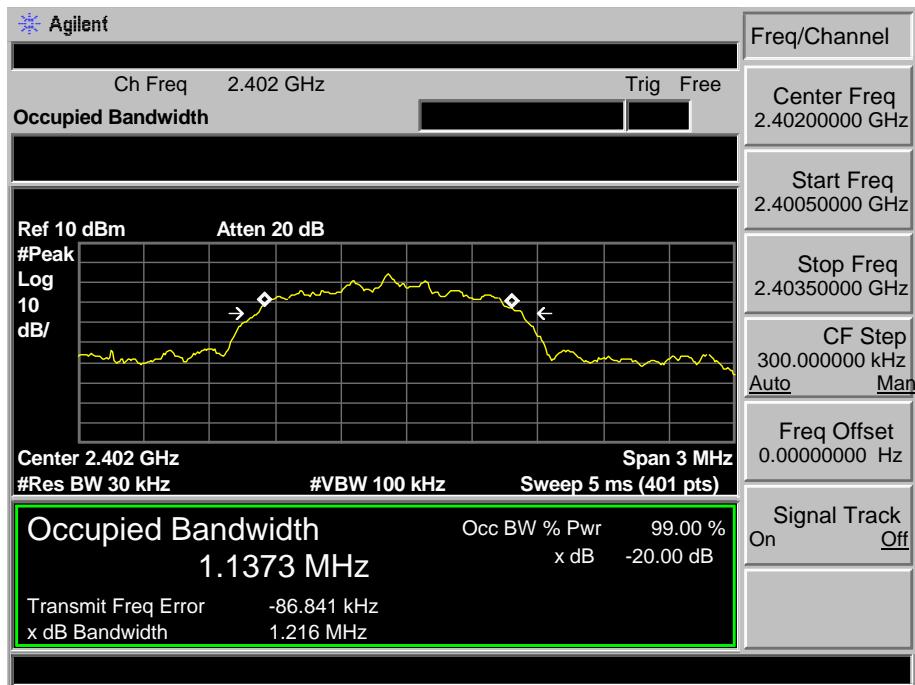
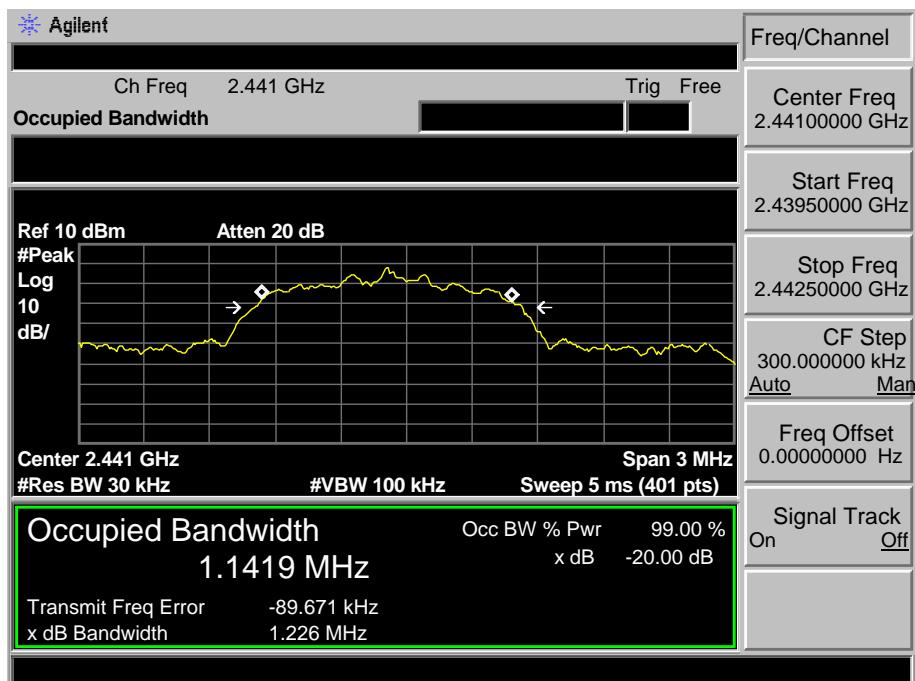
### GFSK 2402MHz



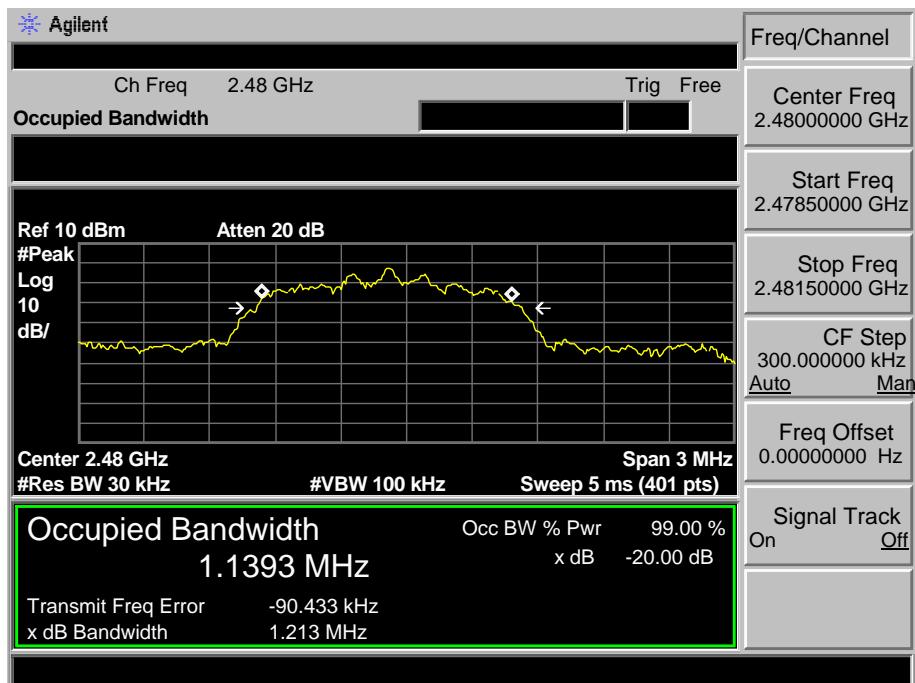
### GFSK 2441MHz



**GFSK 2480MHz**

**8-DPSK 2402MHz****8-DPSK 2441MHz**

## 8-DPSK 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

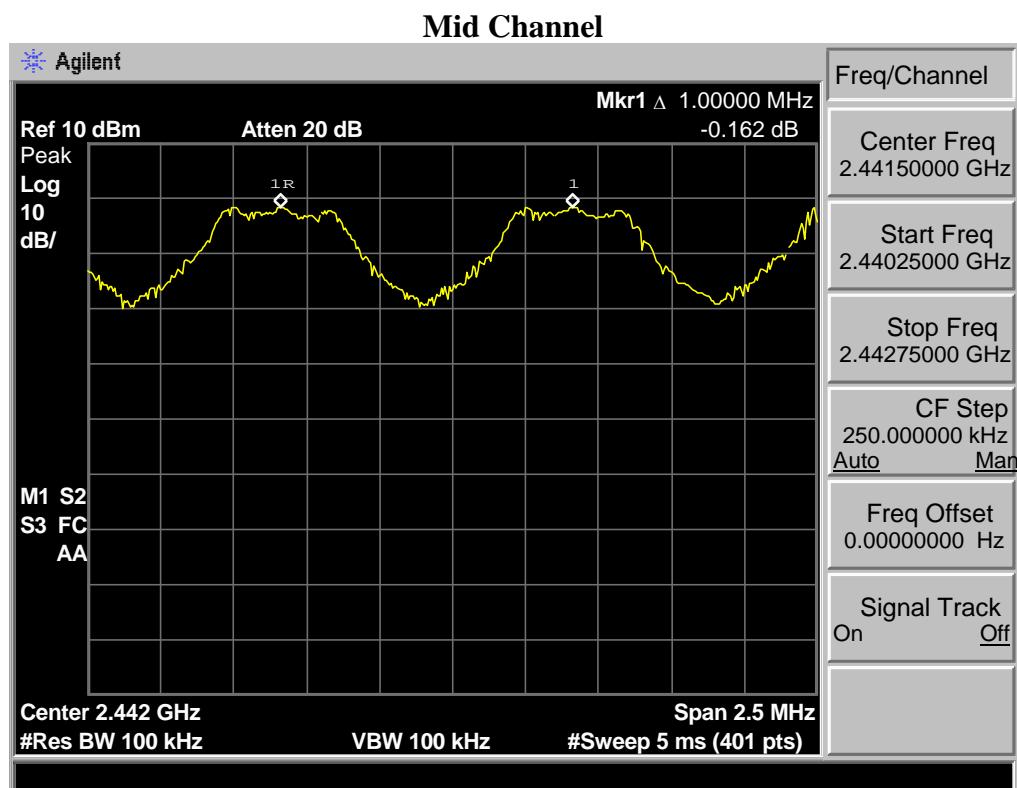
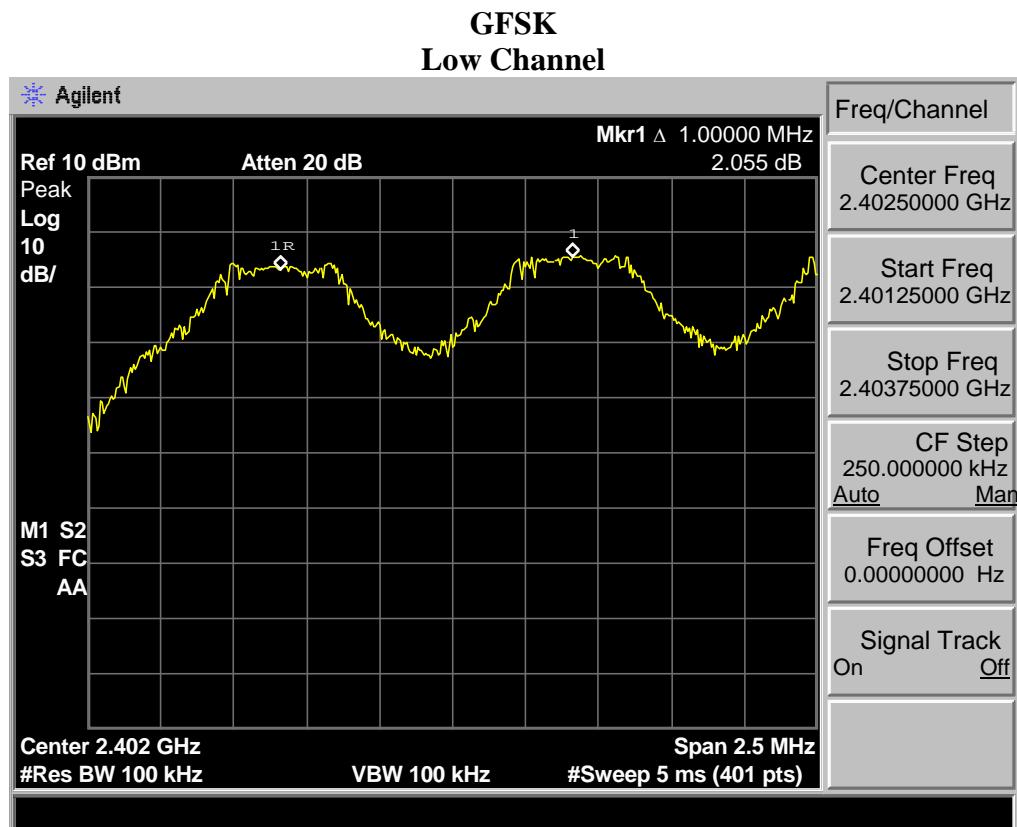
### 5.2. Test Procedure

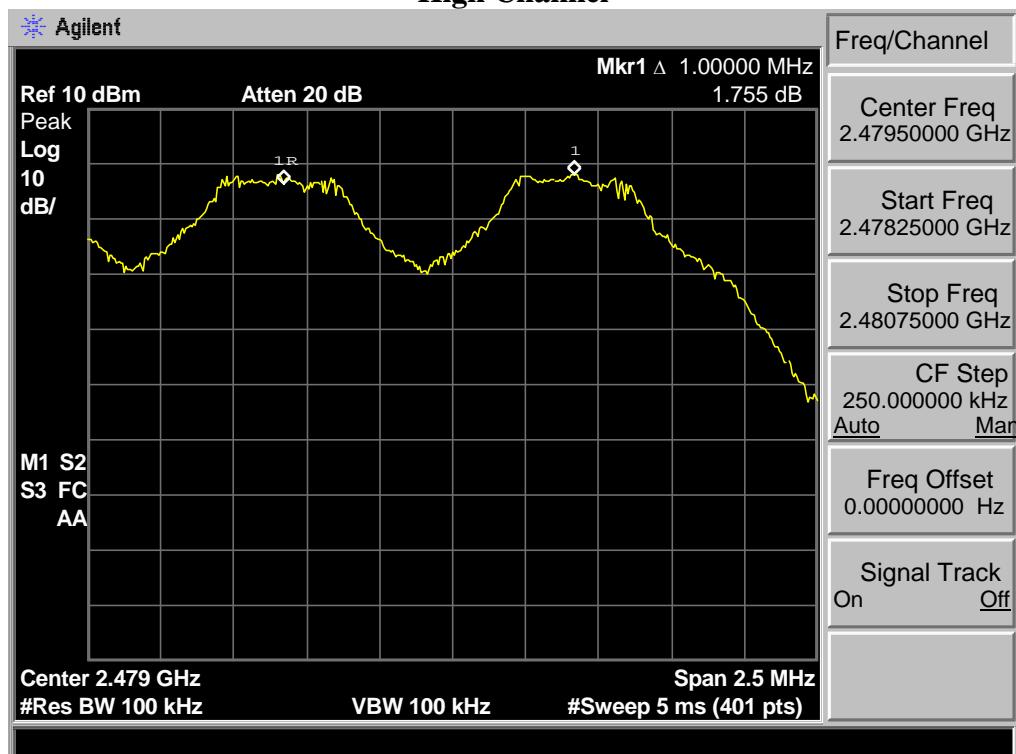
The transmitter output was coupled to a spectrum analyzer via a antenna. The carrier frequency was measured by spectrum analyzer with 100kHz RBW and 100kHz VBW.

### 5.3. Test Result

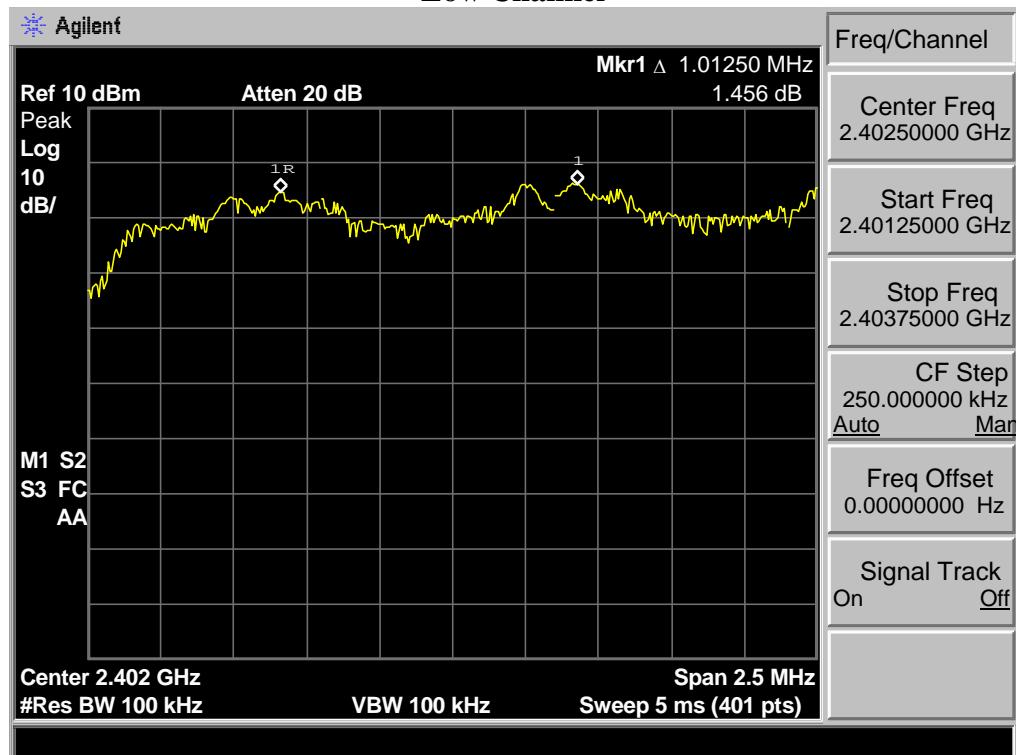
EUT: Wireless Soundbar M/N: R-4B Soundbar				
Test date: 2015-08-03		Test site: RF site	Tested by: Tony Tang	
Mode	Channel	Channel separation (MHz)	Limit	Conclusion
GFSK	Low CH	1.000	0.883 MHz	PASS
	Mid CH	1.000	0.869 MHz	PASS
	High CH	1.000	0.869 MHz	PASS
8-DPSK	Low CH	1.013	> 2/3 of the 20dB Bandwidth or 25[kHz]( whichever is greater)	PASS
	Mid CH	1.000		PASS
	High CH	1.000		PASS

## 5.4. Test Data

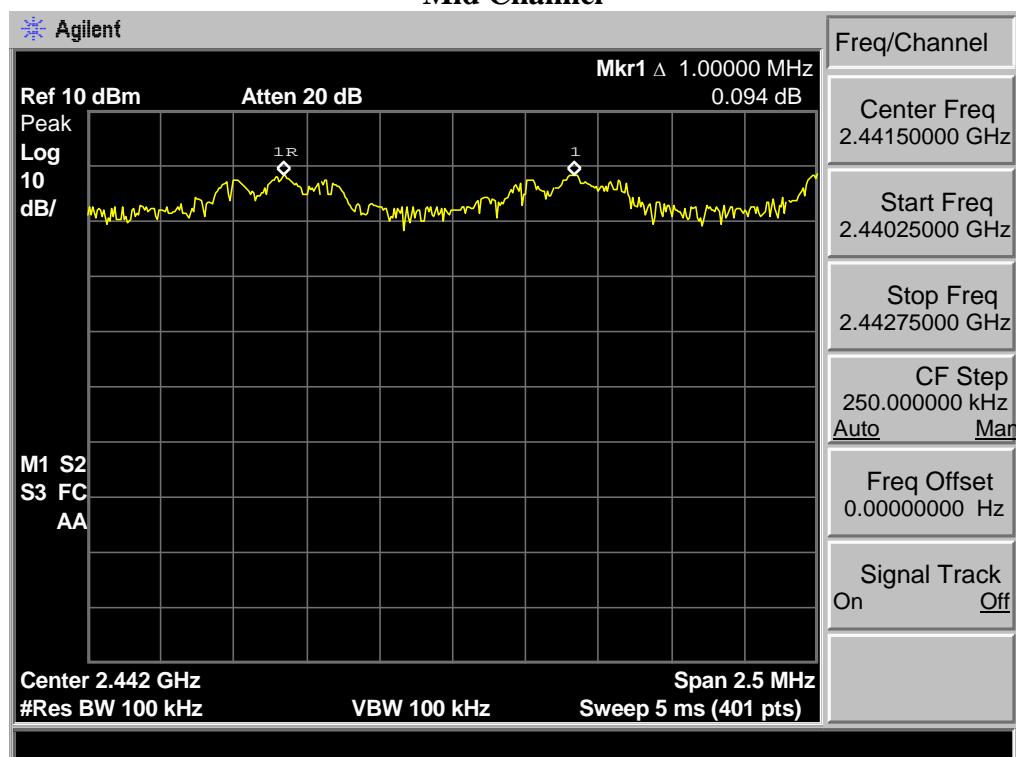


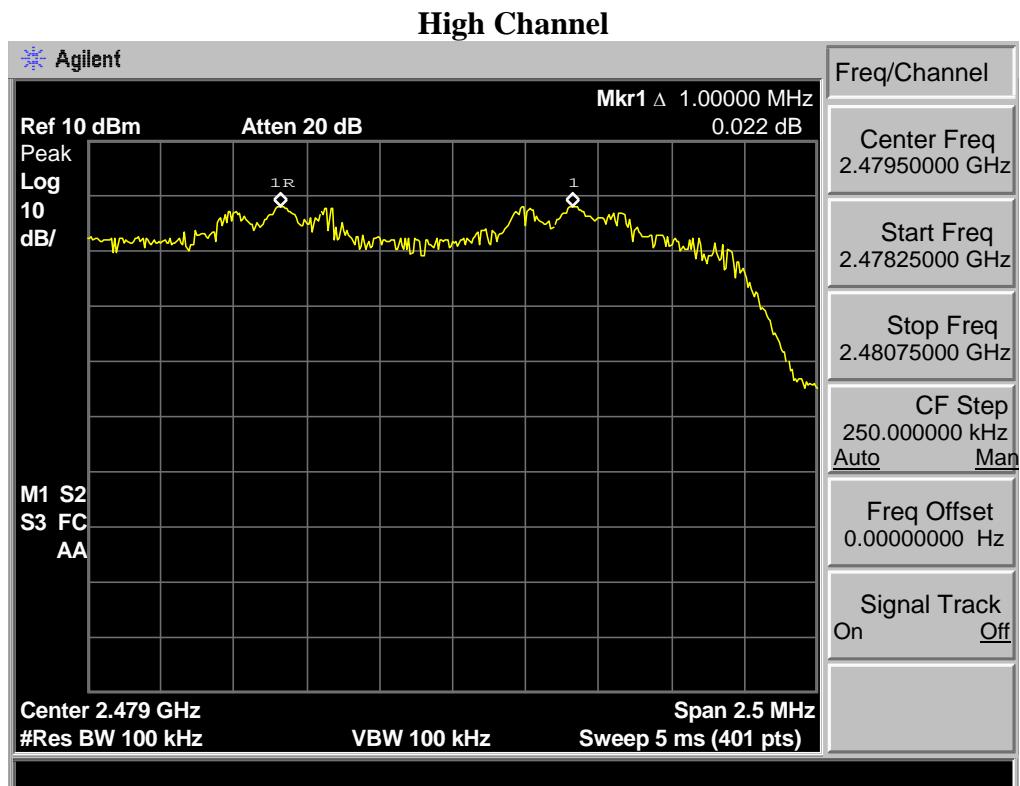
**High Channel**

## 8-DPSK Low Channel



## Mid 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

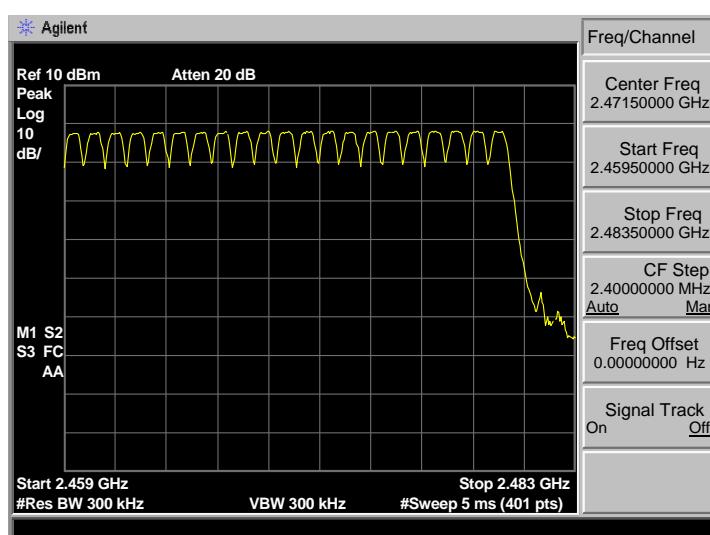
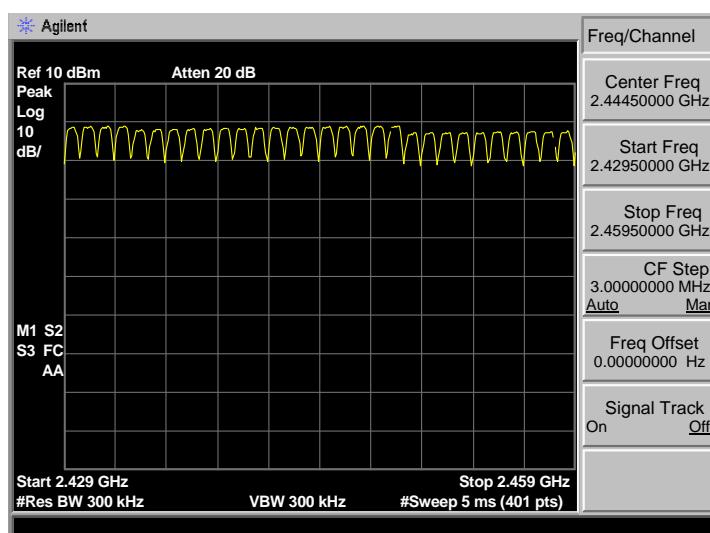
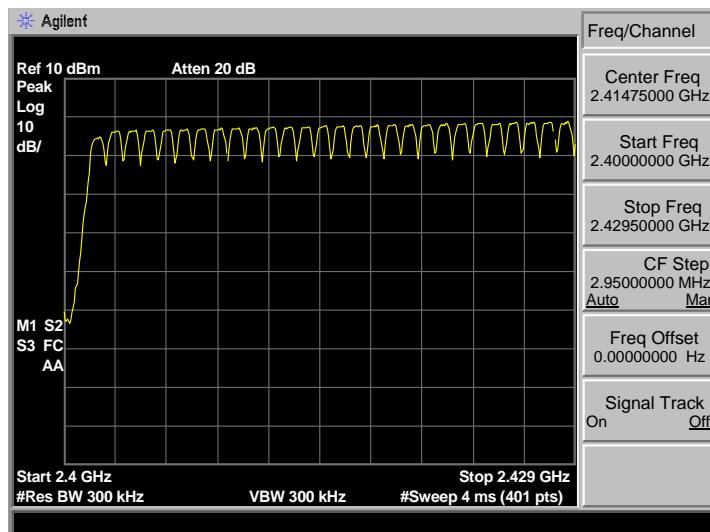
The transmitter output was coupled to a spectrum analyzer via a antenna. The number of hopping channel was measured by spectrum analyzer with 300kHz RBW and 300kHz VBW.

### 6.3. Test Result

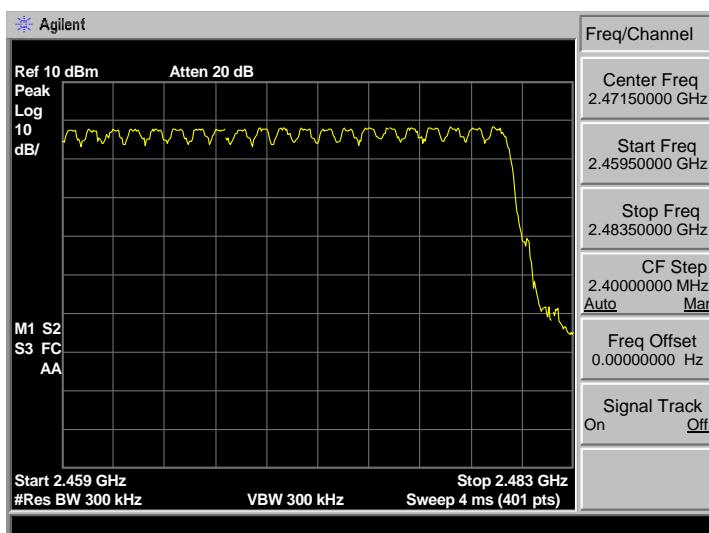
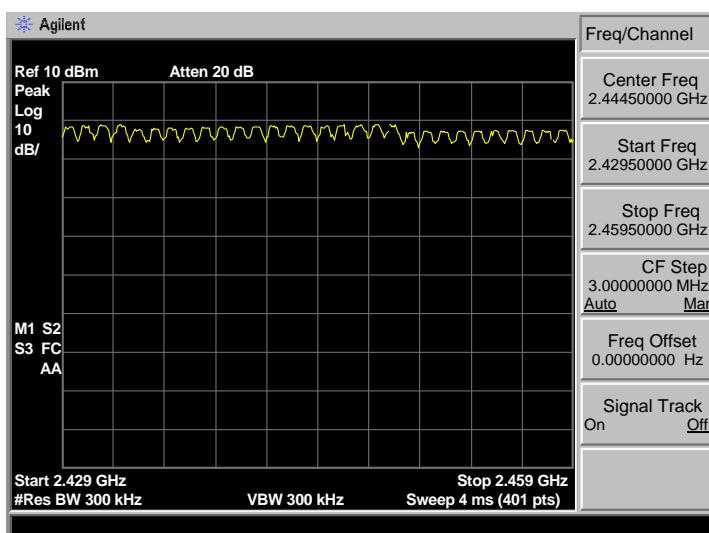
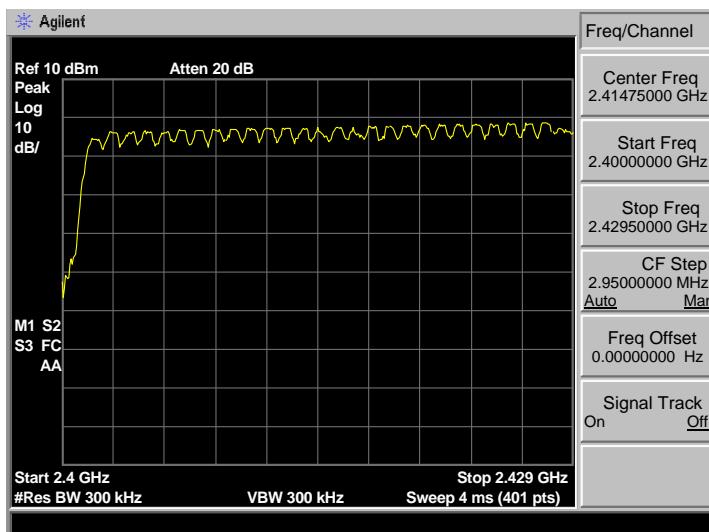
EUT: Wireless Soundbar M/N: R-4B Soundbar			
Test date: 2015-08-03	Test site: RF site	Tested by: Tony.Tang	
Mode	Number of hopping channel	Limit	Conclusion
GFSK	79	>15	PASS
8-DPSK	79	>15	PASS

## 6.4. Test Data

### GFSK



## 8-DPSK



## 7. DWELL TIME

### 7.1. Limit

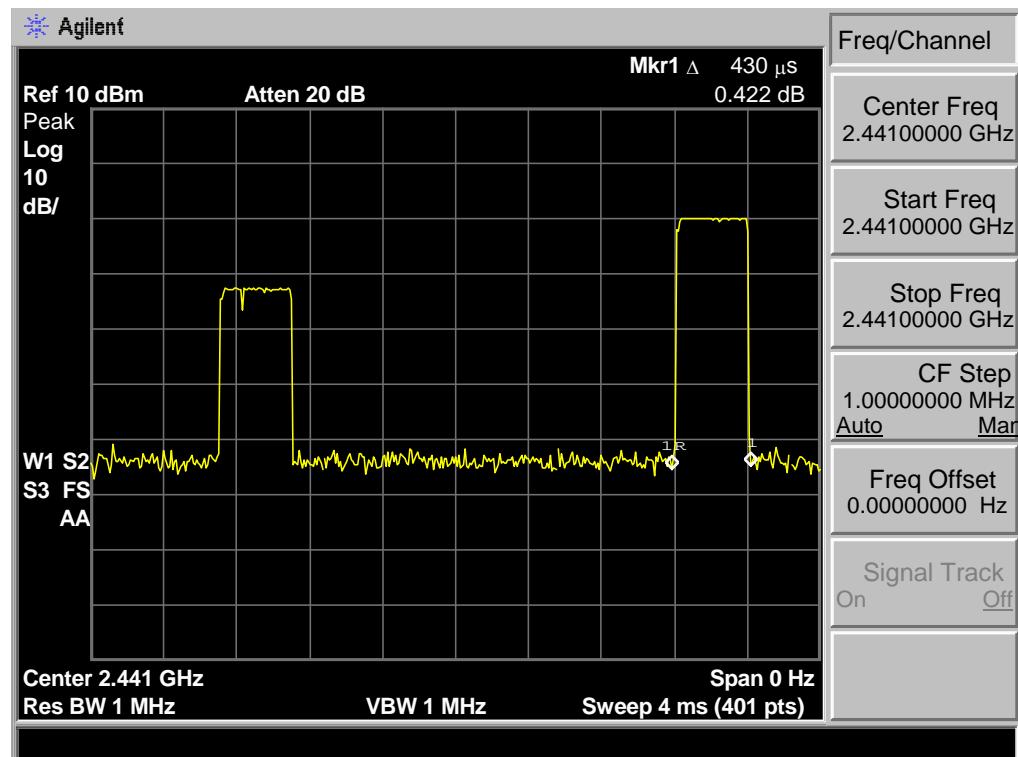
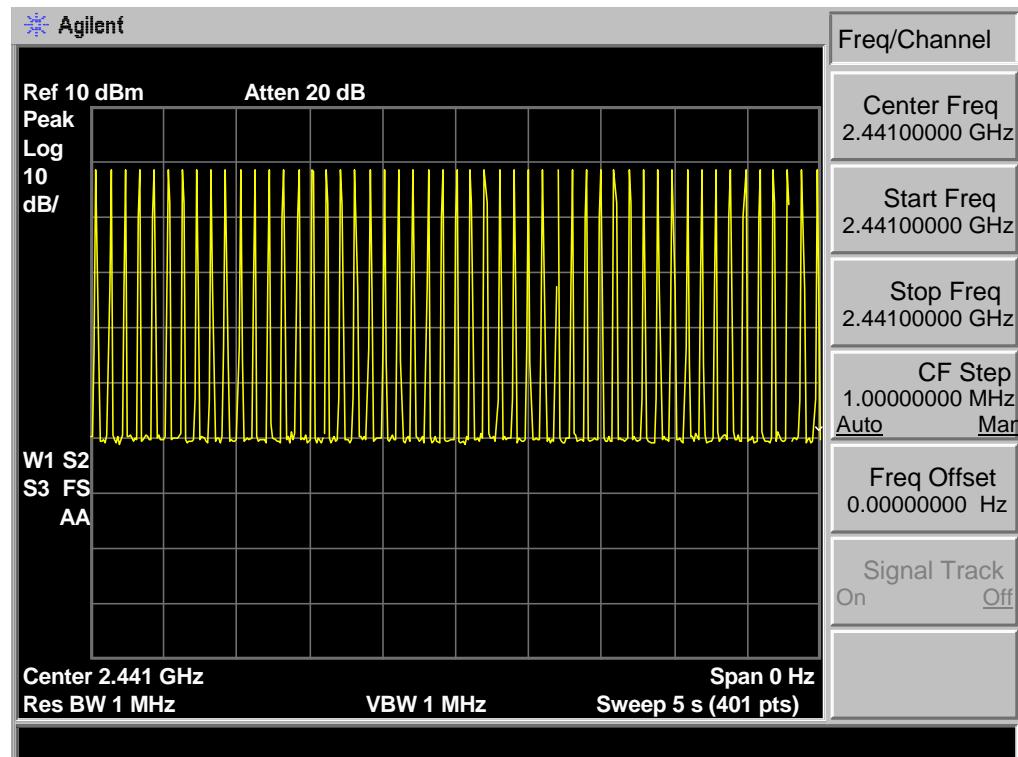
The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

### 7.2. Test Result

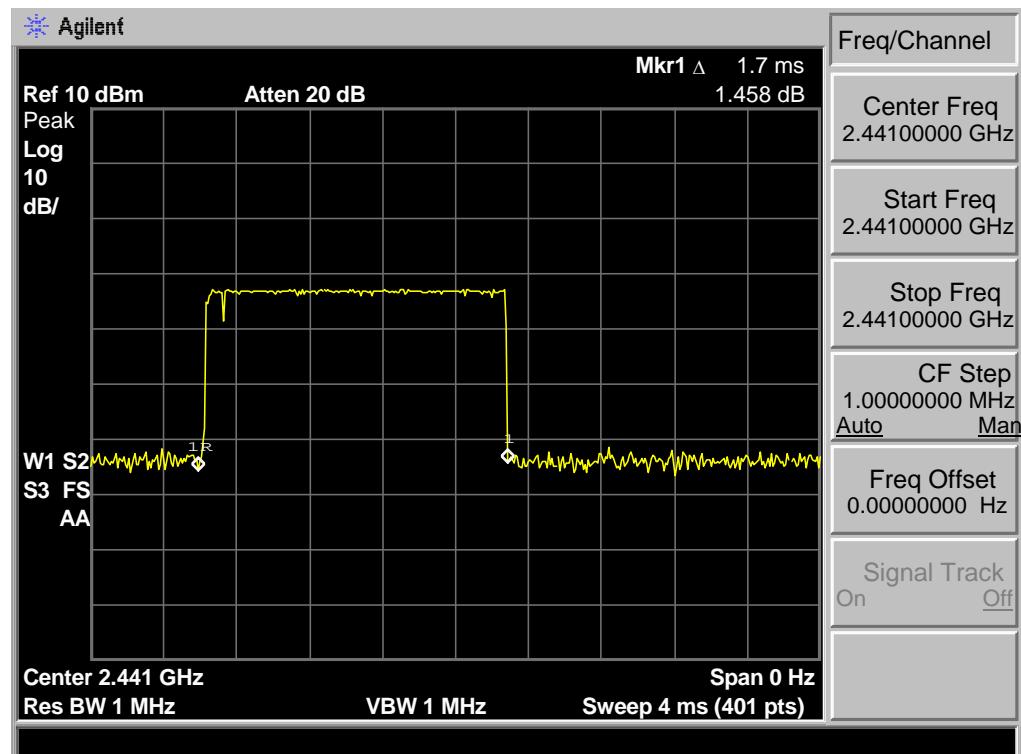
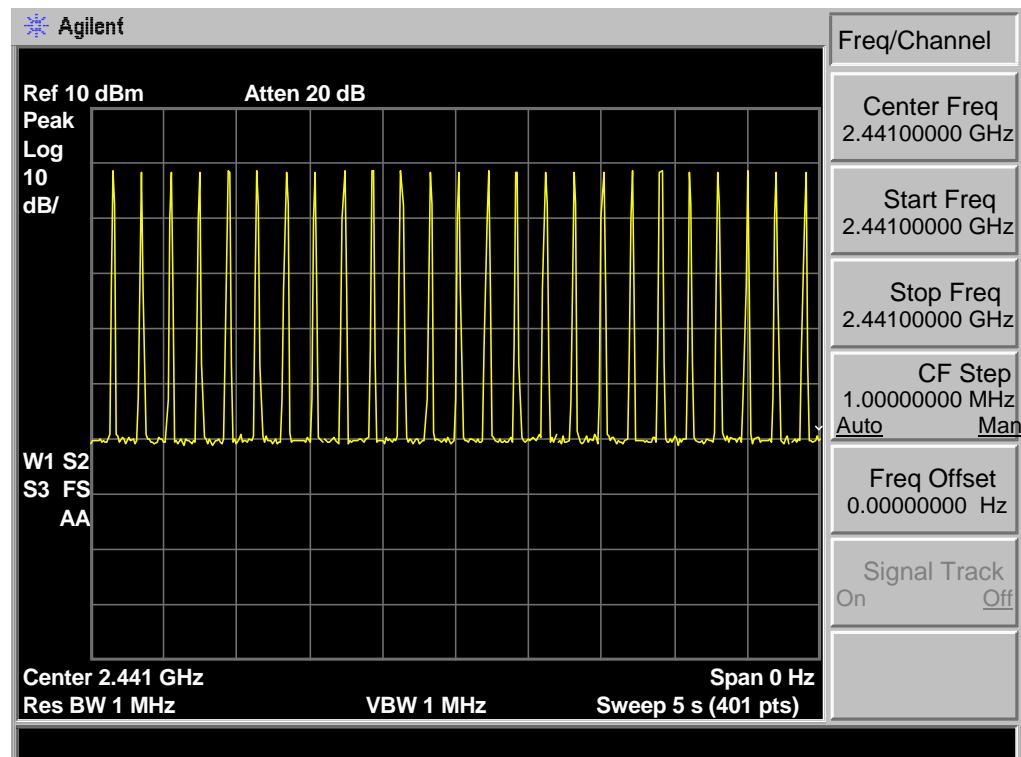
EUT: Wireless Soundbar M/N: R-4B Soundbar			
Test date: 2015-08-03	Test site: RF site	Tested by: Tony Tang	
Mode	Dwell time (ms)	Limit	Conclusion
GFSK DH1	135.88	<400ms	PASS
GFSK DH3	268.60	<400ms	PASS
GFSK DH5	316.95	<400ms	PASS
8-DPSK DH1	154.84	<400ms	PASS
8-DPSK DH3	273.34	<400ms	PASS
8-DPSK DH5	320.17	<400ms	PASS

### 7.3. Test Data

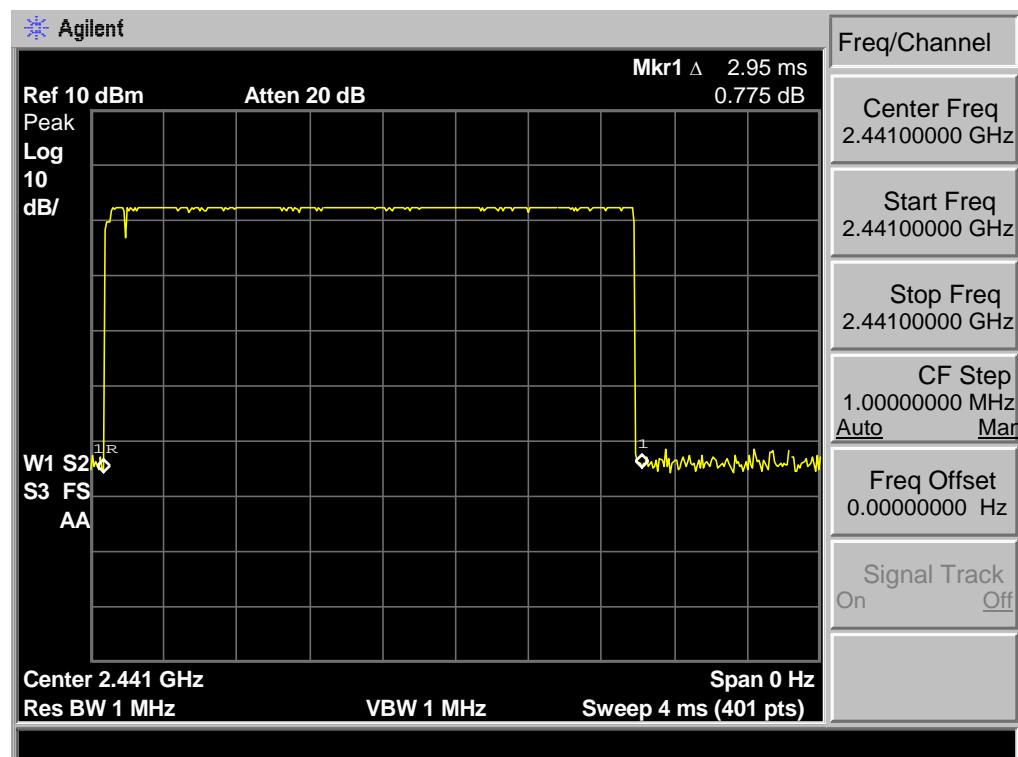
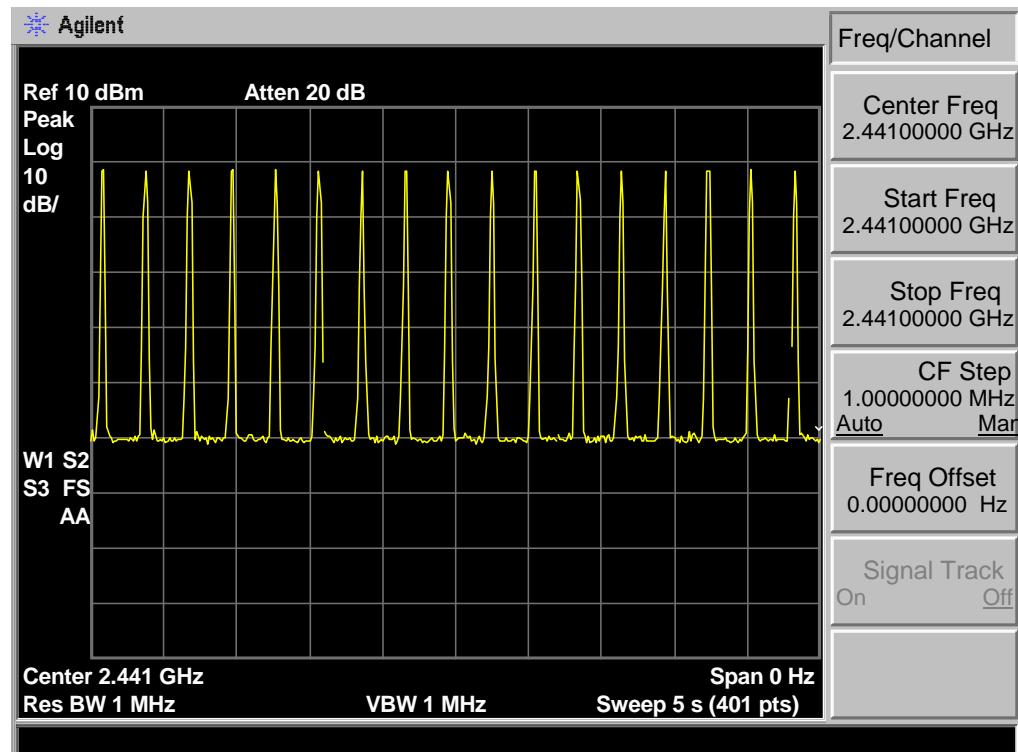
**GFSK DH1 : 50hop/5s \* 0.4 \* 79 \* 0.43ms = 135.88ms**



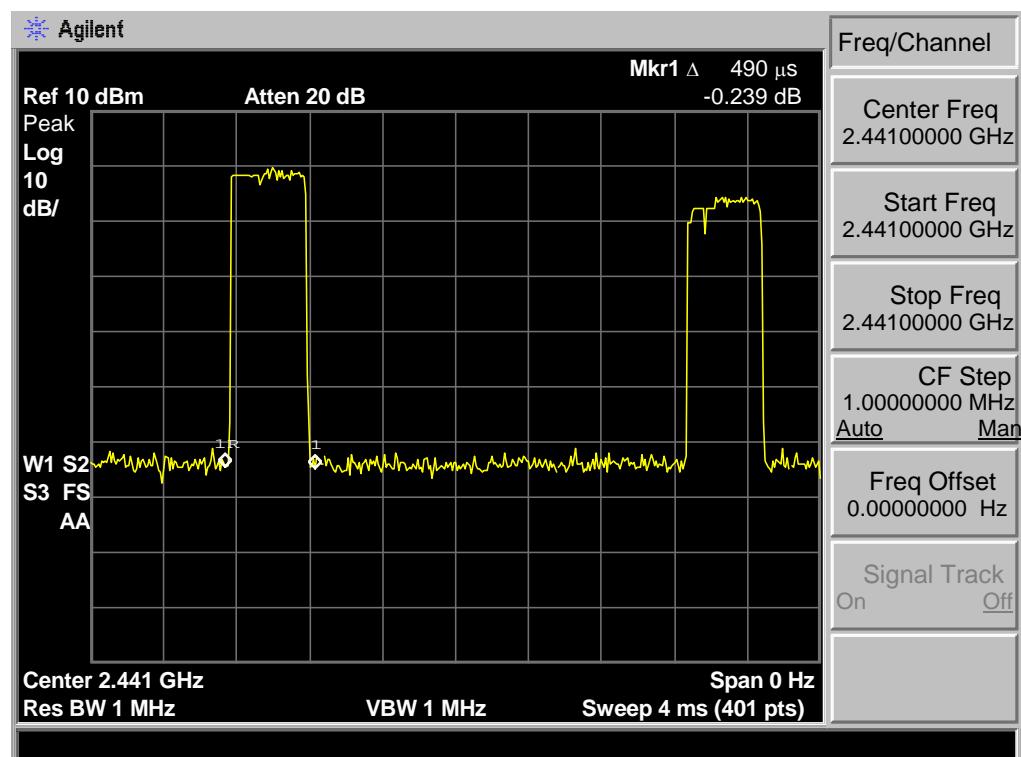
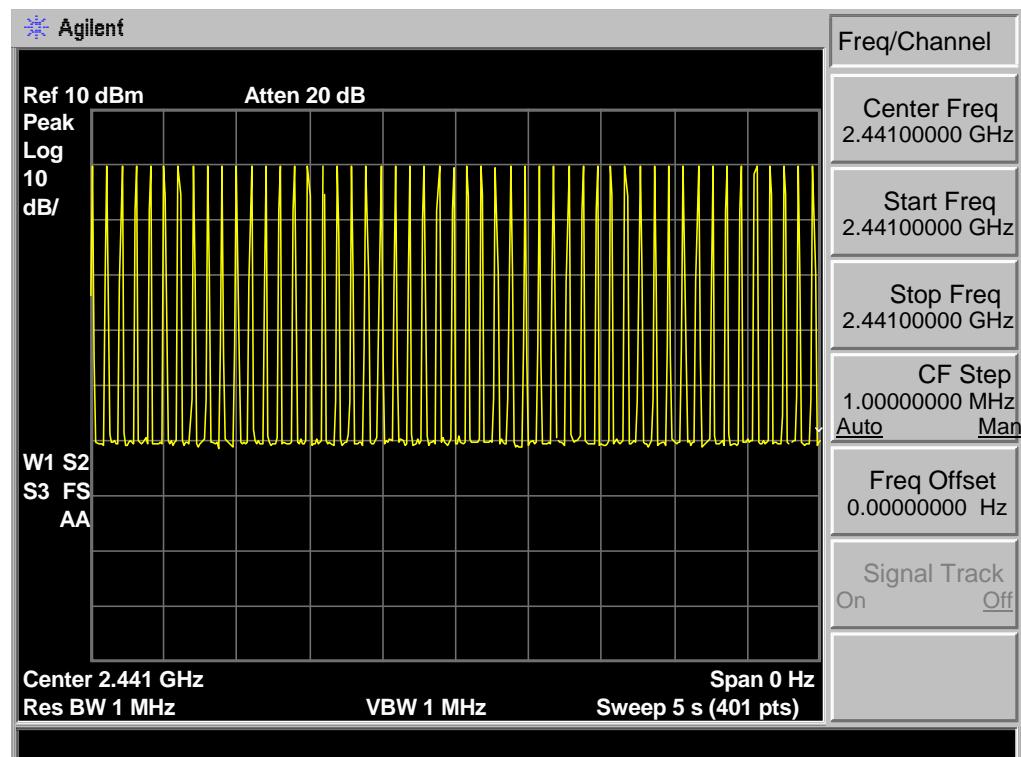
GFSK DH3 : 25hop/5s \* 0.4 \* 79 \* 1.70ms=268.60ms



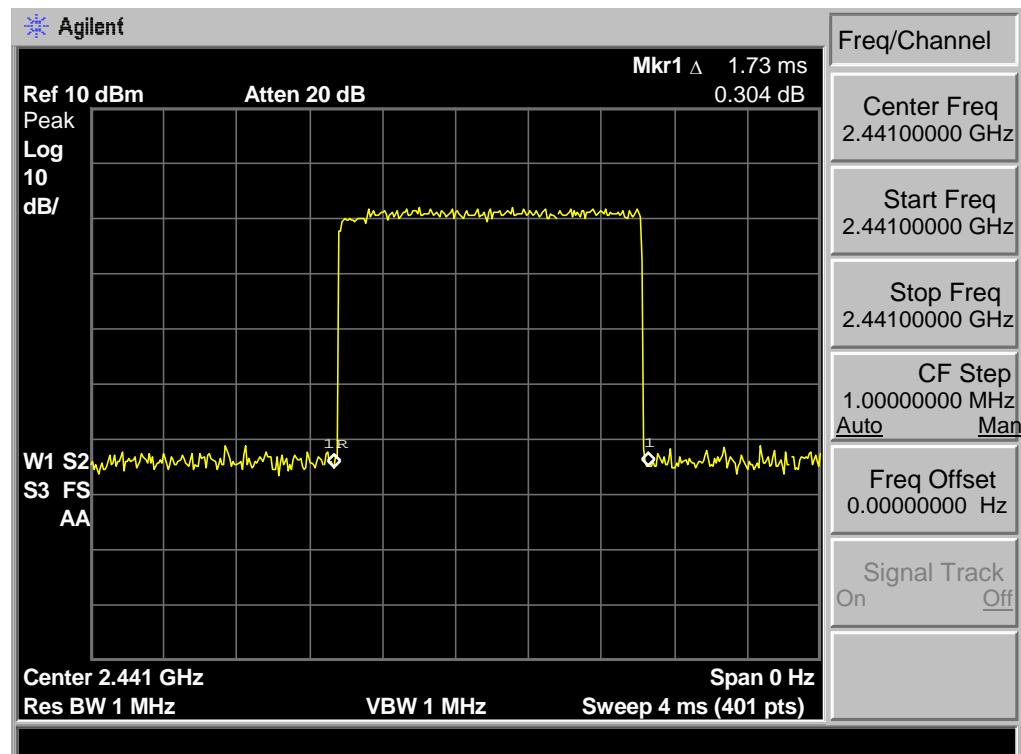
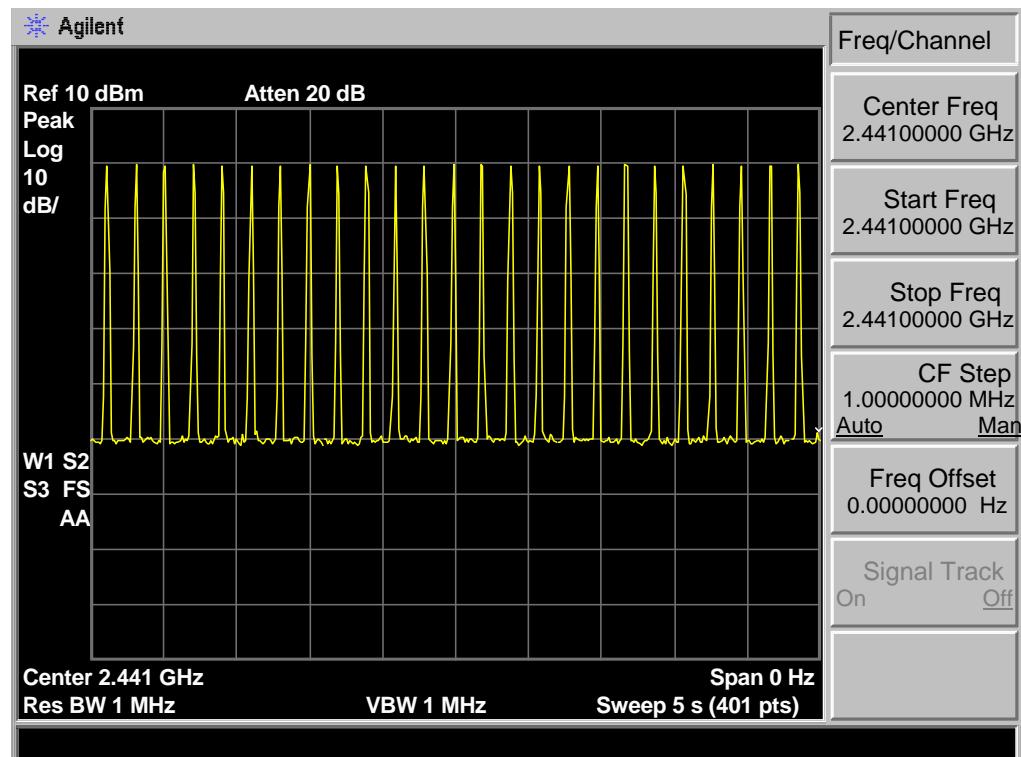
**GSFK DH5 : 17hop/5s \* 0.4 \* 79 \*2.95ms = 316.95ms**



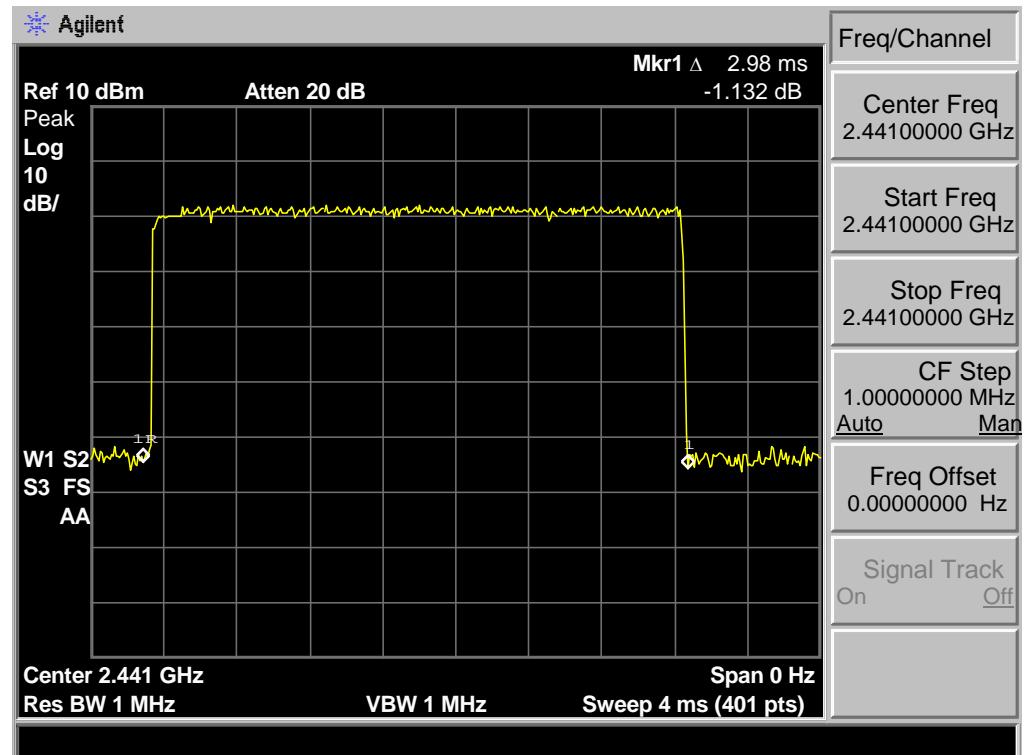
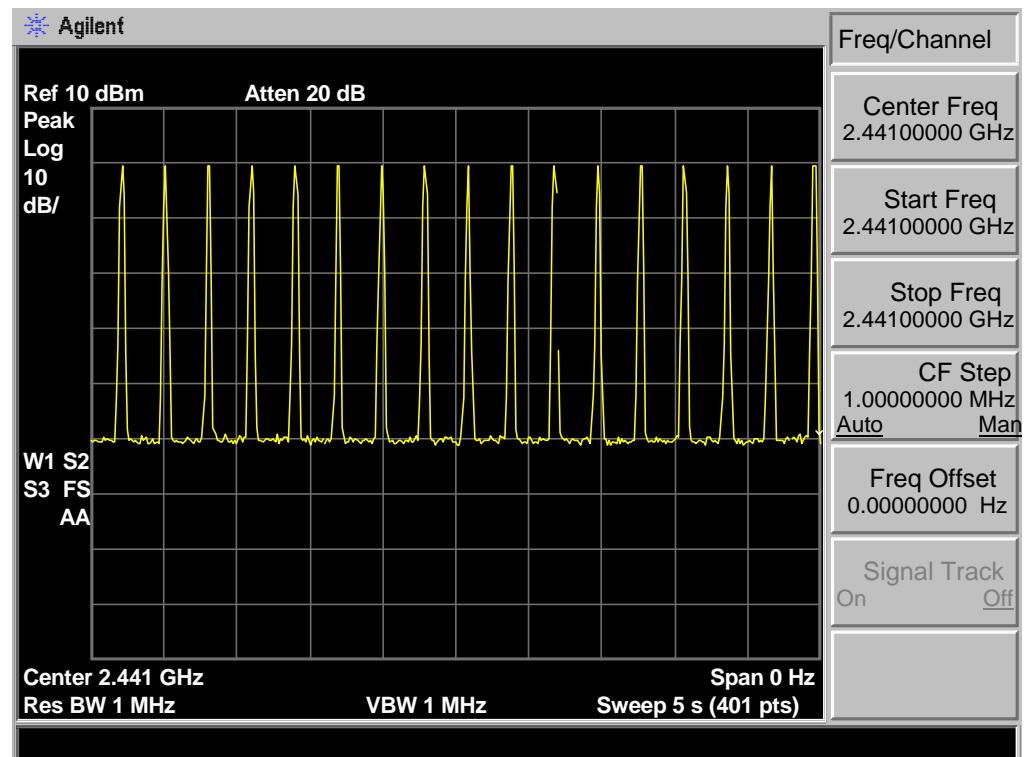
**8-DPSK DH1 : 50hop/5s \* 0.4 \* 79 \* 0.49ms = 154.84ms**



**8-DPSK DH3 : 25hop/5s \* 0.4 \* 79 \* 1.73ms= 273.34ms**



**8-DPSK DH5 : 17hop/5s \* 0.4 \* 79 \*2.98ms = 320.17ms**



## 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

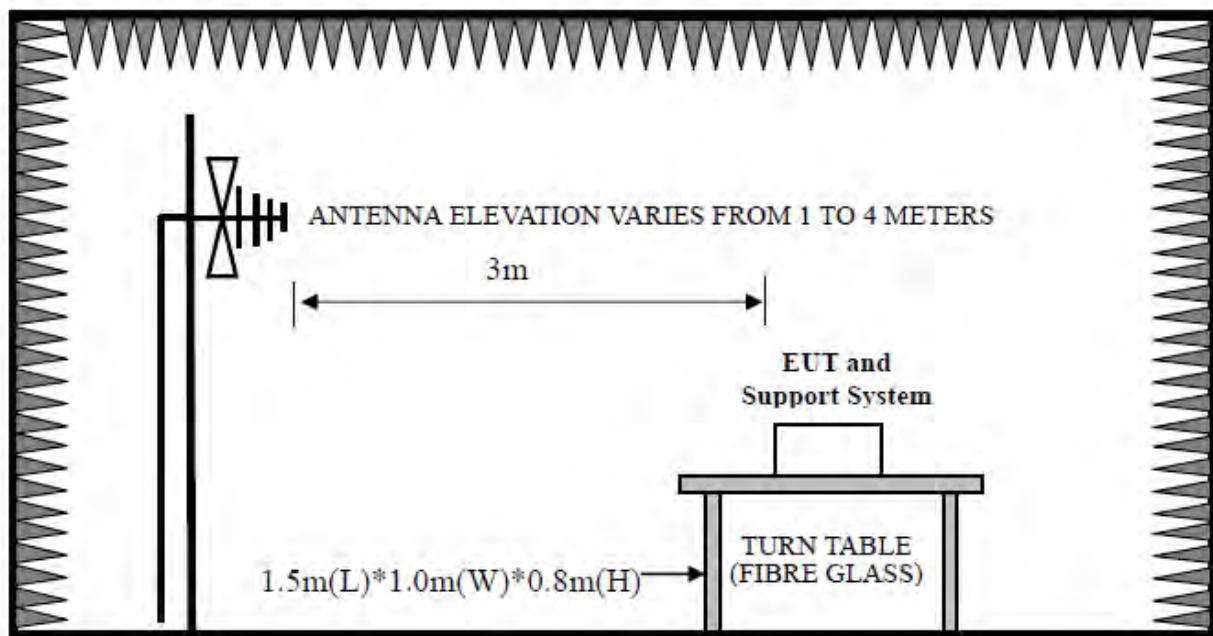
MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
<sup>1</sup> 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
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	( <sup>2</sup> )

#### 15.209 Limit

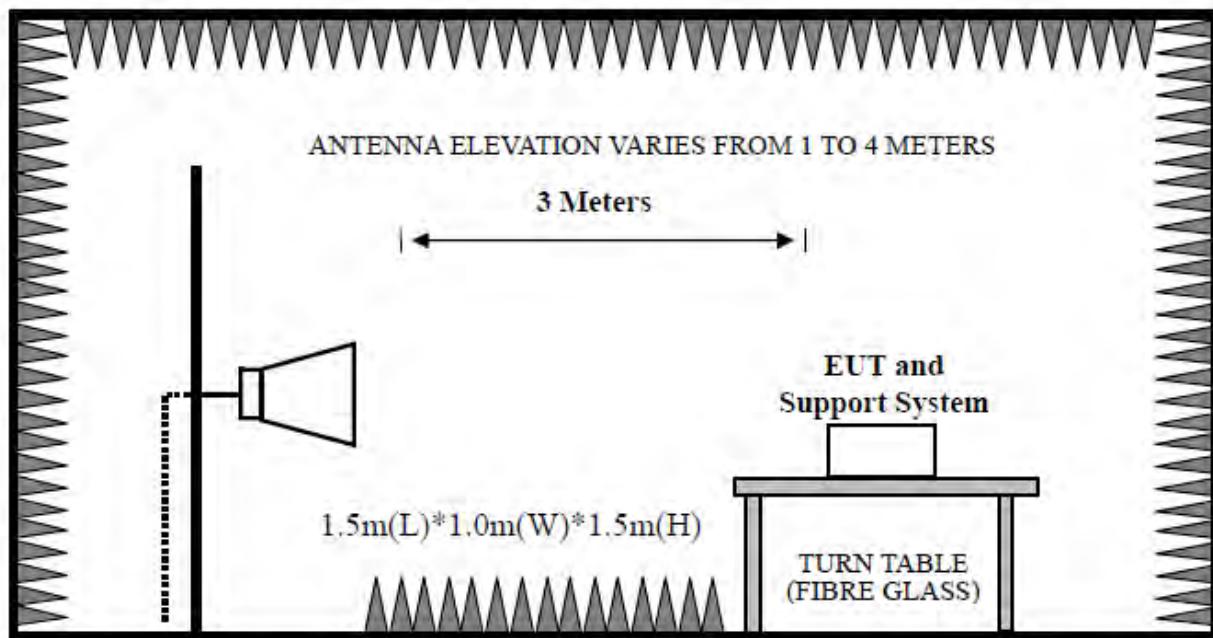
FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		µV/m	dB(µV)/m
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	74.0 dB(µV)/m (Peak) 54.0 dB(µV)/m (Average)	

## 8.2. Block Diagram of Test setup

30~1000MHz



Above 1GHz



### 8.3. Test Procedure

EUT was placed on a turn table, which is 0.8 meter high above ground for 30~1000MHz test, and which is 1.5 meter high above ground for above 1GHz test. 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

PEAK detector, 1MHz/1MHz for PAEK measurement,  
PEAK detector, 1MHz/10Hz for Average measurement

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

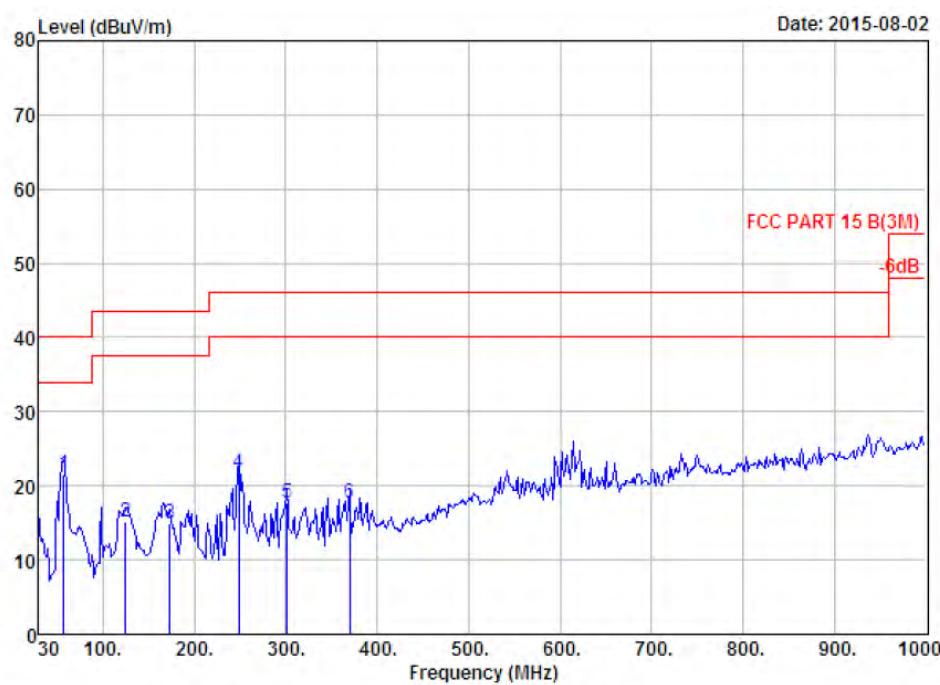
### 8.4. Test Result

30MHz—25GHz Radiated emissison Test result	
EUT: Wireless Soundbar	
M/N: R-4B Soundbar	
Power: AC 120V/60Hz	
Test date: 2015-08-01~02	Test site: 3m Chamber
Test mode: Tx Mode	Tested by: Tony Tang
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.

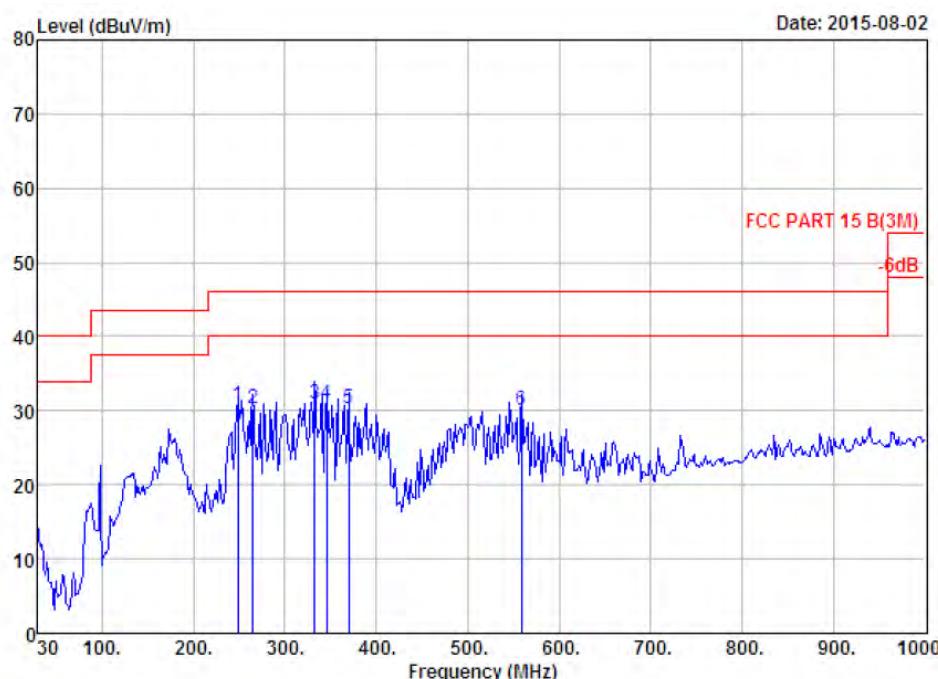
## 8.5. Test Data

30 MHz – 1000 MHz



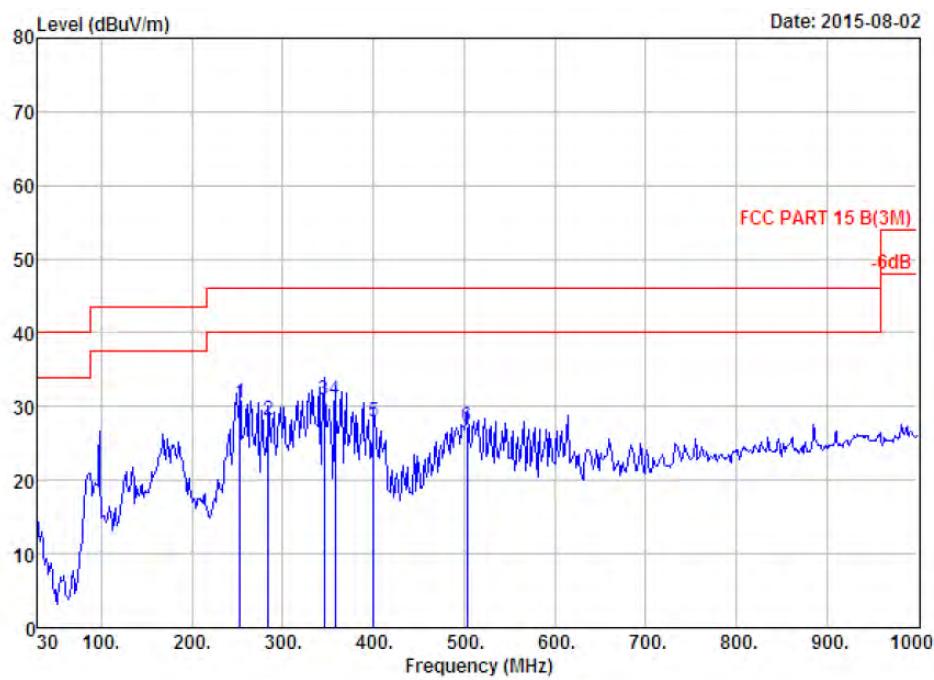
Site no. : 966 1# chamber Data no. : 741  
 Dis. / Ant. : 3m 27137 Ant. pol. : VERTICAL  
 Limit : FCC PART 15 B(3M)  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : 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	57.16	5.06	0.99	15.49	21.54	40.00	18.46	QP
2	125.06	11.35	1.52	2.22	15.09	43.50	28.41	QP
3	173.56	9.03	1.68	4.21	14.92	43.50	28.58	QP
4	248.25	11.52	2.13	8.16	21.81	46.00	24.19	QP
5	301.60	13.04	2.39	2.18	17.61	46.00	28.39	QP
6	369.50	14.84	2.65	0.19	17.68	46.00	28.32	QP



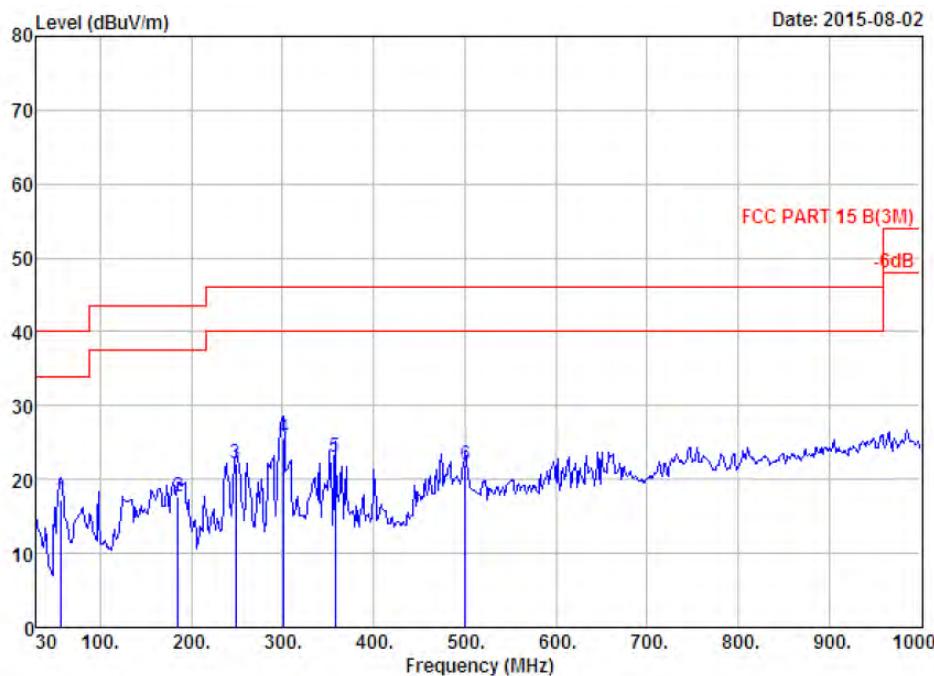
Site no. : 966 1# chamber Data no. : 742  
 Dis. / Ant. : 3m 27137 Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15 B(3M)  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : GFSK TX 2402Mhz

		Ant.	Cable	Emission				
	Freq. (MHz)	Factor (dB/m)	Loss (dB)	Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	248.25	11.52	2.13	17.07	30.72	46.00	15.28	QP
2	264.74	12.94	2.28	15.01	30.23	46.00	15.77	QP
3	332.64	13.93	2.48	14.55	30.96	46.00	15.04	QP
4	345.25	14.32	2.54	14.02	30.88	46.00	15.12	QP
5	369.50	14.84	2.65	12.90	30.39	46.00	15.61	QP
6	558.65	19.68	3.25	7.25	30.18	46.00	15.82	QP



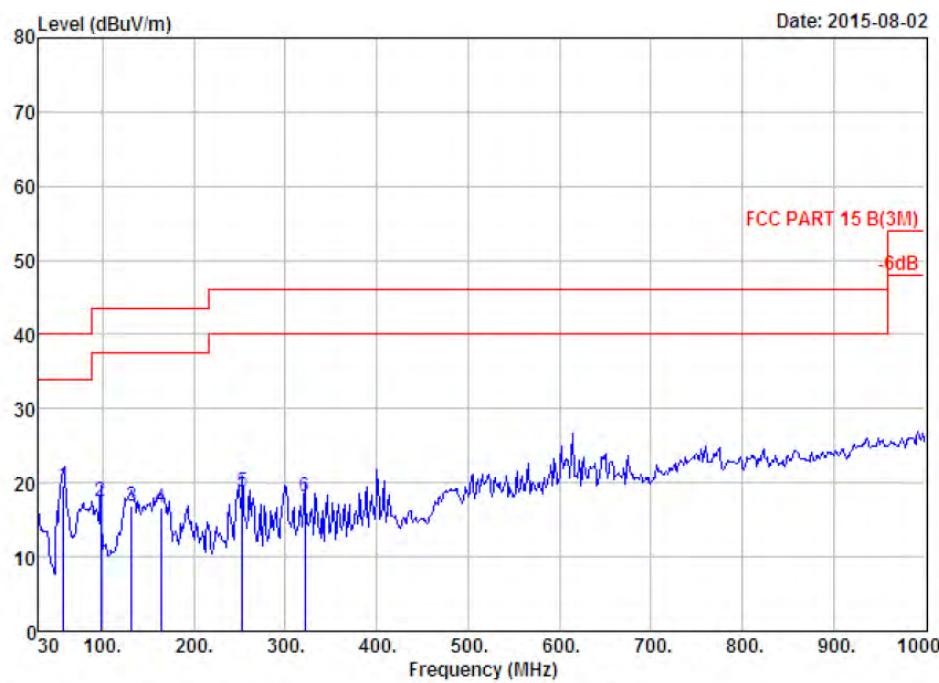
Site no. : 966 1# chamber Data no. : 743  
 Dis. / Ant. : 3m 27137 Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15 B(3M)  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : GFSK TX 2441Mhz

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission			
				Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 253.10	12.17	2.17	16.21	30.55	46.00	15.45	QP
2 284.14	12.52	2.36	13.27	28.15	46.00	17.85	QP
3 345.25	14.32	2.54	13.99	30.85	46.00	15.15	QP
4 357.86	14.45	2.56	13.87	30.88	46.00	15.12	QP
5 400.54	16.07	2.66	9.24	27.97	46.00	18.03	QP
6 503.36	17.90	3.12	6.39	27.41	46.00	18.59	QP



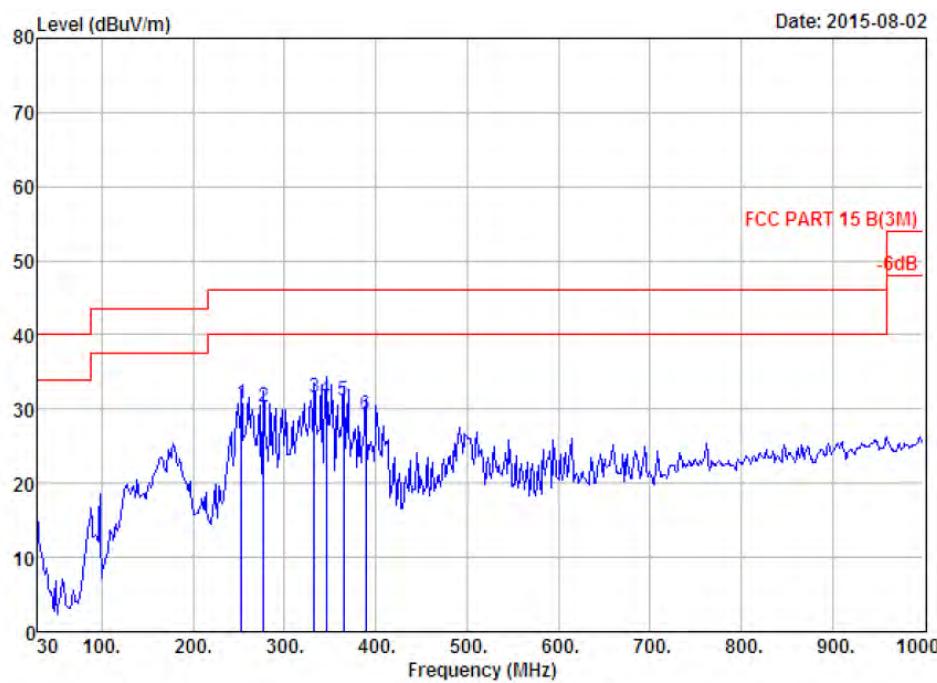
Site no. : 966 1# chamber Data no. : 744  
 Dis. / Ant. : 3m 27137 Ant. pol. : VERTICAL  
 Limit : FCC PART 15 B(3M)  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : 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 57.16	5.06	0.99	11.16	17.21	40.00	22.79	QP
2 185.20	8.48	1.75	7.45	17.68	43.50	25.82	QP
3 248.25	11.52	2.13	8.44	22.09	46.00	23.91	QP
4 301.60	13.04	2.39	10.10	25.53	46.00	20.47	QP
5 357.86	14.45	2.56	6.11	23.12	46.00	22.88	QP
6 500.45	17.88	3.11	0.92	21.91	46.00	24.09	QP



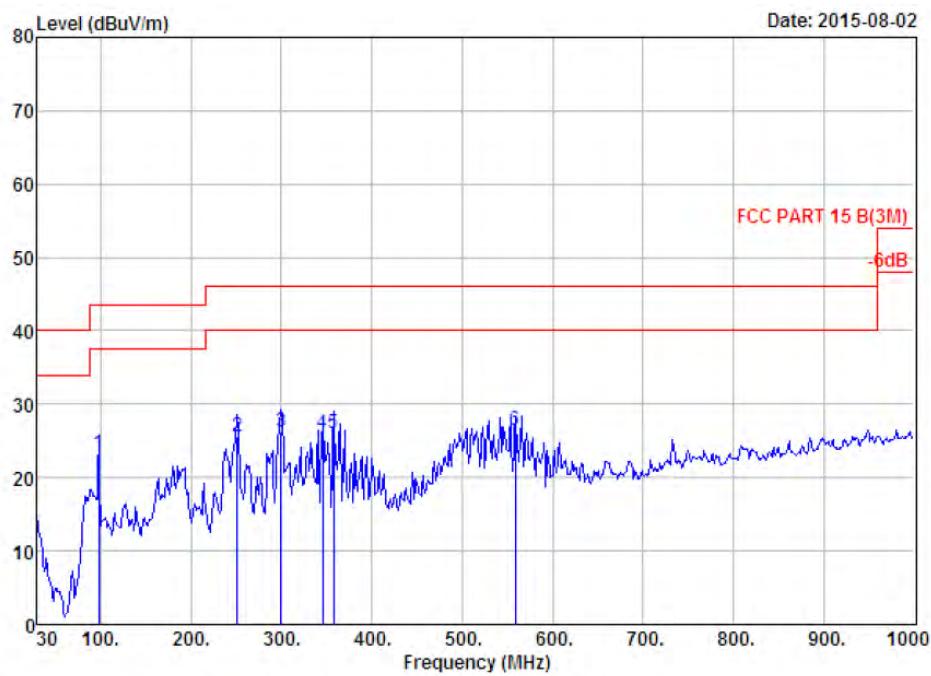
Site no. : 966 1# chamber Data no. : 745  
 Dis. / Ant. : 3m 27137 Ant. pol. : VERTICAL  
 Limit : FCC PART 15 B(3M)  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : 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 57.16	5.06	0.99	13.65	19.70	40.00	20.30	QP
2 97.90	9.13	1.33	7.07	17.53	43.50	25.97	QP
3 131.85	11.34	1.50	4.11	16.95	43.50	26.55	QP
4 163.86	9.89	1.67	5.07	16.63	43.50	26.87	QP
5 253.10	12.17	2.17	4.49	18.83	46.00	27.17	QP
6 321.00	13.60	2.41	2.08	18.09	46.00	27.91	QP



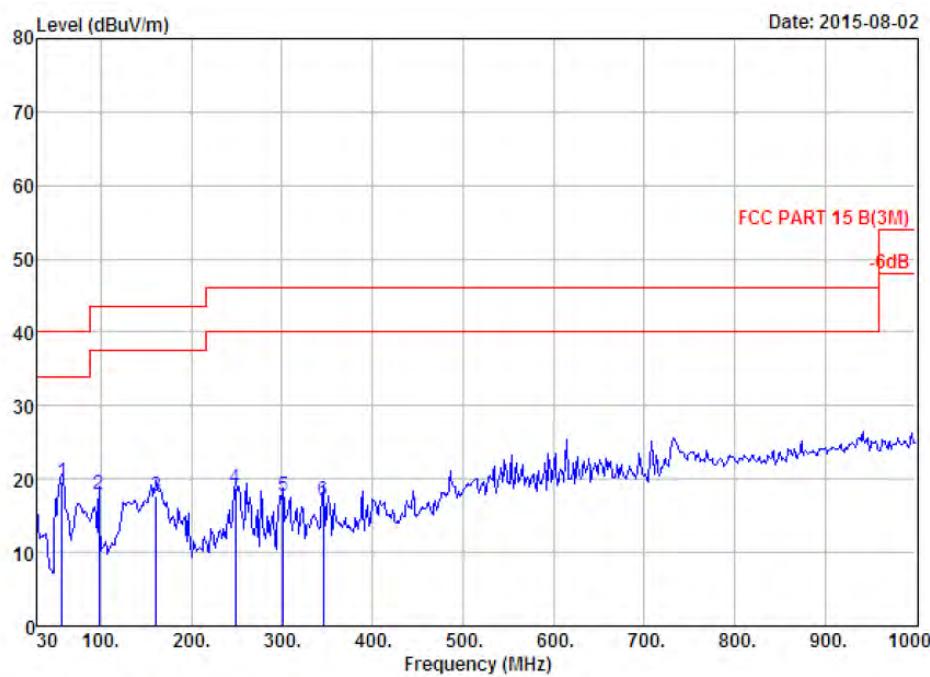
Site no. : 966 1# chamber Data no. : 746  
 Dis. / Ant. : 3m 27137 Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15 B(3M)  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : GFSK TX 2480Mhz

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission			
				Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 253.10	12.17	2.17	16.39	30.73	46.00	15.27	QP
2 277.35	12.36	2.25	15.75	30.36	46.00	15.64	QP
3 332.64	13.93	2.48	15.07	31.48	46.00	14.52	QP
4 345.25	14.32	2.54	14.42	31.28	46.00	14.72	QP
5 364.65	14.65	2.63	13.79	31.07	46.00	14.93	QP
6 388.90	15.54	2.65	11.12	29.31	46.00	16.69	QP



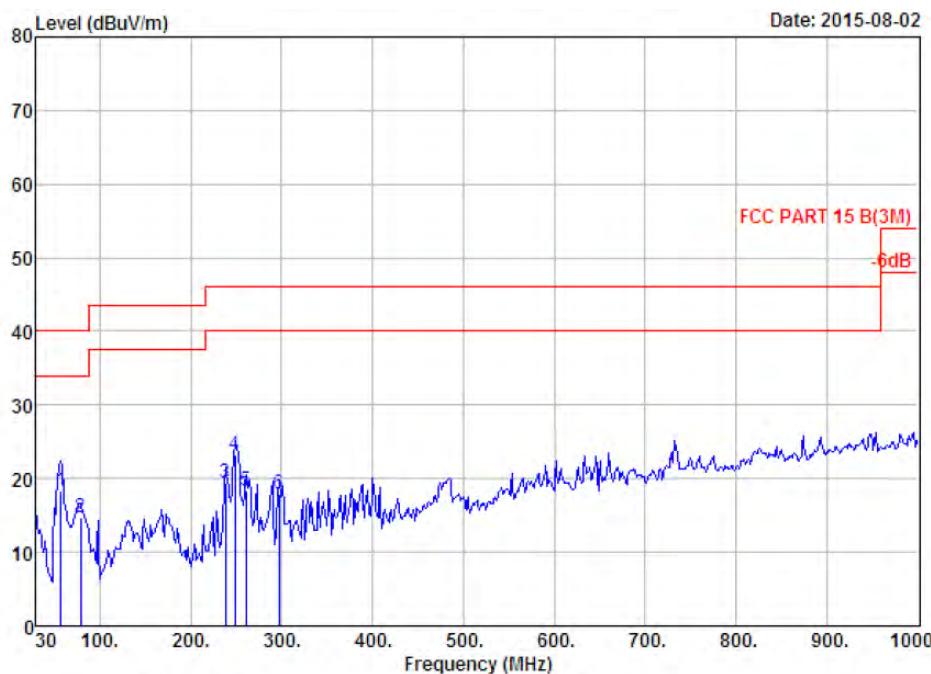
Site no. : 966 1# chamber Data no. : 747  
 Dis. / Ant. : 3m 27137 Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15 B(3M)  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : 8-DPSK TX 2402Mhz

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission			
				Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 97.90	9.13	1.33	12.70	23.16	43.50	20.34	QP
2 251.16	11.94	2.15	11.49	25.58	46.00	20.42	QP
3 299.66	13.01	2.38	10.76	26.15	46.00	19.85	QP
4 345.25	14.32	2.54	9.21	26.07	46.00	19.93	QP
5 357.86	14.45	2.56	9.01	26.02	46.00	19.98	QP
6 558.65	19.68	3.25	3.52	26.45	46.00	19.55	QP



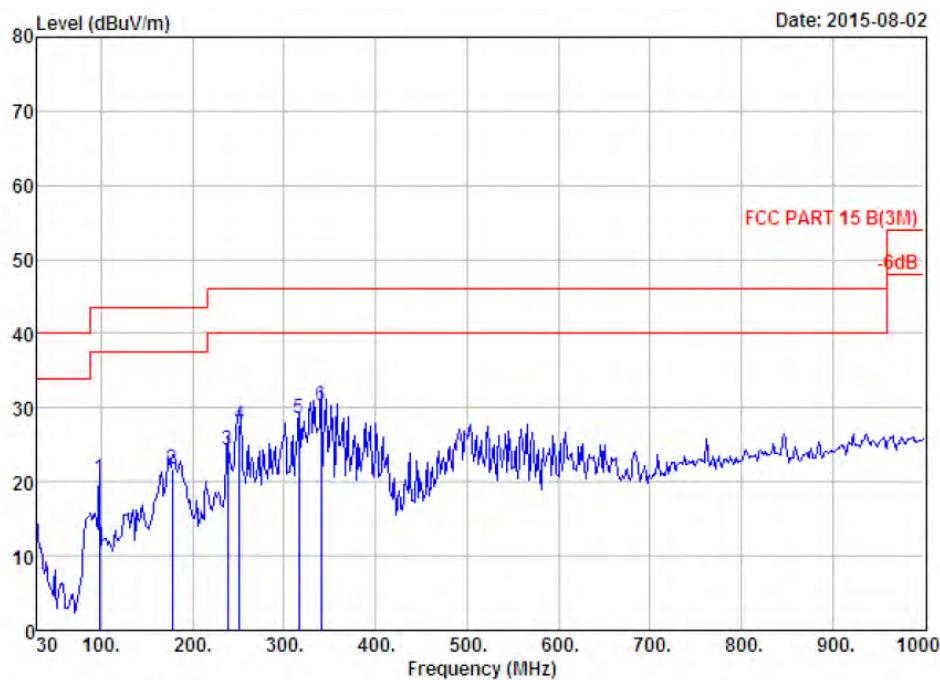
Site no. : 966 1# chamber Data no. : 748  
 Dis. / Ant. : 3m 27137 Ant. pol. : VERTICAL  
 Limit : FCC PART 15 B(3M)  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : 8-DPSK TX 2402Mhz

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission			
				Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 57.16	5.06	0.99	13.64	19.69	40.00	20.31	QP
2 97.90	9.13	1.33	7.44	17.90	43.50	25.60	QP
3 160.95	10.24	1.70	5.86	17.80	43.50	25.70	QP
4 248.25	11.52	2.13	5.10	18.75	46.00	27.25	QP
5 301.60	13.04	2.39	2.36	17.79	46.00	28.21	QP
6 345.25	14.32	2.54	0.24	17.10	46.00	28.90	QP



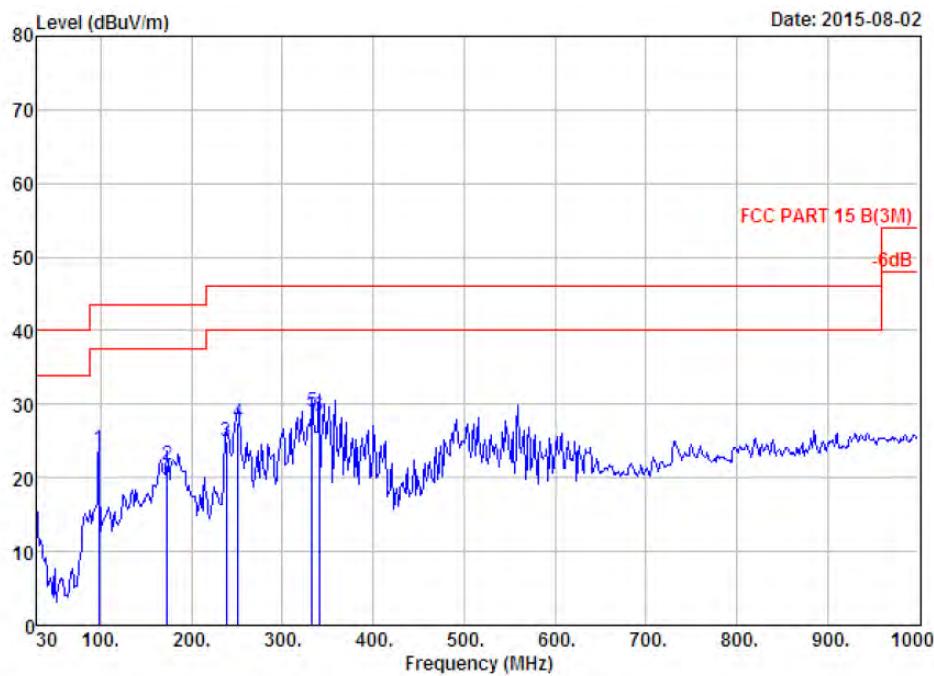
Site no. : 966 1# chamber Data no. : 749  
 Dis. / Ant. : 3m 27137 Ant. pol. : VERTICAL  
 Limit : FCC PART 15 B(3M)  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : 8-DPSK TX 2441Mhz

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission			
				Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 57.16	5.06	0.99	12.29	18.34	40.00	21.66	QP
2 78.50	6.89	1.22	6.63	14.74	40.00	25.26	QP
3 238.55	10.11	2.10	7.25	19.46	46.00	26.54	QP
4 248.25	11.52	2.13	9.55	23.20	46.00	22.80	QP
5 260.86	12.96	2.22	3.24	18.42	46.00	27.58	QP
6 296.75	12.99	2.32	2.58	17.89	46.00	28.11	QP



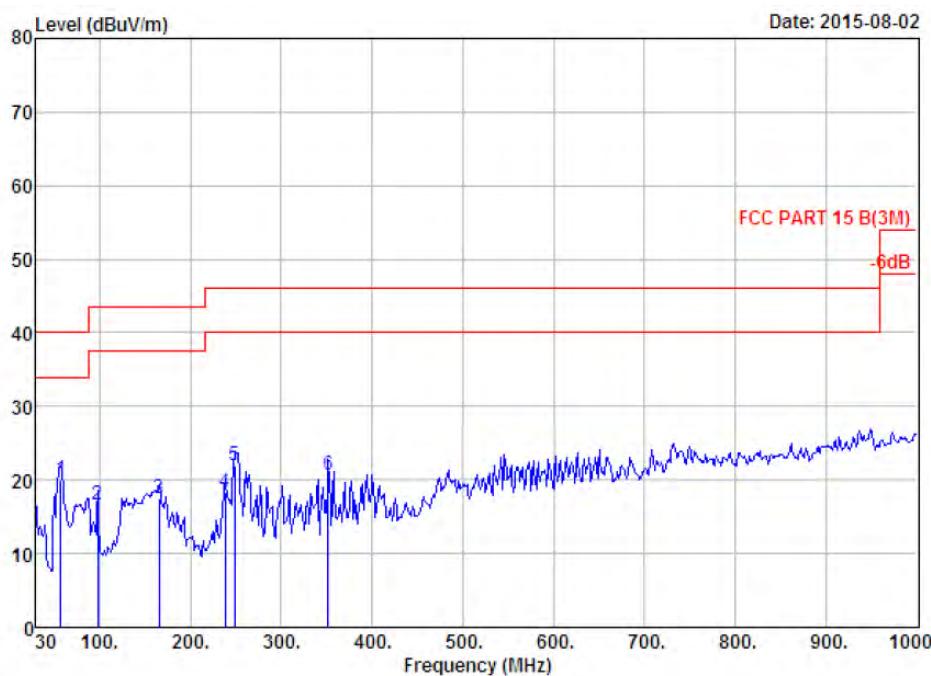
Site no. : 966 1# chamber Data no. : 750  
 Dis. / Ant. : 3m 27137 Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15 B(3M)  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : 8-DPSK TX 2441Mhz

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission				Remark
				Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)		
1 97.90	9.13	1.33	10.00	20.46	43.50	23.04	QP	
2 177.44	8.97	1.67	11.01	21.65	43.50	21.85	QP	
3 238.55	10.11	2.10	12.05	24.26	46.00	21.74	QP	
4 251.16	11.94	2.15	13.59	27.68	46.00	18.32	QP	
5 316.15	13.42	2.41	12.69	28.52	46.00	17.48	QP	
6 340.40	14.16	2.51	13.69	30.36	46.00	15.64	QP	



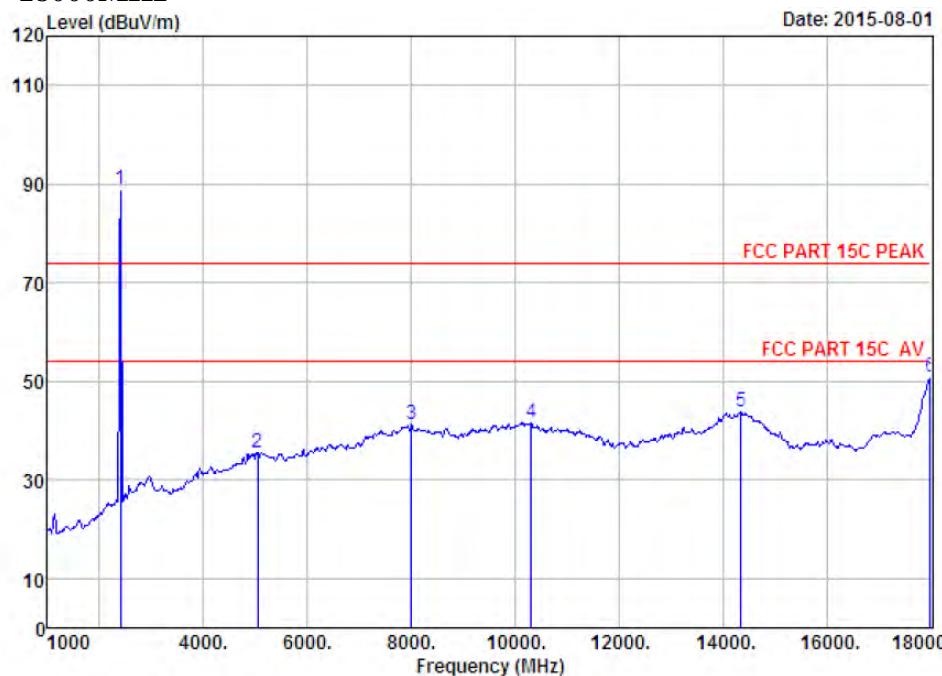
Site no. : 966 1# chamber Data no. : 751  
 Dis. / Ant. : 3m 27137 Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15 B(3M)  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : 8-DPSK TX 2480Mhz

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission			
				Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 97.90	9.13	1.33	13.34	23.80	43.50	19.70	QP
2 173.56	9.03	1.68	10.95	21.66	43.50	21.84	QP
3 238.55	10.11	2.10	12.77	24.98	46.00	21.02	QP
4 251.16	11.94	2.15	13.39	27.48	46.00	18.52	QP
5 332.64	13.93	2.48	12.56	28.97	46.00	17.03	QP
6 340.40	14.16	2.51	11.73	28.40	46.00	17.60	QP



Site no. : 966 1# chamber Data no. : 752  
 Dis. / Ant. : 3m 27137 Ant. pol. : VERTICAL  
 Limit : FCC PART 15 B(3M)  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : 8-DPSK TX 2480Mhz

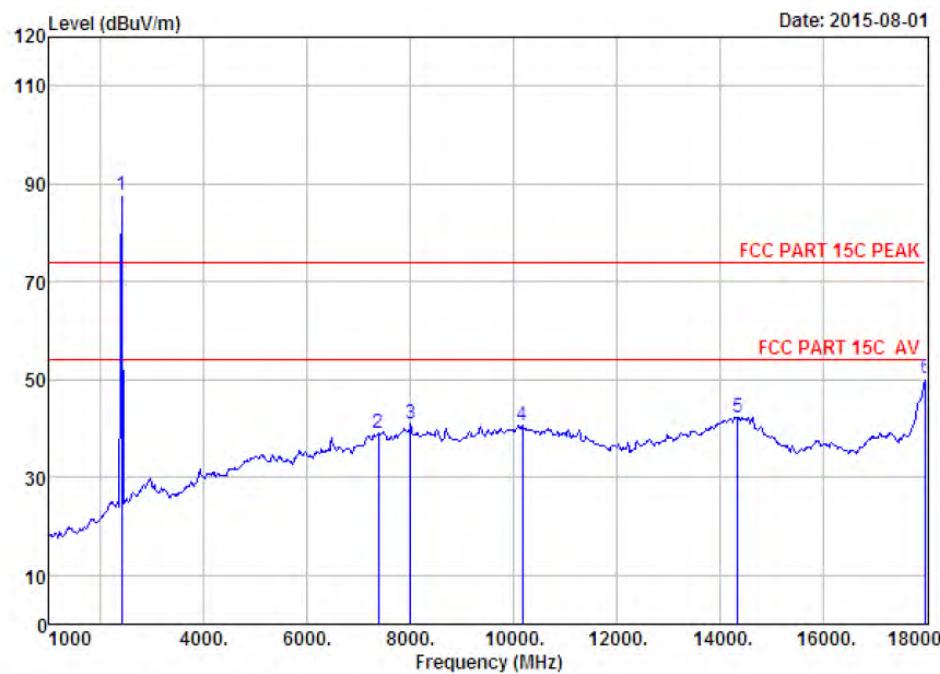
Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission			
				Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 57.16	5.06	0.99	13.96	20.01	40.00	19.99	QP
2 97.90	9.13	1.33	6.12	16.58	43.50	26.92	QP
3 165.80	9.66	1.68	6.13	17.47	43.50	26.03	QP
4 238.55	10.11	2.10	6.15	18.36	46.00	27.64	QP
5 248.25	11.52	2.13	8.31	21.96	46.00	24.04	QP
6 352.04	14.47	2.53	3.75	20.75	46.00	25.25	QP

**1000 MHz – 18000MHz**

Site no. : 1# 966 chamber Data no. : 519  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 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	88.77	88.82	74.00	-14.82	Peak
2	5046.00	31.57	12.53	32.08	23.43	35.45	74.00	38.55	Peak
3	8004.00	37.01	11.40	31.22	24.00	41.19	74.00	32.81	Peak
4	10316.00	38.65	11.41	32.37	24.05	41.74	74.00	32.26	Peak
5	14345.00	41.76	10.92	32.93	23.94	43.69	74.00	30.31	Peak
6	18000.00	46.45	11.38	27.65	20.93	50.91	74.00	23.09	Peak

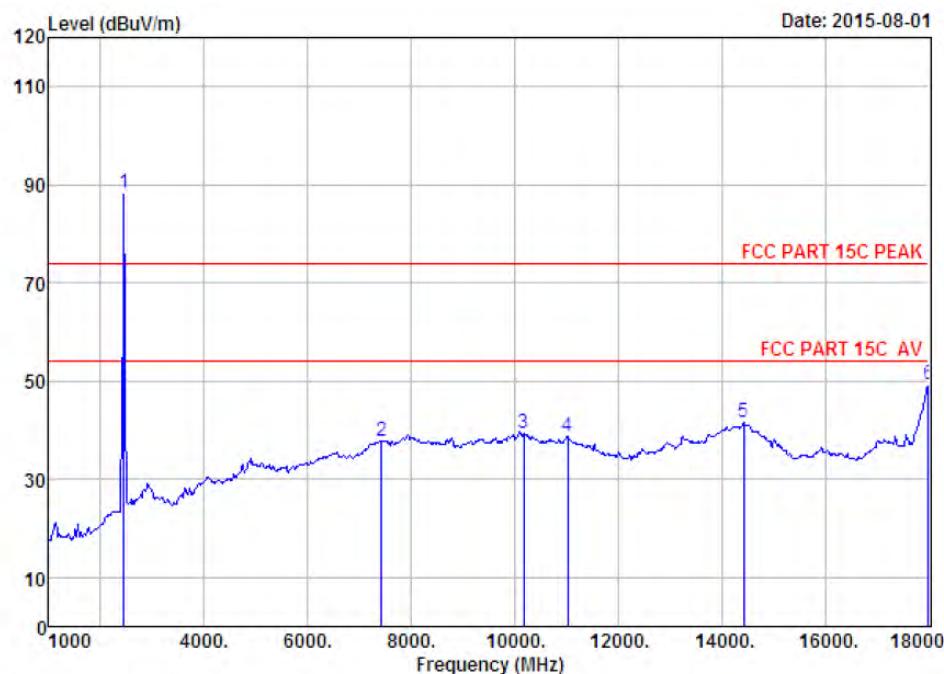
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 520  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : GFSK TX 2402MHz

		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	2402.00	27.61	6.62	34.18	87.52	87.57	74.00	-13.57 Peak	
2	7375.00	36.57	11.59	31.98	22.77	38.95	74.00	35.05 Peak	
3	8004.00	37.01	11.40	31.22	23.62	40.81	74.00	33.19 Peak	
4	10180.00	38.42	11.49	32.11	22.92	40.72	74.00	33.28 Peak	
5	14345.00	41.76	10.92	32.93	22.56	42.31	74.00	31.69 Peak	
6	18000.00	46.45	11.38	27.85	20.21	50.19	74.00	23.81 Peak	

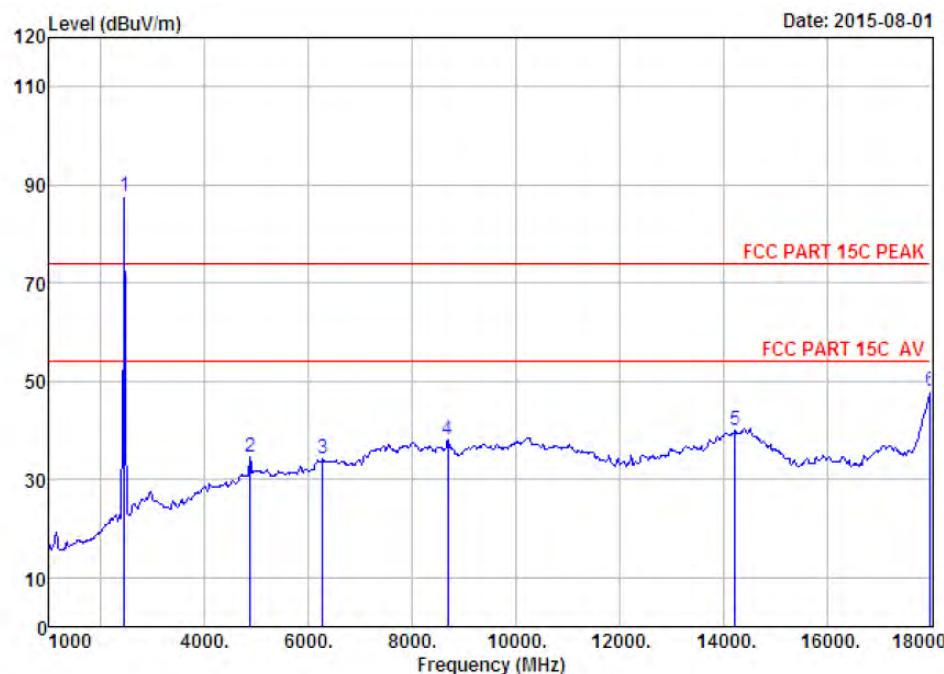
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 523  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : GFSK TX 2441MHz

	Ant.	Cable	Amp	Emission					Remark
Freq. (MHz)	Factor (dB/m)	Loss (dB)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)		
1 2441.00	27.60	6.67	34.12	88.03	88.18	74.00	-14.18	Peak	
2 7426.00	36.56	11.60	31.95	21.61	37.82	74.00	36.18	Peak	
3 10180.00	38.42	11.49	32.11	21.64	39.44	74.00	34.56	Peak	
4 11030.00	39.50	11.27	33.71	21.73	38.79	74.00	35.21	Peak	
5 14430.00	41.82	10.93	32.84	21.78	41.69	74.00	32.31	Peak	
6 18000.00	46.45	11.38	27.85	19.39	49.37	74.00	24.63	Peak	

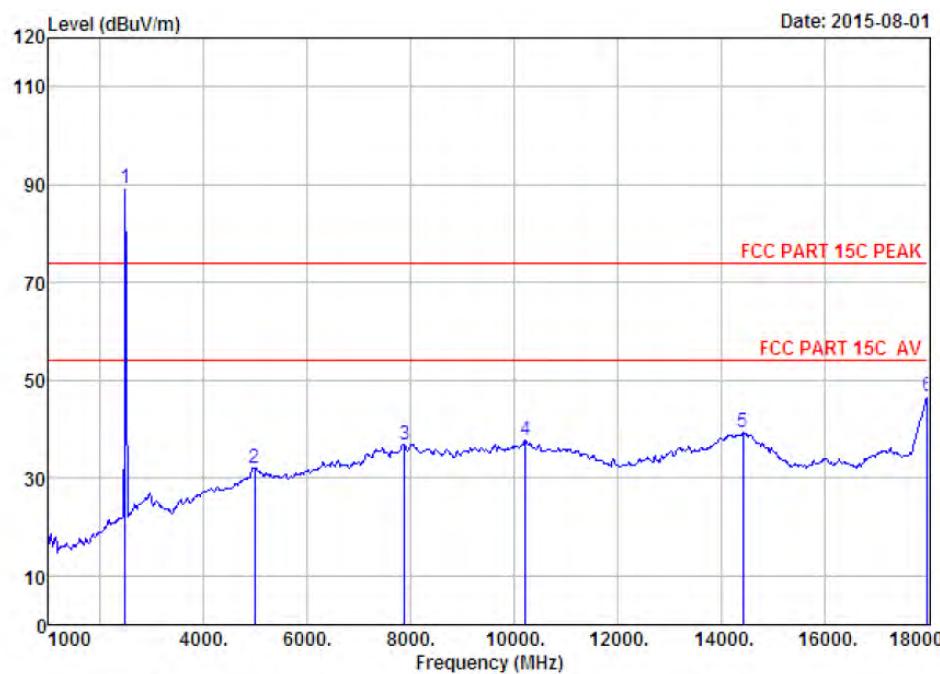
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official  
 limit are not reported.



Site no. : 1# 966 chamber Data no. : 524  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 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	87.40	87.55	74.00	-13.55	Peak
2	4876.00	31.37	12.07	31.90	22.90	34.44	74.00	39.56	Peak
3	6270.00	33.48	12.18	31.95	20.47	34.18	74.00	39.82	Peak
4	8684.00	37.32	11.45	32.43	21.78	38.12	74.00	35.88	Peak
5	14226.00	41.66	10.91	33.29	20.61	39.89	74.00	34.11	Peak
6	18000.00	46.45	11.38	27.85	17.97	47.95	74.00	26.05	Peak

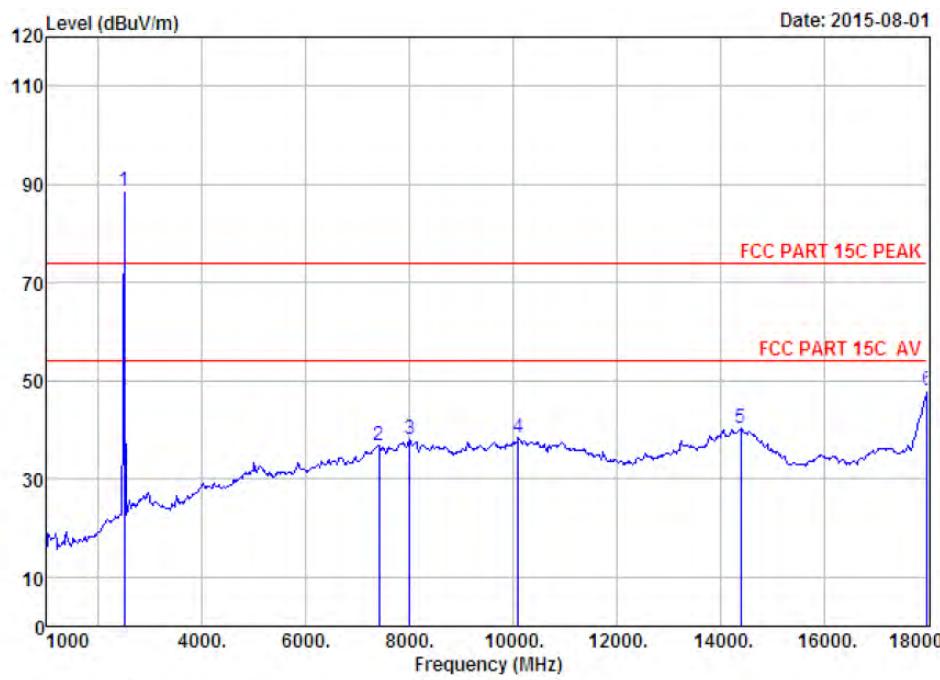
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 525  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 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	89.03	89.29	74.00	-15.29	Peak
2	4978.00	31.52	12.52	31.99	20.04	32.09	74.00	41.91	Peak
3	7885.00	36.78	11.45	31.33	20.04	36.94	74.00	37.06	Peak
4	10214.00	38.48	11.47	32.17	19.83	37.61	74.00	36.39	Peak
5	14430.00	41.82	10.93	32.84	19.34	39.25	74.00	34.75	Peak
6	18000.00	46.45	11.38	27.85	16.83	46.81	74.00	27.19	Peak

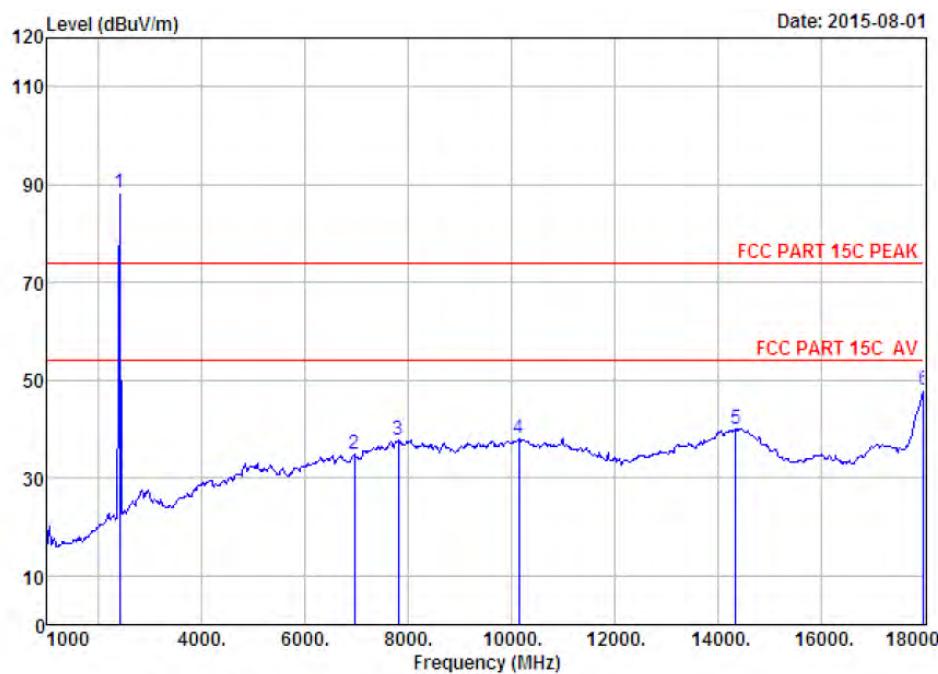
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 526  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 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	2496.00	27.57	6.73	34.00	88.33	88.63	74.00	-14.63	Peak
2	7409.00	36.58	11.60	31.97	20.48	36.69	74.00	37.31	Peak
3	8004.00	37.01	11.40	31.22	20.86	38.05	74.00	35.95	Peak
4	10095.00	38.27	11.53	31.95	20.40	38.25	74.00	35.75	Peak
5	14396.00	41.79	10.92	32.83	20.41	40.29	74.00	33.71	Peak
6	18000.00	46.45	11.38	27.85	18.11	48.09	74.00	25.91	Peak

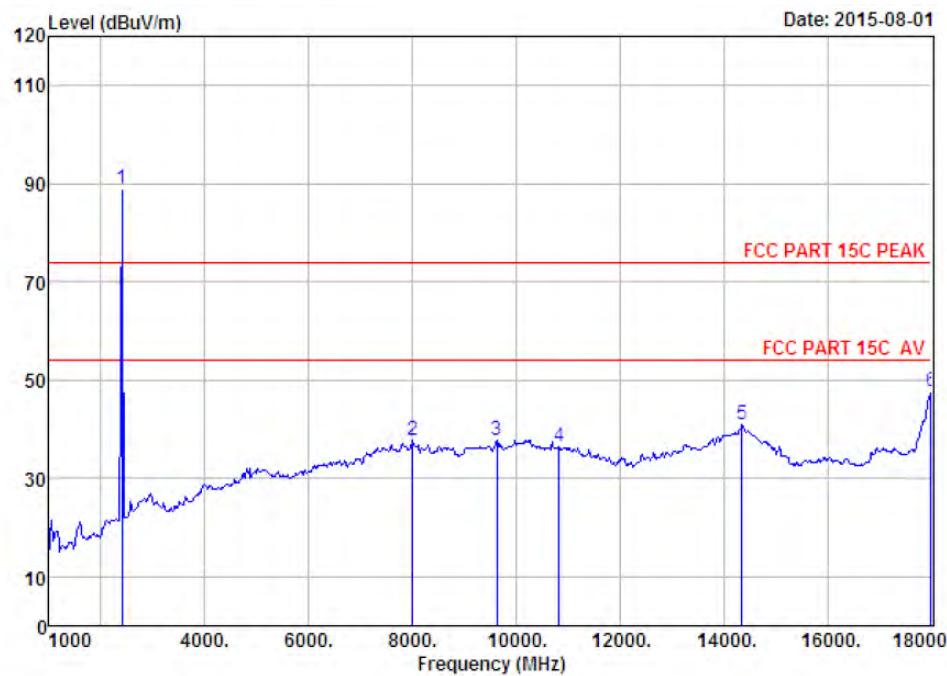
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 529  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : 8-DPSK TX 2402MHz

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Emission		Margin (dB)	Remark
				Reading (dBuV)	Level (dBuV/m)		
1 2402.00	27.61	6.62	34.18	88.24	88.29	74.00	-14.29 Peak
2 6950.00	35.29	11.56	32.41	20.59	35.03	74.00	38.97 Peak
3 7800.00	36.61	11.49	31.44	21.04	37.70	74.00	36.30 Peak
4 10146.00	38.36	11.51	32.05	20.36	38.18	74.00	35.82 Peak
5 14345.00	41.76	10.92	32.93	20.29	40.04	74.00	33.96 Peak
6 18000.00	46.45	11.38	27.85	18.03	48.01	74.00	25.99 Peak

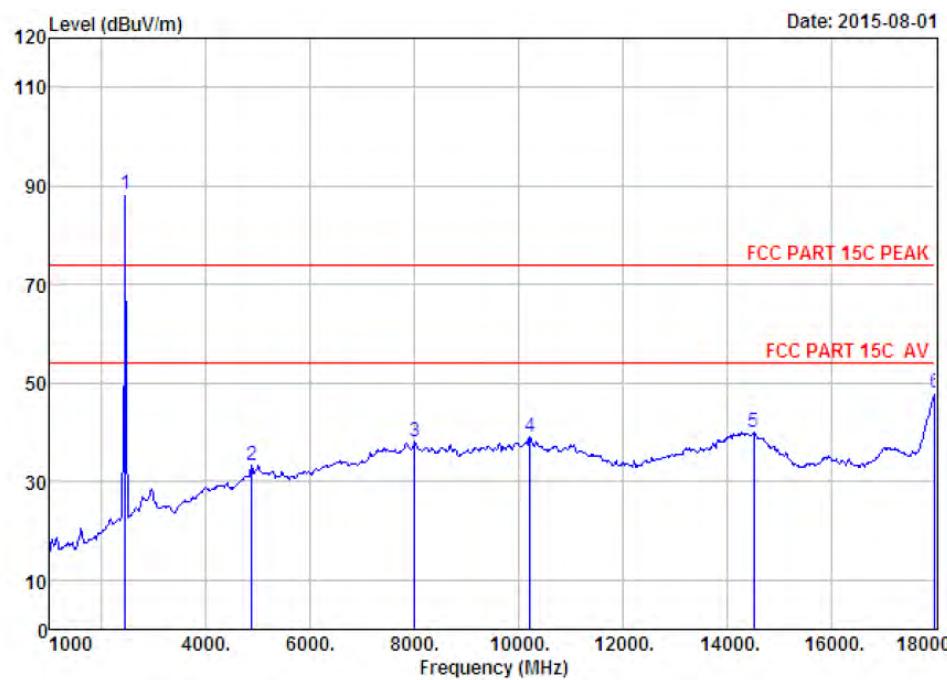
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 530  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : 8-DPSK TX 2402MHz

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission				Remark
					Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)		
1 2402.00	27.61	6.62	34.18	88.83	88.88	74.00	-14.88	Peak	
2 8004.00	37.01	11.40	31.22	20.43	37.62	74.00	36.38	Peak	
3 9636.00	37.96	11.68	31.91	19.90	37.63	74.00	36.37	Peak	
4 10826.00	39.33	11.30	33.33	19.28	36.58	74.00	37.42	Peak	
5 14345.00	41.76	10.92	32.93	21.08	40.83	74.00	33.17	Peak	
6 18000.00	46.45	11.38	27.85	17.56	47.54	74.00	26.46	Peak	

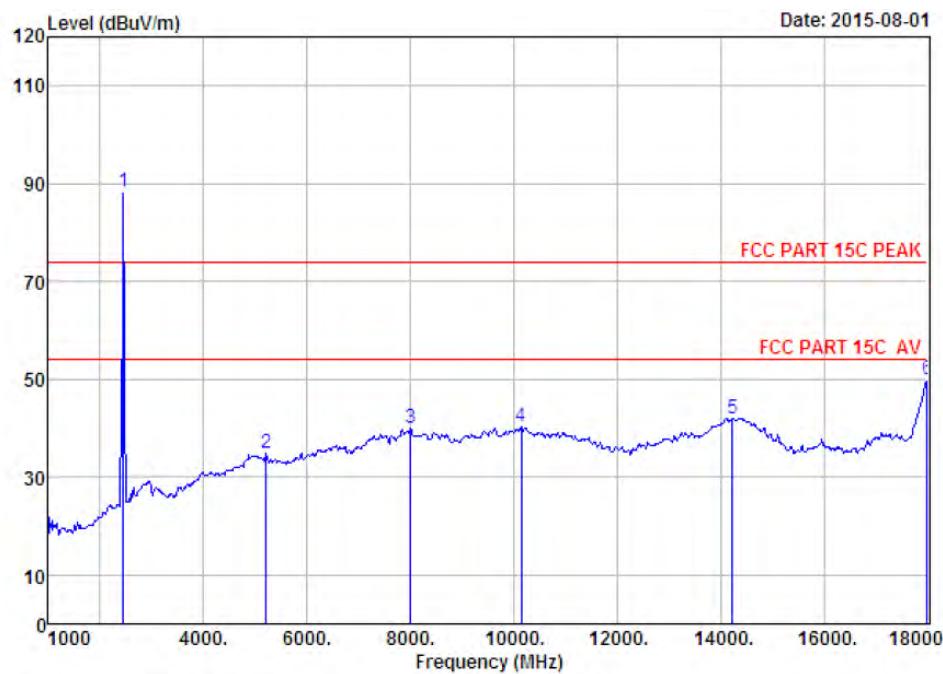
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 533  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : 8-DPSK TX 2441MHz

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Emission				Margin (dB)	Remark
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)			
1 2441.00	27.60	6.67	34.12	88.30	88.45	74.00	-14.45	Peak	
2 4876.00	31.37	12.07	31.90	21.87	33.41	74.00	40.59	Peak	
3 8004.00	37.01	11.40	31.22	20.86	38.05	74.00	35.95	Peak	
4 10214.00	38.48	11.47	32.17	21.31	39.09	74.00	34.91	Peak	
5 14515.00	41.89	10.93	33.14	20.37	40.05	74.00	33.95	Peak	
6 18000.00	46.45	11.38	27.85	17.89	47.87	74.00	26.13	Peak	

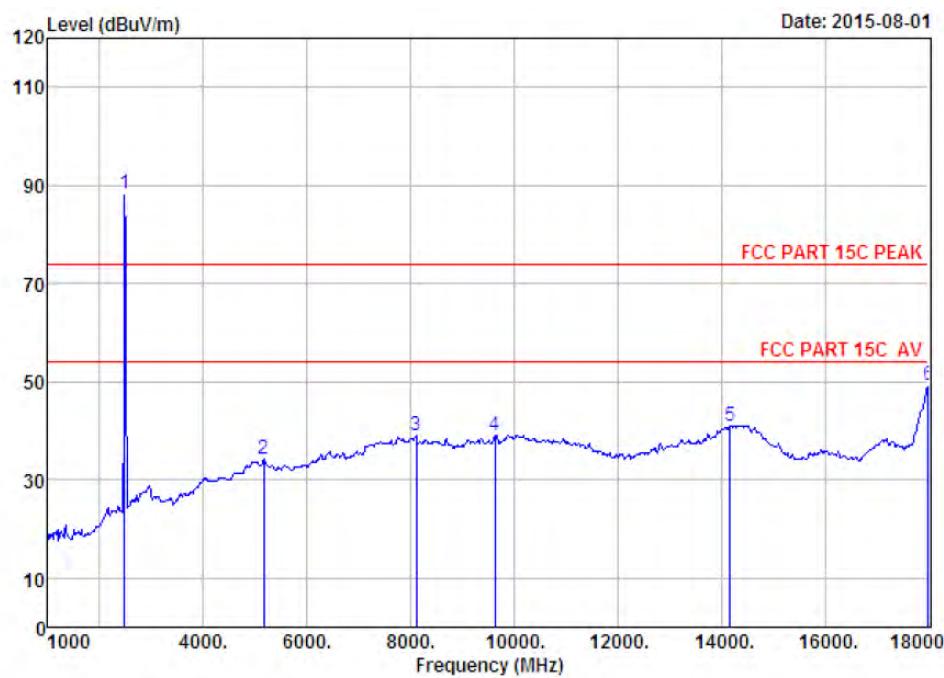
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 534  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Hum:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : 8-DPSK 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	88.04	88.19	74.00	-14.19	Peak
2	5216.00	31.68	12.33	32.17	22.94	34.78	74.00	39.22	Peak
3	8004.00	37.01	11.40	31.22	22.90	40.09	74.00	33.91	Peak
4	10146.00	38.36	11.51	32.05	22.37	40.19	74.00	33.81	Peak
5	14226.00	41.66	10.91	33.29	22.68	41.96	74.00	32.04	Peak
6	18000.00	46.45	11.38	27.85	19.94	49.92	74.00	24.08	Peak

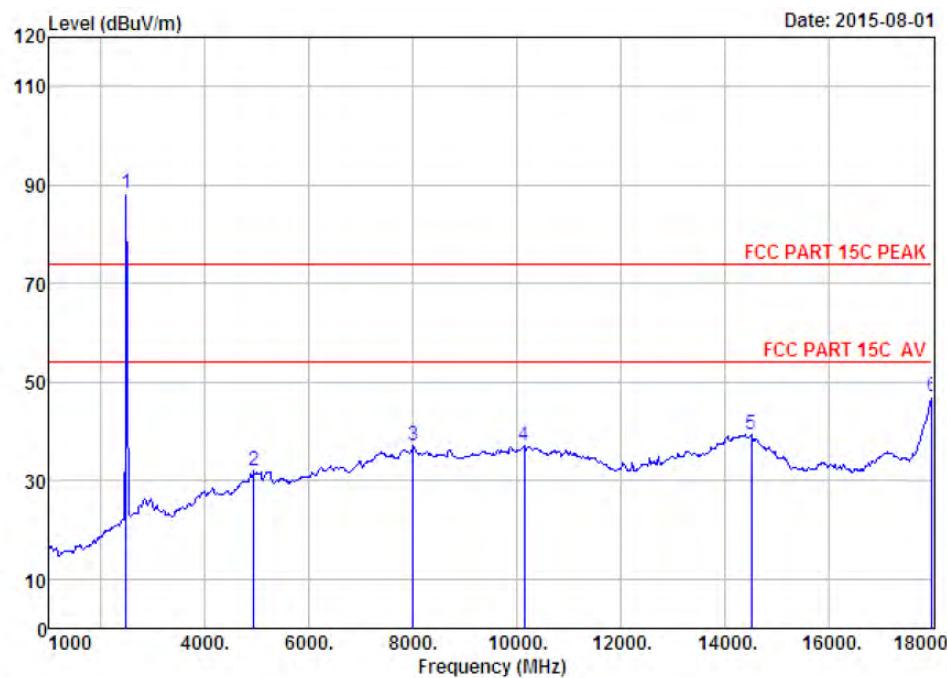
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 535  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : 8-DPSK TX 2480MHz

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Emission			Margin (dB)	Remark
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)		
1 2480.00	27.58	6.71	34.03	88.12	88.38	74.00	-14.38	Peak
2 5165.00	31.65	12.39	32.16	22.41	34.29	74.00	39.71	Peak
3 8106.00	36.82	11.41	31.38	22.10	38.95	74.00	35.05	Peak
4 9636.00	37.96	11.68	31.91	21.44	39.17	74.00	34.83	Peak
5 14175.00	41.61	10.91	33.44	22.03	41.11	74.00	32.89	Peak
6 18000.00	46.45	11.38	27.85	19.27	49.25	74.00	24.75	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.



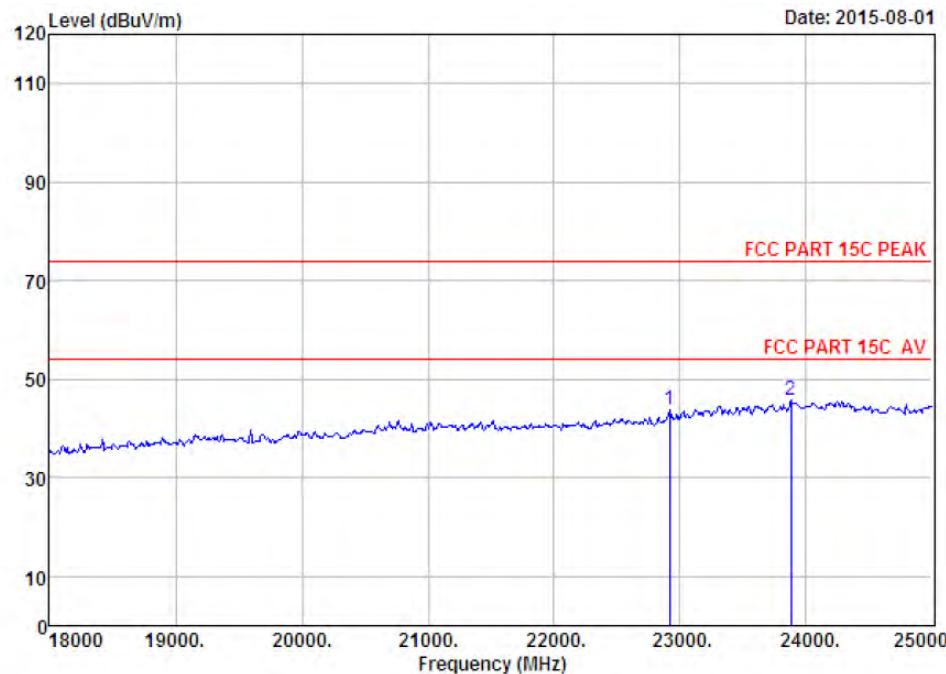
Site no. : 1# 966 chamber Data no. : 536  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : 8-DPSK TX 2480MHz

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Emission				Margin (dB)	Remark
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)			
1 2480.00	27.58	6.71	34.03	88.15	88.41	74.00	-14.41	Peak	
2 4944.00	31.47	12.37	31.96	20.15	32.03	74.00	41.97	Peak	
3 8004.00	37.01	11.40	31.22	20.02	37.21	74.00	36.79	Peak	
4 10146.00	38.36	11.51	32.05	19.15	36.97	74.00	37.03	Peak	
5 14515.00	41.89	10.93	33.14	19.59	39.27	74.00	34.73	Peak	
6 18000.00	46.45	11.38	27.85	16.97	46.95	74.00	27.05	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**

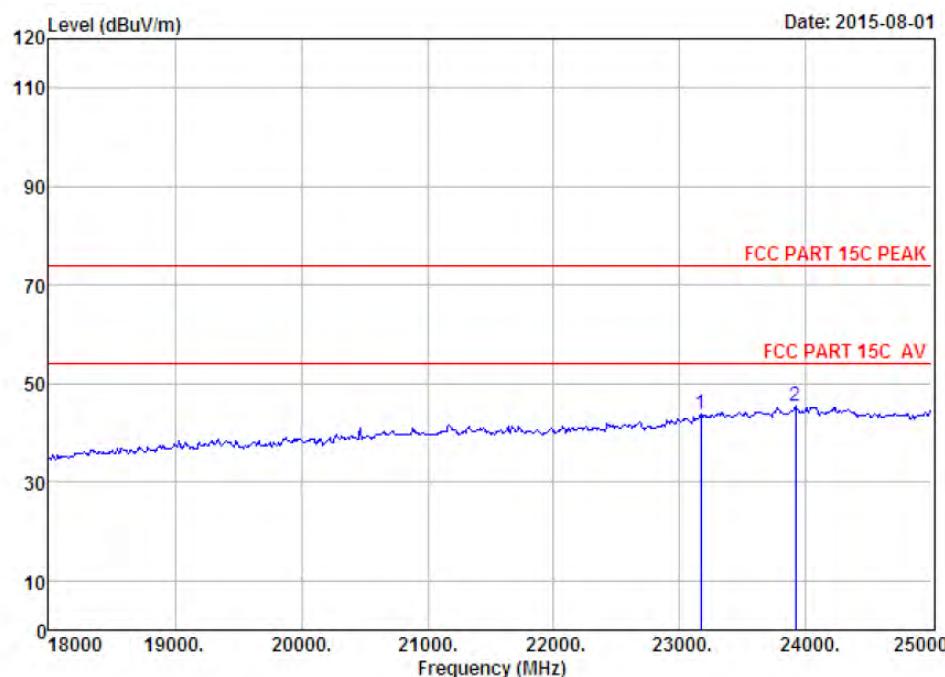
Date: 2015-08-01



Site no. : 1# 966 chamber Data no. : 547  
 Dis. / Ant. : 3m ANT ABOVE 18G Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 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 22914.00	45.64	21.10	33.93	10.93	43.74	74.00	30.26	Peak
2 23880.00	45.63	21.94	32.93	11.15	45.79	74.00	28.21	Peak

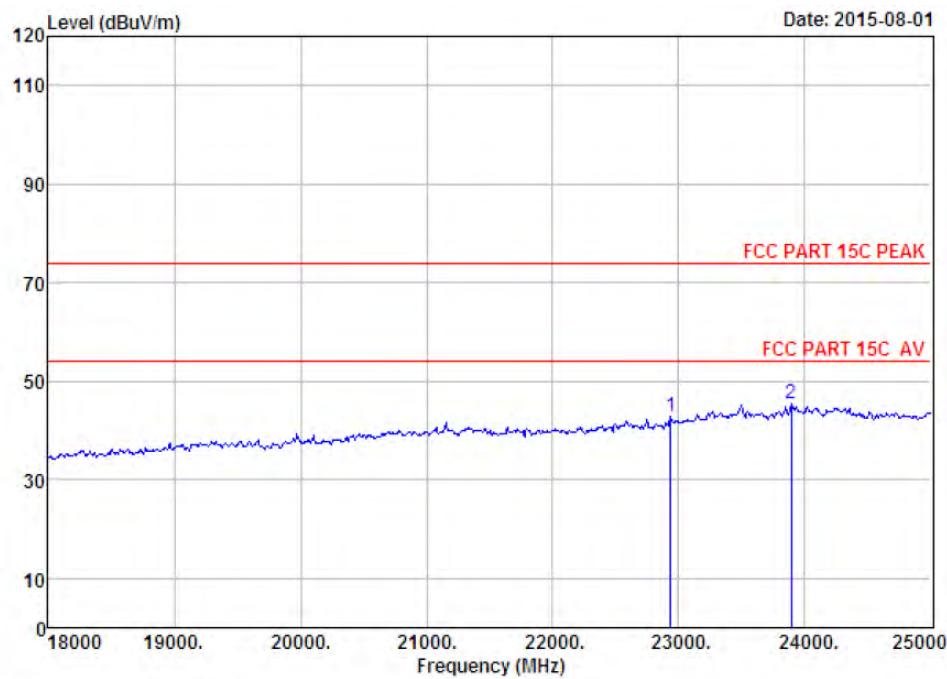
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 548  
 Dis. / Ant. : 3m ANT ABVOE 18G Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : GFSK TX 2402MHz

	Ant.	Cable	Amp	Emission				
Freq. (MHz)	Factor (dB/m)	Loss (dB)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 23166.00	45.63	21.30	33.67	10.53	43.79	74.00	30.21	Peak
2 23915.00	45.62	21.97	32.88	10.61	45.32	74.00	28.68	Peak

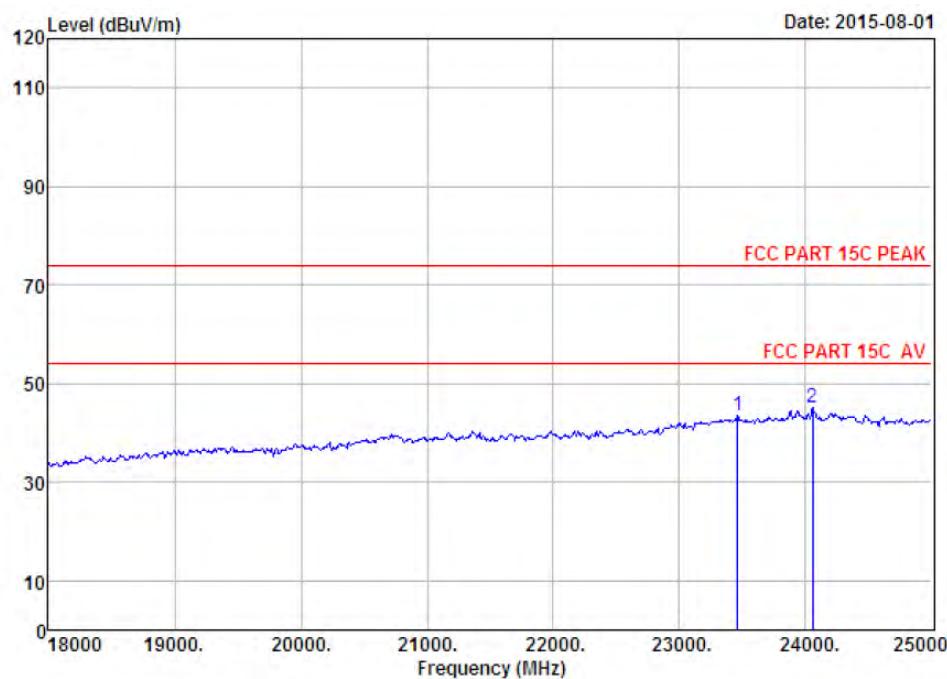
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 549  
 Dis. / Ant. : 3m ANT ABVOE 18G Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : GFSK TX 2441MHz

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Emission				Margin (dB)	Remark
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)			
1 22935.00	45.63	21.11	33.93	9.92	42.73	74.00	31.27		Peak
2 23894.00	45.62	21.95	32.90	10.63	45.30	74.00	28.70		Peak

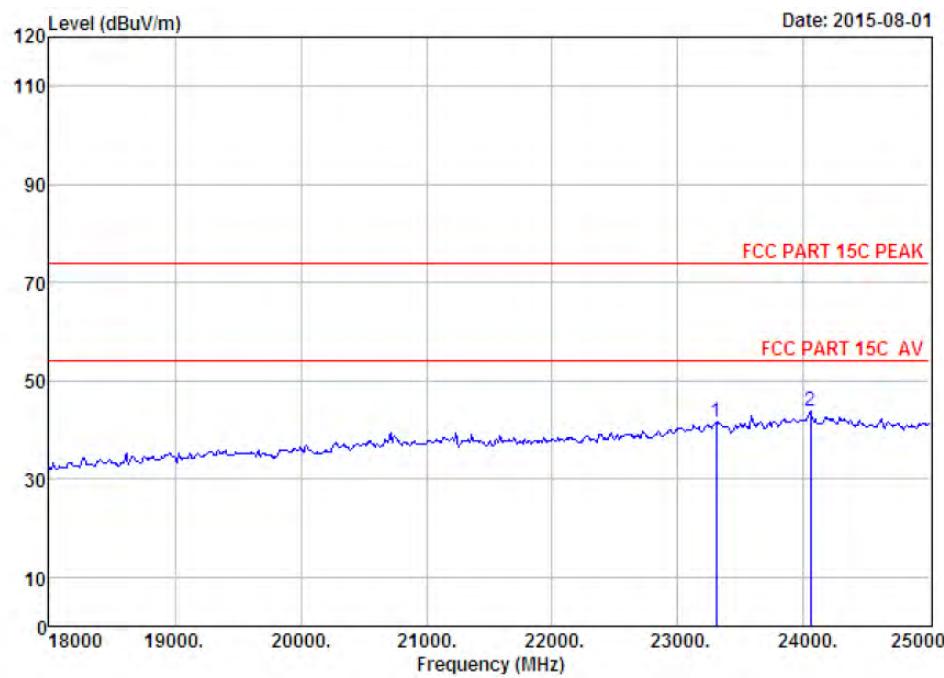
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 550  
 Dis. / Ant. : 3m ANT ABOVE 18G Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : GFSK TX 2441MHz

Freq. (MHz)	Ant. (dB/m)	Cable (dB)	Amp (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 23460.00	45.69	21.56	33.38	9.67	43.54	74.00	30.46	Peak
2 24055.00	45.61	22.08	32.88	10.37	45.18	74.00	28.82	Peak

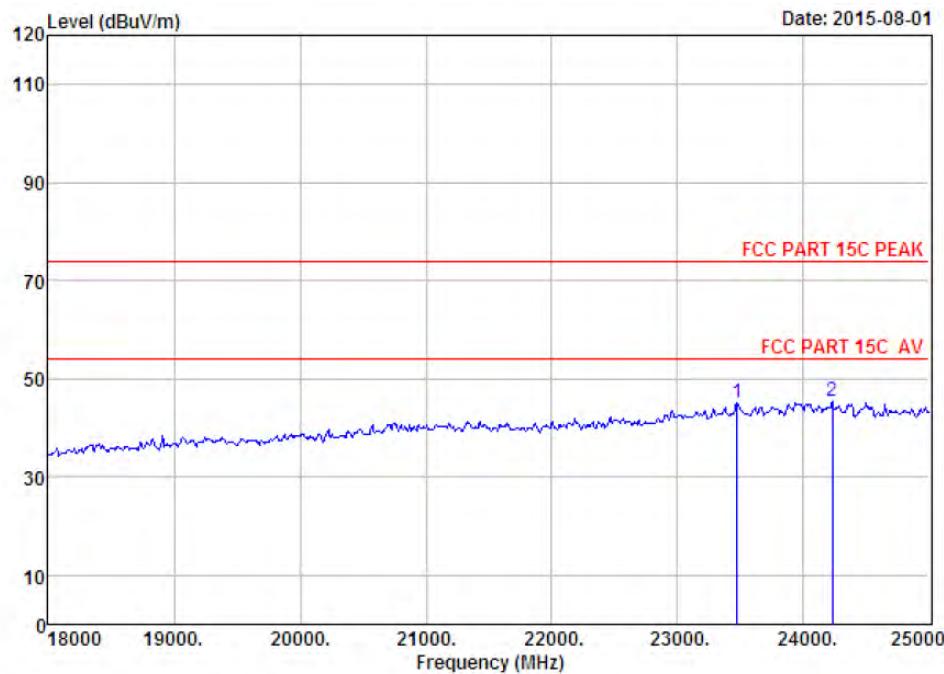
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 551  
 Dis. / Ant. : 3m ANT ABOVE 18G Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : GFSK TX 2480MHz

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Emission				Margin (dB)	Remark
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)			
1 23306.00	45.66	21.43	33.53	7.96	41.52	74.00	32.48	Peak	
2 24055.00	45.61	22.08	32.88	9.16	43.97	74.00	30.03	Peak	

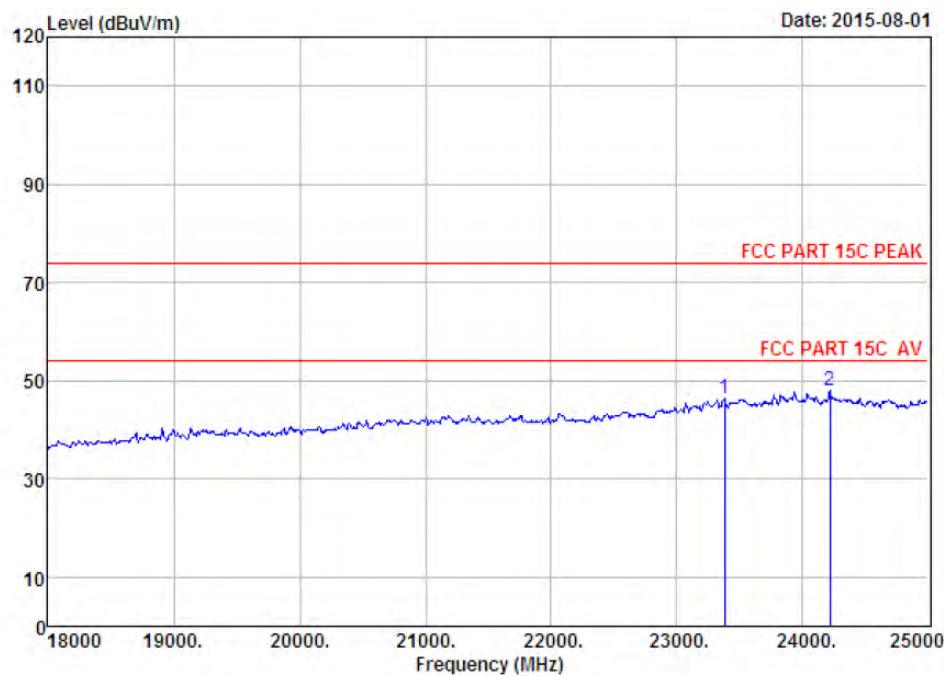
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber                      Data no. : 552  
 Dis. / Ant. : 3m ANT ABVOE 18G              Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : GFSK TX 2480MHz

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission				Margin (dB)	Remark
					Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Margin (dB)		
1 23474.00	45.70	21.57	33.35	11.33	45.25	74.00	28.75	28.75	Peak	
2 24230.00	45.65	22.17	33.15	10.71	45.38	74.00	28.62	28.62	Peak	

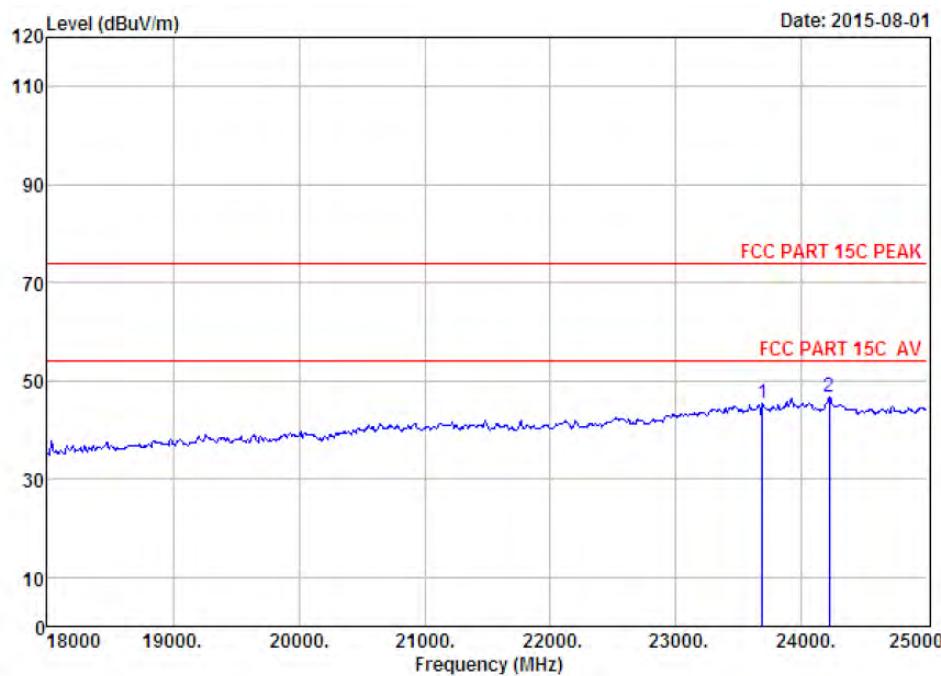
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 553  
 Dis. / Ant. : 3m ANT ABVOE 18G Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : 8-DPSK TX 2402MHz

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Emission				Margin (dB)	Remark
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)			
1 23376.00	45.67	21.48	33.46	12.82	46.51	74.00	27.49	Peak	
2 24216.00	45.65	22.17	33.15	13.38	48.05	74.00	25.95	Peak	

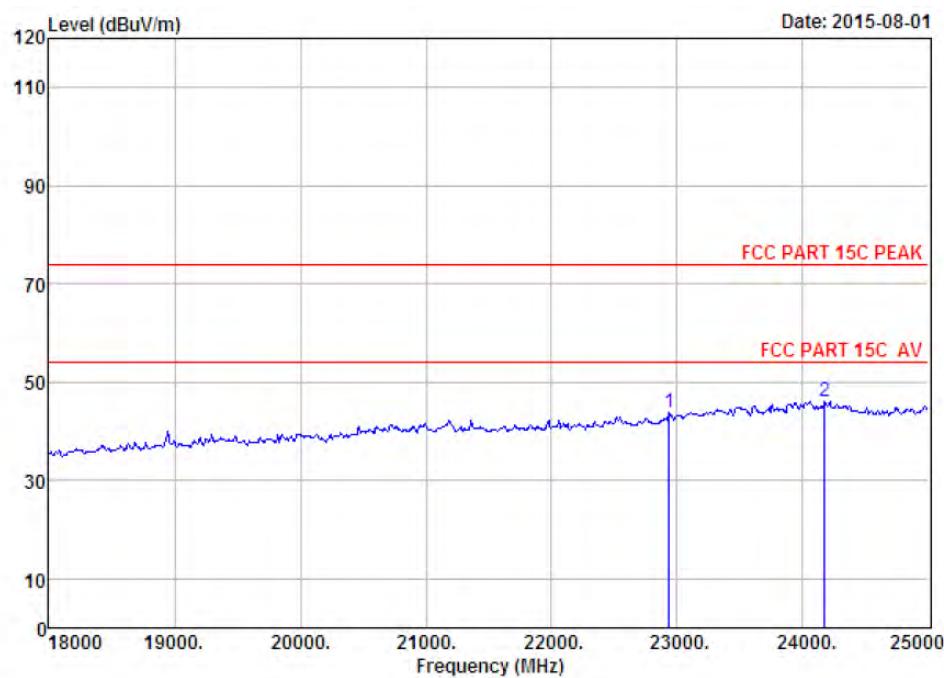
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber                          Data no. : 554  
 Dis. / Ant. : 3m ANT ABOVE 18G                          Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : 8-DPSK TX 2402MHz

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission				Remark
					Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)		
1 23684.00	45.67	21.77	33.14	11.23	45.53	74.00	28.47	Peak	
2 24216.00	45.65	22.17	33.15	12.00	46.67	74.00	27.33	Peak	

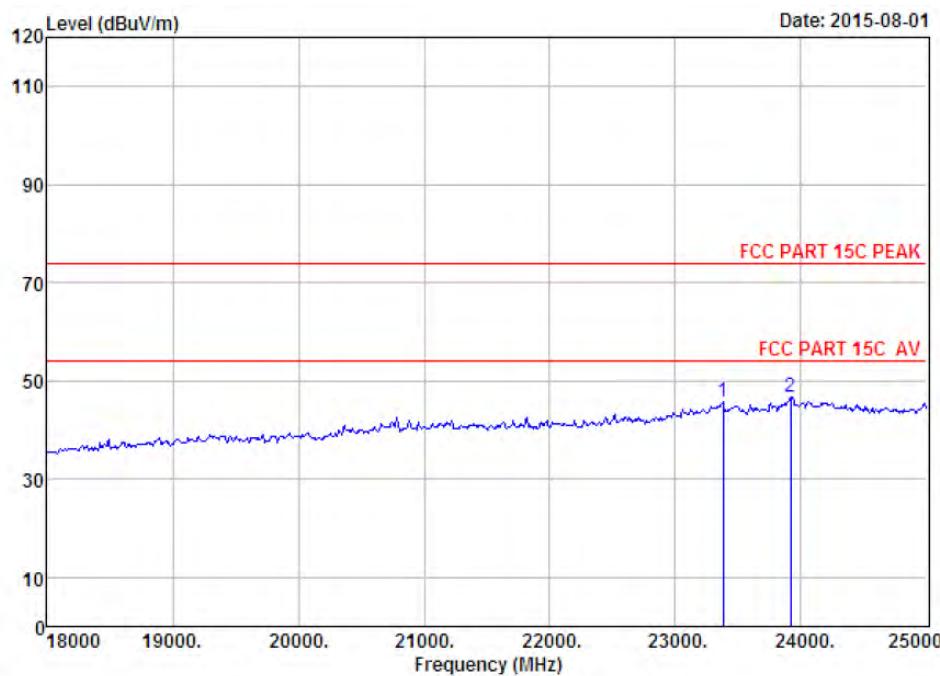
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 555  
 Dis. / Ant. : 3m ANT ABOVE 18G Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : 8-DPSK TX 2441MHz

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission				Remark
					Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)		
1 22935.00	45.63	21.11	33.93	10.92	43.73	74.00	30.27	Peak	
2 24174.00	45.64	22.14	33.07	11.50	46.21	74.00	27.79	Peak	

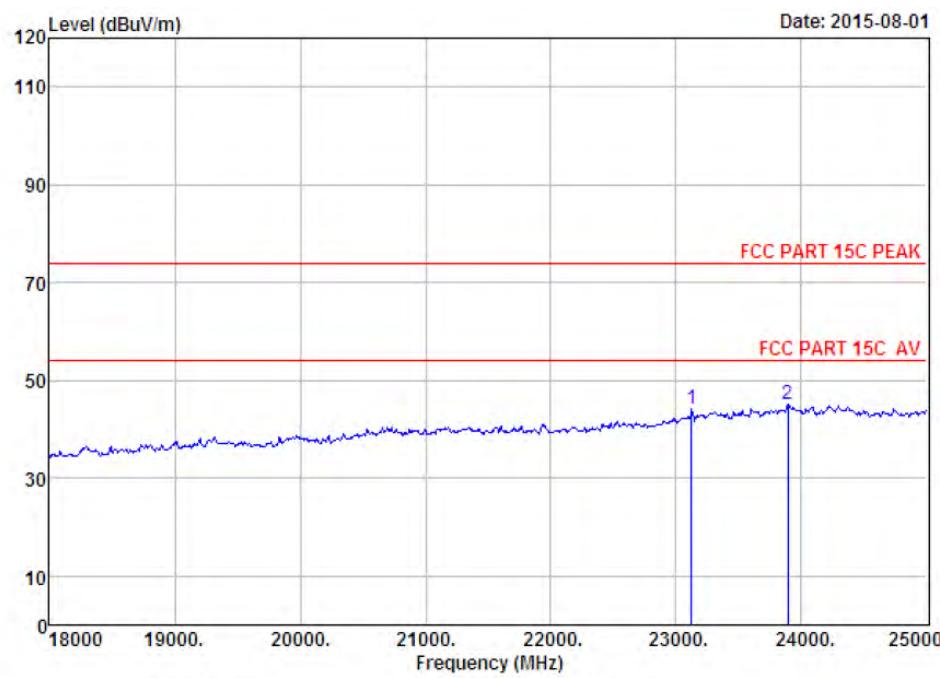
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 556  
 Dis. / Ant. : 3m ANT ABVOE 18G Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : 8-DPSK TX 2441MHz

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission				Remark
					Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)		
1 23376.00	45.67	21.48	33.46	12.19	45.88	74.00	28.12	Peak	
2 23915.00	45.62	21.97	32.88	11.96	46.67	74.00	27.33	Peak	

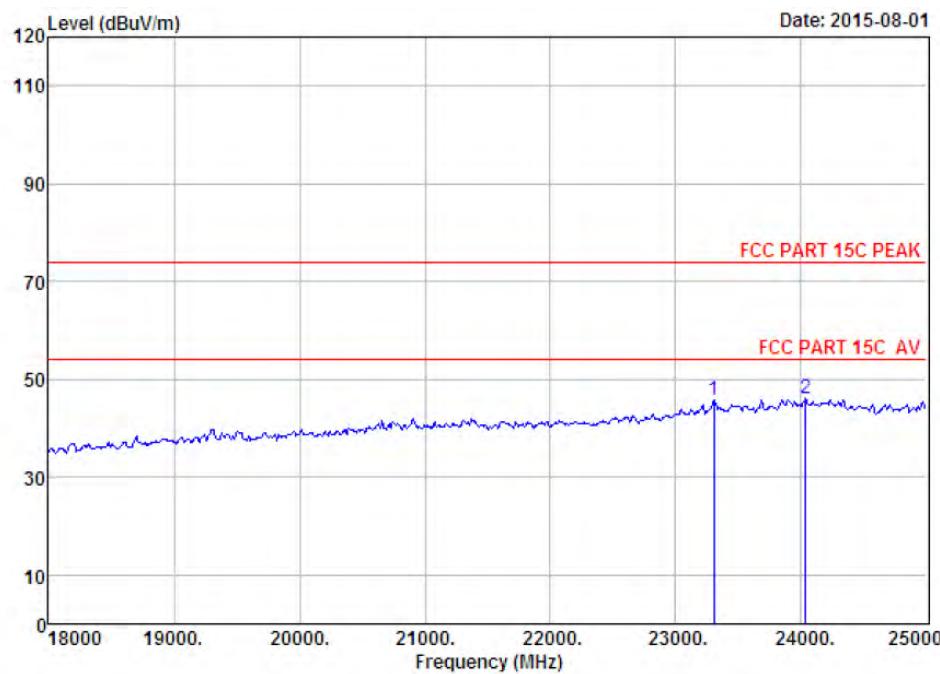
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 557  
 Dis. / Ant. : 3m ANT ABVOE 18G Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : 8-DPSK TX 2480MHz

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Emission				Margin (dB)	Remark
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)			
1 23124.00	45.63	21.26	33.72	10.83	44.00	74.00	30.00	Peak	
2 23894.00	45.62	21.95	32.90	10.46	45.13	74.00	28.87	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. : 1# 966 chamber Data no. : 558  
 Dis. / Ant. : 3m ANT ABOVE 18G Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : 8-DPSK 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	23306.00	45.66	21.43	33.53	12.09	45.65	74.00	28.35	Peak
2	24034.00	45.60	22.06	32.84	11.15	45.97	74.00	28.03	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.

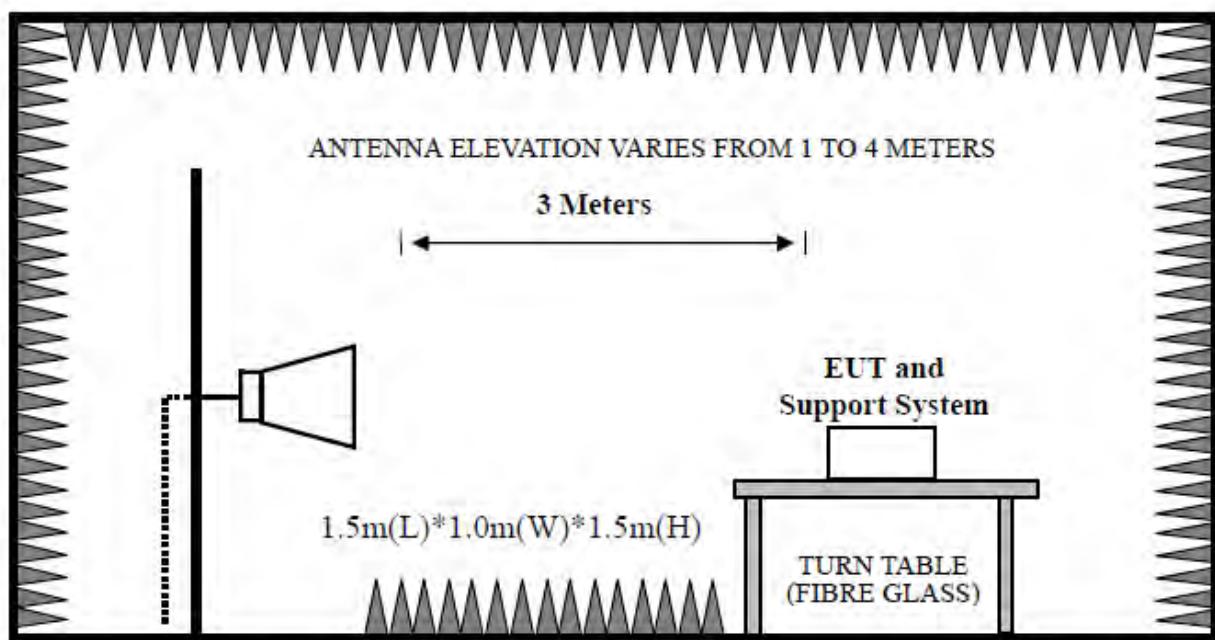
## 9. BAND EDGE COMPLIANCE

### 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

Above 1GHz



### 9.3. Test Procedure

EUT was placed on a turn table, which is 1.5 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

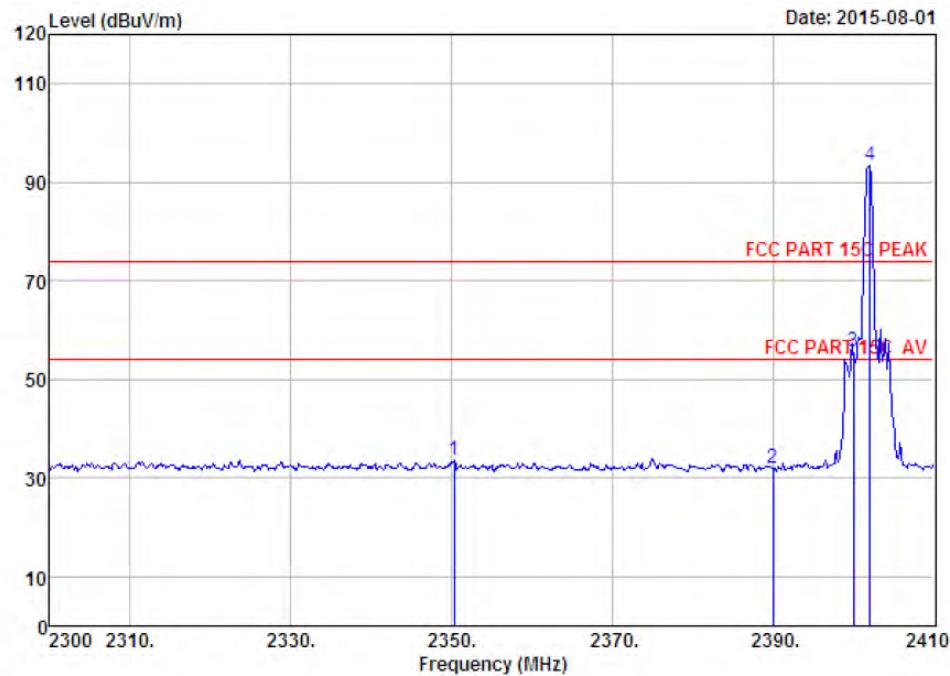
- (a) Peak : RBW = 1MHz, VBW = 1MHz, Detector=PEAK detector, Sweep time = auto
- (b) AV : RBW = 1MHz, VBW = 10Hz, Detector=PEAK detector, Sweep time = auto .

### 9.4. Test Result

EUT: Wireless Soundbar
M/N: R-4B Soundbar
Power: AC 120V/60Hz
Test date: 2015-08-01    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.

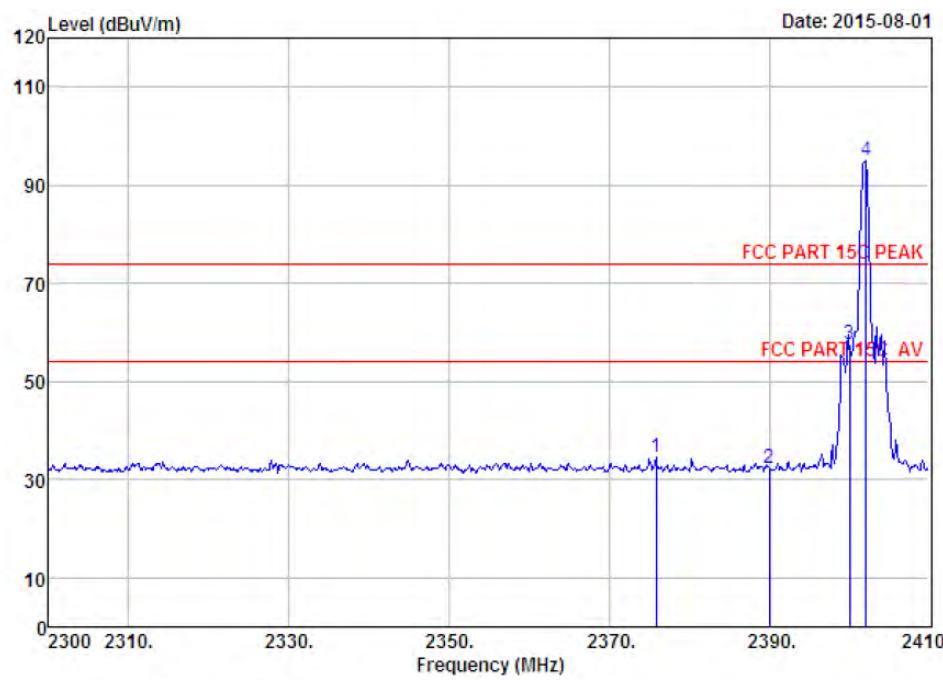
## 9.5. Test Data



Site no. : 1# 966 chamber Data no. : 521  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : GFSK TX 2402MHz(No Hopping)

	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	2350.38	27.70	6.56	34.22	33.45	33.49	74.00	40.51	Peak
2	2390.00	27.64	6.62	34.19	31.79	31.86	74.00	42.14	Peak
3	2400.00	27.61	6.62	34.18	55.49	55.54	74.00	18.46	Peak
4	2402.08	27.61	6.62	34.18	93.53	93.58	74.00	-19.58	Peak

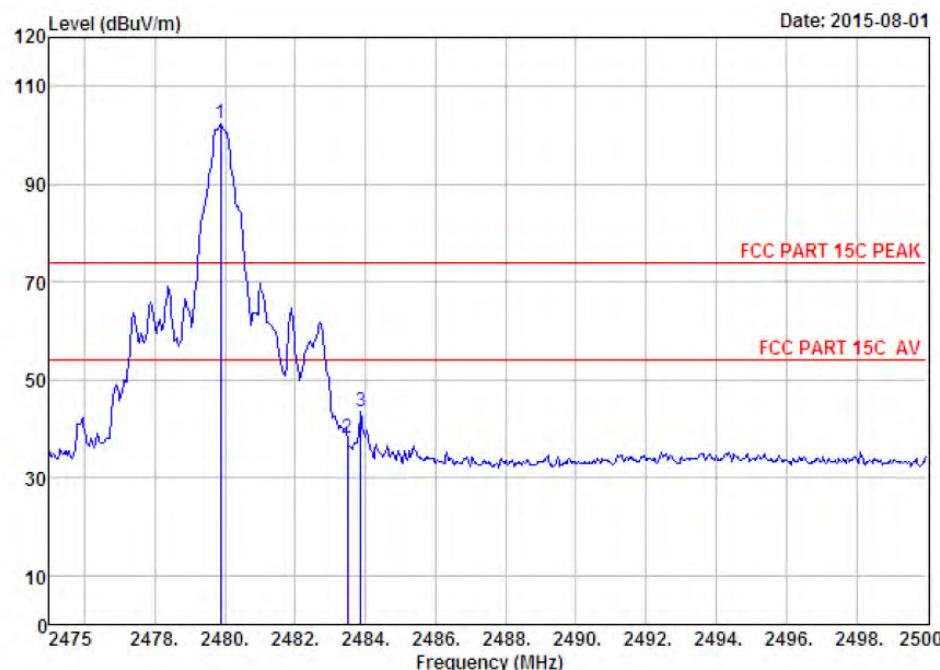
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 522  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : GFSK TX 2402MHz(No Hopping)

	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	2375.90	27.64	6.60	34.19	34.46	34.51	74.00	39.49	Peak
2	2390.00	27.64	6.62	34.19	32.30	32.37	74.00	41.63	Peak
3	2400.00	27.61	6.62	34.18	57.57	57.62	74.00	16.38	Peak
4	2402.08	27.61	6.62	34.18	95.06	95.11	74.00	-21.11	Peak

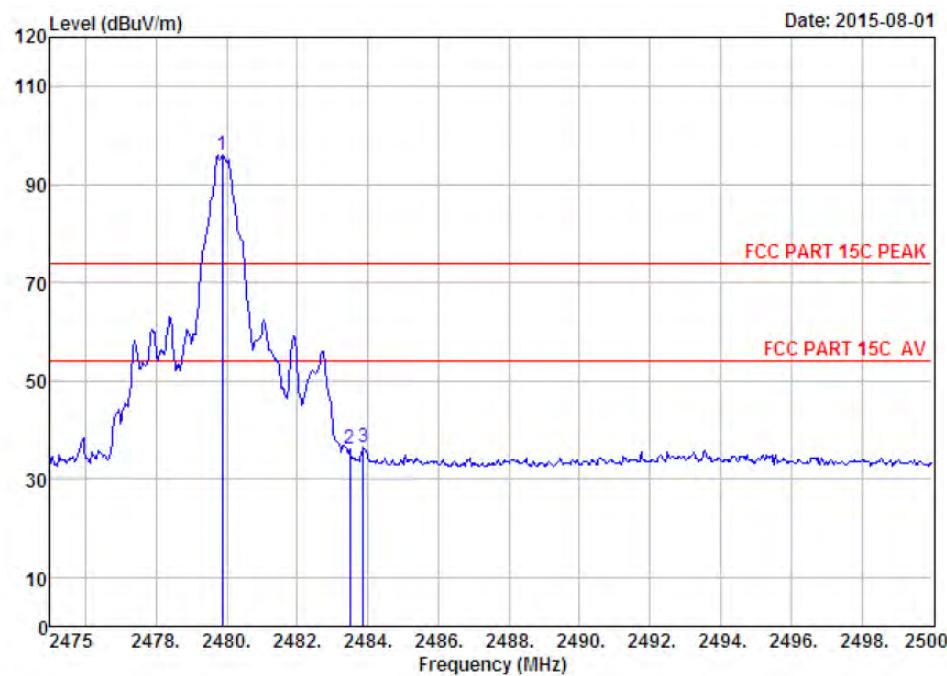
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 527  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : GFSK TX 2480MHz(No Hopping)

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 2479.88	27.58	6.71	34.03	102.29	102.55	74.00	-28.55	Peak
2 2483.50	27.58	6.71	34.03	37.69	37.95	74.00	36.05	Peak
3 2483.88	27.58	6.71	34.03	43.23	43.49	74.00	30.51	Peak

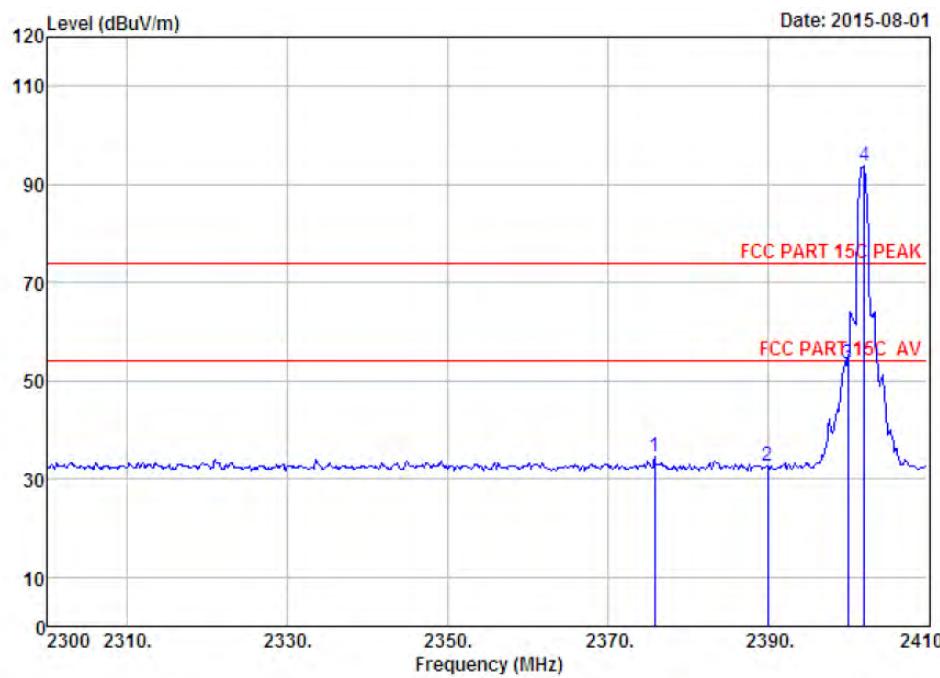
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 528  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : GFSK TX 2480MHz(No Hopping)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission				Remark
					Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)		
1	2479.88	27.58	6.71	34.03	95.75	96.01	74.00	-22.01	Peak
2	2483.50	27.58	6.71	34.03	36.00	36.26	74.00	37.74	Peak
3	2483.88	27.58	6.71	34.03	36.21	36.47	74.00	37.53	Peak

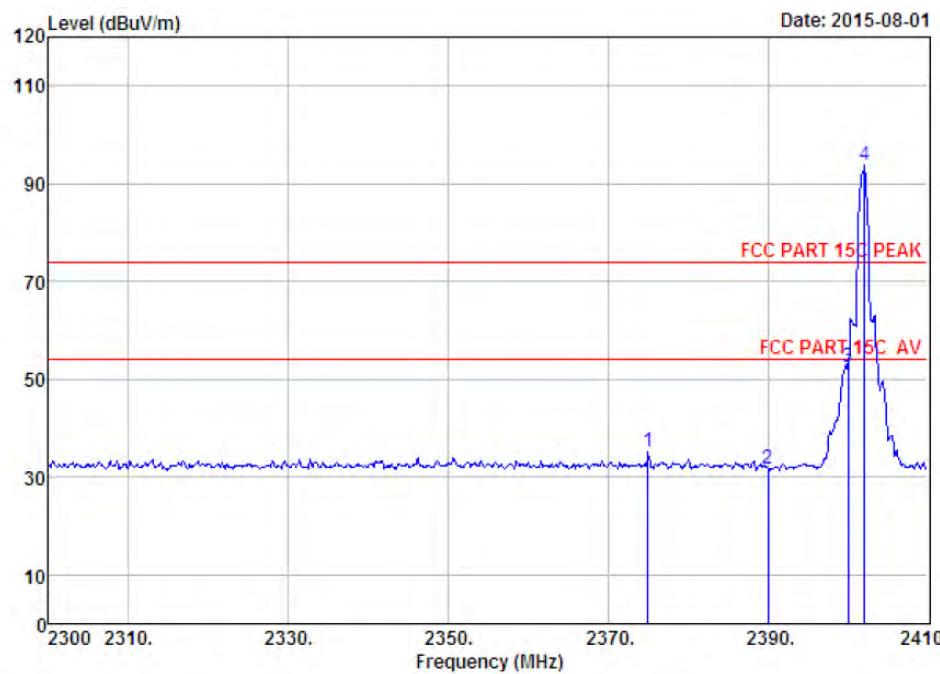
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 531  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : 8-DPSK TX 2402MHz(No Hopping)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Emission				Margin (dB)	Remark
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)			
1 2375.90	27.64	6.60	34.19	34.37	34.42	74.00	39.58		Peak
2 2390.00	27.64	6.62	34.19	32.50	32.57	74.00	41.43		Peak
3 2400.00	27.61	6.62	34.18	53.55	53.60	74.00	20.40		Peak
4 2402.08	27.61	6.62	34.18	93.57	93.62	74.00	-19.62		Peak

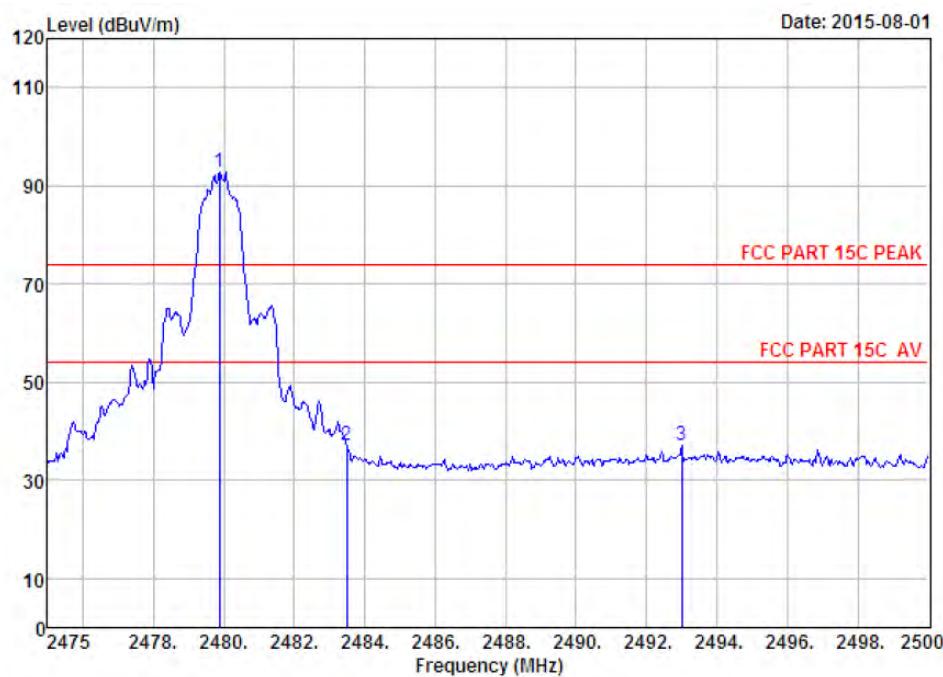
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 532  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : 8-DPSK TX 2402MHz(No Hopping)

	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	2375.02	27.64	6.60	34.19	35.02	35.07	74.00	38.93 Peak
2	2390.00	27.64	6.62	34.19	31.69	31.76	74.00	42.24 Peak
3	2400.00	27.61	6.62	34.18	52.46	52.51	74.00	21.49 Peak
4	2402.08	27.61	6.62	34.18	93.61	93.66	74.00	-19.66 Peak

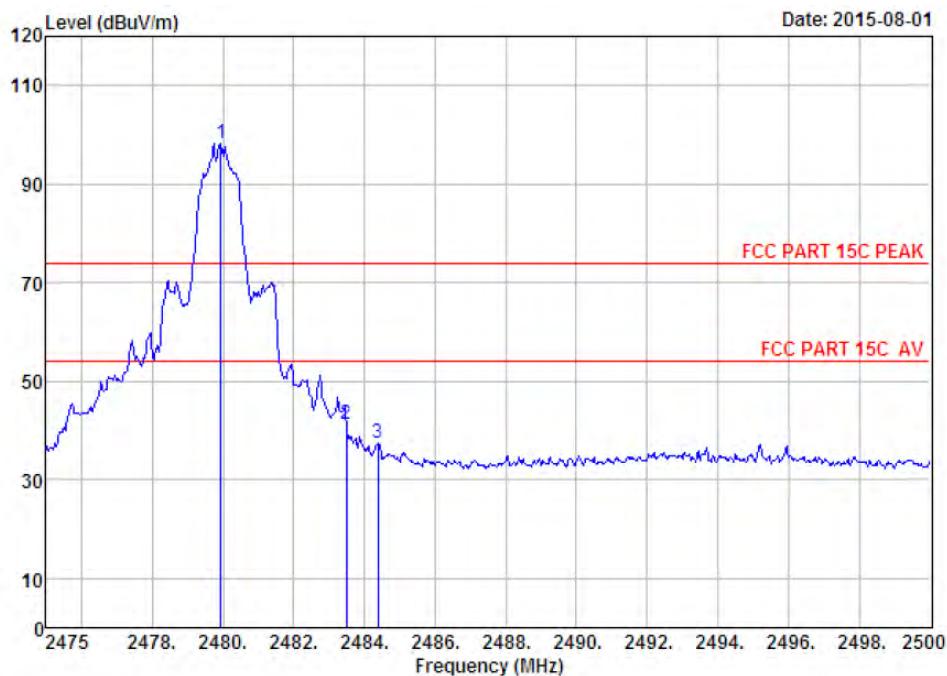
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 537  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : 8-DPSK TX 2480MHz(No Hopping)

	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	2479.88	27.58	6.71	34.03	92.61	92.87	74.00	-18.87	Peak
2	2483.50	27.58	6.71	34.03	36.88	37.14	74.00	36.86	Peak
3	2493.00	27.58	6.73	34.03	36.81	37.09	74.00	36.91	Peak

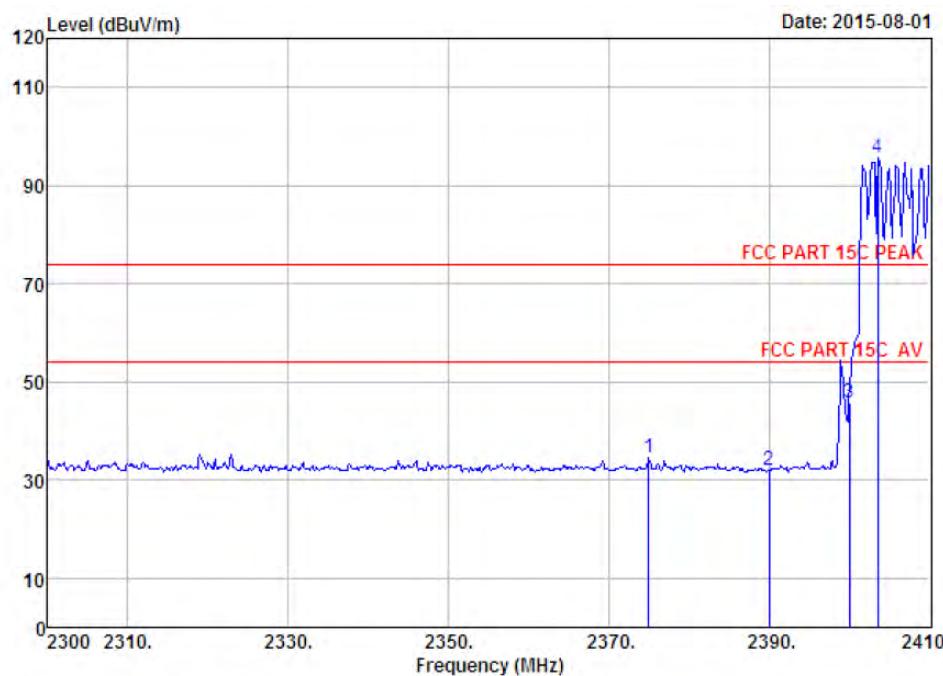
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 538  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : 8-DPSK TX 2480MHz(No Hopping)

	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	2479.95	27.58	6.71	34.03	98.12	98.38	74.00	-24.38	Peak
2	2483.50	27.58	6.71	34.03	41.17	41.43	74.00	32.57	Peak
3	2484.38	27.58	6.71	34.03	37.25	37.51	74.00	36.49	Peak

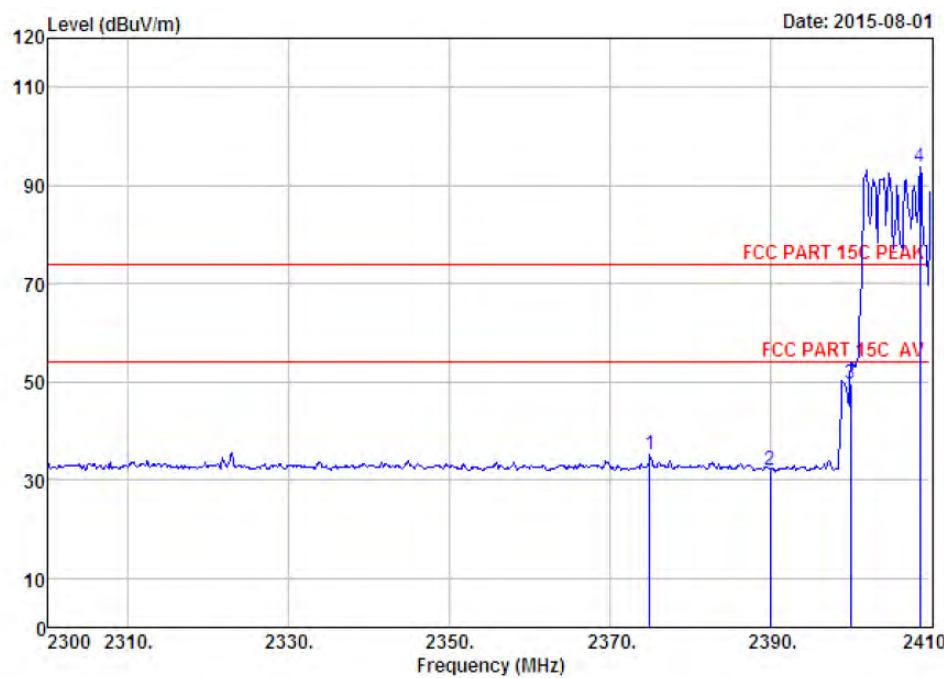
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 539  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : GFSK TX 2402MHz(Hopping On)

	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	2375.02	27.64	6.60	34.59	34.95	34.60	74.00	39.40	Peak
2	2390.00	27.64	6.62	34.62	32.38	32.02	74.00	41.98	Peak
3	2400.00	27.61	6.62	34.64	46.16	45.75	74.00	28.25	Peak
4	2403.62	27.61	6.64	34.64	95.92	95.53	74.00	-21.53	Peak

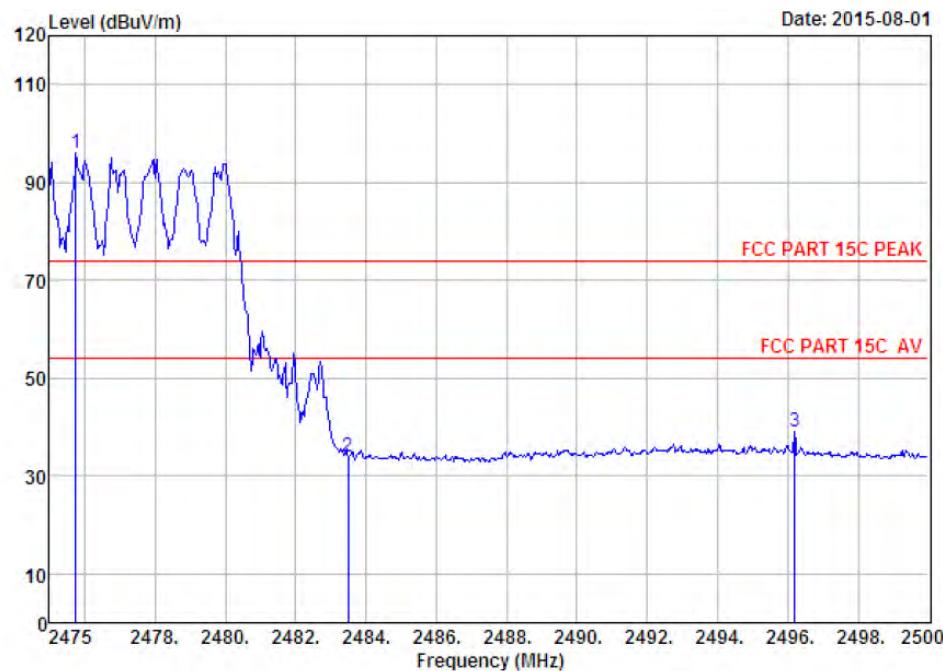
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 540  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 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 2375.02	27.64	6.60	34.59	35.48	35.13	74.00	38.87	Peak
2 2390.00	27.64	6.62	34.62	32.49	32.13	74.00	41.87	Peak
3 2400.00	27.61	6.62	34.64	50.04	49.63	74.00	24.37	Peak
4 2408.68	27.60	6.64	34.64	94.01	93.61	74.00	-19.61	Peak

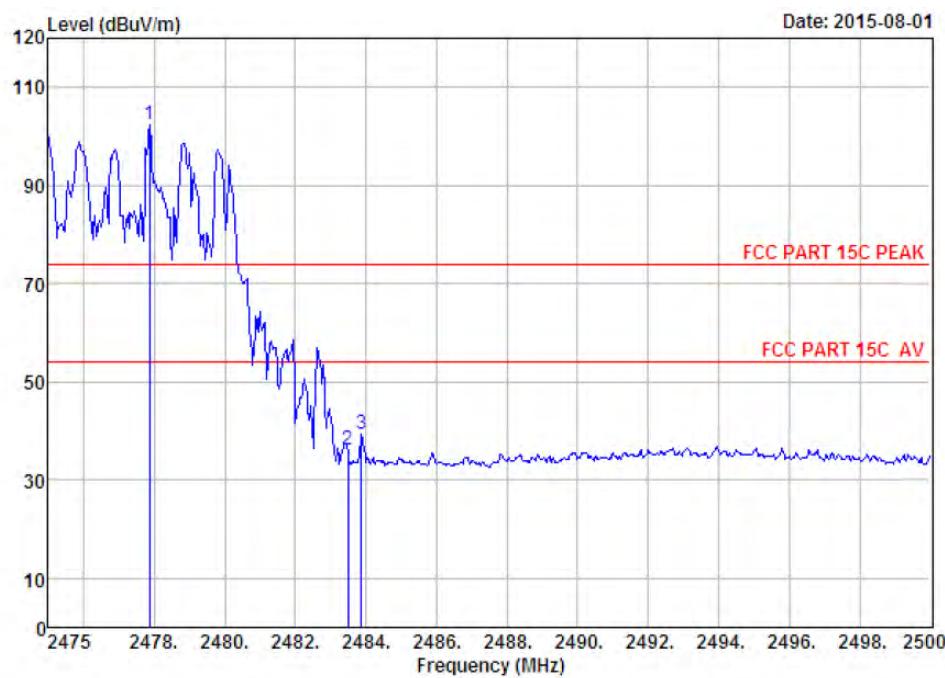
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 541  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : GFSK IX 2480MHz(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	2475.75	27.58	6.71	34.06	95.66	95.89	74.00	-21.89	Peak
2	2483.50	27.58	6.71	34.03	33.60	33.86	74.00	40.14	Peak
3	2496.20	27.57	6.73	34.00	38.74	39.04	74.00	34.96	Peak

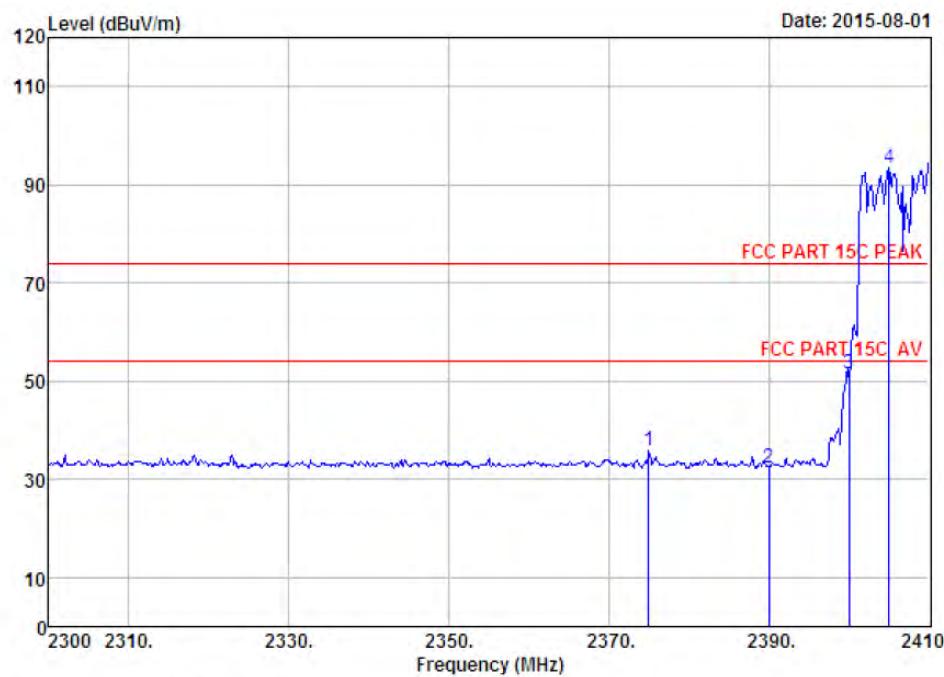
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 542  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : GFSK TX 2480MHz(Hopping On)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission				Remark
					Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)		
1 2477.88	27.58	6.71	34.03	102.26	102.52	74.00	-28.52	Peak	
2 2483.50	27.58	6.71	34.03	35.90	36.16	74.00	37.84	Peak	
3 2483.88	27.58	6.71	34.03	39.12	39.38	74.00	34.62	Peak	

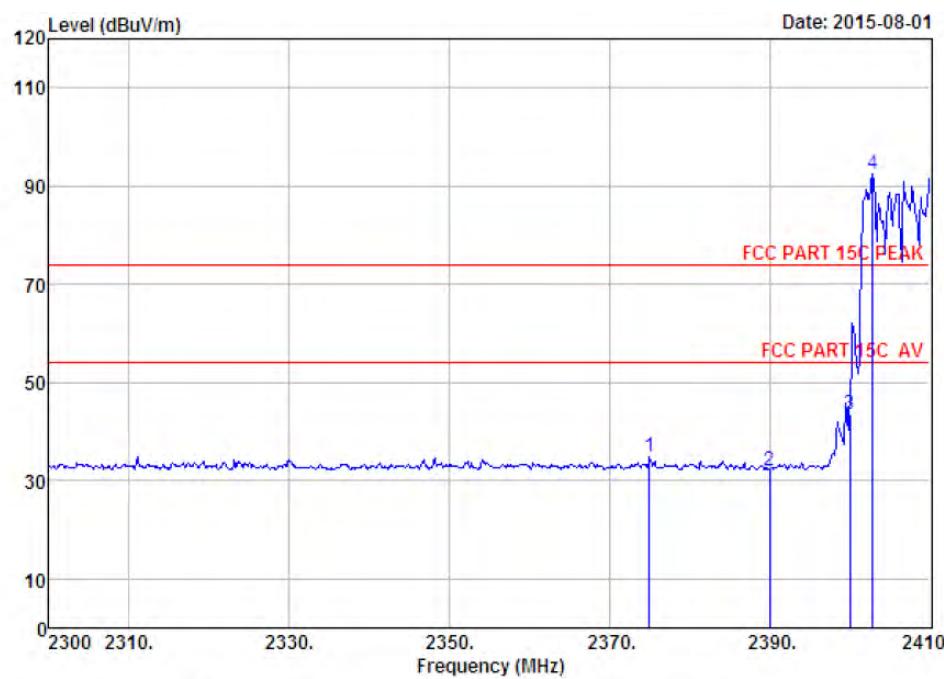
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 543  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : 8-DPSK TX 2402MHz(Hopping On)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission				Margin (dB)	Remark
					Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)			
1 2375.02	27.64	6.60	34.19	35.64	35.69	74.00	38.31		Peak	
2 2390.00	27.64	6.62	34.19	32.32	32.39	74.00	41.61		Peak	
3 2400.00	27.61	6.62	34.18	51.41	51.46	74.00	22.54		Peak	
4 2405.05	27.61	6.64	34.18	93.33	93.40	74.00	-19.40		Peak	

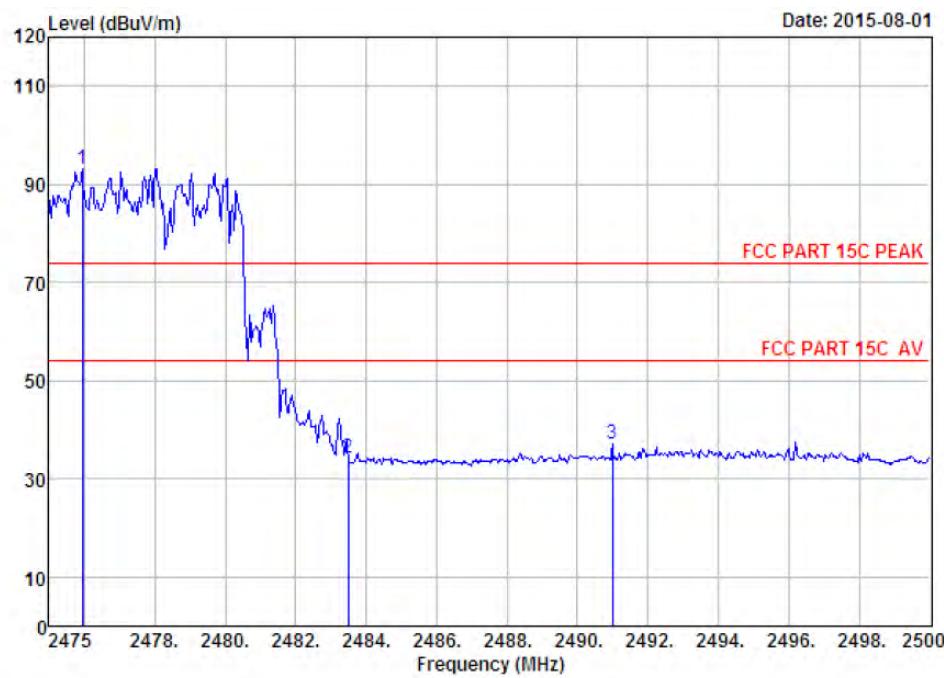
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 544  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : 8-DPSK TX 2402MHz(Hopping On)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Emission				Margin (dB)	Remark
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)			
1 2375.02	27.64	6.60	34.19	34.98	35.03	74.00	38.97	Peak	
2 2390.00	27.64	6.62	34.19	32.01	32.08	74.00	41.92	Peak	
3 2400.00	27.61	6.62	34.18	43.55	43.60	74.00	30.40	Peak	
4 2402.85	27.61	6.64	34.18	92.38	92.45	74.00	-18.45	Peak	

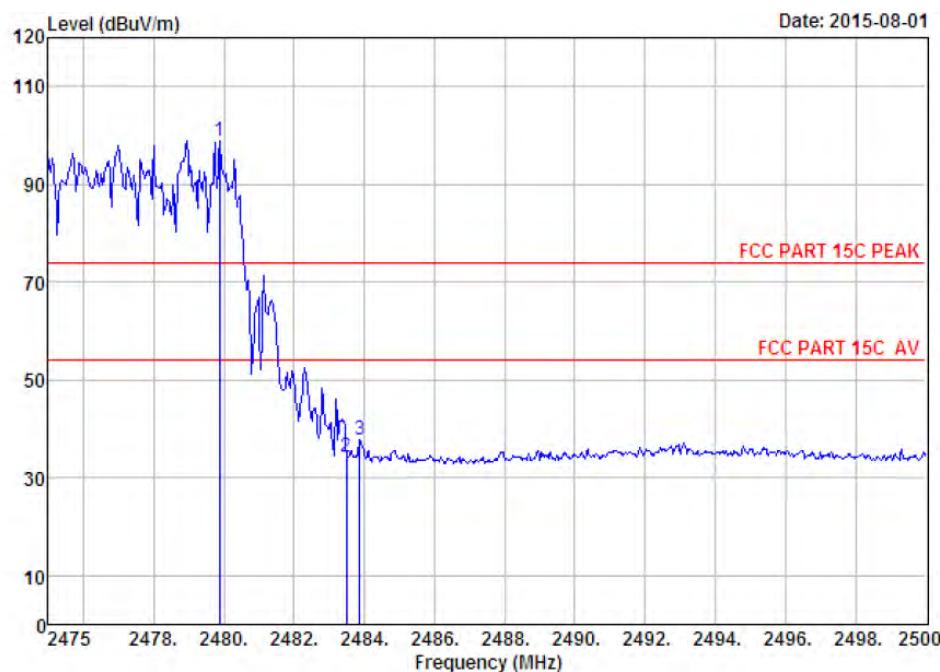
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 545  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : 8-DPSK TX 2480MHz(Hopping On)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Emission			Margin (dB)	Remark
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)		
1 2475.95	27.58	6.71	34.06	93.00	93.23	74.00	-19.23	Peak
2 2483.50	27.58	6.71	34.03	33.87	34.13	74.00	39.87	Peak
3 2491.00	27.58	6.73	34.03	36.85	37.13	74.00	36.87	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. : 1# 966 chamber Data no. : 546  
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL  
 Limit : FCC PART 15C PEAK  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : 8-DPSK TX 2480MHz(Hopping On)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Emission				Margin (dB)	Remark
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)			
1 2479.88	27.58	6.71	34.03	98.63	98.89	74.00	-24.89		Peak
2 2483.50	27.58	6.71	34.03	34.00	34.26	74.00	39.74		Peak
3 2483.88	27.58	6.71	34.03	37.51	37.77	74.00	36.23		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 EMISSION TEST

### 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 Power connected to the power mains through a line impedance stabilization network (L.I.S.N. 1#). This provides a 50 ohm coupling impedance for the EUT (Please refer the block diagram of the test setup and photographs). The AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10: 2013 on Conducted Emission Test.

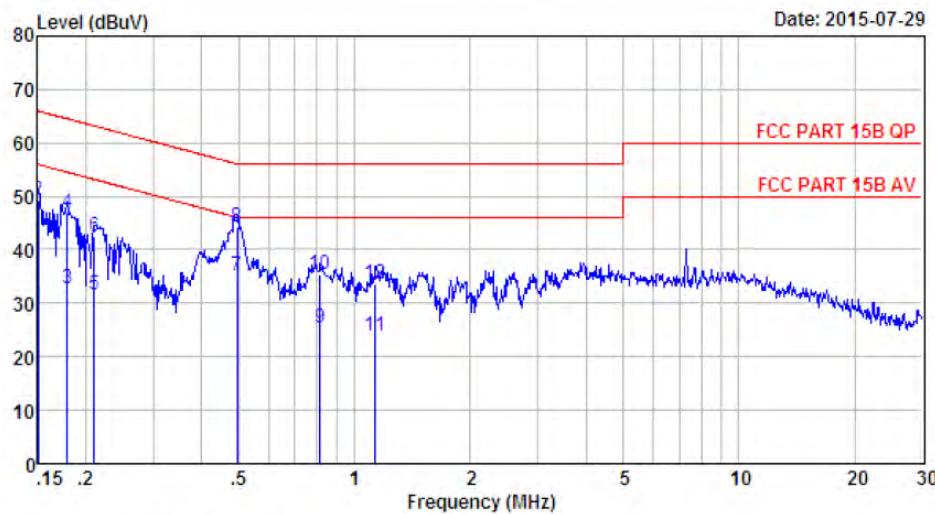
The bandwidth of test receiver (R & S ESHS30) is set at 10kHz.

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

### 10.3. Result

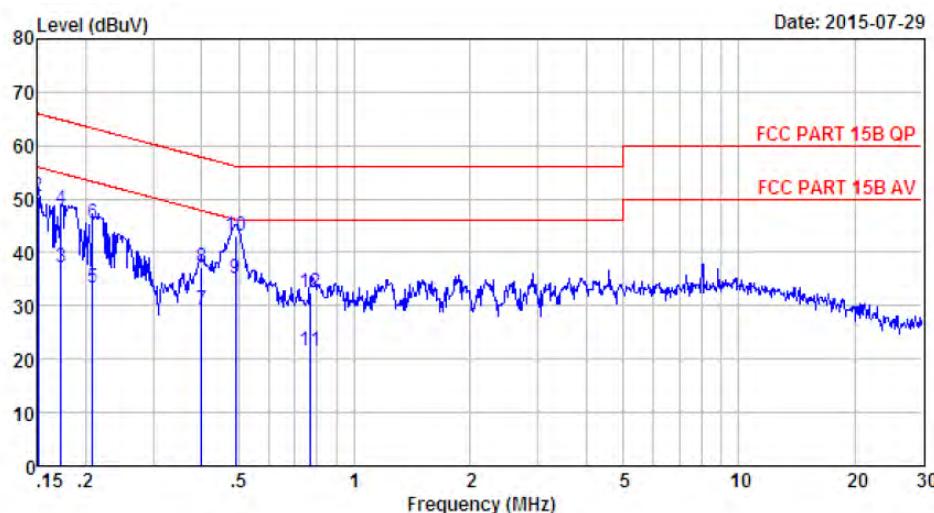
**PASS.** (All emissions not reported below are too low against the prescribed limits.)

## 10.4.Data



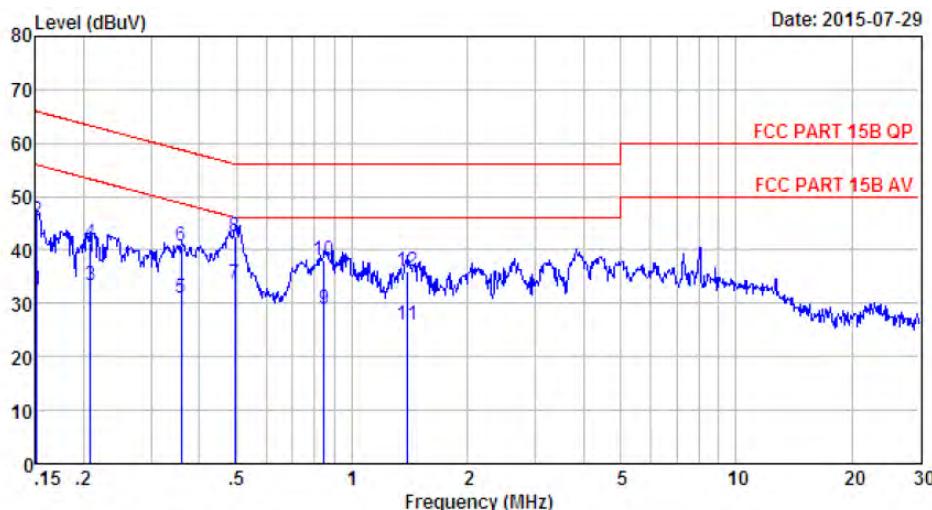
Site no : 844 Shield Room  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa NEUTRAL  
 Limit : FCC PART 15B QP  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : TX Mode

	LISN	Cable	Emission				Remark
Freq. (MHz)	Factor (dB)	Loss (dB)	Reading (dBuV)	Level (dBuV)	Limits (dBuV)	Margin (dB)	
1	0.15	9.46	9.81	10.12	29.39	56.00	26.61 Average
2	0.15	9.46	9.81	30.12	49.39	66.00	16.61 QP
3	0.18	9.54	9.80	13.57	32.91	54.55	21.64 Average
4	0.18	9.54	9.80	27.57	46.91	64.55	17.64 QP
5	0.21	9.60	9.80	12.14	31.54	53.18	21.64 Average
6	0.21	9.60	9.80	23.14	42.54	63.18	20.64 QP
7	0.49	9.59	9.81	15.87	35.27	46.10	10.83 Average
8	0.49	9.59	9.81	24.87	44.27	56.10	11.83 QP
9	0.81	9.62	9.81	6.00	25.43	46.00	20.57 Average
10	0.81	9.62	9.81	16.00	35.43	56.00	20.57 QP
11	1.14	9.61	9.81	4.35	23.77	46.00	22.23 Average
12	1.14	9.61	9.81	14.35	33.77	56.00	22.23 QP



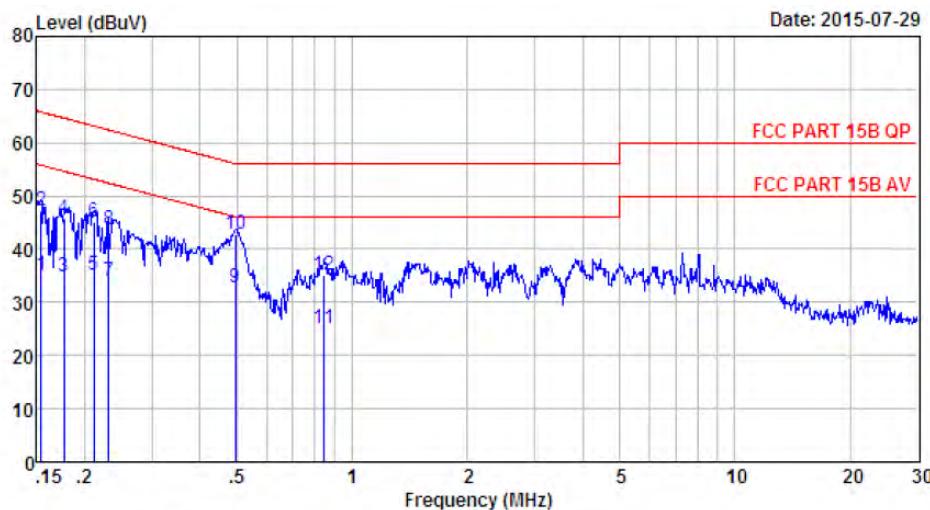
Site no : 844 Shield Room  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa LINE  
 Limit : FCC PART 15B QP  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 120V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : TX Mode

Freq. (MHz)	LISN (dB)	Cable (dB)	Emission			Margin (dB)	Remark
			Factor	Loss	Reading (dBuV)	Level (dBuV)	
1	0.15	9.61	9.81	11.95	31.37	56.00	Average
2	0.15	9.61	9.81	30.95	50.37	66.00	QP
3	0.17	9.61	9.81	17.63	37.05	54.86	17.81
4	0.17	9.61	9.81	28.63	48.05	64.86	16.81
5	0.21	9.61	9.80	13.96	33.37	53.27	19.90
6	0.21	9.61	9.80	25.96	45.37	63.27	17.90
7	0.40	9.61	9.82	9.77	29.20	47.86	18.66
8	0.40	9.61	9.82	17.77	37.20	57.86	20.66
9	0.49	9.61	9.81	15.80	35.22	46.14	10.92
10	0.49	9.61	9.81	23.80	43.22	56.14	12.92
11	0.77	9.60	9.81	2.10	21.51	46.00	24.49
12	0.77	9.60	9.81	13.10	32.51	56.00	23.49



Site no : 844 Shield Room  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa NEUTRAL  
 Limit : FCC PART 15B QP  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 240V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : TX Mode

Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Emission				Remark
			Reading (dBuV)	Level (dBuV)	Limits (dBuV)	Margin (dB)	
1	0.15	9.46	9.81	13.24	32.51	55.96	23.45 Average
2	0.15	9.46	9.81	26.24	45.51	65.96	20.45 QP
3	0.21	9.60	9.80	13.96	33.36	53.27	19.91 Average
4	0.21	9.60	9.80	21.96	41.36	63.27	21.91 QP
5	0.36	9.59	9.82	11.45	30.86	48.74	17.88 Average
6	0.36	9.59	9.82	21.45	40.86	58.74	17.88 QP
7	0.49	9.59	9.81	14.20	33.60	46.10	12.50 Average
8	0.49	9.59	9.81	23.20	42.60	56.10	13.50 QP
9	0.84	9.62	9.82	9.53	28.97	46.00	17.03 Average
10	0.84	9.62	9.82	18.53	37.97	56.00	18.03 QP
11	1.40	9.61	9.82	6.44	25.87	46.00	20.13 Average
12	1.40	9.61	9.82	16.44	35.87	56.00	20.13 QP



Site no : 844 Shield Room  
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa LINE  
 Limit : FCC PART 15B QP  
 Engineer : Tony  
 EUT : Wireless Soundbar  
 Power : DC 18V From Adapter Input AC 240V/60Hz  
 M/N : R-4B Soundbar  
 Test Mode : TX Mode

Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Emission				Remark
			Reading (dBuV)	Level (dBuV)	Limits (dBuV)	Margin (dB)	
1 0.15	9.61	9.81	15.70	35.12	55.78	20.66	Average
2 0.15	9.61	9.81	27.70	47.12	65.78	18.66	QP
3 0.18	9.61	9.80	15.46	34.87	54.64	19.77	Average
4 0.18	9.61	9.80	26.46	45.87	64.64	18.77	QP
5 0.21	9.61	9.80	15.70	35.11	53.14	18.03	Average
6 0.21	9.61	9.80	25.70	45.11	63.14	18.03	QP
7 0.23	9.61	9.80	14.40	33.81	52.39	18.58	Average
8 0.23	9.61	9.80	24.40	43.81	62.39	18.58	QP
9 0.49	9.61	9.81	13.28	32.70	46.10	13.40	Average
10 0.49	9.61	9.81	23.28	42.70	56.10	13.40	QP
11 0.84	9.62	9.82	5.56	25.00	46.00	21.00	Average
12 0.84	9.62	9.82	15.56	35.00	56.00	21.00	QP

## 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 Integrated PCB 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 3.14 dBi.