

FCC Test Report

Product Name	Play-Fi Wireless Speaker
Model No	W7
FCC ID.	IPUW7SPEAKER

Applicant	DEI Sales Inc. dba Definitive Technology
Address	One Viper Way Vista California United States 92081

Date of Receipt	May 27, 2014
Issue Date	Aug. 08, 2014
Report No.	1460042R-RFUSP26V00
Report Version	V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

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Test Report

Issue Date: Aug. 08, 2014

Report No.: 1460042R-RFUSP26V00



Product Name	Play-Fi Wireless Speaker
Applicant	DEI Sales Inc. dba Definitive Technology
Address	One Viper Way Vista California United States 92081
Manufacturer	DEI Sales Inc. dba Definitive Technology
Model No.	W7
EUT Rated Voltage	AC 100-240V, 50-60Hz
EUT Test Voltage	AC 120V/60Hz
Trade Name	D. (Definitive Technology)
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2013 ANSI C63.10: 2009, FCC KDB-558074
Test Result	Complied

Documented By

A handwritten signature in blue ink that reads "Joanne Lin".

(Senior Adm. Specialist / Joanne Lin)

Tested By

A handwritten signature in blue ink that reads "Alan Chen".

(Engineer / Alan Chen)

Approved By

A handwritten signature in black ink that reads "Vincent Lin".

(Director / Vincent Lin)

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Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Play-Fi Wireless Speaker
Trade Name	D. (Definitive Technology)
Model No.	W7
FCC ID.	IPUW7SPEAKER
Frequency Range	802.11b/g/n-20MHz:2412-2462MHz,802.11n-40MHz:2422-2452MHz 802.11a/n-20MHz:5745-5825MHz ,802.11n-40MHz:5755-5795MHz
Number of Channels	802.11b/g/n-20MHz: 11, n-40MHz: 7 802.11a/n-20MHz: 5, n-40MHz: 2
Data Speed	802.11b: 1-11Mbps, 802.11a/g: 6-54Mbps, 802.11n: up to 150Mbps
Channel separation	802.11b/g/n-20MHz: 5 MHz, 802.11a/n-20MHz: 20MHz 802.11n-40MHz: 40MHz
Type of Modulation	802.11b:DSSS, DBPSK, DQPSK, CCK 802.11a/g/n: OFDM, BPSK, QPSK, 16QAM, 64QAM
Antenna Type	PIFA
Antenna Gain	Refer to the table “Antenna List”
Channel Control	Auto
Power Cable	Shielded, 1.8m
Contain Module	LITEON / WN3500M

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	MAGLAYERS	MSA-3310-25GC4-A2 MSA-3310-25GC4-A5	PIFA Antenna	2.28 dBi in 2.4GHz 1.50 dBi in 5.725~5.850GHz

Note: The antenna of EUT is conform to FCC 15.203

802.11b/g/n-20MHz Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 01:	2412 MHz	Channel 02:	2417 MHz	Channel 03:	2422 MHz	Channel 04:	2427 MHz
Channel 05:	2432 MHz	Channel 06:	2437 MHz	Channel 07:	2442 MHz	Channel 08:	2447 MHz
Channel 09:	2452 MHz	Channel 10:	2457 MHz	Channel 11:	2462 MHz		

802.11n-40MHz (2.4G Band) Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 3:	2422 MHz	Channel 4:	2427 MHz	Channel 5:	2432 MHz	Channel 6:	2437 MHz
Channel 7:	2442 MHz	Channel 8:	2447 MHz	Channel 9:	2452 MHz		

802.11a/n-20MHz Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 149:	5745 MHz	Channel 153:	5765 MHz	Channel 157:	5785 MHz	Channel 161:	5805 MHz
Channel 165:	5825 MHz						

802.11n-40MHz (5G Band) Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency
Channel 151:	5755 MHz	Channel 159:	5795 MHz

Note:

1. This device is a Play-Fi Wireless Speaker with a built-in 2.4GHz and 5GHz WLAN transceiver.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report. (802.11b is 1Mbps 、802.11g is 6Mbps 、802.11n(20M-BW) is 7.2Mbps and 、802.11n(40M-BW) is 15Mbps).
4. These tests are conducted on a sample for the purpose of demonstrating compliance of 802.11a/b/g/n transmitter with Part 15 Subpart C Paragraph 15.247 of spread spectrum devices.

Test Mode:	Mode 1: Transmit (802.11b 1Mbps)
	Mode 2: Transmit (802.11g 6Mbps)
	Mode 3: Transmit - 802.11a 6Mbps
	Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band)
	Mode 5: Transmit - 802.11n-40BW_15Mbps(2.4G Band)
	Mode 6: Transmit - 802.11n-20BW_7.2Mbps(5G Band)
	Mode 7: Transmit - 802.11n-40BW_15Mbps(5G Band)

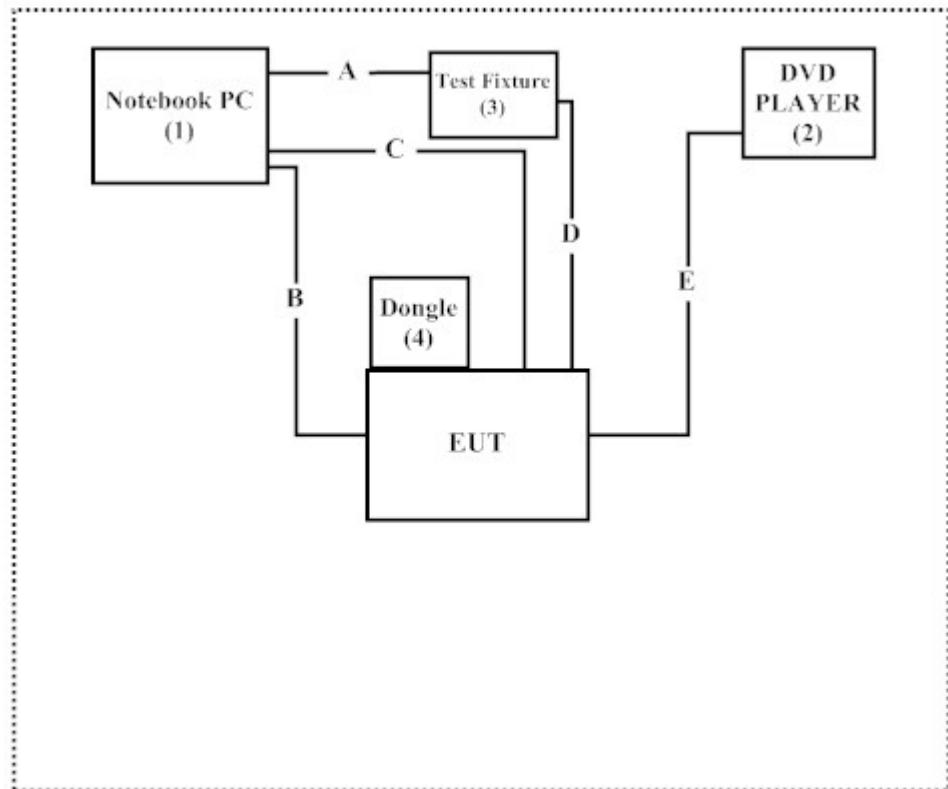
1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook PC	DELL	PPT	N/A	Non-Shielded, 0.8m
2	DVD PLAYER	Pioneer	DV-600AV	GJKD006378LS	Non-Shielded, 1.8m
3	Test Fixture	Meiloon	N/A	N/A	N/A
4	Dongle	Transcend	N/A	N/A	N/A

Signal Cable Type		Signal cable Description
A	RS-232 to RS-232 Cable	Shielded, 1.8m
B	Audio Cable	Shielded, 1.8m
C	LAN Cable	Shielded, 1.2m
D	Signal Cable	Non-Shielded, 0.3m
E	Fiber Cable	Shielded, 1.0m

1.4. Configuration of Tested System



1.5. EUT Exercise Software

- (1) Setup the EUT as shown in Section 1.4.
- (2) Execute software “Tera Term V.4.67” on the Notebook PC.
- (3) Configure the test mode, the test channel, and the data rate.
- (4) Press “OK” to start the continuous Transmit.
- (5) Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site : <http://www.quietek.com/tw/ctg/cts/accreditations.htm>

The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : <http://www.quietek.com/>

Site Description: File on
Federal Communications Commission
FCC Engineering Laboratory
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Registration Number: 92195

Site Name: Quietek Corporation
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Linkou Dist., New Taipei City 24451,
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TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789
E-Mail : service@quietek.com

FCC Accreditation Number: TW1014

2. Conducted Emission

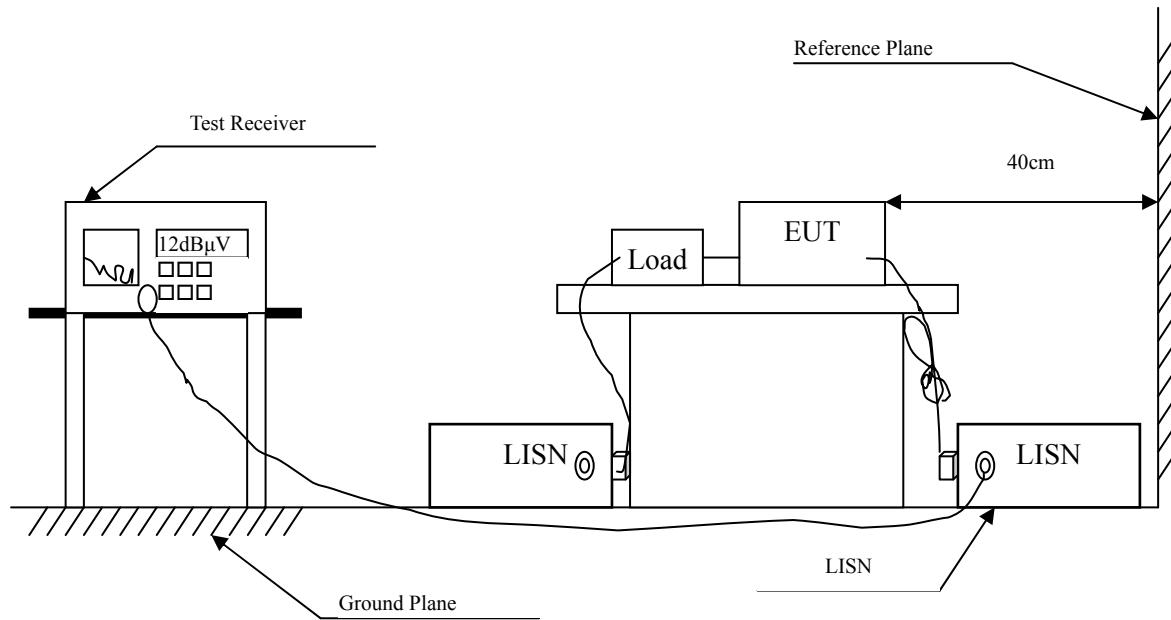
2.1. Test Equipment

	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.	Remark
X	Test Receiver	R & S	ESCS 30 / 825442/018	Sep., 2013	
X	Artificial Mains Network	R & S	ENV4200 / 848411/10	Feb., 2014	Peripherals
X	LISN	R & S	ESH3-Z5 / 825562/002	Feb., 2014	EUT
	DC LISN	Schwarzbeck	8226 / 176	Mar., 2014	EUT
X	Pulse Limiter	R & S	ESH3-Z2 / 357.8810.52	Feb., 2014	
	No.1 Shielded Room				

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked by “X” are used to measure the final test results.

2.2. Test Setup



2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBμV) Limit		
Frequency MHz	Limits	
	QP	AVG
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

2.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2009 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.5. Uncertainty

± 2.26 dB

2.6. Test Result of Conducted Emission

Product : Play-Fi Wireless Speaker
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Mode : Mode 5: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V	dB	dB μ V
Line 1					
Quasi-Peak					
0.170	9.743	34.220	43.964	-21.465	65.429
0.216	9.739	30.030	39.769	-24.345	64.114
0.334	9.745	27.380	37.125	-23.618	60.743
0.490	9.752	32.180	41.932	-14.354	56.286
0.779	9.765	28.600	38.365	-17.635	56.000
7.920	9.910	27.320	37.230	-22.770	60.000
Average					
0.170	9.743	18.800	28.544	-26.885	55.429
0.216	9.739	22.700	32.439	-21.675	54.114
0.334	9.745	24.340	34.085	-16.658	50.743
0.490	9.752	24.580	34.332	-11.954	46.286
0.779	9.765	20.320	30.085	-15.915	46.000
7.920	9.910	21.530	31.440	-18.560	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ “ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Play-Fi Wireless Speaker
 Test Item : Conducted Emission Test
 Power Line : Line 2
 Test Mode : Mode 5: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V	dB	dB μ V
Line 2					
Quasi-Peak					
0.173	9.747	31.650	41.397	-23.946	65.343
0.509	9.753	33.100	42.853	-13.147	56.000
0.771	9.775	28.660	38.435	-17.565	56.000
1.974	9.839	19.840	29.679	-26.321	56.000
6.685	9.900	23.990	33.890	-26.110	60.000
20.920	10.100	24.460	34.560	-25.440	60.000
Average					
0.173	9.747	12.100	21.847	-33.496	55.343
0.509	9.753	21.120	30.873	-15.127	46.000
0.771	9.775	18.660	28.435	-17.565	46.000
1.974	9.839	6.030	15.869	-30.131	46.000
6.685	9.900	16.290	26.190	-23.810	50.000
20.920	10.100	19.050	29.150	-20.850	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ “ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Play-Fi Wireless Speaker
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Mode : Mode 7: Transmit - 802.11n-40BW_15Mbps(5G Band) (5755MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V	dB	dB μ V
Line 1					
Quasi-Peak					
0.158	9.747	34.680	44.427	-21.344	65.771
0.170	9.743	32.900	42.644	-22.785	65.429
0.212	9.739	28.440	38.179	-26.050	64.229
0.341	9.745	26.150	35.895	-24.648	60.543
0.505	9.753	33.100	42.853	-13.147	56.000
0.654	9.759	26.900	36.659	-19.341	56.000
Average					
0.158	9.747	26.160	35.907	-19.864	55.771
0.170	9.743	13.810	23.554	-31.875	55.429
0.212	9.739	20.420	30.159	-24.070	54.229
0.341	9.745	10.480	20.225	-30.318	50.543
0.505	9.753	21.420	31.173	-14.827	46.000
0.654	9.759	19.760	29.519	-16.481	46.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. ““ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Play-Fi Wireless Speaker
 Test Item : Conducted Emission Test
 Power Line : Line 2
 Test Mode : Mode 7: Transmit - 802.11n-40BW_15Mbps(5G Band) (5755MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V	dB	dB μ V
Line 2					
Quasi-Peak					
0.166	9.747	33.830	43.577	-21.966	65.543
0.212	9.749	28.580	38.329	-25.900	64.229
0.373	9.747	28.450	38.197	-21.432	59.629
0.498	9.752	32.750	42.502	-13.555	56.057
7.912	9.920	27.580	37.500	-22.500	60.000
21.162	10.105	25.840	35.945	-24.055	60.000
Average					
0.166	9.747	28.500	38.247	-17.296	55.543
0.212	9.749	24.300	34.049	-20.180	54.229
0.373	9.747	15.410	25.157	-24.472	49.629
0.498	9.752	28.740	38.492	-7.565	46.057
7.912	9.920	22.630	32.550	-17.450	50.000
21.162	10.105	20.160	30.265	-19.735	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. ““ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

3. Peak Power Output

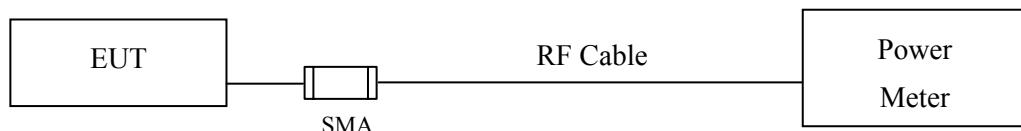
3.1. Test Equipment

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X Power Meter	Anritsu	ML2495A/6K00003357	May, 2014
X Power Sensor	Anritsu	MA2411B/0738448	Jun., 2014

Note:

1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with “X” are used to measure the final test results.

3.2. Test Setup



3.3. Limits

The maximum peak power shall be less 1 Watt.

3.4. Test Procedure

The EUT was tested according to DTS test procedure of KDB 558074 for compliance to FCC 47CFR 15.247 requirements. The maximum peak conducted output power using KDB 558074 D01 DTS Meas Guidance v03r02 section 9.1.2 PKPM1 Peak power meter method.

3.5. Uncertainty

± 1.27 dB

3.6. Test Result of Peak Power Output

Product : Play-Fi Wireless Speaker
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)				Peak Power	Required Limit	Result
		1	2	5.5	11			
		Measurement Level (dBm)						
01	2412	15.42	--	--	--	17.86	<30dBm	Pass
06	2437	15.23	15.17	14.92	14.67	17.67	<30dBm	Pass
11	2462	15.05	--	--	--	17.47	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Product : Play-Fi Wireless Speaker
 Test Item : Peak Power Output Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		6	9	12	18	24	36	48	54			
		Measurement Level (dBm)										
01	2412	13.98	--	--	--	--	--	--	--	23.68	<30dBm	Pass
06	2437	13.43	13.31	13.19	13.07	12.95	12.83	12.71	12.59	23.32	<30dBm	Pass
11	2462	14.29	--	--	--	--	--	--	--	22.81	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Product : Play-Fi Wireless Speaker
 Test Item : Peak Power Output Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit - 802.11a 6Mbps

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power 6	Required Limit	Result
		6	9	12	18	24	36	48	54			
		Measurement Level (dBm)										
149	5745	12.96	--	--	--	--	--	--	--	20.72	<30dBm	Pass
157	5785	12.51	12.35	12.29	12.21	12.17	12.11	12.07	11.92	20.42	<30dBm	Pass
165	5825	12.71	--	--	--	--	--	--	--	20.36	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Product : Play-Fi Wireless Speaker
 Test Item : Peak Power Output Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band)

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		7.2	14.4	21.7	28.9	43.3	57.8	65	72.2			
		Measurement Level (dBm)										
01	2412	12.94	--	--	--	--	--	--	--	21.33	<30dBm	Pass
06	2437	13.28	13.02	12.76	12.5	12.24	11.98	11.72	11.46	21.88	<30dBm	Pass
11	2462	13.01	--	--	--	--	--	--	--	21.54	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Product : Play-Fi Wireless Speaker
 Test Item : Peak Power Output Data
 Test Site : No.3 OATS
 Test Mode : Mode 5: Transmit - 802.11n-40BW_15Mbps(2.4G Band)

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		15	30	45	60	90	120	135	150			
		Measurement Level (dBm)										
03	2422	12.06	--	--	--	--	--	--	--	20.81	<30dBm	Pass
06	2437	11.49	11.37	11.25	11.13	11.01	10.89	10.77	10.65	20.31	<30dBm	Pass
09	2452	11.88	--	--	--	--	--	--	--	20.63	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Product : Play-Fi Wireless Speaker
 Test Item : Peak Power Output Data
 Test Site : No.3 OATS
 Test Mode : Mode 6: Transmit - 802.11n-20BW_7.2Mbps(5G Band)

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		7.2	14.4	21.7	28.9	43.3	57.8	65	72.2			
		Measurement Level (dBm)										
149	5745	10.72	--	--	--	--	--	--	--	19.91	<30dBm	Pass
157	5785	11.21	11.14	11.08	10.86	10.71	10.53	10.38	10.21	20.04	<30dBm	Pass
165	5825	11.21	--	--	--	--	--	--	--	20.23	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Product : Play-Fi Wireless Speaker
 Test Item : Peak Power Output Data
 Test Site : No.3 OATS
 Test Mode : Mode 7: Transmit - 802.11n-40BW_15Mbps(5G Band)

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power 15	Required Limit	Result
		15	30	45	60	90	120	135	150			
		Measurement Level (dBm)										
151	5755	10.97	--	--	--	--	--	--	--	20.63	<30dBm	Pass
159	5795	10.86	11.67	11.43	11.24	11.08	10.98	10.89	10.71	20.83	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

4. Radiated Emission

4.1. Test Equipment

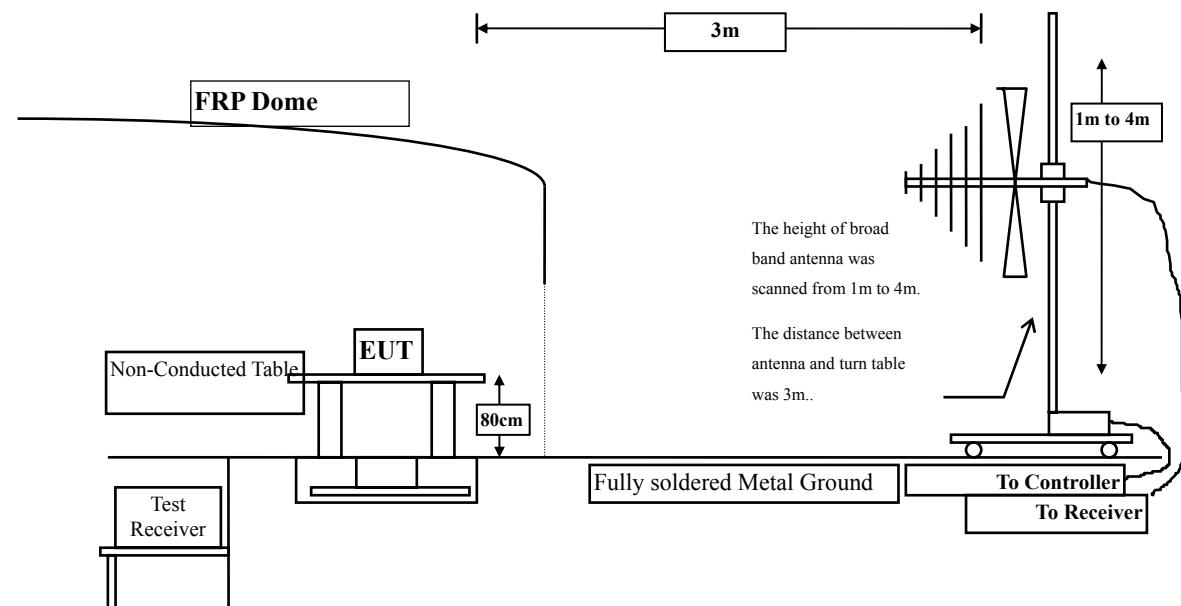
The following test equipment are used during the radiated emission test:

Test Site	Equipment		Manufacturer	Model No./Serial No.	Last Cal.
☒ Site # 3	X	Loop Antenna	Teseq	HLA6120 / 26739	Jul., 2014
	X	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2013
	X	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2013
	X	Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2014
	X	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2014
	X	Pre-Amplifier	QTK	AP-180C / CHM_0906076	Sep., 2013
	X	Pre-Amplifier	MITEQ	AMF-4D-180400-45-6P/925975	Mar., 2014
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2014
	X	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2013
	X	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2014
	X	Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	X	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

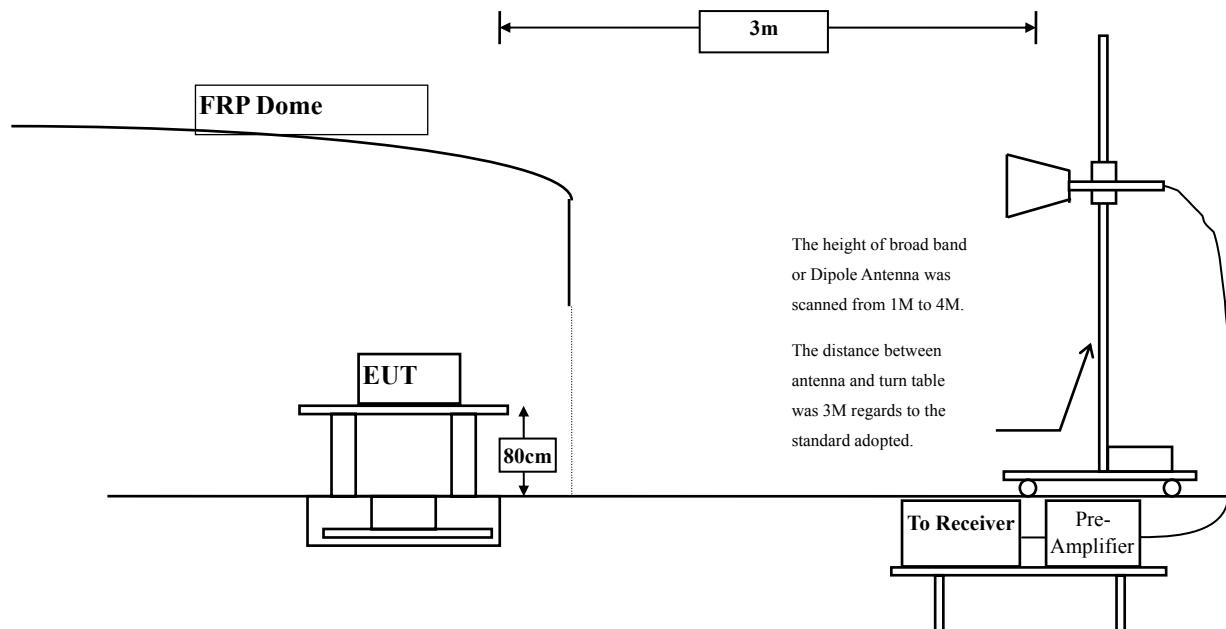
Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with "X" are used to measure the final test results.

4.2. Test Setup

Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



4.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209(a) Limits		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remarks: E field strength (dB μ V/m) = 20 log E field strength (uV/m)

4.4. Test Procedure

The EUT was setup according to ANSI C63.10: 2009 and tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2009 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The worst radiated emission is measured in the Open Area Test Site on the Final Measurement.

The measurement frequency range from 9kHz - 10th Harmonic of fundamental was investigated.

4.5. Uncertainty

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

4.6. Test Result of Radiated Emission

Product : Play-Fi Wireless Speaker
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

Frequency MHz	Correct Factor dB	Reading Level dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector:					
4824.000	2.428	52.130	54.559	-19.441	74.000
7236.000	9.177	40.980	50.157	-23.843	74.000
9648.000	10.019	41.310	51.330	-22.670	74.000
Average Detector:					
4824.000	2.428	49.080	51.509	-2.491	54.000
Vertical					
Peak Detector:					
4824.000	2.836	45.580	48.417	-25.583	74.000
7236.000	9.676	40.920	50.596	-23.404	74.000
9648.000	10.556	40.120	50.677	-23.323	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Play-Fi Wireless Speaker
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V/m	dB	dB μ V/m

Horizontal

Peak Detector:

4874.000	2.076	51.740	53.817	-20.183	74.000
7311.000	9.512	39.610	49.122	-24.878	74.000
9748.000	9.630	39.490	49.120	-24.880	74.000

Average

Detector:

--

Vertical

Peak Detector:

4874.000	2.532	46.010	48.542	-25.458	74.000
7311.000	10.089	39.930	50.019	-23.981	74.000
9748.000	10.266	39.940	50.207	-23.793	74.000

Average

Detector:

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Play-Fi Wireless Speaker
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462 MHz)

Frequency MHz	Correct Factor	Reading Level dB	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
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Horizontal**Peak Detector:**

4924.000	2.191	51.630	53.821	-20.179	74.000
7386.000	10.373	39.550	49.924	-24.076	74.000
9848.000	9.964	43.320	53.284	-20.716	74.000

Average**Detector:**

--

Vertical**Peak Detector:**

4924.000	2.805	47.610	50.415	-23.585	74.000
7386.000	11.180	39.560	50.740	-23.260	74.000
9848.000	10.801	41.300	52.101	-21.899	74.000

Average**Detector:**

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Play-Fi Wireless Speaker
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V/m	dB	dB μ V/m

Horizontal

Peak Detector:

4824.000	2.428	50.840	53.269	-20.731	74.000
7236.000	9.177	40.820	49.997	-24.003	74.000
9648.000	10.019	40.350	50.370	-23.630	74.000

Average

Detector:

--

Vertical

Peak Detector:

4824.000	2.836	46.830	49.667	-24.333	74.000
7236.000	9.676	40.930	50.606	-23.394	74.000
9648.000	10.556	40.090	50.647	-23.353	74.000

Average

Detector:

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Play-Fi Wireless Speaker
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V/m	dB	dB μ V/m

Horizontal

Peak Detector:

4874.000	2.076	50.850	52.927	-21.073	74.000
7311.000	9.512	39.820	49.332	-24.668	74.000
9748.000	9.630	39.160	48.790	-25.210	74.000

Average

Detector:

--

Vertical

Peak Detector:

4874.000	2.532	46.800	49.332	-24.668	74.000
7311.000	10.089	39.740	49.829	-24.171	74.000
9748.000	10.266	39.590	49.857	-24.143	74.000

Average

Detector:

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Play-Fi Wireless Speaker
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V/m	dB	dB μ V/m

Horizontal

Peak Detector:

4924.000	2.191	53.420	55.611	-18.389	74.000
7386.000	10.373	39.230	49.604	-24.396	74.000
9848.000	9.964	40.640	50.604	-23.396	74.000

Average

Detector:

4924.000	2.191	40.940	43.131	-10.869	54.000
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Vertical

Peak Detector:

4924.000	2.805	47.080	49.885	-24.115	74.000
7386.000	11.180	40.090	51.270	-22.730	74.000
9848.000	10.801	40.100	50.901	-23.099	74.000

Average

Detector:

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Play-Fi Wireless Speaker
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit - 802.11a 6Mbps (5745 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V/m	dB	dB μ V/m

Horizontal

Peak Detector:

11490.000	15.004	37.870	52.874	-21.126	74.000
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Average

Detector:

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Vertical

Peak Detector:

11490.000	16.520	37.410	53.930	-20.070	74.000
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Average

Detector:

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Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Play-Fi Wireless Speaker
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit - 802.11a 6Mbps (5785 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V/m	dB	dB μ V/m

Horizontal

Peak Detector:

11570.000	15.207	37.580	52.787	-21.213	74.000
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Average

Detector:

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Vertical

Peak Detector:

11570.000	16.573	37.350	53.922	-20.078	74.000
-----------	--------	--------	--------	---------	--------

Average

Detector:

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Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Play-Fi Wireless Speaker
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit - 802.11a 6Mbps (5825 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V/m	dB	dB μ V/m

Horizontal

Peak Detector:

11650.000	13.504	37.600	51.104	-22.896	74.000
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Average

Detector:

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Vertical

Peak Detector:

11650.000	14.959	37.130	52.089	-21.911	74.000
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Average

Detector:

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Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Play-Fi Wireless Speaker
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2412MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V/m	dB	dB μ V/m

Horizontal

Peak Detector:

4824.000	2.428	51.160	53.589	-20.411	74.000
7236.000	9.177	40.140	49.317	-24.683	74.000
9648.000	10.019	39.980	50.000	-24.000	74.000

Average

Detector:

--

Vertical

Peak Detector:

4824.000	2.836	46.490	49.327	-24.673	74.000
7236.000	9.676	40.160	49.836	-24.164	74.000
9648.000	10.556	40.970	51.527	-22.473	74.000

Average

Detector:

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Play-Fi Wireless Speaker
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V/m	dB	dB μ V/m

Horizontal

Peak Detector:

4874.000	2.076	50.630	52.707	-21.293	74.000
7311.000	9.512	39.700	49.212	-24.788	74.000
9748.000	9.630	39.730	49.360	-24.640	74.000

Average

Detector:

--

Vertical

Peak Detector:

4874.000	2.532	45.410	47.942	-26.058	74.000
7311.000	10.089	40.230	50.319	-23.681	74.000
9748.000	10.266	39.730	49.997	-24.003	74.000

Average

Detector:

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Play-Fi Wireless Speaker
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2462 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V/m	dB	dB μ V/m

Horizontal

Peak Detector:

4924.000	2.191	52.800	54.991	-19.009	74.000
7386.000	10.373	39.320	49.694	-24.306	74.000
9848.000	9.964	39.730	49.694	-24.306	74.000

Average

Detector:

4924.000	2.191	38.620	40.811	-13.189	54.000
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Vertical

Peak Detector:

4924.000	2.805	46.980	49.785	-24.215	74.000
7386.000	11.180	39.240	50.420	-23.580	74.000
9848.000	10.801	39.800	50.601	-23.399	74.000

Average

Detector:

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Play-Fi Wireless Speaker
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 5: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2422MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V/m	dB	dB μ V/m

Horizontal

Peak Detector:

4844.000	2.280	46.790	49.071	-24.929	74.000
7266.000	9.106	39.740	48.846	-25.154	74.000
9688.000	9.663	39.940	49.603	-24.397	74.000

Average

Detector:

--

Vertical

Peak Detector:

4844.000	2.707	42.870	45.578	-28.422	74.000
7266.000	9.626	39.640	49.266	-24.734	74.000
9688.000	10.284	39.860	50.144	-23.856	74.000

Average

Detector:

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Play-Fi Wireless Speaker
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 5: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V/m	dB	dB μ V/m

Horizontal

Peak Detector:

4874.000	2.076	47.510	49.587	-24.413	74.000
7311.000	9.512	39.580	49.092	-24.908	74.000
9748.000	9.630	39.500	49.130	-24.870	74.000

Average

Detector:

--

Vertical

Peak Detector:

4874.000	2.532	43.340	45.872	-28.128	74.000
7311.000	10.089	39.270	49.359	-24.641	74.000
9748.000	10.266	39.500	49.767	-24.233	74.000

Average

Detector:

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Play-Fi Wireless Speaker
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 5: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2452 MHz)

Frequency MHz	Correct Factor	Reading Level dB	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
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Horizontal

Peak Detector:

4904.000	2.000	47.330	49.331	-24.669	74.000
7356.000	10.308	38.930	49.238	-24.762	74.000
9808.000	9.850	39.640	49.490	-24.510	74.000

Average

Detector:

--

Vertical

Peak Detector:

4904.000	2.513	44.390	46.904	-27.096	74.000
7356.000	11.022	38.600	49.622	-24.378	74.000
9808.000	10.512	39.910	50.422	-23.578	74.000

Average

Detector:

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Play-Fi Wireless Speaker
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 6: Transmit - 802.11n-20BW_7.2Mbps(5G Band) (5745MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V/m	dB	dB μ V/m

Horizontal

Peak Detector:

11490.000	15.004	38.440	53.444	-20.556	74.000
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Average

Detector:

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Vertical

Peak Detector:

11490.000	16.520	37.230	53.750	-20.250	74.000
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Average

Detector:

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Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Play-Fi Wireless Speaker
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 6: Transmit - 802.11n-20BW_7.2Mbps(5G Band) (5785 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V/m	dB	dB μ V/m

Horizontal

Peak Detector:

11570.000	15.207	37.840	53.047	-20.953	74.000
-----------	--------	--------	--------	---------	--------

Average

Detector:

--

Vertical

Peak Detector:

11570.000	16.573	37.240	53.812	-20.188	74.000
-----------	--------	--------	--------	---------	--------

Average

Detector:

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Play-Fi Wireless Speaker
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 6: Transmit - 802.11n-20BW_7.2Mbps(5G Band) (5825 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V/m	dB	dB μ V/m

Horizontal

Peak Detector:

11650.000	13.504	37.130	50.634	-23.366	74.000
-----------	--------	--------	--------	---------	--------

Average

Detector:

--

Vertical

Peak Detector:

11650.000	14.959	37.680	52.639	-21.361	74.000
-----------	--------	--------	--------	---------	--------

Average

Detector:

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Play-Fi Wireless Speaker
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 7: Transmit - 802.11n-40BW_15Mbps(5G Band) (5755MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V/m	dB	dB μ V/m

Horizontal

Peak Detector:

11510.000	17.124	35.150	52.274	-21.726	74.000
-----------	--------	--------	--------	---------	--------

Average

Detector:

--

Vertical

Peak Detector:

11510.000	18.081	35.590	53.671	-20.329	74.000
-----------	--------	--------	--------	---------	--------

Average

Detector:

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Play-Fi Wireless Speaker
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 7: Transmit - 802.11n-40BW_15Mbps(5G Band) (5795 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V/m	dB	dB μ V/m

Horizontal

Peak Detector:

11590.000	16.701	35.150	51.850	-22.150	74.000
-----------	--------	--------	--------	---------	--------

Average

Detector:

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Vertical

Peak Detector:

11590.000	17.567	36.290	53.856	-20.144	74.000
-----------	--------	--------	--------	---------	--------

Average

Detector:

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Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Play-Fi Wireless Speaker
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2437 MHz)

Frequency MHz	Correct Factor	Reading Level dB	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
135.959	-7.480	42.600	35.120	-8.380	43.500
269.916	-5.580	42.600	37.020	-8.980	46.000
392.673	0.819	36.600	37.419	-8.581	46.000
592.100	3.405	37.600	41.004	-4.996	46.000
763.099	5.116	32.100	37.216	-8.784	46.000
900.502	5.843	32.100	37.943	-8.057	46.000
Vertical					
173.433	-2.777	37.100	34.323	-9.177	43.500
343.139	-0.795	40.100	39.305	-6.695	46.000
522.753	1.116	36.100	37.216	-8.784	46.000
689.876	2.284	35.100	37.384	-8.616	46.000
808.757	3.220	33.100	36.320	-9.680	46.000
937.544	3.056	35.100	38.156	-7.844	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Play-Fi Wireless Speaker
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V/m	dB	dB μ V/m
Horizontal					
154.160	-8.002	39.737	31.735	-11.765	43.500
338.460	-3.380	29.505	26.124	-19.876	46.000
516.940	3.200	27.410	30.610	-15.390	46.000
674.080	2.713	38.589	41.302	-4.698	46.000
811.820	6.281	22.071	28.352	-17.648	46.000
916.580	6.470	19.945	26.415	-19.585	46.000
Vertical					
55.220	-10.927	42.330	31.403	-8.597	40.000
175.500	-1.842	36.321	34.479	-9.021	43.500
352.040	-1.292	27.276	25.984	-20.016	46.000
536.340	1.609	25.016	26.625	-19.375	46.000
732.280	-0.833	19.381	18.548	-27.452	46.000
887.480	1.283	20.885	22.168	-23.832	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Play-Fi Wireless Speaker
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit - 802.11a 6Mbps (5785MHz)

Frequency MHz	Correct Factor	Reading Level dB	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
243.400	-6.546	37.370	30.824	-15.176	46.000
377.260	1.107	31.700	32.807	-13.193	46.000
499.480	1.991	28.196	30.186	-15.814	46.000
689.600	3.642	24.672	28.314	-17.686	46.000
798.240	6.409	24.110	30.518	-15.482	46.000
968.960	7.356	22.304	29.660	-24.340	54.000
Vertical					
57.160	-11.116	42.917	31.801	-8.199	40.000
154.160	-5.272	35.760	30.488	-13.012	43.500
365.620	0.282	28.532	28.814	-17.186	46.000
528.580	1.164	28.411	29.575	-16.425	46.000
687.660	2.292	25.024	27.316	-18.684	46.000
864.200	-0.291	23.595	23.304	-22.696	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Play-Fi Wireless Speaker
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V/m	dB	dB μ V/m
Horizontal					
159.980	-10.030	40.483	30.452	-13.048	43.500
357.860	-0.719	22.341	21.622	-24.378	46.000
491.720	1.521	26.320	27.841	-18.159	46.000
615.880	2.813	19.800	22.613	-23.387	46.000
823.460	7.241	19.684	26.925	-19.075	46.000
941.800	6.790	19.832	26.622	-19.378	46.000
Vertical					
57.160	-11.116	44.906	33.790	-6.210	40.000
198.780	-5.708	25.880	20.172	-23.328	43.500
429.640	0.630	30.385	31.014	-14.986	46.000
540.220	2.169	26.937	29.106	-16.894	46.000
674.080	0.003	38.554	38.557	-7.443	46.000
844.800	2.462	19.097	21.559	-24.441	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Play-Fi Wireless Speaker
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 5: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V/m	dB	dB μ V/m
Horizontal					
59.100	-11.901	44.205	32.304	-7.696	40.000
243.400	-6.546	37.579	31.033	-14.967	46.000
443.220	-0.031	30.149	30.118	-15.882	46.000
720.640	3.826	26.678	30.504	-15.496	46.000
883.600	6.601	20.011	26.612	-19.388	46.000
961.200	6.810	23.952	30.762	-23.238	54.000
Vertical					
117.300	-3.740	33.668	29.928	-13.572	43.500
249.220	-5.096	36.117	31.021	-14.979	46.000
377.260	0.647	33.541	34.188	-11.812	46.000
520.820	1.078	27.785	28.862	-17.138	46.000
674.080	0.003	37.715	37.718	-8.282	46.000
840.920	2.284	23.924	26.208	-19.792	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Play-Fi Wireless Speaker
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 6: Transmit - 802.11n-20BW_7.2Mbps(5G Band) (5785 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V/m	dB	dB μ V/m
Horizontal					
130.880	-7.407	34.560	27.152	-16.348	43.500
288.020	-5.557	36.527	30.970	-15.030	46.000
443.220	-0.031	29.079	29.048	-16.952	46.000
610.060	3.657	21.910	25.567	-20.433	46.000
802.120	6.356	21.935	28.291	-17.709	46.000
935.980	6.760	28.433	35.193	-10.807	46.000
Vertical					
59.100	-11.291	43.223	31.932	-8.068	40.000
216.240	-6.051	36.094	30.043	-15.957	46.000
379.200	0.881	25.570	26.451	-19.549	46.000
528.580	1.164	29.755	30.919	-15.081	46.000
774.960	2.023	31.817	33.840	-12.160	46.000
922.400	3.200	23.333	26.533	-19.467	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Play-Fi Wireless Speaker
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 7: Transmit - 802.11n-40BW_15Mbps(5G Band) (5755MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V/m	dB	dB μ V/m
Horizontal					
39.700	-3.625	33.725	30.100	-9.900	40.000
154.160	-8.002	36.818	28.816	-14.684	43.500
365.620	0.382	27.050	27.432	-18.568	46.000
528.580	3.074	29.876	32.950	-13.050	46.000
790.480	6.363	23.016	29.379	-16.621	46.000
937.920	6.750	26.793	33.543	-12.457	46.000
Vertical					
57.160	-11.116	44.307	33.191	-6.809	40.000
288.020	-5.487	36.582	31.095	-14.905	46.000
499.480	-0.199	29.194	28.994	-17.006	46.000
689.600	2.302	23.649	25.951	-20.049	46.000
825.400	3.016	20.873	23.889	-22.111	46.000
951.500	3.083	24.119	27.202	-18.798	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

5. RF antenna conducted test

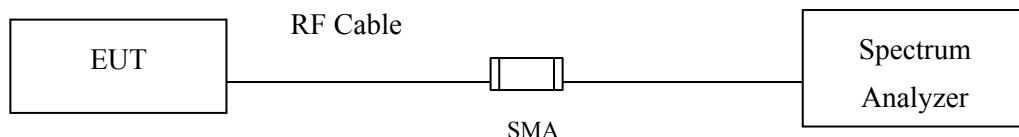
5.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2014
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2014
	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2014

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with "X" are used to measure the final test results.

5.2. Test Setup

RF antenna Conducted Measurement:



5.3. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

5.4. Test Procedure

The EUT was tested according to DTS test procedure of Jan. 2012 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 100 kHz, Set VBW > RBW, scan up through 10th harmonic.

5.5. Uncertainty

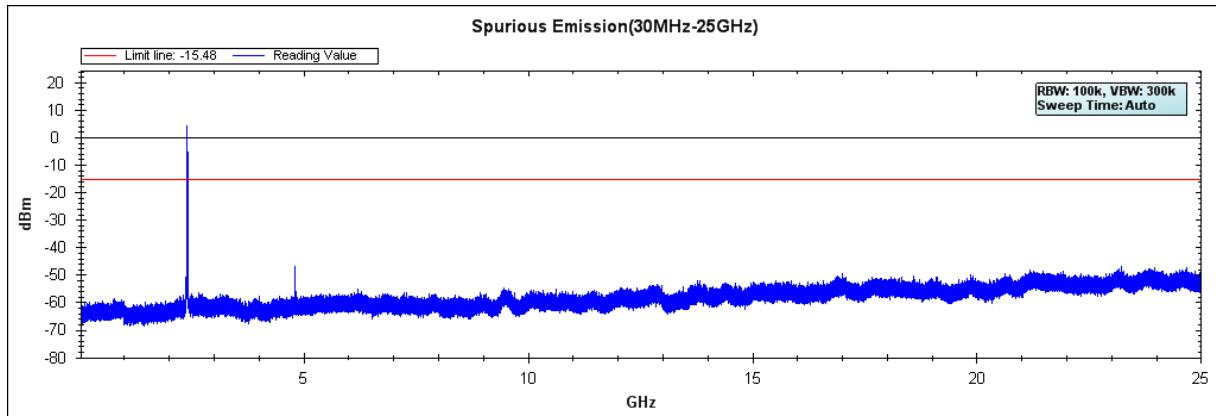
The measurement uncertainty

Conducted is defined as $\pm 1.27\text{dB}$

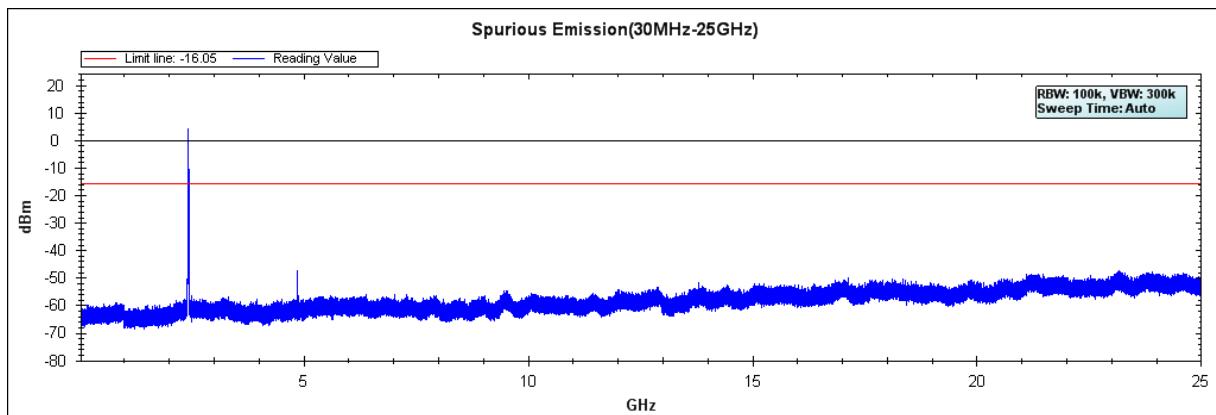
5.6. Test Result of RF antenna conducted test

Product : Play-Fi Wireless Speaker
Test Item : RF antenna conducted test
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps)

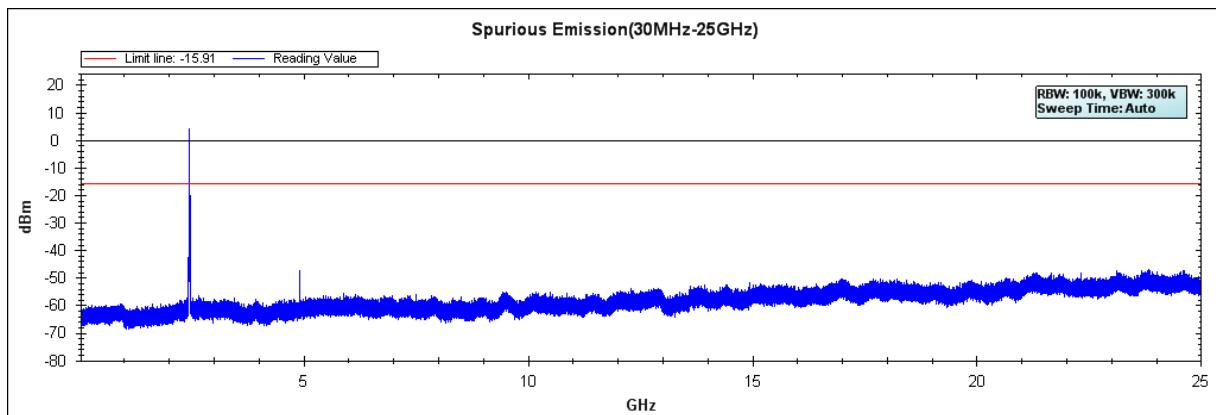
Channel 01 (2412MHz) 30MHz-25GHz



Channel 06 (2437MHz) 30MHz -25GHz



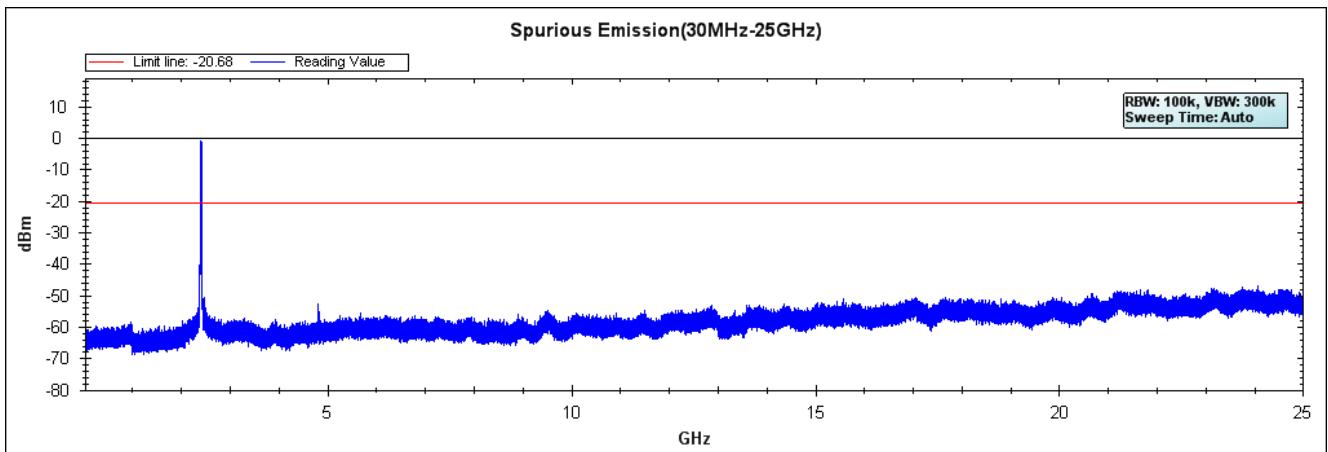
Channel 11 (2462MHz) 30MHz -25GHz



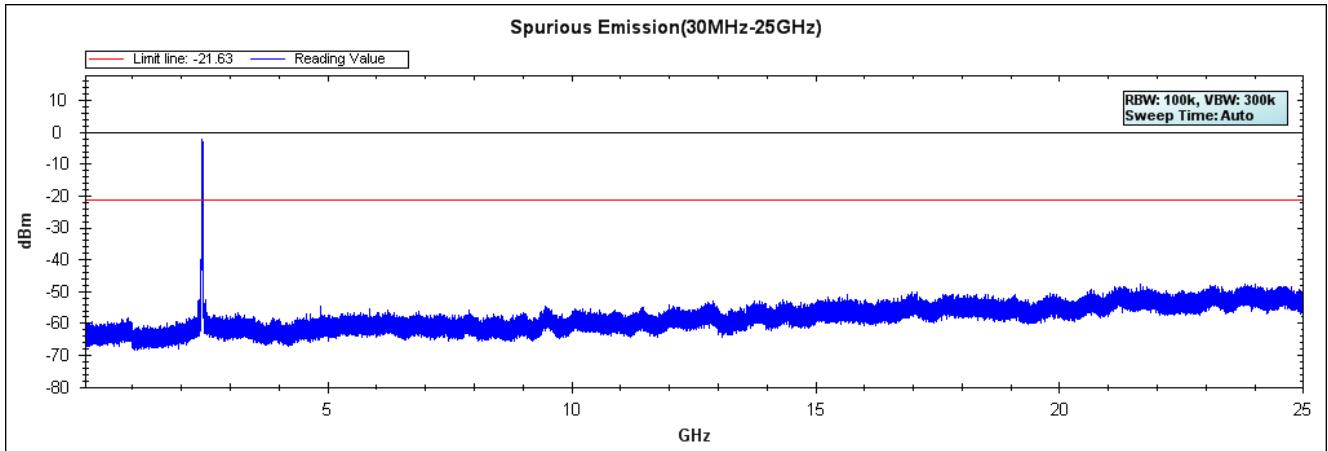
Note: The above test pattern is synthesized by multiple of the frequency range.

Product : Play-Fi Wireless Speaker
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps)

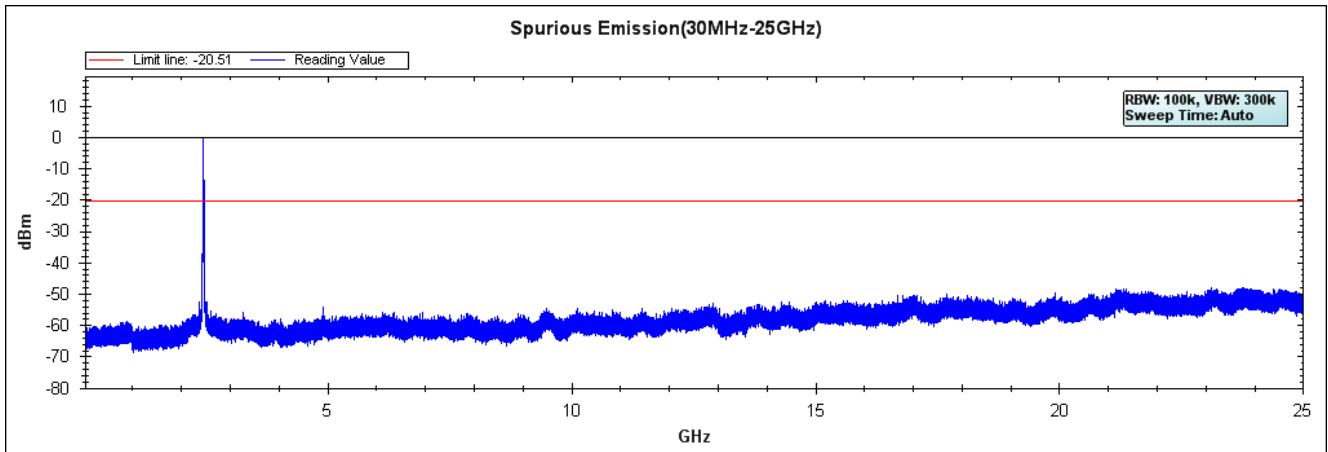
Channel 01 (2412MHz) 30MHz -25GHz



Channel 06 (2437MHz) 30MHz -25GHz



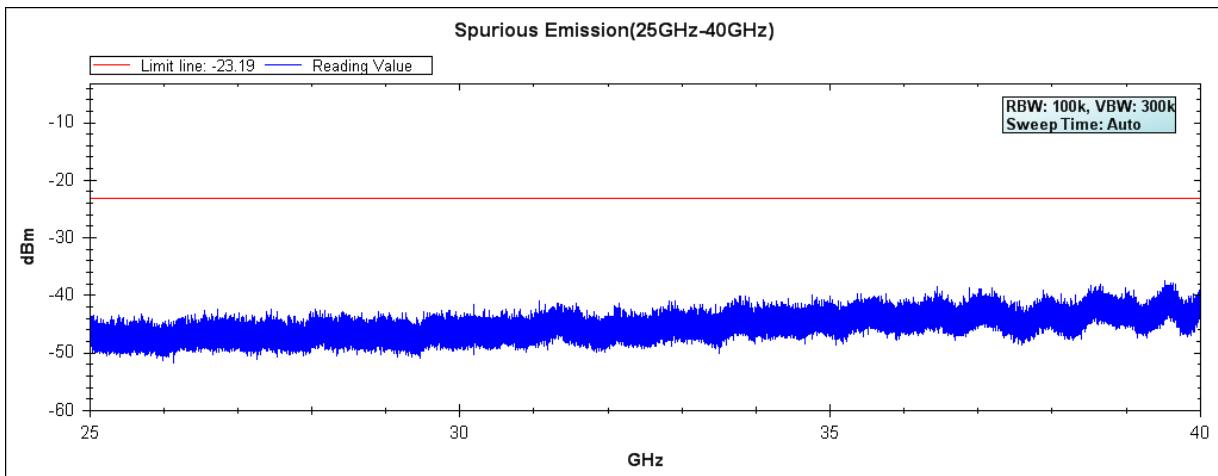
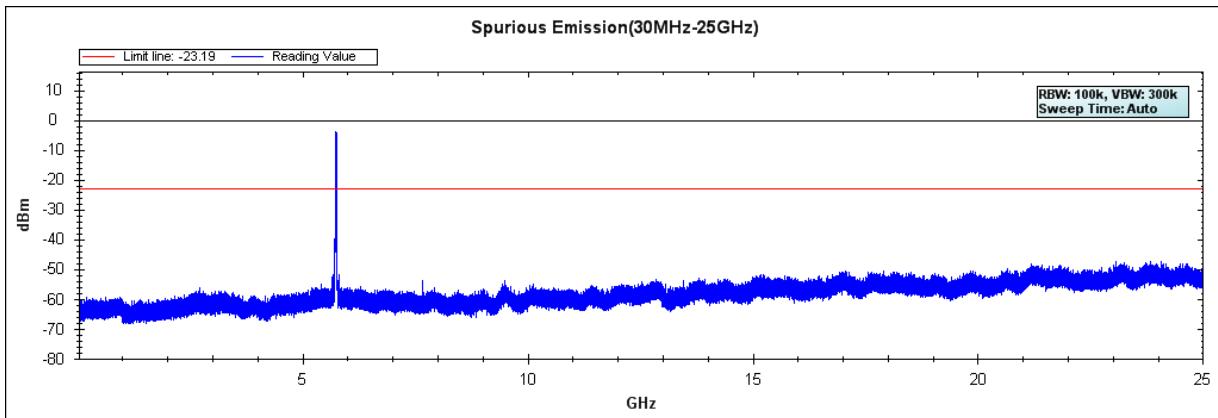
Channel 11 (2462MHz) 30MHz -25GHz



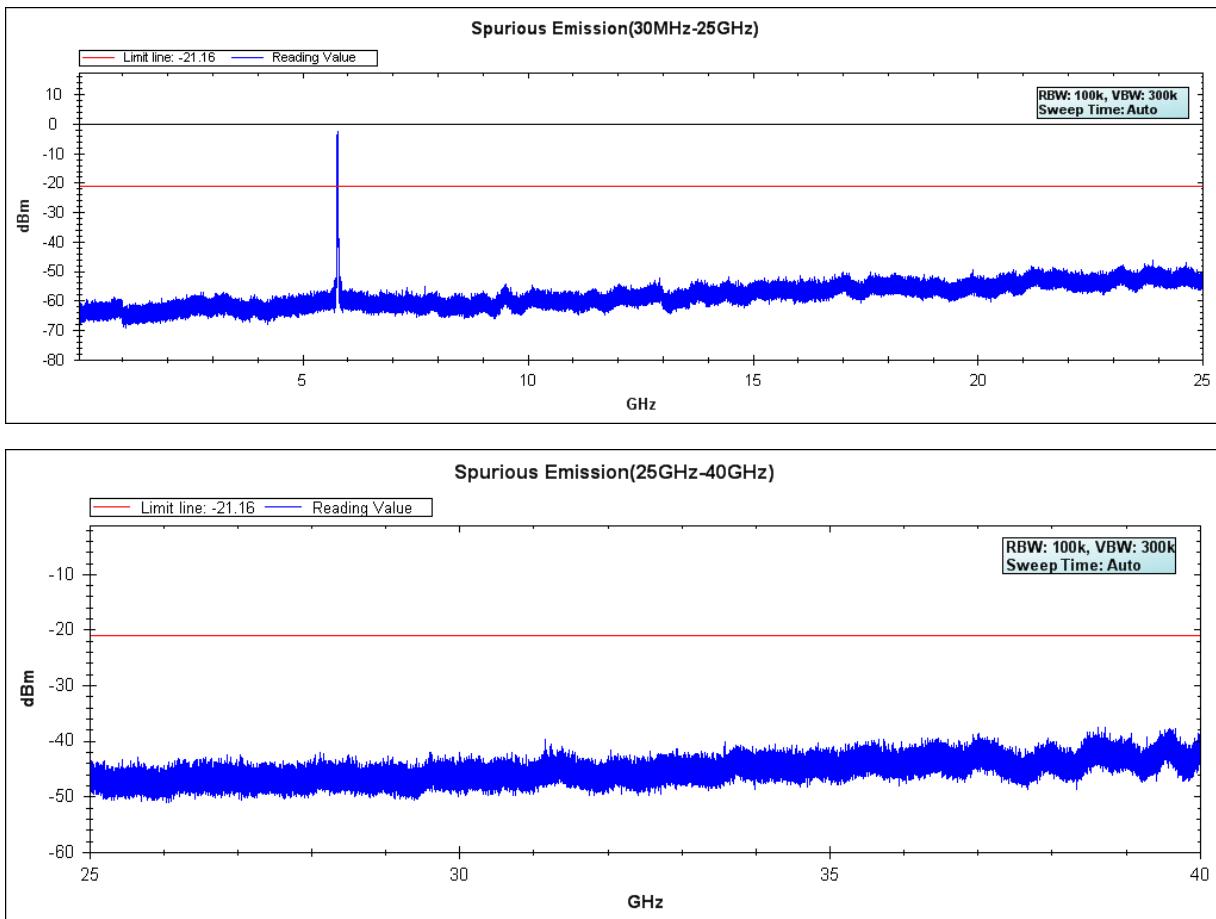
Note: The above test pattern is synthesized by multiple of the frequency range.

Product : Play-Fi Wireless Speaker
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11a 6Mbps

Channel 149 (5745MHz) 30MHz -40GHz

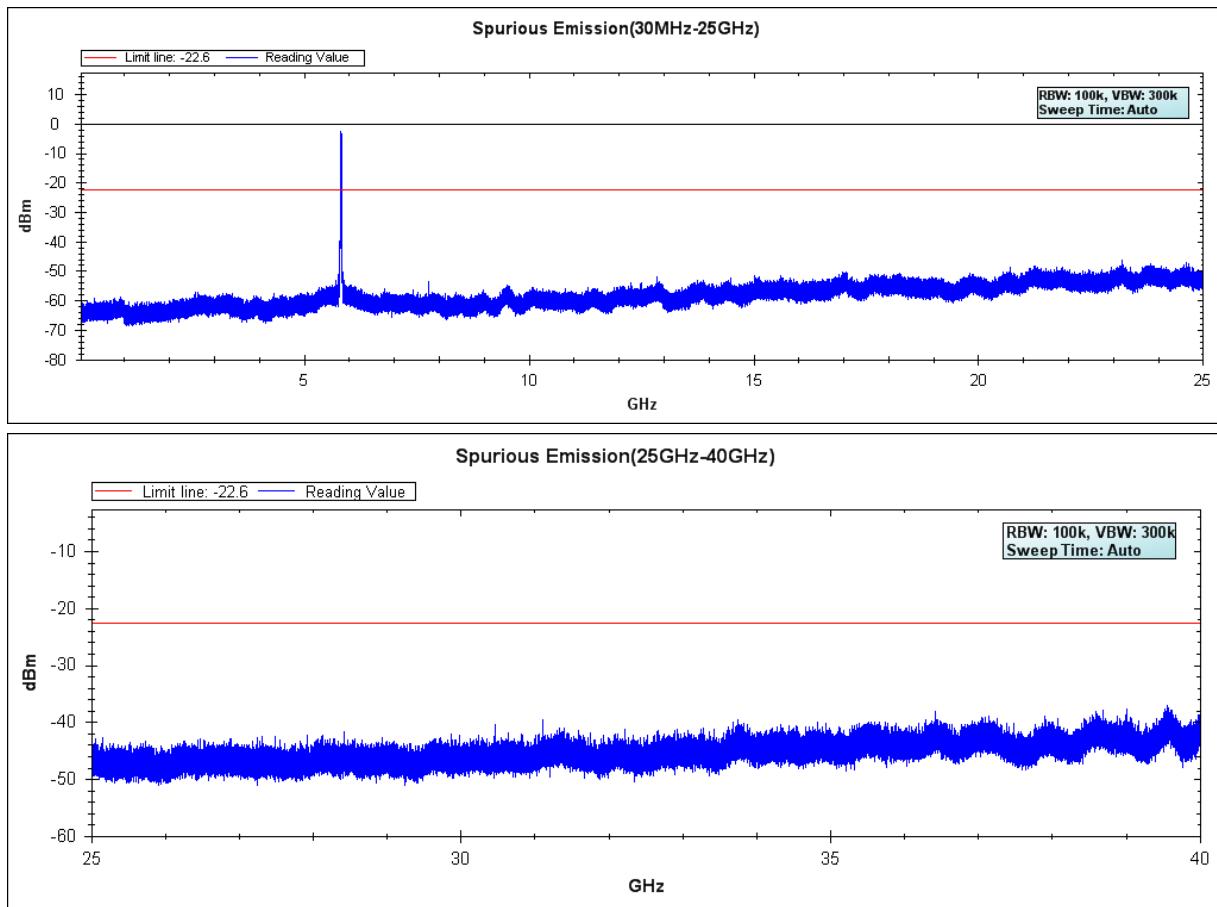


Note: The above test pattern is synthesized by multiple of the frequency range.

Channel 157 (5785MHz) 30MHz -40GHz

Note: The above test pattern is synthesized by multiple of the frequency range.

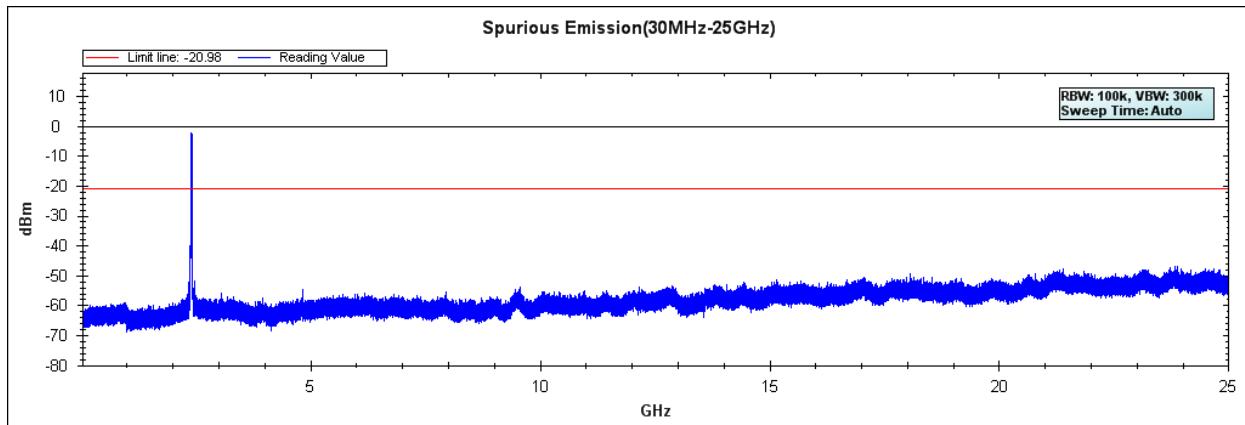
Channel 165 (5825MHz) 30MHz -40GHz



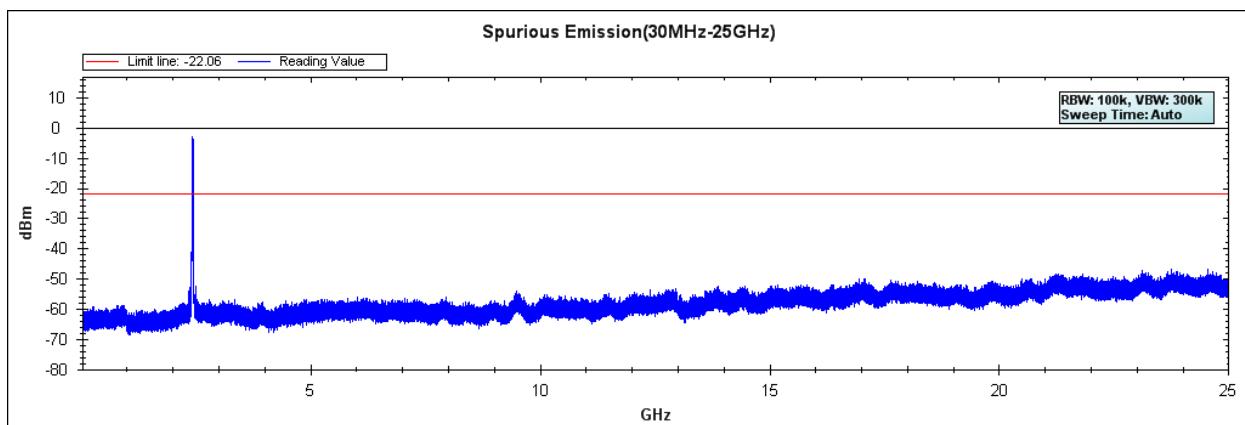
Note: The above test pattern is synthesized by multiple of the frequency range.

Product : Play-Fi Wireless Speaker
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band)

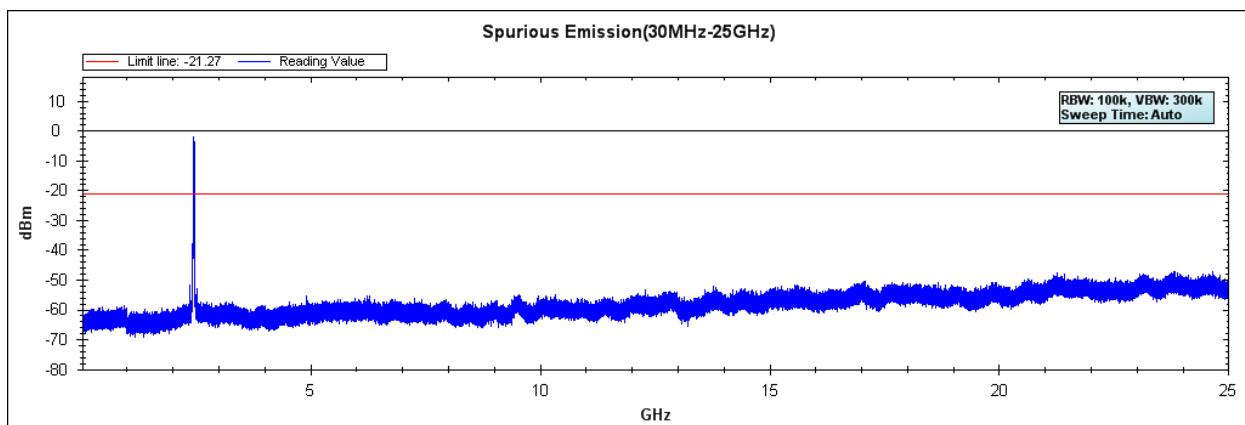
Channel 01 (2412MHz) 30MHz -25GHz



Channel 06 (2437MHz) 30MHz -25GHz



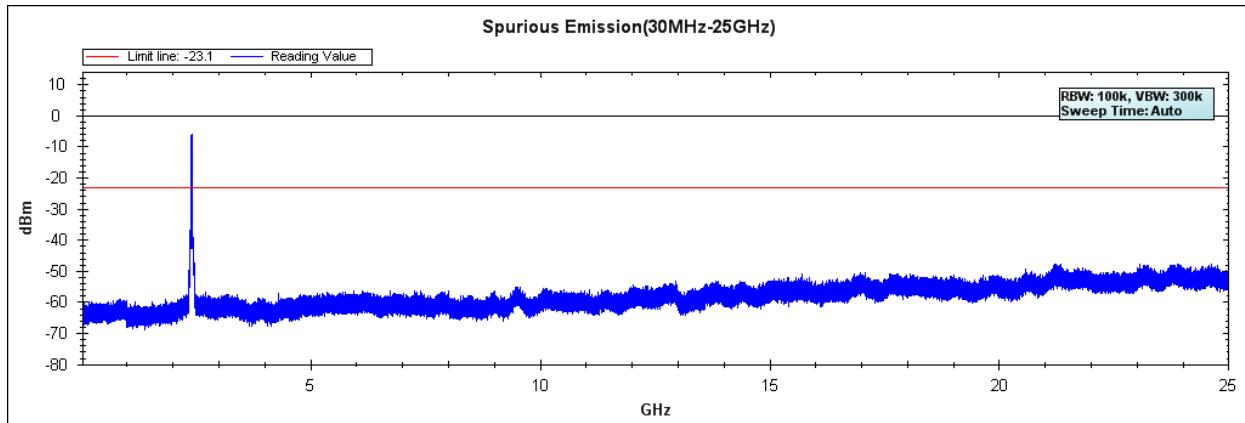
Channel 11 (2462MHz) 30MHz -25GHz



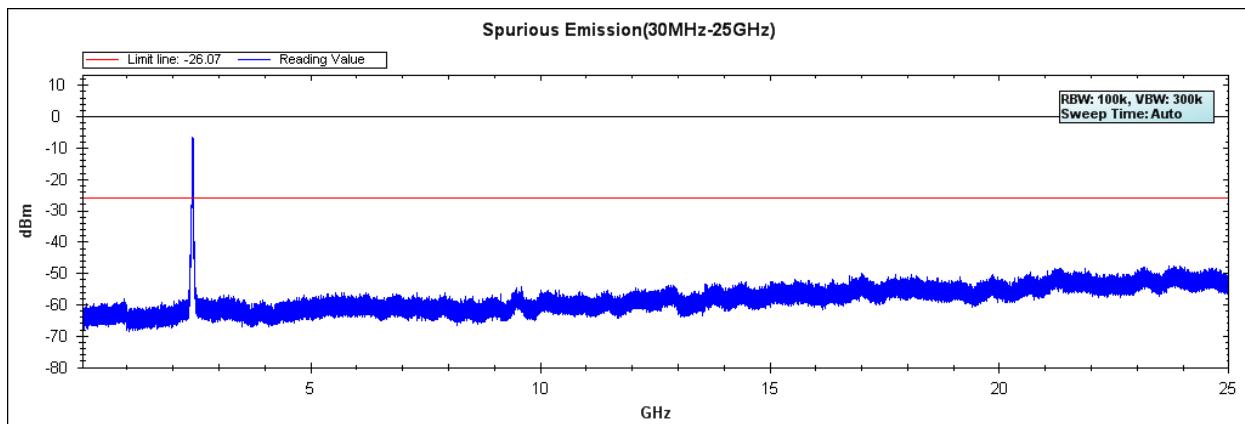
Note: The above test pattern is synthesized by multiple of the frequency range.

Product : Play-Fi Wireless Speaker
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 5: Transmit - 802.11n-40BW_15Mbps(2.4G Band)

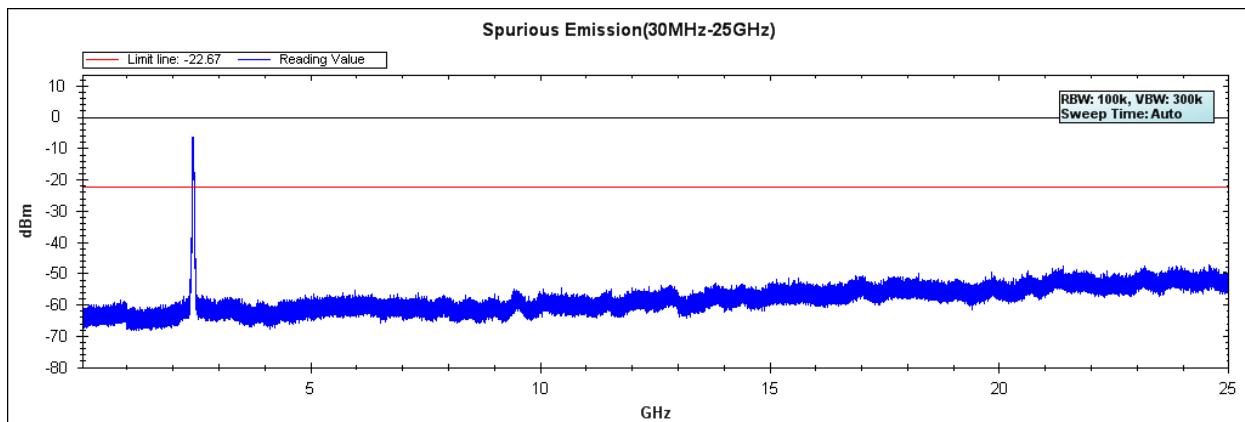
Channel 03 (2422MHz) 30MHz -25GHz



Channel 06 (2437MHz) 30MHz -25GHz



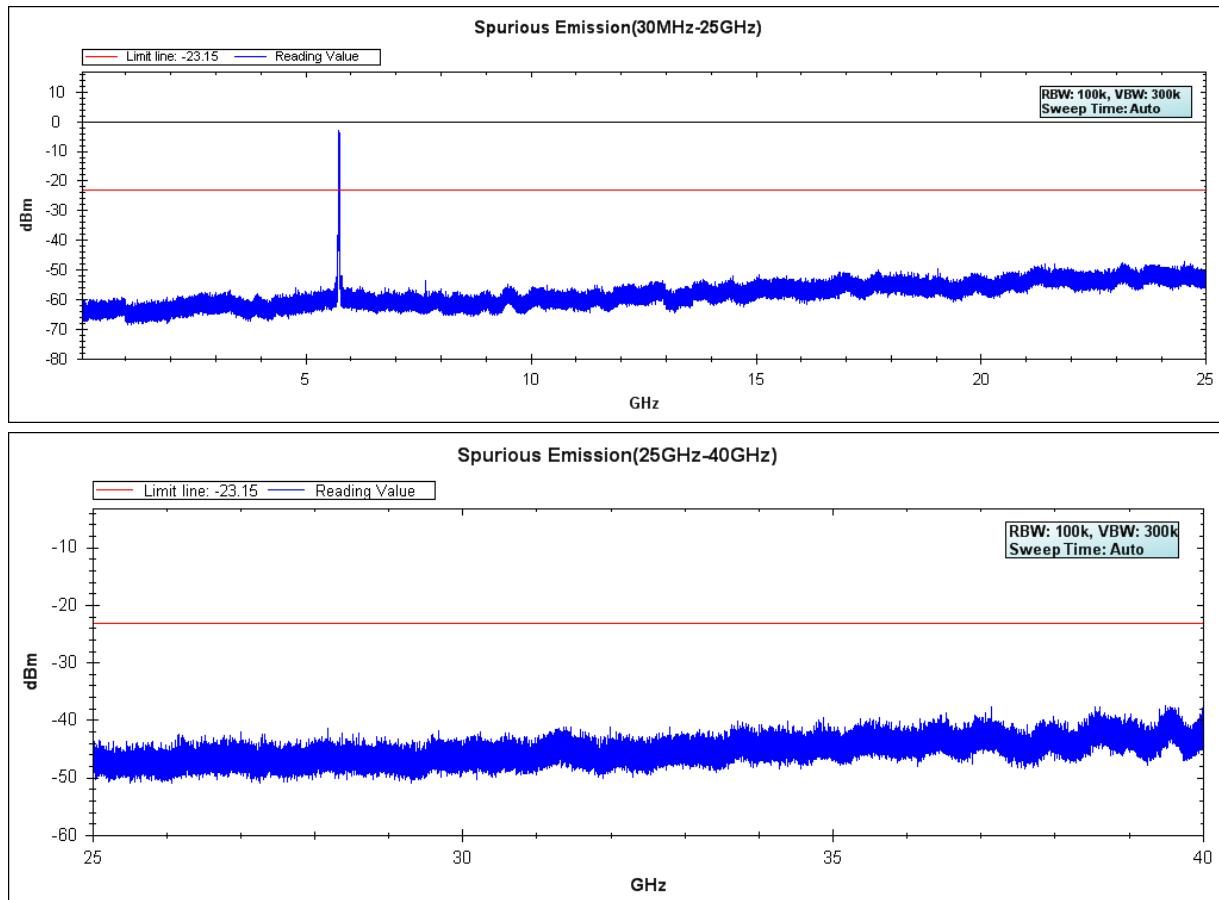
Channel 09 (2452MHz) 30MHz -25GHz



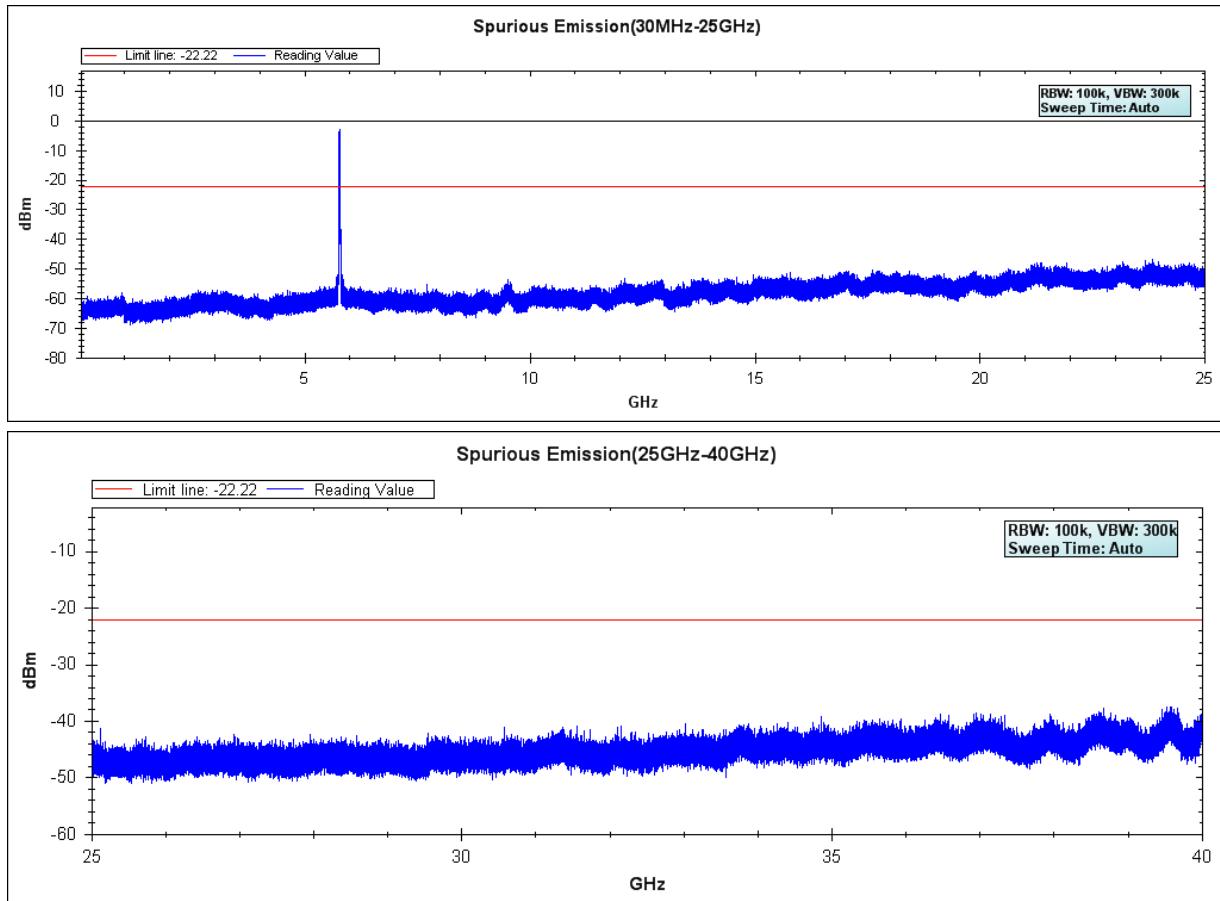
Note: The above test pattern is synthesized by multiple of the frequency range.

Product : Play-Fi Wireless Speaker
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 6: Transmit - 802.11n-20BW_7.2Mbps(5G Band)

Channel 49 (5745MHz) 30MHz -40GHz

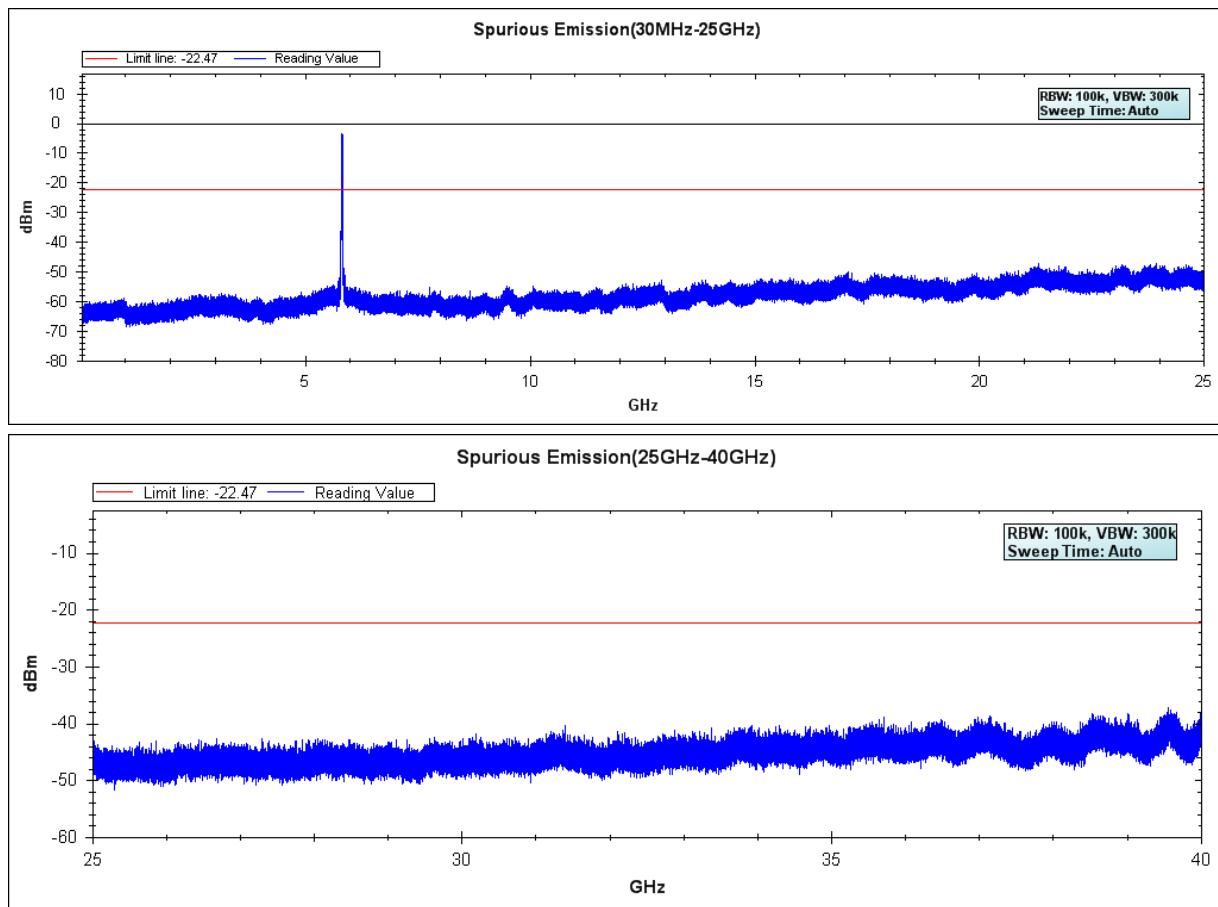


Note: The above test pattern is synthesized by multiple of the frequency range.

Channel 157 (5785MHz) 30MHz -40GHz

Note: The above test pattern is synthesized by multiple of the frequency range.

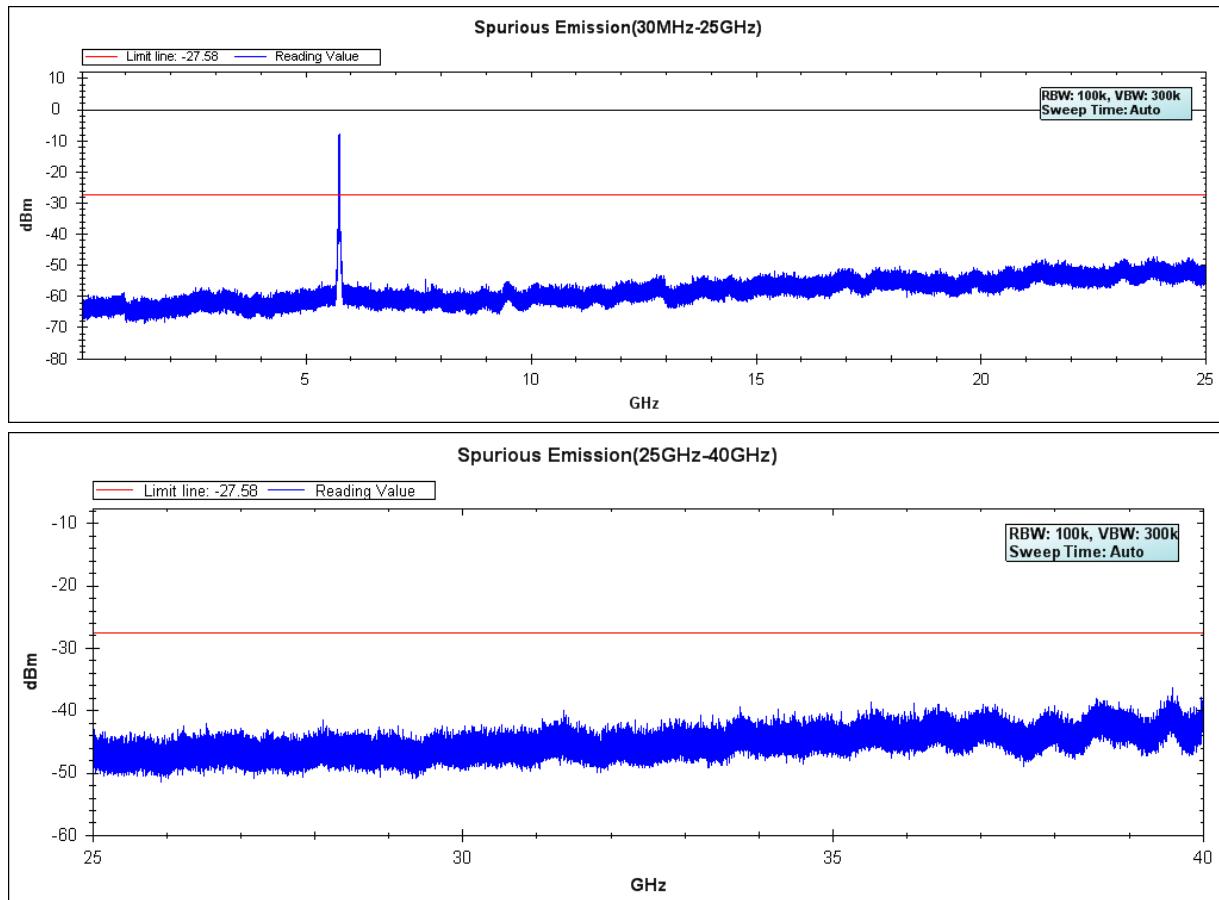
Channel 165 (5825MHz) 30MHz -40GHz



Note: The above test pattern is synthesized by multiple of the frequency range.

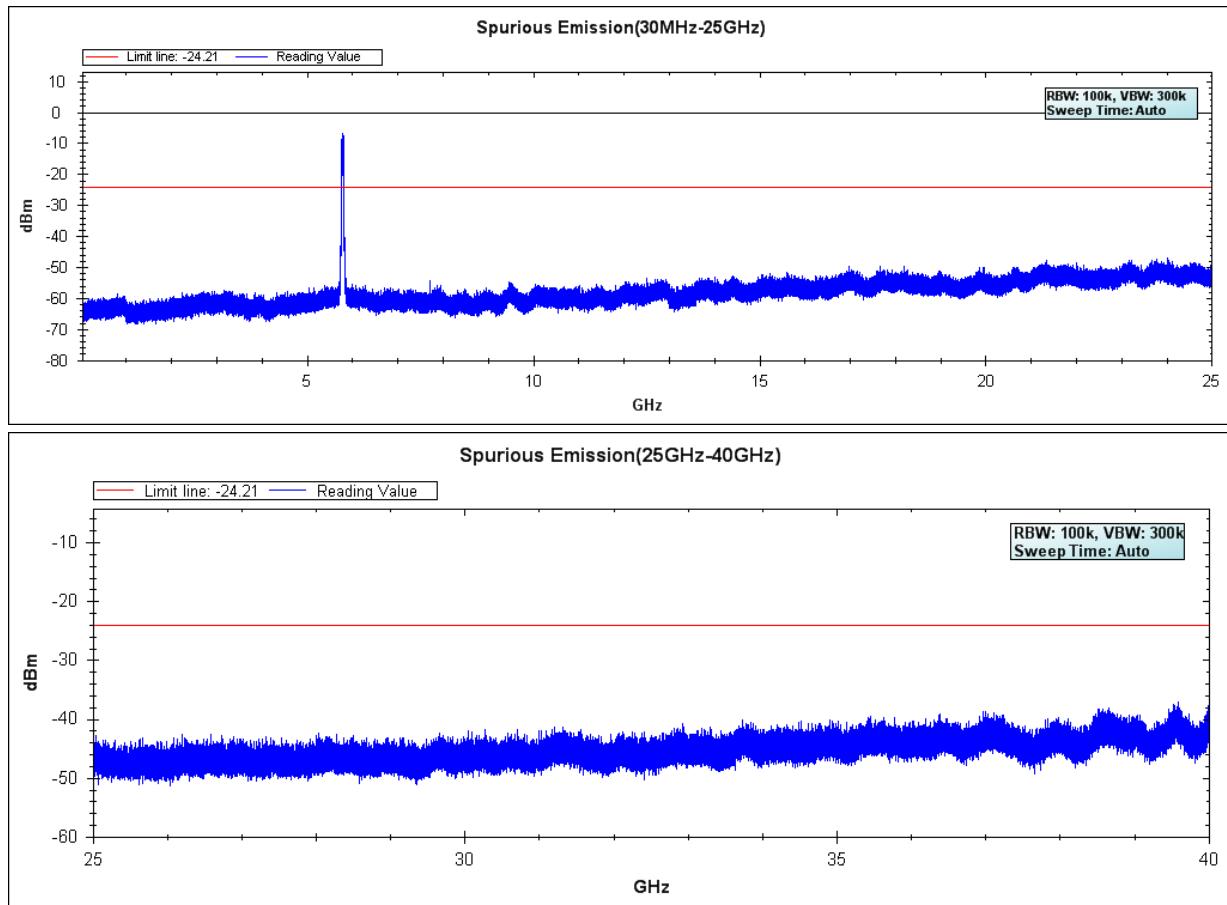
Product : Play-Fi Wireless Speaker
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 7: Transmit - 802.11n-40BW_15Mbps(5G Band)

Channel 151 (5755MHz) 30MHz -40GHz



Note: The above test pattern is synthesized by multiple of the frequency range.

Channel 159 (5795MHz) 30MHz -40GHz



Note: The above test pattern is synthesized by multiple of the frequency range.

6. Band Edge

6.1. Test Equipment

RF Conducted Measurement

The following test equipments are used during the band edge tests:

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2014
Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2014
X Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2014
8-WAY Power Divider	JFW	50PD-647 / 526770 0916	Apr., 2014

Note:

1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with “X” are used to measure the final test results.

RF Radiated Measurement:

The following test equipments are used during the band edge tests:

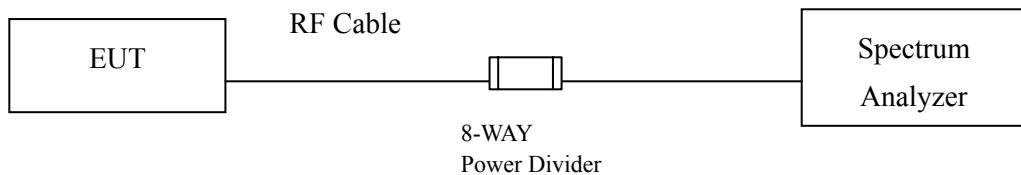
Test Site	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X Site # 3	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2013
	X Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2013
	Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2014
	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2014
	X Pre-Amplifier	QTK	AP-180C / CHM_0906076	Sep., 2013
	Pre-Amplifier	MITEQ	AMF-4D-180400-45-6P/925975	Mar., 2014
	X Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2014
	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2013
	X Coaxial Cable	QuiTek	QTK-CABLE/ CAB5	Feb., 2014
	X Controller	QuiTek	QTK-CONTROLLER/ CTRL3	N/A
	X Coaxial Switch	Anritsu	MP59B/6200265729	N/A

Note:

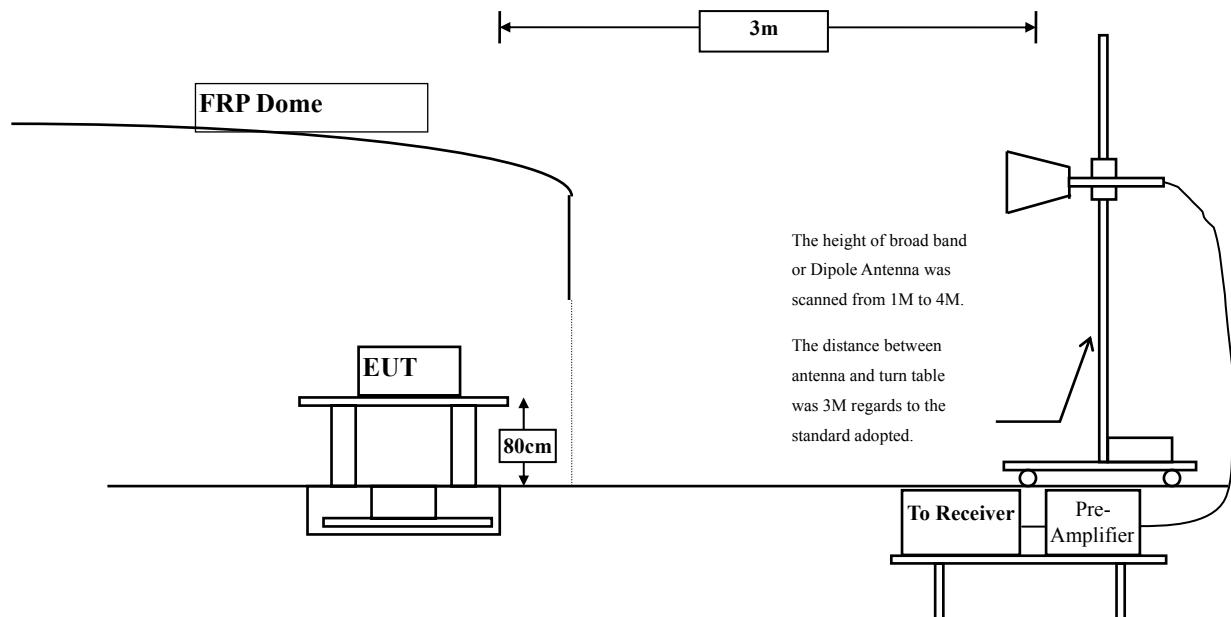
1. All instruments are calibrated every one year.
2. The test instruments marked by “X” are used to measure the final test results.

6.2. Test Setup

RF Conducted Measurement



RF Radiated Measurement:



6.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

6.4. Test Procedure

The EUT was setup according to ANSI C63.10: 2009 and tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2009. on radiated measurement.

6.5. Uncertainty

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

6.6. Test Result of Band Edge

Product : Play-Fi Wireless Speaker
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
01 (Peak)	2390.000	31.509	24.907	56.416	74.00	54.00	Pass
01 (Peak)	2400.000	31.561	29.868	61.429	--	--	Pass
01 (Peak)	2413.000	31.646	70.477	102.123	--	--	Pass
01 (Average)	2390.000	31.509	13.663	45.172	74.00	54.00	Pass
01 (Average)	2400.000	31.561	22.040	53.601	--	--	Pass
01 (Average)	2411.200	31.632	67.665	99.297	--	--	Pass

Figure Channel 01:

Horizontal (Peak)

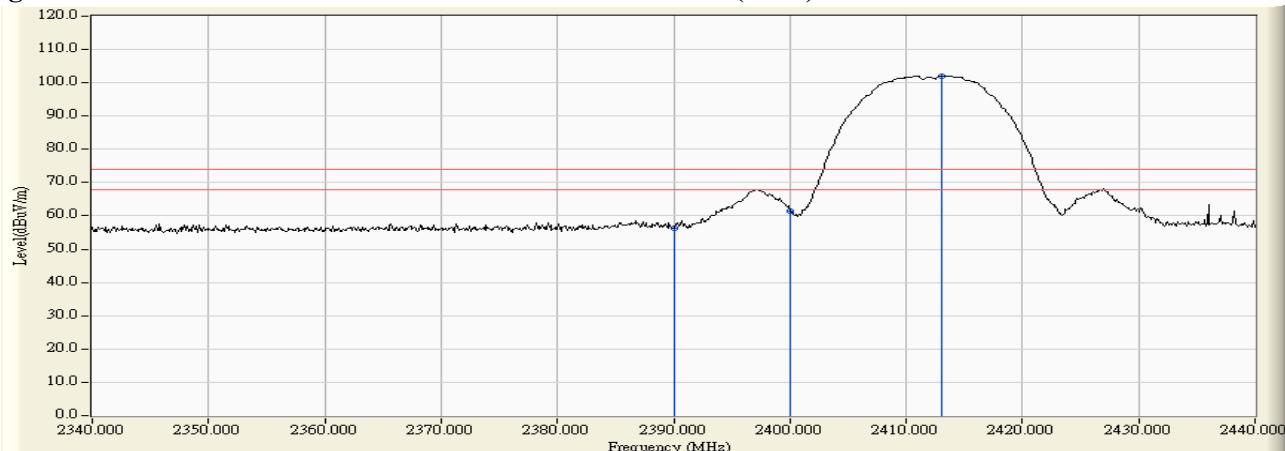
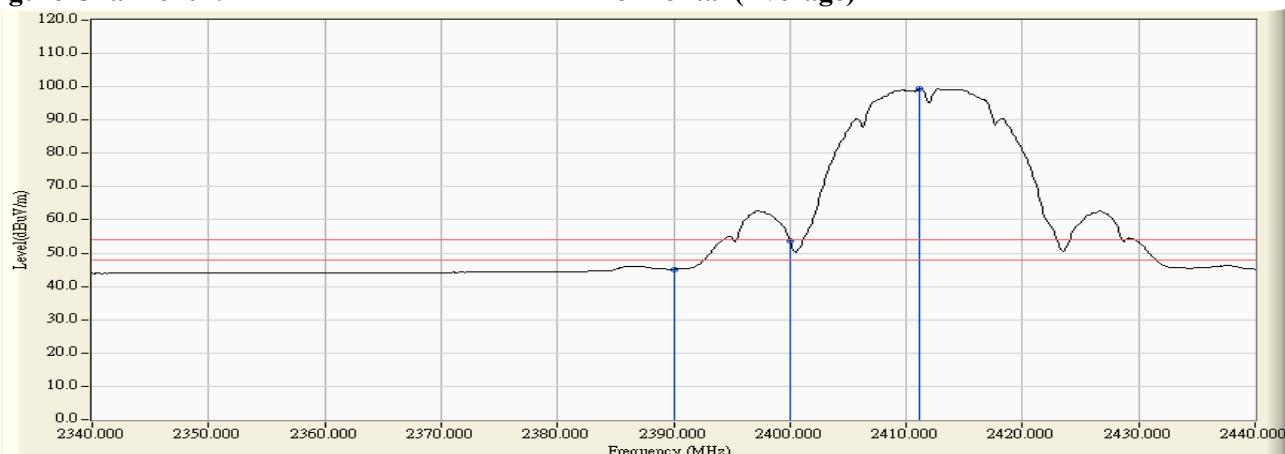


Figure Channel 01:

Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Play-Fi Wireless Speaker
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
01 (Peak)	2390.000	30.915	25.073	55.988	74.00	54.00	Pass
01 (Peak)	2400.000	30.912	31.325	62.237	--	--	Pass
01 (Peak)	2413.100	30.957	71.576	102.533	--	--	Pass
01 (Average)	2390.000	30.915	13.939	44.854	74.00	54.00	Pass
01 (Average)	2400.000	30.912	23.284	54.196	--	--	Pass
01 (Average)	2411.200	30.944	68.804	99.748	--	--	Pass

Figure Channel 01:

Vertical (Peak)

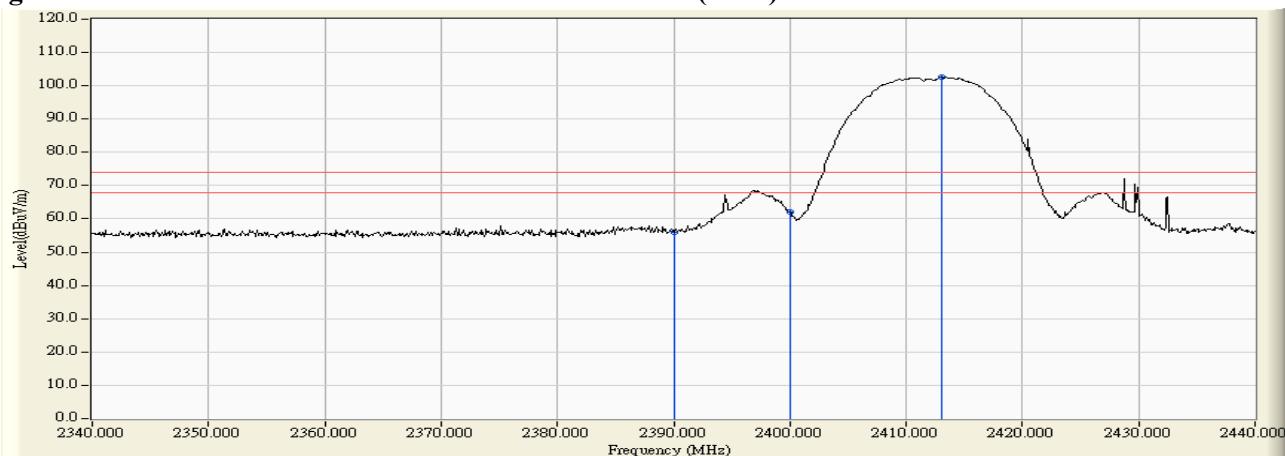
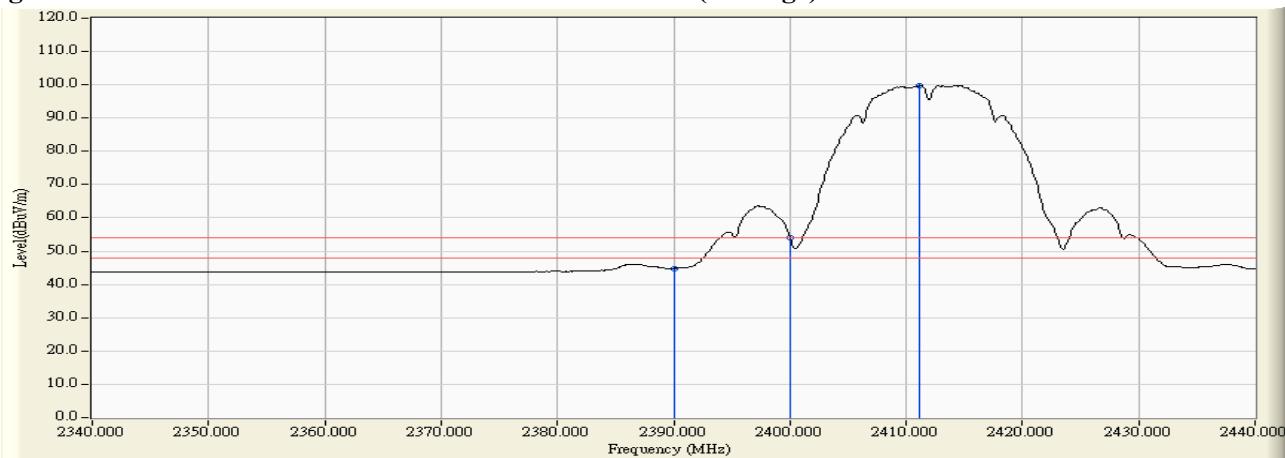


Figure Channel 01:

Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Play-Fi Wireless Speaker
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
11 (Peak)	2463.000	32.027	69.443	101.470	--	--	Pass
11 (Peak)	2483.500	32.182	26.370	58.552	74.00	54.00	Pass
11 (Peak)	2484.400	32.189	32.309	64.498	74.00	54.00	Pass
11 (Average)	2461.200	32.014	66.377	98.390	--	--	Pass
11 (Average)	2483.500	32.182	13.804	45.986	74.00	54.00	Pass

Figure Channel 11:

Horizontal (Peak)

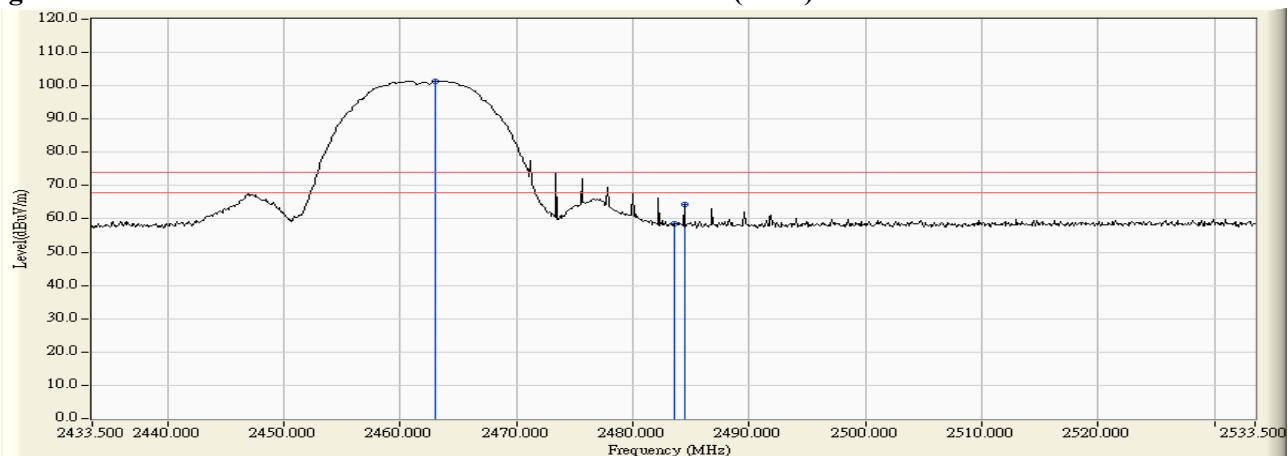
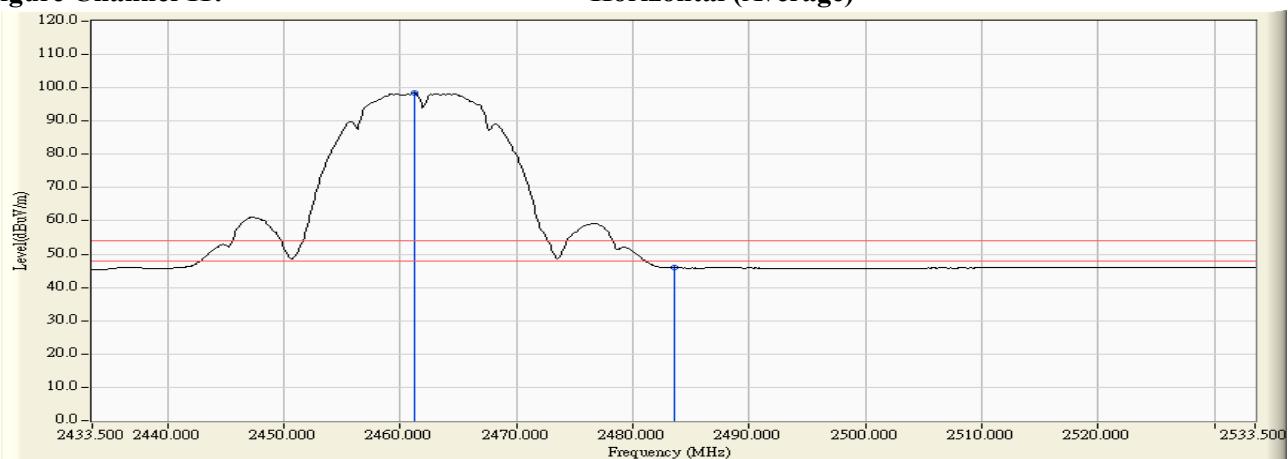


Figure Channel 11:

Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Play-Fi Wireless Speaker
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462MHz)

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
11 (Peak)	2463.000	31.298	69.998	101.295	--	--	Pass
11 (Peak)	2483.500	31.435	33.125	64.560	74.00	54.00	Pass
11 (Average)	2461.200	31.285	67.095	98.380	--	--	Pass
11 (Average)	2483.500	31.435	13.886	45.321	74.00	54.00	Pass

Figure Channel 11:

Vertical (Peak)

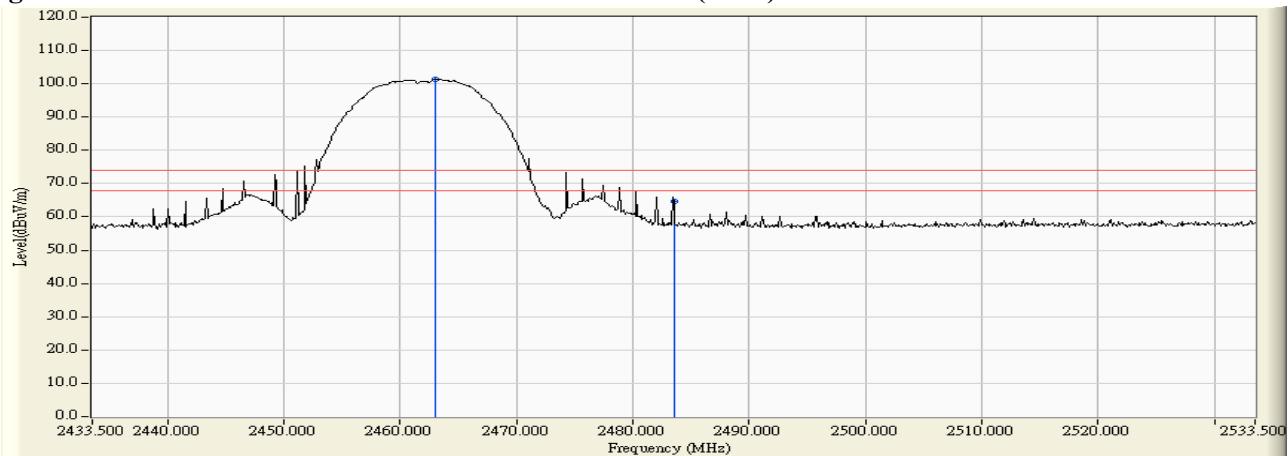
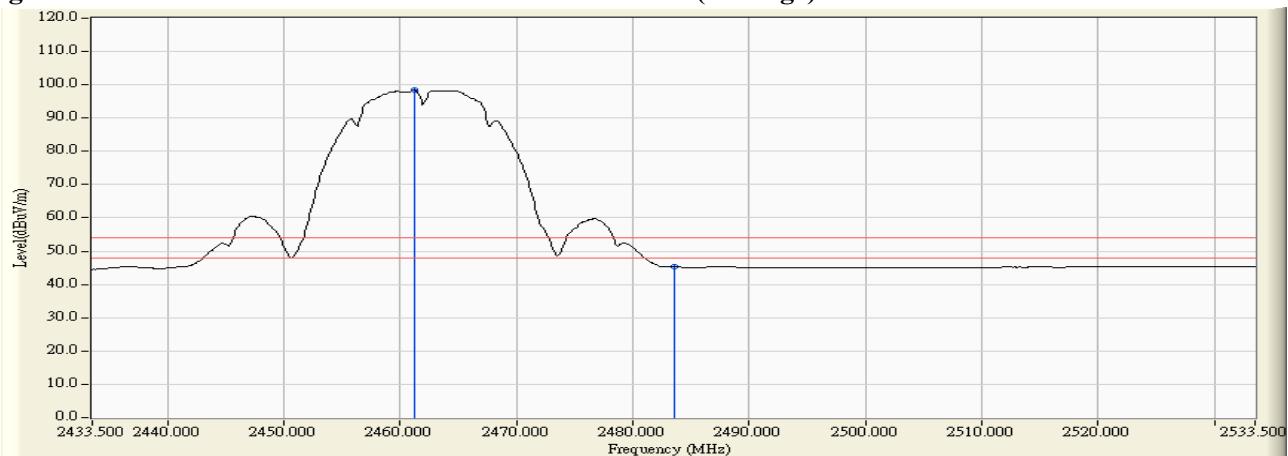


Figure Channel 11:

Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Play-Fi Wireless Speaker
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
01 (Peak)	2390.000	31.509	35.172	66.681	74.00	54.00	Pass
01 (Peak)	2400.000	31.561	41.240	72.801	--	--	Pass
01 (Peak)	2415.100	31.662	71.497	103.159	--	--	Pass
01 (Average)	2390.000	31.509	20.090	51.599	74.00	54.00	Pass
01 (Average)	2400.000	31.561	26.292	57.853	--	--	Pass
01 (Average)	2414.000	31.654	62.819	94.472	--	--	Pass

Figure Channel 01:

Horizontal (Peak)

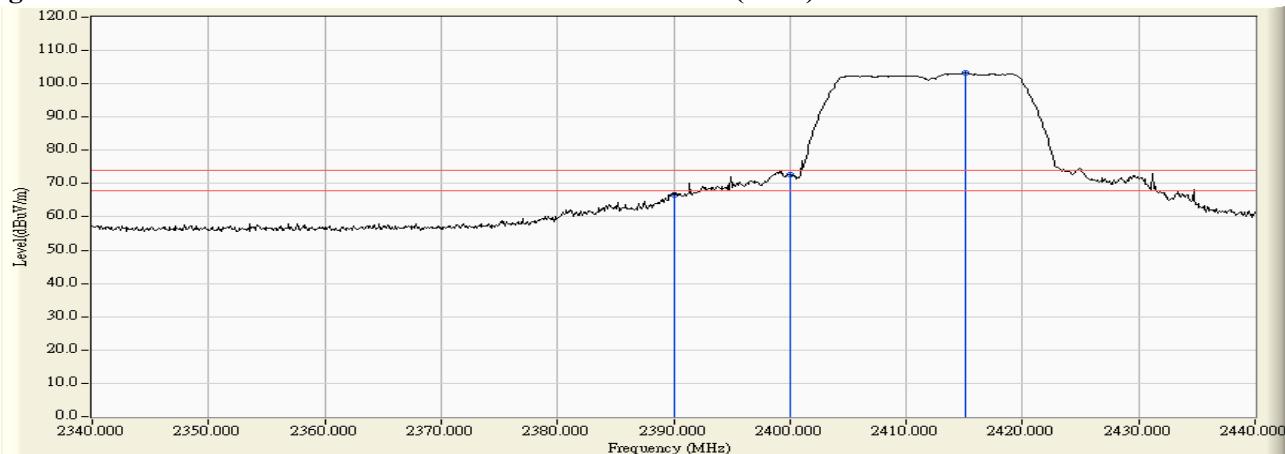
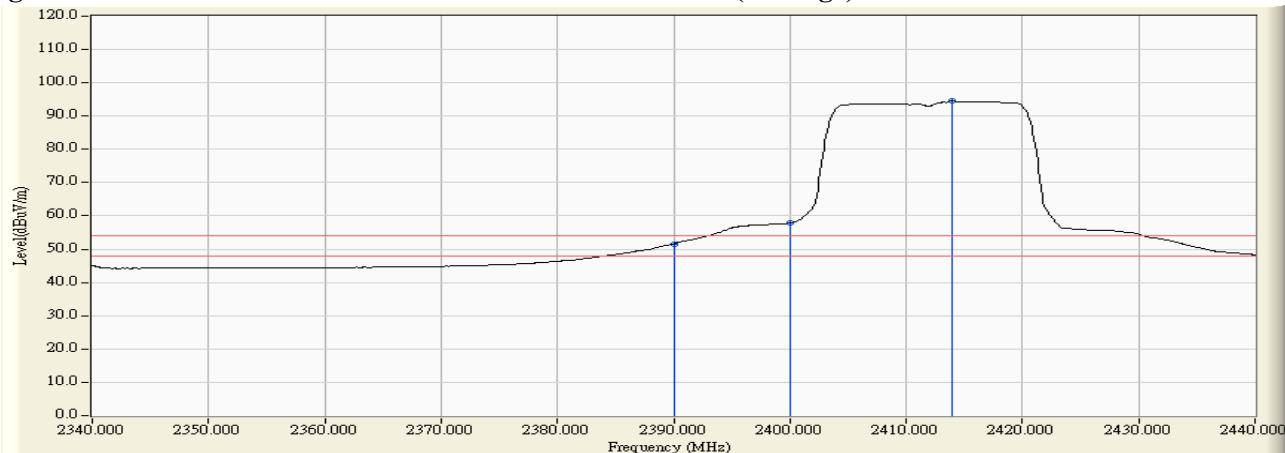


Figure Channel 01:

Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Play-Fi Wireless Speaker
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
01 (Peak)	2390.000	30.915	36.007	66.922	74.00	54.00	Pass
01 (Peak)	2400.000	30.912	44.241	75.153	--	--	Pass
01 (Peak)	2415.100	30.970	72.471	103.441	--	--	Pass
01 (Average)	2390.000	30.915	21.017	51.932	74.00	54.00	Pass
01 (Average)	2400.000	30.912	27.618	58.530	--	--	Pass
01 (Average)	2413.900	30.962	63.786	94.748	--	--	Pass

Figure Channel 01:

Vertical (Peak)

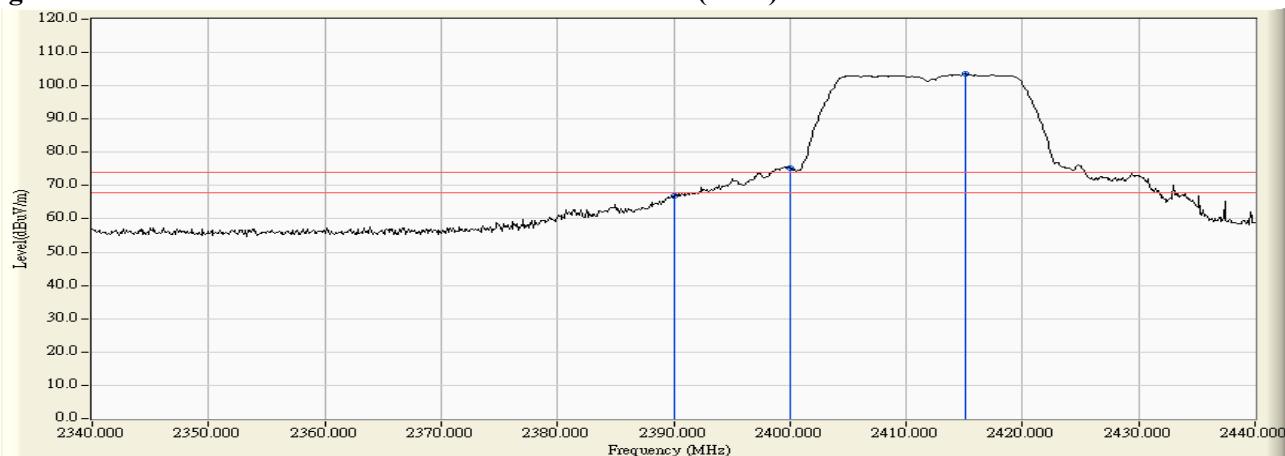
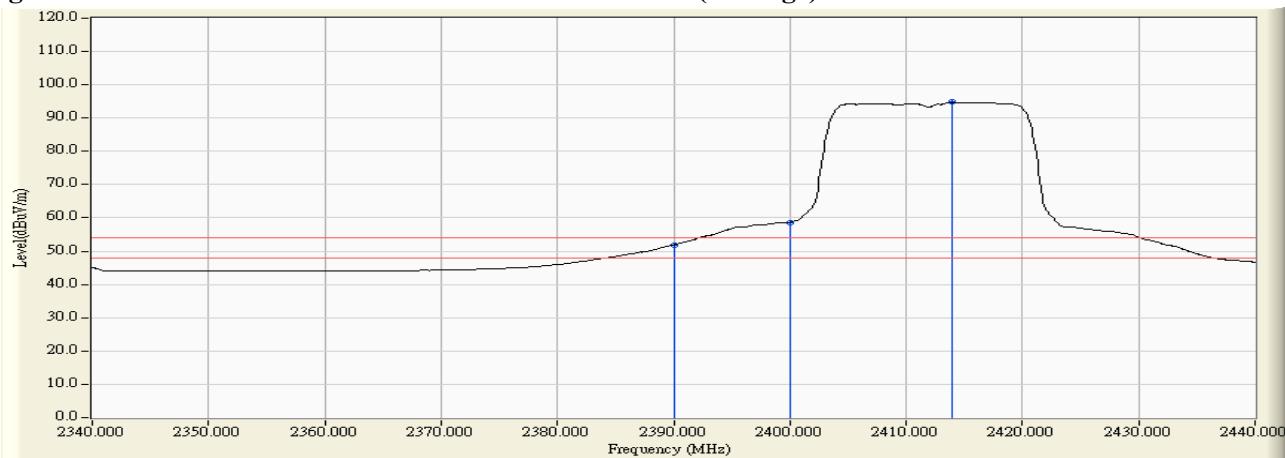


Figure Channel 01:

Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Play-Fi Wireless Speaker
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
11 (Peak)	2455.200	31.969	71.230	103.198	--	--	Pass
11 (Peak)	2483.500	32.182	33.783	65.965	74.00	54.00	Pass
11 (Peak)	2484.000	32.185	35.165	67.351	74.00	54.00	Pass
11 (Average)	2456.100	31.974	62.355	94.330	--	--	Pass
11 (Average)	2483.500	32.182	18.655	50.837	74.00	54.00	Pass

Figure Channel 11:

Horizontal (Peak)

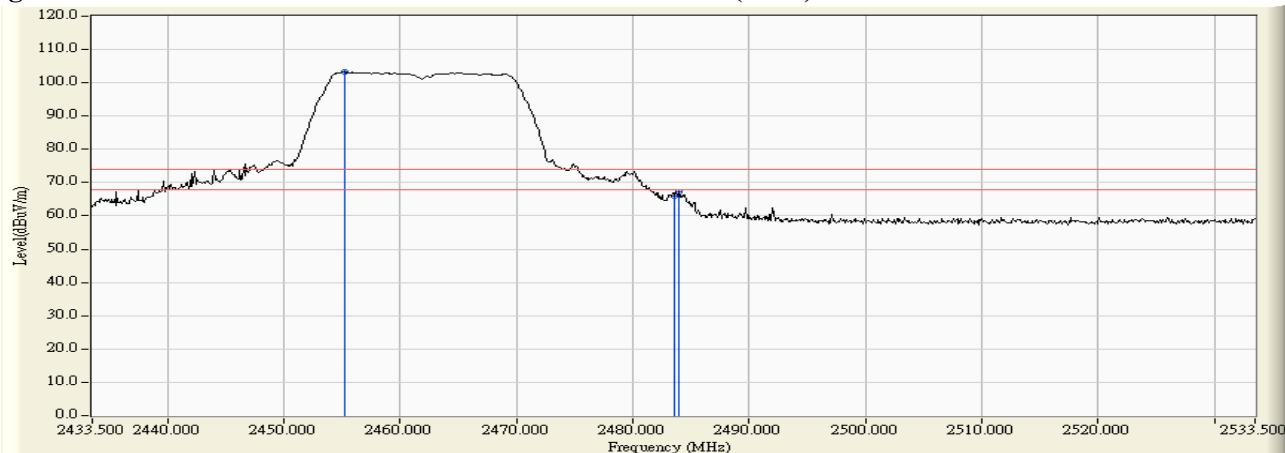
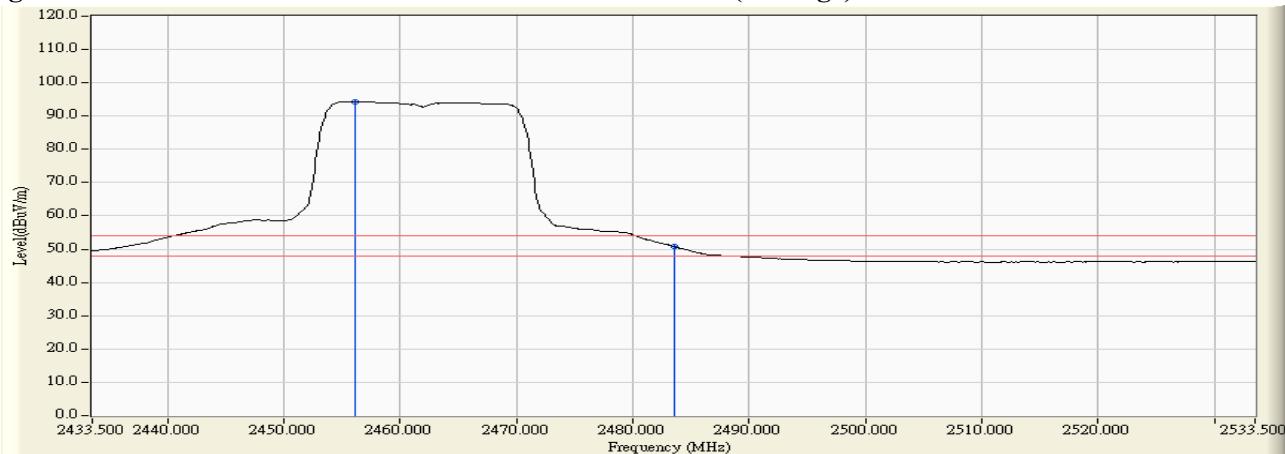


Figure Channel 11:

Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Play-Fi Wireless Speaker
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462MHz)

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
11 (Peak)	2456.500	31.252	61.792	93.045	--	--	Pass
11 (Peak)	2483.500	31.435	25.807	57.242	74.00	54.00	Pass
11 (Average)	2456.800	31.255	52.968	84.223	--	--	Pass
11 (Average)	2483.500	31.435	13.658	45.093	74.00	54.00	Pass

Figure Channel 11:

Vertical (Peak)

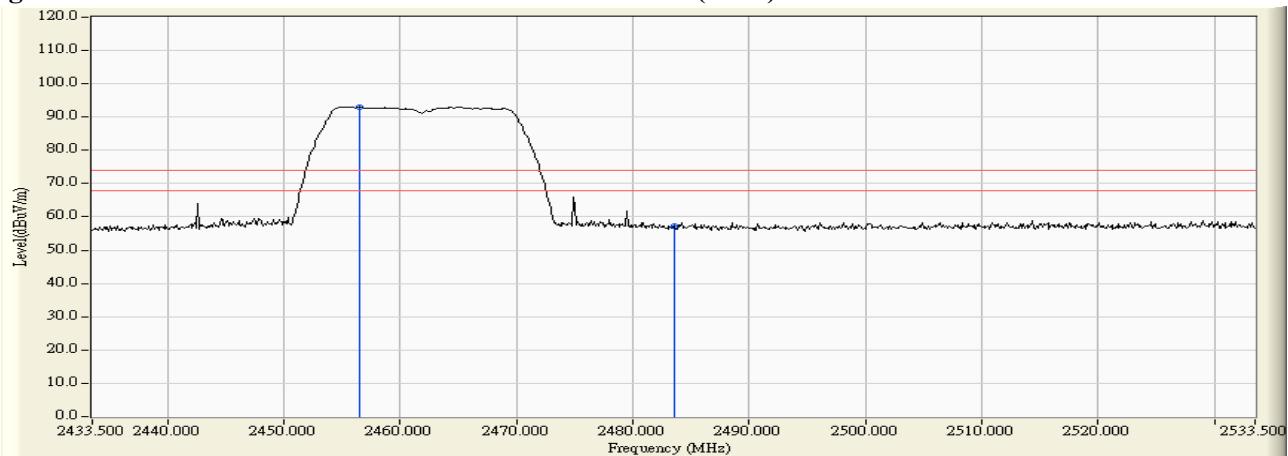
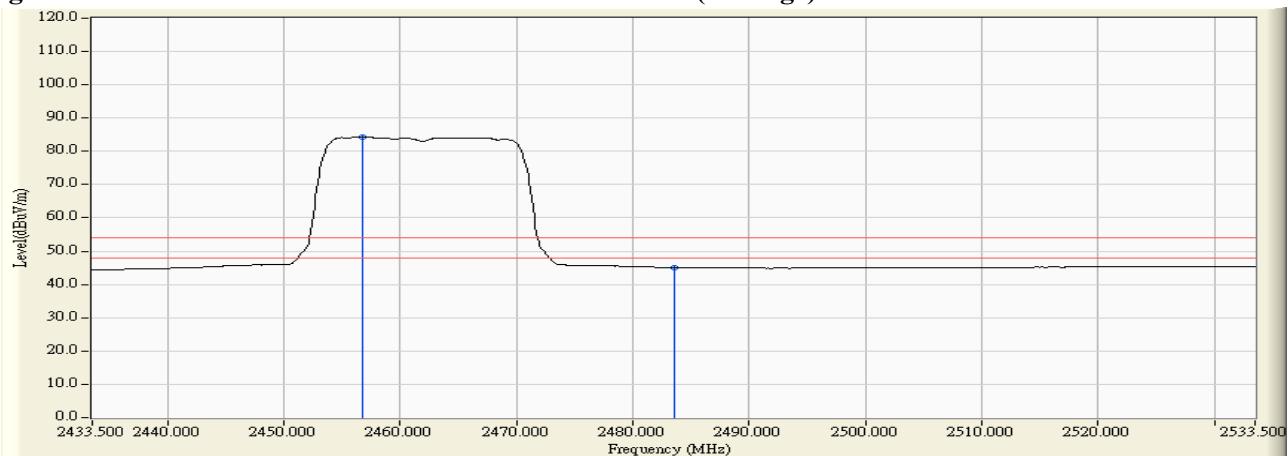


Figure Channel 11:

Vertical (Average)



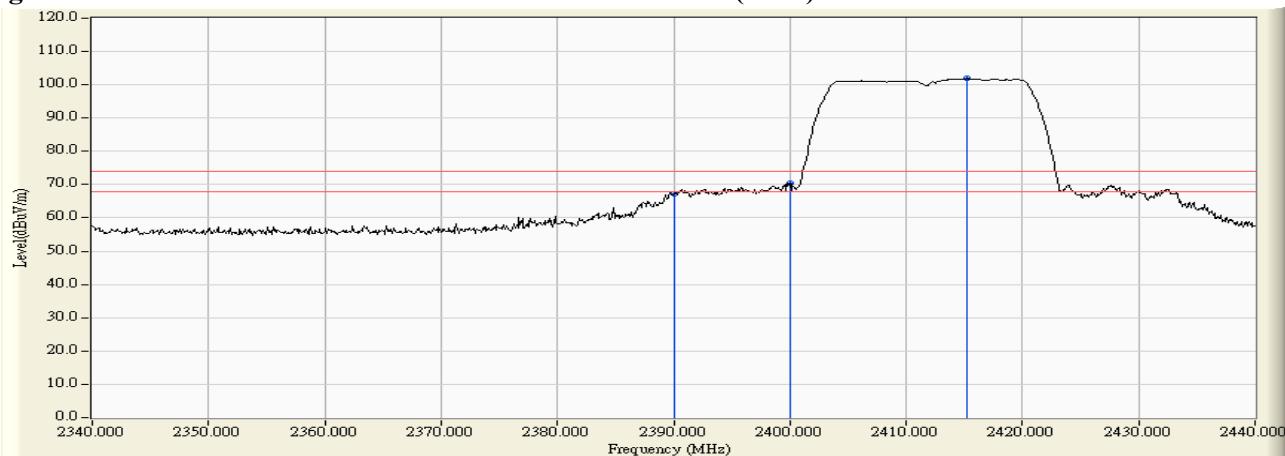
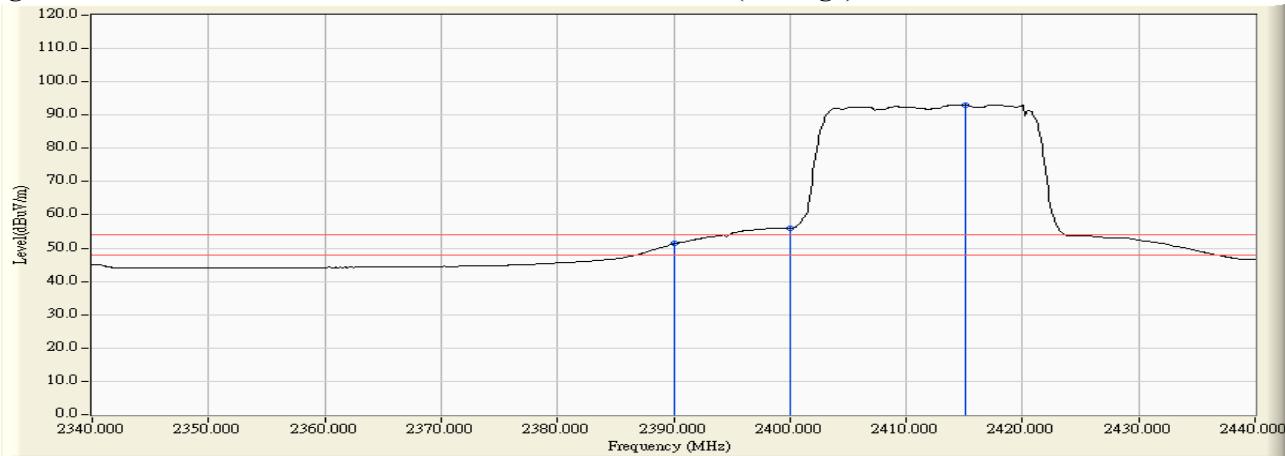
Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Play-Fi Wireless Speaker
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2412MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
01 (Peak)	2390.000	31.509	35.887	67.396	74.00	54.00	Pass
01 (Peak)	2400.000	31.561	38.804	70.365	--	--	Pass
01 (Peak)	2415.200	31.662	70.189	101.852	--	--	Pass
01 (Average)	2390.000	31.509	19.842	51.351	74.00	54.00	Pass
01 (Average)	2400.000	31.561	24.441	56.002	--	--	Pass
01 (Average)	2415.100	31.662	61.368	93.030	--	--	Pass

Figure Channel 01:
Horizontal (Peak)

Figure Channel 01:
Horizontal (Average)


Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Play-Fi Wireless Speaker
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2412MHz)

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
01 (Peak)	2390.000	30.915	38.578	69.493	74.00	54.00	Pass
01 (Peak)	2400.000	30.912	41.839	72.751	--	--	Pass
01 (Peak)	2415.100	30.970	71.800	102.770	--	--	Pass
01 (Average)	2390.000	30.915	21.988	52.903	74.00	54.00	Pass
01 (Average)	2400.000	30.912	26.713	57.625	--	--	Pass
01 (Average)	2415.000	30.970	62.638	93.608	--	--	Pass

Figure Channel 01:

Vertical (Peak)

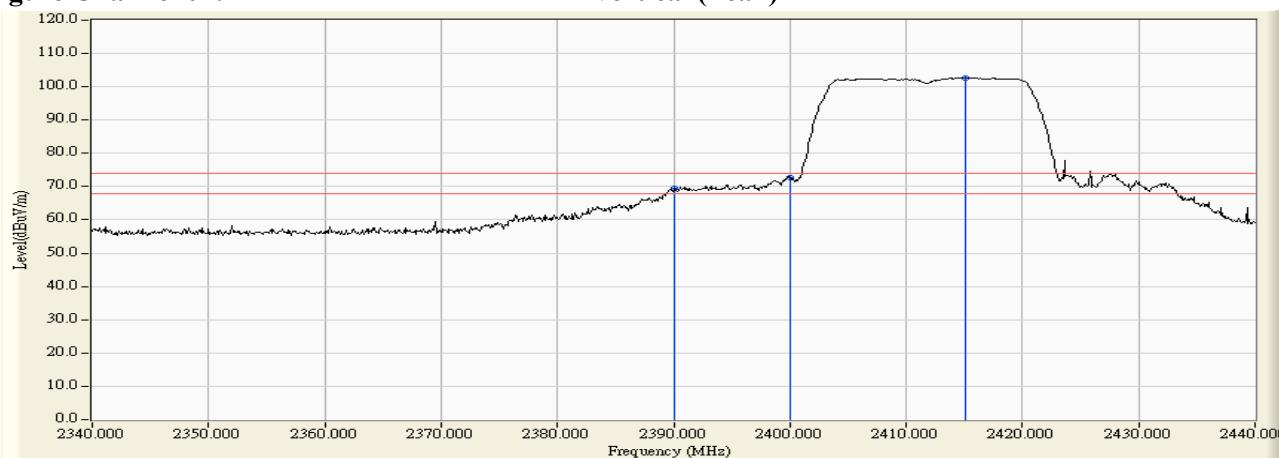
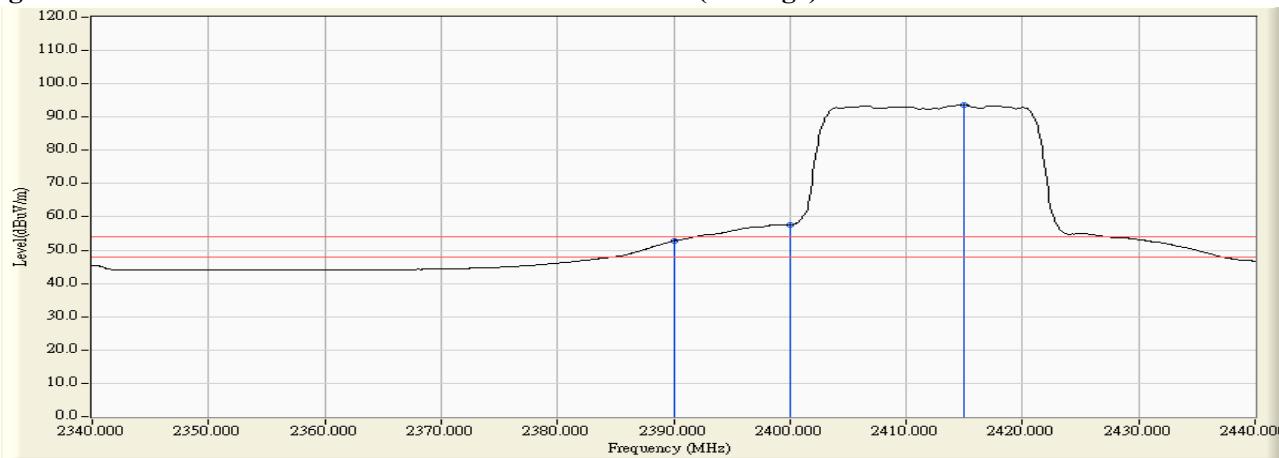


Figure Channel 01:

Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Play-Fi Wireless Speaker
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2462MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
11 (Peak)	2454.800	31.965	71.187	103.152	--	--	Pass
11 (Peak)	2483.500	32.182	37.255	69.437	74.00	54.00	Pass
11 (Average)	2456.100	31.974	62.041	94.016	--	--	Pass
11 (Average)	2483.500	32.182	19.964	52.146	74.00	54.00	Pass

Figure Channel 11:

Horizontal (Peak)

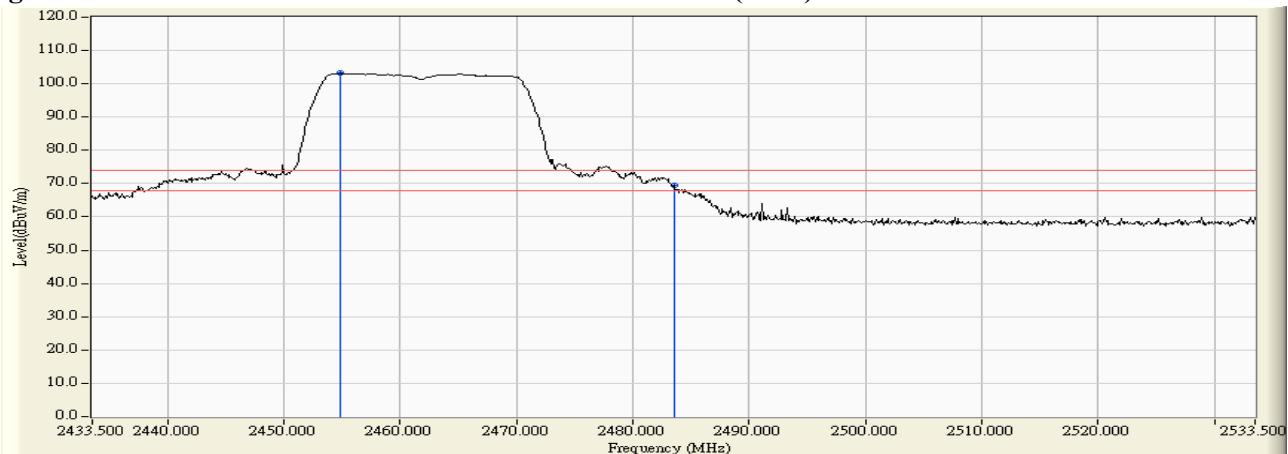
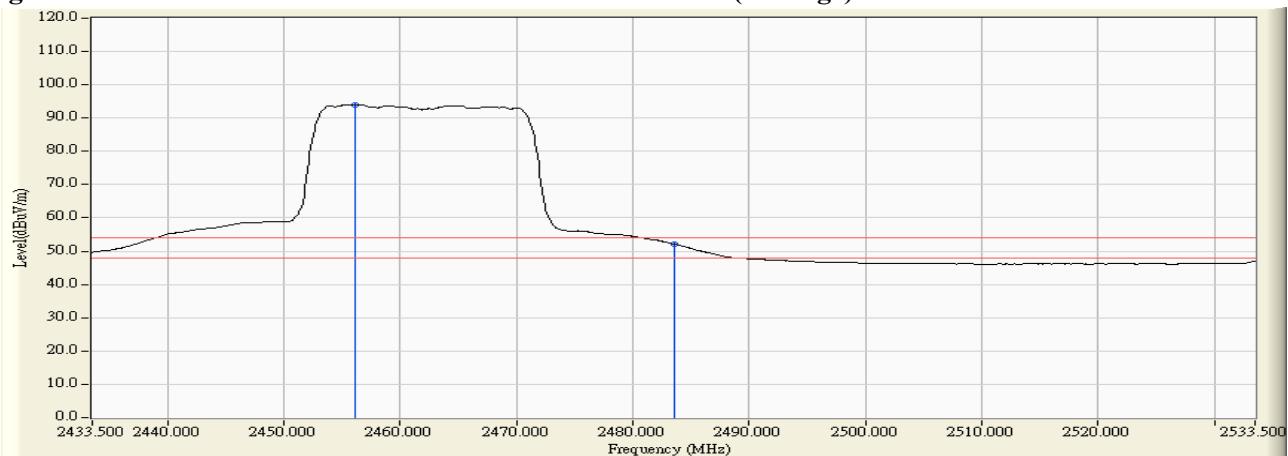


Figure Channel 11:

Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Play-Fi Wireless Speaker
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2462MHz)

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
11 (Peak)	2456.400	31.251	70.170	101.422	--	--	Pass
11 (Peak)	2483.500	31.435	32.387	63.822	74.00	54.00	Pass
11 (Peak)	2484.300	31.440	36.288	67.729	74.00	54.00	Pass
11 (Average)	2456.300	31.251	61.077	92.328	--	--	Pass
11 (Average)	2483.500	31.435	17.546	48.981	74.00	54.00	Pass

Figure Channel 11:

Vertical (Peak)

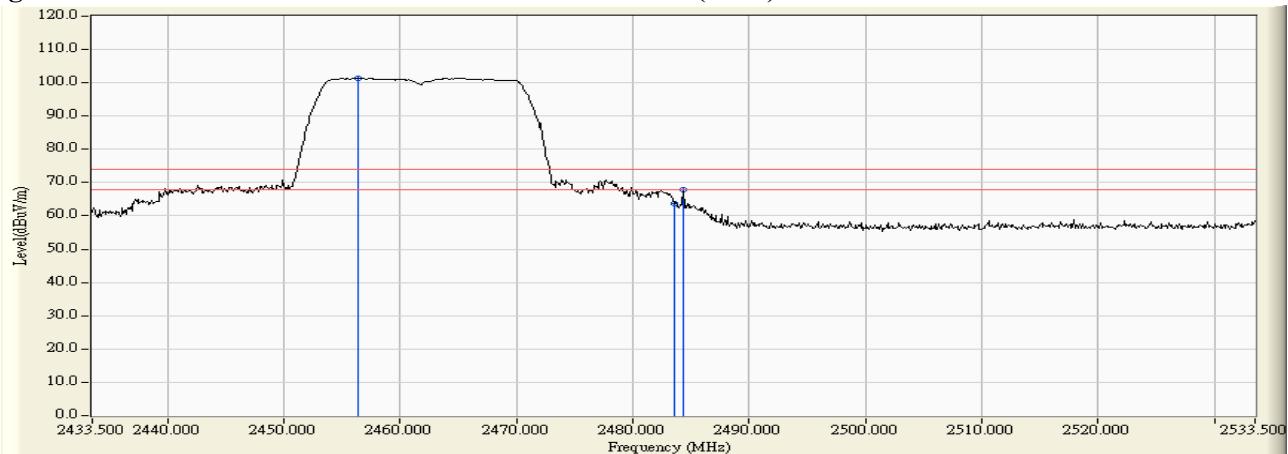
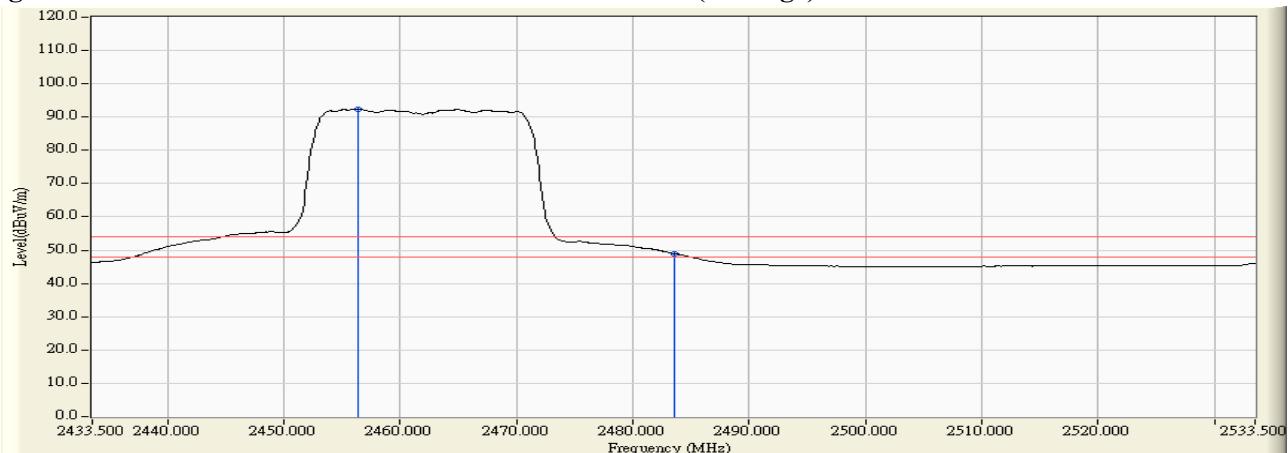


Figure Channel 11:

Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Play-Fi Wireless Speaker
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 5: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2422MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
03 (Peak)	2388.800	31.505	35.442	66.946	74.00	54.00	Pass
03 (Peak)	2390.000	31.509	34.292	65.801	74.00	54.00	Pass
03 (Peak)	2400.000	31.561	35.602	67.163	--	--	Pass
03 (Peak)	2428.900	31.767	66.356	98.124	--	--	Pass
03 (Average)	2390.000	31.509	21.790	53.299	74.00	54.00	Pass
03 (Average)	2400.000	31.561	22.903	54.464	--	--	Pass
03 (Average)	2430.100	31.777	57.311	89.088	--	--	Pass

Figure Channel 03:

Horizontal (Peak)

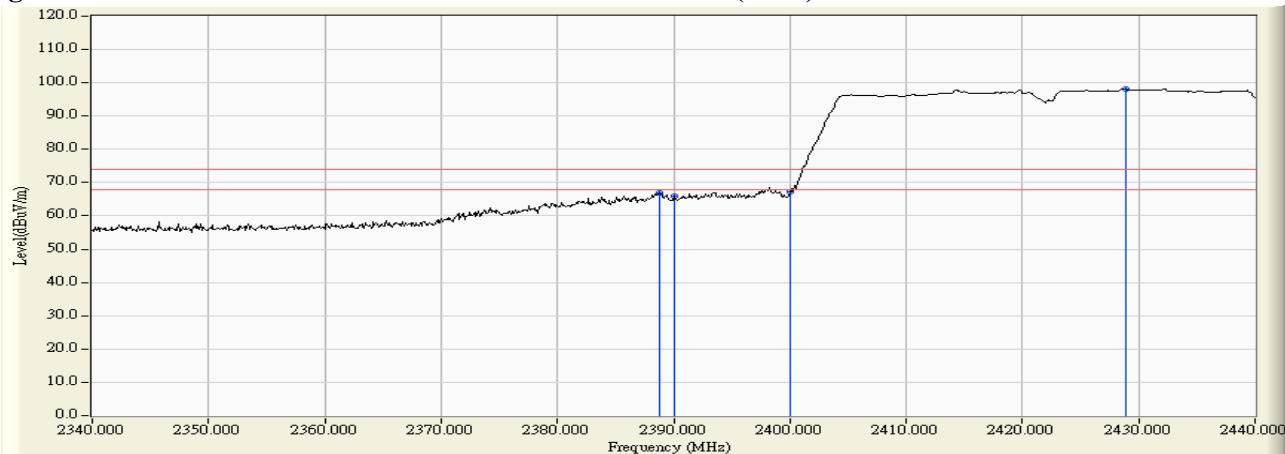
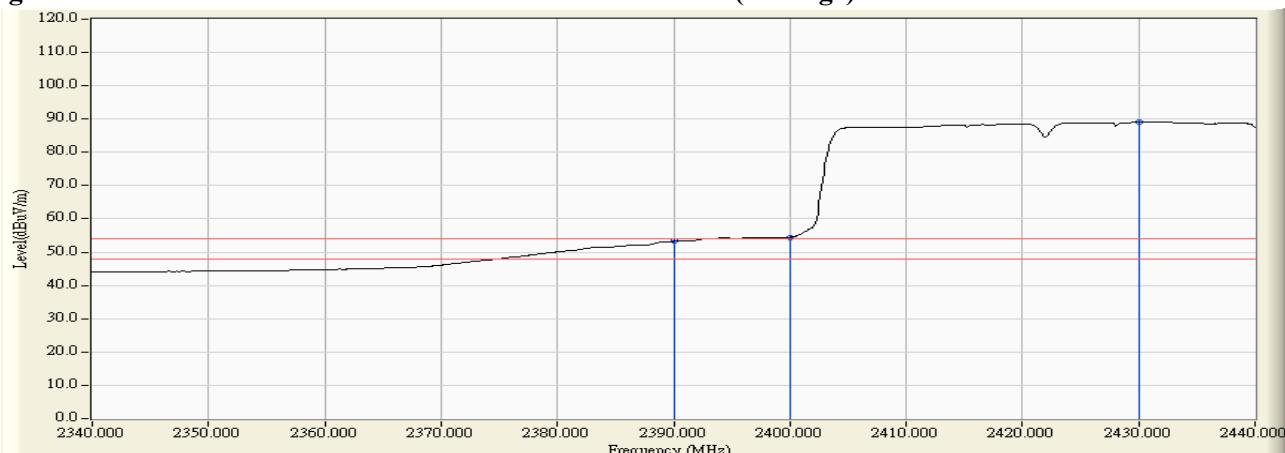


Figure Channel 03:

Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Play-Fi Wireless Speaker
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 5: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2422MHz)

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
03 (Peak)	2390.000	30.915	35.667	66.582	74.00	54.00	Pass
03 (Peak)	2400.000	30.912	38.053	68.965	--	--	Pass
03 (Peak)	2414.300	30.966	67.718	98.683	--	--	Pass
03 (Average)	2390.000	30.915	22.202	53.117	74.00	54.00	Pass
03 (Average)	2400.000	30.912	22.977	53.889	--	--	Pass
03 (Average)	2415.800	30.975	55.530	86.505	--	--	Pass

Figure Channel 03:

Vertical (Peak)

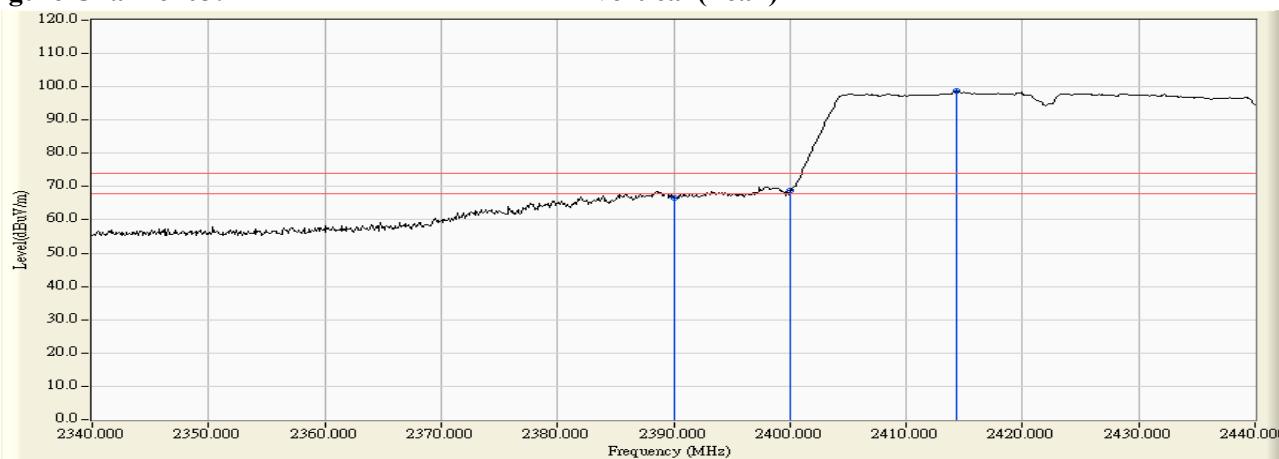
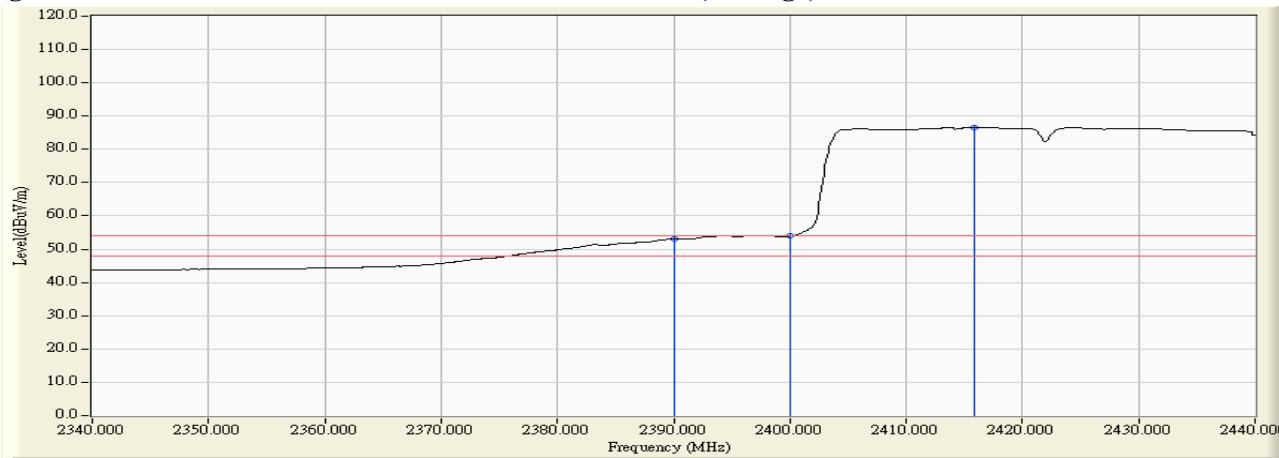


Figure Channel 03:

Vertical (Average)



Note: 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.

2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Play-Fi Wireless Speaker
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 5: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2452MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
09 (Peak)	2444.400	31.886	65.829	97.715	--	--	Pass
09 (Peak)	2483.500	32.182	29.940	62.122	74.00	54.00	Pass
09 (Peak)	2487.700	32.213	32.952	65.166	74.00	54.00	Pass
09 (Average)	2438.200	31.838	56.939	88.778	--	--	Pass
09 (Average)	2483.500	32.182	18.423	50.605	74.00	54.00	Pass

Figure Channel 09:

Horizontal (Peak)

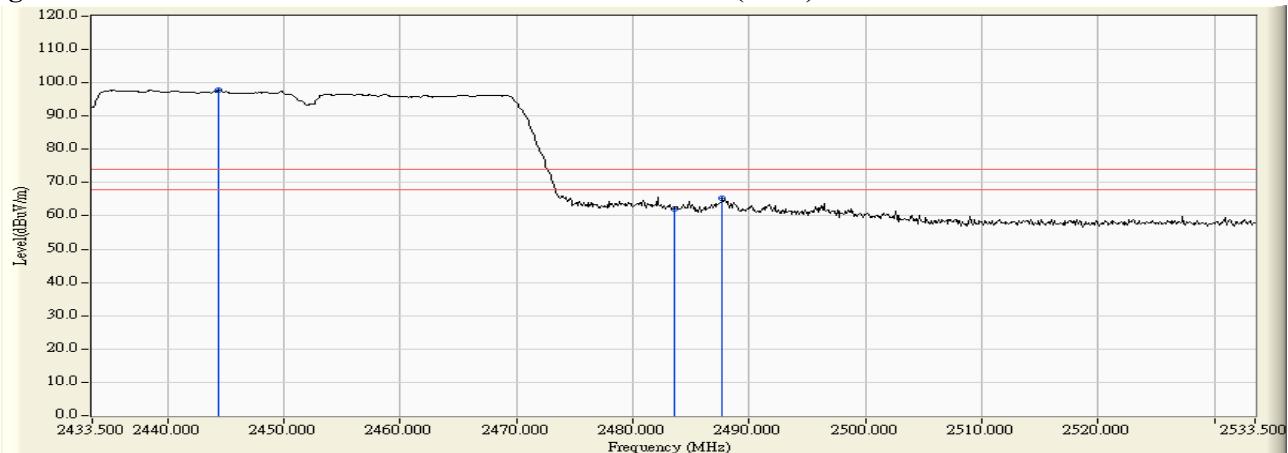
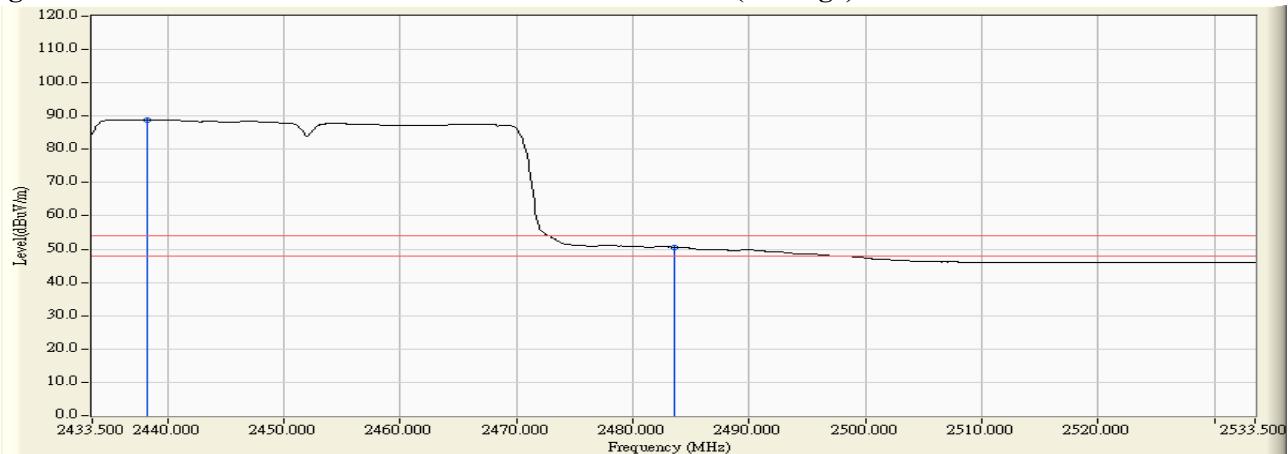


Figure Channel 09:

Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Play-Fi Wireless Speaker
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 5: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2452MHz)

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
09 (Peak)	2444.300	31.169	65.577	96.746	--	--	Pass
09 (Peak)	2483.500	31.435	30.590	62.025	74.00	54.00	Pass
09 (Peak)	2488.100	31.466	32.533	63.999	74.00	54.00	Pass
09 (Average)	2439.800	31.138	56.202	87.340	--	--	Pass
09 (Average)	2483.500	31.435	18.541	49.976	74.00	54.00	Pass

Figure Channel 09:

Vertical (Peak)

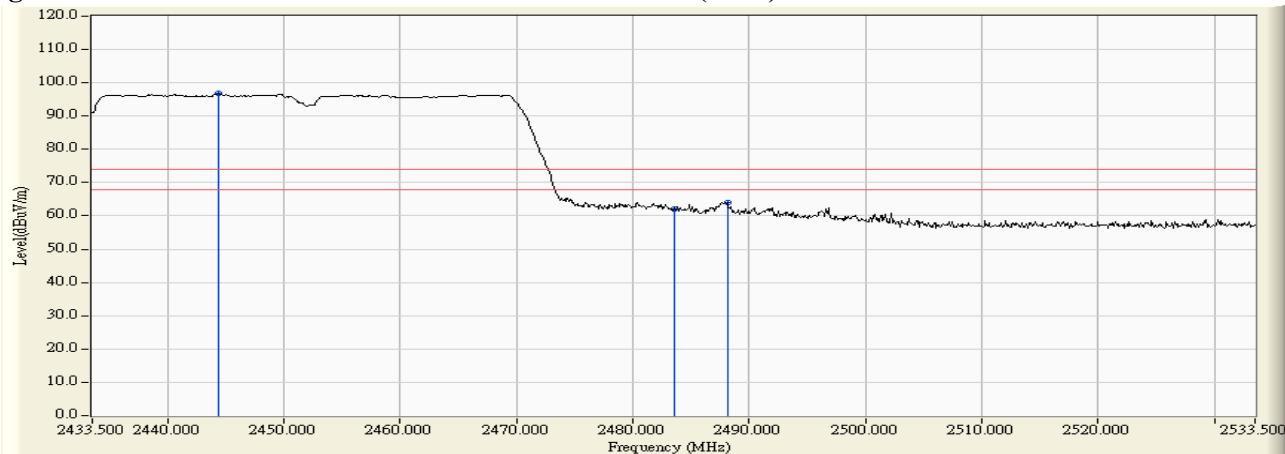
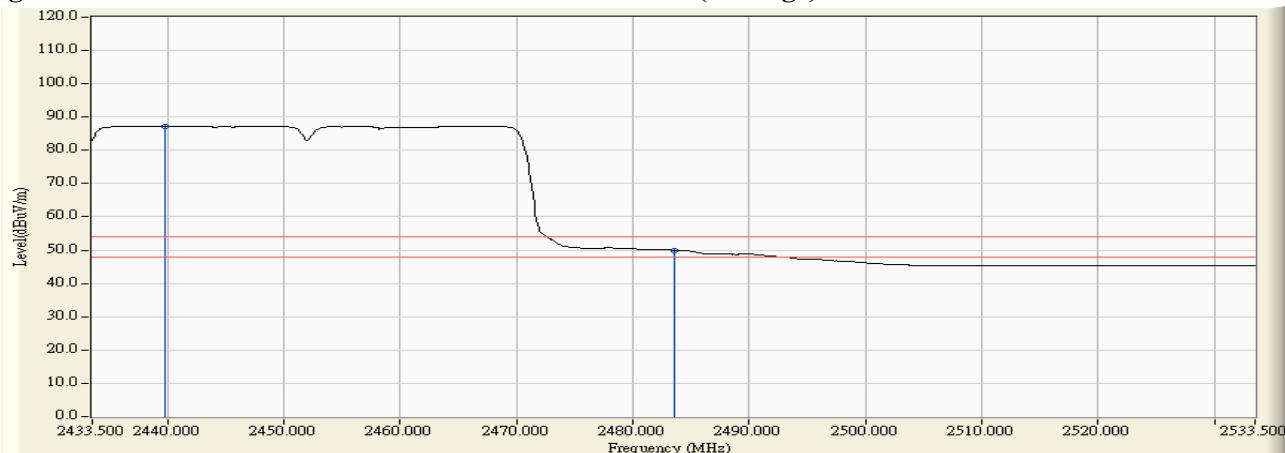


Figure Channel 09:

Vertical (Average)

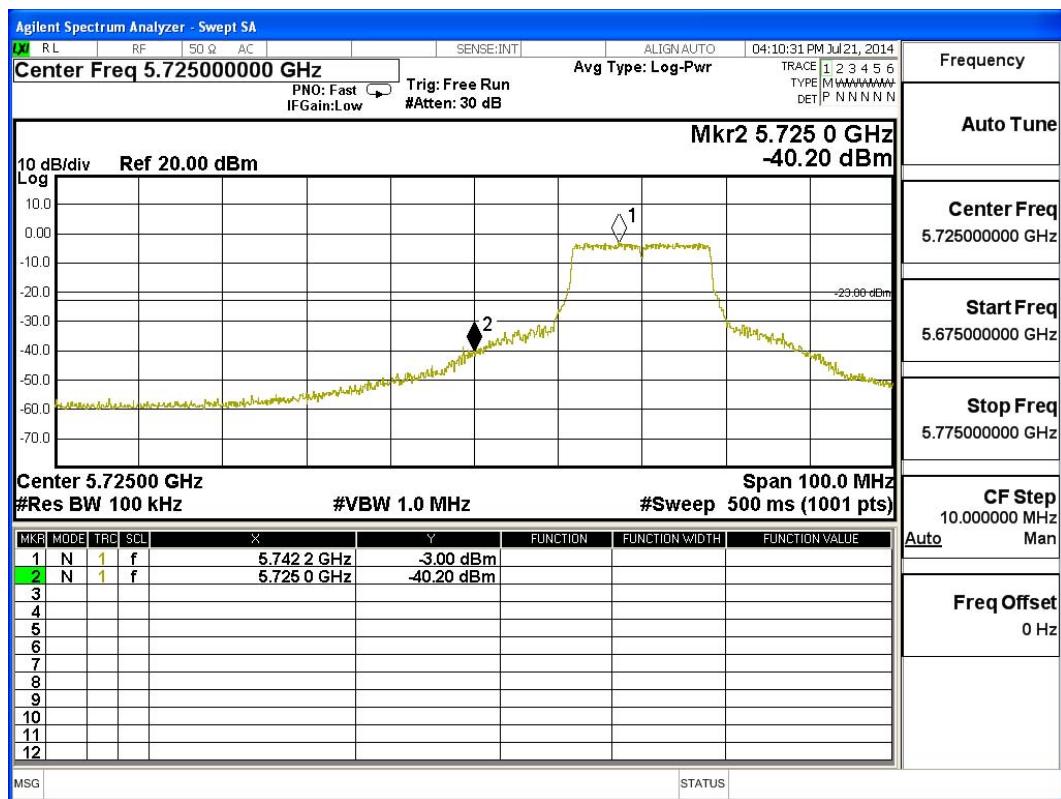


Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

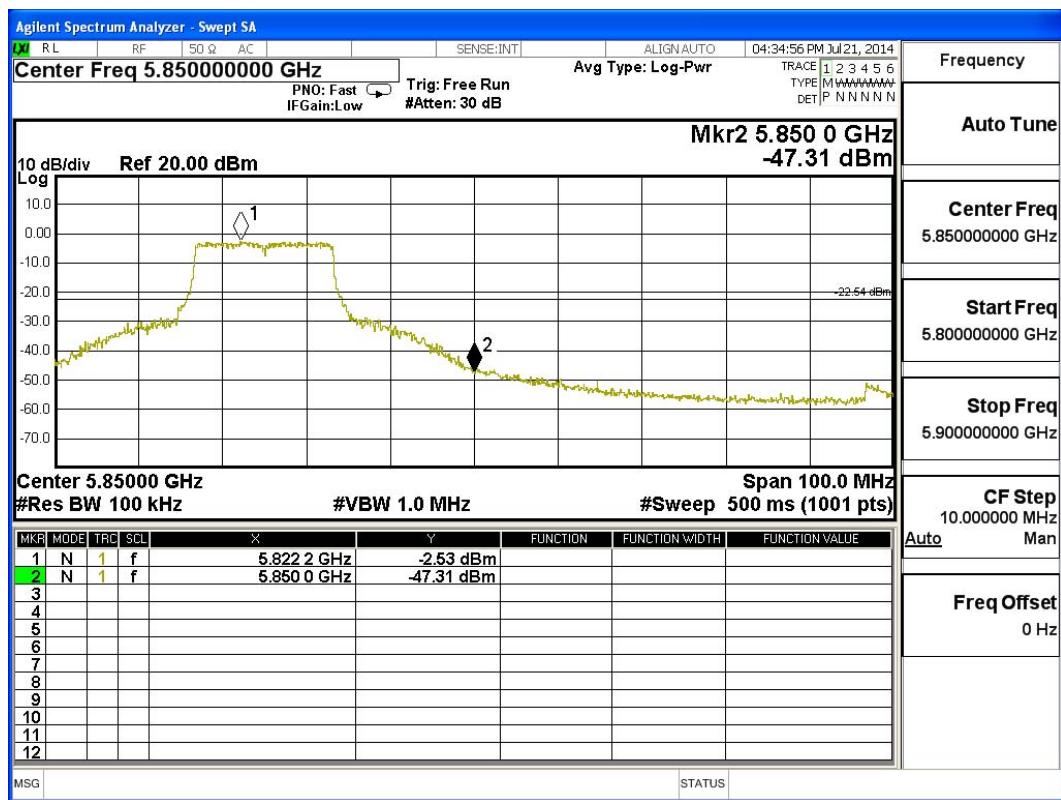
Product : Play-Fi Wireless Speaker
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit - 802.11a 6Mbps

Test Frequency (MHz)	Measurement Level Δ (dB)	Limit Δ (dB)	Result
5745	37.20	>20	PASS



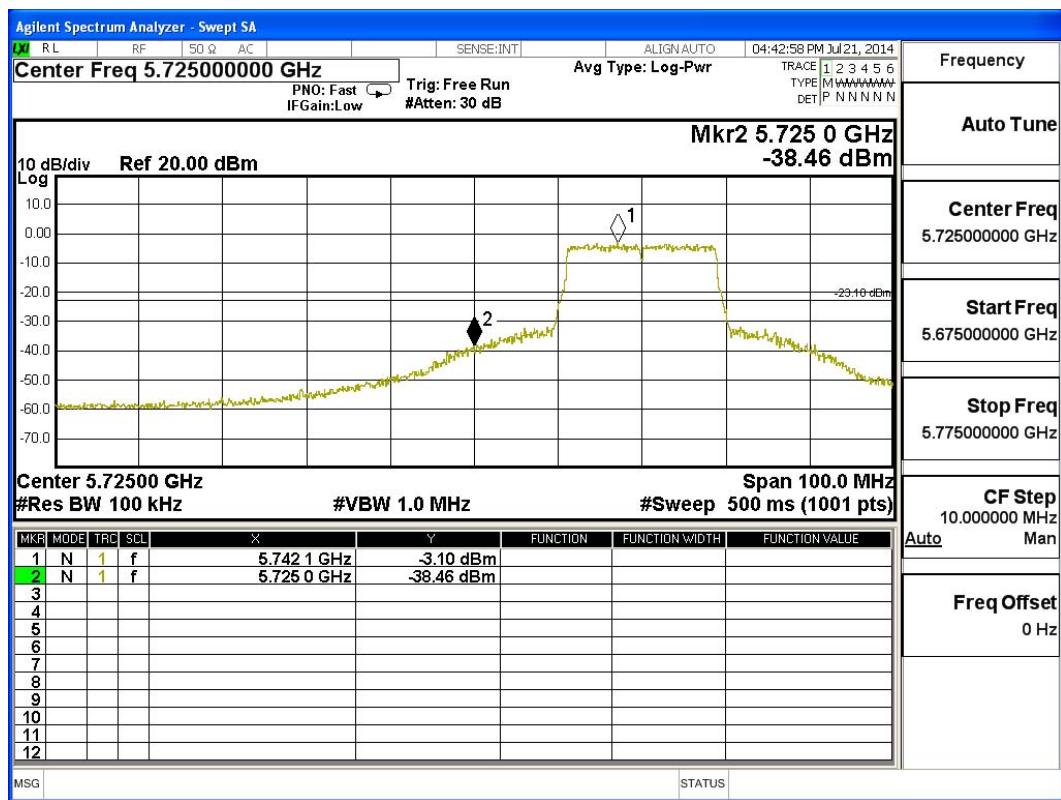
Product : Play-Fi Wireless Speaker
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit - 802.11a 6Mbps

Test Frequency (MHz)	Measurement Level Δ (dB)	Limit Δ (dB)	Result
5825	44.78	>20	PASS



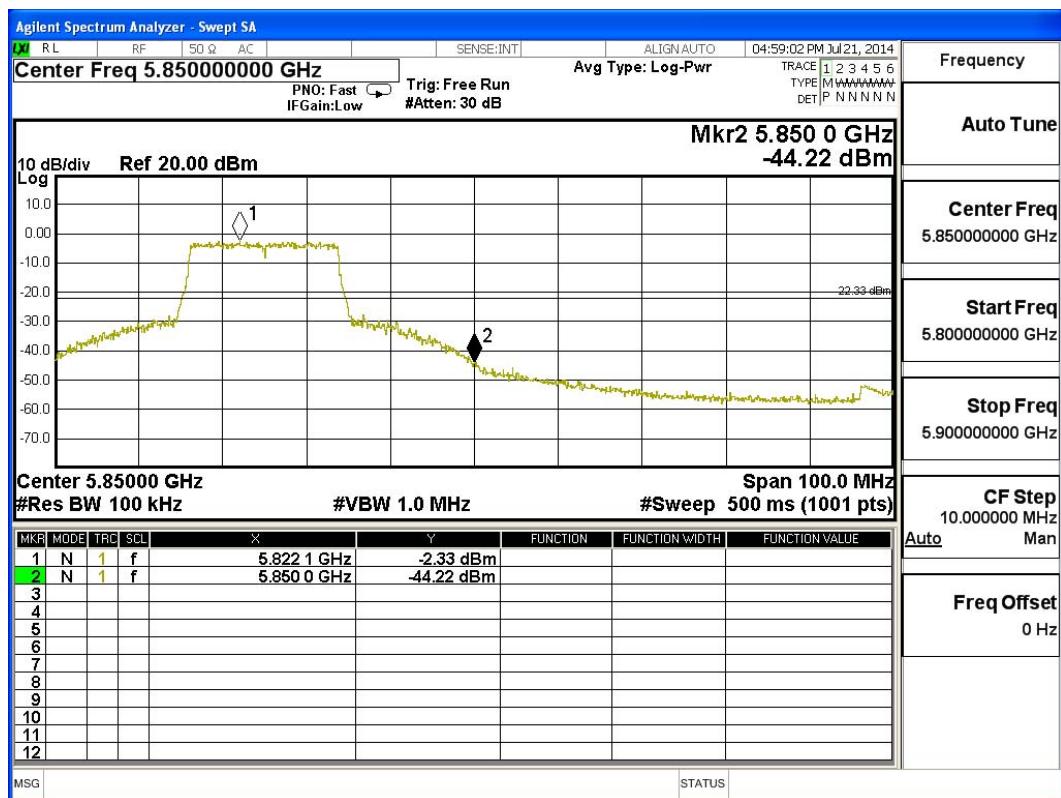
Product : Play-Fi Wireless Speaker
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 6: Transmit - 802.11n-20BW_7.2Mbps(5G Band)

Test Frequency (MHz)	Measurement Level Δ (dB)	Limit Δ (dB)	Result
5745	35.36	>20	PASS



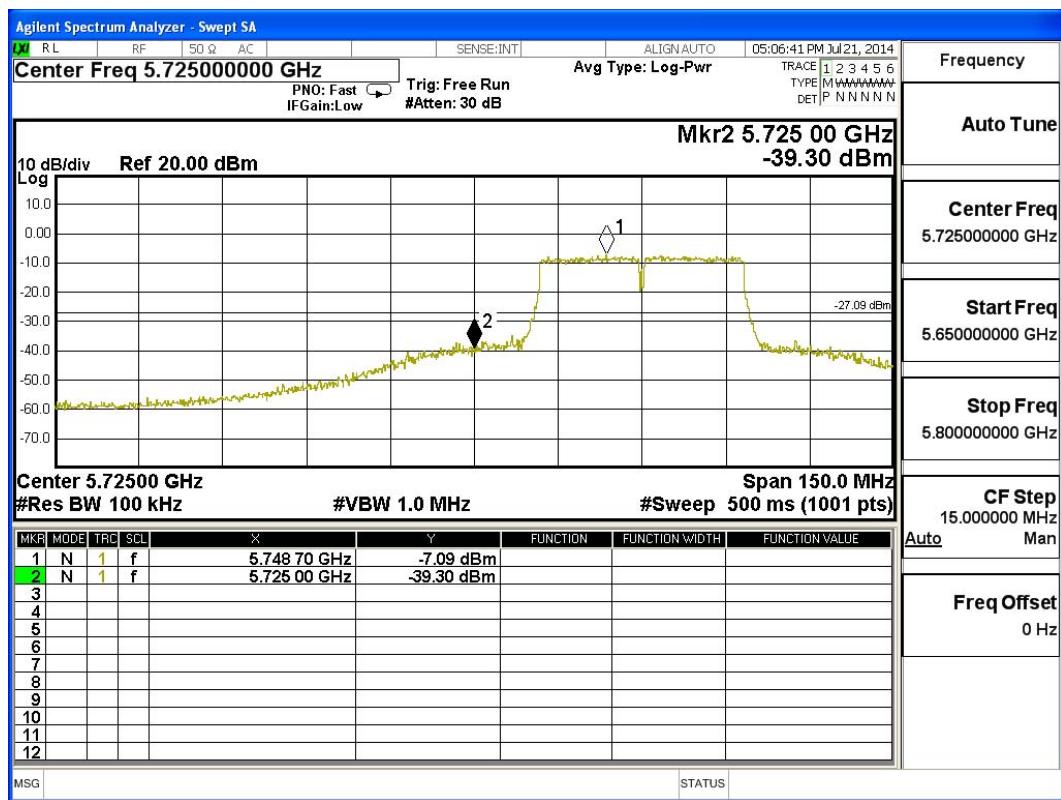
Product : Play-Fi Wireless Speaker
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 6: Transmit - 802.11n-20BW_7.2Mbps(5G Band)

Test Frequency (MHz)	Measurement Level Δ (dB)	Limit Δ (dB)	Result
5825	41.89	>20	PASS



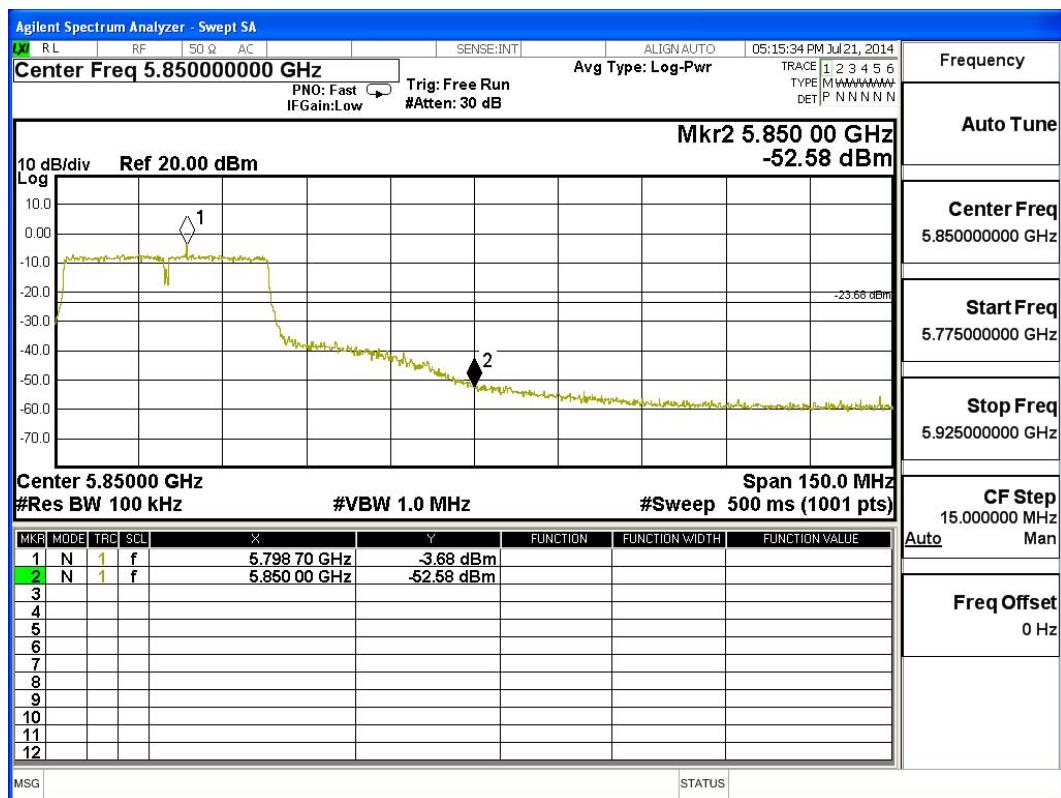
Product : Play-Fi Wireless Speaker
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 7: Transmit - 802.11n-40BW_15Mbps(5G Band)

Test Frequency (MHz)	Measurement Level Δ (dB)	Limit Δ (dB)	Result
5755	32.21	>20	PASS



Product : Play-Fi Wireless Speaker
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 7: Transmit - 802.11n-40BW_15Mbps(5G Band)

Test Frequency (MHz)	Measurement Level Δ (dB)	Limit Δ (dB)	Result
5795	48.90	>20	PASS



7. Occupied Bandwidth

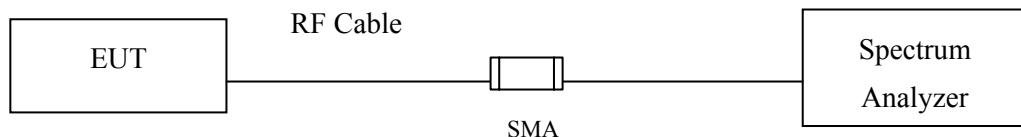
7.1. Test Equipment

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2014
Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2014
X Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2014

Note:

1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with “X” are used to measure the final test results.

7.2. Test Setup



7.3. Limits

The minimum bandwidth shall be at least 500 kHz.

7.4. Test Procedure

The EUT was setup according to ANSI C63.10: 2009; tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

7.5. Uncertainty

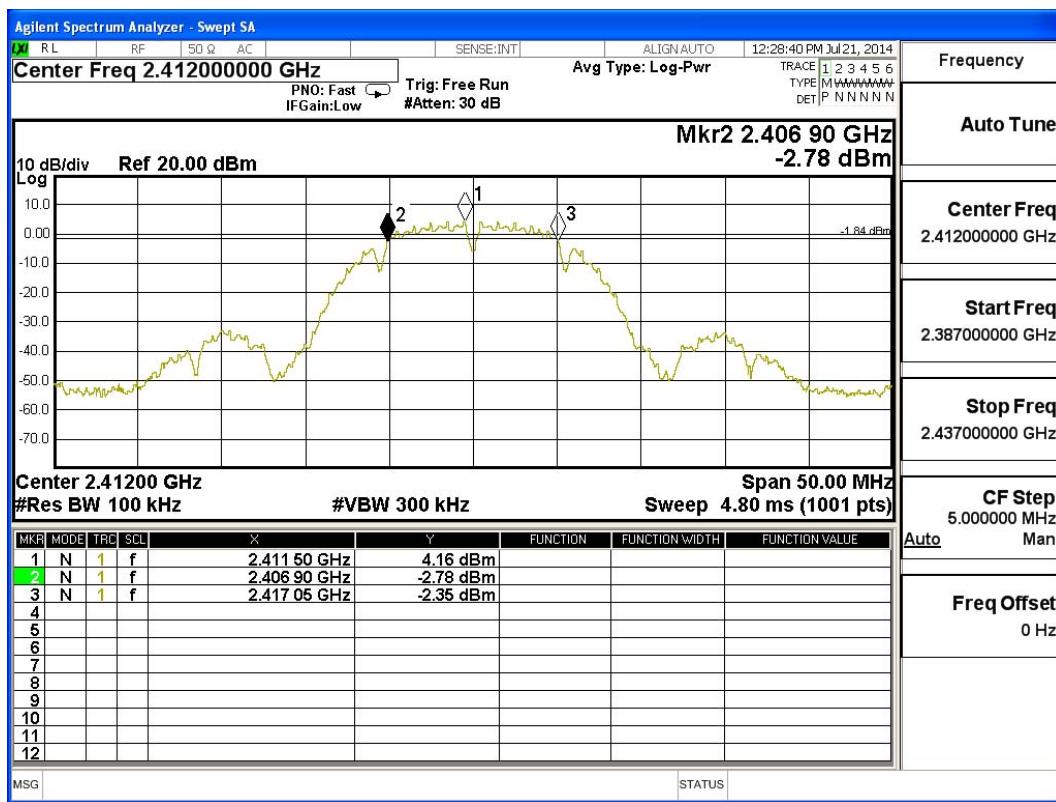
± 150Hz

7.6. Test Result of Occupied Bandwidth

Product : Play-Fi Wireless Speaker
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1	2412.00	10150	>500	Pass

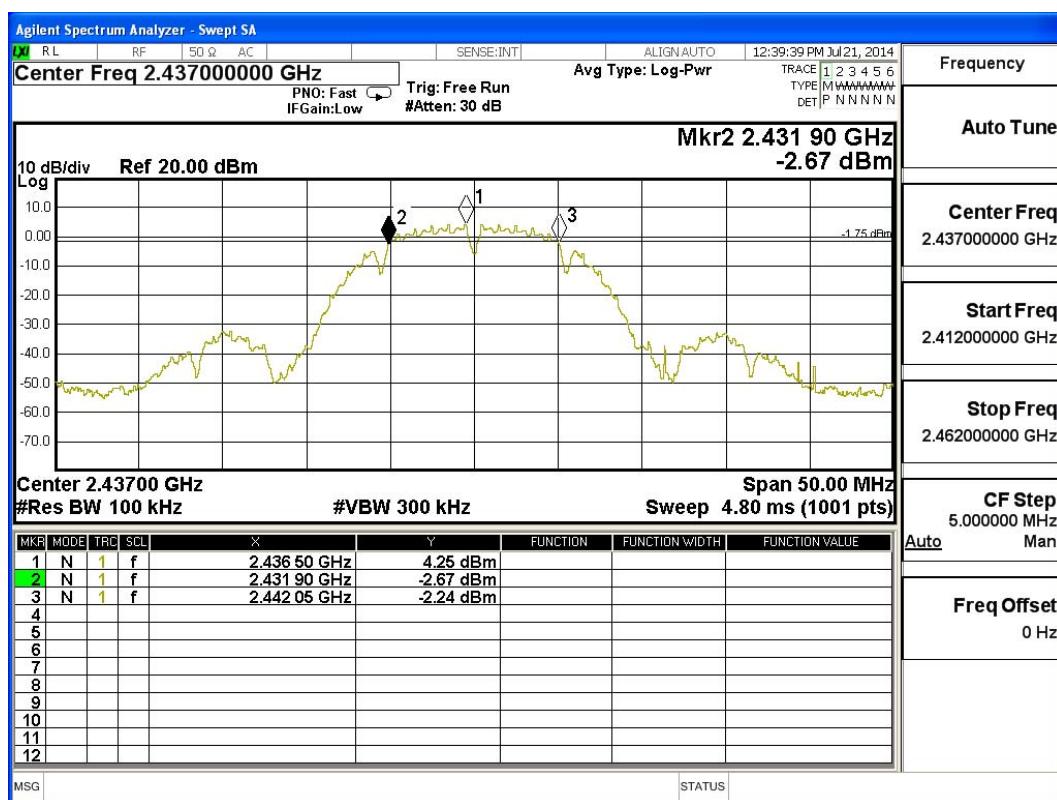
Figure Channel 1:



Product : Play-Fi Wireless Speaker
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2437MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
6	2437.00	10150	>500	Pass

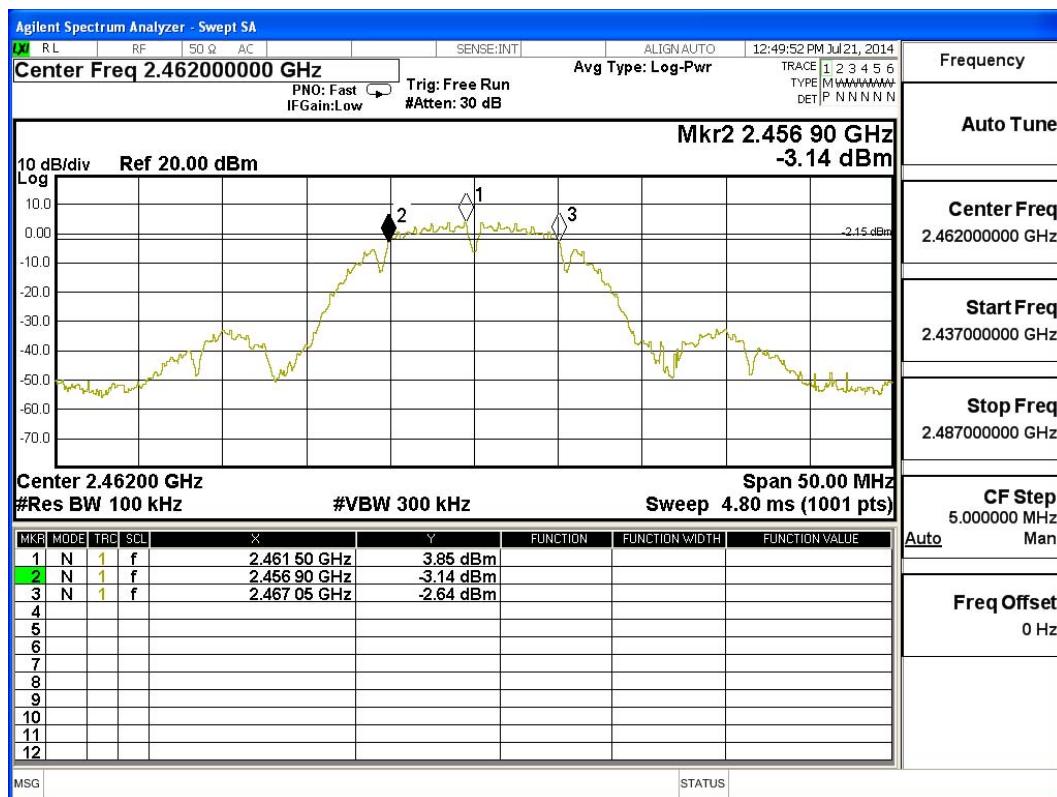
Figure Channel 6:



Product : Play-Fi Wireless Speaker
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
11	2462.00	10150	>500	Pass

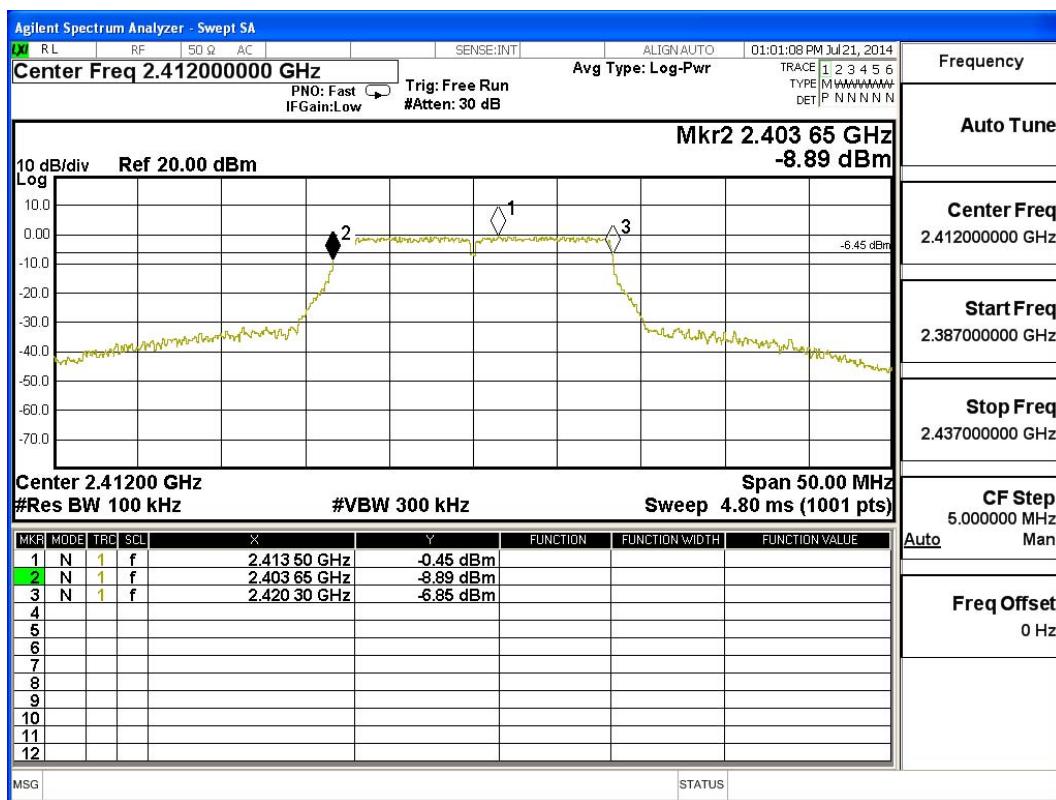
Figure Channel 11:



Product : Play-Fi Wireless Speaker
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1	2412.00	16650	>500	Pass

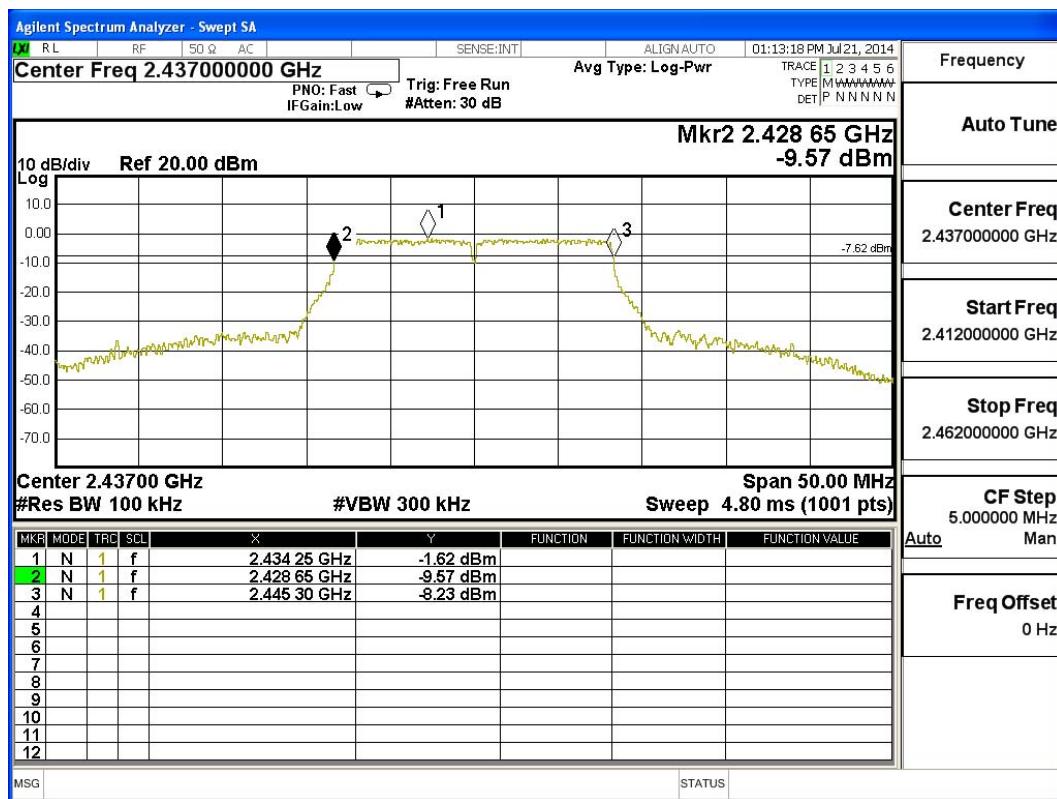
Figure Channel 1:



Product : Play-Fi Wireless Speaker
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
6	2437.00	16650	>500	Pass

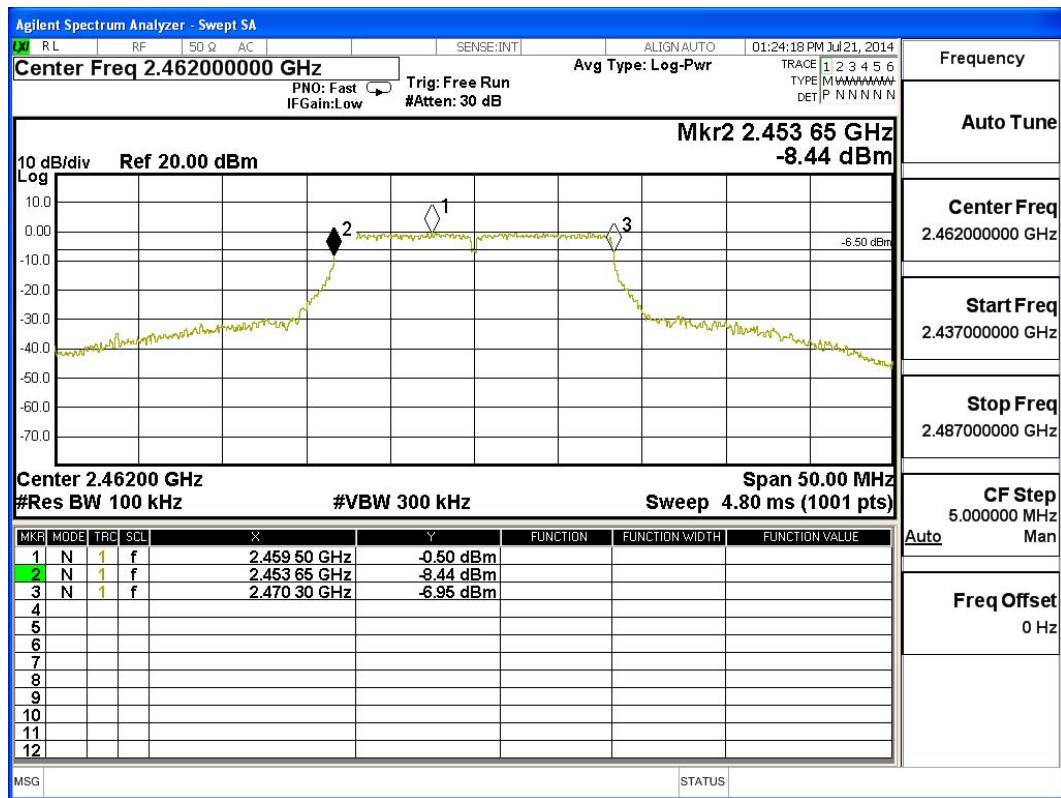
Figure Channel 6:



Product : Play-Fi Wireless Speaker
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
11	2462.00	16650	>500	Pass

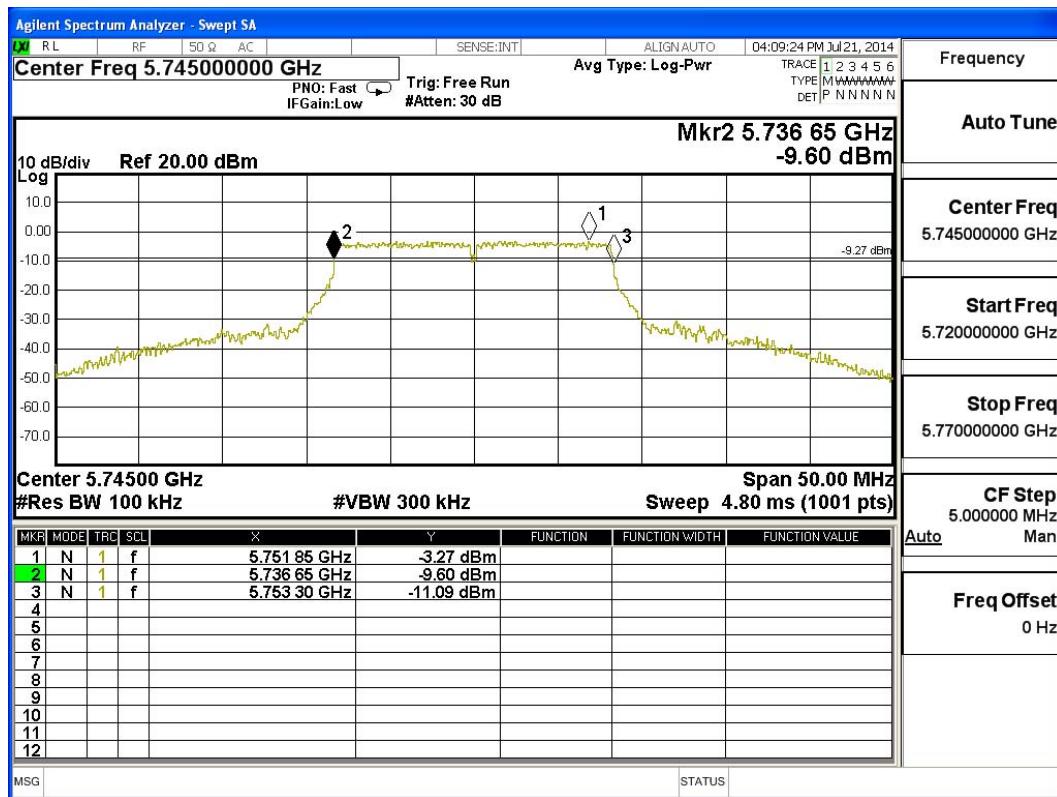
Figure Channel 11:



Product : Play-Fi Wireless Speaker
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11a 6Mbps (5745MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
149	5745.00	16650	>500	Pass

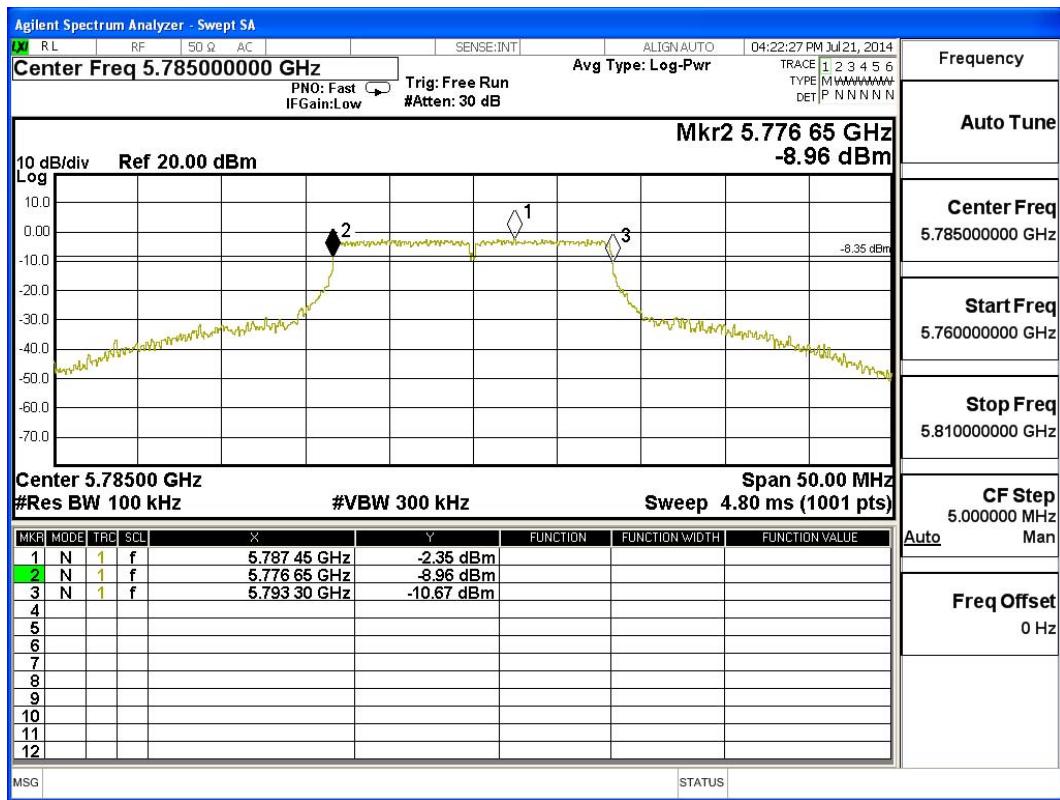
Figure Channel 149:



Product : Play-Fi Wireless Speaker
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit - 802.11a 6Mbps (5785MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
157	5785.00	16650	>500	Pass

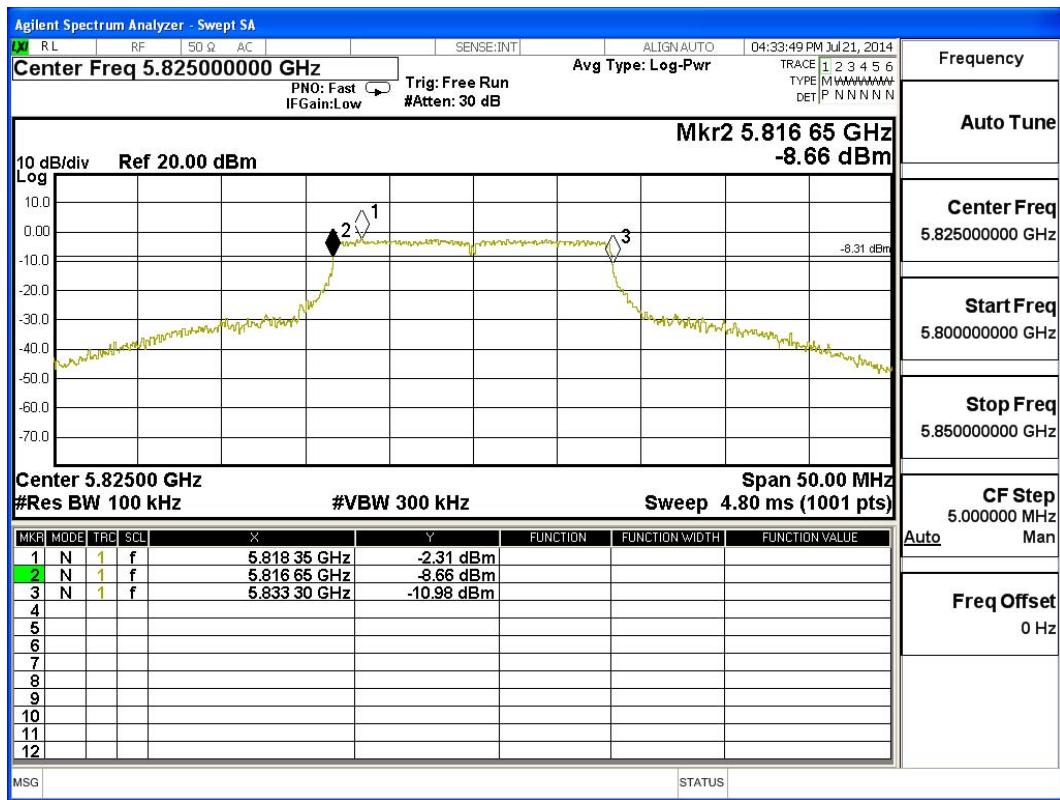
Figure Channel 157:



Product : Play-Fi Wireless Speaker
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit - 802.11a 6Mbps (5825MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
165	5825.00	16650	>500	Pass

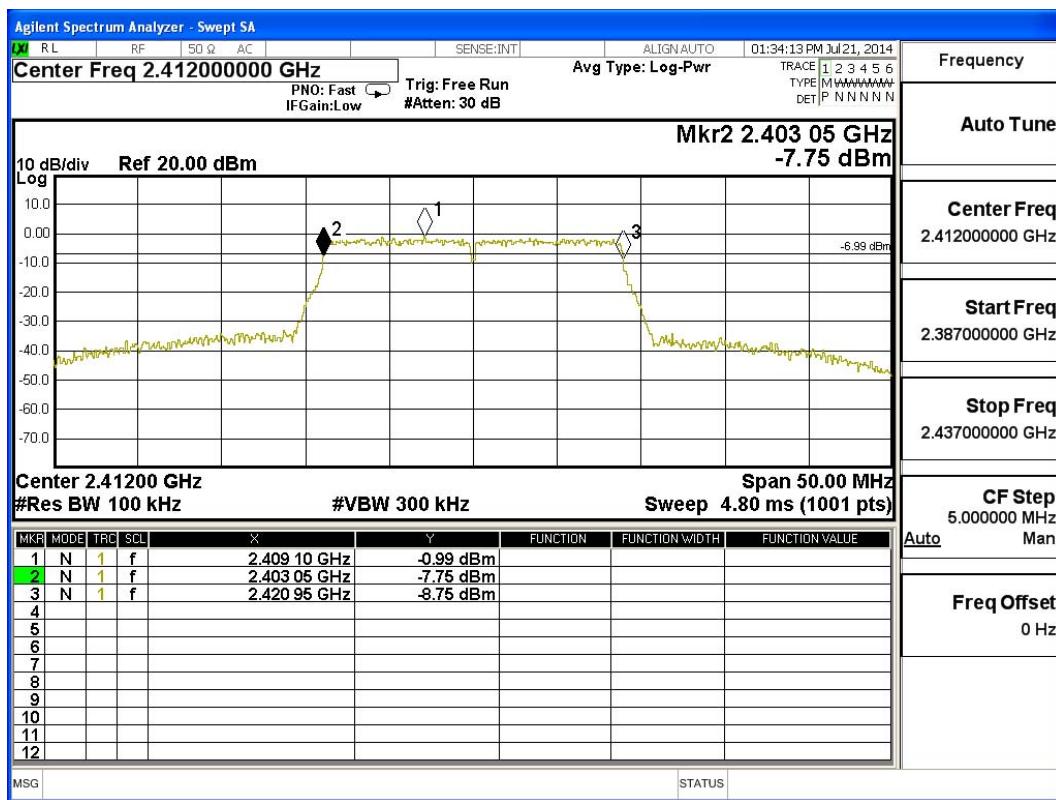
Figure Channel 165:



Product : Play-Fi Wireless Speaker
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2412MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1	2412.00	17900	>500	Pass

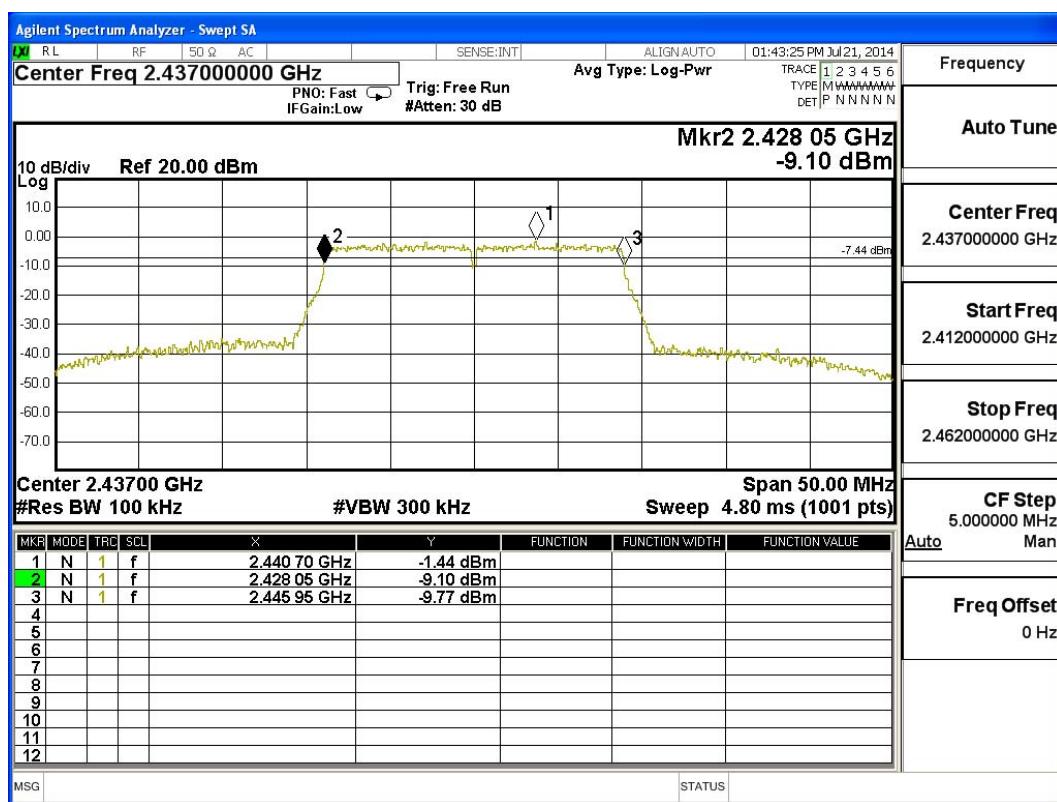
Figure Channel 1:



Product : Play-Fi Wireless Speaker
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2437MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
6	2437.00	17900	>500	Pass

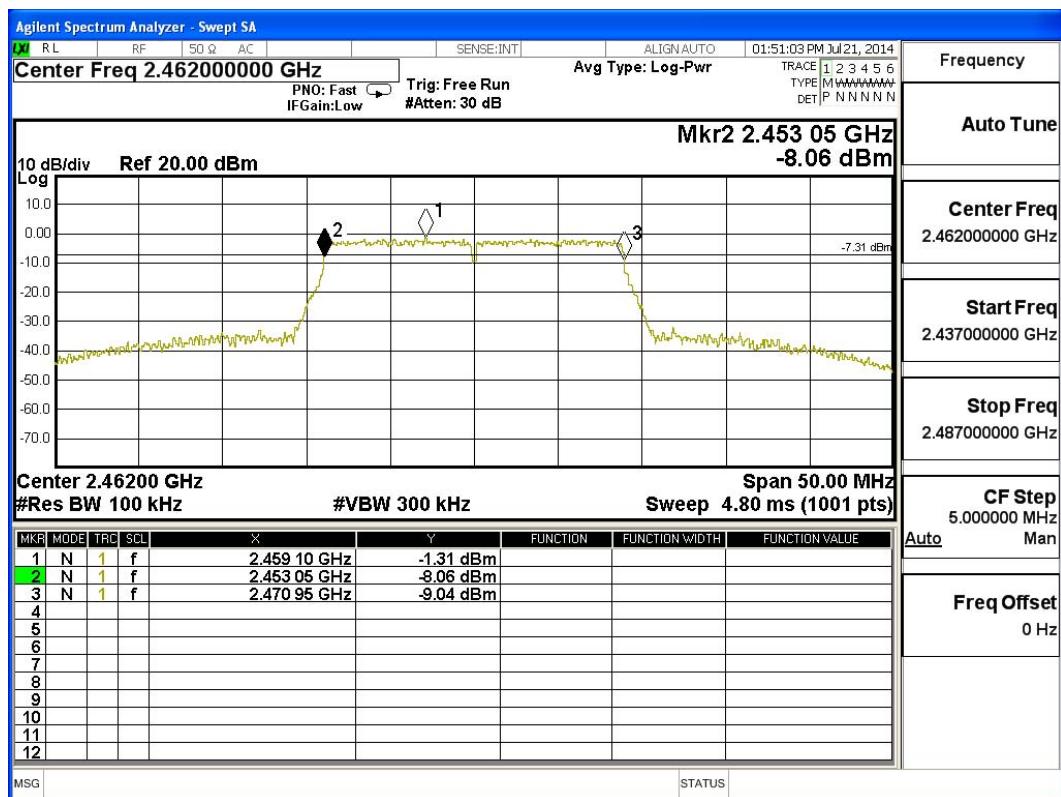
Figure Channel 6:



Product : Play-Fi Wireless Speaker
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2462MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
11	2462.00	17900	>500	Pass

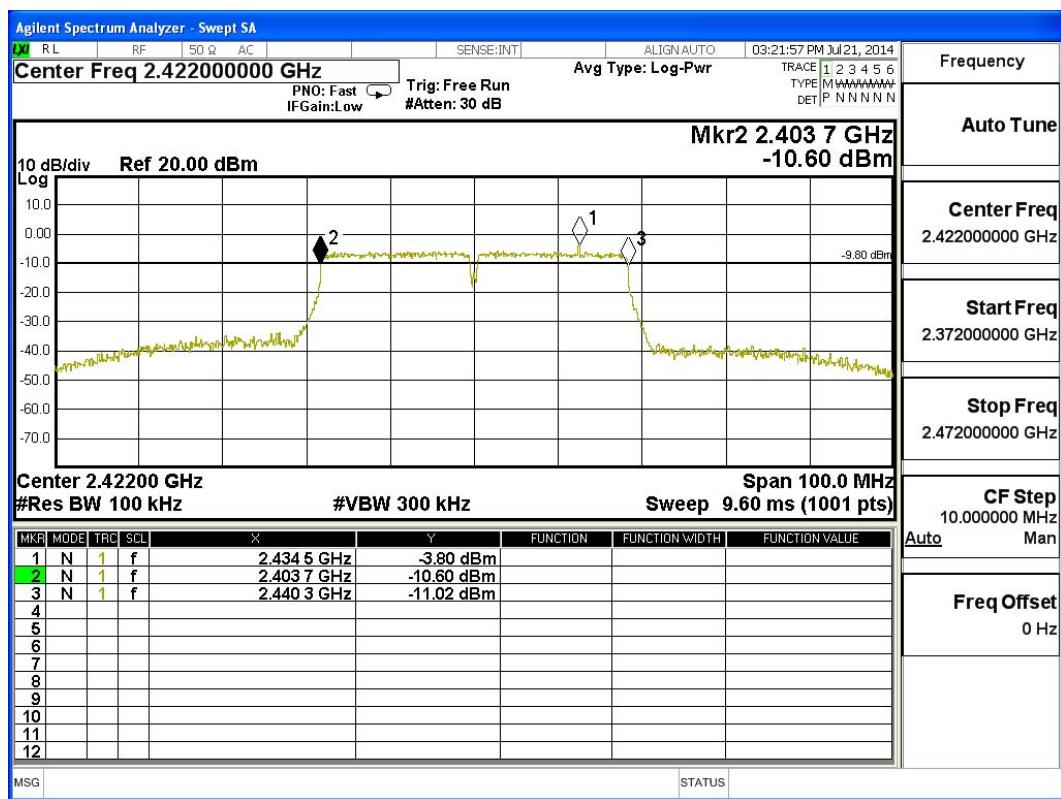
Figure Channel 11:



Product : Play-Fi Wireless Speaker
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 5: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2422MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
3	2422.00	36600	>500	Pass

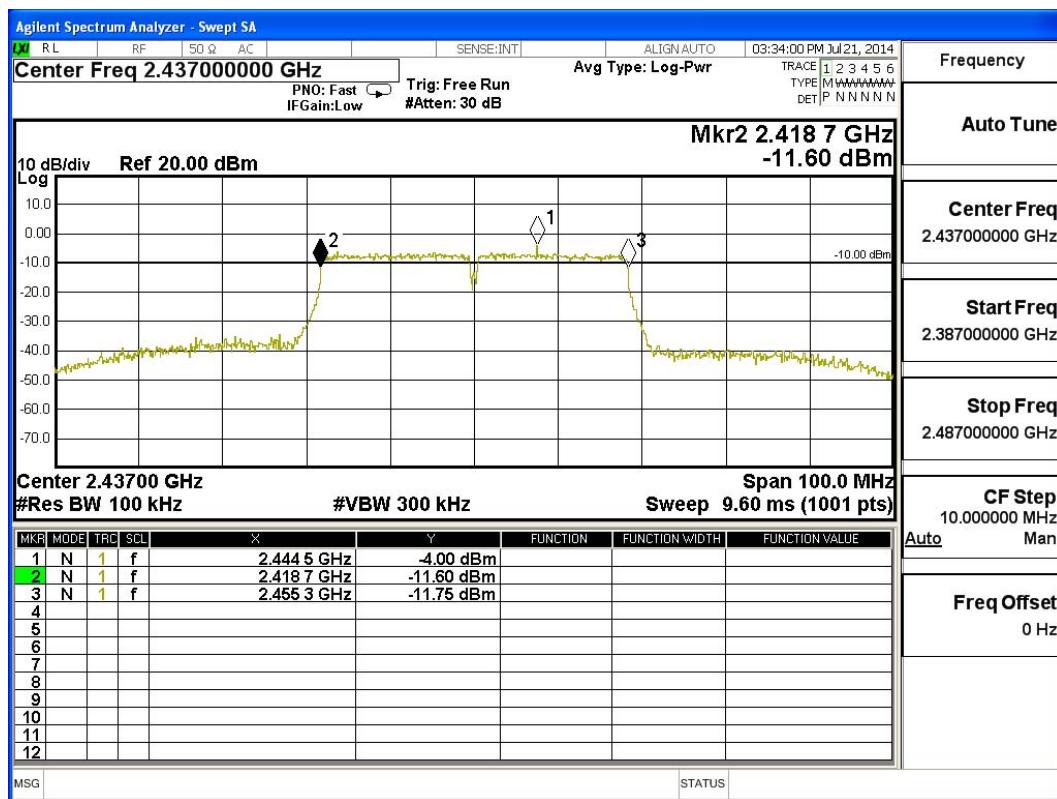
Figure Channel 3:



Product : Play-Fi Wireless Speaker
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 5: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2437MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
6	2437.00	36600	>500	Pass

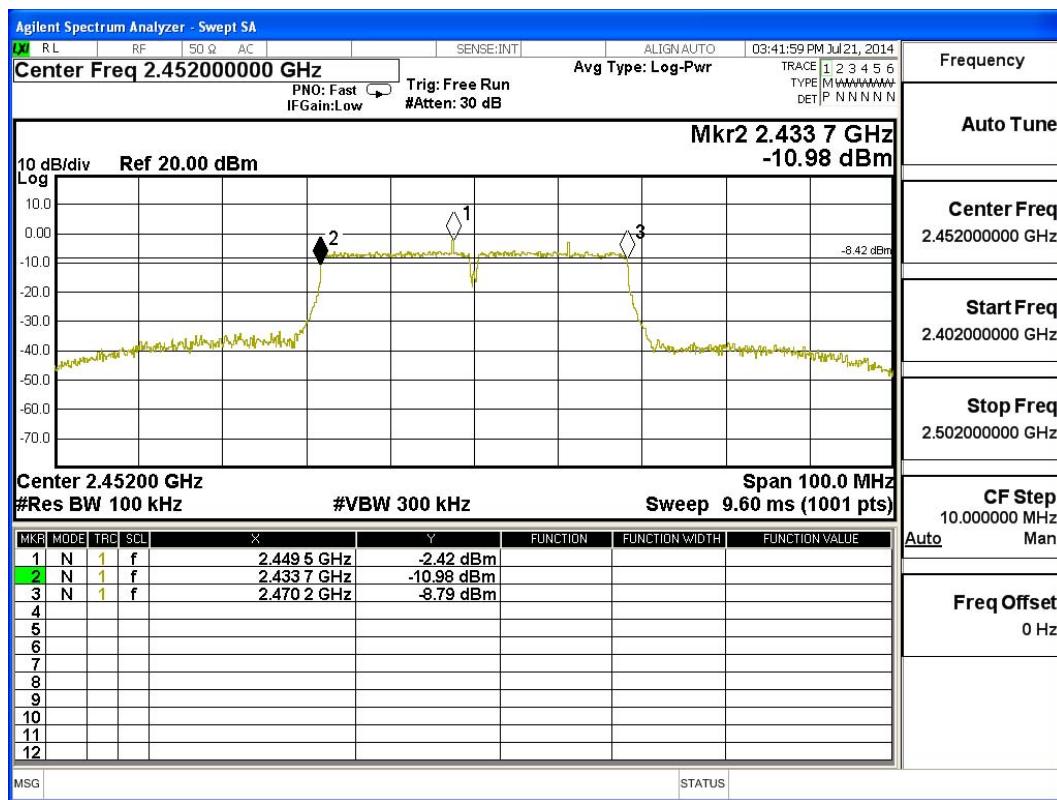
Figure Channel 6:



Product : Play-Fi Wireless Speaker
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 5: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2452MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
9	2452.00	36500	>500	Pass

Figure Channel 9:



Product : Play-Fi Wireless Speaker
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 6: Transmit - 802.11n-20BW_7.2Mbps(5G Band) (5745MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
149	5745.00	17950	>500	Pass

Figure Channel 149:

