Test Report

Product Name	Play-Fi Player
Model No	Play-Fi Player
FCC ID.	PPQ-PLAYFIP1

Applicant	Lite-On Technology Corp.
Address	4F, 90, Chien 1 Road, Chung-Ho, Taipei Hsien 235, Taiwan, R.O.C.

Date of Receipt	Mar. 19, 2012
Issue Date	June 14, 2012
Report No.	123300R-RFUSP42V01
Report Version	V1.0

Testing Laboratory
0914

Test Report Certification

Issue Date: June 14, 2012
Report No.: 123300R-RFUSP42V01

Accredited by NIST (NVLAP)
NVLAP Lab Code: 200533-0

Product Name	Play-Fi Player
Applicant	Lite-On Technology Corp.
Address	4F, 90, Chien 1 Road, Chung-Ho, Taipei Hsien 235, Taiwan, R.O.C.
Manufacturer	DONG GUAN G-COM COMPUTER CO., LTD.
Model No.	Play-Fi Player
EUT Rated Voltage	AC 100-240V, 50-60Hz
EUT Test Voltage	AC 120V/60Hz
Trade Name	Phorus
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2010 ANSI C63.4: 2003
Test Result	Complied

The test results relate only to the samples tested.
The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.
This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

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(Senior Adm. Specialist / Rita Huang)

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(Engineer / Nowal Kuo)

Approved By :
(Manager / Vincent Lin)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Play-Fi Player
Trade Name	Phorus
Model No.	Play-Fi Player
FCC ID.	PPQ-PLAYFIP1
Frequency Range	802.11b/g/n-20MHz:2412-2462MHz,802.11n-40MHz:2422-2452MHz
Number of Channels	802.11b/g/n-20MHz: 11, n-40MHz: 7
Data Speed	802.11b: 1-11Mbps, 802.11g: 6-54Mbps, 802.11n: up to 150Mbps
Channel separation	802.11b/g/n-20MHz: 5 MHz
Type of Modulation	802.11b:DSSS DBPSK, DQPSK, CCK 802.11g/n: OFDM BPSK, QPSK, 16QAM, 64QAM
Antenna Type	PIFA Antenna
Antenna Gain	Refer to the table “Antenna List”
Channel Control	Auto
Micro USB Cable	Non-Shielded, 0.3m
Mini USB Cable	Shielded, 0.3m
Power Adapter	MFR: Asian Power Devices INC., M/N: WA-24E12FU Input: AC 100-240V, 50-60Hz, 0.65A Output: DC 12V, 2A Cable Out: Non-Shielded, 1.5m

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	MAG. LAYERS	MSA-3810-2G4C1-A2	PIFA	4.47 dBi for 2.4 GHz

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 Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 1:	2422 MHz	Channel 2:	2427 MHz	Channel 3:	2432 MHz	Channel 4:	2437 MHz
Channel 5:	2442 MHz	Channel 6:	2447 MHz	Channel 7:	2452 MHz		

Note:

1. This device is a Play-Fi Player with a built-in 2.4GHz WLAN +Bluetooth transceiver, this report for WLAN.
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 802.11b/g/n transmitter with Part 15 Subpart C Paragraph 15.247 of spread spectrum devices.
5. The different of the each model is shown as below:

MCU Name	MCU Frequency	SDRAM	Note
88AP1-8JD2(88AP162)	162MHz	winbond	WLAN Module #1
		hynix	WLAN Module #2
88AP1-8JD2(88AP166)	166MHz	winbond	WLAN Module #3
		hynix	WLAN Module #4

6. The MCU and SDRAM are digital circuits function and not part of RF circuits.
7. The test item conducted emission and 30MHz – 1GHz radiated emission are tested at four WLAN modules which describe in above note.
8. After tested conducted emission and 30MHz – 1GHz radiated emission, the worst case are system include WLAN module #1 and WLAN module #4. The worst case are tested all test item.

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

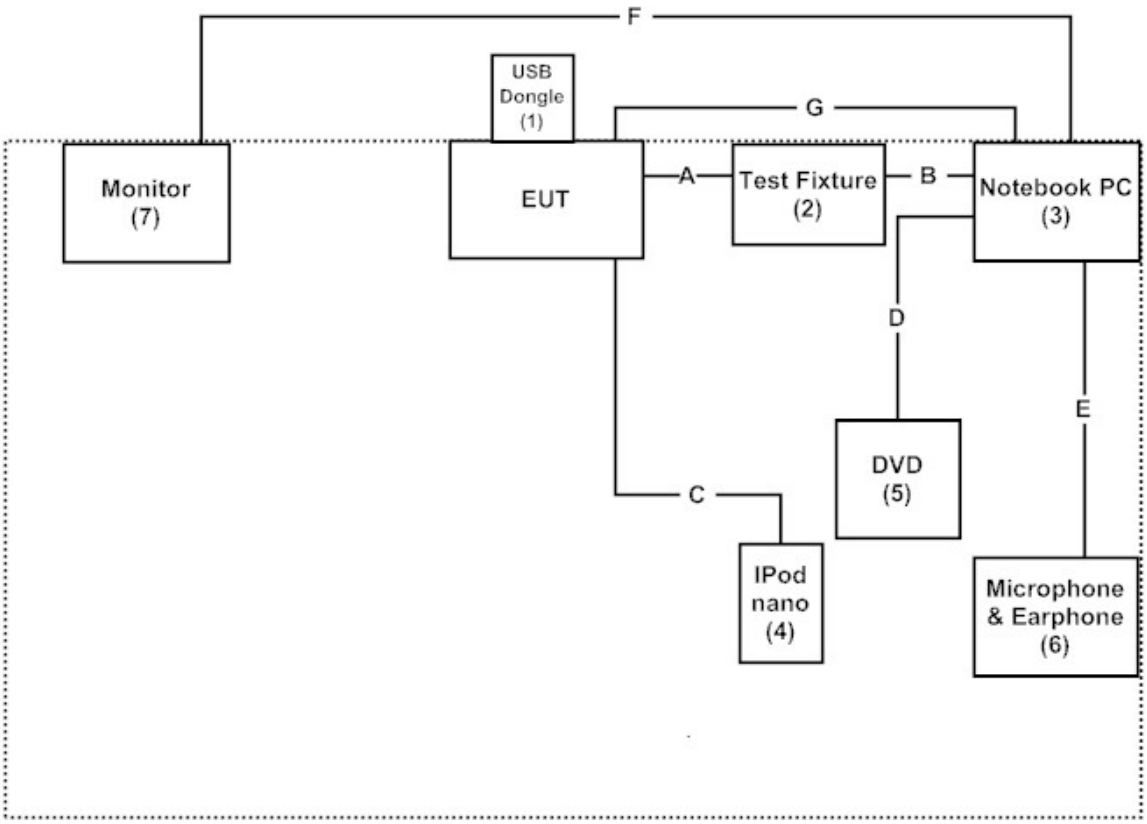
1.3. Tested System Details

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	USB Dongle	Kamera	N/A	N/A	N/A
2	Test Fixture	Lite-On	N/A	N/A	N/A
3	Notebook PC	DELL	PPT	N/A	Non-Shielded, 0.8m
4	IPod nano	Apple	A1236	7K823E51Y0P	N/A
5	DVD	DELL	PD01S	N/A	N/A
6	Microphone & Earphone	PCHOME	N/A	N/A	N/A
7	Monitor	LG	W2261VT	907YHZK07373	Non-Shielded, 1.8m

Signal Cable Type		Signal cable Description
A	Test Fixture Cable	Non-Shielded, 0.2m
B	RS-232 Cable	Non-Shielded, 2.0m
C	IPOD-NANO Cable	Non-Shielded, 1.8m
D	DVD Cable	Non-Shielded, 0.5m
E	Microphone & Earphone Cable	Non-Shielded, 1.2m
F	D-SUB Cable	Shielded, 1.8m, with two ferrite cores bonded.
G	USB Cable	Non-Shielded, 1.0m

1.4. Configuration of Tested System



1.5. EUT Exercise Software

(1) Connect EUT and Notebook via test fixture.

(2) Execute program on the Notebook.

(3) Configure the test mode, the test channel, and the data rate.

(4) Press “OK” to start the continuous transmission.

(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
7435 Oakland Mills Road
Columbia, MD 21046
Registration Number: 92195

Accreditation on NVLAP
NVLAP Lab Code: 200533-0

Site Name: Quietek Corporation
Site Address: No. 5-22, Ruei-Shu Valley, Ruei-Ping Tsuen,
Lin-Kou Shiang, Taipei,
Taiwan, R.O.C.
TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789
E-Mail : service@quietek.com

FCC Accreditation Number: TW1014

2. Conducted Emission

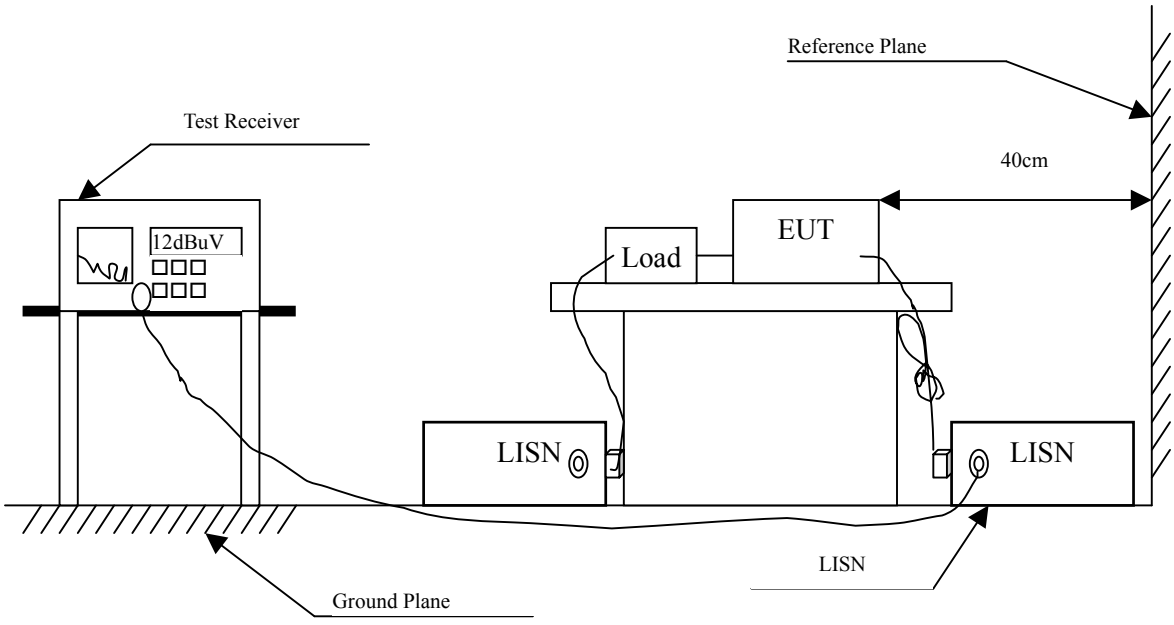
2.1. Test Equipment

	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.	Remark
X	Test Receiver	R & S	ESCS 30 / 825442/018	Sep., 2011	
X	Artificial Mains Network	R & S	ENV4200 / 848411/10	Feb., 2012	Peripherals
X	LISN	R & S	ESH3-Z5 / 825562/002	Feb., 2012	EUT
	DC LISN	Schwarzbeck	8226 / 176	Mar, 2012	EUT
X	Pulse Limiter	R & S	ESH3-Z2 / 357.8810.52	Feb., 2012	
	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 (dBuV) 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 C63.4: 2003 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 Player
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 4: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2437MHz) main chip_162 (winbond)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Line 1					
Quasi-Peak					
0.150	9.697	35.250	44.947	-21.053	66.000
0.193	9.804	30.640	40.444	-24.327	64.771
0.248	9.831	22.900	32.731	-30.469	63.200
0.470	9.807	23.630	33.437	-23.420	56.857
1.127	9.820	20.420	30.240	-25.760	56.000
11.353	10.054	18.520	28.574	-31.426	60.000
Average					
0.150	9.697	20.110	29.807	-26.193	56.000
0.193	9.804	18.950	28.754	-26.017	54.771
0.248	9.831	11.150	20.981	-32.219	53.200
0.470	9.807	16.140	25.947	-20.910	46.857
1.127	9.820	14.140	23.960	-22.040	46.000
11.353	10.054	12.270	22.324	-27.676	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 Player
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 4: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2437MHz)
main chip_162 (winbond)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Line 2					
Quasi-Peak					
0.166	9.786	34.660	44.446	-21.097	65.543
0.224	9.771	29.640	39.411	-24.475	63.886
0.470	9.823	30.970	40.793	-16.064	56.857
1.752	9.860	19.090	28.950	-27.050	56.000
3.752	9.870	16.680	26.550	-29.450	56.000
11.966	10.105	15.670	25.775	-34.225	60.000
Average					
0.166	9.786	23.630	33.416	-22.127	55.543
0.224	9.771	22.270	32.041	-21.845	53.886
0.470	9.823	20.810	30.633	-16.224	46.857
1.752	9.860	13.000	22.860	-23.140	46.000
3.752	9.870	9.790	19.660	-26.340	46.000
11.966	10.105	9.550	19.655	-30.345	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 Player
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 4: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2437MHz)
main chip_166 (Hynix)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Line 1					
Quasi-Peak					
0.150	9.697	30.430	40.127	-25.873	66.000
0.185	9.782	28.970	38.752	-26.248	65.000
0.228	9.837	24.630	34.467	-29.304	63.771
0.459	9.810	29.070	38.880	-18.291	57.171
1.150	9.820	21.350	31.170	-24.830	56.000
10.990	10.047	19.810	29.857	-30.143	60.000
Average					
0.150	9.697	13.970	23.667	-32.333	56.000
0.185	9.782	18.050	27.832	-27.168	55.000
0.228	9.837	19.110	28.947	-24.824	53.771
0.459	9.810	21.380	31.190	-15.981	47.171
1.150	9.820	15.740	25.560	-20.440	46.000
10.990	10.047	13.160	23.207	-26.793	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 Player
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 4: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2437MHz)
main chip_166 (Hynix)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Line 2					
Quasi-Peak					
0.170	9.784	32.070	41.854	-23.575	65.429
0.240	9.777	25.260	35.037	-28.392	63.429
0.455	9.820	29.160	38.980	-18.306	57.286
0.841	9.840	18.960	28.800	-27.200	56.000
1.529	9.850	21.780	31.630	-24.370	56.000
12.818	10.120	19.270	29.390	-30.610	60.000
Average					
0.170	9.784	20.450	30.234	-25.195	55.429
0.240	9.777	14.570	24.347	-29.082	53.429
0.455	9.820	21.380	31.200	-16.086	47.286
0.841	9.840	11.730	21.570	-24.430	46.000
1.529	9.850	15.430	25.280	-20.720	46.000
12.818	10.120	13.210	23.330	-26.670	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 Player
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 4: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2437MHz)
main chip_162 (Hynix)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Line 1					
Quasi-Peak					
0.166	9.820	31.350	41.170	-24.373	65.543
0.189	9.820	28.390	38.210	-26.676	64.886
0.420	9.820	25.250	35.070	-23.216	58.286
1.431	9.820	19.690	29.510	-26.490	56.000
3.287	9.840	17.190	27.030	-28.970	56.000
12.494	10.013	16.750	26.763	-33.237	60.000
Average					
0.166	9.820	19.390	29.210	-26.333	55.543
0.189	9.820	13.440	23.260	-31.626	54.886
0.420	9.820	18.760	28.580	-19.706	48.286
1.431	9.820	13.140	22.960	-23.040	46.000
3.287	9.840	10.920	20.760	-25.240	46.000
12.494	10.013	10.870	20.883	-29.117	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 Player
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 4: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2437MHz)
main chip_162 (Hynix)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Line 2					
Quasi-Peak					
0.170	9.860	30.650	40.510	-24.919	65.429
0.193	9.860	28.050	37.910	-26.861	64.771
0.416	9.870	25.230	35.100	-23.300	58.400
1.087	9.870	17.770	27.640	-28.360	56.000
1.752	9.880	16.010	25.890	-30.110	56.000
11.400	10.090	15.890	25.980	-34.020	60.000
Average					
0.170	9.860	19.910	29.770	-25.659	55.429
0.193	9.860	16.740	26.600	-28.171	54.771
0.416	9.870	17.140	27.010	-21.390	48.400
1.087	9.870	10.970	20.840	-25.160	46.000
1.752	9.880	9.850	19.730	-26.270	46.000
11.400	10.090	9.440	19.530	-30.470	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 Player
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 4: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2437MHz)
main chip_166 (winbond)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Line 1					
Quasi-Peak					
0.181	9.820	27.410	37.230	-27.884	65.114
0.205	9.820	25.430	35.250	-29.179	64.429
0.404	9.820	25.270	35.090	-23.653	58.743
1.197	9.820	18.330	28.150	-27.850	56.000
1.920	9.830	18.010	27.840	-28.160	56.000
11.935	10.010	16.210	26.220	-33.780	60.000
Average					
0.181	9.820	22.330	32.150	-22.964	55.114
0.205	9.820	12.570	22.390	-32.039	54.429
0.404	9.820	19.830	29.650	-19.093	48.743
1.197	9.820	11.790	21.610	-24.390	46.000
1.920	9.830	11.120	20.950	-25.050	46.000
11.935	10.010	9.900	19.910	-30.090	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 Player
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 4: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2437MHz)
main chip_166 (winbond)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Line 2					
Quasi-Peak					
0.170	9.860	26.450	36.310	-29.119	65.429
0.228	9.860	23.250	33.110	-30.661	63.771
0.396	9.870	25.150	35.020	-23.951	58.971
1.154	9.870	15.450	25.320	-30.680	56.000
2.259	9.880	15.930	25.810	-30.190	56.000
12.431	10.100	15.410	25.510	-34.490	60.000
Average					
0.170	9.860	21.170	31.030	-24.399	55.429
0.228	9.860	13.290	23.150	-30.621	53.771
0.396	9.870	19.540	29.410	-19.561	48.971
1.154	9.870	8.880	18.750	-27.250	46.000
2.259	9.880	10.820	20.700	-25.300	46.000
12.431	10.100	10.510	20.610	-29.390	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, 2012
X	Power Sensor	Anritsu	MA2411B/0738448	Jun, 2012
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2012
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2012
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2012

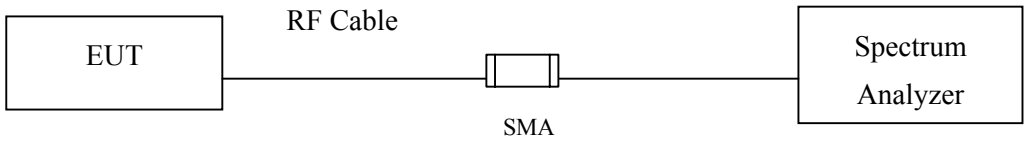
Note:

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

Average Power For different Data Rate (Mbps)

Peak Power Measurement



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 Jan. 2012 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

3.5. Uncertainty

± 1.27 dB

3.6. Test Result of Peak Power Output

Product : Play-Fi Player
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) main chip_162

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)				Peak Power	Required Limit	Result
		1	2	5.5	11	1		
		Measurement Level (dBm)						
01	2412	15.11	--	--	--	17.10	<30dBm	Pass
06	2437	15.01	14.98	14.95	14.93	16.59	<30dBm	Pass
11	2462	13.68	--	--	--	15.27	<30dBm	Pass

Note:
1. Peak Power Output Value =Reading value on Spectrum Analyzer + cable loss
   (Use the spectrum analyzer's integrated channel power measurement function)
2. Average Power for different data rate = Reading value on Power Meter +cable loss

Figure Channel 1:

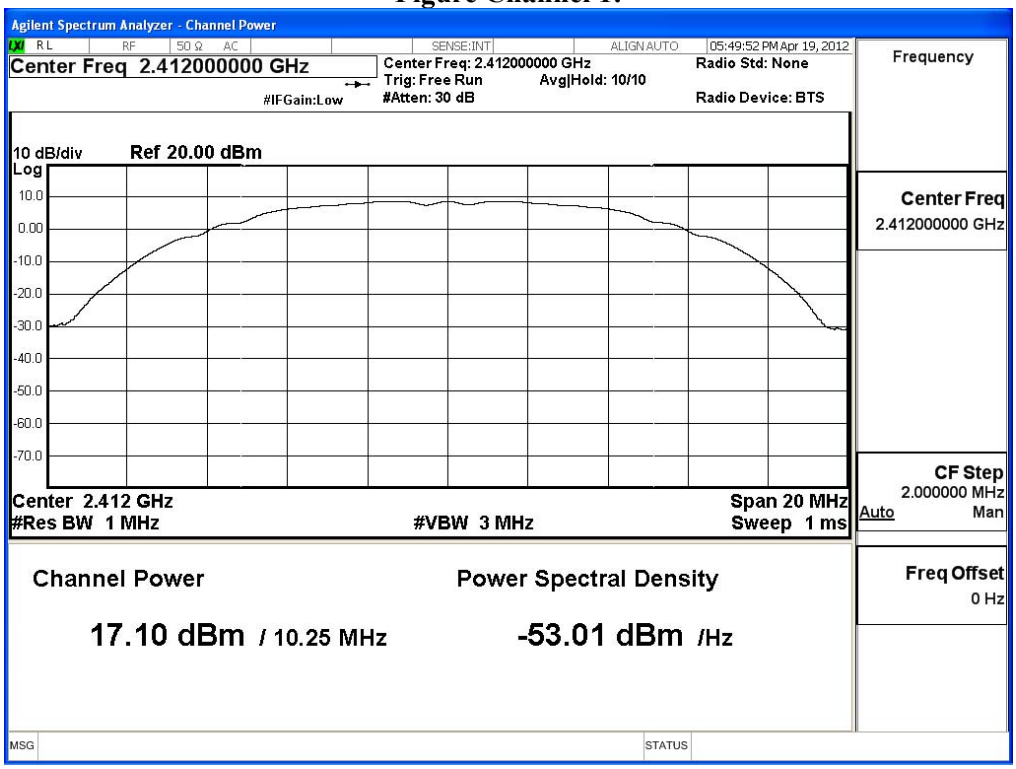


Figure Channel 6:

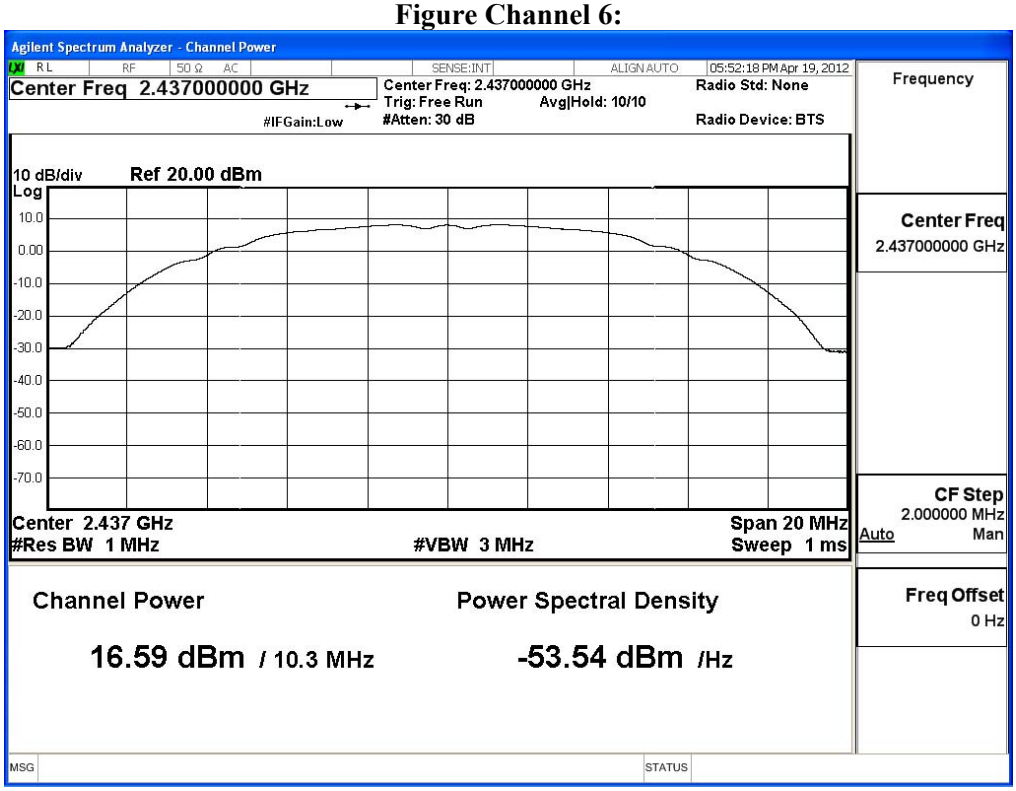
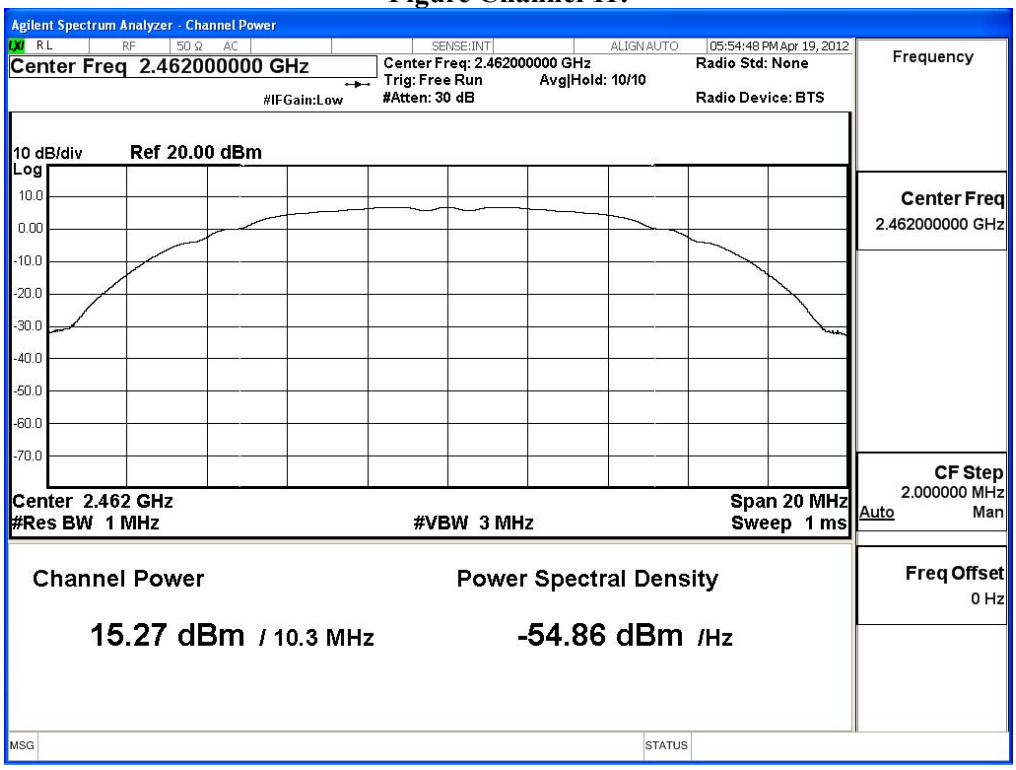


Figure Channel 11:



Product : Play-Fi Player
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) main chip_162

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		6	9	12	18	24	36	48	54	6		
		Measurement Level (dBm)										
01	2412	12.07	--	--	--	--	--	--	--	18.78	<30dBm	Pass
06	2437	11.88	11.85	11.84	11.81	11.78	11.75	11.71	11.69	18.66	<30dBm	Pass
11	2462	11.41	--	--	--	--	--	--	--	17.76	<30dBm	Pass

Note:
1. Peak Power Output Value =Reading value on Spectrum Analyzer + cable loss
   (Use the spectrum analyzer's integrated channel power measurement function)
2. Average Power for different data rate = Reading value on Power Meter +cable loss

Figure Channel 1:

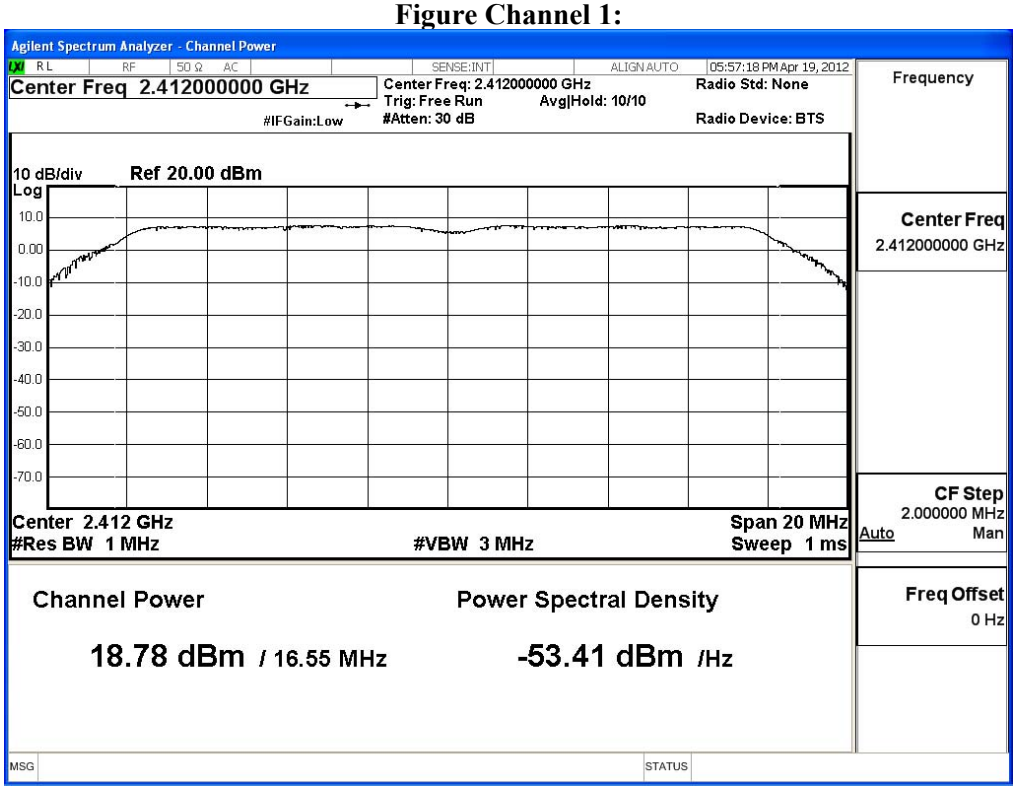


Figure Channel 6:

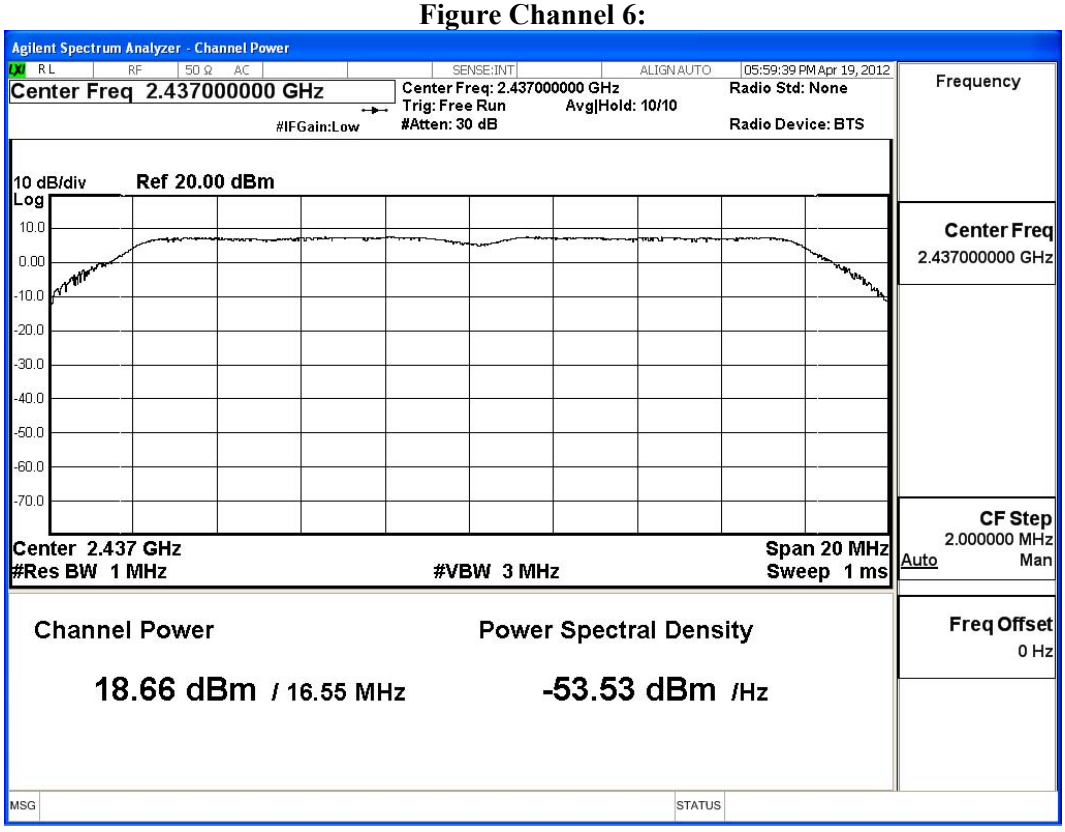
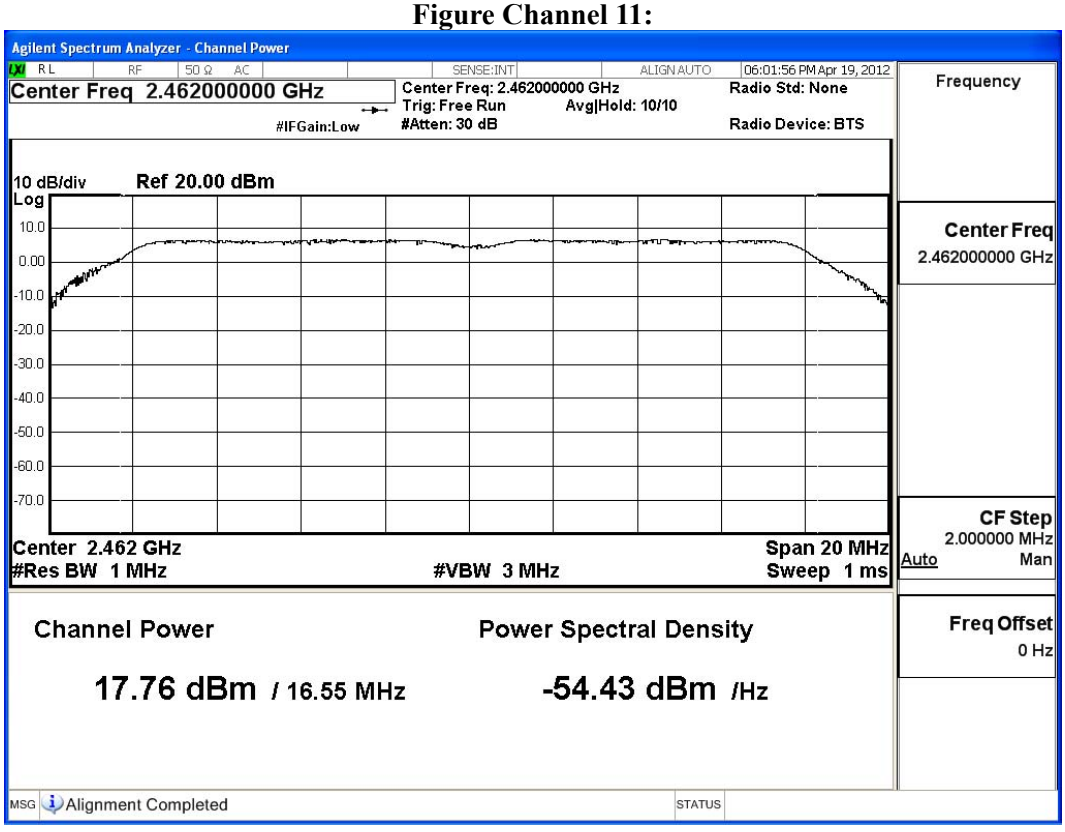


Figure Channel 11:



Product : Play-Fi Player
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) main chip_162

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power
		7.2	14.4	21.7	28.9	43.3	57.8	65	72.2	7.2
		Measurement Level (dBm)								
01	2412	12.16	--	--	--	--	--	--	--	19.09
06	2437	11.85	11.84	11.8	11.79	11.75	11.73	11.71	11.69	19.01
11	2462	12.02	--	--	--	--	--	--	--	19.12

Note:
1. Peak Power Output Value =Reading value on Spectrum Analyzer + cable loss
(Use the spectrum analyzer's integrated channel power measurement function)
2. Average Power for different data rate = Reading value on Power Meter +cable loss

Figure Channel 1:

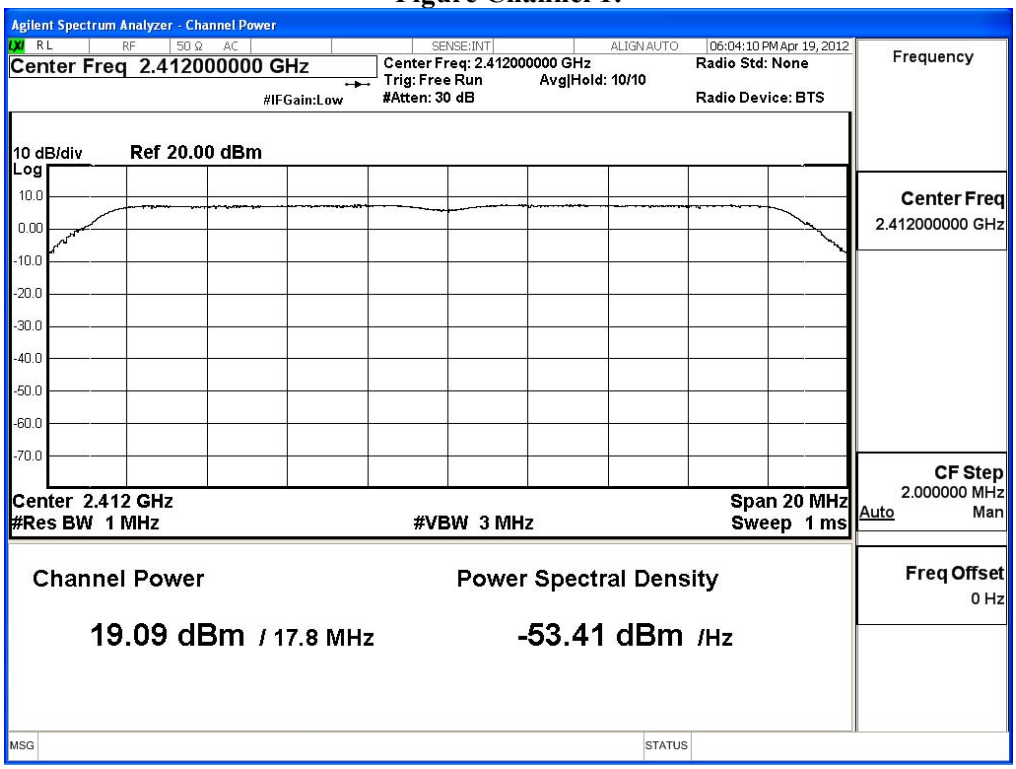


Figure Channel 6:

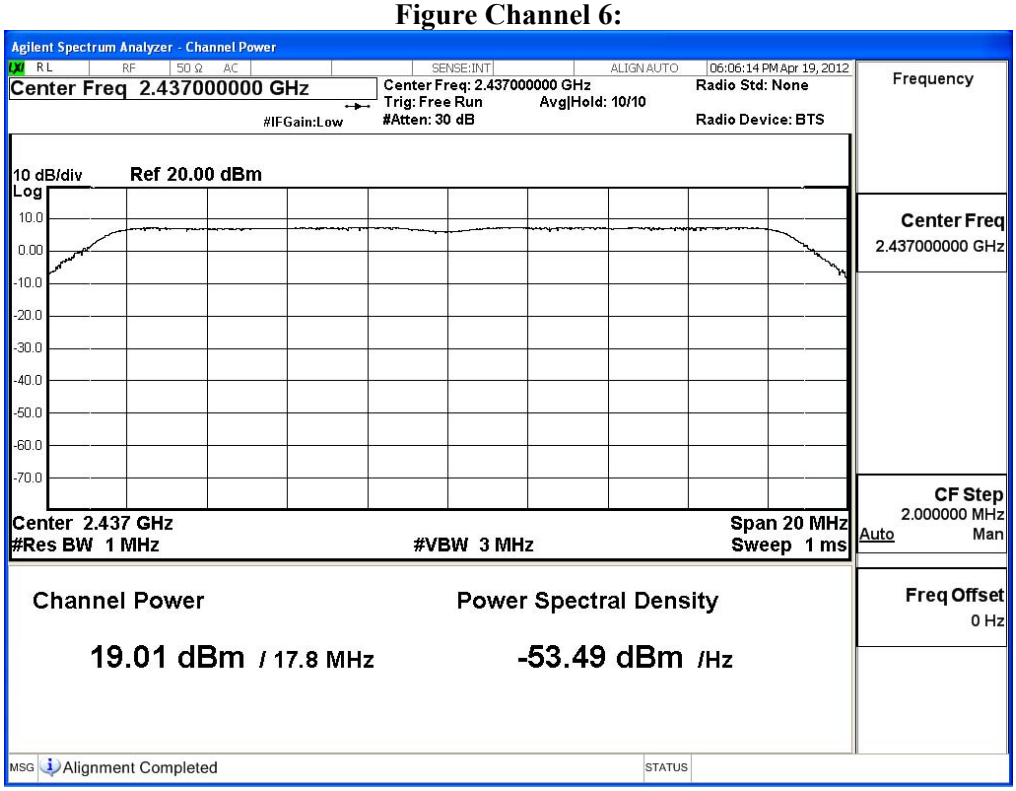
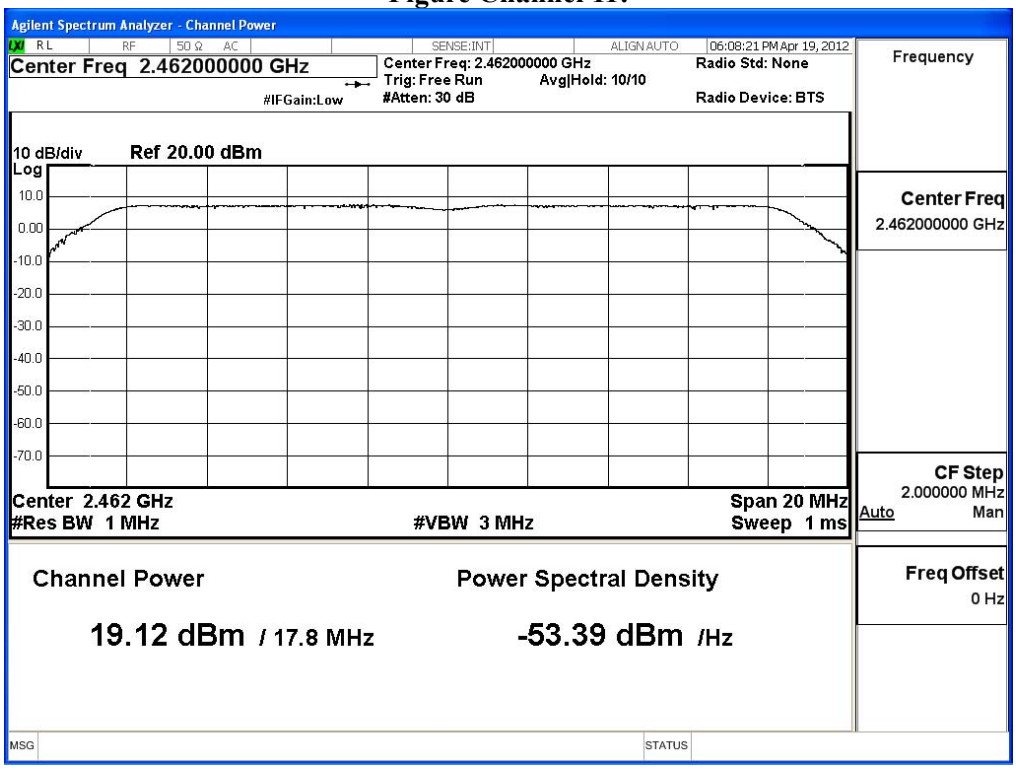


Figure Channel 11:



Product : Play-Fi Player
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - 802.11n-40BW_15Mbps(2.4G Band) main chip_162

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power
		15	30	45	60	90	120	135	150	15
		Measurement Level (dBm)								
3	2422	11.88	--	--	--	--	--	--	--	18.95
6	2437	12.04	12.01	11.99	11.97	11.95	11.94	11.91	11.88	19.20
9	2452	11.71	--	--	--	--	--	--	--	18.83

Note:
1. Peak Power Output Value =Reading value on Spectrum Analyzer + cable loss
   (Use the spectrum analyzer's integrated channel power measurement function)
2. Average Power for different data rate = Reading value on Power Meter +cable loss

Figure Channel 3:

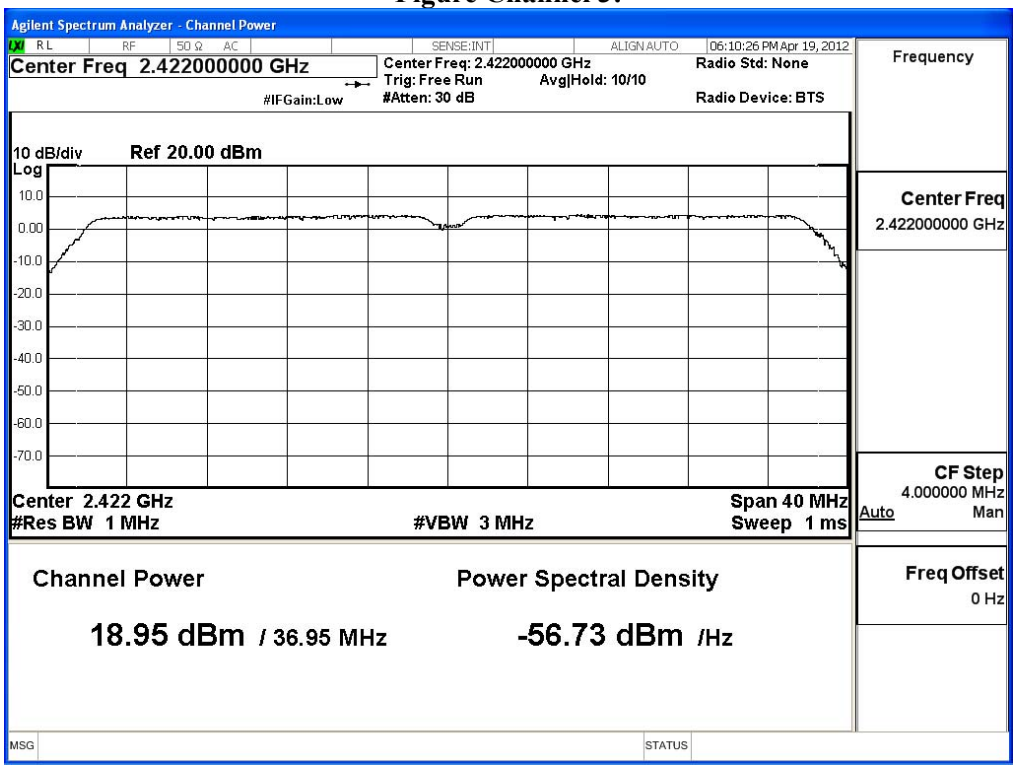


Figure Channel 6:

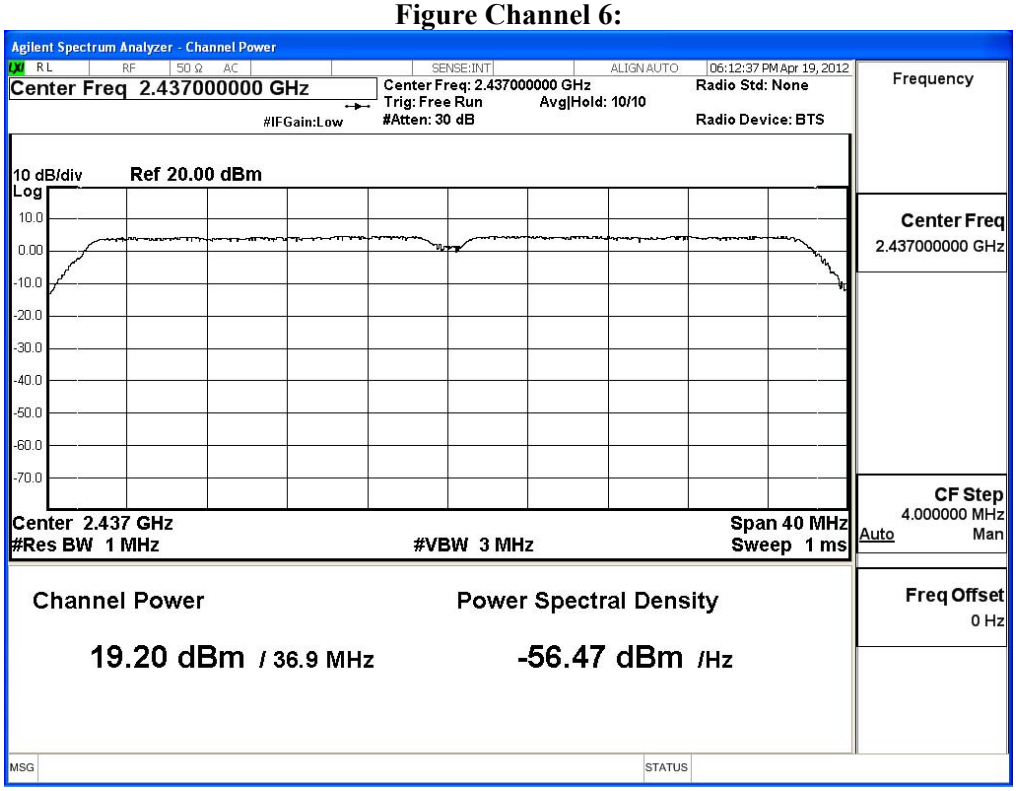
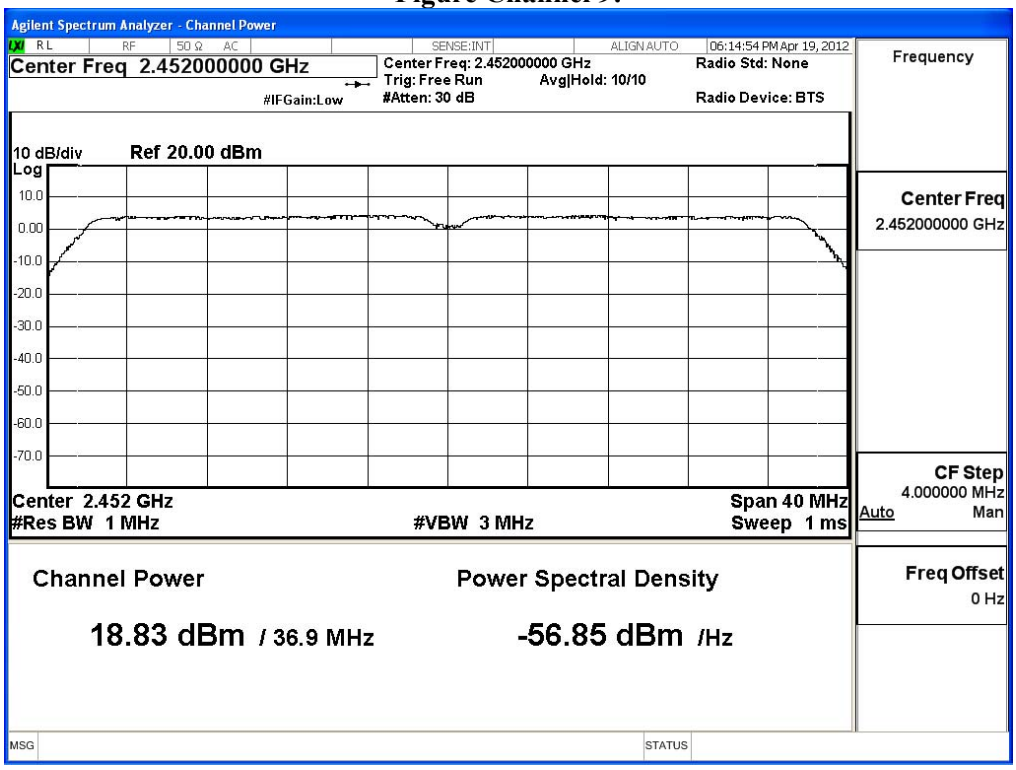


Figure Channel 9:



Product : Play-Fi Player
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) main chip_166

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)				Peak Power	Required Limit	Result
		1	2	5.5	11	1		
		Measurement Level (dBm)						
01	2412	15.28	--	--	--	17.48	<30dBm	Pass
06	2437	15.13	15.11	15.07	15.03	16.52	<30dBm	Pass
11	2462	13.77	--	--	--	15.75	<30dBm	Pass

Note:
1. Peak Power Output Value =Reading value on Spectrum Analyzer + cable loss
   (Use the spectrum analyzer's integrated channel power measurement function)
2. Average Power for different data rate = Reading value on Power Meter +cable loss

Figure Channel 1:

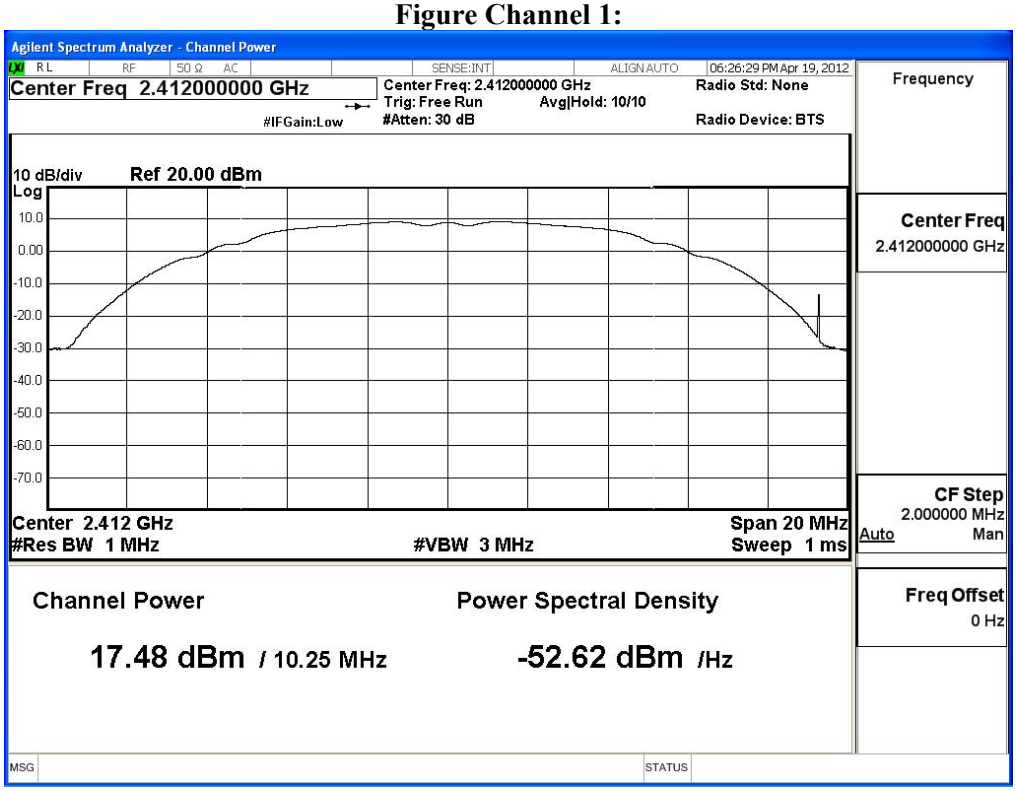


Figure Channel 6:

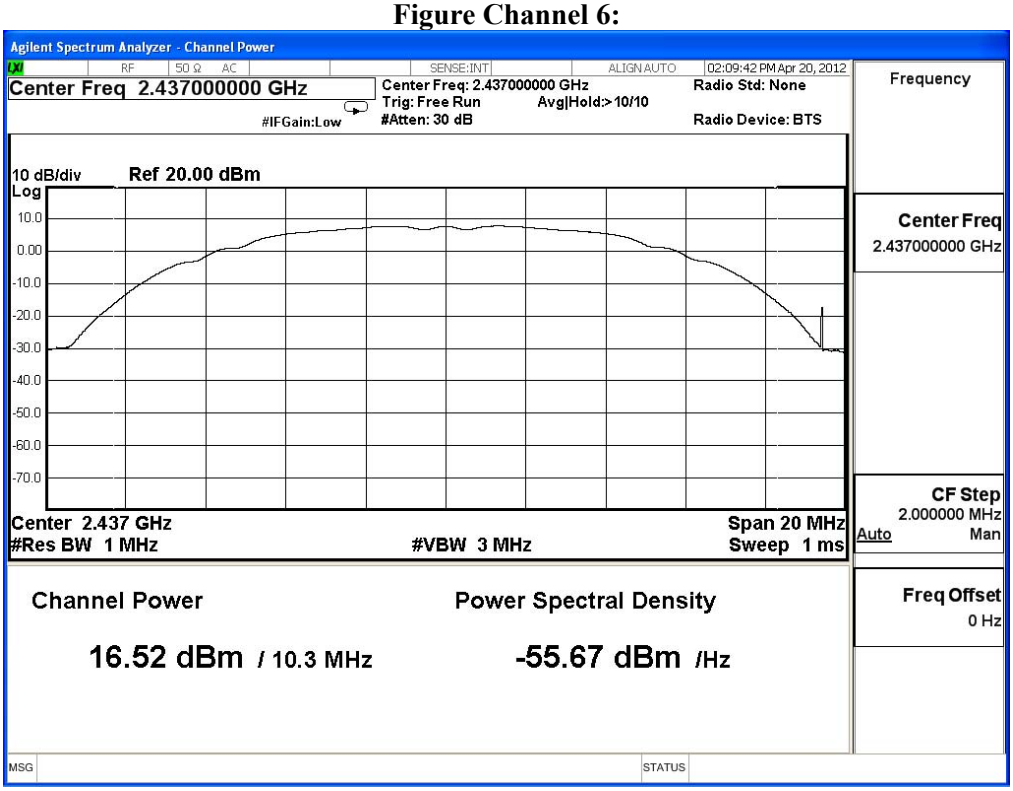
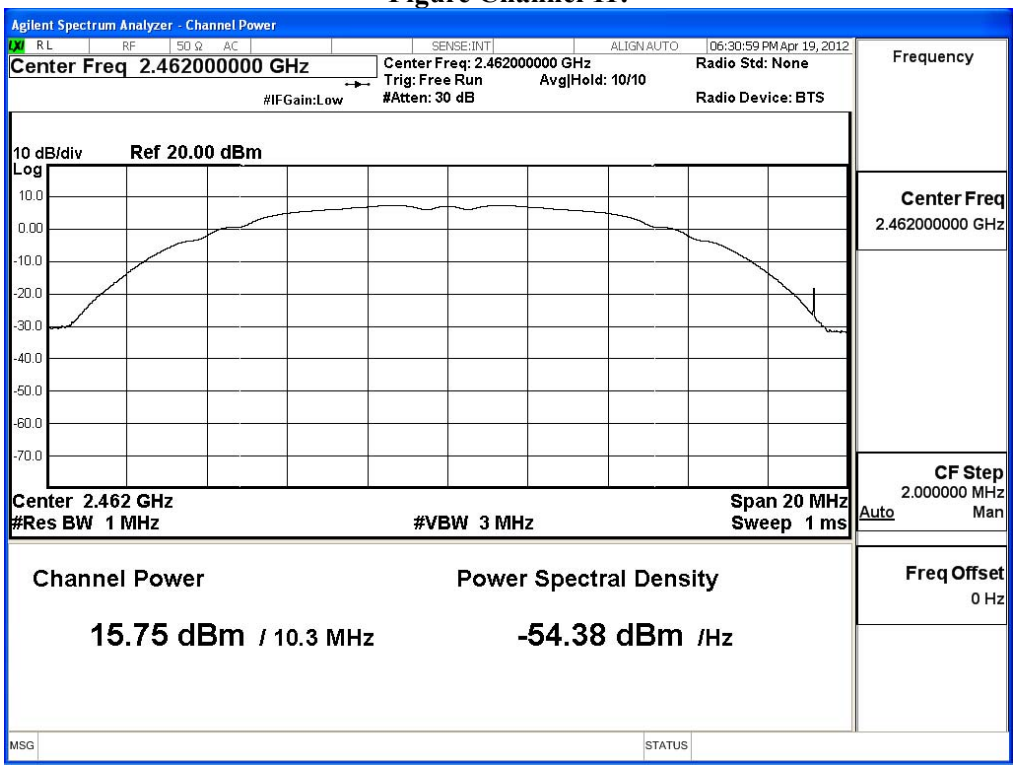


Figure Channel 11:



Product : Play-Fi Player
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) main chip_166

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		6	9	12	18	24	36	48	54	6		
		Measurement Level (dBm)										
01	2412	12.37	--	--	--	--	--	--	--	19.20	<30dBm	Pass
06	2437	12.13	12.1	12.08	12.05	12.04	12	11.98	11.95	18.68	<30dBm	Pass
11	2462	12.22	--	--	--	--	--	--	--	17.99	<30dBm	Pass

Note:
1. Peak Power Output Value =Reading value on Spectrum Analyzer + cable loss
   (Use the spectrum analyzer's integrated channel power measurement function)
2. Average Power for different data rate = Reading value on Power Meter +cable loss

Figure Channel 1:

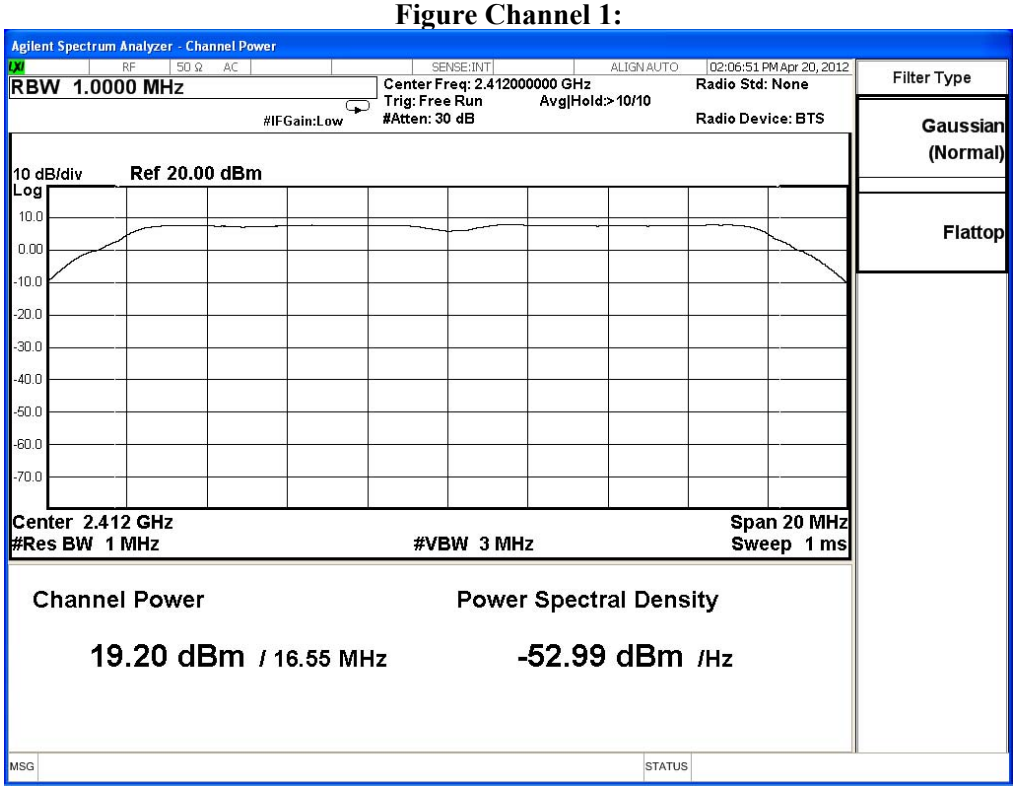


Figure Channel 6:

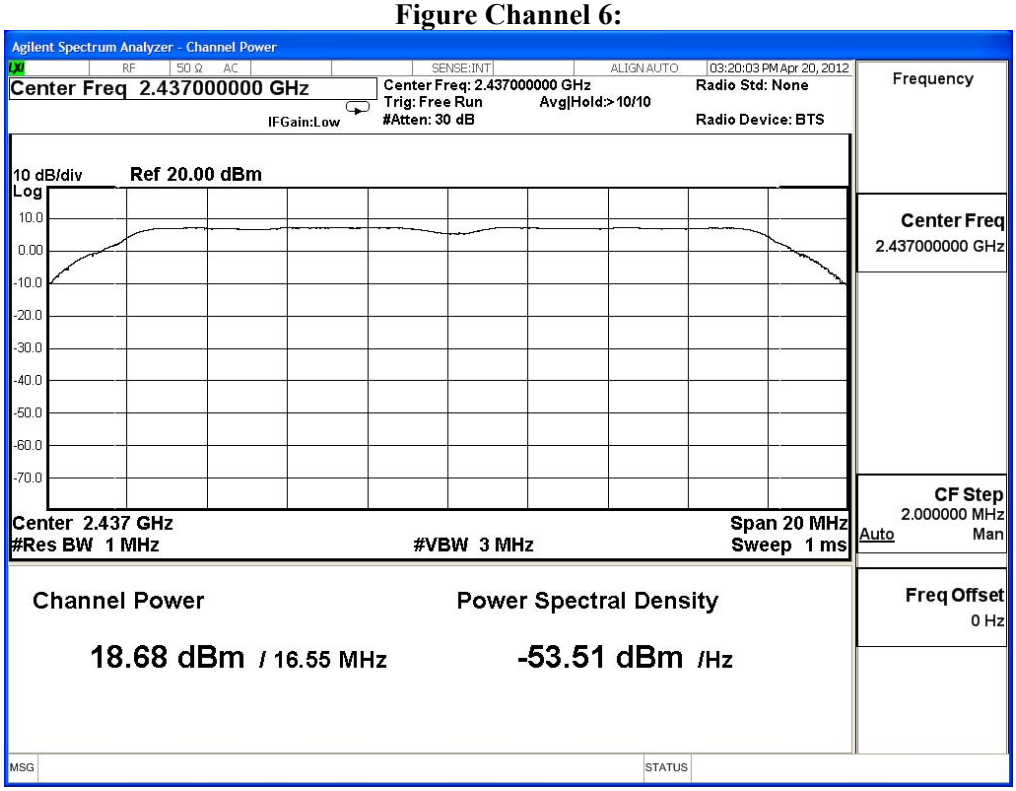
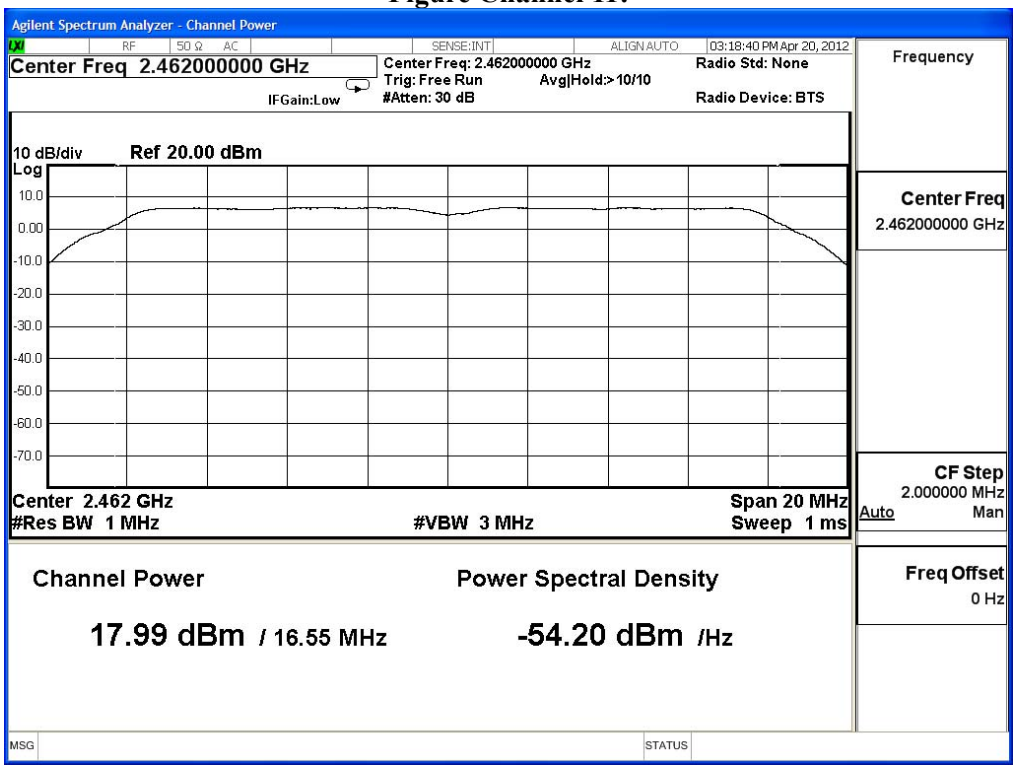


Figure Channel 11:



Product : Play-Fi Player
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) main chip_166

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power
		7.2	14.4	21.7	28.9	43.3	57.8	65	72.2	7.2
		Measurement Level (dBm)								
01	2412	12.26	--	--	--	--	--	--	--	19.46
06	2437	12.06	12.03	11.99	11.98	11.95	11.93	11.91	11.87	19.40
11	2462	12.22	--	--	--	--	--	--	--	19.48

Note:
1. Peak Power Output Value =Reading value on Spectrum Analyzer + cable loss
   (Use the spectrum analyzer's integrated channel power measurement function)
2. Average Power for different data rate = Reading value on Power Meter +cable loss

Figure Channel 1:

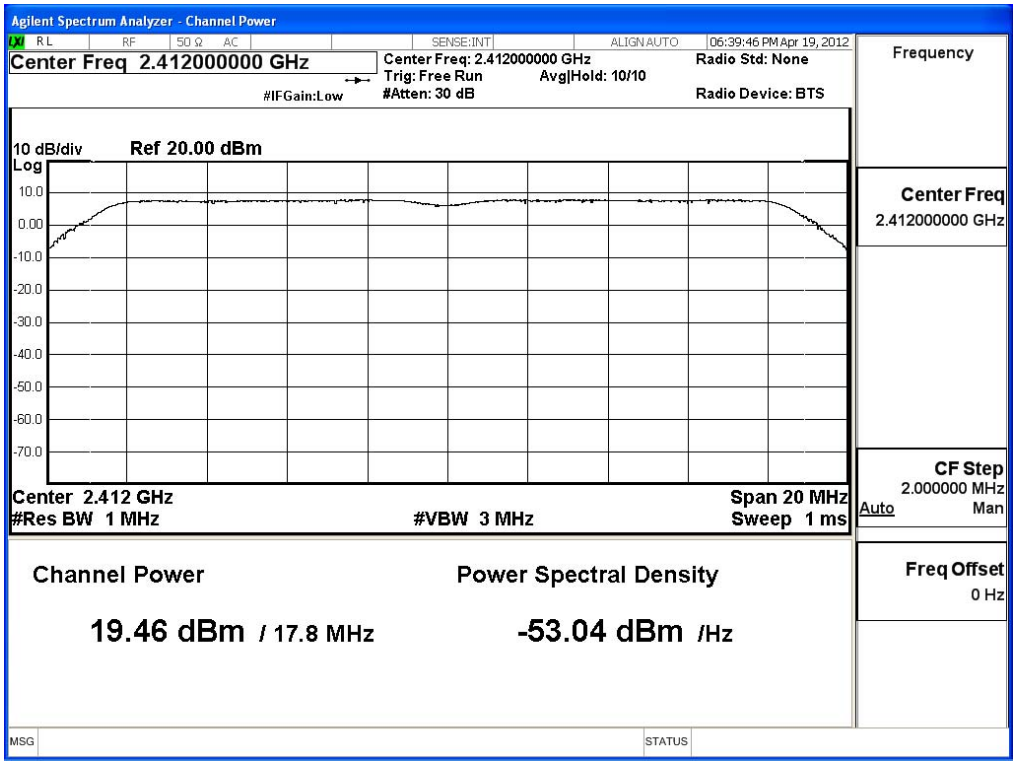


Figure Channel 6:

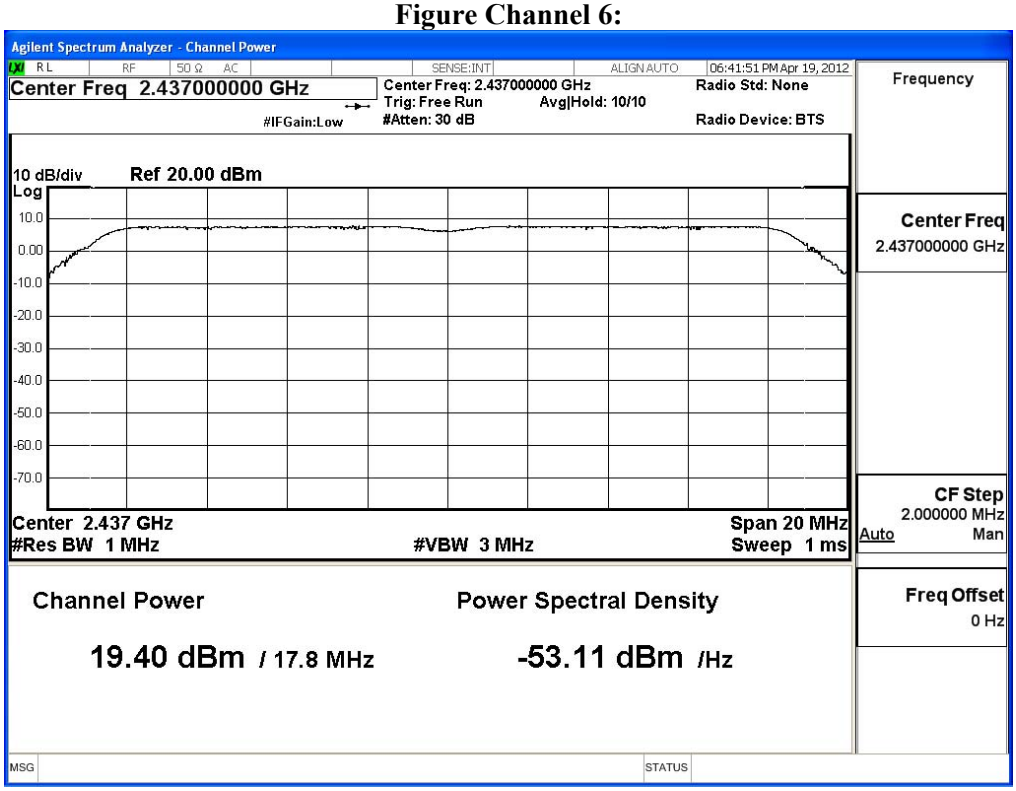
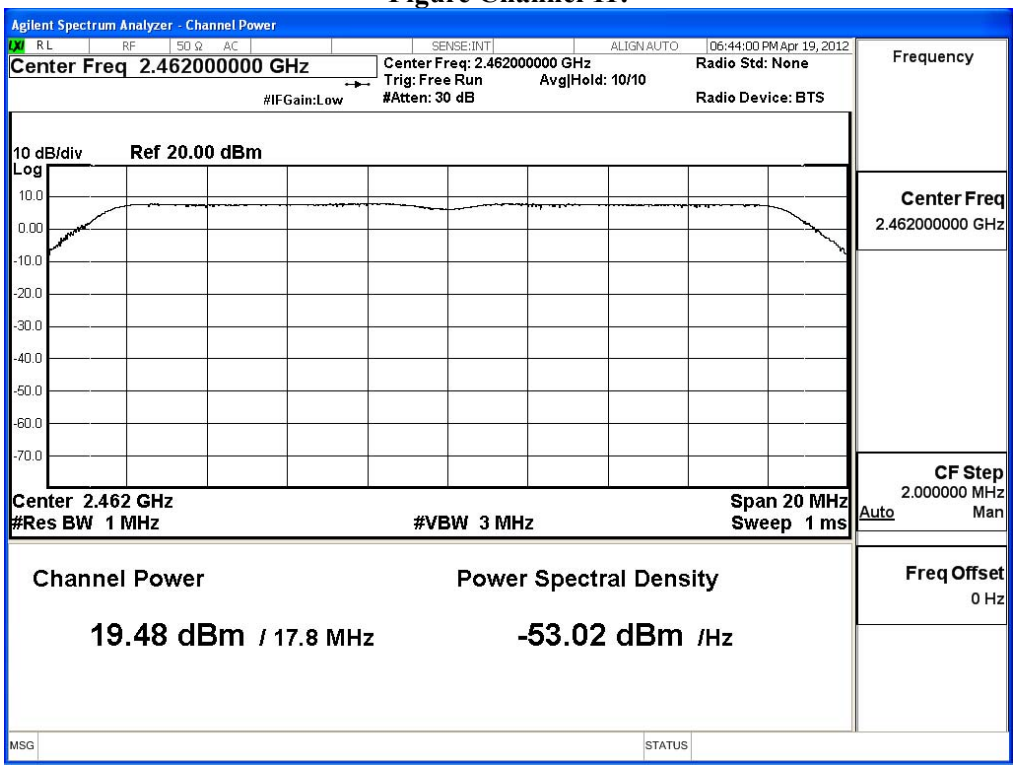


Figure Channel 11:



Product : Play-Fi Player
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - 802.11n-40BW_15Mbps(2.4G Band) main chip_166

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power
		15	30	45	60	90	120	135	150	15
		Measurement Level (dBm)								
3	2422	12.32	--	--	--	--	--	--	--	19.32
6	2437	12.43	12.41	12.38	12.35	12.34	12.31	12.29	12.25	19.50
9	2452	12.14	--	--	--	--	--	--	--	19.14

Note:
1. Peak Power Output Value =Reading value on Spectrum Analyzer + cable loss
   (Use the spectrum analyzer's integrated channel power measurement function)
2. Average Power for different data rate = Reading value on Power Meter +cable loss

Figure Channel 3:

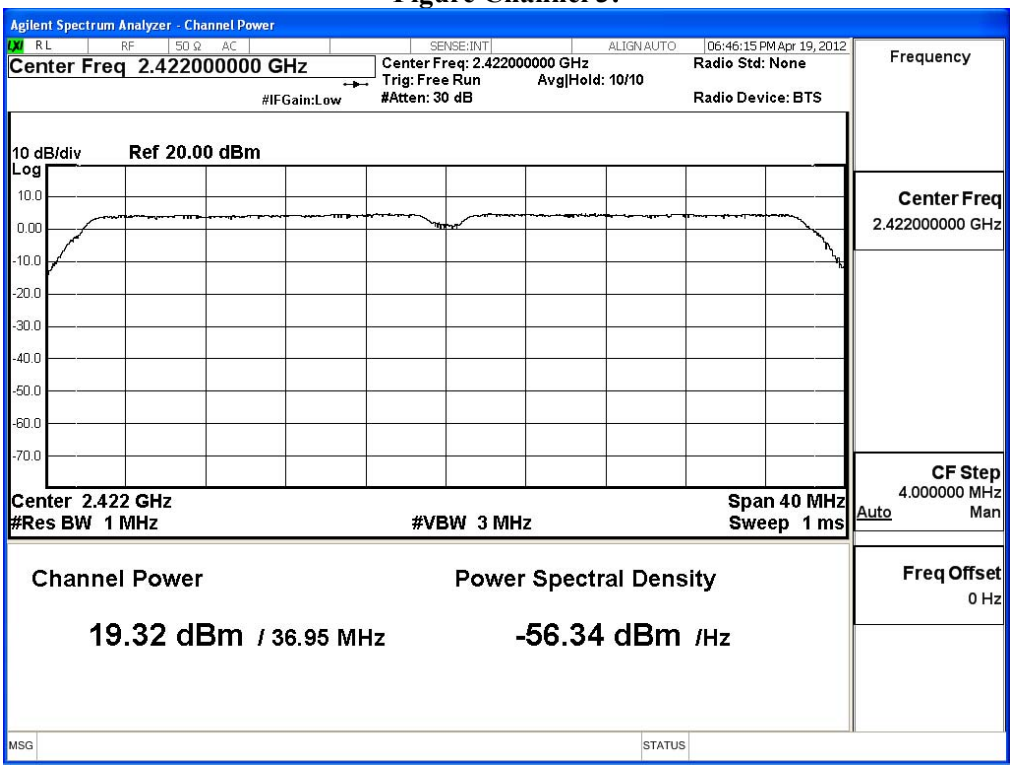


Figure Channel 6:

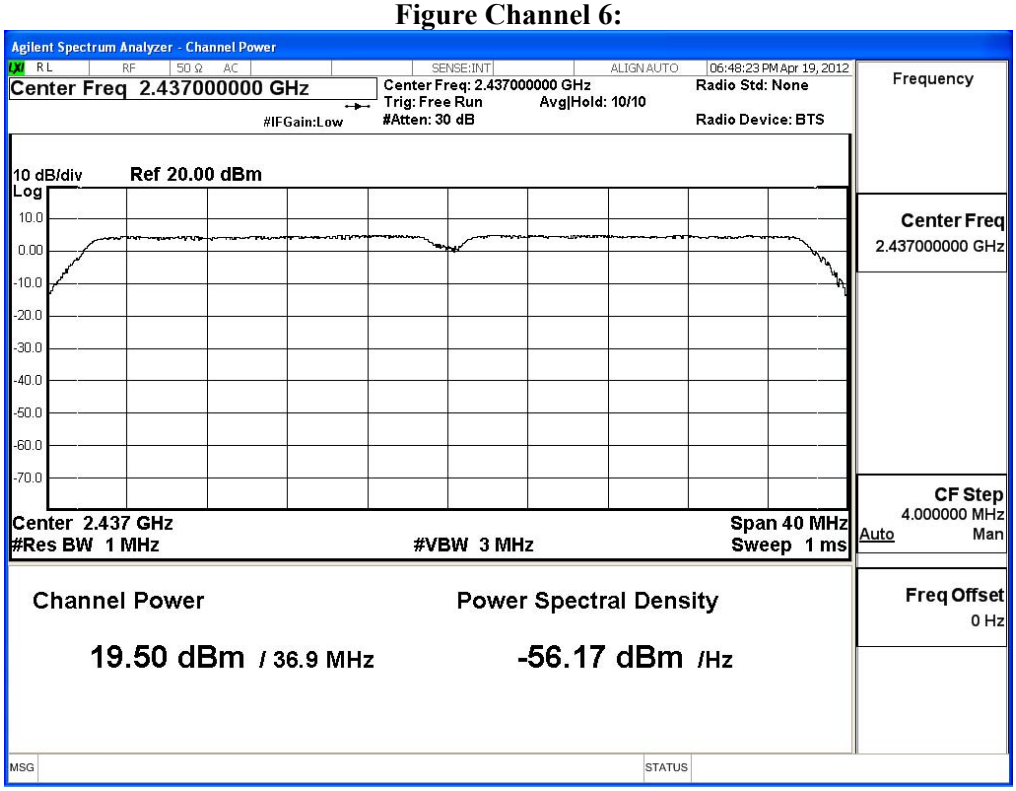
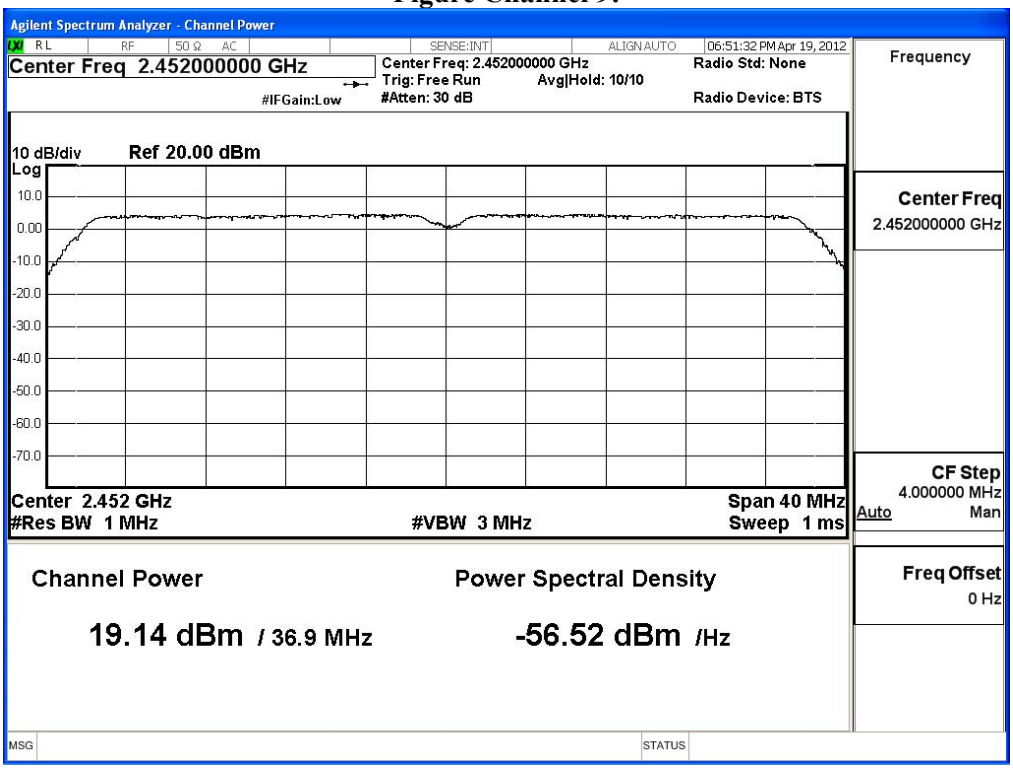


Figure Channel 9:



4. Radiated Emission

4.1. Test Equipment

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

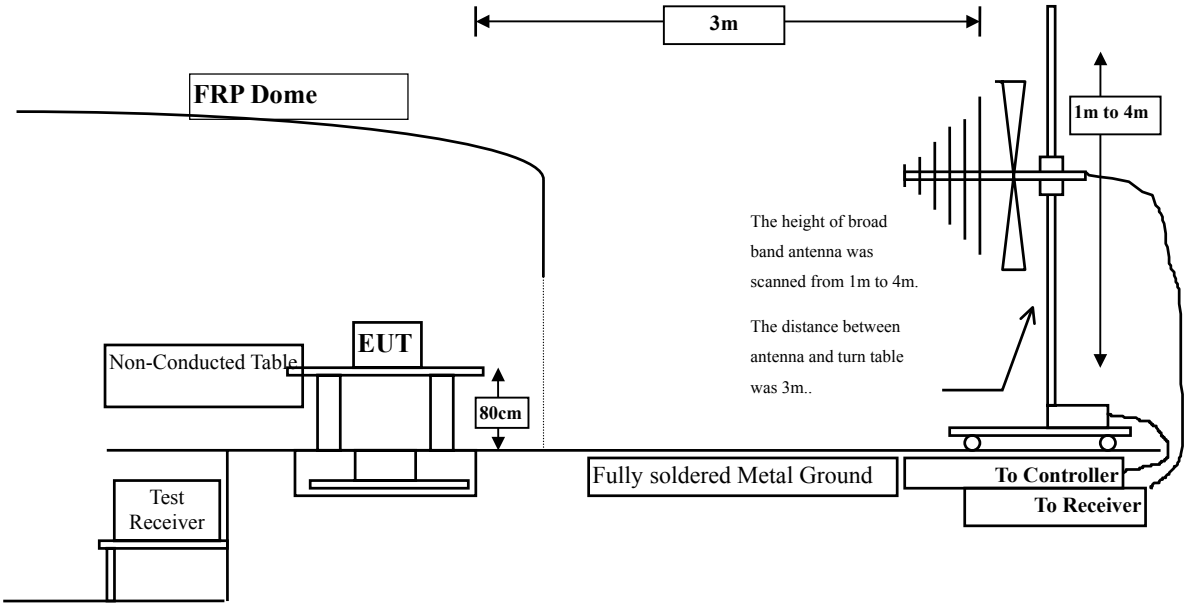
Test Site	Equipment		Manufacturer	Model No./Serial No.	Last Cal.
☒Site # 3	X	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2011
	X	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2011
	X	Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2011
	X	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2012
	X	Pre-Amplifier	QTK	AP-180C / CHM_0906076	Sep., 2011
	X	Pre-Amplifier	MITEQ	AMF-4D-180400-45-6P/ 925975	Mar, 2012
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2012
	X	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2011
	X	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2012
	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.

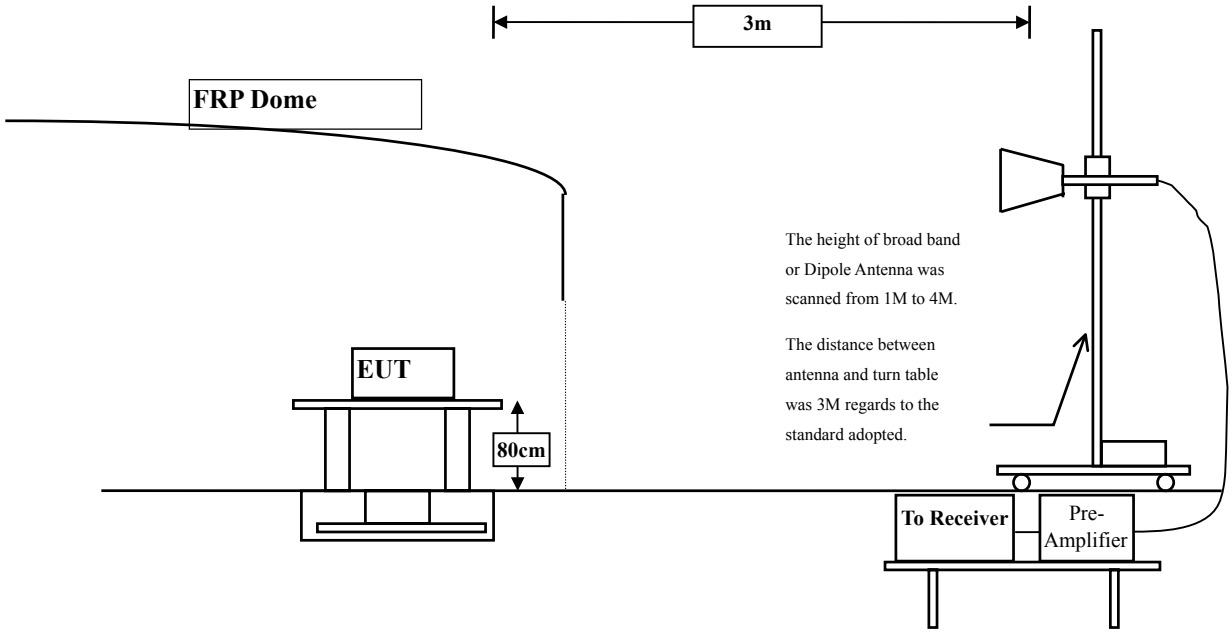
2. The test instruments marked with “X” are used to measure the final test results.

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	uV/m @3m	dBuV/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Remarks: E field strength (dBuV/m) = 20 log E field strength (uV/m)

4.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to DTS test procedure of Jan. 2012 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 C63.4:2003 on radiated measurement.
The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.
Radiated emission measurements below 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 form 30MHz - 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 Player
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz) main chip_162

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4824.000	3.261	43.180	46.441	-27.559	74.000
7236.000	10.650	39.540	50.190	-23.810	74.000
9648.000	13.337	37.380	50.716	-23.284	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	6.421	45.890	52.311	-21.689	74.000
7236.000	11.495	40.970	52.465	-21.535	74.000
9648.000	13.807	39.460	53.266	-20.734	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 Player
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2437 MHz) main chip_162

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.038	43.140	46.177	-27.823	74.000
7311.000	11.795	38.870	50.664	-23.336	74.000
9748.000	12.635	37.550	50.185	-23.815	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	5.812	49.210	55.021	-18.979	74.000
7311.000	12.630	39.990	52.619	-21.381	74.000
9748.000	13.126	42.330	55.456	-18.544	74.000
Average Detector:					
4874.000	5.812	46.990	52.801	-1.199	54.000
9748.000	13.126	36.870	49.996	-4.004	54.000

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.

Product : Play-Fi Player
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462 MHz) main chip_162

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4924.000	2.858	43.580	46.437	-27.563	74.000
7386.000	12.127	37.380	49.508	-24.492	74.000
9848.000	12.852	37.360	50.213	-23.787	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	5.521	49.300	54.820	-19.180	74.000
7386.000	13.254	37.690	50.944	-23.056	74.000
9848.000	13.367	41.200	54.567	-19.433	74.000
Average Detector:					
4924.000	5.521	47.050	52.570	-1.430	54.000
9848.000	13.367	35.310	48.677	-5.323	54.000

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.

Product : Play-Fi Player
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz) main chip_162

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4824.000	3.261	37.850	41.111	-32.889	74.000
7236.000	10.650	39.540	50.190	-23.810	74.000
9648.000	13.337	36.040	49.376	-24.624	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	6.421	42.640	49.061	-24.939	74.000
7236.000	11.495	41.340	52.835	-21.165	74.000
9648.000	13.807	36.340	50.146	-23.854	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 Player
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437 MHz) main chip_162

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.038	38.060	41.097	-32.903	74.000
7311.000	11.795	36.850	48.644	-25.356	74.000
9748.000	12.635	36.530	49.165	-24.835	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	5.812	44.250	50.061	-23.939	74.000
7311.000	12.630	40.470	53.099	-20.901	74.000
9748.000	13.126	36.650	49.776	-24.224	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 Player
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462 MHz) main chip_162

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4924.000	2.858	41.070	43.927	-30.073	74.000
7386.000	12.127	36.280	48.408	-25.592	74.000
9848.000	12.852	36.480	49.333	-24.667	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	5.521	45.780	51.300	-22.700	74.000
7386.000	13.254	37.310	50.564	-23.436	74.000
9848.000	13.367	36.890	50.257	-23.743	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 Player
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2412MHz)
main chip_162

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4824.000	3.261	37.550	40.811	-33.189	74.000
7236.000	10.650	40.530	51.180	-22.820	74.000
9648.000	13.337	35.760	49.096	-24.904	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	6.421	42.650	49.071	-24.929	74.000
7236.000	11.495	42.660	54.155	-19.845	74.000
9648.000	13.807	35.940	49.746	-24.254	74.000
Average Detector:					
7236.000	11.495	24.790	36.285	-17.715	54.000

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.

Product : Play-Fi Player
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2437 MHz)
main chip_162

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.038	40.650	43.687	-30.313	74.000
7311.000	11.795	38.450	50.244	-23.756	74.000
9748.000	12.635	36.410	49.045	-24.955	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	5.812	45.360	51.171	-22.829	74.000
7311.000	12.630	41.060	53.689	-20.311	74.000
9748.000	13.126	36.560	49.686	-24.314	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 Player
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2462 MHz)
main chip_162

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4924.000	2.858	41.530	44.387	-29.613	74.000
7386.000	12.127	37.970	50.098	-23.902	74.000
9848.000	12.852	36.920	49.773	-24.227	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	5.521	47.660	53.180	-20.820	74.000
7386.000	13.254	38.300	51.554	-22.446	74.000
9848.000	13.367	37.220	50.587	-23.413	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 Player
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2422MHz)
main chip_162

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4844.000	3.171	37.010	40.181	-33.819	74.000
7266.000	11.162	36.370	47.532	-26.468	74.000
9688.000	13.507	37.400	50.908	-23.092	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4844.000	6.178	40.970	47.148	-26.852	74.000
7266.000	11.982	41.130	53.112	-20.888	74.000
9688.000	13.507	36.610	50.118	-23.882	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 Player
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2437 MHz)
main chip_162

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.038	37.310	40.347	-33.653	74.000
7311.000	11.795	35.640	47.434	-26.566	74.000
9748.000	12.635	36.890	49.525	-24.475	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	5.812	42.860	48.671	-25.329	74.000
7311.000	12.630	39.400	52.029	-21.971	74.000
9748.000	13.126	37.200	50.326	-23.674	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 Player
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2452 MHz)
main chip_162

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4904.000	2.914	37.980	40.895	-33.105	74.000
7356.000	11.995	35.640	47.634	-26.366	74.000
9808.000	12.475	36.590	49.065	-24.935	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4904.000	5.530	43.850	49.381	-24.619	74.000
7356.000	13.005	35.860	48.864	-25.136	74.000
9808.000	12.901	37.040	49.941	-24.059	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 Player
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz) main chip_166

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4824.000	3.261	41.340	44.601	-29.399	74.000
7236.000	10.650	39.410	50.060	-23.940	74.000
9648.000	13.337	36.420	49.756	-24.244	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	6.421	43.410	49.831	-24.169	74.000
7236.000	11.495	39.470	50.965	-23.035	74.000
9648.000	13.807	35.950	49.756	-24.244	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 Player
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2437 MHz) main chip_166

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.038	42.940	45.977	-28.023	74.000
7311.000	11.795	40.780	52.574	-21.426	74.000
9748.000	12.635	37.890	50.525	-23.475	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	5.812	45.670	51.481	-22.519	74.000
7311.000	12.630	40.870	53.499	-20.501	74.000
9748.000	13.126	37.120	50.246	-23.754	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 Player
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462 MHz) main chip_166

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4924.000	2.858	42.080	44.937	-29.063	74.000
7386.000	12.127	37.490	49.618	-24.382	74.000
9848.000	12.852	37.030	49.883	-24.117	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	5.521	44.500	50.020	-23.980	74.000
7386.000	13.254	37.320	50.574	-23.426	74.000
9848.000	13.367	37.050	50.417	-23.583	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 Player
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz) main chip_166

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4824.000	3.261	39.270	42.531	-31.469	74.000
7236.000	10.650	40.360	51.010	-22.990	74.000
9648.000	13.337	36.150	49.486	-24.514	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	6.421	39.960	46.381	-27.619	74.000
7236.000	11.495	41.210	52.705	-21.295	74.000
9648.000	13.807	36.080	49.886	-24.114	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 Player
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437 MHz) main chip_166

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.038	38.750	41.787	-32.213	74.000
7311.000	11.795	40.230	52.024	-21.976	74.000
9748.000	12.635	36.530	49.165	-24.835	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	5.812	40.720	46.531	-27.469	74.000
7311.000	12.630	41.090	53.719	-20.281	74.000
9748.000	13.126	36.830	49.956	-24.044	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 Player
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462 MHz) main chip_166

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4924.000	2.858	40.560	43.417	-30.583	74.000
7386.000	12.127	39.020	51.148	-22.852	74.000
9848.000	12.852	36.520	49.373	-24.627	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	5.521	41.240	46.760	-27.240	74.000
7386.000	13.254	39.550	52.804	-21.196	74.000
9848.000	13.367	36.400	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 Player
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2412MHz)
main chip_166

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4824.000	3.261	39.760	43.021	-30.979	74.000
7236.000	10.650	43.280	53.930	-20.070	74.000
9648.000	13.337	35.340	48.676	-25.324	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	6.254	40.290	46.544	-27.456	74.000
7236.000	11.495	41.950	53.445	-20.555	74.000
9648.000	13.536	36.350	49.886	-24.114	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 Player
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2437 MHz)
main chip_166

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.038	38.740	41.777	-32.223	74.000
7311.000	11.795	40.020	51.814	-22.186	74.000
9748.000	12.635	36.280	48.915	-25.085	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	5.812	40.980	46.791	-27.209	74.000
7311.000	12.630	40.660	53.289	-20.711	74.000
9748.000	13.126	36.790	49.916	-24.084	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 Player
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2462 MHz)
main chip_166

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4924.000	2.858	38.830	41.687	-32.313	74.000
7386.000	12.127	39.440	51.568	-22.432	74.000
9848.000	12.852	36.280	49.133	-24.867	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	5.521	41.640	47.160	-26.840	74.000
7386.000	13.254	40.410	53.664	-20.336	74.000
9848.000	13.367	35.950	49.317	-24.683	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 Player
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2422MHz)
main chip_166

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4844.000	3.171	37.080	40.251	-33.749	74.000
7266.000	11.162	36.610	47.772	-26.228	74.000
9688.000	12.964	36.100	49.065	-24.935	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4844.000	6.178	37.740	43.918	-30.082	74.000
7266.000	11.982	37.410	49.392	-24.608	74.000
9688.000	13.507	36.140	49.648	-24.352	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 Player
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2437 MHz)
main chip_166

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.038	37.340	40.377	-33.623	74.000
7311.000	11.795	36.370	48.164	-25.836	74.000
9748.000	12.635	36.020	48.655	-25.345	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	5.812	36.450	42.261	-31.739	74.000
7311.000	12.630	38.470	51.099	-22.901	74.000
9748.000	13.126	36.190	49.316	-24.684	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 Player
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2452 MHz)
main chip_166

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4904.000	2.914	37.190	40.105	-33.895	74.000
7356.000	11.995	35.690	47.684	-26.316	74.000
9808.000	12.475	36.290	48.765	-25.235	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4904.000	5.530	39.020	44.551	-29.449	74.000
7356.000	13.005	36.210	49.214	-24.786	74.000
9808.000	12.901	36.420	49.321	-24.679	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 Player
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2437 MHz) main chip_162 (winbond)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
37.760	-2.539	32.491	29.953	-10.047	40.000
253.100	-5.669	39.484	33.815	-12.185	46.000
309.360	-4.463	37.982	33.519	-12.481	46.000
398.600	0.879	34.151	35.030	-10.970	46.000
540.220	3.499	29.616	33.115	-12.885	46.000
961.200	6.810	36.499	43.309	-10.691	54.000
Vertical					
293.840	-4.990	37.576	32.586	-13.414	46.000
608.120	2.175	28.604	30.779	-15.221	46.000
666.320	-0.951	35.399	34.448	-11.552	46.000
798.240	2.629	29.642	32.270	-13.730	46.000
961.200	3.310	32.306	35.616	-18.384	54.000
996.120	-1.323	38.394	37.071	-16.929	54.000

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.

Product : Play-Fi Player
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437 MHz) main chip_162 (winbond)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
253.100	-5.669	39.864	34.195	-11.805	46.000
398.600	0.879	34.892	35.771	-10.229	46.000
540.220	3.499	28.708	32.207	-13.793	46.000
798.240	6.409	34.319	40.727	-5.273	46.000
961.200	6.810	34.466	41.276	-12.724	54.000
996.120	8.107	35.456	43.563	-10.437	54.000
Vertical					
43.580	-10.919	42.801	31.882	-8.118	40.000
222.060	-6.484	44.989	38.504	-7.496	46.000
361.740	-0.646	33.320	32.673	-13.327	46.000
798.240	2.629	30.213	32.841	-13.159	46.000
961.200	3.310	33.170	36.480	-17.520	54.000
996.120	-1.323	40.304	38.981	-15.019	54.000

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.

Product : Play-Fi Player
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2437 MHz)
main chip_162 (winbond)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
39.700	-3.625	37.979	34.354	-5.646	40.000
311.300	-4.651	39.605	34.954	-11.046	46.000
398.600	0.879	35.050	35.929	-10.071	46.000
798.240	6.409	35.120	41.528	-4.472	46.000
961.200	6.810	35.937	42.747	-11.253	54.000
1000.000	9.564	36.184	45.748	-8.252	54.000
Vertical					
41.640	-11.715	42.478	30.764	-9.236	40.000
375.320	0.388	30.708	31.096	-14.904	46.000
664.380	-0.978	32.827	31.849	-14.151	46.000
798.240	2.629	30.696	33.324	-12.676	46.000
961.200	3.310	32.927	36.237	-17.763	54.000
1000.000	-1.166	37.290	36.124	-17.876	54.000

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.

Product : Play-Fi Player
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2437 MHz)
main chip_162 (winbond)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
64.920	-12.587	44.401	31.814	-8.186	40.000
311.300	-4.651	39.584	34.933	-11.067	46.000
664.380	1.882	32.827	34.709	-11.291	46.000
798.240	6.409	33.102	39.510	-6.490	46.000
916.580	6.470	29.435	35.905	-10.095	46.000
961.200	6.810	34.189	40.999	-13.001	54.000
Vertical					
43.580	-10.919	43.123	32.204	-7.796	40.000
260.860	-4.870	41.240	36.370	-9.630	46.000
540.220	2.169	27.846	30.015	-15.985	46.000
664.380	-0.978	32.949	31.971	-14.029	46.000
798.240	2.629	30.392	33.020	-12.980	46.000
961.200	3.310	32.242	35.552	-18.448	54.000

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.

Product : Play-Fi Player
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2437 MHz) main chip_166 (Hynix)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
107.600	-7.058	35.325	28.267	-15.233	43.500
249.220	-6.014	40.969	34.955	-11.045	46.000
375.320	-1.209	38.663	37.454	-8.546	46.000
600.360	3.977	33.202	37.179	-8.821	46.000
798.240	5.148	33.319	38.467	-7.533	46.000
961.200	6.450	40.151	46.601	-7.399	54.000
Vertical					
105.660	-0.253	36.088	35.835	-7.665	43.500
249.220	-7.634	42.972	35.338	-10.662	46.000
398.600	-4.678	42.316	37.638	-8.362	46.000
497.540	-1.393	32.035	30.642	-15.358	46.000
825.400	3.430	30.383	33.813	-12.187	46.000
961.200	7.260	39.482	46.742	-7.258	54.000

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.

Product : Play-Fi Player
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437 MHz) main chip_166 (Hynix)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
103.720	-6.751	35.090	28.338	-15.162	43.500
249.220	-6.014	41.832	35.818	-10.182	46.000
375.320	-1.209	39.674	38.465	-7.535	46.000
600.360	3.977	33.142	37.119	-8.881	46.000
798.240	5.148	33.148	38.296	-7.704	46.000
961.200	6.450	40.290	46.740	-7.260	54.000
Vertical					
107.600	-0.318	37.755	37.437	-6.063	43.500
249.220	-7.634	43.006	35.372	-10.628	46.000
400.540	-5.156	40.818	35.663	-10.337	46.000
532.460	-0.563	32.369	31.806	-14.194	46.000
699.300	0.695	37.763	38.458	-7.542	46.000
961.200	7.260	39.238	46.498	-7.502	54.000

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.

Product : Play-Fi Player
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2437 MHz)
main chip_166 (Hynix)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
107.600	-7.058	35.872	28.814	-14.686	43.500
249.220	-6.014	41.674	35.660	-10.340	46.000
400.540	-2.276	37.898	35.622	-10.378	46.000
600.360	3.977	32.829	36.806	-9.194	46.000
798.240	5.148	33.796	38.944	-7.056	46.000
961.200	6.450	39.163	45.613	-8.387	54.000
Vertical					
132.820	-4.440	39.674	35.234	-8.266	43.500
249.220	-7.634	42.673	35.039	-10.961	46.000
398.600	-4.678	43.160	38.482	-7.518	46.000
532.460	-0.563	33.000	32.437	-13.563	46.000
769.140	2.923	32.876	35.799	-10.201	46.000
961.200	7.260	39.725	46.985	-7.015	54.000

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.

Product : Play-Fi Player
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2437 MHz)
main chip_166 (Hynix)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
103.720	-6.751	34.124	27.372	-16.128	43.500
249.220	-6.014	41.081	35.067	-10.933	46.000
375.320	-1.209	39.322	38.113	-7.887	46.000
540.220	2.551	35.107	37.658	-8.342	46.000
800.180	5.141	32.867	38.008	-7.992	46.000
961.200	6.450	40.054	46.504	-7.496	54.000
Vertical					
55.220	-4.699	40.772	36.073	-3.927	40.000
132.820	-4.440	39.572	35.132	-8.368	43.500
256.980	-7.573	41.056	33.483	-12.517	46.000
398.600	-4.678	40.901	36.223	-9.777	46.000
695.420	1.878	34.224	36.102	-9.898	46.000
961.200	7.260	39.085	46.345	-7.655	54.000

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.

Product : Play-Fi Player
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2437 MHz) main chip_162 (Hynix)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
97.900	-7.650	34.414	26.763	-16.737	43.500
388.900	-1.684	42.668	40.984	-5.016	46.000
480.080	-0.329	31.842	31.513	-14.487	46.000
540.220	2.551	31.814	34.365	-11.635	46.000
598.420	3.991	31.973	35.964	-10.036	46.000
798.240	5.148	34.304	39.452	-6.548	46.000
Vertical					
119.240	-3.541	42.178	38.637	-4.863	43.500
386.960	-3.064	40.877	37.813	-8.187	46.000
540.220	0.121	29.973	30.094	-15.906	46.000
749.740	2.510	31.346	33.856	-12.144	46.000
798.240	2.808	29.634	32.442	-13.558	46.000
852.560	0.452	31.062	31.514	-14.486	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.

Product : Play-Fi Player
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437 MHz) main chip_162 (Hynix)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
284.140	-4.894	46.438	41.544	-4.456	46.000
499.480	0.048	35.654	35.702	-10.298	46.000
540.220	2.551	31.843	34.394	-11.606	46.000
598.420	3.991	31.817	35.808	-10.192	46.000
798.240	5.148	33.588	38.736	-7.264	46.000
856.440	6.382	26.666	33.048	-12.952	46.000
Vertical					
402.480	-5.823	41.357	35.534	-10.466	46.000
497.540	-1.393	33.429	32.036	-13.964	46.000
608.120	-1.576	32.837	31.261	-14.739	46.000
749.740	2.510	30.713	33.223	-12.777	46.000
852.560	0.452	30.506	30.958	-15.042	46.000
930.160	6.477	26.793	33.270	-12.730	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.

Product : Play-Fi Player
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2437 MHz)
main chip_162 (Hynix)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
92.080	-8.819	35.978	27.159	-16.341	43.500
392.780	-2.096	40.734	38.638	-7.362	46.000
540.220	2.551	31.681	34.232	-11.768	46.000
598.420	3.991	30.414	34.405	-11.595	46.000
798.240	5.148	33.834	38.982	-7.018	46.000
895.240	4.988	29.278	34.265	-11.735	46.000
Vertical					
92.080	-3.339	36.422	33.083	-10.417	43.500
385.020	-2.820	39.564	36.744	-9.256	46.000
540.220	0.121	31.006	31.127	-14.873	46.000
598.420	-2.979	31.509	28.530	-17.470	46.000
798.240	2.808	33.169	35.977	-10.023	46.000
932.100	6.152	24.344	30.496	-15.504	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.

Product : Play-Fi Player
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2437 MHz)
main chip_162 (Hynix)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
191.020	-10.040	42.565	32.525	-10.975	43.500
388.900	-1.684	39.514	37.830	-8.170	46.000
540.220	2.551	31.788	34.339	-11.661	46.000
598.420	3.991	31.509	35.500	-10.500	46.000
798.240	5.148	33.169	38.317	-7.683	46.000
866.140	5.596	28.244	33.840	-12.160	46.000
Vertical					
117.300	-3.106	38.077	34.971	-8.529	43.500
386.960	-3.064	42.394	39.330	-6.670	46.000
499.480	-0.852	31.577	30.725	-15.275	46.000
608.120	-1.576	32.055	30.479	-15.521	46.000
809.880	3.279	26.625	29.904	-16.096	46.000
885.540	2.552	29.743	32.295	-13.705	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.

Product : Play-Fi Player
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2437 MHz) main chip_166 (winbond)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
398.600	-2.268	36.908	34.640	-11.360	46.000
540.220	2.551	32.258	34.809	-11.191	46.000
623.640	1.959	34.900	36.859	-9.141	46.000
666.320	2.031	33.232	35.264	-10.736	46.000
809.880	5.049	31.712	36.761	-9.239	46.000
908.820	6.029	34.284	40.313	-5.687	46.000
Vertical					
95.960	-2.790	41.651	38.861	-4.639	43.500
175.500	-8.257	42.610	34.352	-9.148	43.500
497.540	-1.393	32.731	31.338	-14.662	46.000
666.320	-1.809	34.692	32.884	-13.116	46.000
749.740	2.510	32.638	35.148	-10.852	46.000
891.360	2.218	29.253	31.471	-14.529	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.

Product : Play-Fi Player
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437 MHz) main chip_166 (winbond)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
191.020	-10.040	44.544	34.504	-8.996	43.500
540.220	2.551	32.403	34.954	-11.046	46.000
623.640	1.959	35.392	37.351	-8.649	46.000
666.320	2.031	34.480	36.512	-9.488	46.000
798.240	5.148	31.884	37.032	-8.968	46.000
916.580	6.144	27.726	33.870	-12.130	46.000
Vertical					
171.620	-8.752	46.769	38.017	-5.483	43.500
410.240	-6.616	41.204	34.588	-11.412	46.000
499.480	-0.852	31.388	30.536	-15.464	46.000
623.640	-2.631	32.926	30.295	-15.705	46.000
749.740	2.510	31.867	34.377	-11.623	46.000
883.600	2.566	28.864	31.429	-14.571	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.

Product : Play-Fi Player
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2437 MHz)
main chip_166 (winbond)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
49.400	-11.018	45.169	34.151	-5.849	40.000
412.180	-3.245	35.924	32.679	-13.321	46.000
540.220	2.551	31.322	33.873	-12.127	46.000
623.640	1.959	34.790	36.749	-9.251	46.000
798.240	5.148	30.989	36.137	-9.863	46.000
897.180	5.182	25.714	30.896	-15.104	46.000
Vertical					
101.780	-0.021	37.298	37.276	-6.224	43.500
373.380	-2.373	39.273	36.900	-9.100	46.000
540.220	0.121	29.231	29.352	-16.648	46.000
623.640	-2.631	32.265	29.634	-16.366	46.000
749.740	2.510	33.943	36.453	-9.547	46.000
920.460	5.517	27.336	32.853	-13.147	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.

Product : Play-Fi Player
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - 802.11n-40BW_15Mbps(2.4G Band) (2437 MHz)
main chip_166 (winbond)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
43.580	-4.496	37.634	33.138	-6.862	40.000
404.420	-2.269	36.233	33.964	-12.036	46.000
540.220	2.551	33.769	36.320	-9.680	46.000
623.640	1.959	35.387	37.346	-8.654	46.000
798.240	5.148	30.626	35.774	-10.226	46.000
899.120	5.433	25.912	31.345	-14.655	46.000
Vertical					
97.900	-1.400	34.442	33.041	-10.459	43.500
497.540	-1.393	29.996	28.603	-17.397	46.000
623.640	-2.631	33.683	31.052	-14.948	46.000
699.300	0.695	35.541	36.236	-9.764	46.000
835.100	1.995	31.390	33.385	-12.615	46.000
924.340	5.550	28.393	33.943	-12.057	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.