

FC

Test Report

Product Name	iHome AirPlay Wireless Audio System
Model No	iW4, iW4X
FCC ID.	EMOIW4

Applicant	SDI Technologies Inc.
Address	1299 Main Street, Rahway, NJ 07065, U.S.A

Date of Receipt	Apr. 25, 2012
Issue Date	May. 08, 2012
Report No.	124525R-RFUSP42V01
Report Version	V1.0



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

Test Report Certification

Issue Date: May. 08, 2012

Report No.: 124525R-RFUSP42V01


Accredited by NIST (NVLAP)

NVLAP Lab Code: 200533-0

Product Name	iHome AirPlay Wireless Audio System
Applicant	SDI Technologies Inc.
Address	1299 Main Street, Rahway, NJ 07065, U.S.A
Manufacturer	DONG GUAN G-COM COMPUTER CO., LTD
Model No.	iW4, iW4X
FCC ID.	EMOIW4
EUT Rated Voltage	AC 100-240V, 50-60Hz
EUT Test Voltage	AC 120V/60Hz
Trade Name	iHome
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.

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TABLE OF CONTENTS

Description	Page
1. GENERAL INFORMATION	5
1.1. EUT Description.....	5
1.2. Operational Description	7
1.3. Tested System Details.....	8
1.4. Configuration of Tested System	9
1.5. EUT Exercise Software	9
1.6. Test Facility	10
2. Conducted Emission.....	11
2.1. Test Equipment.....	11
2.2. Test Setup	11
2.3. Limits	12
2.4. Test Procedure	12
2.5. Uncertainty	12
2.6. Test Result of Conducted Emission.....	13
3. Peak Power Output	15
3.1. Test Equipment.....	15
3.2. Test Setup	15
3.3. Limits	16
3.4. Test Procedure	16
3.5. Uncertainty	16
3.6. Test Result of Peak Power Output.....	17
4. Radiated Emission.....	25
4.1. Test Equipment.....	25
4.2. Test Setup	26
4.3. Limits	27
4.4. Test Procedure	28
4.5. Uncertainty	28
4.6. Test Result of Radiated Emission.....	29
5. RF antenna conducted test.....	37
5.1. Test Equipment.....	37
5.2. Test Setup	37
5.3. Limits	37
5.4. Test Procedure	37
5.5. Uncertainty	38
5.6. Test Result of RF antenna conducted test.....	39
6. Band Edge	51
6.1. Test Equipment.....	51
6.2. Test Setup	51
6.3. Limits	52
6.4. Test Procedure	52
6.5. Uncertainty	52
6.6. Test Result of Band Edge	53

7.	Occupied Bandwidth.....	61
7.1.	Test Equipment.....	61
7.2.	Test Setup	61
7.3.	Limits	61
7.4.	Test Procedure	61
7.5.	Uncertainty	61
7.6.	Test Result of Occupied Bandwidth	62
8.	Power Density	68
8.1.	Test Equipment.....	68
8.2.	Test Setup	68
8.3.	Limits	68
8.4.	Test Procedure	68
8.5.	Uncertainty	68
8.6.	Test Result of Power Density	69
9.	EMI Reduction Method During Compliance Testing	75
Attachment 1: EUT Test Photographs		
Attachment 2: EUT Detailed Photographs		

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	iHome AirPlay Wireless Audio System
Trade Name	iHome
Model No.	iW4, iW4X
FCC ID.	EMOIW4
Frequency Range	2412-2462MHz for 802.11b/g
Number of Channels	802.11b/g: 11
Data Speed	802.11b: 1-11Mbps, 802.11g: 6-54Mbps
Type of Modulation	802.11b:DSSS (DBPSK, DQPSK, CCK) 802.11g:OFDM (BPSK, QPSK, 16QAM, 64QAM)
Antenna Type	Dipole
Antenna Gain	Refer to the table "Antenna List"
Channel Control	Auto
Power Adapter	MFR: iHome, M/N: Y48FE-120-3500U/J Input: AC 100-240V, 50-60Hz, 1.2A Output: DC 12V, 3500mA Cable Out: Non-Shielded, 2m, with one ferrite core boned.

Antenna List

No.	Manufacturer	Model No.	Peak Gain
1	MAGLAYERS	EDA-8709-2G4C1-A83	2dBi for 2.4GHz

Note: The antenna of EUT is conform to FCC 15.203.

802.11b/g 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		

Note:

1. The EUT is an iHome AirPlay Wireless Audio System with a built-in 2.4GHz WLAN transceiver.
2. The EUT is including two models for different color.
3. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
4. 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)
5. These tests are conducted on a sample for the purpose of demonstrating compliance of 802.11b/g 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)

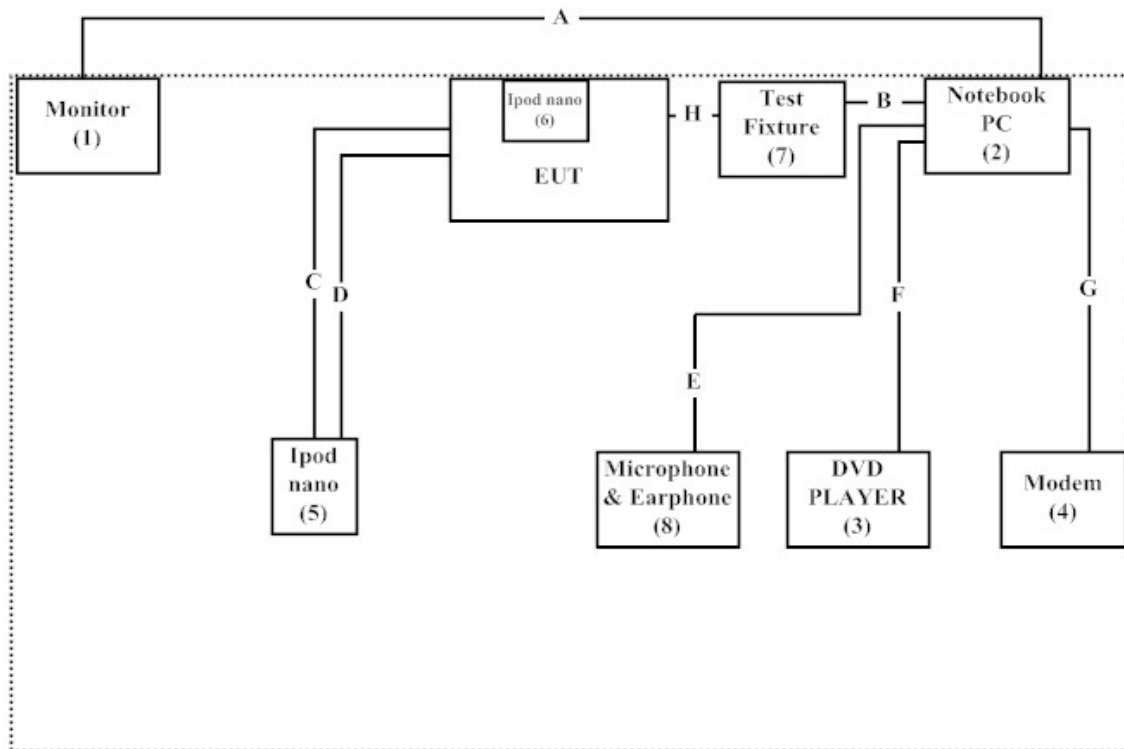
1.3. Tested System Details

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.	FCC ID	Power Cord
1 Monitor	LG	W2261VT	907YHZK07373	DoC	Non-Shielded, 1.8m
2 Notebook PC	DELL	PPT	N/A	DoC	Non-Shielded, 0.8m
3 DVD PLAYER	DELL	PD01S	N/A	DoC	Non-Shielded, 1.8m
4 Modem	ACEEX	DM-1414	0102027536	IFAXDM1414	Non-Shielded, 1.8m
5 Ipod nano	Apple	A1199	YM709R1CVQ5	N/A	N/A
6 Ipod nano	Apple	A1199	5U705F9HVQ5	N/A	N/A
7 Test Fixture	LITE-ON	N/A	N/A	N/A	N/A
8 Microphone & Earphone	PCHOME	N/A	N/A	N/A	N/A

Signal Cable Type	Signal cable Description
A D-SUB Cable	Non-Shielded, 1.8m,with two ferrite cores bonded.
B USB Cable	Non-Shielded, 1.5m
C Audio Cable	Non-Shielded, 1m
D Ipod nano Cable	Non-Shielded, 1m
E Microphone & Earphone Cable	Non-Shielded, 1.2m
F DVD Cable	Non-Shielded, 0.5m
G Modem Cable	Non-Shielded, 1.5m
H Signal Cable	Non-Shielded, 0.05m

1.4. Configuration of Tested System



1.5. EUT Exercise Software

- (1) Setup the EUT as shown in section 1.4.
- (2) Execute command on the notebook.
- (3) Configure the test mode, the test channel, and the data rate.
- (4) 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, Ruishukeng,
Linkou Dist. New Taipei City 24451,
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

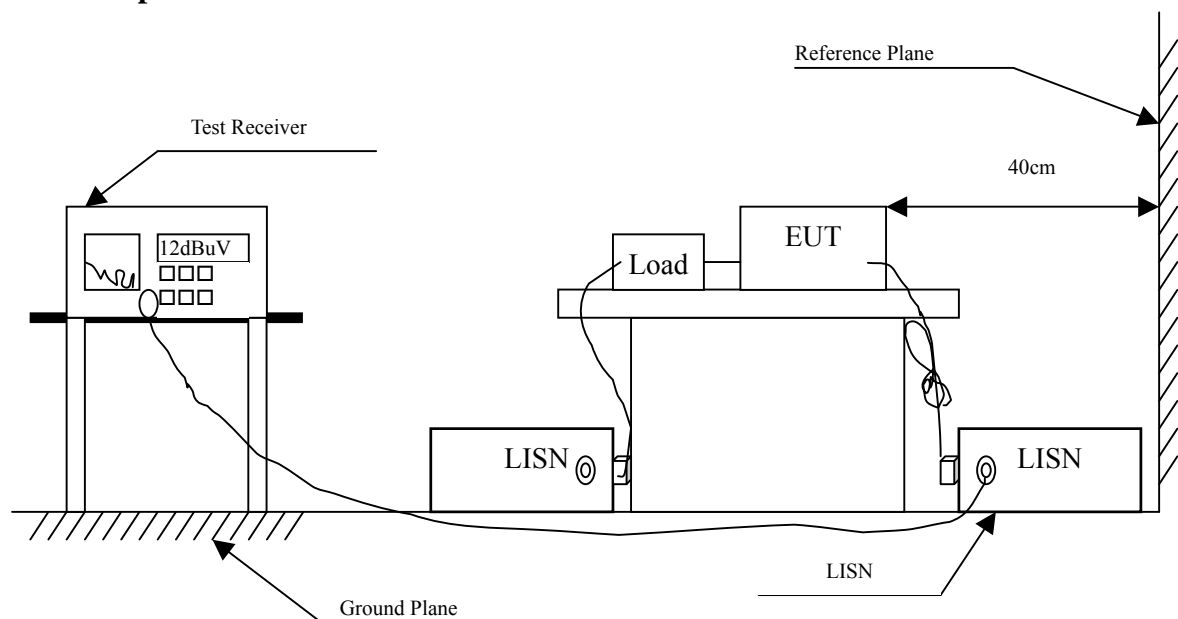
2.1. Test Equipment

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

Item	Instrument	Manufacturer	Type No./Serial No	Last Cal.	Remark
1	Test Receiver	R & S	ESCS 30/825442/17	May, 2012	
2	L.I.S.N.	R & S	ESH3-Z5/825016/6	May, 2012	EUT
3	L.I.S.N.	Kyoritsu	KNW-407/8-1420-3	May, 2012	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2	May, 2012	
5	No.1 Shielded Room			N/A	

Note: All instruments are calibrated every one year.

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 : iHome AirPlay Wireless Audio System
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
Line 1					
Quasi-Peak					
0.166	9.711	32.940	42.651	-22.892	65.543
0.302	9.830	27.510	37.340	-24.317	61.657
0.377	9.818	18.560	28.378	-31.136	59.514
0.521	9.800	24.880	34.680	-21.320	56.000
1.087	9.820	12.290	22.110	-33.890	56.000
3.763	9.860	11.350	21.210	-34.790	56.000
Average					
0.166	9.711	21.890	31.601	-23.942	55.543
0.302	9.830	22.240	32.070	-19.587	51.657
0.377	9.818	7.400	17.218	-32.296	49.514
0.521	9.800	18.440	28.240	-17.760	46.000
1.087	9.820	5.860	15.680	-30.320	46.000
3.763	9.860	4.570	14.430	-31.570	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 : iHome AirPlay Wireless Audio System
 Test Item : Conducted Emission Test
 Power Line : Line 2
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV	dB	dBuV
Line 2					
Quasi-Peak					
0.189	9.771	31.000	40.771	-24.115	64.886
0.220	9.770	27.450	37.220	-26.780	64.000
0.295	9.790	28.200	37.990	-23.867	61.857
0.513	9.830	25.200	35.030	-20.970	56.000
0.802	9.840	17.220	27.060	-28.940	56.000
0.884	9.840	14.890	24.730	-31.270	56.000
Average					
0.189	9.771	19.190	28.961	-25.925	54.886
0.220	9.770	20.930	30.700	-23.300	54.000
0.295	9.790	23.020	32.810	-19.047	51.857
0.513	9.830	18.870	28.700	-17.300	46.000
0.802	9.840	9.120	18.960	-27.040	46.000
0.884	9.840	7.250	17.090	-28.910	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

3. Peak Power Output

3.1. Test Equipment

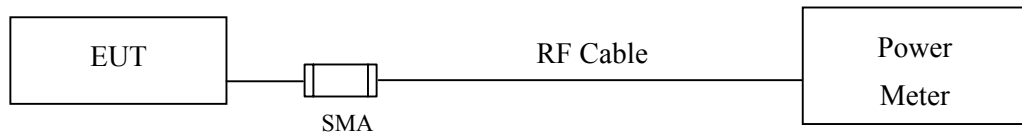
	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Power Meter	Anritsu	ML2495A/6K00003357	May, 2012
X	Power Sensor	Anritsu	MA2411B/0738448	Jun, 2011
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2011
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2011
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2012

Note:

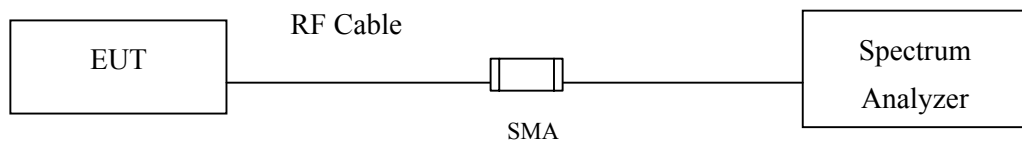
1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with “X” are used to measure the final test results.

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 : iHome AirPlay Wireless Audio System
 Test Item : Peak Power Output Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)_COM 2 port

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	16.73	--	--	--	19.38	<30dBm	Pass
06	2437	17.03	17.01	16.98	16.93	19.17	<30dBm	Pass
11	2462	17.05	--	--	--	19.54	<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:

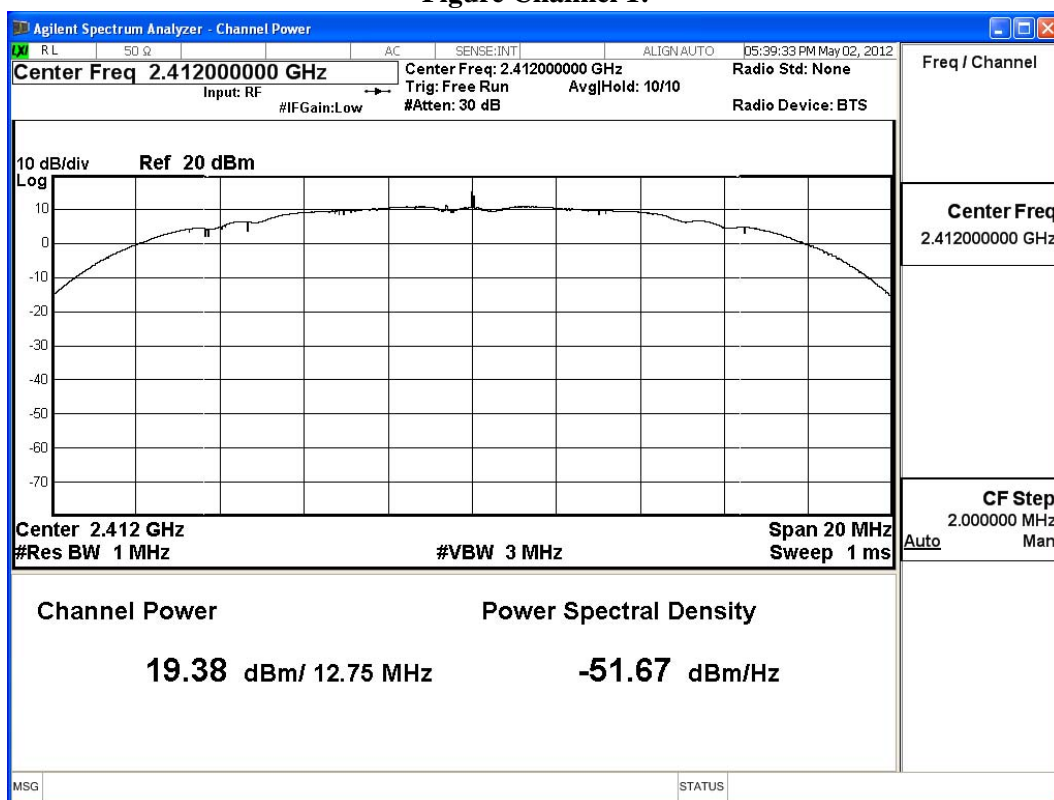


Figure Channel 6:

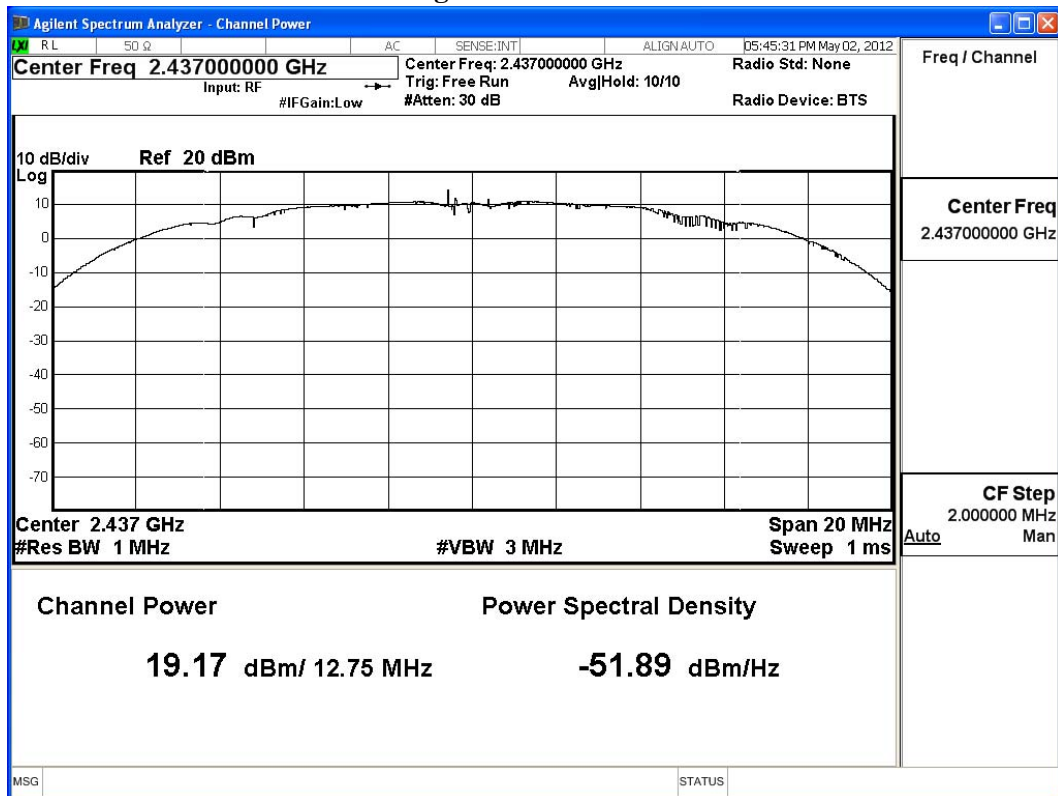
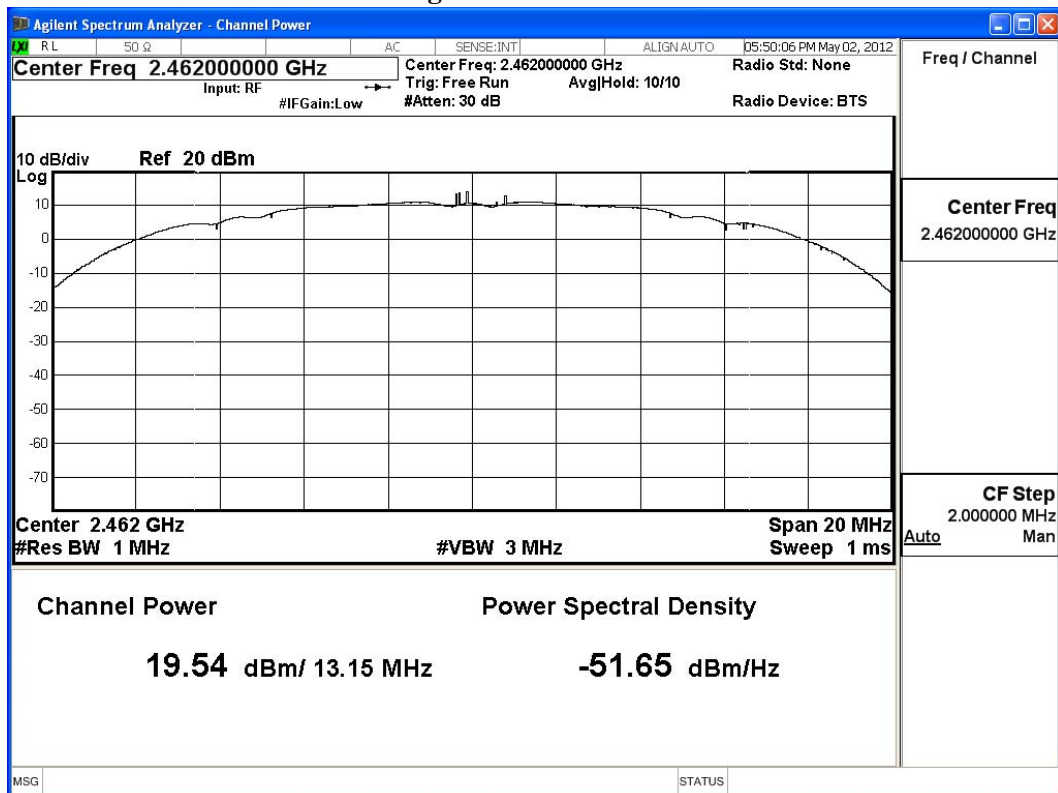


Figure Channel 11:



Product : iHome AirPlay Wireless Audio System
 Test Item : Peak Power Output Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)_COM 2 port

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	15.02	--	--	--	--	--	--	--	21.83	<30dBm	Pass
06	2437	15.21	15.2	15.19	15.17	15.15	15.11	15.09	15.05	22.42	<30dBm	Pass
11	2462	15.41	--	--	--	--	--	--	--	22.32	<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:

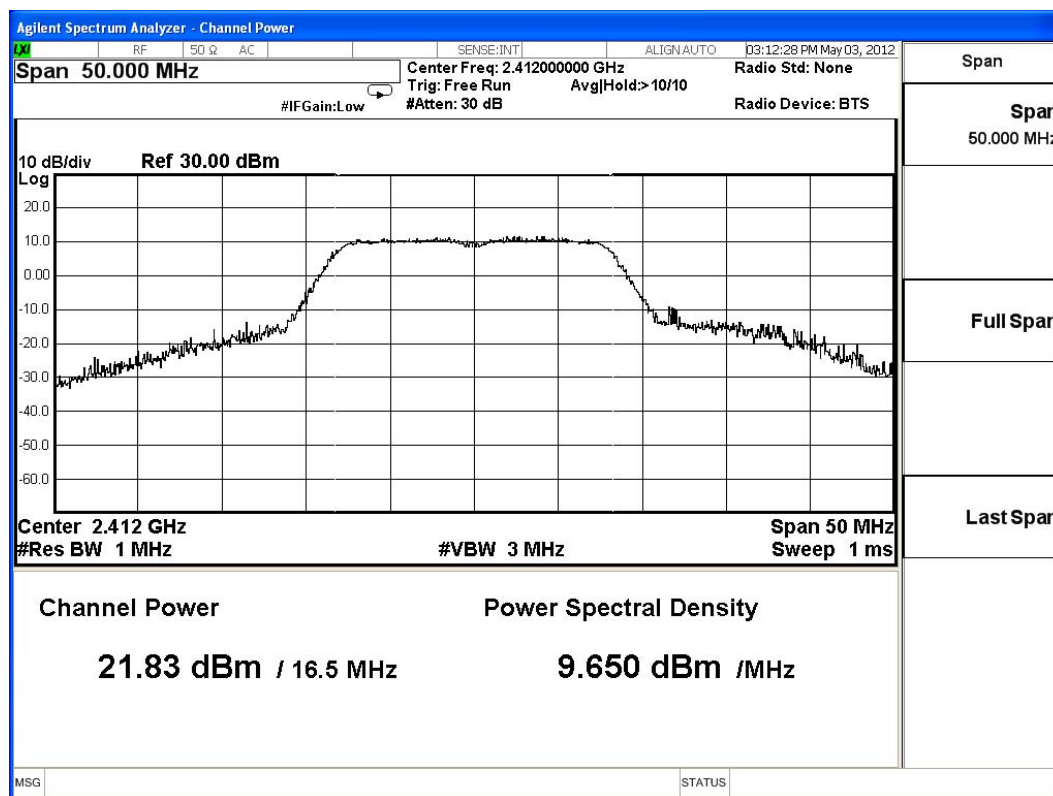


Figure Channel 6:

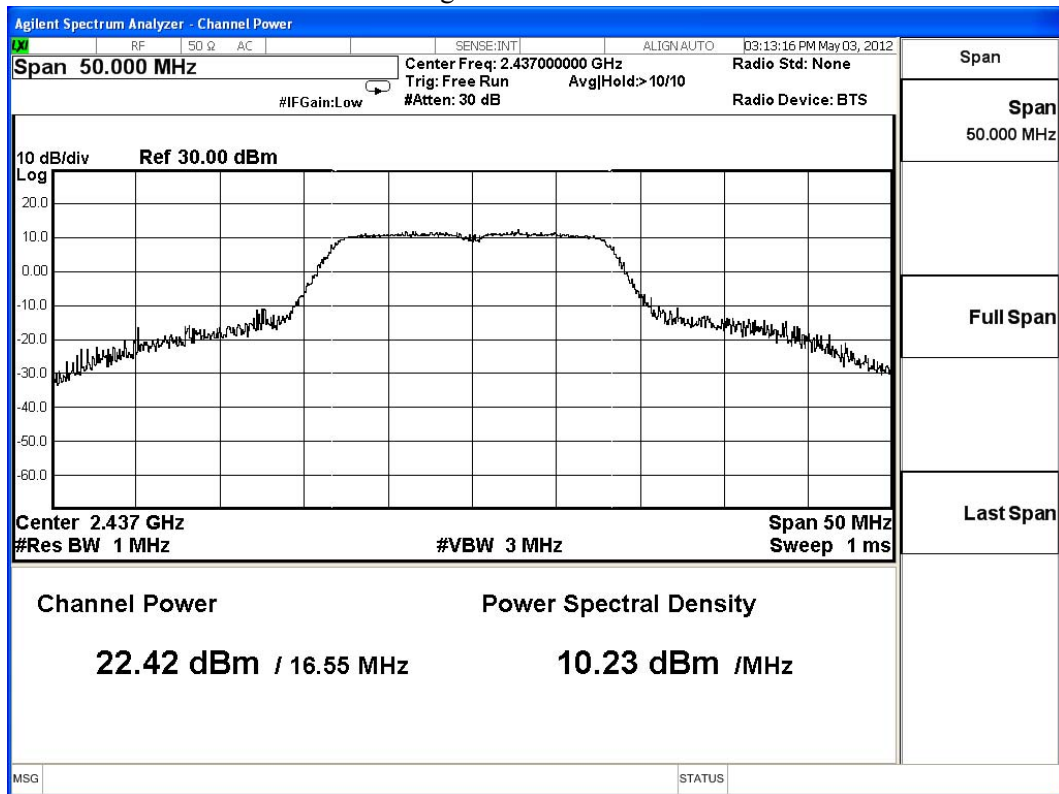
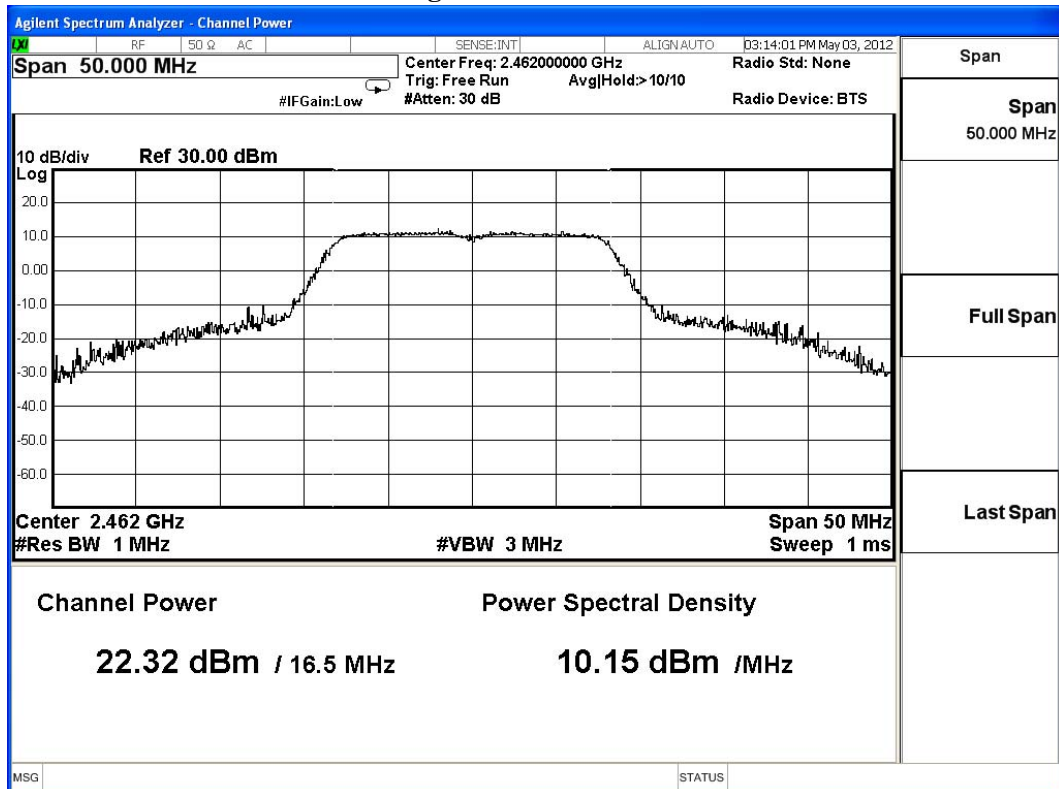


Figure Channel 11:



Product : iHome AirPlay Wireless Audio System
 Test Item : Peak Power Output Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)_COM 1 port

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	16.69	--	--	--	19.11	<30dBm	Pass
06	2437	16.67	16.63	16.56	16.51	18.97	<30dBm	Pass
11	2462	16.68	--	--	--	19.28	<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:

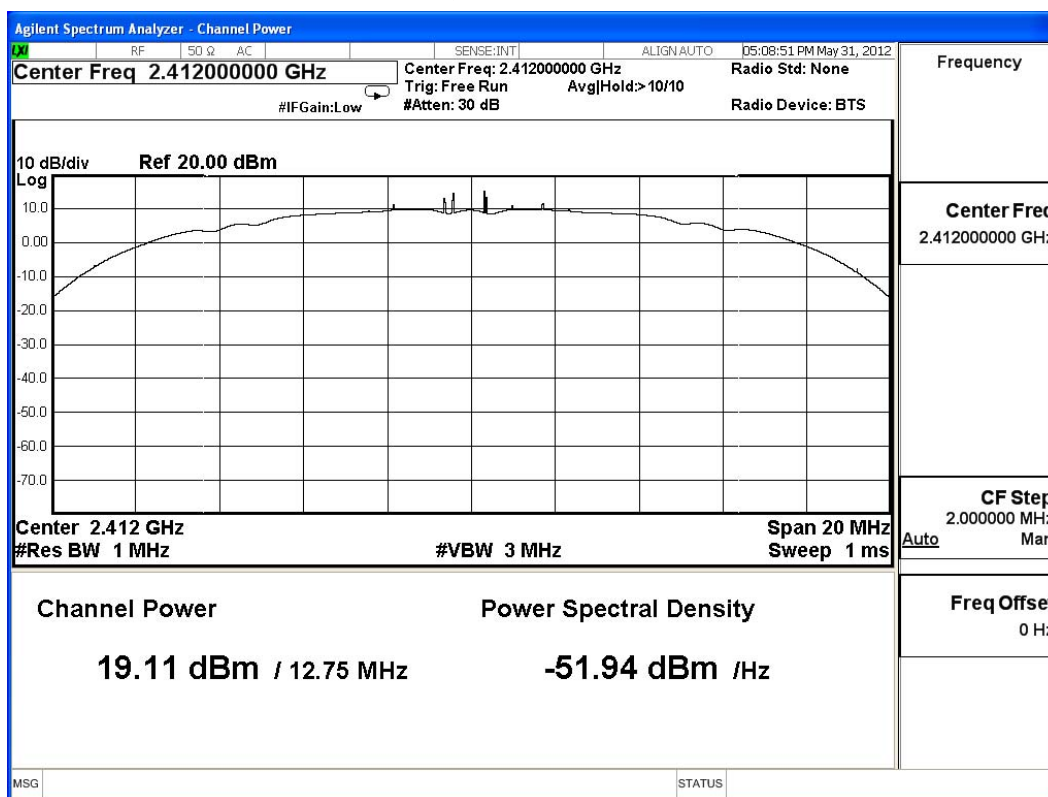


Figure Channel 6:

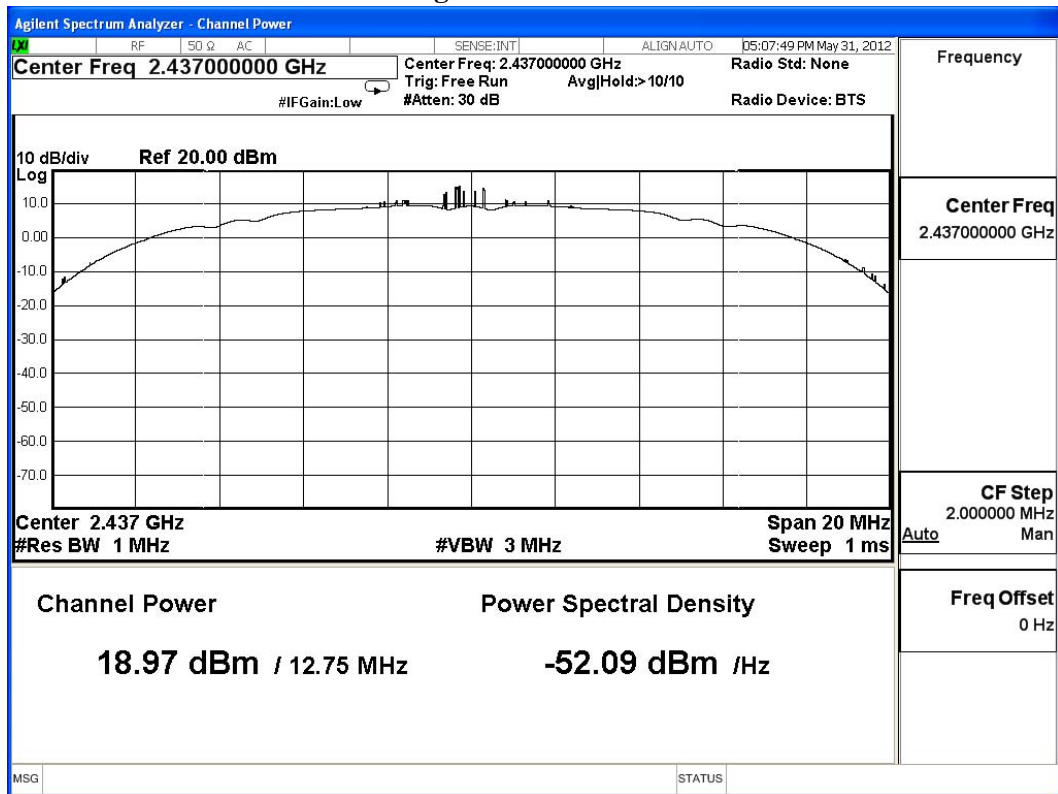
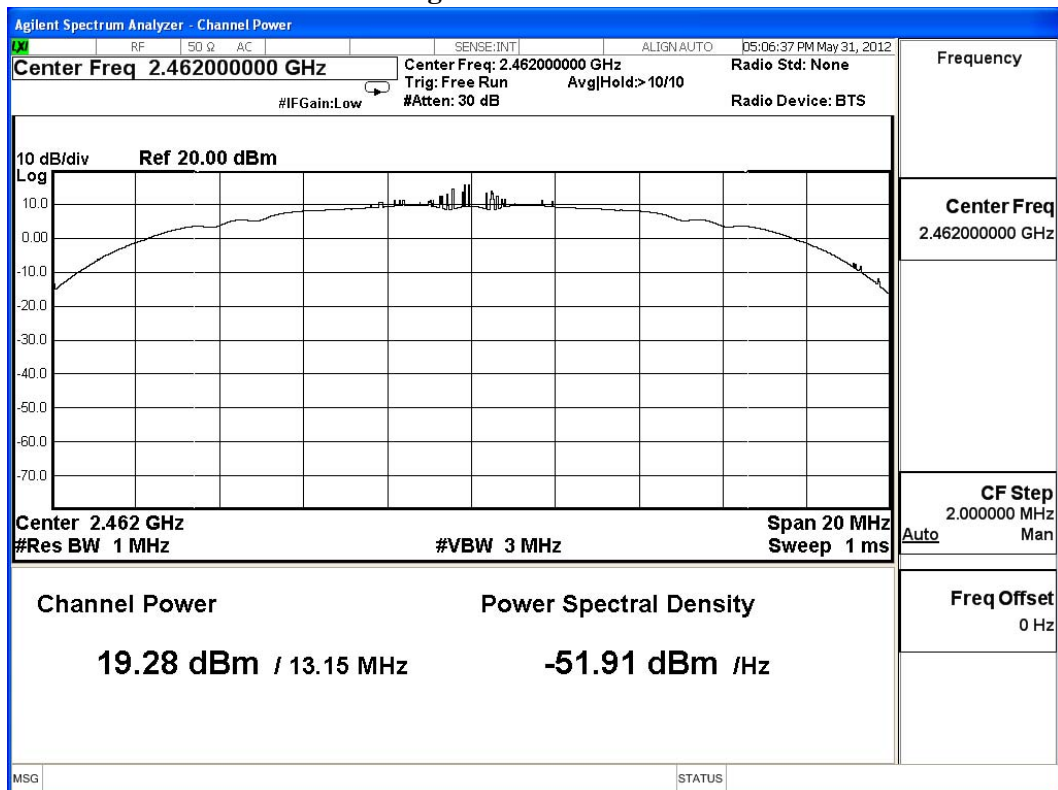


Figure Channel 11:



Product : iHome AirPlay Wireless Audio System
 Test Item : Peak Power Output Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)_COM 1 port

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	14.98	--	--	--	--	--	--	--	21.72	<30dBm	Pass
06	2437	15.18	15.1	15.06	14.88	14.65	14.36	14.02	13.77	22.17	<30dBm	Pass
11	2462	14.93	--	--	--	--	--	--	--	22.17	<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:

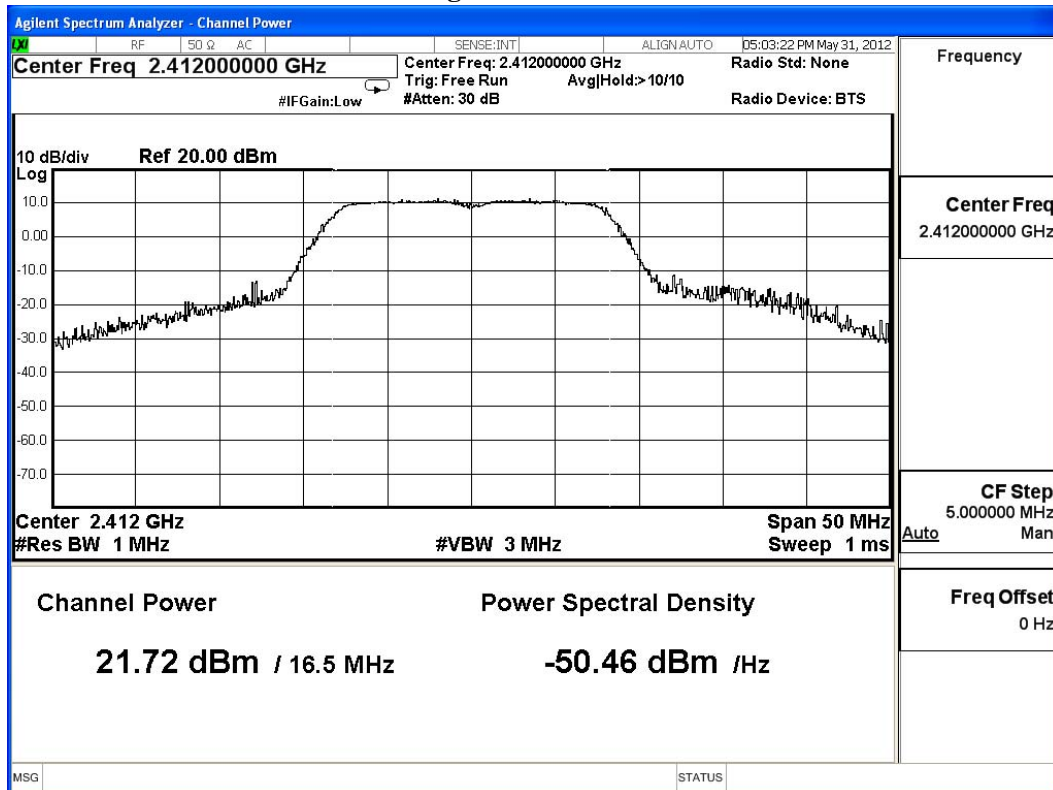


Figure Channel 6:

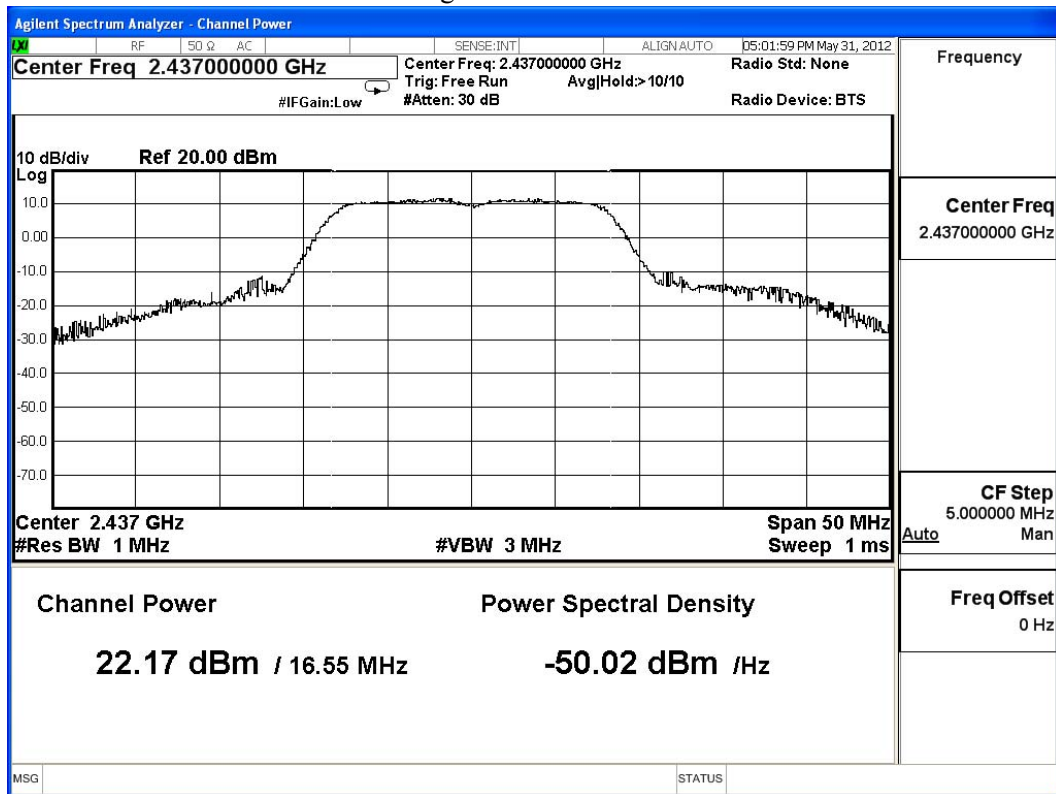
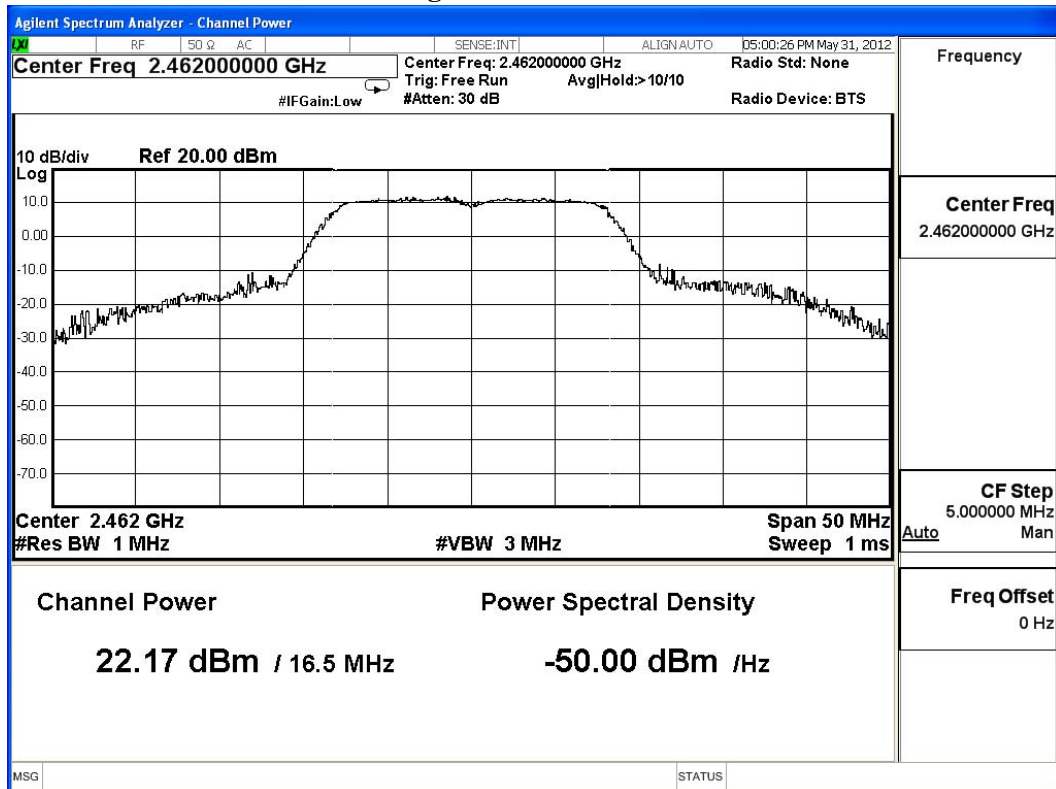


Figure Channel 11:



4. Radiated Emission

4.1. Test Equipment

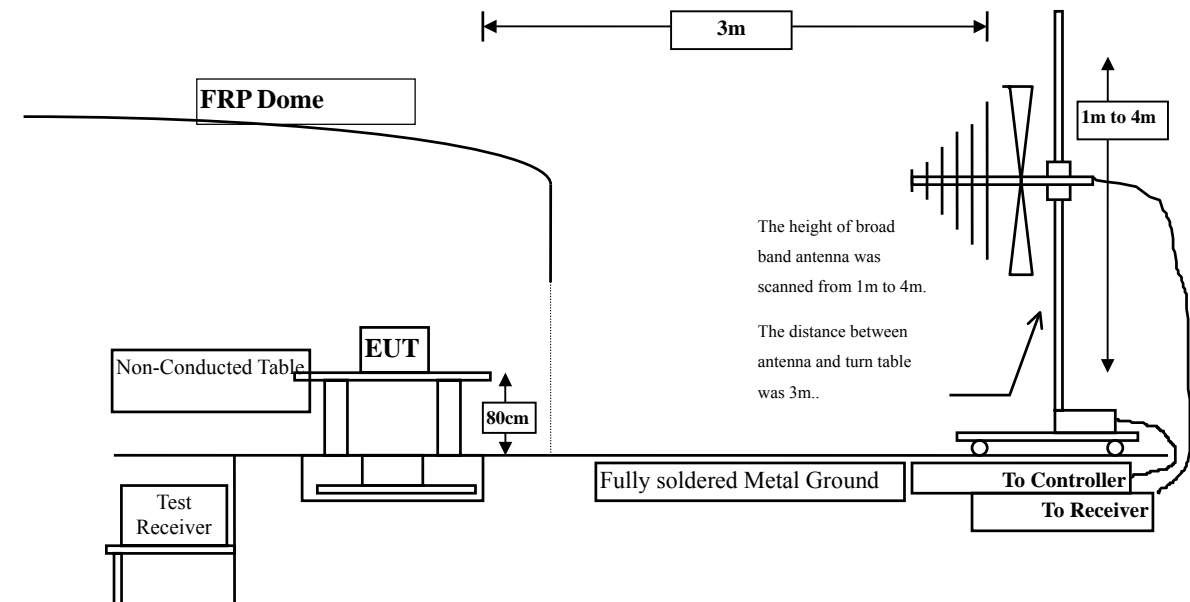
The following test equipment are used during the radiated emission test:

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	Agilent	8447D/2944A09549	Sep., 2011
	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

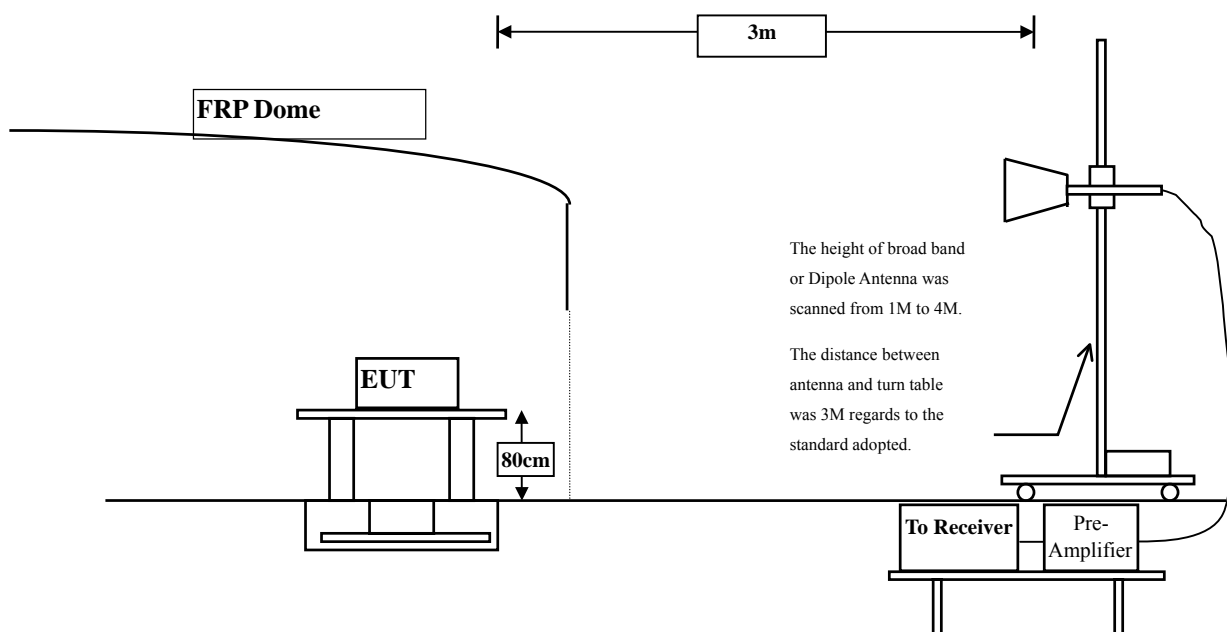
- Note:
1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
 2. The test instruments marked with “X” are used to measure the final test results.

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 frequency range from 30MHz to 10th harmonics is checked.

4.5. Uncertainty

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

4.6. Test Result of Radiated Emission

Product : iHome AirPlay Wireless Audio System
 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 dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4824.000	0.428	41.940	42.369	-31.631	74.000
7236.000	7.177	38.920	46.097	-27.903	74.000
9648.000	8.019	41.730	49.750	-24.250	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	0.836	44.600	45.437	-28.563	74.000
7236.000	7.676	39.210	46.886	-27.114	74.000
9648.000	8.556	43.070	51.627	-22.373	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 : iHome AirPlay Wireless Audio System
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	0.076	41.520	41.597	-32.403	74.000
7311.000	7.512	38.420	45.932	-28.068	74.000
9748.000	7.630	40.340	47.970	-26.030	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	0.532	42.650	43.182	-30.818	74.000
7311.000	8.089	39.020	47.109	-26.891	74.000
9748.000	8.266	41.870	50.137	-23.863	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 : iHome AirPlay Wireless Audio System
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462 MHz)

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

Horizontal

Peak Detector:

4924.000	0.191	40.910	41.101	-32.899	74.000
7386.000	8.373	38.200	46.574	-27.426	74.000
9848.000	7.964	40.290	48.254	-25.746	74.000

Average Detector:

--

Vertical

Peak Detector:

4924.000	0.805	41.530	42.335	-31.665	74.000
7386.000	9.180	39.150	48.330	-25.670	74.000
9848.000	8.801	43.560	52.361	-21.639	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 : iHome AirPlay Wireless Audio System
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

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

Horizontal

Peak Detector:

4824.000	0.428	41.410	41.839	-32.161	74.000
7236.000	7.177	39.000	46.177	-27.823	74.000
9648.000	8.019	39.390	47.410	-26.590	74.000

Average Detector:

--

Vertical

Peak Detector:

4824.000	0.836	41.020	41.857	-32.143	74.000
7236.000	7.676	38.570	46.246	-27.754	74.000
9648.000	8.556	39.530	48.087	-25.913	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 : iHome AirPlay Wireless Audio System
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437 MHz)

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

Horizontal

Peak Detector:

4874.000	0.076	41.000	41.077	-32.923	74.000
7311.000	7.512	38.500	46.012	-27.988	74.000
9748.000	7.630	38.920	46.550	-27.450	74.000

Average Detector:

--

Peak Detector:

4874.000	0.532	41.320	41.852	-32.148	74.000
7311.000	8.089	38.380	46.469	-27.531	74.000
9748.000	8.266	38.670	46.937	-27.063	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 : iHome AirPlay Wireless Audio System
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462 MHz)

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

Horizontal

Peak Detector:

4924.000	0.191	41.400	41.591	-32.409	74.000
7386.000	8.373	38.270	46.644	-27.356	74.000
9848.000	7.964	39.290	47.254	-26.746	74.000

Average Detector:

--

Vertical

Peak Detector:

4924.000	0.805	40.810	41.615	-32.385	74.000
7386.000	9.180	38.550	47.730	-26.270	74.000
9848.000	8.801	39.100	47.901	-26.099	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 : iHome AirPlay Wireless Audio System
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps)(2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
282.200	-5.211	47.884	42.673	-3.327	46.000
522.760	1.786	37.264	39.050	-6.950	46.000
565.440	1.611	34.673	36.284	-9.716	46.000
699.300	2.875	33.923	36.798	-9.202	46.000
837.040	5.103	29.286	34.388	-11.612	46.000
926.280	6.491	27.398	33.889	-12.111	46.000
Vertical					
282.200	-8.461	46.864	38.403	-7.597	46.000
522.760	-0.334	33.429	33.095	-12.905	46.000
790.480	2.913	30.528	33.440	-12.560	46.000
837.040	2.223	33.278	35.500	-10.500	46.000
881.660	2.557	32.139	34.696	-11.304	46.000
970.900	7.302	27.956	35.258	-18.742	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 : iHome AirPlay Wireless Audio System
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)(2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
282.200	-5.211	47.640	42.429	-3.571	46.000
348.160	-2.268	39.880	37.612	-8.388	46.000
520.820	1.762	37.682	39.444	-6.556	46.000
565.440	1.611	34.472	36.083	-9.917	46.000
837.040	5.103	30.623	35.725	-10.275	46.000
926.280	6.491	27.448	33.939	-12.061	46.000
Vertical					
70.740	-6.151	40.137	33.986	-6.014	40.000
282.200	-8.461	47.164	38.703	-7.297	46.000
520.820	-0.298	33.571	33.273	-12.727	46.000
837.040	2.223	33.469	35.691	-10.309	46.000
926.280	5.821	28.987	34.808	-11.192	46.000
970.900	7.302	27.495	34.797	-19.203	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.

5. RF antenna conducted test

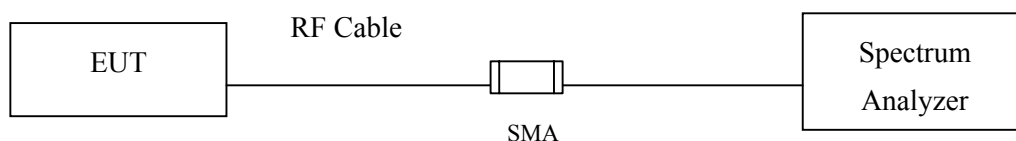
5.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2011
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2011
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.

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

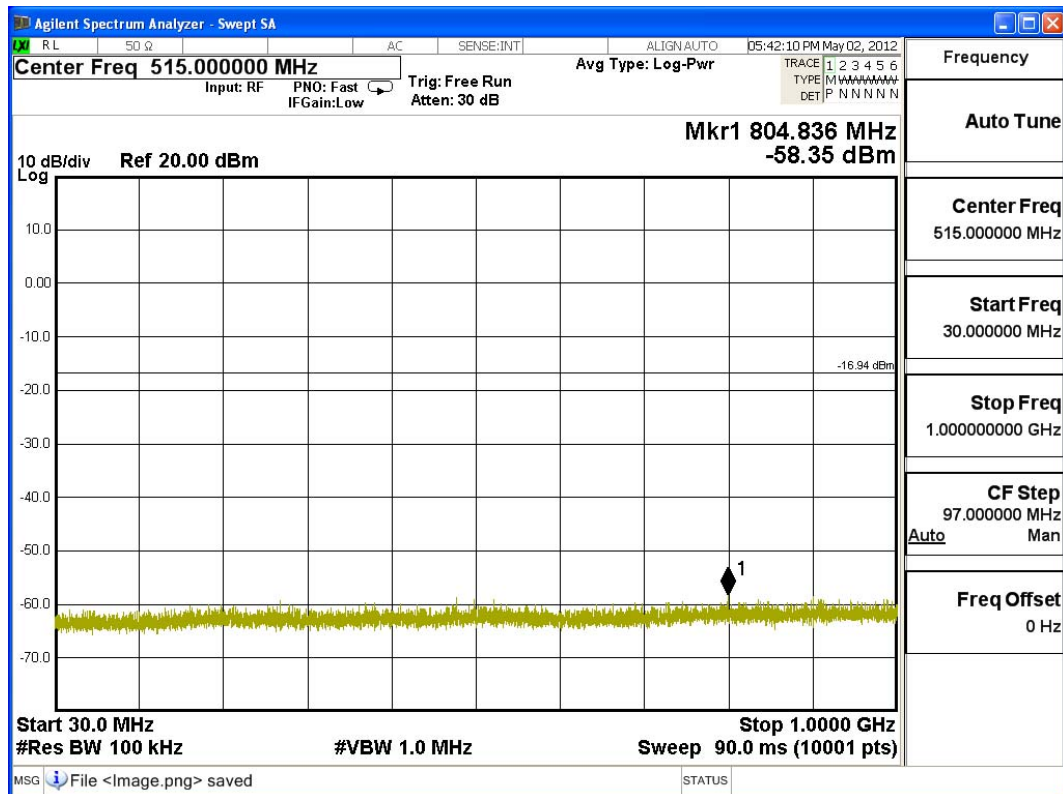
The measurement uncertainty

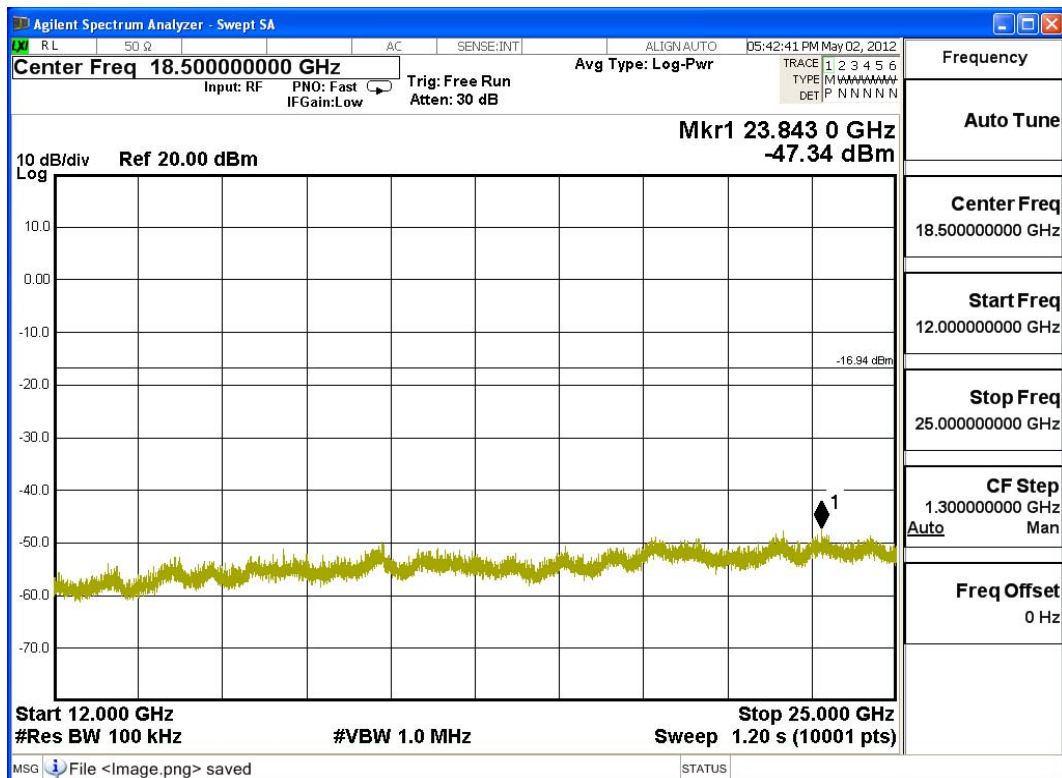
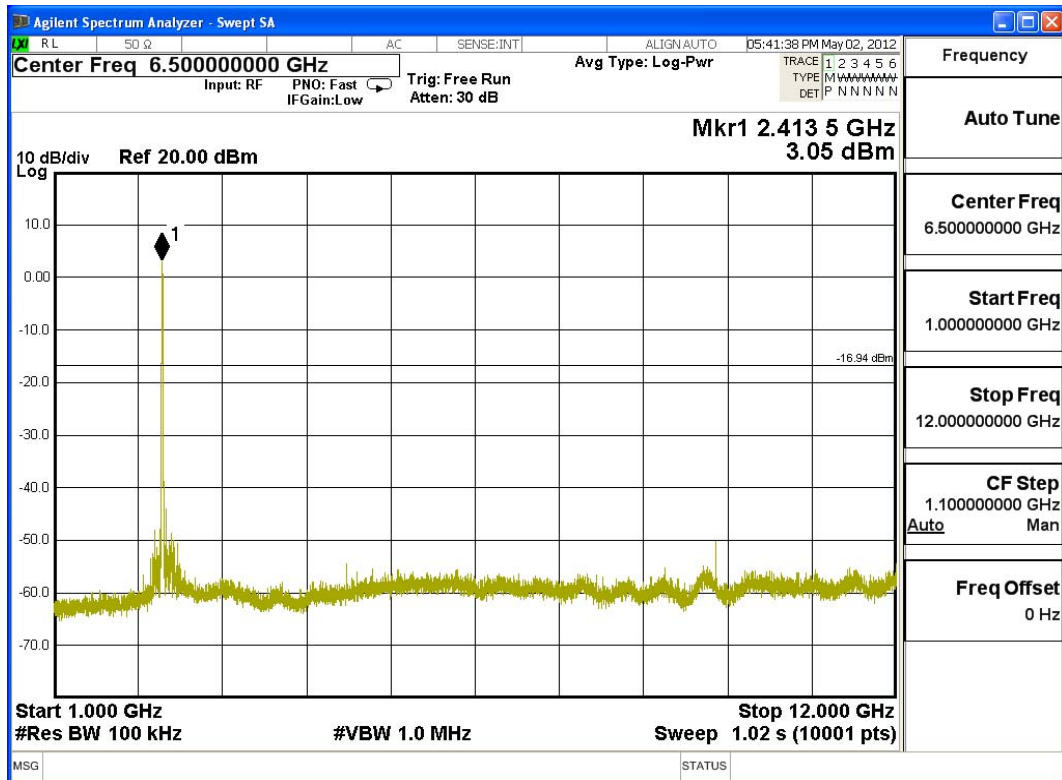
Conducted is defined as $\pm 1.27\text{dB}$

5.6. Test Result of RF antenna conducted test

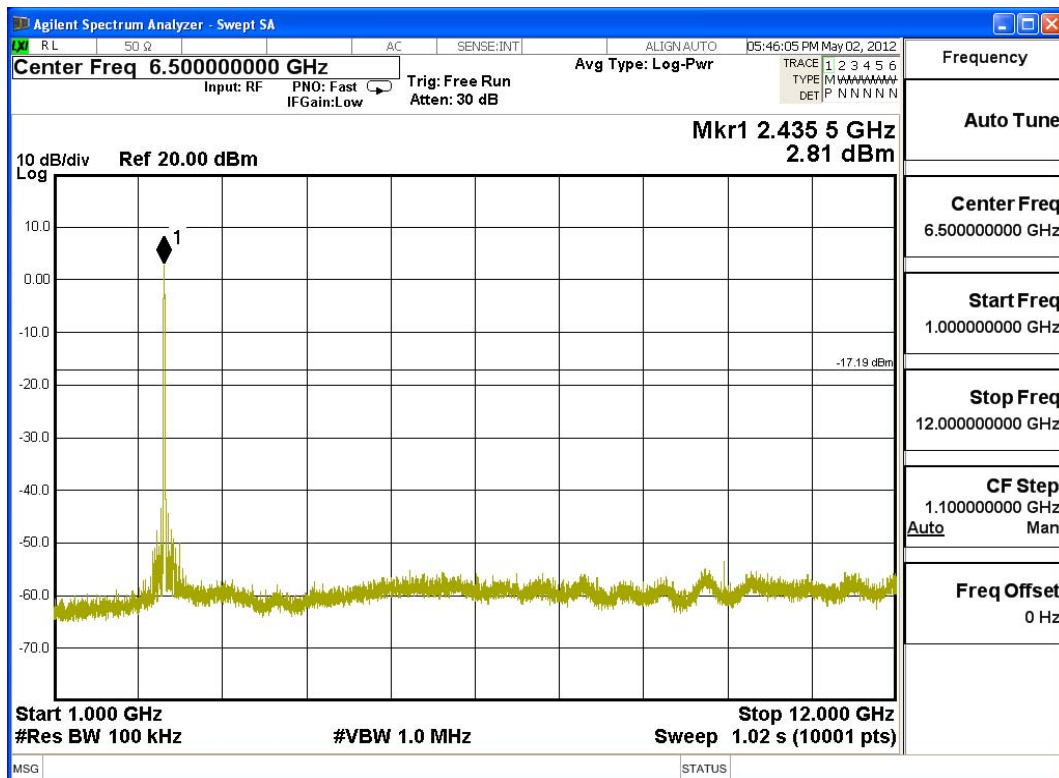
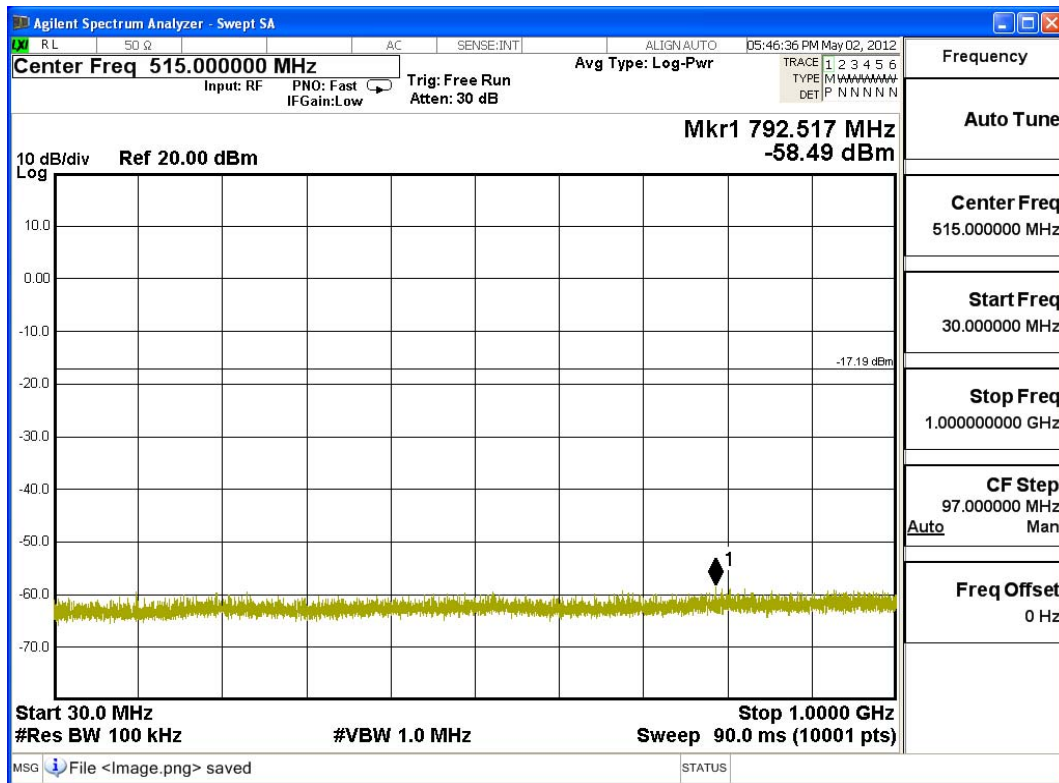
Product : iHome AirPlay Wireless Audio System
 Test Item : RF antenna conducted test
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)

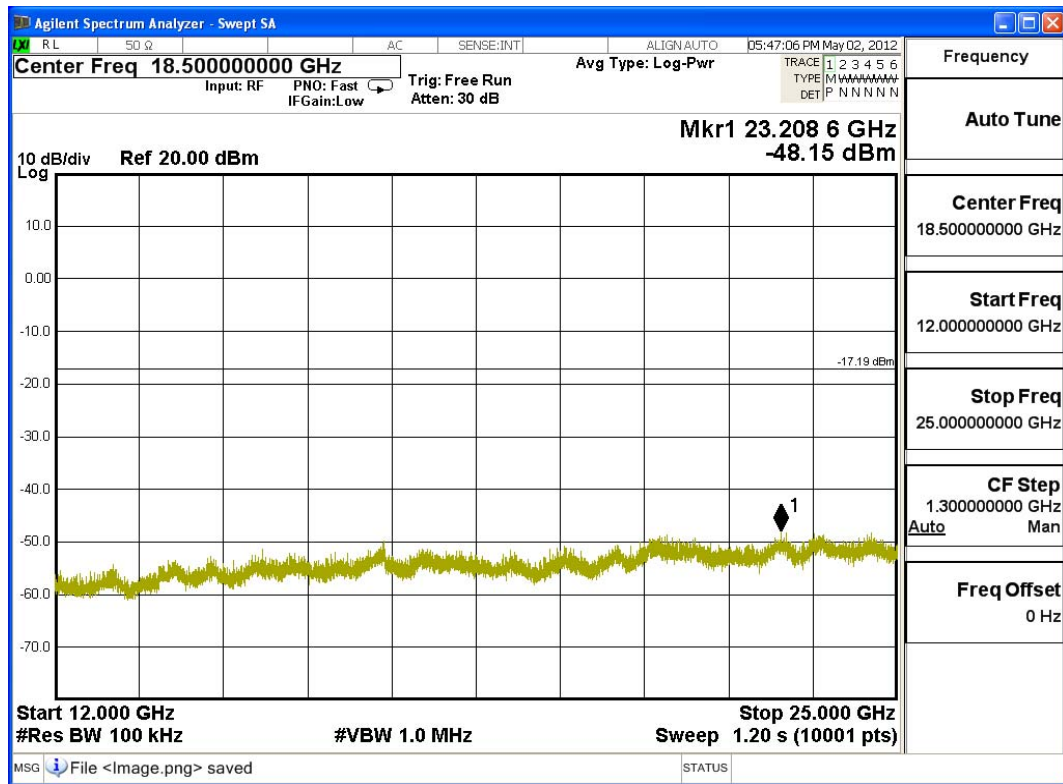
Channel 01 (2412MHz)



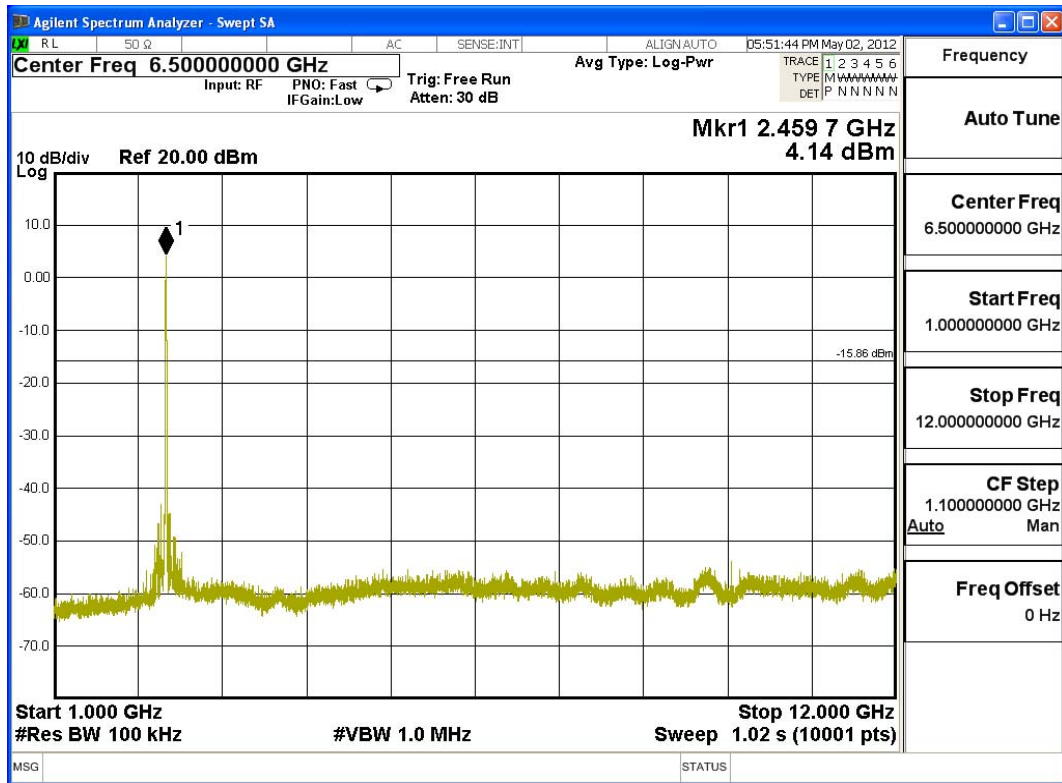
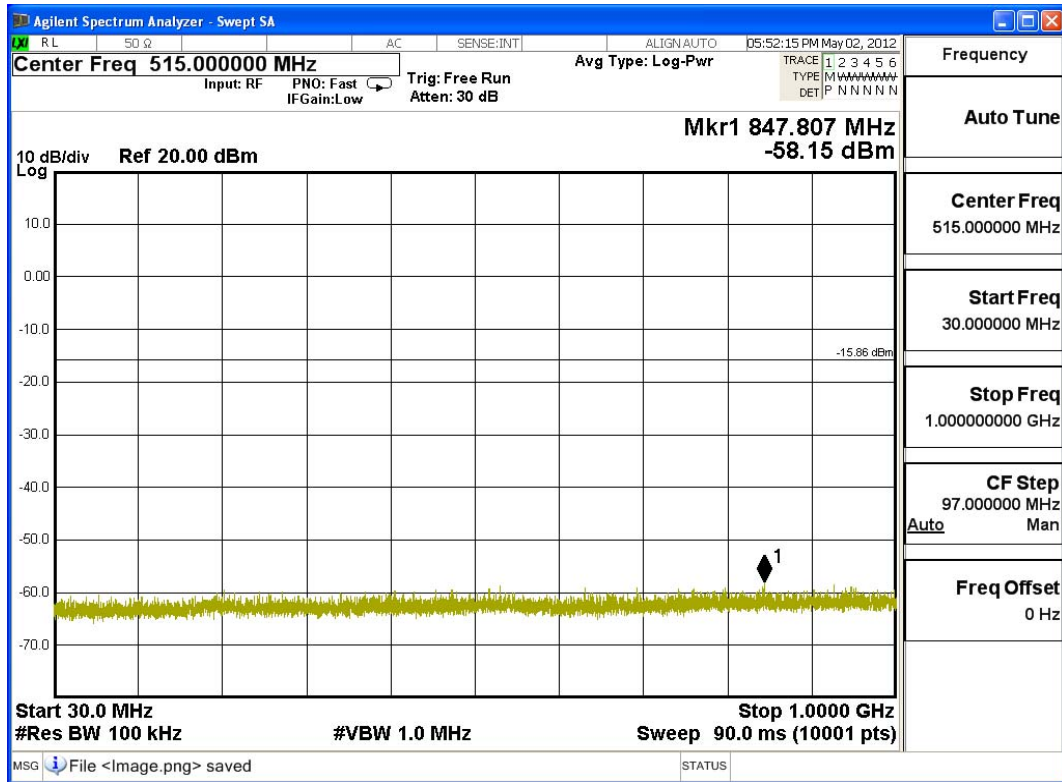


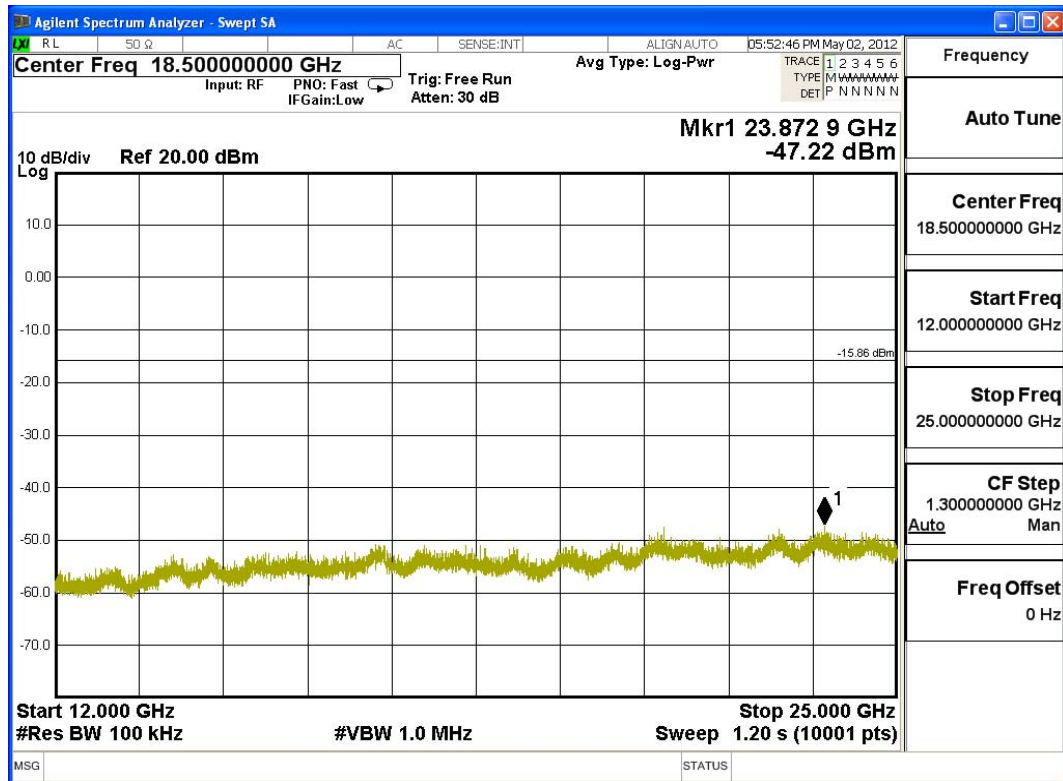
Channel 06 (2437MHz)





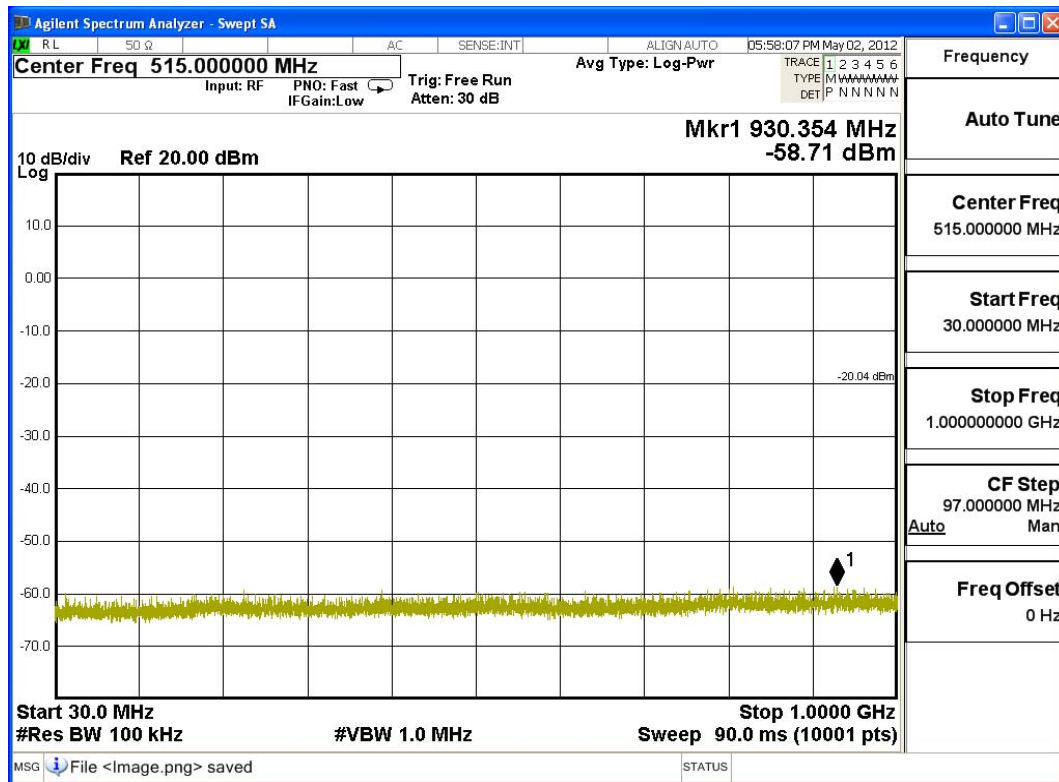
Channel 11 (2462MHz)

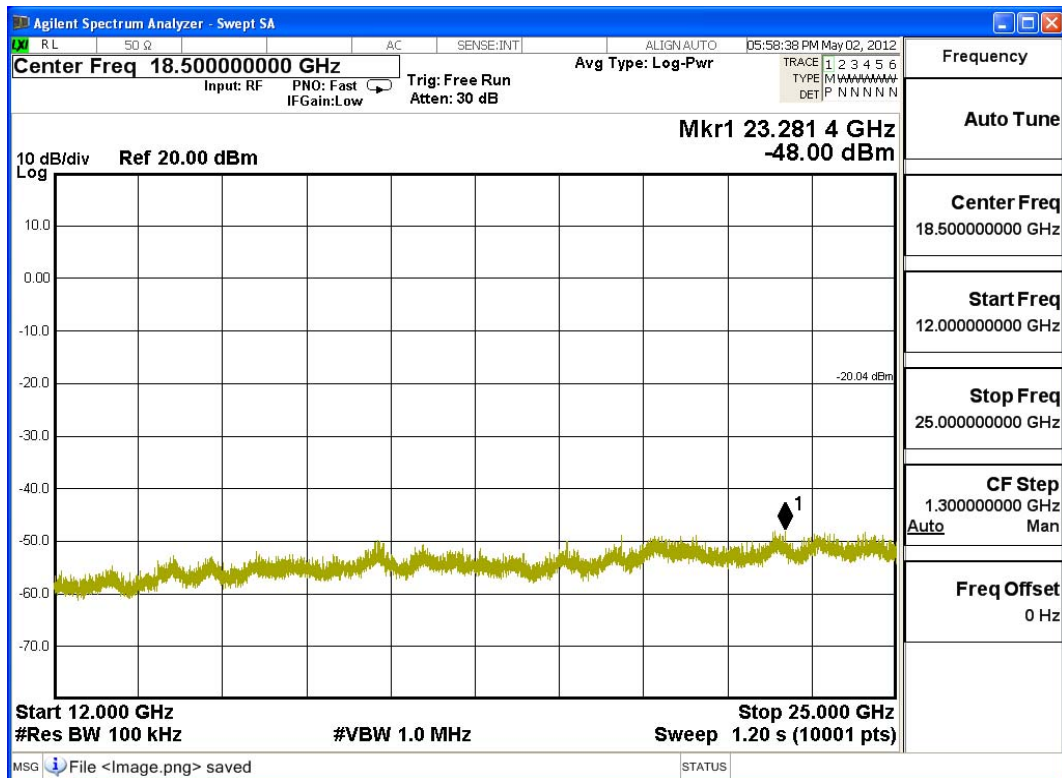
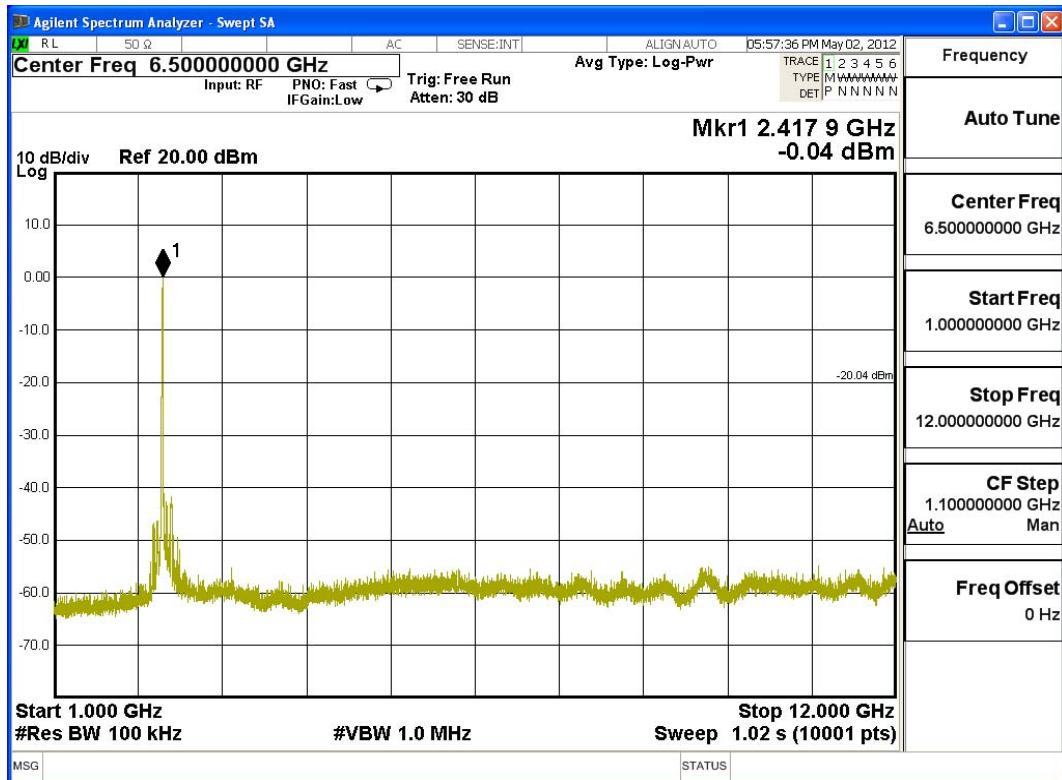




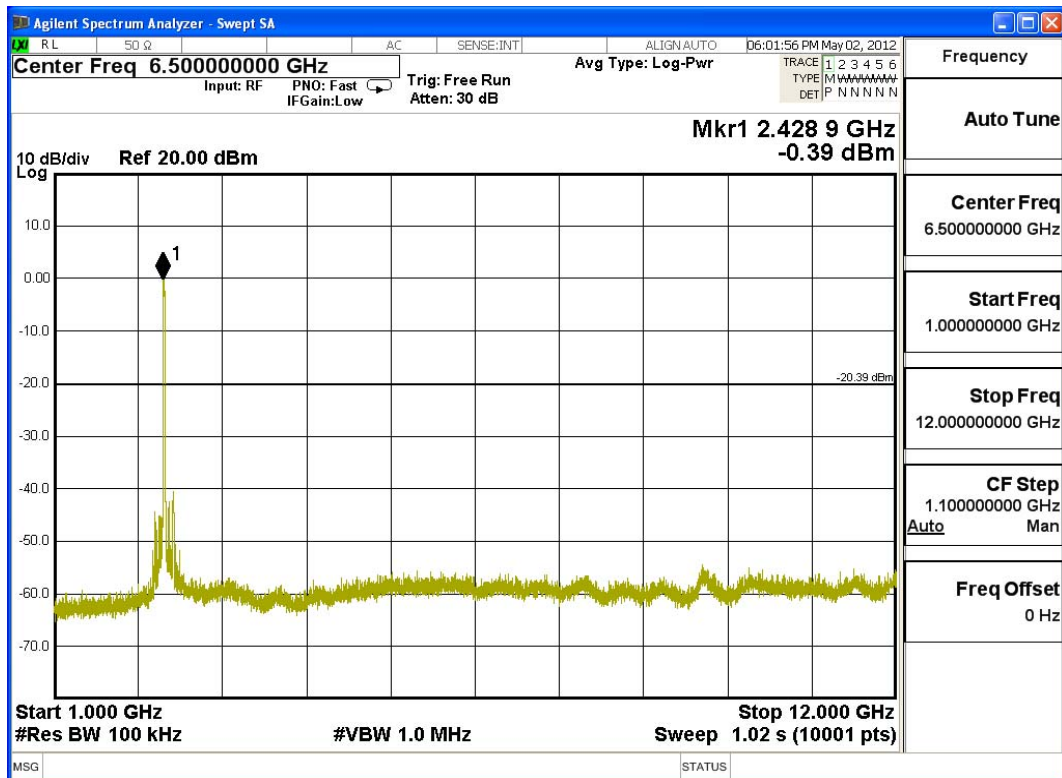
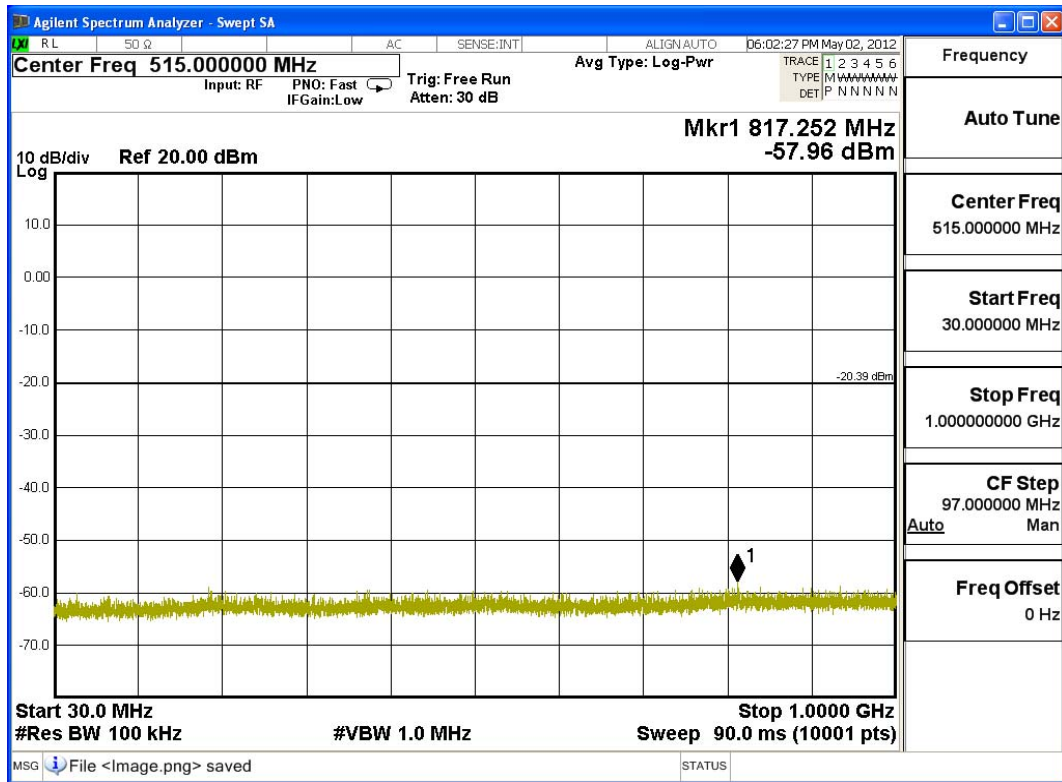
Product : iHome AirPlay Wireless Audio System
 Test Item : RF Antenna Conducted Spurious
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)

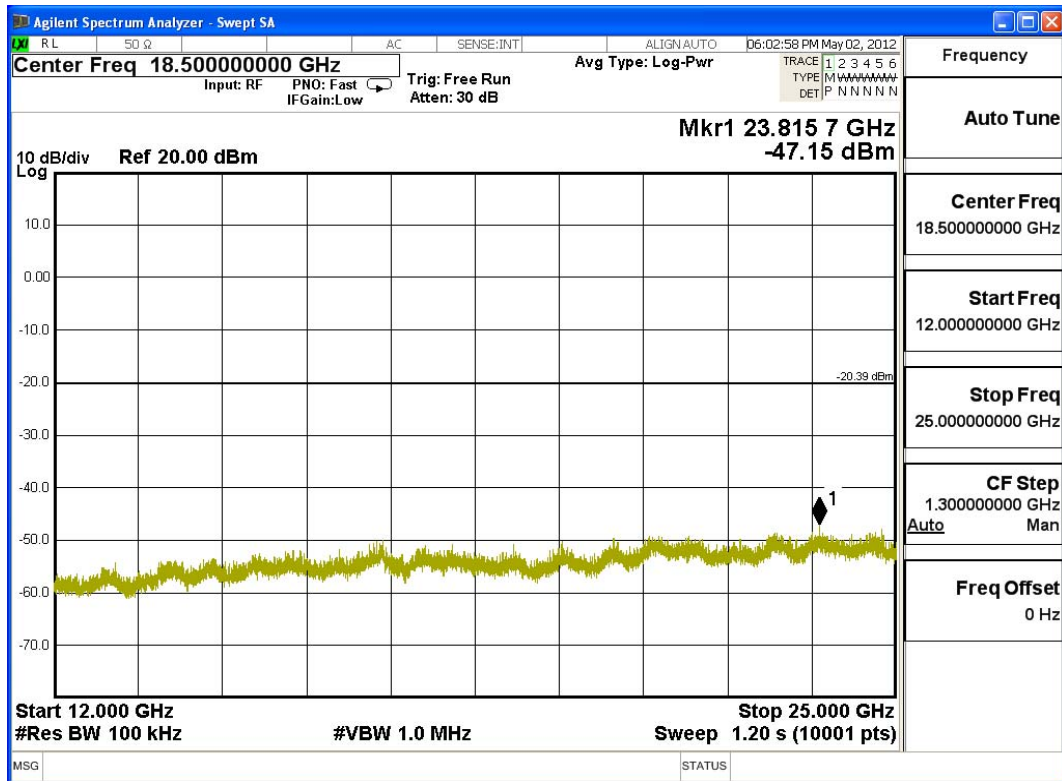
Channel 01 (2412MHz)





Channel 06 (2437MHz)





Channel 11 (2462MHz)

