Application for FCC Certification
On behalf of

Altec Lansing, LLC

Product Name: Wireless AirPlay Speaker

Model No.: MA5000

Serial No.: DD1809M00033

FCC ID: VJS-MA5000

Prepared For : Altec Lansing, LLC
9330 Scranton Road, Suite 600, San Diego, CA 92121,
USA

Prepared By :Audix Technology (Shanghai) Co., Ltd.
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Report No. : ACI-F11129
Date of Test : Sep. 05 - 09, 2011
Date of Report : Sep. 20, 2011

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TEST REPORT FOR FCC CERTIFICATE

Applicant	:	Altec Lansing, LLC
Manufacturer	:	Inventec Appliances (Pudong) Corporation
EUT Description	:	Wireless AirPlay Speaker
	(A) Model No.	: MA5000
	(B) Serial No.	: DD1809M00033
	(C) Test Voltage	: AC 120V/60Hz

Test Procedure Used:

FCC RULES AND REGULATIONS PART 15 SUBPART C OCTOBER 2010 AND ANSI C63.4-2003

The device described above is tested by Audix Technology (Shanghai) Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits.

The test results are contained in this test report and Audix Technology (Shanghai) Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. This report also shows that the EUT (M/N: see Sec. 2.1, S/N: see Sec. 2.1), which was tested on Sep. 05 – 09, 2011 is technically compliance with the FCC limits.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Technology (Shanghai) Co., Ltd.

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

The test results for EUT's USB port function are contained in No. EM-F1000778, a Declaration of Conformity report.

Date of Test : Sep. 05 – 09, 2011 Date of Report : Sep. 20, 2011

Producer : Kathy Wang
KATHY WANG / Assistant

Review : Dio Yang
DIO YANG / Assistant Manager

AUDIX® For and on behalf of
Audix Technology (Shanghai) Co., Ltd.

Signatory : Byron Kwo
Authorized Signature EMC BYRON KWO/ Senior Manager

1 SUMMARY OF STANDARDS AND RESULTS

1.1 Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below:

Description / Test Item	Test Standard	Results	Meets Limit
EMISSION			
Conducted Emission	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2010 AND ANSI C63.4:2003 AND KDB558074	Pass	15.207
Radiated Emission	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2010 AND ANSI C63.4:2003 AND KDB558074	Pass	15.209(a) 15.205(a)(c)
6 dB Bandwidth Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2010 AND ANSI C63.4:2003 AND KDB558074	Pass	15.247(a)(2)
Maximum Peak Output Power Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2010 AND ANSI C63.4:2003 AND KDB558074	Pass	15.247(b)(3)
Emission Limitations Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2010 AND ANSI C63.4:2003 AND KDB558074	Pass	15.247(d)
Band Edge Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2010 AND ANSI C63.4:2003 AND KDB558074	Pass	15.247(d)
Power Spectral Density Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2010 AND ANSI C63.4:2003 AND KDB558074	Pass	15.247(e)

2 GENERAL INFORMATION

2.1 Description of Equipment Under Test

Description	:	Wireless AirPlay Speaker
Type of EUT		☑ Production ☐ Pre-product ☐ Pro-type
Model Number	:	MA5000
Serial Number	:	DD1809M00033
Radio Tech	:	IEEE 802.11b/g
Freq. Band	:	2412 MHz - 2462 MHz Total 11 Channels in 5 MHz Separation
Tested Freq.	:	2412 MHz (Channel 01) 2437 MHz (Channel 06) 2462 MHz (Channel 11)
Modulation	:	DSSS for 802.11b OFDM for 802.11g
Transmit data rate	:	802.11b: 1, 2, 5.5, 11, 22 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps After testing, the highest average output power of the EUT was at 1 Mbps in 802.11b mode and 12 Mbps in 802.11g mode. So 1 Mbps and 12 Mbps mode were representative selected to test in this report.
Antenna Gain	:	4.59 dBi
Applicant	:	Altec Lansing, LLC 9330 Scranton Road, Suite 600, San Diego, CA 92121, USA
Manufacturer	:	Inventec Appliances (Pudong) Corporation No. 789 Pu Xing Road, Shanghai, PRC

2.2 Description of Test Facility

Site Description (Semi-Anechoic Chamber) : Sept. 17, 1998 file on
Apr 29, 2009 Renewed
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046, USA

Name of Firm : Audix Technology (Shanghai) Co., Ltd.

Site Location : 3 F 34 Bldg 680 Guiping Rd.,
Caohejing Hi-Tech Park,
Shanghai 200233, China

FCC registration Number : 91789

Accredited by NVLAP, Lab Code : 200371-0

2.3 Measurement Uncertainty

Conducted Emission Expanded Uncertainty : U = 3.38 dB
Radiated Emission Expanded Uncertainty (30-200MHz):
U = 4.58dB (Horizontal)
U = 4.70dB (Vertical)
Radiated Emission Expanded Uncertainty (200M-1GHz):
U = 4.84dB (Horizontal)
U = 4.70dB (Vertical)
Radiated Emission Expanded Uncertainty (Above 1GHz):
U= 4.60 dB (Horizontal)
U= 4.18 dB (Vertical)
6 dB Bandwidth Expanded Uncertainty : U = 0.05 kHz
Maximum Peak Output Power Expanded Uncertainty: U = 0.30 dBm
Emission Limitations Expanded Uncertainty : U = 0.15 dB
Band Edge Expanded Uncertainty : U = 0.15 dB
Power Spectral Density Expanded Uncertainty : U = 0.15 dB

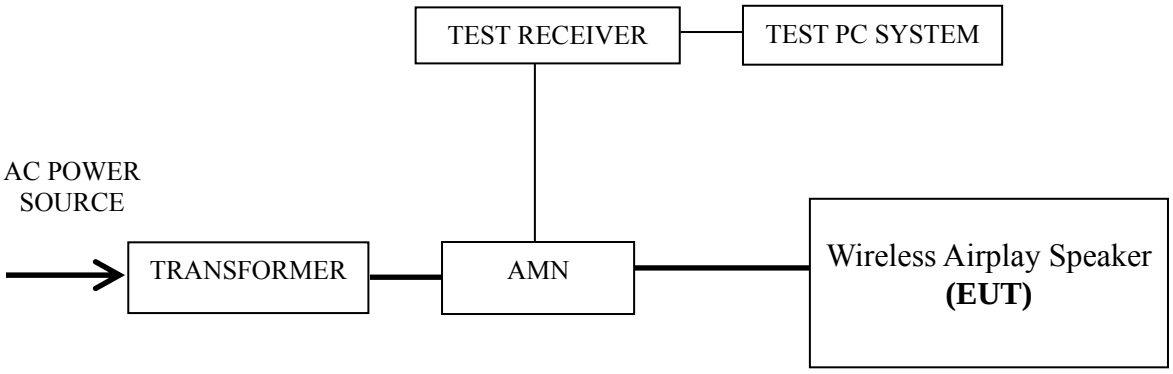
3 CONDUCTED EMISSION TEST

3.1 Test Equipment

The following test equipments are used during the conducted emission test in a shielded room:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	100841	Mar 22, 2011	Mar 22, 2012
2.	Artificial Mains Network (AMN)	R&S	ESH2-Z5	843890/011	Mar 22, 2011	Mar 22, 2012
3.	50Ω Coaxial Switch	Anritsu	MP59B	6200426389	Mar 18, 2011	Sep 18, 2011
4.	Software	Audix	E3	SET00200 9804M592	--	--

3.2 Block Diagram of Test Setup



—— : Signal Line
▬ : Power Line

3.3 Conducted Emission Limits [FCC Part 15 Subpart C 15.207]

Frequency Range (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15 ~ 0.5	66~56*	56~46*
0.5 ~ 5	56	46
5 ~ 30	60	50
NOTE – *Decreases with the logarithm of the frequency.		

3.4 Test Configuration

The EUT (listed in Sec.2.1) was installed as shown on Sec.3.2 to meet FCC requirement and operating in a manner that tends to maximize its emission level in a normal application.

3.5 Operating Condition of EUT

3.5.1 Setup the EUT as shown in Sec. 3.2.

3.5.2 Turn on the power of all equipments and the EUT.

3.5.3 Set the EUT on the test mode (Transmitting), and then test.

3.6 Test Procedures

The EUT was connected to the power mains through an Artificial Mains Network (AMN). This provided a 50 ohm coupling impedance for the measuring equipment.

Both sides of AC line (Line & Neutral) were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables were changed or manipulated according to ANSI C63.4:2003 during conducted emission test.

The bandwidth of R&S Test Receiver ESCI was set at 9 kHz.

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

The test modes were done on conducted disturbance test and all the test results are listed in Sec. 3.7.

3.7 Test Results

< PASS >

The frequency and amplitude of the highest conducted emission relative to the limit is reported. All emissions not reported below are too low against the prescribed limits.

NOTE 1 – Factor = Cable Loss + AMN Factor.
NOTE 2 – Emission Level = Meter Reading + Factor.
NOTE 3 – "QP" means "Quasi-Peak" values, "AV" means "Average" values.
NOTE 4 – The worst emission is detected at 0.408 MHz (Average Value) with corrected signal level of 28.87 dB (μV) (limit is 47.68 dB (μV)), when the Neutral of the EUT is connected to AMN.

EUT	: Wireless AirPlay Speaker	Temperature :	25℃
Model No.	: MA5000	Humidity :	44%RH
Serial No.	: DD1809M00033	Date of Test :	Sep. 06, 2011
Test Mode	: Transmitting		

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.157	29.46	0.22	29.68	65.60	35.92	QP
	0.406	36.60	0.29	36.89	57.73	20.84	
	1.043	21.82	0.37	22.19	56.00	33.81	
	1.888	19.38	0.44	19.82	56.00	36.18	
	5.594	17.18	0.58	17.76	60.00	42.24	
	26.558	27.27	1.23	28.50	60.00	31.50	
	0.157	19.54	0.22	19.76	55.60	35.84	AV
	0.406	26.46	0.29	26.75	47.73	20.98	
	1.043	12.32	0.37	12.69	46.00	33.31	
	1.888	9.45	0.44	9.89	46.00	36.11	
	5.594	8.64	0.58	9.22	50.00	40.78	
	26.558	17.64	1.23	18.87	50.00	31.13	
Neutral	0.155	29.84	0.19	30.03	65.74	35.71	QP
	0.408	37.57	0.23	37.80	57.68	19.88	
	1.043	22.40	0.44	22.84	56.00	33.16	
	3.140	19.52	0.63	20.15	56.00	35.85	
	21.373	24.01	1.21	25.22	60.00	34.78	
	26.558	29.74	1.32	31.06	60.00	28.94	
	0.155	19.64	0.19	19.83	55.74	35.91	AV
	0.408	**28.64**	**0.23**	**28.87**	**47.68**	**18.81**	
	1.043	12.65	0.44	13.09	46.00	32.91	
	3.140	9.45	0.63	10.08	46.00	35.92	
	21.373	12.64	1.21	13.85	50.00	36.15	
	26.558	19.63	1.32	20.95	50.00	29.05	

TEST ENGINEER: LVY LV

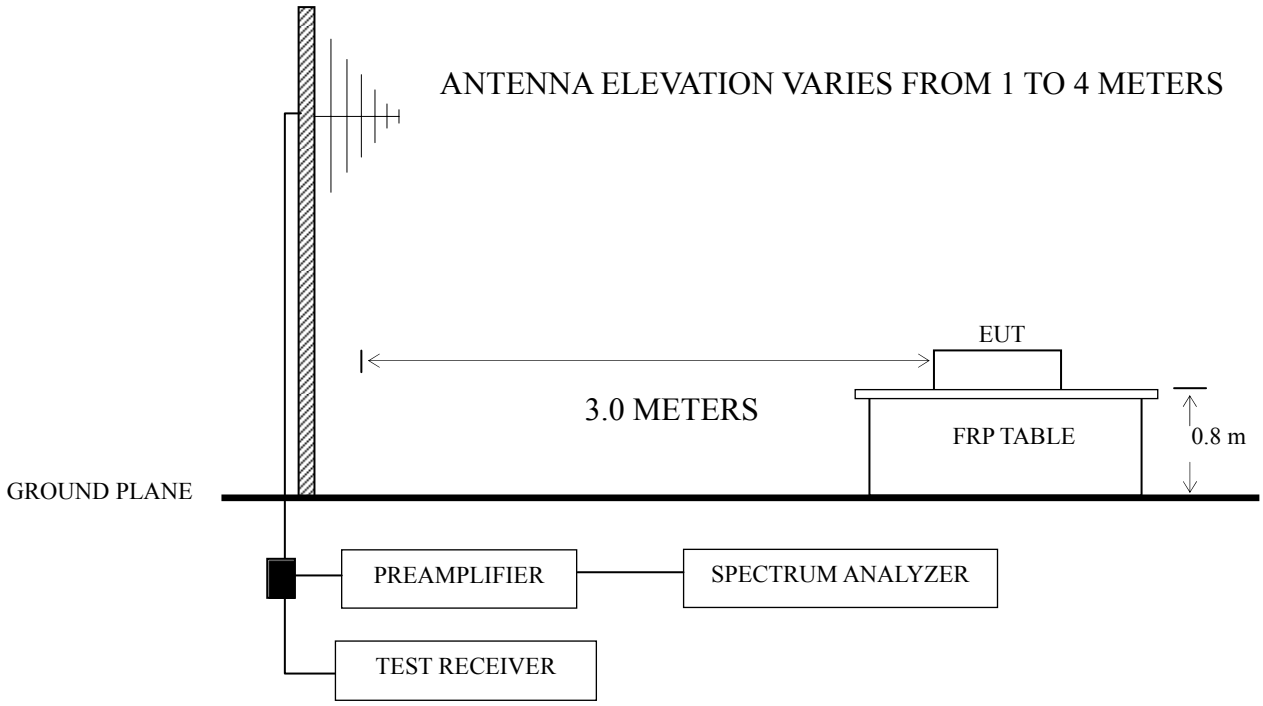
4 RADIATED EMISSION TEST

4.1 Test Equipment

The following test equipment are used during the radiated emission test in a semi-anechoic chamber:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Preamplifier	Agilent	8447D	2944A10548	Mar 22, 2011	Mar 22, 2012
2.	Preamplifier	HP	8449B	3008A00864	Mar 22, 2011	Mar 22, 2012
3.	Spectrum Analyzer	Agilent	E7405A	MY45106600	Mar 22, 2011	Mar 22, 2012
4.	Test Receiver	R&S	ESVS10	844594/001	Mar 22, 2011	Mar 22, 2012
5.	Bi-log Antenna	TESEQ	CBL6112D	23192	Dec 01, 2010	Dec 01, 2011
6.	Horn Antenna	EMCO	3115	9607-4878	May 06, 2011	May 06, 2012
7.	Horn Antenna	EMCO	3116	00062643	May 13, 2011	May 13, 2012
8.	50Ω Coaxial Switch	Anritsu	MP59B	6200426390	Mar 18, 2011	Sep 18, 2011
9.	Software	Audix	E3	SET00200 9912M295-2	-	-

4.2 Block Diagram of Test Setup



■ : 50 ohm Coaxial Switch

4.3 Radiated Emission Limit [FCC Part 15 Subpart C 15.209]

Frequency (MHz)	Distance (m)	Field strength limits (μV/m)	
		(μV/m)	dB(μV/m)
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0

NOTE 1 - Emission Level dB (μV/m) = 20 log Emission Level (μV/m)
NOTE 2 - The tighter limit applies at the band edges.
NOTE 3 - Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
NOTE 4 - The limits shown are based on Quasi-peak value detector below or equal to 1GHz and Average value detector above 1GHz.
NOTE 5 - Above 1 GHz, the limit on peak emission is 20 dB above the maximum permitted average emission limit applicable to the EUT

4.4 Test Configuration

The EUT (listed in Sec.2.1) and the simulators (listed in Sec.2.2) were installed as shown on Sec.3.2 to meet FCC requirements and operating in a manner that tends to maximize its emission level in a normal application.

4.5 Operating Condition of EUT

4.5.1 Setup the EUT as shown in Sec. 3.2.

4.5.2 Turn on the power of all equipment.

4.5.3 Turn the EUT on the test mode, and then test.

4.6 Test Procedures

Radiated emission test applies to harmonics/spurs that fall in the restricted bands listed in Section 15.205. The maximum permitted average field strength is listed in Section 15.209. A pre-amp is necessary for this measurement. For measurement above 1 GHz, set RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation.

The EUT was placed on a turntable that is 0.8 meter above ground. The turntable rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna, which was mounted on an antenna tower. The antenna moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (Calibrated Bilog Antenna) or Horn antenna was used as receiving antenna. Both horizontal and vertical polarizations of the antenna were set on measurement. In order to find the maximum emission, all of the interference cables were manipulated according to ANSI C63.4:2003 requirements during radiated emission test.

The bandwidth of Test Receiver R&S ESVS10 was set at 120 kHz from 30MHz to 1000MHz.

The bandwidth of the VBW was set at 1MHz and RBW was set at 1MHz for peak emission measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emission above 1GHz for Spectrum Agilent E7405A.

The frequency range from 30 MHz to 25 GHz (Up to 10^{th} harmonics from fundamental frequency) was checked.

The EUT was tested under the following test modes:

Mode	Operation	Channel	Frequency
1.	Transmitting	01	2412 MHz
2.		06	2437 MHz
3.		11	2462 MHz
4.	Receiving	01	2412 MHz
5.	Transmitting Band-Edge	01	2412 MHz
6.		11	2462 MHz

All the test results are listed in Sec.4.7.

4.7 Test Results

<PASS>

The frequency and amplitude of the highest radiated emission relative the limit is reported. All the emissions not reported below are too low against the FCC limit.

No.	Operation	Modulation	Channel	Frequency	Data Page	
1.	Transmitting	802.11b	01	2412 MHz	P15	
2.			06	2437 MHz	P16	
3.			11	2462 MHz	P17	
4.		802.11g	01	2412 MHz	P18	
5.			06	2437 MHz	P19	
6.			11	2462 MHz	P20	
7.	Receiving	--	01	2412 MHz	P21	
9.	Transmitting	802.11b	01	2412 MHz	Band Edge	P22-P25
10.			11	2462 MHz		P26-P29
11.		802.11g	01	2412 MHz		P30-P33
12.			11	2462 MHz		P34-P37

NOTE 1 - All reading are Quasi-Peak values below or equal to 1GHz and Peak values above 1GHz. For measurements above 1 GHz, the peak measured value complies with the average limit, it is unnecessary to perform an average measurement.
For Band-Edge measurements, both peak and average value were measured.

NOTE 2 – For Receiving Mode, we selected Receiving Ch01 mode to perform the test.

EUT	: Wireless AirPlay Speaker	Temperature :	25℃
Model No.	: MA5000	Humidity :	45%RH
Serial No.	: DD1809M00033	Date of Test :	Sep 05, 2011
Test Mode	: 802.11b Transmitting Ch01		

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	182.29	21.34	9.97	2.36	--	33.67	43.50	9.83	QP
	255.04	21.97	12.22	2.63	--	36.82	46.00	9.18	
	271.53	22.69	12.86	2.67	--	38.22	46.00	7.78	
	320.03	**24.15**	**14.26**	**2.80**	--	**41.21**	**46.00**	**4.79**	
	480.08	10.62	17.37	3.21	--	31.20	46.00	14.80	
	875.84	8.34	20.37	4.75	--	33.46	46.00	12.54	
	1322.00	54.39	26.42	5.51	37.45	48.87	74.00	25.13	PK
	2134.00	52.05	27.99	6.59	36.16	50.47	74.00	23.53	
	2988.00	50.82	31.87	6.49	35.90	53.28	74.00	20.72	
	4822.00	51.28	35.74	9.09	35.29	60.82	74.00	13.18	
	7370.00	49.39	38.26	9.91	34.73	62.83	74.00	11.17	
	8854.00	49.32	39.45	11.86	34.83	65.80	74.00	8.20	
	4822.00	32.37	35.74	9.09	35.29	41.91	54.00	12.09	AV
	7370.00	29.52	38.26	9.91	34.73	42.96	54.00	11.04	
	8854.00	29.47	39.45	11.86	34.83	45.95	54.00	8.05	
Vertical	90.14	23.56	11.00	1.73	--	36.29	43.50	7.21	QP
	182.29	**24.30**	**9.97**	**2.36**	--	**36.63**	**43.50**	**6.87**	
	320.03	20.83	14.26	2.80	--	37.89	46.00	8.11	
	453.89	13.54	17.03	3.13	--	33.70	46.00	12.30	
	701.24	12.29	19.50	3.68	--	35.47	46.00	10.53	
	877.78	13.38	20.36	4.75	--	38.49	46.00	7.51	
	1336.00	53.80	26.47	5.53	37.42	48.38	74.00	25.62	PK
	1602.00	55.86	27.08	5.93	36.75	52.12	74.00	21.88	
	3758.00	50.34	32.76	7.62	35.73	54.99	74.00	19.01	
	4822.00	52.89	35.74	9.09	35.29	62.43	74.00	11.57	
	7636.00	50.56	38.35	10.22	34.71	64.42	74.00	9.58	
	9372.00	51.35	39.50	12.42	34.92	68.35	74.00	5.65	
	3758.00	30.17	32.76	7.62	35.73	34.82	54.00	19.18	AV
	4822.00	32.36	35.74	9.09	35.29	41.90	54.00	12.10	
	7636.00	30.66	38.35	10.22	34.71	44.52	54.00	9.48	

TEST ENGINEER: RAVEN JIN

EUT	:	Wireless AirPlay Speaker	Temperature :	25℃
Model No.	:	MA5000	Humidity :	45%RH
Serial No.	:	DD1809M00033	Date of Test :	Sep 05, 2011
Test Mode	:	802.11b Transmitting Ch06		

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	**72.68**	**17.60**	**10.08**	**1.47**	--	**29.15**	**40.00**	**10.85**	QP
	121.18	18.77	10.99	2.03	--	31.79	43.50	11.71	
	208.48	15.32	10.15	2.46	--	27.93	43.50	15.57	
	640.13	11.36	18.74	3.55	--	33.65	46.00	12.35	
	744.89	10.41	20.01	3.78	--	34.20	46.00	11.80	
	800.18	7.52	20.60	3.88	--	32.00	46.00	14.00	
	1336.00	55.07	26.47	5.53	37.42	49.65	74.00	24.35	PK
	1826.00	57.90	27.28	6.23	36.40	55.01	74.00	18.99	
	2862.00	51.30	31.36	6.60	35.94	53.32	74.00	20.68	
	3604.00	49.77	32.37	7.32	35.76	53.70	74.00	20.30	
	4864.00	48.86	35.97	9.14	35.27	58.70	74.00	15.30	
	7524.00	49.94	38.64	10.14	34.72	64.00	74.00	10.00	
	1826.00	37.61	27.28	6.23	36.40	34.72	54.00	19.28	AV
	4864.00	28.44	35.97	9.14	35.27	38.28	54.00	15.72	
	7524.00	28.52	38.64	10.14	34.72	42.58	54.00	11.42	
Vertical	182.29	19.36	9.97	2.36	--	31.69	43.50	11.81	QP
	259.89	**22.86**	**12.40**	**2.64**	--	**37.90**	**46.00**	**8.10**	
	337.49	15.72	14.74	2.85	--	33.31	46.00	12.69	
	481.05	13.92	17.39	3.21	--	34.52	46.00	11.48	
	698.33	7.89	19.47	3.68	--	31.04	46.00	14.96	
	744.89	8.29	20.01	3.78	--	32.08	46.00	13.92	
	1602.00	56.33	27.08	5.93	36.75	52.59	74.00	21.41	PK
	1854.00	55.48	27.31	6.26	36.37	52.68	74.00	21.32	
	2988.00	51.13	31.87	6.49	35.90	53.59	74.00	20.41	
	4864.00	52.67	35.97	9.14	35.27	62.51	74.00	11.49	
	7314.00	49.83	38.03	9.91	34.73	63.04	74.00	10.96	
	9106.00	49.08	39.50	12.15	34.88	65.85	74.00	8.15	
	4864.00	31.17	35.97	9.14	35.27	41.01	54.00	12.99	AV
	7314.00	29.43	38.03	9.91	34.73	42.64	54.00	11.36	
	9106.00	29.69	39.50	12.15	34.88	46.46	54.00	7.54	

TEST ENGINEER: RAVEN JIN

EUT	:	Wireless AirPlay Speaker	Temperature :	25℃
Model No.	:	MA5000	Humidity :	45%RH
Serial No.	:	DD1809M00033	Date of Test :	Sep 05, 2011
Test Mode	:	802.11b Transmitting Ch11		

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	189.08	19.67	9.90	2.39	--	31.96	43.50	11.54	QP
	266.68	**24.61**	**12.66**	**2.66**	**--**	**39.93**	**46.00**	**6.07**	
	320.03	19.82	14.26	2.80	--	36.88	46.00	9.12	
	480.08	18.72	17.37	3.21	--	39.30	46.00	6.70	
	872.93	8.58	20.37	4.60	--	33.55	46.00	12.45	
	960.23	11.28	20.61	5.12	--	37.01	54.00	16.99	
	1322.00	57.58	26.42	5.51	37.45	52.06	74.00	21.94	PK
	2624.00	51.35	30.19	6.86	36.02	52.38	74.00	21.62	
	3954.00	49.25	33.21	8.13	35.71	54.88	74.00	19.12	
	5634.00	48.30	36.47	9.37	34.92	59.22	74.00	14.78	
	7594.00	49.49	38.47	10.22	34.72	63.46	74.00	10.54	
	9274.00	49.34	39.50	12.28	34.91	66.21	74.00	7.79	
	3954.00	30.50	33.21	8.13	35.71	36.13	54.00	17.87	AV
	5634.00	28.24	36.47	9.37	34.92	39.16	54.00	14.84	
	7594.00	29.75	38.47	10.22	34.72	43.72	54.00	10.28	
Vertical	85.29	18.29	10.80	1.66	--	30.75	40.00	9.25	QP
	264.74	16.17	12.62	2.65	--	31.44	46.00	14.56	
	480.08	**18.90**	**17.37**	**3.21**	**--**	**39.48**	**46.00**	**6.52**	
	698.33	12.52	19.47	3.68	--	35.67	46.00	10.33	
	720.64	13.74	19.73	3.73	--	37.20	46.00	8.80	
	872.93	14.41	20.37	4.60	--	39.38	46.00	6.62	
	1336.00	55.08	26.47	5.53	37.42	49.66	74.00	24.34	PK
	2316.00	52.57	28.91	6.82	36.11	52.19	74.00	21.81	
	3772.00	49.60	32.78	7.62	35.73	54.27	74.00	19.73	
	4934.00	53.44	36.34	9.20	35.23	63.75	74.00	10.25	
	7384.00	50.87	38.34	10.02	34.72	64.51	74.00	9.49	
	9512.00	49.55	39.50	12.55	34.94	66.66	74.00	7.34	
	3772.00	29.28	32.78	7.62	35.73	33.95	54.00	20.05	AV
	4934.00	30.93	36.34	9.20	35.23	41.24	54.00	12.76	
	7384.00	30.37	38.34	10.02	34.72	44.01	54.00	9.99	

TEST ENGINEER: RAVEN JIN

EUT	:	Wireless AirPlay Speaker	Temperature :	25℃
Model No.	:	MA5000	Humidity :	45%RH
Serial No.	:	DD1809M00033	Date of Test :	Sep 05, 2011
Test Mode	:	802.11g Transmitting Ch01		

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	**61.04**	**25.07**	**9.21**	**1.21**	--	**35.49**	**40.00**	**4.51**	QP
	88.20	23.22	10.93	1.70	--	35.85	43.50	7.65	
	177.44	23.43	10.02	2.35	--	35.80	43.50	7.70	
	271.53	17.09	12.86	2.67	--	32.62	46.00	13.38	
	640.13	10.94	18.74	3.55	--	33.23	46.00	12.77	
	746.83	11.46	20.01	3.80	--	35.27	46.00	10.73	
	1336.00	61.63	26.47	5.53	37.42	56.21	74.00	17.79	PK
	1798.00	56.60	27.26	6.20	36.44	53.62	74.00	20.38	
	2988.00	50.69	31.87	6.49	35.90	53.15	74.00	20.85	
	5200.00	48.65	36.62	9.35	35.10	59.52	74.00	14.48	
	7244.00	52.02	37.80	9.83	34.73	64.92	74.00	9.08	
	9344.00	49.28	39.50	12.42	34.92	66.28	74.00	7.72	
	1336.00	41.63	26.47	5.53	37.42	36.21	54.00	17.79	AV
	5200.00	28.85	36.62	9.35	35.10	39.72	54.00	14.28	
	7244.00	32.00	37.80	9.83	34.73	44.90	54.00	9.10	
Vertical	191.99	21.59	9.87	2.40	--	33.86	43.50	9.64	QP
	300.63	**20.67**	**13.73**	**2.76**	--	**37.16**	**46.00**	**8.84**	
	654.68	9.29	18.93	3.60	--	31.82	46.00	14.18	
	701.24	9.43	19.50	3.68	--	32.61	46.00	13.39	
	746.83	7.89	20.01	3.80	--	31.70	46.00	14.30	
	960.23	9.57	20.61	5.12	--	35.30	54.00	18.70	
	1602.00	52.07	27.08	5.93	36.75	48.33	74.00	25.67	PK
	2974.00	51.16	31.80	6.49	35.90	53.55	74.00	20.45	
	4528.00	48.33	34.03	8.86	35.45	55.77	74.00	18.23	
	5200.00	48.11	36.62	9.35	35.10	58.98	74.00	15.02	
	6754.00	49.92	37.04	9.52	34.76	61.72	74.00	12.28	
	9428.00	49.53	39.50	12.42	34.93	66.52	74.00	7.48	
	4528.00	28.56	34.03	8.86	35.45	36.00	54.00	18.00	AV
	5200.00	28.38	36.62	9.35	35.10	39.25	54.00	14.75	
	6754.00	29.77	37.04	9.52	34.76	41.57	54.00	12.43	

TEST ENGINEER: RAVEN JIN

EUT	:	Wireless AirPlay Speaker	Temperature :	25℃
Model No.	:	MA5000	Humidity :	45%RH
Serial No.	:	DD1809M00033	Date of Test :	Sep 05, 2011
Test Mode	:	802.11g Transmitting Ch06		

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	**86.26**	**22.02**	**10.83**	**1.68**	--	**34.53**	**40.00**	**5.47**	QP
	181.32	22.16	9.98	2.36	--	34.50	43.50	9.00	
	252.13	18.56	12.09	2.62	--	33.27	46.00	12.73	
	701.24	13.78	19.50	3.68	--	36.96	46.00	9.04	
	744.89	12.79	20.01	3.78	--	36.58	46.00	9.42	
	800.18	13.56	20.60	3.88	--	38.04	46.00	7.96	
	1056.00	52.21	25.13	5.26	38.08	44.52	74.00	29.48	PK
	1364.00	53.23	26.57	5.55	37.34	48.01	74.00	25.99	
	2988.00	51.12	31.87	6.49	35.90	53.58	74.00	20.42	
	4962.00	48.57	36.49	9.20	35.21	59.05	74.00	14.95	
	7286.00	49.87	37.96	9.91	34.73	63.01	74.00	10.99	
	9162.00	49.68	39.50	12.15	34.89	66.44	74.00	7.56	
	4962.00	29.28	36.49	9.20	35.21	39.76	54.00	14.24	AV
	7286.00	29.33	37.96	9.91	34.73	42.47	54.00	11.53	
	9162.00	29.45	39.50	12.15	34.89	46.21	54.00	7.79	
Vertical	172.59	20.53	10.08	2.33	--	32.94	43.50	10.56	QP
	208.48	21.13	10.15	2.46	--	33.74	43.50	9.76	
	300.63	**21.18**	**13.73**	**2.76**	--	**37.67**	**46.00**	**8.33**	
	373.38	12.32	15.72	2.93	--	30.97	46.00	15.03	
	701.24	10.17	19.50	3.68	--	33.35	46.00	12.65	
	872.93	7.79	20.37	4.60	--	32.76	46.00	13.24	
	1350.00	53.77	26.53	5.53	37.38	48.45	74.00	25.55	PK
	1602.00	53.66	27.08	5.93	36.75	49.92	74.00	24.08	
	2946.00	50.76	31.71	6.53	35.91	53.09	74.00	20.91	
	5508.00	48.49	36.50	9.55	34.96	59.58	74.00	14.42	
	7300.00	52.13	38.03	9.91	34.73	65.34	74.00	8.66	
	9176.00	48.78	39.50	12.28	34.89	65.67	74.00	8.33	
	5508.00	28.94	36.50	9.55	34.96	40.03	54.00	13.97	AV
	7300.00	32.18	38.03	9.91	34.73	45.39	54.00	8.61	
	9176.00	28.88	39.50	12.28	34.89	45.77	54.00	8.23	

TEST ENGINEER: RAVEN JIN

EUT	:	Wireless AirPlay Speaker	Temperature :	25℃
Model No.	:	MA5000	Humidity :	45%RH
Serial No.	:	DD1809M00033	Date of Test :	Sep 05, 2011
Test Mode	:	802.11g Transmitting Ch11		

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	182.29	21.73	9.97	2.36	--	34.06	43.50	9.44	QP
	240.49	21.59	11.55	2.58	--	35.72	46.00	10.28	
	320.03	**24.22**	**14.26**	**2.80**	**--**	**41.28**	**46.00**	**4.72**	
	480.08	14.83	17.37	3.21	--	35.41	46.00	10.59	
	640.13	11.72	18.74	3.55	--	34.01	46.00	11.99	
	746.83	10.02	20.01	3.80	--	33.83	46.00	12.17	
	1322.00	53.83	26.42	5.51	37.45	48.31	74.00	25.69	PK
	3072.00	50.58	31.93	6.52	35.87	53.16	74.00	20.84	
	3982.00	49.57	33.25	8.13	35.70	55.25	74.00	18.75	
	4948.00	47.50	36.41	9.20	35.22	57.89	74.00	16.11	
	7636.00	49.06	38.35	10.22	34.71	62.92	74.00	11.08	
	9386.00	48.91	39.50	12.42	34.92	65.91	74.00	8.09	
	3982.00	28.58	33.25	8.13	35.70	34.26	54.00	19.74	AV
	4924.00	28.18	36.34	9.20	35.24	38.48	54.00	15.52	
	7636.00	29.28	38.35	10.22	34.71	43.14	54.00	10.86	
	9386.00	28.16	39.50	12.42	34.92	45.16	54.00	8.84	
Vertical	**90.14**	**23.91**	**11.00**	**1.73**	**--**	**36.64**	**43.50**	**6.86**	QP
	320.03	19.83	14.26	2.80	--	36.89	46.00	9.11	
	453.89	15.45	17.03	3.13	--	35.61	46.00	10.39	
	640.13	15.93	18.74	3.55	--	38.22	46.00	7.78	
	720.64	15.14	19.73	3.73	--	38.60	46.00	7.40	
	877.78	13.92	20.36	4.75	--	39.03	46.00	6.97	
	1350.00	53.81	26.53	5.53	37.38	48.49	74.00	25.51	PK
	1602.00	55.48	27.08	5.93	36.75	51.74	74.00	22.26	
	2960.00	50.68	31.74	6.49	35.90	53.01	74.00	20.99	
	4934.00	48.94	36.34	9.20	35.23	59.25	74.00	14.75	
	7398.00	52.91	38.34	10.02	34.72	66.55	74.00	7.45	
	9162.00	49.22	39.50	12.15	34.89	65.98	74.00	8.02	
	4934.00	28.44	36.34	9.20	35.23	38.75	54.00	15.25	AV
	7398.00	32.12	38.34	10.02	34.72	45.76	54.00	8.24	
	9162.00	29.24	39.50	12.15	34.89	46.00	54.00	8.00	

TEST ENGINEER: RAVEN JIN

EUT	: Wireless AirPlay Speaker	Temperature :	25℃
Model No.	: MA5000	Humidity :	45%RH
Serial No.	: DD1809M00033	Date of Test :	Sep 05, 2011
Test Mode	: Receiving Ch01		

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	159.98	25.84	10.25	2.27	--	38.36	43.50	5.14	QP
	266.68	**26.46**	**12.66**	**2.66**	**--**	**41.78**	**46.00**	**4.22**	
	320.03	21.89	14.26	2.80	--	38.95	46.00	7.05	
	480.08	21.08	17.37	3.21	--	41.66	46.00	4.34	
	872.93	11.61	20.37	4.60	--	36.58	46.00	9.42	
	960.23	15.17	20.61	5.12	--	40.90	54.00	13.10	
	1336.00	64.41	26.47	5.53	37.42	58.99	74.00	15.01	PK
	3198.00	50.77	31.98	6.72	35.84	53.63	74.00	20.37	
	4948.00	48.13	36.41	9.20	35.22	58.52	74.00	15.48	
	6838.00	48.93	36.99	9.57	34.76	60.73	74.00	13.27	
	7496.00	49.72	38.70	10.14	34.72	63.84	74.00	10.16	
	9106.00	50.23	39.50	12.15	34.88	67.00	74.00	7.00	
	1336.00	44.72	26.47	5.53	37.42	39.30	54.00	14.70	AV
	4948.00	28.39	36.41	9.20	35.22	38.78	54.00	15.22	
	6838.00	29.33	36.99	9.57	34.76	41.13	54.00	12.87	
	7496.00	29.25	38.70	10.14	34.72	43.37	54.00	10.63	
Vertical	126.03	19.74	10.89	2.07	--	32.70	43.50	10.80	QP
	259.89	13.79	12.40	2.64	--	28.83	46.00	17.17	
	453.89	12.11	17.03	3.13	--	32.27	46.00	13.73	
	480.08	**19.08**	**17.37**	**3.21**	**--**	**39.66**	**46.00**	**6.34**	
	640.13	12.25	18.74	3.55	--	34.54	46.00	11.46	
	875.84	11.27	20.37	4.75	--	36.39	46.00	9.61	
	1364.00	52.43	26.57	5.55	37.34	47.21	74.00	26.79	PK
	1602.00	53.47	27.08	5.93	36.75	49.73	74.00	24.27	
	2974.00	50.35	31.80	6.49	35.90	52.74	74.00	21.26	
	4822.00	49.36	35.74	9.09	35.29	58.90	74.00	15.10	
	7244.00	52.19	37.80	9.83	34.73	65.09	74.00	8.91	
	9106.00	49.09	39.50	12.15	34.88	65.86	74.00	8.14	
	4822.00	30.70	35.74	9.09	35.29	40.24	54.00	13.76	AV
	7244.00	33.64	37.80	9.83	34.73	46.54	54.00	7.46	
	9106.00	29.31	39.50	12.15	34.88	46.08	54.00	7.92	

TEST ENGINEER: RAVEN JIN

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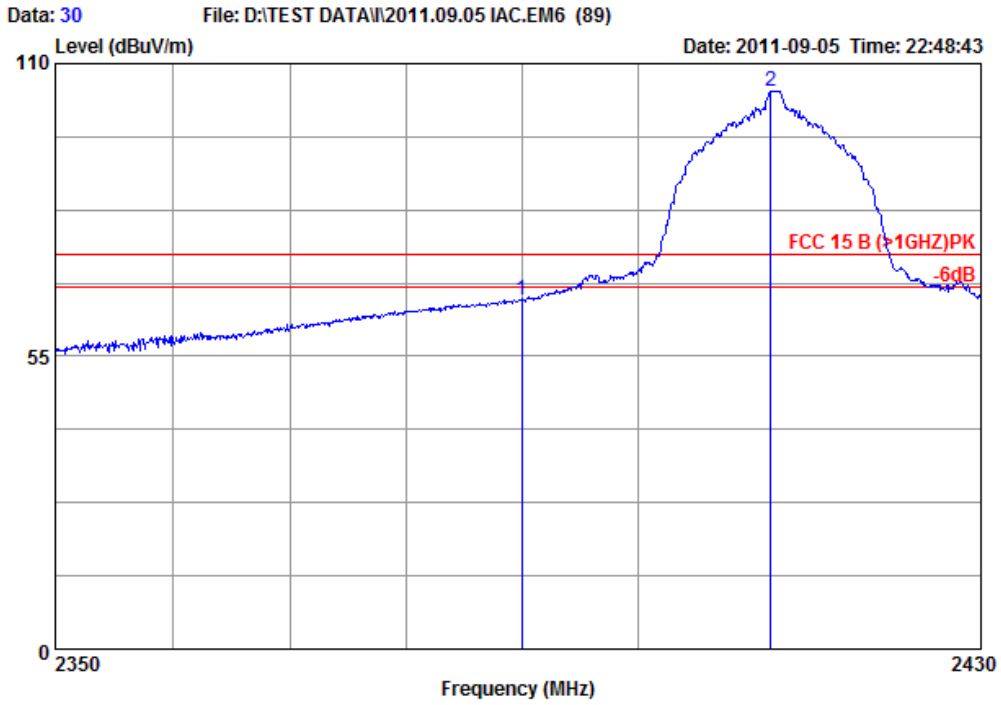

Site no : Audix ACI (3m Chamber) Data no. : 30
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : HORIZONTAL
Env. / Ins. : 20'C 60%RH / E7405A Engineer : Raven
EUT : Wireless Airplay Speaker
M/N : MA5000
S/N : DD1809M00033
Power Rating: 120V/60Hz
Test Mode : TX CH1 802.11b

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.000	29.19	36.09	6.89	65.70	65.69	74.00	8.31	Peak
2	2411.600	29.30	36.09	6.89	104.82	104.92	74.00	-30.92	Peak

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

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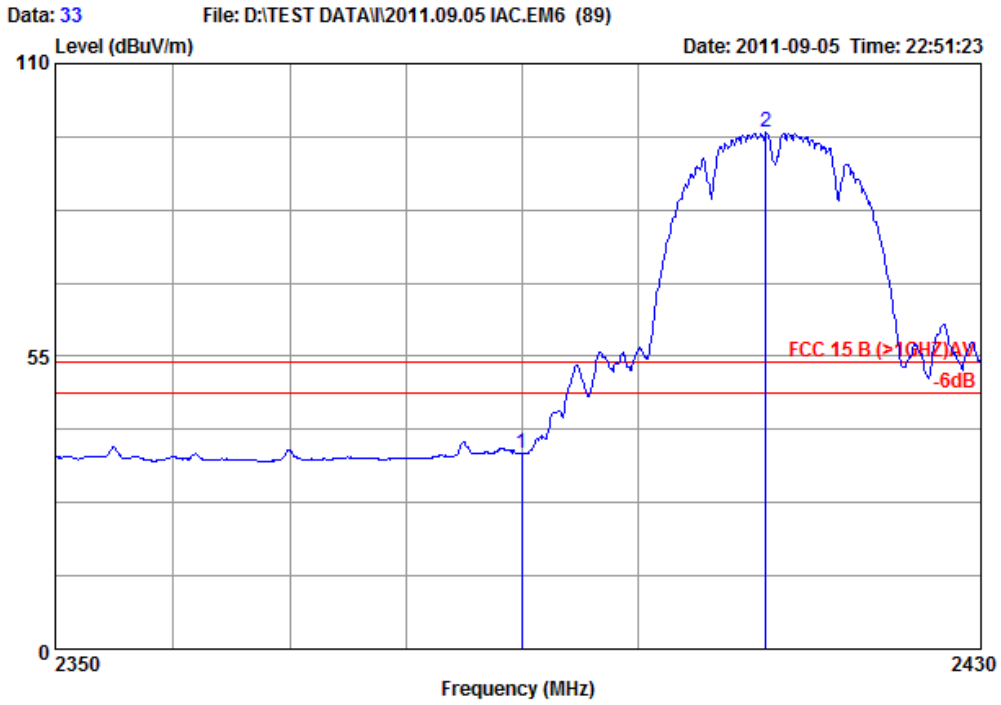

Site no : Audix ACI (3m Chamber) Data no. : 33
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ)AV Ant. pol. : HORIZONTAL
Env. / Ins. : 20'C 60%RH / E7405A Engineer : Raven
EUT : Wireless Airplay Speaker
M/N : MA5000
S/N : DD1809M00033
Power Rating: 120V/60Hz
Test Mode : TX CH1 802.11b

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.000	29.19	36.09	6.89	36.68	36.67	54.00	17.33	Average
2	2411.200	29.30	36.09	6.89	97.02	97.12	54.00	-43.12	Average

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

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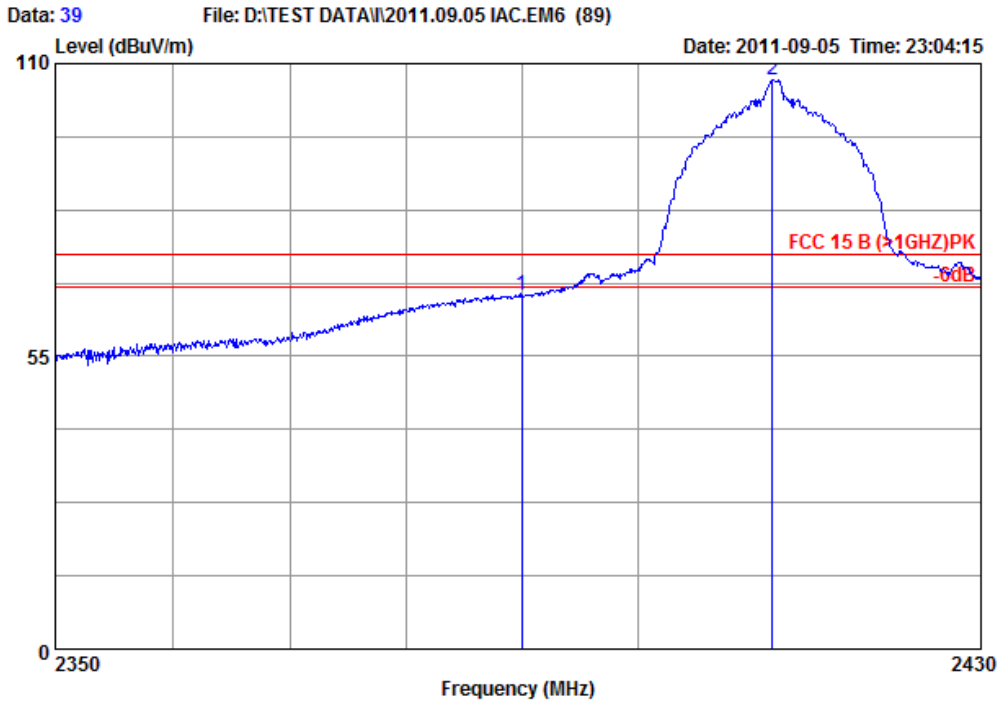

Site no : Audix ACI (3m Chamber) Data no. : 39
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : VERTICAL
Env. / Ins. : 20'C 60%RH / E7405A Engineer : Raven
EUT : Wireless Airplay Speaker
M/N : MA5000
S/N : DD1809M00033
Power Rating: 120V/60Hz
Test Mode : TX CH1 802.11b

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.000	29.19	36.09	6.89	66.49	66.48	74.00	7.52	Peak
2	2411.760	29.30	36.09	6.89	106.71	106.81	74.00	-32.81	Peak

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

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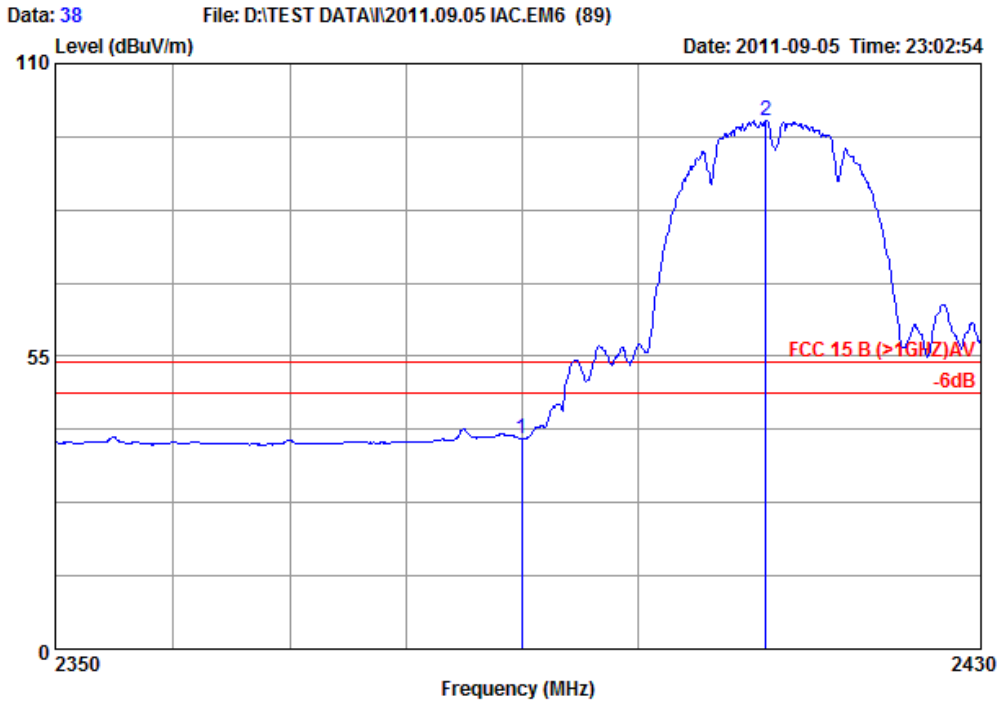

Site no : Audix ACI (3m Chamber) Data no. : 38
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ)AV Ant. pol. : VERTICAL
Env. / Ins. : 20'C 60%RH / E7405A Engineer : Raven
EUT : Wireless Airplay Speaker
M/N : MA5000
S/N : DD1809M00033
Power Rating: 120V/60Hz
Test Mode : TX CH1 802.11b

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.000	29.19	36.09	6.89	39.65	39.64	54.00	14.36	Average
2	2411.200	29.30	36.09	6.89	99.13	99.23	54.00	-45.23	Average

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

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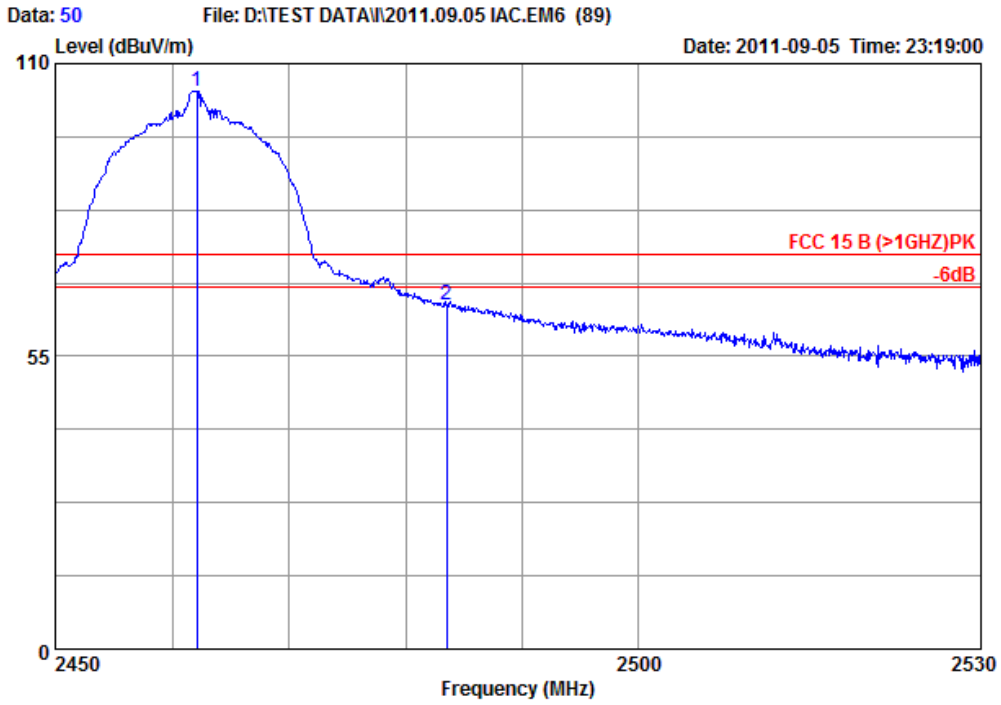

Site no : Audix ACI (3m Chamber) Data no. : 50
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : HORIZONTAL
Env. / Ins. : 20'C 60%RH / E7405A Engineer : Raven
EUT : Wireless Airplay Speaker
M/N : MA5000
S/N : DD1809M00033
Power Rating: 120V/60Hz
Test Mode : TX CH11 802.11b

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2462.080	29.48	36.07	6.96	104.57	104.94	74.00	-30.94	Peak
2	2483.500	29.55	36.07	6.96	64.09	64.53	74.00	9.47	Peak

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

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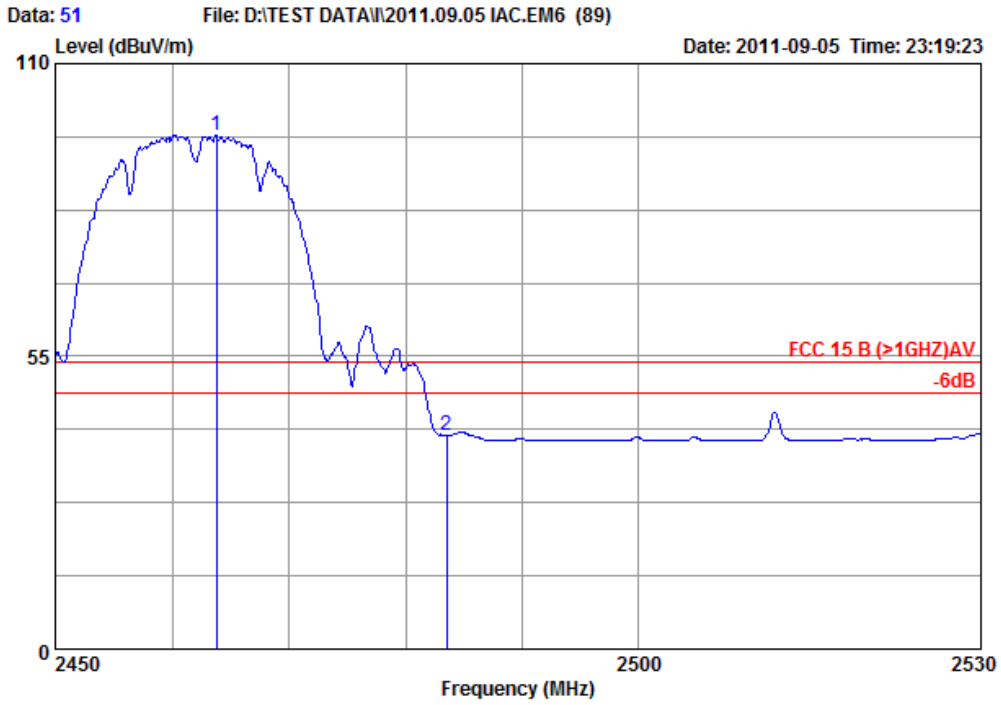
audixaci@audix.com



Site no : Audix ACI (3m Chamber) Data no. : 51
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ)AV Ant. pol. : HORIZONTAL
Env. / Ins. : 20'C 60%RH / E7405A Engineer : Raven
EUT : Wireless Airplay Speaker
M/N : MA5000
S/N : DD1809M00033
Power Rating: 120V/60Hz
Test Mode : TX CH11 802.11b

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2463.760	29.48	36.07	6.96	96.20	96.57	54.00	-42.57	Average
2	2483.500	29.55	36.07	6.96	39.75	40.19	54.00	13.81	Average

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

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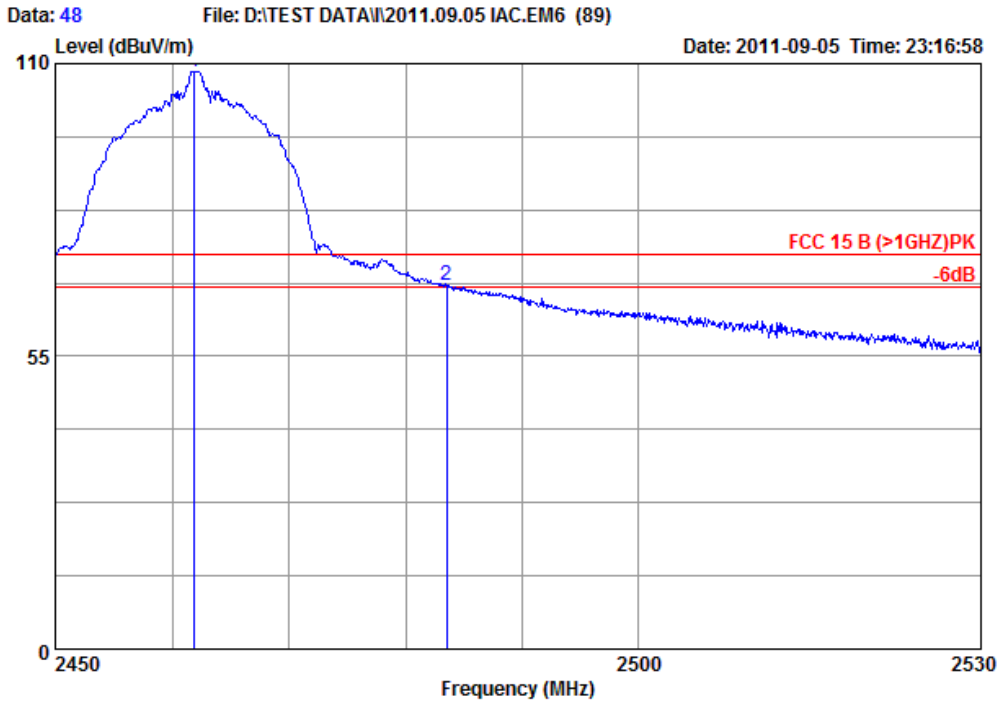

Site no : Audix ACI (3m Chamber) Data no. : 48
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : VERTICAL
Env. / Ins. : 20'C 60%RH / E7405A Engineer : Raven
EUT : Wireless Airplay Speaker
M/N : MA5000
S/N : DD1809M00033
Power Rating: 120V/60Hz
Test Mode : TX CH11 802.11b

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2461.840	29.48	36.07	6.96	108.15	108.52	74.00	-34.52	Peak
2	2483.500	29.55	36.07	6.96	67.80	68.24	74.00	5.76	Peak

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

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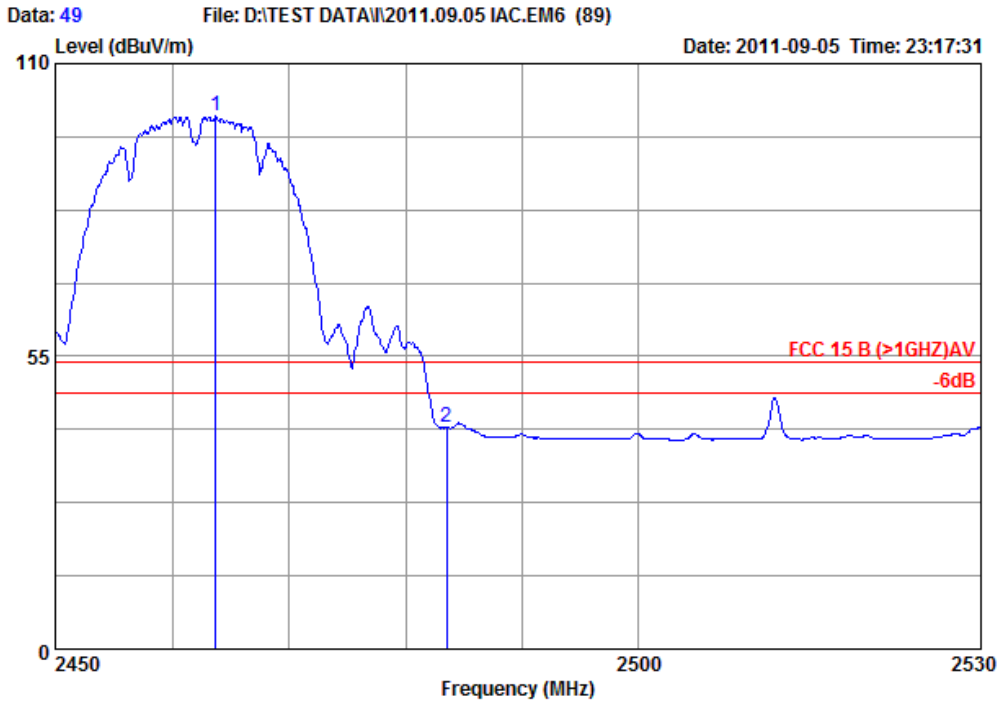
audixaci@audix.com



Site no : Audix ACI (3m Chamber) Data no. : 49
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ)AV Ant. pol. : VERTICAL
Env. / Ins. : 20'C 60%RH / E7405A Engineer : Raven
EUT : Wireless Airplay Speaker
M/N : MA5000
S/N : DD1809M00033
Power Rating: 120V/60Hz
Test Mode : TX CH11 802.11b

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2463.680	29.48	36.07	6.96	99.78	100.15	54.00	-46.15	Average
2	2483.500	29.55	36.07	6.96	41.18	41.62	54.00	12.38	Average

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

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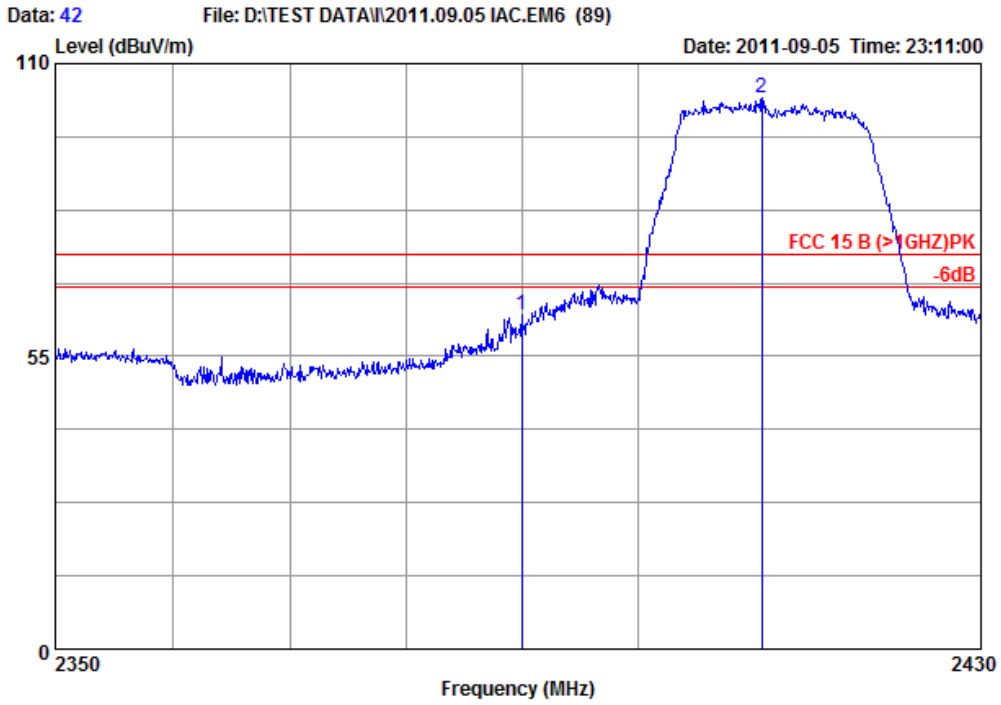

Site no : Audix ACI (3m Chamber) Data no. : 42
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : HORIZONTAL
Env. / Ins. : 20'C 60%RH / E7405A Engineer : Raven
EUT : Wireless Airplay Speaker
M/N : MA5000
S/N : DD1809M00033
Power Rating: 120V/60Hz
Test Mode : TX CH1 802.11g

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.000	29.19	36.09	6.89	62.68	62.67	74.00	11.33	Peak
2	2410.800	29.27	36.09	6.89	103.45	103.52	74.00	-29.52	Peak

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

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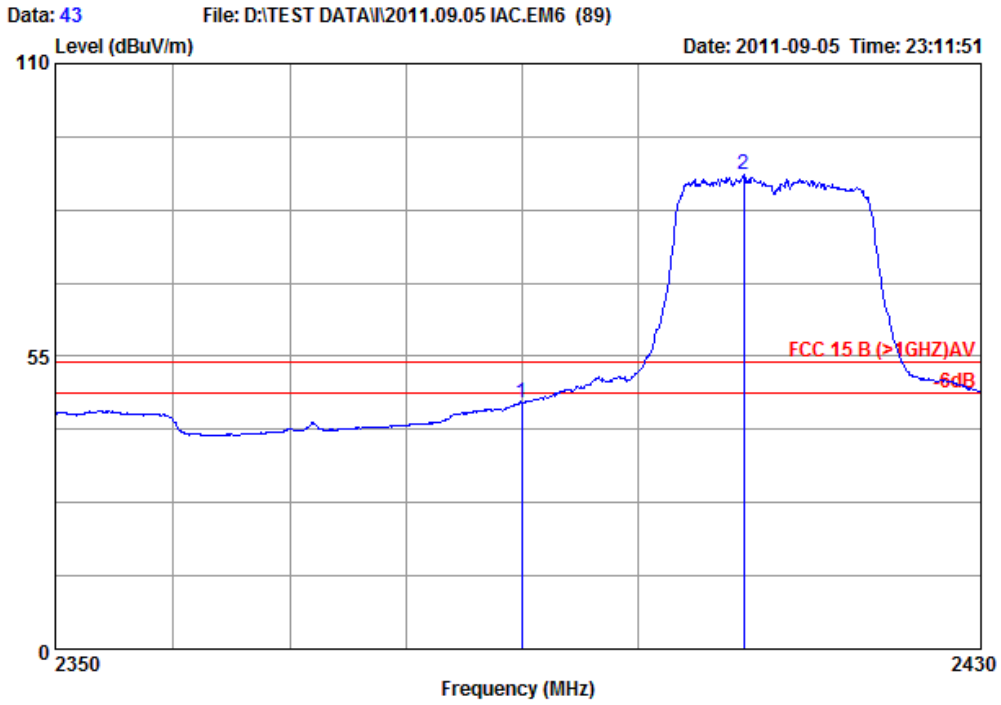

Site no : Audix ACI (3m Chamber) Data no. : 43
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ)AV Ant. pol. : HORIZONTAL
Env. / Ins. : 20'C 60%RH / E7405A Engineer : Raven
EUT : Wireless Airplay Speaker
M/N : MA5000
S/N : DD1809M00033
Power Rating: 120V/60Hz
Test Mode : TX CH1 802.11g

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.000	29.19	36.09	6.89	46.27	46.26	54.00	7.74	Average
2	2409.280	29.27	36.09	6.89	89.16	89.23	54.00	-35.23	Average

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

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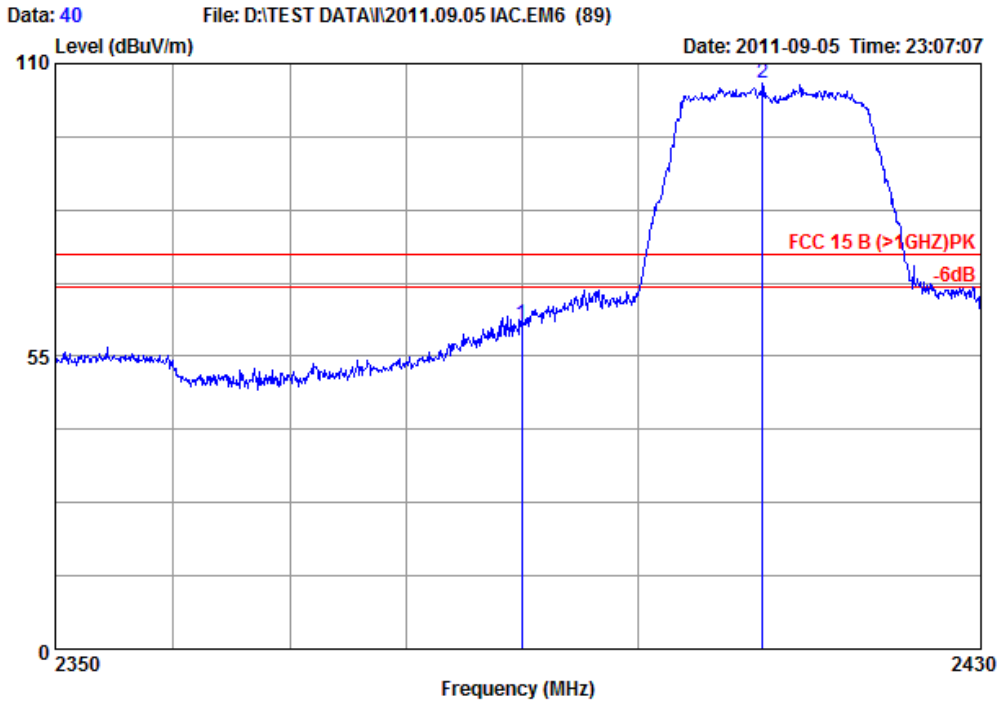
audixaci@audix.com



Site no : Audix ACI (3m Chamber) Data no. : 40
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : VERTICAL
Env. / Ins. : 20'C 60%RH / E7405A Engineer : Raven
EUT : Wireless Airplay Speaker
M/N : MA5000
S/N : DD1809M00033
Power Rating: 120V/60Hz
Test Mode : TX CH1 802.11g

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.000	29.19	36.09	6.89	61.11	61.10	74.00	12.90	Peak
2	2410.880	29.27	36.09	6.89	106.27	106.34	74.00	-32.34	Peak

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

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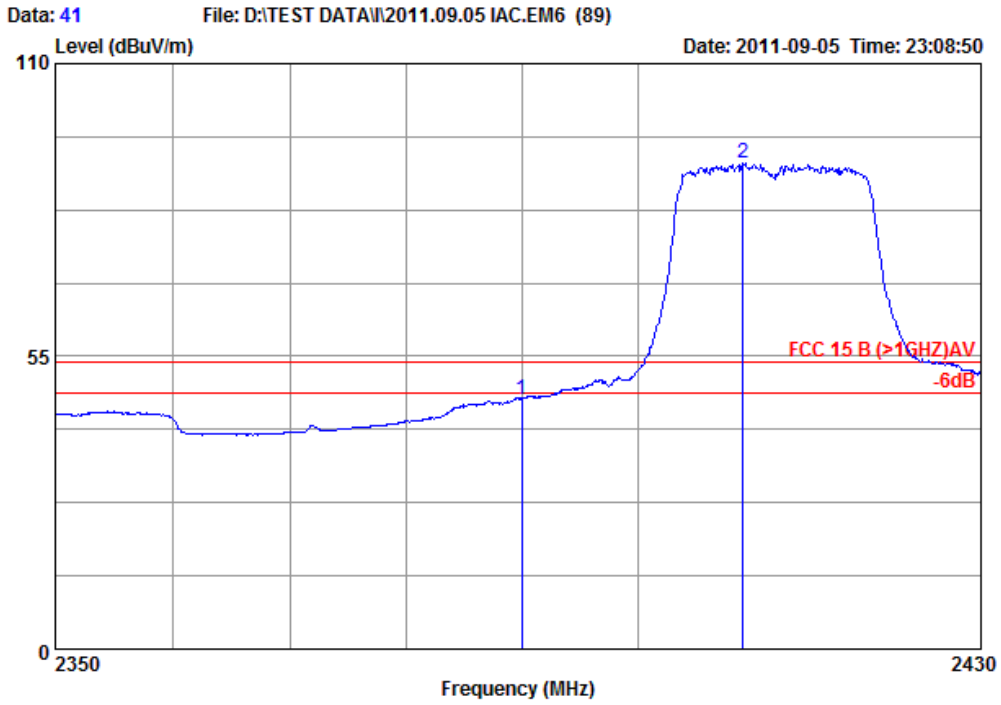

Site no : Audix ACI (3m Chamber) Data no. : 41
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ)AV Ant. pol. : VERTICAL
Env. / Ins. : 20'C 60%RH / E7405A Engineer : Raven
EUT : Wireless Airplay Speaker
M/N : MA5000
S/N : DD1809M00033
Power Rating: 120V/60Hz
Test Mode : TX CH1 802.11g

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.000	29.19	36.09	6.89	46.93	46.92	54.00	7.08	Average
2	2409.200	29.27	36.09	6.89	91.35	91.42	54.00	-37.42	Average

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

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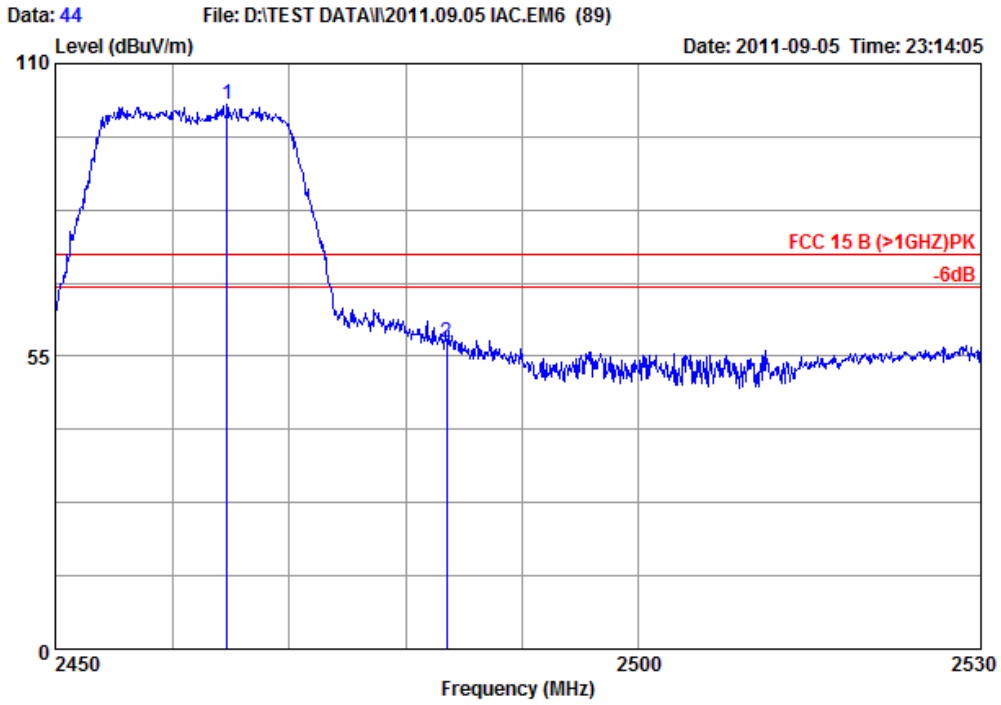

Site no : Audix ACI (3m Chamber) Data no. : 44
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : HORIZONTAL
Env. / Ins. : 20'C 60%RH / E7405A Engineer : Raven
EUT : Wireless Airplay Speaker
M/N : MA5000
S/N : DD1809M00033
Power Rating: 120V/60Hz
Test Mode : TX CH11 802.11g

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2464.640	29.48	36.07	6.96	101.94	102.31	74.00	-28.31	Peak
2	2483.500	29.55	36.07	6.96	57.30	57.74	74.00	16.26	Peak

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

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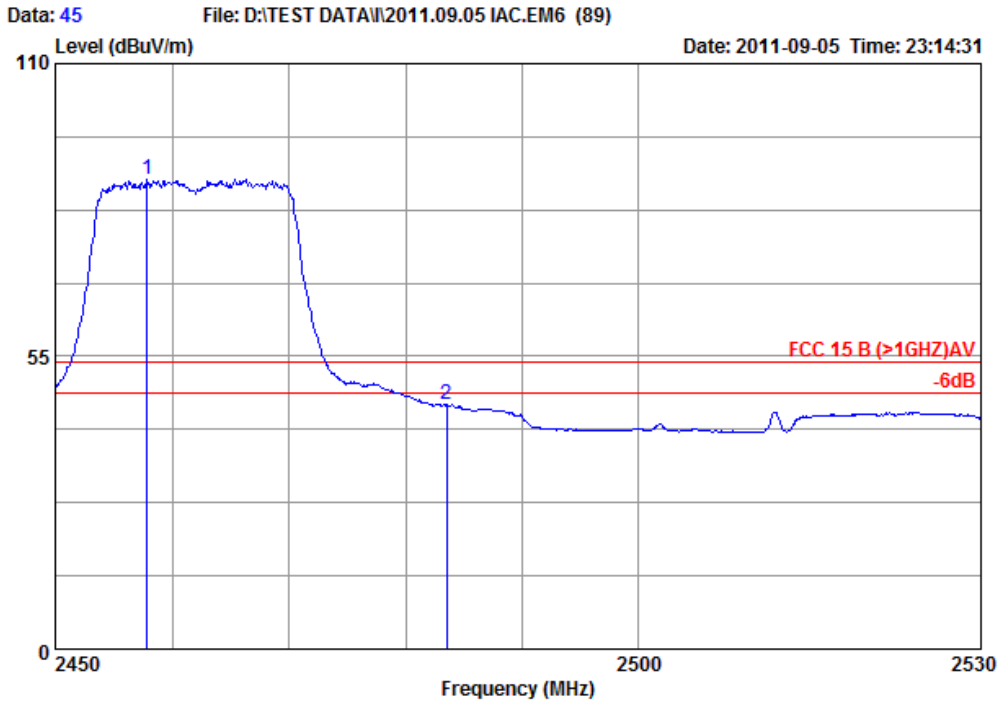
audixaci@audix.com



Site no : Audix ACI (3m Chamber) Data no. : 45
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ)AV Ant. pol. : HORIZONTAL
Env. / Ins. : 20'C 60%RH / E7405A Engineer : Raven
EUT : Wireless Airplay Speaker
M/N : MA5000
S/N : DD1809M00033
Power Rating: 120V/60Hz
Test Mode : TX CH11 802.11g

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2457.840	29.45	36.07	6.96	87.85	88.19	54.00	-34.19	Average
2	2483.500	29.55	36.07	6.96	45.41	45.85	54.00	8.15	Average

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

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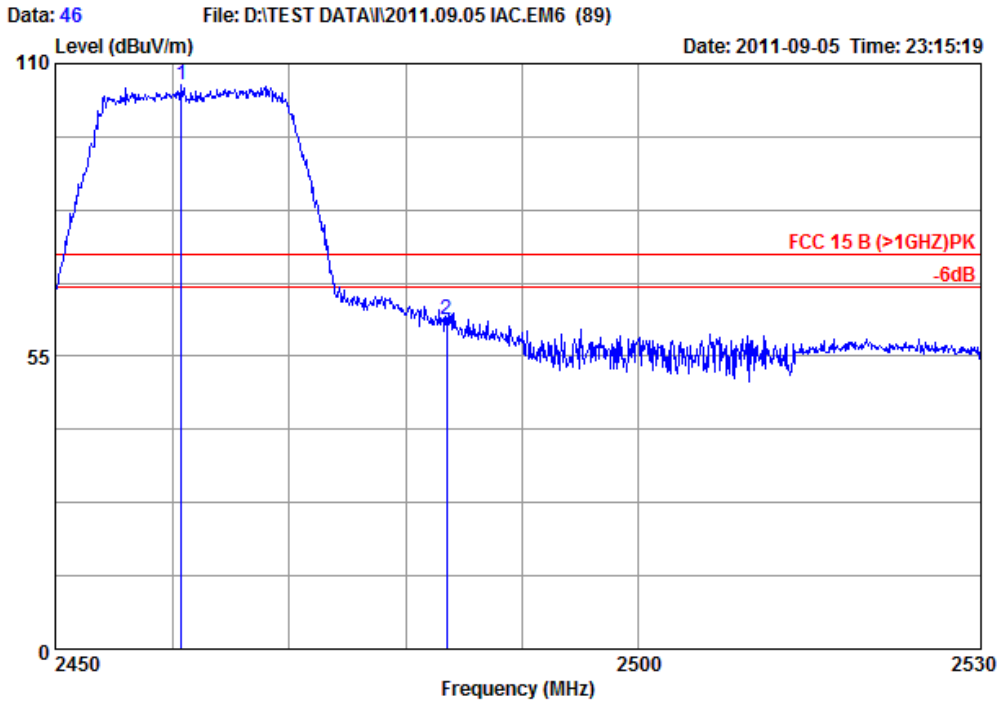
audixaci@audix.com



Site no : Audix ACI (3m Chamber) Data no. : 46
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : VERTICAL
Env. / Ins. : 20'C 60%RH / E7405A Engineer : Raven
EUT : Wireless Airplay Speaker
M/N : MA5000
S/N : DD1809M00033
Power Rating: 120V/60Hz
Test Mode : TX CH11 802.11g

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2460.720	29.48	36.07	6.96	105.80	106.17	74.00	-32.17	Peak
2	2483.500	29.55	36.07	6.96	61.57	62.01	74.00	11.99	Peak

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

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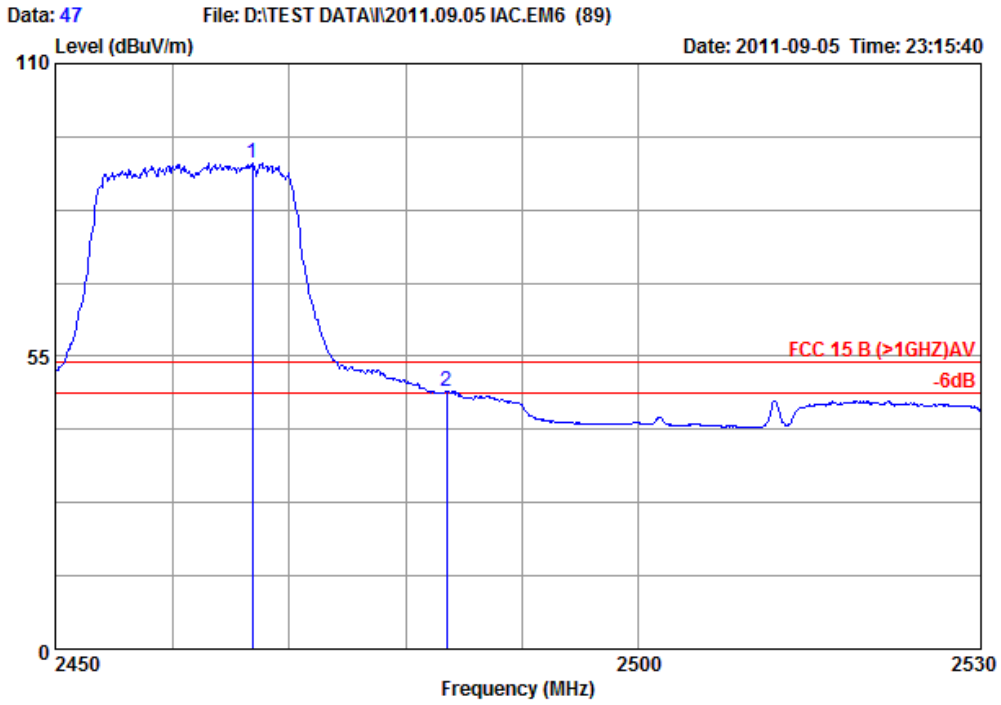
audixaci@audix.com



Site no : Audix ACI (3m Chamber) Data no. : 47
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ)AV Ant. pol. : VERTICAL
Env. / Ins. : 20'C 60%RH / E7405A Engineer : Raven
EUT : Wireless Airplay Speaker
M/N : MA5000
S/N : DD1809M00033
Power Rating: 120V/60Hz
Test Mode : TX CH11 802.11g

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2466.800	29.48	36.07	6.96	91.07	91.44	54.00	-37.44	Average
2	2483.500	29.55	36.07	6.96	48.01	48.45	54.00	5.55	Average

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

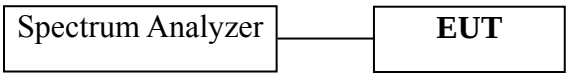
5 6 dB BANDWIDTH MEASUREMENT

5.1 Test Equipment

The following test equipment was used during the Emission Bandwidth measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E7405A	MY45106600	Mar 22, 2011	Mar 22, 2012

5.2 Block Diagram of Test Setup



5.3 Specification Limits (§15.247(a)(2))

The minimum 6 dB bandwidth shall be at least 500 kHz.

5.4 Operating Condition of EUT

The test program "Hyper-Terminal" was used to enable the EUT to transmit data at different channel frequency individually.

5.5 Test Procedure

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measure by spectrum analyzer with 100 kHz RBW / 100 kHz VBW.
The 6 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB. The test procedure is defined in KDB558074.

5.6 Test Results

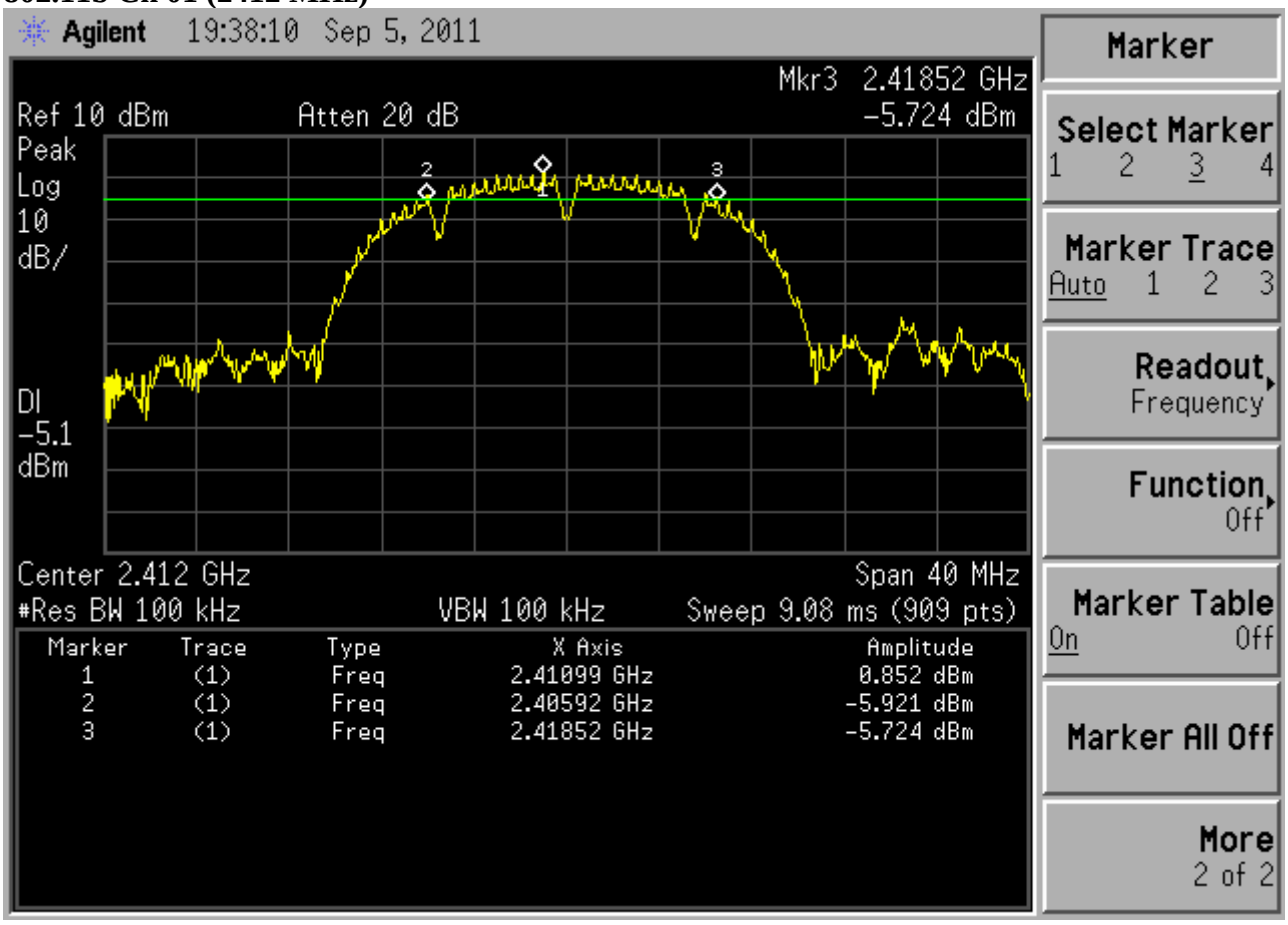
PASSED.

All the test results are attached in next pages.

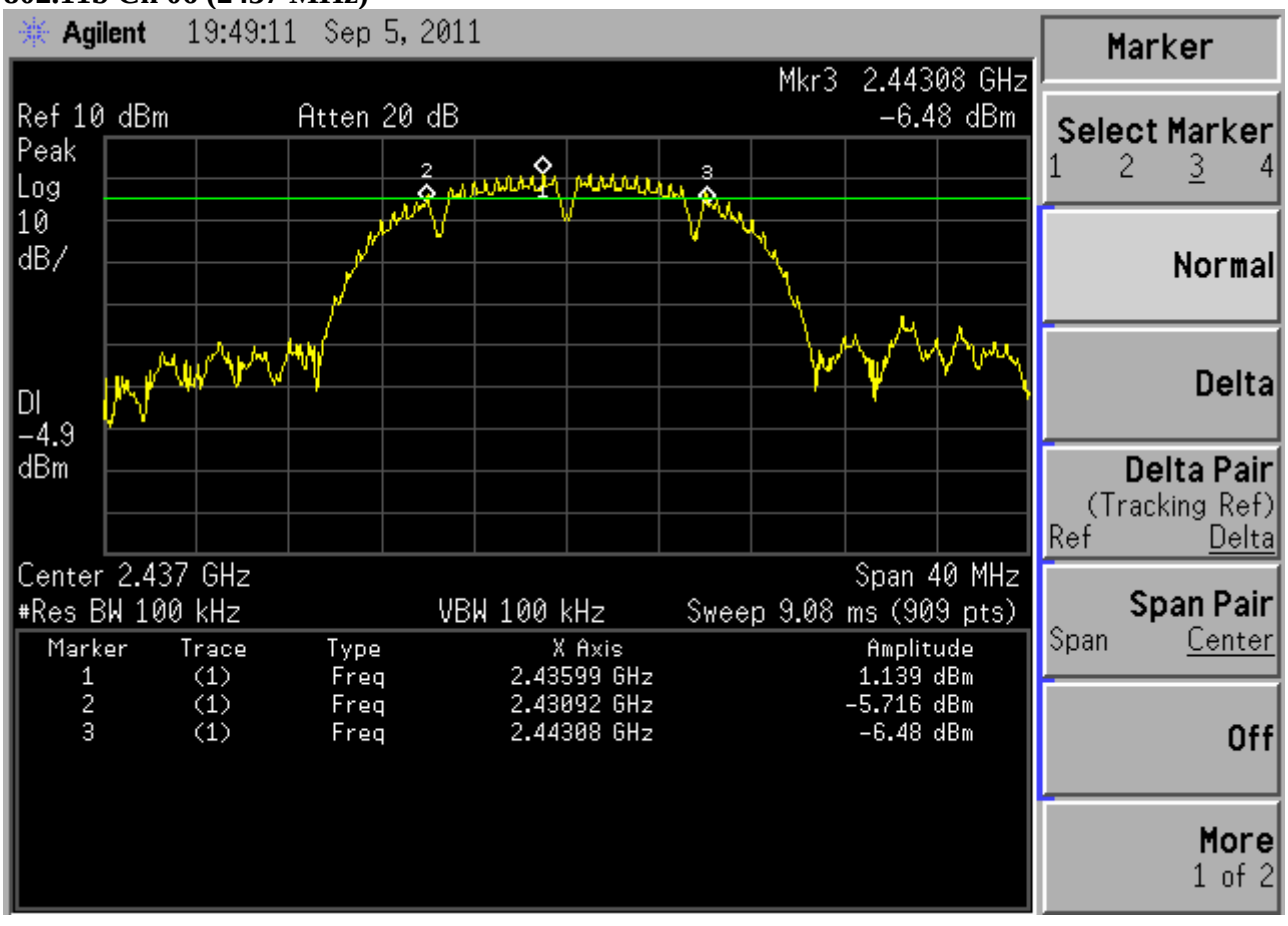
(Test Date: Sep. 05, 2011 Temperature: 24℃ Humidity: 45 %)

Modulation	Channel	Frequency	**6dB Bandwidth**
802.11b	01	2412 MHz	**12.60 MHz**
	06	2437 MHz	**12.16 MHz**
	11	2462 MHz	**12.16 MHz**
802.11g	01	2412 MHz	**16.48 MHz**
	06	2437 MHz	**16.52 MHz**
	11	2462 MHz	**16.48 MHz**

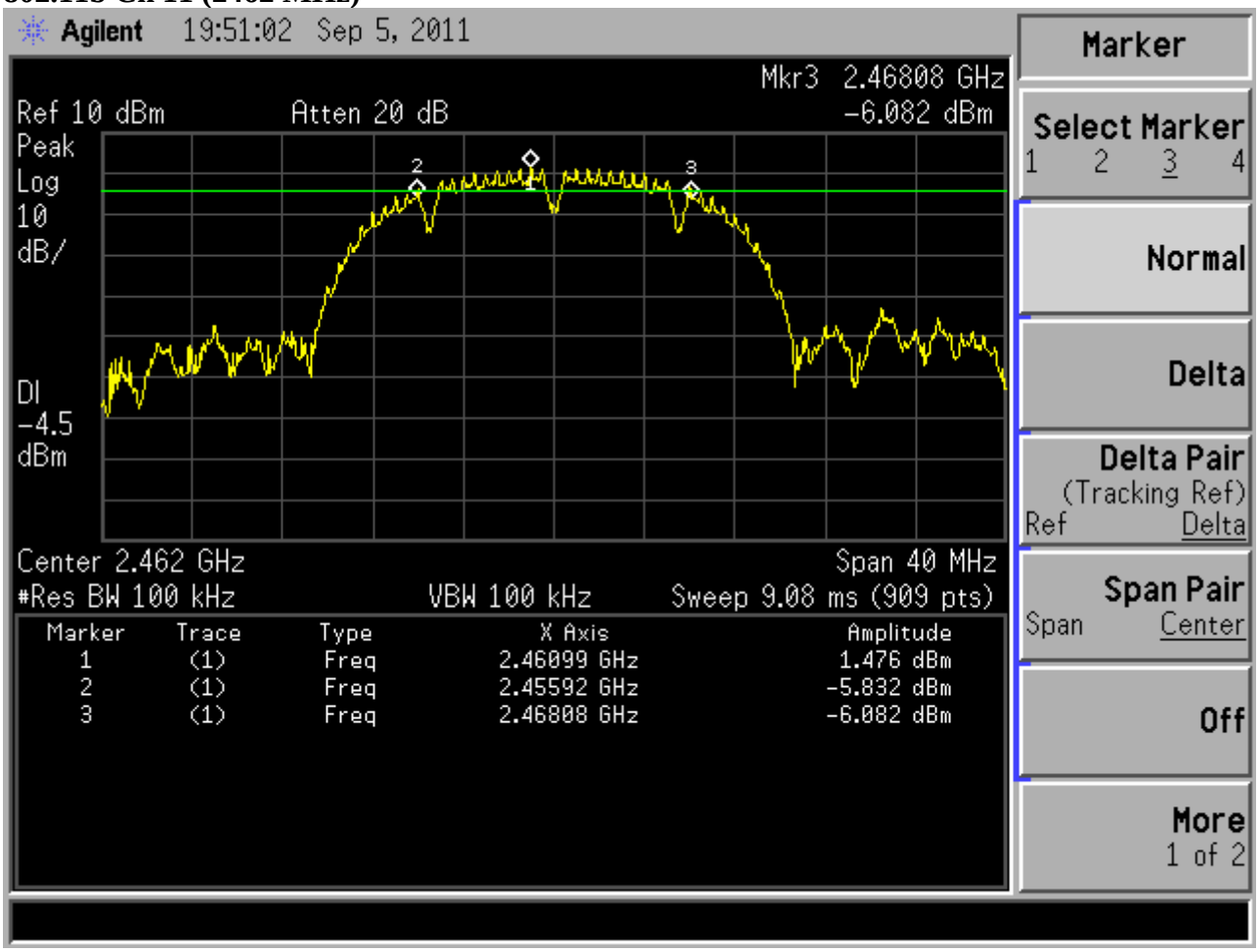
802.11b Ch 01 (2412 MHz)



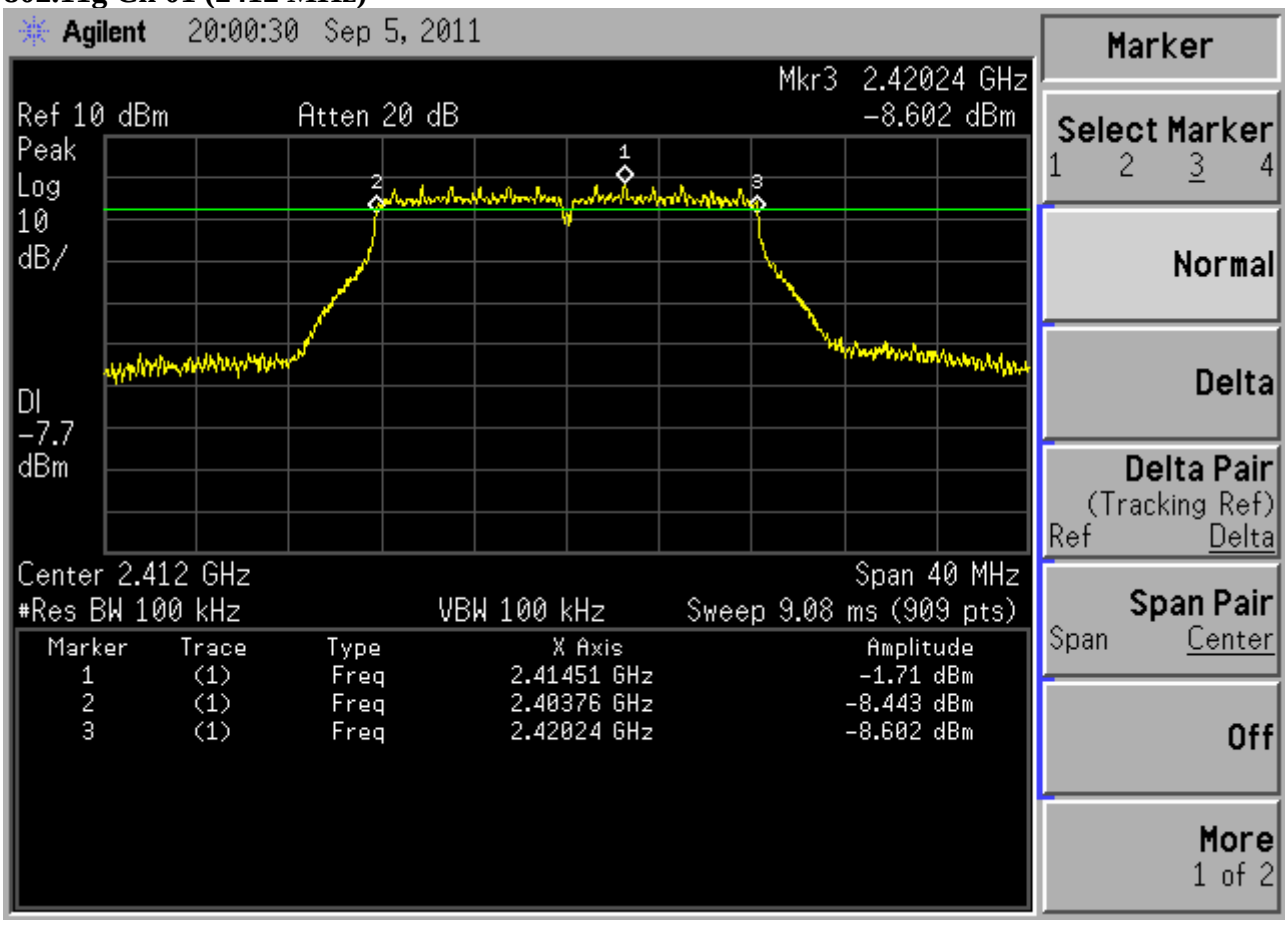
802.11b Ch 06 (2437 MHz)



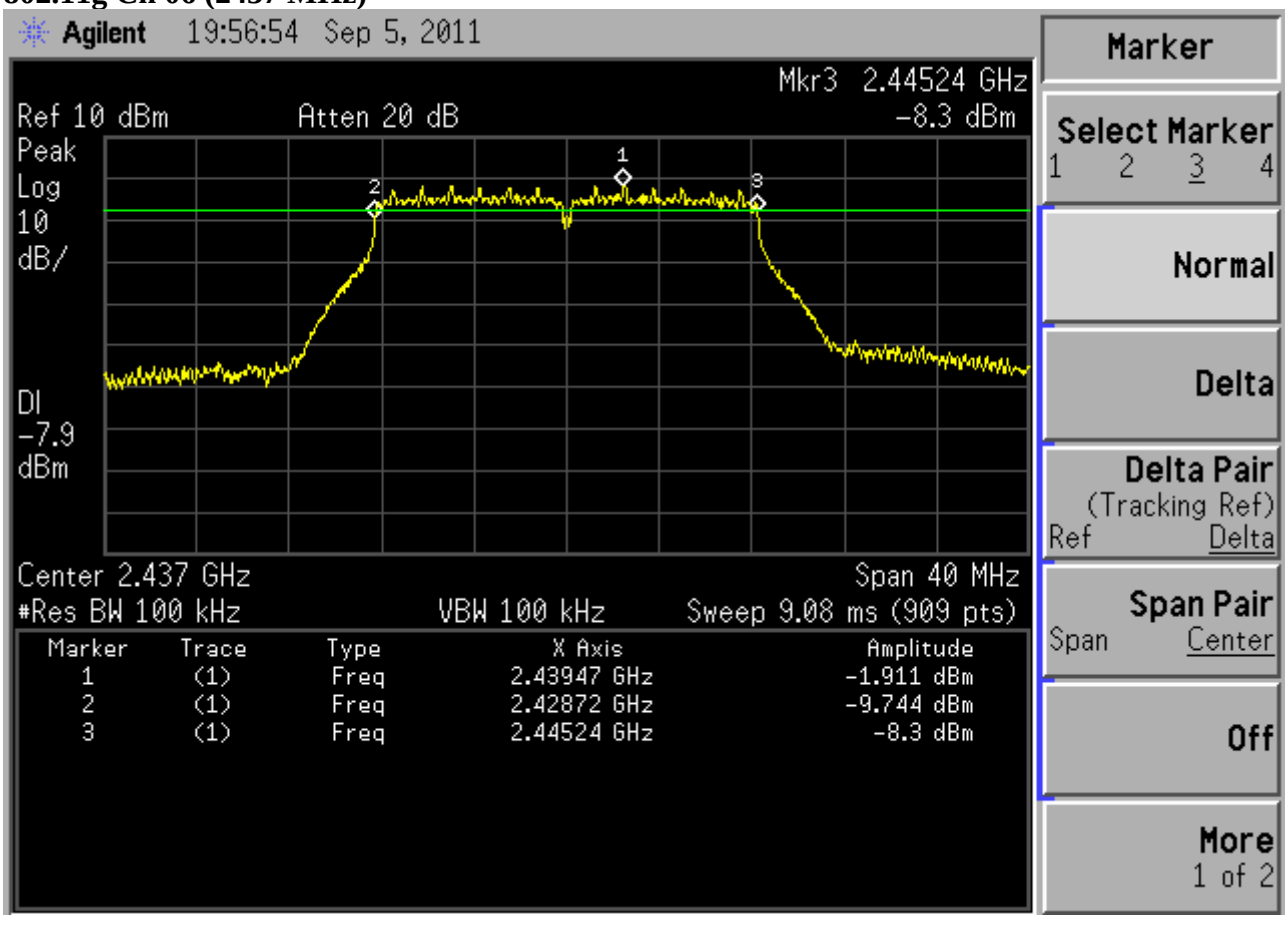
802.11b Ch 11 (2462 MHz)



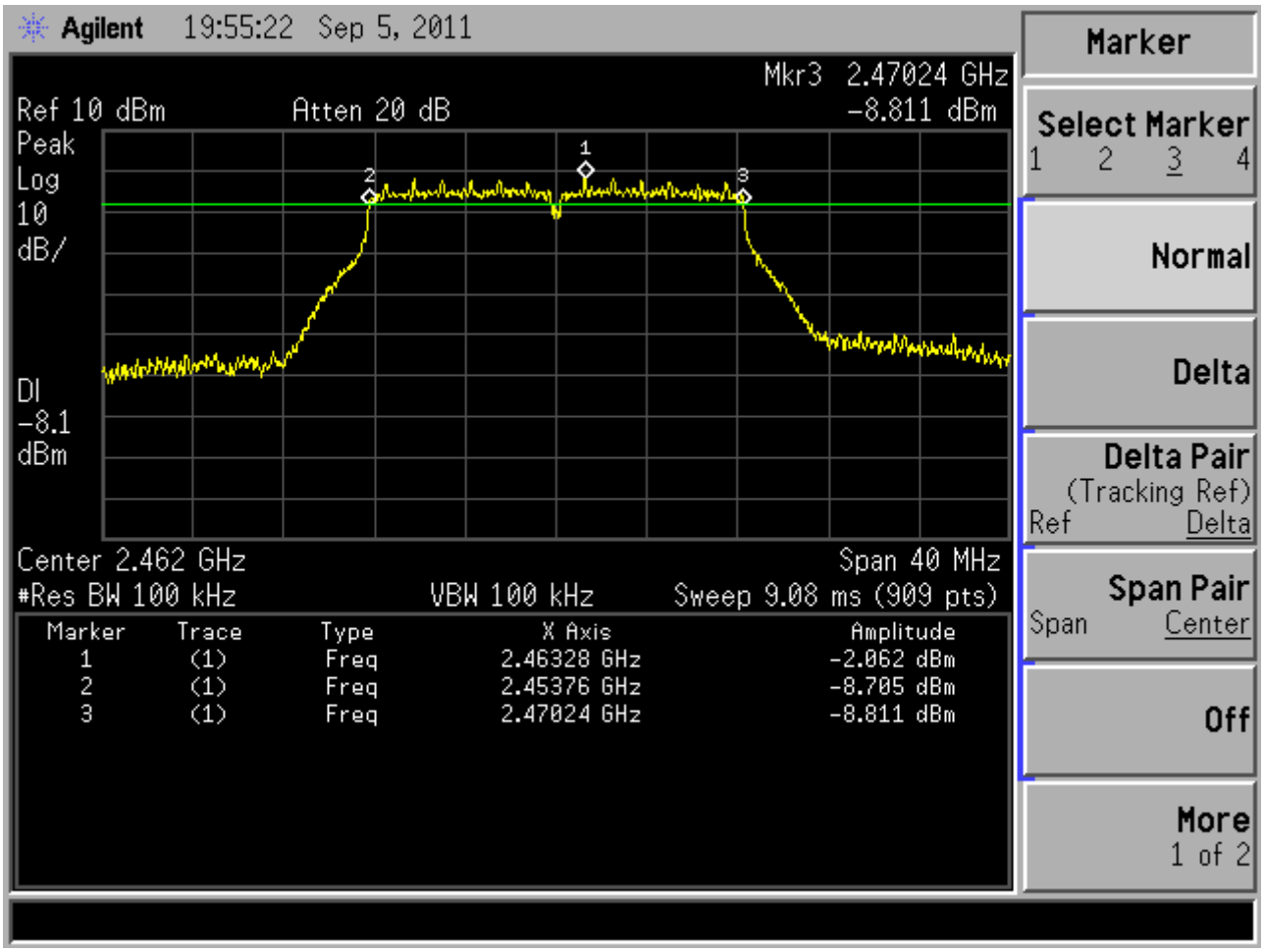
802.11g Ch 01 (2412 MHz)



802.11g Ch 06 (2437 MHz)



802.11g Ch 11 (2462 MHz)



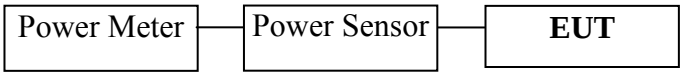
6 MAXIMUM PEAK OUTPUT POWER MEASUREMENT

6.1 Test Equipment

The following test equipment was used during the maximum peak output power measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Power Meter	Anritsu	ML2487A	6K00003245	Mar 22, 2011	Mar 22, 2012
2.	Power Sensor	Anritsu	MA2491A	32489	Mar 22, 2011	Mar 22, 2012

6.2 Block Diagram of Test Setup



6.3 Specification Limits ((§15.247(b)(3))

The Limits of maximum Peak Output Power for digital modulation in 2400-2483.5 MHz is: 1 Watt. (30 dBm)

6.4 Operating Condition of EUT

The test program "Hyper-Terminal" was used to enable the EUT to transmit data at different channel frequency individually.

6.5 Test Procedure

This is an RF conducted test. Use a direct connection between the antenna port of the transmitter and the power meter, through suitable attenuation. We use Power Output Option 1 (which defined in KDB558074) to measure the power output. Power Output Option 1 is a peak measurement. The transmitter output was connected to the power meter that was designed to detect peak value automatically.
Note: The bandwidth of the power meter is 20MHz.

6.6 Test Results

PASSED. All the test results are listed below.

(Test Date: Sep. 05, 2011 Temperature: 24℃ Humidity: 45 %)

Modulation	Channel	Frequency	**Peak Output Power**	Limit
802.11b	01	2412 MHz	**14.85 dBm**	30 dBm
	06	2437 MHz	**14.85 dBm**	30 dBm
	11	2462 MHz	**14.97 dBm**	30 dBm
802.11g	01	2412 MHz	**19.81 dBm**	30 dBm
	06	2437 MHz	**19.74 dBm**	30 dBm
	11	2462 MHz	**19.69 dBm**	30 dBm

7 EMISSION LIMITATIONS MEASUREMENT

7.1 Test Equipment

The following test equipment was used during the emission limitations test：

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E7405A	MY45106600	Mar 22, 2011	Mar 22, 2012

7.2 Block Diagram of Test Setup

The same as Section. 5.2.

7.3 Specification Limits (§15.247(d))

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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 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)).(※This test result attaching to Section. 4.7)

7.4 Operating Condition of EUT

The test program “Hyper-Terminal” was used to enable the EUT to transmit data at different channel frequency individually.

7.5 Test Procedure

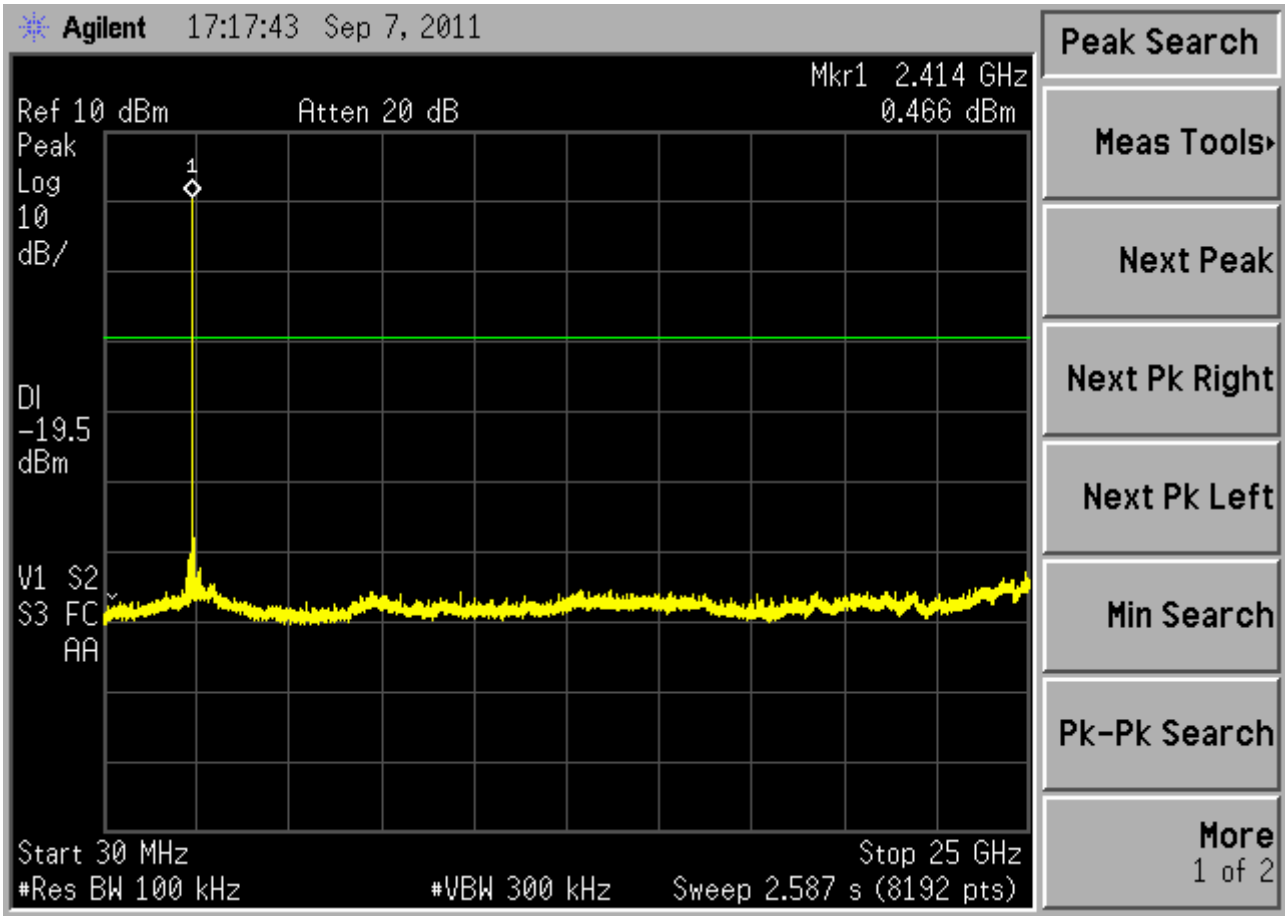
The transmitter output was connected to the spectrum analyzer. Set RBW = 100 kHz, VBW = 300 kHz, scan up through 10^{th} harmonic. All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.

7.6 Test Results

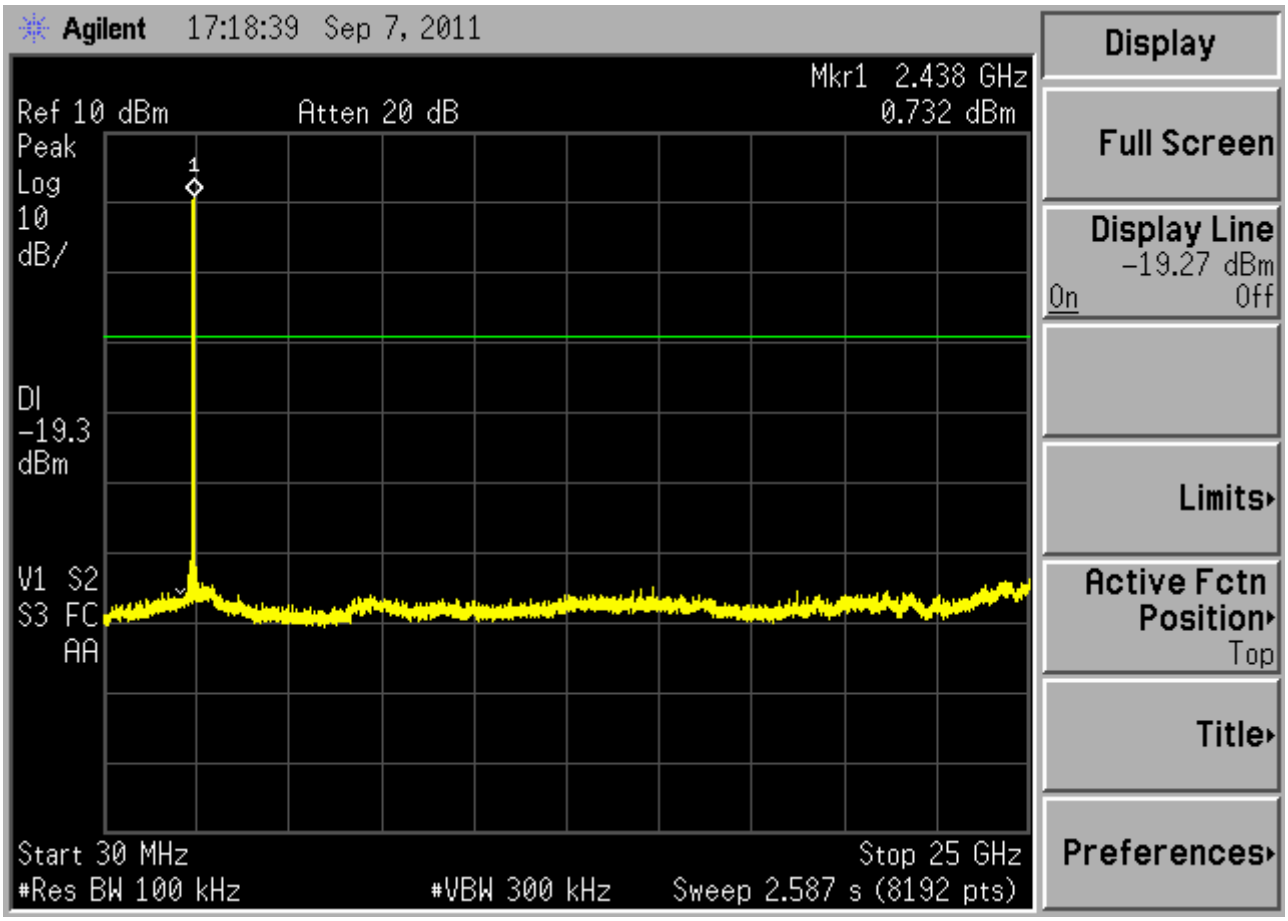
PASSED.
The test data was attached in the next pages.

(Test Date: Sep. 07, 2011 Temperature: 24℃ Humidity: 46 %)

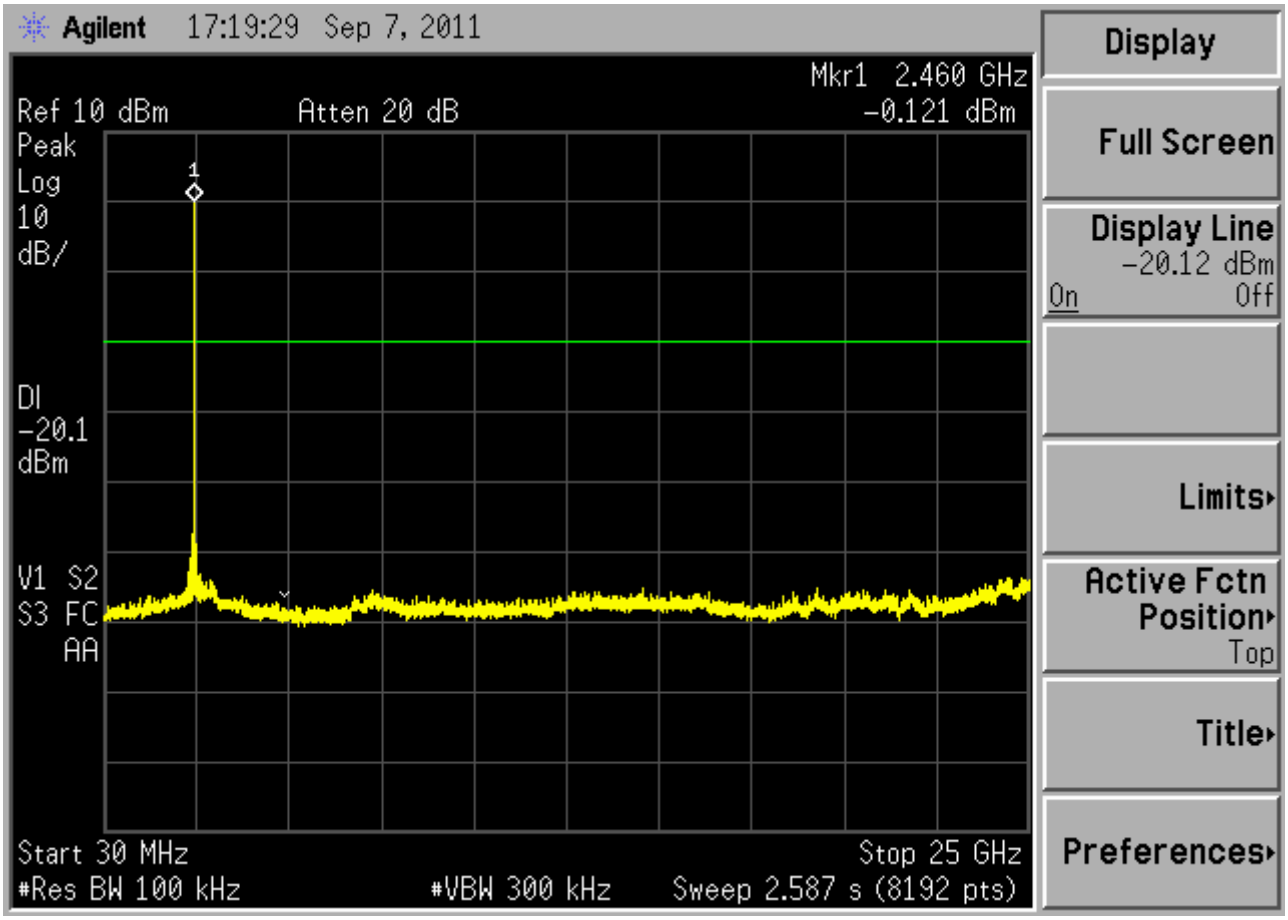
802.11b Ch01 2412 MHz



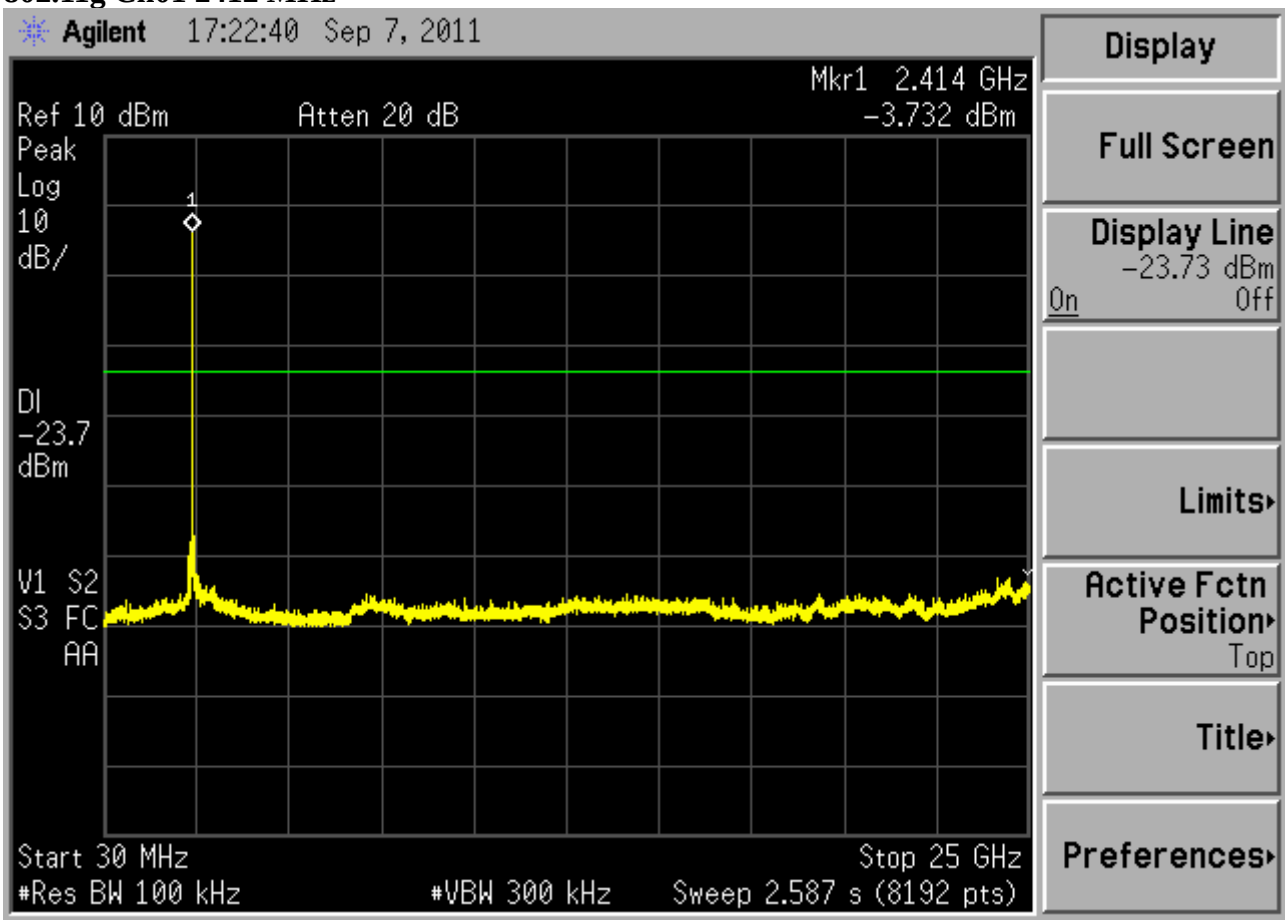
802.11b Ch06 2437 MHz



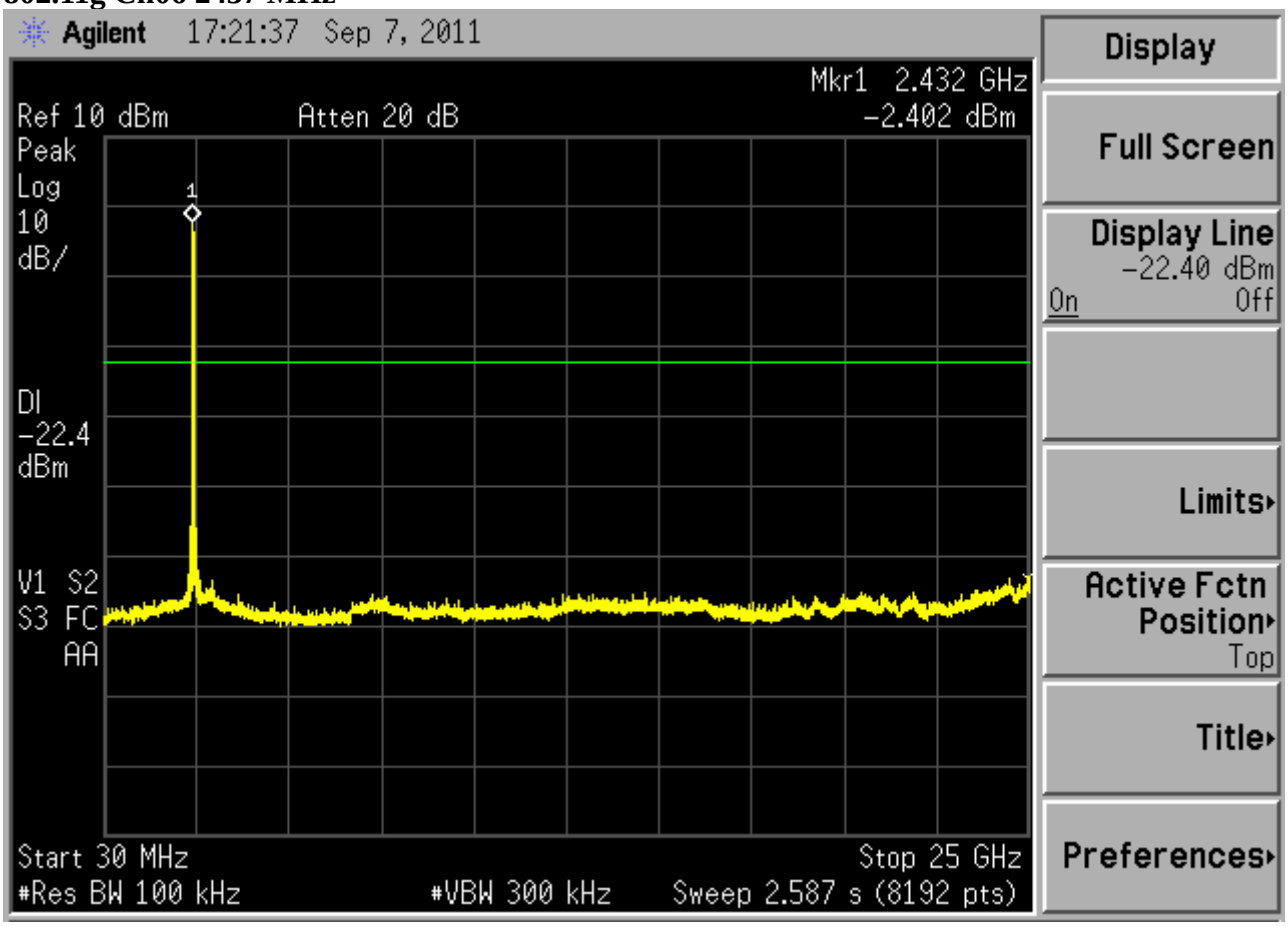
802.11b Ch11 2462 MHz



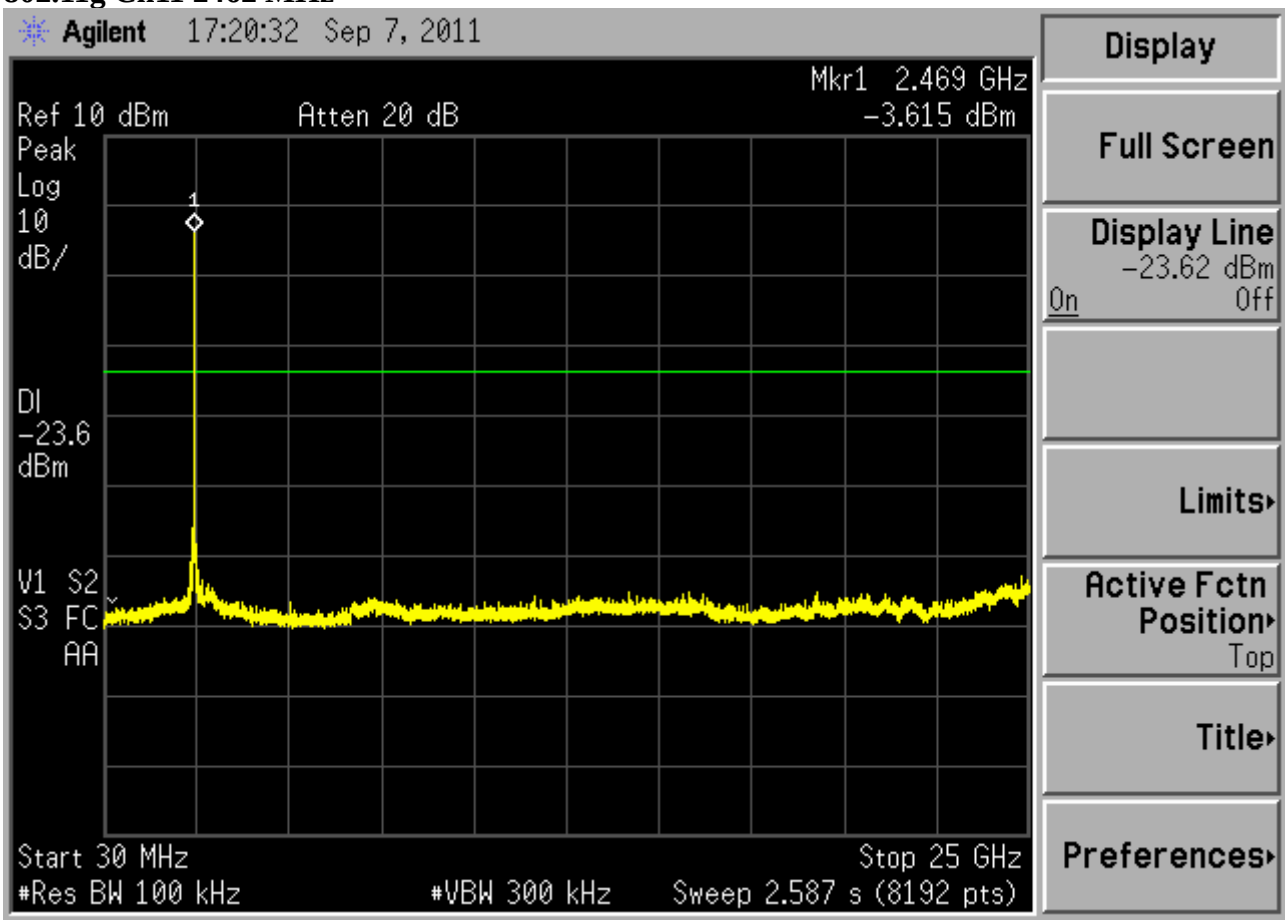
802.11g Ch01 2412 MHz



802.11g Ch06 2437 MHz



802.11g Ch11 2462 MHz



8 BAND EDGES MEASUREMENT

8.1 Test Equipment

The following test equipment was used during the band edges measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E7405A	MY45106600	Mar 22, 2011	Mar 22, 2012

8.2 Block Diagram of Test Setup

The same as section.5.2.

8.3 Specification Limits (§15.247(d))

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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, provided the transmitter demonstrates compliance with the peak conducted power limits.

8.4 Operating Condition of EUT

The test program "Hyper-Terminal" was used to enable the EUT to transmit and receive data at different channel frequency individually.

8.5 Test Procedure

The transmitter output was connected to the spectrum analyzer. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 100kHz bandwidth from band edge.

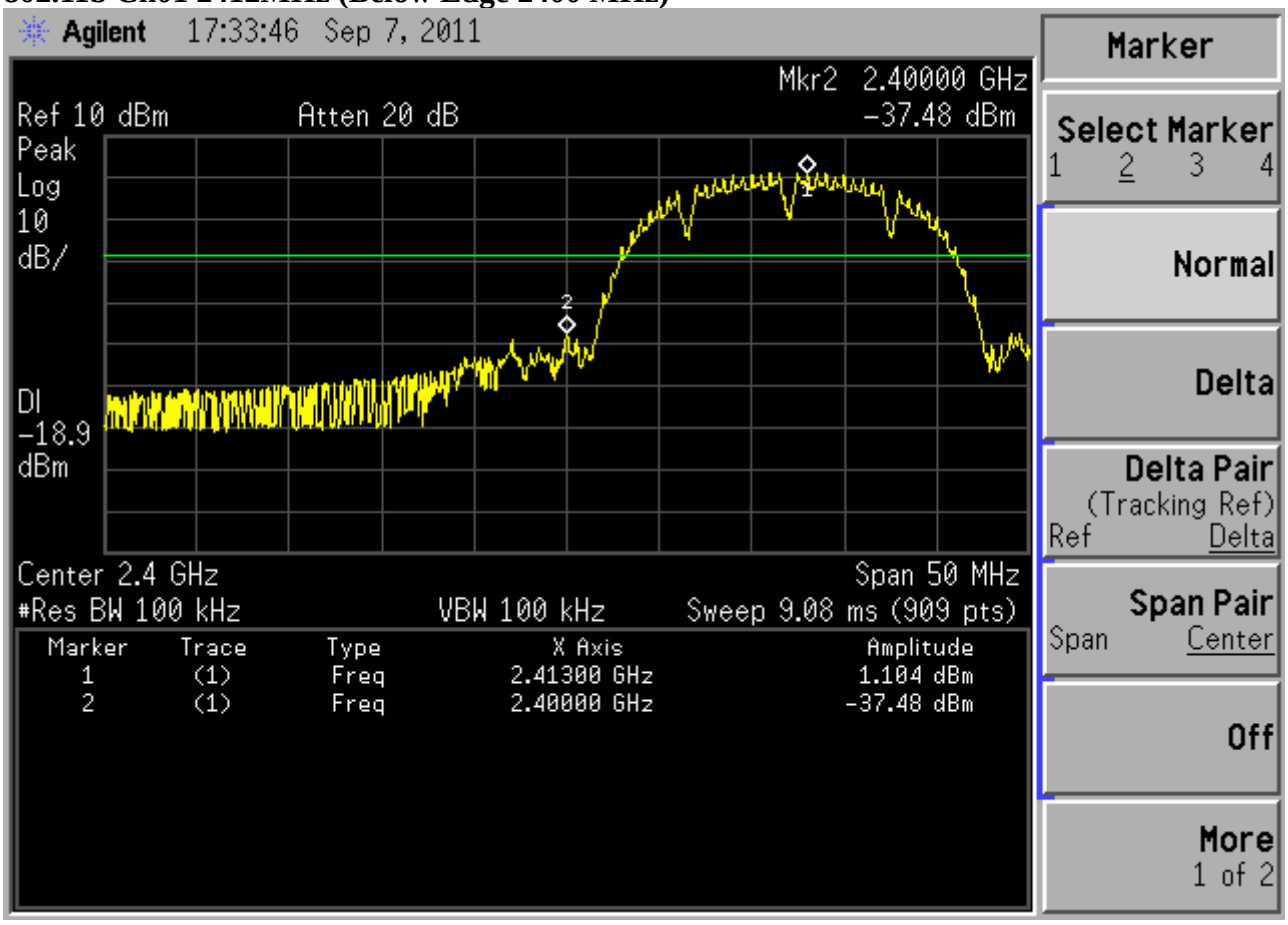
8.6 Test Results

PASSED. All the test results are attached in next pages.

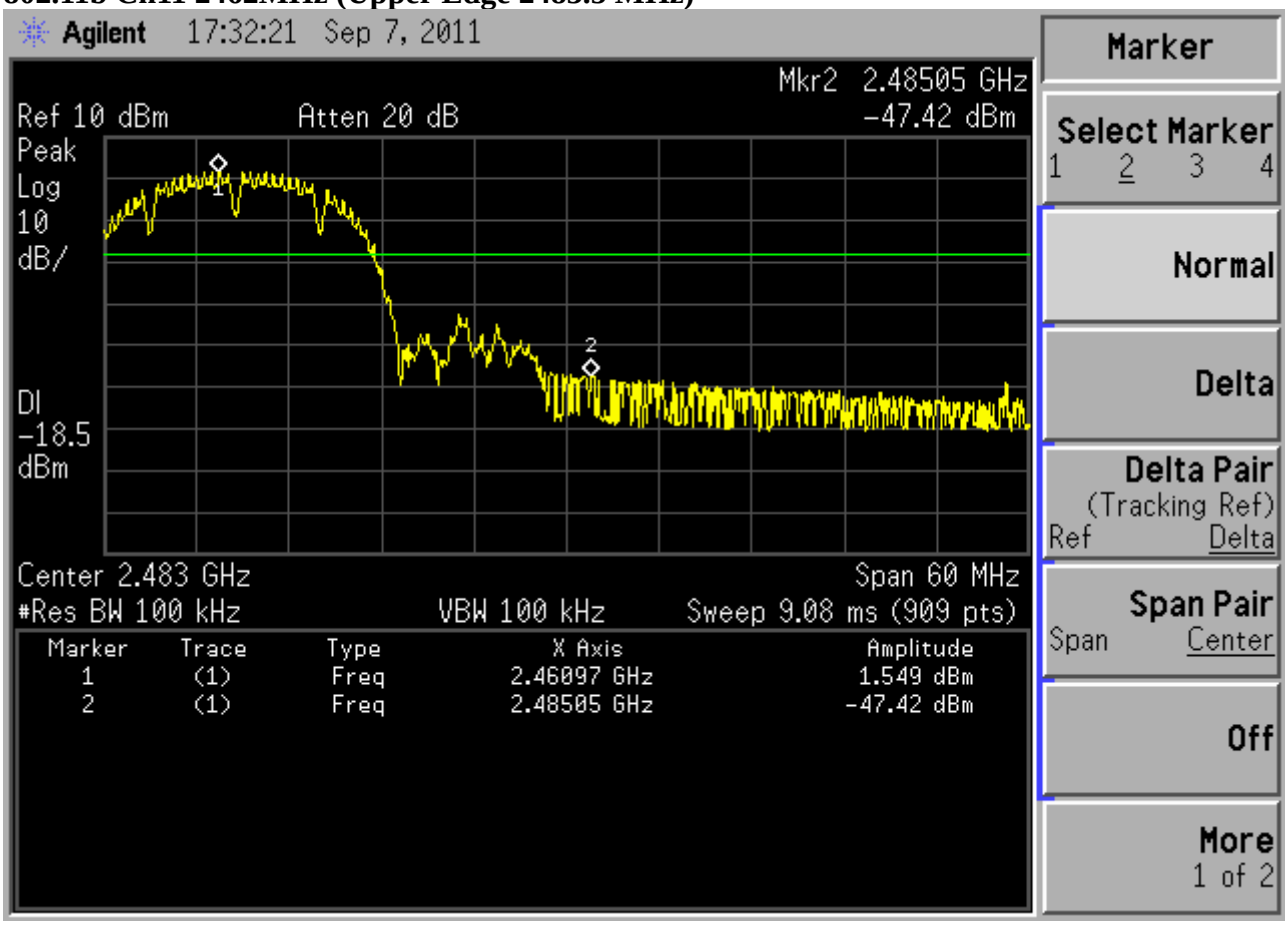
(Test Date: Sep. 07, 2011 Temperature: 24℃ Humidity: 46 %)

Modulation	Location	Channel	Frequency	**Delta Marker**	Result
802.11b	Below Band Edge	01	2412 MHz	**38.584 dB**	More than **20 dB** below the highest level of the desired power
	Upper Band Edge	11	2462 MHz	**48.969 dB**	
802.11g	Below Band Edge	01	2412 MHz	**38.387 dB**	
	Upper Band Edge	11	2462 MHz	**41.744 dB**	

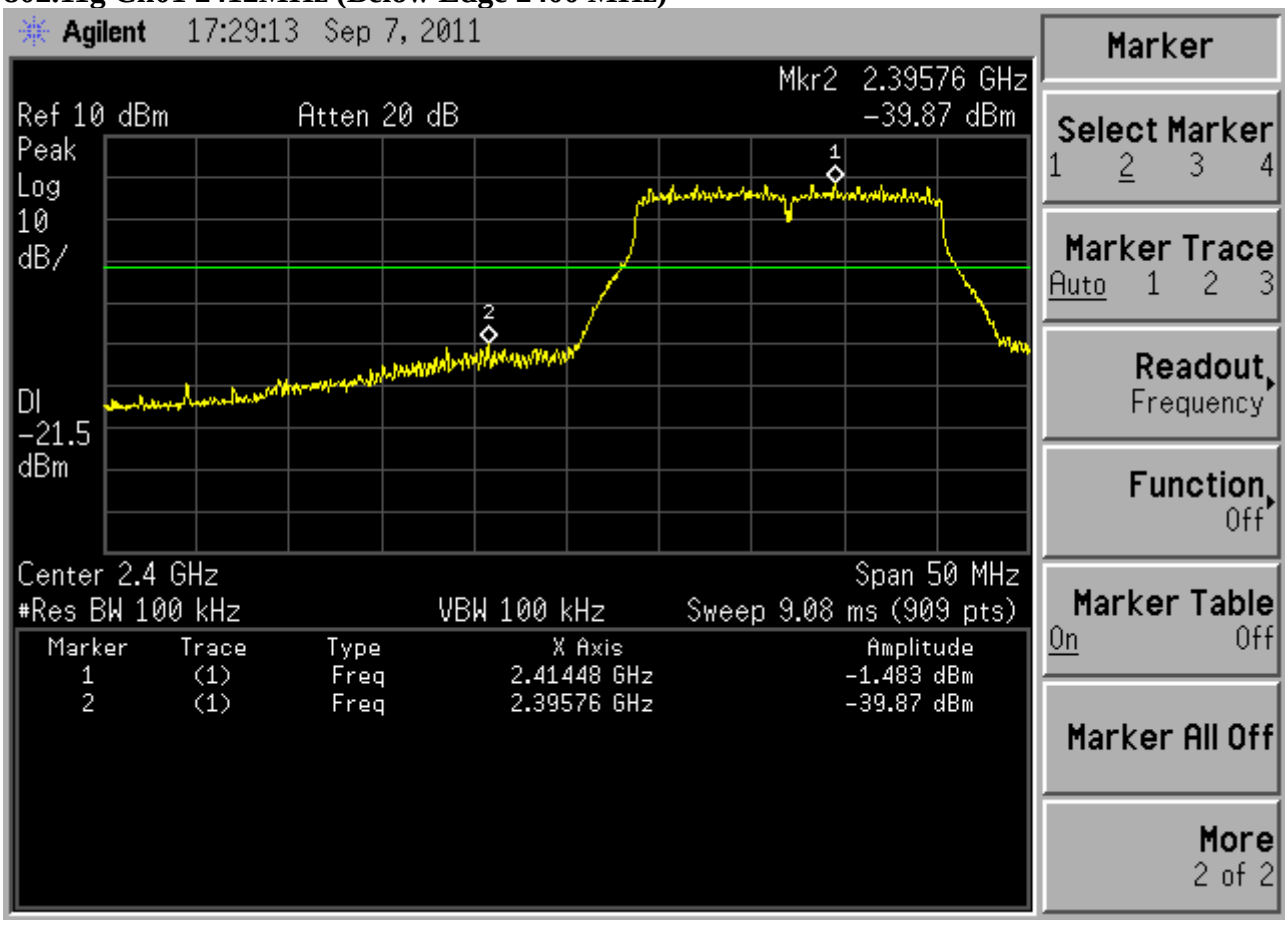
802.11b Ch01 2412MHz (Below Edge 2400 MHz)



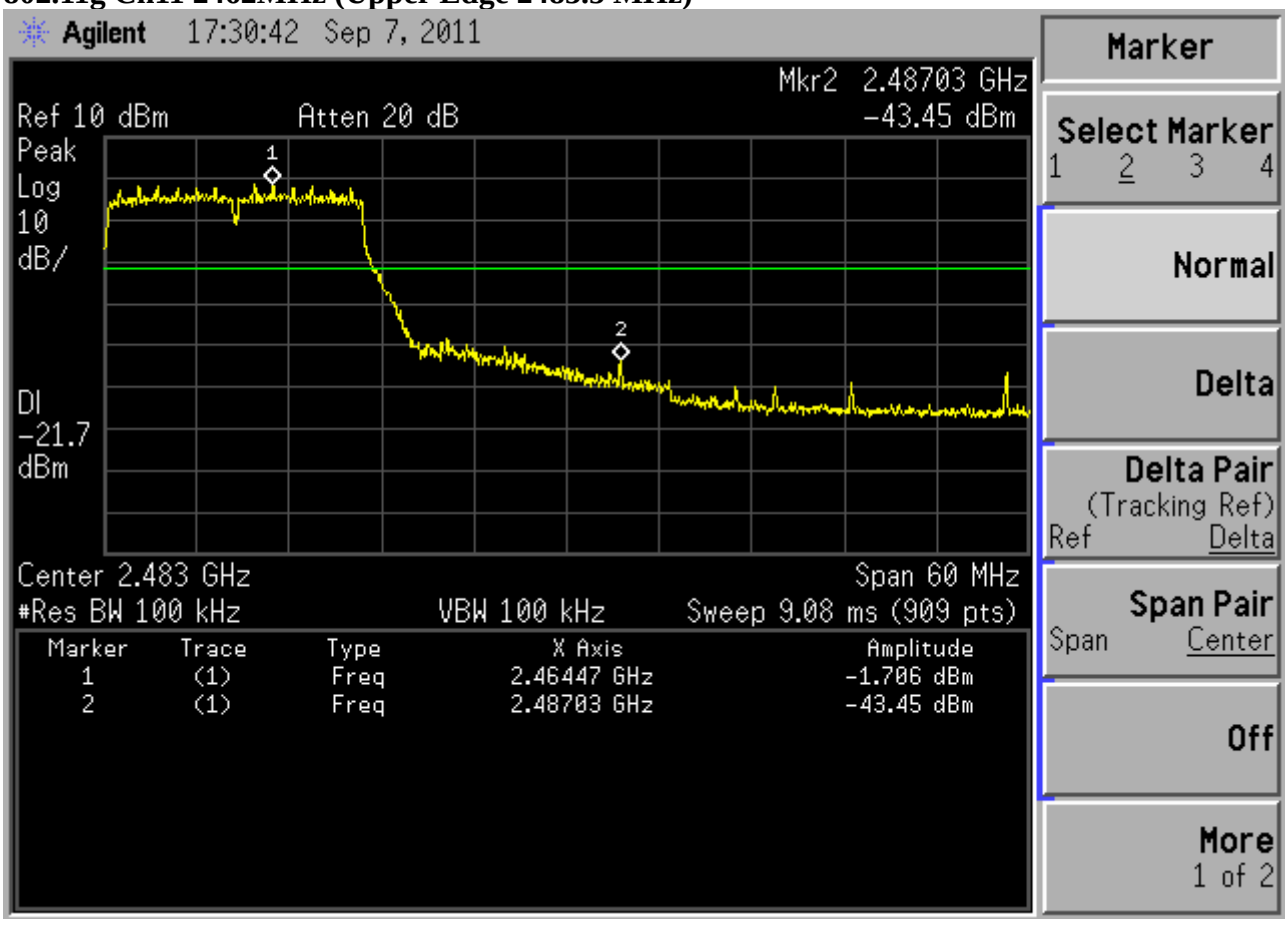
802.11b Ch11 2462MHz (Upper Edge 2483.5 MHz)



802.11g Ch01 2412MHz (Below Edge 2400 MHz)



802.11g Ch11 2462MHz (Upper Edge 2483.5 MHz)



9 POWER SPECTRAL DENSITY MEASUREMENT

9.1 Test Equipment

The following test equipment was used during the power spectral density measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E7405A	MY45106600	Mar 22, 2011	Mar 22, 2012

9.2 Block Diagram of Test Setup

The same as section.5.2.

9.3 Specification Limits (§15.247(e))

The peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band.

9.4 Operating Condition of EUT

The test program "Hyper-Terminal" was used to enable the EUT to transmit data at different channel frequency individually.

9.5 Test Procedure

The same method of determining the conducted output power shall be used to determine the power spectral density. If a peak output is measured, then a peak power spectral density measurement is required. Use PSD Option 1 (which defined in KDB558074) if Power output Option 1 was used.
PSD Option 1:
Locate and zoom in on emission peak(s) within the passband. Set RBW = 3kHz, VBW > RBW, sweep = (SPAN/3kHz). The peak level measured must be no greater than +8 dBm.
The transmitter output was connected to the spectrum analyzer. The fundamental frequency was measured with the spectrum analyzer using 3 kHz RBW and 30 kHz VBW, set sweep time = span/3 kHz.

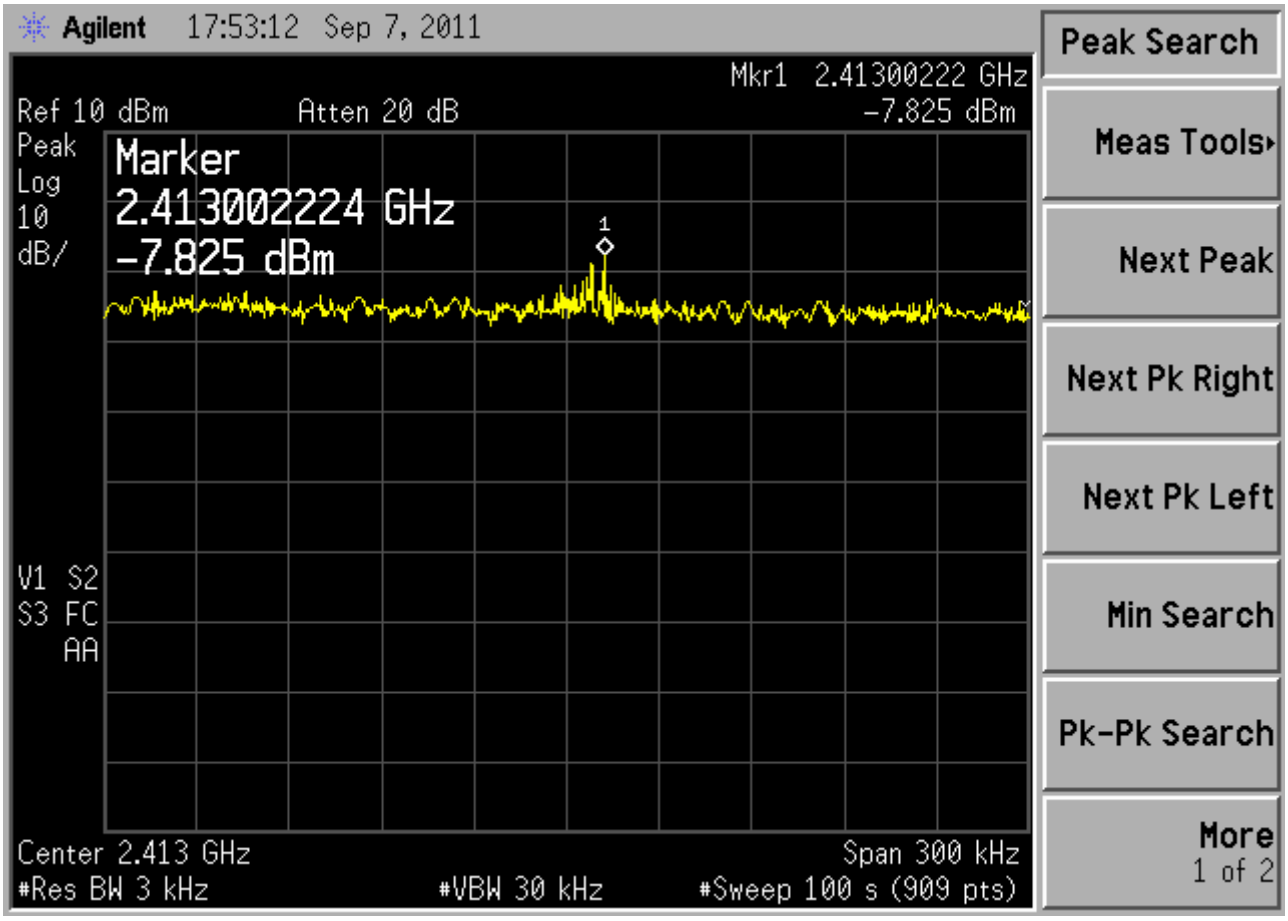
9.6 Test Results

PASSED. All the test results are attached in next pages.

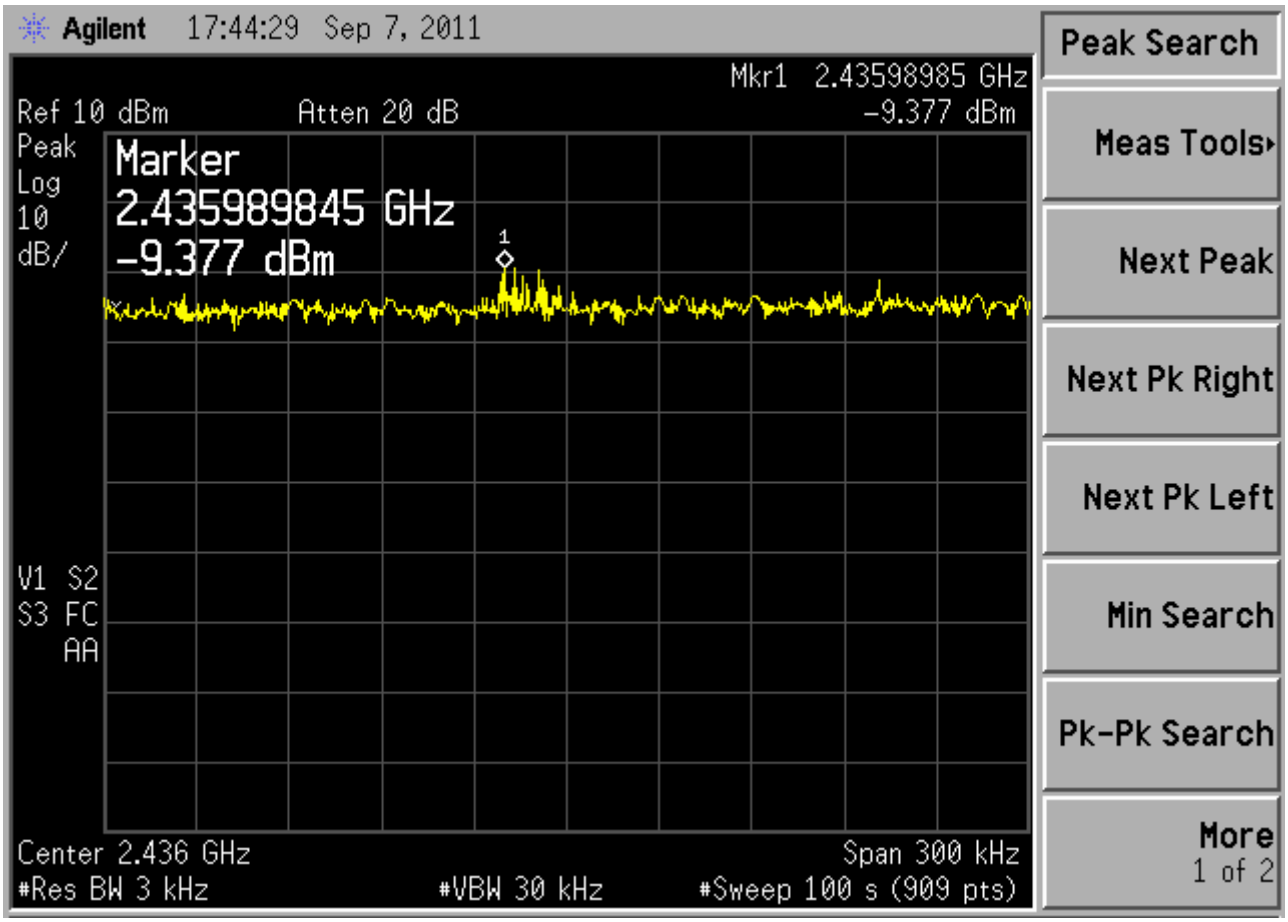
(Test Date: Sep. 07, 2011 Temperature: 24℃ Humidity: 46 %)

Modulation	Channel	Frequency	Power Spectral Density	Limit
802.11b	01	2412 MHz	-7.825 dBm	8dBm
	06	2437MHz	-9.377 dBm	8dBm
	11	2462MHz	-10.72 dBm	8dBm
802.11g	01	2412 MHz	-14.94 dBm	8dBm
	06	2437MHz	-14.64 dBm	8dBm
	11	2462MHz	-15.39 dBm	8dBm

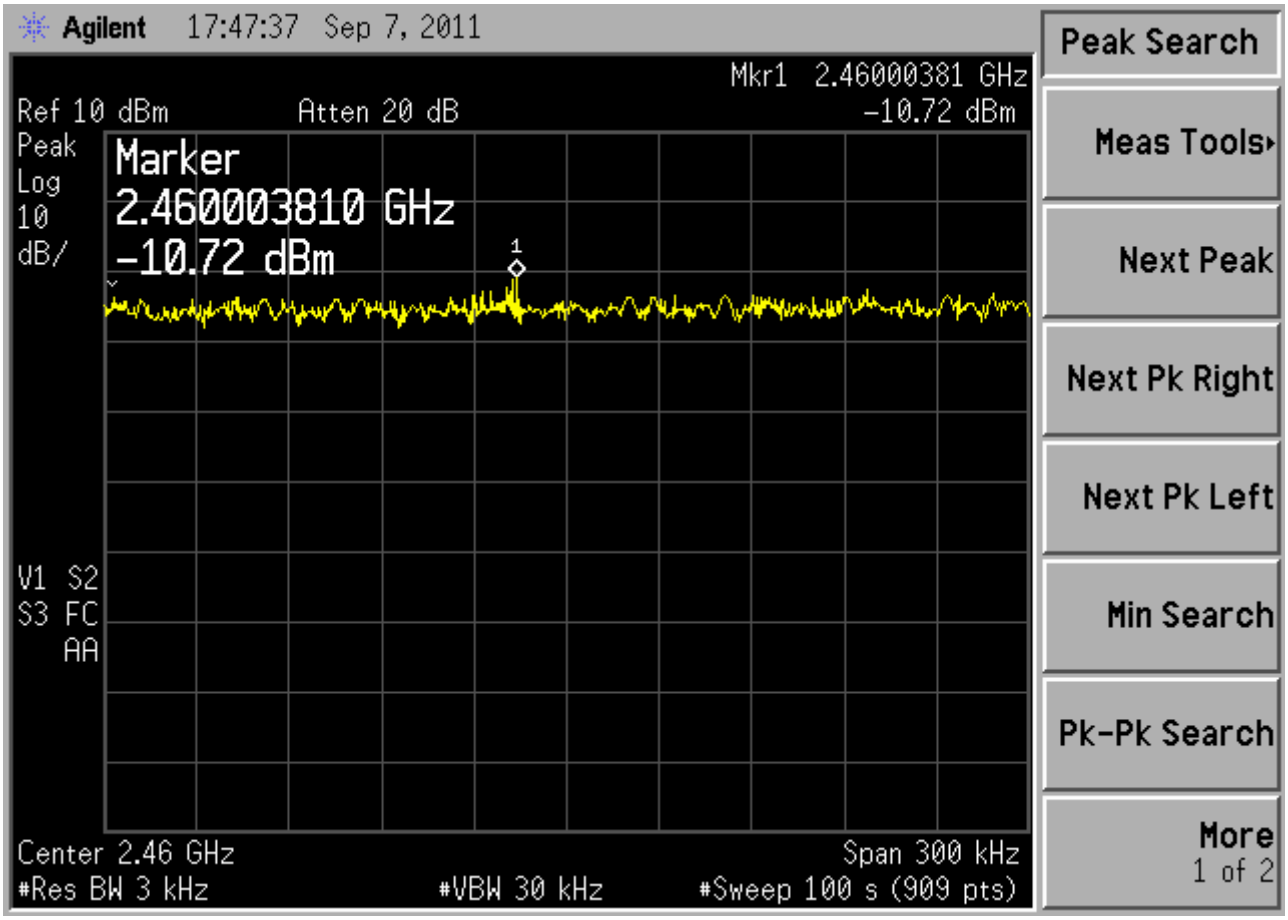
802.11b Ch01 2412 MHz



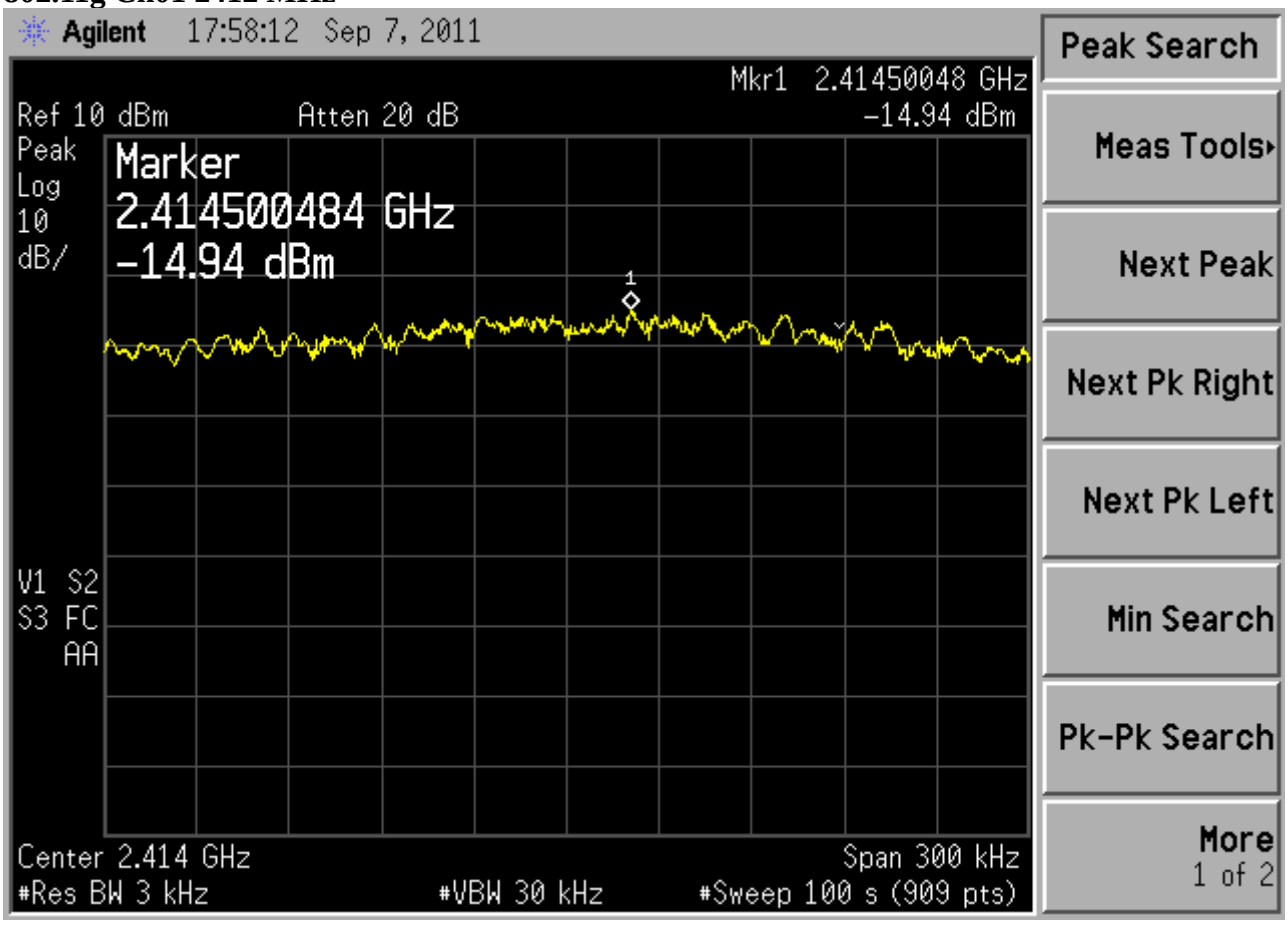
802.11b Ch06 2437 MHz



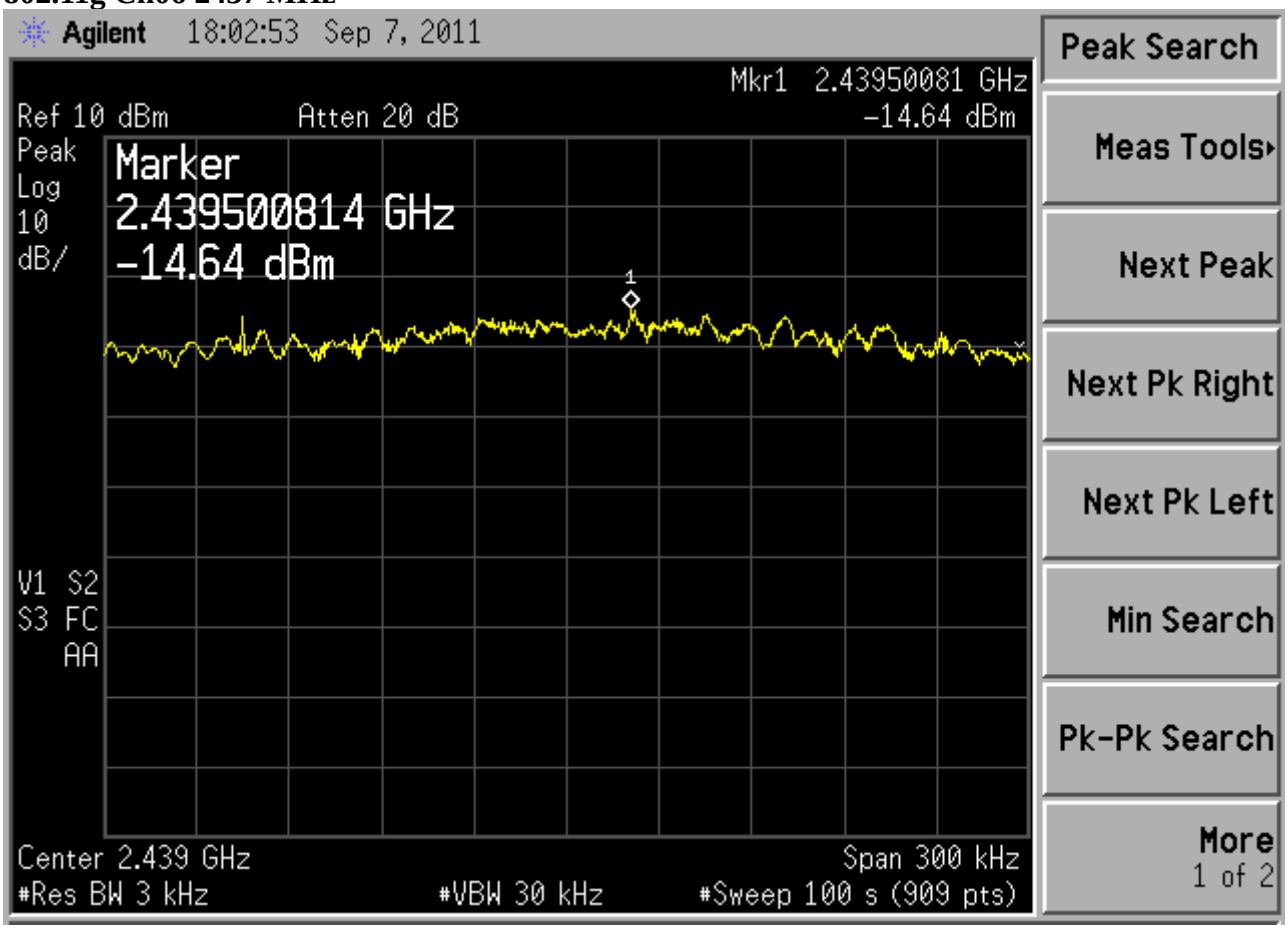
802.11b Ch11 2462 MHz



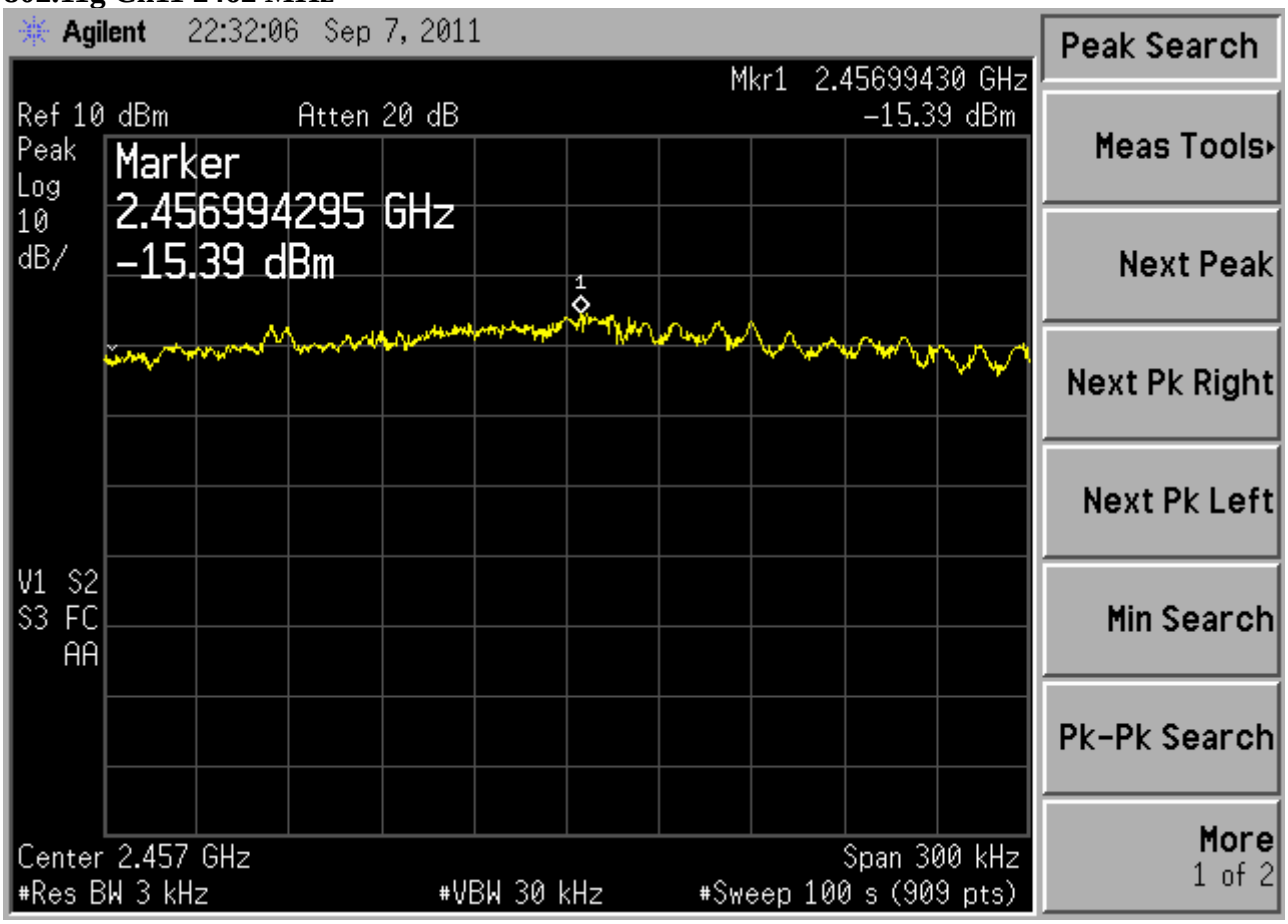
802.11g Ch01 2412 MHz



802.11g Ch06 2437 MHz



802.11g Ch11 2462 MHz



10 DEVIATION TO TEST SPECIFICATIONS

None.