Application for FCC Certification
On behalf of

Sonos, Inc.

Product Name: Woodstock Sonos Controller

Model No.: CR200

Serial No.: E2009032503

FCC ID: SBVCR003

Prepared For : Sonos, Inc.
223 E. De La Guerra, Santa Barbara, CA 93101 USA

Prepared By :Audix Technology (Shanghai) Co., Ltd.
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Report No. : ACI-F09032
Date of Test : Mar 25 -Jun 19, 2009
Date of Report : Jun 19, 2009

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TEST REPORT FOR FCC CERTIFICATE

Applicant	:	Sonos, Inc.
Manufacturer	:	Inventec Appliances (Pudong) Corporation
EUT Description	:	Woodstock Sonos Controller
		(A) Model No. : CR200
		(B) Serial No. : E2009032503
		(C) Power Supply : DC 4.2V(Li-ion Battery)

Test Procedure Used:

FCC RULES AND REGULATIONS PART 15 SUBPART C OCTOBER 2008 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: CR200, S/N: E2009032503), which was tested on Mar 25 - Jun 19, 2009 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.

Date of Test : Mar 25 –Jun 19, 2009 Date of Report : Jun 19, 2009

Producer : Zeno Gu
ZENO GU / Assistant

Review : Dio Yang
DIO YANG / Supervisor

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

Signatory : Sammy Chen
Authorized Signature EMC SAMMY CHEN/ Assistant 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 2008 AND ANSI C63.4:2003 AND KDB558074	Pass	15.207
Radiated Emission	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2008 AND ANSI C63.4:2003 AND KDB558074	Pass	15.209
6 dB Bandwidth Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2008 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 2008 AND ANSI C63.4:2003 AND KDB558074	Pass	15.247(b)(3)
RF Exposure Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2008 AND ANSI C63.4:2003 AND KDB558074	Pass	15.247(i)
Emission Limitations Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2008 AND ANSI C63.4:2003 AND KDB558074	Pass	15.247(d)
Band Edge Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2008 AND ANSI C63.4:2003 AND KDB558074	Pass	15.247(d)
Power Spectral Density Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2008 AND ANSI C63.4:2003 AND KDB558074	Pass	15.247(e)

2 GENERAL INFORMATION

2.1 Description of Equipment Under Test

Description	:	Woodstock Sonos Controller
Type of EUT		☑ Production ☐ Pre-product ☐ Pro-type
Model Number	:	CR200
Serial Number	:	E2009032503
Applicant	:	Sonos, Inc. 223 E. De La Guerra, Santa Barbara, CA 93101 USA
Manufacturer	:	Inventec Appliances (Pudong) Corporation No.789 Pu Xing Road, Shanghai, PRC.
Charger (with Dock)	:	Manufacturer : SONOS M/N : UL310-0520 I/P : AC 100-240V 50/60Hz 0.3A O/P : DC 5V 2A
Power Supply	:	DC 4.2V(Li-ion Battery)
Radio Tech	:	IEEE 802.11g
Freq. Band	:	2412 MHz, 2437 MHz, 2462 MHz Total 3 Channels
Tested Freq.	:	2412 MHz (Channel 01) 2437 MHz (Channel 06) 2462 MHz (Channel 11)
Modulation	:	OFDM
Transmit data rate:		24 Mbps The data rate is fixed, can not be adjusted.
Antenna1 Gain	:	1.67dBi
Antenna2 Gain	:	1.03dBi

2.2 Peripherals

2.2.1 Digital Music System

Manufacturer	:	SONOS
Model Number	:	ZonePlayer ZP90
Serial Number	:	0801 00-0E-58-23-01-74-2
Power Cord	:	Unshielded, Detachable, 2m
LAN Cable	:	Unshielded, Detachable, 2m

2.2.2 Notebook PC

Manufacturer	:	Acer
Model Number	:	MS2229
Serial Number	:	LXANP0C008804129962000
Certificate	:	CE, CCC, C-Tick, FCC DoC, BSMI

Note: The ZonePlayer was connected to notebook PC through LAN cable during the test.

2.3 Description of Test Facility

Site Description (Semi-Anechoic Chamber) : Sept. 17, 1998 file on
June 26, 2006 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

2.4 Measurement Uncertainty

Conducted Emission Expanded Uncertainty	: U = 1.26 dB
Radiated Emission Expanded Uncertainty	: U = 3.02 dB
6 dB Bandwidth Expanded Uncertainty	: U = 0.05 kHz
Maximum Peak Output Power Expanded Uncertainty	: U = 0.30 dBm
RF Exposure Expanded Uncertainty	: U = 0.002 mW/cm^2
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

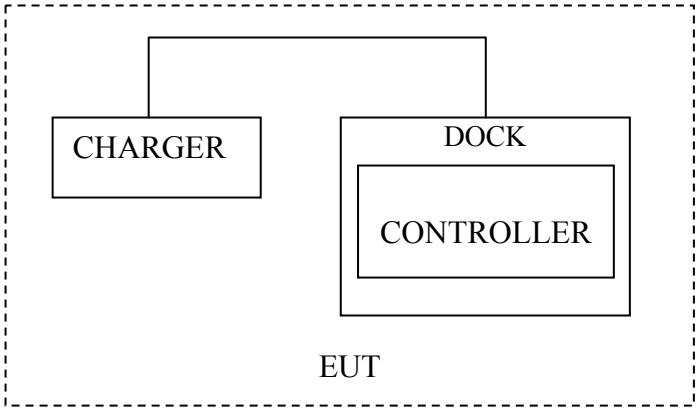
3.1 Test Equipment

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

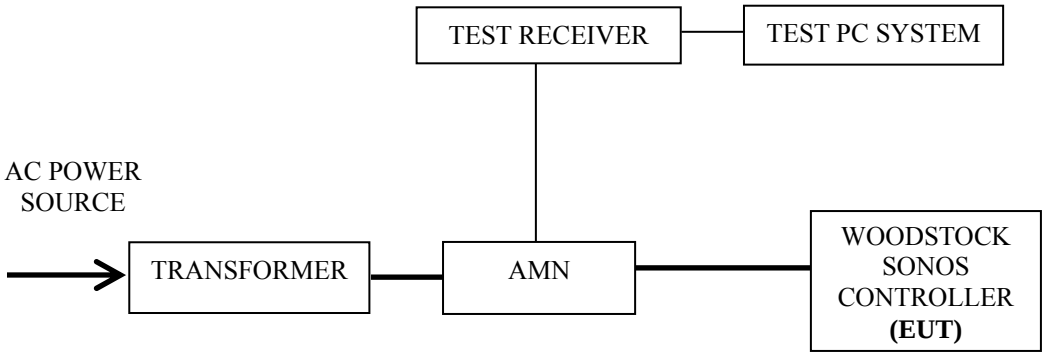
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	100841	Nov 21, 2008	Nov 21, 2009
2.	Artificial Mains Network (AMN)	R&S	ESH2-Z5	843890/011	Apr 02, 2009	Apr 02, 2010
3.	50 Ω Coaxial Switch	Anritsu	MP59B	6200426389	Mar 19, 2009	Sep 19, 2009
4.	50Ω Terminator	Anritsu	BNC	001	Apr 02, 2009	Apr 02, 2010
5.	Software	Audix	E3	SET00200 9804M592	--	--

3.2 Block Diagram of Test Setup

3.2.1 EUT & Peripherals



3.2.2 Conducted Disturbance Test Setup



—— : Signal Line
—— : Power Line
▬ : 50 ohm Terminator

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 (TX & RX), 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.

Test Mode	Data Page
Transmitting Antenna1	P12-P13
Transmitting Antenna2	P14-P15
Receiving Antenna1	P16-P17
Receiving Antenna2	P18-P19

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.

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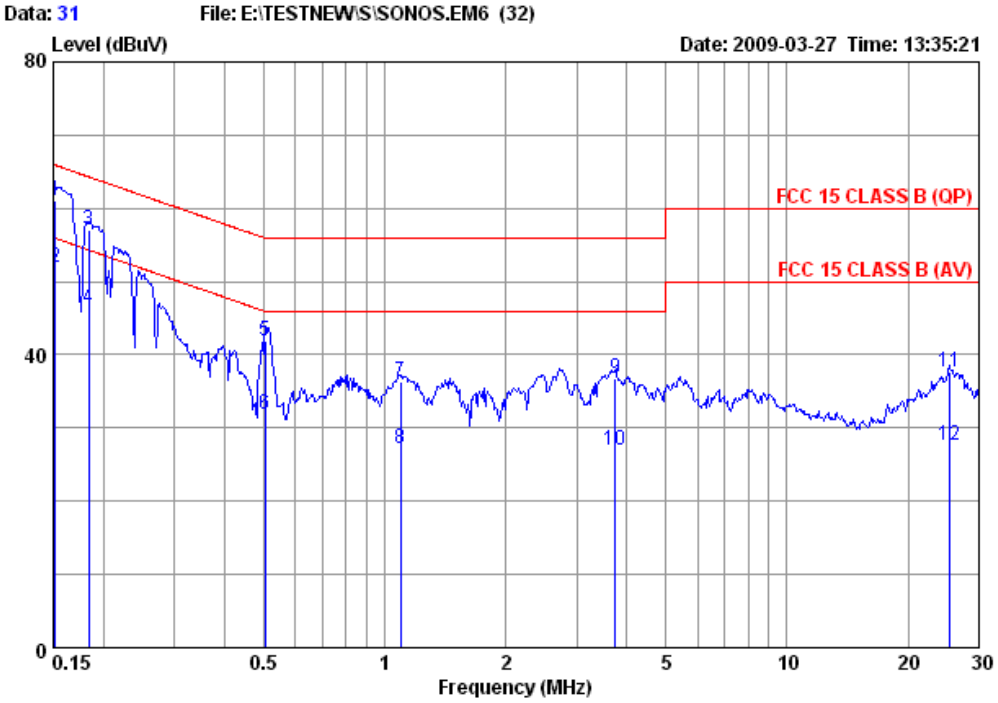

Site no : Conduction Data no :31
AMN : ESH2-Z5-08.04.06 AMN Phase :LINE
Limit : FCC 15 CLASS B (QP)
Env/Ins : 22'C 48%RH / ESCI Engineer :Wency
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating : 120V/60Hz
Test Mode : Transmitting Antenna1

	Freq (MHz)	AMN. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.152	0.55	0.02	60.55	61.12	65.91	4.79	QP
2	0.152	0.55	0.02	51.30	51.87	55.91	4.04	Average
3	0.183	0.60	0.02	56.48	57.10	64.33	7.23	QP
4	0.183	0.60	0.02	45.71	46.33	54.33	8.00	Average
5	0.505	0.53	0.04	41.32	41.89	56.00	14.11	QP
6	0.505	0.53	0.04	31.27	31.84	46.00	14.16	Average
7	1.094	0.42	0.05	35.81	36.28	56.00	19.72	QP
8	1.094	0.42	0.05	26.65	27.12	46.00	18.88	Average
9	3.740	0.41	0.12	36.31	36.84	56.00	19.16	QP
10	3.740	0.41	0.12	26.33	26.86	46.00	19.14	Average
11	25.321	0.54	0.29	36.80	37.63	60.00	22.37	QP
12	25.321	0.54	0.29	26.82	27.65	50.00	22.35	Average

Remarks:1.Emission Level= AMN Factor + Cable Loss + Reading

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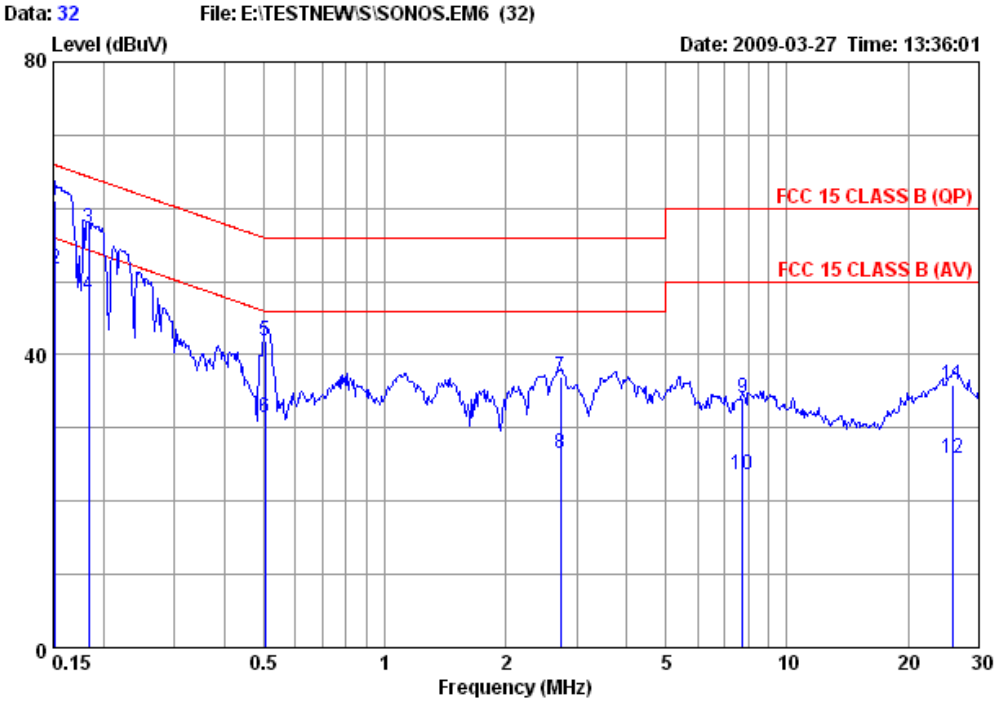

Site no : Conduction Data no :32
AMN : ESH2-Z5-08.04.06 AMN Phase :NEUTRAL
Limit : FCC 15 CLASS B (QP)
Env/Ins : 22'C 48%RH / ESCI Engineer :Wency
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating : 120V/60Hz
Test Mode : Transmitting Antenna1

	Freq (MHz)	AMN. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.152	0.42	0.02	60.63	61.07	65.91	4.84	QP
2	0.152	0.42	0.02	51.23	51.67	55.91	4.24	Average
3	0.183	0.51	0.02	56.65	57.18	64.33	7.15	QP
4	0.183	0.51	0.02	47.56	48.09	54.33	6.24	Average
5	0.505	0.52	0.04	41.33	41.89	56.00	14.11	QP
6	0.505	0.52	0.04	30.92	31.48	46.00	14.52	Average
7	2.736	0.34	0.10	36.66	37.10	56.00	18.90	QP
8	2.736	0.34	0.10	26.03	26.47	46.00	19.53	Average
9	7.769	0.56	0.15	33.38	34.09	60.00	25.91	QP
10	7.769	0.56	0.15	22.95	23.66	50.00	26.34	Average
11	25.864	0.63	0.30	34.88	35.81	60.00	24.19	QP
12	25.864	0.63	0.30	24.94	25.87	50.00	24.13	Average

Remarks:1.Emission Level= AMN Factor + Cable Loss + Reading

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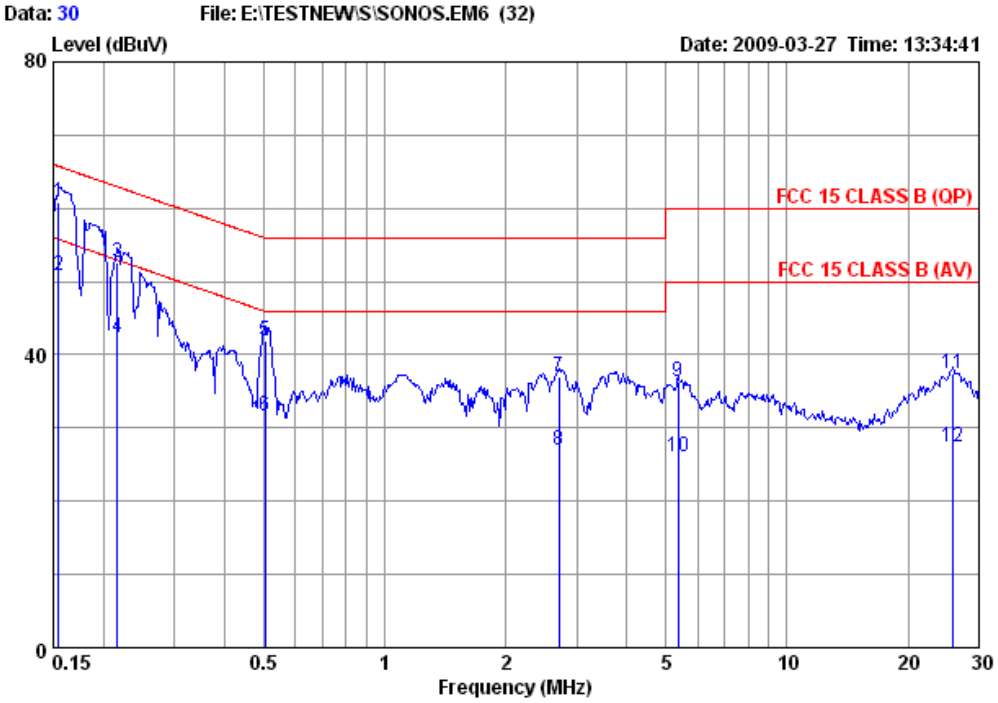

Site no : Conduction Data no :30
AMN : ESH2-Z5-08.04.06 AMN Phase :LINE
Limit : FCC 15 CLASS B (QP)
Env/Ins : 22'C 48%RH / ESCI Engineer :Wency
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating : 120V/60Hz
Test Mode : Transmitting Antenna2

	Freq (MHz)	AMN. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.155	0.56	0.02	60.36	60.94	65.74	4.80	QP
2	0.155	0.56	0.02	50.15	50.73	55.74	5.01	Average
3	0.216	0.61	0.03	51.87	52.51	62.96	10.45	QP
4	0.216	0.61	0.03	41.75	42.39	52.96	10.57	Average
5	0.505	0.53	0.04	41.39	41.96	56.00	14.04	QP
6	0.505	0.53	0.04	31.14	31.71	46.00	14.29	Average
7	2.707	0.36	0.10	36.55	37.01	56.00	18.99	QP
8	2.707	0.36	0.10	26.47	26.93	46.00	19.07	Average
9	5.362	0.45	0.13	35.65	36.23	60.00	23.77	QP
10	5.362	0.45	0.13	25.46	26.04	50.00	23.96	Average
11	25.864	0.54	0.30	36.51	37.35	60.00	22.65	QP
12	25.864	0.54	0.30	26.61	27.45	50.00	22.55	Average

Remarks:1.Emission Level= AMN Factor + Cable Loss + Reading

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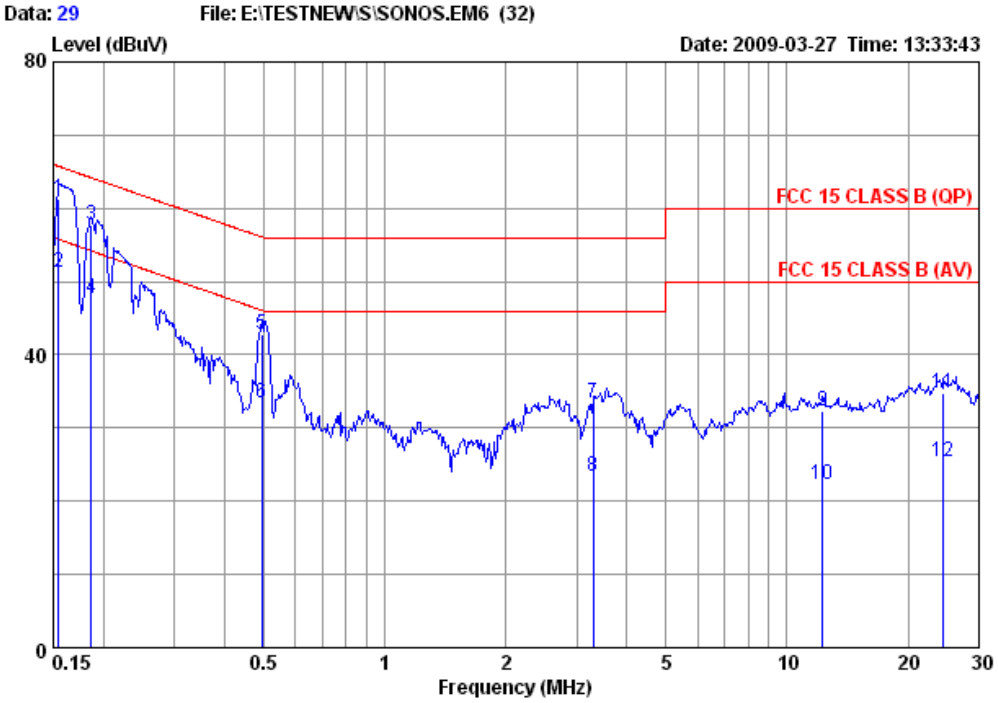

Site no : Conduction Data no :29
AMN : ESH2-Z5-08.04.06 AMN Phase :NEUTRAL
Limit : FCC 15 CLASS B (QP)
Env/Ins : 22'C 48%RH / ESCI Engineer :Wency
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating : 120V/60Hz
Test Mode : Transmitting Antenna2

	Freq (MHz)	AMN. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.155	0.43	0.02	60.92	61.37	65.74	4.37	QP
2	0.155	0.43	0.02	50.86	51.31	55.74	4.43	Average
3	0.186	0.52	0.02	57.24	57.78	64.20	6.42	QP
4	0.186	0.52	0.02	47.17	47.71	54.20	6.49	Average
5	0.494	0.52	0.04	42.33	42.89	56.10	13.21	QP
6	0.494	0.52	0.04	32.82	33.38	46.10	12.72	Average
7	3.293	0.34	0.11	32.91	33.36	56.00	22.64	QP
8	3.293	0.34	0.11	23.02	23.47	46.00	22.53	Average
9	12.253	0.53	0.21	31.65	32.39	60.00	27.61	QP
10	12.253	0.53	0.21	21.45	22.19	50.00	27.81	Average
11	24.529	0.62	0.29	33.83	34.74	60.00	25.26	QP
12	24.529	0.62	0.29	24.38	25.29	50.00	24.71	Average

Remarks:1.Emission Level= AMN Factor + Cable Loss + Reading

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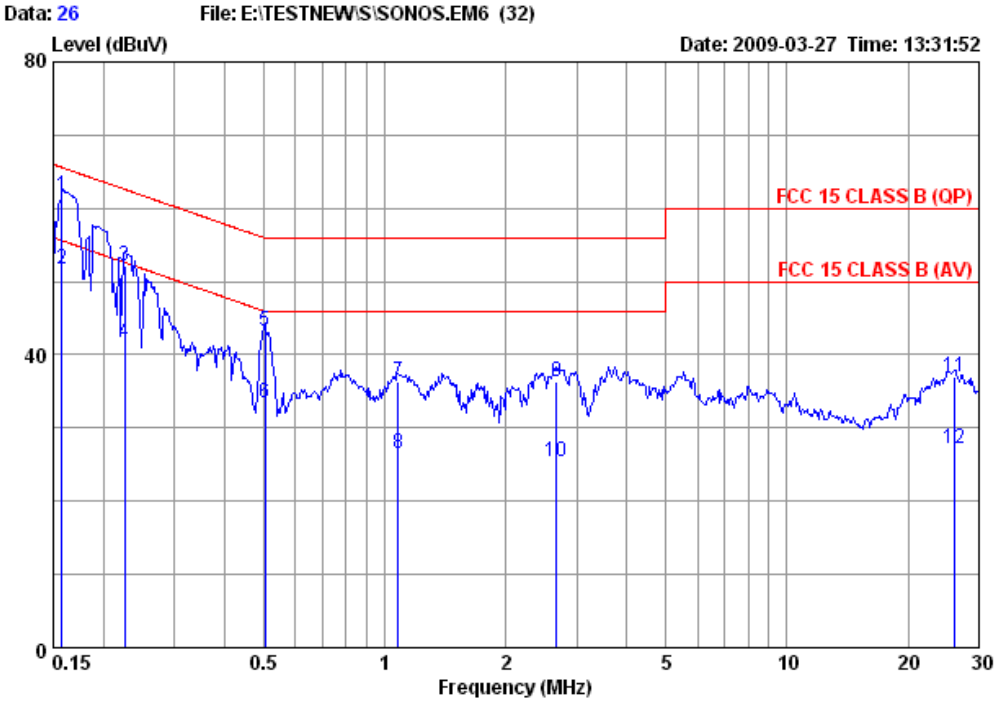

Site no : Conduction Data no :26
AMN : ESH2-Z5-08.04.06 AMN Phase :LINE
Limit : FCC 15 CLASS B (QP)
Env/Ins : 22'C 48%RH / ESCI Engineer :Wency
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating : 120V/60Hz
Test Mode : Receiving Antenna1

	Freq (MHz)	AMN. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.157	0.56	0.02	61.05	61.63	65.60	3.97	QP
2	0.157	0.56	0.02	51.11	51.69	55.60	3.91	Average
3	0.226	0.61	0.03	51.40	52.04	62.61	10.57	QP
4	0.226	0.61	0.03	41.04	41.68	52.61	10.93	Average
5	0.505	0.53	0.04	42.74	43.31	56.00	12.69	QP
6	0.505	0.53	0.04	32.79	33.36	46.00	12.64	Average
7	1.082	0.42	0.05	35.95	36.42	56.00	19.58	QP
8	1.082	0.42	0.05	25.97	26.44	46.00	19.56	Average
9	2.678	0.36	0.10	35.76	36.22	56.00	19.78	QP
10	2.678	0.36	0.10	25.03	25.49	46.00	20.51	Average
11	26.139	0.54	0.30	36.13	36.97	60.00	23.03	QP
12	26.139	0.54	0.30	26.26	27.10	50.00	22.90	Average

Remarks:1.Emission Level= AMN Factor + Cable Loss + Reading

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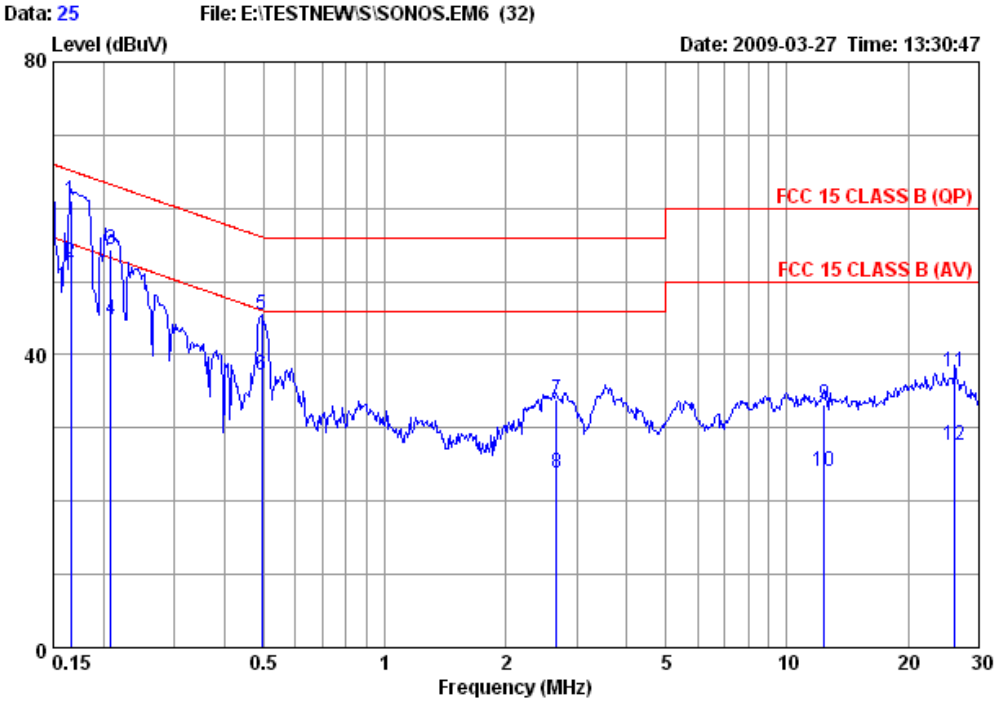

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AMN : ESH2-Z5-08.04.06 AMN Phase :NEUTRAL
Limit : FCC 15 CLASS B (QP)
Env/Ins : 22'C 48%RH / ESCI Engineer :Wency
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating : 120V/60Hz
Test Mode : Receiving Antenna1

	Freq (MHz)	AMN. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.166	0.46	0.02	60.51	60.99	65.16	4.17	QP
2	0.166	0.46	0.02	52.11	52.59	55.16	2.57	Average
3	0.208	0.55	0.02	53.87	54.44	63.27	8.83	QP
4	0.208	0.55	0.02	44.14	44.71	53.27	8.56	Average
5	0.494	0.52	0.04	44.96	45.52	56.10	10.58	QP
6	0.494	0.52	0.04	36.58	37.14	46.10	8.96	Average
7	2.678	0.34	0.10	33.36	33.80	56.00	22.20	QP
8	2.678	0.34	0.10	23.33	23.77	46.00	22.23	Average
9	12.384	0.53	0.21	32.41	33.15	60.00	26.85	QP
10	12.384	0.53	0.21	23.31	24.05	50.00	25.95	Average
11	26.139	0.63	0.30	36.69	37.62	60.00	22.38	QP
12	26.139	0.63	0.30	26.62	27.55	50.00	22.45	Average

Remarks:1.Emission Level= AMN Factor + Cable Loss + Reading

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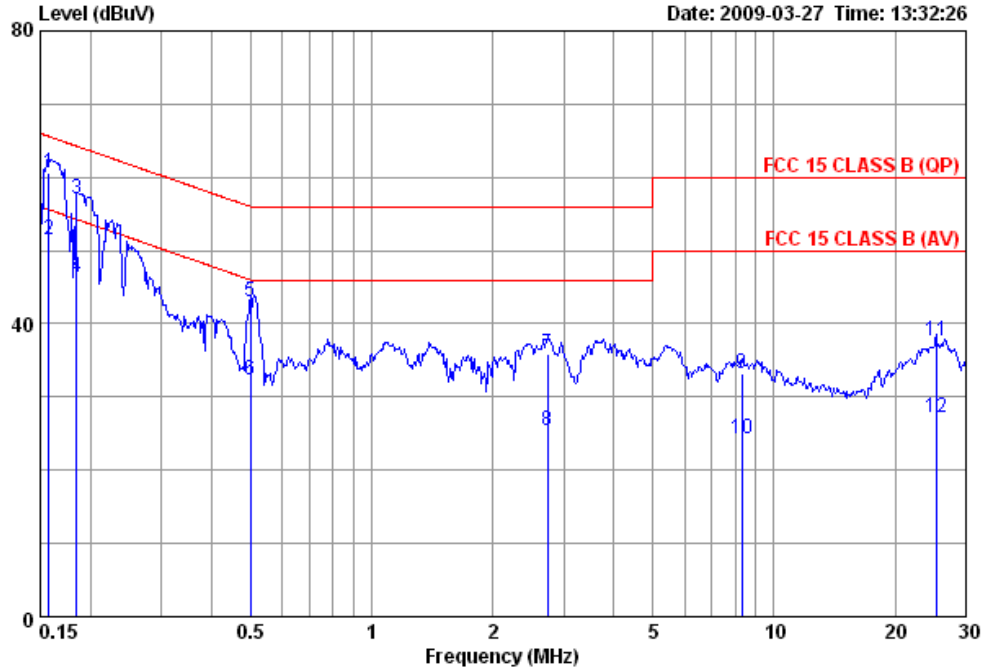

Site no : Conduction Data no :27
AMN : ESH2-Z5-08.04.06 AMN Phase :LINE
Limit : FCC 15 CLASS B (QP)
Env/Ins : 22'C 48%RH / ESCI Engineer :Wency
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating : 120V/60Hz
Test Mode : Receiving Antenna2

	Freq (MHz)	AMN. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.157	0.56	0.02	60.00	60.58	65.60	5.02	QP
2	0.157	0.56	0.02	50.81	51.39	55.60	4.21	Average
3	0.184	0.60	0.02	56.32	56.94	64.28	7.34	QP
4	0.184	0.60	0.02	45.71	46.33	54.28	7.95	Average
5	0.499	0.53	0.04	42.33	42.90	56.01	13.11	QP
6	0.499	0.53	0.04	31.82	32.39	46.01	13.62	Average
7	2.736	0.36	0.10	35.50	35.96	56.00	20.04	QP
8	2.736	0.36	0.10	25.02	25.48	46.00	20.52	Average
9	8.323	0.43	0.15	32.55	33.13	60.00	26.87	QP
10	8.323	0.43	0.15	23.64	24.22	50.00	25.78	Average
11	25.321	0.54	0.29	36.72	37.55	60.00	22.45	QP
12	25.321	0.54	0.29	26.25	27.08	50.00	22.92	Average

Remarks:1.Emission Level= AMN Factor + Cable Loss + Reading

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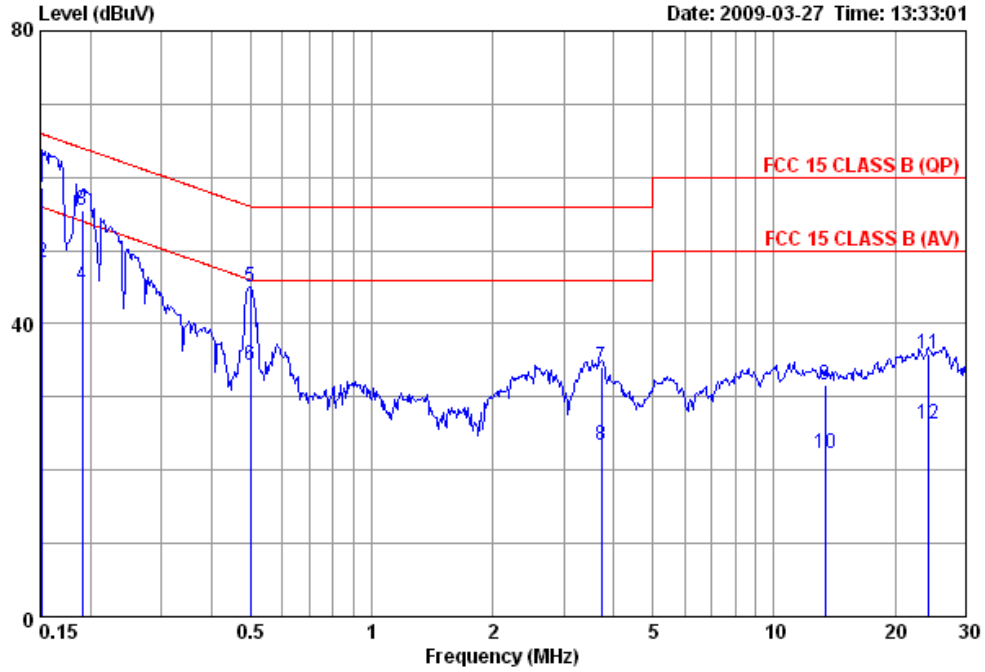
audixaci@audix.com

Data: 28 File: E:\TESTNEW\S\SONOS.EM6 (32)



Site no : Conduction Data no :28
AMN : ESH2-Z5-08.04.06 AMN Phase :NEUTRAL
Limit : FCC 15 CLASS B (QP)
Env/Ins : 22'C 48%RH / ESCI Engineer :Wency
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating : 120V/60Hz
Test Mode : Receiving Antenna2

	Freq (MHz)	AMN. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.152	0.42	0.02	58.19	58.63	65.91	7.28	QP
2	0.152	0.42	0.02	47.92	48.36	55.91	7.55	Average
3	0.190	0.53	0.02	54.88	55.43	64.02	8.59	QP
4	0.190	0.53	0.02	44.77	45.32	54.02	8.70	Average
5	0.499	0.52	0.04	44.54	45.10	56.01	10.91	QP
6	0.499	0.52	0.04	33.78	34.34	46.01	11.67	Average
7	3.720	0.34	0.12	33.58	34.04	56.00	21.96	QP
8	3.720	0.34	0.12	23.03	23.49	46.00	22.51	Average
9	13.408	0.53	0.23	30.86	31.62	60.00	28.38	QP
10	13.408	0.53	0.23	21.46	22.22	50.00	27.78	Average
11	24.142	0.63	0.29	34.89	35.81	60.00	24.19	QP
12	24.142	0.63	0.29	25.36	26.28	50.00	23.72	Average

Remarks:1.Emission Level= AMN Factor + Cable Loss + Reading

4 RADIATED EMISSION TEST

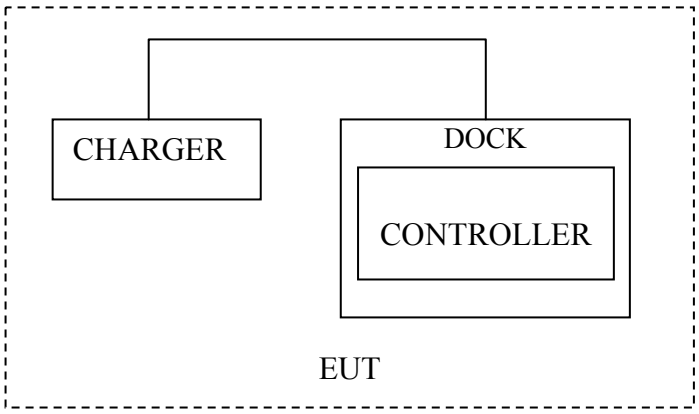
4.1 Test Equipment

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

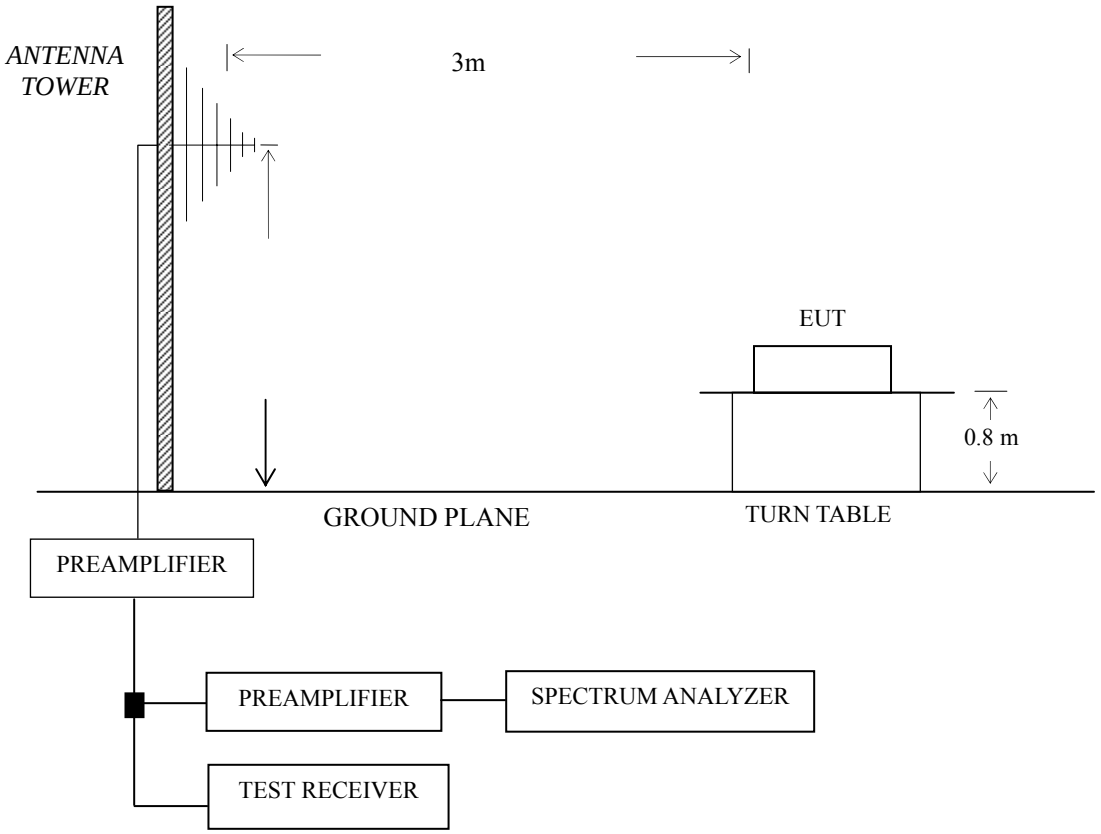
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Preamplifier	Agilent	8447D	2944A10548	Mar 19, 2009	Sep 19, 2009
2.	Preamplifier	HP	8449B	3008A00864	May 19, 2008	May 19, 2009
3.	Spectrum Analyzer	Agilent	E7405A	MY45106600	May 19, 2008	May 19, 2009
4.	Test Receiver	R&S	ESVS10	844594/001	Mar 07, 2009	Mar 07, 2010
5.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 14, 2008	May 14, 2009
6.	Horn Antenna	EMCO	3115	9607-4878	Oct 26, 2008	Oct 26, 2009
7.	Horn Antenna	EMCO	3116	00062643	Oct 26, 2008	Oct 26, 2009
8.	50Ω Coaxial Switch	Anritsu	MP59B	6200426390	Mar 19, 2009	Sep 19, 2009
9.	Software	Audix	E3	SET00200 9912M295-2	-	-

4.2 Block Diagram of Test Setup

4.2.1 EUT & Peripherals



4.2.2 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 Sec2.2) 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 (TX & RX) and then test.

4.5.4 Configured the EUT in three axis: Lying, Side, Stand, and test separately.

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 30M to 1000MHz.

The bandwidth of Spectrum Analyzer Agilent E7405A was set at 1MHz above 1 GHz.

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	06	2437 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	Antenna	Channel	Frequency	Data Page	
					< 1GHz	> 1GHz
1.	Transmitting	1	01	2412 MHz	P24-P25	P26-P27
2.		1	06	2437 MHz	P28-P29	P30-P31
3.		1	11	2462 MHz	P32-P33	P34-P35
4.		2	01	2412 MHz	P36-P37	P38-P39
5.		2	06	2437 MHz	P40-P41	P42-P43
6.		2	11	2462 MHz	P44-P45	P46-P47
7.	Receiving	1	06	2437 MHz	P48-P49	P50-P51
8.		2	06	2437 MHz	P52-P53	P54-P55
9.	Transmitting	1	01	2412 MHz	Band-Edge	P56-P59
10.		1	11	2462 MHz		P60-P63
11.		2	01	2412 MHz		P64-P67
12.		2	11	2462 MHz		P68-P71

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 - The emission levels recorded below is data of EUT configured in Stand direction, for Stand direction was the maximum emission direction during the test. The data of Lying & Side direction are too low against the official limit to be reported.

NOTE 3 - Measurement was up to 25GHz, only data of 30MHz to 8GHz were recorded in the report, because the emission levels of 8GHz to 25GHz were too low against the official limit and not reported.

NOTE 4 - 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

NOTE 5 - The worst case is for Transmitting Antenna1 Ch01(2412MHz). The worst emission at horizontal polarization was detected at 363.680 MHz with corrected signal level of 42.96 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 1.00 m height and the turntable was at 225°. The worst emission at vertical polarization was detected at 364.650 MHz with corrected signal level of 27.60 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 1.00 m height and the turntable was at 145°.

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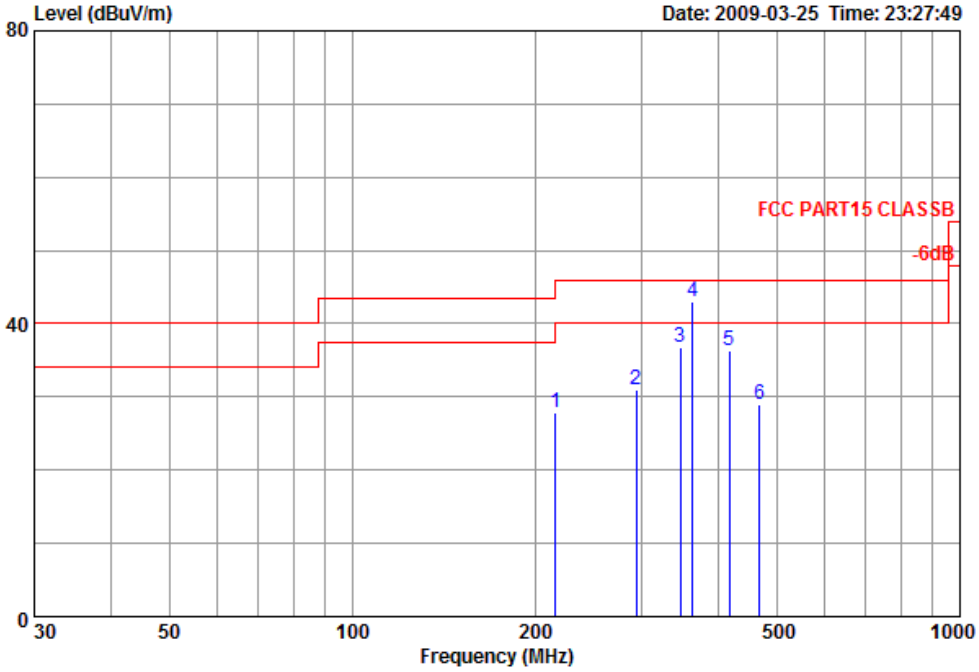
Data: 84 File: D:\TEST DATA\S\SONOS.EM6 (114)



Site no : Audix ACI (3m Chamber) Data no. : 84
Dis. / Ant. : 3m /CBL 6112D-2008.05.14
Limit : FCC PART15 CLASSB Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH/ ESVS10 Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna1 Ch01

	Freq. (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	216.240	11.43	1.14	15.25	27.82	46.00	18.18
2	293.840	13.79	1.50	15.73	31.02	46.00	14.98
3	347.190	15.24	1.80	19.75	36.79	46.00	9.21
4	363.680	15.69	1.87	25.40	42.96	46.00	3.04
5	417.030	16.74	2.10	17.39	36.23	46.00	9.77
6	468.440	17.49	2.28	9.14	28.91	46.00	17.09

Remarks: 1.Emission Level= Antenna Factor + Cable Loss + Reading.
2.The emission levels that are 20dB below the offical are not report.

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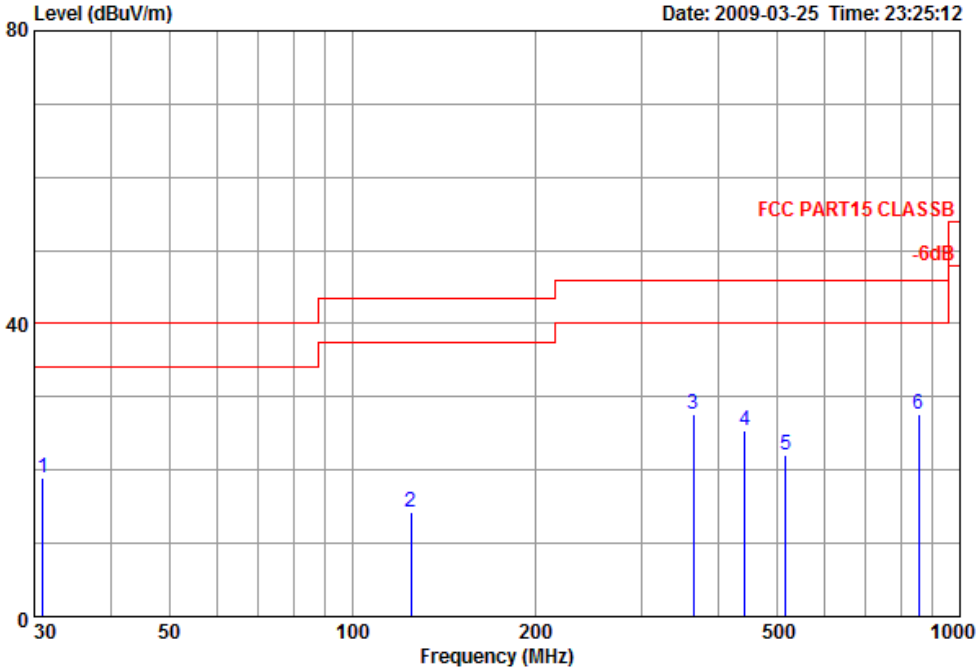
Data: 83 File: D:\TEST DATA\S\SONOS.EM6 (114)



Site no : Audix ACI (3m Chamber) Data no. : 83
Dis. / Ant. : 3m /CBL 6112D-2008.05.14
Limit : FCC PART15 CLASSB Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH/ ESVS10 Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna1 Ch01

	Freq. (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	30.970	19.03	0.57	-0.64	18.96	40.00	21.04
2	125.060	12.76	0.89	0.60	14.25	43.50	29.25
3	364.650	15.73	1.89	9.98	27.60	46.00	18.40
4	442.250	17.11	2.20	6.17	25.48	46.00	20.52
5	515.970	18.09	2.42	1.60	22.11	46.00	23.89
6	856.440	21.28	3.44	2.85	27.57	46.00	18.43

Remarks: 1.Emission Level= Antenna Factor + Cable Loss + Reading.
2.The emission levels that are 20dB below the offical are not report.

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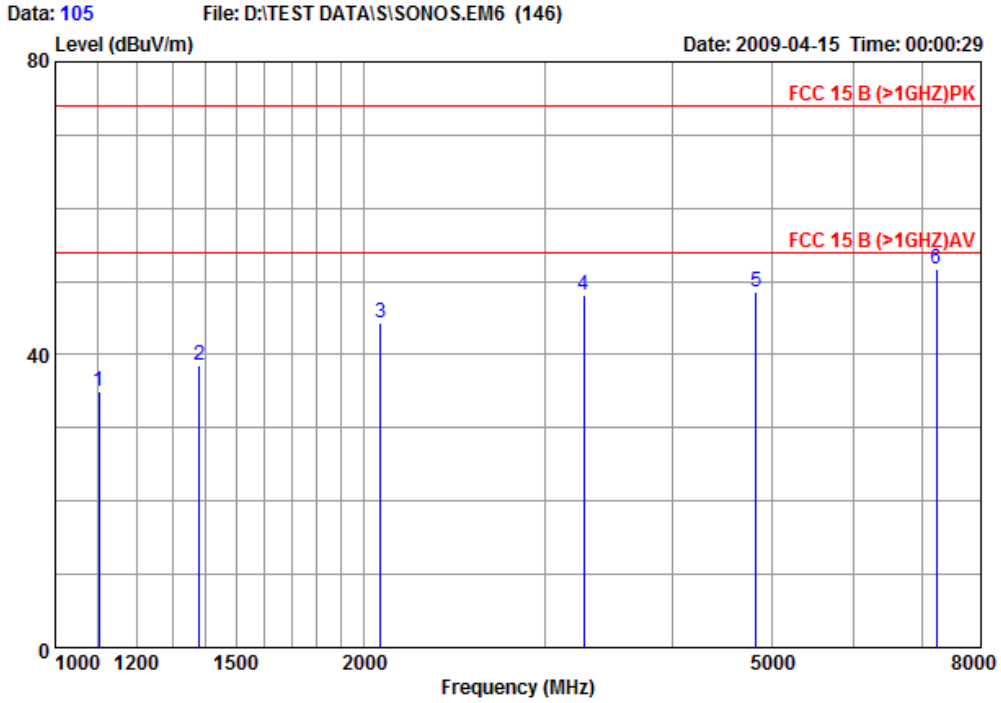

Site no : Audix ACI (3m Chamber) Data no. : 105
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna1 Ch01

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	1103.264	24.60	37.41	3.97	43.86	35.02	74.00	38.98
2	1382.262	25.73	36.76	4.57	45.07	38.61	74.00	35.39
3	2077.705	27.87	35.61	5.66	46.34	44.26	74.00	29.74
4	3280.326	31.15	34.42	7.24	44.21	48.18	74.00	25.82
5	4824.000	33.69	34.71	10.01	39.50	48.49	74.00	25.51
6	7236.000	35.01	34.50	11.47	39.83	51.81	74.00	22.19

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.The emission levels that are 20dB below the offical are not report.

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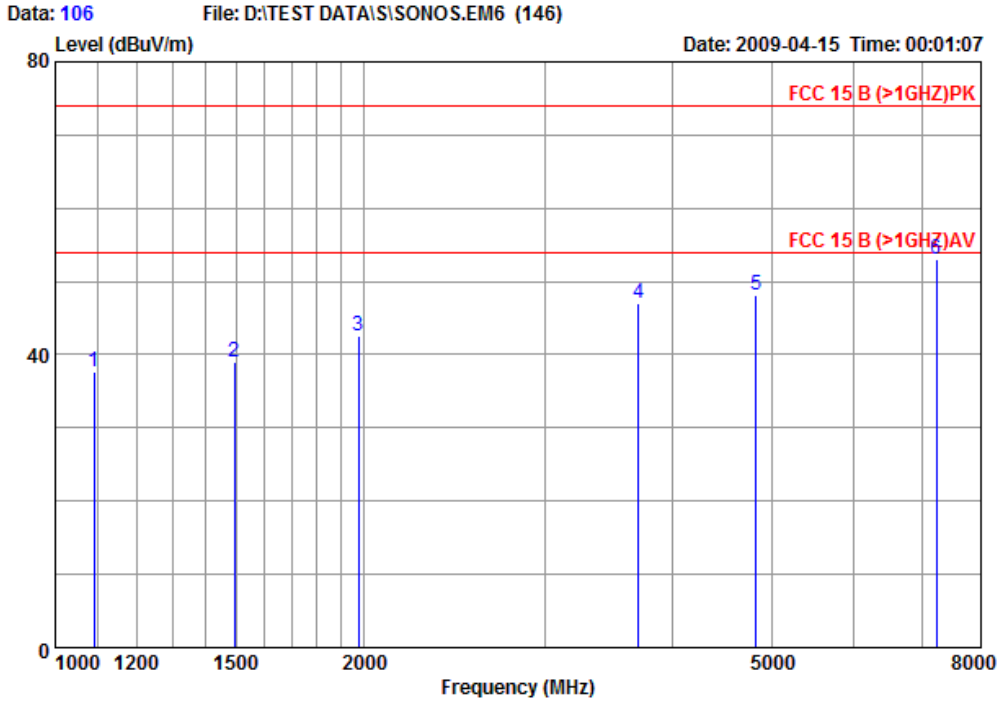

Site no : Audix ACI (3m Chamber) Data no. : 106
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna1 Ch01

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	1090.582	24.54	37.45	3.93	46.71	37.73	74.00	36.27
2	1494.455	26.13	36.54	4.79	44.61	38.99	74.00	35.01
3	1978.082	27.54	35.73	5.58	45.15	42.54	74.00	31.46
4	3703.723	32.03	33.92	7.91	41.00	47.02	74.00	26.98
5	4824.000	33.24	34.57	9.86	39.53	48.06	74.00	25.94
6	7236.000	35.42	34.49	11.83	40.27	53.03	74.00	20.97

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.The emission levels that are 20dB below the offical are not report.

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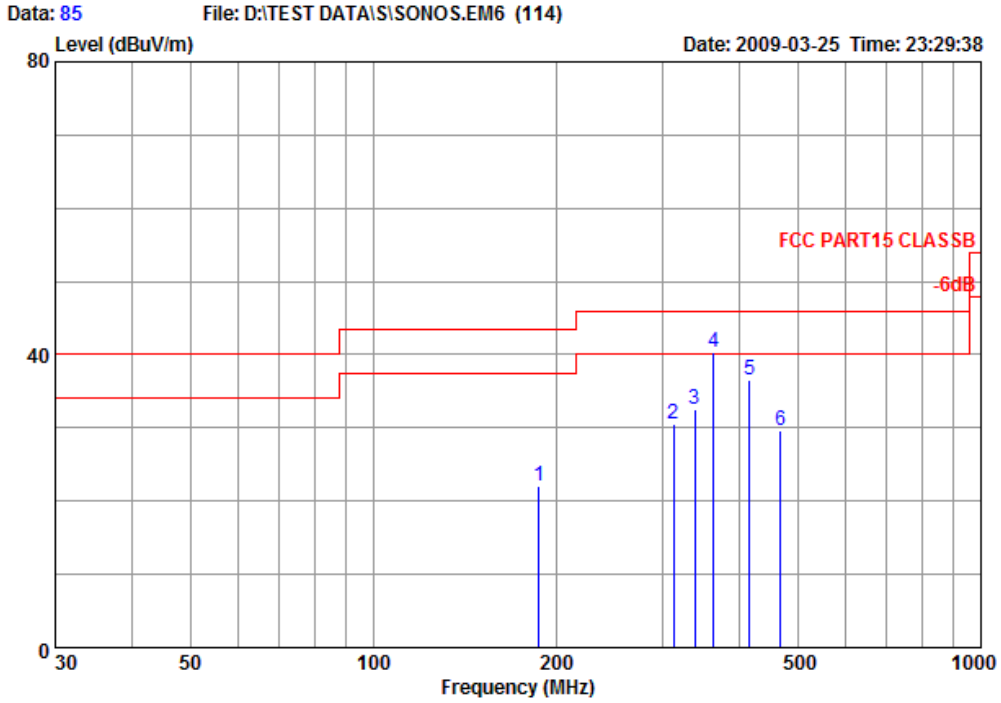

Site no : Audix ACI (3m Chamber) Data no. : 85
Dis. / Ant. : 3m /CBL 6112D-2008.05.14
Limit : FCC PART15 CLASSB Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH/ ESVS10 Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna1 Ch06

	Freq. (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	187.140	10.17	1.04	10.86	22.07	43.50	21.43
2	312.270	14.24	1.60	14.66	30.50	46.00	15.50
3	338.460	14.98	1.75	15.84	32.57	46.00	13.43
4	363.680	15.69	1.87	22.68	40.24	46.00	5.76
5	416.060	16.72	2.10	17.77	36.59	46.00	9.41
6	468.440	17.49	2.28	9.96	29.73	46.00	16.27

Remarks: 1.Emission Level= Antenna Factor + Cable Loss + Reading.
2.The emission levels that are 20dB below the offical are not report.

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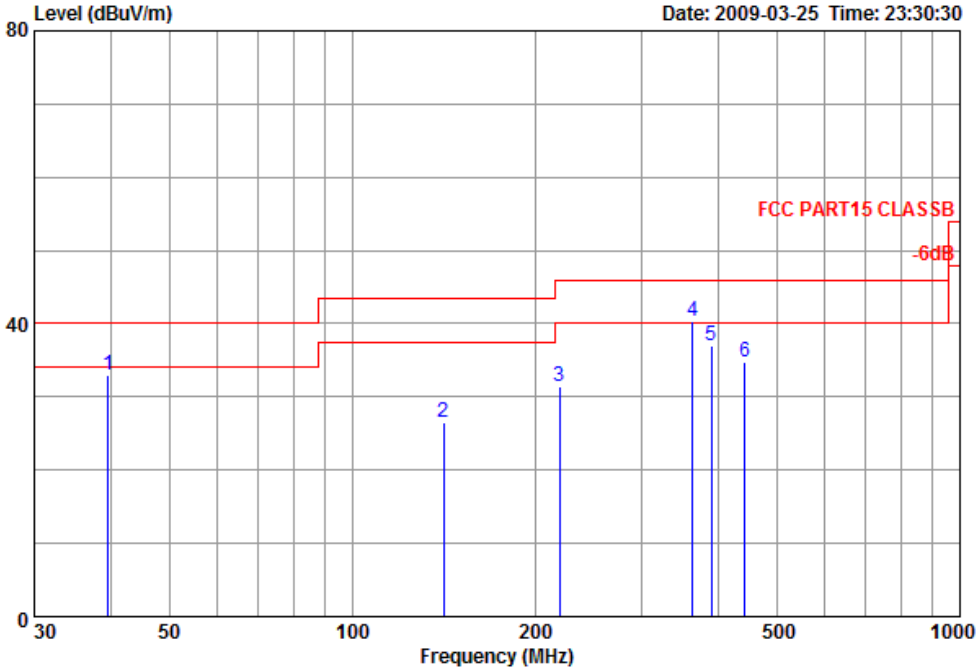
audixaci@audix.com

Data: 86 File: D:\TEST DATA\S\SONOS.EM6 (114)



Site no : Audix ACI (3m Chamber) Data no. : 86
Dis. / Ant. : 3m /CBL 6112D-2008.05.14
Limit : FCC PART15 CLASSB Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH/ ESVS10 Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna1 Ch06

	Freq. (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	39.700	14.08	0.68	18.21	32.97	40.00	7.03
2	141.550	12.01	0.91	13.63	26.55	43.50	16.95
3	219.150	11.57	1.15	18.71	31.43	46.00	14.57
4	363.680	15.69	1.87	22.82	40.38	46.00	5.62
5	389.870	16.30	2.00	18.70	37.00	46.00	9.00
6	442.250	17.11	2.20	15.44	34.75	46.00	11.25

Remarks: 1.Emission Level= Antenna Factor + Cable Loss + Reading.
2.The emission levels that are 20dB below the offical are not report.

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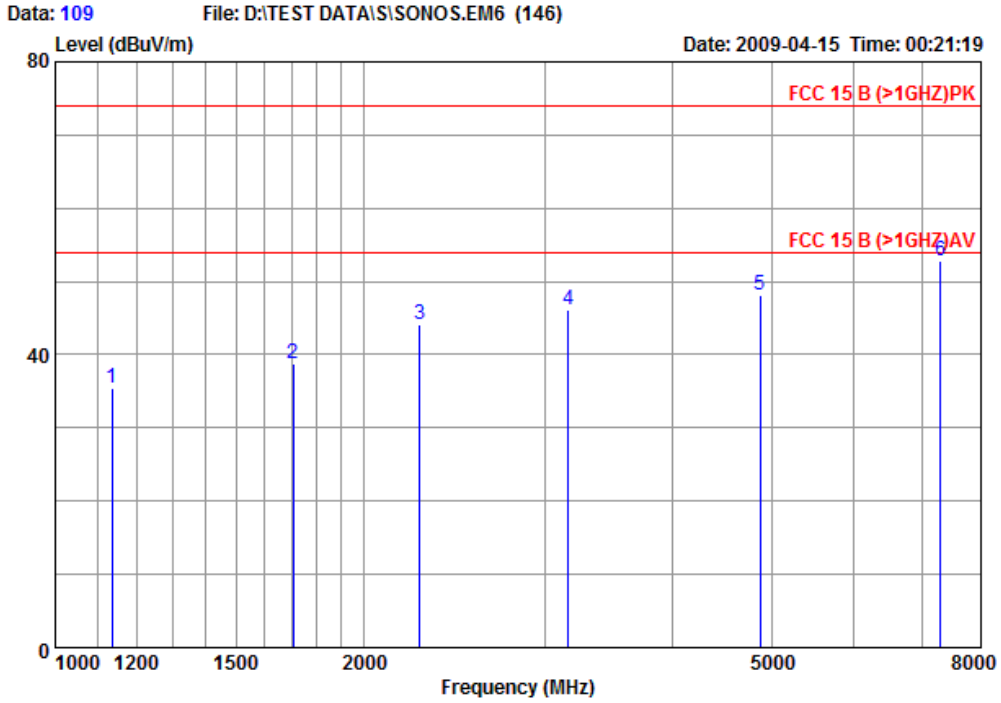

Site no : Audix ACI (3m Chamber) Data no. : 109
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna1 Ch06

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	1135.617	24.74	37.34	4.05	43.88	35.33	74.00	38.67
2	1706.968	26.80	36.16	5.21	42.85	38.70	74.00	35.30
3	2265.907	28.49	35.42	5.83	45.14	44.04	74.00	29.96
4	3168.500	30.90	34.58	7.14	42.75	46.21	74.00	27.79
5	4874.000	33.92	34.64	10.10	38.81	48.19	74.00	25.81
6	7311.000	35.15	34.50	11.53	40.72	52.90	74.00	21.10

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.The emission levels that are 20dB below the offical are not report.

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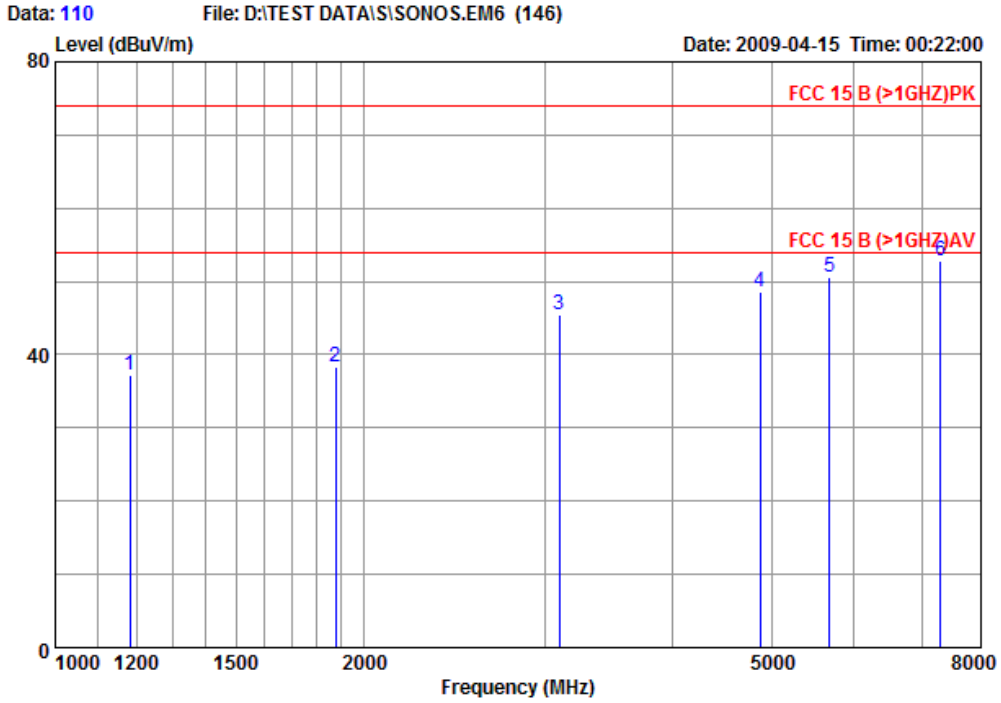
audixaci@audix.com



Site no : Audix ACI (3m Chamber) Data no. : 110
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna1 Ch06

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	1182.513	24.95	37.22	4.16	45.40	37.29	74.00	36.71
2	1877.800	27.28	35.88	5.48	41.35	38.23	74.00	35.77
3	3105.037	30.75	34.66	7.09	42.32	45.50	74.00	28.50
4	4874.000	33.03	34.25	9.80	40.02	48.60	74.00	25.40
5	5697.365	34.11	34.58	10.26	40.77	50.56	74.00	23.44
6	7311.000	35.61	34.46	12.21	39.43	52.79	74.00	21.21

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.The emission levels that are 20dB below the offical are not report.

Audix Technology (Shanghai) Co., Ltd.
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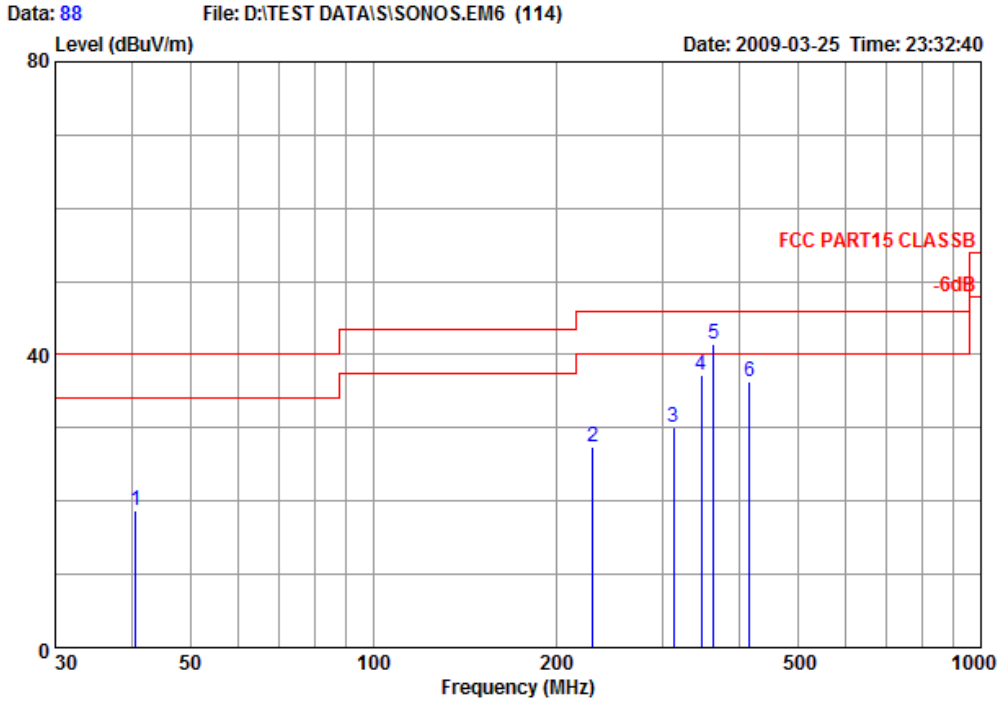

Site no : Audix ACI (3m Chamber) Data no. : 88
Dis. / Ant. : 3m /CBL 6112D-2008.05.14
Limit : FCC PART15 CLASSB Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH/ ESVS10 Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna1 Ch11

	Freq. (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	40.670	13.62	0.69	4.35	18.66	40.00	21.34
2	229.820	12.11	1.20	14.08	27.39	46.00	18.61
3	312.270	14.24	1.60	14.29	30.13	46.00	15.87
4	347.190	15.24	1.80	20.21	37.25	46.00	8.75
5	363.680	15.69	1.87	23.96	41.52	46.00	4.48
6	416.060	16.72	2.10	17.49	36.31	46.00	9.69

Remarks: 1.Emission Level= Antenna Factor + Cable Loss + Reading.
2.The emission levels that are 20dB below the offical are not report.

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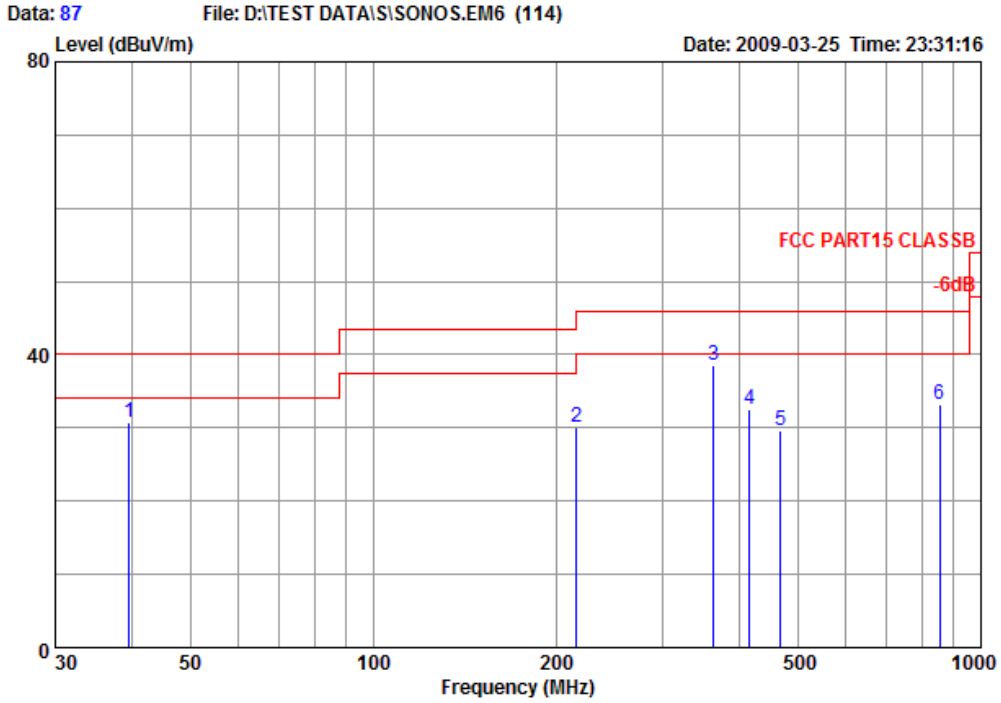

Site no : Audix ACI (3m Chamber) Data no. : 87
Dis. / Ant. : 3m /CBL 6112D-2008.05.14
Limit : FCC PART15 CLASSB Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH/ ESVS10 Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna1 Ch11

	Freq. (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	39.700	14.08	0.68	16.08	30.84	40.00	9.16
2	216.240	11.43	1.14	17.42	29.99	46.00	16.01
3	363.680	15.69	1.87	21.00	38.56	46.00	7.44
4	416.060	16.72	2.10	13.67	32.49	46.00	13.51
5	468.440	17.49	2.28	9.90	29.67	46.00	16.33
6	856.440	21.28	3.44	8.43	33.15	46.00	12.85

Remarks: 1.Emission Level= Antenna Factor + Cable Loss + Reading.
2.The emission levels that are 20dB below the offical are not report.

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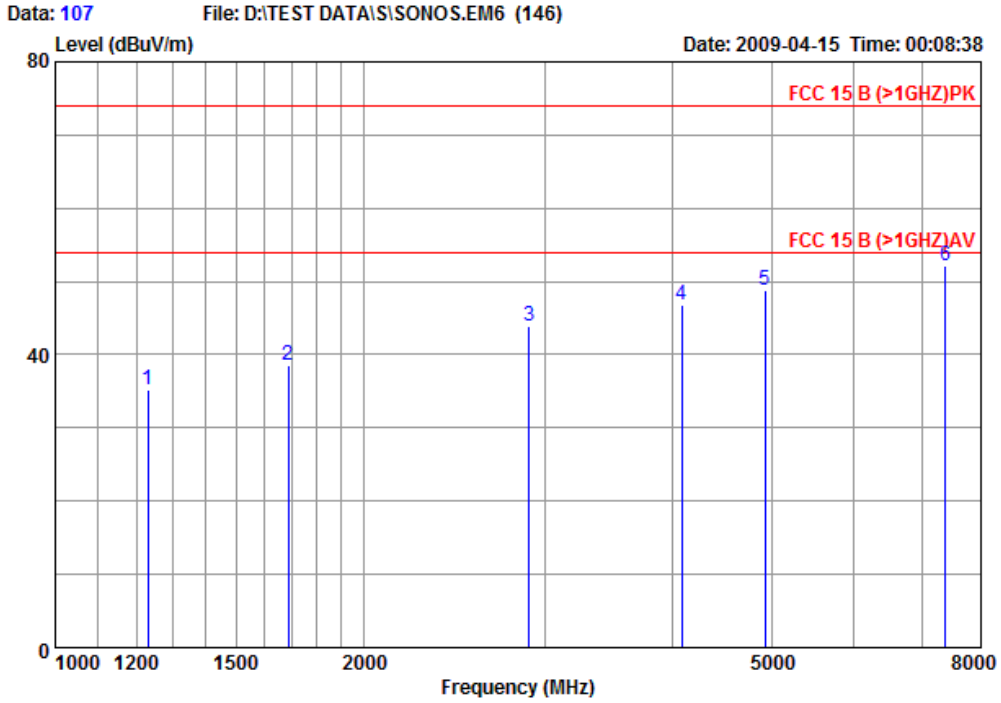

Site no : Audix ACI (3m Chamber) Data no. : 107
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna1 Ch11

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	1231.345	25.15	37.10	4.26	42.93	35.24	74.00	38.76
2	1687.347	26.74	36.18	5.17	42.88	38.61	74.00	35.39
3	2896.945	30.25	34.88	6.83	41.59	43.79	74.00	30.21
4	4086.182	32.67	33.71	8.80	39.14	46.90	74.00	27.10
5	4924.000	33.89	34.65	10.09	39.44	48.77	74.00	25.23
6	7386.000	35.37	34.49	11.73	39.49	52.10	74.00	21.90

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.The emission levels that are 20dB below the offical are not report.

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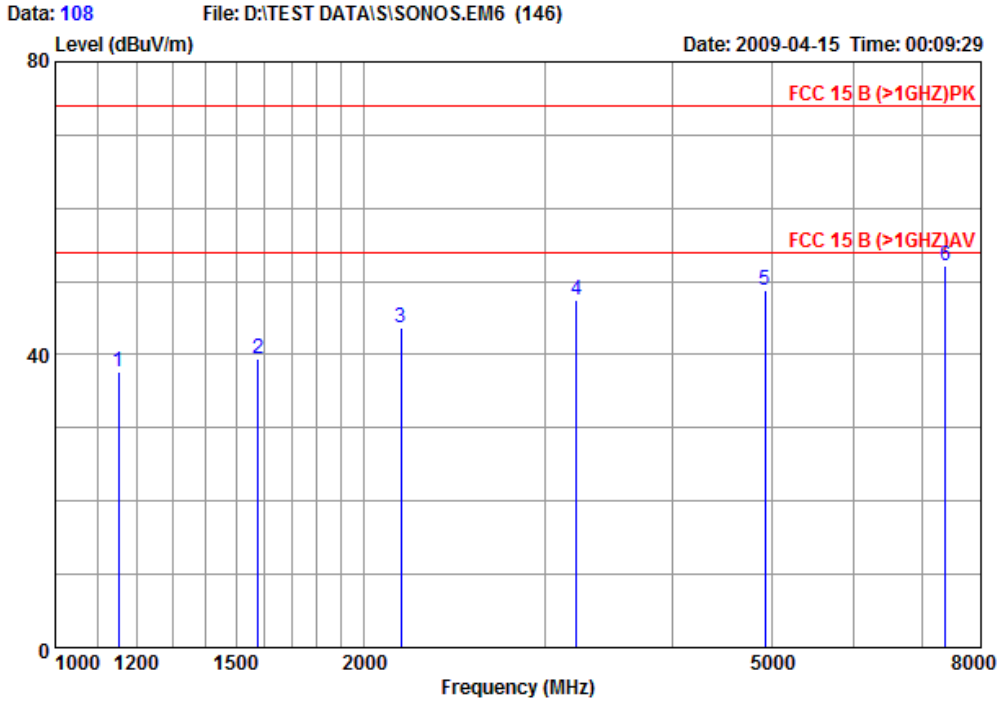
audixaci@audix.com



Site no : Audix ACI (3m Chamber) Data no. : 108
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna1 Ch11

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	1153.000	24.81	37.28	4.10	46.00	37.63	74.00	36.37
2	1578.000	26.40	36.38	4.96	44.55	39.53	74.00	34.47
3	2173.000	28.20	35.51	5.75	45.17	43.61	74.00	30.39
4	3227.000	31.02	34.50	7.19	43.71	47.42	74.00	26.58
5	4924.000	33.28	34.61	9.87	40.37	48.91	74.00	25.09
6	7386.000	35.51	34.47	12.00	39.12	52.16	74.00	21.84

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.The emission levels that are 20dB below the offical are not report.

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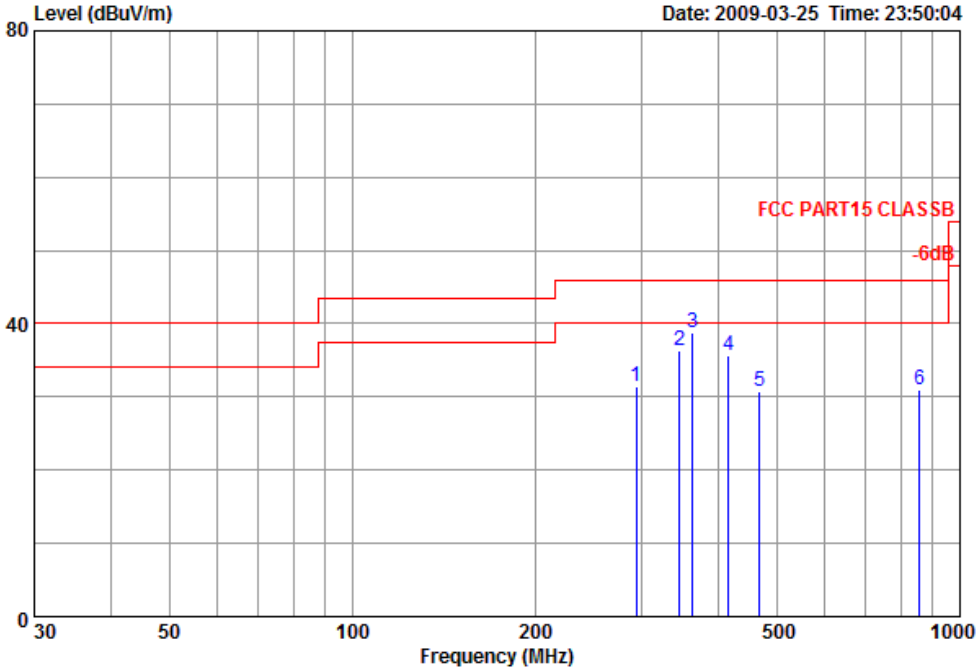
Data: 94 File: D:\TEST DATA\S\SONOS.EM6 (114)



Site no : Audix ACI (3m Chamber) Data no. : 94
Dis. / Ant. : 3m /CBL 6112D-2008.05.14
Limit : FCC PART15 CLASSB Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH/ ESVS10 Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna2 Ch01

	Freq. (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	293.840	13.79	1.50	16.18	31.47	46.00	14.53
2	346.220	15.20	1.77	19.42	36.39	46.00	9.61
3	363.680	15.69	1.87	21.13	38.69	46.00	7.31
4	416.060	16.72	2.10	16.93	35.75	46.00	10.25
5	468.440	17.49	2.28	10.89	30.66	46.00	15.34
6	859.350	21.31	3.44	6.30	31.05	46.00	14.95

Remarks: 1.Emission Level= Antenna Factor + Cable Loss + Reading.
2.The emission levels that are 20dB below the offical are not report.

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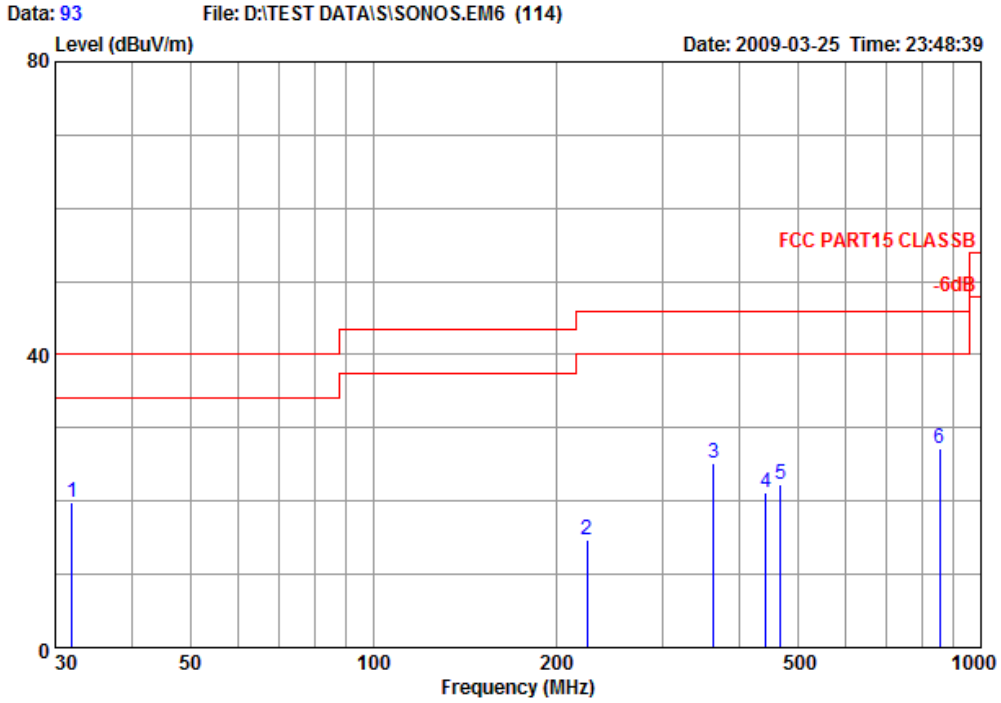

Site no : Audix ACI (3m Chamber) Data no. : 93
Dis. / Ant. : 3m /CBL 6112D-2008.05.14
Limit : FCC PART15 CLASSB Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH/ ESVS10 Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna2 Ch01

	Freq. (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	31.940	18.49	0.59	0.83	19.91	40.00	20.09
2	224.970	11.89	1.17	1.73	14.79	46.00	31.21
3	363.680	15.69	1.87	7.68	25.24	46.00	20.76
4	442.250	17.11	2.20	1.89	21.20	46.00	24.80
5	468.440	17.49	2.28	2.43	22.20	46.00	23.80
6	856.440	21.28	3.44	2.53	27.25	46.00	18.75

Remarks: 1.Emission Level= Antenna Factor + Cable Loss + Reading.
2.The emission levels that are 20dB below the offical are not report.

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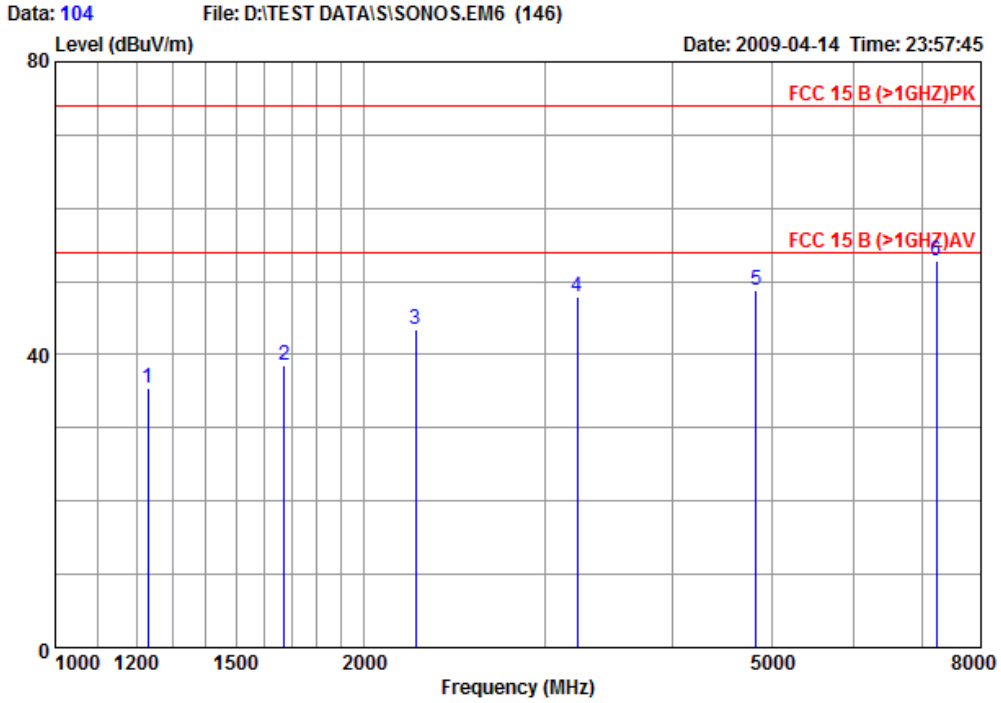

Site no : Audix ACI (3m Chamber) Data no. : 104
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna2 Ch01

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	1231.345	25.15	37.10	4.26	43.17	35.48	74.00	38.52
2	1672.779	26.70	36.21	5.14	42.88	38.51	74.00	35.49
3	2246.344	28.43	35.44	5.81	44.61	43.41	74.00	30.59
4	3233.260	31.05	34.49	7.20	44.25	48.01	74.00	25.99
5	4824.000	32.96	34.15	9.66	40.31	48.78	74.00	25.22
6	7236.000	34.29	34.53	10.41	42.74	52.91	74.00	21.09

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.The emission levels that are 20dB below the offical are not report.

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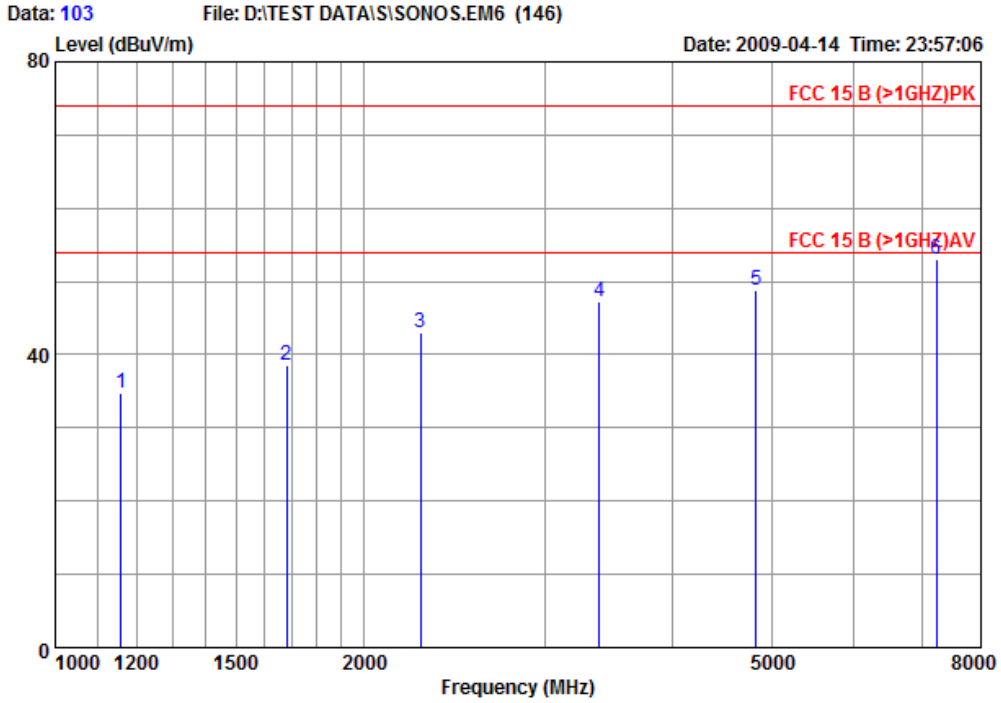

Site no : Audix ACI (3m Chamber) Data no. : 103
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna2 Ch01

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	1158.828	24.84	37.28	4.11	43.12	34.79	74.00	39.21
2	1682.477	26.73	36.19	5.16	42.89	38.59	74.00	35.41
3	2272.466	28.51	35.42	5.84	44.09	43.02	74.00	30.98
4	3396.098	31.40	34.29	7.33	42.78	47.22	74.00	26.78
5	4824.000	32.96	34.15	9.66	40.31	48.78	74.00	25.22
6	7236.000	34.86	34.50	11.37	41.28	53.01	74.00	20.99

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.The emission levels that are 20dB below the offical are not report.

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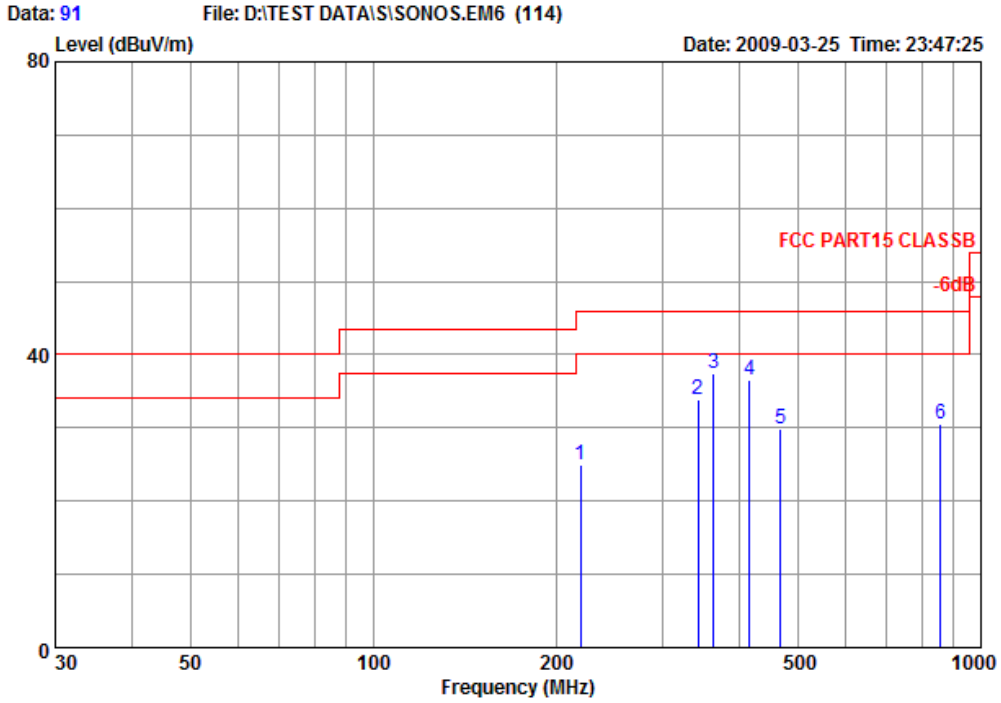

Site no : Audix ACI (3m Chamber) Data no. : 91
Dis. / Ant. : 3m /CBL 6112D-2008.05.14
Limit : FCC PART15 CLASSB Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH/ ESVS10 Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna2 Ch06

	Freq. (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	219.150	11.57	1.15	12.16	24.88	46.00	21.12
2	342.340	15.11	1.77	16.94	33.82	46.00	12.18
3	363.680	15.69	1.87	19.87	37.43	46.00	8.57
4	416.060	16.72	2.10	17.81	36.63	46.00	9.37
5	468.440	17.49	2.28	10.19	29.96	46.00	16.04
6	859.350	21.31	3.44	5.70	30.45	46.00	15.55

Remarks: 1.Emission Level= Antenna Factor + Cable Loss + Reading.
2.The emission levels that are 20dB below the offical are not report.

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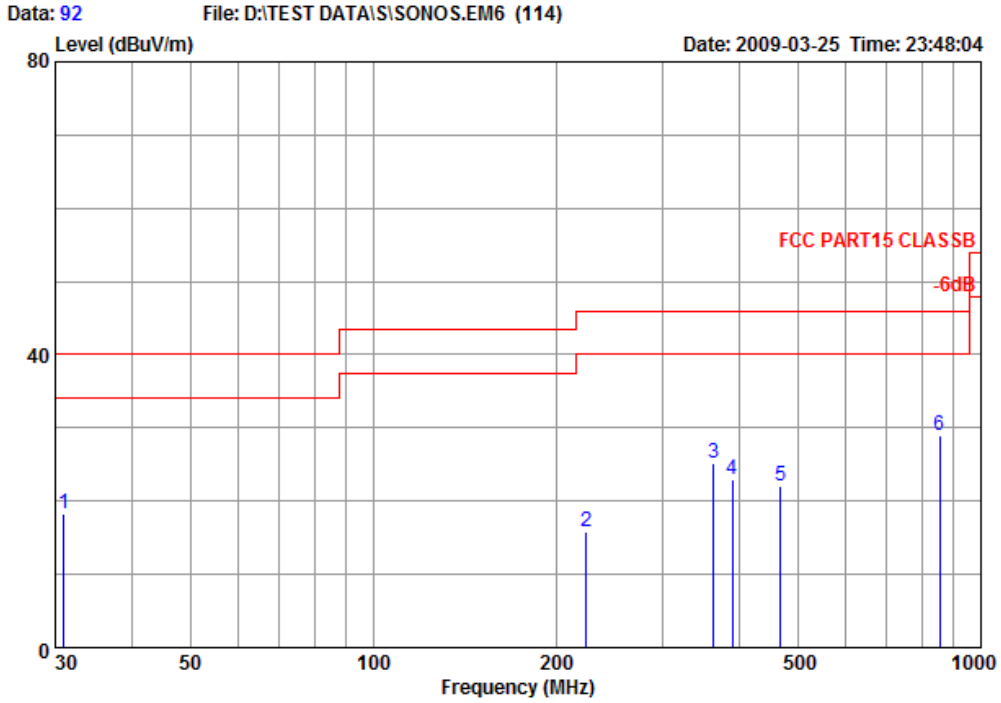

Site no : Audix ACI (3m Chamber) Data no. : 92
Dis. / Ant. : 3m /CBL 6112D-2008.05.14
Limit : FCC PART15 CLASSB Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH/ ESVS10 Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna2 Ch06

	Freq. (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	30.970	19.03	0.57	-1.41	18.19	40.00	21.81
2	224.000	11.85	1.17	2.91	15.93	46.00	30.07
3	363.680	15.69	1.87	7.73	25.29	46.00	20.71
4	389.870	16.30	2.00	4.69	22.99	46.00	23.01
5	468.440	17.49	2.28	2.34	22.11	46.00	23.89
6	856.440	21.28	3.44	4.21	28.93	46.00	17.07

Remarks: 1.Emission Level= Antenna Factor + Cable Loss + Reading.
2.The emission levels that are 20dB below the offical are not report.

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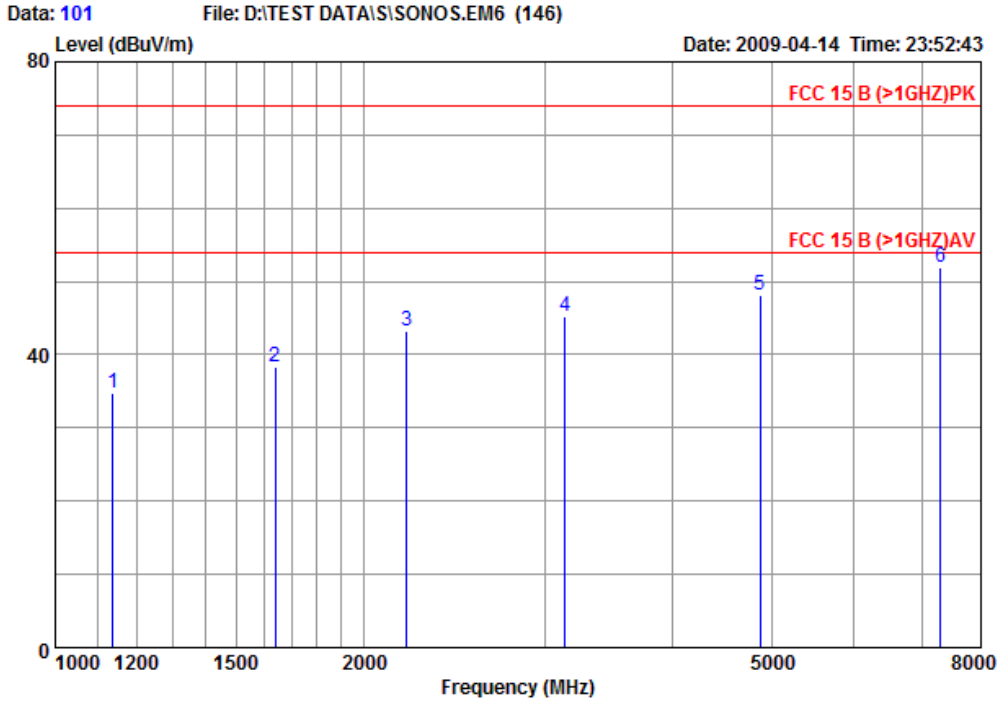

Site no : Audix ACI (3m Chamber) Data no. : 101
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna2 Ch06

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	1138.904	24.76	37.33	4.06	43.24	34.73	74.00	39.27
2	1639.274	26.59	36.27	5.07	43.02	38.41	74.00	35.59
3	2201.352	28.28	35.49	5.77	44.72	43.28	74.00	30.72
4	3141.145	30.84	34.61	7.12	41.99	45.34	74.00	28.66
5	4874.000	32.92	34.09	9.54	39.76	48.13	74.00	25.87
6	7311.000	34.32	34.52	10.44	41.60	51.84	74.00	22.16

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.The emission levels that are 20dB below the offical are not report.

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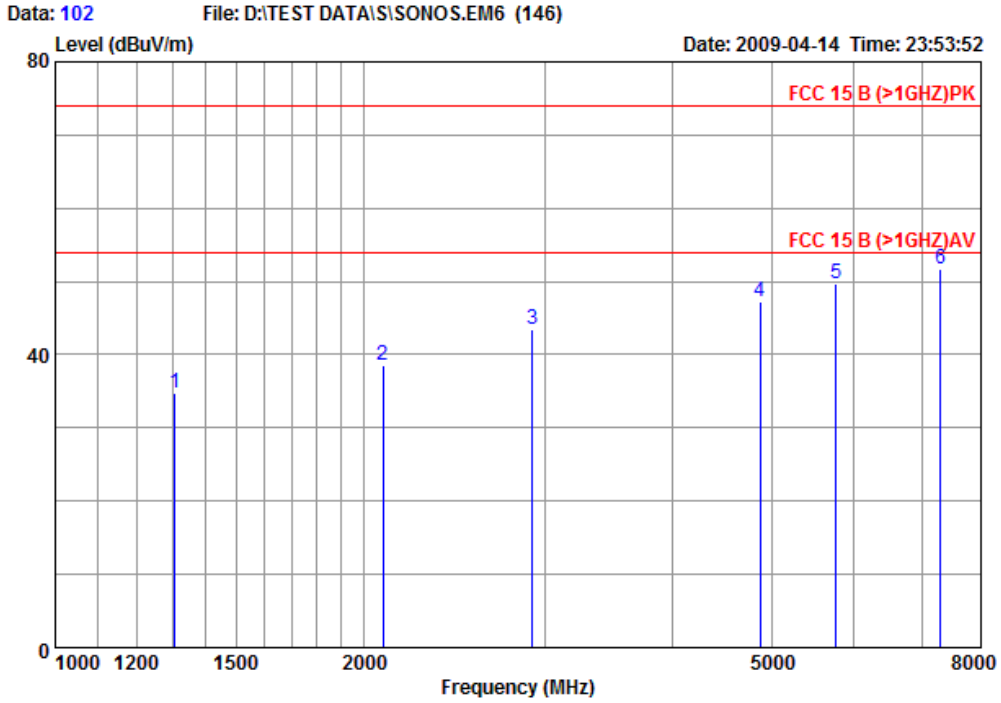

Site no : Audix ACI (3m Chamber) Data no. : 102
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ) PK Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna2 Ch06

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	1308.399	25.46	36.92	4.43	41.70	34.67	74.00	39.33
2	2089.751	27.91	35.60	5.67	40.52	38.50	74.00	35.50
3	2922.174	30.31	34.86	6.87	41.23	43.55	74.00	30.45
4	4874.000	32.92	34.09	9.54	38.76	47.13	74.00	26.87
5	5780.300	34.19	34.56	10.33	39.80	49.76	74.00	24.24
6	7311.000	35.47	34.48	11.93	38.73	51.65	74.00	22.35

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.The emission levels that are 20dB below the offical are not report.

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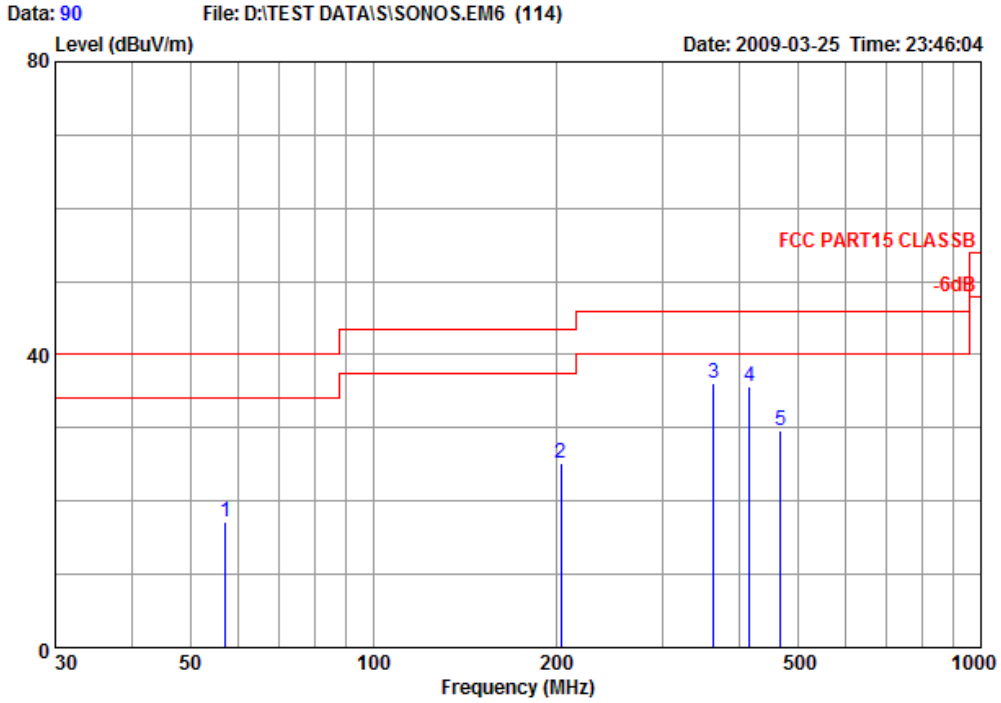

Site no : Audix ACI (3m Chamber) Data no. : 90
Dis. / Ant. : 3m /CBL 6112D-2008.05.14
Limit : FCC PART15 CLASSB Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH/ ESVS10 Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna2 Ch11

	Freq. (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	57.160	7.18	0.81	9.11	17.10	40.00	22.90
2	203.630	10.85	1.10	13.17	25.12	43.50	18.38
3	363.680	15.69	1.87	18.59	36.15	46.00	9.85
4	416.060	16.72	2.10	16.87	35.69	46.00	10.31
5	468.440	17.49	2.28	9.85	29.62	46.00	16.38

Remarks: 1.Emission Level= Antenna Factor + Cable Loss + Reading.
2.The emission levels that are 20dB below the offical are not report.

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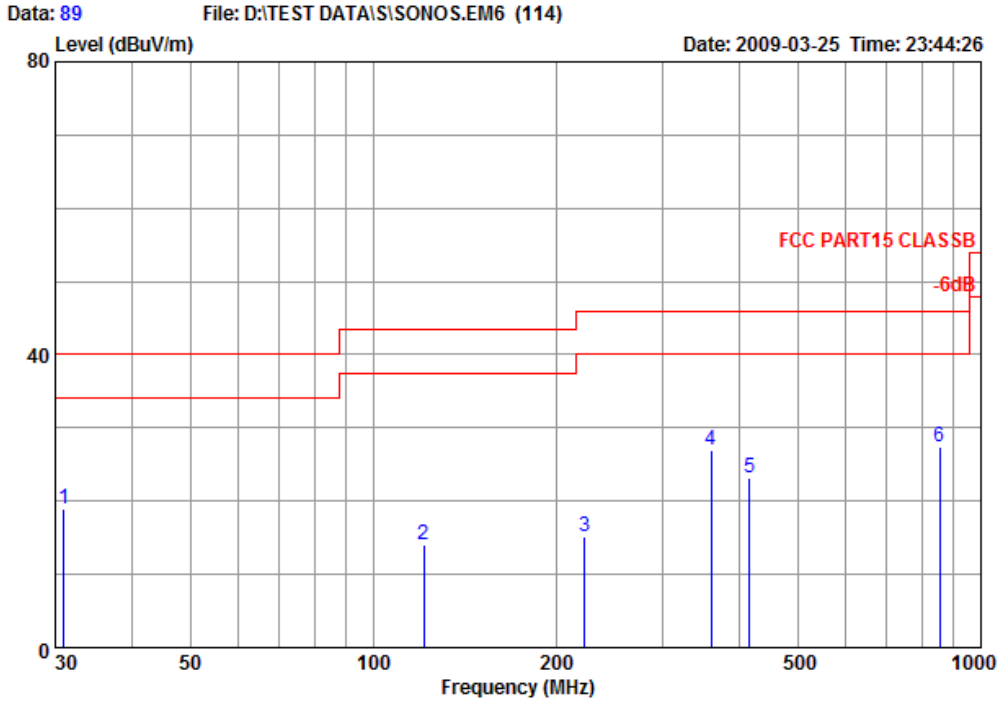

Site no : Audix ACI (3m Chamber) Data no. : 89
Dis. / Ant. : 3m /CBL 6112D-2008.05.14
Limit : FCC PART15 CLASSB Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH/ ESVS10 Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna2 Ch11

	Freq. (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	30.970	19.03	0.57	-0.66	18.94	40.00	21.06
2	121.180	12.95	0.88	0.19	14.02	43.50	29.48
3	223.030	11.80	1.17	2.14	15.11	46.00	30.89
4	359.800	15.61	1.84	9.57	27.02	46.00	18.98
5	416.060	16.72	2.10	4.29	23.11	46.00	22.89
6	856.440	21.28	3.44	2.61	27.33	46.00	18.67

Remarks: 1.Emission Level= Antenna Factor + Cable Loss + Reading.
2.The emission levels that are 20dB below the offical are not report.

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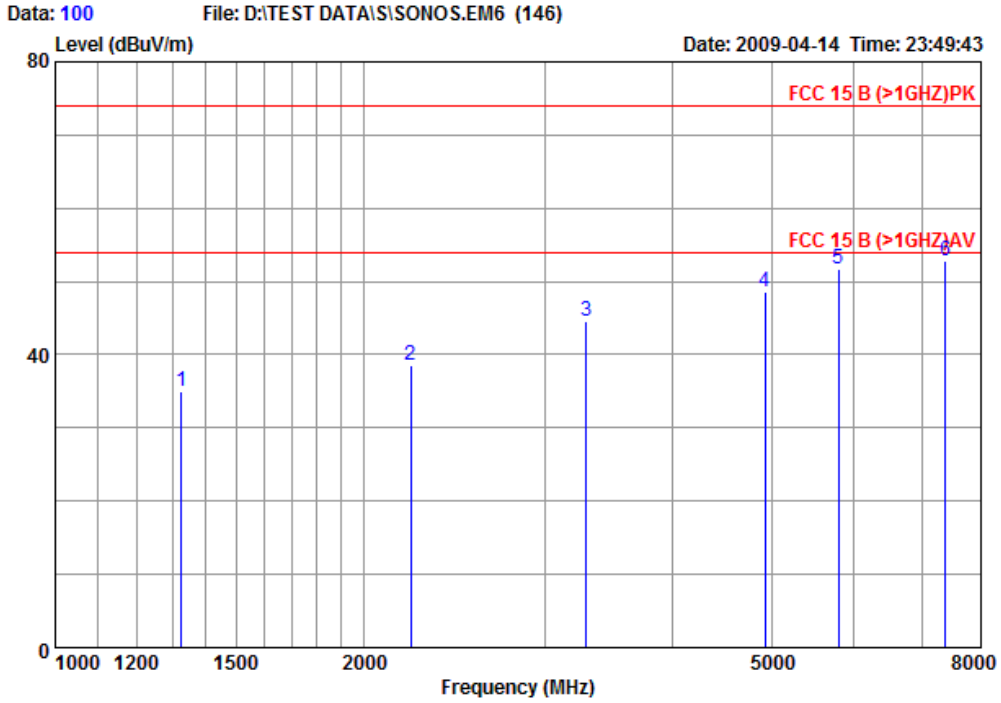

Site no : Audix ACI (3m Chamber) Data no. : 100
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna2 Ch11

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	1327.446	25.53	36.88	4.47	41.89	35.01	74.00	38.99
2	2220.523	28.35	35.47	5.79	39.90	38.57	74.00	35.43
3	3299.344	31.19	34.41	7.26	40.54	44.58	74.00	29.42
4	4924.000	33.16	34.44	9.84	40.12	48.68	74.00	25.32
5	5813.812	34.23	34.55	10.36	41.58	51.62	74.00	22.38
6	7386.000	35.47	34.48	11.93	39.95	52.87	74.00	21.13

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.The emission levels that are 20dB below the offical are not report.

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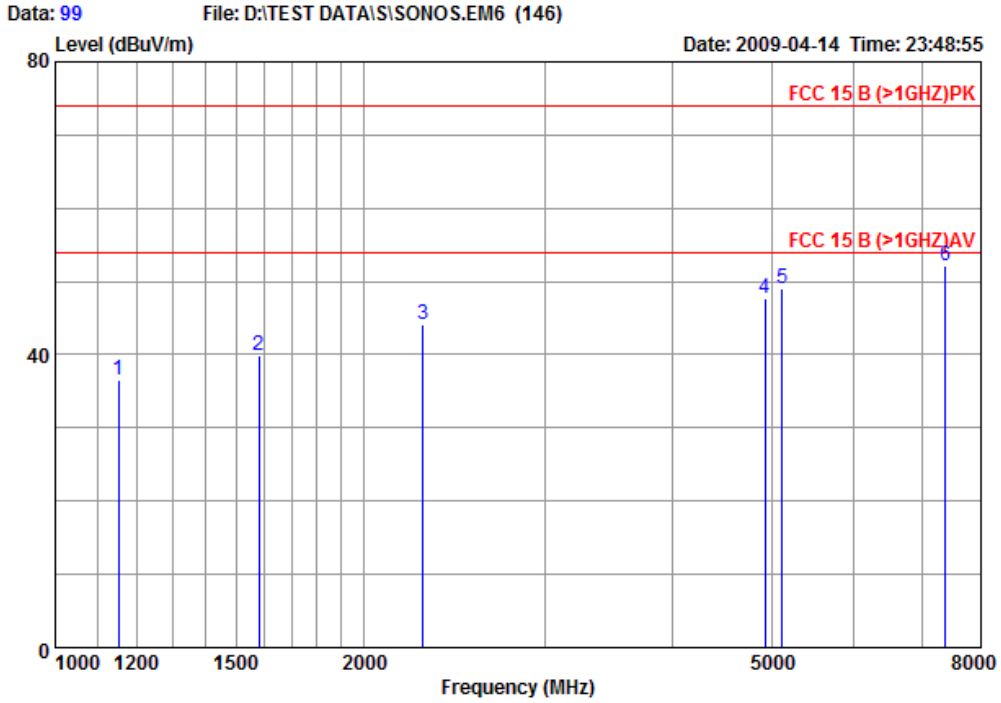

Site no : Audix ACI (3m Chamber) Data no. : 99
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna2 Ch11

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	1152.148	24.81	37.29	4.10	44.96	36.58	74.00	37.42
2	1578.822	26.40	36.38	4.96	44.92	39.90	74.00	34.10
3	2285.641	28.55	35.40	5.85	45.02	44.02	74.00	29.98
4	4924.000	31.11	34.45	7.22	43.88	47.76	74.00	26.24
5	5119.517	33.53	34.76	9.95	40.32	49.04	74.00	24.96
6	7386.000	35.42	34.49	11.83	39.37	52.13	74.00	21.87

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.The emission levels that are 20dB below the offical are not report.

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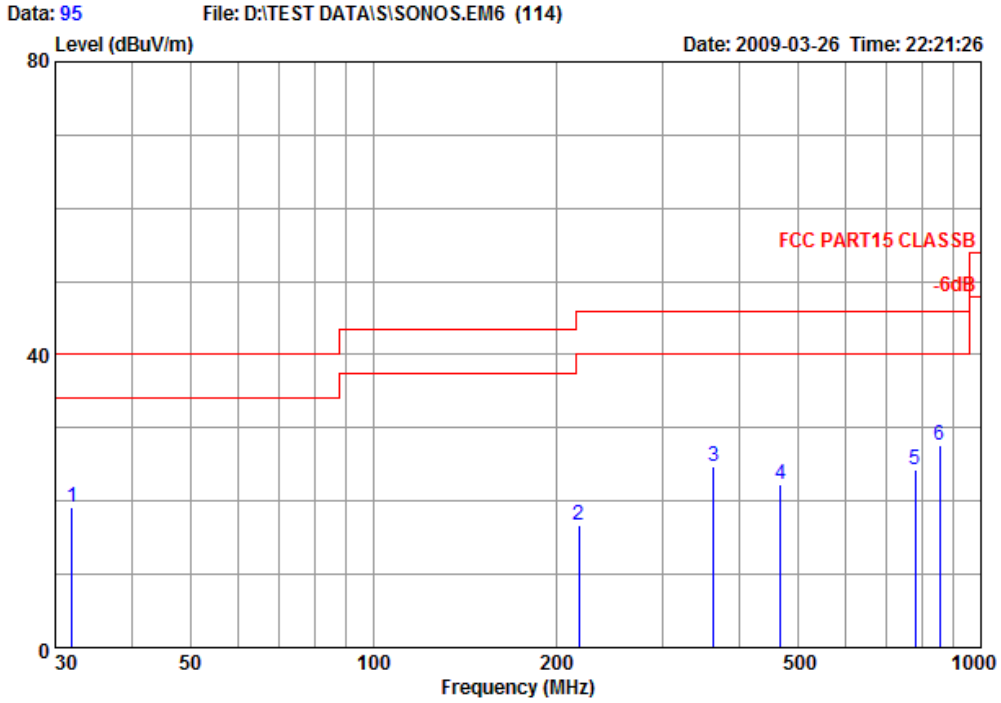

Site no : Audix ACI (3m Chamber) Data no. : 95
Dis. / Ant. : 3m /CBL 6112D-2008.05.14
Limit : FCC PART15 CLASSB Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH/ ESVS10 Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Receiving Antenna1 Ch06

	Freq. (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	31.940	18.49	0.59	0.13	19.21	40.00	20.79
2	218.180	11.52	1.15	3.95	16.62	46.00	29.38
3	363.680	15.69	1.87	7.17	24.73	46.00	21.27
4	468.440	17.49	2.28	2.62	22.39	46.00	23.61
5	779.810	20.52	3.27	0.44	24.23	46.00	21.77
6	856.440	21.28	3.44	3.01	27.73	46.00	18.27

Remarks: 1.Emission Level= Antenna Factor + Cable Loss + Reading.
2.The emission levels that are 20dB below the offical are not report.

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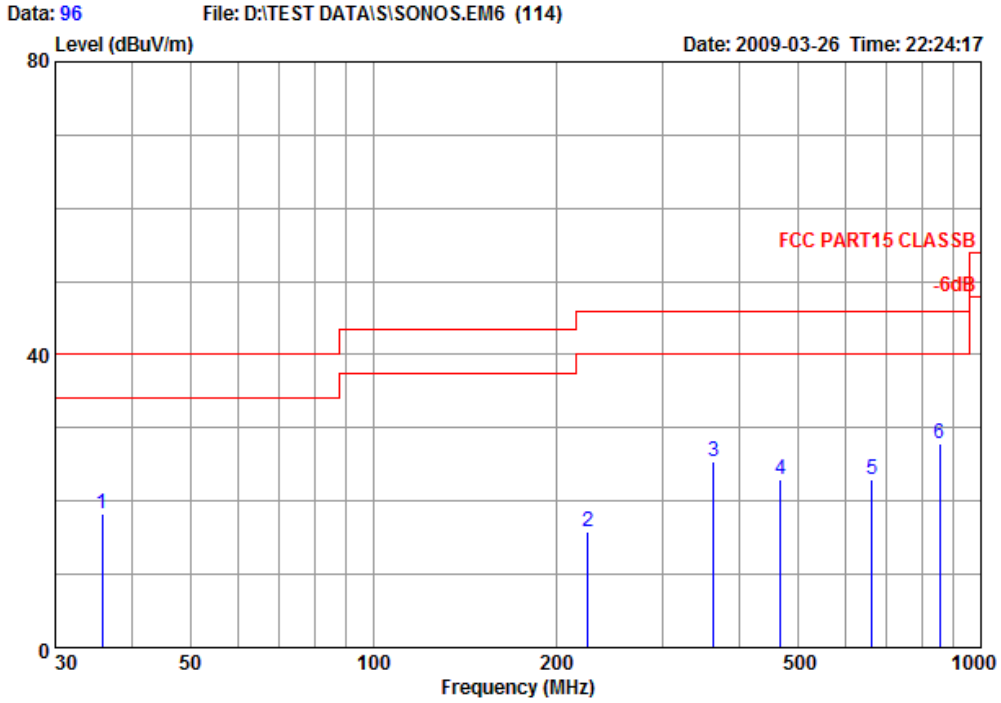

Site no : Audix ACI (3m Chamber) Data no. : 96
Dis. / Ant. : 3m /CBL 6112D-2008.05.14
Limit : FCC PART15 CLASSB Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH/ ESVS10 Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Receiving Antenna1 Ch06

	Freq. (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	35.820	16.45	0.64	1.23	18.32	40.00	21.68
2	225.940	11.94	1.19	2.76	15.89	46.00	30.11
3	363.680	15.69	1.87	7.82	25.38	46.00	20.62
4	468.440	17.49	2.28	3.21	22.98	46.00	23.02
5	662.440	19.52	2.91	0.51	22.94	46.00	23.06
6	856.440	21.28	3.44	3.23	27.95	46.00	18.05

Remarks: 1.Emission Level= Antenna Factor + Cable Loss + Reading.
2.The emission levels that are 20dB below the offical are not report.

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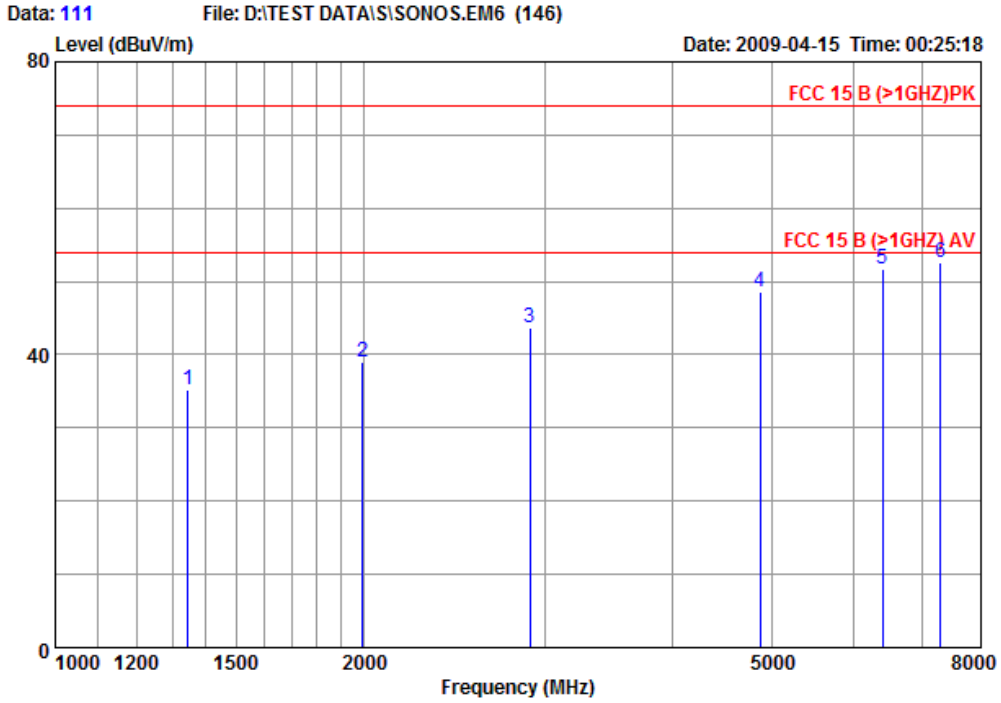

Site no : Audix ACI (3m Chamber) Data no. : 111
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Receiving Antenna1 Ch06

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	1346.769	25.60	36.84	4.51	41.98	35.25	74.00	38.75
2	1995.309	27.59	35.70	5.59	41.61	39.09	74.00	34.91
3	2905.331	30.27	34.87	6.84	41.33	43.57	74.00	30.43
4	4874.000	32.81	33.91	9.20	40.53	48.63	74.00	25.37
5	6414.167	34.79	34.50	11.25	40.12	51.66	74.00	22.34
6	7311.000	36.08	34.40	12.78	38.03	52.49	74.00	21.51

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.The emission levels that are 20dB below the offical are not report.

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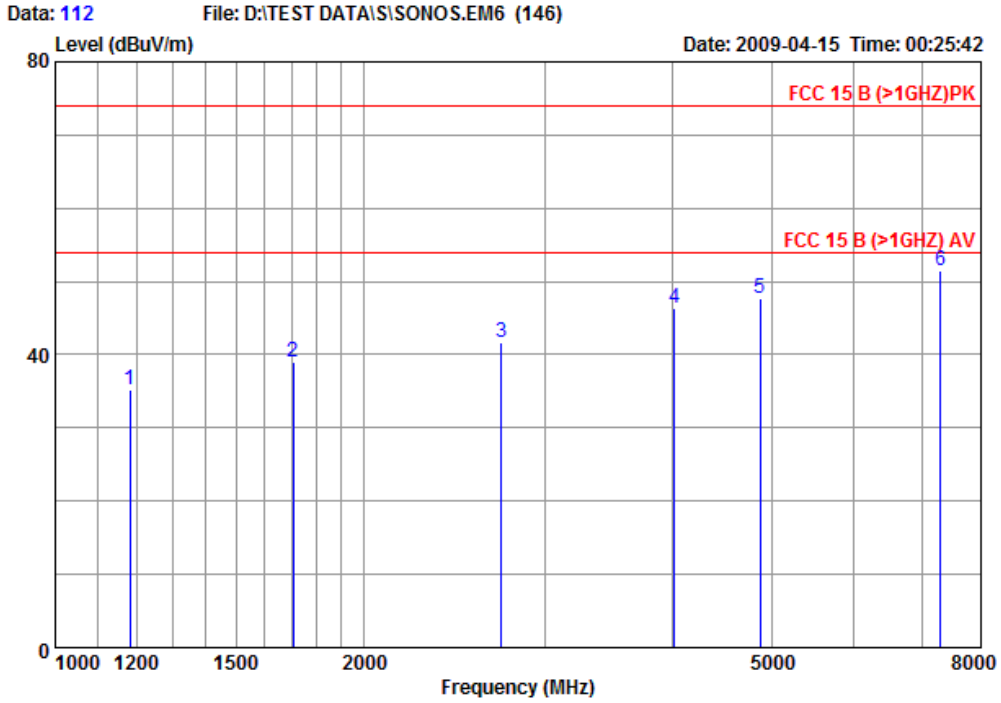

Site no : Audix ACI (3m Chamber) Data no. : 112
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Receiving Antenna1 Ch06

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	1182.513	24.95	37.22	4.16	43.22	35.11	74.00	38.89
2	1706.968	26.80	36.16	5.21	43.22	39.07	74.00	34.93
3	2726.337	29.82	35.01	6.48	40.39	41.68	74.00	32.32
4	4015.929	32.61	33.62	8.63	38.62	46.24	74.00	27.76
5	4874.000	32.95	34.14	9.63	39.32	47.76	74.00	26.24
6	7311.000	35.51	34.47	12.00	38.34	51.38	74.00	22.62

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.The emission levels that are 20dB below the offical are not report.

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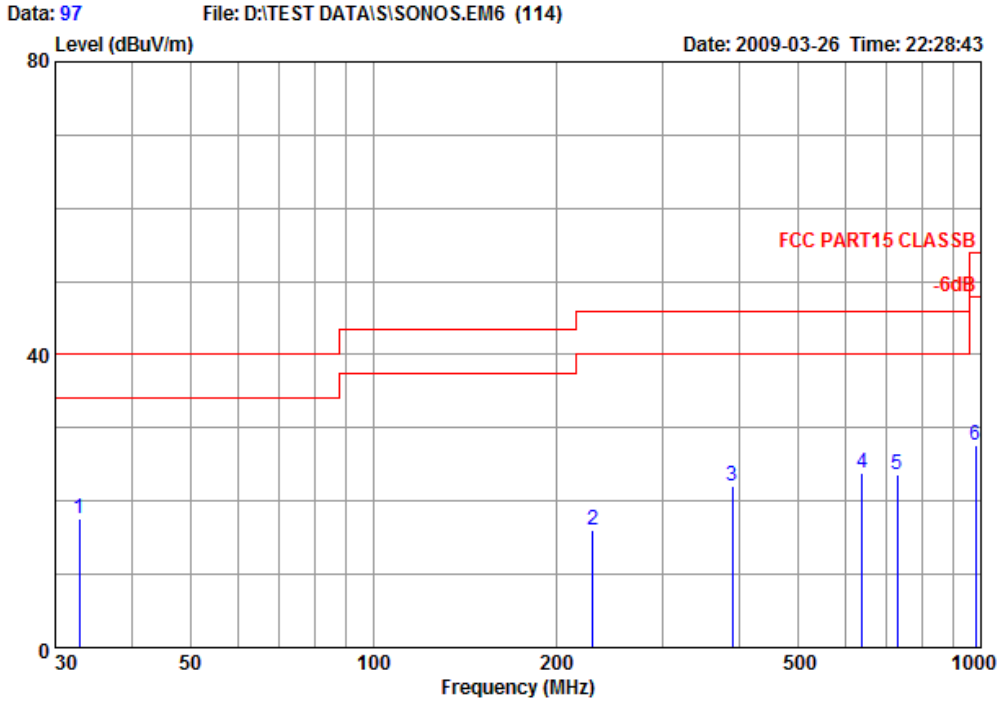

Site no : Audix ACI (3m Chamber) Data no. : 97
Dis. / Ant. : 3m /CBL 6112D-2008.05.14
Limit : FCC PART15 CLASSB Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH/ ESVS10 Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Receiving Antenna2 Ch06

	Freq. (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	32.910	17.95	0.60	-0.96	17.59	40.00	22.41
2	229.820	12.11	1.20	2.80	16.11	46.00	29.89
3	389.870	16.30	2.00	3.77	22.07	46.00	23.93
4	637.220	19.39	2.79	1.66	23.84	46.00	22.16
5	727.430	19.97	3.14	0.41	23.52	46.00	22.48
6	980.600	22.27	3.80	1.48	27.55	54.00	26.45

Remarks: 1.Emission Level= Antenna Factor + Cable Loss + Reading.
2.The emission levels that are 20dB below the offical are not report.

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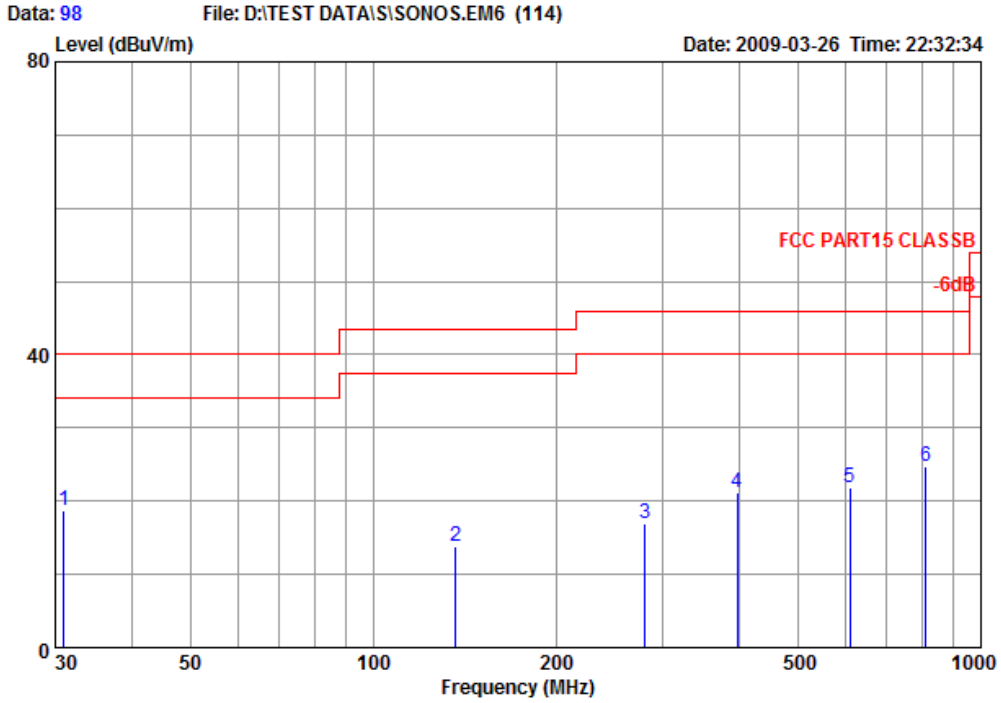

Site no : Audix ACI (3m Chamber) Data no. : 98
Dis. / Ant. : 3m /CBL 6112D-2008.05.14
Limit : FCC PART15 CLASSB Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH/ ESVS10 Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Receiving Antenna2 Ch06

	Freq. (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	30.970	19.03	0.57	-0.81	18.79	40.00	21.21
2	136.700	12.23	0.91	0.64	13.78	43.50	29.72
3	280.260	13.55	1.44	1.91	16.90	46.00	29.10
4	397.630	16.44	2.02	2.80	21.26	46.00	24.74
5	608.120	19.25	2.63	0.02	21.90	46.00	24.10
6	811.820	20.80	3.36	0.54	24.70	46.00	21.30

Remarks: 1.Emission Level= Antenna Factor + Cable Loss + Reading.
2.The emission levels that are 20dB below the offical are not report.

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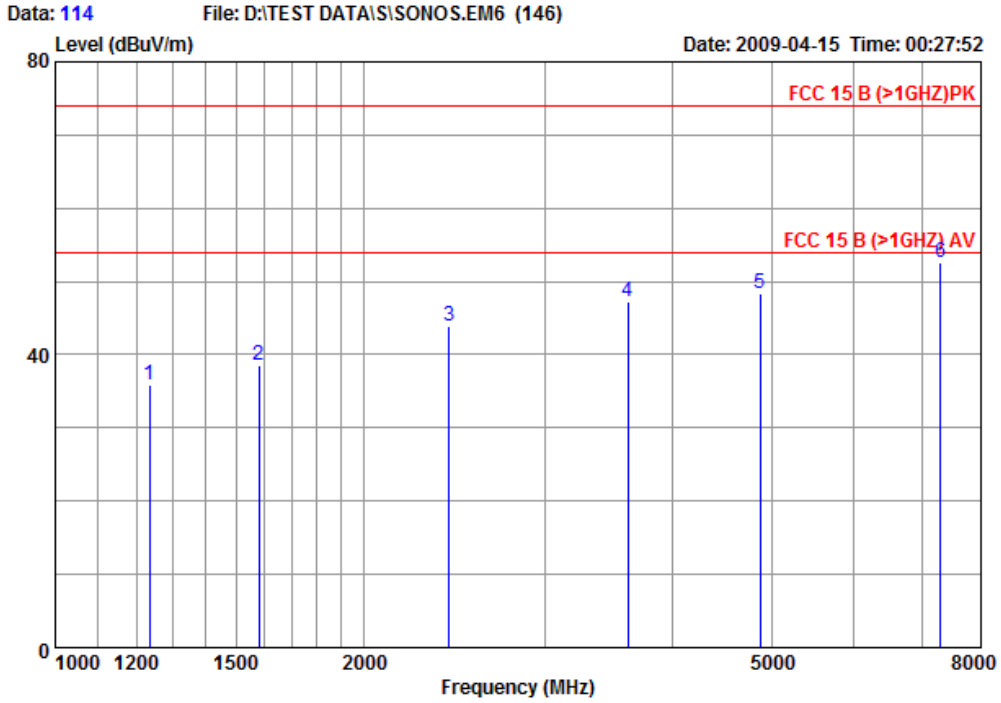

Site no : Audix ACI (3m Chamber) Data no. : 114
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Receiving Antenna2 Ch06

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	1234.909	25.16	37.09	4.27	43.57	35.91	74.00	38.09
2	1578.822	26.40	36.38	4.96	43.68	38.66	74.00	35.34
3	2421.661	28.97	35.28	5.95	44.15	43.79	74.00	30.21
4	3619.064	31.86	34.02	7.70	41.78	47.32	74.00	26.68
5	4874.000	32.96	34.15	9.66	39.88	48.35	74.00	25.65
6	7311.000	35.25	34.50	11.58	40.24	52.57	74.00	21.43

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.The emission levels that are 20dB below the offical are not report.

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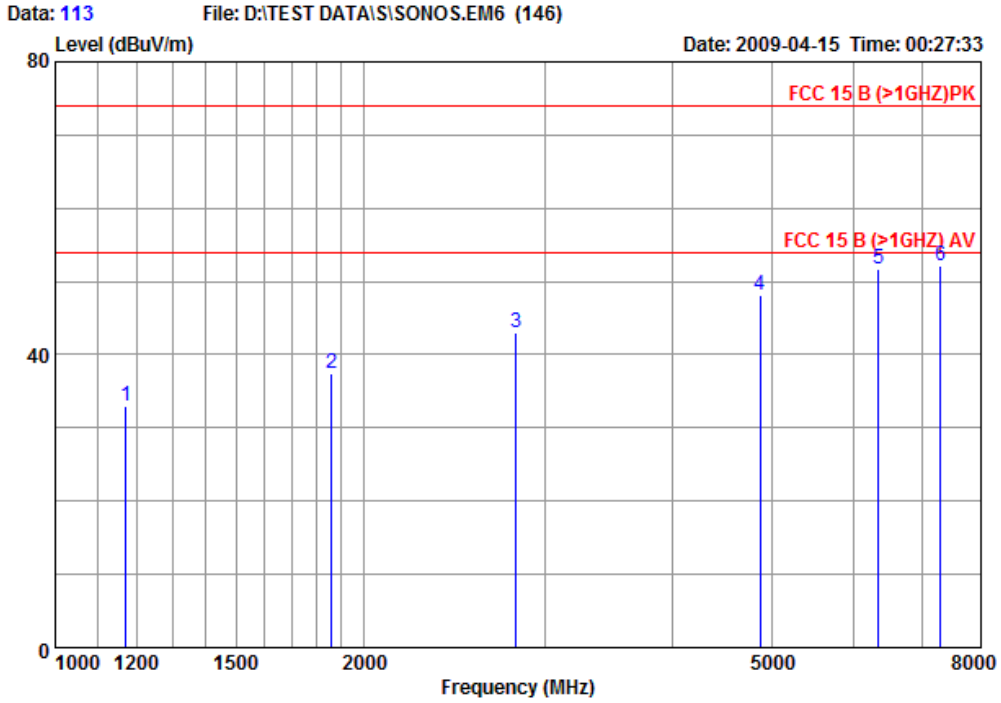

Site no : Audix ACI (3m Chamber) Data no. : 113
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Tom
EUT : Woodstock Sonos Controller
M/N : CR200
S/N : E2009032503
Power Rating: 120V/60Hz
Test Mode : Receiving Antenna2 Ch06

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1	1172.303	24.90	37.24	4.14	41.29	33.09	74.00	40.91
2	1861.588	27.24	35.91	5.46	40.64	37.43	74.00	36.57
3	2814.411	30.04	34.95	6.67	41.20	42.96	74.00	31.04
4	4874.000	32.60	33.60	8.60	40.43	48.03	74.00	25.97
5	6358.789	34.74	34.50	11.15	40.27	51.66	74.00	22.34
6	7311.000	36.08	34.40	12.78	37.72	52.18	74.00	21.82

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.The emission levels that are 20dB below the offical are not report.

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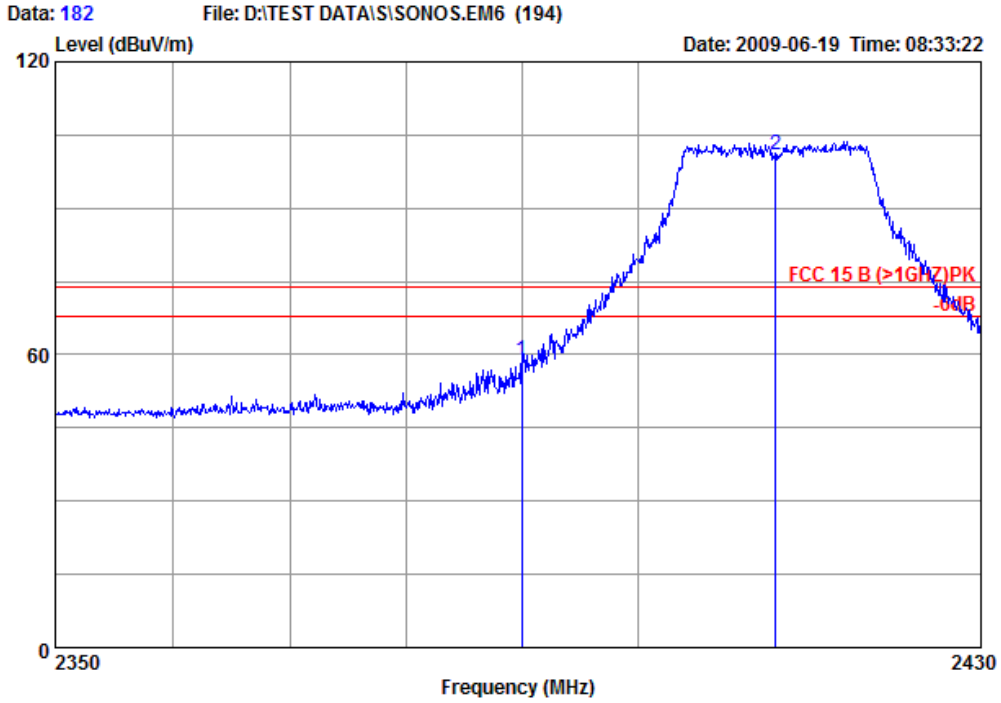
audixaci@audix.com



Site no : Audix ACI (3m Chamber) Data no. : 182
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Dio
EUT : Woodstock Sonos Controller
M/N : CR200
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna1 Ch01

	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	28.86	35.30	5.93	59.34	58.83	74.00	15.17	Peak
2	2412.000	28.95	35.28	5.95	101.20	100.82	74.00	-26.82	Peak

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.High frequency section (spurious in the restricted band 2310-2390 MHz, 2483.5-2500 MHz)

Audix Technology (Shanghai) Co., Ltd.
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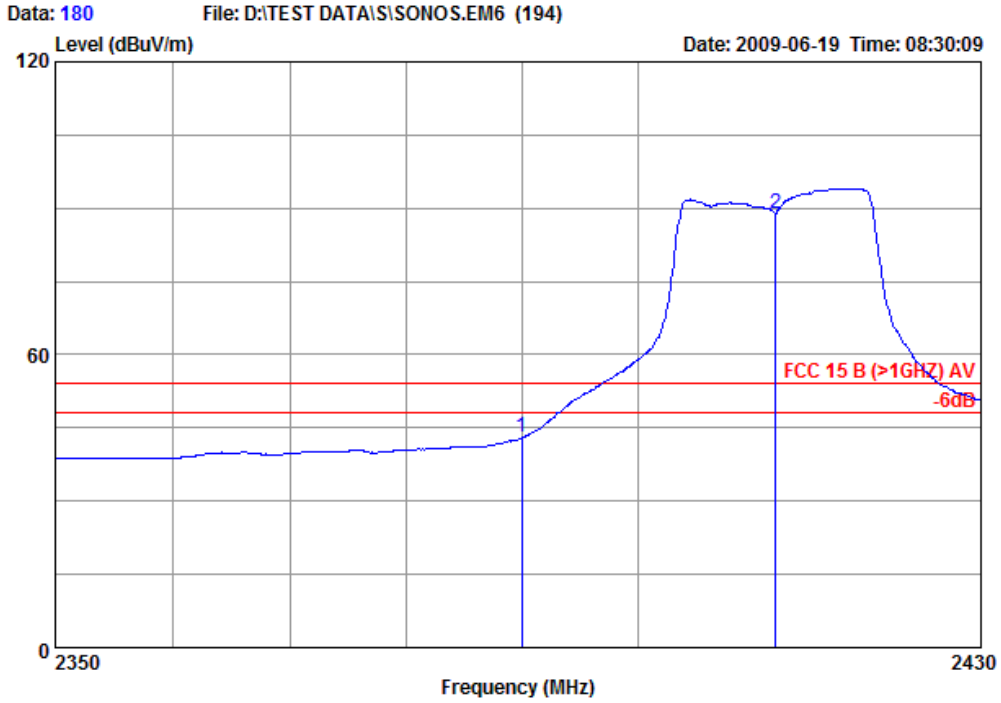
audixaci@audix.com



Site no : Audix ACI (3m Chamber) Data no. : 180
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ) AV Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Dio
EUT : Woodstock Sonos Controller
M/N : CR200
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna1 Ch01

	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	28.86	35.30	5.93	43.52	43.01	54.00	10.99	Average
2	2412.000	28.95	35.28	5.95	89.21	88.83	54.00	-34.83	Average

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.High frequency section (spurious in the restricted band 2310-2390 MHz, 2483.5-2500 MHz)

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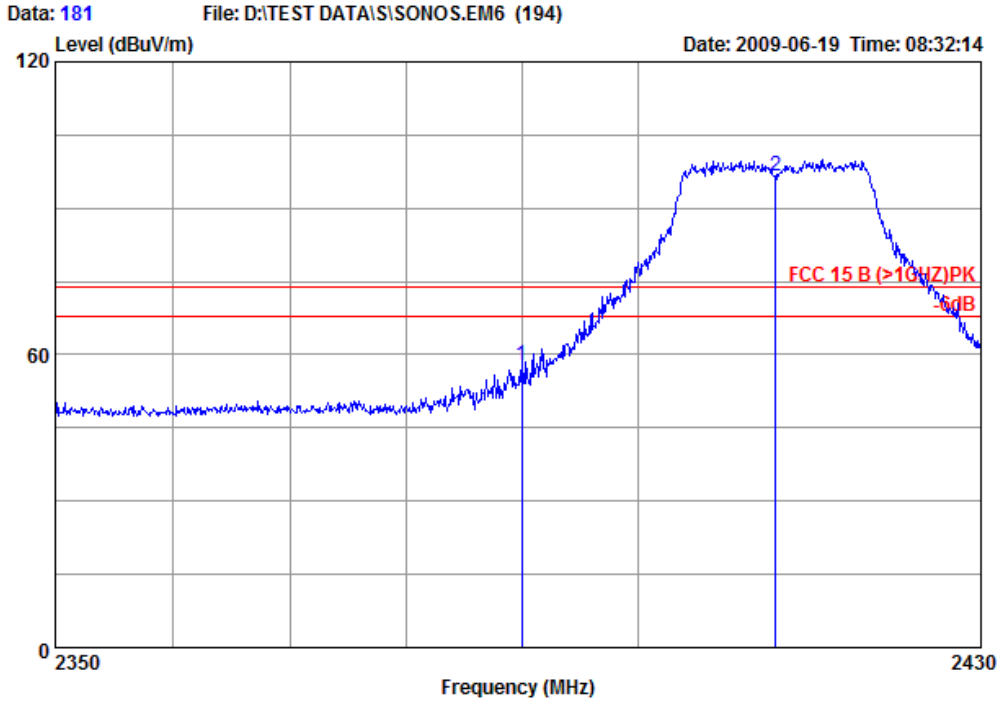

Site no : Audix ACI (3m Chamber) Data no. : 181
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Dio
EUT : Woodstock Sonos Controller
M/N : CR200
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna1 Ch01

	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	28.86	35.30	5.93	58.19	57.68	74.00	16.32	Peak
2	2412.000	28.95	35.28	5.95	97.11	96.73	74.00	-22.73	Peak

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.High frequency section (spurious in the restricted band 2310-2390 MHz, 2483.5-2500 MHz)

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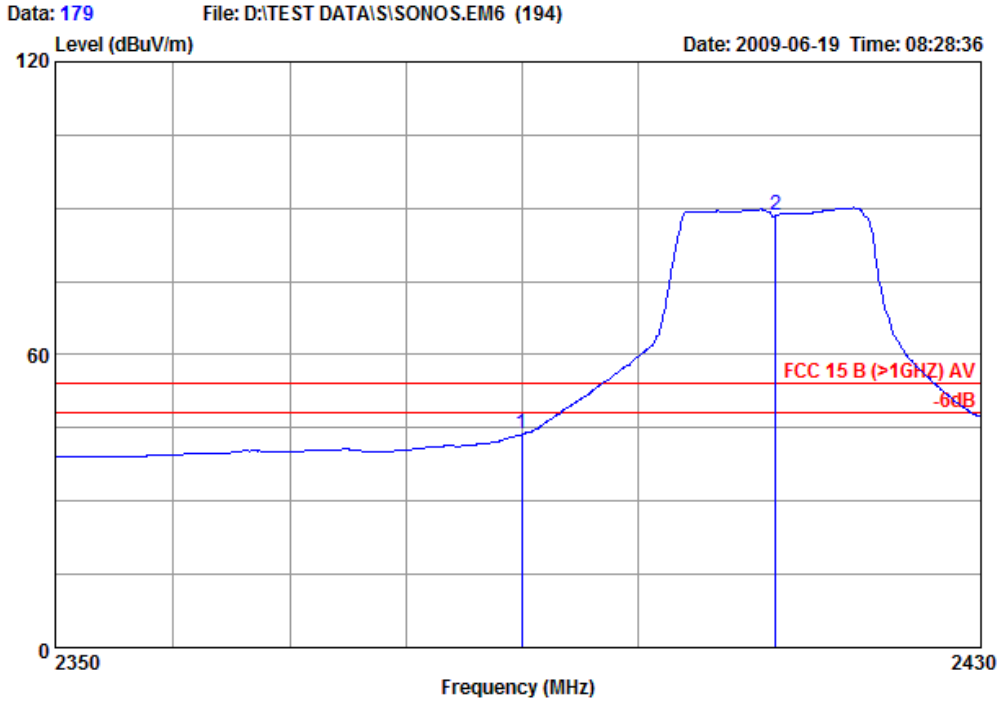

Site no : Audix ACI (3m Chamber) Data no. : 179
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ) AV Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Dio
EUT : Woodstock Sonos Controller
M/N : CR200
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna1 Ch01

	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	28.86	35.30	5.93	44.20	43.69	54.00	10.31	Average
2	2412.000	28.95	35.28	5.95	88.86	88.48	54.00	-34.48	Average

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.High frequency section (spurious in the restricted band 2310-2390 MHz, 2483.5-2500 MHz)

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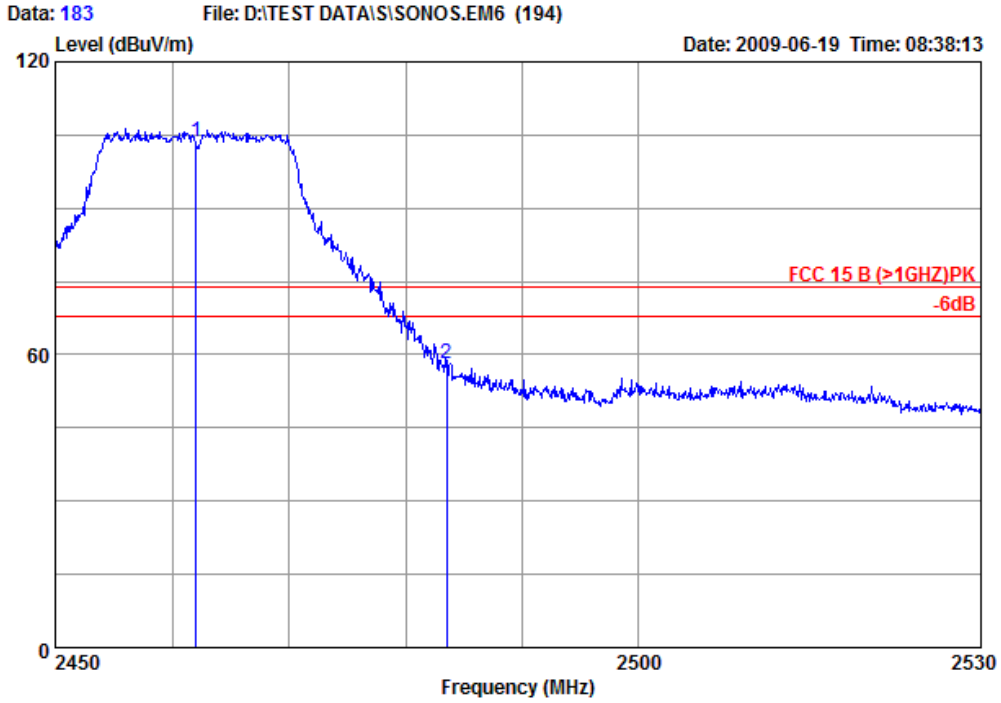

Site no : Audix ACI (3m Chamber) Data no. : 183
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Dio
EUT : Woodstock Sonos Controller
M/N : CR200
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna1 Ch11

	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	2462.000	29.09	35.24	5.98	103.68	103.51	74.00	-29.51	Peak
2	2483.500	29.15	35.22	5.99	58.24	58.16	74.00	15.84	Peak

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.High frequency section (spurious in the restricted band 2310-2390 MHz, 2483.5-2500 MHz)

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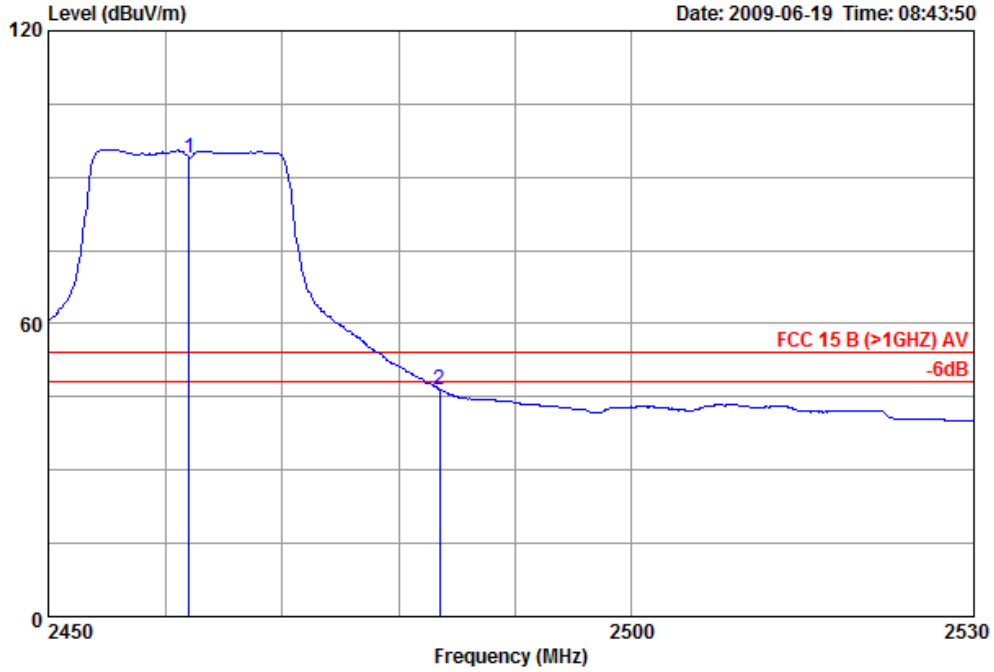
Data: 186 File: D:\TEST DATA\S\SONOS.EM6 (194)



Site no : Audix ACI (3m Chamber) Data no. : 186
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ) AV Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Dio
EUT : Woodstock Sonos Controller
M/N : CR200
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna1 Ch11

	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	2462.000	29.09	35.24	5.98	93.93	93.76	54.00	-39.76	Average
2	2483.520	29.15	35.22	5.99	46.62	46.54	54.00	7.46	Average

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.High frequency section (spurious in the restricted band 2310-2390 MHz, 2483.5-2500 MHz)

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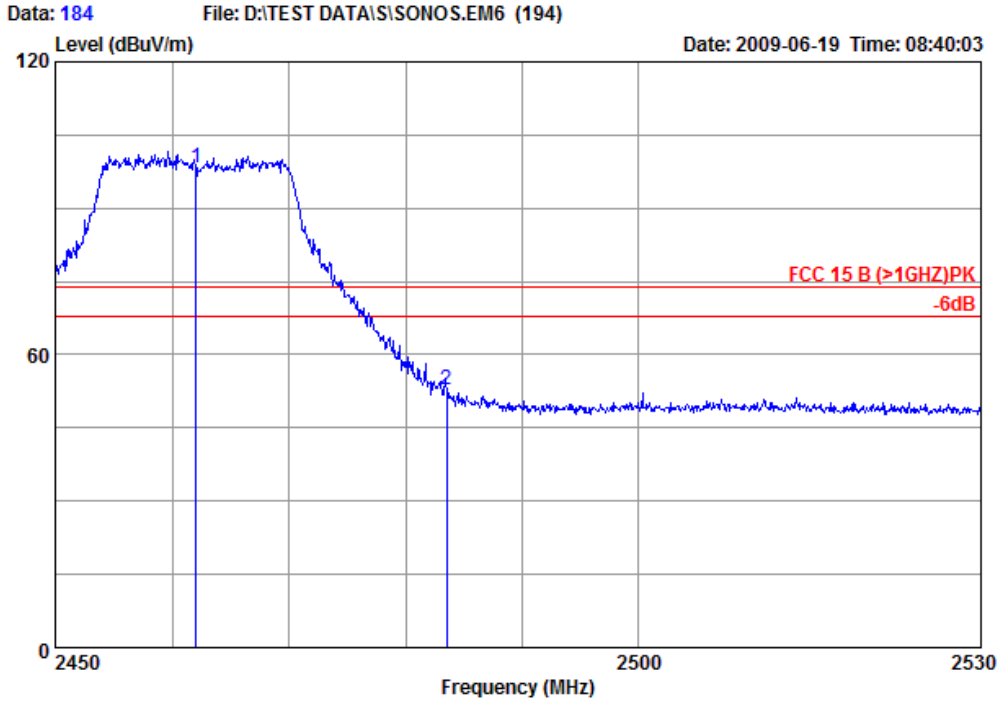

Site no : Audix ACI (3m Chamber) Data no. : 184
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Dio
EUT : Woodstock Sonos Controller
M/N : CR200
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna1 Ch11

	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	2462.000	29.09	35.24	5.98	98.29	98.12	74.00	-24.12	Peak
2	2483.500	29.15	35.22	5.99	52.98	52.90	74.00	21.10	Peak

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.High frequency section (spurious in the restricted band 2310-2390 MHz, 2483.5-2500 MHz)

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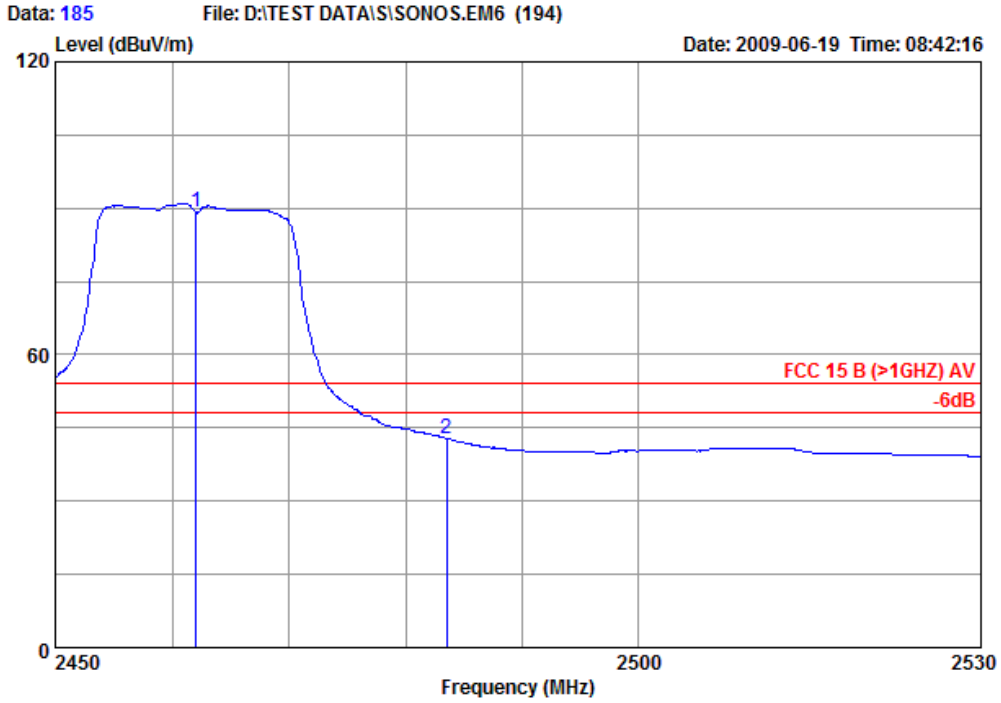

Site no : Audix ACI (3m Chamber) Data no. : 185
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ) AV Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Dio
EUT : Woodstock Sonos Controller
M/N : CR200
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna1 Ch11

	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	2462.000	29.09	35.24	5.98	89.29	89.12	54.00	-35.12	Average
2	2483.520	29.15	35.22	5.99	42.91	42.83	54.00	11.17	Average

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.High frequency section (spurious in the restricted band 2310-2390 MHz, 2483.5-2500 MHz)

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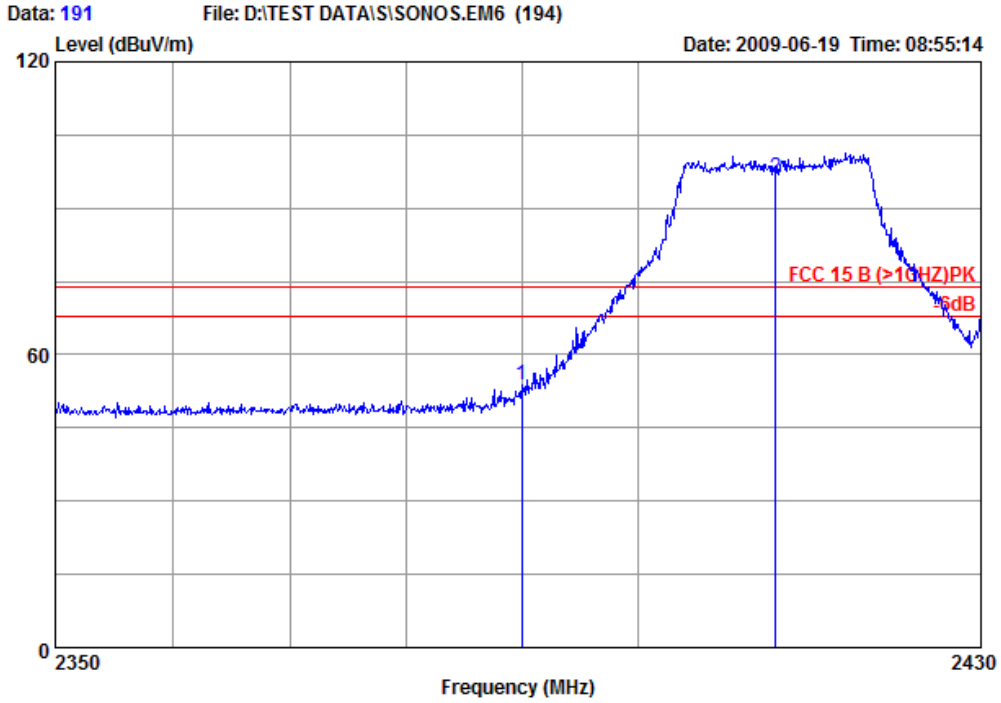

Site no : Audix ACI (3m Chamber) Data no. : 191
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Dio
EUT : Woodstock Sonos Controller
M/N : CR200
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna2 Ch01

	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	28.86	35.30	5.93	54.33	53.82	74.00	20.18	Peak
2	2412.000	28.95	35.28	5.95	96.81	96.43	74.00	-22.43	Peak

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.High frequency section (spurious in the restricted band 2310-2390 MHz, 2483.5-2500 MHz)

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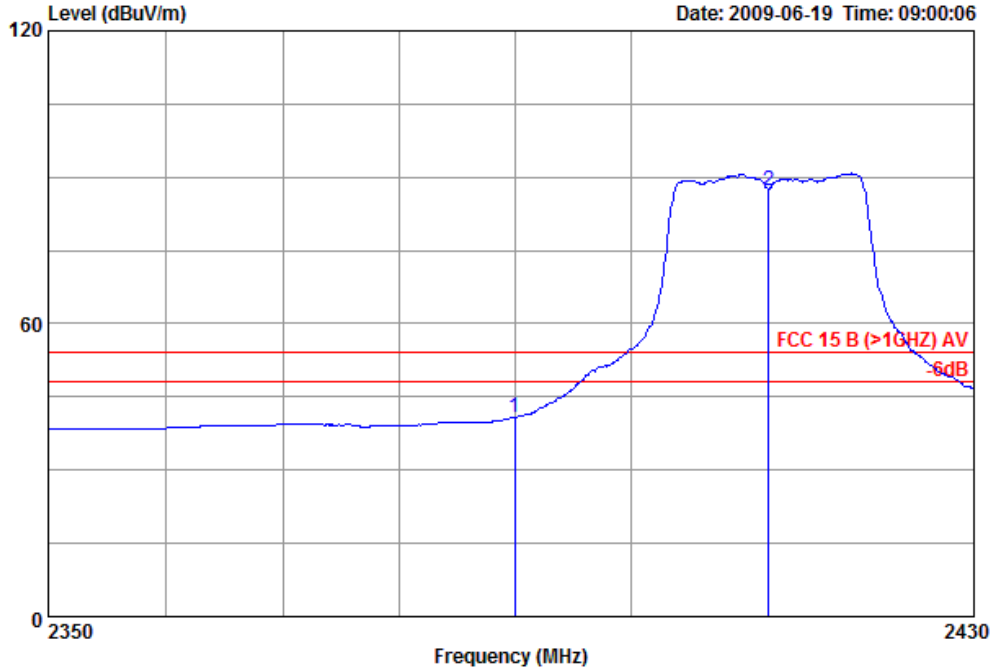
Data: 194 File: D:\TEST DATA\S\SONOS.EM6 (194)



Site no : Audix ACI (3m Chamber) Data no. : 194
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ) AV Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Dio
EUT : Woodstock Sonos Controller
M/N : CR200
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna2 Ch01

	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	28.86	35.30	5.93	41.32	40.81	54.00	13.19	Average
2	2412.000	28.95	35.28	5.95	87.65	87.27	54.00	-33.27	Average

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.High frequency section (spurious in the restricted band 2310-2390 MHz, 2483.5-2500 MHz)

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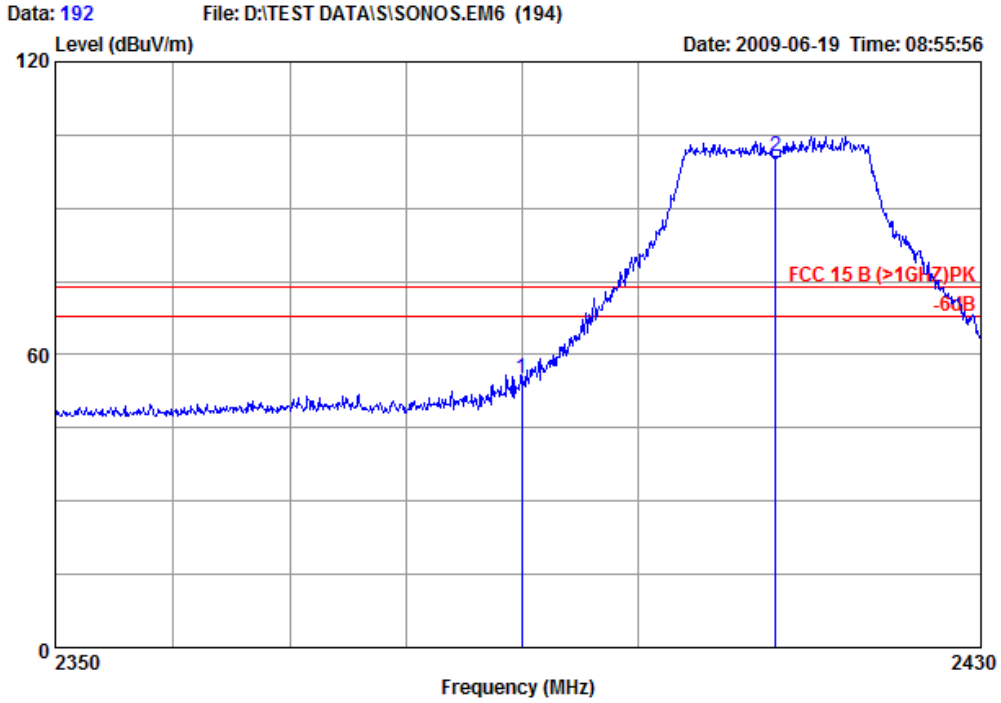

Site no : Audix ACI (3m Chamber) Data no. : 192
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Dio
EUT : Woodstock Sonos Controller
M/N : CR200
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna2 Ch01

	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	28.86	35.30	5.93	55.59	55.08	74.00	18.92	Peak
2	2412.000	28.95	35.28	5.95	101.03	100.65	74.00	-26.65	Peak

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.High frequency section (spurious in the restricted band 2310-2390 MHz, 2483.5-2500 MHz)

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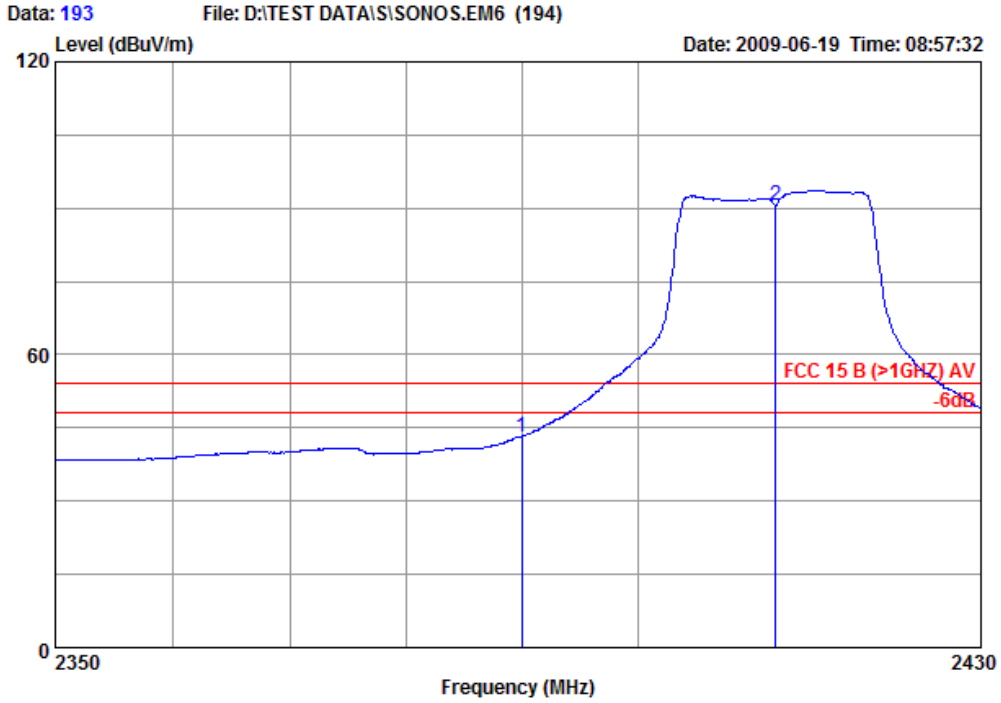
audixaci@audix.com



Site no : Audix ACI (3m Chamber) Data no. : 193
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ) AV Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Dio
EUT : Woodstock Sonos Controller
M/N : CR200
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna2 Ch01

	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	28.86	35.30	5.93	43.70	43.19	54.00	10.81	Average
2	2412.000	28.95	35.28	5.95	90.90	90.52	54.00	-36.52	Average

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.High frequency section (spurious in the restricted band 2310-2390 MHz, 2483.5-2500 MHz)

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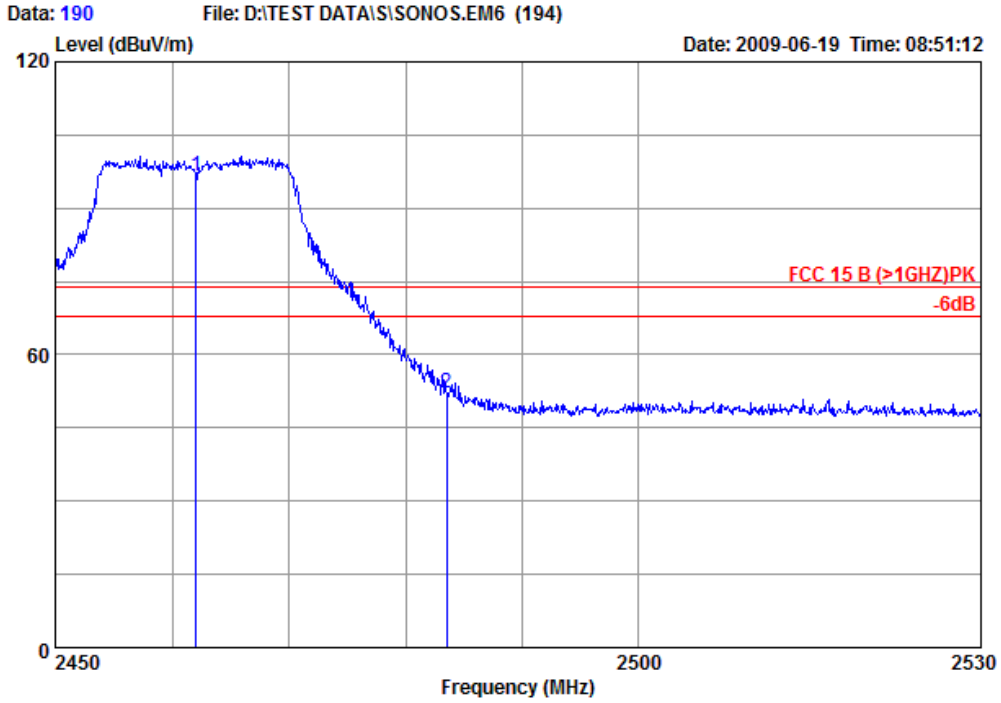

Site no : Audix ACI (3m Chamber) Data no. : 190
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Dio
EUT : Woodstock Sonos Controller
M/N : CR200
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna2 Ch11

	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	2462.000	29.09	35.24	5.98	96.80	96.63	74.00	-22.63	Peak
2	2483.520	29.15	35.22	5.99	52.33	52.25	74.00	21.75	Peak

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.High frequency section (spurious in the restricted band 2310-2390 MHz, 2483.5-2500 MHz)

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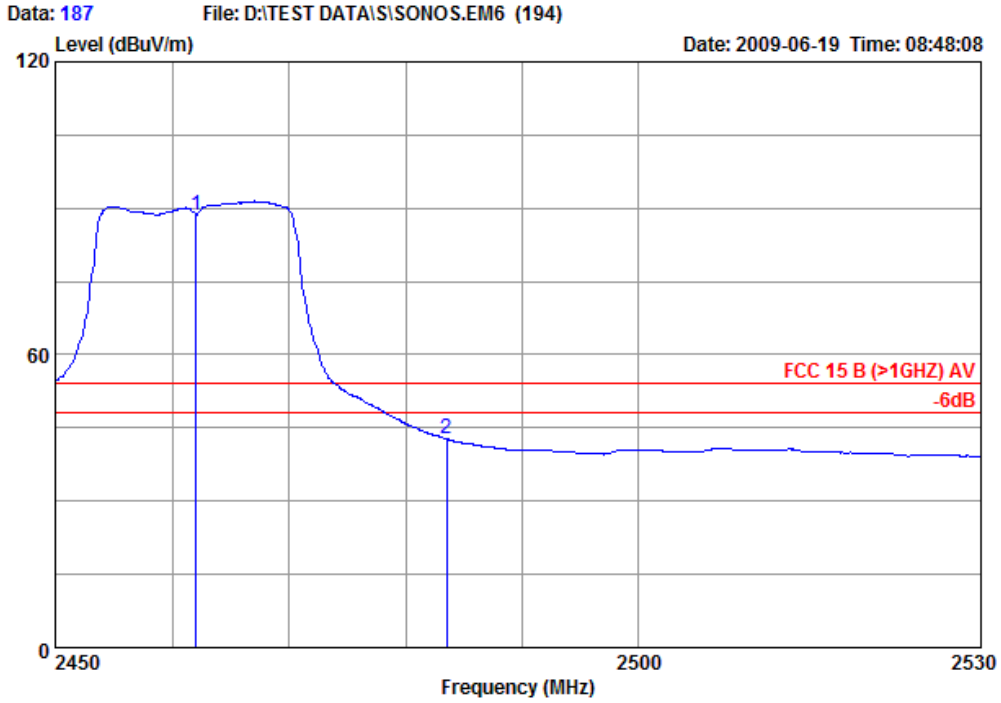
audixaci@audix.com



Site no : Audix ACI (3m Chamber) Data no. : 187
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ) AV Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Dio
EUT : Woodstock Sonos Controller
M/N : CR200
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna2 Ch11

	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	2462.000	29.09	35.24	5.98	88.73	88.56	54.00	-34.56	Average
2	2483.520	29.15	35.22	5.99	42.83	42.75	54.00	11.25	Average

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.High frequency section (spurious in the restricted band 2310-2390 MHz, 2483.5-2500 MHz)

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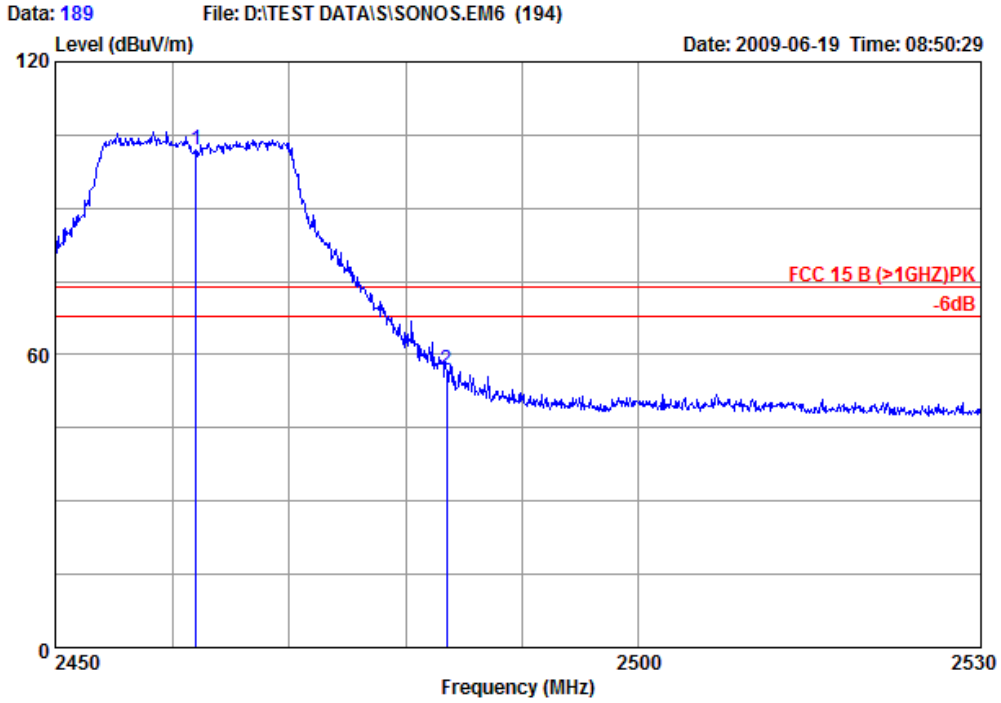
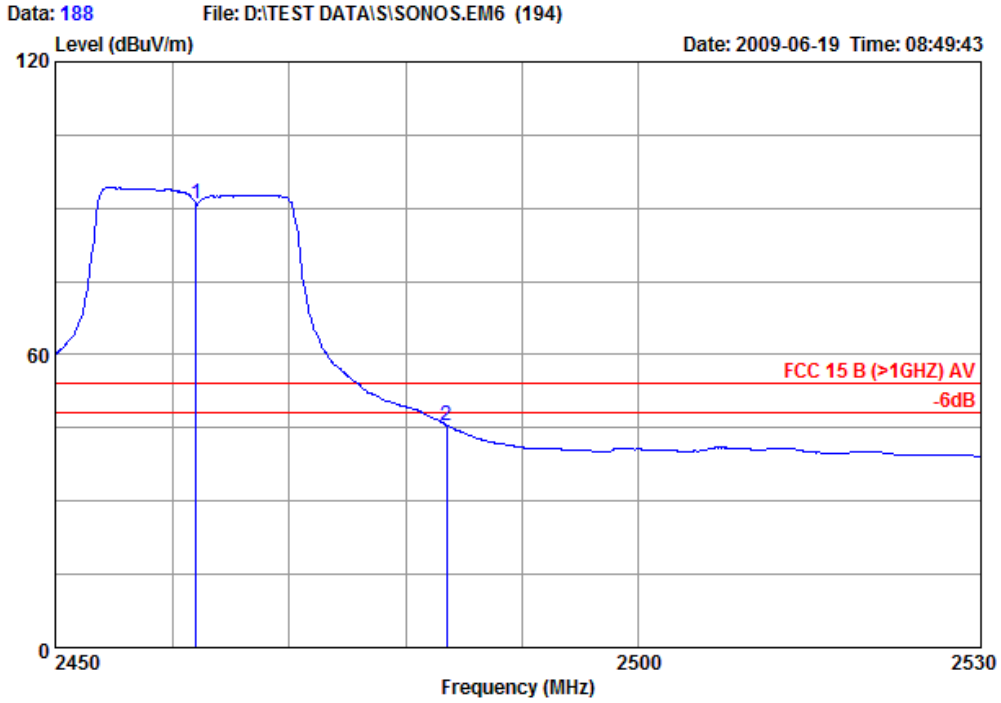


Site no : Audix ACI (3m Chamber) Data no. : 189
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ)PK Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Dio
EUT : Woodstock Sonos Controller
M/N : CR200
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna2 Ch11

	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	2462.000	29.09	35.24	5.98	102.06	101.89	74.00	-27.89	Peak
2	2483.520	29.15	35.22	5.99	56.96	56.88	74.00	17.12	Peak

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.High frequency section (spurious in the restricted band 2310-2390 MHz, 2483.5-2500 MHz)

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai 200233, China
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@audix.com



Site no : Audix ACI (3m Chamber) Data no. : 188
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ) AV Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH / E7405A Engineer : Dio
EUT : Woodstock Sonos Controller
M/N : CR200
Power Rating: 120V/60Hz
Test Mode : Transmitting Antenna2 Ch11

	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	2462.000	29.09	35.24	5.98	91.02	90.85	54.00	-36.85	Average
2	2483.520	29.15	35.22	5.99	45.63	45.55	54.00	8.45	Average

Remarks: 1.Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.
2.High frequency section (spurious in the restricted band 2310-2390 MHz, 2483.5-2500 MHz)

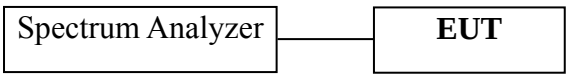
5 6 dB BANDWIDTH MEASUREMENT

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	May 19, 2008	May 19, 2009

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 "Telnet" was used to enable the EUT to transmit and receive 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 and 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

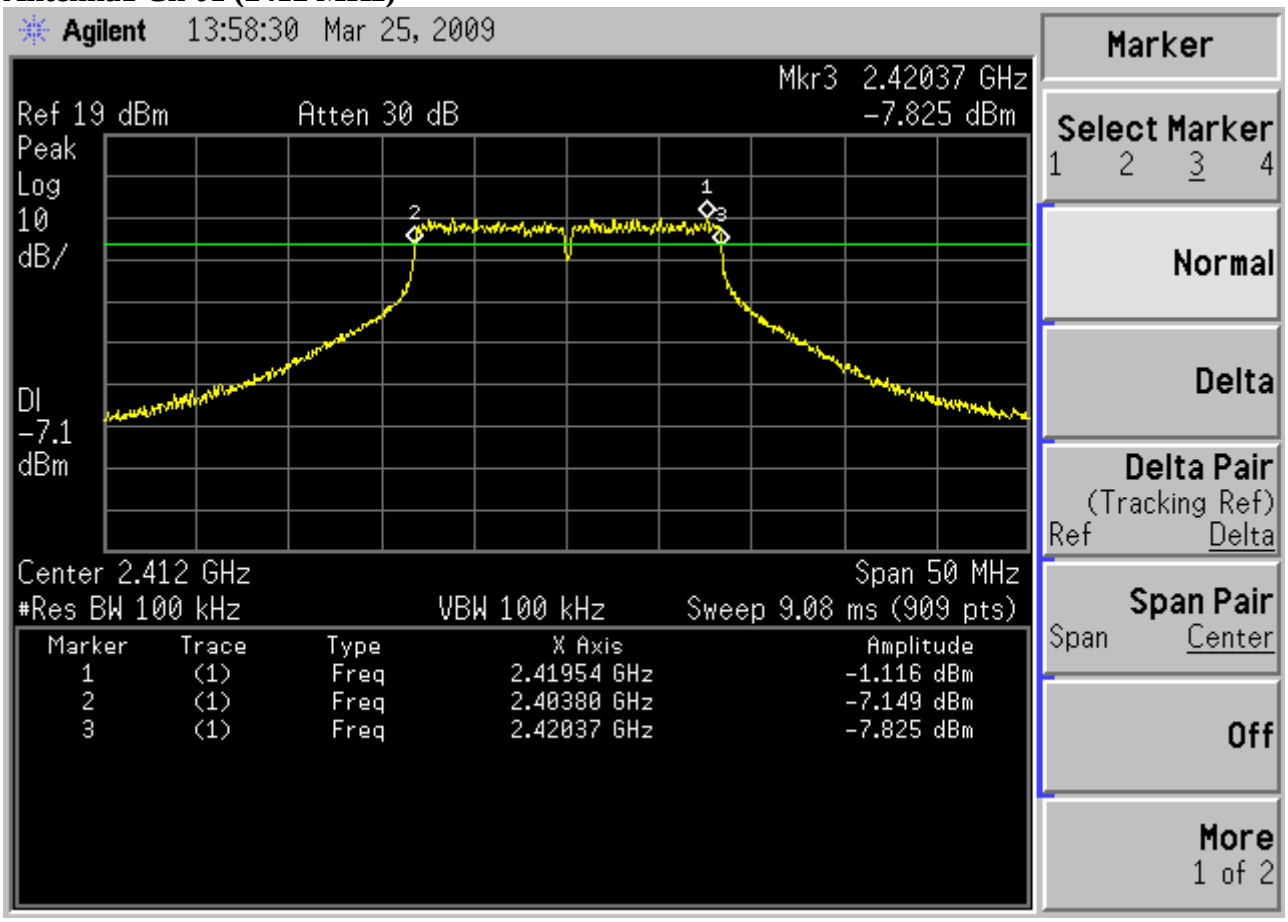
PASSED.

All the test results are attached in next pages.

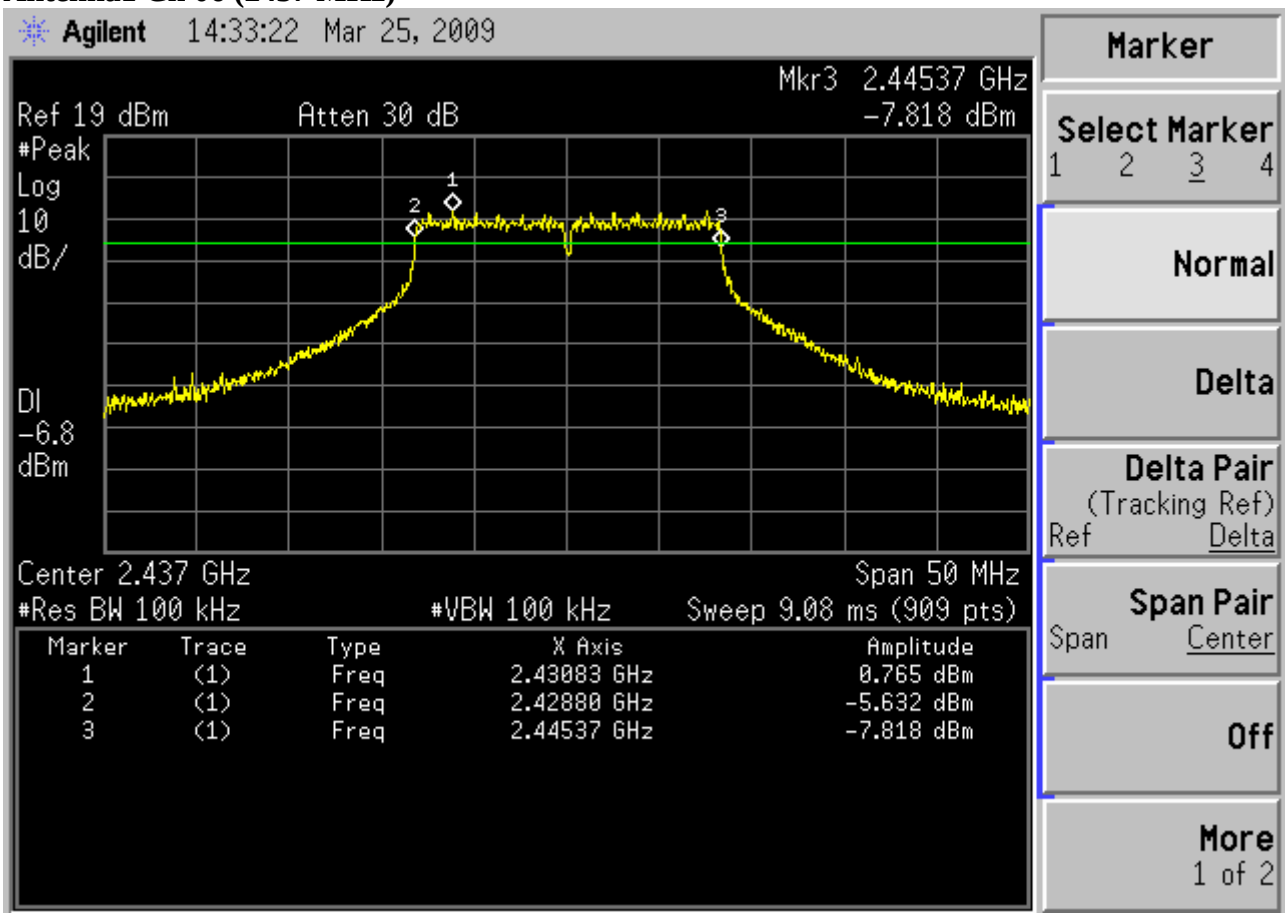
(Test Date : Mar 25, 2009 Temperature : 24℃ Humidity : 52 %)

Antenna	Channel	Frequency	**6dB Bandwidth**
1	01	2412 MHz	**16.57 MHz**
1	06	2437 MHz	**16.57 MHz**
1	11	2462 MHz	**16.51 MHz**
2	01	2412 MHz	**16.46 MHz**
2	06	2437 MHz	**16.51 MHz**
2	11	2462 MHz	**16.51 MHz**

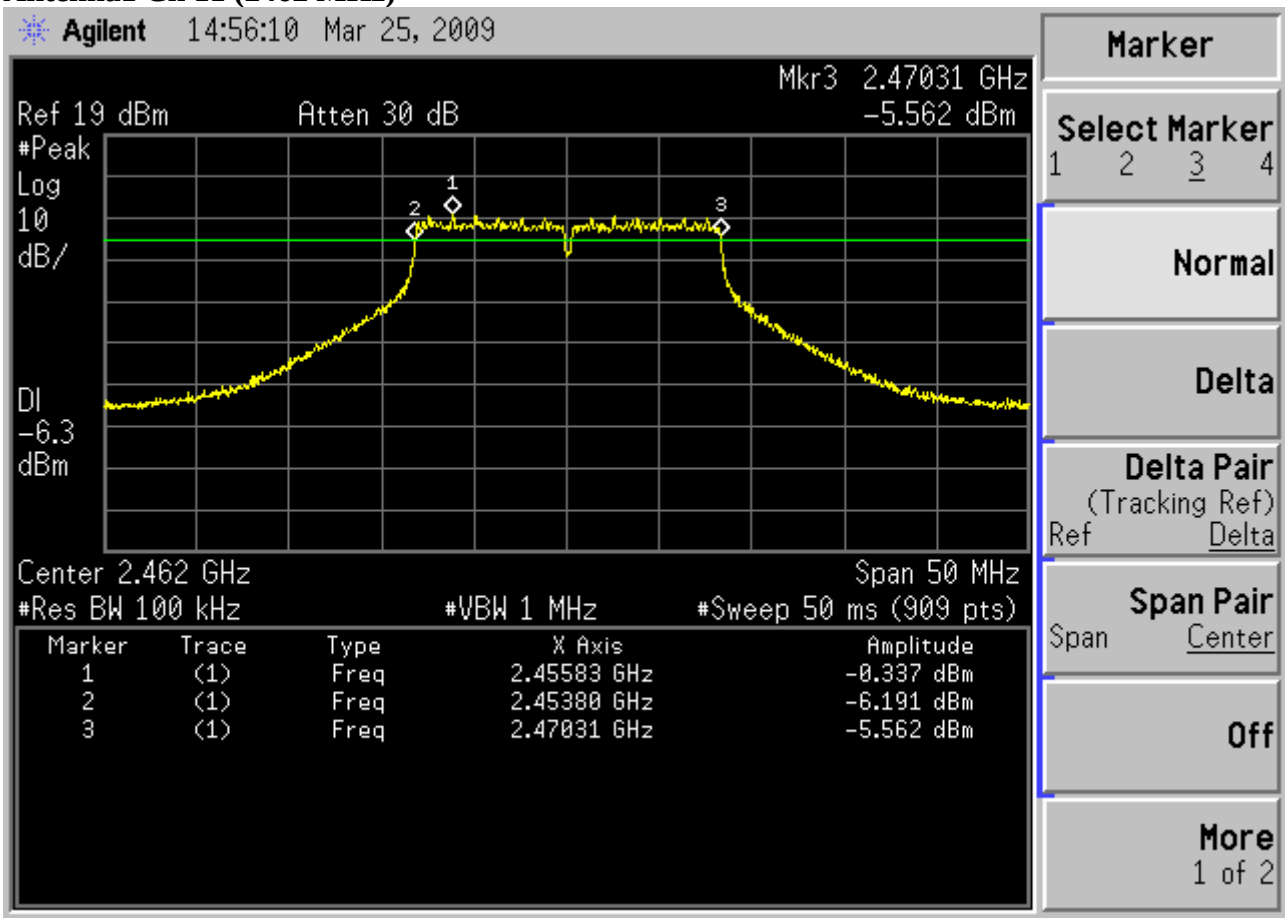
Antenna1 Ch 01 (2412 MHz)



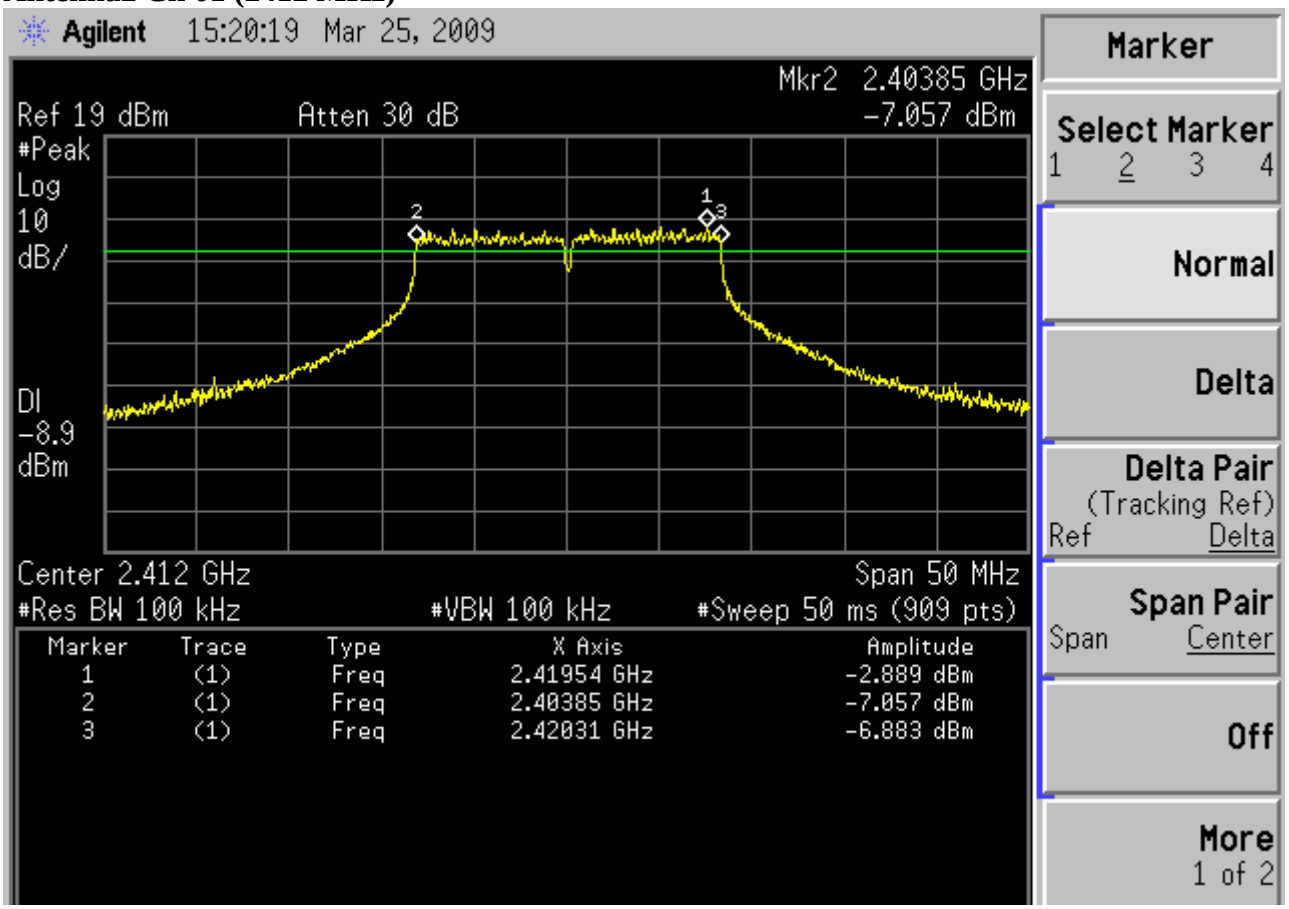
Antenna1 Ch 06 (2437 MHz)



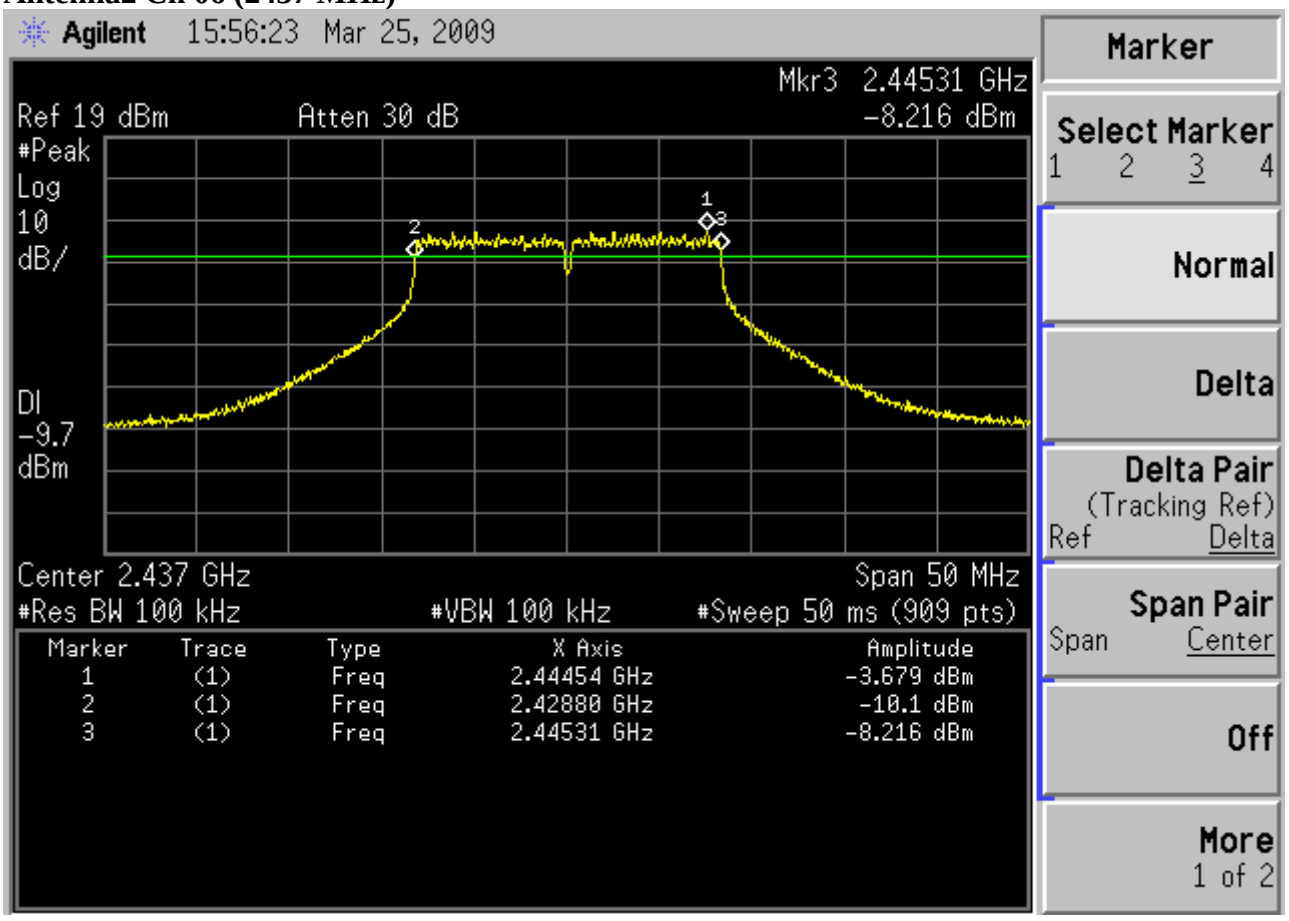
Antenna1 Ch 11 (2462 MHz)



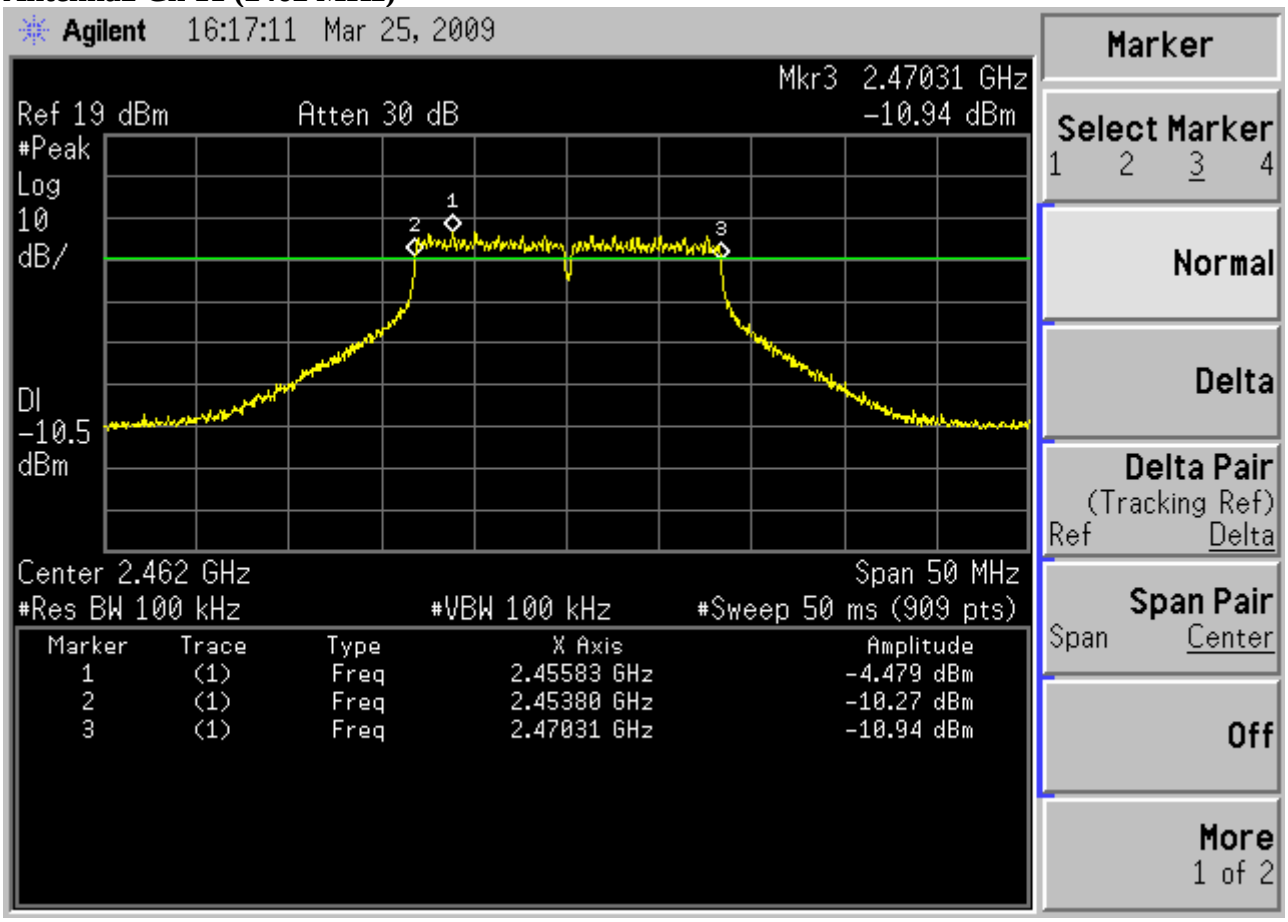
Antenna2 Ch 01 (2412 MHz)



Antenna2 Ch 06 (2437 MHz)



Antenna2 Ch 11 (2462 MHz)



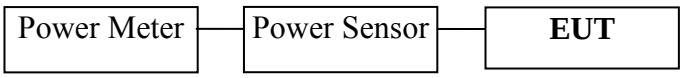
6 MAXIMUM PEAK OUTPUT POWER MEASUREMENT

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	Aug 05, 2008	Aug 05, 2009
2.	Power Sensor	Anritsu	MA2491A	32489	Aug 05, 2008	Aug 05, 2009

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 "Telnet" was used to enable the EUT to transmit and receive 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.

6.6 Test Results

PASSED. All the test results are listed below.

(Test date: Jun 01, 2009 Temperature : 25 ℃ Humidity : 53 %)

Antenna	Channel	Frequency	**Peak Output Power**	Limit
1	01	2412 MHz	**20.63 dBm**	30 dBm
1	06	2437 MHz	**21.35 dBm**	30 dBm
1	11	2462 MHz	**20.66 dBm**	30 dBm
2	01	2412 MHz	**15.12 dBm**	30 dBm
2	06	2437 MHz	**14.77 dBm**	30 dBm
2	11	2462 MHz	**13.75 dBm**	30 dBm

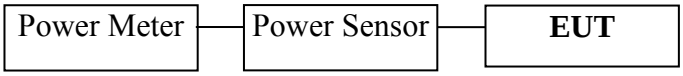
7 RF EXPOSURE MEASUREMENT

7.1 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	Aug 05, 2008	Aug 05, 2009
2.	Power Sensor	Anritsu	MA2491A	32489	Aug 05, 2008	Aug 05, 2009

7.2 Block Diagram of Test Setup



7.3 Specification Limits (§15.247(i), §1.1310)

The criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in 1.1307(b)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Average Time (minutes)
(A)LIMITS FOR OCCUPATIONAL / CONTROL EXPOSURES				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B)LIMITS FOR GENERAL POPULATION / UNCONTROLLED EXPOSURE				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1.0	30

F = Frequency in MHz

7.4 Operating Condition of EUT

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

7.5 Test Procedure

The transmitter output was connected to the power meter that was designed to detect peak value automatically.

7.6 Test Results

PASSED. All the test results are listed below.

(Test date: Jun 01, 2009 Temperature : 25 ℃ Humidity : 53 %)

Antenna	Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density (mW/cm^2)	Limit (mW/cm^2)
1	01	2412	115.61	0.0338	1.0
1	06	2437	136.46	0.0399	1.0
1	11	2462	116.41	0.0340	1.0
2	01	2412	32.51	0.0082	1.0
2	06	2437	29.99	0.0076	1.0
2	11	2462	23.71	0.0060	1.0

Note: $S = \frac{P_A \cdot G}{4 \cdot \pi \cdot r^2}$

Where S = Power Density in mW/cm^2
P_A = Output Power to Antenna = $10^{(P/10)}$ (mW)
(P See Section 7.6)
G = Antenna Gain in numerical
(For Antenna1, G1 = 1.67 dBi = 1.47
For Antenna2, G2 = 1.03 dBi = 1.27)
r = 20cm

8 EMISSION LIMITATIONS MEASUREMENT

8.1 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	May 19, 2008	May 19, 2009

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. 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)

8.4 Operating Condition of EUT

The test program “Telnet” 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 RBW = 100 kHz, VBW = 100 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.

8.6 Test Results

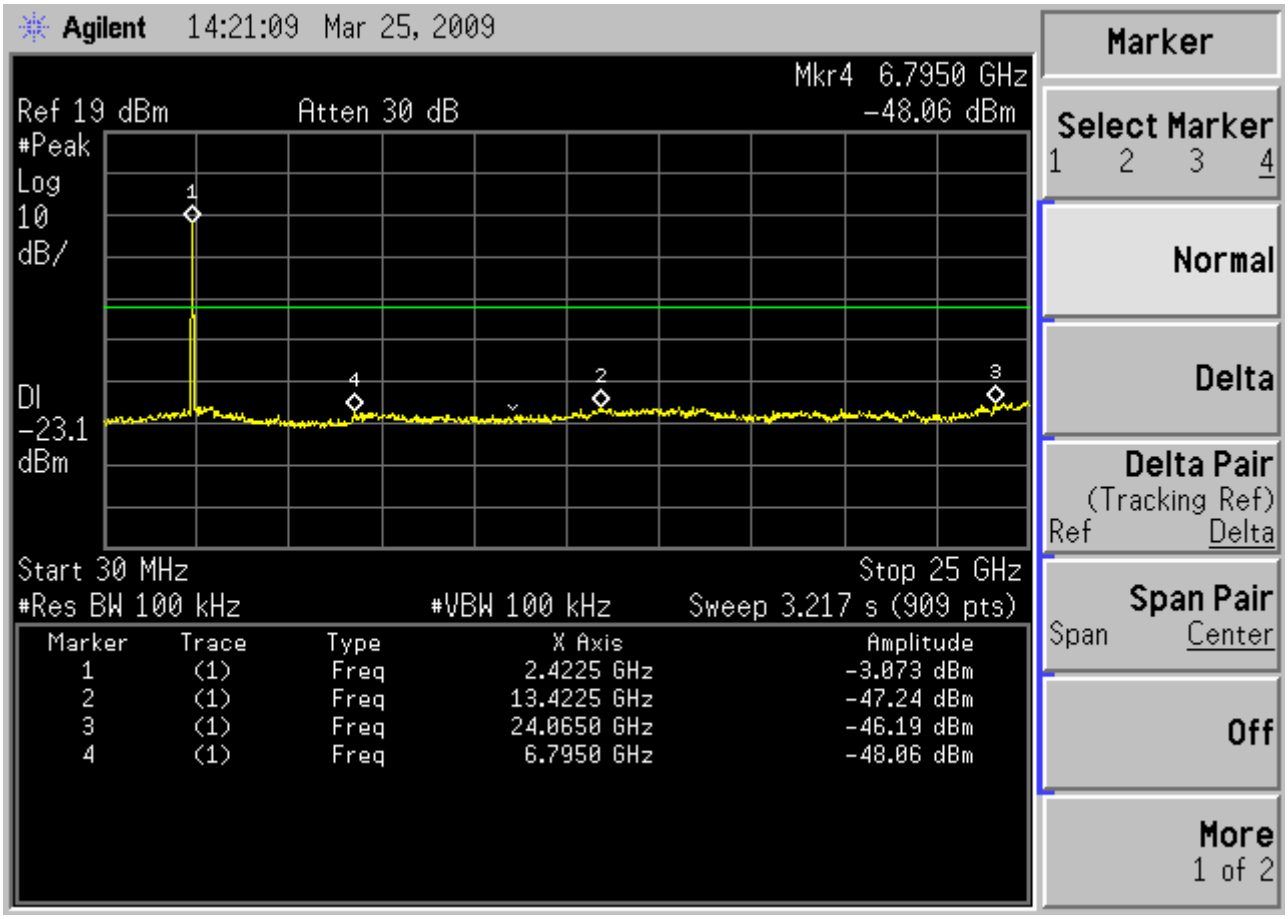
PASSED. The testing data was attached in the next pages.

(Test date: Mar 25, 2009 Temperature : 24 ℃ Humidity : 52 %)

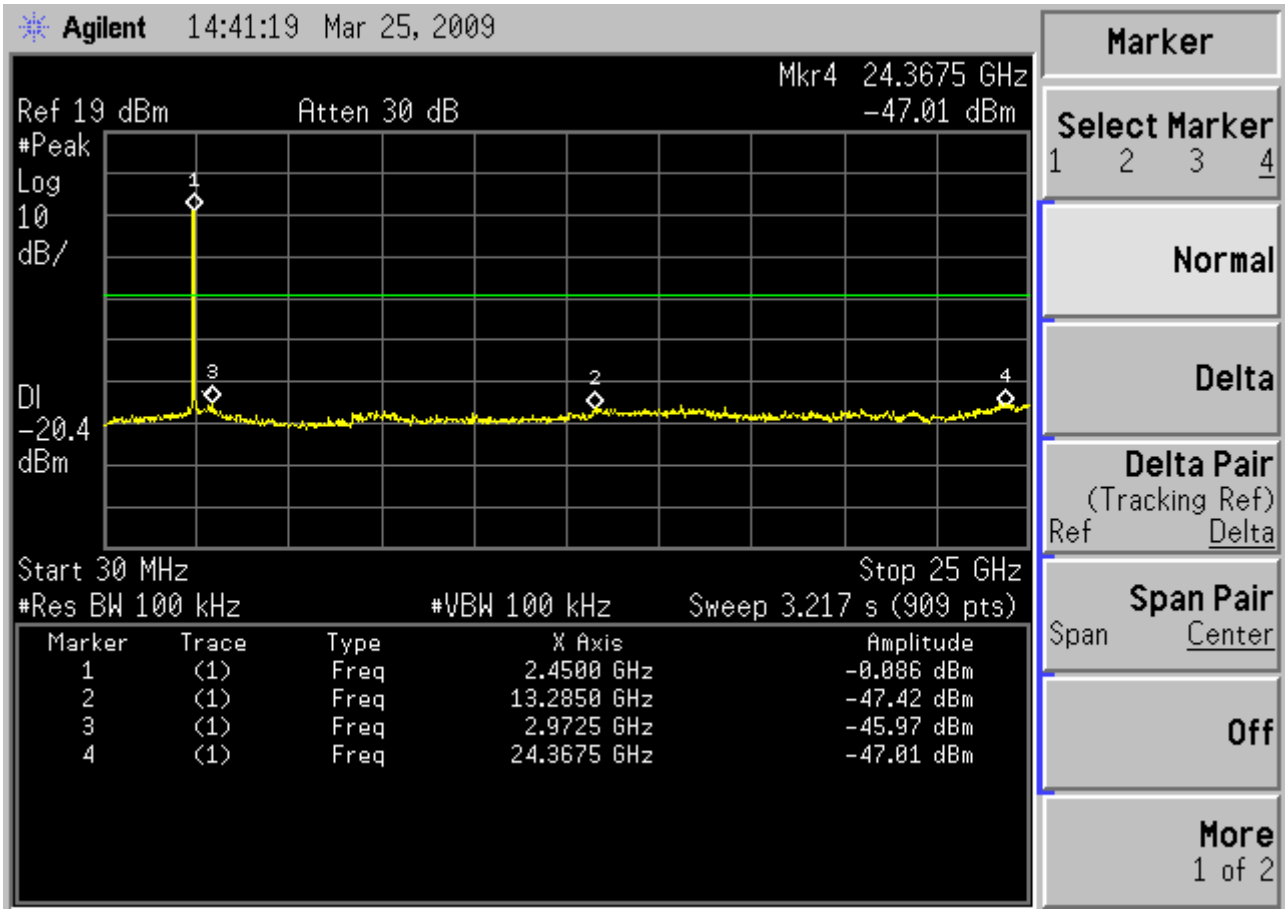
Antenna	Channel	Highest level of desired power (dBm)	Max Value			Limit (dB)
			Freq. (GHz)	Level (dBm)	Result (dB)	
1	01	-3.07	24.065	-46.19	43.12	20
1	06	-0.09	2.9725	-45.97	45.88	20
1	11	-4.00	2.9725	-48.39	44.39	20
2	01	-2.80	24.23	-45.2	42.40	20
2	06	-3.47	2.9725	-46.04	42.57	20
2	11	-7.90	13.5875	-46.47	38.57	20

Note: The peak above the limit line is the carrier frequency.

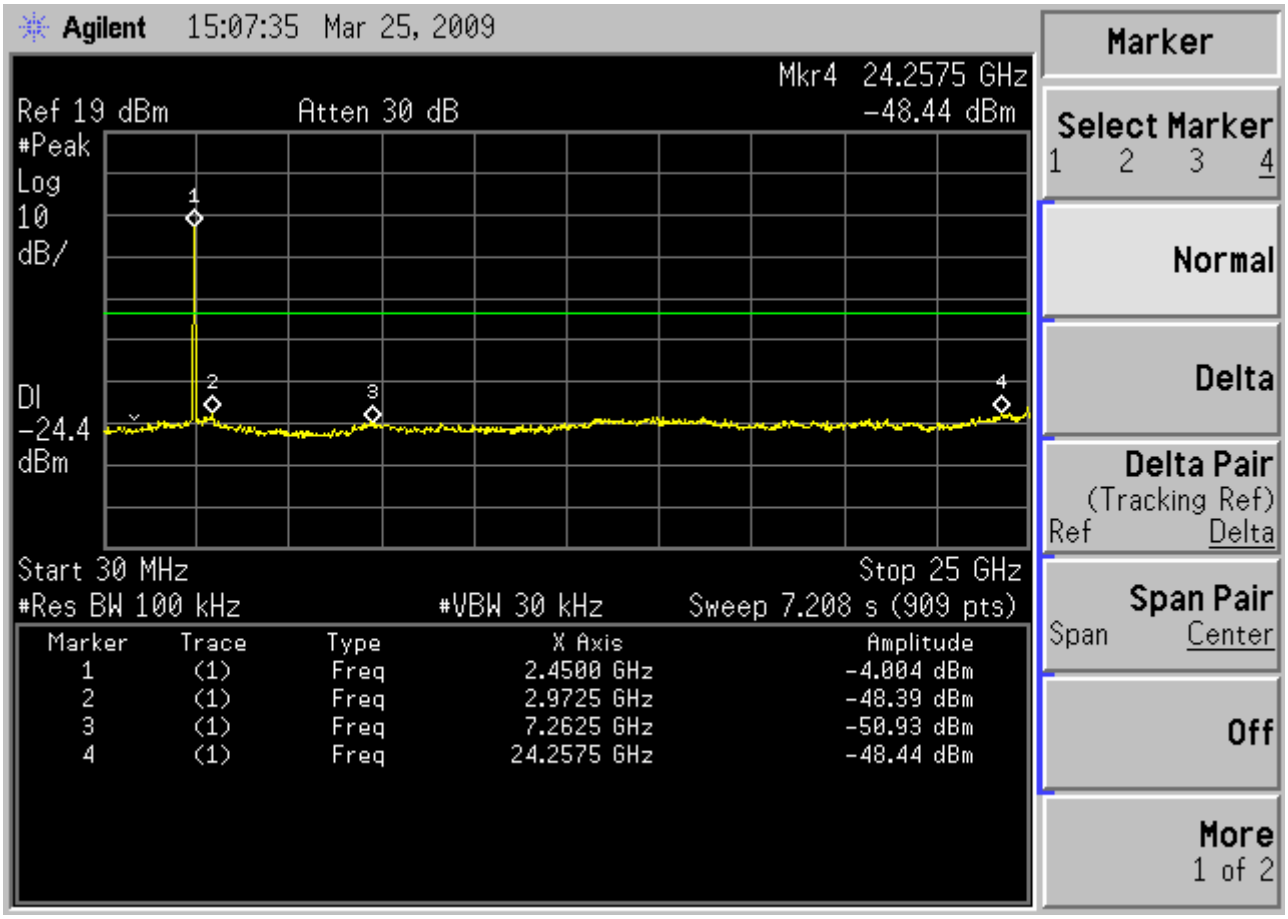
Antenna1 Ch01 2412 MHz



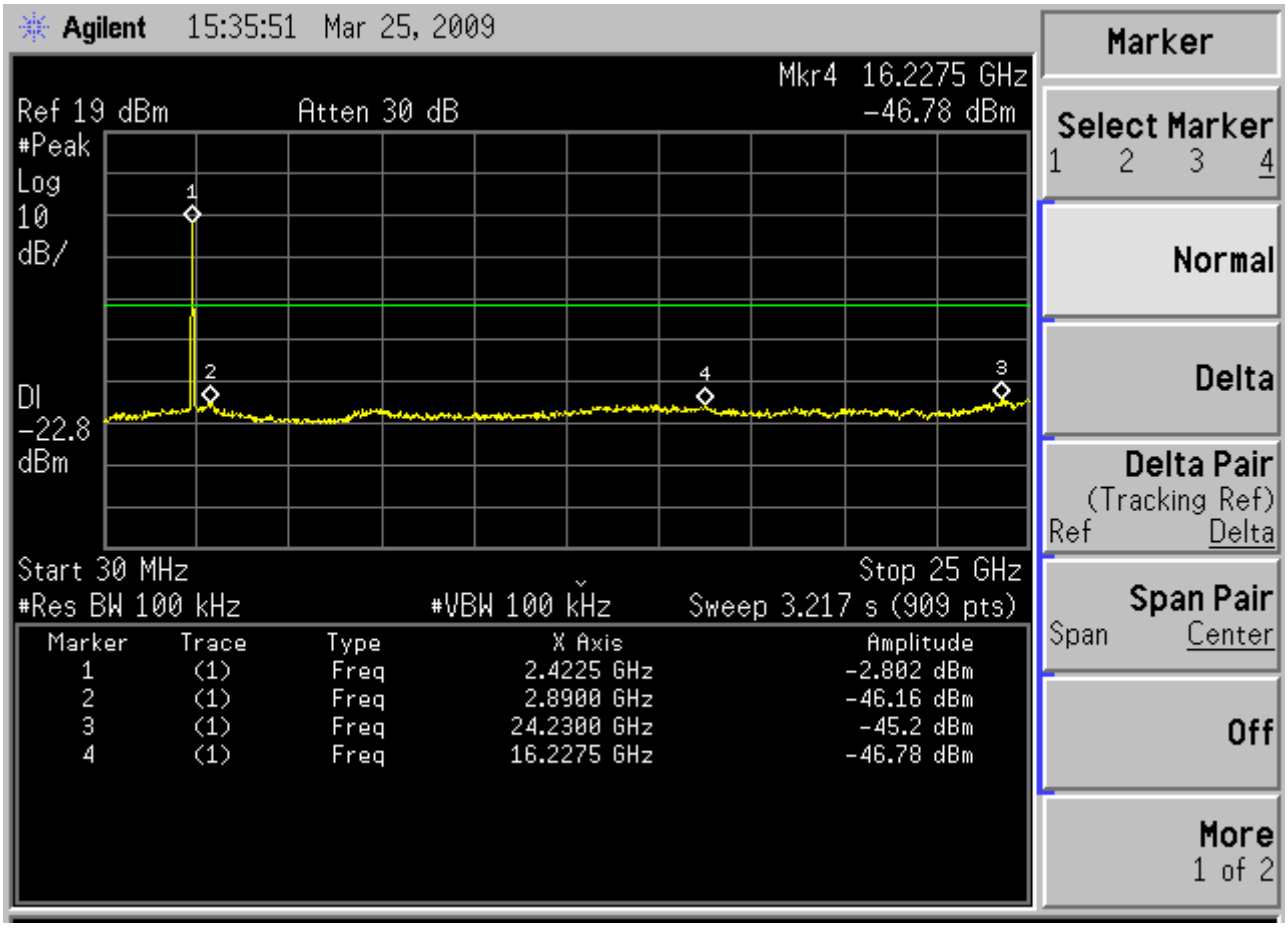
Antenna1 Ch06 2437 MHz



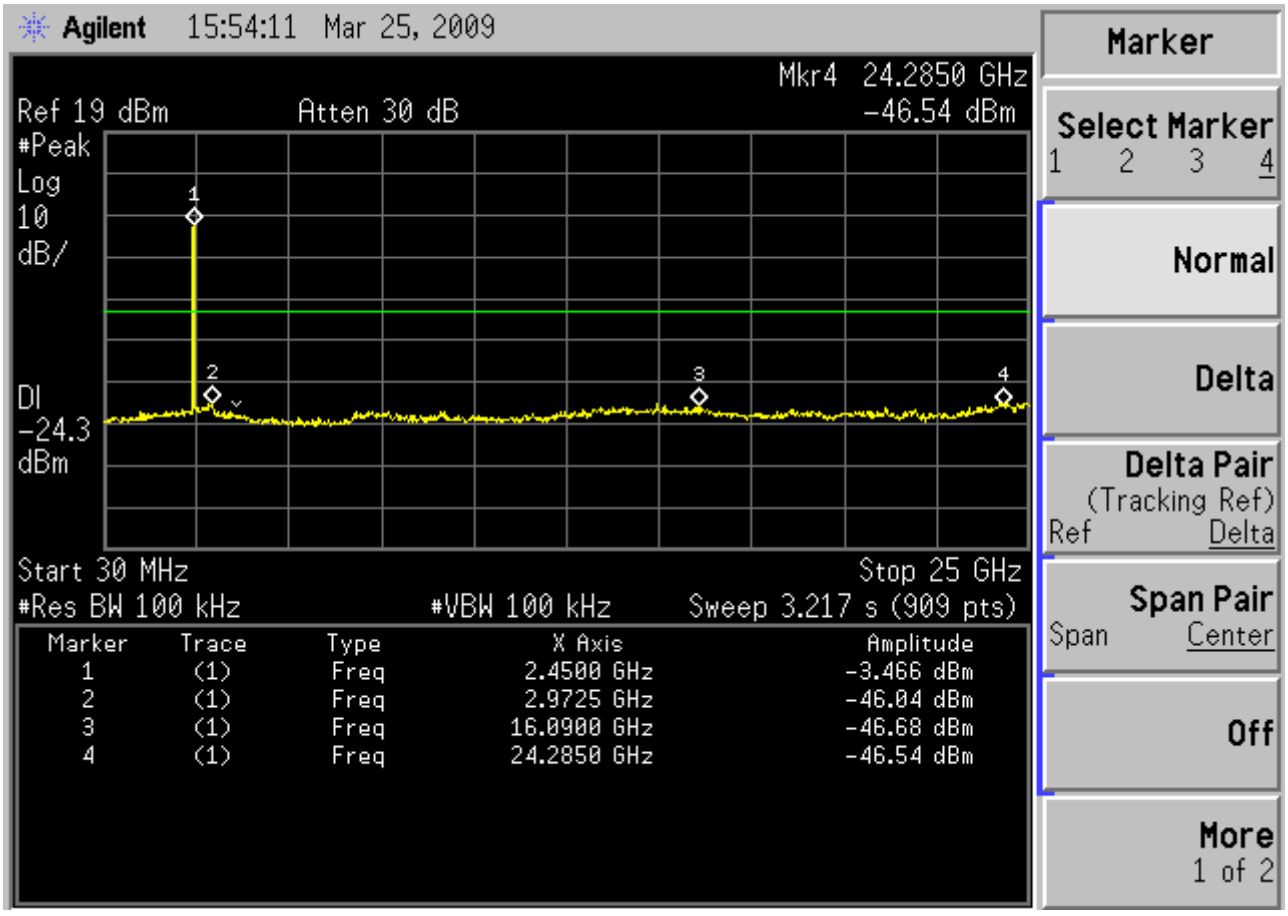
Antenna1 Ch11 2462 MHz



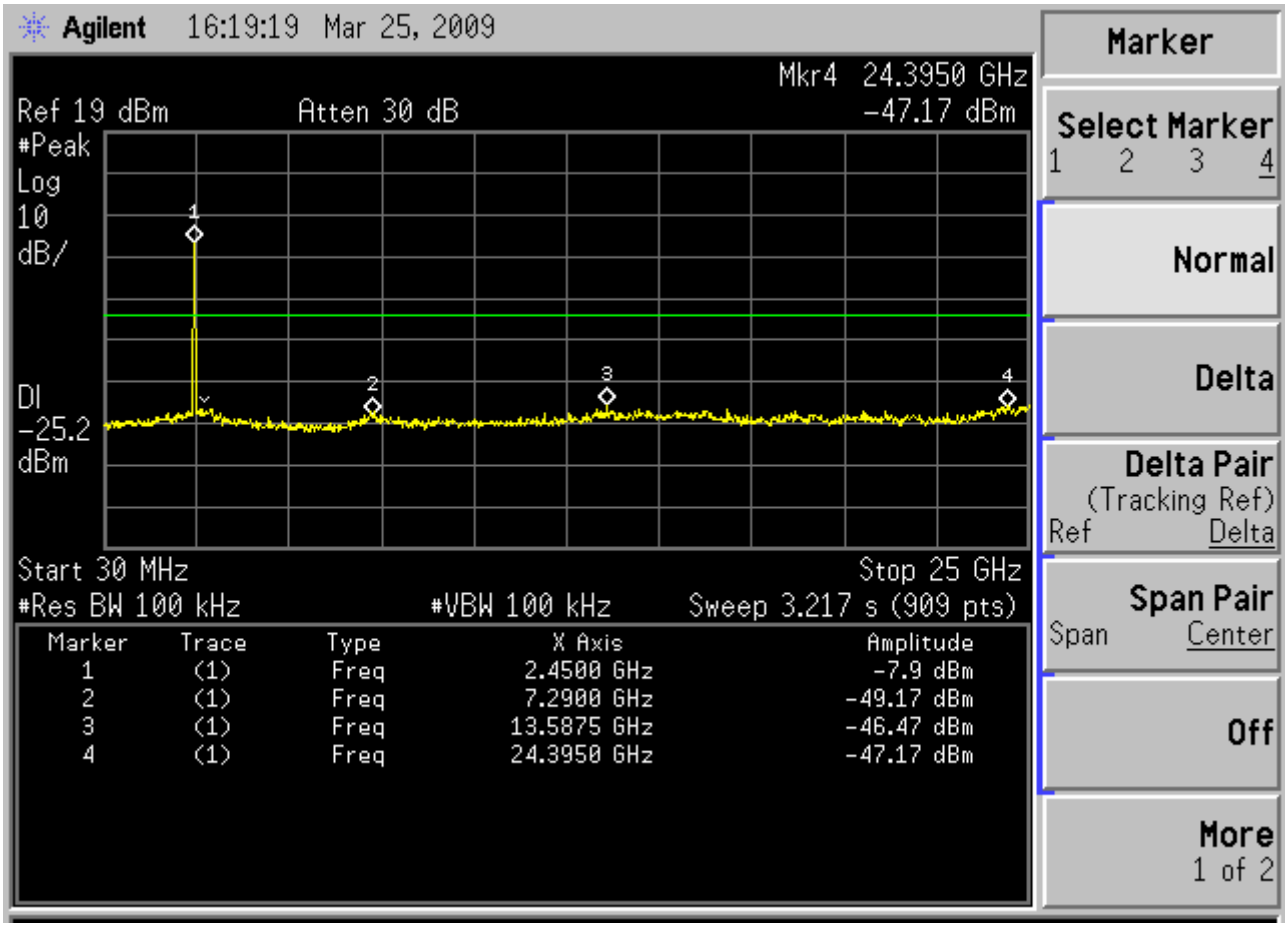
Antenna2 Ch01 2412 MHz



Antenna2 Ch06 2437 MHz



Antenna2 Ch11 2462 MHz



9 BAND EDGES MEASUREMENT

9.1 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	May 19, 2008	May 19, 2009

9.2 Block Diagram of Test Setup

The same as section.5.2.

9.3 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.

9.4 Operating Condition of EUT

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

9.5 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.

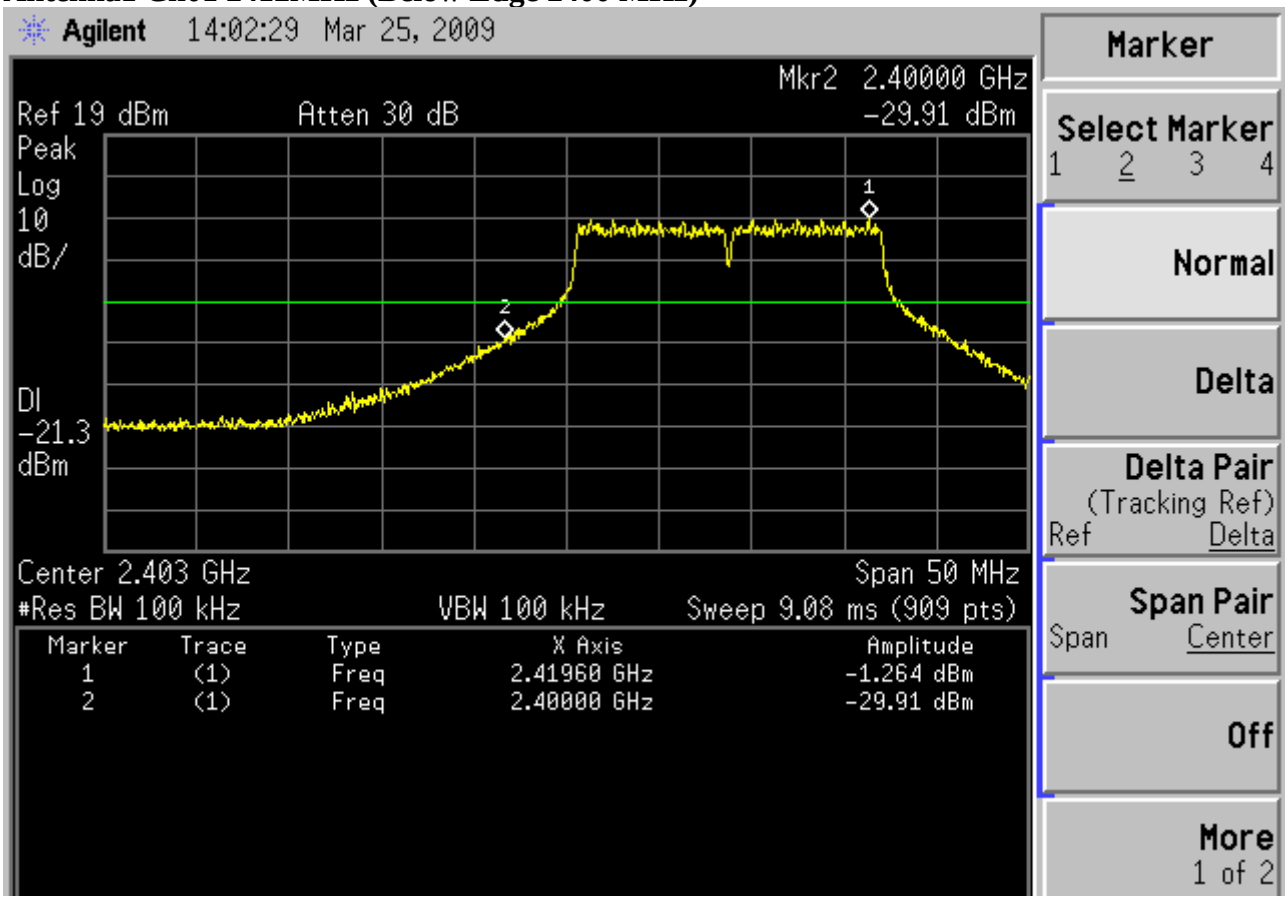
9.6 Test Results

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

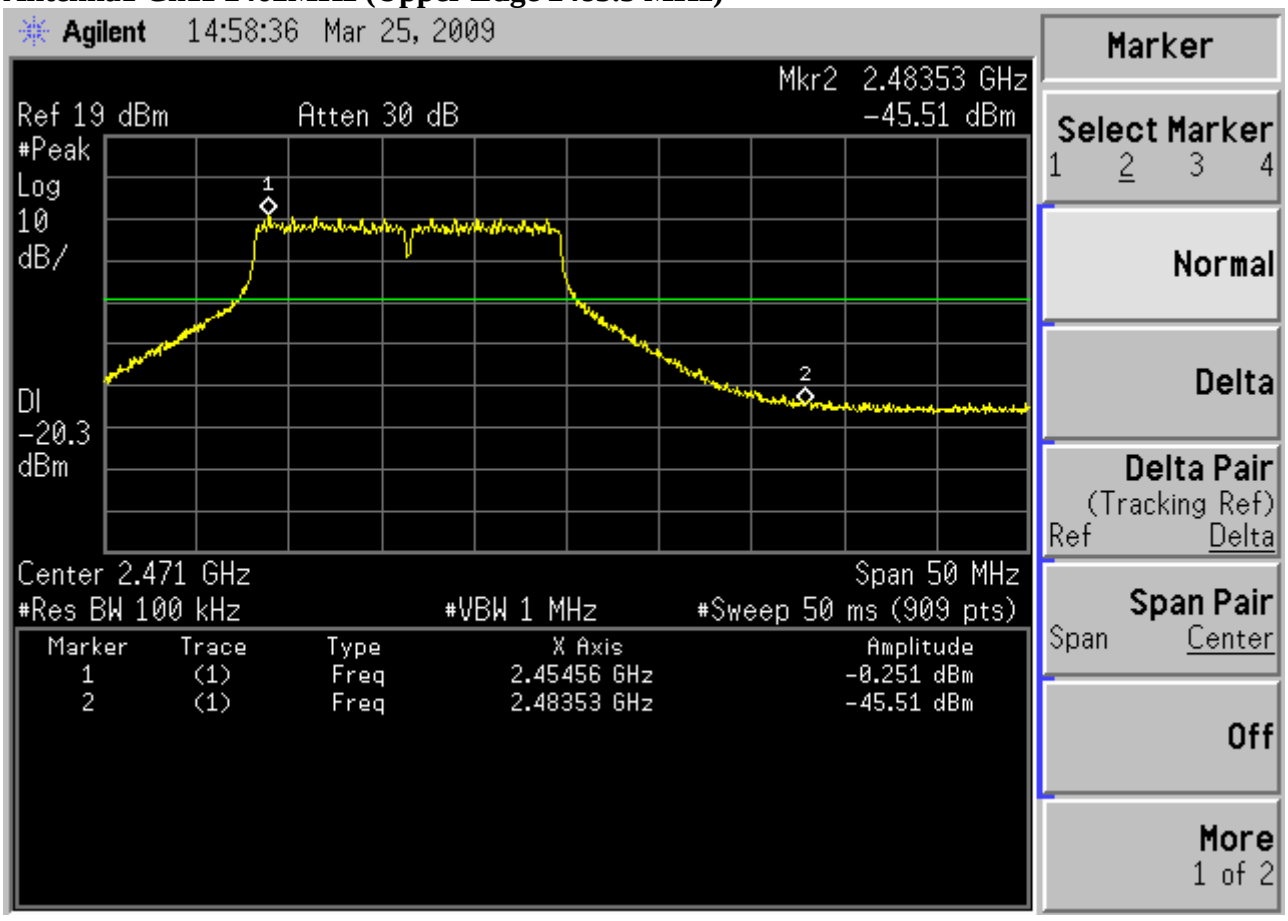
(Test date: Mar 25, 2009 Temperature : 24℃ Humidity : 52 %)

Antenna	Location	Channel	Frequency	**Delta Marker**	Result
1	Below Band Edge	01	2400 MHz	**28.646 dB**	More than **20 dB** below the highest level of the desired power
1	Upper Band Edge	11	2483.5 MHz	**45.259 dB**	
2	Below Band Edge	01	2400 MHz	**29.511 dB**	
2	Upper Band Edge	11	2483.5 MHz	**45.65 dB**	

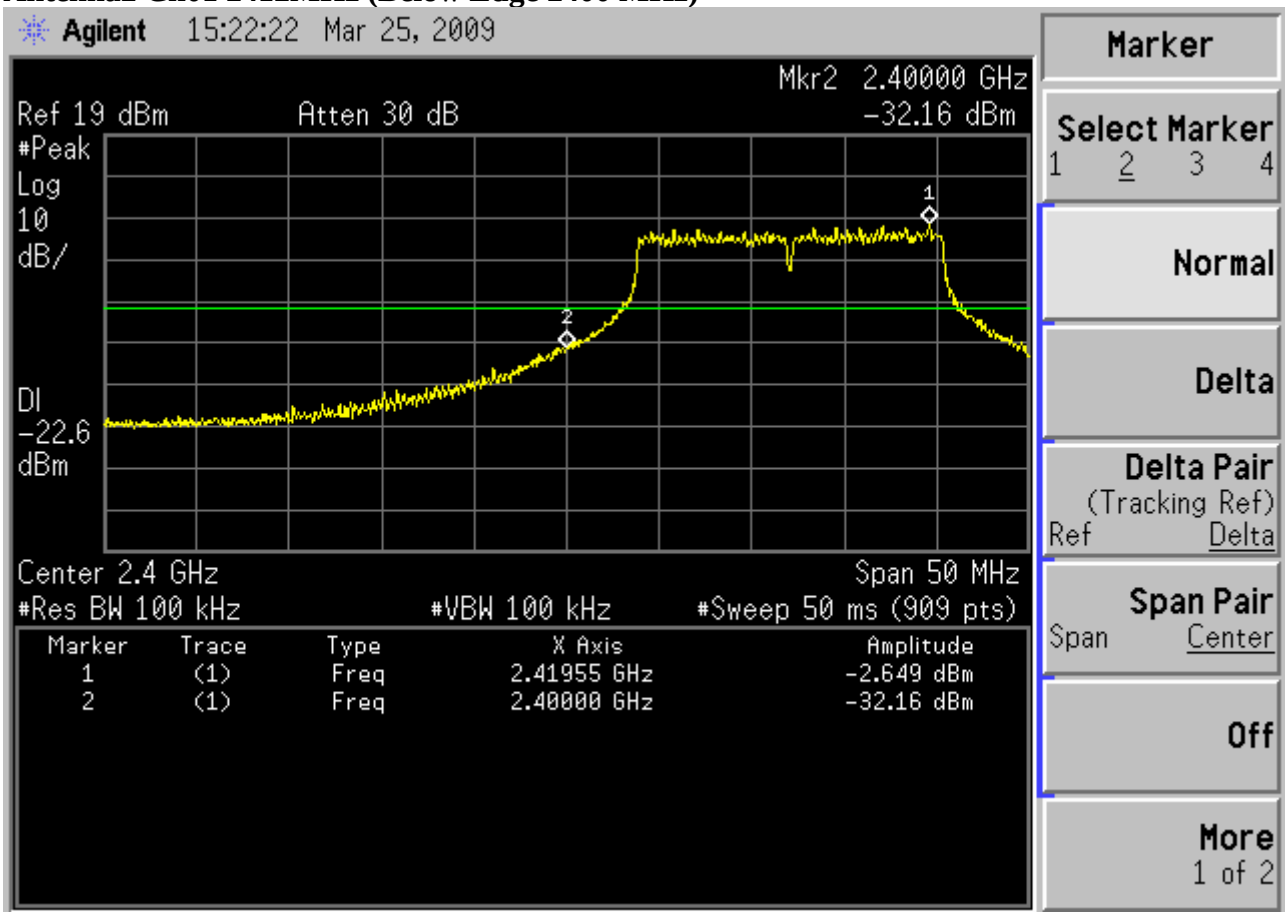
Antenna1 Ch01 2412MHz (Below Edge 2400 MHz)



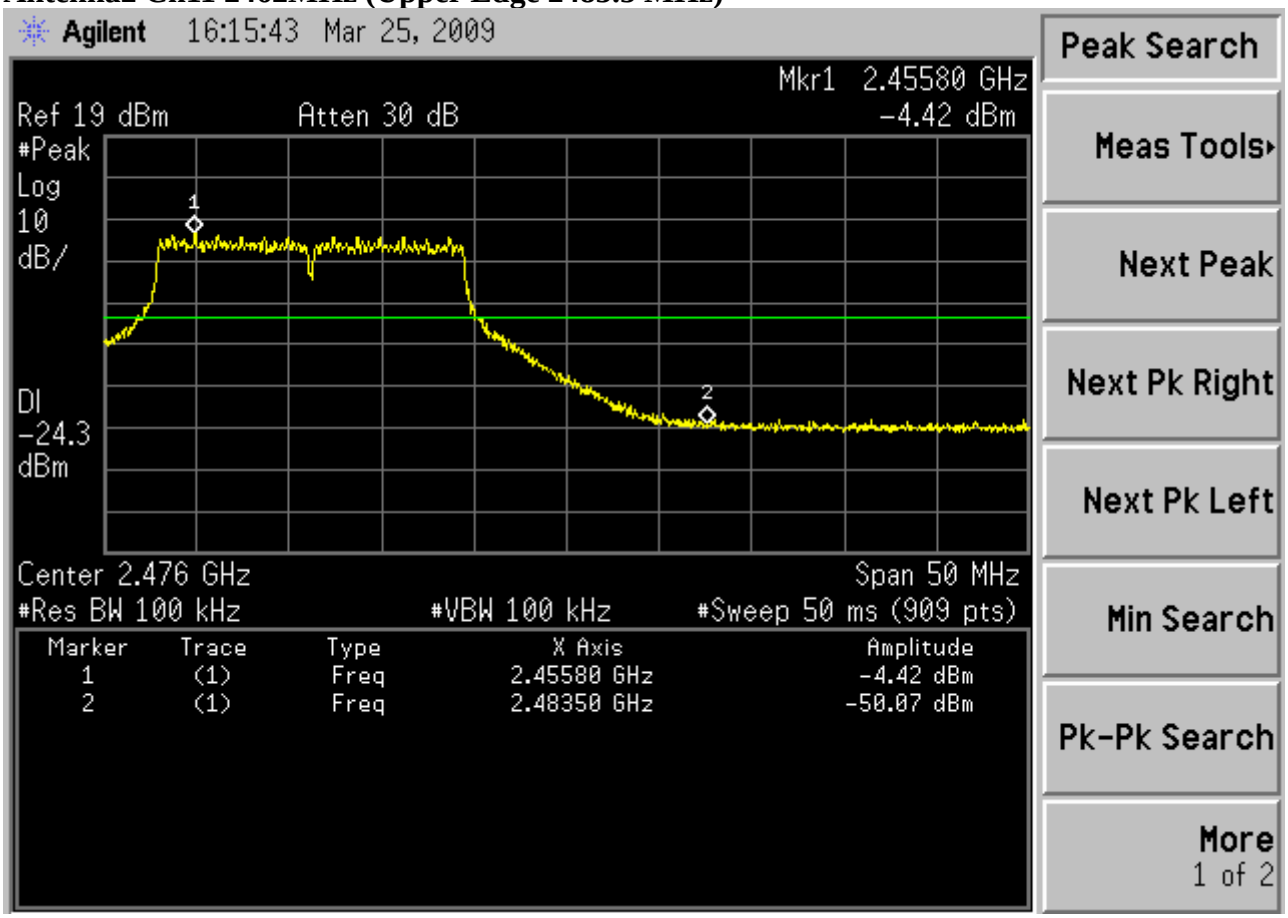
Antenna1 Ch11 2462MHz (Upper Edge 2483.5 MHz)



Antenna2 Ch01 2412MHz (Below Edge 2400 MHz)



Antenna2 Ch11 2462MHz (Upper Edge 2483.5 MHz)



10 POWER SPECTRAL DENSITY MEASUREMENT

10.1 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	May 19, 2008	May 19, 2009

10.2 Block Diagram of Test Setup

The same as section.5.2.

10.3 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.

10.4 Operating Condition of EUT

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

10.5 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.

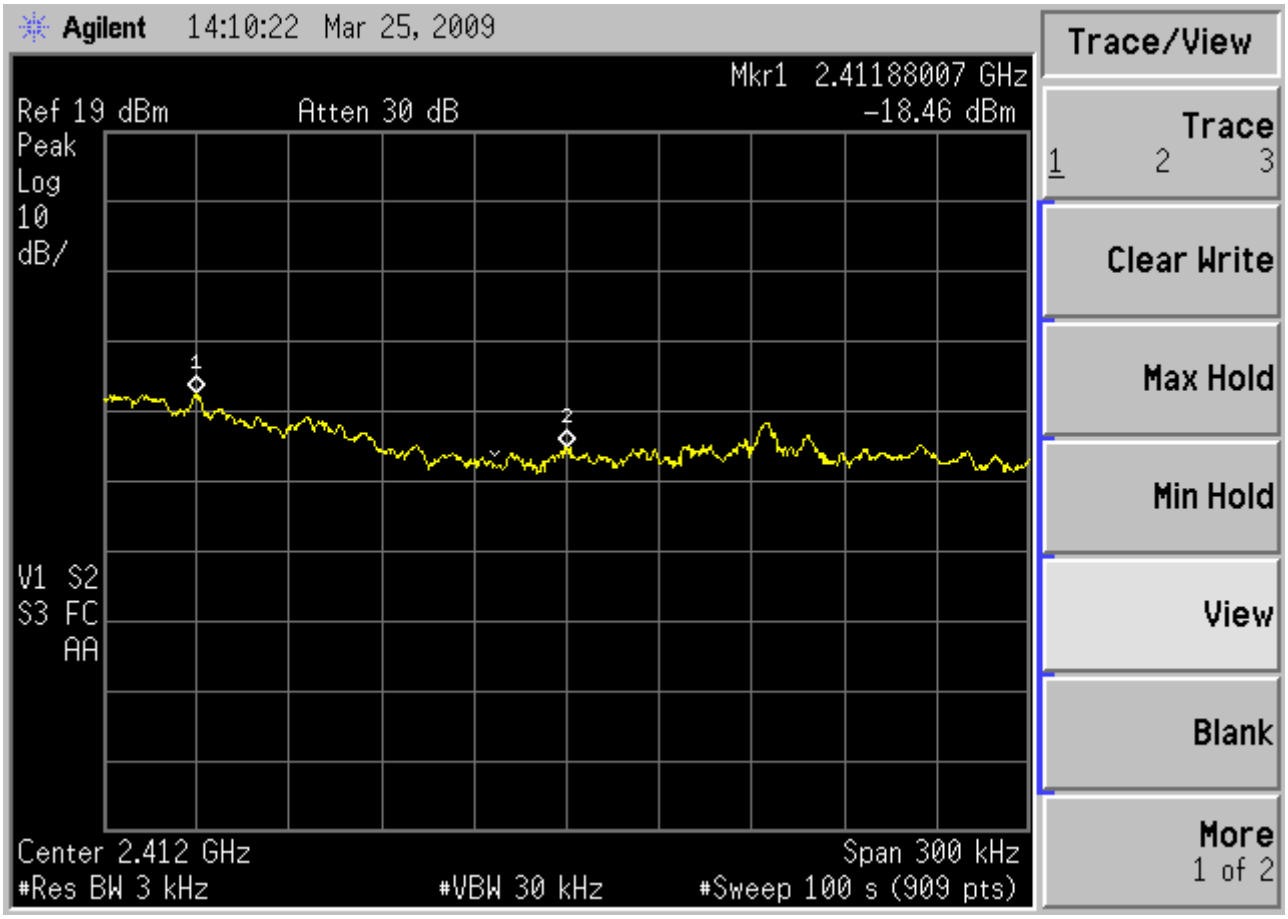
10.6 Test Results

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

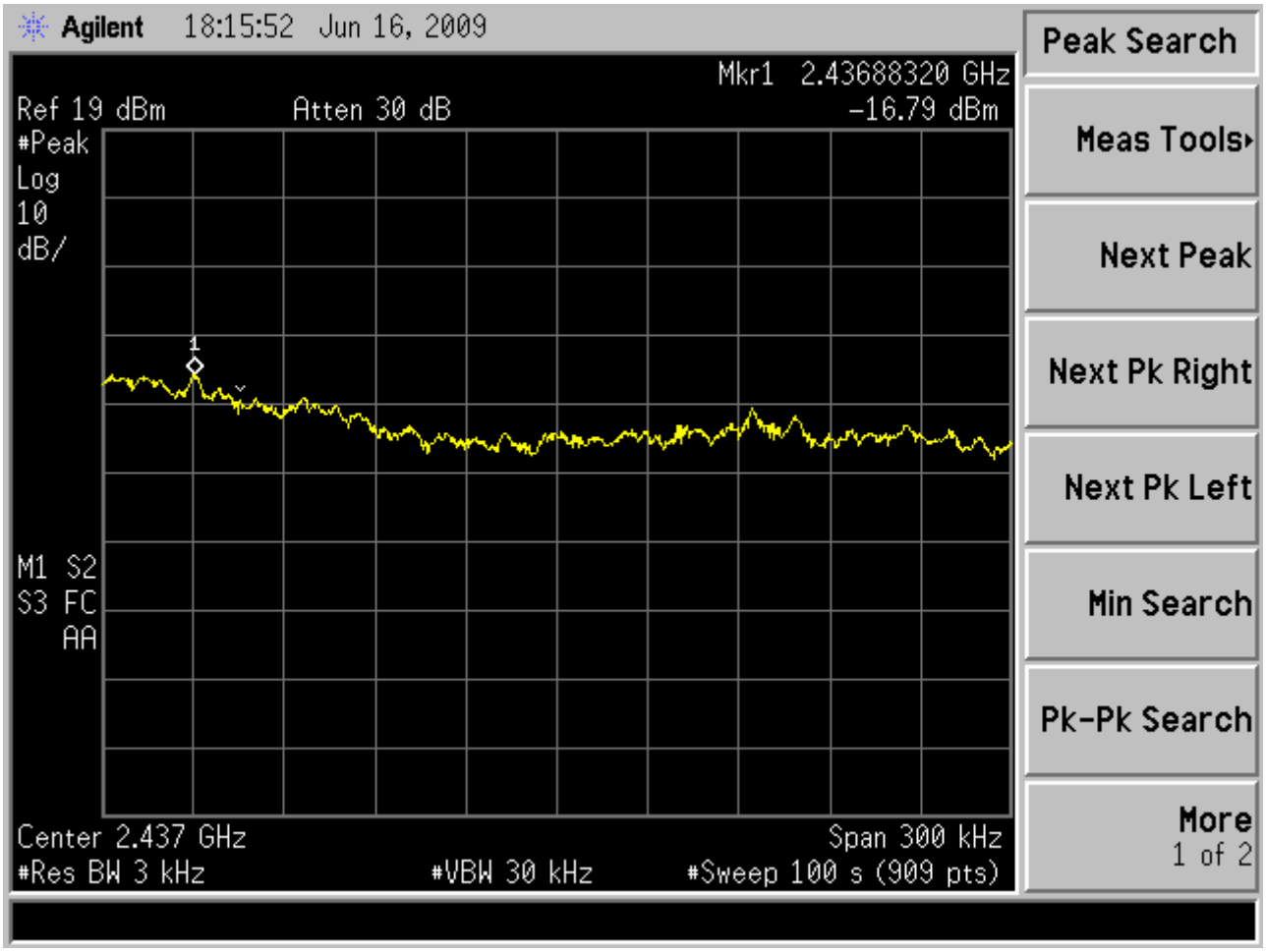
(Test date: Mar 25, 2009 Temperature : 24℃ Humidity : 52 %)

Antenna	Channel	Frequency	Power Spectral Density	Limit
1	01	2412 MHz	-18.46 dBm	8dBm
1	06	2437MHz	-16.85 dBm	8dBm
1	11	2462MHz	-18.52 dBm	8dBm
2	01	2412 MHz	-20.57 dBm	8dBm
2	06	2437MHz	-21.20 dBm	8dBm
2	11	2462MHz	-20.92 dBm	8dBm

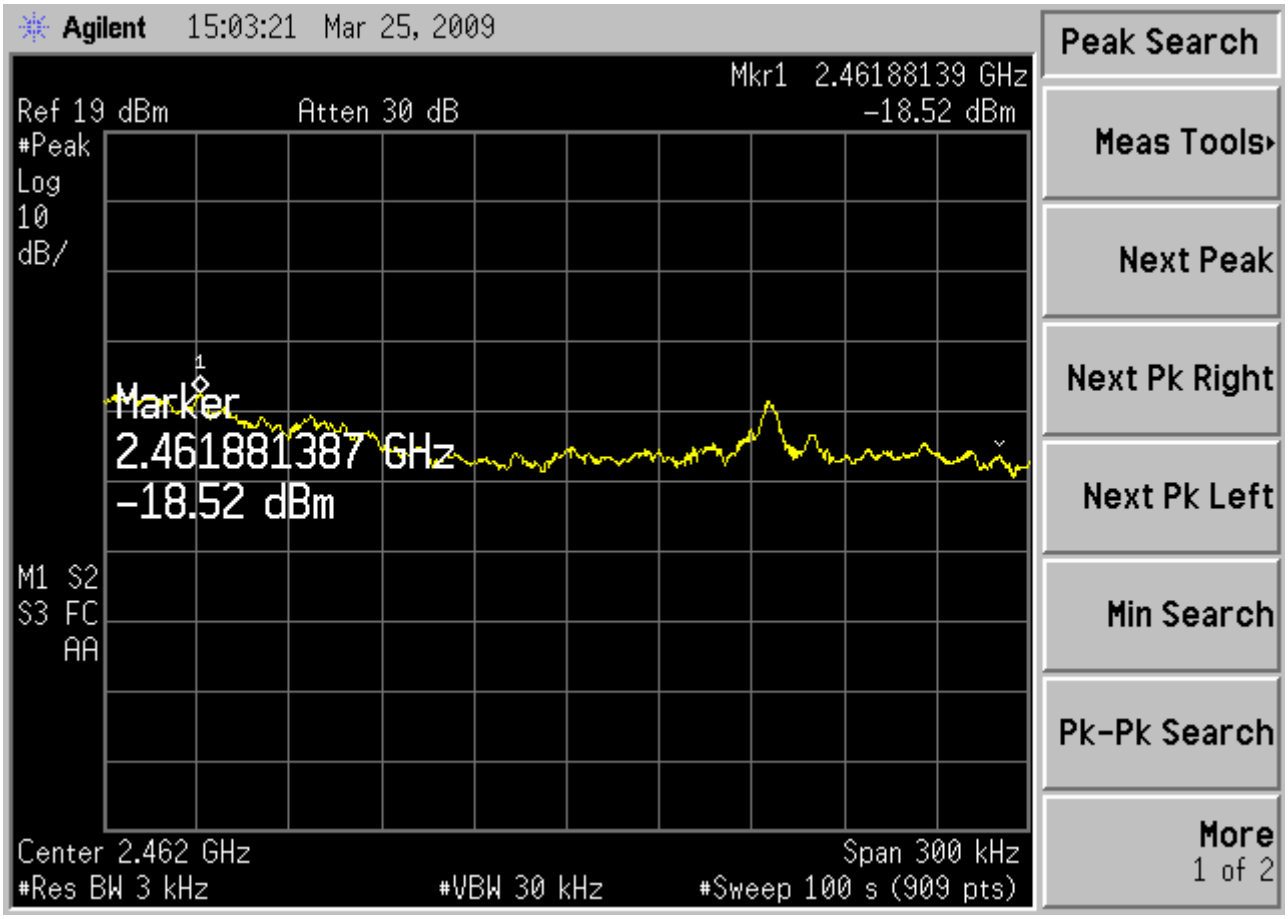
Antenna1 Ch01 2412 MHz



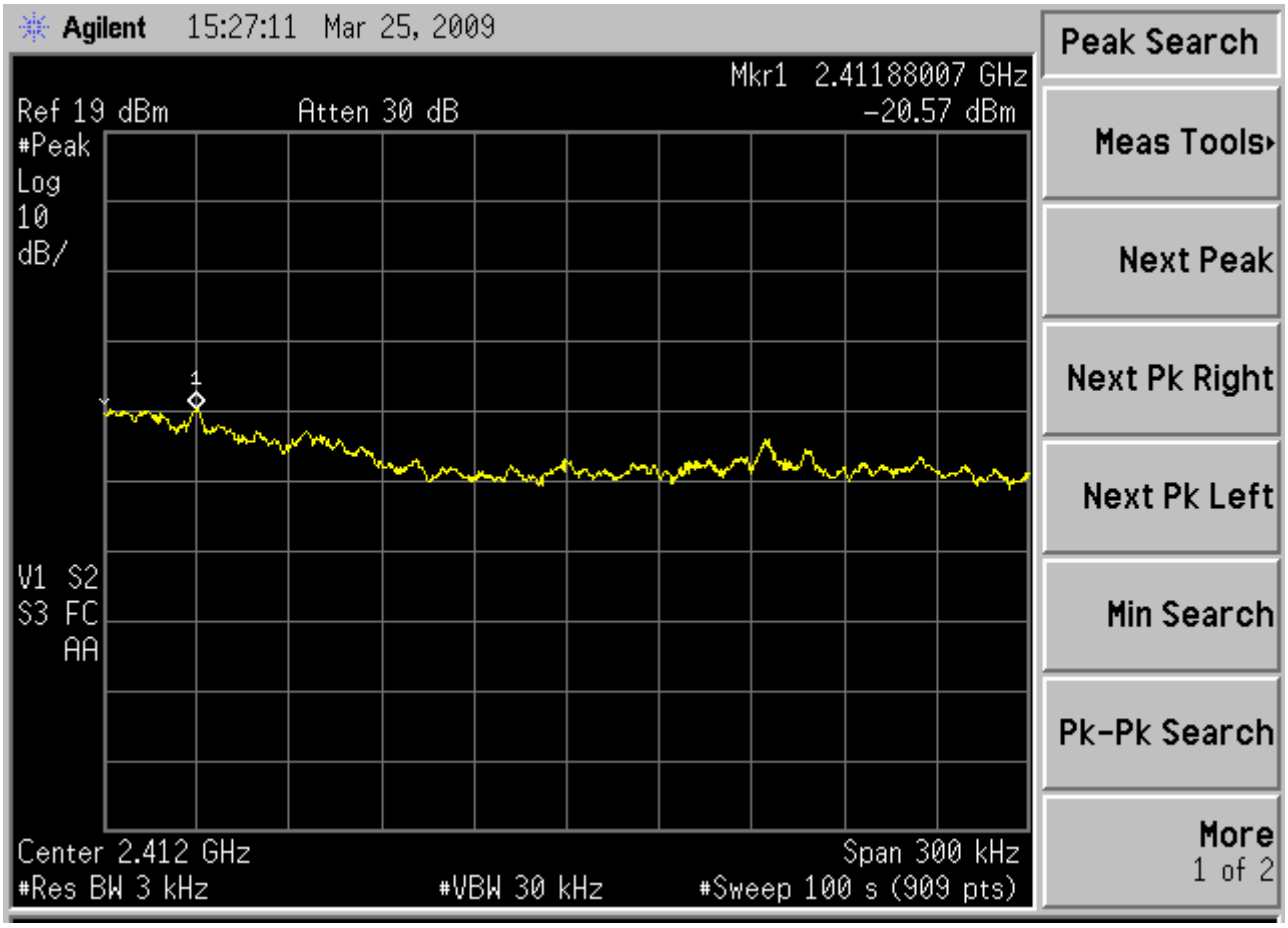
Antenna1 Ch06 2437 MHz



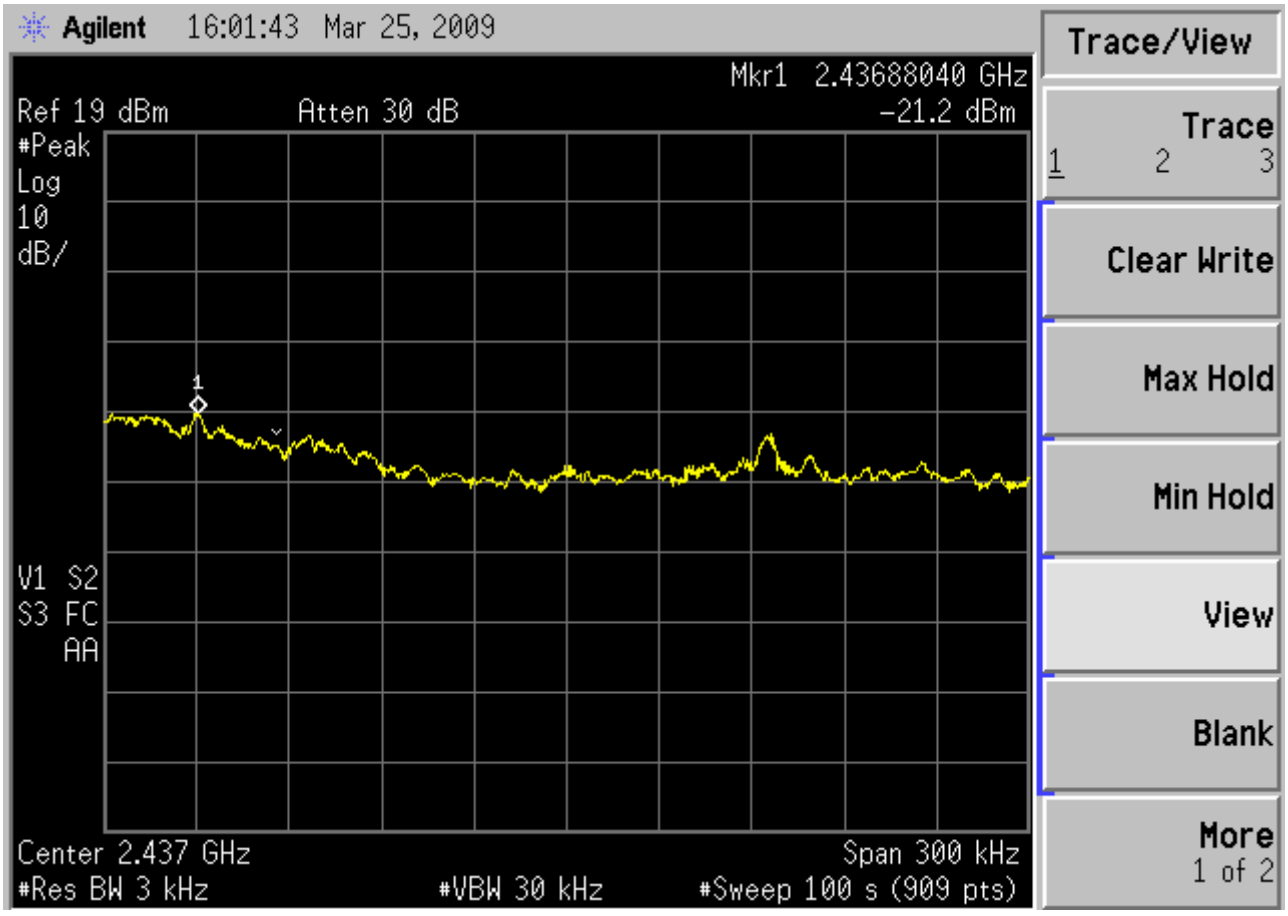
Antenna1 Ch11 2462 MHz



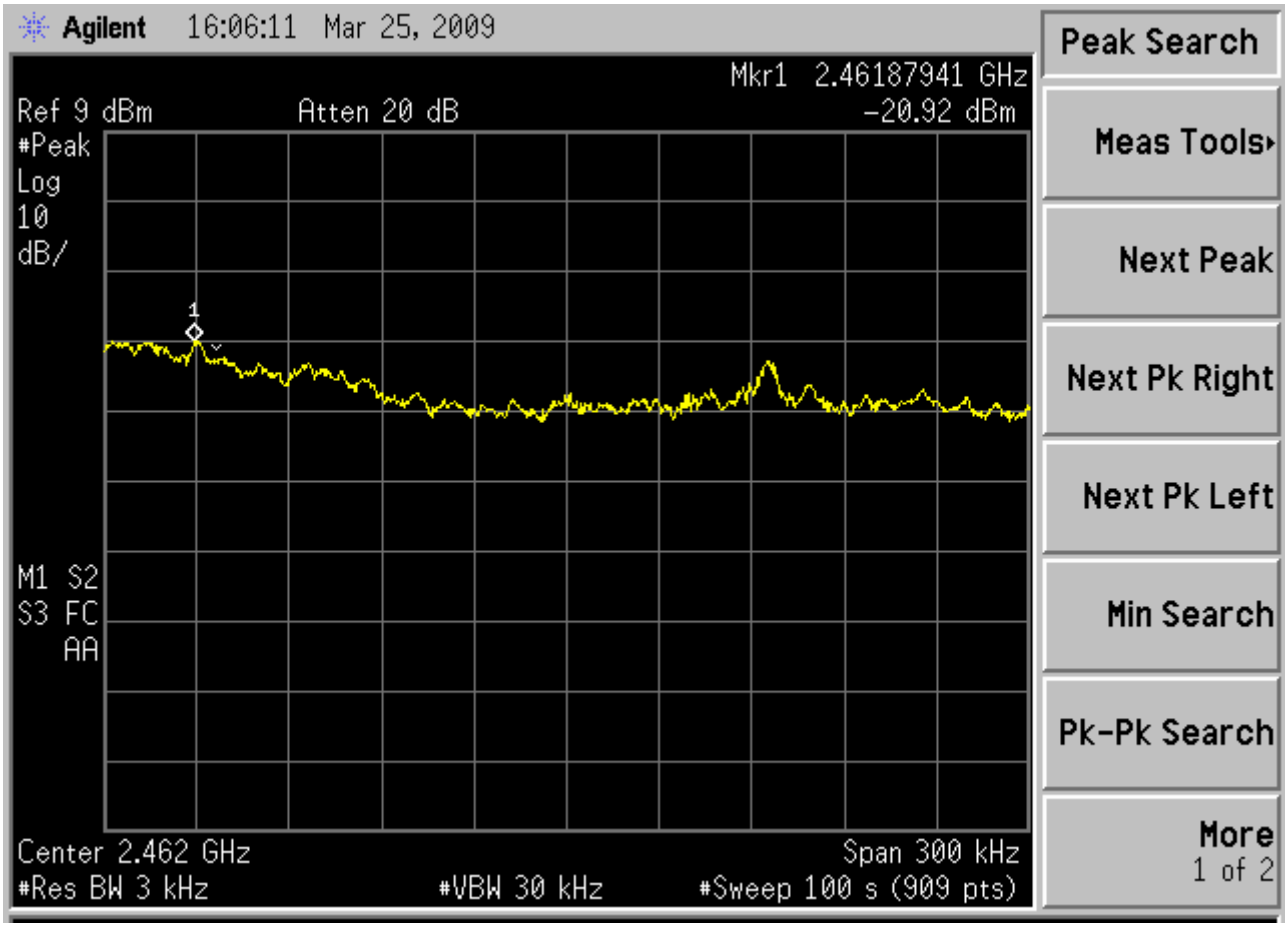
Antenna2 Ch01 2412 MHz



Antenna2 Ch06 2437 MHz



Antenna2 Ch11 2462 MHz



11 DEVIATION TO TEST SPECIFICATIONS

None.

12 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Specifications (mm)	Manufacturer	Location
Sponge	--	4*5*7	FANGZHI ELECTRONIC	See Appendix II Figure 21,22
Sponge	TT-219	78*2*1	FANGZHI ELECTRONIC	See Appendix II Figure 23
Sponge	TT-219	46*2*1	FANGZHI ELECTRONIC	See Appendix II Figure 23

Note: We had required the applicant and manufacturer that all electrical and mechanical devices employed for spurious radiation suppression, including any modifications made during certification testing, must be incorporated in each unit marked

TEST ENGINEER: 

(TOM SI)