FCC CFR47 PART 15 SUBPART C
CERTIFICATION
TEST REPORT

FOR

DUAL RADIO OUTDOOR ACCESS POINT

MODEL NUMBER: AP-ONE

FCC ID: SWX-AP1R2

REPORT NUMBER: 04U3091-1

ISSUE DATE: JANUARY 07, 2005

Prepared for
UBIQUITI NETWORKS
1111 WEYBURN LANE, SUITE 41
SAN JOSE, CA 95129
U.S.A.

Prepared by
COMPLIANCE ENGINEERING SERVICES, INC.
d.b.a.
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LAB CODE:200065-0

Revision History

Rev.	Revisions	Revised By
1	Adding Non-dominant mid channel 5.745 GHz at collocation section	Thu Chan

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: UBIQUITI NETWORKS
1111 WEYBURN LANE, SUITE 41
SAN JOSE, CA 95129 U.S.A.

EUT DESCRIPTION: Dual Radio Outdoor Access Point

MODEL: AP-ONE

SERIAL NUMBER: N/A

DATE TESTED: DECEMBER 29 – DECEMBER 30, 2004

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 15 SUBPART C	NO NON-COMPLIANCE NOTED

Compliance Certification Services, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For CCS By:

THU CHAN
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

Tested By:

DAVID GARCIA
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003, FCC CFR 47 Part 2 and FCC CFR 47 Part 15.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://www.ccsemc.com.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Radiated Emission, 30 to 200 MHz	+/- 3.3 dB
Radiated Emission, 200 to 1000 MHz	+4.5 / -2.9 dB
Radiated Emission, 1000 to 2000 MHz	+4.5 / -2.9 dB
Power Line Conducted Emission	+/- 2.9 dB

Uncertainty figures are valid to a confidence level of 95%.

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5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is an 802.11a 802.11b/g dual transceiver access point.

The radio module is manufactured by Atheros.

The model number was changed after testing commenced. All data in this report is applicable to the model number documented in Section 1 above.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

2400 to 2483.5 MHz Authorized Band

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2412 - 2462	802.11b	29.34	859.01
2412 - 2462	802.11g	29.24	839.46

5725 to 5850 MHz Authorized Band

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5745 - 5825	802.11a	29.12	816.58

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5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes has a maximum gain of 5.5dBi in b/g mode and 3dBi in a-mode.

5.4. SOFTWARE AND FIRMWARE

The AP-1 was placed in continuous transmit mode using the Atheros Radio Test (ART) software utility.

5.5. WORST-CASE CONFIGURATION AND MODE

The worst-case channel is determined as the channel with the highest output power. The highest measured output power was at 2437 MHz in b/g mode and 5825 MHz in a-mode.

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5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	Data	1	RJ45	Shielded	1.5	
2	DC	1	0	Unshielded	1.5	
3	DC	1	0	Unshielded	1.8	
4	AC	1	0	Unshielded	1.8	

I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	Data	1	RJ45	Shielded	1.5	
2	DC	1	0	Unshielded	1.5	
3	DC	1	0	Unshielded	1.8	
4	AC	1	0	Unshielded	1.8	

TEST SETUP

The EUT is installed in a host laptop computer via an Ethernet cable connected to the EUT during the tests. Test software exercised the radio card.

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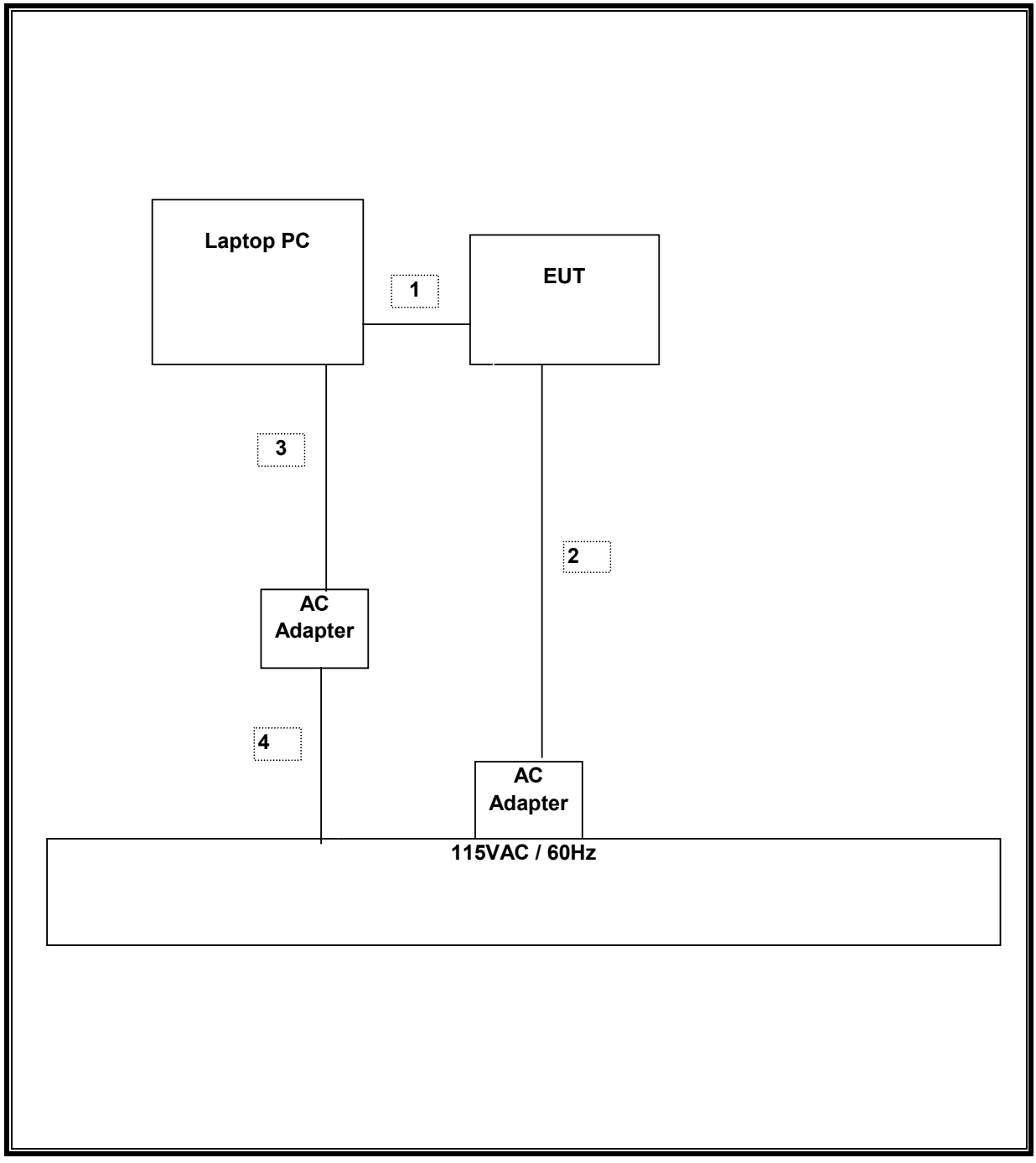
SETUP DIAGRAM FOR TESTS



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6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**Cal Due**
Spectrum Analyzer	HP	E4446A	US42510266	8/25/2005
EMI Test Receiver	R & S	ESHS 20	827129/006	10/22/2005
Amplifier 1-26GHz	MITEQ	NSP2600-SP	924342	8/17/2005
Power Meter	R & S	NRVD	DE 12893	10/21/2005
Power Sensor, 18 GHz, 300 mW	R&S	NRV-Z51	DE 13013	10/20/2005
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	2238	9/12/2005
Antenna, Horn, 18 ~ 26 GHz	ARA	MWH-1826/B	1013	9/12/2005
Site A Line Stabilizer / Conditioner	Tripplite	LC-1800a	A0051681	CNR
LISN, 10 kHz ~ 30 MHz	FCC	LISN-50/250-25-2	2023	8/30/2005
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	8379443	10/21/2005
Site A Preamplifier, 1300MHz	HP	8447D	2944A06833	8/17/2005
Spectrum Analyzer, 26.5 GHz	HP	8593EM	3710A00205	1/6/2006
30MHz---- 2Ghz	Sunol Sciences	JB1 Antenna	A121003	12/22/2005
4.0 GHz High Pass Filter	Micro Tronics	HPM13351	3	N/A
7.6 GHz High Pass Filter	Micro	7600	N02601	N/A
1.5 GHz High Pass Filter	Micro Tronics	HPM 13193	1	N/A
5.725 - 5.825 GHz Reject Filter	Micro Tronics	BRC13192	2	N/A

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7. LIMITS AND RESULTS

7.1. RADIATED EMISSIONS

7.1.1. TRANSMITTER RADIATED SPURIOUS EMISSIONS

LIMITS

§15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])
13.36 - 13.41			

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
[2] Above 38.6

§15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

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§15.209 (a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

§15.209 (b) In the emission table above, the tighter limit applies at the band edges.

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TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each 5 GHz band.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

SUPPLEMENTAL TEST PROCEDURE FOR CO-LOCATED TRANSMITTERS

The dominant transmitter is set to the worst case channel. The spurious emissions performance of the dominant transmitter is investigated as the settings of the non-dominant transmitter are varied. The spectrum is searched for intermodulation products. Worst-case results are reported.

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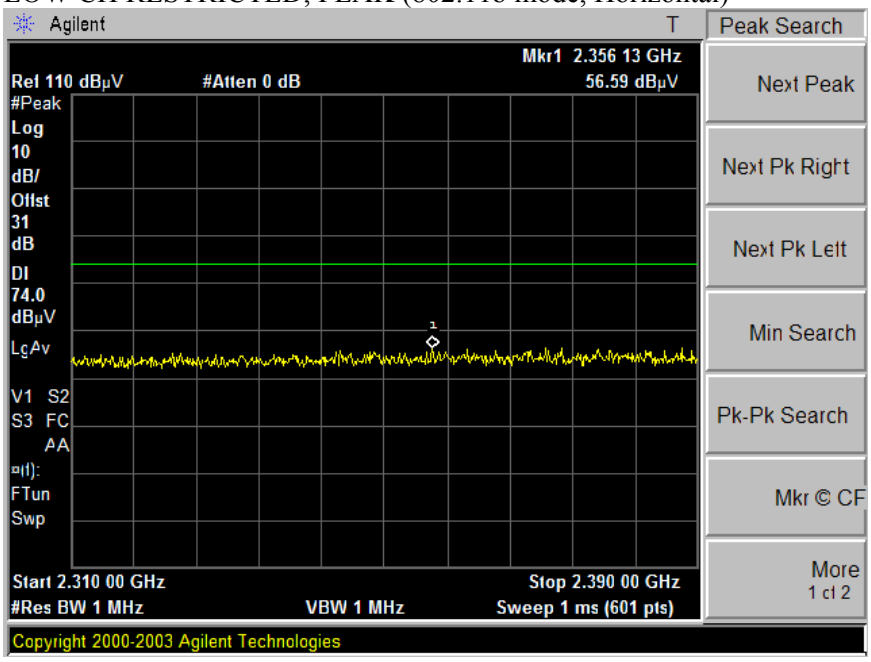
7.1.2. TRANSMITTER ABOVE 1 GHz FOR 2400 TO 2483.5 MHz BAND

RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, HORIZONTAL)

LOW CH RESTRICTED, PEAK (802.11b mode, Horizontal)



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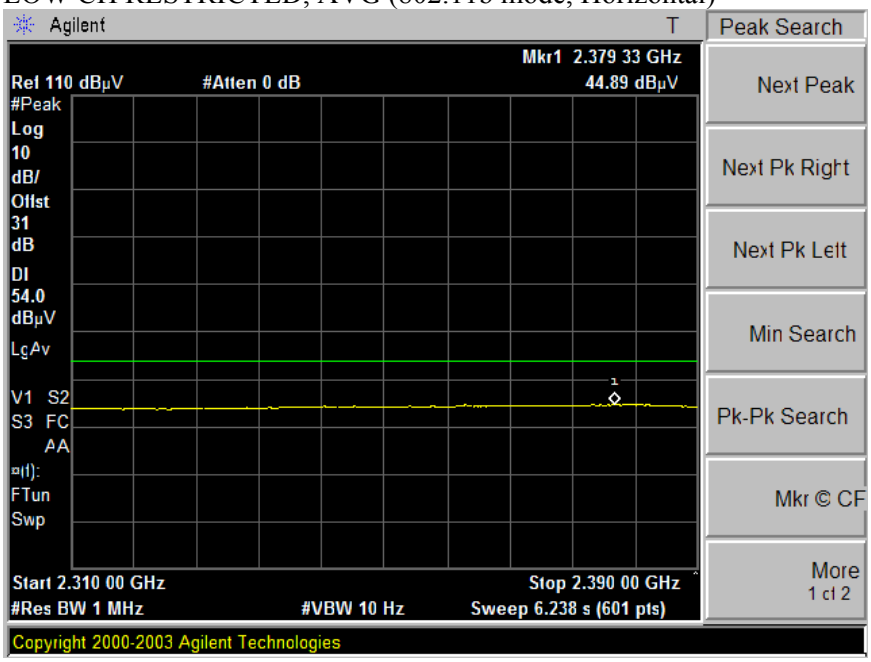
LOW CH RESTRICTED, AVG (802.11b mode, Horizontal)



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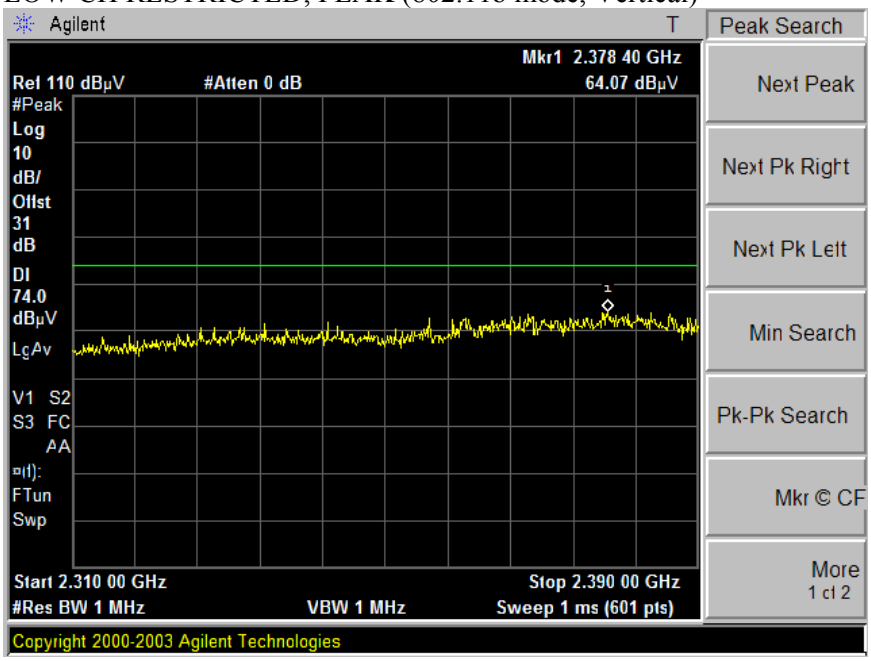
RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, VERTICAL)

LOW CH RESTRICTED, PEAK (802.11b mode, Vertical)



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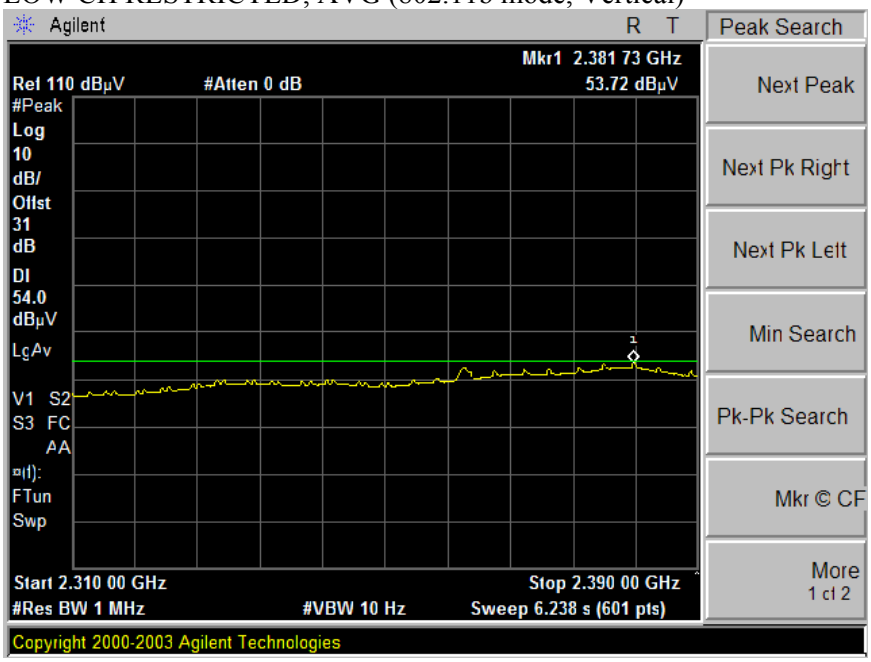
LOW CH RESTRICTED, AVG (802.11b mode, Vertical)



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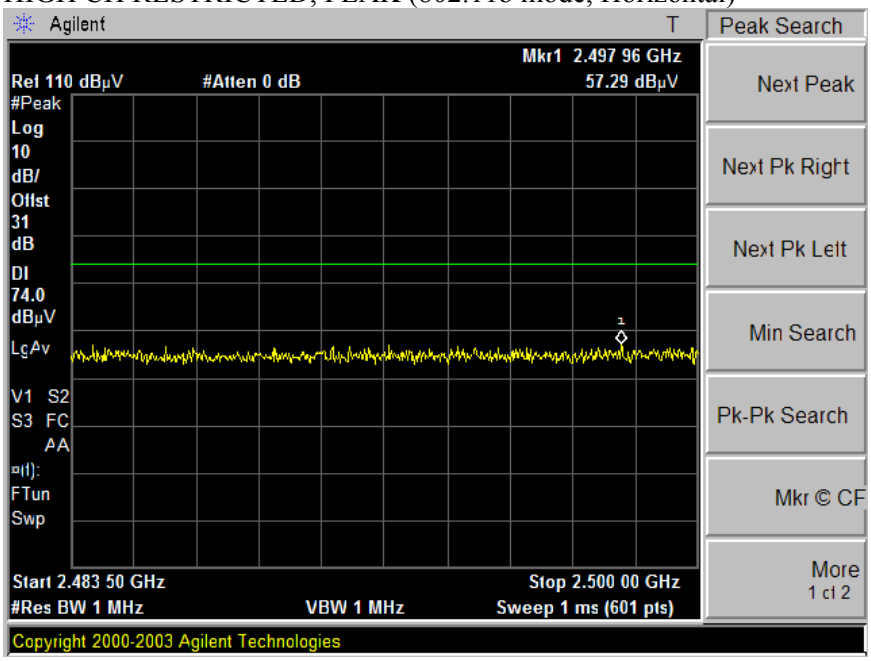
RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, HORIZONTAL)

HIGH CH RESTRICTED, PEAK (802.11b mode, Horizontal)



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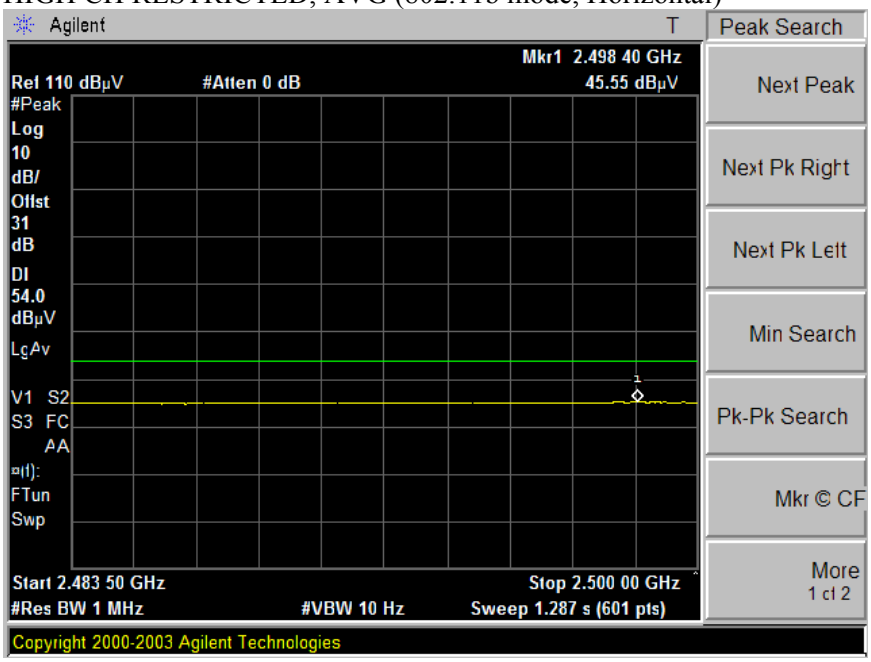
HIGH CH RESTRICTED, AVG (802.11b mode, Horizontal)



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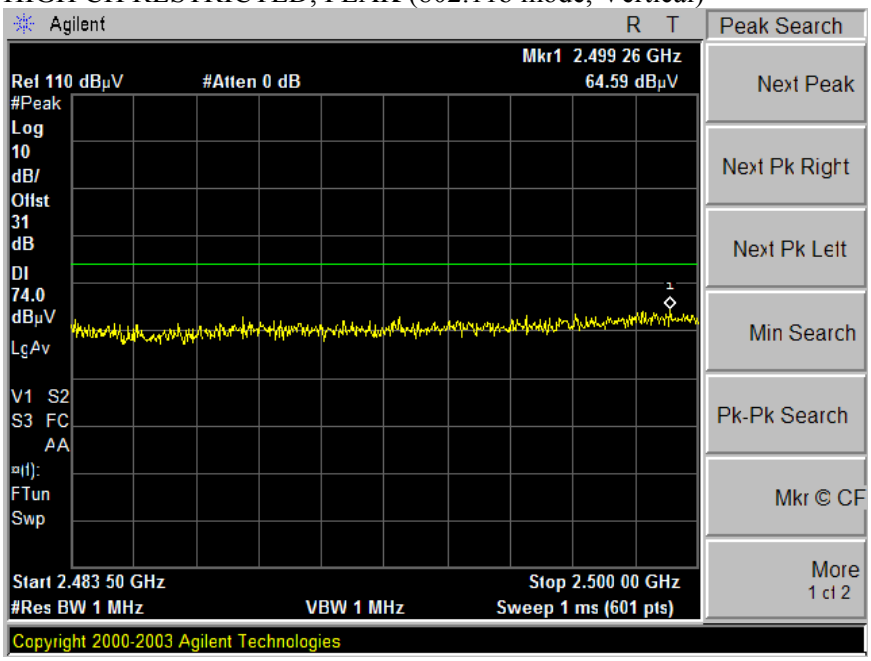
RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, VERTICAL)

HIGH CH RESTRICTED, PEAK (802.11b mode, Vertical)



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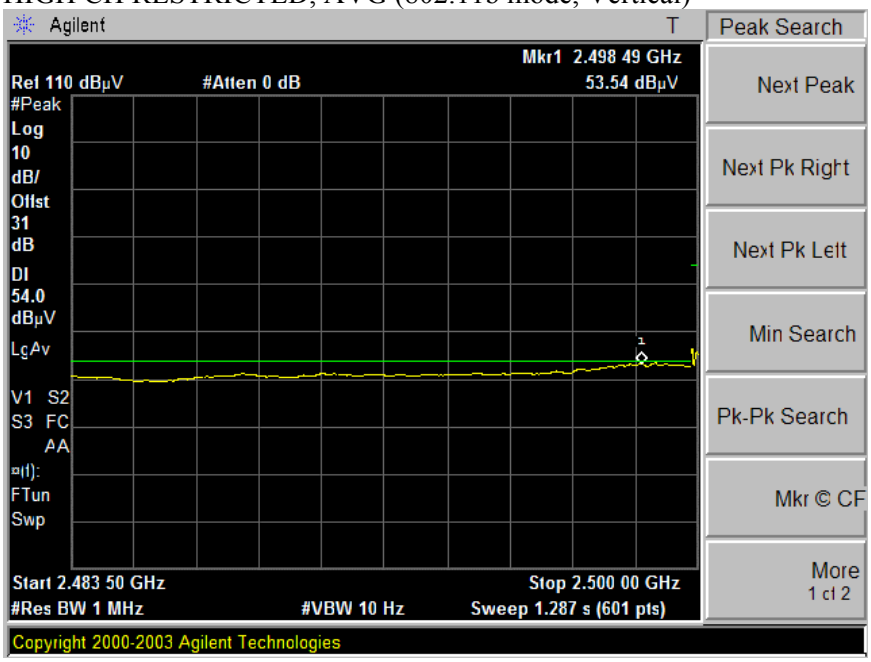
HIGH CH RESTRICTED, AVG (802.11b mode, Vertical)



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HARMONICS AND SPURIOUS EMISSIONS (b MODE)

12/31/04 **High Frequency Measurement**

Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: David Garcia
Project #: 04U3091-1
Company: Ubiquiti
EUT Descrip.: Dual transmitter 802.11 a/ 802.11b/g Access Point
EUT M/N: AP-ONE
Test Target: FCC 15.247
Mode Oper: 11b, Transmitting

Test Equipment:

EMCO Horn 1-18GHz: T60; S/N: 2238 @3m
Pre-amplifer 1-26GHz: T87 Miteq 924342
Pre-amplifer 26-40GHz:
Horn > 18GHz: T39; ARA 18-26GHz; S/N:1013

Hi Frequency Cables
2 foot cable:
3 foot cable:
4 foot cable: 4_David
12 foot cable: 12_Yan

HPF:
Reject Filter: R_001

Peak Measurements
RBW=VBW=1MHz

Average Measurements
RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
2412 Channel															
4.824	3.0	38.8	31.1	33.0	4.8	-39.6	0.0	0.0	37.1	29.4	74	54	-36.9	-24.6	V
4.824	3.0	37.3	28.6	33.0	4.8	-39.6	0.0	0.0	35.6	26.9	74	54	-38.4	-27.1	H
2437 Channel															
4.874	3.0	42.7	36.8	33.0	4.9	-39.6	0.0	0.0	40.9	35.0	74	54	-33.1	-19.0	V
7.311	3.0	37.6	27.8	35.9	6.0	-40.3	0.0	0.0	39.1	29.3	74	54	-34.9	-24.7	V
4.874	3.0	40.2	34.1	33.0	4.9	-39.6	0.0	0.0	38.4	32.3	74	54	-35.6	-21.7	H
7.311	3.0	36.2	27.2	35.9	6.0	-40.3	0.0	0.0	37.7	28.7	74	54	-36.3	-25.3	H
2462 Channel															
4.924	3.0	47.5	45.7	33.0	4.9	-39.7	0.0	0.0	45.7	43.9	74	54	-28.3	-10.1	V
7.386	3.0	41.1	34.7	36.0	6.0	-40.3	0.0	0.0	42.8	36.4	74	54	-31.2	-17.6	V
4.924	3.0	40.5	35.3	33.0	4.9	-39.7	0.0	0.0	38.7	33.5	74	54	-35.3	-20.5	H
7.386	3.0	37.9	28.5	36.0	6.0	-40.3	0.0	0.0	39.6	30.2	74	54	-34.4	-23.8	H
No further emissions were detected.															

f	Measurement Frequency	Amp	Preamp Gain			Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters			Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m			Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength			Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter				

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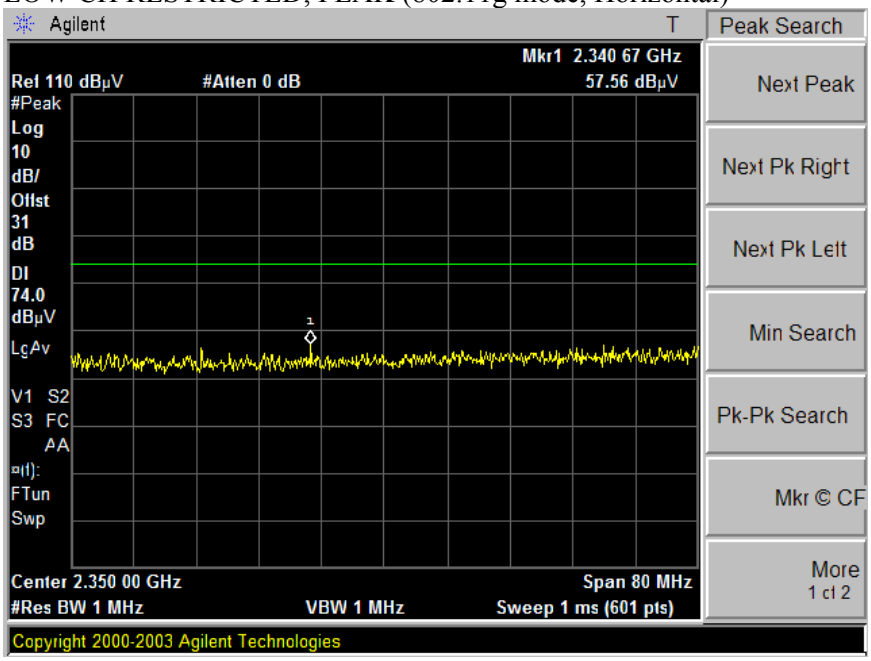
RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, HORIZONTAL)

LOW CH RESTRICTED, PEAK (802.11g mode, Horizontal)



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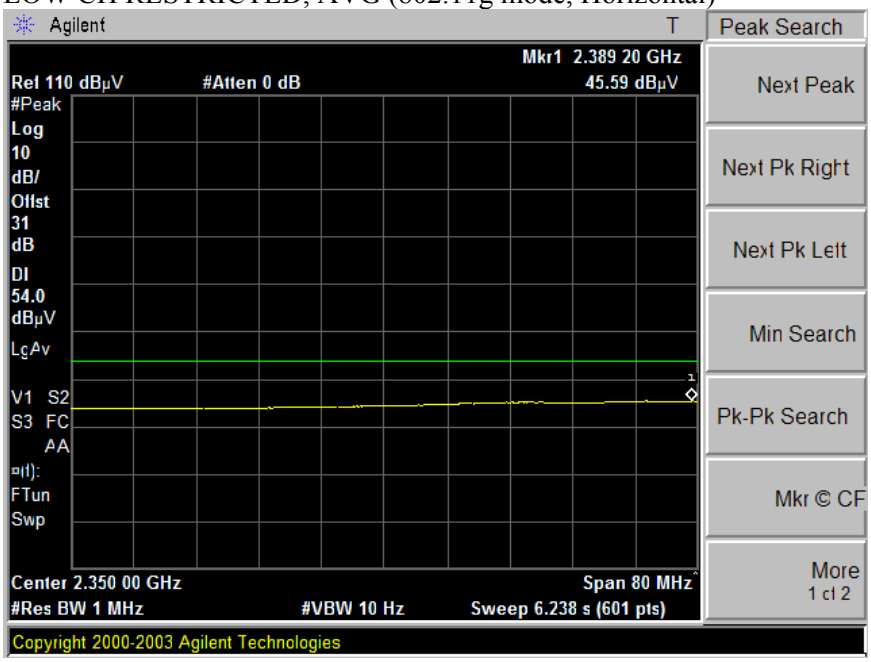
LOW CH RESTRICTED, AVG (802.11g mode, Horizontal)



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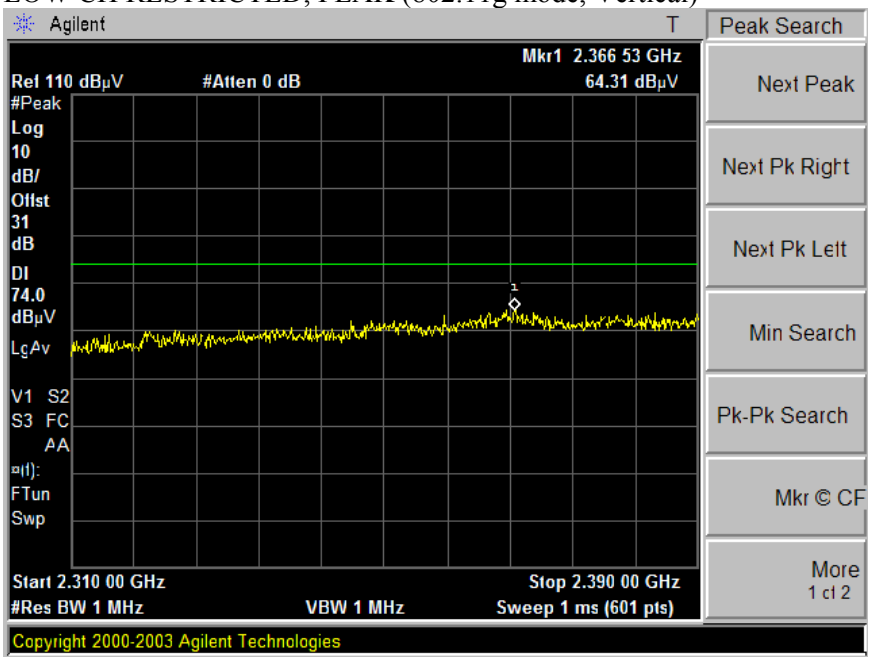
RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, VERTICAL)

LOW CH RESTRICTED, PEAK (802.11g mode, Vertical)



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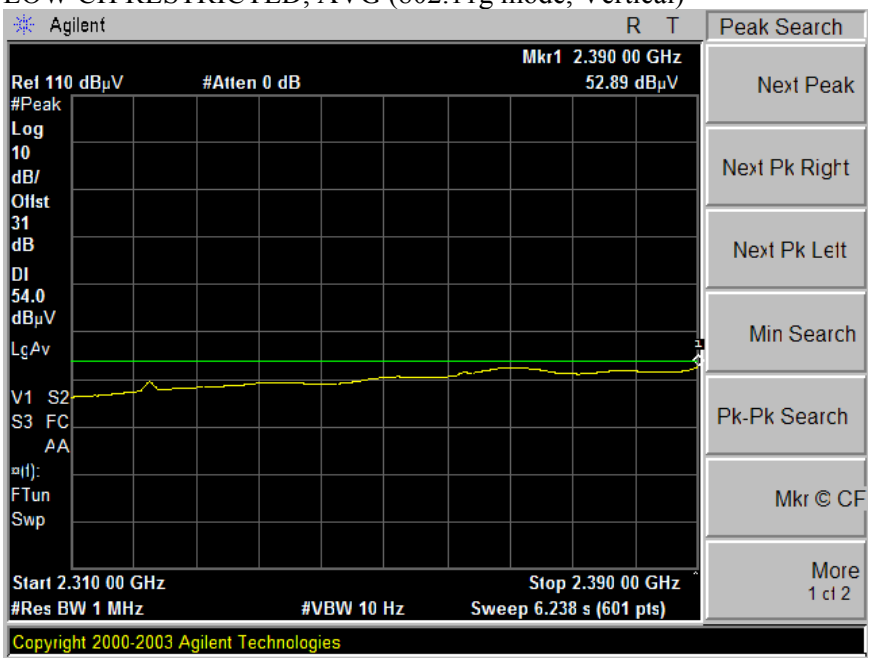
LOW CH RESTRICTED, AVG (802.11g mode, Vertical)



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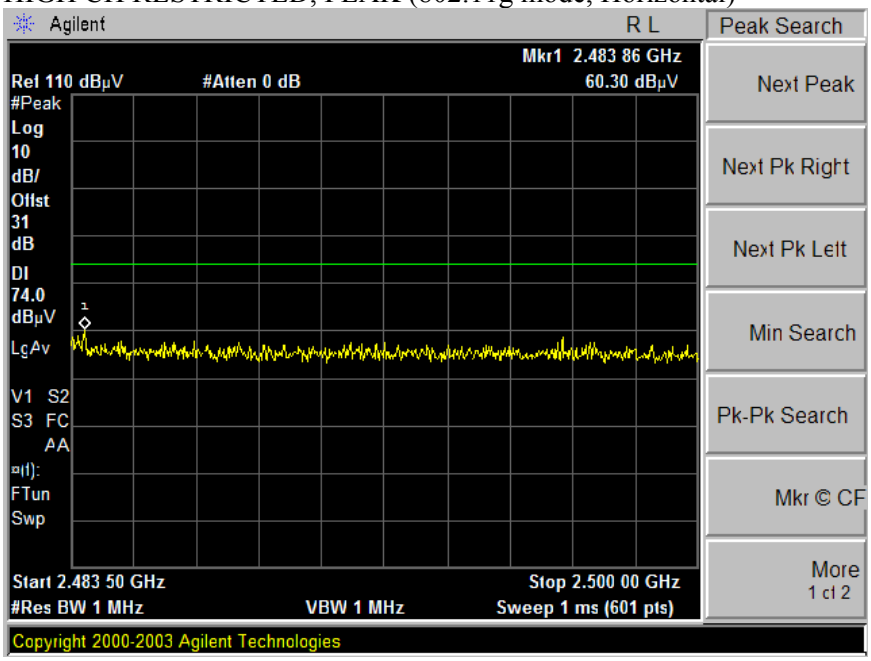
RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, HORIZONTAL)

HIGH CH RESTRICTED, PEAK (802.11g mode, Horizontal)



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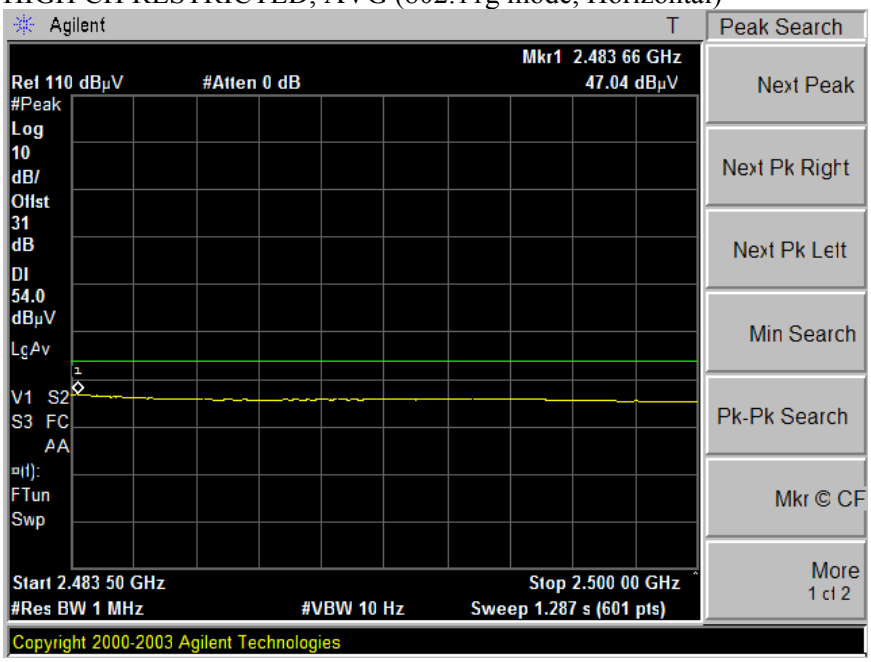
HIGH CH RESTRICTED, AVG (802.11g mode, Horizontal)



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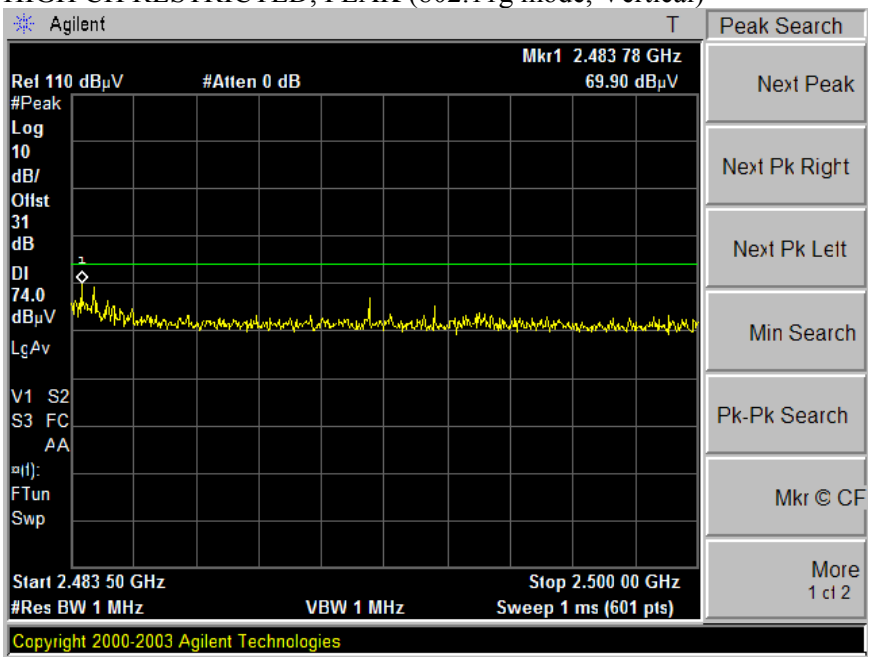
RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, VERTICAL)

HIGH CH RESTRICTED, PEAK (802.11g mode, Vertical)



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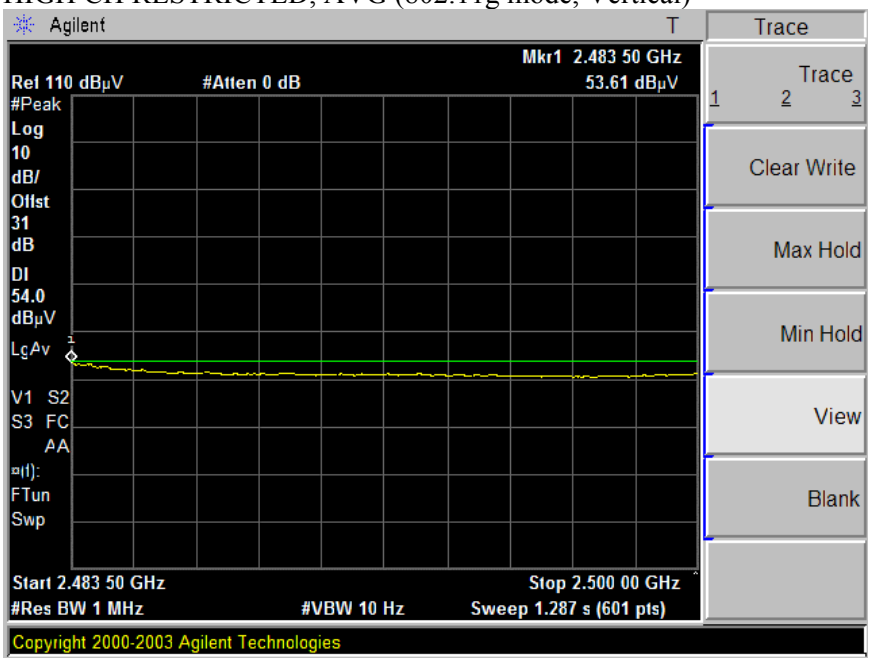
HIGH CH RESTRICTED, AVG (802.11g mode, Vertical)



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HARMONICS AND SPURIOUS EMISSIONS (g MODE)

12/31/04 **High Frequency Measurement**

Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: David Garcia
Project #: 04U3091-1
Company: Ubiquiti
EUT Descrip.: Dual transmitter 802.11 a/ 802.11b/g Access Point
EUT M/N: AP-ONE
Test Target: FCC 15.247
Mode Oper: 11g, Transmitting

Test Equipment:

EMCO Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz
T60; S/N: 2238 @3m	T87 Miteq 924342		T39; ARA 18-26GHz; S/N:1013

Hi Frequency Cables

2 foot cable	3 foot cable	4 foot cable	12 foot cable	HPF	Reject Filter
		4_David	12_Yan		R_001

Peak Measurements
RBW=VBW=1MHz

Average Measurements
RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
2412 Channel															
4.824	3.0	38.4	27.2	33.0	4.8	-39.6	0.0	0.0	36.7	25.5	74	54	-37.3	-28.5	V
2437 Channel															
4.874	3.0	52.8	39.6	33.0	4.9	-39.6	0.0	0.0	51.0	37.8	74	54	-23.0	-16.2	V
7.311	3.0	51.8	38.8	35.9	6.0	-40.3	0.0	0.0	53.3	40.3	74	54	-20.7	-13.7	V
4.874	3.0	38.8	31.3	33.0	4.9	-39.6	0.0	0.0	37.0	29.5	74	54	-37.0	-24.5	H
7.311	3.0	42.1	30.4	35.9	6.0	-40.3	0.0	0.0	43.6	31.9	74	54	-30.4	-22.1	H
2462 Channel															
4.924	3.0	47.9	34.9	33.0	4.9	-39.7	0.0	0.0	46.1	33.1	74	54	-27.9	-20.9	V
7.386	3.0	44.7	31.7	36.0	6.0	-40.3	0.0	0.0	46.4	33.4	74	54	-27.6	-20.6	V
4.924	3.0	41.1	29.1	33.0	4.9	-39.7	0.0	0.0	39.3	27.3	74	54	-34.7	-26.7	H
7.386	3.0	42.1	29.6	36.0	6.0	-40.3	0.0	0.0	43.8	31.3	74	54	-30.2	-22.7	H
No further emissions were detected.															

f	Measurement Frequency	Amp	Preamp Gain			Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters			Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m			Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength			Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter				

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7.1.3. TRANSMITTER ABOVE 1 GHz FOR 5725 TO 5850 MHz BAND

HARMONICS AND SPURIOUS EMISSIONS (802.11a MODE)

12/29/04 **High Frequency Measurement**
Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: David Garcia
Project #: 04U3091-1
Company: Ubiquiti
EUT Descrip.: Dual transmitter 802.11 a/ 802.11b/g Access Point
EUT M/N: AP-ONE
Test Target: FCC 15.247
Mode Oper: 5.8 GHz band, Transmitting

Test Equipment:

EMCO Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz
T60; S/N: 2238 @3m	T87 Miteq 924342		T39; ARA 18-26GHz; S/N:1013

Hi Frequency Cables

2 foot cable	3 foot cable	4 foot cable	12 foot cable	HPF	Reject Filter
		4_David	12_Yan	HPF_1.5GHz	R_001

Peak Measurements
RBW=VBW=1MHz

Average Measurements
RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
5745 GHz Channel															V
1.680	3.0	41.3	33.8	26.5	2.6	-39.8	0.0	0.3	30.9	23.4	74	54	-43.1	-30.6	V
11.490	3.0	55.6	45.5	38.1	8.2	-38.7	0.0	0.8	63.9	53.8	74	54	-10.1	-0.2	V
1.680	3.0	40.9	30.4	26.5	2.6	-39.8	0.0	0.3	30.5	20.0	74	54	-43.5	-34.0	H
11.490	3.0	53.8	42.0	38.1	8.2	-38.7	0.0	0.8	62.1	50.3	74	54	-11.9	-3.7	H
5785 GHz Channel															
1.680	3.0	40.4	32.5	26.5	2.6	-39.8	0.0	0.3	30.0	22.1	74	54	-44.0	-31.9	V
11.571	3.0	58.5	45.3	38.2	8.2	-38.8	0.0	0.8	66.9	53.7	74	54	-7.1	-0.3	V
1.680	3.0	40.4	30.0	26.5	2.6	-39.8	0.0	0.3	30.0	19.6	74	54	-44.0	-34.4	H
11.571	3.0	56.9	44.8	38.2	8.2	-38.8	0.0	0.8	65.3	53.2	74	54	-8.7	-0.8	H
5825 GHz Channel															
1.680	3.0	40.9	33.8	26.5	2.6	-39.8	0.0	0.3	30.5	23.4	74	54	-43.5	-30.6	V
11.650	3.0	56.3	43.6	38.2	8.3	-38.8	0.0	0.8	64.7	52.0	74	54	-9.3	-2.0	V
1.680	3.0	40.4	29.9	26.5	2.6	-39.8	0.0	0.3	30.0	19.5	74	54	-44.0	-34.5	H
11.650	3.0	51.4	38.2	38.2	8.3	-38.8	0.0	0.8	59.8	46.6	74	54	-14.2	-7.4	H
No Further emissions were detected.															

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

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7.1.4. CO-LOCATED TRANSMITTER RADIATED EMISSIONS

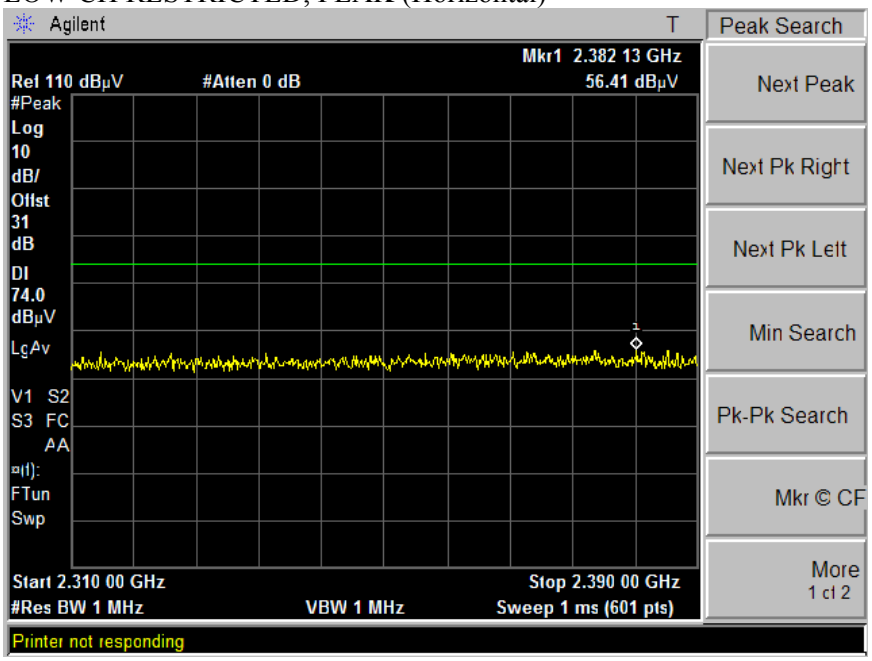
RESULTS

No non-compliance noted:

The dominant transmitter is the 2.4 GHz Band. The Non-dominant transmitter is the mid channel 5.745 GHz.

WORST-CASE RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

LOW CH RESTRICTED, PEAK (Horizontal)



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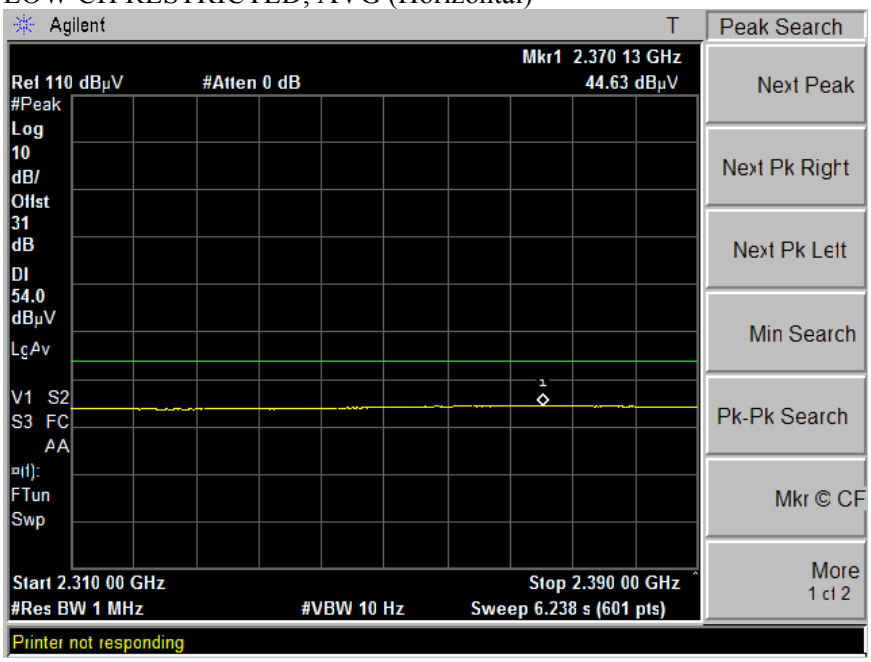
LOW CH RESTRICTED, AVG (Horizontal)



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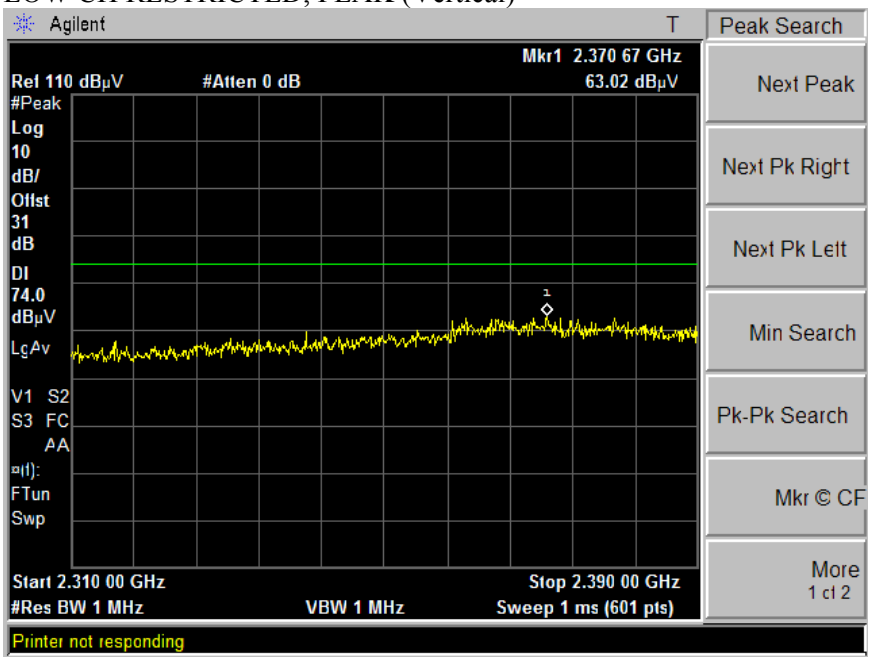
WORST-CASE RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

LOW CH RESTRICTED, PEAK (Vertical)



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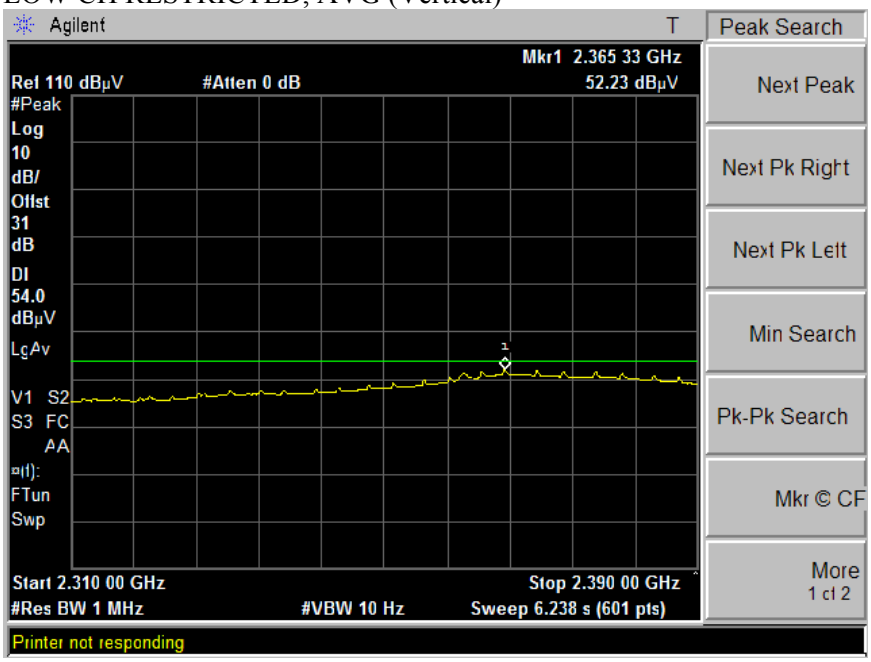
LOW CH RESTRICTED, AVG (Vertical)



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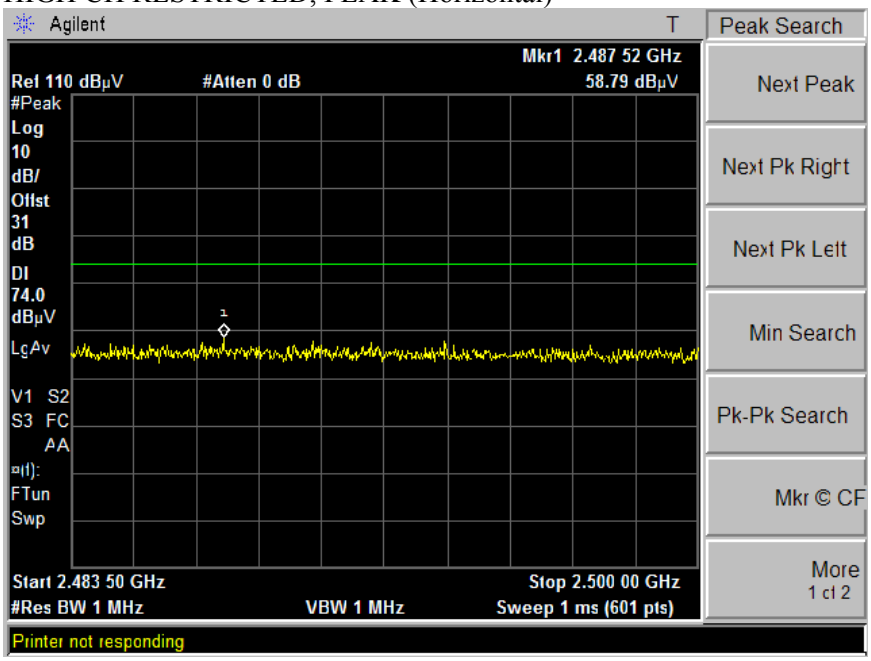
WORST-CASE RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

HIGH CH RESTRICTED, PEAK (Horizontal)



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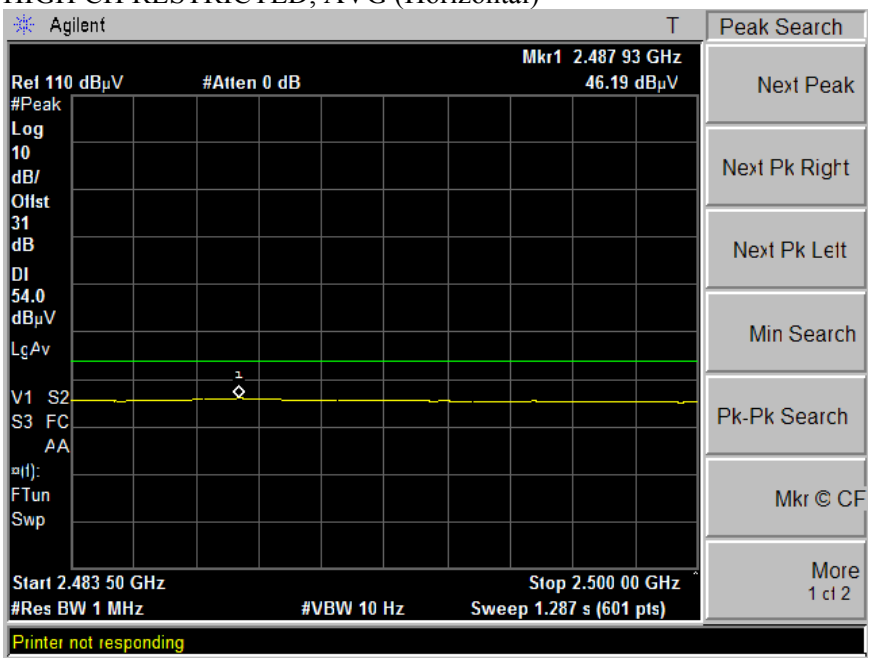
HIGH CH RESTRICTED, AVG (Horizontal)



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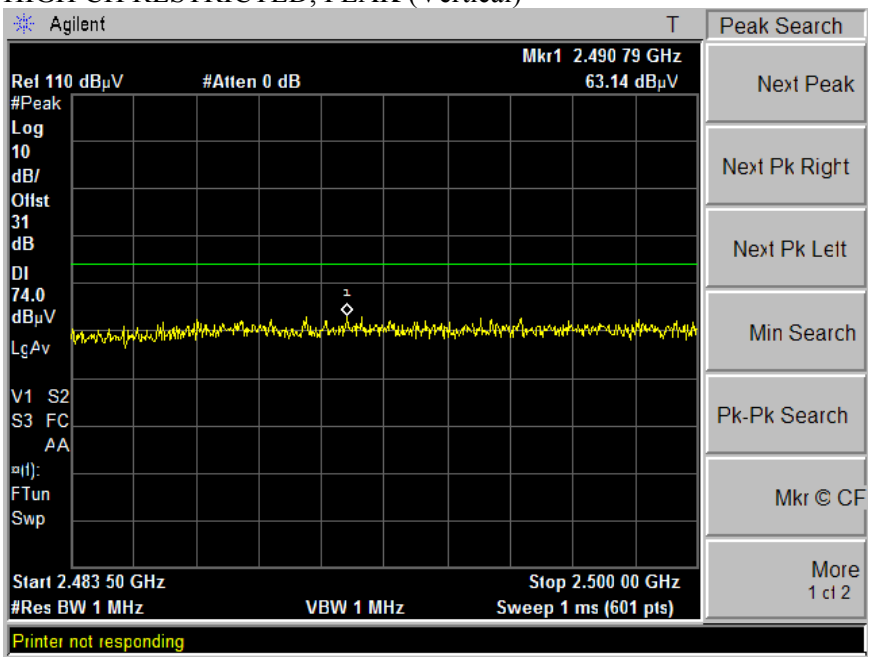
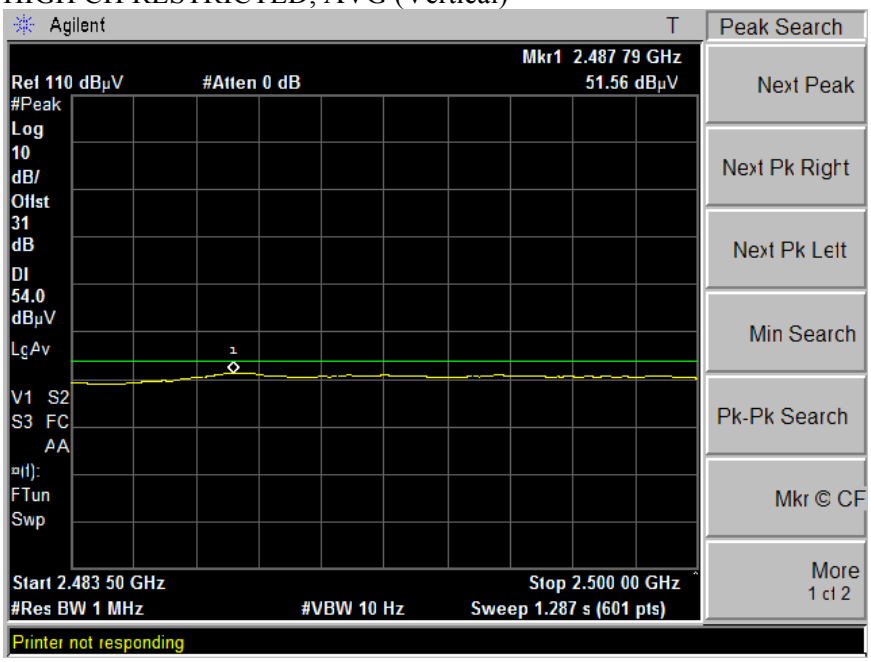
WORST-CASE RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

HIGH CH RESTRICTED, PEAK (Vertical)



This report shall not be reproduced except in full, without the written approval of CCS.

HIGH CH RESTRICTED, AVG (Vertical)



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WORST-CASE HARMONICS AND SPURIOUS EMISSIONS

12/31/04 **High Frequency Measurement**

Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: David Garcia
Project #: 04U3091-1
Company: Ubiquiti
EUT Descrip.: Dual transmitter 802.11 a/ 802.11b/g Access Point
EUT M/N: AP-ONE
Test Target: FCC 15.247
Mode Oper: 11b/Co-location, Transmitting
2.412 Channel and 5.745 Channel

Test Equipment:

EMCO Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz
T60; S/N: 2238 @3m	T87 Miteq 924342		T39; ARA 18-26GHz; S/N:1013

Hi Frequency Cables

2 foot cable	3 foot cable	4 foot cable	12 foot cable	HPF	Reject Filter
		4_David	12_Yan		R_001

Peak Measurements
RBW=VBW=1MHz

Average Measurements
RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
2412 Channel															
4.824	3.0	40.5	33.8	33.0	4.8	-39.6	0.0	0.0	38.8	32.1	74	54	-35.2	-21.9	V
4.824	3.0	35.7	27.9	33.0	4.8	-39.6	0.0	0.0	34.0	26.2	74	54	-40.0	-27.8	H

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

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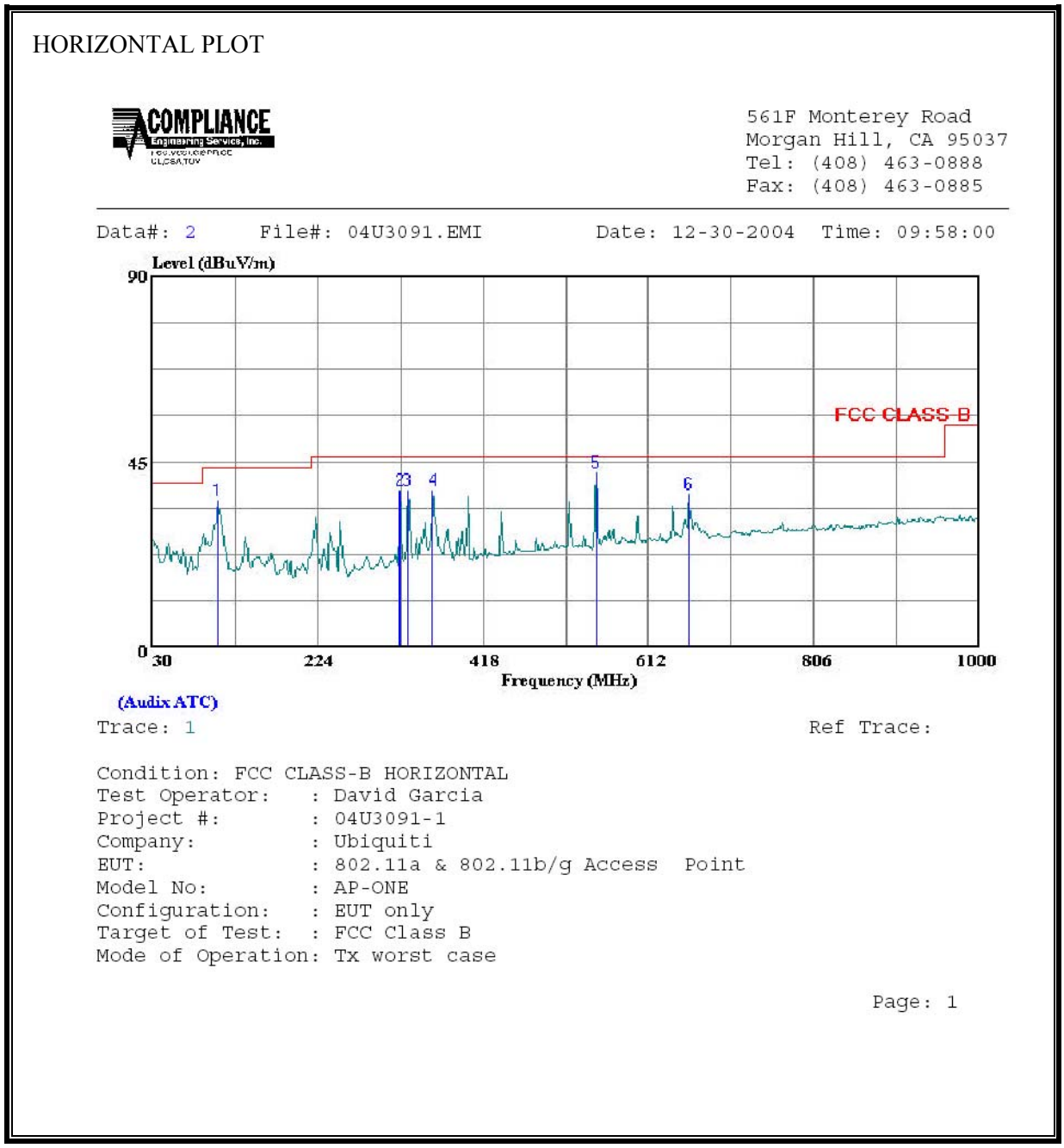
7.1.5. WORST-CASE RADIATED EMISSIONS BELOW 1 GHz

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



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HORIZONTAL DATA

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	106.630	50.77	-15.27	35.50	43.50	-8.00	Peak
2	320.030	49.33	-11.40	37.93	46.00	-8.07	Peak
3	329.730	49.20	-11.19	38.01	46.00	-7.99	Peak
4	358.830	48.38	-10.45	37.94	46.00	-8.06	Peak
5	550.890	48.41	-6.05	42.36	46.00	-3.64	Peak
6	659.530	40.72	-3.70	37.02	46.00	-8.98	Peak

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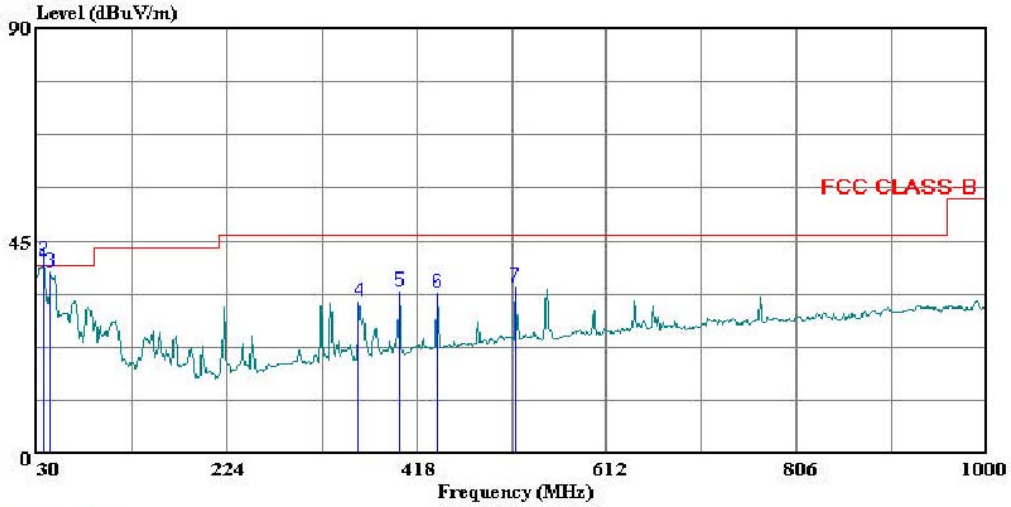
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)

VERTICAL PLOT

561F Monterey Road
Morgan Hill, CA 95037
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 10 File#: 04u3091.emi Date: 12-30-2004 Time: 10:44:22



(Audix ATC)

Trace: 7 Ref Trace:

Condition: FCC CLASS-B VERTICAL
Test Operator: : David Garcia
Project #: : 04U3091-1
Company: : Ubiquiti
EUT: : 802.11a & 802.11b/g Access Point
Model No: : AP-ONE
Configuration: : EUT only
Target of Test: : FCC Class B
Mode of Operation: Tx worst case

Page: 1

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VERTICAL DATA

		Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1		36.790	48.32	-8.67	39.65	40.00	-0.35	QP
2	*	36.790	50.11	-9.36	40.75	40.00	0.75	Peak
3		43.580	52.61	-14.41	38.20	40.00	-1.80	Peak
4		358.830	42.53	-10.45	32.09	46.00	-13.92	Peak
5		400.540	43.67	-9.28	34.39	46.00	-11.61	Peak
6		439.340	42.29	-8.20	34.09	46.00	-11.91	Peak
7		518.880	41.50	-6.31	35.19	46.00	-10.82	Peak

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7.2. POWERLINE CONDUCTED EMISSIONS

LIMIT

§15.207 (a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

The lower limit applies at the boundary between the frequency ranges.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

The resolution bandwidth is set to 9 kHz for both peak detection and quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

No non-compliance noted:

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6 WORST EMISSIONS

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	FCC_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.15	60.60	--	53.21	0.00	66.00	56.00	-5.40	-2.79	L1
0.30	48.86	--	46.78	0.00	60.33	50.33	-11.47	-3.55	L1
0.89	39.34	--	34.66	0.00	56.00	46.00	-16.66	-11.34	L1
0.15	61.10	--	52.60	0.00	66.00	56.00	-4.90	-3.40	L2
0.30	51.70	--	48.22	0.00	60.33	50.33	-8.63	-2.11	L2
0.89	37.02	--	30.55	0.00	56.00	46.00	-18.98	-15.45	L2
6 Worst Data									

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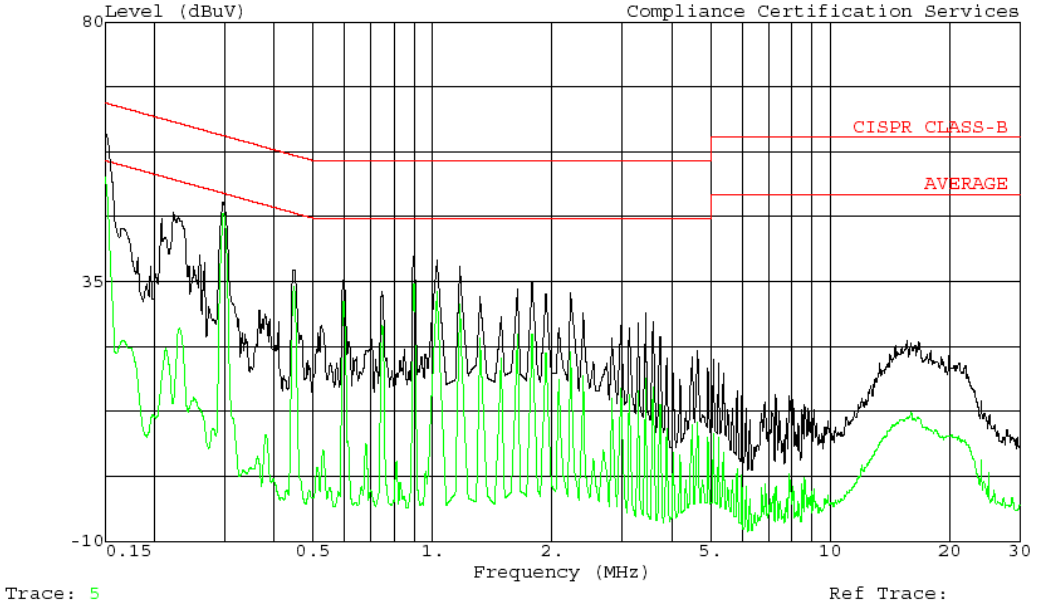
LINE 1 RESULTS

561F Monterey Road
Morgan Hill, CA 95037 USA
Tel: (408) 463-0888
Fax: (408) 463-0885



Trace: 5 Ref Trace:
Project No. : 04U3091-1
Test Engr : David Garcia
Company : Ubiquiti
EUT : 802.11 a and 802.11b/g Dual Access Point
Model No. : AP-ONE
Test Config.: EUT connected to laptop
Type of Test: FCC (CISPR B Limits)
Mode of Op. : TX ; WORST CASE
AC Mains : 110 V AC / 60 Hz
: L1: Peak (Black), Avg (Green)

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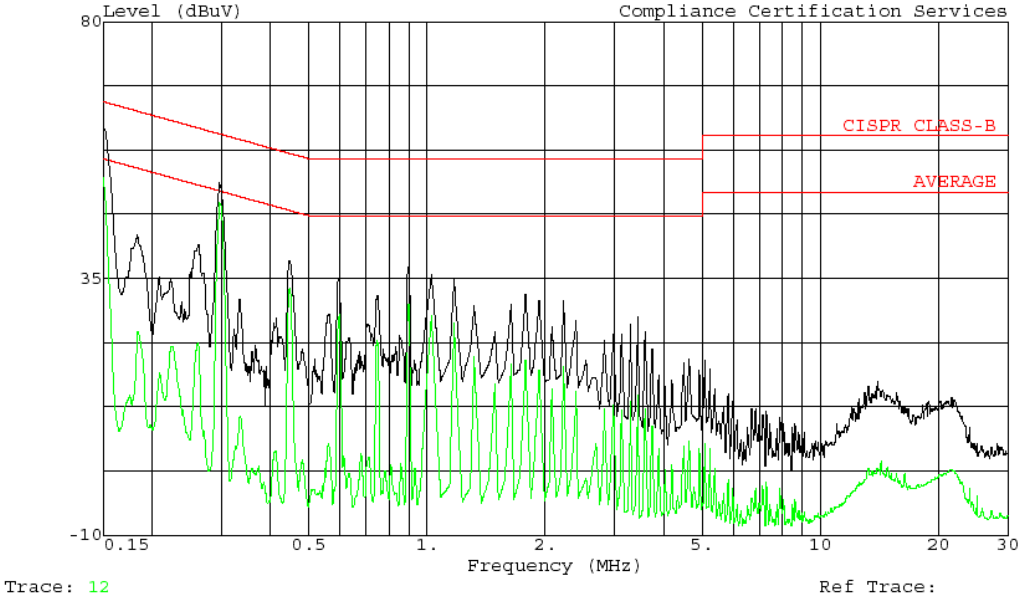
LINE 2 RESULTS

561F Monterey Road
Morgan Hill, CA 95037 USA
Tel: (408) 463-0888
Fax: (408) 463-0885



Trace: 12 Ref Trace:
Project No. : 04U3091-1
Test Engr : David Garcia
Company : Ubiquiti
EUT : 802.11 a and 802.11b/g Dual Access Point
Model No. : AP-ONE
Test Config.: EUT connected to laptop
Type of Test: FCC (CISPR B Limits)
Mode of Op. : TX ; WORST CASE
AC Mains : 110 V AC / 60 Hz
: L2: Peak (Black), Avg (Green)

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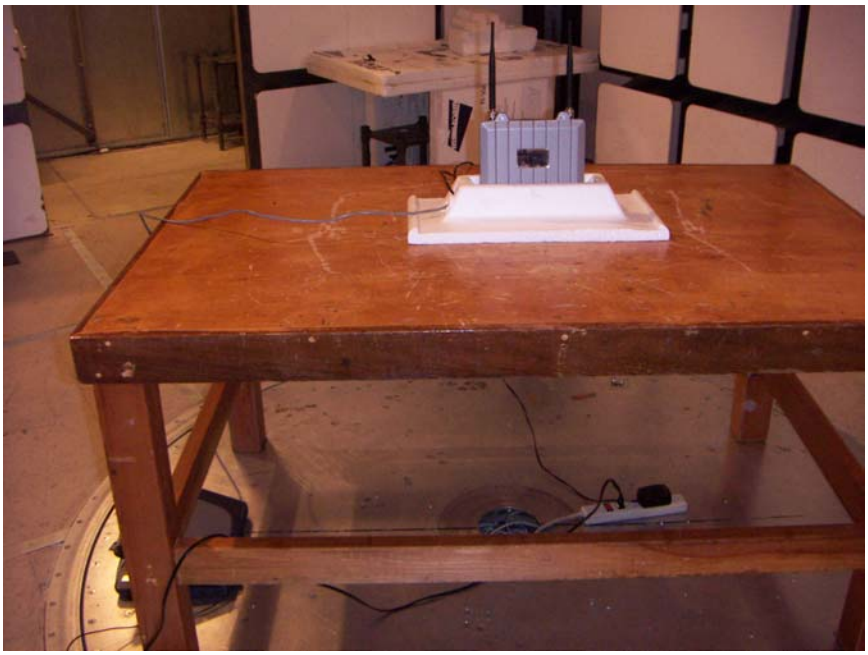
8. SETUP PHOTOS

RADIATED RF MEASUREMENT SETUP

RADIATED FRONT PHOTO



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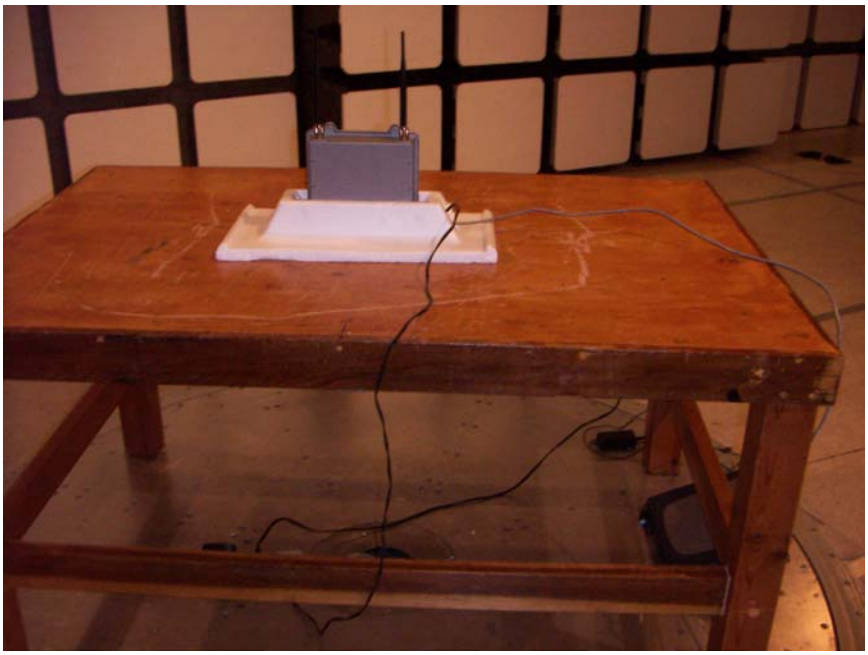
RADIATED BACK PHOTO



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POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP

LINE CONDUCTED FRONT PHOTO

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LINE CONDUCTED BACK PHOTO

END OF REPORT

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