



**FCC CFR47 PART 15 SUBPART C
CERTIFICATION
TEST REPORT**

FOR

802.11 b/g OUTDOOR MICROCELL

MODEL NUMBER: VA2410A

FCC ID: QLN-VA2410A

REPORT NUMBER: 05U3647-1, Revision B

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Prepared for
VIVATO, INC.
12610 E MIRABEAU PKWY SUITE 900
SPOKANE, WA 99216, USA

Prepared by
COMPLIANCE CERTIFICATION SERVICES
561F MONTEREY ROAD,
MORGAN HILL, CA 95037, USA
TEL: (408) 463-0885
FAX: (408) 463-0888



Revision History

Rev.	Issue Date	Revisions	Revised By
A	9/19/05	Initial Issue	DG
B	9/30/05	Revised antenna specifications	MH

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: VIVATO, INC.
12610 E MIRABEAU PKWY SUITE 900
SPOKANE, WA 99216 USA

EUT DESCRIPTION: 802.11 b/g OUTDOOR MICROCELL

MODEL: VA2410A

SERIAL NUMBER: Prototype

DATE TESTED: AUGUST 29 to SEPTEMBER 1, 2005

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:

Tested By:



MIKE HECKROTTE
ENGINEERING MANAGER
COMPLIANCE CERTIFICATION SERVICES



JOSEPH CHUNG
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

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%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is an Outdoor Microcell 802.11 b/g transceiver. It contains two identical radios. Both can receive simultaneously but only one can transmit at any time.

The radio module is manufactured by Vivato, Inc.

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	24.11	257.63
2412 - 2462	802.11g	24.96	313.33

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The EUT utilizes two external antennas; one antenna is connected to each radio. Four antenna types are available per the table below:

Manufacturer	Antenna Model	Antenna Type	Gain (dBi)
Max Rad	MYP24010PT	Yagi	10.0
Max Rad	MP24008XFPT	Panel	8.5
Max Rad	MFB24011	Omni	11.0
SuperPass	SPHSG6O	Horizontal Omni	8.5

5.4. FIRMWARE

The firmware installed in the EUT during testing was VA2400.3.0.A5.

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.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
LAPTOP	IBM	X24	FX-GV403	ANOSY4W2662DFJ
AC ADAPTER	IBM	02K6746	N/A	DOC
USB TO RS232	BELKIN	N10117	N/A	N/A

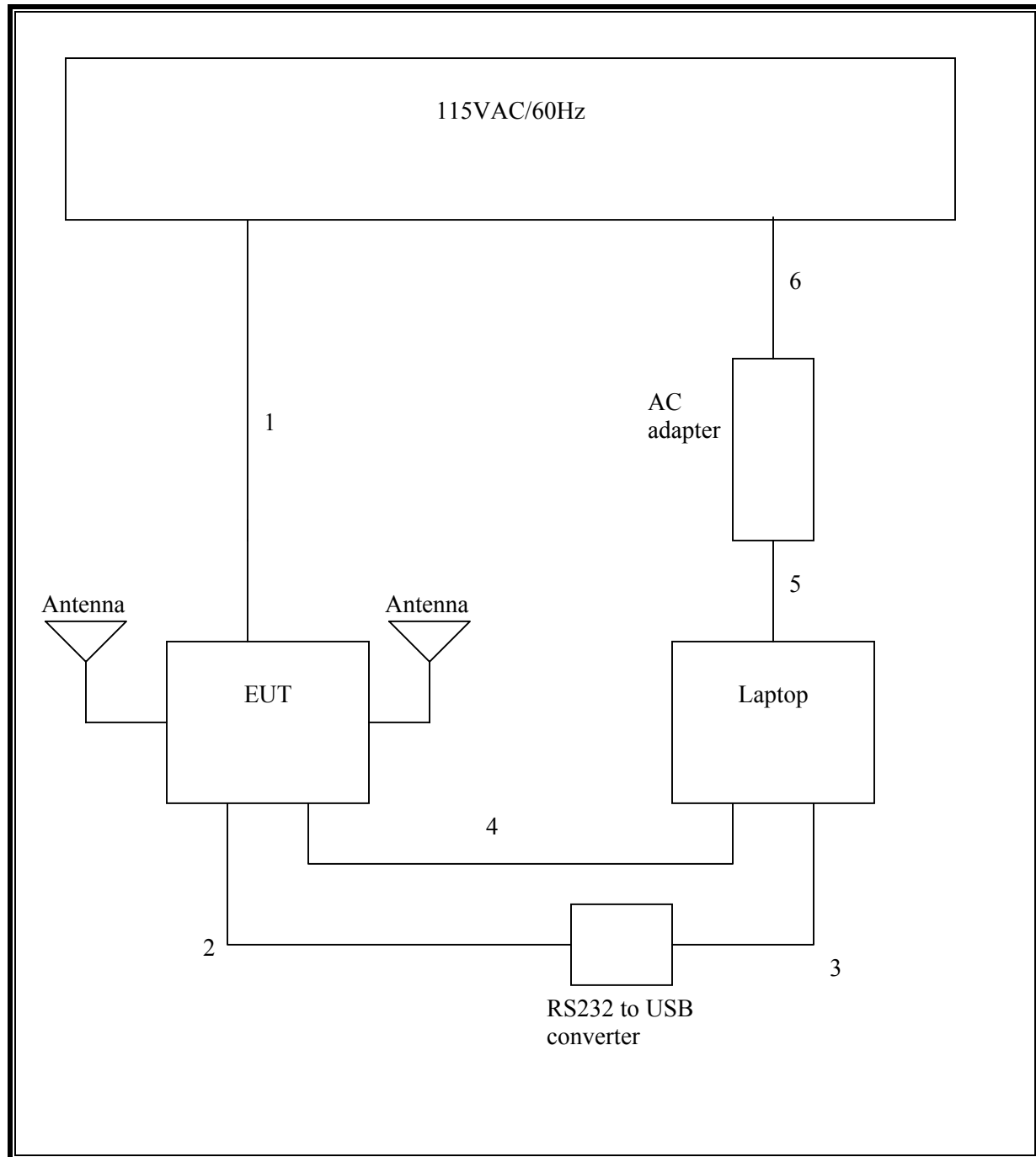
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	AC	Unshielded	2m	
2	RS232	1	RS232	Unshielded	2m	
3	RS232	1	USB	Shielded	2m	
4	RJ45	1	RJ45	Unshielded	2m	
5	DC	1	DC	Unshielded	1.75m	
6	AC	1	AC	Unshielded	1m	

TEST SETUP

The EUT is controlled by a laptop computer during the tests. Test software exercised the radio card.

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT				
Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
Spectrum Analyzer 3 Hz ~ 44 GHz	Agilent	E4446A	US42070220	1/1/2006
Antenna, Horn 1 ~ 18 GHz	ETS	3117	29301	4/22/2006
Preamplifier 1-26.5 GHz	HP	8449B	3008A00931	6/24/2006
4.0 High Pass Filter	Micro Tronics	HPM13351	3	N/A
Power Meter	R & S	NRVS	DE 12101	10/21/2005
Power Sensor, 18 GHz, 300 mW	R&S	NRV-Z51	DE 13013	10/20/2005
EMI Receiver, 9 kHz ~ 2.9 GHz	HP	8542E	3942A00286	3/29/2006
RF Filter Section	HP	85420E	3705A00256	3/29/2006
Antenna, Bilog 30MHz ~ 2Ghz	Sunol Sciences	JB1	A121003	3/3/2006
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 Line Stabilizer/Conditioner	Tripplite	LC-1800a	A005181	CNR
EMI Test Receiver	R & S	ESHS 20	827129/006	10/22/2005

7. LIMITS AND RESULTS

7.1. CHANNEL TESTS FOR THE 2400 TO 2483.5 MHz BAND

7.1.1. 6 dB BANDWIDTH

LIMIT

§15.247 (a) (2) For direct sequence systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

RESULTS

No non-compliance noted:

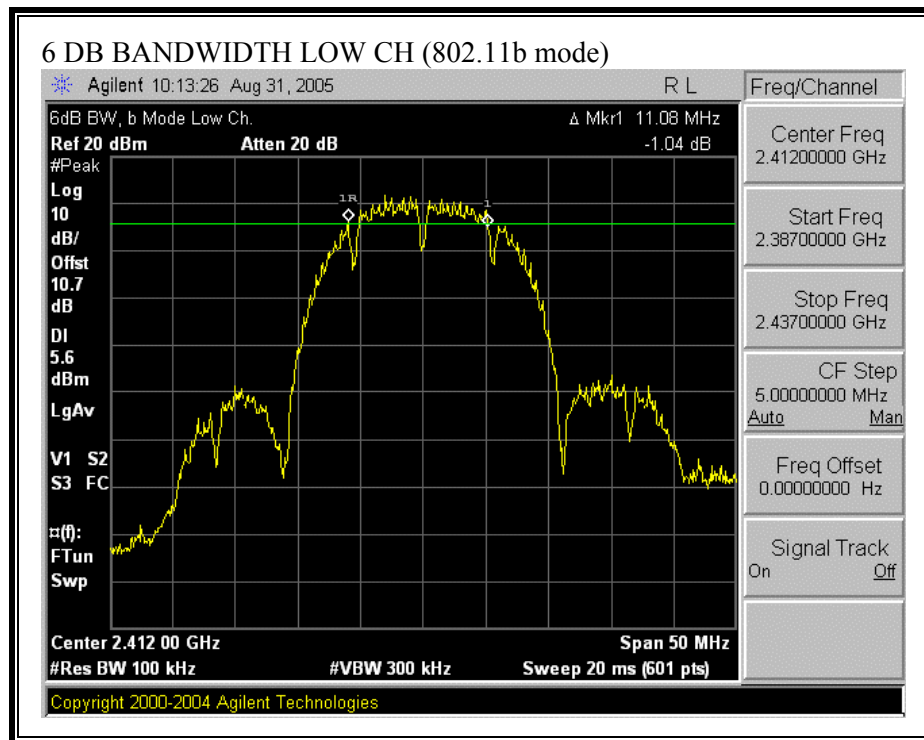
802.11b Mode

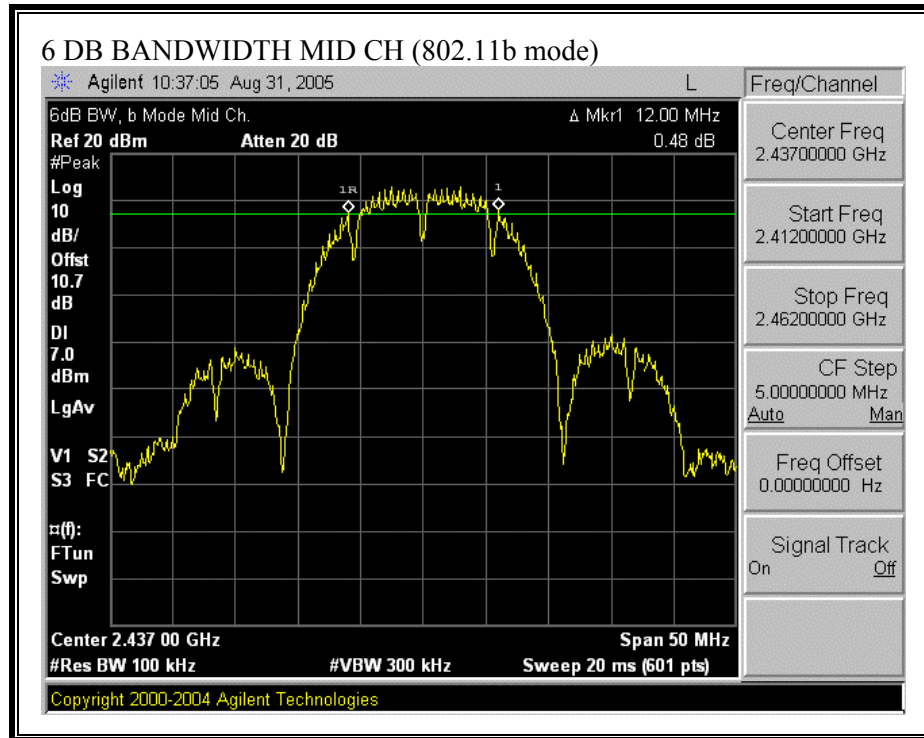
Channel	Frequency (MHz)	6 dB Bandwidth (kHz)	Minimum Limit (kHz)	Margin (kHz)
Low	2412	11080	500	10580
Middle	2437	12000	500	11500
High	2462	10080	500	9580

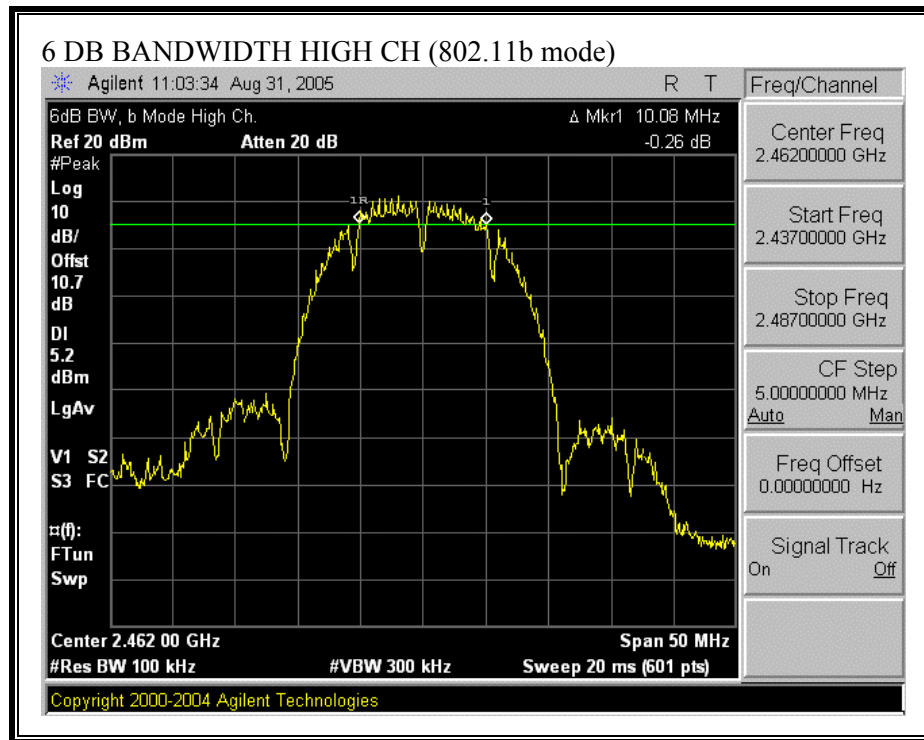
802.11g Mode

Channel	Frequency (MHz)	6 dB Bandwidth (kHz)	Minimum Limit (kHz)	Margin (kHz)
Low	2412	16580	500	16080
Middle	2437	16580	500	16080
High	2462	16420	500	15920

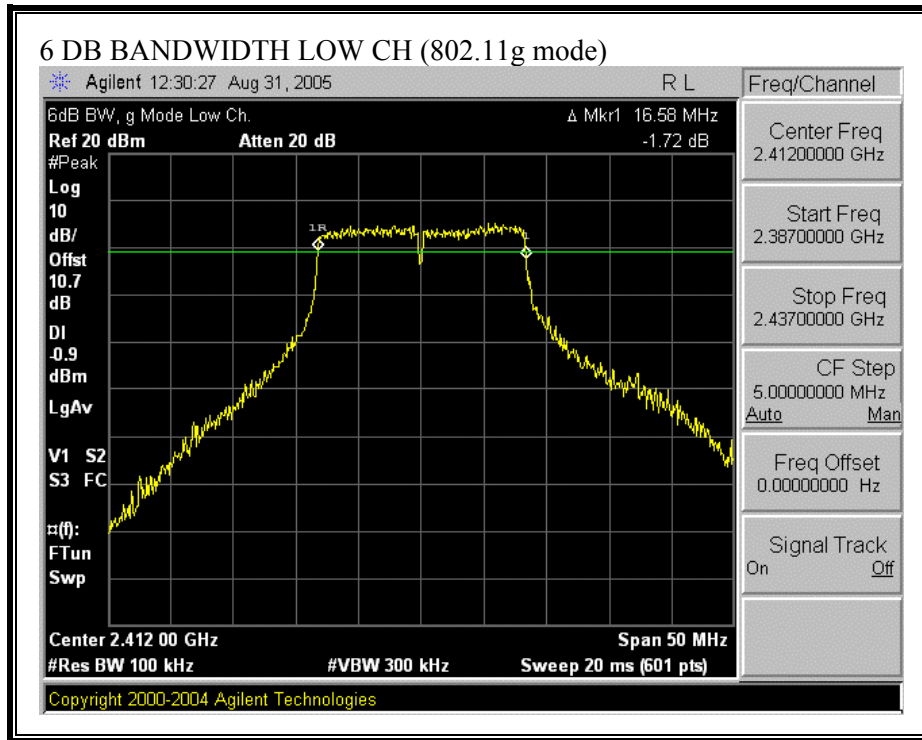
6 DB BANDWIDTH (802.11b MODE)

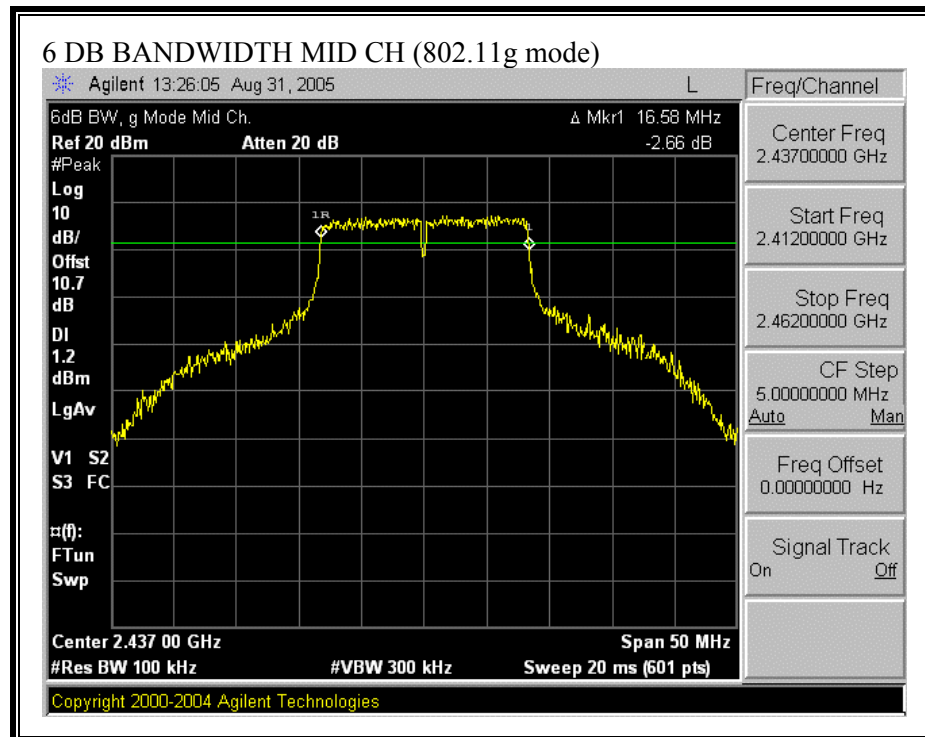


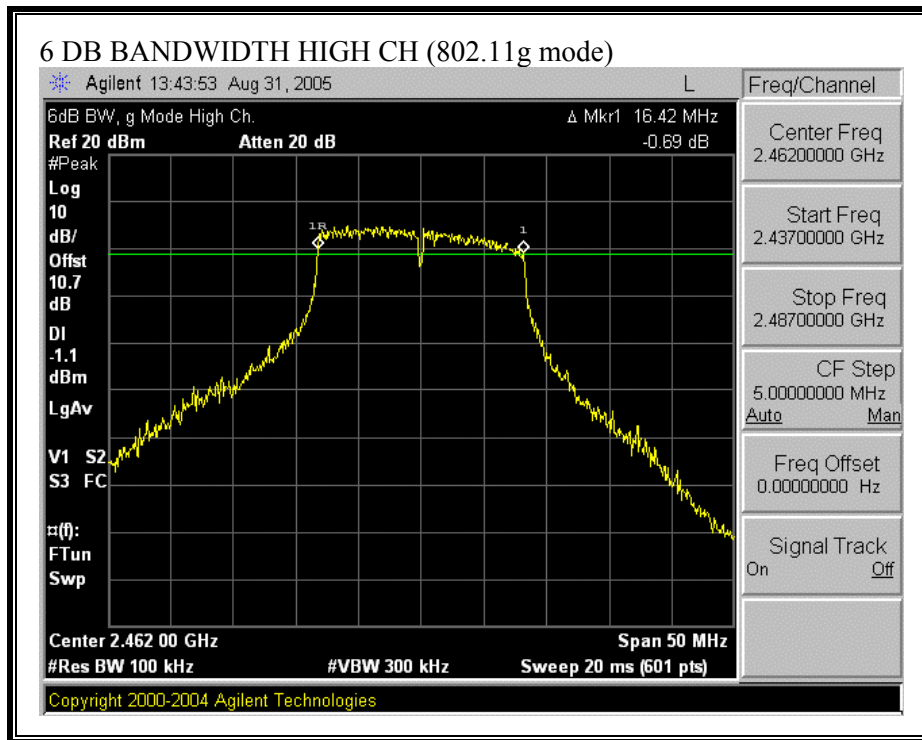




6 DB BANDWIDTH (802.11g MODE)







7.1.2. 99% BANDWIDTH

LIMIT

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RESULTS

No non-compliance noted:

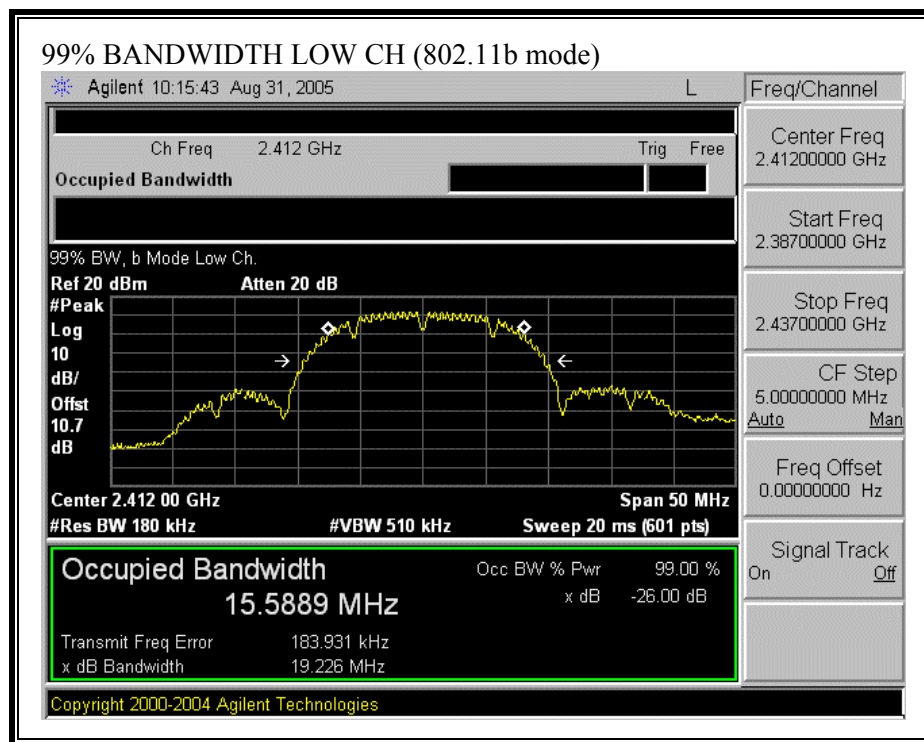
802.11b Mode

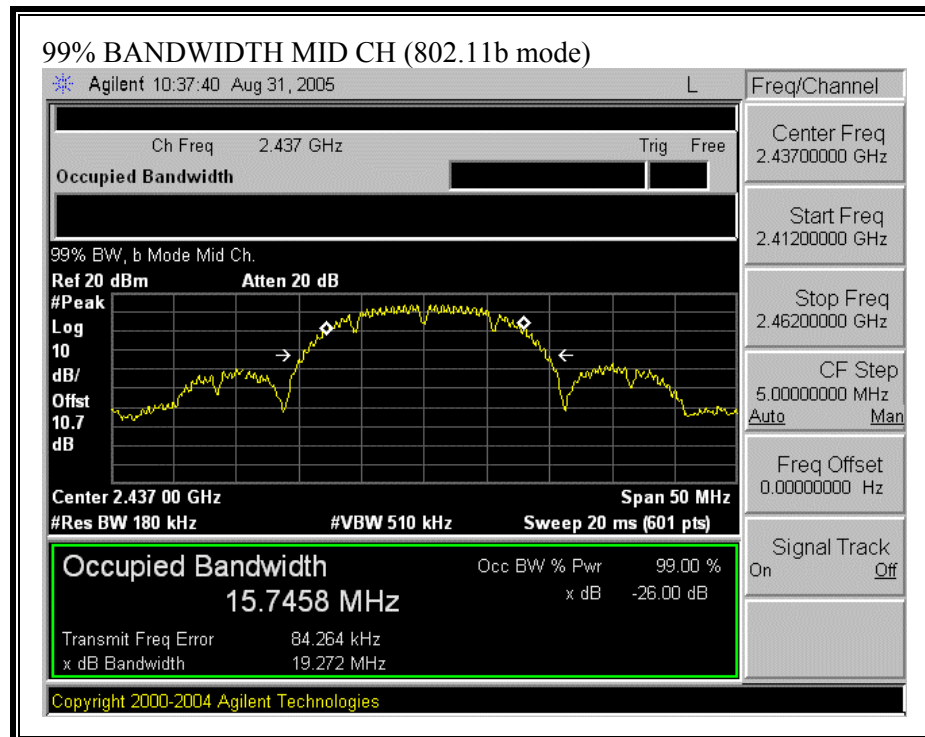
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	15.5889
Middle	2437	15.7458
High	2462	15.1349

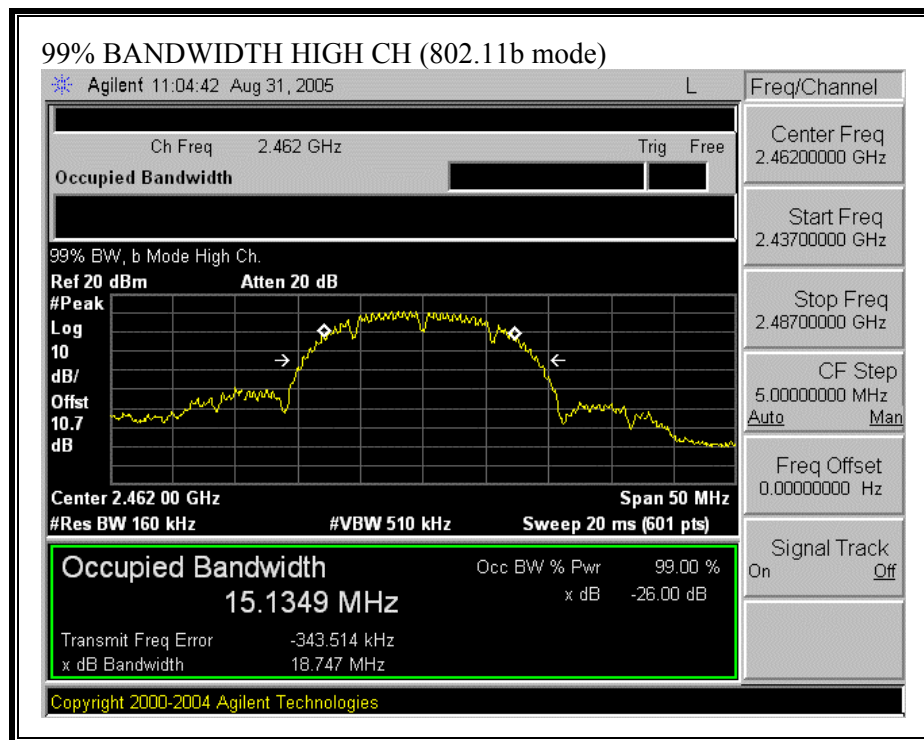
802.11g Mode

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	16.6769
Middle	2437	17.1293
High	2462	16.5152

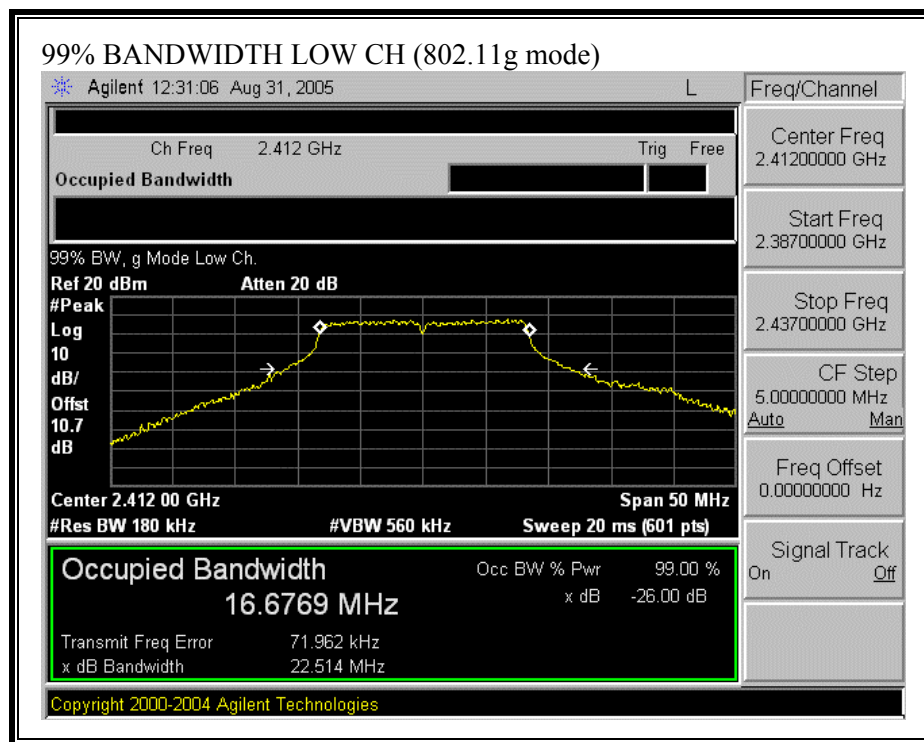
99% BANDWIDTH (802.11b MODE)

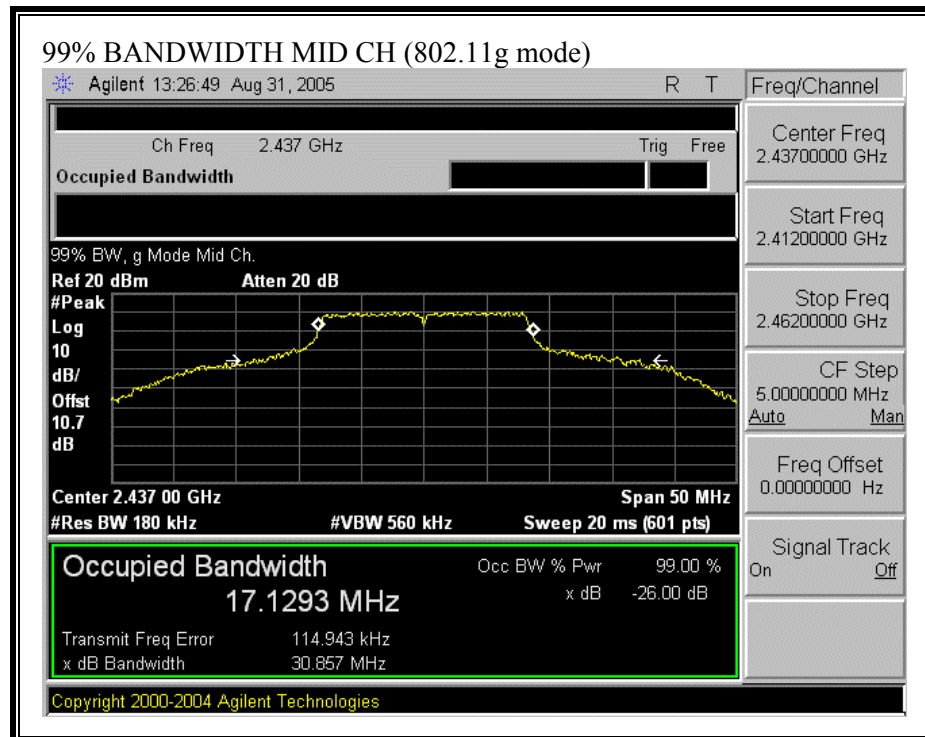


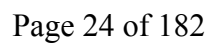




99% BANDWIDTH (802.11g MODE)







7.1.3. PEAK OUTPUT POWER

PEAK POWER LIMIT

§15.247 (b) The maximum peak output power of the intentional radiator shall not exceed the following:

§15.247 (b) (3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz , and 5725-5850 MHz bands: 1 watt.

§15.247 (b) (4) Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2) and (b)(3) of this section, as appropriated, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer and the analyzer's internal channel power integration function is used to integrate the power over a bandwidth greater than or equal to the 99% bandwidth.

RESULTS

The maximum antenna gain is 11 dBi for other than fixed, point-to-point operations, therefore the limit is 25 dBm.

No non-compliance noted:

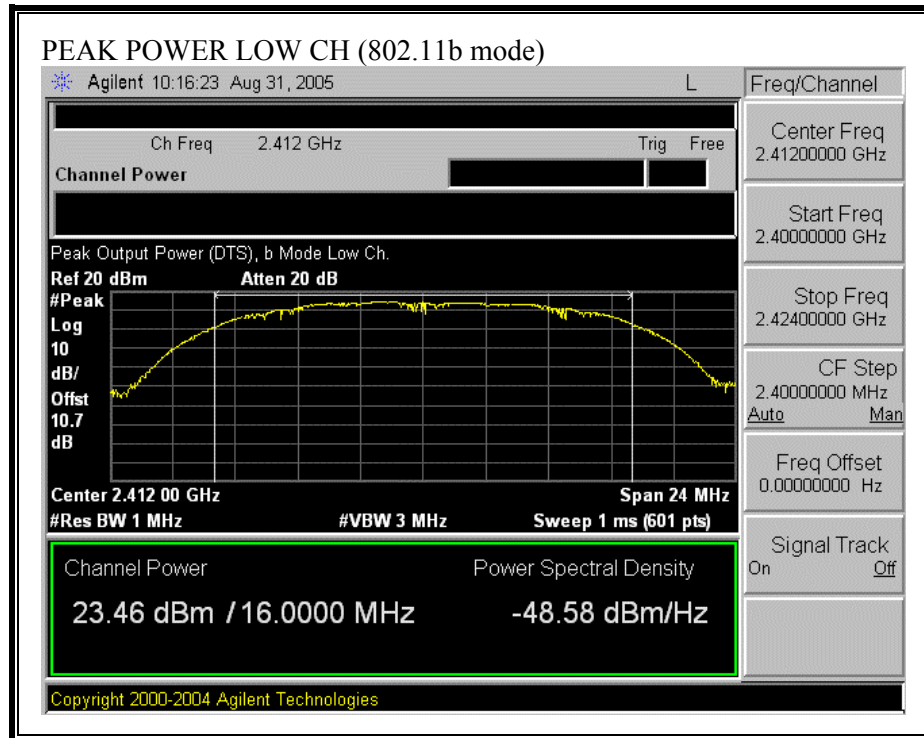
802.11b Mode

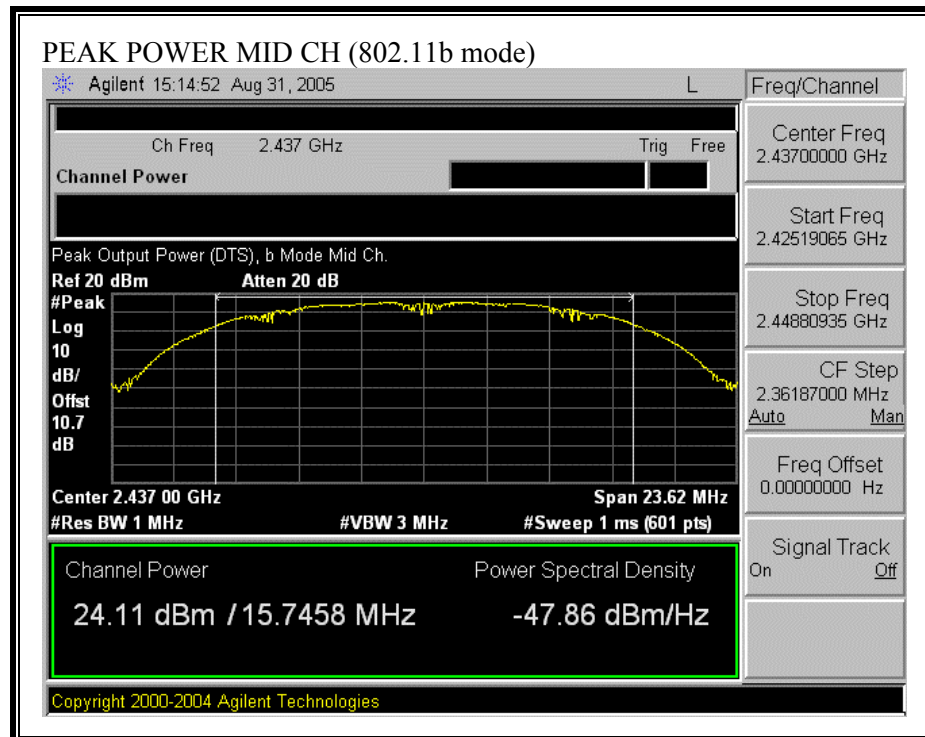
Channel	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	23.46	25	-1.54
Middle	2437	24.11	25	-0.89
High	2462	22.50	25	-2.50

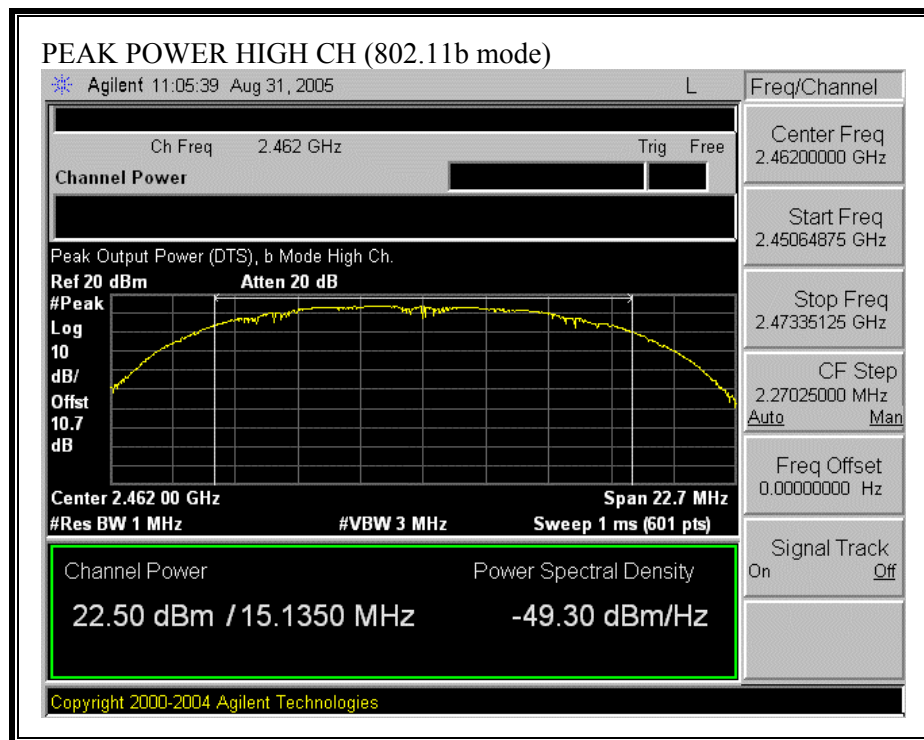
802.11g Mode

Channel	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	22.94	25	-2.06
Middle	2437	24.96	25	-0.04
High	2462	22.19	25	-2.81

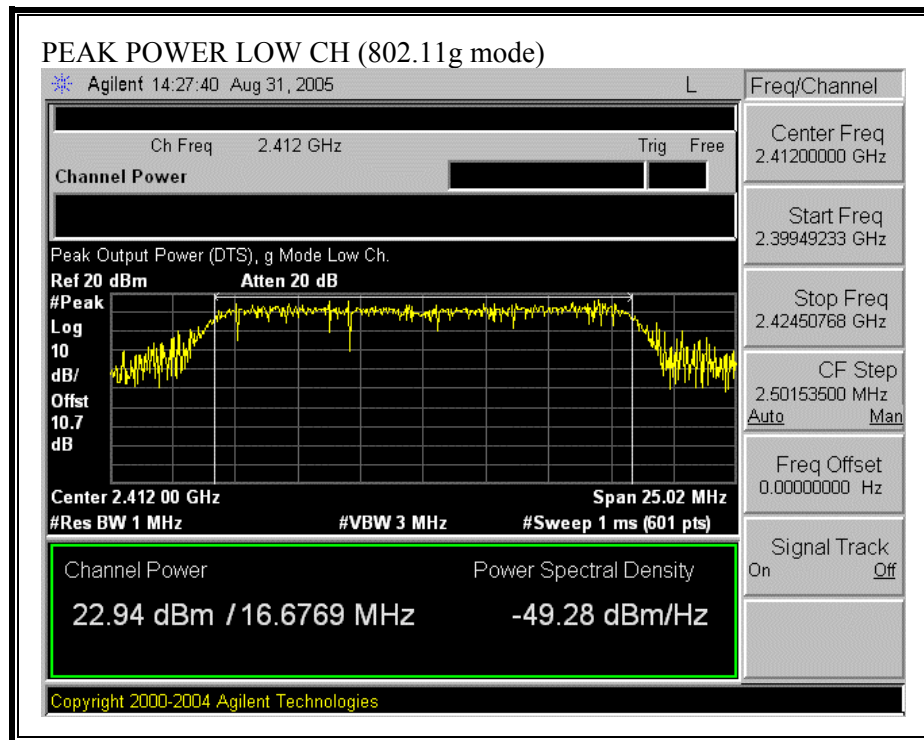
OUTPUT POWER (802.11b MODE)

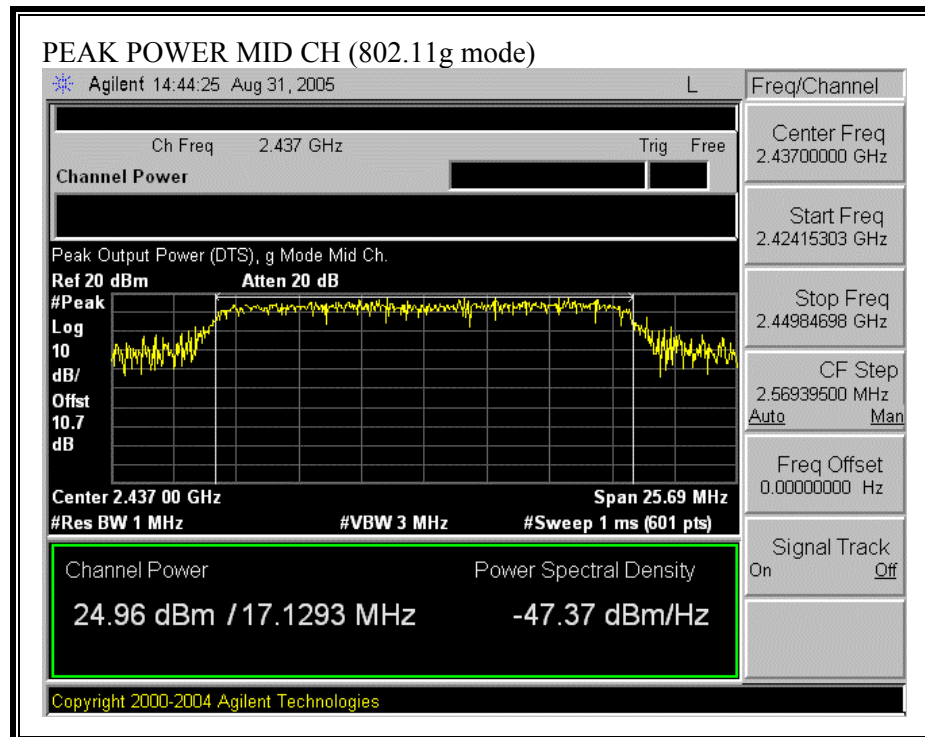


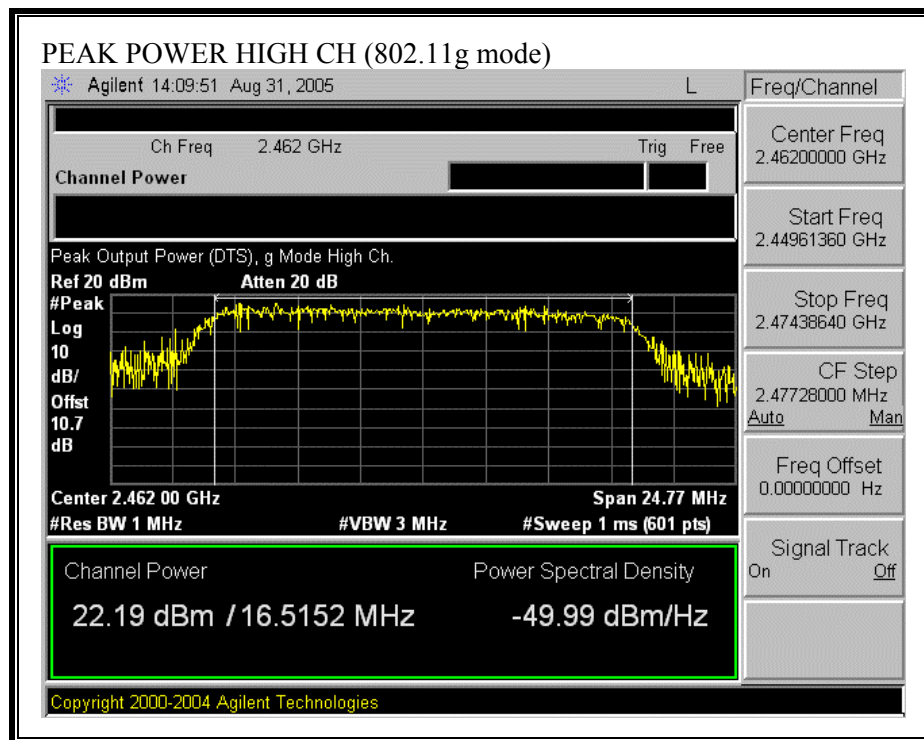




OUTPUT POWER (802.11g MODE)







7.1.4. MAXIMUM PERMISSIBLE EXPOSURE

LIMITS

§1.1310 The criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of §2.1093 of this chapter.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f ²)	6
30–300	61.4	0.163	1.0	6
300–1500			f/300	6
1500–100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)—Continued

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
30–300	27.5	0.073	0.2	30
300–1500			f/1500	30
1500–100,000			1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

CALCULATIONS

Given

$$E = \sqrt{(30 * P * G) / d}$$

and

$$S = E^2 / 3770$$

where

E = Field Strength in Volts/meter

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power Density in milliwatts/square centimeter

Combining equations and rearranging the terms to express the distance as a function of the remaining variables yields:

$$d = \sqrt{((30 * P * G) / (3770 * S))}$$

Changing to units of Power to mW and Distance to cm, using:

$$P \text{ (mW)} = P \text{ (W)} / 1000 \text{ and}$$

$$d \text{ (cm)} = 100 * d \text{ (m)}$$

yields

$$d = 100 * \sqrt{((30 * (P / 1000) * G) / (3770 * S))}$$

$$d = 0.282 * \sqrt{(P * G / S)}$$

where

d = distance in cm

P = Power in mW

G = Numeric antenna gain

S = Power Density in mW/cm²

Substituting the logarithmic form of power and gain using:

$$P \text{ (mW)} = 10^{(P \text{ (dBm)} / 10)} \text{ and}$$

$$G \text{ (numeric)} = 10^{(G \text{ (dBi)} / 10)}$$

yields

$$d = 0.282 * 10^{((P + G) / 20)} / \sqrt{S}$$

where

d = MPE distance in cm

P = Power in dBm

G = Antenna Gain in dBi

S = Power Density Limit in mW/cm²

Rearranging terms to calculate the power density at a specific distance yields

$$S = 0.0795 * 10^{((P + G) / 10)} / (d^2)$$

LIMITS

From §1.1310 Table 1 (B), the maximum value of $S = 1.0 \text{ mW/cm}^2$

RESULTS

No non-compliance noted: (MPE distance equals 20 cm)

Mode	MPE Distance (cm)	Output Power (dBm)	Antenna Gain (dBi)	Power Density (mW/cm ²)
802.11b	20.0	24.11	10.00	0.51
802.11g	20.0	24.96	10.00	0.62

NOTE: For mobile or fixed location transmitters, the minimum separation distance is 20 cm, even if calculations indicate that the MPE distance would be less.

7.1.5. AVERAGE POWER

AVERAGE POWER LIMIT

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

No non-compliance noted:

The cable assembly insertion loss of 10.74 dB (including 10 dB pad and .74 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

802.11b Mode

Channel	Frequency (MHz)	Power (dBm)
Low	2412	22.74
Middle	2437	23.54
High	2462	20.94

802.11g Mode

Channel	Frequency (MHz)	Power (dBm)
Low	2412	20.44
Middle	2437	22.34
High	2462	18.64

7.1.6. PEAK POWER SPECTRAL DENSITY

LIMIT

§15.247 (d) For direct sequence systems, 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 during any time interval of continuous transmission.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer, the maximum level in a 3 kHz bandwidth is measured with the spectrum analyzer using RBW = 3 kHz and VBW > 3 kHz, sweep time = span / 3 kHz, and video averaging is turned off. The PPSD is the highest level found across the emission in any 3 kHz band.

RESULTS

No non-compliance noted:

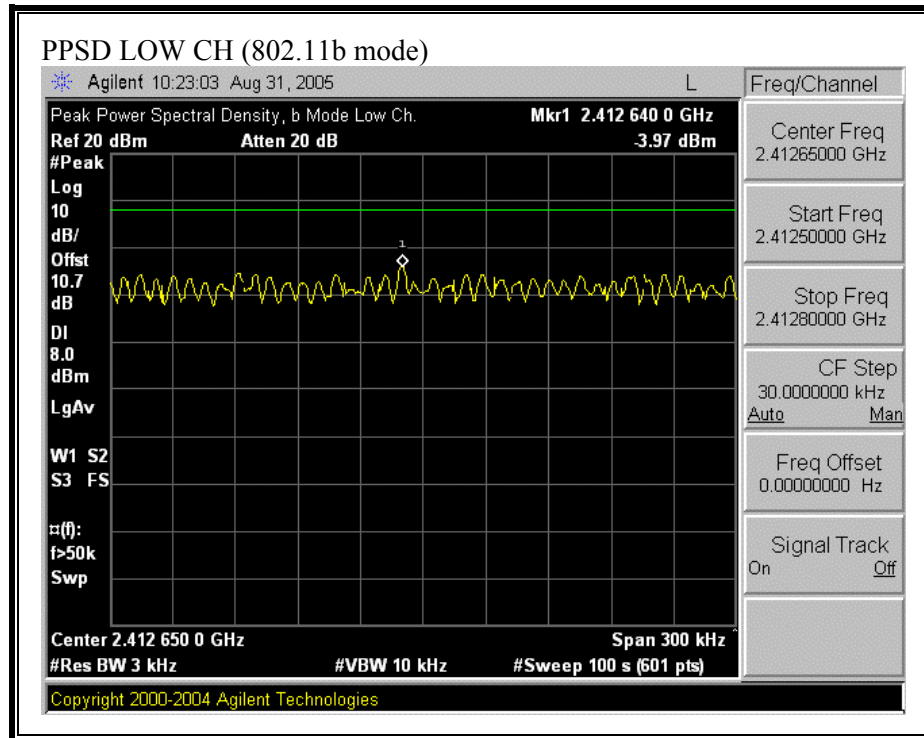
802.11b Mode

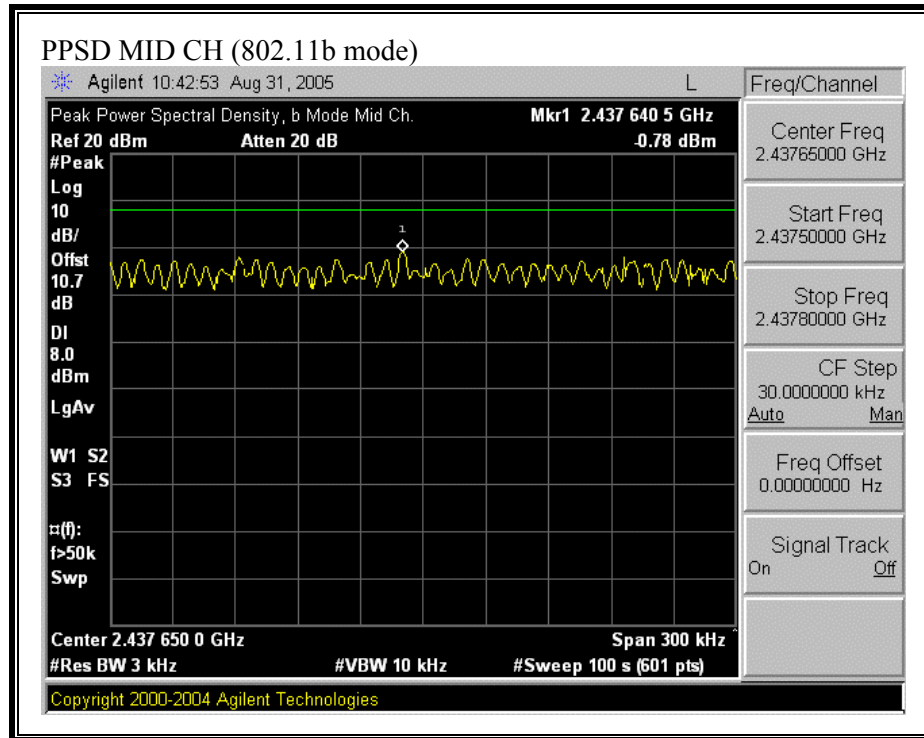
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-3.97	8	-11.97
Middle	2437	-0.78	8	-8.78
High	2462	-3.63	8	-11.63

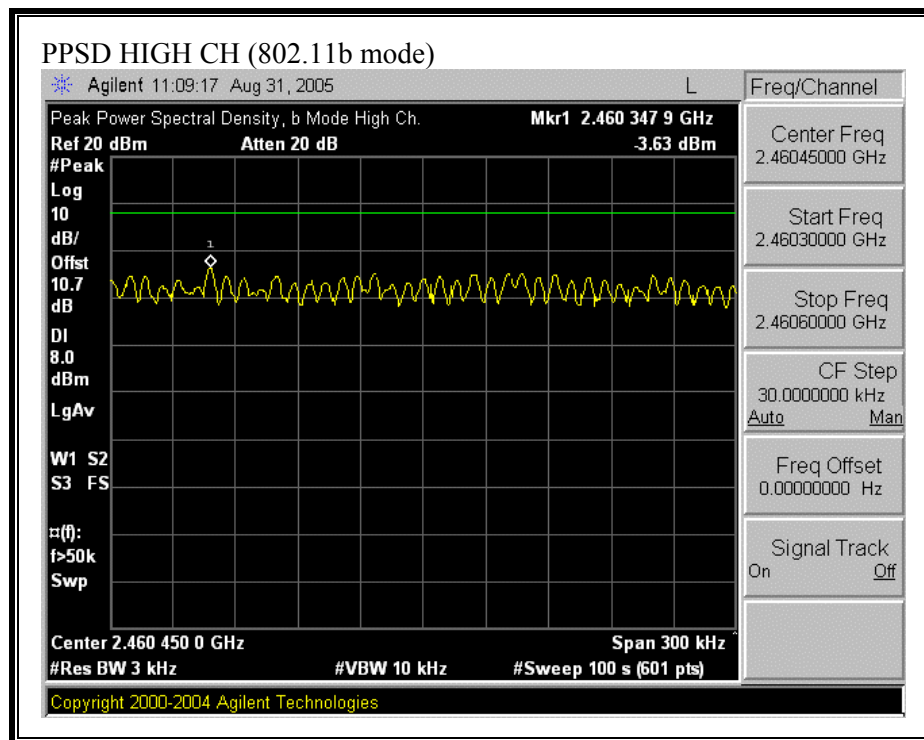
802.11g Mode

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-6.46	8	-14.46
Middle	2437	-5.16	8	-13.16
High	2462	-8.14	8	-16.14

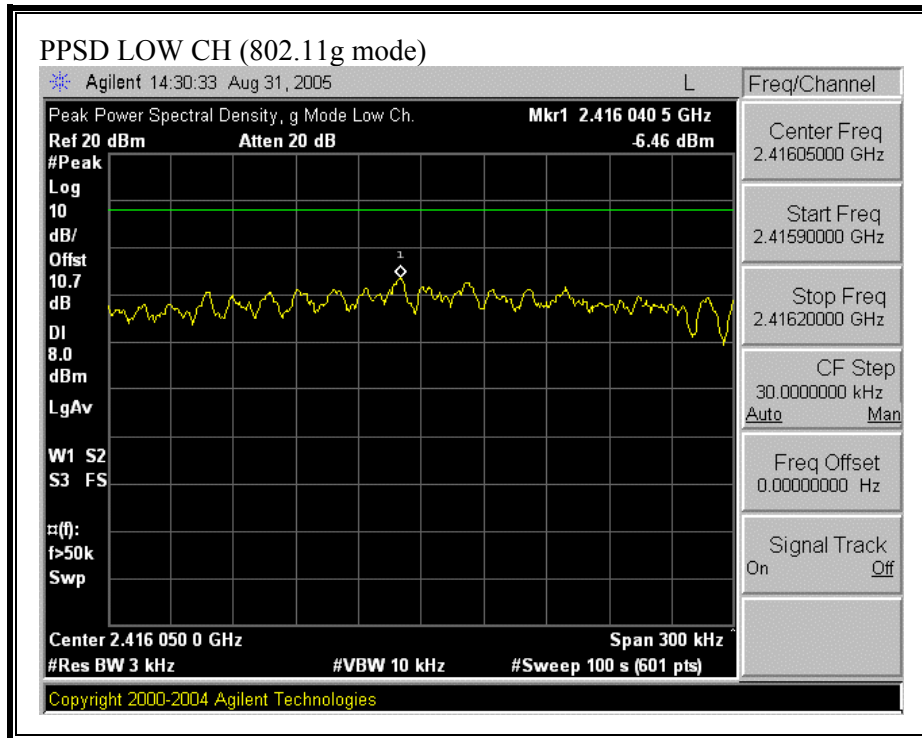
PEAK POWER SPECTRAL DENSITY (802.11b MODE)

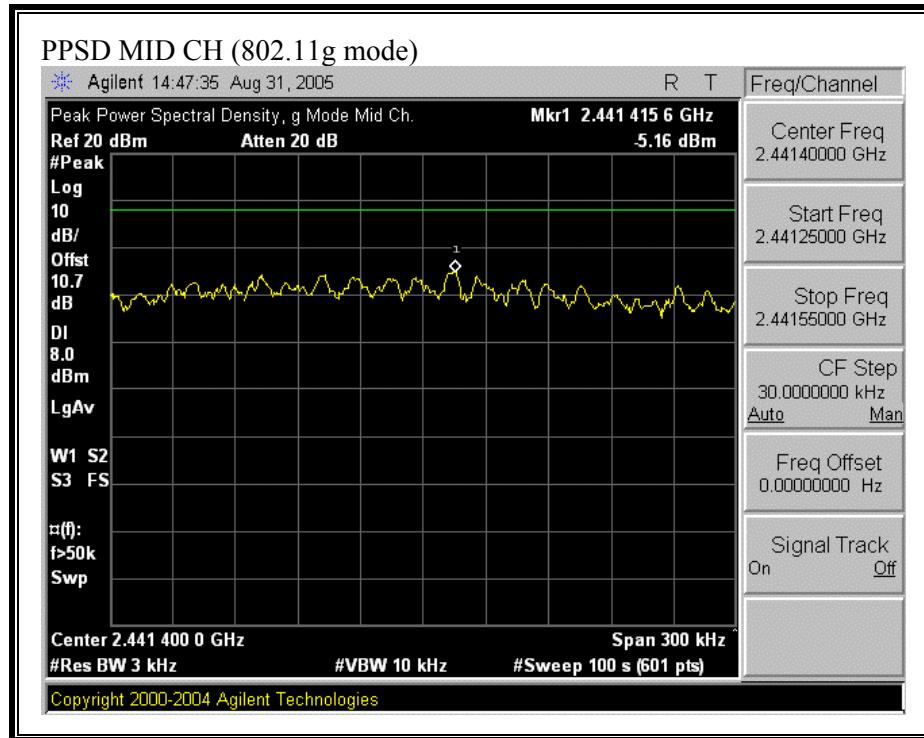


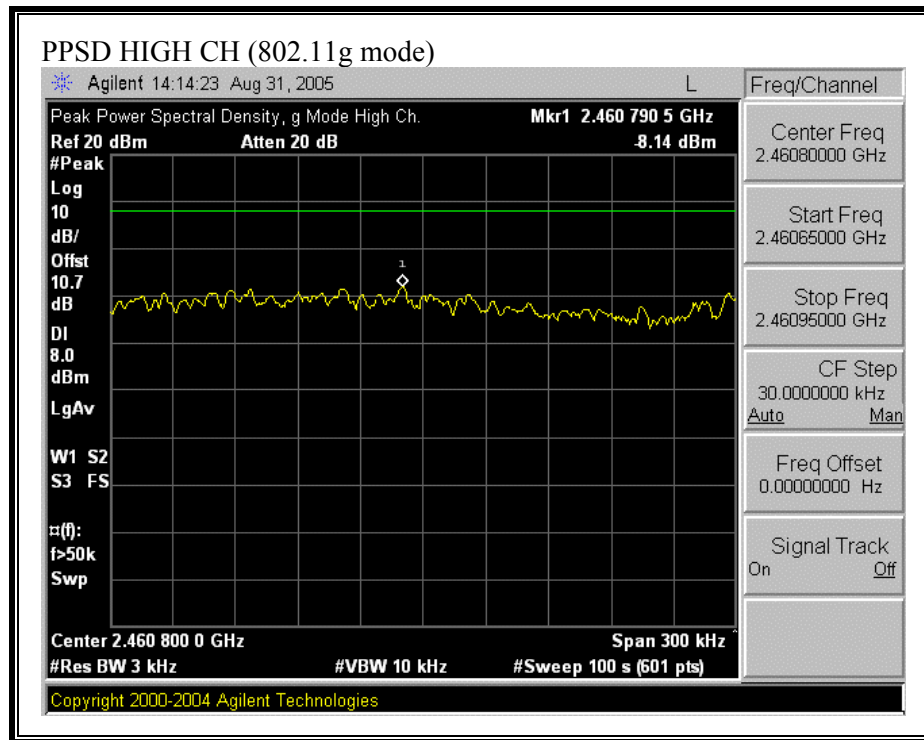




PEAK POWER SPECTRAL DENSITY (802.11g MODE)







7.1.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

§15.247 (c) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

TEST PROCEDURE

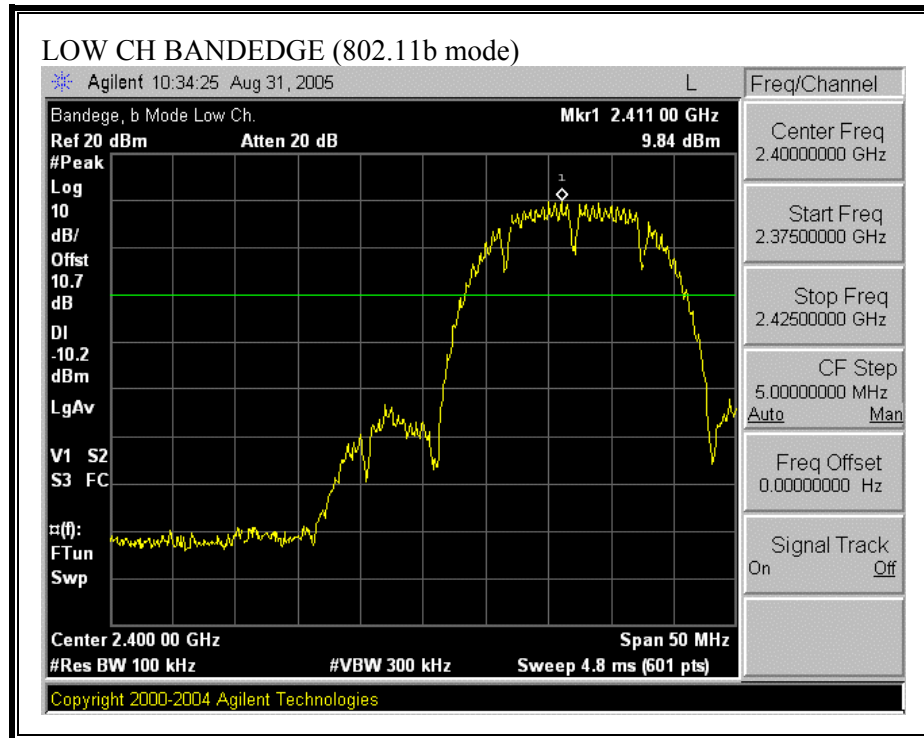
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

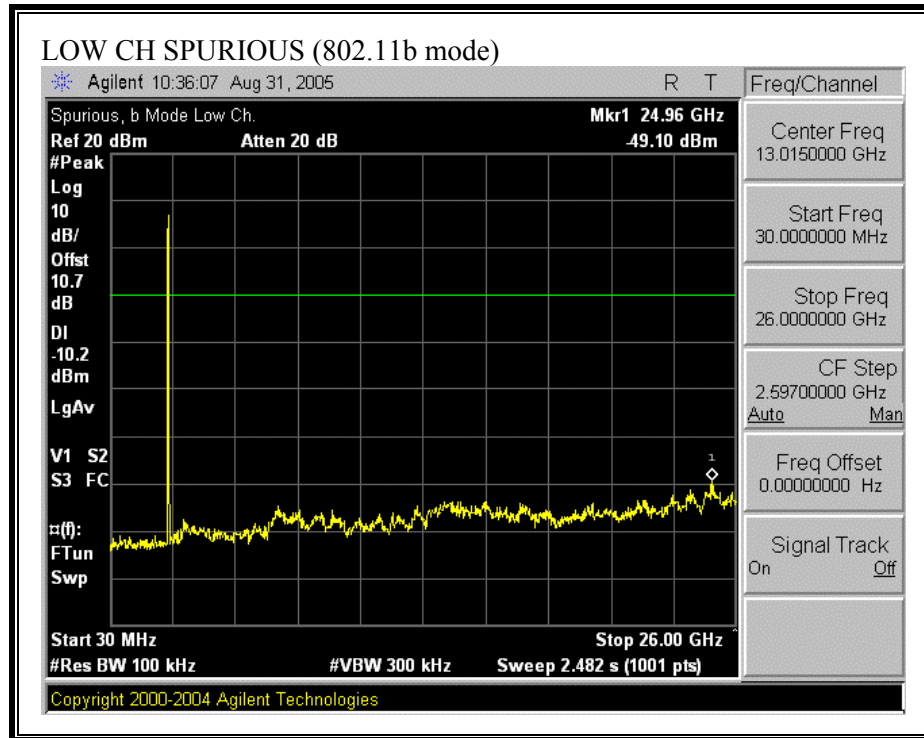
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

RESULTS

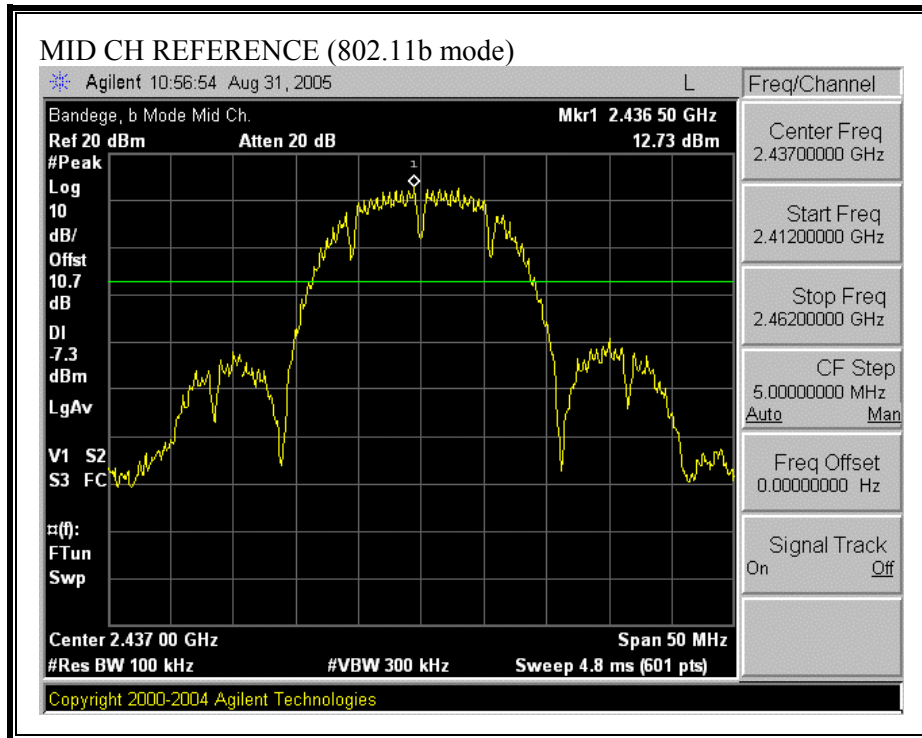
No non-compliance noted:

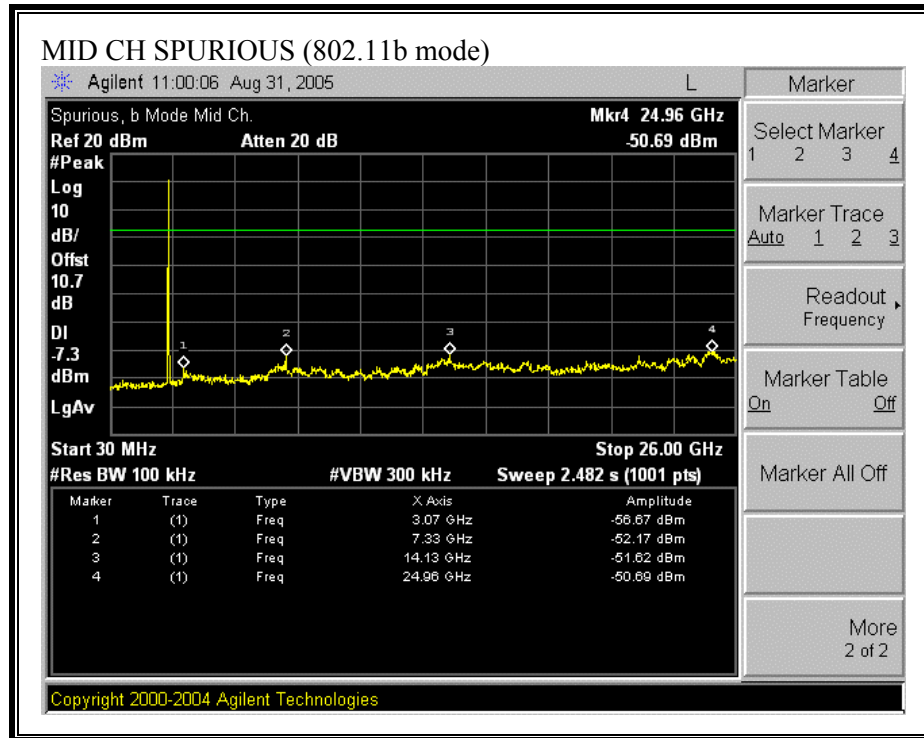
SPURIOUS EMISSIONS, LOW CHANNEL (802.11b MODE)



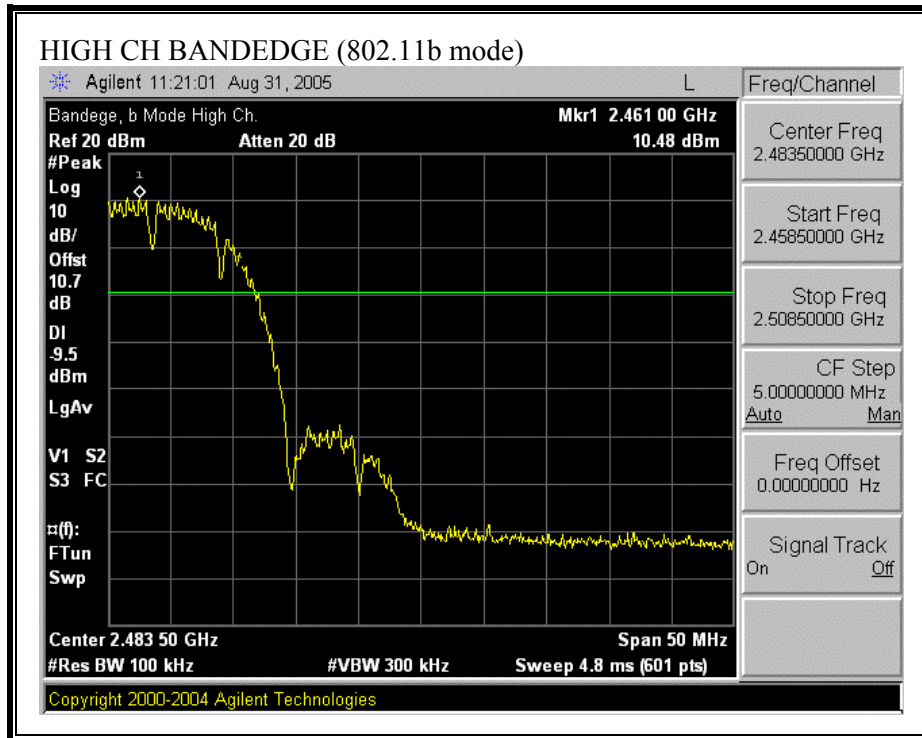


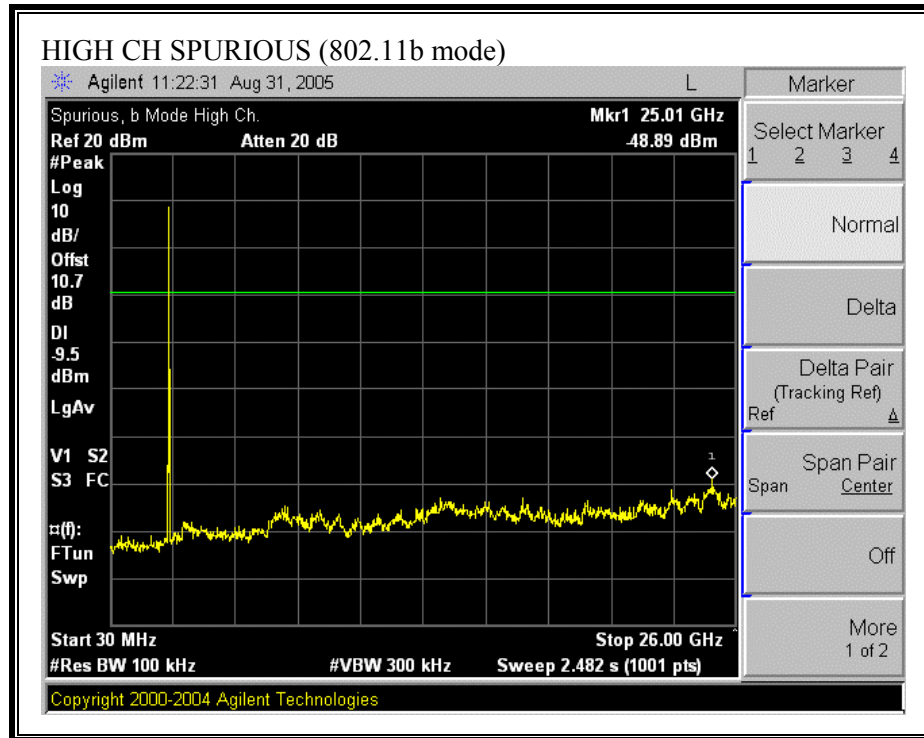
SPURIOUS EMISSIONS, MID CHANNEL (802.11b MODE)



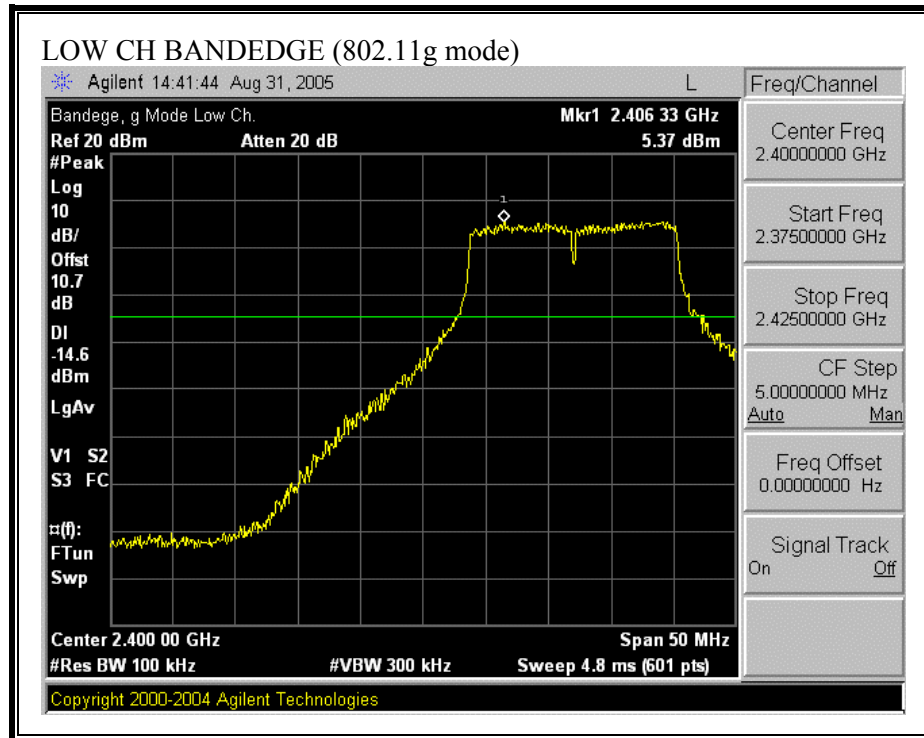


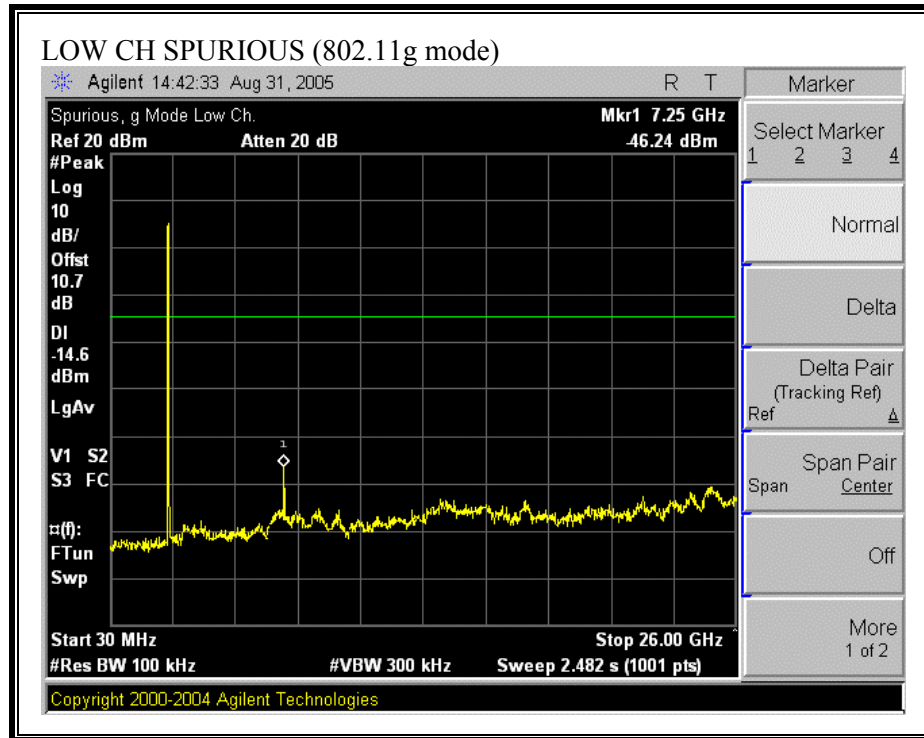
SPURIOUS EMISSIONS, HIGH CHANNEL (802.11b MODE)



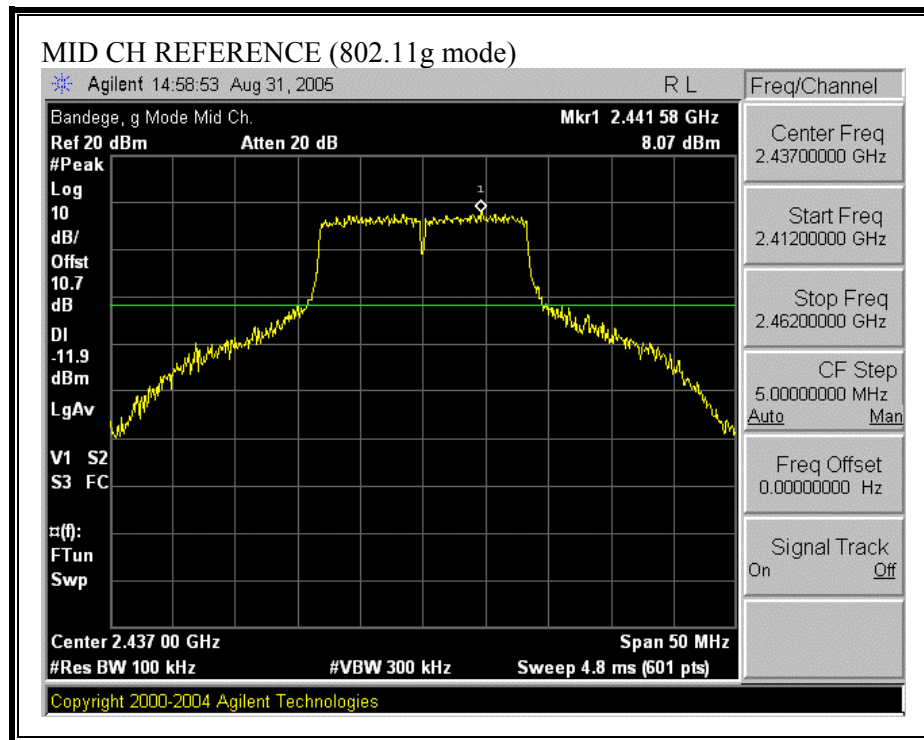


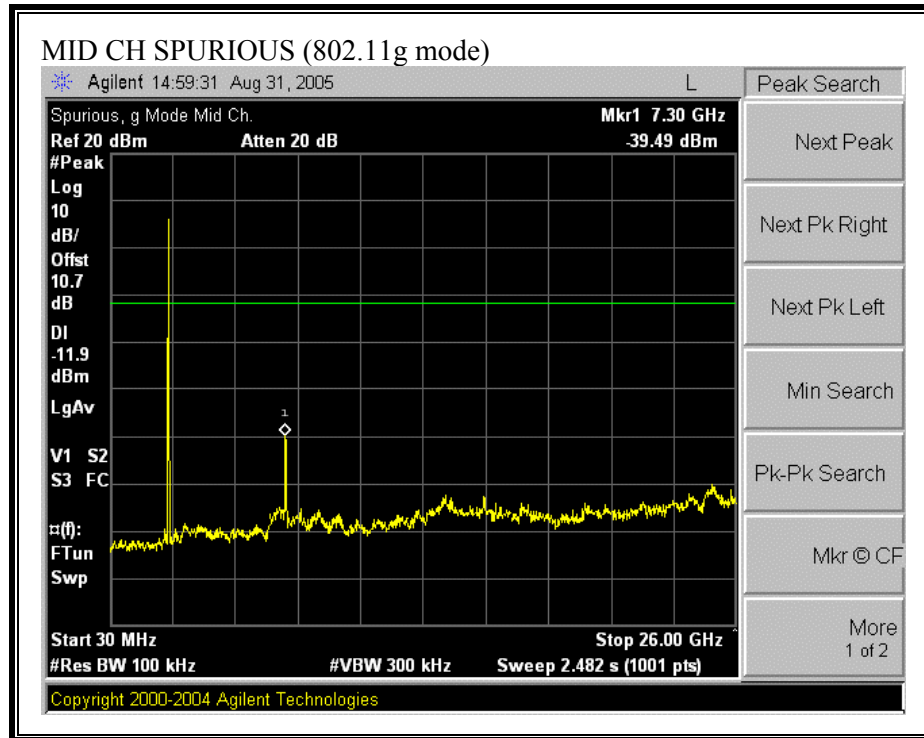
SPURIOUS EMISSIONS, LOW CHANNEL (802.11g MODE)



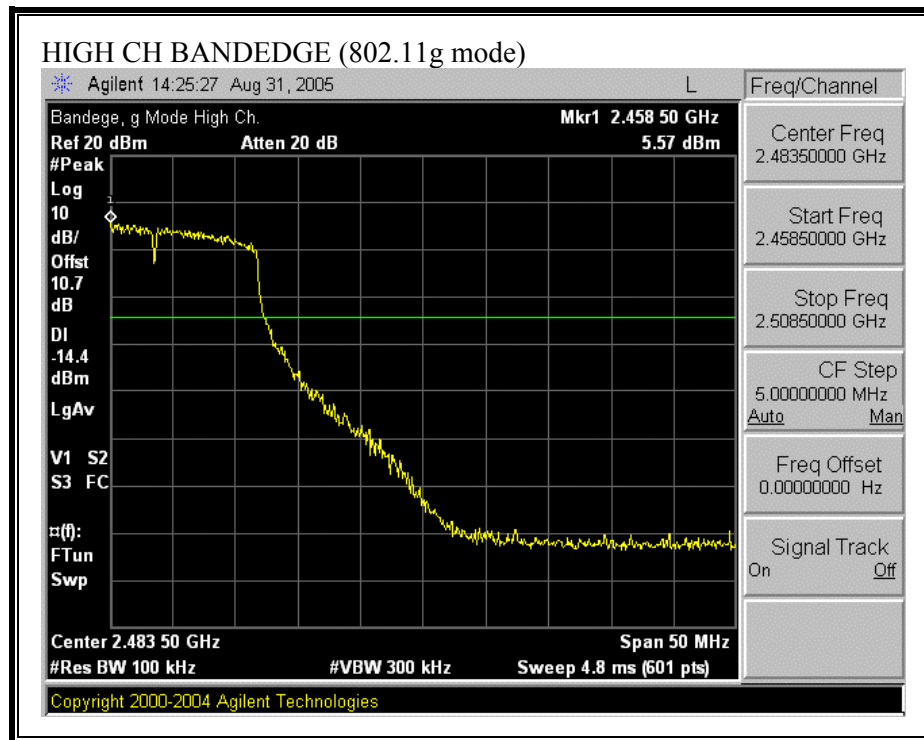


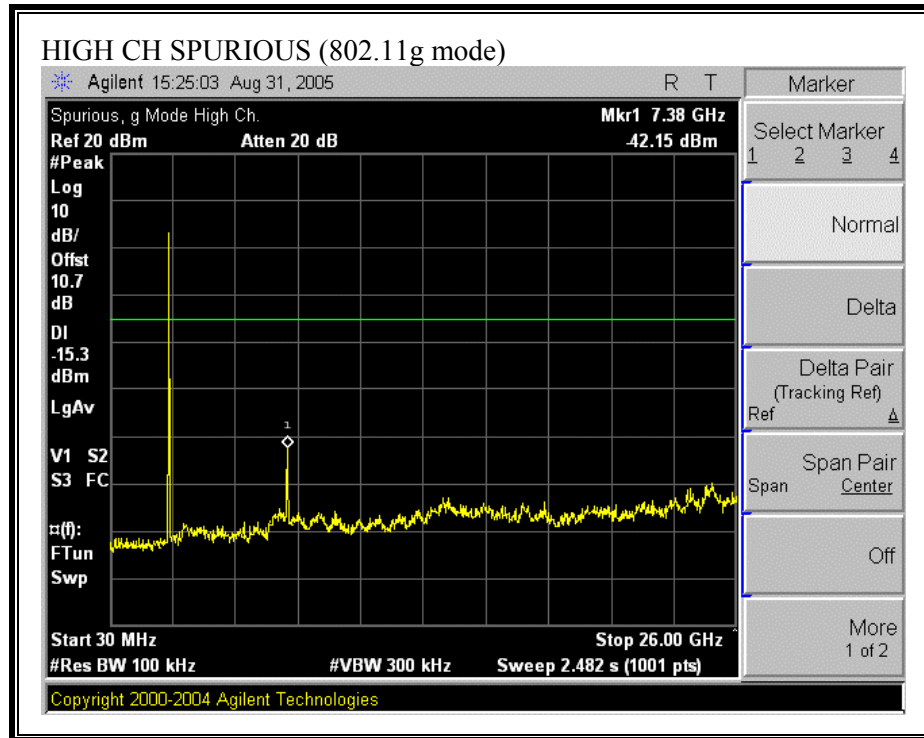
SPURIOUS EMISSIONS, MID CHANNEL (802.11g MODE)





SPURIOUS EMISSIONS, HIGH CHANNEL (802.11g MODE)





7.2. RADIATED EMISSIONS

7.2.1. 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.

§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.

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.

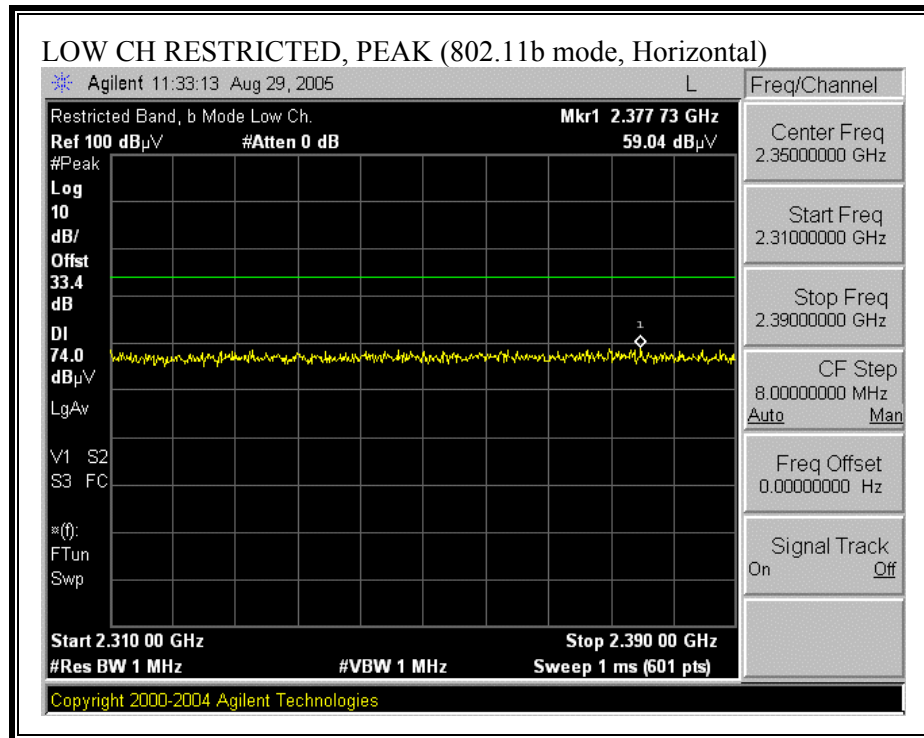
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

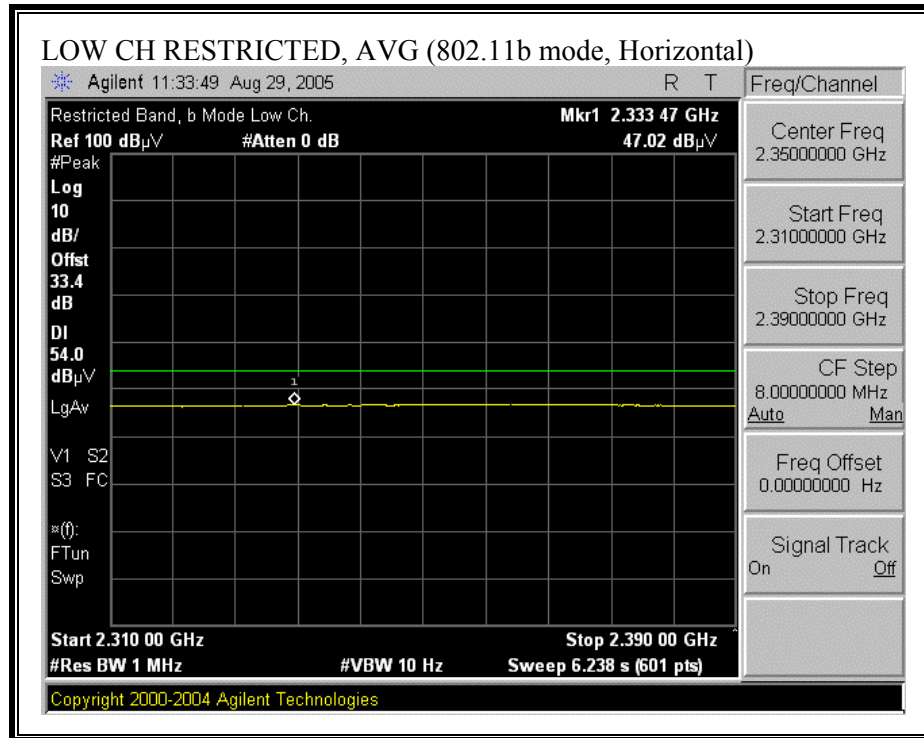
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each 5 GHz band.

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.

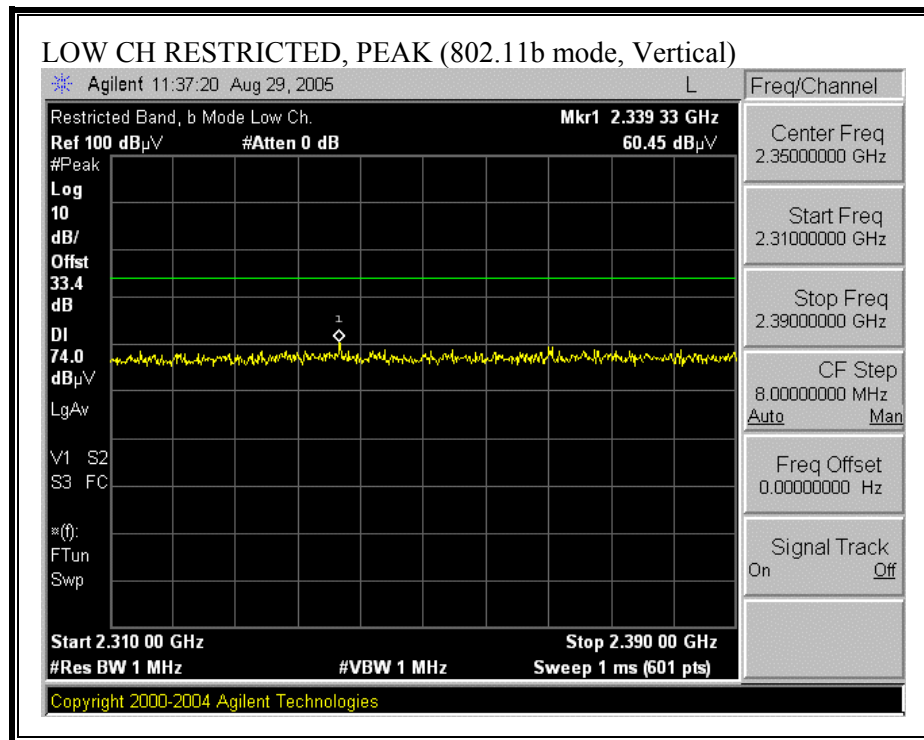
7.2.2. EMISSIONS ABOVE 1 GHz WITH 11 dBi OMNI ANTENNA

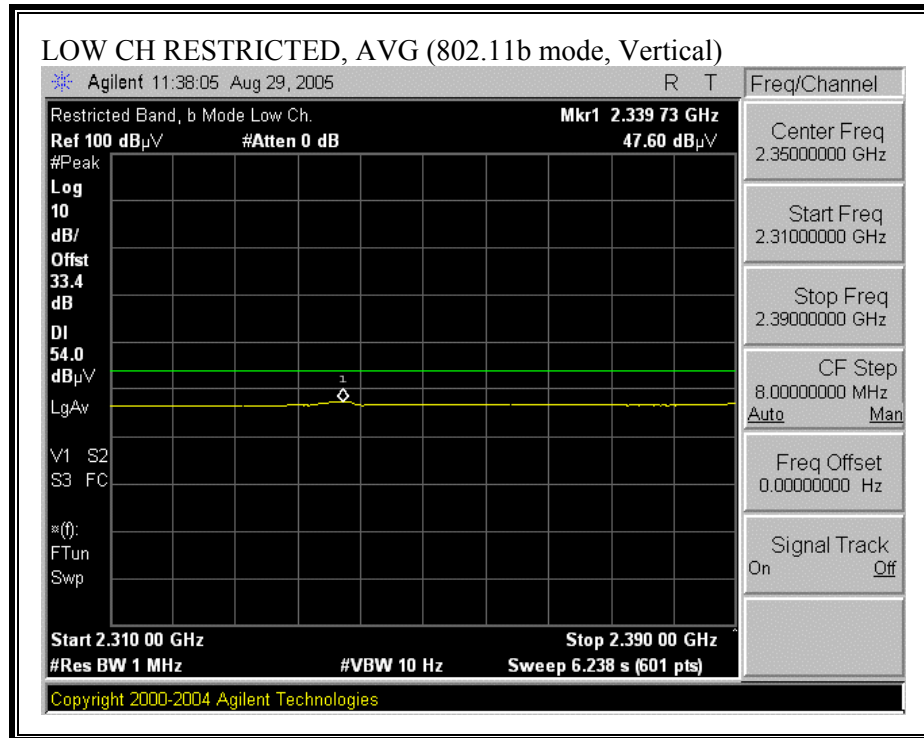
RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, HORIZONTAL)



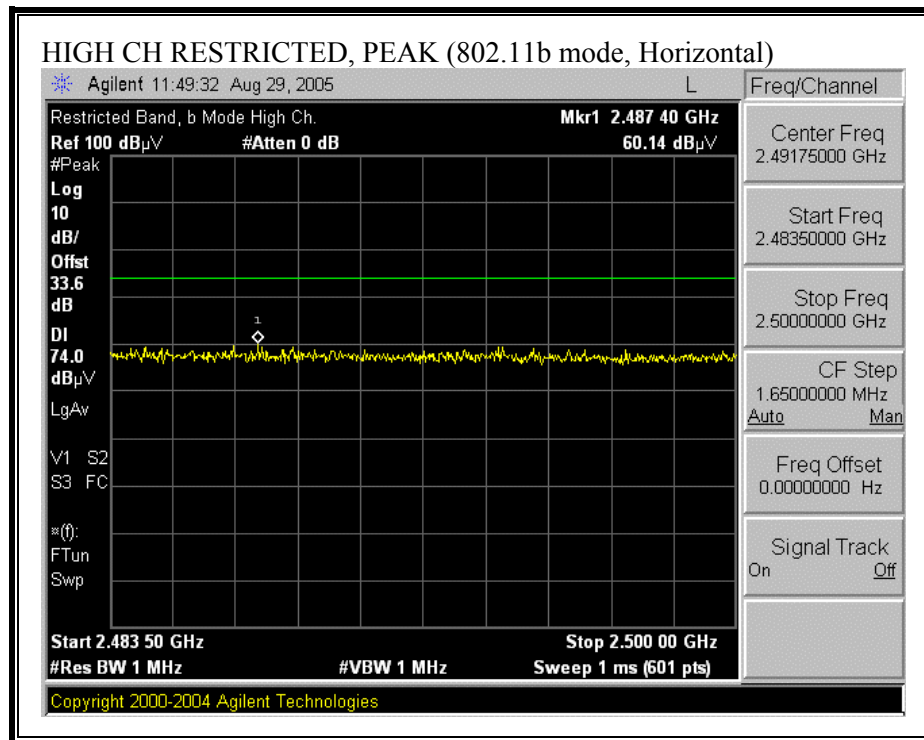


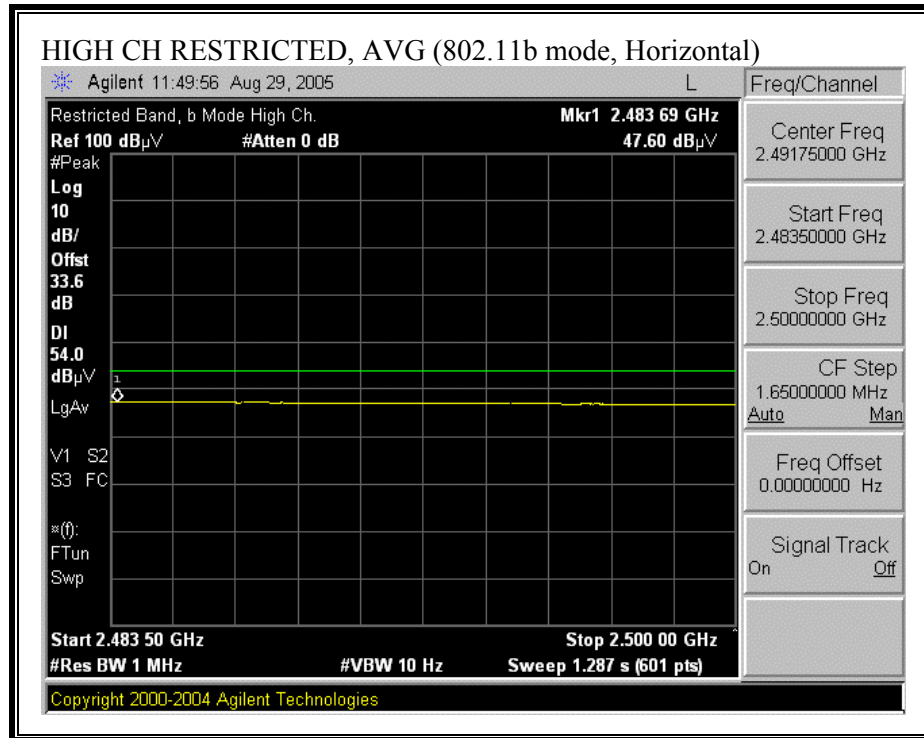
RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, VERTICAL)



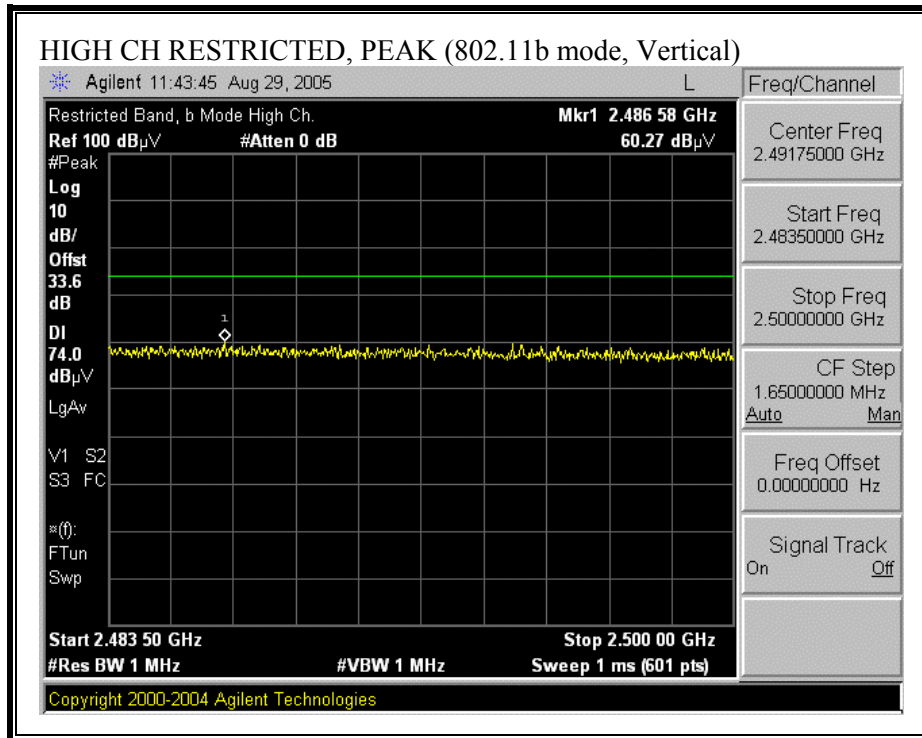


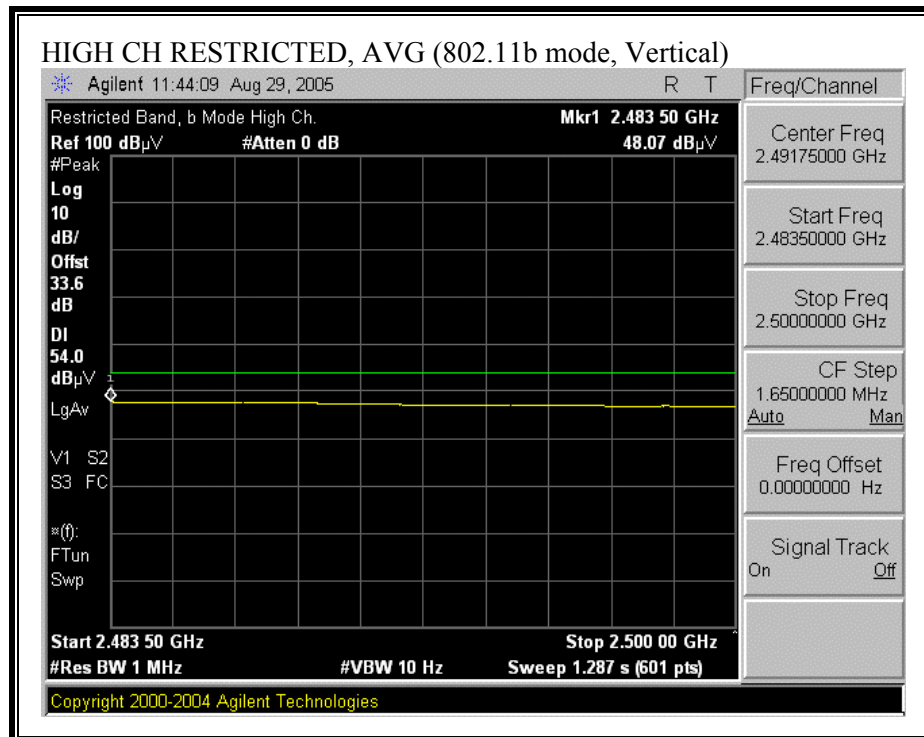
RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS (b MODE)

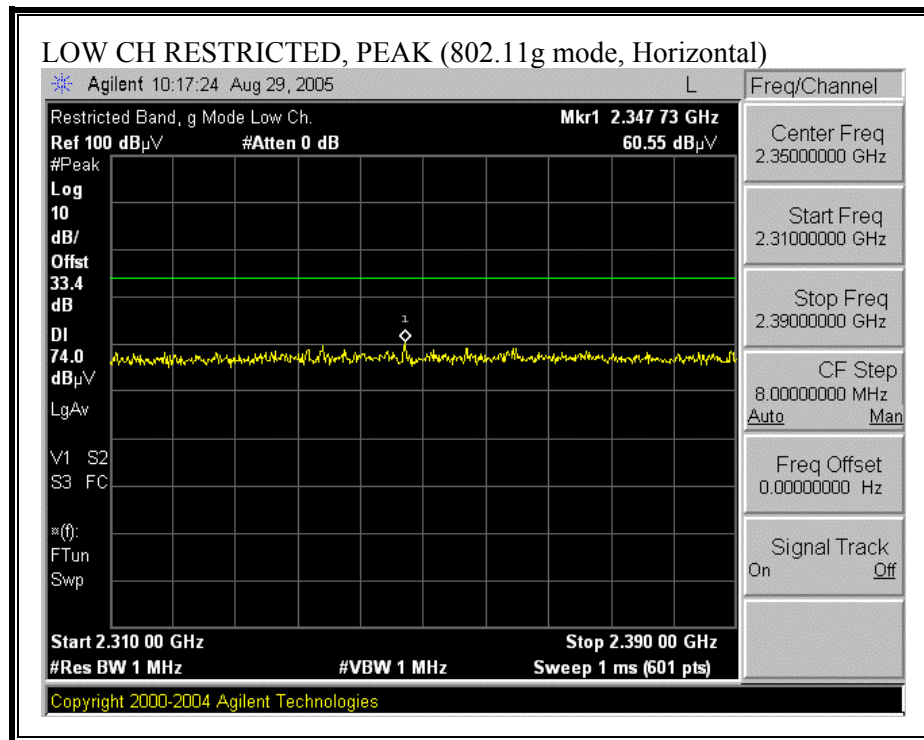
08/29/05 High Frequency Measurement
Compliance Certification Services, Morgan Hill Open Field Site

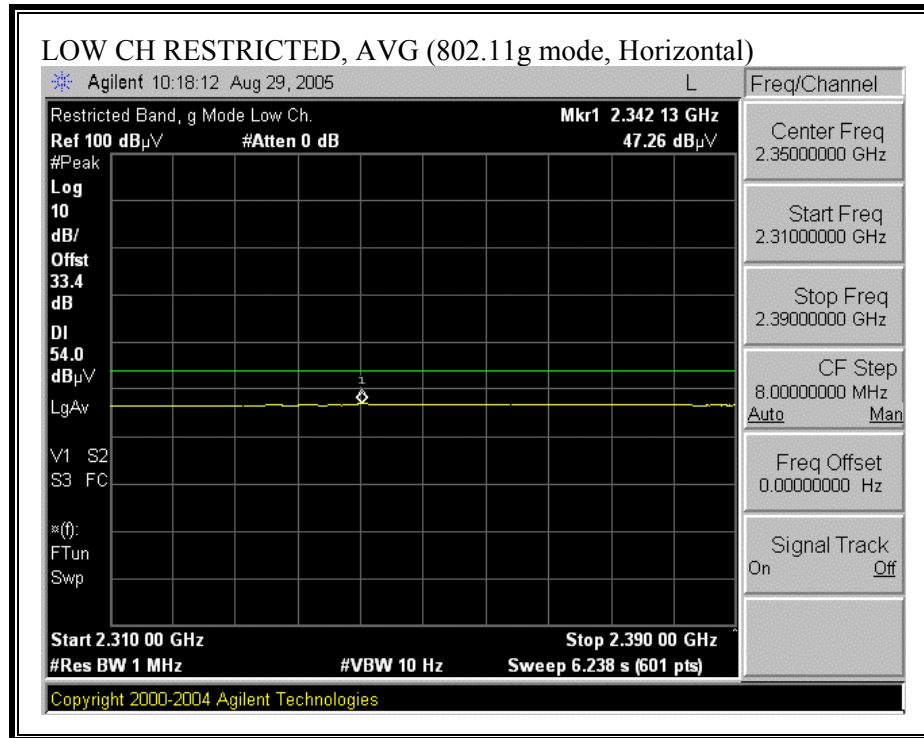
Test Engr: Joseph Chung
Project #:05U3647-1
Company: Vivato
EUT Descrip.:802.11 b/g Wireless Microcell
EUT M/N:VA2410a
Test Target:FCC15.247
Mode Oper:TX, b mode, OMNI Antenna (11 dBi gain)

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		

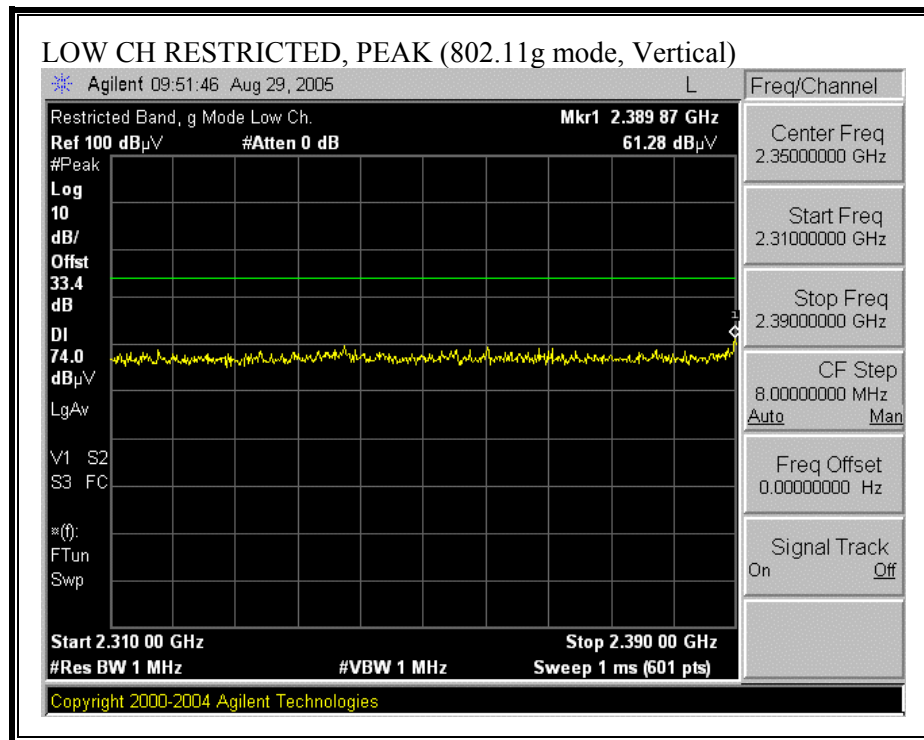
f GHz	Dist (m)	Read Pk dBuV	Read Avg dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fitr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch, 2412															
4.824	3.0	41.0	29.5	34.0	6.0	-33.6	0.0	0.6	48.1	36.6	74.0	54.0	-25.9	-17.4	H
4.824	3.0	40.6	28.7	34.0	6.0	-33.6	0.0	0.6	47.6	35.8	74.0	54.0	-26.4	-18.2	V
Mid Ch, 2437															
4.874	3.0	40.4	28.4	34.1	6.1	-33.5	0.0	0.6	47.6	35.6	74.0	54.0	-26.4	-18.4	V
7.311	3.0	41.9	29.2	35.6	7.7	-33.3	0.0	0.6	52.6	39.9	74.0	54.0	-21.4	-14.1	V
4.874	3.0	40.7	28.1	34.1	6.1	-33.5	0.0	0.6	47.0	35.1	74.0	54.0	-27.0	-18.9	H
High Ch, 2462															
4.924	3.0	42.7	27.7	34.1	6.1	-33.5	0.0	0.6	50.0	35.0	74.0	54.0	-24.0	-19.0	V
7.386	3.0	41.2	28.3	35.7	7.8	-33.3	0.0	0.6	51.8	39.1	74.0	54.0	-22.2	-14.9	V
4.924	3.0	41.0	28.5	34.1	6.1	-33.5	0.0	0.6	47.3	35.9	74.0	54.0	-26.7	-18.1	H
Note: no other emissions found above noise floor.															

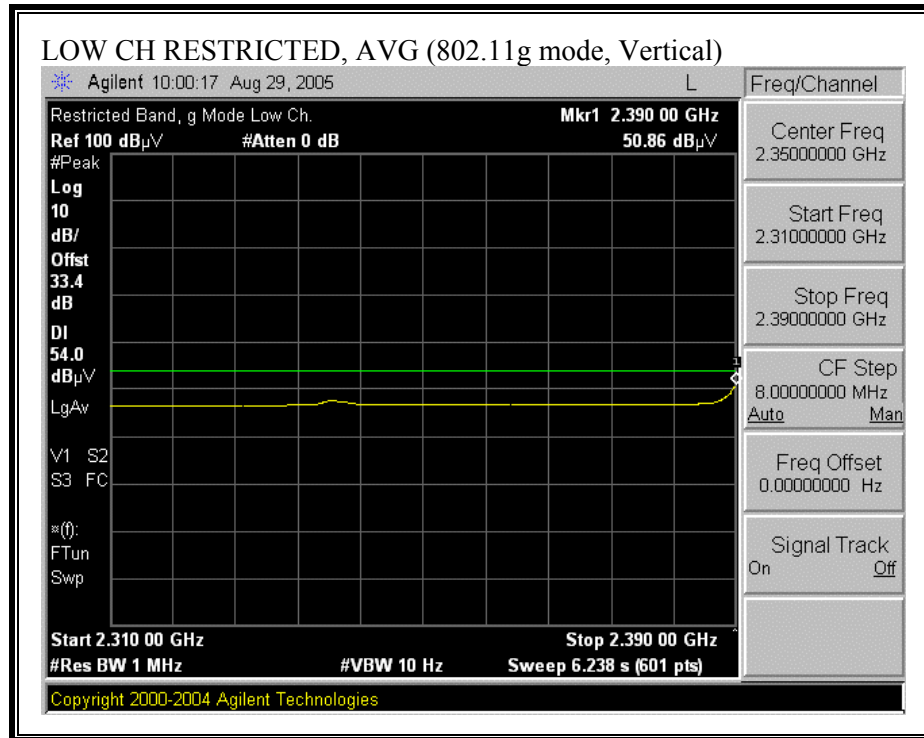
RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, HORIZONTAL)



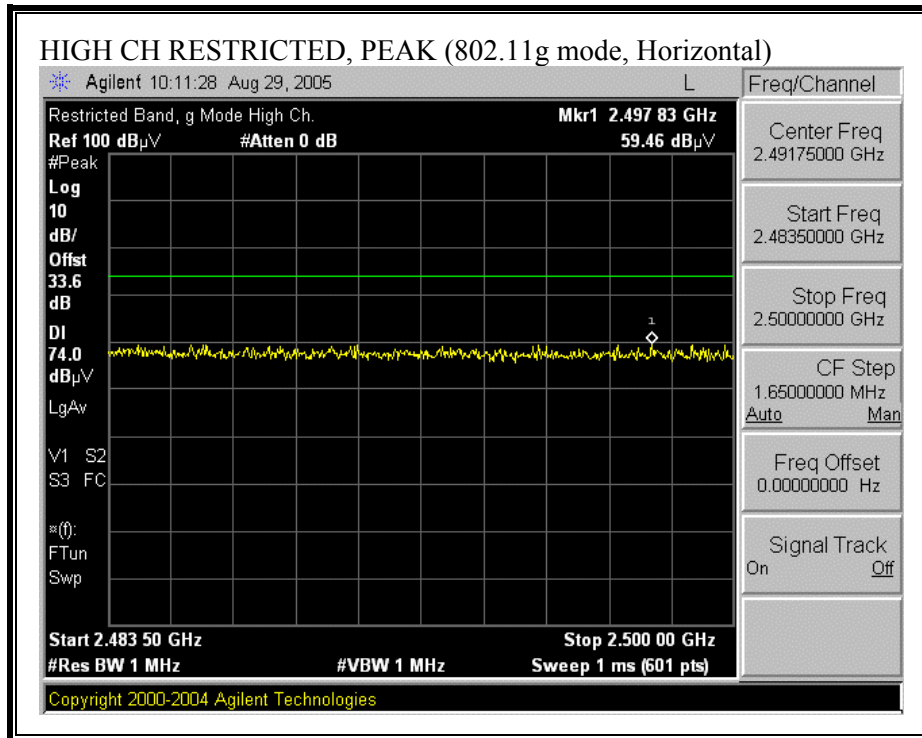


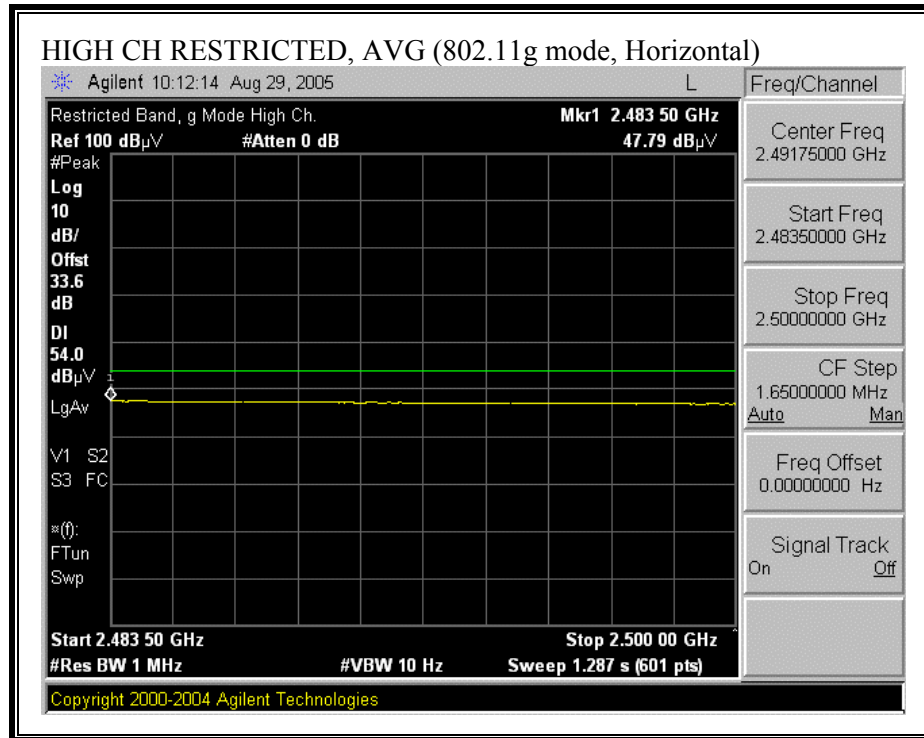
RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, VERTICAL)



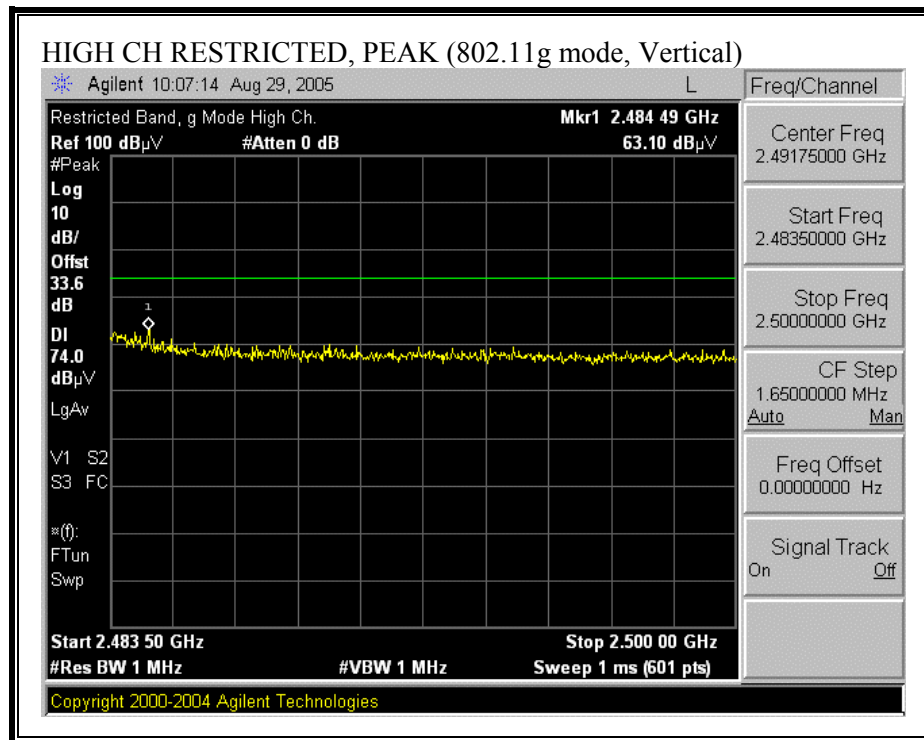


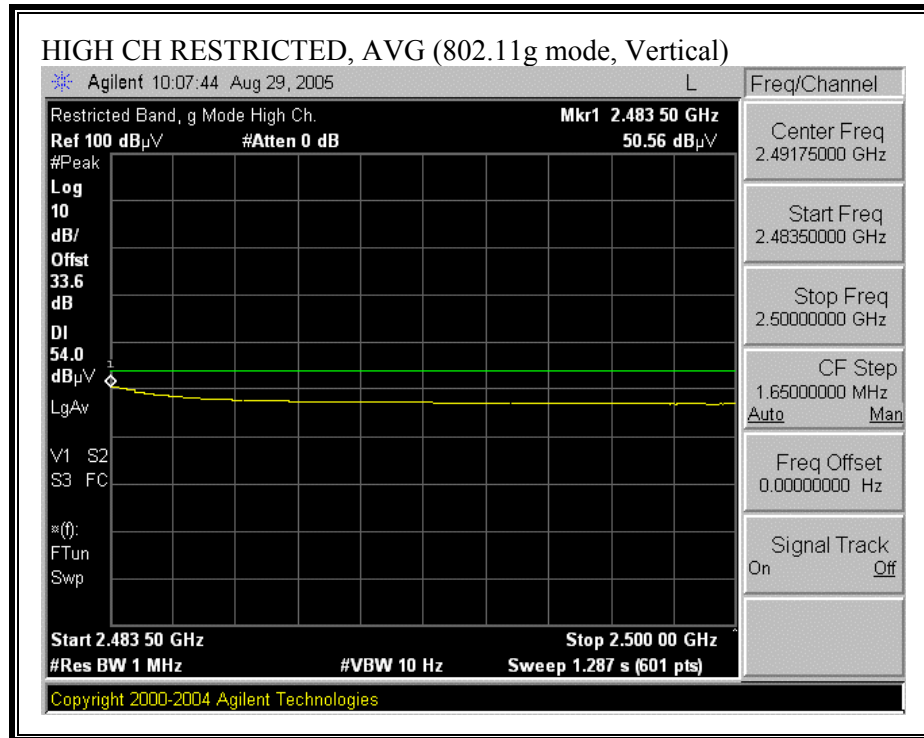
RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, VERTICAL)



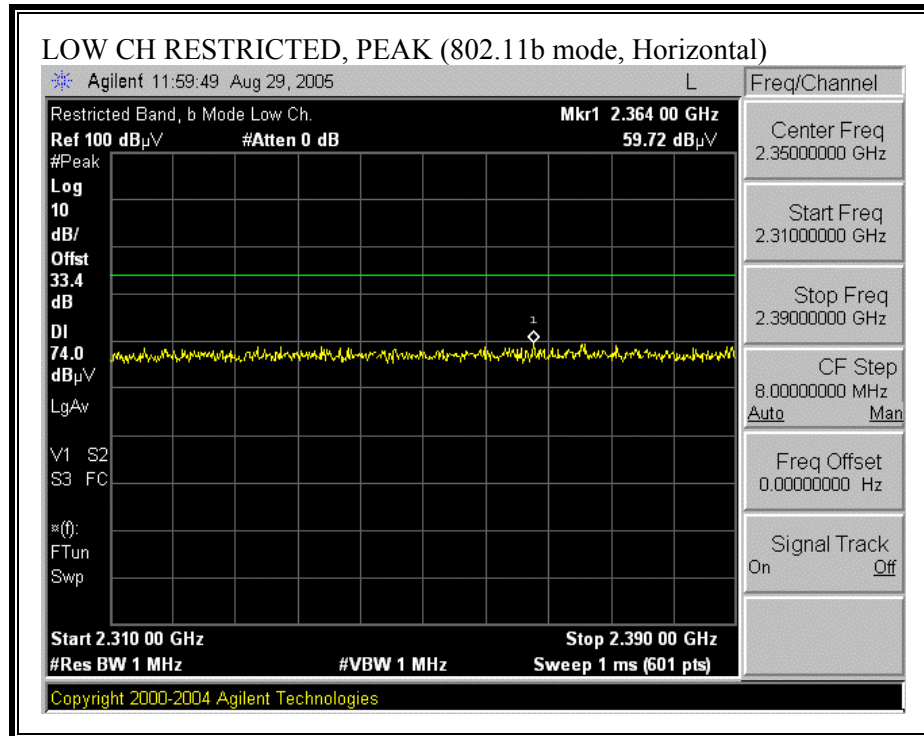


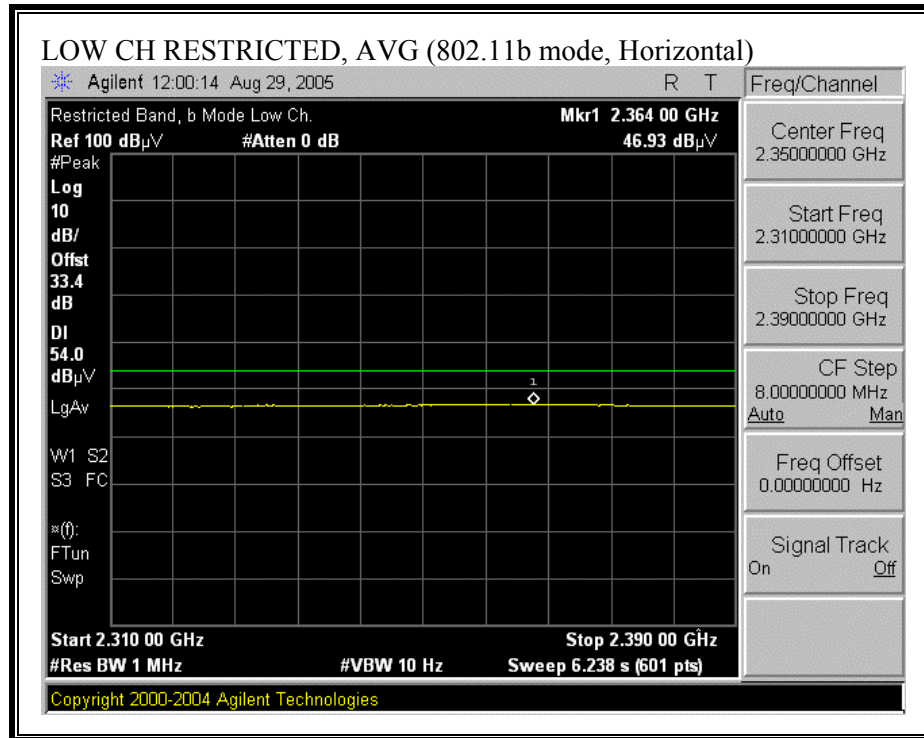
HARMONICS AND SPURIOUS EMISSIONS (g MODE)

08/29/05 High Frequency Measurement																
Compliance Certification Services, Morgan Hill Open Field Site																
Test Engr: Joseph Chung																
Project #:05U3647-1																
Company:Vivato																
EUT Descrp.:802.11 b/g Wireless Microcell																
EUT M/N:VA2410a																
Test Target:FCC15.247																
Mode Oper:TX, g mode, OMNI Antenna (11 dBi gain)																
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									
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)	
Low Ch, 2412																
4.824	3.0	40.0	28.4	34.0	6.0	-33.6	0.0	0.6	47.1	35.5	74.0	54.0	-26.9	-18.5	H	
12.060	3.0	39.7	28.2	38.4	11.4	-33.5	0.0	0.9	57.0	45.5	74.0	54.0	-17.0	-8.5	H	
4.824	3.0	40.1	28.3	34.0	6.0	-33.6	0.0	0.6	47.1	35.4	74.0	54.0	-26.9	-18.6	V	
Mid Ch, 2437																
4.874	3.0	40.3	28.3	34.1	6.1	-33.5	0.0	0.6	47.5	35.5	74.0	54.0	-26.5	-18.5	V	
7.311	3.0	51.9	31.2	35.6	7.7	-33.3	0.0	0.6	62.6	41.9	74.0	54.0	-11.4	-12.1	V	
4.874	3.0	40.8	28.2	34.1	6.1	-33.5	0.0	0.6	48.0	35.4	74.0	54.0	-26.0	-18.6	H	
7.311	3.0	49.6	30.1	35.6	7.7	-33.3	0.0	0.6	60.3	40.8	74.0	54.0	-13.7	-13.2	H	
High Ch, 2462																
4.924	3.0	40.7	28.8	34.1	6.1	-33.5	0.0	0.6	48.0	36.1	74.0	54.0	-26.0	-17.9	V	
7.386	3.0	39.9	28.0	35.7	7.8	-33.3	0.0	0.6	50.7	38.8	74.0	54.0	-23.3	-15.2	V	
4.924	3.0	41.0	28.6	34.1	6.1	-33.5	0.0	0.6	48.3	36.0	74.0	54.0	-25.7	-18.0	H	
Note: no other emissions found above noise floor.																

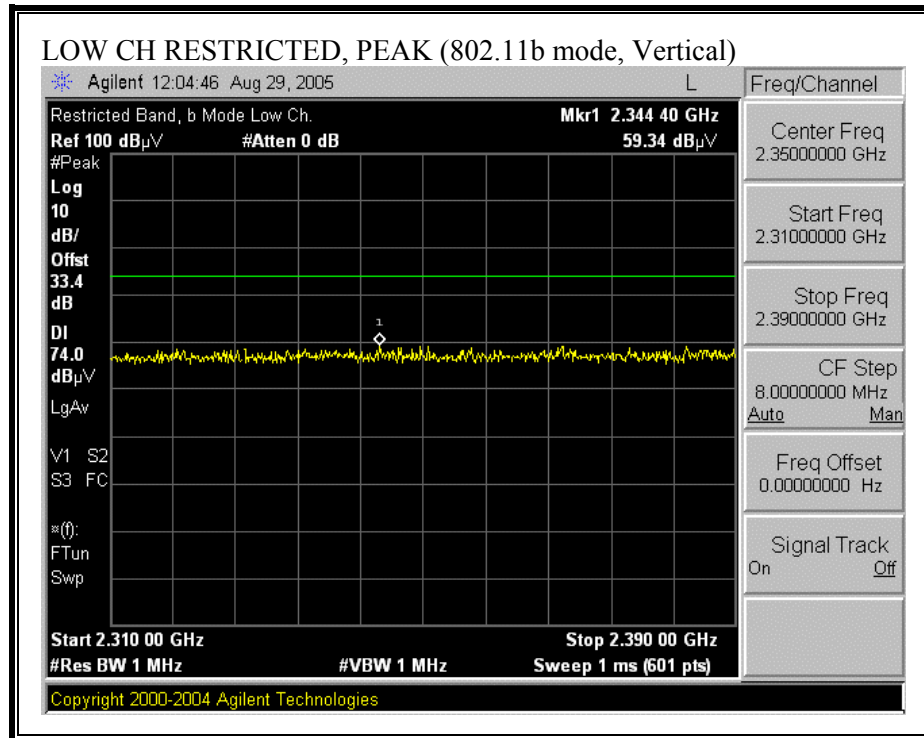
7.2.3. EMISSIONS ABOVE 1 GHz WITH 10 dBi VERTICALLY POLARIZED YAGI ANTENNA

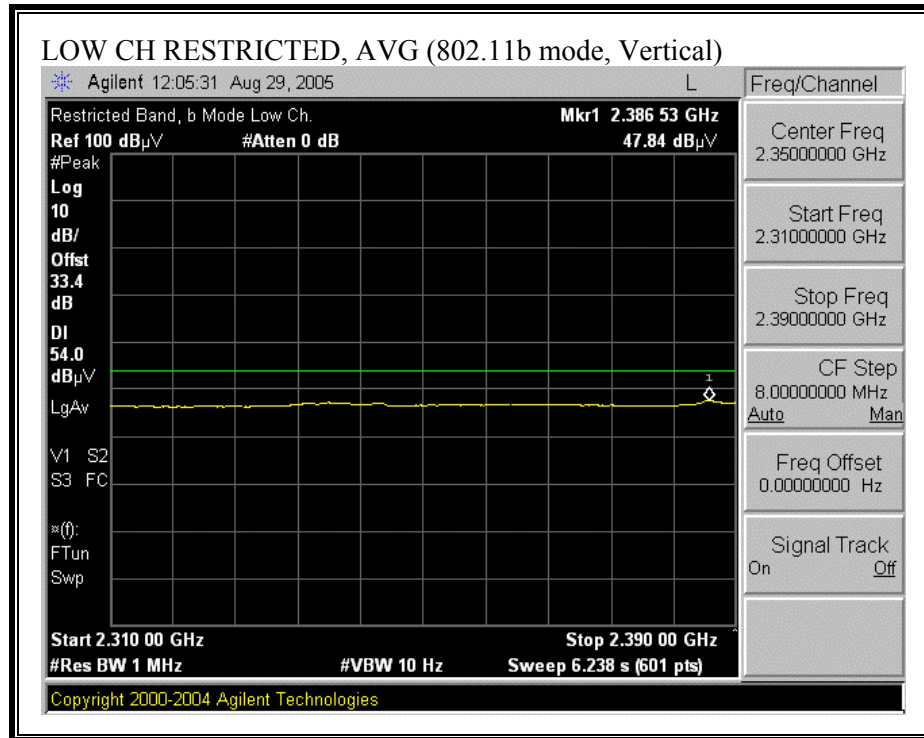
RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, HORIZONTAL)



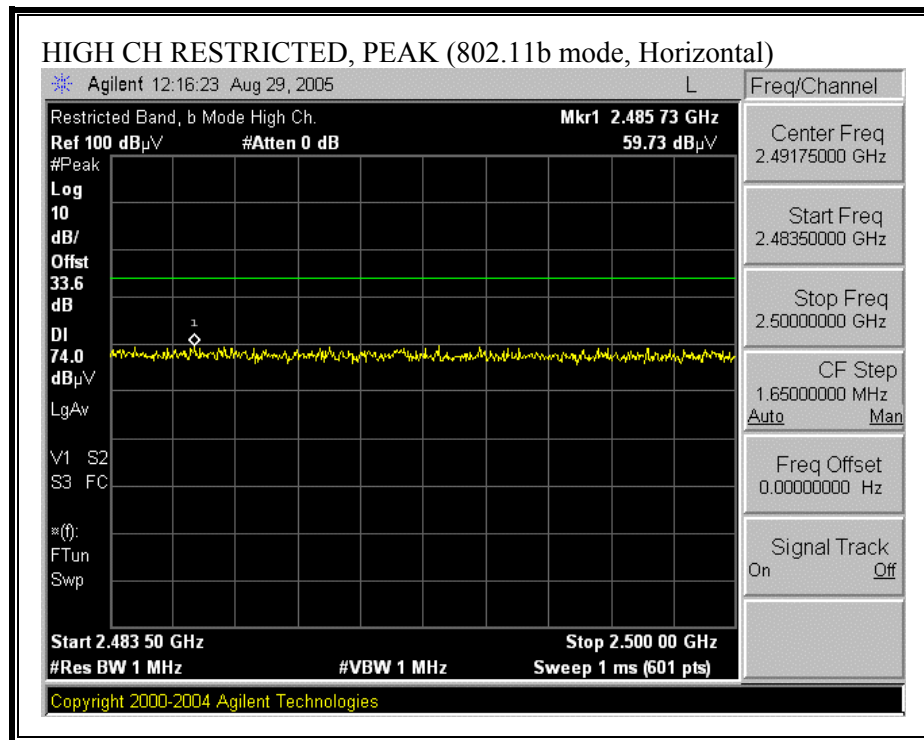


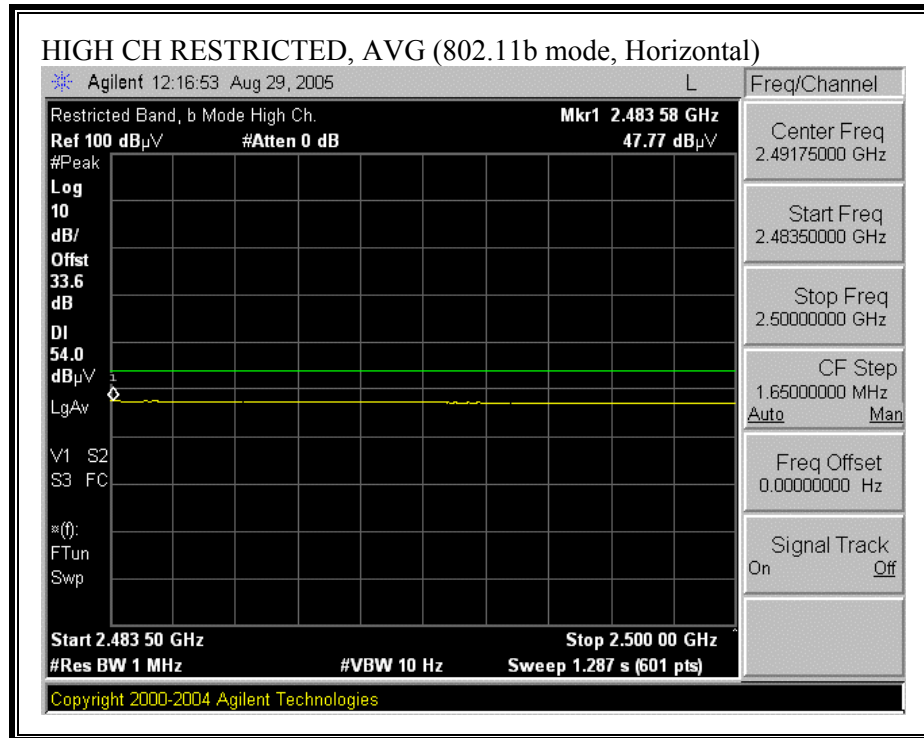
RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, VERTICAL)



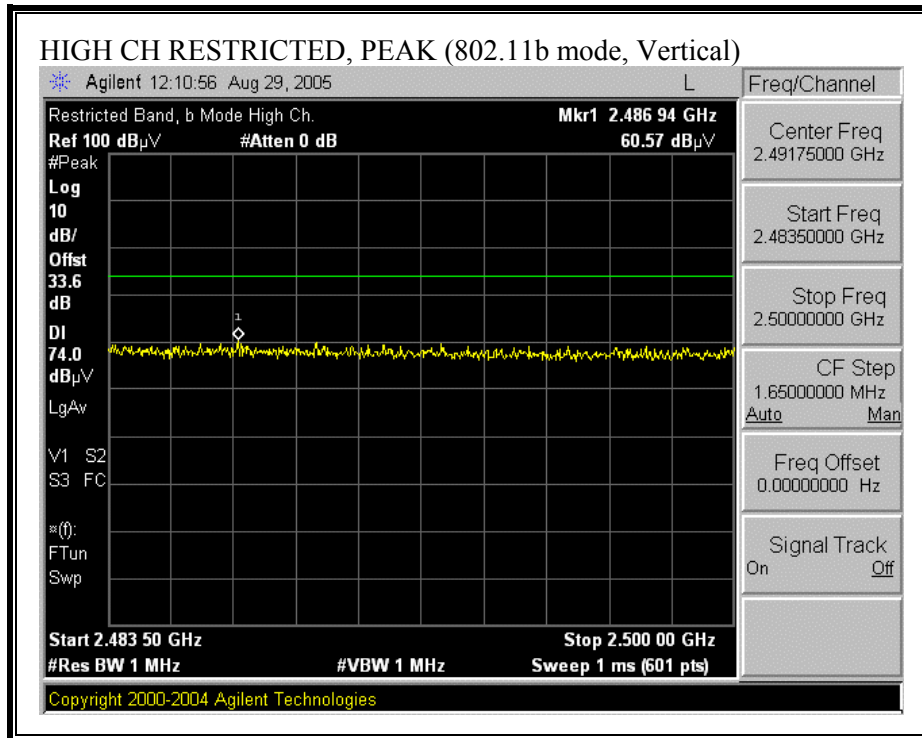


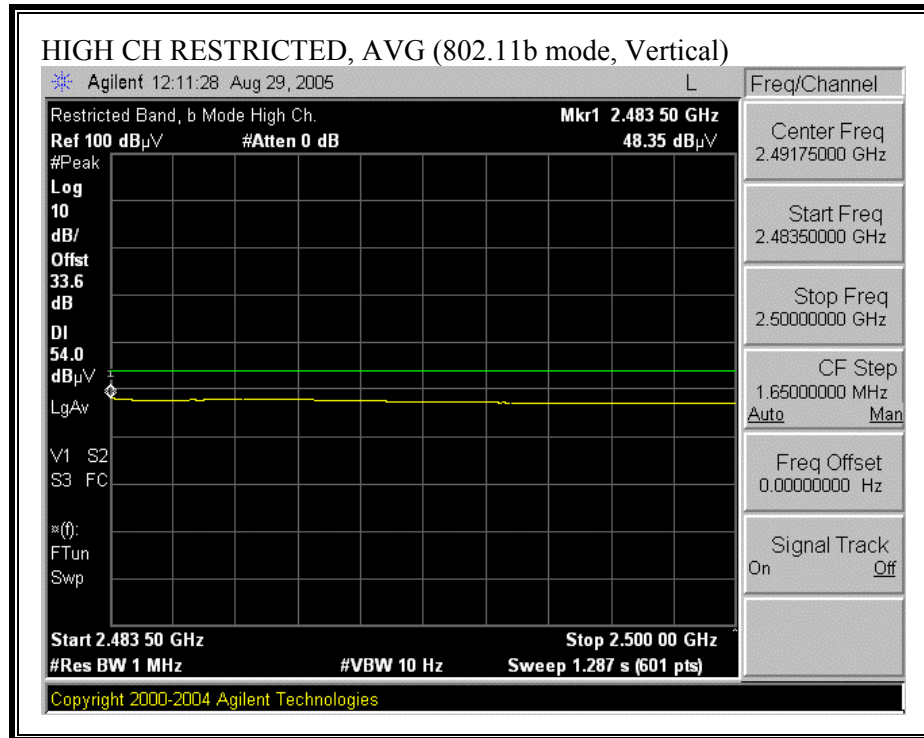
RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS (b MODE)

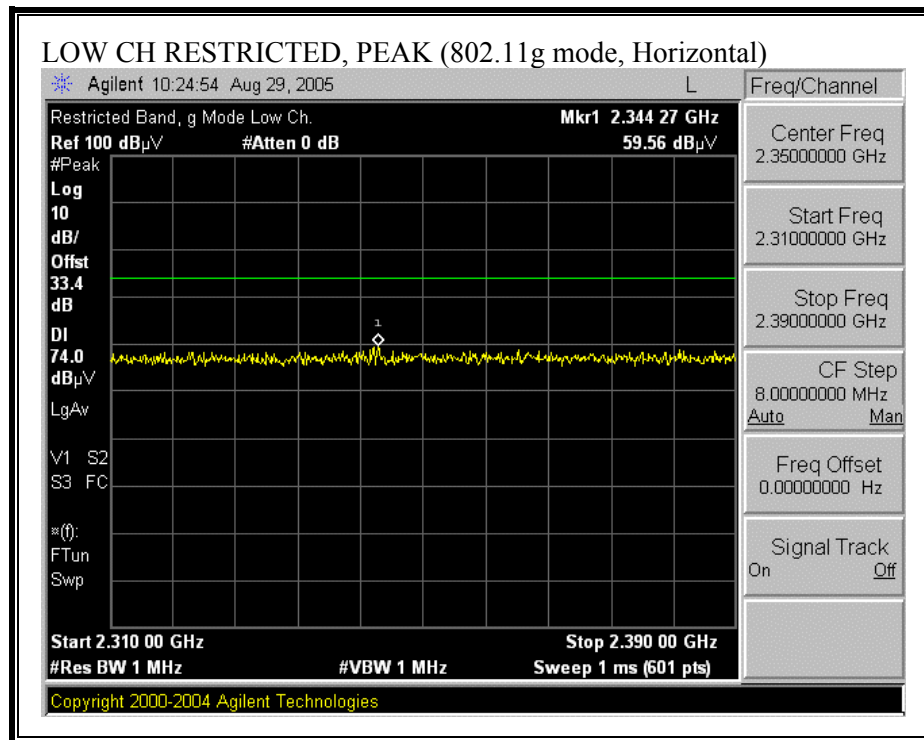
08/29/05 High Frequency Measurement
Compliance Certification Services, Morgan Hill Open Field Site

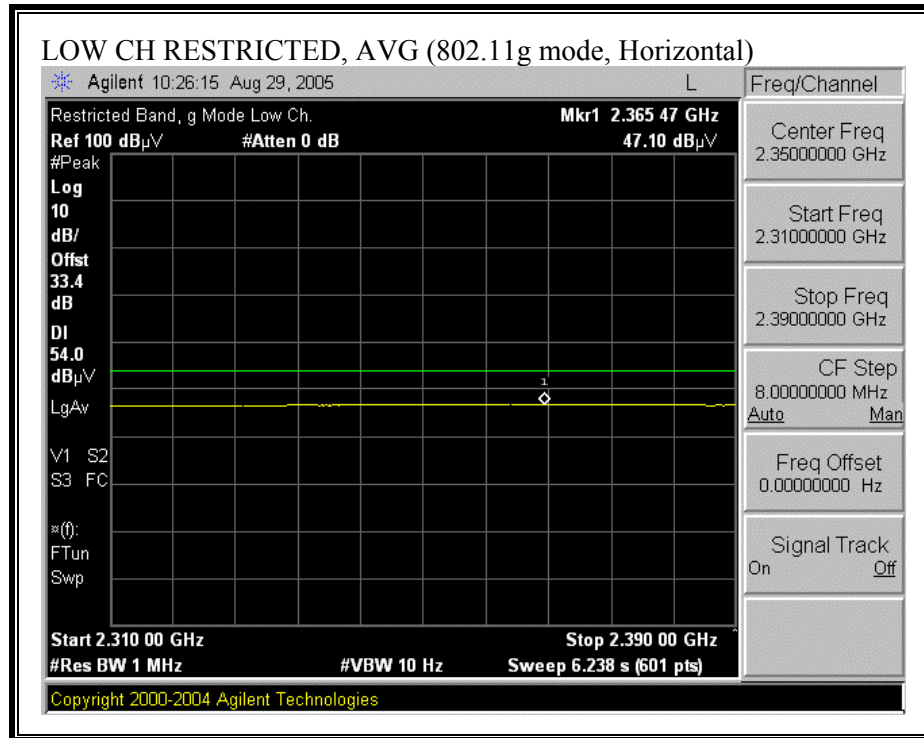
Test Engr: Joseph Chung
Project #:05U3647-1
Company:Vivato
EUT Descrip.:802.11 b/g Wireless Microcell
EUT M/N:VA2410a
Test Target:FCC15.247
Mode Oper:TX, b mode, Yagi antenna, vertical polarization

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		

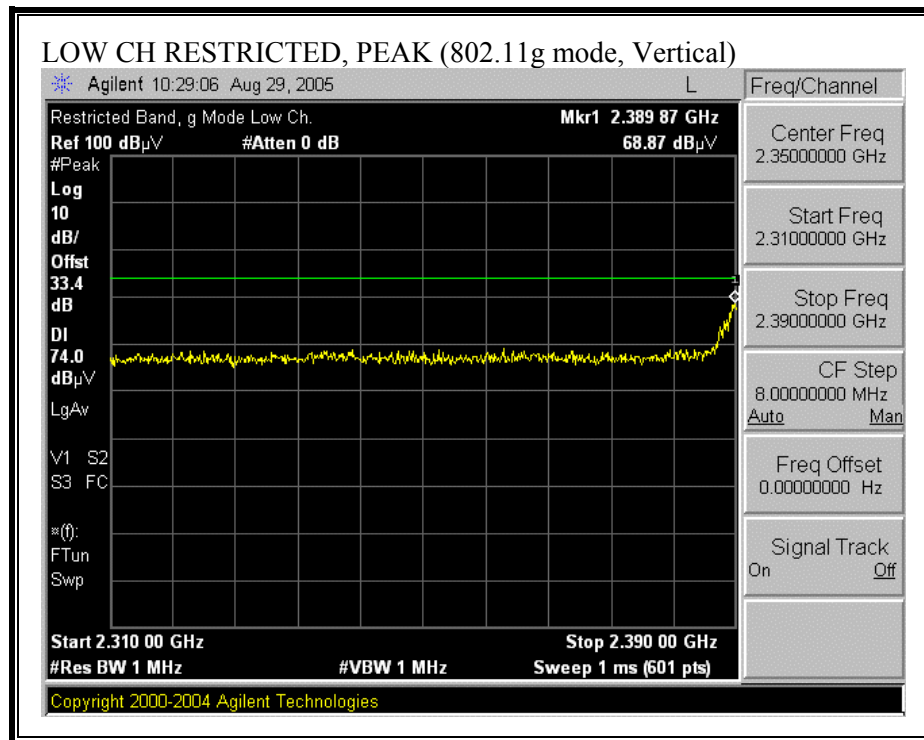
f GHz	Dist (m)	Read Pk dBuV	Read Avg dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fldr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch, 2412															
4.824	3.0	40.4	28.8	34.0	6.0	-33.6	0.0	0.6	47.5	35.8	74.0	54.0	-26.5	-18.2	V
4.824	3.0	40.8	28.4	34.0	6.0	-33.6	0.0	0.6	47.9	35.5	74.0	54.0	-26.1	-18.5	H
Mid Ch, 2437															
4.874	3.0	40.5	28.6	34.1	6.1	-33.5	0.0	0.6	47.7	35.8	74.0	54.0	-26.3	-18.2	H
7.311	3.0	40.9	28.6	35.6	7.7	-33.3	0.0	0.6	51.6	39.3	74.0	54.0	-22.4	-14.7	H
12.185	3.0	40.2	28.5	38.5	11.4	-33.4	0.0	0.9	57.5	45.9	74.0	54.0	-16.5	-8.1	H
4.874	3.0	40.9	29.0	34.1	6.1	-33.5	0.0	0.6	48.1	36.2	74.0	54.0	-25.9	-17.8	V
7.311	3.0	39.9	28.6	35.6	7.7	-33.3	0.0	0.6	50.6	39.3	74.0	54.0	-23.4	-14.7	V
High Ch, 2462															
4.924	3.0	40.3	28.5	34.1	6.1	-33.5	0.0	0.6	47.6	35.8	74.0	54.0	-26.4	-18.2	V
7.386	3.0	40.6	28.7	35.7	7.8	-33.3	0.0	0.6	51.4	39.5	74.0	54.0	-22.6	-14.5	V
4.924	3.0	40.9	28.4	34.1	6.1	-33.5	0.0	0.6	48.2	35.8	74.0	54.0	-25.8	-18.2	H
7.386	3.0	39.9	28.5	35.7	7.8	-33.3	0.0	0.6	50.7	39.3	74.0	54.0	-23.3	-14.8	H
Note: no other emissions detected above noise floor.															

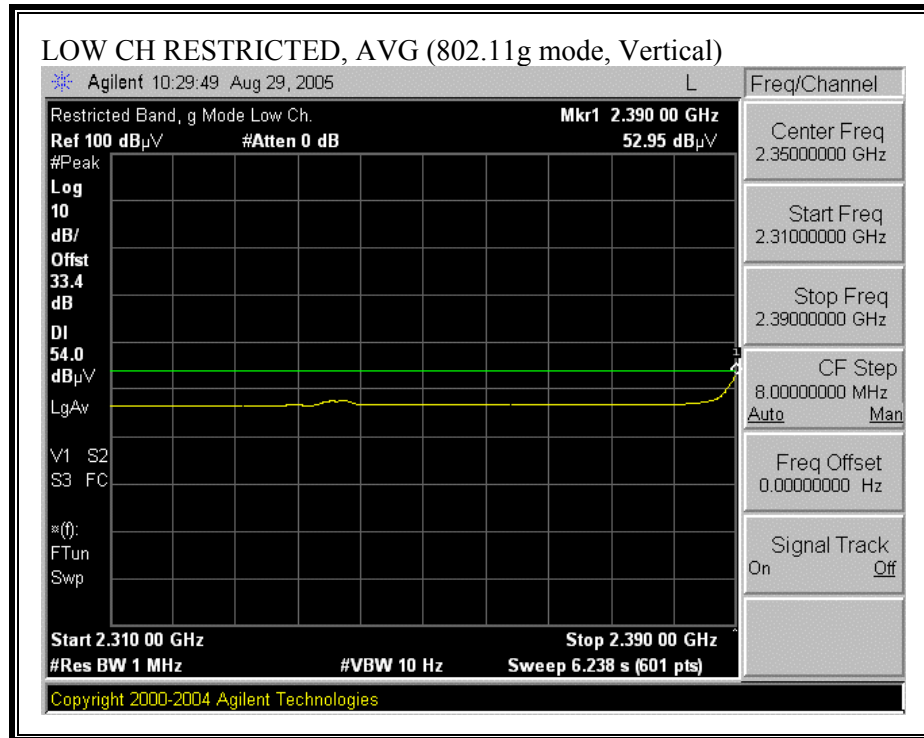
RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, HORIZONTAL)



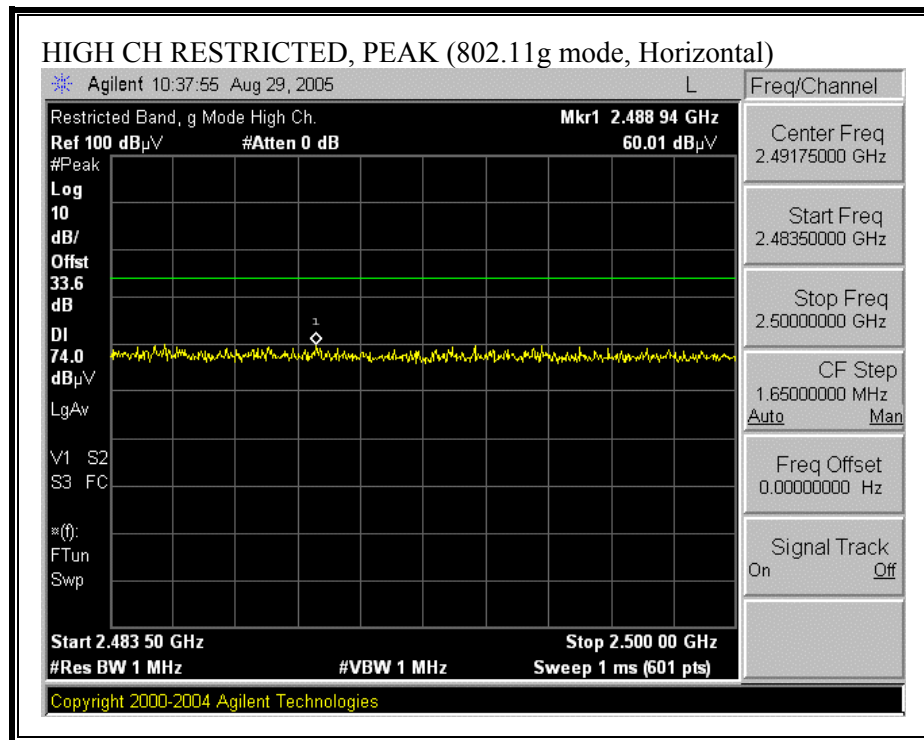


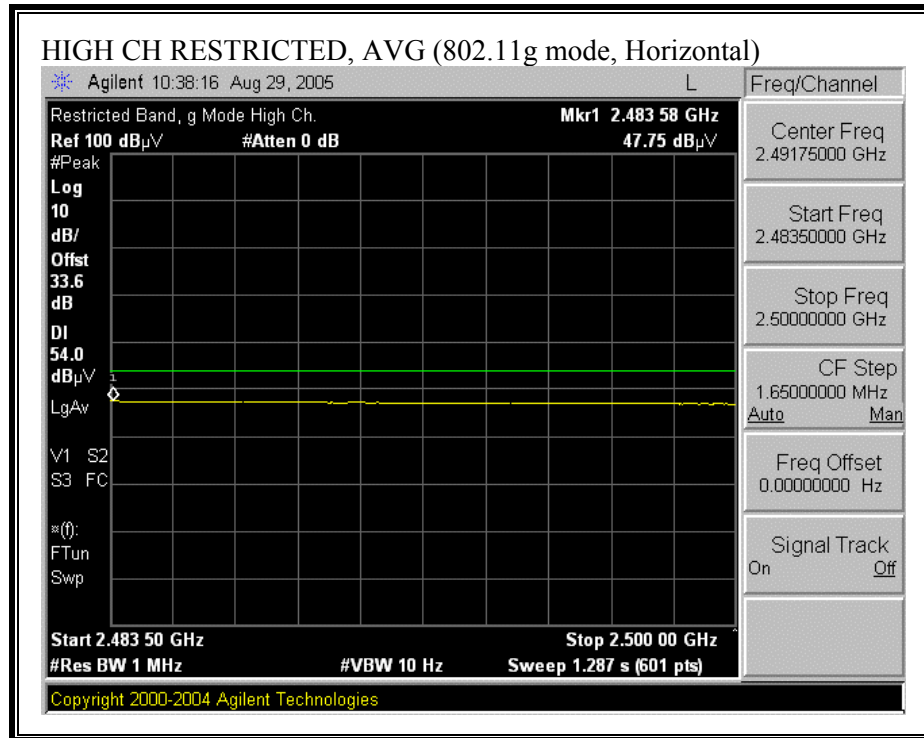
RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, VERTICAL)



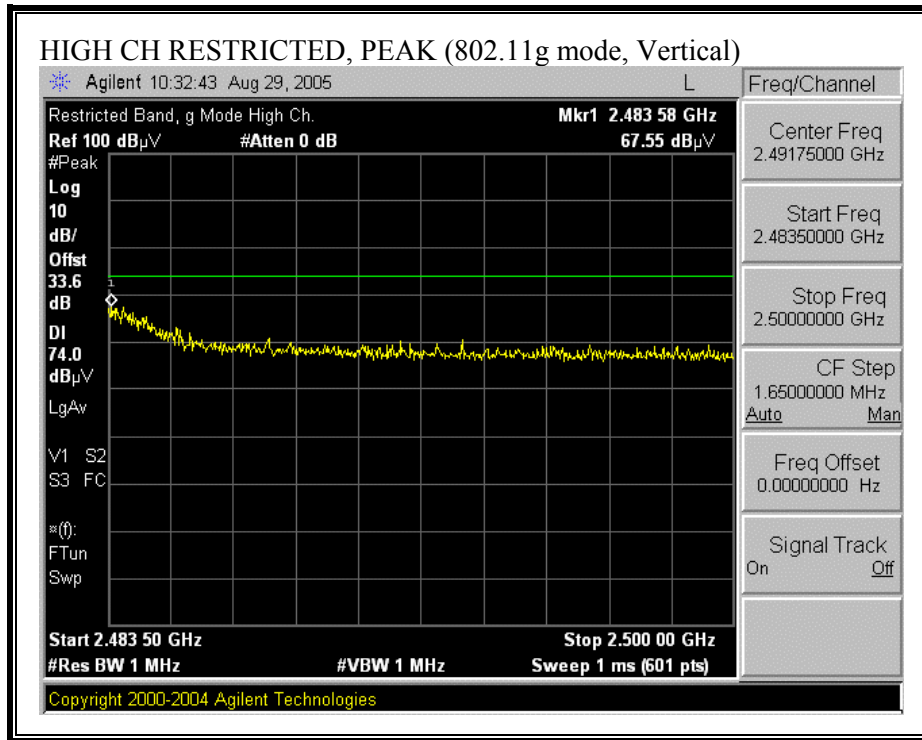


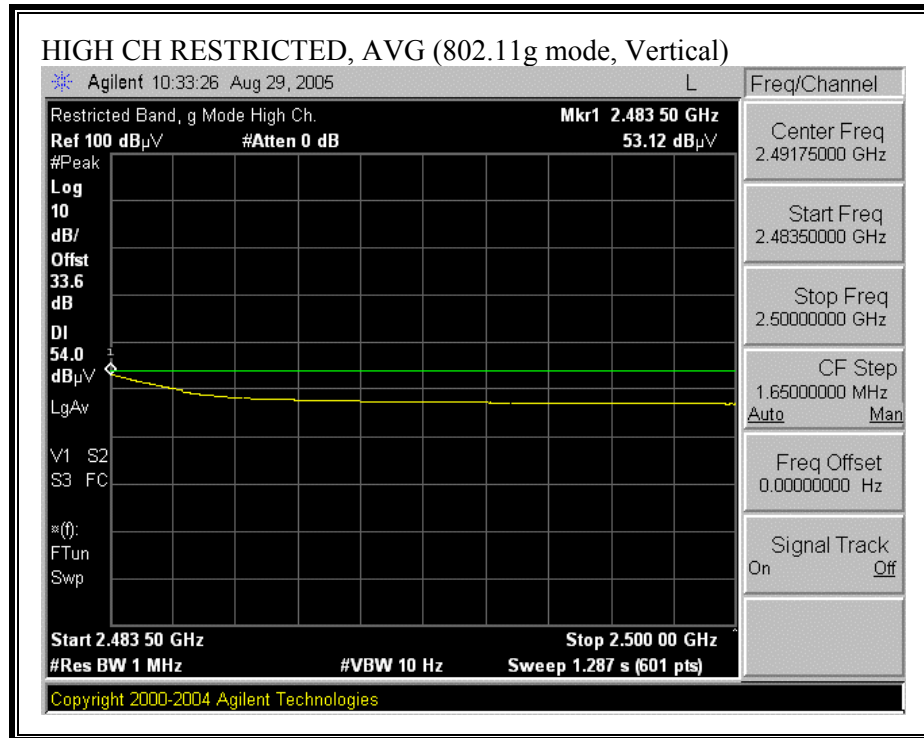
RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, VERTICAL)



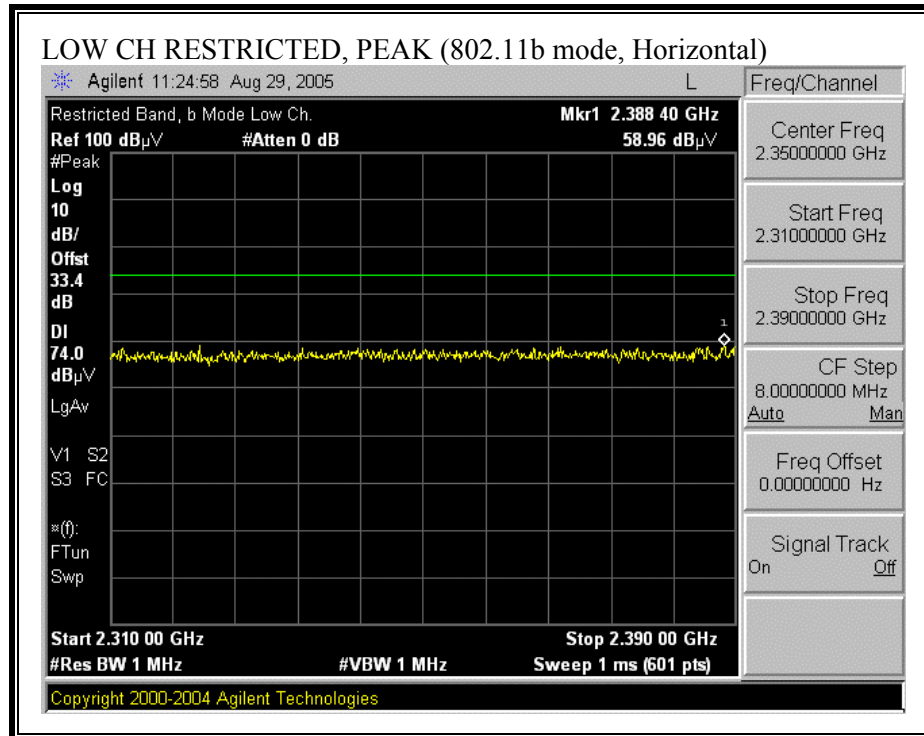


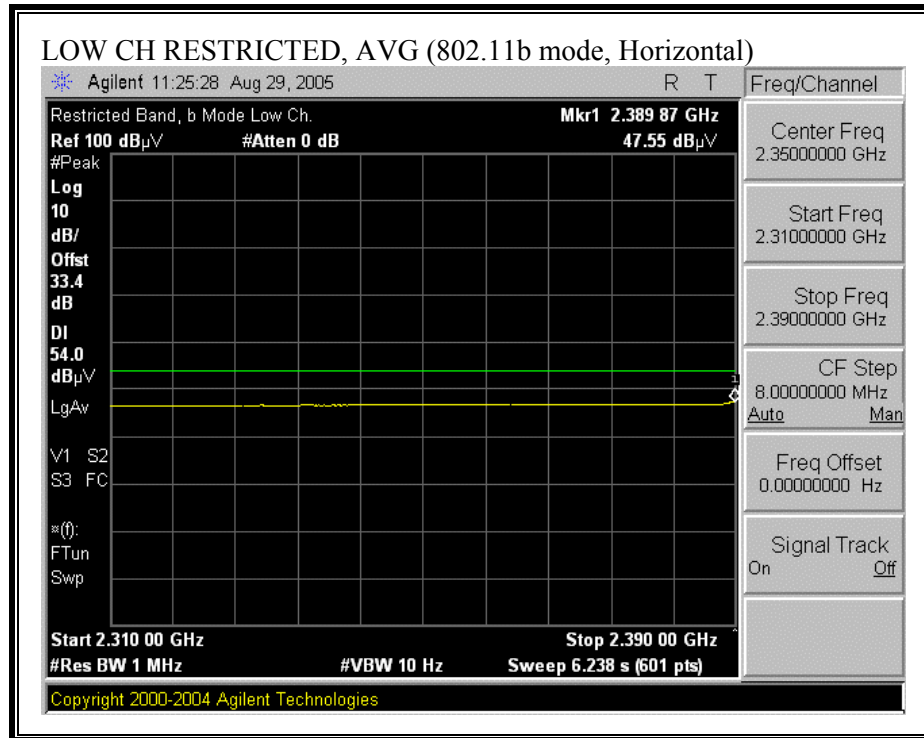
HARMONICS AND SPURIOUS EMISSIONS (g MODE)

08/29/05 High Frequency Measurement Compliance Certification Services, Morgan Hill Open Field Site																
Test Engr: Joseph Chung Project #:05U3647-1 Company:Vivato EUT Descr.:802.11 b/g Wireless Microcell EUT M/N:VA2410a Test Target:FCC15.247 Mode Oper:TX, g mode, Yagi antenna, vertical polarization																
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													
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fitr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)	
Low Ch, 2412																
4.824	3.0	40.3	28.5	34.0	6.0	-33.6	0.0	0.6	47.4	35.5	74.0	54.0	-26.6	-18.5	V	
4.824	3.0	40.0	28.5	34.0	6.0	-33.6	0.0	0.6	47.1	35.5	74.0	54.0	-27.0	-18.5	H	
Mid Ch, 2437																
4.874	3.0	40.8	28.5	34.1	6.1	-33.5	0.0	0.6	48.0	35.7	74.0	54.0	-26.0	-18.3	H	
7.311	3.0	62.5	41.5	35.6	7.7	-33.3	0.0	0.6	73.2	52.2	74.0	54.0	-0.8	-1.8	H	
4.874	3.0	41.3	28.5	34.1	6.1	-33.5	0.0	0.6	48.5	35.7	74.0	54.0	-25.6	-18.3	V	
7.311	3.0	58.3	37.2	35.6	7.7	-33.3	0.0	0.6	69.0	47.9	74.0	54.0	-5.0	-6.1	V	
High Ch, 2462																
4.924	3.0	40.6	28.5	34.1	6.1	-33.5	0.0	0.6	47.9	35.8	74.0	54.0	-26.1	-18.2	V	
7.386	3.0	62.4	36.2	35.7	7.8	-33.3	0.0	0.6	73.2	46.9	74.0	54.0	-0.8	-7.1	V	
4.924	3.0	40.8	28.5	34.1	6.1	-33.5	0.0	0.6	48.1	35.8	74.0	54.0	-25.9	-18.2	H	
7.386	3.0	61.2	34.7	35.7	7.8	-33.3	0.0	0.6	72.0	45.5	74.0	54.0	-2.0	-8.5	H	
12.310	3.0	40.5	28.5	38.5	11.5	-33.4	0.0	0.9	58.0	46.0	74.0	54.0	-16.0	-8.0	H	
Note: no other emissions detected above noise floor.																

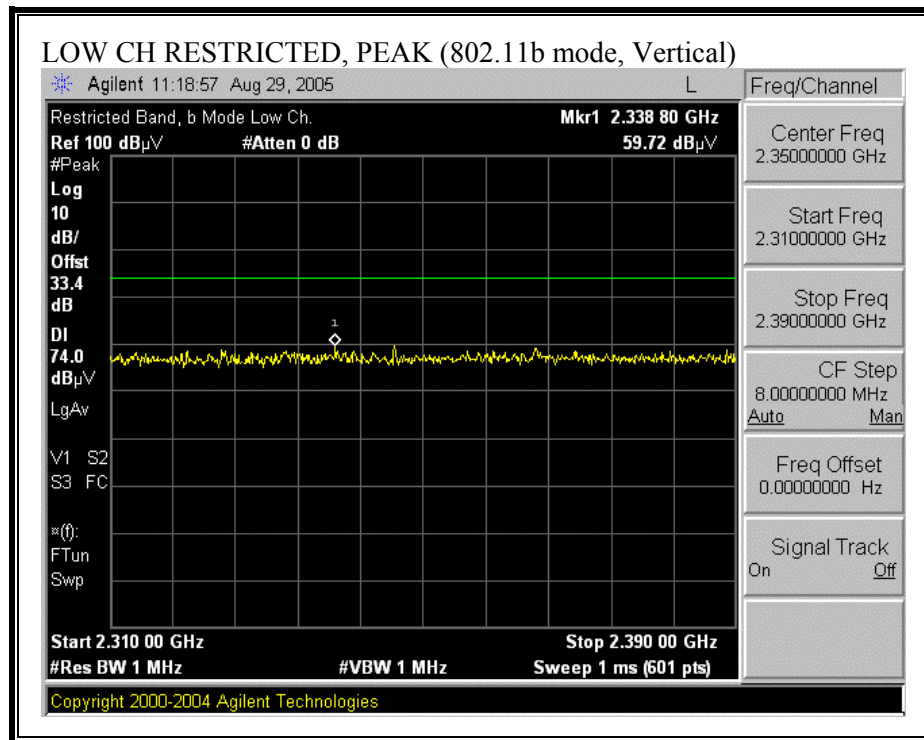
7.2.4. EMISSIONS ABOVE 1 GHz WITH 10 dBi HORIZONTALLY POLARIZED YAGI ANTENNA

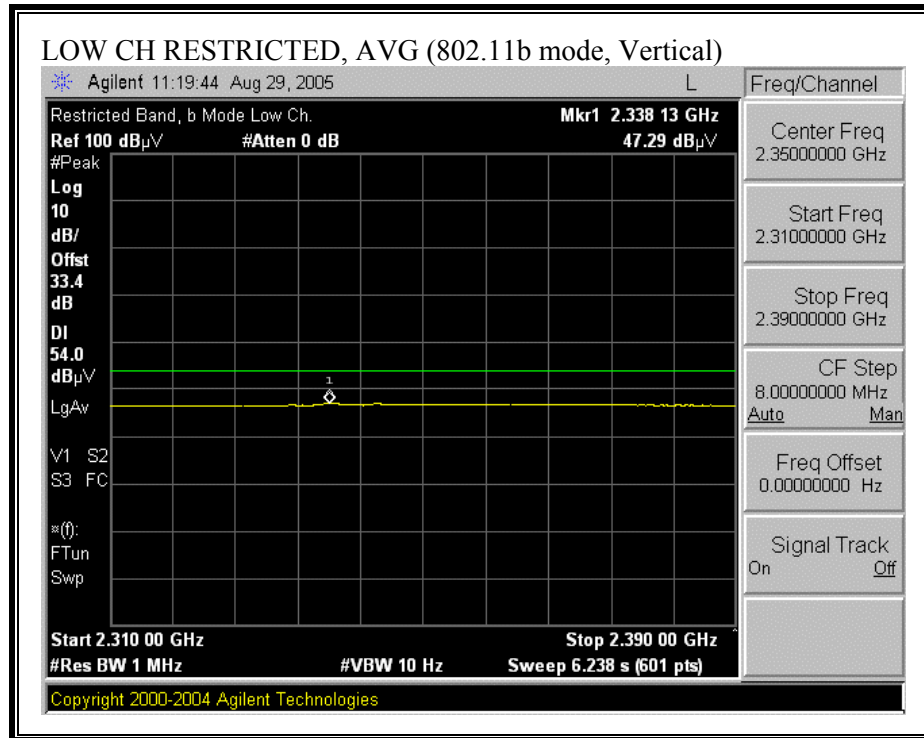
RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, HORIZONTAL)



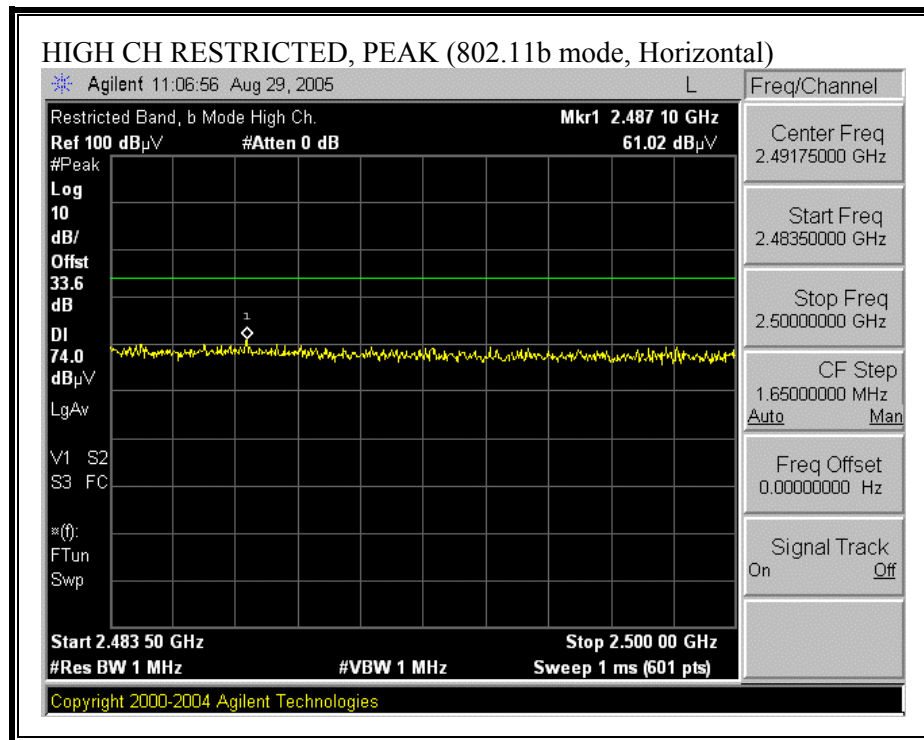


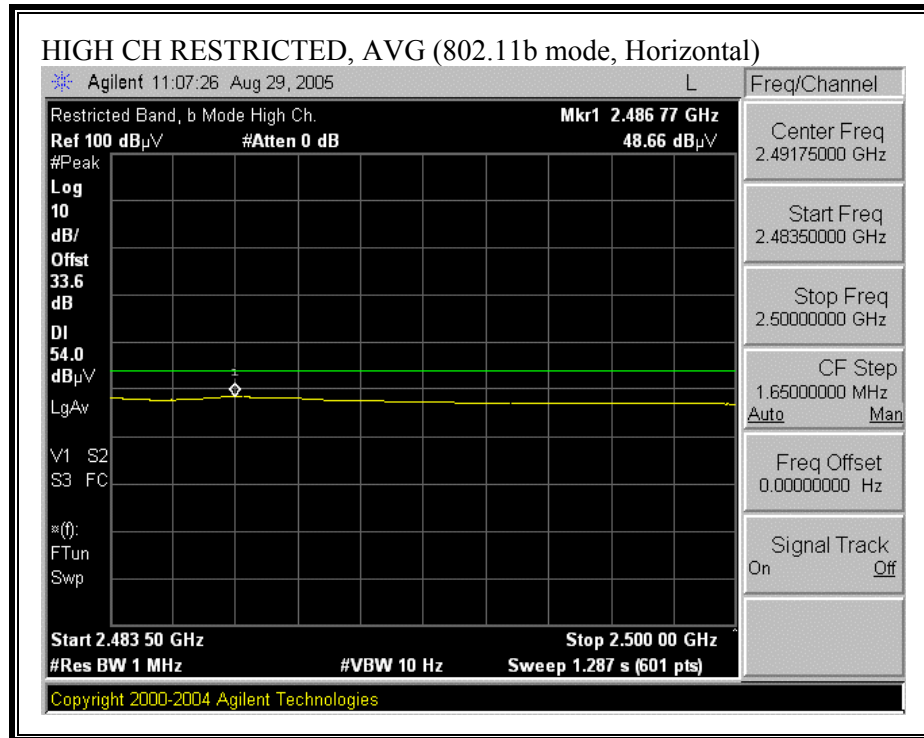
RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, VERTICAL)



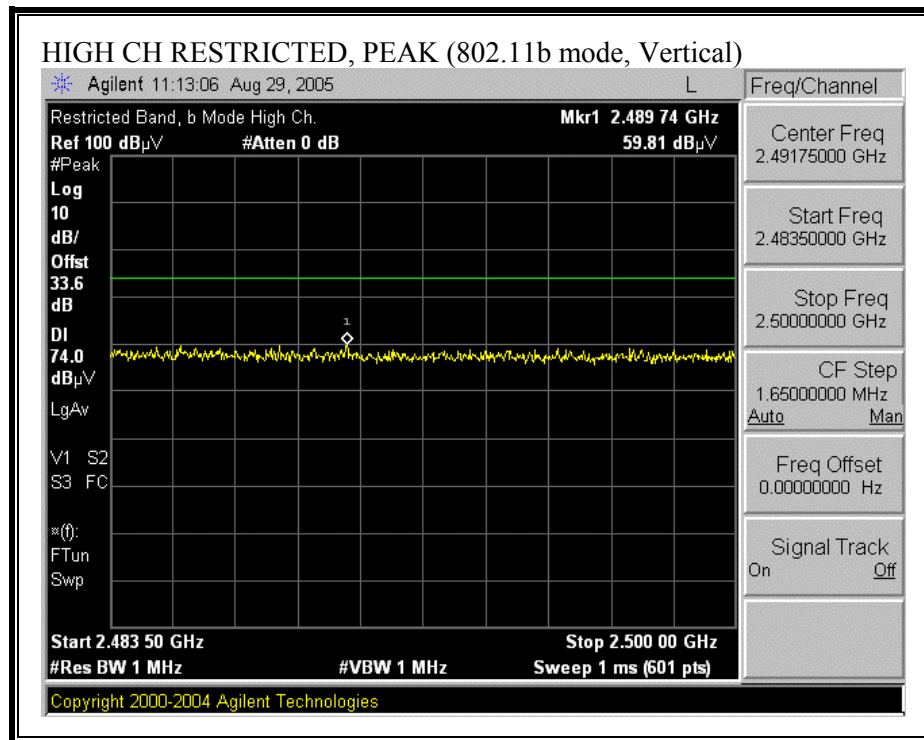


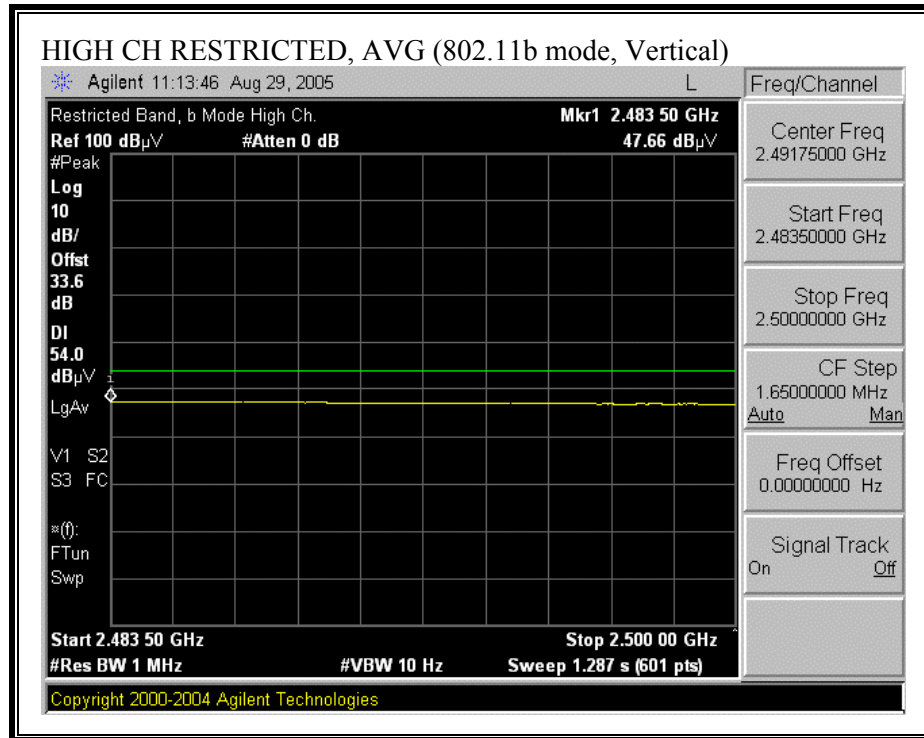
RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, VERTICAL)

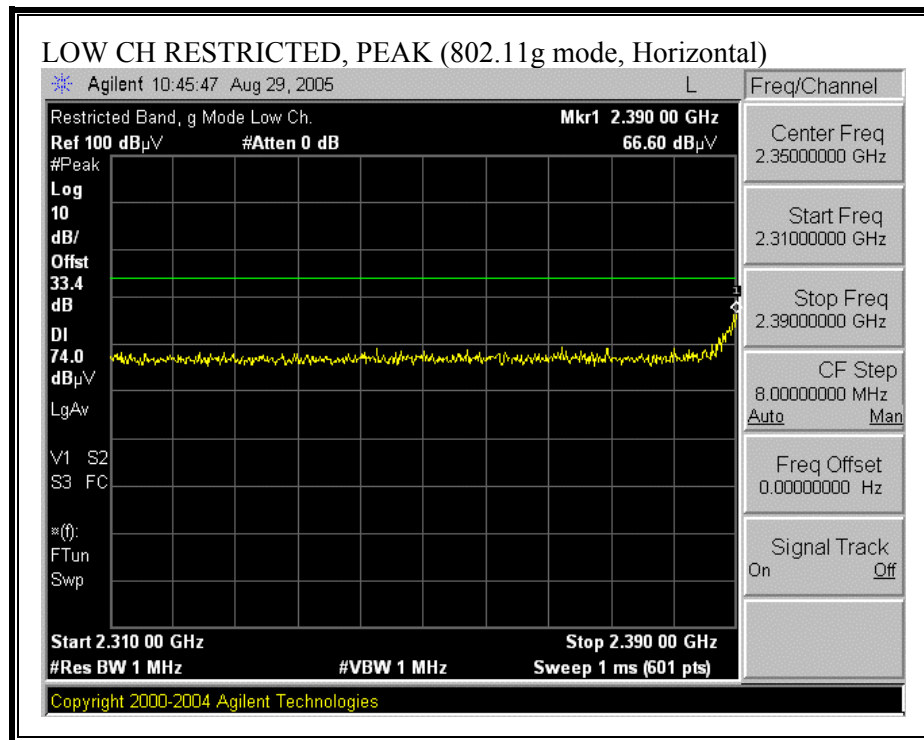


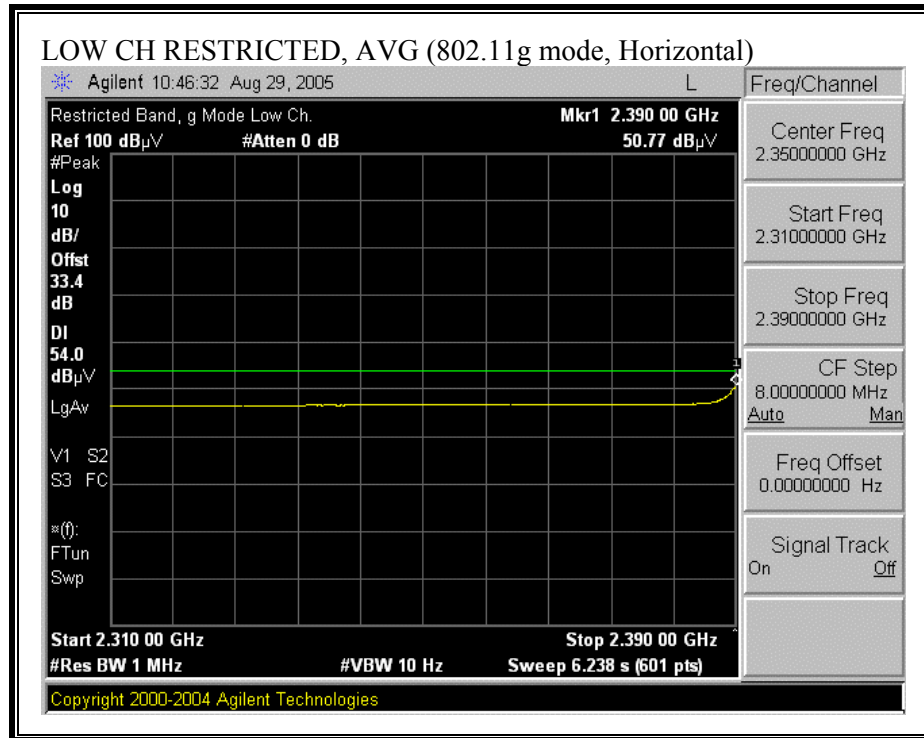


HARMONICS AND SPURIOUS EMISSIONS (b MODE)

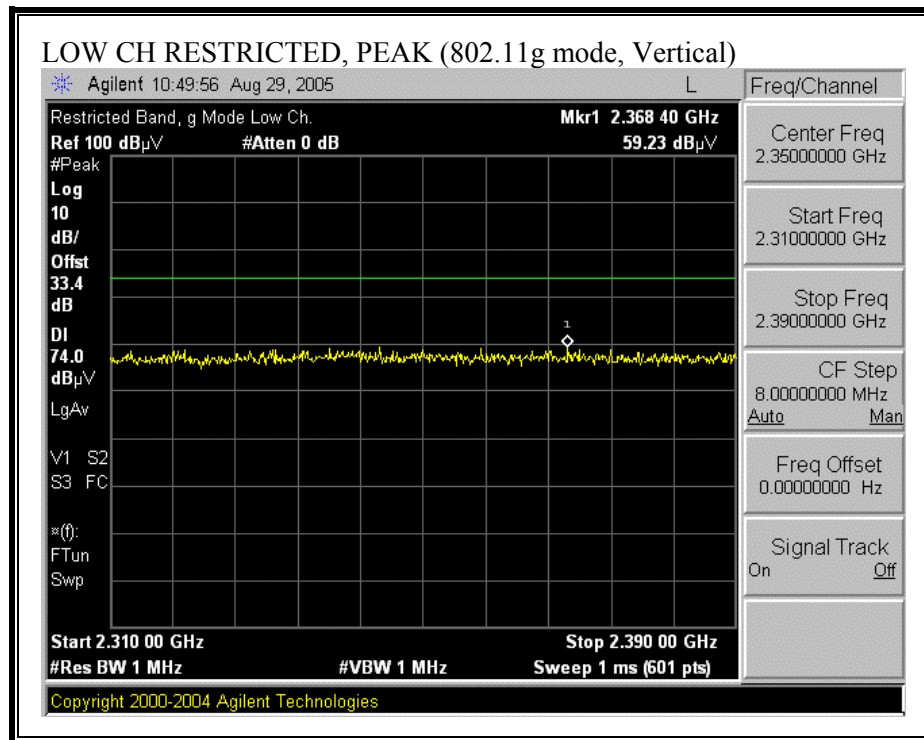
08/30/05 High Frequency Measurement Compliance Certification Services, Morgan Hill Open Field Site															
Test Engr: Chin Pang Project #: 05U3647-1 Company: Vivato EUT Descrip.: 802.11 b/g Wireless Microcell EUT M/N: VA2410a Test Target: FCC15.247 Mode Oper: TX, b mode, YAGI Antenna (10dBi gain)															
Test Equipment:															
EMCO Horn 1-18GHz T60; S/N: 2238 @3m		Pre-amplifier 1-26GHz T34 HP 8449B		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit FCC 15.205							
Hi Frequency Cables															
2 foot cable		3 foot cable 3_Chin		4 foot cable		12 foot cable 12_Neelesh		HPF HPF_4.0GHz		Reject Filter		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	Filt dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch, 2412															
4.824	3.0	42.0	30.0	33.6	3.8	-33.6	0.0	0.6	46.4	34.4	74	54	-27.6	-19.6	V
4.824	3.0	41.0	29.0	33.6	3.8	-33.6	0.0	0.6	45.4	33.4	74	54	-28.6	-20.6	H
Mid Ch, 2437															
4.874	3.0	41.4	29.0	33.7	3.8	-33.5	0.0	0.6	45.9	33.5	74	54	-28.1	-20.5	V
7.311	3.0	42.1	29.3	36.2	4.9	-33.3	0.0	0.6	50.5	37.7	74	54	-23.5	-16.3	V
4.874	3.0	42.5	31.0	33.7	3.8	-33.5	0.0	0.6	47.0	35.5	74	54	-27.0	-18.5	H
7.311	3.0	41.5	30.4	36.2	4.9	-33.3	0.0	0.6	49.9	38.8	74	54	-24.1	-15.2	H
High Ch, 2462															
4.924	3.0	41.2	28.8	33.7	3.8	-33.5	0.0	0.6	45.8	33.4	74	54	-28.2	-20.6	V
7.386	3.0	41.3	28.7	36.2	4.9	-33.3	0.0	0.6	49.8	37.2	74	54	-24.2	-16.8	V
4.924	3.0	42.7	29.0	33.7	3.8	-33.5	0.0	0.6	47.3	33.6	74	54	-26.7	-20.4	H
7.386	3.0	42.0	28.8	36.2	4.9	-33.3	0.0	0.6	50.5	37.3	74	54	-23.5	-16.7	H
Note: No other emissions were detected above the system noise floor.															
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										

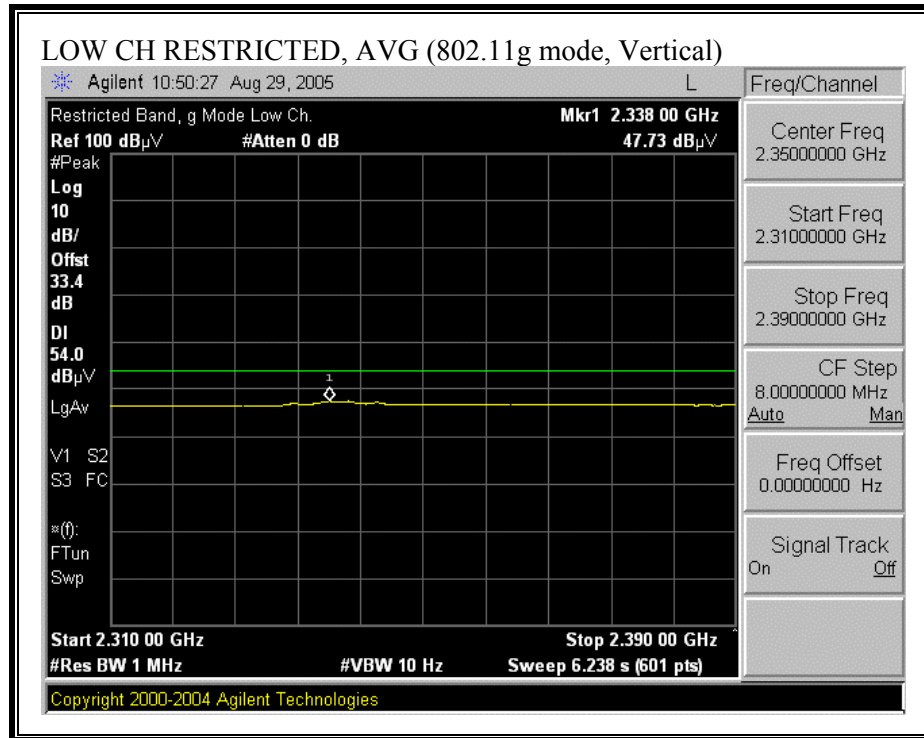
RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, HORIZONTAL)



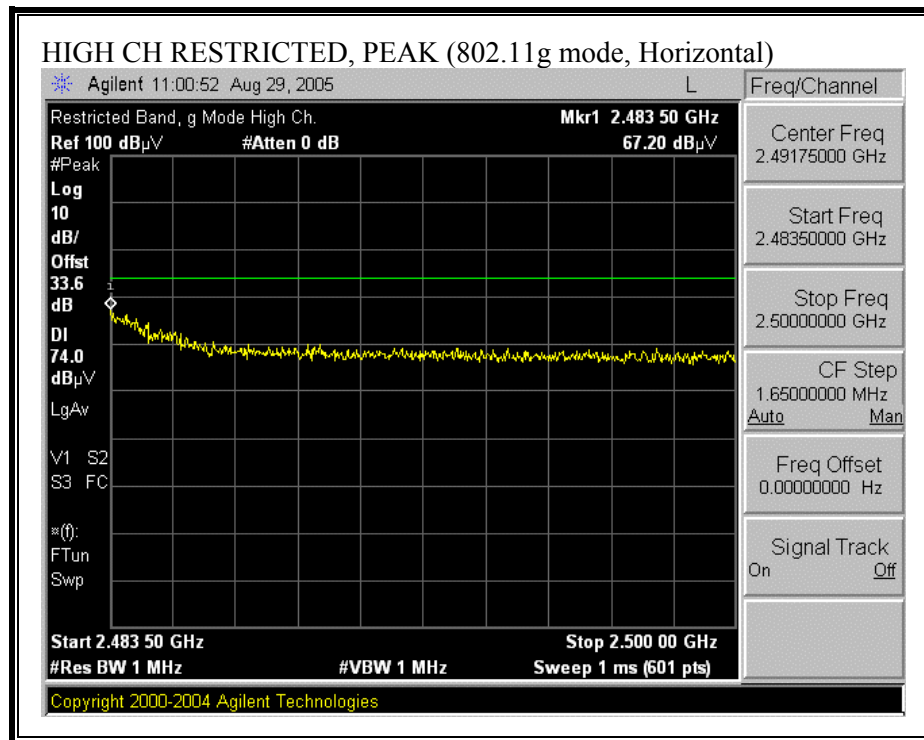


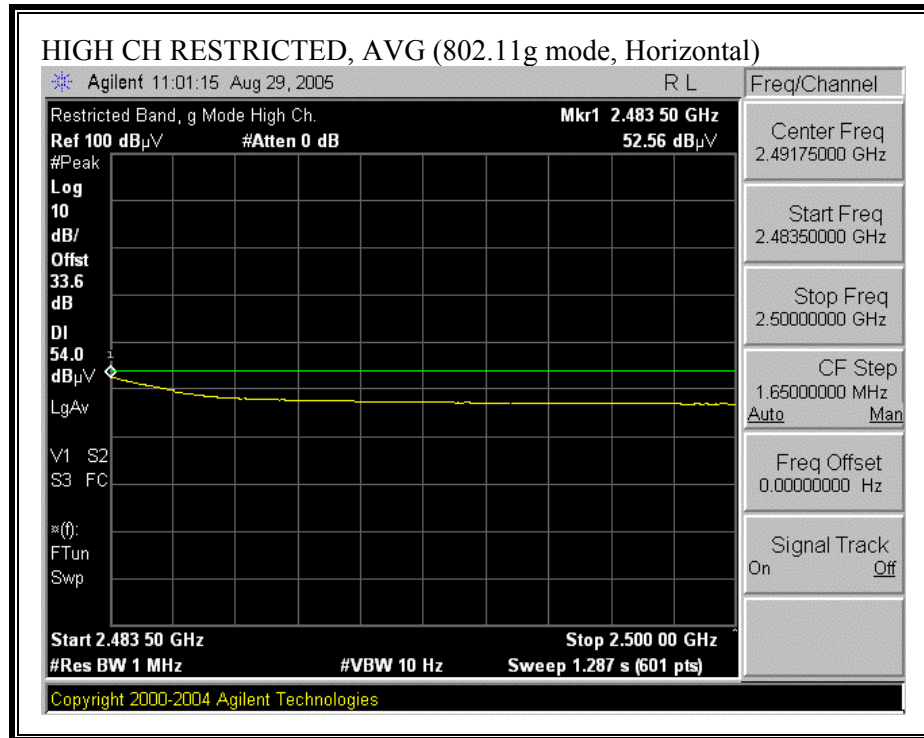
RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, VERTICAL)



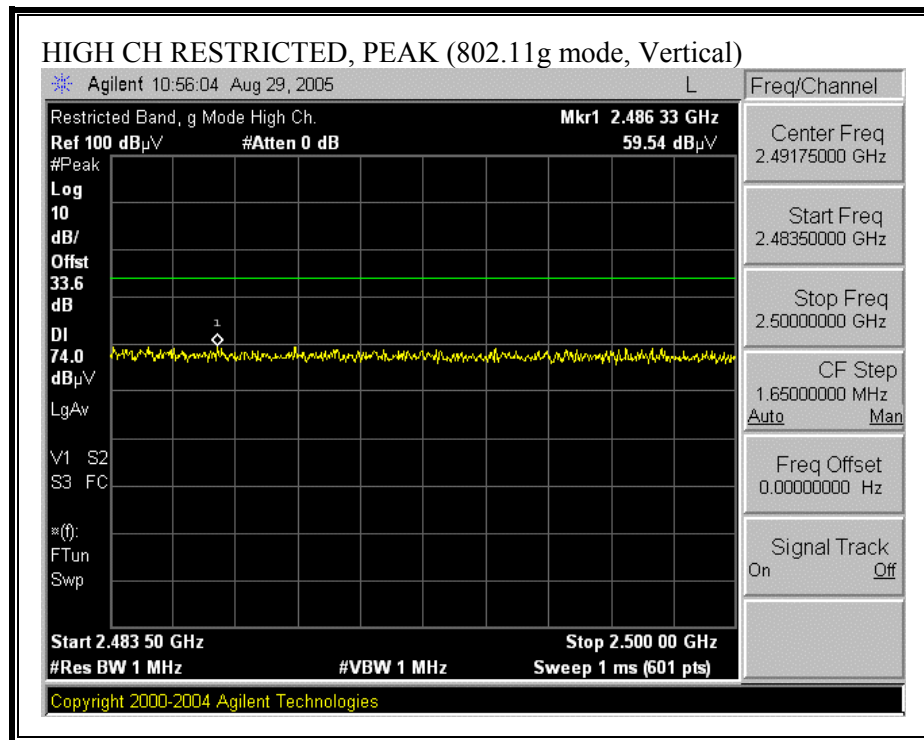


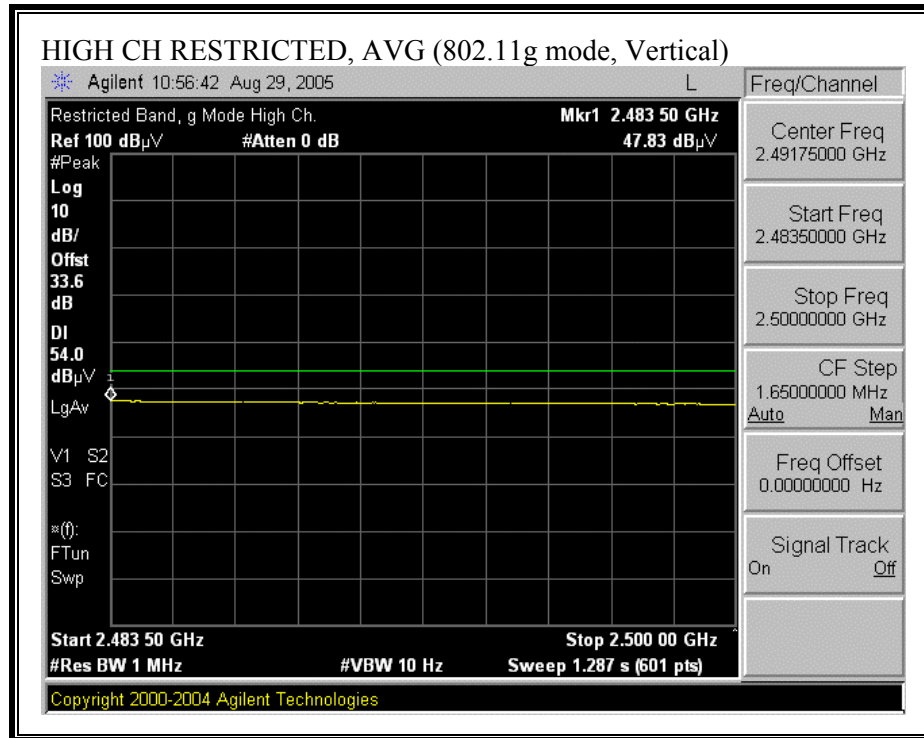
RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, VERTICAL)



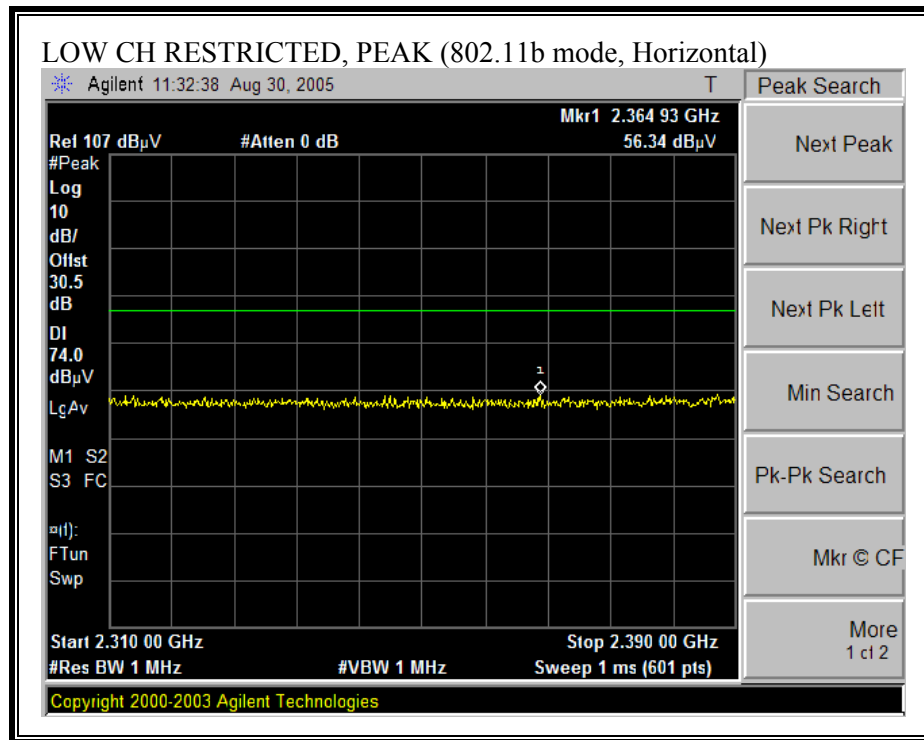


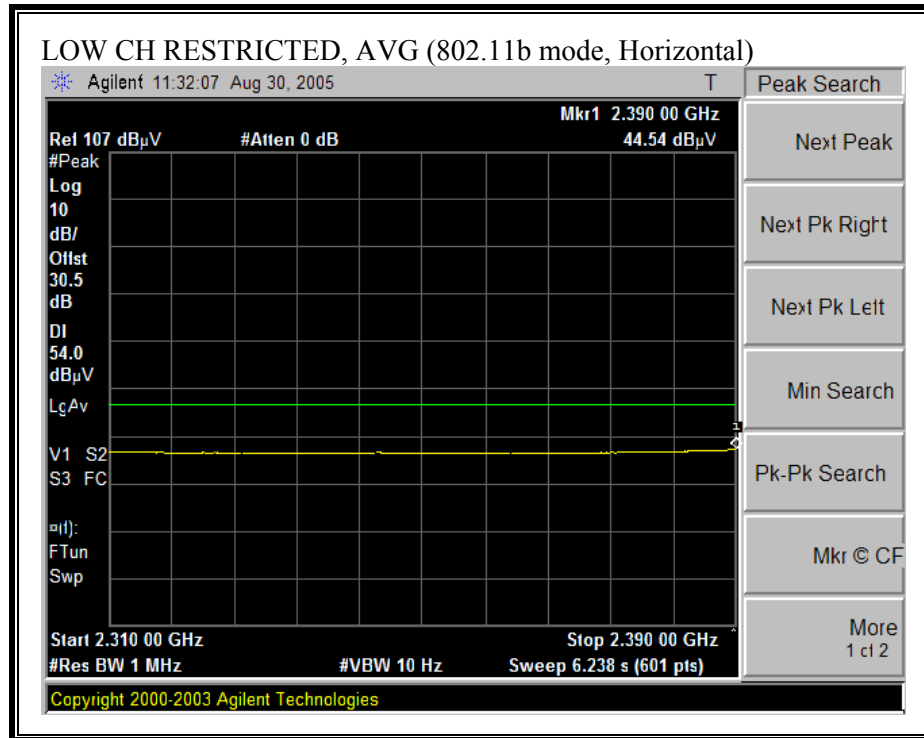
HARMONICS AND SPURIOUS EMISSIONS (g MODE)

08/30/05 High Frequency Measurement Compliance Certification Services, Morgan Hill Open Field Site															
Test Engr: Chin Pang Project #: 05U3647-1 Company: Vivato EUT Descrip.: 802.11 b/g Wireless Microcell EUT M/N: VA2410a Test Target: FCC15.247 Mode Oper: TX, g mode, YAGI Antenna (10dBi gain)															
Test Equipment:															
EMCO Horn 1-18GHz T60; S/N: 2238 @3m		Pre-amplifier 1-26GHz T34 HP 8449B		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit FCC 15.205							
Hi Frequency Cables										HPF		Reject Filter		Peak Measurements RBW=VBW=1MHz	
2 foot cable		3 foot cable		4 foot cable		12 foot cable		HPF_4.0GHz		Reject Filter		Average Measurements RBW=1MHz, VBW=10Hz			
3_Chin						12_Neelesh									
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filt dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch, 2412															
4.824	3.0	41.0	28.6	33.6	3.8	-33.6	0.0	0.6	45.4	33.0	74	54	-28.6	-21.0	V
4.824	3.0	40.6	28.5	33.6	3.8	-33.6	0.0	0.6	45.0	32.9	74	54	-29.0	-21.1	H
Mid Ch, 2437															
4.874	3.0	41.3	28.4	33.7	3.8	-33.5	0.0	0.6	45.8	32.9	74	54	-28.2	-21.1	V
7.311	3.0	58.3	42.8	36.2	4.9	-33.3	0.0	0.6	66.7	51.2	74	54	-7.3	-2.8	V
4.874	3.0	42.5	31.0	33.7	3.8	-33.5	0.0	0.6	47.0	35.5	74	54	-27.0	-18.5	H
7.311	3.0	62.5	42.5	36.2	4.9	-33.3	0.0	0.6	70.9	50.9	74	54	-3.1	-3.1	H
High Ch, 2462															
4.924	3.0	40.0	28.8	33.7	3.8	-33.5	0.0	0.6	44.6	33.4	74	54	-29.4	-20.6	V
7.386	3.0	50.3	29.0	36.2	4.9	-33.3	0.0	0.6	58.8	37.5	74	54	-15.2	-16.5	V
4.924	3.0	42.7	29.0	33.7	3.8	-33.5	0.0	0.6	47.3	33.6	74	54	-26.7	-20.4	H
7.386	3.0	62.8	31.0	36.2	4.9	-33.3	0.0	0.6	71.3	39.5	74	54	-2.7	-14.5	H
Note: No other emissions were detected above the system noise floor.															
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								

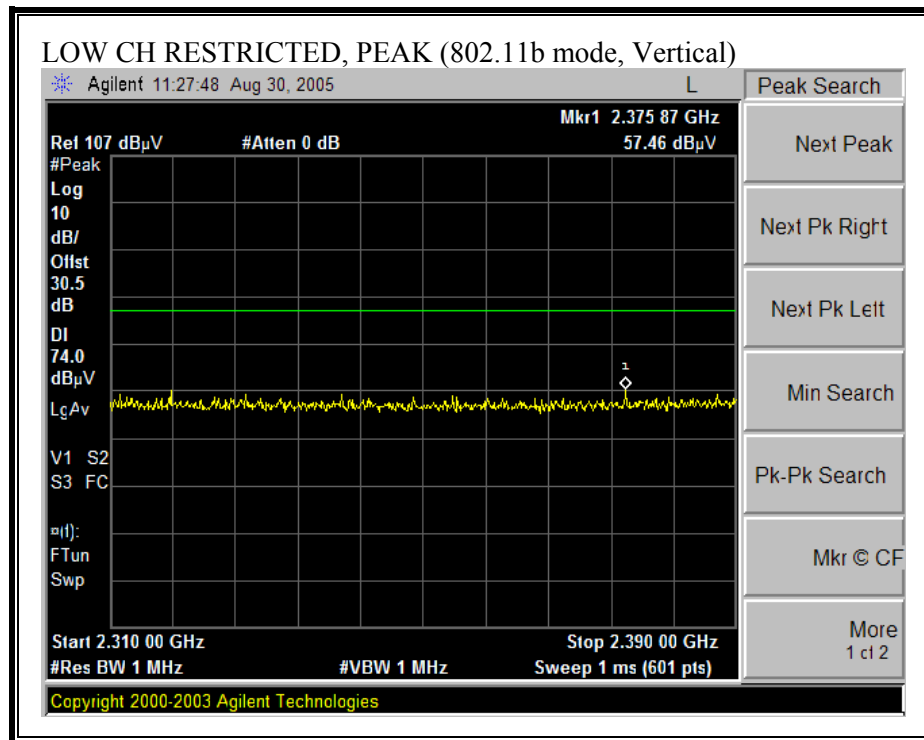
7.2.5. EMISSIONS ABOVE 1 GHz WITH 8.5 dBi OMNIDIRECTIONAL ANTENNA

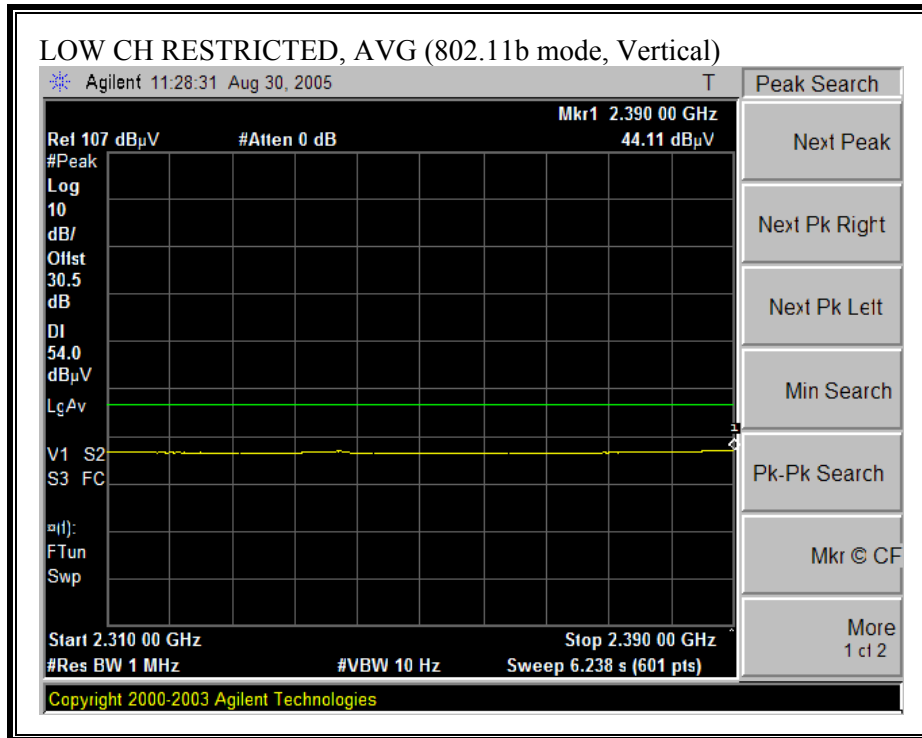
RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, HORIZONTAL)



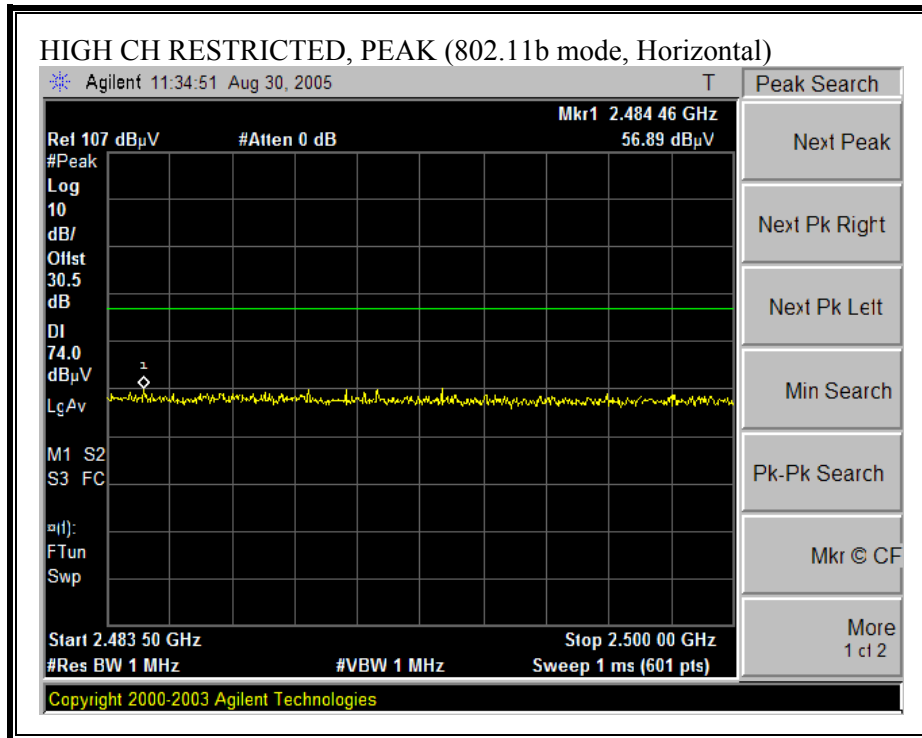


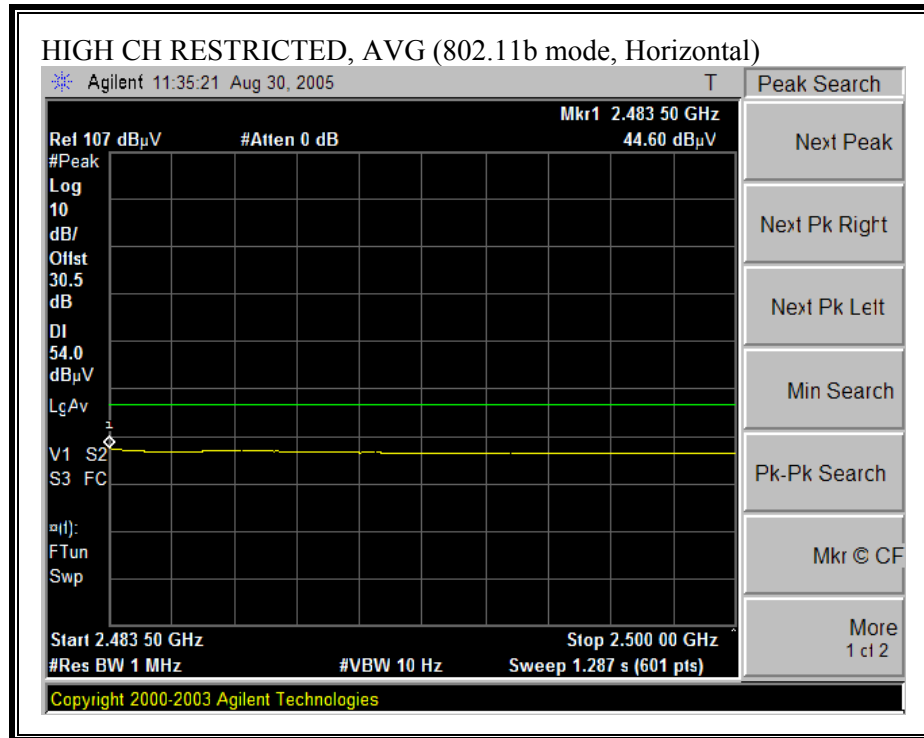
RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, VERTICAL)



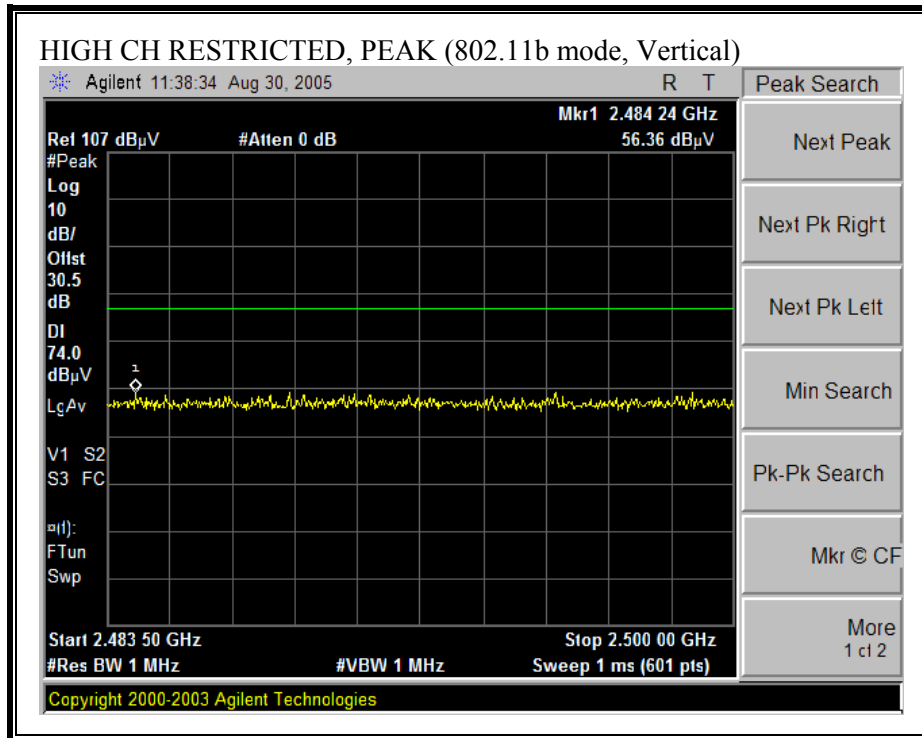


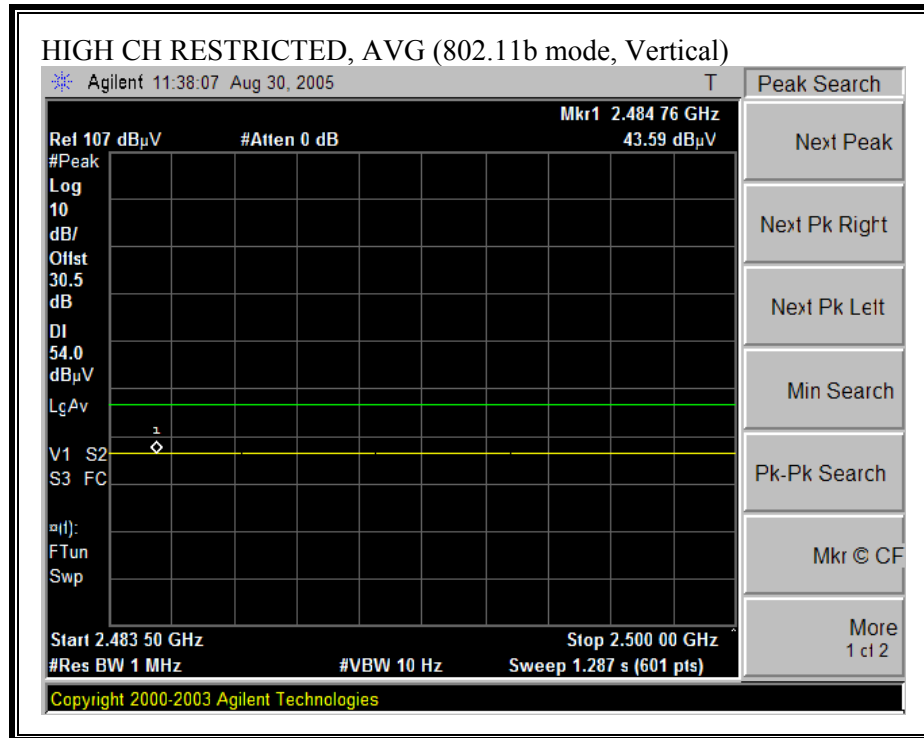
RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, VERTICAL)

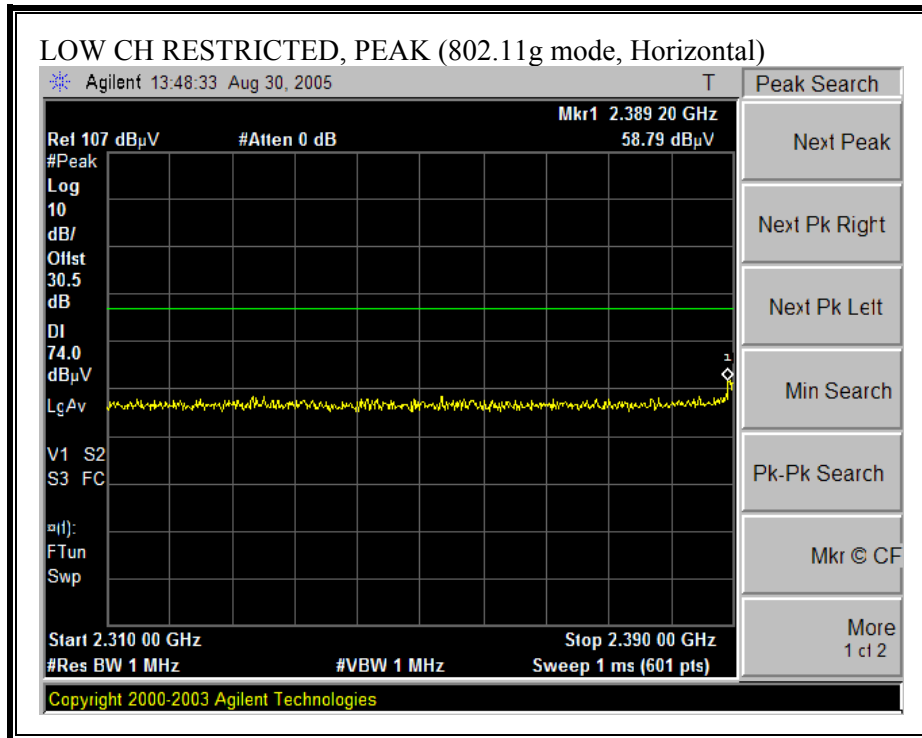


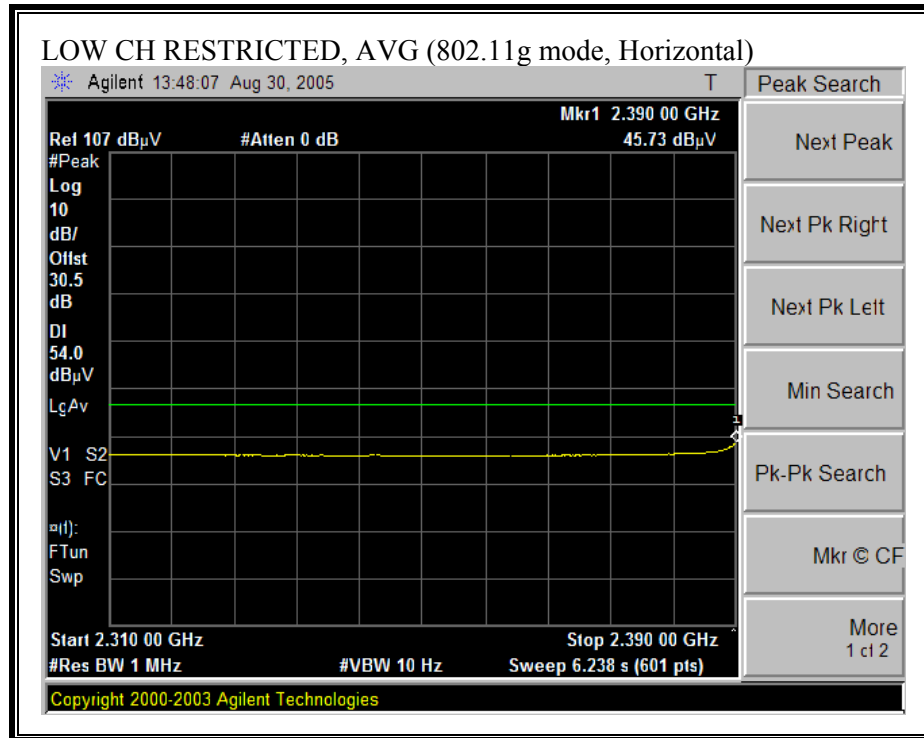


HARMONICS AND SPURIOUS EMISSIONS (b MODE)

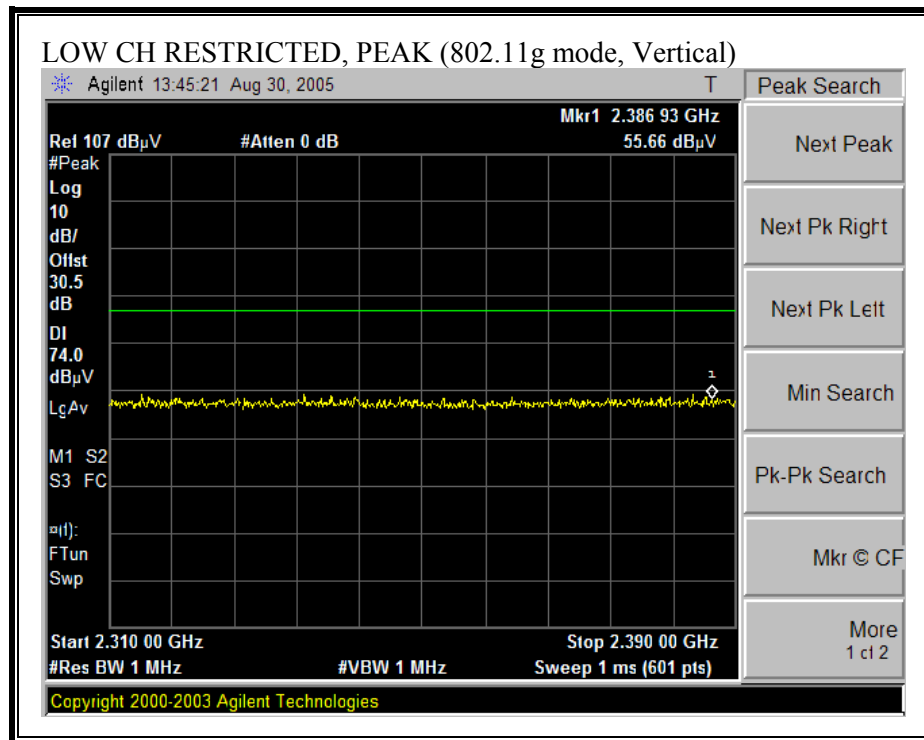
08/30/05 High Frequency Measurement Compliance Certification Services, Morgan Hill Open Field Site																
Test Engr: Chin Pang Project #: 05U3647-1 Company: Vivato EUT Descrip.: 802.11 b/g Wireless Microcell EUT M/N: VA2410a Test Target: FCC15.247 Mode Oper: TX, b mode, Omni Antenna (8.5dBi gain), horizontal polarization																
Test Equipment:																
EMCO Horn 1-18GHz T60; S/N: 2238 @3m		Pre-amplifier 1-26GHz T34 HP 8449B		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit FCC 15.205								
Hi Frequency Cables										HPF		Reject Filter		Peak Measurements RBW=VBW=1MHz		
2 foot cable		3 foot cable		4 foot cable		12 foot cable		HPF_4.0GHz		Reject Filter		Average Measurements RBW=1MHz, VBW=10Hz				
3_Chin						12_Neelesh										
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filt dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)	
Low Ch, 2412																
4.824	3.0	40.0	27.8	33.6	3.8	-33.6	0.0	0.6	44.4	32.2	74	54	-29.6	-21.8	V	
4.824	3.0	40.5	28.0	33.6	3.8	-33.6	0.0	0.6	44.9	32.4	74	54	-29.1	-21.6	H	
Mid Ch, 2437																
4.874	3.0	40.0	28.0	33.7	3.8	-33.5	0.0	0.6	44.5	32.5	74	54	-29.5	-21.5	V	
7.311	3.0	40.5	28.0	36.2	4.9	-33.3	0.0	0.6	48.9	36.4	74	54	-25.1	-17.6	V	
4.874	3.0	40.6	28.2	33.7	3.8	-33.5	0.0	0.6	45.1	32.7	74	54	-28.9	-21.3	H	
7.311	3.0	40.4	28.4	36.2	4.9	-33.3	0.0	0.6	48.8	36.8	74	54	-25.2	-17.2	H	
High Ch, 2462																
4.924	3.0	40.7	28.4	33.7	3.8	-33.5	0.0	0.6	45.3	33.0	74	54	-28.7	-21.0	V	
7.386	3.0	41.5	28.2	36.2	4.9	-33.3	0.0	0.6	50.0	36.7	74	54	-24.0	-17.3	V	
4.924	3.0	40.6	28.0	33.7	3.8	-33.5	0.0	0.6	45.2	32.6	74	54	-28.8	-21.4	H	
7.386	3.0	55.2	31.0	36.2	4.9	-33.3	0.0	0.6	63.7	39.5	74	54	-10.3	-14.5	H	
Note: No other emissions were detected above the system noise floor.																
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									

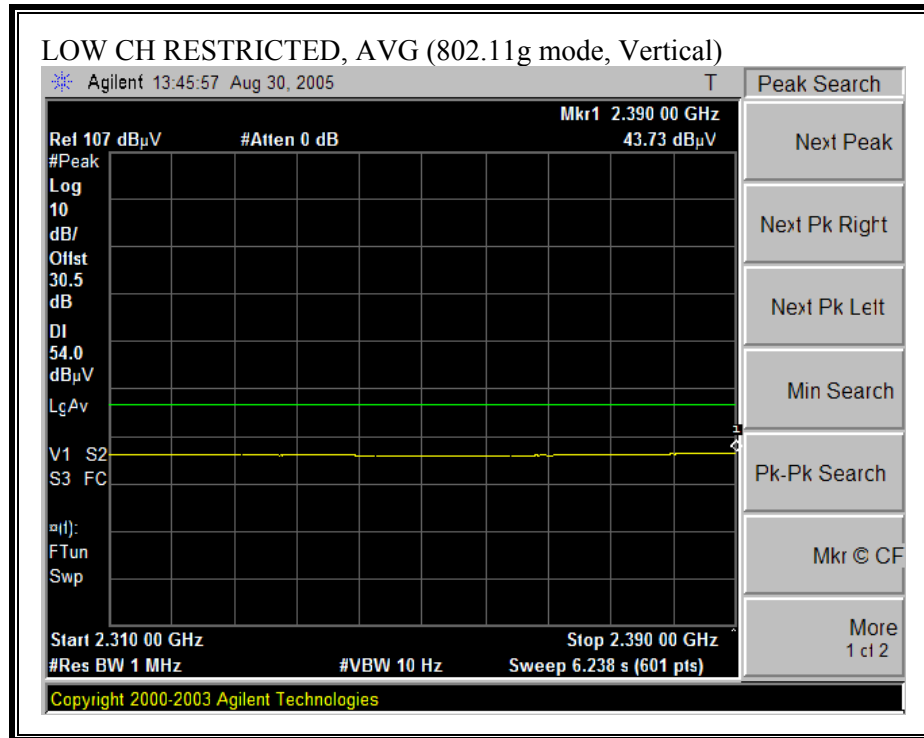
RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, HORIZONTAL)



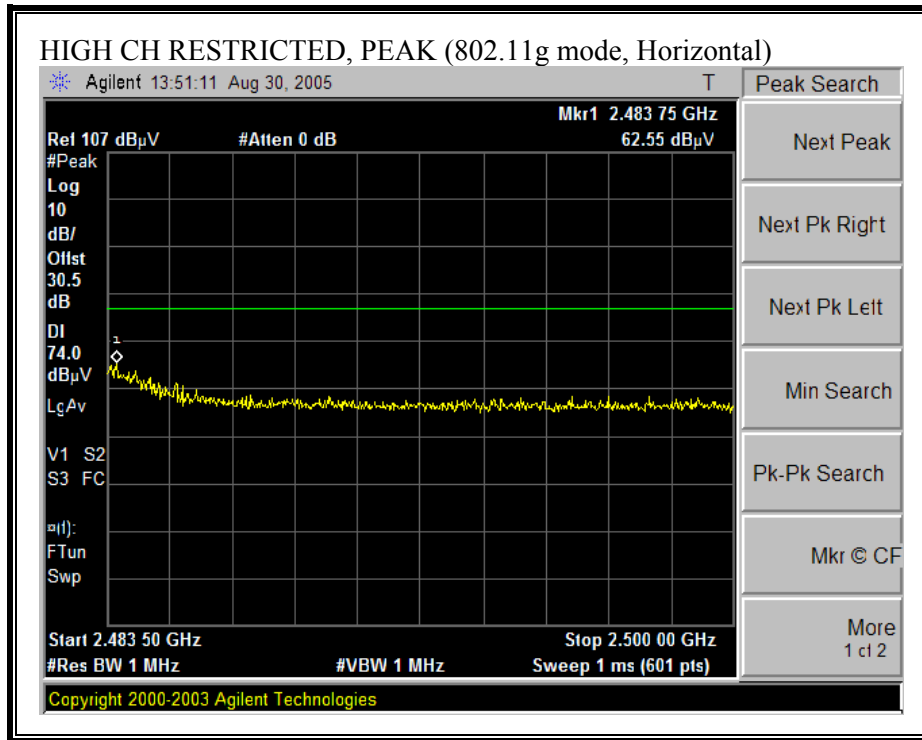


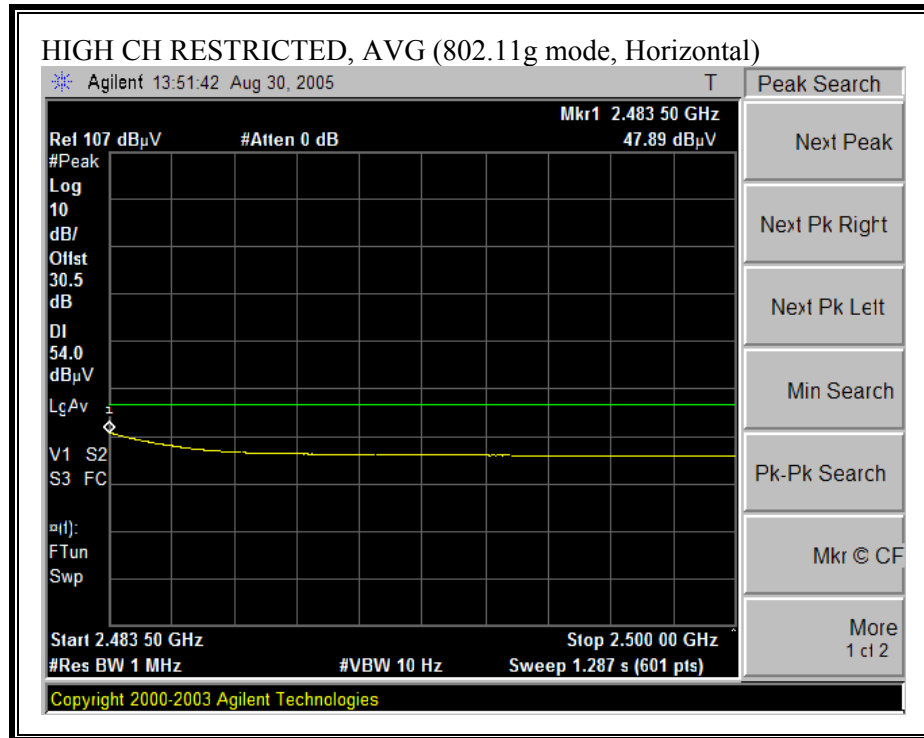
RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, VERTICAL)



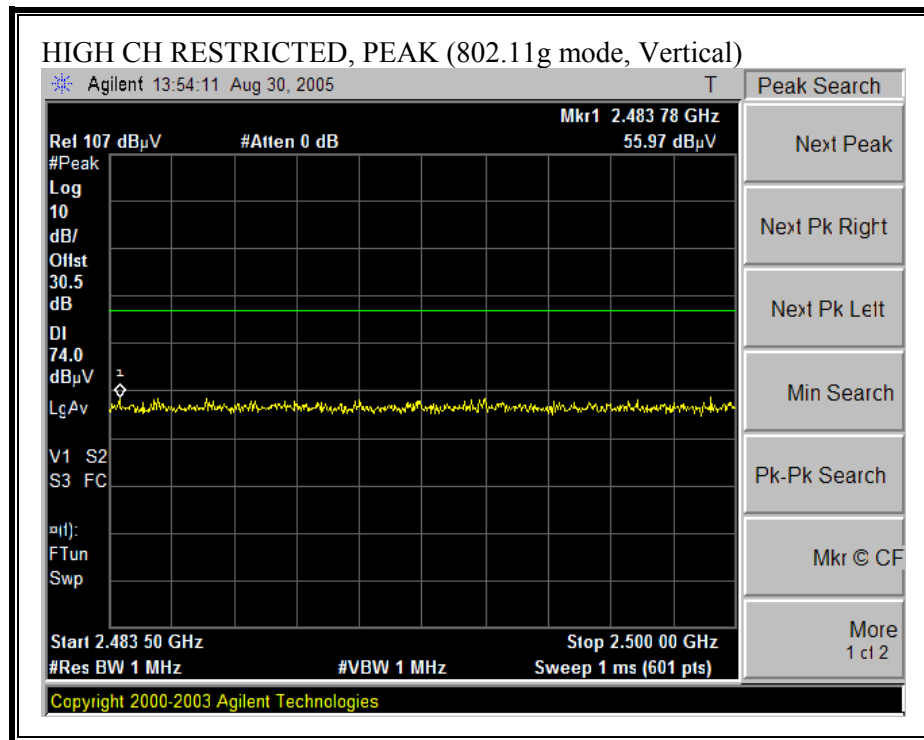


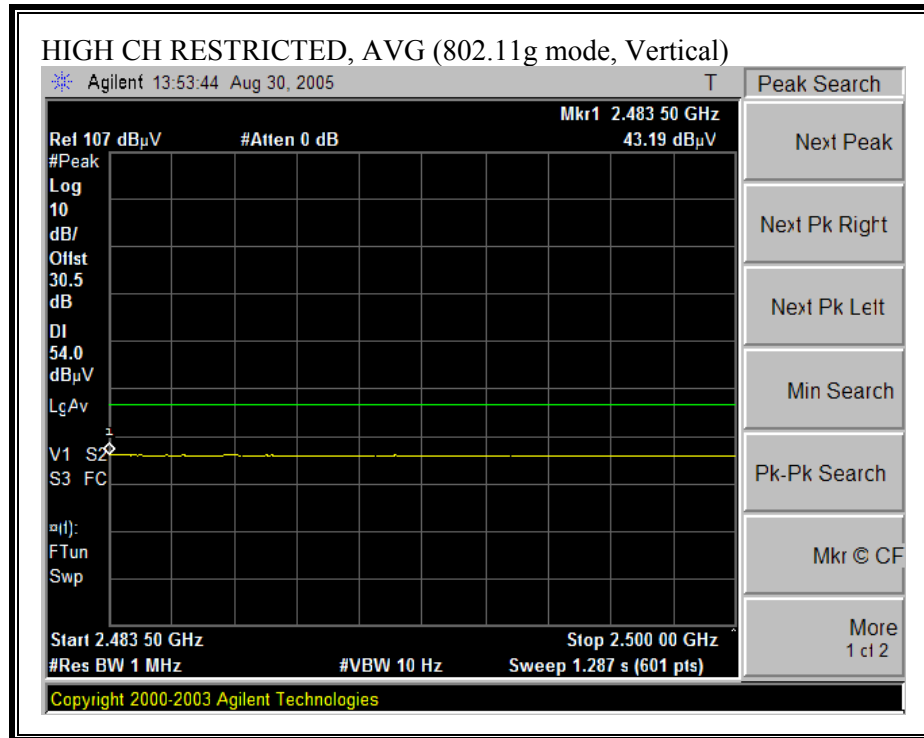
RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS (g MODE)

08/30/05 High Frequency Measurement
Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Chin Pang
Project #: 05U3647-1
Company: Vivato
EUT Descrip.: 802.11 b/g Wireless Microcell
EUT M/N: VA2410a
Test Target: FCC15.247
Mode Oper: TX, g mode, Omni Antenna (8.5dBi gain), horizontal polarization

Test Equipment:

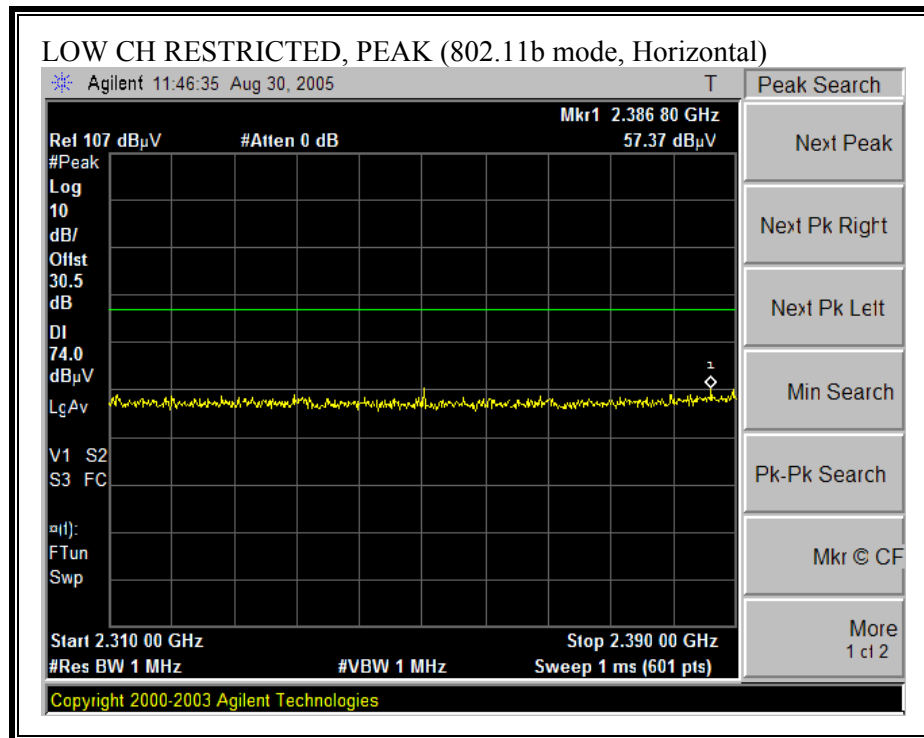
EMCO Horn 1-18GHz T60; S/N: 2238 @3m	Pre-amplifier 1-26GHz T34 HP 8449B	Pre-amplifier 26-40GHz	Horn > 18GHz	Limit FCC 15.205
Hi Frequency Cables				
2 foot cable	3 foot cable 3_Chin	4 foot cable	12 foot cable 12_Neelesh	HPF HPF_4.0GHz
Reject Filter				
Peak Measurements RBW=VBW=1MHz				
Average Measurements RBW=1MHz, VBW=10Hz				

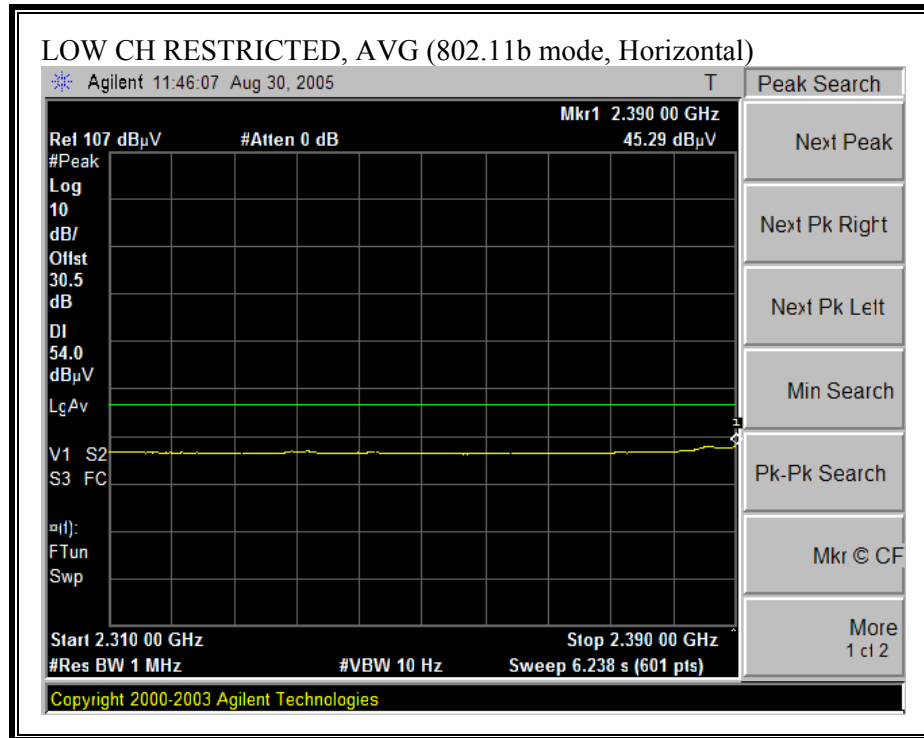
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filt dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch, 2412															
4.824	3.0	39.8	27.5	33.6	3.8	-33.6	0.0	0.6	44.2	31.9	74	54	-29.8	-22.1	V
4.824	3.0	41.0	28.0	33.6	3.8	-33.6	0.0	0.6	45.4	32.4	74	54	-28.6	-21.6	H
Mid Ch, 2437															
4.874	3.0	40.6	27.7	33.7	3.8	-33.5	0.0	0.6	45.1	32.2	74	54	-28.9	-21.8	V
7.311	3.0	56.0	40.1	36.2	4.9	-33.3	0.0	0.6	64.4	48.5	74	54	-9.6	-5.5	V
4.874	3.0	40.5	28.0	33.7	3.8	-33.5	0.0	0.6	45.0	32.5	74	54	-29.0	-21.5	H
7.311	3.0	55.2	39.5	36.2	4.9	-33.3	0.0	0.6	63.6	47.9	74	54	-10.4	-6.1	H
High Ch, 2462															
4.924	3.0	41.0	28.3	33.7	3.8	-33.5	0.0	0.6	45.6	32.9	74	54	-28.4	-21.1	V
7.386	3.0	46.0	28.5	36.2	4.9	-33.3	0.0	0.6	54.5	37.0	74	54	-19.5	-17.0	V
4.924	3.0	41.4	28.3	33.7	3.8	-33.5	0.0	0.6	46.0	32.9	74	54	-28.0	-21.1	H
7.386	3.0	55.0	30.0	36.2	4.9	-33.3	0.0	0.6	63.5	38.5	74	54	-10.5	-15.5	H
Note: No other emissions were detected above the system noise floor.															

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		

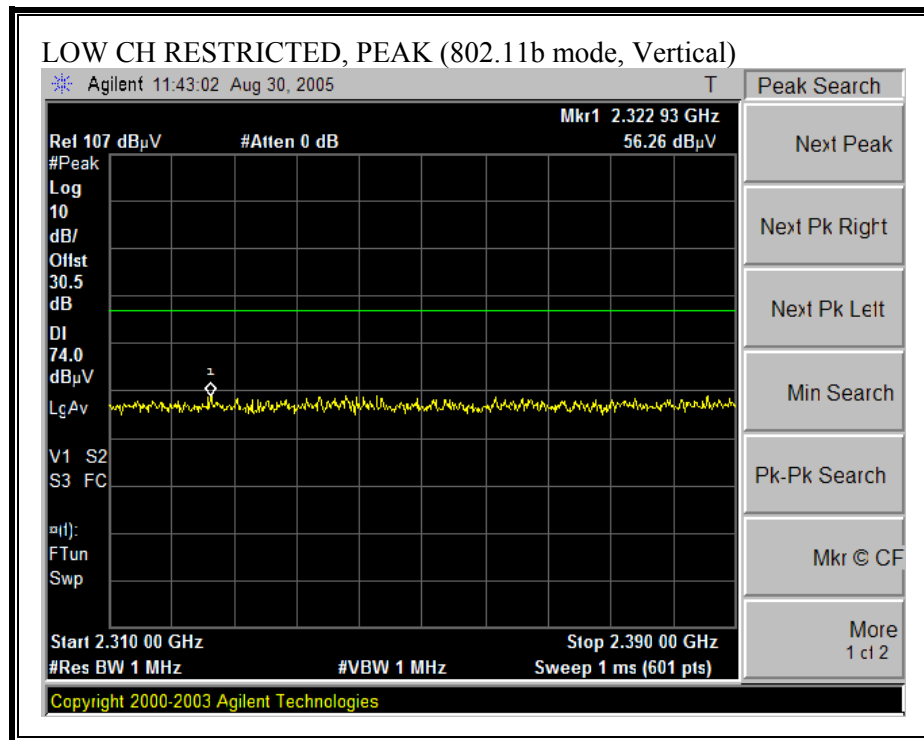
7.2.6. EMISSIONS ABOVE 1 GHz WITH 8.5 dBi HORIZONTALLY POLARIZED PANEL ANTENNA

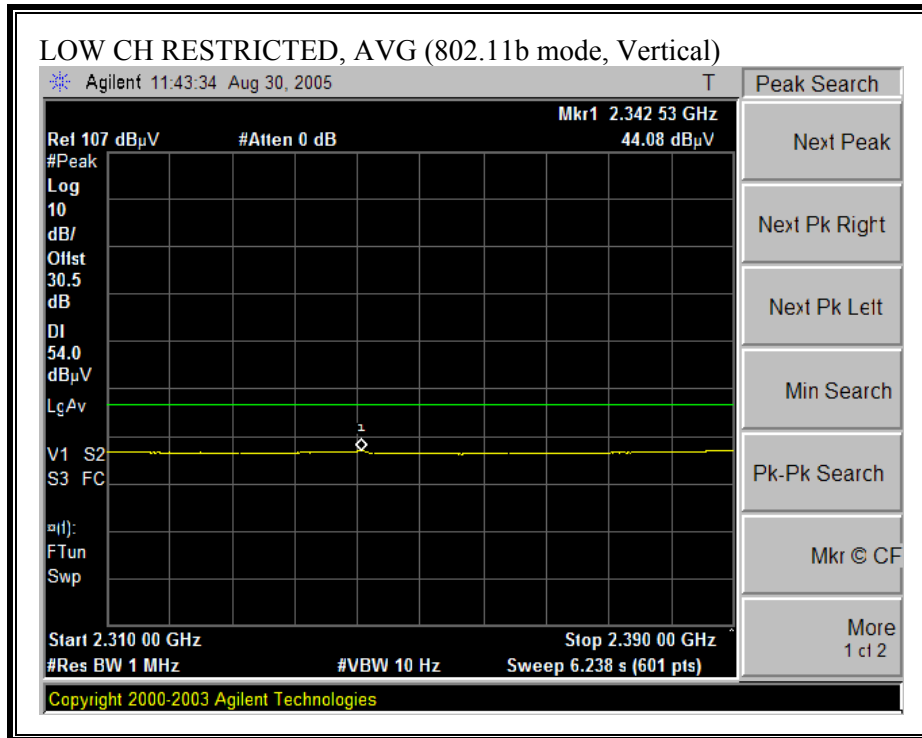
RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, HORIZONTAL)



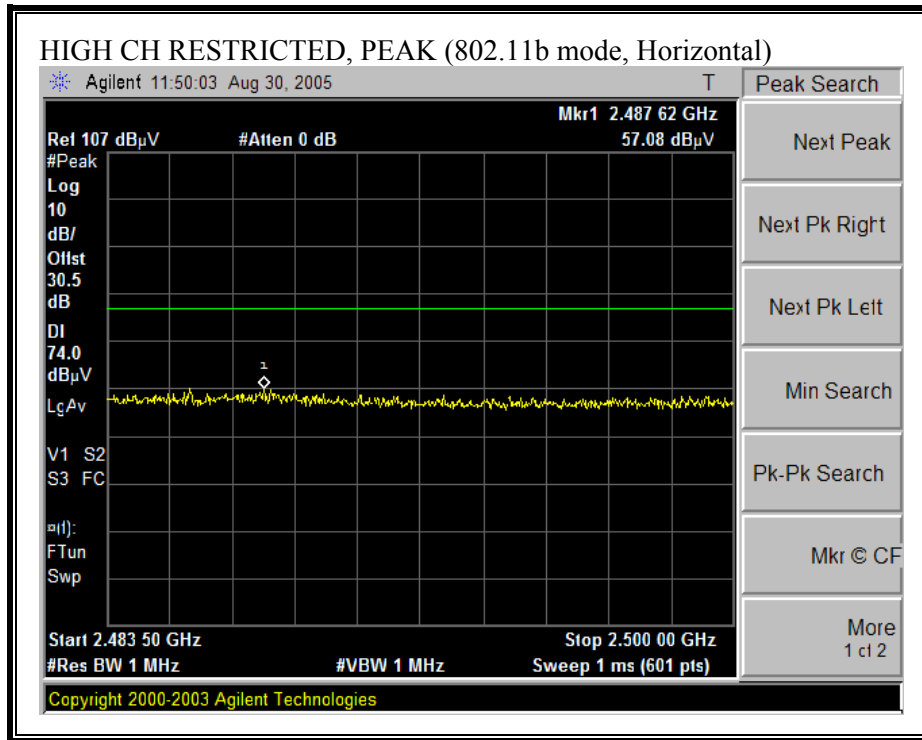


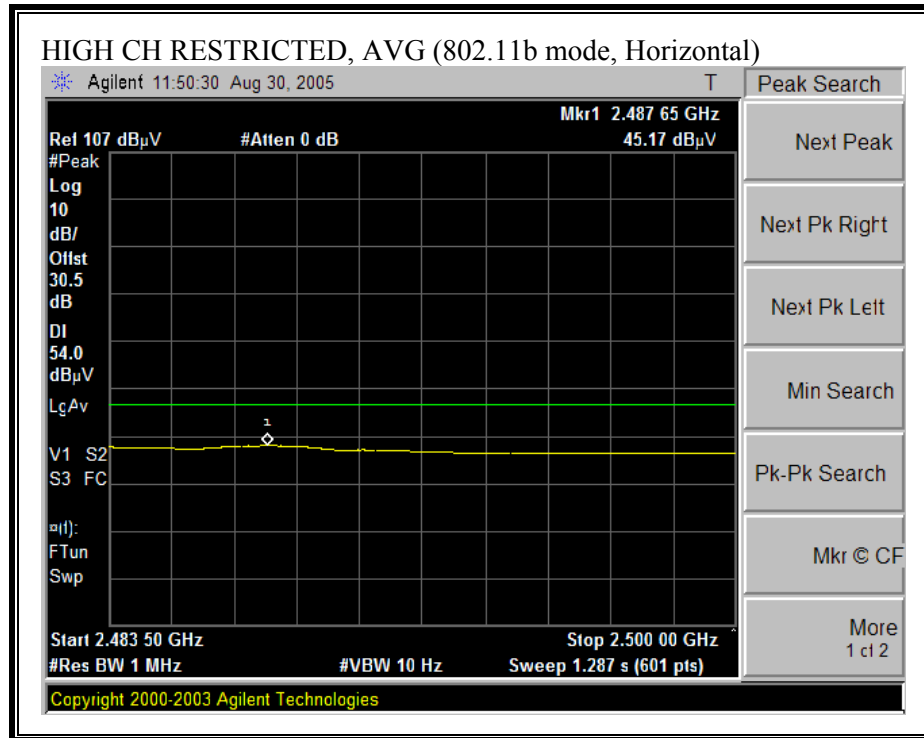
RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, VERTICAL)



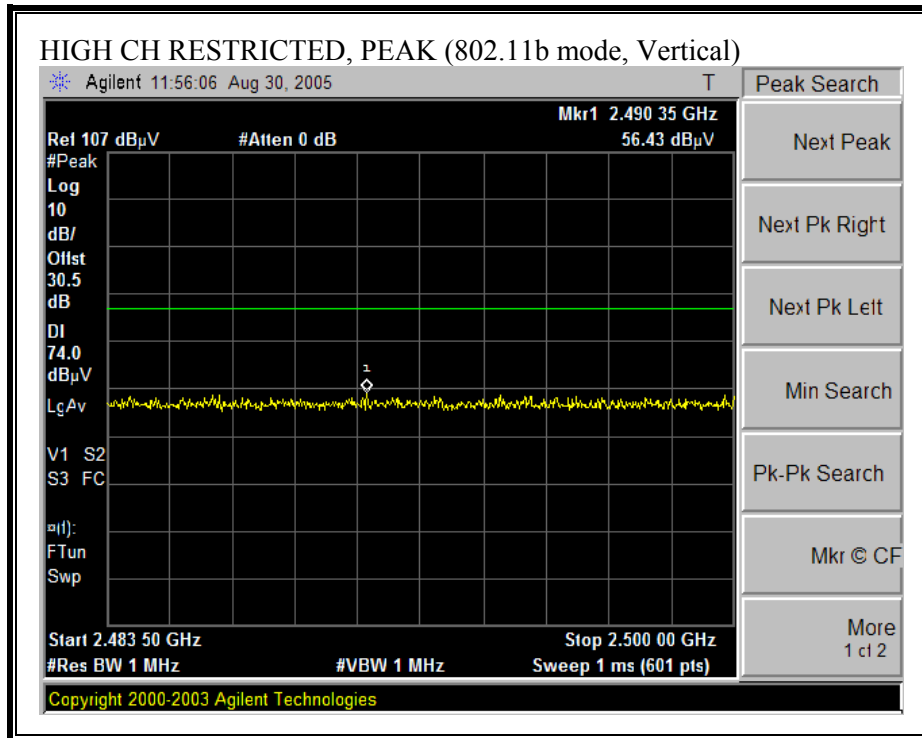


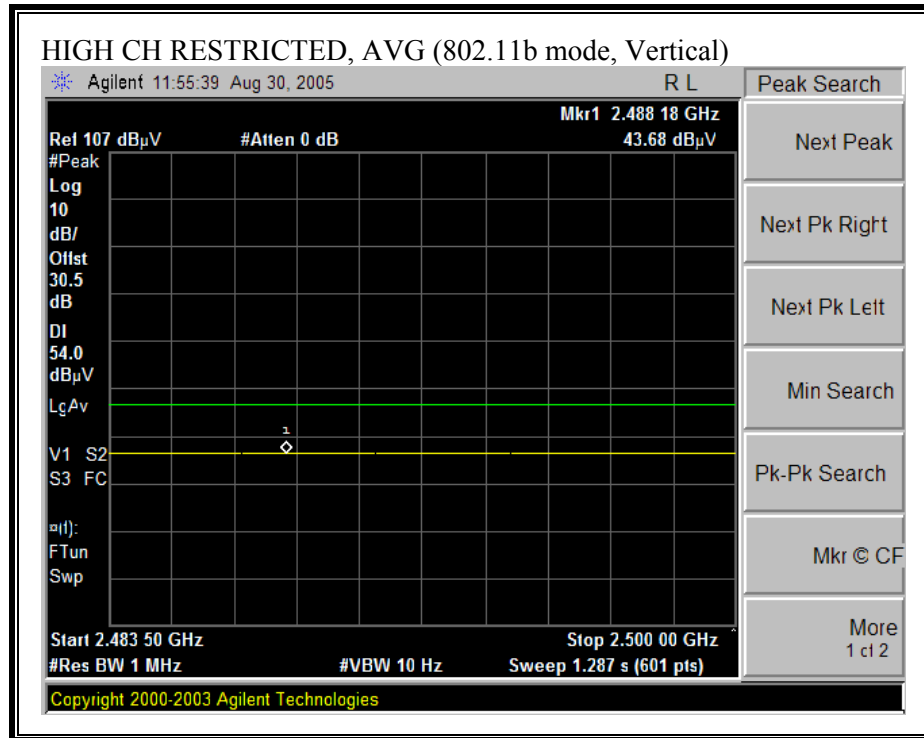
RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, VERTICAL)

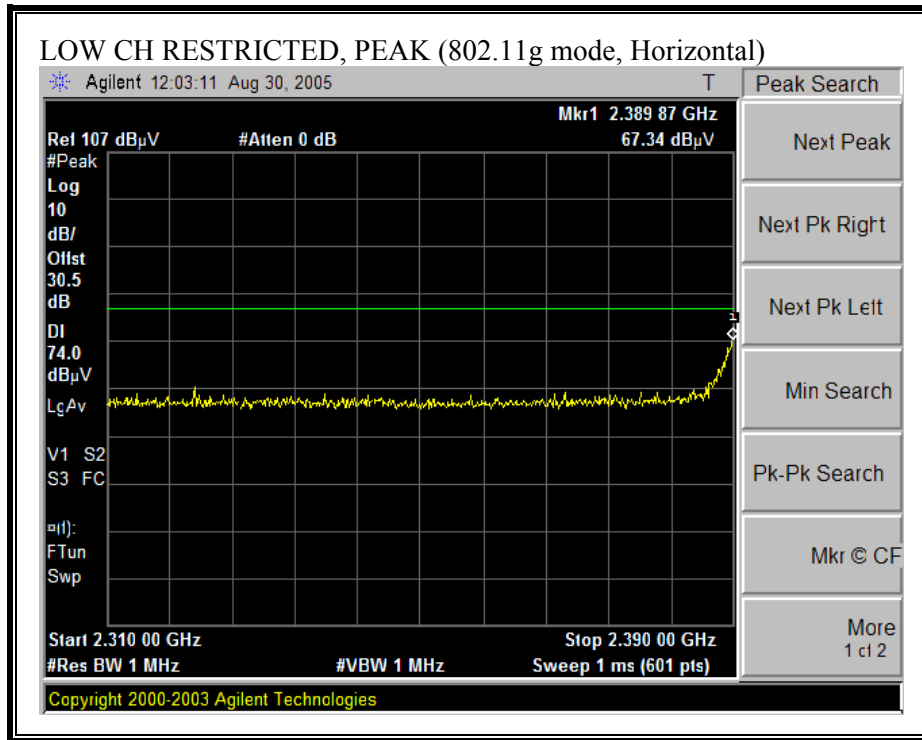


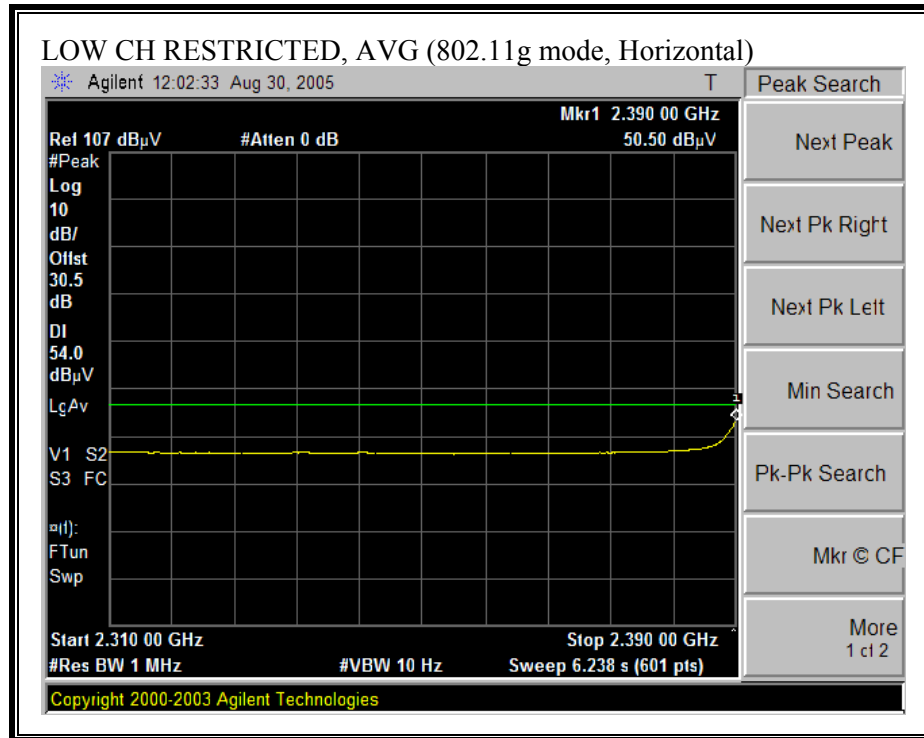


HARMONICS AND SPURIOUS EMISSIONS (b MODE)

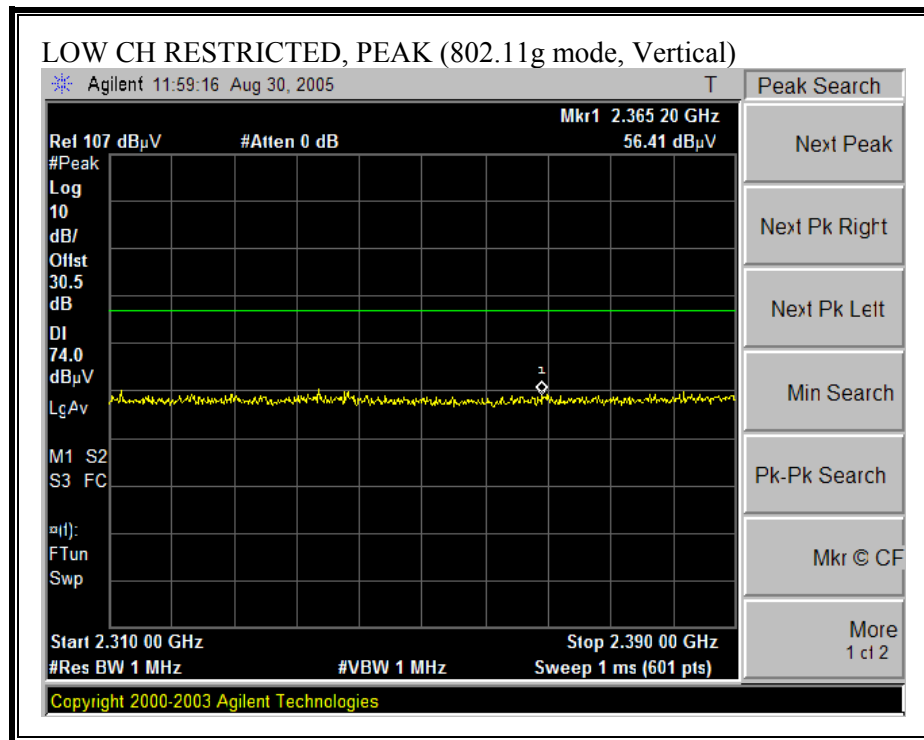
08/30/05 High Frequency Measurement Compliance Certification Services, Morgan Hill Open Field Site															
Test Engr: Chin Pang Project #: 05U3647-1 Company: Vivato EUT Descrip.: 802.11 b/g Wireless Microcell EUT M/N: VA2410a Test Target: FCC15.247 Mode Oper: TX, b mode, Panel Antenna (8.5 dBi gain), horizontal polarization															
Test Equipment:															
EMCO Horn 1-18GHz T60; S/N: 2238 @3m		Pre-amplifier 1-26GHz T34 HP 8449B		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit FCC 15.205							
Hi Frequency Cables		2 foot cable 3_Chin		3 foot cable		4 foot cable		12 foot cable 12_Neelash		HPF HPF_4.0GHz		Reject Filter		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	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch, 2412															
4.824	3.0	40.2	28.0	33.6	3.8	-33.6	0.0	0.6	44.6	32.4	74	54	-29.4	-21.6	V
4.824	3.0	40.0	27.7	33.6	3.8	-33.6	0.0	0.6	44.4	32.1	74	54	-29.6	-21.9	H
Mid Ch, 2437															
4.874	3.0	40.0	27.8	33.7	3.8	-33.5	0.0	0.6	44.5	32.3	74	54	-29.5	-21.7	V
7.311	3.0	40.0	28.2	36.2	4.9	-33.3	0.0	0.6	48.4	36.6	74	54	-25.6	-17.4	V
4.874	3.0	40.5	28.0	33.7	3.8	-33.5	0.0	0.6	45.0	32.5	74	54	-29.0	-21.5	H
7.311	3.0	40.7	28.4	36.2	4.9	-33.3	0.0	0.6	49.1	36.8	74	54	-24.9	-17.2	H
High Ch, 2462															
4.924	3.0	41.3	28.1	33.7	3.8	-33.5	0.0	0.6	45.9	32.7	74	54	-28.1	-21.3	V
7.386	3.0	41.6	30.0	36.2	4.9	-33.3	0.0	0.6	50.1	38.5	74	54	-23.9	-15.5	V
4.924	3.0	41.0	28.3	33.7	3.8	-33.5	0.0	0.6	45.6	32.9	74	54	-28.4	-21.1	H
7.386	3.0	44.0	35.0	36.2	4.9	-33.3	0.0	0.6	52.5	43.5	74	54	-21.5	-10.5	H
Note: No other emissions were detected above the system noise floor.															
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										

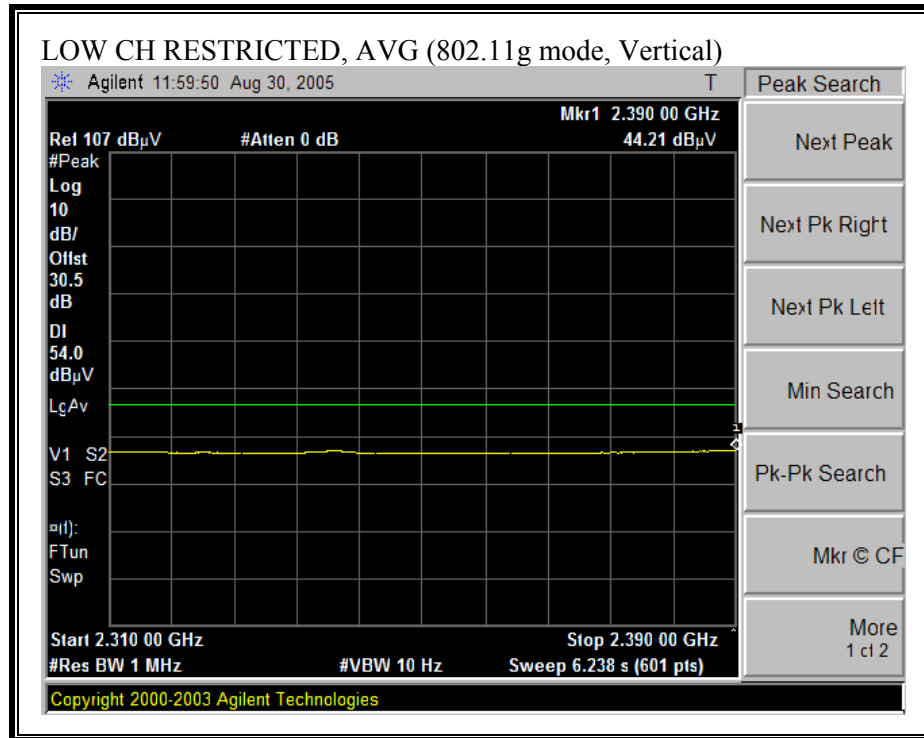
RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, HORIZONTAL)



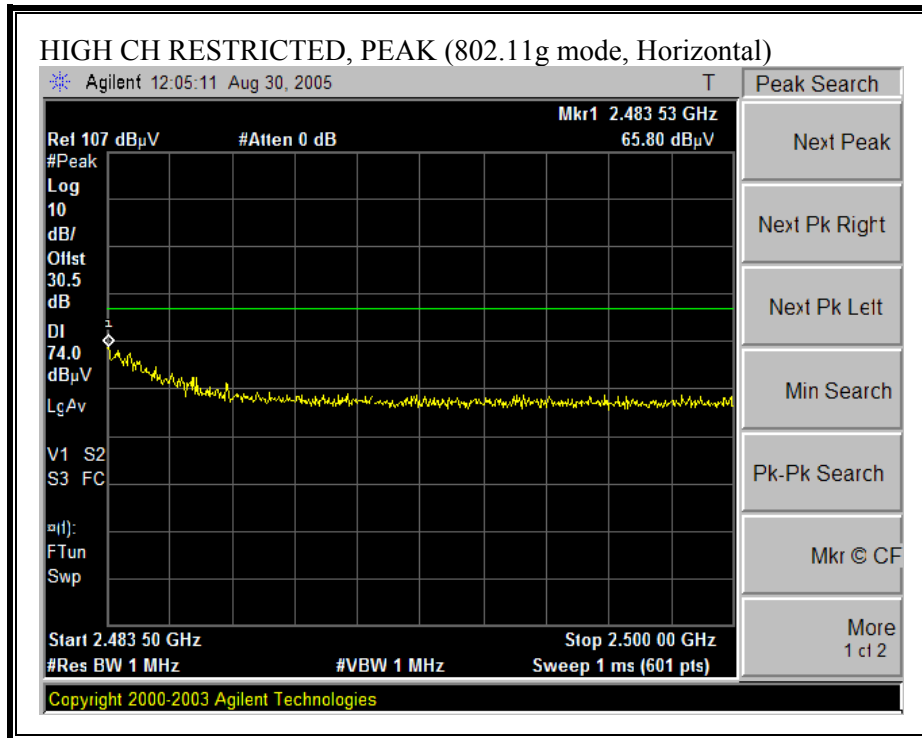


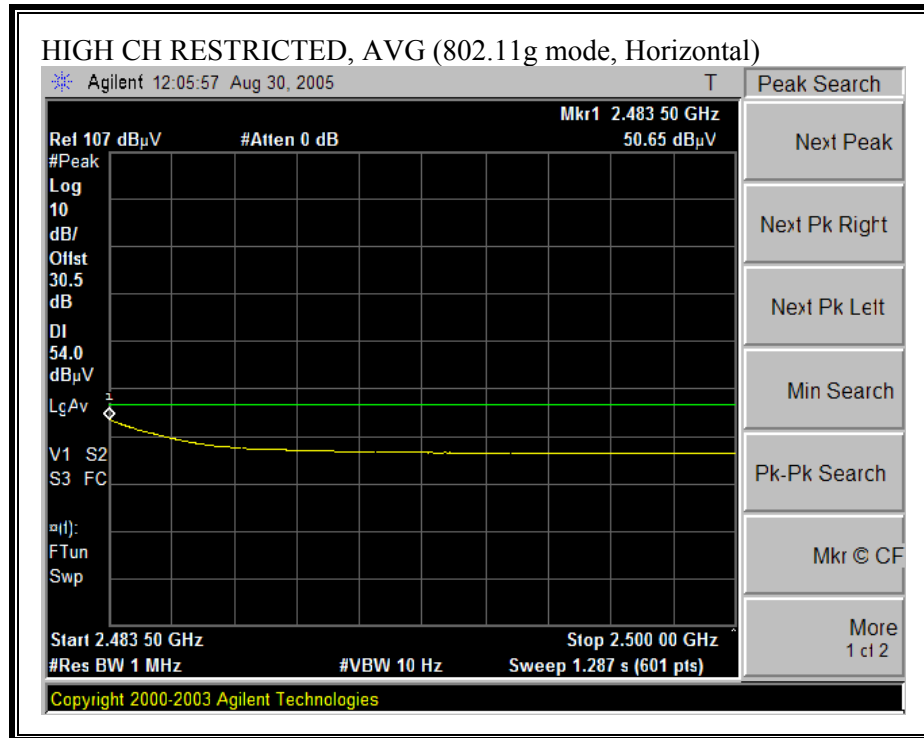
RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, VERTICAL)



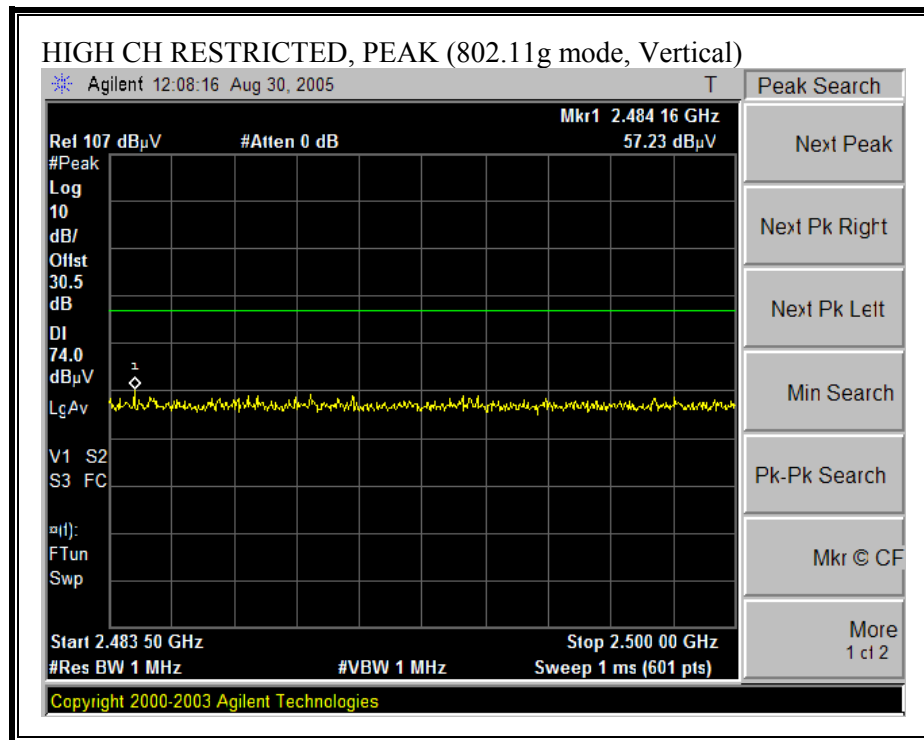


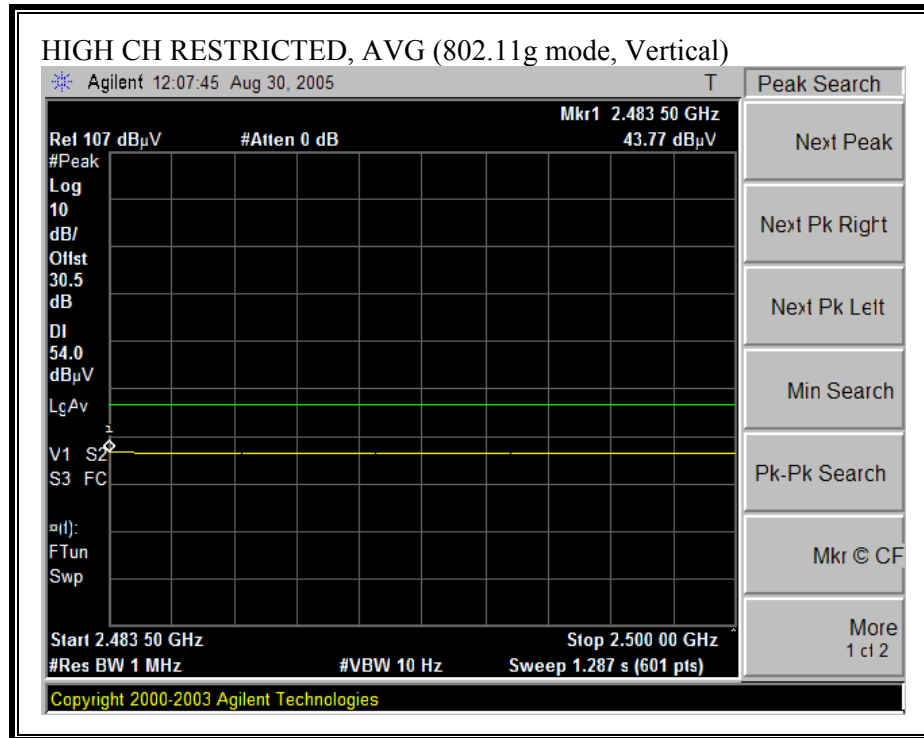
RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, VERTICAL)



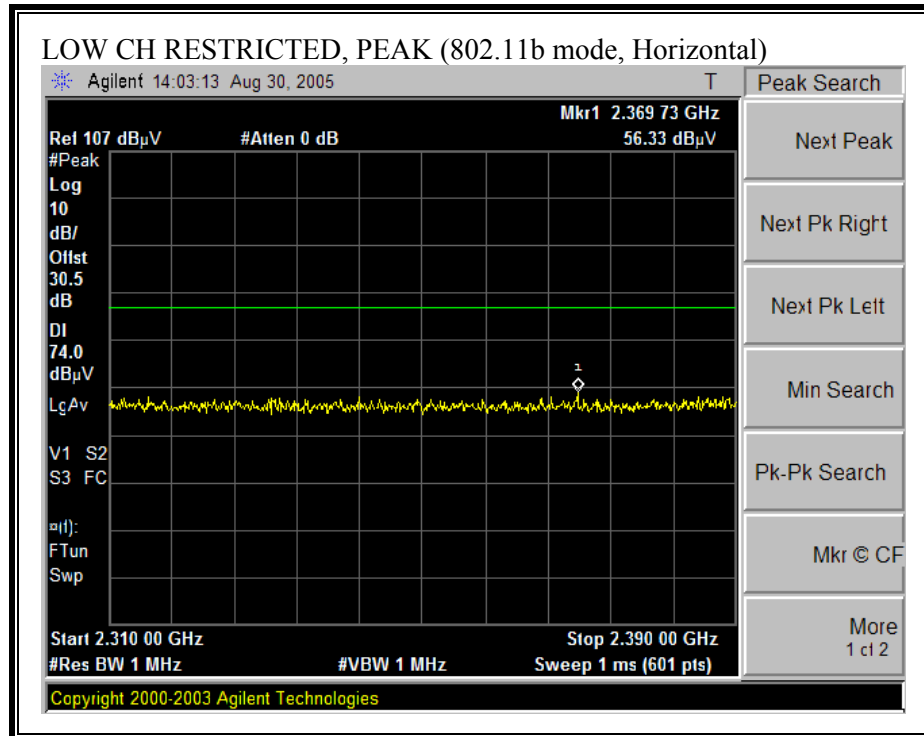


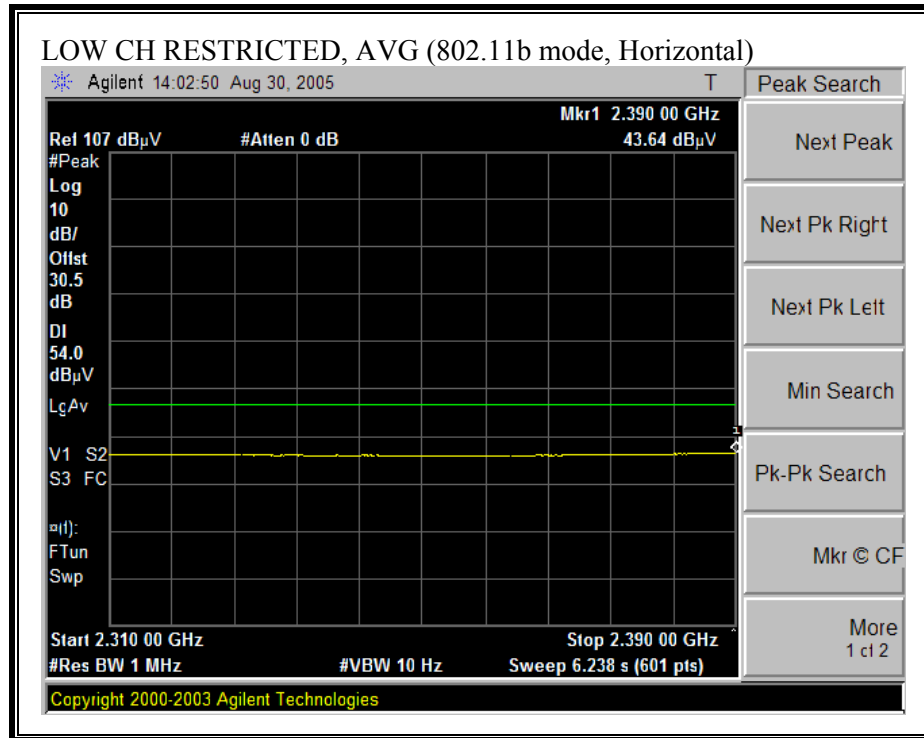
HARMONICS AND SPURIOUS EMISSIONS (g MODE)

08/30/05 High Frequency Measurement Compliance Certification Services, Morgan Hill Open Field Site															
Test Engr: Chin Pang Project #: 05U3647-1 Company: Vivato EUT Descrip.: 802.11 b/g Wireless Microcell EUT M/N: VA2410a Test Target: FCC15.247 Mode Oper: TX, g mode, Panel Antenna (8.5 dBi gain), horizontal polarization															
Test Equipment:															
EMCO Horn 1-18GHz T60; S/N: 2238 @3m		Pre-amplifier 1-26GHz T34 HP 8449B		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit FCC 15.205							
Hi Frequency Cables				HPF		Reject Filter		Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz, VBW=10Hz							
2 foot cable		3 foot cable		4 foot cable		12 foot cable		HPF_4.0GHz		Reject Filter					
3_Chin		12_Neelesh													
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filt dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch, 2412															
4.824	3.0	40.2	27.8	33.6	3.8	-33.6	0.0	0.6	44.6	32.2	74	54	-29.4	-21.8	V
4.824	3.0	40.0	27.5	33.6	3.8	-33.6	0.0	0.6	44.4	31.9	74	54	-29.6	-22.1	H
Mid Ch, 2437															
4.874	3.0	40.0	27.7	33.7	3.8	-33.5	0.0	0.6	44.5	32.2	74	54	-29.5	-21.8	V
7.311	3.0	50.7	33.0	36.2	4.9	-33.3	0.0	0.6	59.1	41.4	74	54	-14.9	-12.6	V
4.874	3.0	40.5	27.8	33.7	3.8	-33.5	0.0	0.6	45.0	32.3	74	54	-29.0	-21.7	H
7.311	3.0	58.1	38.5	36.2	4.9	-33.3	0.0	0.6	66.5	46.9	74	54	-7.5	-7.1	H
High Ch, 2462															
4.924	3.0	40.5	27.6	33.7	3.8	-33.5	0.0	0.6	45.1	32.2	74	54	-28.9	-21.8	V
7.386	3.0	48.0	28.8	36.2	4.9	-33.3	0.0	0.6	56.5	37.3	74	54	-17.5	-16.7	V
4.924	3.0	40.6	28.0	33.7	3.8	-33.5	0.0	0.6	45.2	32.6	74	54	-28.8	-21.4	H
7.386	3.0	55.2	31.0	36.2	4.9	-33.3	0.0	0.6	63.7	39.5	74	54	-10.3	-14.5	H
Note: No other emissions were detected above the system noise floor.															
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										

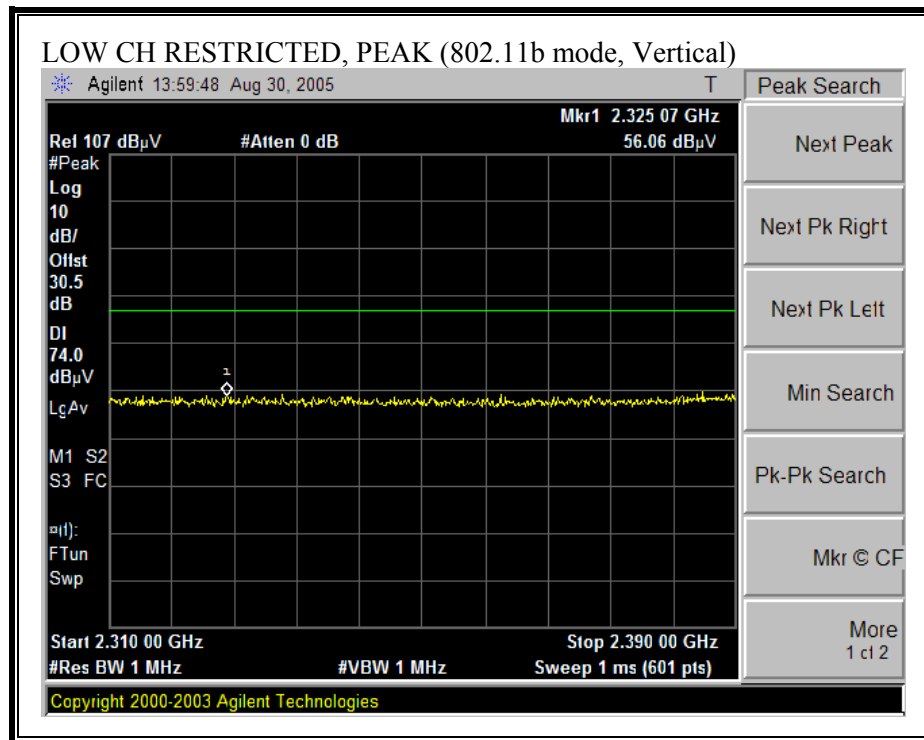
7.2.7. EMISSIONS ABOVE 1 GHz WITH 8.5 dBi VERTICALLY POLARIZED PANEL ANTENNA

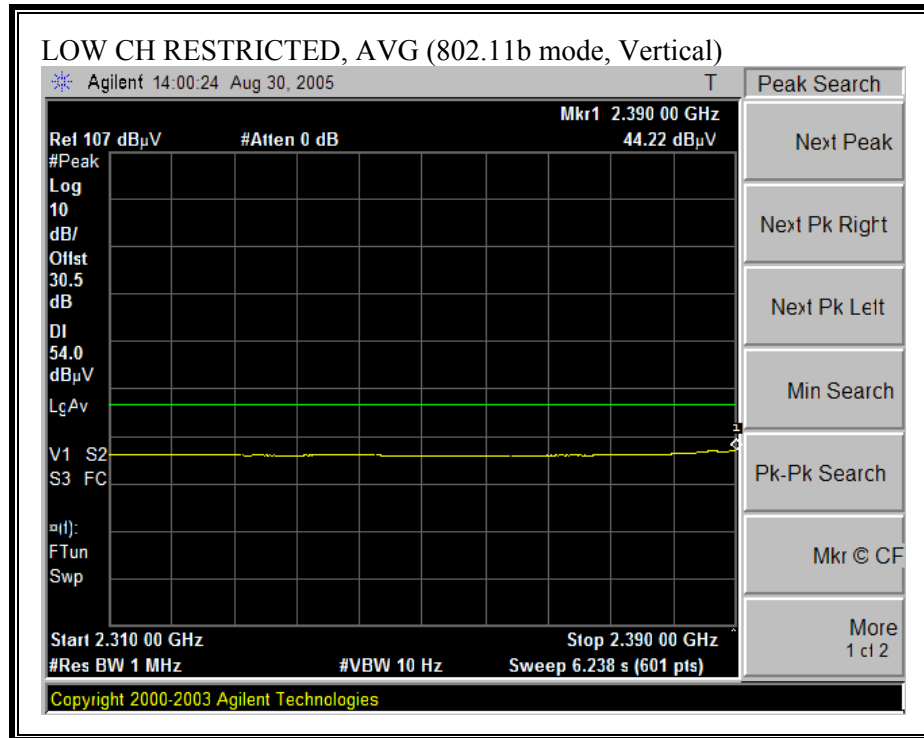
RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, HORIZONTAL)



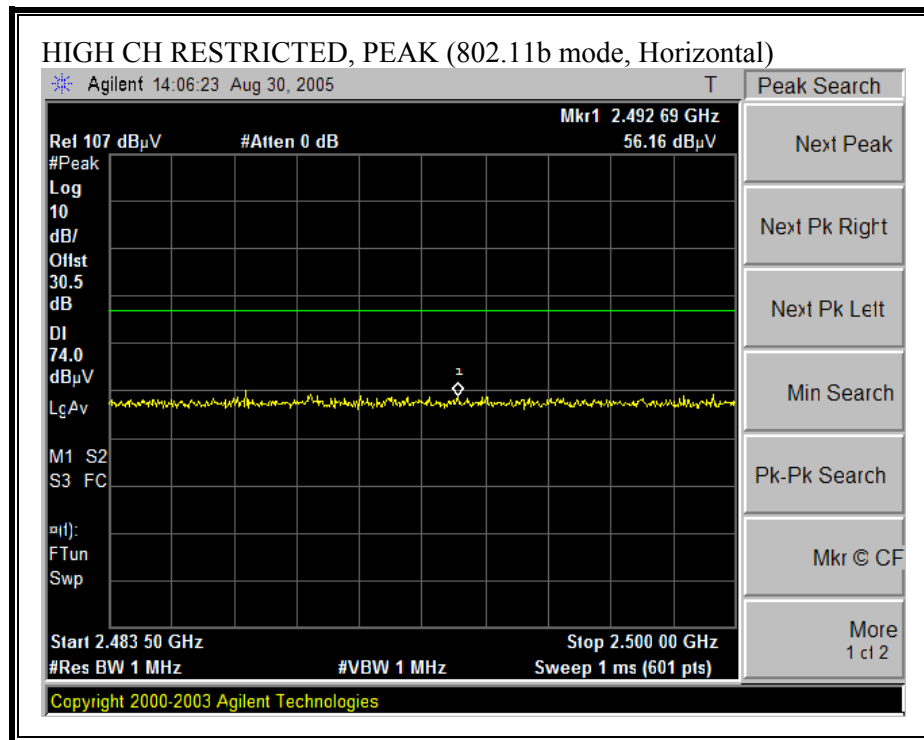


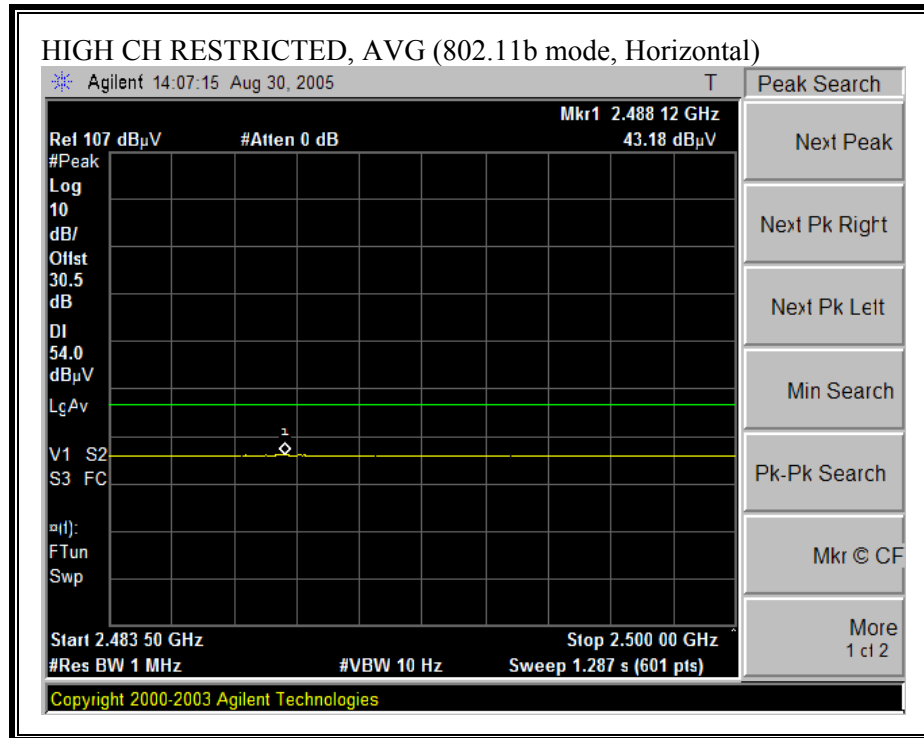
RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, VERTICAL)



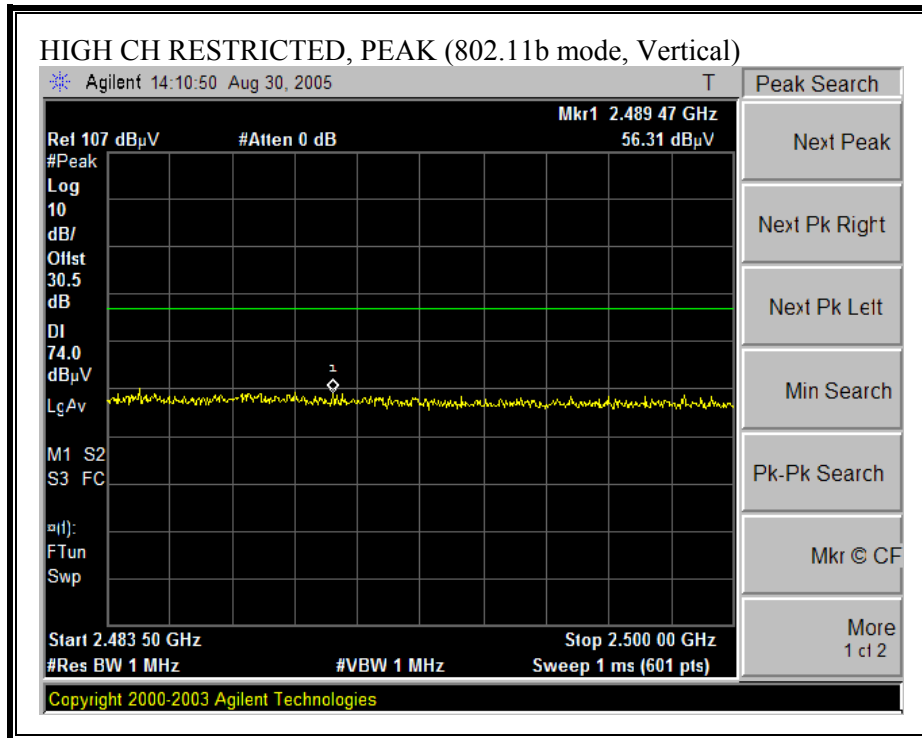


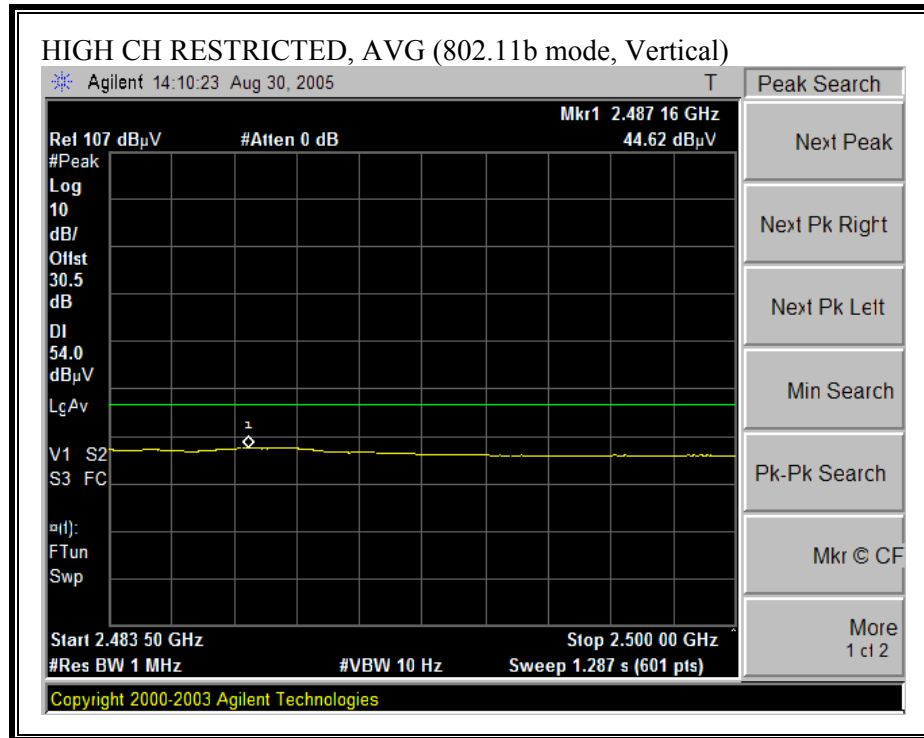
RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, VERTICAL)

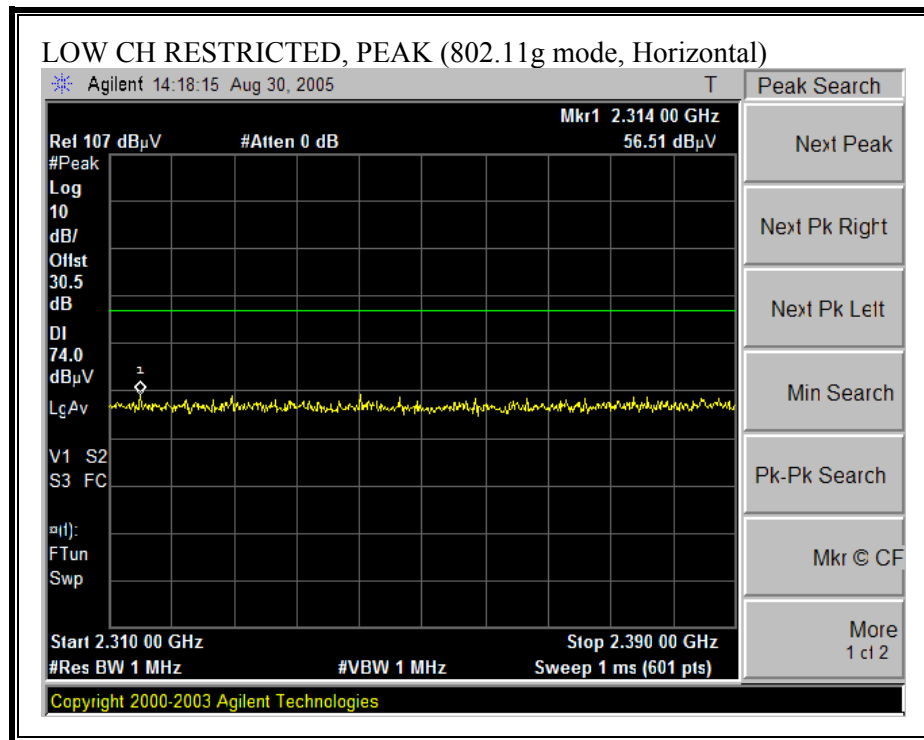


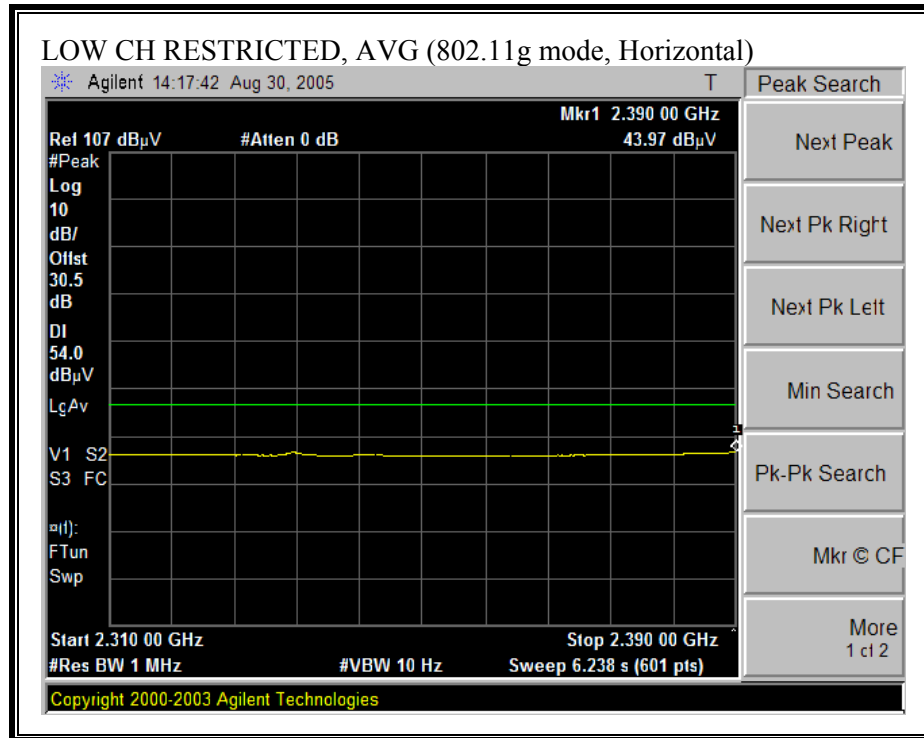


HARMONICS AND SPURIOUS EMISSIONS (b MODE)

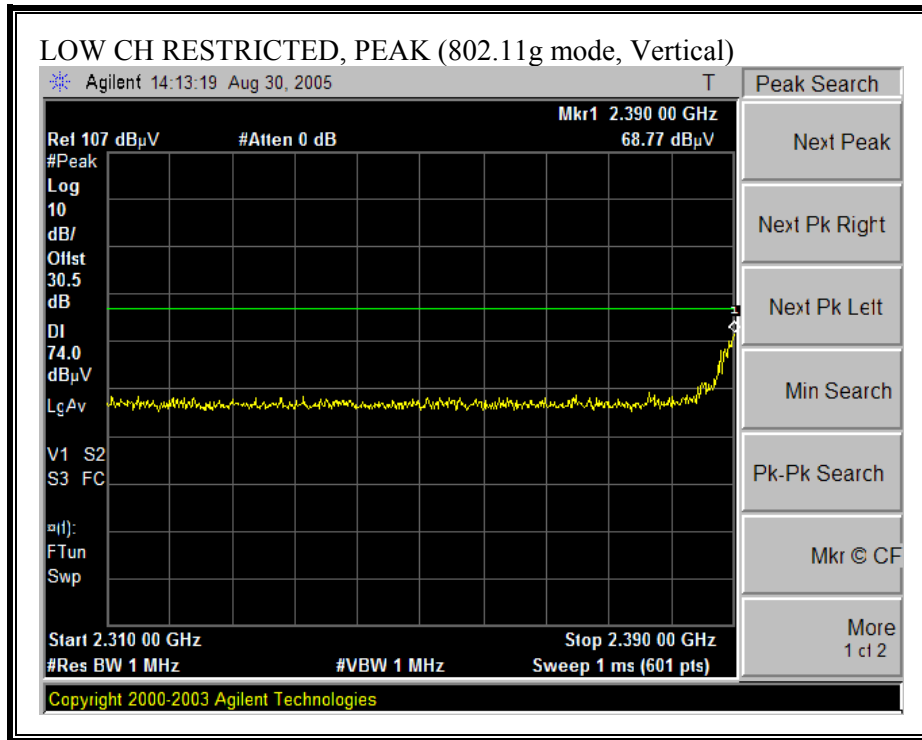
08/30/05 High Frequency Measurement Compliance Certification Services, Morgan Hill Open Field Site															
Test Engr: Chin Pang Project #: 05U3647-1 Company: Vivato EUT Descrip.: 802.11 b/g Wireless Microcell EUT M/N: VA2410a Test Target: FCC15.247 Mode Oper: TX, b mode, Panel Antenna (8.5 dBi gain), vertical polarization															
Test Equipment:															
EMCO Horn 1-18GHz T60; S/N: 2238 @3m		Pre-amplifier 1-26GHz T34 HP 8449B		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit FCC 15.205							
Hi Frequency Cables		2 foot cable 3_Chin		3 foot cable		4 foot cable		12 foot cable 12_Neelesh		HPF HPF_4.0GHz		Reject Filter		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	Filt dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch, 2412															
4.824	3.0	40.5	28.2	33.6	3.8	-33.6	0.0	0.6	44.9	32.6	74	54	-29.1	-21.4	V
4.824	3.0	40.0	28.0	33.6	3.8	-33.6	0.0	0.6	44.4	32.4	74	54	-29.6	-21.6	H
Mid Ch, 2437															
4.874	3.0	41.0	28.0	33.7	3.8	-33.5	0.0	0.6	45.5	32.5	74	54	-28.5	-21.5	V
7.311	3.0	41.5	28.7	36.2	4.9	-33.3	0.0	0.6	49.9	37.1	74	54	-24.1	-16.9	V
4.874	3.0	41.1	28.0	33.7	3.8	-33.5	0.0	0.6	45.6	32.5	74	54	-28.4	-21.5	H
7.311	3.0	41.5	28.3	36.2	4.9	-33.3	0.0	0.6	49.9	36.7	74	54	-24.1	-17.3	H
High Ch, 2462															
4.924	3.0	40.0	28.0	33.7	3.8	-33.5	0.0	0.6	44.6	32.6	74	54	-29.4	-21.4	V
7.386	3.0	42.1	30.5	36.2	4.9	-33.3	0.0	0.6	50.6	39.0	74	54	-23.4	-15.0	V
4.924	3.0	41.5	28.6	33.7	3.8	-33.5	0.0	0.6	46.1	33.2	74	54	-27.9	-20.8	H
7.386	3.0	41.0	30.0	36.2	4.9	-33.3	0.0	0.6	49.5	38.5	74	54	-24.5	-15.5	H
Note: No other emissions were detected above the system noise floor.															
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										

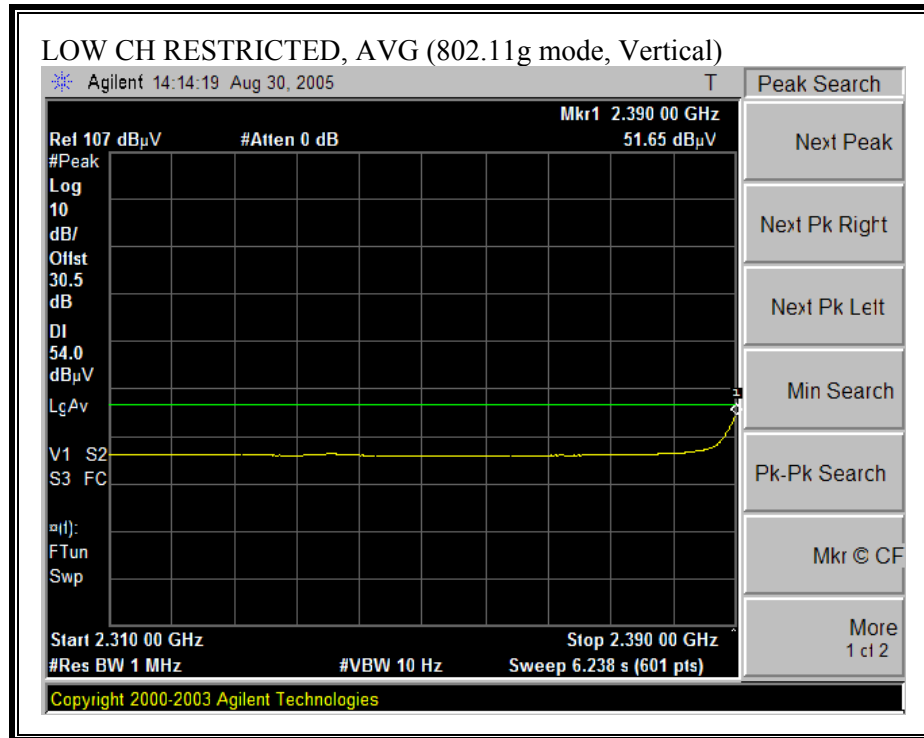
RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, HORIZONTAL)



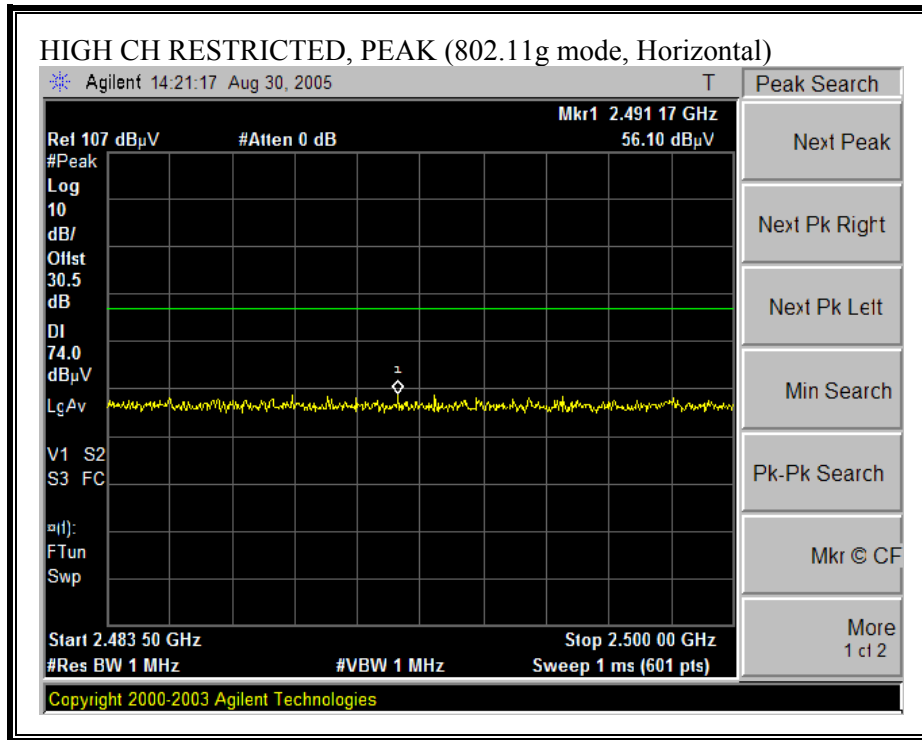


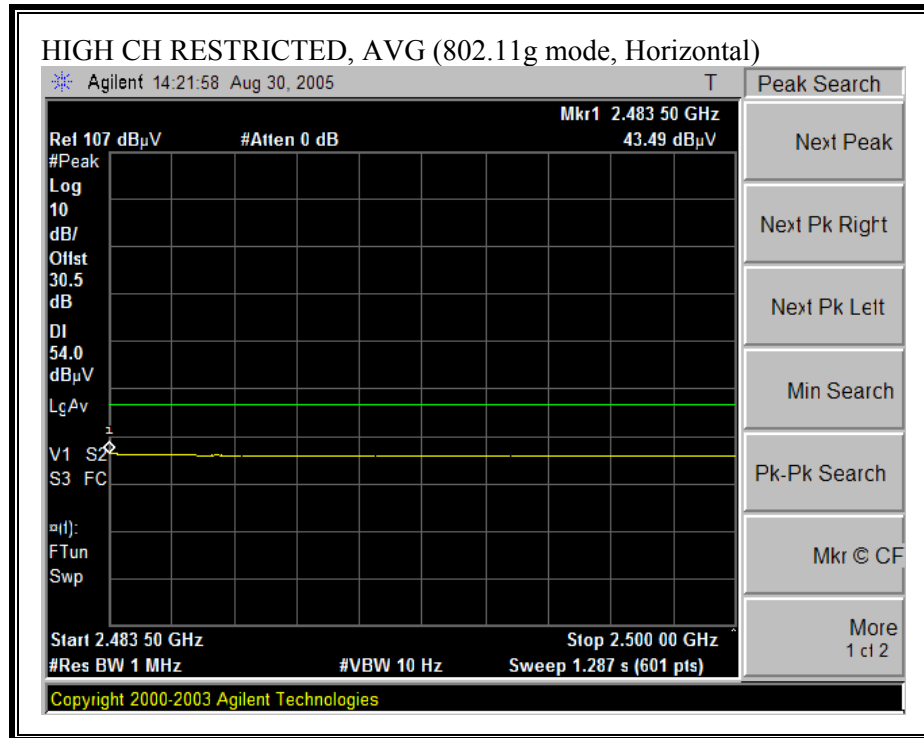
RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, VERTICAL)



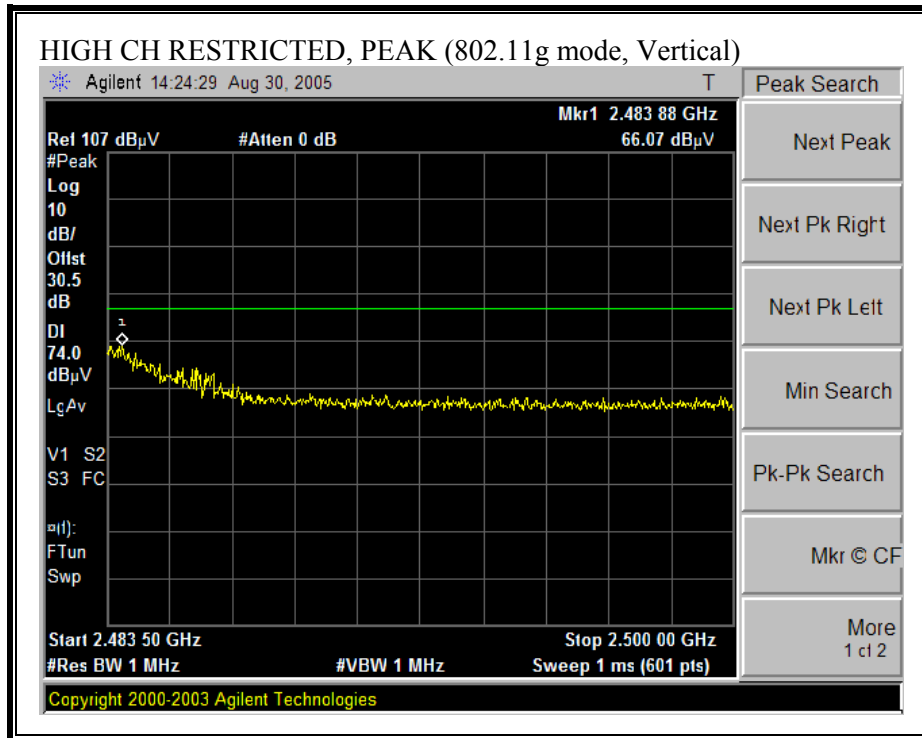


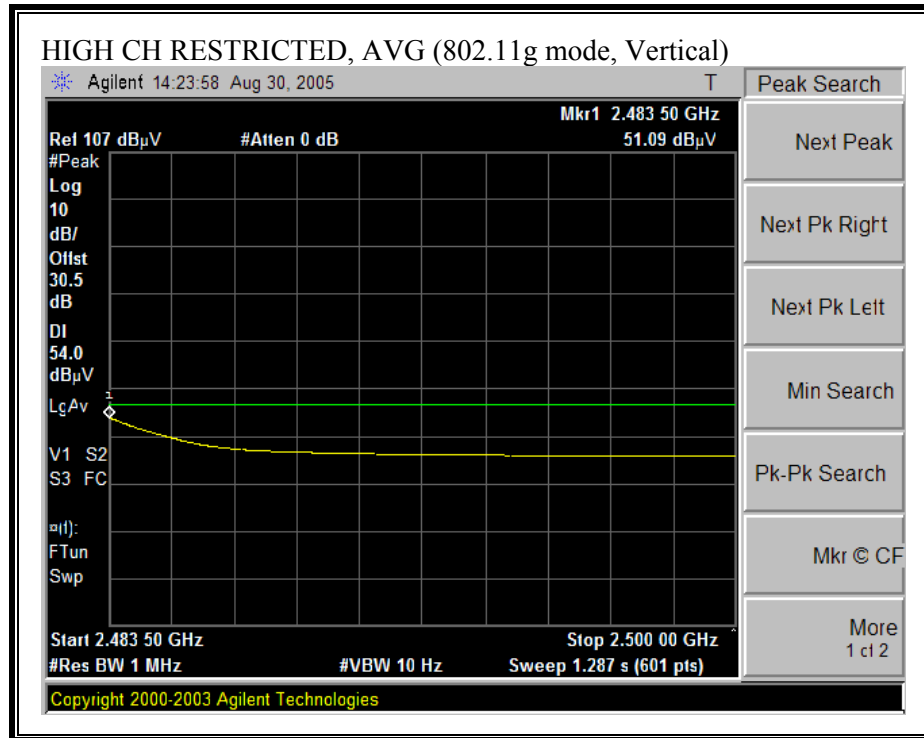
RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS (g MODE)

08/30/05 High Frequency Measurement Compliance Certification Services, Morgan Hill Open Field Site																
Test Engr: Chin Pang Project #: 05U3647-1 Company: Vivato EUT Descrip.: 802.11 b/g Wireless Microcell EUT M/N: VA2410a Test Target: FCC15.247 Mode Oper: TX, g mode, Panel Antenna (8.5 dBi gain), vertical polarization																
Test Equipment:																
EMCO Horn 1-18GHz T60; S/N: 2238 @3m		Pre-amplifier 1-26GHz T34 HP 8449B		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit FCC 15.205								
Hi Frequency Cables										HPF		Reject Filter		Peak Measurements RBW=VBW=1MHz		
2 foot cable		3 foot cable		4 foot cable		12 foot cable		HPF_4.0GHz		Reject Filter		Average Measurements RBW=1MHz, VBW=10Hz				
3_Chin						12_Neelesh										
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filt dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)	
Low Ch, 2412																
4.824	3.0	40.2	28.2	33.6	3.8	-33.6	0.0	0.6	44.6	32.6	74	54	-29.4	-21.4	V	
4.824	3.0	40.8	28.4	33.6	3.8	-33.6	0.0	0.6	45.2	32.8	74	54	-28.8	-21.2	H	
Mid Ch, 2437																
4.874	3.0	40.6	28.3	33.7	3.8	-33.5	0.0	0.6	45.1	32.8	74	54	-28.9	-21.2	V	
7.311	3.0	53.5	35.0	36.2	4.9	-33.3	0.0	0.6	61.9	43.4	74	54	-12.1	-10.6	V	
4.874	3.0	40.5	28.0	33.7	3.8	-33.5	0.0	0.6	45.0	32.5	74	54	-29.0	-21.5	H	
7.311	3.0	48.0	32.0	36.2	4.9	-33.3	0.0	0.6	56.4	40.4	74	54	-17.6	-13.6	H	
High Ch, 2462																
4.924	3.0	41.0	28.6	33.7	3.8	-33.5	0.0	0.6	45.6	33.2	74	54	-28.4	-20.8	V	
7.386	3.0	43.0	29.3	36.2	4.9	-33.3	0.0	0.6	51.5	37.8	74	54	-22.5	-16.2	V	
4.924	3.0	40.8	28.4	33.7	3.8	-33.5	0.0	0.6	45.4	33.0	74	54	-28.6	-21.0	H	
7.386	3.0	42.0	29.0	36.2	4.9	-33.3	0.0	0.6	50.5	37.5	74	54	-23.5	-16.5	H	
Note: No other emissions were detected above the system noise floor.																
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									

7.2.8. WORST-CASE RADIATED EMISSIONS BELOW 1 GHz

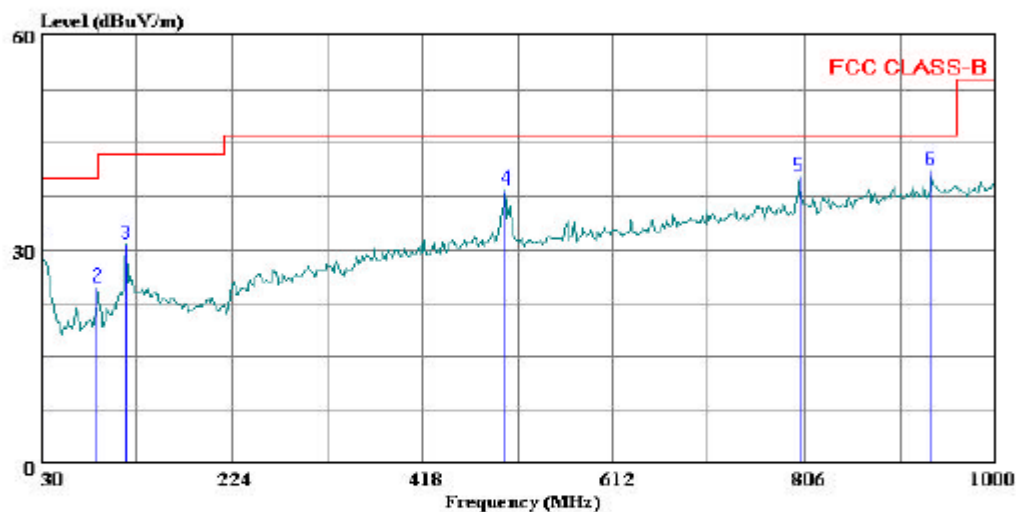
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



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

Data#: 6 File#: Below 1GHz.EMI Date: 08-31-2005 Time: 18:29:57



(Auxiliary ATC)

Trace: 5

Ref Trace:

Condition: FCC CLASS-B HORIZONTAL
Test Operator: : Joseph Chung
Project #: : 05U3647-1
Company: : Vivato
EUT: : Outdoor Microcell, 802.11 b/g
Model No. : VA2410A
Configuration : EUT standalone (OMNI)
Target of Test : FCC Class B
Mode of Operation: Continuous TX - Worst Case

HORIZONTAL DATA

Page: 1									
	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Cable Loss	Probe Factor
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB		dB	dB
1	30.970	8.55	20.45	29.00	40.00	-11.00	Peak	0.45	20.00
2	87.230	16.22	8.45	24.67	40.00	-15.33	Peak	0.77	7.68
3	116.330	16.04	14.71	30.75	43.50	-12.75	Peak	0.91	13.80
4	502.390	18.08	20.24	38.32	46.00	-7.68	Peak	1.97	18.27
5	800.180	15.63	24.58	40.21	46.00	-5.79	Peak	2.67	21.91
6	934.040	14.83	26.33	41.16	46.00	-4.84	Peak	3.09	23.24

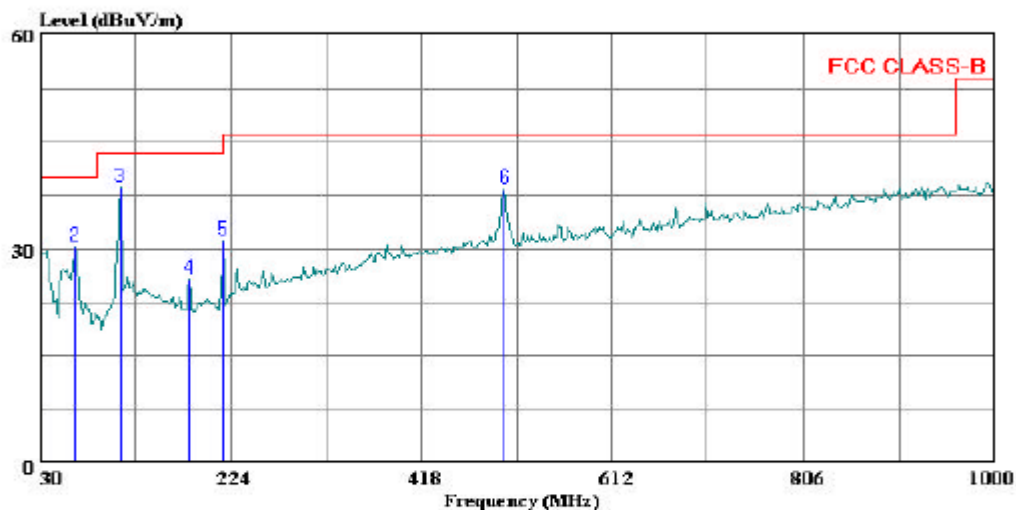
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)

VERTICAL PLOT



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

Data#: 8 File#: Below 1GHz.EMI Date: 08-31-2005 Time: 18:40:03



(Auxiliary ATC)

Trace: 7

Ref Trace:

Condition: FCC CLASS-B VERTICAL
Test Operator: : Joseph Chung
Project #: : 05U3647-1
Company: : Vivato
EUT: : Outdoor Microcell, 802.11 b/g
Model No.: : VA2410A
Configuration : EUT standalone (OMNI)
Target of Test : FCC Class B
Mode of Operation: Continuous TX - Worst Case

VERTICAL DATA

Page: 1									
	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Cable Loss	Probe Factor
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB		dB	dB
1	30.000	11.02	20.45	31.47	40.00	-8.53	Peak	0.45	20.00
2	65.890	21.15	9.09	30.24	40.00	-9.76	Peak	0.66	8.43
3	111.480	24.89	13.82	38.71	43.50	-4.79	Peak	0.86	12.96
4	182.290	12.71	12.95	25.66	43.50	-17.84	Peak	1.16	11.79
5	216.240	18.71	12.36	31.07	46.00	-14.93	Peak	1.24	11.12
6	502.390	18.25	20.24	38.49	46.00	-7.51	Peak	1.97	18.27

7.3. 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 μ H/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.

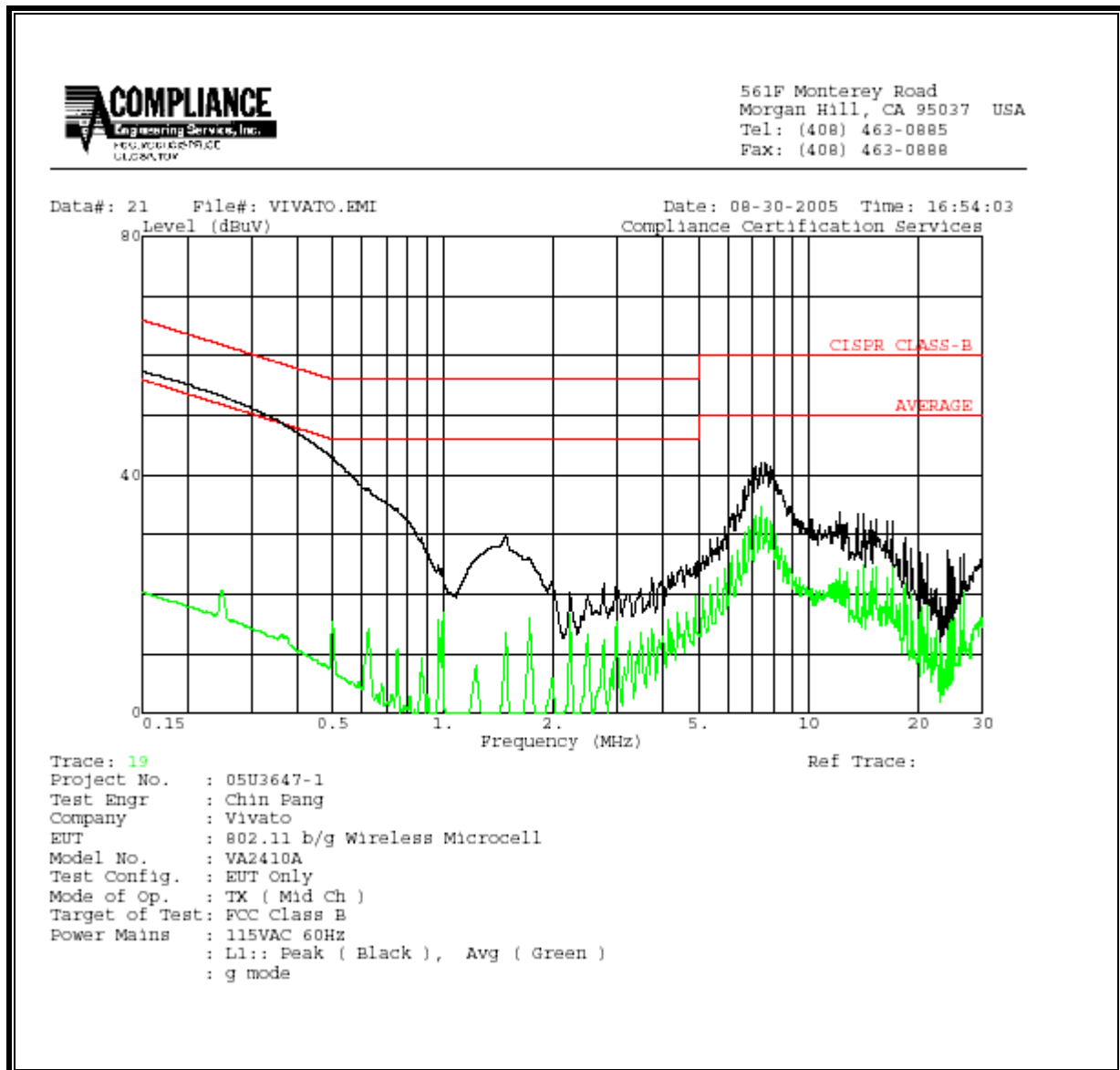
RESULTS

No non-compliance noted:

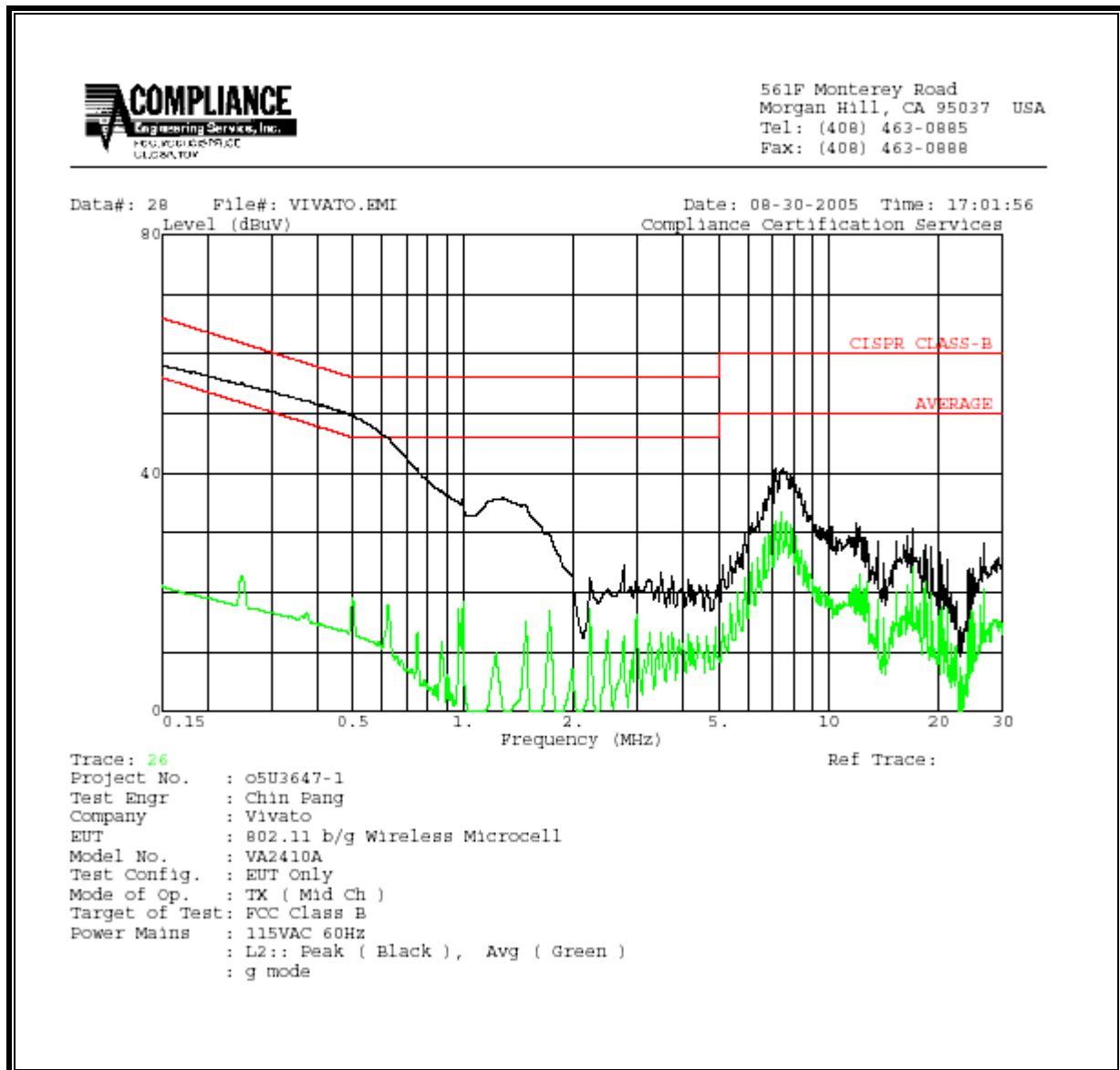
6 WORST EMISSIONS

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	EN B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.15	57.40	--	20.38	0.00	65.84	55.84	-8.44	-35.46	L1
0.29	51.46	--	20.70	0.00	60.47	50.47	-9.01	-29.77	L1
7.61	42.12	--	34.64	0.00	60.00	50.00	-17.88	-15.36	L1
0.17	57.28	--	20.12	0.00	64.96	54.96	-7.68	-34.84	L2
0.37	52.19	--	22.86	0.00	58.57	48.57	-6.38	-25.71	L2
7.49	40.70	--	33.35	0.00	60.00	50.00	-19.30	-16.65	L2
6 Worst Data									

LINE 1 RESULTS

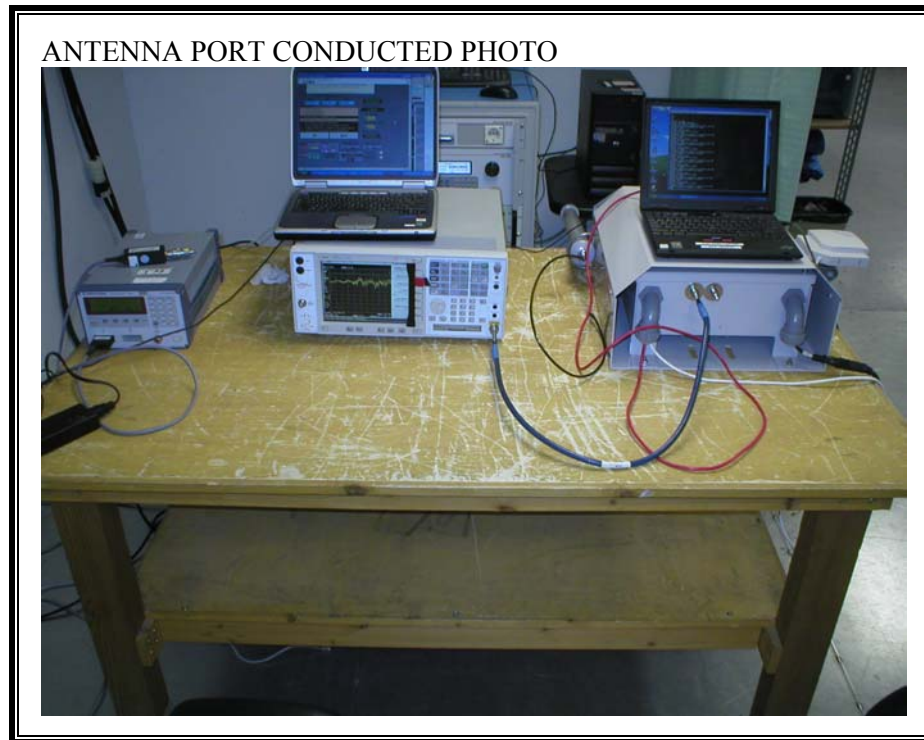


LINE 2 RESULTS

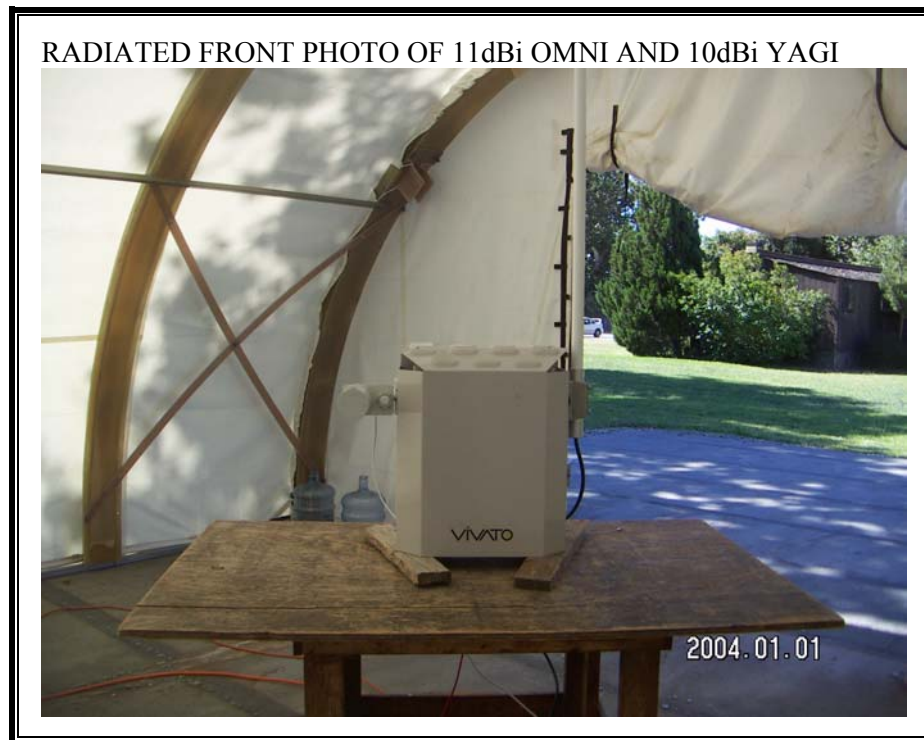


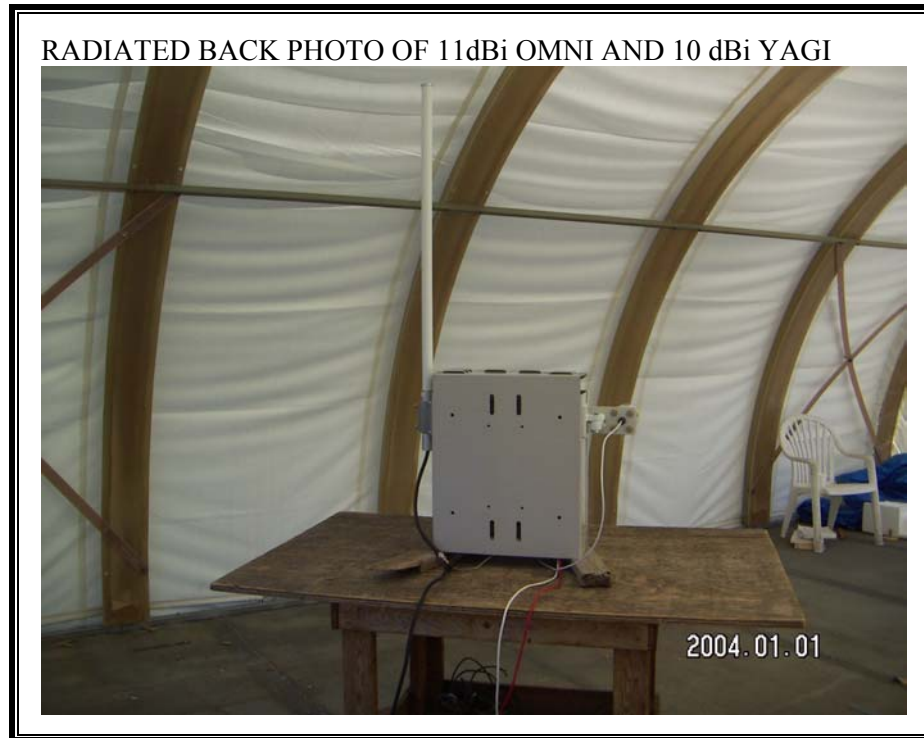
8. SETUP PHOTOS

ANTENNA PORT CONDUCTED RF MEASUREMENT SETUP

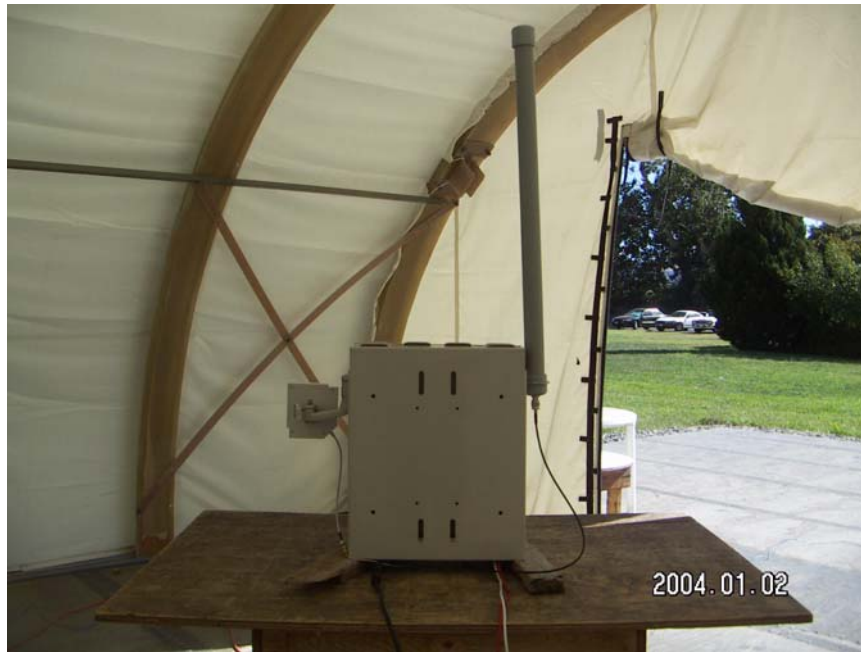


RADIATED RF MEASUREMENT SETUP

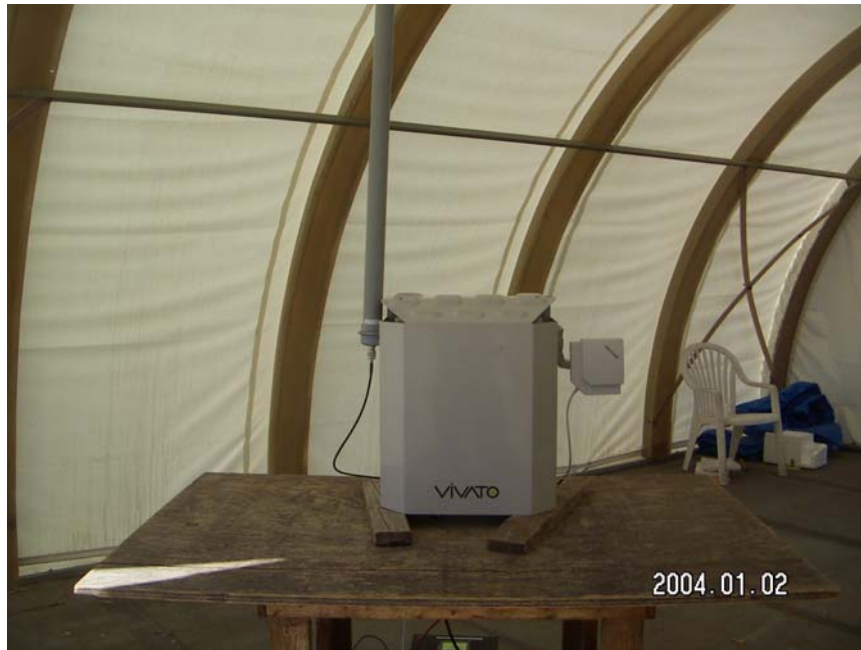




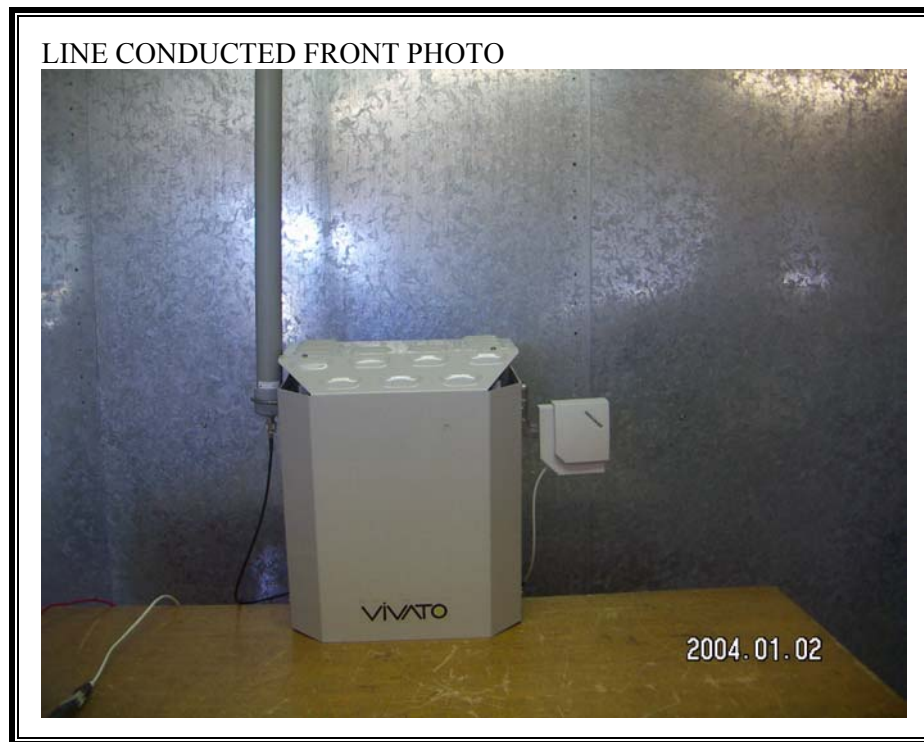
RADIATED FRONT PHOTO OF 8.5 dBi OMNI AND 8.5 dBi
DIRECTIONAL PANEL



RADIATED BACK PHOTO OF 8.5 dBi OMNI AND 8.5 dBi
DIRECTIONAL PANEL



POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP



LINE CONDUCTED BACK PHOTO



END OF REPORT