FCC CFR47 PART 15 SUBPART C
CLASS II PERMISSIVE CHANGE
TEST REPORT

FOR

BROADCOM 802.11ag /DRAFT 802.11n
WIRELESS LAN PCI-E MINI CARD

MODEL NUMBER: BCM94321MC

FCC ID: QDS-BRCM1022

REPORT NUMBER: 07U11194-1

ISSUE DATE: JULY 31, 2007

Prepared for
BROADCOM CORP.
190 MATHILDA PLACE
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Prepared by
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Revision History

Rev.	Issue Date	Revisions	Revised By
--	July 31, 2007	Initial Issue	Sunny Shih

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS 4

2. TEST METHODOLOGY 5

3. FACILITIES AND ACCREDITATION 5

4. CALIBRATION AND UNCERTAINTY 5

4.1. MEASURING INSTRUMENT CALIBRATION 5

4.2. MEASUREMENT UNCERTAINTY 5

5. EQUIPMENT UNDER TEST 6

5.1. DESCRIPTION OF EUT 6

5.2. DESCRIPTION OF CLASS II PERMISSIVE CHANGE 6

5.3. DESCRIPTION OF AVAILABLE ANTENNAS 6

5.4. SOFTWARE AND FIRMWARE 6

5.5. WORST-CASE CONFIGURATION AND MODE 7

5.6. DESCRIPTION OF TEST SETUP 8

6. TEST AND MEASUREMENT EQUIPMENT 10

7. LIMITS AND RESULTS 11

7.1. RADIATED EMISSIONS 11

7.1.1. TRANSMITTER RADIATED SPURIOUS EMISSIONS 11

7.1.2. TRANSMITTER ABOVE 1 GHz FOR 2400 TO 2483.5 MHz BAND 14

7.1.3. TRANSMITTER ABOVE 1 GHz FOR 5725 TO 5850 MHz BAND 46

7.1.4. WORST-CASE RADIATED EMISSIONS BELOW 1 GHz 49

8. SETUP PHOTOS 53

1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	BROADCOM CORP. 190 MATHILDA PLACE SUNNYVALE, CA 94086, USA
EUT DESCRIPTION:	BROADCOM 802.11ag/DRAFT 802.11n WIRELESS LAN PCI-E MINI CARD
MODEL:	BCM94321MC
SERIAL NUMBER:	107 & 316
DATE TESTED:	JULY 17 – JULY 31, 2007

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

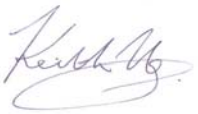
Compliance Certification Services, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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
ENGINEERING SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

Tested By:



KEITH NG
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 47173 Benicia Street, Fremont, 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 802.11ag/Draft 802.11n Wireless LAN PCI-E Mini Card, model number BCM94321MC.

The radio module is manufactured by Broadcom Corp.

5.2. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

The EUT is installed in a DELL laptop, Model PRK-E2PT2-2 with 2 different Antennas ACON and AMPHENOL Stamped Metal sheet

The major changes filed under this application are:
1. Add a portable platform, Dell PP12S.
2. Add co-location with Bluetooth, FCC ID: PIWW360BT.

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

DESCRIPTION OF EACH ANTENNA (List all antennas)			
Antenna Manufacturer / Model Number	**Antenna Type (Dipole, Patch, Panel, Yagi, etc.)**	**Maximum Peak Antenna Gain (dBi) 2.4GHz**	**Maximum Peak Antenna Gain (dBi) 5GHz**
Acon Stamped metal sheet	AMP6P-700000	Main 1.0 (V) Main 2.6 (H+V)	Aux -0.5 (H) Aux 0.7 (H+V)
Amphenol Stamped metal sheet	WT0541-22-003	Aux -0.43 (V) Aux 1.81 (H+V)	Aux 1.72 (H) Aux 2.58 (H+V)

5.4. SOFTWARE AND FIRMWARE

The EUT was tested in the following manner:
- "epi_ttcp.exe" was used to transmit UDP packets to a broadcast IP address (192.168.66.255) – i.e. no ACK required. This test mode sends a continuous packetized data stream with duty cycles that vary dependant upon data rate/MCS Index selected.
- "wl ampdu" and "frameburst" were enabled to ensure worst case data packet transfer and duty cycle. Worst case packet length have also been used to ensure max duty cycle

5.5. WORST-CASE CONFIGURATION AND MODE

The worst-case channel is determined as the channel with the highest output power, and oriented with mobile laptop, X, Y, Z positions. The highest emissions measurement was at normal laptop position.

Regarding the selection of the antennas being tested, the antenna with the highest antenna gain was chosen. Therefore, ACON antenna was used for testing in 2.4GHz b and g Legacy mode, and Amphenol antenna was used for testing in MIMO modes for 2.4GHz and Legacy & MIMO 5GHz band.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
NoteBook	DELL	PRK-E2PT2-2	PRKE2PT2051	DoC
AC/DC Adapter	DELL	DA65NS0-00	CN0CF745-48661-738-2D4U	N/A

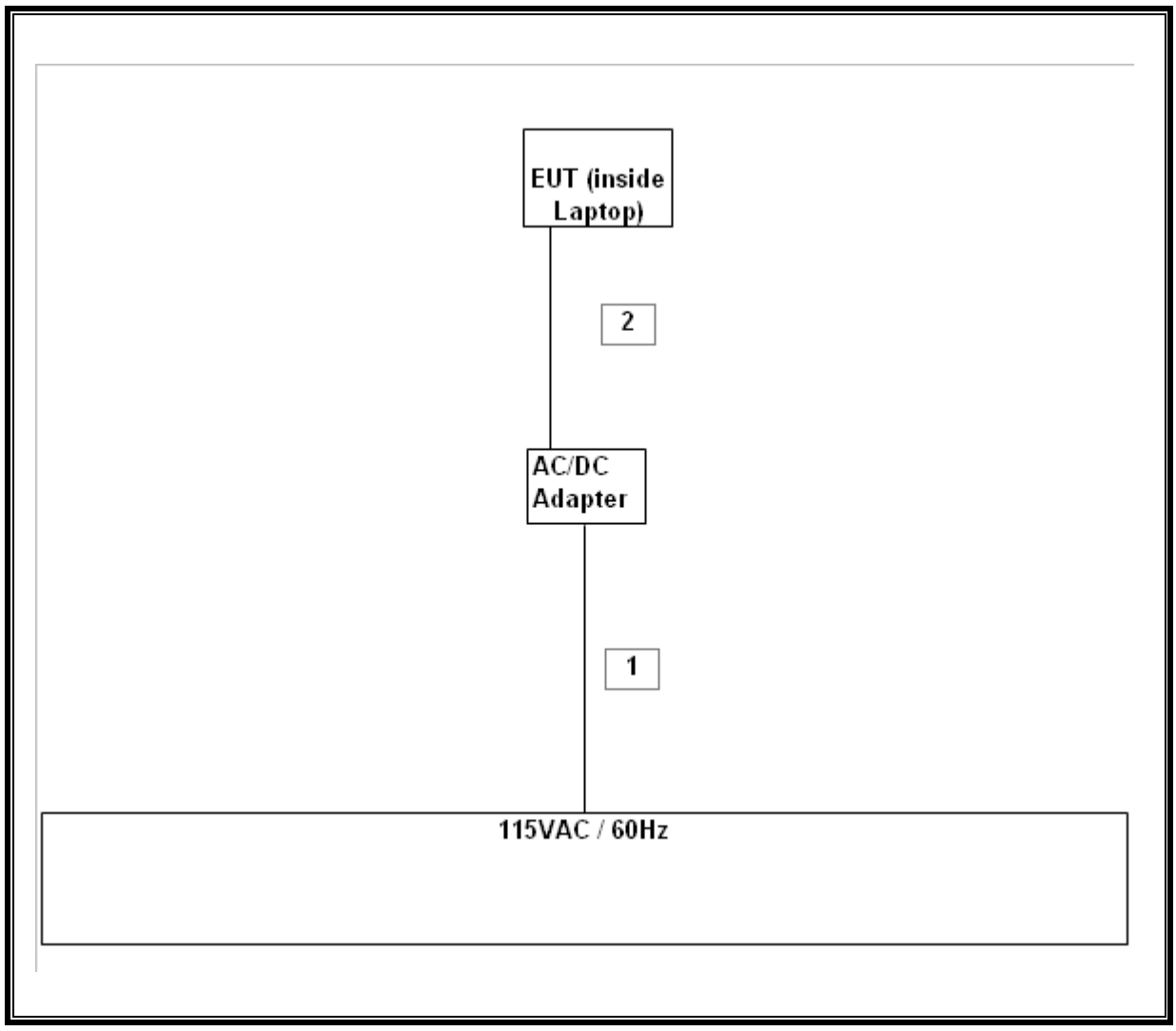
I/O CABLES

I/O CABLE LIST						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length**	**Remarks**
1	AC	1	US115VAC	Unsheilded	1.5m	No
2	DC	1	DC Plug	Unsheilded	1.5m	No

TEST SETUP

The EUT is installed in a host laptop 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 LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**Cal Due**
Spectrum Analyzer 3 Hz ~ 44 GHz	Agilent / HP	E4446A	US42070220	11/26/2007
Preamplifier, 1 ~ 26.5 GHz	Agilent / HP	8449B	3008A00931	8/1/2007
5.47-5.725GHz Reject Filter	Micro-Tronics	BRC13191	1	CNR
2.4 - 2.5 Band Reject Filter	Micro Tronics	N/A	1	N/A
Quasi-Peak Adaptor	Agilent / HP	85650A	3145A01654	1/21/2008
SA RF Section, 1.5 GHz	Agilent / HP	85680B	2814A04227	1/7/2008
SA Display Section 2	Agilent / HP	85662A	2816A16696	4/7/2008
Antenna, Bilog 30 MHz ~ 2 GHz	Sunol Sciences	JB1	A0022704	8/13/2007
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	9001-3245	4/15/2008
Power Sensor 10MHz - 18GHz	Agilent / HP	8481A	2349A36506	4/22/2008
Power Meter	Agilent / HP	438B	2822A05684	6/20/2008
EMI Receiver, 9 kHz ~ 2.9 GHz	Agilent / HP	8542E	3942A00286	12/62008
RF Filter Section	Agilent / HP	85420E	3705A00256	12/62009

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.

§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.

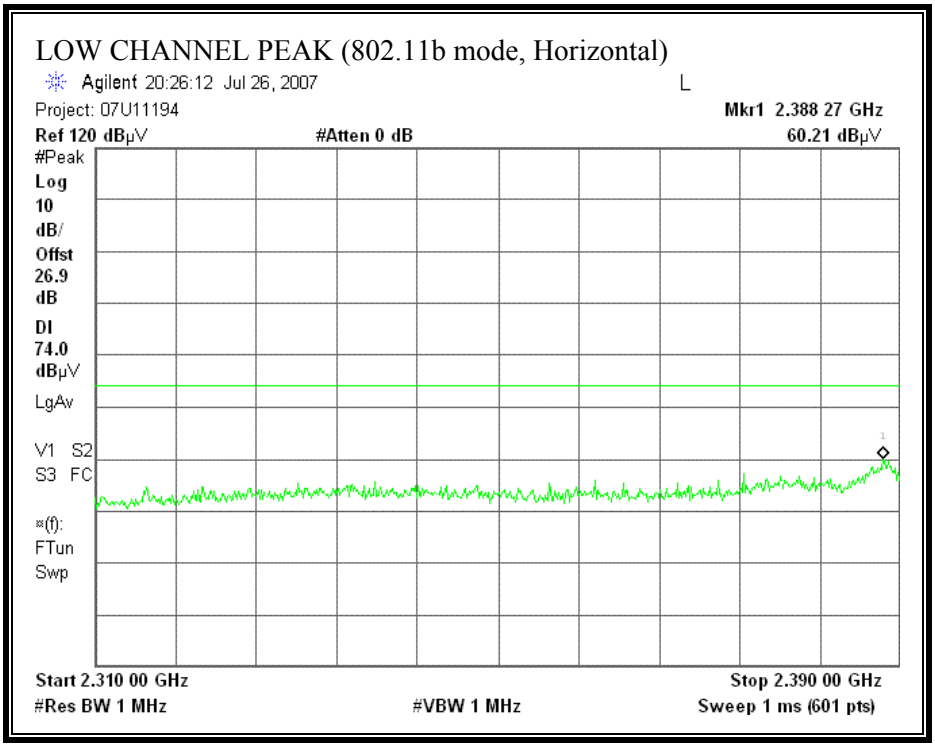
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each 5 GHz band.

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.

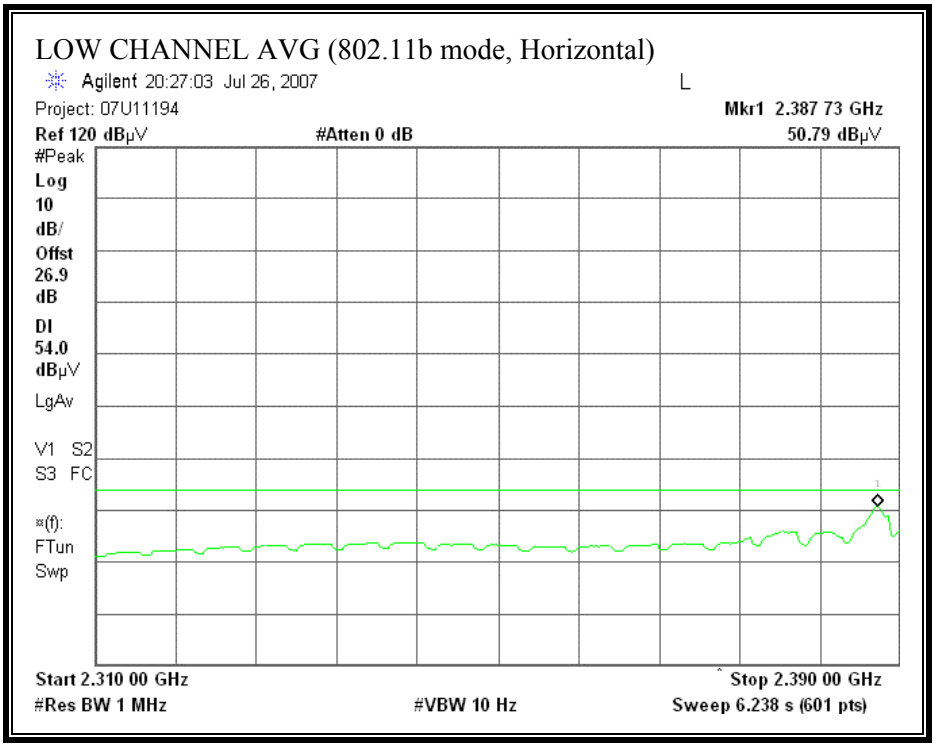
7.1.2. TRANSMITTER ABOVE 1 GHz FOR 2400 TO 2483.5 MHz BAND

RESTRICTED BANDEDGE (802.11b MODE, 2412MHz, With ACON Antenna)

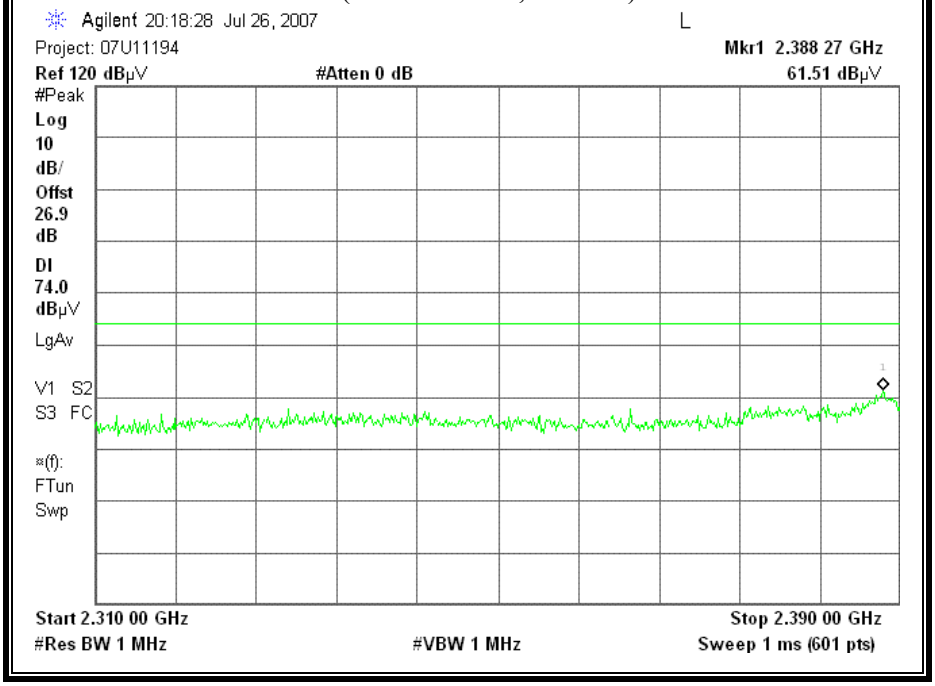
LOW CHANNEL PEAK (802.11b mode, Horizontal)



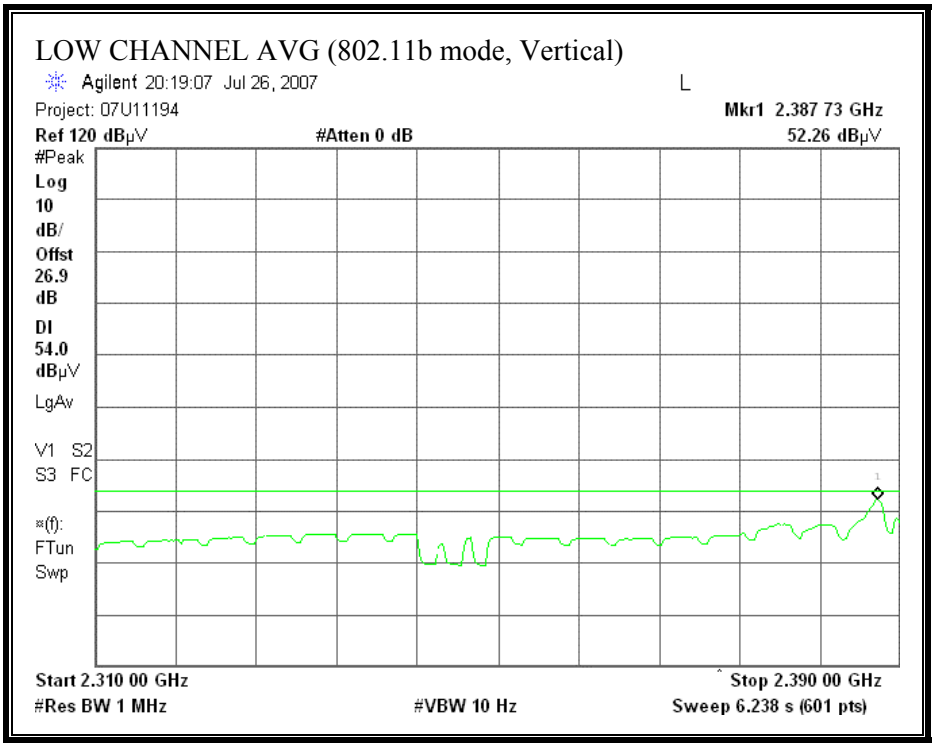
LOW CHANNEL AVG (802.11b mode, Horizontal)



LOW CHANNEL PEAK (802.11b mode, Vertical)

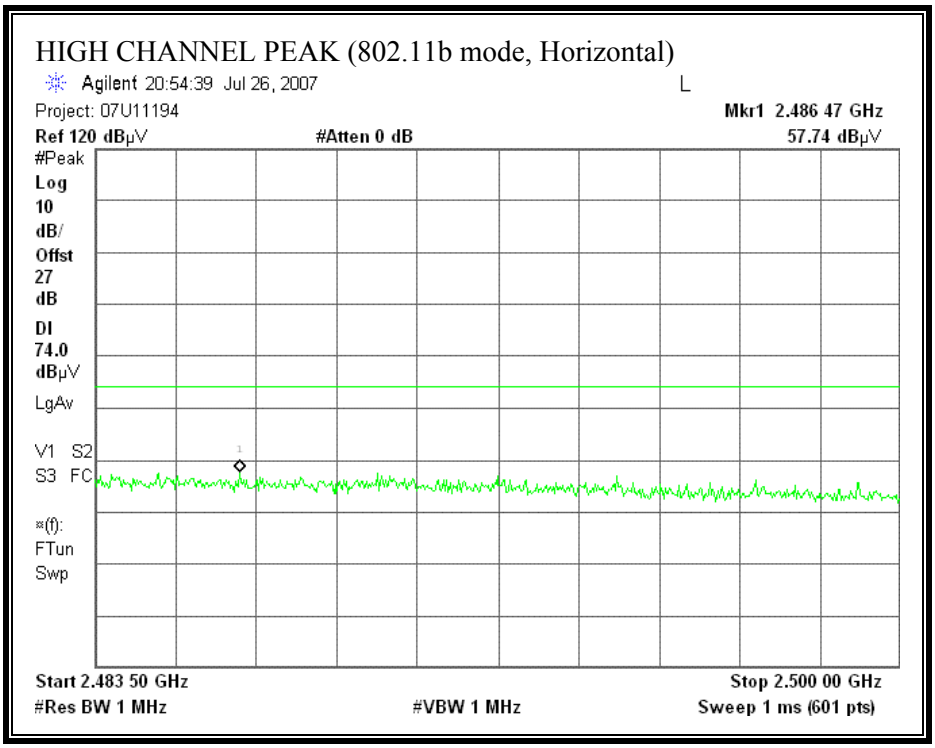


LOW CHANNEL AVG (802.11b mode, Vertical)

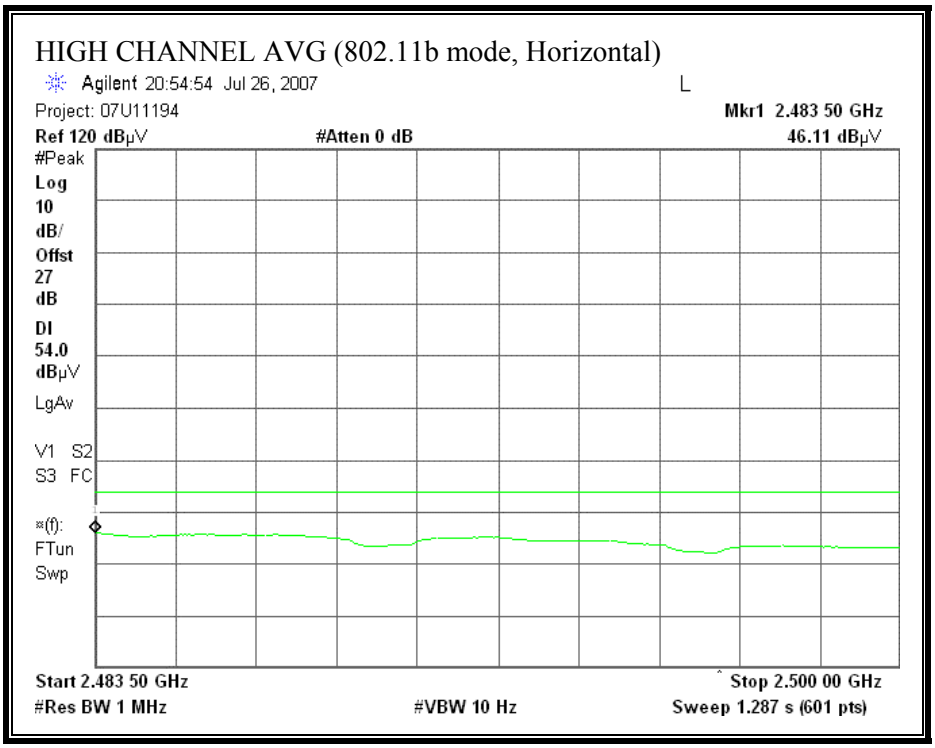


RESTRICTED BANDEDGE (802.11b MODE, 2457MHz, With ACON Antenna)

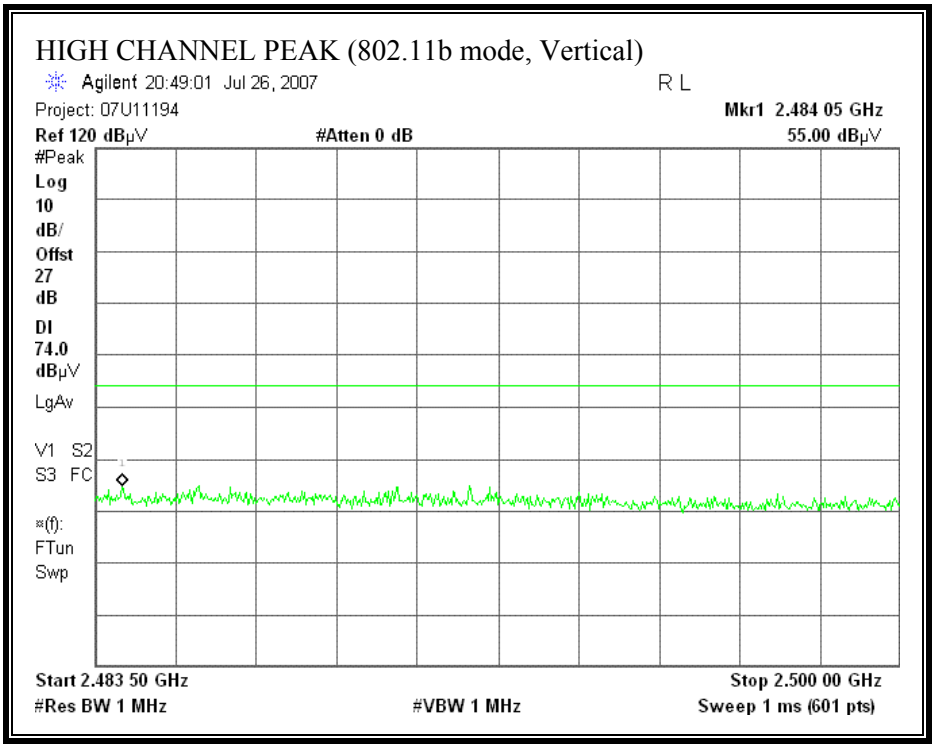
HIGH CHANNEL PEAK (802.11b mode, Horizontal)



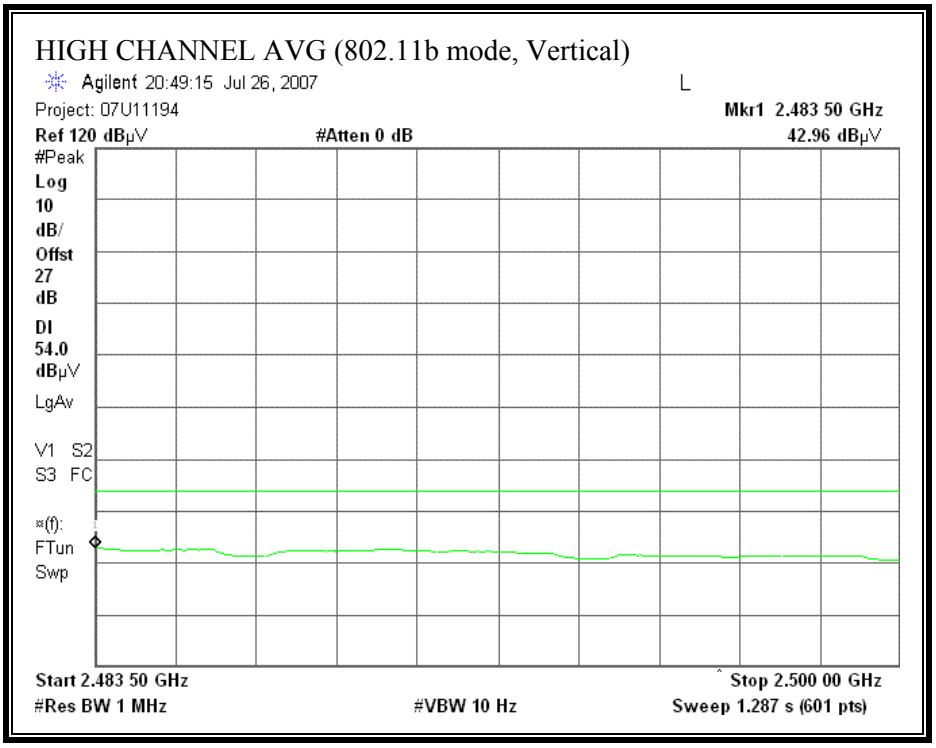
HIGH CHANNEL AVG (802.11b mode, Horizontal)



HIGH CHANNEL PEAK (802.11b mode, Vertical)

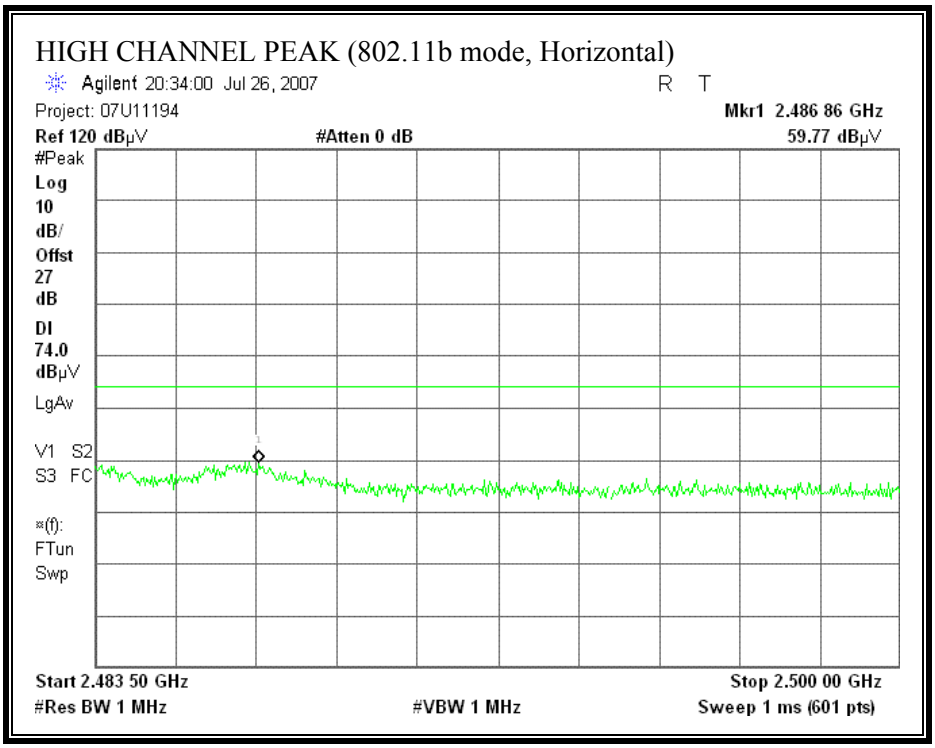


HIGH CHANNEL AVG (802.11b mode, Vertical)

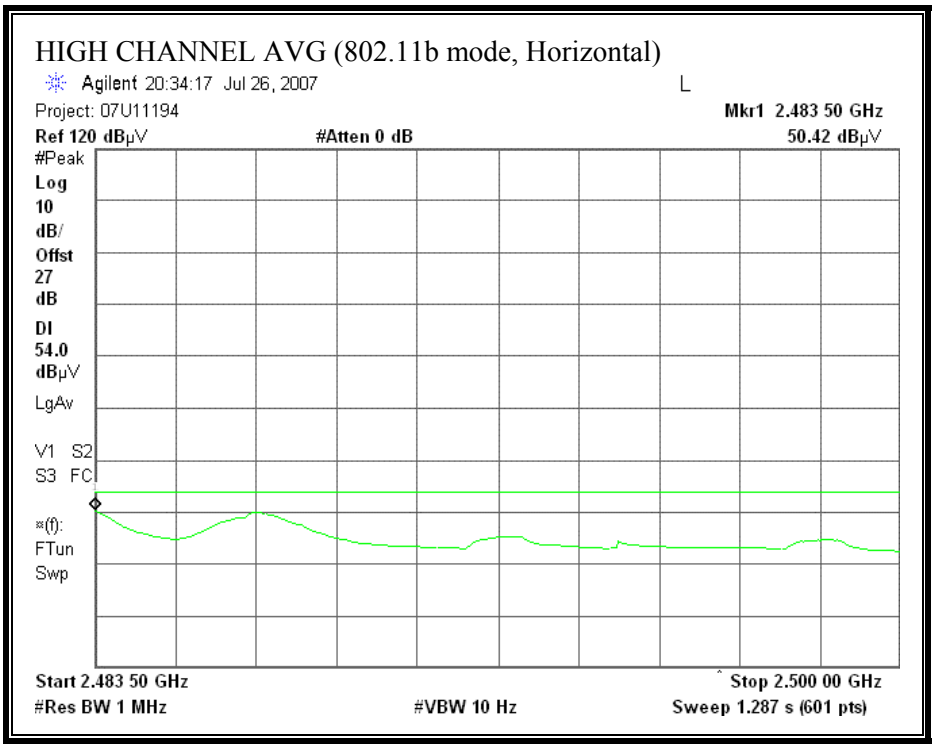


RESTRICTED BANDEDGE (802.11b MODE, 2462MHz, With ACON Antenna)

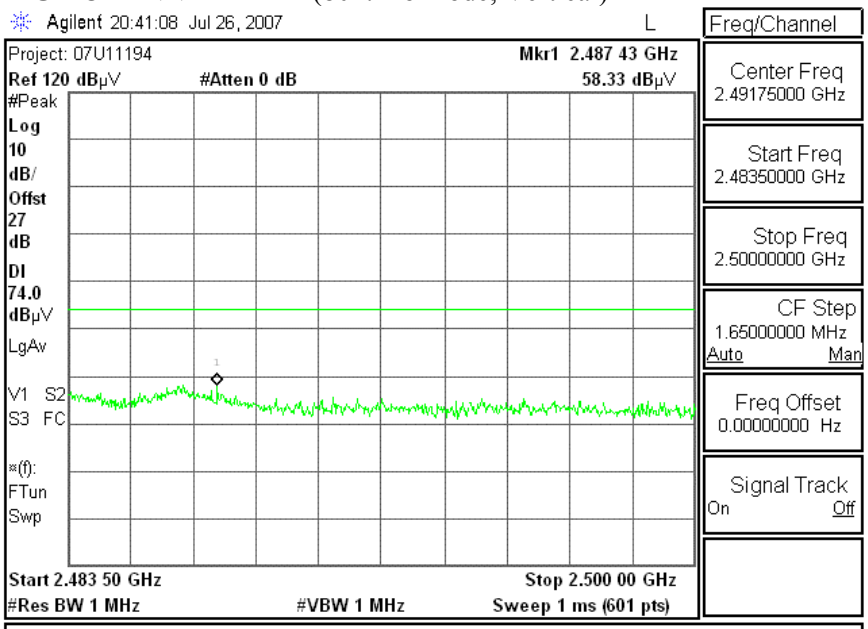
HIGH CHANNEL PEAK (802.11b mode, Horizontal)



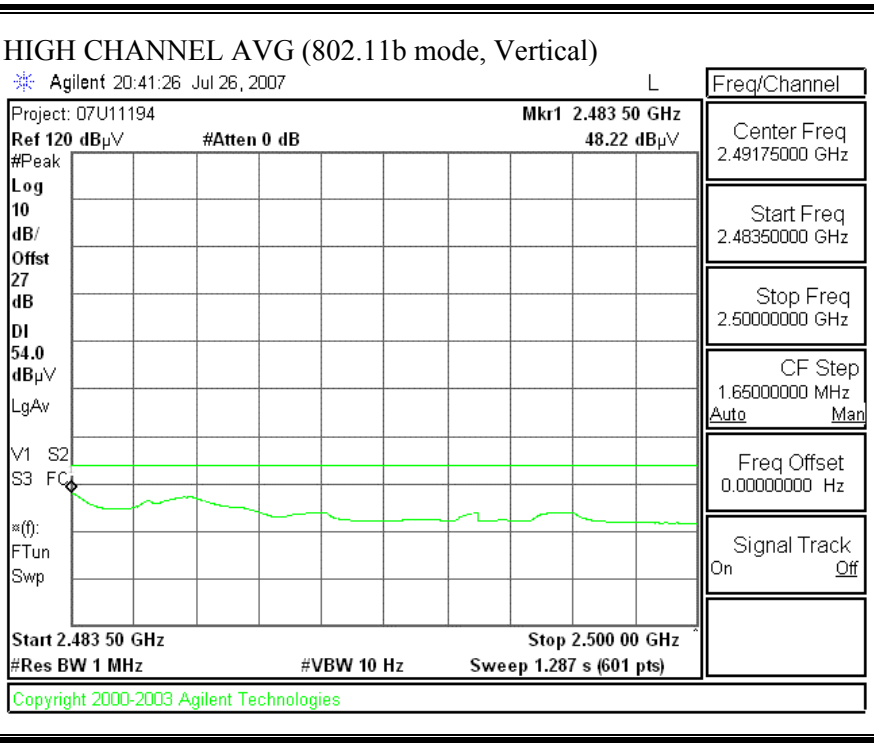
HIGH CHANNEL AVG (802.11b mode, Horizontal)



HIGH CHANNEL PEAK (802.11b mode, Vertical)



HIGH CHANNEL AVG (802.11b mode, Vertical)



HARMONICS AND SPURIOUS EMISSIONS (802.11b MODE)

With ACON Antenna

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Company: Broadcom
Project #: 07U11194
Date: 7/30/2007
Test Engineer: Keith Ng
Configuration: EUT installed inside the Dell laptop with Acon Antenna
Mode: 2.4GHz Tx b mode

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T144 Miteq 3008A00931			FCC 15.205

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
		A-5m Chamber		R_001

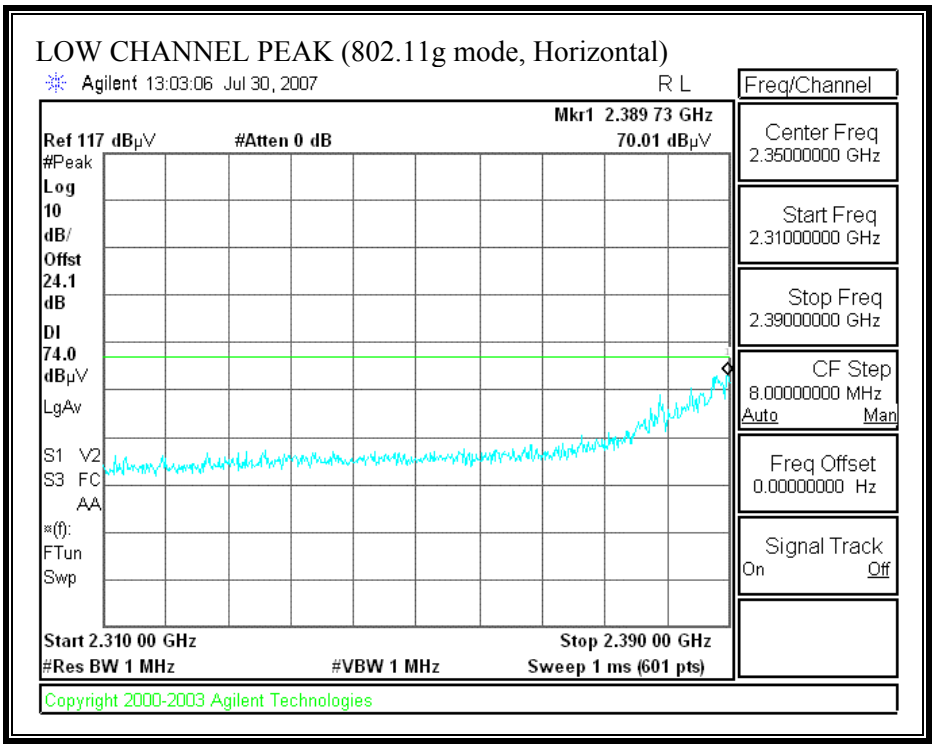
Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

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)
Low Ch(2412MHz)															
1.066	3.0	49.1	36.5	25.6	3.1	-39.4	0.0	0.0	38.3	25.7	74	54	-35.7	-28.3	V
4.824	3.0	41.2	31.4	33.0	6.9	-36.5	0.0	0.0	44.6	34.8	74	54	-29.4	-19.2	V
1.066	3.0	52.6	35.9	25.6	3.1	-39.4	0.0	0.0	41.9	25.2	74	54	-32.1	-28.8	H
4.824	3.0	46.2	42.3	33.0	6.9	-36.5	0.0	0.0	49.6	45.7	74	54	-24.4	-8.3	H
Mid Ch(2437MHz)															
1.066	3.0	50.5	37.3	33.7	6.9	-34.8	0.0	0.0	54.6	40.5	74.0	54.0	-19.4	-13.5	V
4.874	3.0	44.7	40.9	37.1	9.8	-33.3	0.0	0.0	49.9	36.5	74.0	54.0	-24.1	-17.5	V
1.066	3.0	51.6	35.9	33.7	6.9	-34.8	0.0	0.0	52.3	39.1	74.0	54.0	-21.7	-14.9	H
4.874	3.0	50.6	44.5	37.1	9.8	-33.3	0.0	0.0	49.4	36.4	74.0	54.0	-24.6	-17.6	H
7.311	3.0	42.6	25.9	37.1	9.8	-33.3	0.0	0.0	49.4	36.4	74.0	54.0	-24.6	-17.6	H
Hi Ch (2462MHz)															
1.066	3.0	50.0	34.3	25.6	3.1	-39.4	0.0	0.0	39.3	23.6	74	54	-34.7	-30.4	V
4.924	3.0	42.1	35.6	33.1	7.0	-36.5	0.0	0.0	45.7	39.2	74	54	-28.3	-14.8	V
1.067	3.0	52.0	36.5	25.6	3.1	-39.4	0.0	0.0	41.3	25.8	74	54	-32.7	-28.2	H
4.924	3.0	46.4	39.7	33.1	7.0	-36.5	0.0	0.0	50.0	43.3	74	54	-24.0	-10.7	H

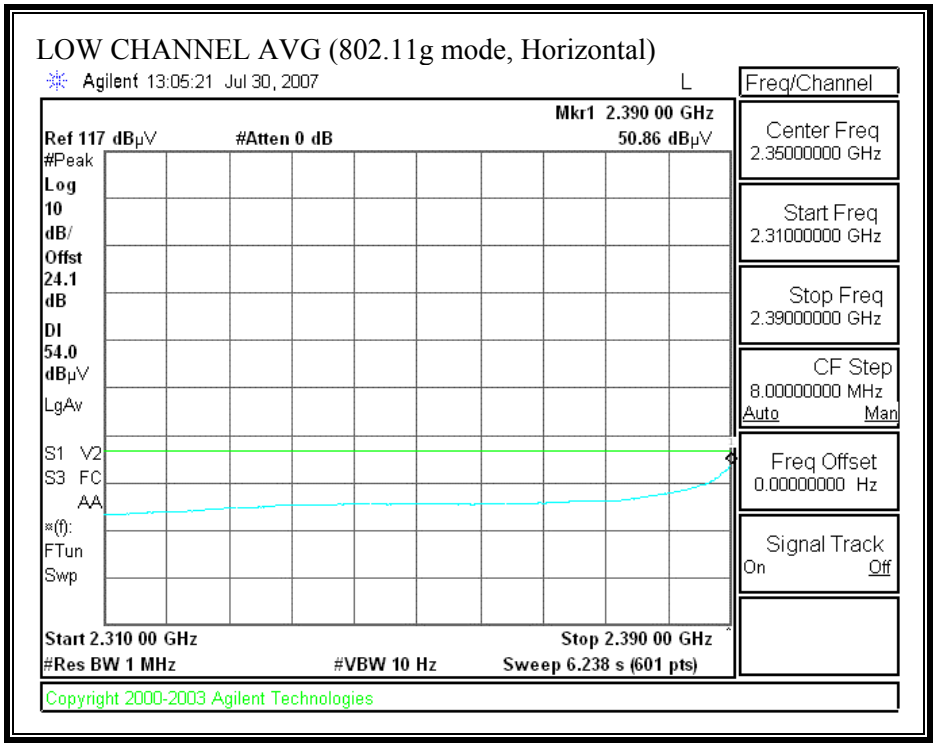
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field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

RESTRICTED BANDEDGE (802.11g MODE, 2412MHz, With ACON Antenna)

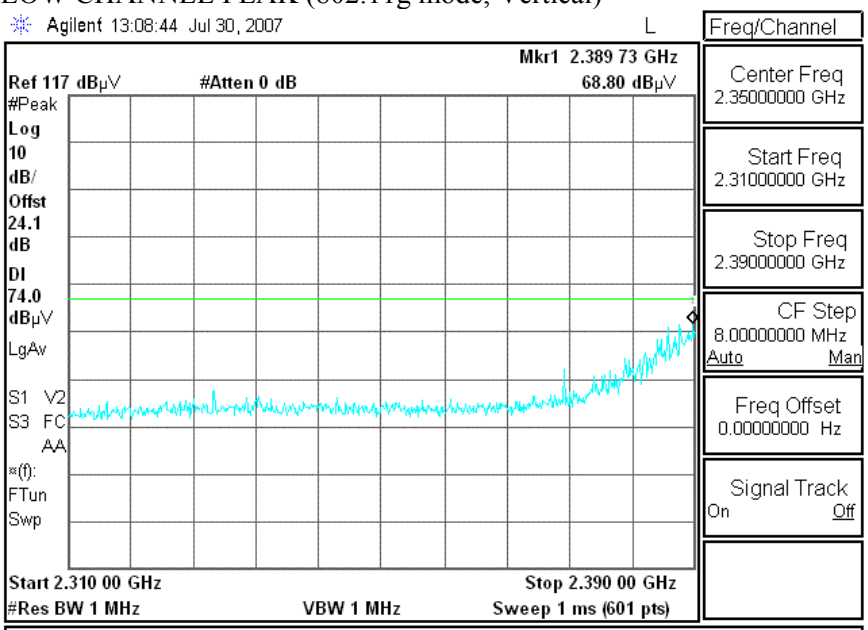
LOW CHANNEL PEAK (802.11g mode, Horizontal)



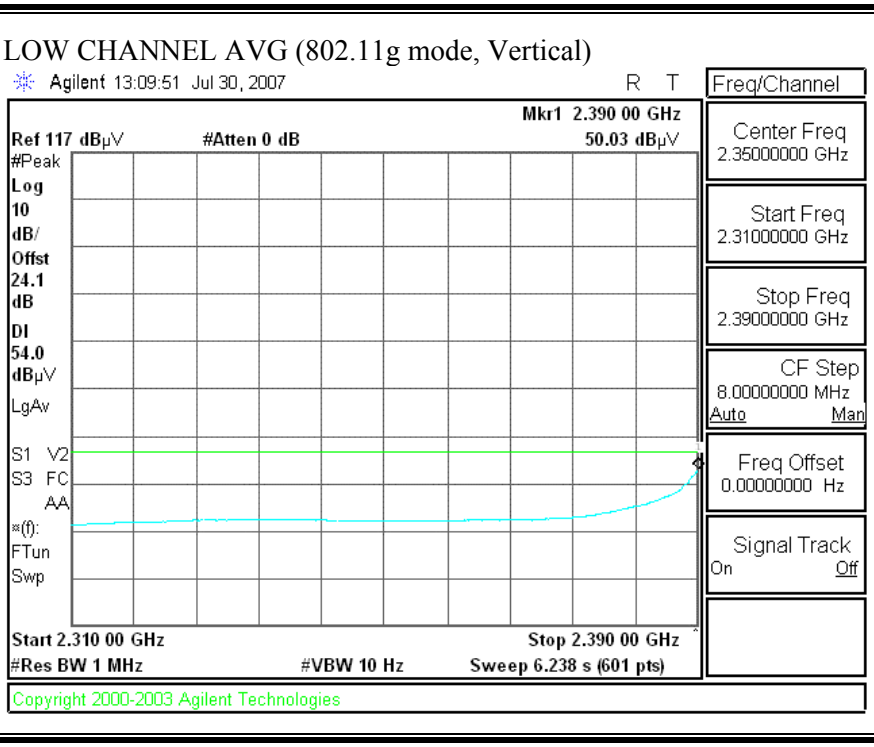
LOW CHANNEL AVG (802.11g mode, Horizontal)



LOW CHANNEL PEAK (802.11g mode, Vertical)

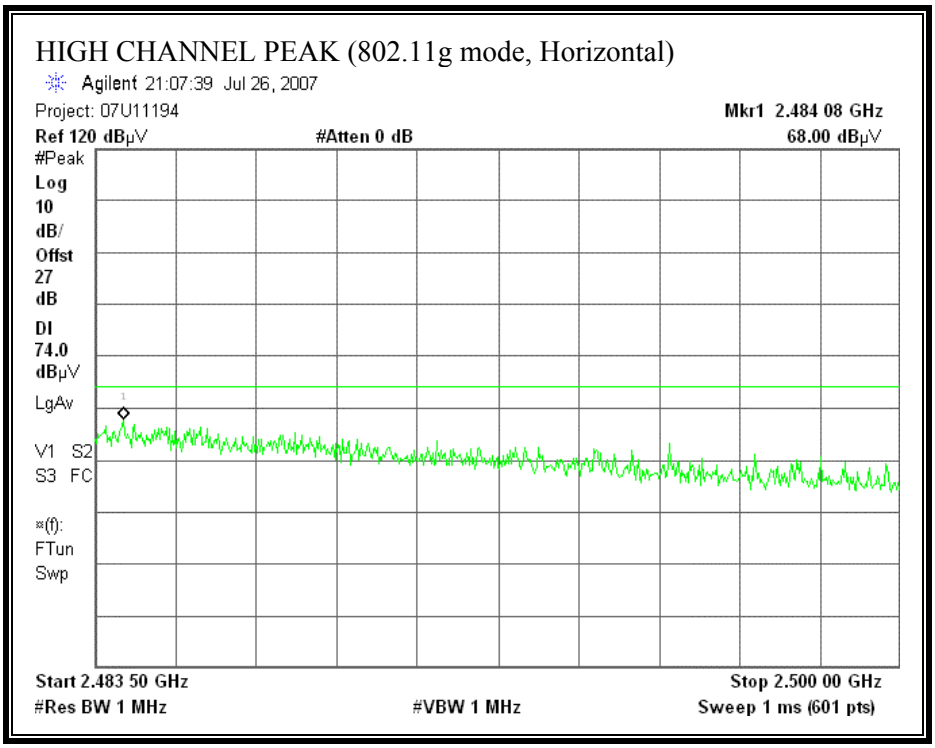


LOW CHANNEL AVG (802.11g mode, Vertical)

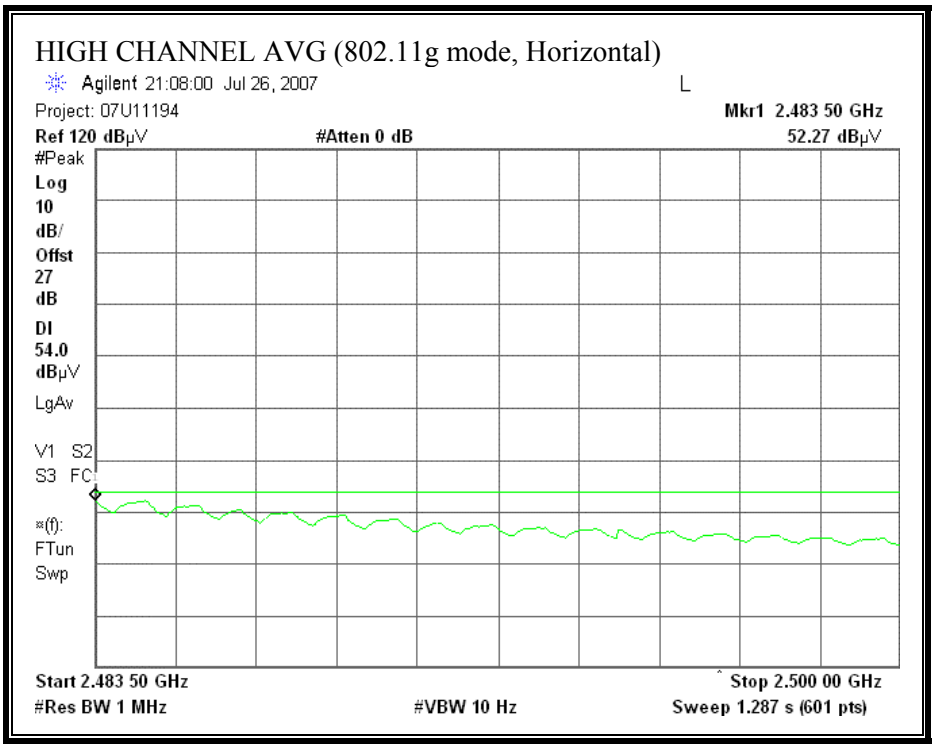


RESTRICTED BANDEDGE (802.11g MODE, 2457MHz, With ACON Antenna)

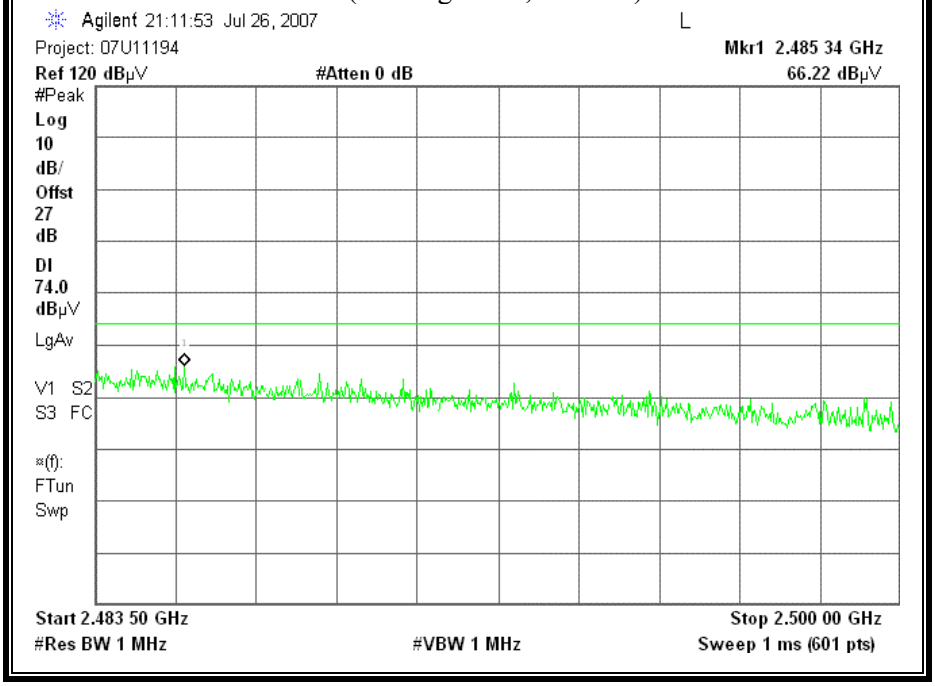
HIGH CHANNEL PEAK (802.11g mode, Horizontal)



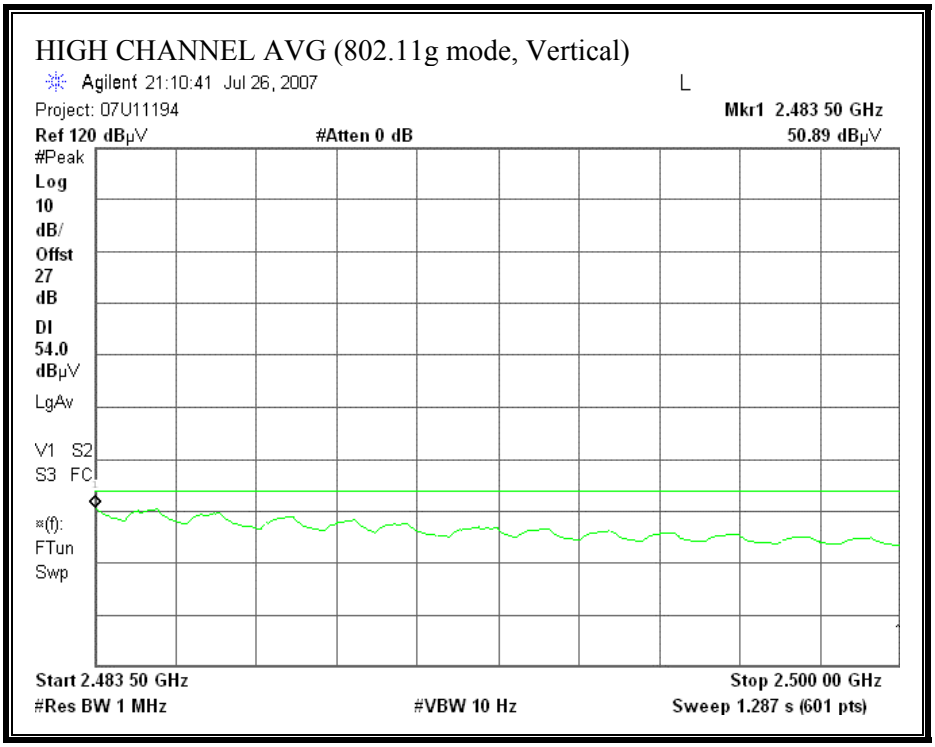
HIGH CHANNEL AVG (802.11g mode, Horizontal)



HIGH CHANNEL PEAK (802.11g mode, Vertical)

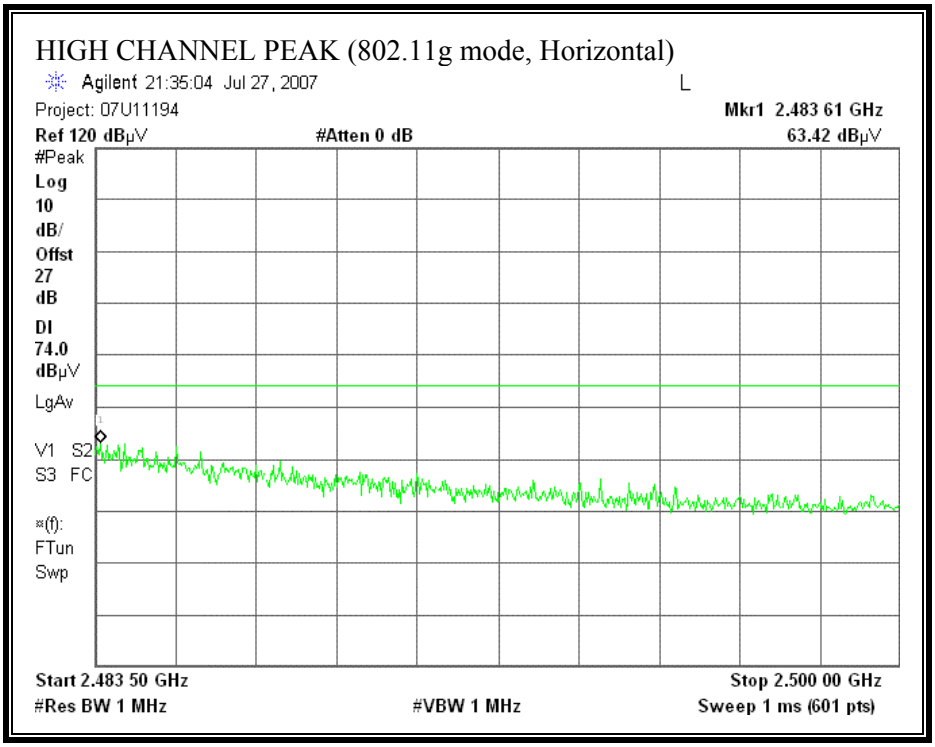


HIGH CHANNEL AVG (802.11g mode, Vertical)

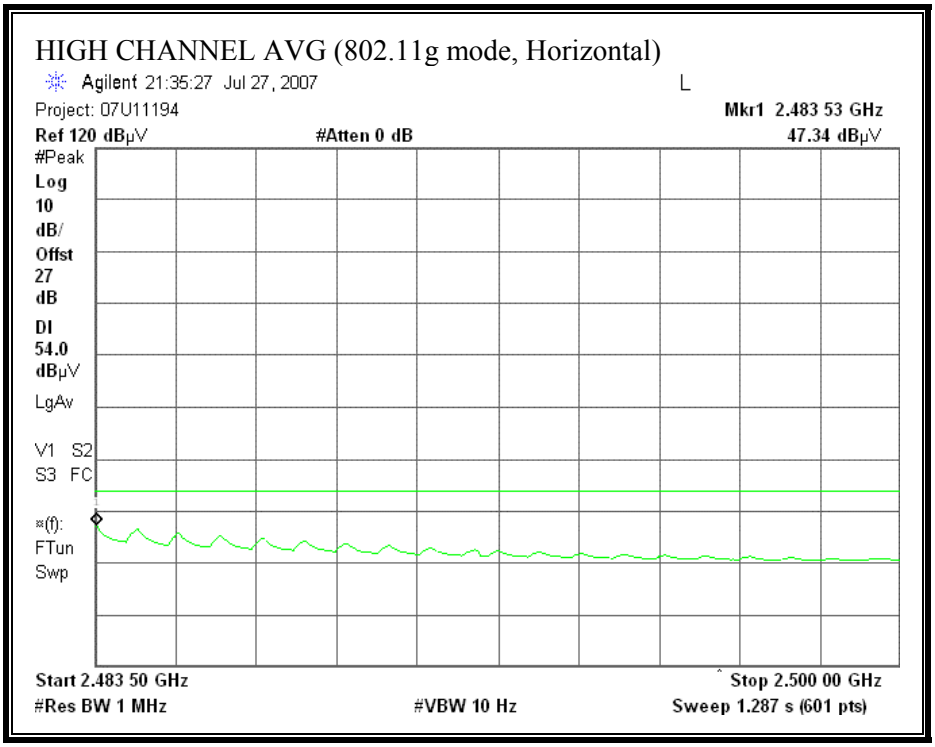


RESTRICTED BANDEDGE (802.11g MODE, 2462MHz, With ACON Antenna)

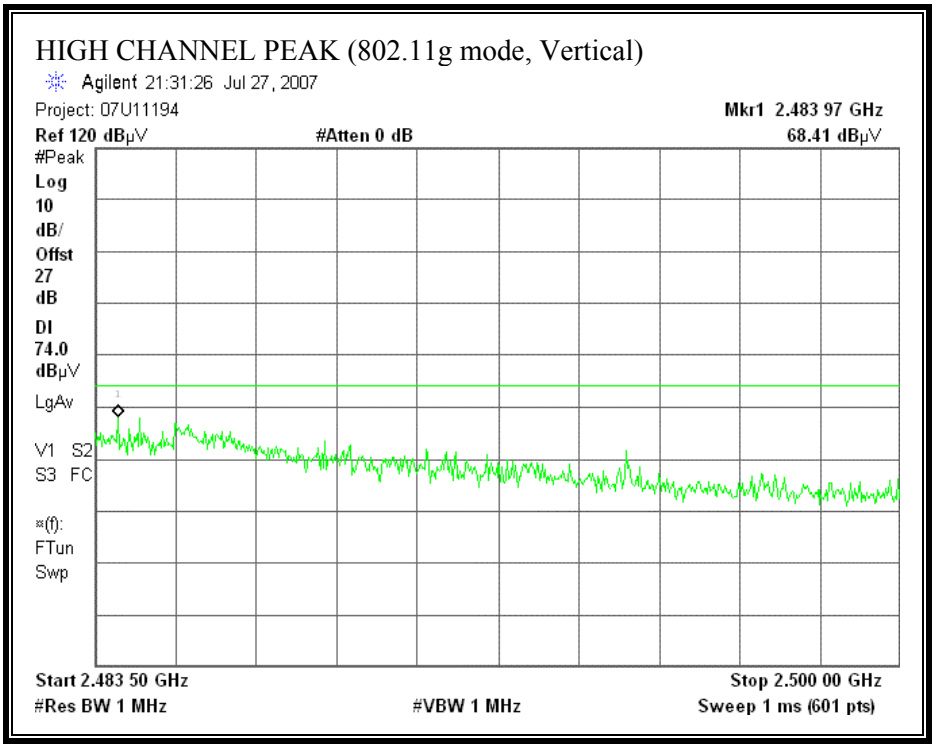
HIGH CHANNEL PEAK (802.11g mode, Horizontal)



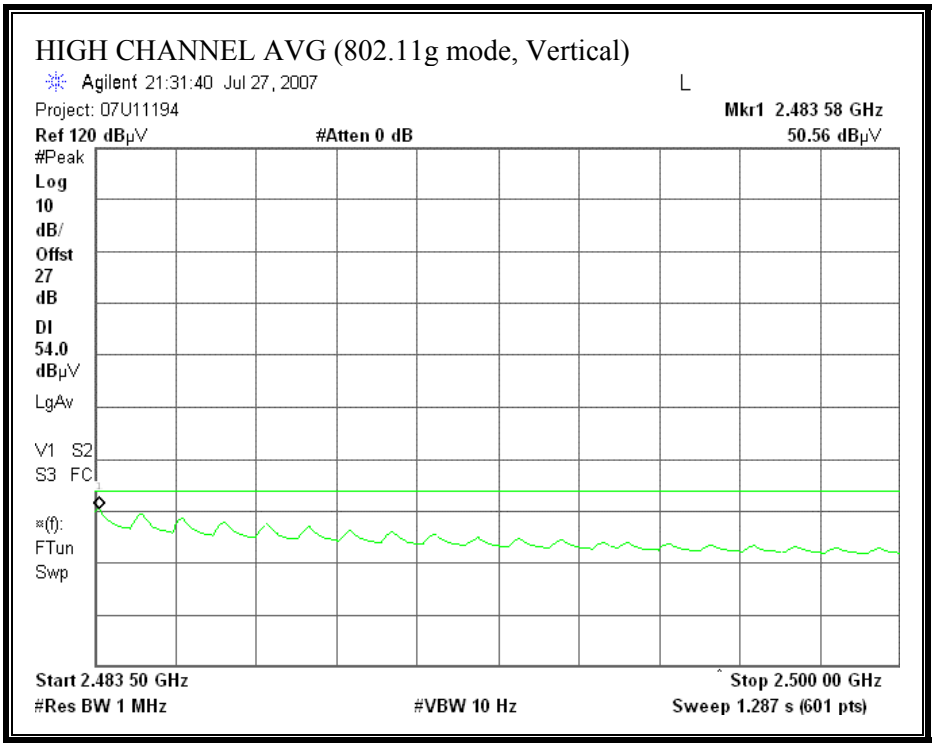
HIGH CHANNEL AVG (802.11g mode, Horizontal)



HIGH CHANNEL PEAK (802.11g mode, Vertical)



HIGH CHANNEL AVG (802.11g mode, Vertical)



HARMONICS AND SPURIOUS EMISSIONS (802.11g MODE)

With ACON Antenna

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Company: Broadcom
Project #: 07U11194
Date: 7/30/2007
Test Engineer: Keith Ng
Configuration: EUT installed inside the Dell laptop with Acon Antenna
Mode: 2.4GHz Tx g mode

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T144 Miteq 3008A00931			FCC 15.205

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
		A-5m Chamber		R_001

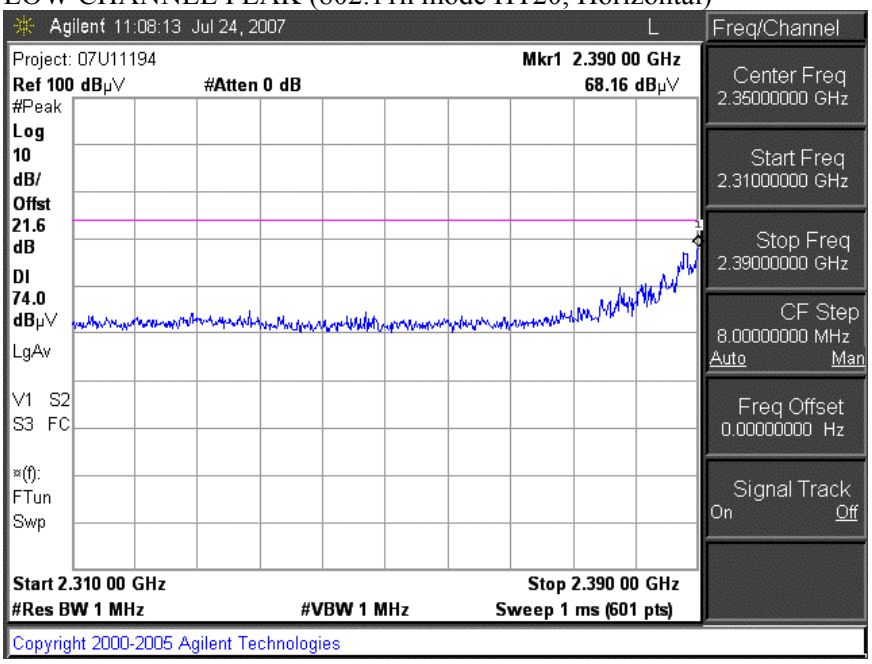
Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

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)
Low Ch(2412MHz)															
1.066	3.0	59.4	39.3	25.6	3.1	-39.4	0.0	0.0	48.7	28.6	74	54	-25.3	-25.4	V
1.346	3.0	58.4	46.6	26.3	3.4	-39.0	0.0	0.0	49.1	37.3	74	54	-24.9	-16.7	V
4.824	3.0	44.6	28.3	33.0	6.9	-36.5	0.0	0.0	48.0	31.7	74	54	-26.0	-22.3	V
1.066	3.0	54.7	36.4	25.6	3.1	-39.4	0.0	0.0	44.0	25.7	74	54	-30.0	-28.3	H
4.824	3.0	46.6	31.7	33.0	6.9	-36.5	0.0	0.0	50.0	35.2	74	54	-24.0	-18.8	H
Mid Ch(2437MHz)															
1.066	3.0	53.3	37.9	33.7	6.9	-34.8	0.0	0.0	54.6	40.5	74.0	54.0	-19.4	-13.5	V
1.345	3.0	57.4	46.2	37.1	9.8	-33.3	0.0	0.0	49.9	36.5	74.0	54.0	-24.1	-17.5	V
4.874	3.0	42.4	30.1	37.1	9.8	-33.3	0.0	0.0	49.9	36.5	74.0	54.0	-24.1	-17.5	V
1.067	3.0	52.6	36.2	33.7	6.9	-34.8	0.0	0.0	52.3	39.1	74.0	54.0	-21.7	-14.9	H
4.874	3.0	52.9	36.1	37.1	9.8	-33.3	0.0	0.0	49.4	36.4	74.0	54.0	-24.6	-17.6	H
7.311	3.0	45.1	28.8	37.1	9.8	-33.3	0.0	0.0	49.4	36.4	74.0	54.0	-24.6	-17.6	H
Hi Ch (2462MHz)															
1.066	3.0	54.4	39.8	25.6	3.1	-39.4	0.0	0.0	43.7	29.1	74	54	-30.3	-24.9	V
1.345	3.0	50.1	40.4	26.3	3.4	-39.0	0.0	0.0	40.8	31.2	74	54	-33.2	-22.8	V
4.924	3.0	40.7	32.8	33.1	7.0	-36.5	0.0	0.0	44.3	36.4	74	54	-29.7	-17.6	V
1.066	3.0	50.7	35.9	25.6	3.1	-39.4	0.0	0.0	40.0	25.1	74	54	-34.0	-28.9	H
1.346	3.0	54.9	42.9	26.3	3.4	-39.0	0.0	0.0	45.7	33.7	74	54	-28.3	-20.3	H
4.924	3.0	48.1	33.7	33.1	7.0	-36.5	0.0	0.0	51.7	37.3	74	54	-22.3	-16.7	H

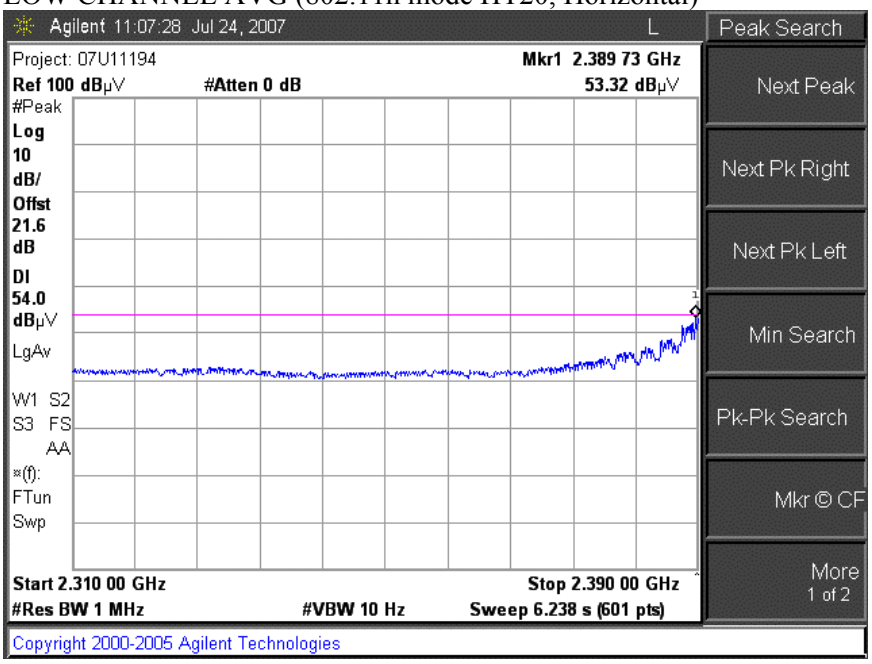
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field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

RESTRICTED BANDEDGE (802.11n MODE HT20, 2412MHz, With Amphenol Antenna)

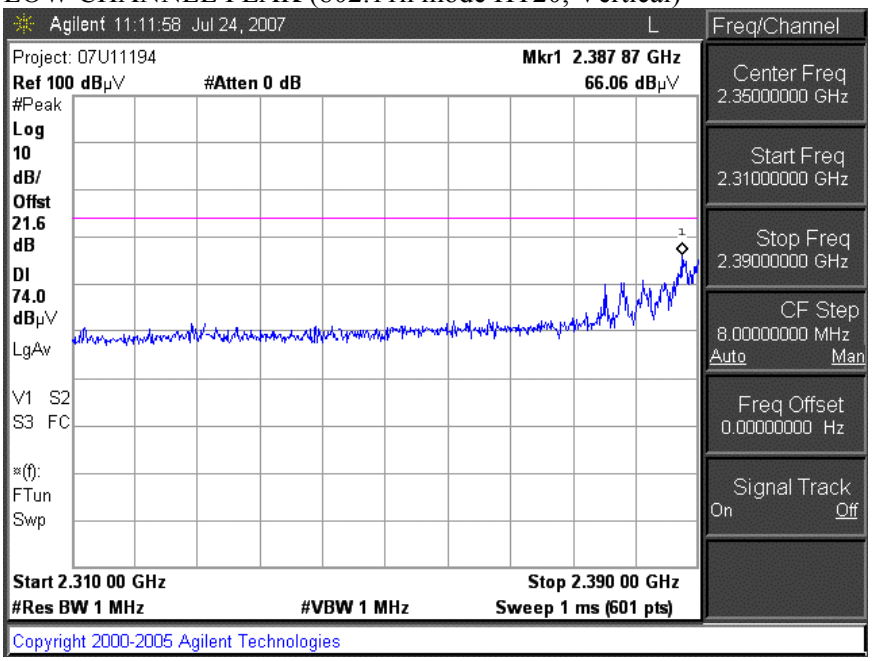
LOW CHANNEL PEAK (802.11n mode HT20, Horizontal)



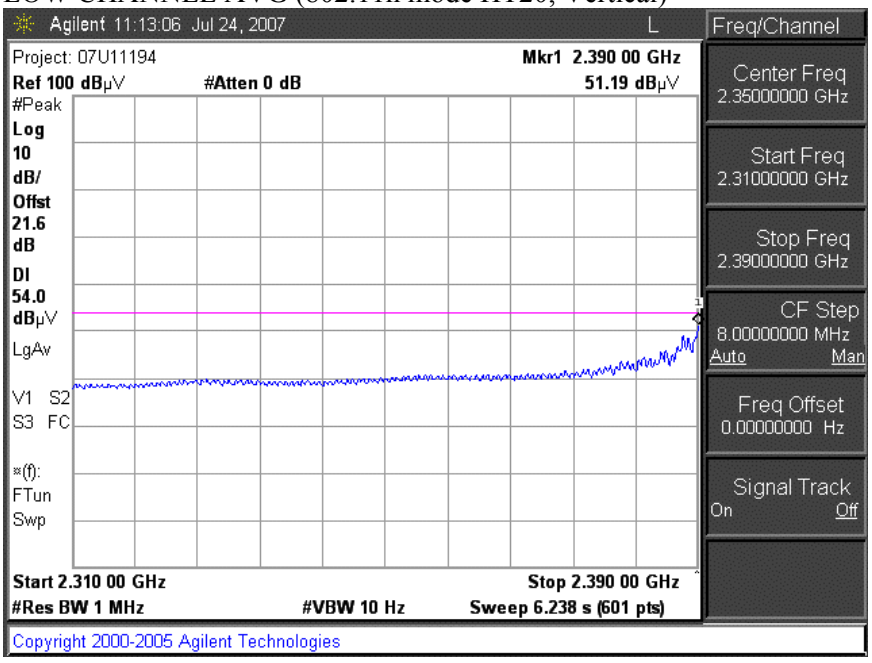
LOW CHANNEL AVG (802.11n mode HT20, Horizontal)



LOW CHANNEL PEAK (802.11n mode HT20, Vertical)

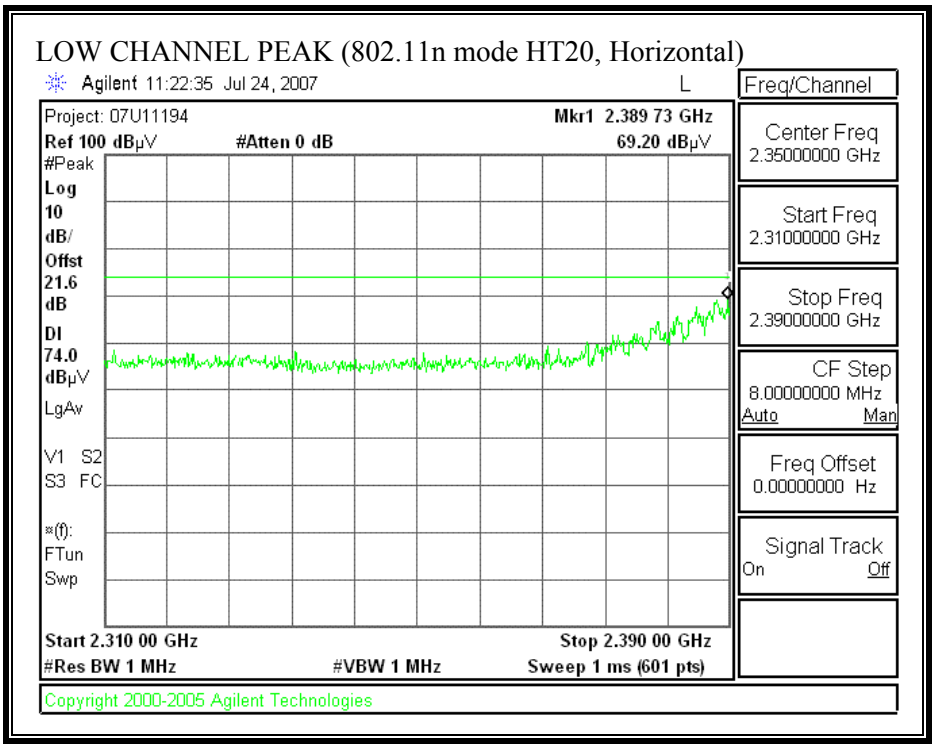


LOW CHANNEL AVG (802.11n mode HT20, Vertical)

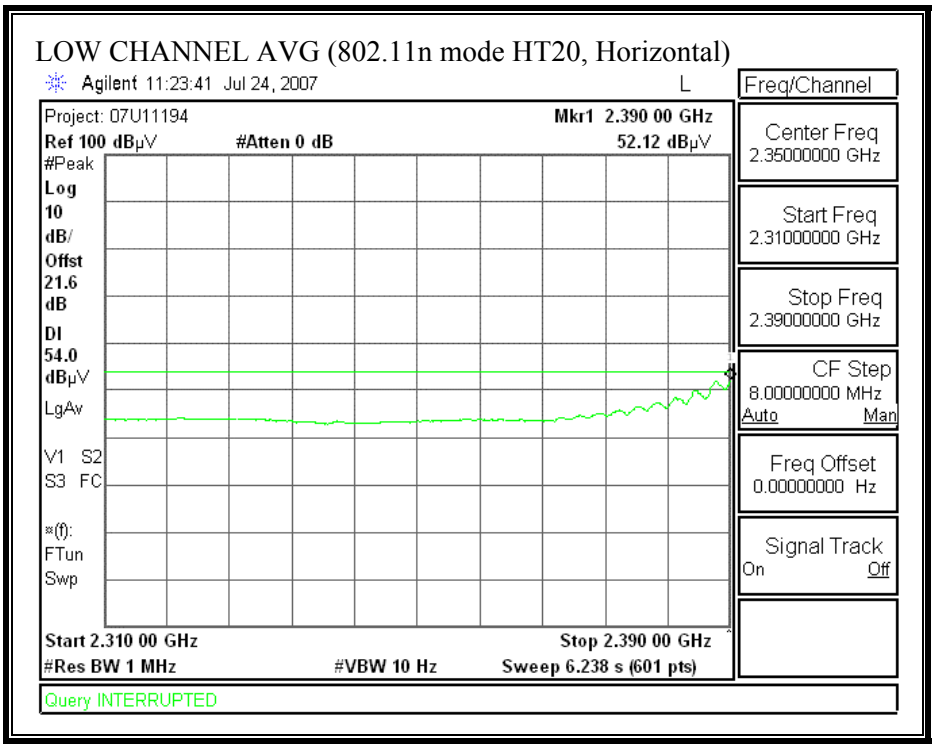


RESTRICTED BANDEDGE (802.11n MODE HT20, 2417MHz, With Amphenol Antenna)

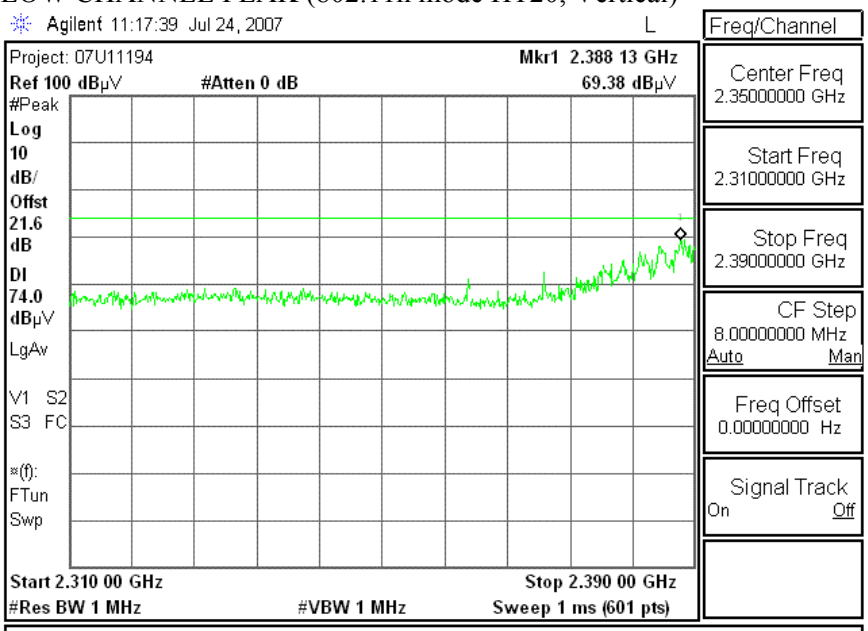
LOW CHANNEL PEAK (802.11n mode HT20, Horizontal)



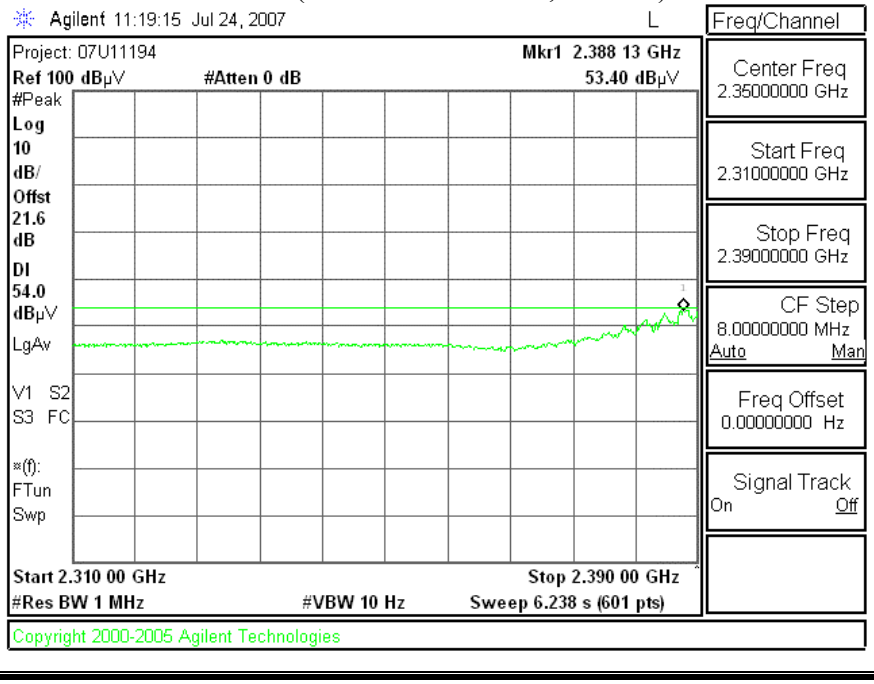
LOW CHANNEL AVG (802.11n mode HT20, Horizontal)



LOW CHANNEL PEAK (802.11n mode HT20, Vertical)

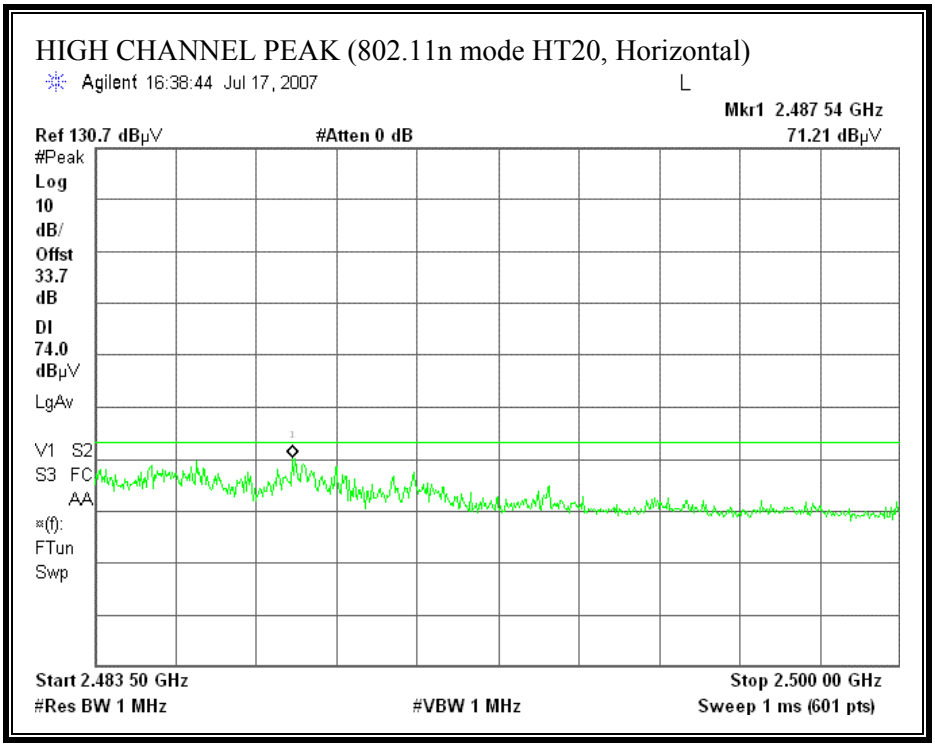


LOW CHANNEL AVG (802.11n mode HT20, Vertical)

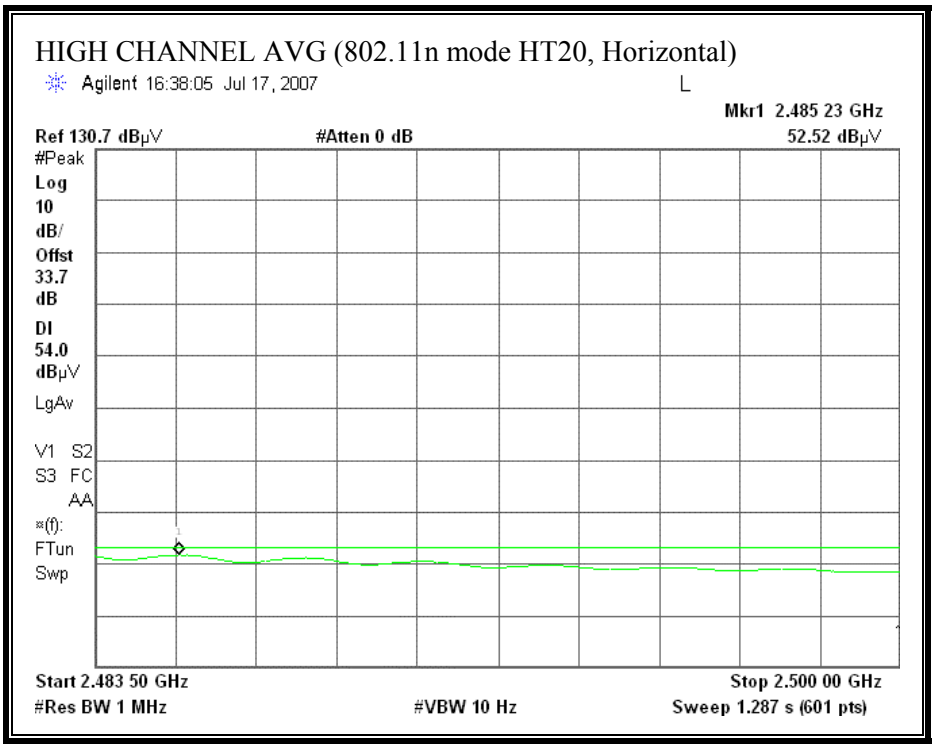


RESTRICTED BANDEDGE (802.11n MODE HT20, 2457MHz, With Amphenol Antenna)

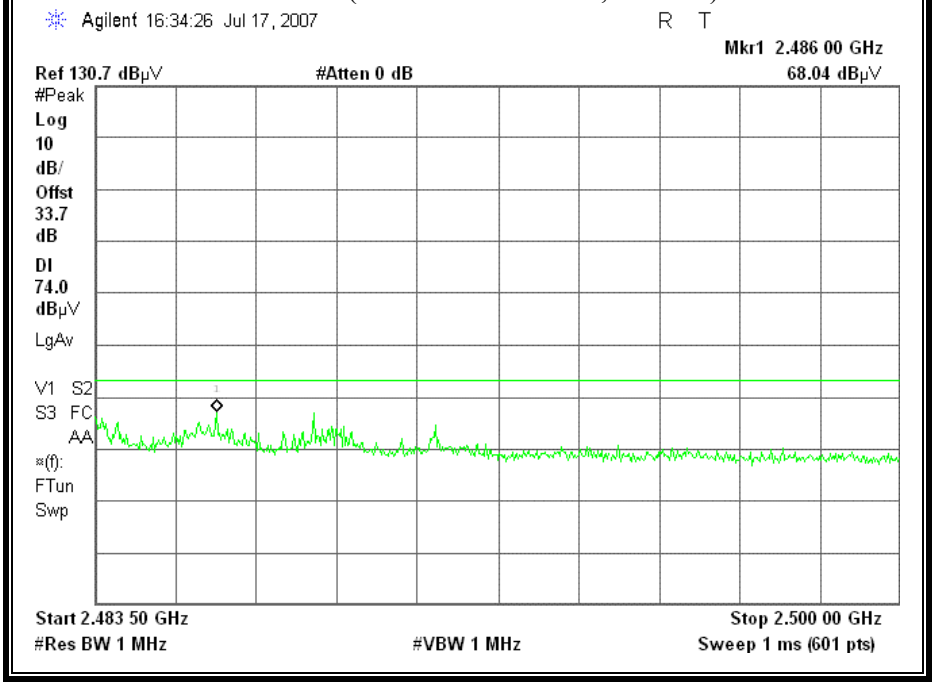
HIGH CHANNEL PEAK (802.11n mode HT20, Horizontal)



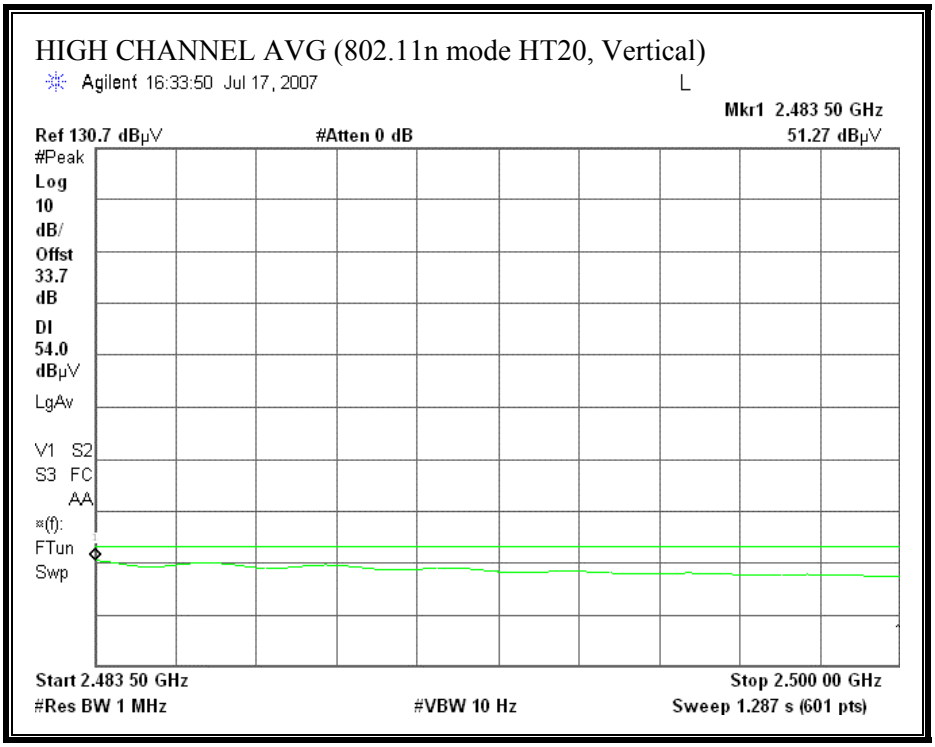
HIGH CHANNEL AVG (802.11n mode HT20, Horizontal)



HIGH CHANNEL PEAK (802.11n mode HT20, Vertical)

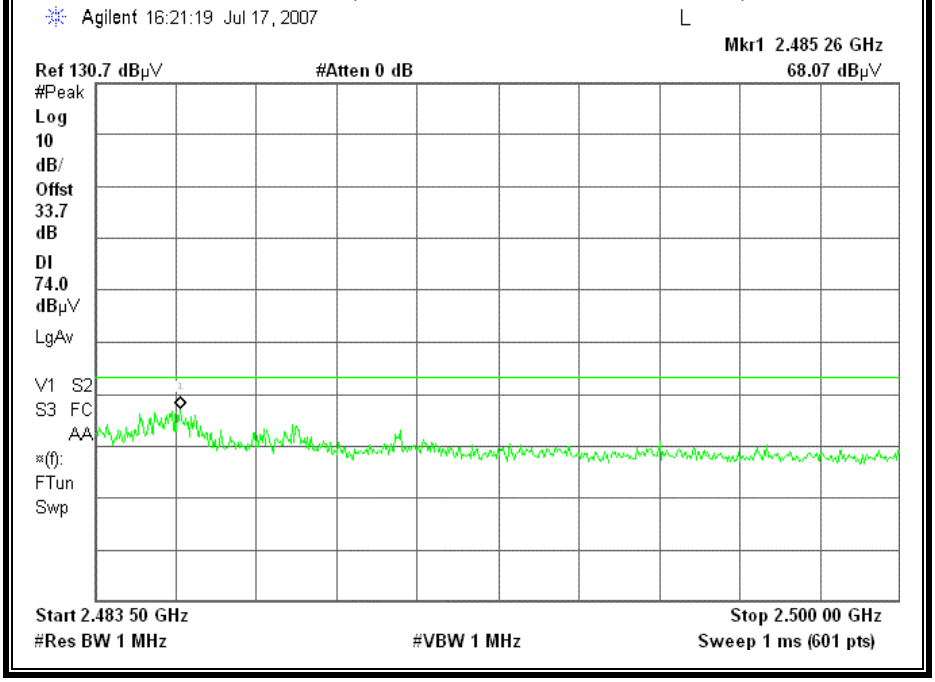


HIGH CHANNEL AVG (802.11n mode HT20, Vertical)

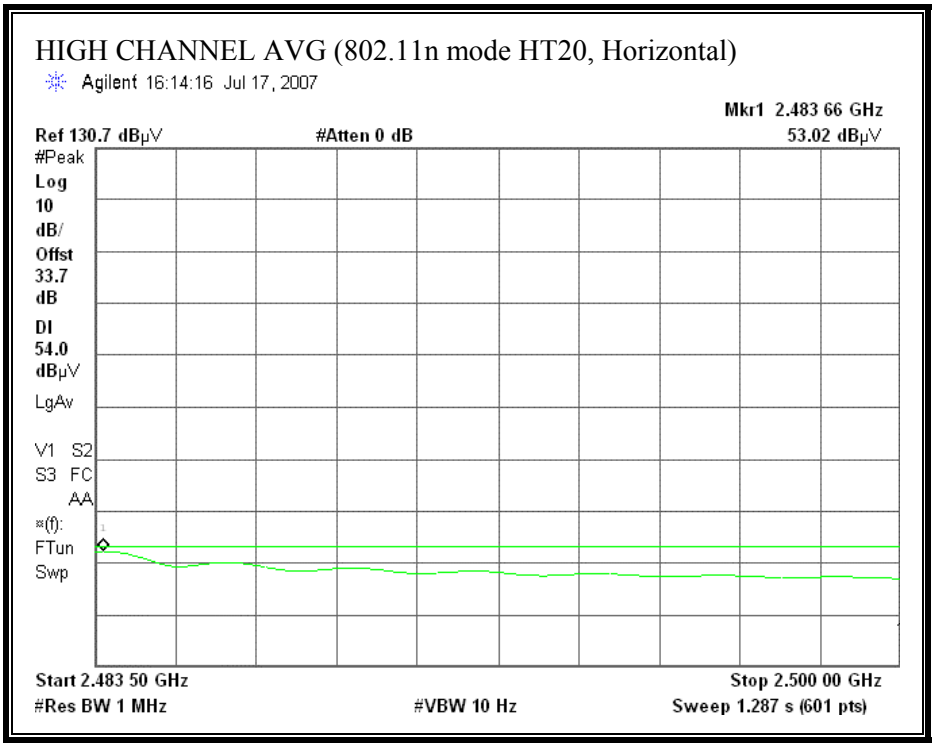


RESTRICTED BANDEDGE (802.11n MODE HT20, 2462MHz, With Amphenol Antenna)

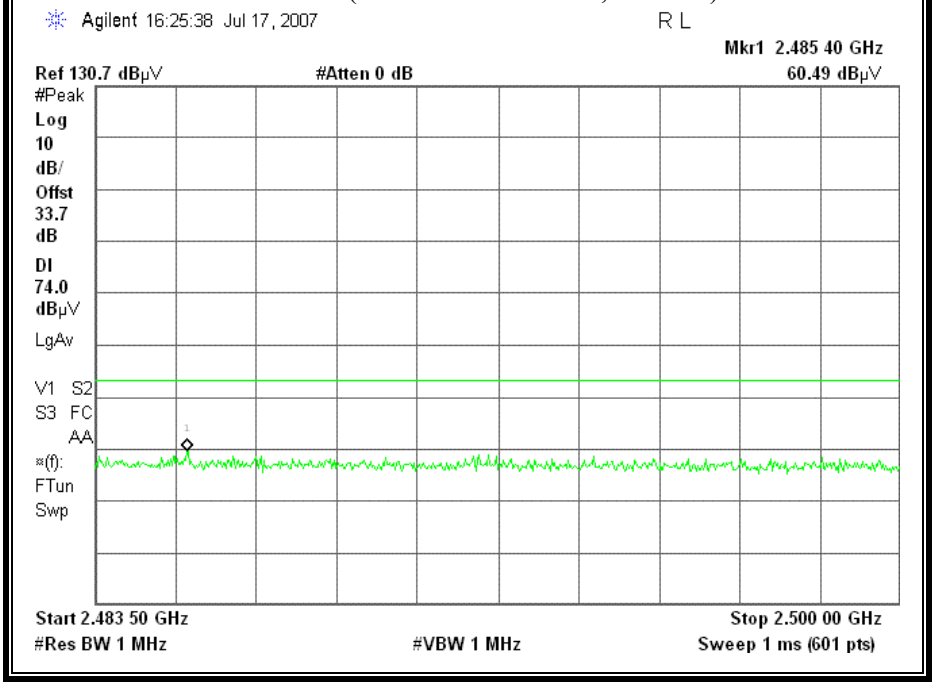
HIGH CHANNEL PEAK (802.11n mode HT20, Horizontal)



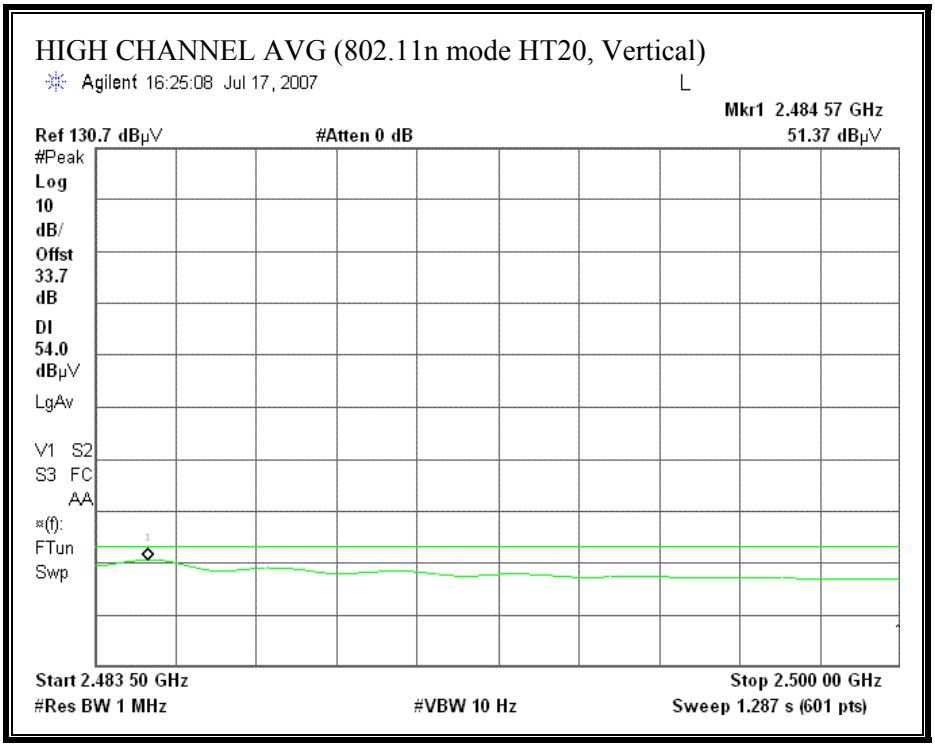
HIGH CHANNEL AVG (802.11n mode HT20, Horizontal)



HIGH CHANNEL PEAK (802.11n mode HT20, Vertical)



HIGH CHANNEL AVG (802.11n mode HT20, Vertical)



HARMONICS AND SPURIOUS EMISSIONS (802.11n MODE HT20)

With Amphenol Antenna

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Company:	Broadcom
Project #:	07U11194
Date:	07/17/07
Test Engineer:	Frank Ibrahim
Configuration:	EUT inside Dell Laptop PC, transmitting at 11n MIMO 20MHz, using Amphenol antennas, DeskTop Configuration
Mode:	TX ON
Conducted AV power setting:	LowCH (14dBm), MidCH (16dBm), HighCH (14dBm)
S/N:	Radio Module: GC4760AAFU53K9, Laptop PC: 814S701016G72300031KS00

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T144 Miteq 3008A00931		T89; ARA 18-26GHz; S/N:1049	45.87

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
		A-5m Chamber		R_001

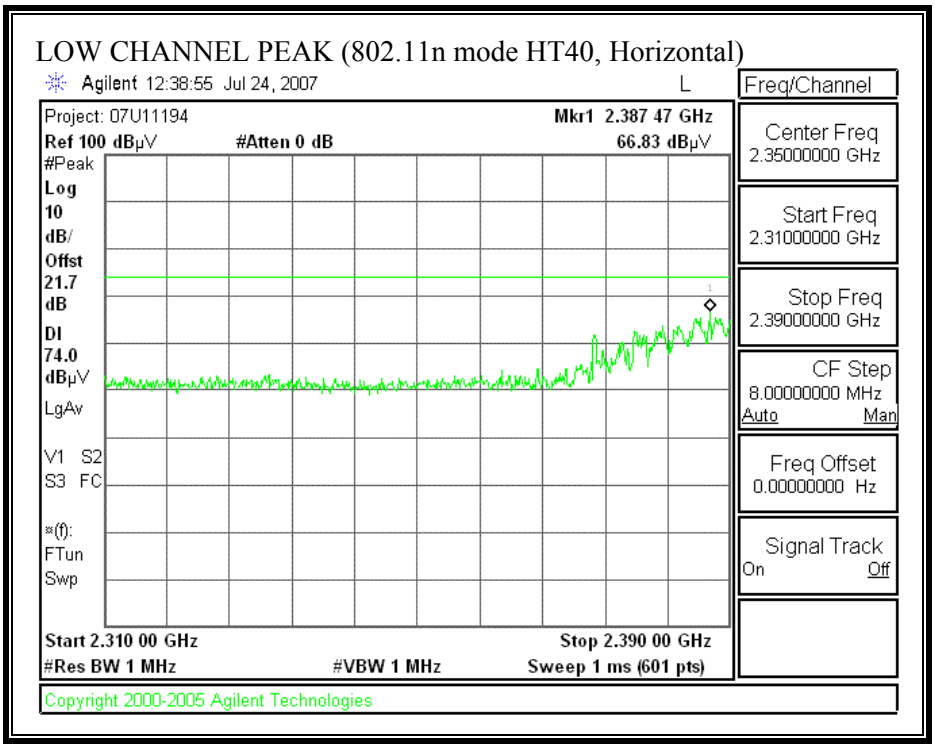
Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

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)
Low Channel (2412 MHz)															
4.824	3.0	44.67	32.12	33.0	6.9	-36.5	0.0	0.0	48.10	35.55	74	54	-25.90	-18.45	V
7.236	3.0	45.78	28.55	35.4	8.4	-36.2	0.0	0.0	53.35	36.12	74	54	-20.65	-17.88	V
4.824	3.0	45.87	30.65	33.0	6.9	-36.5	0.0	0.0	49.30	34.08	74	54	-24.70	-19.92	H
7.236	3.0	44.89	30.33	35.4	8.4	-36.2	0.0	0.0	52.46	37.90	74	54	-21.54	-16.10	H
Mid Channel (2437 MHz)															
4.874	3.0	44.31	31.29	33.1	6.9	-36.5	0.0	0.0	47.82	34.80	74	54	-26.18	-19.20	V
7.311	3.0	46.80	25.58	35.5	8.4	-36.2	0.0	0.0	54.48	33.26	74	54	-19.52	-20.74	V
4.874	3.0	45.65	29.67	33.1	6.9	-36.5	0.0	0.0	49.16	33.18	74	54	-24.84	-20.82	H
7.311	3.0	44.71	25.52	35.5	8.4	-36.2	0.0	0.0	52.39	33.20	74	54	-21.61	-20.80	H
High Channel (2462 MHz)															
4.924	3.0	41.40	26.55	33.1	7.0	-36.5	0.0	0.0	45.00	30.15	74	54	-29.00	-23.85	V
7.386	3.0	38.00	25.32	35.6	8.4	-36.2	0.0	0.0	45.80	33.12	74	54	-28.20	-20.88	V
4.924	3.0	39.88	28.89	33.1	7.0	-36.5	0.0	0.0	43.48	32.49	74	54	-30.52	-21.51	H
7.386	3.0	39.99	29.54	35.6	8.4	-36.2	0.0	0.0	47.79	37.34	74	54	-26.21	-16.66	H

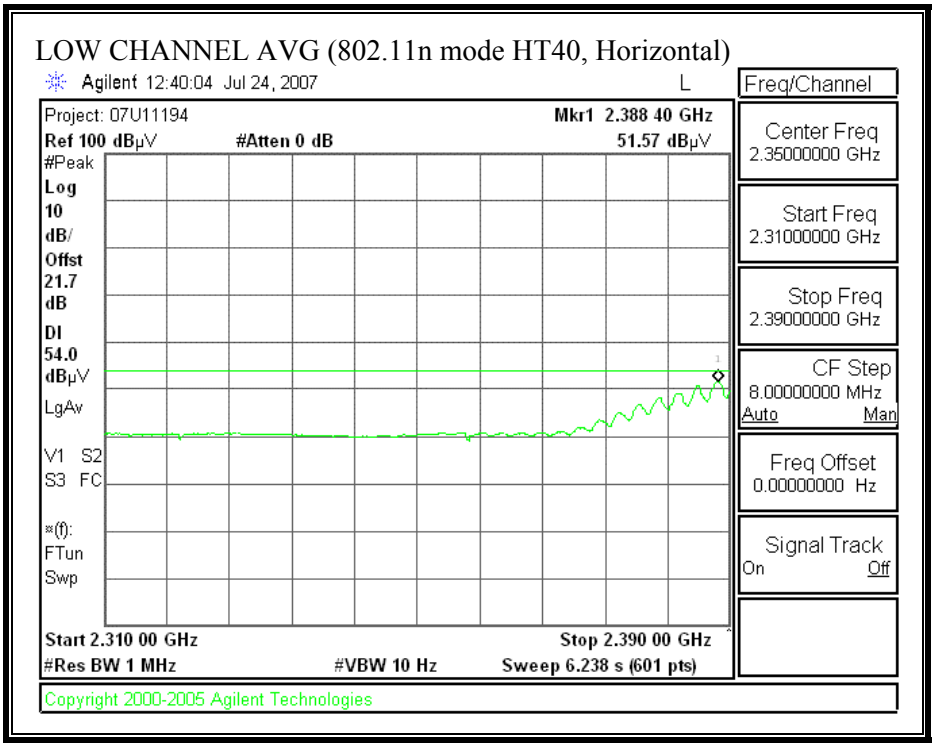
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field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

RESTRICTED BANDEDGE (802.11n MODE HT40, 2422MHz, With Amphenol Antenna)

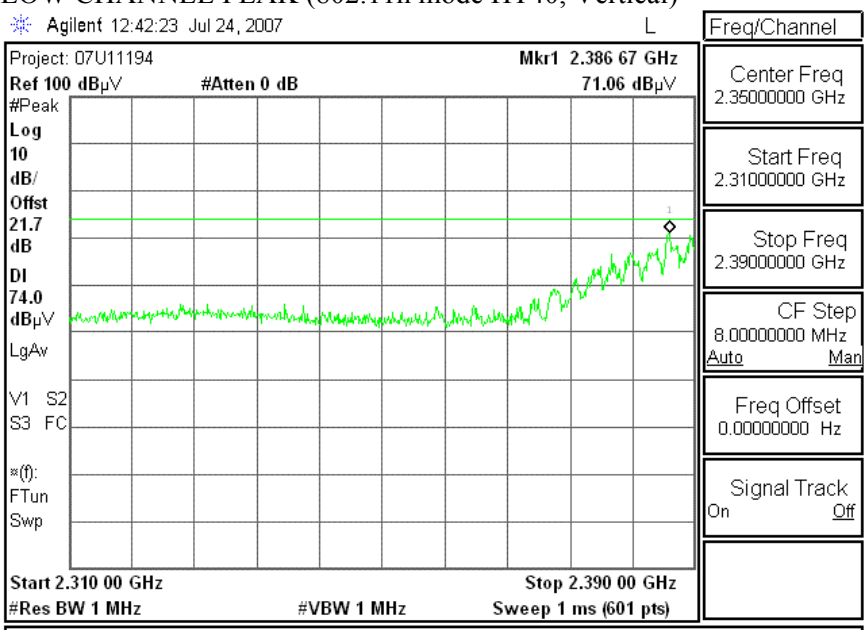
LOW CHANNEL PEAK (802.11n mode HT40, Horizontal)



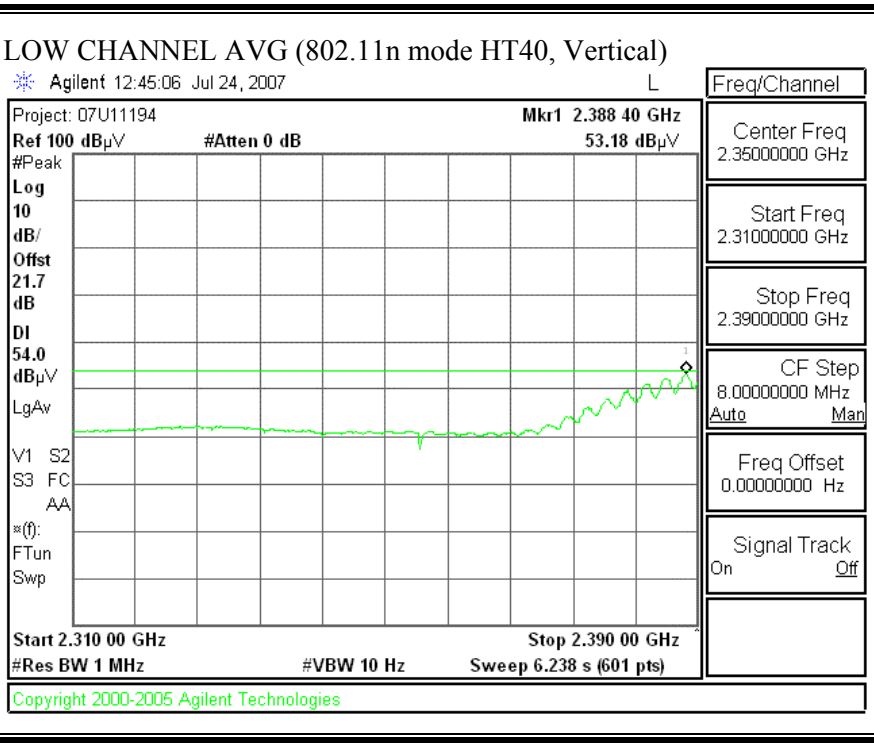
LOW CHANNEL AVG (802.11n mode HT40, Horizontal)



LOW CHANNEL PEAK (802.11n mode HT40, Vertical)

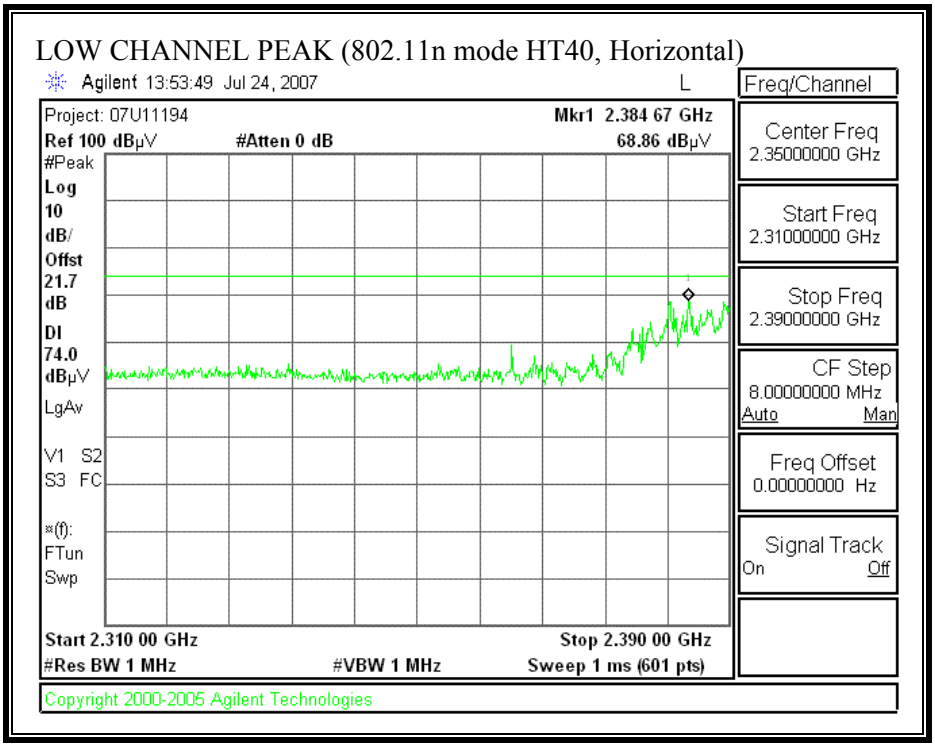


LOW CHANNEL AVG (802.11n mode HT40, Vertical)

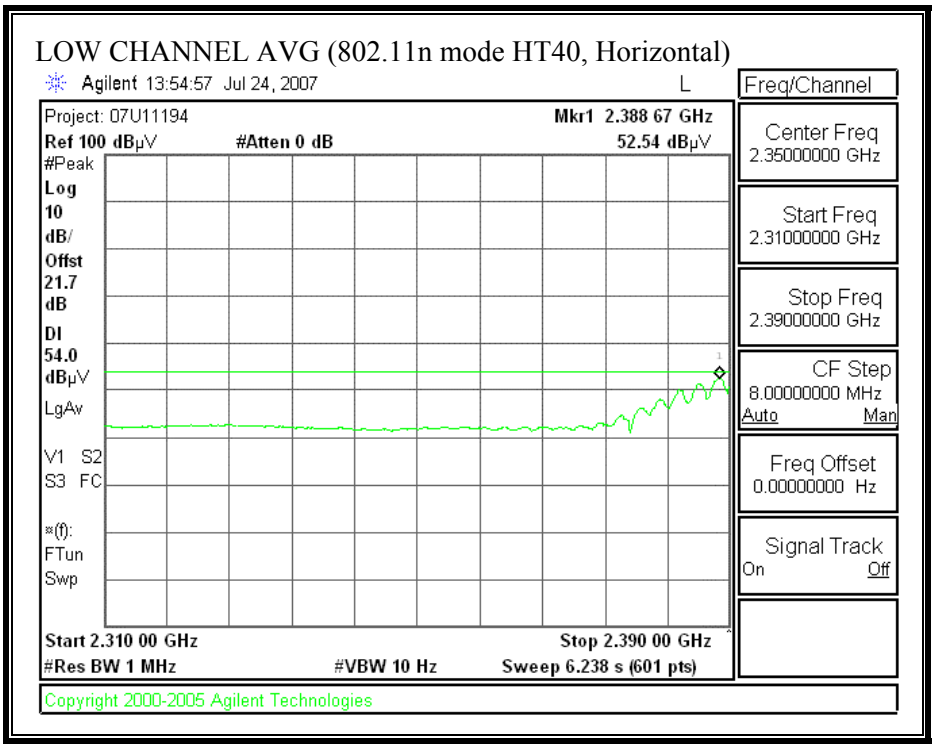


RESTRICTED BANDEDGE (802.11n MODE HT40, 2427MHz, With Amphenol Antenna)

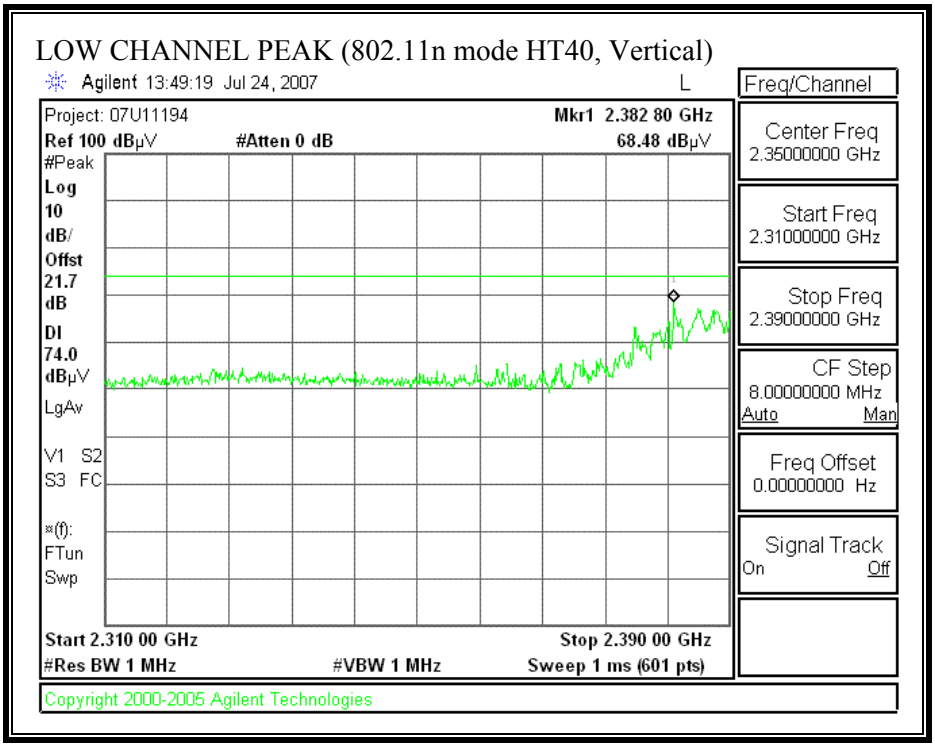
LOW CHANNEL PEAK (802.11n mode HT40, Horizontal)



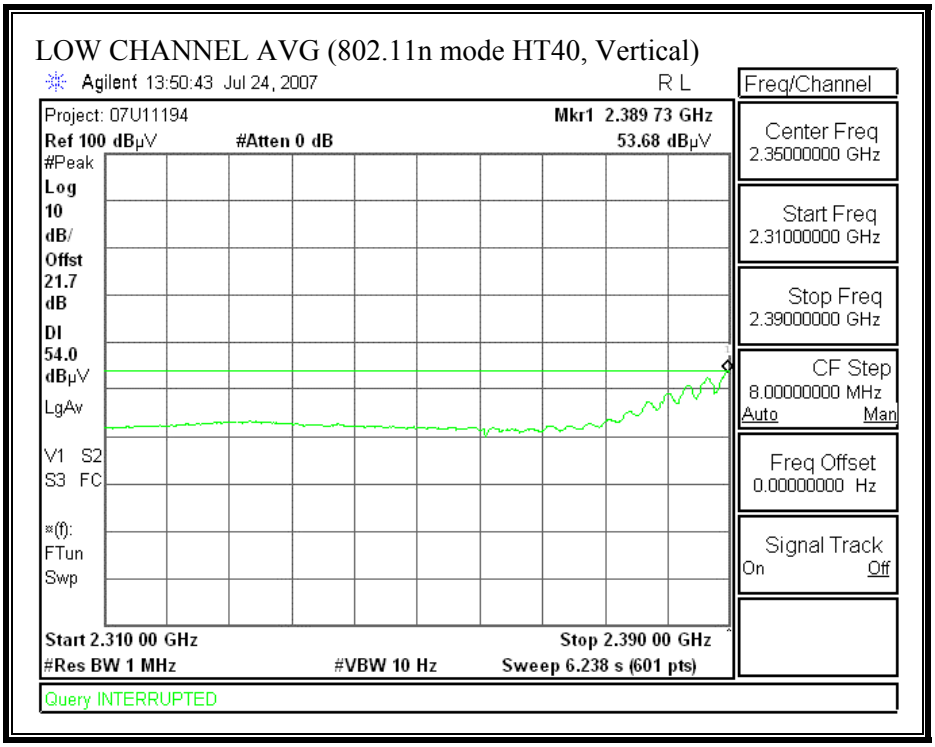
LOW CHANNEL AVG (802.11n mode HT40, Horizontal)



LOW CHANNEL PEAK (802.11n mode HT40, Vertical)

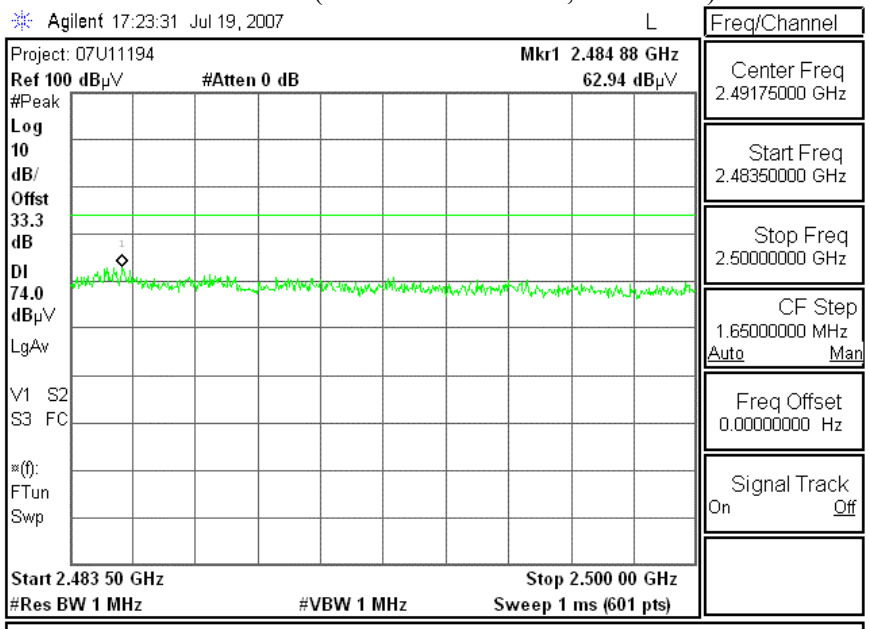


LOW CHANNEL AVG (802.11n mode HT40, Vertical)

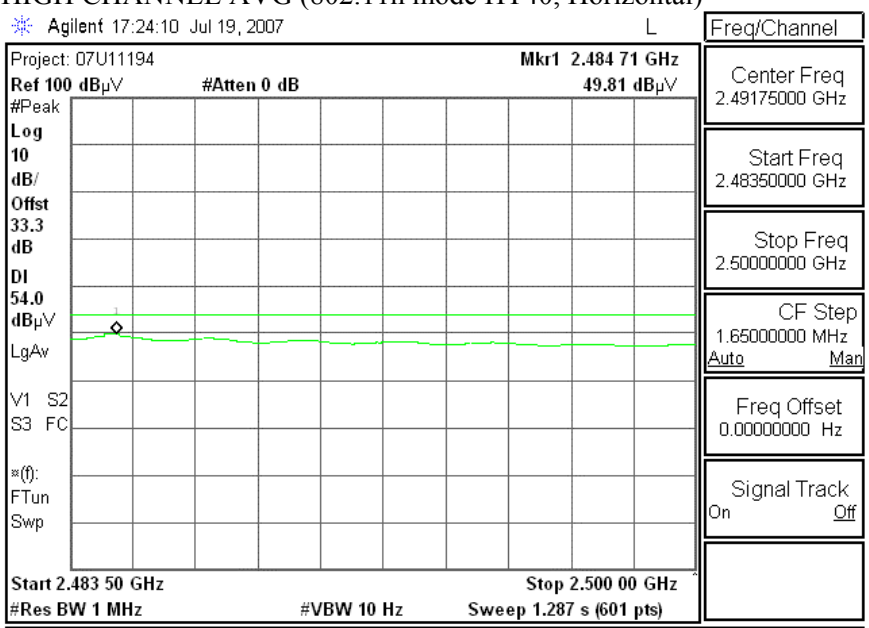


RESTRICTED BANDEDGE (802.11n MODE HT40, 2447MHz, With Amphenol Antenna)

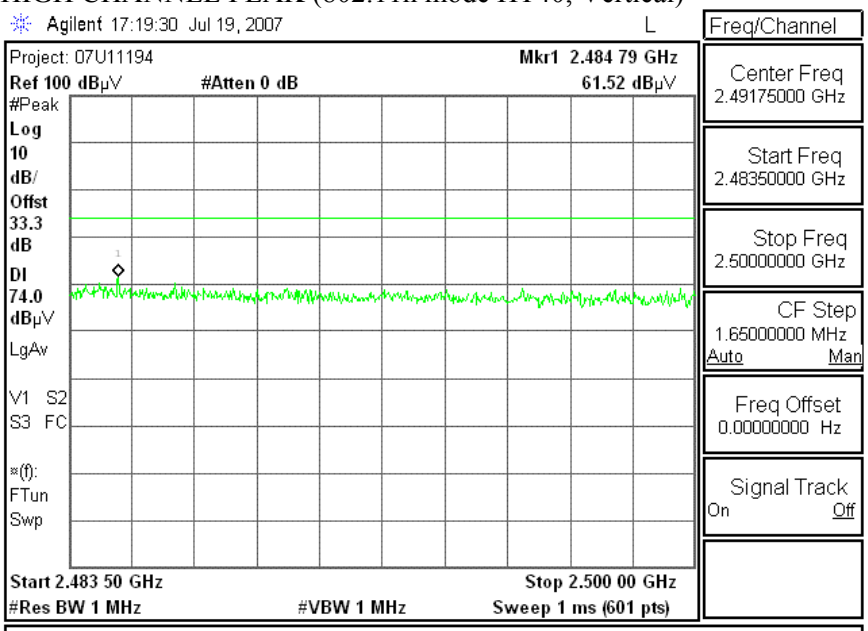
HIGH CHANNEL PEAK (802.11n mode HT40, Horizontal)



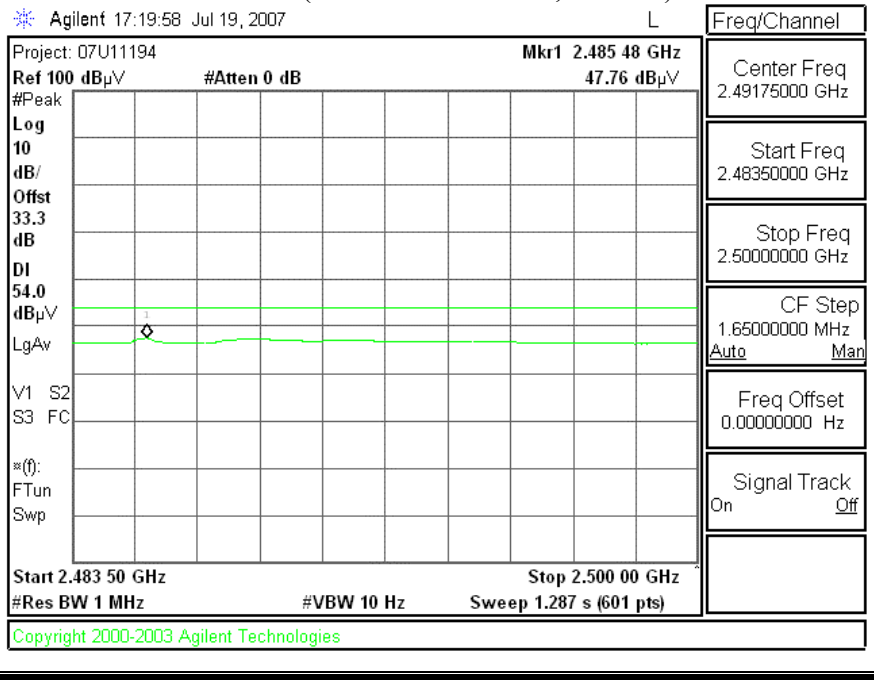
HIGH CHANNEL AVG (802.11n mode HT40, Horizontal)



HIGH CHANNEL PEAK (802.11n mode HT40, Vertical)

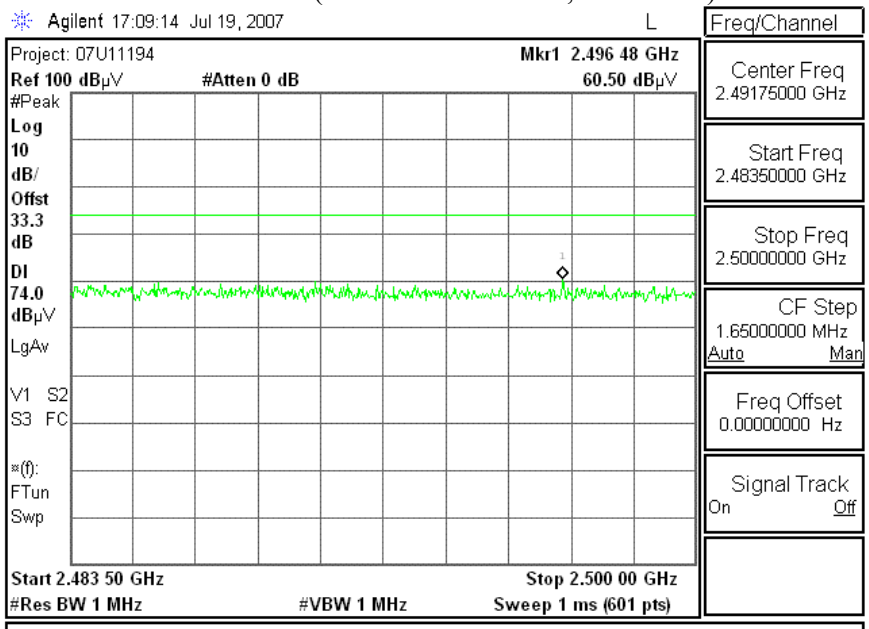


HIGH CHANNEL AVG (802.11n mode HT40, Vertical)

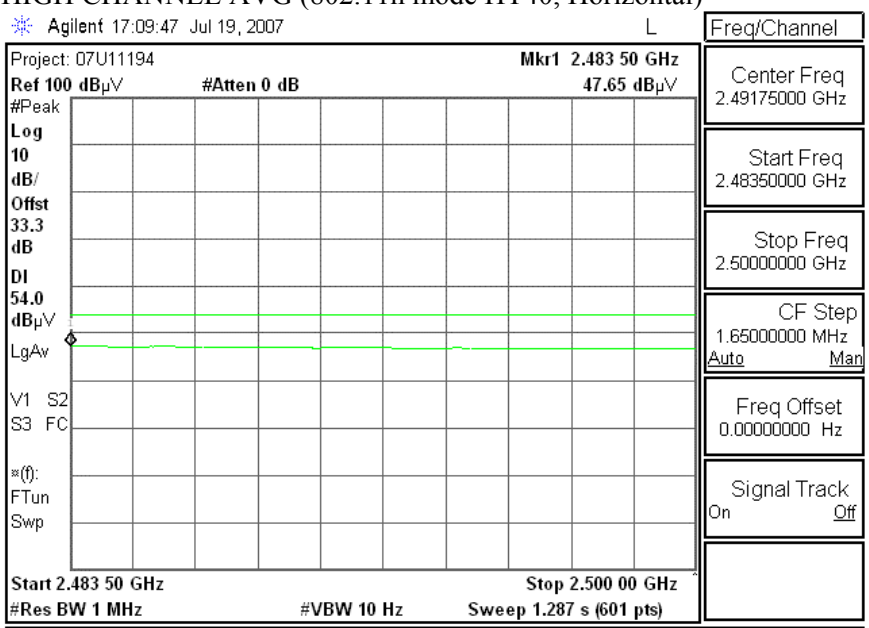


RESTRICTED BANDEDGE (802.11n MODE HT40, 2452MHz, With Amphenol Antenna)

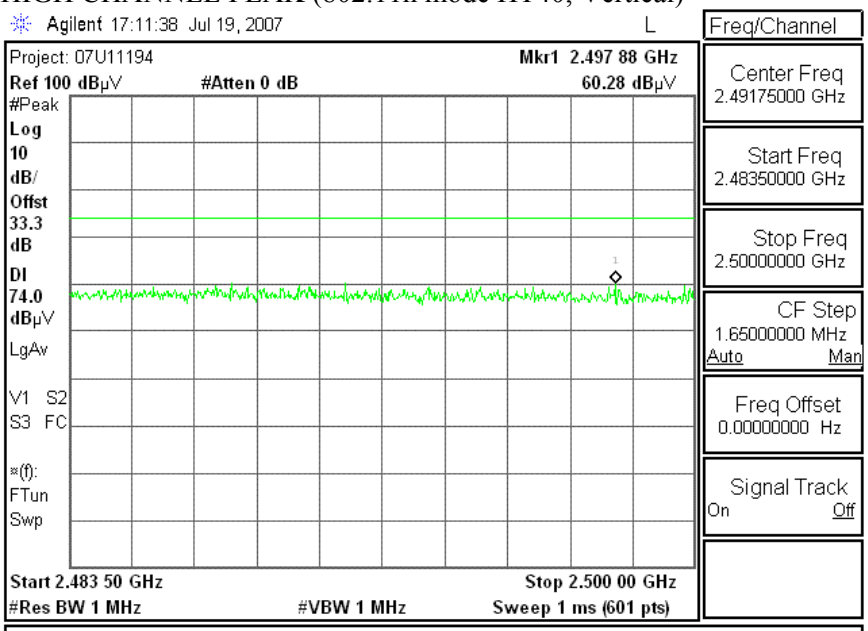
HIGH CHANNEL PEAK (802.11n mode HT40, Horizontal)



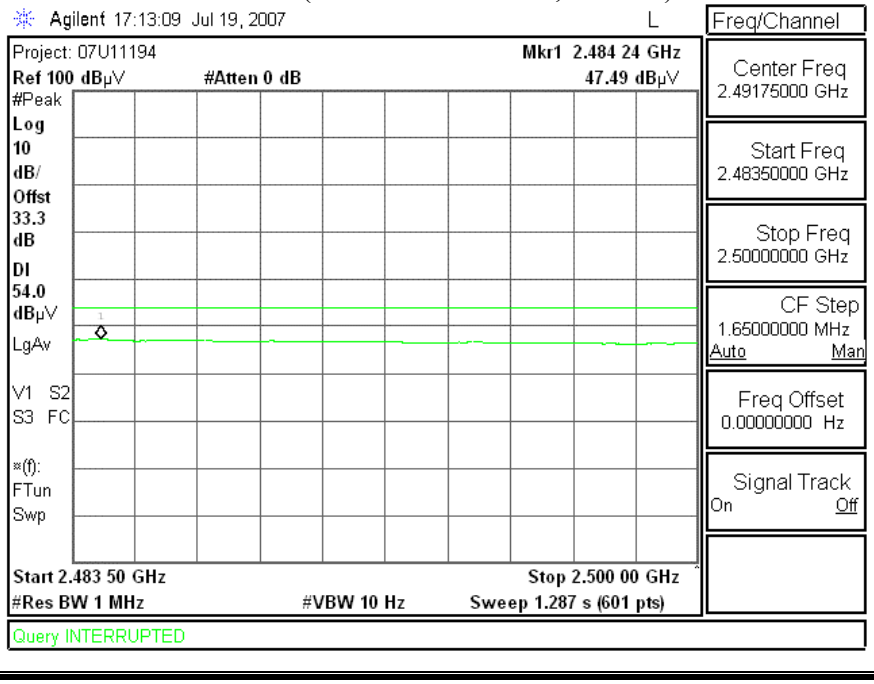
HIGH CHANNEL AVG (802.11n mode HT40, Horizontal)



HIGH CHANNEL PEAK (802.11n mode HT40, Vertical)



HIGH CHANNEL AVG (802.11n mode HT40, Vertical)



HARMONICS AND SPURIOUS EMISSIONS (802.11n MODE HT40)

With Amphenol Antenna

High Frequency Measurement

Compliance Certification Services, Fremont 5m Chamber

Company:	Broadcom
Project #:	07U11194
Date:	07/19/07
Test Engineer:	Thanh Nguyen
Configuration:	EUT inside Dell Laptop PC, transmitting at 11n MIMO 40MHz, using Amphenol antennas, DeskTop Configuration
Mode:	TX ON
Conducted AV power setting:	LowCH (13dBm), MidCH (14dBm), HighCH (12dBm)
S/N:	Radio Module: GC4760AAFU53K9, Laptop PC: 814S701016G72300031KS00

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T144 Miteq 3008A00931		T89; ARA 18-26GHz; S/N:1049	FCC 15.205

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
		A-5m Chamber		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)
Low Channel (2422 MHz)															
4.854	3.0	44.88	31.45	33.3	3.6	-36.5	0.0	0.0	45.39	31.96	74	54	-28.61	-22.04	H
7.281	3.0	44.33	31.25	35.0	4.3	-36.2	0.0	0.0	47.34	34.26	74	54	-26.66	-19.74	H
4.854	3.0	44.68	34.21	33.3	3.6	-36.5	0.0	0.0	45.19	34.72	74	54	-28.81	-19.28	V
7.281	3.0	43.63	31.22	35.0	4.3	-36.2	0.0	0.0	46.64	34.23	74	54	-27.36	-19.77	V
Low Channel (2427 MHz)															
4.854	3.0	44.21	31.13	33.3	3.6	-36.5	0.0	0.0	44.72	31.64	74	54	-29.28	-22.36	H
7.281	3.0	44.80	31.02	35.0	4.3	-36.2	0.0	0.0	47.81	34.03	74	54	-26.19	-19.97	H
4.854	3.0	44.19	33.22	33.3	3.6	-36.5	0.0	0.0	44.70	33.73	74	54	-29.30	-20.27	V
7.281	3.0	43.04	30.76	35.0	4.3	-36.2	0.0	0.0	46.05	33.77	74	54	-27.95	-20.23	V
Mid Channel (2437 MHz)															
4.854	3.0	44.88	31.45	33.3	3.6	-36.5	0.0	0.0	45.39	31.96	74	54	-28.61	-22.04	H
7.281	3.0	44.33	31.25	35.0	4.3	-36.2	0.0	0.0	47.34	34.26	74	54	-26.66	-19.74	H
4.854	3.0	44.68	34.21	33.3	3.6	-36.5	0.0	0.0	45.19	34.72	74	54	-28.81	-19.28	V
7.281	3.0	43.63	31.22	35.0	4.3	-36.2	0.0	0.0	46.64	34.23	74	54	-27.36	-19.77	V
High Channel (2452 MHz)															
4.904	3.0	44.67	32.20	33.1	7.0	-36.5	0.0	0.0	48.24	35.77	74	54	-25.76	-18.23	V
7.356	3.0	39.44	26.23	35.5	8.4	-36.2	0.0	0.0	47.19	33.98	74	54	-26.81	-20.02	V
4.904	3.0	45.78	33.56	33.1	7.0	-36.5	0.0	0.0	49.35	37.13	74	54	-24.65	-16.87	H
7.356	3.0	40.12	30.22	35.5	8.4	-36.2	0.0	0.0	47.87	37.97	74	54	-26.13	-16.03	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		

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

HARMONICS AND SPURIOUS EMISSIONS (802.11a MODE)

With Amphenol Antenna

High Frequency Measurement
Compliance Certification Services, Fremont 5 meter Chamber A

Company: Broadcom
Project #: 07U11194
Date: 07/17/07
Test Engineer: Thanh Nguyen
Configuration: EUT inside Dell Laptop PC, transmitting at 11a 5800MHz band, using Amphenol antenna
Mode: Transmit Continuous transmitting.
Radio Module: 6F634002HWQXE, Laptop PC: 814S701016G7230001BKS00

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T144 Miteq 3008A00931			FCC 15.209

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
		Gordon 203134001	HPF_7.6GHz	

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)
Low Channel 5745MHz															
11.481	1.0	48.7	30.7	37.4	11.6	-35.9	-9.5	0.7	52.9	35.0	74	54	-21.1	-19.0	V
17.235	1.0	42.3	28.3	41.7	13.3	-33.8	-9.5	0.6	54.6	40.7	74	54	-19.4	-13.3	V
11.481	1.0	56.3	42.2	37.4	11.6	-35.9	-9.5	0.7	60.6	46.5	74	54	-13.4	-7.5	H
17.235	1.0	41.4	28.4	41.7	13.3	-33.8	-9.5	0.6	53.7	40.7	74	54	-20.3	-13.3	H
Mid Channel 5785 MHz															
11.570	1.0	57.3	42.6	37.4	11.7	-35.8	-9.5	0.7	61.8	47.0	74	54	-12.2	-7.0	H
17.355	1.0	43.3	30.2	42.1	13.3	-33.8	-9.5	0.6	56.0	43.0	74	54	-18.0	-11.0	H
11.570	1.0	54.9	36.3	37.4	11.7	-35.8	-9.5	0.7	59.3	40.8	74	54	-14.7	-13.2	V
17.355	1.0	43.5	29.8	42.1	13.3	-33.8	-9.5	0.6	56.2	42.5	74	54	-17.8	-11.5	V
Channel 5825MHz															
11.610	1.0	51.3	31.6	37.4	11.7	-35.8	-9.5	0.7	55.8	36.1	74	54	-18.2	-17.9	V
17.395	1.0	43.2	30.1	42.3	13.3	-33.8	-9.5	0.6	56.1	43.0	74	54	-17.9	-11.0	V
11.610	1.0	52.9	33.7	37.4	11.7	-35.8	-9.5	0.7	57.5	38.2	74	54	-16.5	-15.8	H
17.395	1.0	44.3	29.5	42.3	13.3	-33.8	-9.5	0.6	57.2	42.4	74	54	-16.8	-11.6	H
No other emissions were detected above 3rd harmonics															

Rev. 5.1.6

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		

HARMONICS AND SPURIOUS EMISSIONS (802.11n MODE HT20)

With Amphenol Antenna

High Frequency Measurement

Compliance Certification Services, Fremont 5 meter Chamber A

Company:	Broadcom
Project #:	07U11194
Date:	07/19/07
Test Engineer:	Thanh Nguyen
Configuration:	EUT inside Dell Laptop PC, transmitting at 11n20 5800MHz band, using Amphenol antenna
Mode: Transmit	Continuous transmitting.
	Radio Module: 6F634002HWQXE, Laptop PC: 814S701016G7230001BKS00

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T73; S/N: 6717 @3m	T144 Miteq 3008A00931			FCC 15.209

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
		Gordon 203134001	HPF_7.6GHz	

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)
Low Channel 5745MHz															
11.490	1.0	54.1	39.0	37.5	11.6	-35.9	-9.5	0.7	58.4	43.4	74	54	-15.6	-10.6	V
17.235	1.0	40.6	30.3	41.7	13.3	-33.8	-9.5	0.6	52.9	42.7	74	54	-21.1	-11.3	V
11.490	1.0	49.2	35.2	37.5	11.6	-35.9	-9.5	0.7	53.5	39.6	74	54	-20.5	-14.4	H
17.235	1.0	35.7	25.6	41.7	13.3	-33.8	-9.5	0.6	48.1	38.0	74	54	-25.9	-16.0	H
Mid Channel 5785 MHz															
11.570	1.0	54.2	44.6	37.5	11.7	-35.8	-9.5	0.7	58.7	49.2	74	54	-15.3	-4.8	V
17.355	1.0	35.4	25.7	42.2	13.3	-33.8	-9.5	0.6	48.3	38.5	74	54	-25.7	-15.5	V
11.570	1.0	49.1	37.1	37.5	11.7	-35.8	-9.5	0.7	53.7	41.7	74	54	-20.3	-12.3	H
17.355	1.0	36.6	25.6	42.2	13.3	-33.8	-9.5	0.6	49.5	38.4	74	54	-24.5	-15.6	H
Channel 5825MHz															
11.610	1.0	50.1	37.2	37.5	11.7	-35.8	-9.5	0.7	54.7	41.8	74	54	-19.3	-12.2	V
17.395	1.0	35.2	26.5	42.4	13.3	-33.8	-9.5	0.6	48.2	39.4	74	54	-25.8	-14.6	V
11.610	1.0	51.6	36.3	37.5	11.7	-35.8	-9.5	0.7	56.2	41.0	74	54	-17.8	-13.0	H
17.395	1.0	35.8	25.6	42.4	13.3	-33.8	-9.5	0.6	48.7	38.6	74	54	-25.3	-15.4	H
No other emissions were detected above 3rd harmonics															

Rev. 5.1.6

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		

HARMONICS AND SPURIOUS EMISSIONS (802.11n MODE HT40)

With Amphenol Antenna

High Frequency Measurement

Compliance Certification Services, Fremont 5 meter Chamber A

Company:	Broadcom
Project #:	07U11194
Date:	07/19/07
Test Engineer:	Thanh Nguyen
Configuration:	EUT inside Dell Laptop PC, transmitting at 11n40 5800MHz band, using Amphenol antenna
Mode: Transmit	Continuous transmitting.
	Radio Module: 6F634002HWQXE, Laptop PC: 814S701016G7230001BKS00

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T73; S/N: 6717 @3m	T144 Miteq 3008A00931			FCC 15.209

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
		Gordon 203134001	HPF_7.6GHz	

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)
Channel 151, 5755MHz															
11.510	1.0	52.1	42.5	37.5	11.6	-35.8	-9.5	0.7	56.5	46.9	74	54	-17.5	-7.1	V
17.265	1.0	35.2	25.4	41.9	13.3	-33.8	-9.5	0.6	47.7	37.9	74	54	-26.3	-16.1	V
11.510	1.0	44.0	32.7	37.5	11.6	-35.8	-9.5	0.7	48.4	37.2	74	54	-25.6	-16.8	H
17.265	1.0	35.7	25.3	41.9	13.3	-33.8	-9.5	0.6	48.2	37.8	74	54	-25.8	-16.2	H
Channel 159, 5795 MHz															
11.590	1.0	45.8	36.6	37.5	11.7	-35.8	-9.5	0.7	50.4	41.2	74	54	-23.6	-12.8	V
17.385	1.0	35.5	25.8	42.3	13.3	-33.8	-9.5	0.6	48.5	38.7	74	54	-25.5	-15.3	V
11.590	1.0	44.4	32.8	37.5	11.7	-35.8	-9.5	0.7	49.1	37.4	74	54	-24.9	-16.6	H
17.385	1.0	35.1	26.3	42.3	13.3	-33.8	-9.5	0.6	48.0	39.3	74	54	-26.0	-14.7	H
No other emissions were detected above 3rd harmonics															

Rev. 5.1.6

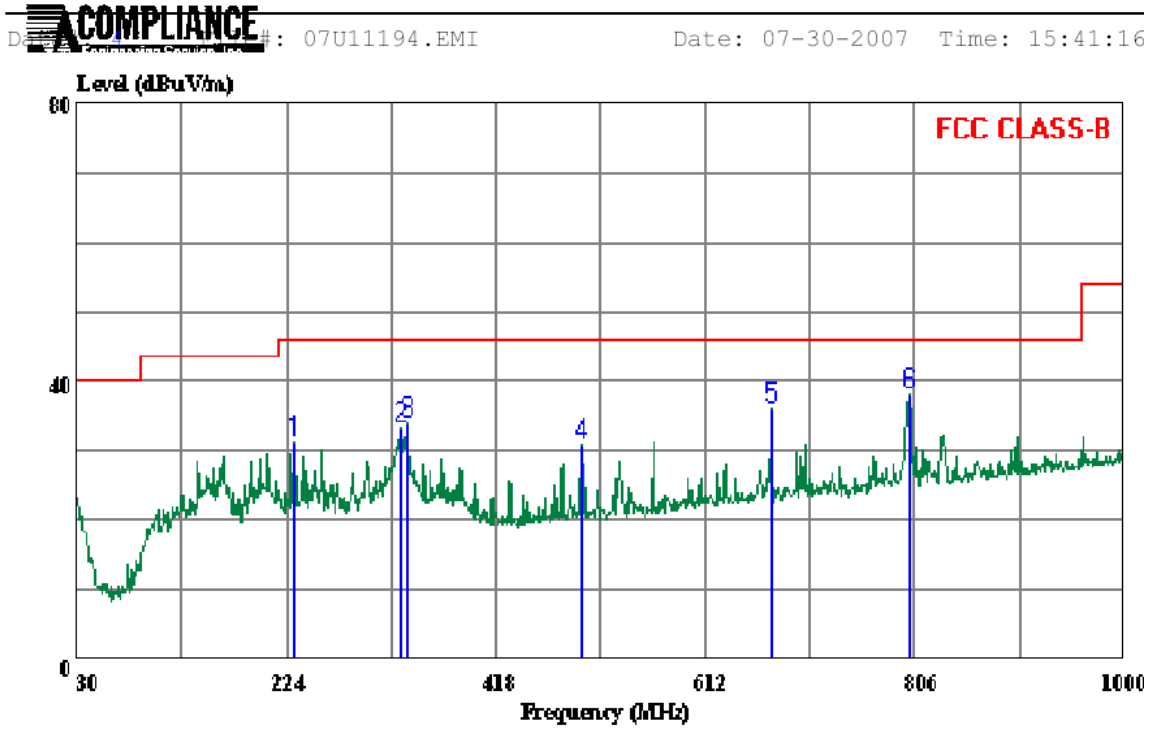
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field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

7.1.4. WORST-CASE RADIATED EMISSIONS BELOW 1 GHz

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

2.4GHz Band

HORIZONTAL PLOT



Trace: 3 Ref Trace:

Condition: FCC CLASS-B HORIZONTAL
Engineer: : Keith Ng
Company: : Broadcom
Project #: : 07U11194
Test Configuration:: EUT Installed in Laptop
Mode of operation: : 2.4GHz Tx Worst Case
Test Target: : FCC Class B

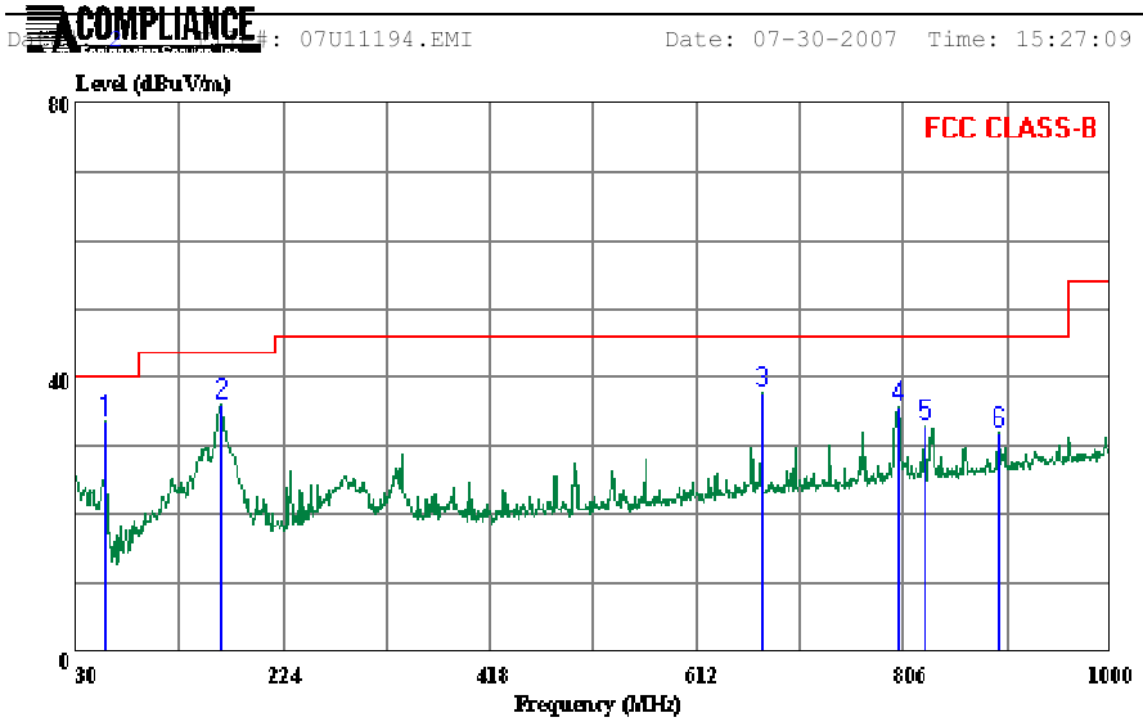
Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	230.790	49.50	-18.40	31.10	46.00	-14.90	Peak
2	328.760	48.30	-15.02	33.28	46.00	-12.72	Peak
3	335.550	48.80	-14.92	33.88	46.00	-12.12	Peak
4	497.540	42.20	-11.40	30.80	46.00	-15.20	Peak
5	673.110	45.10	-8.92	36.18	46.00	-9.82	Peak
6	800.180	44.90	-6.88	38.02	46.00	-7.98	Peak

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

2.4GHz Band

VERTICAL PLOT



Trace: 1 Ref Trace:

Condition: FCC CLASS-B VERTICAL
Engineer: : Keith Ng
Company: : Broadcom
Project #: : 07U11194
Test Configuration:: EUT Installed in Laptop
Mode of operation: : 2.4GHz Tx Worst Case
Test Target: : FCC Class B

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	57.160	56.36	-22.94	33.42	40.00	-6.58	Peak
2	165.800	53.80	-17.93	35.87	43.50	-7.63	Peak
3	673.110	46.80	-8.92	37.88	46.00	-8.12	Peak
4	800.180	42.50	-6.88	35.62	46.00	-10.38	Peak
5	825.400	39.20	-6.36	32.84	46.00	-13.16	Peak
6	896.210	37.00	-5.10	31.90	46.00	-14.10	Peak

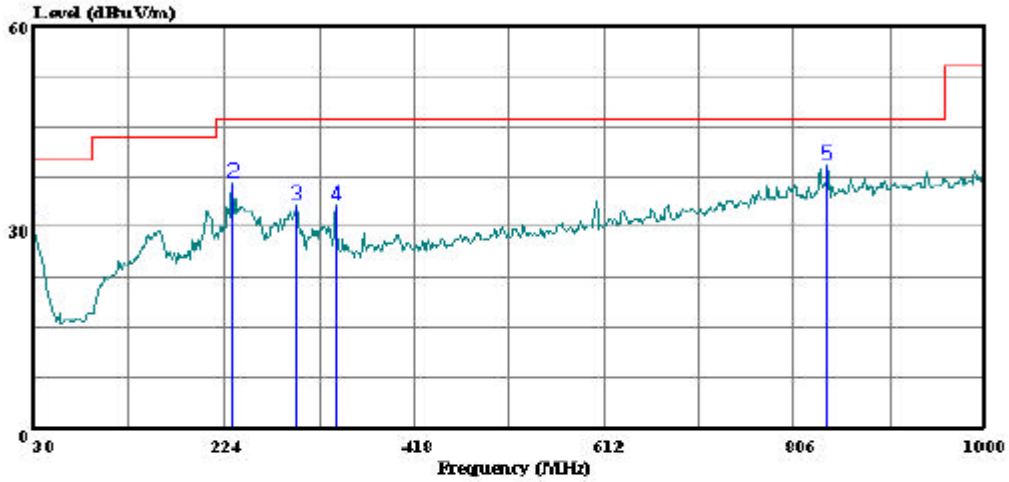
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

5GHz Band

HORIZONTAL PLOT

Compliance Certification Services
47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

Data#: 18 File#: 11194emi.emi Date: 07-19-2007 Time: 10:05:24



Trace: 17 Ref Trace:

Condition: FCC CLASS-B HORIZONTAL
Test Operator:: Thanh Nguyen
Project #: : 07U11194
Company: : BROADCOM CORP.
Configuration:: EUT in the Notebook
Mode : : Tx 5GHz Band worst case
Target: : FCC Class B

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	30.000	6.44	22.65	29.09	40.00	-10.91	Peak
2	232.730	23.18	13.33	36.51	46.00	-9.49	Peak
3	298.690	17.55	15.69	33.24	46.00	-12.76	Peak
4	337.490	16.63	16.72	33.35	46.00	-12.65	Peak
5	838.980	13.97	25.33	39.30	46.00	-6.70	Peak

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

5GHz Band

VERTICAL PLOT

Compliance Certification Services
47173 Benicia Street
Fremont, CA 94538
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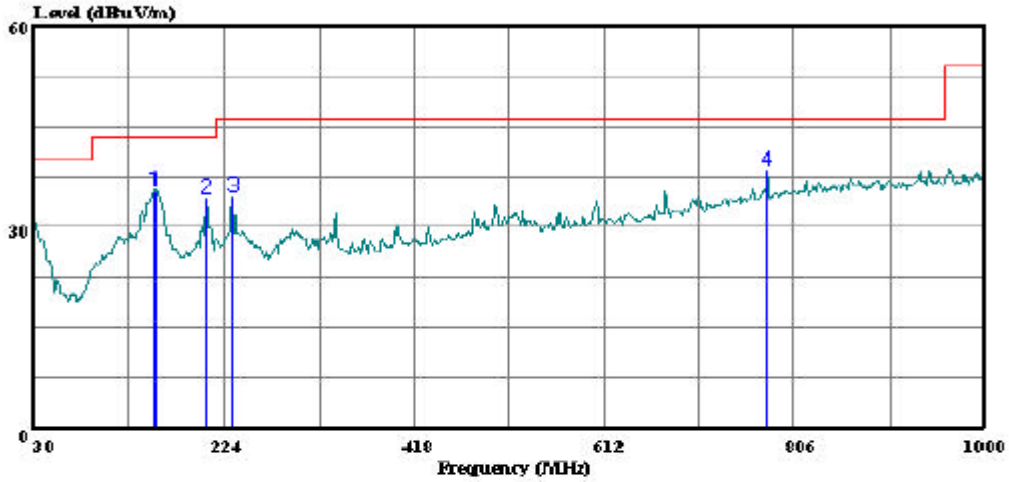
Data#: 13 File#: 11194emi.emi Date: 07-19-2007 Time: 09:40:29



Trace: 11 Ref Trace:

Condition: FCC CLASS-B VERTICAL
Test Operator:: Thanh Nguyen
Project #: : 07U11194
Company: : BROADCOM CORP.
Configuration:: EUT in the Notebook
Mode : : Transmit 5GHz band worst case
Target: : FCC Class B
: Experiment using 8542E EMI receiver's
: PreAmp on, without external amplifier.

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	154.160	21.21	14.17	35.37	43.50	-8.13	Peak
2	206.540	20.53	13.66	34.19	43.50	-9.31	Peak
3	232.730	21.32	13.33	34.65	46.00	-11.35	Peak
4	778.840	13.95	24.58	38.53	46.00	-7.47	Peak