FCC CFR47 PART 15 SUBPART C
INDUSTRY CANADA RSS-210 ISSUE 8
CLASS II PERMISSIVE CHANGE

CERTIFICATION TEST REPORT

FOR

802.11ABGN 3X3 W/NO BEAM FORMING MODULE

MODEL NUMBER: AR5BHB112

FCC ID: WA7-AR5BHB112
IC: 6627C-AR5BHB112

REPORT NUMBER: 11U14110-1, Revision A

ISSUE DATE: FEBRUARY 20, 2012

Prepared for

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
	2/14/12	Initial Issue	T. LEE
A	2/20/2012	Revised EUT description, Add Section 4.2	T. LEE

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ATTESTATION OF TEST RESULTS

COMPANY NAME: FLUKE NETWORKS.
6920 SEAWAY BLVD
EVERRET, WA 98203, USA

EUT DESCRIPTION: 802.11abgn 3X3 W/NO BEAM FORMING MODULE

MODEL: AR5BHB112

SERIAL NUMBER: CUS152-053-F0760

DATE TESTED: DECEMBER 13, 2011 to JANUARY 17, 2012

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-210 Issue 8 Annex 8	Pass
INDUSTRY CANADA RSS-GEN Issue 3	Pass

Compliance Certification Services (UL CCS) tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL CCS based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. 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 UL CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL CCS will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For UL CCS By:

TIM LEE
STAFF ENGINEER
UL CCS

Tested By:

VIEN TRAN
EMC ENGINEER
UL CCS

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1. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 3, and RSS-210 Issue 8.

2. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

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

3. CALIBRATION AND UNCERTAINTY

3.1. 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.

3.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

3.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 1000 MHz	4.94 dB

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

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4. EQUIPMENT UNDER TEST

4.1. DESCRIPTION OF EUT

The EUT is a 802.11abgn 3x3 product with the option of no beam forming module.

The radio module is manufactured by Atheros.

4.2. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

The major change filed under this application is adding a new antenna types with lower gain.

4.3. MAXIMUM OUTPUT POWER

In order to pass Band edge and Harmonic spurious measurement, the 2.4 and 5.8GHz bands must be reduced from the original average output powers as table shown below:

Average Power
2.4GHz

11b Mode, 1Mbps

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	2	US115V	Unshielded	1m	Ferrite on laptop's end
2	DC	2	DC	Unshielded	2m	NA
3	Ant Port	1	U.FL	Unshielded	0.2m	NA

11g Mode, 6Mbps

Channel	Frequency (MHz)	Setting (dBm)	Chain 1 Power (dBm)	Chain 2 Power (dBm)	Chain 3 Power (dBm)	Total Power (dBm)
Low	**2412**	**7.0**	**8.10**	**7.80**	**7.15**	**12.47**
High	**2462**	**13.5**	**13.30**	**13.50**	**13.50**	**18.21**

11n HT20 Mode, 6.5Mbps

Channel	Frequency (MHz)	Setting (dBm)	Chain 1 Power (dBm)	Chain 2 Power (dBm)	Chain 3 Power (dBm)	Total Power (dBm)
Low	**2412**	**5.5**	**6.60**	**5.40**	**5.35**	**10.59**
High	**2462**	**9.0**	**9.00**	**9.65**	**9.60**	**14.20**

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11n HT40 Mode, 13.5Mbps

Channel	Frequency (MHz)	Setting (dBm)	Chain 1 Power (dBm)	Chain 2 Power (dBm)	Chain 3 Power (dBm)	Total Power (dBm)
Low	**2422**	**5.0**	**6.60**	**5.30**	**5.30**	**10.55**
High	**2452**	**7.50**	**7.35**	**7.85**	**7.12**	**12.22**

5.8GHz

11a Mode, 6Mbps

Channel	Frequency (MHz)	Setting (dBm)	Chain 1 Power (dBm)	Chain 2 Power (dBm)	Chain 3 Power (dBm)	Total Power (dBm)
Middle	**5785**	**18.0**	**15.30**	**14.80**	**13.60**	**19.39**
High	**5825**	**18.0**	**14.80**	**14.60**	**14.00**	**19.25**

11n HT20 Mode 6.5Mbps

Channel	Frequency (MHz)	Setting (dBm)	Chain 1 Power (dBm)	Chain 2 Power (dBm)	Chain 3 Power (dBm)	Total Power (dBm)
Middle	**5785**	**17.0**	**14.30**	**13.70**	**13.30**	**18.56**
High	**5825**	**16.0**	**13.50**	**13.00**	**12.65**	**17.84**

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Peak Power

2.4GHz

11b Mode, 1Mbps

Channel	Frequency (MHz)	Setting (dBm)	Chain 1 Power (dBm)	Chain 2 Power (dBm)	Chain 3 Power (dBm)	Total Power (dBm)
Low	**2412**	**7.0**	**10.76**	**11.60**	**10.73**	**15.82**
High	**2462**	**13.5**	**15.98**	**16.72**	**16.07**	**21.04**

11g Mode, 6Mbps

Channel	Frequency (MHz)	Setting (dBm)	Chain 1 Power (dBm)	Chain 2 Power (dBm)	Chain 3 Power (dBm)	Total Power (dBm)
Low	**2412**	**7.0**	**16.51**	**15.66**	**15.32**	**20.63**
High	**2462**	**13.5**	**22.55**	**23.05**	**21.78**	**27.26**

11n HT20 Mode, 6.5Mbps

Channel	Frequency (MHz)	Setting (dBm)	Chain 1 Power (dBm)	Chain 2 Power (dBm)	Chain 3 Power (dBm)	Total Power (dBm)
Low	**2412**	**5.5**	**14.30**	**14.06**	**13.96**	**18.88**
High	**2462**	**9.0**	**16.58**	**18.04**	**16.75**	**21.94**

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11n HT40 Mode, 13.5Mbps

Channel	Frequency (MHz)	Setting (dBm)	Chain 1 Power (dBm)	Chain 2 Power (dBm)	Chain 3 Power (dBm)	Total Power (dBm)
Low	**2422**	**5.0**	**14.18**	**14.02**	**13.37**	**18.64**
High	**2452**	**7.50**	**15.90**	**16.43**	**15.69**	**20.79**

5.8GHz

11a Mode, 6Mbps

Channel	Frequency (MHz)	Setting (dBm)	Chain 1 Power (dBm)	Chain 2 Power (dBm)	Chain 3 Power (dBm)	Total Power (dBm)
Middle	**5785**	**18.0**	**23.89**	**23.45**	**22.22**	**28.01**
High	**5825**	**18.0**	**22.59**	**23.87**	**22.47**	**27.80**

11n HT20 Mode, 6.5Mbps

Channel	Frequency (MHz)	Setting (dBm)	Chain 1 Power (dBm)	Chain 2 Power (dBm)	Chain 3 Power (dBm)	Total Power (dBm)
Middle	**5785**	**17.0**	**23.17**	**23.03**	**21.83**	**27.49**
High	**5825**	**16.0**	**22.59**	**22.29**	**21.62**	**26.96**

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4.4. OUTPUT POWER MEASUREMENTS

LIMITS

FCC §15.247 (b)

IC RSS-210 A8.4

Antenna Gain (dBi)	10 Log (# Tx Chains) (dB)	Effective Legacy Gain (dBi)
1.1	4.77	5.87
3.2	4.77	7.97

TEST PROCEDURE

Peak power is measured using the Channel bandwidth Alternative peak output power procedure specified in "TCB Training for Devices covered under Scopes A1 - A4" by Joe Dichoso, May 2003.

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RESULTS

4.4.1. 802.11b Mode, 1Mbps

Channel	Frequency (MHz)	Chain 1 PK Power (dBm)	Chain 2 PK Power (dBm)	Chain 3 PK Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	10.76	11.60	10.73	15.82	30.00	-14.18
High	2462	15.98	16.72	16.07	21.04	30.00	-8.96

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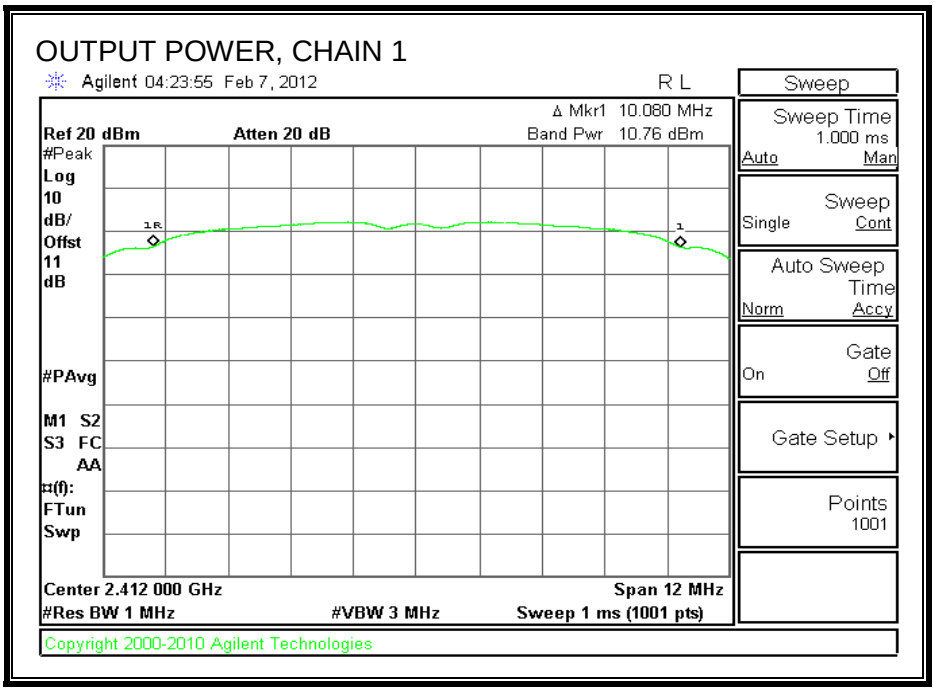
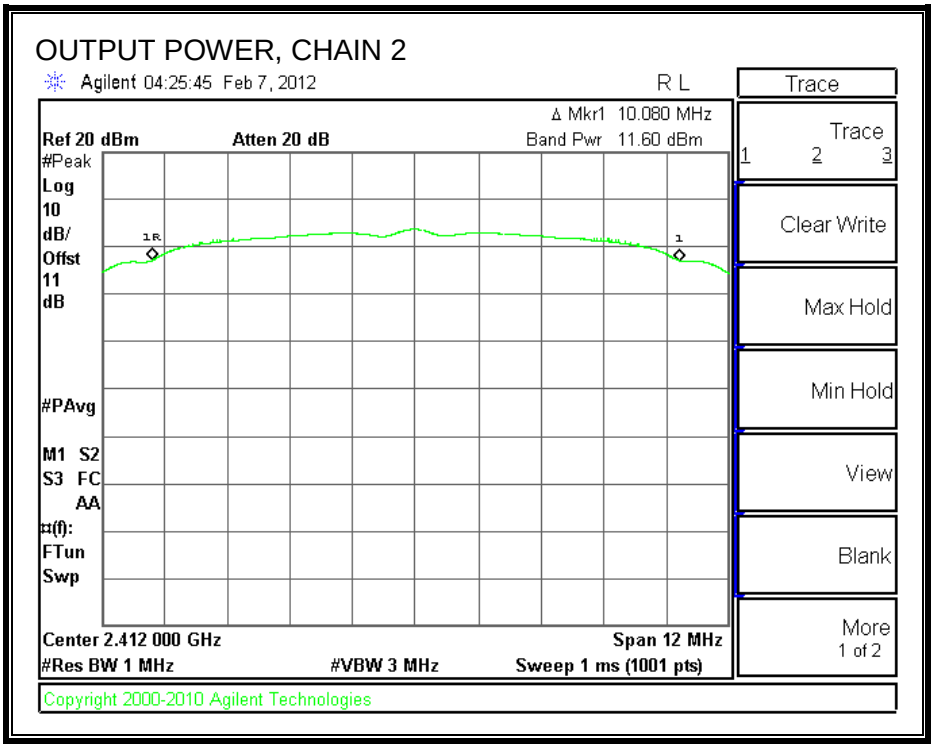
LOW CH





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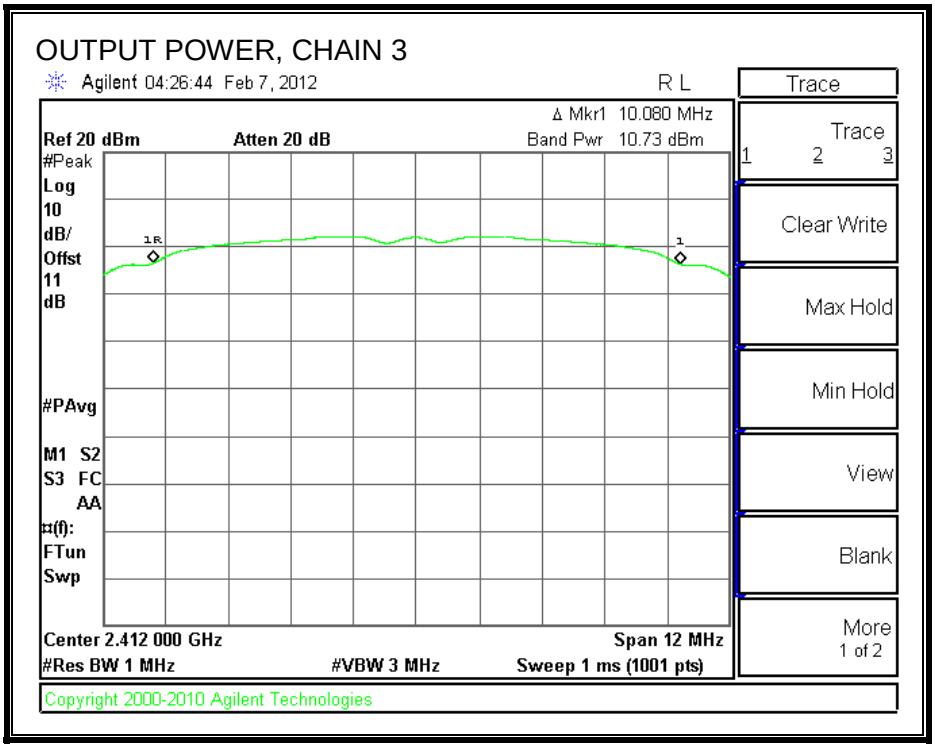

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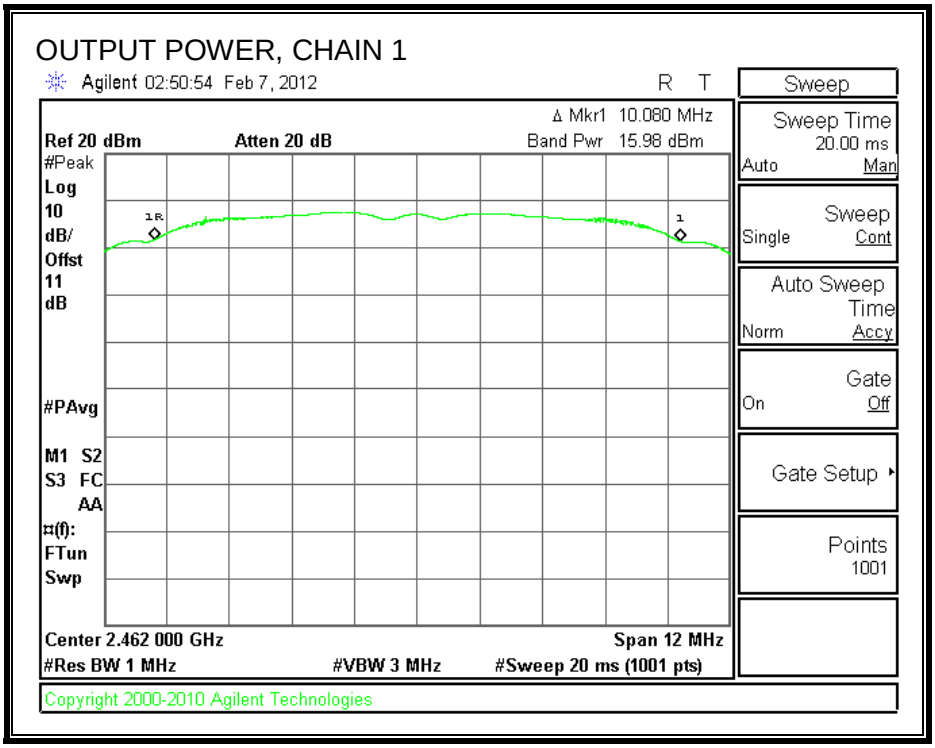

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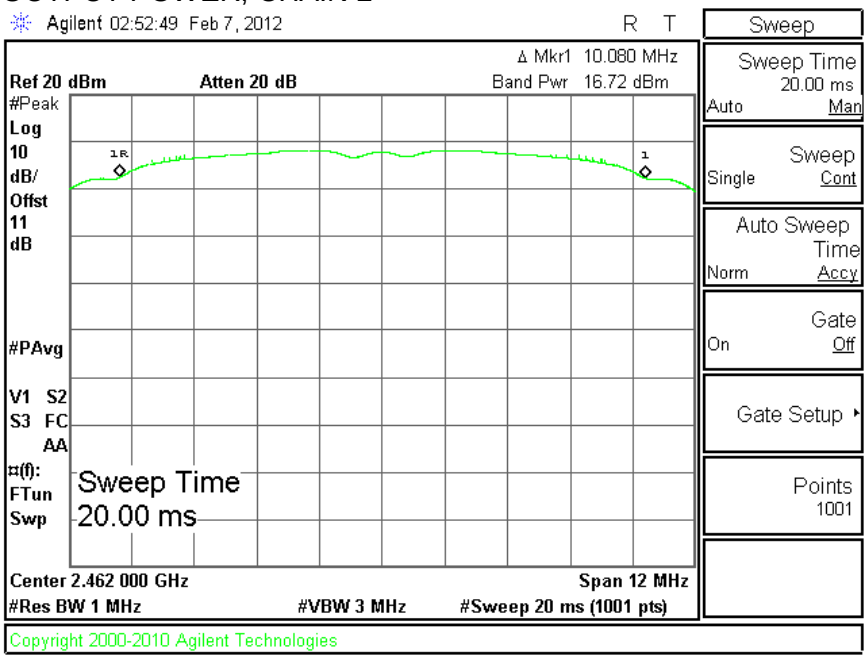
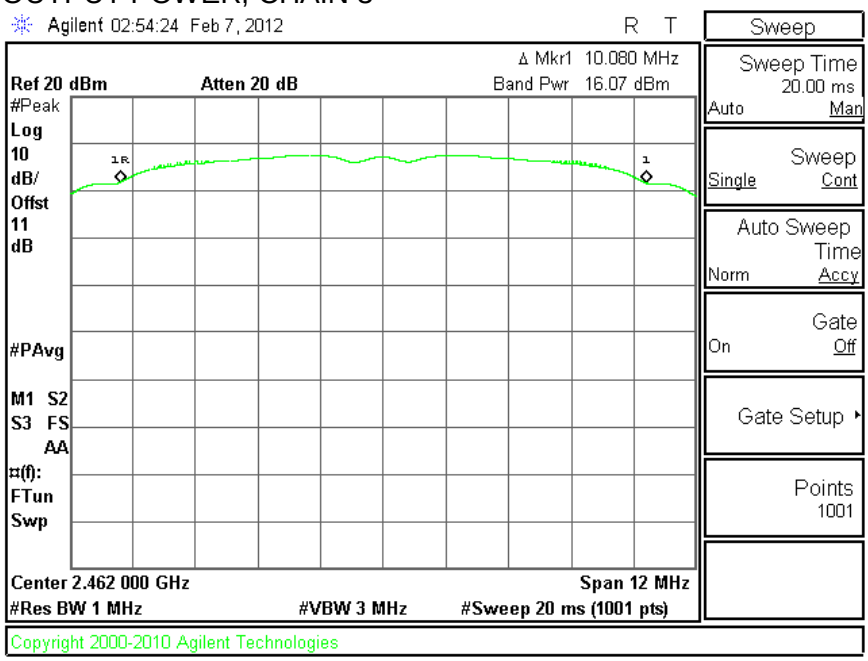
OUTPUT POWER, CHAIN 2



OUTPUT POWER, CHAIN 3



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4.4.2. 802.11g Mode, 6Mbps

Channel	Frequency (MHz)	Chain 1 PK Power (dBm)	Chain 2 PK Power (dBm)	Chain 3 PK Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	16.51	15.66	15.32	20.63	30.00	-9.37
High	2462	22.55	23.05	21.78	27.26	30.00	-2.74

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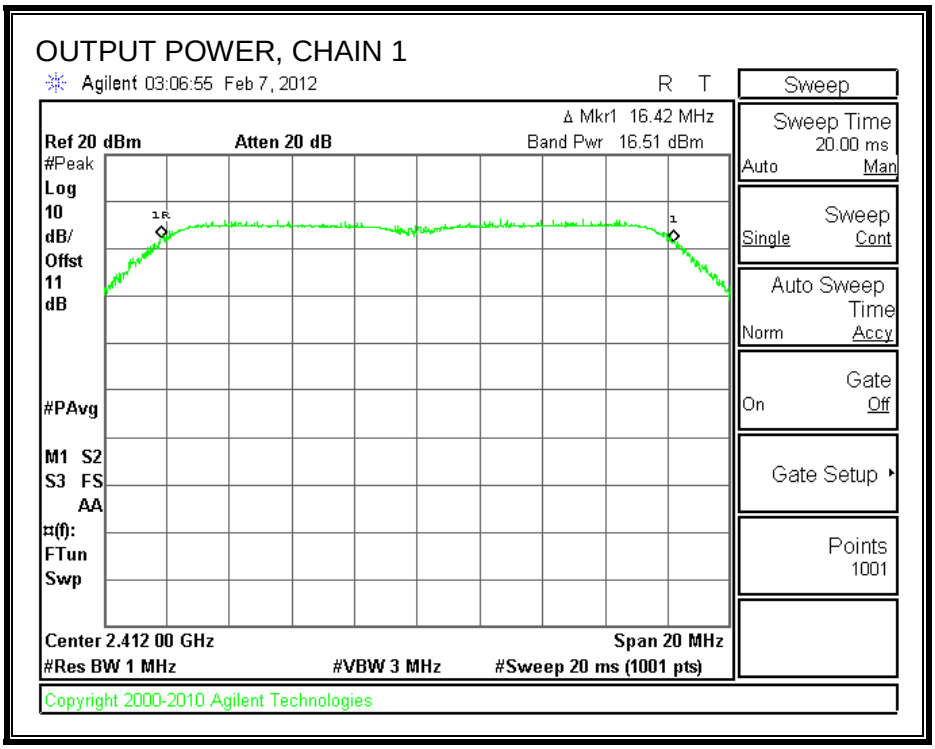

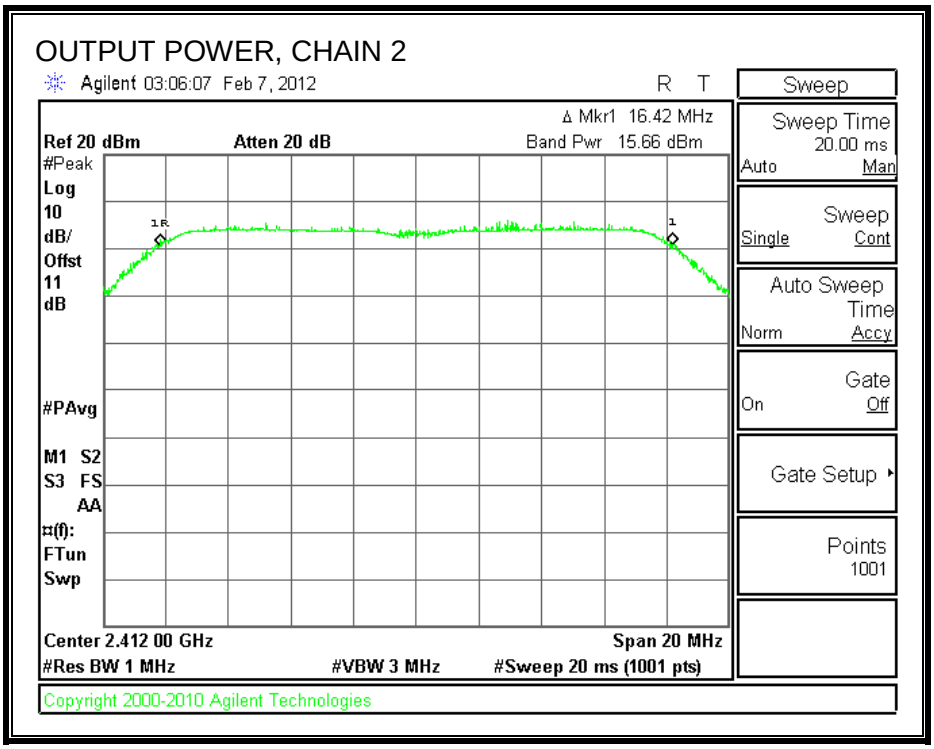

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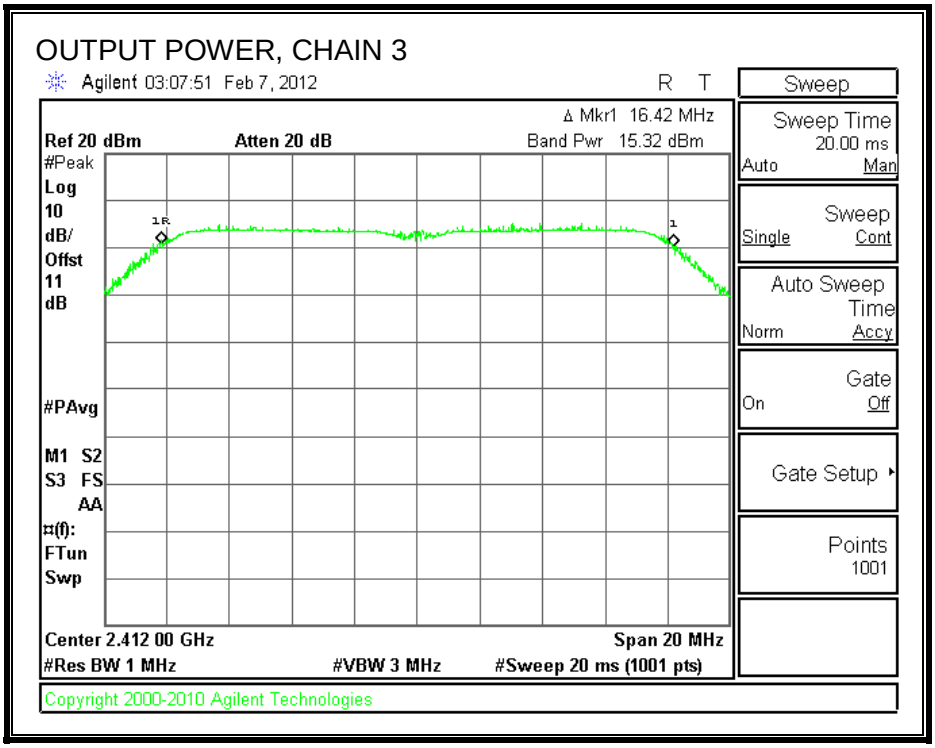

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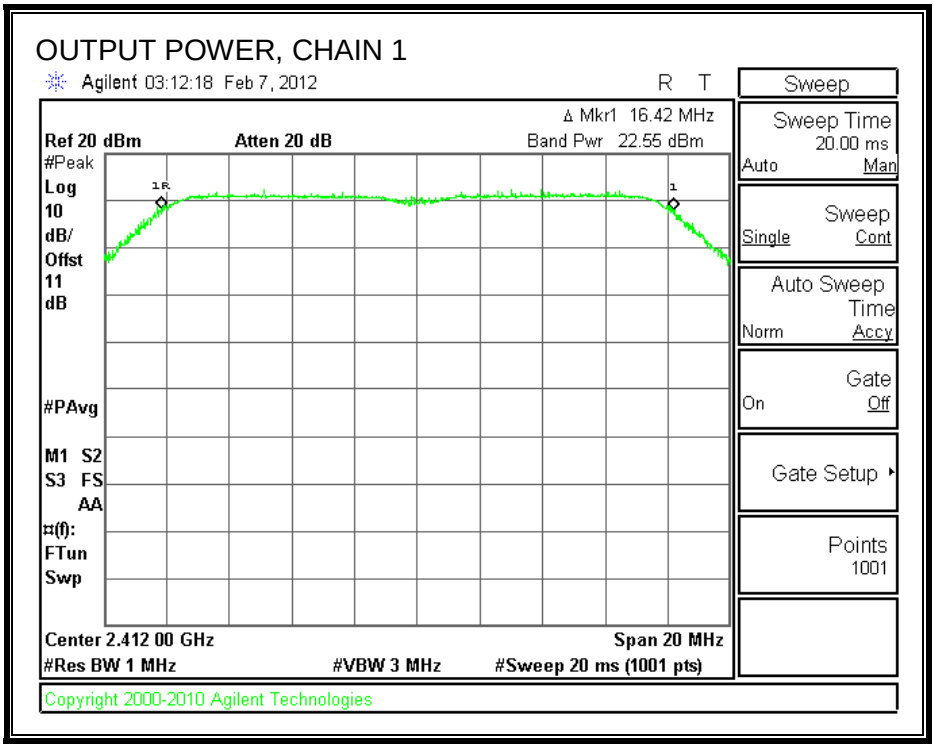

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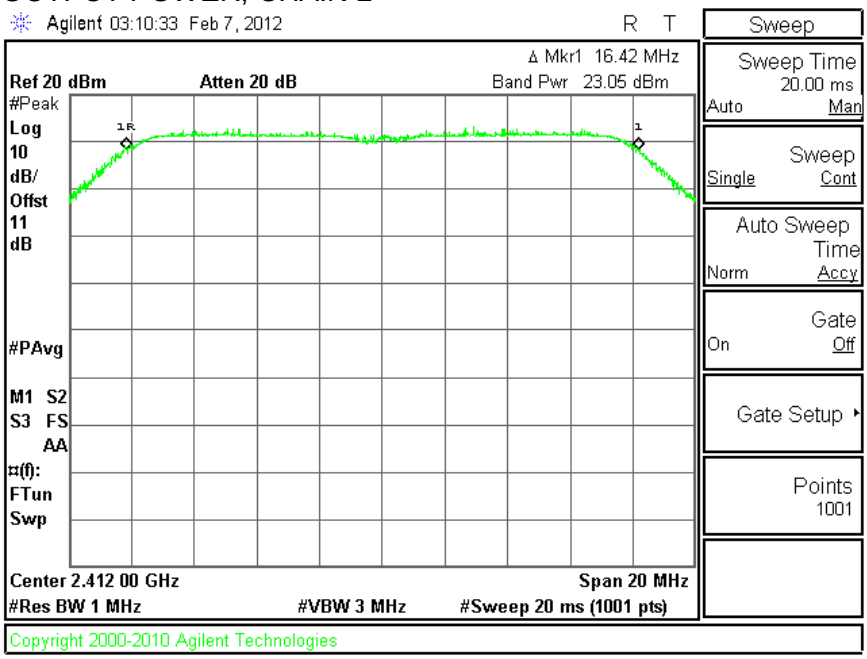
OUTPUT POWER, CHAIN 2



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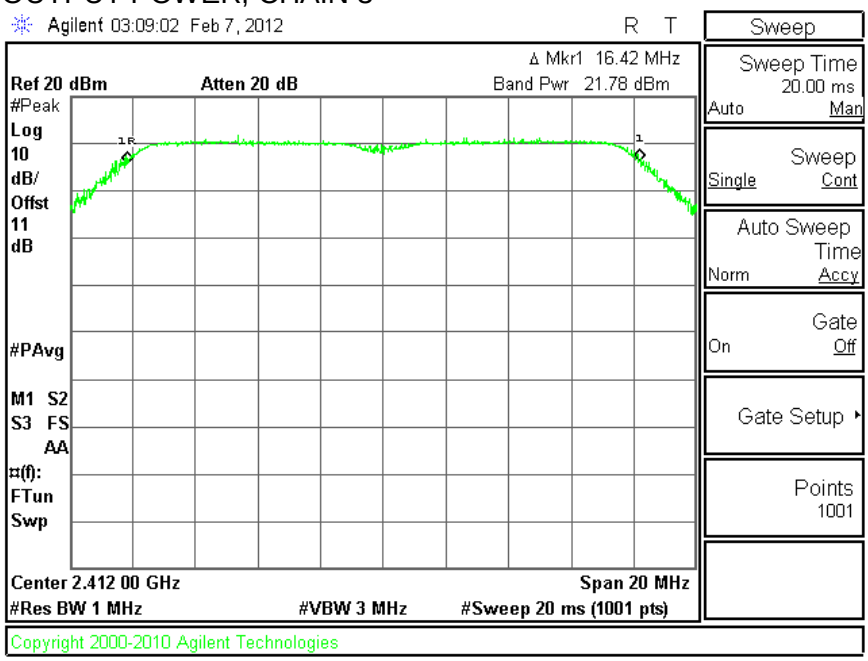

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4.4.3. 802.11n HT20 Mode, 2.4GHz, 6.5Mbps

Channel	Frequency (MHz)	Chain 1 PK Power (dBm)	Chain 2 PK Power (dBm)	Chain 3 PK Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	14.30	14.06	13.96	18.88	30.00	-11.12
High	2462	16.58	18.04	16.75	21.94	30.00	-8.06

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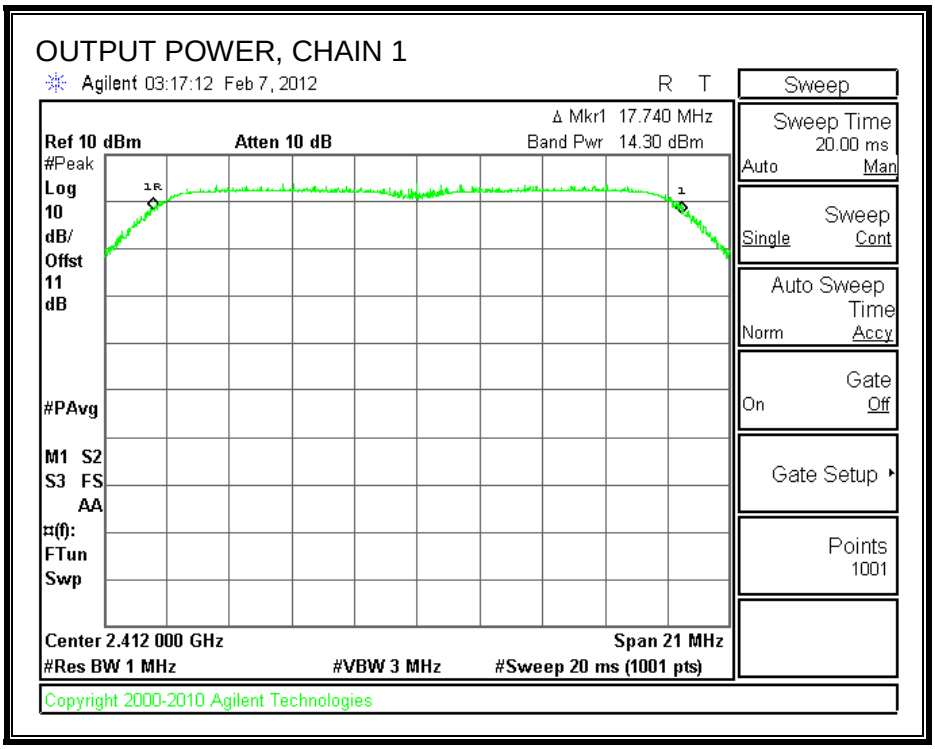
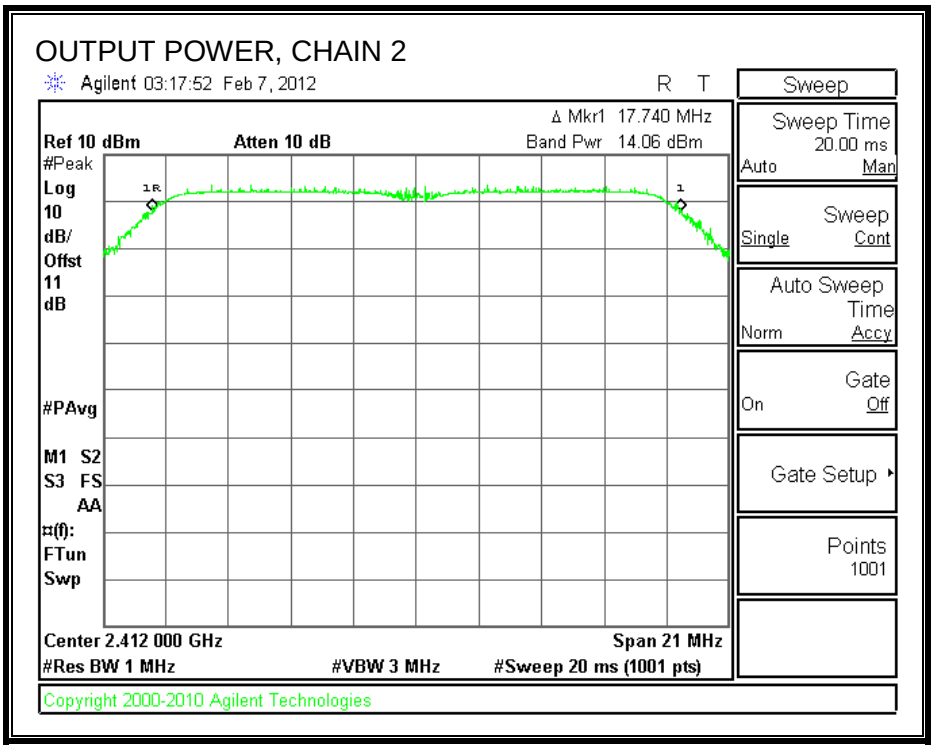
LOW CH





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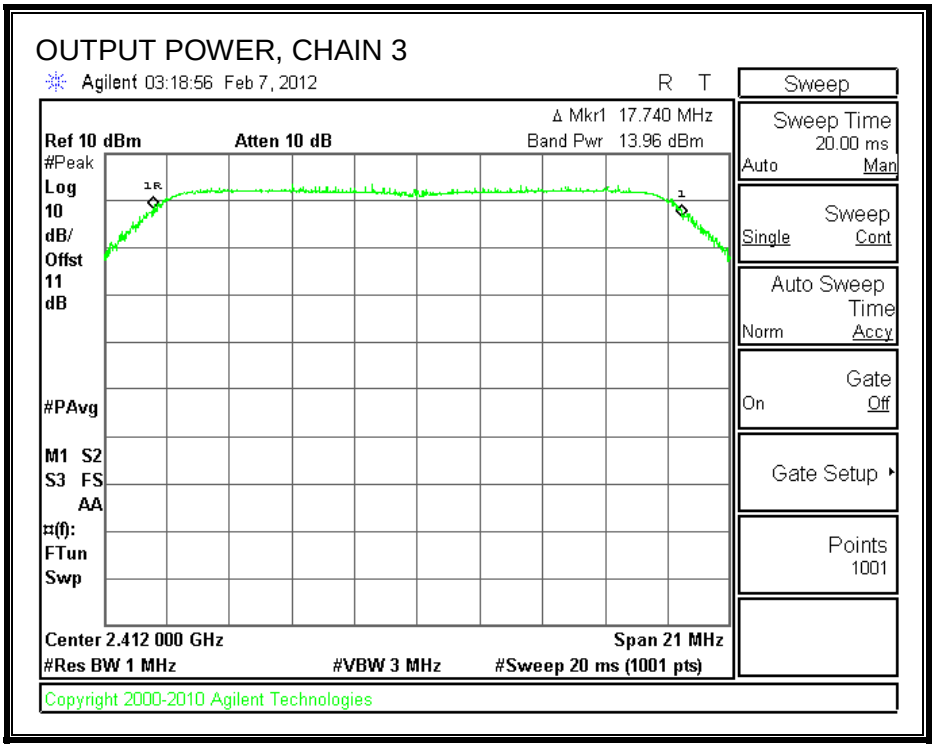

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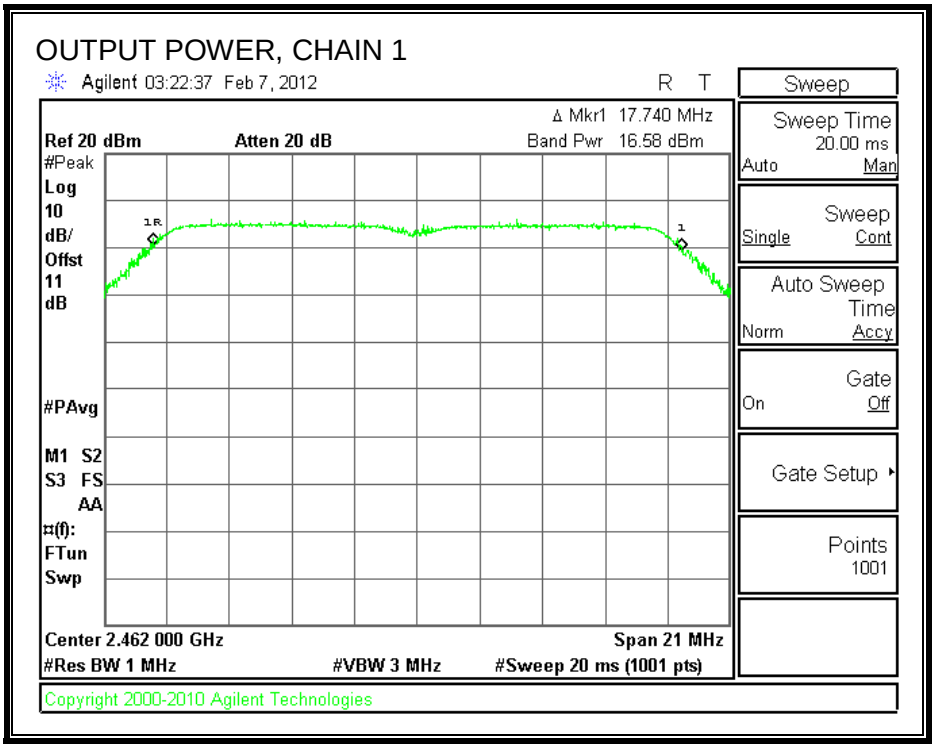

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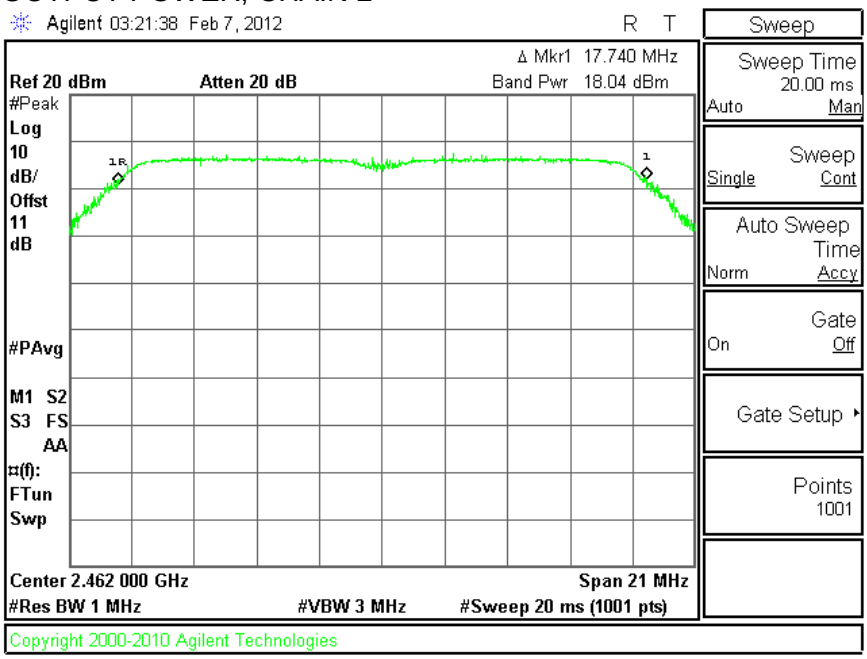

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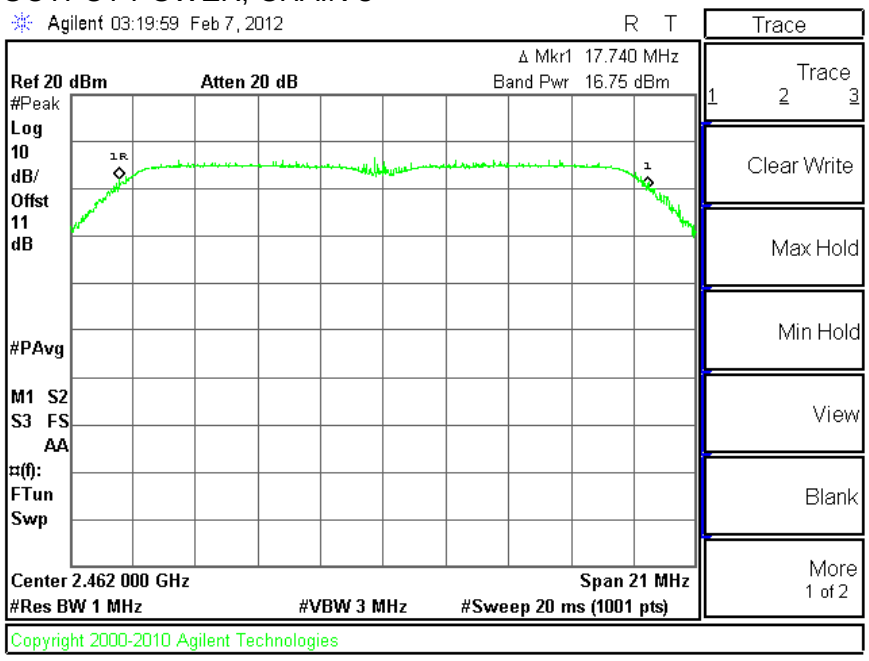

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4.4.4. 802.11n HT40 Mode, 2.4GHz, 13.5Mbps

Channel	Frequency (MHz)	Chain 1 PK Power (dBm)	Chain 2 PK Power (dBm)	Chain 3 PK Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	2422	14.18	14.02	13.37	18.64	30.00	-11.36
High	2452	15.90	16.43	15.69	20.79	30.00	-9.21

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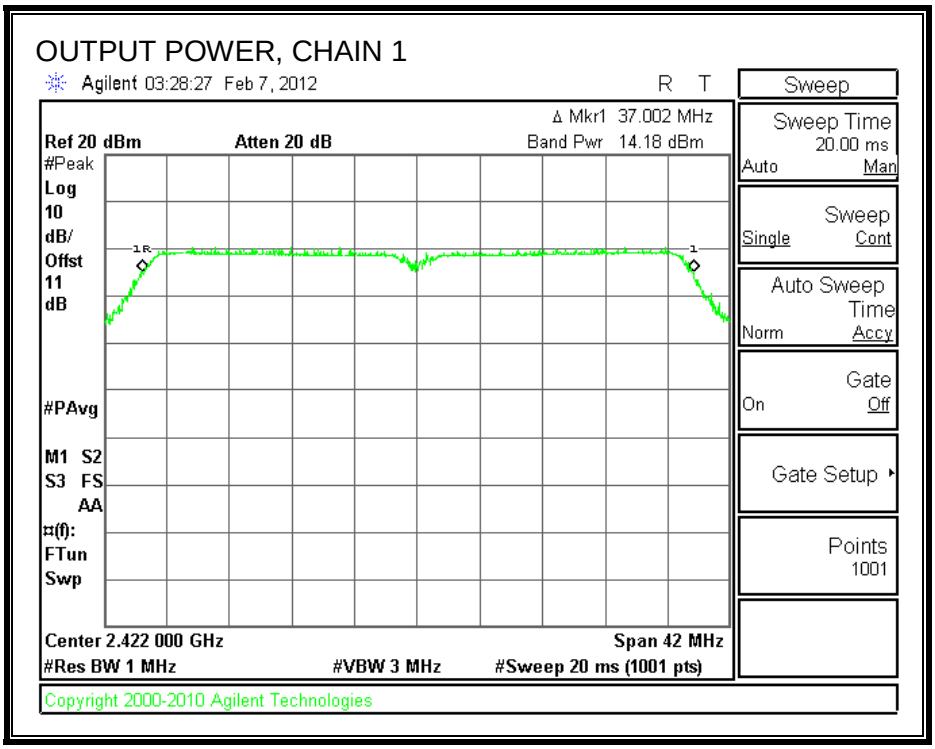
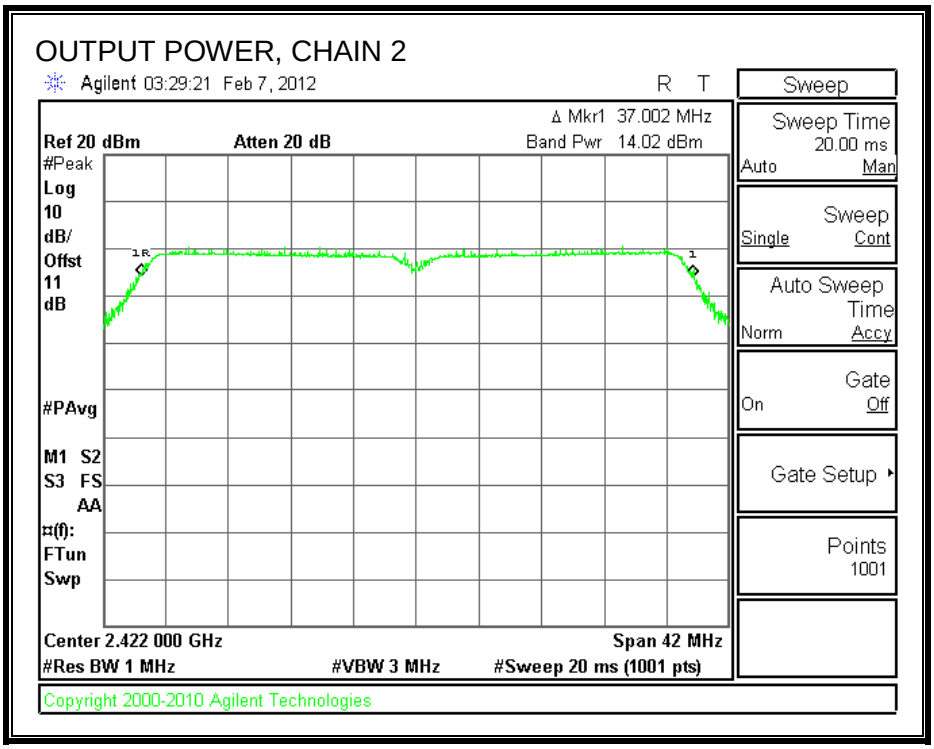
LOW CH





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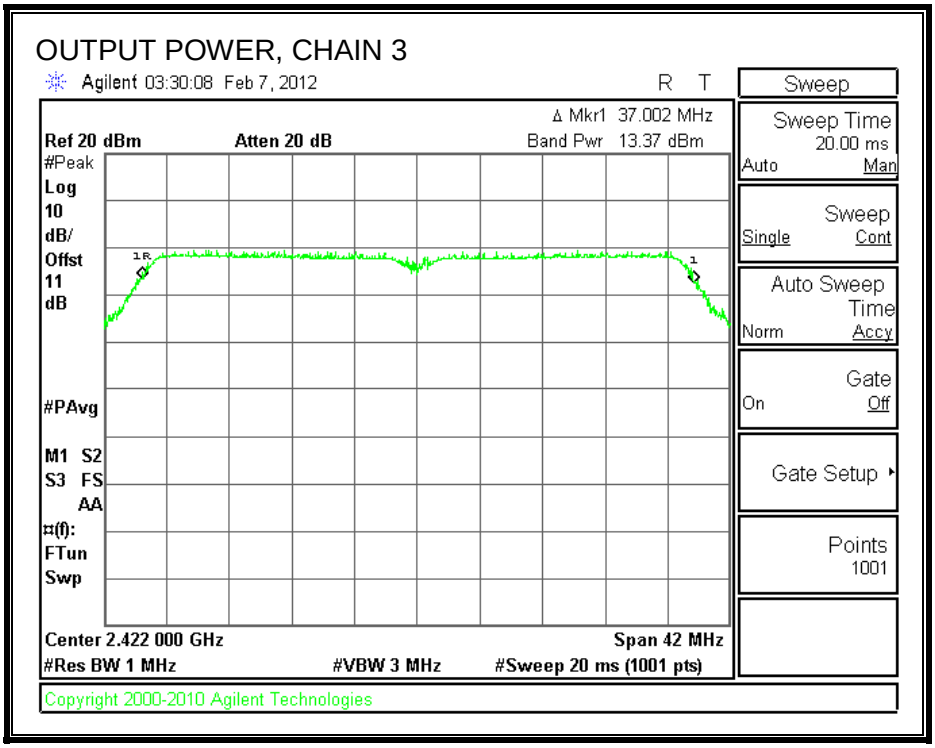

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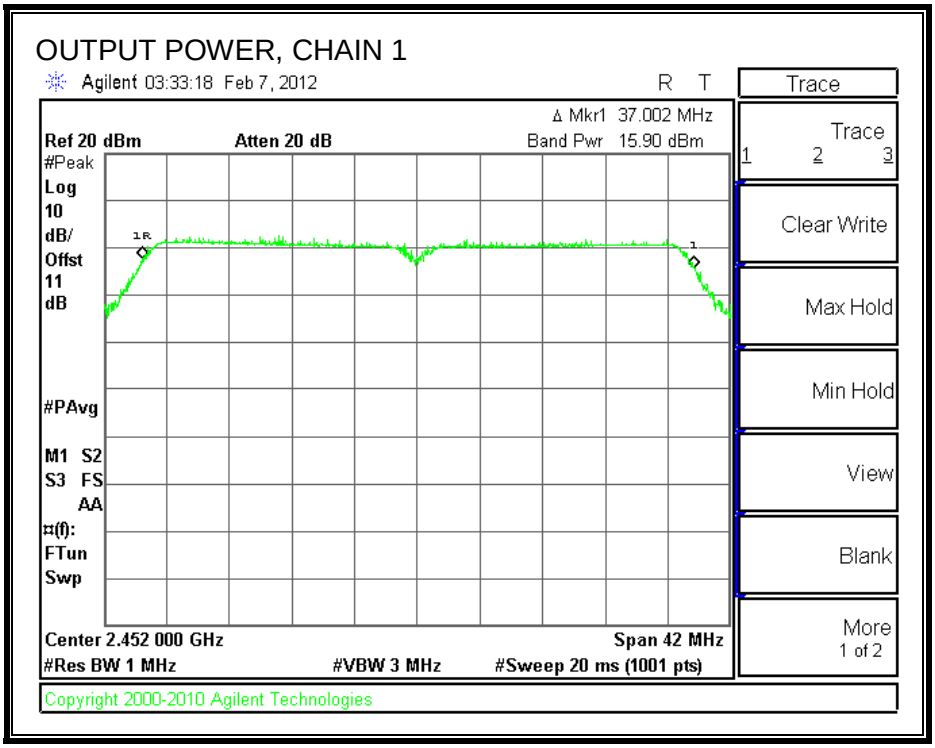

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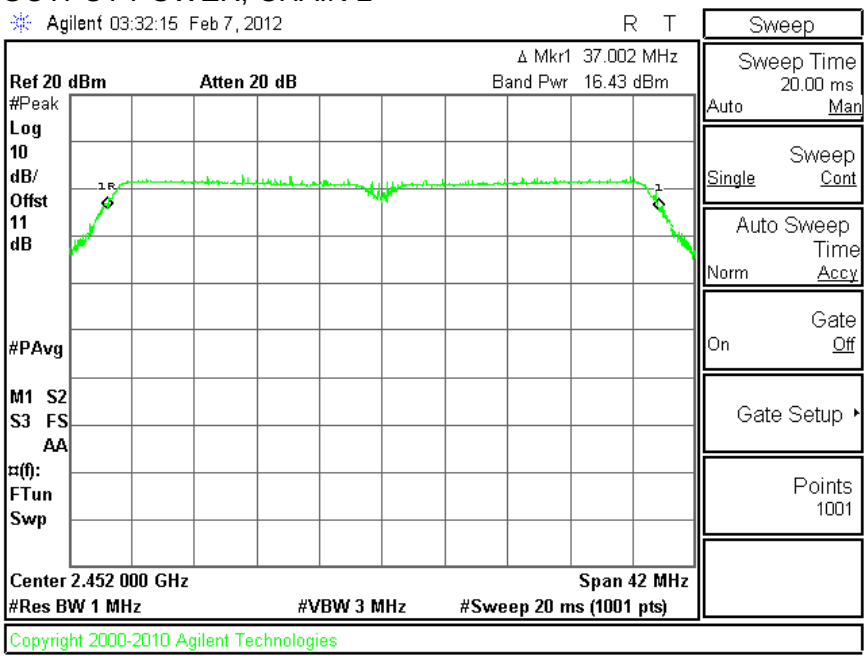
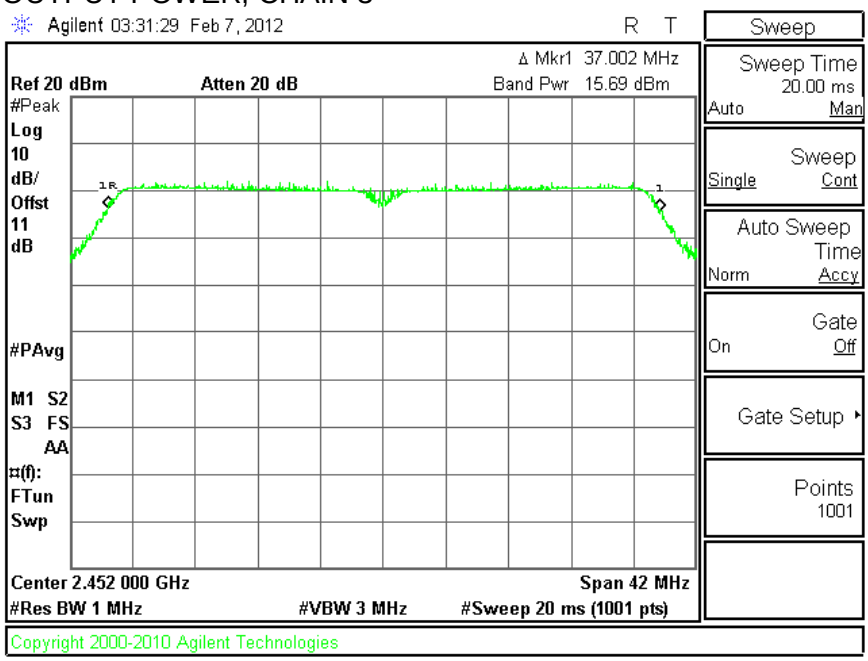
OUTPUT POWER, CHAIN 2



OUTPUT POWER, CHAIN 3



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4.4.5. 802.11a Mode, 5.8GHz, 6Mbps

Channel	Frequency (MHz)	Chain 1 PK Power (dBm)	Chain 2 PK Power (dBm)	Chain 3 PK Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Middle	5785	23.89	23.45	22.22	28.01	28.03	-0.02
High	5825	22.59	23.87	22.47	27.80	28.03	-0.23

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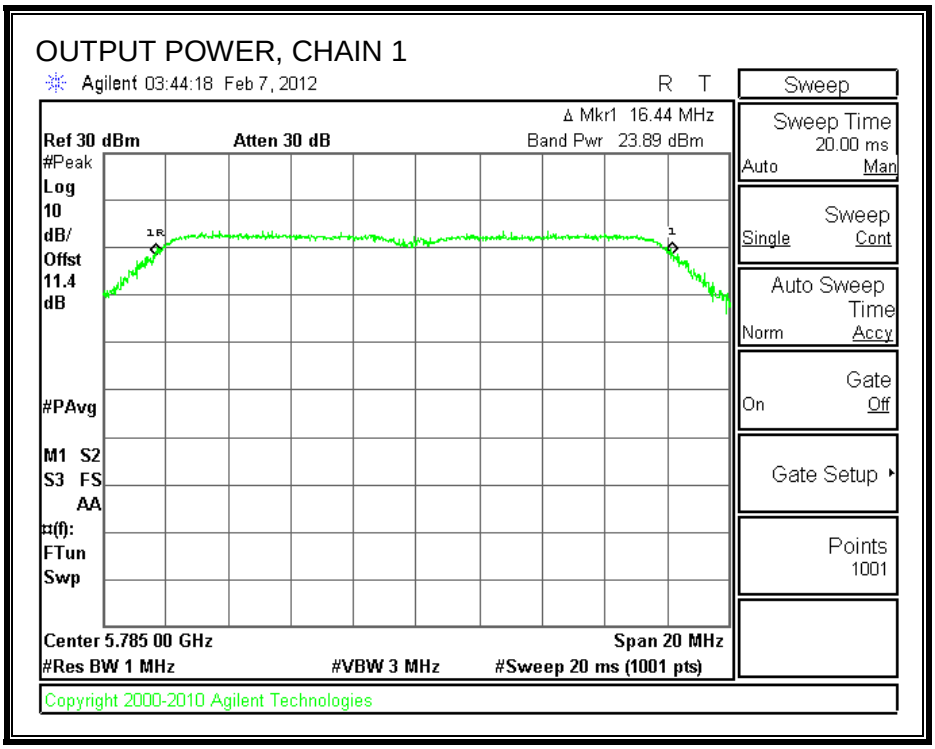
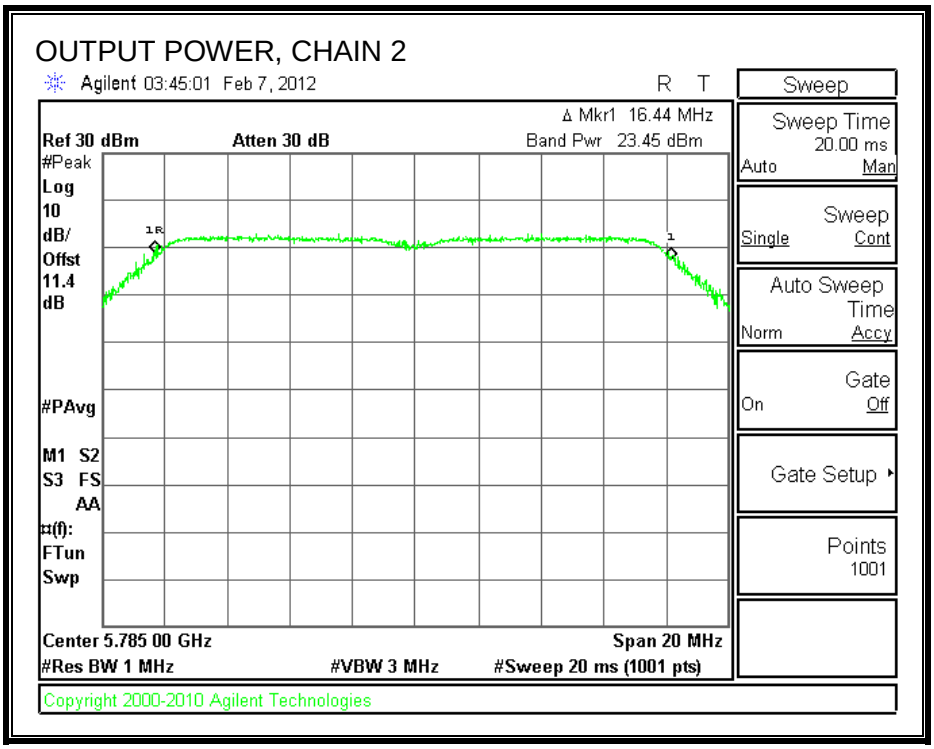
MIDDLE CH





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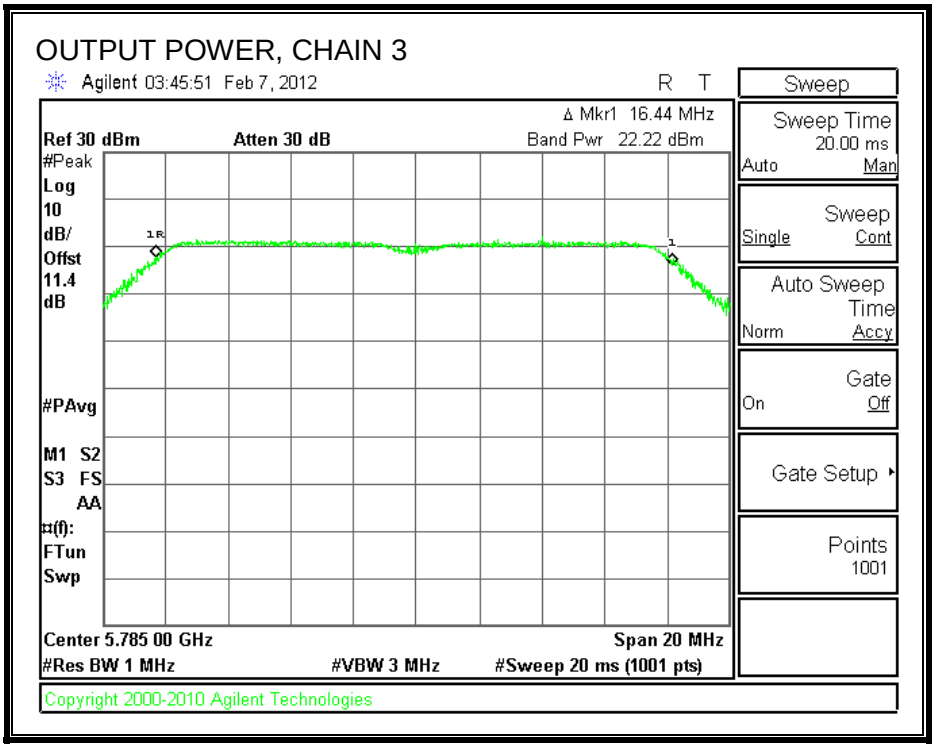
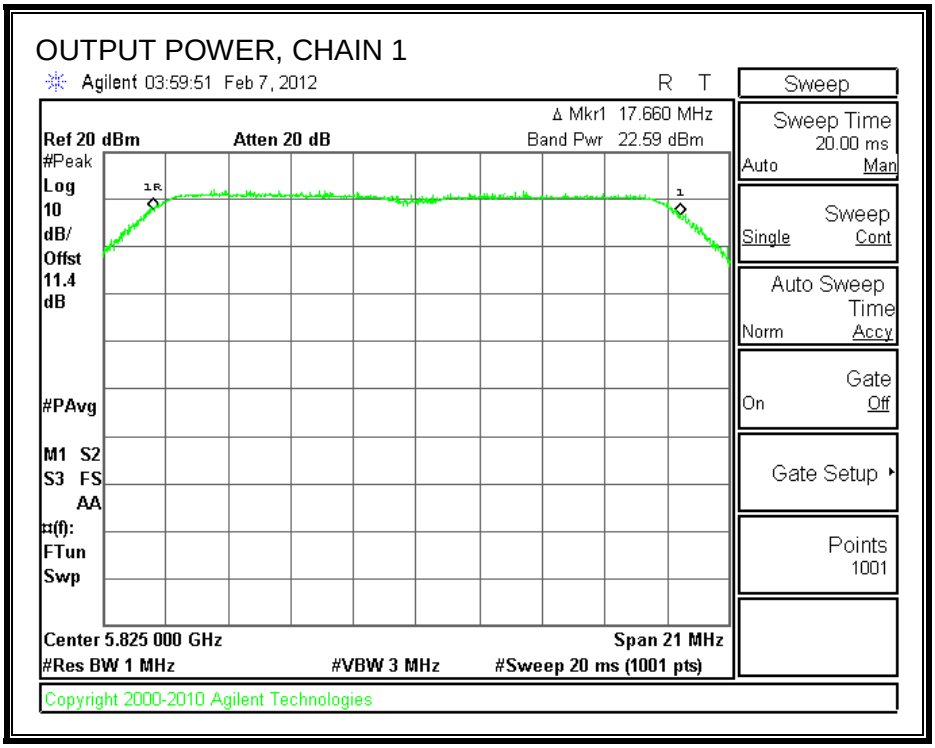


HIGH CH



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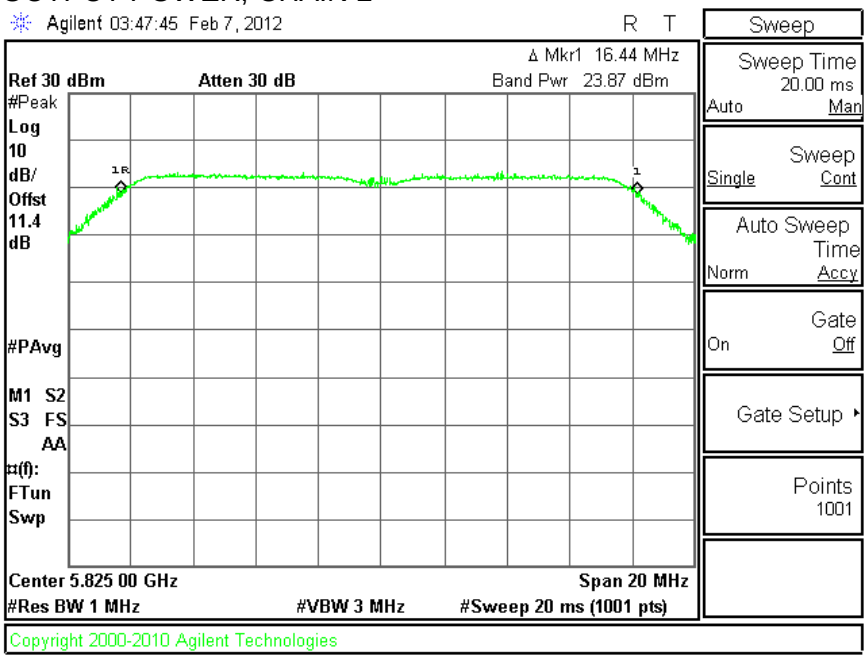
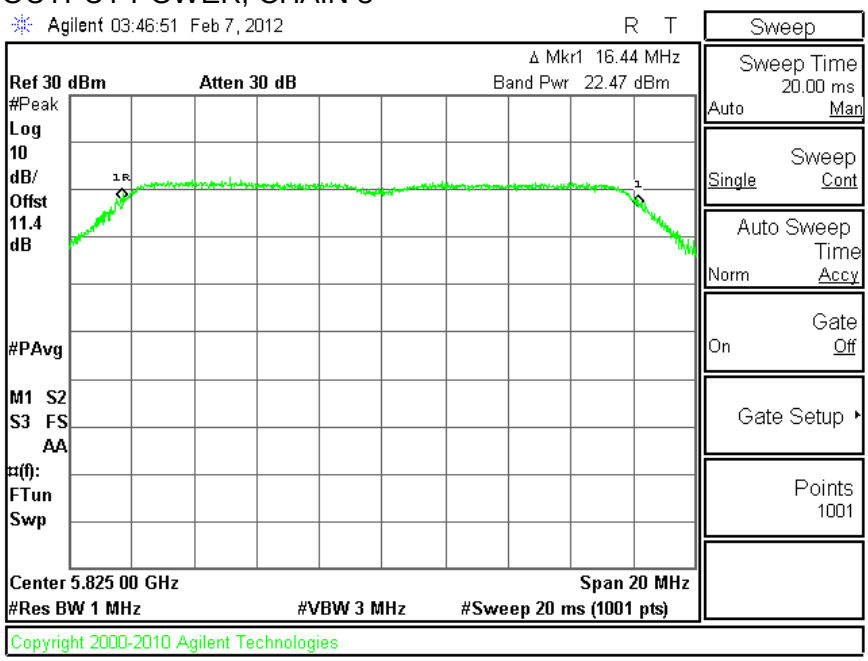
OUTPUT POWER, CHAIN 2



OUTPUT POWER, CHAIN 3



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4.4.6. 802.11n HT20 Mode, 5.8GHz, 6.5Mbps

Channel	Frequency (MHz)	Chain 1 PK Power (dBm)	Chain 2 PK Power (dBm)	Chain 3 PK Power (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Middle	5785	23.17	23.03	21.83	27.49	28.03	-0.54
High	5825	22.59	22.29	21.63	26.96	28.03	-1.07

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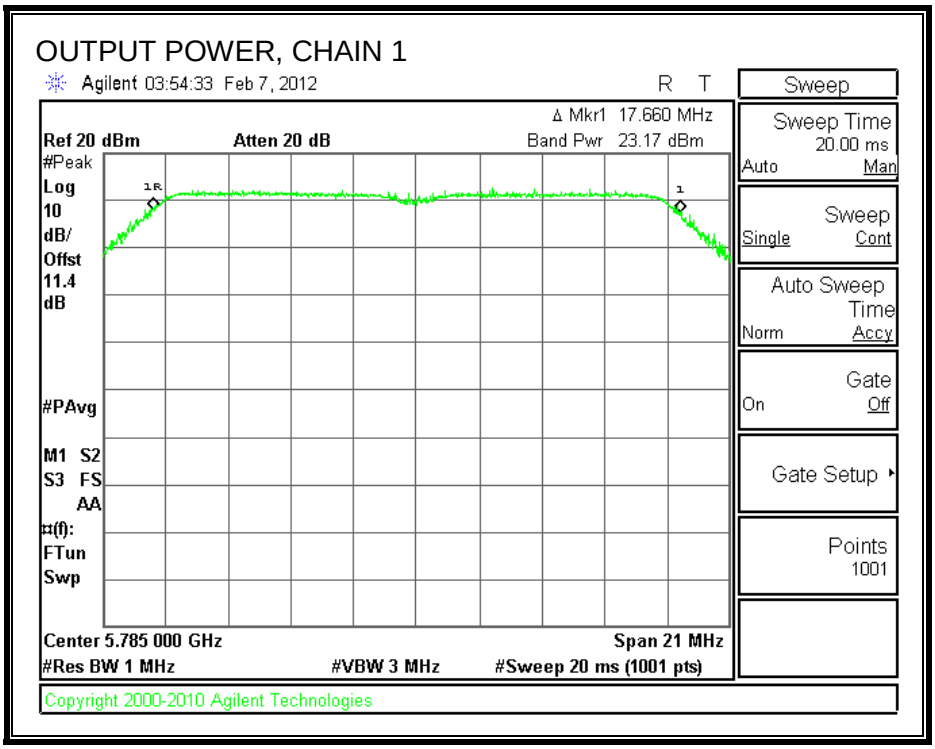
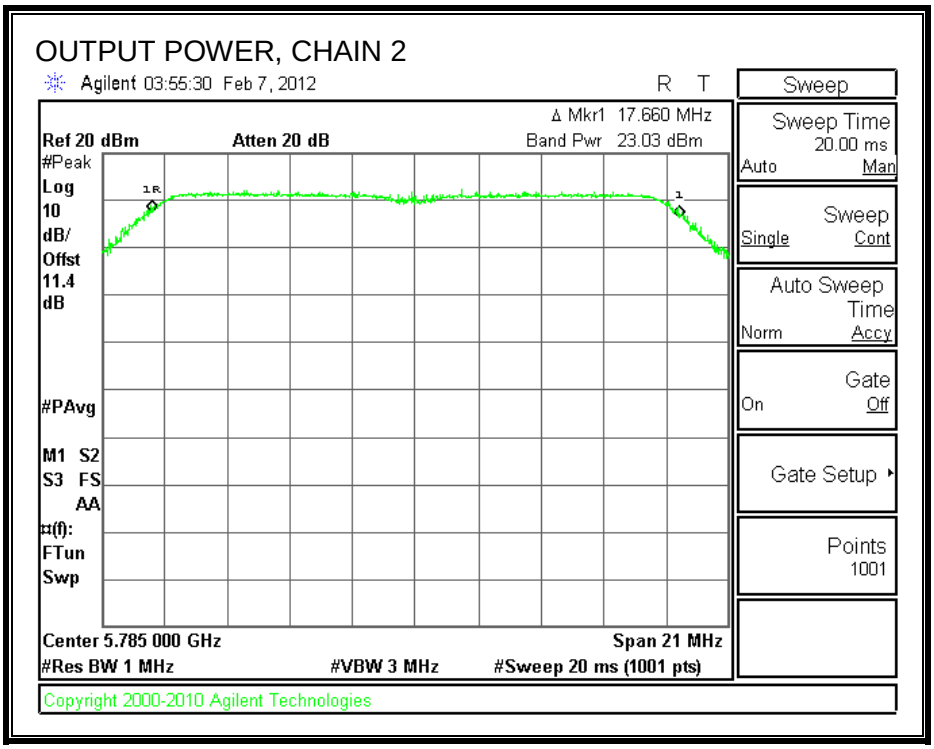
MIDDLE CH





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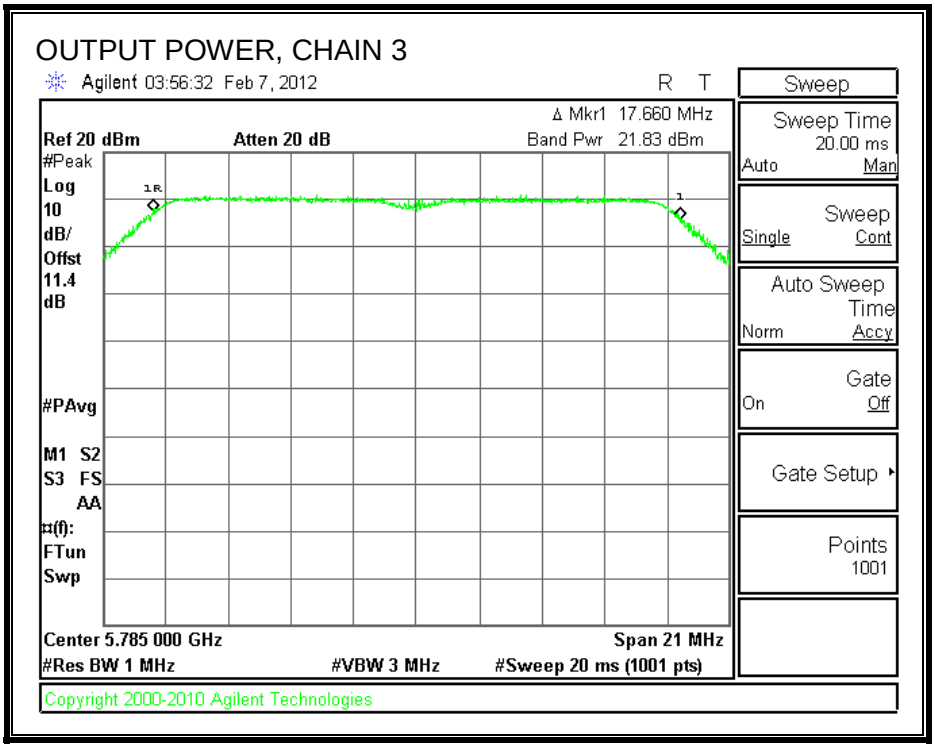
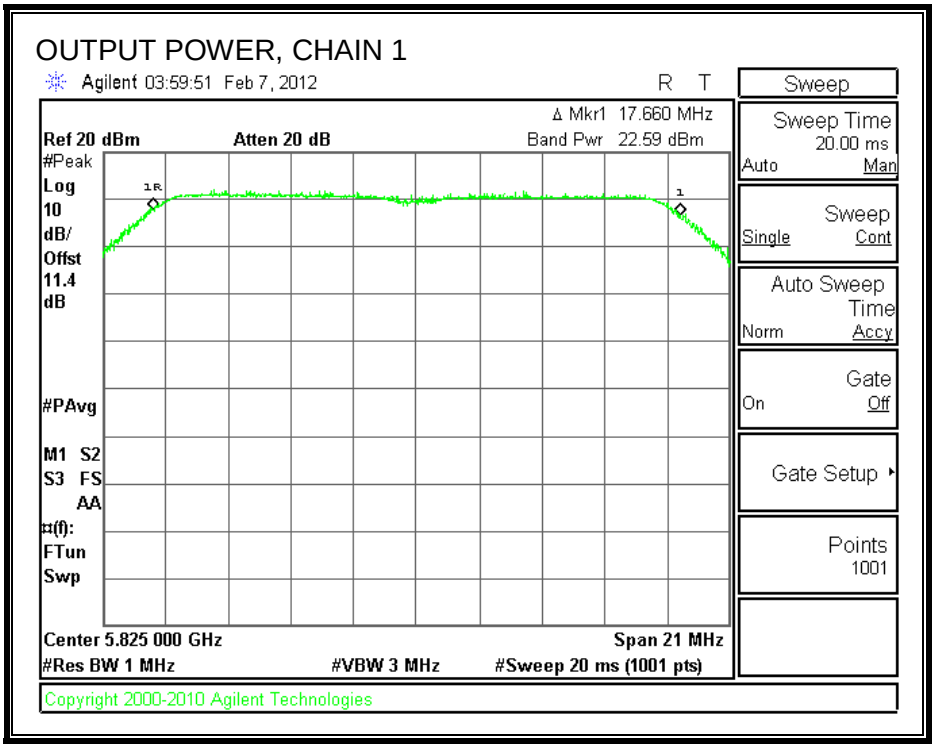


HIGH CH



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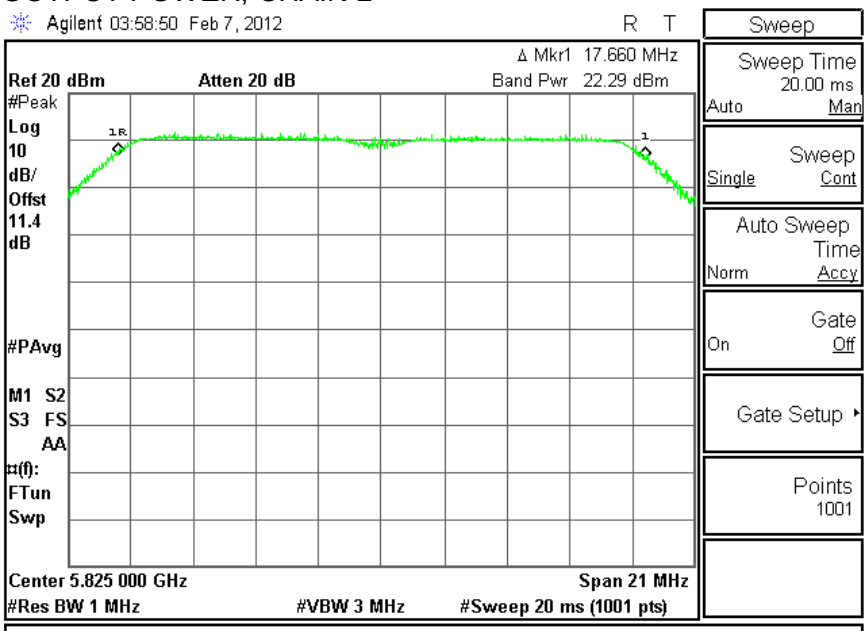
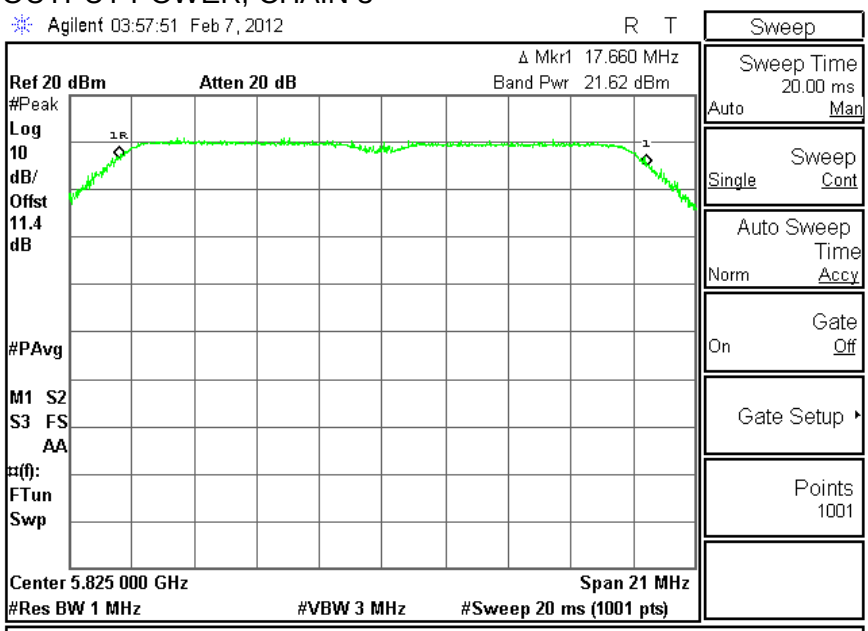
OUTPUT POWER, CHAIN 2



OUTPUT POWER, CHAIN 3



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DESCRIPTION OF CLASS II PERMISSIVE CHANGE

The major change filed under this application is adding a new Ethertronics' Savvi WLAN Embedded Ceramic antenna.

4.5. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a Savvi Embedded Ceramic antenna, with the maximum gain as table below:

Frequency Band (GHz)	Peak Gain (dBi)
2.4-2.5	1.1
4.9-5.8	3.2

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4.6. SOFTWARE AND FIRMWARE

The EUT driver software installed during testing was Atheros AR93 Anwi Diagnostic Kernel Driver.

The test utility software used during testing was Atheros artgui ver_2.5.

4.7. WORST-CASE CONFIGURATION AND MODE

The EUT was tested as an external module installed in a test jig board connected to a host Laptop PC.

Worst-Case data rates were utilized from preliminary testing of the Chipset, worst-case data rates used during the testing are as follows:

For 2.4GHz Band:
All final tests in the 802.11b Mode (Legacy) were made at 1 Mb/s.
All final tests in the 802.11g Mode were made at 6 Mb/s.
All final tests in the 802.11n HT20 Mode were made at MCS0.
All final tests in the 802.11n HT40 Mode were made at MCS0.

For 5.8GHz Band:
All final tests in the 802.11a Mode (Legacy) were made at 6 Mb/s.
All final tests in the 802.11n HT20 Mode were made at MCS0
All final tests in the 802.11n HT40 Mode were made at MCS0

For Radiated Band Edge measurements preliminary testing showed that the worst case was horizontal polarization, so final measurements were performed with horizontal polarization.

Worst-case mode and channel used for 30-1000 MHz radiated and power line conducted emissions was the mode and channel with the highest output power.

To determine the worst-position of highest emissions, the EUT was investigated for X, Y, Z positions, and the worst position was turned out to be antenna at X-position.

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4.8. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	Delta	GA240PE1-00	CN-OJ211H-48661-134-09VU	DoC
Laptop	Dell	Precision M6200	FBSNQ61	DoC
PCB Board	Qualcomm	NA	NA	NA
Antenna AC Adapter	V-Infinity	3A-124DA09	1039A	DoC

I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	2	US115V	Unshielded	1m	Ferrite on laptop's end
2	DC	2	DC	Unshielded	2m	NA
3	Ant Port	1	U.FL	Unshielded	0.2m	NA

TEST SETUP

The EUT is connected to a host laptop computer via a PCI-E adapter board during the test. Test software exercised the radio card.

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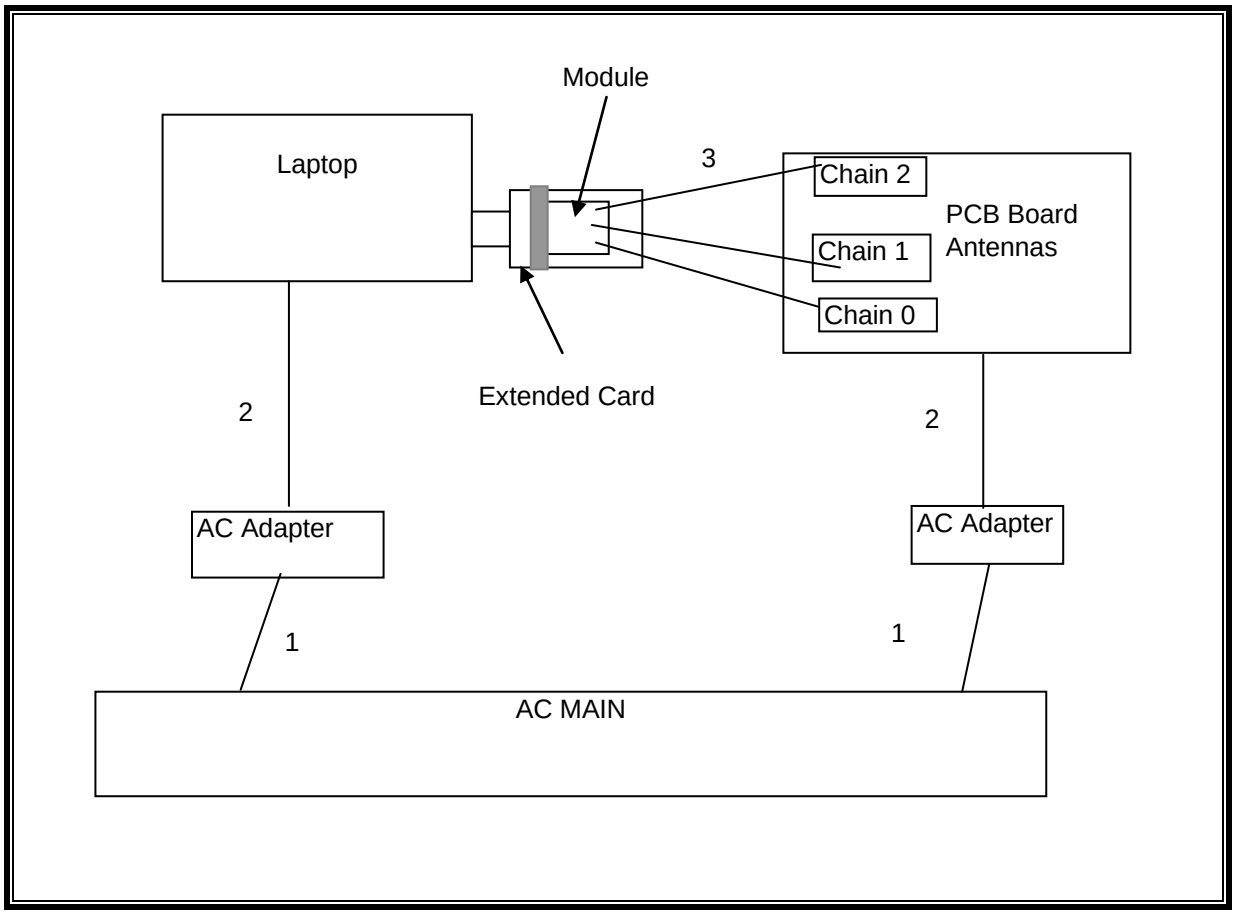
SETUP DIAGRAM FOR TESTS



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5. 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**	**Asset**	**Cal Date**	**Cal Due**
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C00996	04/29/11	10/29/12
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01171	01/14/11	07/14/12
Antenna, Horn, 18 GHz	EMCO	3115	C00872	06/29/11	06/29/12
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00980	06/25/11	06/25/12
Antenna, Horn, 40 GHz	ARA	MWH-2640/B	C00981	06/08/11	06/08/12
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00778	01/06/11	07/06/12
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C00749	07/14/11	07/14/12
Preamplifier, 40 GHz	Miteq	NSP4000-SP2	C00990	07/15/11	07/15/12
Peak Power Meter	HP	437B	C00963	3/22/2011	10/29/12
Peak Power Sensor	HP	E9327A	C00964	4/13/2011	11/04/12
EMI Receiver, 6.5 GHz	Agilent / HP	8546A	1963	05/19/11	08/19/12
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	08/06/10	05/06/12
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	11/06/10	02/06/12
Reject Filter, 2.4-2.5 GHz	Micro-Tronics	BRM50702	N02685	CNR	CNR
Highpass Filter, 7.6 GHz	Micro-Tronics	HPM13195	N02601	CNR	CNR

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6. RADIATED TEST RESULTS

6.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

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, and 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 applicable 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.

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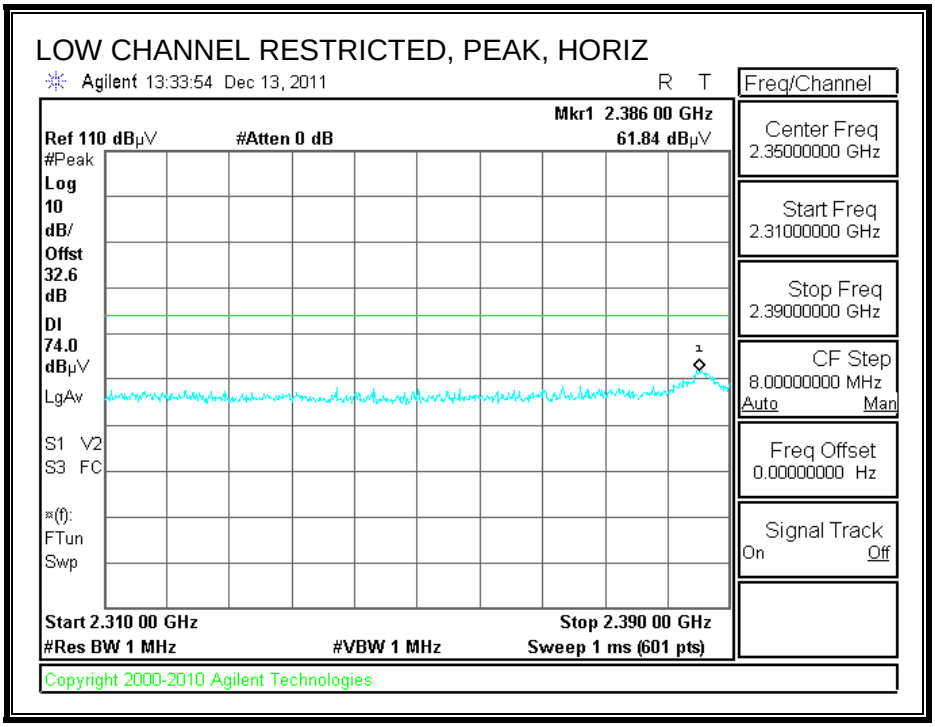
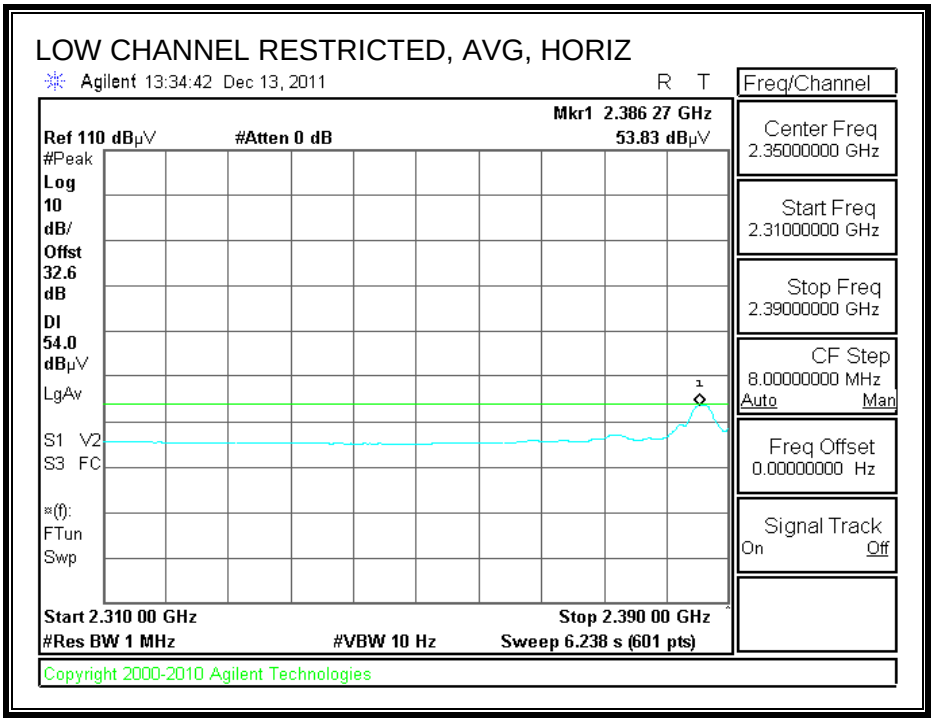
6.2. TRANSMITTER ABOVE 1 GHz

6.2.1. 802.11b MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)





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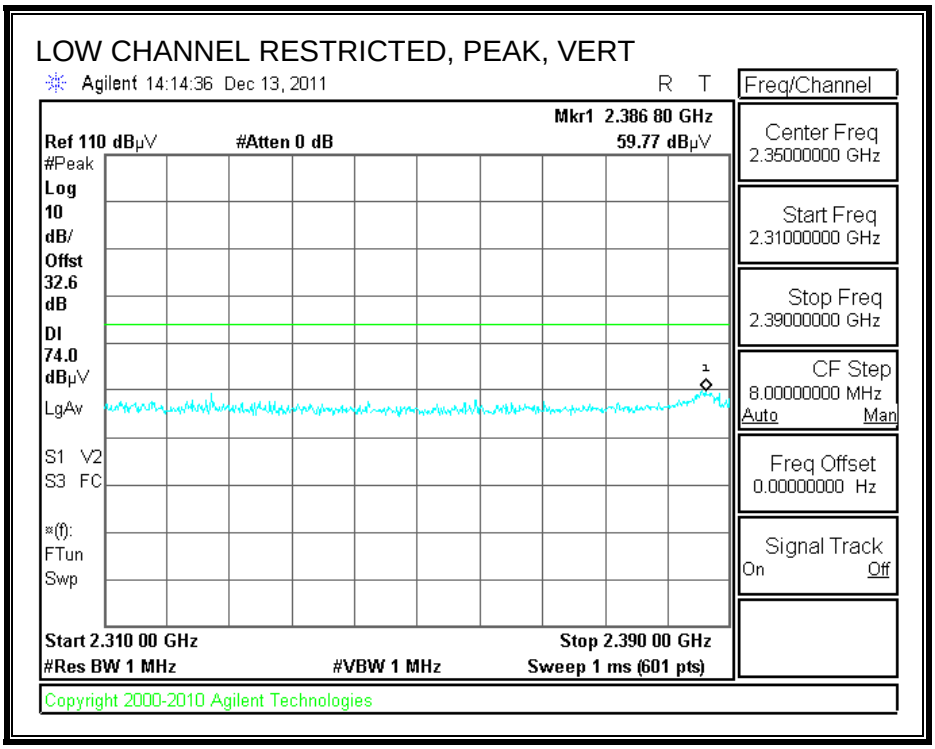
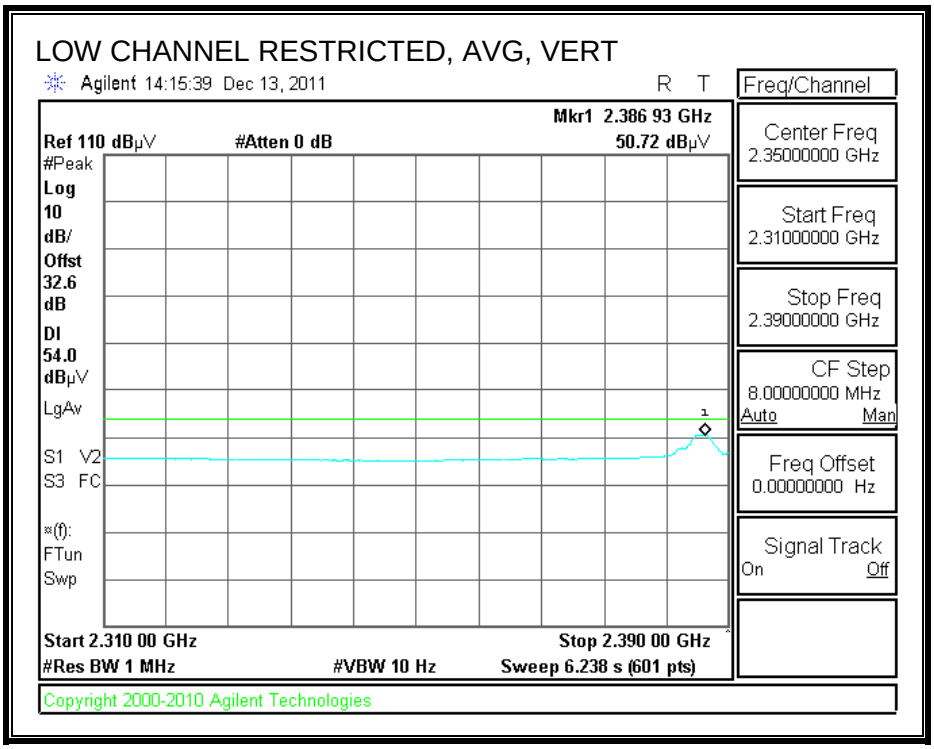
RESTRICTED BANDEDGE (LOW CH CHANNEL, VERTICAL)





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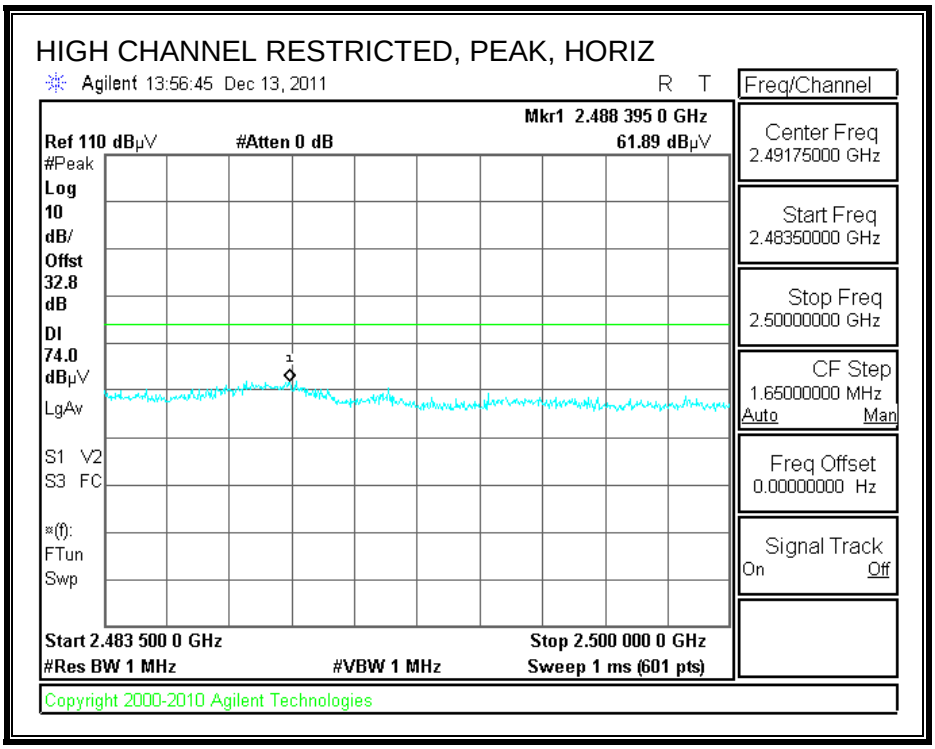
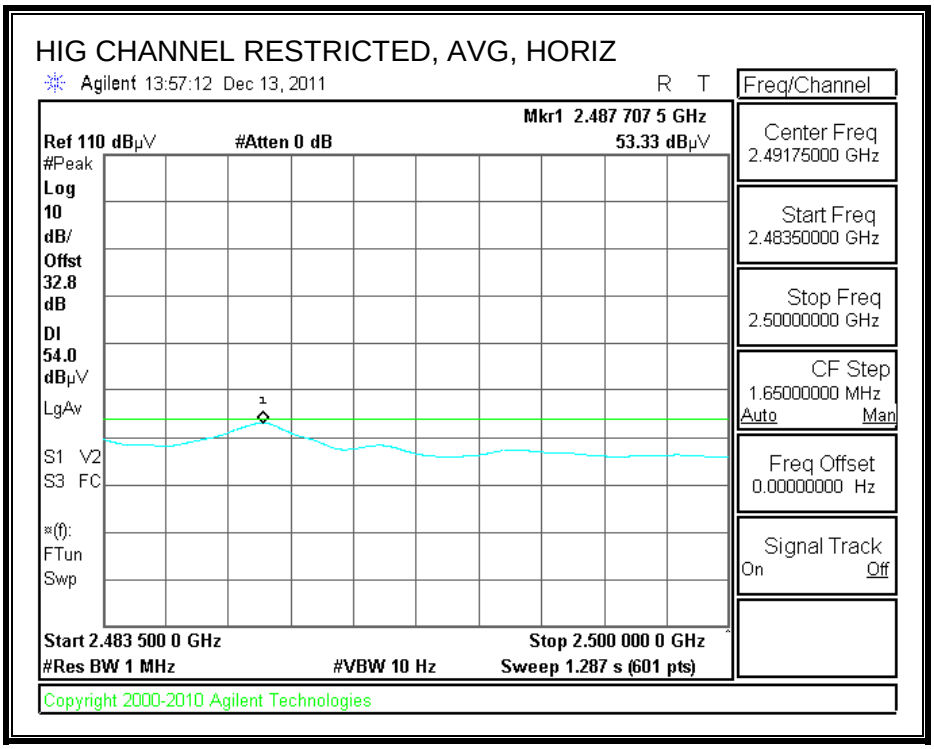
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





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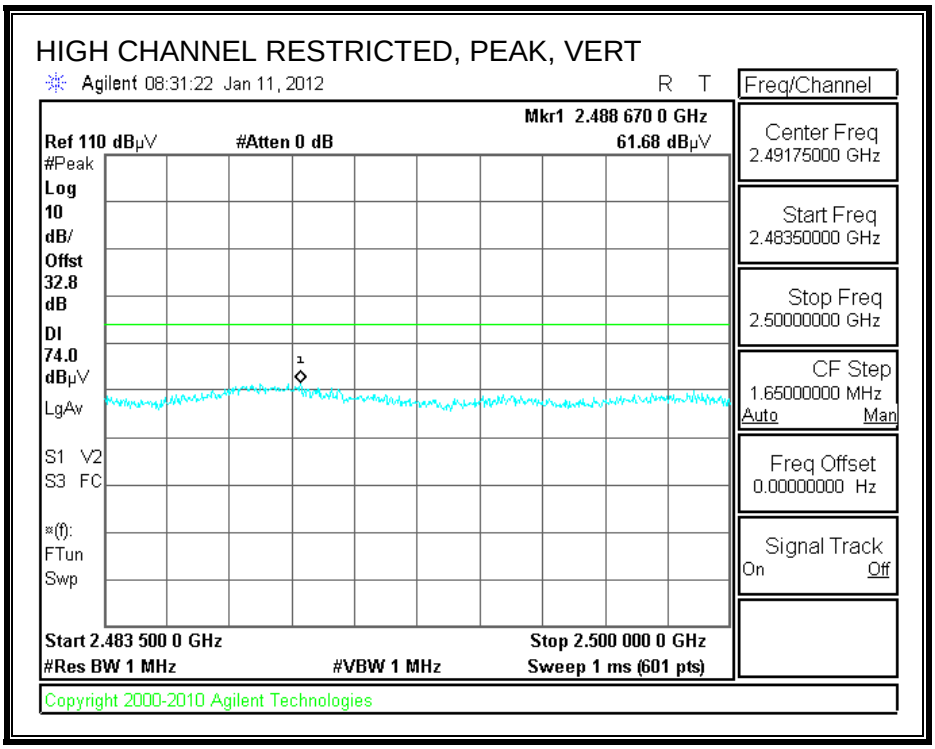
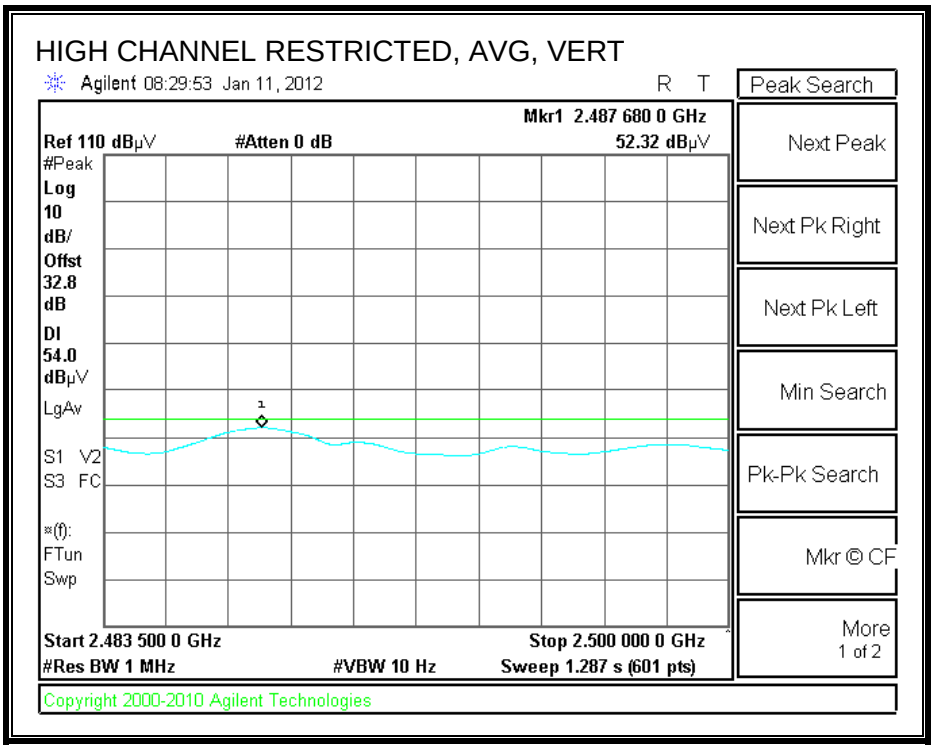
RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





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HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 3m Chamber

Test Engr: Vien Tran
Date: 01/06/12
Project #: 11U14110
Company: Fluke Networks
Test Target: FCC Class B
Mode Oper: Tx 11b Mode 1Mbps

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

f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
LOW CHANNEL, 2412MHz															
4.824	3.0	39.3	33.1	6.8	-34.8	0.0	0.0	44.4	74.0	-29.6	V	P	101.0	33.0	
4.824	3.0	33.0	33.1	6.8	-34.8	0.0	0.0	38.1	54.0	-15.9	V	A	101.0	33.0	
4.824	3.0	38.7	33.1	6.8	-34.8	0.0	0.0	43.8	74.0	-30.2	H	P	198.0	347.0	
4.824	3.0	31.0	33.1	6.8	-34.8	0.0	0.0	36.1	54.0	-17.9	H	A	198.0	347.0	
MID CHANNEL, 2437MHz															
4.874	3.0	49.3	33.2	6.8	-34.8	0.0	0.0	54.4	74.0	-19.6	H	P	198.0	347.0	
4.874	3.0	47.6	33.2	6.8	-34.8	0.0	0.0	52.7	54.0	-1.3	H	A	198.0	347.0	
7.311	3.0	40.4	36.3	9.1	-34.1	0.0	0.0	51.7	74.0	-22.3	H	P	160.0	59.0	
7.311	3.0	33.2	36.3	9.1	-34.1	0.0	0.0	44.5	54.0	-9.5	H	A	160.0	59.0	
12.185	3.0	33.3	39.4	12.0	-32.5	0.0	0.0	52.1	74.0	-21.9	H	P	195.0	98.0	
12.185	3.0	21.3	39.4	12.0	-32.5	0.0	0.0	40.2	54.0	-13.8	H	A	195.0	98.0	
4.874	3.0	44.6	33.2	6.8	-34.8	0.0	0.0	49.8	74.0	-24.2	V	P	98.0	180.0	
4.874	3.0	41.5	33.2	6.8	-34.8	0.0	0.0	46.6	54.0	-7.4	V	A	98.0	180.0	
7.311	3.0	41.8	36.3	9.1	-34.1	0.0	0.0	53.1	74.0	-20.9	V	P	113.0	-2.0	
7.311	3.0	35.9	36.3	9.1	-34.1	0.0	0.0	47.2	54.0	-6.8	V	A	113.0	-2.0	
12.185	3.0	33.2	39.4	12.0	-32.5	0.0	0.0	52.1	74.0	-21.9	V	P	127.0	156.0	
12.185	3.0	21.3	39.4	12.0	-32.5	0.0	0.0	40.2	54.0	-13.9	V	A	127.0	156.0	
HIGH CHANNEL, 2462MHz															
4.924	3.0	39.0	33.2	6.8	-34.8	0.0	0.0	44.2	74.0	-29.8	H	P	156.0	54.0	
4.924	3.0	32.7	33.2	6.8	-34.8	0.0	0.0	37.9	54.0	-16.1	H	A	156.0	54.0	
7.386	3.0	36.0	36.4	9.1	-34.1	0.0	0.0	47.5	74.0	-26.5	H	P	152.0	334.0	
7.386	3.0	24.6	36.4	9.1	-34.1	0.0	0.0	36.1	54.0	-17.9	H	A	152.0	334.0	
12.310	3.0	33.9	39.4	12.0	-32.5	0.0	0.0	52.8	74.0	-21.2	H	P	136.0	354.0	
12.310	3.0	21.3	39.4	12.0	-32.5	0.0	0.0	40.3	54.0	-13.7	H	A	136.0	354.0	
4.924	3.0	37.2	33.2	6.8	-34.8	0.0	0.0	42.4	74.0	-31.6	V	P	98.0	257.0	
4.924	3.0	29.6	33.2	6.8	-34.8	0.0	0.0	34.8	54.0	-19.2	V	A	98.0	257.0	
7.386	3.0	36.9	36.4	9.1	-34.1	0.0	0.0	48.3	74.0	-25.7	V	P	168.0	361.0	
7.386	3.0	25.9	36.4	9.1	-34.1	0.0	0.0	37.3	54.0	-16.7	V	A	168.0	361.0	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

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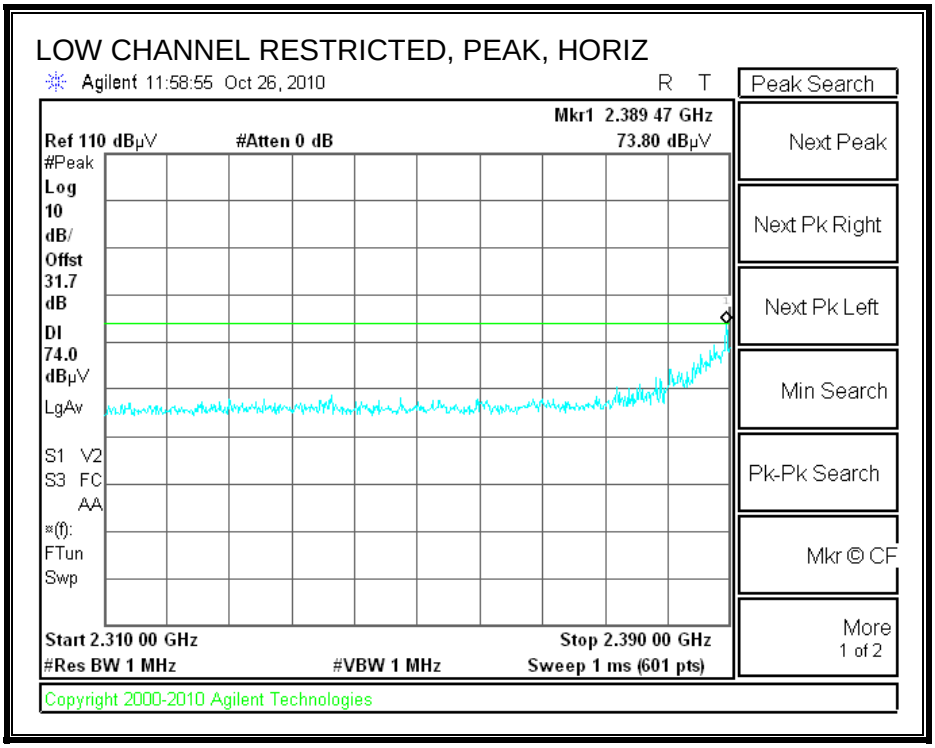
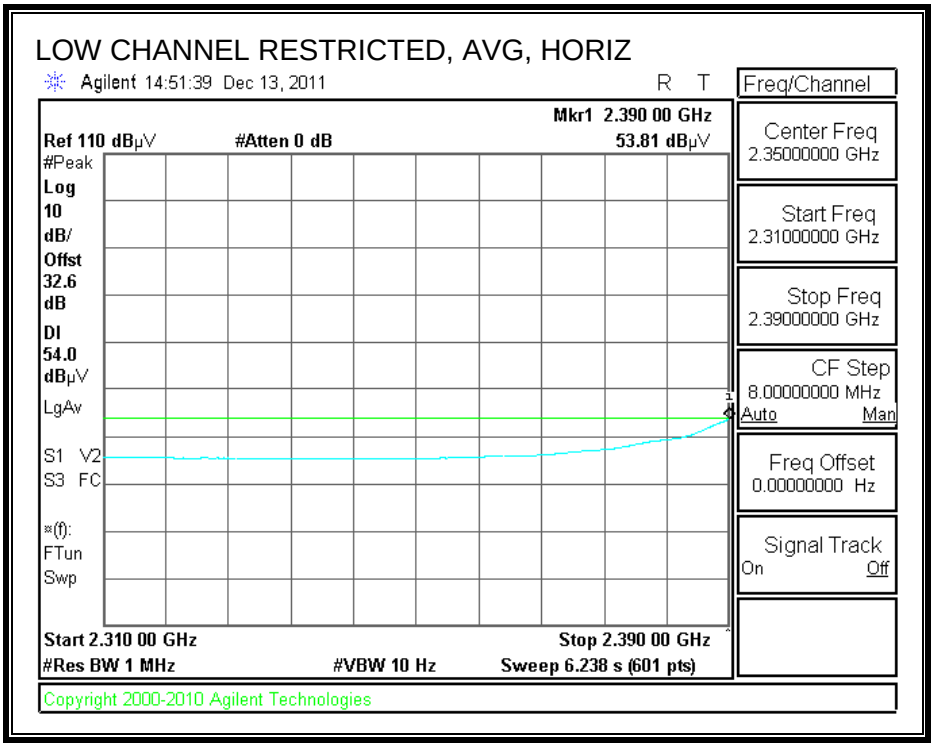
6.2.2. 802.11g MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)





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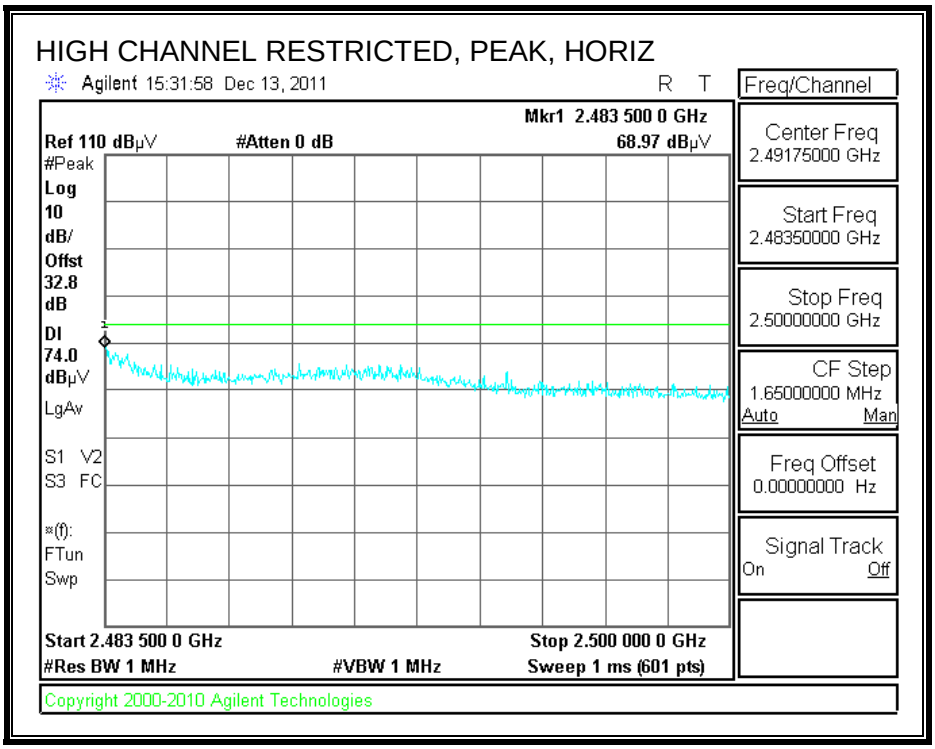
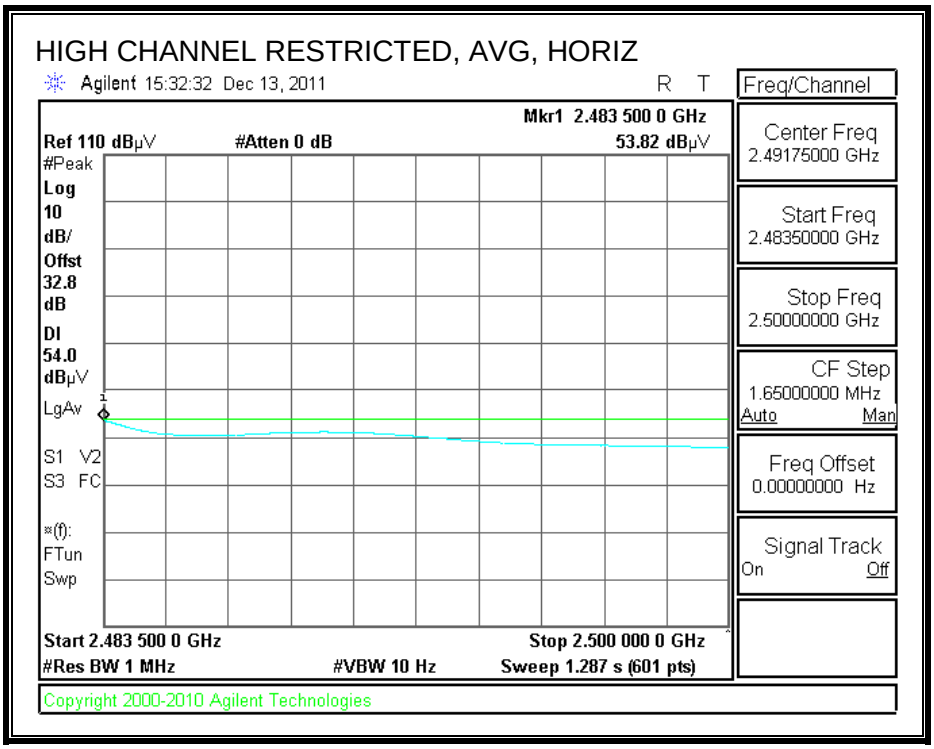
RESTRICTED BANDEDGE HIGH CHANNEL, HORIZONTAL)





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HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 3m Chamber

Test Engr: Vien Tran
Date: 01/06/12
Project #: 11U14110
Company: Fluke Networks
Test Target: FCC Class B
Mode Oper: Tx 11g Mode, 6Mbps

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

f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
LOW CHANNEL, 2412MHz, 6Mbps															
4.824	3.0	39.7	33.1	6.8	-34.8	0.0	0.0	44.8	74.0	-29.2	H	P	197.0	-2.0	
4.824	3.0	26.2	33.1	6.8	-34.8	0.0	0.0	31.2	54.0	-22.8	H	A	197.0	-2.0	
4.824	3.0	37.3	33.1	6.8	-34.8	0.0	0.0	42.4	74.0	-31.6	V	P	98.0	332.0	
4.824	3.0	25.1	33.1	6.8	-34.8	0.0	0.0	30.2	54.0	-23.8	V	A	98.0	332.0	
MID CHANNEL, 2437MHz, 6Mbps															
4.874	3.0	47.2	33.2	6.8	-34.8	0.0	0.0	52.4	74.0	-21.6	H	P	177.0	82.0	
4.874	3.0	31.3	33.2	6.8	-34.8	0.0	0.0	36.4	54.0	-17.6	H	A	177.0	82.0	
7.311	3.0	47.7	36.3	9.1	-34.1	0.0	0.0	59.0	74.0	-15.0	H	P	155.0	37.0	
7.311	3.0	29.6	36.3	9.1	-34.1	0.0	0.0	40.9	54.0	-13.1	H	A	155.0	37.0	
12.185	3.0	33.6	39.4	12.0	-32.5	0.0	0.0	52.5	74.0	-21.5	H	P	196.0	307.0	
12.185	3.0	21.2	39.4	12.0	-32.5	0.0	0.0	40.1	54.0	-13.9	H	A	196.0	307.0	
4.874	3.0	47.1	33.2	6.8	-34.8	0.0	0.0	52.3	74.0	-21.7	V	P	181.0	137.0	
4.874	3.0	32.7	33.2	6.8	-34.8	0.0	0.0	37.8	54.0	-16.2	V	A	181.0	137.0	
7.311	3.0	36.5	36.3	9.1	-34.1	0.0	0.0	47.8	74.0	-26.2	V	P	98.0	267.0	
7.311	3.0	23.5	36.3	9.1	-34.1	0.0	0.0	34.8	54.0	-19.2	V	A	98.0	267.0	
12.185	3.0	33.8	39.4	12.0	-32.5	0.0	0.0	52.7	74.0	-21.3	V	P	170.0	176.0	
12.185	3.0	21.3	39.4	12.0	-32.5	0.0	0.0	40.2	54.0	-13.8	V	A	170.0	176.0	
HIGH CHANNEL, 2462MHz, 6Mbps															
4.924	3.0	44.0	33.2	6.8	-34.8	0.0	0.0	49.2	74.0	-24.8	H	P	159.0	111.0	
4.924	3.0	29.6	33.2	6.8	-34.8	0.0	0.0	34.8	54.0	-19.2	H	A	159.0	111.0	
7.386	3.0	46.9	36.4	9.1	-34.1	0.0	0.0	58.3	74.0	-15.7	H	P	158.0	34.0	
7.386	3.0	25.4	36.4	9.1	-34.1	0.0	0.0	36.8	54.0	-17.2	H	A	158.0	34.0	
12.310	3.0	33.4	39.4	12.0	-32.5	0.0	0.0	52.3	74.0	-21.7	H	P	167.0	238.0	
12.310	3.0	21.4	39.4	12.0	-32.5	0.0	0.0	40.4	54.0	-13.6	H	A	167.0	238.0	
4.924	3.0	42.5	33.2	6.8	-34.8	0.0	0.0	47.7	74.0	-26.3	V	P	110.0	253.0	
4.924	3.0	28.5	33.2	6.8	-34.8	0.0	0.0	33.7	54.0	-20.3	V	A	110.0	253.0	
7.386	3.0	40.1	36.4	9.1	-34.1	0.0	0.0	51.5	74.0	-22.5	V	P	162.0	327.0	
7.386	3.0	23.6	36.4	9.1	-34.1	0.0	0.0	35.0	54.0	-19.0	V	A	162.0	327.0	
12.310	3.0	33.6	39.4	12.0	-32.5	0.0	0.0	52.6	74.0	-21.4	V	P	161.0	329.0	
12.310	3.0	21.0	39.4	12.0	-32.5	0.0	0.0	39.9	54.0	-14.1	V	A	161.0	329.0	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

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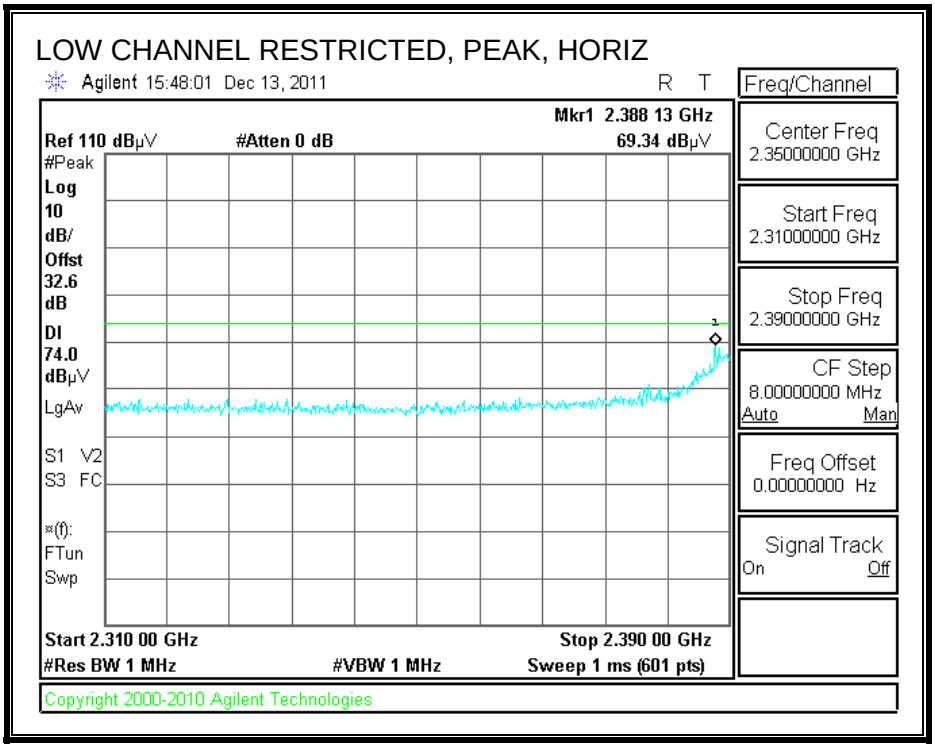
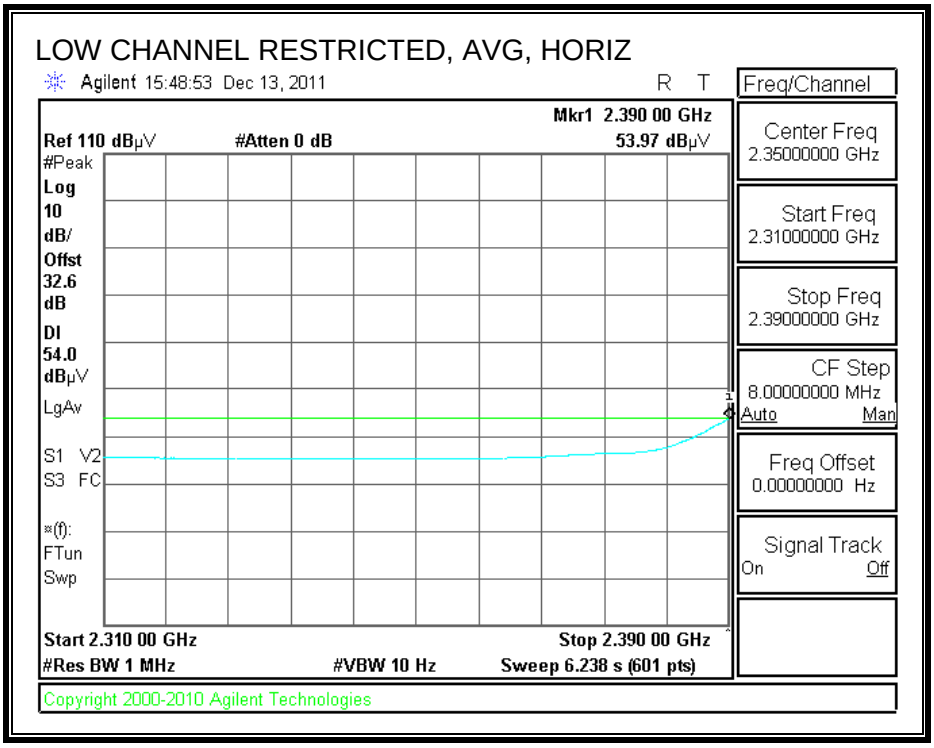
6.2.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)





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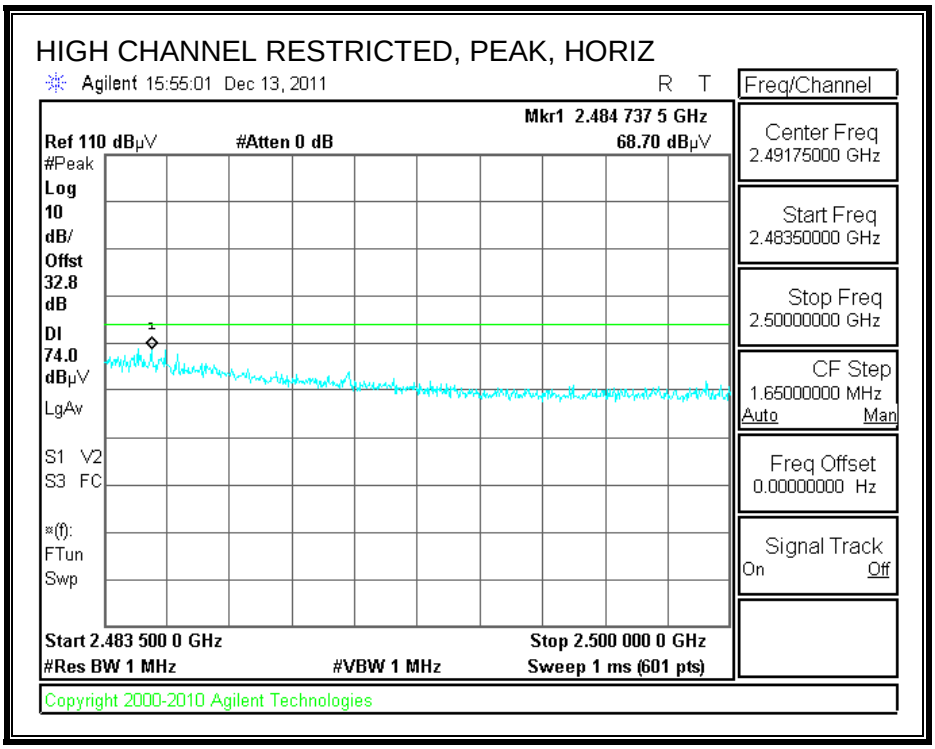
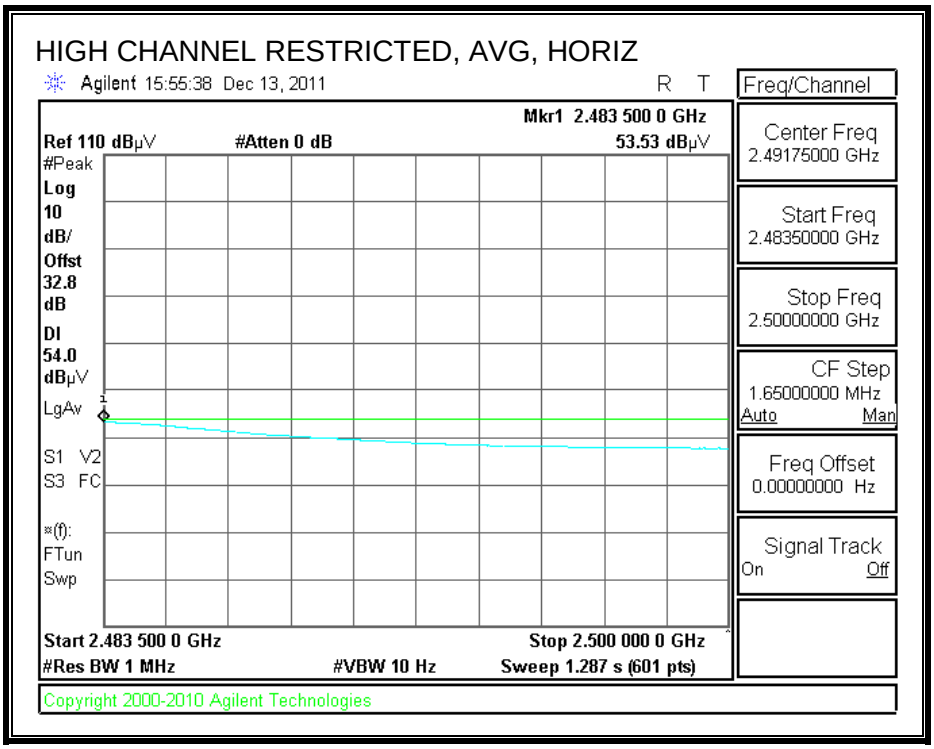
RESTRICTED BANDEDGE HIGH CHANNEL, HORIZONTAL)





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HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 3m Chamber

Test Engr: Vien Tran
Date: 01/06/12
Project #: 11U14110
Company: Fluke Networks
Test Target: FCC Class B
Mode Oper: Tx HT20 Mode 6.5Mbps

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

f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
LOW CHANNEL, 2412MHz, 6.5Mbps - Setting=5.5dBm															
4.824	3.0	36.6	33.1	6.8	-34.8	0.0	0.0	41.7	74.0	-32.3	H	P	117.0	164.0	
4.824	3.0	24.0	33.1	6.8	-34.8	0.0	0.0	29.1	54.0	-24.9	H	A	117.0	164.0	
4.824	3.0	37.4	33.1	6.8	-34.8	0.0	0.0	42.5	74.0	-31.5	V	P	192.0	38.0	
4.824	3.0	24.3	33.1	6.8	-34.8	0.0	0.0	29.4	54.0	-24.6	V	A	192.0	38.0	
MID CHANNEL, 2437MHz, 6.5Mbps - Setting=14dBm															
4.874	3.0	51.5	33.2	6.8	-34.8	0.0	0.0	56.6	74.0	-17.4	H	P	179.0	352.0	
4.874	3.0	35.5	33.2	6.8	-34.8	0.0	0.0	40.7	54.0	-13.3	H	A	179.0	352.0	
7.311	3.0	49.4	36.3	9.1	-34.1	0.0	0.0	60.7	74.0	-13.3	H	P	143.0	26.0	
7.311	3.0	32.6	36.3	9.1	-34.1	0.0	0.0	43.9	54.0	-10.1	H	A	143.0	26.0	
12.185	3.0	36.3	39.4	12.0	-32.5	0.0	0.0	55.2	74.0	-18.8	H	P	149.0	357.0	
12.185	3.0	21.9	39.4	12.0	-32.5	0.0	0.0	40.8	54.0	-13.2	H	A	149.0	357.0	
4.874	3.0	41.3	33.2	6.8	-34.8	0.0	0.0	46.5	74.0	-27.5	V	P	110.0	283.0	
4.874	3.0	28.9	33.2	6.8	-34.8	0.0	0.0	34.0	54.0	-20.0	V	A	110.0	283.0	
7.311	3.0	42.9	36.3	9.1	-34.1	0.0	0.0	54.2	74.0	-19.8	V	P	160.0	330.0	
7.311	3.0	27.0	36.3	9.1	-34.1	0.0	0.0	38.3	54.0	-15.7	V	A	160.0	330.0	
12.185	3.0	33.6	39.4	12.0	-32.5	0.0	0.0	52.5	74.0	-21.5	V	P	197.0	32.0	
12.185	3.0	21.1	39.4	12.0	-32.5	0.0	0.0	40.0	54.0	-14.0	V	A	197.0	32.0	
MID CHANNEL, 2437MHz, 6.5Mbps - Setting=9dBm															
4.924	3.0	39.0	33.2	6.8	-34.8	0.0	0.0	44.2	74.0	-29.8	H	P	181.0	344.0	
4.924	3.0	26.1	33.2	6.8	-34.8	0.0	0.0	31.3	54.0	-22.7	H	A	181.0	344.0	
7.386	3.0	35.3	36.4	9.1	-34.1	0.0	0.0	46.8	74.0	-27.2	H	P	166.0	18.0	
7.386	3.0	22.5	36.4	9.1	-34.1	0.0	0.0	33.9	54.0	-20.1	H	A	166.0	18.0	
12.310	3.0	33.3	39.4	12.0	-32.5	0.0	0.0	52.2	74.0	-21.8	H	P	102.0	260.0	
12.310	3.0	21.1	39.4	12.0	-32.5	0.0	0.0	40.0	54.0	-14.0	H	A	102.0	260.0	
4.924	3.0	36.7	33.2	6.8	-34.8	0.0	0.0	41.9	74.0	-32.1	V	P	98.0	224.0	
4.924	3.0	24.4	33.2	6.8	-34.8	0.0	0.0	29.6	54.0	-24.4	V	A	98.0	224.0	
7.386	3.0	35.7	36.4	9.1	-34.1	0.0	0.0	47.1	74.0	-26.9	V	P	126.0	257.0	
7.386	3.0	22.8	36.4	9.1	-34.1	0.0	0.0	34.2	54.0	-19.8	V	A	126.0	257.0	
12.310	3.0	33.7	39.4	12.0	-32.5	0.0	0.0	52.7	74.0	-21.3	V	P	155.0	25.0	
12.310	3.0	21.3	39.4	12.0	-32.5	0.0	0.0	40.2	54.0	-13.8	V	A	155.0	25.0	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

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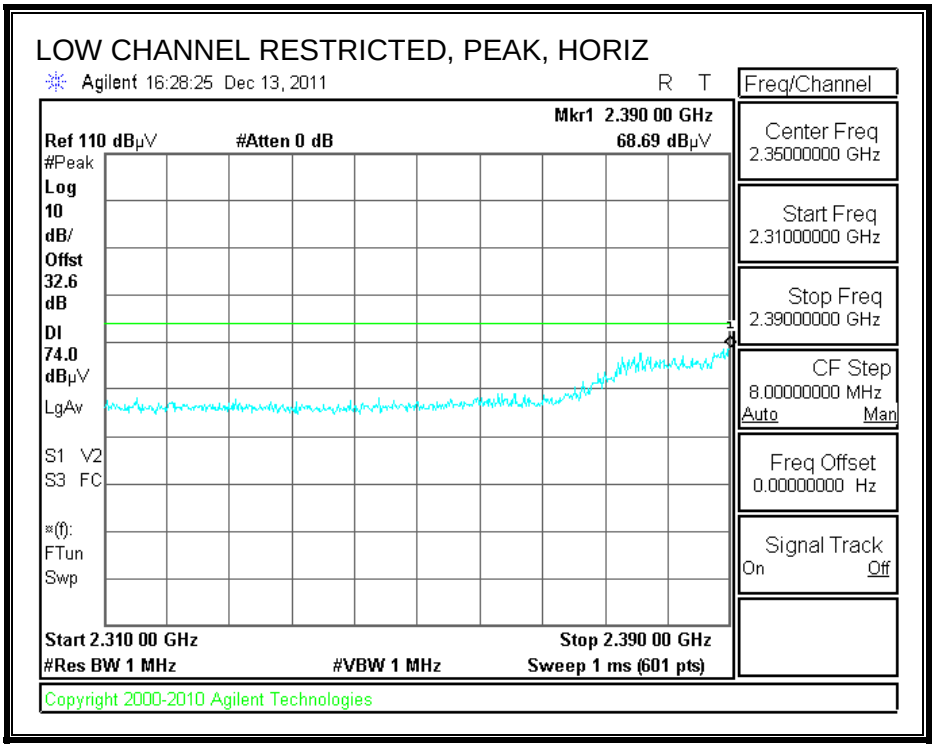
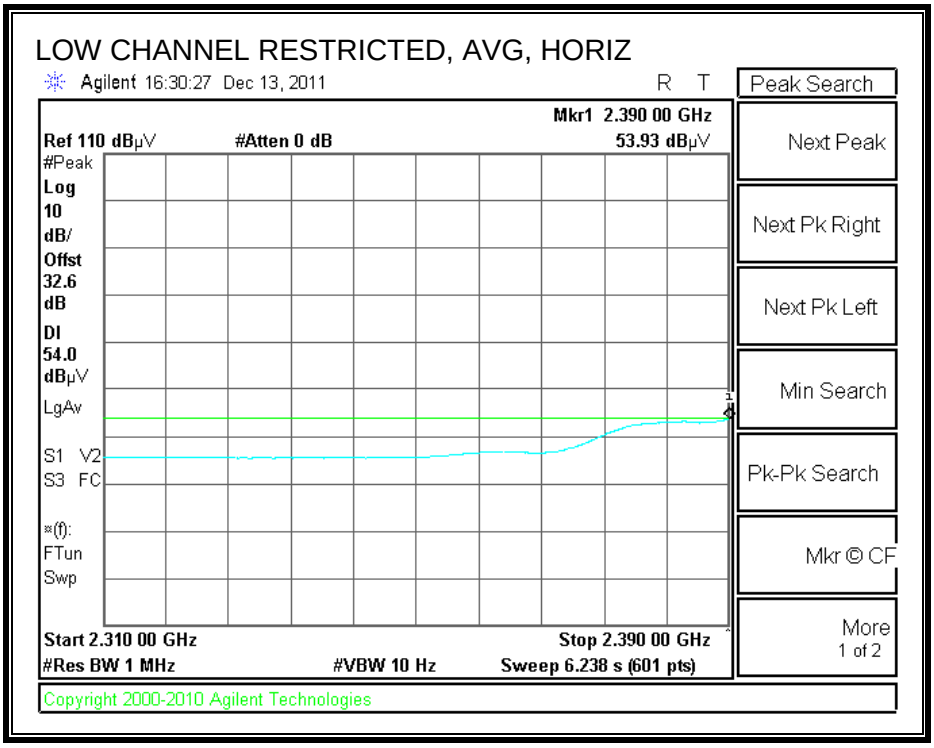
6.2.1. 802.11n HT40 MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)





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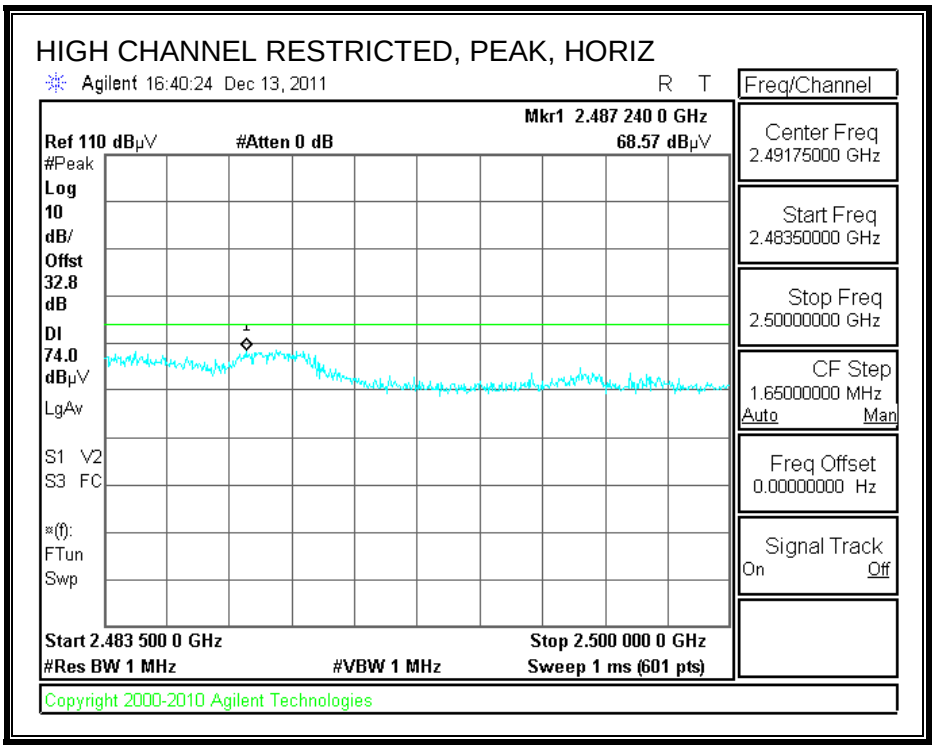
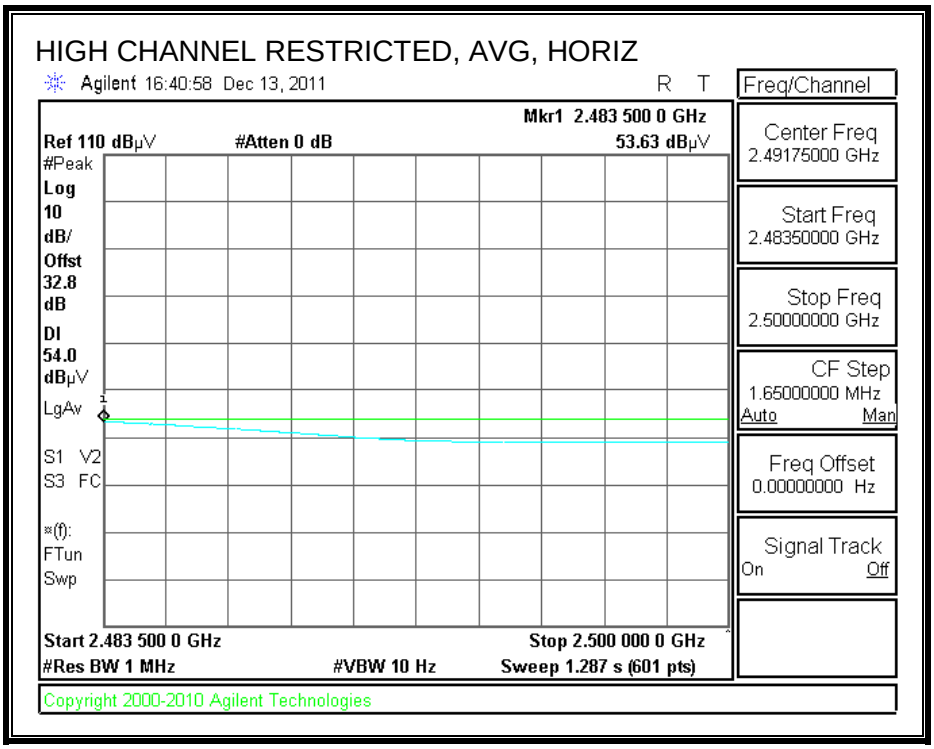
RESTRICTED BANDEDGE HIGH CHANNEL, HORIZONTAL)





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HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 3m Chamber

Test Engr: Vien Tran
Date: 01/09/12
Project #: 11U14110
Company: Fluke Networks
Test Target: FCC Class B
Mode Oper: Tx HT40 Mode 13.5Mbps

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

f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
LOW CHANNEL, 2422MHz															
4.844	3.0	38.1	33.1	6.8	-34.8	0.0	0.0	43.2	74.0	-30.8	H	P	98.0	148.0	
4.844	3.0	25.0	33.1	6.8	-34.8	0.0	0.0	30.1	54.0	-23.9	H	A	98.0	148.0	
7.266	3.0	35.8	36.2	9.1	-34.1	0.0	0.0	47.0	74.0	-27.0	H	P	101.0	185.0	
7.266	3.0	23.7	36.2	9.1	-34.1	0.0	0.0	35.0	54.0	-19.0	H	A	101.0	185.0	
4.844	3.0	38.2	33.1	6.8	-34.8	0.0	0.0	43.3	74.0	-30.7	V	P	130.0	343.0	
4.844	3.0	25.0	33.1	6.8	-34.8	0.0	0.0	30.1	54.0	-23.9	V	A	130.0	343.0	
7.266	3.0	36.2	36.2	9.1	-34.1	0.0	0.0	47.4	74.0	-26.6	V	P	100.0	322.0	
7.266	3.0	23.8	36.2	9.1	-34.1	0.0	0.0	35.0	54.0	-19.0	V	A	100.0	322.0	
MID CHANNEL, 2437MHz															
4.874	3.0	41.0	33.2	6.8	-34.8	0.0	0.0	46.2	74.0	-27.8	H	P	188.0	339.0	
4.874	3.0	28.4	33.2	6.8	-34.8	0.0	0.0	33.6	54.0	-20.4	H	A	188.0	339.0	
7.311	3.0	36.6	36.3	9.1	-34.1	0.0	0.0	47.8	74.0	-26.2	H	P	164.0	141.0	
7.311	3.0	23.6	36.3	9.1	-34.1	0.0	0.0	34.9	54.0	-19.1	H	A	164.0	141.0	
12.185	3.0	34.1	39.4	12.0	-32.5	0.0	0.0	53.0	74.0	-21.0	H	P	169.0	73.0	
12.185	3.0	21.7	39.4	12.0	-32.5	0.0	0.0	40.6	54.0	-13.4	H	A	169.0	73.0	
4.874	3.0	38.3	33.2	6.8	-34.8	0.0	0.0	43.4	74.0	-30.6	V	P	98.0	231.0	
4.874	3.0	26.4	33.2	6.8	-34.8	0.0	0.0	31.6	54.0	-22.4	V	A	98.0	231.0	
7.311	3.0	36.7	36.3	9.1	-34.1	0.0	0.0	48.0	74.0	-26.0	V	P	103.0	260.0	
7.311	3.0	23.7	36.3	9.1	-34.1	0.0	0.0	35.0	54.0	-19.0	V	A	103.0	260.0	
4.904	3.0	37.8	33.2	6.8	-34.8	0.0	0.0	43.0	74.0	-31.0	V	P	127.0	240.0	
4.904	3.0	25.3	33.2	6.8	-34.8	0.0	0.0	30.5	54.0	-23.5	V	A	127.0	240.0	
7.356	3.0	35.6	36.4	9.1	-34.1	0.0	0.0	47.0	74.0	-27.0	V	P	170.0	110.0	
7.356	3.0	23.4	36.4	9.1	-34.1	0.0	0.0	34.8	54.0	-19.2	V	A	170.0	110.0	
HIGH CHANNEL, 2452MHz															
4.904	3.0	38.0	33.2	6.8	-34.8	0.0	0.0	43.2	74.0	-30.8	H	P	166.0	339.0	
4.904	3.0	25.8	33.2	6.8	-34.8	0.0	0.0	31.0	54.0	-23.0	H	A	166.0	339.0	
7.356	3.0	35.2	36.4	9.1	-34.1	0.0	0.0	46.5	74.0	-27.5	H	P	183.0	243.0	
7.356	3.0	22.7	36.4	9.1	-34.1	0.0	0.0	34.1	54.0	-19.9	H	A	183.0	243.0	
12.260	3.0	34.5	39.4	12.0	-32.5	0.0	0.0	53.4	74.0	-20.6	H	P	119.0	254.0	
12.260	3.0	21.7	39.4	12.0	-32.5	0.0	0.0	40.6	54.0	-13.4	H	A	119.0	254.0	
4.904	3.0	38.2	33.2	6.8	-34.8	0.0	0.0	43.4	74.0	-30.6	V	P	198.0	142.0	
4.904	3.0	25.0	33.2	6.8	-34.8	0.0	0.0	30.2	54.0	-23.8	V	A	198.0	142.0	
7.356	3.0	36.2	36.4	9.1	-34.1	0.0	0.0	47.5	74.0	-26.5	V	P	164.0	160.0	
7.356	3.0	23.4	36.4	9.1	-34.1	0.0	0.0	34.8	54.0	-19.2	V	A	164.0	160.0	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

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6.2.2. 802.11a MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 3m Chamber

Test Engr: Vien Tran
Date: 01/09/12
Project #: 11U14110
Company: Fluke Networks
Test Target: FCC Class B
Mode Oper: Tx 11a Mode_5.8GHz Band_6Mbps

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

f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
LOW CHANNEL, 5745MHz, Setting=19.5dBm															
11.490	3.0	45.5	38.9	11.2	-32.5	0.0	0.0	63.0	74.0	-11.0	V	P	98.0	112.0	
11.490	3.0	32.0	38.9	11.2	-32.5	0.0	0.0	49.5	54.0	-4.5	V	A	98.0	112.0	
11.490	3.0	48.3	38.9	11.2	-32.5	0.0	0.0	65.9	74.0	-8.1	H	P	98.0	135.0	
11.490	3.0	35.7	38.9	11.2	-32.5	0.0	0.0	53.2	54.0	-0.8	H	A	98.0	135.0	
MID CHANNEL, 5785MHz, Setting=18.0dBm to pass (from 19dBm)															
11.570	3.0	50.2	38.9	11.3	-32.5	0.0	0.0	68.0	74.0	-6.0	V	P	113.0	128.0	
11.570	3.0	36.3	38.9	11.3	-32.5	0.0	0.0	54.0	54.0	0.0	V	A	113.0	128.0	
11.570	3.0	45.5	38.9	11.3	-32.5	0.0	0.0	63.2	74.0	-10.8	H	P	98.0	134.0	
11.570	3.0	32.3	38.9	11.3	-32.5	0.0	0.0	50.0	54.0	-4.0	H	A	98.0	134.0	
HIGH CHANNEL, 5825MHz, Setting=18.0dBm to pass (from 19dBm)															
11.650	3.0	47.4	39.0	11.4	-32.5	0.0	0.0	65.3	74.0	-8.7	V	P	98.0	132.0	
11.650	3.0	35.6	39.0	11.4	-32.5	0.0	0.0	53.5	54.0	-0.5	V	A	98.0	132.0	
11.650	3.0	44.5	39.0	11.4	-32.5	0.0	0.0	62.4	74.0	-11.6	H	P	98.0	53.0	
11.650	3.0	31.6	39.0	11.4	-32.5	0.0	0.0	49.5	54.0	-4.5	H	A	98.0	53.0	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

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6.2.3. 802.11n HT20 MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 3m Chamber

Test Engr: Vien Tran
Date: 01/09/12
Project #: 11U14110
Company: Fluke Networks
Test Target: FCC Class B
Mode Oper: Tx HT20 Mode, 6.5Mbps_5.8GHz Band

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

f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
LOW CHANNEL, 5745MHz															
11.490	3.0	51.1	38.9	11.2	-32.5	0.0	0.0	68.6	74.0	-5.4	V	P	118.0	128.0	
11.490	3.0	35.8	38.9	11.2	-32.5	0.0	0.0	53.3	54.0	-0.7	V	A	118.0	128.0	
11.490	3.0	48.1	38.9	11.2	-32.5	0.0	0.0	65.6	74.0	-8.4	H	P	119.0	317.0	
11.490	3.0	33.9	38.9	11.2	-32.5	0.0	0.0	51.4	54.0	-2.6	H	A	119.0	317.0	
MID CHANNEL, 5785MHz															
11.570	3.0	49.0	38.9	11.3	-32.5	0.0	0.0	66.7	74.0	-7.3	V	P	114.0	125.0	
11.570	3.0	35.1	38.9	11.3	-32.5	0.0	0.0	52.8	54.0	-1.2	V	A	114.0	125.0	
11.570	3.0	45.4	38.9	11.3	-32.5	0.0	0.0	63.2	74.0	-10.8	H	P	98.0	133.0	
11.570	3.0	31.3	38.9	11.3	-32.5	0.0	0.0	49.1	54.0	-4.9	H	A	98.0	133.0	
HIGH CHANNEL, 5825MHz															
11.650	3.0	49.9	39.0	11.4	-32.5	0.0	0.0	67.8	74.0	-6.2	V	P	136.0	125.0	
11.650	3.0	35.8	39.0	11.4	-32.5	0.0	0.0	53.8	54.0	-0.3	V	A	136.0	125.0	
11.650	3.0	42.5	39.0	11.4	-32.5	0.0	0.0	60.4	74.0	-13.6	H	P	98.0	335.0	
11.650	3.0	29.4	39.0	11.4	-32.5	0.0	0.0	47.3	54.0	-6.7	H	A	98.0	335.0	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

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6.2.4. 802.11n HT40 MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 3m Chamber

Test Engr: Vien Tran
Date: 01/09/12
Project #: 11U14110
Company: Fluke Networks
Test Target: FCC Class B
Mode Oper: Tx HT40 Mode, 13.5Mbps_5.8GHz Band

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

f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
LOW CHANNEL, 5755MHz															
11.510	3.0	45.2	38.9	11.2	-32.5	0.0	0.0	62.8	74.0	-11.2	V	P	103.0	126.0	
11.510	3.0	31.6	38.9	11.2	-32.5	0.0	0.0	49.2	54.0	-4.8	V	A	103.0	126.0	
11.510	3.0	39.5	38.9	11.2	-32.5	0.0	0.0	57.1	74.0	-16.9	H	P	98.0	131.0	
11.510	3.0	26.7	38.9	11.2	-32.5	0.0	0.0	44.2	54.0	-9.8	H	A	98.0	131.0	
HIGH CHANNEL, 5795MHz															
11.590	3.0	41.6	39.0	11.3	-32.5	0.0	0.0	59.3	74.0	-14.7	H	P	101.0	132.0	
11.590	3.0	28.2	39.0	11.3	-32.5	0.0	0.0	46.0	54.0	-8.0	H	A	101.0	132.0	
11.590	3.0	48.9	39.0	11.3	-32.5	0.0	0.0	66.7	74.0	-7.3	V	P	146.0	130.0	
11.590	3.0	35.8	39.0	11.3	-32.5	0.0	0.0	53.6	54.0	-0.4	V	A	146.0	130.0	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

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6.3. RECEIVER ABOVE 1 GHz

6.3.1. FOR 20 MHz BANDWIDTH

High Frequency Measurement
Compliance Certification Services, Fremont 3m Chamber

Test Engr: Vien Tran
Date: 01/10/12
Project #: 11U14110
Company: Fluke Networks
Test Target: FCC Class B
Mode Oper: Rx HT20 Mode_Worst-Case

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T34 HP 8449B			RX RSS 210

Hi Frequency Cables

3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF	Reject Filter
3' cable 22807700	12' cable 22807600	20' cable 22807500		

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)
1.660	3.0	56.1	35.9	27.0	3.6	-36.8	0.0	0.0	49.9	29.7	74	54	-24.1	-24.3	V
2.333	3.0	53.5	32.4	28.5	4.4	-35.8	0.0	0.0	50.6	29.5	74	54	-23.4	-24.5	V
3.000	3.0	52.3	47.5	30.3	5.1	-35.3	0.0	0.0	52.4	47.6	74	54	-21.6	-6.4	V
4.980	3.0	47.8	27.3	33.2	6.9	-34.0	0.0	0.0	53.9	33.4	74	54	-20.1	-20.6	V
1.660	3.0	55.8	35.2	27.0	3.6	-36.8	0.0	0.0	49.6	29.0	74	54	-24.4	-25.0	H
2.333	3.0	54.5	41.3	28.5	4.4	-35.8	0.0	0.0	51.6	38.4	74	54	-22.4	-15.6	H
3.000	3.0	49.5	45.2	30.3	5.1	-35.3	0.0	0.0	49.6	45.3	74	54	-24.4	-8.7	H
4.980	3.0	42.3	25.3	33.2	6.9	-34.0	0.0	0.0	48.4	31.4	74	54	-25.6	-22.6	H

Rev. 07.08.11

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

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6.3.2. FOR 40 MHz BANDWIDTH

High Frequency Measurement
Compliance Certification Services, Fremont 3m Chamber

Test Engr: Vien Tran
Date: 01/10/12
Project #: 11U14110
Company: Fluke Networks
Test Target: FCC Class B
Mode Oper: Rx HT40 Mode_Worst-Case

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T34 HP 8449B			RX RSS 210

Hi Frequency Cables

3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF	Reject Filter
3' cable 22807700	12' cable 22807600	20' cable 22807500		

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)
1.660	3.0	54.2	35.0	27.0	3.6	-36.8	0.0	0.0	48.0	28.7	74	54	-26.0	-25.3	V
2.333	3.0	53.3	31.5	28.5	4.4	-35.8	0.0	0.0	50.4	28.6	74	54	-23.6	-25.4	V
3.000	3.0	51.4	46.6	30.3	5.1	-35.3	0.0	0.0	51.4	46.6	74	54	-22.6	-7.4	V
4.980	3.0	45.6	26.4	33.2	6.9	-34.0	0.0	0.0	51.7	32.5	74	54	-22.3	-21.5	V
1.660	3.0	53.3	34.3	27.0	3.6	-36.8	0.0	0.0	47.1	28.0	74	54	-26.9	-26.0	H
2.333	3.0	53.9	40.4	28.5	4.4	-35.8	0.0	0.0	51.0	37.5	74	54	-23.0	-16.5	H
3.000	3.0	48.6	44.3	30.3	5.1	-35.3	0.0	0.0	48.7	44.3	74	54	-25.3	-9.7	H
4.980	3.0	42.3	24.4	33.2	6.9	-34.0	0.0	0.0	48.4	30.5	74	54	-25.6	-23.5	H

Rev. 07.08.11

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

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6.4. WORST-CASE BELOW 1 GHz

2.4GHz Band

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

HORIZONTAL & VERTICAL DATA

COMPANY: Fluke Networks **TEST ENGINNER: Chin Pang**
PROJECT NUMBER: 11U14110 **DATE TESTED: 01/17/2012**

30 - 1000MHz - HORIZONTAL

Test Frequency	Meter Reading	Detector	25MHz-1Ghz Chamber B Amp [dB]	T130 Bilog Factors. TXT [dB]	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
50.3537	56.62	PK	-29.0	8.0	35.62	40	-4.38	300	Horz
124.984	52.85	PK	-28.3	13.8	38.35	43.5	-5.15	200	Horz
346.9365	48.32	PK	-26.8	14.1	35.62	46	-10.38	100	Horz
513.0616	43.56	PK	-27.0	17.0	33.56	46	-12.44	200	Horz
875.1639	45.24	PK	-25.0	21.4	41.64	46	-4.36	100	Horz

30 - 1000MHz - VERTICAL

Test Frequency	Meter Reading	Detector	25MHz-1Ghz Chamber B Amp [dB]	T130 Bilog Factors. TXT [dB]	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
34.4584	44.99	PK	-29.2	18.3	34.09	40	-5.91	100	Horz
374.947	42.52	PK	-26.8	14.6	30.32	46	-15.68	100	Horz
540.006	42.48	PK	-26.8	17.4	33.08	46	-12.92	100	Horz
738.3094	45.45	PK	-25.8	19.9	39.55	46	-6.45	100	Horz

PK - Peak detector
QP - Quasi-Peak detector
LnAv - Linear Average detector
LgAv - Log Average detector
Av - Average detector
CAV - CISPR Average detector
RMS - RMS detection
CRMS - CISPR RMS detection

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5.8GHz Band

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

HORIZONTAL & VERTICAL DATA

COMPANY: Fluke Networks **TEST ENGINNER: Chin Pang**
PROJECT NUMBER: 11U14110 **DATE TESTED: 01/17/2012**

30 - 1000MHz - HORIZONTAL

Test Frequency	Meter Reading	Detector	25MHz-1Ghz Chamber B Amp [dB]	T130 Bilog Factors. TXT [dB]	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
54.6183	50.15	PK	-29.0	7.9	29.05	40	-10.95	200	Horz
124.984	52.39	PK	-28.3	13.8	37.89	43.5	-5.61	200	Horz
432.0344	42.72	PK	-27.0	15.6	31.32	46	-14.68	200	Horz
458.9788	42.62	PK	-27.0	16.1	31.72	46	-14.28	200	Horz
617.1563	45.48	PK	-26.6	18.4	37.28	46	-8.72	200	Horz
750.1339	45	PK	-25.7	20.1	39.4	46	-6.60	100	Horz

30 - 1000MHz - VERTICAL

Test Frequency	Meter Reading	Detector	25MHz-1Ghz Chamber B Amp [dB]	T130 Bilog Factors. TXT [dB]	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
39.3046	48.37	PK	-29.2	14.6	33.77	40	-6.23	100	Horz
133.5132	48.13	PK	-28.2	13.5	33.43	43.5	-10.07	100	Horz
166.4668	50.37	PK	-27.9	10.4	32.87	43.5	-10.63	100	Horz
374.8501	41.87	PK	-26.8	14.6	29.67	46	-16.33	100	Horz
566.9504	46.47	PK	-26.6	17.8	37.67	46	-8.33	100	Horz

PK - Peak detector
QP - Quasi-Peak detector
LnAv - Linear Average detector
LgAv - Log Average detector
Av - Average detector
CAV - CISPR Average detector
RMS - RMS detection
CRMS - CISPR RMS detection

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