



**FCC CFR47 PART 15 SUBPART C
INDUSTRY CANADA RSS-210 ISSUE 7
CLASS II PERMISSIVE CHANGE**

CERTIFICATION TEST REPORT

FOR

**Intel Centrino Ultimate-N6300
(Tested Inside Of Lenovo ThinkPad X200/X201 Tablet Series)**

**FCC MODEL NUMBER: 633ANHMW
IC MODEL NUMBER: 633ANHU**

**FCC ID: PD9633ANHU
IC: 1000M-9633ANHU**

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NVLAP LAB CODE 200065-0

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: INTEL CORPORATION
2111 NE 25TH AVENUE
HILLSBORO, OREGON 97124, USA

EUT DESCRIPTION: INTEL CENTRINO ULTIMATE-N6300 (Tested Inside Of Lenovo ThinkPad X200/X201 Tablet Series)

FCC MODEL: 633ANHMW

IC MODEL: 633ANHU

SERIAL NUMBER: Z1ZHJ897E1MX

DATE TESTED: OCTOBER 04 - 15, 2009

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-210 Issue 7 Annex 8	Pass
INDUSTRY CANADA RSS-GEN Issue 2	Pass

Compliance Certification Services, Inc. (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 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.

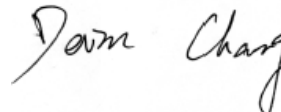
Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by 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 CCS By:



THU CHAN
EMC MANAGER
COMPLIANCE CERTIFICATION SERVICES

Tested By:



DEVIN CHANG
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, FCC CFR 47 Part 15, RSS-GEN Issue 2, and RSS-210 Issue 7.

3. FACILITIES AND ACCREDITATION

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

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. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamplifier Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

4.3. 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%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a 3x3 WLAN 802.11a/b/g/n transceiver Intel Centrino Ultimate-N6300.
The radio module is manufactured by Intel.

5.2. MAXIMUM OUTPUT POWER

The test measurement passed within ± 0.5 dBm of the original output power.

5.3. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

The major change filed under this application is adding portable tablet Lenovo ThinkPad X200/X201 Tablet Series.

5.4. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes PIFA antennas, with maximum gain as below:

Freq. (MHz)	Main (A)		Aux (B)		MIMO (C)	
	WNC	ACON	WNC	ACON	WNC	ACON
2400-2500	-1.53	-0.39	1.32	0.64	-0.84	-0.50
5725-5850	-0.76	0.92	0.14	0.22	-0.21	1.13

5.5. SOFTWARE AND FIRMWARE

The EUT driver software installed during testing was Intel Centrino Ultimate N 6300 AGN, rev. 13.0.0.91.

The test utility software used during testing was CRTU, rev. 5.15.36.0.

5.6. WORST-CASE CONFIGURATION AND MODE

The tests were performed on full test worst case channel with higher antennas gain of Wistron @ 2.4GHz and ACON @ 5GHz installed, also spot check with the rest of lower antennas gain.

The worst-case channel is determined as the channel with the highest output power.

The worst-position was the EUT with highest emissions. To determine the worst-case, the EUT was investigated for X, Y, Z, and mobile positions, after the investigations, the worst-position were turned out to be mobile position for 2.4 GHz band and portable Z position for 5 GHz band.

5.7. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Lenovo	X200 Tablet	R9-09B1T 09/07	DoC
AC Adapter	Lenovo	DCWP CM-2	11S92P1156Z1ZDXN973BAB	DoC

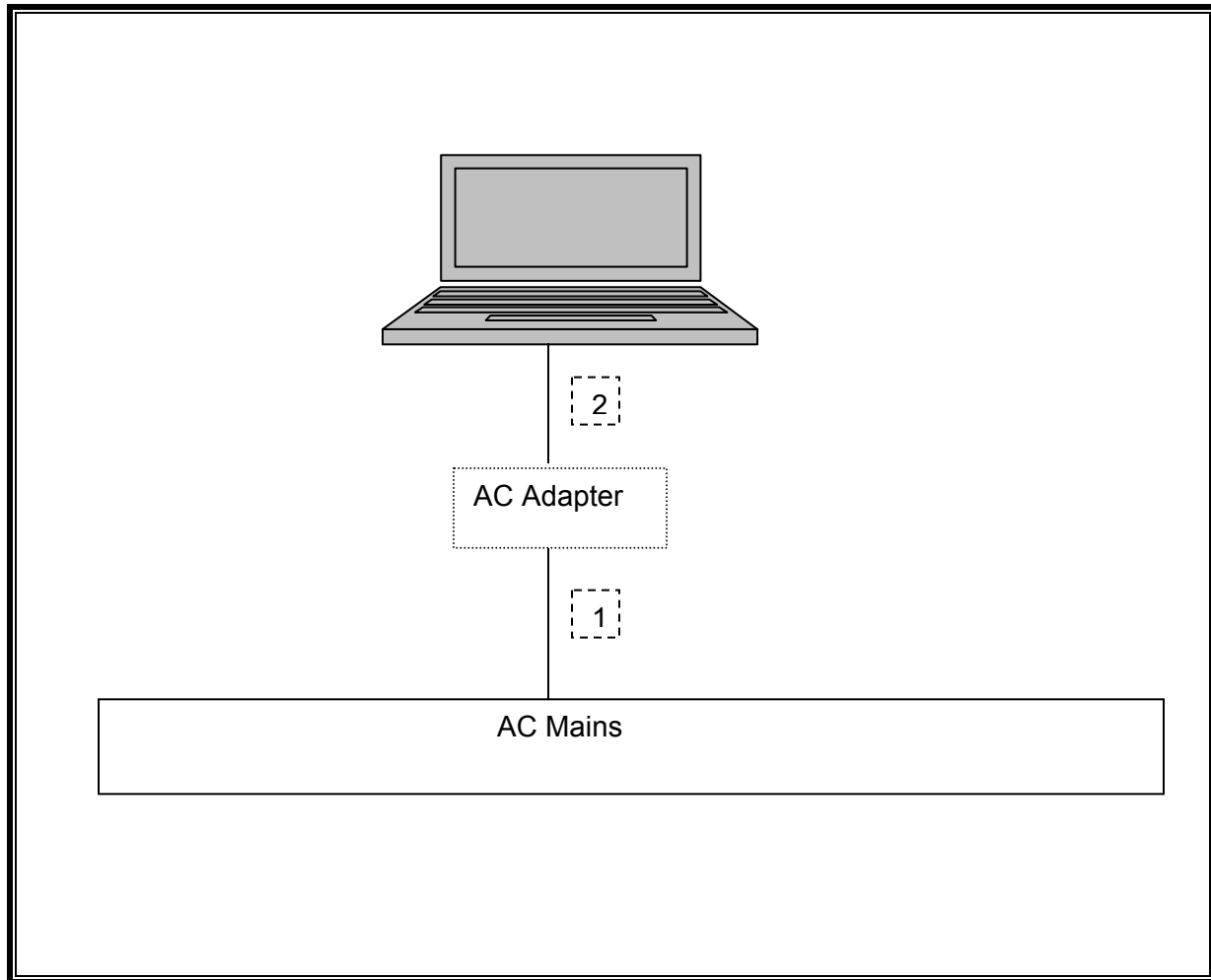
I/O CABLES

Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	US 115V	Un-shielded	1.2m	NA
2	DC	1	DC	Un-shielded	1.2m	Ferrite at laptop's end

TEST SETUP

The EUT is installed in a host laptop computer during the tests. Test software exercised the radio card.

SETUP DIAGRAM



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	Asset	Cal Date	Cal Due
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01069	01/05/09	01/05/10
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	01/14/09	01/14/10
Antenna, Horn, 18 GHz	EMCO	3115	C00945	04/22/09	04/22/10
Antenna, Horn, 26.5 GHz	ARA	MVH-1826/B	C00589	09/29/09	11/28/10
Antenna, Horn, 40 GHz	ARA	MVH-2640B	C00981	05/21/09	05/21/10
Preamplifier, 40 GHz	Miteq	NSP4000-SP2	C00990	10/11/09	10/11/10
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00885	03/31/09	03/31/10
Preamplifier, 1-26GHz	Agilent / HP	8449B	C01052	07/05/09	07/05/10
Peak Power Meter	Boonton	4541	C01186	01/19/09	01/19/10
Peak Power Sensor	Boonton	4541	C01189	01/15/09	01/15/10
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	10/29/09	10/29/10
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	02/06/09	02/06/10

7. RADIATED TEST RESULTS

7.1. 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 ($\mu\text{V/m}$) at 3 m	Field Strength Limit (dB $\mu\text{V/m}$) 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.

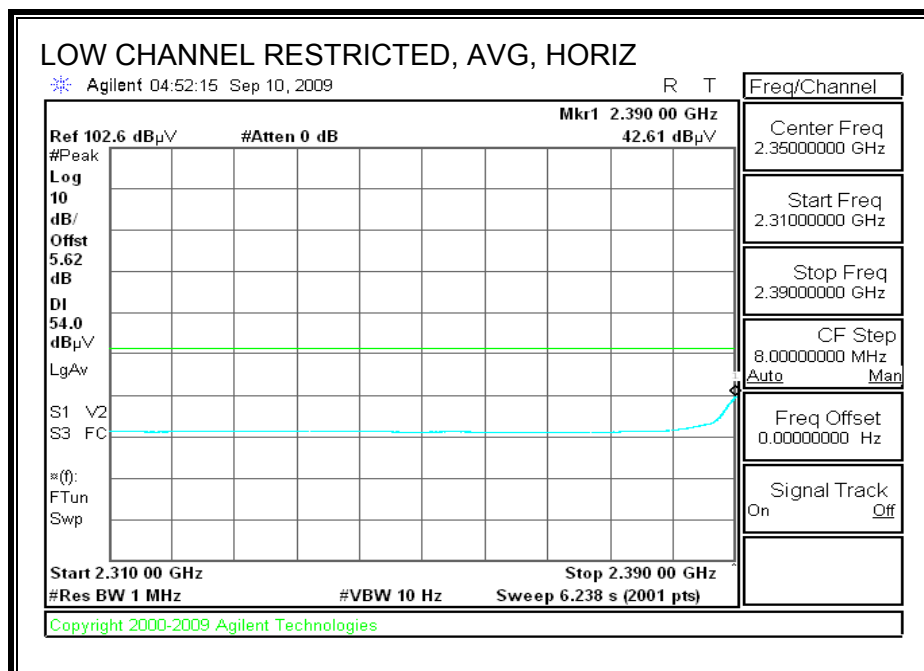
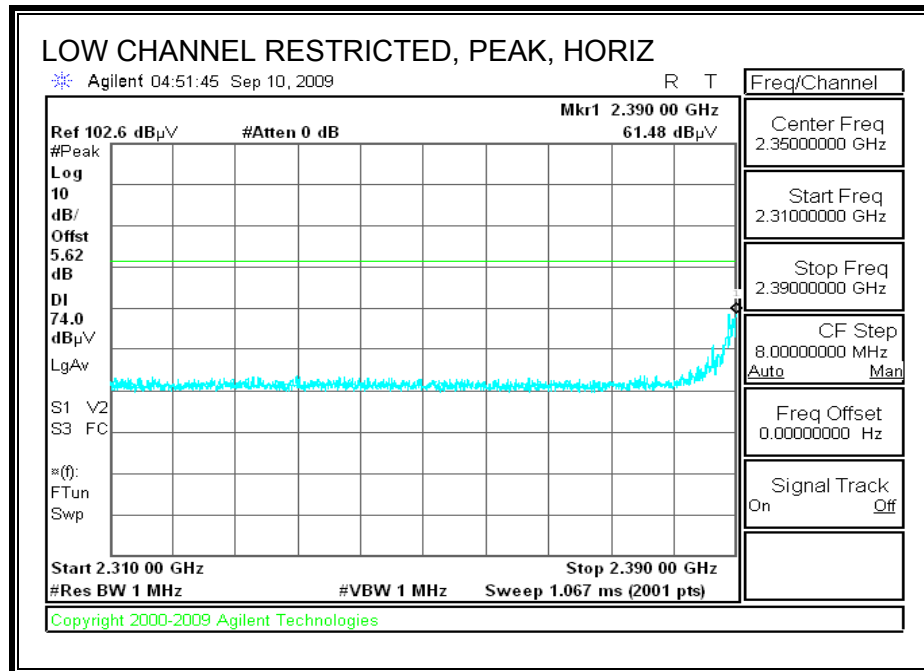
7.2. TRANSMITTER ABOVE 1 GHz

WNC ANTENNA

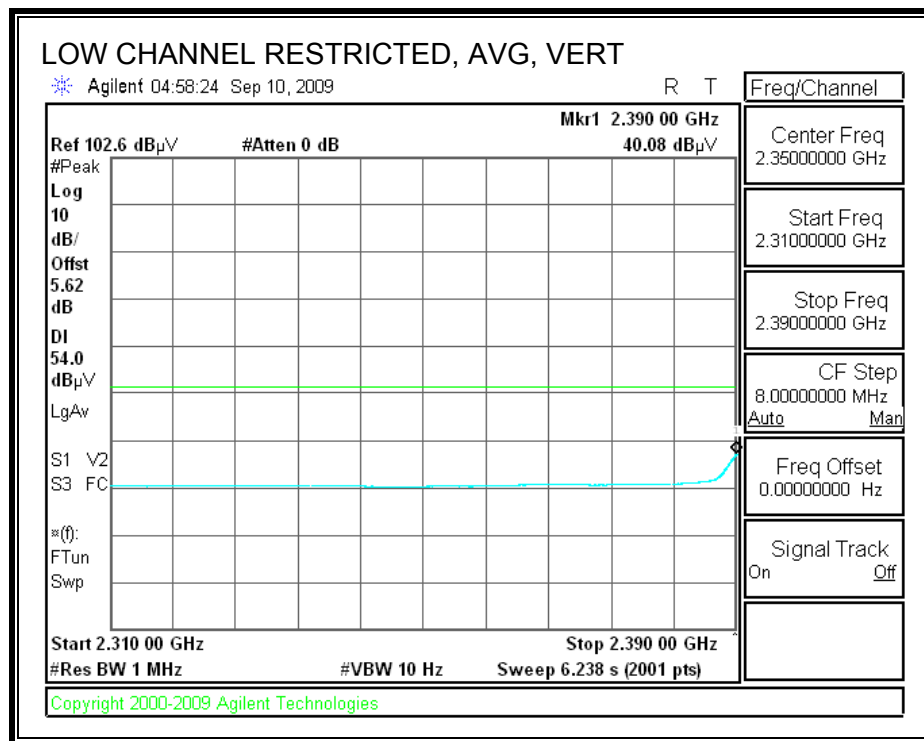
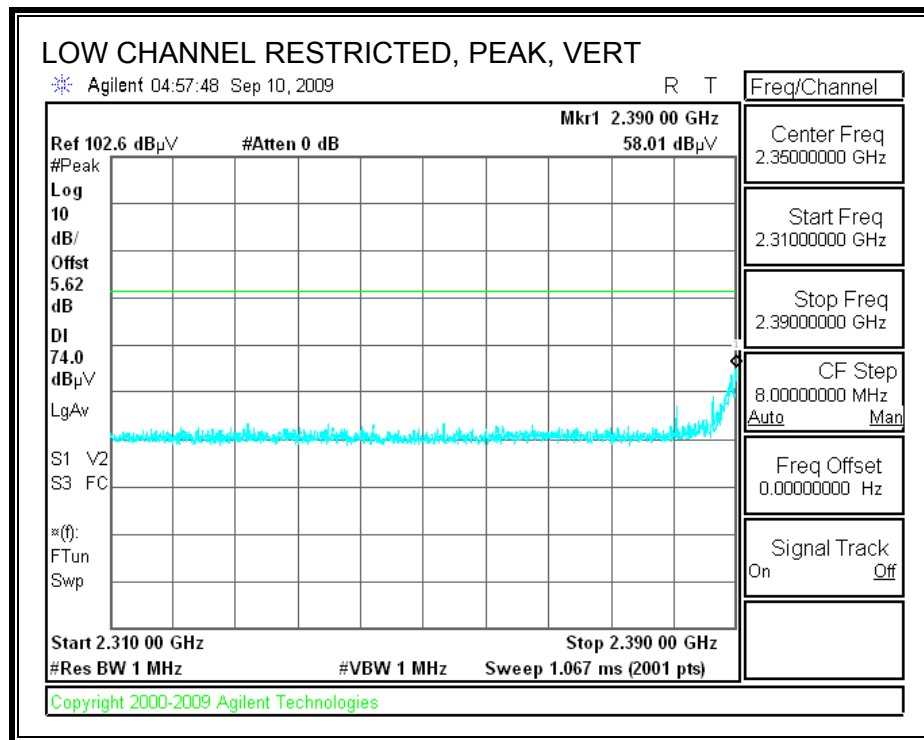
7.2.1. 802.11b MODE IN THE 2.4 GHz BAND

CHAIN B

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

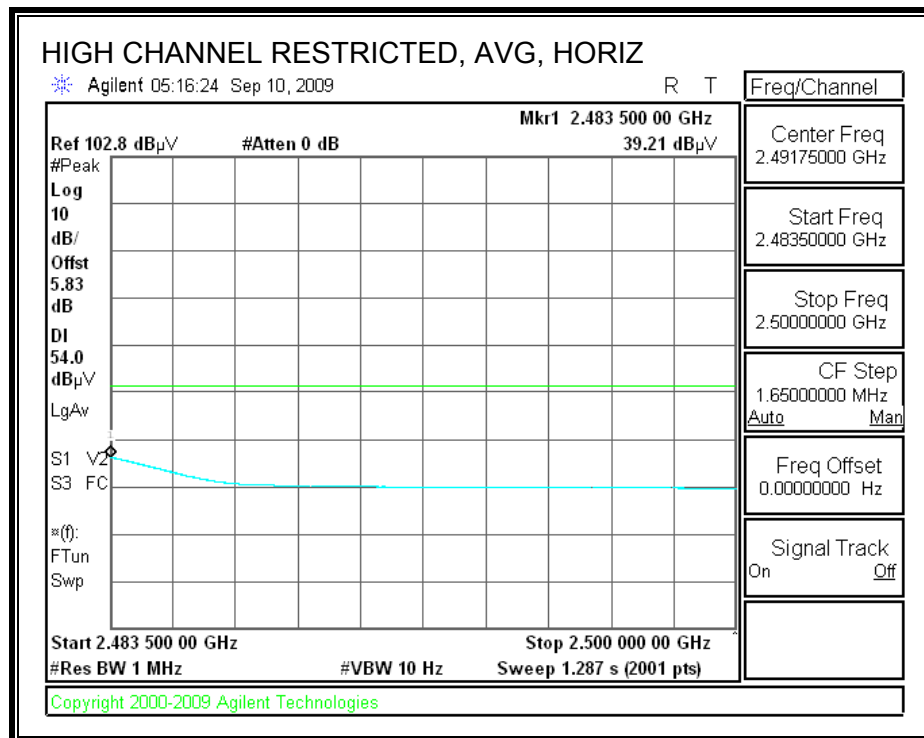
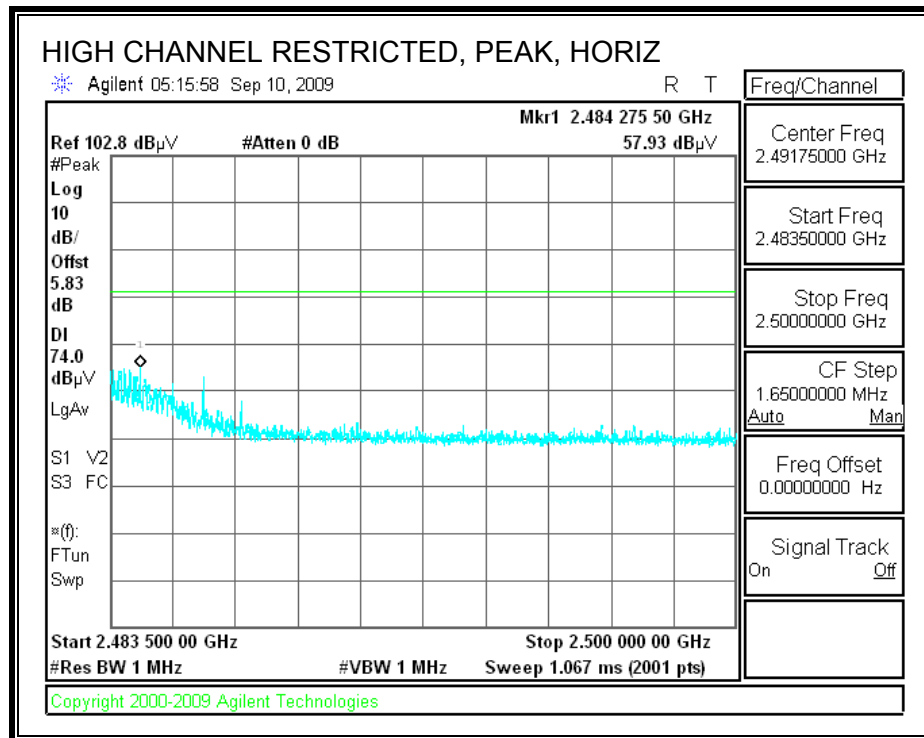


RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

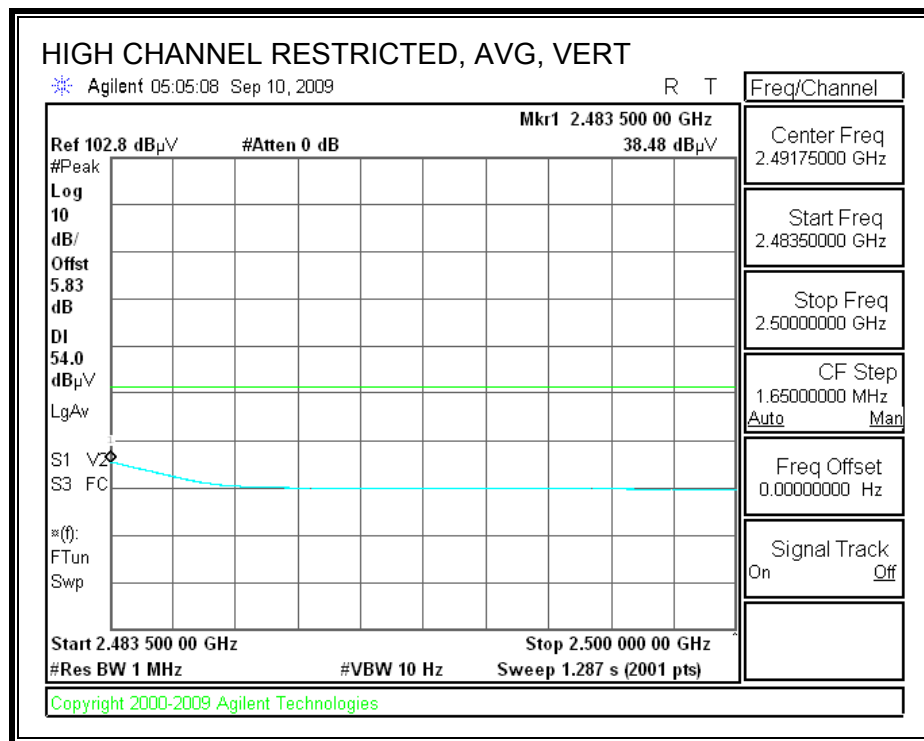
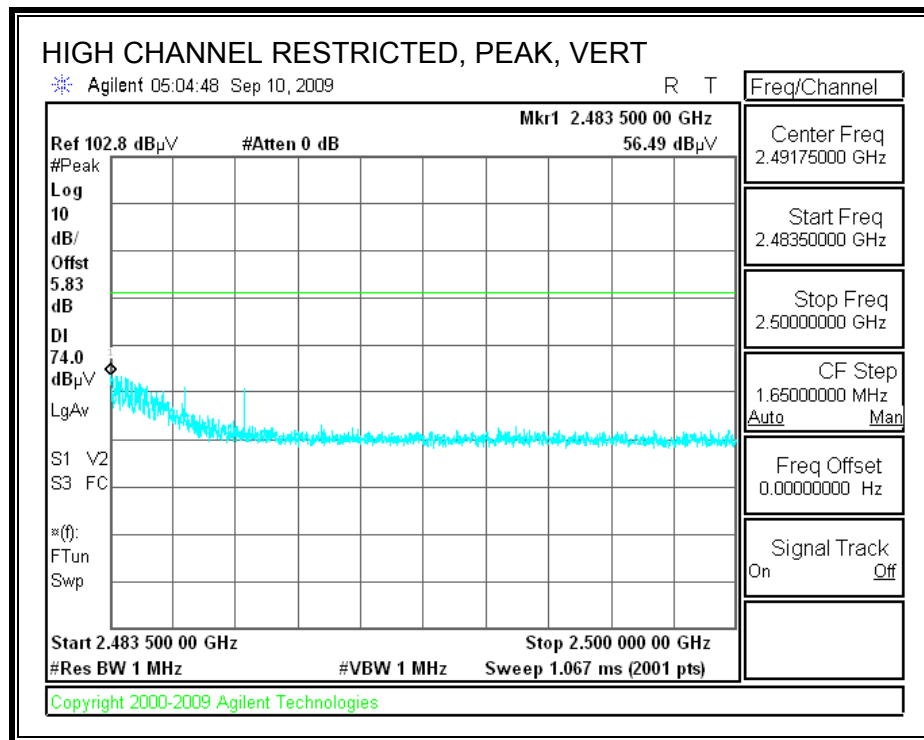


CHAIN B

RESTRICTED BANEDGE (HIGH CHANNEL, HORIZONTAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS – LOW & HIGH CHANNELS, CHAIN B

High Frequency Measurement

Compliance Certification Services, Fremont 3m Chamber

Test Engr: Vien Tran
Date: 09/15/09
Project #: 09U12795
Company: Intel
EUT Description: Module 802.11ahgn 3x3
EUT M/N: 633ANHMMW
Test Target: FCC B
Mode Oper: Tx in 2.4GHz Band_11b Mode_Low & Hi Channels_Chain B

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
11b 2412MHz															
4.824	3.0	34.6	32.7	5.8	-34.8	0.0	0.6	38.8	74.0	-35.2	V	P	100.0	243.0	
4.824	3.0	26.5	32.7	5.8	-34.8	0.0	0.6	30.7	54.0	-23.3	V	A	100.0	243.0	
4.824	3.0	33.7	32.7	5.8	-34.8	0.0	0.6	37.9	74.0	-36.1	H	P	100.0	246.0	
4.824	3.0	24.7	32.7	5.8	-34.8	0.0	0.6	29.0	54.0	-25.0	H	A	100.0	246.0	
11b 2462MHz															
4.924	3.0	37.4	32.7	5.9	-34.8	0.0	0.6	41.8	74.0	-32.2	V	P	101.0	62.0	
4.924	3.0	32.4	32.7	5.9	-34.8	0.0	0.6	36.8	54.0	-17.2	V	A	101.0	62.0	
7.386	3.0	34.0	35.6	7.3	-34.1	0.0	0.6	43.4	74.0	-30.6	V	P	100.0	0.0	
7.386	3.0	21.1	35.6	7.3	-34.1	0.0	0.6	30.5	54.0	-23.5	V	A	100.0	0.0	
4.924	3.0	39.2	32.7	5.9	-34.8	0.0	0.6	43.6	74.0	-30.4	H	P	100.0	247.0	
4.924	3.0	35.0	32.7	5.9	-34.8	0.0	0.6	39.5	54.0	-14.5	H	A	100.0	247.0	
7.386	3.0	32.8	35.6	7.3	-34.1	0.0	0.6	42.2	74.0	-31.8	H	P	100.0	245.0	
7.386	3.0	21.1	35.6	7.3	-34.1	0.0	0.6	30.6	54.0	-23.5	H	A	100.0	245.0	

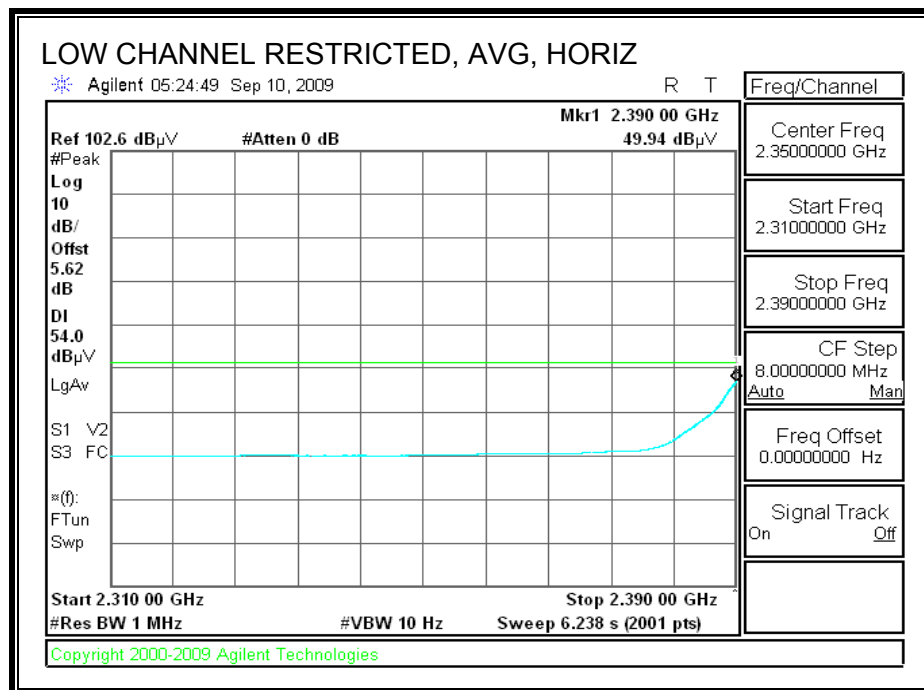
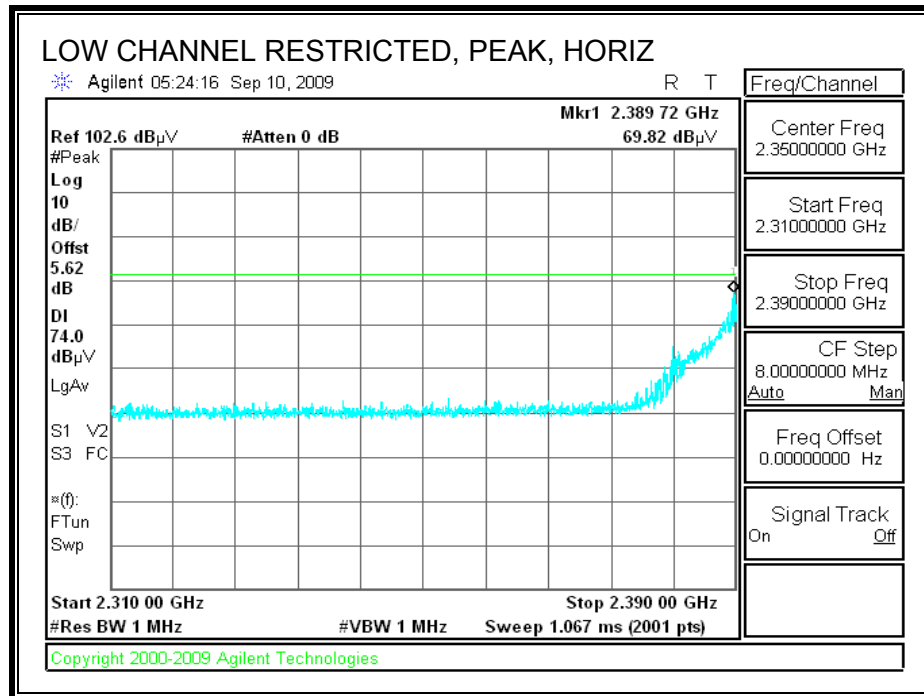
Rev. 4.1.2.7

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

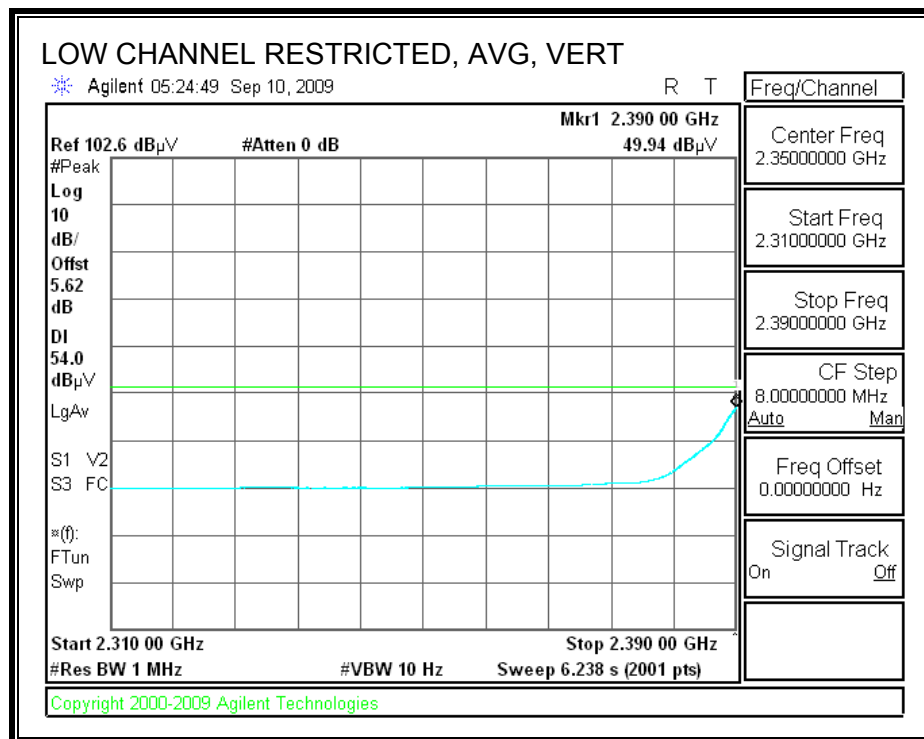
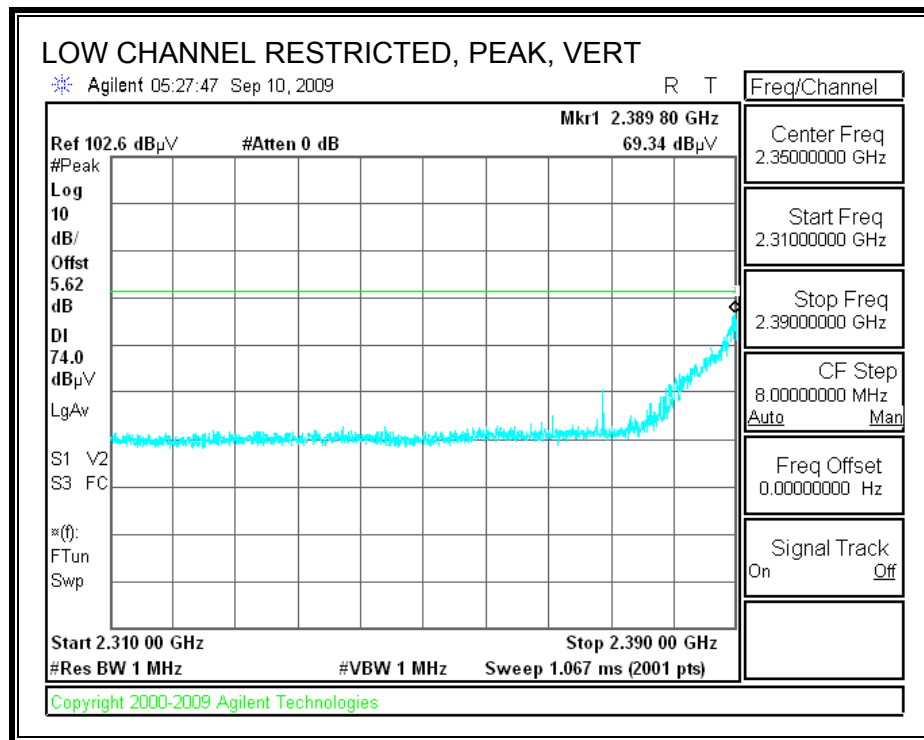
7.2.2. 802.11g MODE IN THE 2.4 GHz BAND

CHAIN A

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

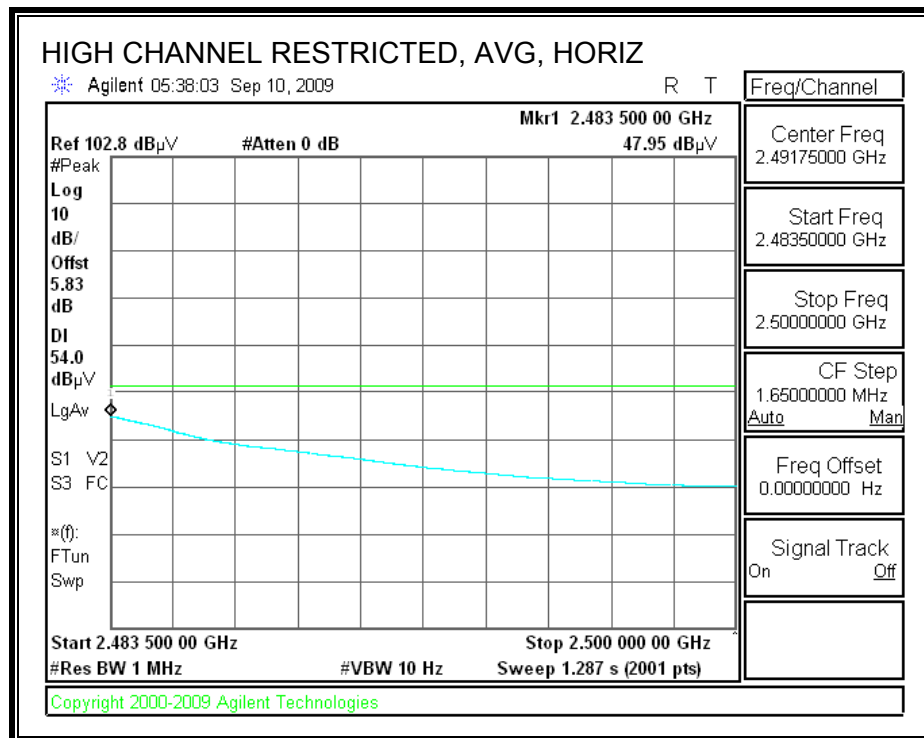
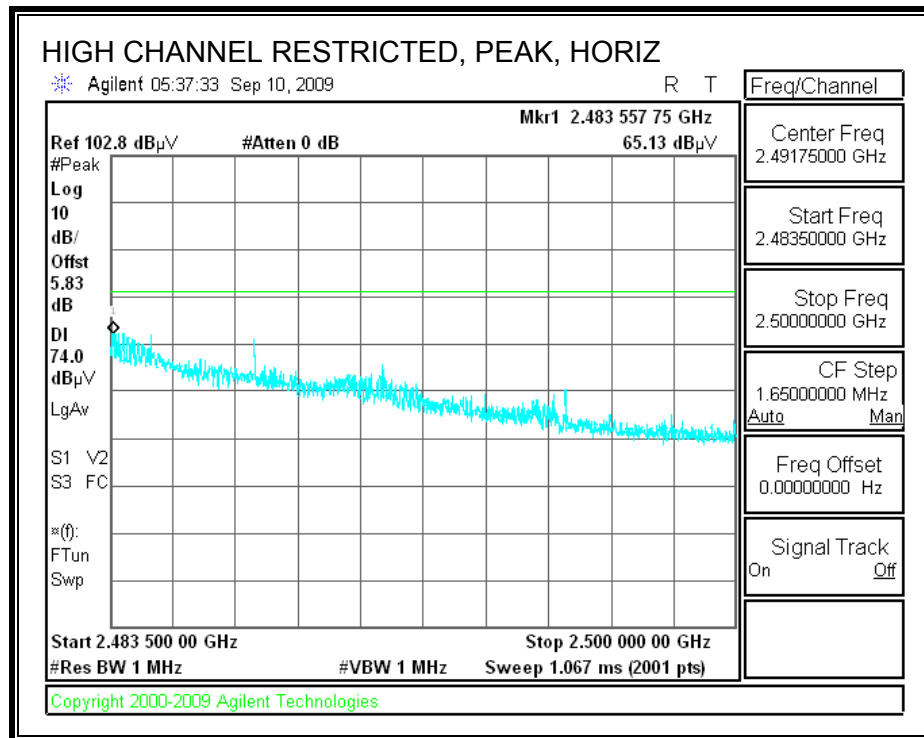


RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

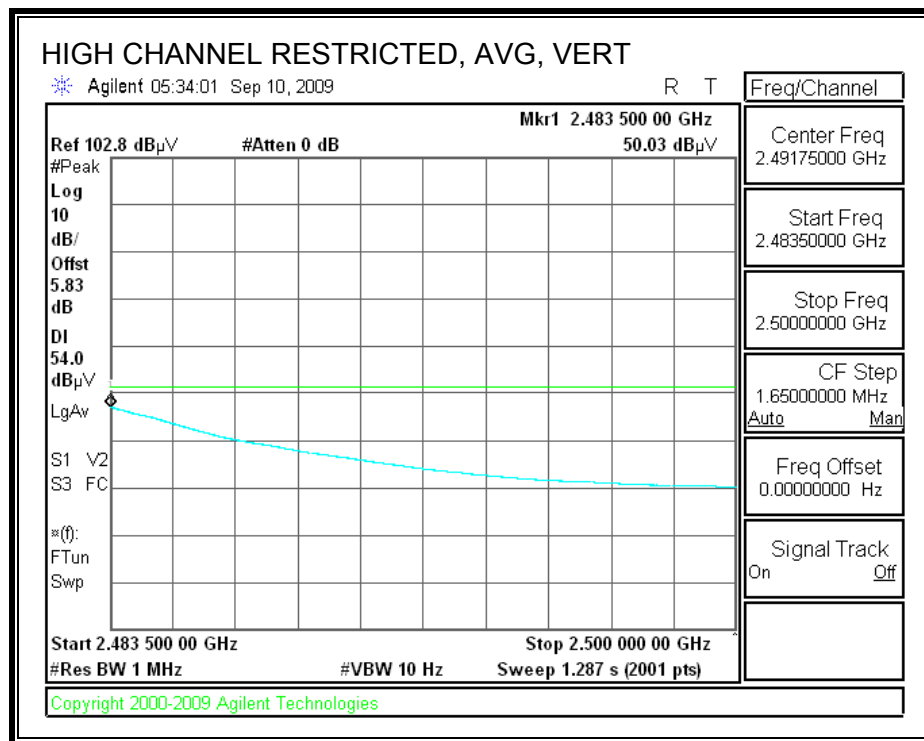
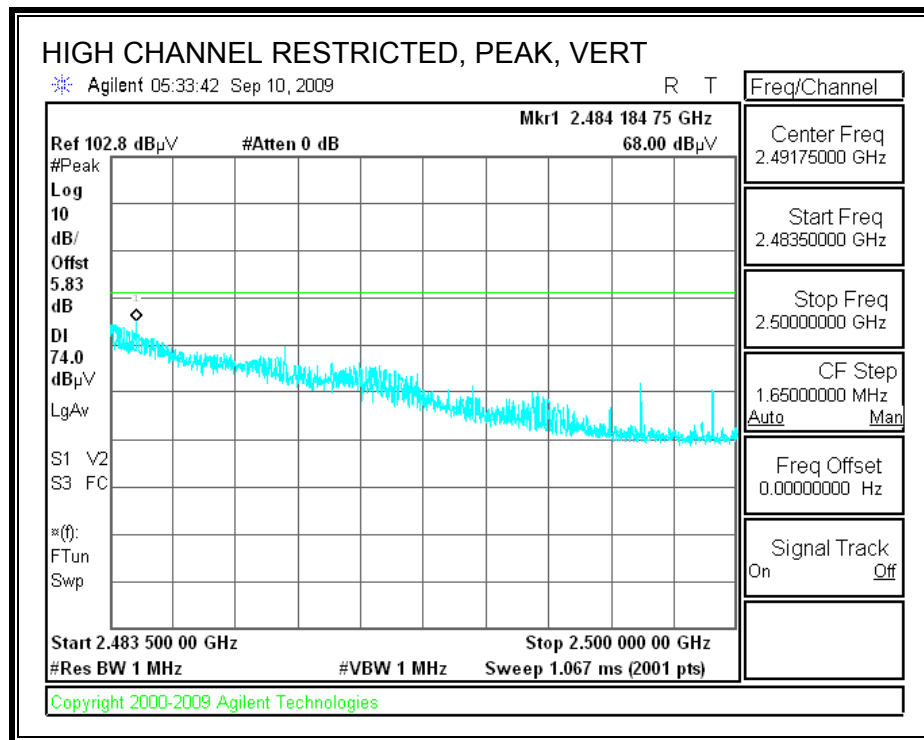


CHAIN A

RESTRICTED BANEDGE (HIGH CHANNEL, HORIZONTAL)

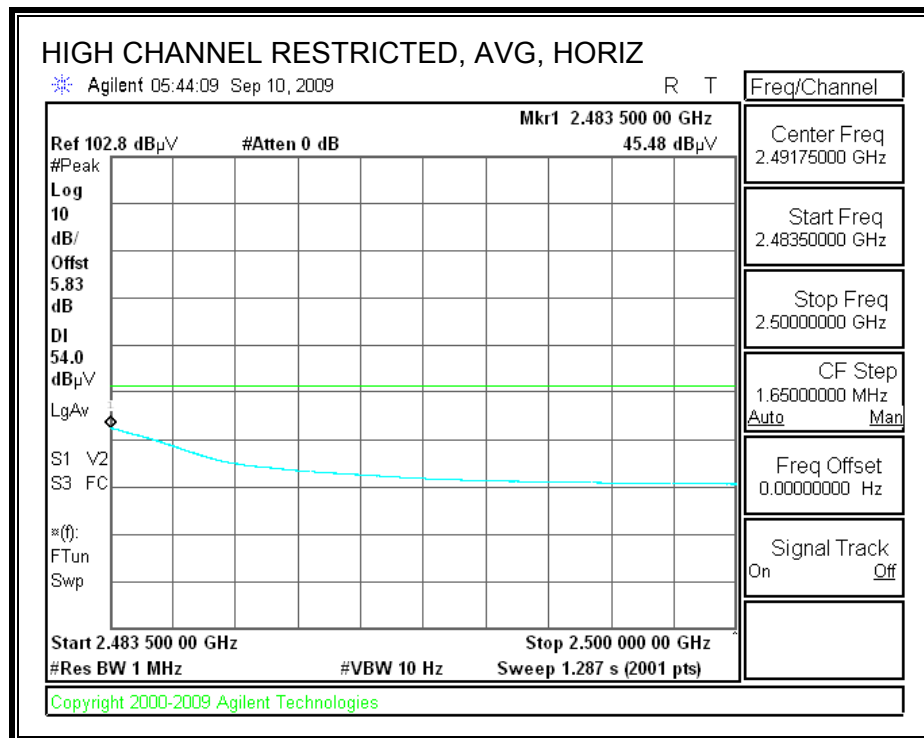
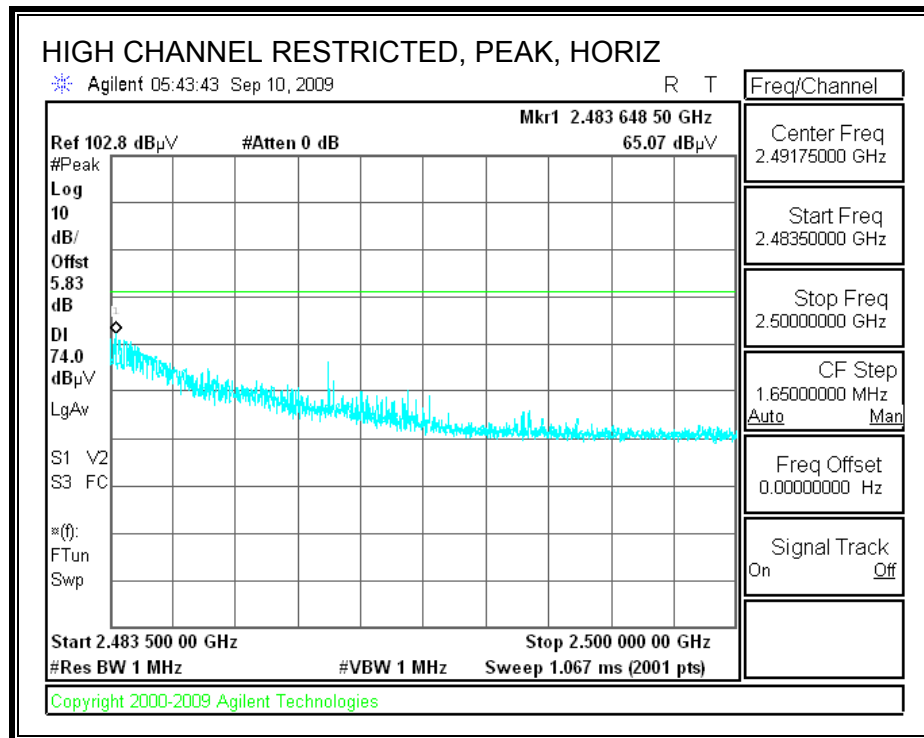


RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

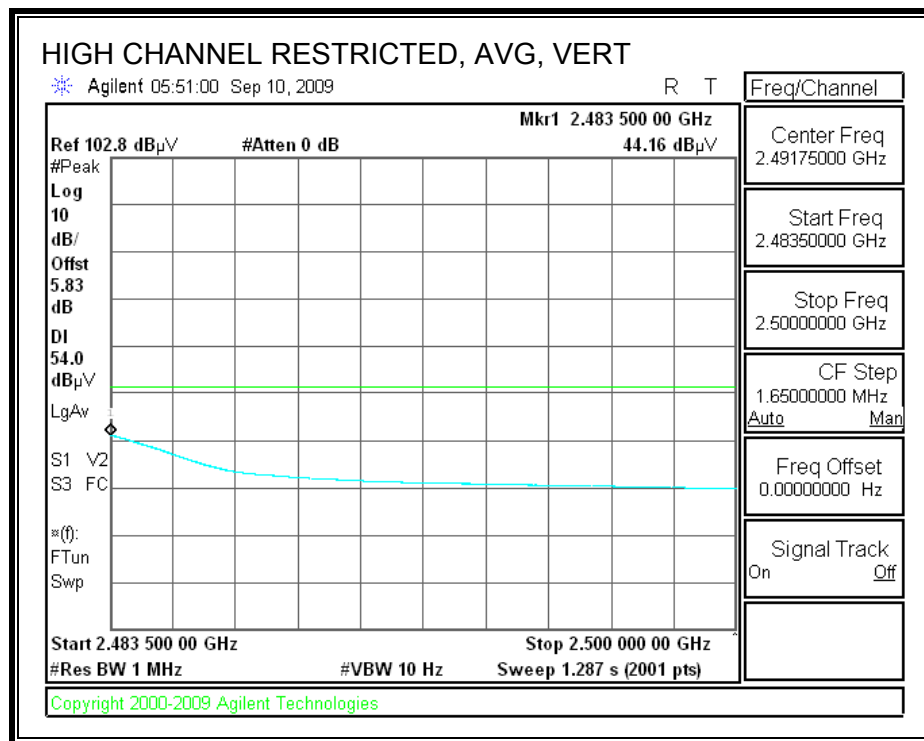
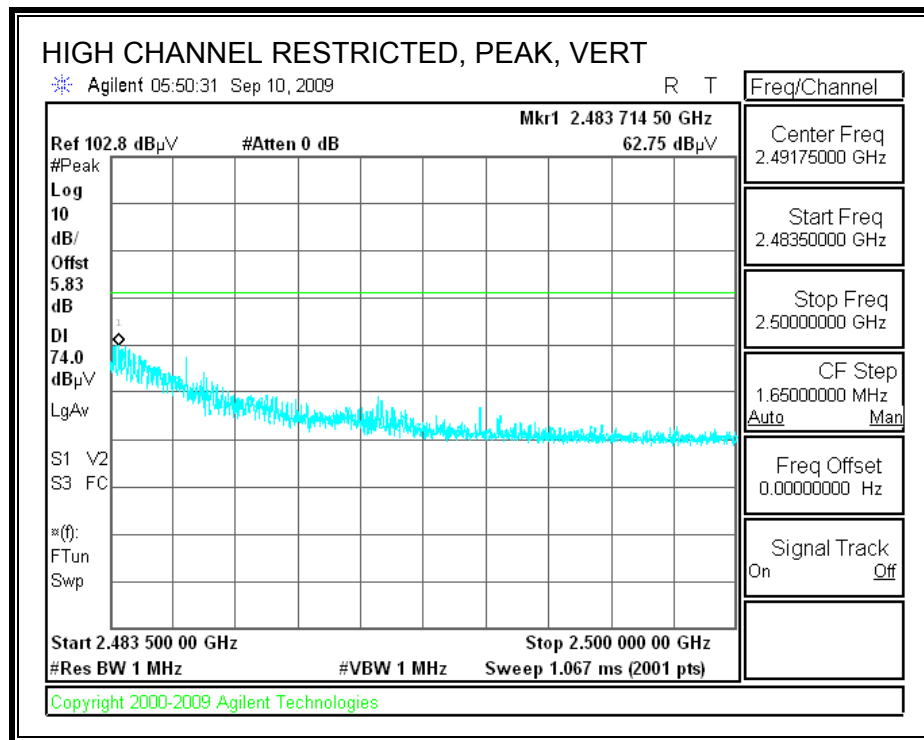


CHAIN B

RESTRICTED BANEDGE (HIGH CHANNEL, HORIZONTAL)

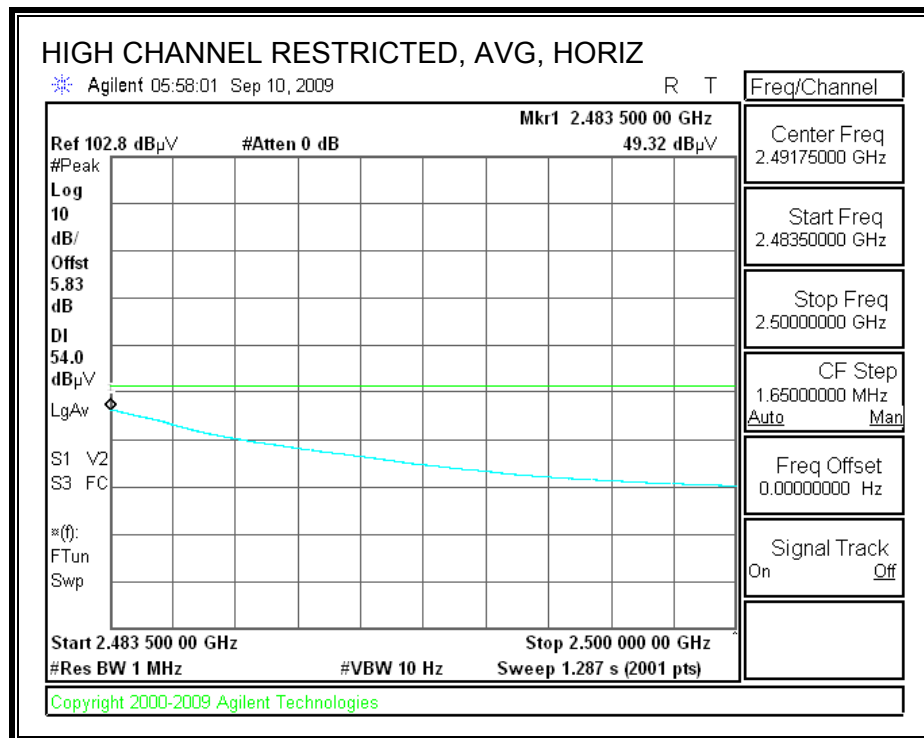
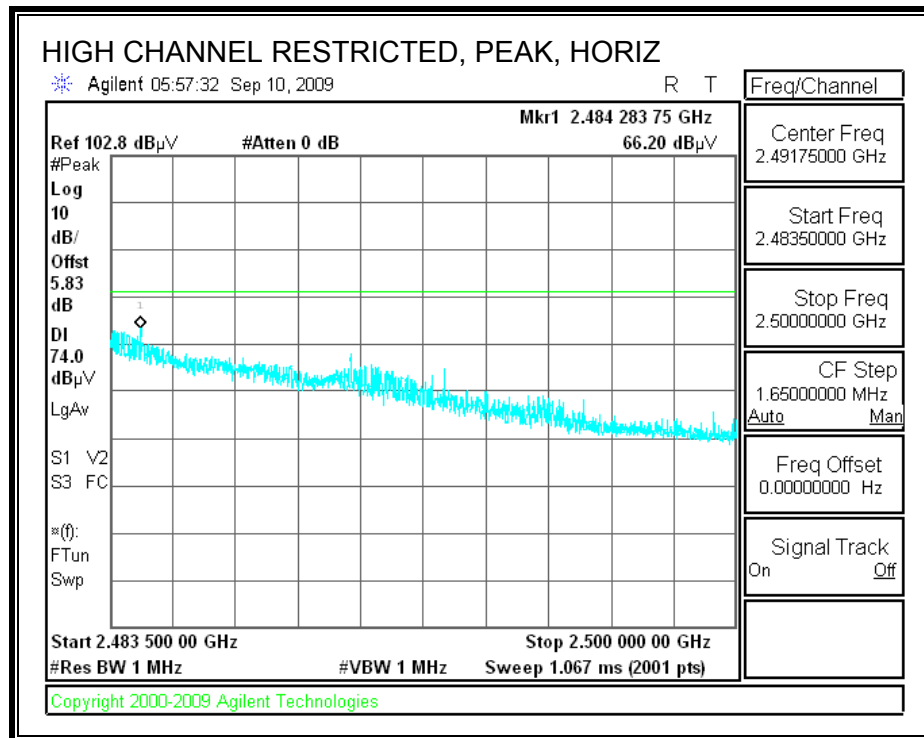


RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

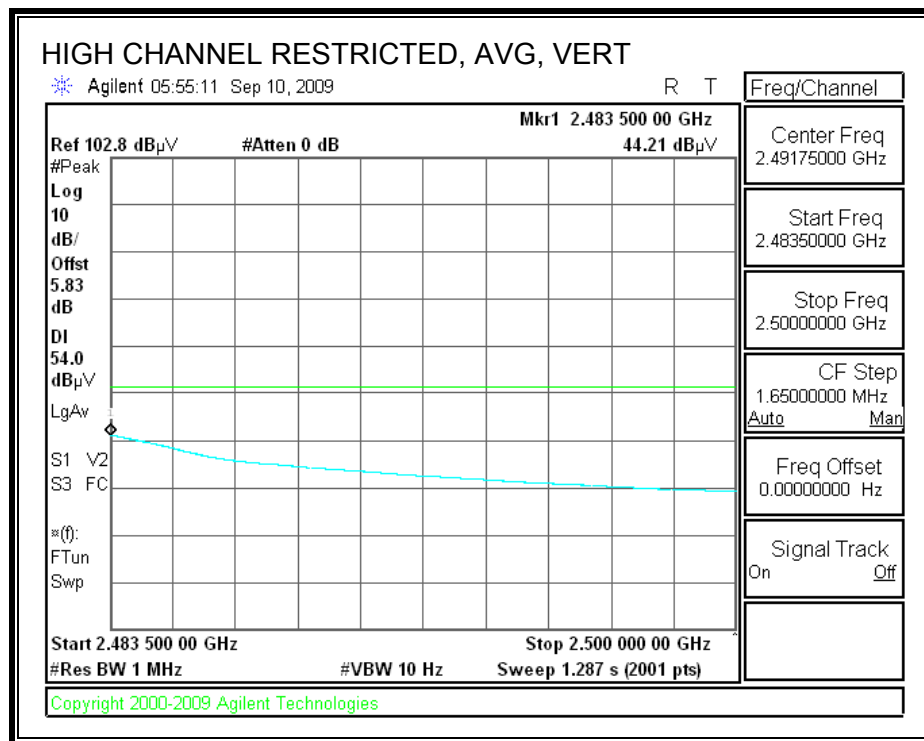
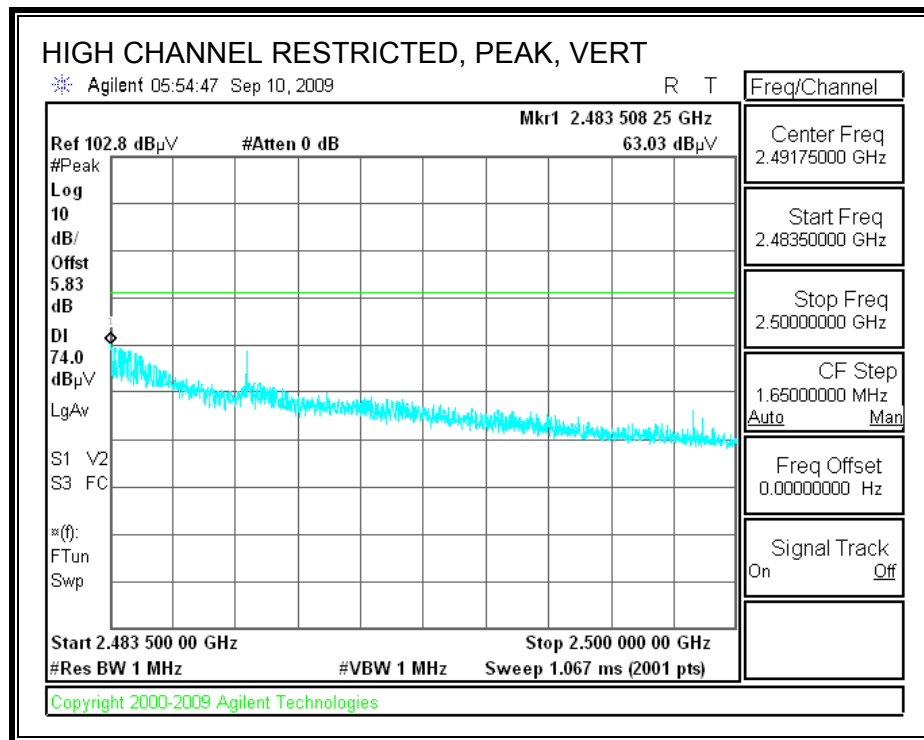


CHAIN C

RESTRICTED BANEDGE (HIGH CHANNEL, HORIZONTAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS – MID CHANNEL, CHAIN B

High Frequency Measurement

Compliance Certification Services, Fremont 3m Chamber

Test Engr: Vien Tran
Date: 09/15/09
Project #: 09U12795
Company: Intel
EUT Description: Module 802.11ahgn 3x3
EUT M/N: 633ANHMMW
Test Target: FCC B
Mode Oper: Tx in 2.4GHz Band_11g Mode_Mid Channel_Chain B

f	Measurement Frequency	Amp	Preamplifier 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	Filt dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol V/H	Det P/A/QP	Ant. High cm	Table Angle Degree	Notes
11g_2437MHz															
4.874	3.0	36.7	32.7	5.8	-34.8	0.0	0.6	41.1	74.0	-32.9	V	P	100.0	244.0	
4.874	3.0	23.6	32.7	5.8	-34.8	0.0	0.6	28.0	54.0	-26.0	V	A	100.0	244.0	
7.311	3.0	33.1	35.5	7.3	-34.1	0.0	0.6	42.4	74.0	-31.6	V	P	100.0	251.0	
7.311	3.0	20.6	35.5	7.3	-34.1	0.0	0.6	29.8	54.0	-24.2	V	A	100.0	251.0	
4.874	3.0	34.5	32.7	5.8	-34.8	0.0	0.6	38.8	74.0	-35.2	H	P	100.0	308.0	
4.874	3.0	21.4	32.7	5.8	-34.8	0.0	0.6	25.7	54.0	-28.3	H	A	100.0	308.0	
7.311	3.0	34.1	35.5	7.3	-34.1	0.0	0.6	43.4	74.0	-30.7	H	P	100.0	76.0	
7.311	3.0	20.6	35.5	7.3	-34.1	0.0	0.6	29.9	54.0	-24.1	H	A	100.0	76.0	

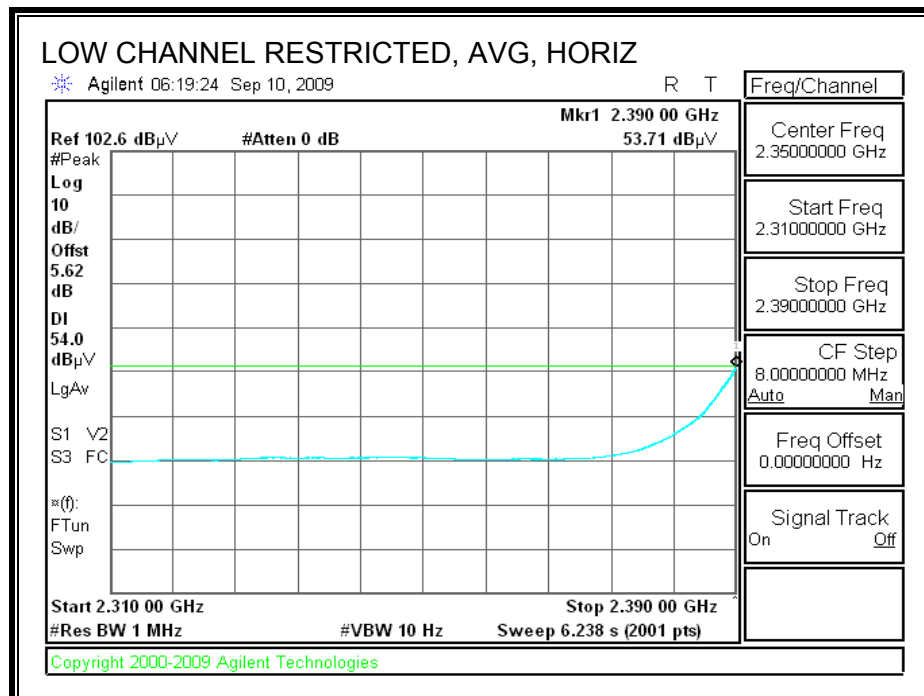
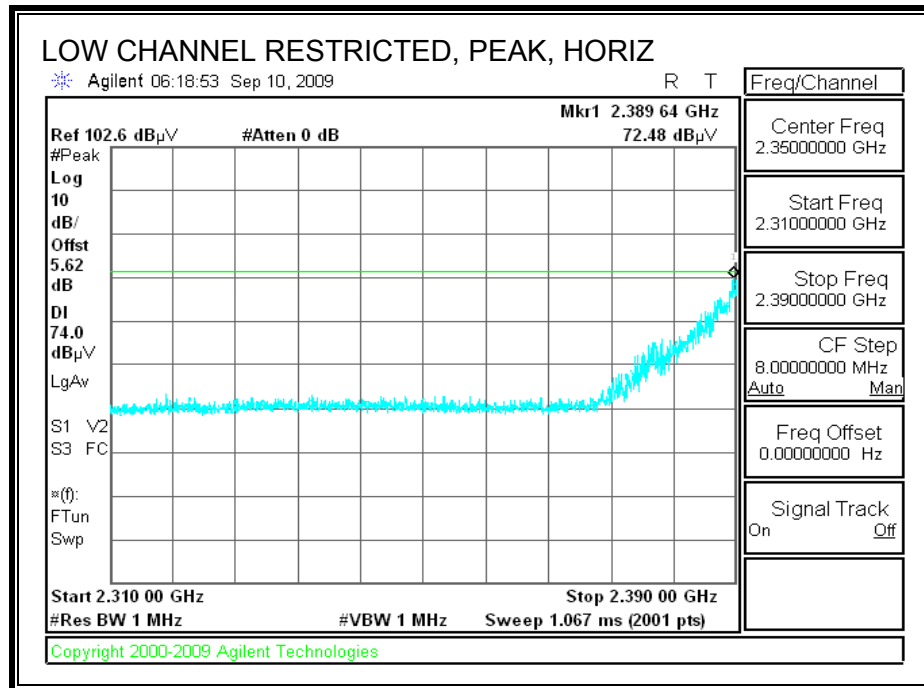
Rev. 4.1.2.7

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

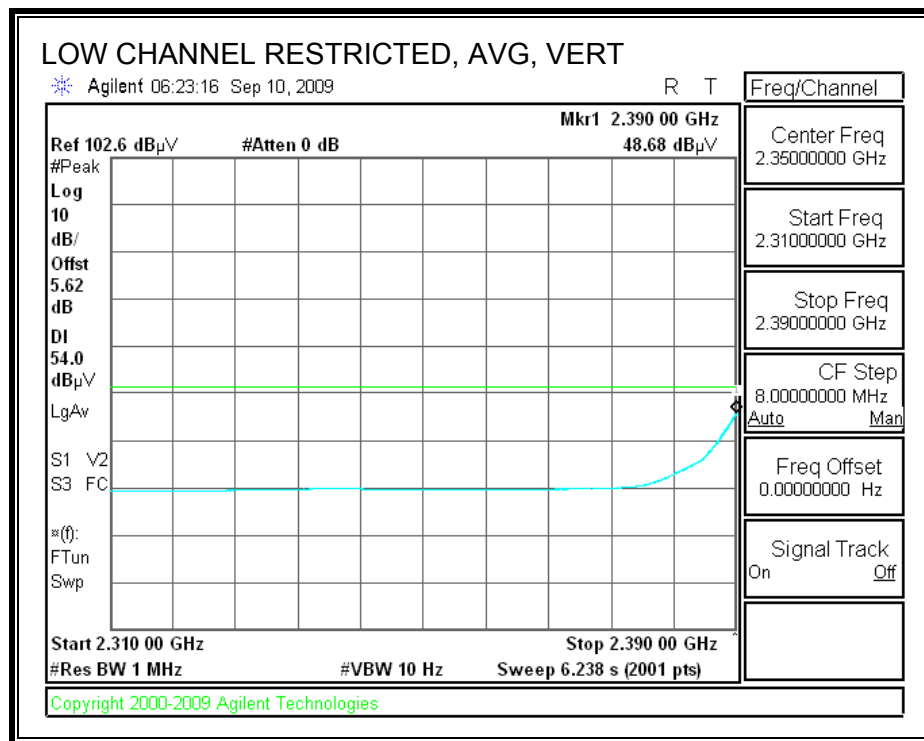
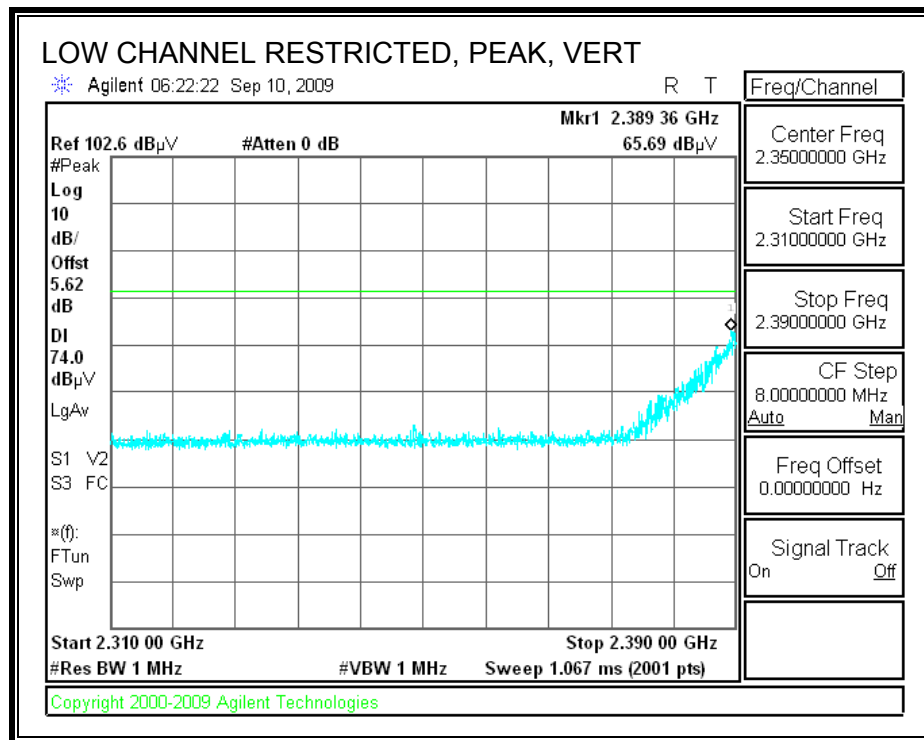
7.2.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

CHAIN C

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

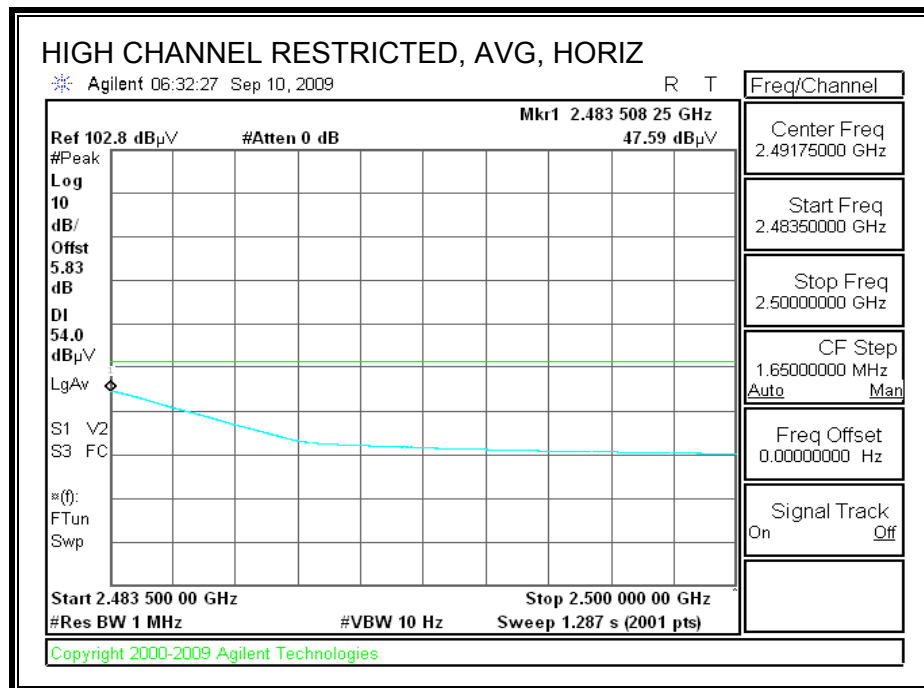
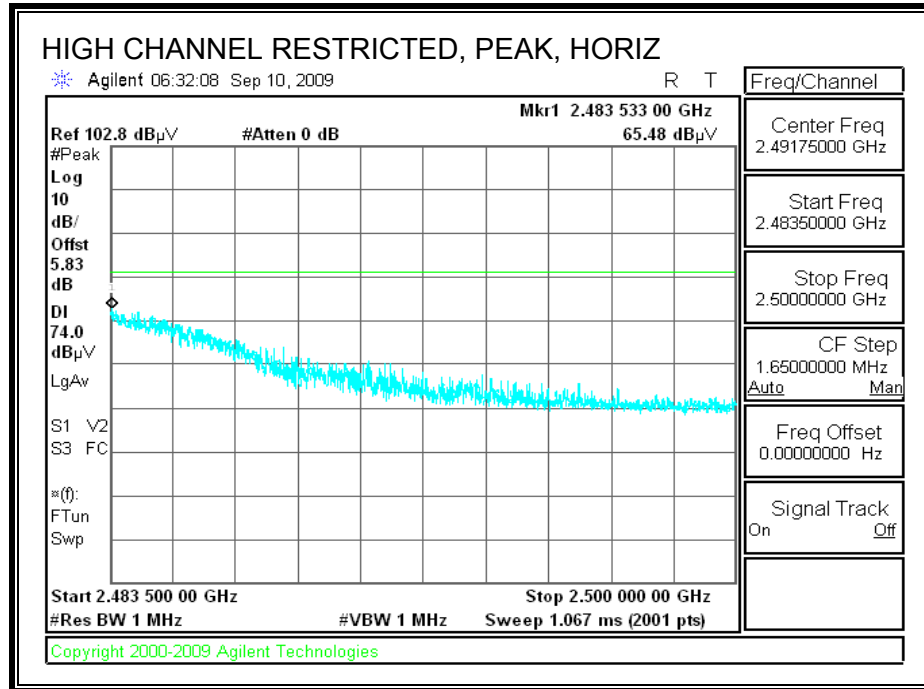


RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

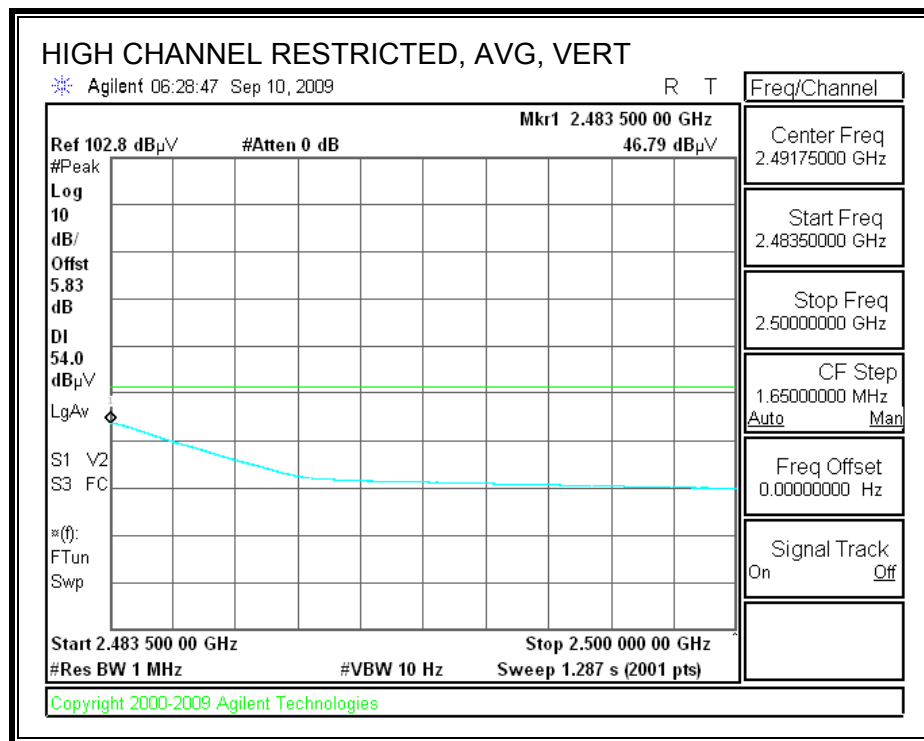
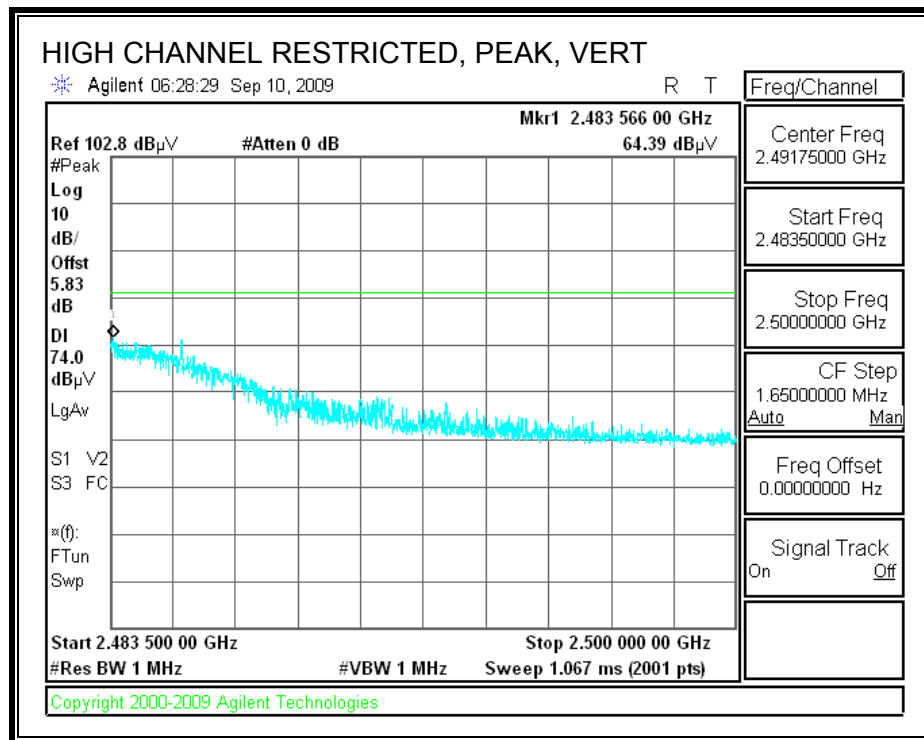


CHAIN B

RESTRICTED BANEDGE (HIGH CHANNEL, HORIZONTAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS – MID CHANNEL, CHAIN B

High Frequency Measurement **Compliance Certification Services, Fremont 3m Chamber**

Test Engr: Vien Tran
Date: 09/15/09
Project #: 09U12795
Company: Intel
EUT Description: Module 802.11ahgn 3x3
EUT M/N: 633ANHMMW
Test Target: FCC B
Mode Oper: Tx in 2.4GHz Band_11n HT20 Mode_Mid Channel_Chain B

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	Fitr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol V/H	Det P/A/QP	Ant.High cm	Table Angle Degree	Notes
11n HT20 2437MHz Chain B															
4.874	3.0	36.1	32.7	5.8	-34.8	0.0	0.6	40.5	74.0	-33.5	V	P	100.0	245.0	
4.874	3.0	23.0	32.7	5.8	-34.8	0.0	0.6	27.3	54.0	-26.7	V	A	100.0	245.0	
7.311	3.0	33.5	35.5	7.3	-34.1	0.0	0.6	42.7	74.0	-31.3	V	P	100.0	20.0	
7.311	3.0	20.7	35.5	7.3	-34.1	0.0	0.6	30.0	54.0	-24.0	V	A	100.0	20.0	
4.874	3.0	33.4	32.7	5.8	-34.8	0.0	0.6	37.7	74.0	-36.3	H	P	99.0	307.0	
4.874	3.0	21.1	32.7	5.8	-34.8	0.0	0.6	25.5	54.0	-28.5	H	A	99.0	307.0	
7.311	3.0	33.2	35.5	7.3	-34.1	0.0	0.6	42.5	74.0	-31.5	H	P	100.0	27.0	
7.311	3.0	20.6	35.5	7.3	-34.1	0.0	0.6	29.9	54.0	-24.1	H	A	100.0	27.0	

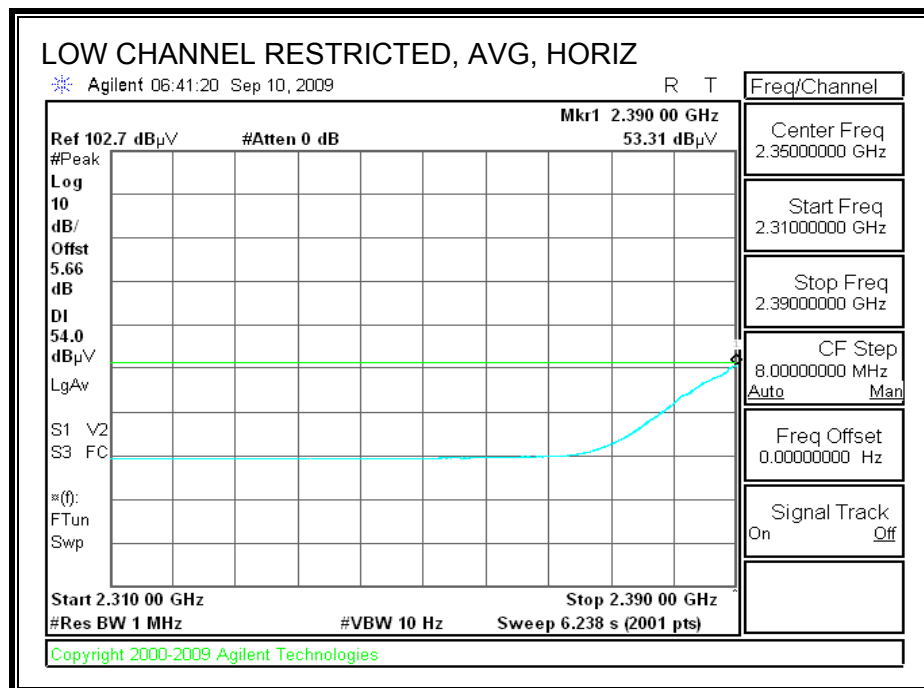
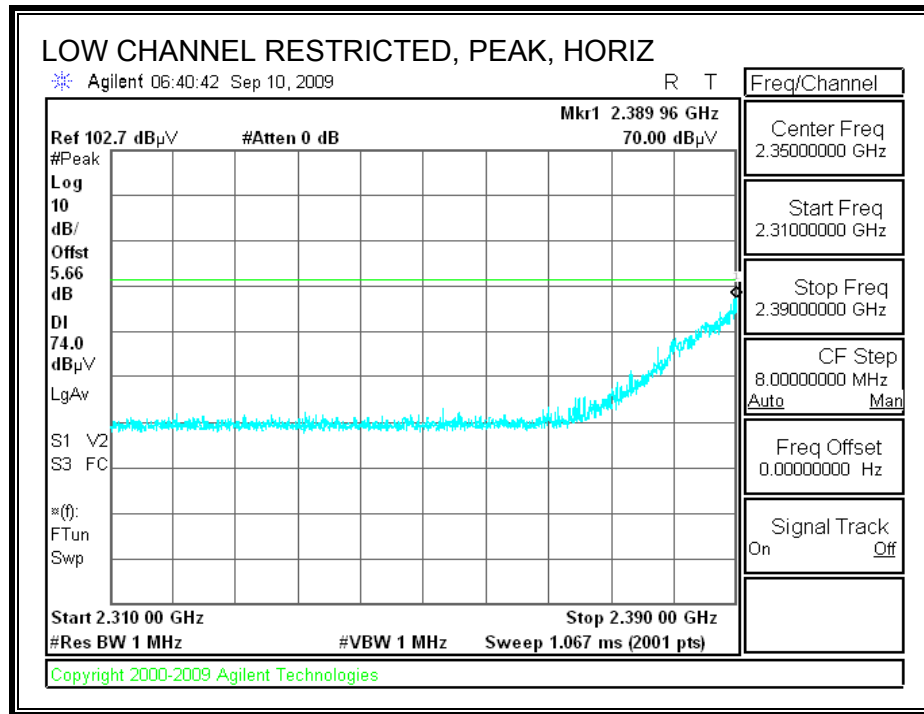
Rev. 4.1.2.7

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

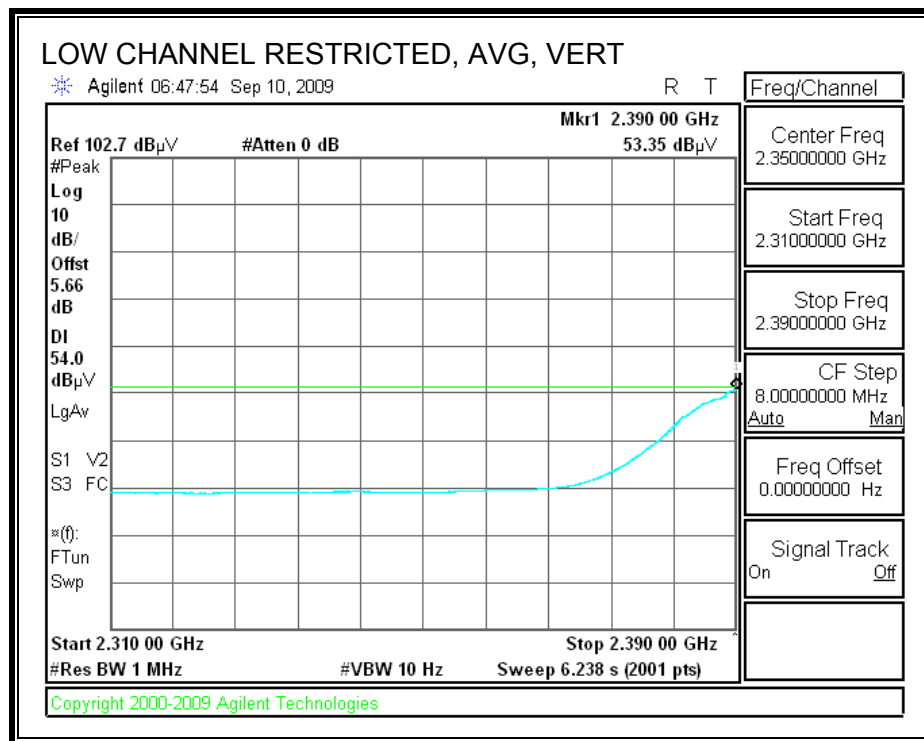
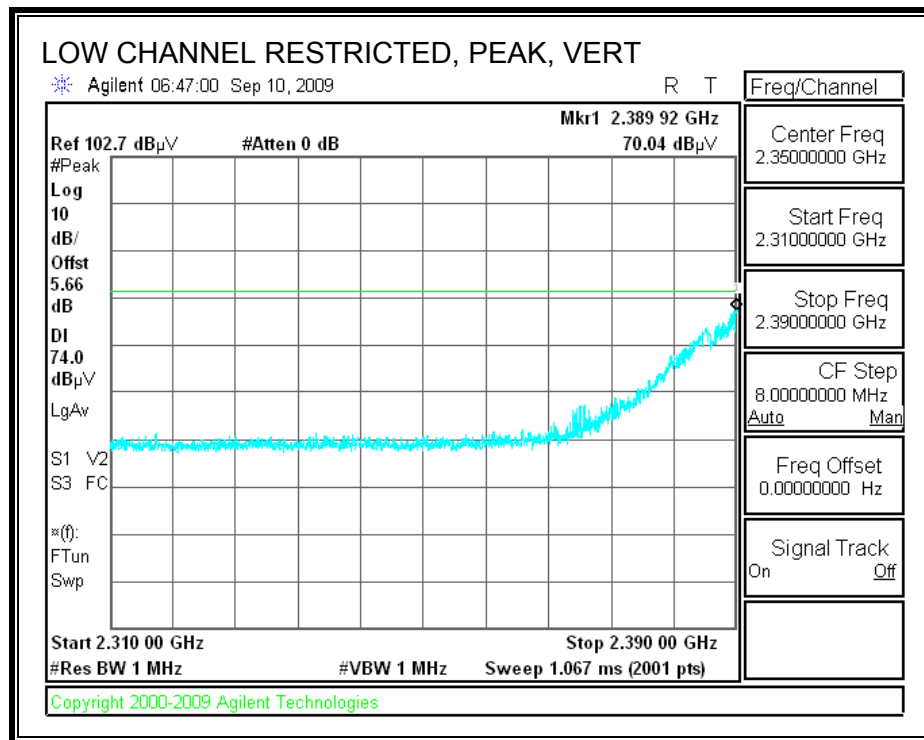
7.2.4. 802.11n HT40 MODE IN THE 2.4 GHz BAND

CHAIN A

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

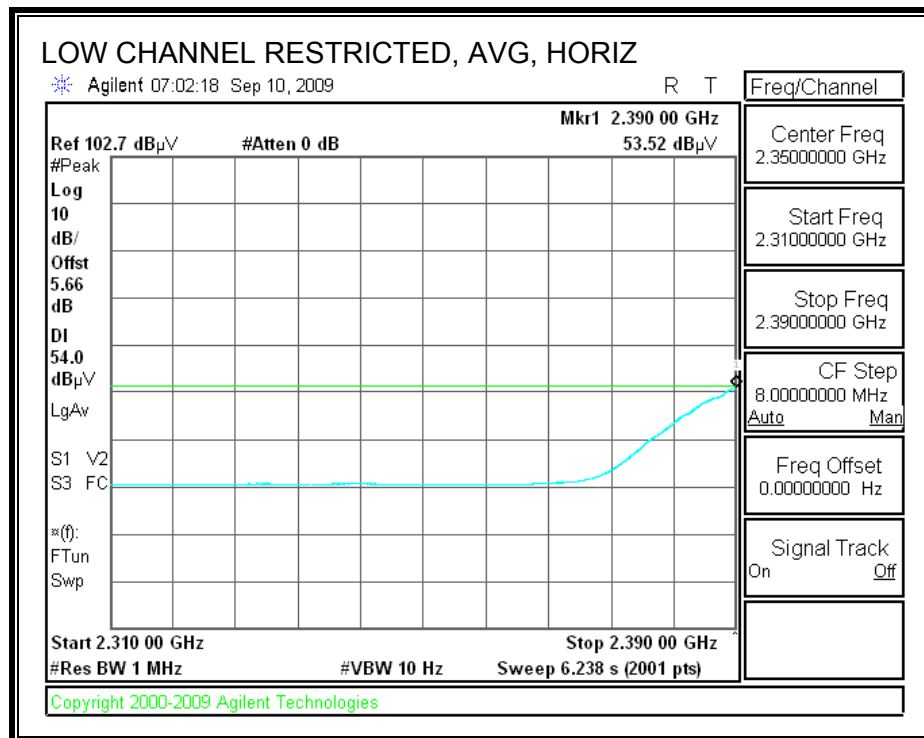
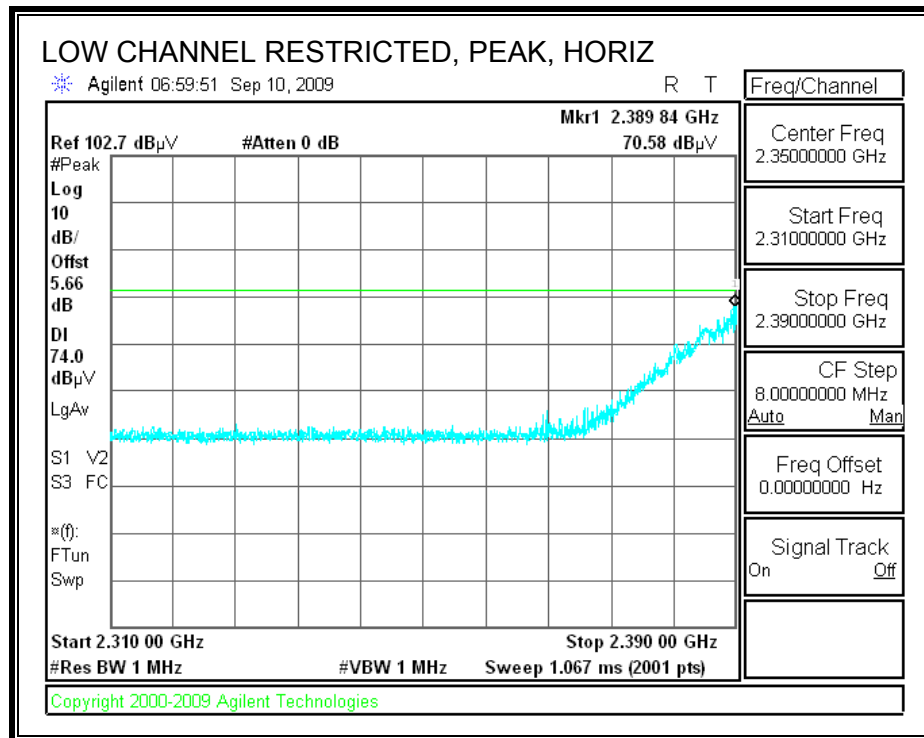


RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

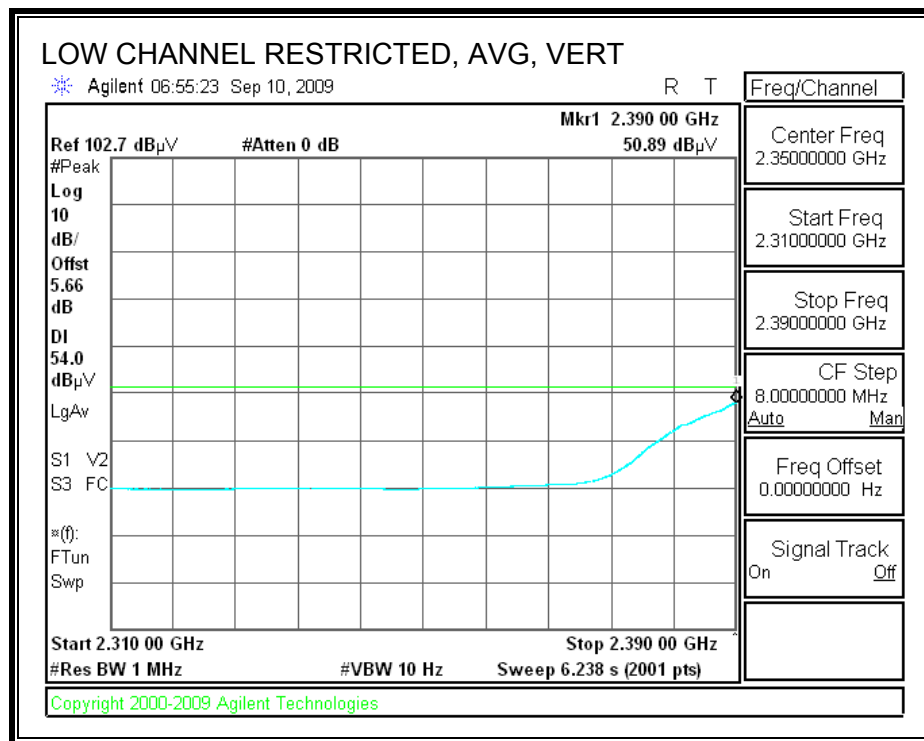
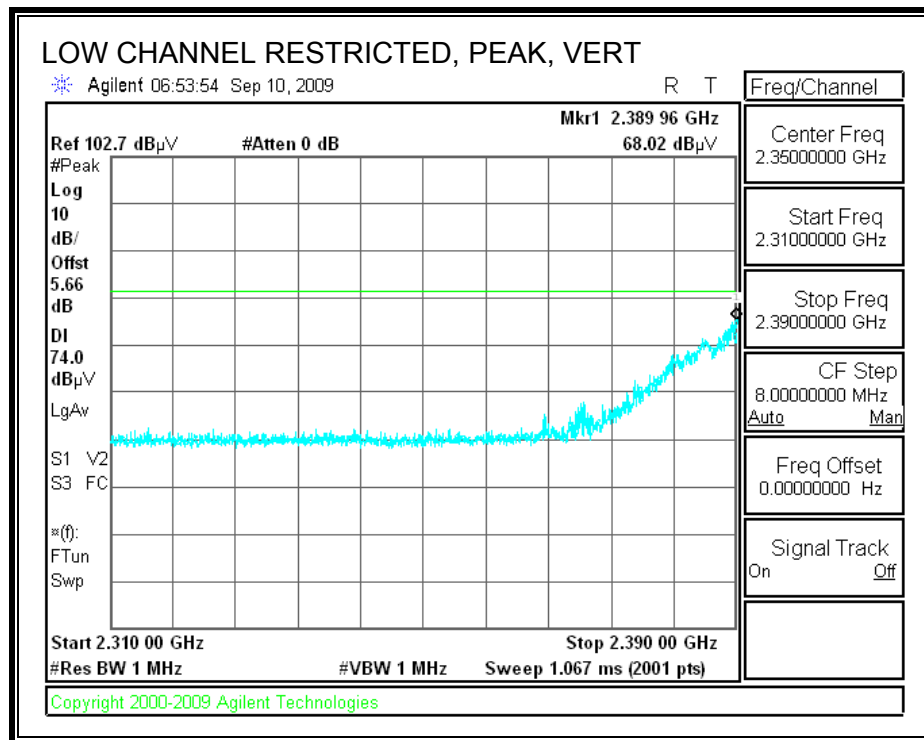


CHAIN B

RESTRICTED BANEDGE (LOW CHANNEL, HORIZONTAL)

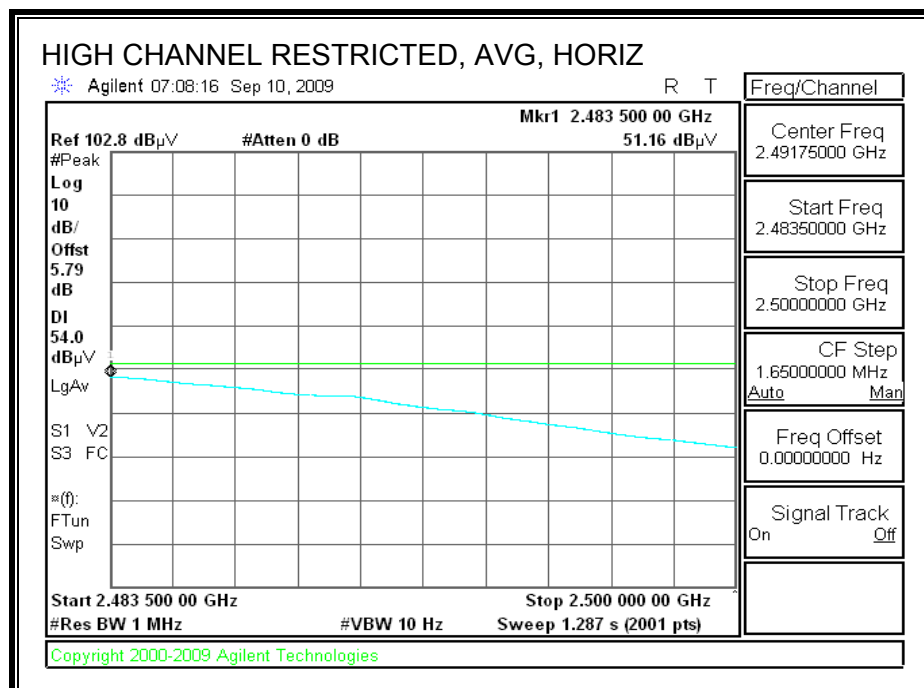
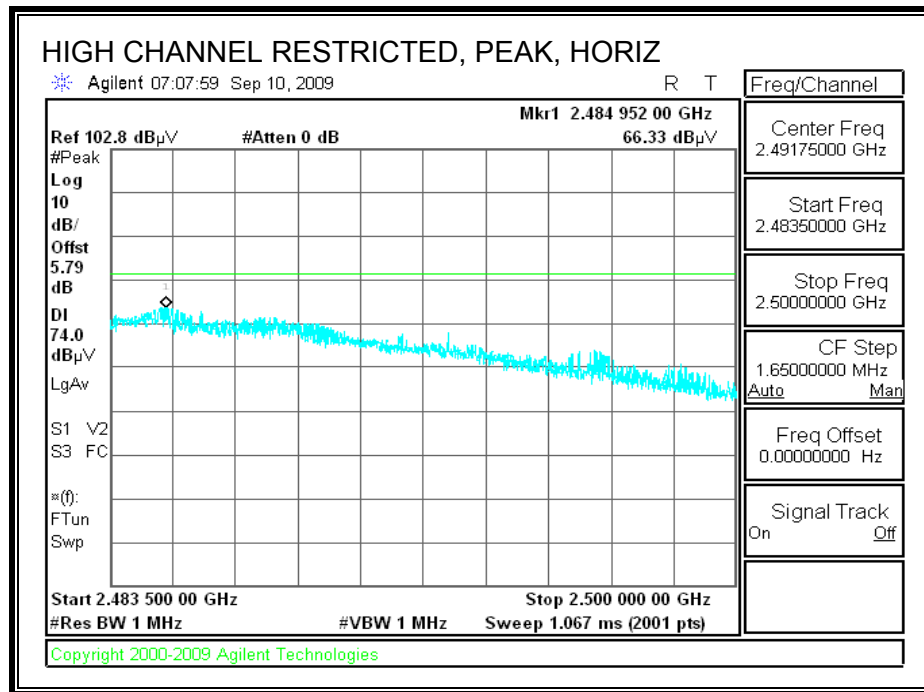


RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

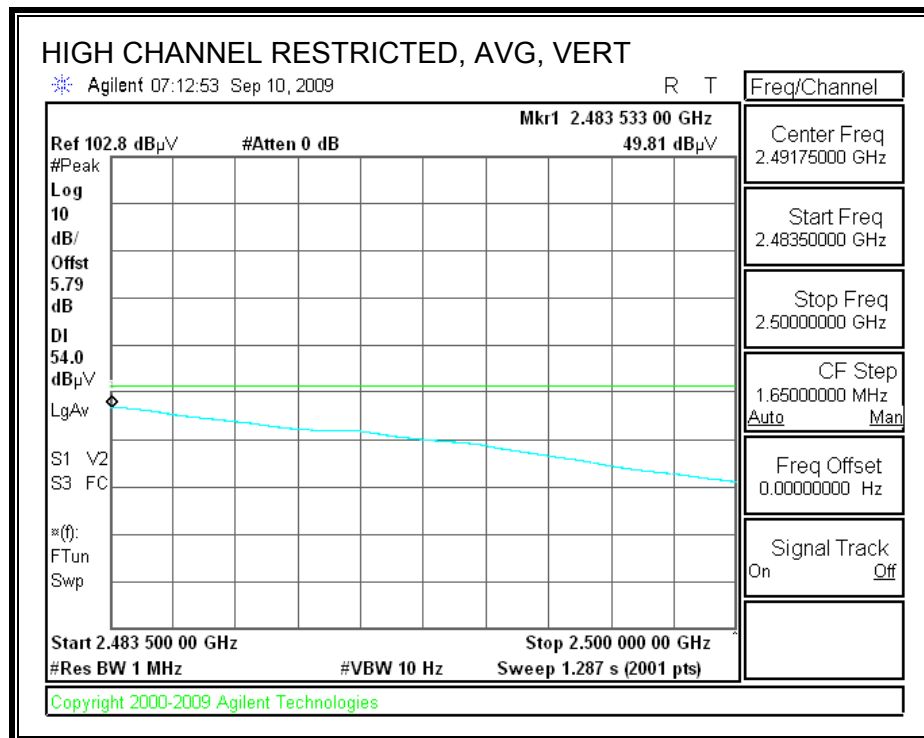
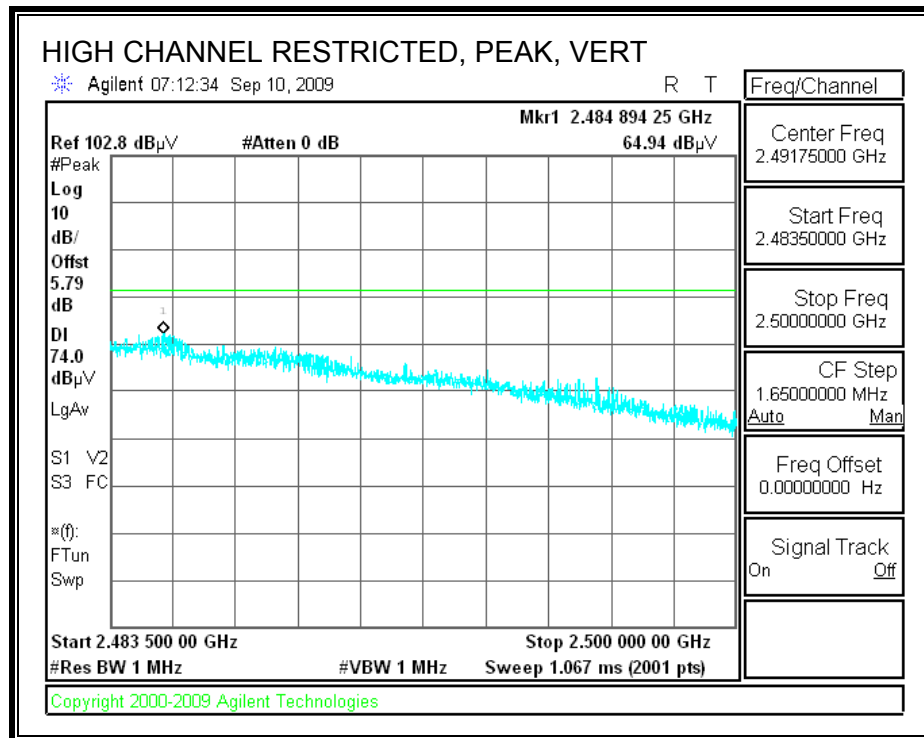


CHAIN B

RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

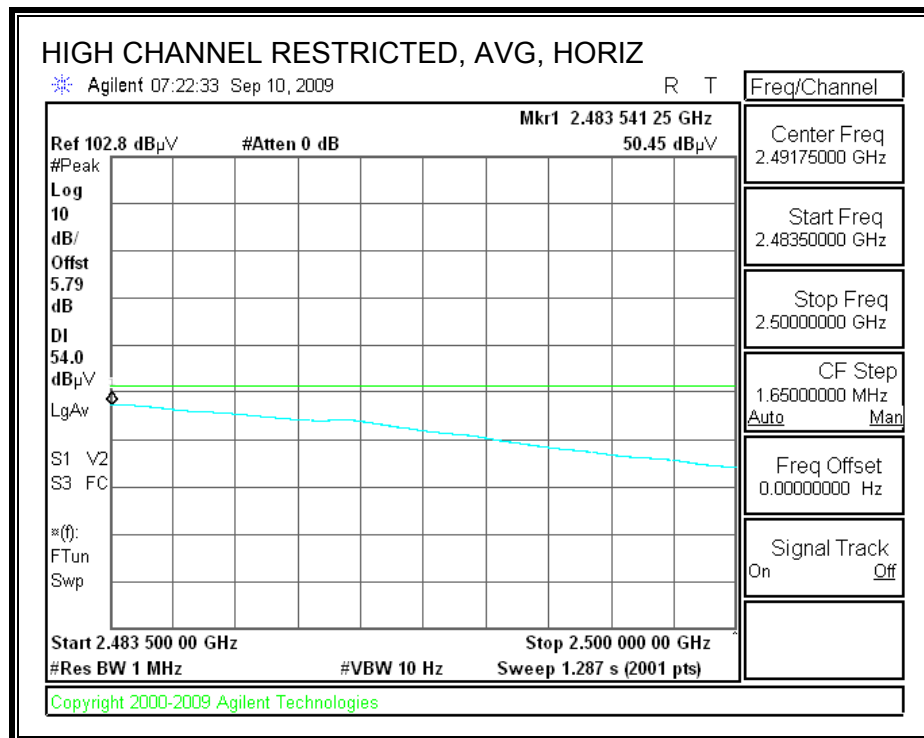
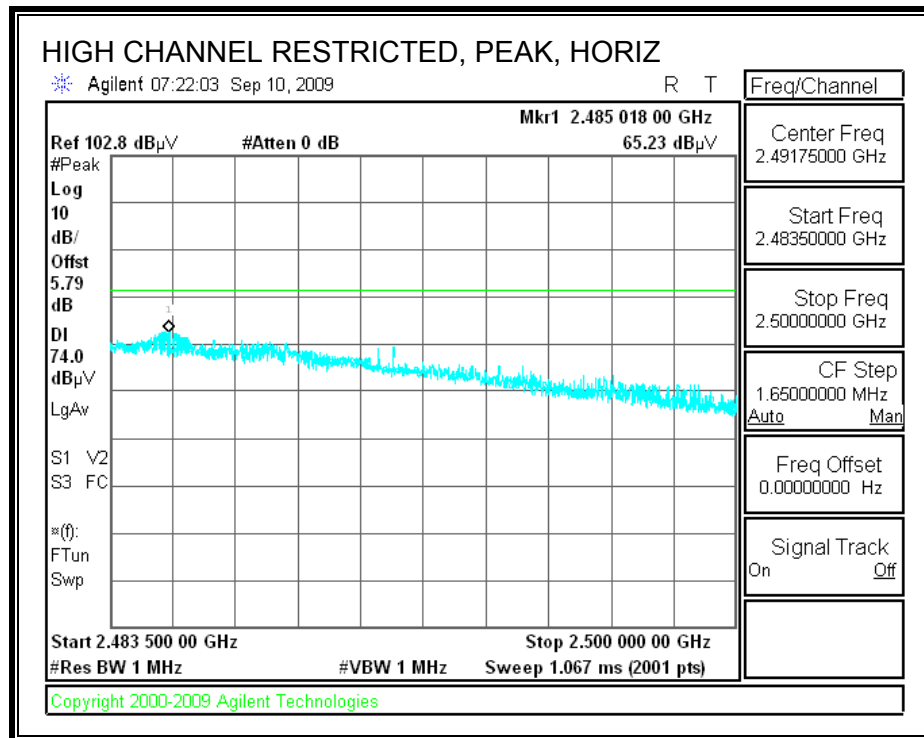


RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

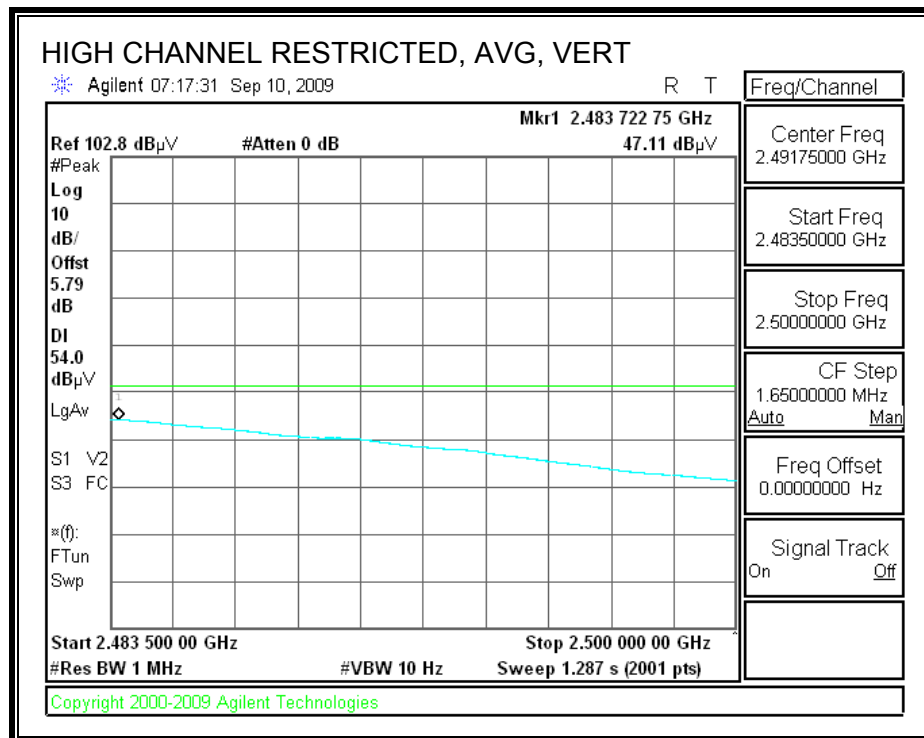
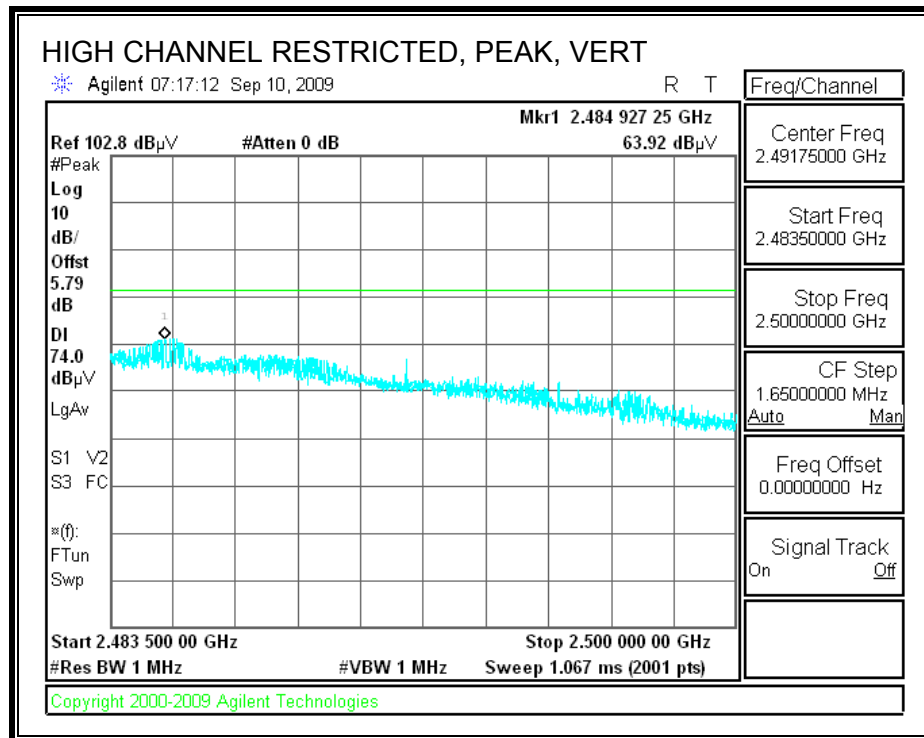


CHAIN C

RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



RESTRICTED BANEDGE (HIGH CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS – MID CHANNEL, CHAIN B

High Frequency Measurement **Compliance Certification Services, Fremont 3m Chamber**

Test Engr: Vien Tran
Date: 09/15/09
Project #: 09U12795
Company: Intel
EUT Description: Module 802.11ahgn 3x3
EUT M/N: 633ANHMMW
Test Target: FCC B
Mode Oper: Tx in 2.4GHz Band_11n HT40 Mode_Mid Channel_Chain B

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	Fitr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol V/H	Det P/A/QP	Ant.High cm	Table Angle Degree	Notes
11n HT40 2437MHz Chain B															
4.874	3.0	34.5	32.7	5.8	-34.8	0.0	0.6	38.8	74.0	-35.2	V	P	100.0	244.0	
4.874	3.0	22.0	32.7	5.8	-34.8	0.0	0.6	26.4	54.0	-27.6	V	A	100.0	244.0	
7.311	3.0	32.7	35.5	7.3	-34.1	0.0	0.6	42.0	74.0	-32.0	V	P	100.0	300.0	
7.311	3.0	20.5	35.5	7.3	-34.1	0.0	0.6	29.8	54.0	-24.2	V	A	100.0	300.0	
4.874	3.0	33.1	32.7	5.8	-34.8	0.0	0.6	37.5	74.0	-36.5	H	P	100.0	54.0	
4.874	3.0	20.8	32.7	5.8	-34.8	0.0	0.6	25.1	54.0	-28.9	H	A	100.0	54.0	
7.311	3.0	33.5	35.5	7.3	-34.1	0.0	0.6	42.7	74.0	-31.3	H	P	100.0	192.0	
7.311	3.0	20.7	35.5	7.3	-34.1	0.0	0.6	29.9	54.0	-24.1	H	A	100.0	192.0	

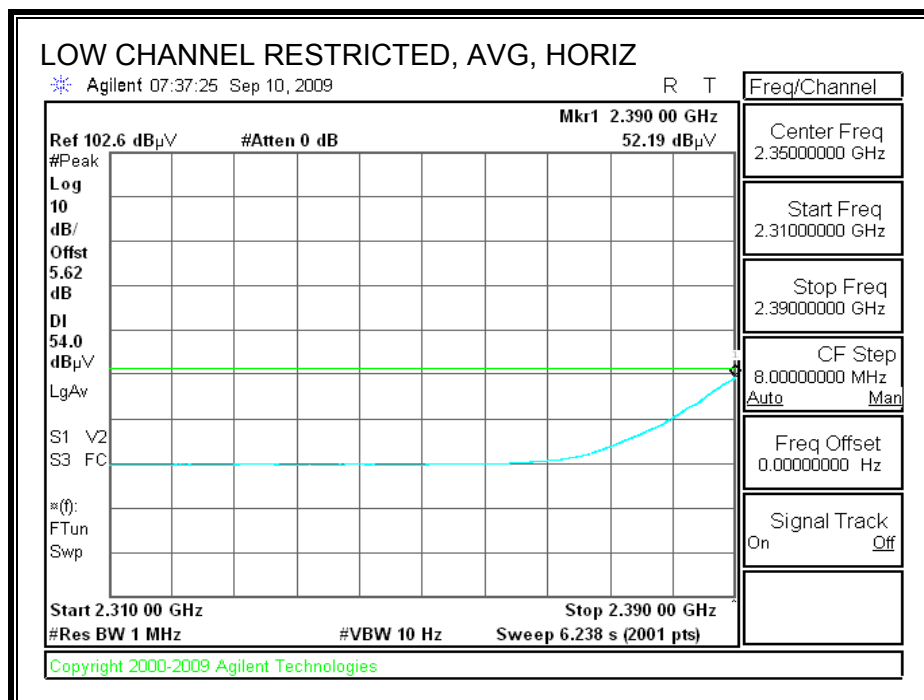
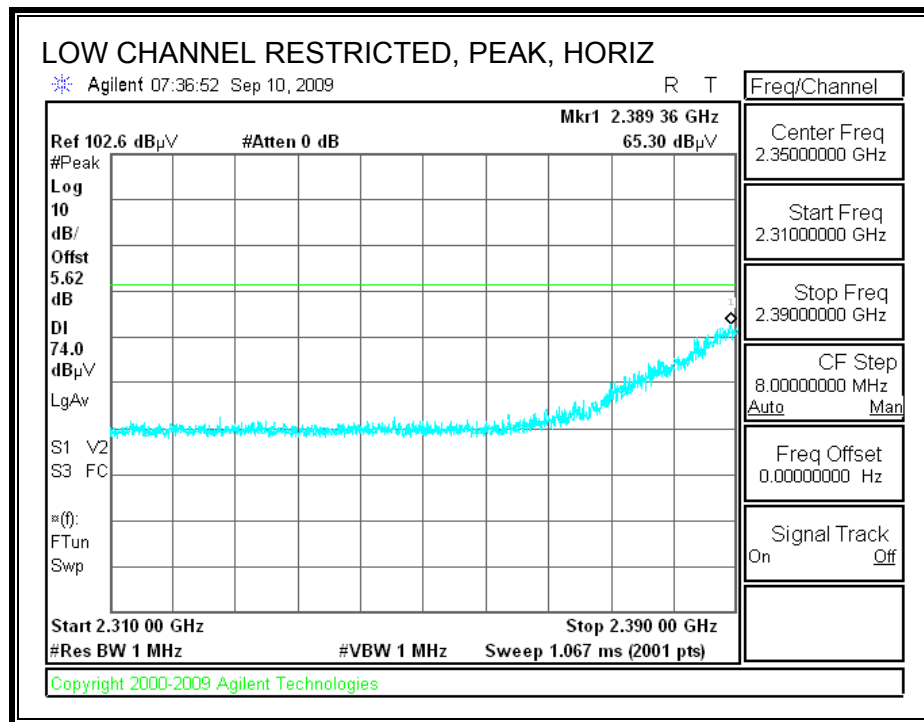
Rev. 4.1.2.7

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

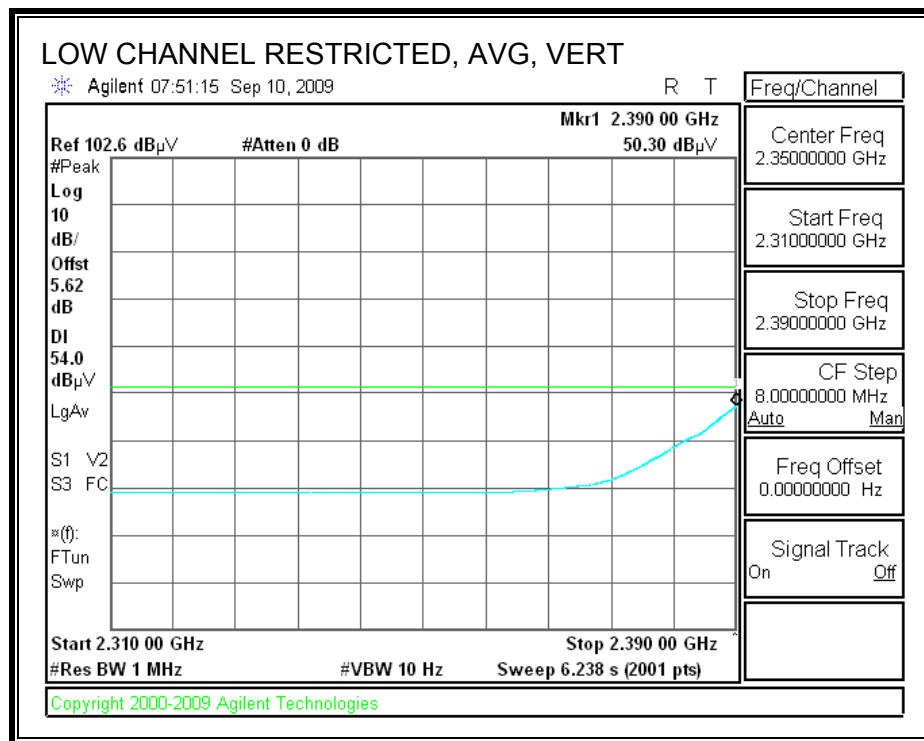
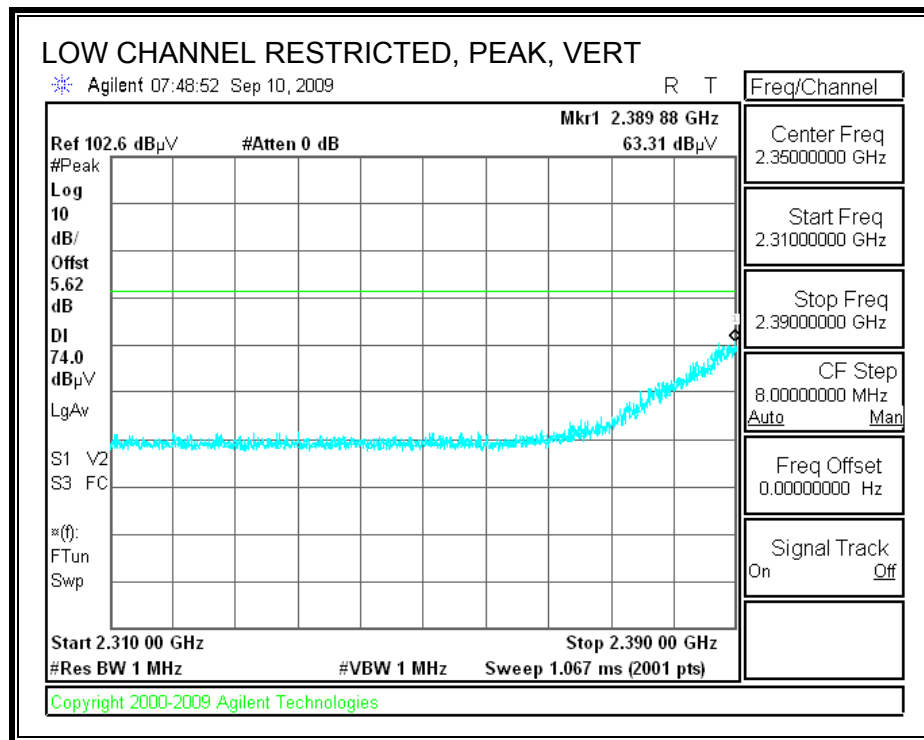
7.2.5. 802.11n HT20 MODE_3x3 IN THE 2.4 GHz BAND

CHAINS ABC

RESTRICTED BANEDGE (LOW CHANNEL, HORIZONTAL)

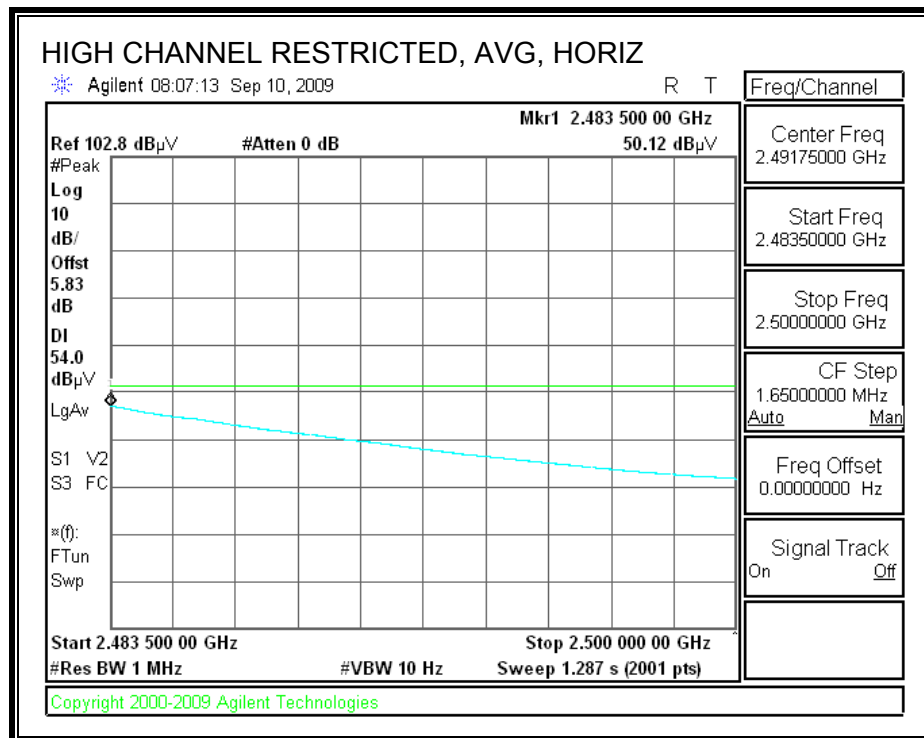
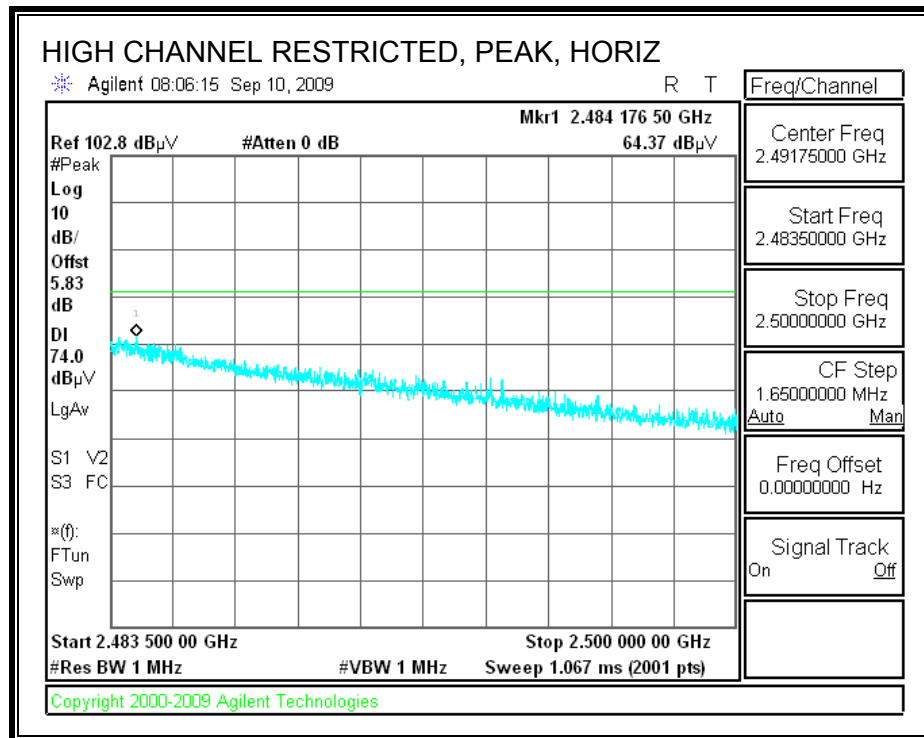


RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

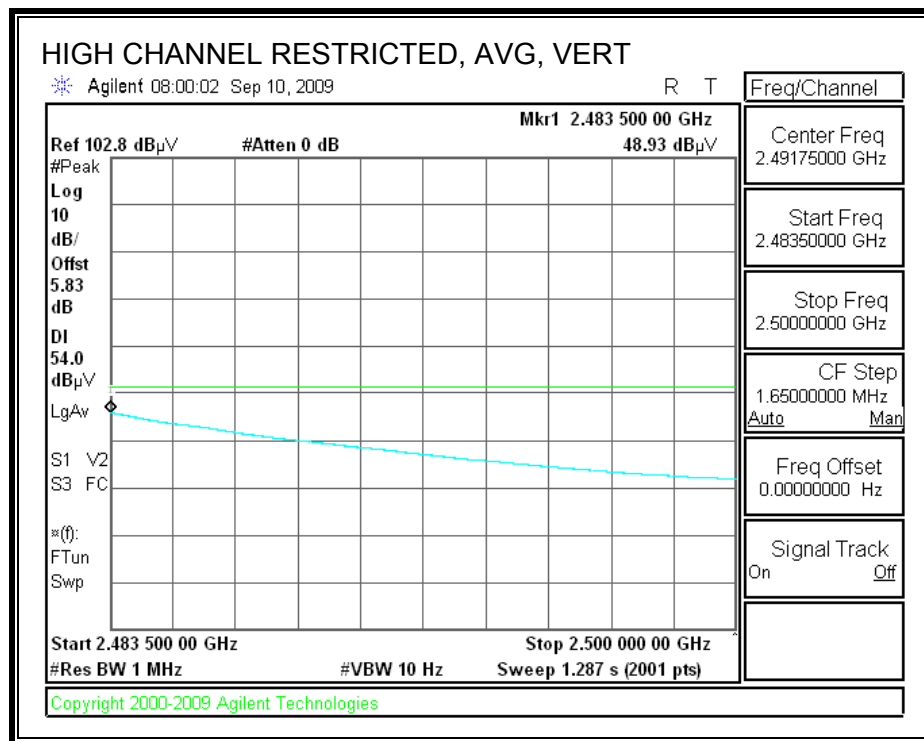
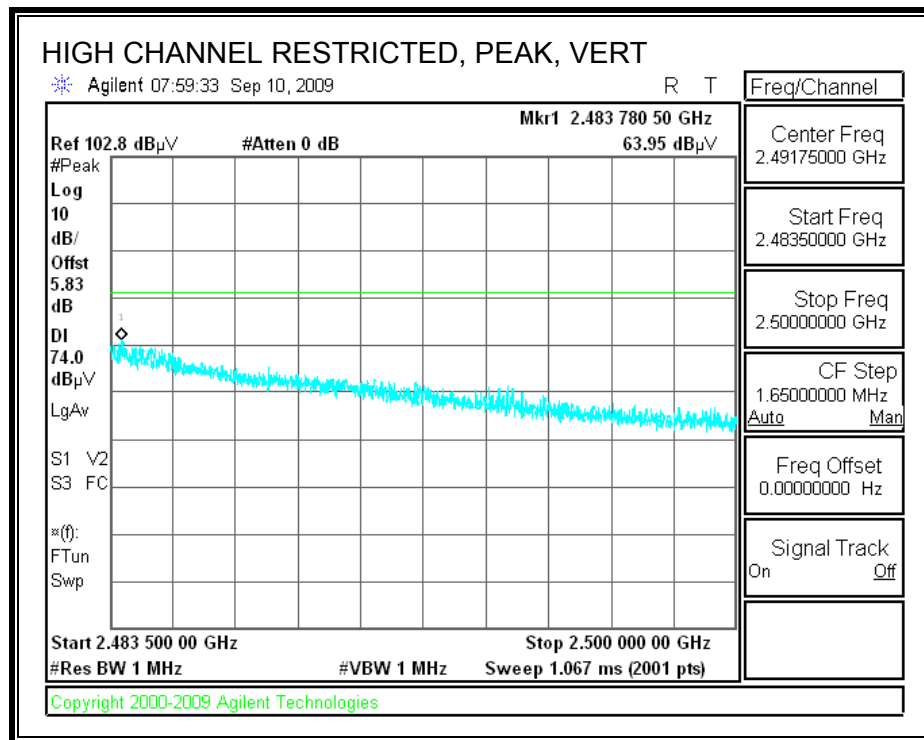


CHAINS ABC

RESTRICTED BANEDGE (HIGH CHANNEL, HORIZONTAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS – MID CHANNEL, CHAINS ABC

High Frequency Measurement

Compliance Certification Services, Fremont 3m Chamber

Test Engr: Vien Tran
Date: 09/15/09
Project #: 09U12795
Company: Intel
EUT Description: Module 802.11ahgn 3x3
EUT M/N: 633ANHMMW
Test Target: FCC B
Mode Oper: Tx in 2.4GHz Band_11n HT40 Mode 3x3_Chains ABC_Mid Channel

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	Fitr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol V/H	Det. P/A/QP	Ant. High cm	Table Angle Degree	Notes
HT40 3x3 Chains ABC 2437MHz															
4.874	3.0	34.1	32.7	5.8	-34.8	0.0	0.6	38.5	74.0	-35.5	V	P	99.0	169.0	
4.874	3.0	22.0	32.7	5.8	-34.8	0.0	0.6	26.3	54.0	-27.7	V	A	99.0	169.0	
7.311	3.0	33.0	35.5	7.3	-34.1	0.0	0.6	42.2	74.0	-31.8	V	P	100.0	316.0	
7.311	3.0	20.7	35.5	7.3	-34.1	0.0	0.6	29.9	54.0	-24.1	V	A	100.0	316.0	
4.874	3.0	34.5	32.7	5.8	-34.8	0.0	0.6	38.8	74.0	-35.2	H	P	100.0	226.0	
4.874	3.0	22.0	32.7	5.8	-34.8	0.0	0.6	26.4	54.0	-27.6	H	A	100.0	226.0	
7.311	3.0	33.6	35.5	7.3	-34.1	0.0	0.6	42.8	74.0	-31.2	H	P	100.0	352.0	
7.311	3.0	21.2	35.5	7.3	-34.1	0.0	0.6	30.4	54.0	-23.6	H	A	100.0	352.0	

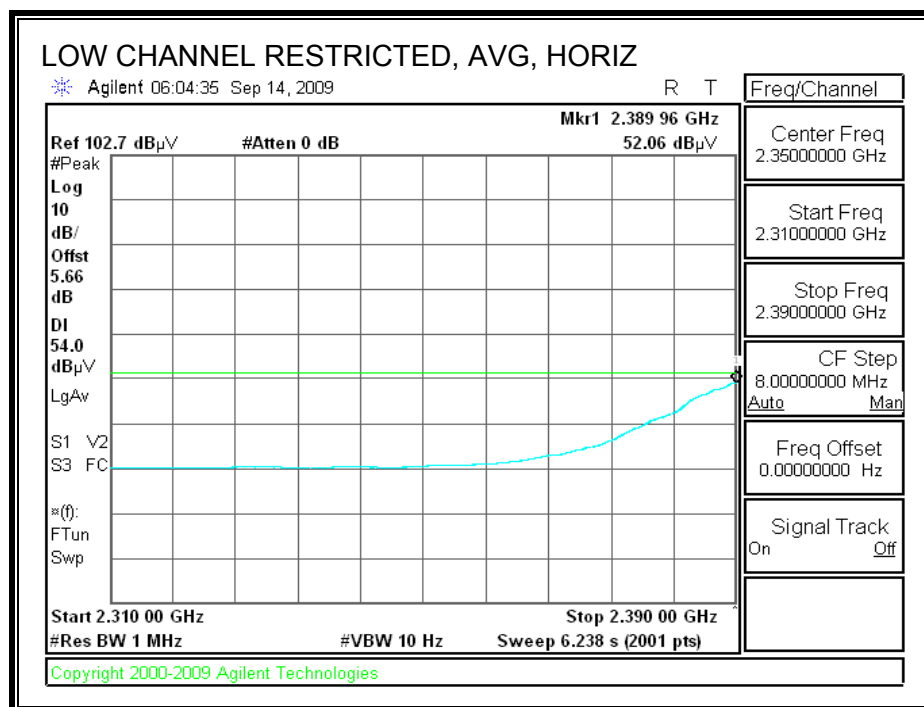
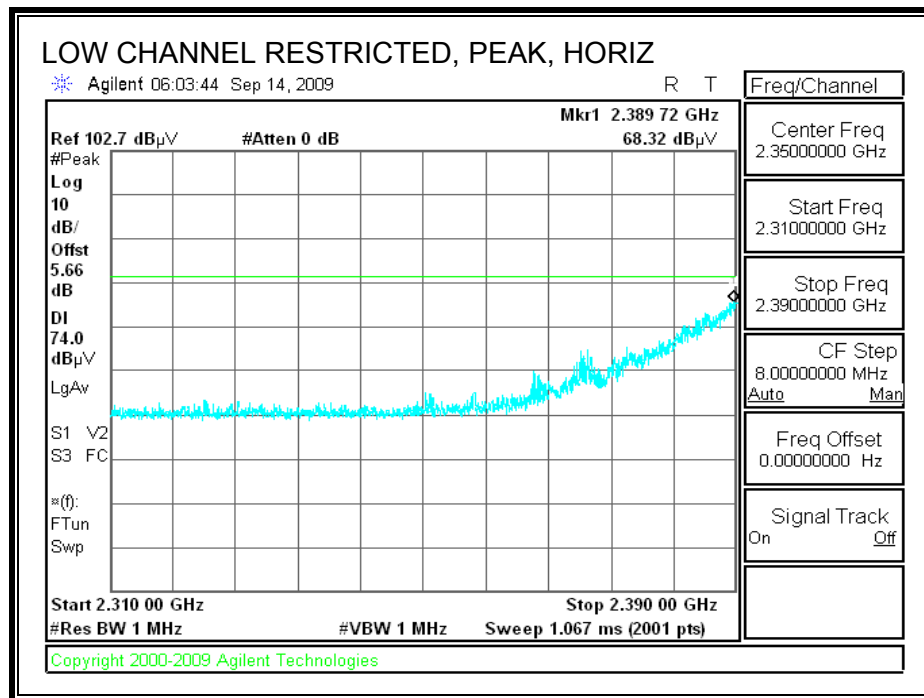
Rev. 4.1.2.7

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

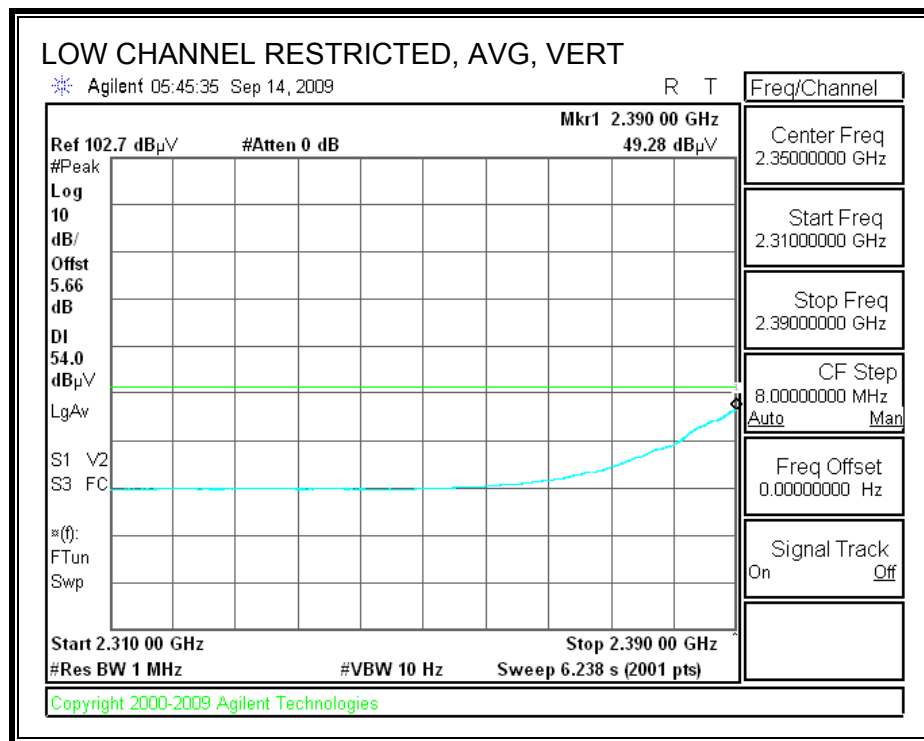
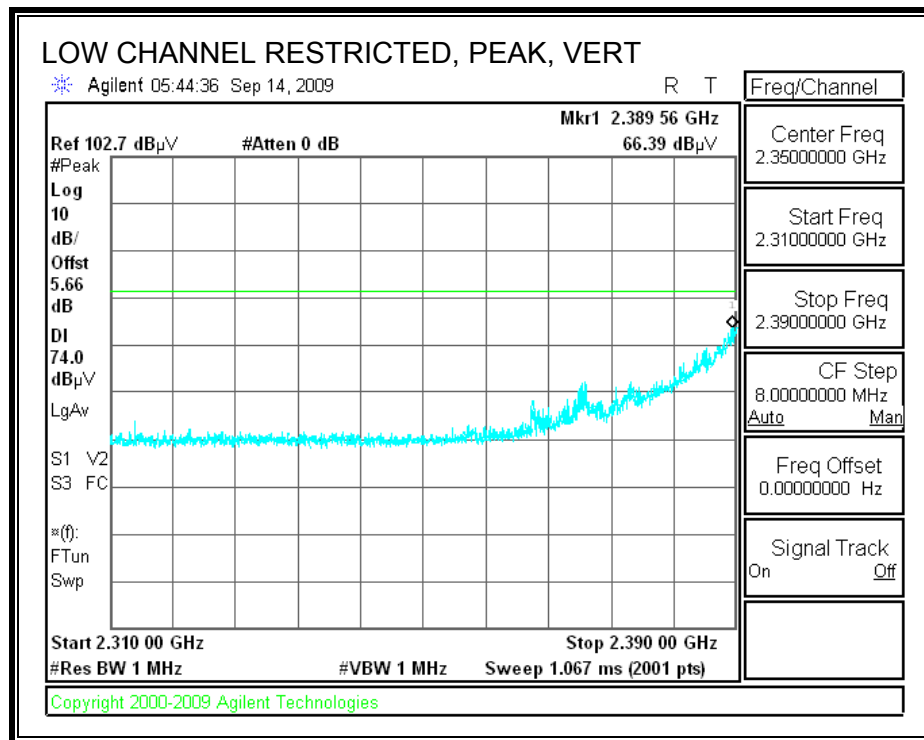
7.2.6. 802.11n HT40 MODE 3x3 IN THE 2.4 GHz BAND

CHAIN ABC

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

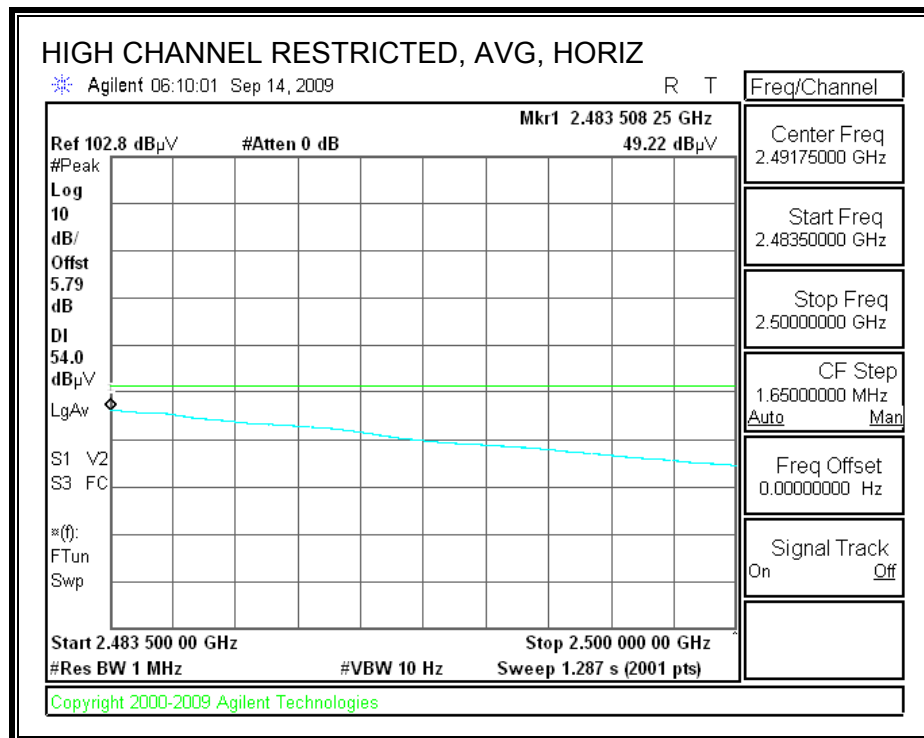
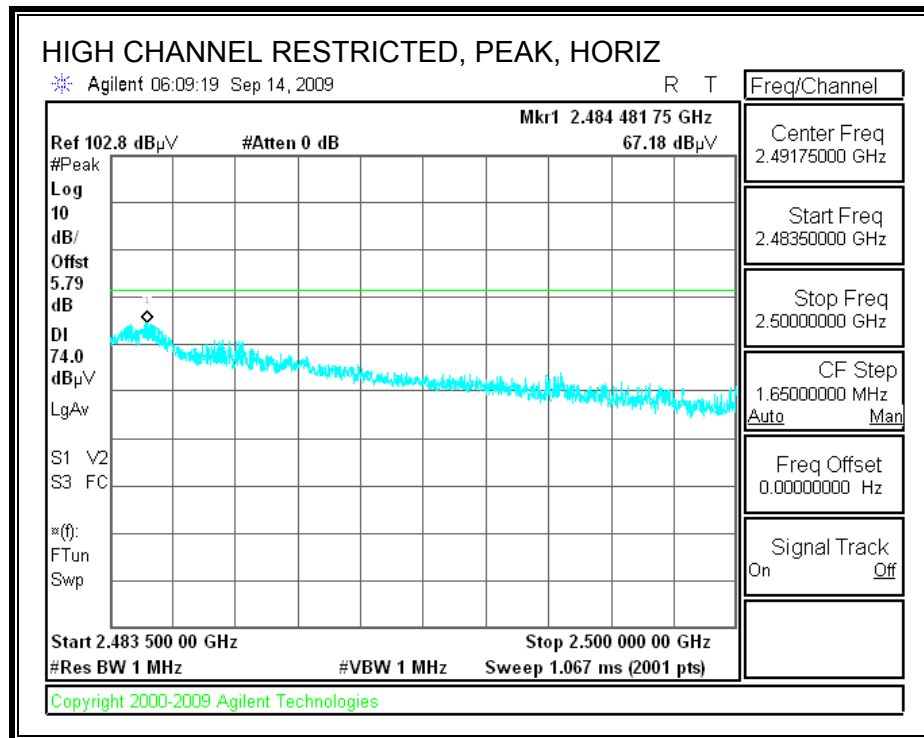


RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

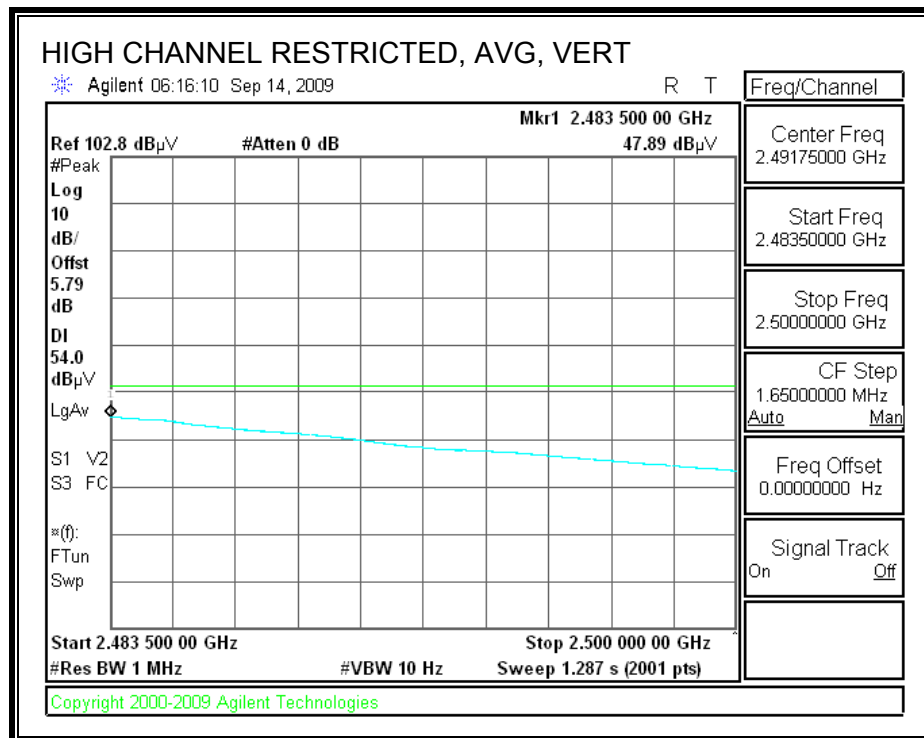
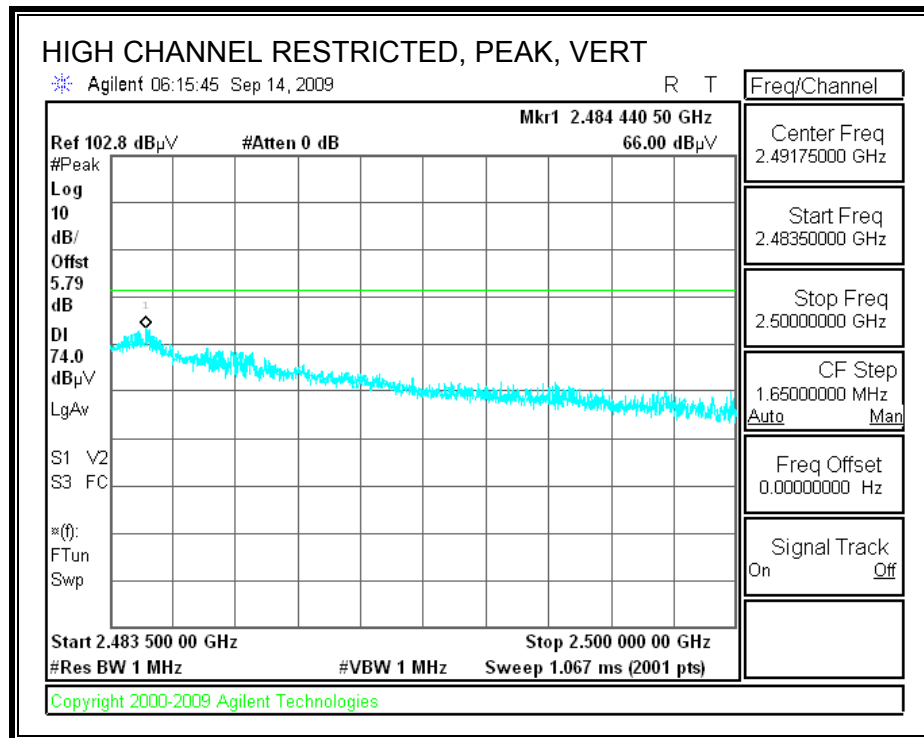


CHAIN ABC

RESTRICTED BANEDGE (HIGH CHANNEL, HORIZONTAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS – MID CHANNEL, CHAINS ABC

High Frequency Measurement

Compliance Certification Services, Fremont 3m Chamber

Test Engr: Vien Tran
Date: 09/15/09
Project #: 09U12795
Company: Intel
EUT Description: Module 802.11ahgn 3x3
EUT M/N: 633ANHMMW
Test Target: FCC B
Mode Oper: Tx in 2.4GHz Band_11n HT40 Mode 3x3_Mid Channel_Chains ABC

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	Fitr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol V/H	Det P/A/QP	Ant. High cm	Table Angle Degree	Notes
HT40 3x3 Chains ABC 2437MHz															
4.874	3.0	34.1	32.7	5.8	-34.8	0.0	0.6	38.5	74.0	-35.5	V	P	99.0	169.0	
4.874	3.0	22.0	32.7	5.8	-34.8	0.0	0.6	26.3	54.0	-27.7	V	A	99.0	169.0	
7.311	3.0	33.0	35.5	7.3	-34.1	0.0	0.6	42.2	74.0	-31.8	V	P	100.0	316.0	
7.311	3.0	20.7	35.5	7.3	-34.1	0.0	0.6	29.9	54.0	-24.1	V	A	100.0	316.0	
4.874	3.0	34.5	32.7	5.8	-34.8	0.0	0.6	38.8	74.0	-35.2	H	P	100.0	226.0	
4.874	3.0	22.0	32.7	5.8	-34.8	0.0	0.6	26.4	54.0	-27.6	H	A	100.0	226.0	
7.311	3.0	33.6	35.5	7.3	-34.1	0.0	0.6	42.8	74.0	-31.2	H	P	100.0	352.0	
7.311	3.0	21.2	35.5	7.3	-34.1	0.0	0.6	30.4	54.0	-23.6	H	A	100.0	352.0	

Rev. 4.1.2.7

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

ACON ANTENNA

7.2.7. 802.11b MODE IN THE 2.4 GHz BAND

CHAIN B

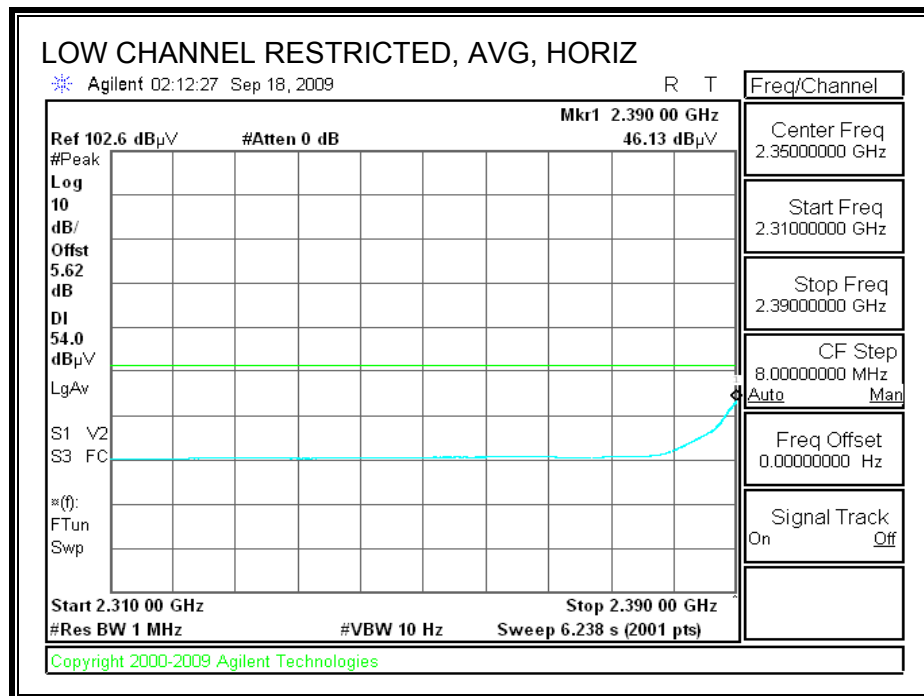
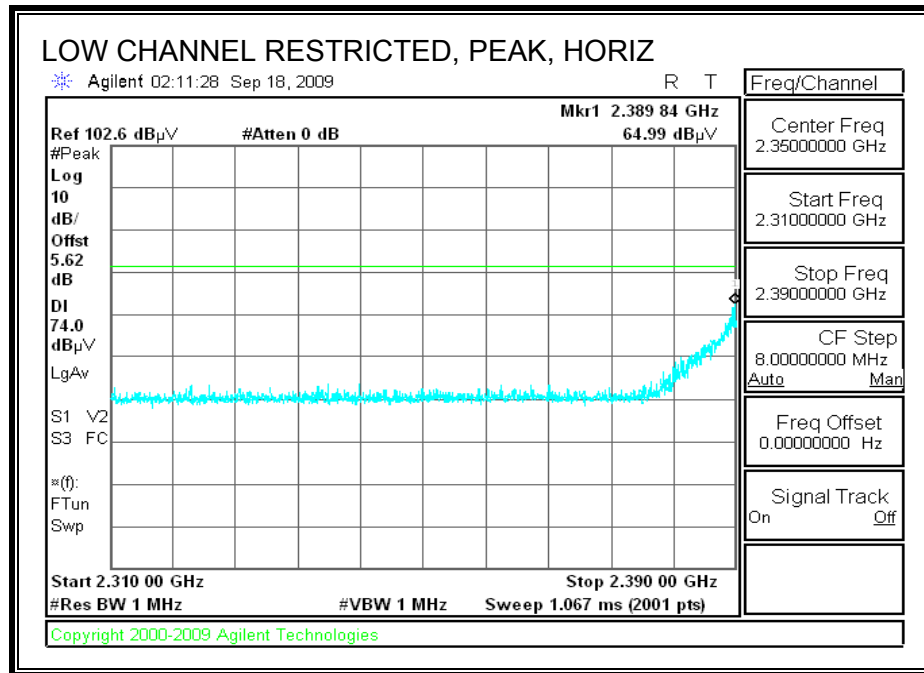
HARMONICS AND SPURIOUS EMISSIONS – LOW & HIGH CHANNELS

High Frequency Measurement Compliance Certification Services, Fremont 3m Chamber															
Test Engr:		Vien Tran													
Date:		09/18/09													
Project #:		09U12795													
Company:		Intel													
EUT Description:		Module 802.11abgn 3x3 with ACON Antenna													
EUT M/N:		633ANHMW													
Test Target:		FCC B													
Mode Oper:		Tx in 2.4GHz Band_Low & High Channels_Chain B_Spot Check													
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	Fldr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
11b 2412MHz Chain B															
4.824	3.0	36.6	32.7	5.8	-34.8	0.0	0.6	40.8	74.0	-33.2	V	P	107.0	198.0	
4.824	3.0	29.4	32.7	5.8	-34.8	0.0	0.6	33.7	54.0	-20.3	V	A	107.0	198.0	
4.824	3.0	34.9	32.7	5.8	-34.8	0.0	0.6	39.2	74.0	-34.8	H	P	99.0	222.0	
4.824	3.0	24.8	32.7	5.8	-34.8	0.0	0.6	29.1	54.0	-24.9	H	A	99.0	222.0	
11b 2462MHz Chain B															
4.924	3.0	37.1	32.7	5.9	-34.8	0.0	0.6	41.5	74.0	-32.5	V	P	100.0	247.0	
4.924	3.0	30.6	32.7	5.9	-34.8	0.0	0.6	35.0	54.0	-19.0	V	A	100.0	247.0	
7.386	3.0	34.5	35.6	7.3	-34.1	0.0	0.6	43.9	74.0	-30.1	V	P	100.0	283.0	
7.386	3.0	21.3	35.6	7.3	-34.1	0.0	0.6	30.7	54.0	-23.3	V	A	100.0	283.0	
4.924	3.0	34.8	32.7	5.9	-34.8	0.0	0.6	39.2	74.0	-34.8	H	P	100.0	108.0	
4.924	3.0	26.3	32.7	5.9	-34.8	0.0	0.6	30.7	54.0	-23.3	H	A	100.0	108.0	
7.386	3.0	33.3	35.6	7.3	-34.1	0.0	0.6	42.7	74.0	-31.3	H	P	101.0	214.0	
7.386	3.0	21.1	35.6	7.3	-34.1	0.0	0.6	30.5	54.0	-23.5	H	A	101.0	214.0	
Rev. 4.1.2.7															
Note: No other emissions were detected above the system noise floor.															

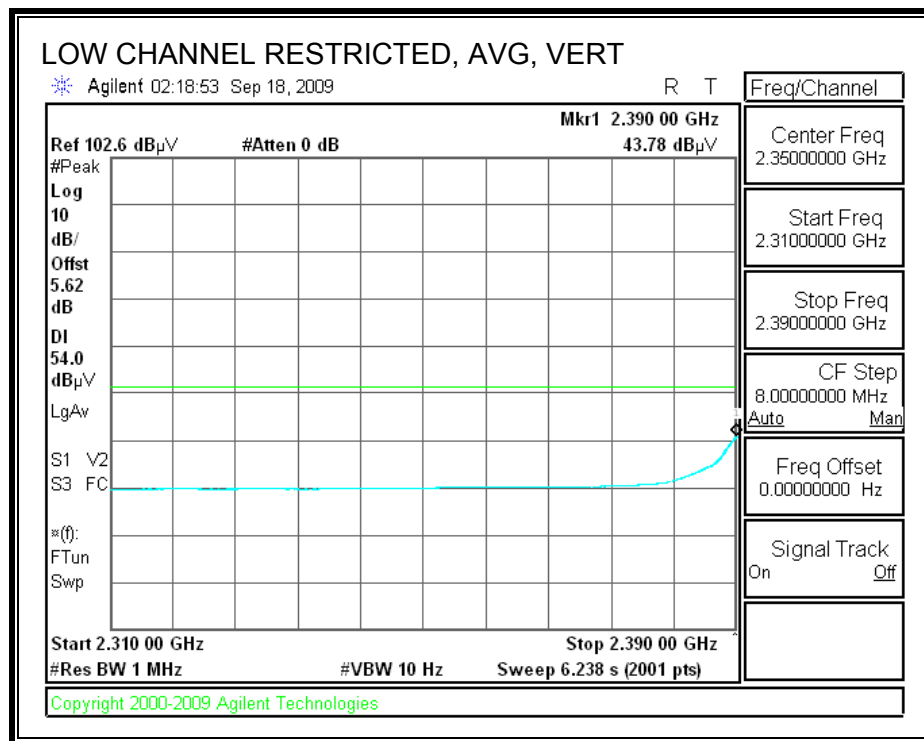
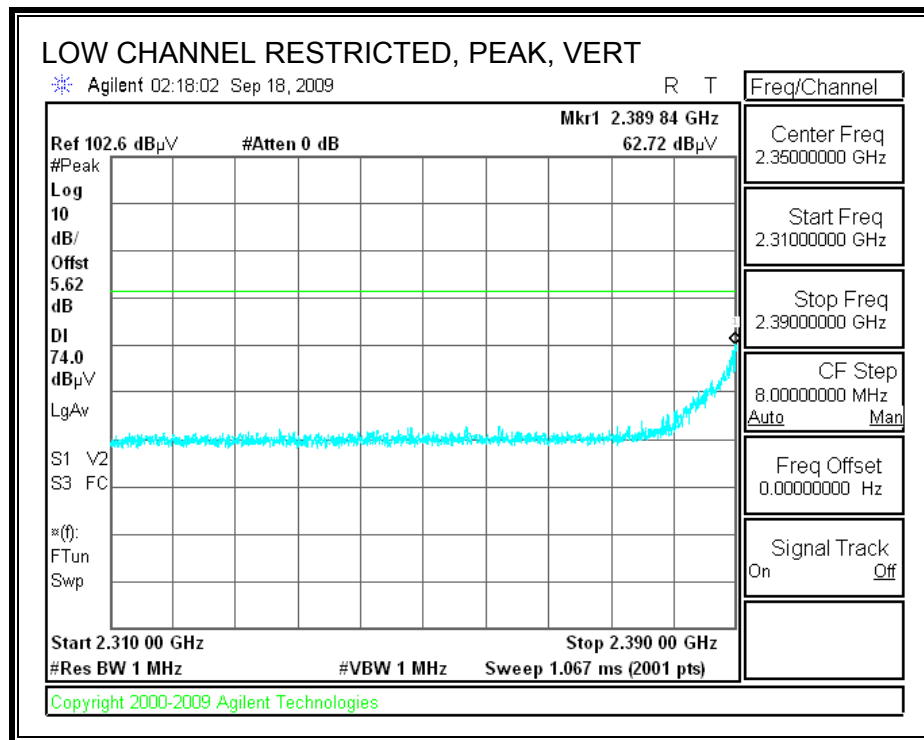
7.2.8. 802.11n HT20 MODE IN THE 2.4 GHz BAND

CHAIN C

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



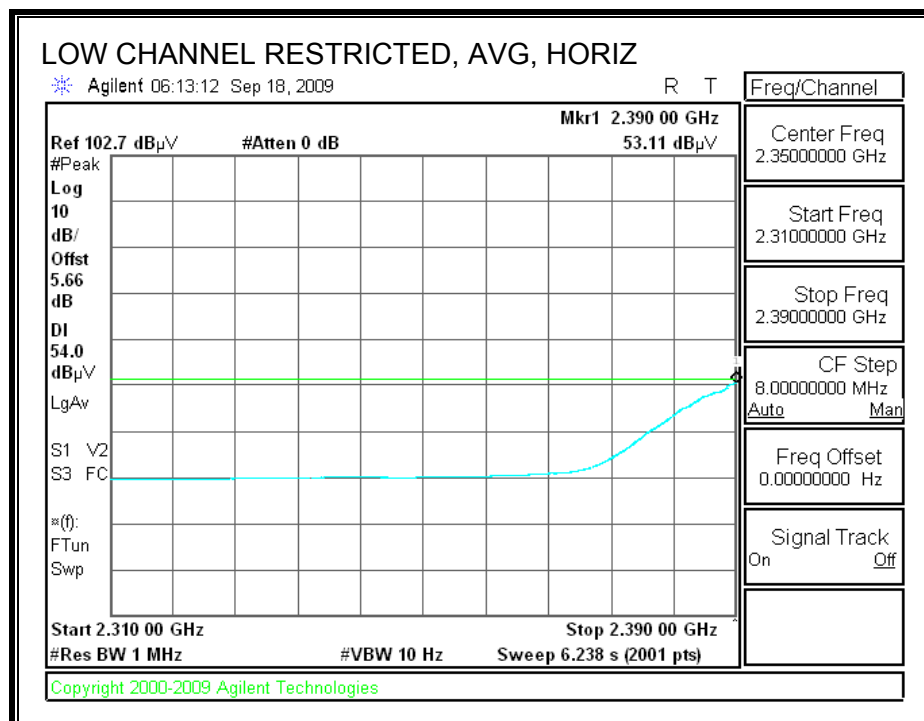
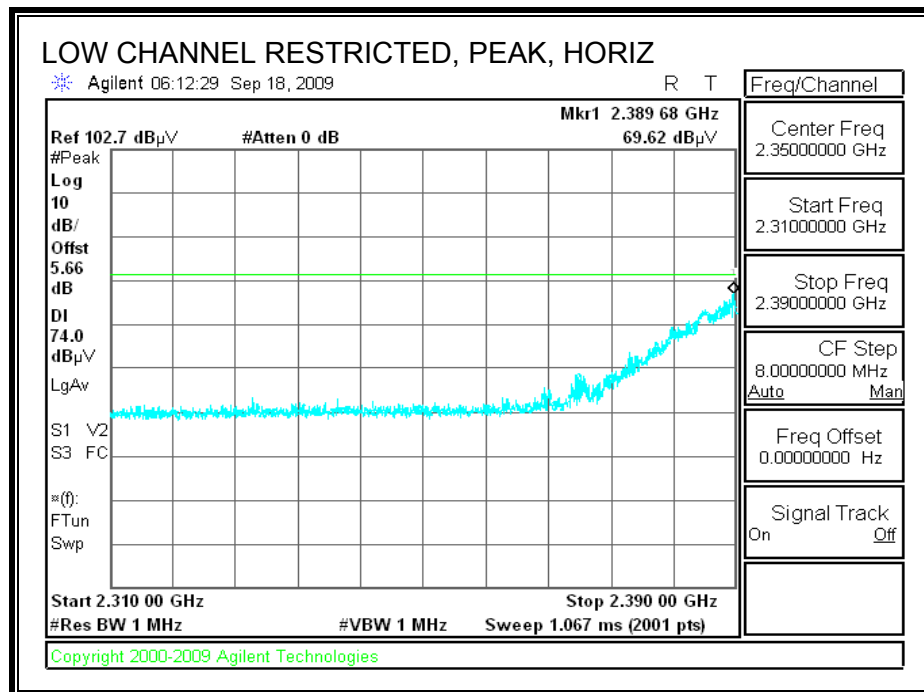
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



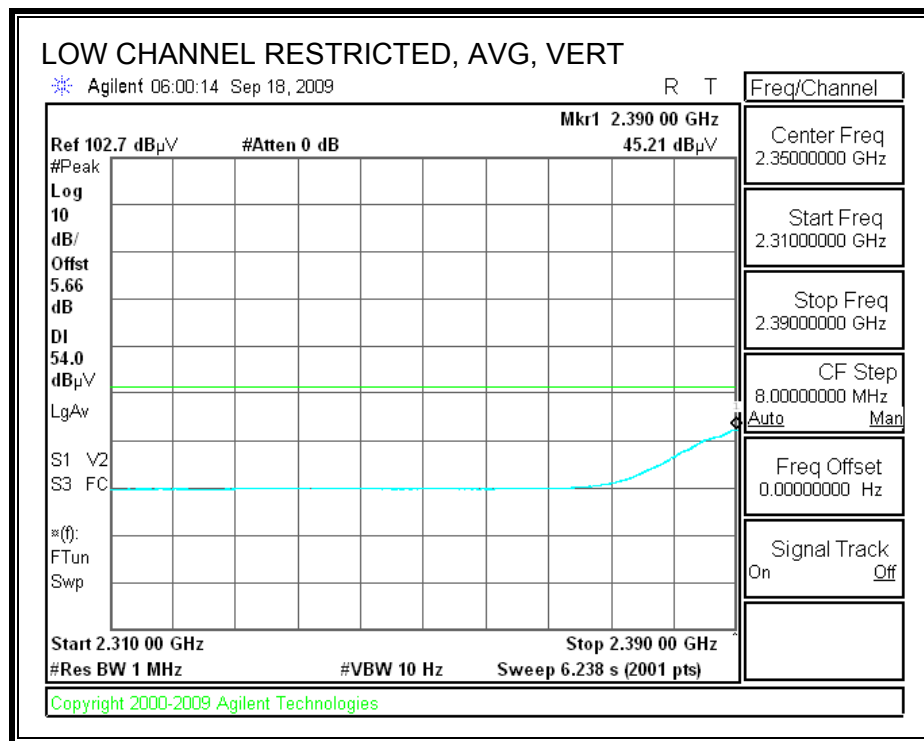
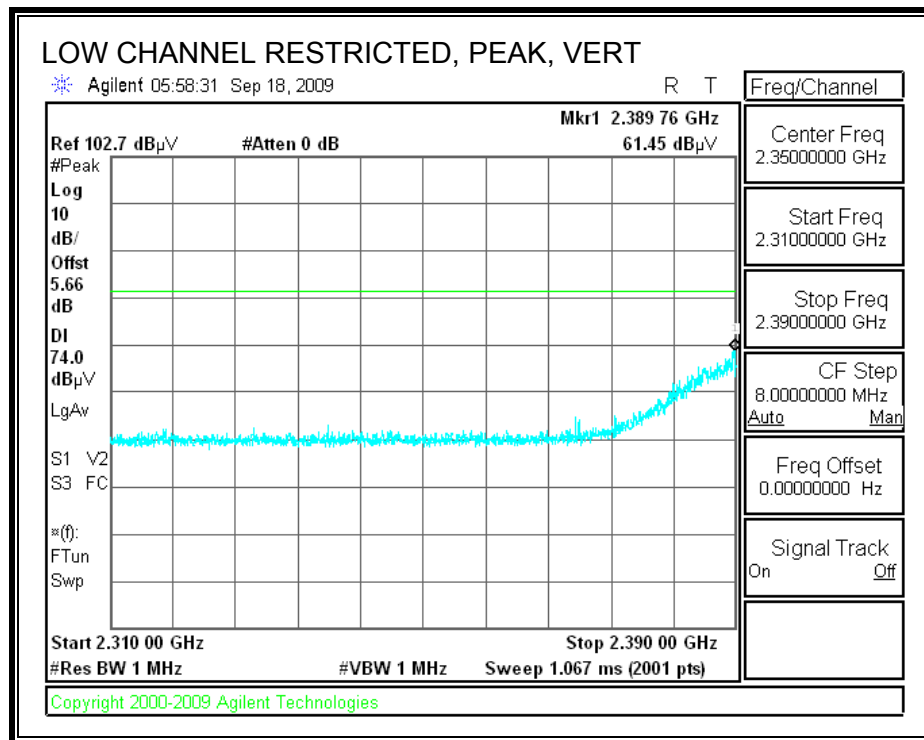
7.2.9. 802.11n HT40 MODE IN THE 2.4 GHz BAND

CHAIN A

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

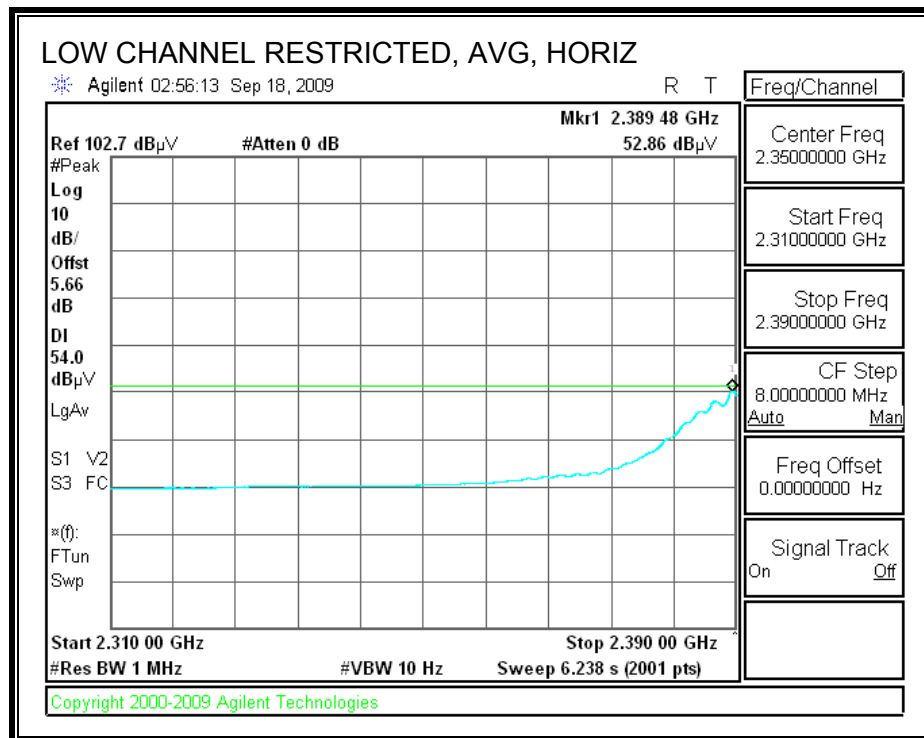
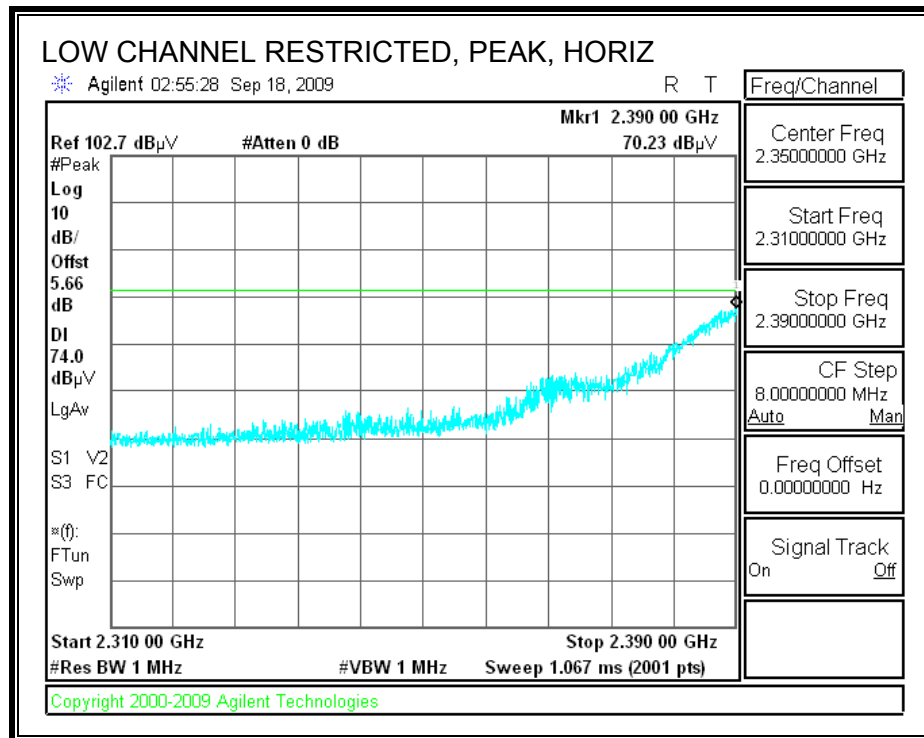


RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

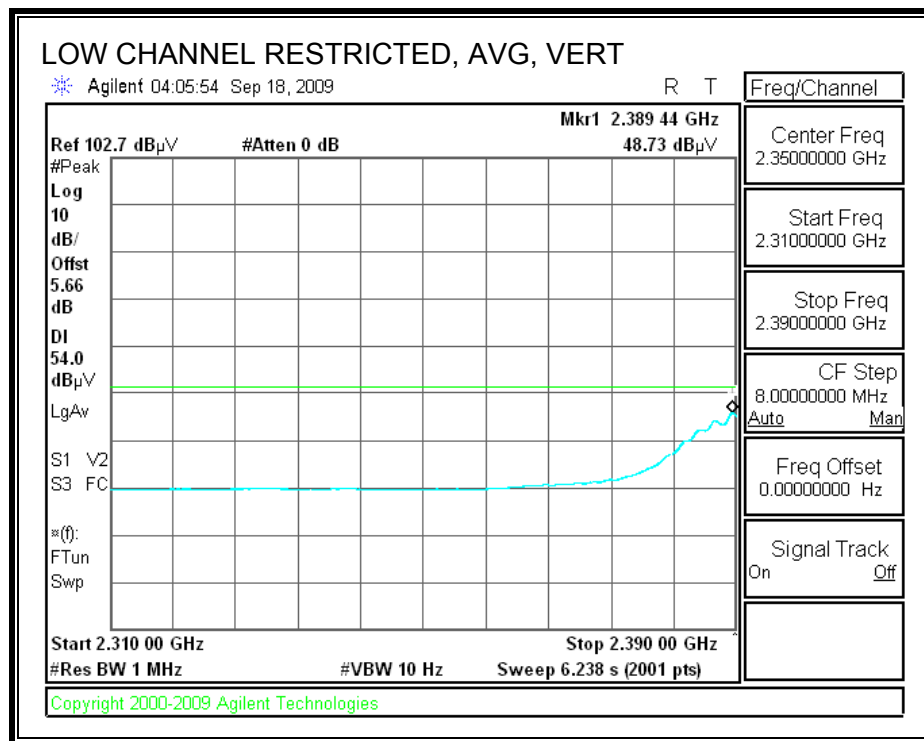
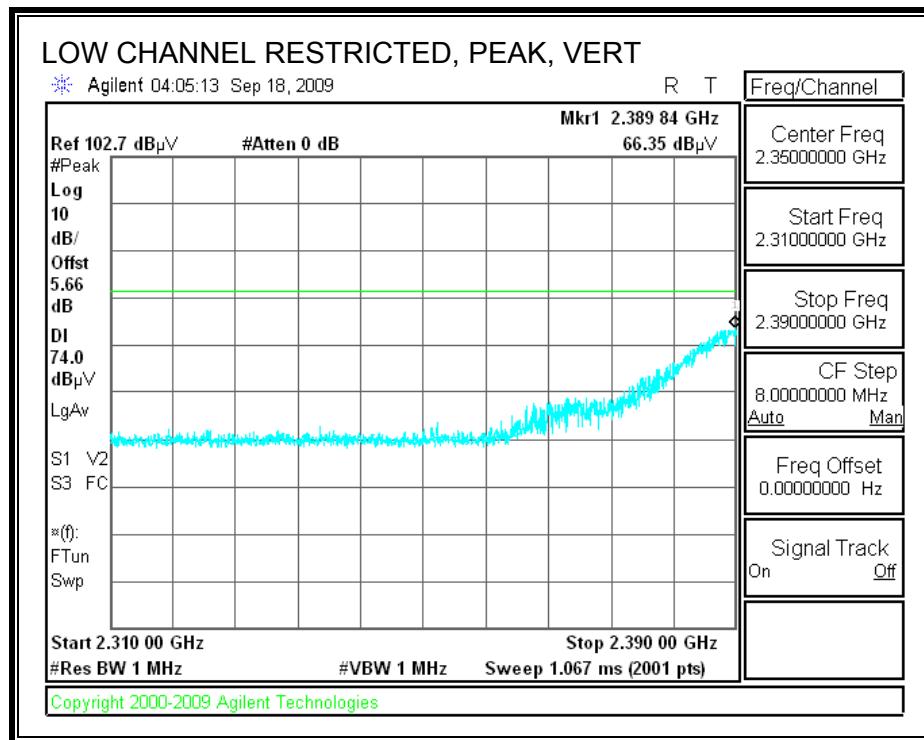


CHAIN B

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



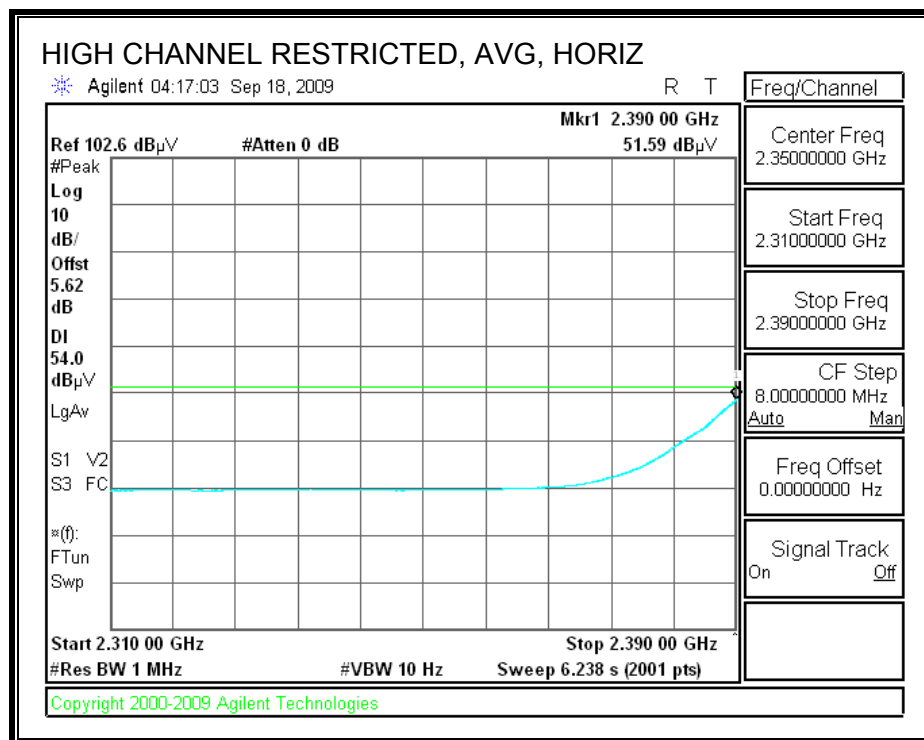
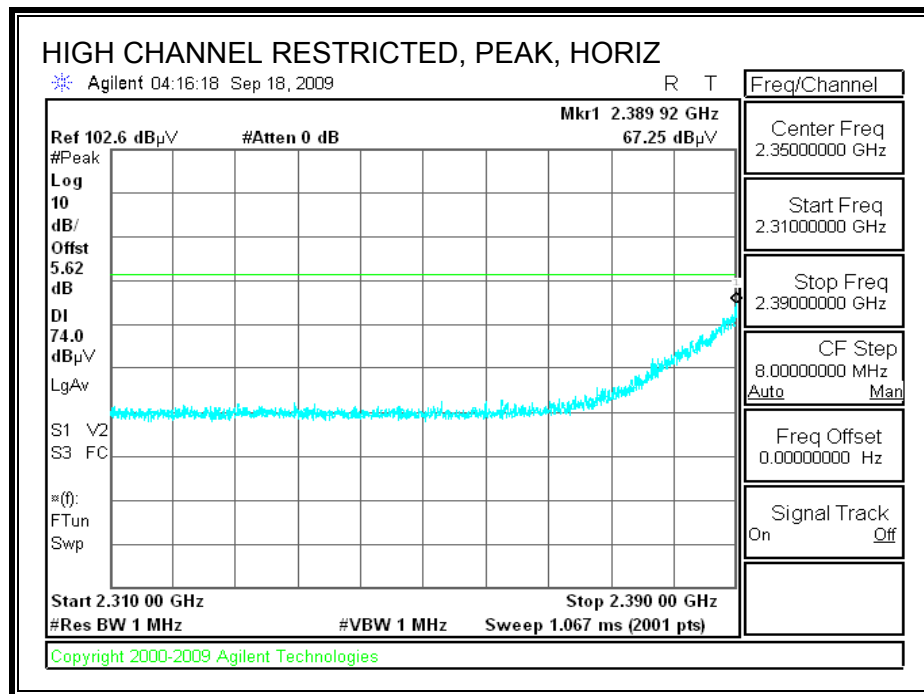
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



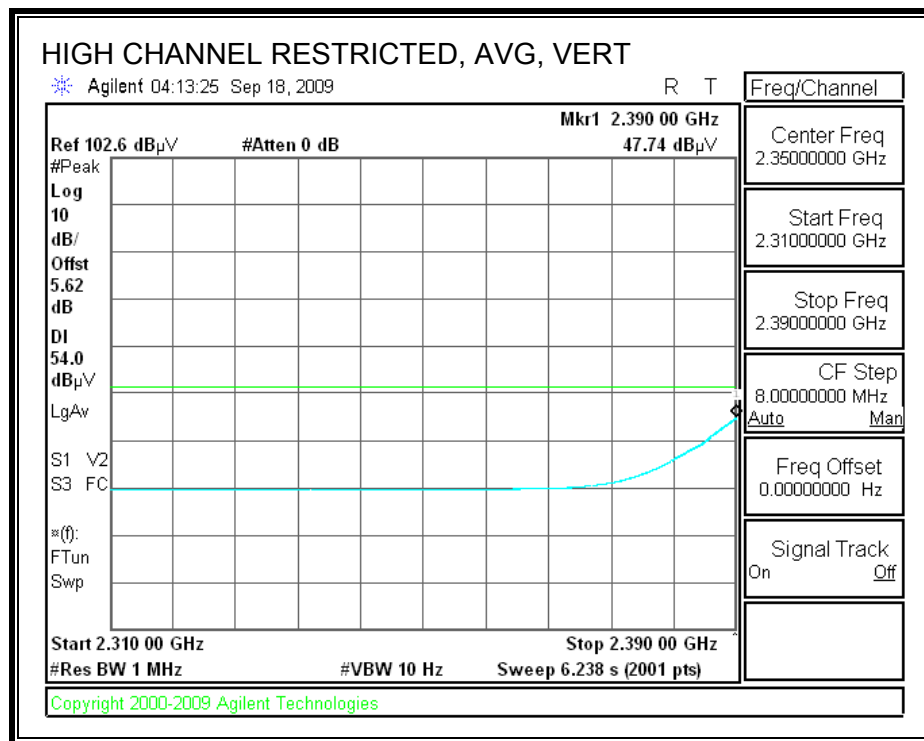
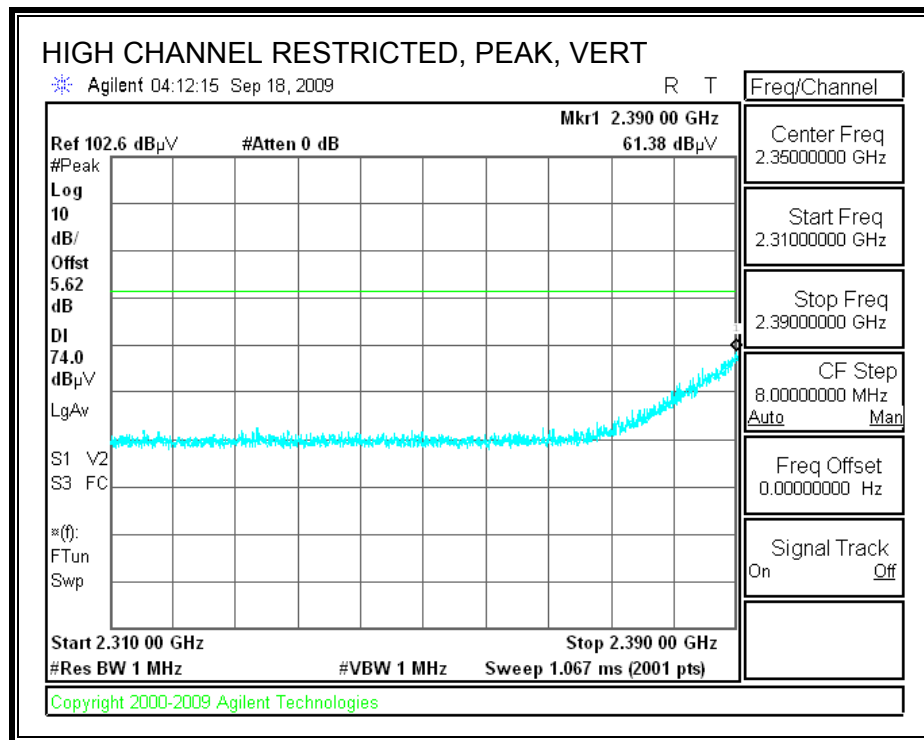
7.2.10. 802.11n HT20 MODE_3x3 IN THE 2.4 GHz BAND

CHAIN ABC

RESTRICTED BANEDGE (HIGH CHANNEL, HORIZONTAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



7.2.11. 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:		09/16/09														
Project #:		09U12795														
Company:		Intel														
EUT Description:		Module 802.11abgn 3x3														
EUT M/N:		633ANHMW														
Test Target:		FCC B														
Mode Oper:		Tx in 5.8GHz Band_11a Mode_Low Channel_Chain A														
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	Dist	Read	AF	CL	Amp	D Corr	Fldr	Corr.	Limit	Margin	Ant. Pol.	Det.	Ant. High	Table Angle	Notes	
GHz	(m)	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dB	V/H	P/A/Q/P	cm	Degree		
11a 5745MHz Chain A Hor																
11.490	3.0	31.3	38.0	9.5	-32.5	0.0	0.7	47.0	74.0	-27.0	V	P	99.0	94.0		
11.490	3.0	19.3	38.0	9.5	-32.5	0.0	0.7	35.0	54.0	-19.0	V	A	99.0	94.0		
11.490	3.0	32.1	38.0	9.5	-32.5	0.0	0.7	47.7	74.0	-26.3	H	P	100.0	109.0		
11.490	3.0	19.2	38.0	9.5	-32.5	0.0	0.7	34.9	54.0	-19.1	H	A	100.0	109.0		
Rev. 4.1.2.7																
Note: No other emissions were detected above the system noise floor.																

7.2.12. 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:		09/16/09														
Project #:		09U12795														
Company:		Intel														
EUT Description:		Module 802.11abgn 3x3														
EUT M/N:		633ANHMMW														
Test Target:		FCC B														
Mode Oper:		Tx in 5.8GHz Band_HT20 Mode_Low Channel_Chain A														
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	Dist	Read	AF	CL	Amp	D Corr	Fldr	Corr.	Limit	Margin	Ant. Pol.	Det.	Ant. High	Table Angle	Notes	
GHz	(m)	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dB	V/H	P/A/Q/P	cm	Degree		
HT20 5745MHz Chain A																
11.490	3.0	31.1	38.0	9.5	-32.5	0.0	0.7	46.8	74.0	-27.2	V	P	100.0	106.0		
11.490	3.0	19.2	38.0	9.5	-32.5	0.0	0.7	34.9	54.0	-19.1	V	A	100.0	106.0		
11.490	3.0	31.6	38.0	9.5	-32.5	0.0	0.7	47.3	74.0	-26.7	H	P	100.0	175.0		
11.490	3.0	19.2	38.0	9.5	-32.5	0.0	0.7	34.9	54.0	-19.1	H	A	100.0	175.0		

Rev. 4.1.2.7

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

7.2.13. 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:		09/16/09														
Project #:		09U12795														
Company:		Intel														
EUT Description:		Module 802.11abgn 3x3														
EUT M/N:		633ANHMMW														
Test Target:		FCC B														
Mode Oper:		Tx in 5.8GHz Band_HT40 Mode_High Channel_Chain A														
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	Dist	Read	AF	CL	Amp	D Corr	Fltr	Corr.	Limit	Margin	Ant. Pol.	Det.	Ant. High	Table Angle	Notes	
GHz	(m)	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dB	V/H	P/A/Q/P	cm	Degree		
HT40 5795MHz Chain A																
11.590	3.0	31.4	38.1	9.5	-32.5	0.0	0.7	47.3	74.0	-26.7	V	P	99.0	57.0		
11.590	3.0	19.6	38.1	9.5	-32.5	0.0	0.7	35.4	54.0	-18.6	V	A	99.0	57.0		
11.590	3.0	32.1	38.1	9.5	-32.5	0.0	0.7	47.9	74.0	-26.1	H	P	100.0	292.0		
11.590	3.0	19.3	38.1	9.5	-32.5	0.0	0.7	35.2	54.0	-18.8	H	A	100.0	292.0		
Rev. 4.1.2.7																
Note: No other emissions were detected above the system noise floor.																

7.2.14. 802.11n HT20 MODE 3x3 IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement															
Compliance Certification Services, Fremont 3m Chamber															
Test Engr:		Vien Tran													
Date:		09/16/09													
Project #:		09U12795													
Company:		Intel													
EUT Description:		Module 802.11abgn 3x3													
EUT M/N:		633ANHMY													
Test Target:		FCC B													
Mode Oper:		Tx in 5.8GHz Band_HT40 Mode_3x3_Low Channel_Chains ABC													
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	Dist	Read	AF	CL	Amp	D Corr	Fldr	Corr.	Limit	Margin	Ant. Pol.	Det.	Ant. High	Table Angle	Notes
GHz	(m)	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dB	V/H	P/A/Q/P	cm	Degree	
HT40 3x3 Chains ABC 5745MHz															
11.490	3.0	31.7	38.0	9.5	-32.5	0.0	0.7	47.4	74.0	-26.6	V	P	100.0	0.0	
11.490	3.0	19.9	38.0	9.5	-32.5	0.0	0.7	35.6	54.0	-18.4	V	A	100.0	0.0	
11.490	3.0	32.2	38.0	9.5	-32.5	0.0	0.7	47.9	74.0	-26.1	H	P	100.0	342.0	
11.490	3.0	19.5	38.0	9.5	-32.5	0.0	0.7	35.2	54.0	-18.8	H	A	100.0	342.0	

Rev. 4.1.2.7

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

7.2.15. 802.11n HT40 MODE 3x3 IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement																
Compliance Certification Services, Fremont 3m Chamber																
Test Engr:		Vien Tran														
Date:		09/17/09														
Project #:		09U12795														
Company:		Intel														
EUT Description:		Module 802.11abgn 3x3														
EUT M/N:		633ANHMMW														
Test Target:		FCC B														
Mode Oper:		Tx in 5.8GHz Band_HT40 Mode_3x3_Low Channel_Chains ABC														
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	
HT40 3x3 Chains ABC																
11.510	3.0	31.6	38.1	9.5	-32.5	0.0	0.7	47.3	74.0	-26.7	V	P	100.0	66.0		
11.510	3.0	20.1	38.1	9.5	-32.5	0.0	0.7	35.8	54.0	-18.2	V	A	100.0	66.0		
11.510	3.0	32.6	38.1	9.5	-32.5	0.0	0.7	48.3	74.0	-25.7	H	P	101.0	359.0		
11.510	3.0	21.3	38.1	9.5	-32.5	0.0	0.7	37.0	54.0	-17.0	H	A	101.0	359.0		
Rev. 4.1.2.7																
Note: No other emissions were detected above the system noise floor.																

7.3. RECEIVER ABOVE 1 GHz

7.3.1. RECEIVER ABOVE 1 GHz IN THE 2.4 GHz BAND

High Frequency Measurement															
Compliance Certification Services, Fremont 5m Chamber															
Test Engr:		Vien Tran													
Date:		09/17/09													
Project #:		09U12795													
Company:		Intel													
EUT Descriptio		Module 802.11abgn 3x3													
EUT M/N:		633ANHMMW													
Test Target:		FCC B													
Mode Oper:		Rx in 2.4GHz Band_Worst-Case													
Test Equipment:															
Horn 1-18GHz			Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit			
T60; S/N: 2238 @3m			T34 HP 8449B									FCC 15.209			
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	Ftr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
2.4GHz WNC Antenna															
1.605	3.0	50.1	35.9	26.5	3.1	-37.4	0.0	0.0	42.2	28.0	74	54	-31.8	-26.0	V
2.493	3.0	45.8	30.2	28.3	3.9	-36.3	0.0	0.0	41.8	26.2	74	54	-32.2	-27.8	V
1.605	3.0	48.9	34.2	26.5	3.1	-37.4	0.0	0.0	41.0	26.3	74	54	-33.0	-27.7	H
2.493	3.0	43.5	29.9	28.3	3.9	-36.3	0.0	0.0	39.5	25.9	74	54	-34.5	-28.1	H
No other emission were detected above system noise floor															
f	Measurement Frequency		Amp	Preamp Gain		Avg Lim		Average Field Strength Limit							
Dist	Distance to Antenna		D Corr	Distance Correct to 3 meters		Pk Lim		Peak Field Strength Limit							
Read	Analyzer Reading		Avg	Average Field Strength @ 3 m		Avg Mar		Margin vs. Average Limit							
AF	Antenna Factor		Peak	Calculated Peak Field Strength		Pk Mar		Margin vs. Peak Limit							
CL	Cable Loss		HPF	High Pass Filter											

7.3.2. RECEIVER ABOVE 1 GHz IN THE 5.8 GHz BAND

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Vien Tran
Date: 09/18/09
Project #: 09U12795
Company: Intel
EUT Description: Module 802.11abgn 3x3
EUT M/N: 633ANHMMW
Test Target: FCC B
Mode Oper: Rx in 5GHz Band_Worst-Case

Test Equipment:

Horn 1-18GHz	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T34 HP 8449B			FCC 15.209

Hi Frequency Cables

3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF	Reject Filter	Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz; VBW=10Hz
3' cable 22807700	12' cable 22807600	20' cable 22807500			

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fldr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
5 GHz Band_ACON Antenna															
1.440	3.0	48.9	31.6	25.9	2.9	-37.7	0.0	0.0	40.1	22.8	74	54	-33.9	-31.2	V
1.760	3.0	52.8	33.1	27.0	3.2	-37.2	0.0	0.0	45.8	26.1	74	54	-28.2	-27.9	V
2.133	3.0	46.1	30.1	27.9	3.6	-36.7	0.0	0.0	40.9	24.9	74	54	-33.1	-29.1	V
2.400	3.0	46.9	29.2	28.0	3.8	-36.3	0.0	0.0	42.5	24.8	74	54	-31.5	-29.2	V
2.493	3.0	46.2	30.2	28.3	3.9	-36.3	0.0	0.0	42.2	26.2	74	54	-31.8	-27.8	V
1.440	3.0	55.5	34.6	25.9	2.9	-37.7	0.0	0.0	46.7	25.8	74	54	-27.3	-28.2	H
2.133	3.0	47.6	31.8	27.9	3.6	-36.7	0.0	0.0	42.4	26.6	74	54	-31.6	-27.4	H
2.400	3.0	48.9	30.3	28.0	3.8	-36.3	0.0	0.0	44.5	25.9	74	54	-29.5	-28.1	H
2.493	3.0	47.3	30.5	28.3	3.9	-36.3	0.0	0.0	43.3	26.5	74	54	-30.7	-27.5	H

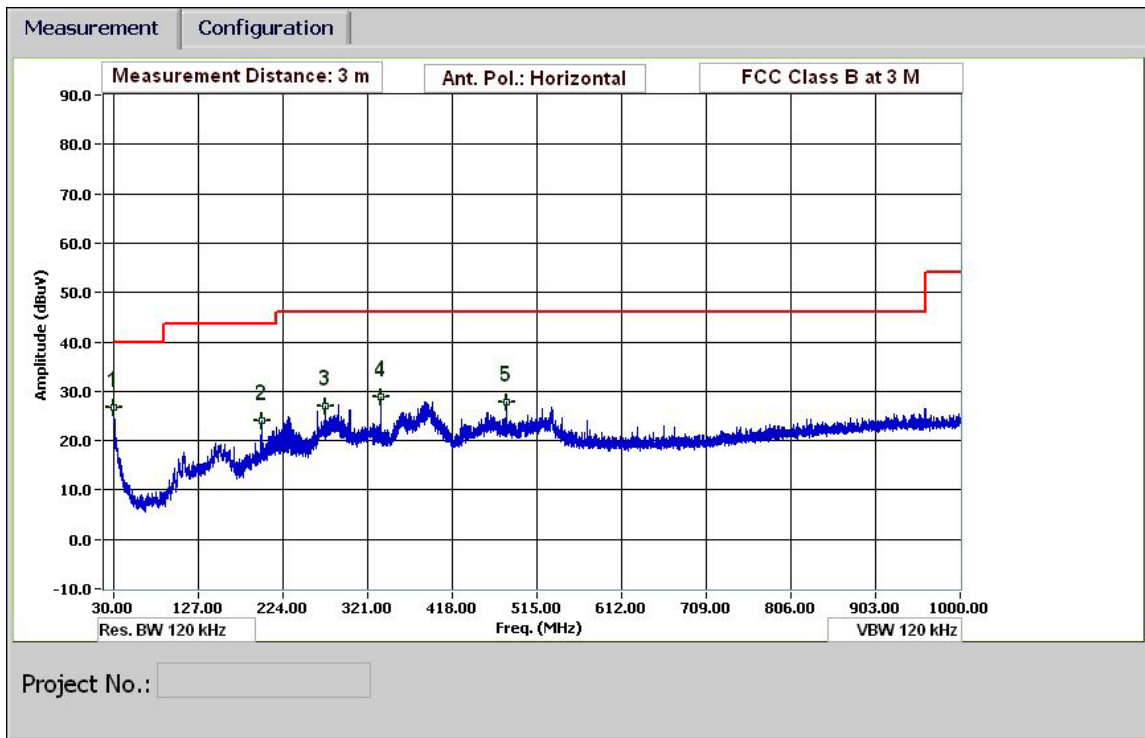
No other emission were detected above system noise floor

7.4. WORST-CASE BELOW 1 GHz

2.4 GHz BAND WITH WNC ANTENNA

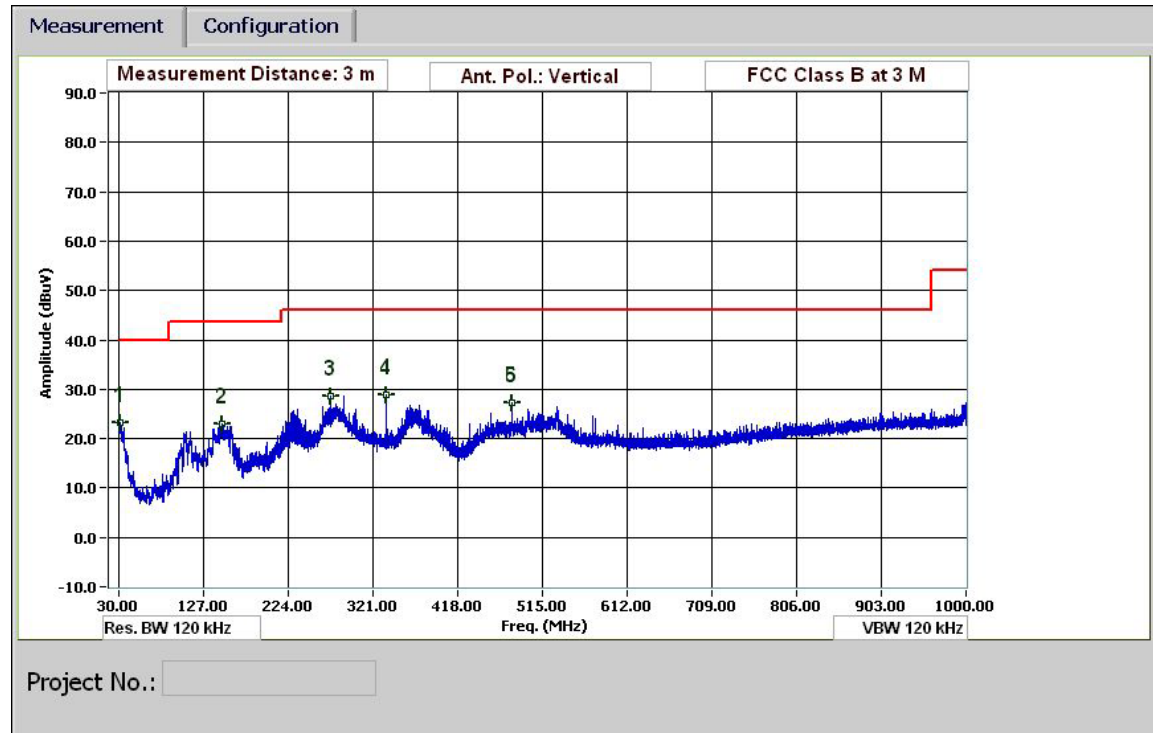
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



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

VERTICAL PLOT



HORIZONTAL & VERTICAL DATA

30-1000MHz Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Vien Tran
Date: 09/17/09
Project #: 09U12795
Company: Intel
EUT Description: Module 802.11abgn 3x3_with WNC Antenna
EUT M/N: 633ANHMH
Test Target: FCC B
Mode Oper: Tx in 2.4 GHz Band_Worst-Case

f	Measurement Frequency	Amp	Preamplifier Gain	Margin	Margin vs. Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters		
Read	Analyzer Reading	Filter	Filter Insert Loss		
AF	Antenna Factor	Corr.	Calculated Field Strength		
CL	Cable Loss	Limit	Field Strength Limit		

f MHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filter dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
Horizontal													
30.000	3.0	34.7	20.0	0.5	28.4	0.0	0.0	26.7	40.0	-13.3	H	EP	
199.807	3.0	38.3	11.9	1.2	27.4	0.0	0.0	24.0	43.5	-19.5	H	EP	
272.050	3.0	40.4	12.5	1.4	27.4	0.0	0.0	27.0	46.0	-19.0	H	EP	
336.013	3.0	40.8	14.0	1.6	27.6	0.0	0.0	28.8	46.0	-17.2	H	EP	
480.019	3.0	37.8	16.5	1.9	28.5	0.0	0.0	27.7	46.0	-18.3	H	EP	
Vertical													
30.960	3.0	31.7	19.5	0.5	28.4	0.0	0.0	23.3	40.0	-16.7	V	EP	
148.445	3.0	36.9	12.7	1.0	27.8	0.0	0.0	22.8	43.5	-20.7	V	EP	
272.050	3.0	42.2	12.5	1.4	27.4	0.0	0.0	28.7	46.0	-17.3	V	EP	
336.013	3.0	40.9	14.0	1.6	27.6	0.0	0.0	28.8	46.0	-17.2	V	EP	
480.019	3.0	37.3	16.5	1.9	28.5	0.0	0.0	27.2	46.0	-18.8	V	EP	
480.019	3.0	37.3	16.5	1.9	28.5	0.0	0.0	27.2	46.0	-18.8	V	EP	

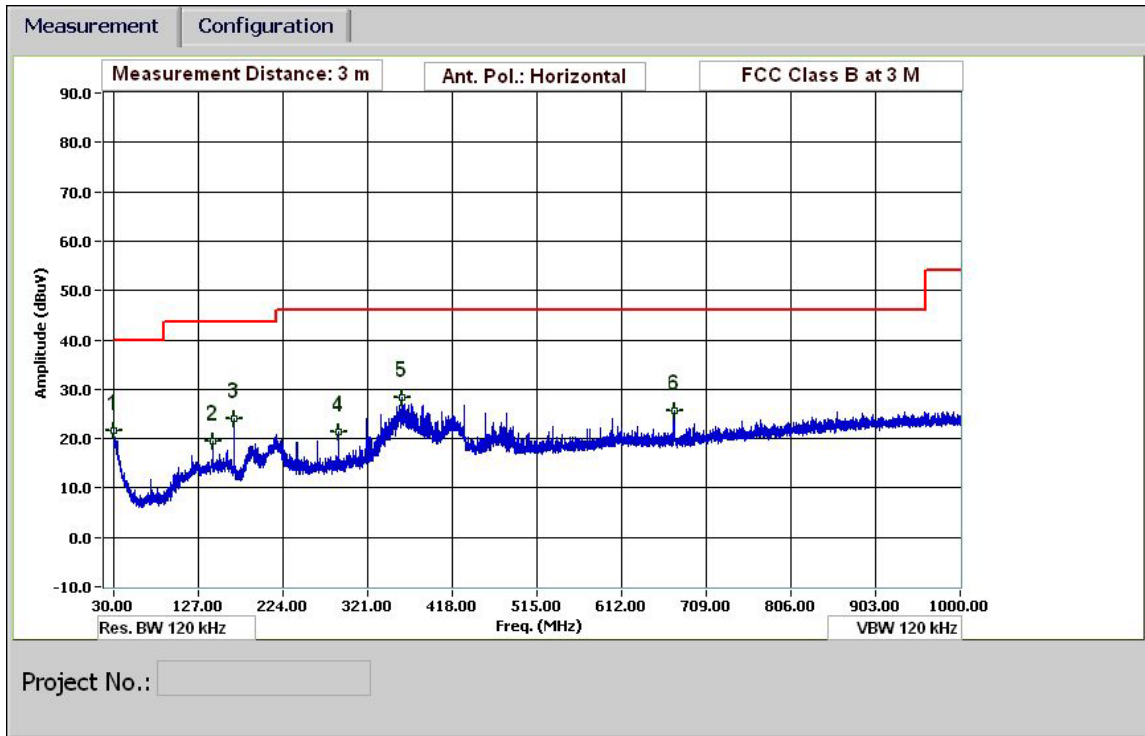
Rev. 1.27.09

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

5.8 GHz BAND WITH ACON ANTENNA

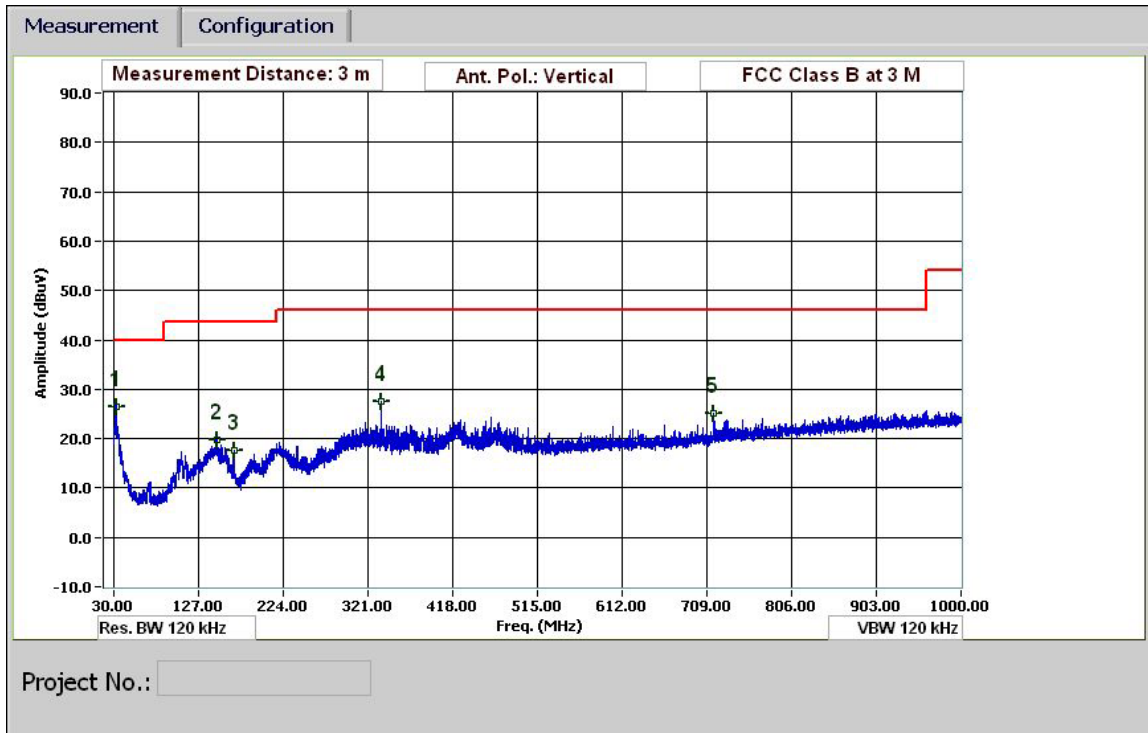
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



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

VERTICAL PLOT



HORIZONTAL & VERTICAL DATA

30-1000MHz Frequency Measurement

Compliance Certification Services, Fremont 5m Chamber

Test Engr: Vien Tran
Date: 09/17/09
Project #: 09U12795
Company: Intel
EUT Description: Module 802.11abgn 3x3_with ACON Antenna
EUT M/N: 633ANHMW
Test Target: FCC B
Mode Oper: Tx in 5 GHz Band_Worst-Case

f Measurement Frequency Amp Preamp Gain Margin
Dist Distance to Antenna D Corr Distance Correct to 3 meters
Read Analyzer Reading Filter Filter Insert Loss
AF Antenna Factor Corr Calculated Field Strength
CL Cable Loss Limit Field Strength Limit

f MHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filter dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Notes
Horizontal											
30.120	3.0	29.7	19.9	0.5	28.4	0.0	0.0	21.7	40.0	-18.3	
144.005	3.0	33.4	12.9	1.0	27.9	0.0	0.0	19.5	43.5	-24.0	
168.006	3.0	38.9	11.6	1.1	27.6	0.0	0.0	23.9	43.5	-19.6	
288.011	3.0	34.1	13.1	1.4	27.4	0.0	0.0	21.3	46.0	-24.7	
360.374	3.0	40.1	14.4	1.6	27.8	0.0	0.0	28.3	46.0	-17.7	
Vertical											
32.400	3.0	35.6	18.8	0.5	28.4	0.0	0.0	26.5	40.0	-13.5	
147.485	3.0	33.9	12.8	1.0	27.8	0.0	0.0	19.9	43.5	-23.6	
168.006	3.0	32.6	11.6	1.1	27.6	0.0	0.0	17.7	43.5	-25.8	
336.013	3.0	39.5	14.0	1.6	27.6	0.0	0.0	27.5	46.0	-18.5	
716.668	3.0	31.9	19.3	2.4	28.5	0.0	0.0	25.1	46.0	-20.9	
672.026	3.0	33.0	18.8	2.3	28.5	0.0	0.0	25.6	46.0	-20.4	

Rev. 1.27.09

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

8. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

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

^{*} Decreases with the logarithm of the frequency.

TEST PROCEDURE

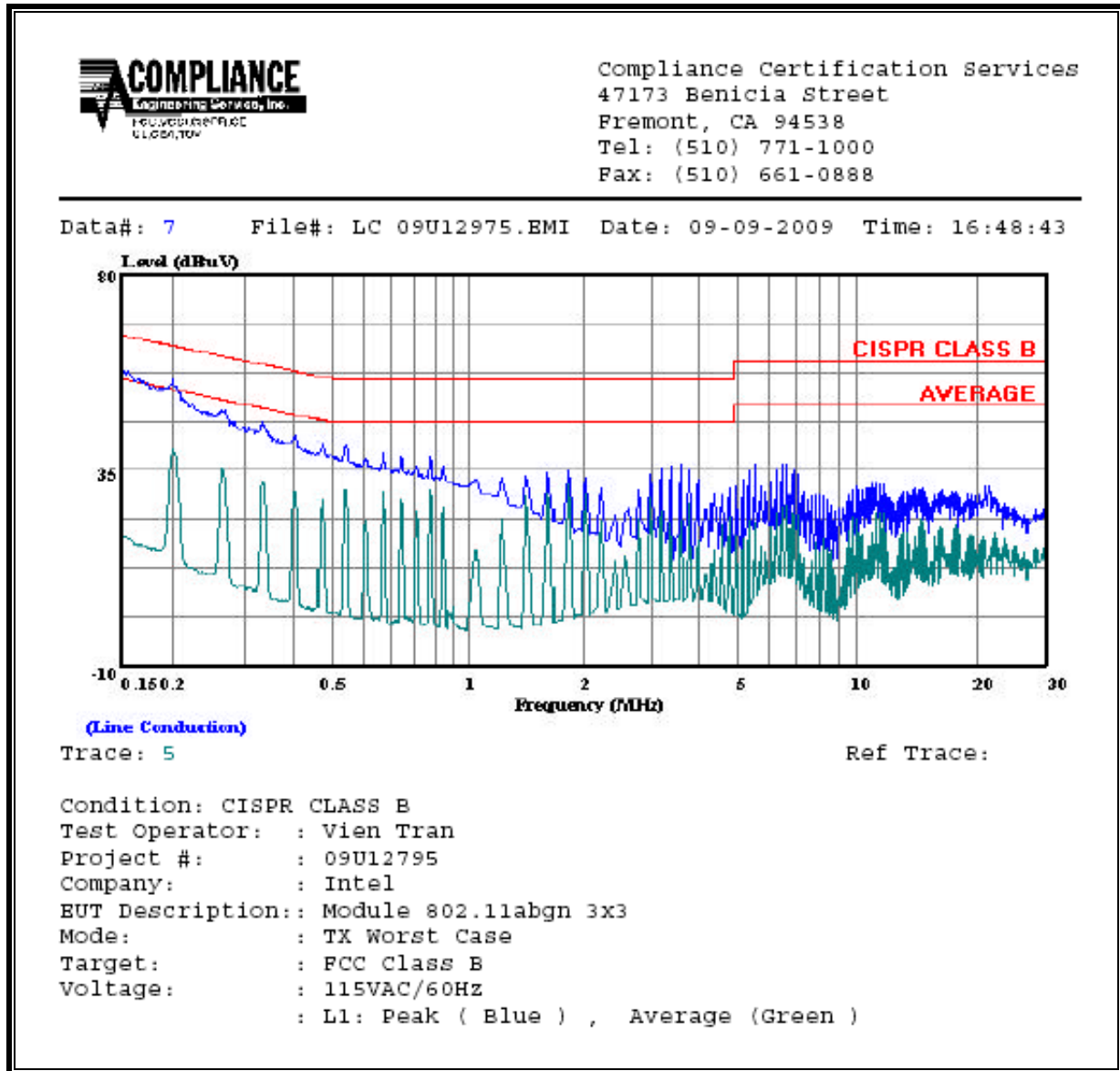
ANSI C63.4

RESULTS

6 WORST EMISSIONS

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	FCC B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.20	54.23	--	39.10	0.00	63.45	53.45	-9.22	-14.35	L1
0.54	40.67	--	30.33	0.00	56.00	46.00	-15.33	-15.67	L1
5.90	36.49	--	33.18	0.00	60.00	50.00	-23.51	-16.82	L1
0.20	53.12	--	35.19	0.00	63.45	53.45	-10.33	-18.26	L2
0.54	38.90	--	26.91	0.00	56.00	46.00	-17.10	-19.09	L2
5.90	44.26	--	34.48	0.00	60.00	50.00	-15.74	-15.52	L2
6 Worst Data									

LINE 1 RESULTS



LINE 2 RESULTS

