



**FCC CFR47 PART 15 SUBPART C
INDUSTRY CANADA RSS-210 ISSUE 8**

CERTIFICATION TEST REPORT

FOR

A tablet (PAD) computer, contains 802.11a/b/g/n transceiver (radio module)

**FCC MODEL NUMBER: TP00045A1
IC MODEL NUMBER: TP00045A1IT**

**FCC ID: PU5-TP00045A1IT
IC: 4182A-TP00045A1IT**

REPORT NUMBER: 12U14545-1, Revision B

ISSUE DATE: NOVEMBER 26, 2012

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	09/21/2012	Initial Issue	T. LEE
A	10/26/2012	Updated IC model number on report	A. Zaffar
B	11/26/2012	Add 2.4 and 5.8GHz Band Chain B band edge and harmonic spurious data	Chin Pang

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	5
2. TEST METHODOLOGY	6
3. FACILITIES AND ACCREDITATION	6
4. CALIBRATION AND UNCERTAINTY	6
4.1. MEASURING INSTRUMENT CALIBRATION	6
4.2. SAMPLE CALCULATION	6
4.3. MEASUREMENT UNCERTAINTY	6
5. EQUIPMENT UNDER TEST	7
5.1. DESCRIPTION OF EUT	7
5.2. MAXIMUM OUTPUT POWER.....	7
5.3. DESCRIPTION OF AVAILABLE ANTENNAS	8
5.4. SOFTWARE AND FIRMWARE.....	9
5.5. WORST-CASE CONFIGURATION AND MODE.....	9
5.6. DESCRIPTION OF TEST SETUP.....	10
6. TEST AND MEASUREMENT EQUIPMENT	12
7. RADIATED TEST RESULTS.....	13
7.1. LIMITS AND PROCEDURE	13
7.2. TRANSMITTER ABOVE 1 GHz	14
7.2.1. TX ABOVE 1 GHz FOR 802.11b 1TX MODE IN THE 2.4 GHz BAND, CHAIN A	14
7.2.2. TX ABOVE 1 GHz FOR 802.11g 1TX CHAIN A IN THE 2.4 GHz BAND, CHAIN A	19
7.2.3. TX ABOVE 1 GHz FOR 802.11n HT20 1TX, CHAIN A IN THE 2.4 GHz BAND, CHAIN A	29
7.2.1. TX ABOVE 1 GHz FOR 802.11n HT40 1TX MODE IN THE 2.4 GHz BAND, CHAIN A	39
7.2.2. TX ABOVE 1 GHz FOR 802.11g, 1TX IN THE 2.4 GHz BAND, CHAIN B.....	49
7.2.3. TX ABOVE 1 GHz FOR 802.11n HT20, 1TX IN THE 2.4 GHz BAND, CHAIN B	53
7.2.4. TX ABOVE 1 GHz FOR 802.11n HT40 1TX IN THE 2.4 GHz BAND, CHAIN B	57
7.2.5. TX ABOVE 1 GHz FOR 802.11n HT20 2TX, IN THE 2.4 GHz BAND, MIMO	61
7.2.6. TX ABOVE 1 GHz FOR 802.11n HT40 2TX MODE IN THE 2.4 GHz BAND, MIMO	71
7.2.7. TX ABOVE 1 GHz FOR 802.11a IN THE 5.8 GHz BAND, CHAIN A	82
7.2.8. TX ABOVE 1 GHz FOR 802.11n HT20 IN THE 5.8 GHz BAND, CHAIN A	83
7.2.9. TX ABOVE 1 GHz FOR 802.11n HT40 IN THE 5.8 GHz BAND, CHAIN A	84
7.2.10. TX ABOVE 1 GHz FOR 802.11n HT20 DUAL CHAINS MODE IN THE 5.8 GHz BAND, MIMO	85
7.2.11. TX ABOVE 1 GHz FOR 802.11n HT40 DUAL CHAINS MODE IN THE 5.8 GHz BAND, MIMO	86

8. WORST-CASE BELOW 1 GHz	87
9. AC POWER LINE CONDUCTED EMISSIONS	90
10. SETUP PHOTOS	94

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: WISTRON CORPORATION
21F., No. 88, Sec.1, Hsintai 5th Rd., Hsichih Dist.
New Taipei City 22181, Taiwan (R.O.C.)

EUT DESCRIPTION: A tablet (PAD) computer, contains 802.11a/b/g/n transceiver
(radio module)

FCC MODEL NUMBER: TP00045A1
IC MODEL NUMBER: TP00045A1IT

SERIAL NUMBER: R9-R1PMH 12/07

DATE TESTED: August 24, 2012 – September 21 and NOVEMBER 18-21, 2012

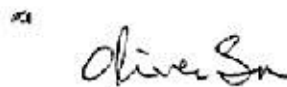
APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-210 Issue 8 Annex 8	Pass
INDUSTRY CANADA RSS-GEN Issue 3	Pass

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:

Tested By:



TIM LEE
STAFF ENGINEER
UL CCS

OLIVER SU
EMC ENGINEER
UL CCS

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2009, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 3, and RSS-210 Issue 8.

3. 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>.

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 Tablet (PAD) computer, contains 802.11a/b/g/n transceiver (radio module)

The radio module (Model: 62205ANSFF) is manufactured by Intel.

5.2. MAXIMUM OUTPUT POWER

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

Frequency (MHz)	Mode	Channel	Output Power (dBm)
2412	802.11b	1	15.60
2437	802.11b	6	15.87
2462	802.11b	11	15.58
2412	802.11g	1	14.00
2417	802.11g	2	16.00
2437	802.11g	6	16.00
2457	802.11g	10	16.80
2462	802.11g	11	14.20
2412	1x Tx 802.11n HT20	1	13.10
2417	1x Tx 802.11n HT20	2	15.97
2437	1x Tx 802.11n HT20	6	16.03
2457	1x Tx 802.11n HT20	10	15.80
2462	1x Tx 802.11n HT20	11	12.70
2412	2x Tx 802.11n HT20	1	11.0 / 11.0
2417	2x Tx 802.11n HT20	2	13.0 / 13.0
2437	2x Tx 802.11n HT20	6	12.8 / 13.0
2457	2x Tx 802.11n HT20	10	13.0 / 13.1
2462	2x Tx 802.11n HT20	11	11.0 / 11.0
2422	1x Tx 802.11n HT40	3	9.20
2427	1x Tx 802.11n HT40	4	10.60
2437	1x Tx 802.11n HT40	6	12.10
2447	1x Tx 802.11n HT40	8	10.50
2452	1x Tx 802.11n HT40	9	9.80
2422	2x Tx 802.11n HT40	3	8.0 / 8.1
2427	2x Tx 802.11n HT40	4	9.56 / 9.30
2447	2x Tx 802.11n HT40	8	9.3 / 9.2
2452	2x Tx 802.11n HT40	9	8.6 / 8.6

5745	802.11a	149	15.80
5785	802.11a	157	15.70
5825	802.11a	165	15.90
5745	1x Tx 802.11n HT20	149	15.70
5785	1x Tx 802.11n HT20	157	15.80
5825	1x Tx 802.11n HT20	165	15.90
5745	2x Tx 802.11n HT20	149	16.30 / 16.30
5785	2x Tx 802.11n HT20	157	16.30 / 16.30
5825	2x Tx 802.11n HT20	165	16.30 / 16.30
5755	1x Tx 802.11n HT40	151	16.50
5795	1x Tx 802.11n HT40	159	16.50
5755	2x Tx 802.11n HT40	151	16.50 / 16.50
5795	2x Tx 802.11n HT40	159	16.60 / 16.60

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

WNC Antenna Assembly Summary:

1A Antenna Part Number	1B Manufacture	1C Antenna Type	Frequency band (MHz)	Peak gain with cable loss (dBi)
Main Antenna (P/N:25.90AFI.001)	Wistron Neweb Corporation	PIFA	2.4GHz band	-1.88
			5 GHz band	-2.33
Auxiliary antenna (P/N:25.90AFJ.001)	Wistron Neweb Corporation	PIFA	2.4GHz band	0.58
			5 GHz band	0.20

WhaYU Antenna Assembly Summary:

1A Antenna Part Number	1B Manufacture	1C Antenna Type	Frequency band (MHz)	Peak gain with cable loss (dBi)
Main Antenna (P/N:25.90AFI.011)	WHAYU Industrial Co.,Ltd	PIFA	2.4GHz band	-1.95
			5 GHz band	-2.61
Auxiliary antenna (P/N:25.90AFJ.011)	WHAYU Industrial Co.,Ltd	PIFA	2.4GHz band	0.38
			5 GHz band	0.08

5.4. SOFTWARE AND FIRMWARE

The test utility software used during testing was DRTU, rev. 1.5.5-0427.

5.5. WORST-CASE CONFIGURATION AND MODE

Radiated emission and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

For 2.4 GHz - The fundamental of the EUT was investigated in three orthogonal orientations X, Y, Z, it was determined that X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

For 5.8 GHz - The fundamental of the EUT was investigated in three orthogonal orientations X, Y, Z, it was determined that Z orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Z orientation.

Only the radiated tests were conducted. Conducted test data were leveraged from the original report Sporton International, Report number FR&CR1D1211AB.

The entire radiated suite of testing was conducted on Chain A and MIMO. Preliminary testing on Harmonic and Spurious indicates Chain A testing is representative for Chain B. Bandedge testing was also conducted on Chain B on worst case channels and modes.

Worst-case measured data rates were:

802.11b mode: 1 Mbps
802.11g mode: 6 Mbps
802.11a mode: 6 Mbps
802.11n HT20mode: MCS0
802.11n HT40mode: MCS0

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC-DC Adapter	LENOVO	ADP-65FD A	69PW26W002V	DoC

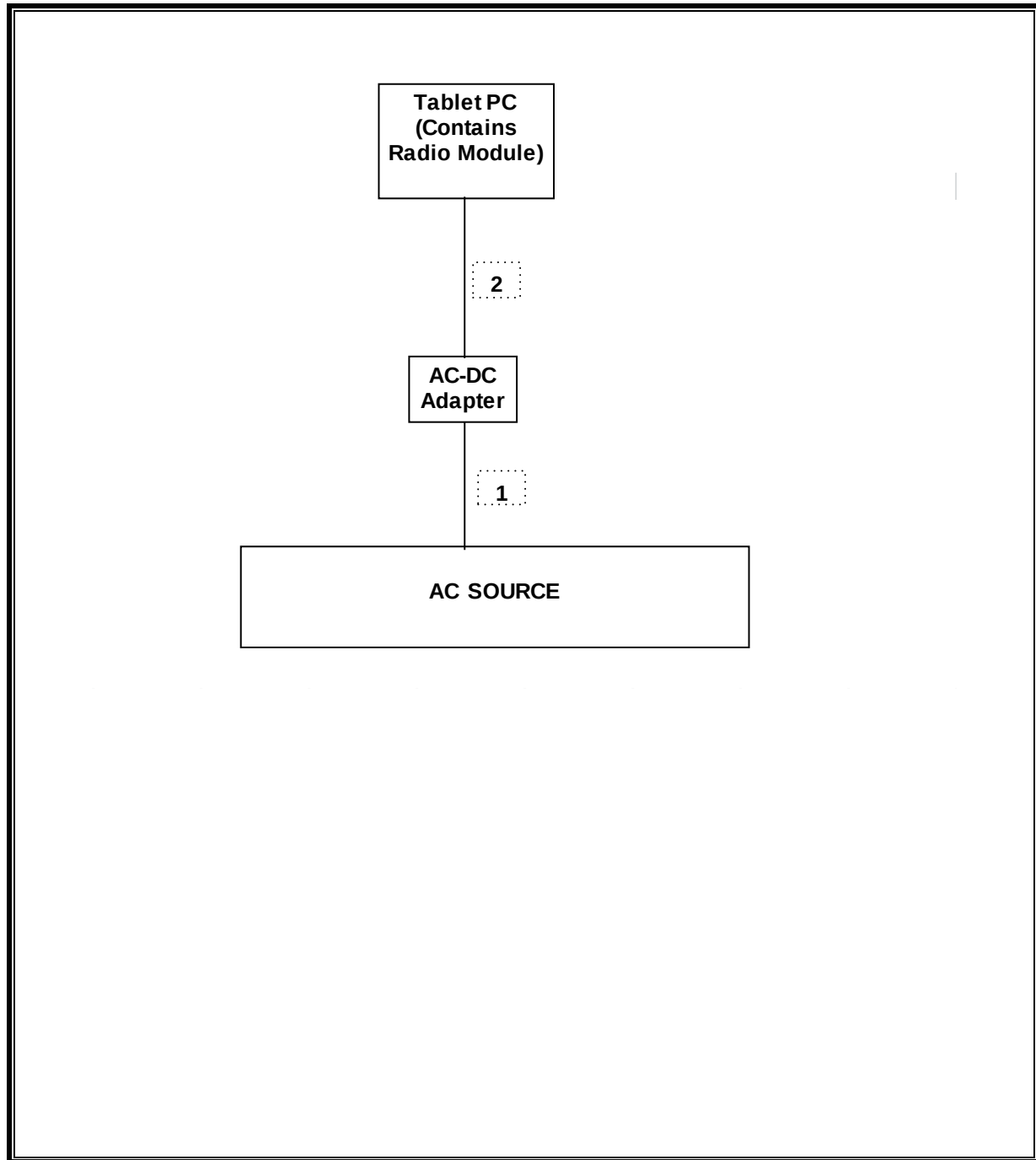
I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	US	Un-shielded	1.8	
2	DC	1	DC	Un-shielded	1.8	

TEST SETUP

Test software exercised the radio card during the tests.

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

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

Test Equipment List					
Description	Manufacturer	Model	Asset	Cal Date	Cal Due
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	C01171	01/26/12	01/26/13
Antenna, Horn, 18 GHz	EMCO	3115	C00872	09/20/11	09/20/12
Antenna, Horn, 26.5 GHz	ARA	SWH-28	C01015	04/23/12	04/23/13
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00558	11/11/11	11/11/12
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C00749	11/11/11	11/11/12
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	C01016	08/14/12	08/14/13
Antenna, Horn, 18 GHz	EMCO	3115	C00945	10/06/11	10/06/12
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00885	11/11/11	11/11/12
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01052	11/11/11	11/11/12
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	C01011	03/23/12	03/23/13
Antenna, Horn, 18 GHz	EMCO	3115	C00783	10/25/12	10/25/13
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00580	12/30/11	12/01/12
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	10/22/12	10/22/13
Antenna, Horn, 40 GHz	ARA	MWH-2640/B	C00981	06/14/11	06/14/13
Preamplifier, 40 GHz	Miteq	NSP4000-SP2	C00990	08/02/11	08/02/13
Power Meter	Agilent / HP	437B	s/n 3125U	07/25/12	07/25/13
Average Power Sensor	Agilent / HP	8481A	s/n 1926A	07/26/12	07/26/13
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01179	02/16/12	02/16/13
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01178	08/18/12	08/18/13
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01069	08/18/12	08/18/13

Note: Horns C00872 and C00C00945 were used before its cal due date. Amplifiers CC00558, C00749, C00885, and C01052 were used before its cal due date.

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 (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, 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.

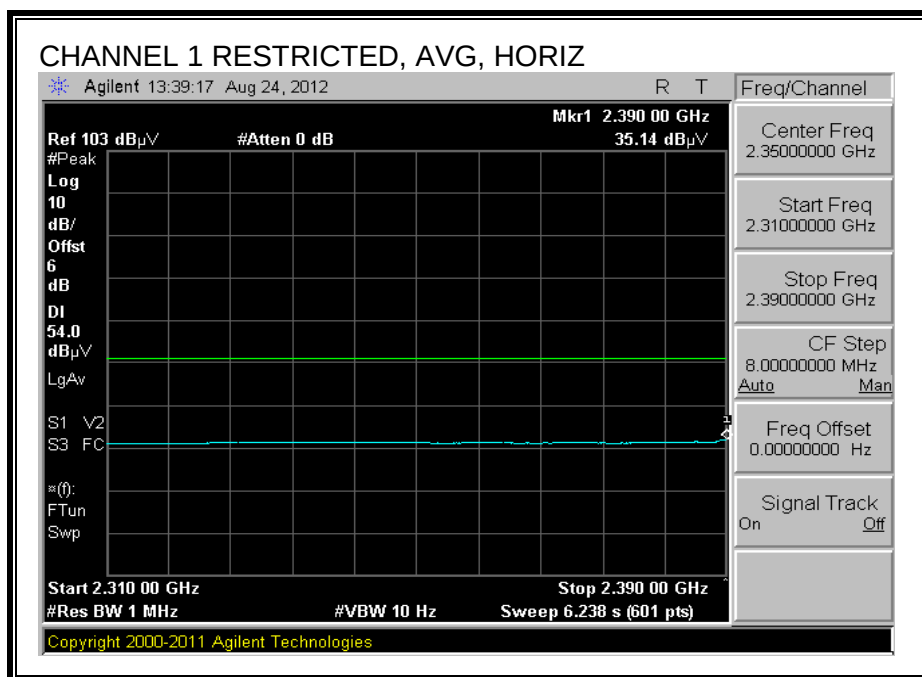
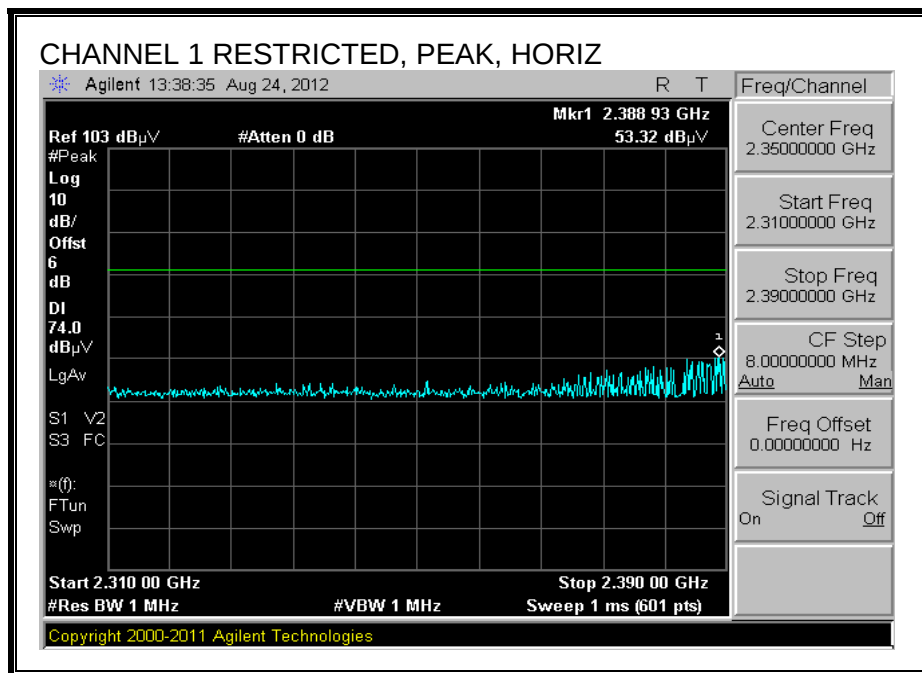
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

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.

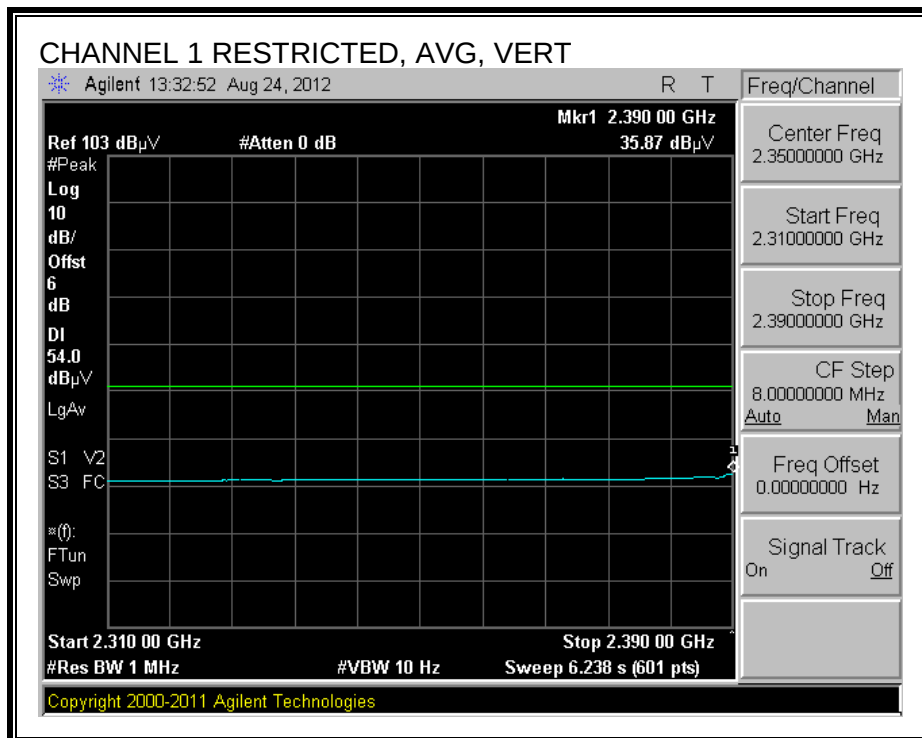
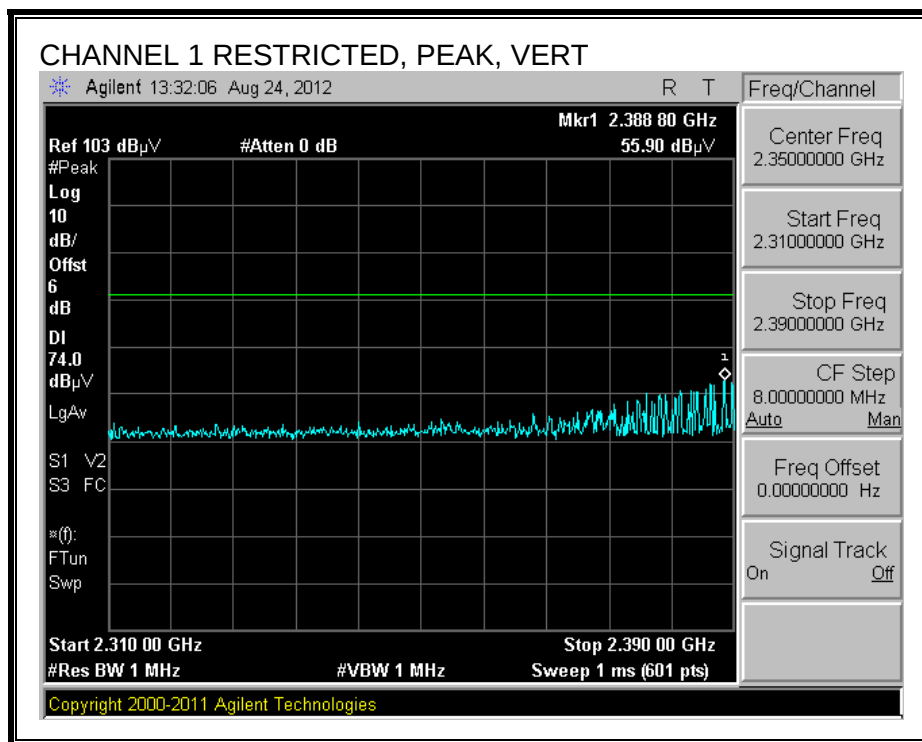
7.2. TRANSMITTER ABOVE 1 GHz

7.2.1. TX ABOVE 1 GHz FOR 802.11b 1TX MODE IN THE 2.4 GHz BAND, CHAIN A

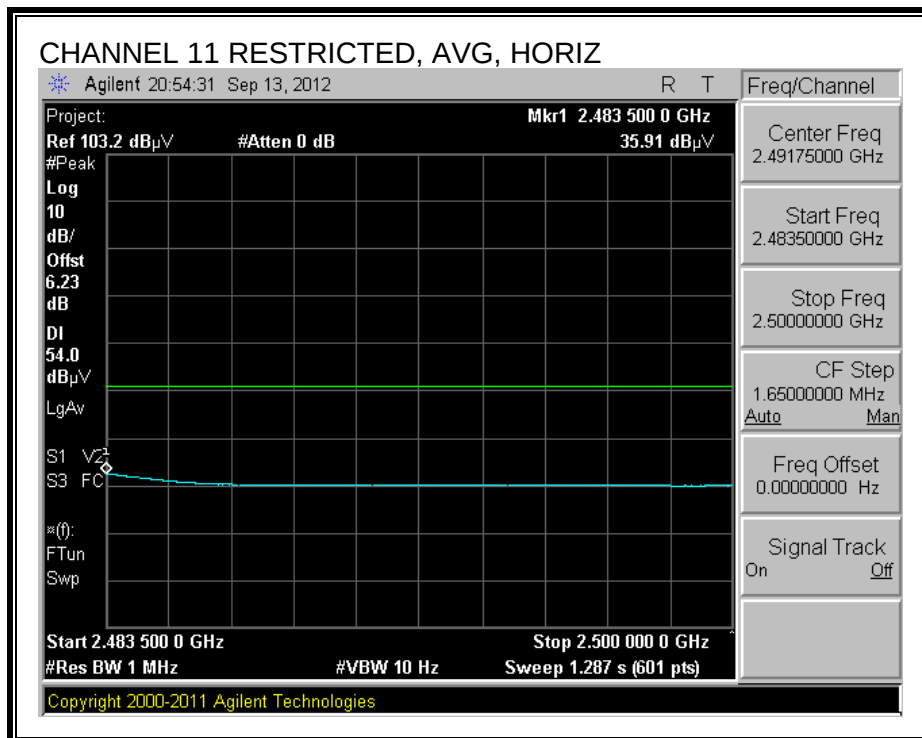
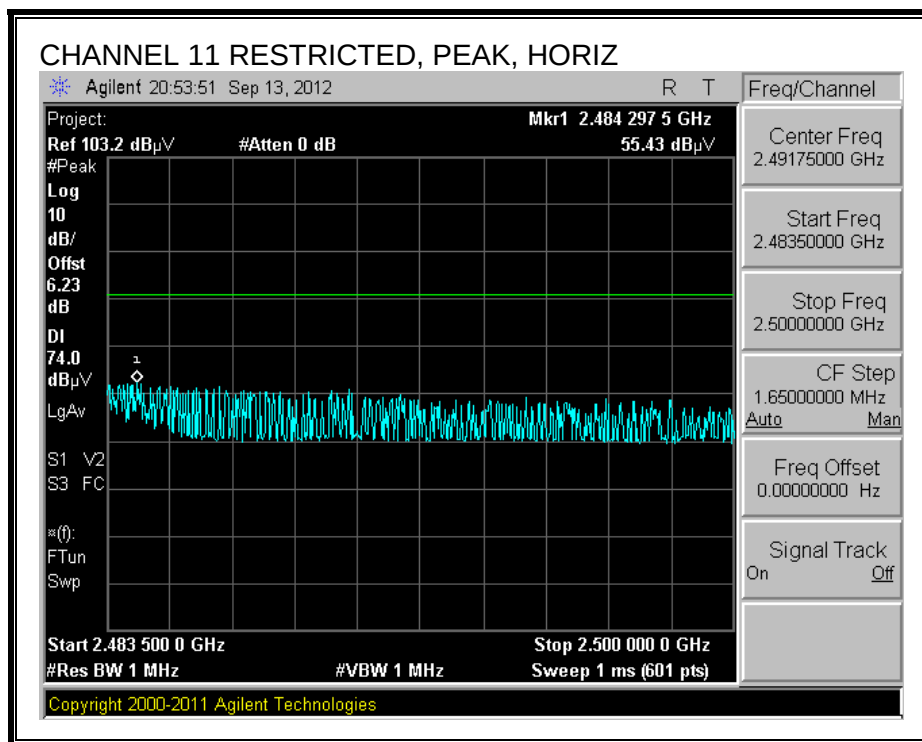
RESTRICTED BANDEDGE (CHANNEL 1, HORIZONTAL)



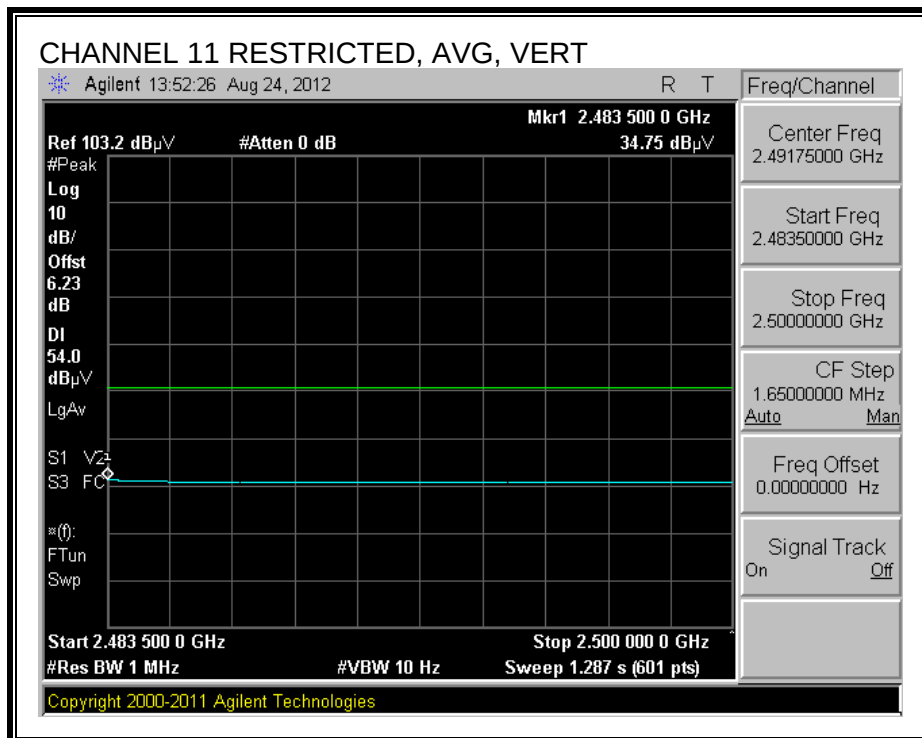
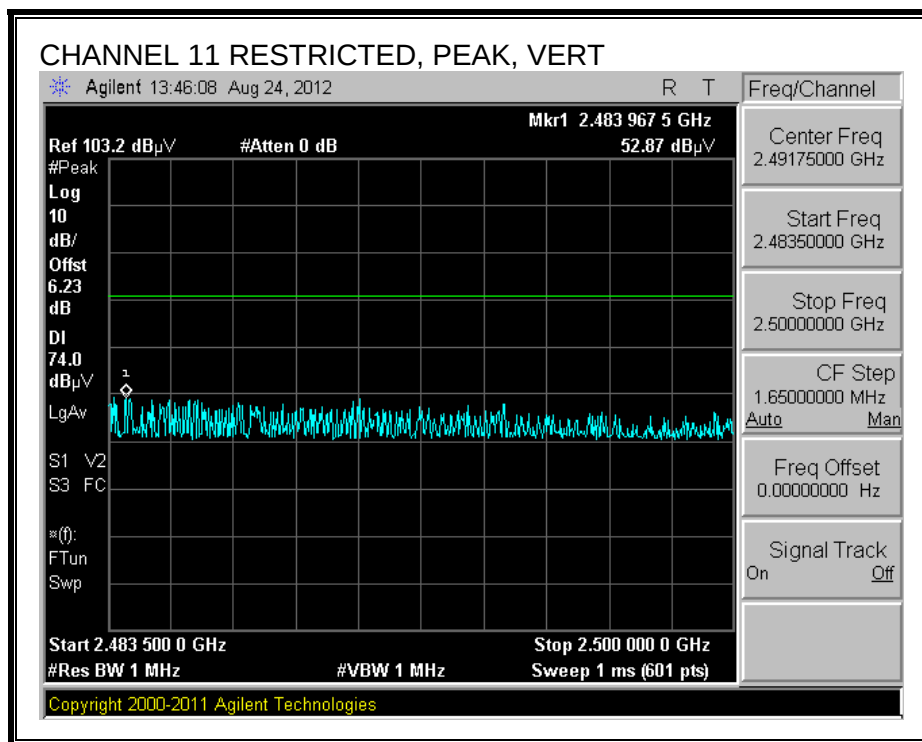
RESTRICTED BANDEDGE (CHANNEL 1, VERTICAL)



RESTRICTED BANDEDGE (11 CHANNEL, HORIZONTAL)



RESTRICTED BANDEDGE (CHANNEL 11, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber

Test Engr: Oliver Su
Date: 08/24/12
Project #: 12U15545
Company: Wistron
Test Target: FCC 15.247
Mode Oper: 11b Mode, Tx continuously, EUT stand-alone

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	

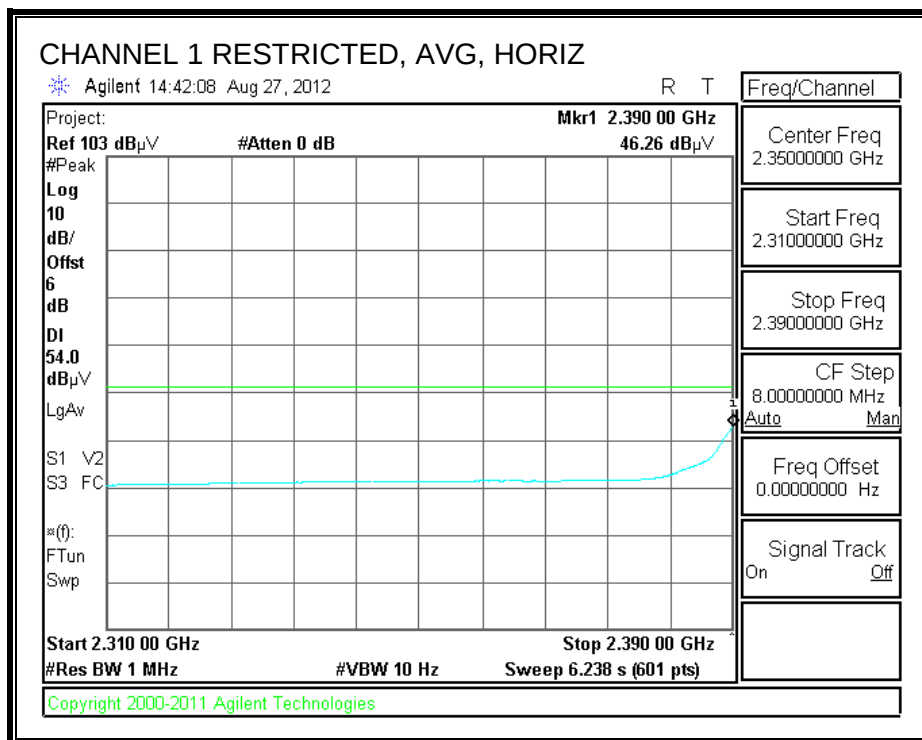
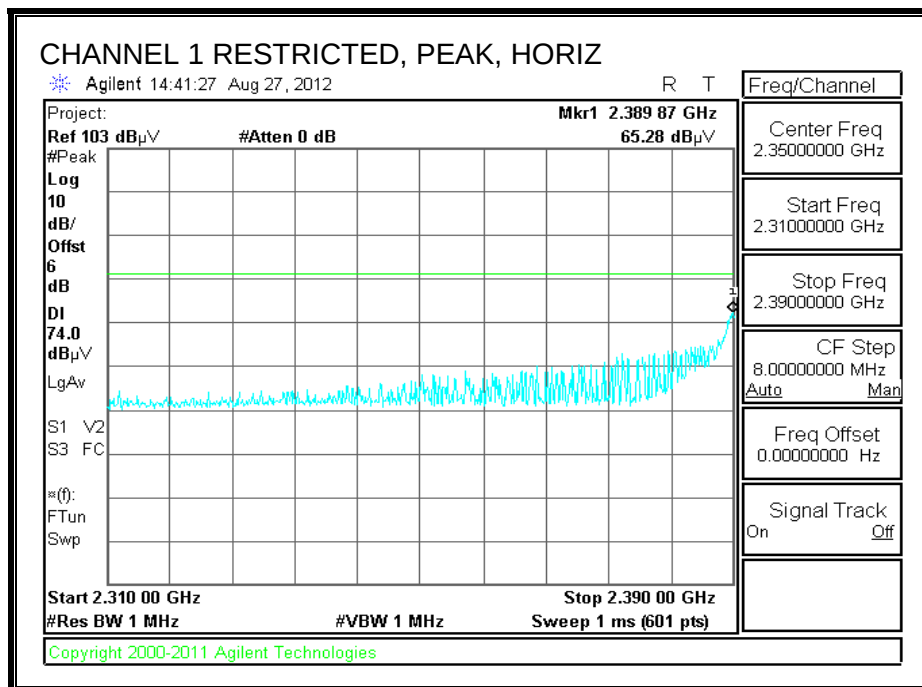
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Ftr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
Ch 11 (2462MHz)															
4.924	3.0	37.7	33.5	6.3	-35.5	0.0	0.0	42.1	74.0	-31.9	V	P	100.0	238.1	
4.924	3.0	29.1	33.5	6.3	-35.5	0.0	0.0	33.5	54.0	-20.5	V	A	100.0	238.1	
4.924	3.0	37.5	33.5	6.3	-35.5	0.0	0.0	41.9	74.0	-32.1	H	P	100.7	229.9	
4.924	3.0	24.8	33.5	6.3	-35.5	0.0	0.0	29.2	54.0	-24.8	H	A	100.7	229.9	
Ch 1 (2412MHz)															
4.824	3.0	37.1	33.4	6.3	-35.5	0.0	0.0	41.3	74.0	-32.7	H	P	158.4	341.5	
4.824	3.0	25.0	33.4	6.3	-35.5	0.0	0.0	29.2	54.0	-24.8	H	A	158.4	341.5	
4.824	3.0	37.0	33.4	6.3	-35.5	0.0	0.0	41.2	74.0	-32.8	V	P	101.4	143.1	
4.824	3.0	28.1	33.4	6.3	-35.5	0.0	0.0	32.3	54.0	-21.7	V	A	101.4	143.1	
Ch 6 (2437MHz)															
4.874	3.0	36.8	33.5	6.3	-35.5	0.0	0.0	41.1	74.0	-32.9	H	P	111.8	75.8	
4.874	3.0	24.3	33.5	6.3	-35.5	0.0	0.0	28.6	54.0	-25.4	H	A	111.8	75.8	
4.874	3.0	35.1	39.3	11.1	-35.3	0.0	0.0	50.2	74.0	-23.8	V	P	194.5	162.1	
4.874	3.0	22.4	39.3	11.1	-35.3	0.0	0.0	37.5	54.0	-16.5	V	A	194.5	162.1	

Rev. 4.1.2.7

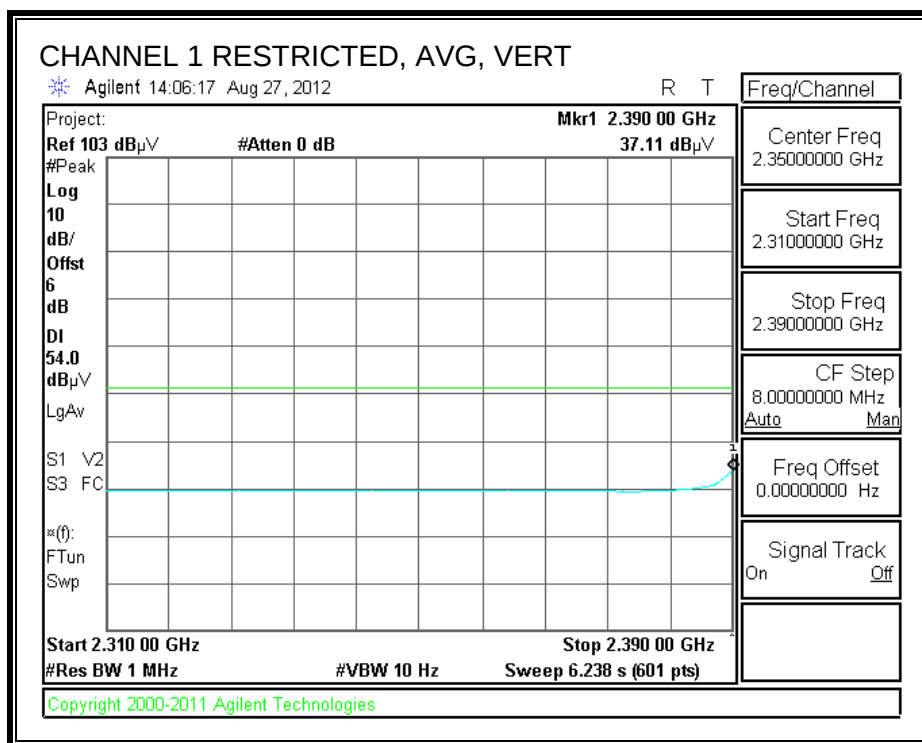
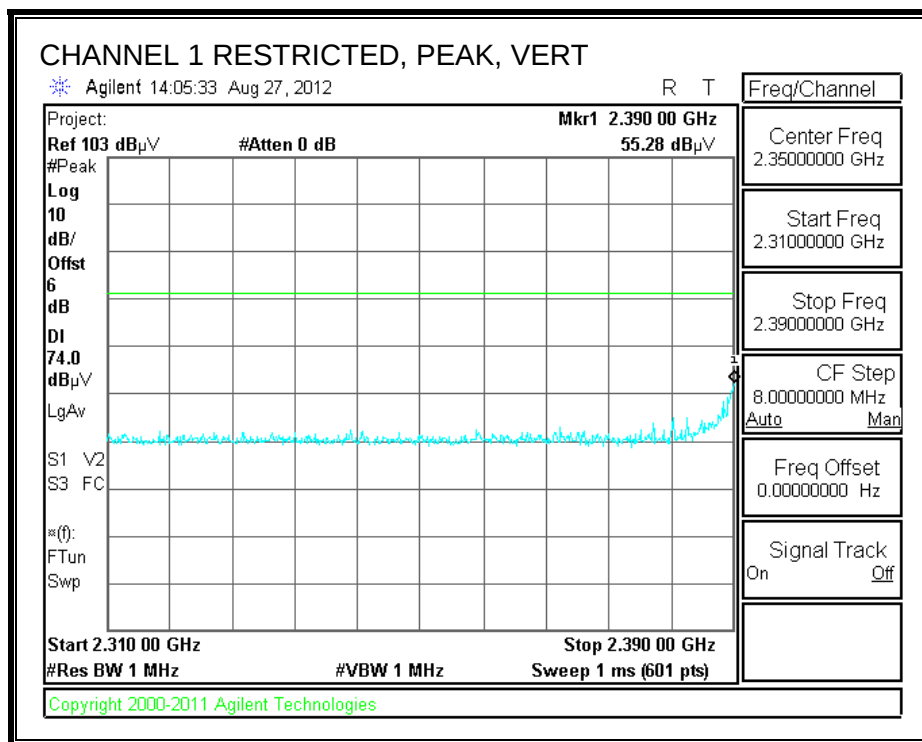
Note: No other emissions were detected above the system noise floor.

7.2.2. TX ABOVE 1 GHz FOR 802.11g 1TX CHAIN A IN THE 2.4 GHz BAND, CHAIN A

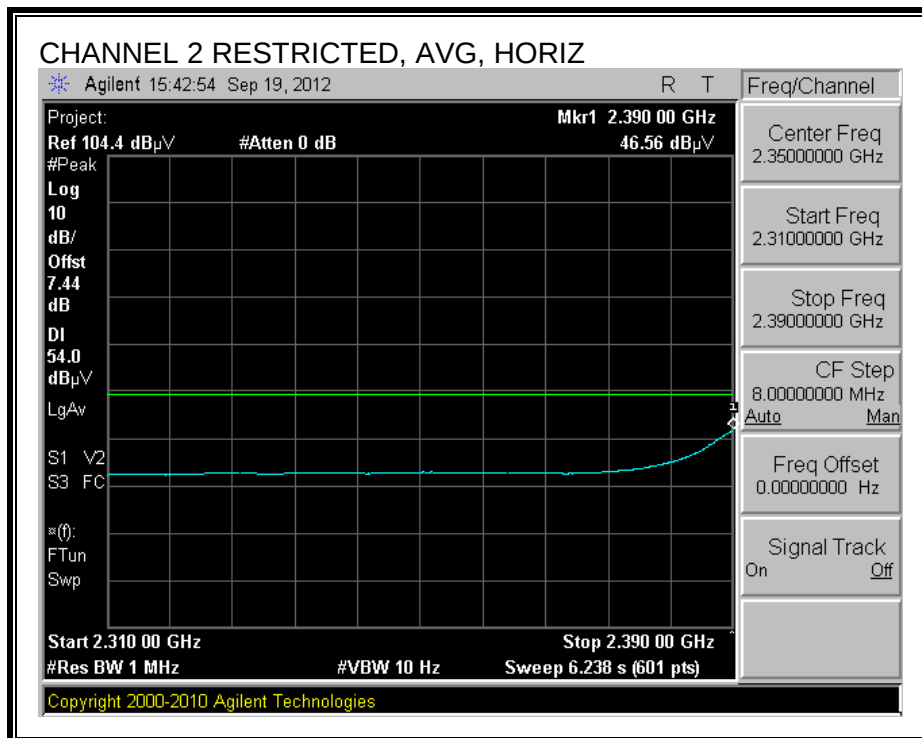
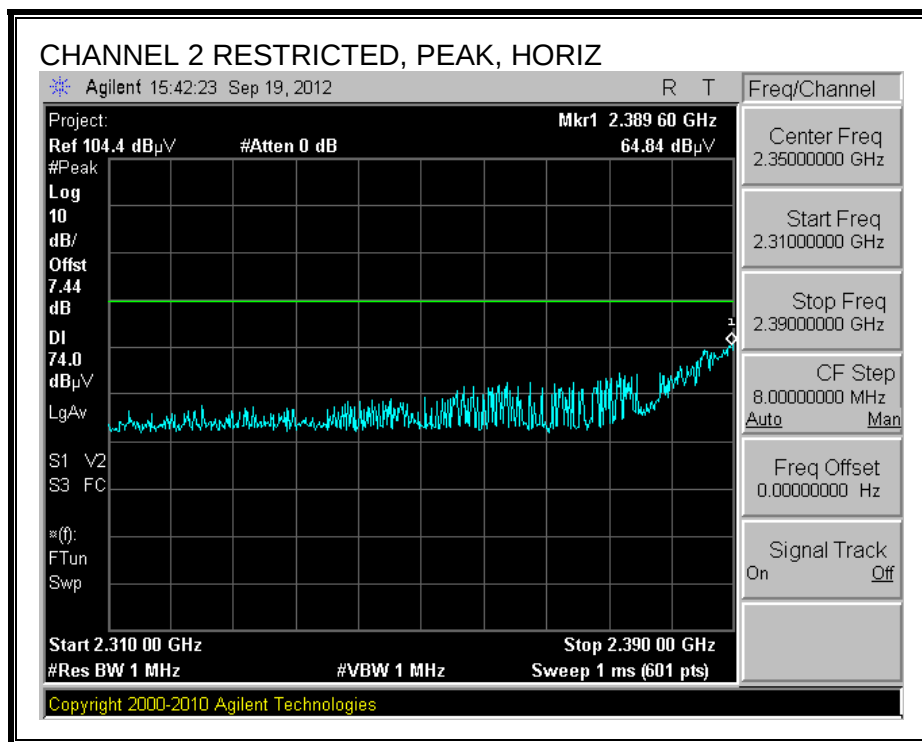
RESTRICTED BANDEDGE (CHANNEL 1, HORIZONTAL)



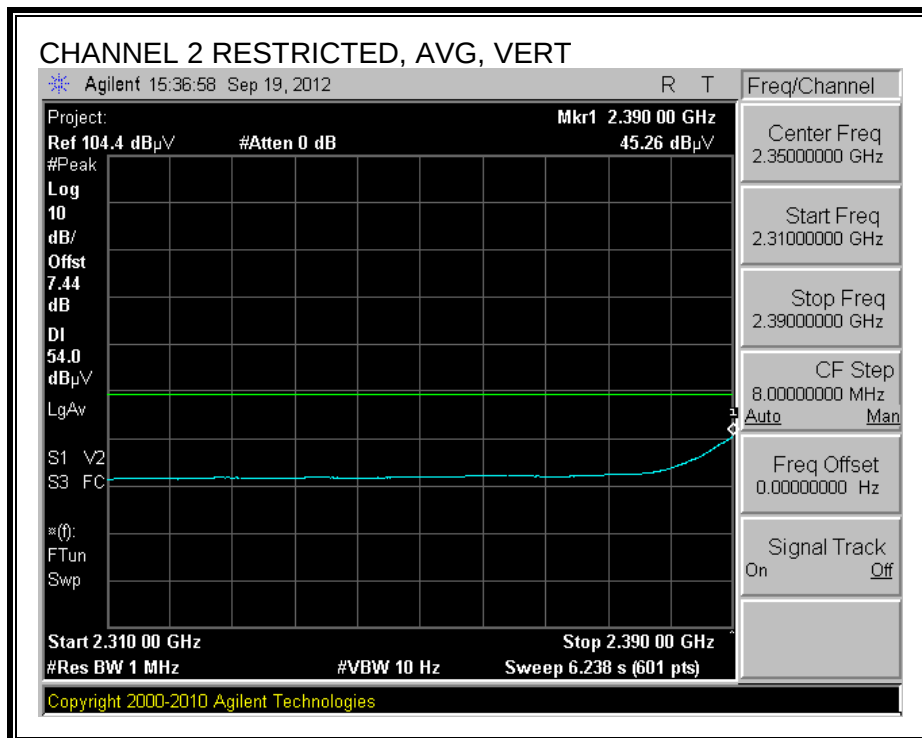
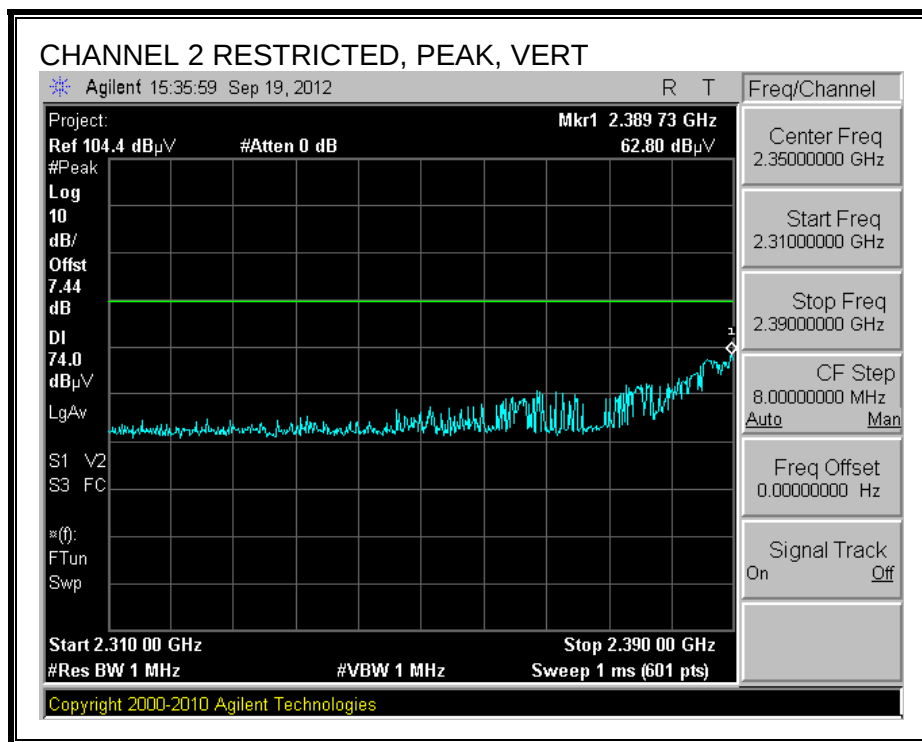
RESTRICTED BANDEDGE (CHANNEL 1, VERTICAL)



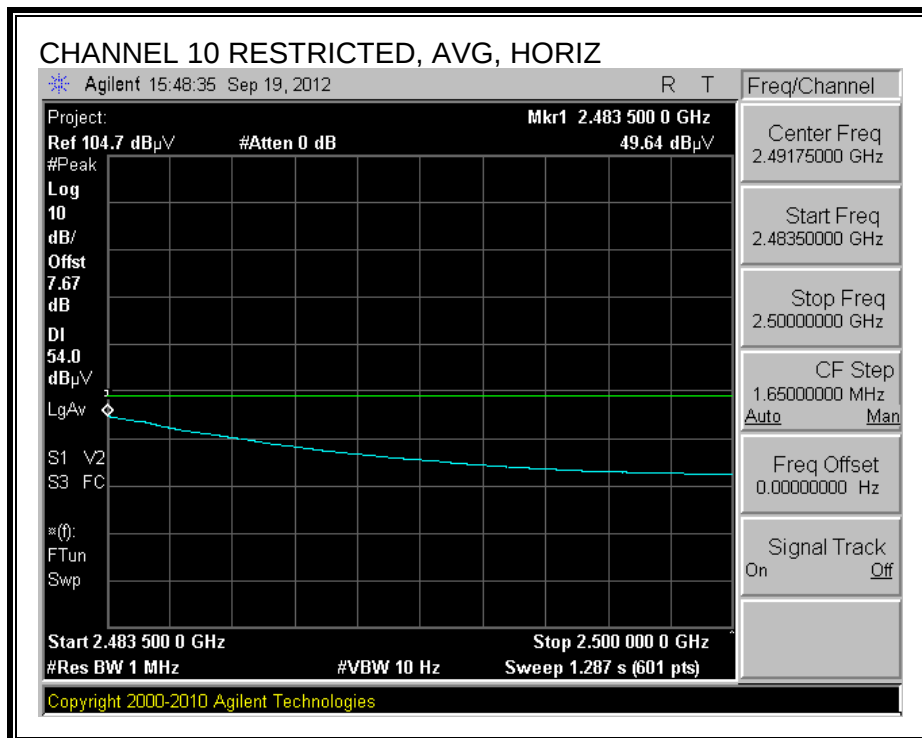
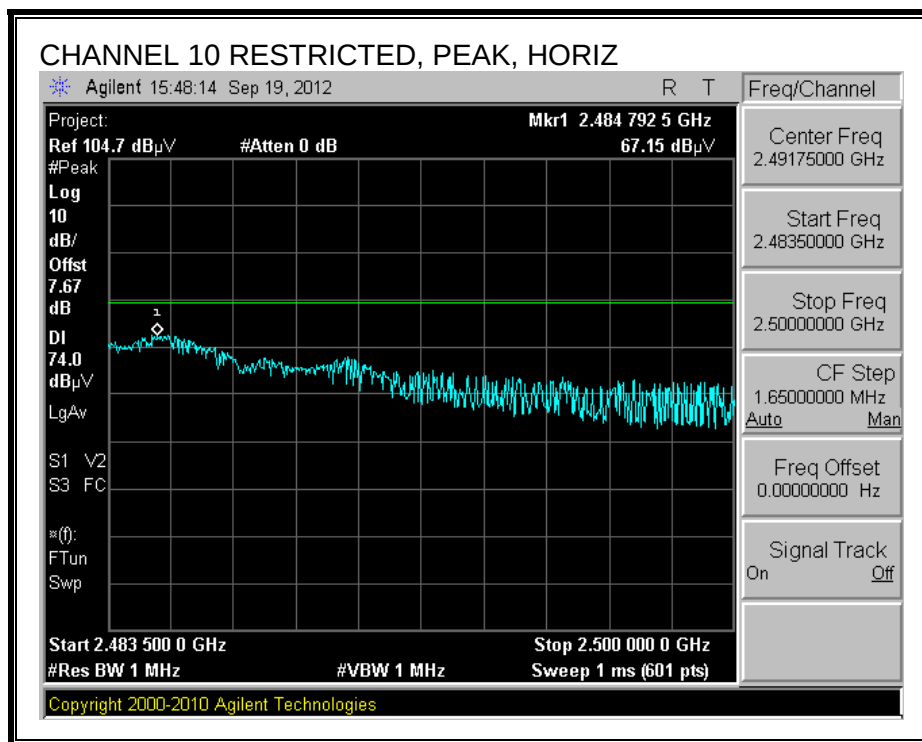
RESTRICTED BANDEDGE (CHANNEL 2, HORIZONTAL)



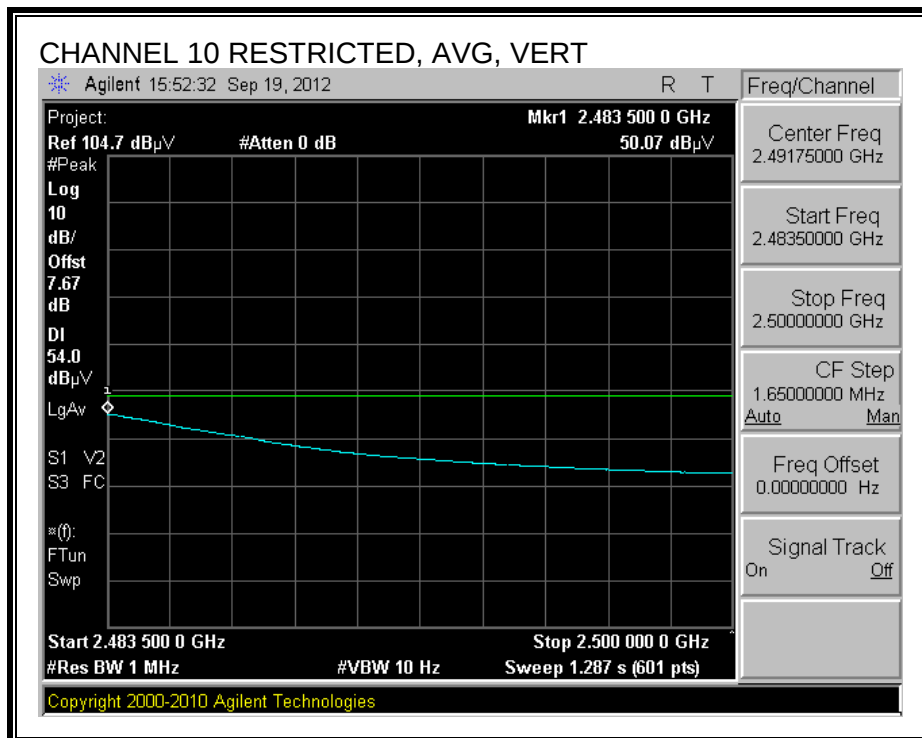
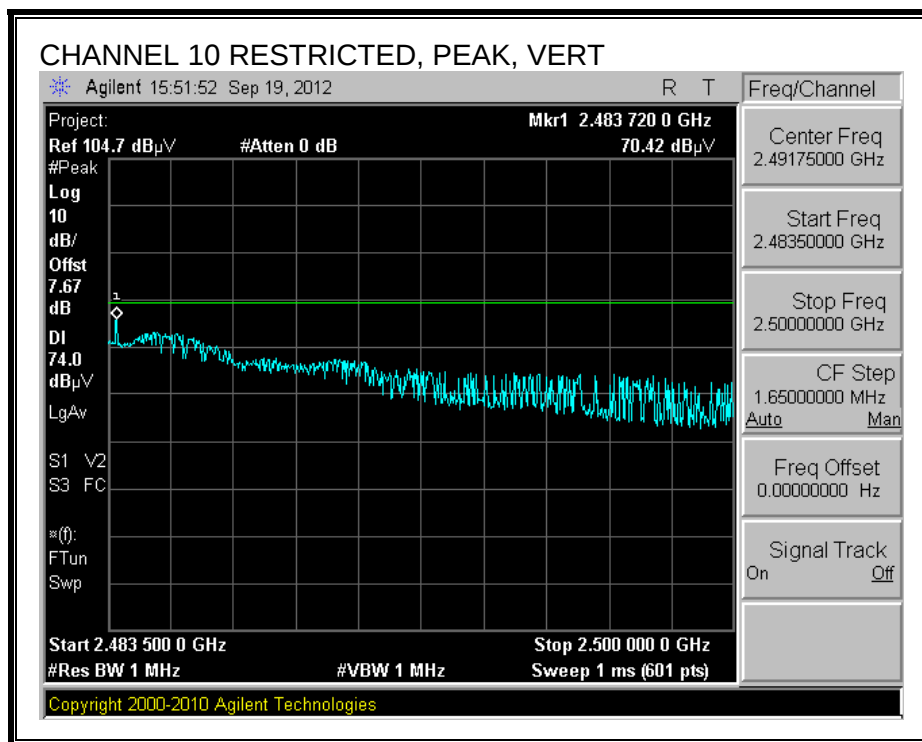
RESTRICTED BANDEDGE (CHANNEL 2, VERTICAL)



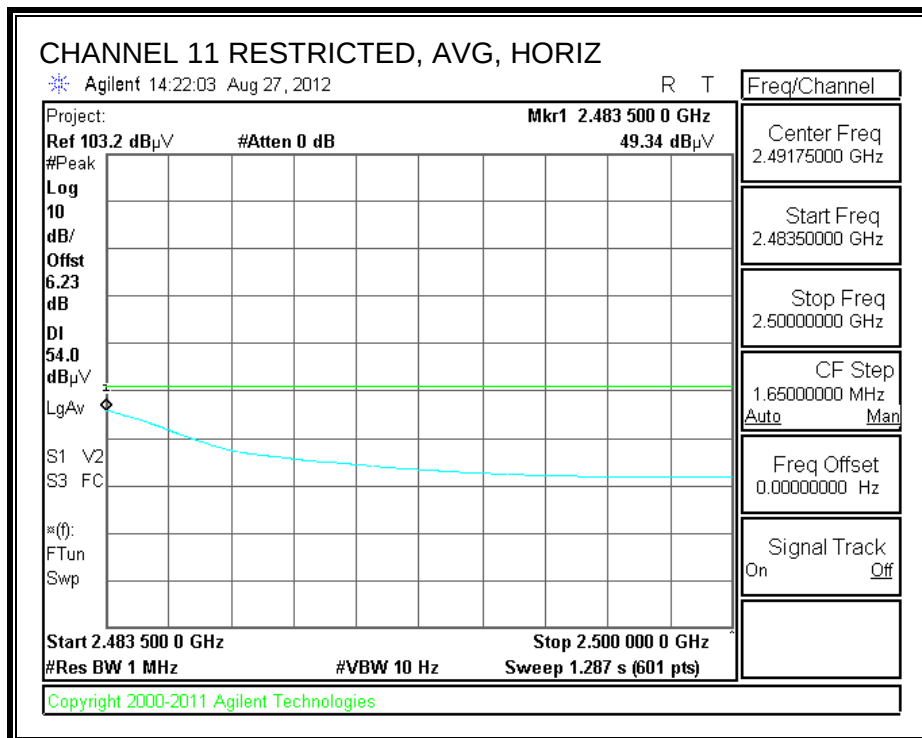
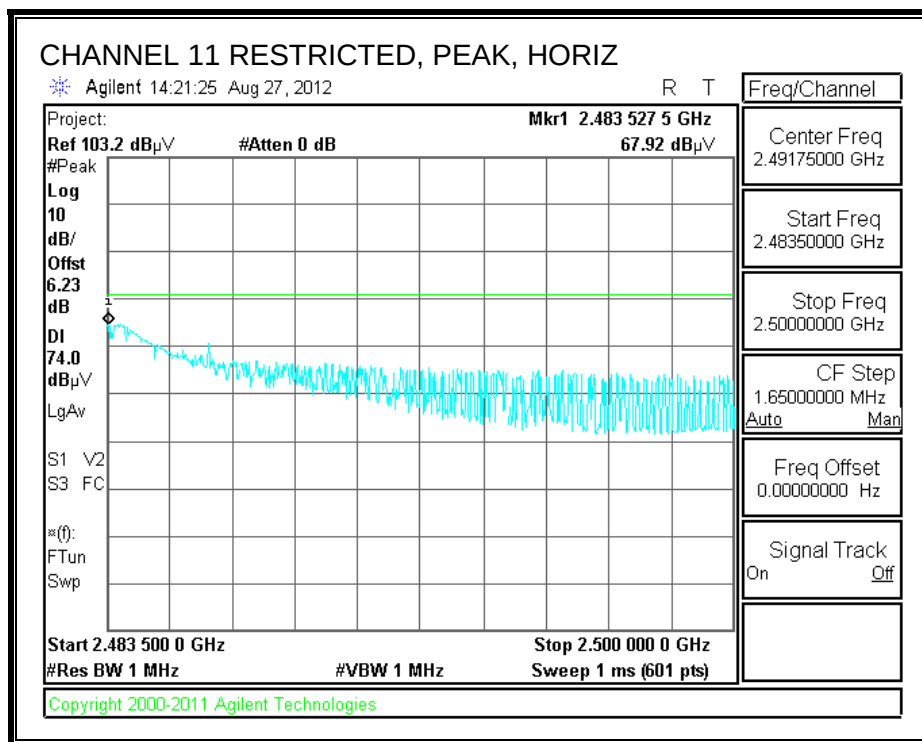
RESTRICTED BANDEDGE (CHANNEL 10, HORIZONTAL)



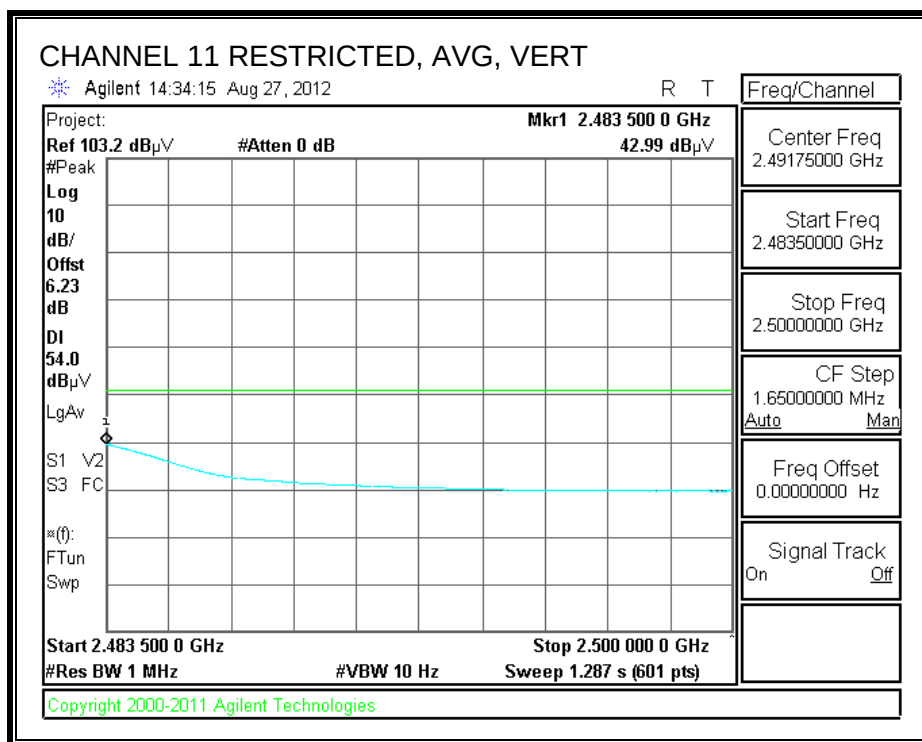
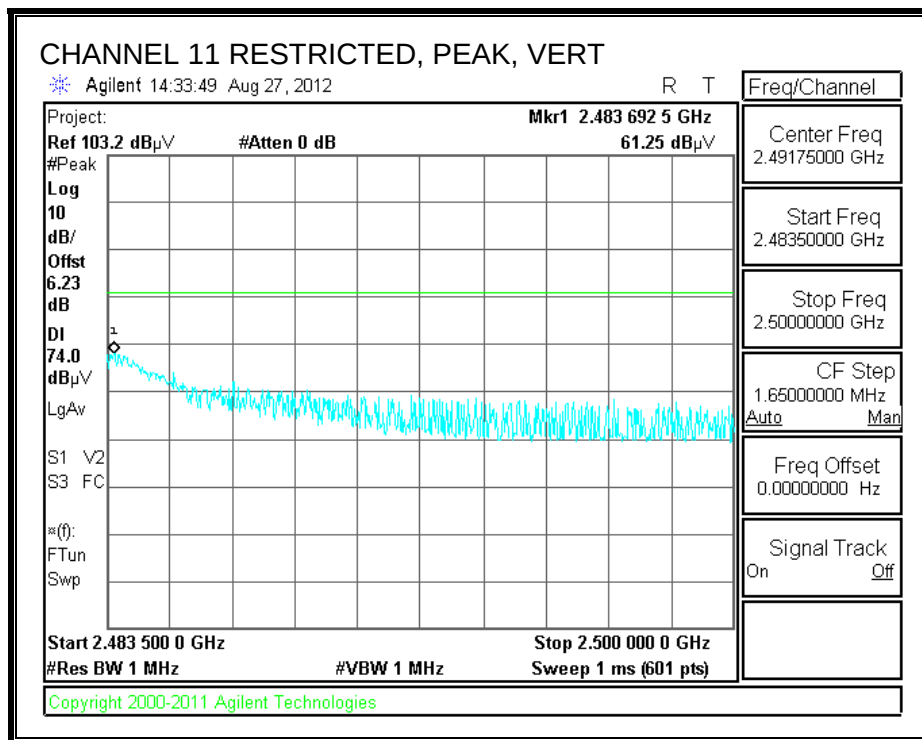
RESTRICTED BANDEDGE (CHANNEL 10, VERTICAL)



RESTRICTED BANDEDGE (CHANNEL 11, HORIZONTAL)



RESTRICTED BANDEDGE (CHANNEL 11, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber

Test Engr: Roy, Tony
Date: 08/27/12
Project #: 12U15545
Company: Wistron
Test Target: FCC 15.247
Mode Oper: 11g, Tx Continuously, EUT stand-alone

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	Ftr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
Ch 1 (2412MHz)															
4.824	3.0	36.2	33.4	6.3	-35.5	0.0	0.0	40.4	74.0	-33.6	V	P	199.8	260.5	
4.824	3.0	24.0	33.4	6.3	-35.5	0.0	0.0	28.2	54.0	-25.8	V	A	199.8	260.5	
4.824	3.0	36.3	33.4	6.3	-35.5	0.0	0.0	40.5	74.0	-33.5	H	P	129.8	306.6	
4.824	3.0	24.1	33.4	6.3	-35.5	0.0	0.0	28.3	54.0	-25.7	H	A	129.8	306.6	
Ch 6 (2437MHz)															
4.874	3.0	36.0	33.5	6.3	-35.5	0.0	0.0	40.3	74.0	-33.7	H	P	110.7	193.5	
4.874	3.0	23.8	33.5	6.3	-35.5	0.0	0.0	28.1	54.0	-25.9	H	A	110.7	193.5	
4.874	3.0	37.7	33.5	6.3	-35.5	0.0	0.0	42.0	74.0	-32.0	V	P	100.4	59.8	
4.874	3.0	25.8	33.5	6.3	-35.5	0.0	0.0	30.1	54.0	-23.9	V	A	100.4	59.8	
Ch 11 (2462MHz)															
4.924	3.0	36.5	33.5	6.3	-35.5	0.0	0.0	40.8	74.0	-33.2	V	P	127.0	100.0	
4.924	3.0	24.1	33.5	6.3	-35.5	0.0	0.0	28.5	54.0	-25.5	V	A	127.0	100.0	
4.924	3.0	37.7	33.5	6.3	-35.5	0.0	0.0	42.1	74.0	-31.9	H	P	145.6	189.8	
4.924	3.0	24.0	33.5	6.3	-35.5	0.0	0.0	28.4	54.0	-25.6	H	A	145.6	189.8	

Rev. 4.1.2.7

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

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Oliver Su
Date: 09/20/12
Project #: 12U14545
Company: Wistron
Test Target: FCC 15.247
Mode Oper: 11g Tx continuously, EUT stand-alone

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	

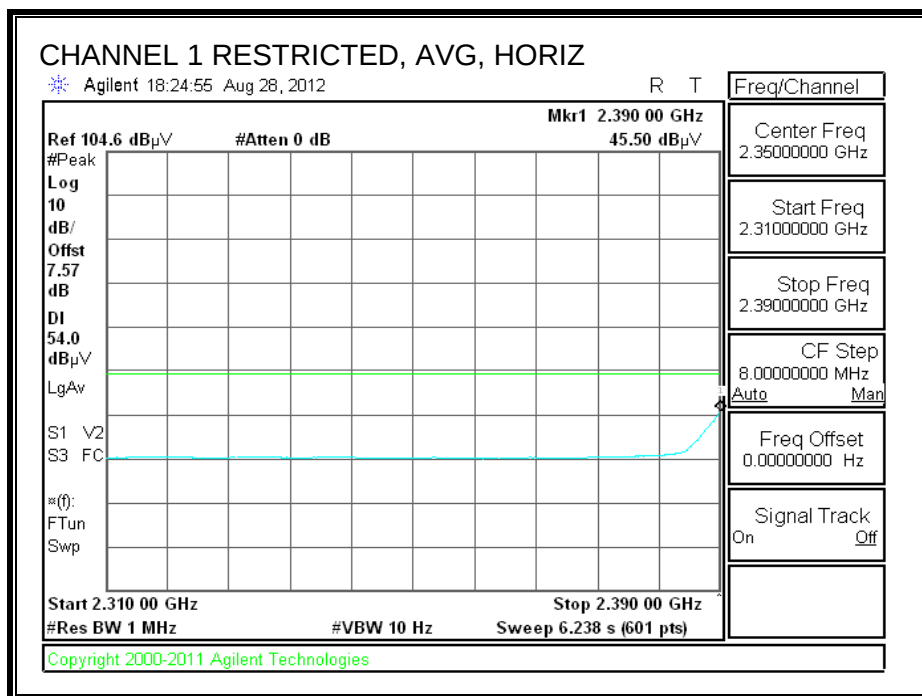
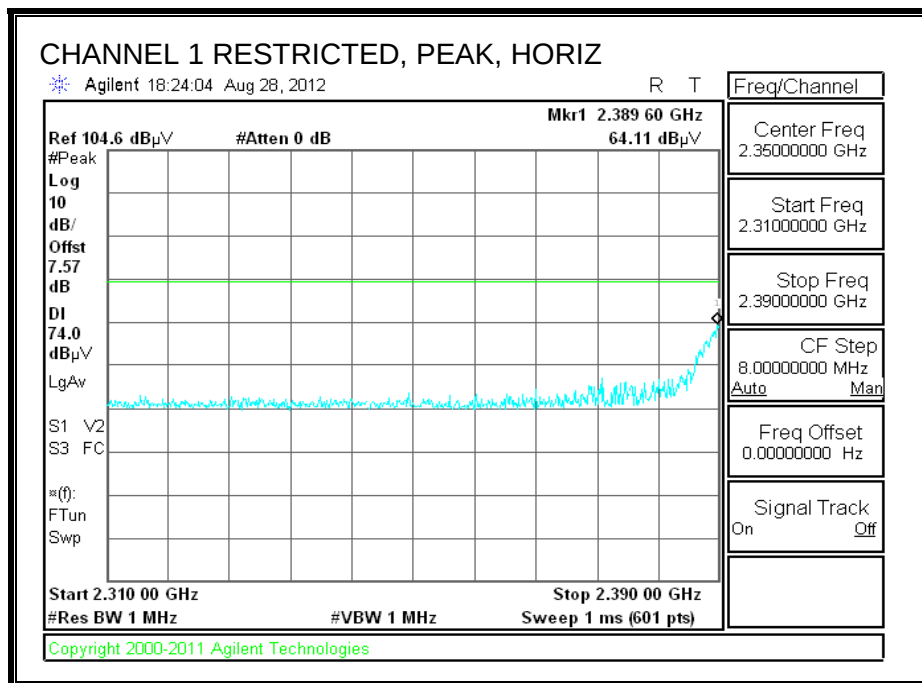
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Ftr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
Ch 2 (2417MHz)															
4.834	3.0	38.1	33.1	6.8	-34.1	0.0	0.0	43.9	74.0	-30.1	V	P	100.0	219.0	
4.834	3.0	25.9	33.1	6.8	-34.1	0.0	0.0	31.7	54.0	-22.3	V	A	100.0	219.0	
4.834	3.0	36.7	33.1	6.8	-34.1	0.0	0.0	42.6	74.0	-31.4	H	P	100.0	320.0	
4.834	3.0	25.1	33.1	6.8	-34.1	0.0	0.0	30.9	54.0	-23.1	H	A	100.0	320.0	
Ch 10 (2457MHz)															
4.914	3.0	39.8	33.2	6.8	-34.0	0.0	0.0	45.8	74.0	-28.2	V	P	165.0	128.0	
4.914	3.0	27.1	33.2	6.8	-34.0	0.0	0.0	33.0	54.0	-21.0	V	A	165.0	128.0	
4.914	3.0	40.1	33.2	6.8	-34.0	0.0	0.0	46.1	74.0	-27.9	H	P	119.0	20.0	
4.914	3.0	27.9	33.2	6.8	-34.0	0.0	0.0	33.9	54.0	-20.1	H	A	119.0	20.0	

Rev. 4.1.2.7

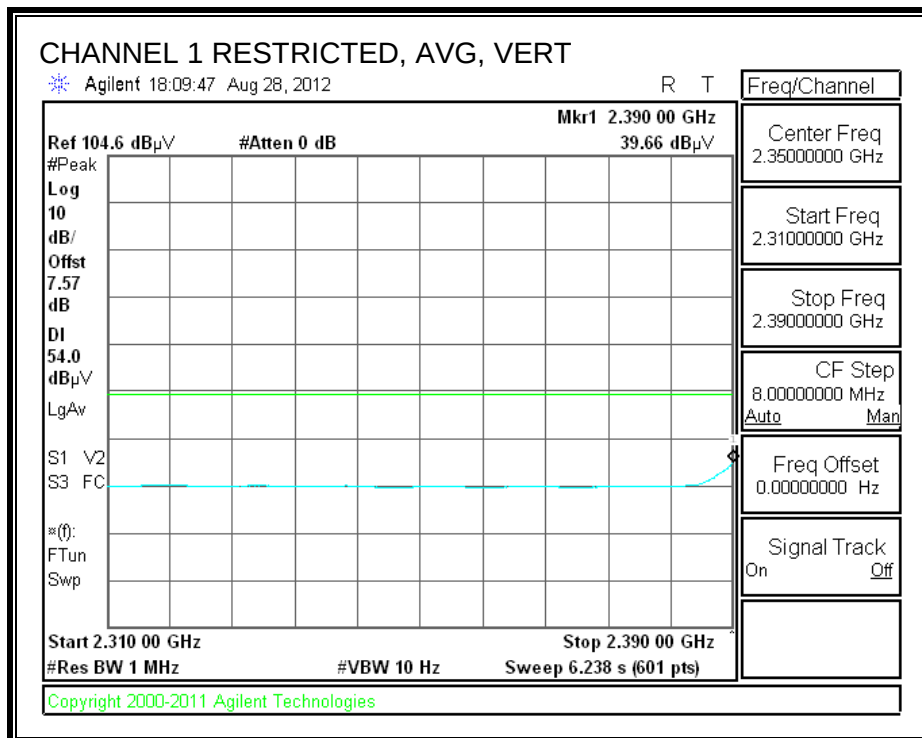
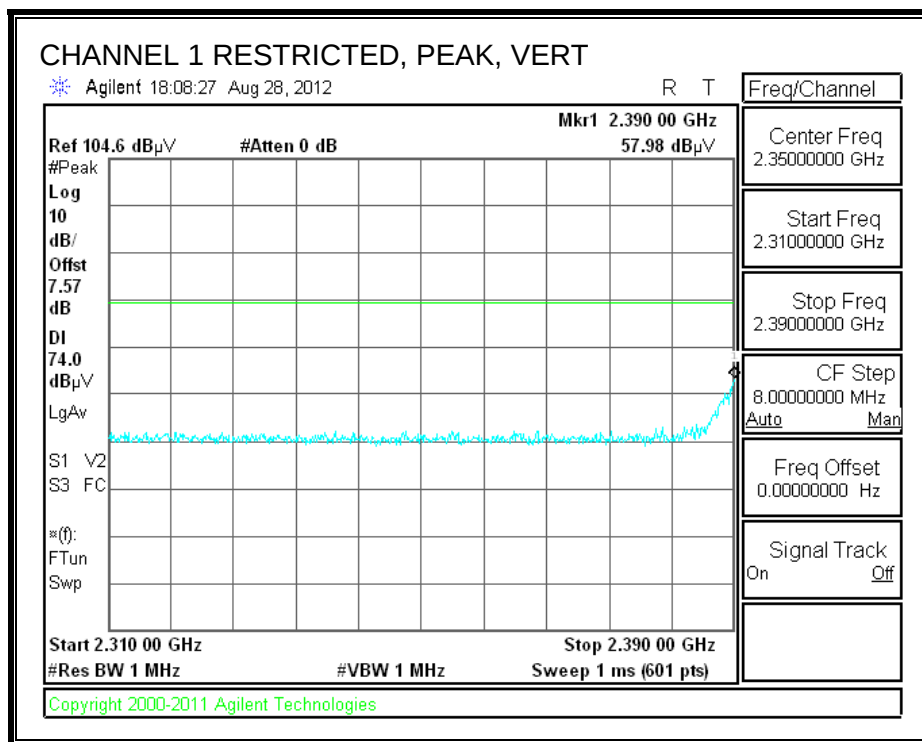
Note: No other emissions were detected above the system noise floor.

7.2.3. TX ABOVE 1 GHz FOR 802.11n HT20 1TX, CHAIN A IN THE 2.4 GHz BAND, CHAIN A

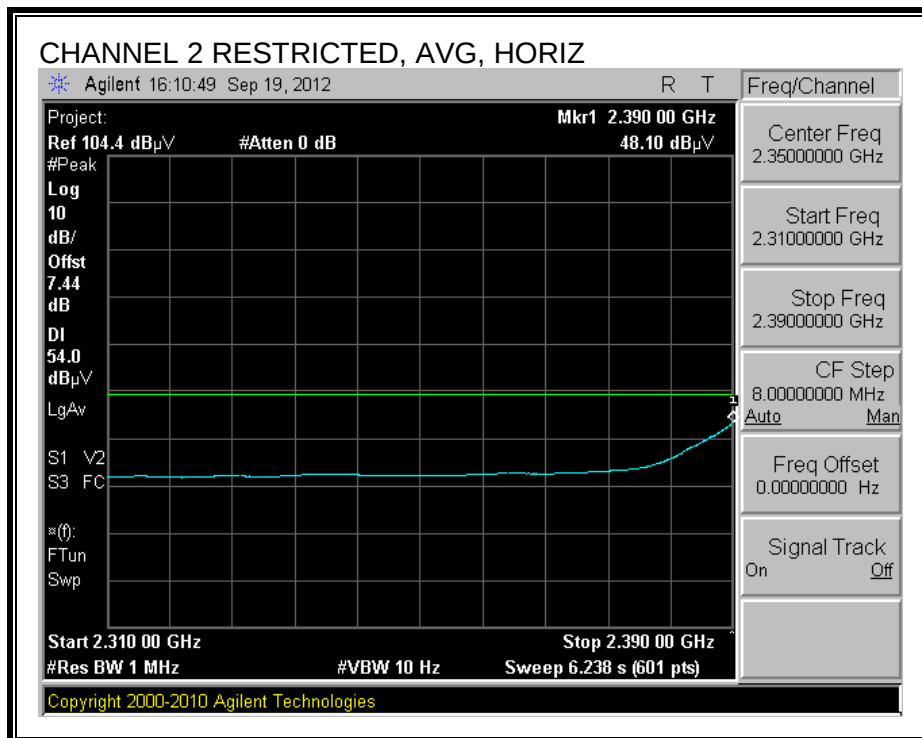
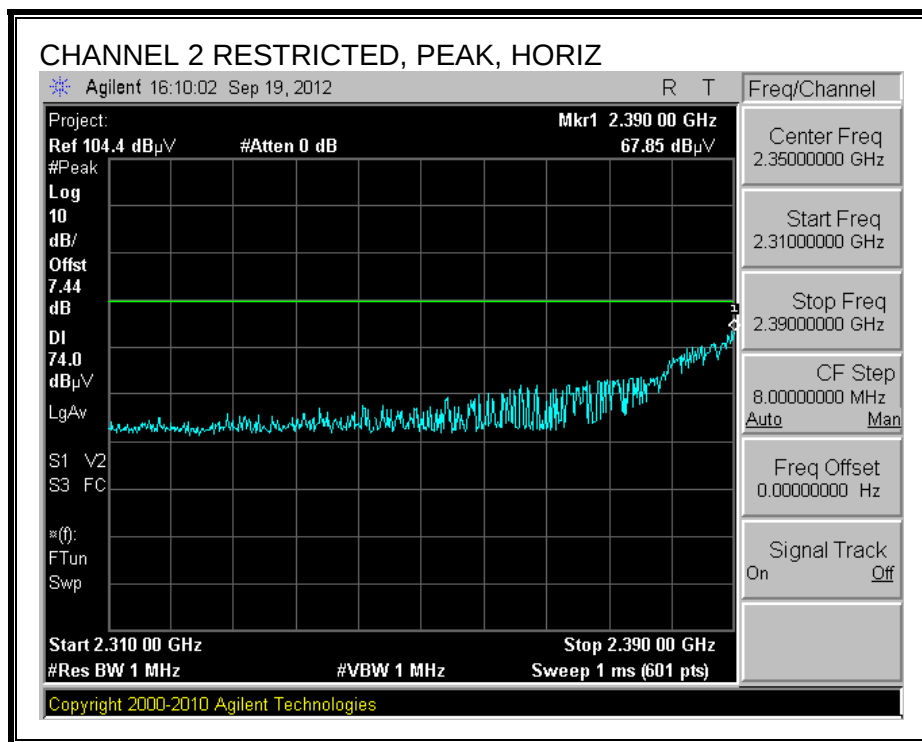
RESTRICTED BANDEDGE (CHANNEL 1, HORIZONTAL)



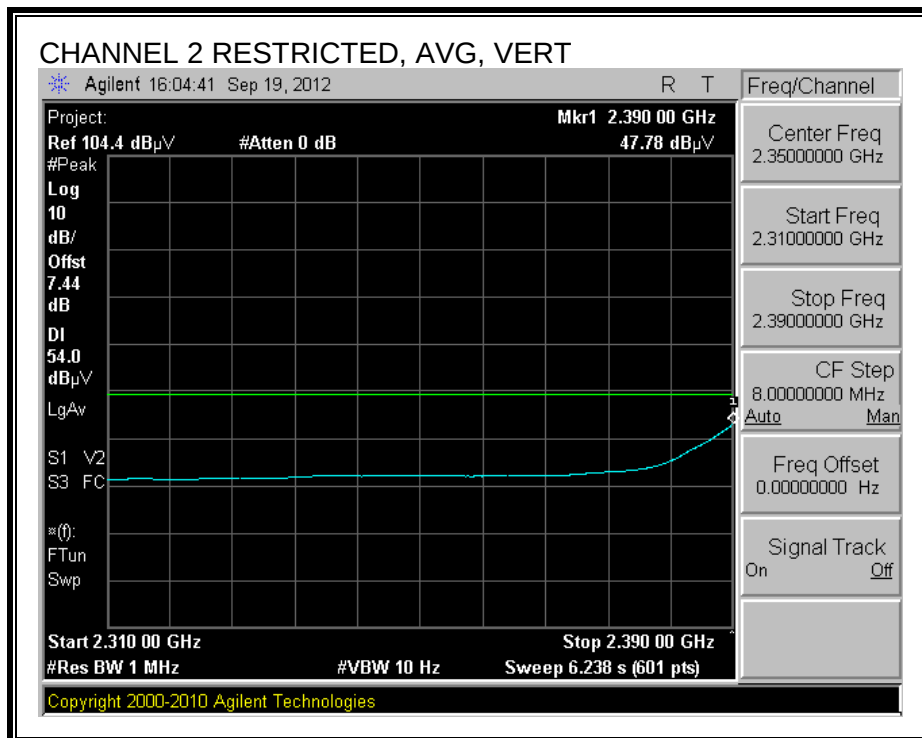
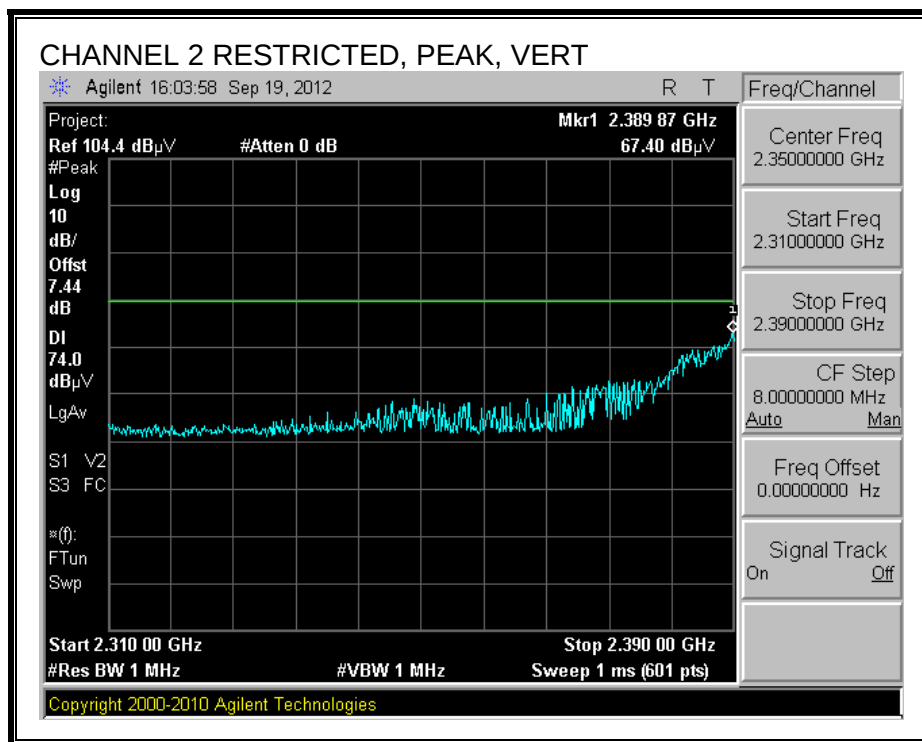
RESTRICTED BANDEDGE (CHANNEL 1, VERTICAL)



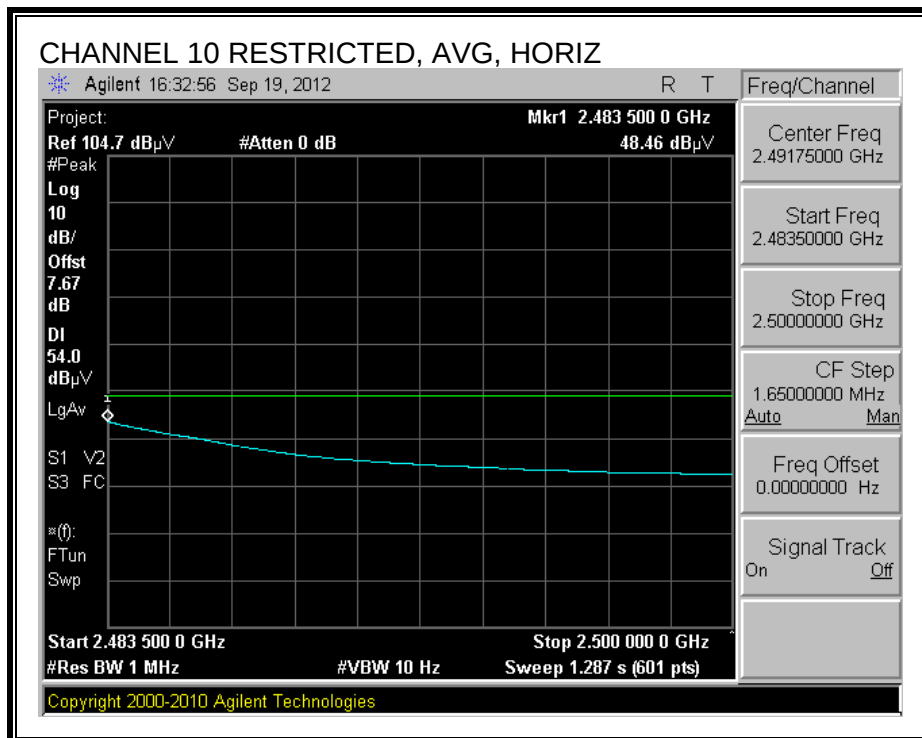
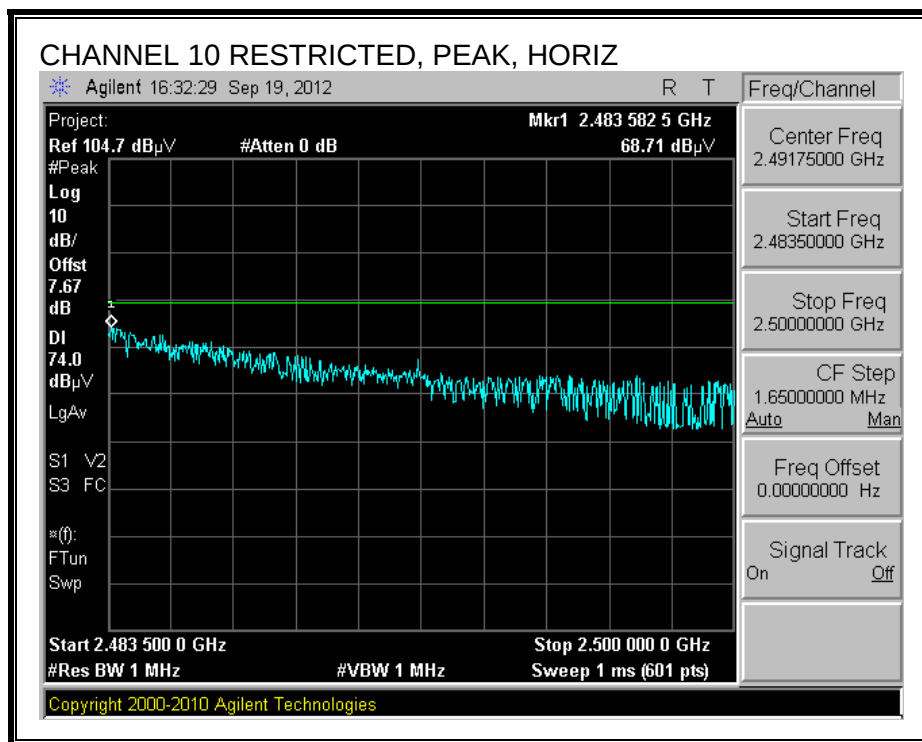
RESTRICTED BANDEDGE (CHANNEL 2, HORIZONTAL)



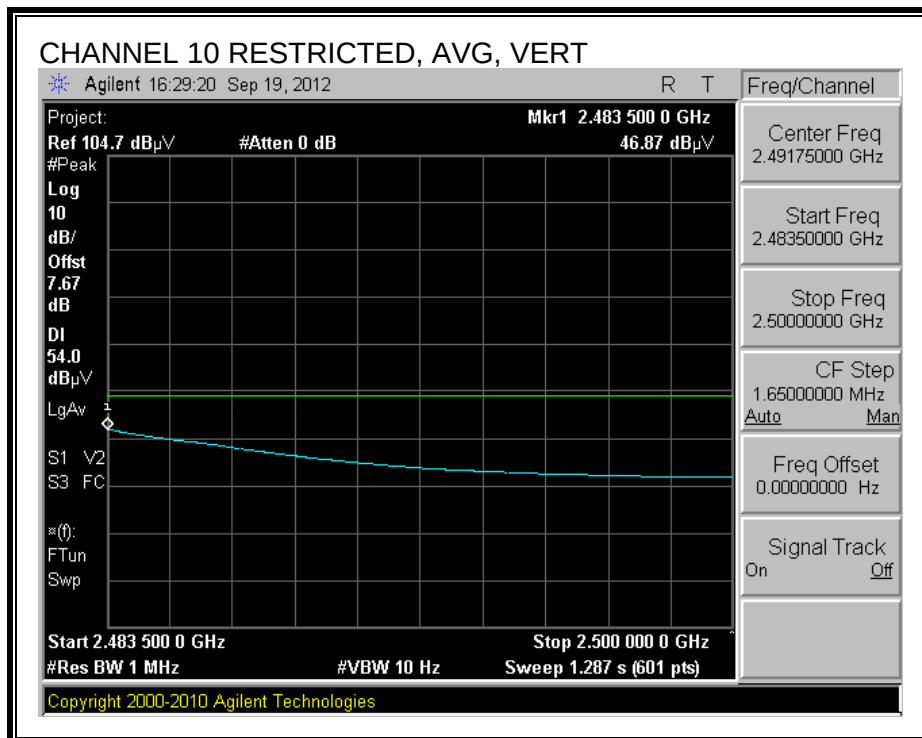
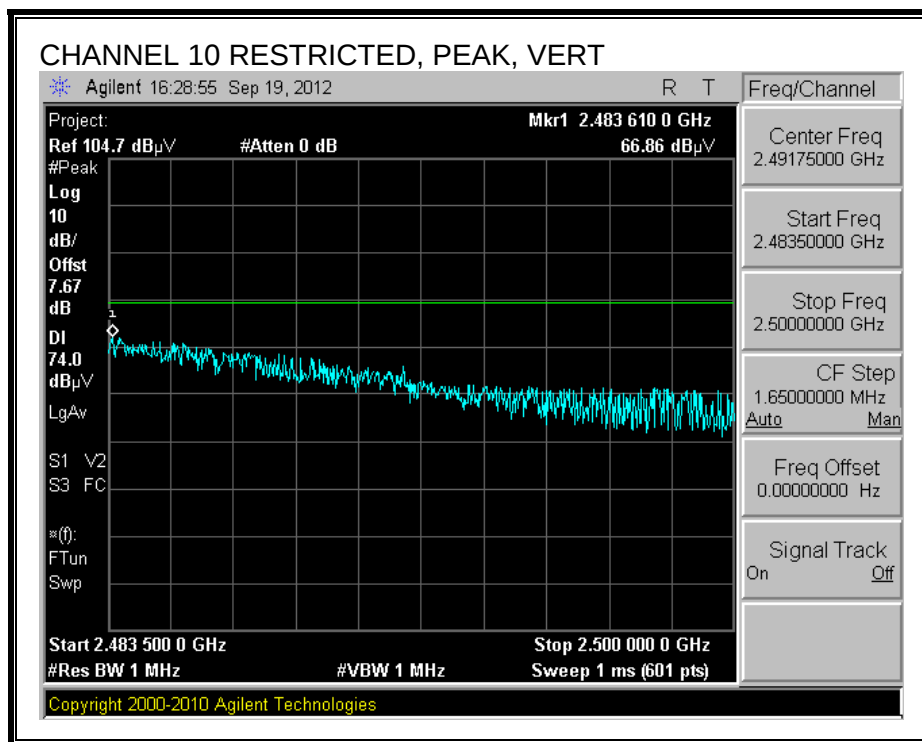
RESTRICTED BANDEDGE (CHANNEL 2, VERTICAL)



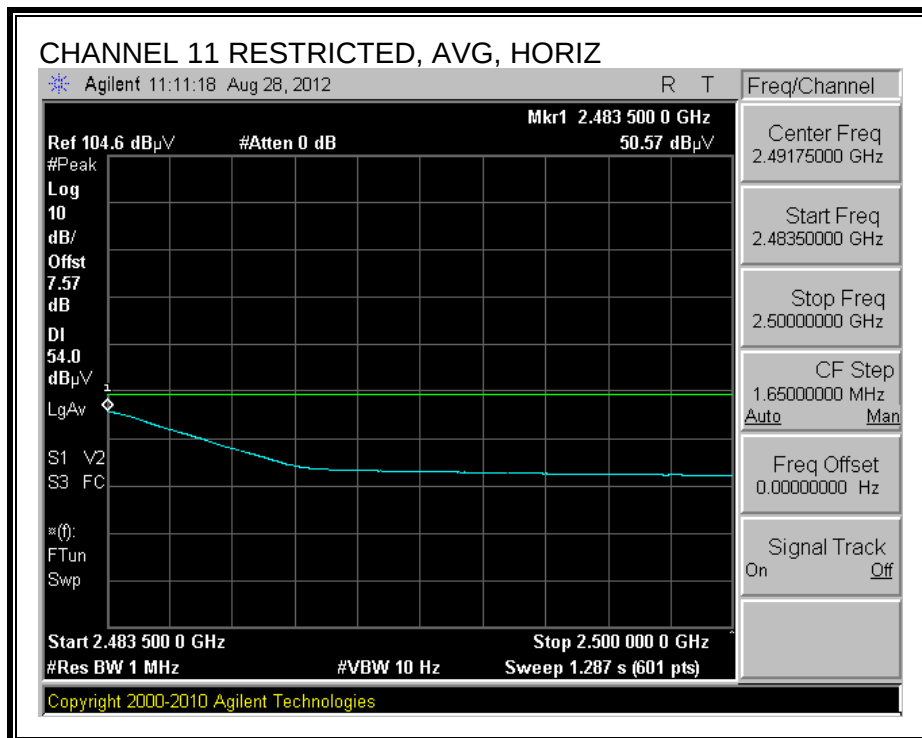
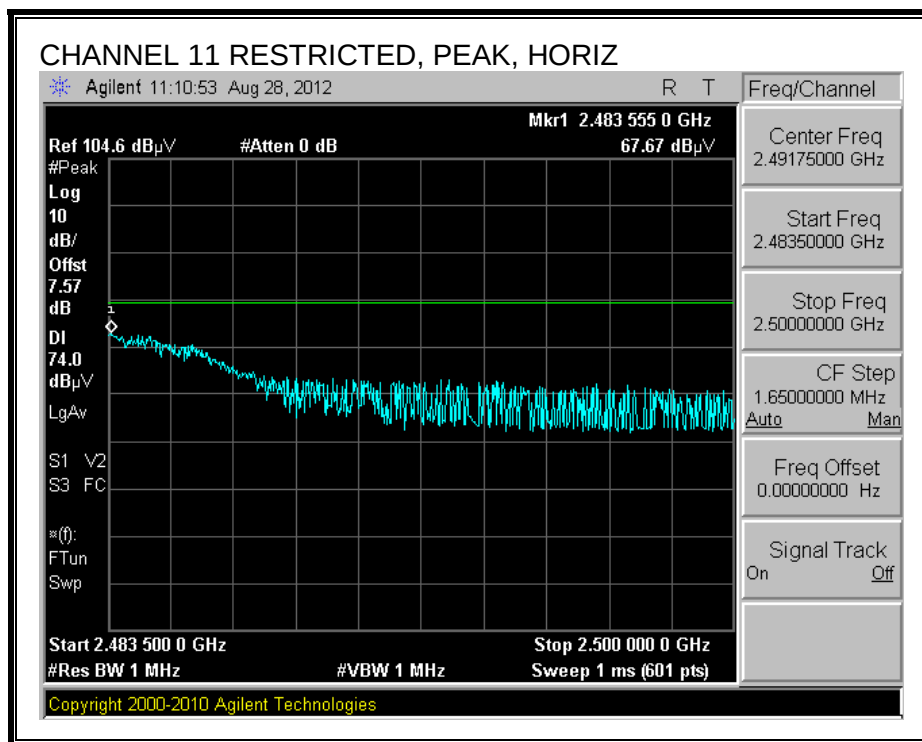
RESTRICTED BANDEDGE (CHANNEL 10, HORIZONTAL)



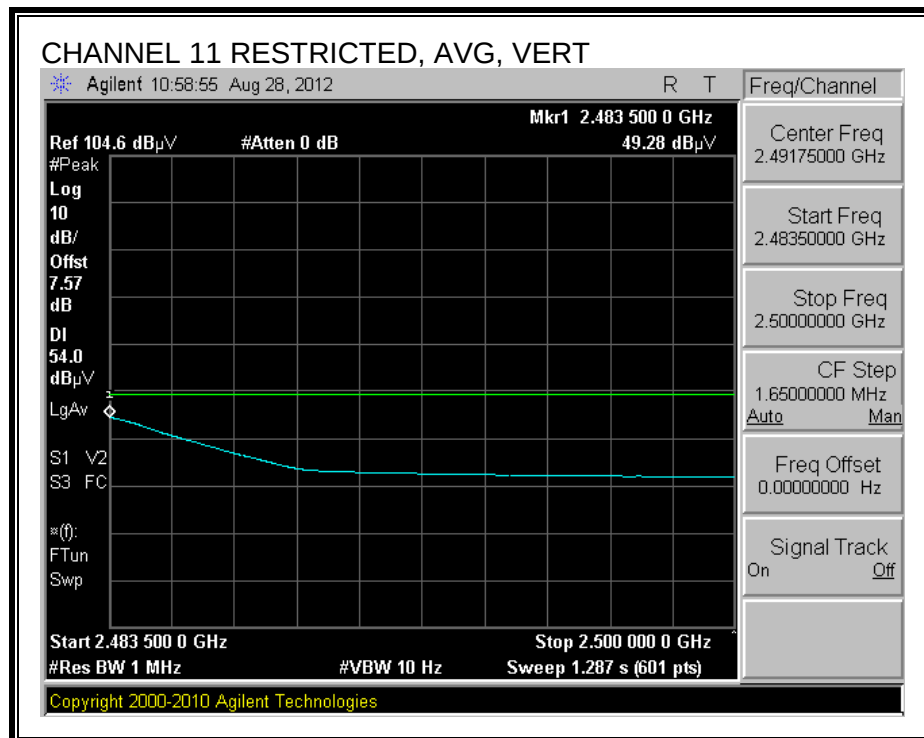
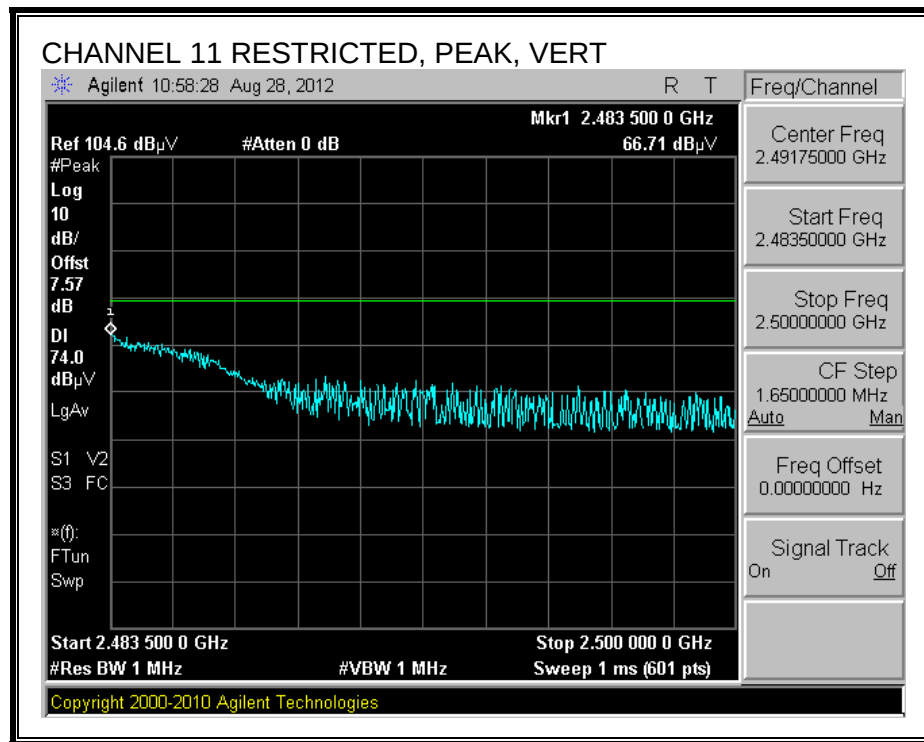
RESTRICTED BANDEDGE (CHANNEL 10, VERTICAL)



RESTRICTED BANDEDGE (CHANNEL 11, HORIZONTAL)



RESTRICTED BANDEDGE (CHANNEL 11, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement

Compliance Certification Services, Fremont 5m Chamber

Test Engr: Roy, Tony
Date: 08/28/12
Project #: 12U14545
Company: Wistron
Test Target: FCC 15.247
Mode Oper: 1x Tx, 11n HT20 Mode, Tx continuously, EUT stand-alone

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/Q/P	Ant. High cm	Table Angle Degree	Notes
Channel 1 (2412 MHz)															
4.824	3.0	36.3	33.1	6.8	-34.1	0.0	10.0	52.1	74.0	-21.9	H	P	191.0	156.0	
4.824	3.0	23.8	33.1	6.8	-34.1	0.0	10.0	39.6	54.0	-14.4	H	A	191.0	156.0	
4.824	3.0	37.6	33.1	6.8	-34.1	0.0	10.0	53.5	74.0	-20.5	V	P	134.0	102.0	
4.824	3.0	24.8	33.1	6.8	-34.1	0.0	10.0	40.6	54.0	-13.4	V	A	134.0	102.0	
Channel 6 (2437 MHz)															
4.874	3.0	38.9	33.2	6.8	-34.0	0.0	10.0	54.9	74.0	-19.1	H	P	98.0	12.0	
4.874	3.0	25.7	33.2	6.8	-34.0	0.0	10.0	41.6	54.0	-12.4	H	A	98.0	12.0	
4.874	3.0	38.4	33.2	6.8	-34.0	0.0	0.0	44.3	74.0	-29.7	V	P	103.0	87.0	
4.874	3.0	25.8	33.2	6.8	-34.0	0.0	0.0	31.7	54.0	-22.3	V	A	103.0	87.0	
Channel 11 (2462 MHz)															
4.924	3.0	35.0	33.2	6.1	-34.0	0.0	0.0	40.3	74.0	-33.7	H	P	197.0	270.0	
4.924	3.0	23.2	33.2	6.1	-34.0	0.0	0.0	28.5	54.0	-25.5	H	A	197.0	270.0	
4.924	3.0	35.8	33.2	6.1	-34.0	0.0	0.0	41.1	74.0	-32.9	V	P	148.0	89.0	
4.924	3.0	23.1	33.2	6.1	-34.0	0.0	0.0	28.4	54.0	-25.6	V	A	148.0	89.0	

Rev. 4.1.2.7

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

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement

Compliance Certification Services, Fremont 5m Chamber

Test Engr: Oliver Su
Date: 09/20/12
Project #: 12U14545
Company: Wistron
Test Target: FCC 15.247
Mode Oper: 1x Tx, 802.11n HT20, EUT stand-alone, Tx continuously

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	

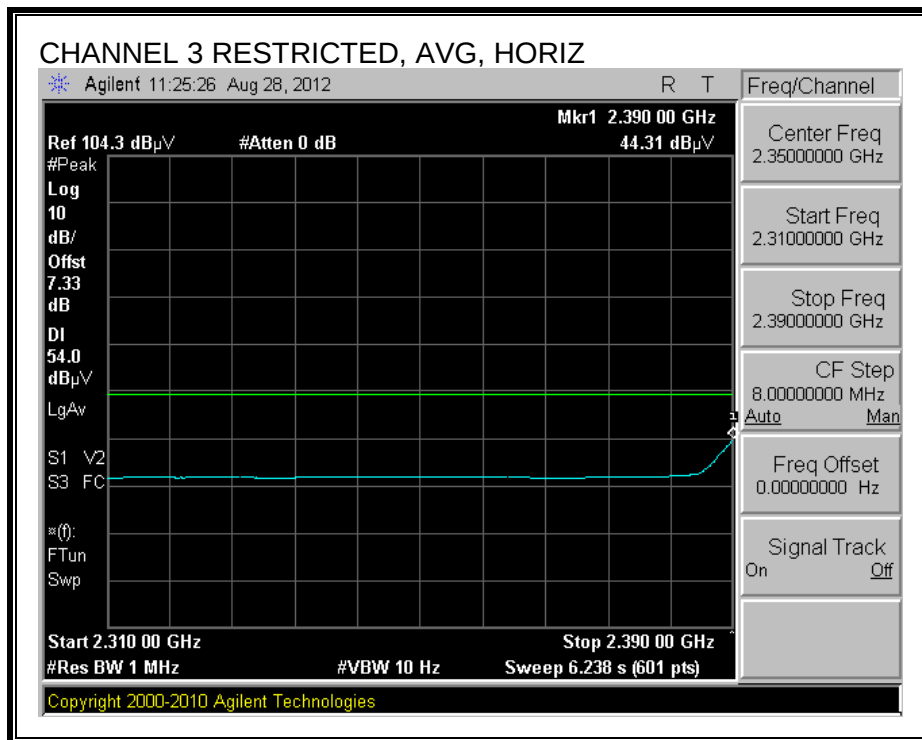
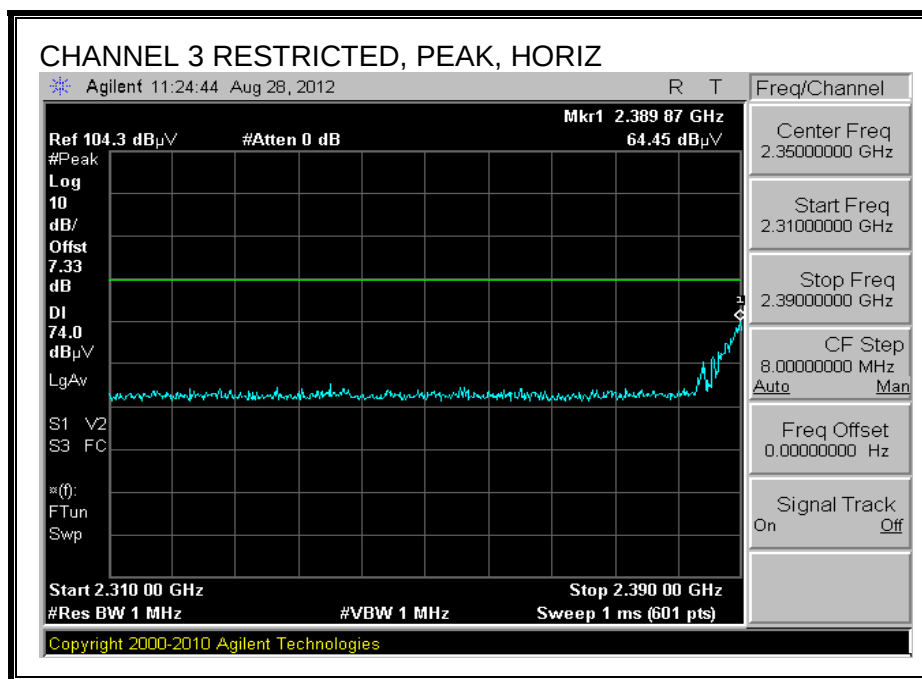
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
Ch 2 (2417MHz)															
4.834	3.0	39.8	33.1	6.8	-34.1	0.0	0.0	45.6	74.0	-28.4	H	P	100.0	318.0	
4.834	3.0	26.5	33.1	6.8	-34.1	0.0	0.0	32.4	54.0	-21.6	H	A	100.0	318.0	
4.834	3.0	40.9	33.1	6.8	-34.1	0.0	0.0	46.7	74.0	-27.3	V	P	113.0	21.0	
4.834	3.0	27.3	33.1	6.8	-34.1	0.0	0.0	33.2	54.0	-20.8	V	A	113.0	21.0	
Ch 10 (2457MHz)															
4.914	3.0	40.4	33.2	6.8	-34.0	0.0	0.0	46.4	74.0	-27.6	V	P	162.0	129.0	
4.914	3.0	27.1	33.2	6.8	-34.0	0.0	0.0	33.1	54.0	-20.9	V	A	162.0	129.0	
4.914	3.0	37.6	33.2	6.8	-34.0	0.0	0.0	43.6	74.0	-30.4	H	P	100.0	320.0	
4.914	3.0	25.4	33.2	6.8	-34.0	0.0	0.0	31.4	54.0	-22.6	H	A	100.0	320.0	

Rev. 4.1.2.7

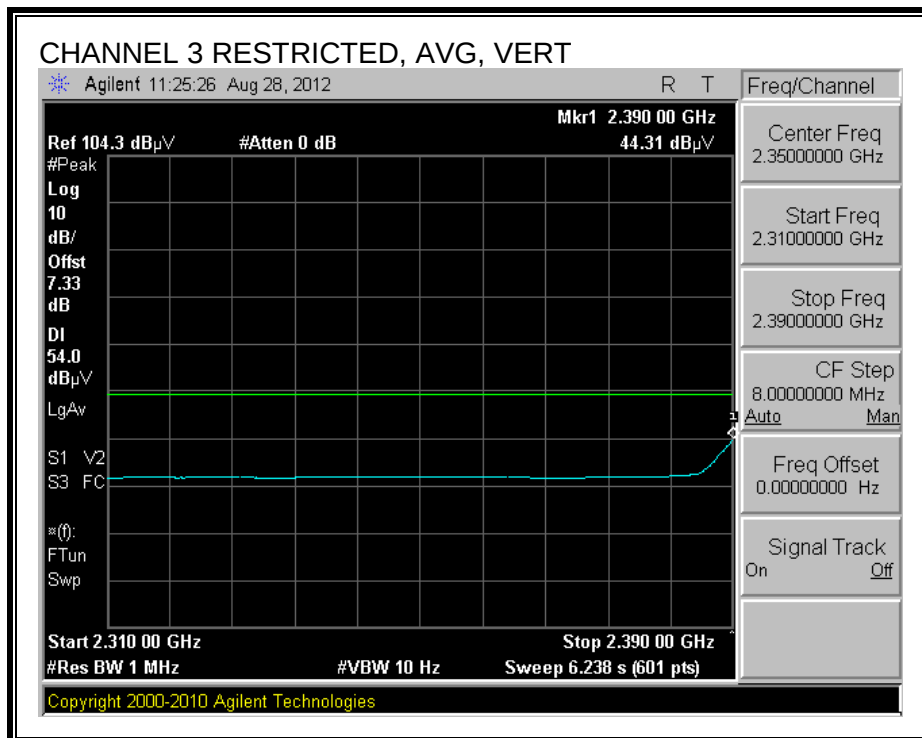
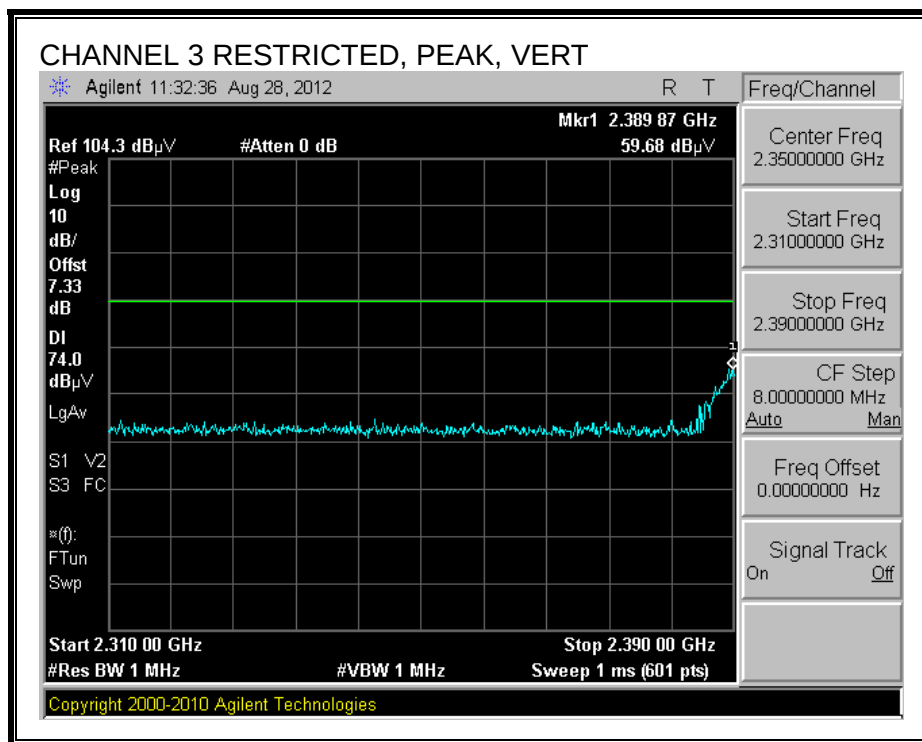
Note: No other emissions were detected above the system noise floor.

7.2.1. TX ABOVE 1 GHz FOR 802.11n HT40 1TX MODE IN THE 2.4 GHz BAND, CHAIN A

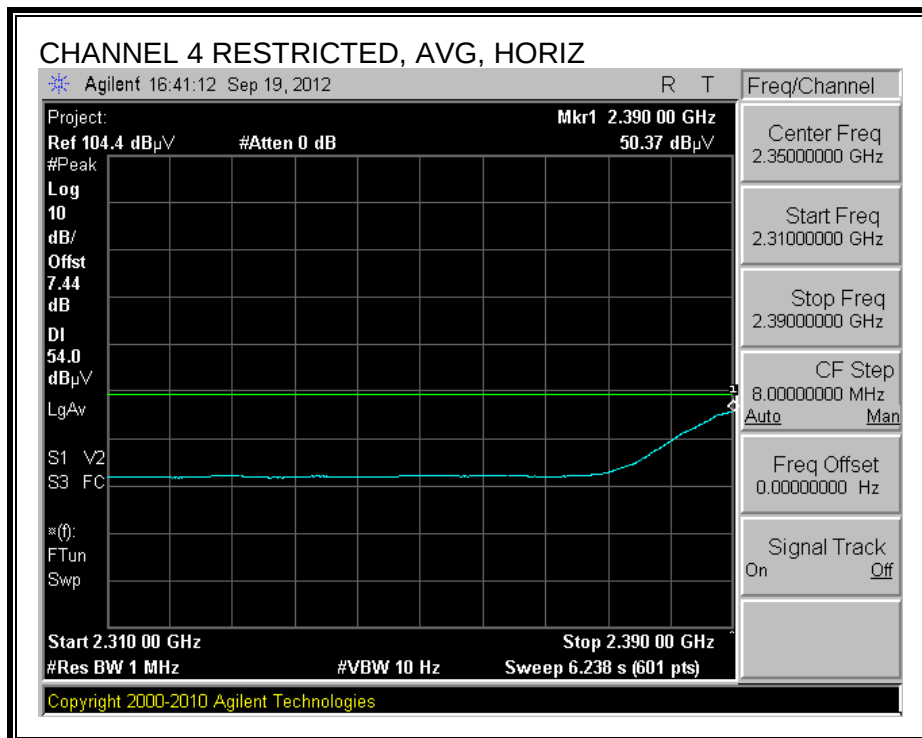
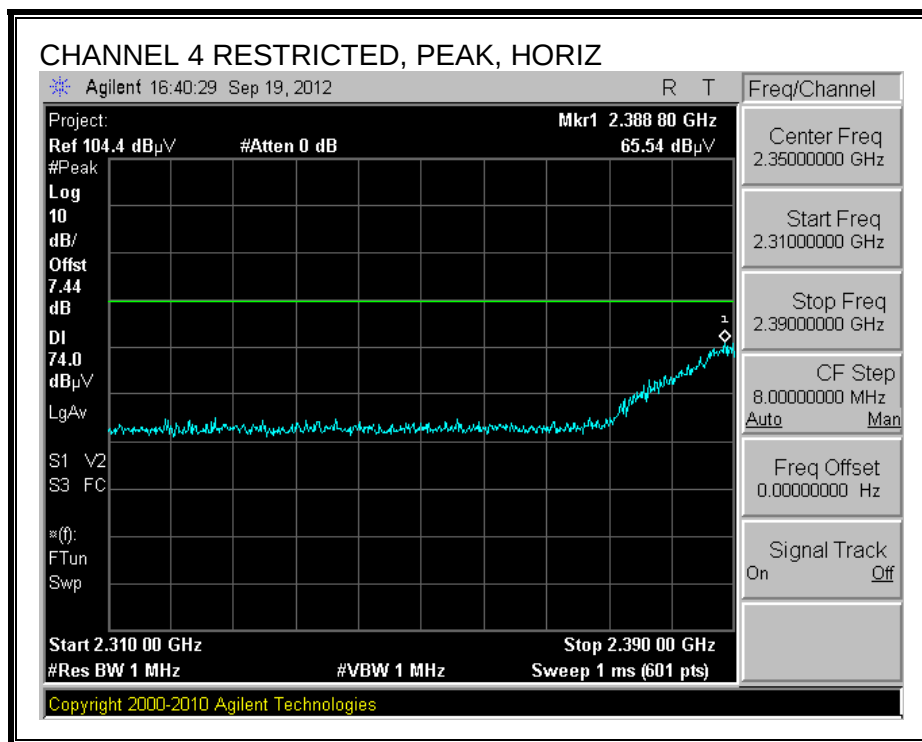
RESTRICTED BANDEDGE (CHANNEL 3, HORIZONTAL)



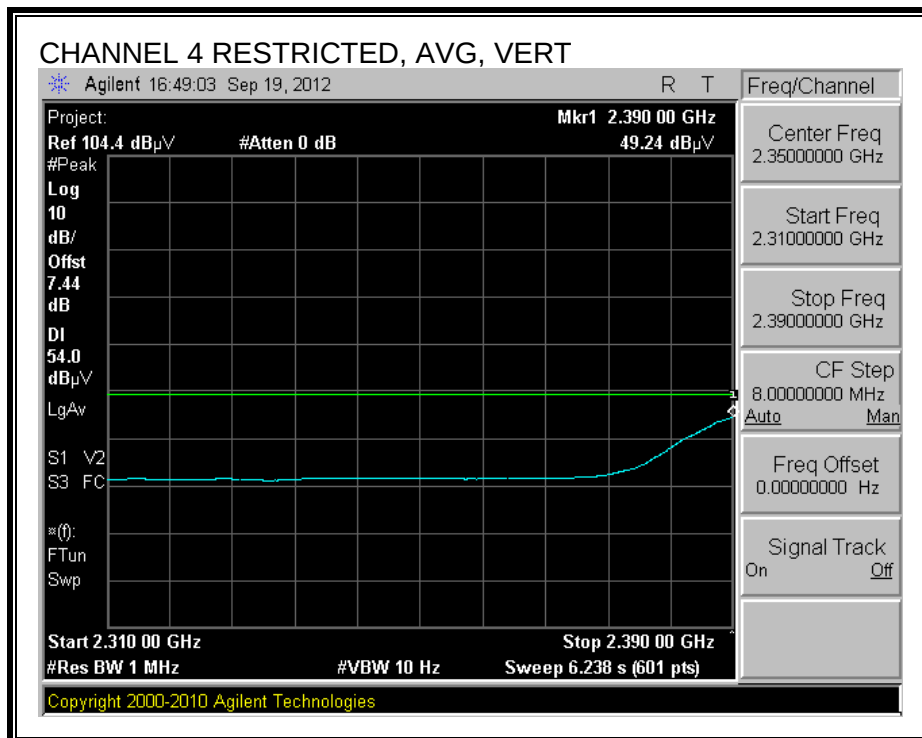
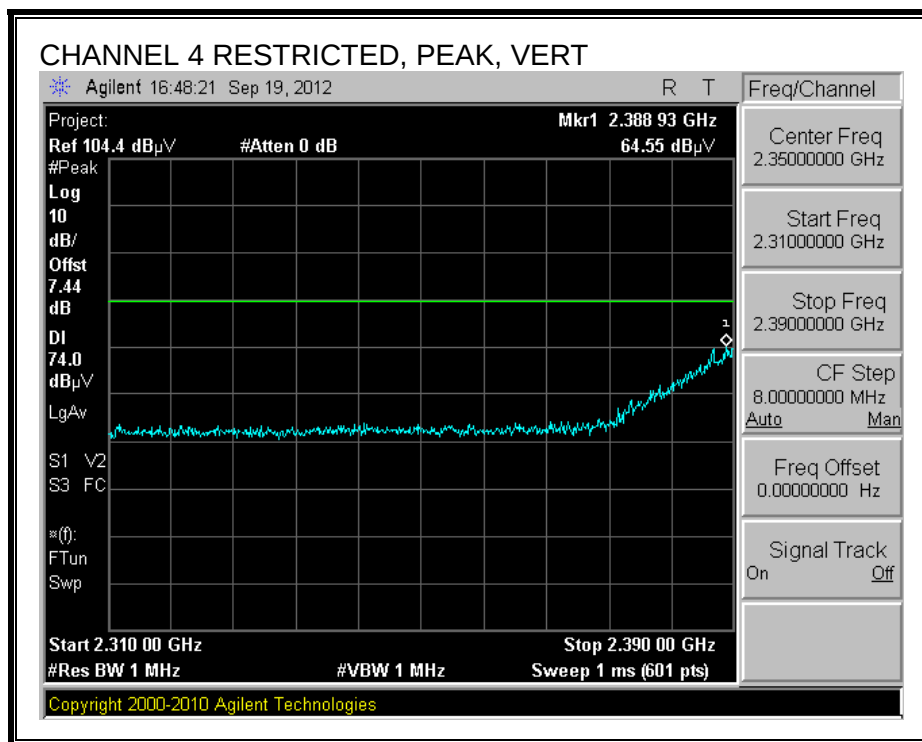
RESTRICTED BANDEDGE (CHANNEL 3, VERTICAL)



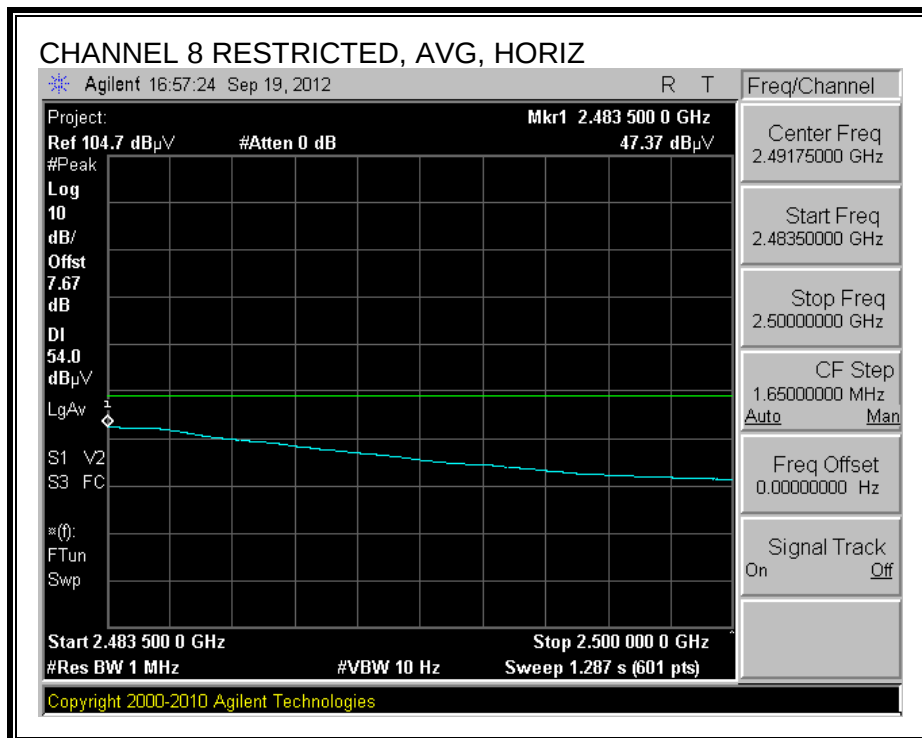
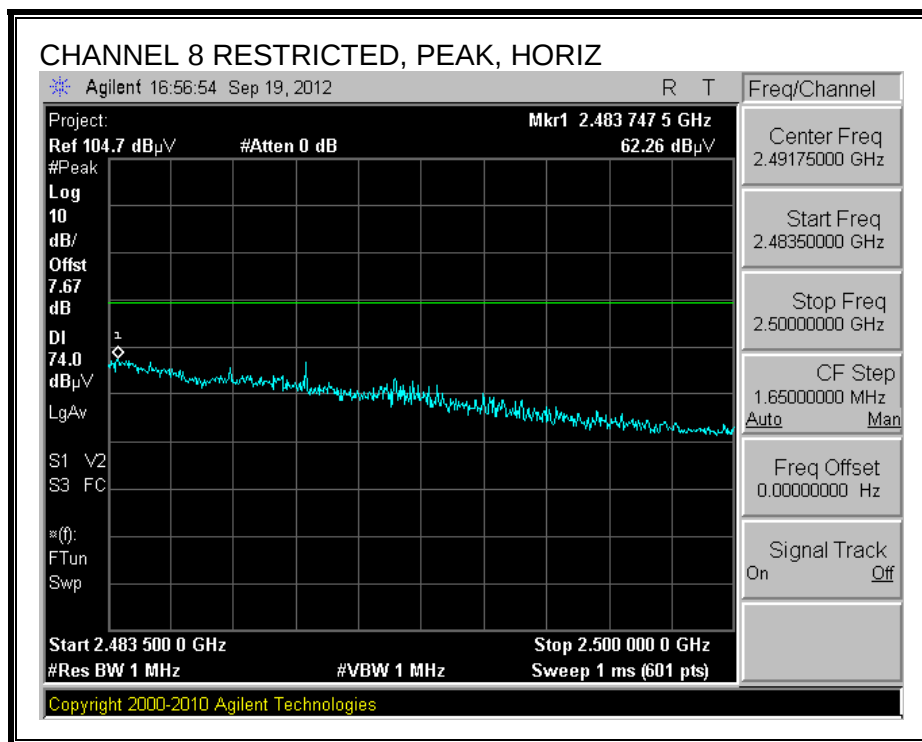
RESTRICTED BANDEDGE (CHANNEL 4, HORIZONTAL)



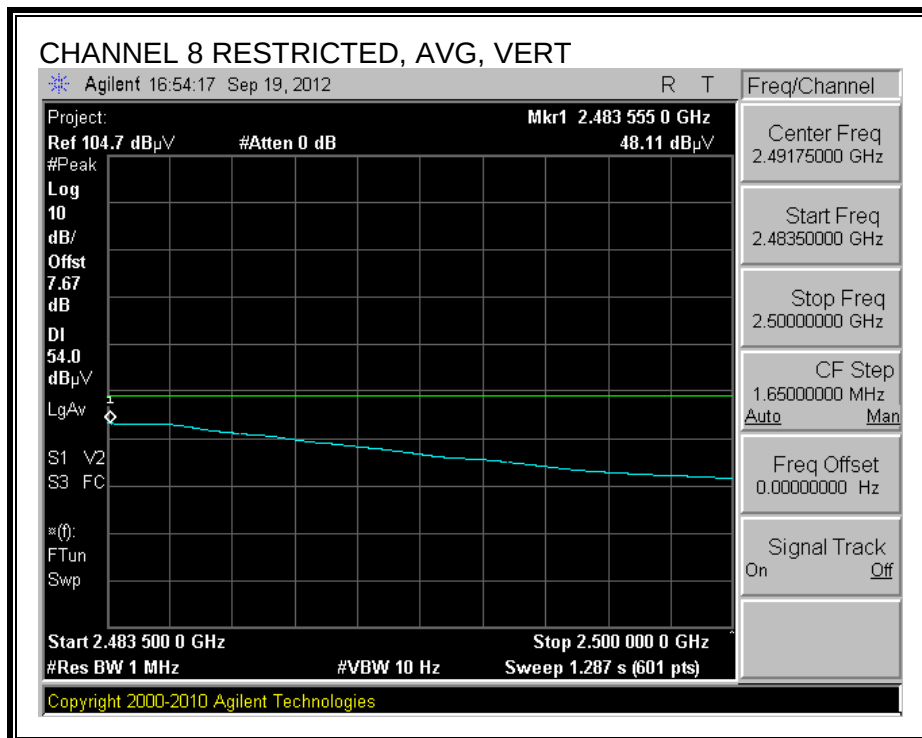
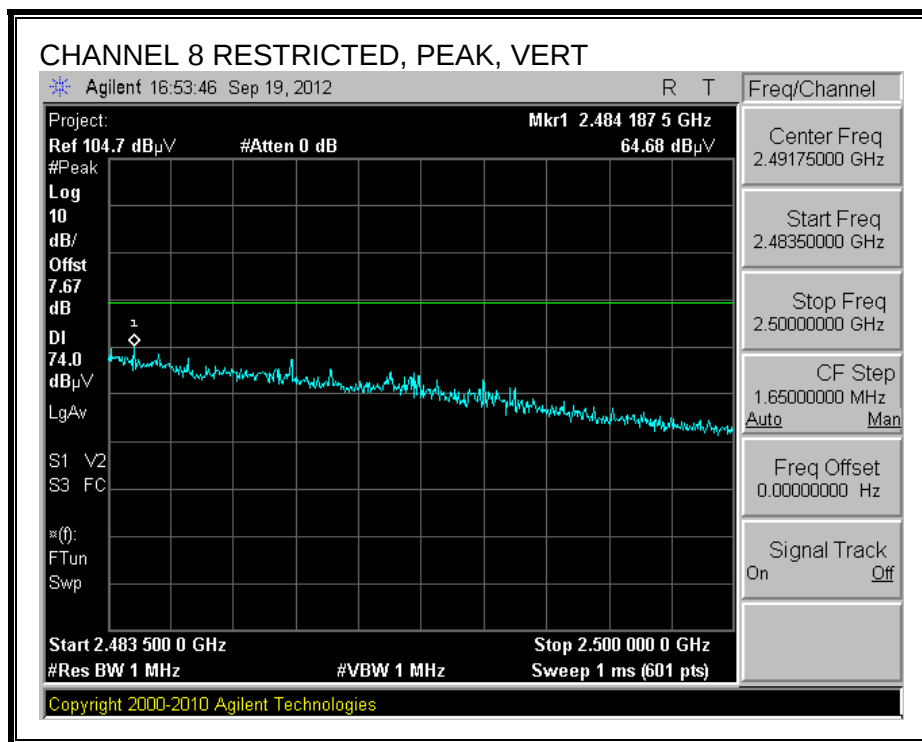
RESTRICTED BANDEDGE (CHANNEL 4, VERTICAL)



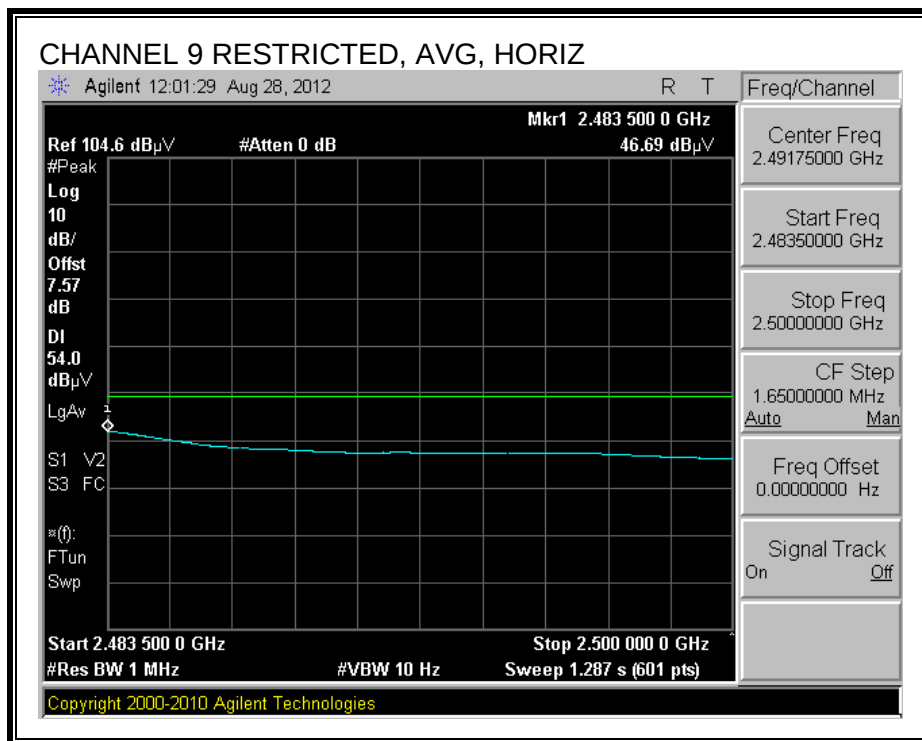
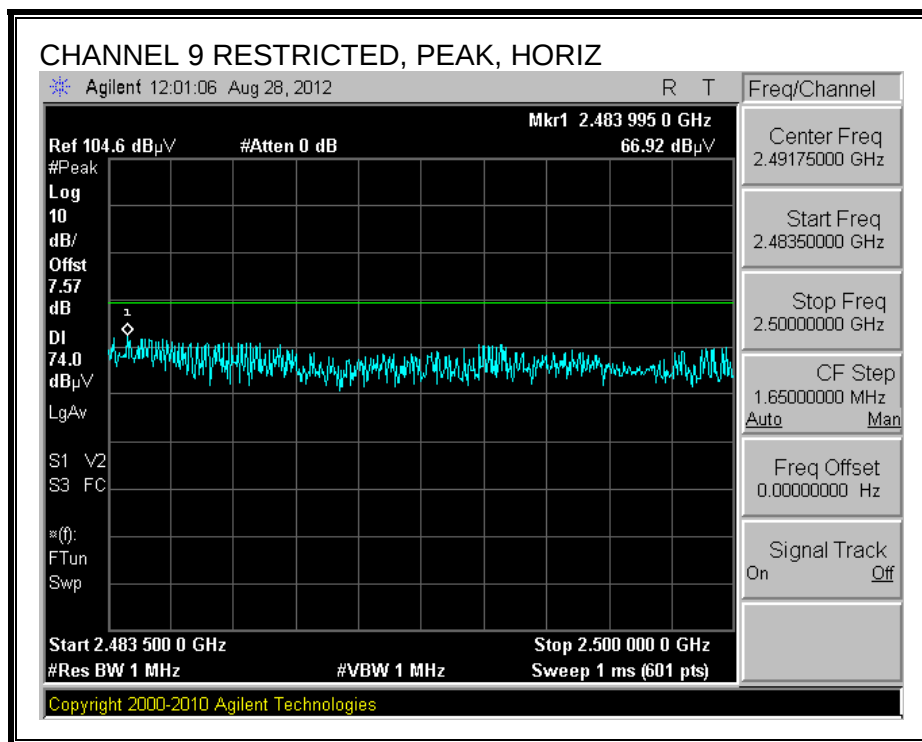
RESTRICTED BANDEDGE (CHANNEL 8, HORIZONTAL)



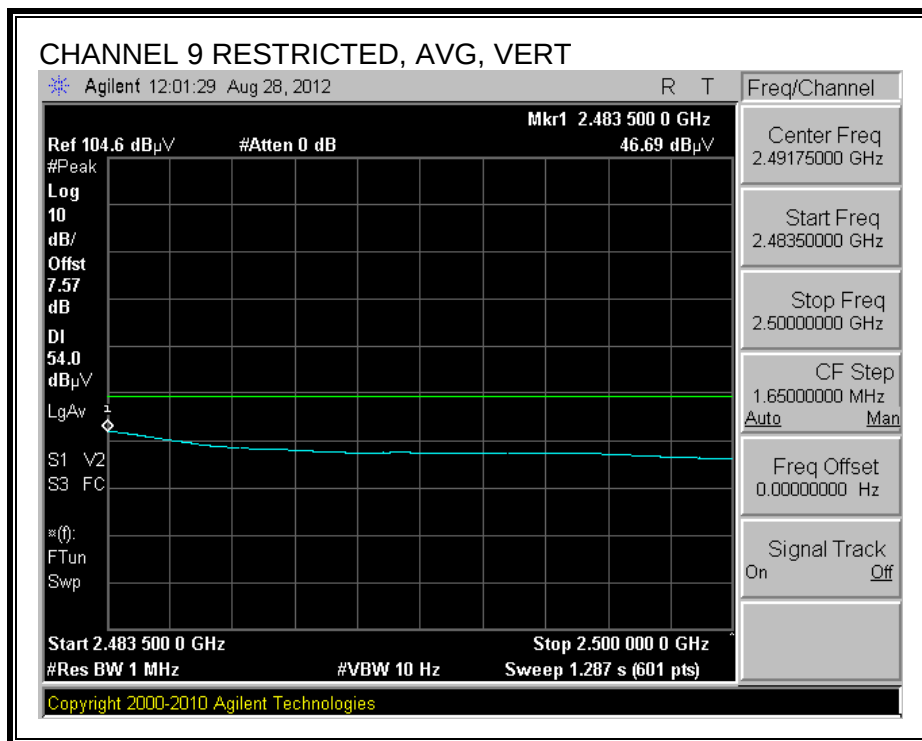
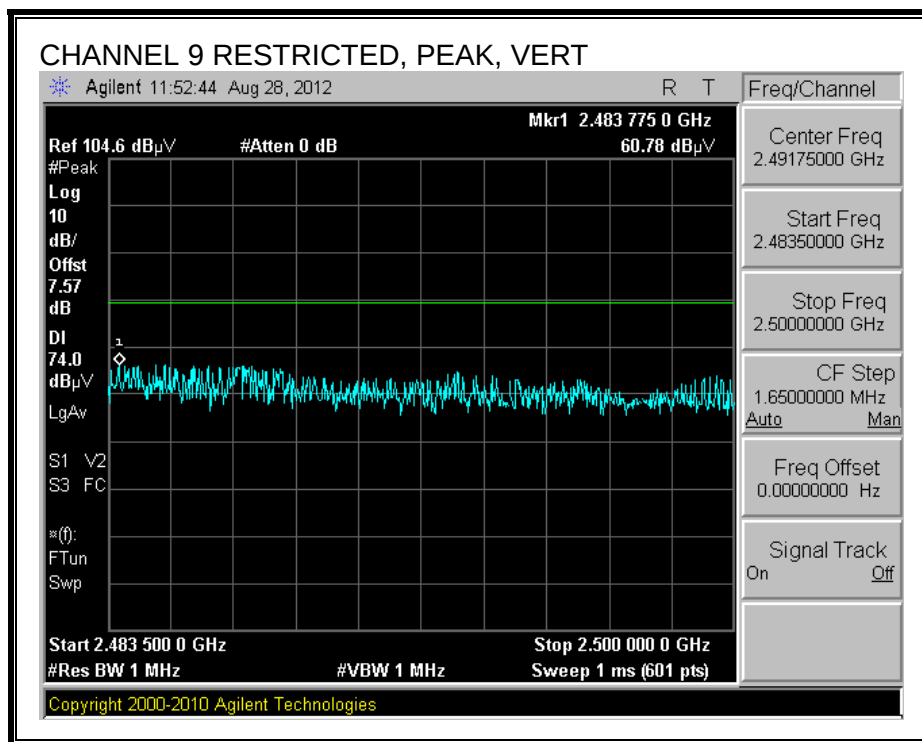
RESTRICTED BANDEDGE (CHANNEL 8, VERTICAL)



RESTRICTED BANDEDGE (CHANNEL 9, HORIZONTAL)



RESTRICTED BANDEDGE (CHANNEL 9, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement

Compliance Certification Services, Fremont 5m Chamber

Test Engr: Oliver Su
Date: 08/29/12
Project #: 12U14545
Company: Wistron
Test Target: FCC 15.247
Mode Oper: 1x Tx, 11n HT40, Tx continuously, EUT stand-alone

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	Ftr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
Ch 3 (2422MHz)															
4.844	3.0	36.2	33.1	6.8	-34.0	0.0	0.0	42.1	74.0	-31.9	H	P	153.0	83.0	
4.844	3.0	23.4	33.1	6.8	-34.0	0.0	0.0	29.3	54.0	-24.7	H	A	153.0	83.0	
4.844	3.0	36.1	33.1	6.8	-34.0	0.0	0.0	42.0	74.0	-32.0	V	P	163.0	145.0	
4.844	3.0	23.6	33.1	6.8	-34.0	0.0	0.0	29.5	54.0	-24.5	V	A	163.0	145.0	
Ch 6 (2437MHz)															
4.874	3.0	36.2	33.2	6.8	-34.0	0.0	0.0	42.2	74.0	-31.8	V	P	100.0	0.0	
4.874	3.0	24.2	33.2	6.8	-34.0	0.0	0.0	30.1	54.0	-23.9	V	A	100.0	0.0	
4.874	3.0	36.5	33.2	6.8	-34.0	0.0	0.0	42.4	74.0	-31.6	H	P	165.0	306.0	
4.874	3.0	24.0	33.2	6.8	-34.0	0.0	0.0	29.9	54.0	-24.1	H	A	165.0	306.0	
Ch 9 (2452MHz)															
4.904	3.0	36.5	33.2	6.8	-34.0	0.0	0.0	42.5	74.0	-31.5	V	P	117.0	255.0	
4.904	3.0	23.7	33.2	6.8	-34.0	0.0	0.0	29.6	54.0	-24.4	V	A	117.0	255.0	
4.904	3.0	36.3	33.2	6.8	-34.0	0.0	0.0	42.3	74.0	-31.7	H	P	138.0	194.0	
4.904	3.0	23.6	33.2	6.8	-34.0	0.0	0.0	29.6	54.0	-24.4	H	A	138.0	194.0	

Rev. 4.1.2.7

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

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement

Compliance Certification Services, Fremont 5m Chamber

Test Engr: Oliver Su
Date: 09/20/12
Project #: 12U14545
Company: Wistron
Test Target: FCC 15.247
Mode Oper: 1x Tx, 11n HT40, Tx continuously, EUT stand-alone

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	

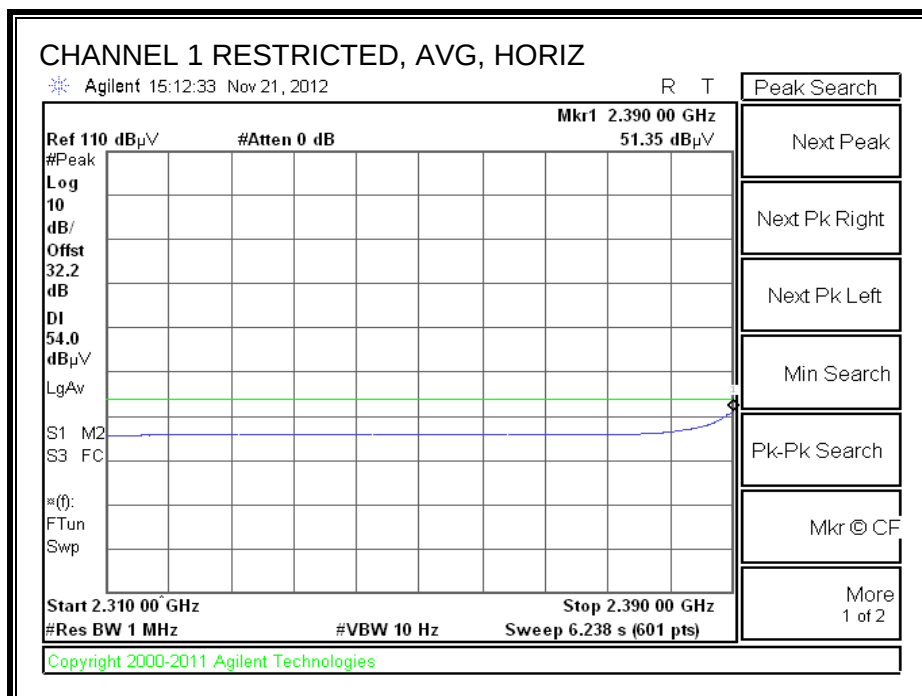
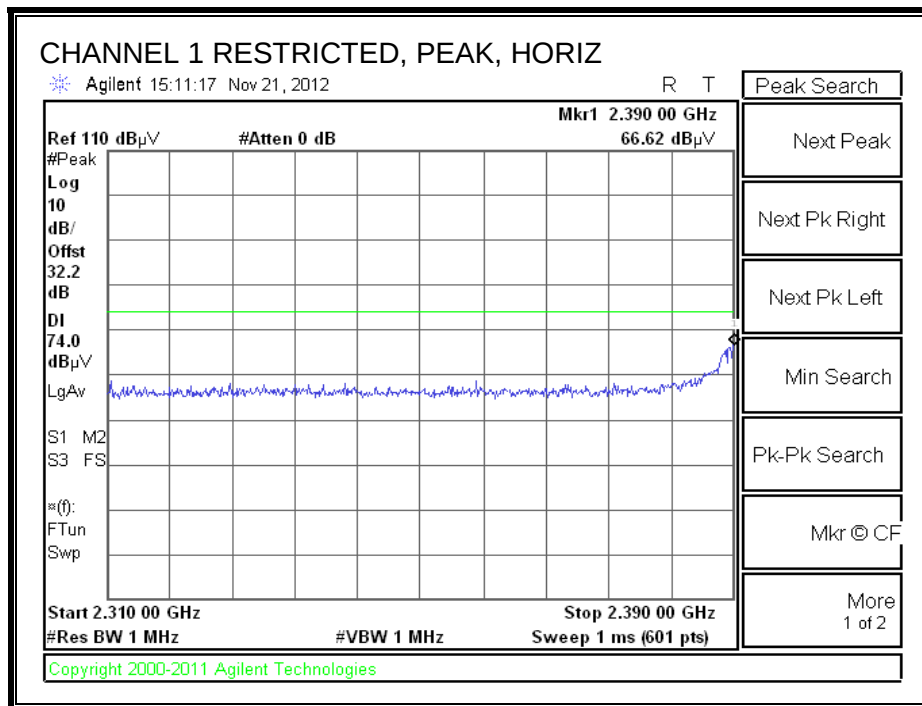
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
Ch 4 (2427MHz)															
4.854	3.0	36.0	33.1	6.8	-34.0	0.0	0.0	42.0	74.0	-32.0	H	P	150.0	90.0	
4.854	3.0	23.4	33.1	6.8	-34.0	0.0	0.0	29.3	54.0	-24.7	H	A	150.0	90.0	
4.854	3.0	36.5	33.1	6.8	-34.0	0.0	0.0	42.5	74.0	-31.5	V	P	168.0	135.0	
4.854	3.0	23.6	33.1	6.8	-34.0	0.0	0.0	29.5	54.0	-24.5	V	A	168.0	135.0	
Ch 8 (2447MHz)															
4.894	3.0	36.7	33.2	6.8	-34.0	0.0	0.0	42.7	74.0	-31.3	V	P	100.0	92.0	
4.894	3.0	24.2	33.2	6.8	-34.0	0.0	0.0	30.1	54.0	-23.9	V	A	100.0	92.0	
4.894	3.0	36.9	33.2	6.8	-34.0	0.0	0.0	42.9	74.0	-31.1	H	P	165.0	300.0	
4.894	3.0	24.0	33.2	6.8	-34.0	0.0	0.0	29.9	54.0	-24.1	H	A	165.0	300.0	

Rev. 4.1.2.7

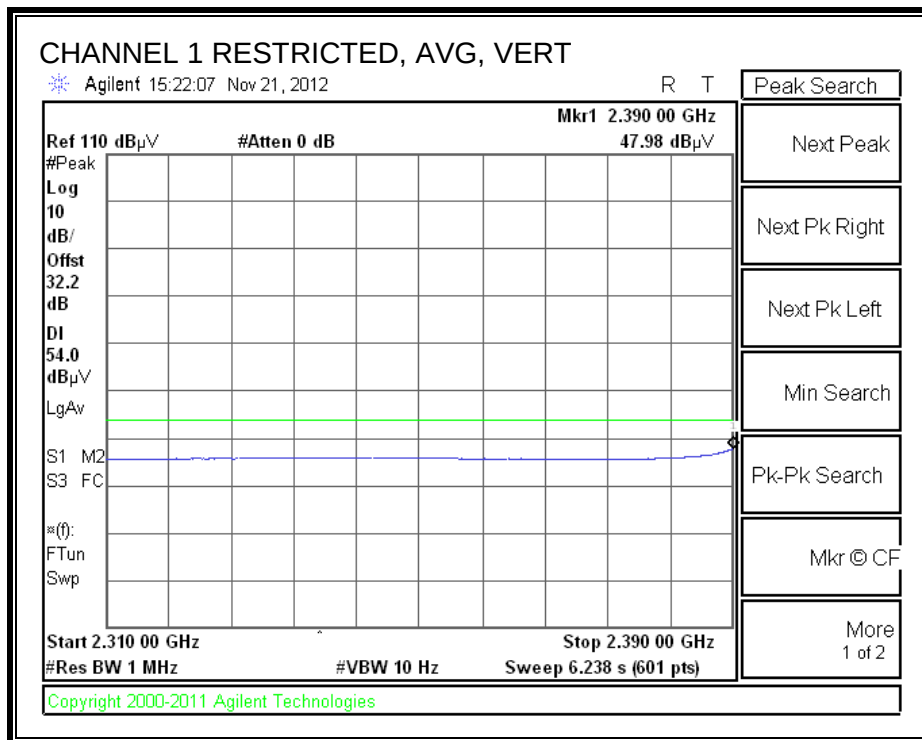
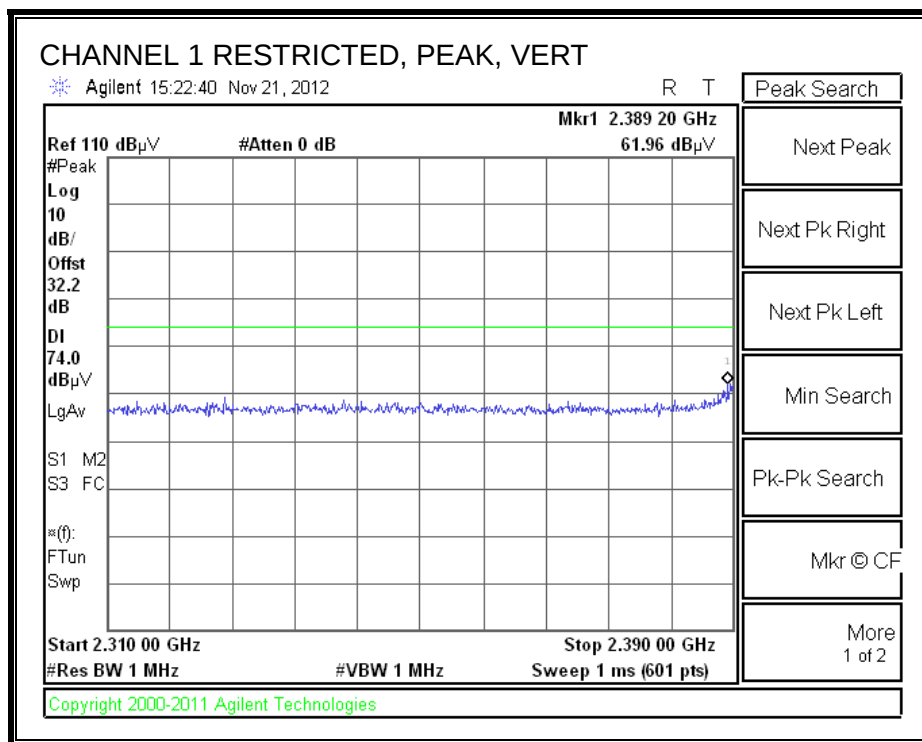
Note: No other emissions were detected above the system noise floor.

7.2.2. TX ABOVE 1 GHz FOR 802.11g, 1TX IN THE 2.4 GHz BAND, CHAIN B

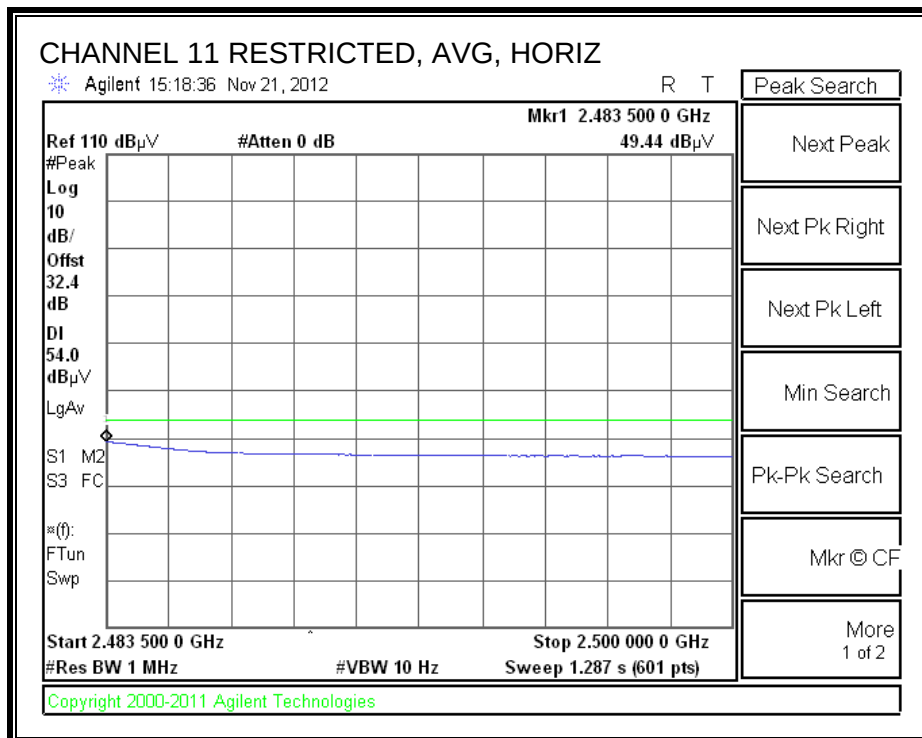
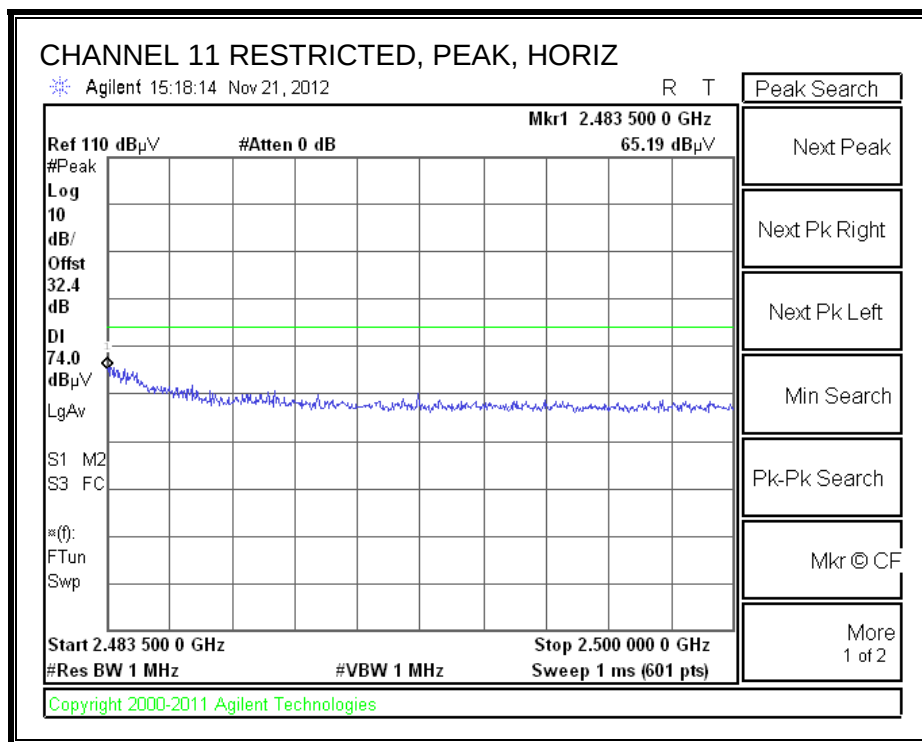
RESTRICTED BANDEDGE (CHANNEL 1, HORIZONTAL)



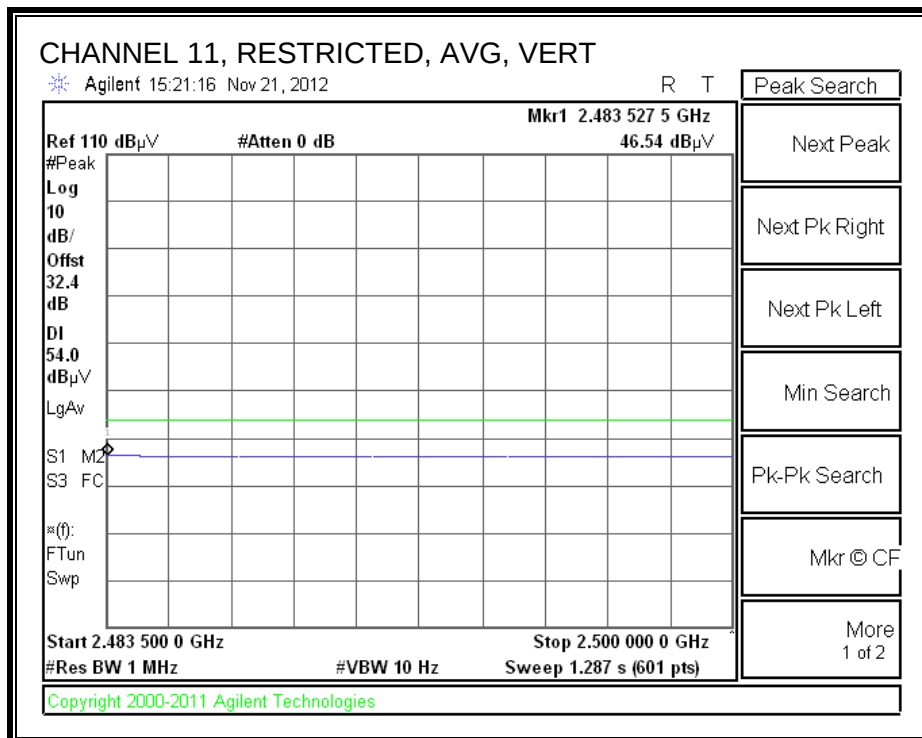
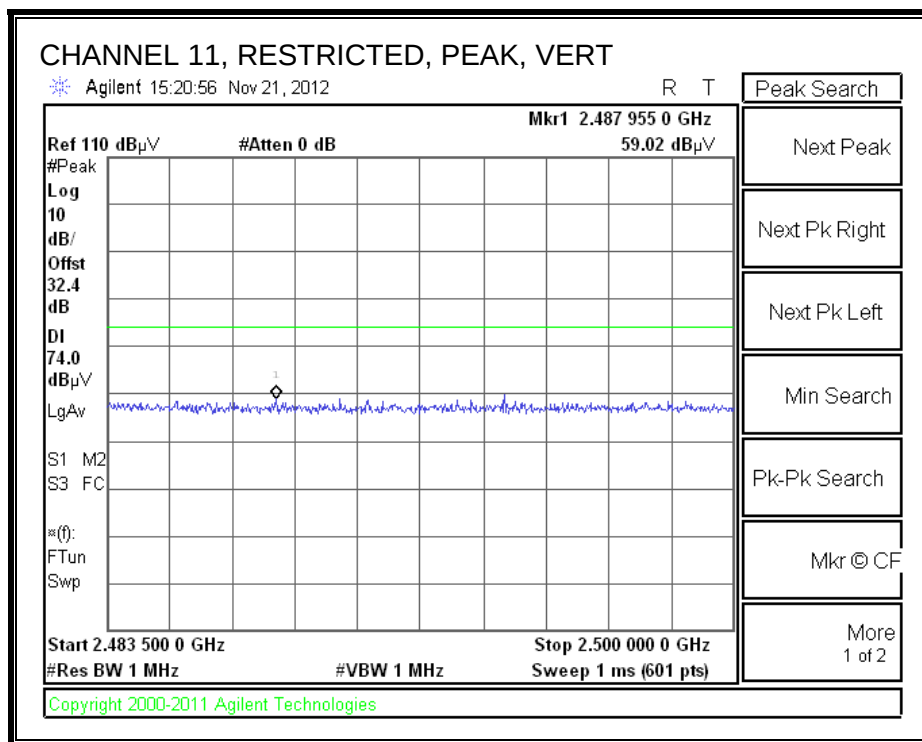
RESTRICTED BANDEDGE (CHANNEL 1, VERTICAL)



RESTRICTED BANDEDGE (CHANNEL 11, HORIZONTAL)

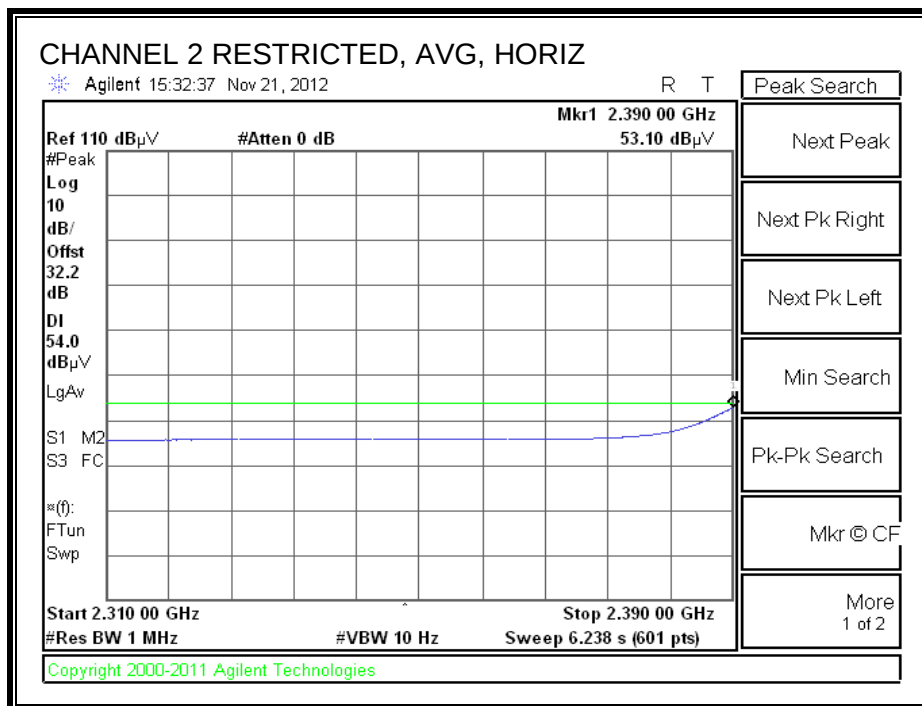
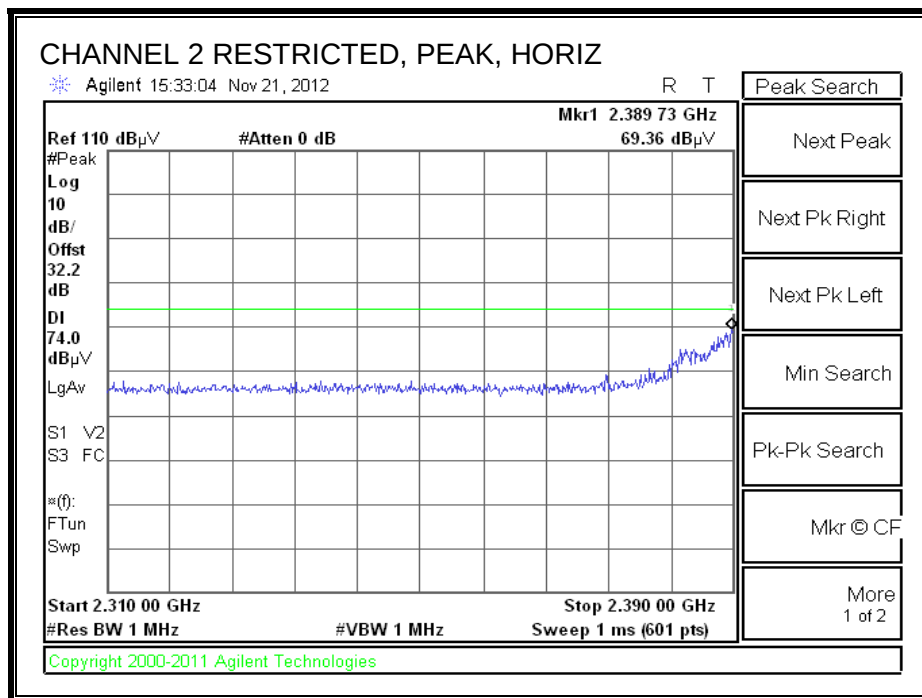


RESTRICTED BANDEDGE (CHANNEL 11, VERTICAL)

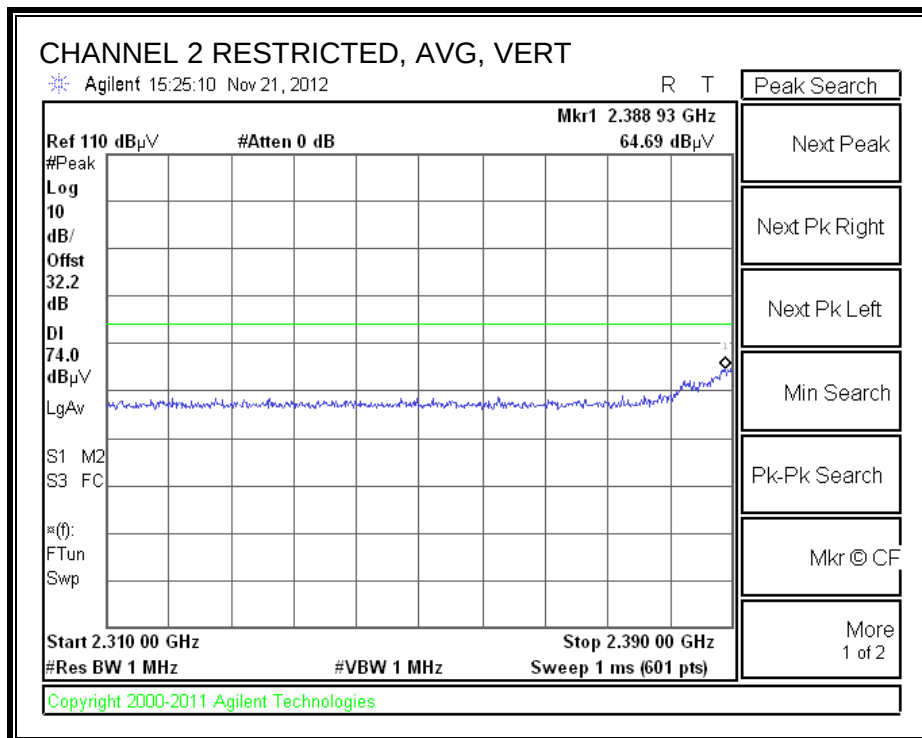
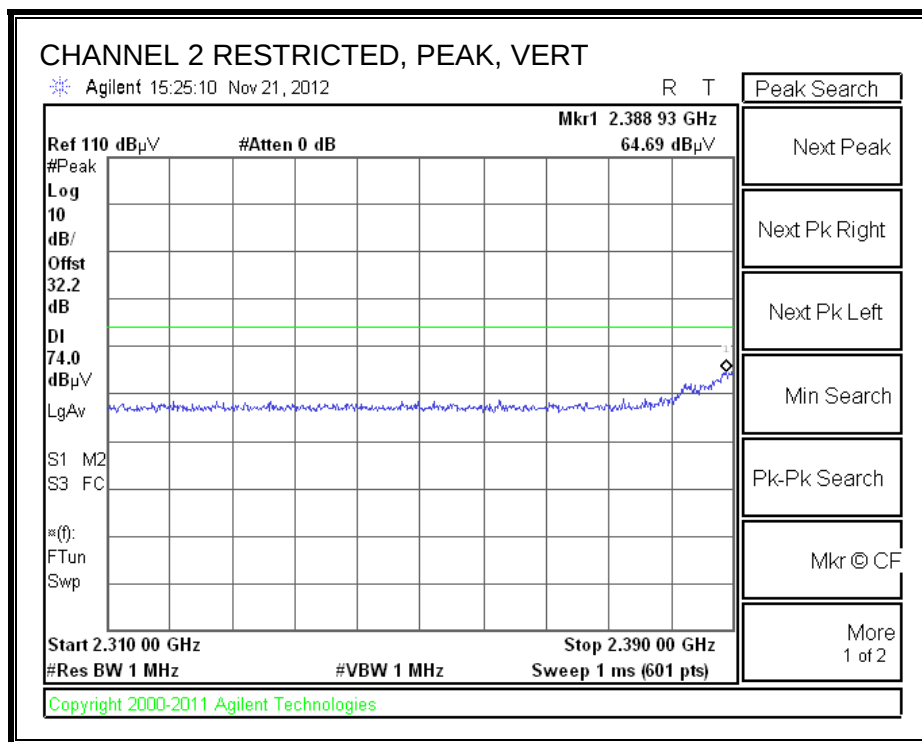


7.2.3. TX ABOVE 1 GHz FOR 802.11n HT20, 1TX IN THE 2.4 GHz BAND, CHAIN B

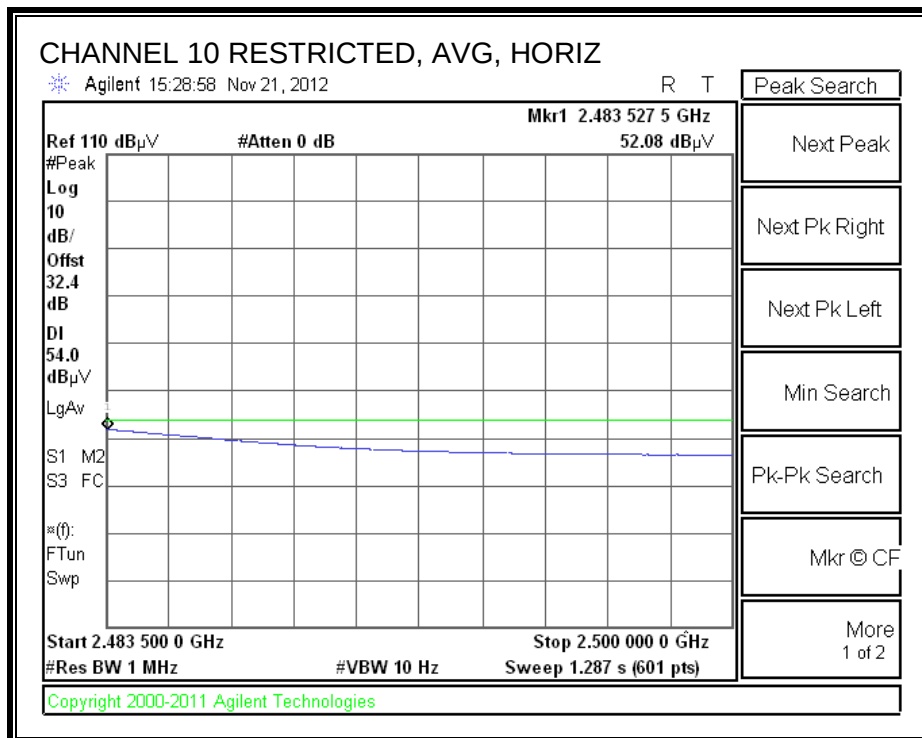
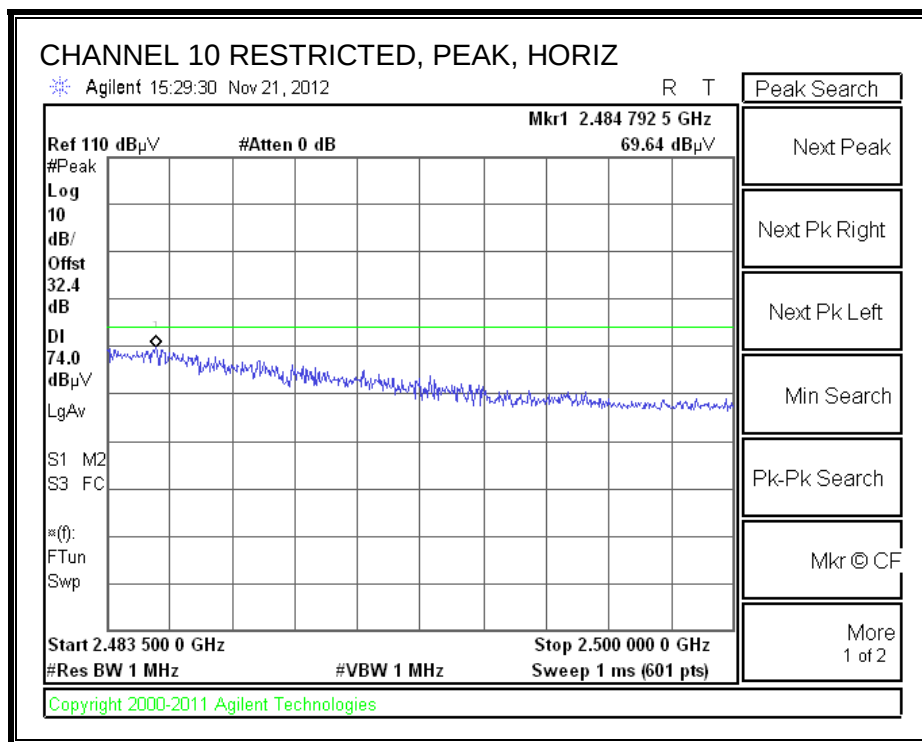
RESTRICTED BANDEDGE (CHANNEL 2, HORIZONTAL)



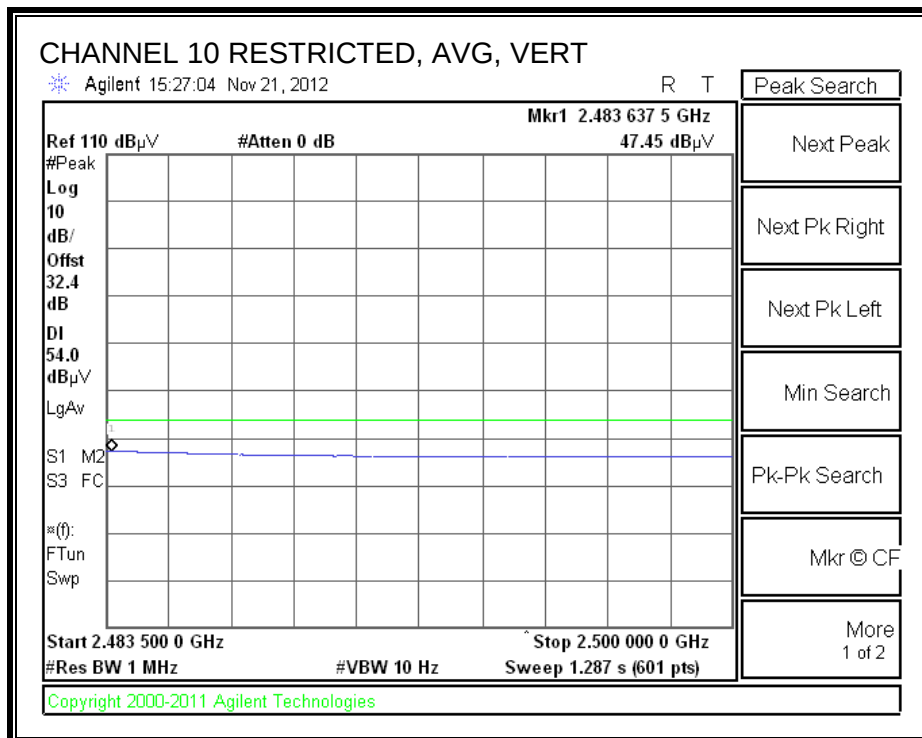
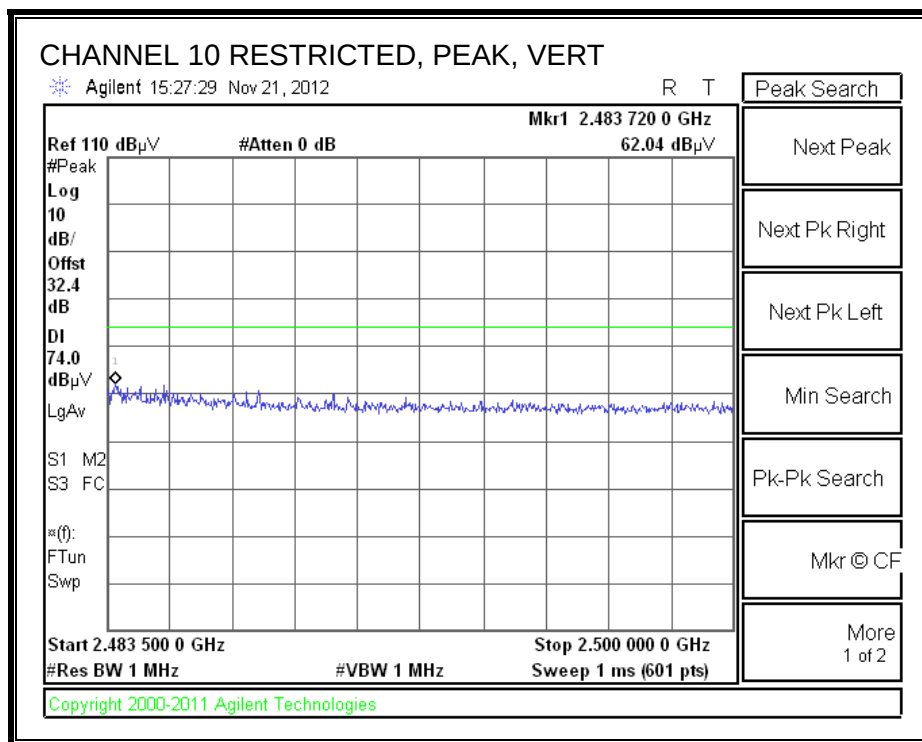
RESTRICTED BANDEDGE (CHANNEL 2, VERTICAL)



RESTRICTED BANDEDGE (CHANNEL 10, HORIZONTAL)

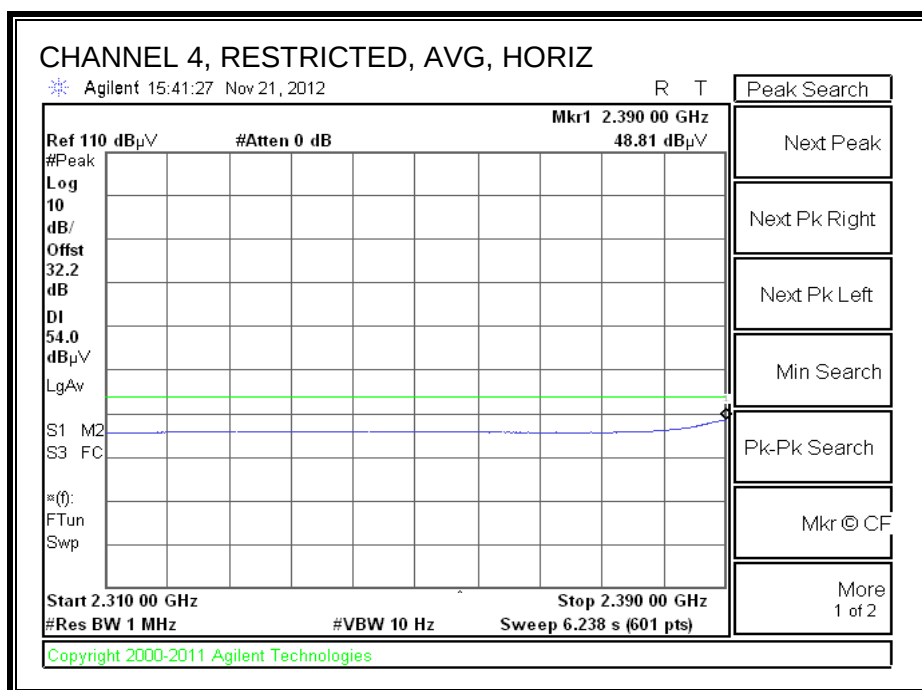
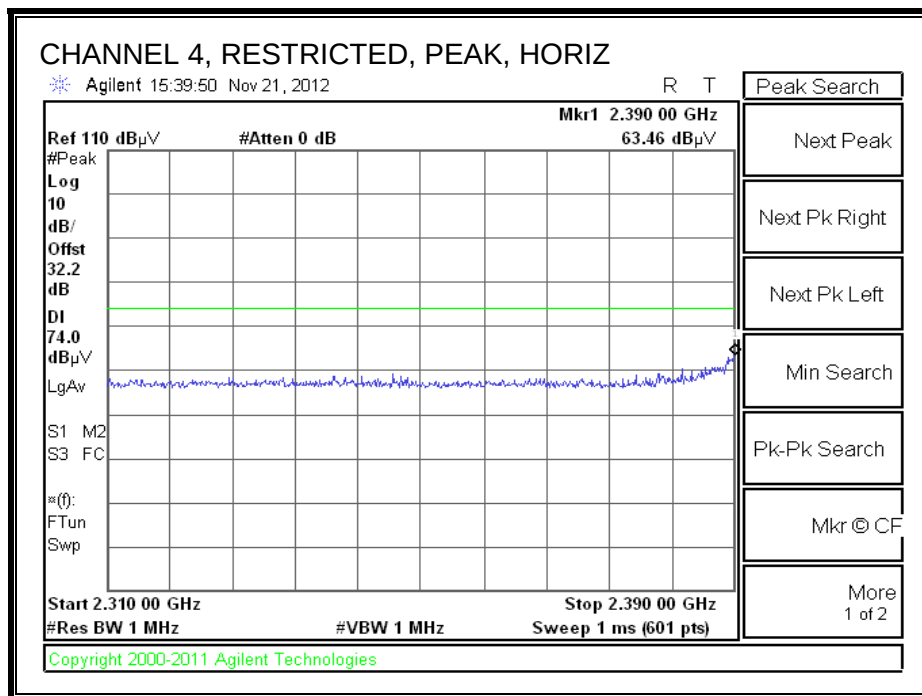


RESTRICTED BANDEDGE (CHANNEL 10, VERTICAL)

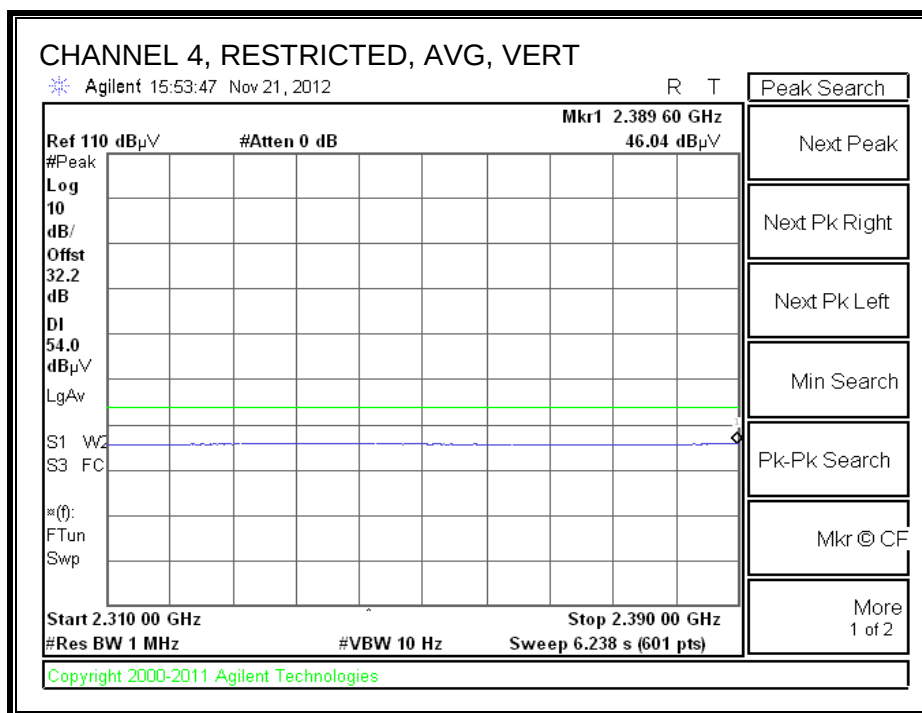
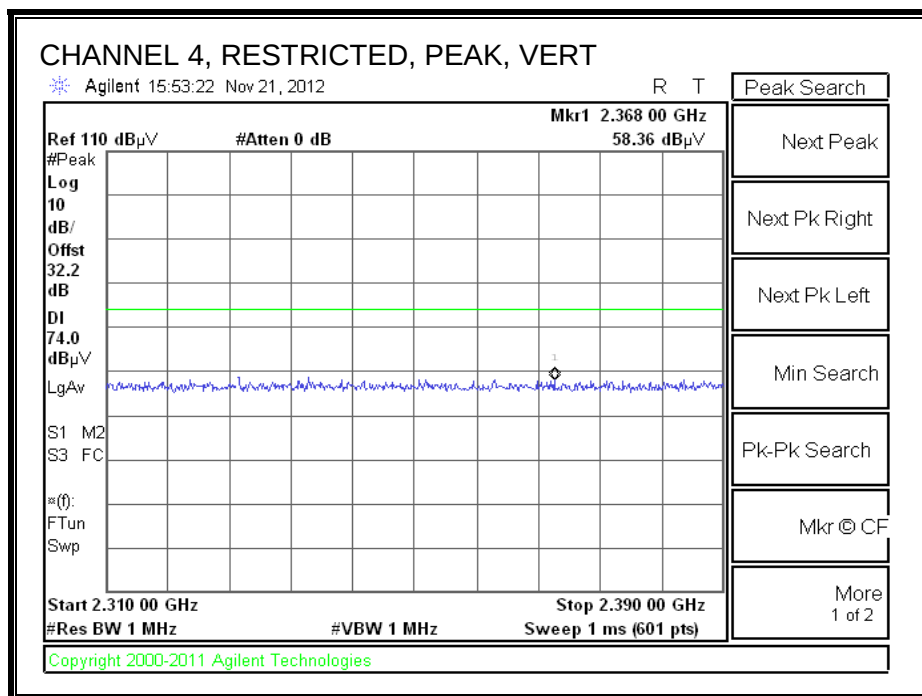


7.2.4. TX ABOVE 1 GHz FOR 802.11n HT40 1TX IN THE 2.4 GHz BAND, CHAIN B

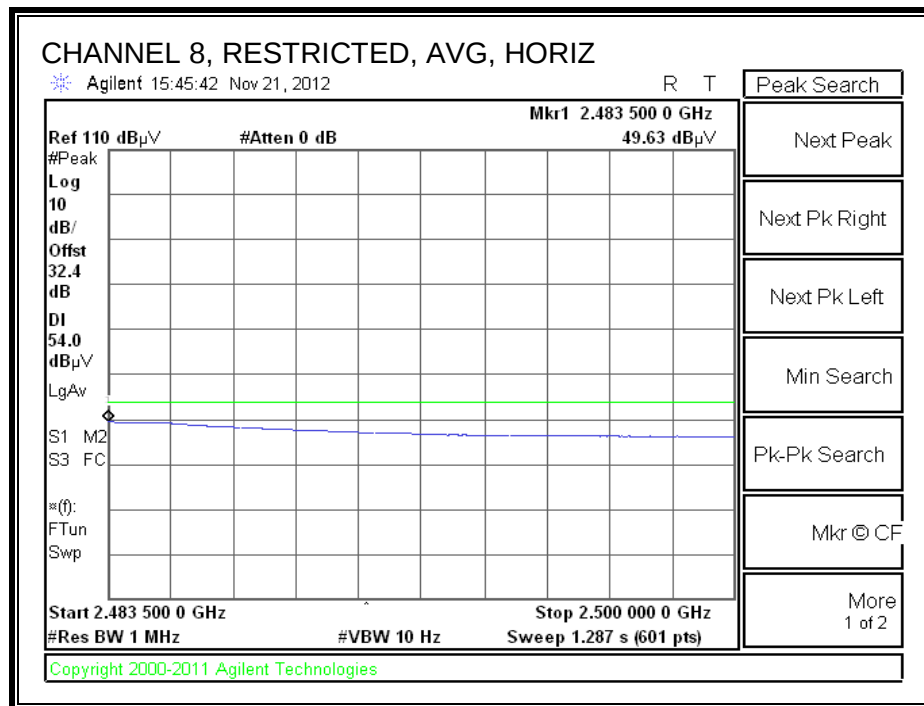
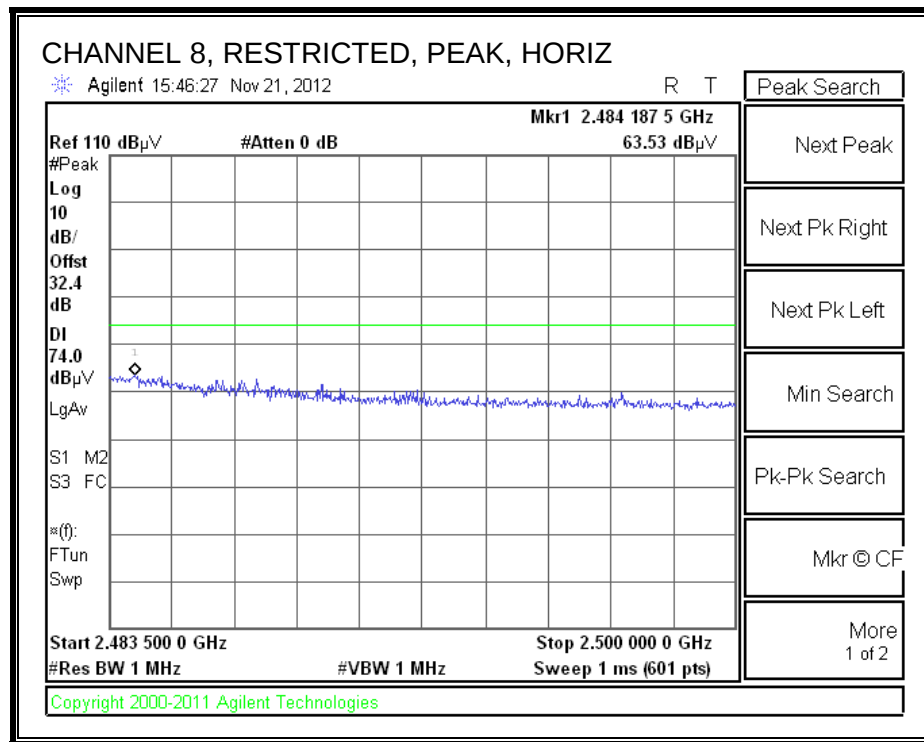
RESTRICTED BANDEDGE (CHANNEL 4, HORIZONTAL)



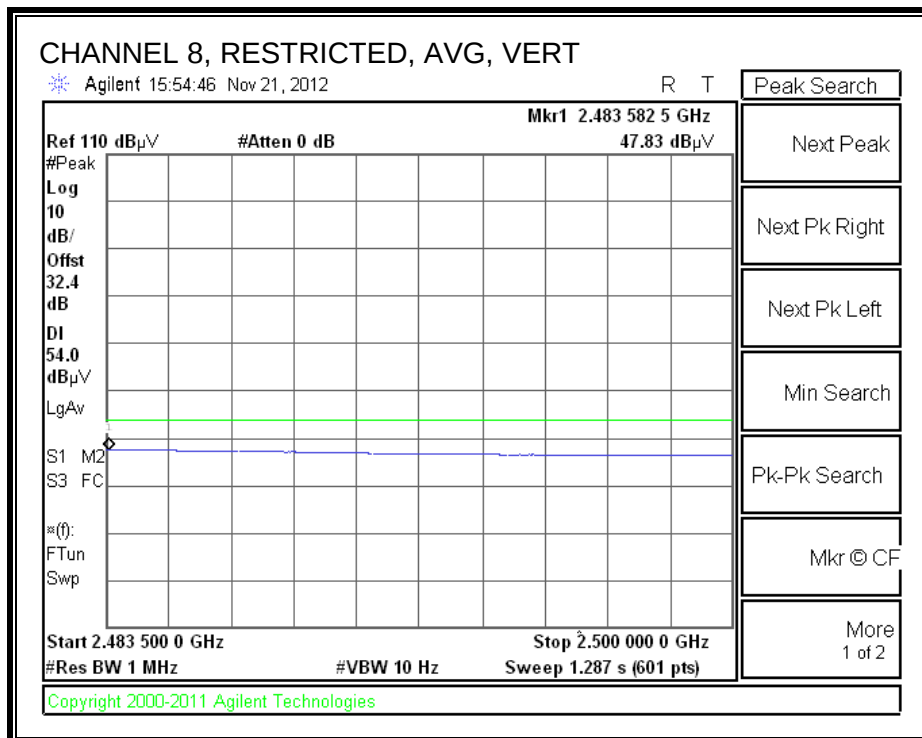
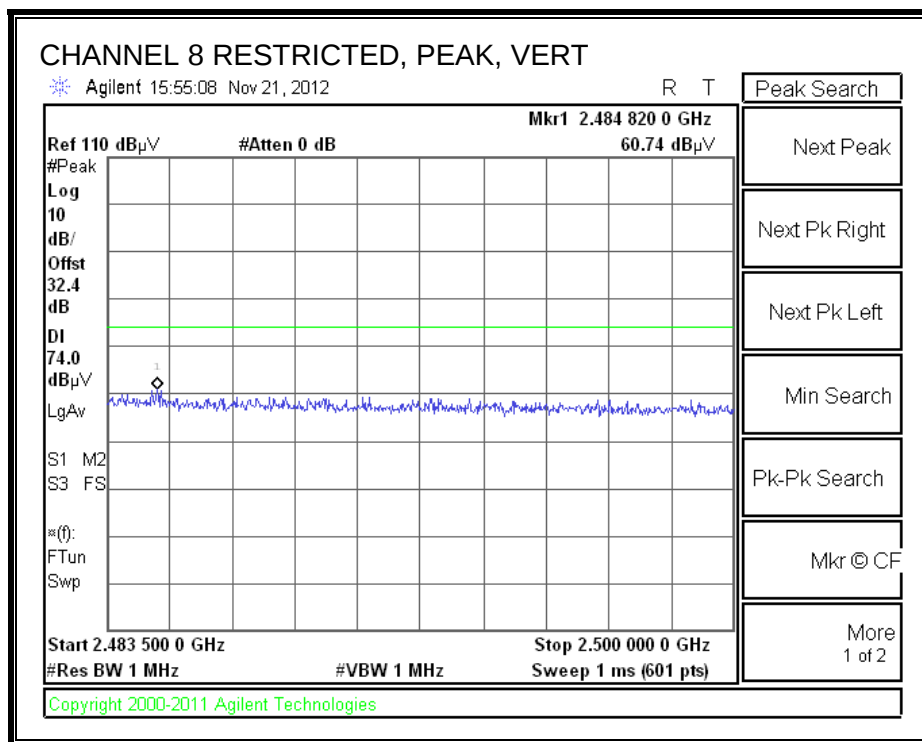
RESTRICTED BANDEDGE (CHANNEL 4, VERTICAL)



RESTRICTED BANDEDGE (CHANNEL 8, HORIZONTAL)

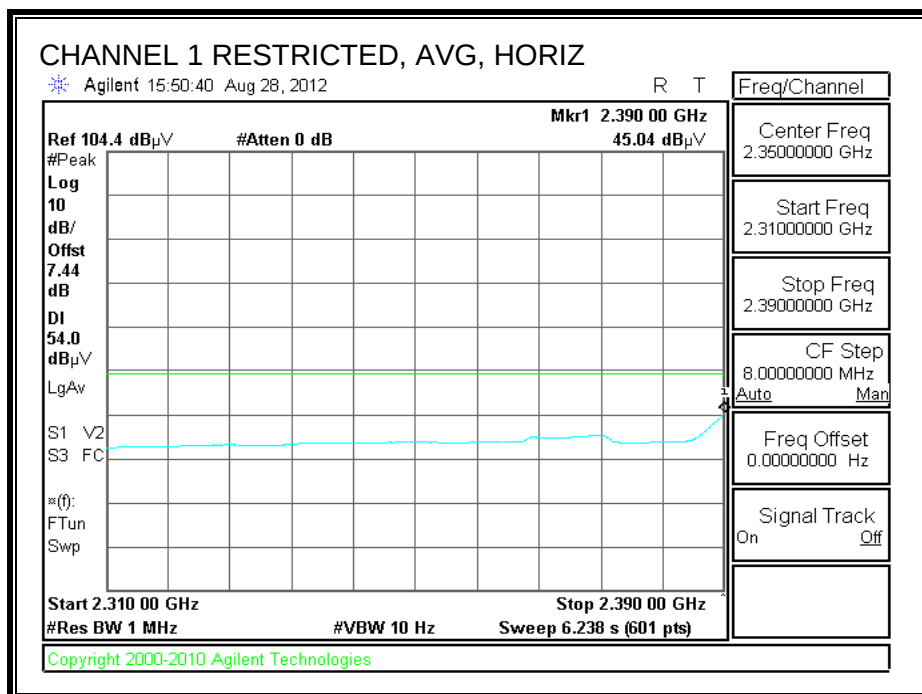
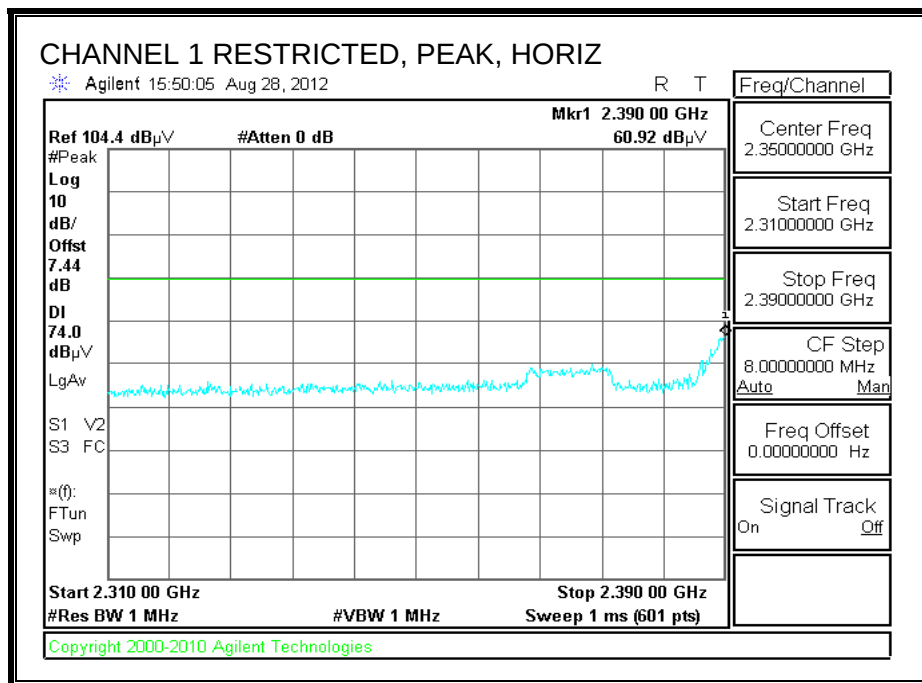


RESTRICTED BANDEDGE (CHANNEL 8, VERTICAL)

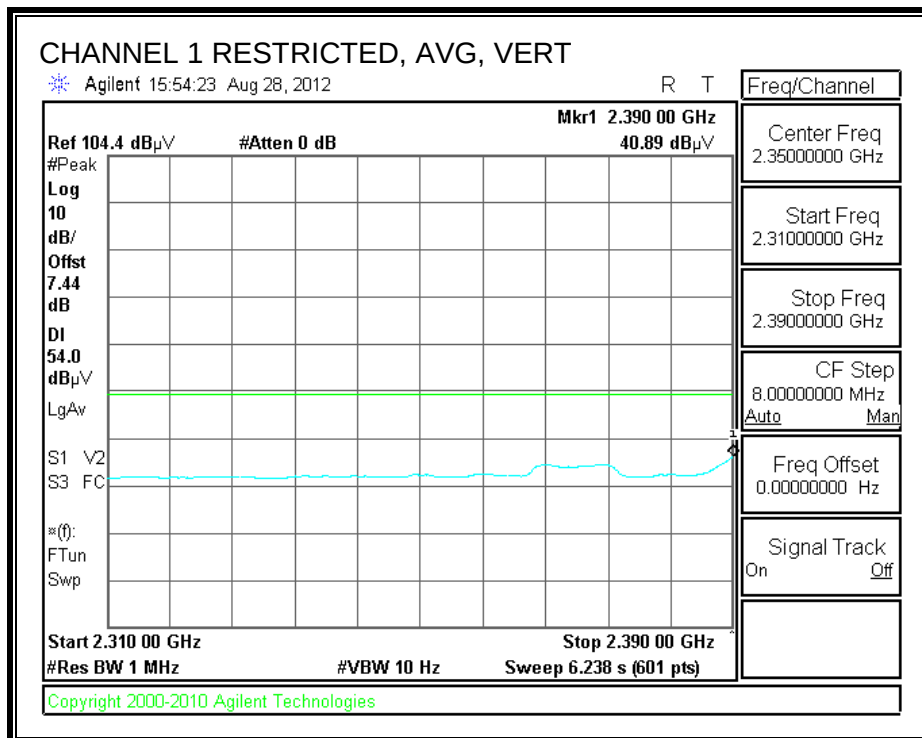
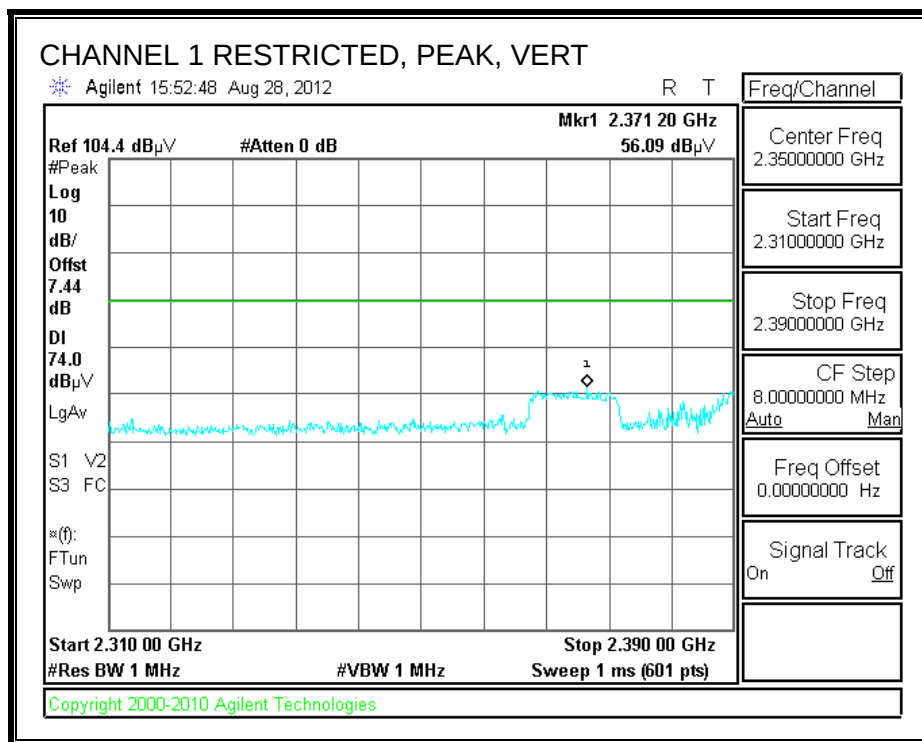


7.2.5. TX ABOVE 1 GHz FOR 802.11n HT20 2TX, IN THE 2.4 GHz BAND, MIMO

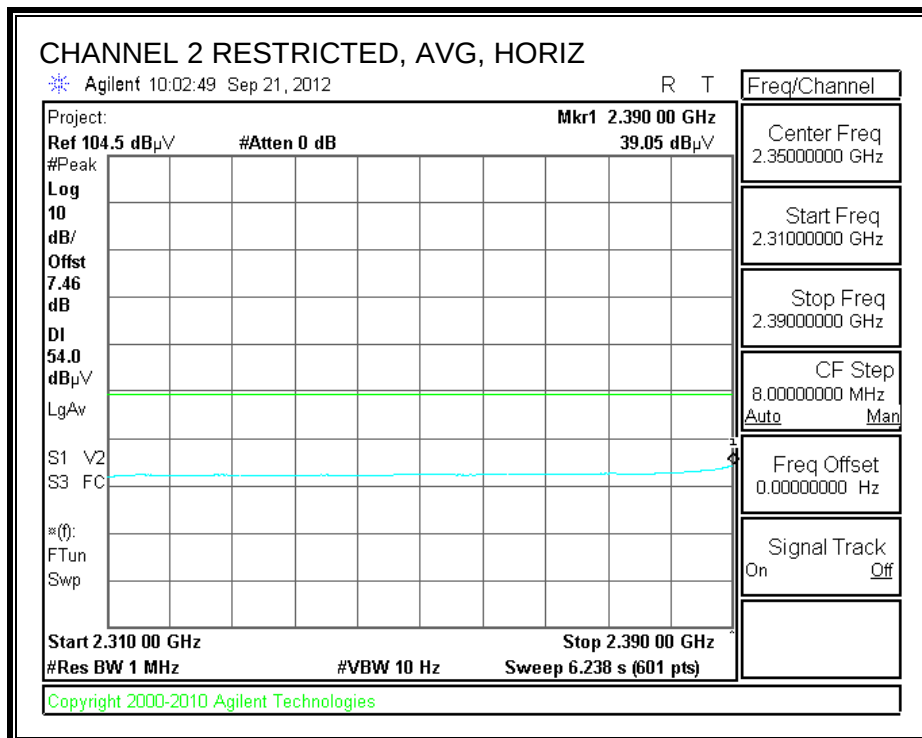
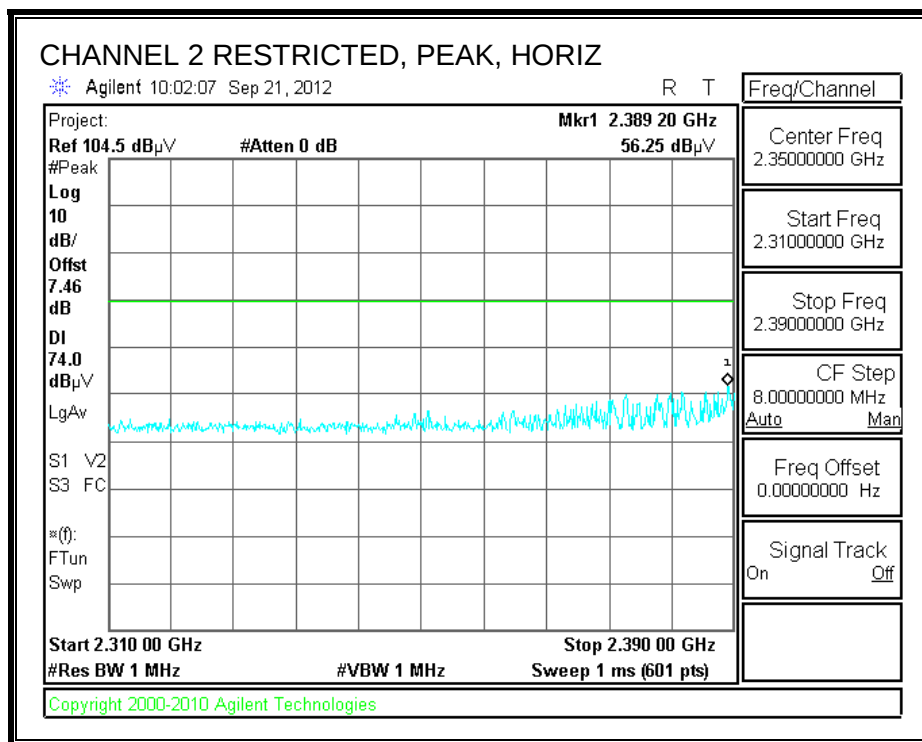
RESTRICTED BANDEDGE (CHANNEL 1, HORIZONTAL)



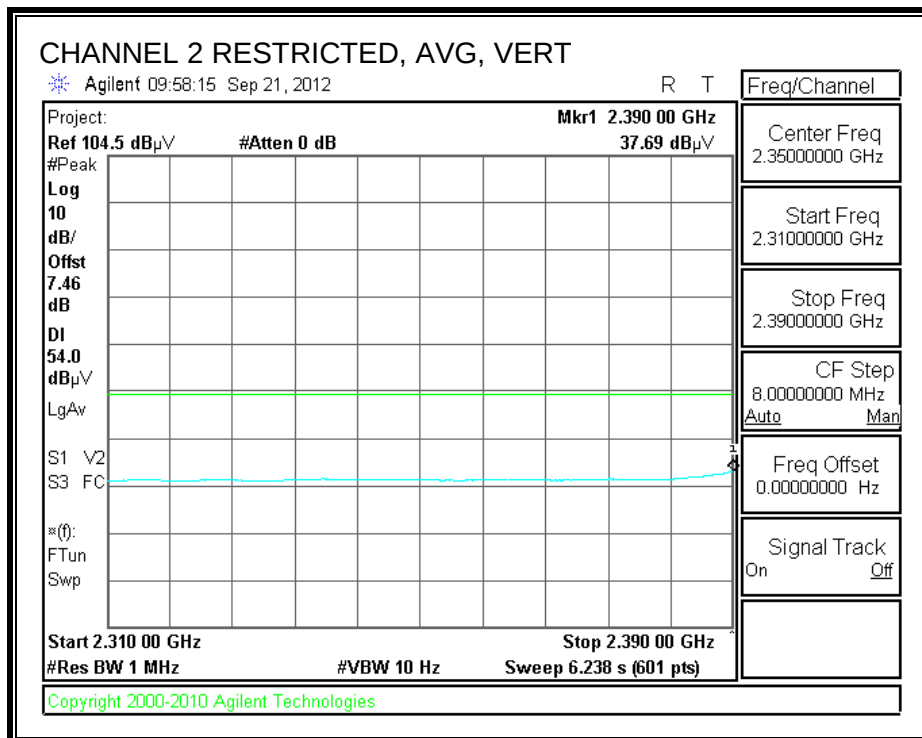
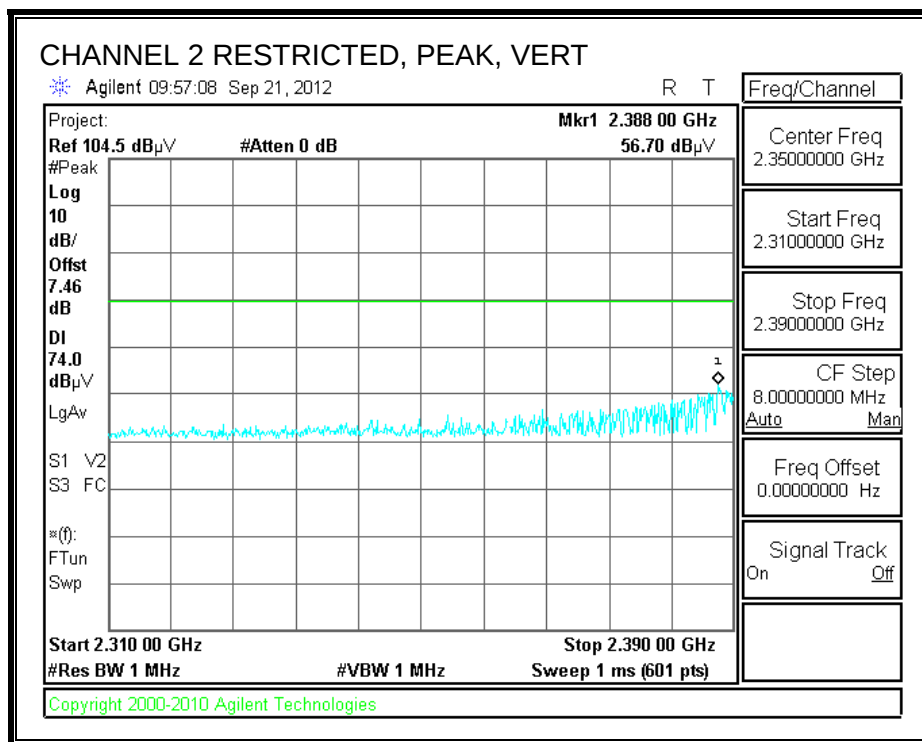
RESTRICTED BANDEDGE (CHANNEL 1, VERTICAL)



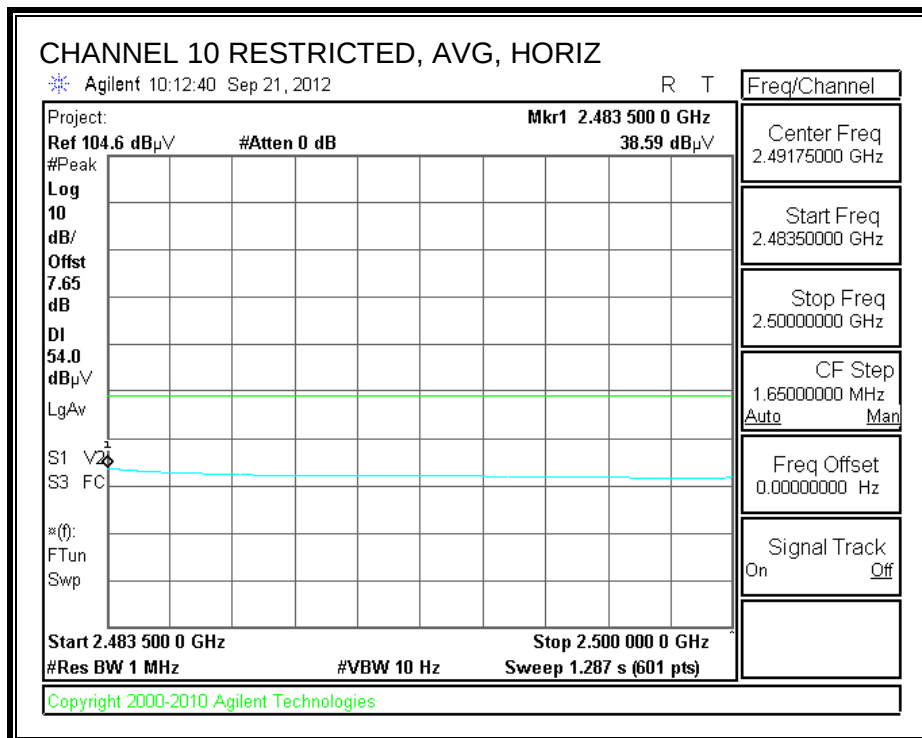
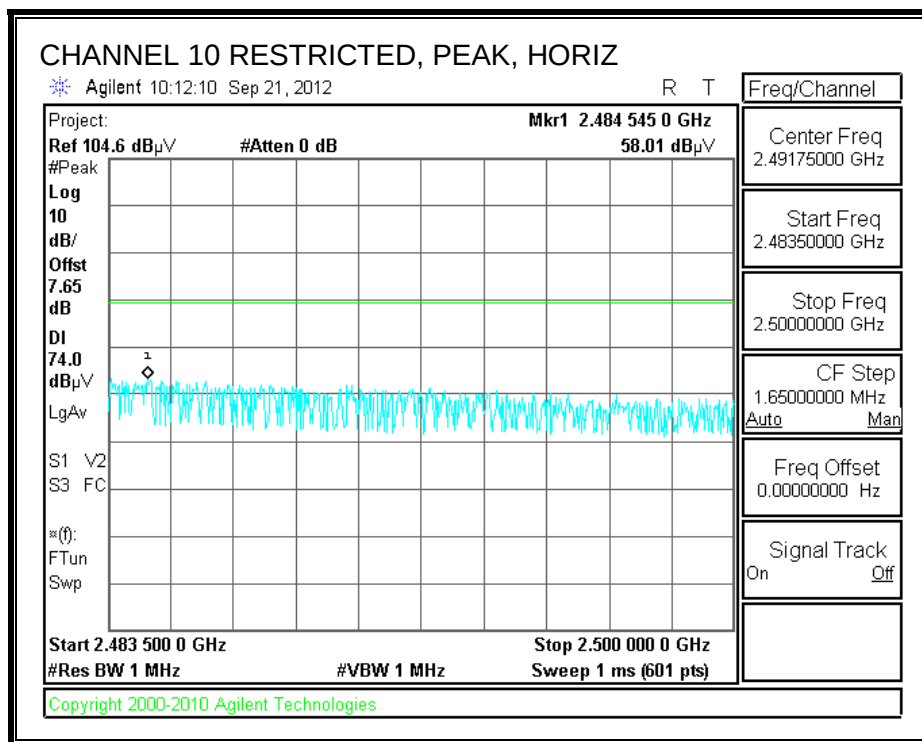
RESTRICTED BANDEDGE (CHANNEL 2, HORIZONTAL)



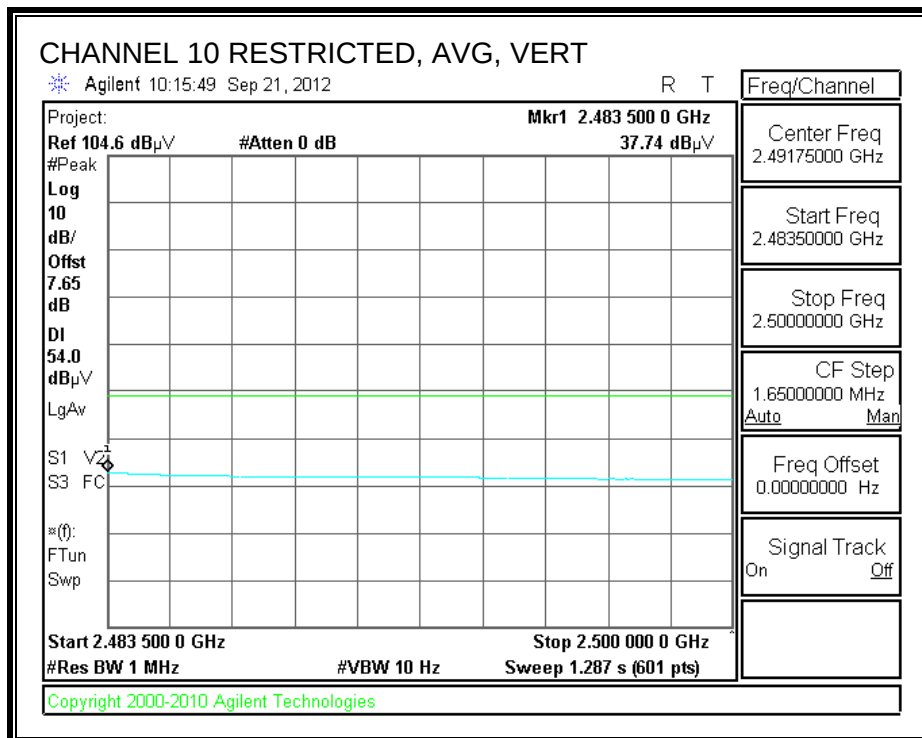
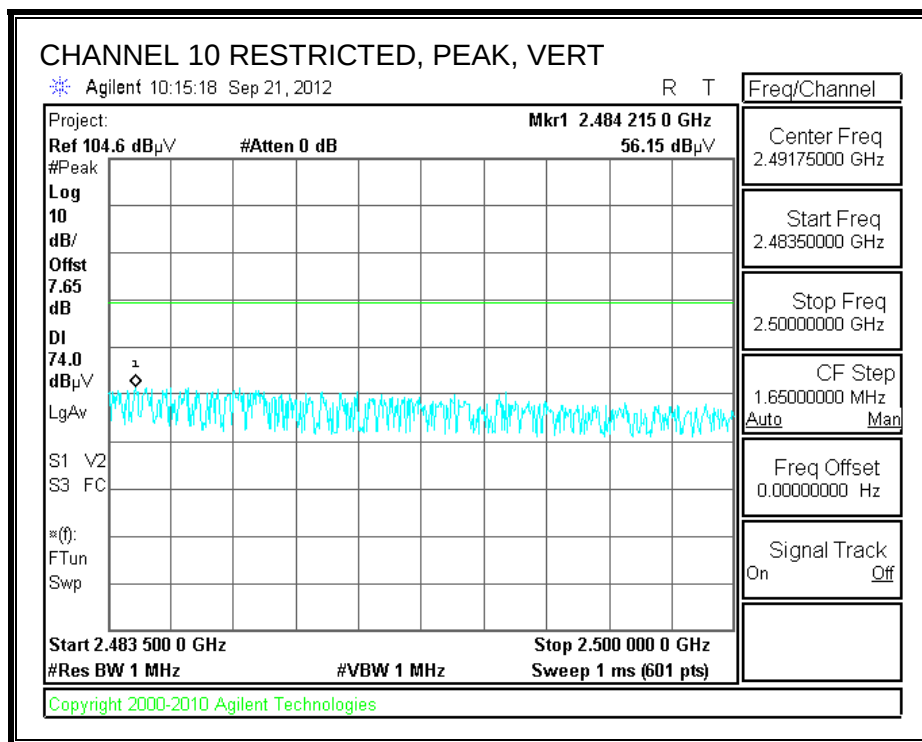
RESTRICTED BANDEDGE (CHANNEL 2, VERTICAL)



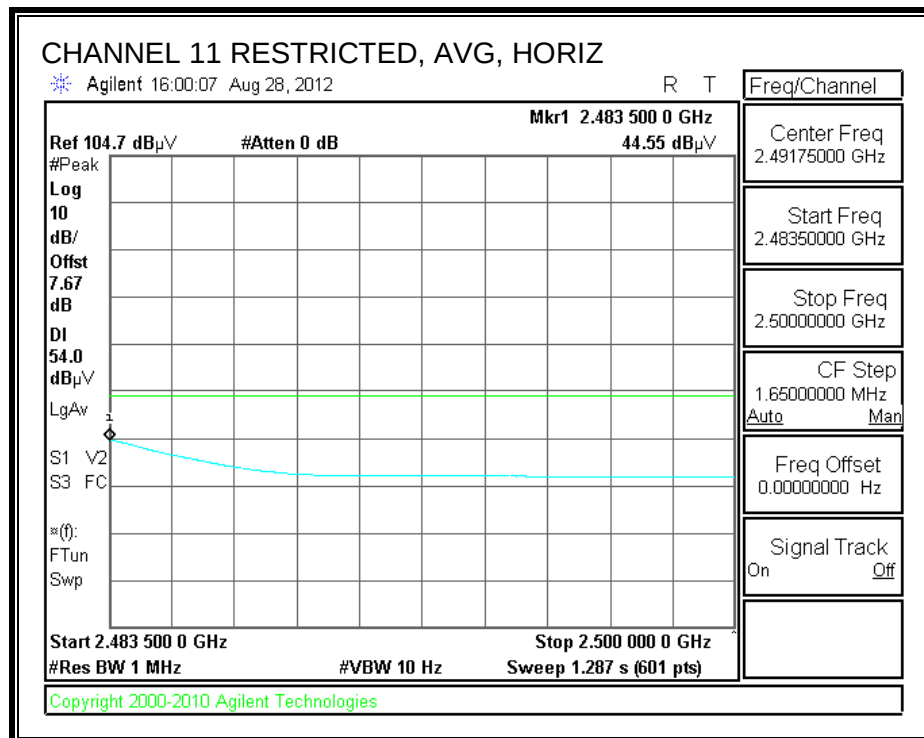
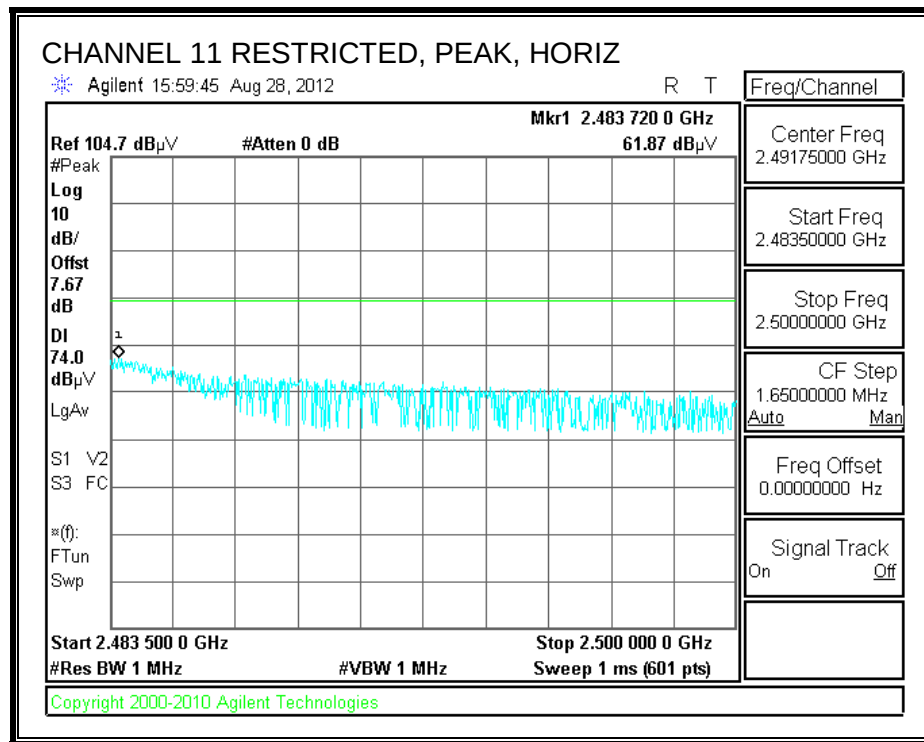
RESTRICTED BANDEDGE (CHANNEL 10, HORIZONTAL)



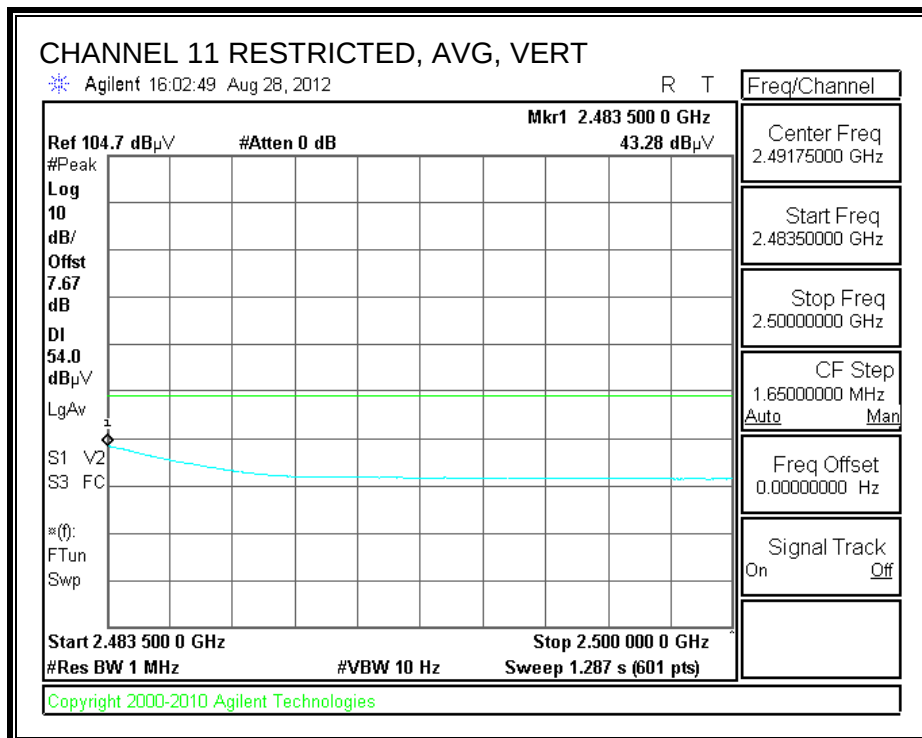
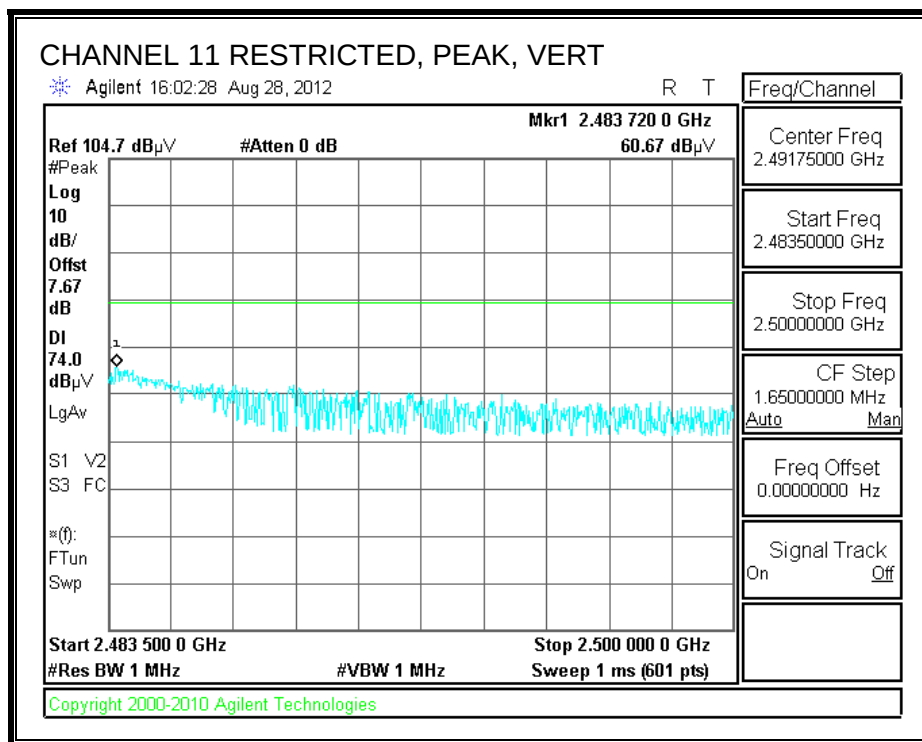
RESTRICTED BANDEDGE (CHANNEL 10, VERTICAL)



RESTRICTED BANDEDGE (CHANNEL 11, HORIZONTAL)



RESTRICTED BANDEDGE (CHANNEL 11, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber

Test Engr: Oliver Su
Date: 08/29/12
Project #: 12U14545
Company: Wistron
Test Target: FCC 15.247
Mode Oper: 2x Tx, 11n HT20, Tx continuously, EUT stand-alone

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	Ftr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/Q/P	Ant.High cm	Table Angle Degree	Notes
Ch 1 (2412MHz)															
4.824	3.0	37.2	33.1	6.8	-34.1	0.0	0.0	43.0	74.0	-31.0	H	P	181.0	358.0	
4.824	3.0	23.6	33.1	6.8	-34.1	0.0	0.0	29.4	54.0	-24.6	H	A	181.0	358.0	
4.824	3.0	36.5	33.1	6.8	-34.1	0.0	0.0	42.3	74.0	-31.7	V	P	190.0	347.0	
4.824	3.0	23.7	33.1	6.8	-34.1	0.0	0.0	29.5	54.0	-24.5	V	A	190.0	347.0	
Ch 6 (2437MHz)															
4.874	3.0	37.6	33.2	6.8	-34.0	0.0	0.0	43.6	74.0	-30.4	V	P	166.0	20.0	
4.874	3.0	24.1	33.2	6.8	-34.0	0.0	0.0	30.0	54.0	-24.0	V	A	166.0	20.0	
4.874	3.0	38.1	33.2	6.8	-34.0	0.0	0.0	43.6	74.0	-30.4	H	P	118.0	101.0	
4.874	3.0	26.3	33.2	6.8	-34.0	0.0	0.0	30.0	54.0	-24.0	H	A	118.0	101.0	
Ch 11 (2462MHz)															
4.924	3.0	35.6	33.2	6.8	-34.0	0.0	0.0	41.6	74.0	-32.4	H	P	113.0	194.0	
4.924	3.0	23.6	33.2	6.8	-34.0	0.0	0.0	29.6	54.0	-24.4	H	A	113.0	194.0	
4.924	3.0	36.3	33.2	6.8	-34.0	0.0	0.0	42.3	74.0	-31.7	V	P	100.0	134.0	
4.924	3.0	23.5	33.2	6.8	-34.0	0.0	0.0	29.5	54.0	-24.5	V	A	100.0	134.0	

Rev. 4.1.2.7

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

High Frequency Measurement

Compliance Certification Services, Fremont 5m Chamber

Test Engr: Oliver Su
Date: 09/21/12
Project #: 12U14545
Company: Wistron
Test Target: FCC 15.247
Mode Oper: 2x Tx, 11n HT20, Tx continuously, EUT stand-alone

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

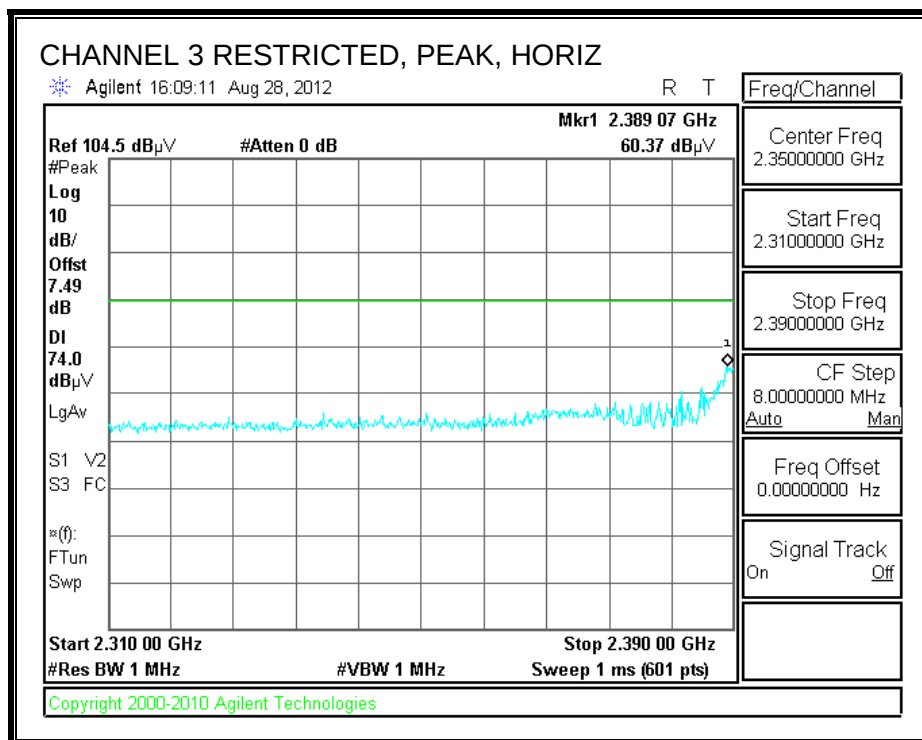
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Ftr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/Q/P	Ant.High cm	Table Angle Degree	Notes
Ch 10 (2457MHz)															
4.914	3.0	36.5	33.2	6.8	-34.0	0.0	0.0	42.5	74.0	-31.5	V	P	98.0	167.0	
4.914	3.0	24.3	33.2	6.8	-34.0	0.0	0.0	30.3	54.0	-23.7	V	A	98.0	167.0	
4.914	3.0	36.9	33.2	6.8	-34.0	0.0	0.0	42.9	74.0	-31.1	H	P	155.0	342.0	
4.914	3.0	24.0	33.2	6.8	-34.0	0.0	0.0	30.0	54.0	-24.0	H	A	155.0	342.0	
Ch 2 (2417MHz)															
4.834	3.0	37.0	33.1	6.8	-34.1	0.0	0.0	42.8	74.0	-31.2	H	P	100.0	343.0	
4.834	3.0	24.5	33.1	6.8	-34.1	0.0	0.0	30.4	54.0	-23.6	H	A	100.0	343.0	
4.834	3.0	36.1	33.1	6.8	-34.1	0.0	0.0	42.0	74.0	-32.0	V	P	148.0	185.0	
4.834	3.0	23.9	33.1	6.8	-34.1	0.0	0.0	29.8	54.0	-24.2	V	A	148.0	185.0	

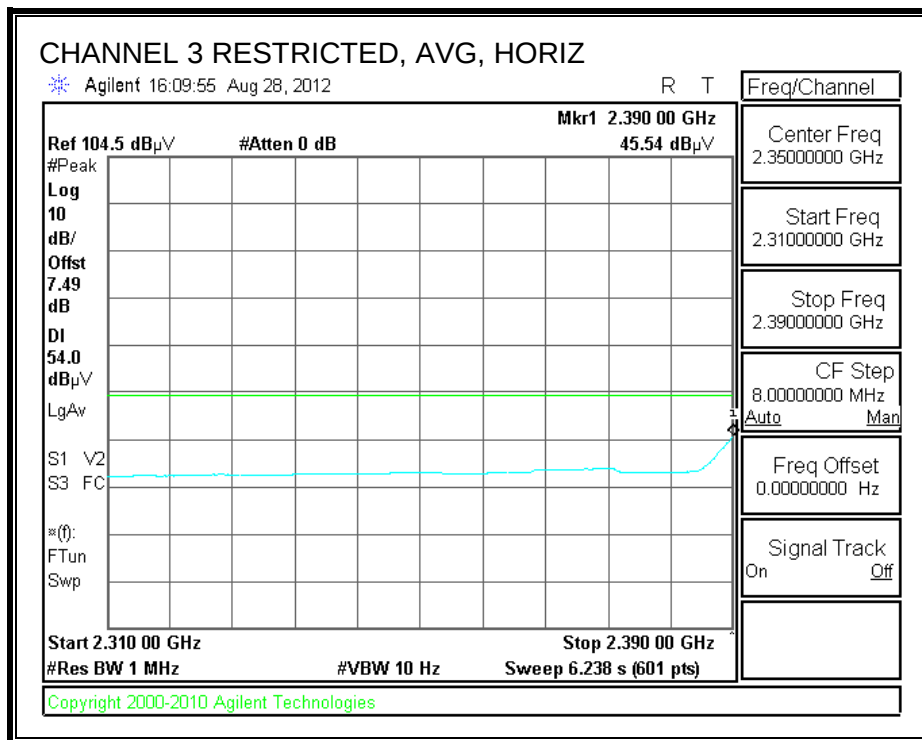
Rev. 4.1.2.7

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

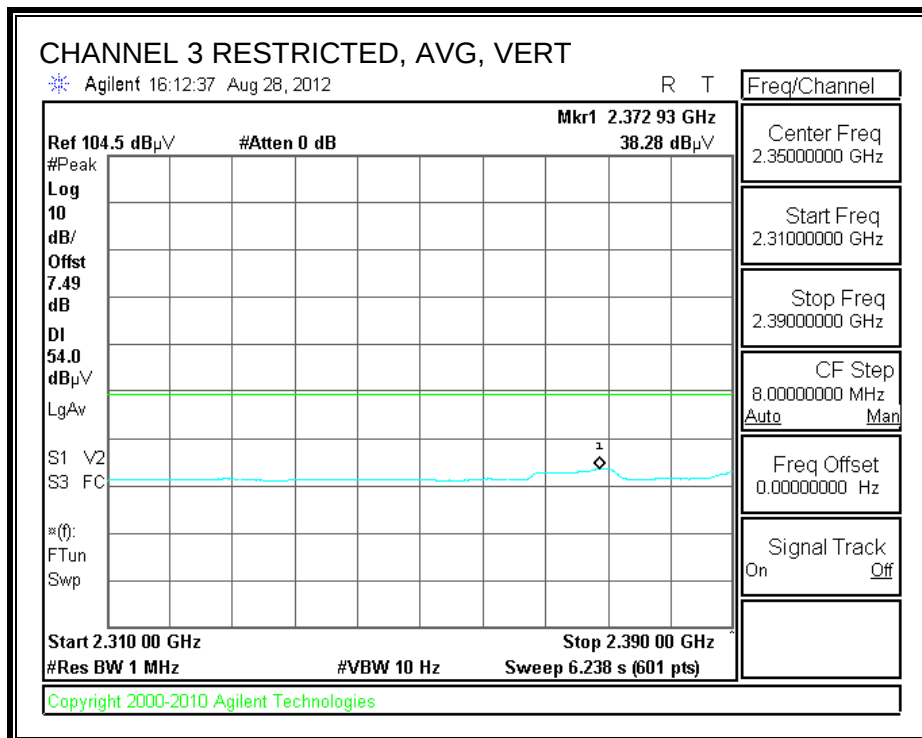
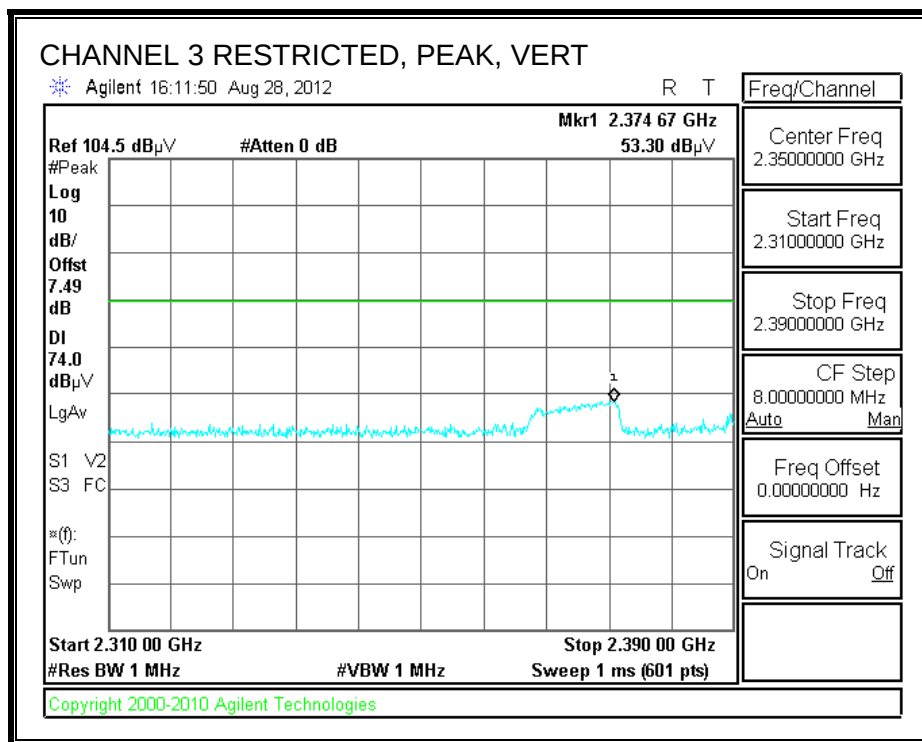
7.2.6. TX ABOVE 1 GHz FOR 802.11n HT40 2TX MODE IN THE 2.4 GHz BAND, MIMO

RESTRICTED BANDEDGE (CHANNEL 3, HORIZONTAL)

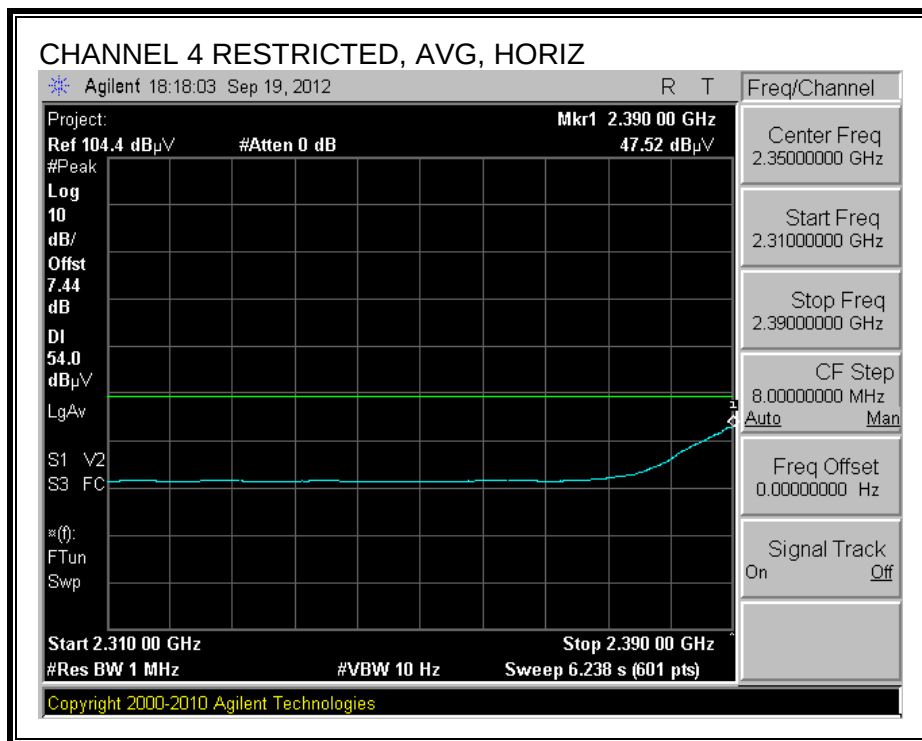
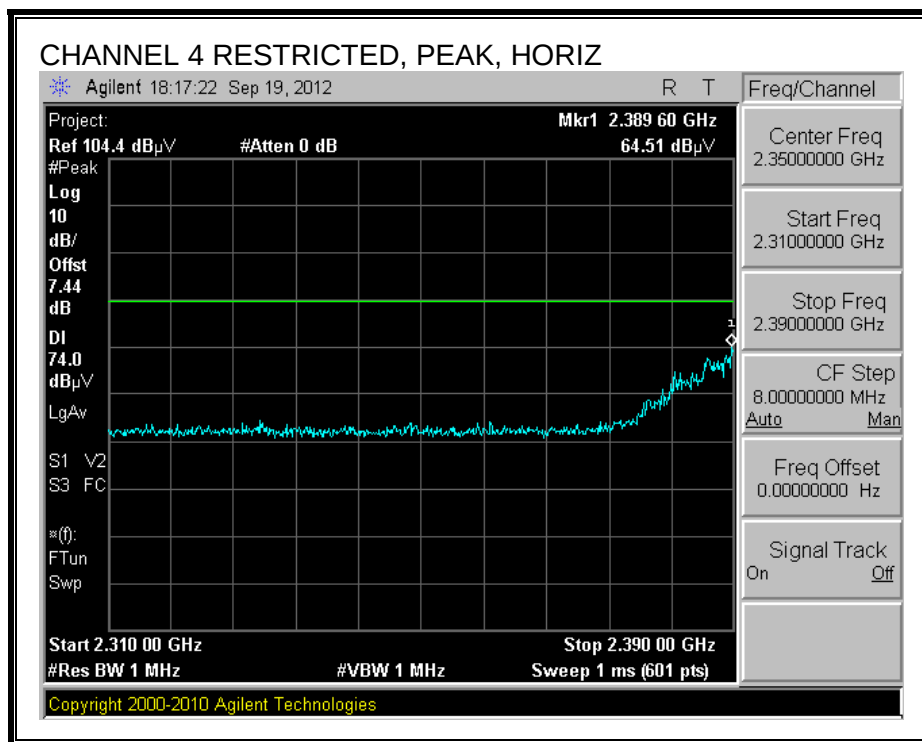




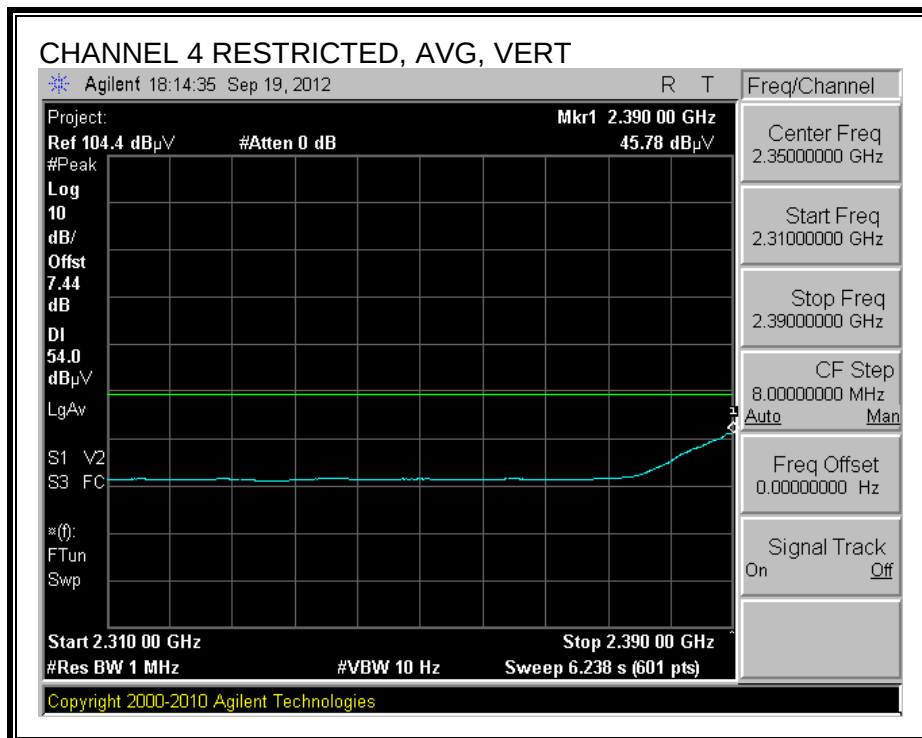
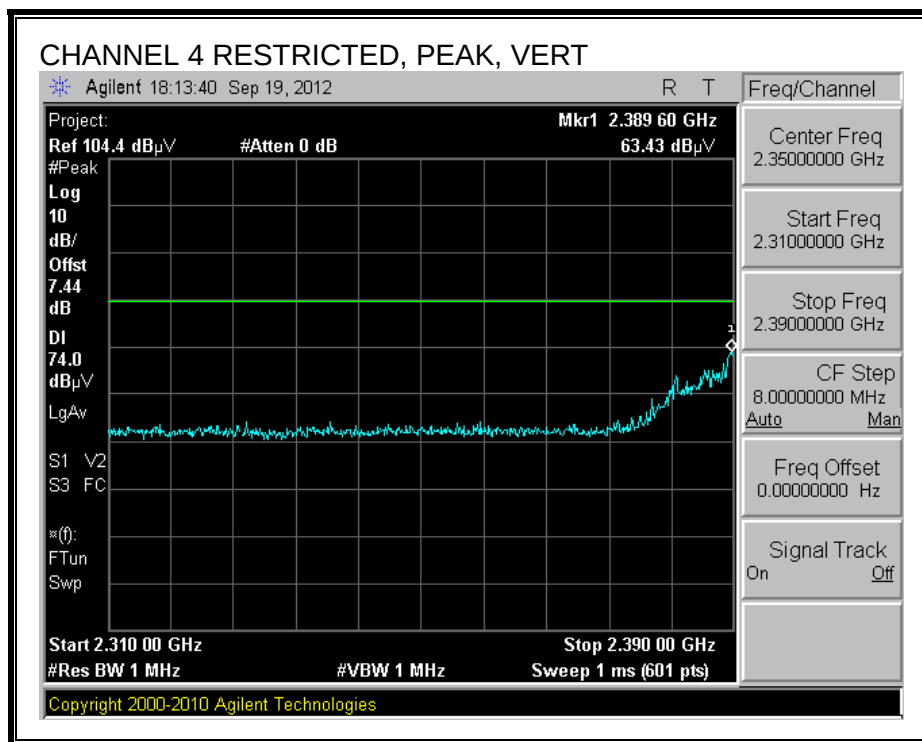
RESTRICTED BANDEDGE (CHANNEL 3, VERTICAL)



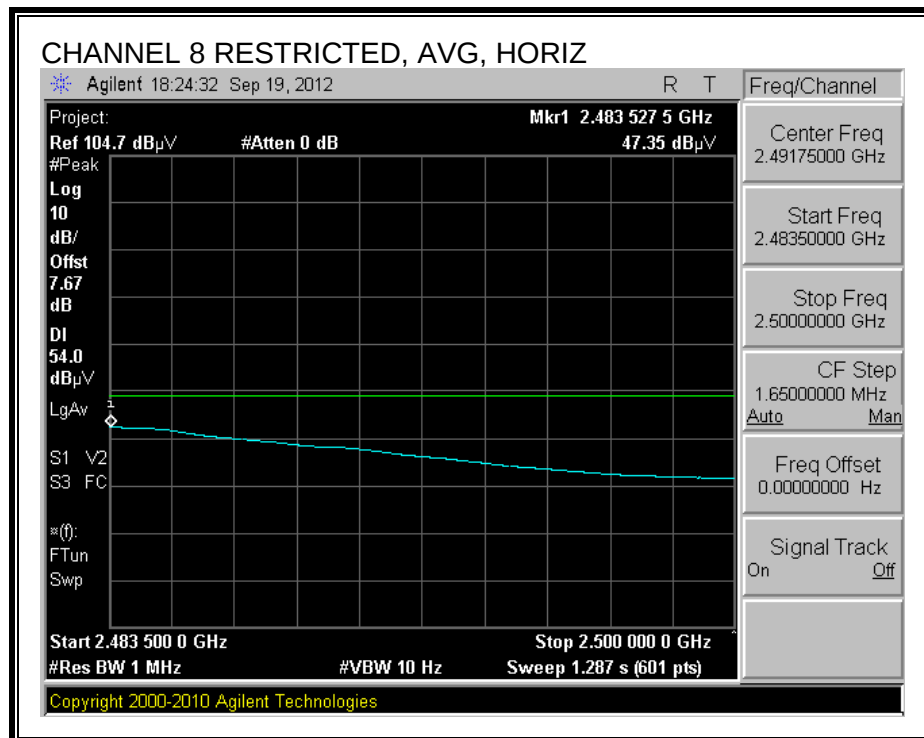
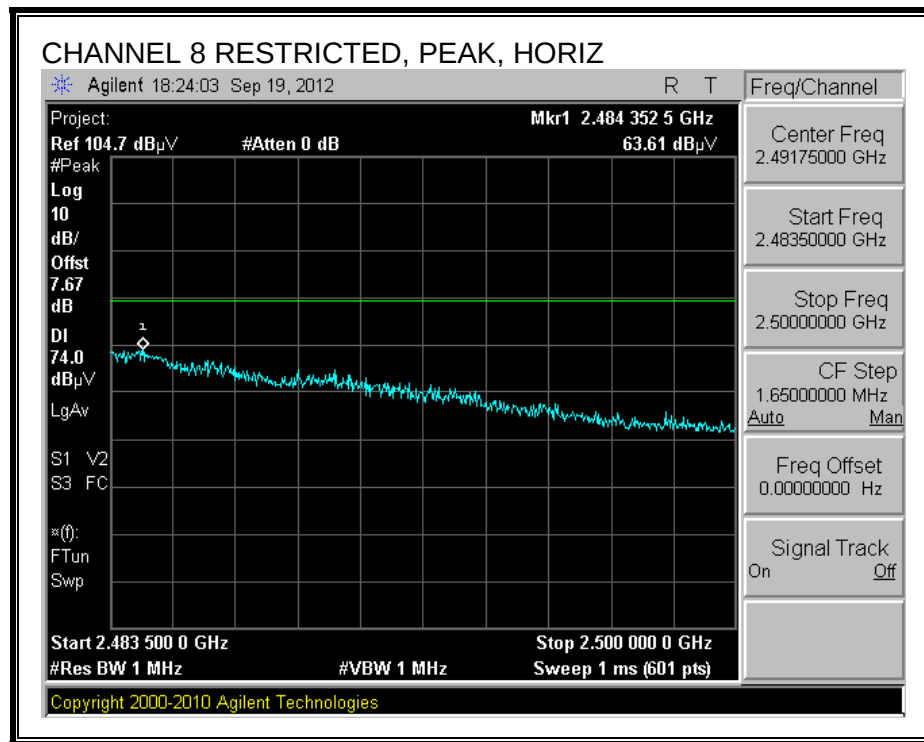
RESTRICTED BANDEDGE (CHANNEL 4, HORIZONTAL)



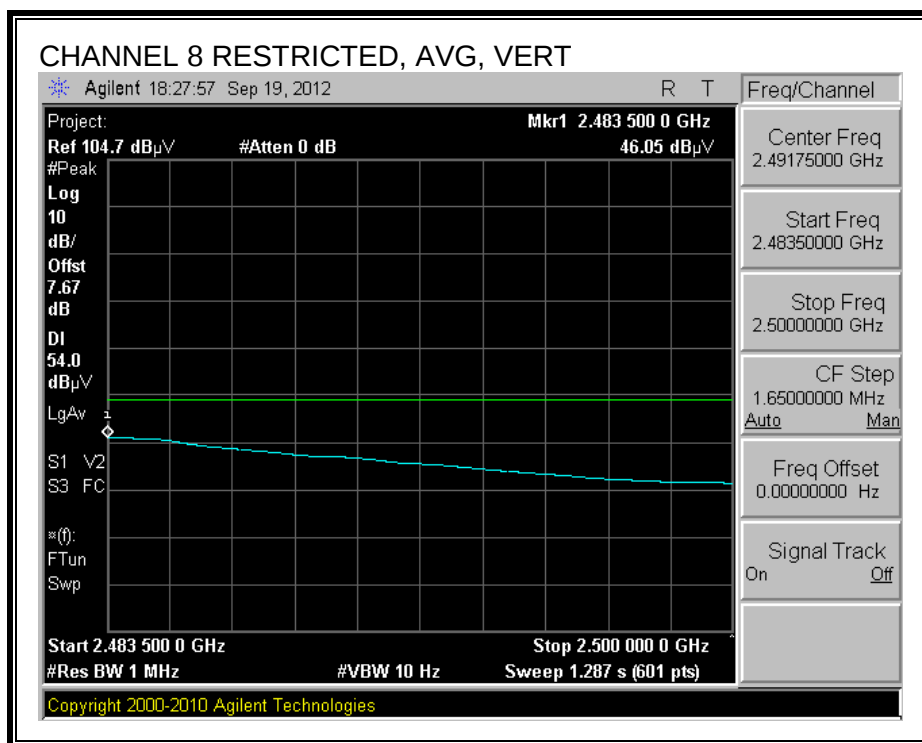
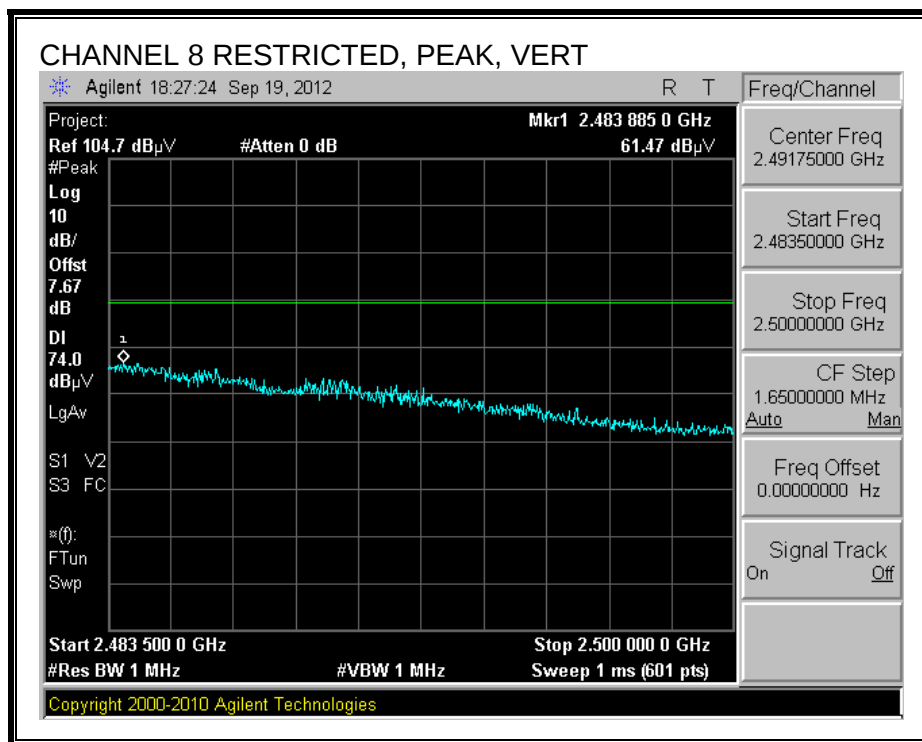
RESTRICTED BANDEDGE (CHANNEL 4, VERTICAL)



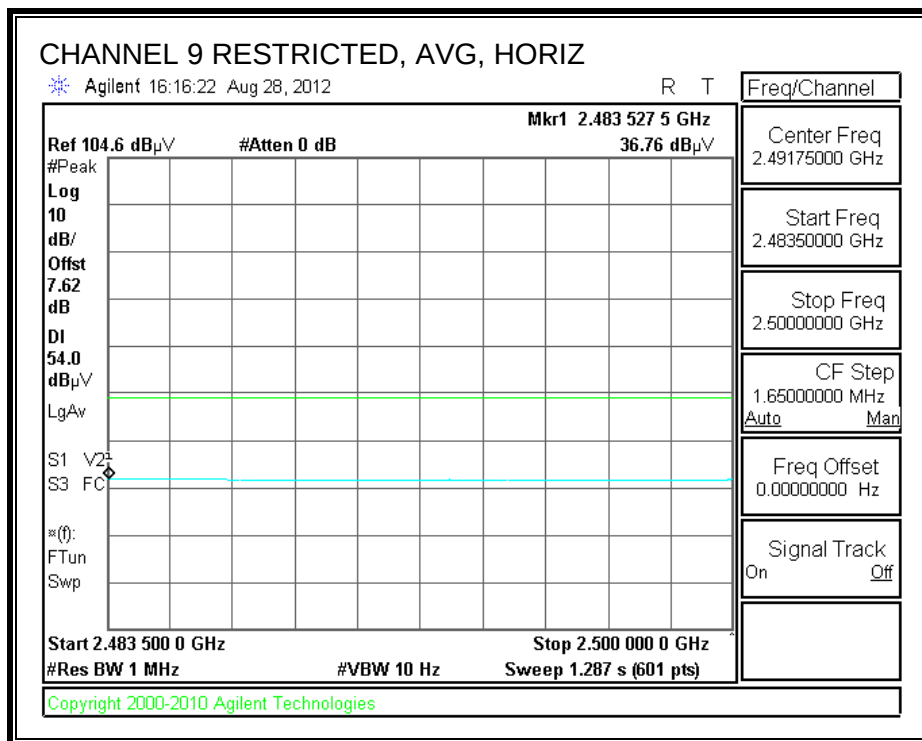
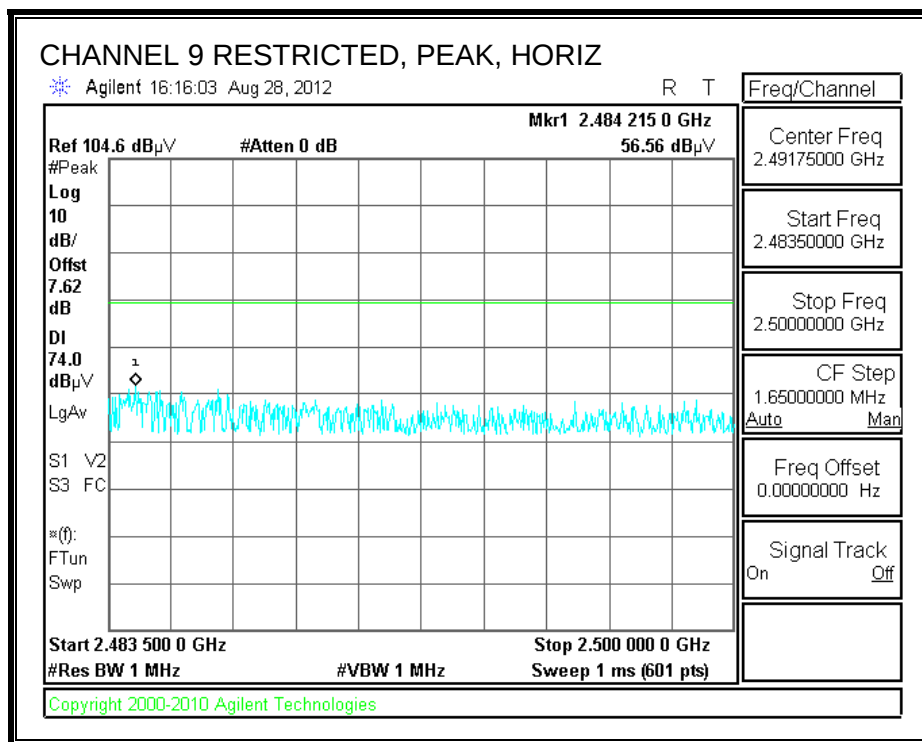
RESTRICTED BANDEDGE (CHANNEL 8, HORIZONTAL)



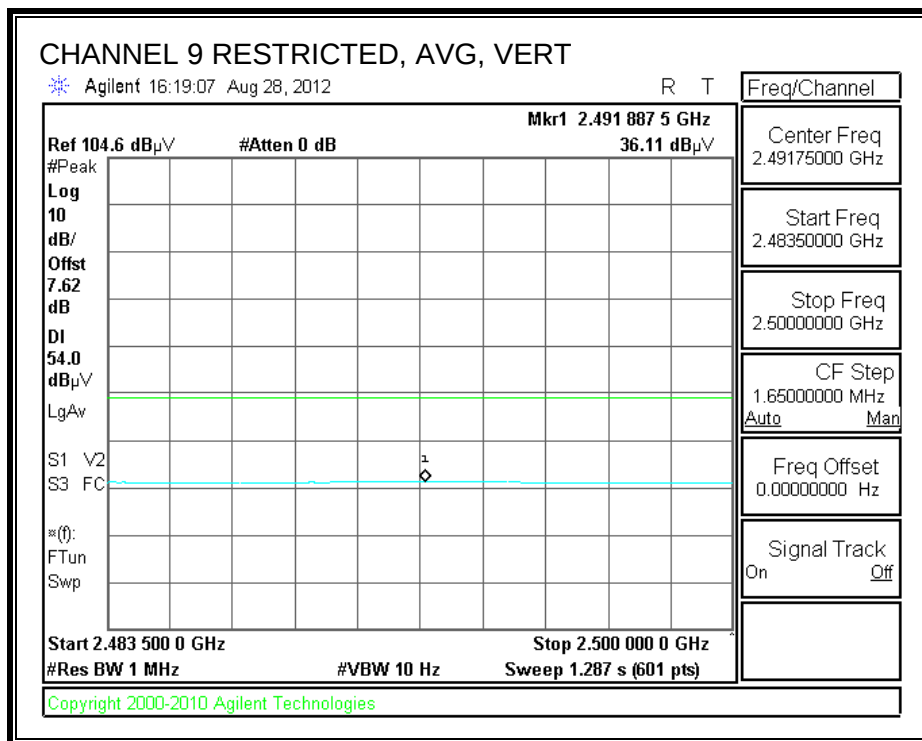
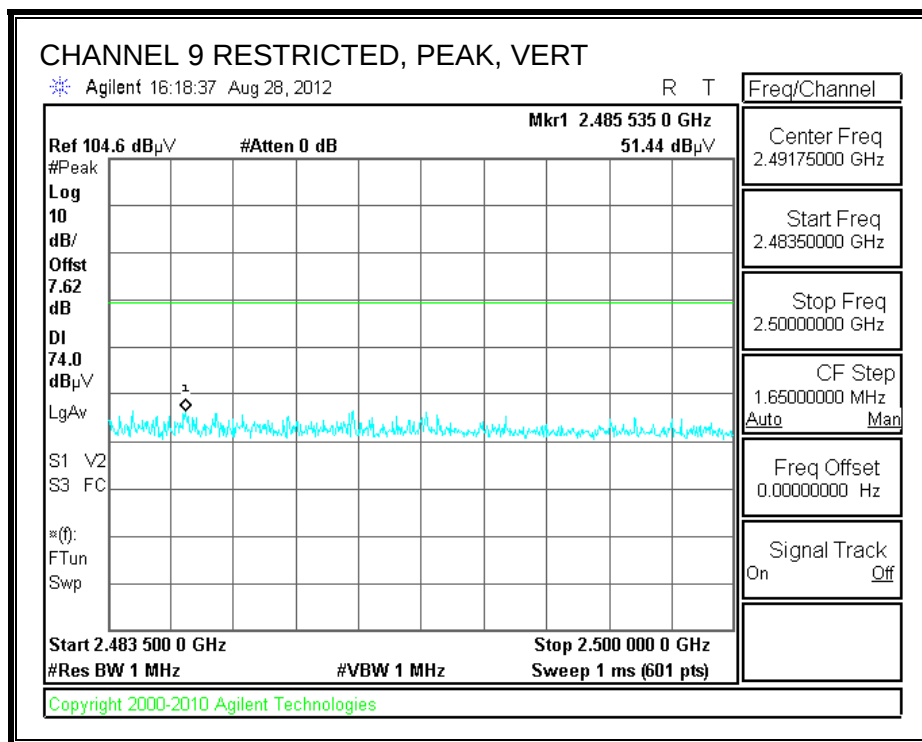
RESTRICTED BANDEDGE (CHANNEL 8, VERTICAL)



RESTRICTED BANDEDGE (CHANNEL 9, HORIZONTAL)



RESTRICTED BANDEDGE (CHANNEL 9, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement

Compliance Certification Services, Fremont 5m Chamber

Test Engr: Oliver Su
Date: 08/29/12
Project #: 12U15545
Company: Wistron
Test Target: FCC 15.247
Mode Oper: 2x Tx, 11n HT40, Tx Continuously, EUT stand-alone

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	Ftr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/Q/P	Ant.High cm	Table Angle Degree	Notes
Ch 3 (2422MHz)															
4.844	3.0	36.6	33.1	6.8	-34.0	0.0	0.0	42.5	74.0	-31.5	V	P	176.0	116.0	
4.844	3.0	24.2	33.1	6.8	-34.0	0.0	0.0	30.0	54.0	-24.0	V	A	176.0	116.0	
4.844	3.0	36.0	33.1	6.8	-34.0	0.0	0.0	41.8	74.0	-32.2	H	P	129.0	249.0	
4.844	3.0	23.6	33.1	6.8	-34.0	0.0	0.0	29.5	54.0	-24.5	H	A	129.0	249.0	
Ch 5 (2432MHz)															
4.864	3.0	36.4	33.1	6.8	-34.0	0.0	0.0	42.3	74.0	-31.7	H	P	131.0	189.0	
4.864	3.0	23.9	33.1	6.8	-34.0	0.0	0.0	29.8	54.0	-24.2	H	A	131.0	189.0	
4.864	3.0	36.0	33.1	6.8	-34.0	0.0	0.0	41.9	74.0	-32.1	V	P	162.0	279.0	
4.864	3.0	23.9	33.1	6.8	-34.0	0.0	0.0	29.8	54.0	-24.2	V	A	162.0	279.0	
Ch 9 (2452MHz)															
4.904	3.0	36.6	33.2	6.8	-34.0	0.0	0.0	42.6	74.0	-31.4	V	P	101.0	56.0	
4.904	3.0	23.7	33.2	6.8	-34.0	0.0	0.0	29.7	54.0	-24.3	V	A	101.0	56.0	
4.904	3.0	37.1	33.2	6.8	-34.0	0.0	0.0	43.1	74.0	-30.9	H	P	122.0	38.0	
4.904	3.0	23.7	33.2	6.8	-34.0	0.0	0.0	29.7	54.0	-24.3	H	A	122.0	38.0	

Rev. 4.1.2.7

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

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Oliver Su
Date: 09/21/12
Project #: 12U14545
Company: Wistron
Test Target: FCC 15.247
Mode Oper: 2x Tx, 11n HT40, Tx continuously, EUT stand-alone

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	Ftr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/Q/P	Ant. High cm	Table Angle Degree	Notes
Ch 8 (2447MHz)															
4.894	3.0	36.4	33.2	6.8	-34.0	0.0	0.0	42.4	74.0	-31.6	V	P	98.0	169.0	
4.894	3.0	24.2	33.2	6.8	-34.0	0.0	0.0	30.2	54.0	-23.8	V	A	98.0	169.0	
4.894	3.0	37.0	33.2	6.8	-34.0	0.0	0.0	42.8	74.0	-31.2	H	P	150.0	340.0	
4.894	3.0	24.0	33.2	6.8	-34.0	0.0	0.0	30.0	54.0	-24.0	H	A	150.0	340.0	
Ch 4 (2427MHz)															
4.854	3.0	37.2	33.1	6.8	-34.1	0.0	0.0	43.0	74.0	-31.0	H	P	105.0	343.0	
4.854	3.0	24.5	33.1	6.8	-34.1	0.0	0.0	30.4	54.0	-23.6	H	A	105.0	343.0	
4.854	3.0	36.6	33.1	6.8	-34.1	0.0	0.0	42.6	74.0	-31.4	V	P	140.0	180.0	
4.854	3.0	23.9	33.1	6.8	-34.1	0.0	0.0	29.8	54.0	-24.2	V	A	140.0	180.0	

Rev. 4.1.2.7

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

7.2.7. TX ABOVE 1 GHz FOR 802.11a IN THE 5.8 GHz BAND, CHAIN A

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement

Compliance Certification Services, Fremont 5m Chamber

Test Engr: Oliver Su
Date: 09/10/12
Project #: 12U14545
Company: Wistron
Test Target: FCC 15.247
Mode Oper: EUT stand-alone with AC Adapter, 5.8GHz, Tx continuously

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	Ftr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/Q/P	Ant. High cm	Table Angle Degree	Notes
11a Low Ch (5745MHz)															
11.490	3.0	35.8	38.8	10.5	-35.5	0.0	0.0	49.6	74.0	-24.4	V	P	105.5	7.8	
11.490	3.0	22.2	38.8	10.5	-35.5	0.0	0.0	36.0	54.0	-18.0	V	A	105.5	7.8	
11.490	3.0	34.8	38.8	10.5	-35.5	0.0	0.0	48.7	74.0	-25.3	H	P	118.7	331.1	
11.490	3.0	21.8	38.8	10.5	-35.5	0.0	0.0	35.7	54.0	-18.3	H	A	118.7	331.1	
11a Mid Ch (5785MHz)															
11.570	3.0	35.0	38.9	10.6	-35.5	0.0	0.0	49.0	74.0	-25.0	H	P	198.3	180.9	
11.570	3.0	21.5	38.9	10.6	-35.5	0.0	0.0	35.5	54.0	-18.5	H	A	198.3	180.9	
11.570	3.0	34.2	38.9	10.6	-35.5	0.0	0.0	48.2	74.0	-25.8	H	P	103.3	314.1	
11.570	3.0	21.6	38.9	10.6	-35.5	0.0	0.0	35.5	54.0	-18.5	H	A	103.3	314.1	
11a High Ch (5825MHz)															
11.650	3.0	35.1	39.0	10.7	-35.5	0.0	0.0	49.3	74.0	-24.7	H	P	119.6	243.3	
11.650	3.0	22.7	39.0	10.7	-35.5	0.0	0.0	36.8	54.0	-17.2	H	A	119.6	243.3	
11.650	3.0	35.0	39.0	10.7	-35.5	0.0	0.0	49.1	74.0	-24.9	V	P	100.3	329.8	
11.650	3.0	22.3	39.0	10.7	-35.5	0.0	0.0	36.5	54.0	-17.5	V	A	100.3	329.8	

Rev. 4.1.2.7

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

7.2.8. TX ABOVE 1 GHz FOR 802.11n HT20 IN THE 5.8 GHz BAND, CHAIN A

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement															
Compliance Certification Services, Fremont 5m Chamber															
Test Engr:		Oliver Su													
Date:		09/10/12													
Project #:		12U14545													
Company:		Wistron													
Test Target:		FCC 15.247													
Mode Oper:		EUT stand-alone with AC Adapter, 5.8GHz, Tx continuously													
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	Ftr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/Q/P	Ant. High cm	Table Angle Degree	Notes
1x Tx 11n HT20 Low Ch (5745MHz)															
11.490	3.0	35.6	38.9	10.6	-35.5	0.0	0.0	49.4	74.0	-24.6	V	P	132.3	295.3	
11.490	3.0	21.8	38.8	10.5	-35.5	0.0	0.0	35.7	54.0	-18.3	V	A	132.3	295.3	
11.490	3.0	35.4	38.8	10.5	-35.5	0.0	0.0	49.2	74.0	-24.8	H	P	187.6	183.0	
11.490	3.0	21.8	38.8	10.5	-35.5	0.0	0.0	35.7	54.0	-18.3	H	A	187.6	183.0	
1 Tx 11n HT20 Mid Ch (5785MHz)															
11.570	3.0	34.6	38.9	10.6	-35.5	0.0	0.0	48.6	74.0	-25.4	H	P	101.9	2.1	
11.570	3.0	21.6	38.9	10.6	-35.5	0.0	0.0	35.6	54.0	-18.4	H	A	101.9	2.1	
11.570	3.0	34.5	38.9	10.6	-35.5	0.0	0.0	48.5	74.0	-25.5	V	P	113.4	62.8	
11.570	3.0	21.5	38.9	10.6	-35.5	0.0	0.0	35.5	54.0	-18.5	V	A	113.4	62.8	
1 Tx 11n HT20 High Ch (5825MHz)															
11.650	3.0	36.4	39.0	10.7	-35.5	0.0	0.0	50.6	74.0	-23.4	V	P	102.9	316.9	
11.650	3.0	22.9	39.0	10.7	-35.5	0.0	0.0	37.1	54.0	-16.9	V	A	102.9	316.9	
11.650	3.0	35.5	39.0	10.7	-35.5	0.0	0.0	49.6	74.0	-24.4	H	P	166.1	169.0	
11.650	3.0	22.7	39.0	10.7	-35.5	0.0	0.0	36.9	54.0	-17.1	H	A	166.1	169.0	
Rev. 4.1.2.7															
Note: No other emissions were detected above the system noise floor.															

7.2.9. TX ABOVE 1 GHz FOR 802.11n HT40 IN THE 5.8 GHz BAND, CHAIN A

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement															
Compliance Certification Services, Fremont 5m Chamber															
Test Engr:		Oliver Su													
Date:		09/10/12													
Project #:		12U14545													
Company:		Wistron													
Test Target:		FCC 15.247													
Mode Oper:		EUT stand-alone with AC Adapter, 5.8GHz, Tx continuously													
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	Ftr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/Q/P	Ant. High cm	Table Angle Degree	Notes
1x Tx 11n HT40 Low Ch (5755MHz)															
11.510	3.0	35.5	38.9	10.6	-35.5	0.0	0.0	49.4	74.0	-24.6	H	P	153.6	10.4	
11.510	3.0	22.7	38.8	10.6	-35.5	0.0	0.0	36.6	54.0	-17.4	H	A	153.6	10.4	
11.510	3.0	35.3	38.8	10.6	-35.5	0.0	0.0	49.2	74.0	-24.8	V	P	199.8	11.6	
11.510	3.0	22.7	38.8	10.6	-35.5	0.0	0.0	36.6	54.0	-17.4	V	A	199.8	11.6	
1 Tx 11n HT40 High Ch (5795MHz)															
11.590	3.0	35.0	38.9	10.6	-35.5	0.0	0.0	49.0	74.0	-25.0	V	P	194.3	0.7	
11.590	3.0	22.4	38.9	10.6	-35.5	0.0	0.0	36.4	54.0	-17.6	V	A	194.3	0.7	
11.590	3.0	34.9	38.9	10.6	-35.5	0.0	0.0	48.9	74.0	-25.1	H	P	168.2	1.8	
11.590	3.0	22.5	38.9	10.6	-35.5	0.0	0.0	36.5	54.0	-17.5	H	A	168.2	1.8	
Rev. 4.1.2.7															
Note: No other emissions were detected above the system noise floor.															

7.2.10. TX ABOVE 1 GHz FOR 802.11n HT20 DUAL CHAINS MODE IN THE 5.8 GHz BAND, MIMO

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Oliver Su
Date: 09/10/12
Project #: 12U14545
Company: Wistron
Test Target: FCC 15.247
Mode Oper: EUT stand-alone with AC Adapter, 5.8GHz, Tx continuously

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	Ftr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/Q/P	Ant.High cm	Table Angle Degree	Notes
2 Tx 11n HT20 Low Ch (5745MHz)															
11.490	3.0	34.6	38.8	10.5	-35.5	0.0	0.0	48.4	74.0	-25.6	H	P	100.2	277.6	
11.490	3.0	21.9	38.8	10.5	-35.5	0.0	0.0	35.7	54.0	-18.3	H	A	100.2	277.6	
11.490	3.0	35.1	38.8	10.5	-35.5	0.0	0.0	49.0	74.0	-25.0	V	P	195.0	216.5	
11.490	3.0	21.8	38.8	10.5	-35.5	0.0	0.0	35.7	54.0	-18.3	V	A	195.0	216.5	
2Tx 11n HT20 Mid Ch (5785MHz)															
11.570	3.0	34.4	38.9	10.6	-35.5	0.0	0.0	48.4	74.0	-25.6	V	P	100.4	309.8	
11.570	3.0	21.6	38.9	10.6	-35.5	0.0	0.0	35.6	54.0	-18.4	V	A	100.4	309.8	
11.570	3.0	34.7	38.9	10.6	-35.5	0.0	0.0	48.7	74.0	-25.3	H	P	177.4	109.6	
11.570	3.0	21.5	38.9	10.6	-35.5	0.0	0.0	35.5	54.0	-18.5	H	A	177.4	109.6	
2Tx 11n HT20 High Ch (5825MHz)															
11.650	3.0	35.2	39.0	10.7	-35.5	0.0	0.0	49.3	74.0	-24.7	H	P	175.7	59.7	
11.650	3.0	22.0	39.0	10.7	-35.5	0.0	0.0	36.1	54.0	-17.9	H	A	175.7	59.7	
11.650	3.0	35.1	39.0	10.7	-35.5	0.0	0.0	49.3	74.0	-24.7	V	P	200.0	354.0	
11.650	3.0	21.8	39.0	10.7	-35.5	0.0	0.0	36.0	54.0	-18.0	V	A	200.0	354.0	

Rev. 4.1.2.7

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

7.2.11. TX ABOVE 1 GHz FOR 802.11n HT40 DUAL CHAINS MODE IN THE 5.8 GHz BAND, MIMO

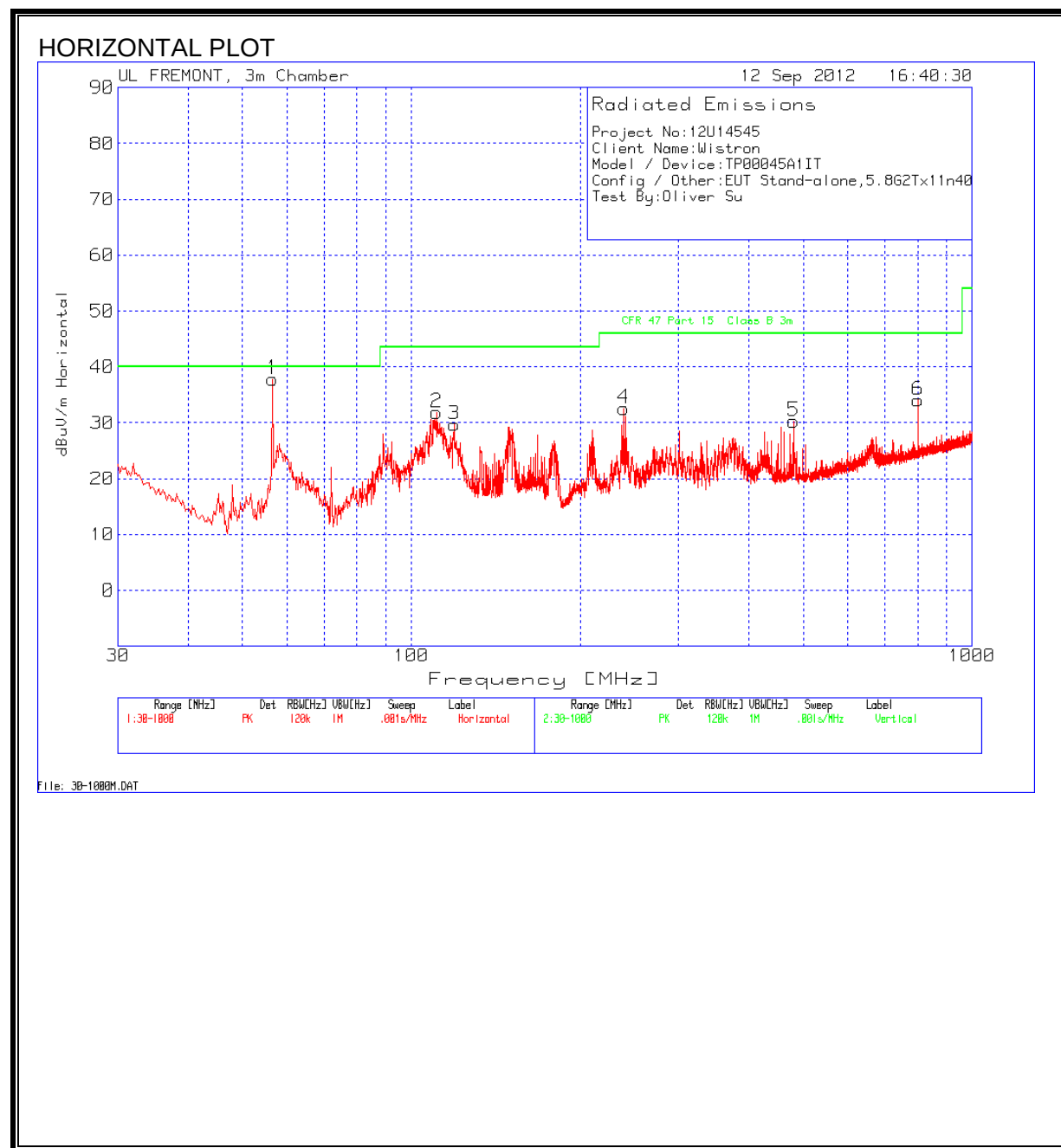
HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement															
Compliance Certification Services, Fremont 5m Chamber															
Test Engr:		Oliver Su													
Date:		09/10/12													
Project #:		12U14545													
Company:		Wistron													
Test Target:		FCC 15.247													
Mode Oper:		EUT stand-alone with AC Adapter, 5.8GHz, Tx continuously													
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												

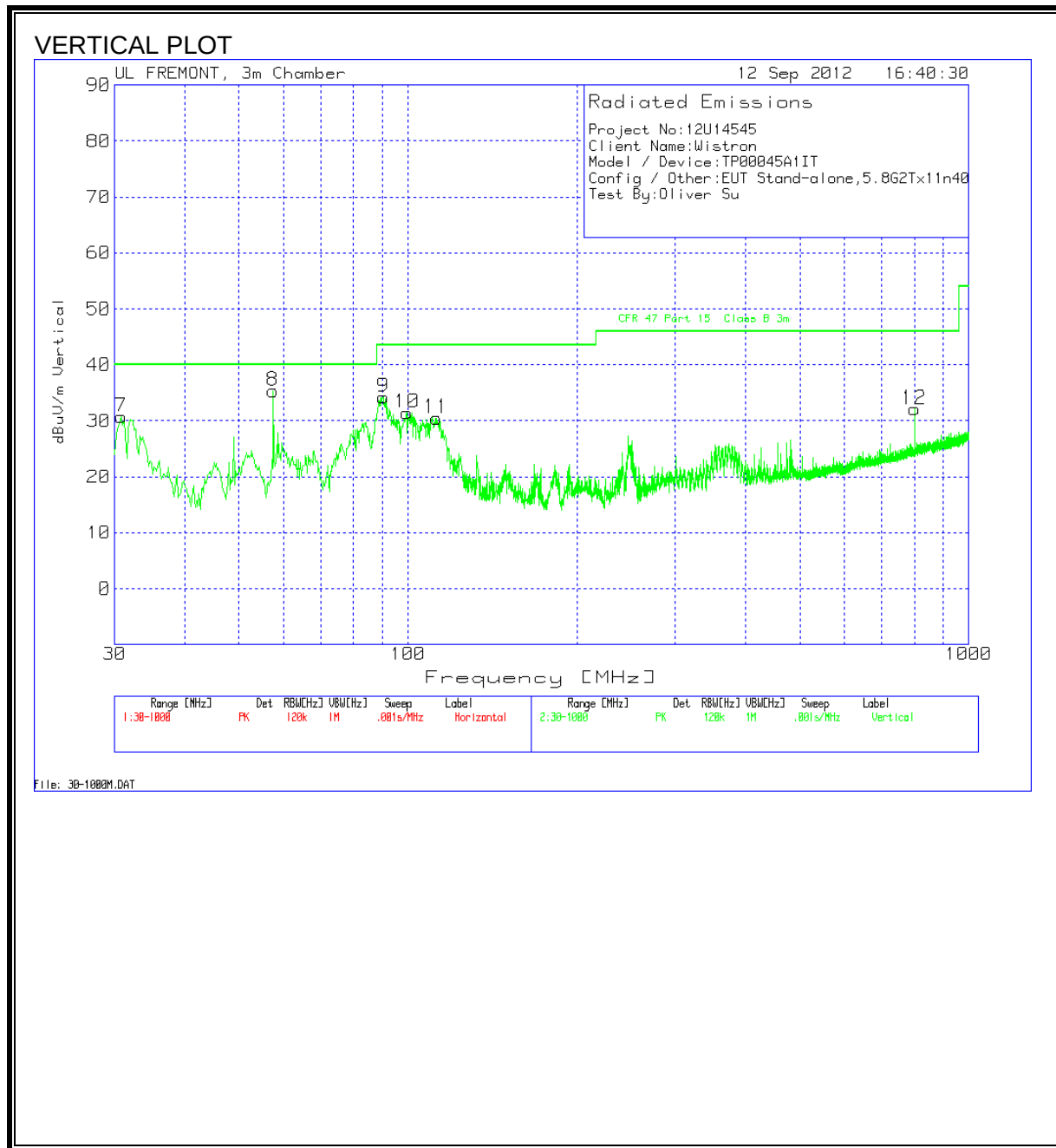
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Ftr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/Q/P	Ant.High cm	Table Angle Degree	Notes
2 Tx 11n HT40 Low Ch (5755MHz)															
11.510	3.0	35.3	38.9	10.6	-35.5	0.0	0.0	49.4	74.0	-24.8	H	P	148.5	20.5	
11.510	3.0	22.7	38.8	10.6	-35.5	0.0	0.0	36.6	54.0	-17.4	H	A	148.5	20.5	
11.510	3.0	35.8	38.8	10.6	-35.5	0.0	0.0	49.2	74.0	-24.2	V	P	130.5	21.6	
11.510	3.0	22.7	38.8	10.6	-35.5	0.0	0.0	36.6	54.0	-17.4	V	A	130.5	21.6	
2 Tx 11n HT40 High Ch (5795MHz)															
11.590	3.0	35.0	38.9	10.6	-35.5	0.0	0.0	49.0	74.0	-25.0	V	P	194.3	0.7	
11.590	3.0	22.4	38.9	10.6	-35.5	0.0	0.0	36.4	54.0	-17.6	V	A	194.3	0.7	
11.590	3.0	34.6	38.9	10.6	-35.5	0.0	0.0	48.9	74.0	-25.4	H	P	168.2	1.8	
11.590	3.0	22.5	38.9	10.6	-35.5	0.0	0.0	36.5	54.0	-17.5	H	A	168.2	1.8	
Rev. 4.1.2.7															
Note: No other emissions were detected above the system noise floor.															

8. WORST-CASE BELOW 1 GHz

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



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



Project No:12U14545									
Client Name:Wistron									
Model / Device:TP00045A1IT									
Config / Other:EUT Stand-alone, 5.8G 2xTx 11n40									
Test By:Oliver Su									
Horizontal 30 - 1000MHz									
Test Frequency	Meter Reading	Detector	25MHz- 1GHz Chambr 3m Amplified (dB)	Antenna T185 (dB)	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
56.5568	57.99	PK	-27.2	7	37.79	40	-2.21	400	Horz
58.03	43.57	QP	-27.2	7	27.37	40	-12.63	171	Horz
110.8333	46.09	PK	-26.7	12.5	31.89	43.5	-11.61	201	Horz
119.1687	42.56	PK	-26.6	13.7	29.66	43.5	-13.84	201	Horz
239.3525	46.47	PK	-25.5	11.6	32.57	46	-13.43	99	Horz
480.1079	38.52	PK	-25.9	17.7	30.32	46	-15.68	201	Horz
799.952	37.54	PK	-24.6	21.1	34.04	46	-11.96	99	Horz
Vertical 30 - 1000MHz									
30.7754	37.52	PK	-27.5	20.7	30.72	40	-9.28	99	Vert
57.526	55.54	PK	-27.2	7	35.34	40	-4.66	201	Vert
90.2858	53.64	PK	-27	7.6	34.24	43.5	-9.26	99	Vert
99.5903	48.51	PK	-26.8	9.7	31.41	43.5	-12.09	99	Vert
112.3841	44.25	PK	-26.6	12.8	30.45	43.5	-13.05	99	Vert
799.952	35.59	PK	-24.6	21.1	32.09	46	-13.91	99	Vert
PK - Peak detector									
QP - Quasi-Peak detector									
Av - Average detector									

9. 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

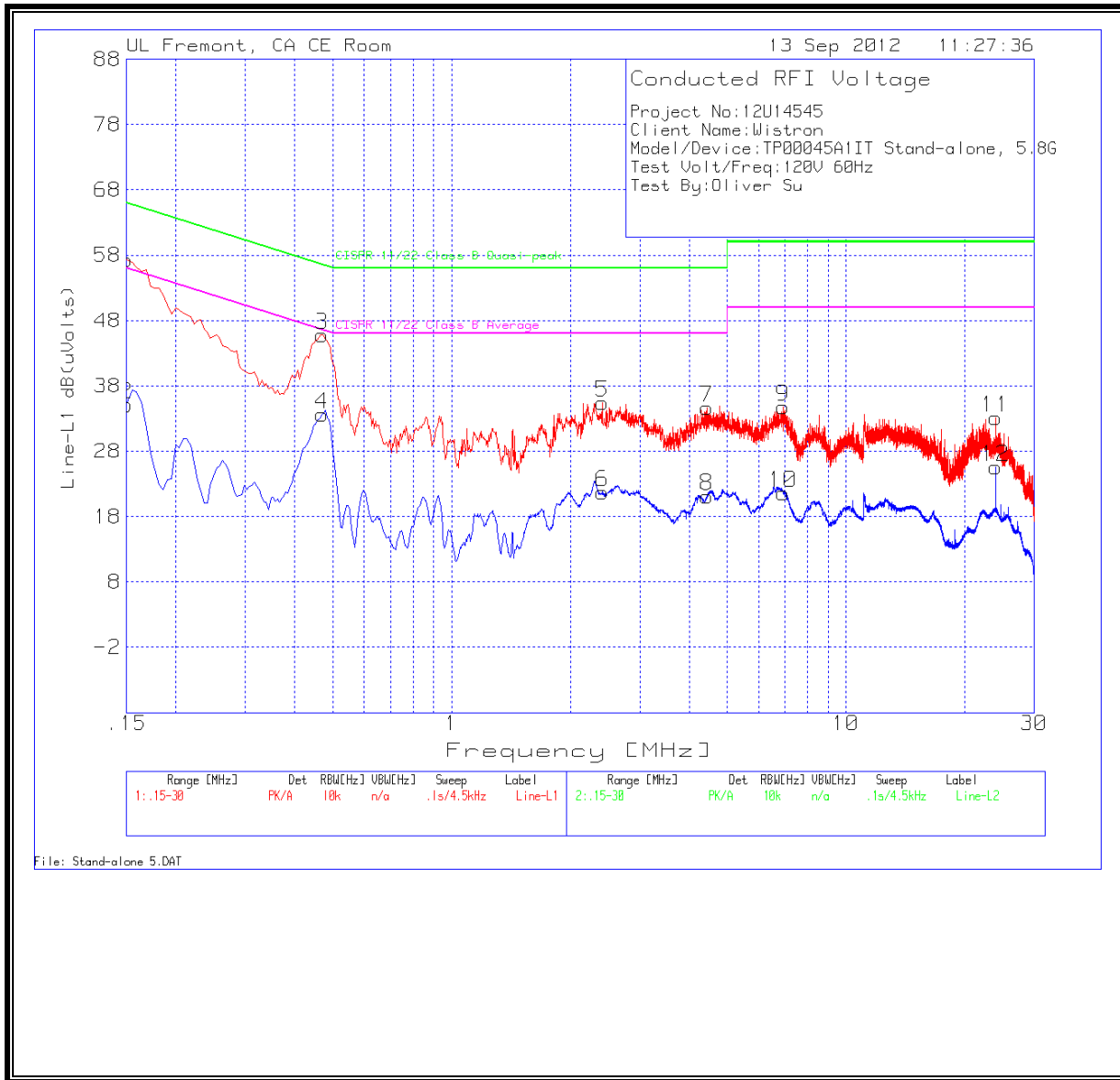
ANSI C63.4

RESULTS

6 WORST EMISSIONS

Project No:12U14545									
Client Name:Wistron									
Model/Device:TP00045A1IT Stand-alone, 5.8G 2x Tx 11nHT40									
Test Volt/Freq:120V 60Hz									
Test By:Oliver Su									
Line-L1 .15 - 30MHz									
Test Frequency	Meter Reading	Detector	T24 IL L1.TXT (dB)	LC Cables 1&3.TXT (dB)	dB(uVolts)	CISPR 11/22 Class B Quasi-peak	Margin	CISPR 11/22 Class B Average	Margin
0.15	57.27	PK	0.1	0	57.37	66	-8.63	-	-
0.15	35.01	Av	0.1	0	35.11	-	-	56	-20.89
0.4695	45.71	PK	0.1	0	45.81	56.5	-10.69	-	-
0.4695	33.58	Av	0.1	0	33.68	-	-	46.5	-12.82
2.409	35.25	PK	0.1	0.1	35.45	56	-20.55	-	-
2.409	21.49	Av	0.1	0.1	21.69	-	-	46	-24.31
4.434	34.43	PK	0.1	0.1	34.63	56	-21.37	-	-
4.434	20.95	Av	0.1	0.1	21.15	-	-	46	-24.85
6.927	34.53	PK	0.1	0.1	34.73	60	-25.27	-	-
6.927	21.45	Av	0.1	0.1	21.65	-	-	50	-28.35
24.009	32.57	PK	0.4	0.2	33.17	60	-26.83	-	-
24.009	25.01	Av	0.4	0.2	25.61	-	-	50	-24.39
Line-L2 .15 - 30MHz									
0.15	55.6	PK	0.1	0	55.7	66	-10.3	-	-
0.15	33.14	Av	0.1	0	33.24	-	-	56	-22.76
0.465	46.09	PK	0.1	0	46.19	56.6	-10.41	-	-
0.465	36.37	Av	0.1	0	36.47	-	-	46.6	-10.13
2.2875	33.64	PK	0.1	0.1	33.84	56	-22.16	-	-
2.2875	19.03	Av	0.1	0.1	19.23	-	-	46	-26.77
5.1765	33.74	PK	0.1	0.1	33.94	60	-26.06	-	-
5.1765	19.75	Av	0.1	0.1	19.95	-	-	50	-30.05
6.801	33.22	PK	0.1	0.1	33.42	60	-26.58	-	-
6.801	21.41	Av	0.1	0.1	21.61	-	-	50	-28.39
24.009	31.43	PK	0.4	0.2	32.03	60	-27.97	-	-
24.009	25.22	Av	0.4	0.2	25.82	-	-	50	-24.18
PK - Peak detector									
QP - Quasi-Peak detector									
Av - Average detector									

LINE 1 RESULTS



LINE 2 RESULTS

