



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

**INTEL WI-FI LINK 5100 SERIES INSTALLED INSIDE HP TABLET COMPUTER MODEL:
HSTNN-W47C**

FCC Model: 512AN_MMW

IC Model: 512ANMU

FCC ID: PD9512ANMU

IC: 1000M-512ANMU

REPORT NUMBER: 08U11778-1A

ISSUE DATE: July 2, 2008

Prepared for

**INTEL CORPORATION
2111 NE 25TH AVENUE
HILLSBORO, OREGON 97124, USA**

Prepared by

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NVLAP LAB CODE 200065-0

Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
--	5-14-08	Initial Issue	Sunny Shih
A	7-2-08	Revised host device description and model name	Sunny Shih

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1. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: INTEL WI-FI LINK 5100 SERIES INSTALLED INSIDE HP TABLET
COMPUTER MODEL: HSTNN-W47C

FCC MODEL: 512AN_MMW

IC MODEL: 512ANMU

SERIAL NUMBER: MAC 0016EA01D95A

DATE TESTED: MAY 01 TO 13, 2008

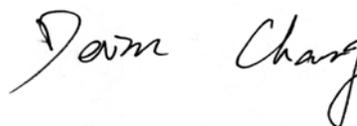
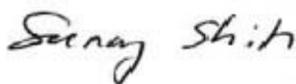
APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C and Subpart E	Pass
RSS-210 Issue 7 Annex 8 and RSS-GEN Issue 2	Pass

Compliance Certification Services, Inc. (CCS) tested the above equipment in accordance with the requirements set forth in the above standards. All expressions of Pass/Fail in this report are opinions expressed by CCS based on interpretations of the test results. 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. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For CCS By:

Tested By:



SUNNY SHIH
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

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. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Power Line Conducted Emission	+/- 2.3 dB
Radiated Emission	+/- 3.4 dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is an INTEL WI-FI LINK 5100 SERIES INSTALLED INSIDE HP TABLET COMPUTER MODEL: HSTNN-W47C

The radio module is manufactured by Intel and model number is 512AN-MMW/512ANMU.

5.2. DESCRIPTION OF CLASS II CHANGE

The major changes filed under this application are:

Adding HP Tablet computer, model HSTNN-W47C.

Only the Radiated Emission and AC mains line conduction tests are performed.

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The following antenna was added:

<u>Antenna Supplier</u>	<u>Type</u>	<u>Model number</u>
Wistron NeWeb Corp (WNC)	PIFA	Main Antenna: 81.EGG15.003 Aux Antenna: 81.EGG15.004

5.4. SOFTWARE AND FIRMWARE

The test utility software used during testing was CRTU version 5.0.51.000

The EUT driver installed during testing was Intel version 12.0.0.54

5.5. WORST-CASE CONFIGURATION AND MODE

Mobile (Normal Notebook) and Portable (Tablet PC) configurations have been investigated. The worst case is to evaluate at Mobile configuration.

The worst-case data rate for each mode is determined to be as follows, based on preliminary tests of the chipset utilized in this radio.

All final tests in the 802.11b mode were made at 1 Mb/s.

All final tests in the 802.11a and g mode were made at 6 Mb/s.

All final tests in the 802.11n HT20 mode were made at HT0.

All final tests in the 802.11n HT40 mode were made at HT0.

For radiated emissions below 1 GHz the worst-case configuration is determined to be the mode and channel with the highest output power.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	HP	HP 2730p	CAY000166297	N/A
AC Adapter	HP	PPP009H	WACLPX1A9VN1	N/A

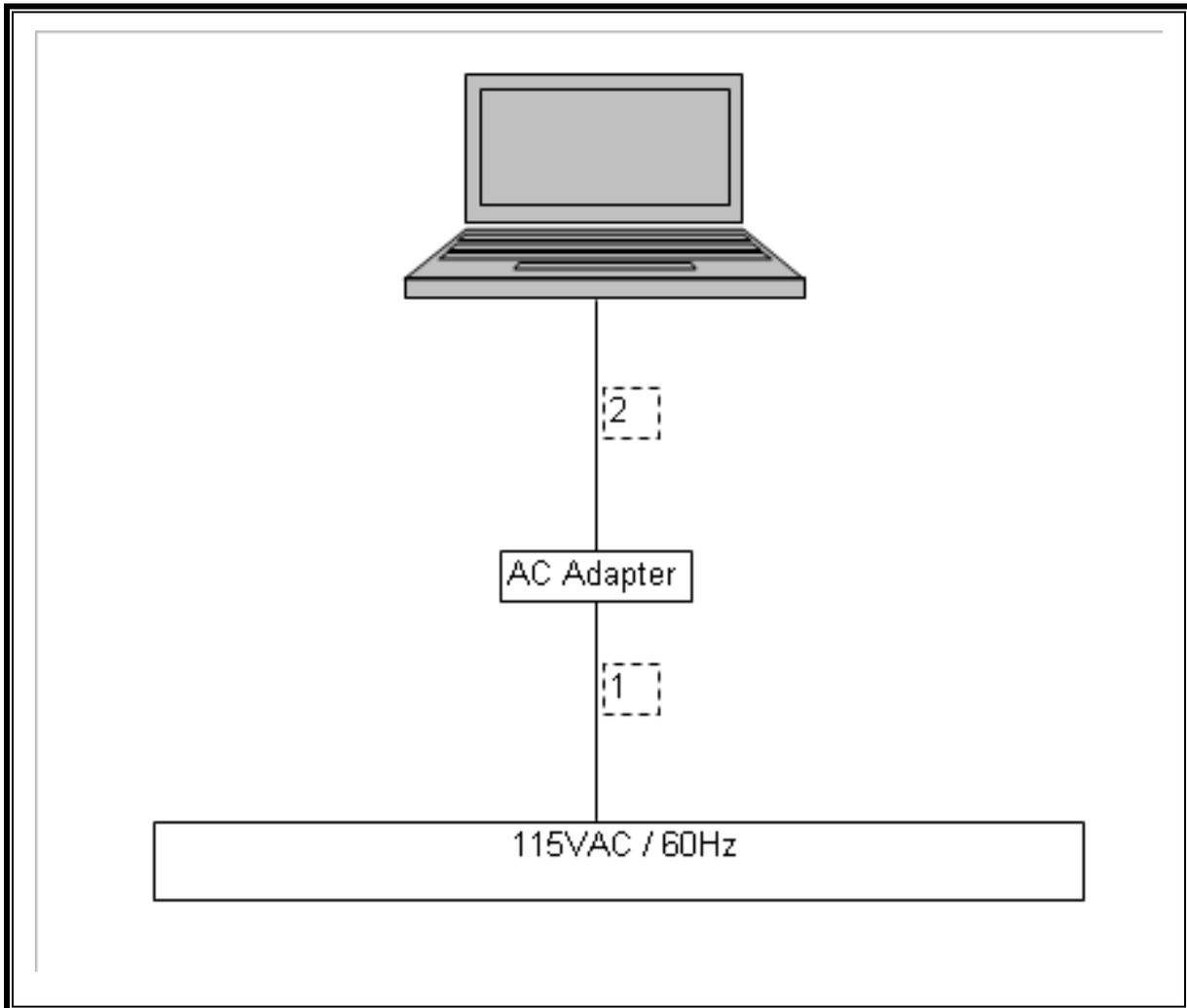
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	US115V	Unshielded	1.8m	N/A
2	DC	1	DC	Unshielded	1.8m	N/A

TEST SETUP

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

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST					
Description	Manufacturer	Model	Asset	Cal Date	Cal Due
EMI Receiver, 2.9 GHz	Agilent / HP	8542E	C00957	2/6/2007	6/12/2008
RF Filter Section, 2.9 GHz	Agilent / HP	85420E	C00958	2/6/2007	6/12/2008
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00885	5/9/2007	5/9/2008
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	10/25/2007	10/25/2008
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	N02481	10/25/2007	10/25/2008
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	10/16/2007	1/27/2009
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01012	5/2/2006	8/7/2008
Antenna, Horn, 18 GHz	ETS	3117	C01006	4/15/2008	4/15/09
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01052	8/3/2007	8/3/08
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	10/13/2007	10/13/08
Peak Power Meter	Agilent / HP	E4416A	C00963	02/14/07	12/02/08
Peak / Average Power Sensor	Agilent	E9327A	C00964	02/14/07	12/02/08
Antenna, Horn 26 ~ 40 GHz	ARA	MWH-2640/B	C01009	4/13/2008	4/13/2009
7.6 GHz High Pass Filter	Micro Tronics	HPM13350	N/A	N/A	N/A
5.75 - 5.8 Reject Filter	Micro Tronics	BRC13192	N/A	N/A	N/A

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.

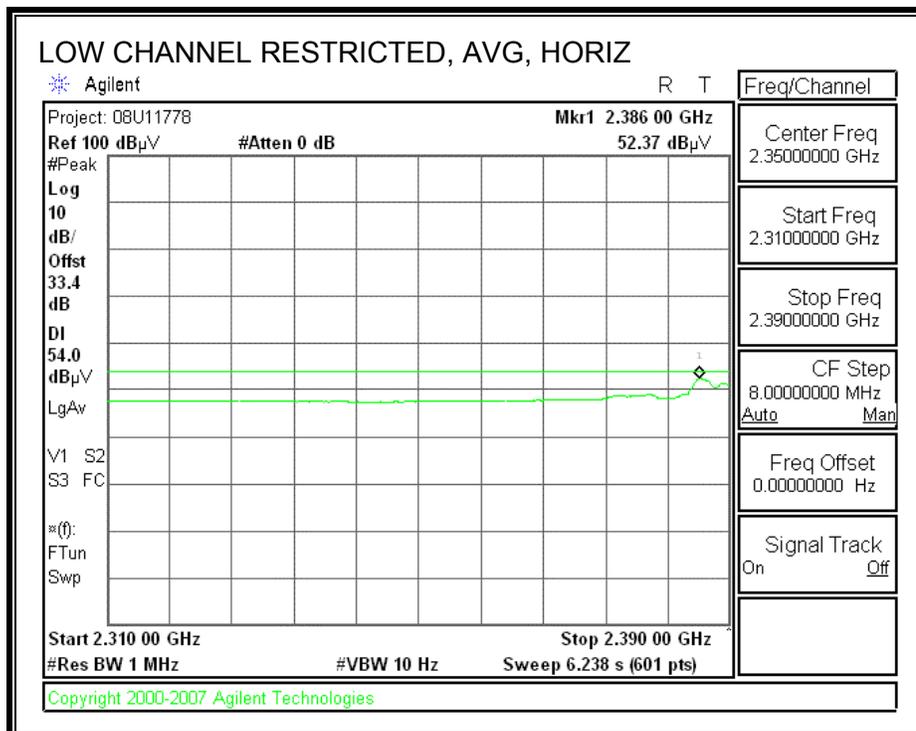
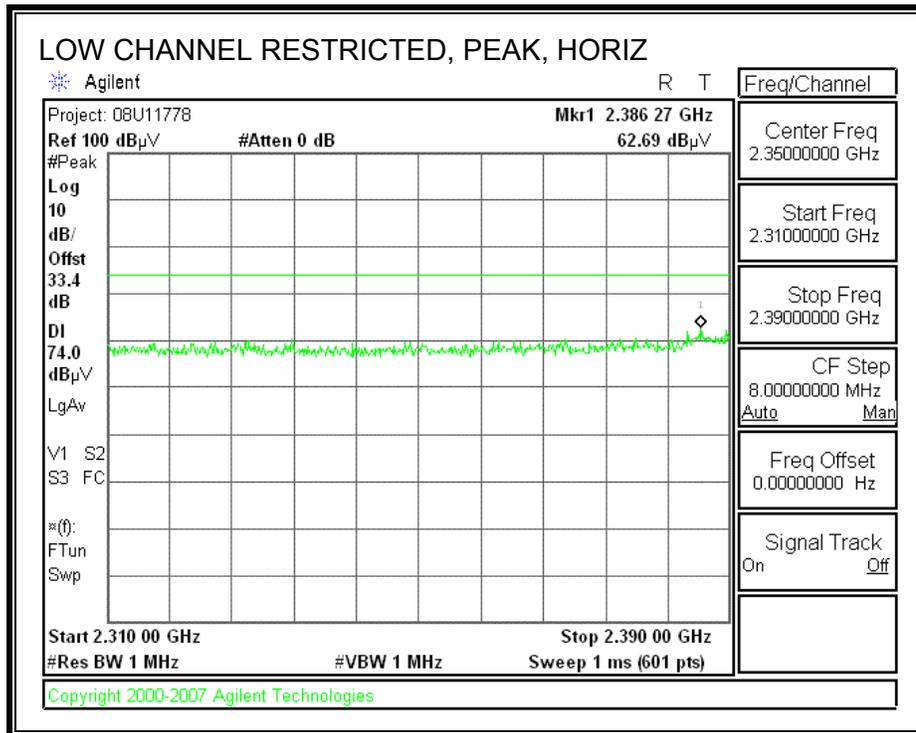
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

The 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.

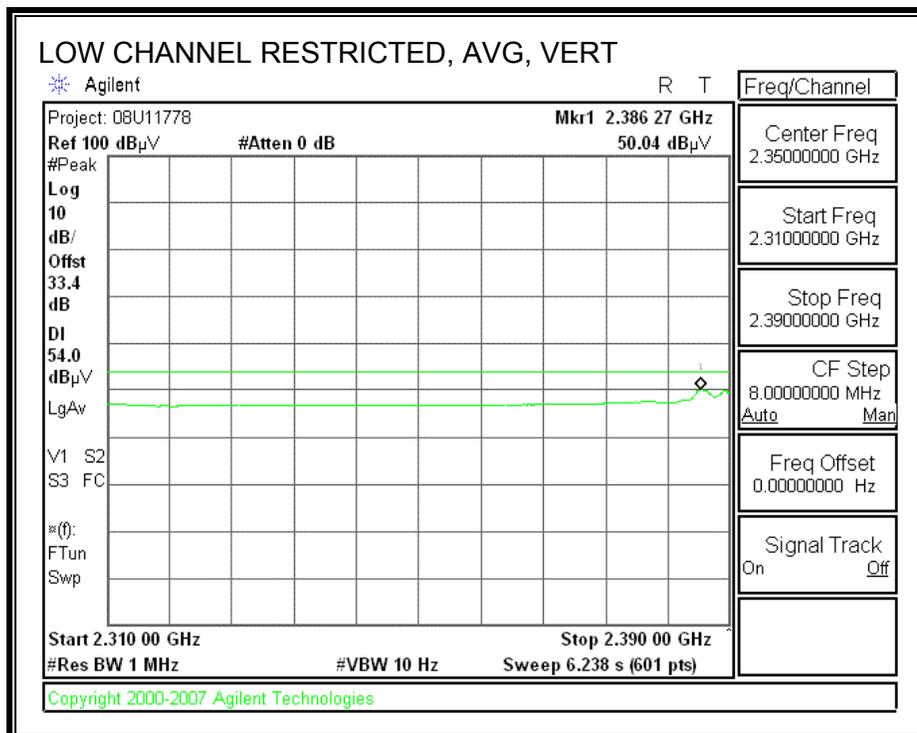
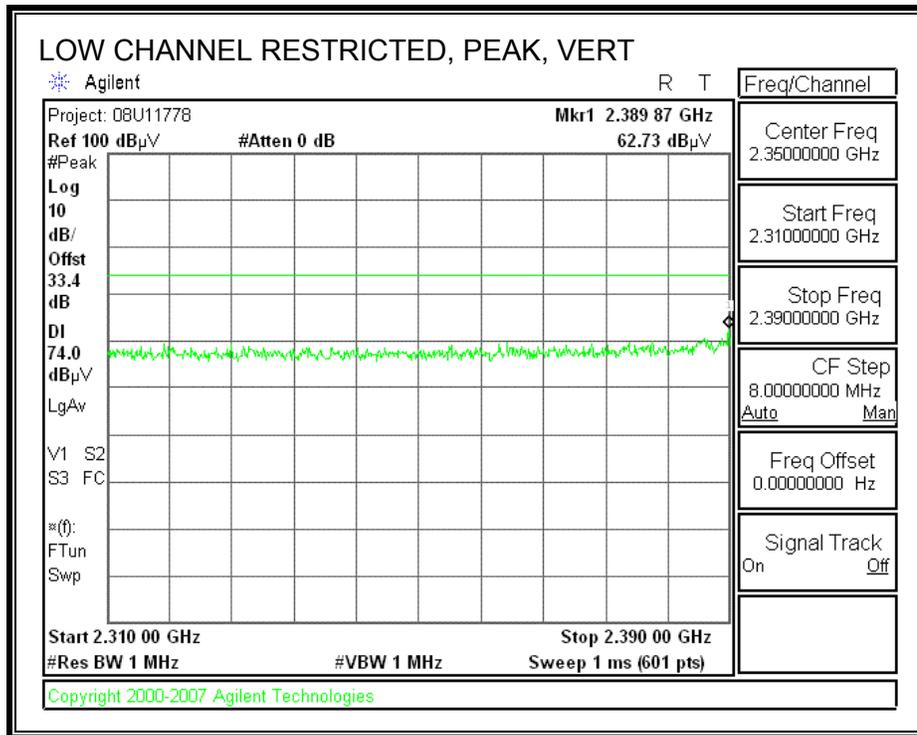
7.2. TRANSMITTER ABOVE 1 GHz

7.2.1. 802.11b MODE

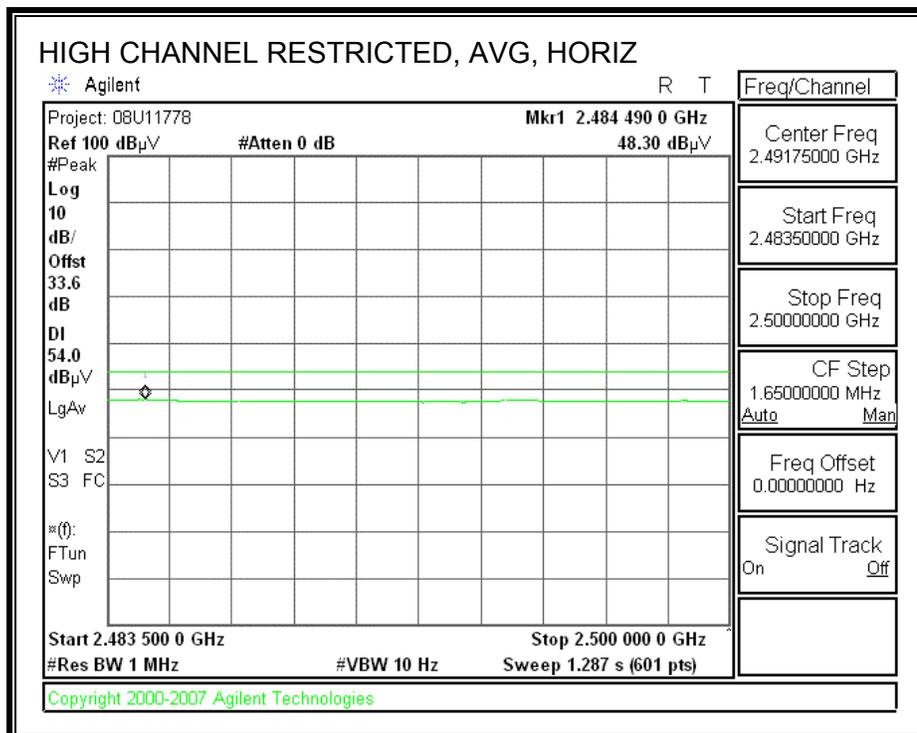
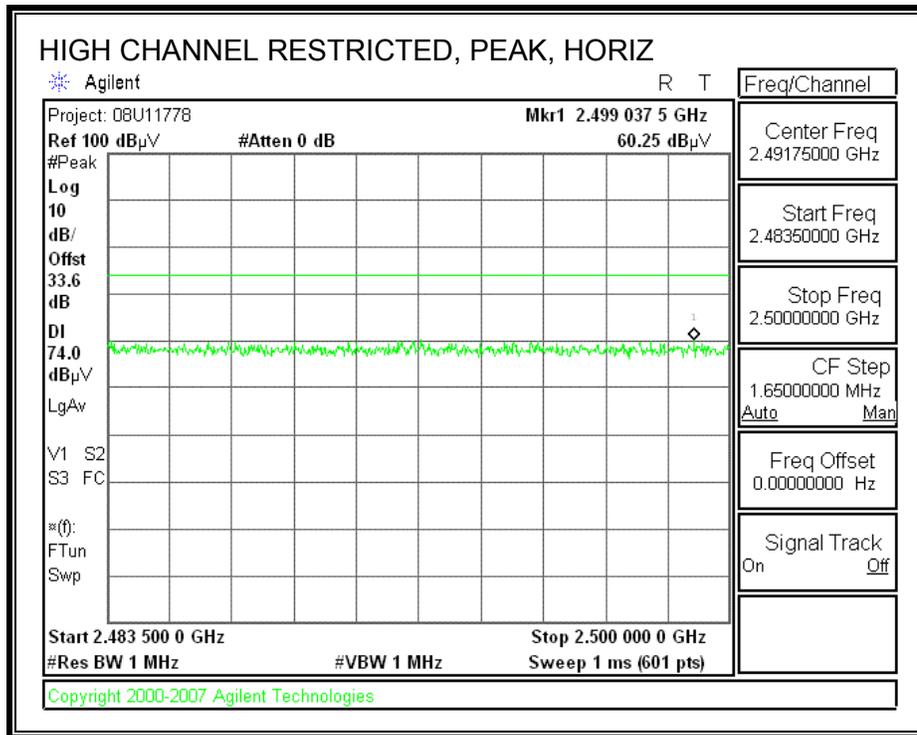
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



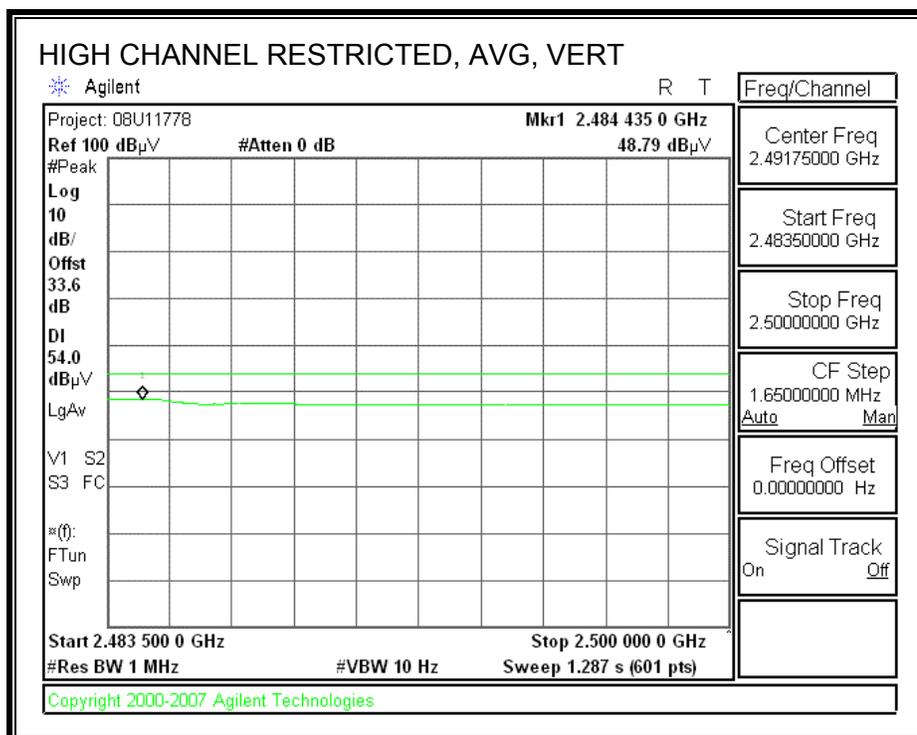
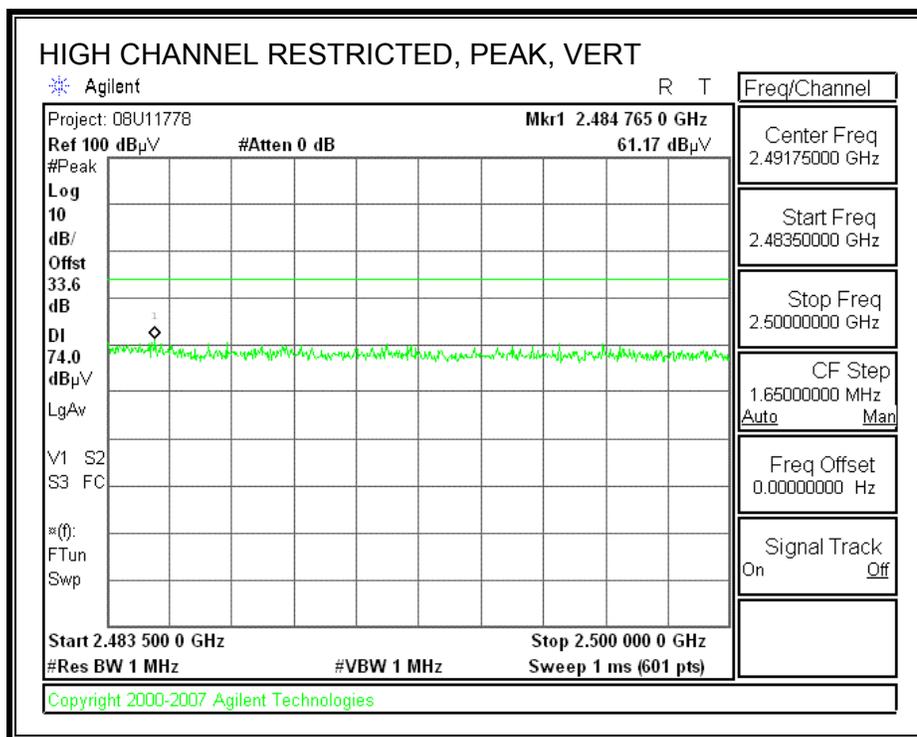
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

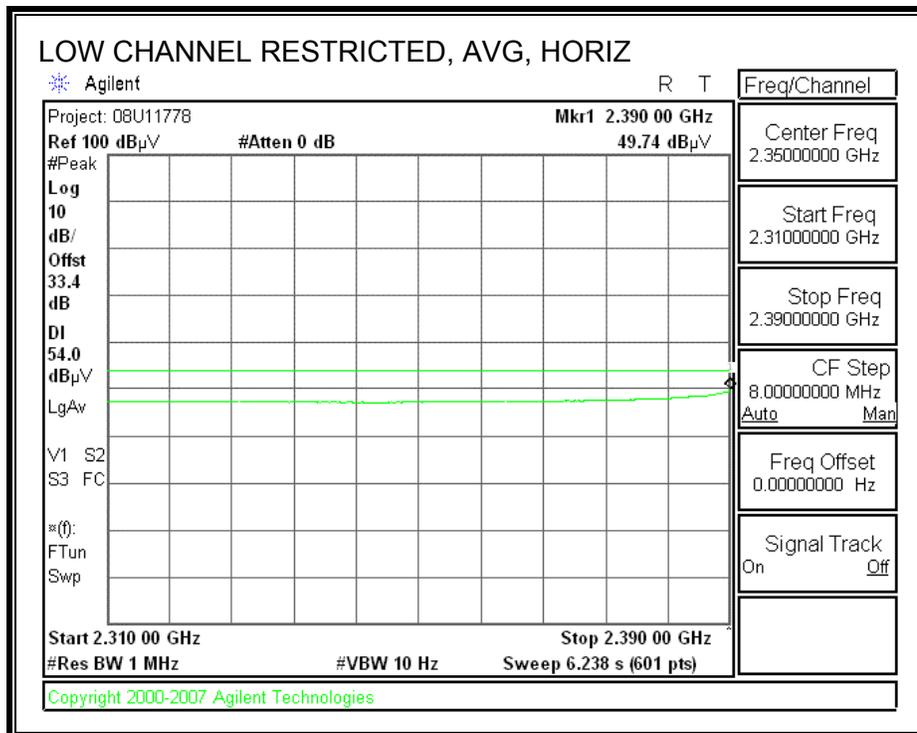
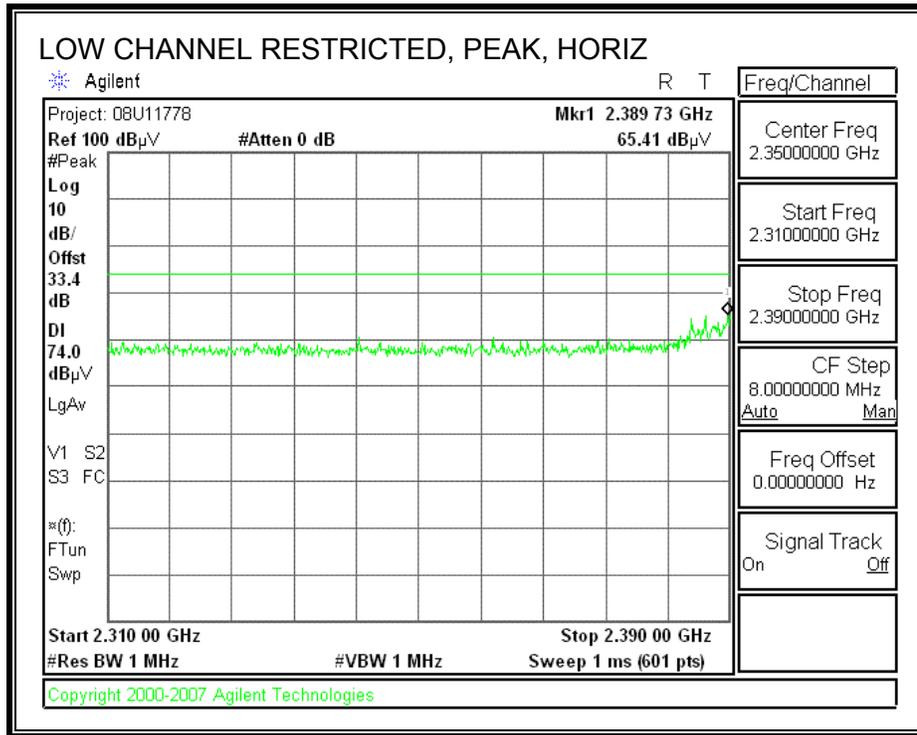


HARMONICS AND SPURIOUS EMISSIONS

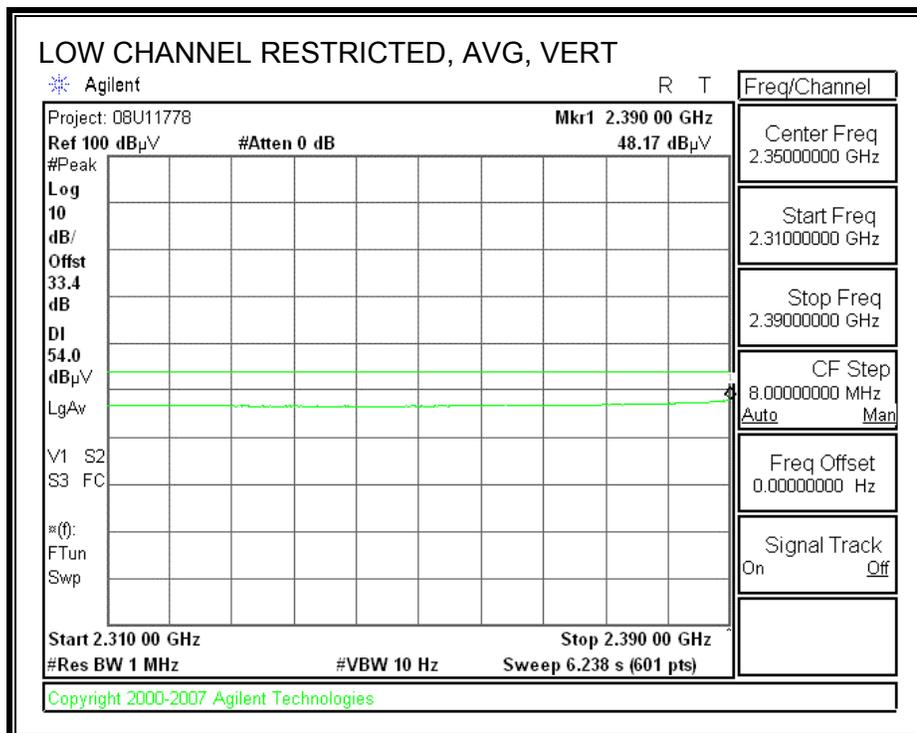
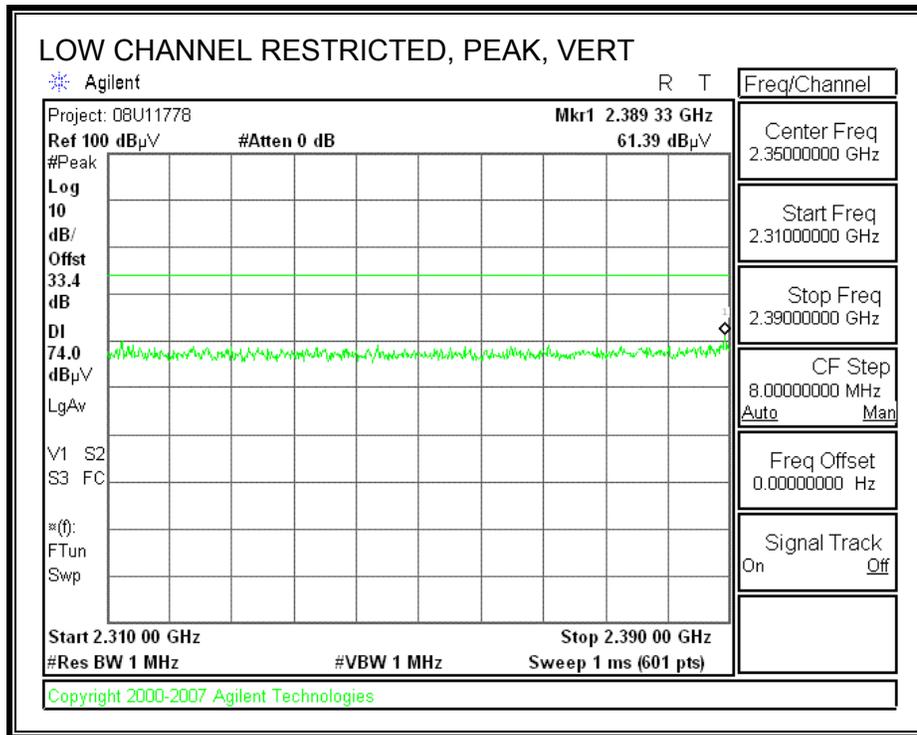
High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber																
Company: Intel Project #: 08U11778 Date: 05/02/2008 Test Engineer: Tom Chen Configuration: EUT host on NB Mode: 11b Mode TX on Low \ Mid \ High CH																
Test Equipment:																
Horn 1-18GHz			Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit				
T60; S/N: 2238 @3m			T144 Miteq 3008A00931									FCC 15.209				
Hi Frequency Cables																
2 foot cable			3 foot cable			12 foot cable			HPF		Reject Filter		Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz ; VBW=10Hz			
						A-5m Chamber					R_001					
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)	
Harmonics Spurious																
Low Channel 2412MHz																
4.824	3.0	37.8	30.1	33.0	6.9	-36.5	0.0	0.0	41.2	33.5	74	54	-32.8	-20.5	V	
7.236	3.0	38.1	30.3	35.4	8.4	-36.2	0.0	0.0	45.7	37.9	74	54	-28.3	-16.1	V	
4.824	3.0	39.5	33.5	33.0	6.9	-36.5	0.0	0.0	42.9	36.9	74	54	-31.1	-17.1	H	
7.236	3.0	37.5	30.1	35.4	8.4	-36.2	0.0	0.0	45.1	37.7	74	54	-28.9	-16.3	H	
Mid Channel 2437MHz																
4.874	3.0	37.8	30.2	33.1	6.9	-36.5	0.0	0.0	41.3	33.7	74	54	-32.7	-20.3	V	
7.311	3.0	37.0	30.1	35.5	8.4	-36.2	0.0	0.0	44.7	37.8	74	54	-29.3	-16.2	V	
4.874	3.0	38.0	30.5	33.1	6.9	-36.5	0.0	0.0	41.5	34.0	74	54	-32.5	-20.0	H	
7.311	3.0	36.1	29.0	35.5	8.4	-36.2	0.0	0.0	43.8	36.7	74	54	-30.2	-17.3	H	
High Channel 2462MHz																
4.924	3.0	39.5	32.3	33.1	7.0	-36.5	0.0	0.0	43.1	35.9	74	54	-30.9	-18.1	V	
7.386	3.0	37.5	29.8	35.6	8.4	-36.2	0.0	0.0	45.3	37.6	74	54	-28.7	-16.4	V	
4.924	3.0	38.6	30.3	33.1	7.0	-36.5	0.0	0.0	42.2	33.9	74	54	-31.8	-20.1	H	
7.386	3.0	36.5	28.6	35.6	8.4	-36.2	0.0	0.0	44.3	36.4	74	54	-29.7	-17.6	H	
No other emissions were detected above noise floor.																
Rev. 4.12.7																
f	Measurement Frequency					Amp	Preamp Gain					Avg Lim	Average Field Strength Limit			
Dist	Distance to Antenna					D Corr	Distance Correct to 3 meters					Pk Lim	Peak Field Strength Limit			
Read	Analyzer Reading					Avg	Average Field Strength @ 3 m					Avg Mar	Margin vs. Average Limit			
AF	Antenna Factor					Peak	Calculated Peak Field Strength					Pk Mar	Margin vs. Peak Limit			
CL	Cable Loss					HPF	High Pass Filter									

7.2.2. 802.11g MODE

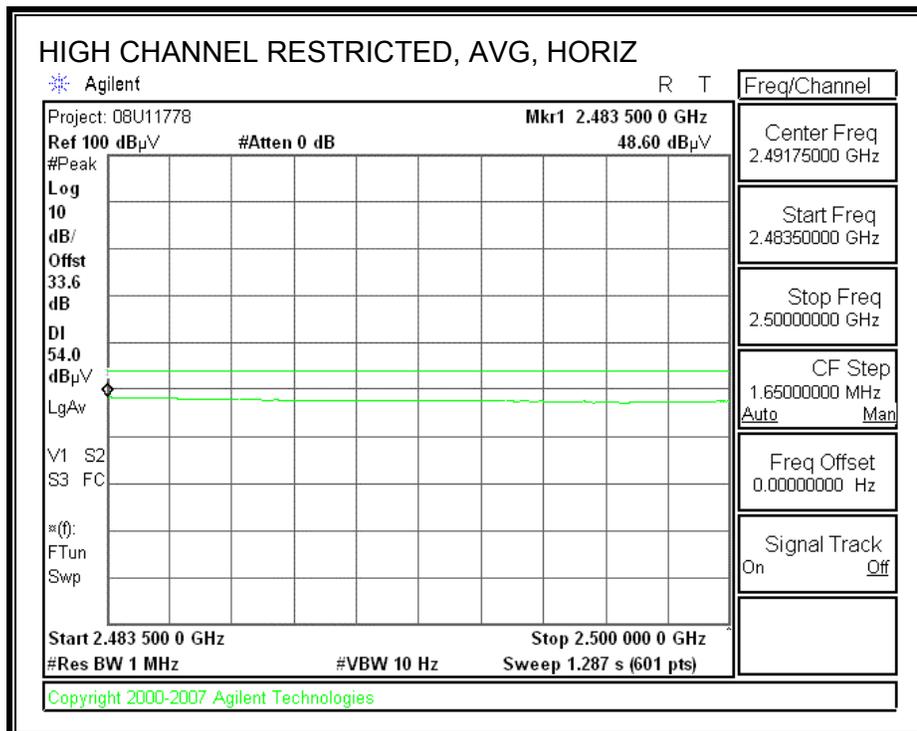
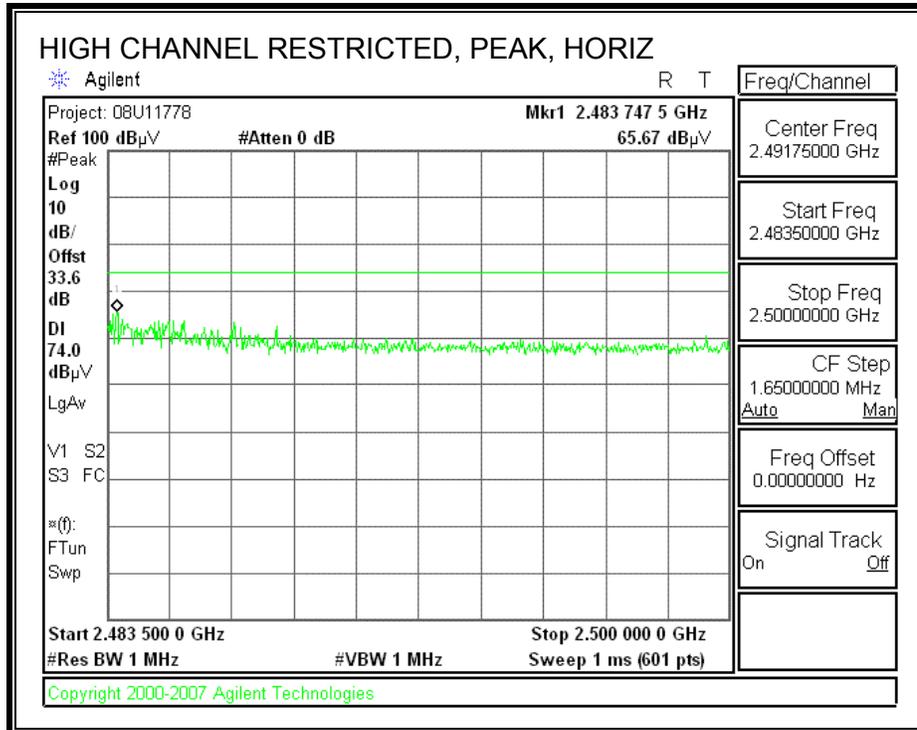
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



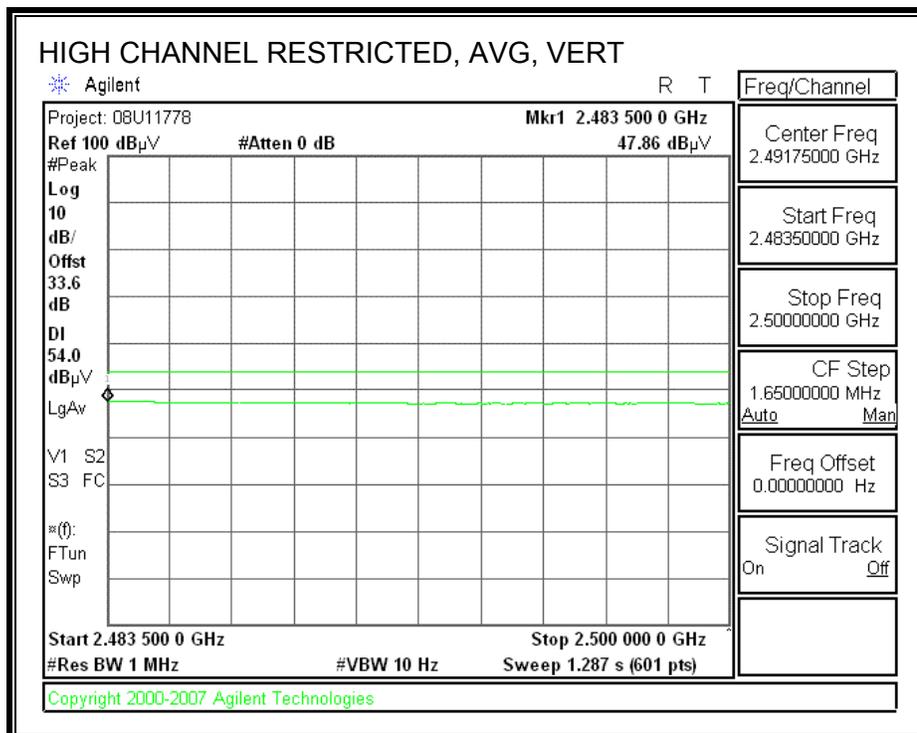
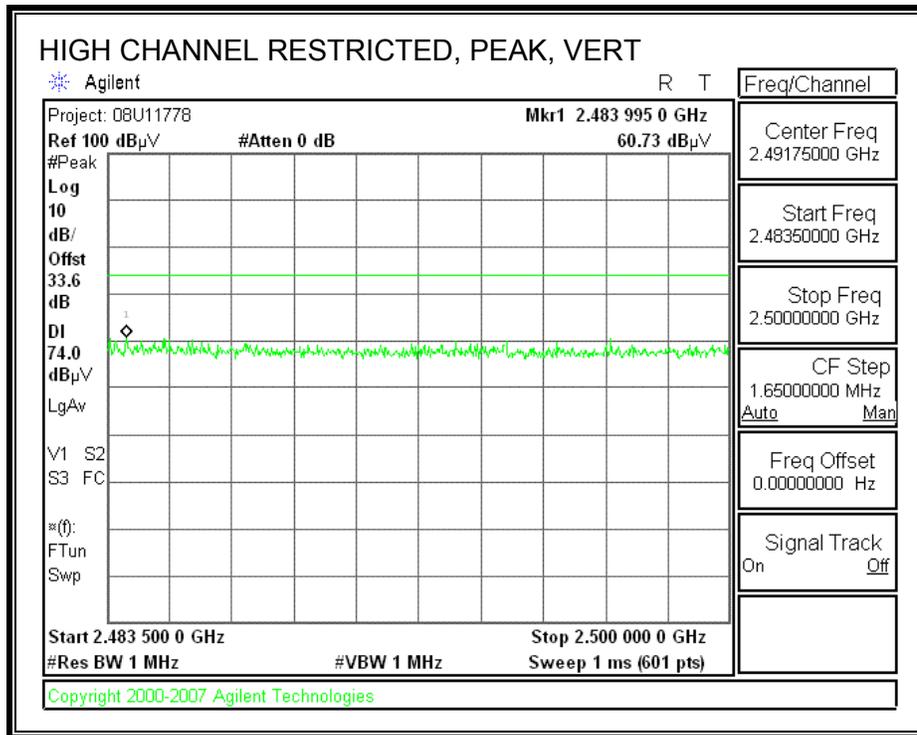
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

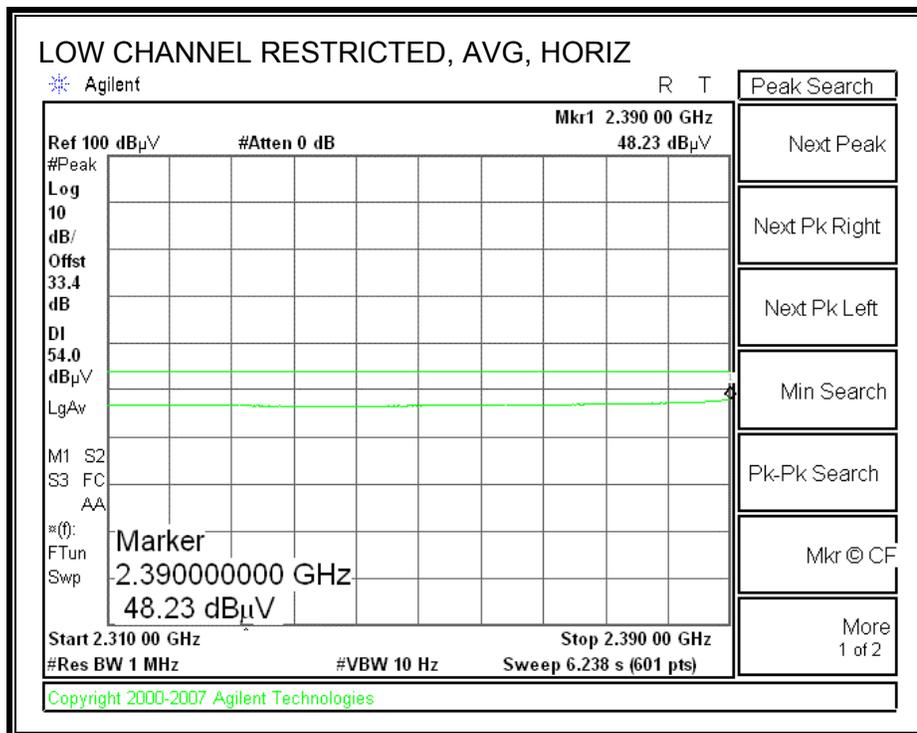
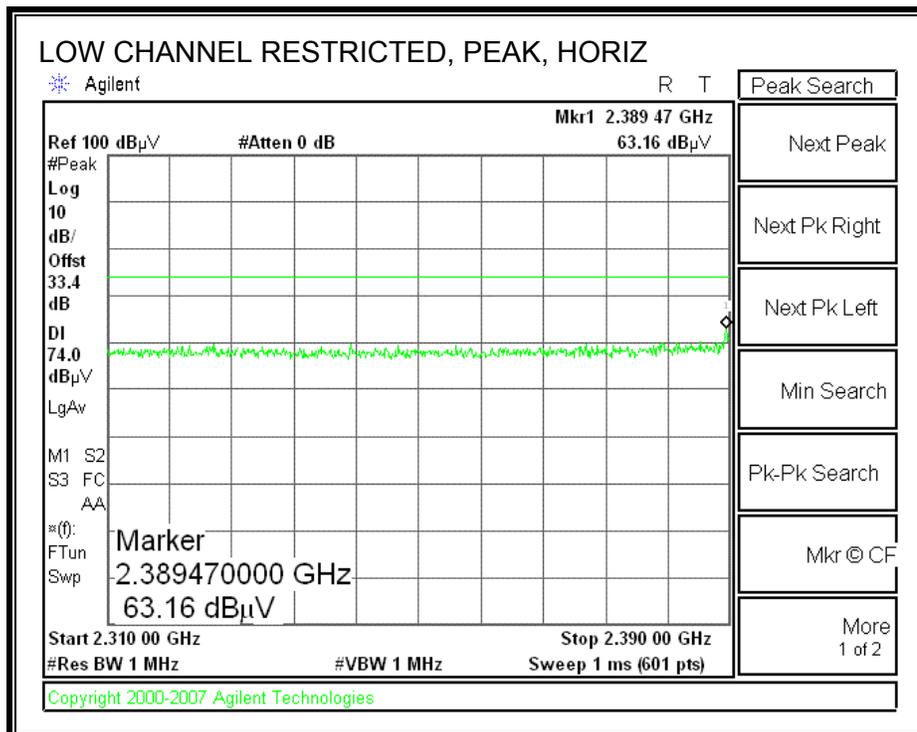


HARMONICS AND SPURIOUS EMISSIONS

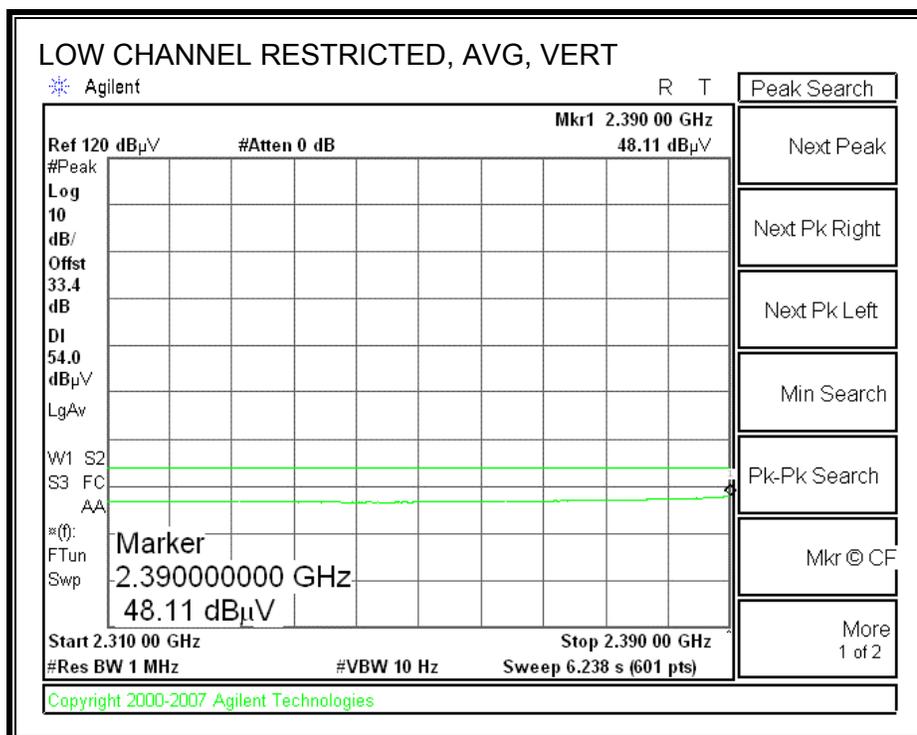
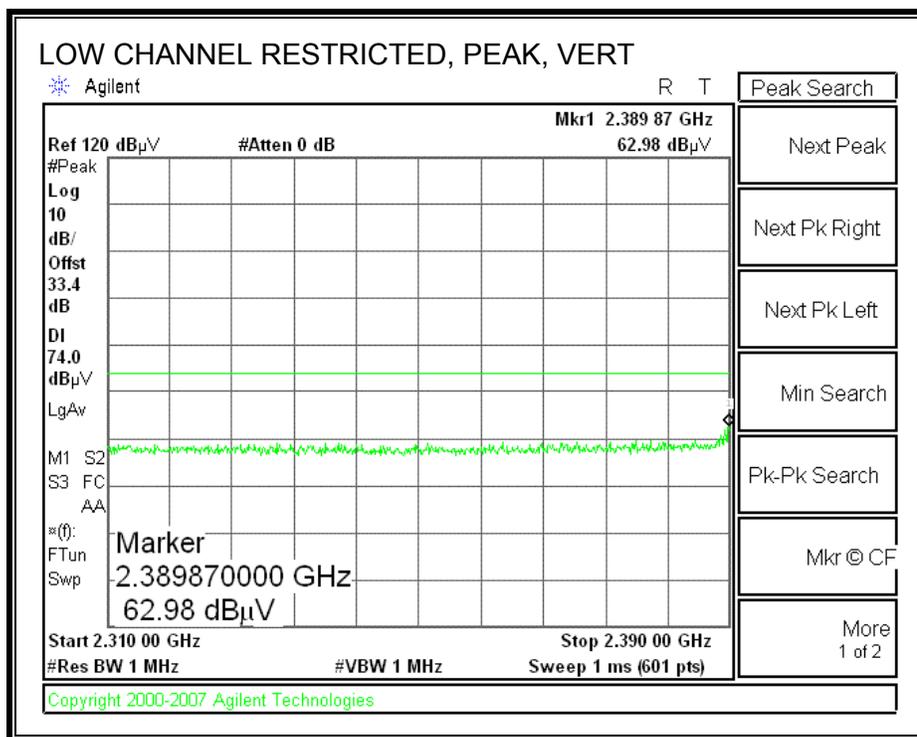
High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber																
Company: Intel Project #: 08U11778 Date: 05/01/2008 Test Engineer: Tom Chen Configuration: EUT host on NB Mode: 11g Mode TX on Low \ Mid \ High CH																
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2 foot cable			3 foot cable			12 foot cable			HPF			Reject Filter				
			A-5m Chamber									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)	
Harmonics Spurious																
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7.311	3.0	35.7	23.4	35.5	8.4	-36.2	0.0	0.0	43.4	31.1	74	54	-30.6	-22.9	H	
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4.924	3.0	37.5	25.5	33.1	7.0	-36.5	0.0	0.0	41.1	29.1	74	54	-32.9	-24.9	V	
7.386	3.0	41.1	27.5	35.6	8.4	-36.2	0.0	0.0	48.9	35.3	74	54	-25.1	-18.7	V	
4.924	3.0	37.0	24.3	33.1	7.0	-36.5	0.0	0.0	40.6	27.9	74	54	-33.4	-26.1	H	
7.386	3.0	37.1	24.0	35.6	8.4	-36.2	0.0	0.0	44.9	31.8	74	54	-29.1	-22.2	H	
No other emissions were detected above noise floor.																
Rev. 4.12.7																
f	Measurement Frequency					Amp	Preamp Gain					Avg Lim	Average Field Strength Limit			
Dist	Distance to Antenna					D Corr	Distance Correct to 3 meters					Pk Lim	Peak Field Strength Limit			
Read	Analyzer Reading					Avg	Average Field Strength @ 3 m					Avg Mar	Margin vs. Average Limit			
AF	Antenna Factor					Peak	Calculated Peak Field Strength					Pk Mar	Margin vs. Peak Limit			
CL	Cable Loss					HPF	High Pass Filter									

7.2.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

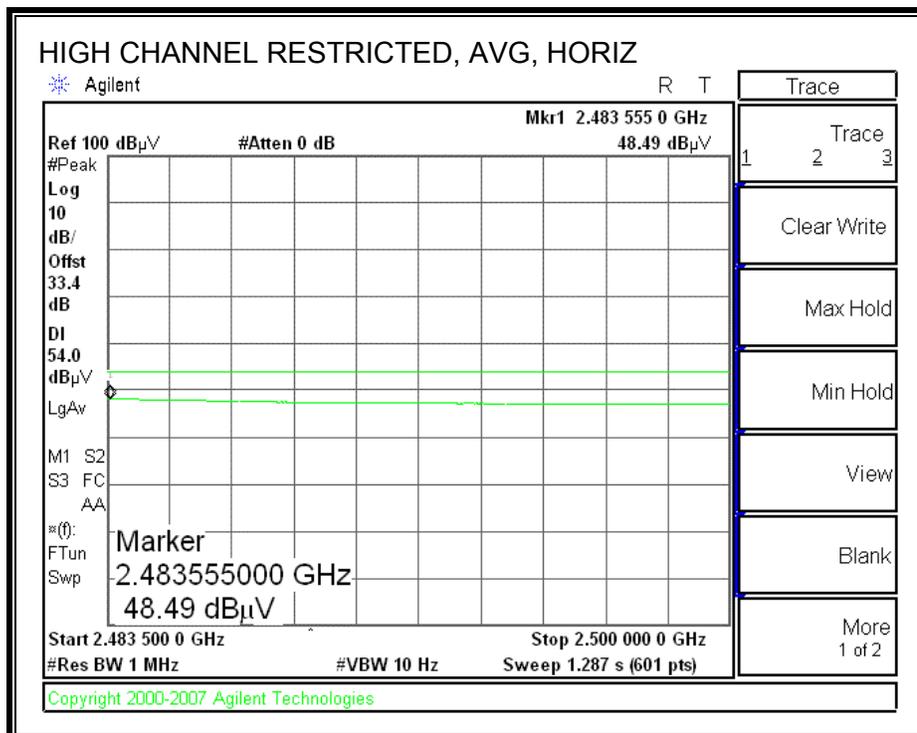
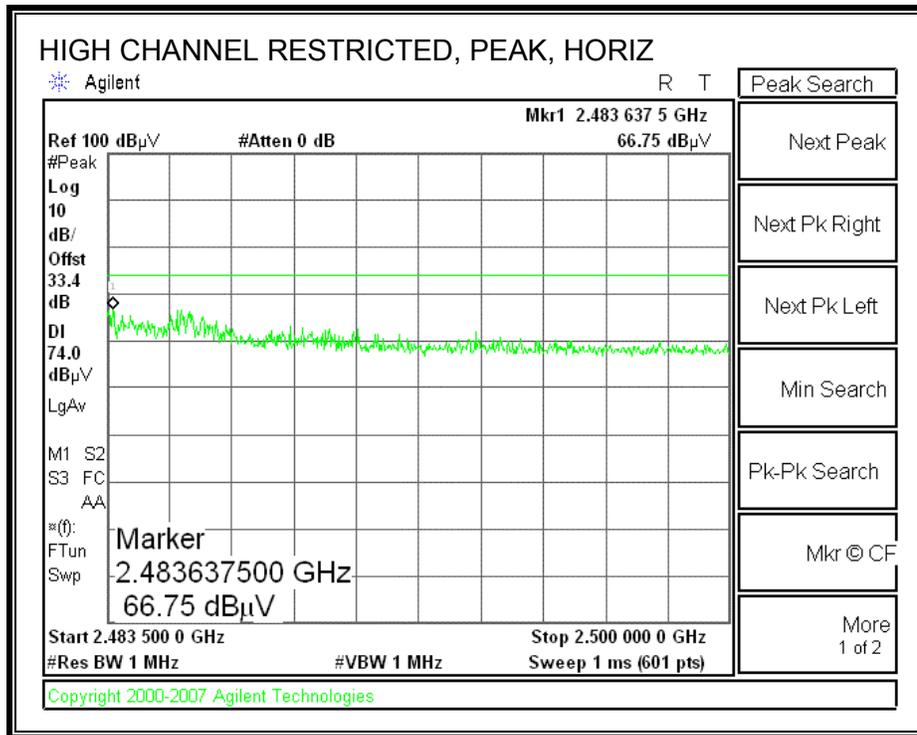
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



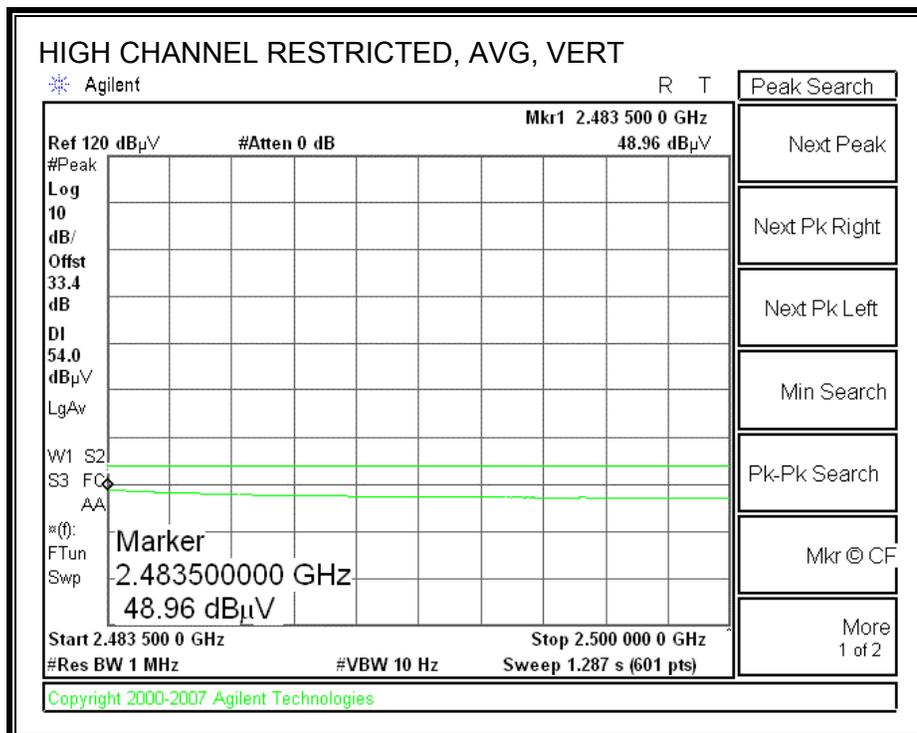
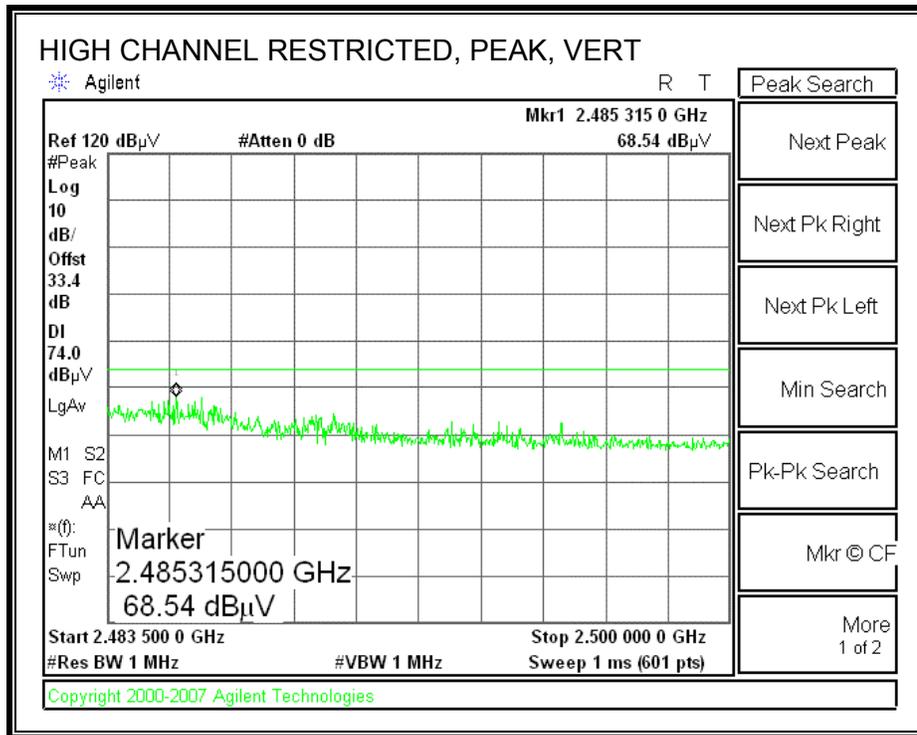
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
 Compliance Certification Services, Fremont 5m Chamber

Company: Intel
 Project #: 08U11778
 Date: 05/02/2008
 Test Engineer: Tom Chen
 Configuration: EUT host on NB
 Mode: 1In HT20 Mode TX on Low \ Mid \ High CH

Test Equipment:

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

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter	Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz ; VBW=10Hz
		A-5m Chamber		R_001	

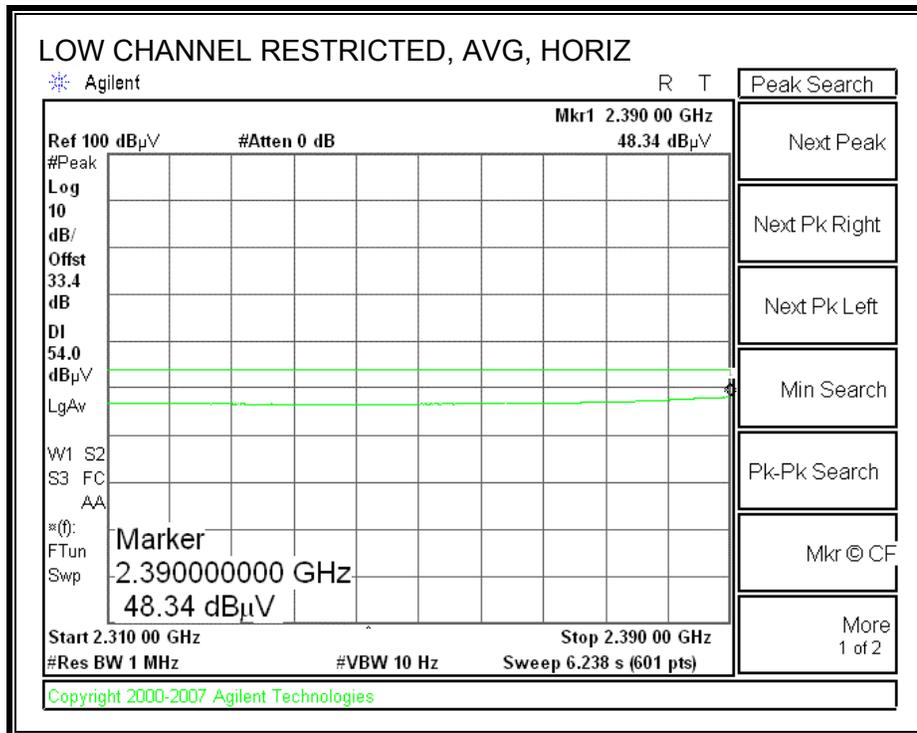
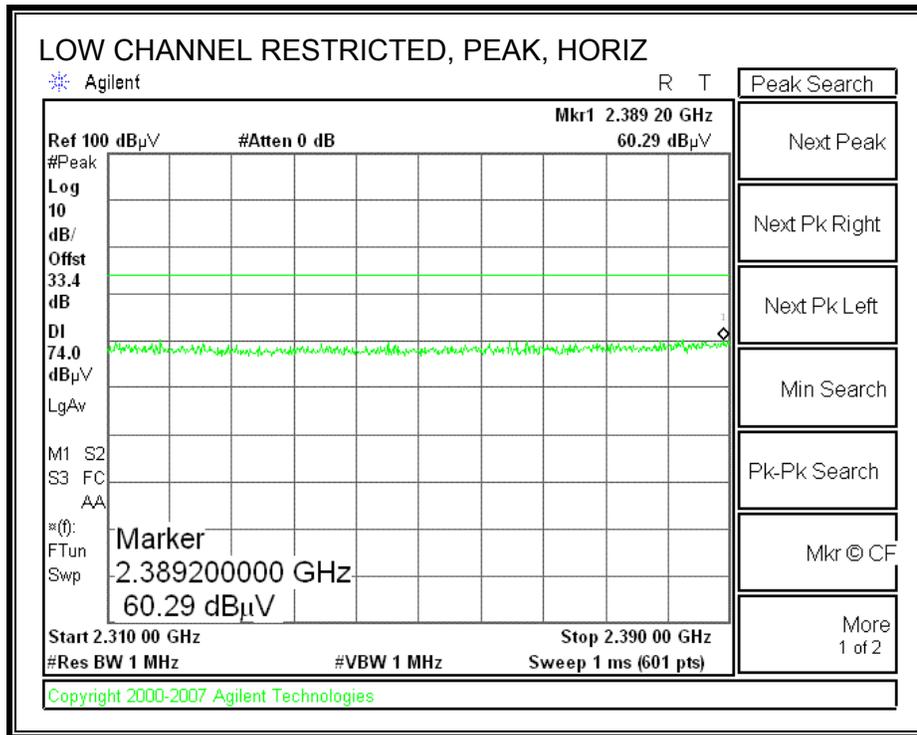
f GHz	Dist (m)	Read Pk dBuV	Read Avg dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Harmonics Spurious															
Low Channel 2412MHz															
4.824	3.0	37.3	27.1	33.0	6.9	-36.5	0.0	0.0	40.7	30.5	74	54	-33.3	-23.5	V
7.236	3.0	35.8	25.1	35.4	8.4	-36.2	0.0	0.0	43.4	32.7	74	54	-30.6	-21.3	V
4.824	3.0	37.6	26.4	33.0	6.9	-36.5	0.0	0.0	41.0	29.8	74	54	-33.0	-24.2	H
7.236	3.0	36.3	26.1	35.4	8.4	-36.2	0.0	0.0	43.9	33.7	74	54	-30.1	-20.3	H
Mid Channel 2437MHz															
4.874	3.0	37.3	27.1	33.1	6.9	-36.5	0.0	0.0	40.8	30.6	74	54	-33.2	-23.4	V
7.311	3.0	38.5	27.2	35.5	8.4	-36.2	0.0	0.0	46.2	34.9	74	54	-27.8	-19.1	V
4.874	3.0	37.0	26.0	33.1	6.9	-36.5	0.0	0.0	40.5	29.5	74	54	-33.5	-24.5	H
7.311	3.0	36.5	25.9	35.5	8.4	-36.2	0.0	0.0	44.2	33.6	74	54	-29.8	-20.4	H
High Channel 2462MHz															
4.924	3.0	38.5	27.8	33.1	7.0	-36.5	0.0	0.0	42.1	31.4	74	54	-31.9	-22.6	V
7.386	3.0	36.6	26.3	35.6	8.4	-36.2	0.0	0.0	44.4	34.1	74	54	-29.6	-19.9	V
4.924	3.0	37.5	26.7	33.1	7.0	-36.5	0.0	0.0	41.1	30.3	74	54	-32.9	-23.7	H
7.386	3.0	36.5	25.4	35.6	8.4	-36.2	0.0	0.0	44.3	33.2	74	54	-29.7	-20.8	H
No other emissions were detected above noise floor.															

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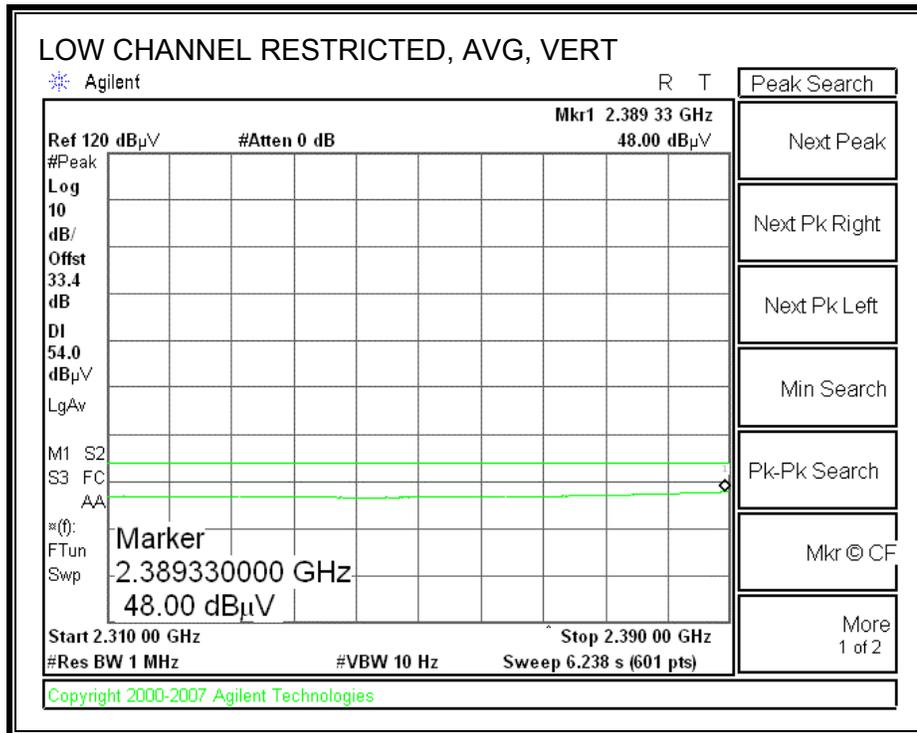
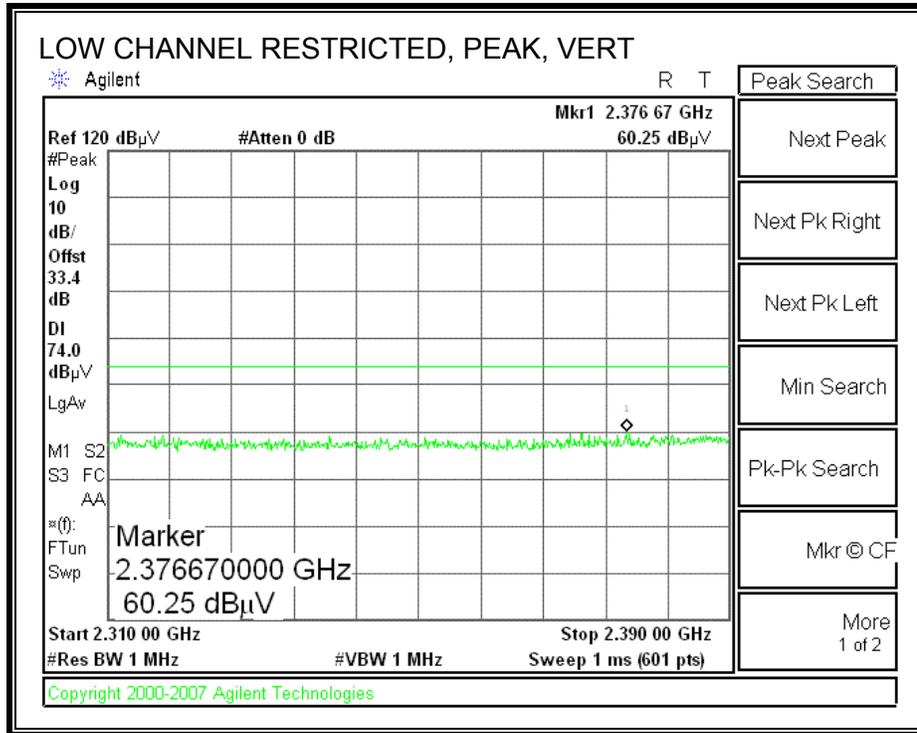
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field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

7.2.4. 802.11n HT40 MODE IN THE 2.4 GHz BAND

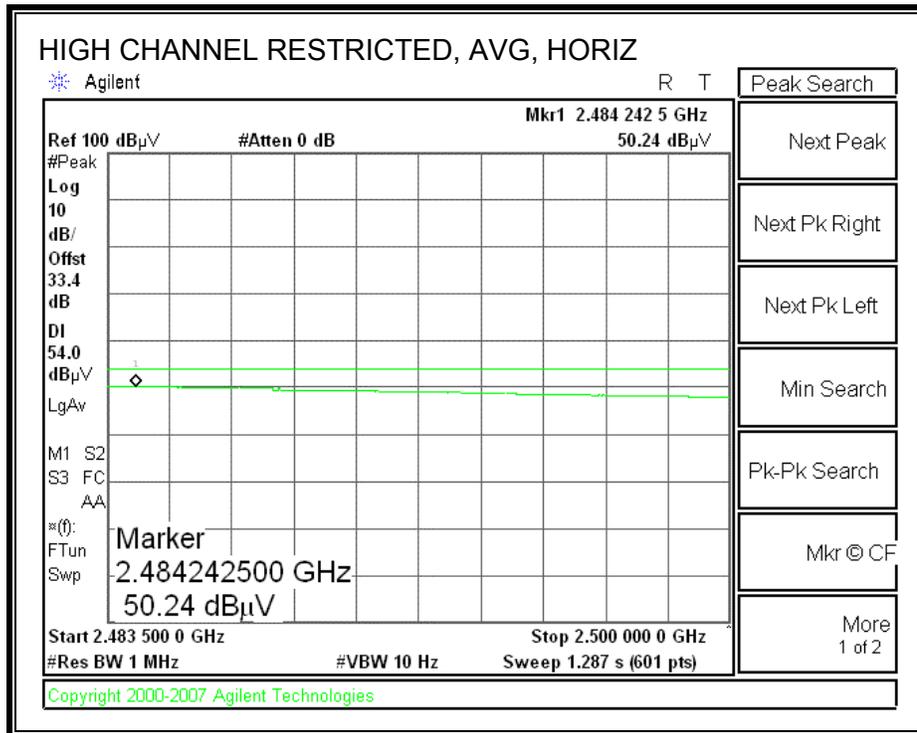
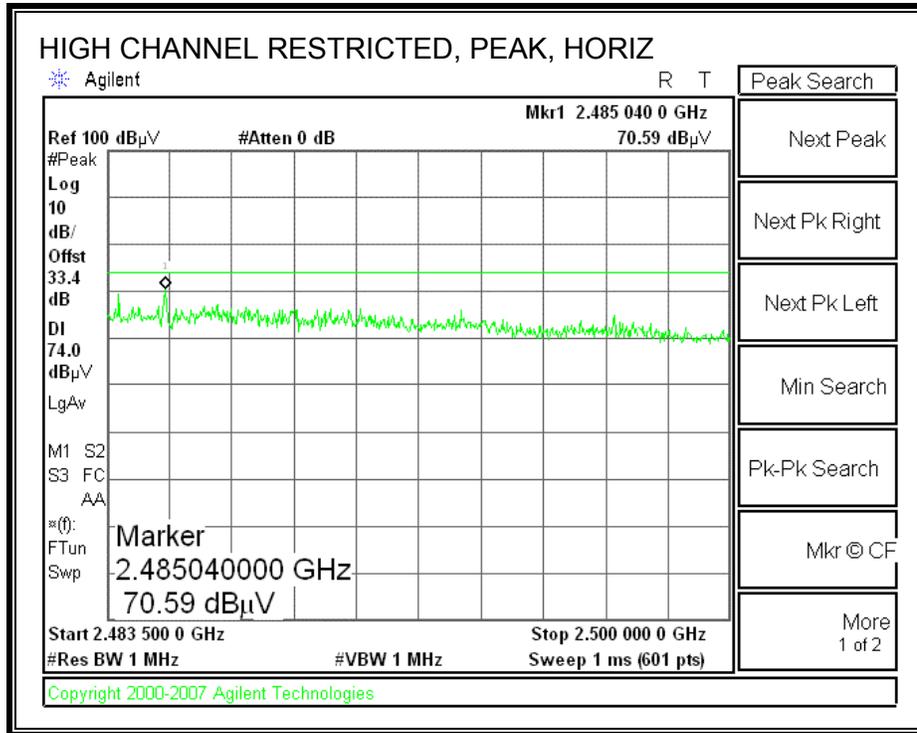
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



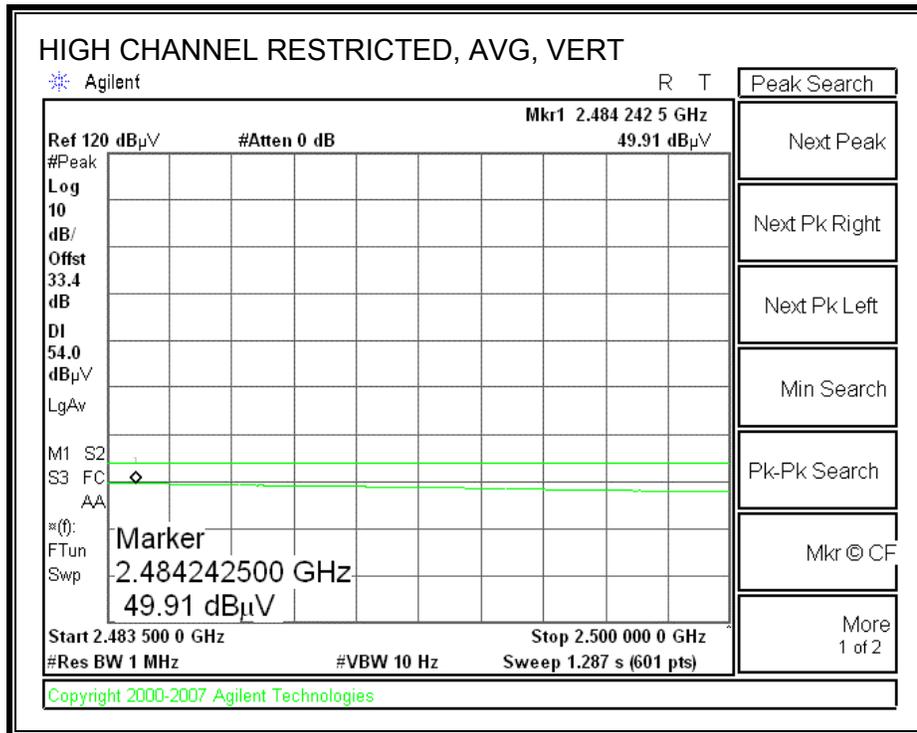
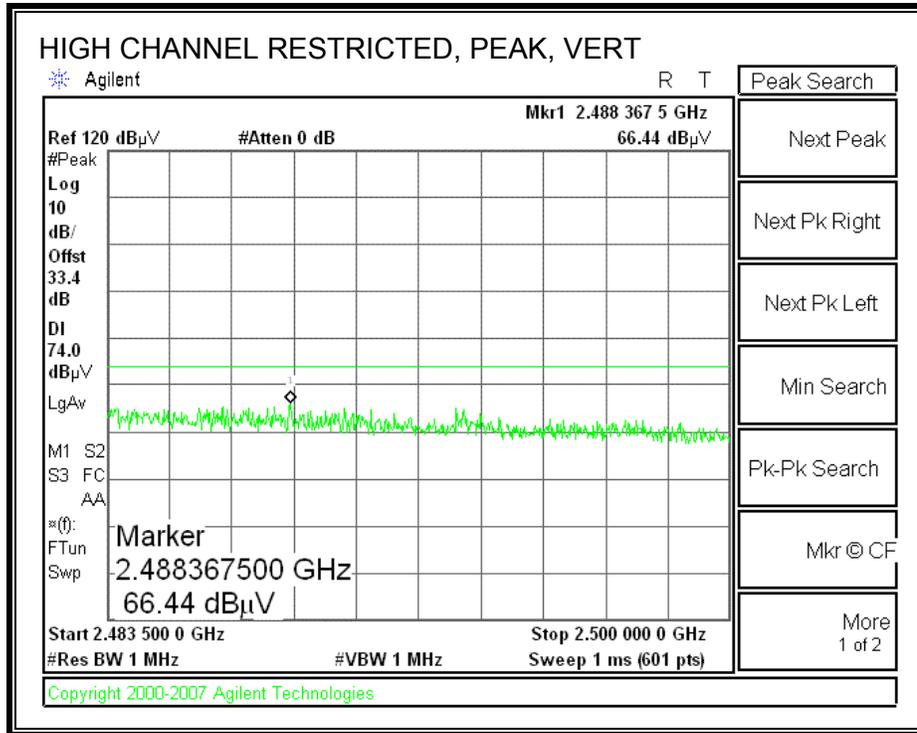
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
 Compliance Certification Services, Fremont 5m Chamber

Company: Intel
 Project #: 08U11778
 Date: 05/02/2008
 Test Engineer: Tom Chen
 Configuration: EUT host on NB
 Mode: 1In HT40 Mode TX on Low \ Mid \ High CH

Test Equipment:

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

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter	
		A-5m Chamber		R_001	Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Harmonics Spurious															
Low Channel 2422MHz															
4.844	3.0	38.5	26.7	33.0	6.9	-36.5	0.0	0.0	42.0	30.2	74	54	-32.0	-23.8	V
7.266	3.0	37.1	26.2	35.4	8.4	-36.2	0.0	0.0	44.7	33.8	74	54	-29.3	-20.2	V
4.844	3.0	37.2	26.1	33.0	6.9	-36.5	0.0	0.0	40.7	29.6	74	54	-33.3	-24.4	H
7.266	3.0	36.3	25.3	35.4	8.4	-36.2	0.0	0.0	43.9	32.9	74	54	-30.1	-21.1	H
Mid Channel 2437MHz															
4.874	3.0	37.3	26.8	33.1	6.9	-36.5	0.0	0.0	40.8	30.3	74	54	-33.2	-23.7	V
7.311	3.0	36.5	25.6	35.5	8.4	-36.2	0.0	0.0	44.2	33.3	74	54	-29.8	-20.7	V
4.874	3.0	37.2	26.0	33.1	6.9	-36.5	0.0	0.0	40.7	29.5	74	54	-33.3	-24.5	H
7.311	3.0	36.3	25.2	35.5	8.4	-36.2	0.0	0.0	44.0	32.9	74	54	-30.0	-21.1	H
High Channel 2452MHz															
4.904	3.0	38.5	26.5	33.1	7.0	-36.5	0.0	0.0	42.1	30.1	74	54	-31.9	-23.9	V
7.356	3.0	36.3	24.1	35.5	8.4	-36.2	0.0	0.0	44.1	31.9	74	54	-29.9	-22.1	V
4.904	3.0	36.8	25.7	33.1	7.0	-36.5	0.0	0.0	40.4	29.3	74	54	-33.6	-24.7	H
7.356	3.0	36.8	25.4	35.5	8.4	-36.2	0.0	0.0	44.6	33.2	74	54	-29.4	-20.8	H
No other emissions were detected above noise floor.															

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

7.2.5. 802.11a MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber																
Company: Intel Project #: 08U11778 Date: 05/05/2008 Test Engineer: Devin Chang Configuration: EUT host on NB Mode: 11a Mode																
Test Equipment:																
Horn 1-18GHz		Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit					
T60; S/N: 2238 @3m		T144 Miteq 3008A00931									FCC 15.209					
Hi Frequency Cables																
2 foot cable		3 foot cable			12 foot cable			HPF		Reject Filter						
					A-5m Chamber					R_001		Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz ; VBW=10Hz				
f GHz	Dist (m)	Read Pk dBuV	Read Avg dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)	
Harmonics Spurious																
Low Channel 5745MHz																
11.490	1.0	45.2	33.1	37.4	11.6	-35.9	-9.5	0.0	48.8	36.7	74	54	-25.2	-17.3	V	
17.235	1.0	34.7	23.4	41.7	13.3	-33.8	-9.5	0.0	46.4	35.1	74	54	-27.6	-18.9	V	
11.490	1.0	38.3	26.1	37.4	11.6	-35.9	-9.5	0.0	41.9	29.7	74	54	-32.1	-24.3	H	
17.235	1.0	34.3	23.1	41.7	13.3	-33.8	-9.5	0.0	46.0	34.8	74	54	-28.0	-19.2	H	
Mid Channel 5785MHz																
11.570	1.0	46.0	33.0	37.4	11.7	-35.8	-9.5	0.0	49.8	36.8	74	54	-24.2	-17.2	V	
17.355	1.0	35.4	22.7	42.1	13.3	-33.8	-9.5	0.0	47.6	34.8	74	54	-26.4	-19.2	V	
11.570	1.0	40.2	27.2	37.4	11.7	-35.8	-9.5	0.0	44.0	31.0	74	54	-30.0	-23.0	H	
17.355	1.0	37.6	23.9	42.1	13.3	-33.8	-9.5	0.0	49.7	36.0	74	54	-24.3	-18.0	H	
High Channel 5825MHz																
11.650	1.0	48.0	35.5	37.4	11.8	-35.7	-9.5	0.0	52.0	39.5	74	54	-22.0	-14.5	V	
17.475	1.0	35.2	23.0	42.6	13.4	-33.8	-9.5	0.0	47.7	35.5	74	54	-26.3	-18.5	V	
11.650	1.0	41.2	27.9	37.4	11.8	-35.7	-9.5	0.0	45.1	31.9	74	54	-28.9	-22.1	H	
17.475	1.0	37.3	24.2	42.6	13.4	-33.8	-9.5	0.0	49.9	36.7	74	54	-24.1	-17.3	H	
No other emissions were detected above noise floor.																
Rev. 4.12.7																
f	Measurement Frequency					Amp	Preamp Gain					Avg Lim	Average Field Strength Limit			
Dist	Distance to Antenna					D Corr	Distance Correct to 3 meters					Pk Lim	Peak Field Strength Limit			
Read	Analyzer Reading					Avg	Average Field Strength @ 3 m					Avg Mar	Margin vs. Average Limit			
AF	Antenna Factor					Peak	Calculated Peak Field Strength					Pk Mar	Margin vs. Peak Limit			
CL	Cable Loss					HPF	High Pass Filter									

7.2.6. 802.11n HT20 MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
 Compliance Certification Services, Fremont 5m Chamber

Company: Intel
 Project #: 08U11778
 Date: 05/05/2008
 Test Engineer: Devin Chang
 Configuration: EUT host on NB
 Mode: 11n HT20 Mode

Test Equipment:

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

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter	Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz ; VBW=10Hz
		A-5m Chamber		R_001	

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Harmonics Spurious															
Low Channel 5745MHz															
11.490	1.0	47.9	31.2	37.4	11.6	-35.9	-9.5	0.0	51.5	34.8	74	54	-22.5	-19.2	V
17.235	1.0	35.7	23.0	41.7	13.3	-33.8	-9.5	0.0	47.3	34.7	74	54	-26.7	-19.3	V
11.490	1.0	38.9	24.8	37.4	11.6	-35.9	-9.5	0.0	42.5	28.4	74	54	-31.5	-25.6	H
17.235	1.0	37.6	24.2	41.7	13.3	-33.8	-9.5	0.0	49.2	35.9	74	54	-24.8	-18.1	H
Mid Channel 5785MHz															
11.570	1.0	47.1	32.6	37.4	11.7	-35.8	-9.5	0.0	50.9	36.3	74	54	-23.1	-17.7	V
17.355	1.0	36.2	22.6	42.1	13.3	-33.8	-9.5	0.0	48.4	34.7	74	54	-25.6	-19.3	V
11.570	1.0	39.1	25.4	37.4	11.7	-35.8	-9.5	0.0	42.9	29.2	74	54	-31.1	-24.8	H
17.355	1.0	37.5	24.0	42.1	13.3	-33.8	-9.5	0.0	49.7	36.1	74	54	-24.3	-17.9	H
High Channel 5825MHz															
11.650	1.0	49.8	35.7	37.4	11.8	-35.7	-9.5	0.0	53.7	39.6	74	54	-20.3	-14.4	V
17.475	1.0	29.1	23.6	42.6	13.4	-33.8	-9.5	0.0	41.6	36.1	74	54	-32.4	-17.9	V
11.650	1.0	41.6	28.1	37.4	11.8	-35.7	-9.5	0.0	45.5	32.0	74	54	-28.5	-22.0	H
17.475	1.0	38.9	24.8	42.6	13.4	-33.8	-9.5	0.0	51.4	37.3	74	54	-22.6	-16.7	H
No other emissions were detected above noise floor.															

Rev. 4127

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

7.2.7. 802.11n HT40 MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
 Compliance Certification Services, Fremont 5m Chamber

Company: Intel
 Project #: 08U11778
 Date: 05/05/2008
 Test Engineer: Devin Chang
 Configuration: EUT host on NB
 Mode: 11n HT40 Mode

Test Equipment:

Horn 1-18GHz T60; S/N: 2238 @3m	Pre-amplifier 1-26GHz T144 Miteq 3008A00931	Pre-amplifier 26-40GHz	Horn > 18GHz	Limit FCC 15.209
Hi Frequency Cables			HPF	Reject Filter R_001
2 foot cable	3 foot cable	12 foot cable A-5m Chamber		

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

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Harmonics Spurious															
Low Channel 5755MHz															
11.510	1.0	43.9	29.9	37.4	11.6	-35.8	-9.5	0.0	47.6	33.5	74	54	-26.4	-20.5	V
17.265	1.0	35.7	22.8	41.8	13.3	-33.8	-9.5	0.0	47.5	34.6	74	54	-26.5	-19.4	V
11.510	1.0	36.7	24.7	37.4	11.6	-35.8	-9.5	0.0	40.4	28.3	74	54	-33.6	-25.7	H
17.265	1.0	36.9	23.5	41.8	13.3	-33.8	-9.5	0.0	48.7	35.2	74	54	-25.3	-18.8	H
High Channel 5795MHz															
11.590	1.0	45.1	32.0	37.4	11.7	-35.8	-9.5	0.0	48.9	35.8	74	54	-25.1	-18.2	V
17.385	1.0	36.1	22.6	42.2	13.3	-33.8	-9.5	0.0	48.3	34.8	74	54	-25.7	-19.2	V
11.590	1.0	38.2	25.6	37.4	11.7	-35.8	-9.5	0.0	42.0	29.4	74	54	-32.0	-24.6	H
17.385	1.0	36.8	23.6	42.2	13.3	-33.8	-9.5	0.0	49.0	35.8	74	54	-25.0	-18.2	H
No other emissions were detected above noise floor.															

Rev. 4.12.7

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. RECEIVER ABOVE 1 GHz

7.3.1. 20 MHz BANDWIDTH IN THE 2.4 GHz BAND

High Frequency Measurement																
Compliance Certification Services, Fremont C Chamber																
Company:		Intel														
Project #:		08U11778														
Date:		5/5/2008														
Test Engineer:		Vien Tran														
Configuration:		EUT insides HP Olifant laptop														
Mode:		Rx DTS Band														
Test Equipment:																
Horn 1-18GHz			Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit				
T136; M/N: 3117 @3m			T145 Agilent 3008A005									RX RSS 210				
Hi Frequency Cables																
2 foot cable			3 foot cable			12 foot cable			HPF		Reject Filter		Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz ; VBW=10Hz			
			Thanh 187215003			Ninous 208946002					R_001					
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)	
1.100	3.0	55.6	43.6	27.9	1.6	-36.1	0.0	0.0	49.0	37.0	74	54	-25.0	-17.0	V	
1.330	3.0	55.4	40.6	28.7	1.7	-35.9	0.0	0.0	49.8	35.0	74	54	-24.2	-19.0	V	
1.100	3.0	55.7	41.5	27.9	1.6	-36.1	0.0	0.0	49.1	34.9	74	54	-24.9	-19.1	H	
1.330	3.0	58.7	42.5	28.7	1.7	-35.9	0.0	0.0	53.1	36.9	74	54	-20.9	-17.1	H	
No other emissions 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													

7.4. WORST-CASE BELOW 1 GHz

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

Trace: 7

Ref Trace:

Condition: FCC CLASS-B HORIZONTAL
 Test Operator:: Devin Chang
 Project #: : 08U11778
 Company: : Intel
 Configuration:: EUT/Support Equipment
 Mode : : DTS band Worst case
 Target: : FCC Class B

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	102.750	47.67	-20.02	27.64	43.50	-15.86	Peak
2	248.250	54.17	-17.79	36.37	46.00	-9.63	Peak
3	401.510	50.33	-13.39	36.95	46.00	-9.05	Peak
4	685.720	46.67	-8.67	37.99	46.00	-8.01	Peak
5	733.250	46.00	-7.85	38.15	46.00	-7.85	Peak
6	798.240	45.98	-6.87	39.11	46.00	-6.89	QP
7	798.240	52.17	-6.87	45.30	46.00	-0.70	Peak

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

Trace: 1

Ref Trace:

Condition: FCC CLASS-B VERTICAL
 Test Operator:: Devin Chang
 Project #: : 08U11778
 Company: : Intel
 Configuration:: EUT/Support Equipment
 Mode : : DTS band Worst case
 Target: : FCC Class B

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	35.820	45.51	-12.14	33.37	40.00	-6.63	Peak
2	170.650	48.50	-18.14	30.36	43.50	-13.14	Peak
3	256.010	55.67	-17.53	38.14	46.00	-7.86	Peak
4	401.510	48.17	-13.39	34.78	46.00	-11.22	Peak
5	668.260	45.17	-8.86	36.31	46.00	-9.69	Peak
6	801.150	45.40	-6.88	38.52	46.00	-7.48	QP
7	801.150	51.67	-6.86	44.81	46.00	-1.19	Peak

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

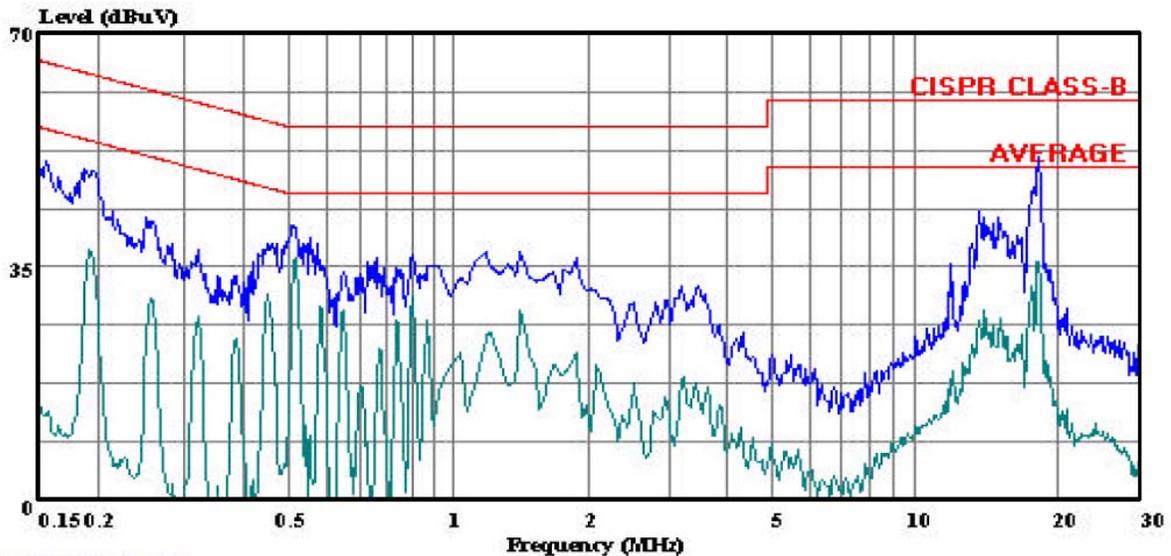
CONDUCTED EMISSIONS DATA (115VAC 60Hz)										
Freq. (MHz)	Reading			Class (dB)	Limit QP	FCC_B		Margin		Remark L1 / L2
	PK (dBuV)	QP (dBuV)	AV (dBuV)			AV	QP (dB)	AV (dB)		
0.19	49.33	--	37.32	0.00	63.95	53.95	-14.62	-16.63	L1	
0.52	41.11	--	36.46	0.00	56.00	46.00	-14.89	-9.54	L1	
18.33	51.50	--	35.70	0.00	60.00	50.00	-8.50	-14.30	L1	
0.19	49.63	--	37.04	0.00	63.95	53.95	-14.32	-16.91	L2	
0.52	41.06	--	36.33	0.00	56.00	46.00	-14.94	-9.67	L2	
18.33	51.29	--	35.62	0.00	60.00	50.00	-8.71	-14.38	L2	
6 Worst Data										

LINE 1 RESULTS



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

Data#: 7 File#: 08U11778 LC.EMI Date: 05-06-2008 Time: 11:02:19



(Line Conduction)

Trace: 5

Ref Trace:

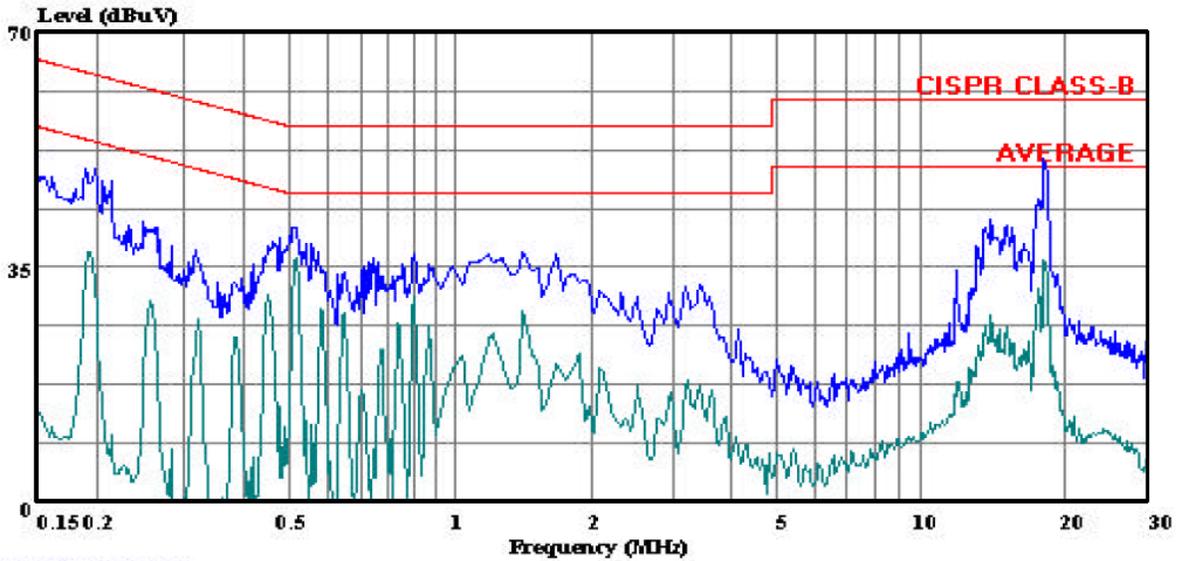
Condition: CISPR CLASS-B
Test Operator:: Vien Tran
Project #: : 08U11778
Company: : Intel
Configuration:: Intel WiFi Link 5100 installed inside
: HP Olifant portable tablet
Mode: : Tx Worst-case
Target: : FCC Class B
Voltage: : 115VAC / 60Hz
: Line 1: Peak (Blue), Average (Green)

LINE 2 RESULTS



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

Data#: 14 File#: 08U11778 LC.EMI Date: 05-06-2008 Time: 11:11:59



(Line Conduction)

Trace: 12

Ref Trace:

Condition: CISPR CLASS-B
Test Operator: : Vien Tran
Project #: : 08U11778
Company: : Intel
Configuration: : Intel WiFi Link 5100 installed inside
: HP Olifant portable tablet
Mode: : Tx Worst-case
Target: : FCC Class B
Voltage: : 115VAC / 60Hz
: Line 2: Peak (Blue), Average (Green)