



**FCC CFR47 PART 15 SUBPART C
INDUSTRY CANADA RSS-210 ISSUE 7**

**CLASS II PERMISSIVE CHANGE
CERTIFICATION TEST REPORT**

FOR

WIRELESS WIFI LINK 4965AG

MODEL NUMBER: PA3539U-1MPC

FCC ID: CJ6UPA3539WL

IC: 248H-DPA3539W

REPORT NUMBER: 07U11379-1

ISSUE DATE: NOVEMBER 1. 2007

Prepared for
**TOSHIBA CORPORATION
DIGITAL MEDIA NETWORK COMPANY
OME COMPLEX, 2-9, SUEHIRO-CHO
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Prepared by
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	11/01/07	Initial Issue based on CCS Report 07U11378-1, dated October 24, 2007.	T. Chan

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: TOSHIBA CORPORATION
DIGITAL MEDIA NETWORK COMPANY
OME COMPLEX, 2-9, SUEHIRO-CHO
TOKYO, 198-8710, JAPAN

EUT DESCRIPTION: WIRELESS WIFI LINK 4965AG

MODEL TESTED: PA3538U-1MPC

MODEL: PA3539U-1MPC

SERIAL NUMBER: GC2710504832

DATE TESTED: OCTOBER 12-16, 2007

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	No Non-Compliance Noted
RSS-210 Issue 7 Annex 8 and RSS-GEN Issue 2	No Non-Compliance Noted

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

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For CCS By:

Tested By:



THU CHAN
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

CHIN PANG
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
Radiated Emission, 30 to 200 MHz	+/- 3.3 dB
Radiated Emission, 200 to 1000 MHz	+4.5 / -2.9 dB
Radiated Emission, 1000 to 2000 MHz	+4.5 / -2.9 dB
Power Line Conducted Emission	+/- 2.9 dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is an 802.11a/b/g/n transceiver in Toshiba Protégé M400 Tablet.

The radio module is manufactured by Intel Corporation

5.2. STATEMENT OF MODEL DIFFERENCES

Model PA3539U-1MPC is identical to the model tested (PA3538U-1MPC) except that MIMO has been disabled.

5.3. CLASS II PERMISSIVE CHANGE DESCRIPTION

The major change filed under this application is:

The EUT module is being used in a Toshiba Protégé M700 Tablet.

5.4. MAXIMUM OUTPUT POWER

The transmitter has a same maximum conducted output power from the original grant.

5.5. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes two PIFA antennas for diversity, each with a maximum gain of -0.55 dBi @ 2.4 GHz and 2.00 dBi @ 5.8 GHz.

5.6. SOFTWARE AND FIRMWARE

The EUT driver software installed in the host support equipment during testing was Intel PRO/Wireless 4965AGN Network Connection xVT, version 11.1.0.53.

The test utility software used during testing was CRTU, rev. 4.1.20.0000

5.7. WORST-CASE CONFIGURATION AND MODE

The portable X, Y and Z positions have been investigated, Z Position was determined as the worst-case position for 2.4GHz band and Y position for the 5GHz band.

The worst-case channel is determined as the channel with the highest output power. The worst data bit rate of 2.4GHz band for 802.11b mode @ 1Mb/s, 802.11g mode @ 6Mb/s and 802.11n 20MHz BW @ HT0 and HT8, the worst data bit rate of 5GHz band for 802.11a @ 6Mb/s, 802.11n 20MHz BW @ HT0 and HT8, 802.11n 40MHz BW @ HT0 and HT8.

5.8. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Toshiba	Protégé M700	970125BJ	DoC
AC Adapter	Toshiba	PA3283U-5ACA	G71C0006Q210	DoC

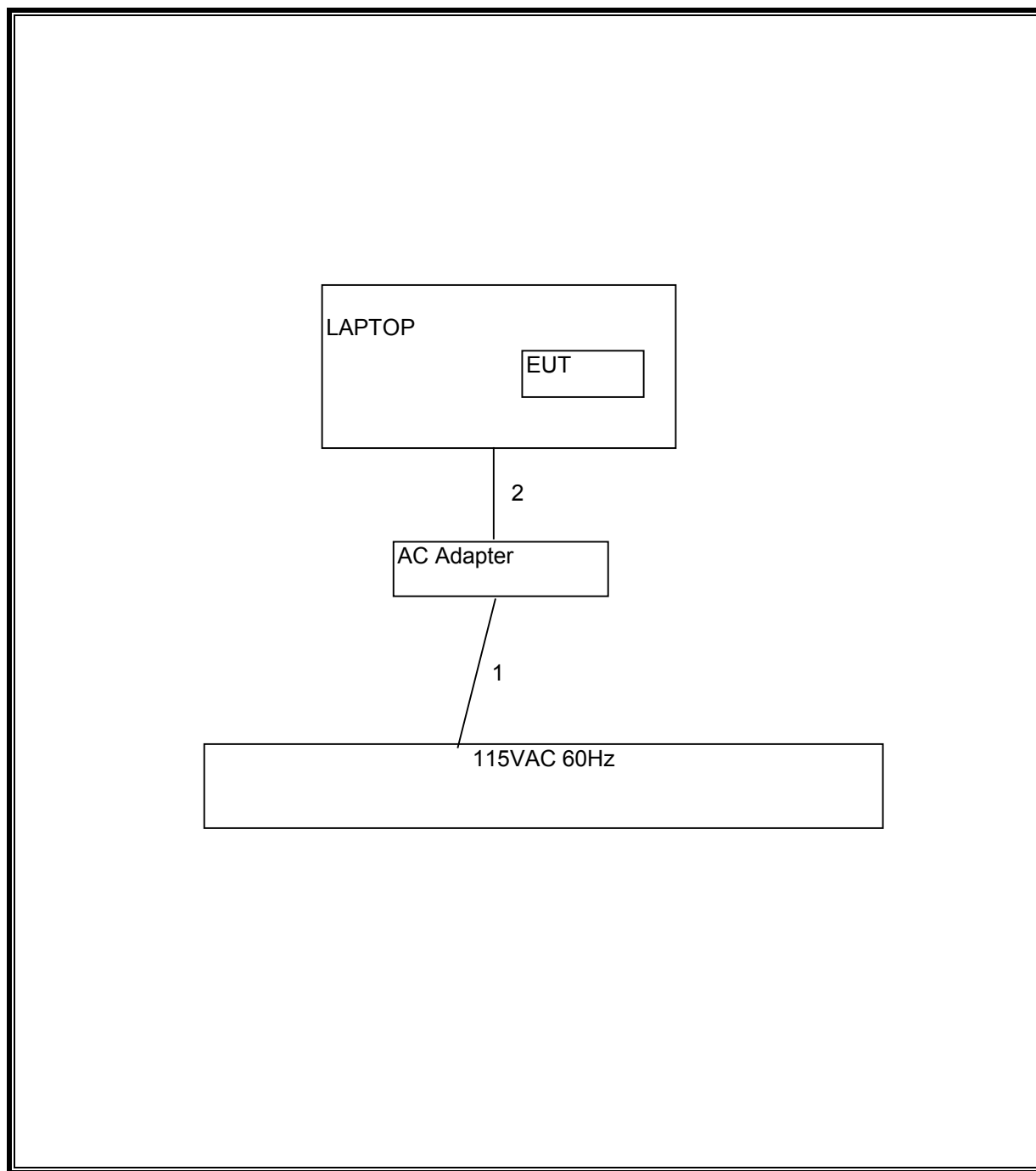
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	US 115V	Un-shielded	2m	NA
2	DC	1	DC	Un-shielded	2m	NA

TEST SETUP

The EUT is installed inside 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	Serial Number	Cal Due
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	2/15/1906	4/15/2008
Preamplifier, 1 ~ 26.5 GHz	Agilent / HP	8449B	3008A00931	9/28/2008
Antenna, Bilog 30 MHz ~ 2 Ghz	Sunol Sciences	JB1	A0022704	9/29/2008
Preamplifier, 1300 MHz	Agilent / HP	8447D	1937A02062	9/23/2008
Spectrum Analyzer 3 Hz ~ 44 GHz	Agilent / HP	E4446A	MY45300064	3/18/2008
EMI Test Receiver	R & S	ESHS 20	827129/006	1/27/2008
LISN, 10 kHz ~ 30 MHz	FCC	LISN-50/250-25-2	2023	12/15/2007
Antenna, Horn 18 ~ 26 GHz	ARA	MWH-1826/B	1049	9/29/2008
Preamplifier, 26 ~ 40 GHz	Miteq	NSP4000-SP2	924343	11/24/2007

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.

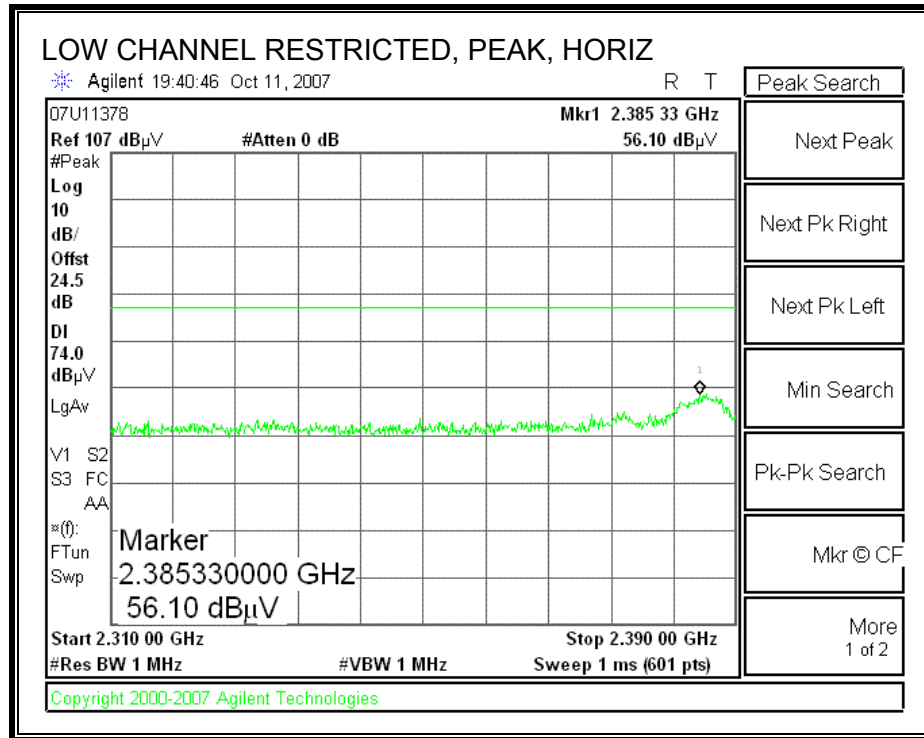
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

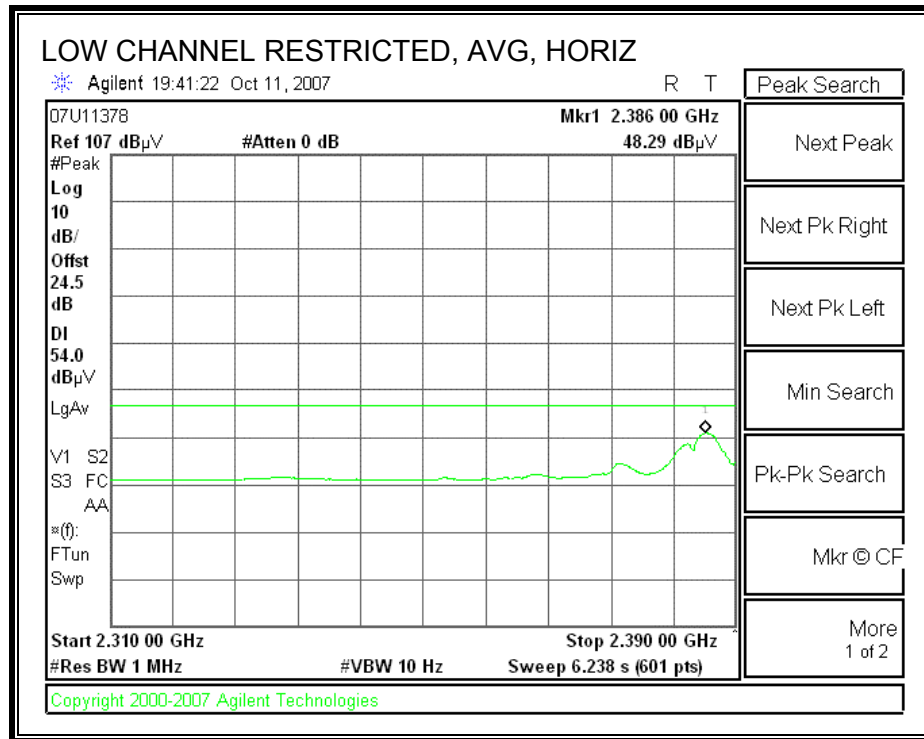
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

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.

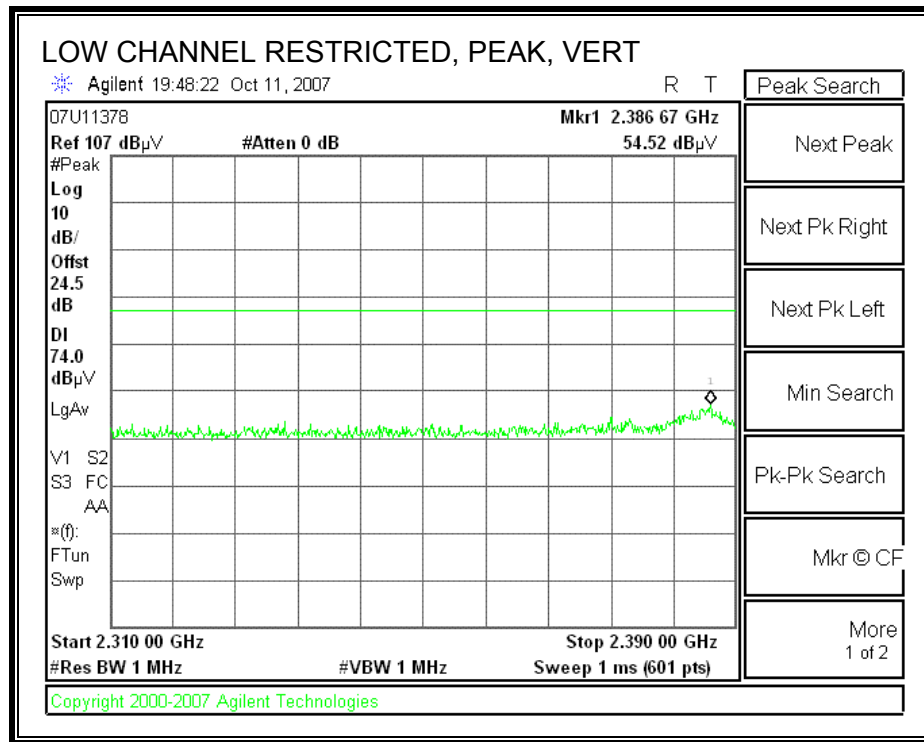
7.1.1. TRANSMITTER ABOVE 1 GHz FOR 802.11b MODE IN THE 2.4 GHz BAND

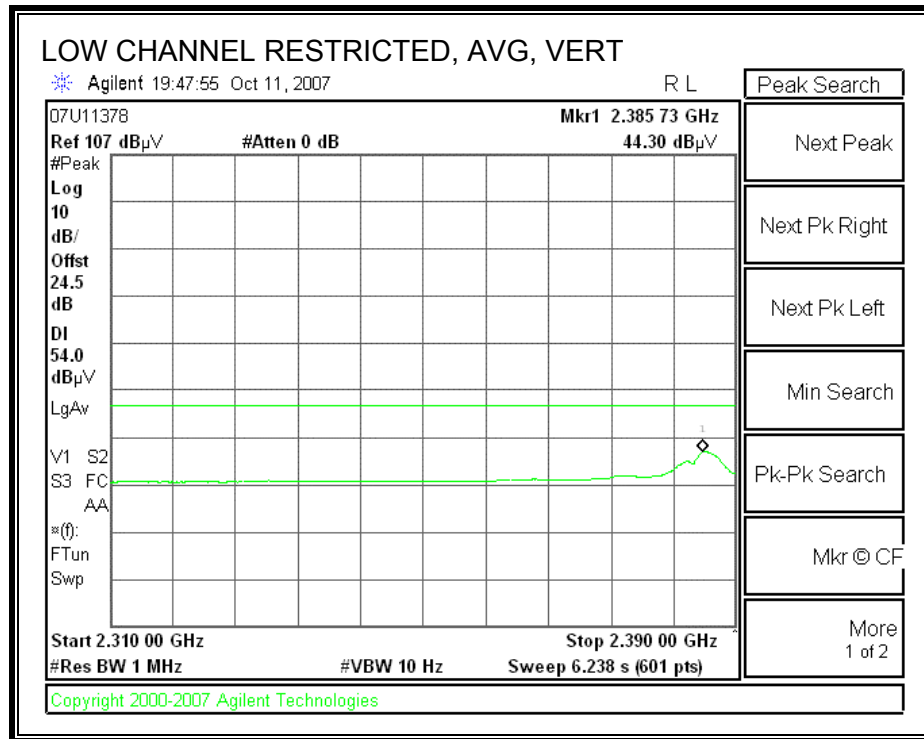
RESTRICTED BANEDGE (LOW CHANNEL, HORIZONTAL)



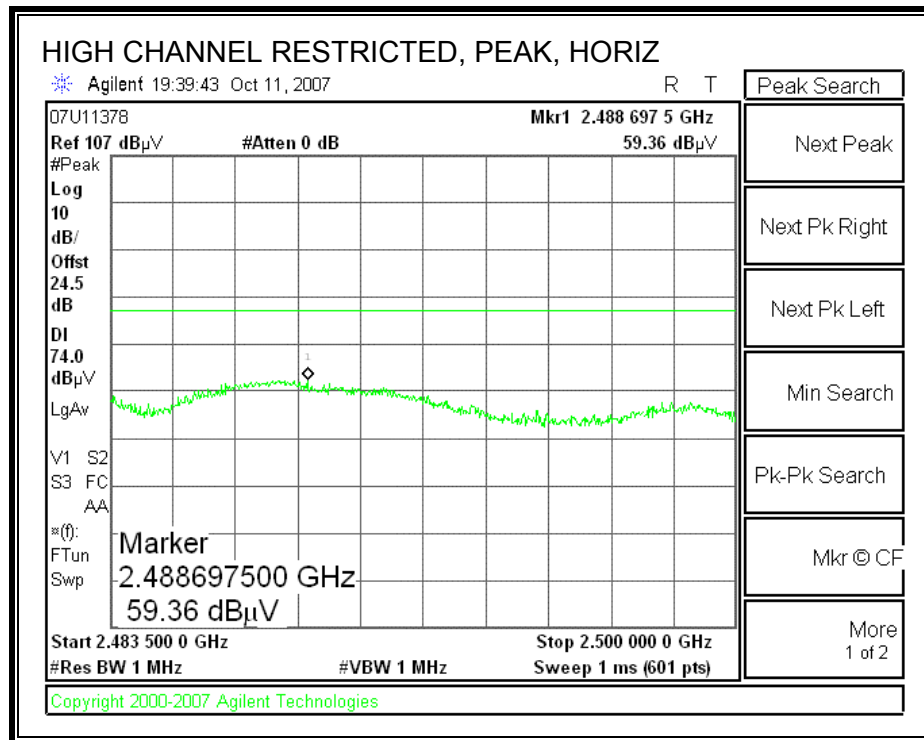


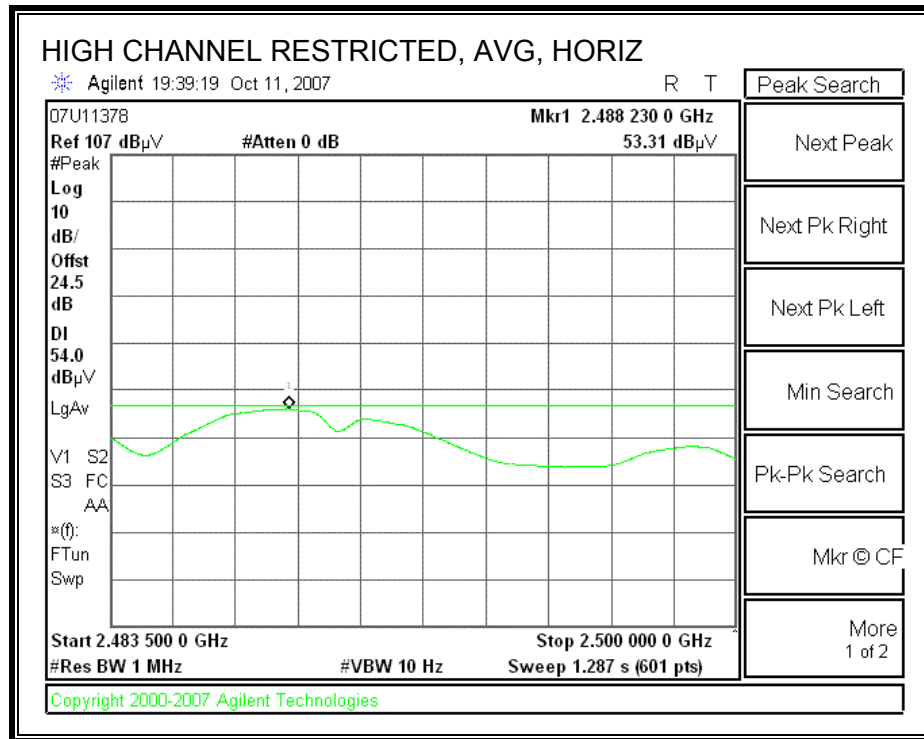
RESTRICTED BANEDGE (LOW CHANNEL, VERTICAL)



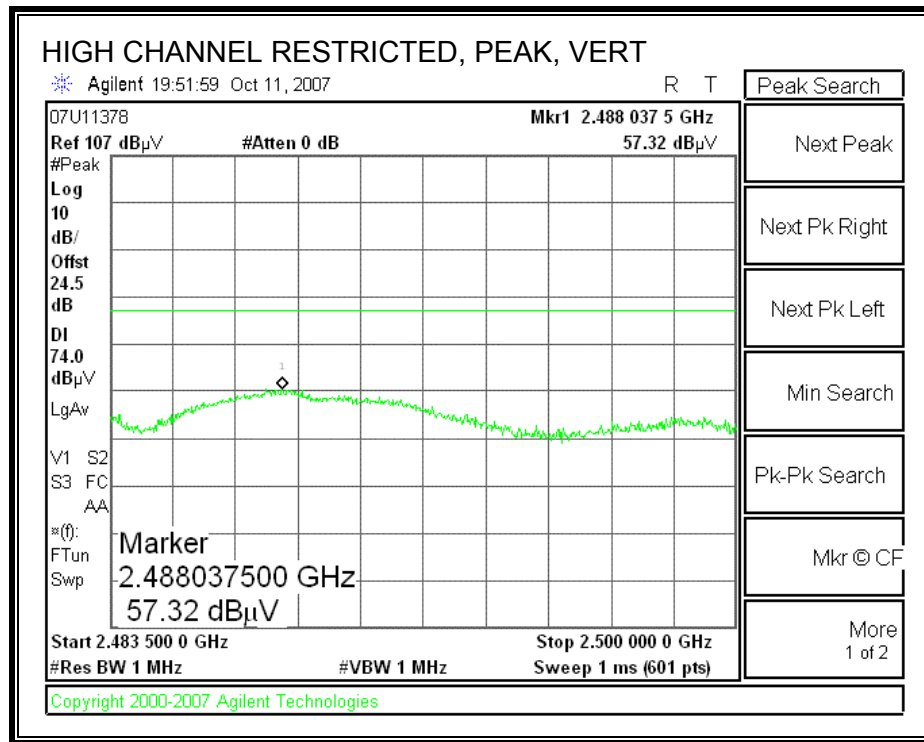


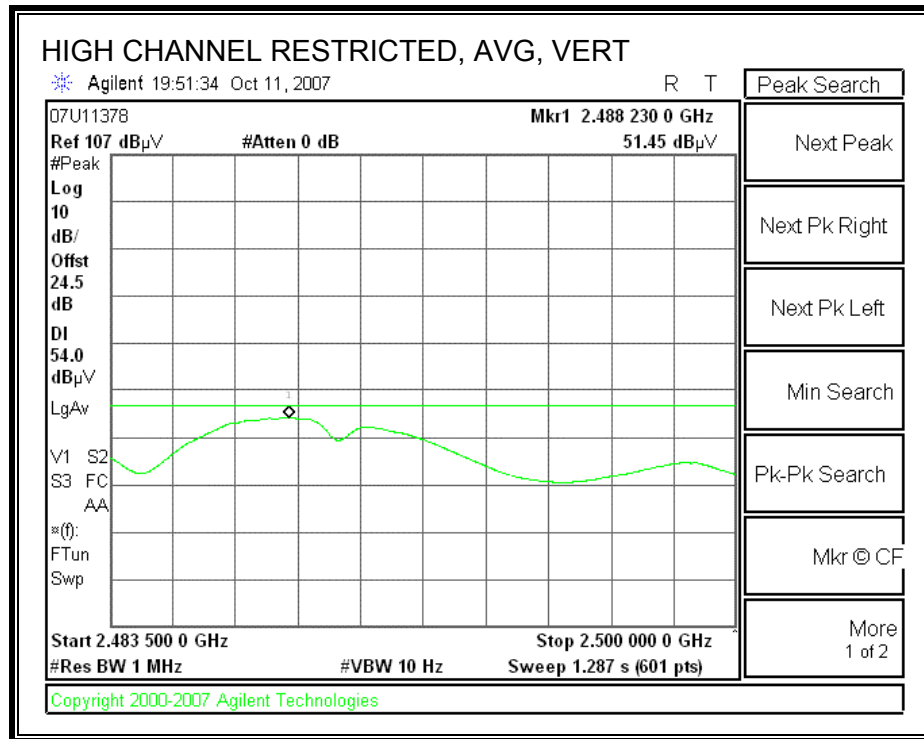
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANEDGE (HIGH CHANNEL, VERTICAL)



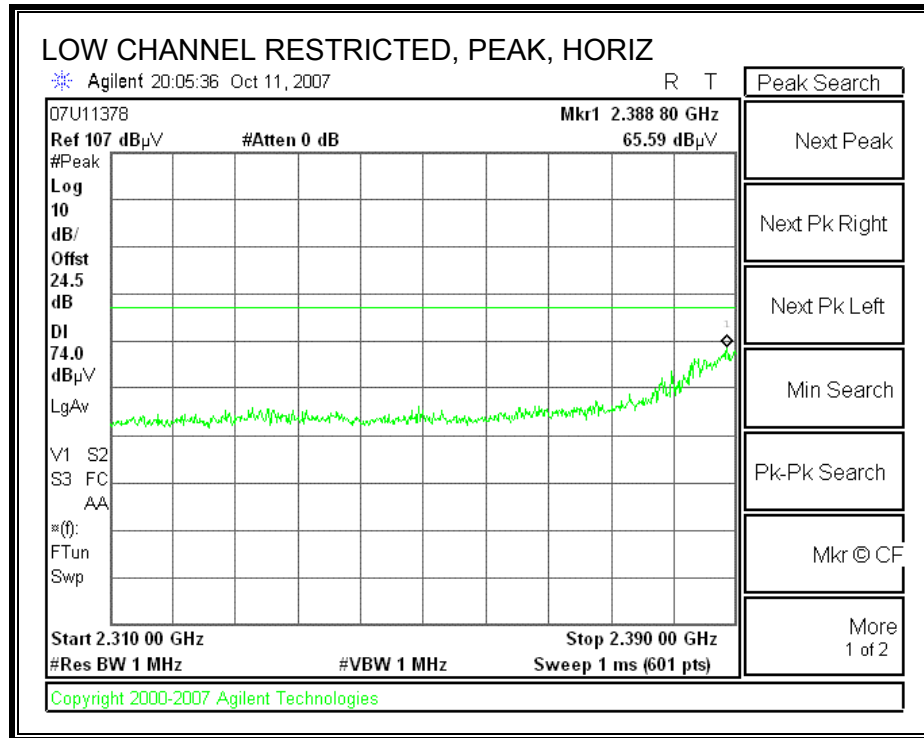


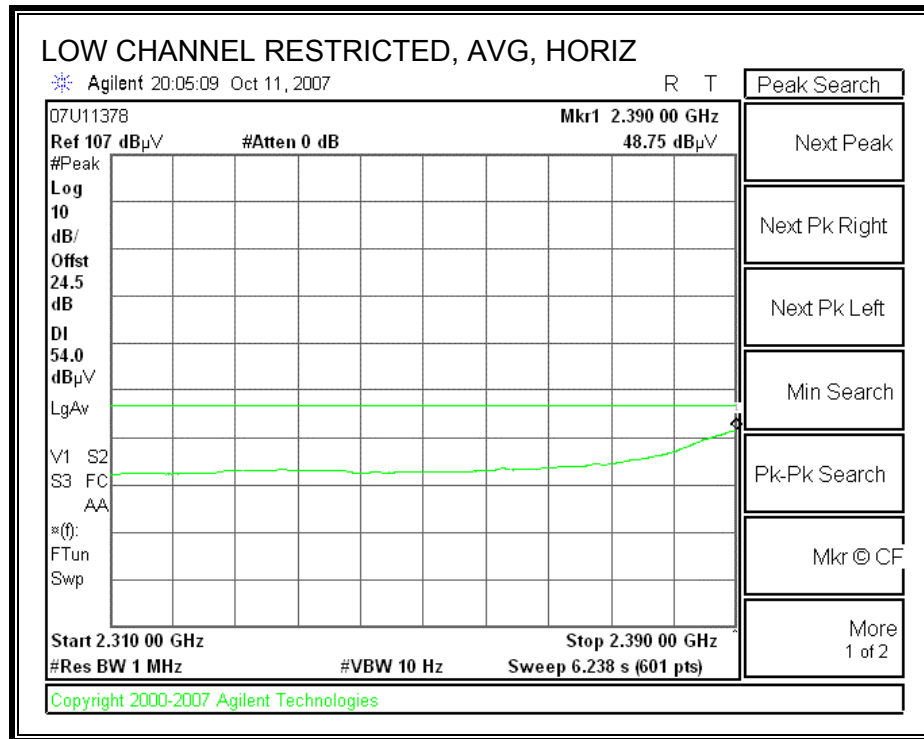
HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement															
Compliance Certification Services, Fremont 5m Chamber															
Company: Toshiba Project #: 07U11378 Date: 10/18/2007 Test Engineer: William Zhuang Configuration: EUT/Laptop with new card SN:GC2710504832 Worst Case Z position Mode: TX, 2.4GHz b mode															
Test Equipment:															
Horn 1-18GHz		Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit							
T119; S/N: 29301 @3m		T34 HP 8449B						FCC 15.205							
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					
William 177079009				C-5m Chamber		HPF_4.0GHz									
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fldr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch															
4.824	3.0	42.7	35.6	33.7	0.9	-34.8	0.0	0.6	43.0	36.0	74	54	-31.0	-18.0	V
4.824	3.0	44.6	40.3	33.7	0.9	-34.8	0.0	0.6	44.9	40.6	74	54	-29.1	-13.4	H
Mid Ch															
4.874	3.0	45.3	41.8	33.7	0.9	-34.8	0.0	0.6	45.7	42.2	74	54	-28.3	-11.8	V
7.311	3.0	50.0	38.0	35.2	1.0	-34.1	0.0	0.6	52.7	40.7	74	54	-21.3	-13.3	V
4.874	3.0	46.3	42.0	33.7	0.9	-34.8	0.0	0.6	46.6	42.4	74	54	-27.4	-11.6	H
7.311	3.0	50.0	38.0	35.2	1.0	-34.1	0.0	0.6	52.7	40.7	74	54	-21.3	-13.3	H
High Ch															
4.924	3.0	44.6	38.4	33.8	0.9	-34.8	0.0	0.6	45.0	38.8	74	54	-29.0	-15.2	V
7.386	3.0	50.5	38.0	35.2	1.0	-34.1	0.0	0.6	53.2	40.7	74	54	-20.8	-13.3	V
4.924	3.0	44.0	37.2	33.8	0.9	-34.8	0.0	0.6	44.4	37.6	74	54	-29.6	-16.4	H
7.386	3.0	50.9	38.3	35.2	1.0	-34.1	0.0	0.6	53.6	41.0	74	54	-20.4	-13.0	H
Rev. 4127															
Note: No other emissions were detected above the 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											

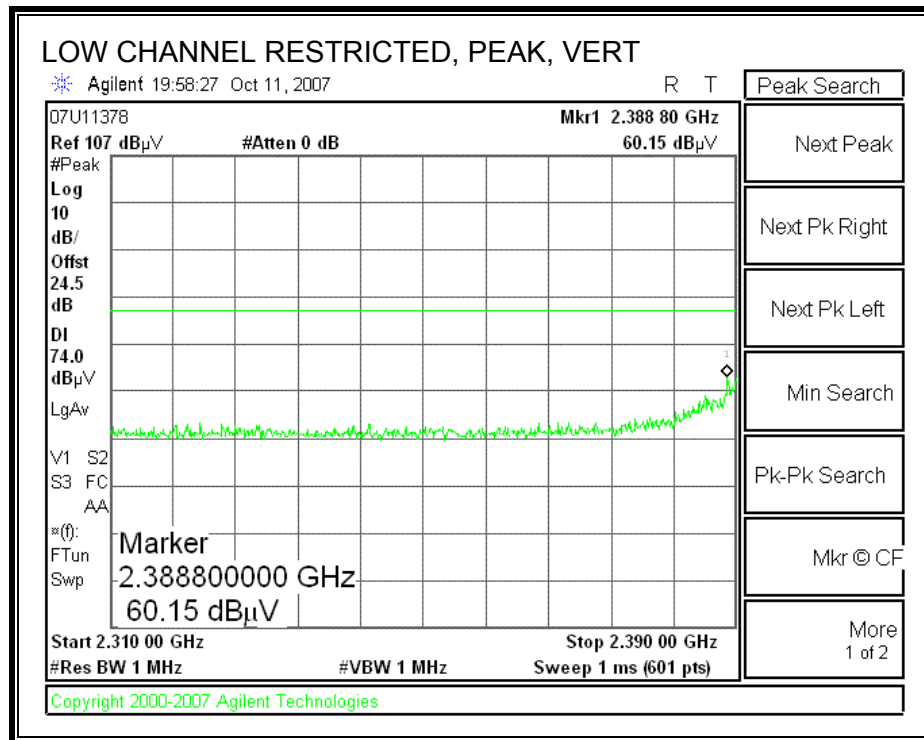
7.1.2. TRANSMITTER ABOVE 1 GHz FOR 802.11g MODE IN THE 2.4 GHz BAND

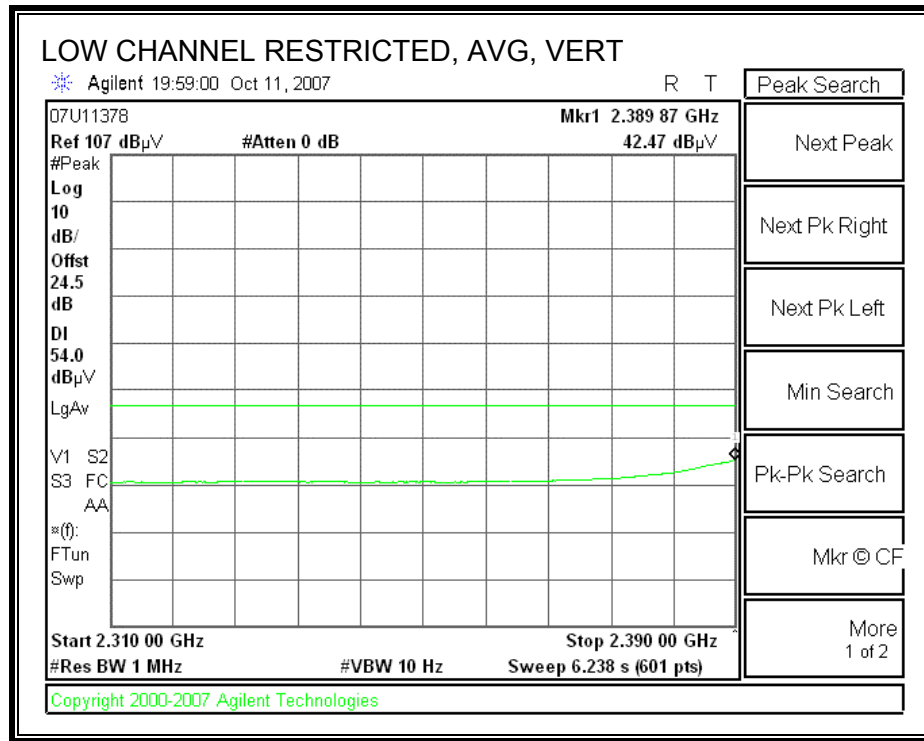
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



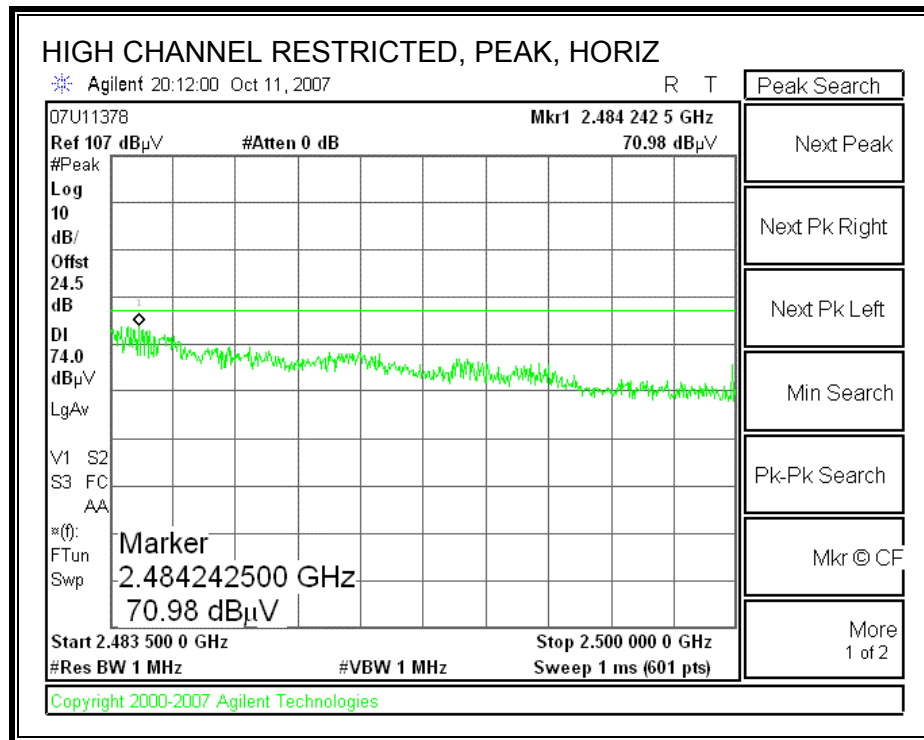


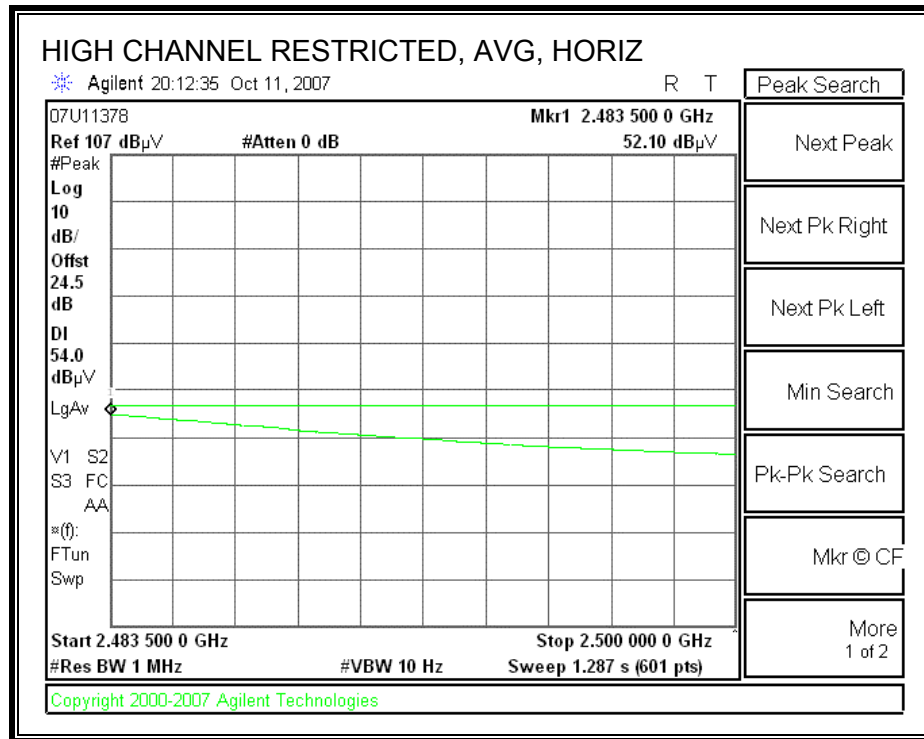
RESTRICTED BANEDGE (LOW CHANNEL, VERTICAL)



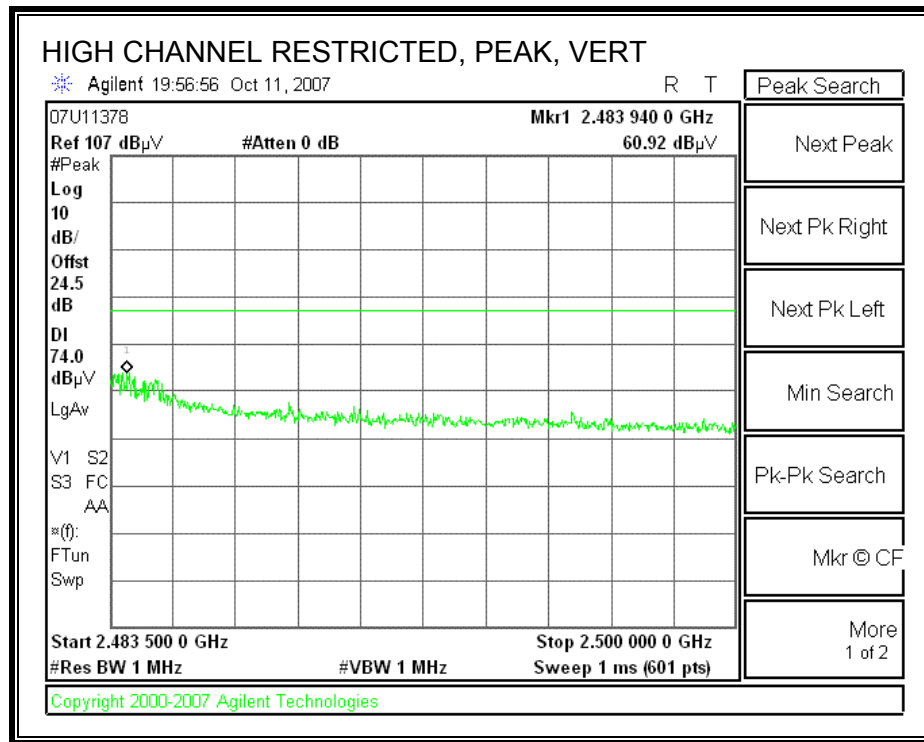


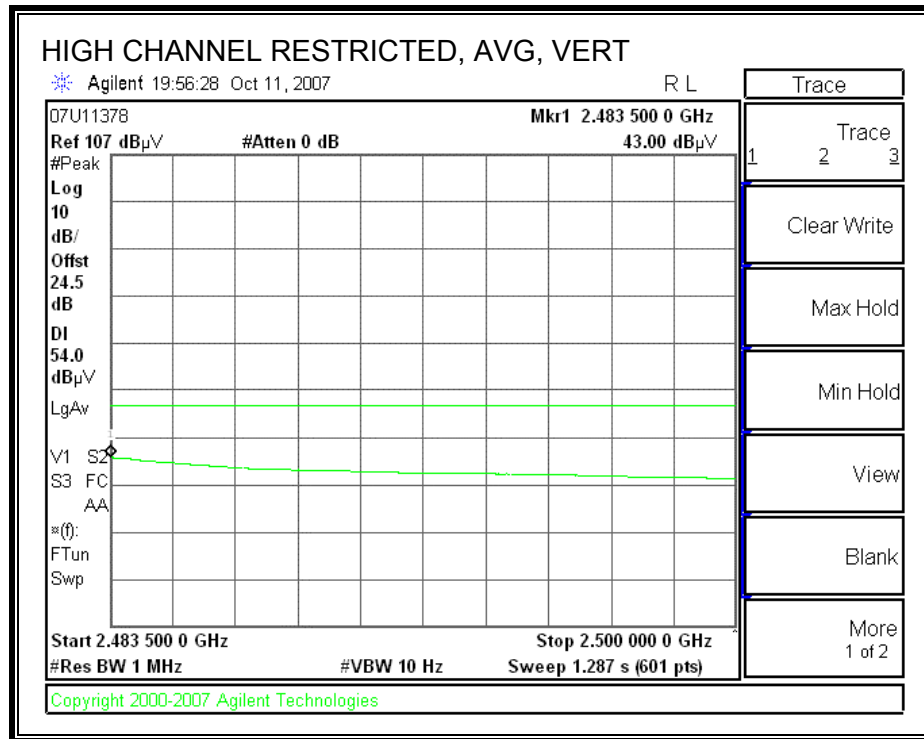
RESTRICTED BANEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



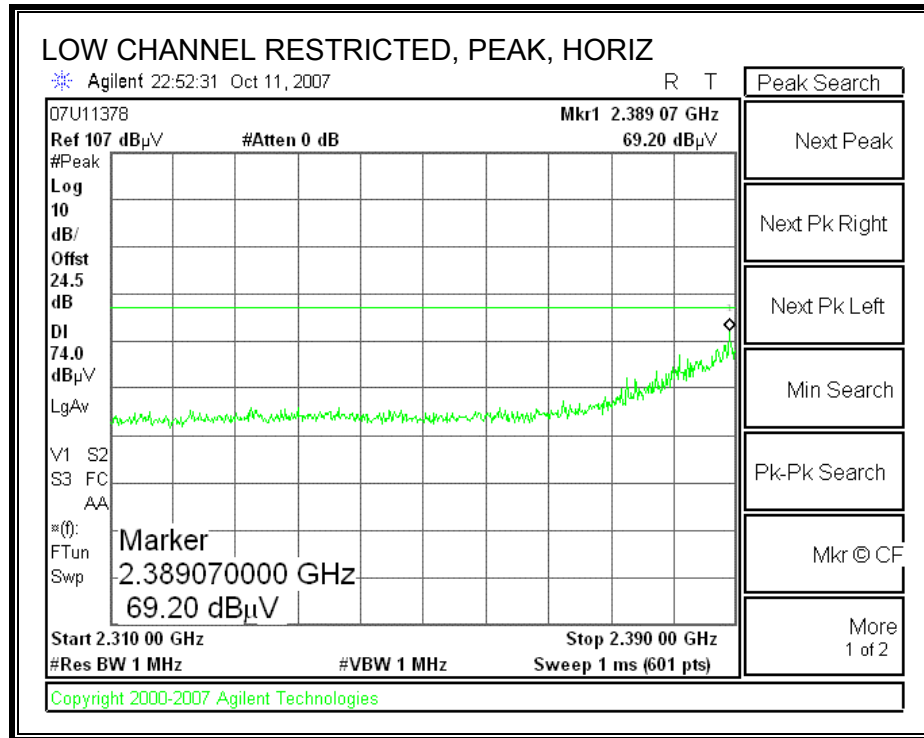


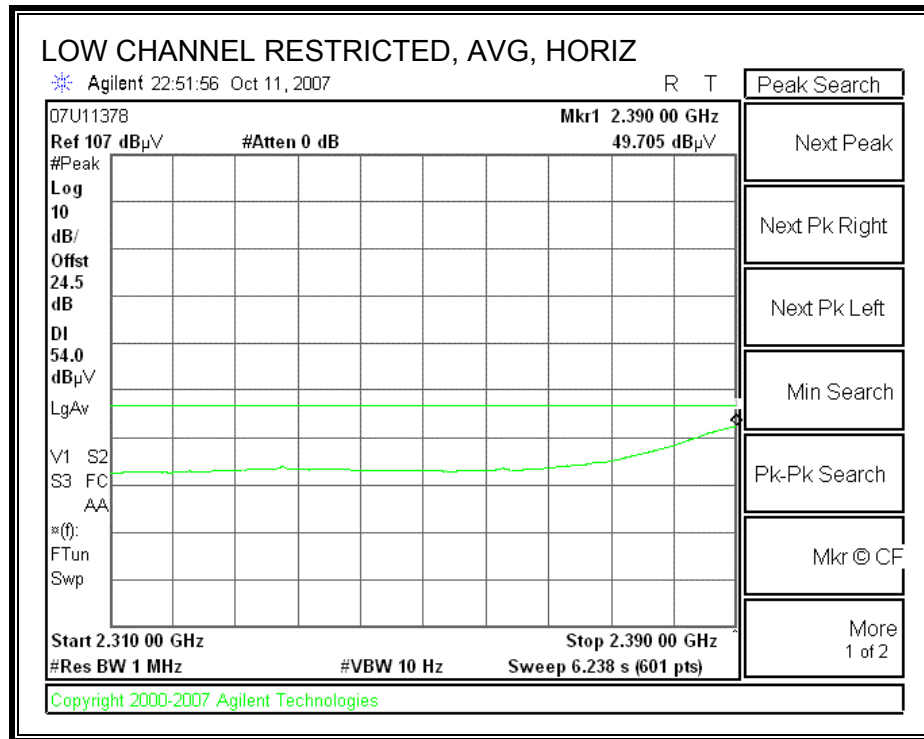
HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement																
Compliance Certification Services, Fremont 5m Chamber																
Company: Toshiba Project #: 07U11378 Date: 10/13/2007 Test Engineer: Chin Pang Configuration: EUT/Laptop Mode: TX, 2.4GHz g mode																
Test Equipment:																
Horn 1-18GHz			Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit				
T60; S/N: 2238 @3m			T145 Agilent 3008A0050									FCC 15.205				
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	
						B-5m Chamber						R_001				
f GHz	Dist (m)	Read Pk dBuV	Read Avg dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filt dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)	
Low Ch																
4.824	3.0	56.5	42.0	33.0	7.1	-34.8	0.0	0.0	61.8	47.3	74	54	-12.2	-6.7	V	
4.824	3.0	54.0	39.0	33.0	7.1	-34.8	0.0	0.0	59.3	44.3	74	54	-14.7	-9.7	H	
Mid Ch																
4.874	3.0	57.3	44.4	33.1	7.2	-34.9	0.0	0.0	62.7	49.8	74	54	-11.3	-4.2	V	
7.311	3.0	45.0	32.0	35.5	8.6	-34.7	0.0	0.0	54.5	41.5	74	54	-19.5	-12.5	V	
4.874	3.0	55.0	40.5	33.1	7.2	-34.9	0.0	0.0	60.4	45.9	74	54	-13.6	-8.1	H	
7.311	3.0	44.3	31.2	35.5	8.6	-34.7	0.0	0.0	53.8	40.7	74	54	-20.2	-13.3	H	
High Ch																
4.924	3.0	56.6	42.5	33.1	7.2	-34.9	0.0	0.0	62.0	47.9	74	54	-12.0	-6.1	V	
7.386	3.0	43.5	31.0	35.6	8.7	-34.6	0.0	0.0	53.1	40.6	74	54	-20.9	-13.4	V	
4.924	3.0	55.6	41.2	33.1	7.2	-34.9	0.0	0.0	61.0	46.6	74	54	-13.0	-7.4	H	
7.386	3.0	45.0	32.0	35.6	8.7	-34.6	0.0	0.0	54.6	41.6	74	54	-19.4	-12.4	H	
Rev. 412.7																
Note: No other emissions were detected above the 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												

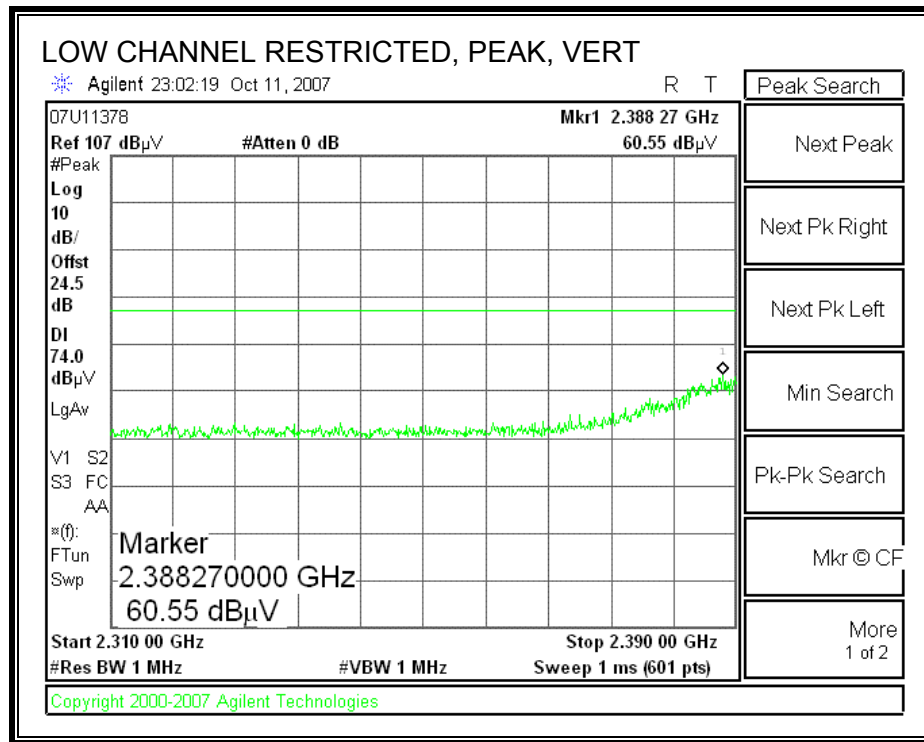
7.1.3. TRANSMITTER ABOVE 1 GHz FOR 802.11n HT0 MODE IN THE 2.4 GHz BAND

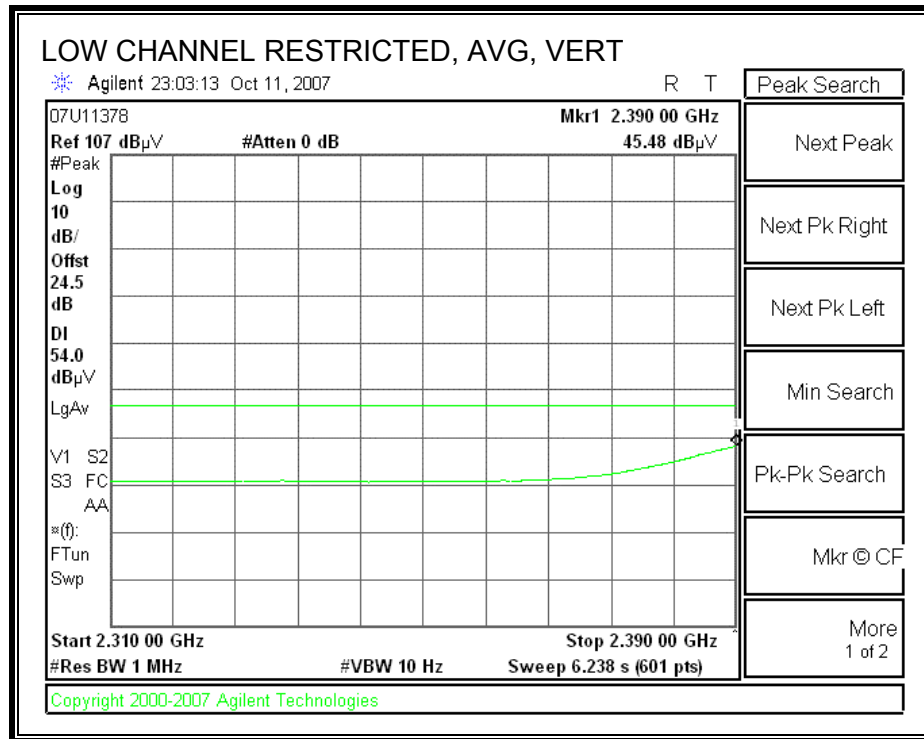
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



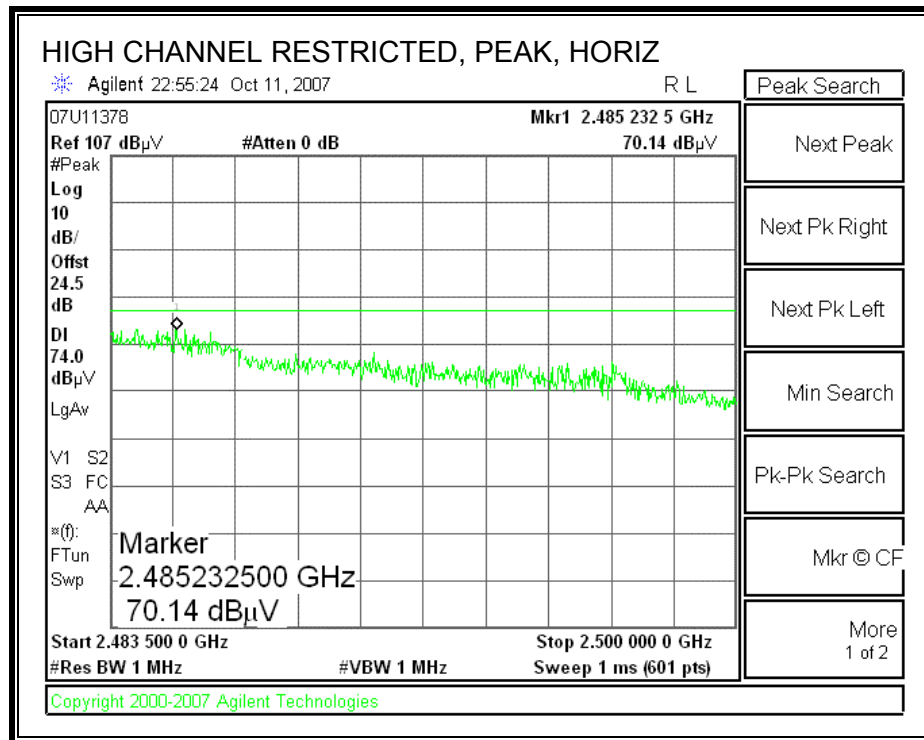


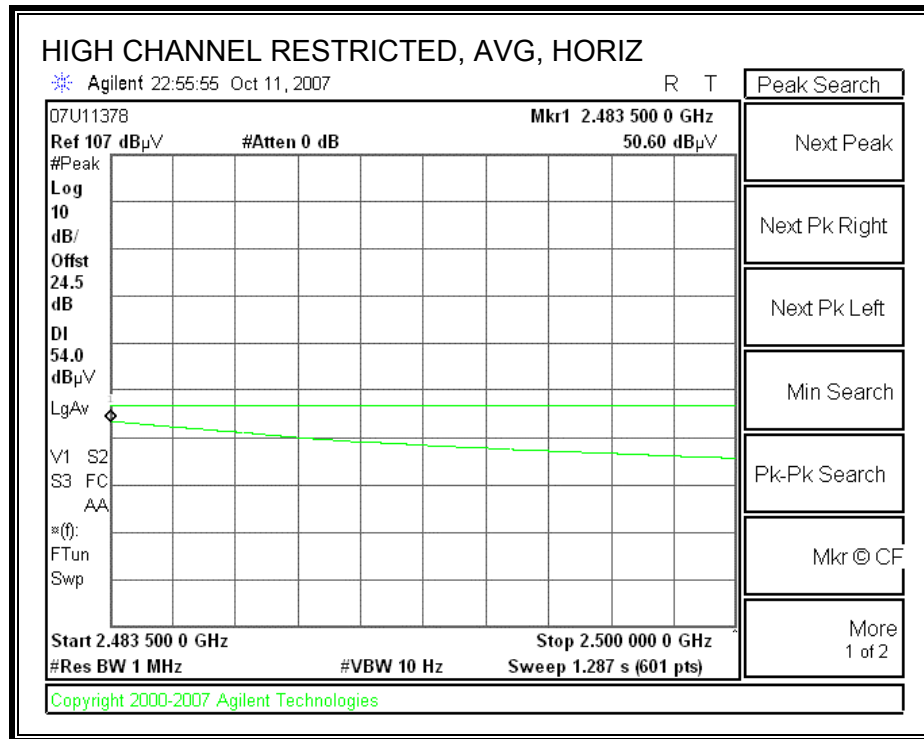
RESTRICTED BANEDGE (LOW CHANNEL, VERTICAL)



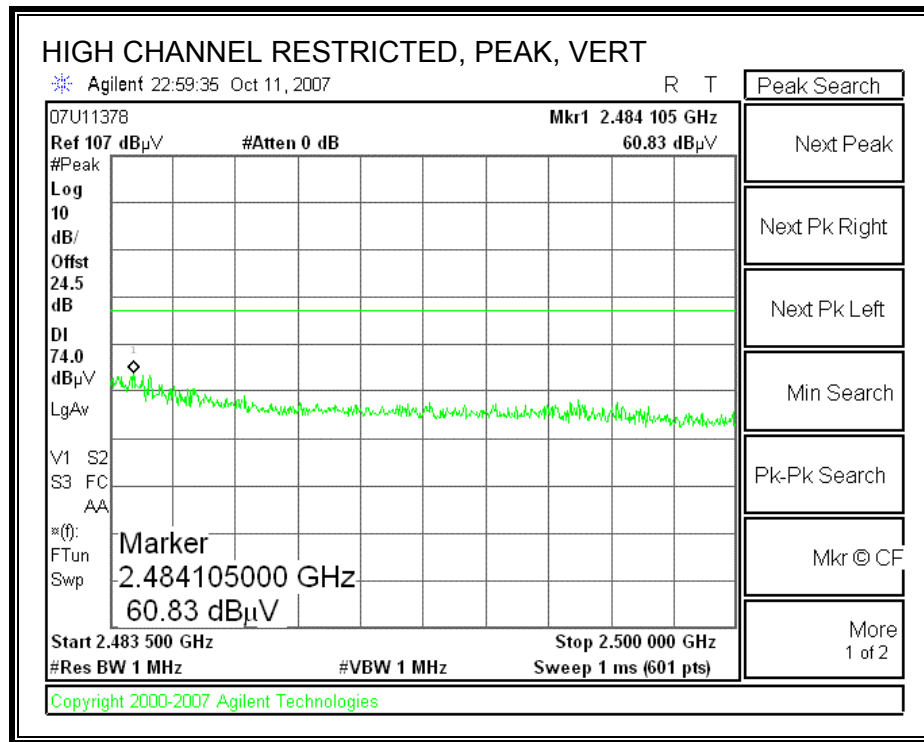


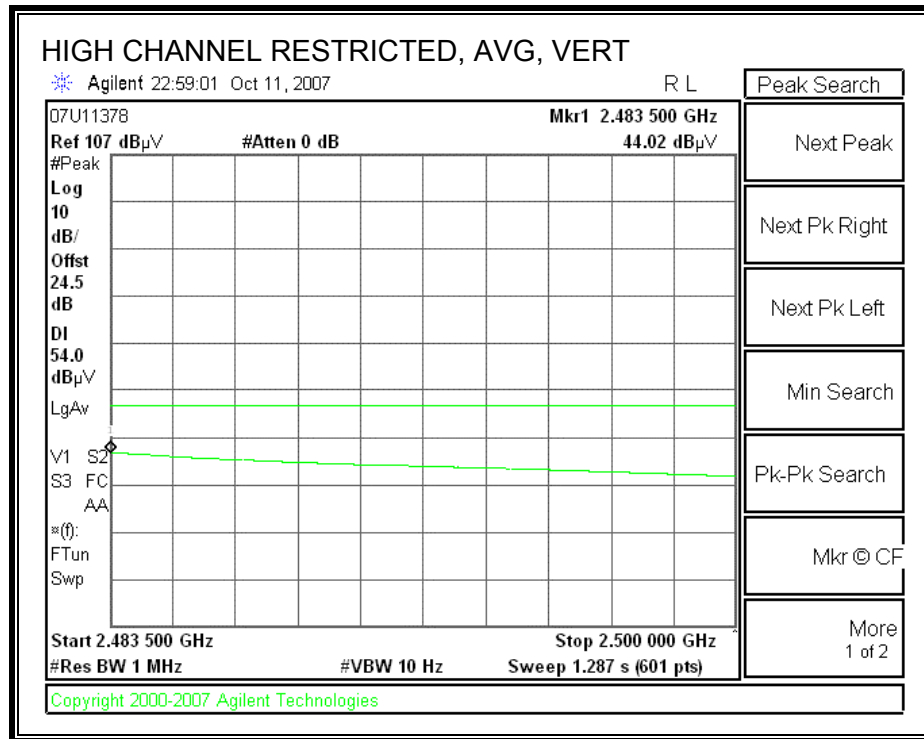
RESTRICTED BANEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANEDGE (HIGH CHANNEL, VERTICAL)



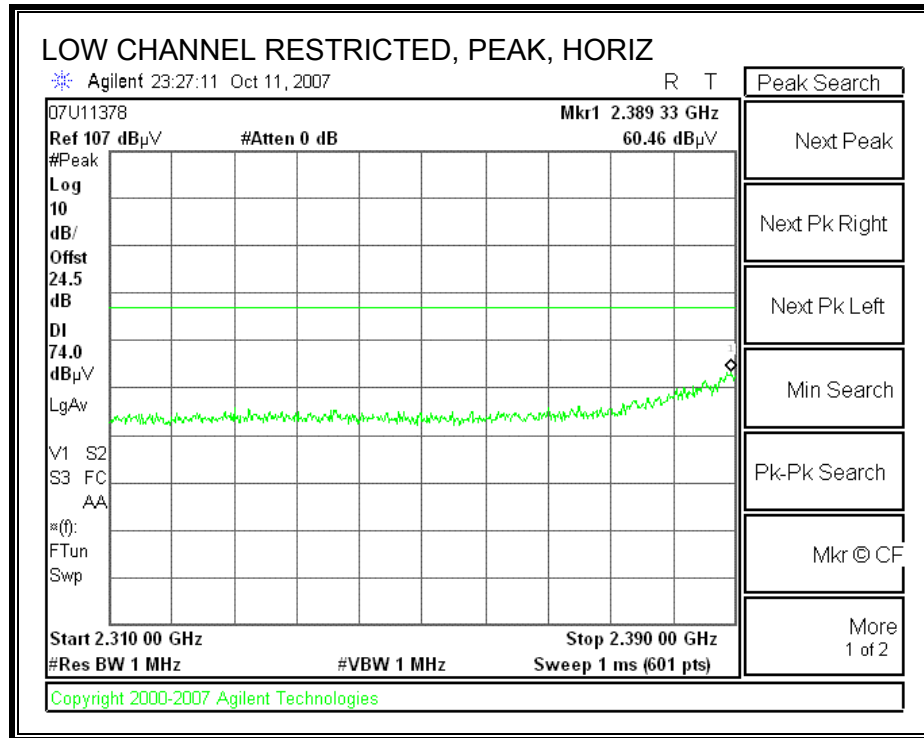


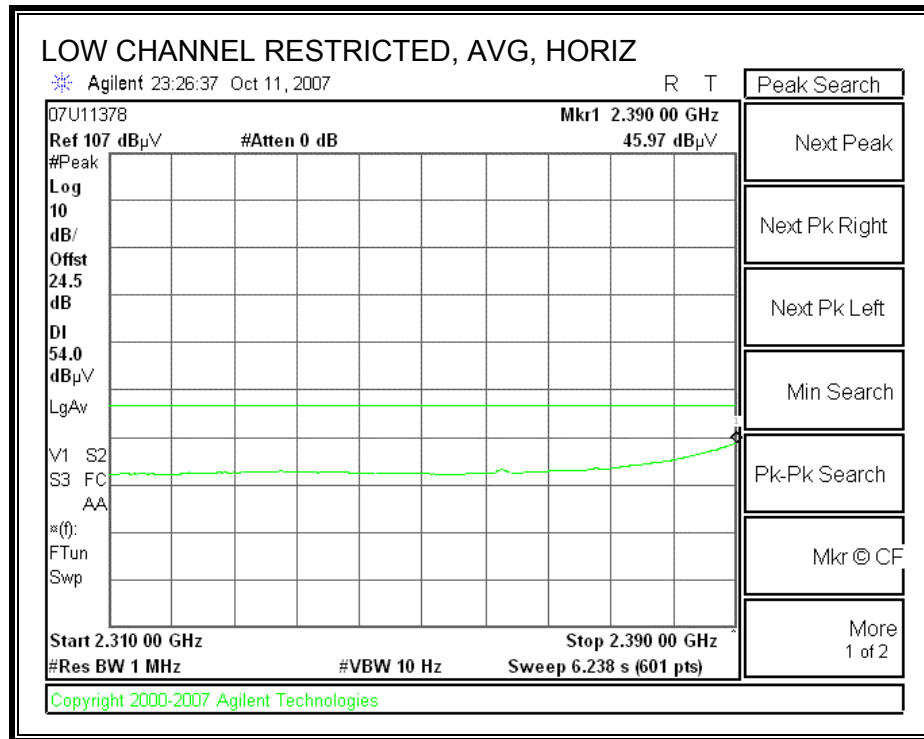
HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement															
Compliance Certification Services, Fremont 5m Chamber															
Company: Toshiba Project #: 07U11378 Date: 10/13/2007 Test Engineer: Chin Pang Configuration: EUT/Laptop Mode: TX, 2.4GHz HT0 mode															
Test Equipment:															
Horn 1-18GHz		Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit							
T60; S/N: 2238 @3m		T145 Agilent 3008A0050						FCC 15.205							
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					
				B-5m Chamber				R_001							
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fldr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch															
4.824	3.0	56.4	42.6	33.0	7.1	-34.8	0.0	0.0	61.7	47.9	74	54	-12.3	-6.1	V
4.824	3.0	55.0	40.0	33.0	7.1	-34.8	0.0	0.0	60.3	45.3	74	54	-13.7	-8.7	H
Mid Ch															
4.874	3.0	57.3	44.4	33.1	7.2	-34.9	0.0	0.0	62.7	49.8	74	54	-11.3	-4.2	V
7.311	3.0	45.0	32.0	35.5	8.6	-34.7	0.0	0.0	54.5	41.5	74	54	-19.5	-12.5	V
4.874	3.0	56.0	43.0	33.1	7.2	-34.9	0.0	0.0	61.4	48.4	74	54	-12.6	-5.6	H
7.311	3.0	44.0	31.0	35.5	8.6	-34.7	0.0	0.0	53.5	40.5	74	54	-20.5	-13.5	H
High Ch															
4.924	3.0	57.0	43.0	33.1	7.2	-34.9	0.0	0.0	62.4	48.4	74	54	-11.6	-5.6	V
7.386	3.0	45.0	32.0	35.6	8.7	-34.6	0.0	0.0	54.6	41.6	74	54	-19.4	-12.4	V
4.924	3.0	54.0	39.3	33.1	7.2	-34.9	0.0	0.0	59.4	44.7	74	54	-14.6	-9.3	H
7.386	3.0	44.4	31.2	35.6	8.7	-34.6	0.0	0.0	54.0	40.8	74	54	-20.0	-13.2	H
Rev. 412.7															
Note: No other emissions were detected above the 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										

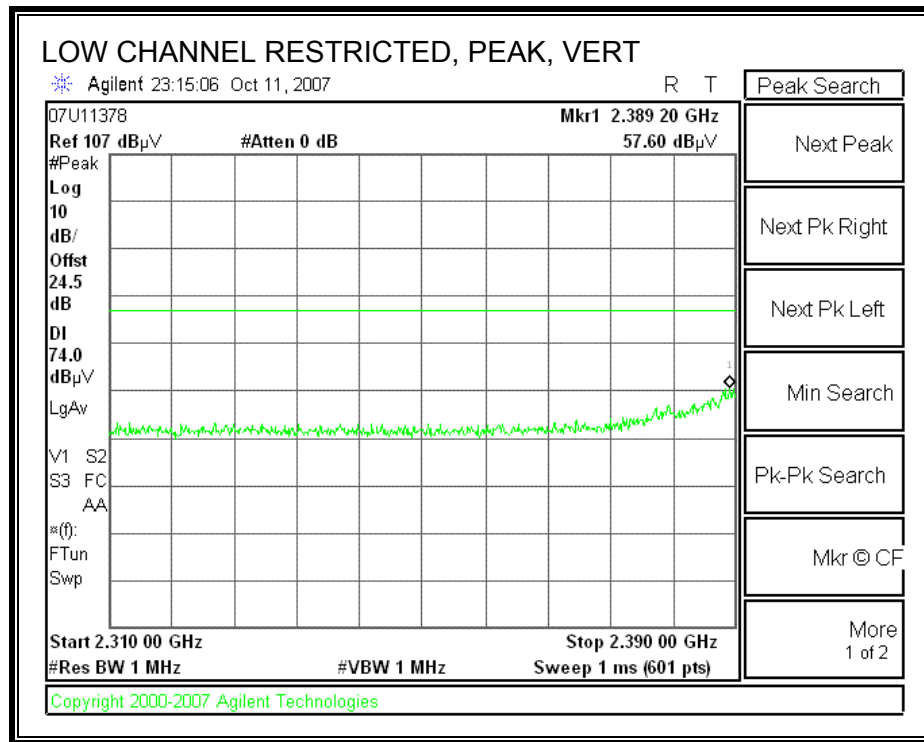
7.1.4. TRANSMITTER ABOVE 1 GHz FOR 802.11n HT8 MODE IN THE 2.4 GHz BAND

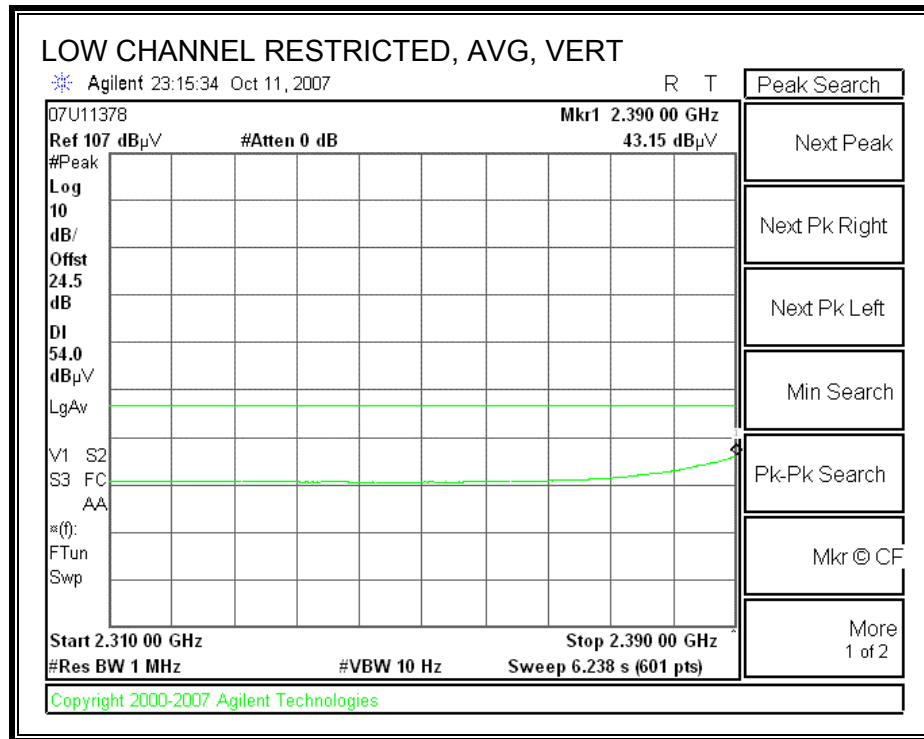
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



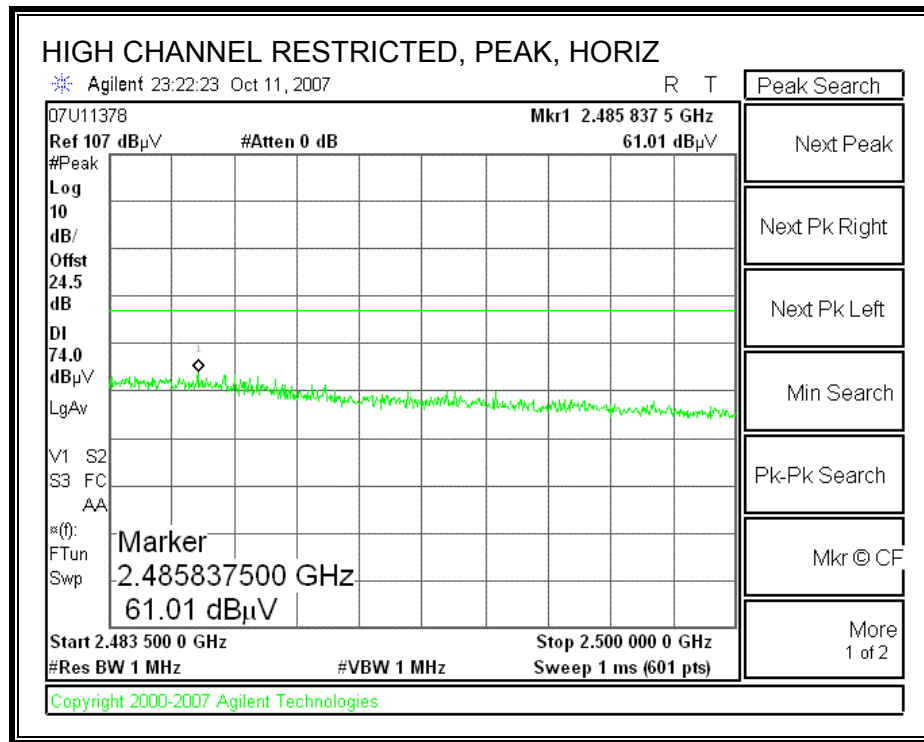


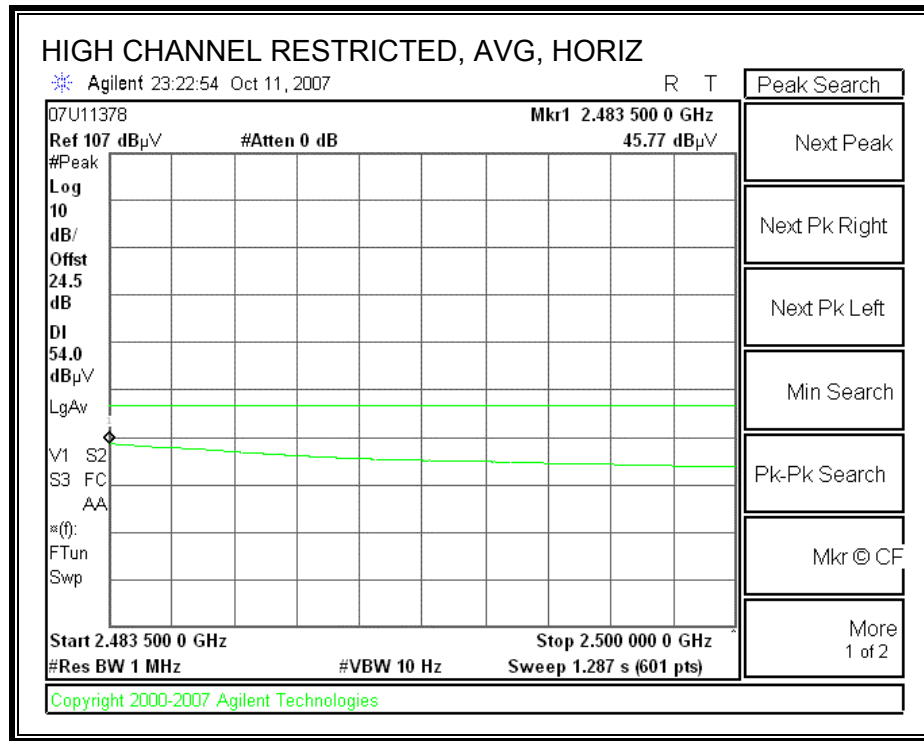
RESTRICTED BANEDGE (LOW CHANNEL, VERTICAL)



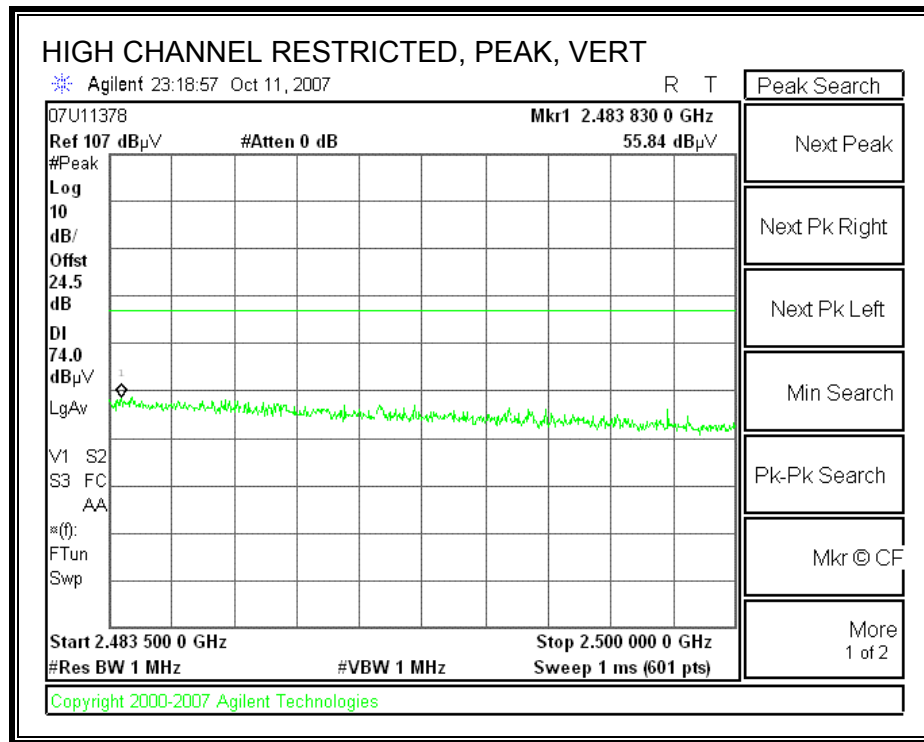


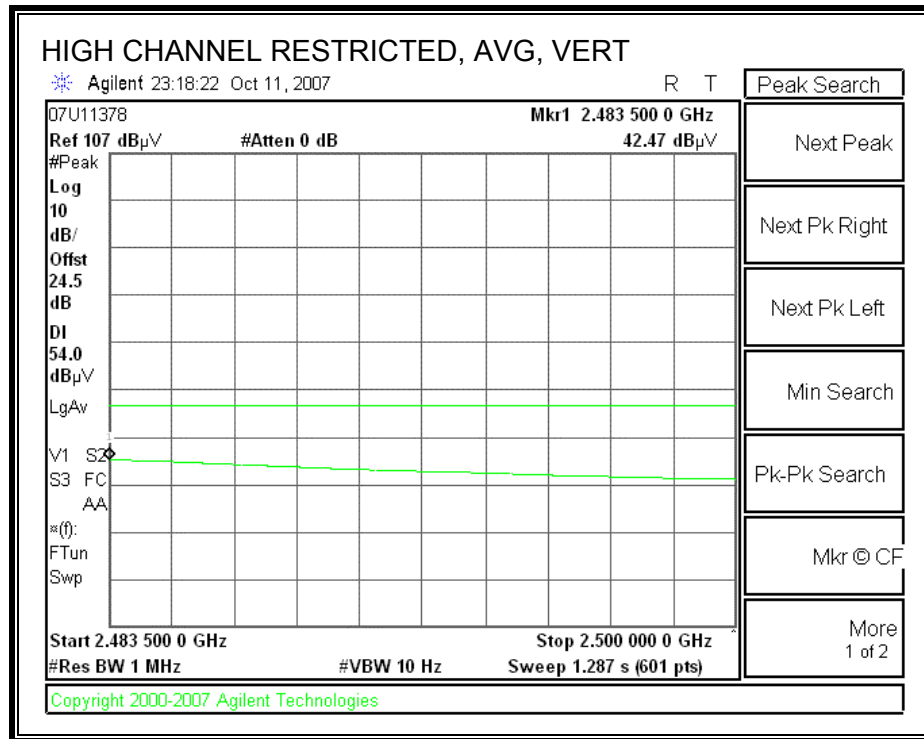
RESTRICTED BANEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement																
Compliance Certification Services, Fremont 5m Chamber																
Company: Toshiba Project #: 07U11378 Date: 10/13//2007 Test Engineer: Chin Pang Configuration: EUT/Laptop Mode: TX, 2.4GHz HT8 mode																
Test Equipment:																
Horn 1-18GHz			Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit				
T60; S/N: 2238 @3m			T145 Agilent 3008A0050									FCC 15.205				
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	
						B-5m Chamber						R_001				
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fldr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)	
Low Ch																
4.824	3.0	56.0	41.0	33.0	7.1	-34.8	0.0	0.0	61.3	46.3	74	54	-12.7	-7.7	V	
4.824	3.0	54.5	40.0	33.0	7.1	-34.8	0.0	0.0	59.8	45.3	74	54	-14.2	-8.7	H	
Mid Ch																
4.874	3.0	56.4	42.0	33.1	7.2	-34.9	0.0	0.0	61.8	47.4	74	54	-12.2	-6.6	V	
7.311	3.0	44.5	31.6	35.5	8.6	-34.7	0.0	0.0	54.0	41.1	74	54	-20.0	-12.9	V	
4.874	3.0	54.0	39.7	33.1	7.2	-34.9	0.0	0.0	59.4	45.1	74	54	-14.6	-8.9	H	
7.311	3.0	43.8	31.0	35.5	8.6	-34.7	0.0	0.0	53.3	40.5	74	54	-20.7	-13.5	H	
High Ch																
4.924	3.0	55.0	40.0	33.1	7.2	-34.9	0.0	0.0	60.4	45.4	74	54	-13.6	-8.6	V	
7.386	3.0	45.0	32.0	35.6	8.7	-34.6	0.0	0.0	54.6	41.6	74	54	-19.4	-12.4	V	
4.924	3.0	52.0	38.5	33.1	7.2	-34.9	0.0	0.0	57.4	43.9	74	54	-16.6	-10.1	H	
7.386	3.0	43.7	31.0	35.6	8.7	-34.6	0.0	0.0	53.3	40.6	74	54	-20.7	-13.4	H	
Rev. 412.7																
Note: No other emissions were detected above the 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											

7.1.5. TRANSMITTER ABOVE 1 GHz FOR 802.11a MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement															
Compliance Certification Services, Fremont 5m Chamber															
Company: Toshiba Project #: 07U11378 Date: 10/13/2007 Test Engineer: Chin Pang Configuration: EUT/Laptop Mode: TX, 5.8GHz Normal a mode															
Test Equipment:															
Horn 1-18GHz		Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit							
T60; S/N: 2238 @3m		T145 Agilent 3008A0051		T88 Miteq 26-40GHz		T39; ARA 18-26GHz; S/N:1013		FCC 15.205							
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					
				B-5m Chamber		HPF_7.6GHz									
f GHz	Dist (m)	Read Pk dBuV	Read Avg dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filt dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch															
11.490	3.0	43.0	30.0	37.4	11.8	-33.1	0.0	0.7	59.8	46.8	74	54	-14.2	-7.2	V
11.490	3.0	45.0	31.5	37.4	11.8	-33.1	0.0	0.7	61.8	48.3	74	54	-12.2	-5.7	H
Mid Ch															
11.575	3.0	44.6	33.5	37.4	11.9	-33.0	0.0	0.7	61.6	50.5	74	54	-12.4	-3.5	V
11.575	3.0	46.8	34.0	37.4	11.9	-33.0	0.0	0.7	63.8	51.0	74	54	-10.2	-3.0	H
High Ch															
11.650	3.0	44.5	33.3	37.4	12.0	-32.9	0.0	0.7	61.7	50.5	74	54	-12.3	-3.5	V
11.650	3.0	46.5	33.0	37.4	12.0	-32.9	0.0	0.7	63.7	50.2	74	54	-10.3	-3.8	H
Rev. 4.12.7															
Note: No other emissions were detected above the 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										

7.1.6. TRANSMITTER ABOVE 1 GHz FOR 802.11n HT0 MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement															
Compliance Certification Services, Fremont 5m Chamber															
Company: Toshiba Project #: 07U11378 Date: 10/13/2007 Test Engineer: Chin Pang Configuration: EUT/Laptop Mode: TX, 5.8GHz HT0 mode															
Test Equipment:															
Horn 1-18GHz		Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit							
T60; S/N: 2238 @3m		T145 Agilent 3008A0051		T88 Miteq 26-40GHz		T39; ARA 18-26GHz; S/N:1013		FCC 15.205							
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					
				B-5m Chamber		HPF_7.6GHz									
f GHz	Dist (m)	Read Pk dBuV	Read Avg dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filt dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch															
11.490	3.0	44.7	31.6	37.4	11.8	-33.1	0.0	0.7	61.5	48.4	74	54	-12.5	-5.6	V
11.490	3.0	46.3	32.0	37.4	11.8	-33.1	0.0	0.7	63.1	48.8	74	54	-10.9	-5.2	H
Mid Ch															
11.575	3.0	46.0	33.6	37.4	11.9	-33.0	0.0	0.7	63.0	50.6	74	54	-11.0	-3.4	V
11.575	3.0	47.0	34.0	37.4	11.9	-33.0	0.0	0.7	64.0	51.0	74	54	-10.0	-3.0	H
High Ch															
11.650	3.0	45.2	33.5	37.4	12.0	-32.9	0.0	0.7	62.4	50.7	74	54	-11.6	-3.3	V
11.650	3.0	46.6	33.1	37.4	12.0	-32.9	0.0	0.7	63.8	50.3	74	54	-10.2	-3.7	H
Rev. 4.12.7															
Note: No other emissions were detected above the 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										

HARMONICS AND SPURIOUS EMISSIONS

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7.1.8. TRANSMITTER ABOVE 1 GHz FOR 802.11n 40MHz HT0 MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement																
Compliance Certification Services, Fremont 5m Chamber																
Company: Toshiba Project #: 07U11378 Date: 10/13/2007 Test Engineer: Chin Pang Configuration: EUT/Laptop Mode: TX, 5.8GHz 40MHz HT0 mode																
Test Equipment:																
Horn 1-18GHz			Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit				
T60; S/N: 2238 @3m			T145 Agilent 3008A005			T88 Miteq 26-40GHz			T39; ARA 18-26GHz; S/N:1013			FCC 15.205				
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	
						B-5m Chamber			HPF_7.6GHz							
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)	
Low Ch, 5755MHz																
11.510	3.0	43.6	30.0	37.4	11.9	-33.1	0.0	0.7	60.5	46.9	74	54	-13.5	-7.1	V	
11.510	3.0	45.0	32.0	37.4	11.9	-33.1	0.0	0.7	61.9	48.9	74	54	-12.1	-5.1	H	
High Ch, 5795MHz																
11.590	3.0	44.0	30.4	37.4	12.0	-33.0	0.0	0.7	61.1	47.5	74	54	-12.9	-6.5	V	
11.590	3.0	45.2	32.0	37.4	12.0	-33.0	0.0	0.7	62.3	49.1	74	54	-11.7	-4.9	H	
Rev. 412.7																
Note: No other emissions were detected above the 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												

7.1.9. TRANSMITTER ABOVE 1 GHz FOR 802.11n 40MHz HT8 MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement																
Compliance Certification Services, Fremont 5m Chamber																
Company: Toshiba Project #: 07U11378 Date: 10/13/2007 Test Engineer: Chin Pang Configuration: EUT/Laptop Mode: TX, 5.8GHz 40MHz HT8 mode																
Test Equipment:																
Horn 1-18GHz			Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit				
T60; S/N: 2238 @3m			T145 Agilent 3008A005			T88 Miteq 26.40GHz			T39; ARA 18.26GHz; S/N:1013			FCC 15.205				
Hi Frequency Cables																
2 foot cable			3 foot cable			12 foot cable			HPF			Reject Filter			Peak Measurements	
						B-5m Chamber			HPF_7.6GHz						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	Filt dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)	
Low Ch, 5755MHz																
11.510	3.0	45.0	32.3	37.4	11.9	-33.1	0.0	0.7	61.9	49.2	74	54	-12.1	-4.8	V	
11.510	3.0	47.6	34.0	37.4	11.9	-33.1	0.0	0.7	64.5	50.9	74	54	-9.5	-3.1	H	
High Ch, 5795MHz																
11.590	3.0	45.8	33.5	37.4	12.0	-33.0	0.0	0.7	62.9	50.6	74	54	-11.1	-3.4	V	
11.590	3.0	47.5	33.7	37.4	12.0	-33.0	0.0	0.7	64.6	50.8	74	54	-9.4	-3.2	H	
Rev. 4127																
Note: No other emissions were detected above the 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									

7.1.10. RECEIVER ABOVE 1 GHz

RECEIVER SPURIOUS EMISSIONS FOR 2400 TO 2483.5 MHz BAND

High Frequency Measurement															
Compliance Certification Services, Fremont 5m Chamber															
Company: Toshiba Project #: 07U11378 Date: 10/15/2007 Test Engineer: Chin Pang Configuration: EUT/Laptop Mode: RX, 2.4GHz (Worst Case)															
Test Equipment:															
Horn 1-18GHz		Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit							
T73; S/N: 6717 @3m		T144 Miteq 3008A00931						FCC 15.209							
Hi Frequency Cables															
2 foot cable		3 foot cable		12 foot cable		HPF		Reject Filter		Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz; VBW=10Hz					
				A-5m Chamber											
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)
Mid Ch															
1.328	3.0	60.7	51.6	25.0	3.4	-39.0	0.0	0.0	50.1	41.0	74	54	-23.9	-13.0	V
1.596	3.0	55.0	45.3	26.0	3.8	-38.6	0.0	0.0	46.1	36.4	74	54	-27.9	-17.6	V
1.661	3.0	54.0	42.1	26.2	3.9	-38.5	0.0	0.0	45.5	33.6	74	54	-28.5	-20.4	V
1.331	3.0	57.8	45.7	25.0	3.4	-39.0	0.0	0.0	47.2	35.1	74	54	-26.8	-18.9	H
1.596	3.0	55.3	40.5	26.0	3.8	-38.6	0.0	0.0	46.4	31.6	74	54	-27.6	-22.4	H
1.661	3.0	57.1	45.5	26.2	3.9	-38.5	0.0	0.0	48.6	37.0	74	54	-25.4	-17.0	H
Rev. 4.12.7															
Note: No other emissions were detected above the 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										

High Frequency Measurement

Compliance Certification Services, Fremont 5m Chamber

Company: Toshiba

Project #: 07U11378

Date: 10/15/2007

Test Engineer: Chin Pang

Configuration: EUT/Laptop

Mode: RX, 5.8GHz (Worst Case)

Test Equipment:

Horn 1-18GHz

T73; S/N: 6717 @3m

Pre-amplifier 1-26GHz

T144 Miteq 3008A00931

Pre-amplifier 26-40GHz

Horn > 18GHz

Limit

FCC 15.209

Hi Frequency Cables

2 foot cable

3 foot cable

12 foot cable

A-5m Chamber

HPF

Reject Filter

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	Fldr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Mid Ch															
1.330	3.0	60.5	43.6	25.0	3.4	-39.0	0.0	0.0	49.9	33.0	74	54	-24.1	-21.0	V
1.596	3.0	54.3	38.6	26.0	3.8	-38.6	0.0	0.0	45.4	29.7	74	54	-28.6	-24.3	V
1.665	3.0	56.6	39.1	26.2	3.9	-38.5	0.0	0.0	48.1	30.6	74	54	-25.9	-23.4	V
1.326	3.0	58.3	40.6	25.0	3.4	-39.0	0.0	0.0	47.7	30.0	74	54	-26.3	-24.0	H
1.598	3.0	57.7	39.8	26.0	3.8	-38.6	0.0	0.0	48.8	30.9	74	54	-25.2	-23.1	H
1.665	3.0	60.0	40.6	26.2	3.9	-38.5	0.0	0.0	51.5	32.1	74	54	-22.5	-21.9	H

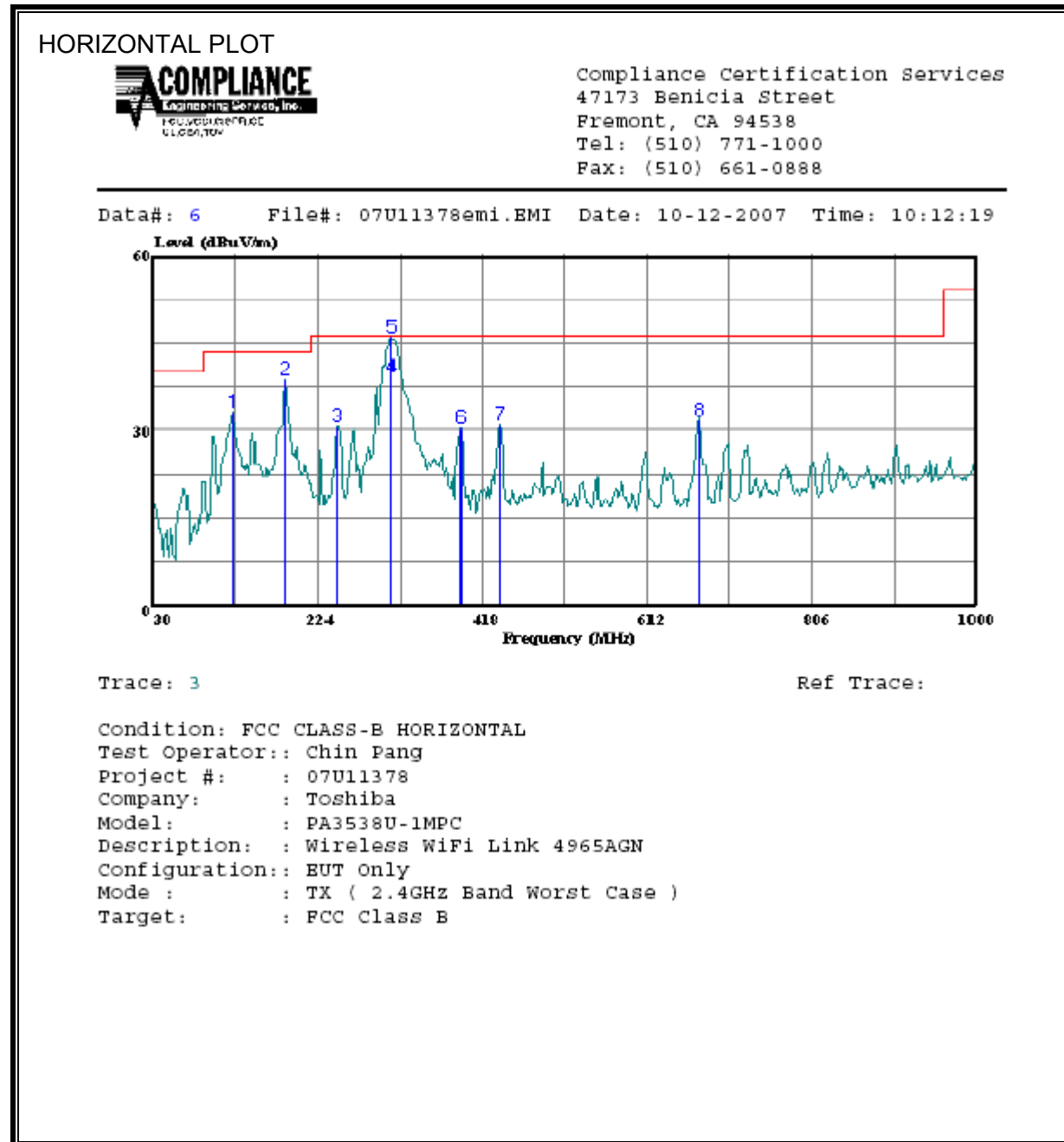
Rev. 412.7

Note: No other emissions were detected above the 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		

7.2. WORST-CASE BELOW 1 GHz

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



HORIZONTAL DATA

Page: 1

	Freq	Read Level	Level	Over Limit	Remark
	MHz	dBuV	dBuV/m	dB	
1	124.090	49.60	33.08	-10.42	Peak
2	184.230	57.19	38.65	-4.85	Peak
3	245.340	48.64	30.66	-15.34	Peak
4	310.330	54.80	39.20	-6.80	QP
5	310.330	61.55	45.95	-0.05	Peak
6	392.780	43.89	30.33	-15.67	Peak
7	439.340	43.31	30.81	-15.19	Peak
8	673.110	40.71	31.78	-14.22	Peak

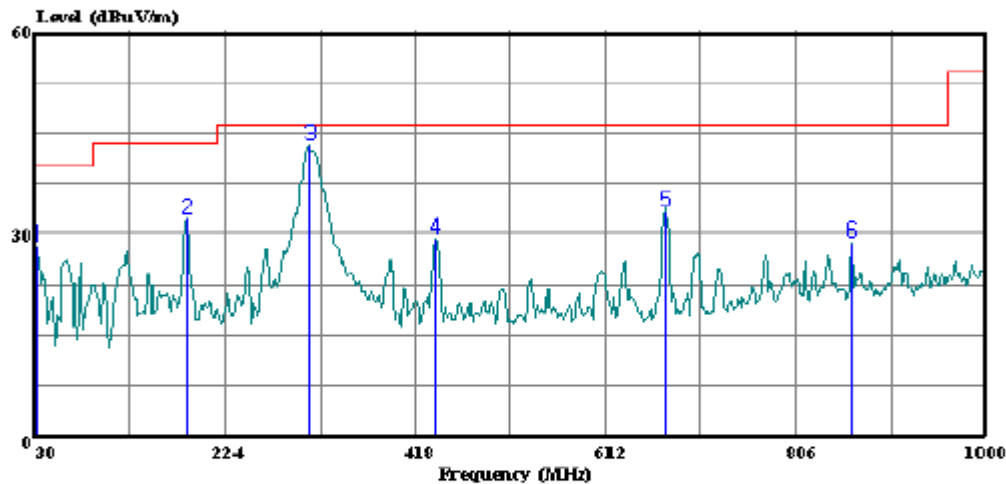
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)

VERTICAL PLOT



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

Data#: 2 File#: 07U11378emi.EMI Date: 10-12-2007 Time: 09:47:01



Trace: 1

Ref Trace:

Condition: FCC CLASS-B VERTICAL
Test Operator:: Chin Pang
Project #: : 07U11378
Company: : Toshiba
Model: : PA3538U-1MPC
Description: : Wireless WiFi Link 4965AGN
Configuration: : EUT Only
Mode : : TX (2.4GHz Band Worst Case)
Target: : FCC Class B

VERTICAL DATA

Page: 1

	Freq	Read Level	Level	Over Limit	Remark
	MHz	dBuV	dBuV/m	dB	
1	31.940	38.45	28.44	-11.56	Peak
2	184.230	50.64	32.10	-11.40	Peak
3	310.330	58.61	43.01	-2.99	Peak
4	439.340	41.86	29.36	-16.64	Peak
5	673.110	42.14	33.21	-12.79	Peak
6	863.230	34.57	28.90	-17.10	Peak