



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

FOR  
802.11ag/Draft 802.11n WLAN PCI-E Mini Card  
Installed inside HP Olifant Tablet, Model: HSTNN-W47C  
MODEL NUMBER: BCM94322MC  
FCC ID: QDS-BRCM1036  
IC: 4324A-BRCM1036

REPORT NUMBER: 08U11713-1

ISSUE DATE: APRIL 16, 2008

*Prepared for*  
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190 MATHILDA PLACE  
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**NVLAP**<sup>®</sup>  
NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	5-16-08	Initial Issue	Sunny Shih

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## 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** BROADCOM CORPORATION  
190 MATHILDA PLACE  
SUNNYVALE, CA 94086, USA

**EUT DESCRIPTION:** 802.11ag / Draft 802n WLAN PCI-E Mini Card  
INSTALLED INSIDE HP OLIFANT TABLET, MODEL: HSTNN-W47C

**MODEL:** BCM94322MC

**SERIAL NUMBER:** EUT: 395514-001, Laptop: 2CE8080PH9

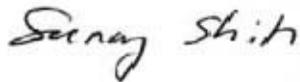
**DATE TESTED:** April 02 to May15, 2008

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:



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SUNNY SHIH  
EMC SUPERVISOR  
COMPLIANCE CERTIFICATION SERVICES

Tested By:



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VIEN TRAN  
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 802.11ag/Draft 802.11n Wireless LAN Transceiver module and manufactured by Broadcom, model number is BCM94322MC.

### 5.2. DESCRIPTION OF CLASS II CHANGE

The major changes filed under this application are:

Added portable platform, HSTNN-W47C

The EUT was tested and certified under CCS project # 07U11529-2, issued on January 26, 2008. Therefore, only the Radiated Emission and AC mains line conduction tests are performed.

### 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The following antennas were 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 EUT driver software installed during testing was BCMWL5, rev. 4.170.67.0.

The test utility software used during testing was wl\_tool, rev. 4.170 RC67.0.

### 5.5. WORST-CASE CONFIGURATION AND MODE

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 802.11g mode were made at 6 Mb/s.

All final tests in the 802.11n HT20 mode were made at MCS0.

All final tests in the 802.11n HT40 mode were made at MC32.

The worst-case channel is determined as the 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	Compaq 2730p	2CE8080PH9	N/A
AC Adapter	HP	PPP009H	F3-0801000598X1	N/A

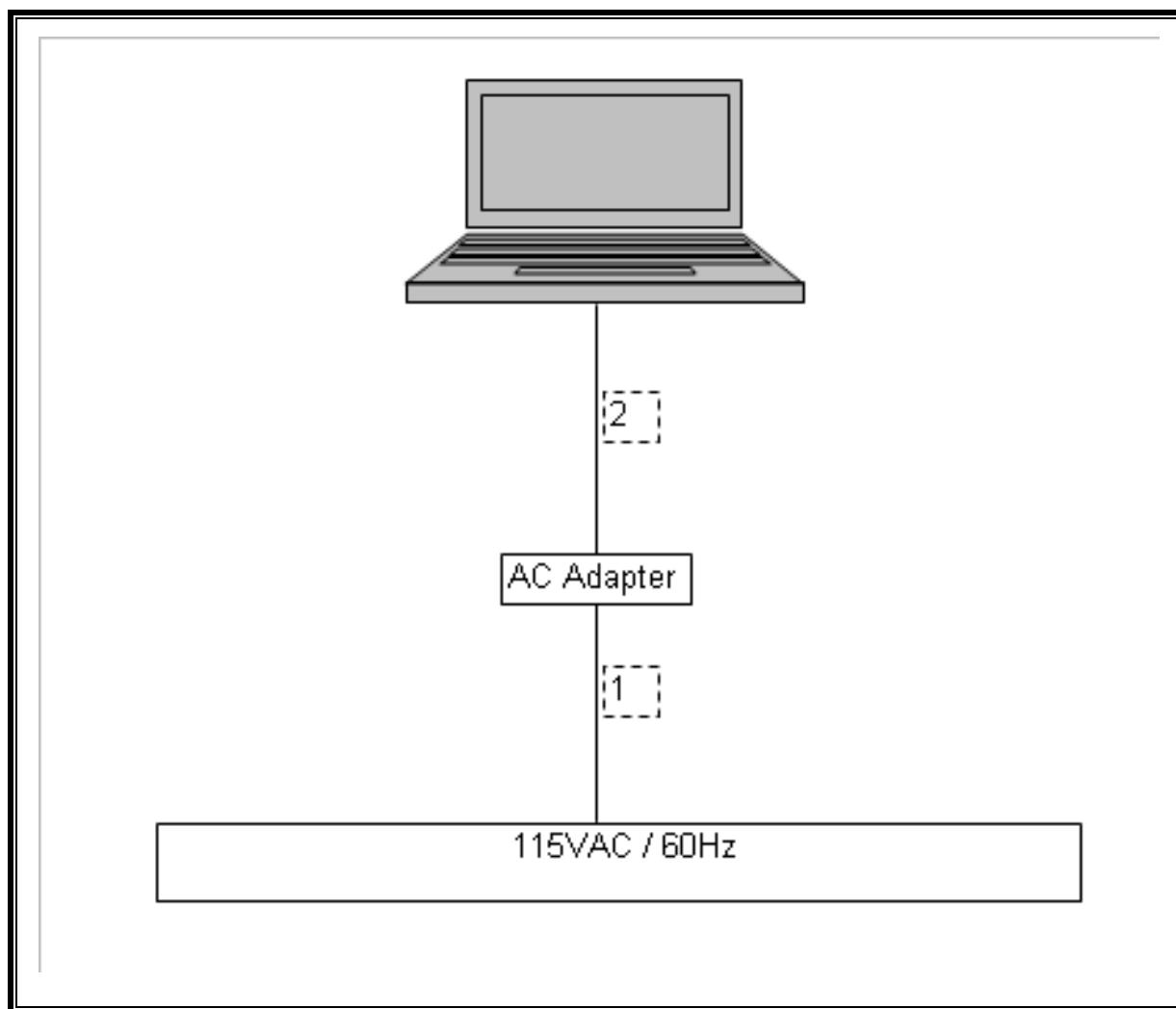
### I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	US115V	Unshielded	2.0m	N/A
2	DC	1	DC	Unshielded	2.0m	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
Antenna, Horn, 18 GHz	EMCO	3115	C00945	04/15/08	04/15/09
Bilog Antenna	Sunol Sciences	JB1	C01016	10/13/07	10/13/08
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C00749	08/03/07	09/27/08
Preamplifier, 1300 MHz	Agilent / HP	8447D	C01064	05/09/08	05/09/09
RF Filter Section, 2.9 GHz	Agilent / HP	85420E	C00958	02/06/07	06/12/08
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
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	10/16/07	01/27/09
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	N02481	09/15/06	09/15/08
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	09/15/06	09/15/08
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01012	05/02/06	08/07/08

## 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, and then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

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

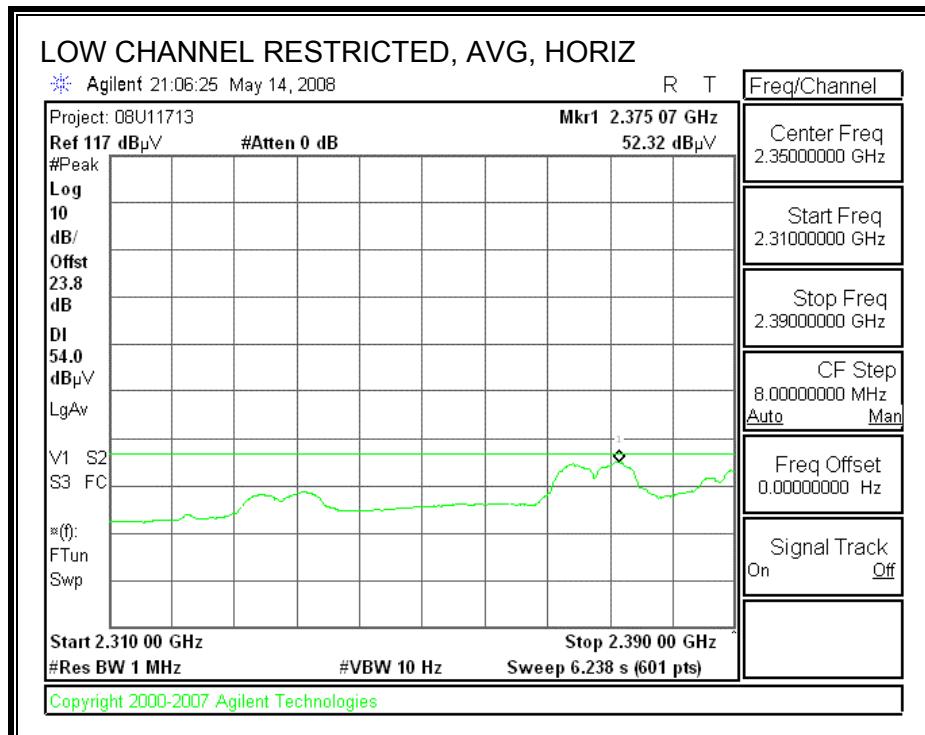
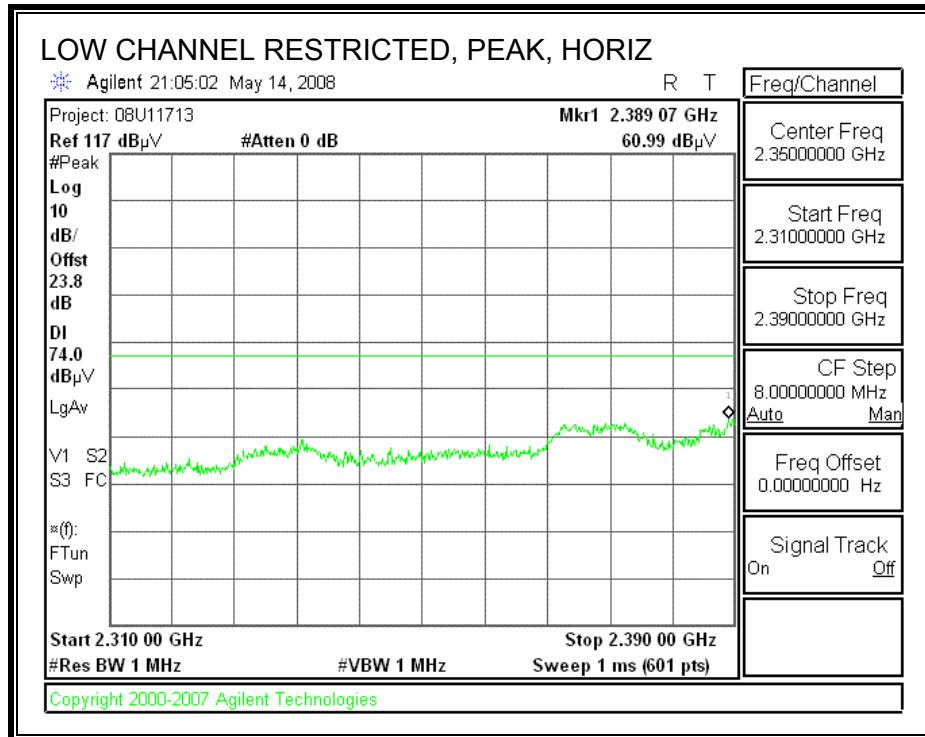
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 5 GHz band.

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.

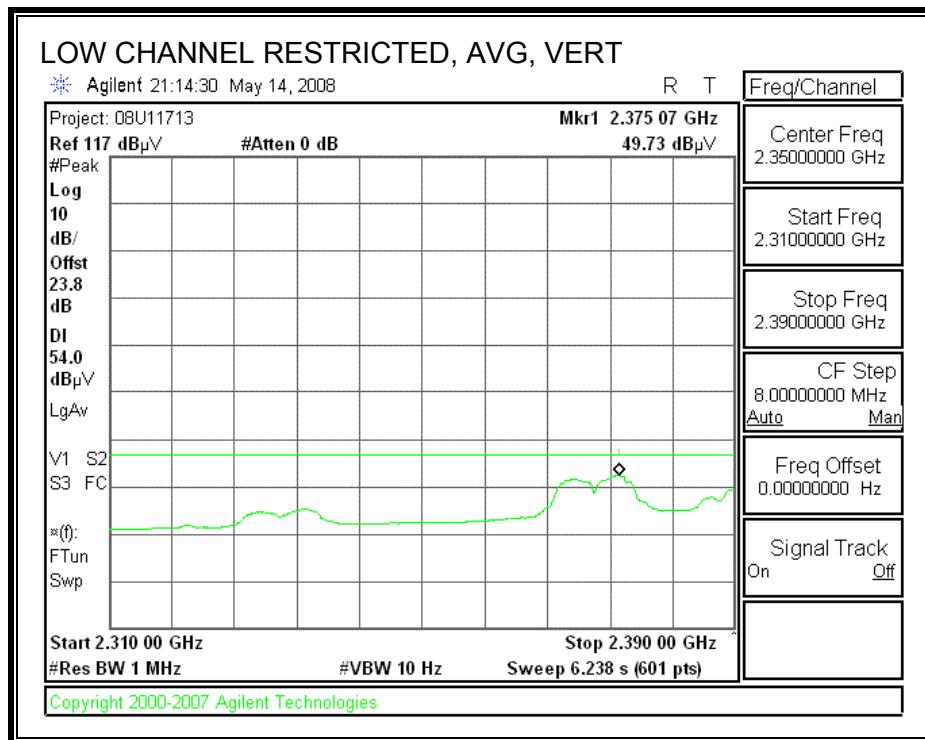
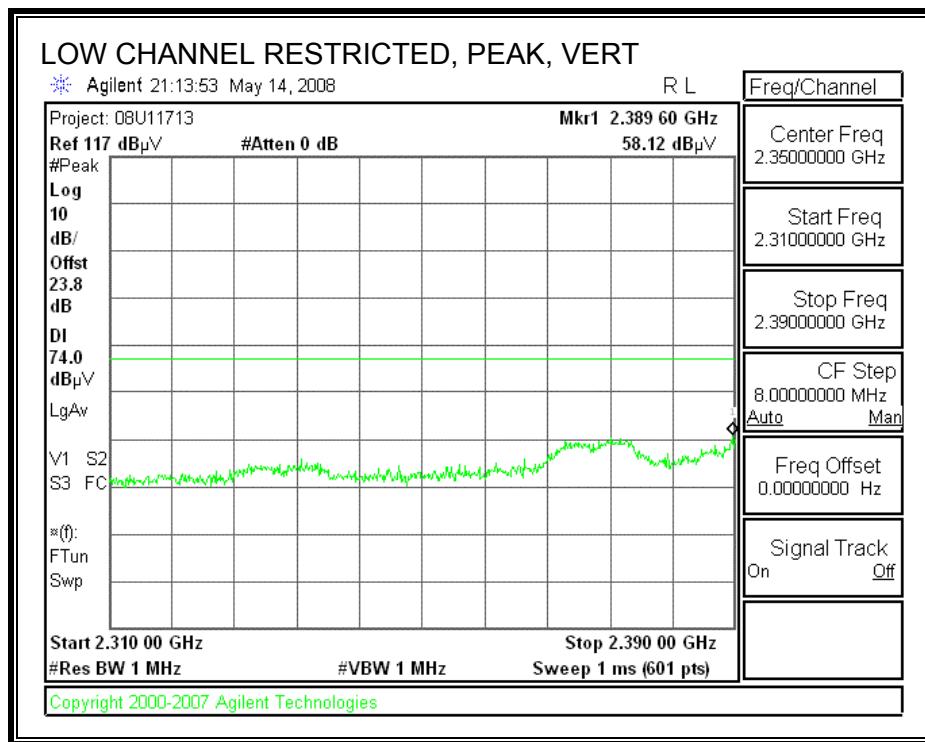
## 7.2. TRANSMITTER ABOVE 1 GHz

### 7.2.1. 802.11b MODE IN THE 2.4 GHz BAND

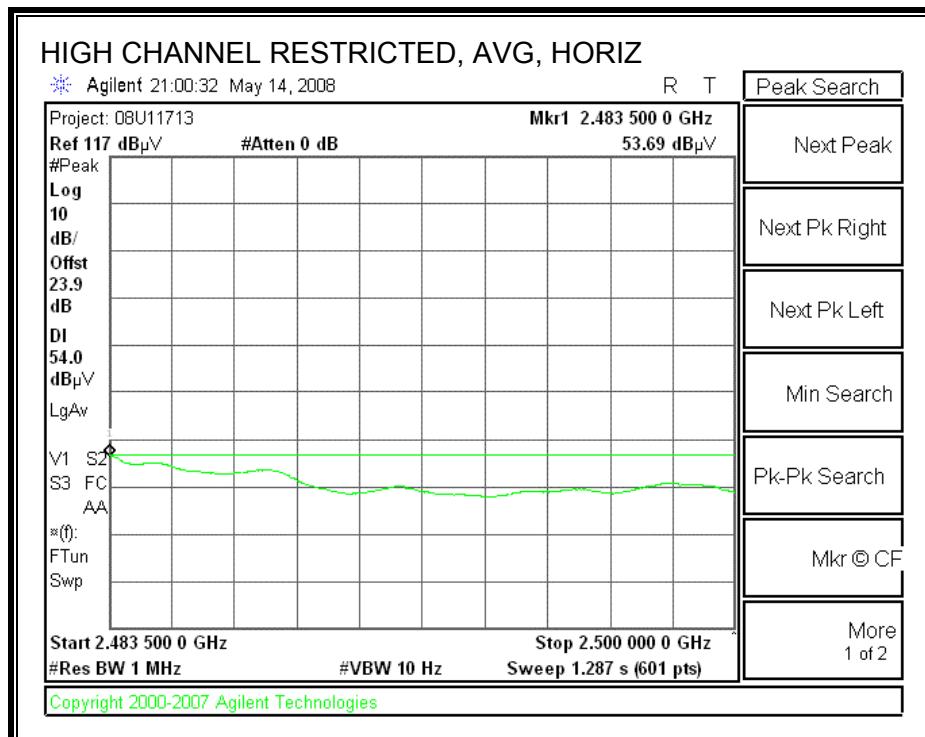
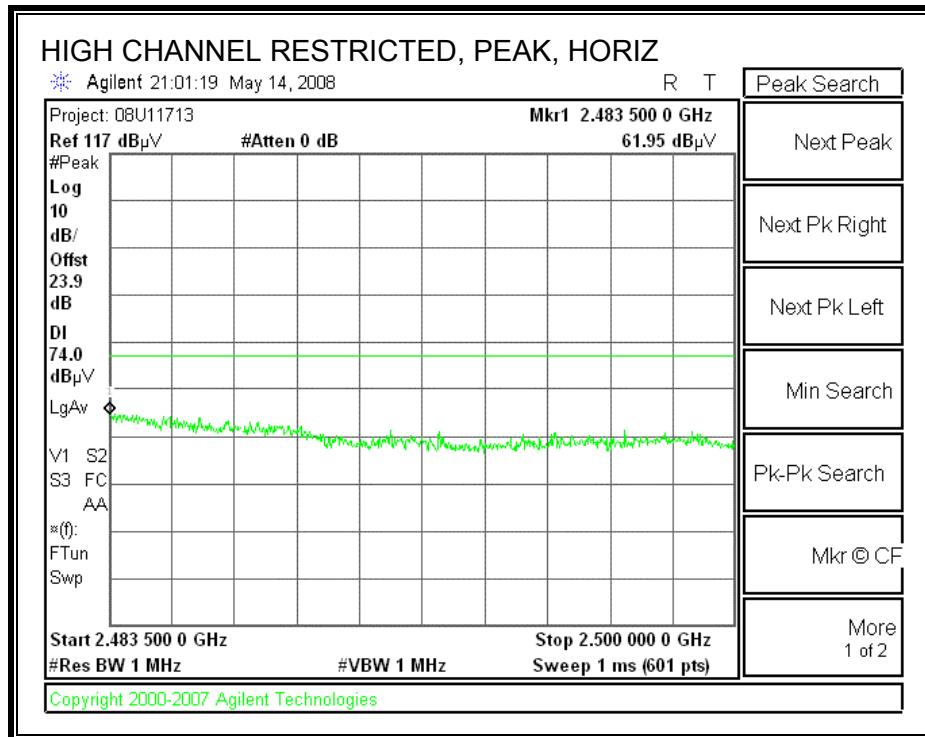
#### RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



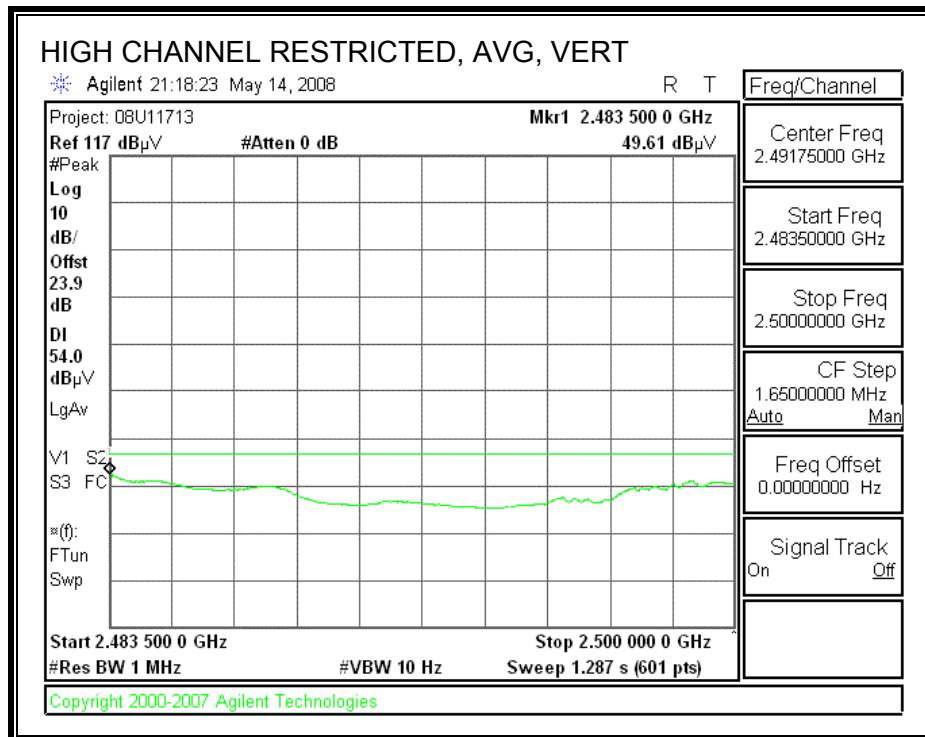
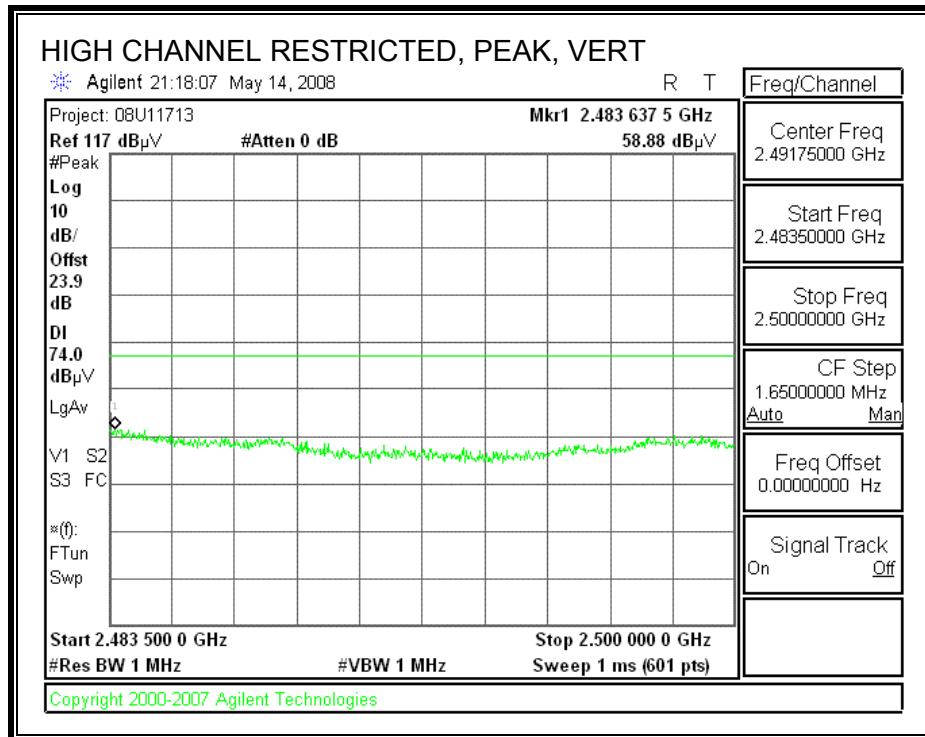
**RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)**



**RESTRICTED BANDEdge (HIGH CHANNEL, HORIZONTAL)**



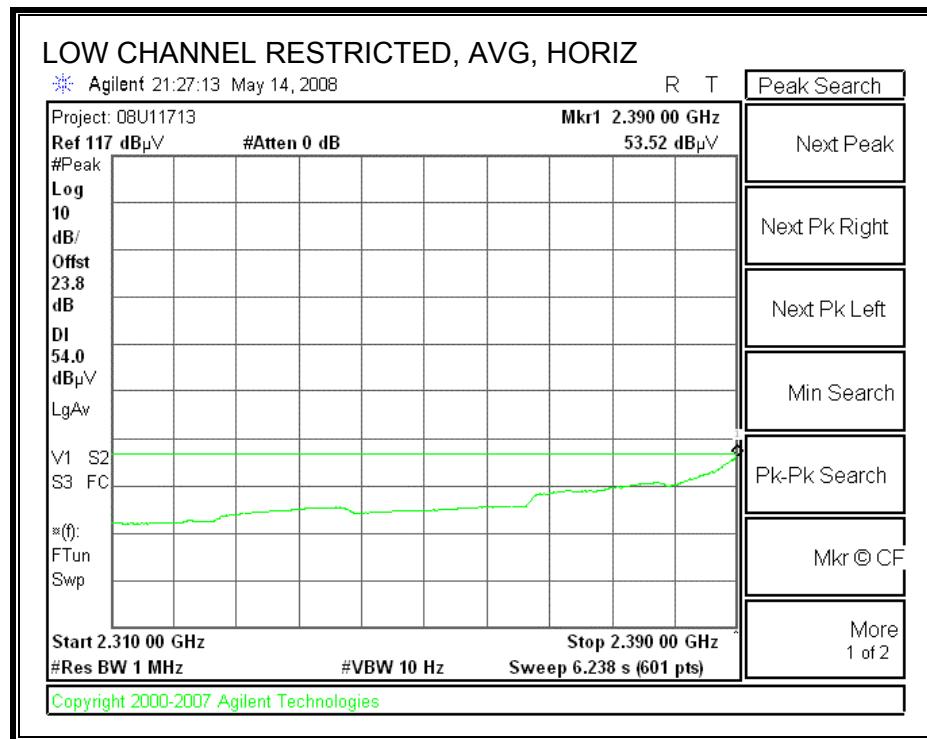
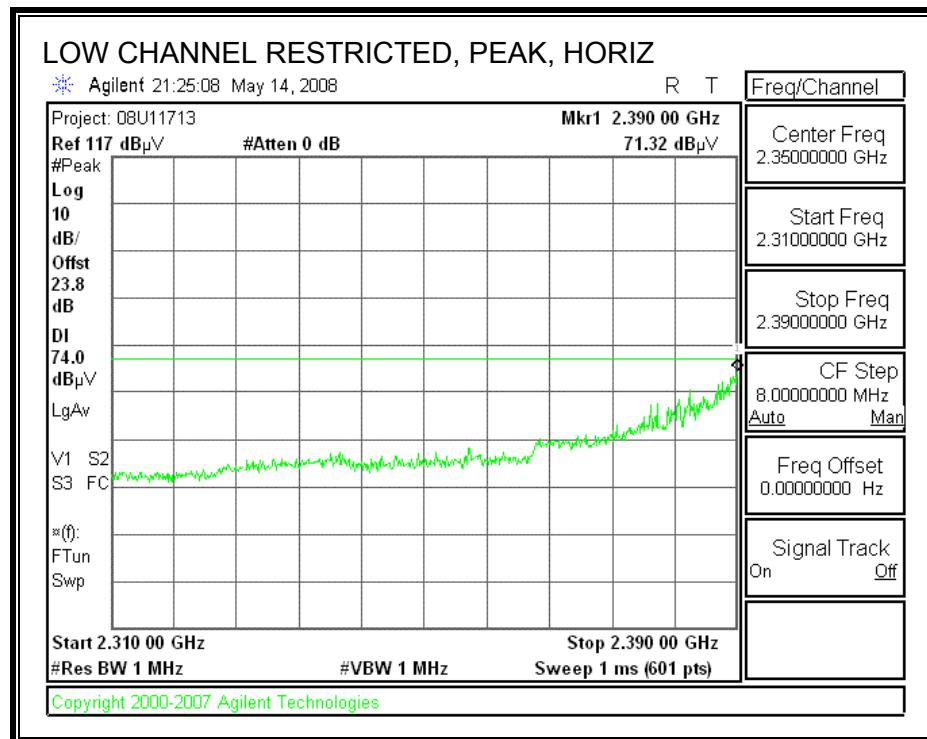
**RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)**



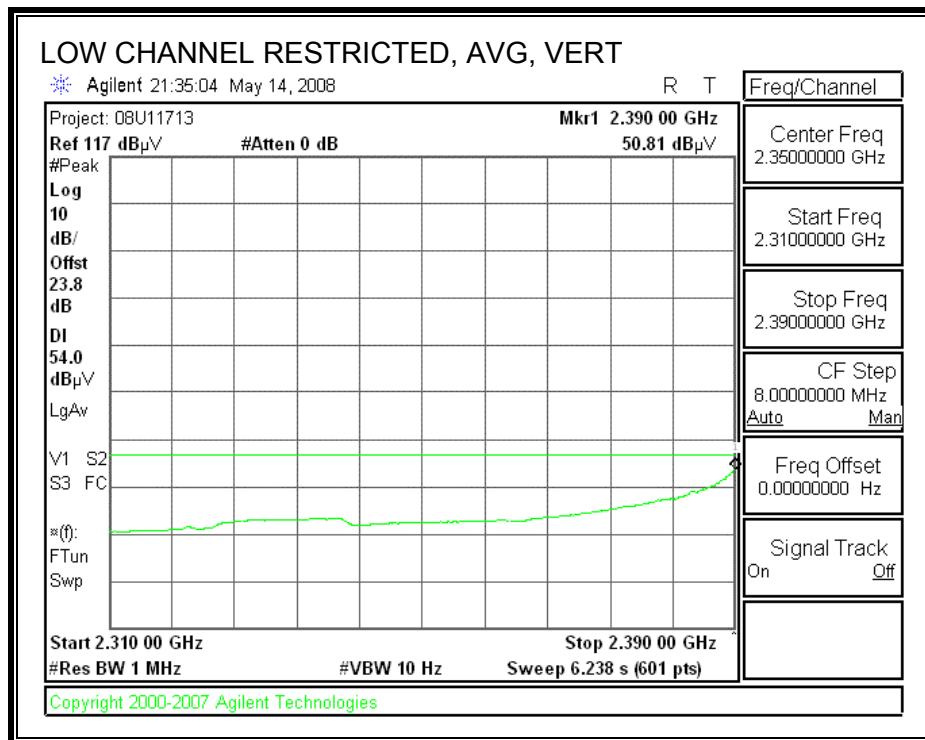
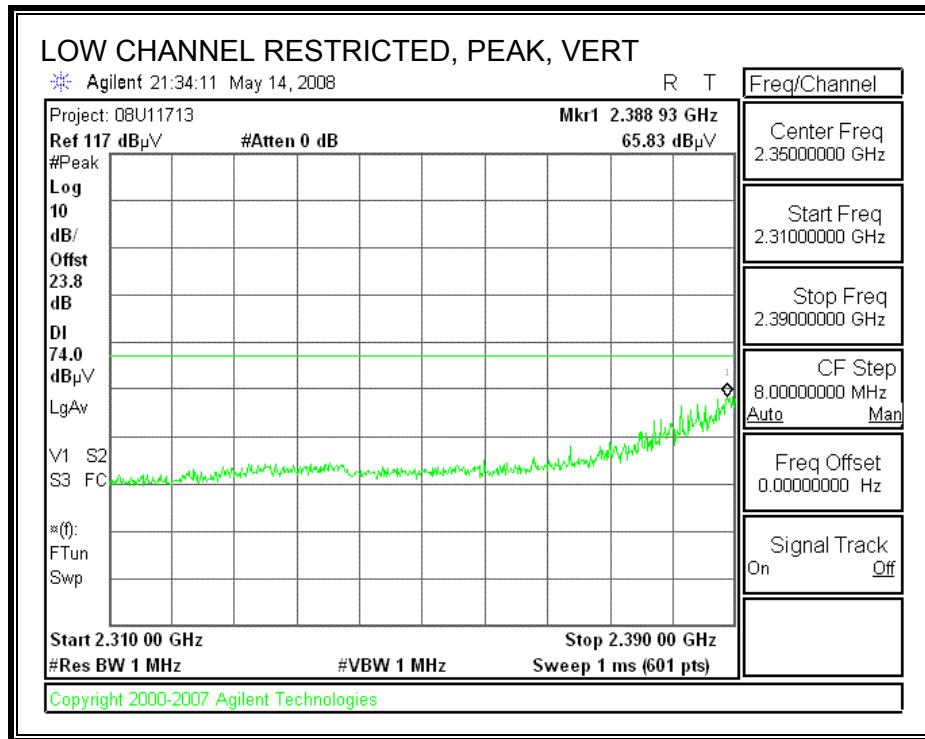
## HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement Compliance Certification Services, 3 Meter_C Chamber																																												
Company:	Broadcom																																											
Project #:	08U11713																																											
Date:	4/7/2008																																											
Test Engineer:	Vien Tran																																											
Configuration:	EUT insides HP platform (Olifant)																																											
Mode:	Tx 11b																																											
<b>Test Equipment:</b>																																												
Horn 1-18GHz		Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit																																				
T73; S/N: 6717 @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																																		
		Ninous 202575001		Can 187209002		HPF_4.0GHz				Average Measurements RBW=1MHz ; VBW=10Hz																																		
<b>f</b> GHz	<b>Dist</b> (m)	<b>Read Pk</b> dBuV	<b>Read Avg</b> dBuV	<b>AF</b> dB/m	<b>CL</b> dB	<b>Amp</b> dB	<b>D Corr</b> dB	<b>Fltr</b> dB	<b>Peak</b> dBuV/m	<b>Avg</b> dBuV/m	<b>Pk Lim</b> dBuV/m	<b>Avg Lim</b> dBuV/m	<b>Pk Mar</b> dB	<b>Avg Mar</b> dB	<b>Notes</b> (V/H)																													
<b>LOW CHANNEL, 2412MHz</b>																																												
4.824	3.0	49.7	44.8	33.3	3.7	-34.8	0.0	0.6	52.5	47.6	74	54	-21.5	-6.4	H																													
4.824	3.0	47.0	40.8	33.3	3.7	-34.8	0.0	0.6	49.8	43.6	74	54	-24.2	-10.4	V																													
<b>MID CHANNEL, 2437 MHz</b>																																												
4.874	3.0	48.0	42.1	33.4	3.7	-34.9	0.0	0.6	50.8	44.9	74	54	-23.2	-9.1	H																													
7.311	3.0	45.6	37.5	35.0	4.5	-34.7	0.0	0.6	51.1	43.0	74	54	-22.9	-11.0	H																													
4.874	3.0	46.5	39.3	33.4	3.7	-34.9	0.0	0.6	49.3	42.1	74	54	-24.7	-11.9	V																													
7.311	3.0	46.1	36.7	35.0	4.5	-34.7	0.0	0.6	51.6	42.2	74	54	-22.4	-11.8	V																													
<b>HIGH CHANNEL, 2462 MHz</b>																																												
4.924	3.0	47.4	39.2	33.4	3.7	-34.9	0.0	0.6	50.3	42.1	74	54	-23.7	-11.9	H																													
7.386	3.0	43.2	33.5	35.0	4.5	-34.6	0.0	0.6	48.8	39.1	74	54	-25.2	-14.9	H																													
4.924	3.0	45.5	35.6	33.4	3.7	-34.9	0.0	0.6	48.4	38.5	74	54	-25.6	-15.5	V																													
7.386	3.0	45.3	33.7	35.0	4.5	-34.6	0.0	0.6	50.9	39.3	74	54	-23.1	-14.7	V																													
<table border="0"> <tr> <td><b>f</b></td> <td>Measurement Frequency</td> <td><b>Amp</b></td> <td>Preamp Gain</td> <td><b>Avg Lim</b></td> <td>Average Field Strength Limit</td> </tr> <tr> <td>Dist</td> <td>Distance to Antenna</td> <td>D Corr</td> <td>Distance Correct to 3 meters</td> <td>Pk Lim</td> <td>Peak Field Strength Limit</td> </tr> <tr> <td>Read</td> <td>Analyzer Reading</td> <td>Avg</td> <td>Average Field Strength @ 3 m</td> <td>Avg Mar</td> <td>Margin vs. Average Limit</td> </tr> <tr> <td>AF</td> <td>Antenna Factor</td> <td>Peak</td> <td>Calculated Peak Field Strength</td> <td>Pk Mar</td> <td>Margin vs. Peak Limit</td> </tr> <tr> <td>CL</td> <td>Cable Loss</td> <td>HPF</td> <td>High Pass Filter</td> <td></td> <td></td> </tr> </table>															<b>f</b>	Measurement Frequency	<b>Amp</b>	Preamp Gain	<b>Avg Lim</b>	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		
<b>f</b>	Measurement Frequency	<b>Amp</b>	Preamp Gain	<b>Avg Lim</b>	Average Field Strength Limit																																							
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit																																							
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AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit																																							
CL	Cable Loss	HPF	High Pass Filter																																									

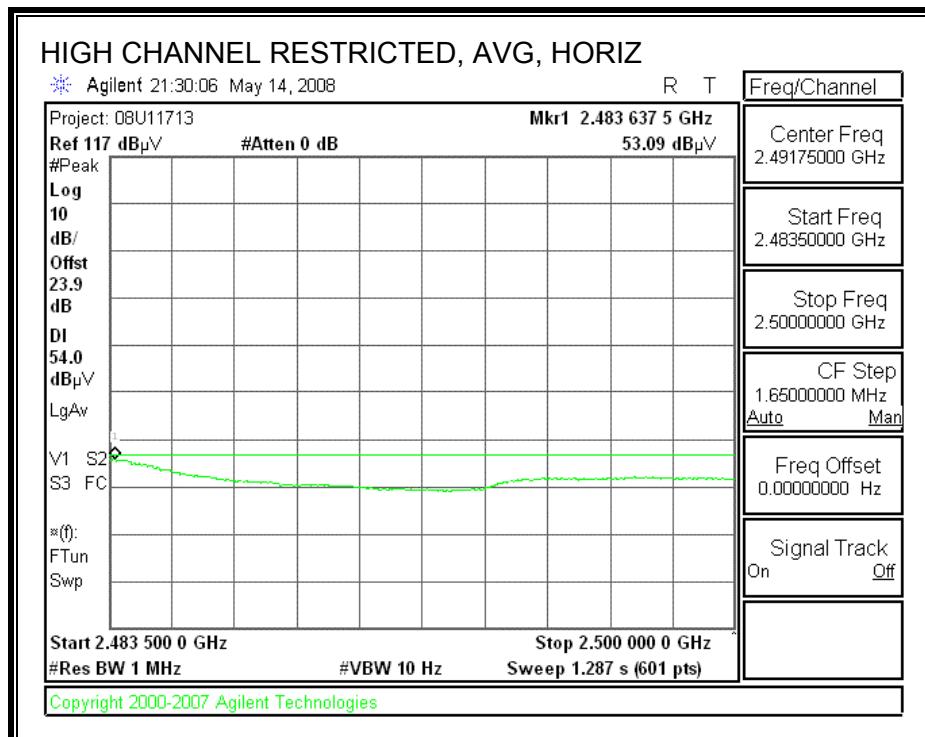
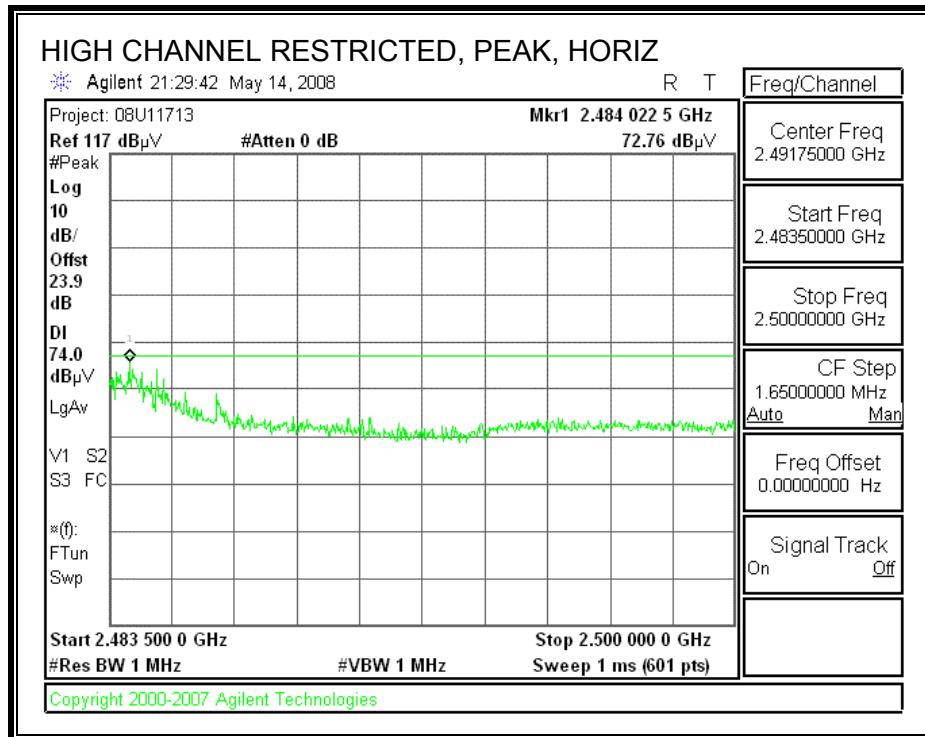
**7.2.2. 802.11g MODE IN THE 2.4 GHz BAND**  
**RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)**



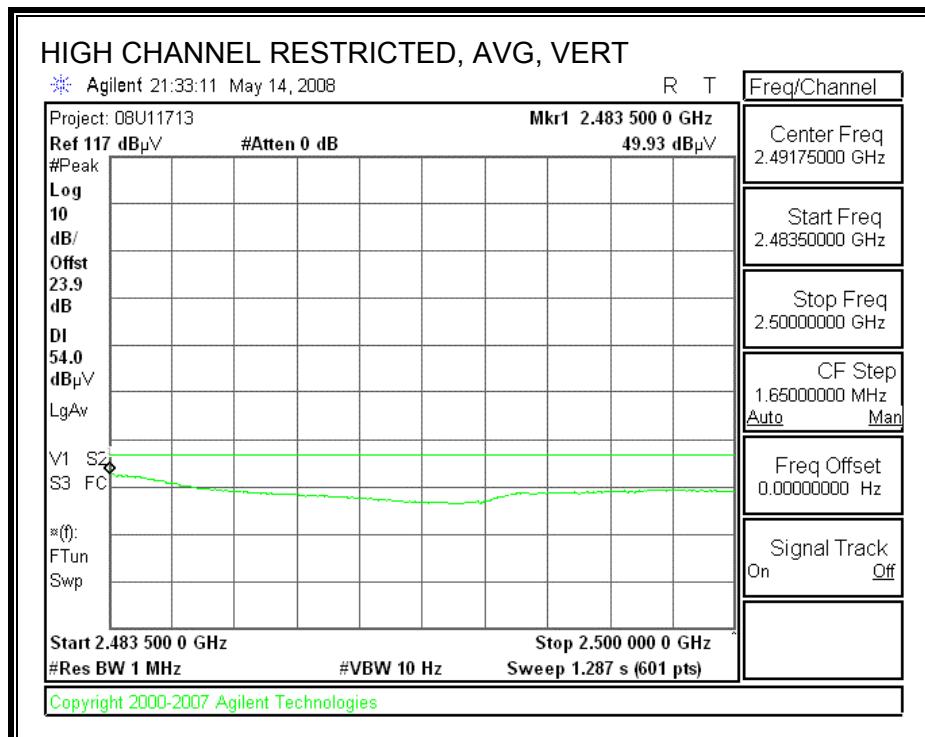
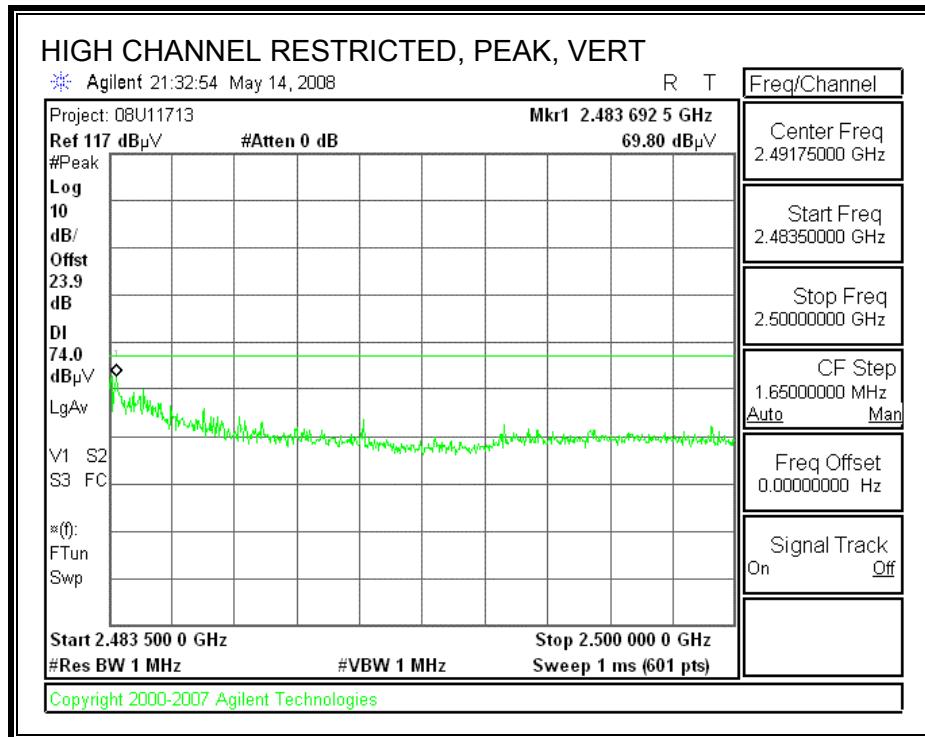
**RESTRICTED BANDEdge (LOW CHANNEL, VERTICAL)**



**RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)**



**RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)**



## HARMONICS AND SPURIOUS EMISSIONS

### High Frequency Measurement

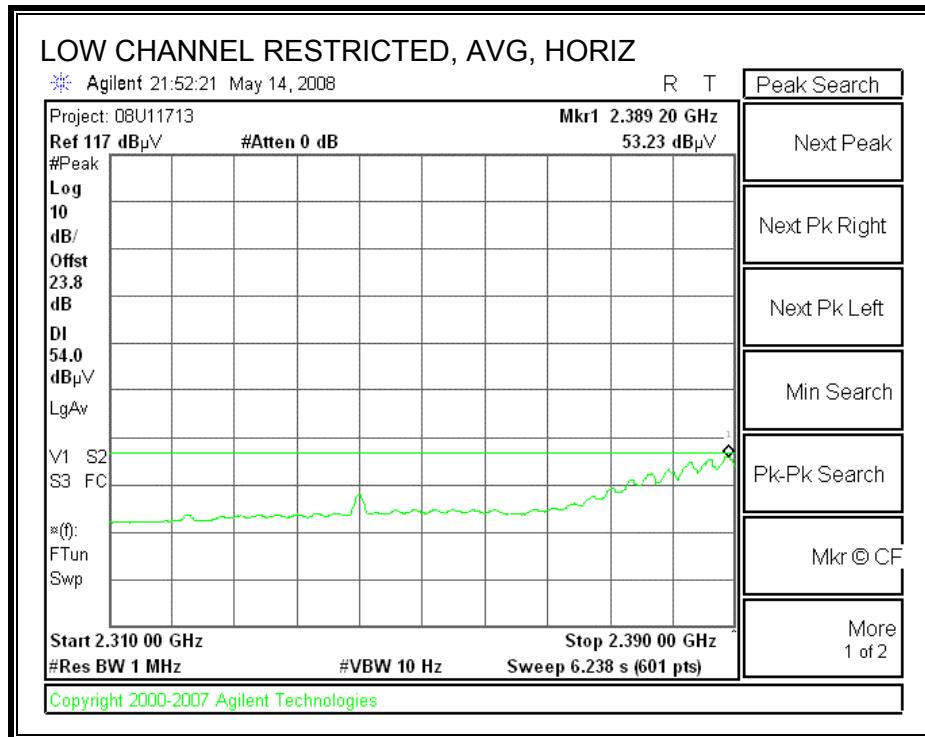
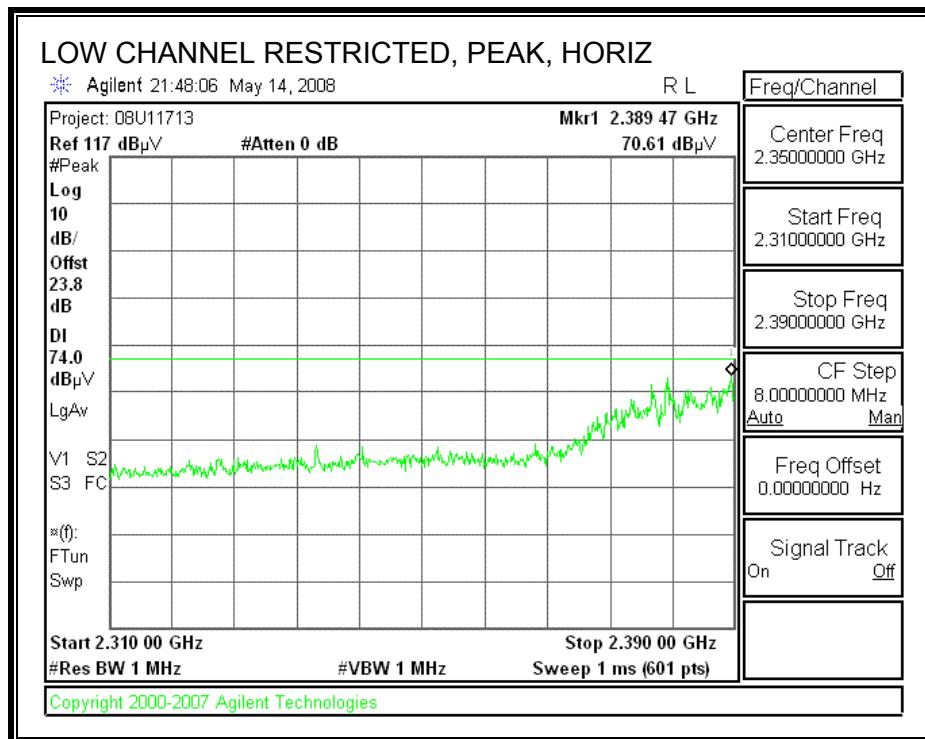
Compliance Certification Services, 3 Meter\_C Chamber

Company: Broadcom  
Project #: 08U11713  
Date: 4/7/2008  
Test Engineer: Vien Tran  
Configuration: FUT insides HP platform (Olifant)  
Mode: Tx 11g

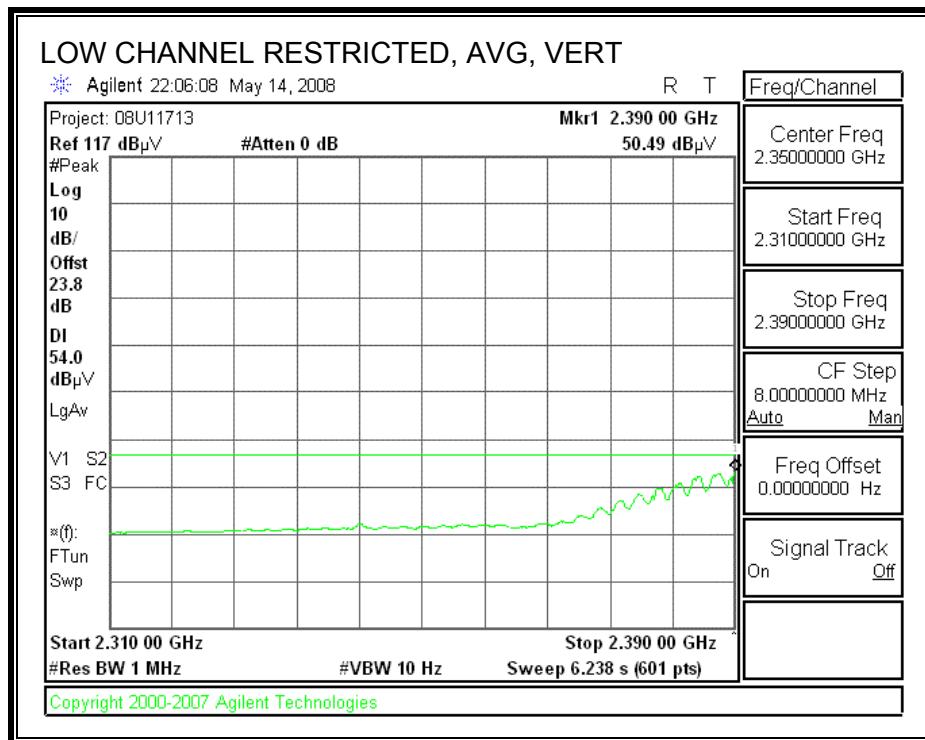
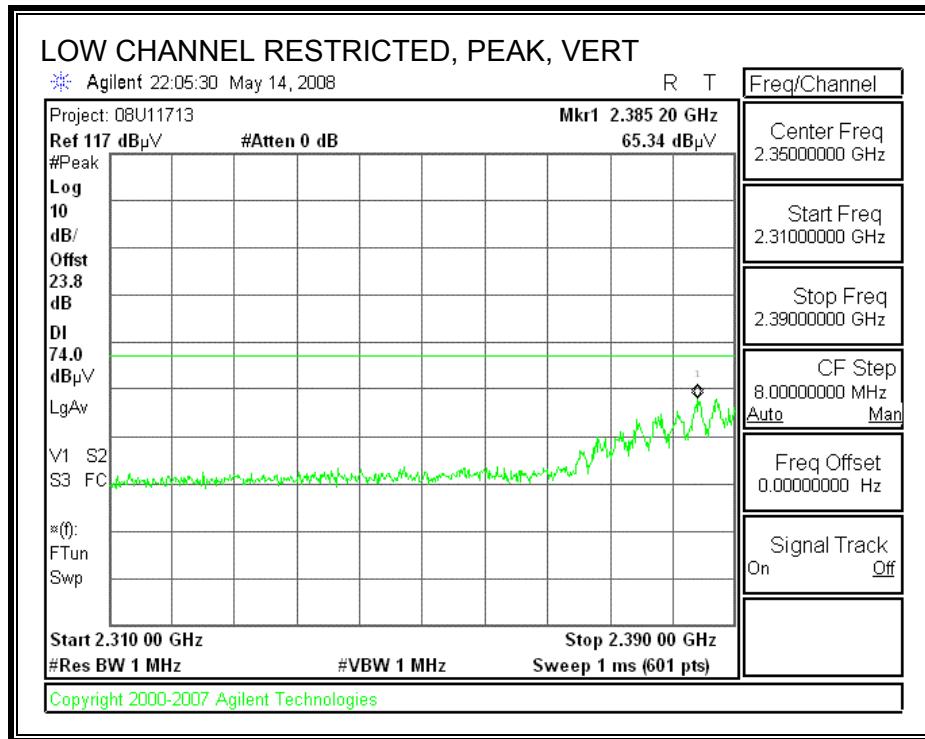
### Test Equipment:

Horn 1-18GHz	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz		Limit										
T73; S/N: 6717 @3m	T145 Agilent 3008A005				FCC 15.205										
Hi Frequency Cables															
2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter	Peak Measurements RBW=VBW=1MHz										
Ninous 202575001	Can 187209002		HPF_4.0GHz		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)
LOW CHANNEL, 2412 MHz															
4.824	3.0	44.2	32.6	33.3	3.7	-34.8	0.0	0.6	47.0	35.4	74	54	-27.0	-18.6	H
4.824	3.0	44.7	33.4	33.3	3.7	-34.8	0.0	0.6	47.5	36.2	74	54	-26.5	-17.8	V
MID CHANNEL, 2437 MHz															
4.874	3.0	44.2	32.5	33.4	3.7	-34.9	0.0	0.6	47.0	35.3	74	54	-27.0	-18.7	H
7.311	3.0	46.4	35.4	35.0	4.5	-34.7	0.0	0.6	51.9	40.9	74	54	-22.1	-13.1	H
4.874	3.0	44.4	32.3	33.4	3.7	-34.9	0.0	0.6	47.2	35.1	74	54	-26.8	-18.9	V
7.311	3.0	46.0	35.6	35.0	4.5	-34.7	0.0	0.6	51.5	41.1	74	54	-22.5	-12.9	V
HIGH CHANNEL, 2462 MHz															
4.924	3.0	44.1	32.4	33.4	3.7	-34.9	0.0	0.6	47.0	35.3	74	54	-27.0	-18.7	H
7.386	3.0	44.9	33.8	35.0	4.5	-34.6	0.0	0.6	50.5	39.4	74	54	-23.5	-14.6	H
4.924	3.0	44.6	32.5	33.4	3.7	-34.9	0.0	0.6	47.5	35.4	74	54	-26.5	-18.6	V
7.386	3.0	46.3	35.3	35.0	4.5	-34.6	0.0	0.6	51.9	40.9	74	54	-22.1	-13.1	V
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										

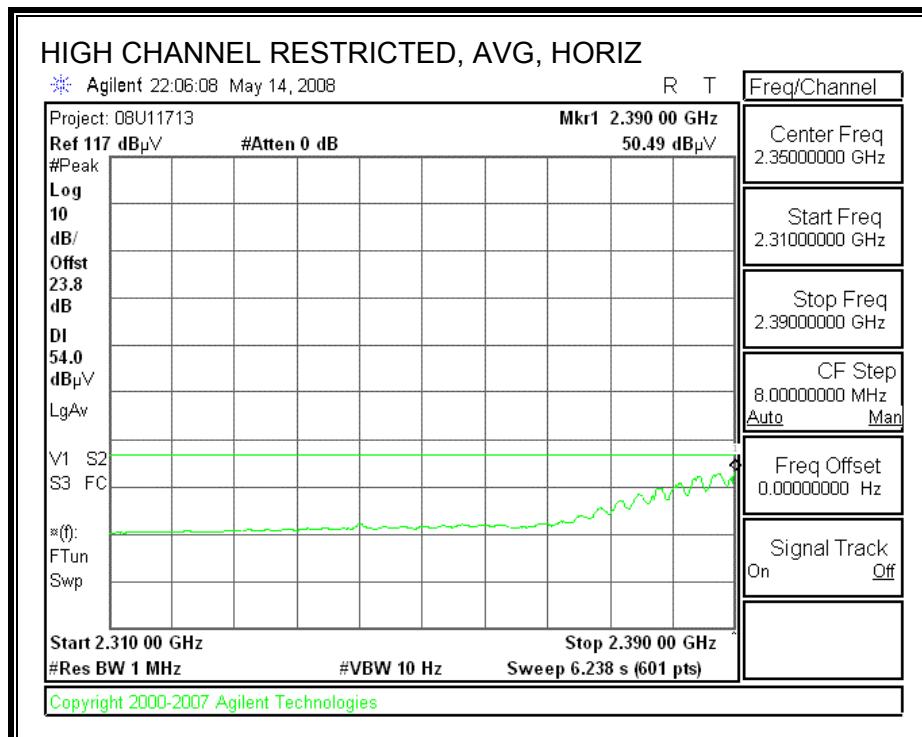
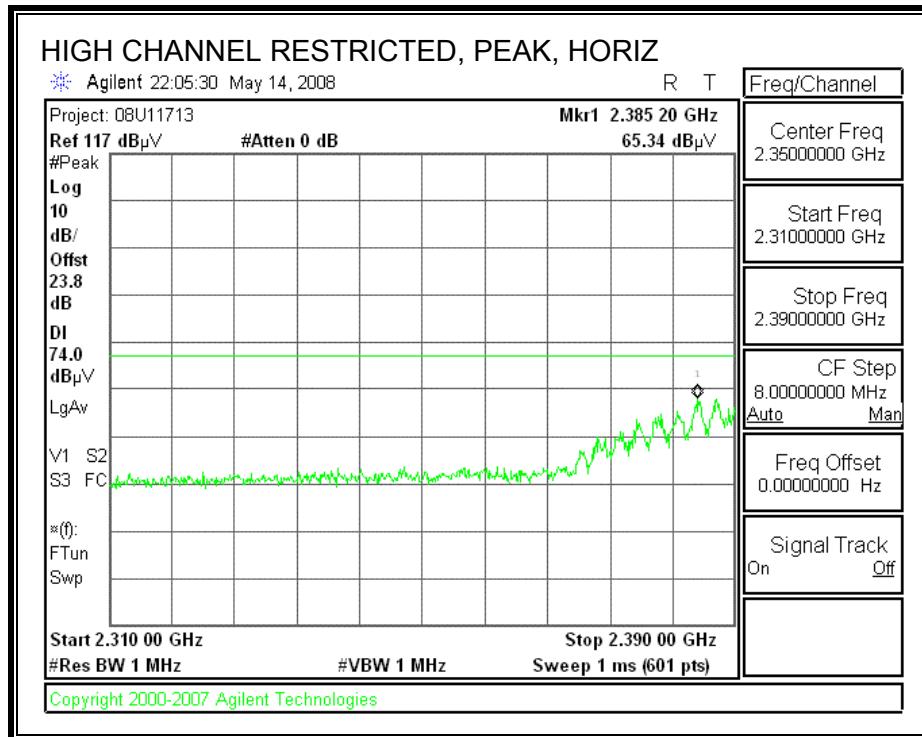
**7.2.3. 802.11n HT40 MODE IN THE 2.4 GHz BAND**  
**RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)**



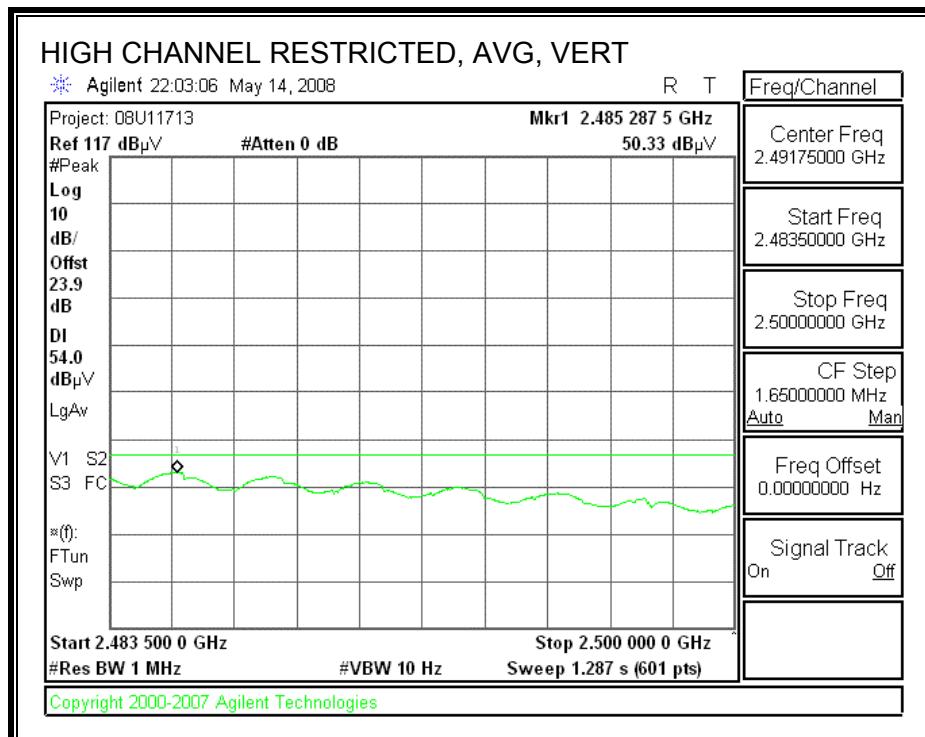
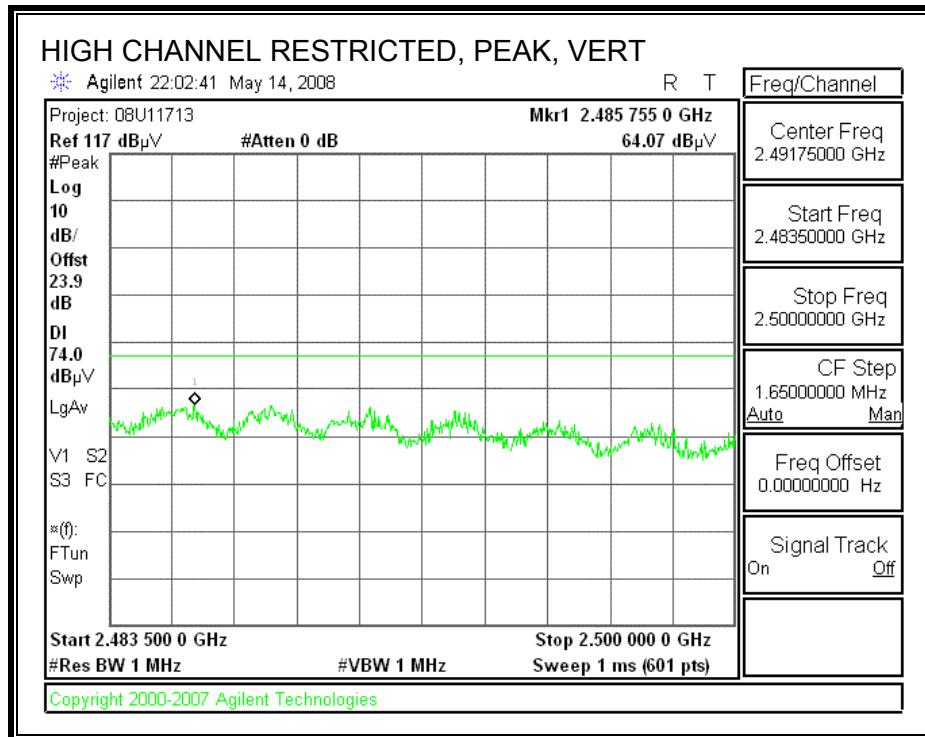
**RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)**



**RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)**



**RESTRICTED BANDEdge (HIGH CHANNEL, VERTICAL)**



## HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement Compliance Certification Services, 3 Meter_C Chamber																																																																																									
Company:	Broadcom																																																																																								
Project #:	08U11713																																																																																								
Date:	4/7/2008																																																																																								
Test Engineer:	Vien Tran																																																																																								
Configuration:	EUT insides HP platform (Olifant)																																																																																								
Mode:	Tx 1In HT40_2.4 GHz																																																																																								
<b>Test Equipment:</b>																																																																																									
Horn 1-18GHz			Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit																																																																													
T73; S/N: 6717 @3m			T145 Agilent 3008A005									FCC 15.205																																																																													
Hi Frequency Cables																																																																																									
2 foot cable			3 foot cable			12 foot cable			HPF			Reject Filter																																																																													
			Ninous 202575001			Can 187209002			HPF_4.0GHz																																																																																
<table border="1"> <tr> <td colspan="15"><b>Peak Measurements</b></td> </tr> <tr> <td colspan="15">RBW=VBW=1MHz</td> </tr> <tr> <td colspan="15"><b>Average Measurements</b></td> </tr> <tr> <td colspan="15">RBW=1MHz, VBW=10Hz</td> </tr> </table>															<b>Peak Measurements</b>															RBW=VBW=1MHz															<b>Average Measurements</b>															RBW=1MHz, VBW=10Hz																													
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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)																																																																										
<b>LOW CHANNEL, 2422 MHz</b>																																																																																									
4.844	3.0	45.2	32.8	33.3	3.7	-34.8	0.0	0.6	48.0	35.6	74	54	-26.0	-18.4	H																																																																										
7.266	3.0	45.8	33.6	35.0	4.5	-34.7	0.0	0.6	51.2	39.0	74	54	-22.8	-15.0	H																																																																										
4.844	3.0	45.9	33.8	33.3	3.7	-34.8	0.0	0.6	48.7	36.6	74	54	-25.3	-17.4	V																																																																										
7.266	3.0	43.7	33.4	35.0	4.5	-34.7	0.0	0.6	49.1	38.8	74	54	-24.9	-15.2	V																																																																										
<b>MID CHANNEL, 2437 MHz</b>																																																																																									
4.874	3.0	44.8	32.5	33.4	3.7	-34.9	0.0	0.6	47.6	35.3	74	54	-26.4	-18.7	H																																																																										
7.311	3.0	45.5	33.0	35.0	4.5	-34.7	0.0	0.6	51.0	38.5	74	54	-23.0	-15.5	H																																																																										
4.874	3.0	44.5	32.6	33.4	3.7	-34.9	0.0	0.6	47.3	35.4	74	54	-26.7	-18.6	V																																																																										
7.311	3.0	43.4	33.2	35.0	4.5	-34.7	0.0	0.6	48.9	38.7	74	54	-25.1	-15.3	V																																																																										
<b>HIGH CHANNEL, 2452 MHz</b>																																																																																									
4.904	3.0	44.4	32.1	33.4	3.7	-34.9	0.0	0.6	47.2	34.9	74	54	-26.8	-19.1	H																																																																										
7.356	3.0	45.1	32.6	35.0	4.5	-34.6	0.0	0.6	50.6	38.1	74	54	-23.4	-15.9	H																																																																										
4.904	3.0	44.1	32.2	33.4	3.7	-34.9	0.0	0.6	46.9	35.0	74	54	-27.1	-19.0	V																																																																										
7.356	3.0	43.0	32.8	35.0	4.5	-34.6	0.0	0.6	48.5	38.3	74	54	-25.5	-15.7	V																																																																										
<table border="1"> <tr> <td>f</td> <td colspan="4">Measurement Frequency</td> <td>Amp</td> <td colspan="4">Preamp Gain</td> <td>Avg Lim</td> <td colspan="4">Average Field Strength Limit</td> </tr> <tr> <td>Dist</td> <td colspan="4">Distance to Antenna</td> <td>D Corr</td> <td colspan="4">Distance Correct to 3 meters</td> <td>Pk Lim</td> <td colspan="4">Peak Field Strength Limit</td> </tr> <tr> <td>Read</td> <td colspan="4">Analyzer Reading</td> <td>Avg</td> <td colspan="4">Average Field Strength @ 3 m</td> <td>Avg Mar</td> <td colspan="4">Margin vs. Average Limit</td> </tr> <tr> <td>AF</td> <td colspan="4">Antenna Factor</td> <td>Peak</td> <td colspan="4">Calculated Peak Field Strength</td> <td>Pk Mar</td> <td colspan="4">Margin vs. Peak Limit</td> </tr> <tr> <td>CL</td> <td colspan="4">Cable Loss</td> <td>HPF</td> <td colspan="4"></td> <td></td> <td colspan="4"></td> </tr> </table>															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									
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																																																																																				

## HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement Compliance Certification Services, 3 Meter_C Chamber																																												
Company:	Broadcom																																											
Project #:	08U11713																																											
Date:	4/7/2008																																											
Test Engineer:	Vien Tran																																											
Configuration:	EUT insides HP platform (Olifant)																																											
Mode:	Tx 1In HT40_5.8 GHz																																											
<b>Test Equipment:</b>																																												
Horn 1-18GHz			Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit																																
T73; S/N: 6717 @3m	T145 Agilent 3008A005											FCC 15.205																																
Hi Frequency Cables																																												
2 foot cable			3 foot cable			12 foot cable			HPF			Reject Filter			Peak Measurements RBW=VBW=1MHz																													
Ninous 202575001			Can 187209002			HPF_7.6GHz									Average Measurements RBW=1MHz, VBW=10Hz																													
<b>f</b> GHz	<b>Dist</b> (m)	<b>Read Pk</b> dBuV	<b>Read Avg.</b> dBuV	<b>AF</b> dB/m	<b>CL</b> dB	<b>Amp</b> dB	<b>D Corr</b> dB	<b>Fltr</b> dB	<b>Peak</b> dBuV/m	<b>Avg</b> dBuV/m	<b>Pk Lim</b> dBuV/m	<b>Avg Lim</b> dBuV/m	<b>Pk Mar</b> dB	<b>Avg Mar</b> dB	<b>Notes</b> (V/H)																													
<b>LOW CHANNEL, 5755 MHz</b>																																												
15.510	3.0	43.1	31.8	38.1	6.7	-32.3	0.0	0.7	56.4	45.1	74	54	-17.6	8.9	H																													
15.510	3.0	44.3	32.5	36.1	6.7	-32.3	0.0	0.7	57.6	45.8	74	54	-16.4	8.2	V																													
<b>HIGH CHANNEL, 5795 MHz</b>																																												
15.590	3.0	42.5	31.4	37.9	6.7	-32.3	0.0	0.7	55.6	44.5	74	54	-18.4	9.5	H																													
15.590	3.0	43.6	32.2	37.9	6.7	-32.3	0.0	0.7	56.7	45.3	74	54	-17.3	8.7	V																													
<table border="0"> <tr> <td>f</td> <td>Measurement Frequency</td> <td>Amp</td> <td>Preamp Gain</td> <td>Avg Lim</td> <td>Average Field Strength Limit</td> </tr> <tr> <td>Dist</td> <td>Distance to Antenna</td> <td>D Corr</td> <td>Distance Correct to 3 meters</td> <td>Pk Lim</td> <td>Peak Field Strength Limit</td> </tr> <tr> <td>Read</td> <td>Analyzer Reading</td> <td>Avg</td> <td>Average Field Strength @ 3 m</td> <td>Avg Mar</td> <td>Margin vs. Average Limit</td> </tr> <tr> <td>AF</td> <td>Antenna Factor</td> <td>Peak</td> <td>Calculated Peak Field Strength</td> <td>Pk Mar</td> <td>Margin vs. Peak Limit</td> </tr> <tr> <td>CL</td> <td>Cable Loss</td> <td>HPF</td> <td>High Pass Filter</td> <td></td> <td></td> </tr> </table>															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		
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. 40 MHz BANDWIDTH IN THE 2.4 GHz BAND

High Frequency Measurement Compliance Certification Services, 3 Meter_C Chamber																													
Company:	Broadcom																												
Project #:	08U11713																												
Date:	4/8/2008																												
Test Engineer:	Vien Tran																												
Configuration:	EUT insides HP platform (Olifant)																												
Mode:	Rx 1In HT40_2.4 GHz																												
<b>Test Equipment:</b>																													
Horn 1-18GHz			Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit																	
T73; S/N: 6717 @3m			T145 Agilent 3008A005									RX RSS 210																	
Hi Frequency Cables																													
2 foot cable			3 foot cable			12 foot cable			HPF			Reject Filter																	
Ninous 202575001			Can 187209002																										
<table border="1"> <tr> <td colspan="15">           Peak Measurements            RBW=VBW=1MHz            Average Measurements            RBW=1MHz, VBW=10Hz         </td> </tr> </table>															Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz, VBW=10Hz														
Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz, VBW=10Hz																													
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)														
1.080	3.0	52.4	46.9	24.1	2.2	-36.1	0.0	0.0	42.6	37.1	74	54	-31.4	-16.9	H														
1.330	3.0	52.5	38.4	25.0	2.3	-35.9	0.0	0.0	43.9	29.8	74	54	-30.1	-24.2	H														
1.600	3.0	51.9	36.6	26.0	2.5	-35.7	0.0	0.0	44.6	29.3	74	54	-29.4	-24.7	H														
2.437	3.0	47.7	38.8	28.4	2.9	-35.1	0.0	0.0	43.9	35.0	74	54	-30.1	-19.0	H														
2.493	3.0	51.0	36.3	28.6	2.9	-35.1	0.0	0.0	47.4	32.7	74	54	-26.6	-21.3	H														
4.995	3.0	48.2	33.7	33.5	3.7	-34.9	0.0	0.0	50.5	36.0	74	54	-23.5	-18.0	H														
1.080	3.0	52.2	46.6	24.1	2.2	-36.1	0.0	0.0	42.4	36.8	74	54	-31.6	-17.2	V														
1.330	3.0	51.6	37.5	25.0	2.3	-35.9	0.0	0.0	43.0	28.9	74	54	-31.0	-25.1	V														
1.600	3.0	52.5	37.0	26.0	2.5	-35.7	0.0	0.0	45.2	29.7	74	54	-28.8	-24.3	V														
2.437	3.0	47.1	36.3	28.4	2.9	-35.1	0.0	0.0	43.3	32.5	74	54	-30.7	-21.5	V														
2.493	3.0	52.4	35.8	28.6	2.9	-35.1	0.0	0.0	48.8	32.2	74	54	-25.2	-21.8	V														
4.995	3.0	48.3	33.9	33.5	3.7	-34.9	0.0	0.0	50.6	36.2	74	54	-23.4	-17.8	V														
f Measurement Frequency Dist Distance to Antenna Read Analyzer Reading AF Antenna Factor CL Cable Loss					Amp Preamp Gain D Corr Distance Correct to 3 meters Avg Average Field Strength @ 3 m Peak Calculated Peak Field Strength HPF High Pass Filter					Avg Lim Average Field Strength Limit Pk Lim Peak Field Strength Limit Avg Mar Margin vs. Average Limit Pk Mar Margin vs. Peak Limit																			

### 7.3.2. 40 MHz BANDWIDTH IN THE 5.8 GHz BAND

High Frequency Measurement Compliance Certification Services, 3 Meter_C Chamber															
Company:	Broadcom														
Project #:	08U11713														
Date:	4/8/2008														
Test Engineer:	Vien Tran														
Configuration:	EUT insides HP platform (Olifant)														
Mode:	Rx 11n HT40_5.8 GHz														
<b>Test Equipment:</b>															
Horn 1-18GHz		Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit							
T73; S/N: 6717 @3m		T145 Agilent 3008A005C						RX RSS 210							
Hi Frequency Cables															
2 foot cable		3 foot cable		12 foot cable		HPF		Reject Filter		Peak Measurements RBW=VBW=1MHz					
		Ninous 202575001		Can 187209002						Average Measurements RBW=1MHz, VBW=10Hz					
<b>f</b> GHz	<b>Dist</b> (m)	<b>Read Pk</b> dBuV	<b>Read Avg</b> dBuV	<b>AF</b> dB/m	<b>CL</b> dB	<b>Amp</b> dB	<b>D Corr</b> dB	<b>Fltr</b> dB	<b>Peak</b> dBuV/m	<b>Avg</b> dBuV/m	<b>Pk Lim</b> dBuV/m	<b>Avg Lim</b> dBuV/m	<b>Pk Mar</b> dB	<b>Avg Mar</b> dB	<b>Notes</b> (V/H)
1.198	3.0	54.3	39.3	24.5	2.2	-36.0	0.0	0.0	45.1	30.1	74	54	-28.9	-23.9	H
1.330	3.0	52.5	36.8	25.0	2.3	-35.9	0.0	0.0	43.9	28.2	74	54	-30.1	-25.8	H
1.600	3.0	50.1	35.4	26.0	2.5	-35.7	0.0	0.0	42.8	28.1	74	54	-31.2	-25.9	H
2.493	3.0	50.2	34.6	28.6	2.9	-35.1	0.0	0.0	46.6	31.0	74	54	-27.4	-23.0	H
1.198	3.0	57.2	39.5	24.5	2.2	-36.0	0.0	0.0	48.0	30.3	74	54	-26.0	-23.7	V
1.330	3.0	53.6	38.6	25.0	2.3	-35.9	0.0	0.0	45.0	30.0	74	54	-29.0	-24.0	V
1.600	3.0	51.5	36.6	26.0	2.5	-35.7	0.0	0.0	44.2	29.3	74	54	-29.8	-24.7	V
2.493	3.0	55.5	36.0	28.6	2.9	-35.1	0.0	0.0	51.9	32.4	74	54	-22.1	-21.6	V
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										

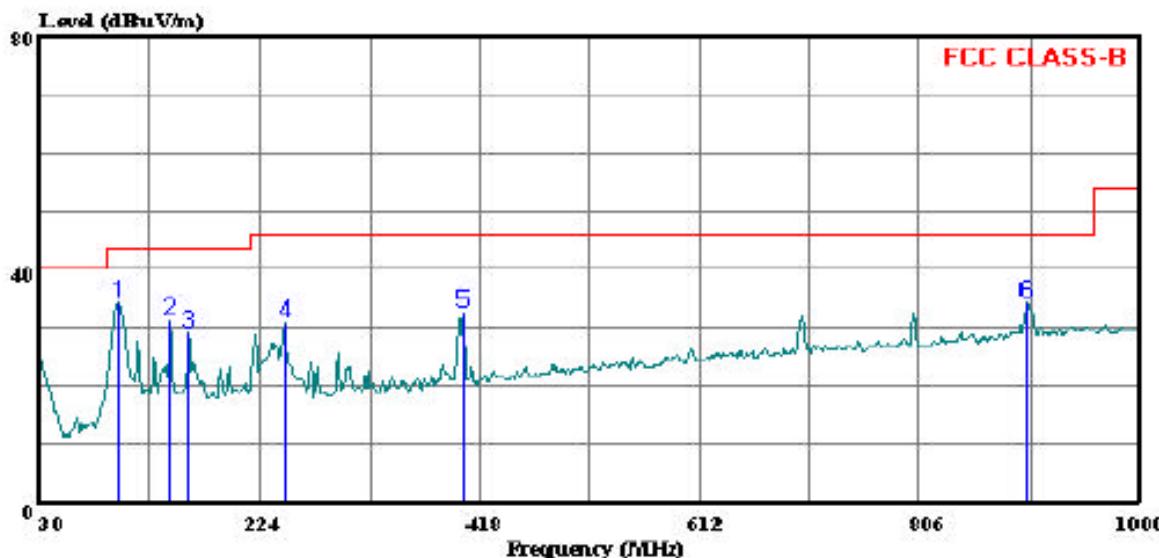
## 7.4. WORST-CASE BELOW 1 GHz

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



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

Data#: 4 File#: 08U11713.EMI Date: 04-04-2008 Time: 10:17:13



Trace: 3

Ref Trace:

Condition: FCC CLASS-B HORIZONTAL  
Test Operator:: Vien Tran  
Project #: : 08U11713\_C2PC  
Company: : Broadcom  
Model : : BCM94322MC  
Configuration:: EUT installed inside Olifant laptop  
Mode : : Normal  
Target: : FCC Class B

Page: 1

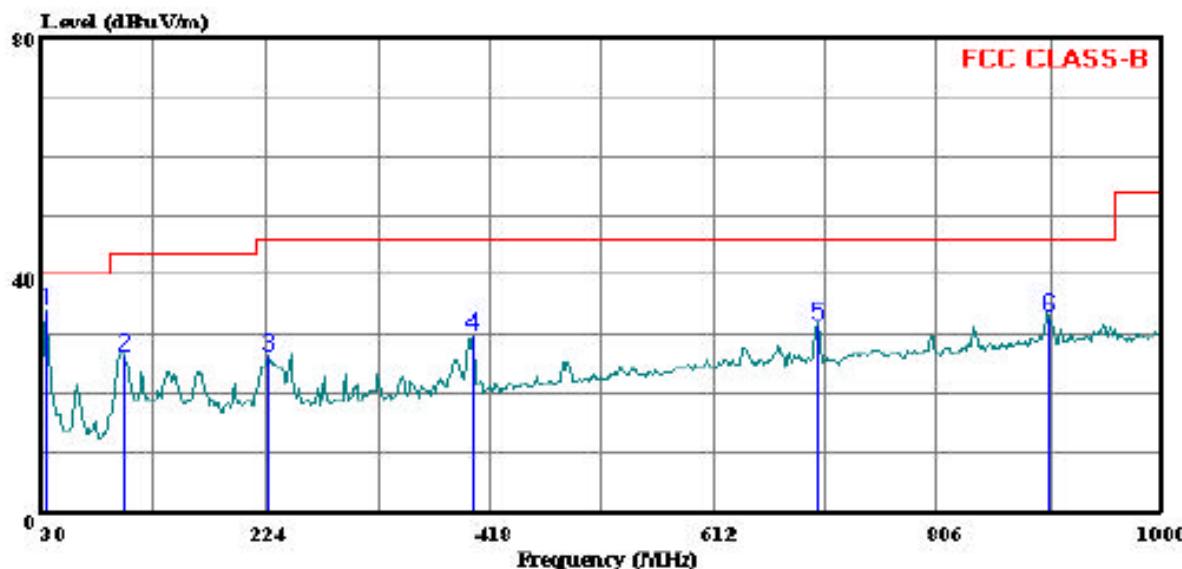
Freq	Read		Limit	Over	Remark
	Level	Factor			
MHz	dBuV	dB	dBuV/m	dBuV/m	dB
1	99.840	51.40	-17.24	34.16	43.50 -9.34 Peak
2	145.430	44.81	-13.55	31.26	43.50 -12.24 Peak
3	159.980	43.17	-14.14	29.03	43.50 -14.47 Peak
4	245.340	45.31	-14.42	30.89	46.00 -15.11 Peak
5	402.480	42.49	-10.07	32.42	46.00 -13.58 Peak
6	900.090	35.03	-0.79	34.24	46.00 -11.76 Peak

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



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

Data#: 6 File#: 08U11713.EMI Date: 04-04-2008 Time: 10:27:52



Trace: 5

Ref Trace:

Condition: FCC CLASS-B VERTICAL  
Test Operator:: Vien Tran  
Project #: : 08U11713\_C2PC  
Company: : Broadcom  
Model : : BCM94322MC  
Configuration:: EUT installed inside Olifant laptop  
Mode : : Normal  
Target: : FCC Class B

Page: 1

Freq	Read		Limit	Over	Remark
	Level	Factor			
MHz	dBuV	dB	dBuV/m	dBuV/m	dB
1	33.880	42.06	-8.07	33.99	40.00 -6.01 Peak
2	100.810	43.47	-17.01	26.46	43.50 -17.04 Peak
3	226.910	41.08	-14.90	26.17	46.00 -19.83 Peak
4	402.480	39.99	-10.07	29.92	46.00 -16.08 Peak
5	702.210	35.24	-3.77	31.46	46.00 -14.54 Peak
6	901.060	33.81	-0.81	32.99	46.00 -13.01 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 <sup>*</sup>	56 to 46 <sup>*</sup>
0.5-5	56	46
5-30	60	50

<sup>\*</sup> Decreases with the logarithm of the frequency.

### TEST PROCEDURE

ANSI C63.4

### RESULTS

#### 6 WORST EMISSIONS

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq. (MHz)	Reading			Closs (dB)	Limit QP	FCC_B AV	Margin		Remark
	PK (dBuV)	QP (dBuV)	AV (dBuV)				QP (dB)	AV (dB)	
0.18	50.18	--	28.33	0.00	64.35	54.35	-14.17	-26.02	L1
14.75	52.34	--	36.33	0.00	60.00	50.00	-7.66	-13.67	L1
20.59	50.95	--	30.27	0.00	60.00	50.00	-9.05	-19.73	L1
0.18	48.63	--	27.79	0.00	64.35	54.35	-15.72	-26.56	L2
14.75	51.28	--	38.78	0.00	60.00	50.00	-8.72	-11.22	L2
20.59	48.44	--	31.96	0.00	60.00	50.00	-11.56	-18.04	L2
6 Worst Data									

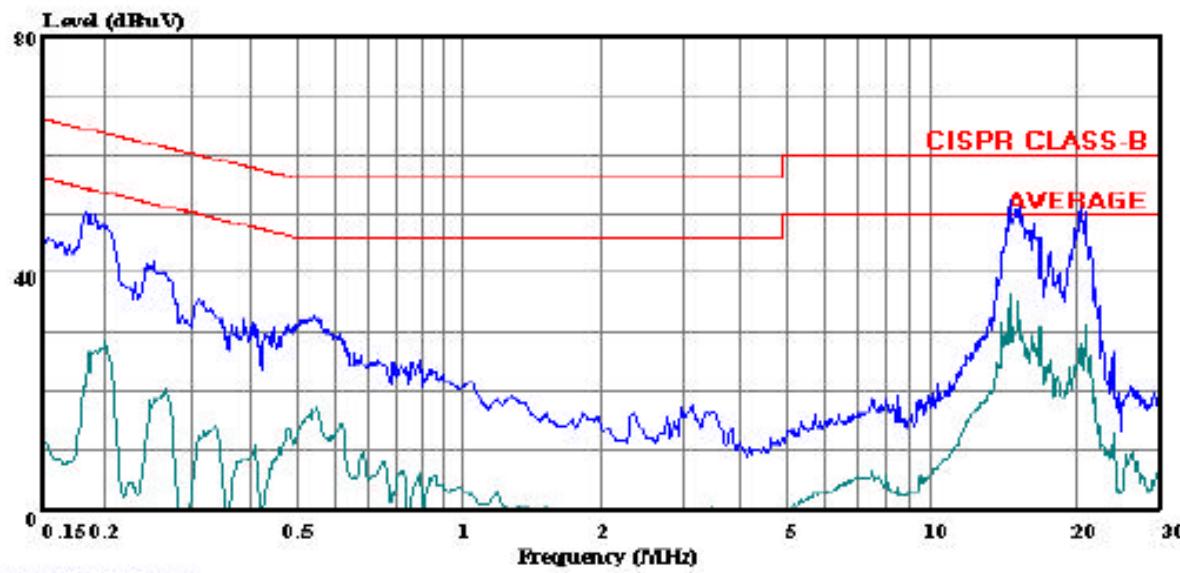
**LINE 1 RESULTS**



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

Data#: 7 File#: 115V.EMI

Date: 04-04-2008 Time: 08:23:30



(Line Conduction)

Trace: 5

Ref Trace:

Condition: CISPR CLASS-B  
Test Operator:: Vien Tran  
Project #: : 08U11713  
Company: : Broadcom  
Configuration:: EUT (Olifant laptop)  
Mode: : Normal  
Target: : FCC Class B  
Voltage: : 115VAC / 60Hz  
: Line 1: Peak (Blue); Average (Green)

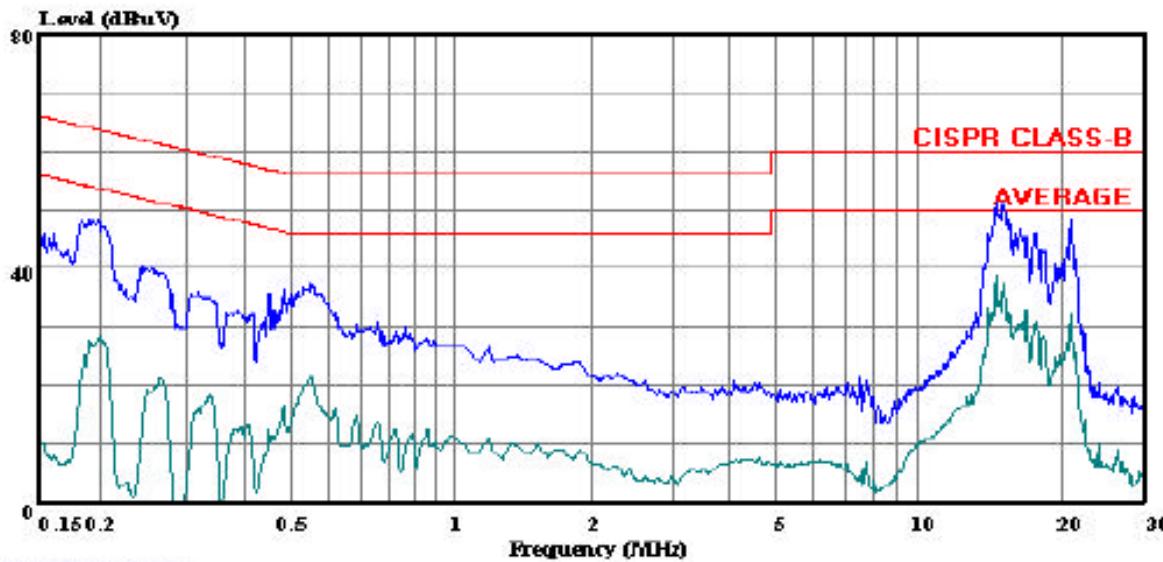
**LINE 2 RESULTS**



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

Data#: 16 File#: 115v.emi

Date: 04-04-2008 Time: 08:44:33



(Line Conduction)

Trace: 14

Ref Trace:

Condition: CISPR CLASS-B  
Test Operator:: Vien Tran  
Project #: : 08U11713  
Company: : Broadcom  
Configuration:: EUT (Olifant laptop)  
Mode: : Normal  
Target: : FCC Class B  
Voltage: : 115VAC / 60Hz  
: Line 2: Peak (Blue); Average (Green)