



**FCC CFR47 PART 15 SUBPART E
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: 08U11713-2
ISSUE DATE: APRIL 15, 2008**

Prepared for
**BROADCOM CORPORATION
190 MATHILDA PLACE
SUNNYVALE, CA 94086, 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>
--	4-15-08	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

MODEL: BCM94322MC

SERIAL NUMBER: 395514-001

DATE TESTED: April 02 - 11, 2008

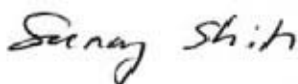
APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart E	Pass
RSS-210 Issue 7 Annex 9 and RSS-GEN Issue 2	Pass

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



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, FCC MO&O 06-96, 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	PIFA	Main Antenna: 81.EGG15.003
(WNC)		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

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 802.11g 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 MCS32.

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

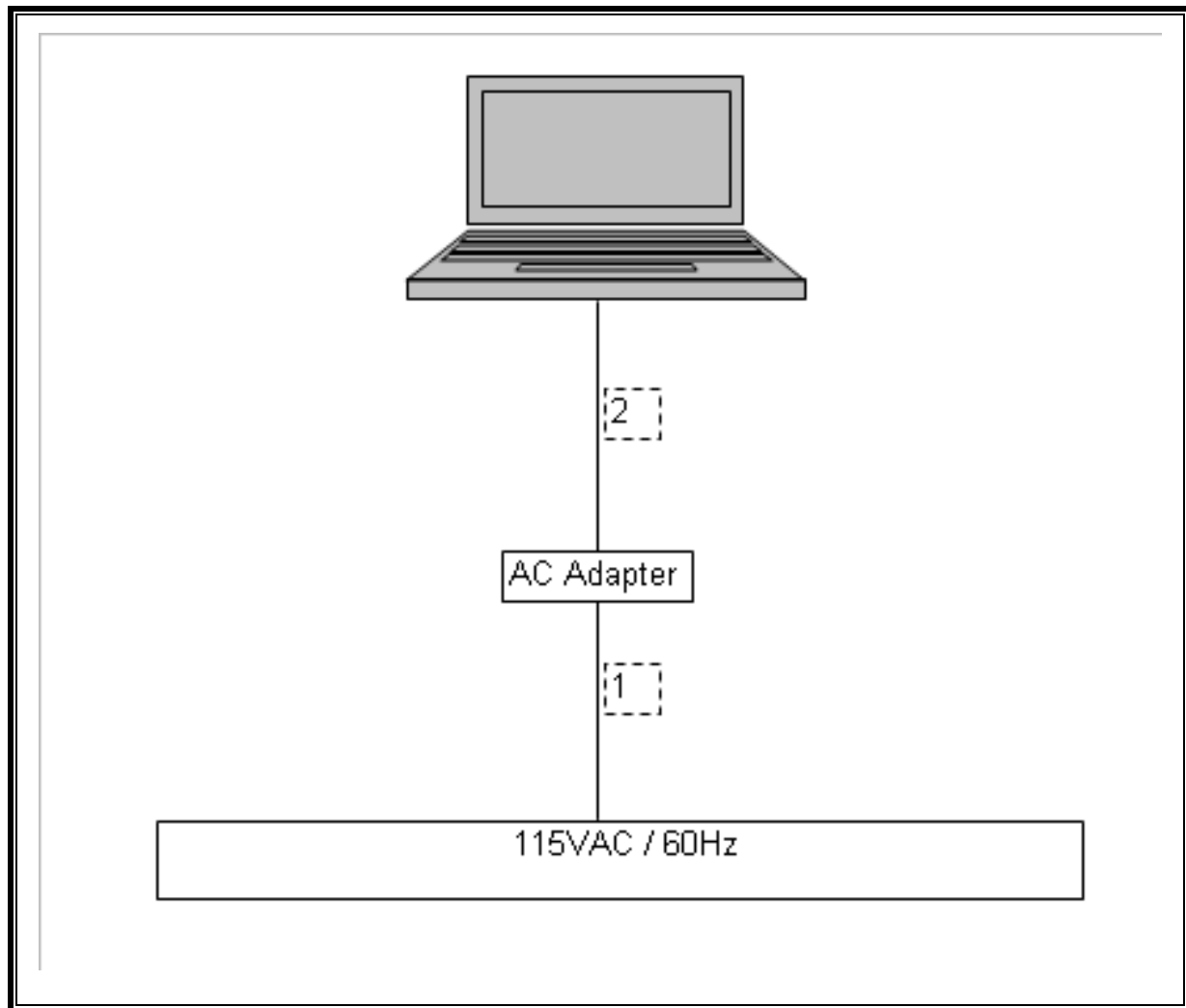
I/O CABLES

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	4/15/2007	4/15/2008
Bilog Antenna	Sunol Sciences	JB1	C01016	10/13/2007	10/13/2008
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C00749	8/3/2007	9/27/2008
Preamplifier, 1300 MHz	Agilent / HP	8447D	C01064	5/9/2007	5/9/2008
RF Filter Section, 2.9 GHz	Agilent / HP	85420E	C00958	2/6/2007	6/12/2008
Peak Power Meter	Agilent / HP	E4416A	C00963	2/14/2007	12/2/2008
Peak / Average Power Sensor	Agilent	E9327A	C00964	2/14/2007	12/2/2008
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	10/16/2007	1/27/2009
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	N02481	9/15/2006	9/15/2008
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	9/15/2006	9/15/2008
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01012	5/2/2006	8/7/2008

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 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 IN THE 5.15 – 5.25 GHz BAND

7.2.1. 802.11a MODE

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement															
Compliance Certification Services, Fremont 5m Chamber															
Company:		Broadcom													
Project #:		08U11713													
Date:		4/10/2008													
Test Engineer:		Vien Tran													
Configuration:		EUT insides HP platform (Olifant)													
Mode:		Tx 11a Legacy_5150-5250MHz_Low Band													
Test Equipment:															
Horn 1-18GHz		Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz		Horn > 18GHz				Limit					
T59; S/N: 3245 @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					
				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 CHANNEL, 5180 MHz															
15.540	3.0	42.4	31.7	38.5	12.9	-32.2	0.0	0.7	62.3	51.6	74	54	-11.7	-2.4	H
15.540	3.0	41.5	30.9	38.5	12.9	-32.2	0.0	0.7	61.4	50.8	74	54	-12.6	-3.2	V
MID CHANNEL, 5200 MHz															
15.600	3.0	42.7	32.0	38.4	12.9	-32.2	0.0	0.7	62.6	51.9	74	54	-11.4	-2.1	H
15.600	3.0	41.8	31.2	38.4	12.9	-32.2	0.0	0.7	61.7	51.1	74	54	-12.3	-2.9	V
HIGH CHANNEL, 5240 MHz															
15.720	3.0	43.3	32.6	38.3	13.0	-32.2	0.0	0.7	63.2	52.5	74	54	-10.8	-1.5	H
15.720	3.0	42.4	31.7	38.3	13.0	-32.2	0.0	0.7	62.3	51.5	74	54	-11.7	-2.5	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								

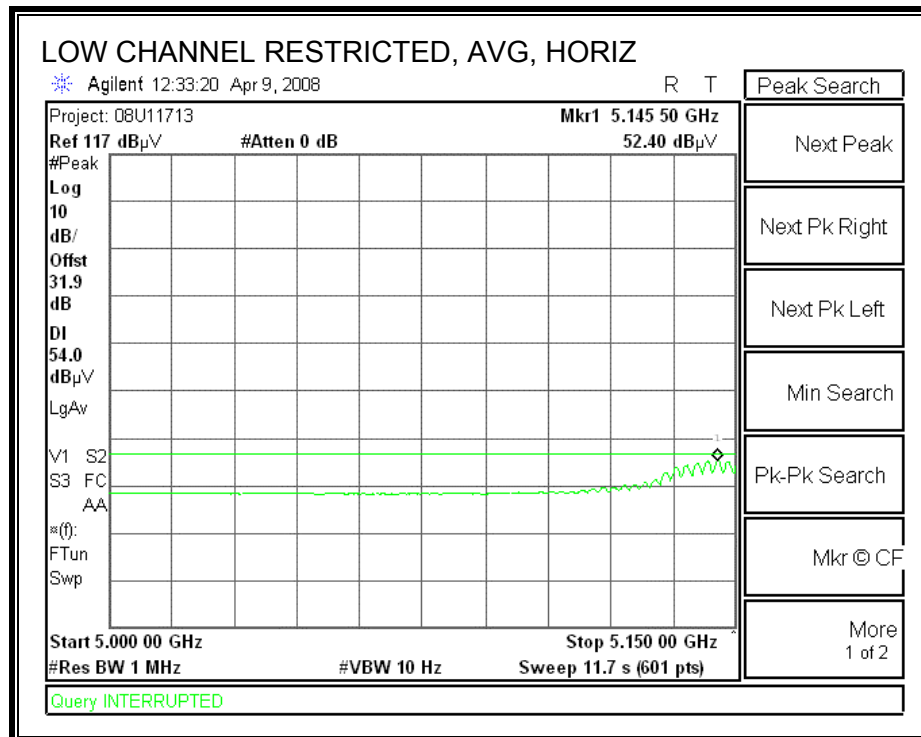
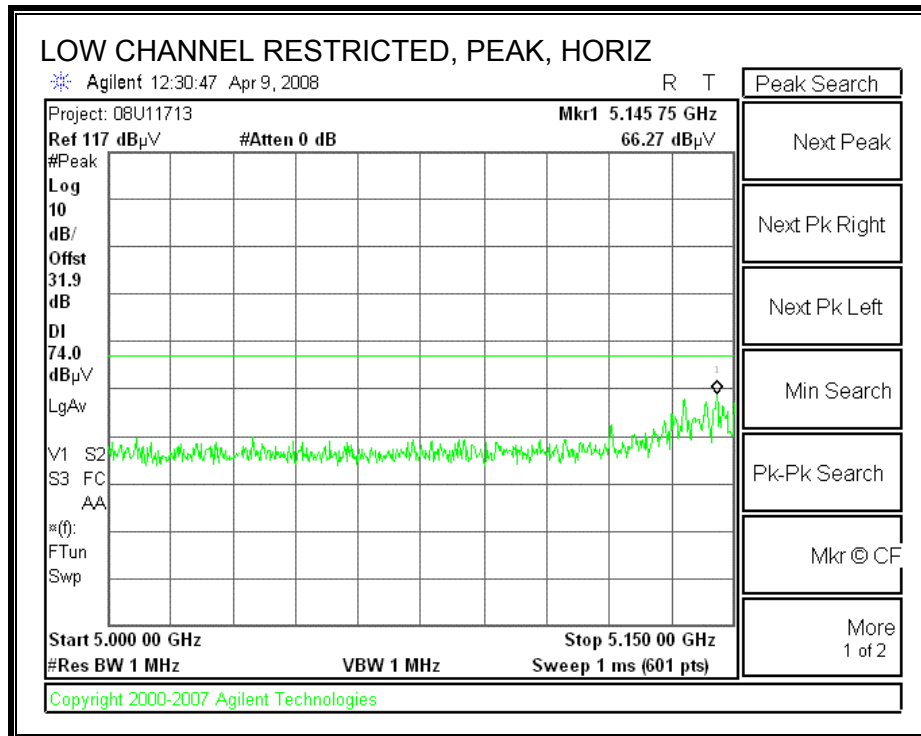
7.2.2. 802.11n HT20 MODE

HARMONICS AND SPURIOUS EMISSIONS

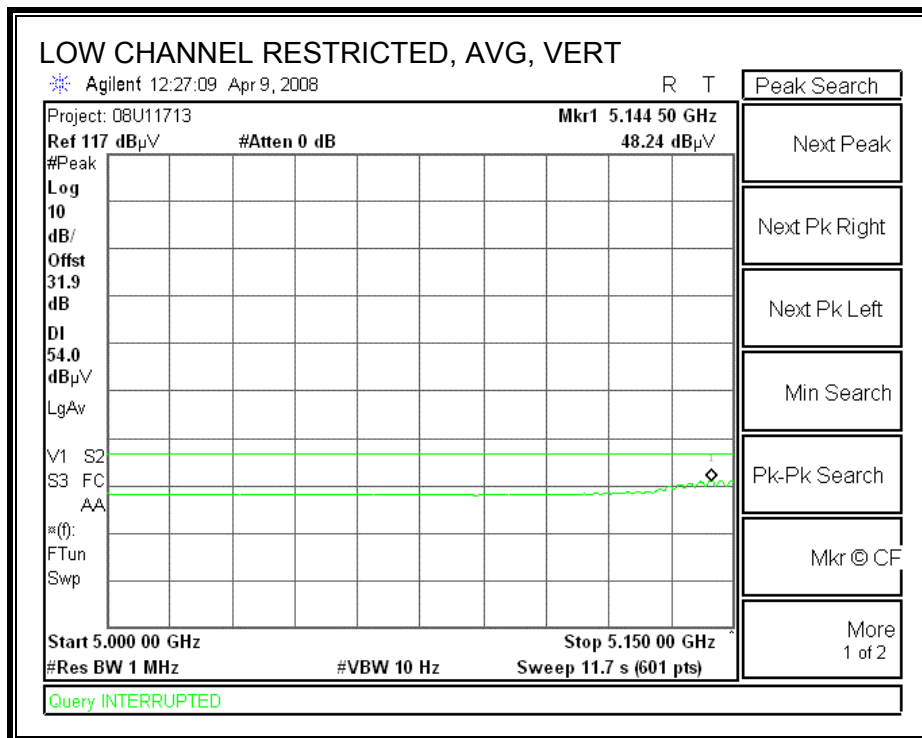
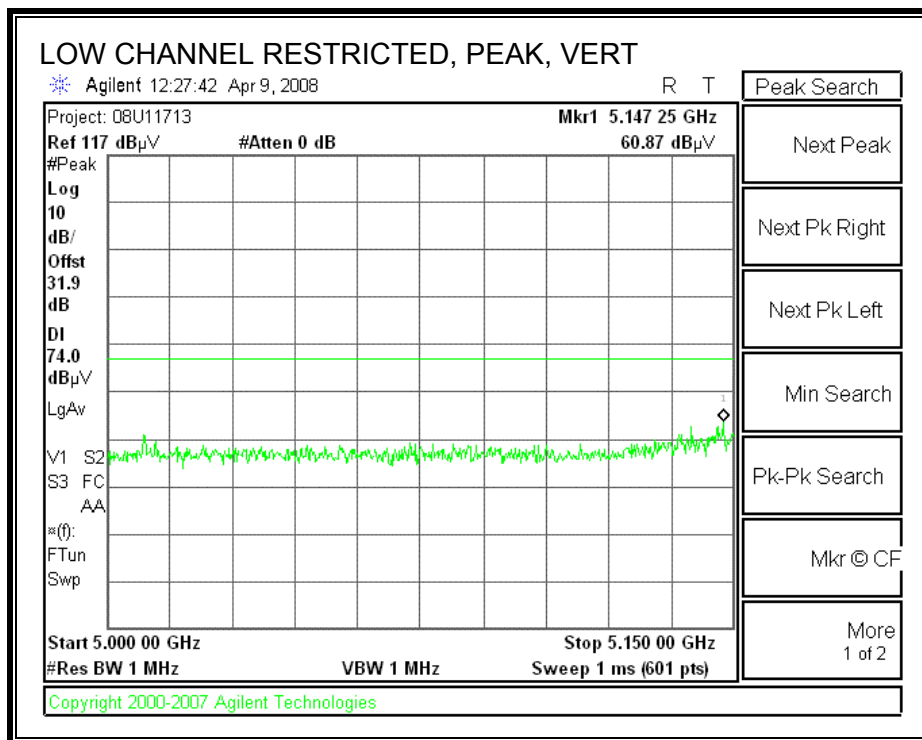
High Frequency Measurement																																														
Compliance Certification Services, Fremont 5m Chamber																																														
Company:		Broadcom																																												
Project #:		08U11713																																												
Date:		4/10/2008																																												
Test Engineer:		Vien Tran																																												
Configuration:		EUT insides HP platform (Olifant)																																												
Mode:		Tx 11n HT20_5150-5250MHz_Low Band																																												
Test Equipment:																																														
Horn 1-18GHz			Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit																																		
T59; S/N: 3245 @3m			T34 HP 8449B									FCC 15.205																																		
Hi Frequency Cables																																														
2 foot cable			3 foot cable			12 foot cable			HPF			Reject Filter		<u>Peak Measurements</u> RBW=VBW=1MHz <u>Average Measurements</u> RBW=1MHz ; VBW=10Hz																																
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CL	Cable Loss	HPF	High Pass Filter																																											

7.2.3. 802.11n HT40 MODE

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement																																													
Compliance Certification Services, Fremont 5m Chamber																																													
Company:		Broadcom																																											
Project #:		08U11713																																											
Date:		4/11/2008																																											
Test Engineer:		Vien Tran																																											
Configuration:		EUT insides HP platform (Olifant)																																											
Mode:		Tx 11n HT40_5150-5250MHz_Low Band																																											
Test Equipment:																																													
Horn 1-18GHz		Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz		Horn > 18GHz				Limit																																			
T136; M/N: 3117 @3m		T144 Miteq 3008A00931								FCC 15.205																																			
Hi Frequency Cables																																													
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LOW CHANNEL, 5190 MHz																																													
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15.570	3.0	42.1	31.5	38.9	12.7	-34.8	0.0	0.7	59.7	49.1	74	54	-14.3	-4.9	V																														
HIGH CHANNEL, 5230 MHz																																													
15.690	3.0	43.9	33.2	39.0	12.7	-34.7	0.0	0.7	61.7	51.0	74	54	-12.3	-3.0	H																														
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7.3. TRANSMITTER ABOVE 1 GHz IN THE 5.25 – 5.35 GHz BAND

7.3.1. 802.11a MODE

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement																
Compliance Certification Services, Fremont 5m Chamber																
Company:		Broadcom														
Project #:		08U11713														
Date:		4/10/2008														
Test Engineer:		Vien Tran														
Configuration:		EUT insides HP platform (Olifant)														
Mode:		Tx 11a Legacy_5250-5350MHz_High Band														
Test Equipment:																
Horn 1-18GHz			Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit				
T59; S/N: 3245 @3m			T34 HP 8449B									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	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 CHANNEL, 5260 MHz																
15.780	3.0	40.7	31.2	38.3	13.0	-32.2	0.0	0.7	60.6	51.1	74	54	-13.4	-2.9	H	
15.780	3.0	39.8	30.3	38.3	13.0	-32.2	0.0	0.7	59.7	50.2	74	54	-14.3	-3.8	V	
MID CHANNEL, 5300 MHz																
10.600	3.0	39.8	28.5	37.2	10.9	-32.6	0.0	0.8	56.1	44.8	74	54	-17.9	-9.2	H	
15.900	3.0	41.5	31.6	38.2	13.0	-32.1	0.0	0.7	61.4	51.5	74	54	-12.6	-2.5	H	
10.600	3.0	38.3	27.2	37.2	10.9	-32.6	0.0	0.8	54.6	43.5	74	54	-19.4	-10.5	V	
15.900	3.0	40.8	30.6	38.2	13.0	-32.1	0.0	0.7	60.7	50.5	74	54	-13.3	-3.5	V	
HIGH CHANNEL, 5320 MHz																
10.640	3.0	38.7	27.4	37.3	11.0	-32.6	0.0	0.8	55.1	43.8	74	54	-18.9	-10.2	H	
15.960	3.0	40.4	30.5	38.2	13.1	-32.1	0.0	0.7	60.2	50.3	74	54	-13.8	-3.7	H	
10.640	3.0	37.2	26.1	37.3	11.0	-32.6	0.0	0.8	53.6	42.5	74	54	-20.4	-11.5	V	
15.960	3.0	39.7	29.5	38.2	13.1	-32.1	0.0	0.7	59.5	49.3	74	54	-14.5	-4.7	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									

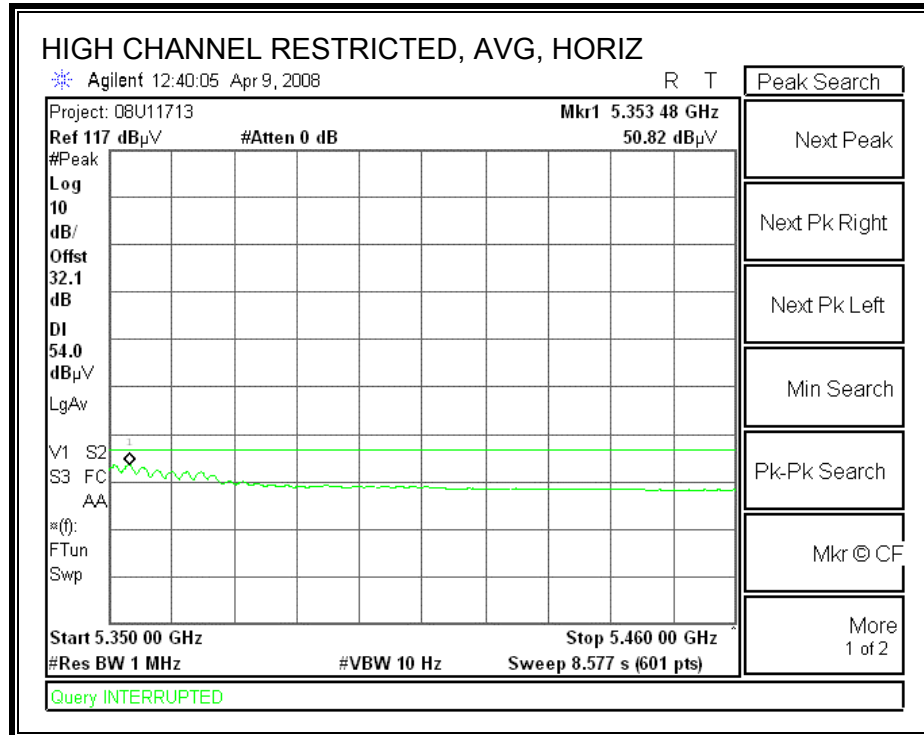
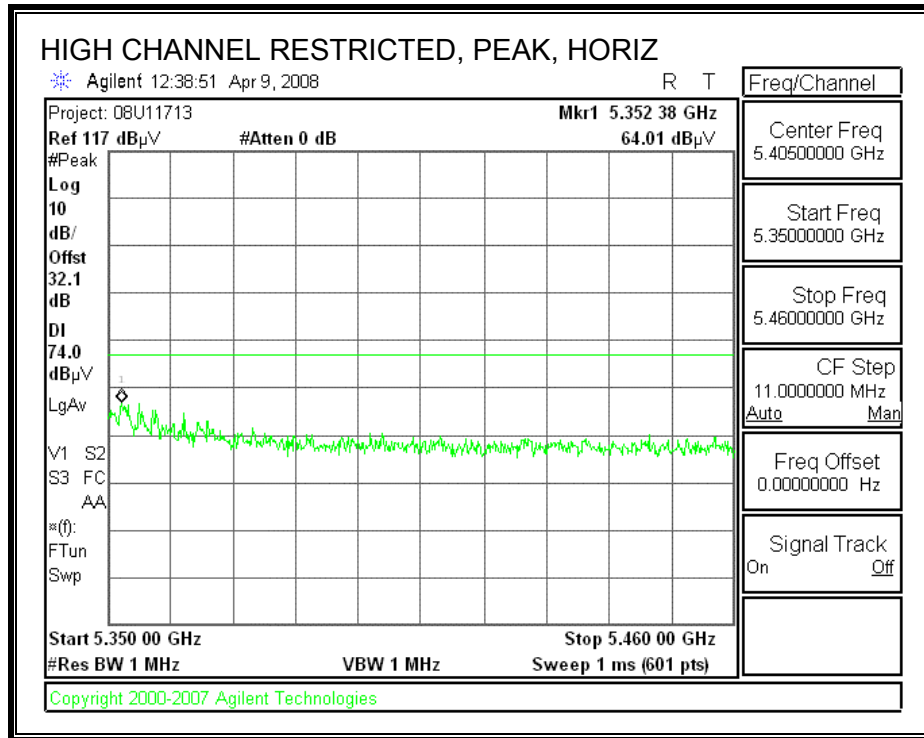
7.3.2. 802.11n HT20 MODE

HARMONICS AND SPURIOUS EMISSIONS

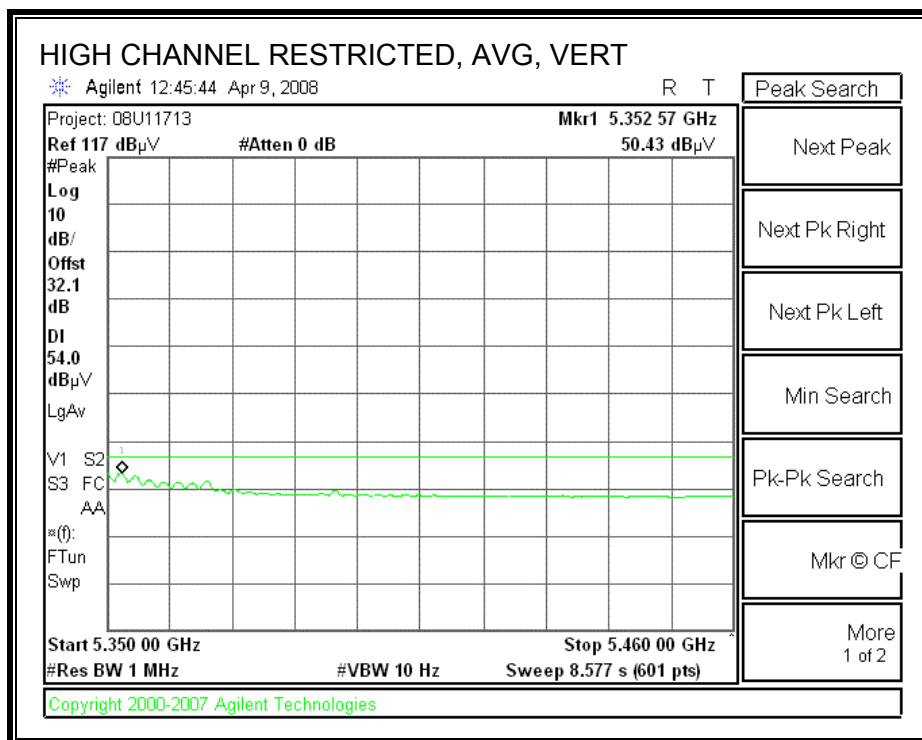
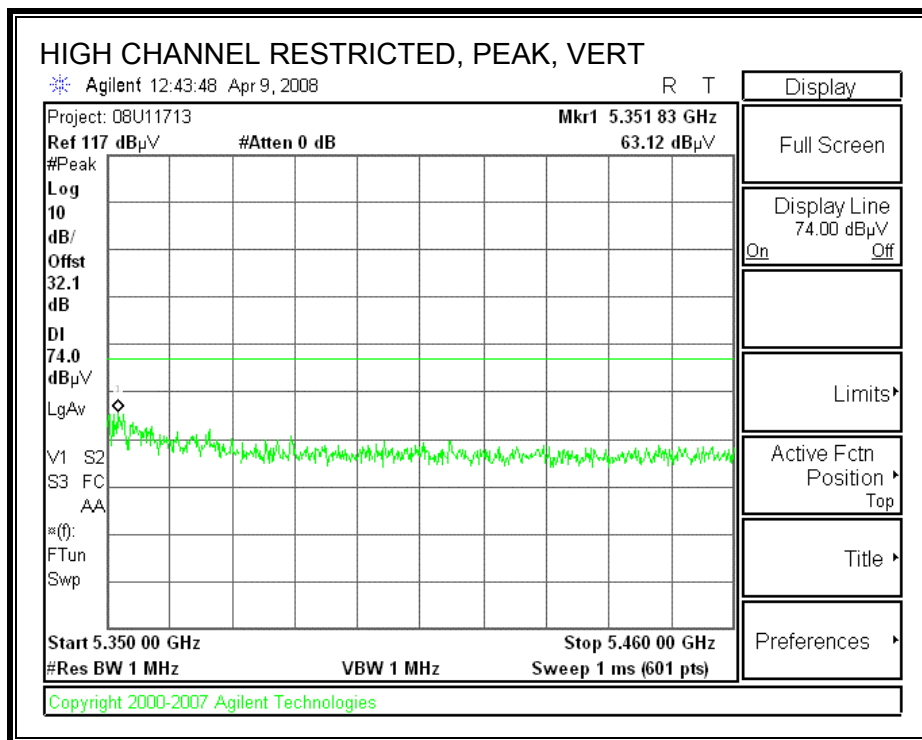
High Frequency Measurement																																														
Compliance Certification Services, Fremont 5m Chamber																																														
Company:		Broadcom																																												
Project #:		08U11713																																												
Date:		4/10/2008																																												
Test Engineer:		Vien Tran																																												
Configuration:		EUT insides HP platform (Olifant)																																												
Mode:		Tx 11n HT20_5250-5350MHz_High Band																																												
Test Equipment:																																														
Horn 1-18GHz			Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit																																		
T59; S/N: 3245 @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																																	
						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	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 CHANNEL, 5260 MHz																																														
15.780	3.0	41.5	32.0	38.3	13.0	-32.2	0.0	0.7	61.3	51.8	74	54	-12.7	-2.2	H																															
15.780	3.0	40.6	31.1	38.3	13.0	-32.2	0.0	0.7	60.4	50.9	74	54	-13.6	-3.1	V																															
MID CHANNEL, 5300 MHz																																														
10.600	3.0	40.6	29.3	37.2	10.9	-32.6	0.0	0.8	56.9	45.6	74	54	-17.1	-8.4	H																															
15.900	3.0	42.3	32.4	38.2	13.0	-32.1	0.0	0.7	62.1	52.2	74	54	-11.9	-1.8	H																															
10.600	3.0	39.1	28.0	37.2	10.9	-32.6	0.0	0.8	55.4	44.3	74	54	-18.6	-9.7	V																															
15.900	3.0	41.6	31.4	38.2	13.0	-32.1	0.0	0.7	61.4	51.2	74	54	-12.6	-2.8	V																															
HIGH CHANNEL, 5320 MHz																																														
10.640	3.0	39.4	28.1	37.3	11.0	-32.6	0.0	0.8	55.8	44.5	74	54	-18.2	-9.5	H																															
15.960	3.0	41.1	31.2	38.2	13.1	-32.1	0.0	0.7	61.0	51.1	74	54	-13.0	-2.9	H																															
10.640	3.0	37.9	26.8	37.3	11.0	-32.6	0.0	0.8	54.3	43.2	74	54	-19.7	-10.8	V																															
15.960	3.0	40.4	30.2	38.2	13.1	-32.1	0.0	0.7	60.3	50.1	74	54	-13.7	-3.9	V																															
<table style="width: 100%; border: none;"> <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																																											

7.3.3. 802.11n HT40 MODE

RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement																																													
Compliance Certification Services, Fremont 5m Chamber																																													
Company:		Broadcom																																											
Project #:		08U11713																																											
Date:		4/10/2008																																											
Test Engineer:		Vien Tran																																											
Configuration:		EUT insides HP platform (Olifant)																																											
Mode:		Tx 11n HT40_5250-5350MHz_High Band																																											
Test Equipment:																																													
Horn 1-18GHz				Pre-amplifier 1-26GHz				Pre-amplifier 26-40GHz				Horn > 18GHz				Limit																													
T59; S/N: 3245 @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																													
								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 CHANNEL, 5270 MHz																																													
15.810	3.0	42.3	31.6	38.3	13.0	-32.2	0.0	0.7	62.2	51.5	74	54	-11.8	-2.5	H																														
15.810	3.0	41.4	30.8	38.3	13.0	-32.2	0.0	0.7	61.3	50.7	74	54	-12.7	-3.3	V																														
HIGH CHANNEL, 5310 MHz																																													
10.620	3.0	40.1	30.2	37.3	10.9	-32.6	0.0	0.8	56.5	46.6	74	54	-17.5	-7.4	H																														
15.930	3.0	41.3	31.0	38.2	13.1	-32.1	0.0	0.7	61.1	50.9	74	54	-12.9	-3.1	H																														
10.620	3.0	39.2	29.7	37.3	10.9	-32.6	0.0	0.8	55.6	46.1	74	54	-18.4	-7.9	V																														
15.930	3.0	41.5	30.4	38.2	13.1	-32.1	0.0	0.7	61.4	50.3	74	54	-12.6	-3.7	V																														
<table style="width: 100%; border: none;"> <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																																										

7.4. TRANSMITTER ABOVE 1 GHz IN THE 5.47 – 5.725 GHz BAND

7.4.1. 802.11a MODE

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement																																													
Compliance Certification Services, Fremont 5m Chamber																																													
Company:		Broadcom																																											
Project #:		08U11713																																											
Date:		4/10/2008																																											
Test Engineer:		Vien Tran																																											
Configuration:		EUT insides HP platform (Olifant)																																											
Mode:		Tx 11a Legacy_5.470-5.725GHz																																											
Test Equipment:																																													
Horn 1-18GHz		Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit																																					
T136; M/N: 3117 @3m		T144 Miteq 3008A00931						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																																			
				A-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 CHANNEL, 5500 MHz																																													
11.000	3.0	43.1	30.6	37.2	11.1	-36.3	0.0	0.7	55.8	43.3	74	54	-18.2	-10.7	H																														
11.000	3.0	41.3	29.5	37.2	11.1	-36.3	0.0	0.7	54.0	42.2	74	54	-20.0	-11.8	V																														
MID CHANNEL, 5600 MHz																																													
11.200	3.0	44.2	31.1	37.3	11.3	-36.1	0.0	0.7	57.4	44.3	74	54	-16.6	-9.7	H																														
11.200	3.0	42.0	30.5	37.3	11.3	-36.1	0.0	0.7	55.2	43.7	74	54	-18.8	-10.3	V																														
HIGH CHANNEL, 5700 MHz																																													
11.400	3.0	44.4	32.1	37.3	11.5	-35.9	0.0	0.7	58.0	45.7	74	54	-16.0	-8.3	H																														
11.400	3.0	42.7	30.8	37.3	11.5	-35.9	0.0	0.7	56.3	44.4	74	54	-17.7	-9.6	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																																										

7.4.2. 802.11n HT20 MODE

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement																
Compliance Certification Services, Fremont 5m Chamber																
Company:		Broadcom														
Project #:		08U11713														
Date:		4/10/2008														
Test Engineer:		Vien Tran														
Configuration:		EUT insides HP platform (Olifant)														
Mode:		Tx 11n HT20_5.470-5.725GHz														
Test Equipment:																
Horn 1-18GHz			Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit				
T136; M/N: 3117 @3m			T144 Miteq 3008A00931									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	
						A-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	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 CHANNEL, 5500 MHz																
11.000	3.0	41.1	29.2	37.2	11.1	-36.3	0.0	0.7	53.9	42.0	74	54	-20.1	-12.0	H	
11.000	3.0	42.3	30.1	37.2	11.1	-36.3	0.0	0.7	55.1	42.9	74	54	-18.9	-11.1	V	
MID CHANNEL, 5600 MHz																
11.200	3.0	40.8	30.1	37.3	11.3	-36.1	0.0	0.7	54.0	43.3	74	54	-20.0	-10.7	H	
11.200	3.0	43.4	31.3	37.3	11.3	-36.1	0.0	0.7	56.6	44.5	74	54	-17.4	-9.5	V	
HIGH CHANNEL, 5700 MHz																
11.400	3.0	41.5	30.2	37.3	11.5	-35.9	0.0	0.7	55.1	43.8	74	54	-18.9	-10.2	H	
11.400	3.0	43.4	31.3	37.3	11.5	-35.9	0.0	0.7	57.0	44.9	74	54	-17.0	-9.1	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											

7.4.3. 802.11n HT40 MODE

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement																																														
Compliance Certification Services, Fremont 5m Chamber																																														
Company:		Broadcom																																												
Project #:		08U11713																																												
Date:		4/10/2008																																												
Test Engineer:		Vien Tran																																												
Configuration:		EUT insides HP platform (Olifant)																																												
Mode:		Tx 11n HT40_5.470-5.725GHz																																												
Test Equipment:																																														
Horn 1-18GHz			Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit																																		
T136; M/N: 3117 @3m			T144 Miteq 3008A00931									FCC 15.205																																		
Hi Frequency Cables																																														
2 foot cable			3 foot cable			12 foot cable			HPF			Reject Filter			<u>Peak Measurements</u> RBW=VBW=1MHz <u>Average Measurements</u> RBW=1MHz ; VBW=10Hz																															
						A-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	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 CHANNEL, 5510 MHz																																														
11.020	3.0	41.4	29.5	37.2	11.1	-36.3	0.0	0.7	54.3	42.4	74	54	-19.7	-11.6	H																															
11.020	3.0	42.6	30.4	37.2	11.1	-36.3	0.0	0.7	55.5	43.3	74	54	-18.5	-10.7	V																															
MID CHANNEL, 5590 MHz																																														
11.180	3.0	41.1	30.4	37.3	11.3	-36.1	0.0	0.7	54.3	43.6	74	54	-19.7	-10.4	H																															
11.180	3.0	43.7	31.6	37.3	11.3	-36.1	0.0	0.7	56.9	44.8	74	54	-17.1	-9.2	V																															
HIGH CHANNEL, 5670 MHz																																														
11.340	3.0	41.8	30.5	37.3	11.5	-36.0	0.0	0.7	55.3	44.0	74	54	-18.7	-10.0	H																															
11.340	3.0	43.7	31.6	37.3	11.5	-36.0	0.0	0.7	57.2	45.1	74	54	-16.8	-8.9	V																															
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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																																											

7.5. RECEIVER ABOVE 1 GHz IN THE 5.47 – 5.725 GHz BAND

7.5.1. 802.11n HT40 MODE

High Frequency Measurement																
Compliance Certification Services, 3 Meter_C Chamber																
Company:		Broadcom														
Project #:		08U11713														
Date:		4/11/2008														
Test Engineer:		Vien Tran														
Configuration:		EUT insides HP platform (Olifant)														
Mode:		Rx 11n HT40_5.3 GHz														
Test Equipment:																
Horn 1-18GHz			Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit				
T73; S/N: 6717 @3m			T145 Agilent 3008A0050									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	
			Ninous 202575001			Can 187209002										
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)	
1.198	3.0	60.4	45.4	24.5	2.2	-36.0	0.0	0.0	51.2	36.2	74	54	-22.8	-17.8	H	
1.330	3.0	58.6	42.9	25.0	2.3	-35.9	0.0	0.0	50.0	34.3	74	54	-24.0	-19.7	H	
1.600	3.0	56.2	41.5	26.0	2.5	-35.7	0.0	0.0	48.9	34.2	74	54	-25.1	-19.8	H	
2.493	3.0	56.3	40.7	28.6	2.9	-35.1	0.0	0.0	52.7	37.1	74	54	-21.3	-16.9	H	
1.198	3.0	63.3	45.6	24.5	2.2	-36.0	0.0	0.0	54.1	36.4	74	54	-19.9	-17.6	V	
1.330	3.0	59.7	44.7	25.0	2.3	-35.9	0.0	0.0	51.1	36.1	74	54	-22.9	-17.9	V	
1.600	3.0	57.6	42.7	26.0	2.5	-35.7	0.0	0.0	50.3	35.4	74	54	-23.7	-18.6	V	
2.493	3.0	61.6	42.1	28.6	2.9	-35.1	0.0	0.0	58.0	38.5	74	54	-16.0	-15.5	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									

7.6. WORST-CASE BELOW 1 GHz

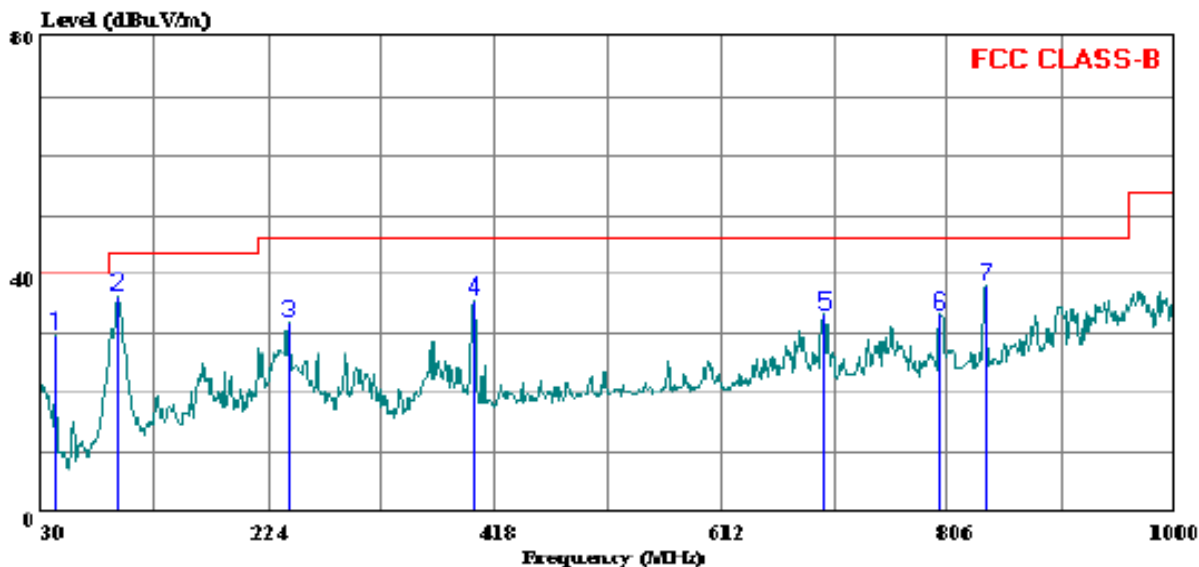
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)



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

Data#: 17 File#: 08u11713.emi

Date: 04-11-2008 Time: 14:28:04



Trace: 16

Ref Trace:

Condition: FCC CLASS-B HORIZONTAL
Test Operator:: Thanh Nguyen
Project #: : 08U11713_C2PC
Company: : Broadcom
Model : BCM94322MC
Configuration: EUT installed inside Olifant laptop
Mode : : Transmit 5GHz band
Target: : FCC Class B

Page: 1

	Freq	Read		Limit	Over	
	MHz	Level	Factor	Level	Line	Limit
		dBuV	dB	dBuV/m	dBuV/m	dB
1	42.610	47.50	-17.56	29.94	40.00	-10.06
2	94.020	58.33	-22.03	36.30	43.50	-7.20
3	241.460	50.00	-18.06	31.94	46.00	-14.06
4	401.510	49.17	-13.39	35.78	46.00	-10.22
5	700.270	41.67	-8.46	33.21	46.00	-12.79
6	799.210	40.17	-6.87	33.29	46.00	-12.71
7	838.010	44.17	-6.23	37.94	46.00	-8.06
						Peak

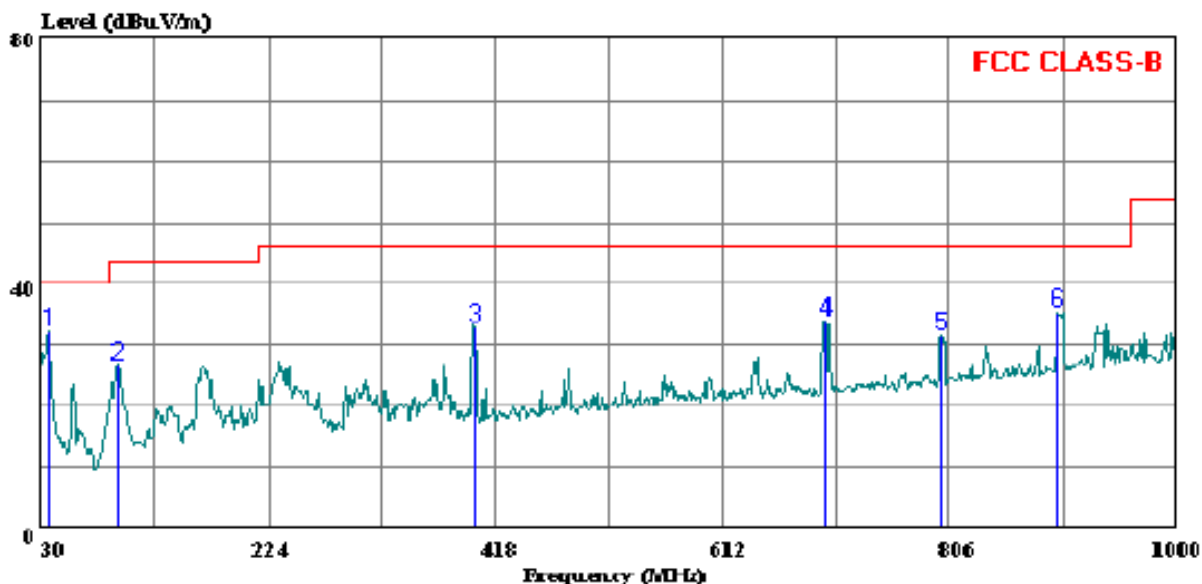
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)



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

Data#: 15 File#: 08u11713.emi

Date: 04-11-2008 Time: 14:15:29



Trace: 14

Ref Trace:

Condition: FCC CLASS-B VERTICAL
Test Operator:: Thanh Nguyen
Project #: : 08U11713_C2PC
Company: : Broadcom
Model : BCM94322MC
Configuration: EUT installed inside Olifant laptop
Mode : : Transmit 5GHz band
Target: : FCC Class B

Page: 1

	Freq	Read		Limit	Over	
	MHz	Level	Factor	Level	Line	Limit Remark
		dBuV	dB	dBuV/m	dBuV/m	dB
1	35.820	44.35	-12.14	32.21	40.00	-7.79 Peak
2	94.990	48.58	-21.79	26.79	43.50	-16.71 Peak
3	400.540	46.33	-13.46	32.87	46.00	-13.13 Peak
4	700.270	42.33	-8.46	33.88	46.00	-12.12 Peak
5	799.210	38.33	-6.87	31.46	46.00	-14.54 Peak
6	898.150	40.17	-4.98	35.18	46.00	-10.82 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

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

6 WORST EMISSIONS

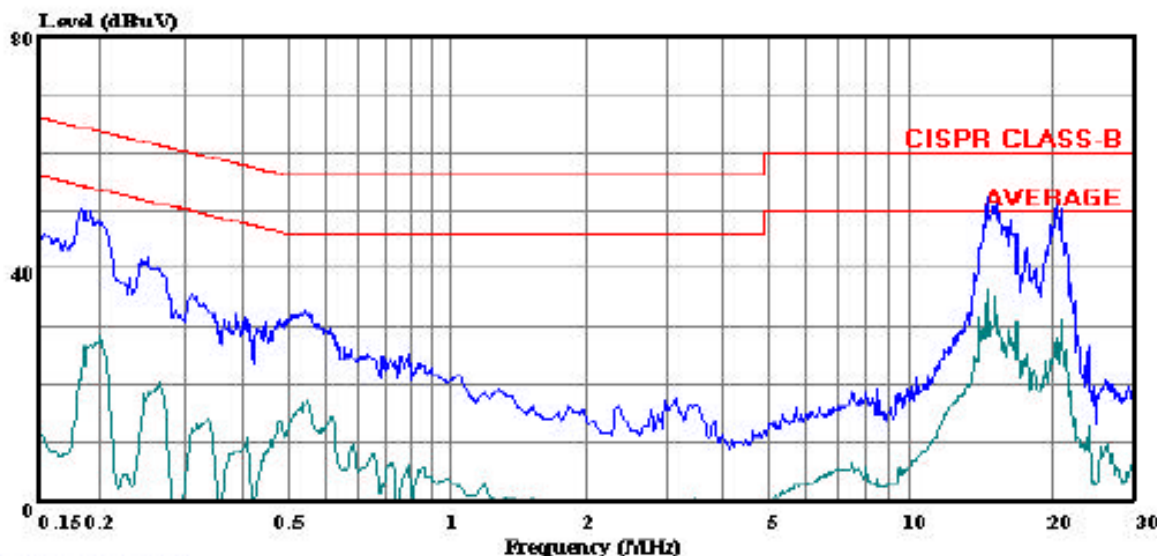
CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	FCC_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.18	50.18	--	28.33	0.00	64.35	54.35	-14.17	-26.02	L1
14.75	52.34	--	36.33	0.00	60.00	50.00	-7.66	-13.67	L1
20.59	50.95	--	30.27	0.00	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
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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:

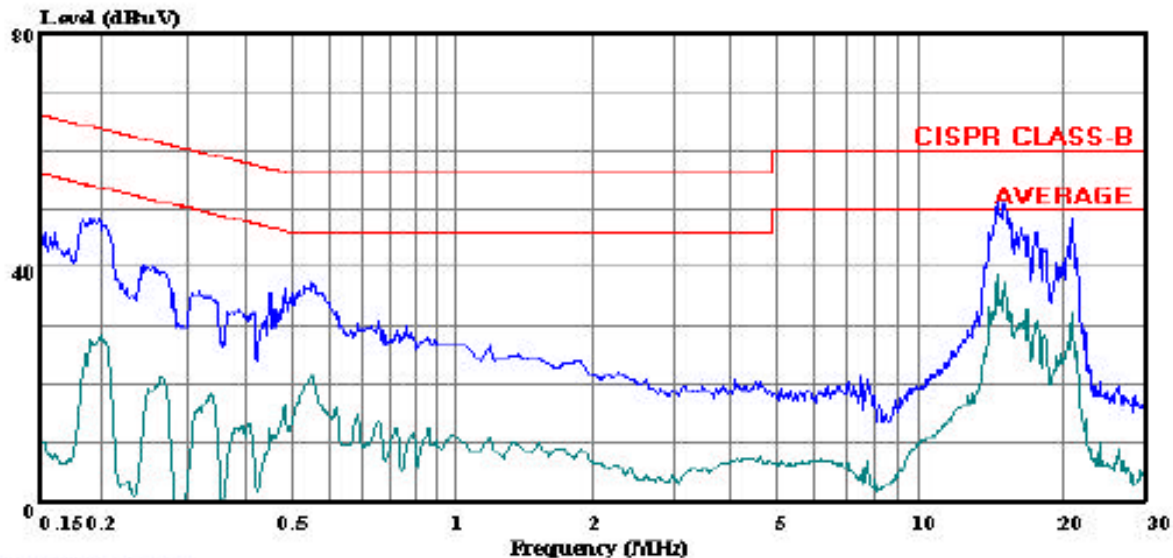
Condition: CISPR CLASS-B
Test Operator:: Vien Tran
Project #: : 08U11713
Company: : Broadcom
Configuration:: BUT (Olifant laptop)
Mode: : Normal
Target: : FCC Class B
Voltage: : 115VAC / 60Hz
: Line 1: Peak (Blue); Average (Green)

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)