



**FCC CFR47 PART 15 SUBPART C
CLASS II PERMISSIVE CHANGE
TEST REPORT**

FOR

BROADCOM 54G WLAN MINI PCI CARD

MODEL NUMBER: BCM94306MPSG

BRAND NAME: BROADCOM

FCC ID: QDS-BRCM1005-H

REPORT NUMBER: 03U2209-1

ISSUE DATE: SEPTEMBER 15, 2003

Prepared for
**BROADCOM CORPORATION
190 MATHILDA PLACE
SUNNYVALE, CALIFORNIA 94086
U.S.A**

Prepared by
**COMPLIANCE CERTIFICATION SERVICES
561F MONTEREY ROAD,
MORGAN HILL, CA 95037, USA
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TABLE OF CONTENTS

1. TEST RESULT CERTIFICATION	3
2. CLASS II PERMISSIVE CHANGE.....	4
3. TEST METHODOLOGY	5
4. FACILITIES AND ACCREDITATION	5
4.1. <i>FACILITIES AND EQUIPMENT</i>	<i>5</i>
4.2. <i>TABLE OF ACCREDITATIONS AND LISTINGS.....</i>	<i>6</i>
4.3. <i>MEASUREMENT UNCERTAINTY</i>	<i>7</i>
4.4. <i>TEST AND MEASUREMENT EQUIPMENT.....</i>	<i>8</i>
5. SETUP OF EQUIPMENT UNDER TEST.....	9
5.1. <i>RADIATED EMISSIONS.....</i>	<i>13</i>
5.2. <i>POWERLINE CONDUCTED EMISSIONS.....</i>	<i>40</i>
6. SETUP PHOTOS.....	44

1. TEST RESULT CERTIFICATION

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

EUT DESCRIPTION: BROADCOM 54G WLAN MINI PCI CARD

MODEL: BCM94306MP5G

DATE TESTED: SEPTEMBER 04, 2003

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART C	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: This document reports conditions under which testing was conducted and results of tests performed. 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.

Approved & Released For CCS By:

Tested By:



THU CHAN
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES



YAN ZHENG
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

The EUT is an 802.11g WLAN Mini PCI Card operating in the 2400 – 2483.5 MHz band with a peak output power of 25.55dBm (359mW), and has a peak antenna gain of 0.48dBi. The changes are as follows:

Adding additional host to Sige version model: BCM94306MPSG (FCC ID: QDS-BRCM-1005-H).
Antenna gain reported in this filing is 0.48dBi.

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4/1992, FCC CFR 47 Part 2 and FCC CFR 47 Part 15.







4. FACILITIES AND ACCREDITATION

4.1. FACILITIES AND EQUIPMENT

The open area test sites and conducted measurement facilities used to collect the radiated data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

4.2. TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3/10 meter Open Area Test Sites to perform FCC Part 15/18 measurements	 1300
Japan	VCCI	CISPR 22 Two OATS and one conducted Site	 R-1014, R-619, C-640
Norway	NEMKO	EN50081-1, EN50081-2, EN50082-1, EN50082-2, IEC61000-6-1, IEC61000-6-2, EN50083-2, EN50091-2, EN50130-4, EN55011, EN55013, EN55014-1, EN55104, EN55015, EN61547, EN55022, EN55024, EN61000-3-2, EN61000-3-3, EN60945, EN61326-1	 ELA 117
Norway	NEMKO	EN60601-1-2 and IEC 60601-1-2, the Collateral Standards for Electro-Medical Products. MDD, 93/42/EEC, AIMD 90/385/EEC	 ELA-171
Taiwan	BSMI	CNS 13438	 SL2-IN-E-1012
Canada	Industry Canada	RSS210 Low Power Transmitter and Receiver	 IC2324 A,B,C, and F

The measurement instruments utilized to perform the tests documented in this report have been calibrated in accordance with the manufacturer's recommendations, and are traceable to national standards.

4.3. MEASUREMENT UNCERTAINTY

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

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%.

4.4. TEST AND MEASUREMENT EQUIPMENT

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

TEST AND MEASUREMENT EQUIPMENT LIST				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due Date
EMI Test Receiver	R & S	ESHS 20	827129/006	7/17/2004
LISN, 10 kHz ~ 30 MHz	FCC	50/250-25-2	114	9/6/2004
Spectrum Analyzer	AGILENT	E4446A	US42070220	1/13/04
Pre-amplifier	MITEQ	NSP2600-SP	924341	4/25/04
Horn Antenna	EMCO	3115	6717	2/04/04
Power Meter	AGILENT	E4416A	0841291160	11/07/04
Power Sensor	Agilent	E9327A	US40440755	11/07/04
Antenna, Biconical	Eaton	94455-1	1214	3/06/04
Antenna, Log Periodic	EMCO	3146	9107-3163	3/06/04
Preamplifier	Miteq	NSP10023988	646456	4/26/04
High Pass Filter (4.57GHz)	FSY Microwave	FM-4570-9SS	003	N.C.R.

5. SETUP OF EQUIPMENT UNDER TEST

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Device Type	Manufacturer	Model	Serial Number	FCC ID
Laptop #2	HP	PP2180	N/A	DoC
AC adapter	HP	ADP-75HB	MVT0236126269	DoC

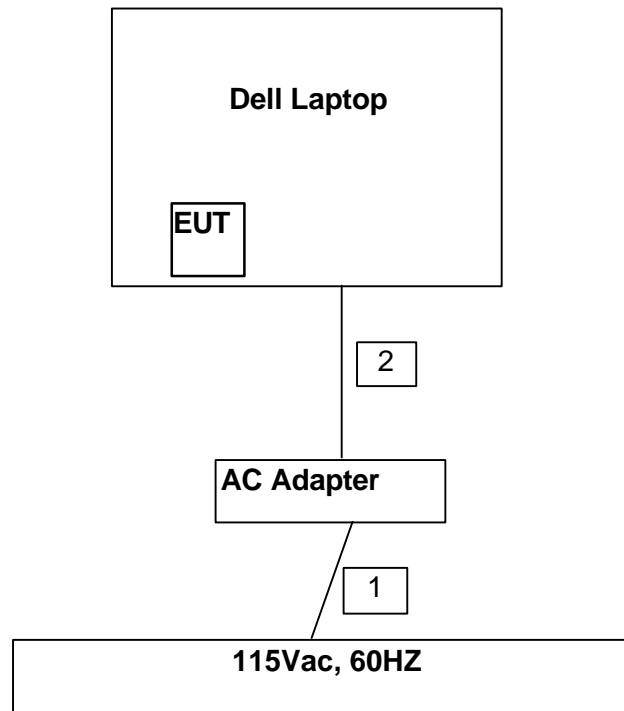
I/O CABLES

Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	US115	Unshielded	1.8m	No
2	DC	1	DC Jack	Unshielded	1.8m	No

TEST SETUP

The EUT is installed in the host laptop.

SETUP DIAGRAM



SETUP FOR DIGITAL DEVICE TESTS

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Device Type	Manufacturer	Model	Serial Number	FCC ID
Laptop #2	HP	PP2180	N/A	DoC
AC adapter	HP	ADP-75HB	MVT0236126269	DoC
MOUSE	HP	M-S34	LZB75062022	DZL211029
PRINTER	HP	2225C	2541S41679	BS46XU2225C
5V DC power adapter	Switching Adapter	RHC-060200-1	0319	DOC

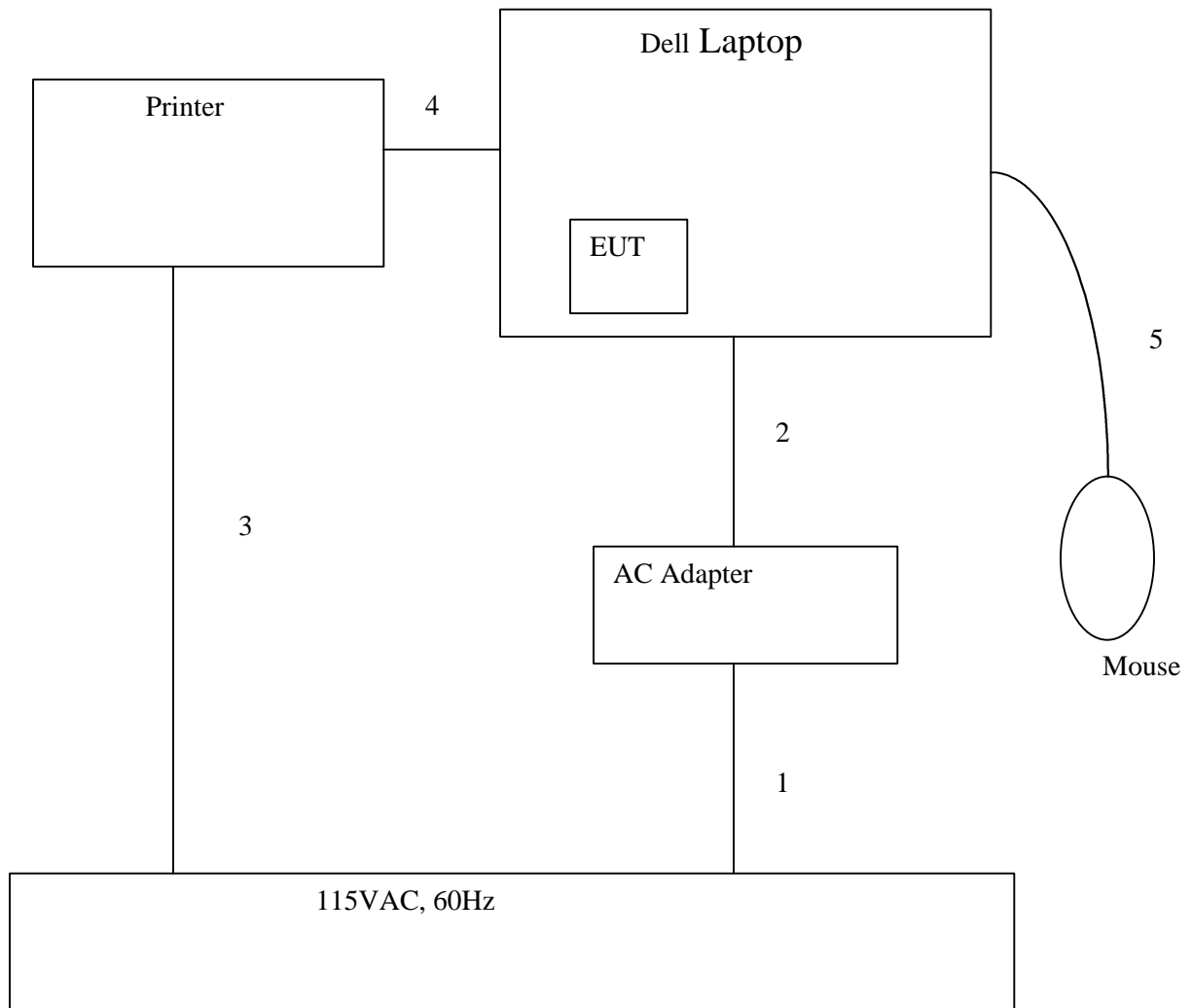
I/O CABLES

Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	US115	Unshielded	1.8m	No
2	DC	1	DC Jack	Unshielded	1.8m	No
3	DC	2	DC	Un-Shielded	2m	Integral with adapter
4	Parallel	1	DB25	Un-Shielded	2m	NA
5	Mouse	1	Mini	Shielded	1m	Integral with mouse

TEST SETUP

The EUT is installed in the host laptop.

SETUP DIAGRAM FOR DIGITAL DEVICE TESTS



5.1. RADIATED EMISSIONS

LIMITS

§15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

§15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

§15.209 (a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

§15.209 (b) In the emission table above, the tighter limit applies at the band edges.

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.

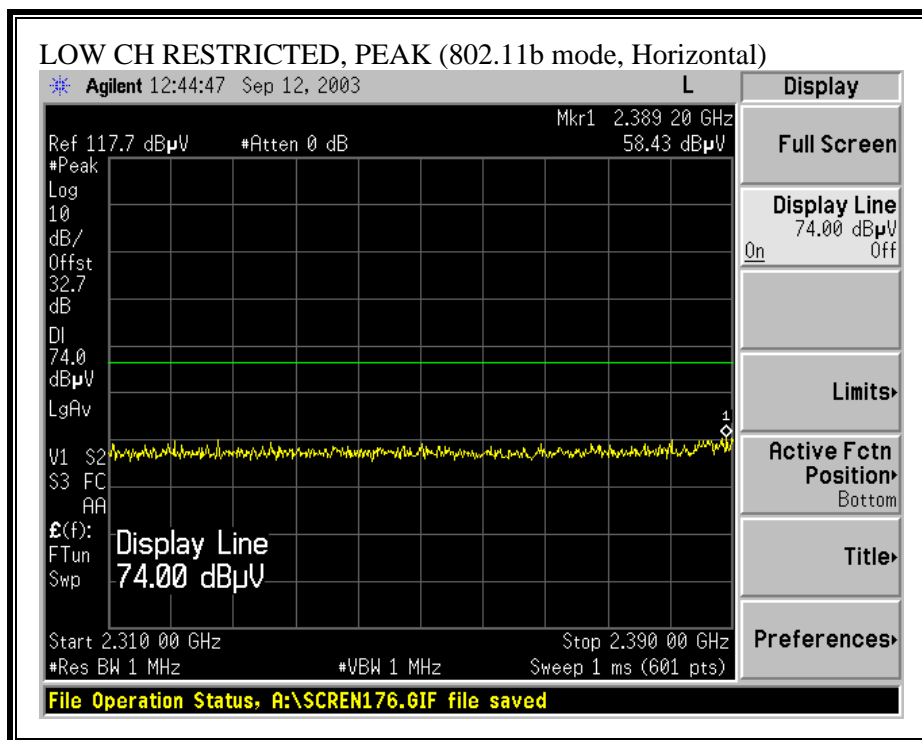
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

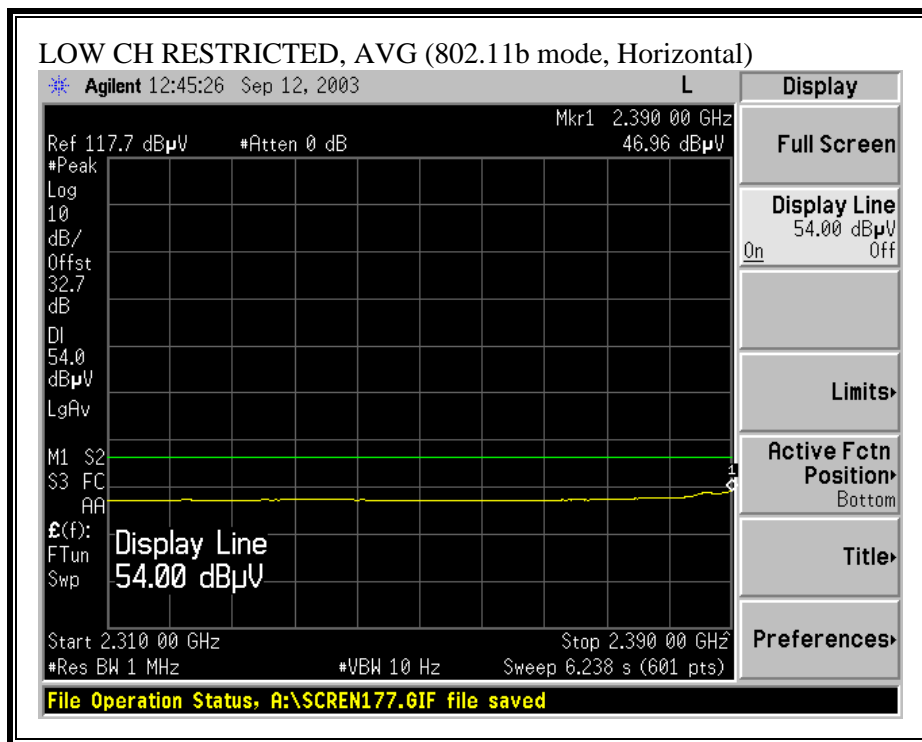
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

RESULTS

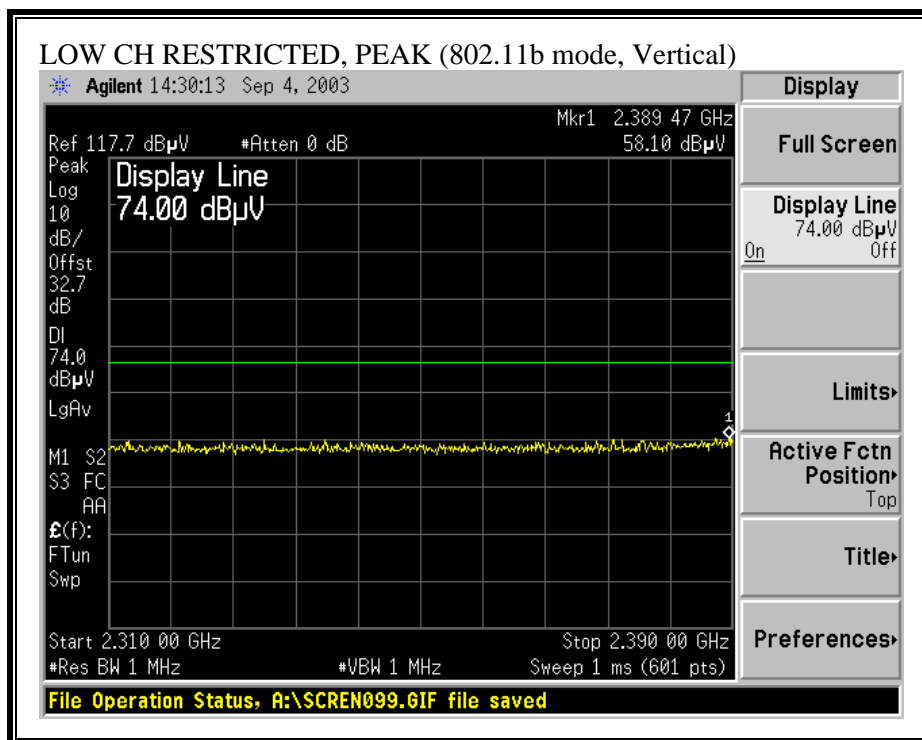
No non-compliance noted:

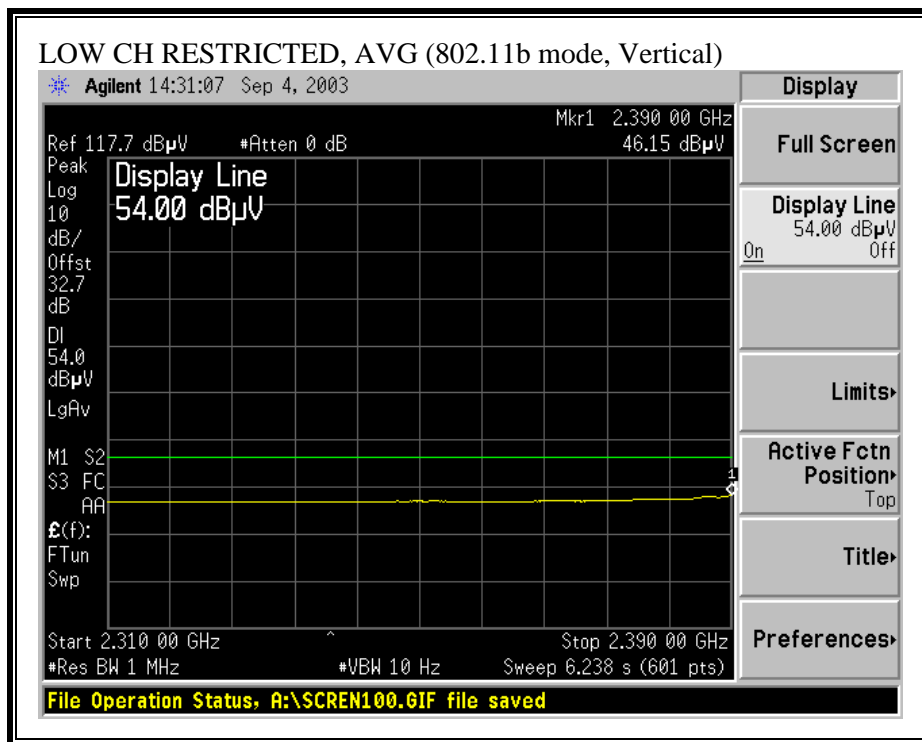
RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, HORIZONTAL)



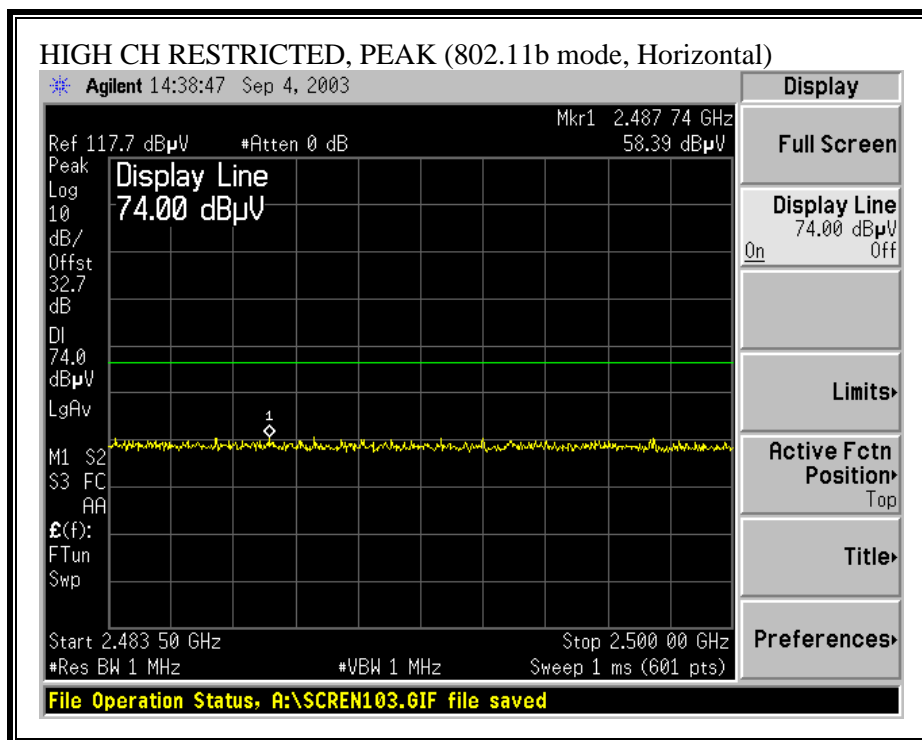


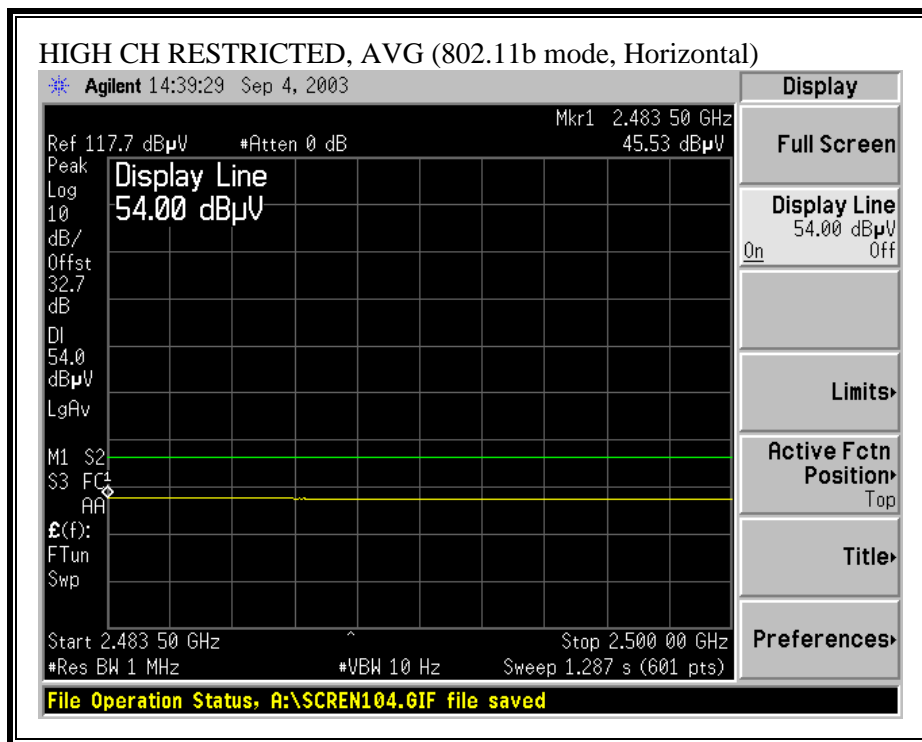
RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, VERTICAL)



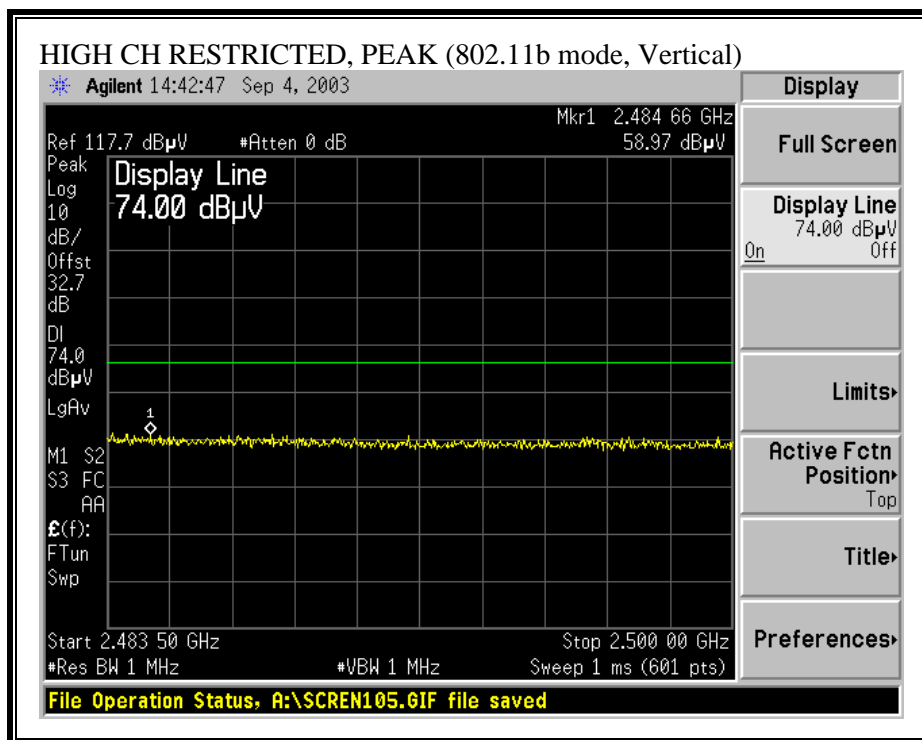


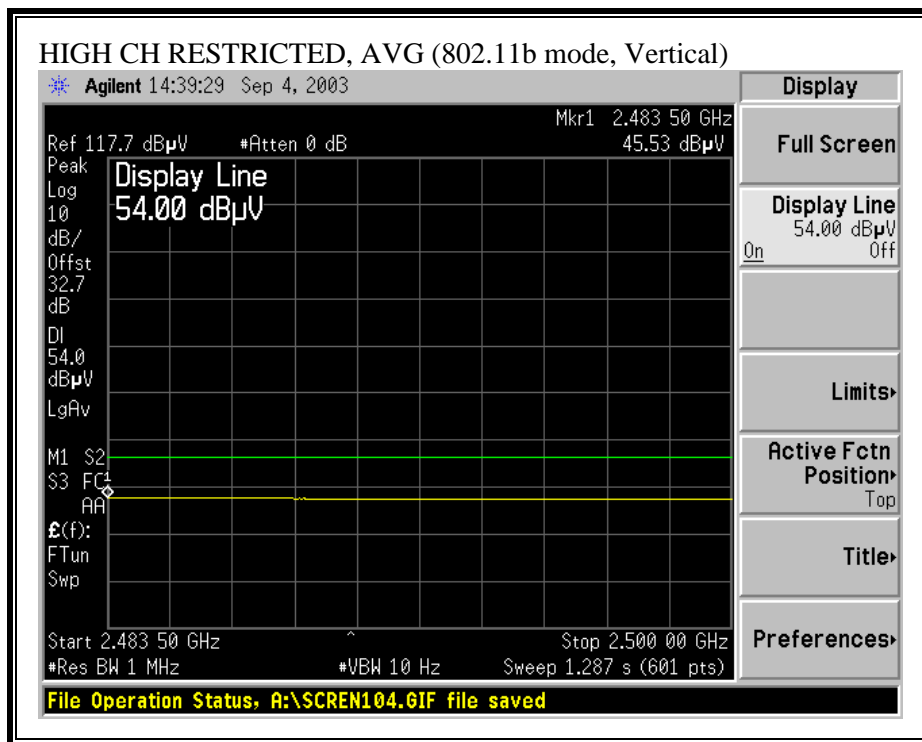
RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS (b MODE, LOW CHANNEL)

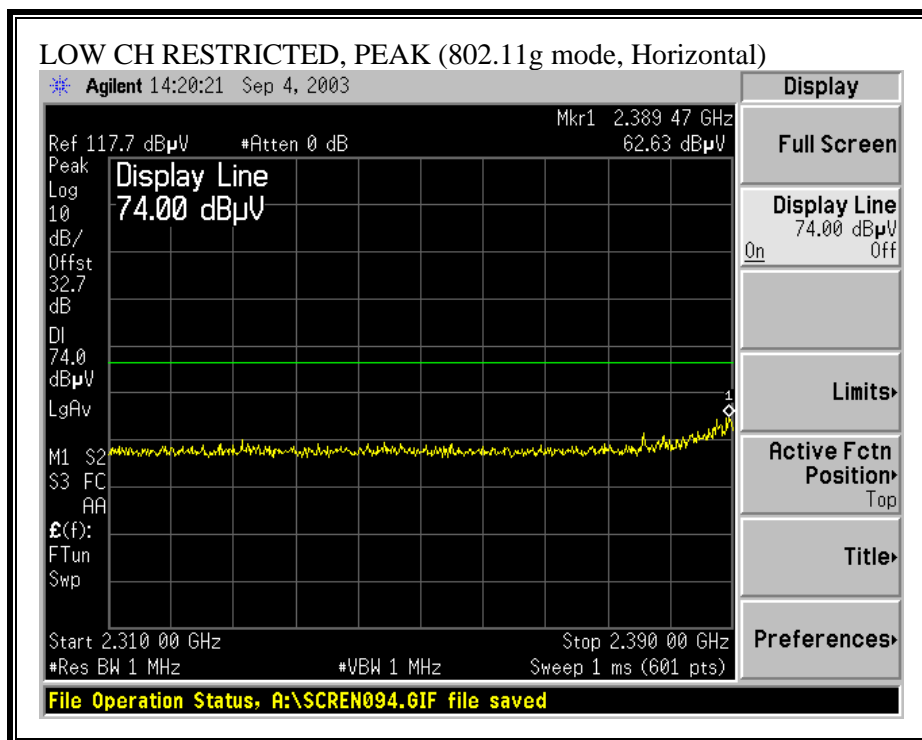
09/04/03 High Frequency Measurement Compliance Certification Services, Morgan Hill Open Field Site																
Test Engr:		Yan Zheng														
Project #:		03U2209														
Company:		Boardcom Corporation														
EUT Descrip.:		802.11 b / g mini PCI Card in PP2180														
EUT M/N:		BSM94306MPSG														
Test Target:		FCC Class B														
Mode Oper:		Transmit, b mode														
Test Equipment:																
EMCO Horn 1-18GHz				Pre-amplifier 1-26GHz				Spectrum Analyzer				Horn > 18GHz				
T60; S/N: 2238 @ 1m				T86 Miteq 924341				Agilent E4446A Analyzer				T117; ARA 18-26GHz; S/N:1013				
Hi Frequency Cables																
<input type="checkbox"/> (2 ft) <input checked="" type="checkbox"/> (2 ~ 3 ft) <input type="checkbox"/> (4 ~ 6 ft) <input checked="" type="checkbox"/> (12 ft)																
Peak Measurements: 1 MHz Resolution Bandwidth 1MHz Video Bandwidth																
Average Measurements: 1 MHz Resolution Bandwidth 10Hz Video Bandwidth																
f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes	
Channel 1 (2412MHz)																
4.824	9.8	55.8	42.0	33.7	4.4	-45.6	0.0	1.0	49.3	35.5	74.0	54.0	-24.7	-18.5	V	
4.824	9.8	51.5	38.5	33.7	4.4	-45.6	0.0	1.0	45.0	32.0	74.0	54.0	-29.0	-22.0	H	
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									

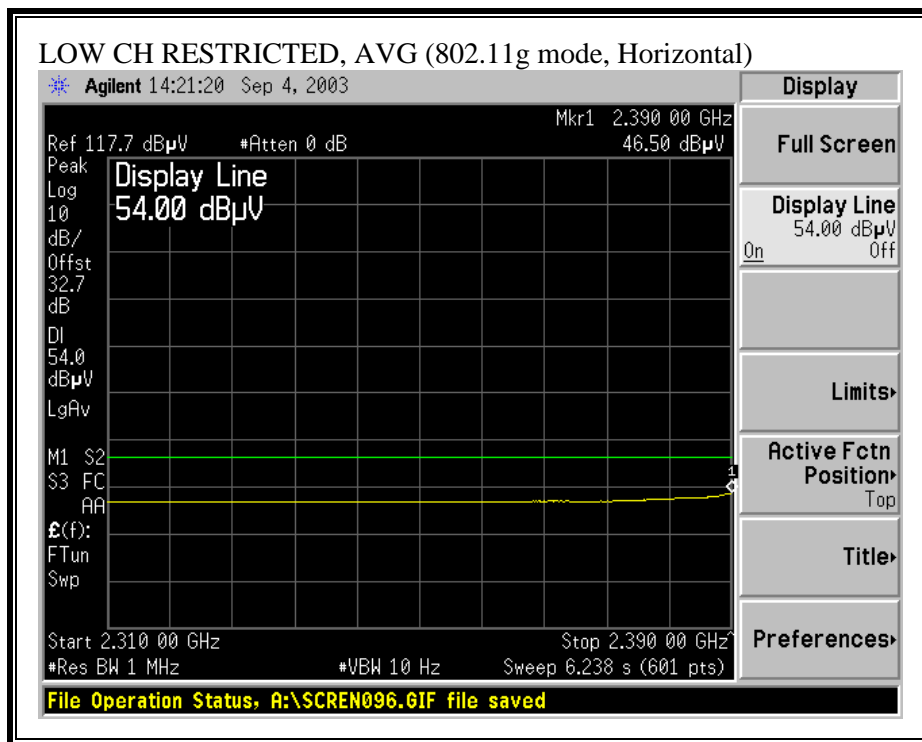
09/04/03 High Frequency Measurement Compliance Certification Services, Morgan Hill Open Field Site															
Test Engr:		Yan Zheng													
Project #:		03U2209													
Company:		Boardcom Corporation													
EUT Descrip.:		802.11 b / g mini PCI Card in PP2180													
EUT M/N:		BSM94306MPSG													
Test Target:		FCC Class B													
Mode Oper:		Transmit, b mode													
Test Equipment:															
EMCO Horn 1-18GHz				Pre-amplifier 1-26GHz				Spectrum Analyzer				Horn > 18GHz			
T60; S/N: 2238 @ 1m ▾				T86 Miteq 924341 ▾				Agilent E4446A Analyzer ▾				T117; ARA 18-26GHz; S/N:1013 ▾			
<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 45%;"> <p>Hi Frequency Cables</p> <div style="display: flex; gap: 10px;"> <div style="border: 1px solid black; padding: 2px 5px; background-color: #e0f7fa;">(2 ft)</div> <div style="border: 1px solid black; padding: 2px 5px; background-color: #e0f7fa;"> <input checked="" type="checkbox"/> (2 ~ 3 ft) </div> <div style="border: 1px solid black; padding: 2px 5px; background-color: #e0f7fa;">(4 ~ 6 ft)</div> <div style="border: 1px solid black; padding: 2px 5px; background-color: #e0f7fa;"> <input checked="" type="checkbox"/> (12 ft) </div> </div> </div> <div style="width: 50%;"> <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <p>Peak Measurements:</p> <p>1 MHz Resolution Bandwidth</p> <p>1MHz Video Bandwidth</p> </div> <div style="width: 48%;"> <p>Average Measurements:</p> <p>1 MHz Resolution Bandwidth</p> <p>10Hz Video Bandwidth</p> </div> </div> </div> </div>															
f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
Channe 6 (2437MHz)															
4.874	9.8	53.1	41.0	33.8	4.4	-45.6	0.0	1.0	46.7	34.6	74.0	54.0	-27.3	-19.4	V
7.311	9.8	51.7	39.7	37.3	5.7	-46.6	0.0	1.0	49.1	37.1	74.0	54.0	-24.9	-16.9	V
7.311	9.8	51.9	39.9	37.3	5.7	-46.6	0.0	1.0	49.3	37.3	74.0	54.0	-24.7	-16.7	H
4.874	9.8	51.1	38.7	33.8	4.4	-45.6	0.0	1.0	44.7	32.3	74.0	54.0	-29.3	-21.7	H
<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>f Measurement Frequency</p> <p>Dist Distance to Antenna</p> <p>Read Analyzer Reading</p> <p>AF Antenna Factor</p> <p>CL Cable Loss</p> </div> <div style="width: 30%;"> <p>Amp Preamp Gain</p> <p>D Corr Distance Correct to 3 meters</p> <p>Avg Average Field Strength @ 3 m</p> <p>Peak Calculated Peak Field Strength</p> <p>HPF High Pass Filter</p> </div> <div style="width: 30%;"> <p>Avg Lim Average Field Strength Limit</p> <p>Pk Lim Peak Field Strength Limit</p> <p>Avg Mar Margin vs. Average Limit</p> <p>Pk Mar Margin vs. Peak Limit</p> </div> </div>															

HARMONICS AND SPURIOUS EMISSIONS (b MODE, HIGH CHANNEL)

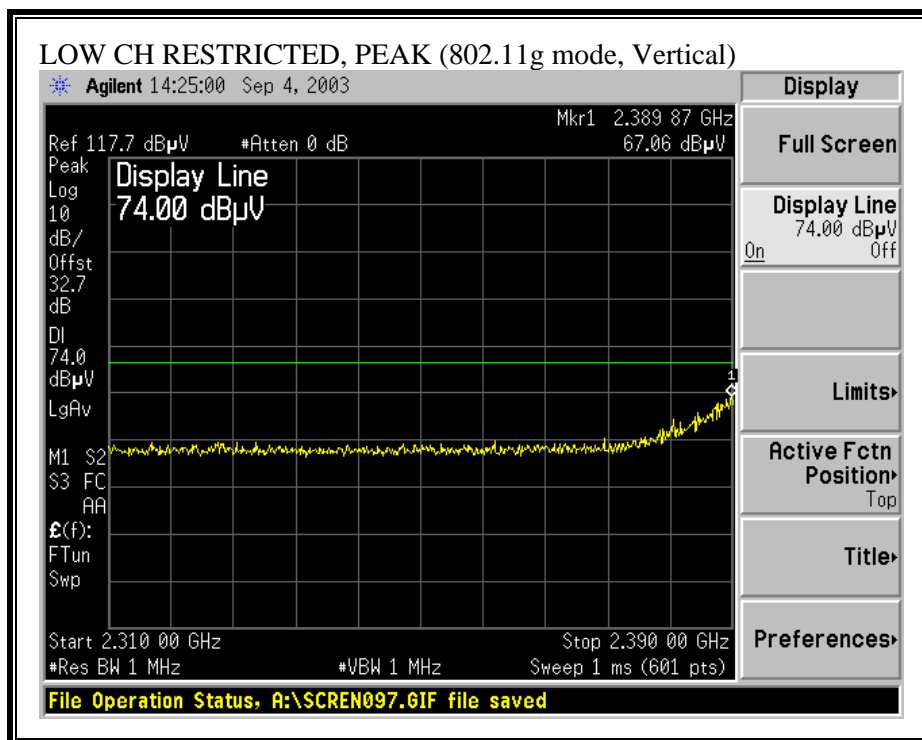
09/04/03 High Frequency Measurement Compliance Certification Services, Morgan Hill Open Field Site															
Test Engr: Yan Zheng															
Project #: 03U2209 Company: Boardcom Corporation EUT Descrip.: 802.11 b / g mini PCI Card in PP2180 EUT M/N: BSM94306MPSG Test Target: FCC Class B Mode Oper: Transmit, b mode															
Test Equipment:															
EMCO Horn 1-18GHz		Pre-amplifier 1-26GHz		Spectrum Analyzer		Horn > 18GHz									
T60; S/N: 2238 @ 1m		T86 Miteq 924341		Agilent E4446A Analyzer		T117; ARA 18-26GHz; S/N:1013									
Hi Frequency Cables <input type="checkbox"/> (2 ft) <input checked="" type="checkbox"/> (2 ~ 3 ft) <input type="checkbox"/> (4 ~ 6 ft) <input checked="" type="checkbox"/> (12 ft)								Peak Measurements: 1 MHz Resolution Bandwidth 1MHz Video Bandwidth				Average Measurements: 1 MHz Resolution Bandwidth 10Hz Video Bandwidth			
f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
Channe 11 (2462MHz)															
4.924	9.8	58.3	44.2	33.8	4.5	-45.7	0.0	1.0	51.9	37.8	74.0	54.0	-22.1	-16.2	V
7.386	9.8	52.3	40.3	37.4	5.7	-46.5	0.0	1.0	49.8	37.8	74.0	54.0	-24.2	-16.2	V
7.386	9.8	52.2	40.0	37.4	5.7	-46.5	0.0	1.0	49.7	37.5	74.0	54.0	-24.3	-16.5	H
4.924	9.8	51.3	38.5	33.8	4.5	-45.7	0.0	1.0	44.9	32.1	74.0	54.0	-29.1	-21.9	H
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											

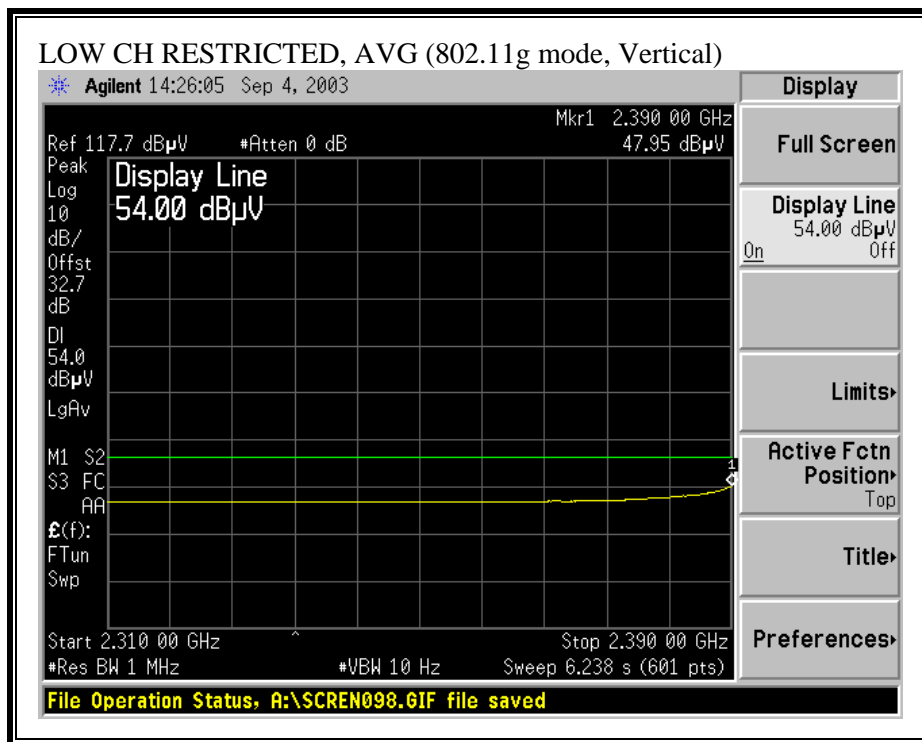
RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, HORIZONTAL)



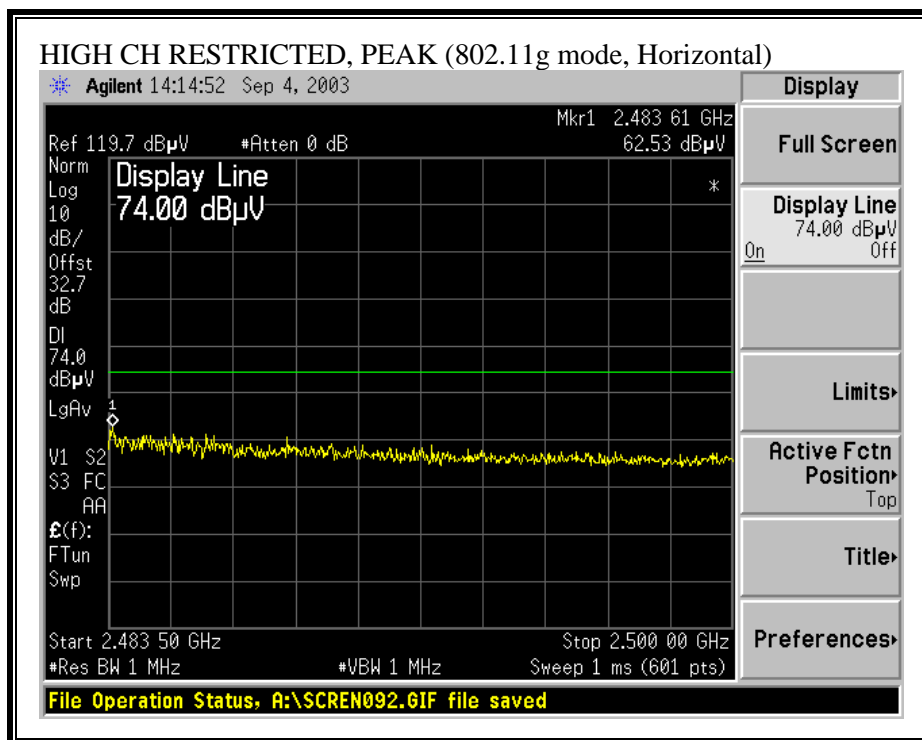


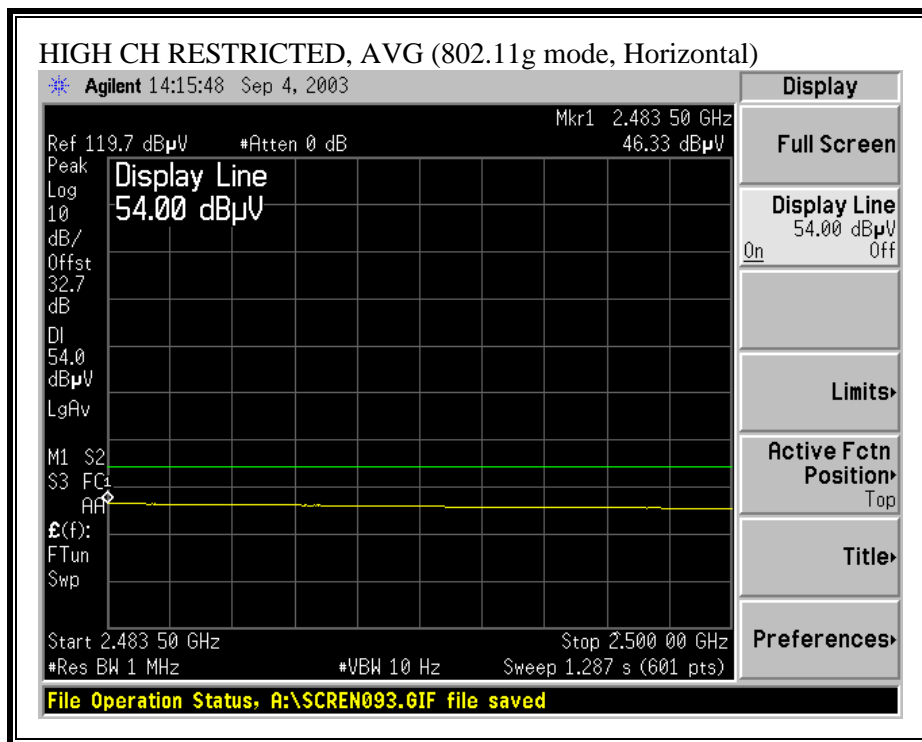
RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, VERTICAL)



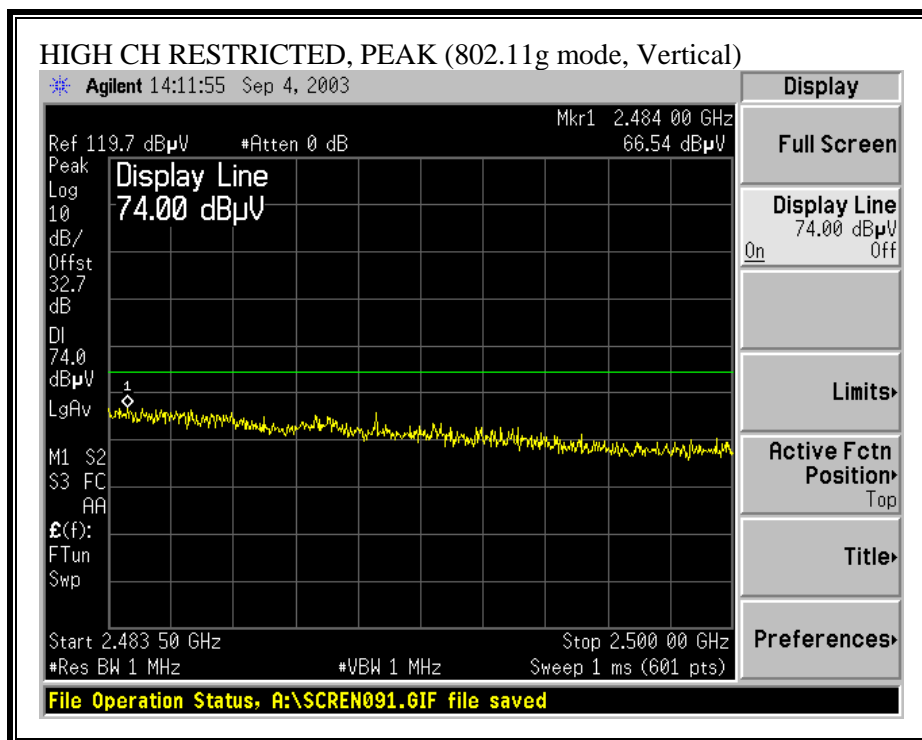


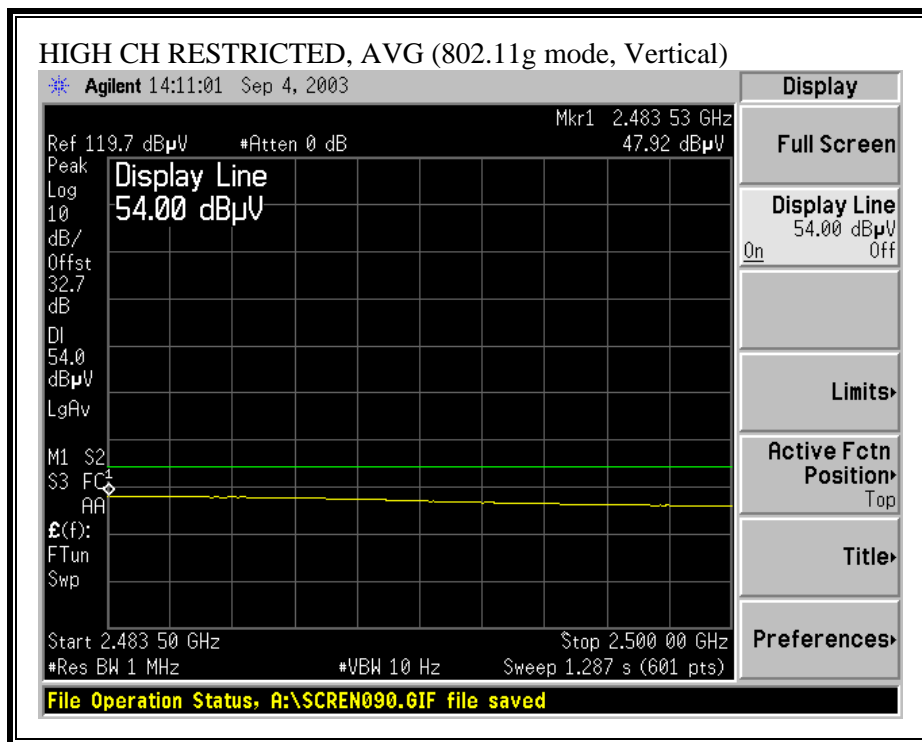
RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS (g NORMAL MODE, LOW CHANNEL)

09/04/03 High Frequency Measurement Compliance Certification Services, Morgan Hill Open Field Site																
Test Engr:		Yan Zheng														
Project #:		03U2209														
Company:		Broadcom Corporation														
EUT Descrip.:		802.11 b / g mini PCI Card in PP2180														
EUT M/N:		BSM94306MPSG														
Test Target:		FCC Class B														
Mode Oper:		Transmit, g mode														
Test Equipment:																
EMCO Horn 1-18GHz		Pre-amplifier 1-26GHz		Spectrum Analyzer				Horn > 18GHz								
T60; S/N: 2238 @ 1m		T86 Miteq 924341		Agilent E4446A Analyzer				T117; ARA 18-26GHz; S/N:1013								
Hi Frequency Cables:																
<input type="checkbox"/> (2 ft) <input checked="" type="checkbox"/> (2 ~ 3 ft) <input type="checkbox"/> (4 ~ 6 ft) <input checked="" type="checkbox"/> (12 ft)																
Peak Measurements: 1 MHz Resolution Bandwidth 1MHz Video Bandwidth																
Average Measurements: 1 MHz Resolution Bandwidth 10Hz Video Bandwidth																
f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes	
Channel 1 (2412MHz)																
4.824	9.8	54.0	40.2	33.7	4.4	-45.6	0.0	1.0	47.5	33.7	74.0	54.0	-26.5	-20.3	V	
4.824	9.8	50.4	38.2	33.7	4.4	-45.6	0.0	1.0	43.9	31.7	74.0	54.0	-30.1	-22.3	H	
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									

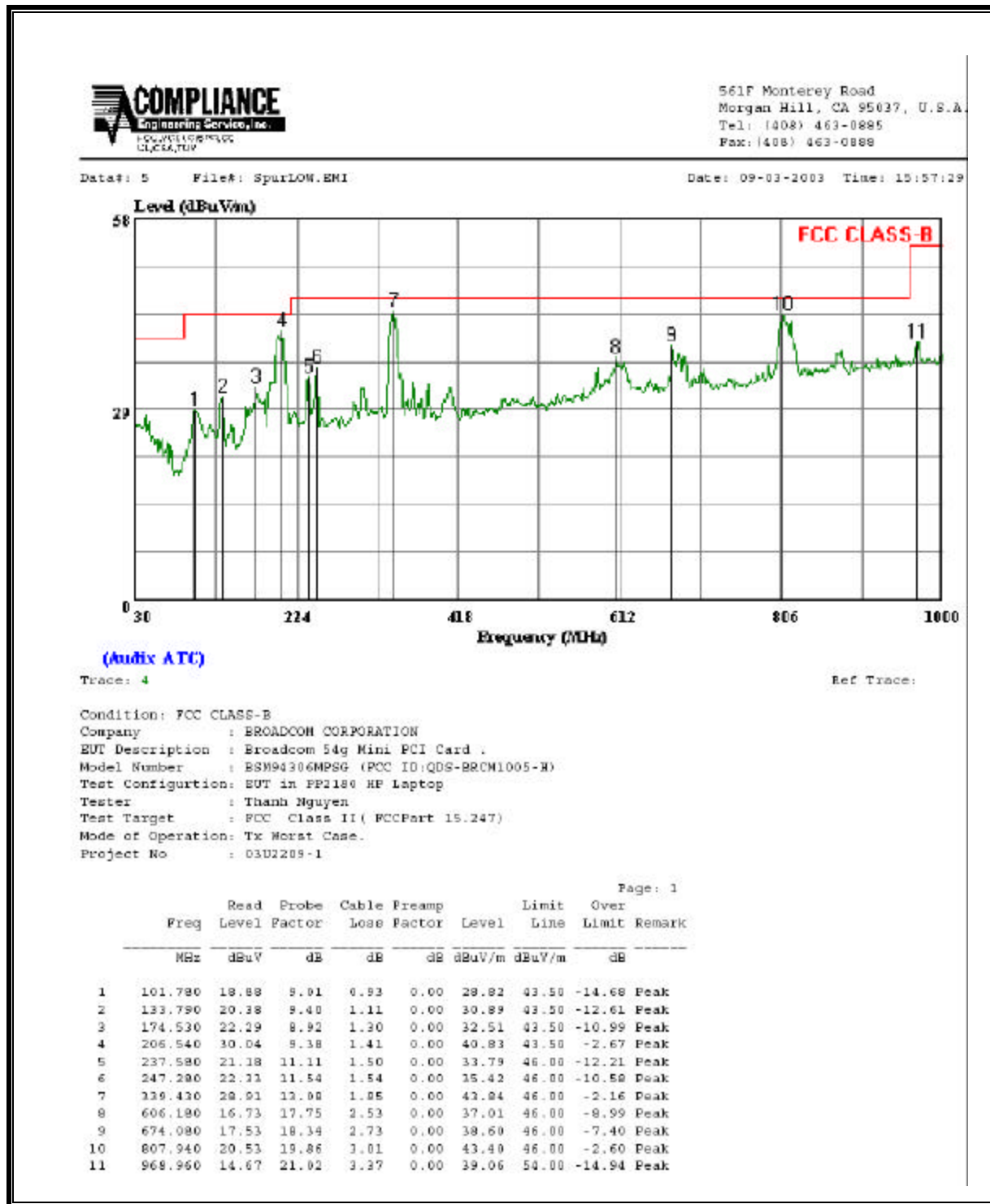
HARMONICS AND SPURIOUS EMISSIONS (g NORMAL MODE, MID CHANNEL)

09/04/03 High Frequency Measurement Compliance Certification Services, Morgan Hill Open Field Site																
Test Engr: Yan Zheng Project #: 03U2209 Company: Boardcom Corporation EUT Descrip.: 802.11 b / g mini PCI Card in PP2180 EUT M/N: BSM94306MPSG Test Target: FCC Class B Mode Oper: Transmit, g mode																
Test Equipment:																
EMCO Horn 1-18GHz T60; S/N: 2238 @ 1m				Pre-amplifier 1-26GHz T86 Miteq 924341				Spectrum Analyzer Agilent E4446A Analyzer				Horn > 18GHz T117; ARA 18-26GHz; S/N:1013				
Hi Frequency Cables <input type="checkbox"/> (2 ft) <input checked="" type="checkbox"/> (2 ~ 3 ft) <input type="checkbox"/> (4 ~ 6 ft) <input checked="" type="checkbox"/> (12 ft)																
Peak Measurements: 1 MHz Resolution Bandwidth 1MHz Video Bandwidth																
Average Measurements: 1 MHz Resolution Bandwidth 10Hz Video Bandwidth																
f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes	
Channel 6 (2437MHz)																
4.874	9.8	54.3	40.5	33.8	4.4	-45.6	0.0	1.0	47.9	34.1	74.0	54.0	-26.1	-19.9	V	
7.311	9.8	52.0	39.8	37.3	5.7	-46.6	0.0	1.0	49.4	37.2	74.0	54.0	-24.6	-16.8	V	
7.311	9.8	52.4	39.8	37.3	5.7	-46.6	0.0	1.0	49.8	37.2	74.0	54.0	-24.2	-16.8	H	
4.874	9.8	51.2	38.3	33.8	4.4	-45.6	0.0	1.0	44.8	31.9	74.0	54.0	-29.2	-22.1	H	
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									

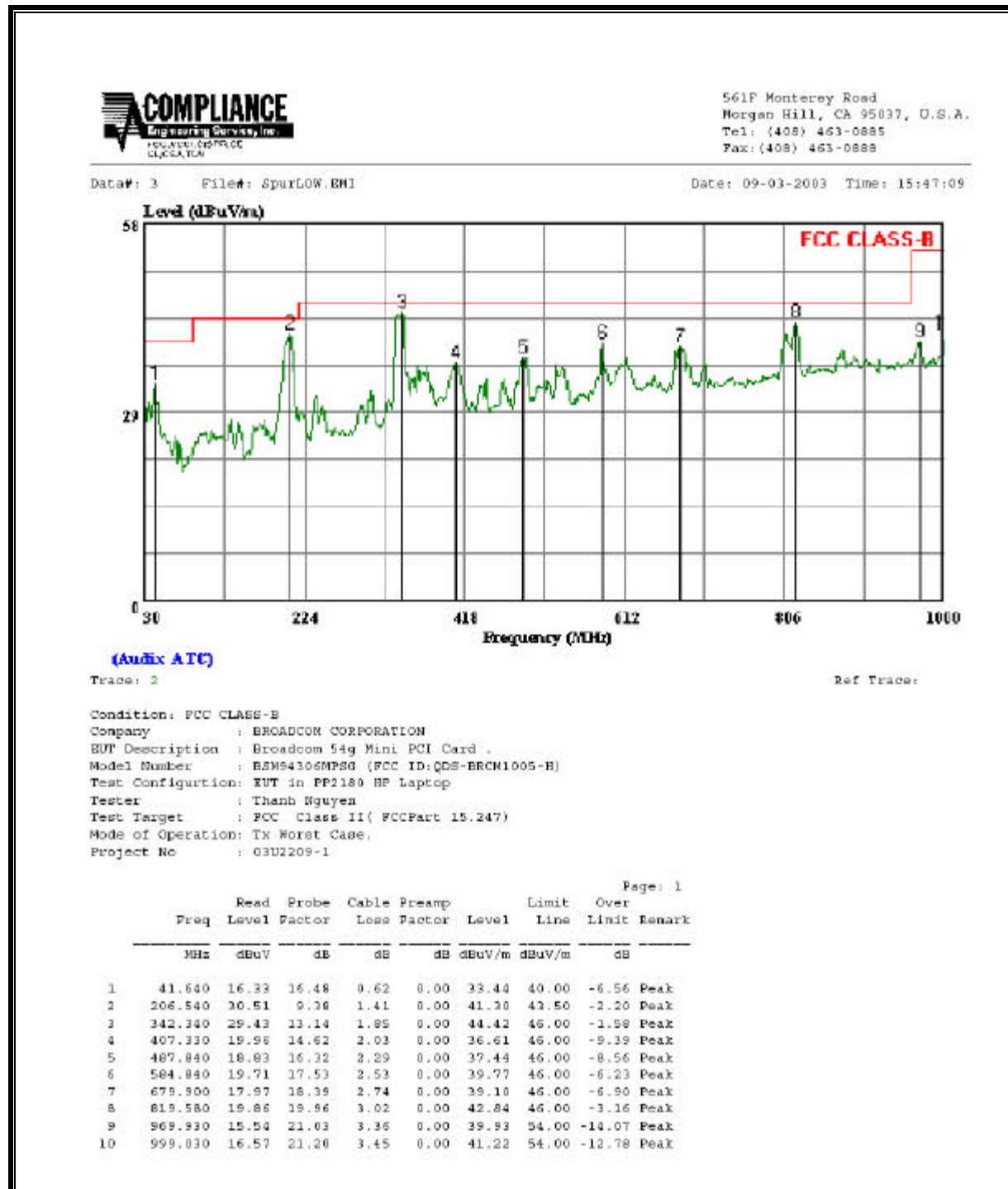
HARMONICS AND SPURIOUS EMISSIONS (g NORMAL MODE, HIGH CHANNEL)

09/04/03 High Frequency Measurement Compliance Certification Services, Morgan Hill Open Field Site																
Test Engr:		Yan Zheng														
Project #:		03U2209														
Company:		Broadcom Corporation														
EUT Descrip.:		802.11 b / g mini PCI Card in PP2180														
EUT M/N:		BSM94306MPSG														
Test Target:		FCC Class B														
Mode Oper:		Transmit, g mode														
Test Equipment:																
EMCO Horn 1-18GHz T60; S/N: 2238 @ 1m				Pre-amplifier 1-26GHz T86 Miteq 924341				Spectrum Analyzer Agilent E4446A Analyzer				Horn > 18GHz T117; ARA 18-26GHz; S/N:1013				
Hi Frequency Cables <input type="checkbox"/> (2 ft) <input checked="" type="checkbox"/> (2 ~ 3 ft) <input type="checkbox"/> (4 ~ 6 ft) <input checked="" type="checkbox"/> (12 ft)																
Peak Measurements: 1 MHz Resolution Bandwidth 1MHz Video Bandwidth																
Average Measurements: 1 MHz Resolution Bandwidth 10Hz Video Bandwidth																
f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes	
Channel 11 (2462MHz)																
4.924	9.8	56.1	41.1	33.8	4.5	-45.7	0.0	1.0	49.7	34.7	74.0	54.0	-24.3	-19.3	V	
7.386	9.8	53.5	40.5	37.4	5.7	-46.5	0.0	1.0	51.0	38.0	74.0	54.0	-23.0	-16.0	V	
7.386	9.8	54.7	40.4	37.4	5.7	-46.5	0.0	1.0	52.2	37.9	74.0	54.0	-21.8	-16.1	H	
4.924	9.8	51.1	38.8	33.8	4.5	-45.7	0.0	1.0	44.7	32.4	74.0	54.0	-29.3	-21.6	H	
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									

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



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



5.2. POWERLINE CONDUCTED EMISSIONS

LIMIT

§15.207 (a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

The lower limit applies at the boundary between the frequency ranges.

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 resolution bandwidth is set to 9 kHz for both peak detection and quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

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

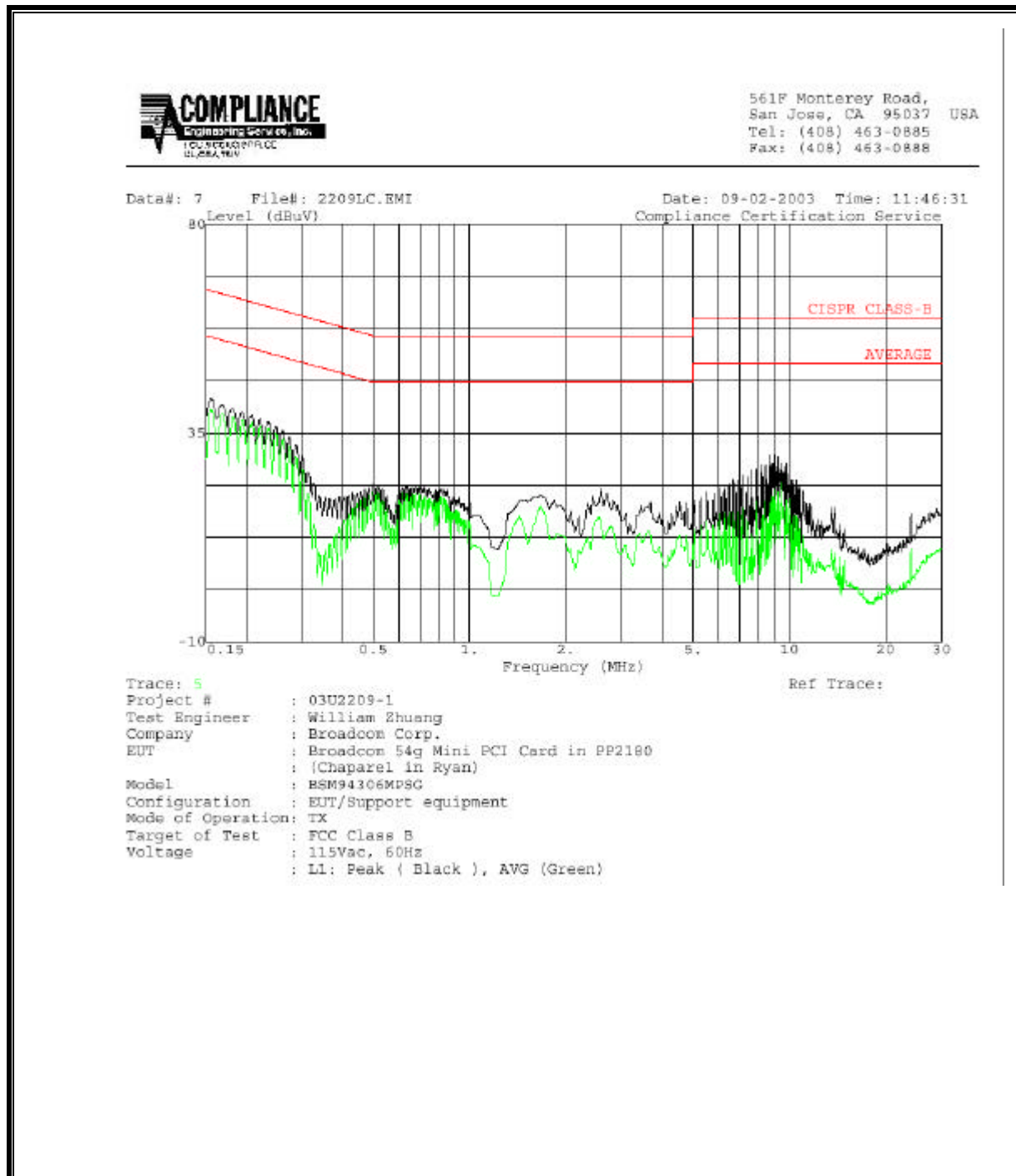
RESULTS

No non-compliance noted:

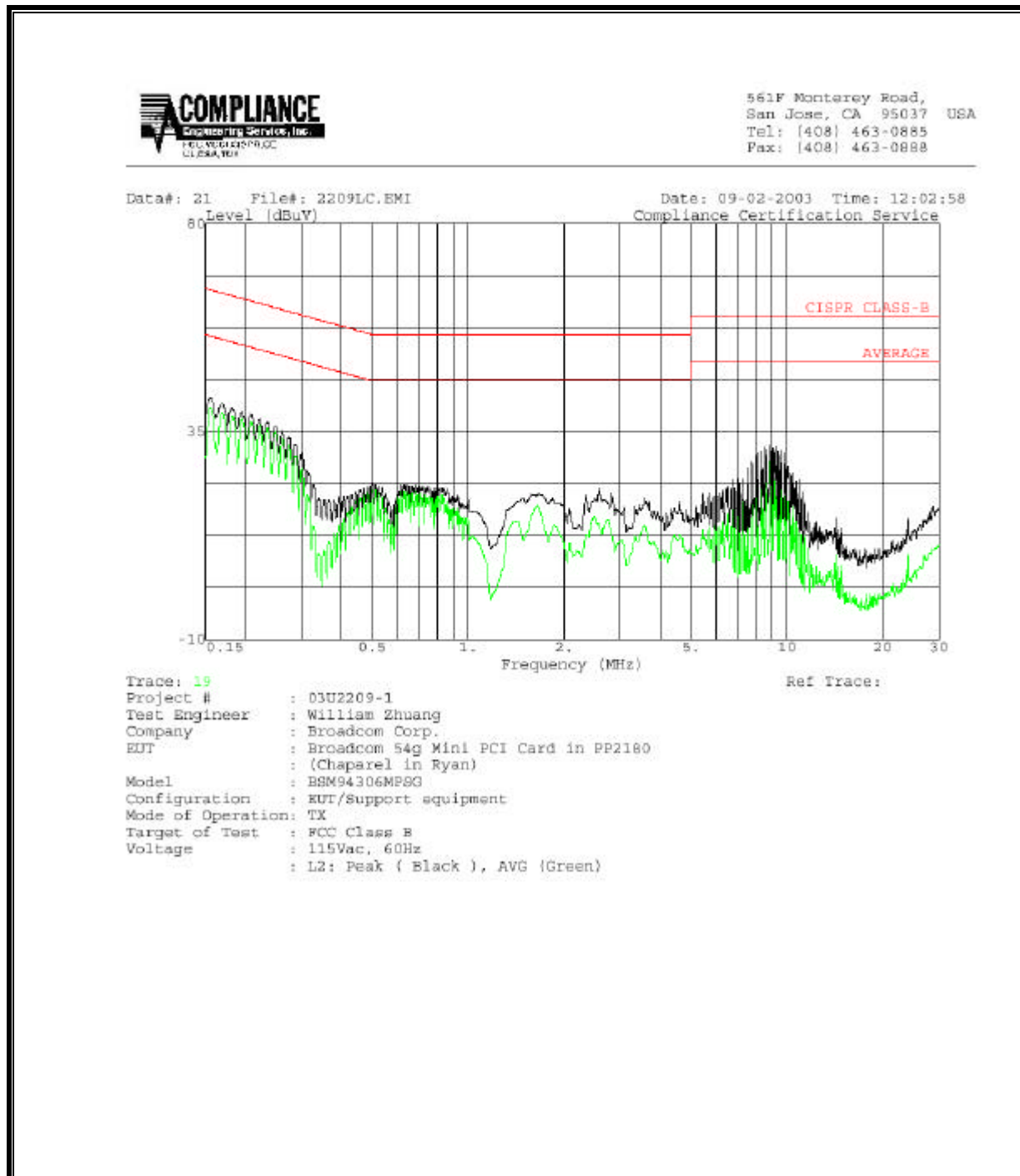
6 WORST EMISSIONS

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	EN B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.16	42.60	--	40.15	0.00	65.86	55.86	-23.26	-15.71	L1
9.01	30.28	--	24.42	0.00	60.00	50.00	-29.72	-25.58	L1
0.50	23.92	--	22.34	0.00	56.09	46.09	-32.17	-23.75	L1
0.16	42.28	--	40.09	0.00	65.86	55.86	-23.58	-15.77	L2
8.82	31.94	--	28.45	0.00	60.00	50.00	-28.06	-21.55	L2
0.50	23.90	--	22.33	0.00	56.09	46.09	-32.19	-23.76	L2
6 Worst Data									

LINE 1 RESULTS



LINE 2 RESULTS



6. SETUP PHOTOS

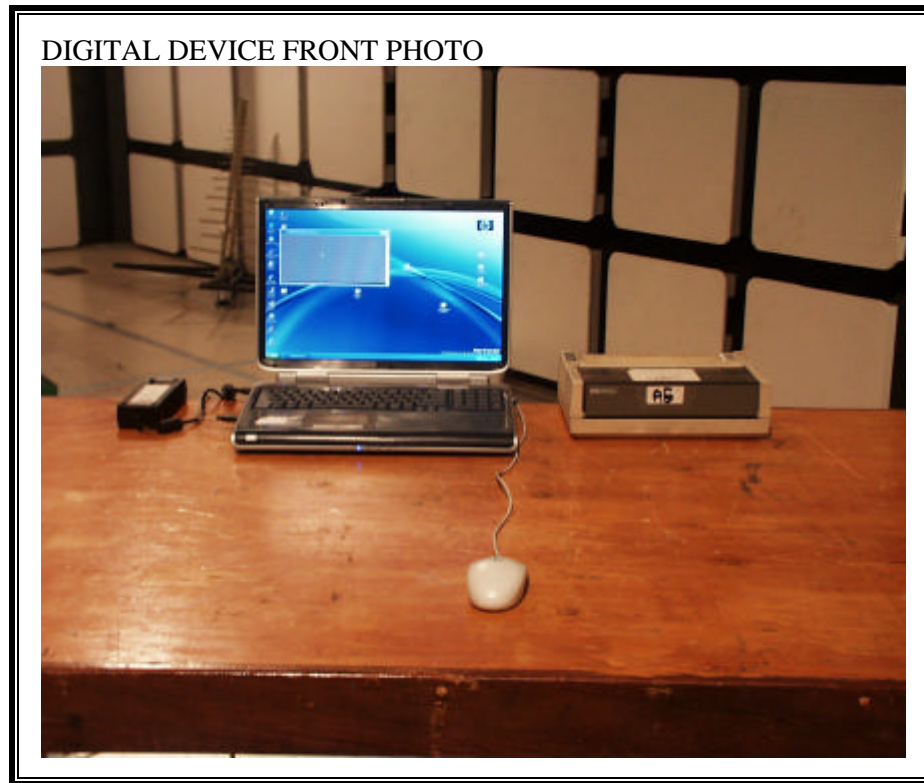
RADIATED RF MEASUREMENT SETUP

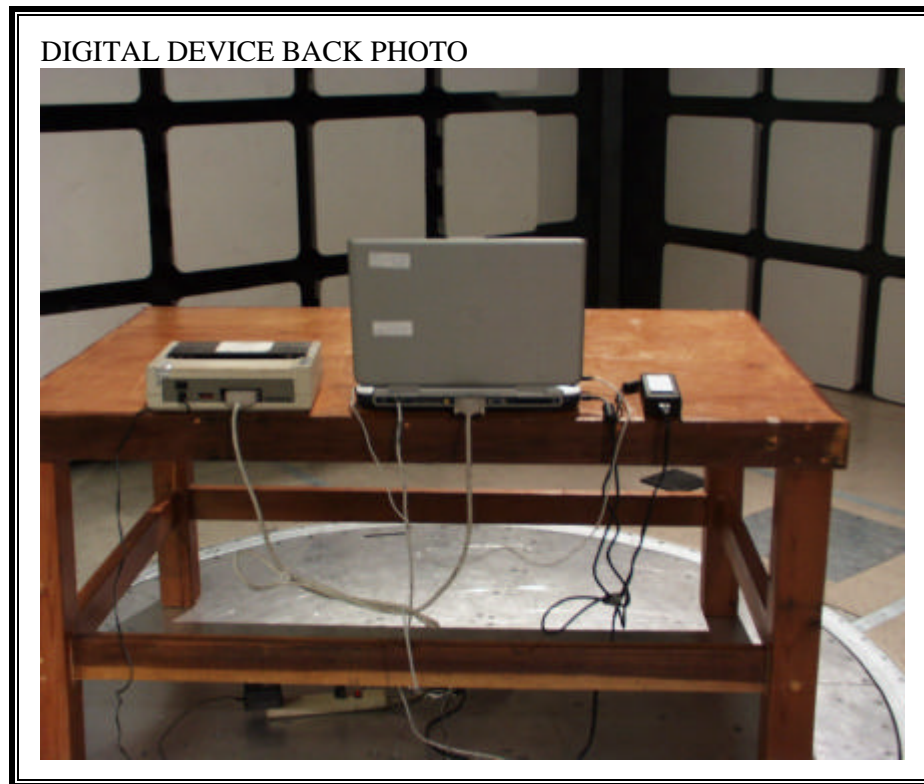


RADIATED BACK PHOTO



DIGITAL DEVICE RADIATED EMISSIONS SETUP





POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP



LINE CONDUCTED BACK PHOTO



END OF REPORT