



FCC CFR47 PART 15 SUBPART C

**CLASS II PERMISSIVE CHANGE
TEST REPORT**

FOR

802.11 a/b/g MINI PCI MODULE

MODEL NUMBER: J07H069.01

FCC ID: MCLJ07H06903

REPORT NUMBER: 03U2185-1

ISSUE DATE: OCTOBER 1, 2003

Prepared for

**AMBIT MICROSYSTEMS CORPORATION
5F-1, 5 HSIN-AN ROAD, HSINCU CITY
SCIENCE-BASED INDUSTRIAL PARK, TAIWAN, R.O.C.**

Prepared by

**COMPLIANCE CERTIFICATION SERVICES
561F MONTEREY ROAD,
MORGAN HILL, CA 95037, USA
TEL: (408) 463-0885
FAX: (408) 463-0888**



TABLE OF CONTENTS

1. TEST RESULT CERTIFICATION	3
2. EUT DESCRIPTION	4
2.1. DESCRIPTION OF EUT	4
2.2. DESCRIPTION OF CLASS II PERMISSIVE CHANGE	4
3. TEST METHODOLOGY	5
4. FACILITIES AND ACCREDITATION	5
5. CALIBRATION AND UNCERTAINTY	6
5.1. MEASURING INSTRUMENT CALIBRATION	6
5.2. MEASUREMENT UNCERTAINTY	6
5.3. TEST AND MEASUREMENT EQUIPMENT	7
6. SETUP OF EQUIPMENT UNDER TEST	8
7. APPLICABLE LIMITS AND TEST RESULTS	10
7.1. RADIATED EMISSIONS	10
7.1.1. RADIATED EMISSIONS ABOVE 1 GHZ	13
7.1.2. CO-LOCATED RADIATED EMISSIONS	32
7.1.3. RADIATED EMISSIONS BELOW 1 GHZ	41
7.2. POWERLINE CONDUCTED EMISSIONS	43
8. SETUP PHOTOS	46

1. TEST RESULT CERTIFICATION

COMPANY NAME: AMBIT MICROSYSTEMS CORPORATION
5F-1, 5 HSIN-AN ROAD, HSINC
SCIENCE BASED INDUSTRIAL PARK, TAIWAN, R.O.C.

EUT DESCRIPTION: 802.11 A/B/G MINI PCI MODULE

MODEL: J07H069.01

DATE TESTED: AUGUST 25 – AUGUST 26, 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.

Note: The 2.4 and 5.8 GHz bands are applicable to this report; another band of operation (5.2 GHz) is documented in a separate report.

Approved & Released For CCS By:

Tested By:



MIKE HECKROTTE
CHIEF ENGINEER
COMPLIANCE CERTIFICATION SERVICES



CHIN PANG
EMC TECHCIAN
COMPLIANCE CERTIFICATION SERVICES

2. EUT DESCRIPTION

2.1. DESCRIPTION OF EUT

The EUT is an 802.11a/b/g transceiver in a mini-PCI form factor.

The transmitter has a maximum peak conducted output power as follows:

Frequency Band (MHz)	Output Power (W)	Output Power (dBm)
2412 - 2462	0.158	21.99
5745 - 5825	0.118	20.72

2.2. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

1. The radio module is intended to be used with an additional antenna type. The main antenna is a Hitachi HAS-03-115 Film Antenna with a maximum assembly gain (including cable loss) of 1.53 dBi in the 2400 – 2483.5 MHz band and 3.16 dBi in the 5725 - 5850 MHz band. The auxilliary antenna is a Hitachi HAS-03-116 Film Antenna with a maximum assembly gain (including cable loss) of –3.86 dBi in the 2400 – 2483.5 MHz band and 3.20 dBi in the 5725 - 5850 MHz band.
2. The radio is intended to be used in a portable application, installed in host computer Hewlett Packard Model TC1100.
3. The radio is intended to be co-located with Bluetooth radio Actiontec model BTM200, FCC ID: LNQBTM200.

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

The open area test sites and conducted measurement facilities used to collect data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.



No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government.

5. CALIBRATION AND UNCERTAINTY

5.1. 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.

5.2. 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%.

5.3. 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 Receiver.	HP	8542E	3942A00286	11/20/03
RF Filter Section	HP	8542E	3705A00256	11/20/03
Bilog	ARA	LPB-2820A	1185	3/6/04
EMI Test Receiver	R & S	ESHS 20	827129/006	7/17/2004
LISN, 10 kHz ~ 30 MHz	FCC	50/250-25-2	114	10/6/2003
Spectrum Analyzer	AGILENT	E4446A	US42070220	1/13/04
Pre-amplifier	MITEQ	NSP2600-SP	924341	4/25/04
Horn Antenna	EMCO	3115	6717	2/4/04
Power Meter	AGILENT	E4416A	0841291160	11/7/04
Power Sensor	Agilent	E9327A	US40440755	11/7/04
High Pass Filter	FSY Microwave	FM-4570-9SS	003	N.C.R.

6. SETUP OF EQUIPMENT UNDER TEST

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Device Type	Manufacturer	Model	Serial Number	FCC ID
Host Computer	HP	TC1100	310681-001	DoC
AC Adapter	HP/Compaq	PA-1650-02C	340938004	DoC

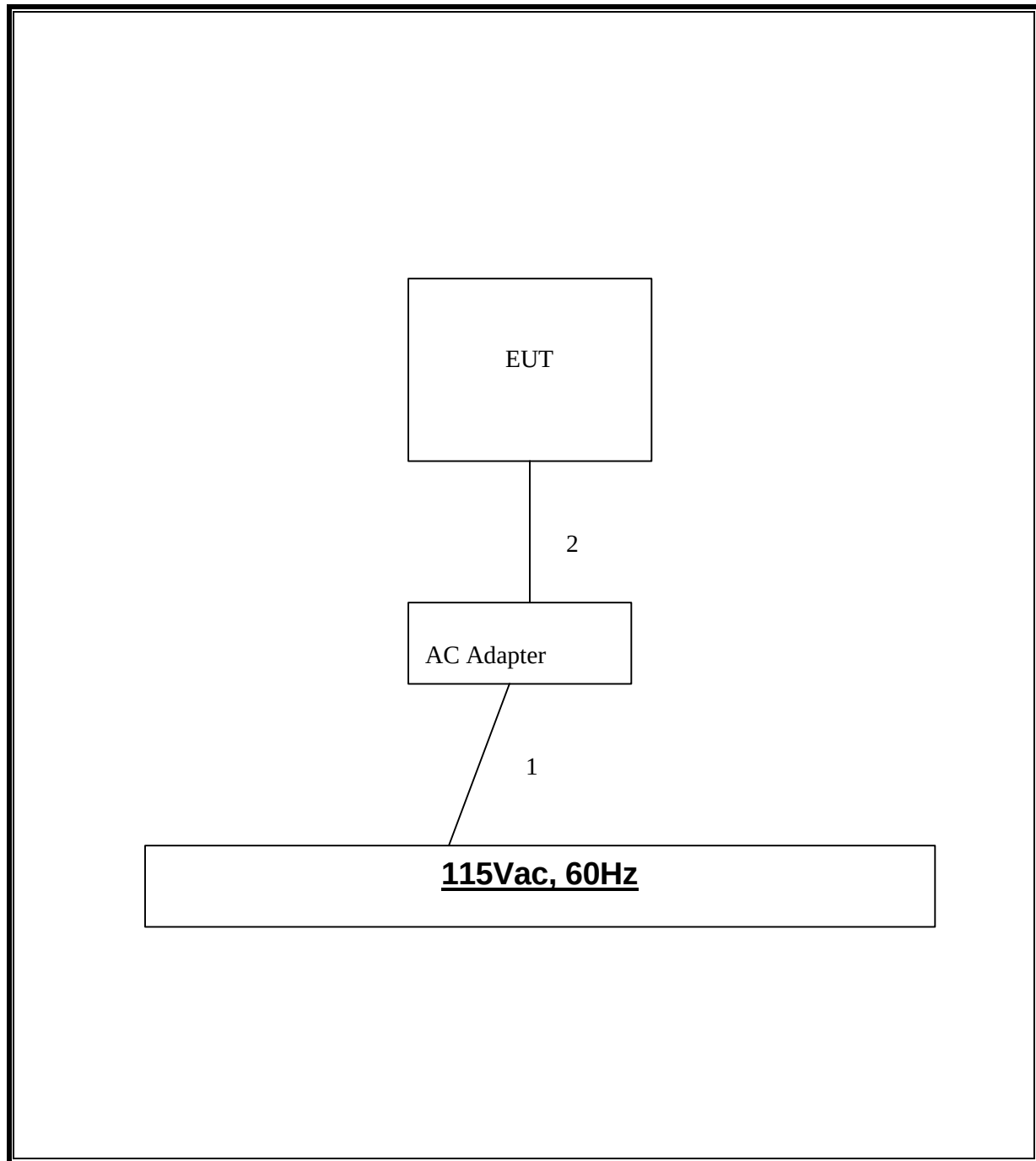
I/O CABLES

Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	US115	Un-Shielded	2m	Bundled AC Cable for LC Test
2	DC	2	DC	Un-Shielded	1m	NA

TEST SETUP

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

SETUP DIAGRAM FOR TESTS



7. APPLICABLE LIMITS AND TEST RESULTS

7.1. 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 of 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 of the 5.8 GHz band.

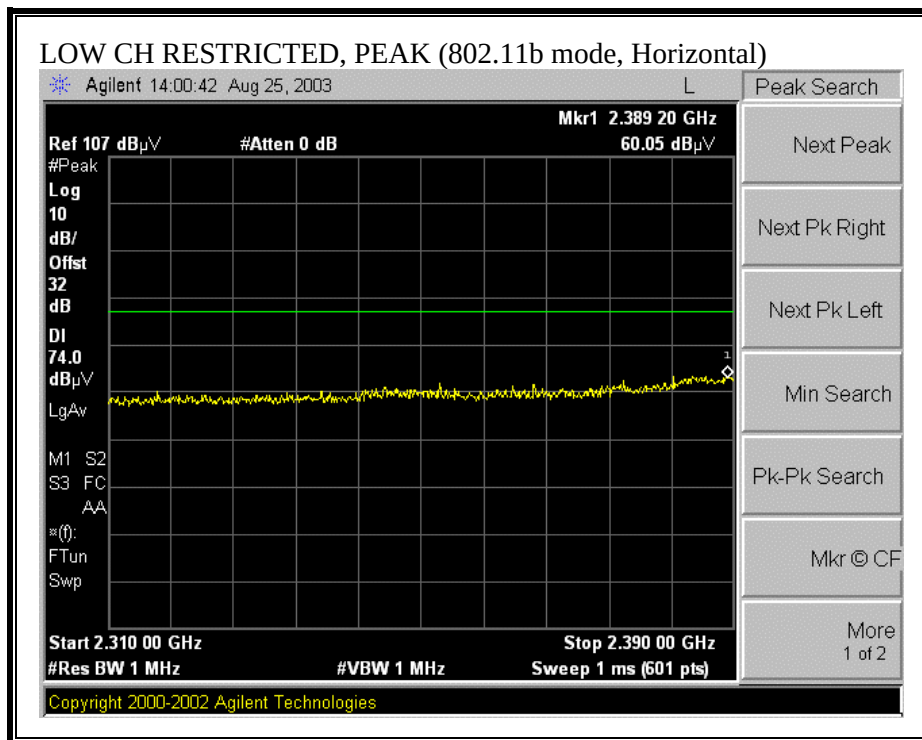
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

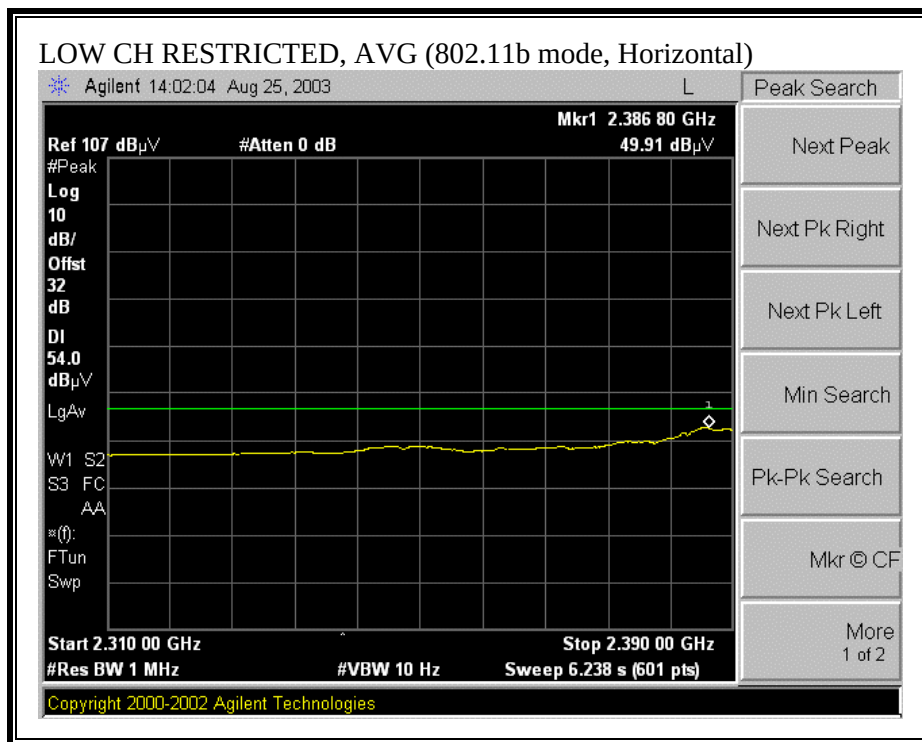
RESULTS

No non-compliance noted:

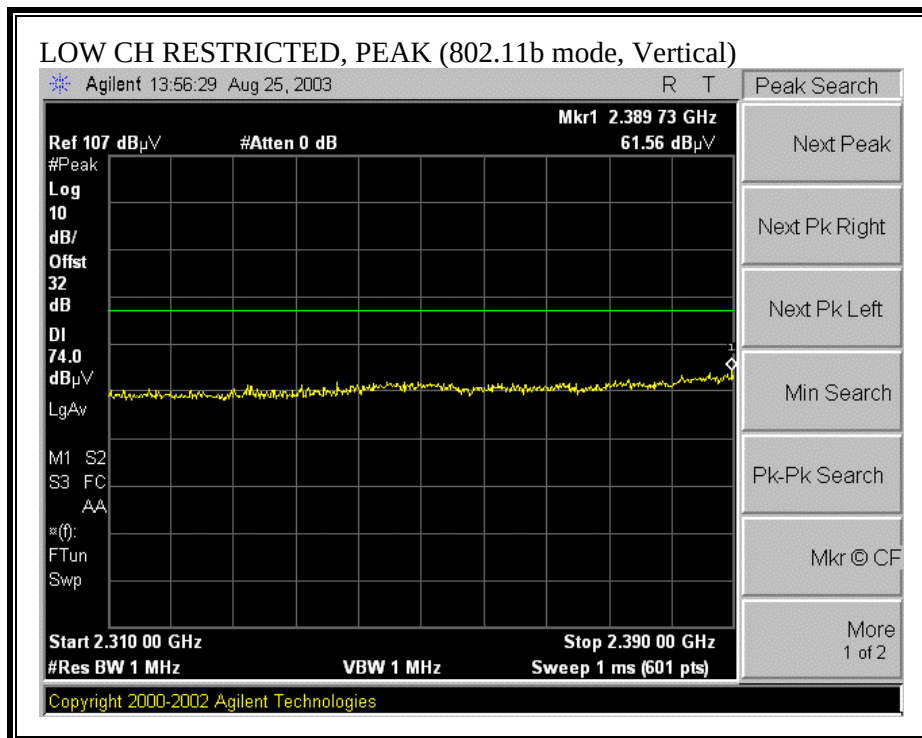
7.1.1. RADIATED EMISSIONS ABOVE 1 GHZ

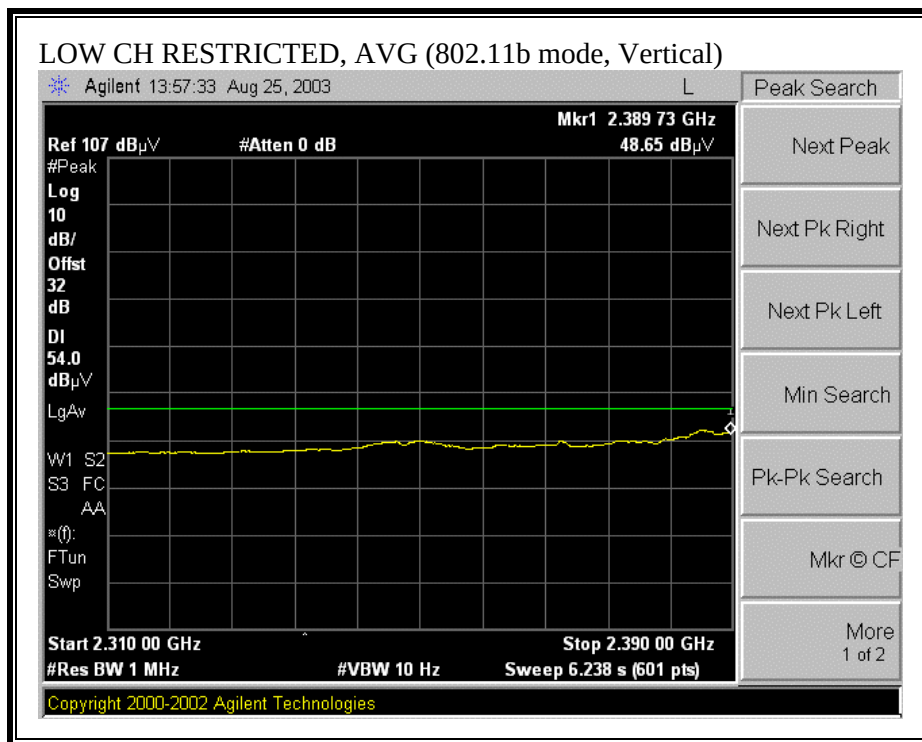
RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, HORIZONTAL)



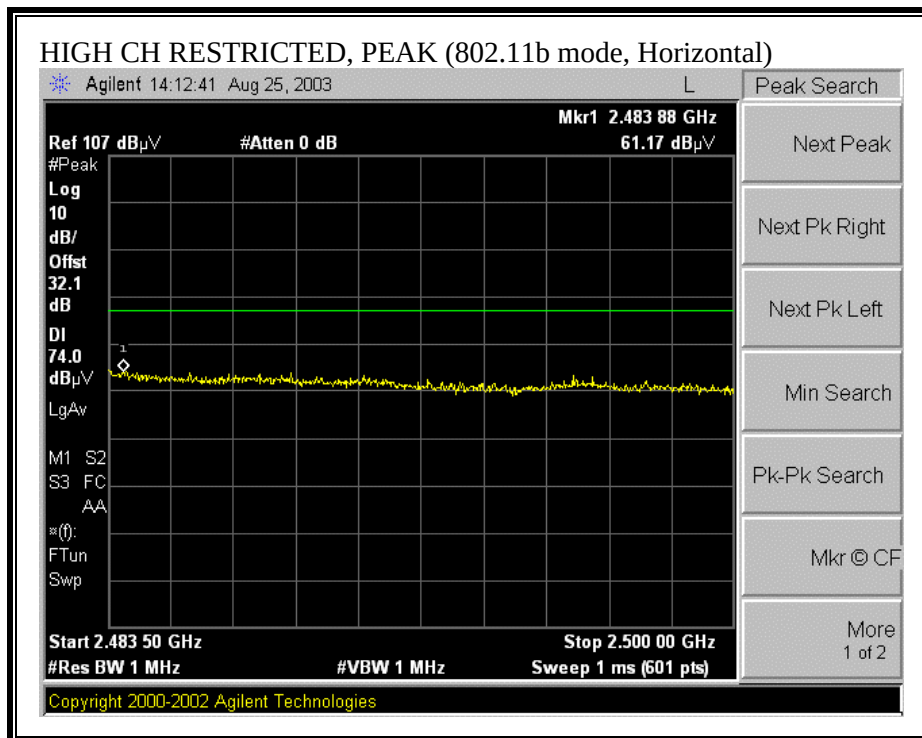


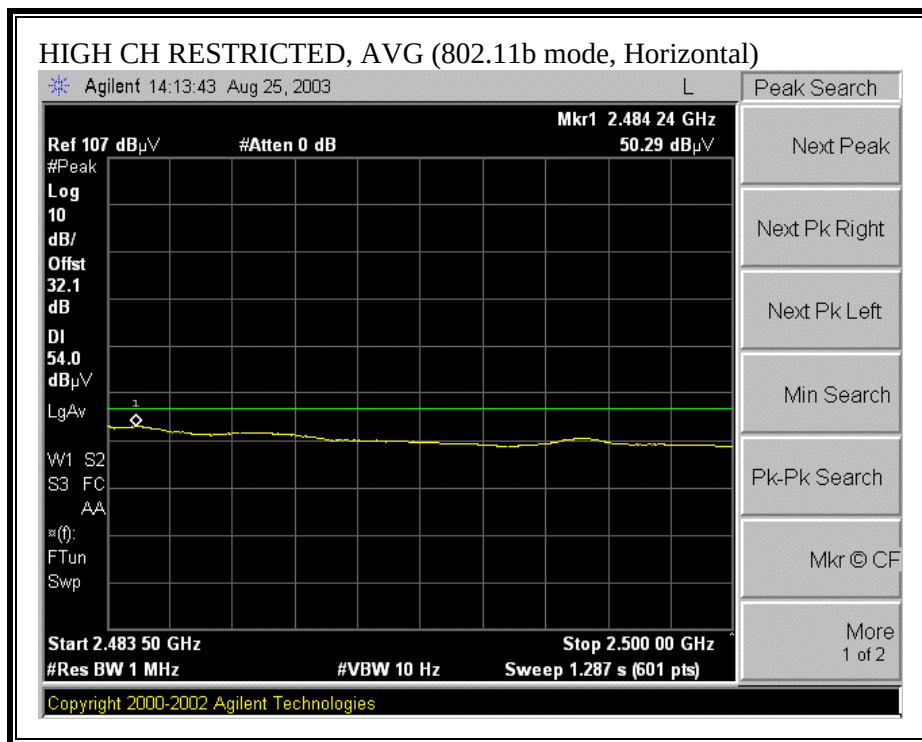
RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, VERTICAL)



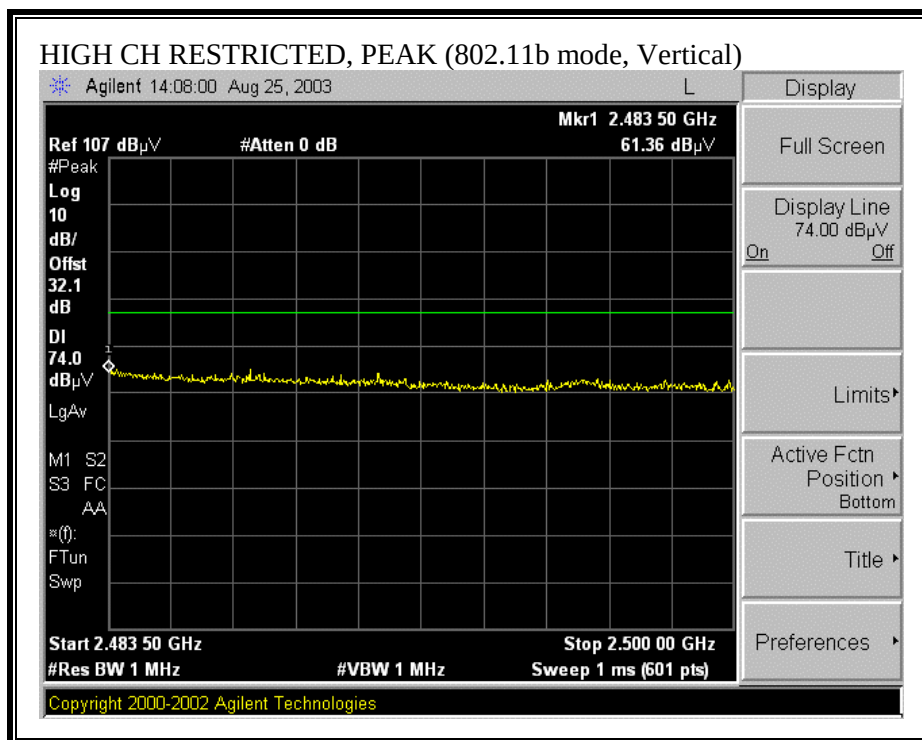


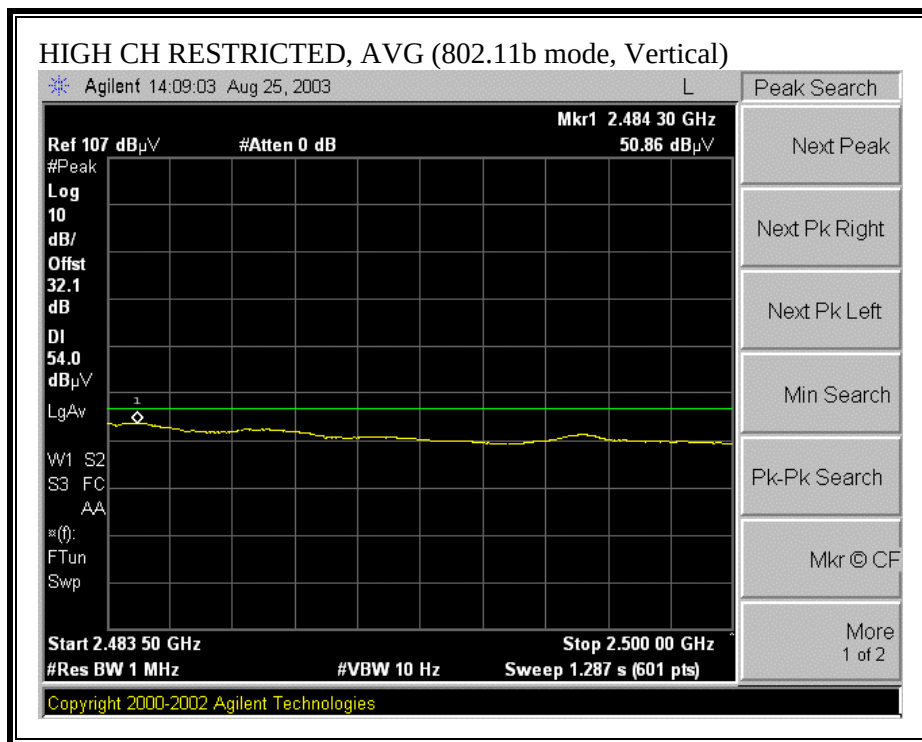
RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, VERTICAL)

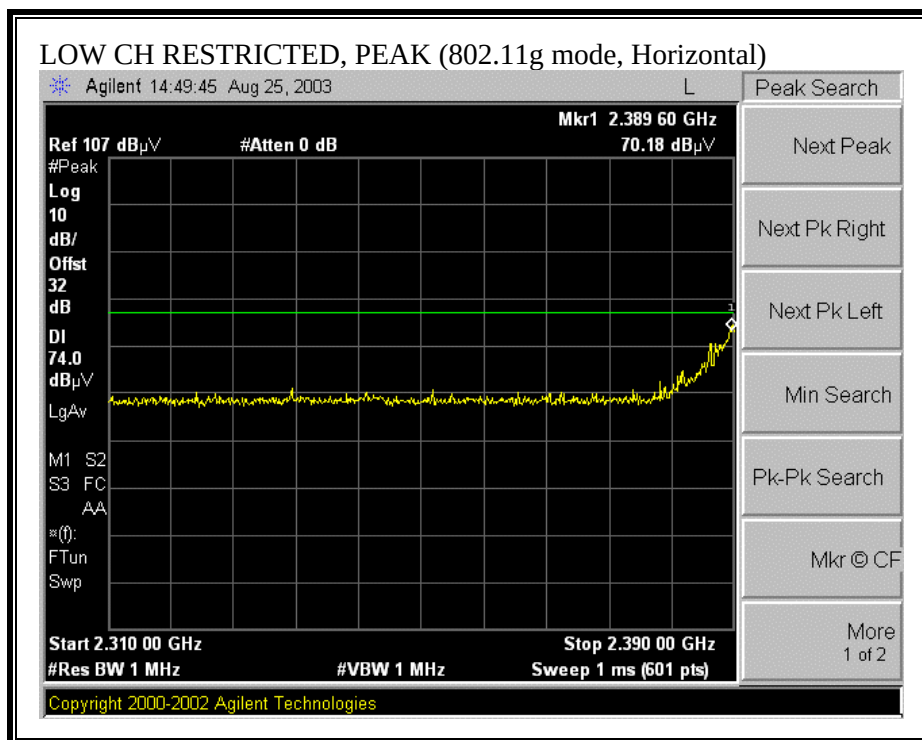


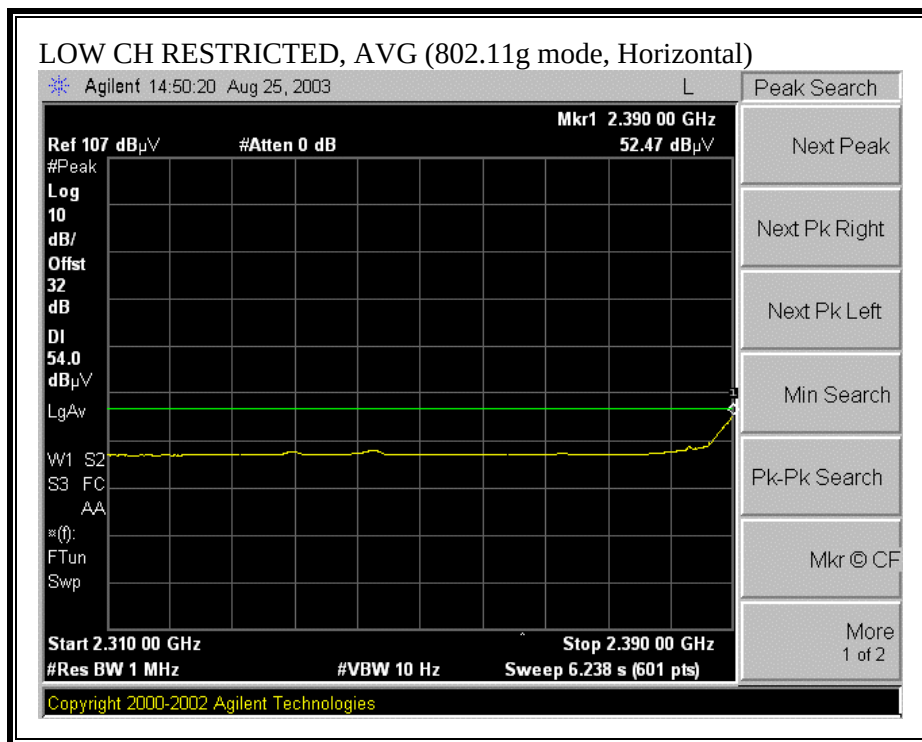


HARMONICS AND SPURIOUS EMISSIONS (b MODE, L M & H CHANNELS)

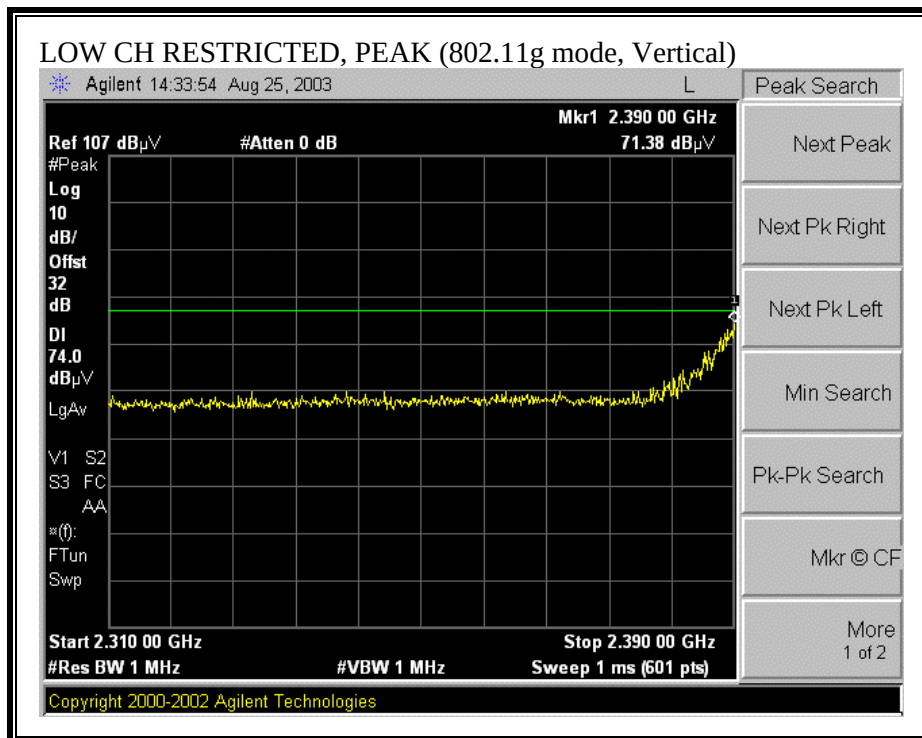
08/25/03 High Frequency Measurement Compliance Certification Services, Morgan Hill Open Field Site																
Test Engr:Chin Pang Project #:03U2185-2 Company:Ambit Microsystem Corp ST. EUT Descip.:802.11 a/b/g Mini PCI EUT M/N:J07H06901 (Antenna Change) Test Target:FCC 15.247 Mode Oper:Tx																
Test Equipment:																
EMCO Horn 1-18GHz T59; S/N: 3245 @3m		Pre-amplifier 1-26GHz T87 Miteq 924342		Spectrum Analyzer Agilent E4446A Analyzer		Horn > 18GHz										
Hi Frequency Cables ☐ (2 ft) ☒ (2 ~ 3 ft) ☐ (4 ~ 6 ft) ☒ (12 ft)								Peak Measurements: 1 MHz Resolution Bandwidth 1MHz Video Bandwidth				Average Measurements: 1 MHz Resolution Bandwidth 10Hz Video Bandwidth				
11b Mode																
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	
Transmittiag at low ch																
4.824	9.8	52.0	43.0	33.1	3.9	-44.7	0.0	1.0	45.3	36.3	74.0	54.0	-28.7	-17.7	V	
7.236	9.8	50.4	38.0	35.9	5.1	-44.6	0.0	1.0	47.8	35.4	74.0	54.0	-26.2	-18.6	V	
2.412	9.8	50.0	40.0	29.4	2.5	-43.2	0.0	1.0	39.6	29.6	74.0	54.0	-34.4	-24.4	H	
7.236	9.8	49.5	38.0	35.9	5.1	-44.6	0.0	1.0	46.9	35.4	74.0	54.0	-27.1	-18.6	H	
Transmittiag at mid ch																
4.874	9.8	51.0	40.7	33.1	4.0	-44.7	0.0	1.0	44.3	34.0	74.0	54.0	-29.7	-20.0	V	
7.311	9.8	48.0	38.0	36.0	5.2	-44.5	0.0	1.0	45.6	35.6	74.0	54.0	-28.4	-18.4	V	
4.874	9.8	50.6	39.5	33.1	4.0	-44.7	0.0	1.0	43.9	32.8	74.0	54.0	-30.1	-21.2	H	
7.311	9.8	49.6	38.6	36.0	5.2	-44.5	0.0	1.0	47.2	36.2	74.0	54.0	-26.8	-17.8	H	
Transmittiag at hi ch																
4.924	9.8	50.4	39.0	33.1	4.0	-44.8	0.0	1.0	43.7	32.3	74.0	54.0	-30.3	-21.7	V	
7.386	9.8	49.9	38.0	36.1	5.2	-44.5	0.0	1.0	47.7	35.8	74.0	54.0	-26.3	-18.2	V	
4.924	9.8	51.0	40.0	33.1	4.0	-44.8	0.0	1.0	44.3	33.3	74.0	54.0	-29.7	-20.7	H	
7.386	9.8	49.0	39.0	36.1	5.2	-44.5	0.0	1.0	46.8	36.8	74.0	54.0	-27.2	-17.2	H	
No other emissions were detected above system noise floor.																
f	Measurement Frequency					Amp	Preamp Gain					Avg Lim	Average Field Strength Limit			
Dist	Distance to Antenna					D Corr	Distance Correct to 3 meters					Pk Lim	Peak Field Strength Limit			
Read	Analyzer Reading					Avg	Average Field Strength @ 3 m					Avg Mar	Margin vs. Average Limit			
AF	Antenna Factor					Peak	Calculated Peak Field Strength					Pk Mar	Margin vs. Peak Limit			
CL	Cable Loss					HPF	High Pass Filter									

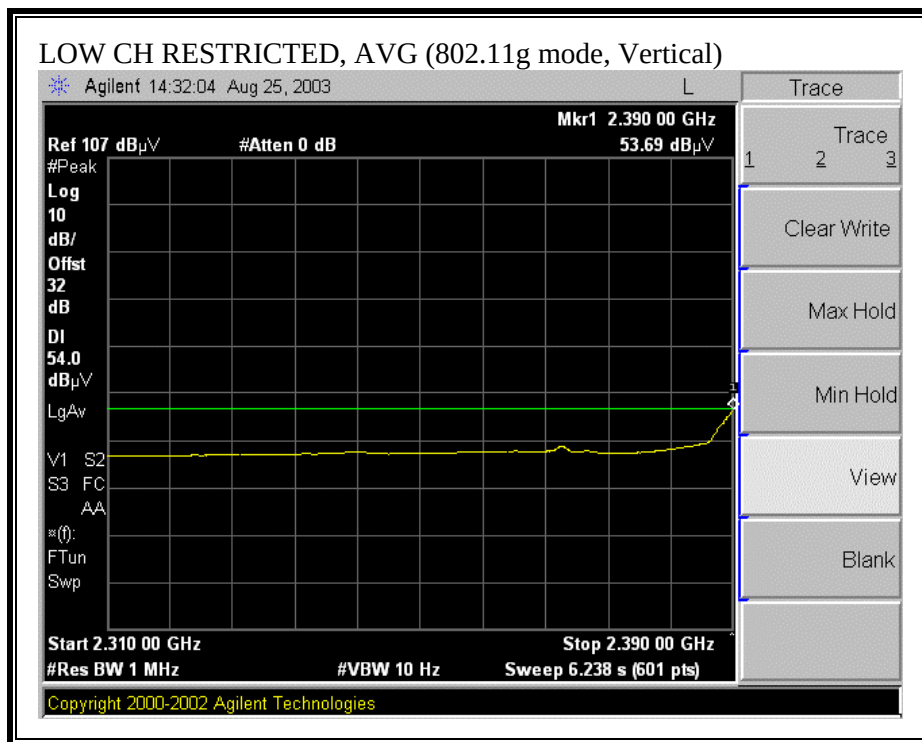
RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, HORIZONTAL)



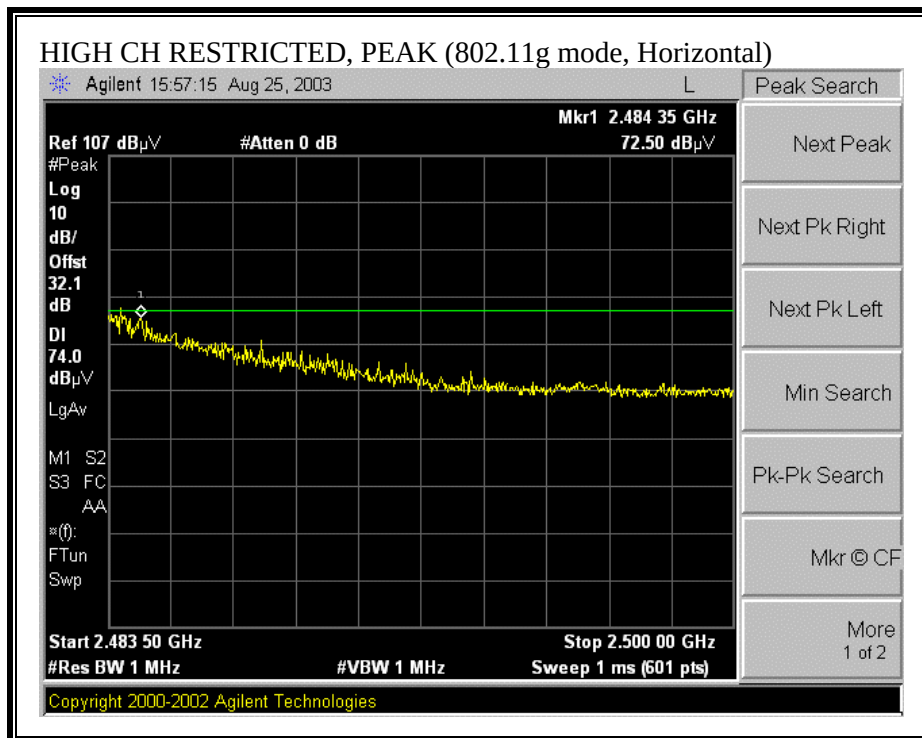


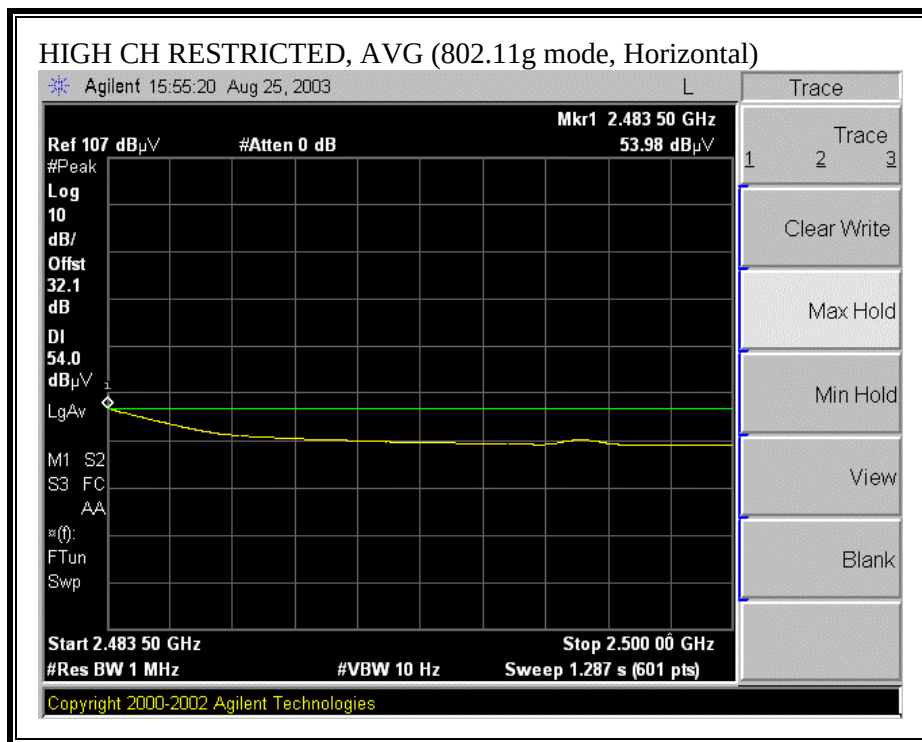
RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, VERTICAL)



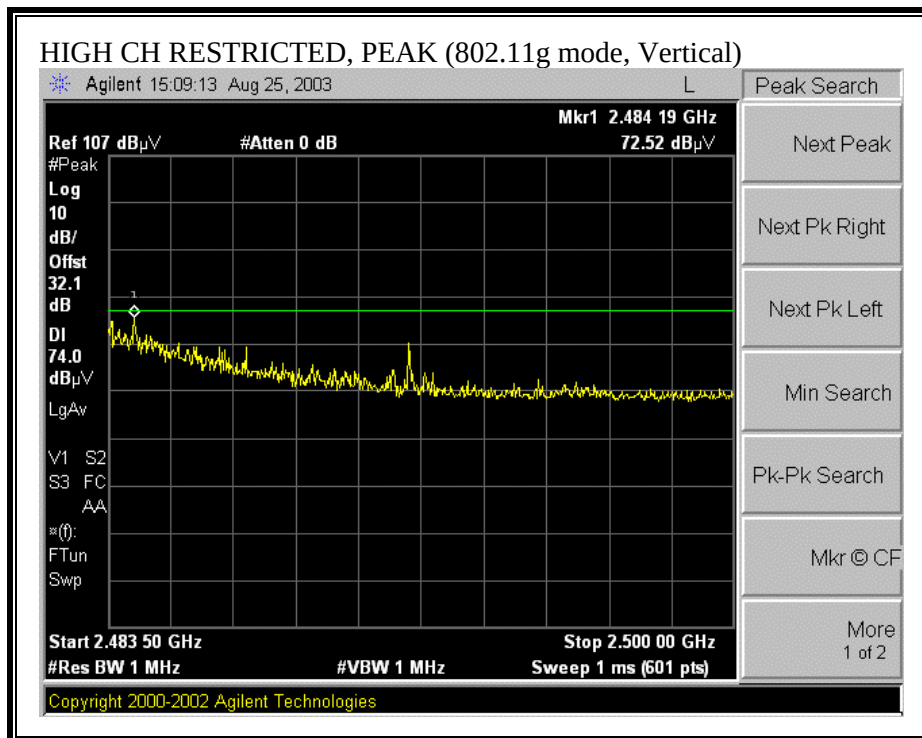


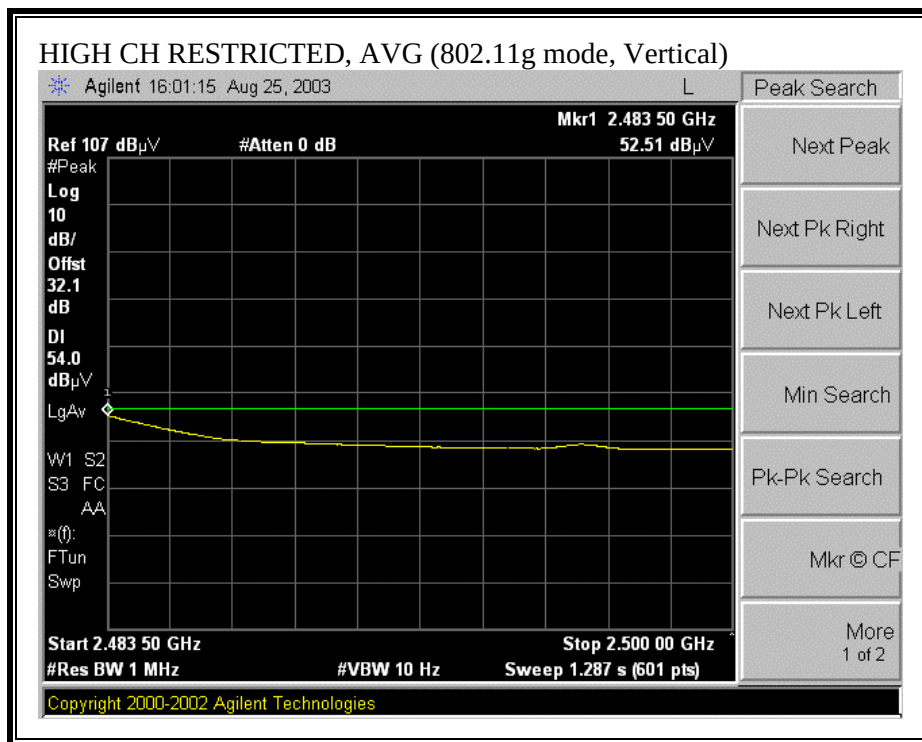
RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS (g NORMAL MODE, L M & H CHANNELS)

08/25/03 High Frequency Measurement Compliance Certification Services, Morgan Hill Open Field Site																
Test Engr:Chin Pang Project #:03U2185-2 Company:Ambit Microsystem Corp. ST EUT Descip.:802.11 a/b/g Mini PCI EUT M/N:J07H06901 (Antenna Change) Test Target:FCC 15.247 Mode Oper:Tx																
Test Equipment:																
EMCO Horn 1-18GHz T59; S/N: 3245 @3m		Pre-amplifier 1-26GHz T87 Miteq 924342		Spectrum Analyzer Agilent E4446A Analyzer		Horn > 18GHz										
Hi Frequency Cables ☐ (2 ft) ☒ (2 ~ 3 ft) ☐ (4 ~ 6 ft) ☒ (12 ft)								Peak Measurements: 1 MHz Resolution Bandwidth 1MHz Video Bandwidth				Average Measurements: 1 MHz Resolution Bandwidth 10Hz Video Bandwidth				
11g Mode																
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	
Transmittiag at low ch																
4.824	9.8	50.0	38.0	33.1	3.9	-44.7	0.0	1.0	43.3	31.3	74.0	54.0	-30.7	-22.7	V	
7.236	9.8	49.0	38.0	35.9	5.1	-44.6	0.0	1.0	46.4	35.4	74.0	54.0	-27.6	-18.6	V	
2.412	9.8	49.5	38.0	29.4	2.5	-43.2	0.0	1.0	39.1	27.6	74.0	54.0	-34.9	-26.4	H	
7.236	9.8	49.3	38.5	35.9	5.1	-44.6	0.0	1.0	46.7	35.9	74.0	54.0	-27.3	-18.1	H	
Transmittiag at mid ch																
4.874	9.8	52.0	41.5	33.1	4.0	-44.7	0.0	1.0	45.3	34.8	74.0	54.0	-28.7	-19.2	V	
7.311	9.8	49.0	38.6	36.0	5.2	-44.5	0.0	1.0	46.6	36.2	74.0	54.0	-27.4	-17.8	V	
4.874	9.8	49.5	39.0	33.1	4.0	-44.7	0.0	1.0	42.8	32.3	74.0	54.0	-31.2	-21.7	H	
7.311	9.8	50.0	39.4	36.0	5.2	-44.5	0.0	1.0	47.6	37.0	74.0	54.0	-26.4	-17.0	H	
Transmittiag at hi ch																
4.924	9.8	50.0	39.0	33.1	4.0	-44.8	0.0	1.0	43.3	32.3	74.0	54.0	-30.7	-21.7	V	
7.386	9.8	49.0	38.0	36.1	5.2	-44.5	0.0	1.0	46.8	35.8	74.0	54.0	-27.2	-18.2	V	
4.924	9.8	50.5	39.3	33.1	4.0	-44.8	0.0	1.0	43.8	32.6	74.0	54.0	-30.2	-21.4	H	
7.386	9.8	49.0	38.6	36.1	5.2	-44.5	0.0	1.0	46.8	36.4	74.0	54.0	-27.2	-17.6	H	
No other emissions were detected above system noise floor.																
f	Measurement Frequency					Amp	Preamp Gain					Avg Lim	Average Field Strength Limit			
Dist	Distance to Antenna					D Corr	Distance Correct to 3 meters					Pk Lim	Peak Field Strength Limit			
Read	Analyzer Reading					Avg	Average Field Strength @ 3 m					Avg Mar	Margin vs. Average Limit			
AF	Antenna Factor					Peak	Calculated Peak Field Strength					Pk Mar	Margin vs. Peak Limit			
CL	Cable Loss					HPF	High Pass Filter									

HARMONICS AND SPURIOUS EMISSIONS (a NORMAL MODE, L M & H CHANNELS)

08/26/03 High Frequency Measurement Compliance Certification Services, Morgan Hill Open Field Site															
Test Engr: chin pang Project #:03U2185-2 Company:Ambit EUT Descrp.:802.11 a/b/g MiniPCI EUT M/N:J07H06901 (antenna change) Test Target:FCC Class B Mode Oper:Tx, normal mode															
Test Equipment:															
EMCO Horn 1-18GHz T59; S/N: 3245 @3m		Pre-amplifier 1-26GHz T87 Miteq 924342		Spectrum Analyzer Agilent E4446A Analyzer		Horn > 18GHz									
Hi Frequency Cables ☐ (2 ft) ☒ (2 ~ 3 ft) ☐ (4 ~ 6 ft) ☒ (12 ft)															
Peak Measurements: 1 MHz Resolution Bandwidth 1MHz Video Bandwidth															
Average Measurements: 1 MHz Resolution Bandwidth 10Hz Video Bandwidth															
11a, 5.8GHz Ch.															
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
Transmitting at low ch															
5.745															
11.490	9.8	45.9	35.0	38.7	6.9	-41.5	0.0	1.0	51.0	40.1	74.0	54.0	-23.0	-13.9	V
11.490	9.8	46.3	35.3	38.7	6.9	-41.5	0.0	1.0	51.4	40.4	74.0	54.0	-22.6	-13.6	H
Transmitting at mid ch															
5.785															
11.570	9.8	46.7	35.6	38.8	6.9	-41.6	0.0	1.0	51.8	40.7	74.0	54.0	-22.2	-13.3	V
11.570	9.8	47.0	36.0	38.8	6.9	-41.6	0.0	1.0	52.1	41.1	74.0	54.0	-21.9	-12.9	H
Transmitting at Hi ch															
5.825															
11.650	9.8	46.8	36.0	38.9	7.0	-41.7	0.0	1.0	51.9	41.1	74.0	54.0	-22.1	-12.9	V
11.650	9.8	46.3	35.5	38.9	7.0	-41.7	0.0	1.0	51.4	40.6	74.0	54.0	-22.6	-13.4	H
No other emissions were detected above system noise floor .															
f	Measurement Frequency			Amp	Preamp Gain			Avg Lim	Average Field Strength Limit						
Dist	Distance to Antenna			D Corr	Distance Correct to 3 meters			Pk Lim	Peak Field Strength Limit						
Read	Analyzer Reading			Avg	Average Field Strength @ 3 m			Avg Mar	Margin vs. Average Limit						
AF	Antenna Factor			Peak	Calculated Peak Field Strength			Pk Mar	Margin vs. Peak Limit						
CL	Cable Loss			HPF	High Pass Filter										

7.1.2. CO-LOCATED RADIATED EMISSIONS

SUPPLEMENTAL TEST PROCEDURE FOR CO-LOCATED RADIATED EMISSIONS

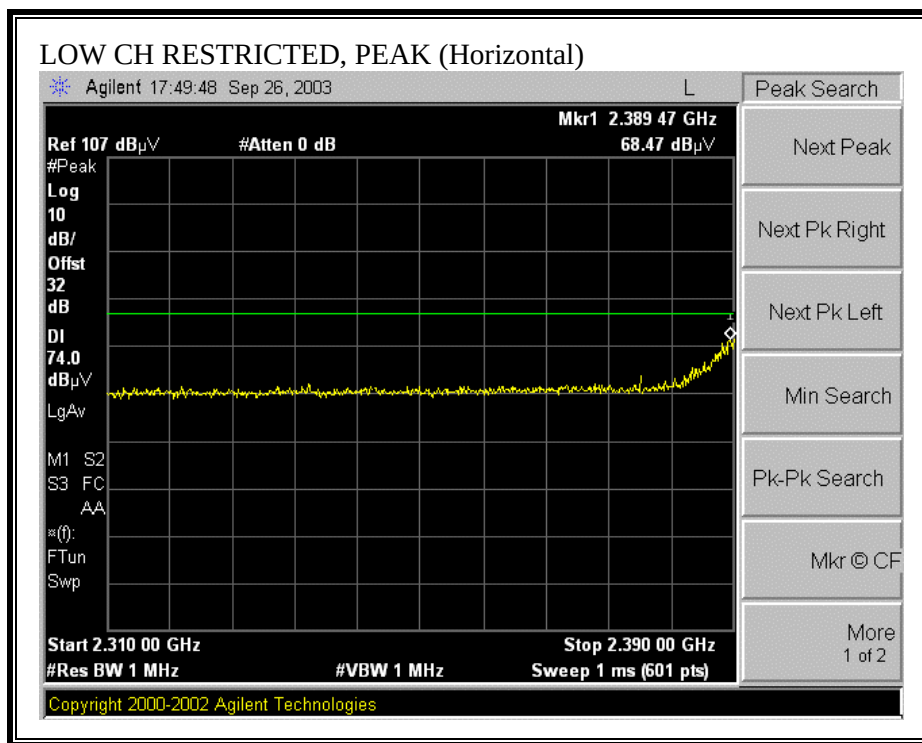
The dominant transmitter is set to the worst case channel. The spurious emissions performance of the dominant transmitter is investigated as the settings of the non-dominant transmitter are varied. Worst case results are reported.

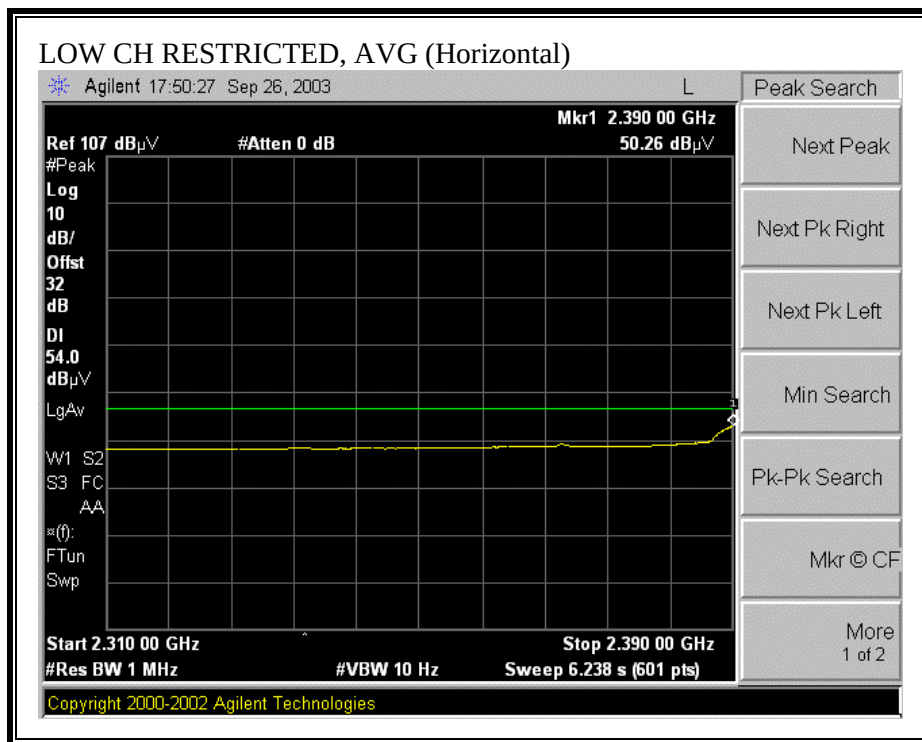
RESULTS

The WLAN is the dominant transmitter; the Bluetooth is the non-dominant transmitter. The worst case band and mode for the dominant transmitter is 2.4 GHz band, g mode.

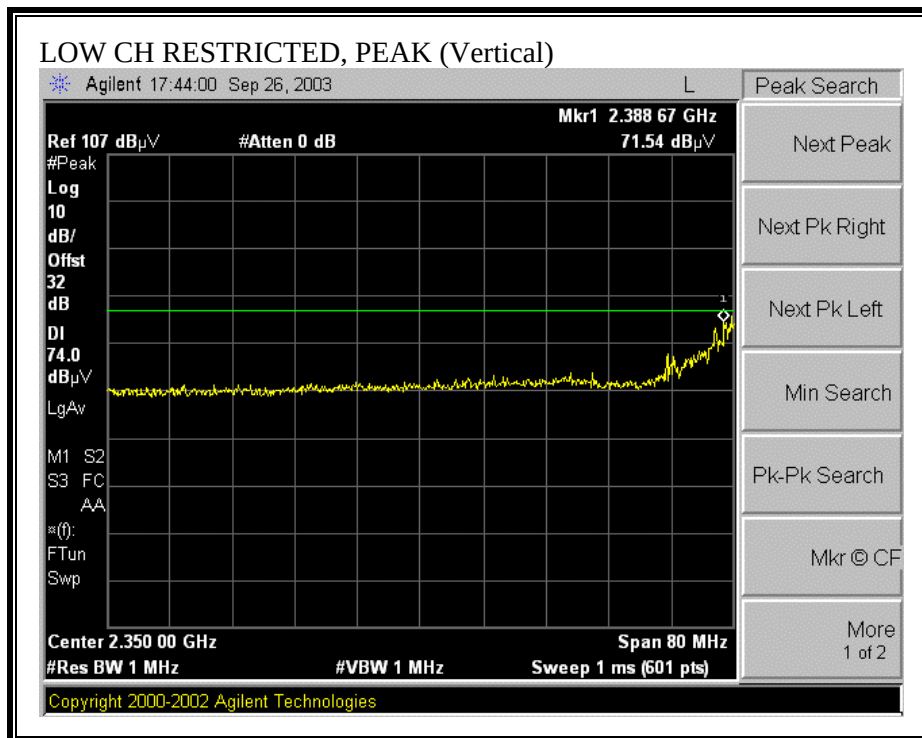
No non-compliance noted:

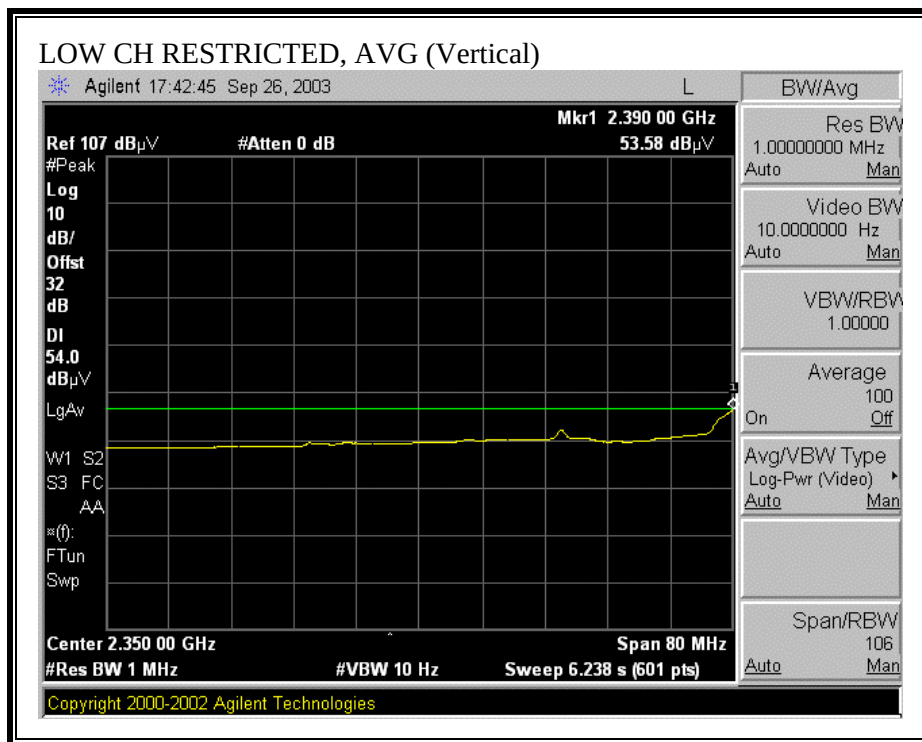
WORST-CASE RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



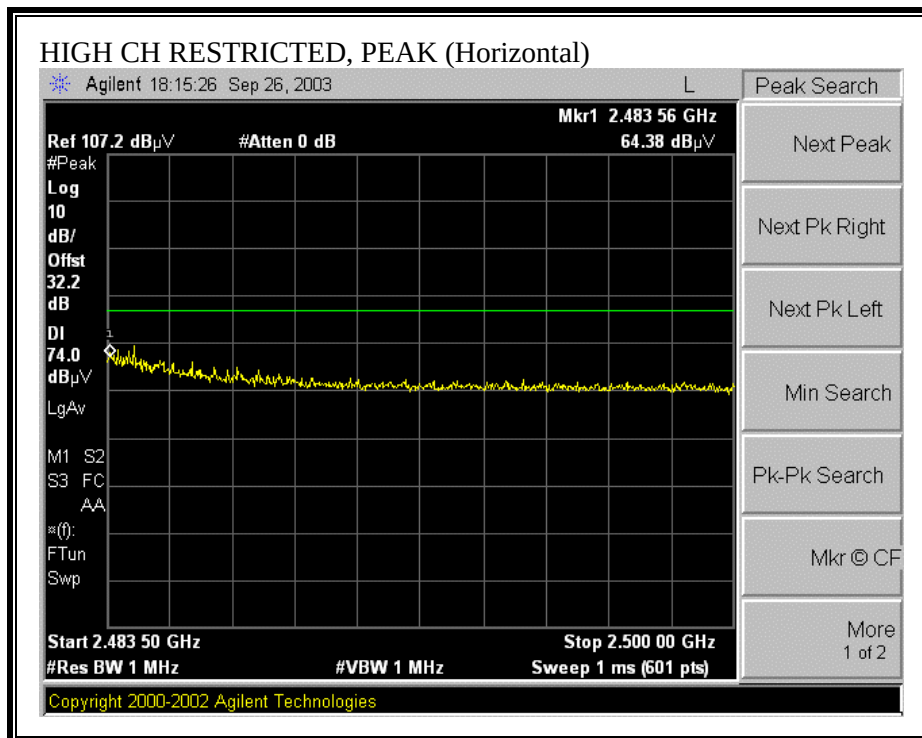


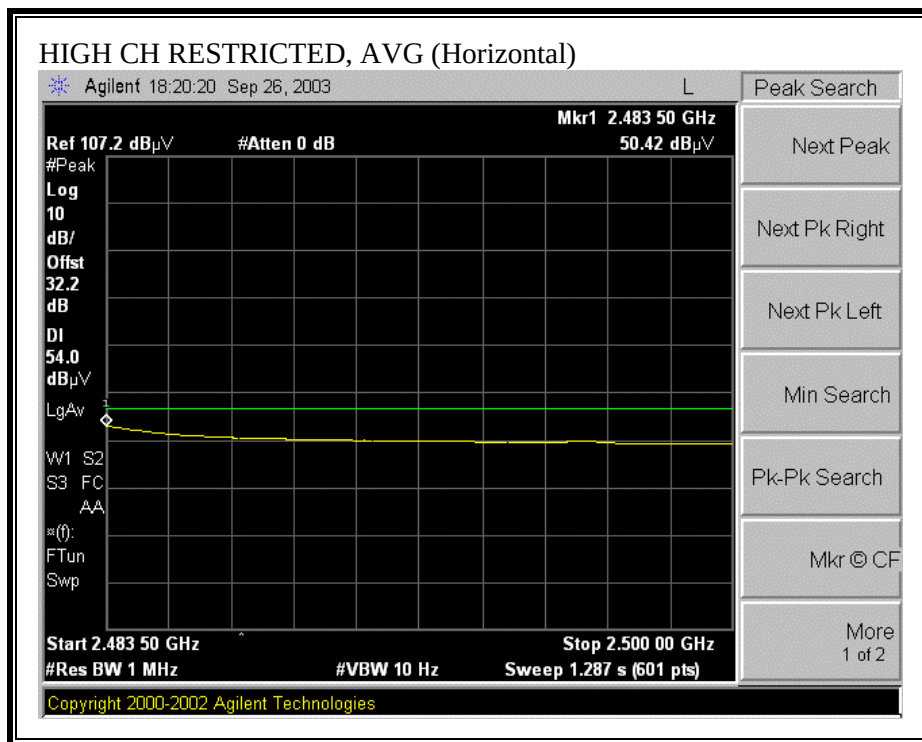
WORST-CASE RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



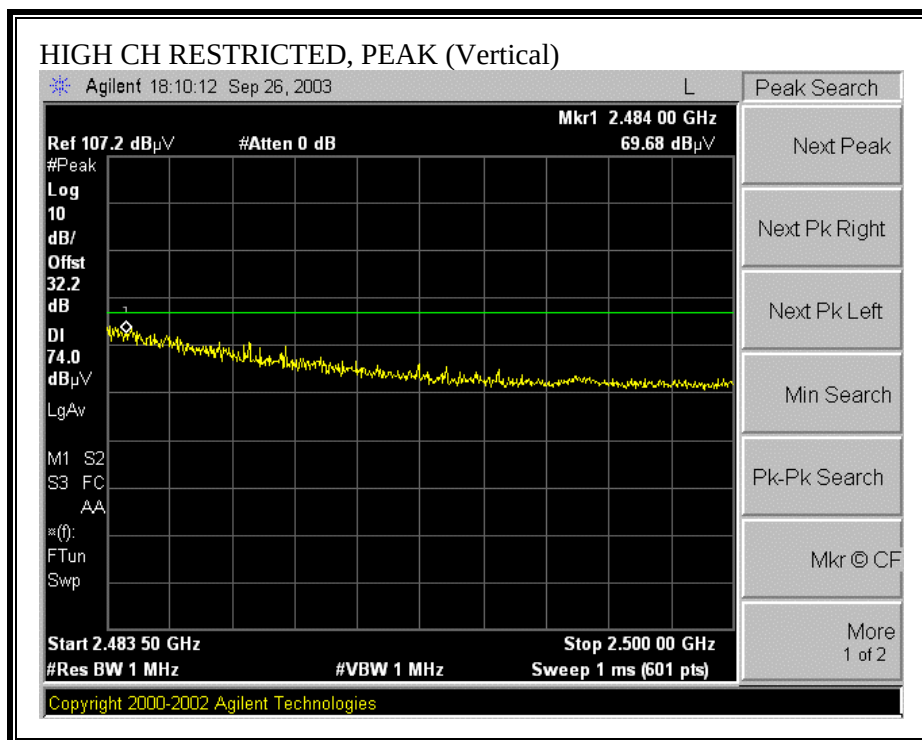


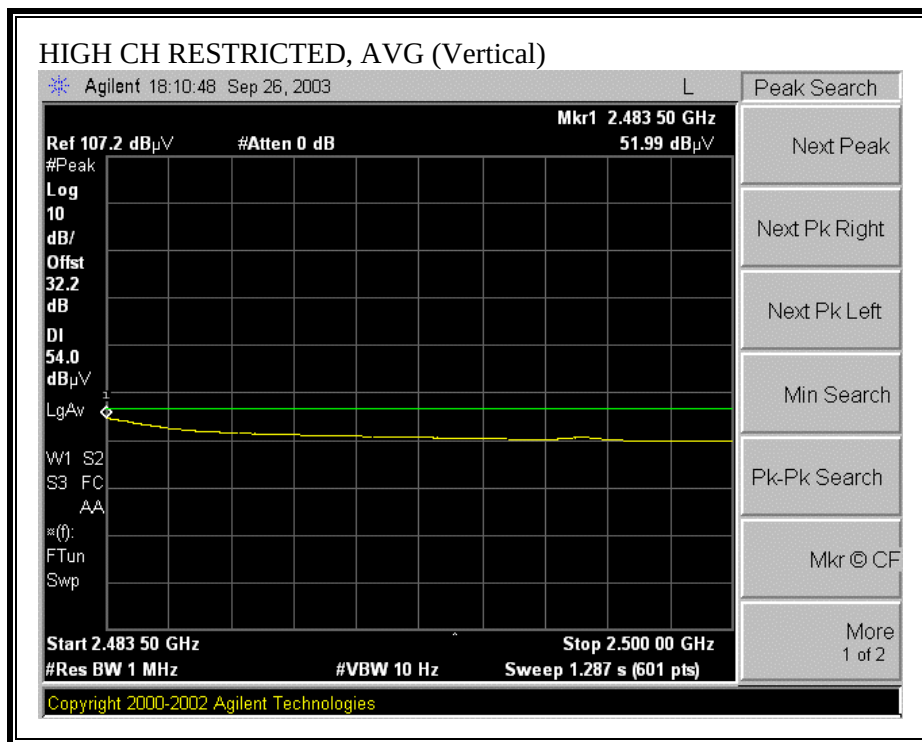
WORST-CASE RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





WORST-CASE RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





WORST-CASE HARMONICS AND SPURIOUS EMISSIONS

09/26/03 High Frequency Measurement

Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Chin Pang

Project #: 03U2185-2

Company: Ambit Microsystem Corp. ST

EUT Descrip.: 802.11 a/b/g Mini PCI

EUT M/N: J07H06901 (Antenna Change)

Test Target: FCC 15.247

Mode Oper: WLAN and Bluetooth colocation, (Worse case, g mode)

Test Equipment:

EMCO Horn 1-18GHz	Pre-amplifier 1-26GHz	Spectrum Analyzer	Horn > 18GHz
T59; S/N: 3245 @3m	T87 Miteq 924342	Agilent E4446A Analyzer	

Hi Frequency Cables

☐ (2 ft)	☒ (2 ~ 3 ft)	☐ (4 ~ 6 ft)	☒ (12 ft)
---------------------------------	--	-------------------------------------	---

Peak Measurements:
1 MHz Resolution Bandwidth
1MHz Video Bandwidth

Average Measurements:
1 MHz Resolution Bandwidth
10Hz Video Bandwidth

11g Mode

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
Transmittiag at g mode, mid ch with bluetooth transmitting															
4.874	9.8	51.5	40.6	33.1	4.0	-44.7	0.0	1.0	44.8	33.9	74.0	54.0	-29.2	-20.1	V
7.311	9.8	52.7	41.0	36.0	5.2	-44.5	0.0	1.0	50.3	38.6	74.0	54.0	-23.7	-15.4	V
4.874	9.8	50.0	39.2	33.1	4.0	-44.7	0.0	1.0	43.3	32.5	74.0	54.0	-30.7	-21.5	H
7.311	9.8	51.0	39.0	36.0	5.2	-44.5	0.0	1.0	48.6	36.6	74.0	54.0	-25.4	-17.4	H

No other emissions were detected above system noise floor.

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

7.1.3. RADIATED EMISSIONS BELOW 1 GHZ

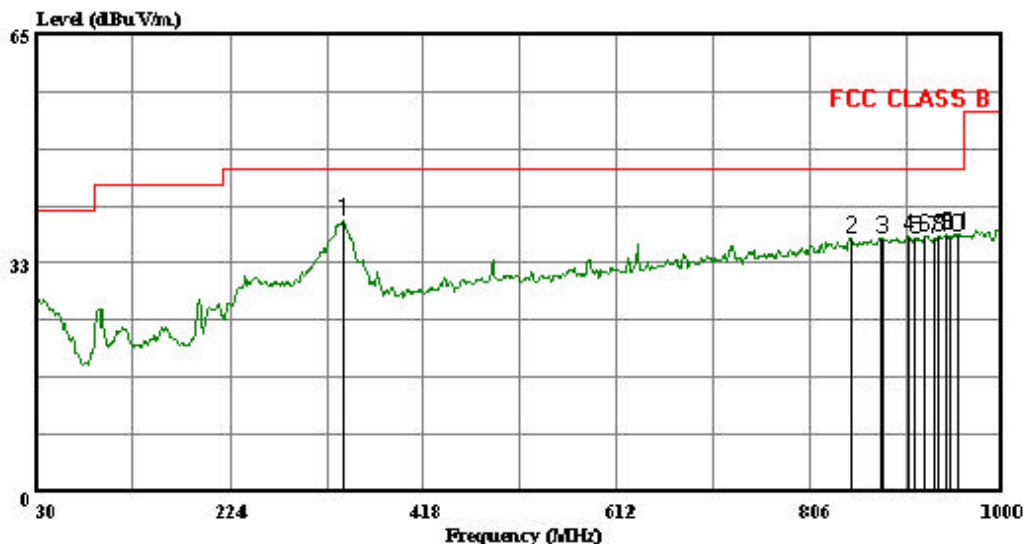
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)



561F Monterey Road
Morgan Hill, CA 95037, U.S.A.
Tel: (408) 463-0885
Fax: (408) 463-0888

Data#: 2 File#: test1.EMI

Date: 08-25-2003 Time: 12:31:51



(Auxiliary ATC)

Trace: 1

Ref Trace:

Condition: FCC CLASS B
Company : Ambit Microsystems Corp.ST
EUT Description : 802.11 a/b/g Mini PCI
Model Number : J07H069-01r
Test Configuration: EUT Only (HP Golden Unit Laptop)
Tester : Chin Pang
Test Target : FCC-B
Mode of Operation: Tx
Project No : 03U2185-2

Page: 1

	Read	Probe	Cable	Preamp	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit Remark
MHz	dBuV	dB	dB	dB	dBuV/m	dBuV/m	dB
1	337.490	23.57	13.02	1.85	0.00	38.44	46.00 -7.56 Peak
2	846.740	12.75	20.18	3.15	0.00	36.08	46.00 -9.92 Peak
3	877.780	12.49	20.42	3.17	0.00	36.08	46.00 -9.92 Peak
4	904.940	12.57	20.62	3.21	0.00	36.40	46.00 -9.60 Peak
5	911.730	12.23	20.66	3.24	0.00	36.13	46.00 -9.87 Peak
6	921.430	12.41	20.72	3.26	0.00	36.39	46.00 -9.61 Peak
7	931.130	11.97	20.79	3.29	0.00	36.05	46.00 -9.95 Peak
8	935.980	12.12	20.82	3.33	0.00	36.27	46.00 -9.73 Peak
9	943.740	12.31	20.86	3.38	0.00	36.55	46.00 -9.45 Peak
10	948.590	12.07	20.90	3.38	0.00	36.35	46.00 -9.65 Peak
11	953.440	12.39	20.93	3.38	0.00	36.70	46.00 -9.30 Peak

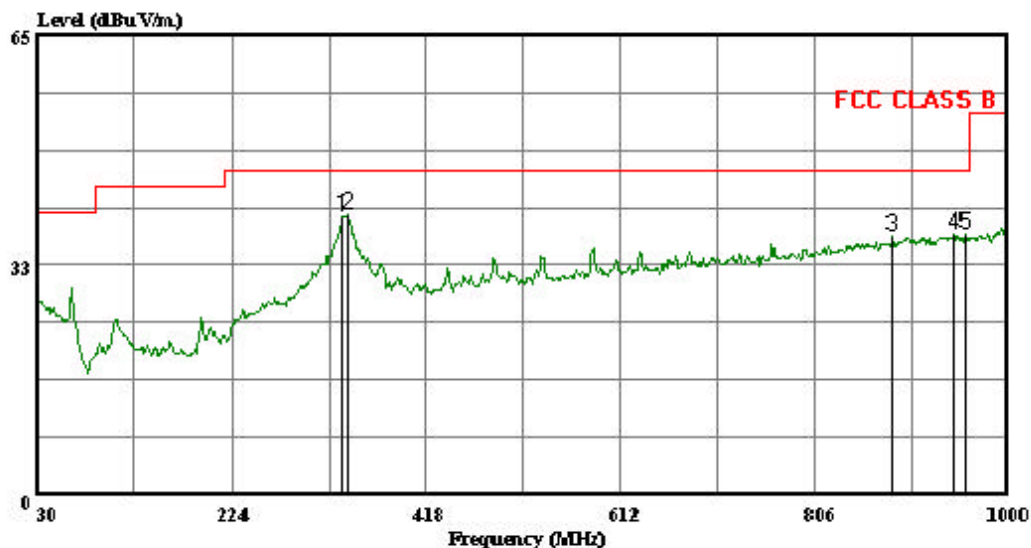
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION VERTICAL)



561F Monterey Road
Morgan Hill, CA 95037, U.S.A.
Tel: (408) 463-0885
Fax: (408) 463-0888

Data#: 4 File#: test1.EMI

Date: 08-25-2003 Time: 12:36:25



(Auxil: ATC)

Trace: 3

Ref Trace:

Condition: FCC CLASS B
Company : Ambit Microsystems Corp.ST
EUT Description : 802.11 a/b/g Mini PCI
Model Number : J07H069-01r
Test Configuration: EUT Only (HP Golden Unit Laptop)
Tester : Chin Pang
Test Target : FCC-B
Mode of Operation: Tx
Project No : 03U2185-2

Page: 1

	Freq	Read Level	Probe Factor	Cable Loss	Preamplifier Factor	Limit Level	Over Limit	Remark
	MHz	dBuV	dB	dB	dB	dBuV/m	dBuV/n	dB
1	334.580	24.59	12.96	1.84	0.00	39.39	46.00	-6.61 Peak
2	339.430	24.61	13.08	1.85	0.00	39.54	46.00	-6.46 Peak
3	882.630	12.98	20.45	3.20	0.00	36.63	46.00	-9.37 Peak
4	945.680	12.65	20.88	3.35	0.00	36.88	46.00	-9.12 Peak
5	955.380	12.41	20.94	3.40	0.00	36.75	46.00	-9.25 Peak

7.2. 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:

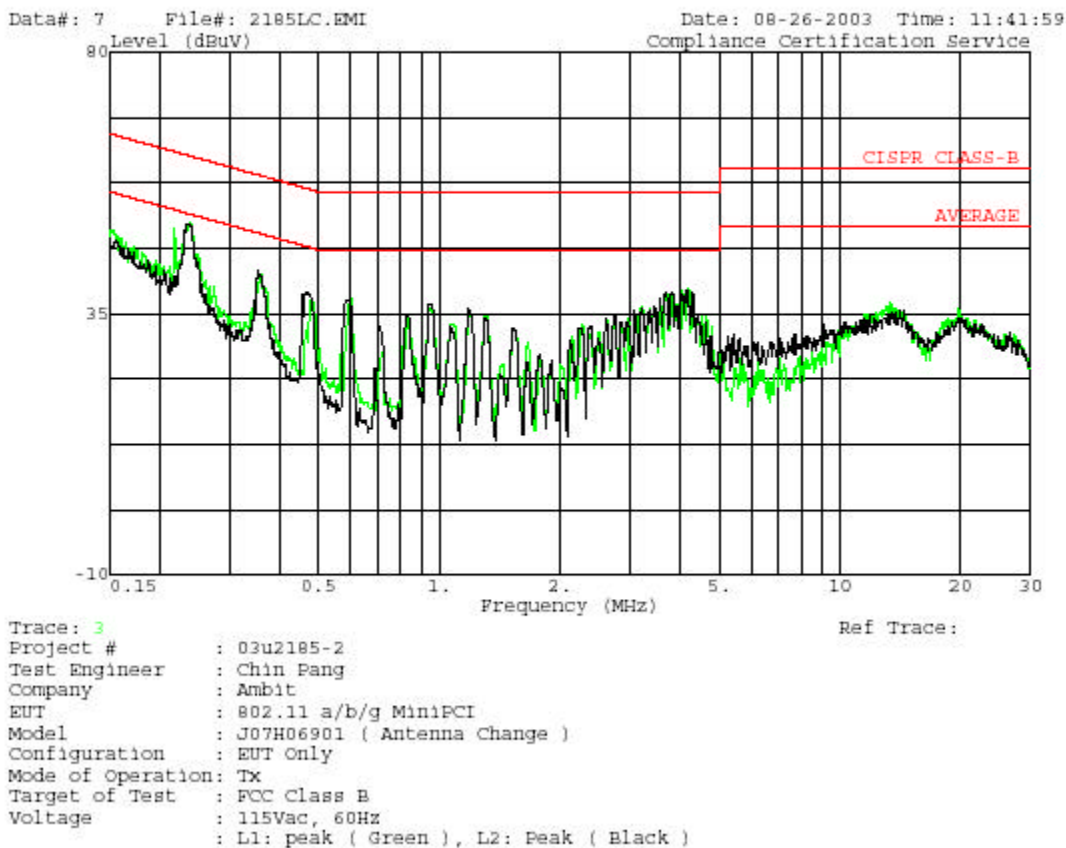
6 WORST EMISSIONS

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
0.24	50.62	--	--	0.00	63.46	53.46	-12.84	-2.84	L1
0.36	41.80	--	--	0.00	60.00	50.00	-18.20	-8.20	L1
4.16	40.14	--	--	0.00	56.00	46.00	-15.86	-5.86	L1
0.24	50.22	--	--	0.00	63.46	53.46	-13.24	-3.24	L2
0.36	42.32	--	--	0.00	60.00	50.00	-17.68	-7.68	L2
4.11	40.14	--	--	0.00	56.00	46.00	-15.86	-5.86	L2
6 Worst Data									

LINE 1 AND LINE 2 RESULTS



561F Monterey Road,
San Jose, CA 95037 USA
Tel: (408) 463-0885
Fax: (408) 463-0888



8. SETUP PHOTOS

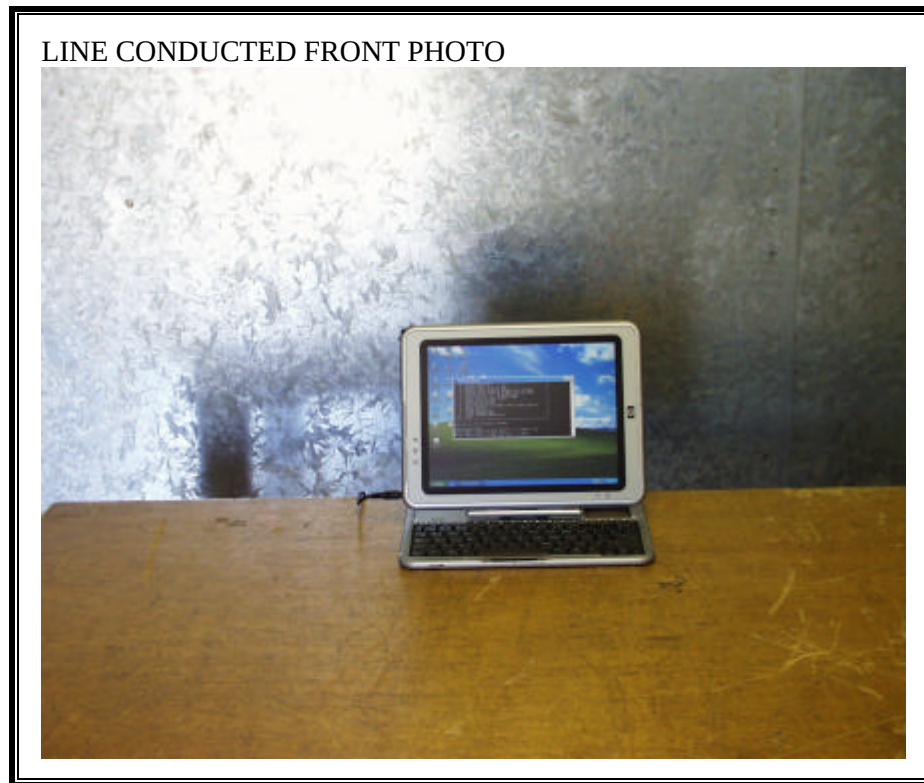
RADIATED RF MEASUREMENT SETUP



RADIATED BACK PHOTO



POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP



LINE CONDUCTED BACK PHOTO



END OF REPORT