



**FCC CFR47 PART 15 SUBPART E  
CERTIFICATION**

**TEST REPORT**

**FOR**

**802.11 a/b/g WLAN MINI PCI MODULE**

**MODEL NUMBER: J07H069.01**

**FCC ID: MCLJ07H06903**

**REPORT NUMBER: 03U2433-2**

**ISSUE DATE: DECEMBER 31, 2003**

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## 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 WLAN MINI PCI MODULE

**MODEL:** J07H069.01

**DATE TESTED:** DECEMBER 23-31, 2003

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART E	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 5.2 GHz band is applicable to this report; other bands of operation (2.4 and 5.8 GHz) are documented in a separate report.

Approved & Released For CCS By:

Tested By:



MIKE HECKROTTE  
CHIEF ENGINEER  
COMPLIANCE CERTIFICATION SERVICES



NEELESH RAJ  
EMC TECHNICIAN  
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)
5180 - 5250	0.044	16.43
5260 - 5320	0.056	17.48

### 2.2. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

The radio module is intended to be used with an additional antenna pair.

The main antenna is a Wistron J12B1394-1 PIFA Antenna with a maximum assembly gain (including cable loss) of 1.0 dBi in the 5150 - 5350 MHz band. The auxiliary antenna is a Wistron J12B1394-2 PIFA Antenna with a maximum assembly gain (including cable loss) of 0.81 dBi in the 5150 - 5350 MHz band.

### 3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4/2001, FCC CFR 47 Part 2 and FCC CFR 47 Part 15.

### 4. FACILITIES AND ACCREDITATION

The test sites and 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:

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

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

### 5.3. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST				
Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	2238	2/4/2004
Preamplifier, 1 ~ 26 GHz	Miteq	NSP10023988	646456	4/25/2004
Spectrum Analyzer 3Hz ~ 26.5GHz	Agilent	E4440A	US41421507	5/8/2004
Antenna, Horn, 18 ~ 26 GHz	ARA	MWH-1826/B	1013	2/2/2004
Peak Power Meter	Agilent	E4416A	GB41291160	11/7/2004
Peak / Average Power Sensor	Agilent	E9327A	US40440755	11/7/2004
EMI Receiver, 9 kHz ~ 2.9 GHz	HP	8542E	3942A00286	11/21/2004
RF Filter Section	HP	85420E	3705A00256	11/21/2004
Antenna, Bicon/Log, 25 ~ 2000 MHz	ARA	LPB-2520/A	1185	3/6/2004
EMI Test Receiver	R & S	ESHS 20	827129/006	7/17/2004
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	8379443	10/13/2004
Line Filter	Lindgren	LMF-3489	497	CNR
LISN, 10 kHz ~ 30 MHz	FCC	LISN-50/250-25-2	2023	10/13/2004
Antenna, Horn 1 ~ 18 GHz	EMC Test Systems	3117	29301	12/6/2004
2.4-2.5 GHz Reject Filter	Micro-Tronics	BRM50702	3	N/A
5.15-5.35 GHz Reject Filter	Micro-Tronics	BRC13190	2	N/A
5.725-5.875 GHz	Micro-Tronics	BRC13192	2	N/A
10 dB Attenuator	Weinschel	56-10	1	N/A

## 6. SETUP OF EQUIPMENT UNDER TEST

### SUPPORT EQUIPMENT

TEST PERIPHERALS				
Device Type	Manufacturer	Model Number	Serial Number	FCC ID
LAPTOP	HP	NX9100 (HP TRUMAN)	N/A	N/A
AC ADAPTER	HP	PPP016H	F3-0308000334A	N/A

### I/O CABLES

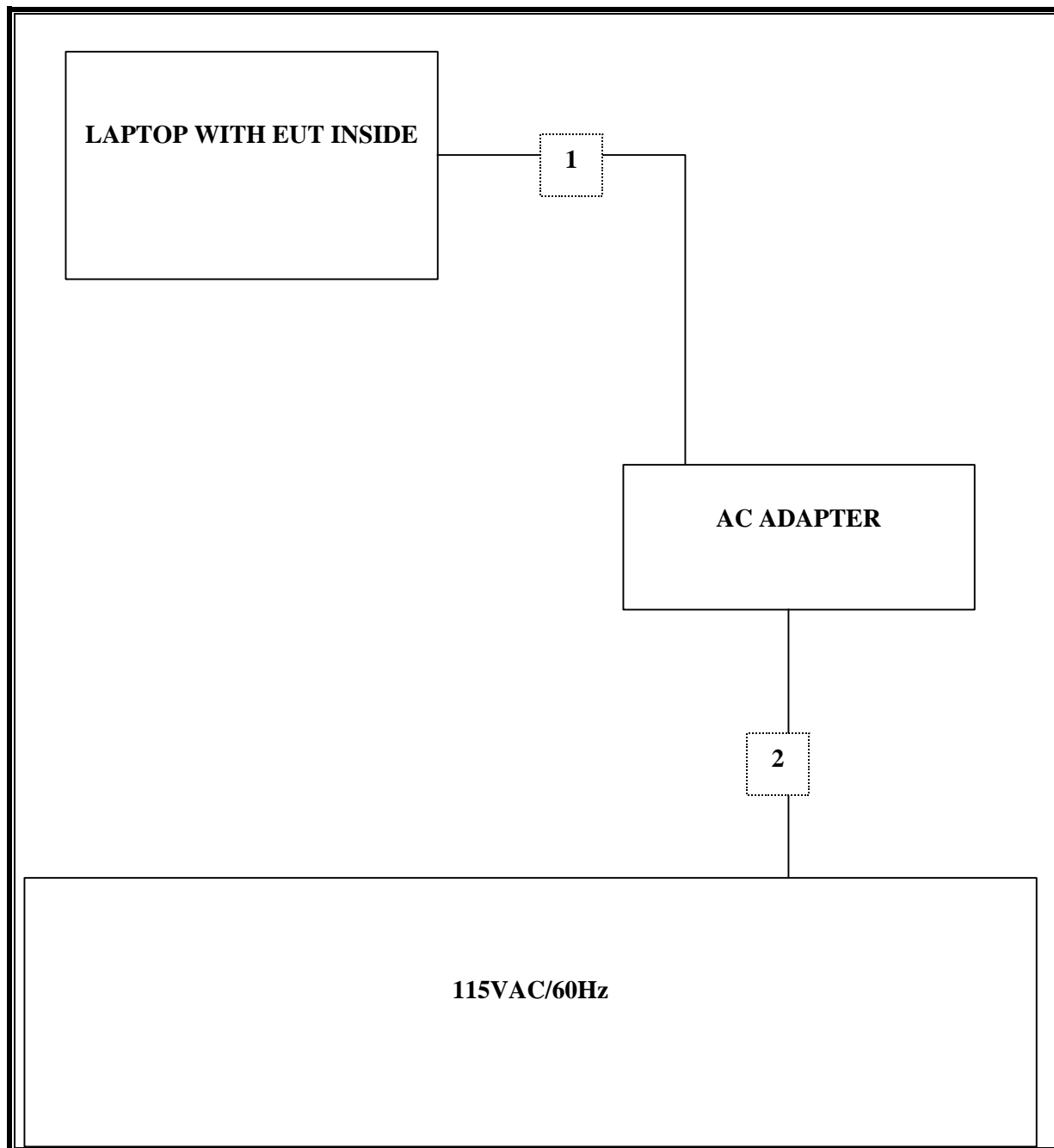
TEST I / O CABLES							
Cable No	I/O Port	# of I/O Port	Connector Type	Type of Cable	Cable Length	Data Traffic	Remark
1	DC PWR	1	DC PWR	SHIELDED	1.86M	NO	FERRITE BEAD AT BOTH ENDS US (3 PRONG)
2	AC PWR	1	AC PWR	UNSHIELDED	1.86M	NO	

### TEST SETUP

The EUT is installed inside the host laptop under the keyboard. The EUT has two antennas, a main and an auxiliary antenna. The main antenna is located at the top right hand corner of the LCD screen and the auxiliary antenna is located at the top left hand at corner of LCD screen. During the testing process the EUT was in continuously transmit mode.



**SETUP DIAGRAM FOR TESTS**



## 7. APPLICABLE LIMITS AND TEST RESULTS

### 7.1. MAXIMUM PERMISSIBLE EXPOSURE

#### LIMITS

§1.1310 The criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of §2.1093 of this chapter.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0 .....	614	1.63	*(100)	6
3.0–30 .....	1842/f	4.89/f	*(900/f <sup>2</sup> )	6
30–300 .....	61.4	0.163	1.0	6
300–1500 .....			f/300	6
1500–100,000 .....			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34 .....	614	1.63	*(100)	30
1.34–30 .....	824/f	2.19/f	*(180/f <sup>2</sup> )	30

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)—Continued

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
30–300 .....	27.5	0.073	0.2	30
300–1500 .....			f/1500	30
1500–100,000 .....			1.0	30

f = frequency in MHz

\* = Plane-wave equivalent power density

NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

## **CALCULATIONS**

Given

$$E = \sqrt{(30 * P * G) / d}$$

and

$$S = E^2 / 3770$$

where

E = Field Strength in Volts/meter

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power Density in milliwatts/square centimeter

Combining equations and rearranging the terms to express the distance as a function of the remaining variables yields:

$$d = \sqrt{((30 * P * G) / (3770 * S))}$$

Changing to units of Power to mW and Distance to cm, using:

$$P \text{ (mW)} = P \text{ (W)} / 1000 \text{ and}$$

$$d \text{ (cm)} = 100 * d \text{ (m)}$$

yields

$$d = 100 * \sqrt{((30 * (P / 1000) * G) / (3770 * S))}$$

$$d = 0.282 * \sqrt{(P * G / S)}$$

where

d = distance in cm

P = Power in mW

G = Numeric antenna gain

S = Power Density in mW/cm<sup>2</sup>

Substituting the logarithmic form of power and gain using:

$$P \text{ (mW)} = 10^{(P \text{ (dBm)} / 10)} \text{ and}$$

$$G \text{ (numeric)} = 10^{(G \text{ (dBi)} / 10)}$$

yields

$$d = 0.282 * 10^{((P + G) / 20)} / \sqrt{S} \quad \text{Equation (1)}$$

where

d = MPE distance in cm

P = Power in dBm

G = Antenna Gain in dBi

S = Power Density Limit in mW/cm<sup>2</sup>

Equation (1) and the measured peak power is used to calculate the MPE distance.

## **LIMITS**

From §1.1310 Table 1 (B),  $S = 1.0 \text{ mW/cm}^2$

## **RESULTS**

No non-compliance noted:

<b>Band (MHz)</b>	<b>Power Density Limit (mW/cm<sup>2</sup>)</b>	<b>Output Power (dBm)</b>	<b>Antenna Gain (dBi)</b>	<b>MPE Distance (cm)</b>
5180 - 5250	1.0	16.43	1.00	2.10
5260 - 5320	1.0	17.48	1.00	2.37

NOTE: For mobile or fixed location transmitters, the minimum separation distance is 20 cm, even if calculations indicate that the MPE distance would be less.

## 7.2. RADIATED EMISSIONS

### 7.2.1. TRANSMITTER RADIATED SPURIOUS 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
<sup>1</sup> 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	( <sup>2</sup> )
13.36 - 13.41			

<sup>1</sup> Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

<sup>2</sup> 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 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

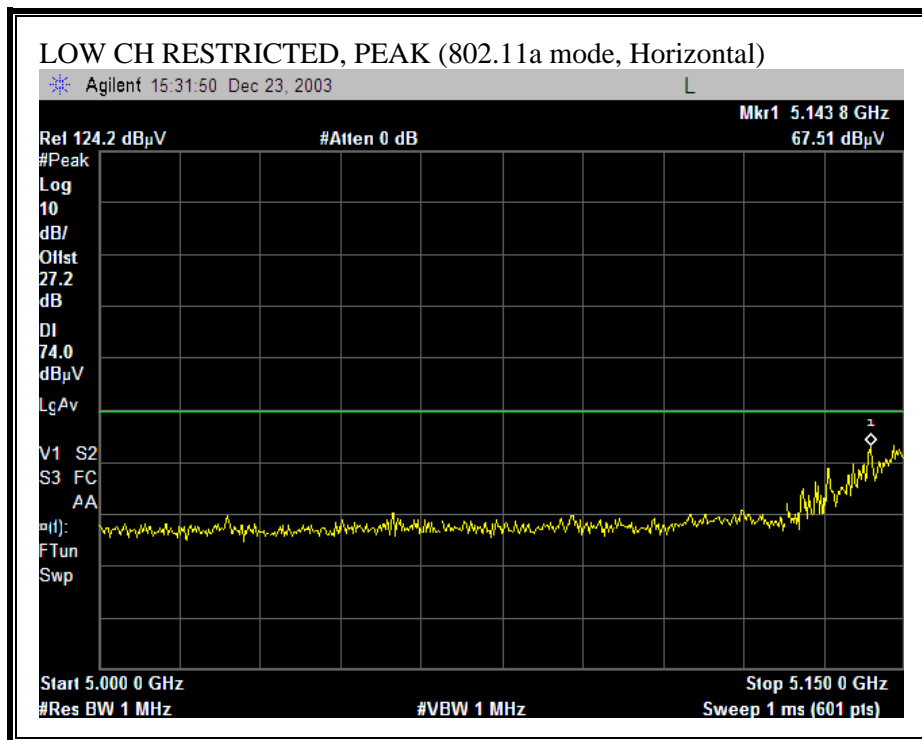
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

## **RESULTS**

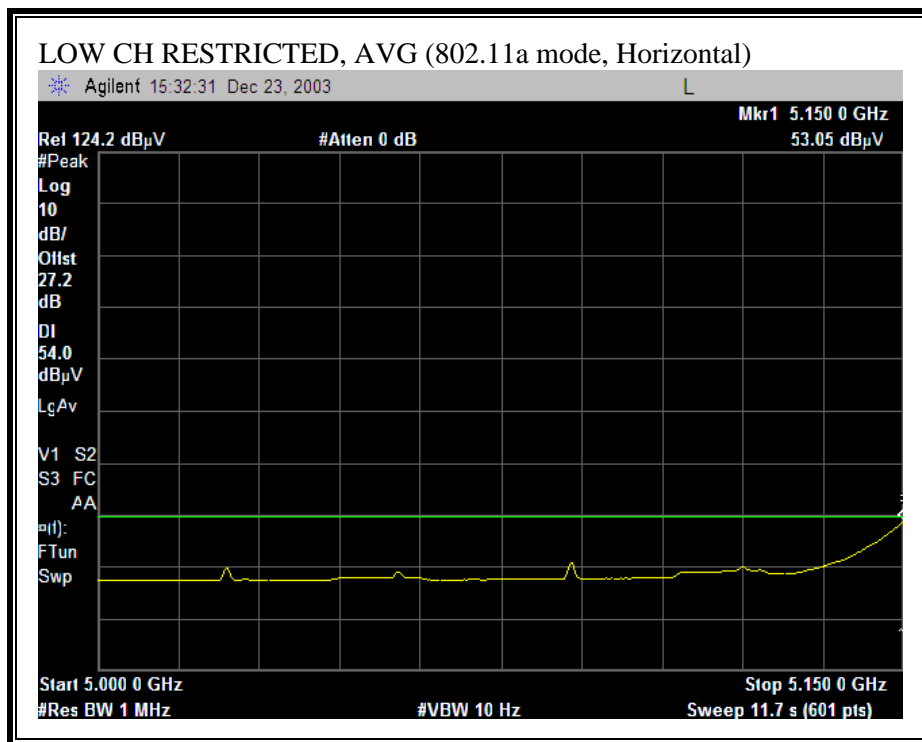
No non-compliance noted:

## 7.2.2. TRANSMITTER RADIATED EMISSIONS ABOVE 1 GHZ

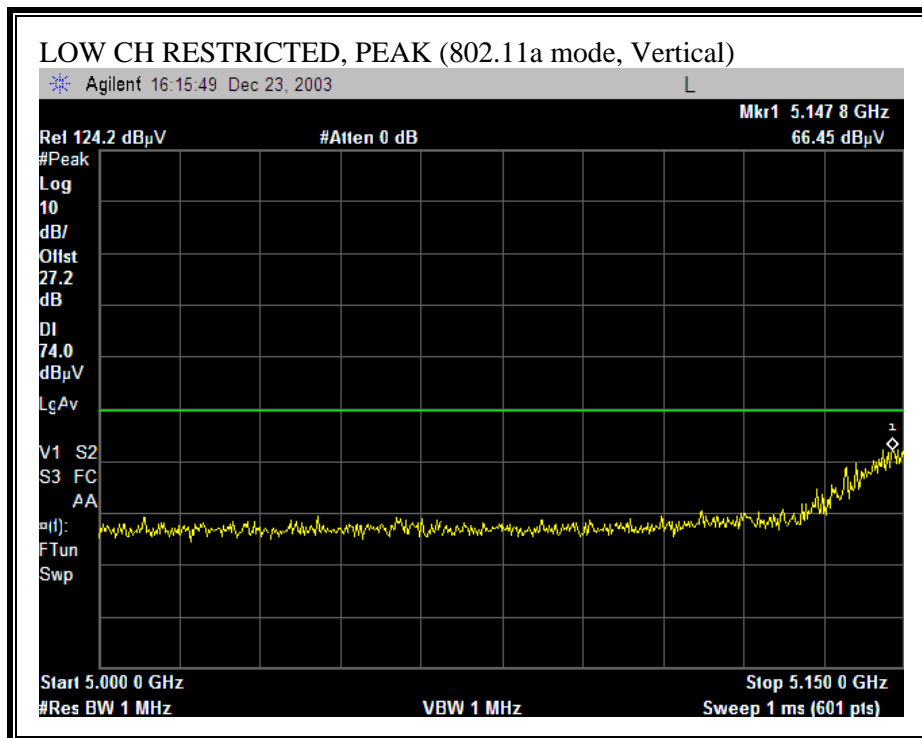
### RESTRICTED BANDEDGE (802.11a MODE, LOW CHANNEL, HORIZONTAL)

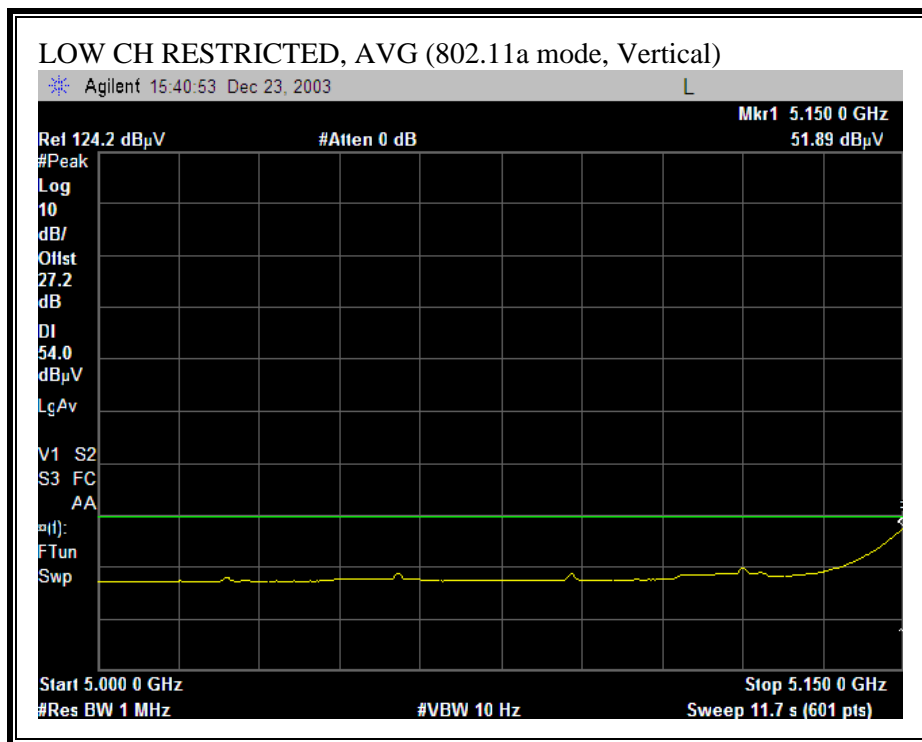




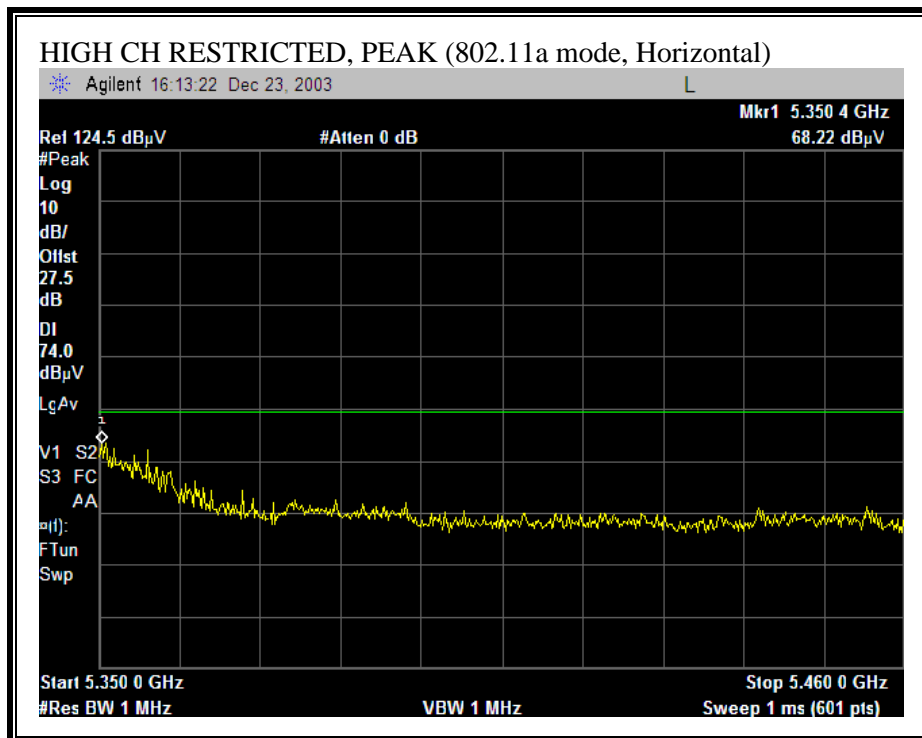


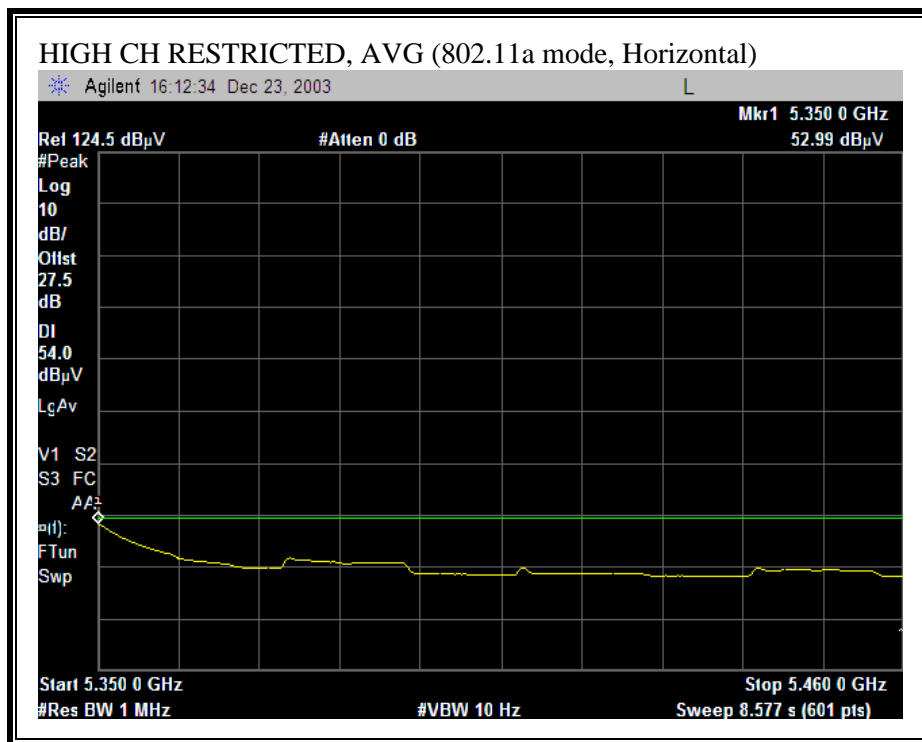
**RESTRICTED BANDEDGE (802.11a MODE, LOW CHANNEL, VERTICAL)**



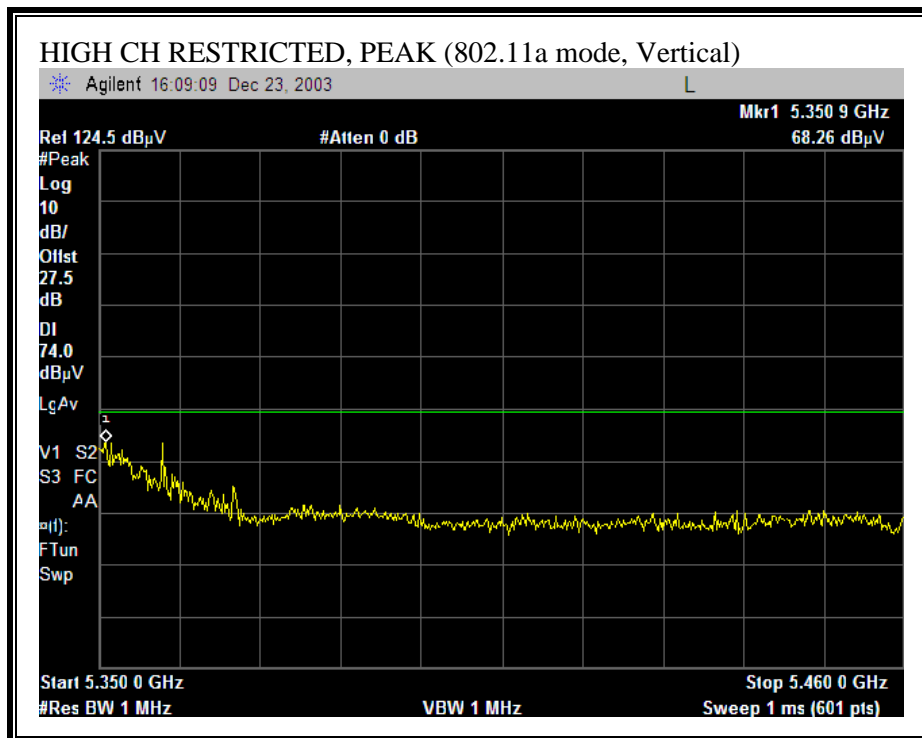


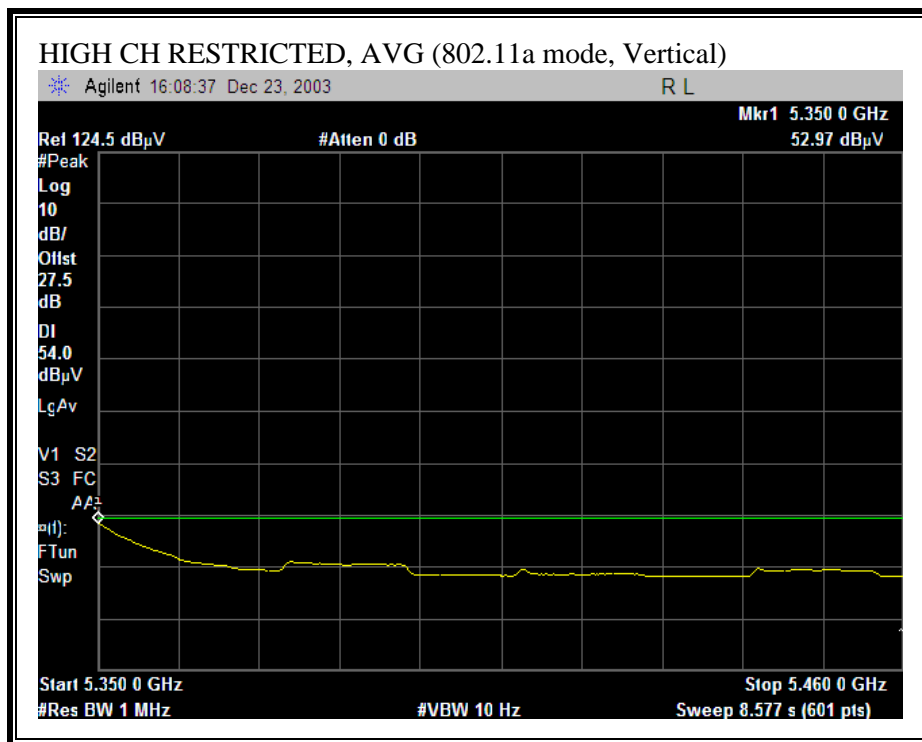
**RESTRICTED BANDEDGE (802.11a MODE, HIGH CHANNEL, HORIZONTAL)**





**RESTRICTED BANDEDGE (802.11a MODE, HIGH CHANNEL, VERTICAL)**



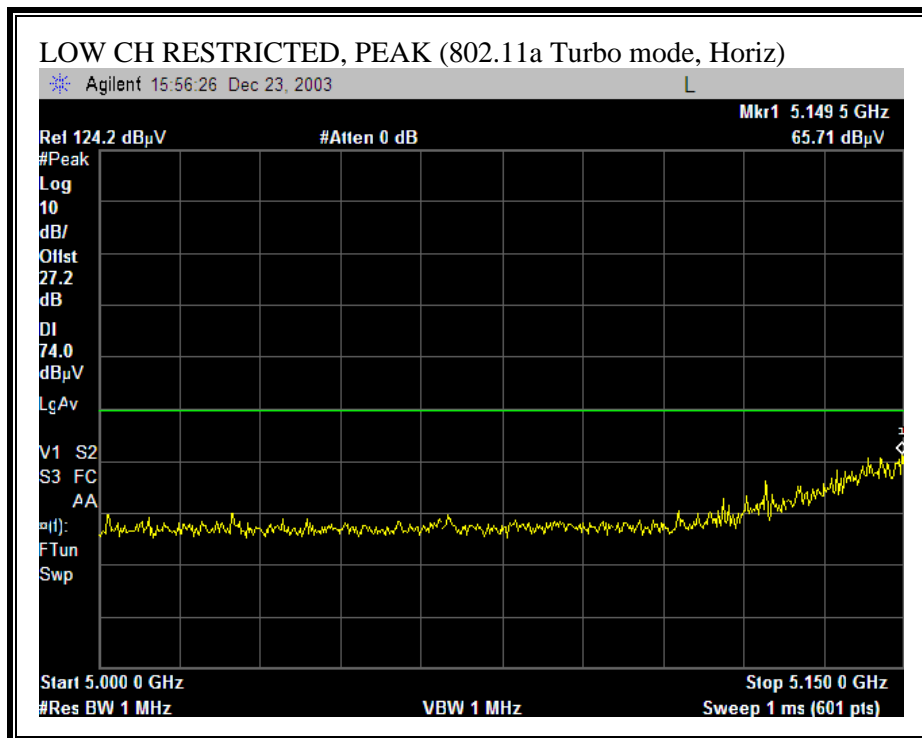


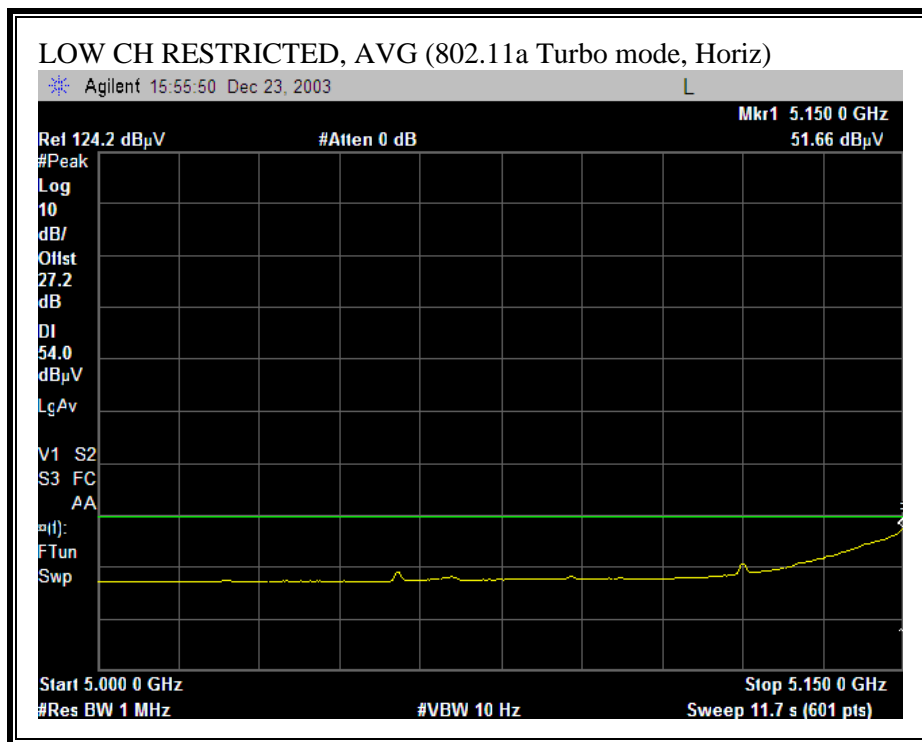
## HARMONICS AND SPURIOUS EMISSIONS (802.11a MODE)

12/29/03 High Frequency Measurement																
Compliance Certification Services, Morgan Hill Open Field Site																
Test Engr: NEELESH RAJ																
Project #: 03U2433																
Company: HEWLETT PACKARD																
EUT Descr.: 802.11 A/B/G J07H069.01																
EUT M/N: NX9100 (HP TRUMAN)																
Test Target: FCC																
Mode Oper: TX (NORMAL)																
Test Equipment:																
EMCO Horn 1-18GHz		Pre-amplifier 1-26GHz		Spectrum Analyzer		Horn > 18GHz		Limit								
T60; S/N: 2238 @3m		T63 Miteq 646456		Agilent E4446A Analyzer				FCC 15.205								
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: Average Measurements:																
1 MHz Resolution Bandwidth 1 MHz Resolution Bandwidth																
1MHz Video Bandwidth 10Hz Video Bandwidth																
f	Dist	Read Pk	Read Avg	AF	CL	Amp	D Corr	HPF	Peak	Avg	Pk Lim	Avg Lim	Pk Mar	Avg Mar	Notes	
GHz	feet	dBuV	dBuV	dB/m	dB	dB	dB		dBuV/m	dBuV/m	dBuV/m	dBuV/m	dB	dB		
LOW CHANNEL (5180MHz)																
5.023	9.8	44.0	34.0	33.3	3.0	-35.3	0.0	1.0	45.9	35.9	74.0	54.0	-28.1	-18.1	V (NOISE FLOOR)	
5.023	9.8	51.7	44.2	33.3	3.0	-35.3	0.0	1.0	53.7	46.1	74.0	54.0	-20.3	-7.9	H	
15.540	9.8	43.3	35.5	39.4	6.0	-40.0	0.0	1.0	49.5	41.8	74.0	54.0	-24.5	-12.2	V (NOISE FLOOR)	
15.540	9.8	43.0	35.2	39.4	6.0	-40.0	0.0	1.0	49.3	41.5	74.0	54.0	-24.7	-12.5	H (NOISE FLOOR)	
MIDDLE CHANNEL (5260MHz)																
15.780	9.8	46.0	36.0	38.7	6.1	-40.0	0.0	1.0	51.8	41.8	74.0	54.0	-22.2	-12.2	V (NOISE FLOOR)	
15.780	9.8	45.0	36.1	38.7	6.1	-40.0	0.0	1.0	50.8	41.9	74.0	54.0	-23.2	-12.1	H (NOISE FLOOR)	
HIGH CHANNEL (5320MHz)																
10.640	9.8	48.9	37.1	38.2	4.8	-33.5	0.0	1.0	59.4	47.5	74.0	54.0	-14.6	-6.5	V	
10.640	9.8	46.1	34.4	38.2	4.8	-33.5	0.0	1.0	56.6	44.8	74.0	54.0	-17.4	-9.2	H	
15.960	9.8	45.6	36.0	38.3	6.1	-40.0	0.0	1.0	51.0	41.4	74.0	54.0	-23.0	-12.6	V (NOISE FLOOR)	
15.960	9.8	45.5	36.2	38.3	6.1	-40.0	0.0	1.0	50.9	41.6	74.0	54.0	-23.1	-12.4	H (NOISE FLOOR)	
NO OTHER SPURIOUS EMISSIONS DETECTED ABOVE THE SYSTEM NOISE FLOOR																
f	Measurement Frequency					Amp	Preamp Gain			Avg Lim	Average Field Strength Limit					
Dist	Distance to Antenna					D Corr	Distance Correct to 3 meters			Pk Lim	Peak Field Strength Limit					
Read	Analyzer Reading					Avg	Average Field Strength @ 3 m			Avg Mar	Margin vs. Average Limit					
AF	Antenna Factor					Peak	Calculated Peak Field Strength			Pk Mar	Margin vs. Peak Limit					
CL	Cable Loss					HPF	High Pass Filter									

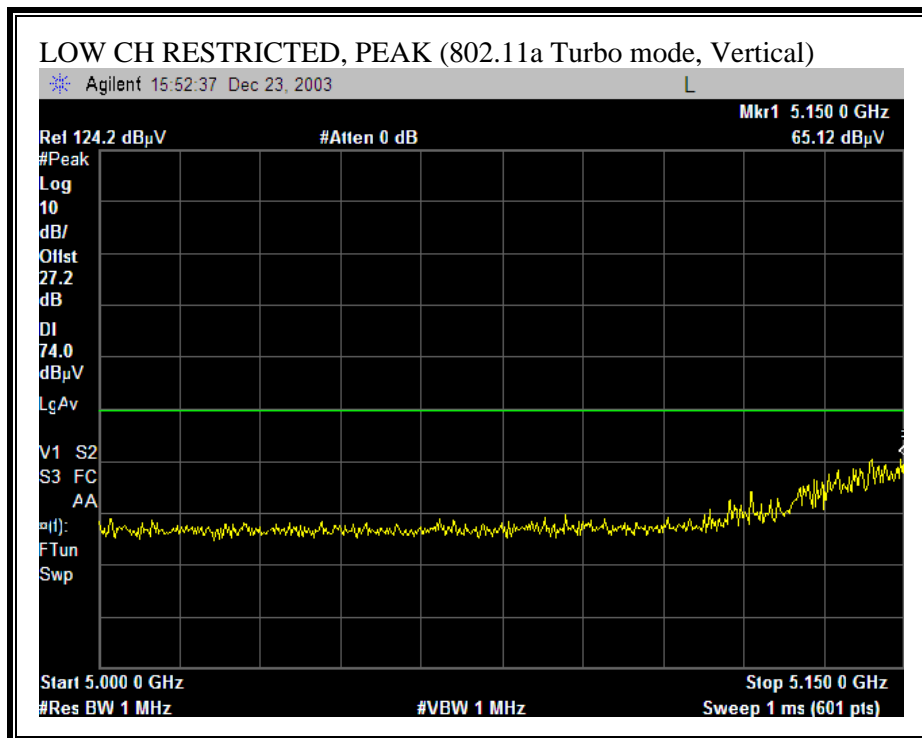


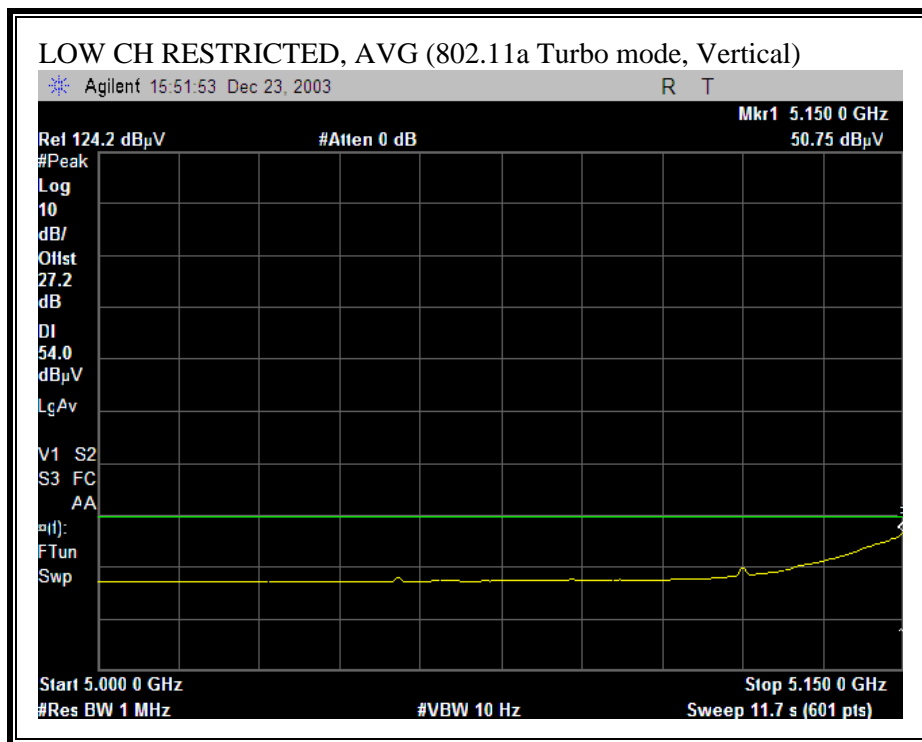
**RESTRICTED BANDEDGE (802.11a TURBO MODE, LOW CHANNEL, HORIZONTAL)**



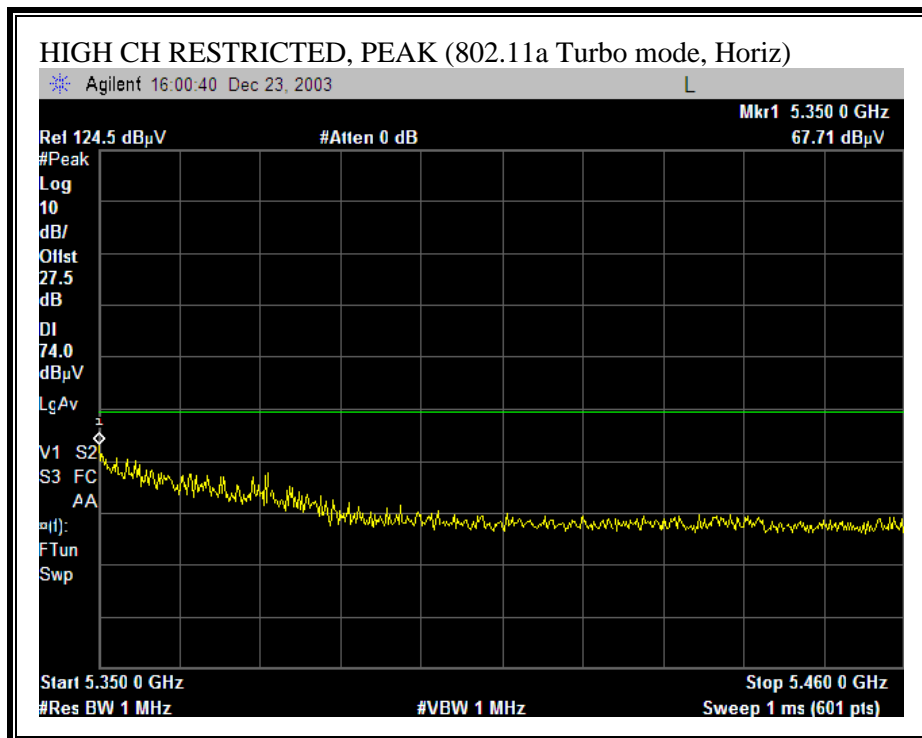


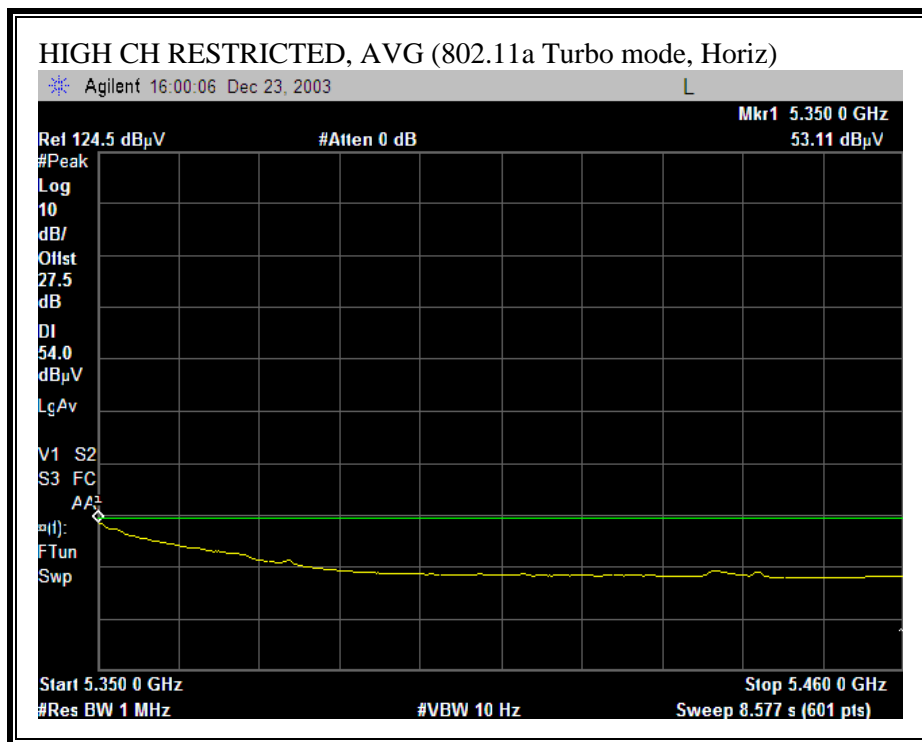
**RESTRICTED BANDEDGE (802.11a TURBO MODE, LOW CHANNEL, VERTICAL)**



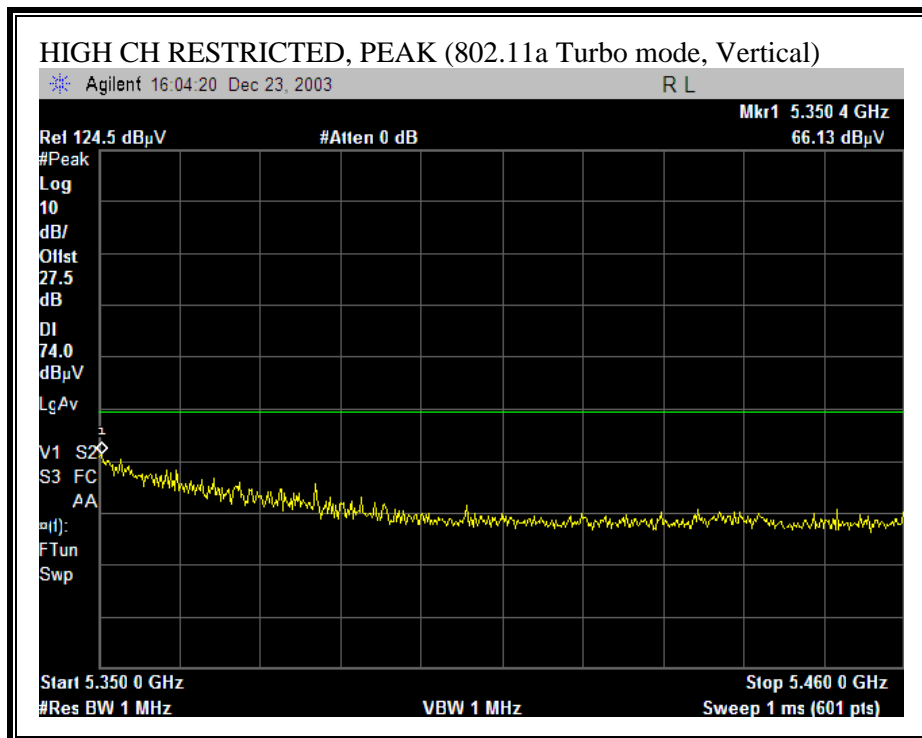


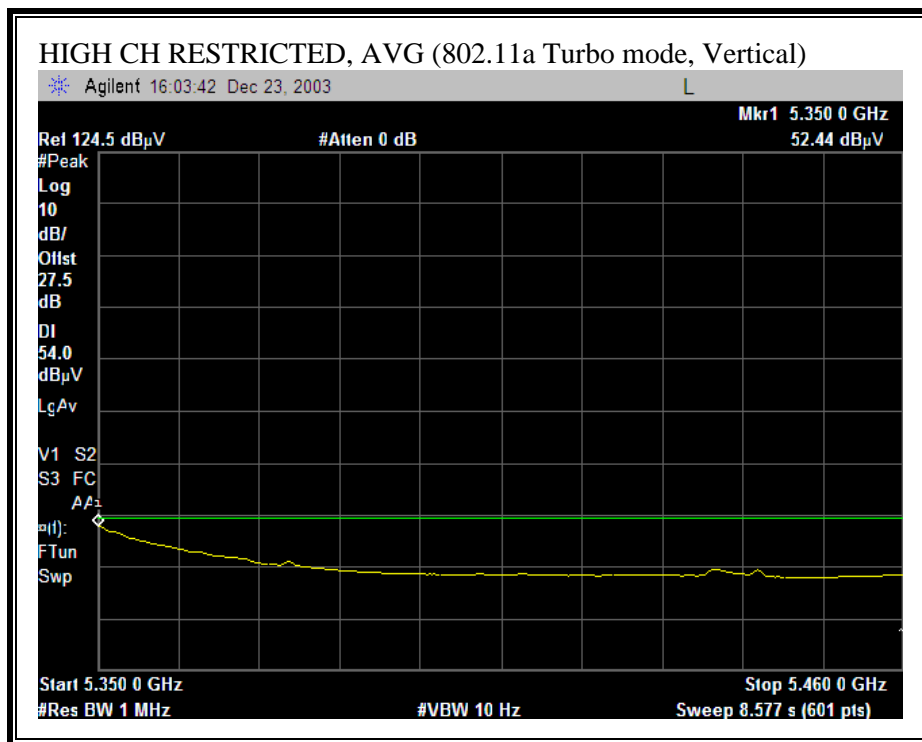
**RESTRICTED BANDEDGE (802.11a TURBO MODE, HIGH CHANNEL, HORIZONTAL)**





**RESTRICTED BANDEDGE (802.11a TURBO MODE, HIGH CHANNEL, VERTICAL)**





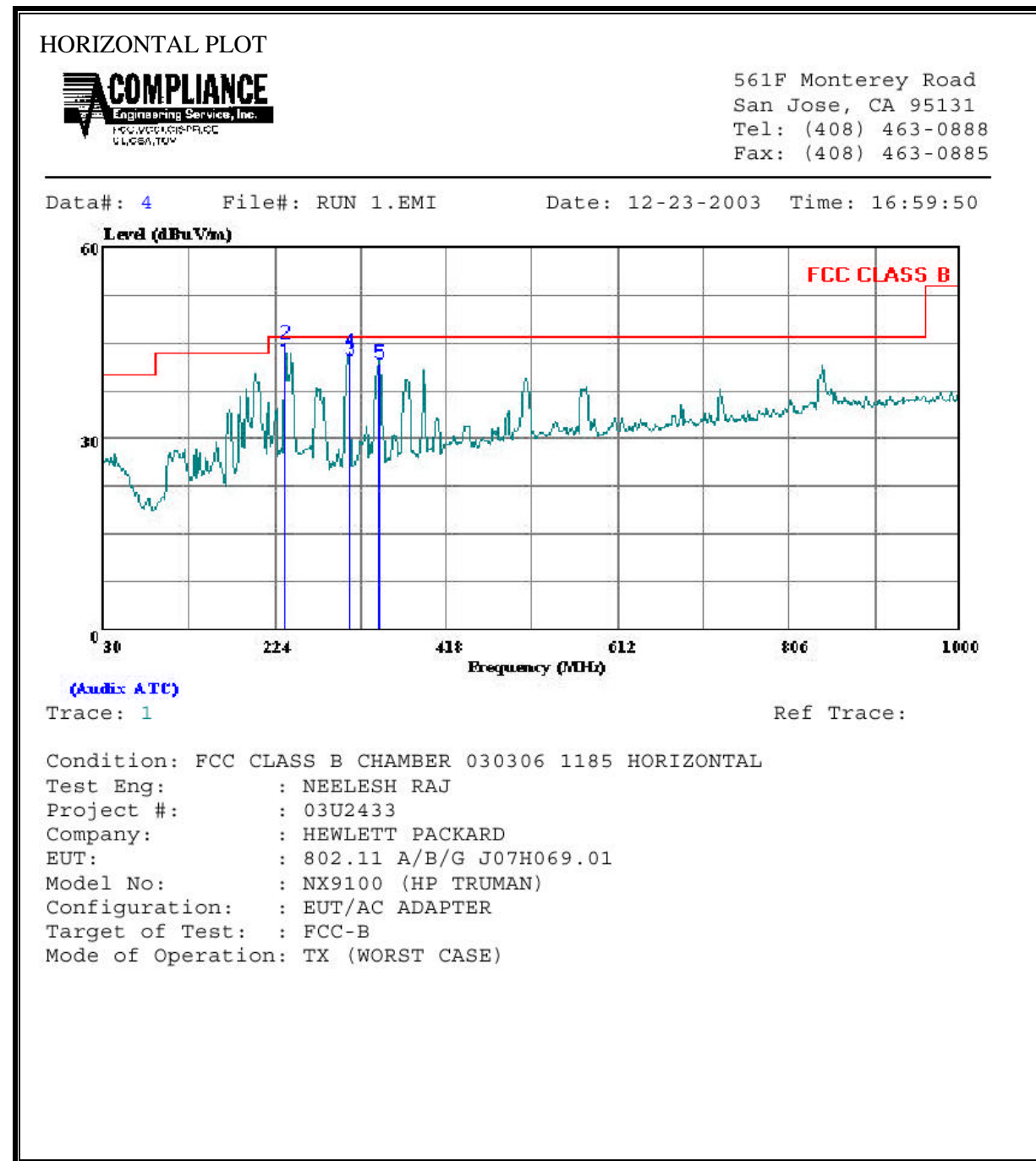


# HARMONICS AND SPURIOUS EMISSIONS 802.11a (TURBO MODE)

12/29/03 High Frequency Measurement															
Compliance Certification Services, Morgan Hill Open Field Site															
Test Engr: NEELESH RAJ															
Project #: 03U2433															
Company: HEWLETT PACKARD															
EUT Descrip.: 802.11 A/B/G J07H069.01															
EUT M/N: NX9100 (HP TRUMAN)															
Test Target: FCC															
Mode Oper: TX (NORMAL)															
Test Equipment:															
EMCO Horn 1-18GHz		Pre-amplifier 1-26GHz		Spectrum Analyzer		Horn > 18GHz		Limit							
T60; S/N: 2238 @3m		T63 Miteq 646456		Agilent E4446A Analyzer				FCC 15.205							
<div> Hi Frequency Cables <div> <input type="checkbox"/> (2 ft) <input checked="" type="checkbox"/> (2 ~ 3 ft) <input type="checkbox"/> (4 ~ 6 ft) <input checked="" type="checkbox"/> (12 ft) </div> </div>															
<div> Peak Measurements: Average Measurements: </div>															
<div> 1 MHz Resolution Bandwidth 1 MHz Resolution Bandwidth </div>															
<div> 1MHz Video Bandwidth 10Hz Video Bandwidth </div>															
f	Dist	Read Pk	Read Avg	AF	CL	Amp	D Corr	HPF	Peak	Avg	Pk Lim	Avg Lim	Pk Mar	Avg Mar	Notes
GHz	feet	dBuV	dBuV	dB/m	dB	dB	dB		dBuV/m	dBuV/m	dBuV/m	dBuV/m	dB	dB	
LOW CHANNEL (5210MHz)															
15.630	9.8	45.6	35.0	39.1	6.0	-40.0	0.0	1.0	51.7	41.1	74.0	54.0	-22.3	-12.9	V (NOISE FLOOR)
15.630	9.8	45.7	34.9	39.1	6.0	-40.0	0.0	1.0	51.8	41.0	74.0	54.0	-22.2	-13.0	H (NOISE FLOOR)
MIDDLE CHANNEL (5250MHz)															
15.750	9.8	45.0	35.1	38.8	6.1	-40.0	0.0	1.0	50.8	40.9	74.0	54.0	-23.2	-13.1	V (NOISE FLOOR)
15.750	9.8	45.2	34.8	38.8	6.1	-40.0	0.0	1.0	51.0	40.6	74.0	54.0	-23.0	-13.4	H (NOISE FLOOR)
HIGH CHANNEL (5290MHz)															
15.870	9.8	46.0	34.9	38.5	6.1	-40.0	0.0	1.0	51.6	40.5	74.0	54.0	-22.4	-13.5	V (NOISE FLOOR)
15.870	9.8	45.1	35.0	38.5	6.1	-40.0	0.0	1.0	50.7	40.6	74.0	54.0	-23.3	-13.4	H (NOISE FLOOR)
NO OTHER SPURIOUS EMISSIONS DETECTED ABOVE THE SYSTEM NOISE FLOOR															
f	Measurement Frequency			Amp	Preamp Gain			Avg Lim	Average Field Strength Limit						
Dist	Distance to Antenna			D Corr	Distance Correct to 3 meters			Pk Lim	Peak Field Strength Limit						
Read	Analyzer Reading			Avg	Average Field Strength @ 3 m			Avg Mar	Margin vs. Average Limit						
AF	Antenna Factor			Peak	Calculated Peak Field Strength			Pk Mar	Margin vs. Peak Limit						
CL	Cable Loss			HPF	High Pass Filter										

### 7.2.3. WORST-CASE RADIATED EMISSIONS BELOW 1 GHz

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

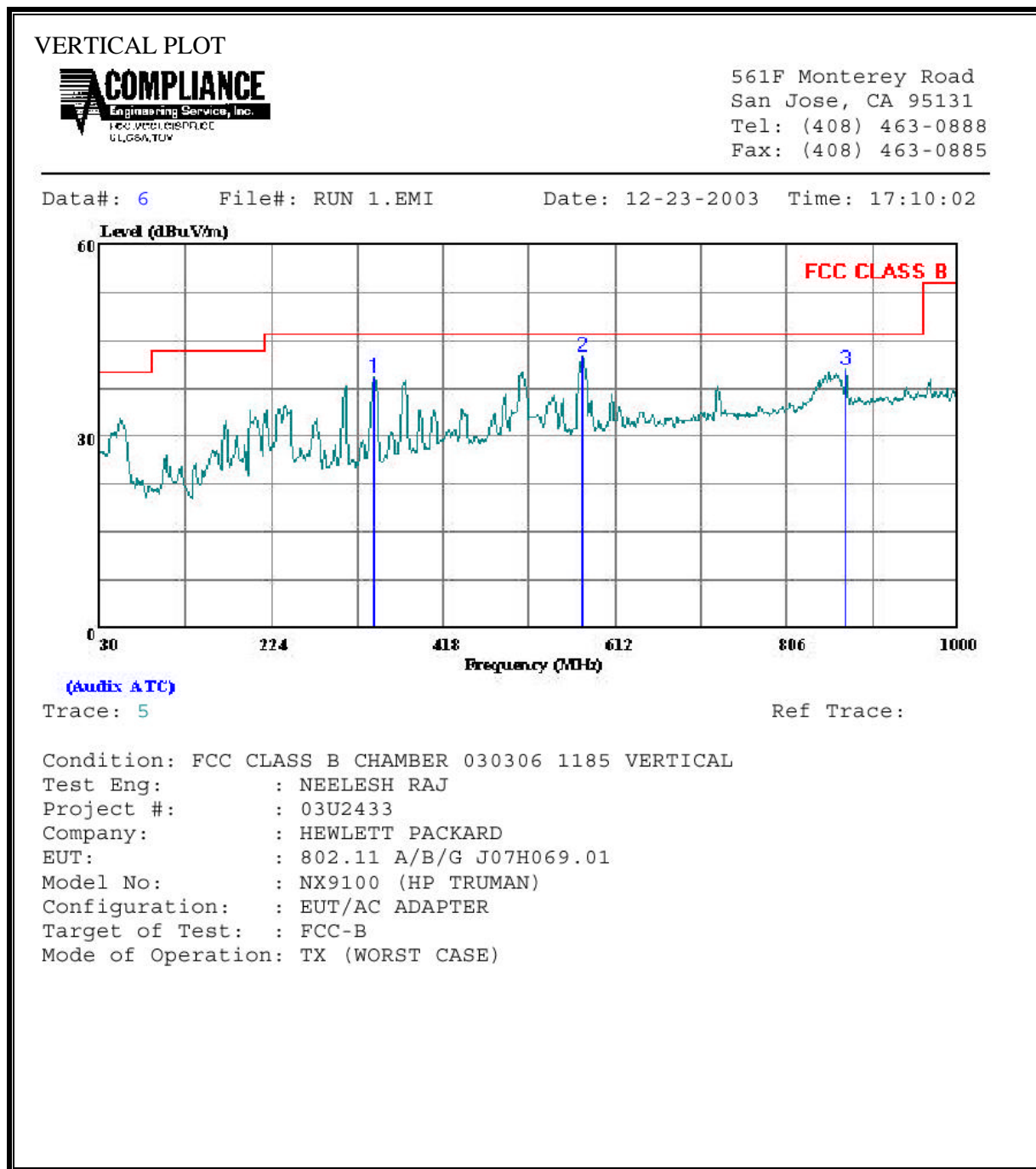


# HORIZONTAL DATA

Page: 1

	Freq	Remark	Read Level	Factor	Level	Limit Line	Over Limit
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	235.640	QP	29.62	12.46	42.08	46.00	-3.92
2	235.640	Peak	32.51	12.49	45.00	46.00	-1.00
3	308.390	QP	28.27	14.02	42.29	46.00	-3.71
4	308.390	Peak	29.54	14.05	43.59	46.00	-2.41
5	341.370	Peak	26.95	14.97	41.93	46.00	-4.07

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



VERTICAL DATA

Page: 1

	Freq	Remark	Read Level	Factor	Level	Limit Line	Over Limit
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	339.430	Peak	24.20	14.93	39.13	46.00	-6.87
2	575.140	Peak	22.77	19.96	42.73	46.00	-3.27
3	872.930	Peak	16.94	23.53	40.47	46.00	-5.53

### 7.3. 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  $\mu$ 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

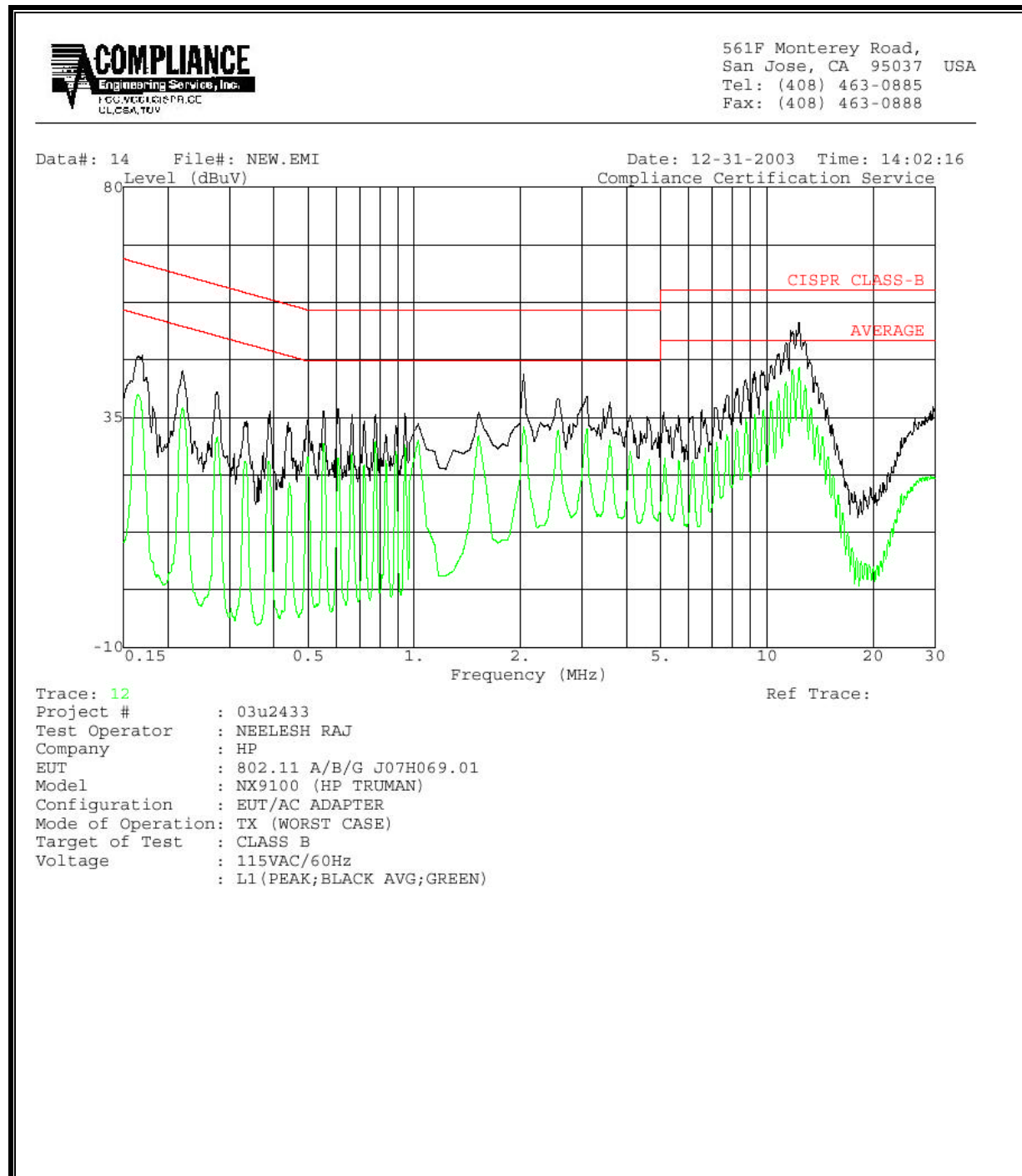
No non-compliance noted:

# **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
12.32	53.60	--	44.68	0.00	60.00	50.00	-6.40	-5.32	L1
11.68	52.10	--	44.25	0.00	60.00	50.00	-7.90	-5.75	L1
2.04	43.36	--	33.13	0.00	56.00	46.00	-12.64	-12.87	L1
12.00	48.12	--	39.95	0.00	60.00	50.00	-11.88	-10.05	L2
12.38	47.46	--	38.23	0.00	60.00	50.00	-12.54	-11.77	L2
0.17	50.64	--	41.17	0.00	65.57	55.57	-14.93	-14.40	L2
6 Worst Data									

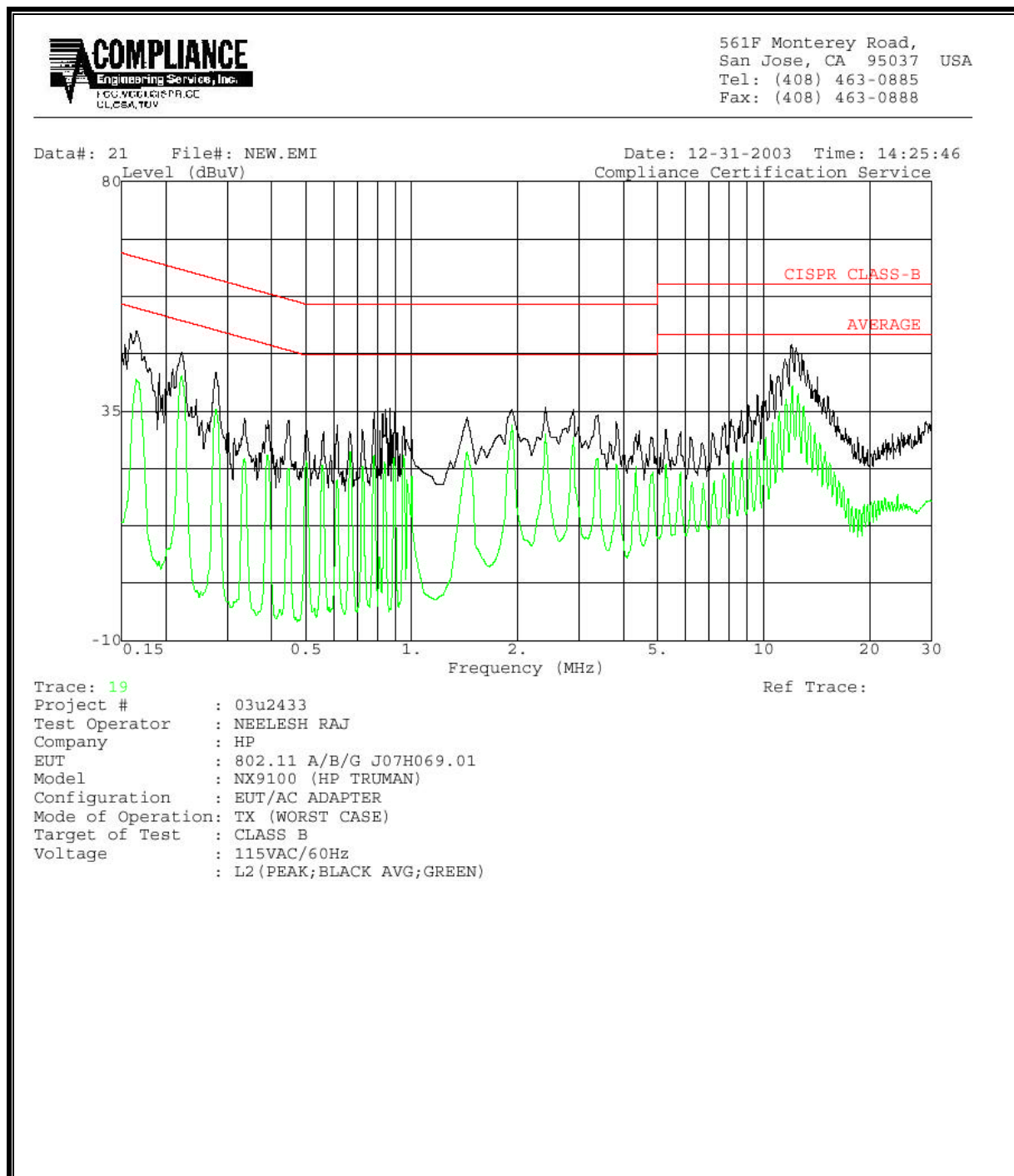


**LINE 1 RESULTS**



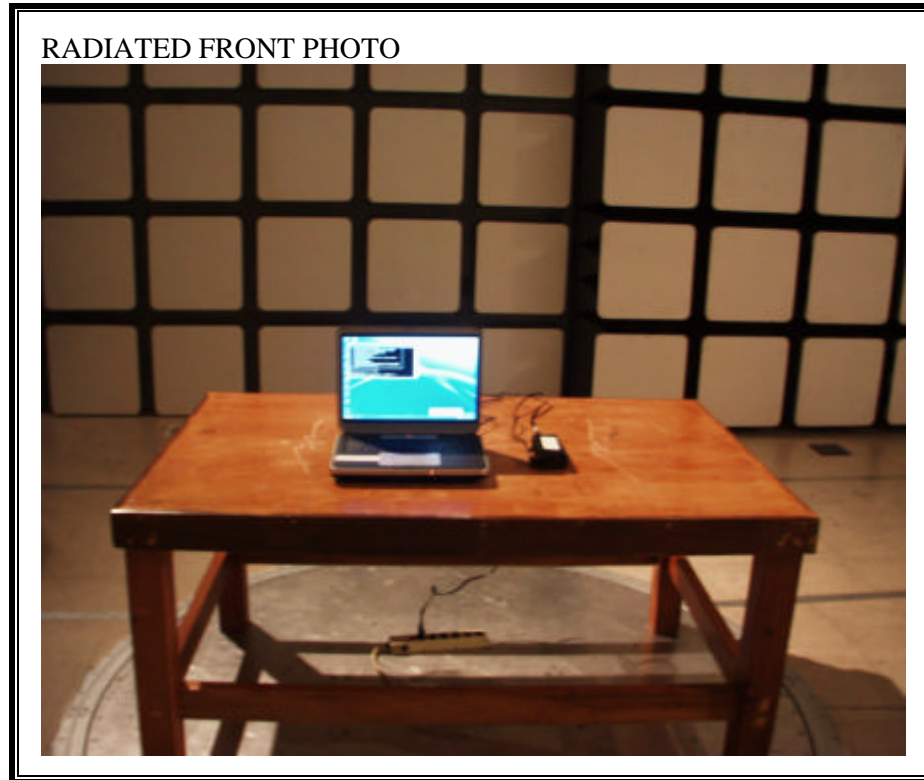


## LINE 2 RESULTS



## 8. SETUP PHOTOS

### RADIATED EMISSIONS SETUP



RADIATED BACK PHOTO



**POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP**



LINE CONDUCTED BACK PHOTO



**END OF REPORT**