



**FCC CFR47 PART 15 SUBPART E
CLASS III PERMISSIVE CHANGE**

TEST REPORT

FOR

802.11A CARDBUS RADIO MODULE

MODEL NUMBER: AIR-RM21A-A-K9 and AIR-RM22A-A-K9

FCC ID: LDK102053

REPORT NUMBER: 06U10107-1, Revision C

ISSUE DATE: MARCH 3, 2006

Prepared for
**CISCO SYSTEMS, INC.
170 WEST TASMAN DRIVE
SAN JOSE, CA 95134**

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

NVLAP[®]
LAB CODE:200065-0

Revision History

<u>Rev.</u>	<u>Revisions</u>	<u>Revised By</u>
A	<u>2/17/06</u> Original revision	DG
B	<u>3/2/06</u> Change to Class III Permissive Change, update issue date	DG
C	<u>3/3/06</u> Removed antenna information from EUT description page and deleted Co-Location data.	DG

TABLE OF CONTENTS

1. TEST RESULT CERTIFICATION	4
2. EUT DESCRIPTION	5
3. TEST METHODOLOGY	6
4. FACILITIES AND ACCREDITATION	6
5. CALIBRATION AND UNCERTAINTY	7
5.1. <i>MEASURING INSTRUMENT CALIBRATION</i>	7
5.2. <i>MEASUREMENT UNCERTAINTY</i>	7
5.3. <i>TEST AND MEASUREMENT EQUIPMENT</i>	8
6. SETUP OF EQUIPMENT UNDER TEST	9
7. APPLICABLE LIMITS AND TEST RESULTS	11
7.1. <i>EMISSION BANDWIDTH</i>	11
7.2. <i>PEAK POWER</i>	15
7.2.1. MAXIMUM PERMISSIBLE EXPOSURE	20
7.2.2. CO-LOCATED MAXIMUM PERMISSIBLE EXPOSURE	Error! Bookmark not defined.
7.3. <i>PEAK POWER SPECTRAL DENSITY</i>	23
7.4. <i>PEAK EXCURSION</i>	27
7.5. <i>CONDUCTED SPURIOUS EMISSIONS</i>	31
7.6. <i>RADIATED EMISSIONS</i>	35
7.6.1. TRANSMITTER RADIATED SPURIOUS EMISSIONS	35
7.6.2. TRANSMITTER RADIATED EMISSIONS ABOVE 1 GHz WITH 9 dBi INTEGRAL ANTENNA	38
7.6.3. TRANSMITTER RADIATED EMISSIONS ABOVE 1 GHz WITH 4.5dBi ANTENNA	47
7.6.4. TRANSMITTER RADIATED EMISSIONS ABOVE 1 GHz WITH 6dBi ANTENNA...	56
7.6.5. TRANSMITTER RADIATED EMISSIONS ABOVE 1 GHz WITH 7dBi ANTENNA...	65
7.6.6. TRANSMITTER RADIATED EMISSIONS ABOVE 1 GHz WITH 9.5dBi ANTENNA	74
7.6.7. WORST-CASE RADIATED EMISSIONS BELOW 1 GHz.....	83
7.7. <i>POWERLINE CONDUCTED EMISSIONS</i>	85
8. SETUP PHOTOS	90

1. TEST RESULT CERTIFICATION

COMPANY NAME: CISCO SYSTEMS, INC.
170 WEST TASMAN DRIVE
SAN JOSE, CA 95134

EUT DESCRIPTION: 802.11a CARDBUS RADIO MODULE

MODEL: AIR-RM21A-A-K9 and AIR-RM22A-A-K9

DATE TESTED: MARCH 29 – AUGUST 25, 2004

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.

Approved & Released For CCS By:



DAVID GARCIA
ENGINEERING MANAGER
COMPLIANCE CERTIFICATION SERVICES

Tested By:



YAN ZHENG
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. EUT DESCRIPTION

The EUT is an 802.11a transceiver module.

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

Frequency Band (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5500 - 5700	802.11a	17.27	53.33

Models AIR-RM21A-A-K9 and AIR-RM22A-A-K9 are identical radio modules. Model AIR-RM21A-A-K9 is used with integral antennas, and AIR-RM22A-A-K9 is used with external antennas.

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				
Description	Manufacturer	Model	Serial Number	Cal Due
EMI Test Receiver	R & S	ESIB40	4/24/2174	11/21/2004
Power Meter	Agilent	E4416A	GB41291160	11/7/04
Peak / Average Power Sensor	Agilent	E9327A	US40440755	11/7/04
30MHz---- 2Ghz	Sunol Sciences	JB1 Antenna	A121003	12/22/04
EMI Receiver, 9 kHz ~ 2.9 GHz	HP	8542E	3942A00286	11/21/04
RF Filter Section	HP	85420E	3705A00256	11/21/04
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	9001-3245	2/4/05
Antenna, Horn, 18 ~ 26 GHz	ARA	MWH-1826/B	1013	2/4/05
Antenna, Horn 26 ~ 40 GHz	ARA	MWH-2640/B	1029	12/3/04
Amplifier 1-26GHz	MITEQ	NSP2600-SP	924342	4/25/05
PreAmplifier 26-40 GHz	Miteq	NSP4000-SP2	924343	6/1/05
Spectrum Analyzer	Agilent	E4446A	MY43360112	1/13/05
Directional Coupler	Krytar	1817	2	CNR
5.15-5.35 Rejection Filter	Micronics	BRC 13190	1	CNR
5.75-5.875 Rejection Filter	Micronics	BRC 13192	1	CNR

6. SETUP OF EQUIPMENT UNDER TEST

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop PC	IBM	T20	78-B3952	DOC
DC Power Supply	KRM	AEEEG-350	9712154746	None
DC Power Supply	Kenwood	PA36-3A	7060074	None
Extender Card	Sycard	PCC Extend 135	C135A-1066	None
AC Adapter	IBM	02K6750	11S02K67050Z1Z2U P25G0L	DOC

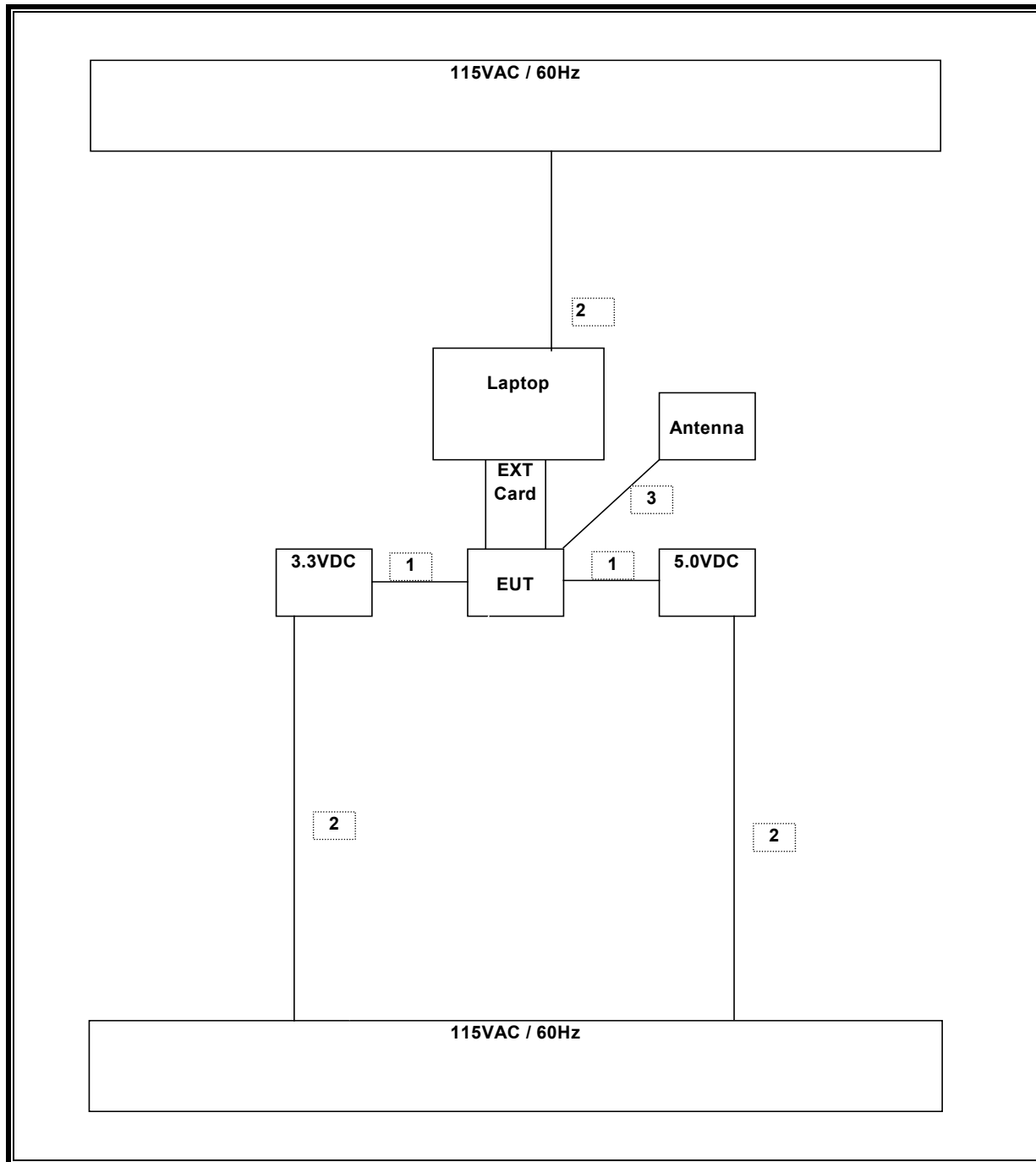
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	Extender	2	Bananan to clip	DC supply	1m	Connected on Extender Card
2	AC	3	IEC	AC	1m	
3	Antenna Cable	2				connect the radio to antenna

TEST SETUP

The EUT is installed in a host laptop computer via a cardbus-to-miniPCI adapter / extension card during the tests. Test software exercised the radio card.

SETUP DIAGRAM FOR TESTS



7. APPLICABLE LIMITS AND TEST RESULTS

7.1. EMISSION BANDWIDTH

LIMIT

§15.403 (i) Emission bandwidth. For purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier. Determination of the emissions bandwidth is based on the use of measurement instrumentation employing a peak detector function with an instrument resolutions bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 1% to 3% of the 26 dB bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled.

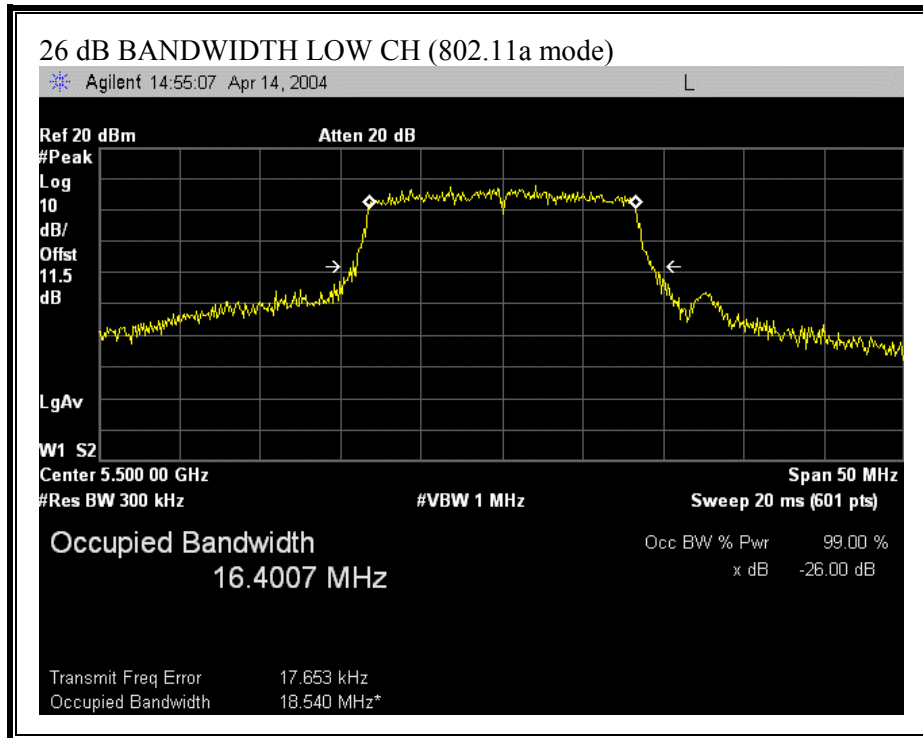
RESULTS

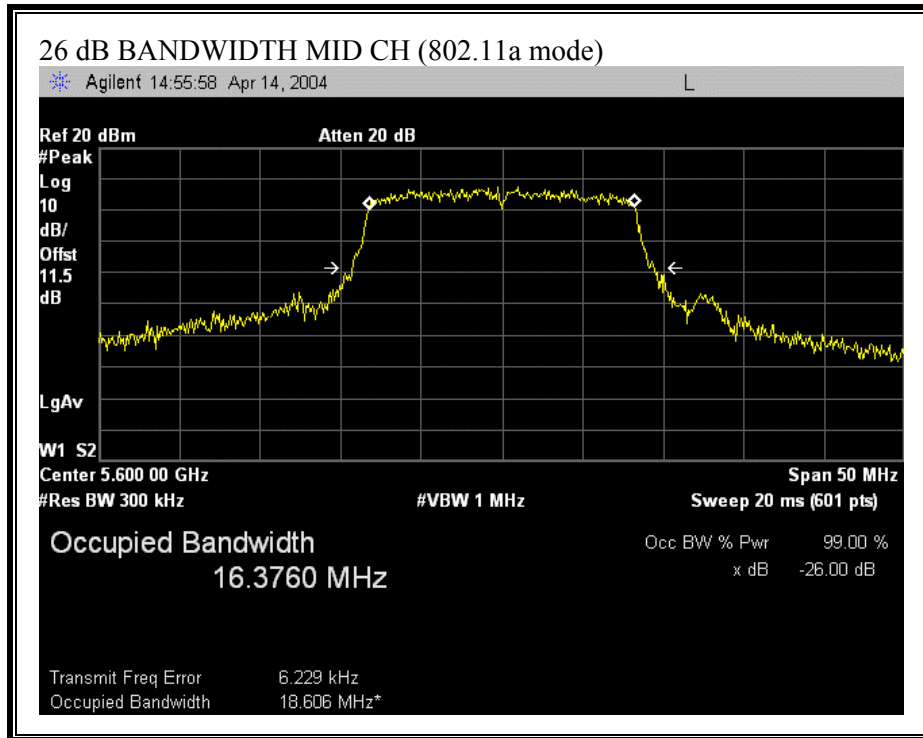
No non-compliance noted:

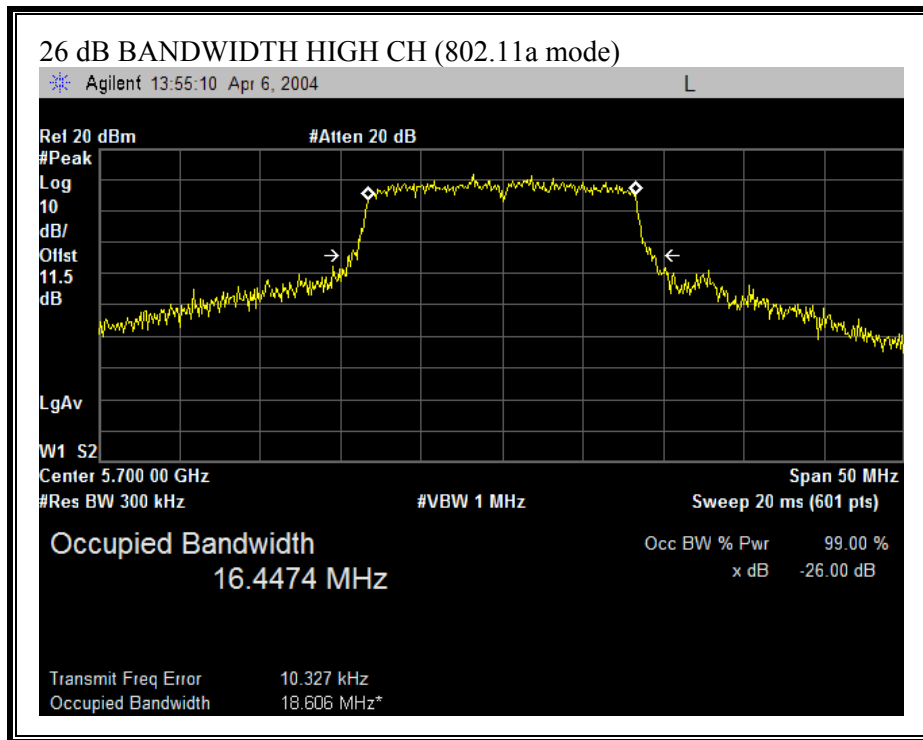
802.11a Mode

Channel	Frequency (MHz)	B (MHz)	10 Log B (dB)
Low	5500	16.40	12.15
Middle	5600	16.38	12.14
High	5700	16.45	12.16

26 dB EMISSION BANDWIDTH (802.11a MODE)







7.2. PEAK POWER

LIMIT

§15.407 (a) (2) For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the peak transmit power over the frequency band of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26-dB emission bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EIRP LIMIT

None; for reporting purposes only.

TEST PROCEDURE

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

The transmitter output operates continuously therefore Method # 1 is used.

LIMITS AND RESULTS

No non-compliance noted:

Limit

Channel	Frequency (MHz)	Fixed Limit (dBm)	B (MHz)	11 + 10 Log B Limit (dBm)	Antenna Gain (dBi)	Limit (dBm)
Low	5500	24	18.54	23.68	9.50	20.18
Mid	5600	24	18.606	23.70	9.50	20.20
High	5700	24	18.606	23.70	9.50	20.20

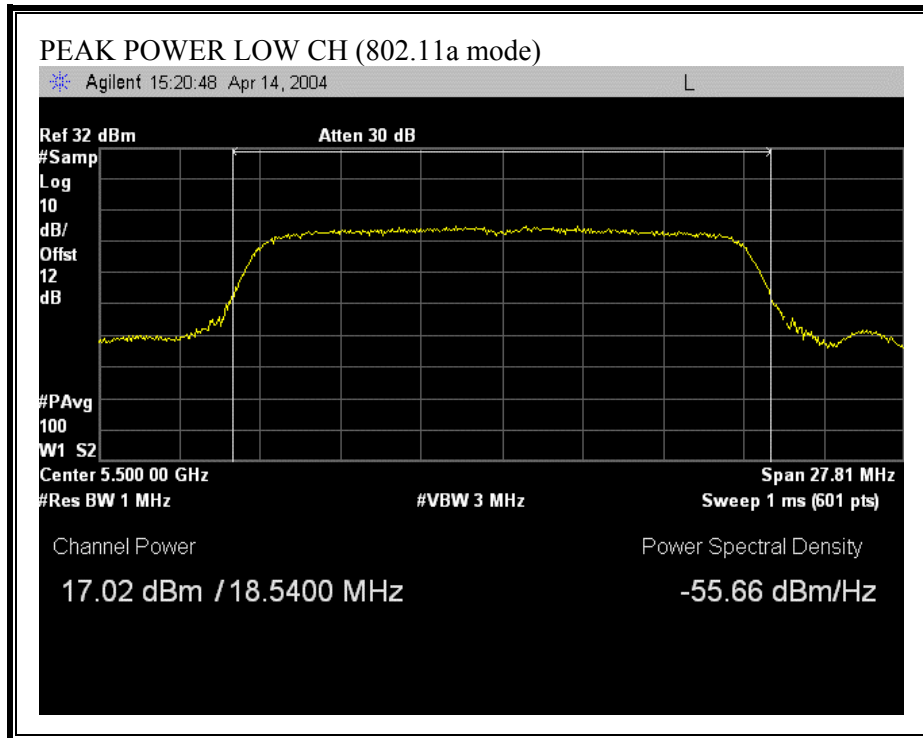
802.11a mode Results

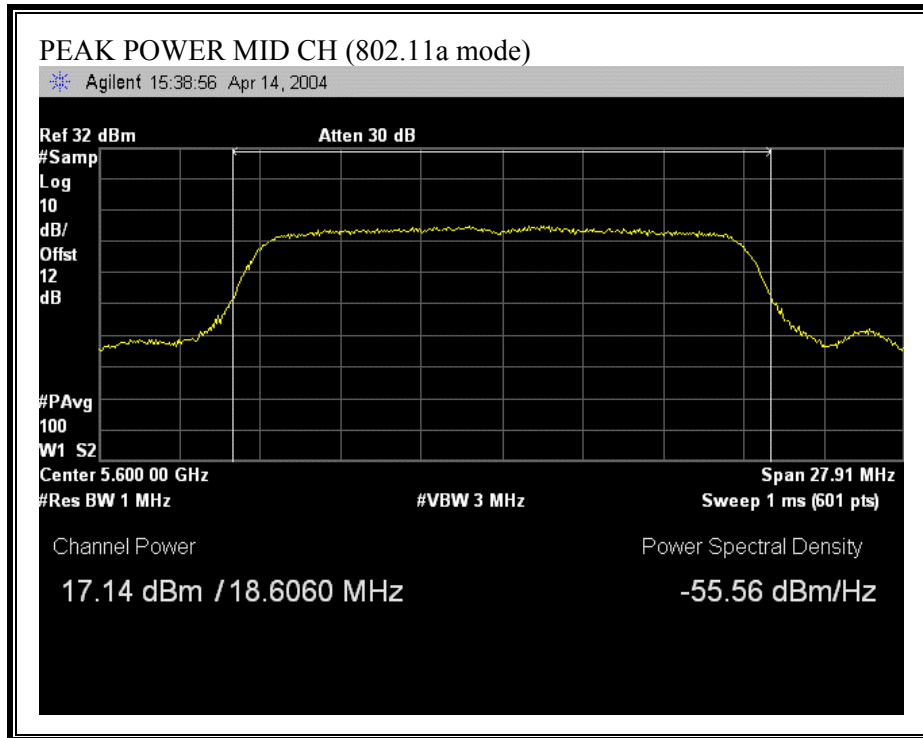
Channel	Frequency (MHz)	Power (dBm)	Limit (dBm)	Margin (dB)
Low	5500	17.02	20.18	-3.16
Middle	5600	17.14	20.20	-3.06
High	5700	17.27	20.20	-2.93

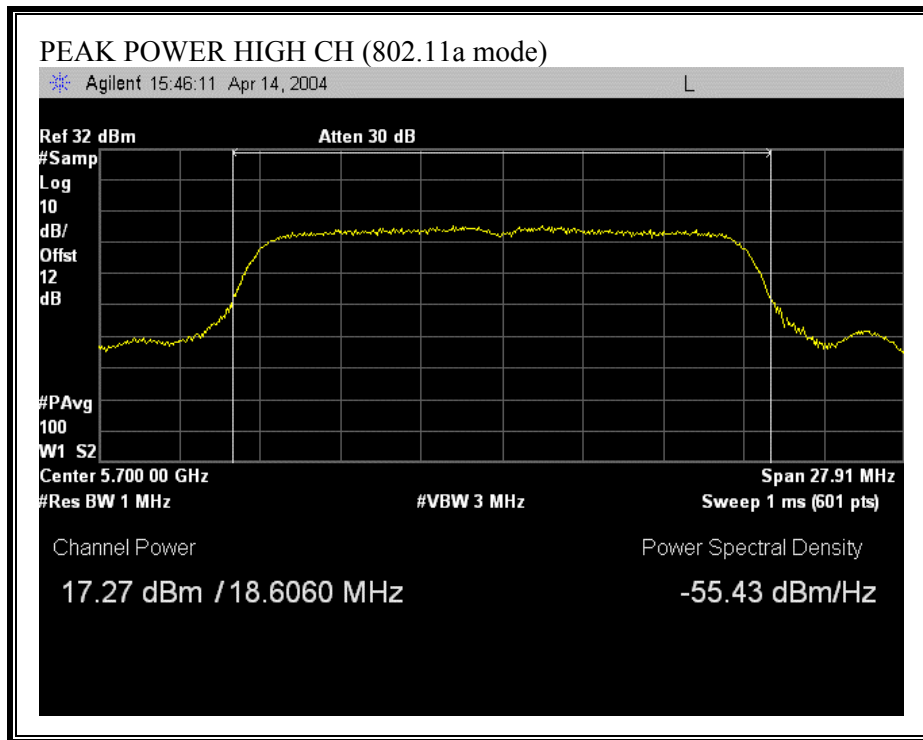
802.11a mode Maximum EIRP Results

Channel	Frequency (MHz)	Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)
Low	5500	17.02	9.50	26.52
Middle	5600	17.14	9.50	26.64
High	5700	17.27	9.50	26.77

PEAK POWER (802.11a MODE)







7.2.1. 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 ²)	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 ²)	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 ²)	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 ²)	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/cm²

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

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

where

d = MPE distance in cm

P = Power in dBm

G = Antenna Gain in dBi

S = Power Density Limit in mW/cm²

Rearranging terms to calculate the power density at a specific distance yields

$$S = 0.0795 * 10^{((P + G) / 10)} / (d^2)$$

LIMITS

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

RESULTS

No non-compliance noted: (MPE distance equals 20 cm)

Mode	MPE Distance (cm)	Output Power (dBm)	Antenna Gain (dBi)	Power Density (mW/cm²)
802.11a	20.0	17.27	9.50	0.09

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.

7.3. PEAK POWER SPECTRAL DENSITY

LIMIT

§15.407 (a) (2) For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the peak power spectral density shall not exceed 11 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

The maximum antenna gain = 9.5 dBi, therefore there is no reduction due to antenna gain.

TEST PROCEDURE

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002. PPSD method #2 was used.

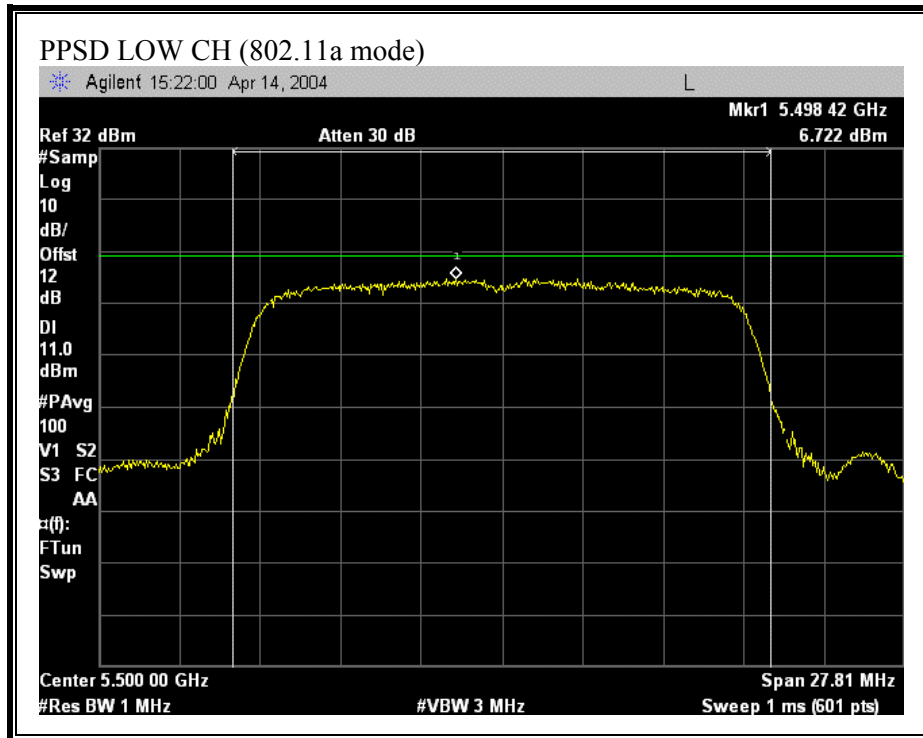
RESULTS

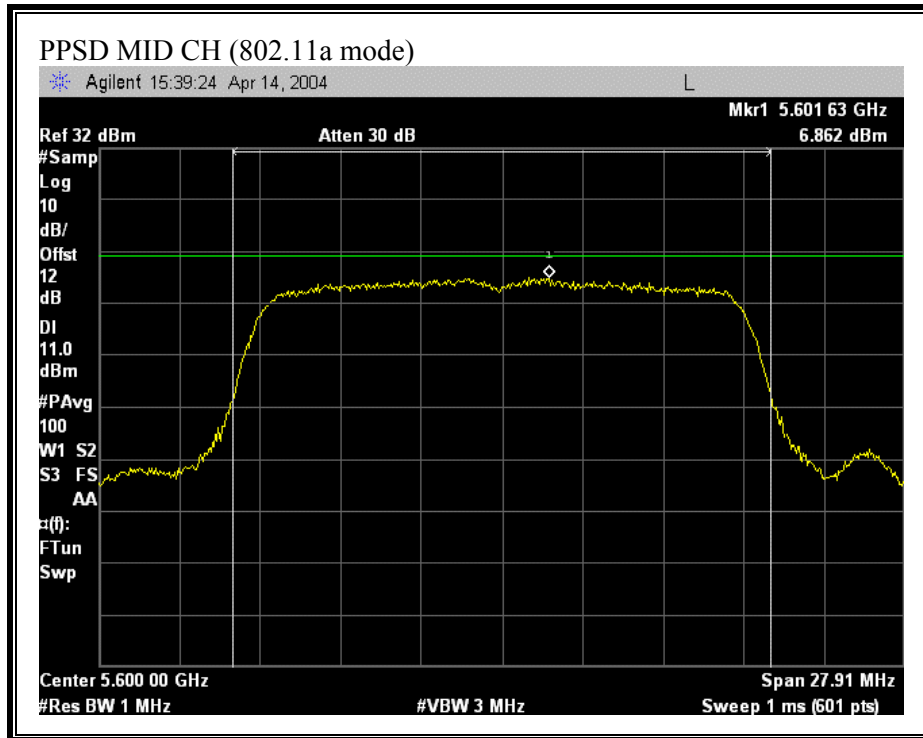
No non-compliance noted:

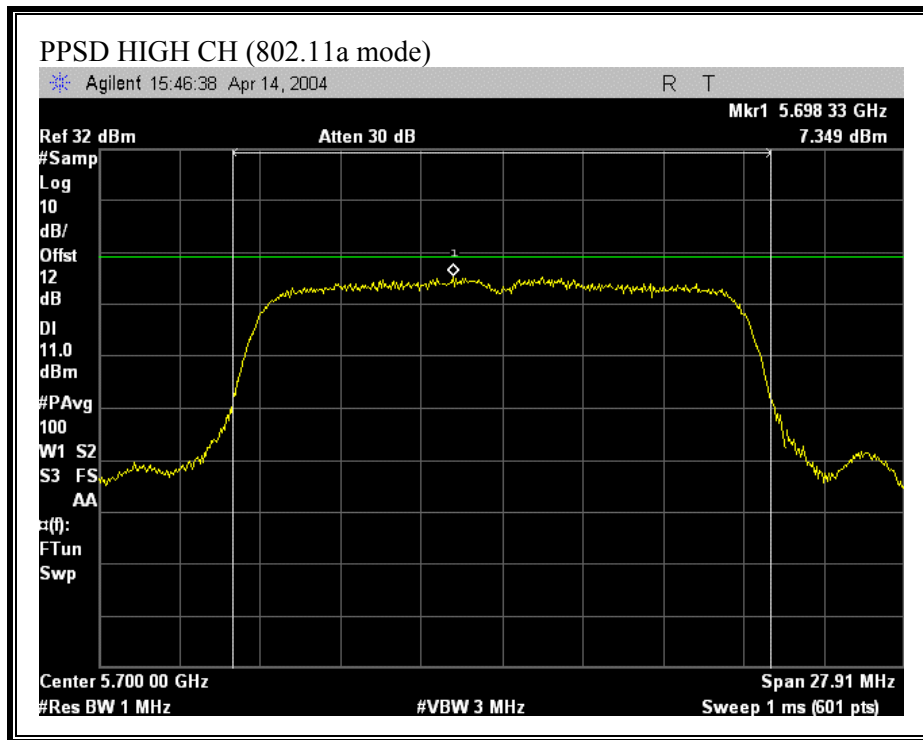
802.11a Mode

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	5500	6.72	11.00	-4.28
Middle	5600	6.86	11.00	-4.14
High	5700	7.35	11.00	-3.65

PEAK POWER SPECTRAL DENSITY (802.11a MODE)







7.4. PEAK EXCURSION

LIMIT

§15.407 (a) (6) The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

TEST PROCEDURE

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

Since Method # 1 was used for peak power measurements, Method # 1 settings are used for the second PPSD trace.

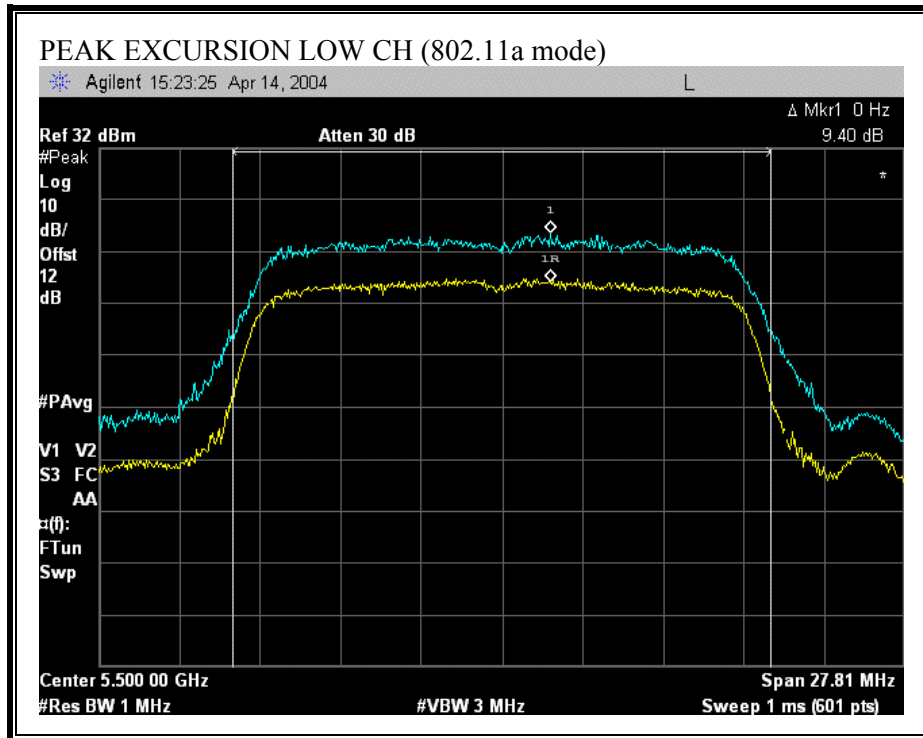
RESULTS

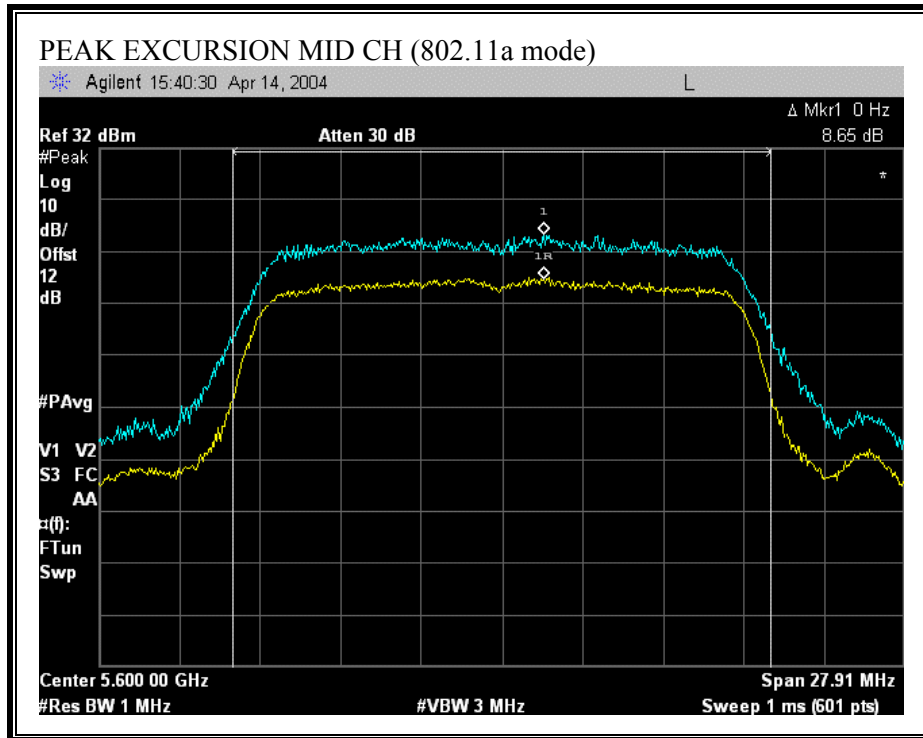
No non-compliance noted:

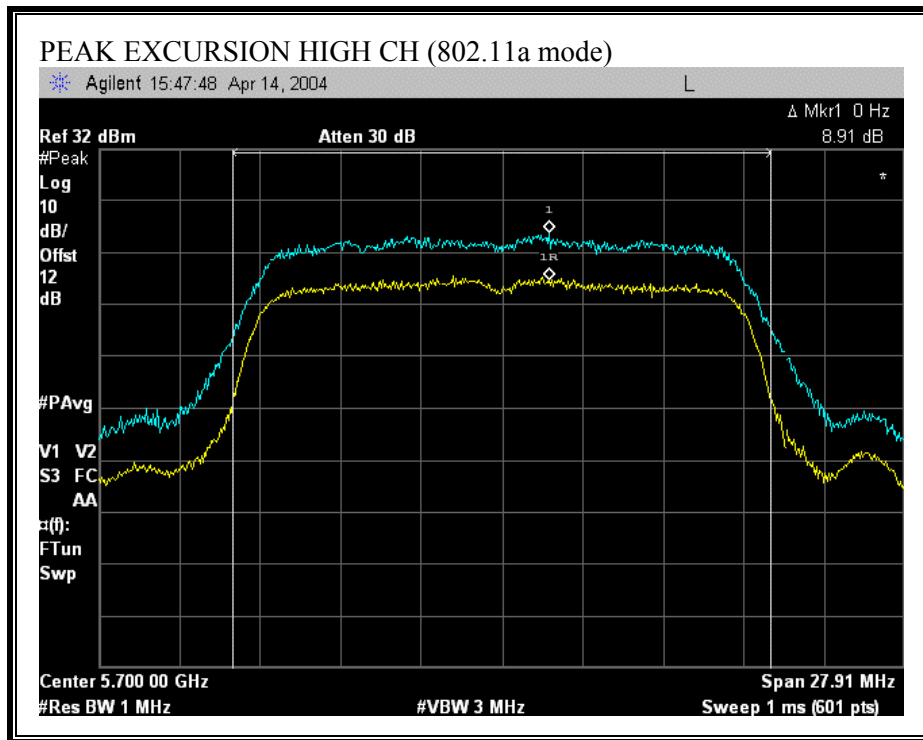
802.11a Mode

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Low	5500	9.40	13	-3.60
Middle	5600	8.65	13	-4.35
High	5700	8.91	13	-4.09

PEAK EXCURSION (802.11a MODE)







7.5. CONDUCTED SPURIOUS EMISSIONS

LIMITS

§15.407 (b) (3) For transmitters operating in the 5.47–5.725 GHz band: all emissions outside of the 5.47–5.725 GHz band shall not exceed an EIRP of -27 dBm / MHz.

TEST PROCEDURE

Conducted RF measurements of the transmitter output are made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

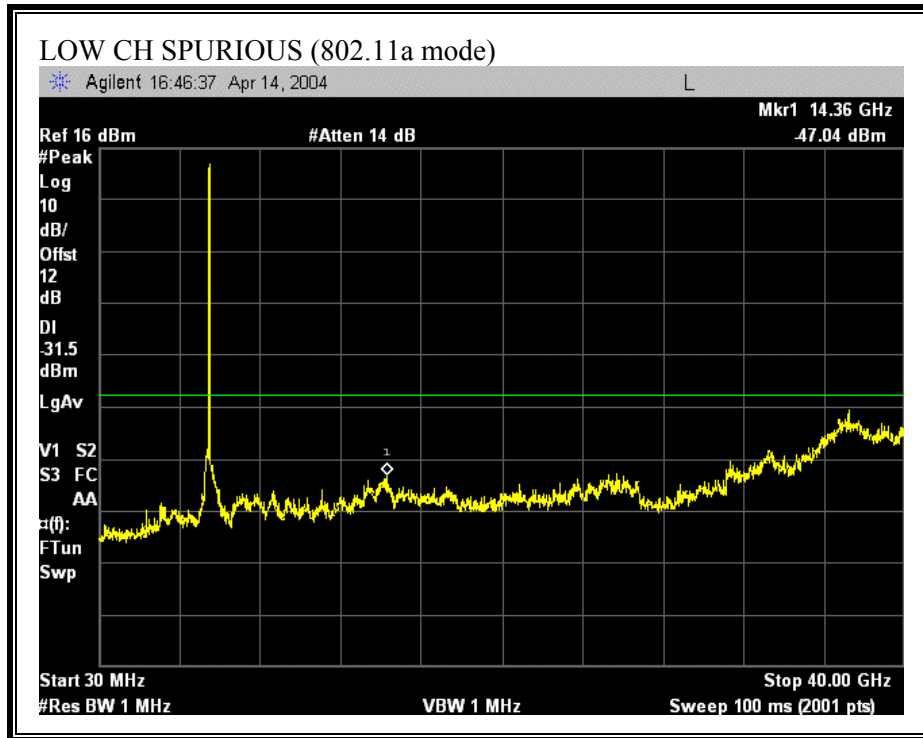
The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 1 MHz. The video bandwidth is set to 1 MHz. Peak detection measurements are compared to the average EIRP limit, adjusted for the maximum antenna gain. If necessary, additional average detection measurements are made.

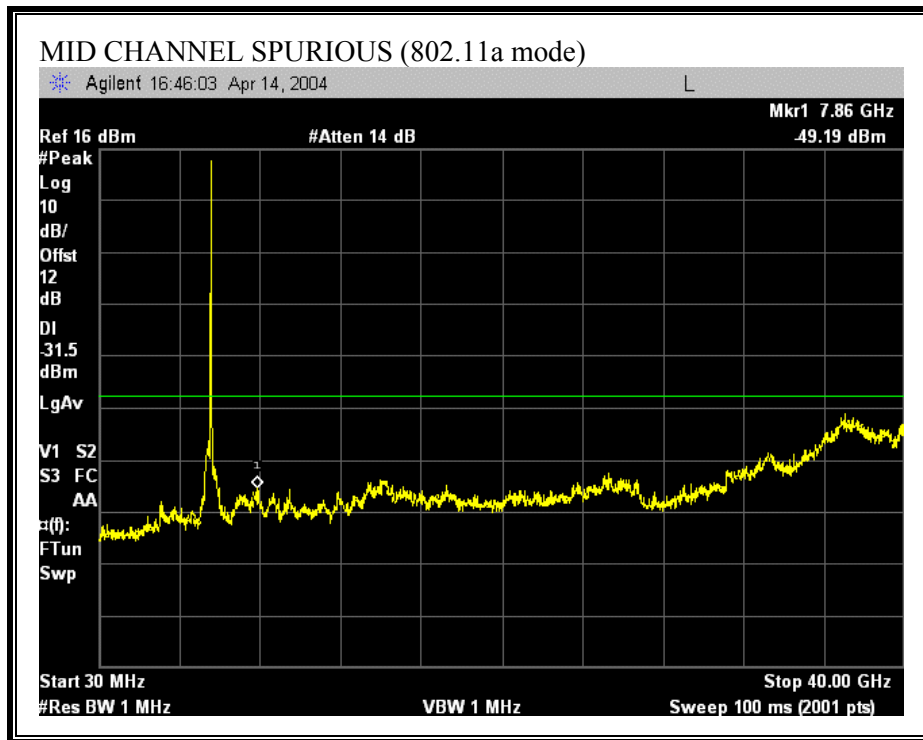
Measurements are made over the 30 MHz to 40 GHz range with the transmitter set to the lowest, middle, and highest channels.

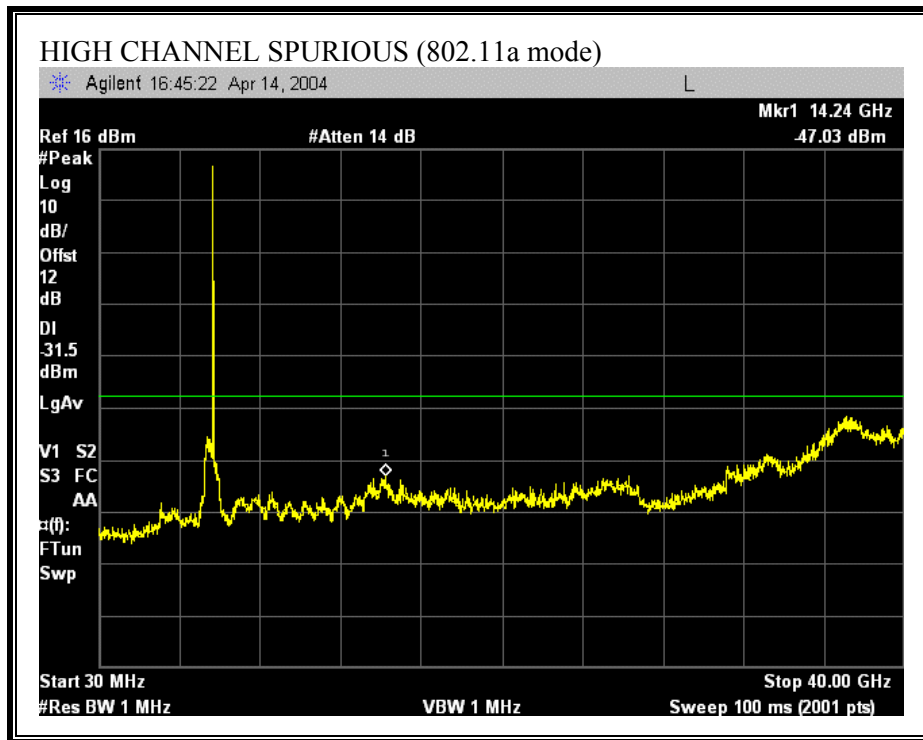
RESULTS

No non-compliance noted:

SPURIOUS EMISSIONS (802.11a MODE)







7.6. RADIATED EMISSIONS

7.6.1. 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
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.

REPORTING NOTES

The nearby restricted band stops 10 MHz below the authorized band. A single plot is taken to show both restricted band emission levels and out-of-band radiated spurious emission levels at and near the lower authorized bandedge. The out-of-band spurious limits of -7 dBm Peak EIRP and -27 dBm Average EIRP are converted to the equivalent 3 meter field strengths of 88.2 dBuV/m Peak and 68.2 dBuV/m Average, respectively, for reporting purposes.

The out-of- band radiated spurious emission levels at and near the upper authorized bandedge are reported as EIRP values.

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 of each band.

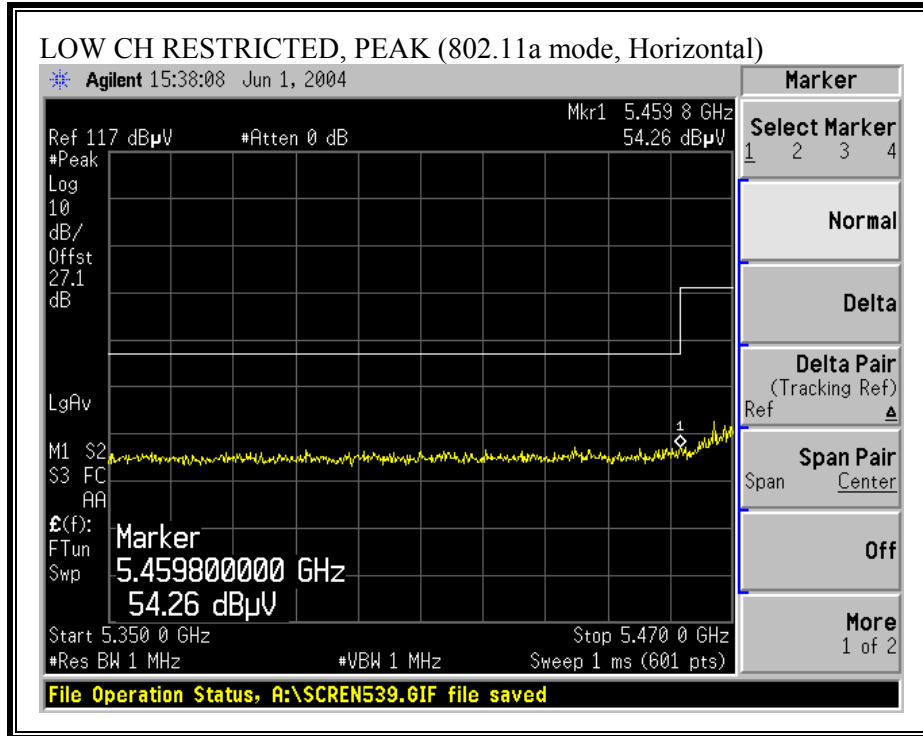
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

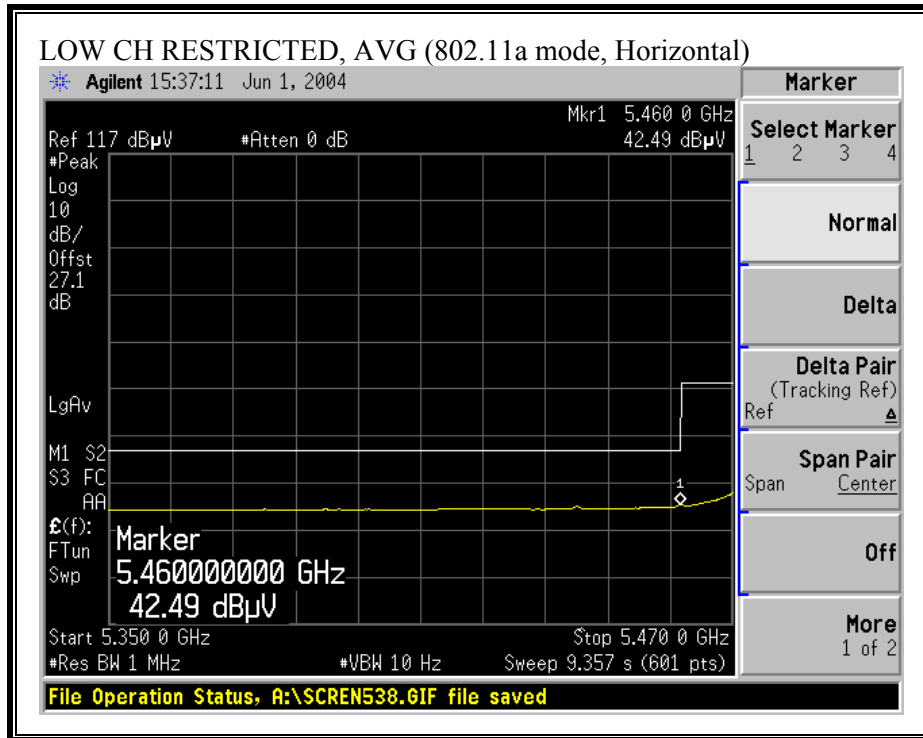
RESULTS

No non-compliance noted:

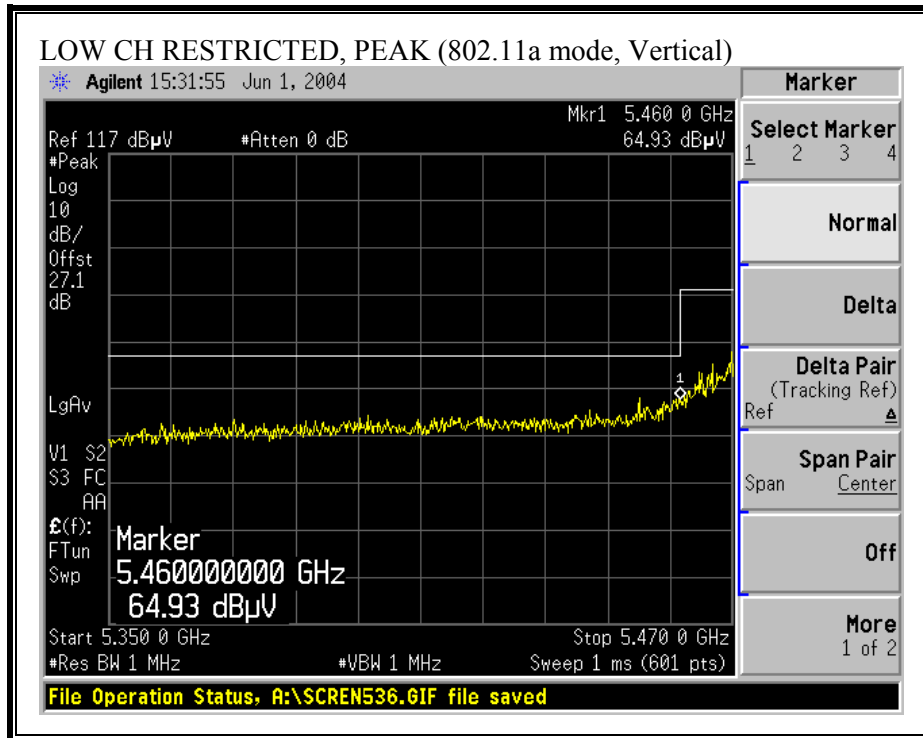
7.6.2. TRANSMITTER RADIATED EMISSIONS ABOVE 1 GHz WITH 9 dBi INTEGRAL ANTENNA

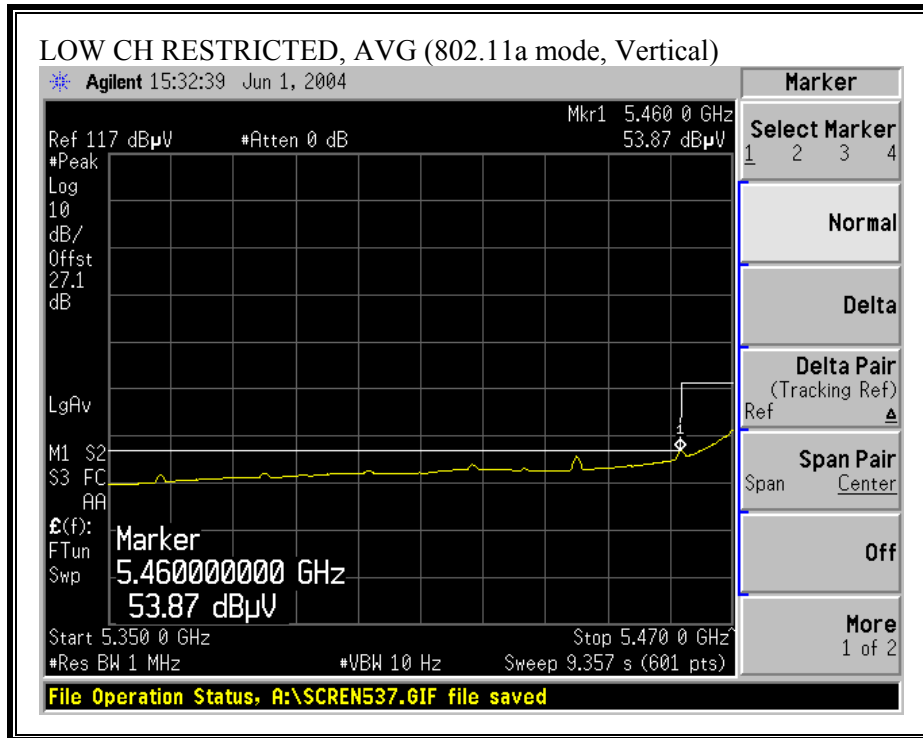
RESTRICTED BANDEDGE (a MODE, LOW CHANNEL, HORIZONTAL)



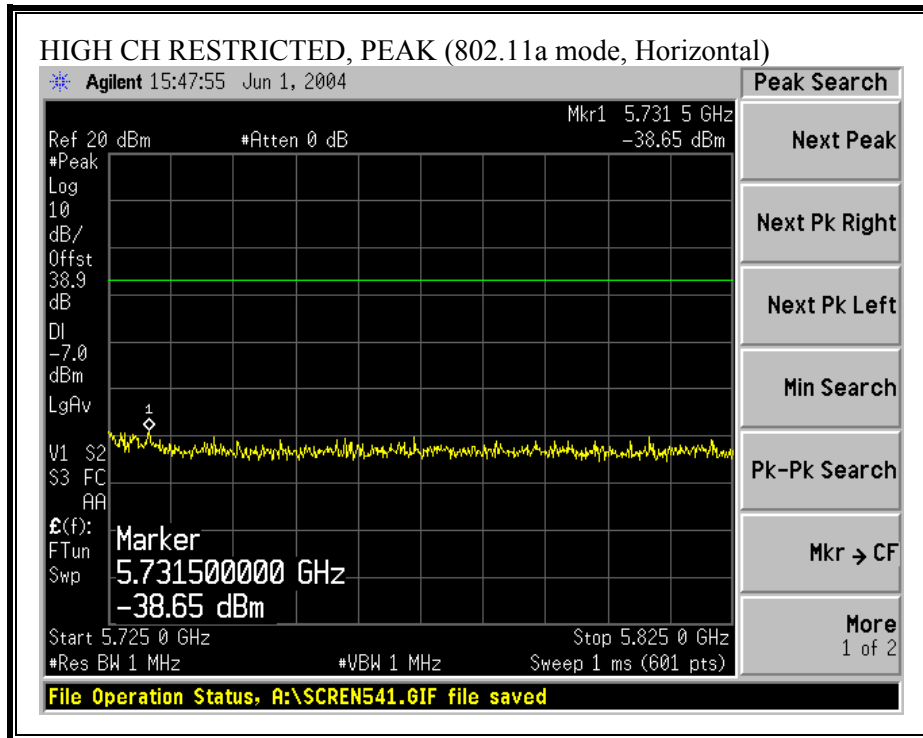


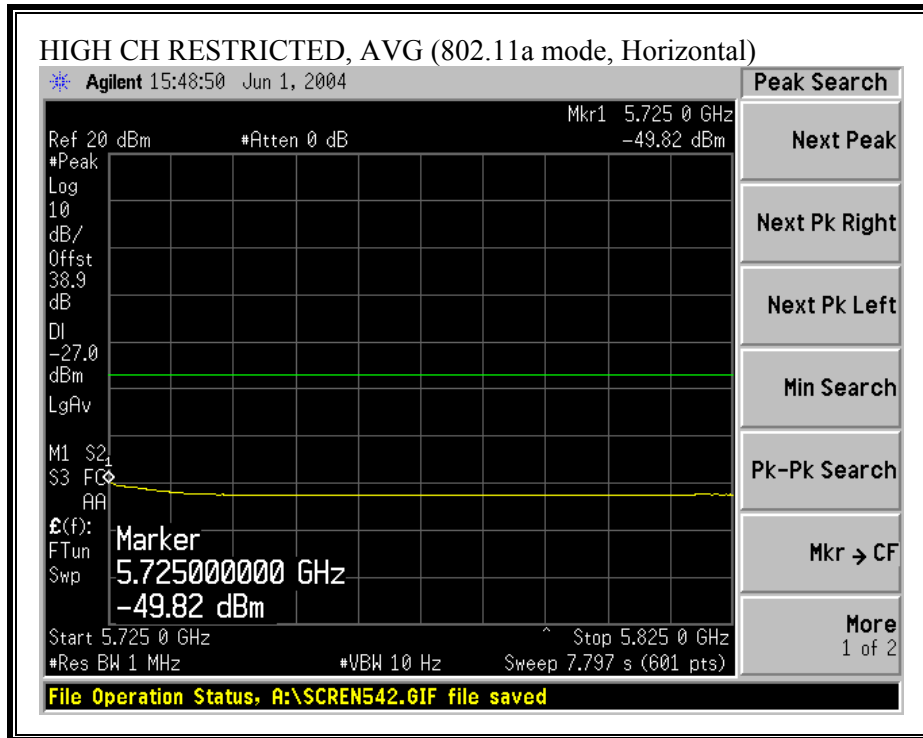
RESTRICTED BANDEDGE (a MODE, LOW CHANNEL, VERTICAL)



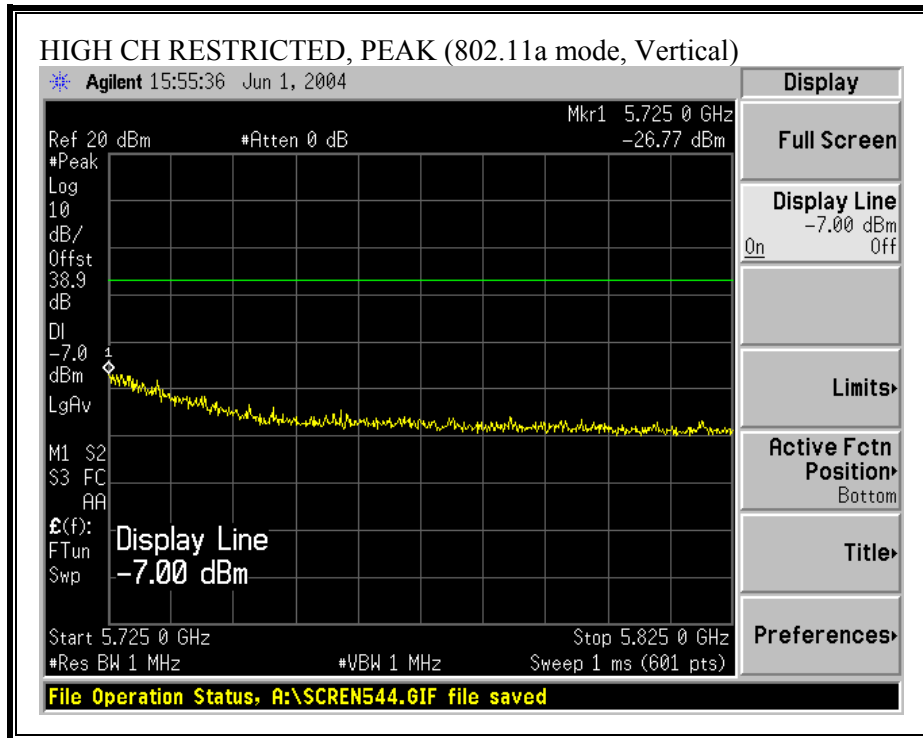


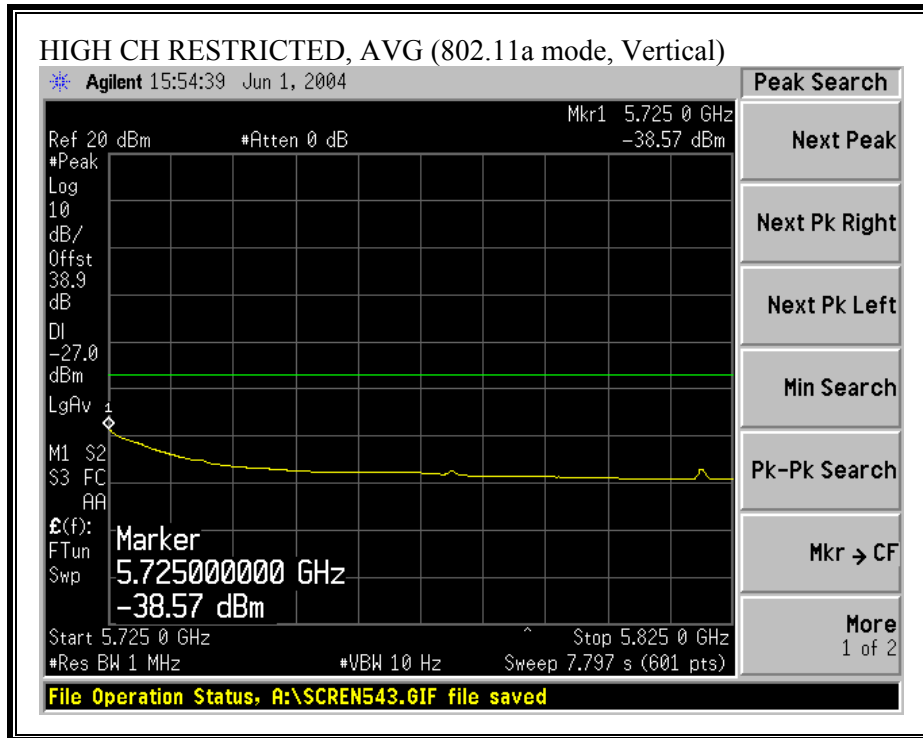
RESTRICTED BANDEDGE (a MODE, HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (a MODE, HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS (a MODE)

06/03/04 **High Frequency Measurement**
 Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Yan Zheng
Project #: 04U2586-1
Company: Cisco
EUT Descrip.: Kodiak RM22A 802.11 a CardBus Radio Module with 9dBi Patch Antenna
EUT M/N: AIR-RM22A-K9 IN AIR-API200 ACCESS POINT
Test Target: FCC Class B
Mode Oper: TX, 5.5 Band

Test Equipment:

EMCO Horn 1-18GHz	Spectrum Analyzer	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz
T59; S/N: 3245 @3m	Agilent E4446A Analyzer	T87 Miteq924342		

Hi Frequency Cables
 (2 ft) (2 ~ 3 ft) (4 ~ 6 ft) (12 ft)

Peak Measurements:
 1 MHz Resolution Bandwidth
 1MHz Video Bandwidth

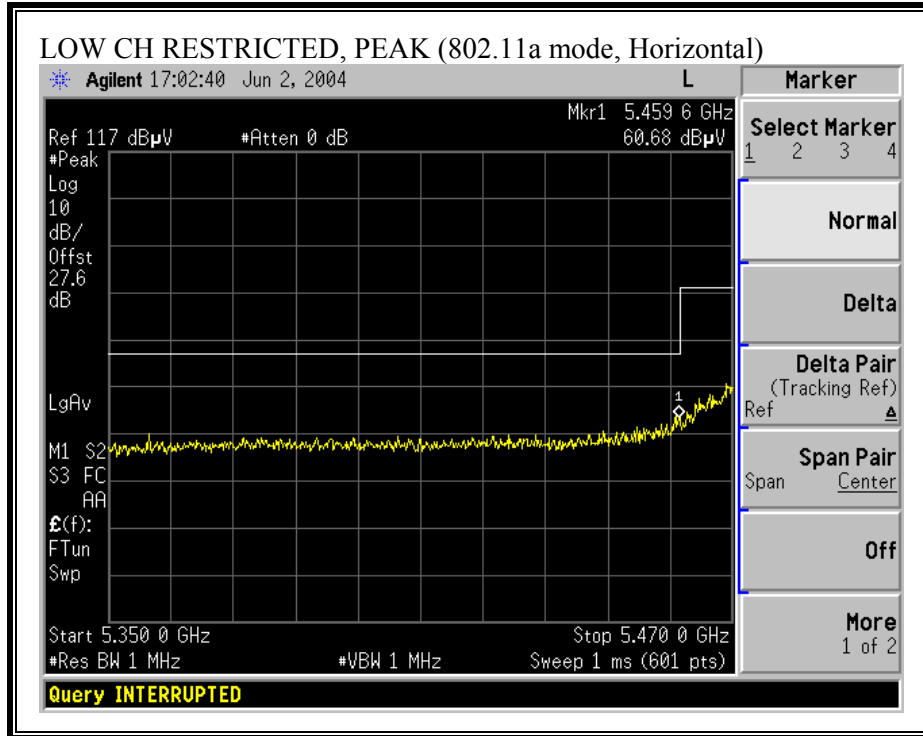
Average Measurements:
 1 MHz Resolution Bandwidth
 10Hz Video Bandwidth

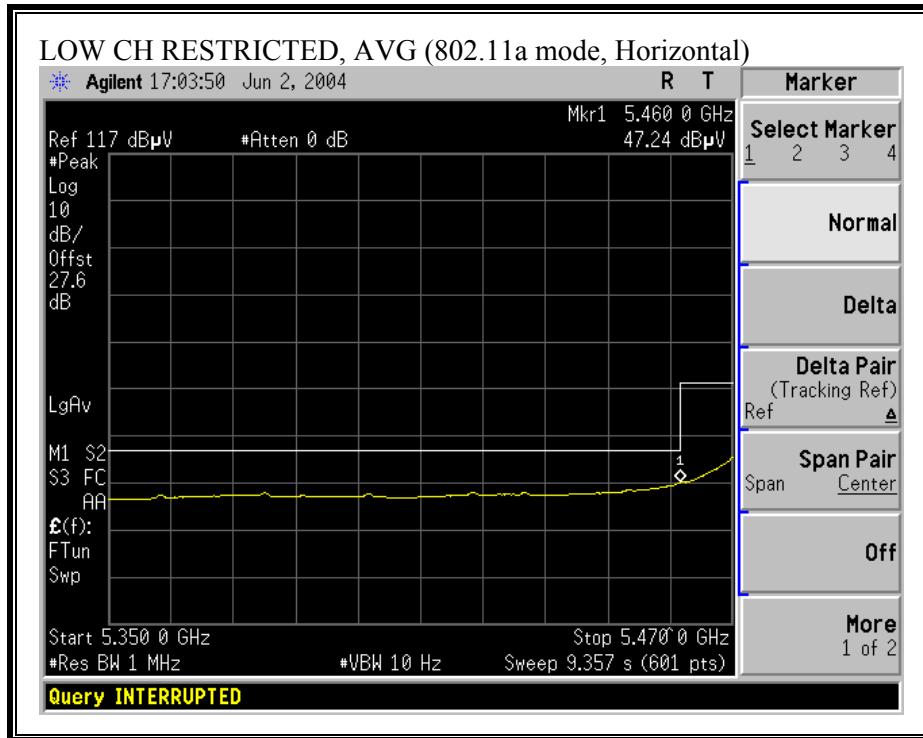
f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
CH 5500															
4.180	9.8	59.9	58.8	32.7	2.8	-44.1	0.0	1.5	52.7	51.6	74.0	54.0	-21.3	-2.4	V
4.180	9.8	61.1	60.1	32.7	2.8	-44.1	0.0	1.5	53.9	52.9	74.0	54.0	-20.1	-1.1	H
11.000	9.8	46.4	36.5	38.2	5.0	-40.9	0.0	1.5	50.2	40.3	74.0	54.0	-23.8	-13.7	V
11.000	9.8	49.6	37.5	38.2	5.0	-40.9	0.0	1.5	53.4	41.3	74.0	54.0	-20.6	-12.7	H
CH 5600															
4.247	9.8	59.7	59.0	32.7	2.8	-44.2	0.0	1.5	52.5	51.8	74.0	54.0	-21.5	-2.2	V
4.247	9.8	58.9	57.7	32.7	2.8	-44.2	0.0	1.5	51.7	50.5	74.0	54.0	-22.3	-3.5	H
11.200	9.8	46.6	35.1	38.4	5.0	-41.1	0.0	1.5	50.4	38.9	74.0	54.0	-23.6	-15.1	V
11.200	9.8	46.1	34.3	38.4	5.0	-41.1	0.0	1.5	49.9	38.1	74.0	54.0	-24.1	-15.9	H
CH 5700															
4.313	9.8	57.7	56.1	32.8	2.8	-44.3	0.0	1.5	50.5	48.9	74.0	54.0	-23.5	-5.1	V
4.313	9.8	58.8	57.8	32.8	2.8	-44.3	0.0	1.5	51.6	50.6	74.0	54.0	-22.4	-3.4	H
11.400	9.8	46.2	34.5	38.6	5.1	-41.4	0.0	1.5	50.0	38.3	74.0	54.0	-24.0	-15.7	V
11.400	9.8	48.0	36.9	38.6	5.1	-41.4	0.0	1.5	51.8	40.7	74.0	54.0	-22.2	-13.3	H

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

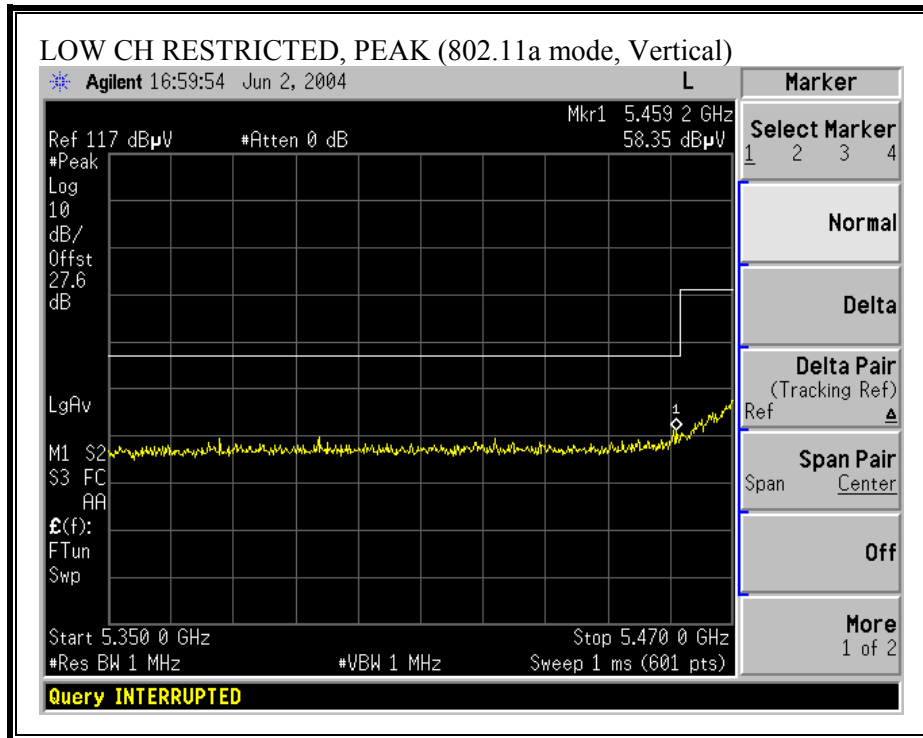
7.6.3. TRANSMITTER RADIATED EMISSIONS ABOVE 1 GHz WITH 4.5dBi ANTENNA

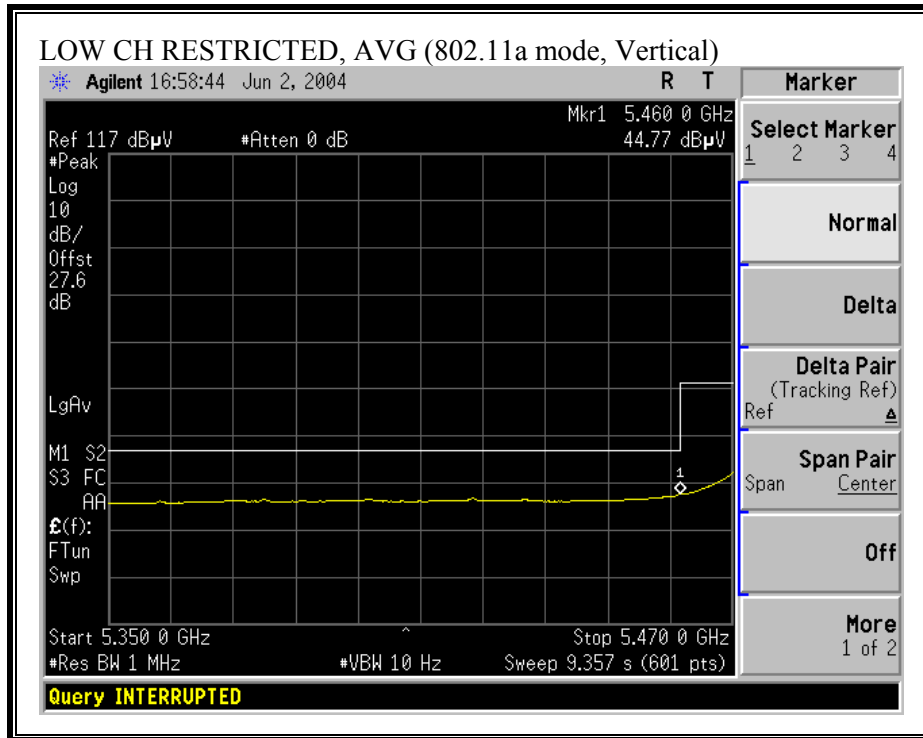
RESTRICTED BANDEDGE (a MODE, LOW CHANNEL, HORIZONTAL)



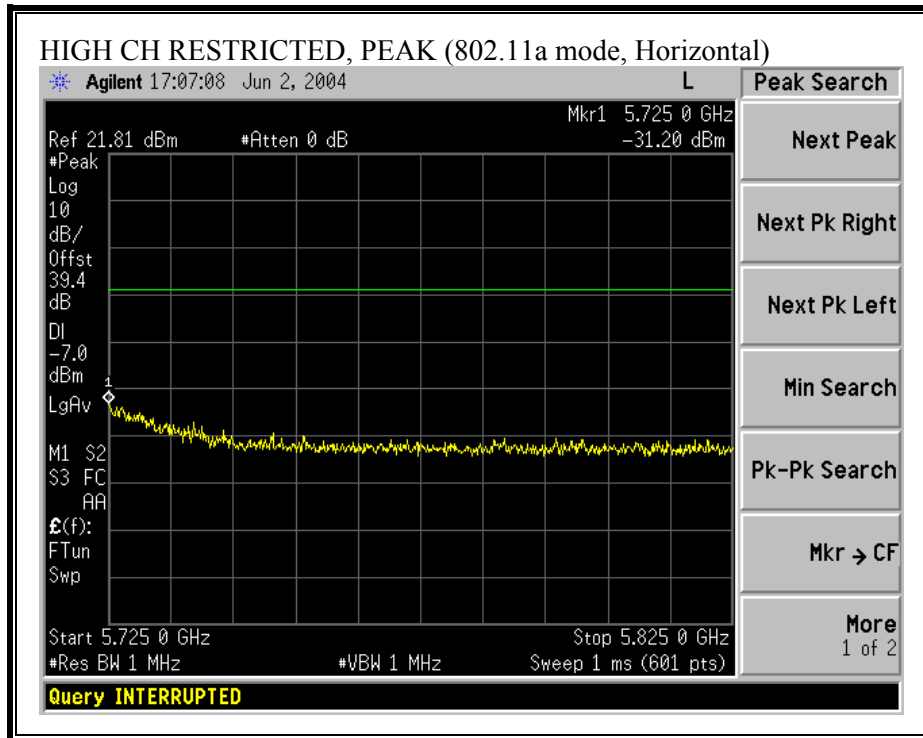


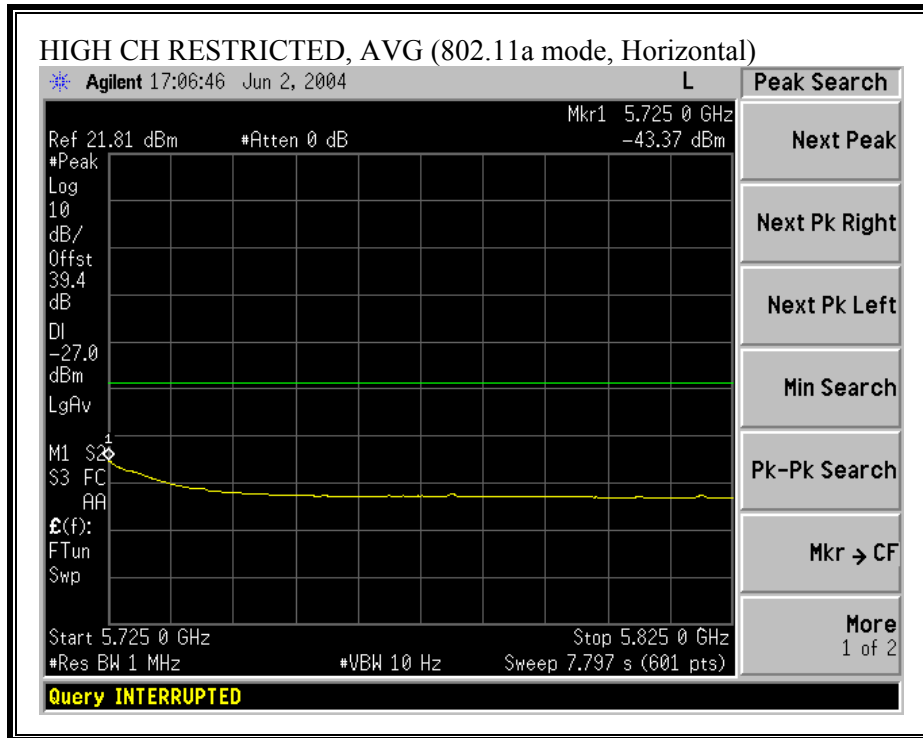
RESTRICTED BANDEDGE (a MODE, LOW CHANNEL, VERTICAL)



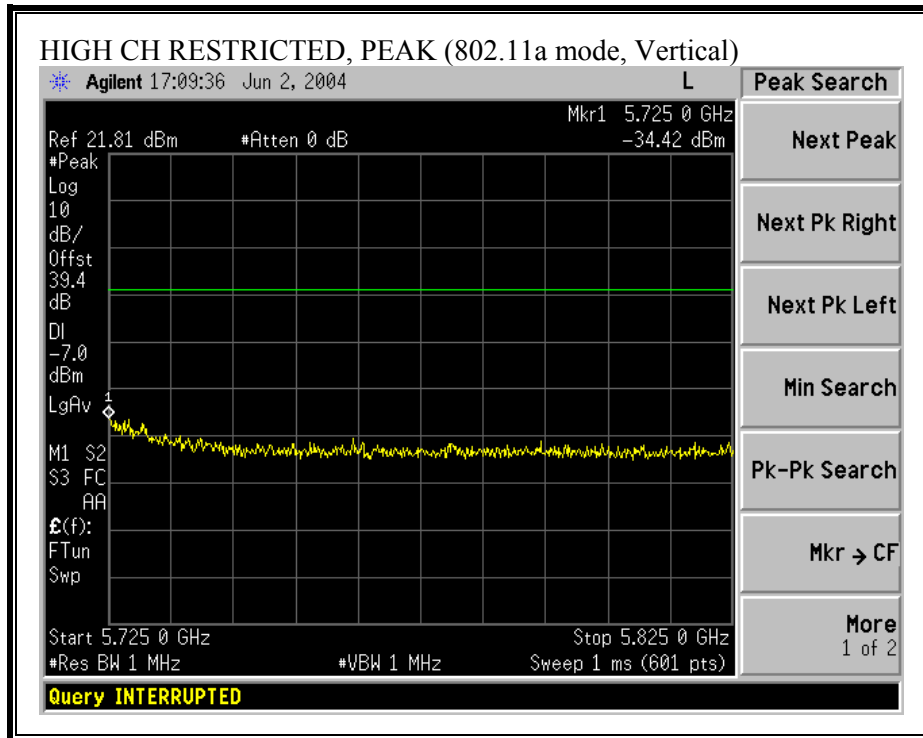


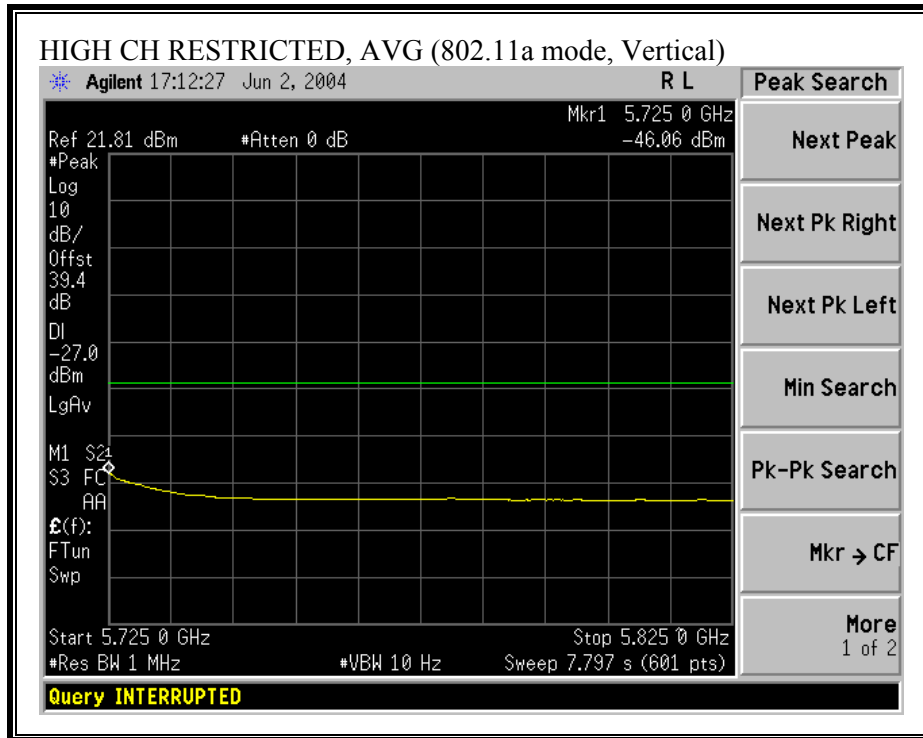
RESTRICTED BANDEDGE (a MODE, HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (a MODE, HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS (a MODE)

06/04/04 **High Frequency Measurement**
 Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Yan Zheng
Project #: 04U2586-1
Company: Cisco
EUT Descrip.: Kodiak RM22A 802.11 a CardBus Radio Module with 4.5dBi Omni Antenna
EUT M/N: AIR-RM22A-K9 IN AIR-API200 ACCESS POINT
Test Target: FCC Class B
Mode Oper: TX, 5.5 Band

Test Equipment:

EMCO Horn 1-18GHz	Spectrum Analyzer	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz
T59; S/N: 3245 @3m	Agilent E4446A Analyzer	T87 Miteq 924342		

Hi Frequency Cables: (2 ft) (2 ~ 3 ft) (4 ~ 6 ft) (12 ft)

Peak Measurements:
 1 MHz Resolution Bandwidth
 1MHz Video Bandwidth

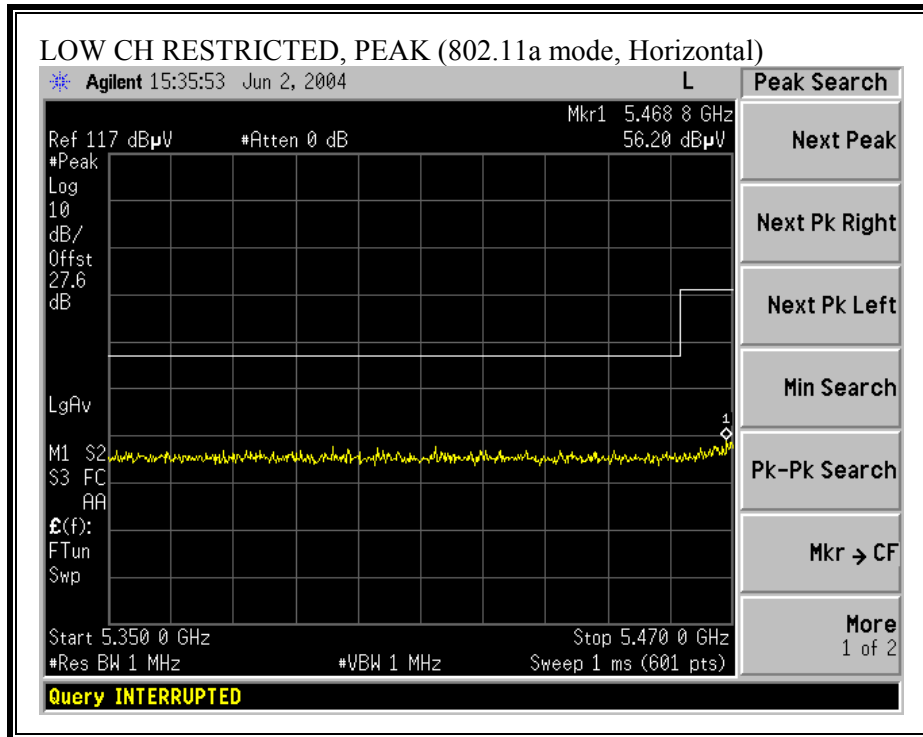
Average Measurements:
 1 MHz Resolution Bandwidth
 10Hz Video Bandwidth

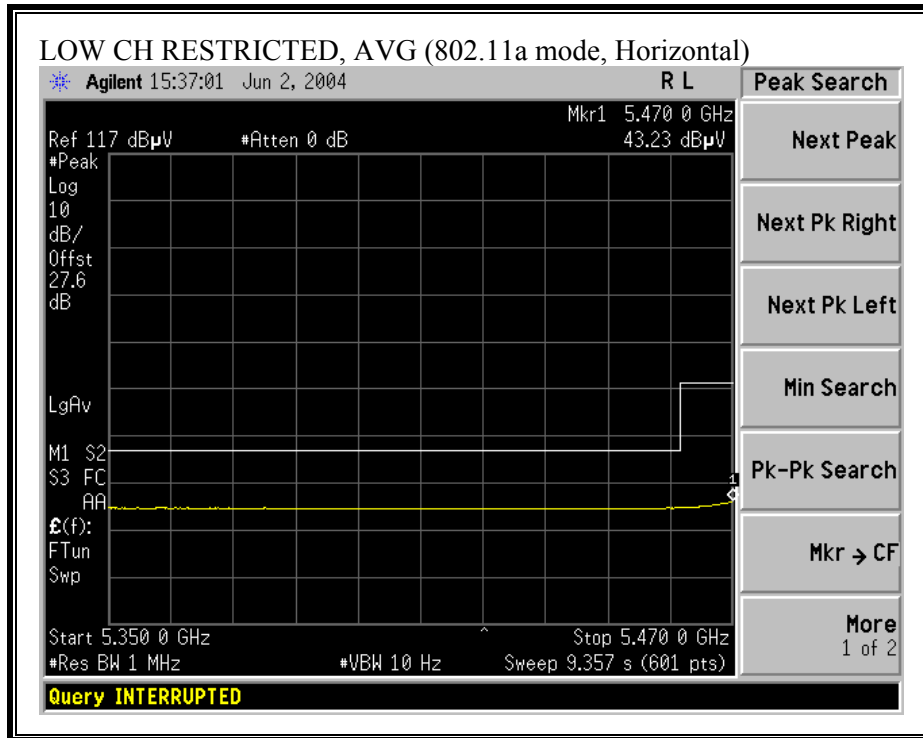
f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
CH 5500															
4.180	9.8	59.5	58.2	32.7	2.8	-44.1	0.0	1.5	52.3	51.0	74.0	54.0	-21.7	-3.0	V
4.180	9.8	55.8	53.3	32.7	2.8	-44.1	0.0	1.5	48.6	46.1	74.0	54.0	-25.4	-7.9	H
11.000	9.8	46.9	35.0	38.2	5.0	-40.9	0.0	1.5	50.7	38.8	74.0	54.0	-23.3	-15.2	V
11.000	9.8	46.3	34.4	38.2	5.0	-40.9	0.0	1.5	50.1	38.2	74.0	54.0	-23.9	-15.8	H
CH 5600															
4.247	9.8	60.7	59.7	32.7	2.8	-44.2	0.0	1.5	53.5	52.5	74.0	54.0	-20.5	-1.5	V
4.247	9.8	56.2	54.9	32.7	2.8	-44.2	0.0	1.5	49.0	47.7	74.0	54.0	-25.0	-6.3	H
11.200	9.8	47.0	35.4	38.4	5.0	-41.1	0.0	1.5	50.8	39.2	74.0	54.0	-23.2	-14.8	V
11.200	9.8	46.6	34.7	38.4	5.0	-41.1	0.0	1.5	50.4	38.5	74.0	54.0	-23.6	-15.5	H
CH 5700															
4.313	9.8	60.7	59.7	32.8	2.8	-44.3	0.0	1.5	53.5	52.5	74.0	54.0	-20.5	-1.5	V
4.313	9.8	56.1	55.0	32.8	2.8	-44.3	0.0	1.5	48.9	47.8	74.0	54.0	-25.1	-6.2	H
11.400	9.8	46.9	35.1	38.6	5.1	-41.4	0.0	1.5	50.7	38.9	74.0	54.0	-23.3	-15.1	V
11.400	9.8	46.8	34.8	38.6	5.1	-41.4	0.0	1.5	50.6	38.6	74.0	54.0	-23.4	-15.4	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		

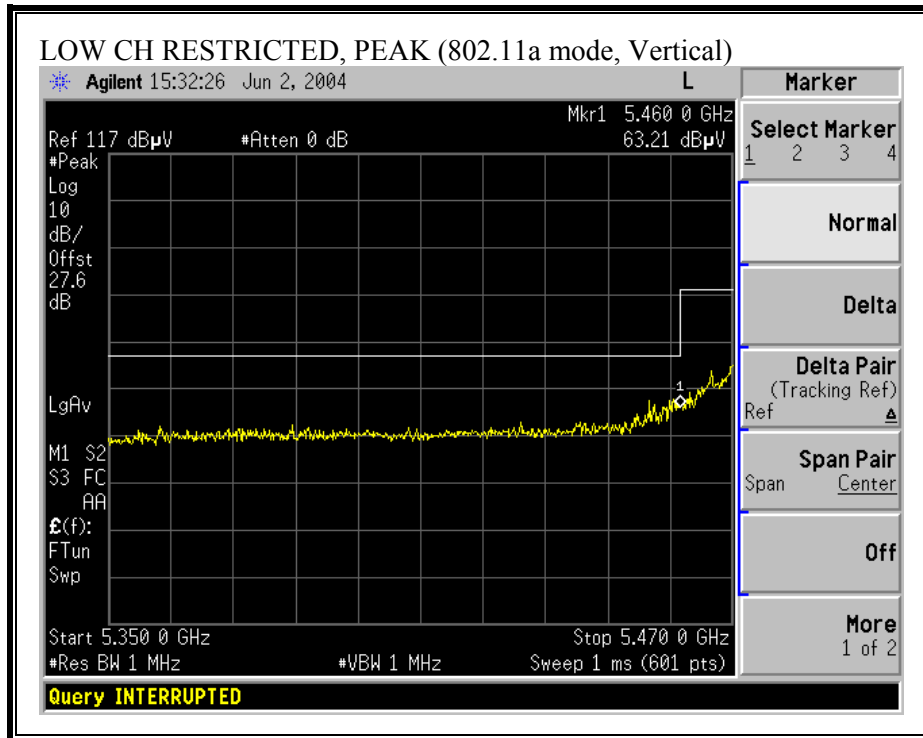
7.6.4. TRANSMITTER RADIATED EMISSIONS ABOVE 1 GHz WITH 6dBi ANTENNA

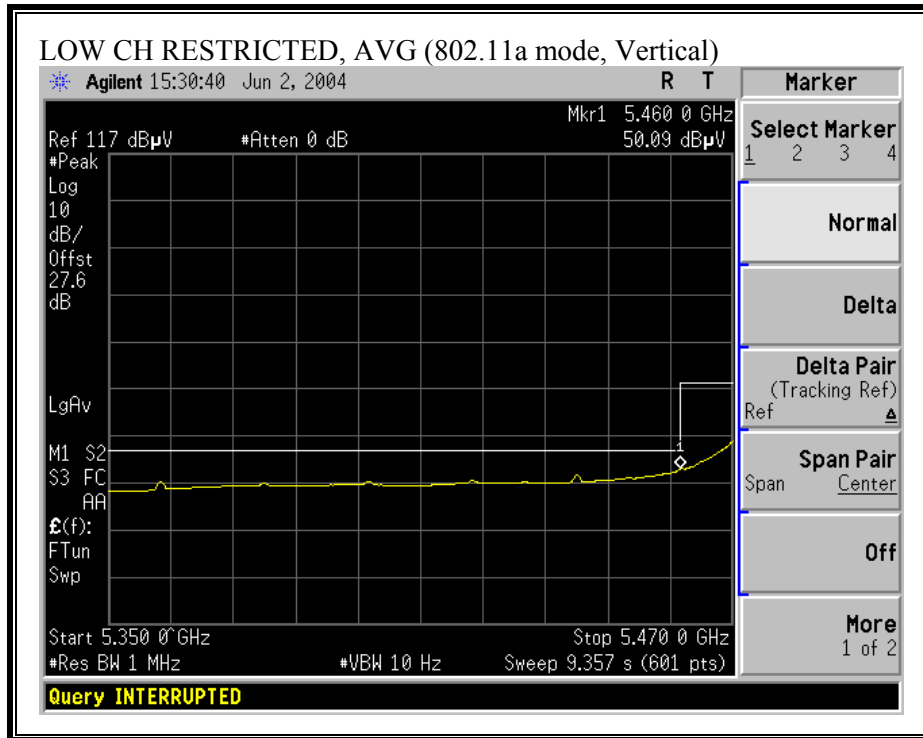
RESTRICTED BANDEDGE (a MODE, LOW CHANNEL, HORIZONTAL)



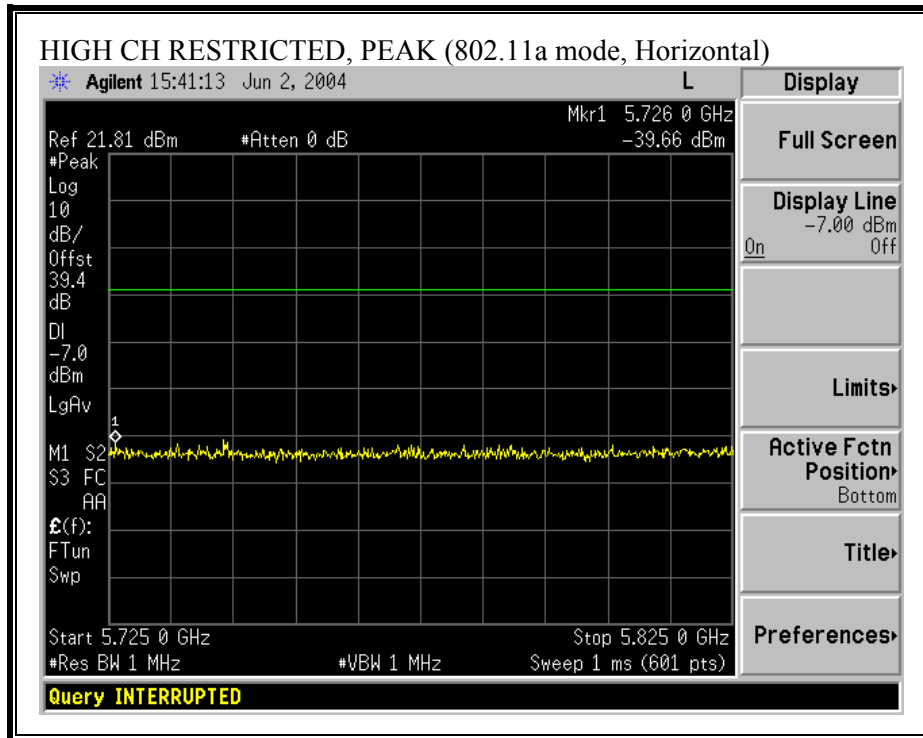


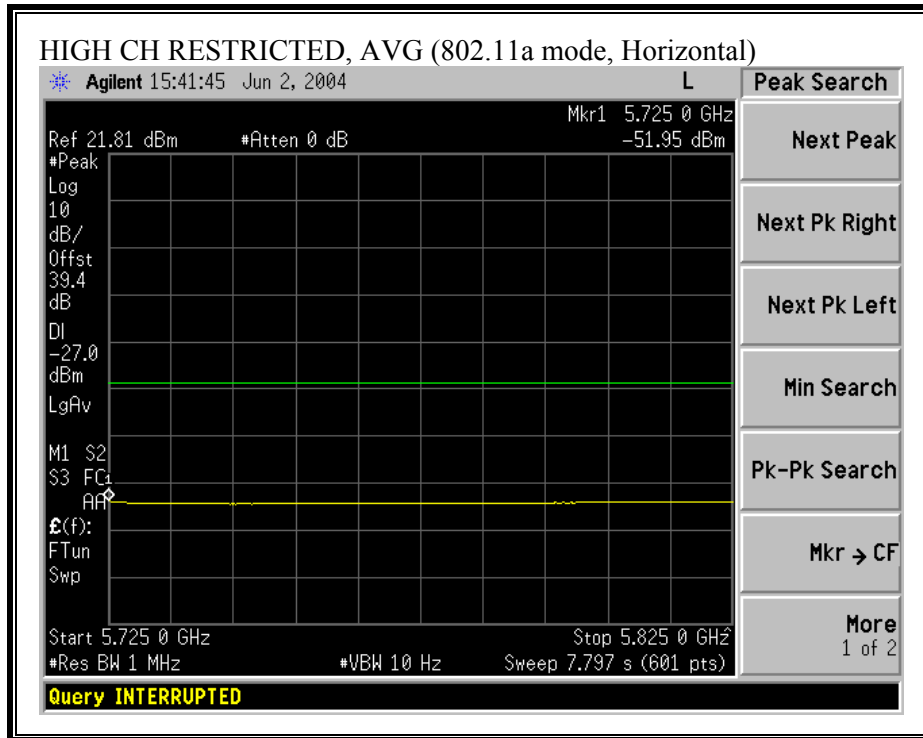
RESTRICTED BANDEDGE (a MODE, LOW CHANNEL, VERTICAL)



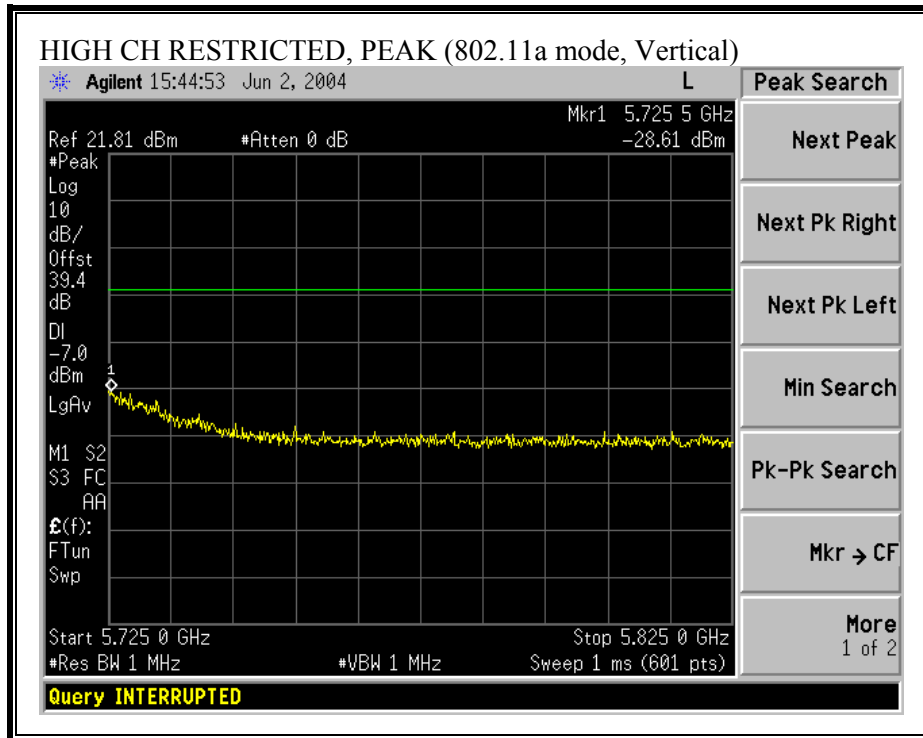


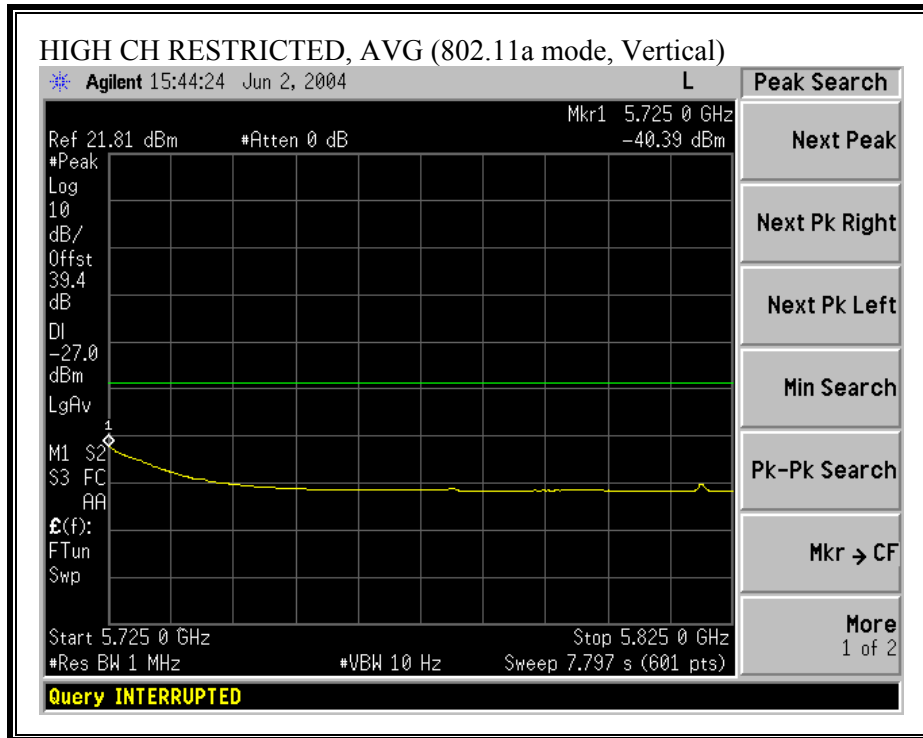
RESTRICTED BANDEDGE (a MODE, HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (a MODE, HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS (a MODE)

06/04/04 **High Frequency Measurement**
 Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Yan Zheng
Project #: 04U2586-1
Company: Cisco
EUT Descrip.: Kodiak RM22A 802.11 a CardBus Radio Module with 6dBi Omni Antenna
EUT M/N: AIR-RM22A-K9 IN AIR-API200 ACCESS POINT
Test Target: FCC Class B
Mode Oper: TX, 5.5 Band

Test Equipment:

EMCO Horn 1-18GHz	Spectrum Analyzer	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz
T59; S/N: 3245 @3m	Agilent E4446A Analyzer	T87 Miteq 924342		

Hi Frequency Cables
 (2 ft) (2 ~ 3 ft) (4 ~ 6 ft) (12 ft)

Peak Measurements:
 1 MHz Resolution Bandwidth
 1MHz Video Bandwidth

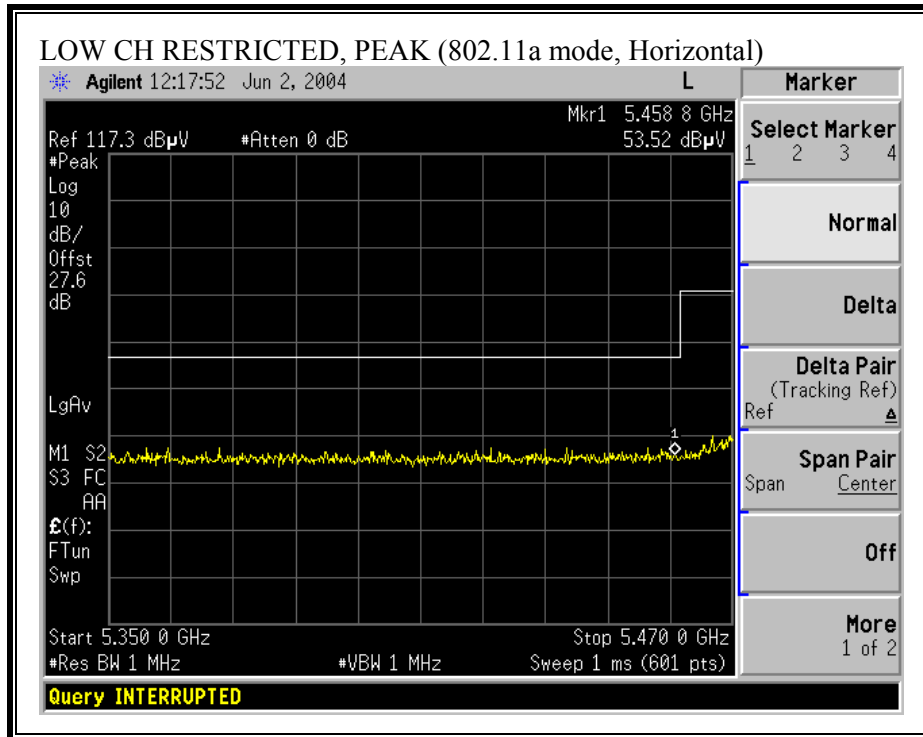
Average Measurements:
 1 MHz Resolution Bandwidth
 10Hz Video Bandwidth

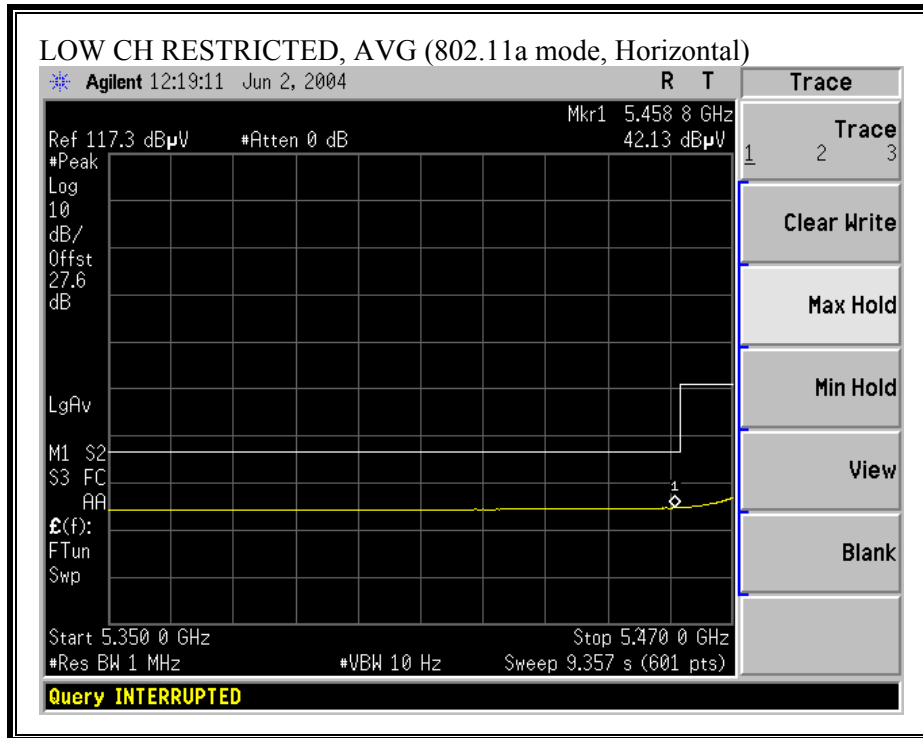
f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
CH 5500															
4.180	9.8	58.9	57.2	32.7	2.8	-44.1	0.0	1.5	51.7	50.0	74.0	54.0	-22.3	-4.0	V
4.180	9.8	55.0	52.1	32.7	2.8	-44.1	0.0	1.5	47.8	44.9	74.0	54.0	-26.2	-9.1	H
11.000	9.8	46.2	34.6	38.2	5.0	-40.9	0.0	1.5	50.0	38.4	74.0	54.0	-24.0	-15.6	V
11.000	9.8	46.1	34.0	38.2	5.0	-40.9	0.0	1.5	49.9	37.8	74.0	54.0	-24.1	-16.2	H
CH 5600															
4.247	9.8	60.8	59.7	32.7	2.8	-44.2	0.0	1.5	53.6	52.5	74.0	54.0	-20.4	-1.5	V
4.247	9.8	56.9	55.1	32.7	2.8	-44.2	0.0	1.5	49.7	47.9	74.0	54.0	-24.3	-6.1	H
11.200	9.8	47.0	35.4	38.4	5.0	-41.1	0.0	1.5	50.8	39.2	74.0	54.0	-23.2	-14.8	V
11.200	9.8	46.1	34.8	38.4	5.0	-41.1	0.0	1.5	49.9	38.6	74.0	54.0	-24.1	-15.4	H
CH 5700															
4.313	9.8	60.0	59.1	32.8	2.8	-44.3	0.0	1.5	52.8	51.9	74.0	54.0	-21.2	-2.1	V
4.313	9.8	56.7	55.2	32.8	2.8	-44.3	0.0	1.5	49.5	48.0	74.0	54.0	-24.5	-6.0	H
11.400	9.8	47.9	36.0	38.6	5.1	-41.4	0.0	1.5	51.7	39.8	74.0	54.0	-22.3	-14.2	V
11.400	9.8	47.1	35.3	38.6	5.1	-41.4	0.0	1.5	50.9	39.1	74.0	54.0	-23.1	-14.9	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		

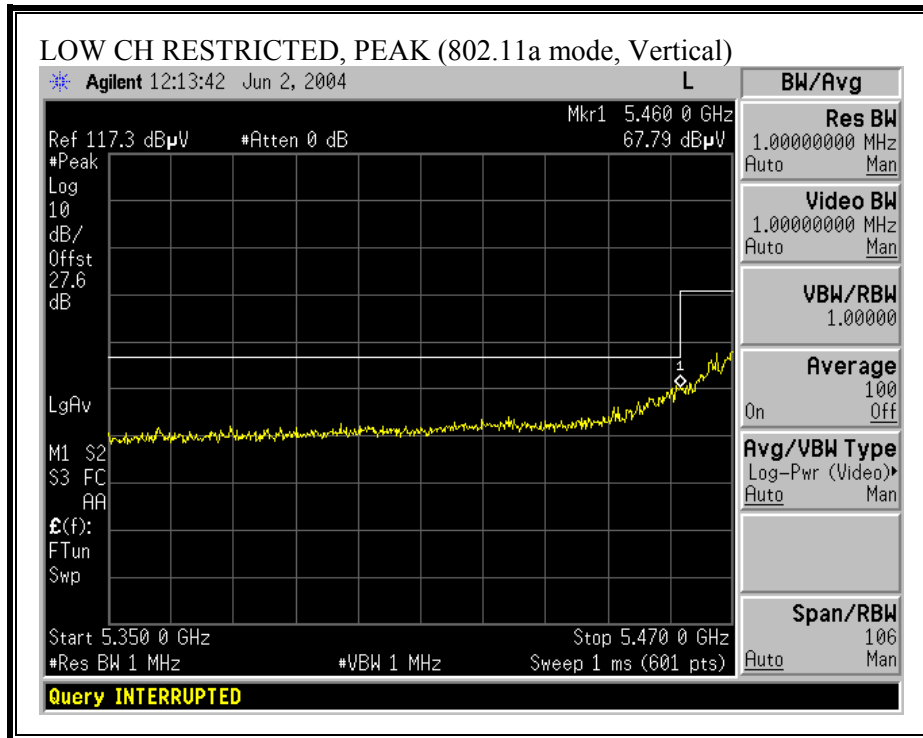
7.6.5. TRANSMITTER RADIATED EMISSIONS ABOVE 1 GHz WITH 7dBi ANTENNA

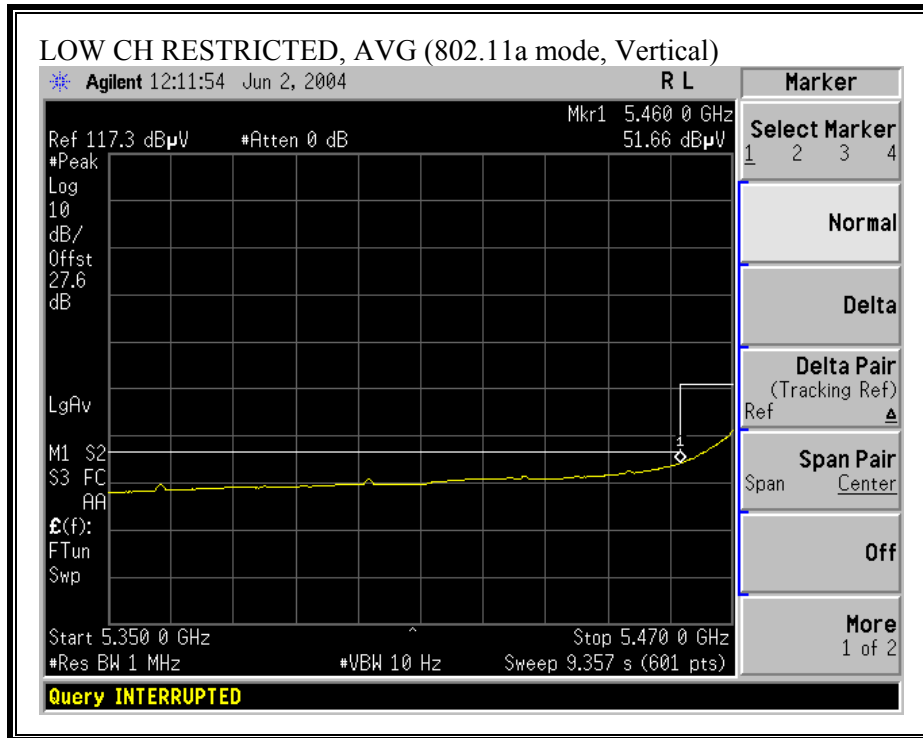
RESTRICTED BANDEDGE (a MODE, LOW CHANNEL, HORIZONTAL)



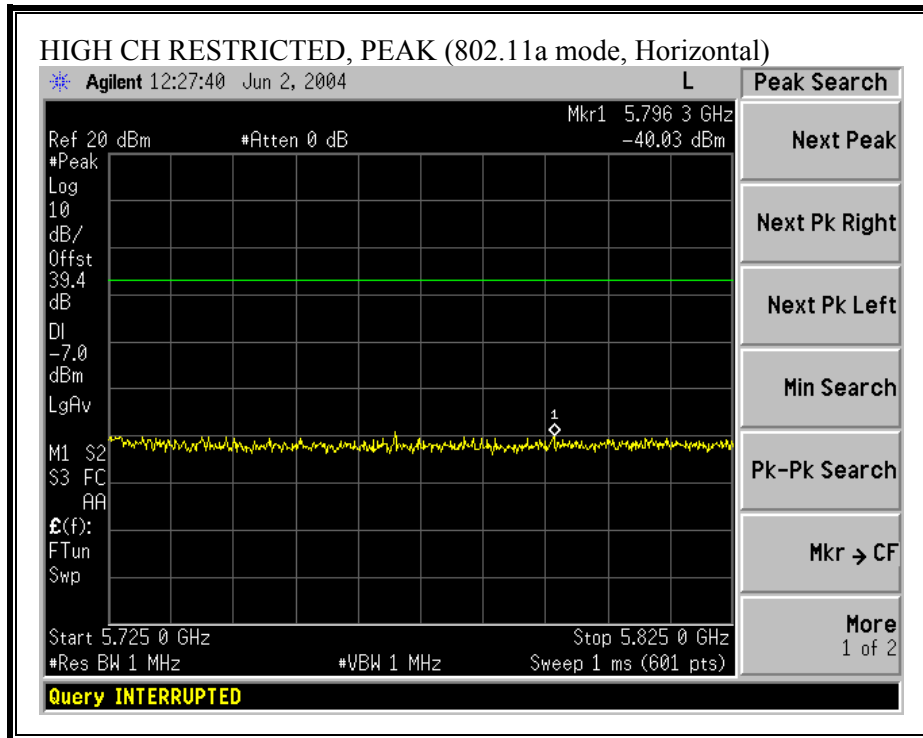


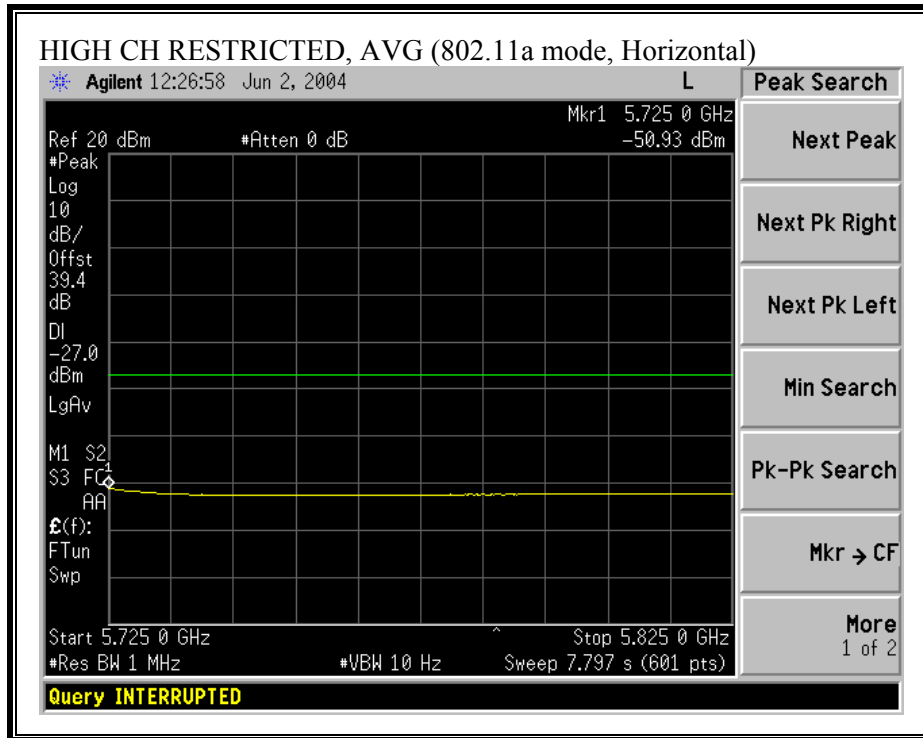
RESTRICTED BANDEDGE (a MODE, LOW CHANNEL, VERTICAL)



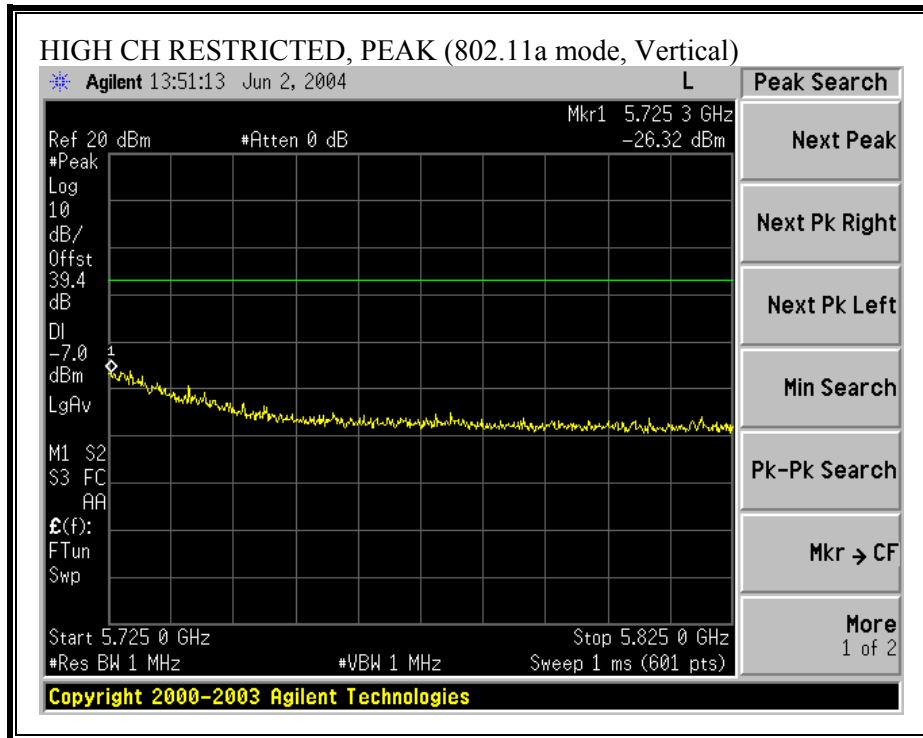


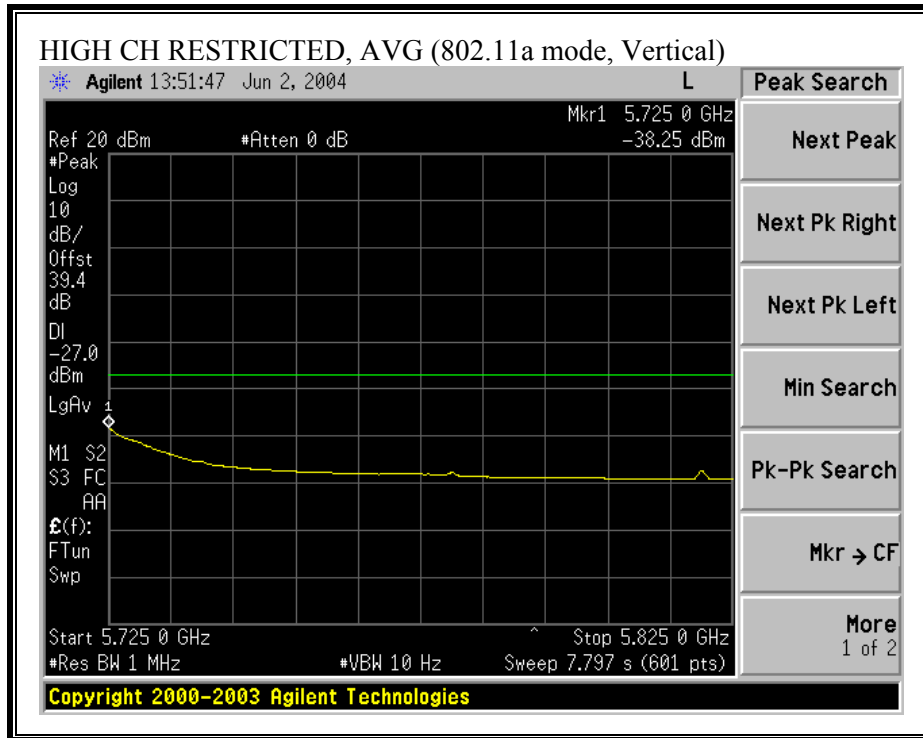
RESTRICTED BANDEDGE (a MODE, HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (a MODE, HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS (a MODE)

06/04/04 **High Frequency Measurement**
 Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Yan Zheng
Project #: 04U2586-1
Company: Cisco
EUT Descrip.: Kodiak RM22A 802.11 a CardBus Radio Module with 7dBi Patch Antenna
EUT M/N: AIR-RM22A-K9 IN AIR-API200 ACCESS POINT
Test Target: FCC Class B
Mode Oper: TX, 5.5 Band

Test Equipment:

EMCO Horn 1-18GHz	Spectrum Analyzer	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz
T59; S/N: 3245 @3m	Agilent E4446A Analyzer	T87 Miteq 924342		

Hi Frequency Cables: (2 ft) (2 ~ 3 ft) (4 ~ 6 ft) (12 ft)

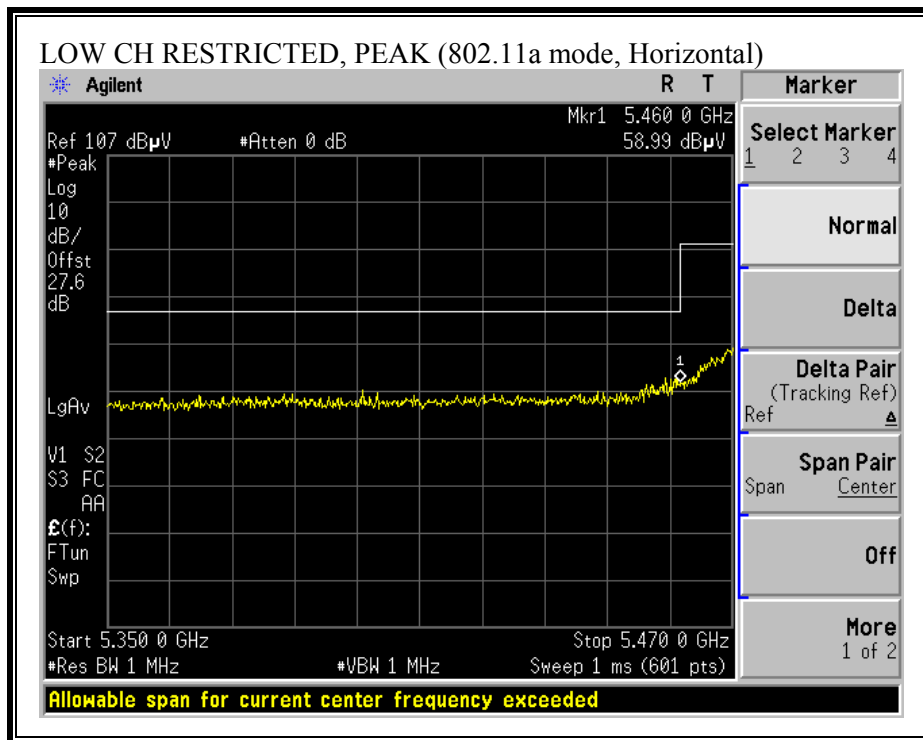
Peak Measurements: 1 MHz Resolution Bandwidth 1MHz Video Bandwidth	Average Measurements: 1 MHz Resolution Bandwidth 10Hz Video Bandwidth
---	--

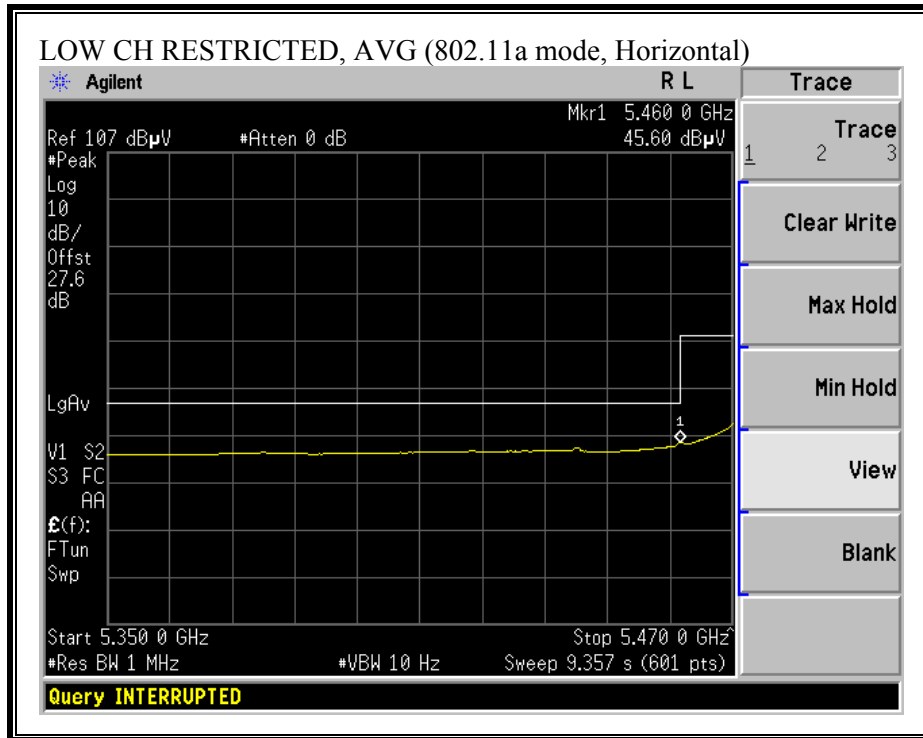
f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
CH 5500															
4.180	9.8	61.1	60.1	32.7	2.8	-44.1	0.0	1.5	53.9	52.9	74.0	54.0	-20.1	-1.1	V
4.180	9.8	56.8	55.2	32.7	2.8	-44.1	0.0	1.5	49.6	48.0	74.0	54.0	-24.4	-6.0	H
11.000	9.8	46.4	34.2	38.2	5.0	-40.9	0.0	1.5	50.2	38.0	74.0	54.0	-23.8	-16.0	V
11.000	9.8	48.0	35.7	38.2	5.0	-40.9	0.0	1.5	51.8	39.5	74.0	54.0	-22.2	-14.5	H
CH 5600															
4.247	9.8	60.8	59.8	32.7	2.8	-44.2	0.0	1.5	53.6	52.6	74.0	54.0	-20.4	-1.4	V
4.247	9.8	56.1	53.7	32.7	2.8	-44.2	0.0	1.5	48.9	46.5	74.0	54.0	-25.1	-7.5	H
11.200	9.8	46.6	35.1	38.4	5.0	-41.1	0.0	1.5	50.4	38.9	74.0	54.0	-23.6	-15.1	V
11.200	9.8	47.4	35.3	38.4	5.0	-41.1	0.0	1.5	51.2	39.1	74.0	54.0	-22.8	-14.9	H
CH 5700															
4.313	9.8	60.7	59.9	32.8	2.8	-44.3	0.0	1.5	53.5	52.7	74.0	54.0	-20.5	-1.3	V
4.313	9.8	56.0	54.1	32.8	2.8	-44.3	0.0	1.5	48.8	46.9	74.0	54.0	-25.2	-7.1	H
11.400	9.8	47.0	35.4	38.6	5.1	-41.4	0.0	1.5	50.8	39.2	74.0	54.0	-23.2	-14.8	V
11.400	9.8	47.8	36.3	38.6	5.1	-41.4	0.0	1.5	51.6	40.1	74.0	54.0	-22.4	-13.9	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		

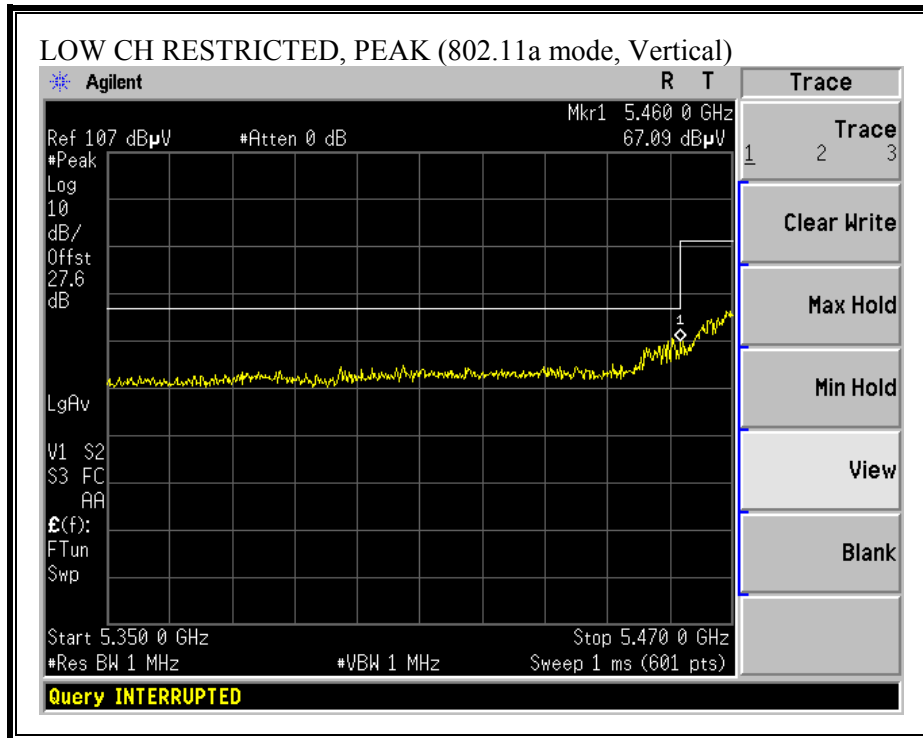
7.6.6. TRANSMITTER RADIATED EMISSIONS ABOVE 1 GHz WITH 9.5dBi ANTENNA

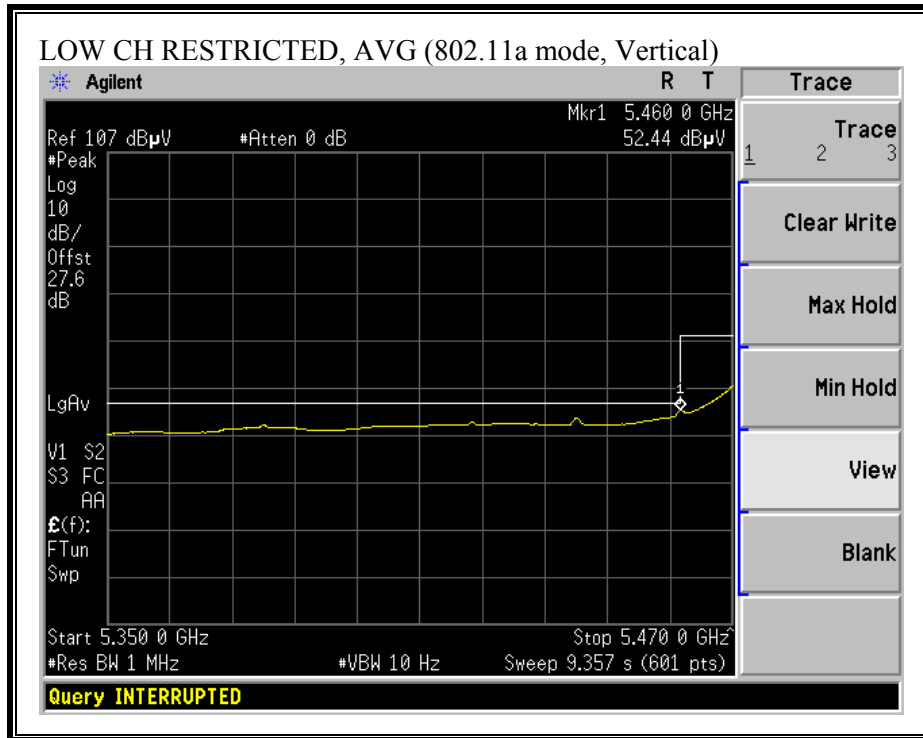
RESTRICTED BANDEDGE (a MODE, LOW CHANNEL, HORIZONTAL)



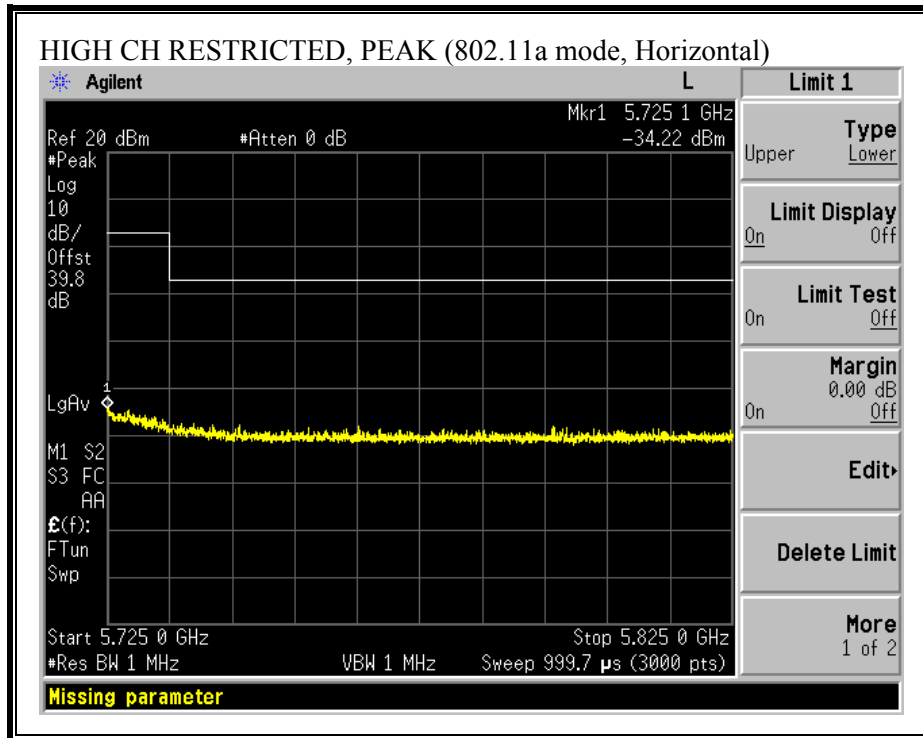


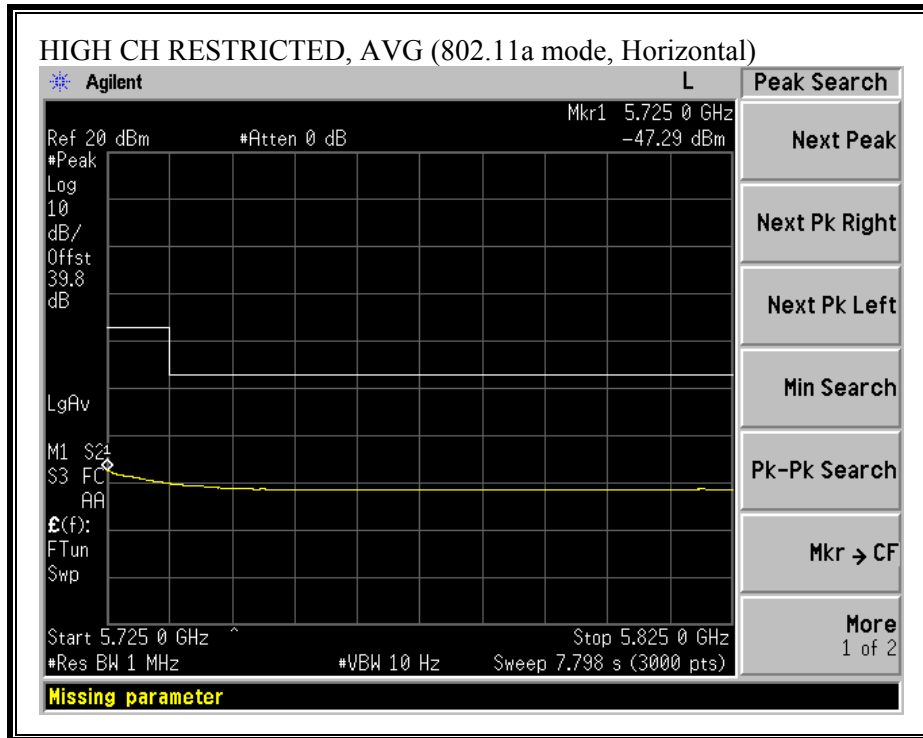
RESTRICTED BANDEDGE (a MODE, LOW CHANNEL, VERTICAL)



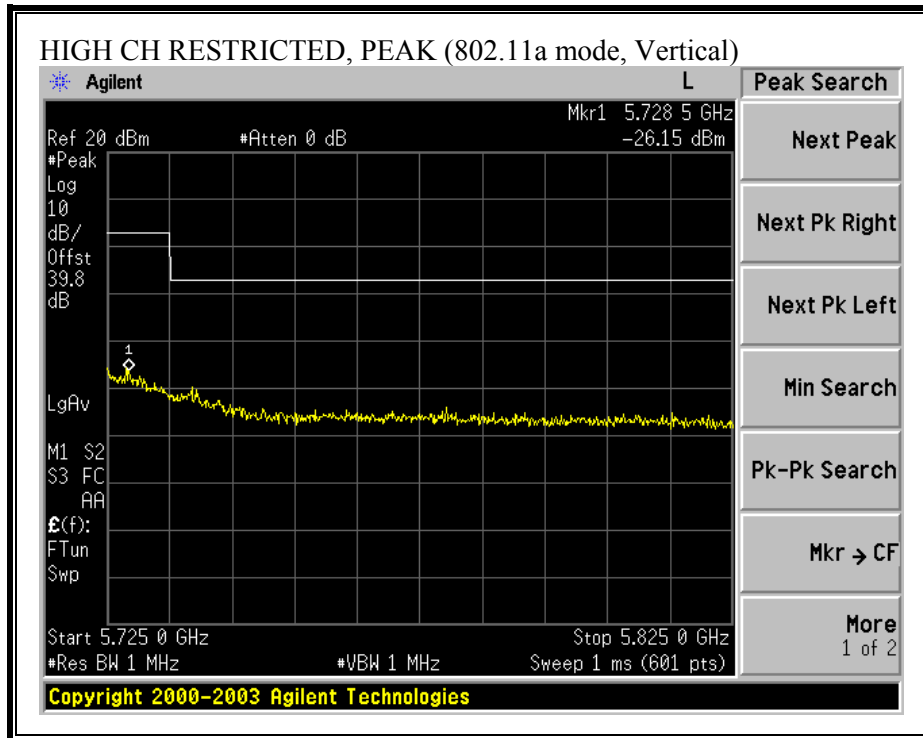


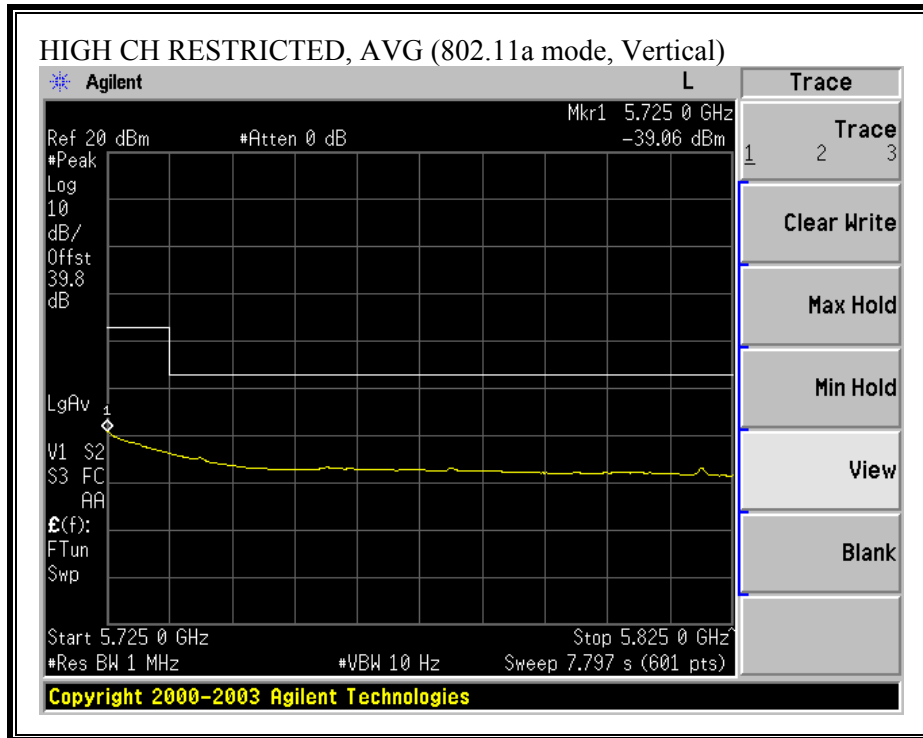
RESTRICTED BANDEDGE (a MODE, HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (a MODE, HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS (a MODE)

08/02/04 High Frequency Measurement
 Compliance Certification Services, Morgan Hill Open Field Site

Test Engr:Chin Pang
 Project #:04u2586
 Company:Cisco
 EUT Descrip.:Kodiak RM22AQ 802.11a Cardbus radio module with 9.5dBi antenna
 EUT M/N:AIR-RM22A-K9 in AP1200 Access Point
 Test Target:FCC UNNI
 Mode Oper:Tx

Test Equipment:

EMCO Horn 1-18GHz Spectrum Analyzer Pre-amplifier 1-26GHz Pre-amplifier 26-40GHz Horn > 18GHz

T60; S/N: 2238 @3m Agilent E4446A Analyzer T87 Miteq 924342

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

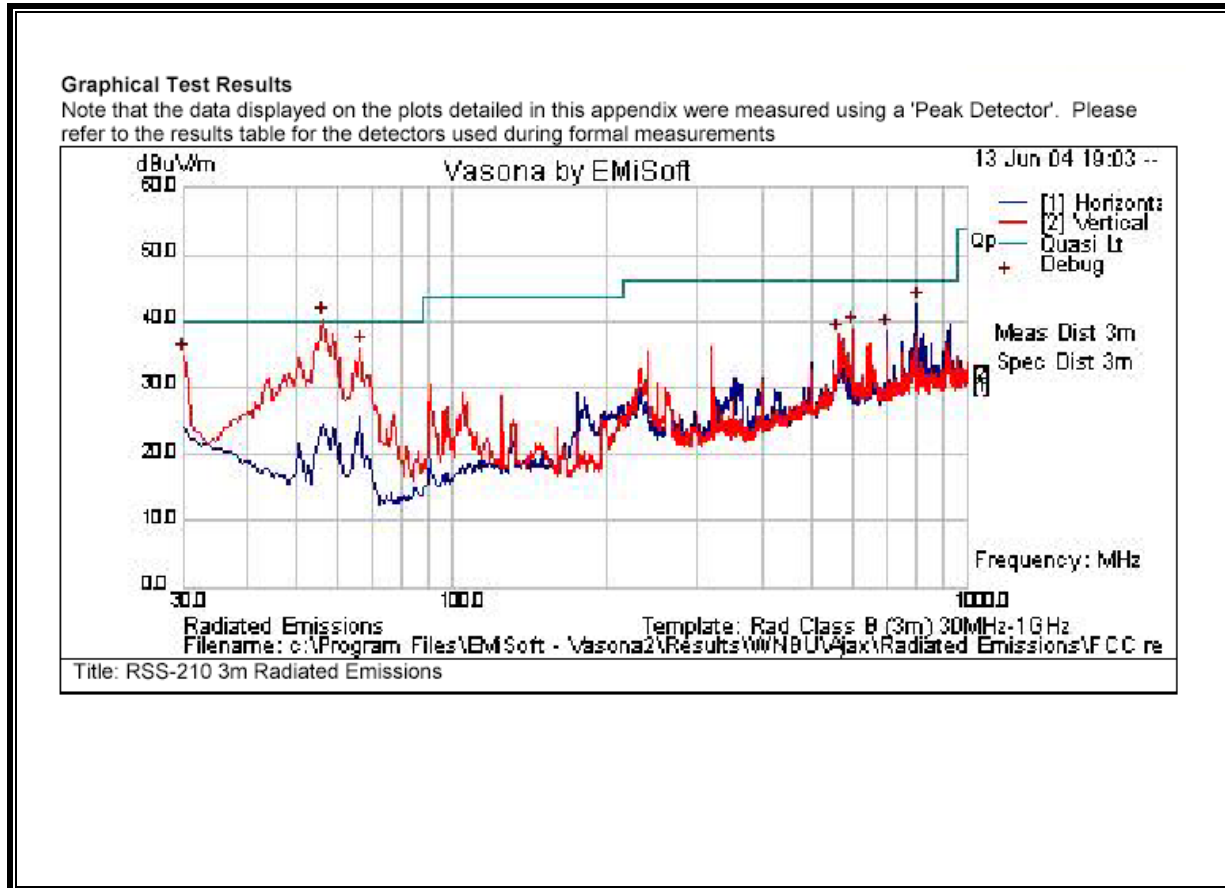
5.5GHz Band

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
low ch, 5500MHz															
4.180	9.8	58.0	56.2	32.7	2.6	-44.1	0.0	0.0	49.2	47.4	74.0	54.0	-24.8	-6.6	V
11.000	9.8	45.6	34.5	38.1	4.7	-40.9	0.0	1.0	48.5	37.4	74.0	54.0	-25.5	-16.6	V
4.180	9.8	60.3	58.3	32.7	2.6	-44.1	0.0	0.0	51.5	49.5	74.0	54.0	-22.5	-4.5	H
11.000	9.8	46.0	33.5	38.1	4.7	-40.9	0.0	1.0	48.9	36.4	74.0	54.0	-25.1	-17.6	H
mid ch, 5600MHz															
4.247	9.8	58.0	56.8	32.8	2.7	-44.2	0.0	0.0	49.2	48.0	74.0	54.0	-24.8	-6.0	V
11.200	9.8	46.4	33.3	38.3	4.8	-41.1	0.0	1.0	49.4	36.3	74.0	54.0	-24.6	-17.7	V
4.247	9.8	59.7	58.5	32.8	2.7	-44.2	0.0	0.0	50.9	49.7	74.0	54.0	-23.1	-4.3	H
11.200	9.8	47.0	34.5	38.3	4.8	-41.1	0.0	1.0	50.0	37.5	74.0	54.0	-24.0	-16.5	H
high ch, 5700MHz															
4.313	9.8	54.5	51.0	32.8	2.7	-44.3	0.0	0.0	45.7	42.2	74.0	54.0	-28.3	-11.8	V
11.400	9.8	46.6	33.4	38.6	4.8	-41.4	0.0	1.0	49.6	36.4	74.0	54.0	-24.4	-17.6	V
4.313	9.8	56.3	54.0	32.8	2.7	-44.3	0.0	0.0	47.5	45.2	74.0	54.0	-26.5	-8.8	H
11.400	9.8	44.5	32.0	38.6	4.8	-41.4	0.0	1.0	47.5	35.0	74.0	54.0	-26.5	-19.0	H
Note: No other emissions were detected above thr 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

7.6.7. WORST-CASE RADIATED EMISSIONS BELOW 1 GHz

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



Test Results Table

Frequency MHz	Raw dBuV	Cable Loss dB	AF dB	Level dBuV/m	Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
30	5.3	0.6	18.6	24.6	Qp	V	98	359	40	-15.4	Pass	
56	29.5	0.8	7	37.4	Qp	V	123	204	40	-2.6	Pass	
66.272	24.8	0.9	6.6	32.4	Qp	V	163	86	40	-7.6	Pass	
560	16.5	2.5	19.2	38.2	Qp	V	98	66	46	-7.8	Pass	
600	15.2	2.6	19	36.8	Qp	V	104	96	46	-9.2	Pass	
700	14.4	2.8	19.3	36.4	Qp	H	307	62	46	-9.6	Pass	
800	16.5	3	20.1	39.6	Qp	H	198	220	46	-6.4	Pass	

7.7. 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.

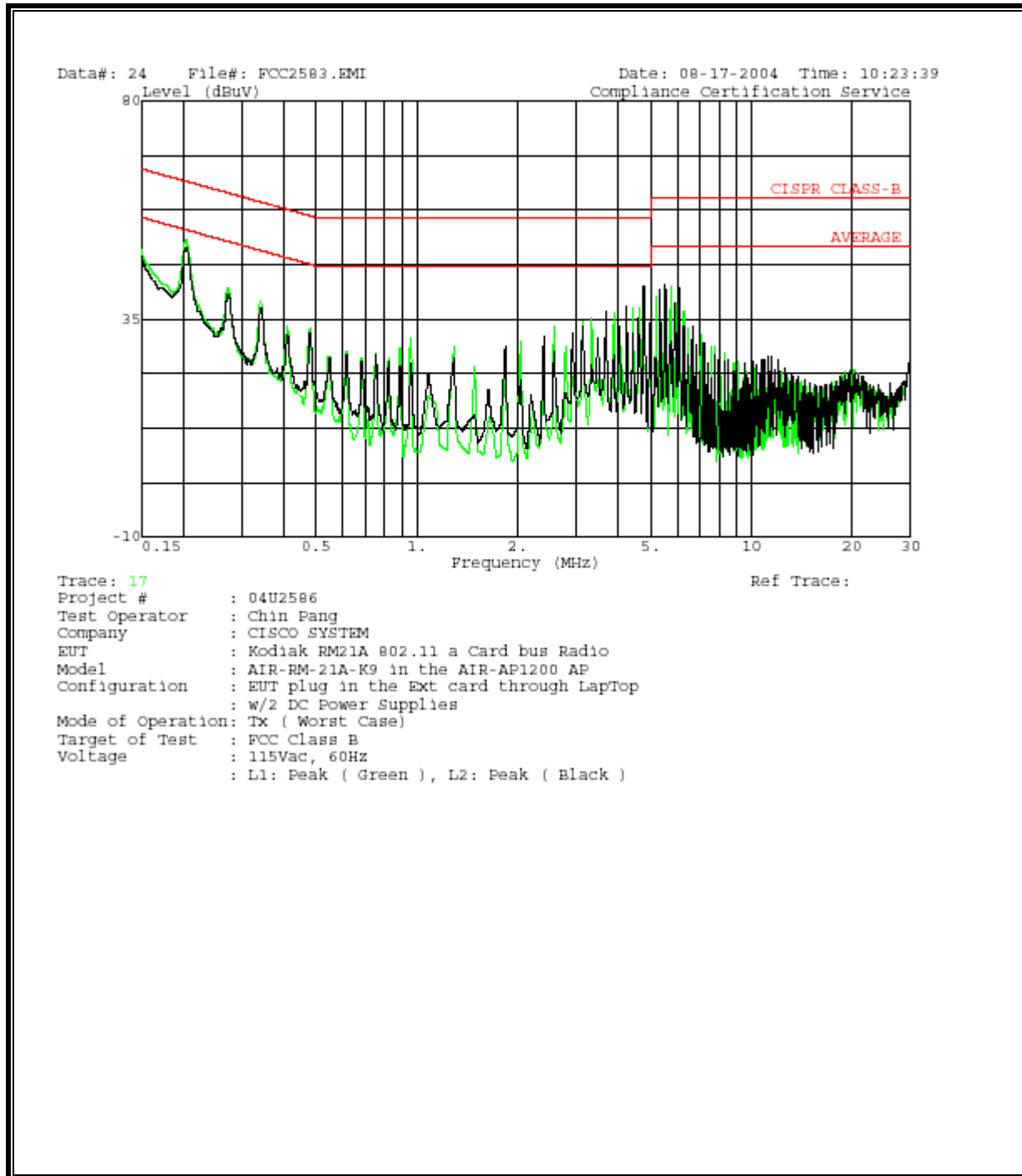
RESULTS

No non-compliance noted:

6 WORST EMISSIONS (AC Adapter)

CONDUCTED EMISSIONS DATA (115VAC 60Hz)										
Freq. (MHz)	Reading			Class (dB)	Limit QP	EN B		Margin		Remark L1 / L2
	PK (dBuV)	QP (dBuV)	AV (dBuV)			AV	QP (dB)	AV (dB)		
0.21	51.11	--	--	0.00	64.43	54.43	-13.32	-3.32	L1	
0.27	41.30	--	--	0.00	62.49	52.49	-21.19	-11.19	L1	
5.74	41.90	--	--	0.00	60.00	50.00	-18.10	-8.10	L1	
0.21	49.56	--	--	0.00	64.43	54.43	-14.87	-4.87	L2	
4.77	41.80	--	--	0.00	56.00	46.00	-14.20	-4.20	L2	
6.07	41.52	--	--	0.00	60.00	50.00	-18.48	-8.48	L2	
6 Worst Data										

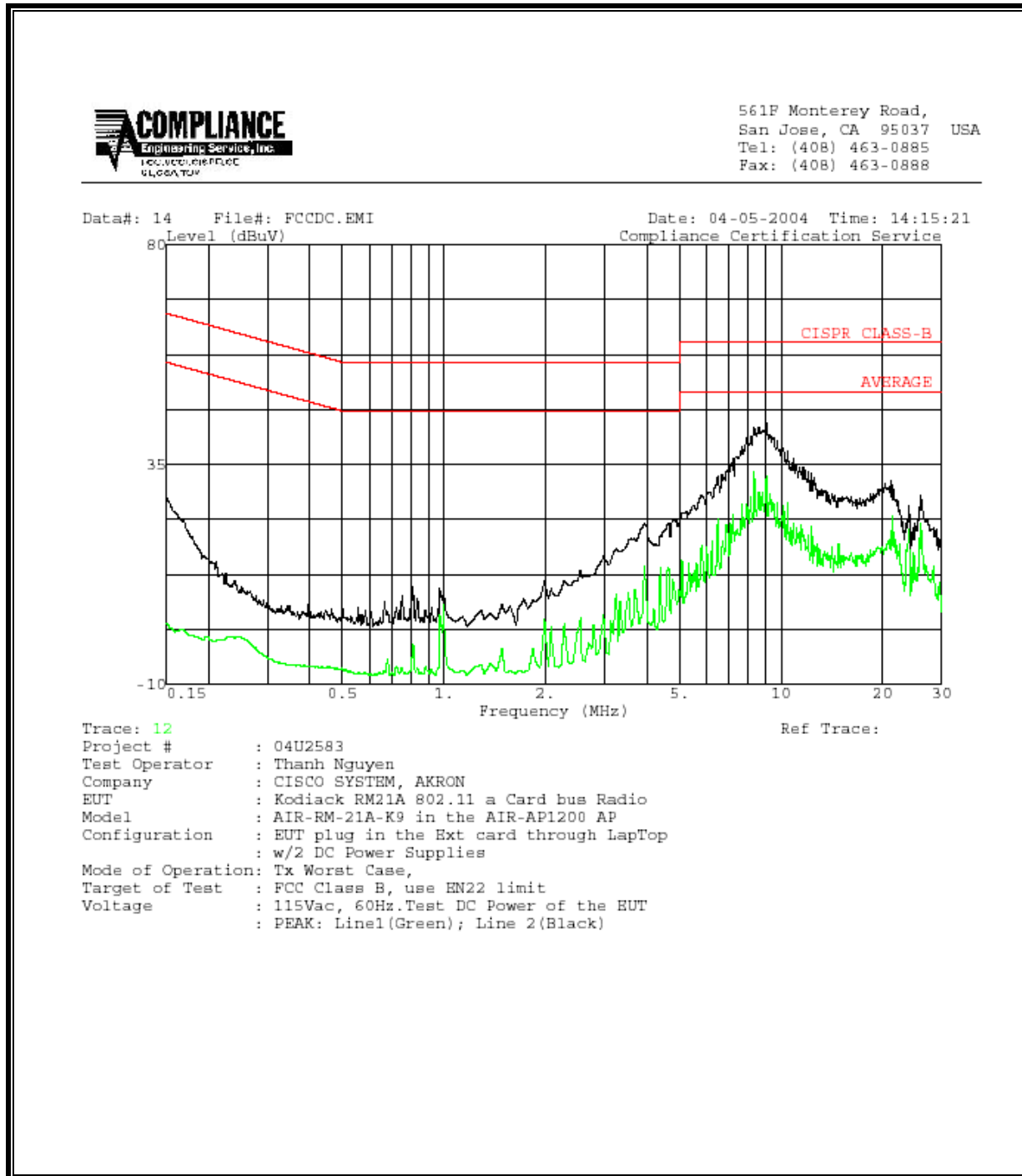
LINE 1 AND LINE 2 RESULTS (AC Power)



6 WORST EMISSIONS (DC Power)

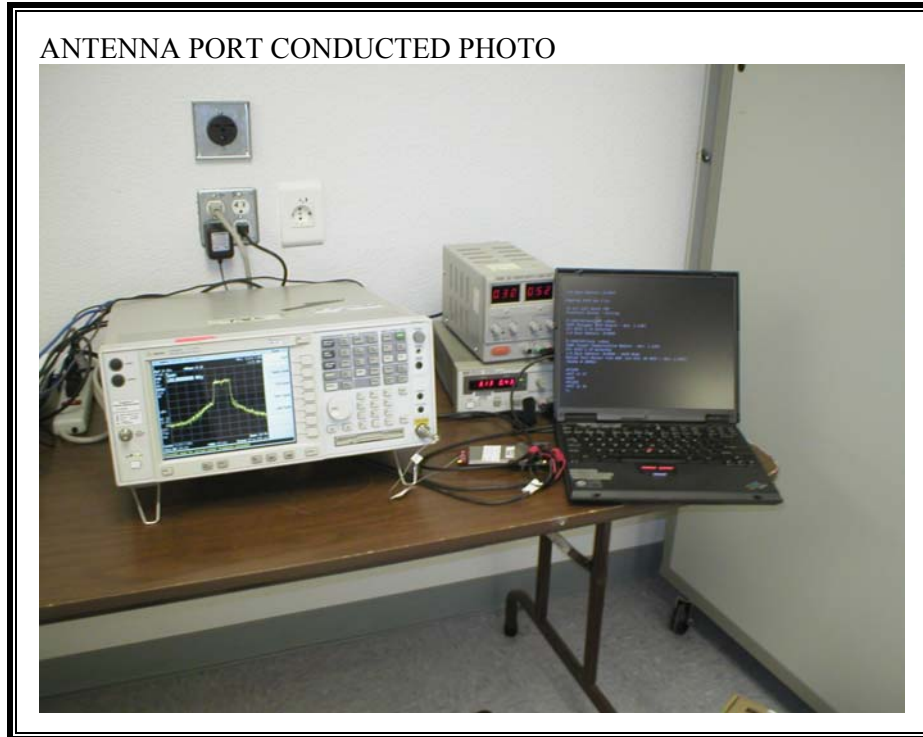
CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq. (MHz)	Reading			Class (dB)	Limit QP	FCC B AV	Margin		Remark L1 / L2
	PK (dBuV)	QP (dBuV)	AV (dBuV)				QP (dB)	AV (dB)	
8.73	42.88	--	--	0.00	60.00	50.00	-17.12	-7.12	L1
20.06	31.62	--	--	0.00	60.00	50.00	-28.38	-18.38	L1
0.15	27.86	--	--	0.00	66.00	56.00	-38.14	-28.14	L1
9.06	43.40	--	--	0.00	60.00	50.00	-16.60	-6.60	L2
21.15	31.72	--	--	0.00	60.00	50.00	-28.28	-18.28	L2
0.15	28.56	--	--	0.00	66.00	56.00	-37.44	-27.44	L2
6 Worst Data									

LINE 1 AND LINE 2 RESULTS (DC Power)

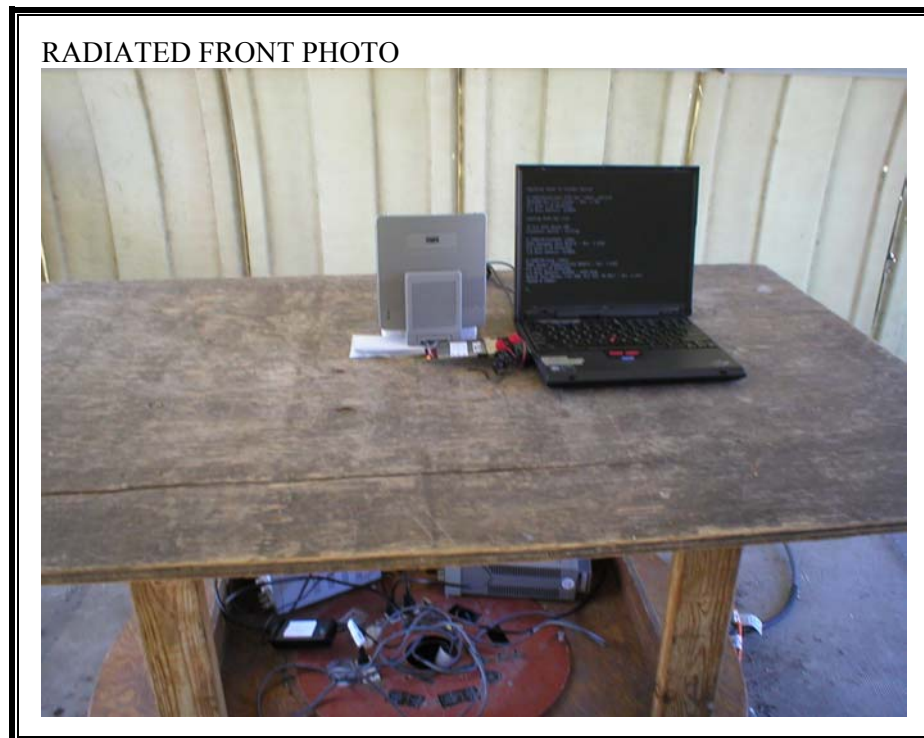


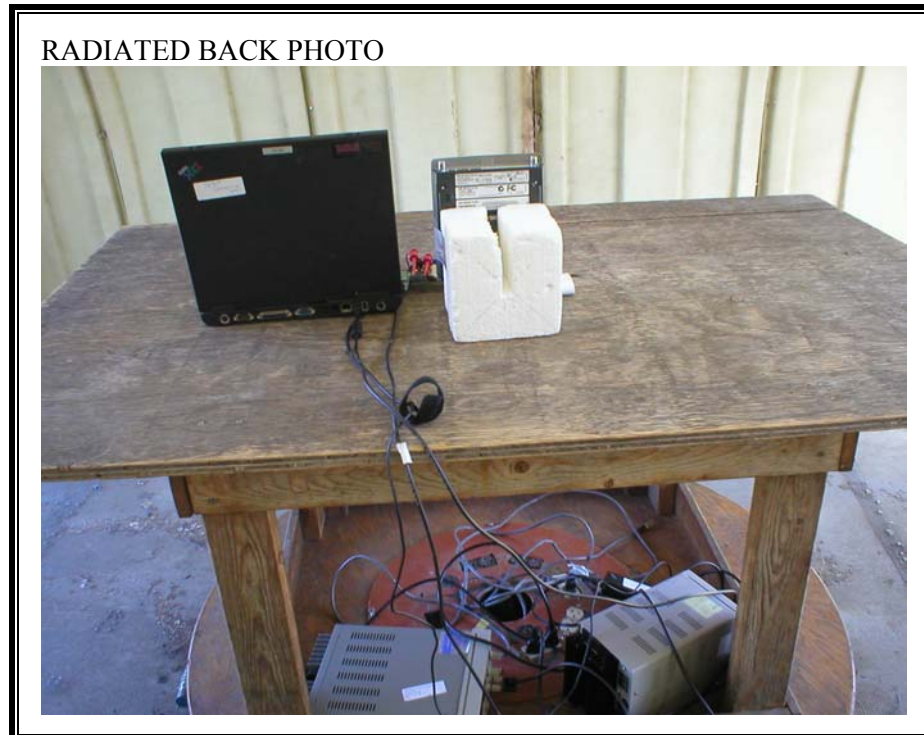
8. SETUP PHOTOS

ANTENNA PORT CONDUCTED RF MEASUREMENT SETUP

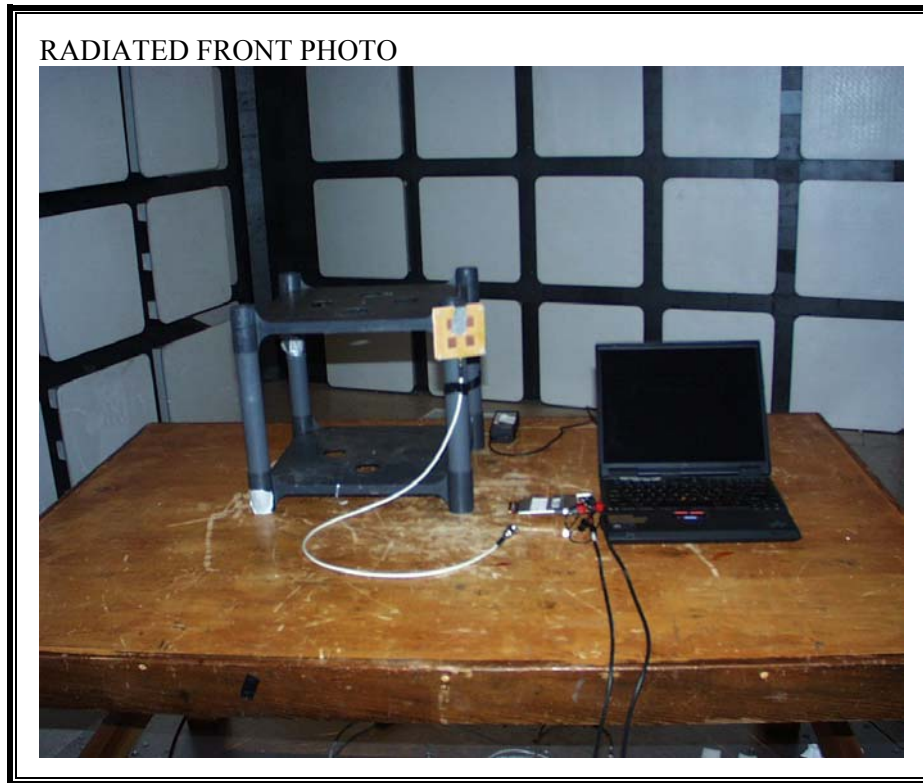


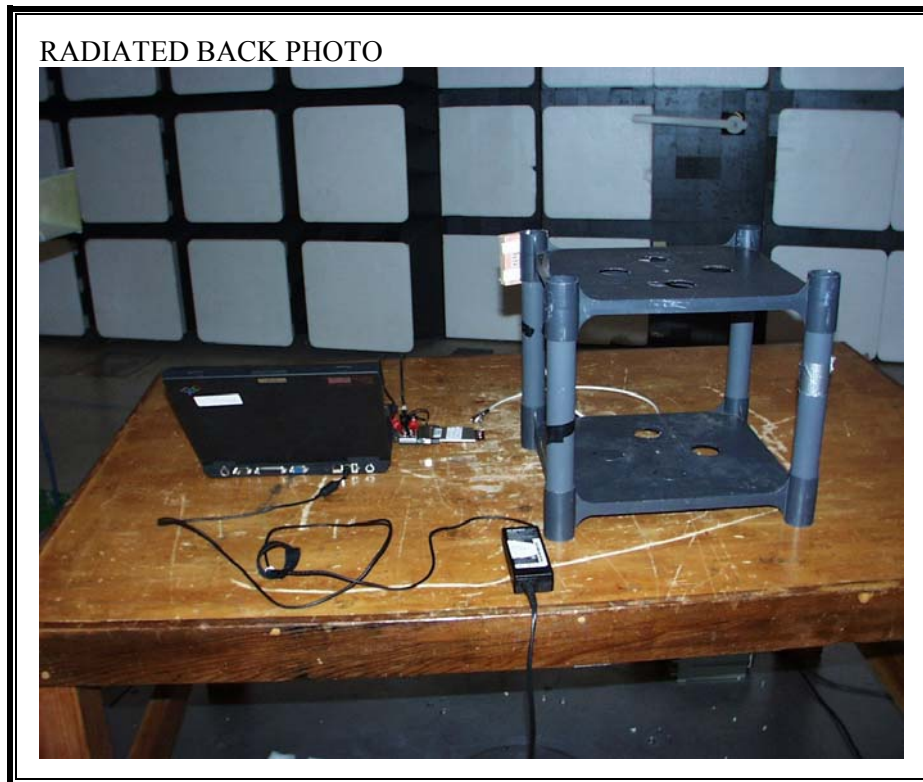
RADIATED RF MEASUREMENT SETUP WITH INTERNAL 9 dBi PATCH ANTENNA





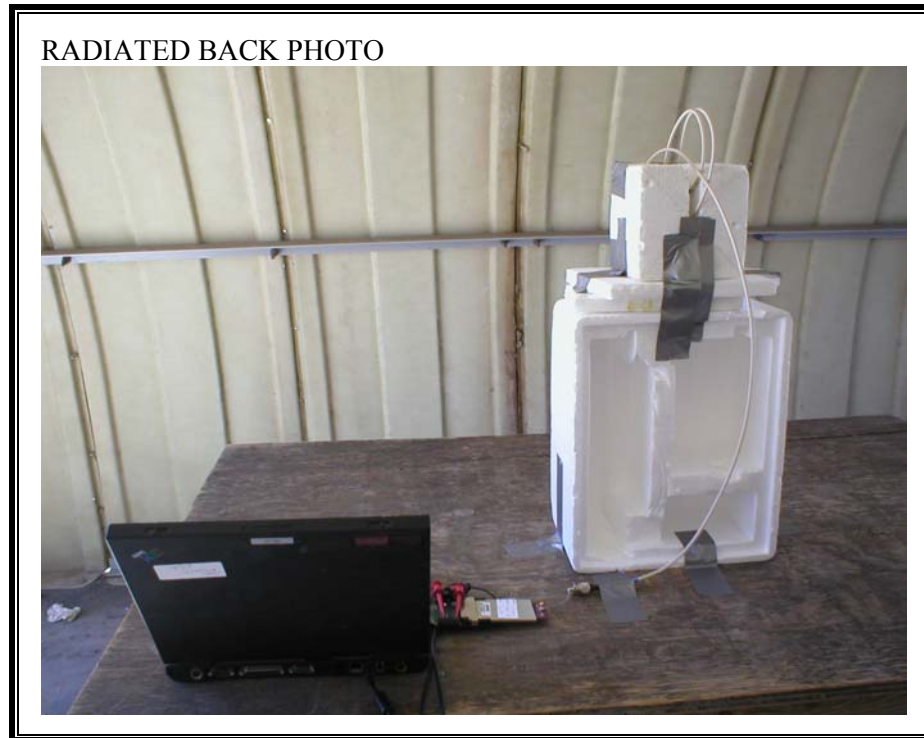
RADIATED RF MEASUREMENT SETUP WITH EXTERNAL 9.5 dBi PATCH ANTENNA





RADIATED RF MEASUREMENT SETUP WITH EXTERNAL 7 dBi PATCH ANTENNA





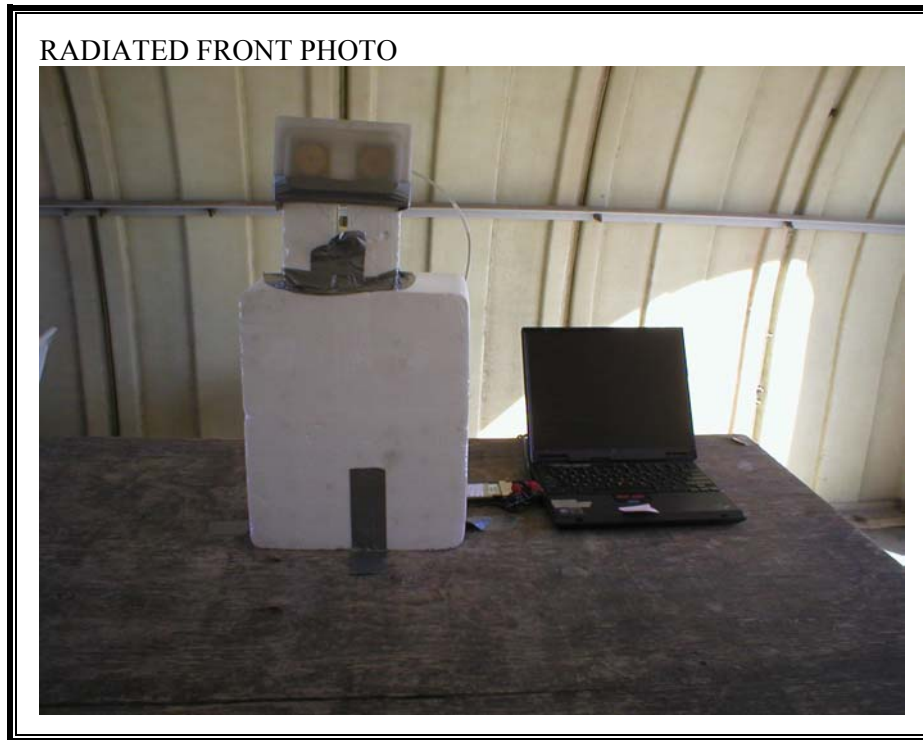
RADIATED RF MEASUREMENT SETUP WITH EXTERNAL 6 dBi OMNI ANTENNA



RADIATED BACK PHOTO

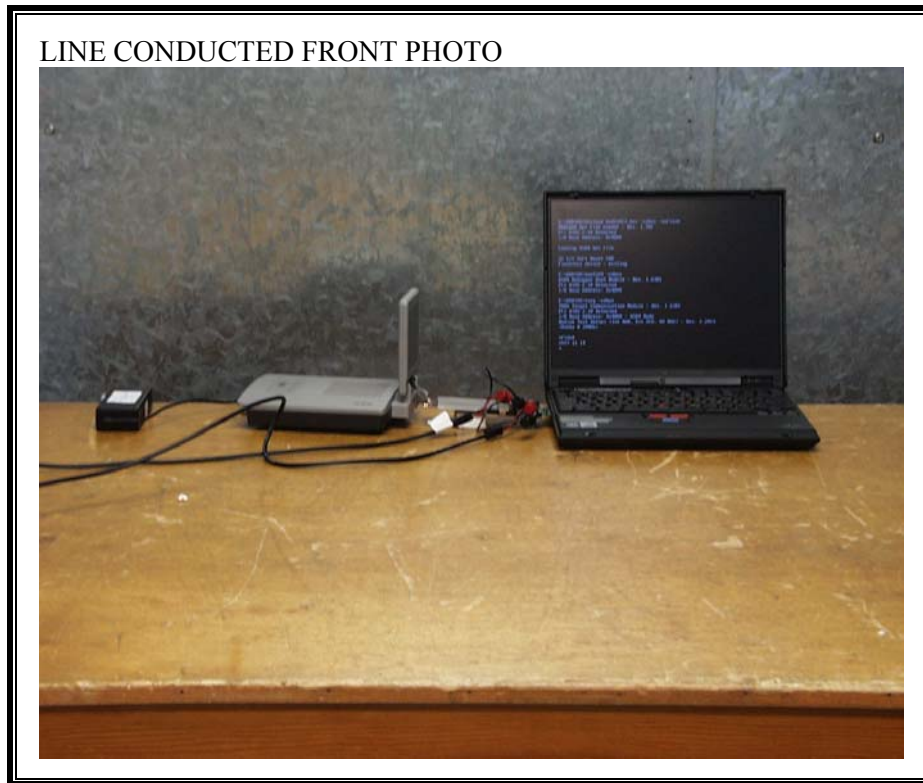


RADIATED RF MEASUREMENT SETUP WITH EXTERNAL 4.5 dBi OMNI ANTENNA



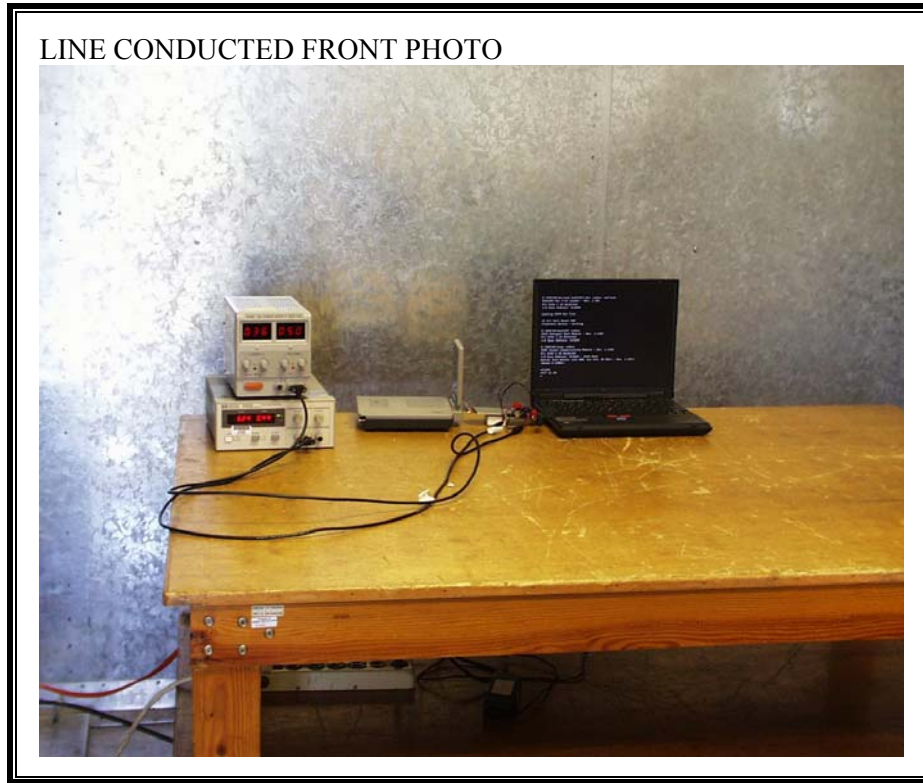


POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP WITH AC ADAPTER





POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP WITH DC POWER





END OF REPORT