

## FCC CFR47 PART 15 SUBPART C CERTIFICATION TEST REPORT

FOR

# 802.11B/G 2x2 APx MIMO MODULE

MODEL NUMBER: AGN0922AR-01

FCC ID: SA3-AGN0922AR0100

**REPORT NUMBER: 05U3521-1** 

**ISSUE DATE: JULY 5, 2005** 

Prepared for AIRGO NETWORKS, INC. 900 ARASTRADERO ROAD PALO ALTO, CA, 94304, USA

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LAB CODE:200065-0

#### **Revision History**

Rev.	Issue Date	Revisions	Revised By
А		Initial Issue	YZ

Page 2 of 127

# TABLE OF CONTENTS

1.	ATT	ESTATION OF TEST RESULTS	
2.	TES	T METHODOLOGY	5
3.	FAC	ILITIES AND ACCREDITATION	5
4.	CAI	IBRATION AND UNCERTAINTY	5
4	.1.	MEASURING INSTRUMENT CALIBRATION	
4	.2.	MEASUREMENT UNCERTAINTY	5
5.	EQU	IPMENT UNDER TEST	6
5	.1.	DESCRIPTION OF EUT	
5	.2.	MAXIMUM OUTPUT POWER	6
5	.3.	DESCRIPTION OF AVAILABLE ANTENNAS	6
5	.4.	SOFTWARE AND FIRMWARE	6
5	.5.	WORST-CASE CONFIGURATION AND MODE	6
5	.6.	DESCRIPTION OF TEST SETUP	7
6.	TES	Γ AND MEASUREMENT EQUIPMENT	9
7.	LIM	ITS AND RESULTS	
7	7.1.	CHANNEL TESTS FOR THE 2400 TO 2483.5 MHz BAND	
	7.1.1		10
	7.1.2		
		99% BANDWIDTH	24
	7.1.3	99% BANDWIDTH PEAK OUTPUT POWER	
	7.1.3 7.1.4	99% BANDWIDTH PEAK OUTPUT POWER MAXIMUM PERMISSIBLE EXPOSURE	
	7.1.3 7.1.4 7.1.5	99% BANDWIDTH PEAK OUTPUT POWER MAXIMUM PERMISSIBLE EXPOSURE AVERAGE POWER	
	7.1.3 7.1.4 7.1.5 7.1.6	<ul> <li>99% BANDWIDTH</li> <li>PEAK OUTPUT POWER</li> <li>MAXIMUM PERMISSIBLE EXPOSURE</li> <li>AVERAGE POWER</li> <li>PEAK POWER SPECTRAL DENSITY</li> </ul>	
7	7.1.3 7.1.4 7.1.5 7.1.6 7.1.7	99% BANDWIDTH PEAK OUTPUT POWER MAXIMUM PERMISSIBLE EXPOSURE AVERAGE POWER PEAK POWER SPECTRAL DENSITY CONDUCTED SPURIOUS EMISSIONS	24 38 52 55 56 69
7	7.1.3 7.1.4 7.1.5 7.1.6 7.1.7	<ul> <li>99% BANDWIDTH</li> <li>PEAK OUTPUT POWER</li> <li>MAXIMUM PERMISSIBLE EXPOSURE</li> <li>AVERAGE POWER</li> <li>PEAK POWER SPECTRAL DENSITY</li> <li>CONDUCTED SPURIOUS EMISSIONS</li> <li>RADIATED EMISSIONS</li> </ul>	24 38 52 55 56 
7	7.1.3 7.1.4 7.1.5 7.1.6 7.1.7 7.2.1	99% BANDWIDTH PEAK OUTPUT POWER MAXIMUM PERMISSIBLE EXPOSURE AVERAGE POWER PEAK POWER SPECTRAL DENSITY CONDUCTED SPURIOUS EMISSIONS RADIATED EMISSIONS TRANSMITTER RADIATED SPURIOUS EMISSIONS	24 38 52 55 55 69 94 94
7	7.1.3 7.1.4 7.1.5 7.1.6 7.1.7	<ul> <li>99% BANDWIDTH</li> <li>PEAK OUTPUT POWER</li> <li>MAXIMUM PERMISSIBLE EXPOSURE</li> <li>AVERAGE POWER</li> <li>PEAK POWER SPECTRAL DENSITY</li> <li>CONDUCTED SPURIOUS EMISSIONS</li> <li>RADIATED EMISSIONS</li> <li>TRANSMITTER RADIATED SPURIOUS EMISSIONS</li></ul>	24 38 52 55 56 69 94 94 97
ŗ	7.1.3 7.1.4 7.1.5 7.1.6 7.1.7 7.2. 7.2.1 7.2.2 7.2.3	<ul> <li>99% BANDWIDTH</li> <li>PEAK OUTPUT POWER</li> <li>MAXIMUM PERMISSIBLE EXPOSURE</li> <li>AVERAGE POWER</li> <li>PEAK POWER SPECTRAL DENSITY</li> <li>CONDUCTED SPURIOUS EMISSIONS</li> <li>RADIATED EMISSIONS</li> <li>TRANSMITTER RADIATED SPURIOUS EMISSIONS</li> <li>TRANSMITTER ABOVE 1 GHz FOR 2400 TO 2483.5 MHz BAND</li> </ul>	24 38 52 55 56 69 94 94 97 115
ŗ	7.1.3 7.1.4 7.1.5 7.1.6 7.1.7 7.2.1 7.2.2 7.2.3 7.2.3	<ul> <li>99% BANDWIDTH</li> <li>PEAK OUTPUT POWER</li> <li>MAXIMUM PERMISSIBLE EXPOSURE</li> <li>AVERAGE POWER</li> <li>PEAK POWER SPECTRAL DENSITY</li> <li>CONDUCTED SPURIOUS EMISSIONS.</li> <li>RADIATED EMISSIONS</li> <li>TRANSMITTER RADIATED SPURIOUS EMISSIONS.</li> <li>TRANSMITTER ABOVE 1 GHz FOR 2400 TO 2483.5 MHz BAND</li> <li>WORST-CASE RADIATED EMISSIONS BELOW 1 GHz.</li> </ul>	24 38 52 55 56 69 94 94 94 97 115 

## **1. ATTESTATION OF TEST RESULTS**

SERIAL NUMBER:	15297			
		L X 1 2005		
DATE TESTED:	JUNE 17 – JU	LY 1, 2005		
DATE TESTED:	JUNE 17 – JU	LY 1, 2005		
DATE TESTED.	ПІNЕ 17 — ПІ	L X 1 2005		
SERIAL NUMBER:	15297	15297		
SERIAL NUMBER:	15297			
MODEL:	AGNO922AR	AGNO922AR-01		
MODEI •	A GNO022 A P	ACNO022AD 01		
EUT DESCRIPTION:	802.11B/G 2x2	802.11B/G 2x2 APx MIMO MODULE		
	PALO ALTO,	CA 94304, USA		
		ADERO ROAD		
COMPANY NAME:	AIRGO NETV	AIRGO NETWORKS, INC.		

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**: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by 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. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For CCS By:

Tested By:

YAN ZHENG EMC SUPERVISOR COMPLIANCE CERTIFICATION SERVICES

William Shing

WILLIAM ZHUANG EMC ENGINEER COMPLIANCE CERTIFICATION SERVICES

Page 4 of 127

# 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003, FCC CFR 47 Part 2 and FCC CFR 47 Part 15.

# 3. 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 <u>http://www.ccsemc.com</u>.

# 4. CALIBRATION AND UNCERTAINTY

## 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

## 4.2. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
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. EQUIPMENT UNDER TEST

## 5.1. DESCRIPTION OF EUT

The EUT is an 802.11b/g transceiver 2x2 APx MIMO module.

The radio module is manufactured by Airgo Networks, Inc..

## 5.2. MAXIMUM OUTPUT POWER

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

Frequency Range	Mode	Output Power	Output Power
(MHz)		(dBm)	( <b>mW</b> )
2412 - 2462	802.11b, Dual Mode	25.90	389.05
2412 - 2462	802.11g, Dual Mode	29.72	937.56

2400 to 2483.5 MHz Authorized Band

## 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes two monopole omni antennas for diversity, each with a maximum gain of 3.0 dBi.

## 5.4. SOFTWARE AND FIRMWARE

The test utility software used during testing was MfgDemoTest v18.0.

## 5.5. WORST-CASE CONFIGURATION AND MODE

The worst-case channel is determined as the channel with the highest output power. The highest measured output power was at 2437 MHz.

The worst-case data rate for this channel is determined to be 6 Mb/s, based on previous experience with 2.4 GHz WLAN product design architectures.

Page 6 of 127

## 5.6. DESCRIPTION OF TEST SETUP

#### SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST								
DescriptionManufacturerModelSerial NumberFCC ID								
AC/DC Adapter	Sony	PCGA-AC19V1	9/27/2263	N/A				
Laptop PC								

#### I/O CABLES

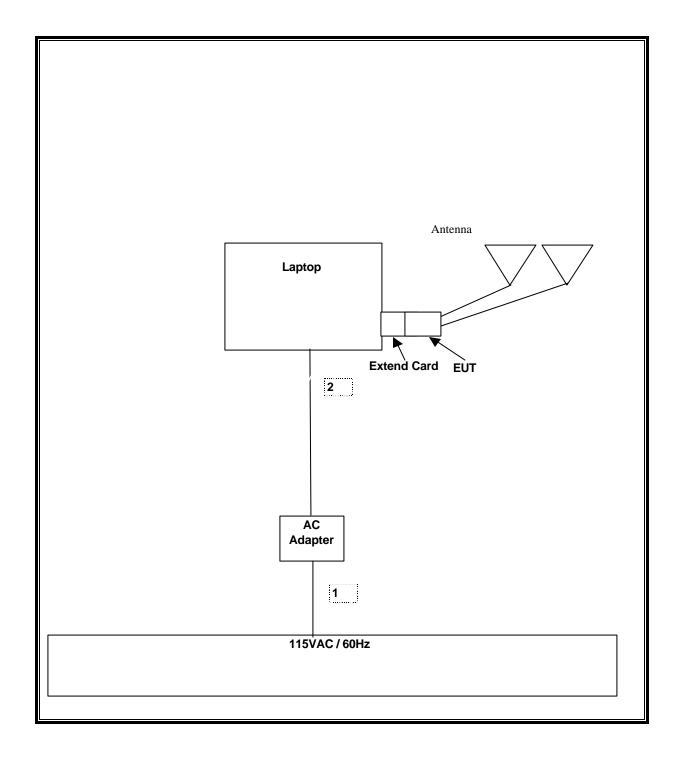
	I/O CABLE LIST						
Cable	Port	# of	Connector	Cable	Cable	Remarks	
No.		Identical	Туре	Туре	Length		
		Ports					
1	AC	1	AC	Unshielded	0.5 m		
2	DC	1	DC	Unshielded	1.5 m	0	

#### TEST SETUP

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

Page 7 of 127

#### **SETUP DIAGRAM FOR TESTS**



Page 8 of 127

# 6. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST						
Description	Manufacturer	Model	Serial Number	Cal Due		
EMI Test Receiver	R & S	ESHS 20	827129/006	10/22/2005		
Site A Line Stabilizer / Conditioner	Tripplite	LC-1800a	A0051681	CNR		
LISN, 10 kHz ~ 30 MHz	FCC	LISN-50/250-25-2	2023	8/30/2005		
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	8379443	10/21/2005		
Spectrum Analyzer	HP	E4446A	US42510266	8/25/2005		
Antenna, Horn 1 ~ 18 GHz	EMCO	3117	29310	9/12/2005		
Preamplifier, 1 ~ 26.5 GHz	HP	8449B	3008A00369	8/17/2005		
Temperature / Humidity Chamber	Thermotron	SE 600-10-10	29800	5/13/2005		
Peak Power Meter	Agilent	E4416A	GB41291160	11/7/2004		
Peak / Average Power Sensor	Agilent	E9327A	US40440755	11/7/2004		
RF Filter Section	HP	85420E	3705A00256	11/21/2004		
EMI Receiver, 9 kHz ~ 2.9 GHz	HP	8542E	3942A00286	11/21/2004		
30MHz 2Ghz	Sunol Sciences	JB1 Antenna	A121003	12/22/2004		
4.0 High Pass Filter	Micro Tronics	HPM13351	3	N/A		

Page 9 of 127

# 7. LIMITS AND RESULTS

## 7.1. CHANNEL TESTS FOR THE 2400 TO 2483.5 MHz BAND

### 7.1.1.6 dB BANDWIDTH

#### <u>LIMIT</u>

§15.247 (a) (2) For direct sequence systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

#### TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

#### **RESULTS**

No non-compliance noted:

Page 10 of 127

### 802.11b Dual Mode, Chain 1

Channel	Frequency	6 dB Bandwidth	Minimum Limit	Margin
	(MHz)	(kHz)	(kHz)	(kHz)
Low	2412	9,830	500	9330
Middle	2437	9,670	500	9170
High	2462	11,000	500	10500

### 802.11b Dual Mode, Chain 2

Channel	Frequency	6 dB Bandwidth	Minimum Limit	Margin
	(MHz)	(kHz)	(kHz)	(kHz)
Low	2412	8,500	500	8000
Middle	2437	8,920	500	8420
High	2462	10,670	500	10170

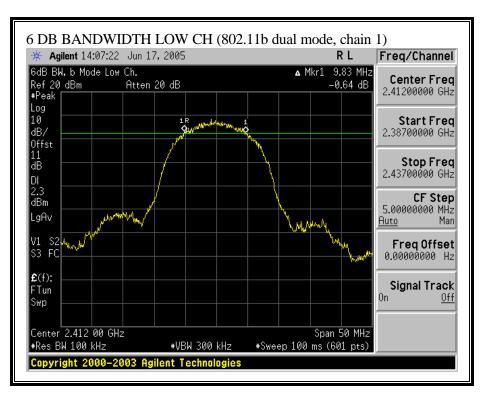
### 802.11g Dual Mode, Chain 1

Channel	Frequency	6 dB Bandwidth	Minimum Limit	Margin
	(MHz)	(kHz)	(kHz)	(kHz)
Low	2412	15,330	500	14830
Middle	2437	15,250	500	14750
High	2462	15,250	500	14750

### 802.11g Dual Mode, Chain 2

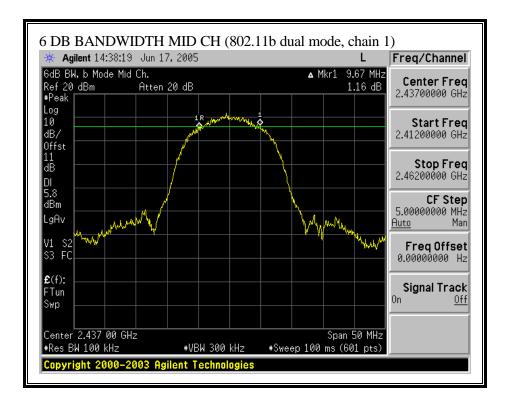
Channel	Frequency	6 dB Bandwidth	Minimum Limit	Margin
	(MHz)	(kHz)	(kHz)	(kHz)
Low	2412	15,420	500	14920
Middle	2437	15,420	500	14920
High	2462	15,330	500	14830

Page 11 of 127

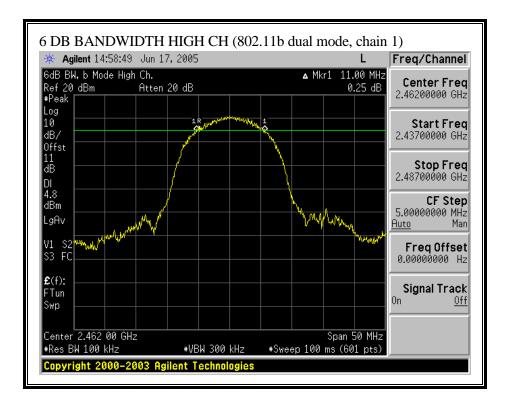


#### 6 DB BANDWIDTH (802.11b DUAL MODE, CHAIN 1)

Page 12 of 127

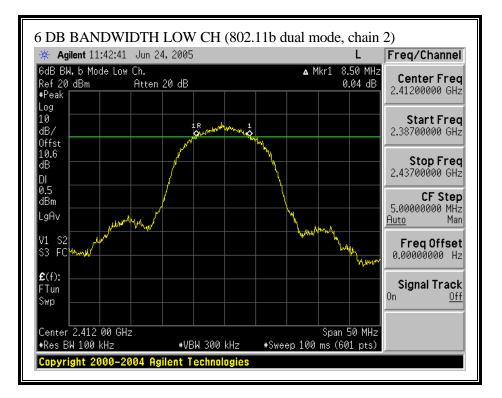


Page 13 of 127

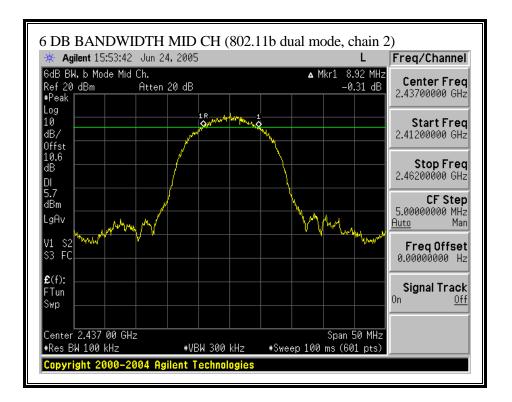


Page 14 of 127

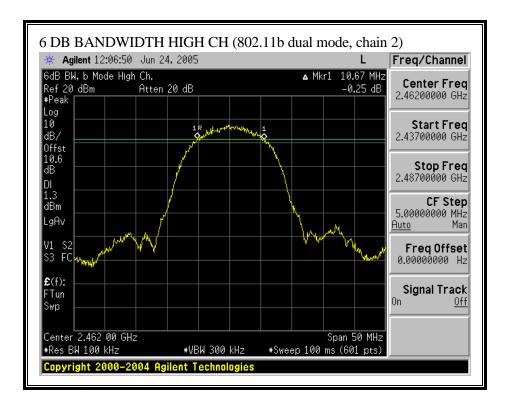
#### 6 DB BANDWIDTH (802.11b DUAL MODE, CHAIN 2)



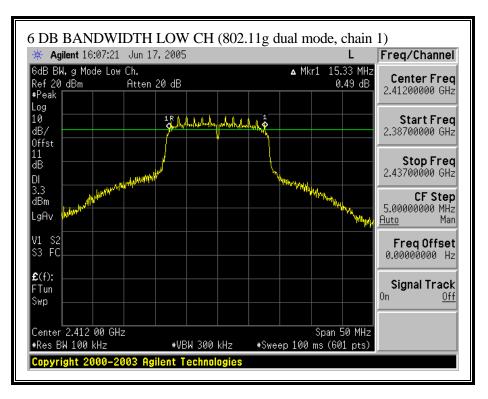
Page 15 of 127



Page 16 of 127

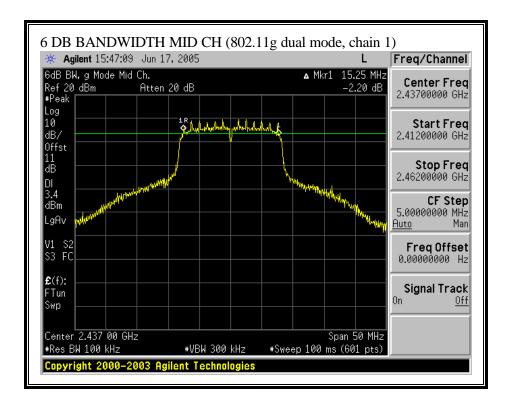


Page 17 of 127

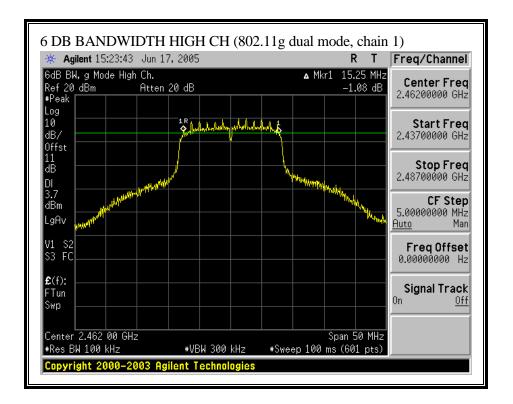


#### 6 DB BANDWIDTH (802.11g DUAL MODE, CHAIN 1)

Page 18 of 127

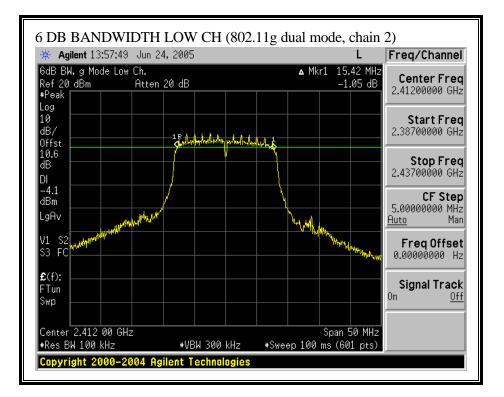


Page 19 of 127

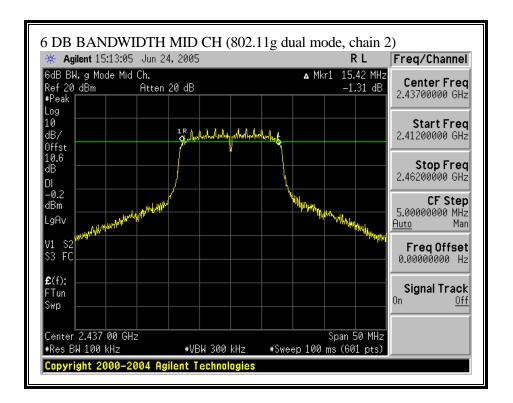


Page 20 of 127

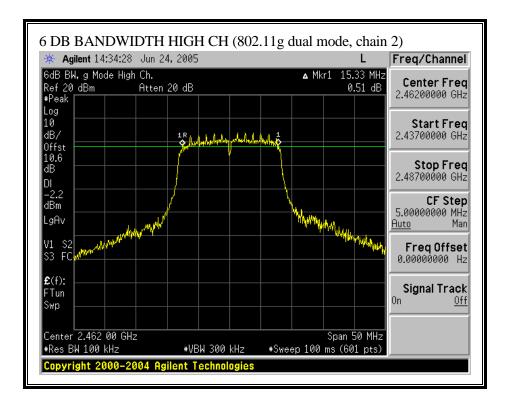
#### 6 DB BANDWIDTH (802.11g DUAL MODE, CHAIN 2)



Page 21 of 127



Page 22 of 127



Page 23 of 127

### 7.1.2. 99% BANDWIDTH

#### <u>LIMIT</u>

None; for reporting purposes only.

#### TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

#### **RESULTS**

No non-compliance noted:

Page 24 of 127

### 802.11b Dual Mode, Chain 1

Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Low	2412	14.7926
Middle	2437	14.827
High	2462	14.8002

### 802.11b Dual Mode, Chain 2

Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Low	2412	14.8683
Middle	2437	14.8104
High	2462	14.7462

### 802.11g Dual Mode, Chain 1

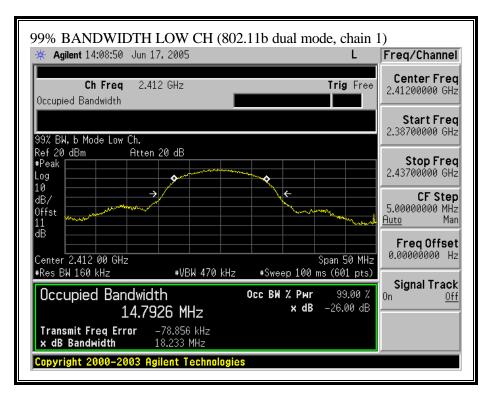
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Middle	2437	16.4144
High	2462	16.5435

### 802.11g Dual Mode, Chain 2

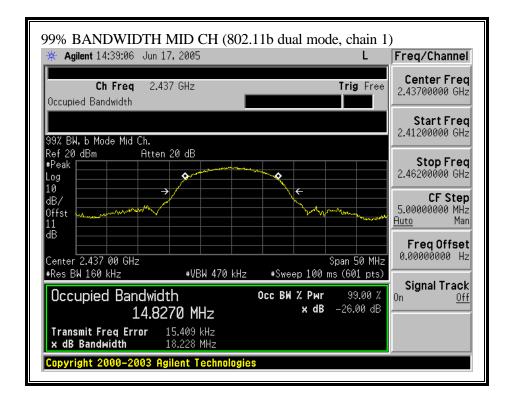
Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Low	2412	16.1679
Middle	2437	16.2268
High	2462	16.1338

Page 25 of 127

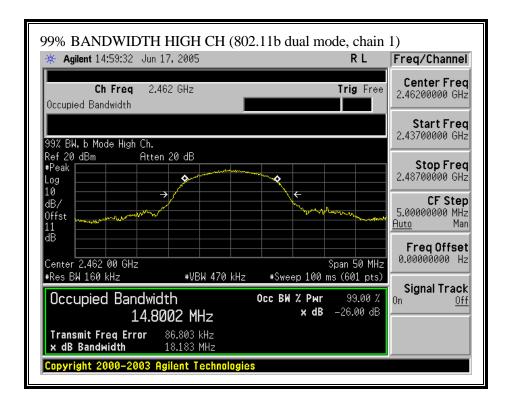
#### 99% BANDWIDTH (802.11b DUAL MODE, CHAIN 1)



Page 26 of 127

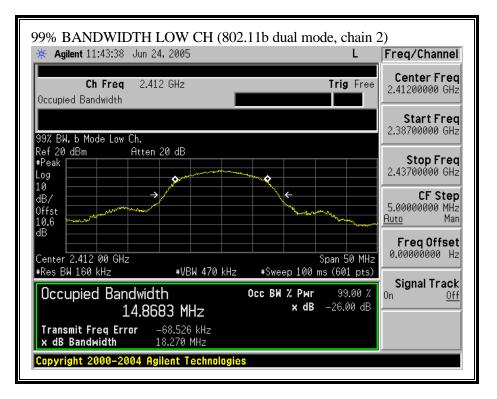


Page 27 of 127

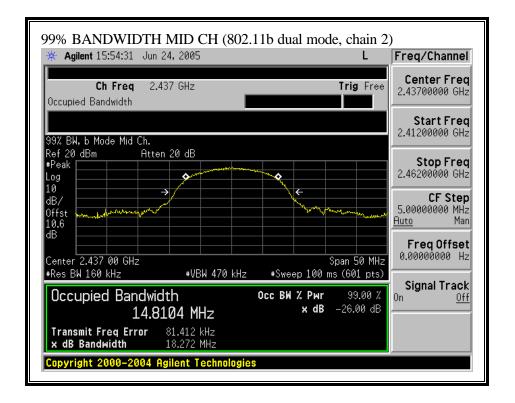


Page 28 of 127

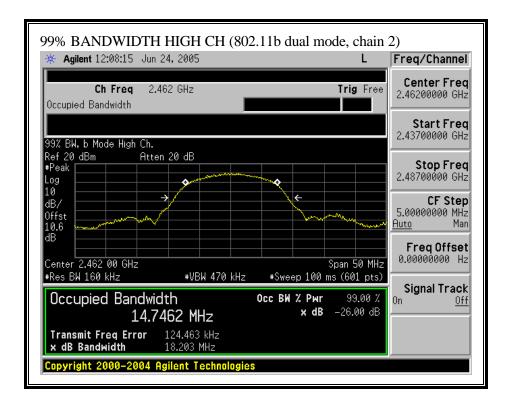
#### 99% BANDWIDTH (802.11b DUAL MODE, CHAIN 2)



Page 29 of 127

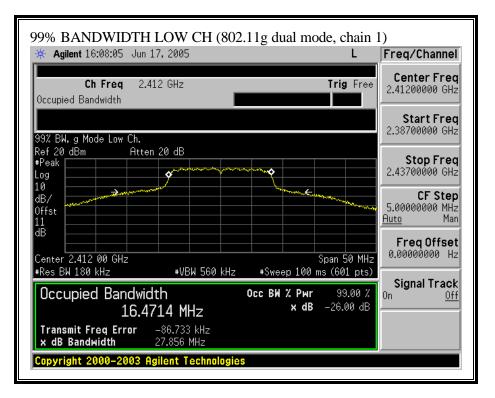


Page 30 of 127

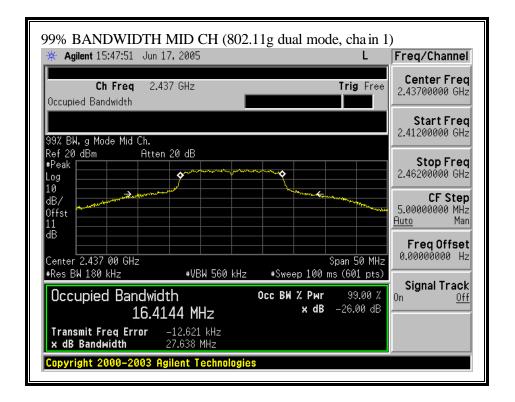


Page 31 of 127

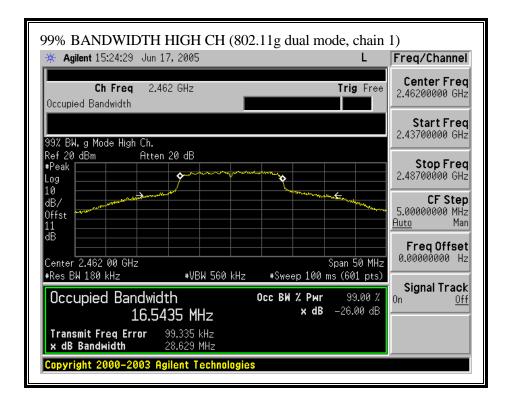
#### 99% BANDWIDTH (802.11g DUAL MODE, CHAIN 1)



Page 32 of 127

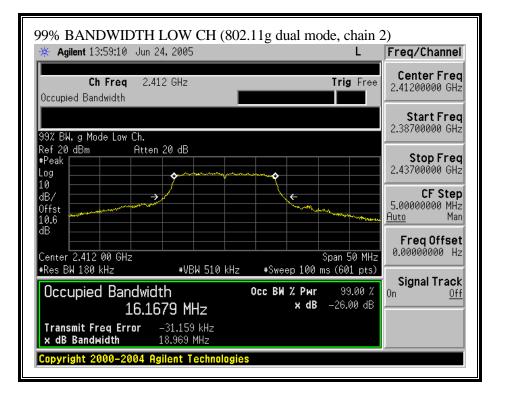


Page 33 of 127

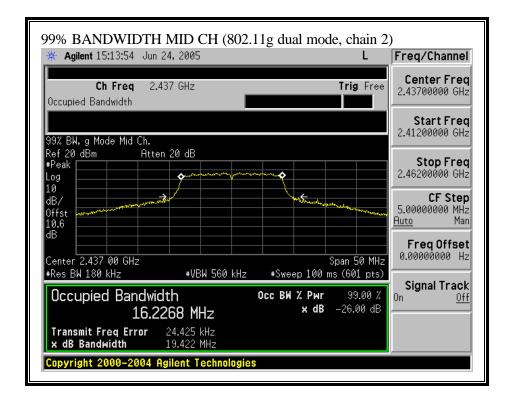


Page 34 of 127

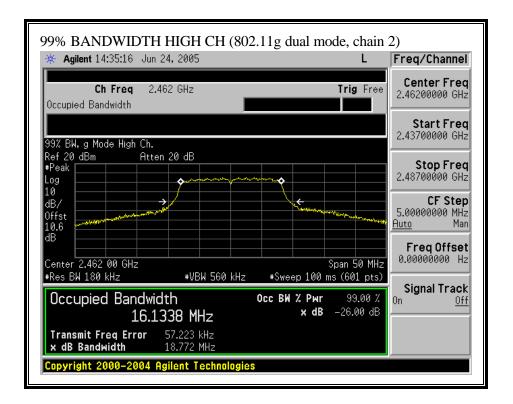
#### 99% BANDWIDTH (802.11g DUAL MODE, CHAIN 2)



Page 35 of 127



Page 36 of 127



Page 37 of 127

# 7.1.3. PEAK OUTPUT POWER

# PEAK POWER LIMIT

§15.247 (b) The maximum peak output power of the intentional radiator shall not exceed the following:

15.247 (b) (3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz , and 5725-5850 MHz bands: 1 watt.

\$15.247 (b) (4) Except as shown in paragraphs (b)(4) (i), (ii) and (iii) of this section, if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

\$15.247 (b) (4) (i) Systems operating in the 2400–2483.5 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

# TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer and the analyzer's internal channel power integration function is used to integrate the power over a bandwidth greater than or equal to the 99% bandwidth.

Page 38 of 127

# **RESULTS**

The maximum antenna gain is 3.0 dBi for other than fixed, point-to-point operations, therefore the limit is 30 dBm.

No non-compliance noted:

# 802.11b Dual Mode

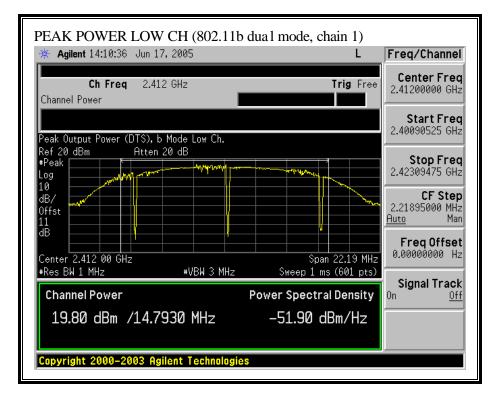
Frequency	Peak Power	Peak Power	Peak Power	Limit	Margin
	Chain 1	Chain 2	Total		
(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	( <b>dB</b> )
2412	19.80	17.19	21.70	30	-8.30
2437	23.00	22.77	25.90	30	-4.10
2462	23.00	19.54	24.62	30	-5.38

# 802.11g Dual Mode

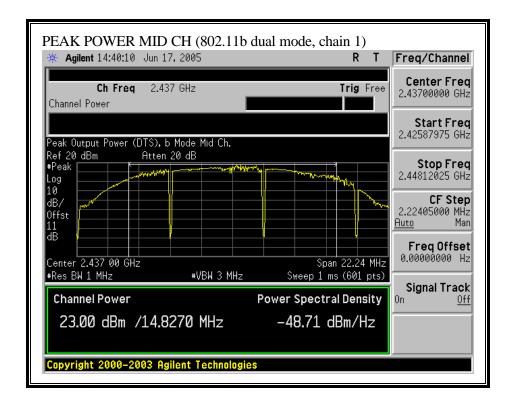
Frequency	Peak Power	Peak Power	Peak Power	Limit	Margin
	Chain 1	Chain 2	Total		
(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	( <b>dB</b> )
2412	22.48	21.44	25.00	30	-5.00
2437	27.72	25.39	29.72	30	-0.28
2462	24.07	23.29	26.71	30	-3.29

Page 39 of 127

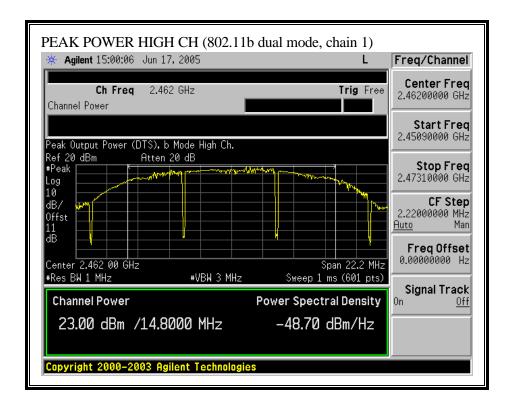
## OUTPUT POWER (802.11b DUAL MODE, CHAIN 1)



Page 40 of 127

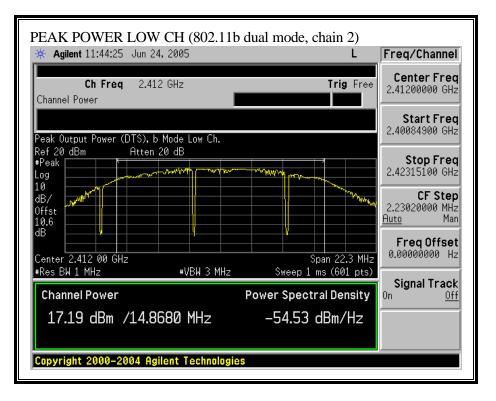


Page 41 of 127

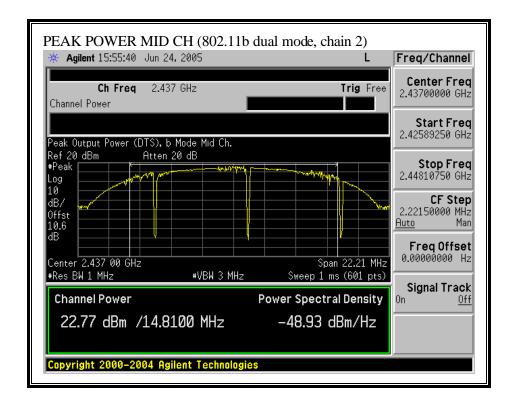


Page 42 of 127

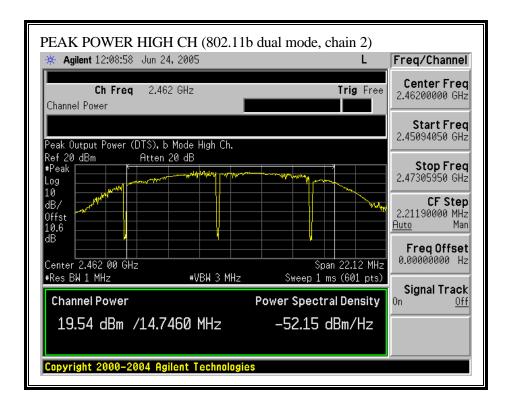
# OUTPUT POWER (802.11b DUAL MODE, CHAIN 2)



Page 43 of 127

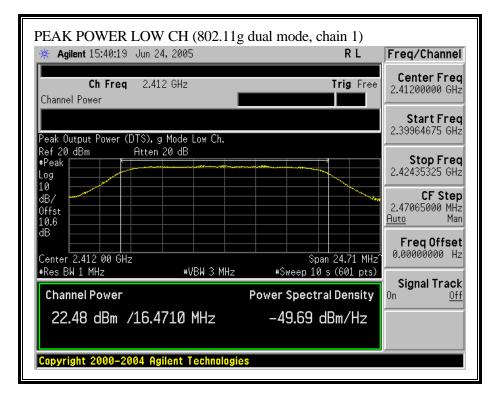


Page 44 of 127

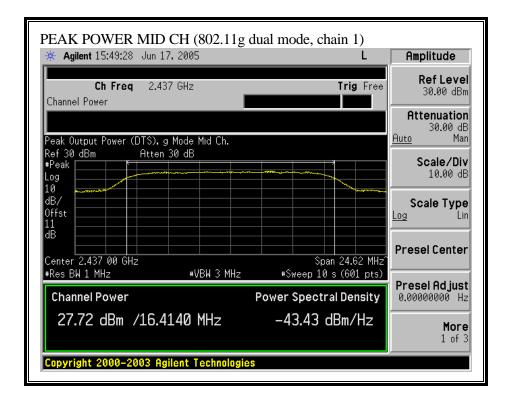


Page 45 of 127

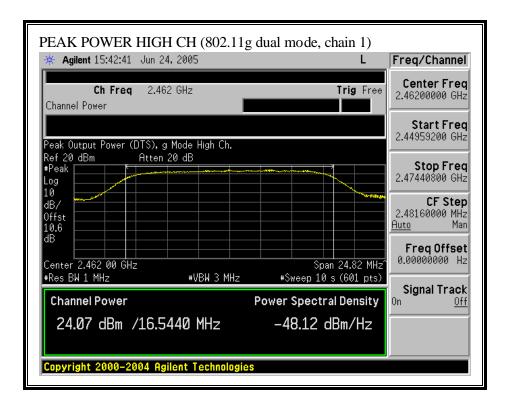
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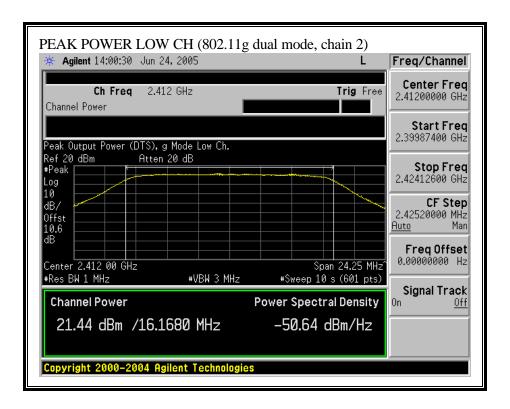
Page 46 of 127



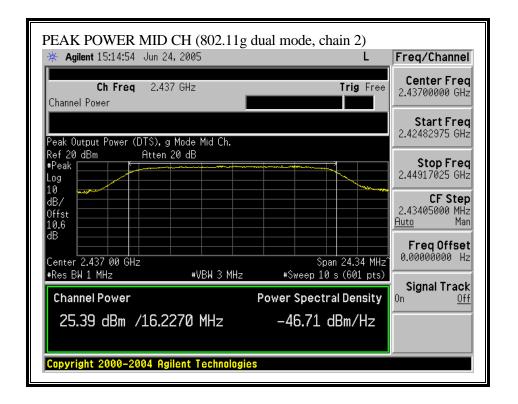
Page 47 of 127



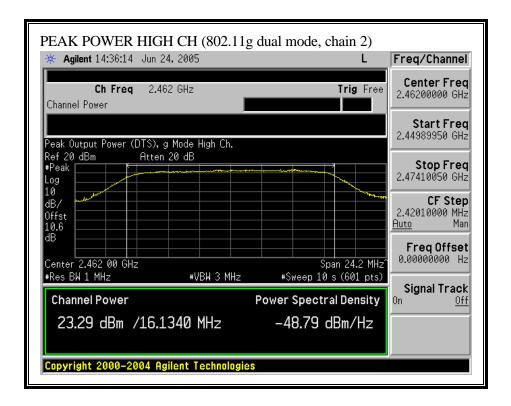
Page 48 of 127



Page 49 of 127



Page 50 of 127



Page 51 of 127

# 7.1.4. 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.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm²)	Averaging time (minutes)	
(A) Lim	its for Occupational	/Controlled Exposure	es		
0.3–3.0	614	1.63	*(100)	6	
3.0–30	1842/f	4.89/f	*(900/f2)	6	
30–300	61.4	0.163	1.0	6	
300–1500			f/300	6	
1500–100,000			5	í.	
(B) Limits f	or General Populati	on/Uncontrolled Exp	osure		
0.3–1.34	614	1.63	*(100)	30	
1.34–30	824/f	2.19/f	*(180/f2)	30	

TABLE 1-LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

#### 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/cm²)	Averaging time (minutes)
30–300 300–1500	27.5	0.073	0.2 f/1500	30 30
1500-100,000			1.0	30

f = frequency in MHz

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.

exposure or can not exercise control over their exposure.

Page 52 of 127

### CALCULATIONS

Given

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

where

and

E = Field Strength in Volts/meter

P = Power in Watts

 $S = E^{2}/3770$ 

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 (mW) = P (W) / 1000 and d (cm) = 100 \* d (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^2

Substituting the logarithmic form of power and gain using:

 $P(mW) = 10 \wedge (P(dBm) / 10)$  and

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

G (numeric) =  $10 \land (G (dBi) / 10)$ 

yields

where

d = MPE distance in cm P = Power in dBm G = Antenna Gain in dBi S = Power Density Limit in mW/cm^2

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

Page 53 of 127

Equation (1)

# **LIMITS**

From §1.1310 Table 1 (B), S = 1.0 mW/cm^2

# **RESULTS**

No non-compliance noted:

	Limit (mW/cm^2)	Power (dBm)	Gain (dBi)	Distance (cm)
802.11b, Dual Mode	1.0	25.90	3.00	7.86
802.11g, Dual Mode	1.0	29.72	3.00	12.20

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.

Page 54 of 127

# 7.1.5. AVERAGE POWER

# AVERAGE POWER LIMIT

None; for reporting purposes only.

# TEST PROCEDURE

The transmitter output is connected to a power meter.

# **RESULTS**

No non-compliance noted:

The cable assembly insertion loss of 11.18 dB (including 10 dB pad and 1.18 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Frequency **Average Power Average Power Average Power** Chain 1 Chain 2 Total (MHz) (dBm) (dBm) (dBm) 2412 16.8 14.7 18.86 2437 20.4 20.0 23.19 2462 20.6 16.9 22.15

802.11b Dual Mode

# 802.11g Dual Mode

Frequency	Average Power	Average Power	Average Power
	Chain 1	Chain 2	Total
(MHz)	(dBm)	(dBm)	(dBm)
2412	15.5	12.3	17.18
2437	17.6	16.5	20.07
2462	15.1	14.4	17.77

# 7.1.6. PEAK POWER SPECTRAL DENSITY

# <u>LIMIT</u>

§15.247 (d) For direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

# TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer, the maximum level in a 3 kHz bandwidth is measured with the spectrum analyzer using RBW = 3 kHz and VBW > 3 kHz, sweep time = span / 3 kHz, and video averaging is turned off. The PPSD is the highest level found across the emission in any 3 kHz band.

# **RESULTS**

No non-compliance noted:

# 802.11b Dual Mode

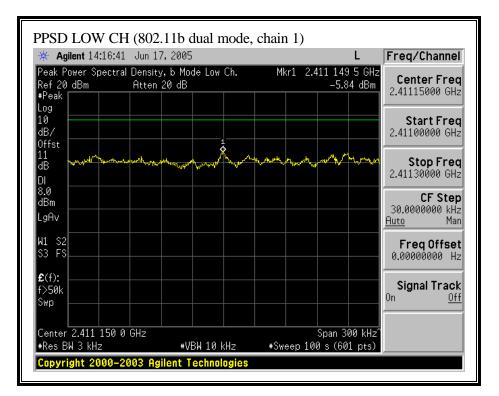
Channel	Frequency	PPSD	PPSD	PPSD	Limit	Margin
		Chain 1	Chain 2	Total		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	( <b>dB</b> )
Low	2412	-5.84	-8.24	-3.87	8	-11.87
Middle	2437	-2.59	-3.66	-0.08	8	-8.08
High	2462	-2.02	-6.38	-0.66	8	-8.66

# 802.11g Dual Mode

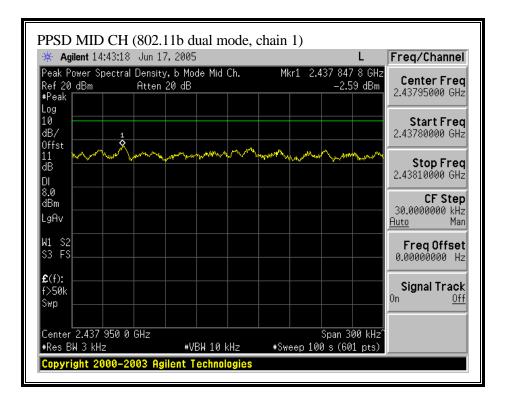
Channel	Frequency	PPSD	PPSD	PPSD	Limit	Margin
		Chain 1	Chain 2	Total		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	( <b>dB</b> )
Low	2412	-4.89	-11.71	-4.07	8	-12.07
Middle	2437	-3.25	-7.24	-1.79	8	-9.79
High	2462	-3.39	-7.94	-2.08	8	-10.08

Page 56 of 127

### PEAK POWER SPECTRAL DENSITY (802.11b DUAL MODE, CHAIN 1)



Page 57 of 127

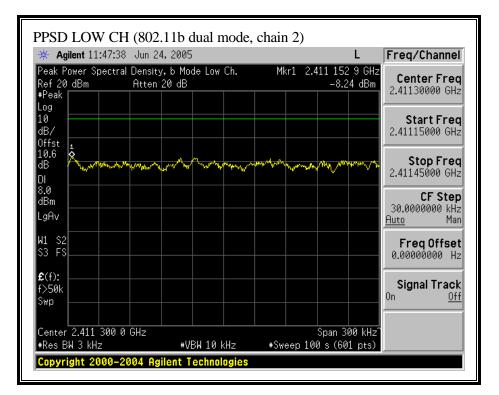


Page 58 of 127

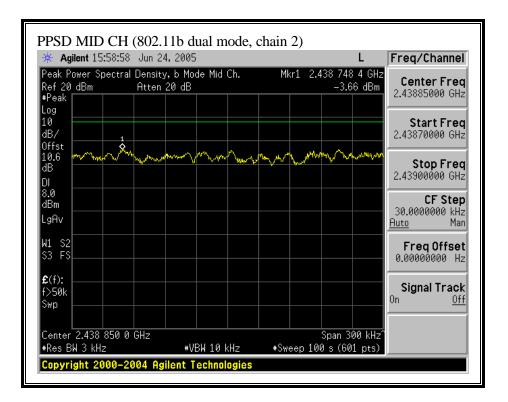
🔆 Agilent 1	5:05:45	Jun 17	7,2005						L	Freq/Channel
Peak Power Ref 20 dBm #Peak				le High	Ch.	Mk	r1 2.4	62 847 -2.0	5 GHz 2 dBm	Center Fred 2.46285000 GHz
Log 10 dB/ Offst				1						Start Fred 2.46270000 GHz
11	m Joner	New Mar	(Miller Vora	~~ <b>~</b> ~	Same of the second s	and the second and the	Mannaha	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	"Wingood of the	Stop Fred 2.46300000 GHz
8.0 dBm LgAv										<b>CF Step</b> 30.0000000 kHz <u>Auto</u> Mar
W1 S2 S3 FS										Freq Offset 0.00000000 Hz
£(f): f>50k Swp										<b>Signal Track</b> On <u>Of</u> i
Center 2.46 #Res BW 3 k		GHz	#VE	3W 10 k	(Hz	#Swe		Span 30 0 s (60		

Page 59 of 127

### PEAK POWER SPECTRAL DENSITY (802.11b DUAL MODE, CHAIN 2)



Page 60 of 127

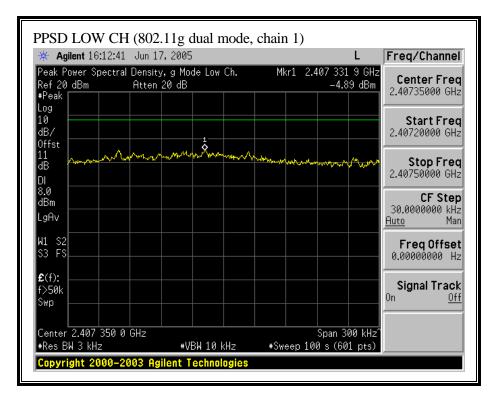


Page 61 of 127

🔆 Agilent 12:1	2:13 Jun 24,	. 2005		L	Freq/Channel
Ref 20 dBm #Peak		b Mode High Ch. 0 dB	Mkr1 2.46	61 153 5 GHz -6.38 dBm	Center Freq 2.46115000 GHz
Log 10 dB/ Offst					<b>Start Freq</b> 2.46100000 GHz
10.6 dB	and when the gap of a	~~~~~	and any control post and	~^~~~	<b>Stop Freq</b> 2.46130000 GHz
8.0 dBm LgAv					<b>CF Step</b> 30.0000000 kHz <u>Auto</u> Man
W1 S2 S3 FS					FreqOffset 0.00000000 Hz
€(f): f>50k Swp					<b>Signal Track</b> On <u>Off</u>
Center 2.461 15 #Res BW 3 kHz	50 0 GHz	#VBW 10 kHz		pan 300 kHz^ s (601 pts)	

Page 62 of 127

### PEAK POWER SPECTRAL DENSITY (802.11g DUAL MODE, CHAIN 1)



Page 63 of 127

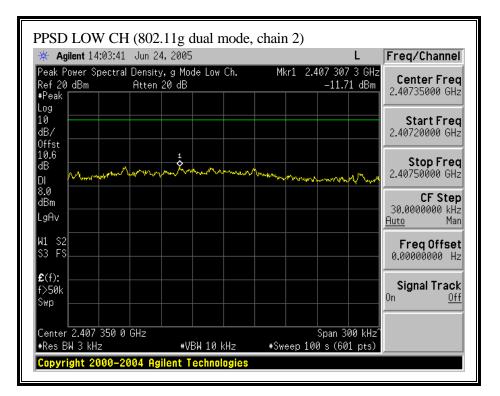
🔆 Agilent 15:5	52 <b>:</b> 33 Jun 17	,2005		L	Freq/Channel
Peak Power Spe Ref 20 dBm #Peak		, g Mode Mid Ch. 20 dB	Mkr1 2.4	35 749 6 GHz -3.25 dBm	Center Freq 2.43570000 GHz
Log 10 dB/ 0ffst					<b>Start Freq</b> 2.43555000 GHz
11 dB DI	atorian and a super	hannen an	mm the marine	Maran Marana Jan	<b>Stop Freq</b> 2.43585000 GHz
8.0 dBm LgAv					<b>CF Step</b> 30.0000000 kHz <u>Auto</u> Man
W1 S2 S3 FS					FreqOffset 0.00000000 Hz
£(f): f>50k Swp					<b>Signal Track</b> On <u>Off</u>
Center 2.435 7 #Res BW 3 kHz	00 0 GHz	#VBW 10 kHz		òpan 300 kHz^ ∣s (601 pts)	

Page 64 of 127

🔆 Agilent 15:2		.11g dual 7, 2005			L	Freq/Channel
Peak Power Spe Ref 20 dBm #Peak			h Ch.	Mkr1 2.464	478 4 GHz -3.39 dBm	Center Freq 2.46450000 GHz
Log 10 dB/ 0ffst		1				<b>Start Freq</b> 2.46435000 GHz
11 dB	manter	wall and the second s	www.www.wy	Maria	-	<b>Stop Freq</b> 2.46465000 GHz
8.0 dBm LgAv						<b>CF Step</b> 30.0000000 kHz <u>Auto</u> Man
W1 \$2 \$3 F\$						FreqOffset 0.00000000 Hz
<b>£</b> (f): f>50k Swp						<b>Signal Track</b> On <u>Off</u>
Center 2.464 50 #Res BW 3 kHz	00 0 GHz	#VBW 10	kHz +	Sp +Sweep 100 s	an 300 kHz^ s (601 pts)	

Page 65 of 127

### PEAK POWER SPECTRAL DENSITY (802.11g DUAL MODE, CHAIN 2)



Page 66 of 127

🔆 Agilent 15:1	.8 <b>:</b> 08 Jun 2	4,2005			L Fre	q/Channel
Peak Power Spe Ref 20 dBm #Peak			Ch. Mkr	1 2.438 558 -7.24	dBm C	<b>enter Freq</b> 3850000 GHz
Log 10 dB/ Offst						<b>Start Freq</b> 3835000 GHz
10.6 dB	mun	and the property and	m	ntahingan daga sa fa	2.4	<b>Stop Freq</b> 3865000 GHz
8.0 dBm LgAv					30. Auto	<b>CF Step</b> 0000000 kHz Man
W1 S2 S3 FS						<b>reqOffset</b> 10000000 Hz
£(f): f>50k Swp					On S	ignal Track <u>Off</u>
Center 2.438 5 #Res BW 3 kHz	00 0 GHz	#VBW 10 ki		Span 30 p 100 s (601		

Page 67 of 127

🔆 Agilent 14:40:1	.6 Jun 24, 20	05		L	Freq/Channel
Peak Power Spectr Ref 20 dBm #Peak			Mkr1 2.40	64 510 4 GHz -7.94 dBm	Center Freq 2.46455000 GHz
Log 10 dB/ Offst					Start Freq 2.46440000 GHz
10.6 dB DI		1 marshton and	-	WWWWWWWW	<b>Stop Freq</b> 2.46470000 GHz
8.0 dBm LgAv					<b>CF Step</b> 30.0000000 kHz <u>Auto</u> Man
W1 S2 S3 FS					Freq Offset 0.00000000 Hz
€(f): f>50k Swp					<b>Signal Track</b> On <u>Off</u>
Center 2.464 550 #Res BW 3 kHz		#VBW 10 kHz		pan 300 kHz^ s (601 pts)	

Page 68 of 127

# 7.1.7. CONDUCTED SPURIOUS EMISSIONS

# **LIMITS**

\$15.247 (c) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in \$15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in \$15.205(a), must also comply with the radiated emission limits specified in \$15.205(c)).

Conducted power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

# TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

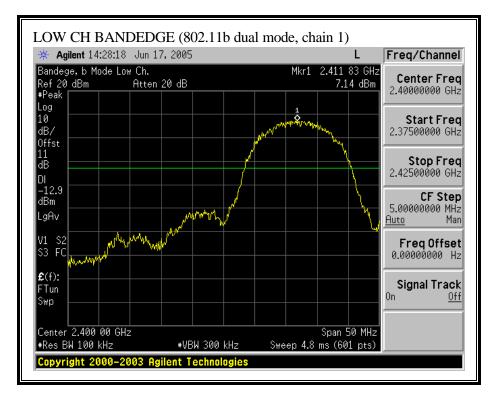
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

### RESULTS

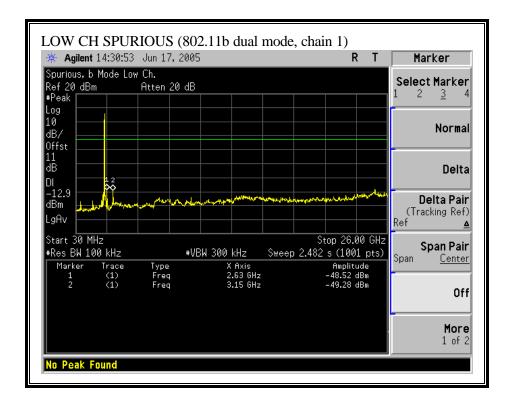
No non-compliance noted:

Page 69 of 127

### SPURIOUS EMISSIONS, LOW CHANNEL (802.11b DUAL MODE, CHAIN 1)

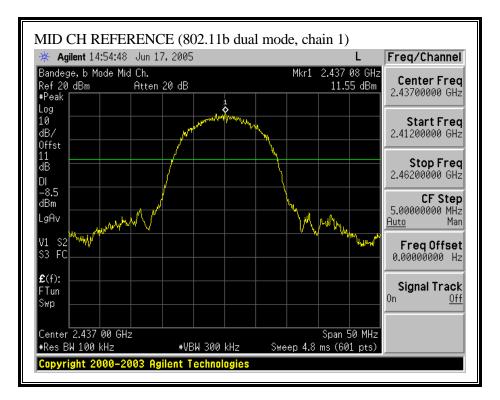


Page 70 of 127

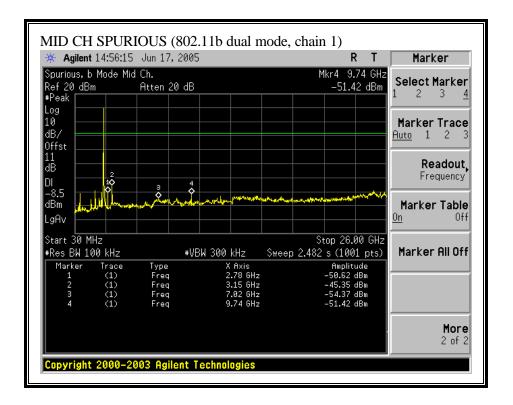


Page 71 of 127

#### SPURIOUS EMISSIONS, MID CHANNEL (802.11b DUAL MODE, CHAIN 1)

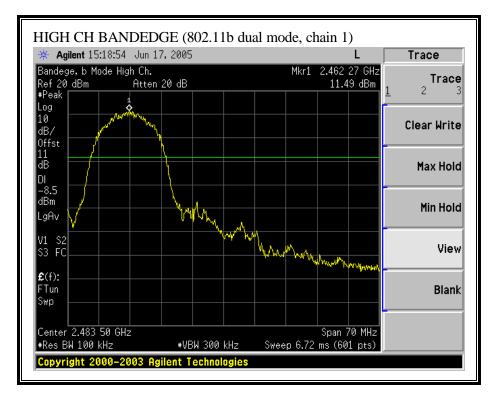


Page 72 of 127

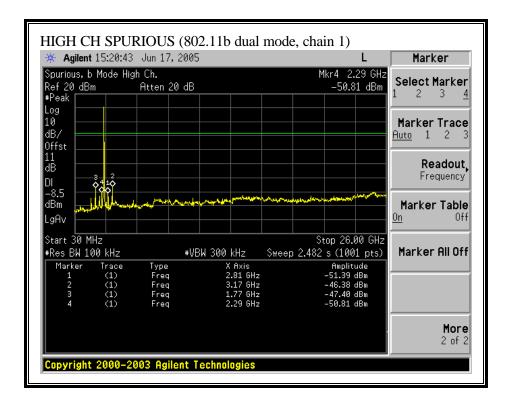


Page 73 of 127

#### SPURIOUS EMISSIONS, HIGH CHANNEL (802.11b DUAL MODE, CHAIN 1)

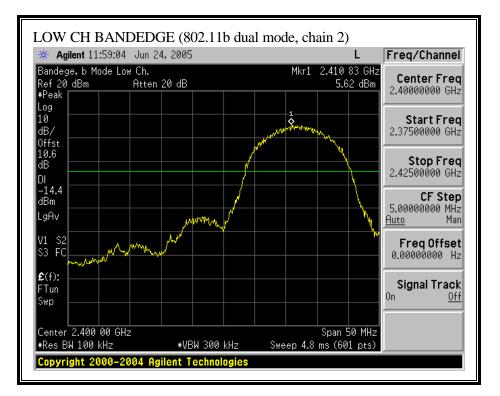


Page 74 of 127

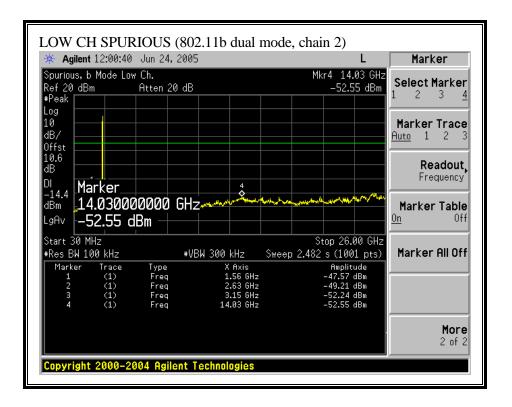


Page 75 of 127

### SPURIOUS EMISSIONS, LOW CHANNEL (802.11b DUAL MODE, CHAIN 2)

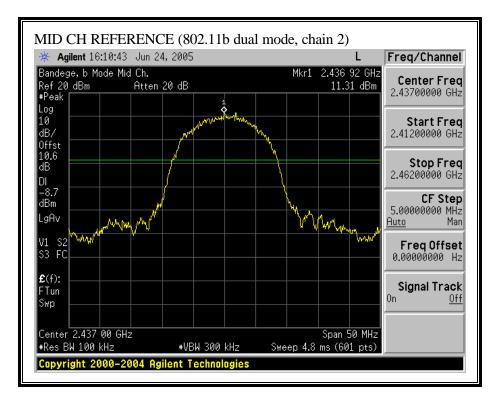


Page 76 of 127

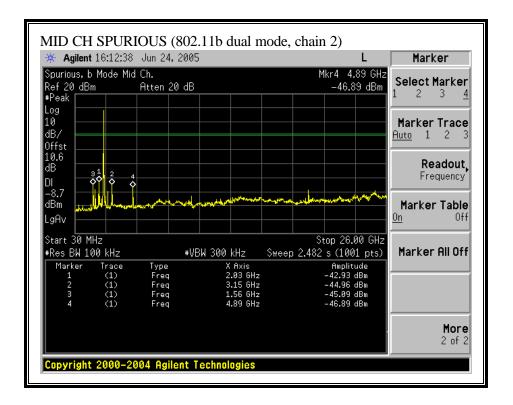


Page 77 of 127

### SPURIOUS EMISSIONS, MID CHANNEL (802.11b DUAL MODE, CHAIN 2)

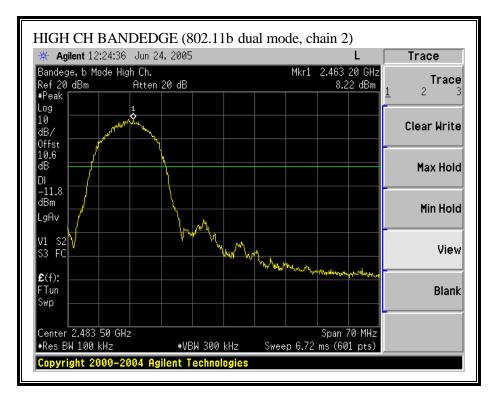


Page 78 of 127



Page 79 of 127

### SPURIOUS EMISSIONS, HIGH CHANNEL (802.11b DUAL MODE, CHAIN 2)

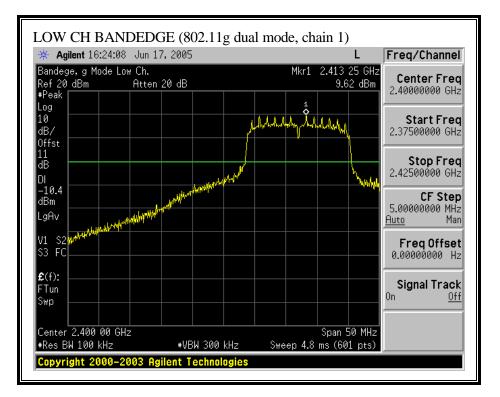


Page 80 of 127

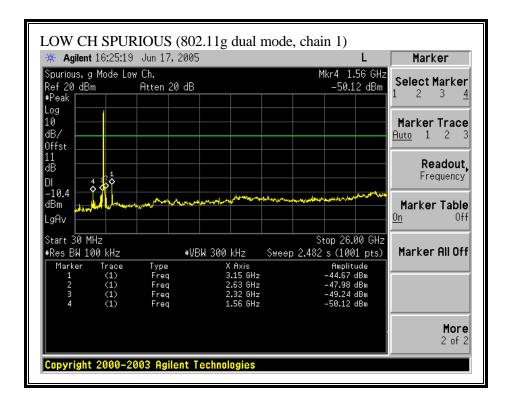
🔆 Agilent 🛛	Marker					
Spurious, b           Ref 20 dBm           #Peak           Log           10           dB/           0ffst           10.6           DI           -11.8           dBm           -14.8	Node H	ligh Ch. Atten 21			r4 14.13 GHz -53.26 dBm	Select Marker 1 2 3 4 Marker Trace <u>Auto</u> 1 2 3 Readout Frequency Marker Table
LgAv <b> −5</b> Start 30 MH #Res BW 10	3 <b>.2</b> 6	dBm —	#VBW 300 kHz	St	op 26.00 GHz s (1001 pts)	Marker All Off
Marker 1 2 3 4	Trace (1) (1) (1) (1)	Type Freq Freq Freq Freq	X Axis 4.91 GHz 1.59 GHz 2.03 GHz 14.13 GHz	2	Amplitude -46.45 dBm -47.01 dBm -48.19 dBm -53.26 dBm	
						More 2 of 2

Page 81 of 127

### SPURIOUS EMISSIONS, LOW CHANNEL (802.11g DUAL MODE, CHAIN 1)

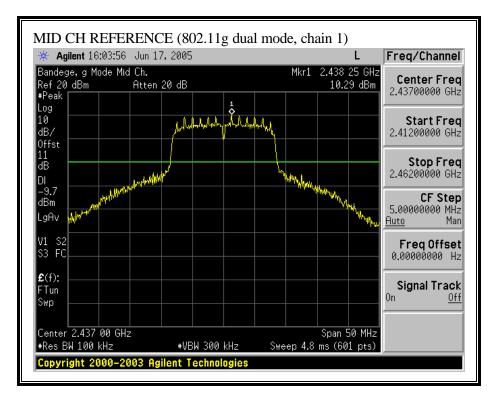


Page 82 of 127

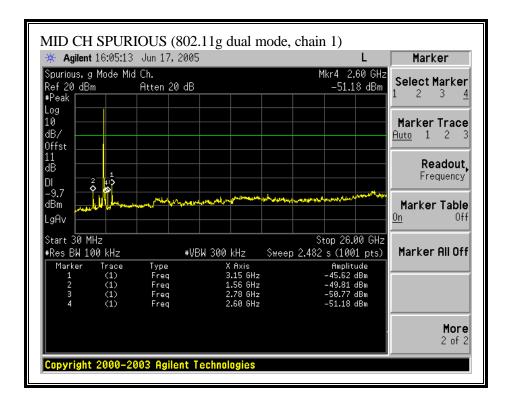


Page 83 of 127

### SPURIOUS EMISSIONS, MID CHANNEL (802.11g DUAL MODE, CHAIN 1)

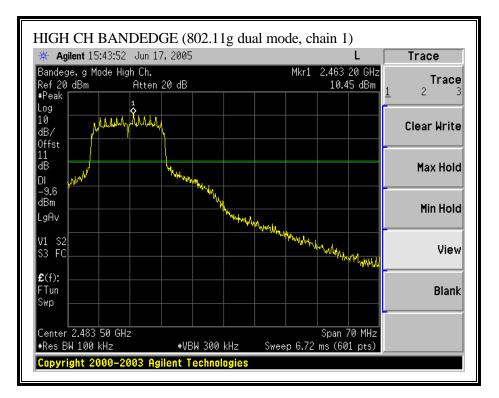


Page 84 of 127

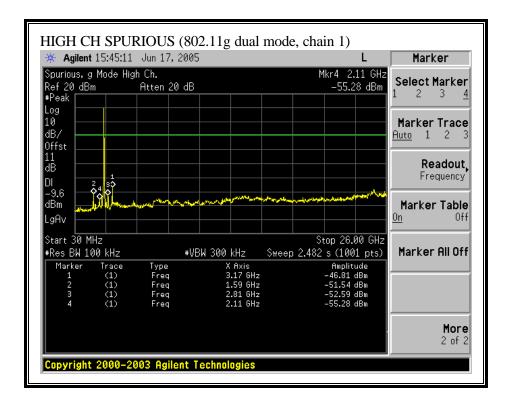


Page 85 of 127

### SPURIOUS EMISSIONS, HIGH CHANNEL (802.11g DUAL MODE, CHAIN 1)

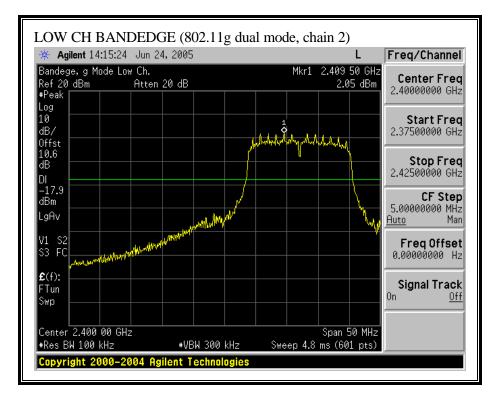


Page 86 of 127



Page 87 of 127

### SPURIOUS EMISSIONS, LOW CHANNEL (802.11g DUAL MODE, CHAIN 2)

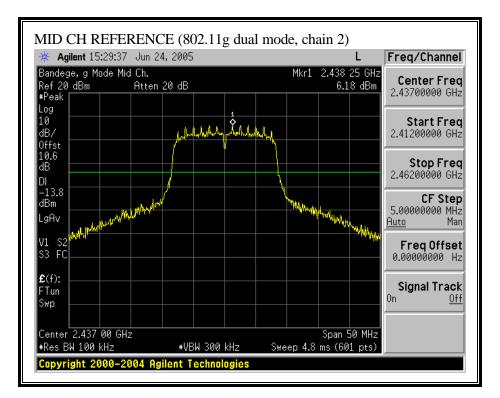


Page 88 of 127

	14:19:09	9 Jun 24,	2005		L	Marker		
Spurious, g Ref 20 dBn #Peak Log 10 dB/ dB/ 0ffst 10.6 dB DI 17.0 Ma	Mode Lo	ow Ch. Atten 20			90 GHz 8 dBm	Select Marker 1 2 3 4 Marker Trace <u>Auto</u> 1 2 3 Readout Frequency Marker Table		
	<b>2.98</b> (			Stop 26.0 Sweep 2.482 s (100)		On Off Marker All Off		
Marker 1 2 3 4		Type Freq Freq Freq Freq	X Axis 1.56 GHz 2.63 GHz	Amplitu -49.17 d -52.06 d -52.34 d	ide IBm IBm IBm	More		

Page 89 of 127

### SPURIOUS EMISSIONS, MID CHANNEL (802.11g DUAL MODE, CHAIN 2)

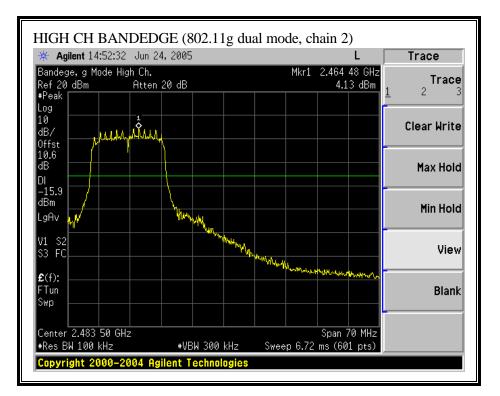


Page 90 of 127

	15:30:59	) Jun 24,	2005		RT	Marker
Spurious, g           Ref 20 dBm           #Peak           Log           10           dB/           0ffst           10.6           dB           DI          13.8	rker_	Atten 20	GHz		4 15.51 GHz -52.22 dBm	Select Marker 1 2 3 4 Marker Trace <u>Auto</u> 1 2 3 Readout Frequency
	2.22 (		#VBW 300 kHz	Sto	pp 26.00 GHz	
			X Axis 3.15 GHz 1.56 GHz 25.07 GHz 15.51 GHz	-	Amplitude 46.99 dBm 47.28 dBm 47.94 dBm 52.22 dBm	

Page 91 of 127

### SPURIOUS EMISSIONS, HIGH CHANNEL (802.11g DUAL MODE, CHAIN 2)



Page 92 of 127

🔆 Agi	ilent 14	4:54:03	3 Jun 24	, 2005						L	Marker
#Peak   Log 10			gh Ch. Atten 2	20 dB						.81 GHz 96 dBm	Select Marker 1 2 3 <u>4</u> Marker Trace
dB/ Offst 10.6 dB DI -15.9	Mark	(er_					2				Auto 1 2 3 Readout, Frequency
-15.9 dBm	2.81 -54	.000 .96 (	0000 ( dBm	GHz,~	and the second	enter manar	har ya Can	S		00 GHz	Marker Table On Off
#Res B Mark 1	er T	race (1)	Type Freq		X 1.	Axis 59 GHz		2.482	Amplit -48.19	dBm	Marker All Off
2 3 4		(1) (1) (1)	Freq Freq Freq		з.	.33 GHz .17 GHz .81 GHz			-53.30 -53.85 -54.96	dBm	
											More 2 of 2

Page 93 of 127

# 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	$(^{2})$
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.

Page 94 of 127

\$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.

Page 95 of 127

# 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 in the 2.4 GHz band.

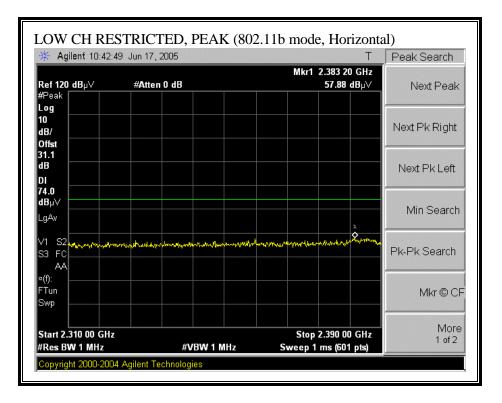
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each 5 GHz band.

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

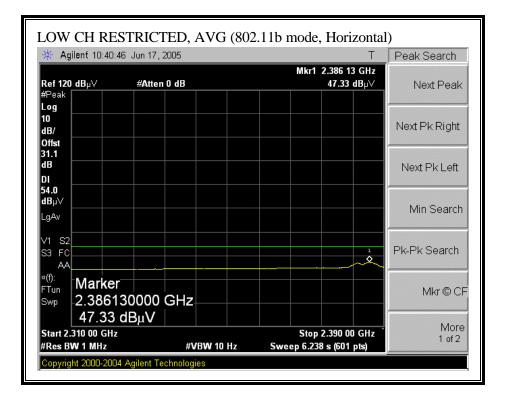
Page 96 of 127

# 7.2.2. TRANSMITTER ABOVE 1 GHz FOR 2400 TO 2483.5 MHz BAND

# RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, HORIZONTAL)

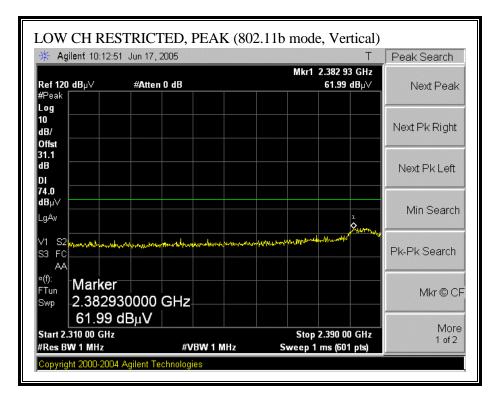


Page 97 of 127

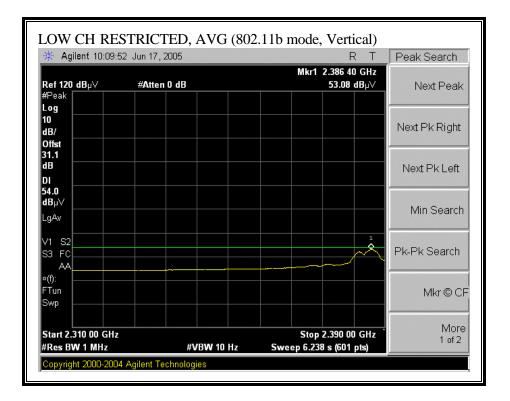


Page 98 of 127

## **RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, VERTICAL)**

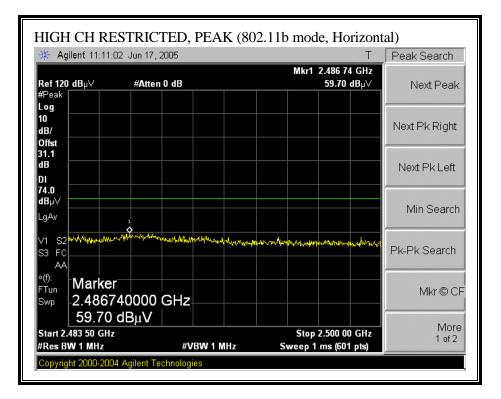


Page 99 of 127

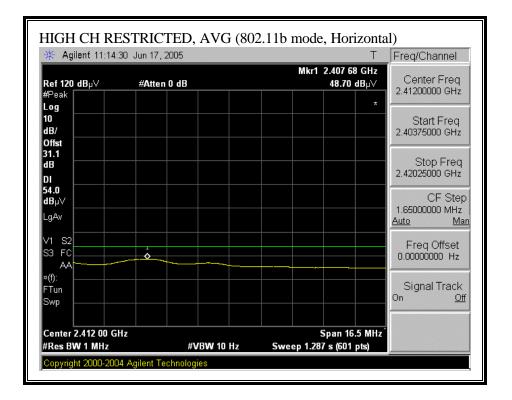


Page 100 of 127

# RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, HORIZONTAL)

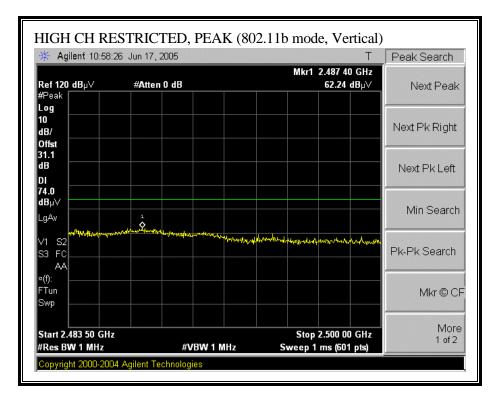


Page 101 of 127

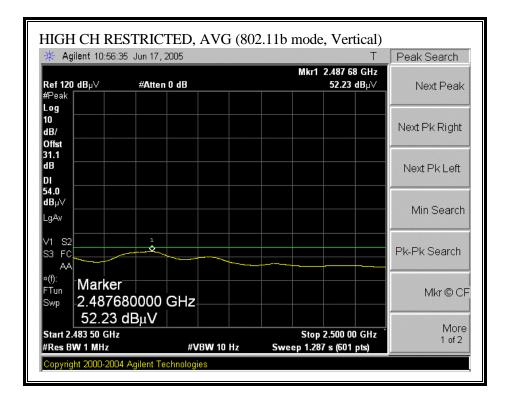


Page 102 of 127

## **RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, VERTICAL)**



Page 103 of 127



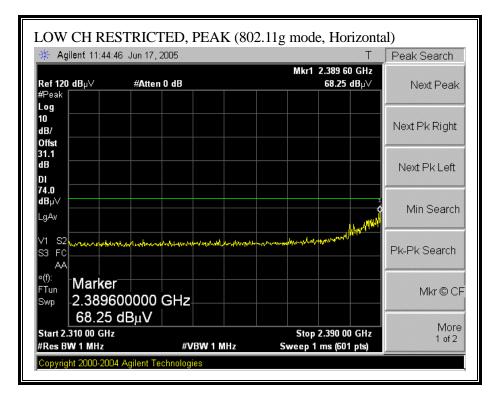
Page 104 of 127

## HARMONICS AND SPURIOUS EMISSIONS (b MODE)

Fest Eng Project # Company EUT Des EUT M/N Fest Targ Mode Op Average	t: y: crip.: N: get: per:	AGN0922AH FCC 15.247 11b mode, Tr	PX Access Poin R-01		Bm, Hi	gh = xx d	Bm								
	inmont: ) Horn 1- N: 6717 (	18GHz	Pre-amp	lifer 1-26 8449B	GHz	P	re-amplifer	26-40G]	Hz		Horn > 18	GHz	-		
2 for 2_Da	ot cable	3 foot	cable	4 foot ca 4_David	ble -	12 I 12_1	coot cable	·	HPF_1.	PF 5GHz _	Reject R_001	Filter		Peak Meass RBW=VBV Average M RBW=1MH	
f	Dist	Read Pk	Read Avg.	AF	CL	Amp	D Corr	Fltr	Peak	Avg	Pk Lim	Avg Lim	Pk Mar	Avg Mar	Notes
GHz 2412 Char	(m)	dBuV ver setting @	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dBuV/m	dBuV/m	dB	dB	(V/H) V
4.824	3.0	55.5	45.5	33.7	5.5	-33.6	0.0	0.6	61.7	51.7	74	54	-12.3	-2.3	V
4.824	3.0	49.9	42.2	33.7	5.5	-33.6	0.0	0.6	56.1	48.4	74	54	-17.9	-5.6	Н
		ver setting @	20												
4.874 7.311	3.0	57.1	47.2 32.5	33.8 35.5	5.5	-33.5	0.0	0.6	63.4	53.5 42.1	74 74	54	-10.6	-0.5	V V
7.311 4.874	3.0 3.0	43.0 51.3	32.5 43.2	35.5 33.8	6.8 5.5	-33.3 -33.5	0.0	0.6 0.6	52.6 57.6	42.1 49.5	74 74	54 54	-21.4 -16.4	-11.9 -4.5	H N
2462 Chai 4.924	nnel, Pow 3.0	ver setting @ 53.3	17 44.8	33.8	5.6	-33.5	0.0	0.6	59.8	51.3	74	54	-14.2	-2.7	v
7.386	3.0	42.2	30.7	35.6	5.0 6.8	-33.3	0.0	0.6	52.0	40.5	74	54	-22.0	-13.5	v
4.924	3.0	48.4	41.0	33.8	5.6	-33.5	0.0	0.6	54.9	47.5	74	54	-19.1	-6.5	Н
No furthe	r emissio	ns were dete	cted above the	noise flo	or of the	e test recei	ver.								
	Dist Read AF	Measureme Distance to Analyzer F Antenna Fa Cable Loss	Reading actor	y		Amp D Corr Avg Peak HPF	Average	Correc Field S ed Peal	ct to 3 mete Strength @ k Field Stre r	3 m		Pk Lim Avg Mar	Peak Field Margin vs	Field Streng d Strength L s. Average I s. Peak Limi	.imit Limit

Page 105 of 127

## **RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, HORIZONTAL)**

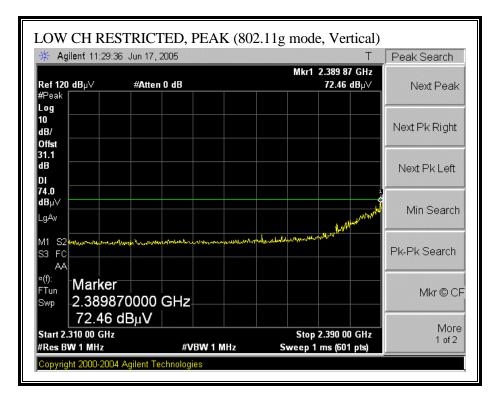


Page 106 of 127

🔆 Agilent 11:43	3:01 Jun 17, 2005	5		٦	Peak Search
<b>Ref 120 dB</b> µ∨ #Peak	#Atten 0 d	B		Mkr1 2.390 00 GH 50.04 dBµ\	
Log 10 dB/					Next Pk Right
Offst 31.1 dB					Next Pk Left
DI 54.0 dBµ∨ LgAv					Min Search
V1 S2 S3 FC					Pk-Pk Search
*(f): FTun Marke Swp 2.390	000000 GI				Mkr © Cł
50.04 dBµV Start 2.310 00 GHz #Res BW 1 MHz		#VBW 10 Hz	Swee	Stop 2.390 00 GH: p 6.238 s (601 pts)	More 1 of 2

Page 107 of 127

## **RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, VERTICAL)**

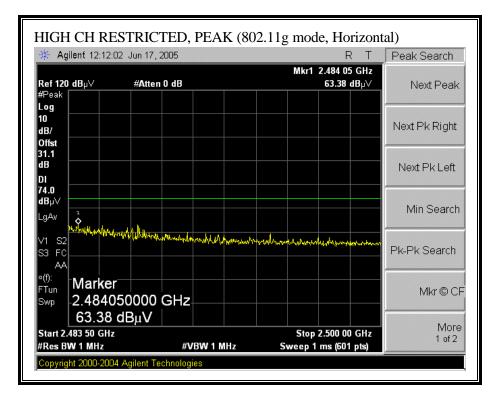


Page 108 of 127

🔆 Agilent 11:26:	48 Jun 17, 2005	Т	Peak Search
<b>Ref 120 dB</b> µ∨ #Peak	#Atten 0 dB	Mkr1 2.390 0 GHz 52.57 dBµ∀	Next Peak
Log 10 dB/ Offst			Next Pk Right
dB			Next Pk Left
54.0 dBµ∨ LgAv			Min Search
W1 S2			Pk-Pk Search
	00000 GHz		Mkr © C
52.57 Start 2.285 0 GHz #Res BW 1 MHz	<u>dBµV</u> #vвw 10 н;		More 1 of 2

Page 109 of 127

## RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, HORIZONTAL)

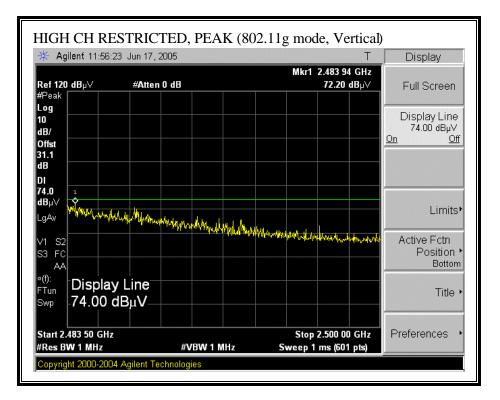


Page 110 of 127

🔆 Agilent 12:09:	30 Jun 17, 2005	Т	Peak Search
<b>Ref 120 dB</b> µ∨ #Peak	#Atten 0 dB	Mkr1 2.483 50 GHz 47.98 dBµ∀	Next Peak
Log 10 dB/			Next Pk Right
Offst 31.1 dB DI			Next Pk Left
54.0 dBμV LgAv			Min Search
V1 S2			Pk-Pk Search
* <sup>(f):</sup> Marke <sup>FTun</sup> 2.4835	500000 GHz		Mkr © Cl
47.98 Start 2.483 50 GHz #Res BW 1 MHz	dBμV <sup>4</sup> / #vвw 10 ⊦	Stop 2.500 00 GHz Iz Sweep 1.287 s (601 pts)	More 1 of 2

Page 111 of 127

## **RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, VERTICAL)**



Page 112 of 127

🔆 Agilent 11:54	:27 Jun 17, 2005			Т	Peak Search
<b>Ref 120 dB</b> µ∨ #Peak	#Atten 0 dB			83 50 GHz 3.35 dBµ∀	Next Peak
Log 10 dB/ Offst					Next Pk Right
dB					Next Pk Left
54.0 dBµ√ LgAv					Min Search
V1 SZ S3 FC					Pk-Pk Search
	500000 GHz				Mkr © CF
53.35 Start 2.483 50 GH #Res BW 1 MHz		/ 10 Hz	Stop 2.5 Sweep 1.287 s	00 00 GHz (601 pts)	More 1 of 2

Page 113 of 127

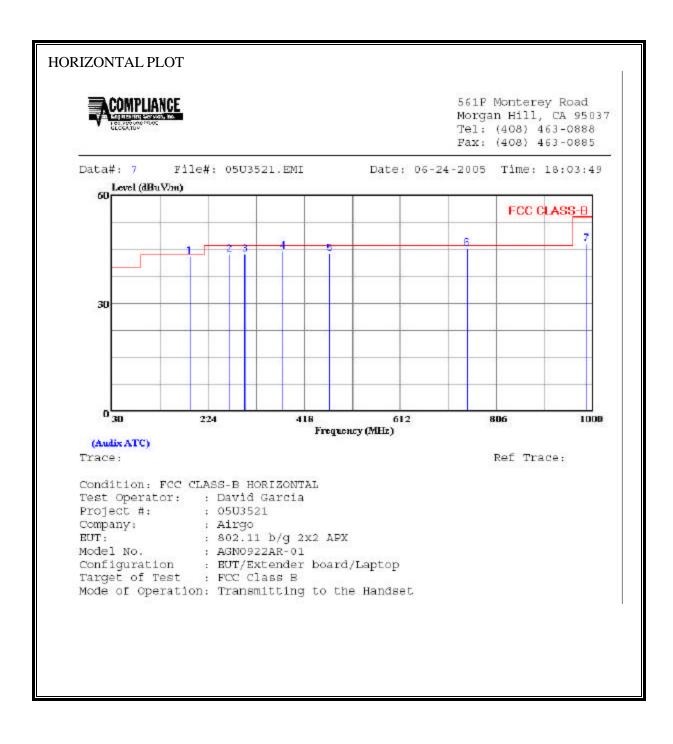
### HARMONICS AND SPURIOUS EMISSIONS (g MODE)

Test Eng Project # Company EUT Desc EUT M/N Test Targ Mode Op	r: : crip.: : et: er:	David Garcia 05U3521 Airgo 802.11 b/g Al AGN0922AF FCC 15.247 11g mode, Tr	PX Access Poin R-01 ransmitting	ıt	_										
<u>Fest Fani</u>	inment: Horn 1-	18GHz	=xx dBm, Mi Pre-amp T34 HP	lifer 1-26			iBM 're-amplifer	26-40G	Hz		Horn >18	SGHz	_		
	ency Cable ot cable vid	3 foot	cable -	4 foot ca 4_David	able		foot cable Yan		HPF_1.	PF 5GHz	Reject R_001	Filter T			
		Read Pk dBuV ver setting @		AF dB/m	CL dB	Amp dB	D Corr dB	dB		Avg dBuV/m			dB	dB	Notes (V/H)
4.824 4.824	3.0 3.0	50.0 47.9	36.2 35.3	33.7 33.7	5.5 5.5	-33.6 -33.6	0.0	0.6 0.6	56.2 54.1	42.4 41.5	74 74	54 54	-17.8 -19.9	-11.6 -12.5	V H
		ver setting @													
4.874 7.311	3.0 3.0	53.5 45.5	39.7 31.4	33.8 35.5	5.5 6.8	-33.5 -33.3	0.0	0.6	59.8 55.1	46.0 41.0	74 74	54 54	-14.2	-8.0 -13.0	V V
4.874	3.0	49.9	37.7	33.8	5.5	-33.5	0.0	0.6	56.2	41.0	74	54 54	-13.9	-10.0	ч Н
2462 Char	nel, Per	ver setting @	15											+	
4.924	3.0	54.2	41.3	33.8	5.6	-33.5	0.0	0.6	60.7	47.8	74	54	-13.3	-6.2	v
7.386	3.0 3.0	44.1 48.3	31.4 35.7	35.6 33.8	6.8 5.6	-33.3 -33.5	0.0	0.6 0.6	53.9 54.8	41.2 42.2	74 74	54 54	-20.1 -19.2	-12.8 -11.8	V H
	5.0	-0.0	55,1	55.0	5.0	-55.5	0.0	0.0	.4.0	72.2	/4	.4	-17.4	-11.0	11
No further	emissio	ns were detec	cted above the	noise flo	or of the	test rece	iver.								
				+											
				<u> </u>											
		Measureme Distance to Analyzer R Antenna Fa Cable Loss	Reading actor	у		Amp D Corr Avg Peak HPF	Average	Corre Field a ed Pea	ct to 3 mete Strength @ k Field Stre r	3 m		Pk Lim Avg Mar	Peak Fiel Margin v	Field Strengt d Strength L s. Average L s. Peak Limi	imit .imit

Page 114 of 127

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

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

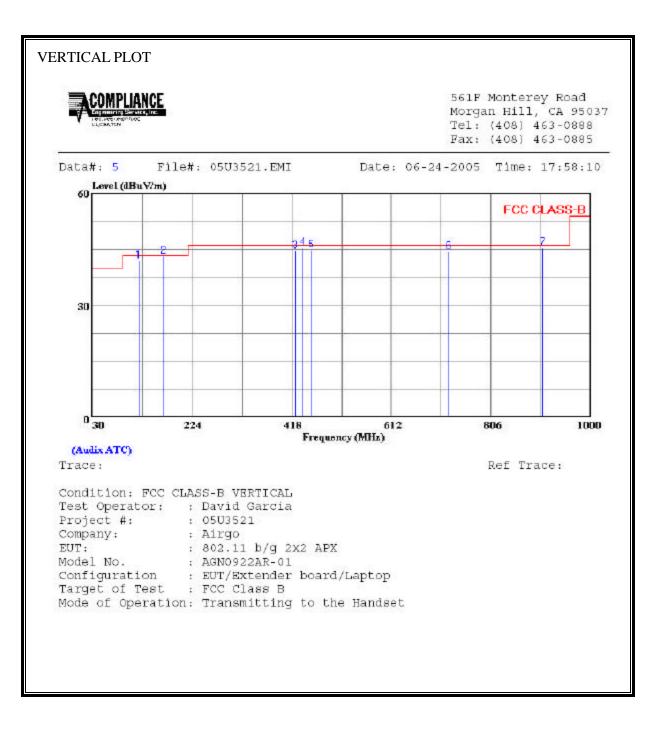


Page 115 of 127

HORIZONTA	L DATA				8900,0 mma		
		Read			Limit		
	Freq	Level	Factor	Level	Line	Limit	Remark
8	MHz	dBuV	dB	$\overline{\text{dBuV}/\text{m}}$	dBuV/m	dB	() () () () () () () () () () () () () (
1	187.140	30.20		43.07			
2	266.680	29.24		43.69			
3	298.690	27.93			46.00		
4	373.380	26.97			46.00		
5		24.14			46.00		
6	746.830						
7	987.390	19.69	26.80	46.49	54.00	-7.51	Peak

Page 116 of 127

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



Page 117 of 127

VERTICAL E	DATA	- 1			÷ · · · ·	-	
	Fred	Read	Factor	Lovol	Limit Line	Over Limit	
	rred	пелет	ractor	пелет	птие	птитс	Kemark
-	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	120.210	26.80	15.13	41.92	43.50	-1.58	Peak
2	167.740	29.58	13.51	43.09	43.50	-0.41	Peak
3	424.790	26.08	18.64	44.72	46.00	-1.28	Peak
	439.340	26.53	18.96	45.49	46.00	-0.51	Peak
	455.830				46.00		
	723.550						집 같은 것 같아요. 승규는 것은
7	906.880	19.43	26.01	45.44	46.00	-0.56	Peak

Page 118 of 127

## 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 L	imit (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:

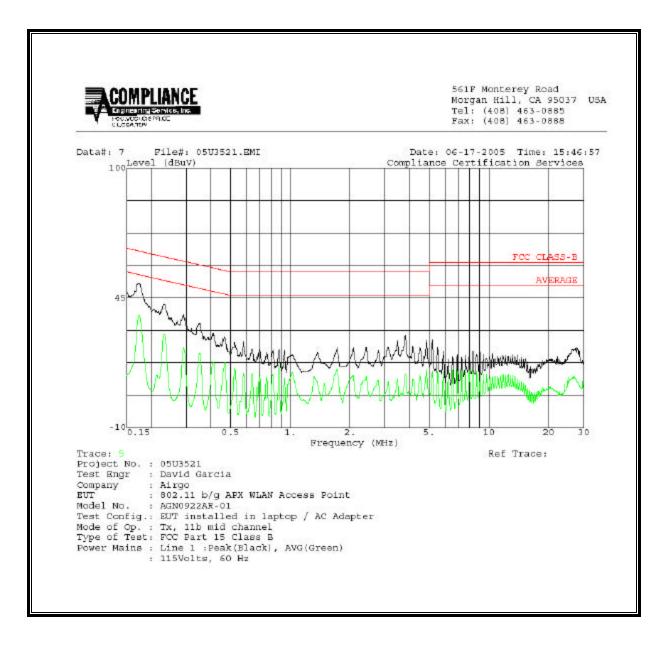
Page 119 of 127

#### **<u>6 WORST EMISSIONS</u>**

Freq.		Closs	Limit	FCC_B	Mar	gin	Remark		
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.17	51.16			0.00	64.77	54.77	-13.61	-3.61	L1
3.80	29.02			0.00	56.00	46.00	-26.98	-16.98	L1
5.19	27.12			0.00	60.00	50.00	-32.88	-22.88	L1
0.17	50.42			0.00	64.77	54.77	-14.35	-4.35	L2
0.59	27.78			0.00	56.00	46.00	-28.22	-18.22	L2
3.80	24.30			0.00	56.00	46.00	-31.70	-21.70	L2
6 Worst I	Data								

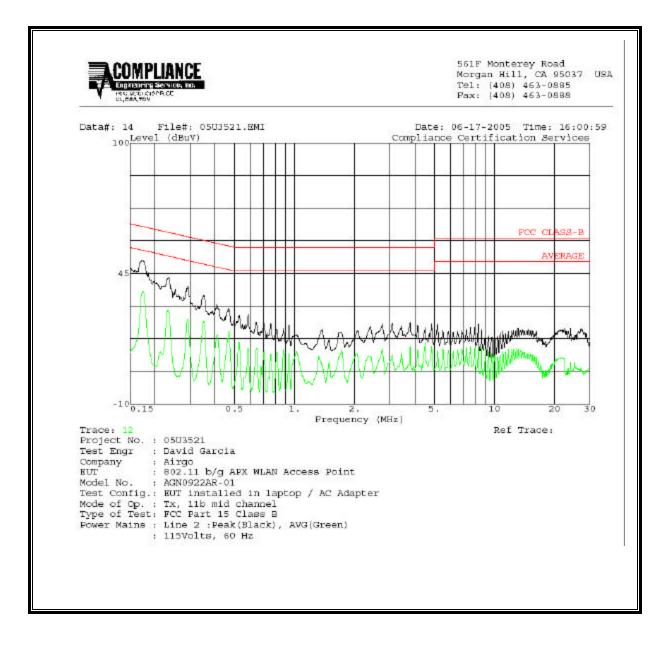
Page 120 of 127

#### LINE 1 RESULTS



Page 121 of 127

#### **LINE 2 RESULTS**



Page 122 of 127

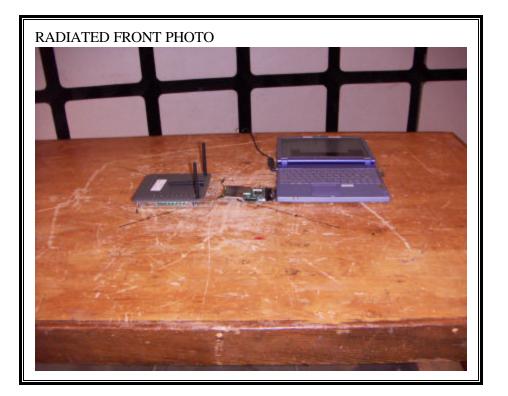
# 8. SETUP PHOTOS

## ANTENNA PORT CONDUCTED RF MEASUREMENT SETUP

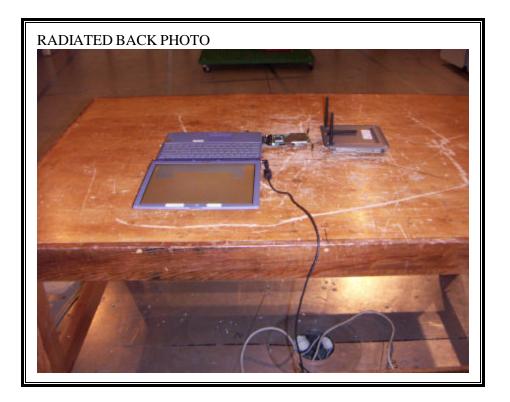


Page 123 of 127

## RADIATED RF MEASUREMENT SETUP



Page 124 of 127



Page 125 of 127

#### POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP



Page 126 of 127



**END OF REPORT** 

Page 127 of 127