



**FCC CFR47 PART 15 SUBPART C  
INDUSTRY CANADA RSS-210 ISSUE 7**

**CERTIFICATION TEST REPORT**

**FOR**

**MESHMAX – ACCESS POINT DEVICE**

**MODEL NUMBERS: 9200-WDO, 9201-WDO**

**FCC ID: HZB-MESHMAXMP11R**

**IC ID: 1856A-MESHMAXMP11**

**REPORT NUMBER: 08U11852-1**

**ISSUE DATE: OCTOBER 06, 2008**

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**NVLAP LAB CODE 200065-0**

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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** PROXIM WIRELESS CORPORATION  
1561 BUCKEYE DRIVE,  
MILPITAS, CA 95035 USA

**EUT DESCRIPTION:** 802.11 a/b/g Access Point – Master Device

**MODELS:** 9200-WDO

**FCC ID:** HZB-MESHMAXMP11R

**IC ID:** 1856A-MESHMAXMP11

**SERIAL NUMBER:** 02191

**DATE TESTED:** June 2 - July 07, 2008

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-210 Issue 7	Pass
INDUSTRY CANADA RSS-GEN Issue 2	Pass

Compliance Certification Services, Inc. (CCS) tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by CCS based on interpretations and/or observations of test results. 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 CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by CCS 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:



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COMPLIANCE CERTIFICATION SERVICES

Tested By:



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EMC ENGINEER  
COMPLIANCE CERTIFICATION SERVICES

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 2, and RSS-210 Issue 7.

## 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

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

## 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
Power Line Conducted Emission	+/- 2.3 dB
Radiated Emission	+/- 3.4 dB

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

## 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

The EUT is an 802.11a/b/g Access Point, Models: 9200-WDO, 9201-WDO. 9200-WDO supports software configurable Mesh and Wi-Fi on 2.4 and 5GHz radios. 9201-WDO supports only Wi-Fi on 2.4 and 5 GHz radios. Both model numbers are electrically identical, only software has different functionality (mesh require SW license).

The radio module is manufactured by Proxim Wireless.

### 5.2. MAXIMUM OUTPUT POWER

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

**For the 10 dBi gain Monopole Antenna:**

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2412 - 2462	802.11b	21.15	130.32
2412 - 2462	802.11g	25.90	389.05
5745 - 5825	802.11a	25.76	376.70
5765 - 5800	802.11 a 40MHz	25.74	374.97

**For the 30 dBi gain Panel Antenna:**

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5745 - 5825	802.11a	29.73	939.72
5765 - 5800	802.11 a 40MHz	27.52	564.94

### **5.3. DESCRIPTION OF AVAILABLE ANTENNAS**

The radio utilizes the following antennas:

- 1) Omni Antenna for 2.4GHz band, with a maximum gain of 10 dBi
- 2) Omni Antenna for 5GHz band, with a maximum gain of 10 dBi
- 3) Panel Antenna 5GHz band, with a maximum gain of 30 dBi

### **5.4. SOFTWARE AND FIRMWARE**

The firmware installed in the EUT during testing was TFTP Server, version 8.2.7.

The EUT driver software installed during testing was GuildFTPd, version 0.999.14.

The test utility software used during testing was ART, rev. 4.8 BUILD # 16.

### **5.5. WORST-CASE CONFIGURATION AND MODE**

The worst-case channel is determined as the channel with the highest output power. The channel with the highest output power for EUT with Monopole antenna was mid channel for 11g, and for EUT with panel antenna it was high channel for 11a; therefore radiated emission below 1 GHz was performed at mid channel, 11g mode, 6 Mbps, for EUT with Monopole antenna, and it was also performed at high channel, 11a mode, 6 Mbps, for EUT with Panel antenna.

Power Line Conducted Emission was performed with EUT connected to the Panel Antenna, transmitting at high channel, 11a mode, 6 Mbps.



## 5.6. DESCRIPTION OF TEST SETUP

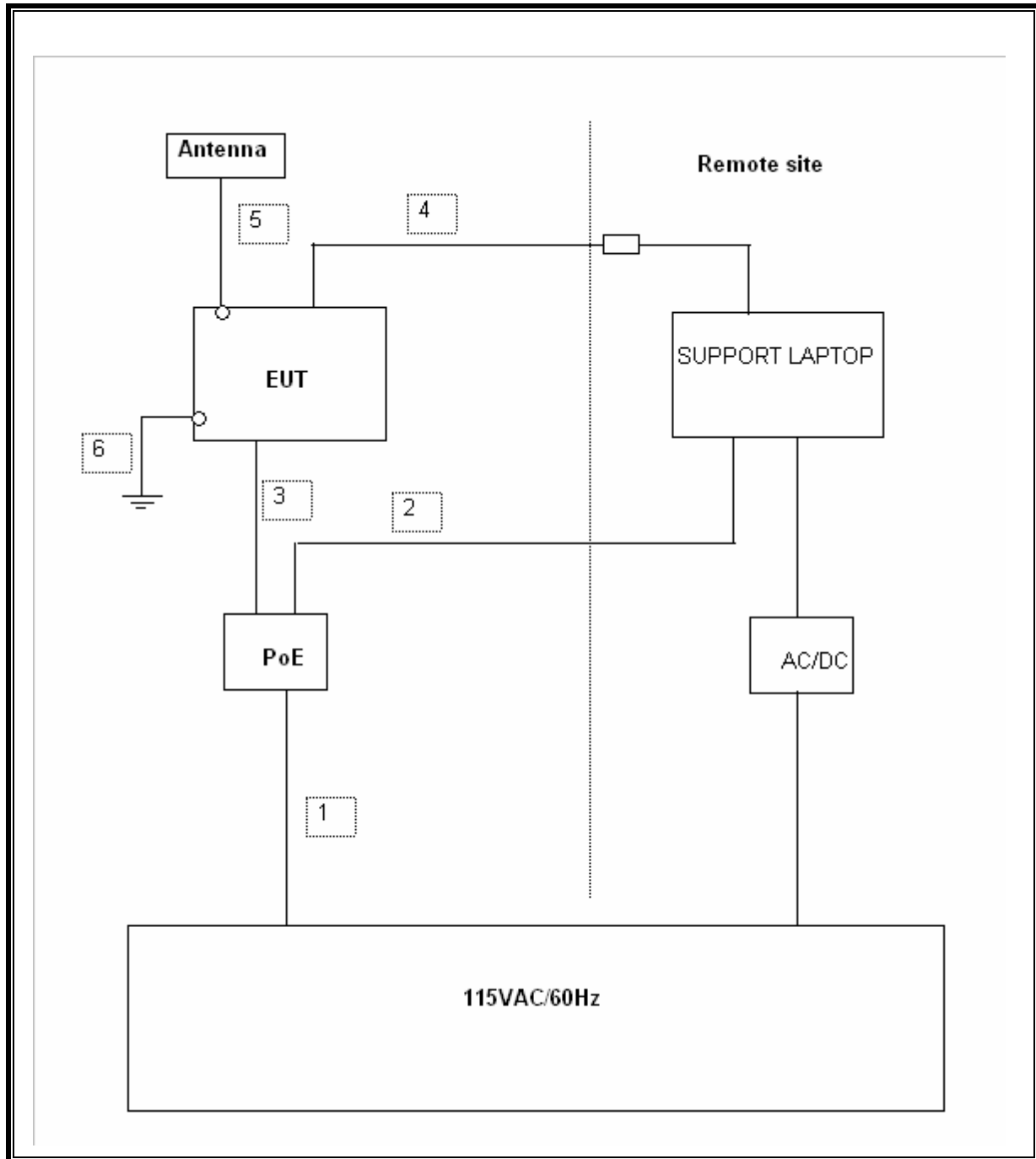
### SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	SONY	PCG-881R	R2429159	N/A
AC/DC Adapter	SONY	PCGA-AC16V	0202B0335718P	N/A
POE	AULT INC.	PW143RD4800F02	N/A	N/A

### I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	US 115V	Un-shielded	1 meter	N/A
2	WLAN	1	RJ45	Un-shielded	2 meter	PoE
3	WLAN	1	RJ45	Un-shielded	.3m	PoE
4	Serial	1	RJ11	Un-shielded	2 meter	Disconnect when testing
5	Antenna	1	N Type	Shielded	.3 m	1 meter use for dish
6	GND	1	Screw	15 AWG	1.5 m	Chassis ground.

**SETUP DIAGRAM FOR TESTS**



## 6. ANTENNA PORT TEST RESULTS

### 6.1. 802.11b MODE IN THE 2.4 GHz BAND

#### 6.1.1. 6 dB BANDWIDTH

##### LIMITS

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

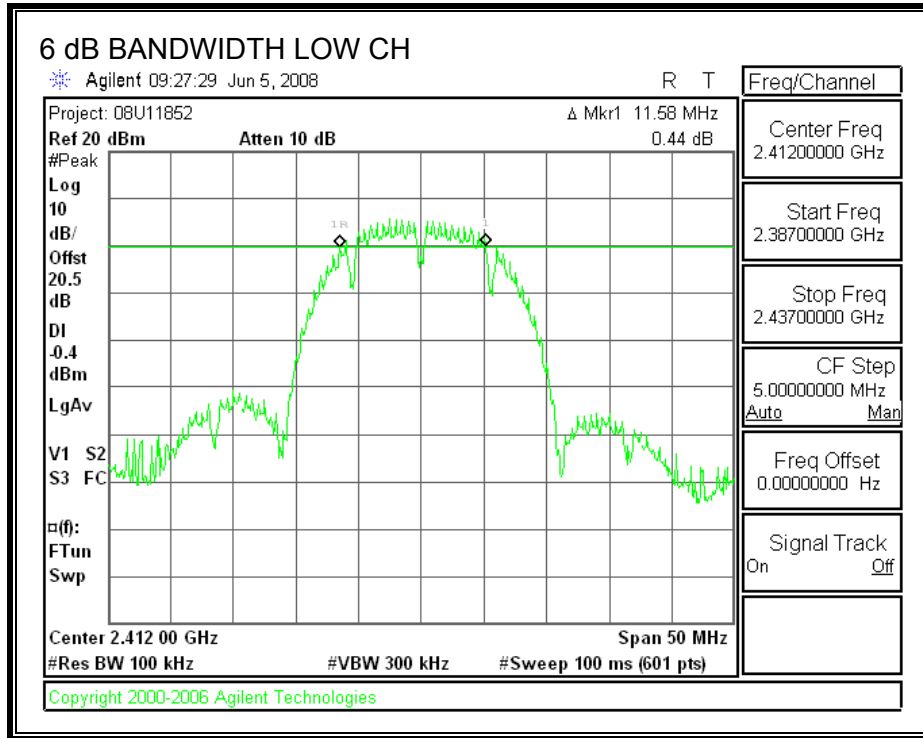
##### TEST PROCEDURE

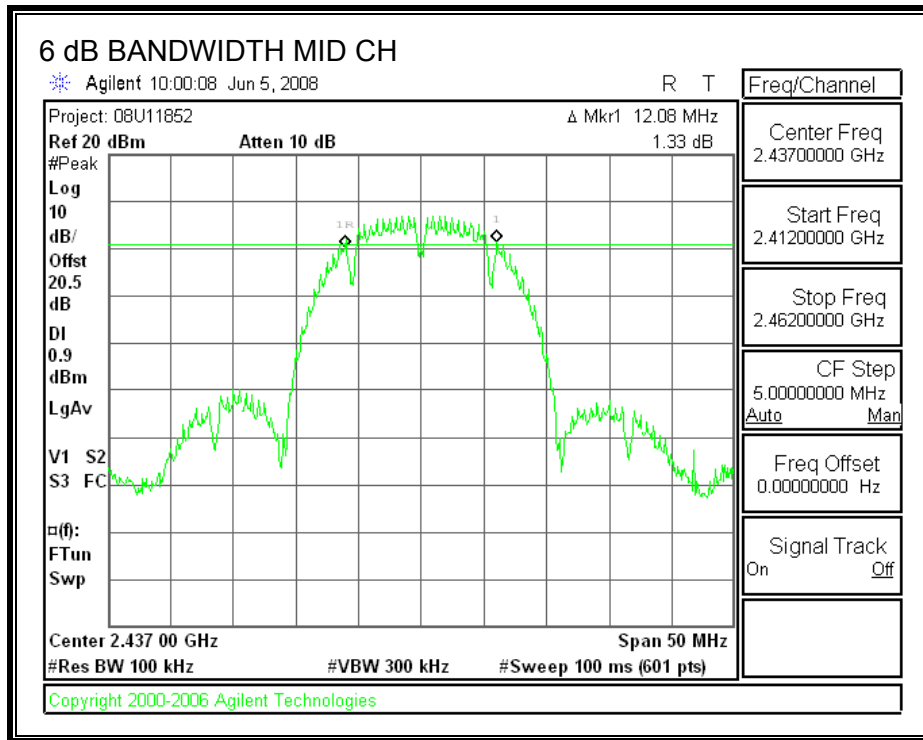
The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

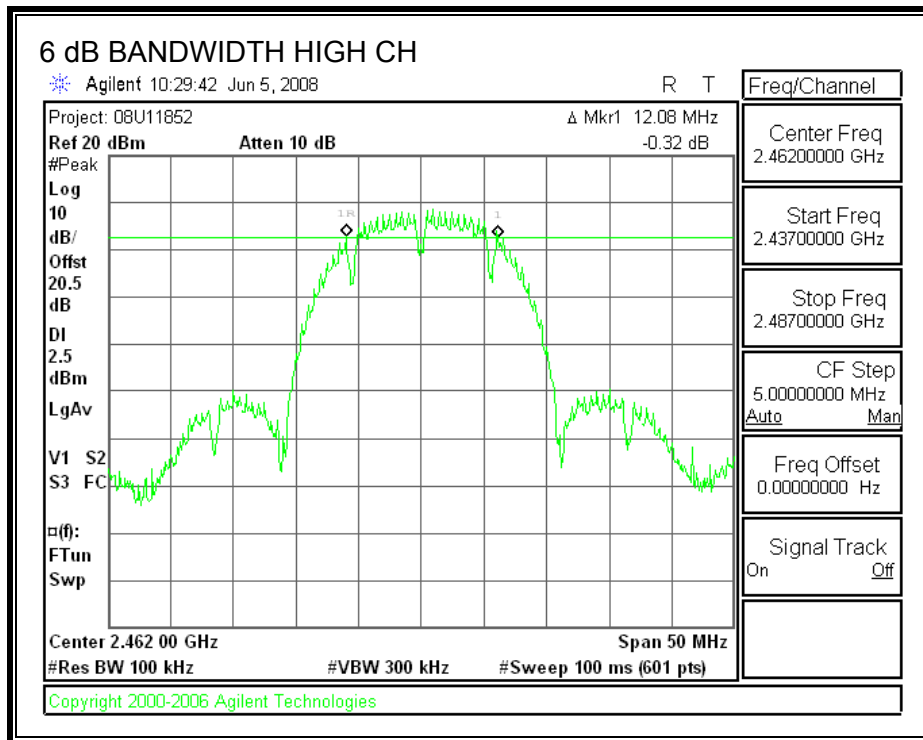
##### RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	11.58	0.5
Middle	2437	12.08	0.5
High	2462	12.08	0.5

**6 dB BANDWIDTH**







### 6.1.2. 99% BANDWIDTH

#### LIMITS

None; for reporting purposes only.

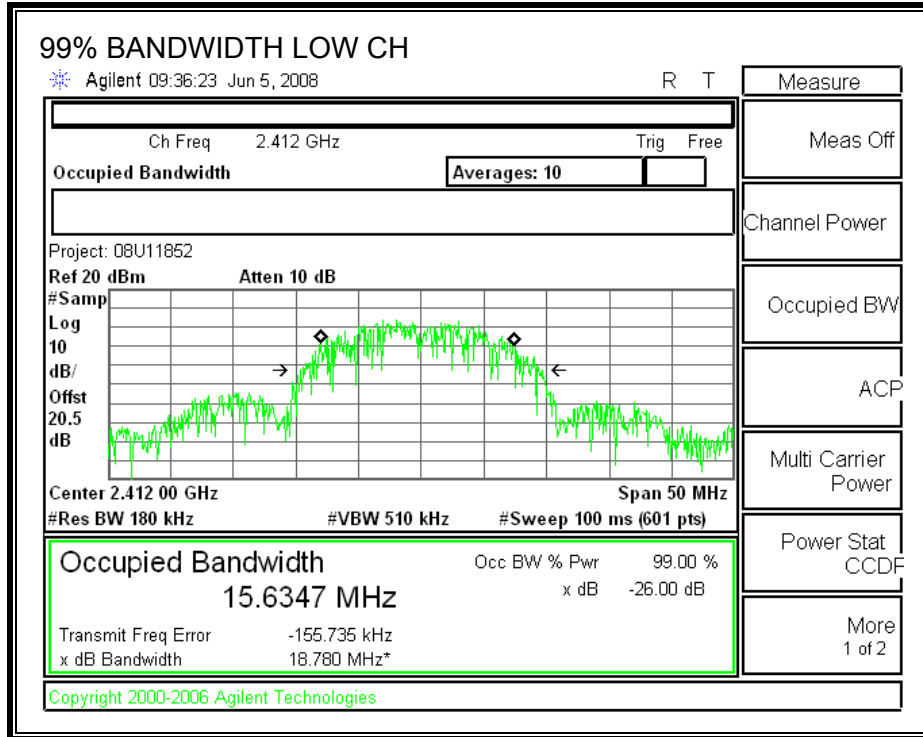
#### TEST PROCEDURE

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.

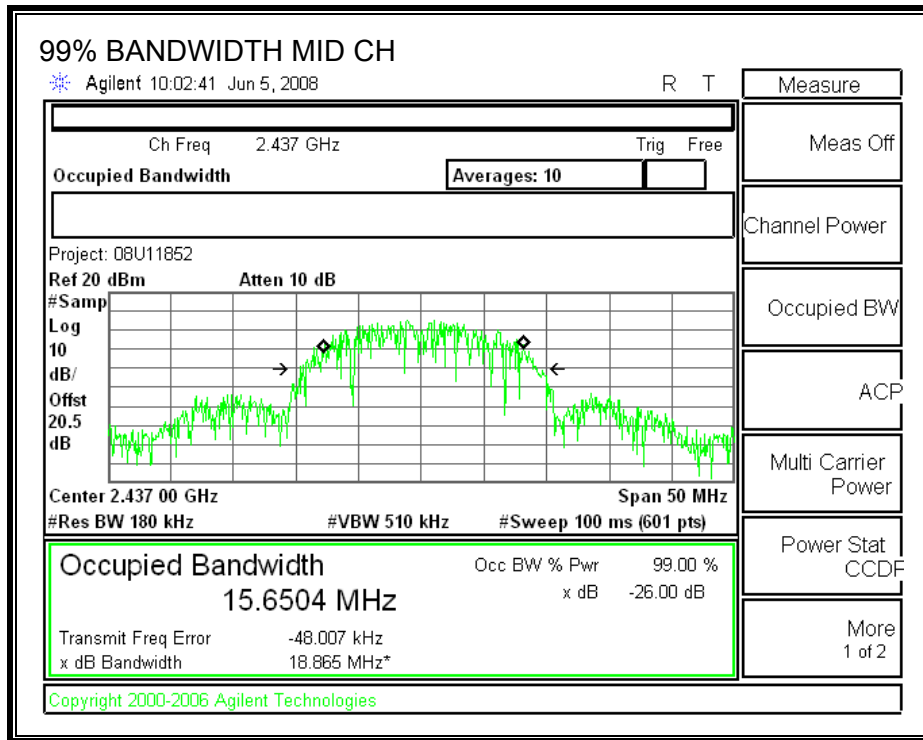
#### RESULTS

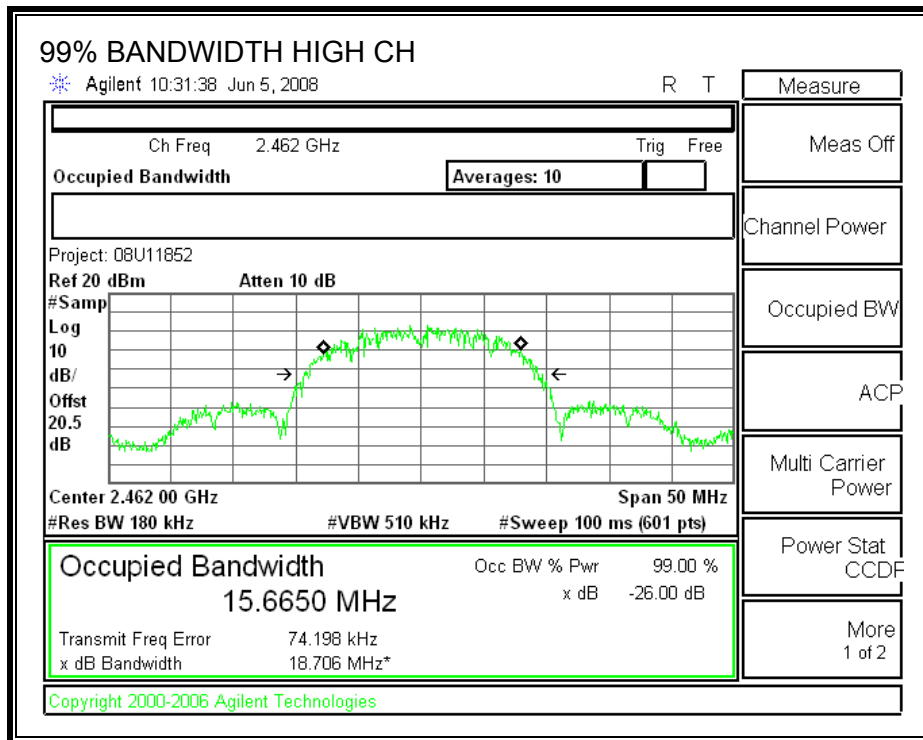
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	15.6347
Middle	2437	15.6504
High	2462	15.6650

**99% BANDWIDTH**









### 6.1.3. OUTPUT POWER

#### LIMITS

FCC §15.247 (b)

IC RSS-210 A8.4

For 2.4 GHz band, the maximum antenna gain is 10 dBi for other than fixed, point-to-point operations, therefore the limit is 26 dBm.

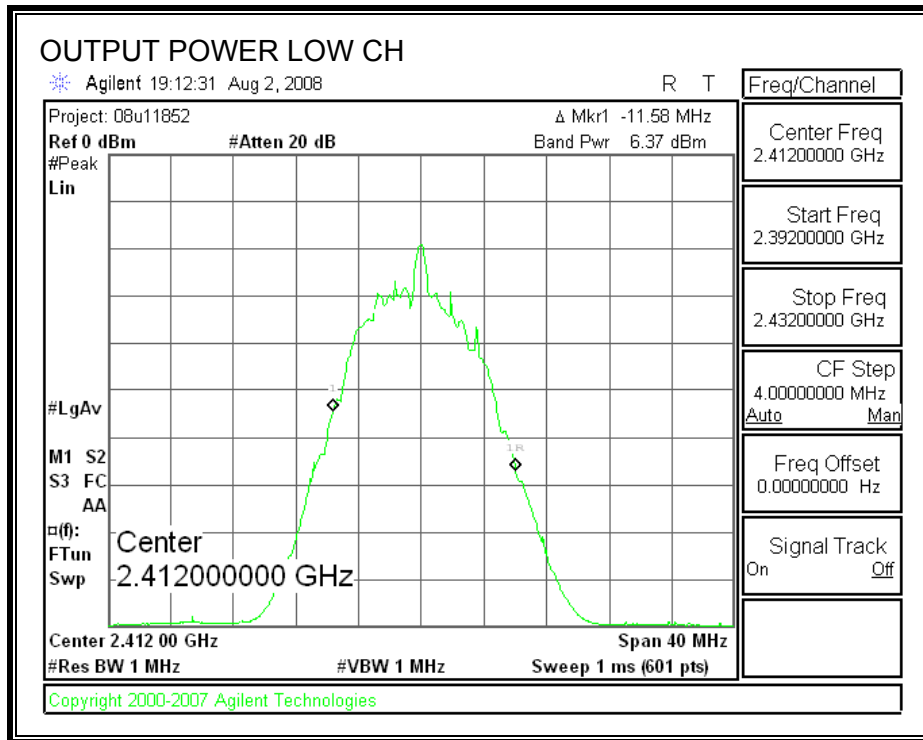
#### TEST PROCEDURE

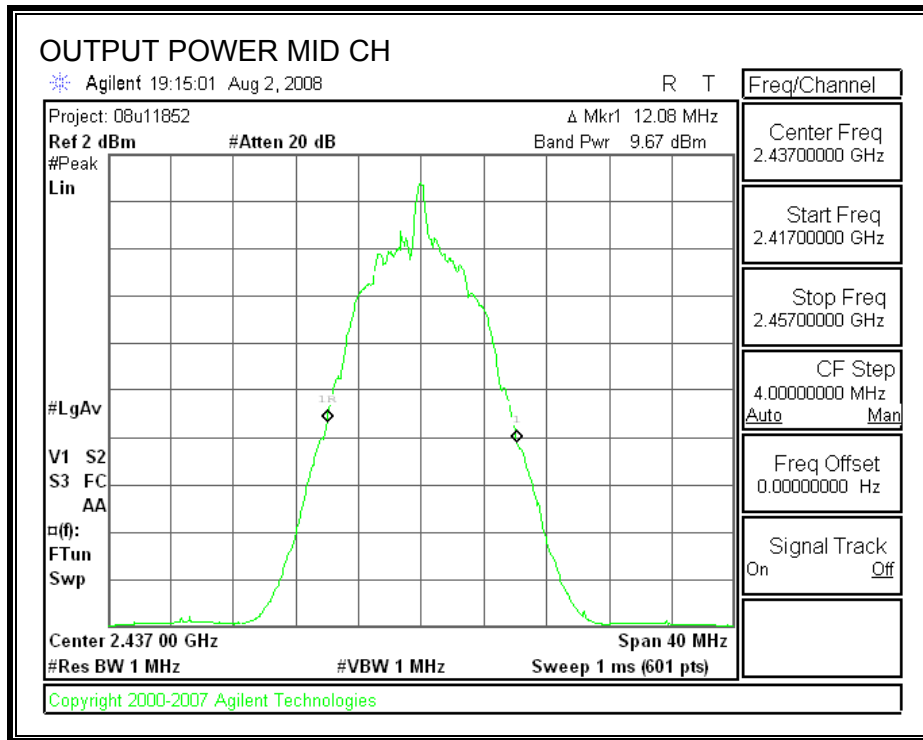
Peak power is measured using the Channel bandwidth Alternative peak output power procedure specified in "TCB Training for Devices covered under Scopes A1 - A4" by Joe Dichoso, May 2003.

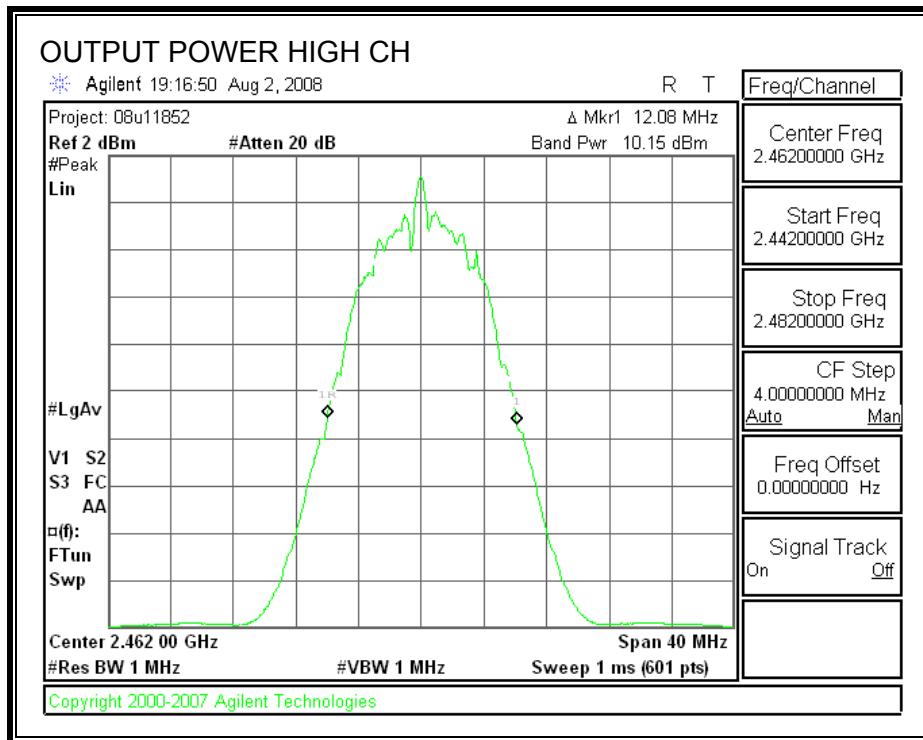
#### RESULTS

Channel	Frequency (MHz)	Spectrum Analyzer Reading (dBm)	Attenuator and Cable Offset (dB)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	6.37	11	17.37	26	-8.63
Middle	2437	9.67	11	20.67	26	-5.33
High	2462	10.15	11	21.15	26	-4.85

**OUTPUT POWER**







#### 6.1.4. AVERAGE POWER

##### LIMITS

None; for reporting purposes only.

##### TEST PROCEDURE

The transmitter output is connected to a power meter.

##### RESULTS

The cable assembly insertion loss of 20.5 dB (including 20 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Power (dBm)
Low	2412	15.50
Middle	2437	17.56
High	2462	18.60

### 6.1.5. POWER SPECTRAL DENSITY

#### LIMITS

FCC §15.247 (e)

IC RSS-210 A8.2 (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

#### TEST PROCEDURE

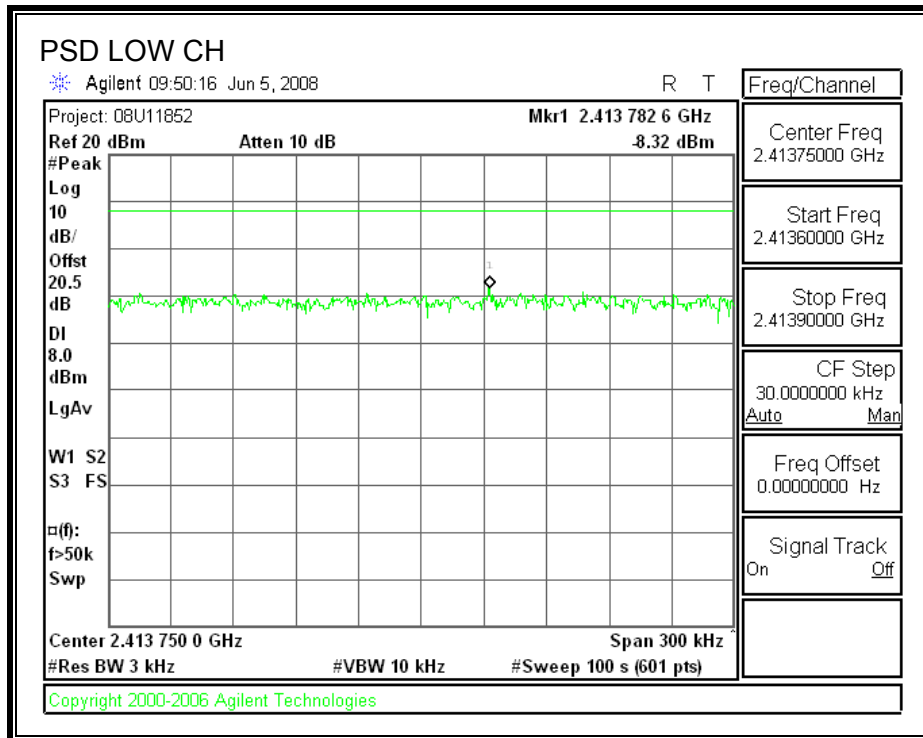
Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005.

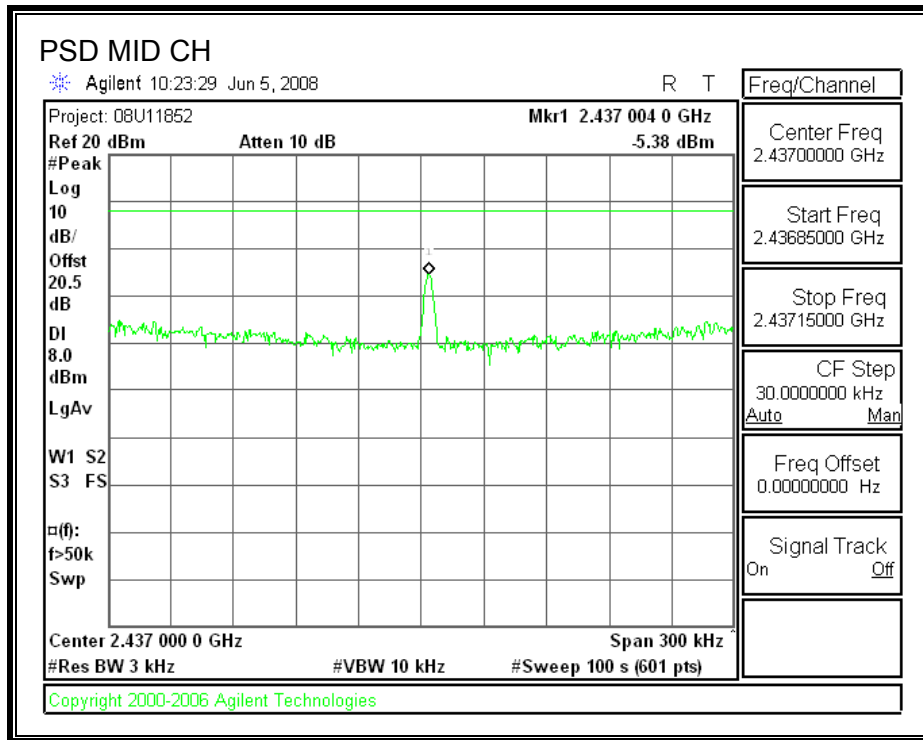
#### RESULTS

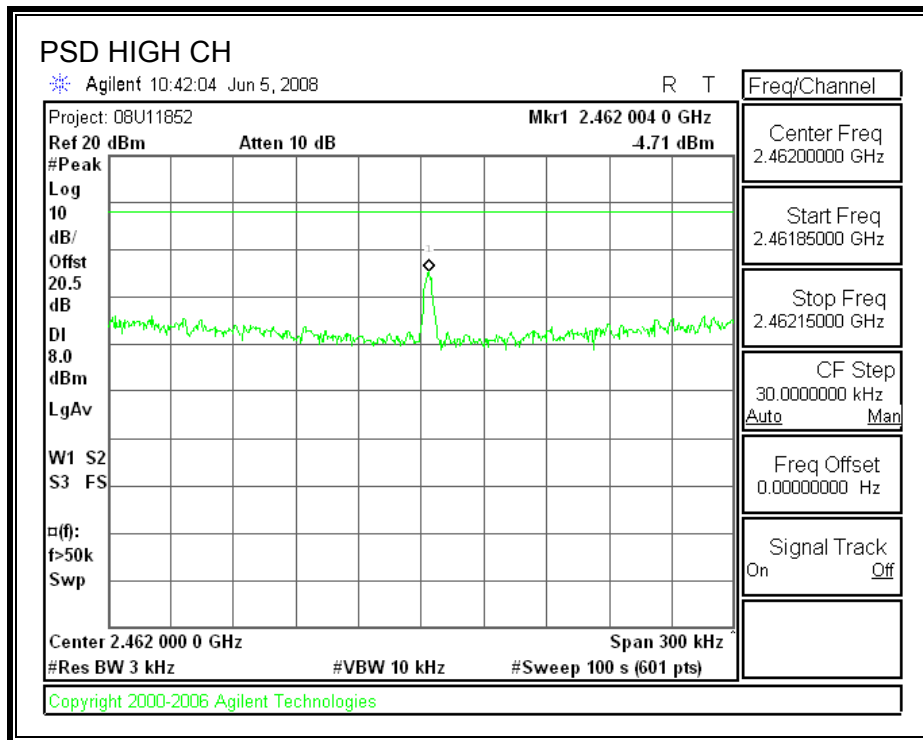
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-8.32	8	-16.32
Middle	2437	-5.38	8	-13.38
High	2462	-4.71	8	-12.71



**POWER SPECTRAL DENSITY**







## 6.1.6. CONDUCTED SPURIOUS EMISSIONS

### LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

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

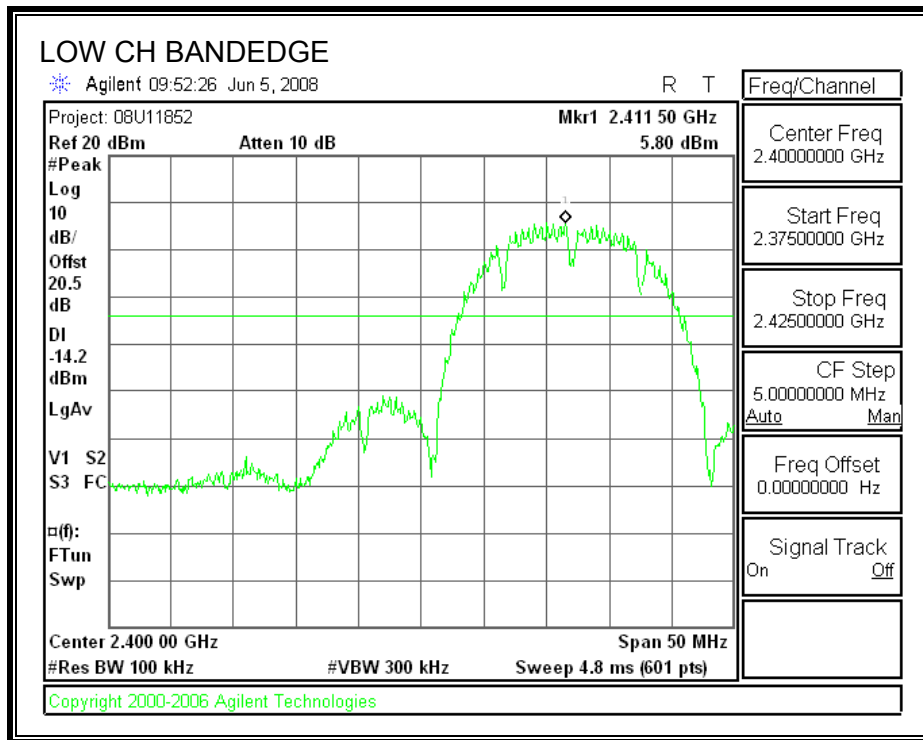
### TEST PROCEDURE

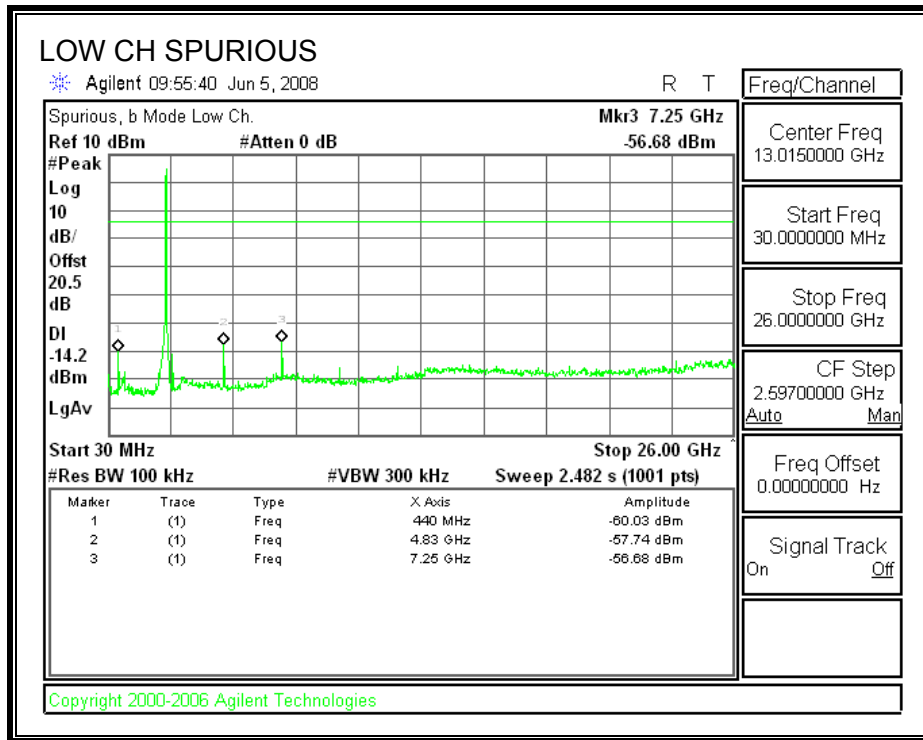
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

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

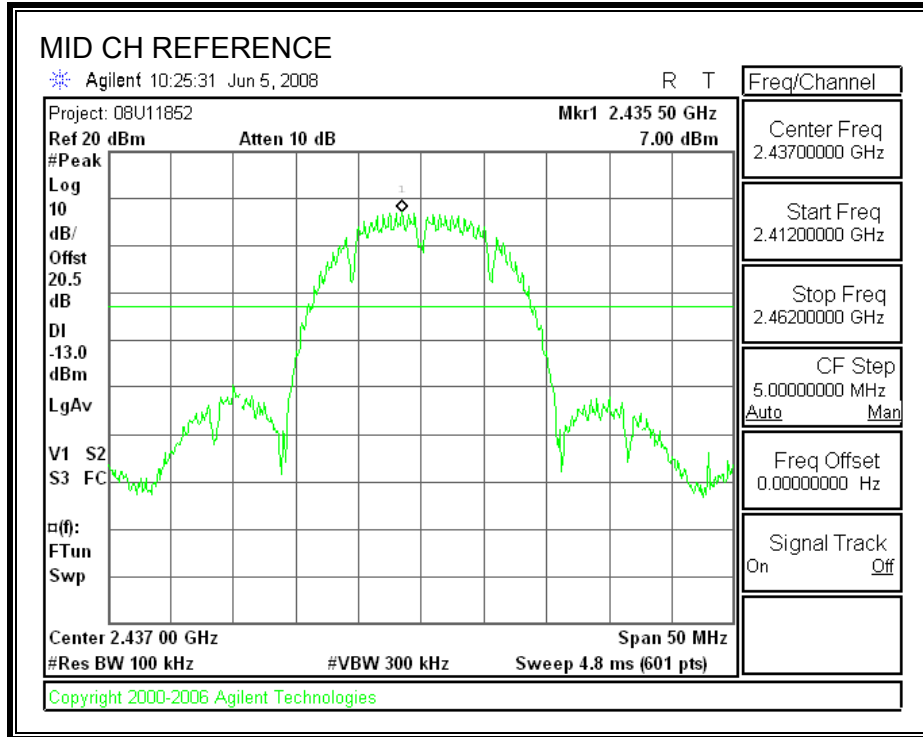
**RESULTS**

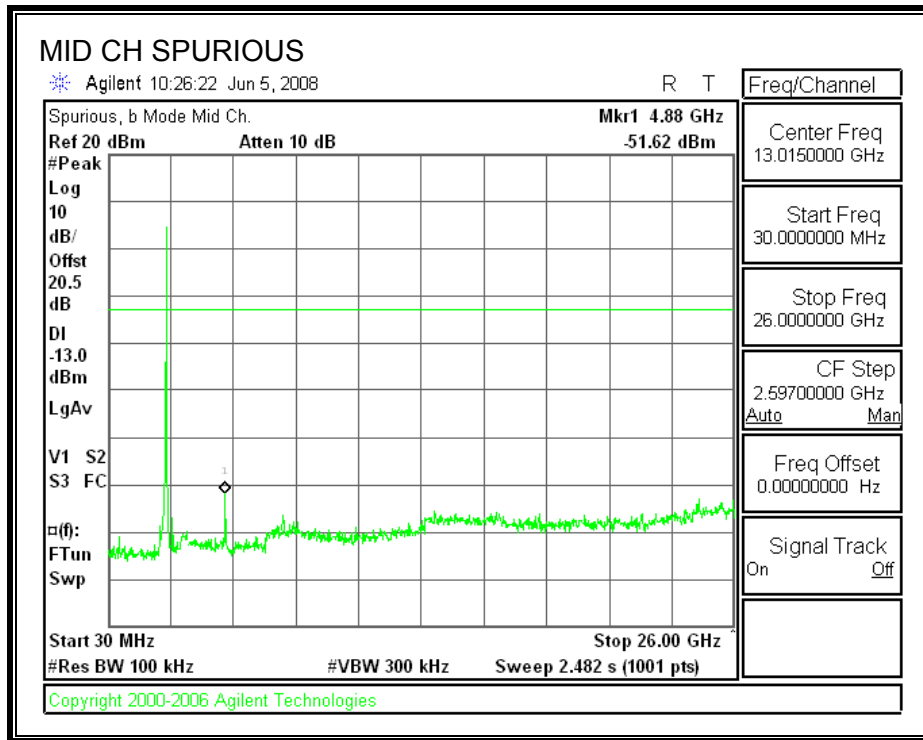
**SPURIOUS EMISSIONS, LOW CHANNEL**





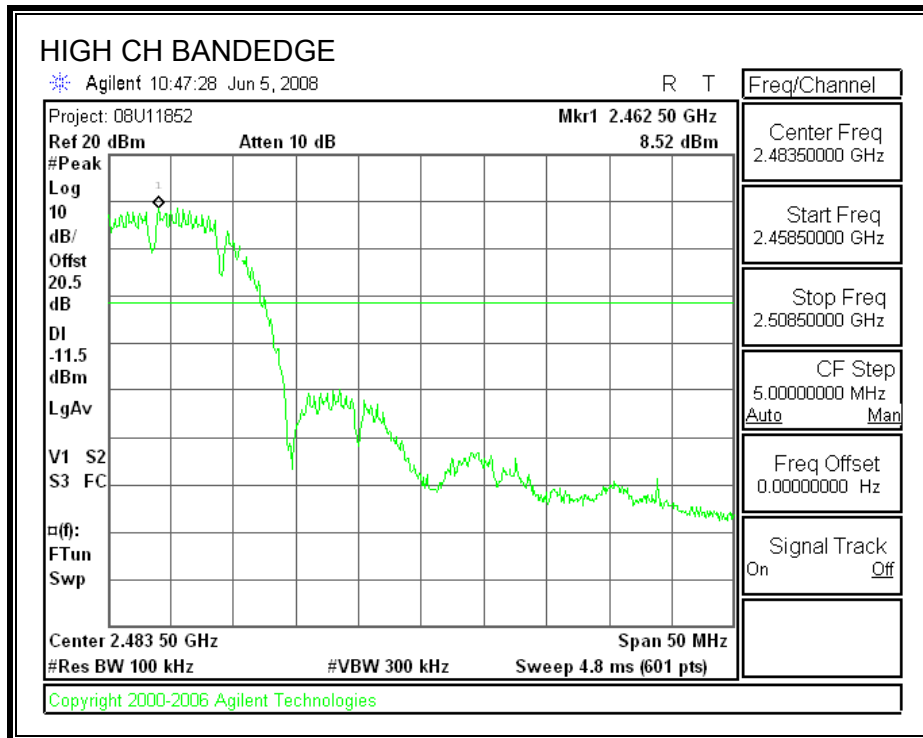
**SPURIOUS EMISSIONS, MID CHANNEL**

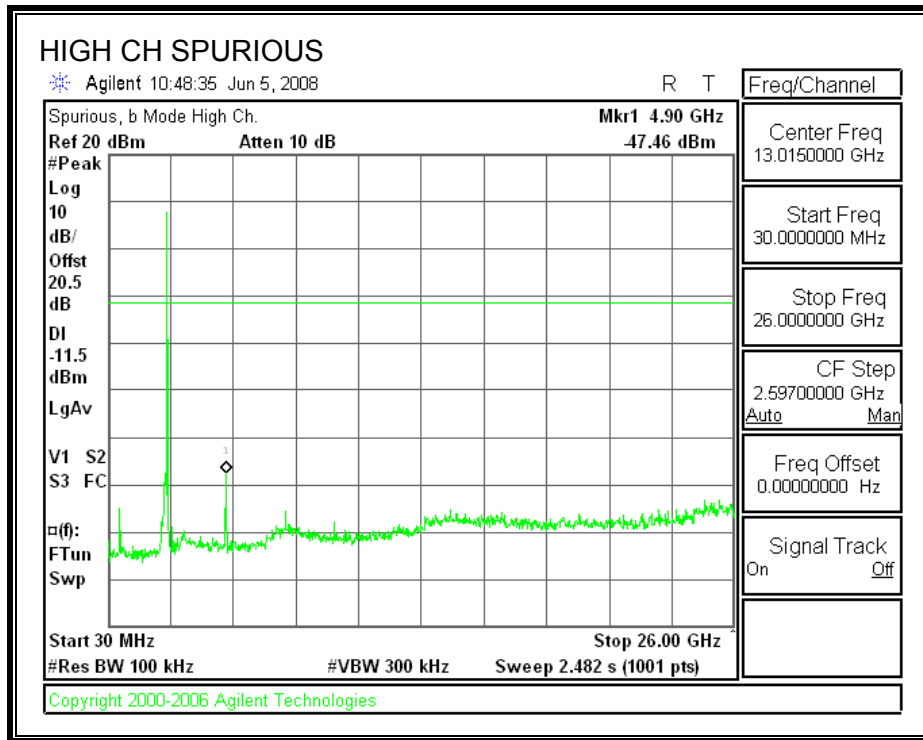






**SPURIOUS EMISSIONS, HIGH CHANNEL**





## 6.2. 802.11g MODE IN THE 2.4 GHz BAND

### 6.2.1. 6 dB BANDWIDTH

#### LIMITS

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

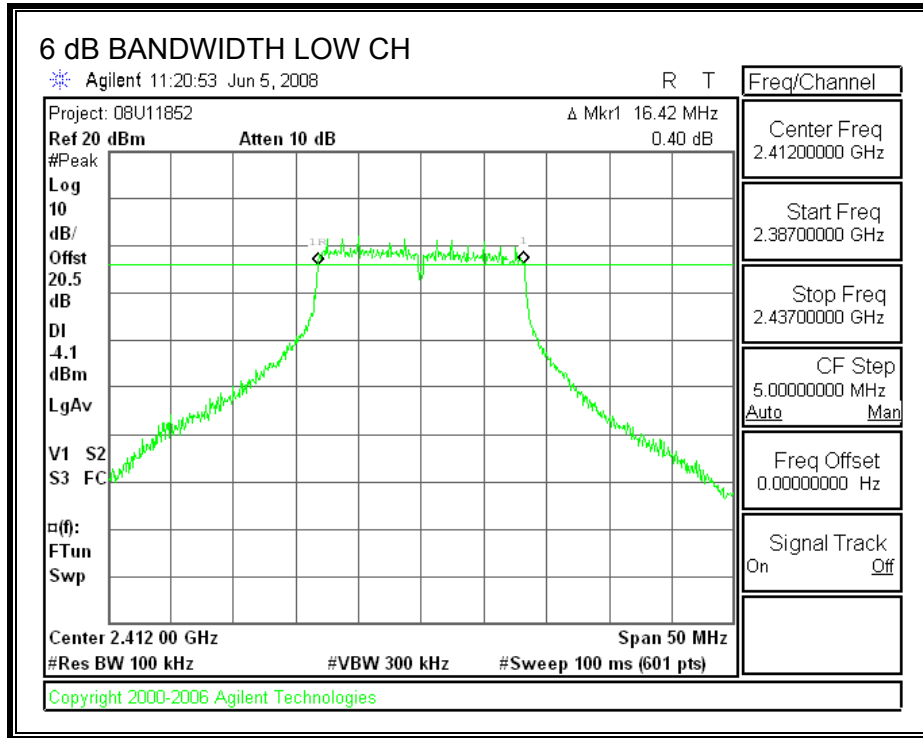
#### TEST PROCEDURE

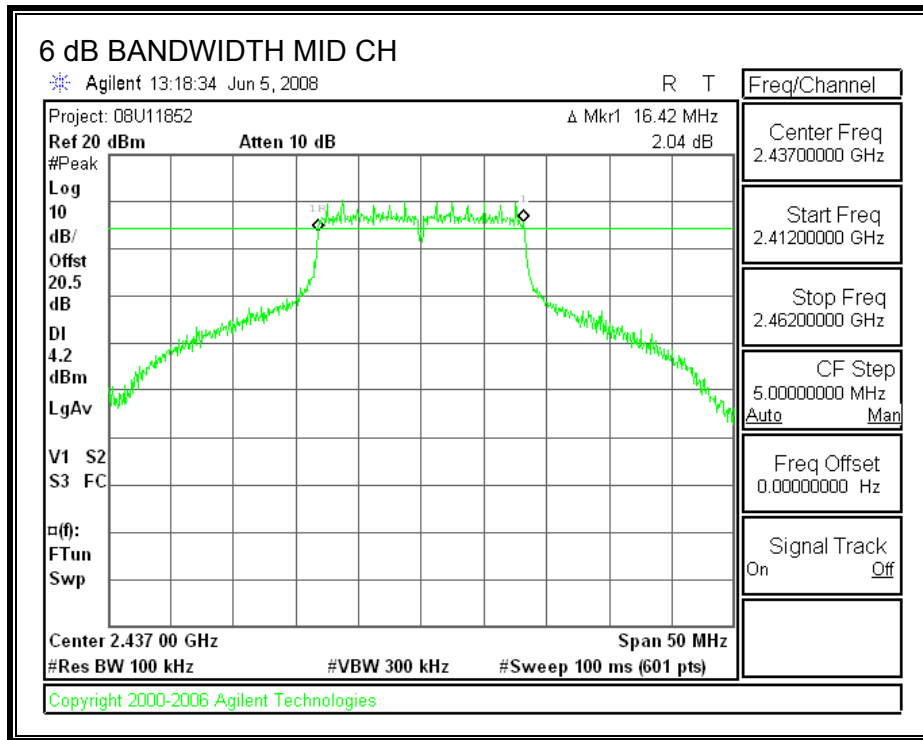
The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

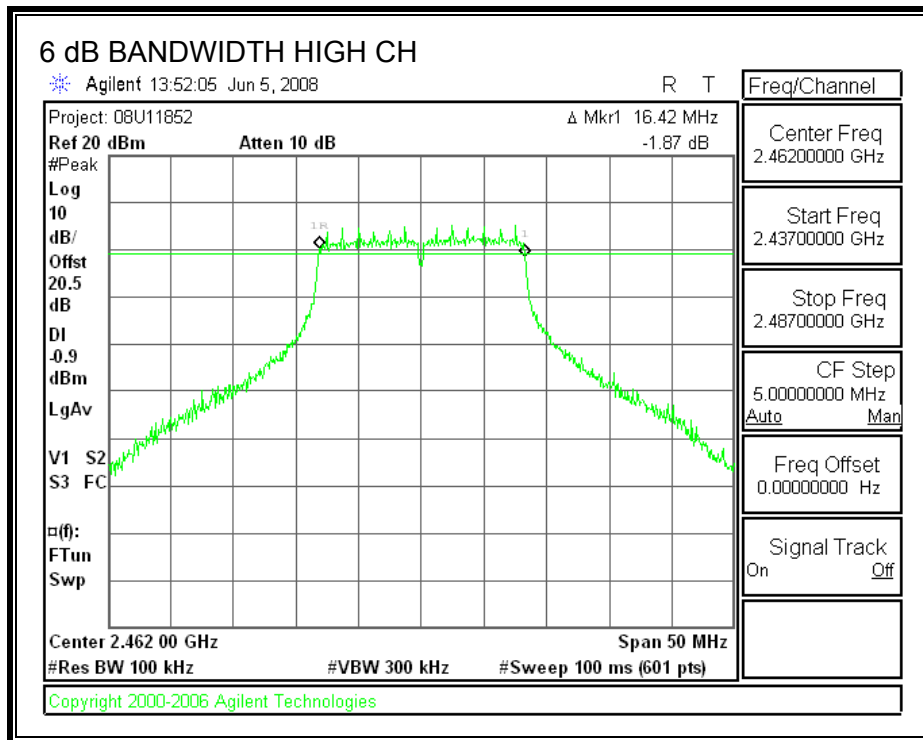
#### RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	16.42	0.5
Middle	2437	16.42	0.5
High	2462	16.42	0.5

**6 dB BANDWIDTH**







### 6.2.2. 99% BANDWIDTH

#### LIMITS

None; for reporting purposes only.

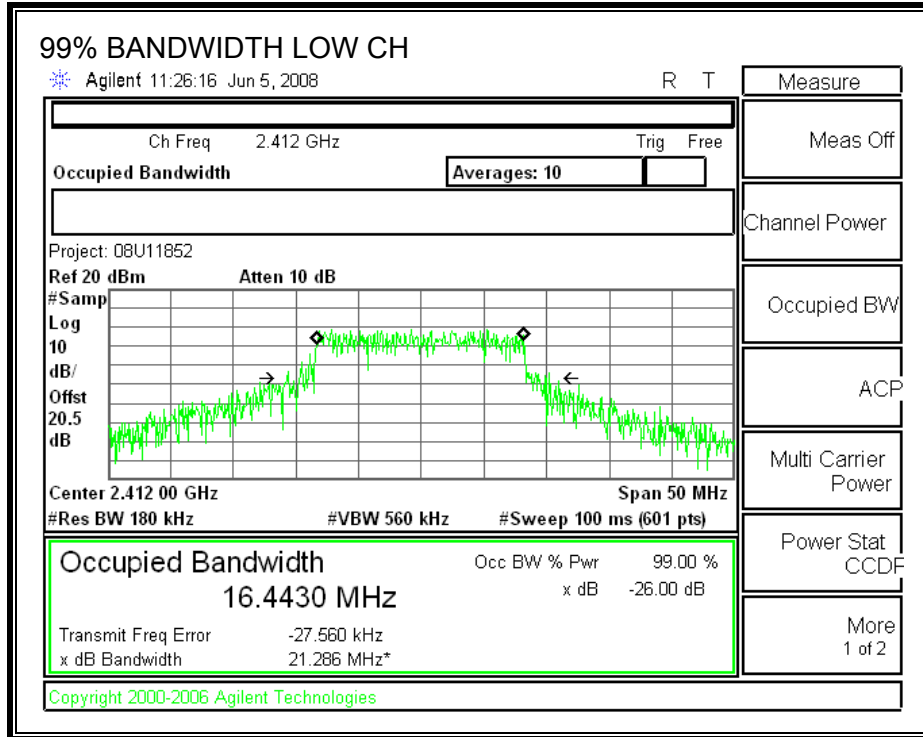
#### TEST PROCEDURE

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.

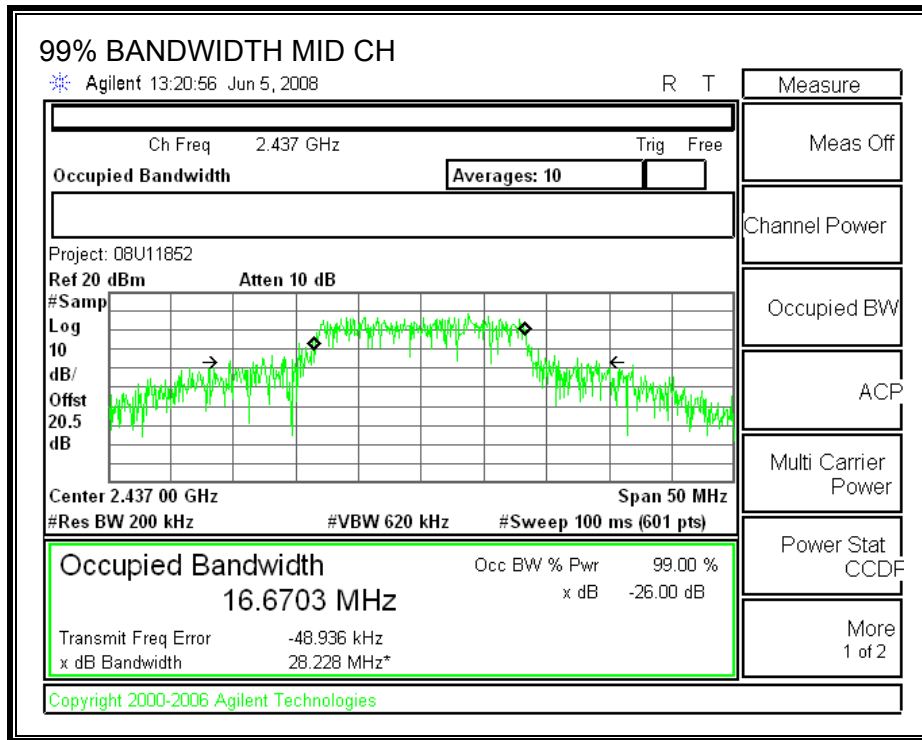
#### RESULTS

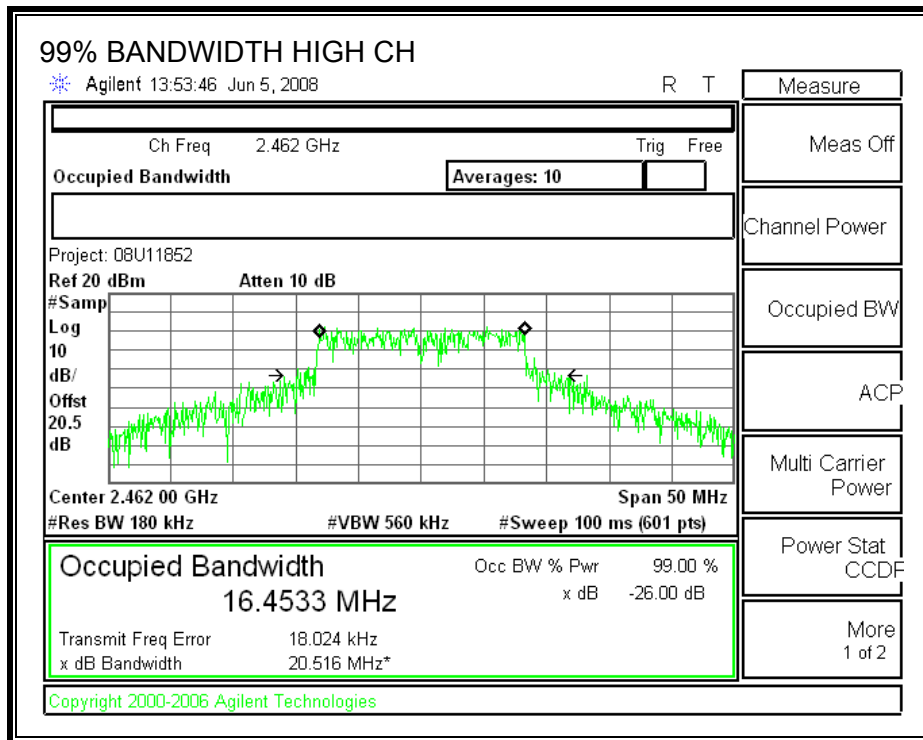
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	16.4430
Middle	2437	16.6703
High	2462	16.4533

**99% BANDWIDTH**









### 6.2.3. OUTPUT POWER

#### LIMITS

FCC §15.247 (b)

IC RSS-210 A8.4

The maximum antenna gain is 10 dBi for other than fixed, point-to-point operations, therefore the limit is 26 dBm.

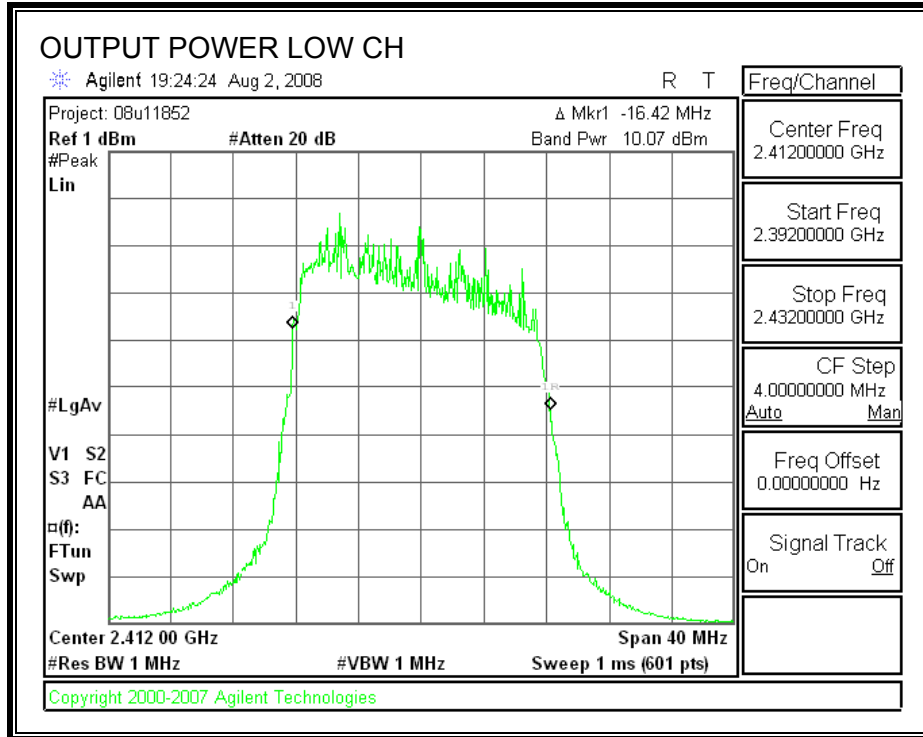
#### TEST PROCEDURE

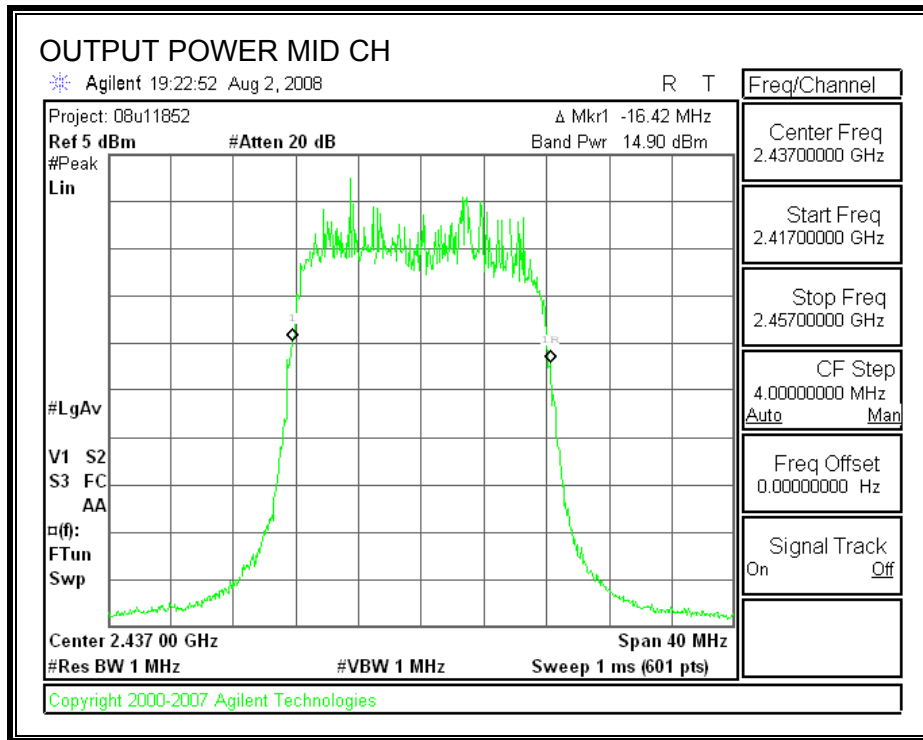
Peak power is measured using the Channel bandwidth Alternative peak output power procedure specified in "TCB Training for Devices covered under Scopes A1 - A4" by Joe Dichoso, May 2003.

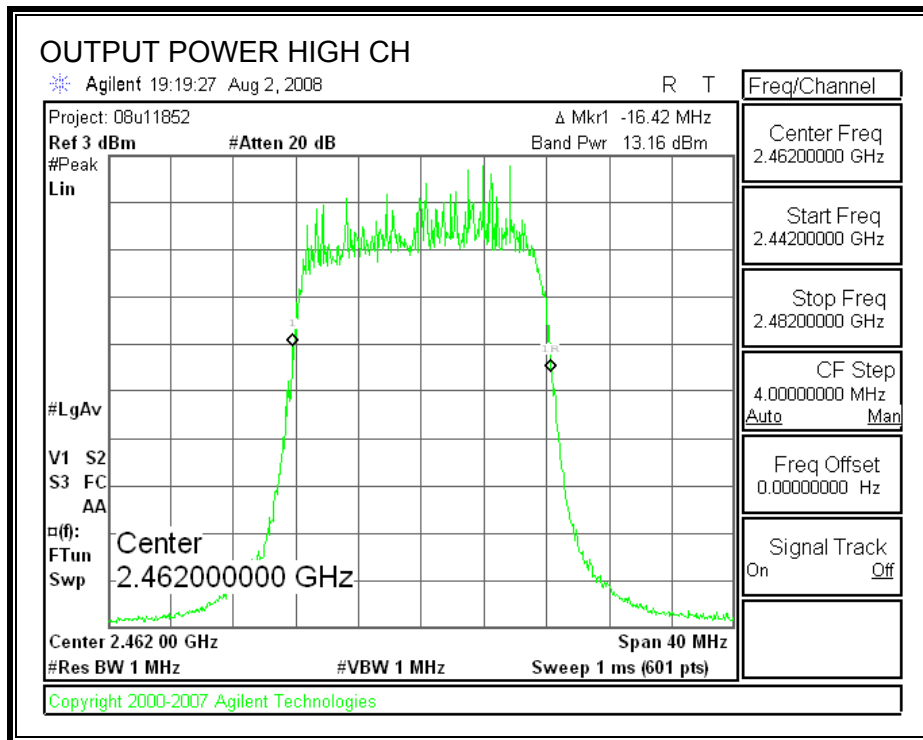
#### RESULTS

Channel	Frequency (MHz)	Spectrum Analyzer Reading (dBm)	Attenuator and Cable Offset (dB)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	10.07	11	21.07	26	-4.93
Middle	2437	14.90	11	25.90	26	-0.10
High	2462	13.16	11	24.16	26	-1.84

**OUTPUT POWER**







## 6.2.4. AVERAGE POWER

### LIMITS

None; for reporting purposes only.

### TEST PROCEDURE

The transmitter output is connected to a power meter.

### RESULTS

The cable assembly insertion loss of 20.5 dB (including 20 dB pad and .5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Power (dBm)
Low	2412	13.15
Middle	2437	19.72
High	2462	16.77

## 6.2.5. POWER SPECTRAL DENSITY

### LIMITS

FCC §15.247 (e)

IC RSS-210 A8.2 (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

### TEST PROCEDURE

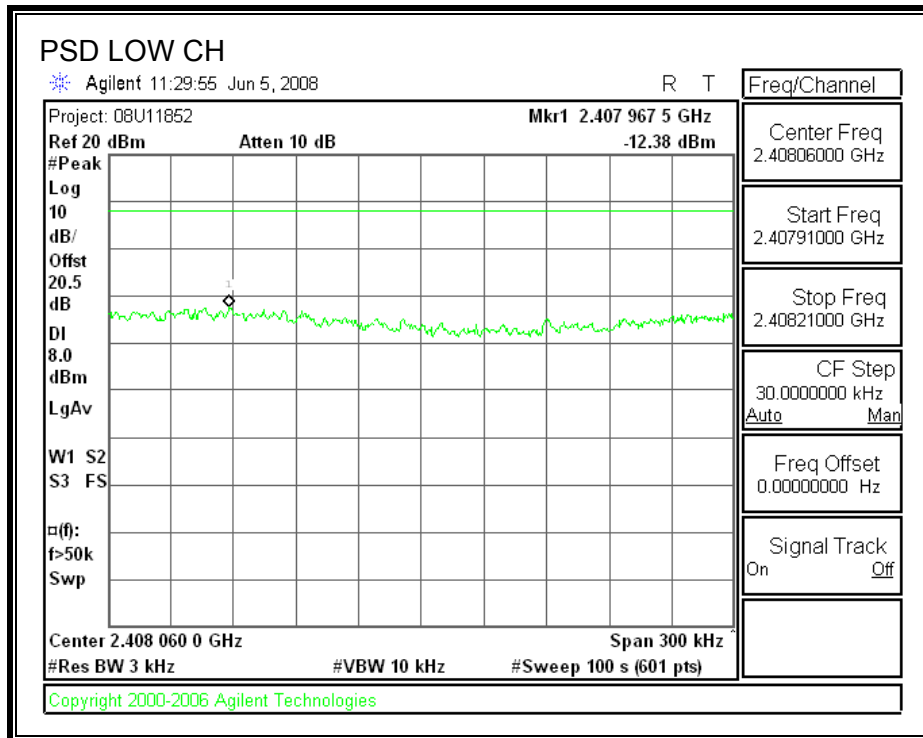
Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005.

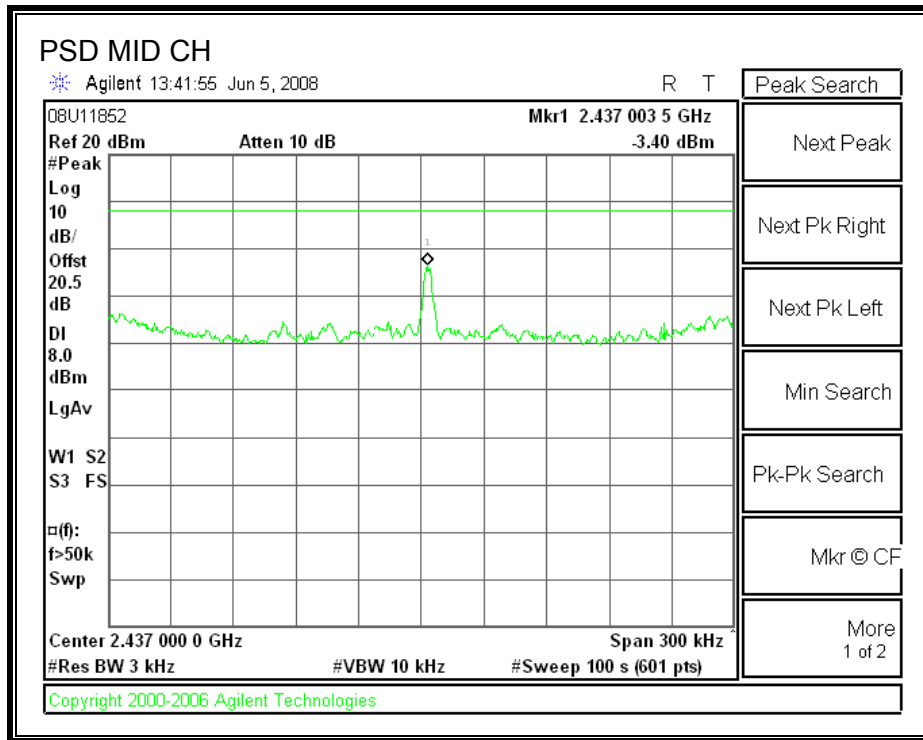
### RESULTS

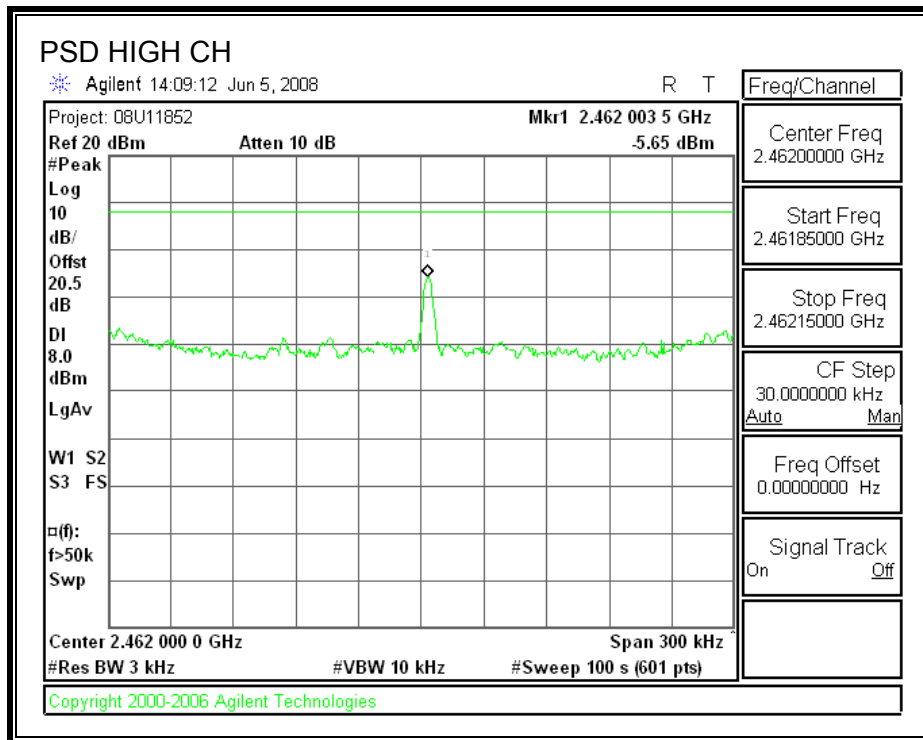
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-12.38	8	-20.38
Middle	2437	-3.40	8	-11.40
High	2462	-5.65	8	-13.65



**POWER SPECTRAL DENSITY**







## 6.2.6. CONDUCTED SPURIOUS EMISSIONS

### LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

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

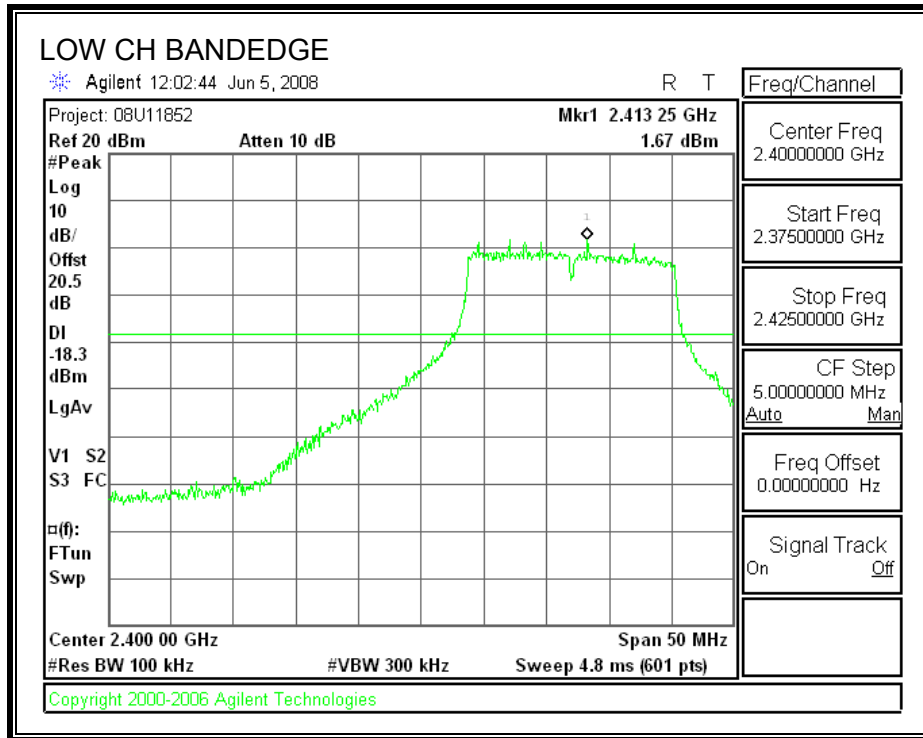
### TEST PROCEDURE

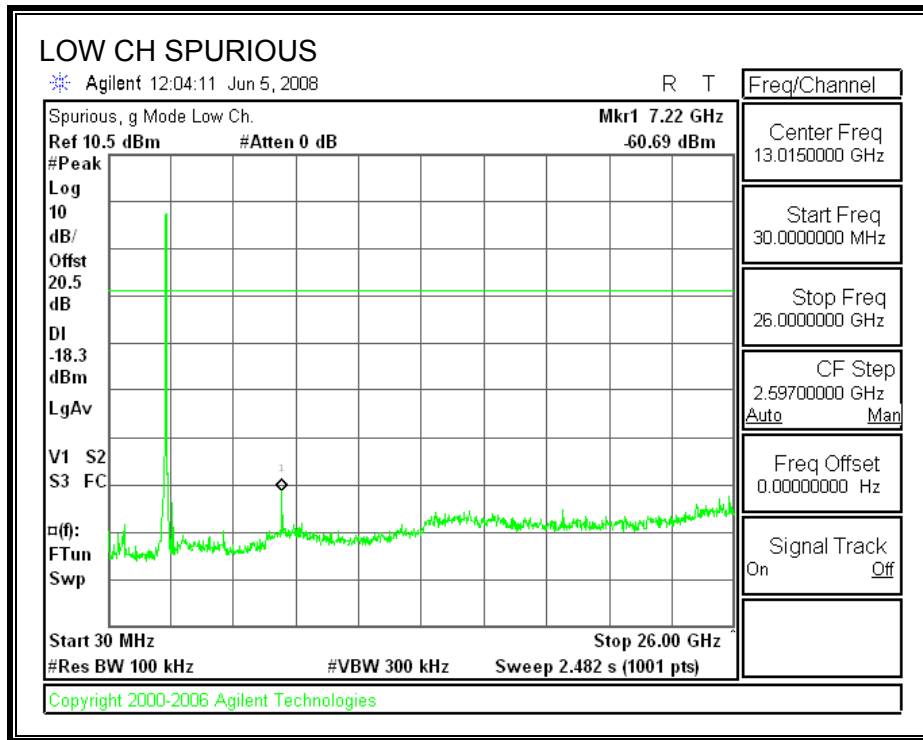
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

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

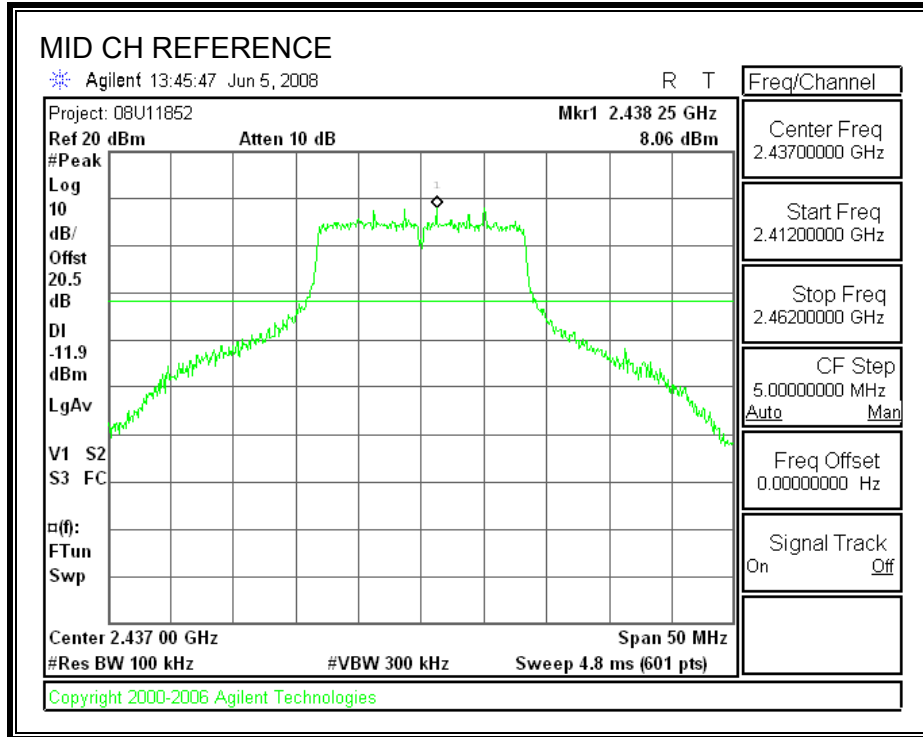
**RESULTS**

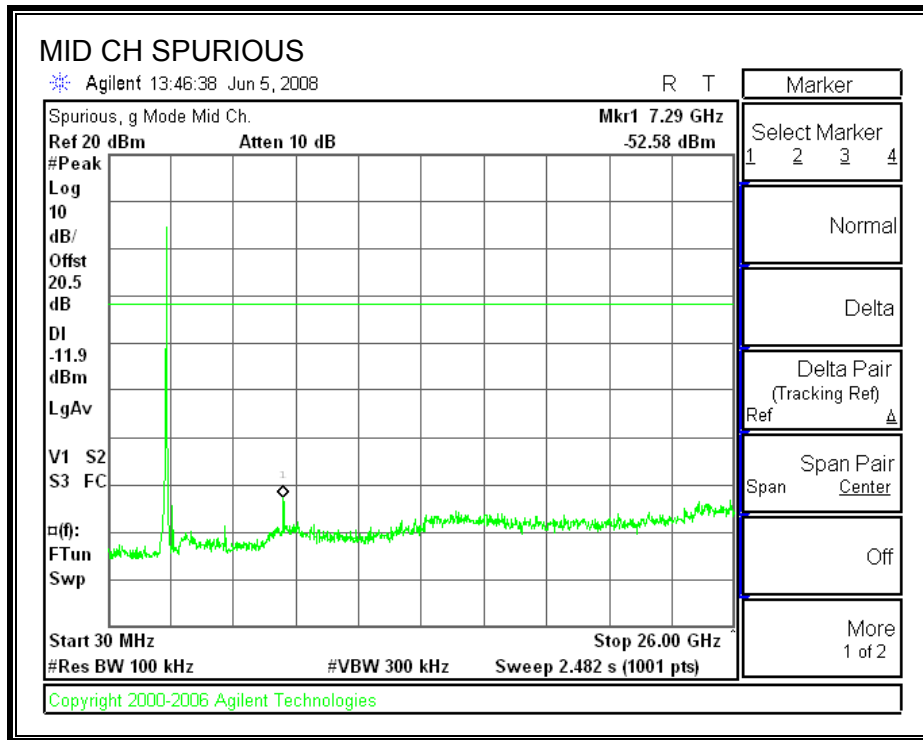
**SPURIOUS EMISSIONS, LOW CHANNEL**





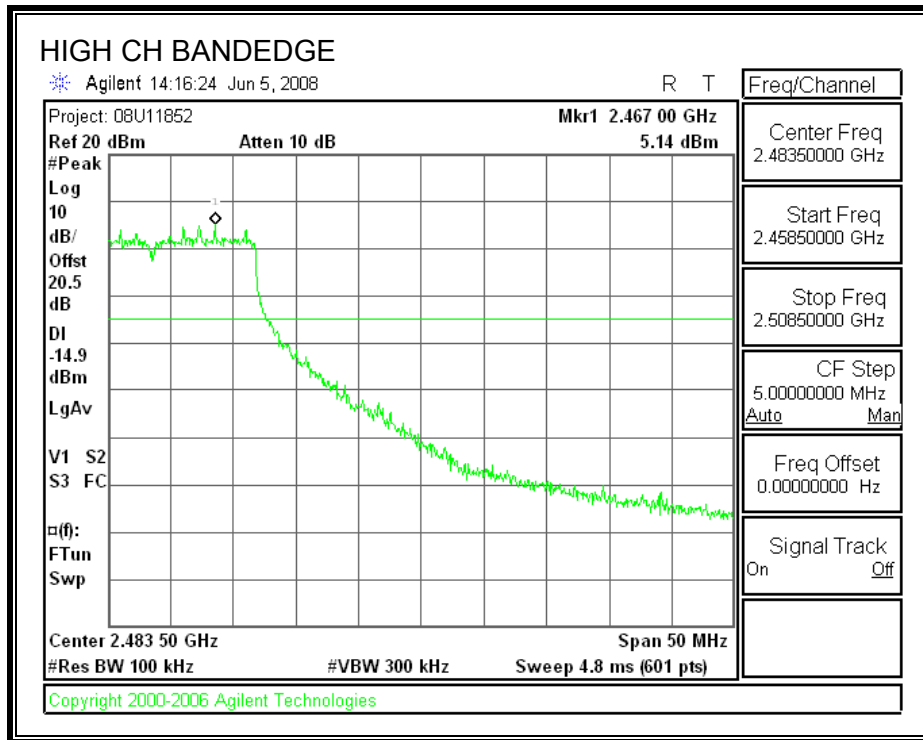
**SPURIOUS EMISSIONS, MID CHANNEL**

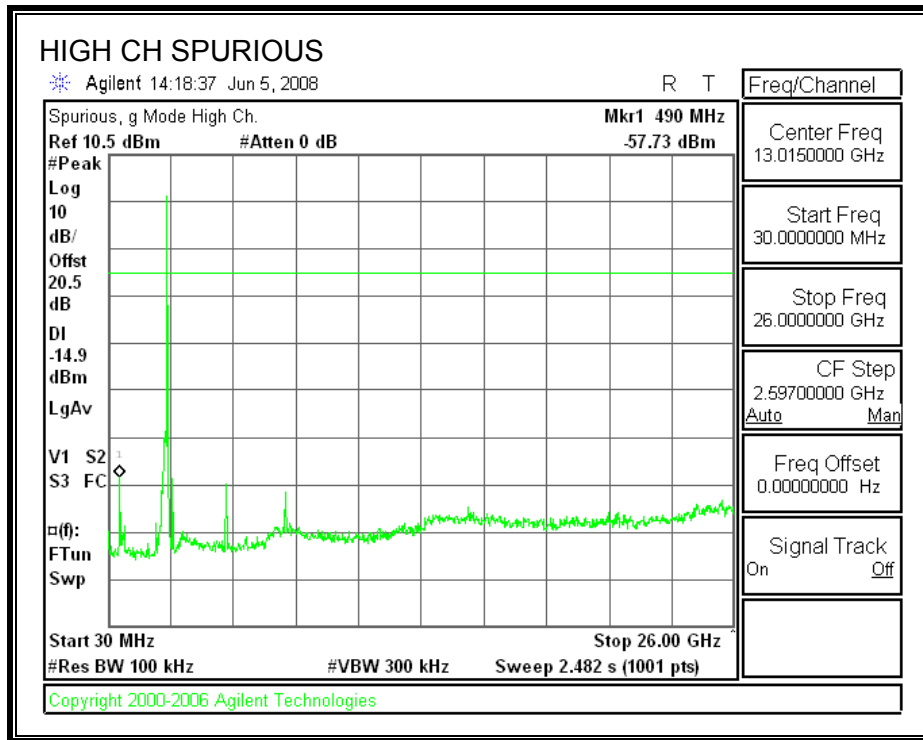






**SPURIOUS EMISSIONS, HIGH CHANNEL**





### 6.3. 802.11a MODE IN THE 5.8 GHz BAND

#### 6.3.1. 6 dB BANDWIDTH

##### LIMITS

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

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

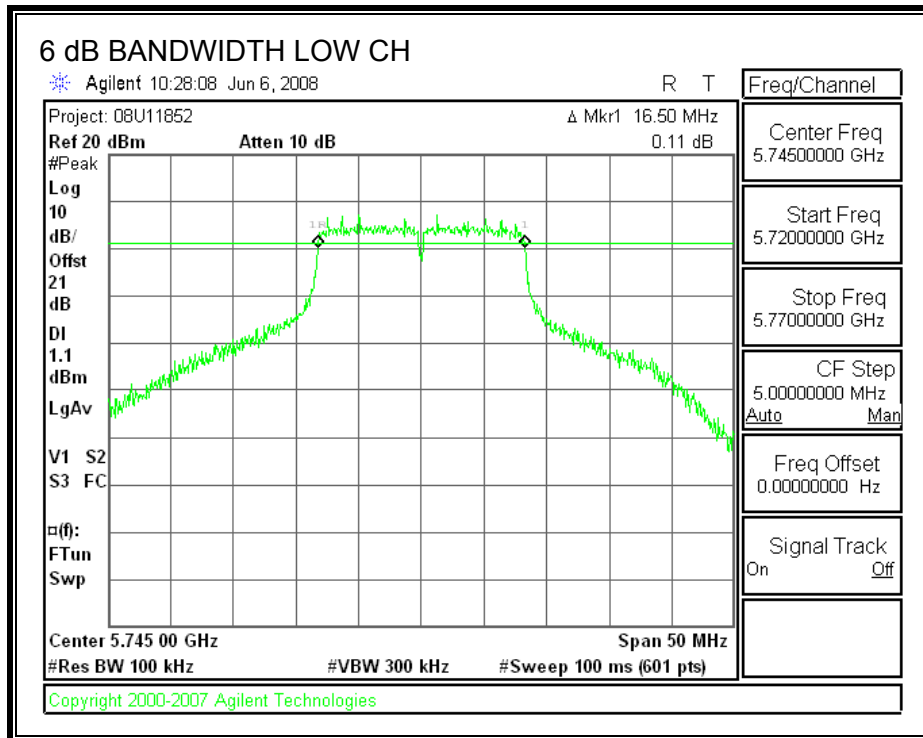
#### 802.11a, 20MHz, Mode

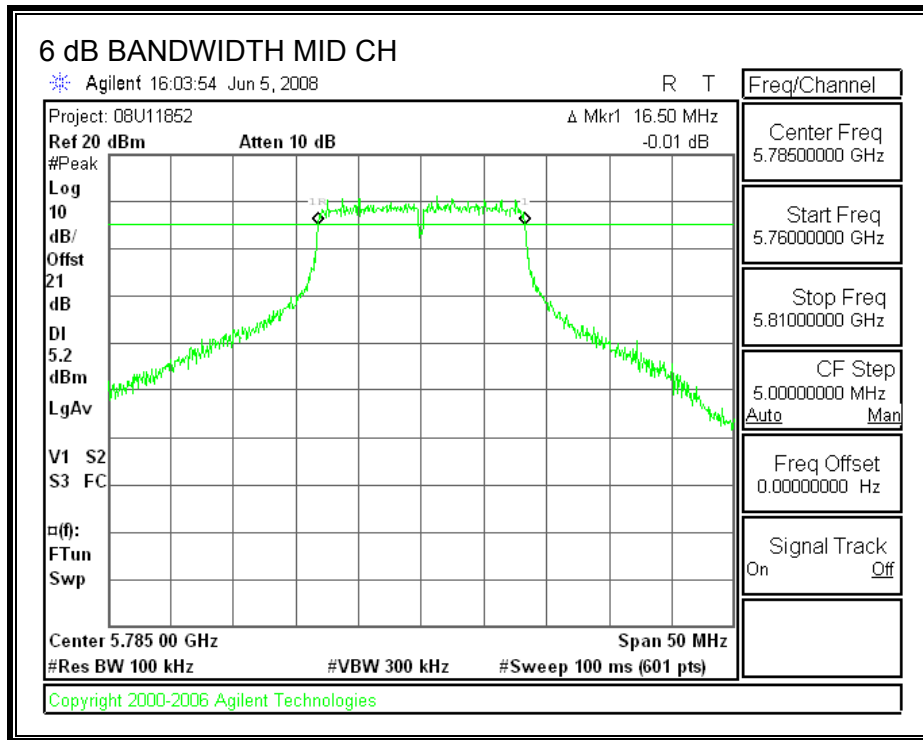
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5745	16.5	0.5
Middle	5785	16.5	0.5
High	5825	16.5	0.5

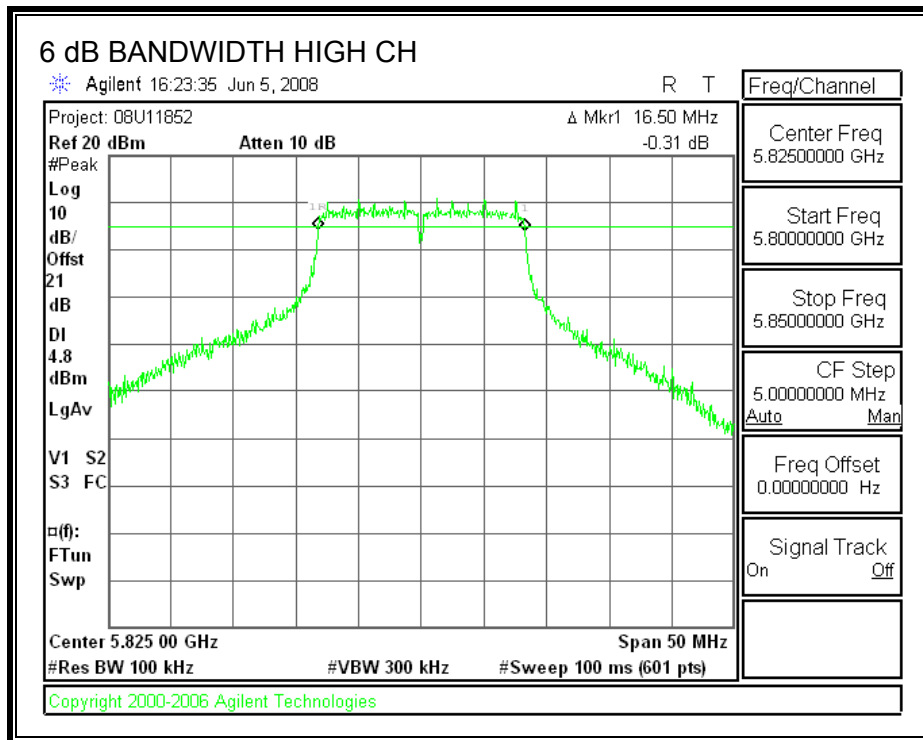
#### 802.11a, 40MHz, Mode

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5765	32.67	0.5
High	5800	32.75	0.5

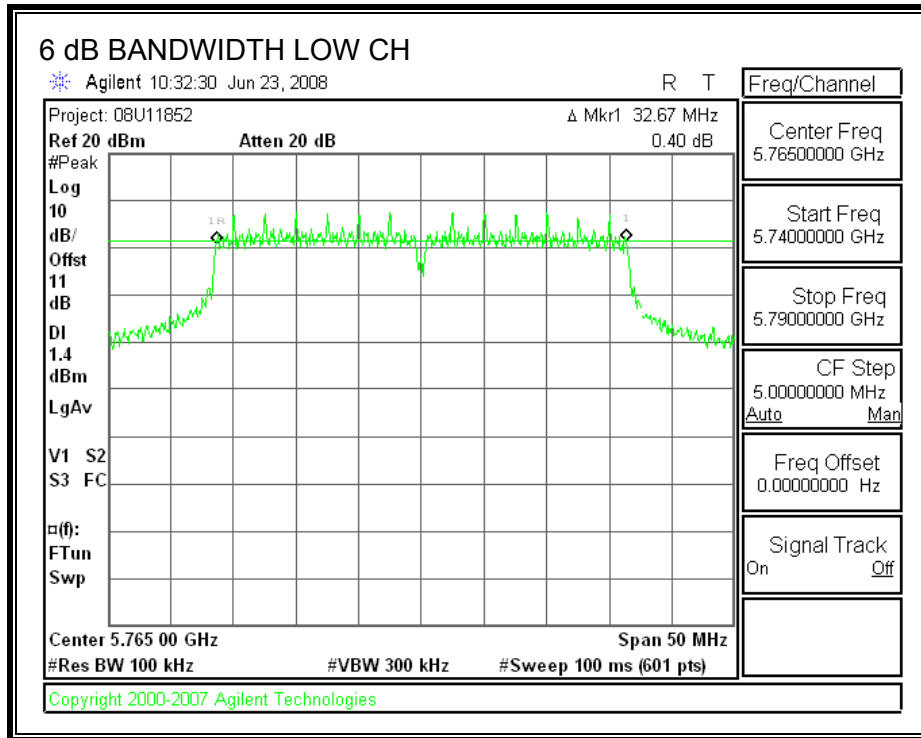
**802.11a, 20MHz, Mode, 6 dB BANDWIDTH**

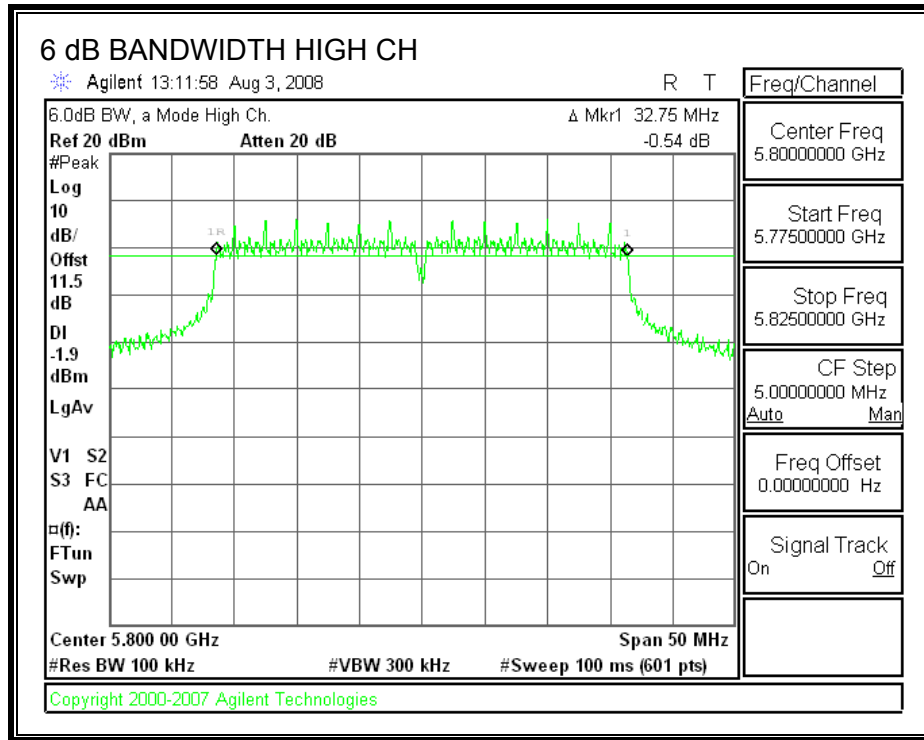






**802.11a, 40MHz, Mode, 6 dB BANDWIDTH**







### 6.3.2. 99% BANDWIDTH

#### LIMITS

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

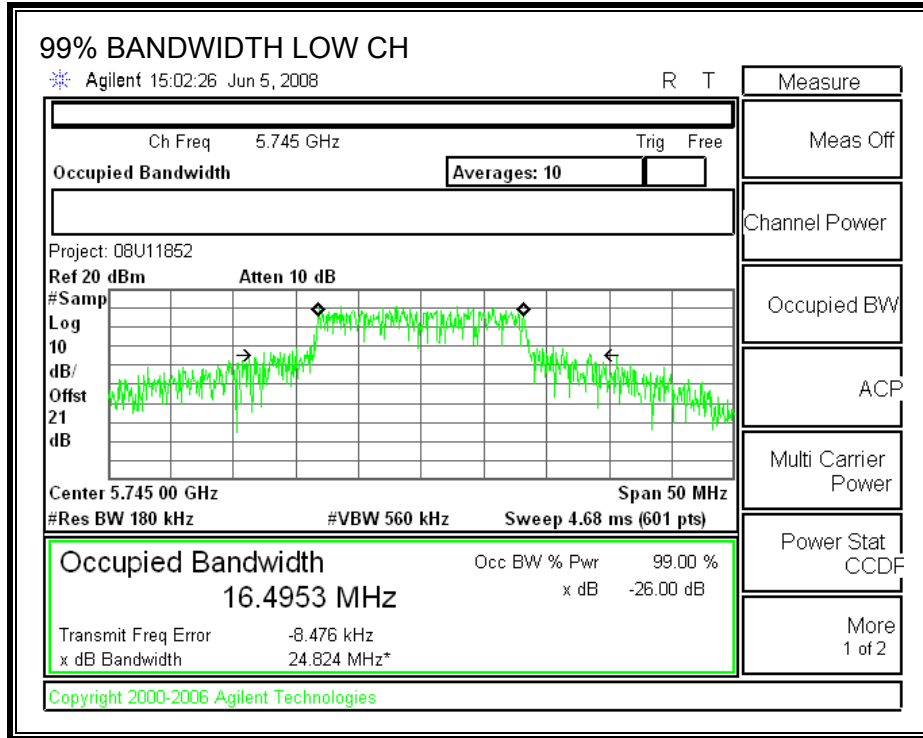
##### 802.11 a, 20MHz, Mode

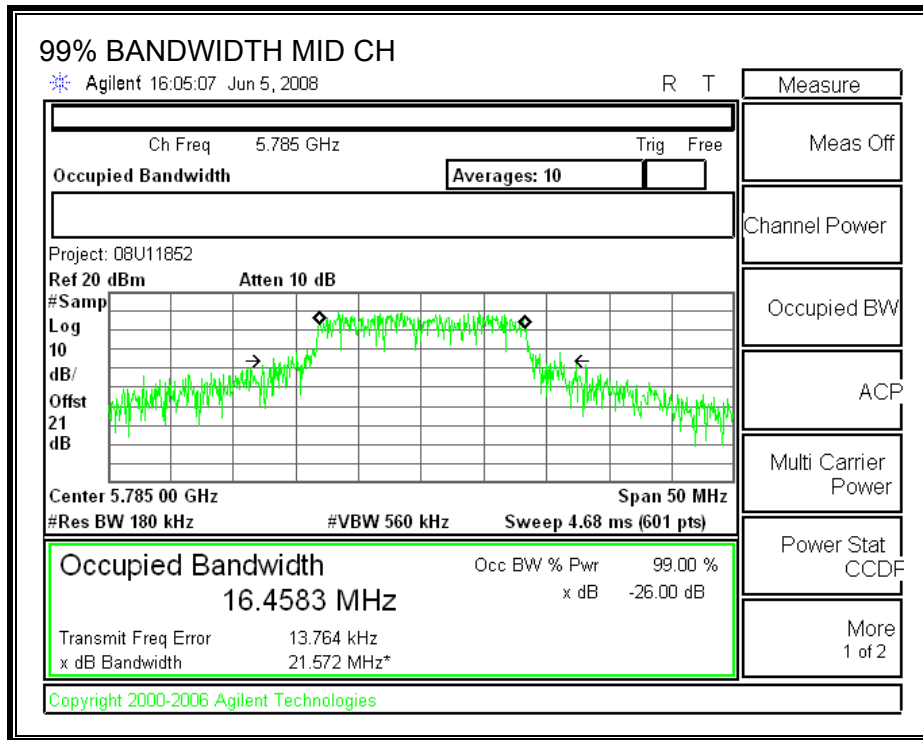
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5745	16.4953
Mid	5785	16.4583
High	5825	16.5472

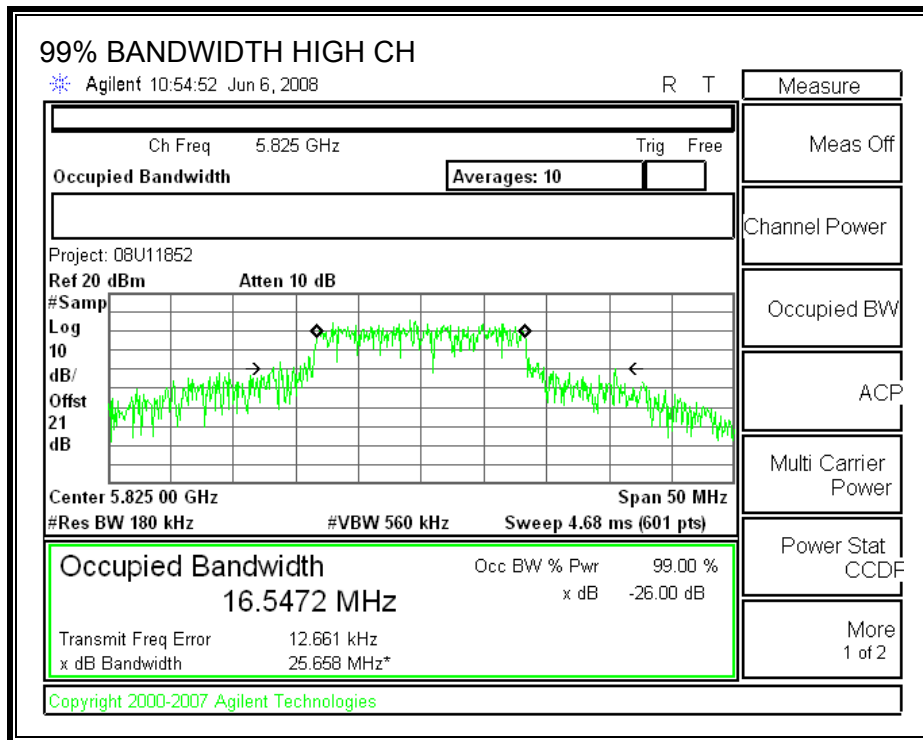
##### 802.11 a, 40MHz, Mode

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5765	32.7731
High	5780	32.9129

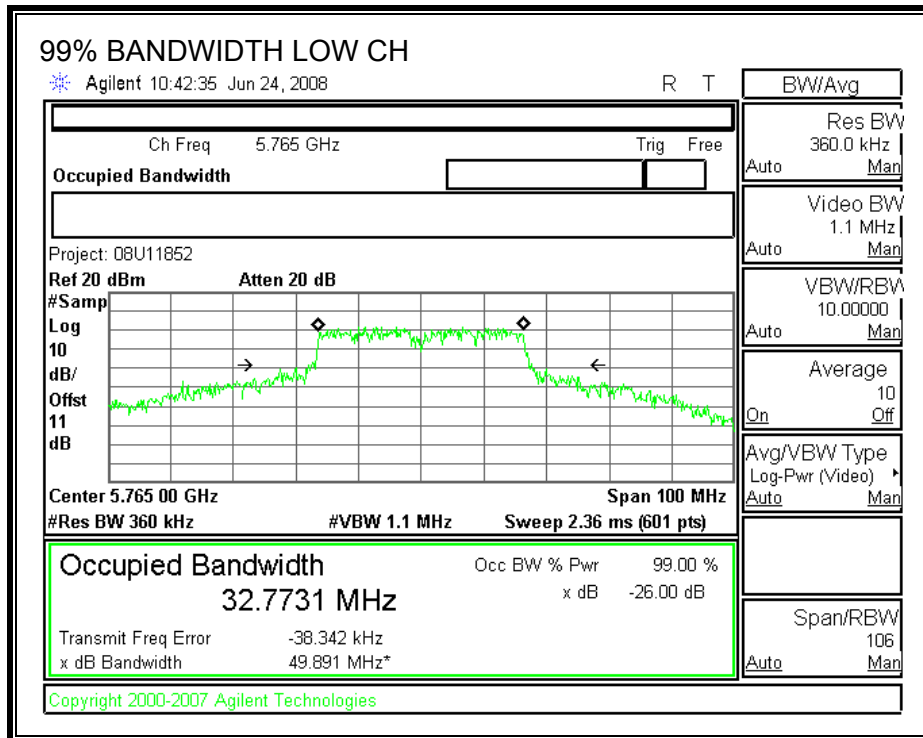
**802.11a, 20MHz Mode, 99% BANDWIDTH**

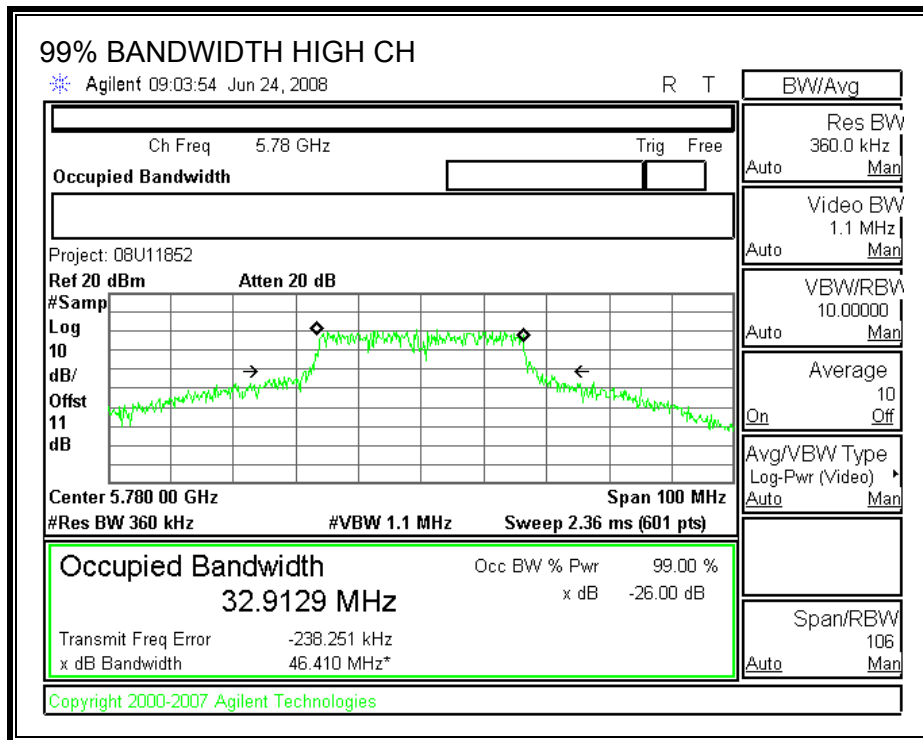






**802.11a, 40MHz Mode, 99% BANDWIDTH**





### 6.3.3. OUTPUT POWER

#### LIMITS

FCC §15.247 (b)

IC RSS-210 A8.4

The Panel antenna gain is 30 dBi, this antenna can be used for both P2P and PMP applications; when it is used for P2P applications the limit is **30 dBm**, and when it is used for PMP applications the limit is **6 dBm**.

The Omni antenna gain is 10 dBi for PMP applications; therefore, the limit is **26 dBm**.

#### TEST PROCEDURE

Peak power is measured using the Channel bandwidth Alternative peak output power procedure specified in "TCB Training for Devices covered under Scopes A1 - A4" by Joe Dichoso, May 2003.

**RESULTS**

**For Panel Antenna (P2P):**

**20 MHz BW**

Channel	Frequency (MHz)	Spectrum Analyzer Reading (dBm)	Attenuator and Cable Offset (dB)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	5745	17.38	11.5	28.88	30	-1.12
Middle	5785	17.74	11.5	29.24	30	-0.76
High	5825	18.23	11.5	29.73	30	-0.27

**40 MHz BW**

Channel	Frequency (MHz)	Spectrum Analyzer Reading (dBm)	Attenuator and Cable Offset (dB)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	5765	15.67	11.5	27.17	30	-2.83
High	5800	16.02	11.5	27.52	30	-2.48



**For Panel Antenna (PMP):**

**20 MHz BW**

Channel	Frequency (MHz)	Spectrum Analyzer Reading (dBm)	Attenuator and Cable Offset (dB)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	5745	-5.93	11.5	5.57	6	-0.43
Middle	5785	-5.95	11.5	5.55	6	-0.45
High	5825	-5.76	11.5	5.74	6	-0.26

**40 MHz BW**

Channel	Frequency (MHz)	Spectrum Analyzer Reading (dBm)	Attenuator and Cable Offset (dB)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	5765	-5.86	11.5	5.64	6	-0.36
High	5800	-6.01	11.5	5.49	6	-0.51

**For Omni Antenna:**

**20 MHz BW**

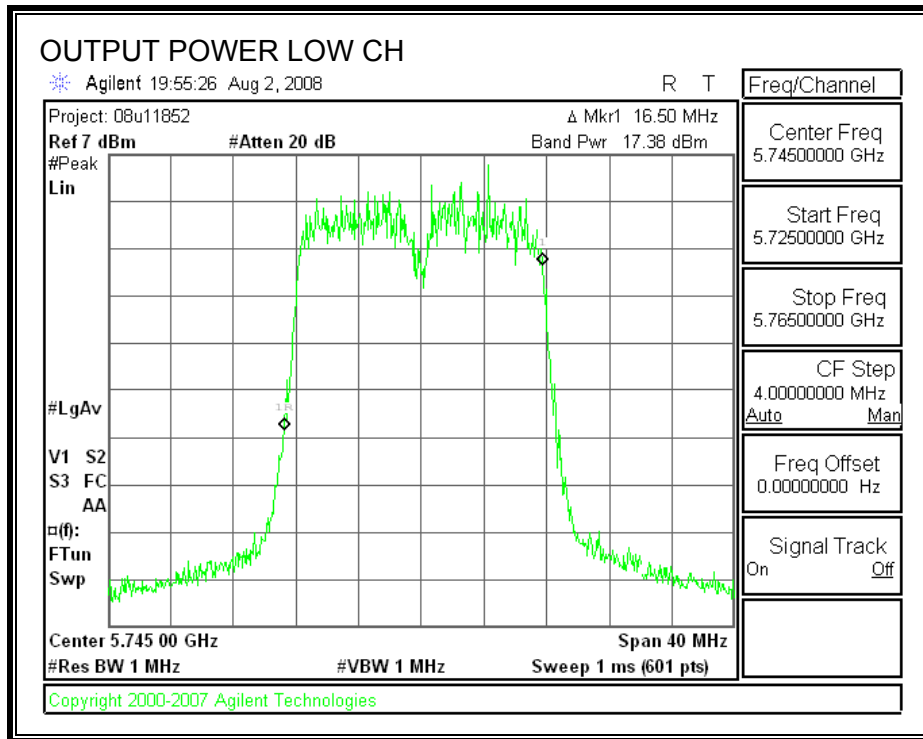
Channel	Frequency (MHz)	Spectrum Analyzer Reading (dBm)	Attenuator and Cable Offset (dB)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	5745	13.73	11.5	25.23	26	-0.77
Middle	5785	13.65	11.5	25.15	26	-0.85
High	5825	14.26	11.5	25.76	26	-0.24

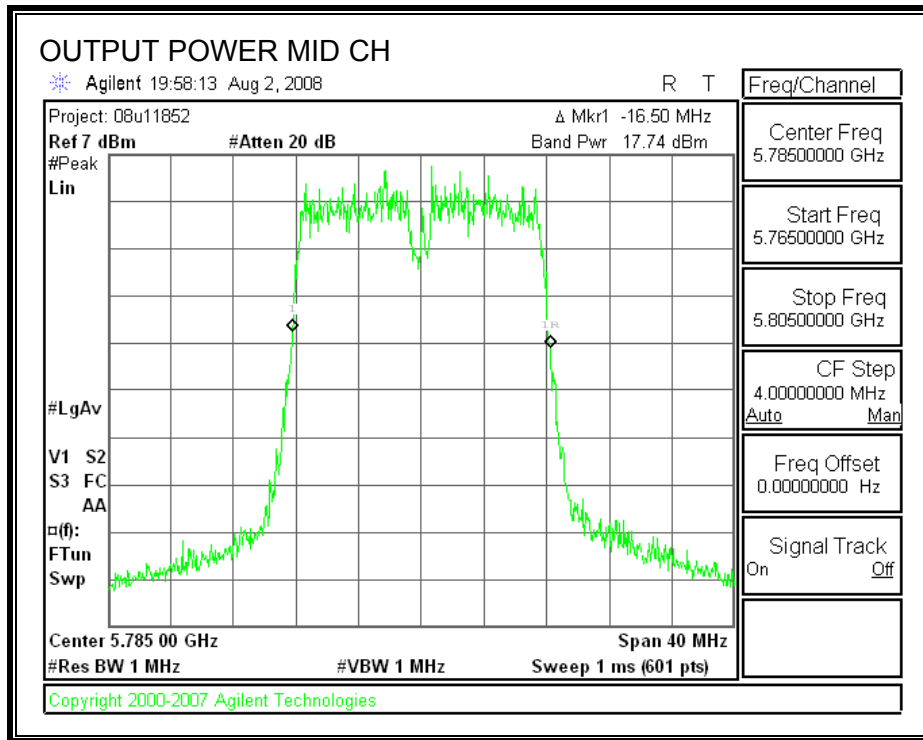
**40 MHz BW**

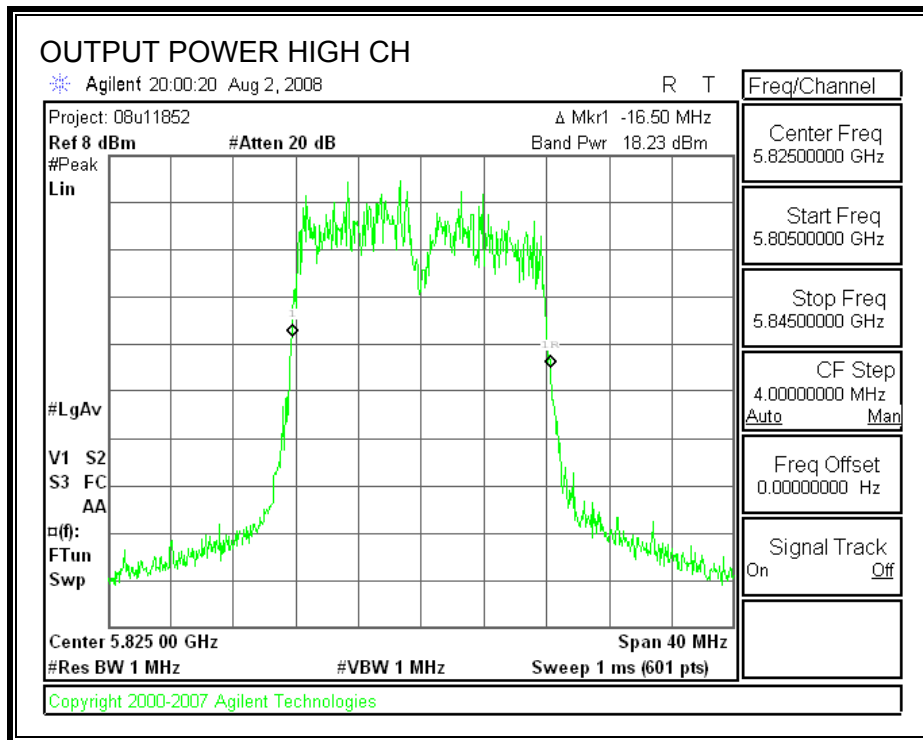
Channel	Frequency (MHz)	Spectrum Analyzer Reading (dBm)	Attenuator and Cable Offset (dB)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	5765	13.90	11.5	25.40	26	-0.60
High	5800	14.24	11.5	25.74	26	-0.26

**For Panel Antenna P2P:**

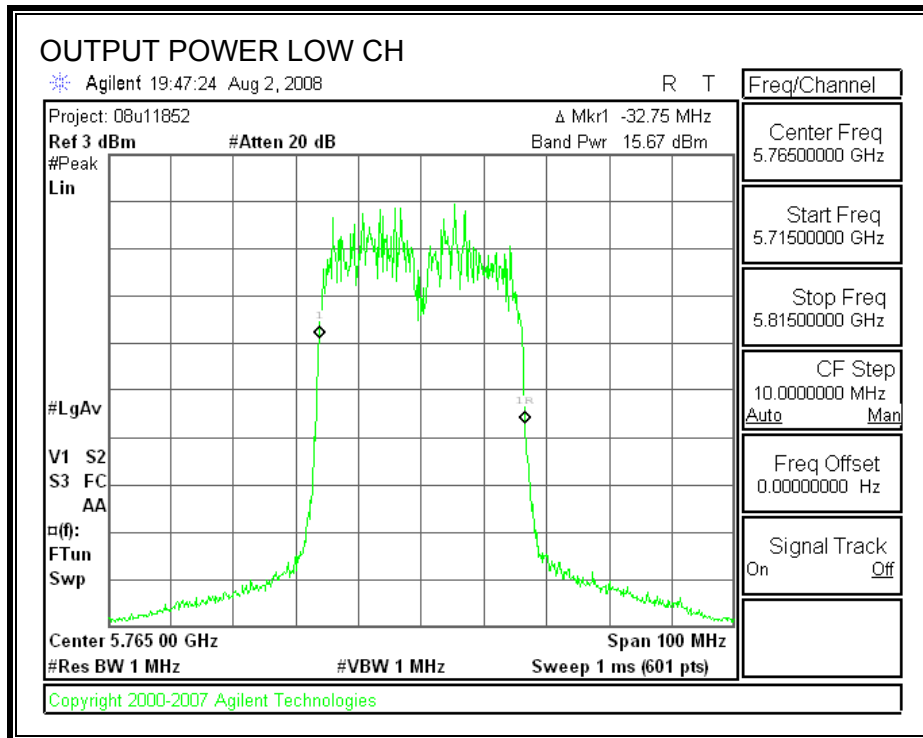
**802.11a, 20MHz, Mode, OUTPUT POWER**

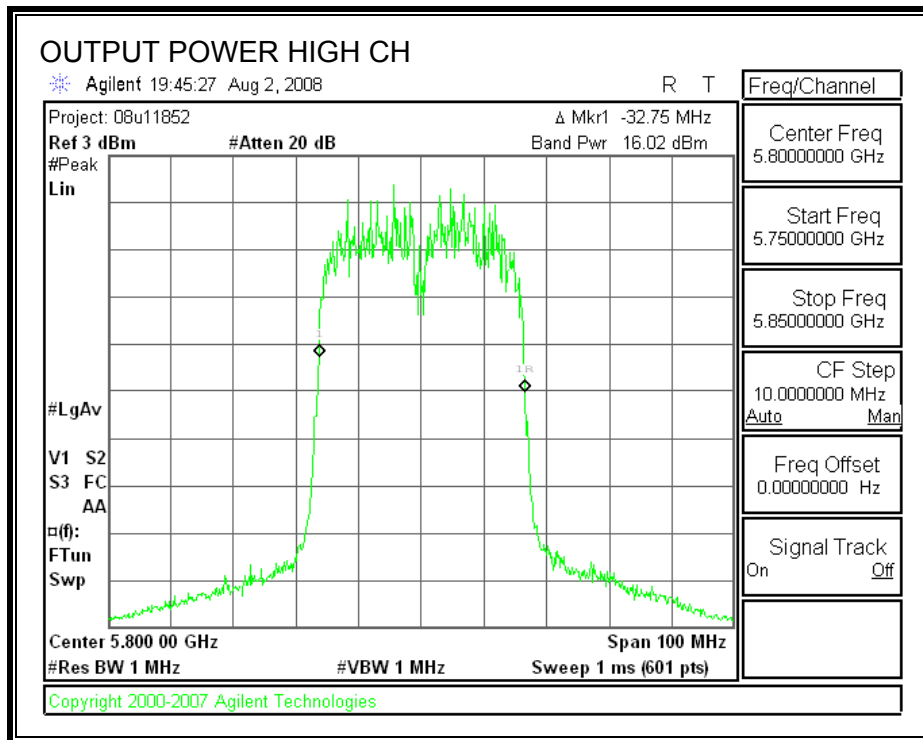






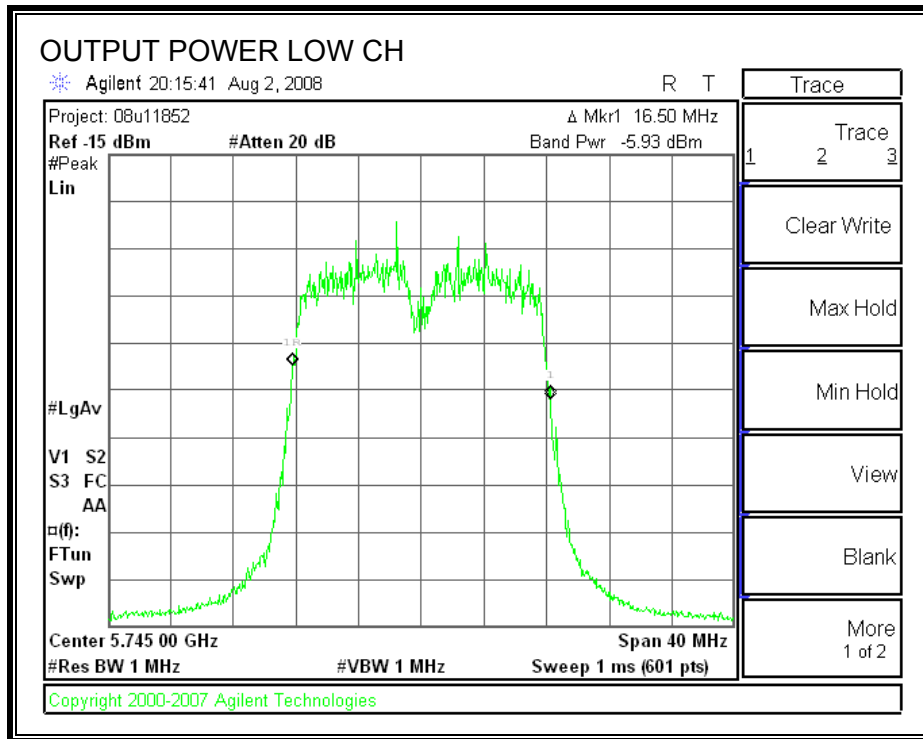
**802.11a, 40MHz, Mode, OUTPUT POWER**



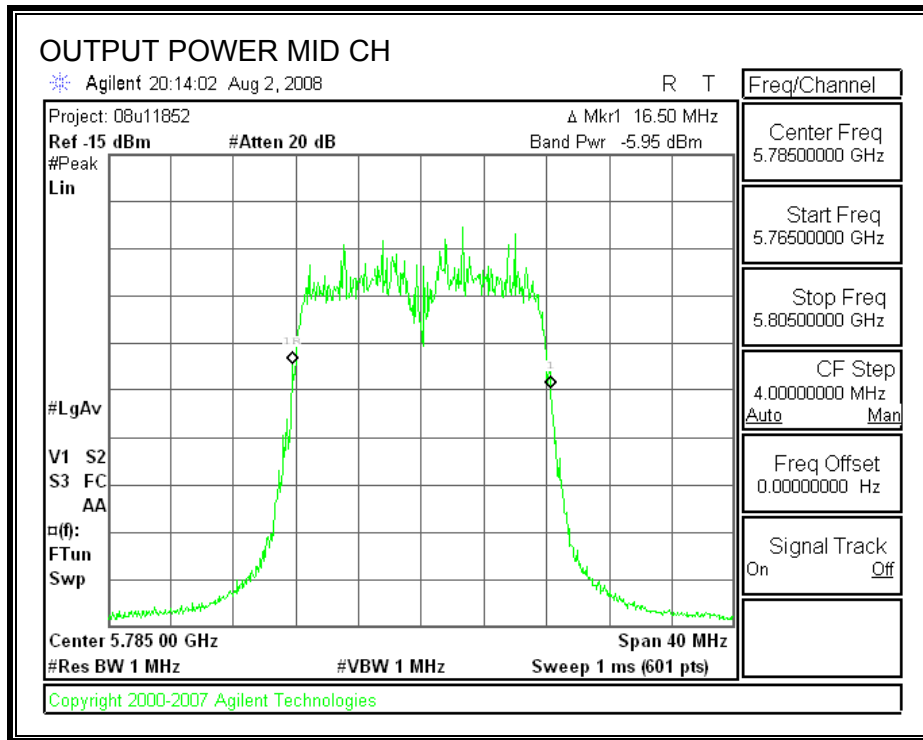


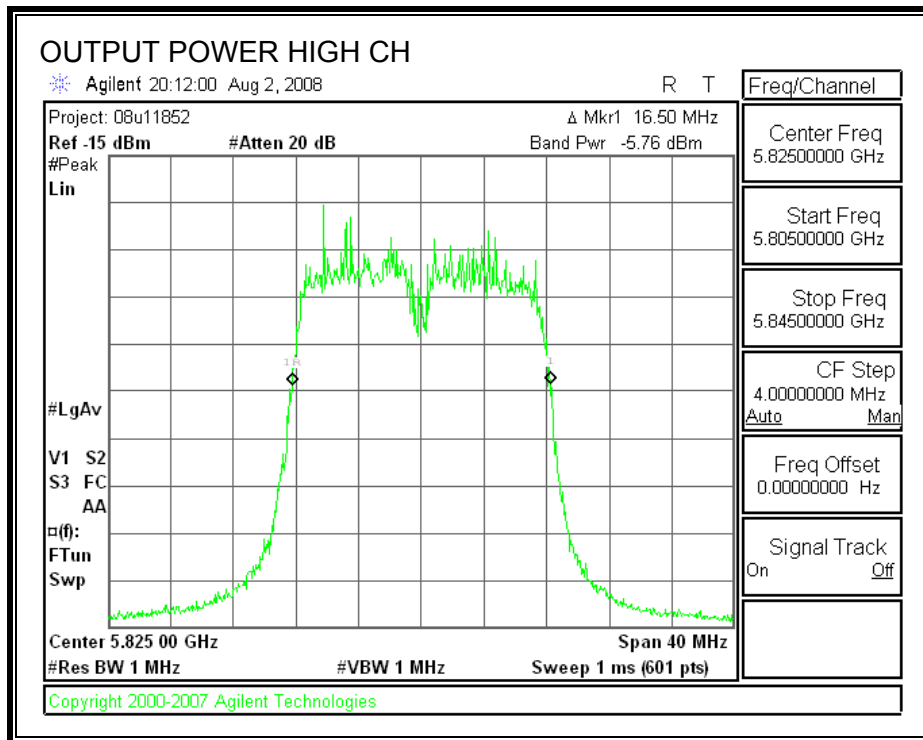
**For Panel Antenna PMP:**

**802.11a, 20MHz, Mode, OUTPUT POWER**

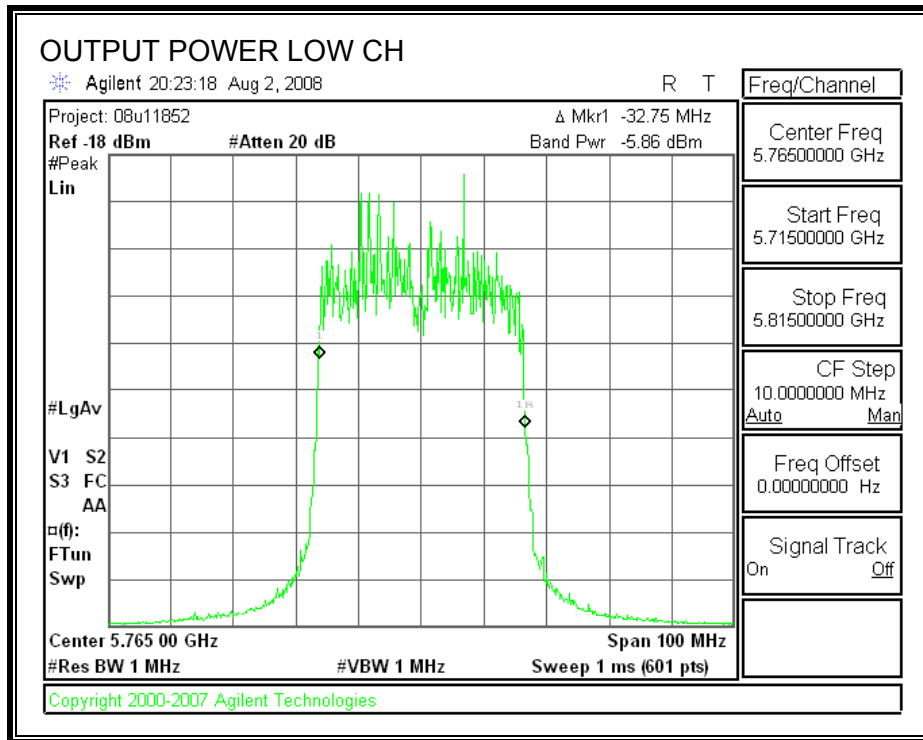


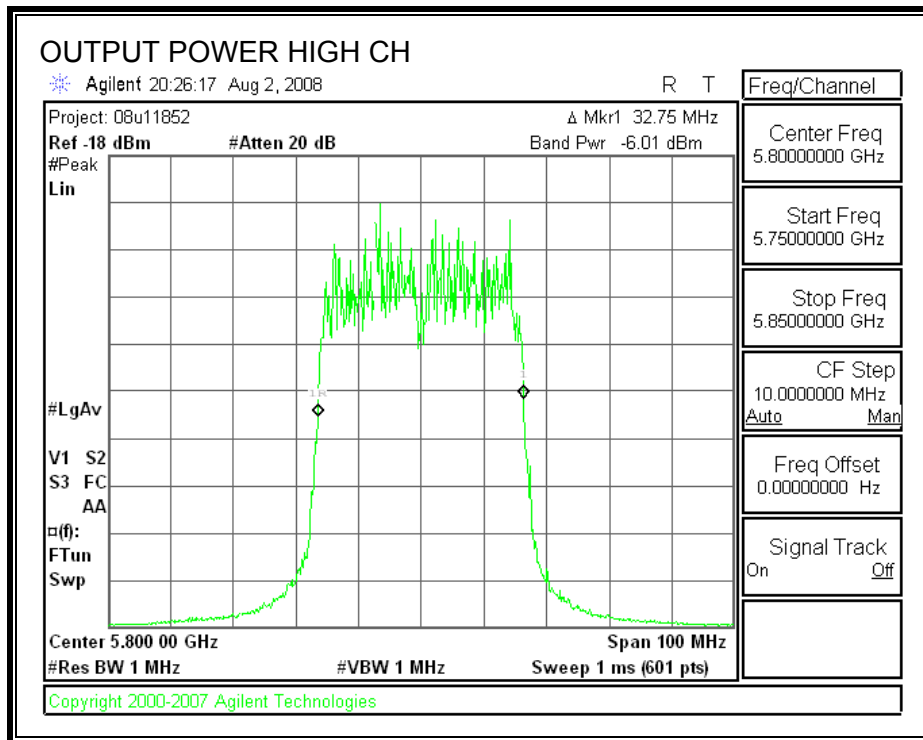






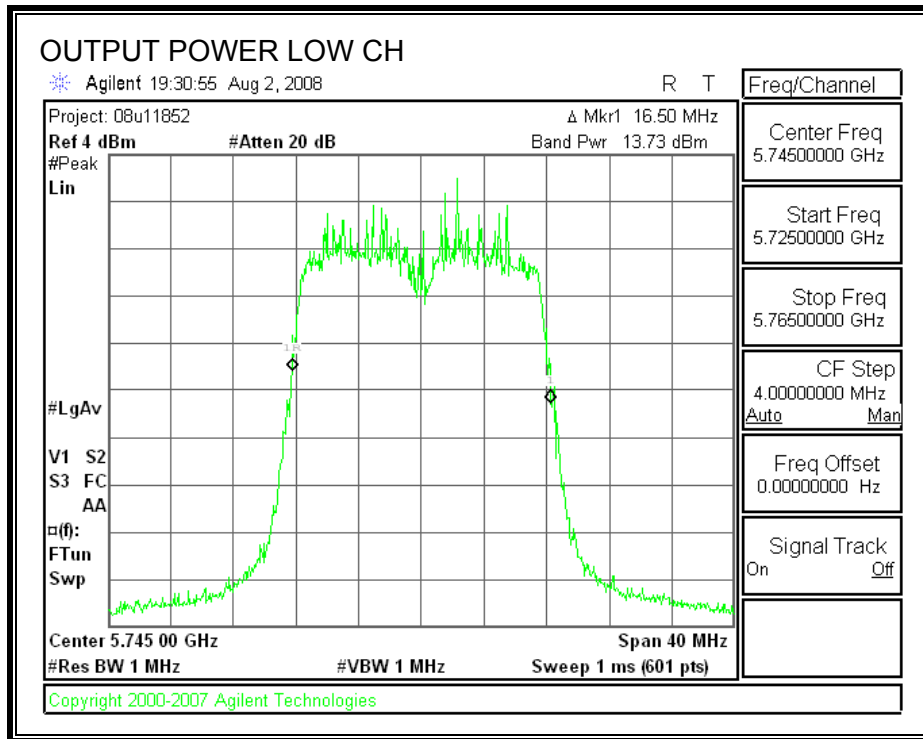
**802.11a, 40MHz, Mode, OUTPUT POWER**

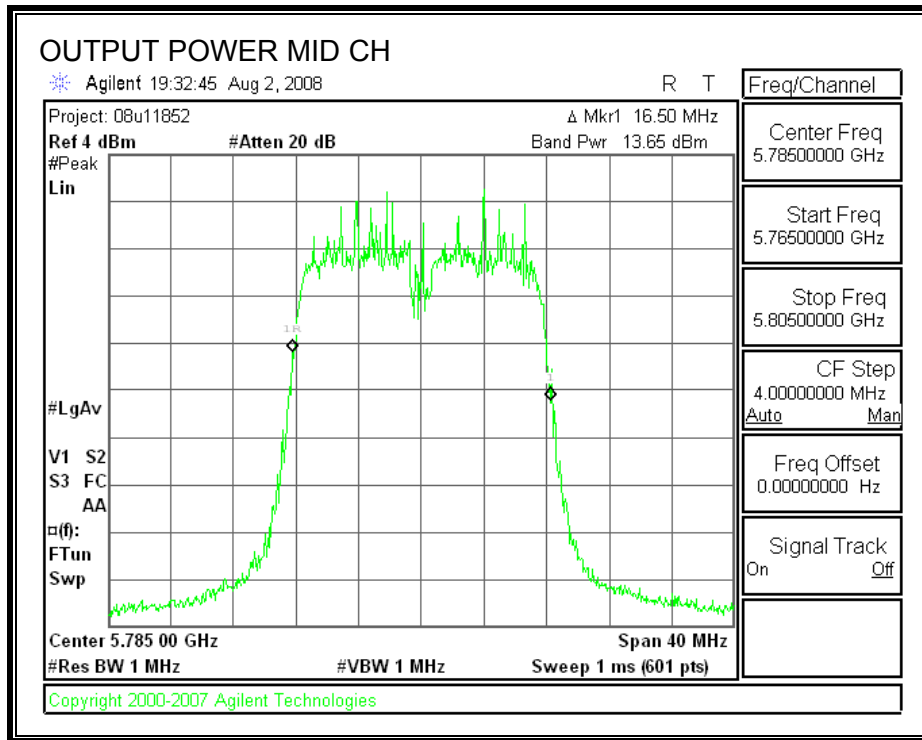


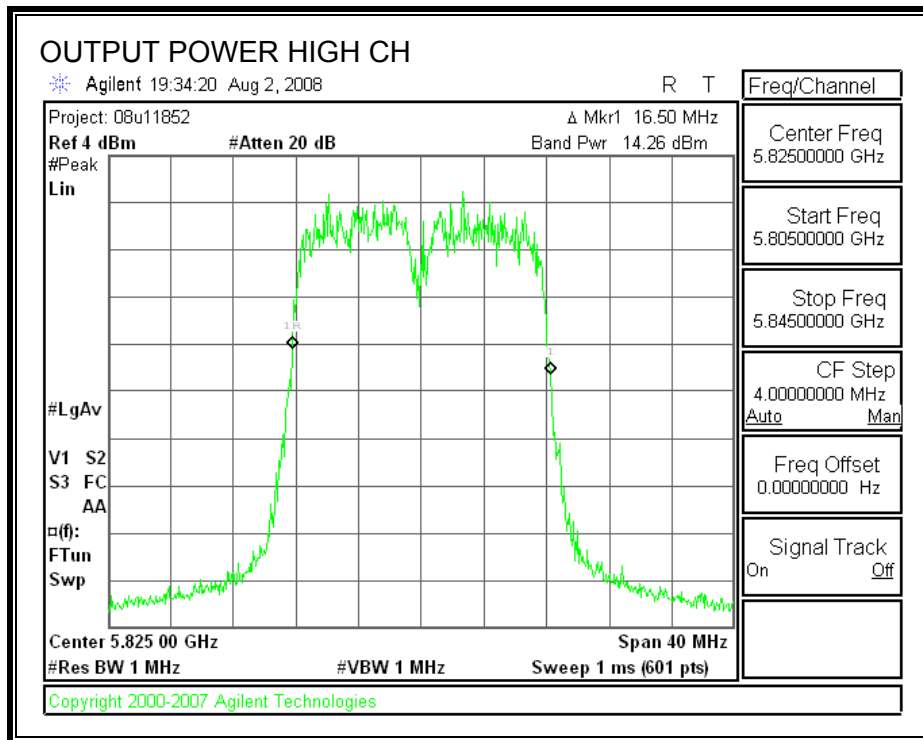


**For Omni Antenna:**

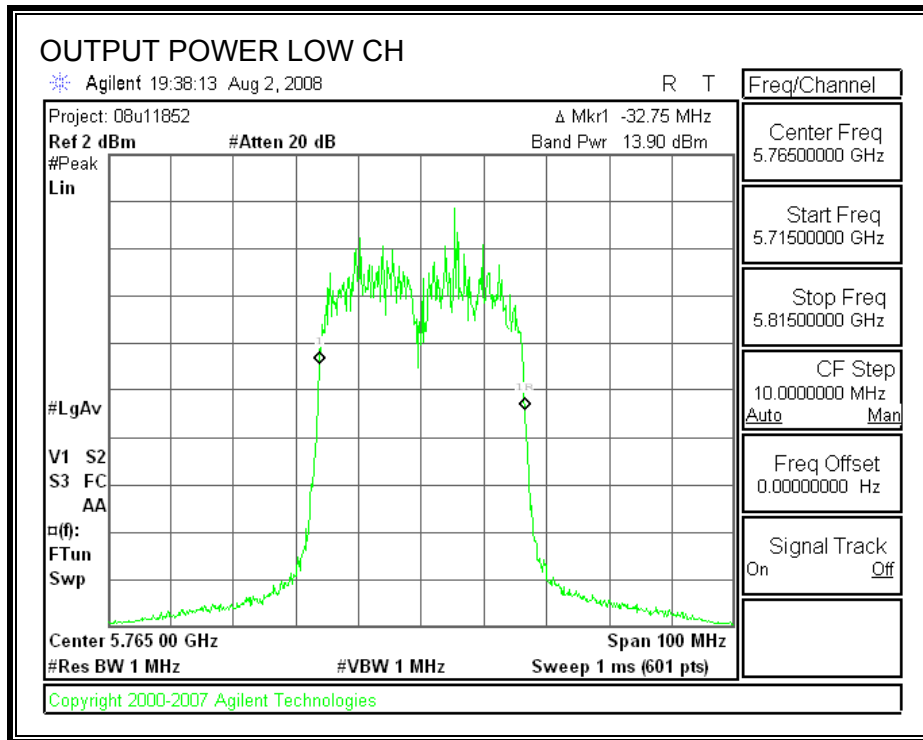
**802.11a, 20MHz, Mode, OUTPUT POWER**



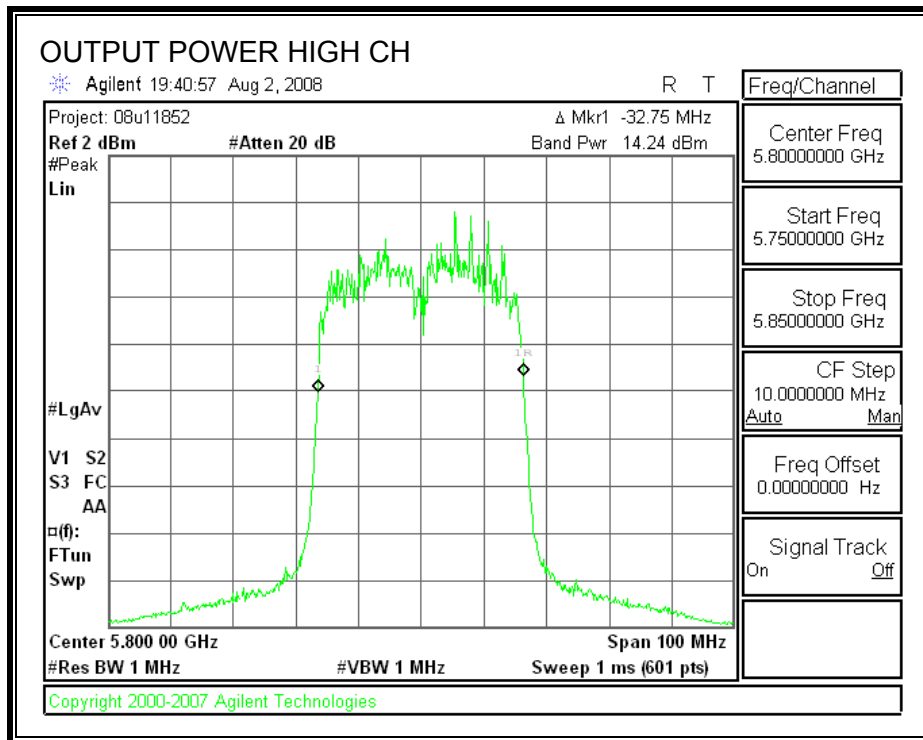




**802.11a, 40MHz, Mode, OUTPUT POWER**







### 6.3.4. AVERAGE POWER

#### LIMITS

None; for reporting purposes only.

#### TEST PROCEDURE

The transmitter output is connected to a power meter.

#### RESULTS

The cable assembly insertion loss of 11.0dB (including 10 dB pad and 1.0 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

#### **For Panel antenna (P2P)**

802.11a, 20MHz, Mode

Channel	Frequency (MHz)	Power (dBm)
Low	5745	22.49
Middle	5785	22.30
High	5825	22.09

802.11a, 40MHz, Mode

Channel	Frequency (MHz)	Power (dBm)
Low	5765	19.30
High	5780	19.10

**For Panel antenna (PMP)**

802.11a, 20MHz, Mode

Channel	Frequency (MHz)	Power (dBm)
Low	5745	-0.52
Middle	5785	-0.60
High	5825	-0.42

802.11a, 40MHz, Mode

Channel	Frequency (MHz)	Power (dBm)
Low	5765	-1.56
High	5780	-1.80

**For Omni antenna:**

802.11a, 20MHz, Mode

Channel	Frequency (MHz)	Power (dBm)
Low	5745	17.03
Middle	5785	17.07
High	5825	17.41

802.11a, 40MHz, Mode

Channel	Frequency (MHz)	Power (dBm)
Low	5765	17.20
High	5780	17.70

### 6.3.5. POWER SPECTRAL DENSITY

#### LIMITS

FCC §15.247 (e)

IC RSS-210 A8.2 (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

#### TEST PROCEDURE

Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005.

#### RESULTS

For Omni antenna:

##### 802.11a, 20MHz, Mode:

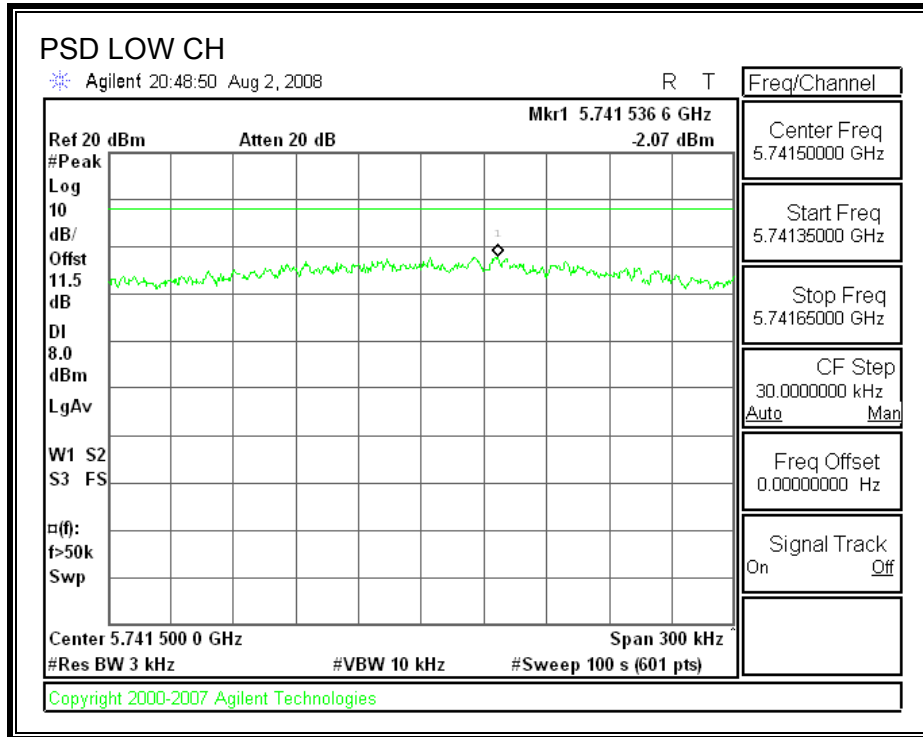
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	5745	-2.07	8	-10.07
Middle	5785	-2.18	8	-10.18
High	5825	-2.56	8	-10.56

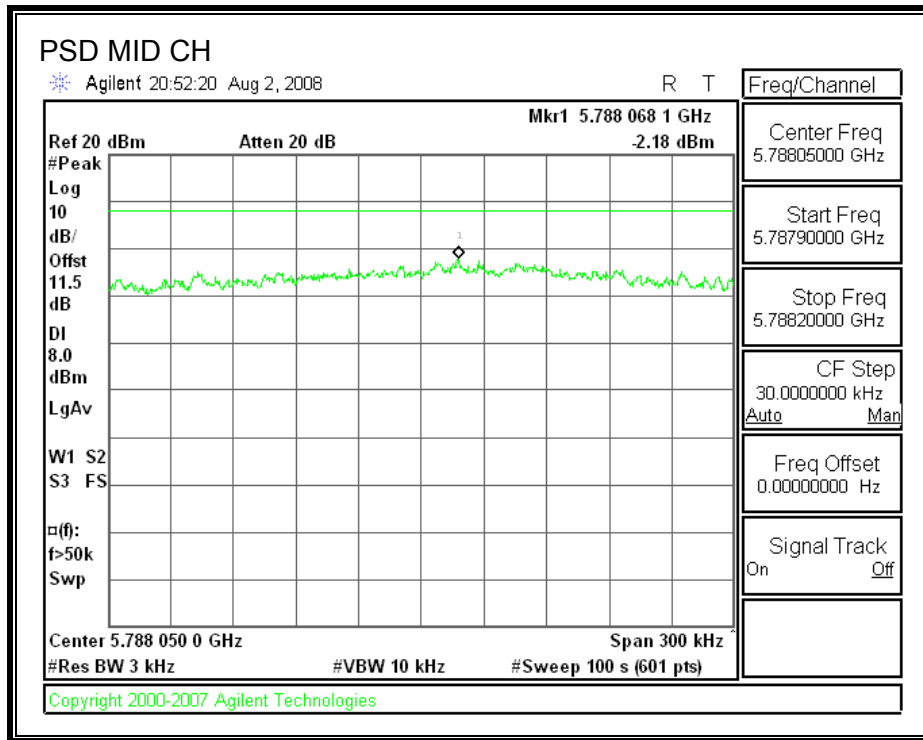
##### 802.11a, 40MHz, Mode:

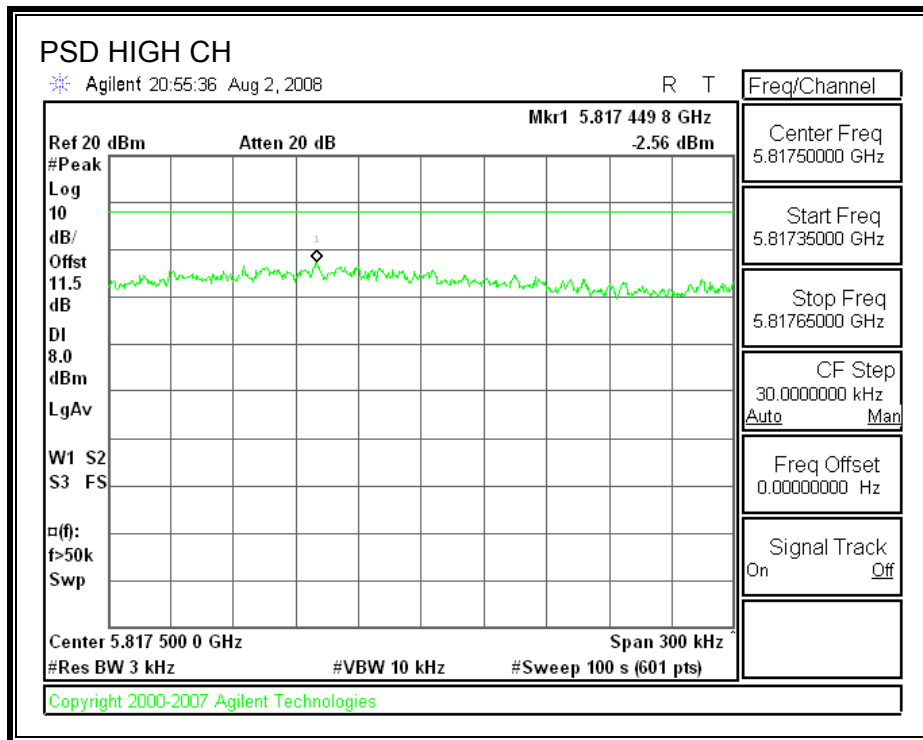
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	5765	-8.01	8	-16.01
High	5800	-8.20	8	-16.20

For Panel antenna (P2P):

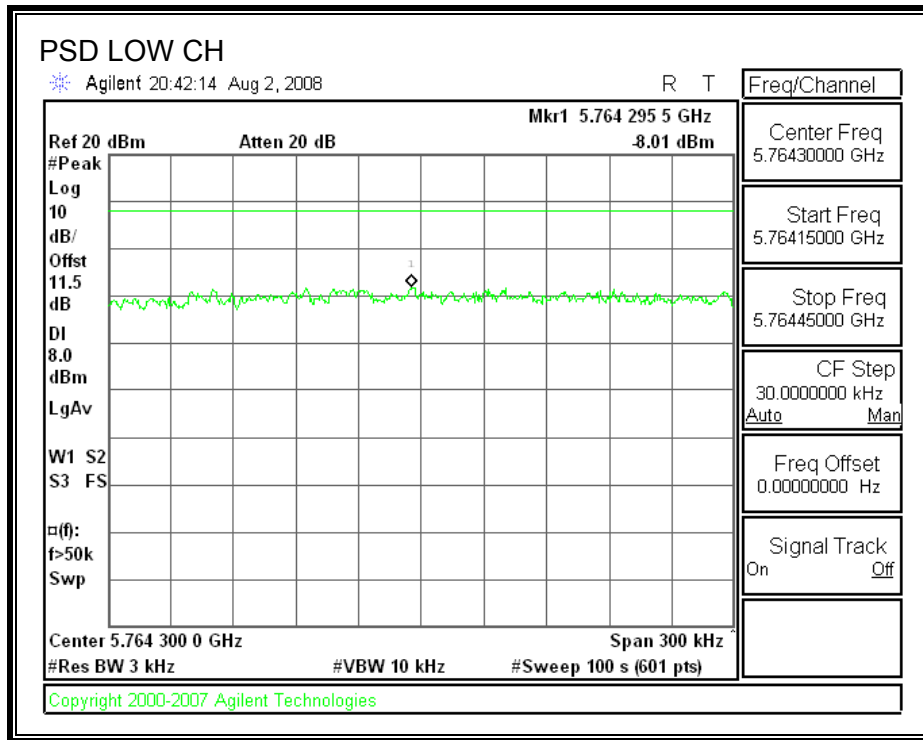
#### 802.11a, 20MHz Mode, POWER SPECTRAL DENSITY



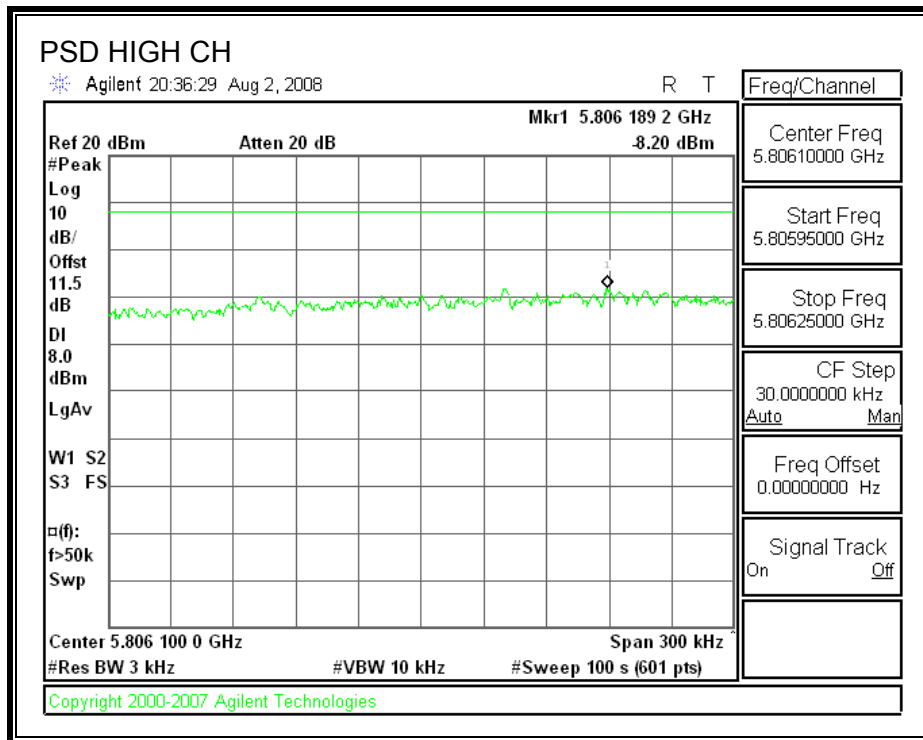




802.11a, 40MHz, Mode, POWER SPECTRAL DENSITY







### **6.3.6. CONDUCTED SPURIOUS EMISSIONS**

#### **LIMITS**

FCC §15.247 (d)

IC RSS-210 A8.5

Output 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.

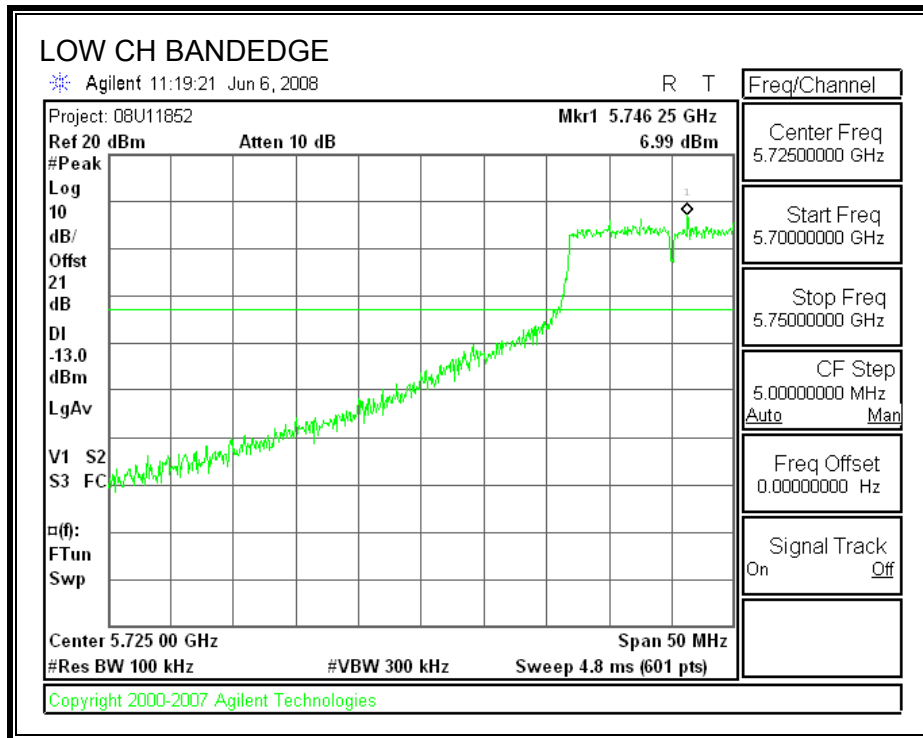
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

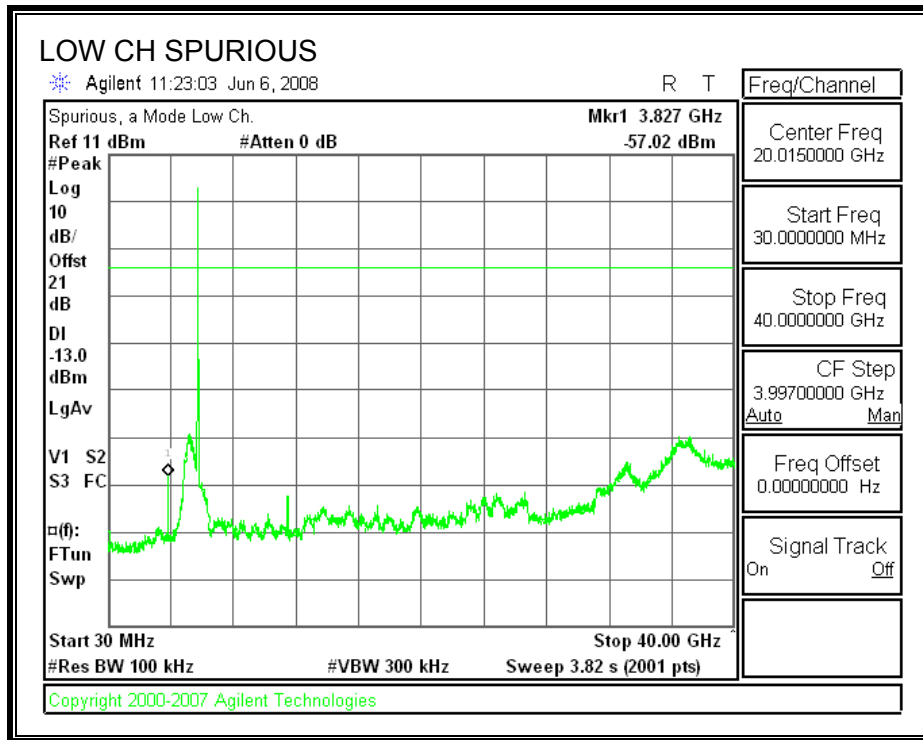
**RESULTS**

**For Panel antenna:**

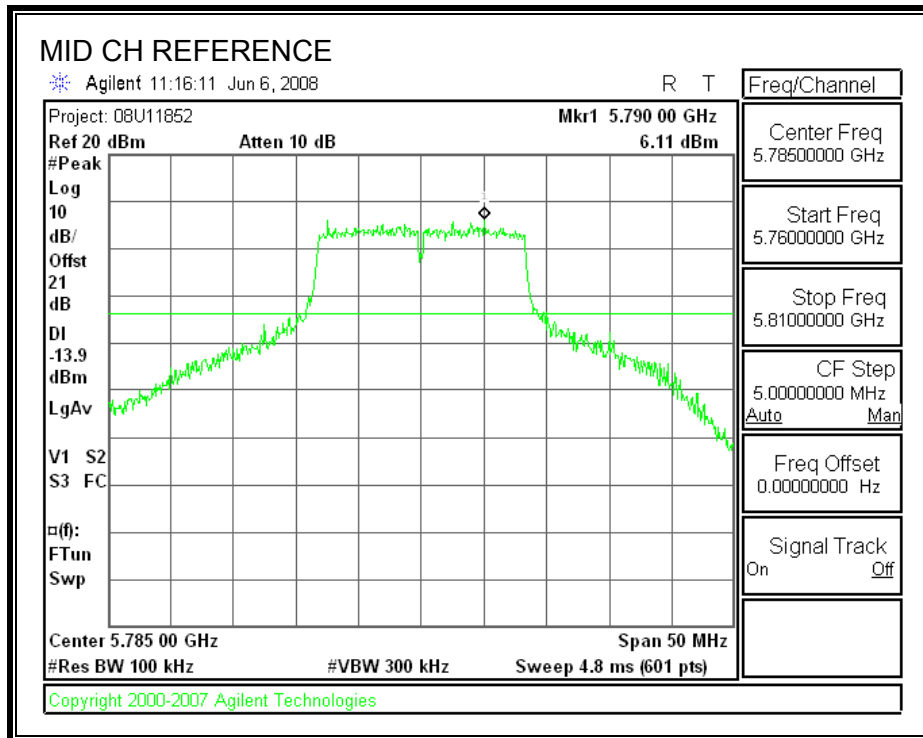
**802.11a, 20MHz Mode**

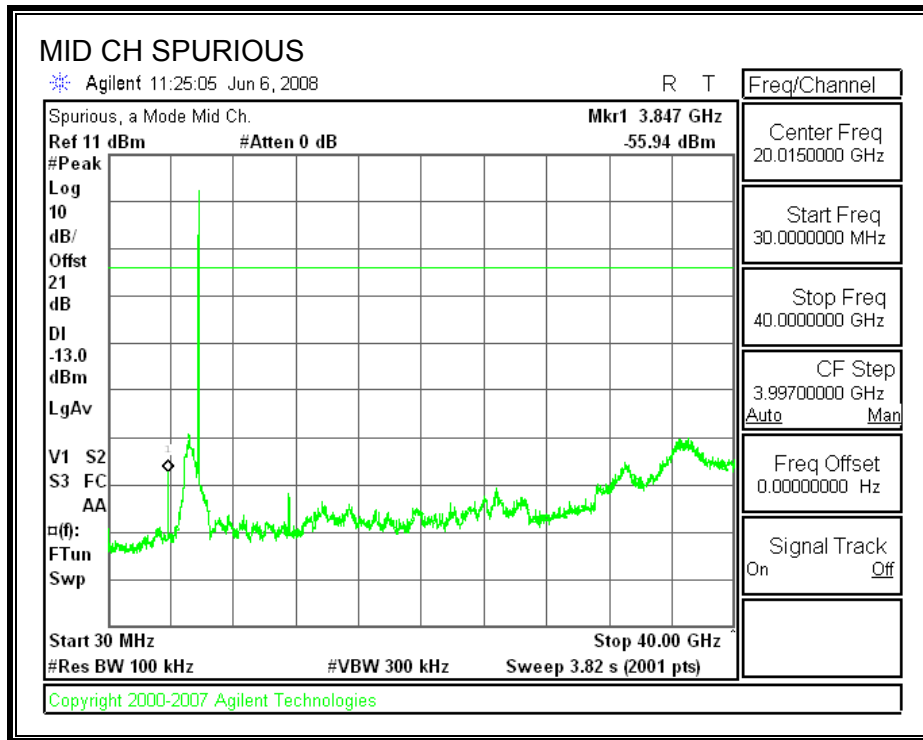
**SPURIOUS EMISSIONS, LOW CHANNEL**



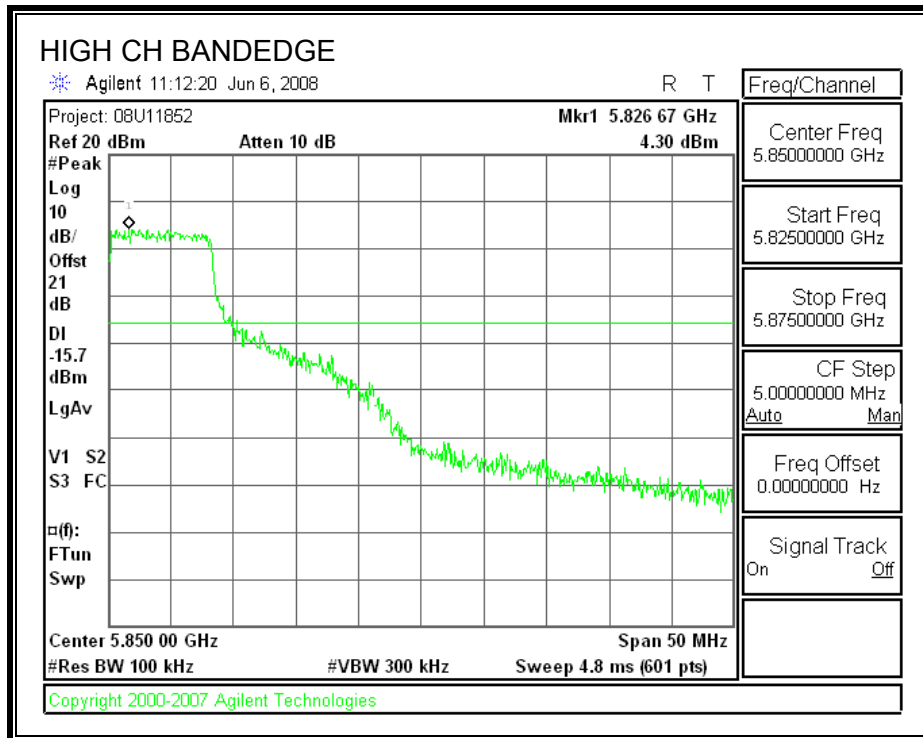


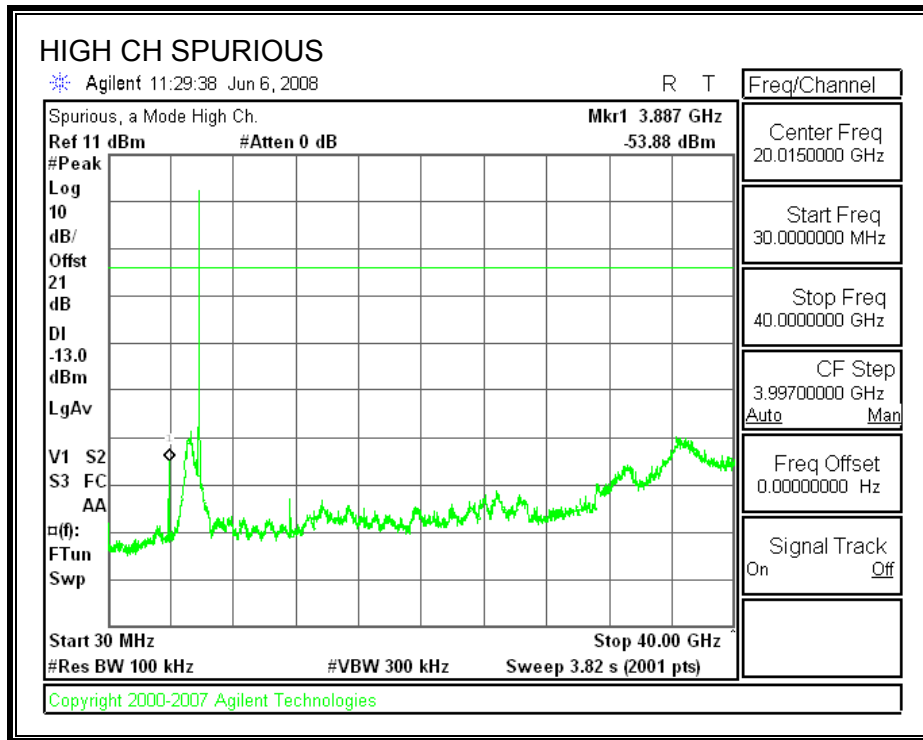
**SPURIOUS EMISSIONS, MID CHANNEL**





**SPURIOUS EMISSIONS, HIGH CHANNEL**

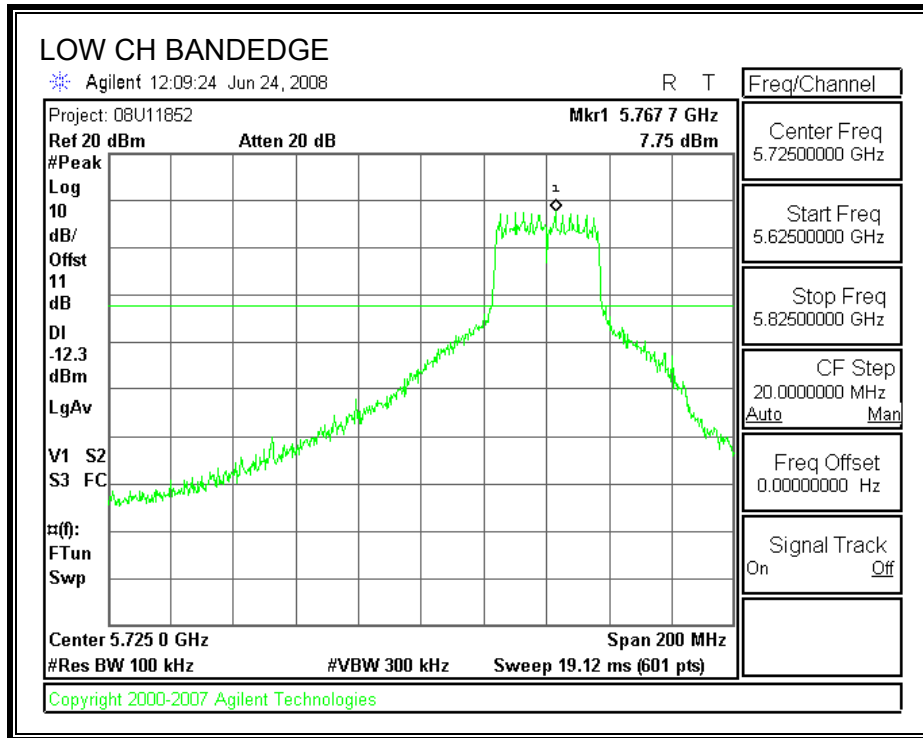


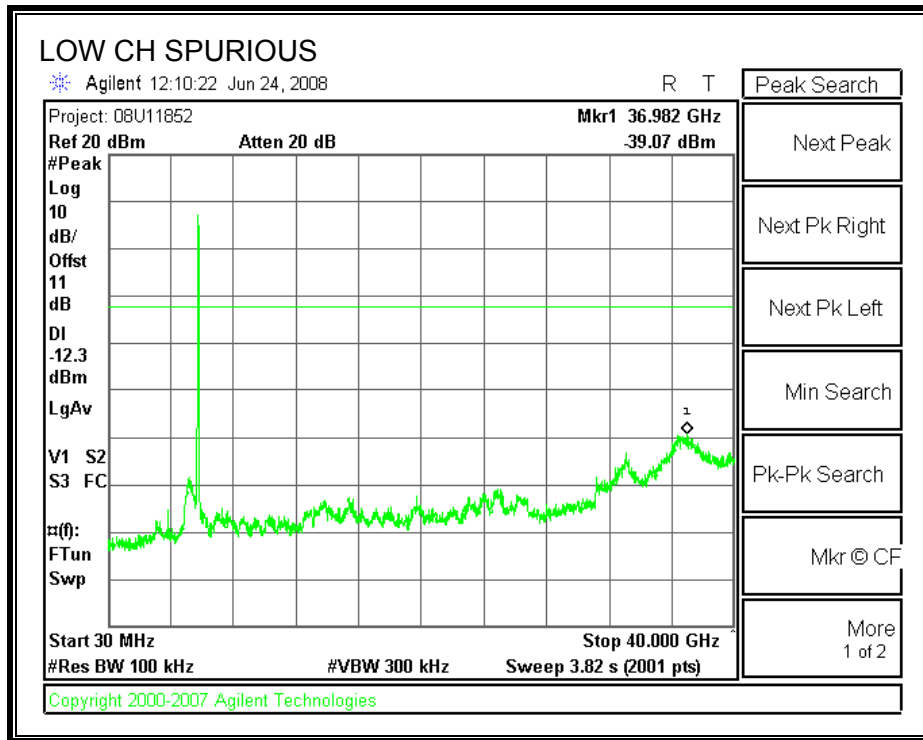




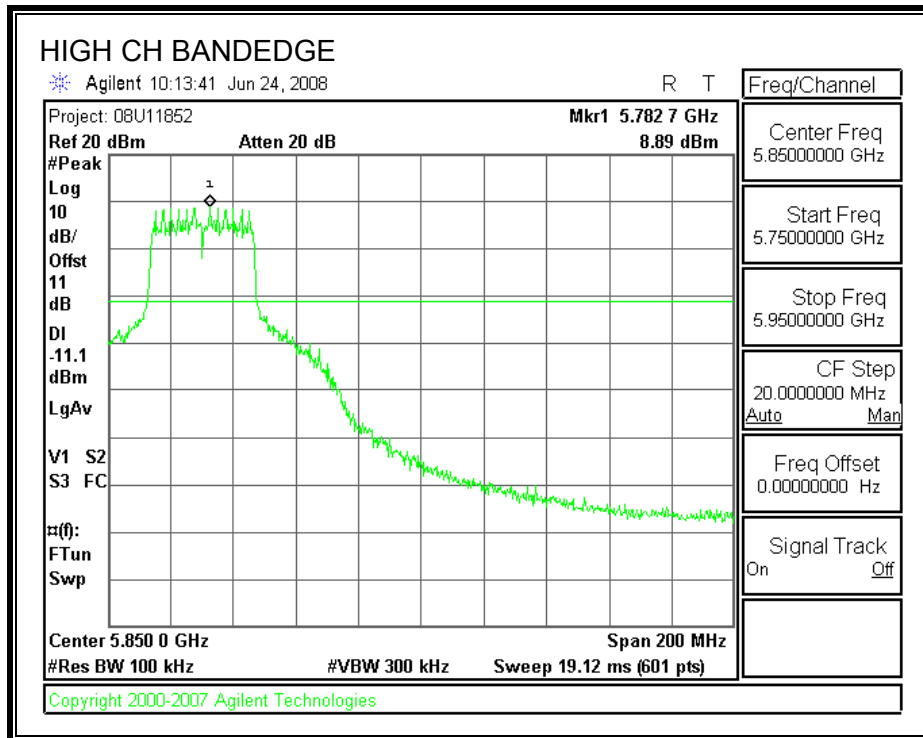
**802.11a, 40MHz Mode**

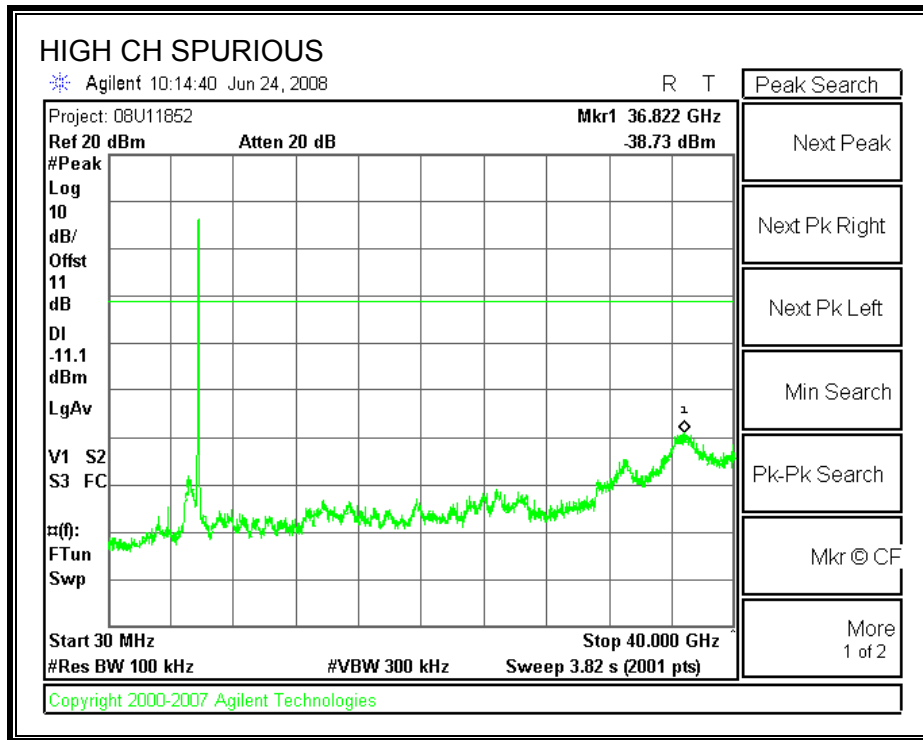
**SPURIOUS EMISSIONS, LOW CHANNEL**





**SPURIOUS EMISSIONS, HIGH CHANNEL**

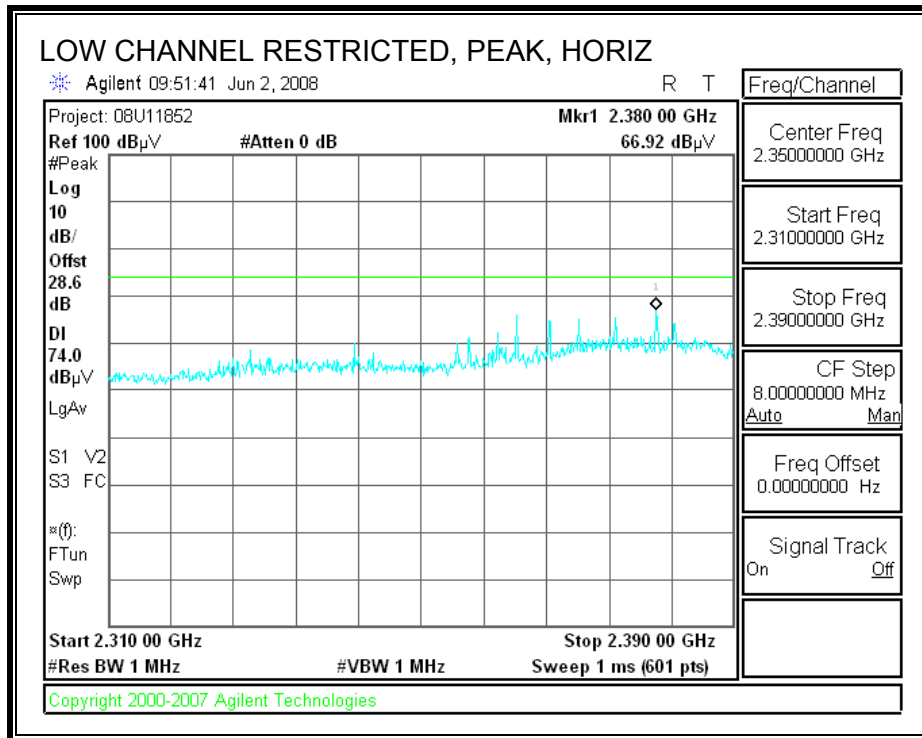


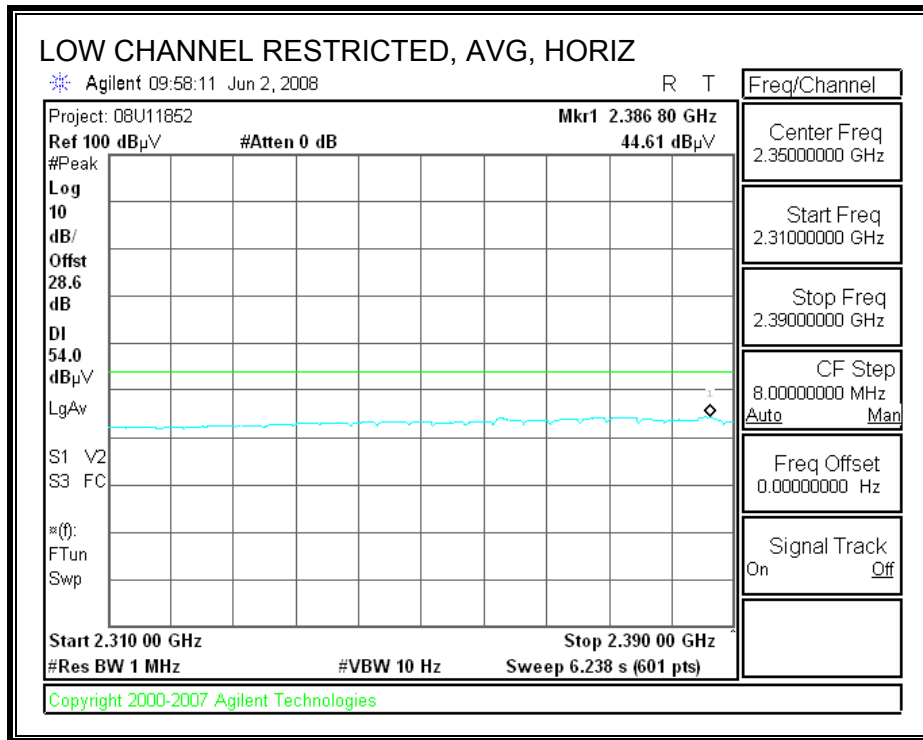


## 6.4. TRANSMITTER ABOVE 1 GHz

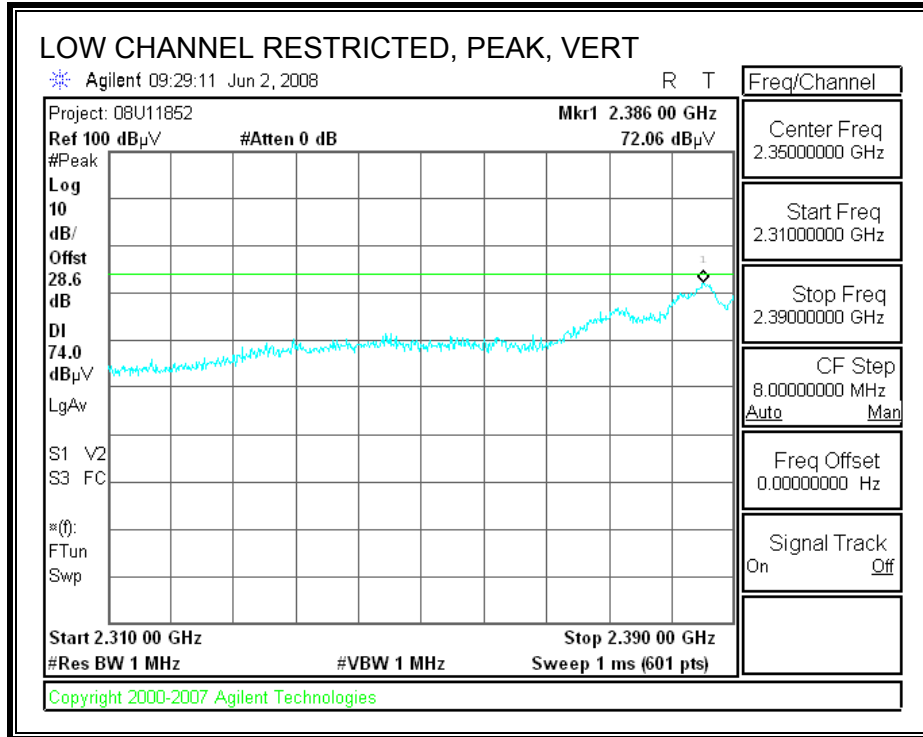
### 6.4.1. TX ABOVE 1 GHz FOR 802.11b MODE IN THE 2.4 GHz BAND

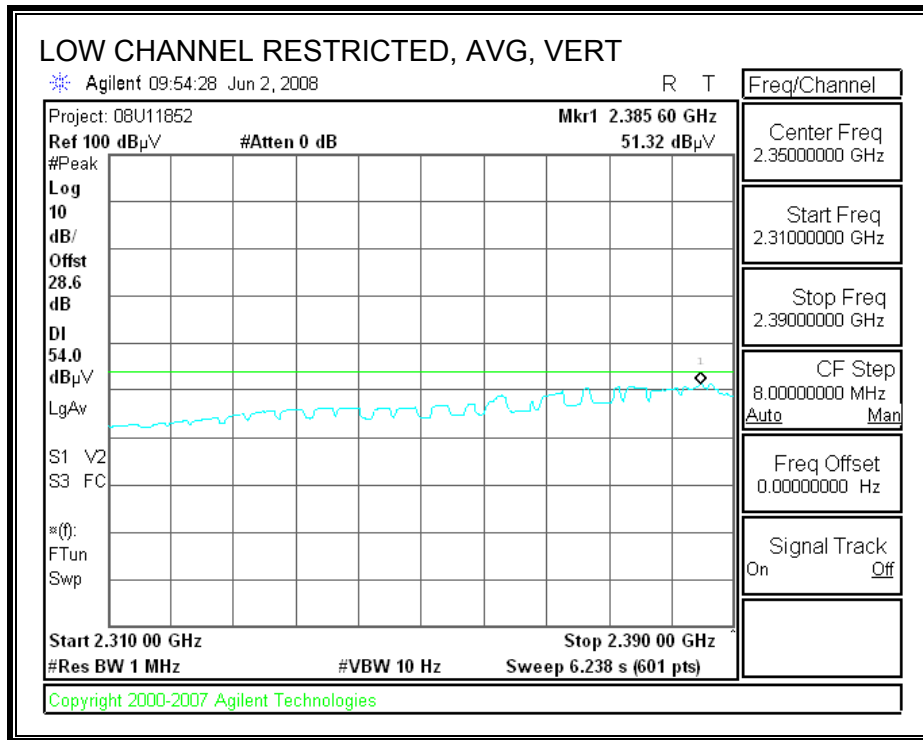
#### RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)





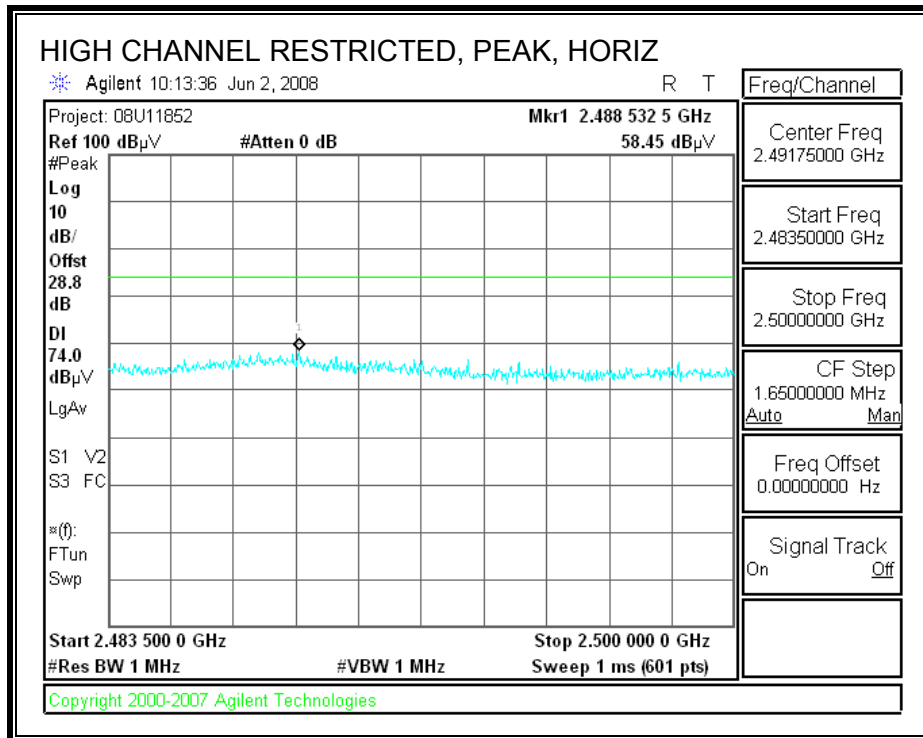
**RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)**

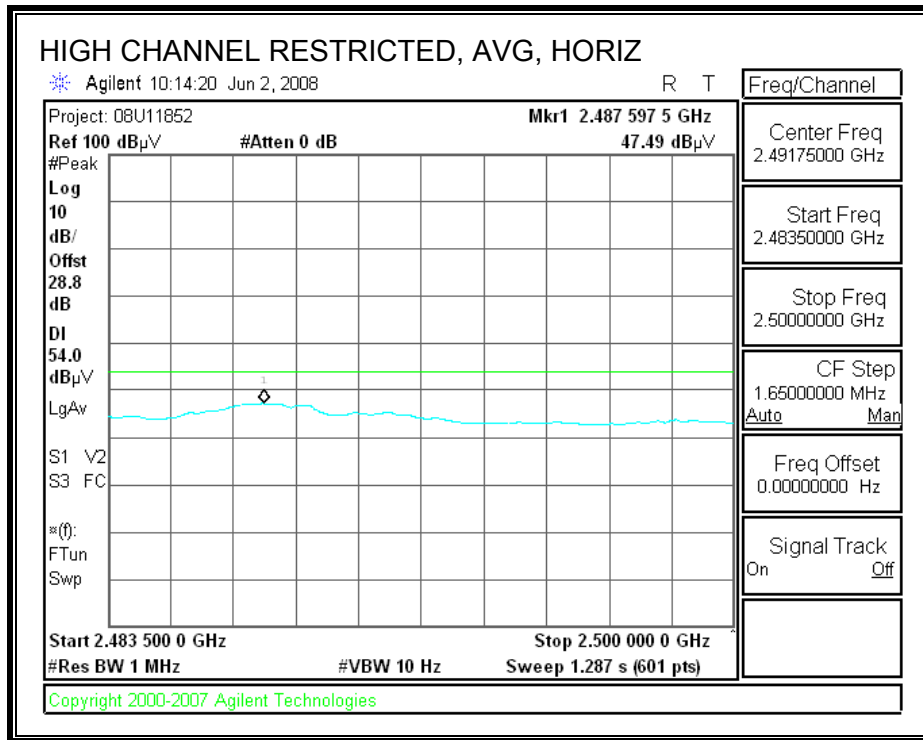




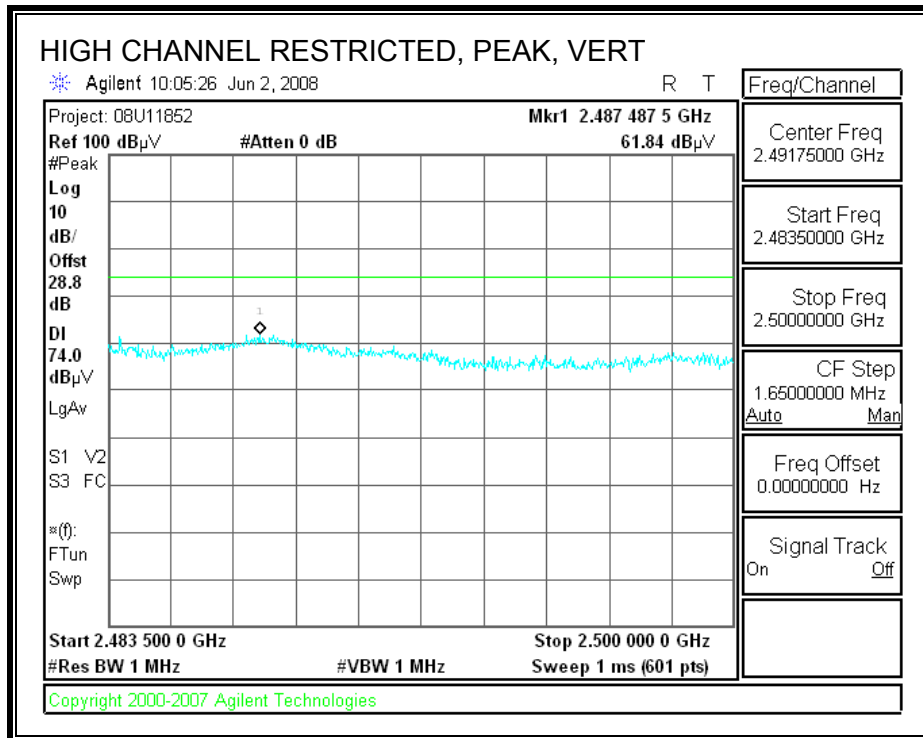


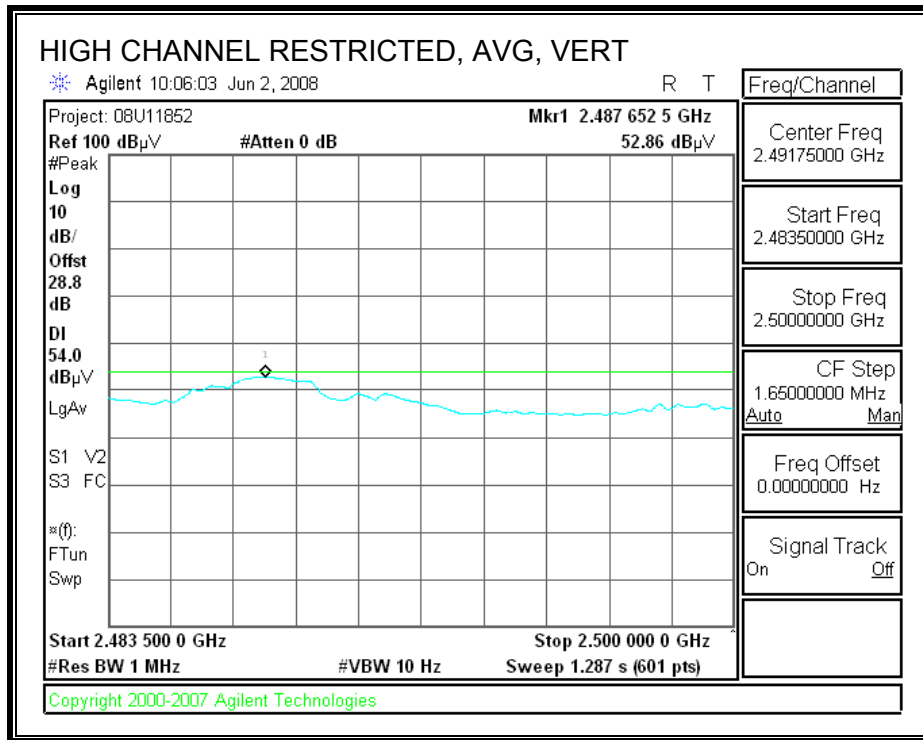
**RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)**





**RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)**



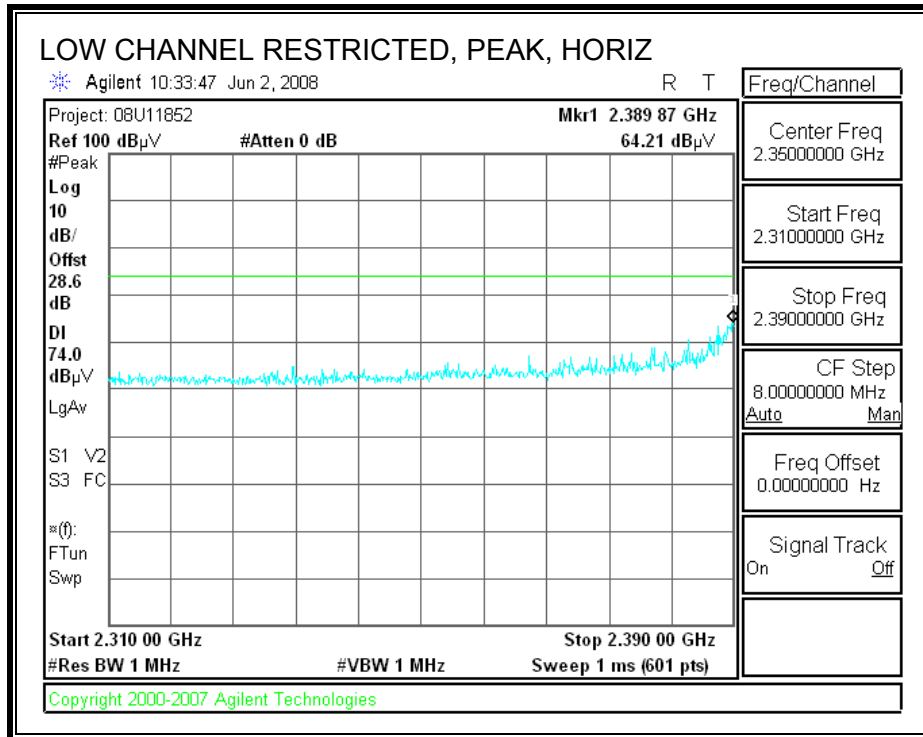


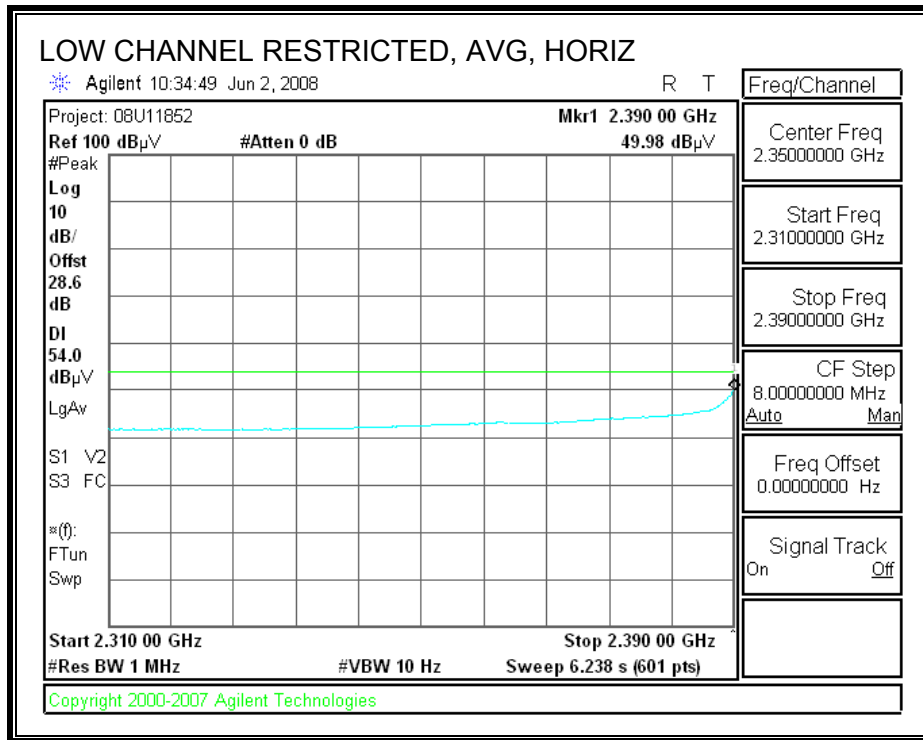
**HARMONICS AND SPURIOUS EMISSIONS**

High Frequency Measurement																	
Compliance Certification Services, 3 Meters_C Chamber																	
Company:		Proxim															
Project #:		08U11852															
Date:		6/2/2008															
Test Engineer:		Thanh Nguyen															
Configuration:		EUT , Omni antenna															
Mode:		Tx b Mode															
<b>Test Equipment:</b>																	
Horn 1-18GHz				Pre-amplifier 1-26GHz				Pre-amplifier 26-40GHz				Horn > 18GHz				Limit	
T60; S/N: 2238 @3m				T145 Agilent 3008A0050								T125; ARA 18-26GHz; S/N:1007				FCC 15.205	
Hi Frequency Cables																	
2 foot cable				3 foot cable				12 foot cable				HPF		Reject Filter		Peak Measurements RBW=VBW=1MHz	
				Thanh 187215003				Ninoux 208946002						R_001		Average Measurements RBW=1MHz ; VBW=10Hz	
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)		
<b>Low CH, 2412MHz</b>																	
4.824	3.0	42.3	32.3	33.0	2.5	-34.8	0.0	0.0	43.0	33.0	74	54	-31.0	-21.0	H		
4.824	3.0	43.6	32.9	33.0	2.5	-34.8	0.0	0.0	44.3	33.6	74	54	-29.7	-20.4	H		
<b>Mid CH, 2437 MHz</b>																	
4.874	3.0	46.2	41.3	33.1	2.6	-34.9	0.0	0.0	46.9	42.0	74	54	-27.1	-12.0	H		
7.311	3.0	50.8	45.2	35.5	3.4	-34.7	0.0	0.0	55.1	49.5	74	54	-18.9	-4.5	H		
4.874	3.0	46.0	40.1	33.1	2.6	-34.9	0.0	0.0	46.8	40.8	74	54	-27.2	-13.2	V		
7.311	3.0	53.3	48.8	35.5	3.4	-34.7	0.0	0.0	57.5	53.1	74	54	-16.5	-0.9	V		
<b>High CH, 2462 MHz</b>																	
4.924	3.0	49.9	46.7	33.1	2.6	-34.9	0.0	0.0	50.8	47.5	74	54	-23.2	-6.5	H		
7.386	3.0	51.5	45.0	35.6	3.5	-34.6	0.0	0.0	55.9	49.4	74	54	-18.1	-4.6	H		
4.924	3.0	50.8	46.7	33.1	2.6	-34.9	0.0	0.0	51.6	47.6	74	54	-22.4	-6.4	V		
7.386	3.0	46.3	38.2	35.6	3.5	-34.6	0.0	0.0	50.7	42.6	74	54	-23.3	-11.4	V		
No other emissions were detected above system noise floor																	
f	Measurement Frequency					Amp	Preamp Gain					Avg Lim	Average Field Strength Limit				
Dist	Distance to Antenna					D Corr	Distance Correct to 3 meters					Pk Lim	Peak Field Strength Limit				
Read	Analyzer Reading					Avg	Average Field Strength @ 3 m					Avg Mar	Margin vs. Average Limit				
AF	Antenna Factor					Peak	Calculated Peak Field Strength					Pk Mar	Margin vs. Peak Limit				
CL	Cable Loss					HPF	High Pass Filter										

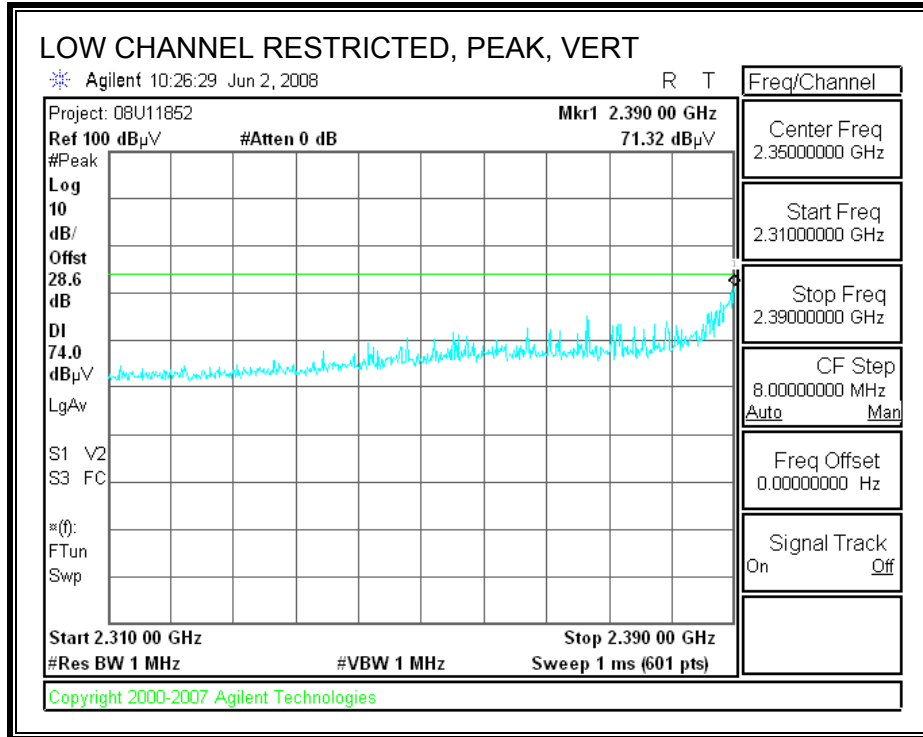
**6.4.2. TX ABOVE 1 GHz FOR 802.11g MODE IN THE 2.4 GHz BAND**

**RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)**

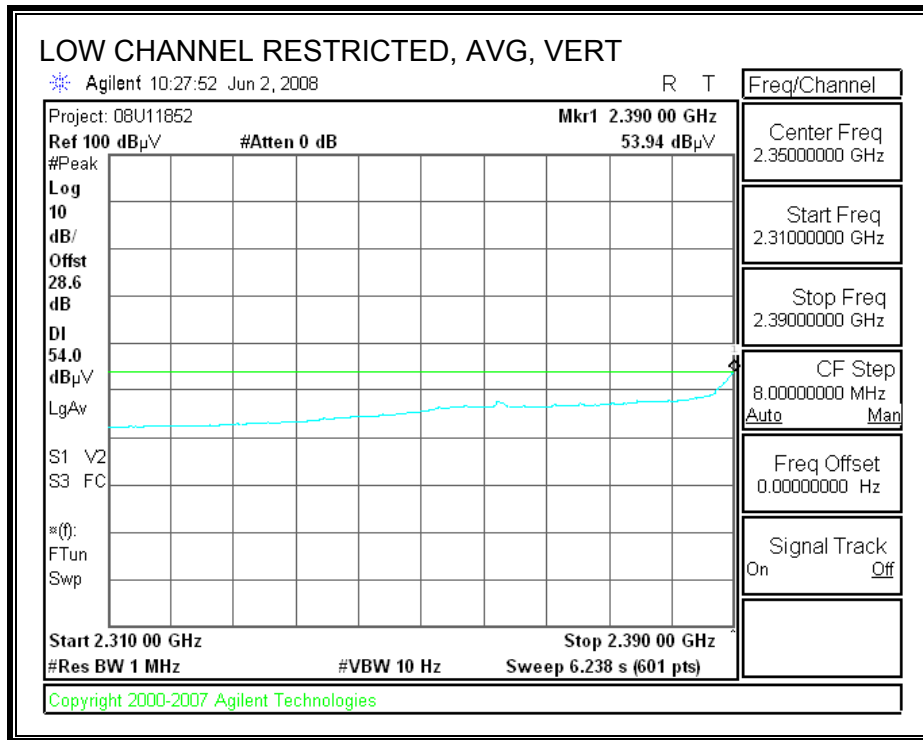




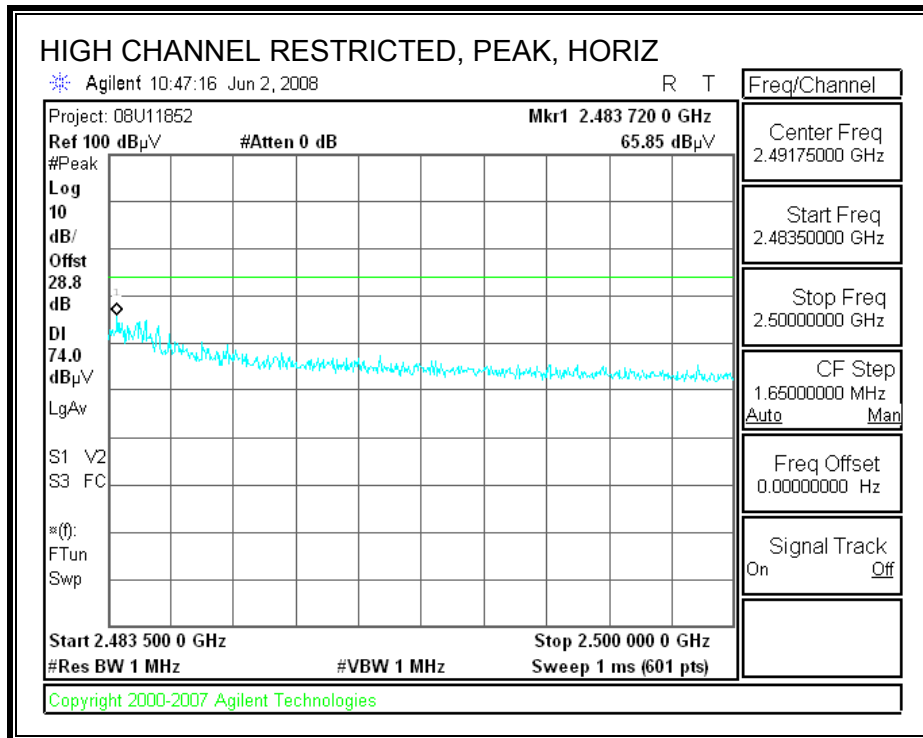
**RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)**

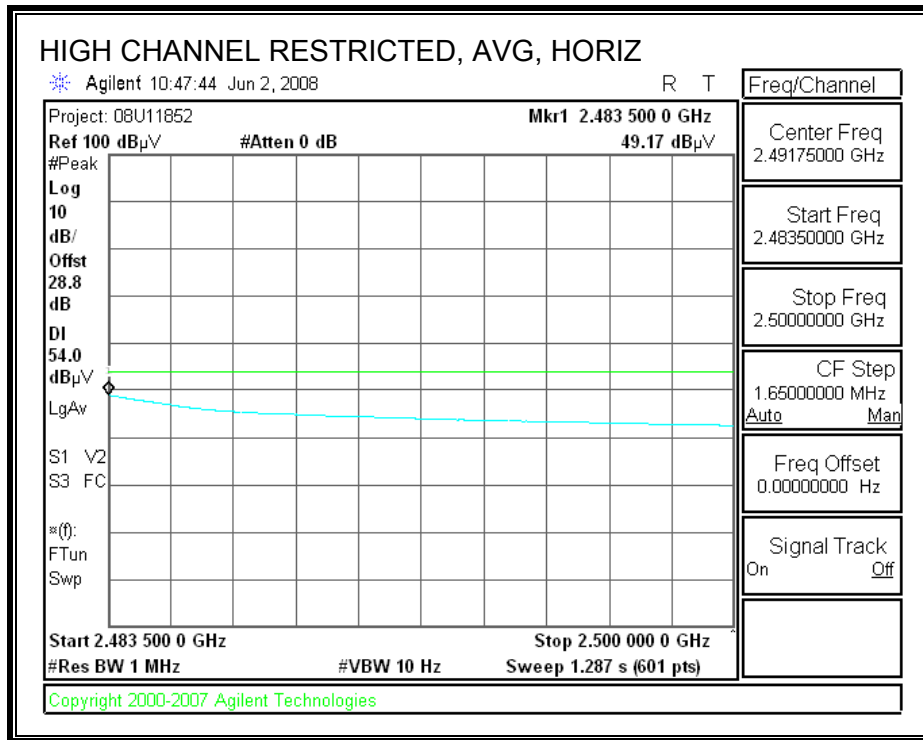




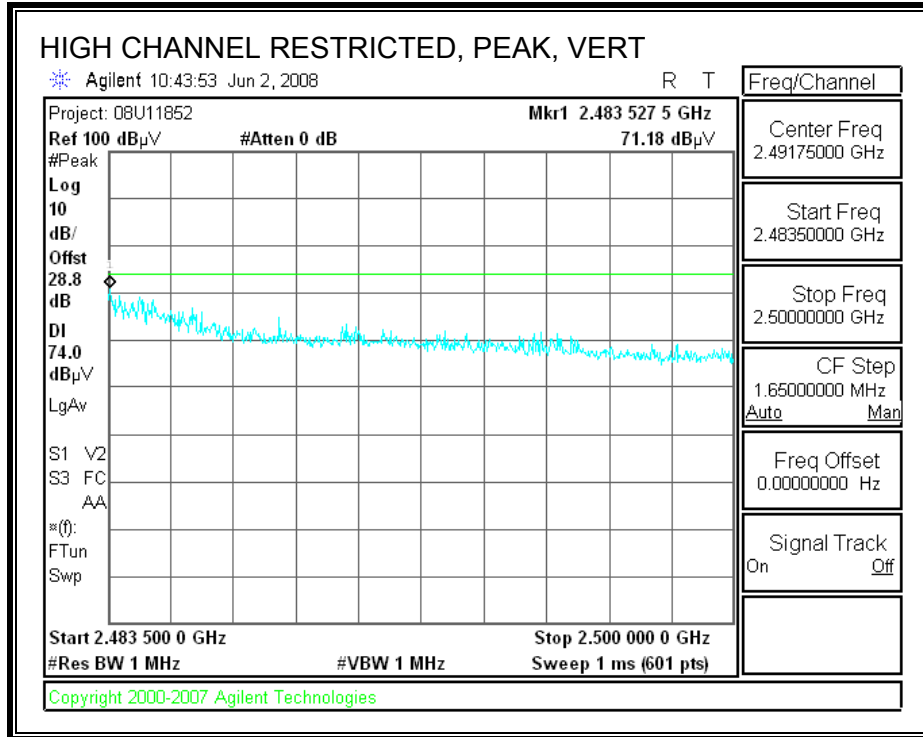


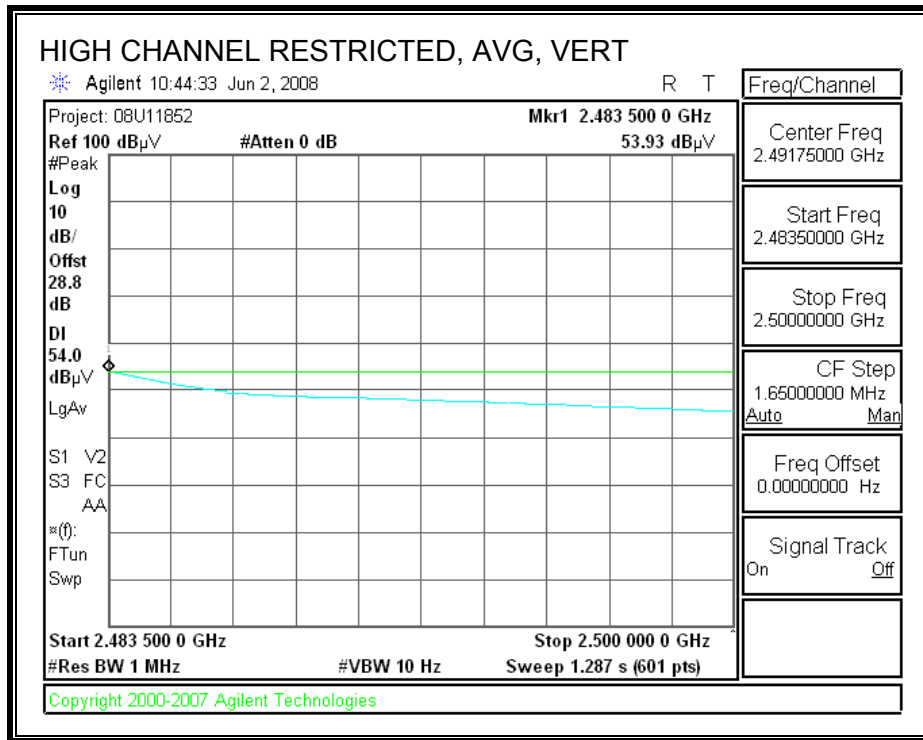
**RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)**





**RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)**





**HARMONICS AND SPURIOUS EMISSIONS**

High Frequency Measurement																			
Compliance Certification Services, 3 Meters_C Chamber																			
Company:		Proxin																	
Project #:		08U11852																	
Date:		6/2/2008																	
Test Engineer:		Thanh Nguyen																	
Configuration:		EUT . Omni Monopol antenna																	
Mode:		Tx g Mode																	
Test Equipment:																			
Horn 1-18GHz				Pre-amplifer 1-26GHz				Pre-amplifer 26-40GHz				Horn > 18GHz				Limit			
T60; S/N: 2238 @3m				T145 Agilent 3008A005t								T125; ARA 18-26GHz; S/N:1007				FCC 15.205			
Hi Frequency Cables																			
2 foot cable				3 foot cable				12 foot cable				HPF				Reject Filter			
				Thanh 187215003				Ninous 208946002								34.34			
Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz, VBW=10Hz																			
f	Dist	Read Pk	Read Avg.	AF	CL	Amp	D Corr	Ftr	Peak	Avg	Pk Lim	Avg Lim	Pk Mar	Avg Mar	Notes				
GHz	(m)	dBuV	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dBuV/m	dBuV/m	dB	dB	(V/H)				
<b>Low CH, 2412MHz</b>																			
4.824	3.0	43.7	30.7	33.0	2.5	-34.8	0.0	0.0	44.4	31.4	74	54	-29.6	-22.6	H/Noise floor				
4.824	3.0	42.9	30.6	33.0	2.5	-34.8	0.0	0.0	43.6	31.3	74	54	-30.4	-22.7	V/Noise floor				
<b>Mid CH, 2437 MHz</b>																			
4.874	3.0	47.2	34.3	33.1	2.6	-34.9	0.0	0.0	48.0	35.1	74	54	-26.0	-18.9	H				
7.311	3.0	57.7	44.1	35.5	3.4	-34.7	0.0	0.0	61.9	48.3	74	54	-12.1	-5.7	H				
4.874	3.0	48.9	36.2	33.1	2.6	-34.9	0.0	0.0	49.6	36.9	74	54	-24.4	-17.1	V				
7.311	3.0	61.2	49.4	35.5	3.4	-34.7	0.0	0.0	65.5	53.6	74	54	-8.5	-0.4	V				
<b>High CH, 2462 MHz</b>																			
4.924	3.0	45.5	34.3	33.1	2.6	-34.9	0.0	0.0	46.4	35.1	74	54	-27.6	-18.9	H				
7.386	3.0	47.5	35.0	35.6	3.5	-34.6	0.0	0.0	51.9	39.4	74	54	-22.1	-14.6	H				
4.924	3.0	44.4	30.5	33.1	2.6	-34.9	0.0	0.0	45.3	31.4	74	54	-28.7	-22.6	V				
7.386	3.0	54.8	43.0	35.6	3.5	-34.6	0.0	0.0	59.2	47.3	74	54	-14.8	-6.7	V				
															V				
No other emissions were detected above system noise floor																			
f	Measurement Frequency					Amp	Preamp Gain					Avg Lim	Average Field Strength Limit						
Dist	Distance to Antenna					D Corr	Distance Correct to 3 meters					Pk Lim	Peak Field Strength Limit						
Read	Analyzer Reading					Avg	Average Field Strength @ 3 m					Avg Mar	Margin vs. Average Limit						
AF	Antenna Factor					Peak	Calculated Peak Field Strength					Pk Mar	Margin vs. Peak Limit						
CL	Cable Loss					HPF	High Pass Filter												

**6.4.3. TX ABOVE 1 GHz FOR 802.11a MODE IN THE 5.8 GHz BAND**

**Panel 5GHz Antenna:**

**HARMONICS AND SPURIOUS EMISSIONS**

**High Frequency Measurement**  
 Compliance Certification Services, 3 Meters\_C Chamber

Company: Proxima  
 Project #: 08U11852  
 Date: 6/2/2008  
 Test Engineer: Thanh Nguyen  
 Configuration: EUT , Panel antenna, support laptop  
 Mode: Tx 5.8GHz DTS band

**Test Equipment:**

Horn 1-18GHz	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T145 Agilent 3008A005	T88 Miteq 26-40GHz	T125; ARA 18-26GHz; S/N:1007	FCC 15.205

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter	Peak Measurements RBW=VBW=1MHz
	Thanh 187215003	Ninous 208946002		R_001	Average Measurements RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fldr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
<b>Low CH, 5745MHz</b>															
11.490	3.0	51.2	36.6	37.4	3.9	-33.1	0.0	0.0	59.4	44.8	74	54	-14.6	-9.2	V
11.490	3.0	48.4	35.2	37.4	3.9	-33.1	0.0	0.0	56.6	43.4	74	54	-17.4	-10.6	H
<b>Mid CH, 5785 MHz</b>															
11.570	3.0	46.6	34.3	37.4	3.9	-33.0	0.0	0.0	54.9	42.6	74	54	-19.1	-11.4	H
11.570	3.0	48.5	36.8	37.4	3.9	-33.0	0.0	0.0	56.8	45.1	74	54	-17.2	-8.9	V
<b>High CH, 5825 MHz</b>															
11.650	3.0	49.3	37.6	37.4	3.9	-32.9	0.0	0.0	57.8	46.0	74	54	-16.2	-8.0	V
11.650	3.0	48.6	36.1	37.4	3.9	-32.9	0.0	0.0	57.1	44.6	74	54	-16.9	-9.4	H

**No other emissions were detected above system noise floor**

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

**Monopole 5GHz Antenna:**

**HARMONICS AND SPURIOUS EMISSIONS**

High Frequency Measurement																
Compliance Certification Services, 3 Meters_C Chamber																
Company:		Proxim														
Project #:		08U11852														
Date:		6/7/2008														
Test Engineer:		Thanh Nguyen														
Configuration:		EUT , Omni Monopole 5GHz 10dBi gain antenna.														
Mode:		Tx 5.8GHz DTS band														
<b>Test Equipment:</b>																
Horn 1-18GHz			Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit				
T60; S/N: 2238 @3m			T145 Agilent 3008A005			T88 Miteq 26.40GHz			T125; ARA 18-26GHz; S/N:1007			FCC 15.205				
Hi Frequency Cables																
2 foot cable			3 foot cable			12 foot cable			HPF		Reject Filter		Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz ; VBW=10Hz			
			Thanh 187215003			Ninous 208946002					R_001					
f GHz	Dist (m)	Read Pk dBuV	Read Avg dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)	
<b>Low CH, 5745MHz</b>																
11.490	3.0	53.2	41.4	37.4	3.9	-33.1	0.0	0.0	61.4	49.6	74	54	-12.6	-4.4	V	
11.490	3.0	47.7	37.2	37.4	3.9	-33.1	0.0	0.0	55.9	45.4	74	54	-18.1	-8.6	H	
<b>Mid CH, 5785 MHz</b>																
11.570	3.0	45.7	33.5	37.4	3.9	-33.0	0.0	0.0	54.0	41.9	74	54	-20.0	-12.1	H	
11.570	3.0	53.7	41.5	37.4	3.9	-33.0	0.0	0.0	62.0	49.8	74	54	-12.0	-4.2	V	
<b>High CH, 5825 MHz</b>																
11.650	3.0	54.4	42.4	37.4	3.9	-32.9	0.0	0.0	62.8	50.8	74	54	-11.2	-3.2	V	
11.650	3.0	49.7	37.7	37.4	3.9	-32.9	0.0	0.0	58.1	46.1	74	54	-15.9	-7.9	H	
No other emissions were detected above system noise floor																
f	Measurement Frequency		Amp	Preamp Gain		Avg Lim	Average Field Strength Limit									
Dist	Distance to Antenna		D Corr	Distance Correct to 3 meters		Pk Lim	Peak Field Strength Limit									
Read	Analyzer Reading		Avg	Average Field Strength @ 3 m		Avg Mar	Margin vs. Average Limit									
AF	Antenna Factor		Peak	Calculated Peak Field Strength		Pk Mar	Margin vs. Peak Limit									
CL	Cable Loss		HPF	High Pass Filter												



## 6.5. RECEIVER ABOVE 1 GHz

### 6.5.1. RX ABOVE 1 GHz FOR 20 MHz BANDWIDTH IN THE 2.4 GHz BAND

**High Frequency Measurement**  
 Compliance Certification Services, 3 Meters\_C Chamber

Company: Proxim  
 Project #: 08U11852  
 Date: 6/2/2008  
 Test Engineer: Thanh Nguyen  
 Configuration: EUT , Omni Monopol 2.4GHz band antenna  
 Mode: Receive mode

**Test Equipment:**

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T145 Agilent 3008A005t			RX RSS 210

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter	Peak Measurements RBW=VBW=1MHz
	Thanh 187215003	Ninous 208946002			Average Measurements RBW=1MHz , VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
1.059	3.0	67.8	43.3	25.6	1.6	-36.1	0.0	0.0	58.9	34.4	74	54	-15.1	-19.6	V
1.866	3.0	52.7	31.9	27.6	1.8	-35.5	0.0	0.0	46.7	25.8	74	54	-27.3	-28.2	V
1.061	3.0	65.7	41.7	25.6	1.6	-36.1	0.0	0.0	56.7	32.7	74	54	-17.3	-21.3	H

**No other emissions were detected above system noise floor**

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

**6.5.2. RX ABOVE 1 GHz FOR 20 MHz BANDWIDTH IN THE 5.8 GHz BAND**

**For Panel Antenna:**

**High Frequency Measurement**  
 Compliance Certification Services, 3 Meters\_C Chamber

Company: Proxim  
 Project #: 08U11852  
 Date: 6/2/2008  
 Test Engineer: Thanh Nguyen  
 Configuration: EUT , Panel 5GHz antenna  
 Mode: Receive mode 5GHz band

**Test Equipment:**

<b>Horn 1-18GHz</b>	<b>Pre-amplifer 1-26GHz</b>	<b>Pre-amplifer 26-40GHz</b>	<b>Horn &gt; 18GHz</b>	<b>Limit</b>
T60; S/N: 2238 @3m	T145 Agilent 3008A005t			RX RSS 210

Hi Frequency Cables

<b>2 foot cable</b>	<b>3 foot cable</b>	<b>12 foot cable</b>	<b>HPF</b>	<b>Reject Filter</b>	<b>Peak Measurements</b> RBW=VBW=1MHz
	Thanh 187215003	Ninous 208946002			<b>Average Measurements</b> RBW=1MHz, VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
1.066	3.0	67.0	42.9	25.6	1.6	-36.1	0.0	0.0	58.1	34.0	74	54	-15.9	-20.0	V
1.991	3.0	55.7	32.7	27.9	1.9	-35.4	0.0	0.0	50.1	27.1	74	54	-23.9	-26.9	V
1.060	3.0	65.6	42.4	25.6	1.6	-36.1	0.0	0.0	56.7	33.5	74	54	-17.3	-20.5	H

**No other emissions were detected above system noise floor**

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

**For Monopole Omni Antenna:**

**High Frequency Measurement**  
 Compliance Certification Services, 3 Meters\_C Chamber

Company: Proxim  
 Project #: 08U11852  
 Date: 7/7/2008  
 Test Engineer: Thanh Nguyen  
 Configuration: EUT , Omni Monopole 5GHz band antenna.  
 Mode: Receive mode

**Test Equipment:**

Horn 1-18GHz	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz	Limit
T73; S/N: 6717 @3m	T144 Miteq 3008A00931			RX RSS 210

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter	
	Thanh 187215003	Gordon 203134001			<u>Peak Measurements</u> RBW=VBW=1MHz <u>Average Measurements</u> RBW=1MHz, VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fldr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
1.059	3.0	66.8	43.7	24.0	3.5	-39.4	0.0	0.0	54.9	31.9	74	54	-19.1	-22.1	V
1.856	3.0	53.7	33.2	26.9	4.5	-38.3	0.0	0.0	46.8	26.3	74	54	-27.2	-27.7	V
1.060	3.0	66.5	43.2	24.0	3.6	-39.4	0.0	0.0	54.6	31.4	74	54	-19.4	-22.6	H

**No other emissions were detected above system noise floor**

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

### 6.5.3. RX ABOVE 1 GHz FOR 40 MHz BANDWIDTH IN THE 5.8 GHz BAND

For Panel Antenna:

High Frequency Measurement																	
Compliance Certification Services, 3 Meters_C Chamber																	
Company:		Proxim															
Project #:		08U11852															
Date:		6/2/2008															
Test Engineer:		Thanh Nguyen															
Configuration:		EUT , Panel 5GHz antenna															
Mode:		Receive mode 5GHz band															
<b>Test Equipment:</b>																	
Horn 1-18GHz			Pre-amplifer 1-26GHz			Pre-amplifer 26-40GHz			Horn > 18GHz			Limit					
T60; S/N: 2238 @3m			T145 Agilent 3008A005t									RX RSS 210					
<b>Hi Frequency Cables</b>																	
2 foot cable			3 foot cable			12 foot cable			HPF			Reject Filter			Peak Measurements		
			Thanh 187215003			Ninous 208946002									RBW=VBW=1MHz		
<b>Average Measurements</b>																	
RBW=1MHz ; VBW=10Hz																	
f	Dist	Read Pk	Read Avg	AF	CL	Amp	D Corr	Fltr	Peak	Avg	Pk Lim	Avg Lim	Pk Mar	Avg Mar	Notes		
GHz	(m)	dBuV	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dBuV/m	dBuV/m	dB	dB	(V/H)		
1.066	3.0	67.0	42.9	25.6	1.6	-36.1	0.0	0.0	58.1	34.0	74	54	-15.9	-20.0	Y		
1.991	3.0	55.7	32.7	27.9	1.9	-35.4	0.0	0.0	50.1	27.1	74	54	-23.9	-26.9	Y		
1.060	3.0	65.6	42.4	25.6	1.6	-36.1	0.0	0.0	56.7	33.5	74	54	-17.3	-20.5	H		
No other emissions were detected above system noise floor																	
f	Measurement Frequency					Amp	Preamp Gain					Avg Lim	Average Field Strength Limit				
Dist	Distance to Antenna					D Corr	Distance Correct to 3 meters					Pk Lim	Peak Field Strength Limit				
Read	Analyzer Reading					Avg	Average Field Strength @ 3 m					Avg Mar	Margin vs. Average Limit				
AF	Antenna Factor					Peak	Calculated Peak Field Strength					Pk Mar	Margin vs. Peak Limit				
CL	Cable Loss					HPF	High Pass Filter										

**For Monopole Omni Antenna:**

**High Frequency Measurement**  
 Compliance Certification Services, 3 Meters\_C Chamber

Company: Proxim  
 Project #: 08U11852  
 Date: 7/7/2008  
 Test Engineer: Thanh Nguyen  
 Configuration: EUT , Omni Monopole 5GHz band antenna.  
 Mode: Receive mode 5.8Ghz a 40 MHz mode.

**Test Equipment:**

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T73; S/N: 6717 @3m	T144 Miteq 3008A00931			RX RSS 210

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter	Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz , VBW=10Hz
	Thanh 187215003	Gordon 203134001			

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
1.061	3.0	65.6	42.9	24.0	3.6	-39.4	0.0	0.0	53.7	31.0	74	54	-20.3	-23.0	V
1.874	3.0	54.7	32.8	27.0	4.5	-38.2	0.0	0.0	47.9	26.0	74	54	-26.1	-28.0	V
1.059	3.0	66.7	44.2	24.0	3.5	-39.4	0.0	0.0	54.8	32.4	74	54	-19.2	-21.6	H

**No other emissions were detected above system noise floor**

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

## **6.6. WORST-CASE BELOW 1 GHz**

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

#### **Monopole Omni 2.4 GHz Antenna:**

No radiated emissions from the radio portion of the EUT were detected in the restricted bands of 15.205

**Panel 5.8 GHz Antenna:**

No radiated emissions from the radio portion of the EUT were detected in the restricted bands of 15.205

**Monopole Omni 5.8 GHz Antenna:**

No radiated emissions from the radio portion of the EUT were detected in the restricted bands of 15.205



## 7. AC POWER LINE CONDUCTED EMISSIONS

### LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

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

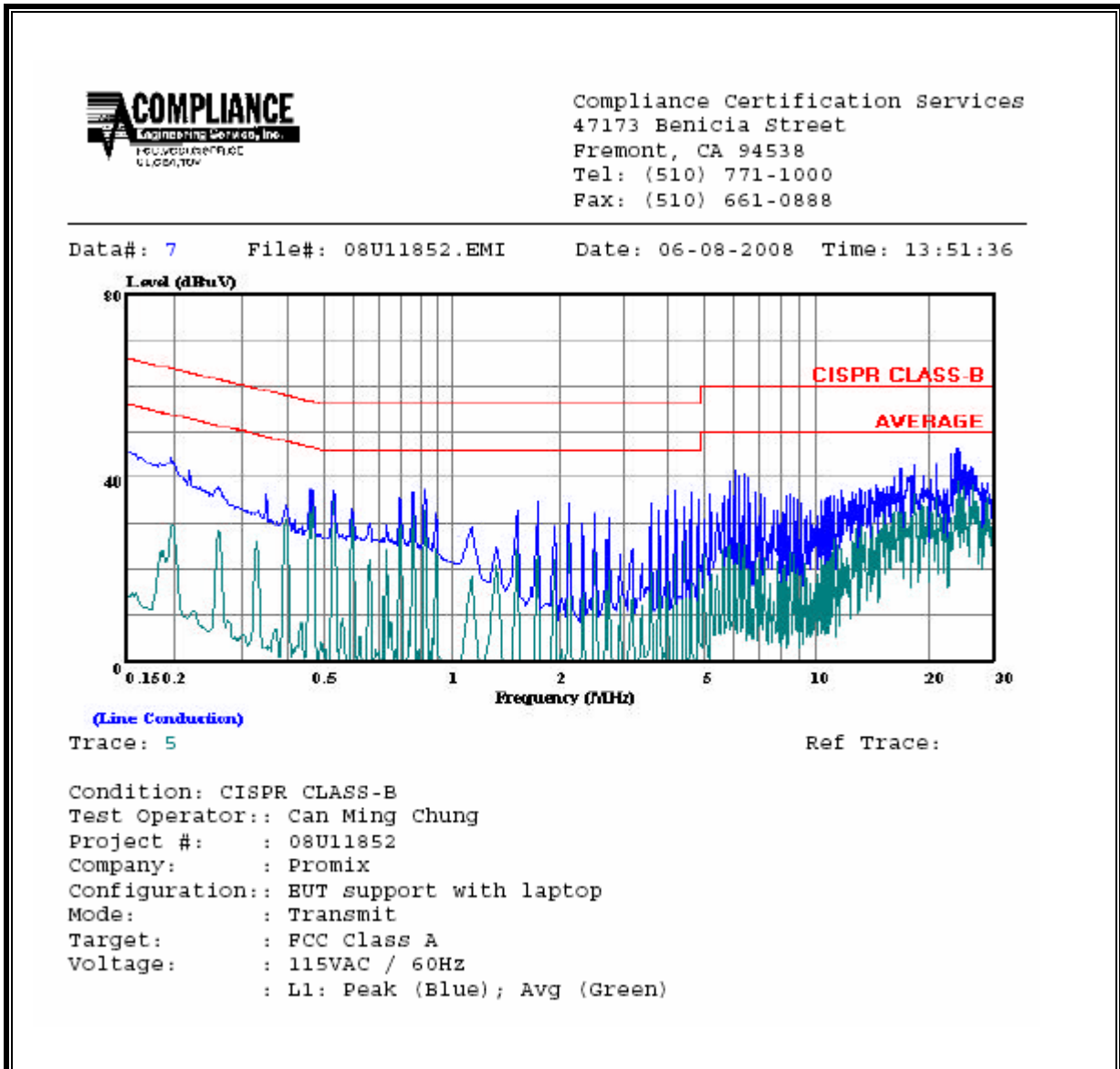
ANSI C63.4

**RESULTS**

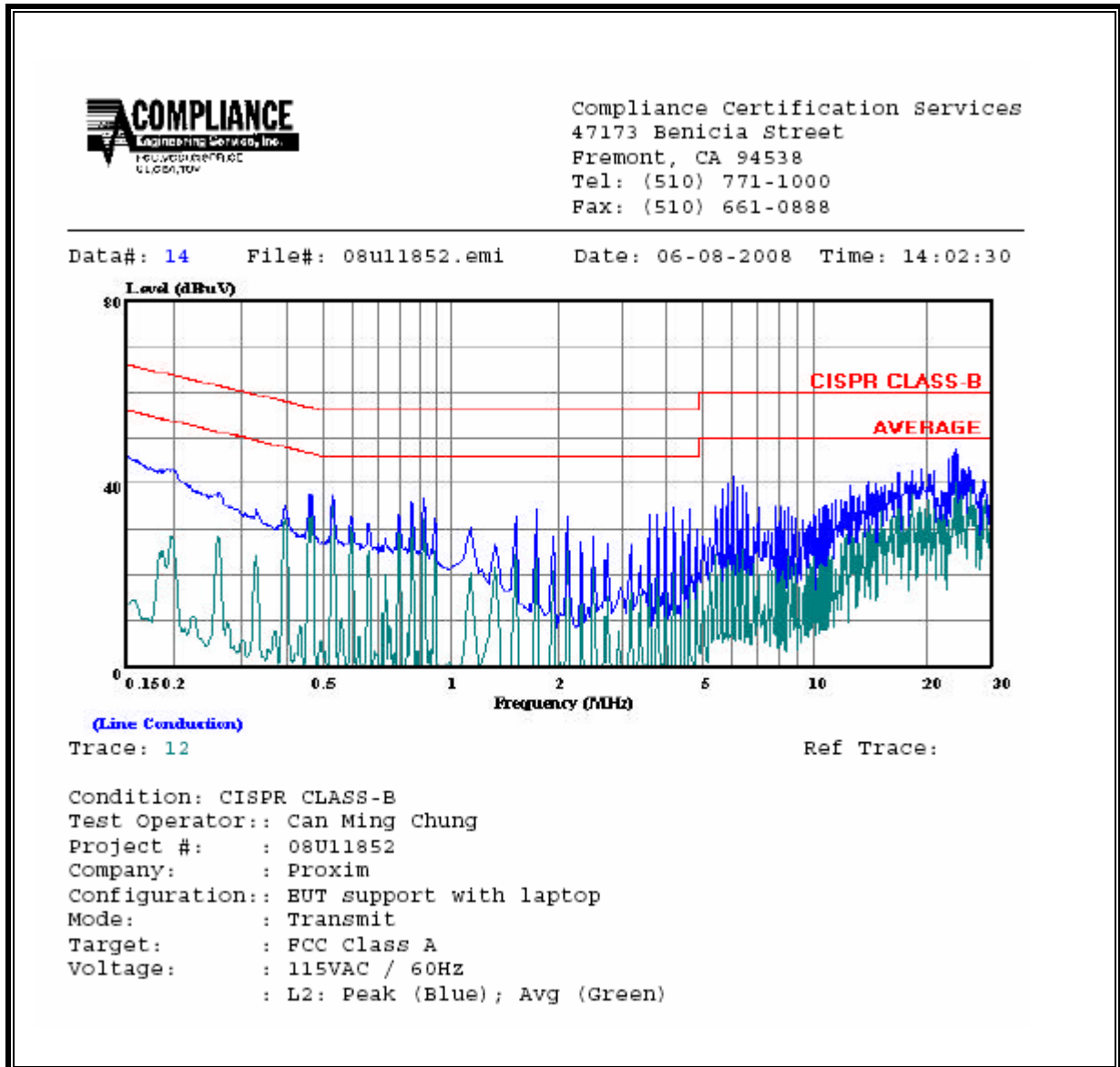
**6 WORST EMISSIONS**

CONDUCTED EMISSIONS DATA (115VAC 60Hz)										
Freq. (MHz)	Reading			Class (dB)	Limit QP	FCC A		Margin		Remark L1 / L2
	PK (dBuV)	QP (dBuV)	AV (dBuV)			AV	QP (dB)	AV (dB)		
0.20	43.33	--	29.78	0.00	79.00	66.00	-35.67	-36.22	L1	
0.92	37.24	--	33.23	0.00	73.00	60.00	-35.76	-26.77	L1	
24.27	46.44	--	40.83	0.00	73.00	60.00	-26.56	-19.17	L1	
0.20	42.49	--	28.45	0.00	79.00	66.00	-36.51	-37.55	L2	
6.15	41.40	--	31.14	0.00	73.00	60.00	-31.60	-28.86	L2	
24.01	47.32	--	24.40	0.00	73.00	60.00	-25.68	-35.60	L2	
6 Worst Data										

**LINE 1 RESULTS**



**LINE 2 RESULTS**



## 8. MAXIMUM PERMISSIBLE EXPOSURE

### FCC RULES

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

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

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

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

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

f = frequency in MHz

\* = Plane-wave equivalent power density

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

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

**IC RULES**

IC Safety Code 6, Section 2.2.1 (a) A person other than an RF and microwave exposed worker shall not be exposed to electromagnetic radiation in a frequency band listed in Column 1 of Table 5, if the field strength exceeds the value given in Column 2 or 3 of Table 5, when averaged spatially and over time, or if the power density exceeds the value given in Column 4 of Table 5, when averaged spatially and over time.

**Table 5  
 Exposure Limits for Persons Not Classed As RF and Microwave Exposed Workers (Including the General Public)**

1 Frequency (MHz)	2 Electric Field Strength; rms (V/m)	3 Magnetic Field Strength; rms (A/m)	4 Power Density (W/m <sup>2</sup> )	5 Averaging Time (min)
0.003–1	280	2.19		6
1–10	280/ <i>f</i>	2.19/ <i>f</i>		6
10–30	28	2.19/ <i>f</i>		6
30–300	28	0.073	2*	6
300–1 500	1.585 <i>f</i> <sup>0.5</sup>	0.0042 <i>f</i> <sup>0.5</sup>	<i>f</i> /150	6
1 500–15 000	61.4	0.163	10	6
15 000–150 000	61.4	0.163	10	616 000 / <i>f</i> <sup>1.2</sup>
150 000–300 000	0.158 <i>f</i> <sup>0.5</sup>	4.21 x 10 <sup>-4</sup> <i>f</i> <sup>0.5</sup>	6.67 x 10 <sup>-5</sup> <i>f</i>	616 000 / <i>f</i> <sup>1.2</sup>

\* Power density limit is applicable at frequencies greater than 100 MHz.

- Notes:**
1. Frequency, *f*, is in MHz.
  2. A power density of 10 W/m<sup>2</sup> is equivalent to 1 mW/cm<sup>2</sup>.
  3. A magnetic field strength of 1 A/m corresponds to 1.257 microtesla (μT) or 12.57 milligauss (mG).

### **CO-LOCATED MPE CALCULATIONS**

For multiple colocated transmitters operating simultaneously the total power density can be calculated by summing the Power \* Gain product (in linear units) of each transmitter.

yields

$$d = 0.282 * \sqrt{((P1 * G1) + (P2 * G2) + \dots + (Pn * Gn)) / S}$$

where

d = distance in cm

Px = Power of transmitter x in mW

Gx = Numeric gain of antenna x

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

In the table below, Power and Gain are entered in units of dBm and dBi respectively, then converted to their linear forms for the purpose of the calculations.

### **LIMITS**

From FCC §1.1310 Table 1 (B), the maximum value of S = 1.0 mW/cm<sup>2</sup>

From IC Safety Code 6, Section 2.2 Table 5 Column 4, S = 10 W/m<sup>2</sup>

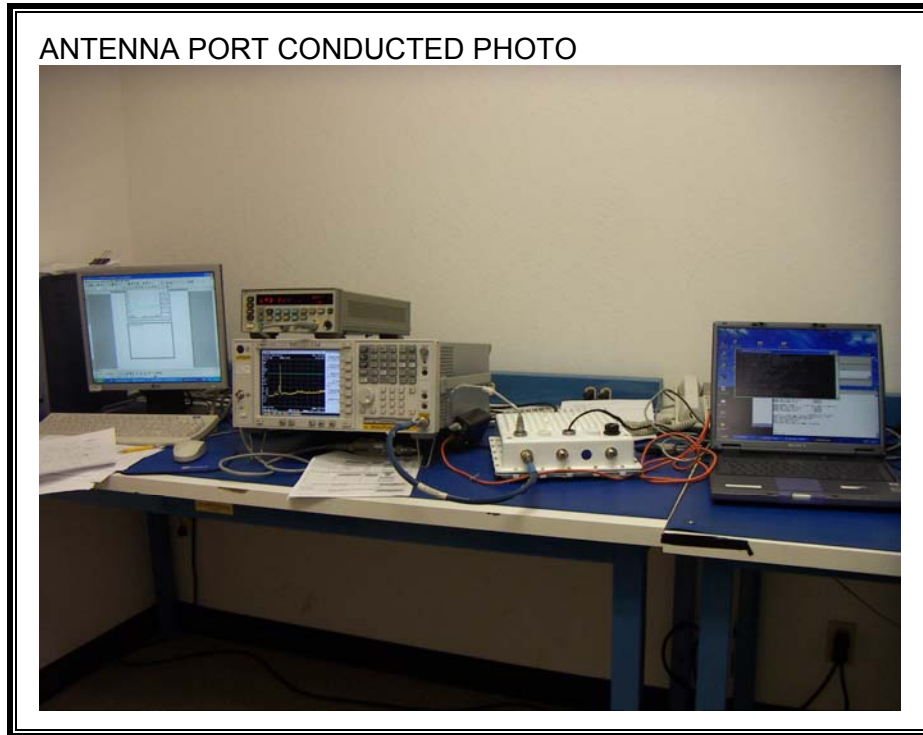
**RESULTS**

Mode	Band	FCC Limit (mW/cm <sup>2</sup> )	IC Limit (W/m <sup>2</sup> )	Output Power (dBm)	Antenna Gain (dBi)	MPE Distance (cm)
WLAN (AP)	2.4 GHz			25.90	10.00	
WLAN (AP)	5 GHz			29.73	30.00	
WLAN (SU)	5 GHz			28.10	31.30	
Combined		1.0	10.0			379.87



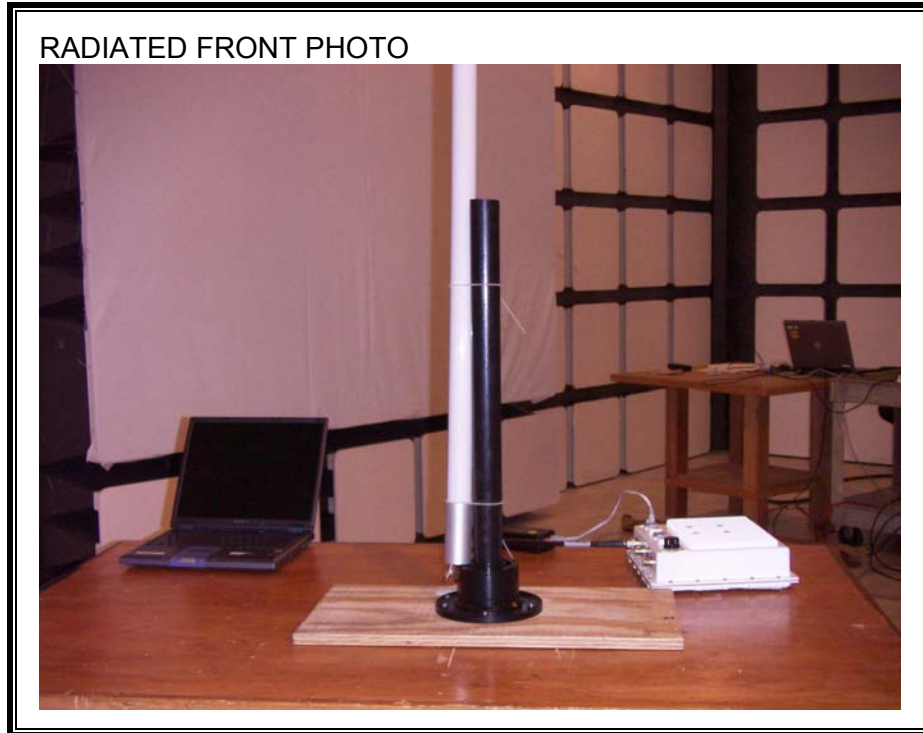
## 9. SETUP PHOTOS

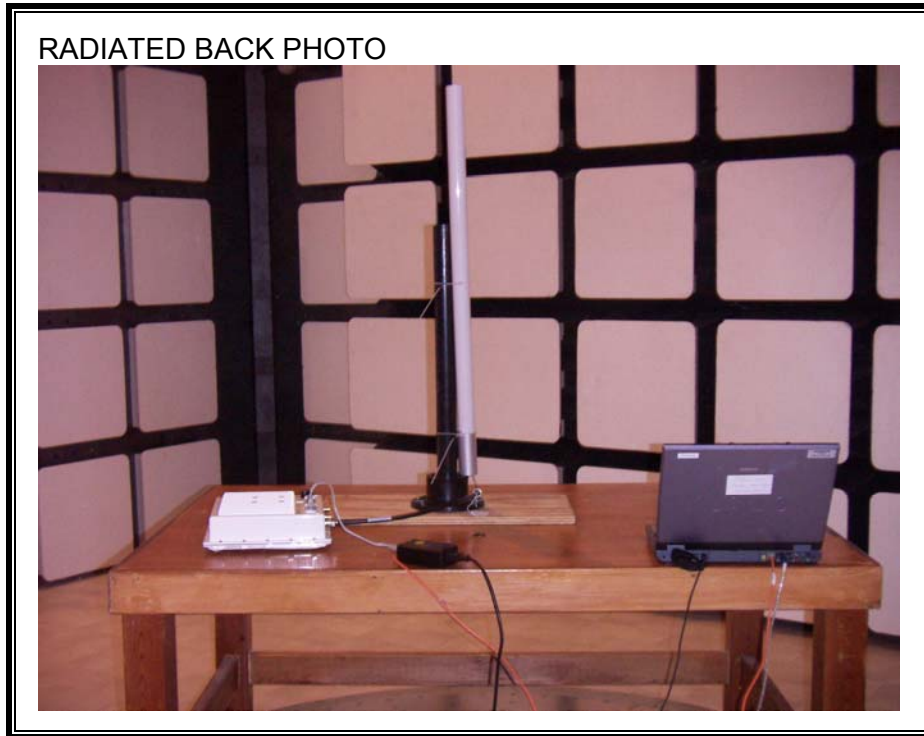
### ANTENNA PORT CONDUCTED RF MEASUREMENT SETUP



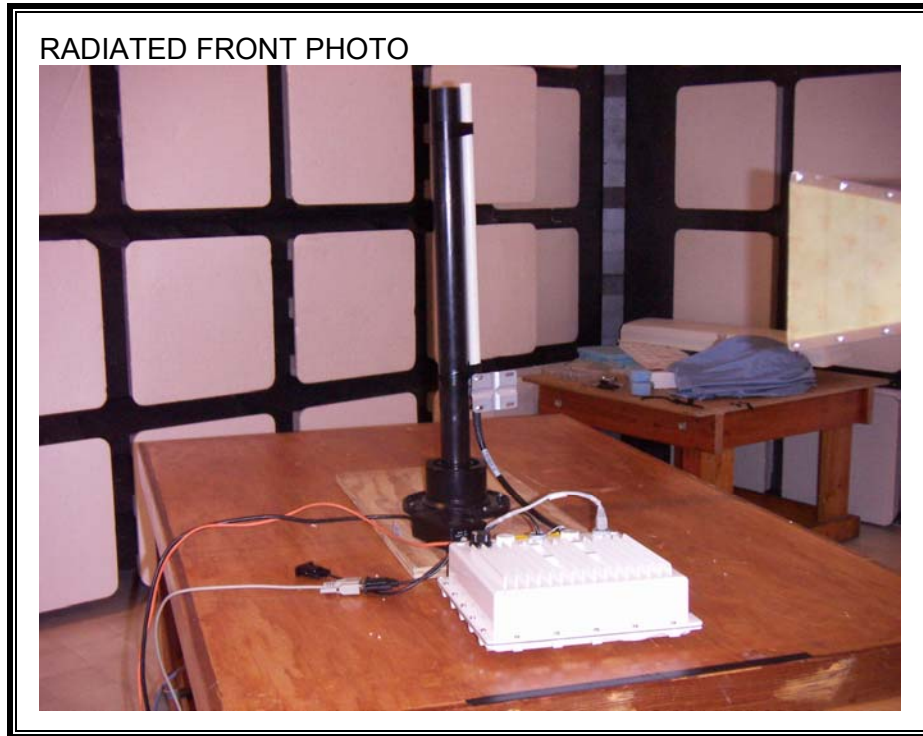
**RADIATED RF MEASUREMENT SETUP**

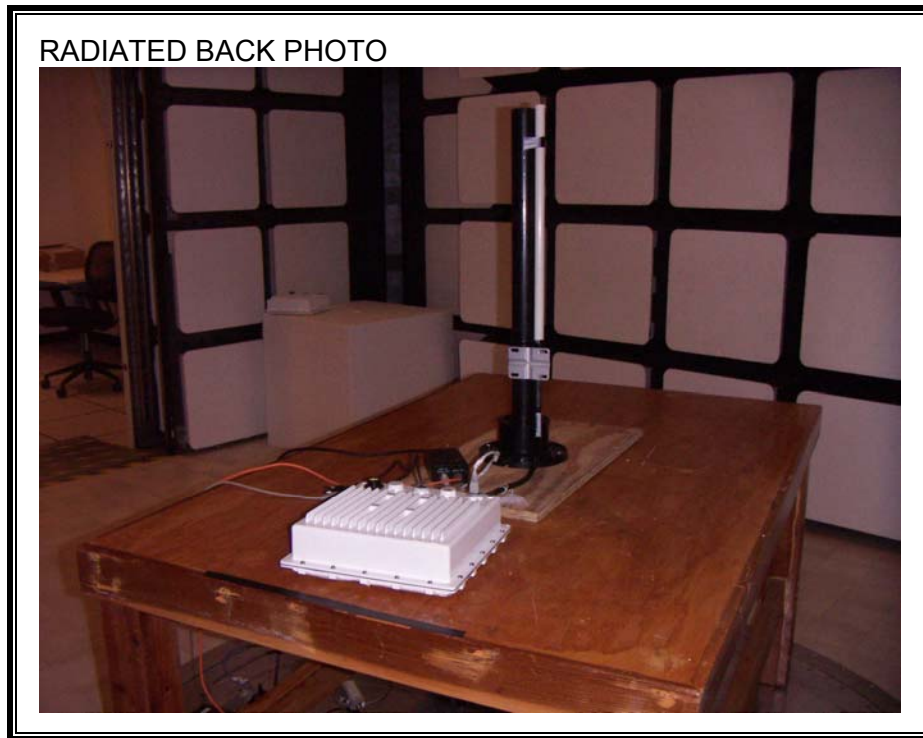
**EUT with Monopole Omni 2.4 GHz Antenna:**



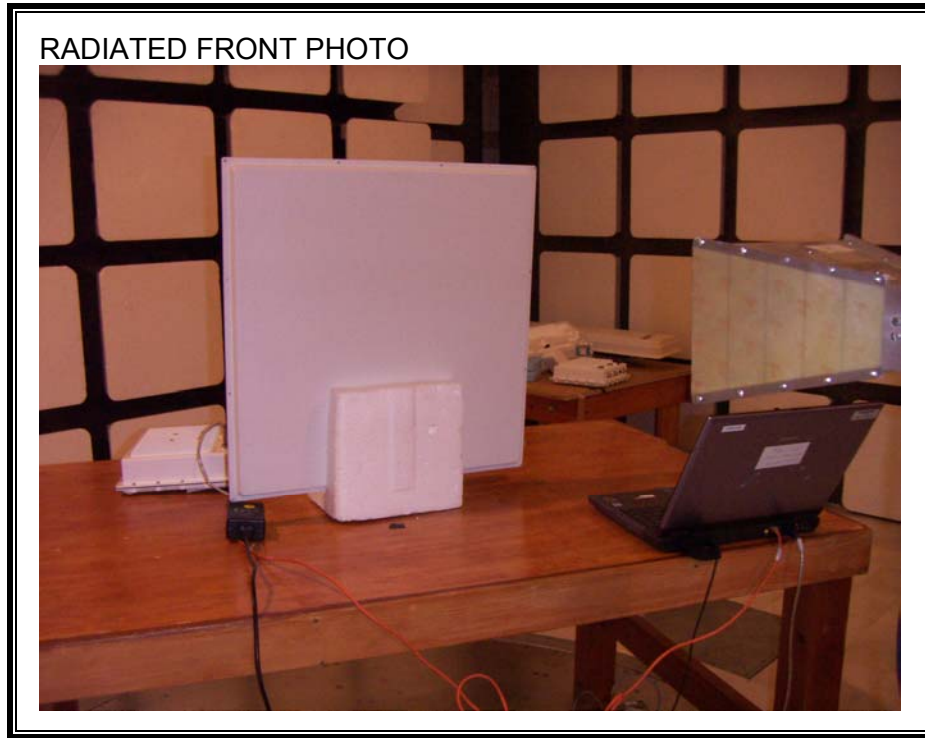


**EUT with Monopole Omni 5.8 GHz Antenna:**



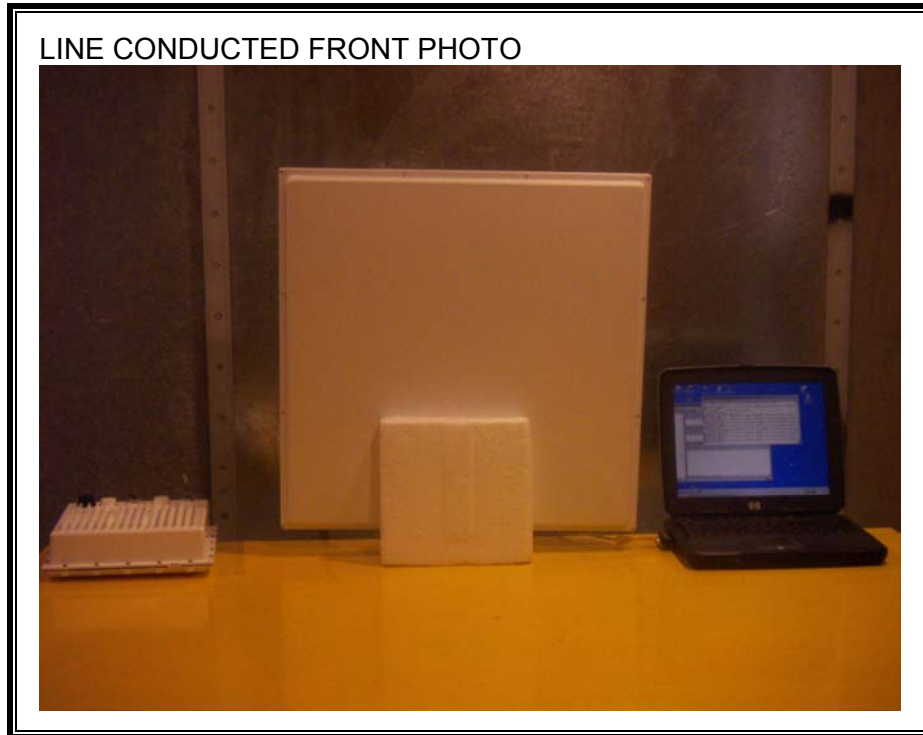


**EUT with Panel 5.8 GHz Antenna:**

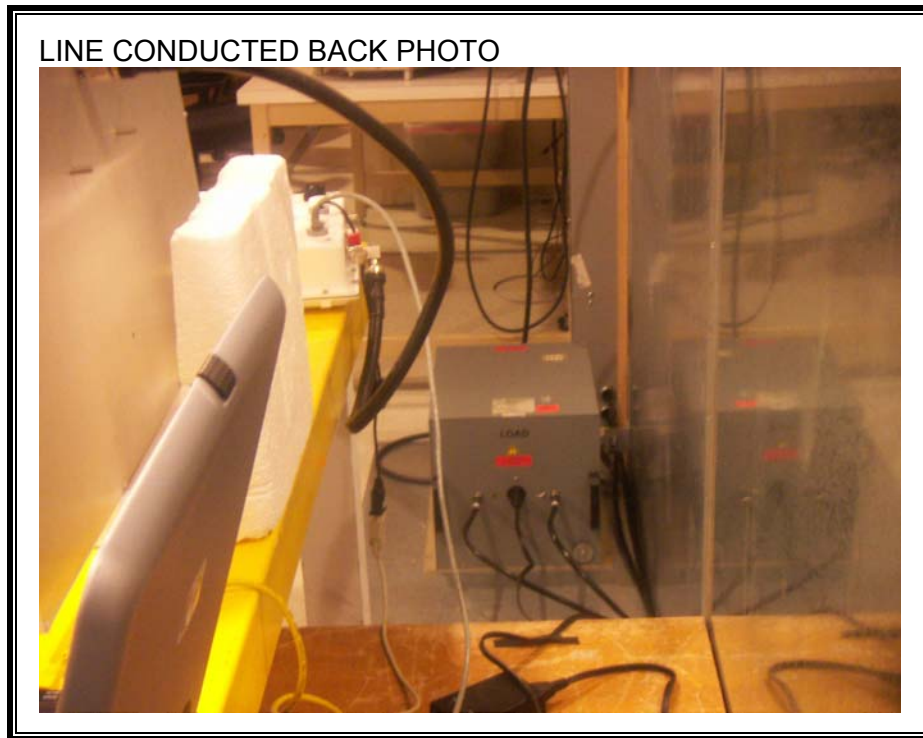




**POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP**







**END OF REPORT**