



**FCC CFR47 PART 15 SUBPART C**

**CERTIFICATION TEST REPORT**

**FOR**

**eBook, WLAN, Bluetooth, and USB Ports without WWAN**

**MODEL NUMBER: PLR001**

**FCC ID: WXP-PLR001**

**REPORT NUMBER: 09U12899-1**

**ISSUE DATE: JANUARY 05, 2010**

*Prepared for*  
**PLASTIC LOGIC**  
**650 CASTRO STREET SUITE 500,**  
**MOUNTAIN VIEW, CA 94041, U.S.A**

*Prepared by*  
**COMPLIANCE CERTIFICATION SERVICES**  
**47173 BENICIA STREET**  
**FREMONT, CA 94538, U.S.A.**  
**TEL: (510) 771-1000**  
**FAX: (510) 661-0888**



**NVLAP LAB CODE 200065-0**

Revision History

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## 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** PLASTIC LOGIC  
650 CASTRO STREET  
MOUNTAIN VIEW, CA 94041, U.S.A

**EUT DESCRIPTION:** eBook, WLAN, Bluetooth, and USB Ports without WWAN

**MODEL:** PLR001

**SERIAL NUMBER:** 00031661400600

**DATE TESTED:** NOVEMBER 10 and 23, 2009

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	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. Measurement Uncertainties were not taken into account and are published for informational purposes only. 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. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For CCS By:

Tested By:



THU CHAN  
EMC MANAGER  
COMPLIANCE CERTIFICATION SERVICES

CHIN PANG  
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, and FCC CFR 47 Part 15.

## 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. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamplifier Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

### 4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 1000 MHz	4.94 dB

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

## **5. EQUIPMENT UNDER TEST**

### **5.1. DESCRIPTION OF EUT**

The EUT is an eBook, WLAN, Bluetooth and USB port device without WWAN

### **5.2. MAXIMUM OUTPUT POWER**

The test measurement passed within  $\pm 0.5\text{dBm}$  of the original output power of the original report 09U12883-4 and model: PLR-002 ( removed WWAN portion)

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

The radio utilizes a PIFA antenna, with a maximum peak gain of 2.0 dBi.

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

The EUT driver software installed during testing was Sychip

The test utility software used during testing was Sychip\_FCCtool.

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

The worst-case channel is determined as the channel with the highest output power.

The EUT is a portable device that has three orientations; therefore X, Y and Z orientations have been investigated. The worst case was found to be Z orientation. Since this EUT just removed WWAN portion from the model PLR-002 and no change to the Bluetooth and WLAN portion, so we just did the test performance to verify the output power and spot check the worst case only based on the original report, 09U12883-4 of PLR-002.

.

## 5.6. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	HP	compaq 2510p	CNF8271TJ1	Doc
AC Adapter	HP	PPP009H	F1-09073355820A	Doc

### I/O CABLES

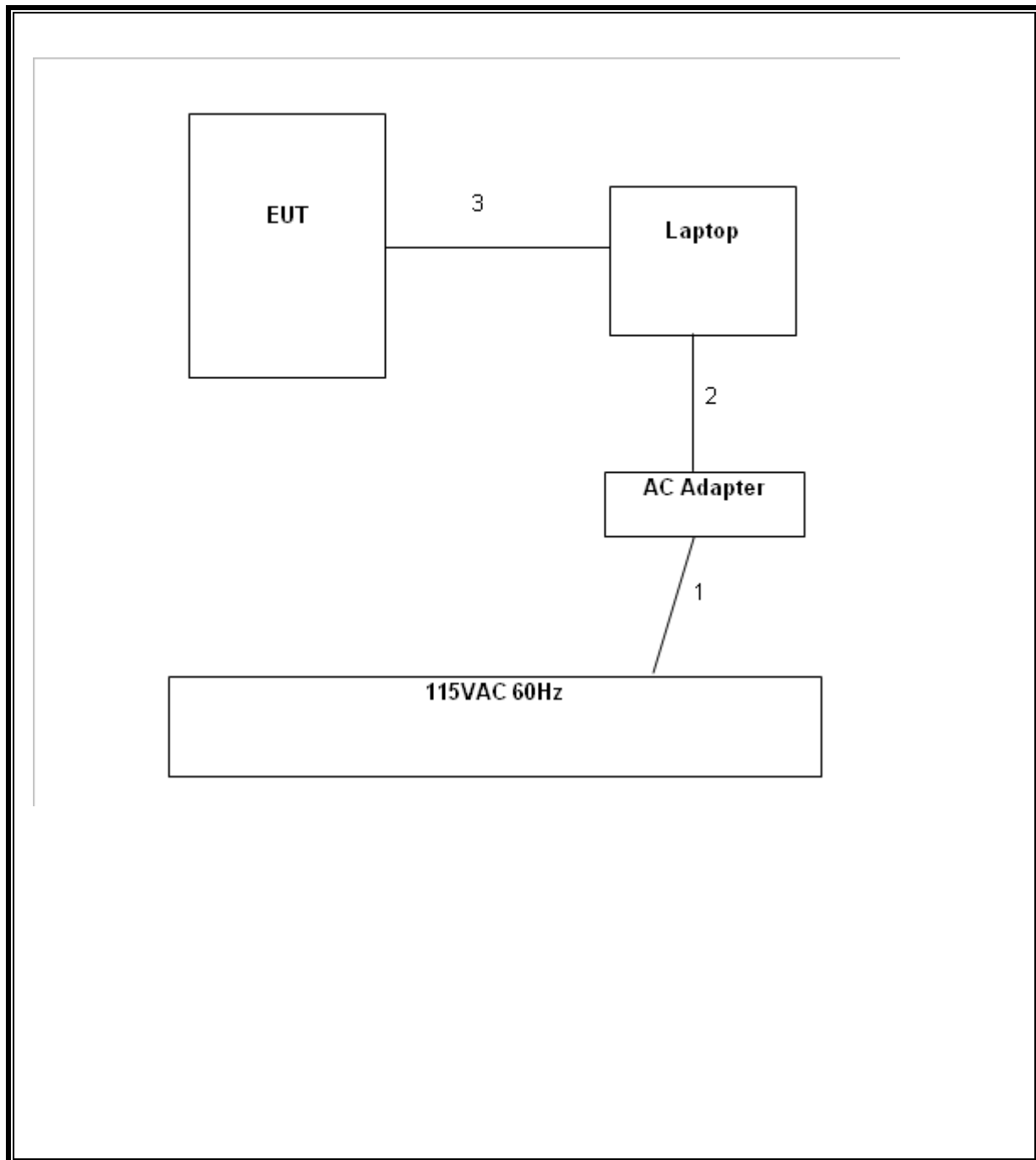
I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	US 115V	Un-shielded	2m	NA
2	DC	1	DC	Un-shielded	2m	NA
3	USB	1	EUT	Un-shielded	2m	NA

### TEST SETUP

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



**SETUP DIAGRAM FOR TESTS**



## 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	Asset	Cal Due
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01178	08/31/10
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	02/04/10
Antenna, Horn, 18 GHz	EMCO	3115	C00783	01/29/10
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00778	12/16/09
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01016	01/14/10
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	10/29/10
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	05/06/11
Peak Power Meter	Boonton	4541	C01189	01/15/10
Peak Power Sensor	Boonton	57318	NA	02/02/10

## 7. ANTENNA PORT TEST RESULTS

### 7.1. 802.11b MODE IN THE 2.4 GHz BAND

#### 7.1.1. 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.

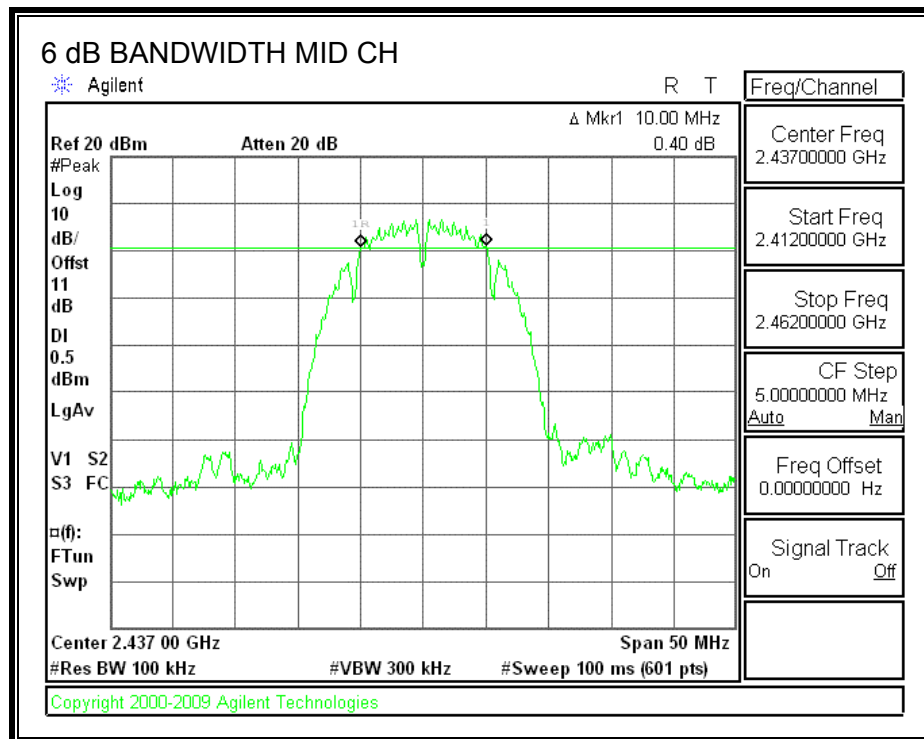
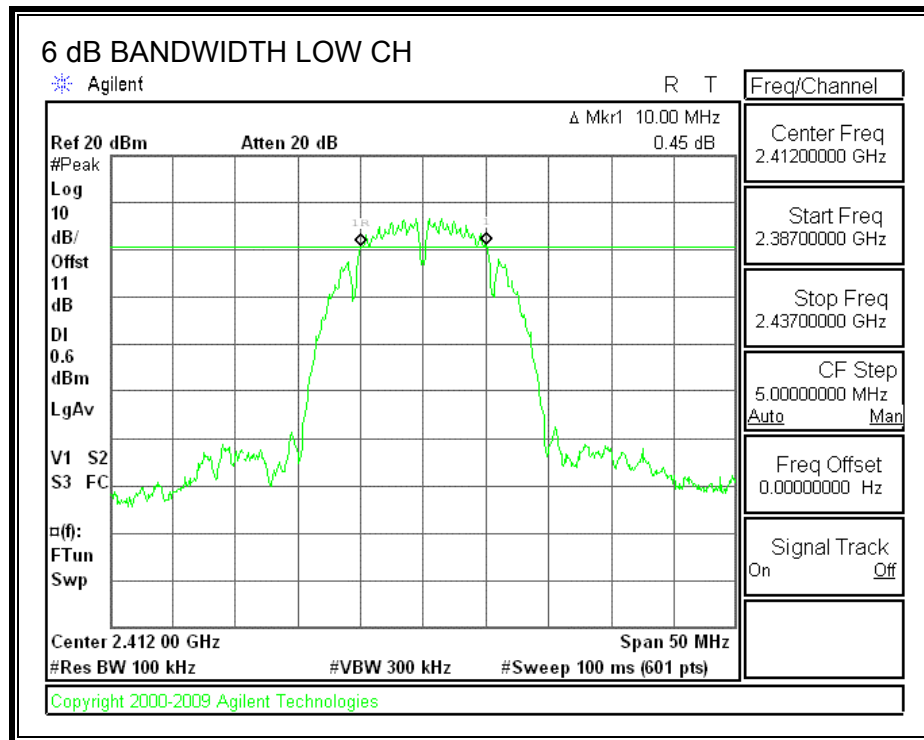
##### TEST PROCEDURE

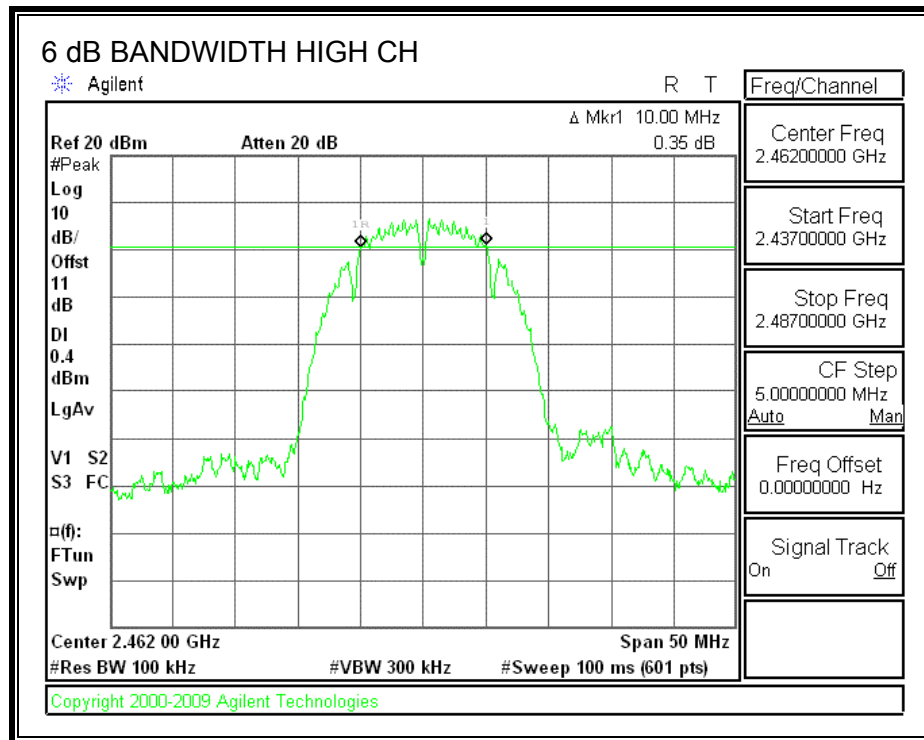
The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

##### RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	10	0.5
Middle	2437	10	0.5
High	2462	10	0.5

## 6 dB BANDWIDTH





### **7.1.2. 99% BANDWIDTH**

#### **LIMITS**

None; for reporting purposes only.

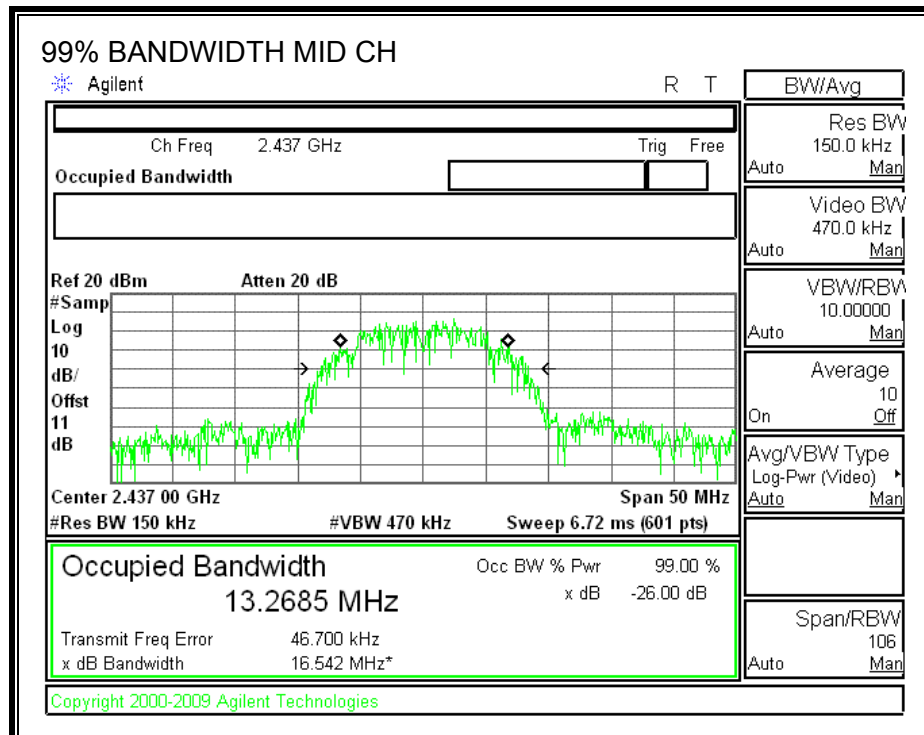
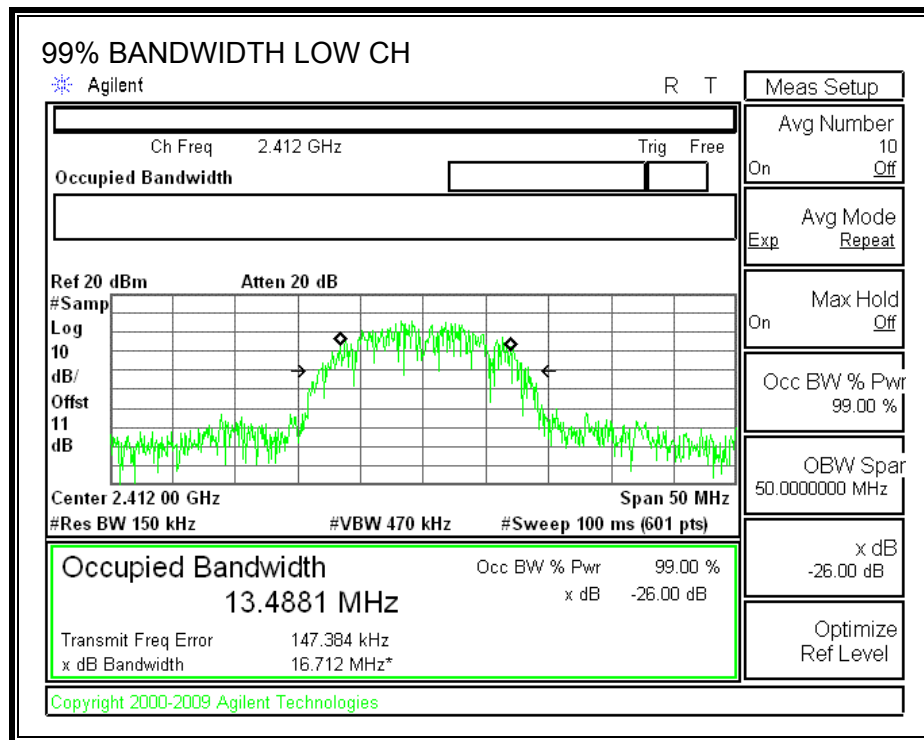
#### **TEST PROCEDURE**

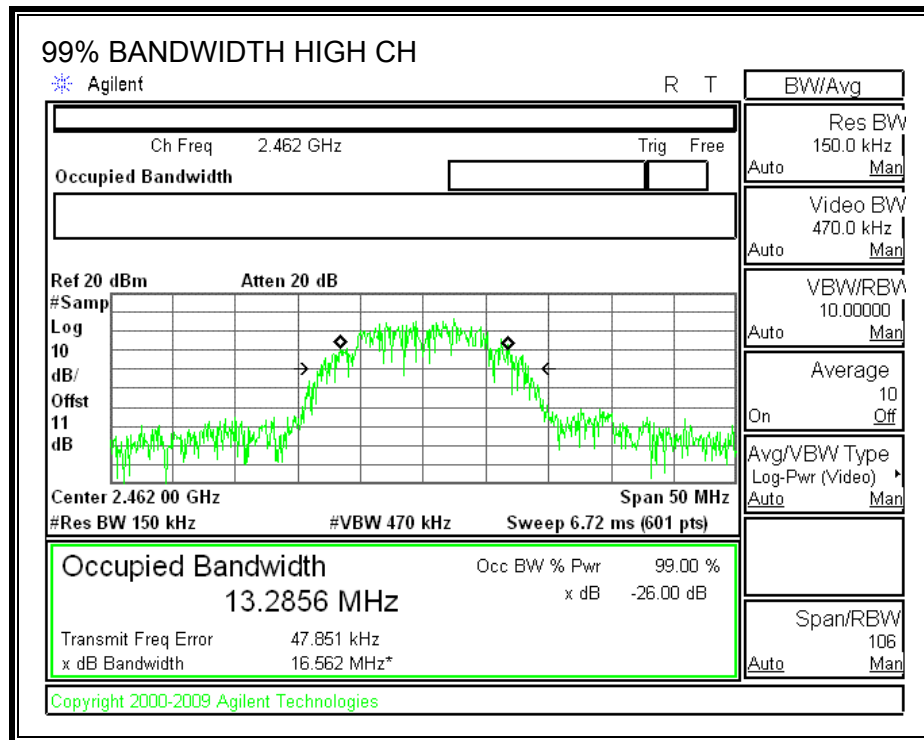
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

#### **RESULTS**

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	13.4881
Middle	2437	13.2685
High	2462	13.2856

**99% BANDWIDTH**







### 7.1.3. OUTPUT POWER

#### LIMITS

FCC §15.247 (b)

IC RSS-210 A8.4

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

#### TEST PROCEDURE

The transmitter output is connected to a power meter.

#### RESULTS

Channel	Frequency (MHz)	Peak Power Meter Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2412	18.00	30	-12.00
Middle	2437	18.20	30	-11.80
High	2462	17.50	30	-12.50

#### **7.1.4. 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 11dB (including 10 dB pad and 1 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	16.50
Middle	2437	16.60
High	2462	16.20

### 7.1.5. 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.

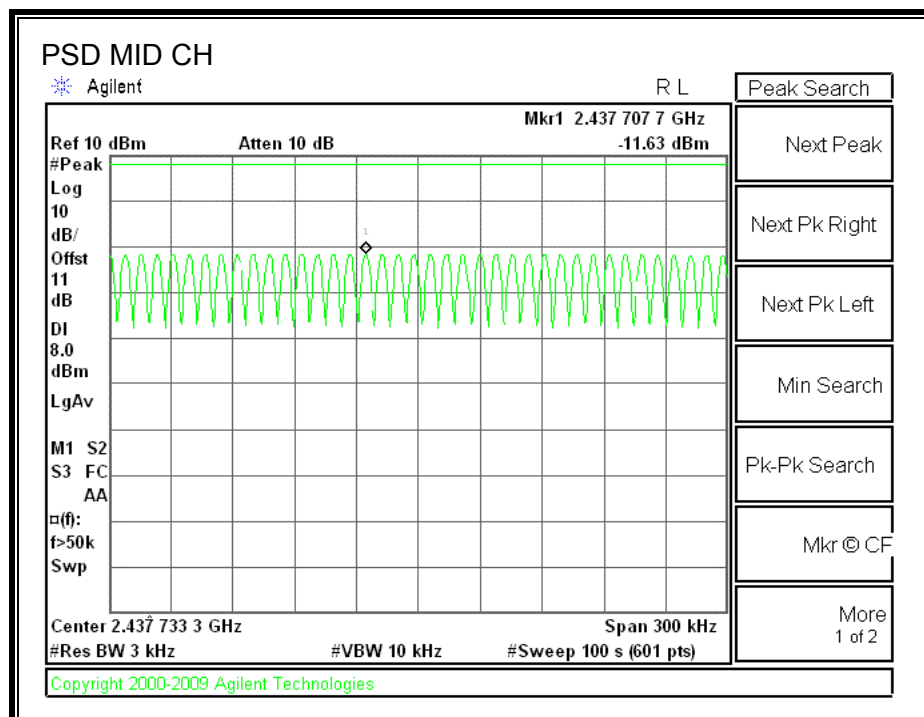
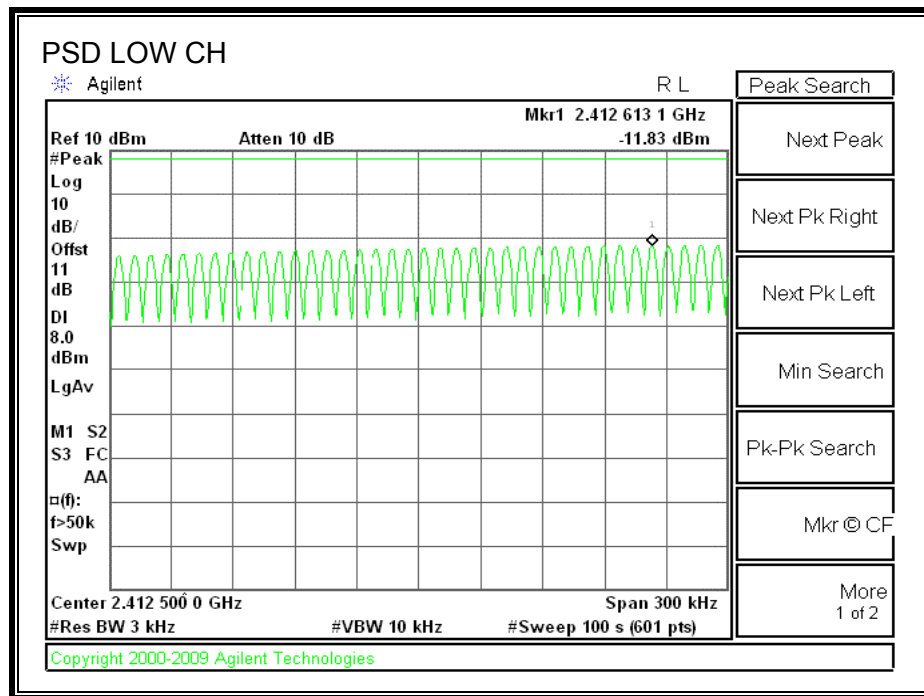
#### TEST PROCEDURE

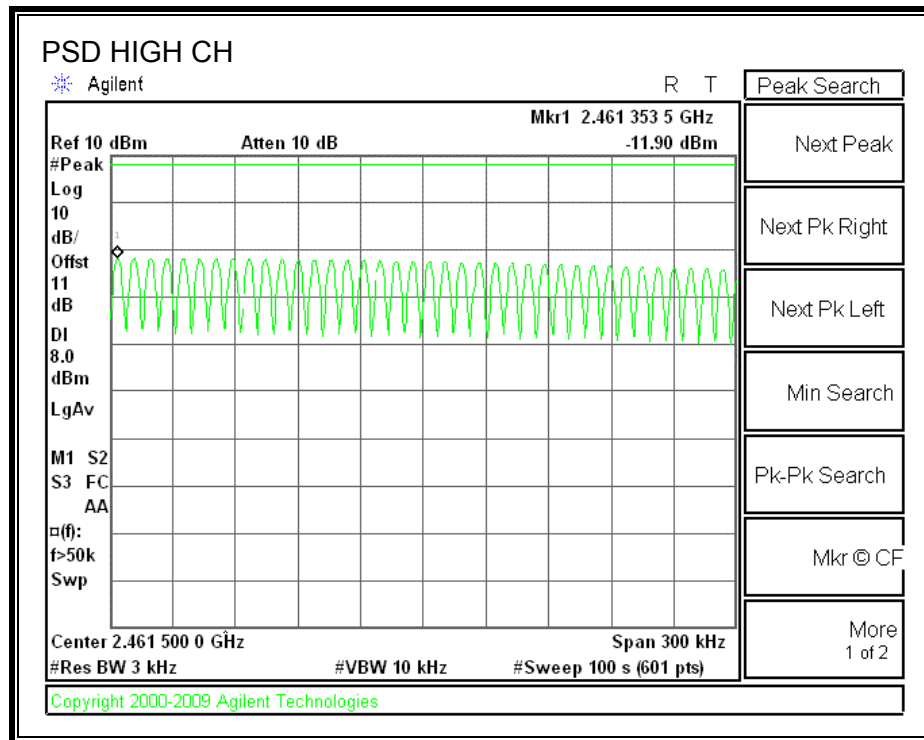
Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005.

#### RESULTS

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-11.83	8	-19.83
Middle	2437	-11.63	8	-19.63
High	2462	-11.90	8	-19.90

## POWER SPECTRAL DENSITY





## **7.1.6. 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.

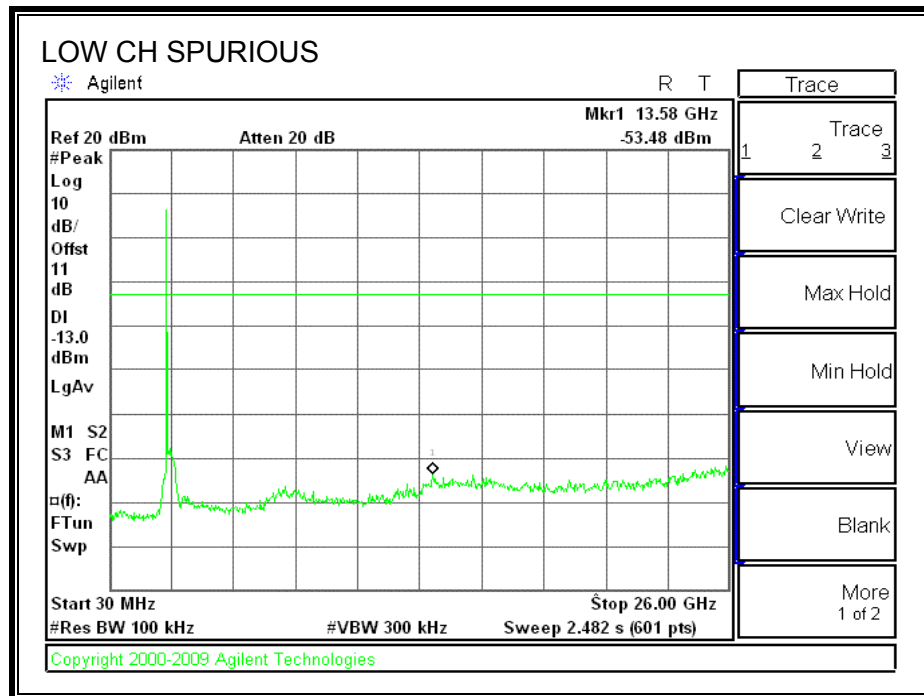
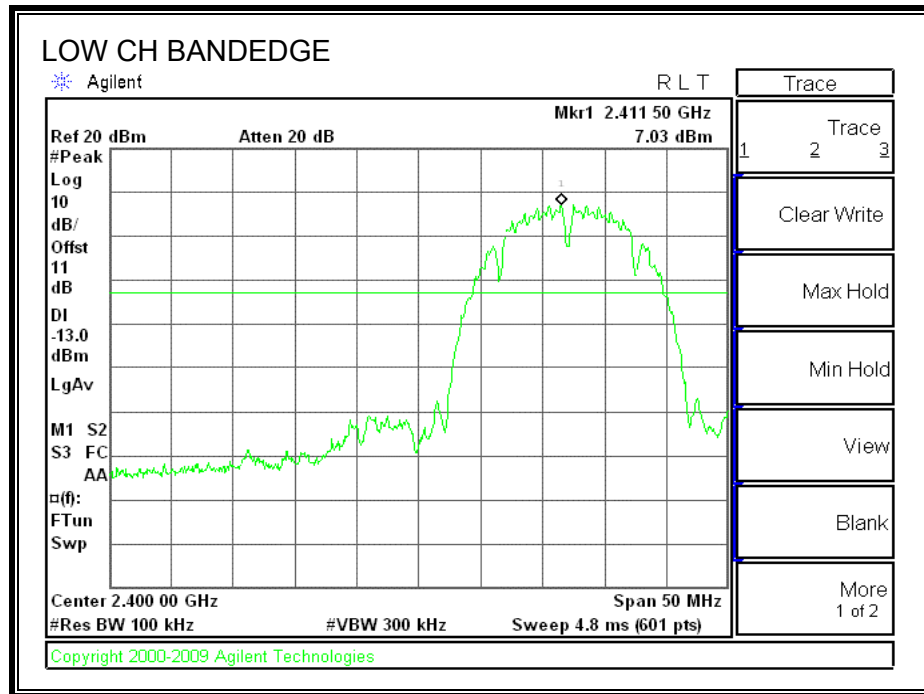
### **TEST PROCEDURE**

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.

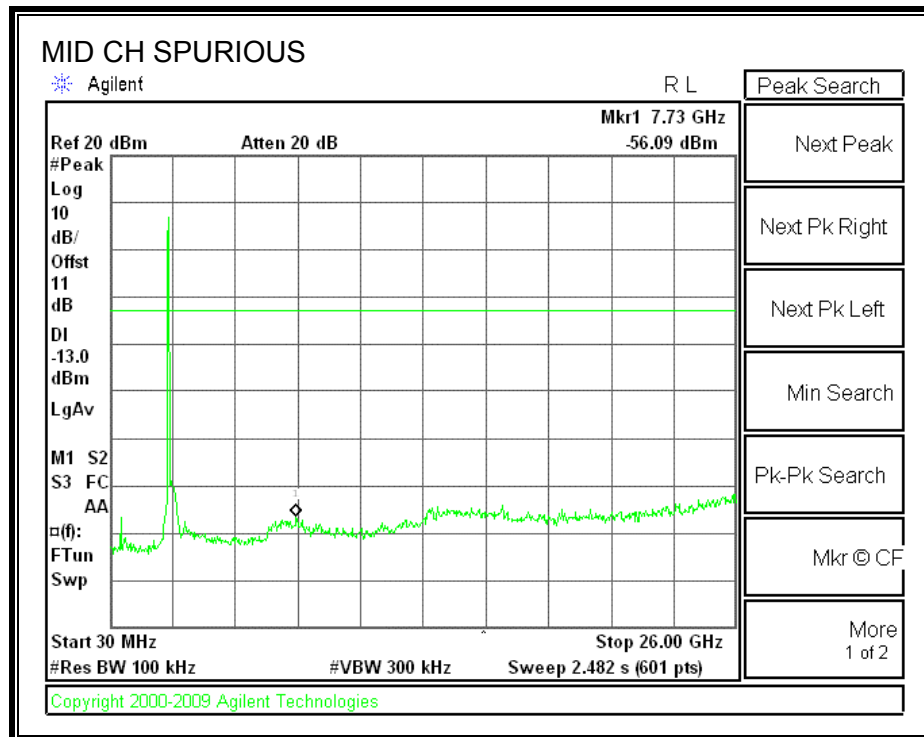
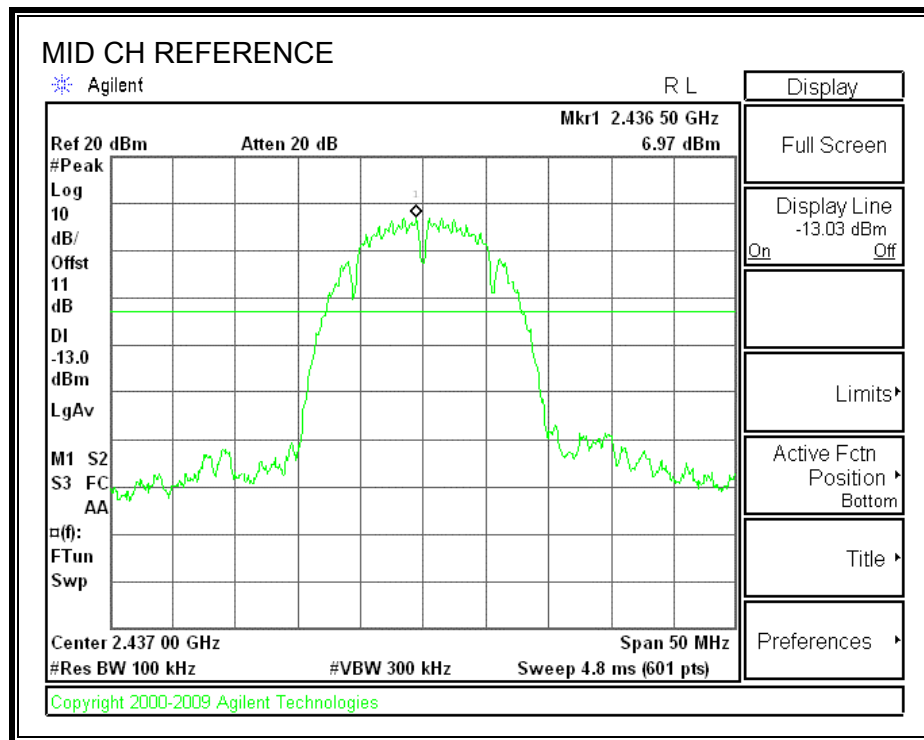
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

## RESULTS

### SPURIOUS EMISSIONS, LOW CHANNEL

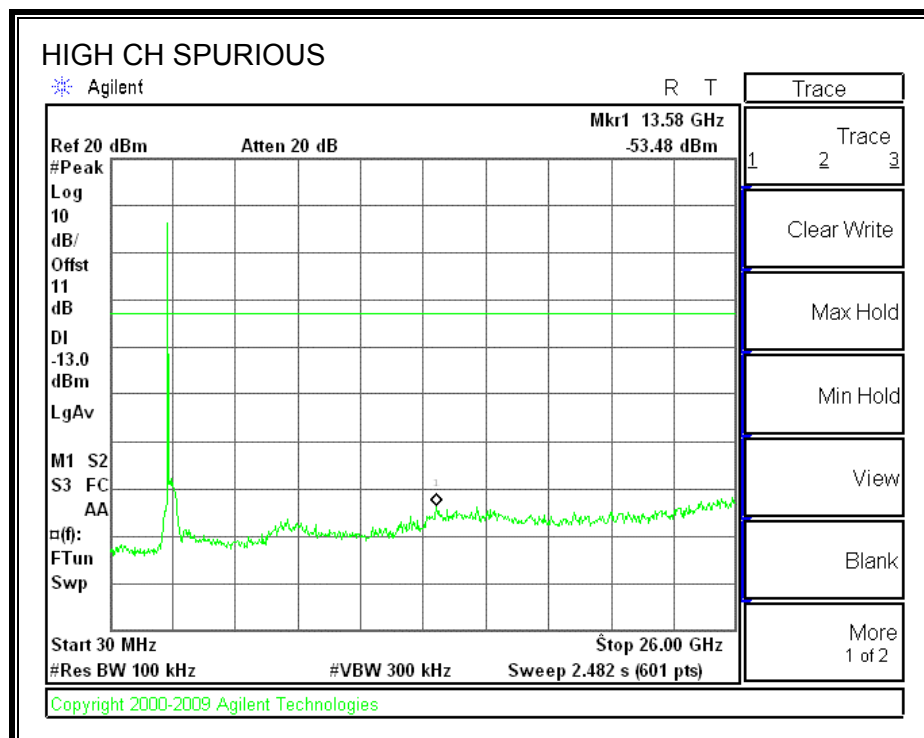
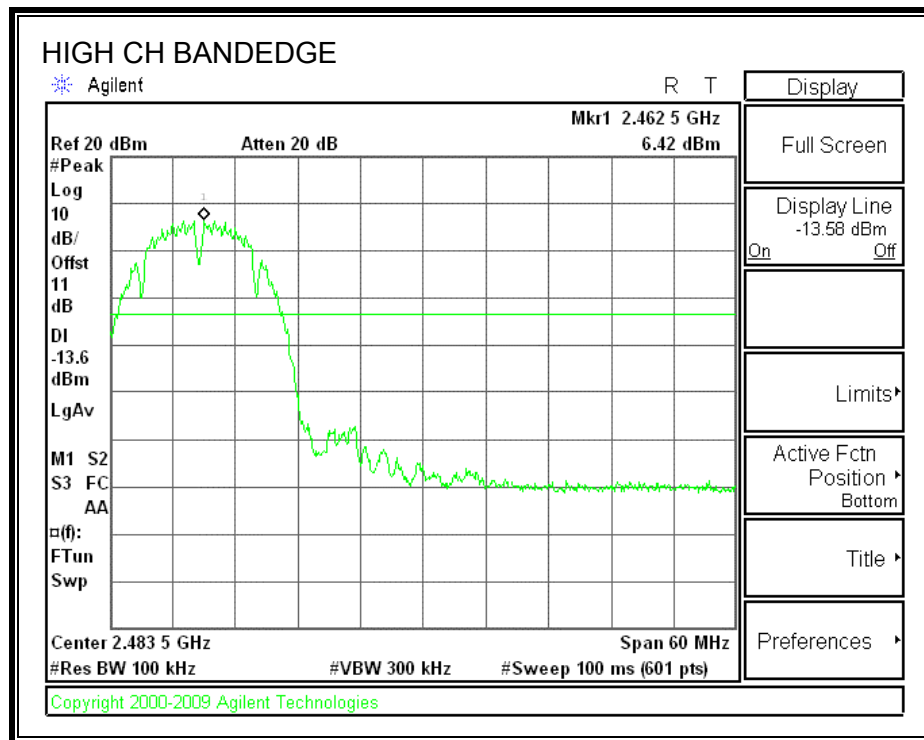


# SPURIOUS EMISSIONS, MID CHANNEL





# SPURIOUS EMISSIONS, HIGH CHANNEL



## 7.2. 802.11g MODE IN THE 2.4 GHz BAND

### 7.2.1. 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.

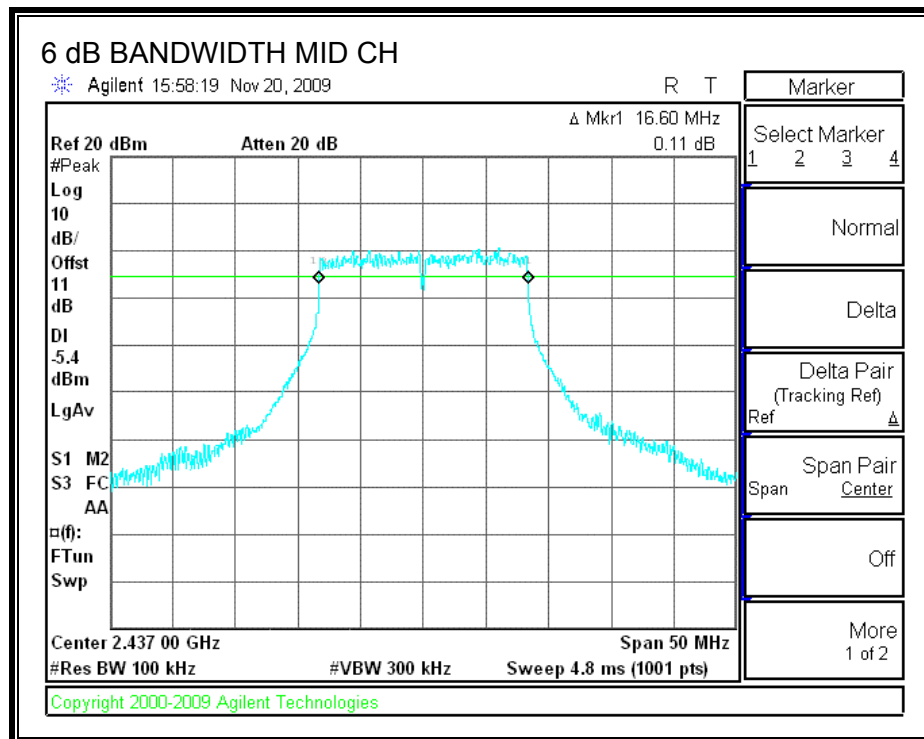
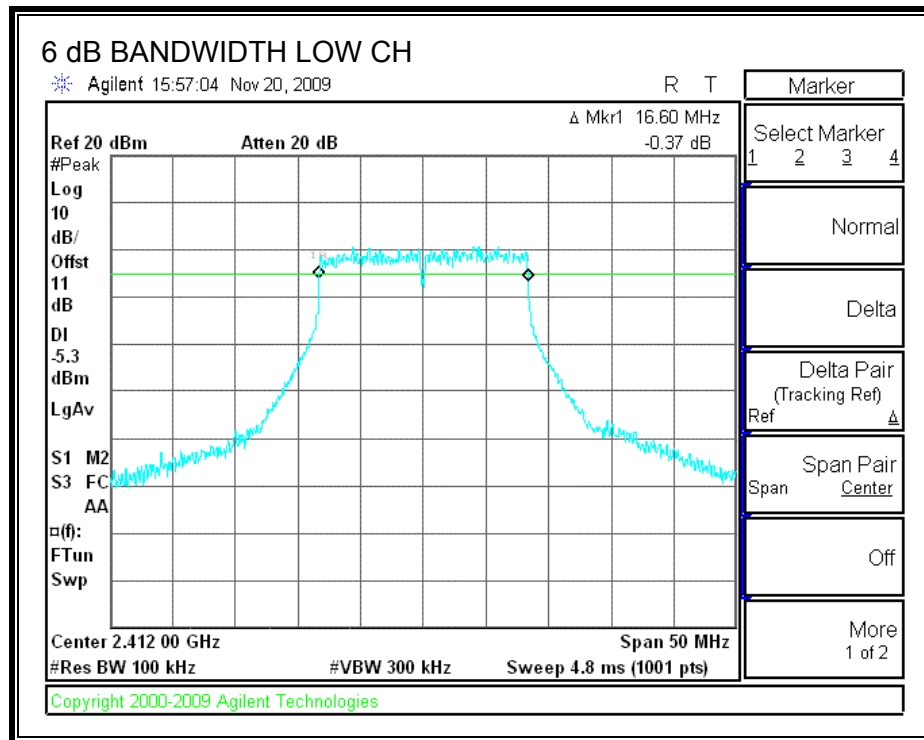
#### TEST PROCEDURE

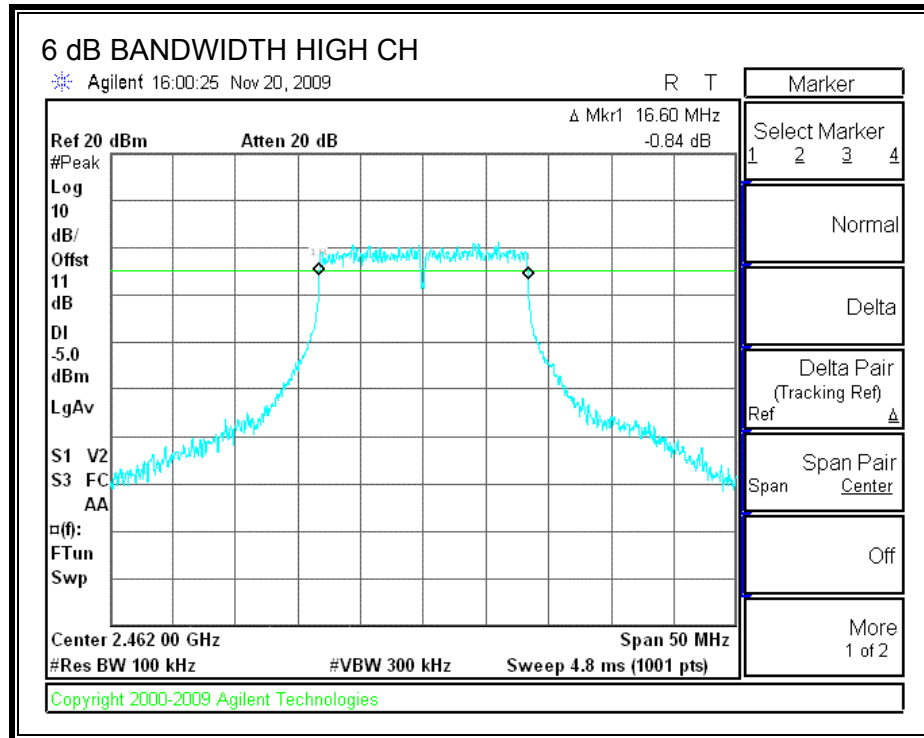
The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

#### RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	16.6	0.5
Middle	2437	16.6	0.5
High	2462	16.6	0.5

## 6 dB BANDWIDTH





## 7.2.2. 99% BANDWIDTH

### LIMITS

None; for reporting purposes only.

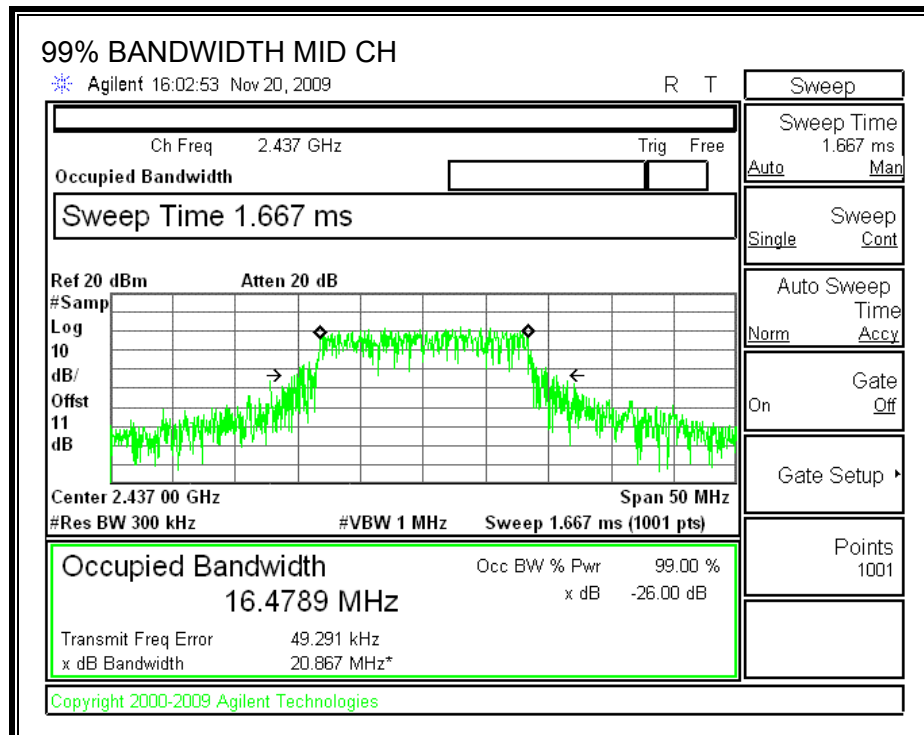
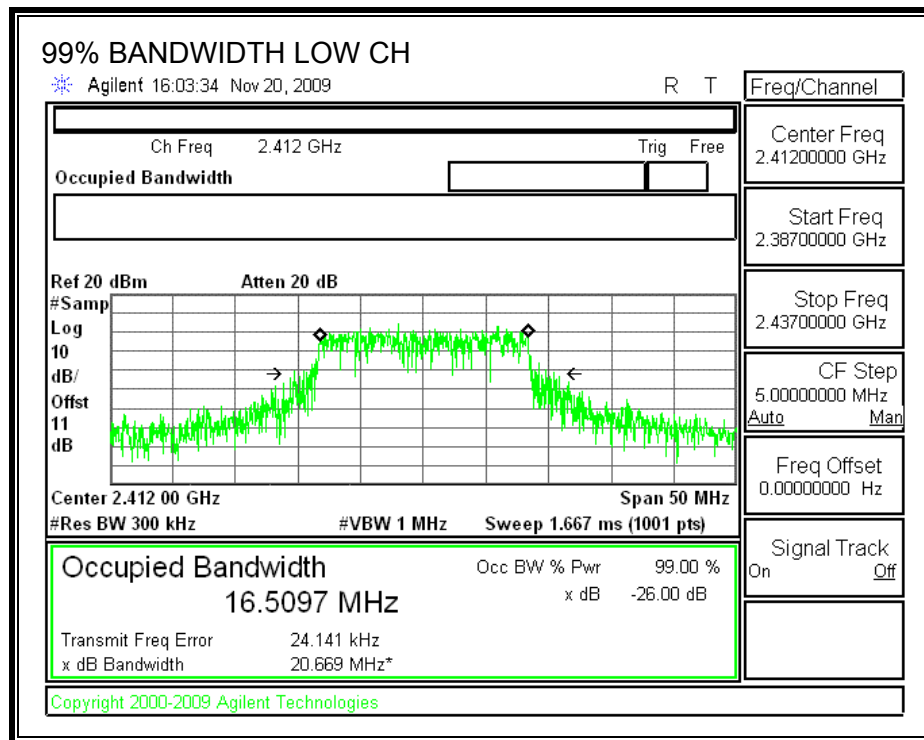
### TEST PROCEDURE

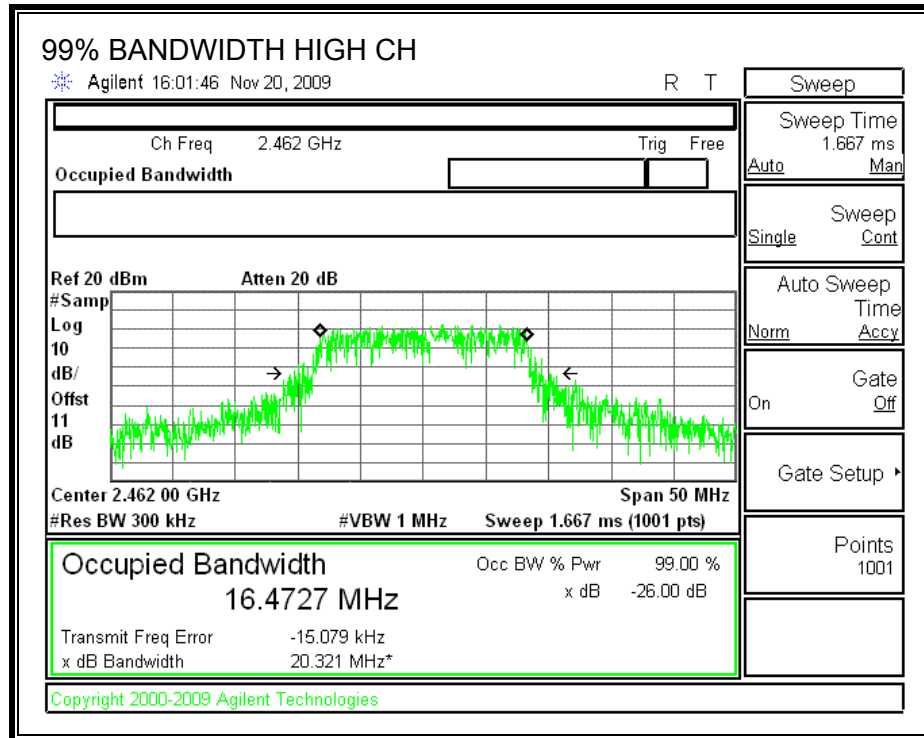
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

### RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	16.5097
Middle	2437	16.4789
High	2462	16.4727

## 99% BANDWIDTH





### 7.2.3. OUTPUT POWER

#### LIMITS

FCC §15.247 (b)

IC RSS-210 A8.4

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

#### TEST PROCEDURE

The transmitter output is connected to a power meter.

#### RESULTS

Channel	Frequency (MHz)	Peak Power Meter Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2412	21.30	30	-8.70
Middle	2437	21.10	30	-8.90
High	2462	20.80	30	-9.20



## 7.2.4. 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 11dB (including 10 dB pad and 1dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Power (dBm)
Low	2412	14.80
Middle	2437	14.10
High	2462	14.10

## 7.2.5. 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.

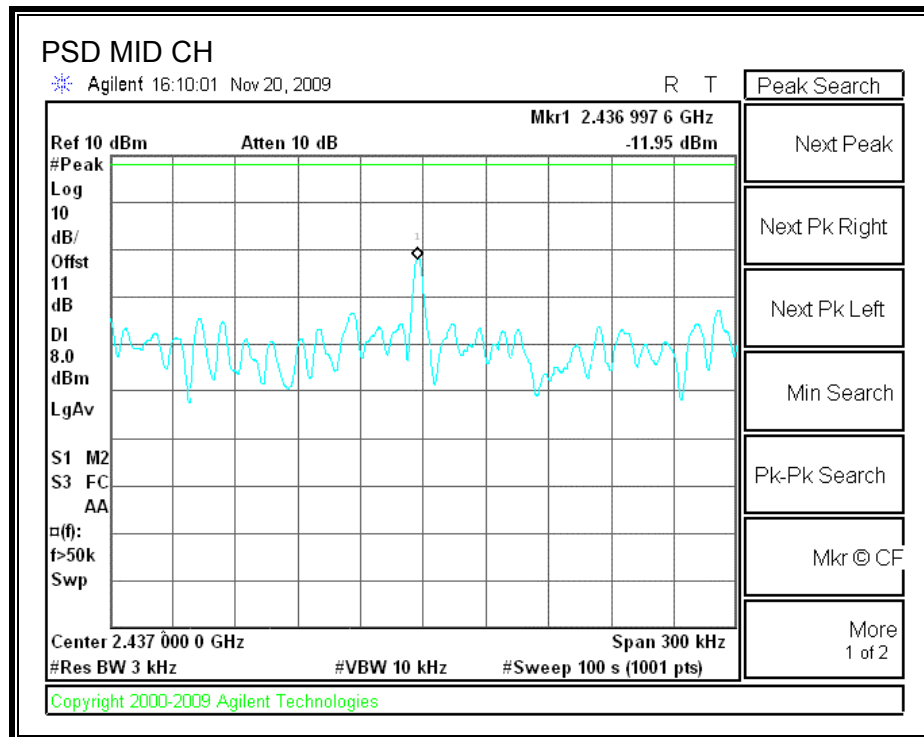
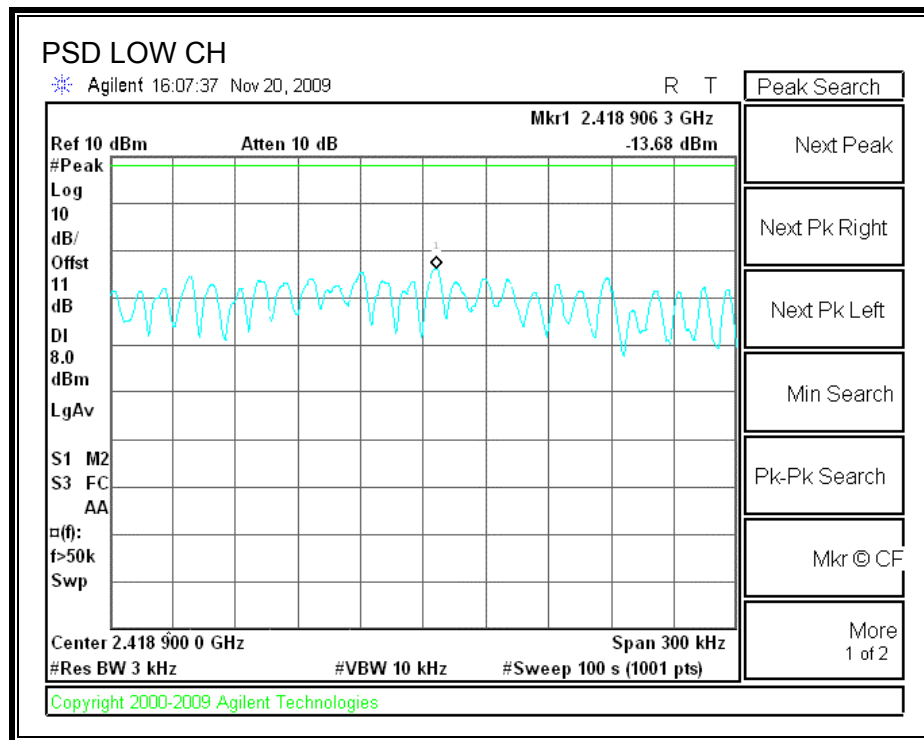
### TEST PROCEDURE

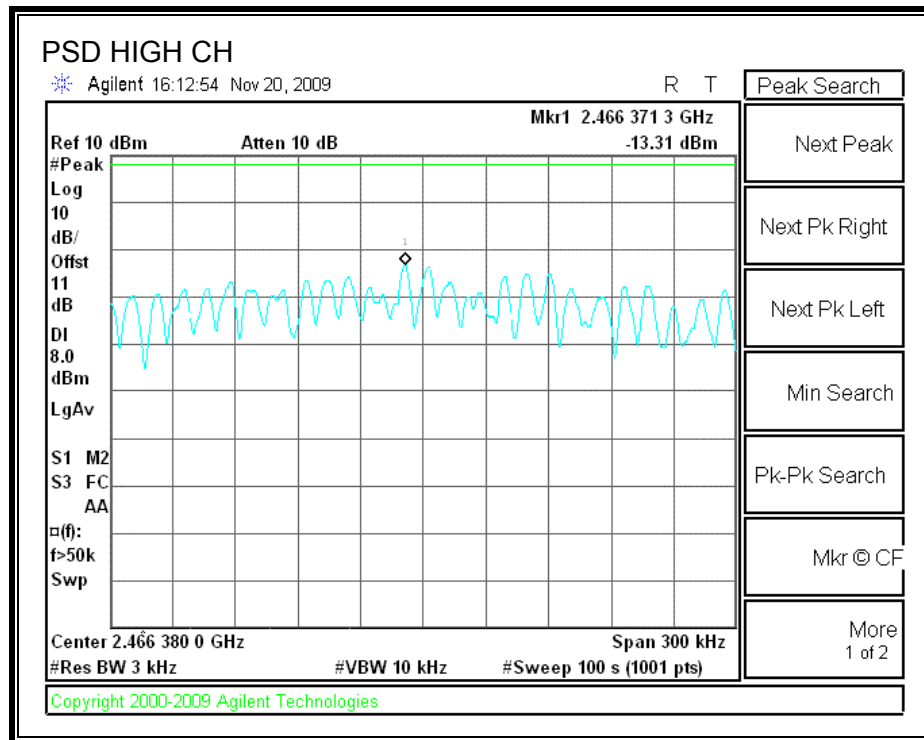
Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005.

### RESULTS

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-13.68	8	-21.68
Middle	2437	-11.95	8	-19.95
High	2462	-13.31	8	-21.31

## POWER SPECTRAL DENSITY





## **7.2.6. 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.

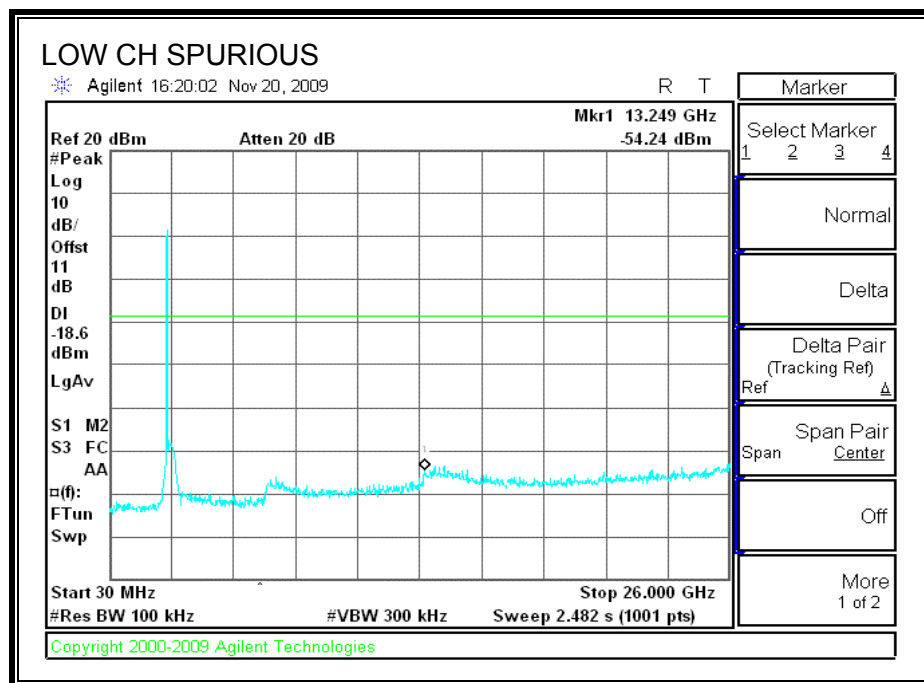
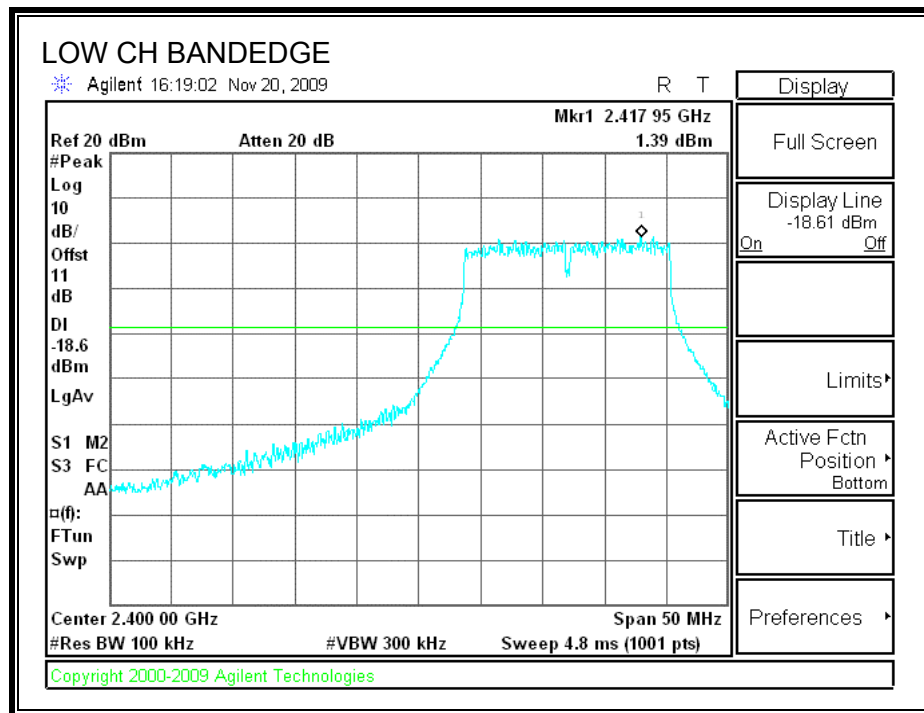
### **TEST PROCEDURE**

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.

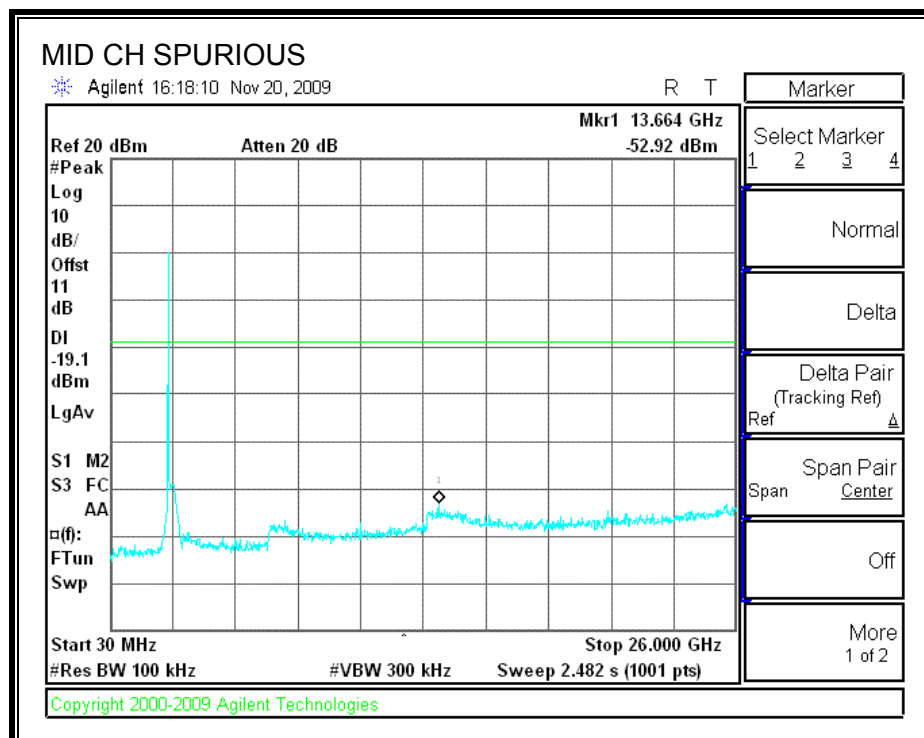
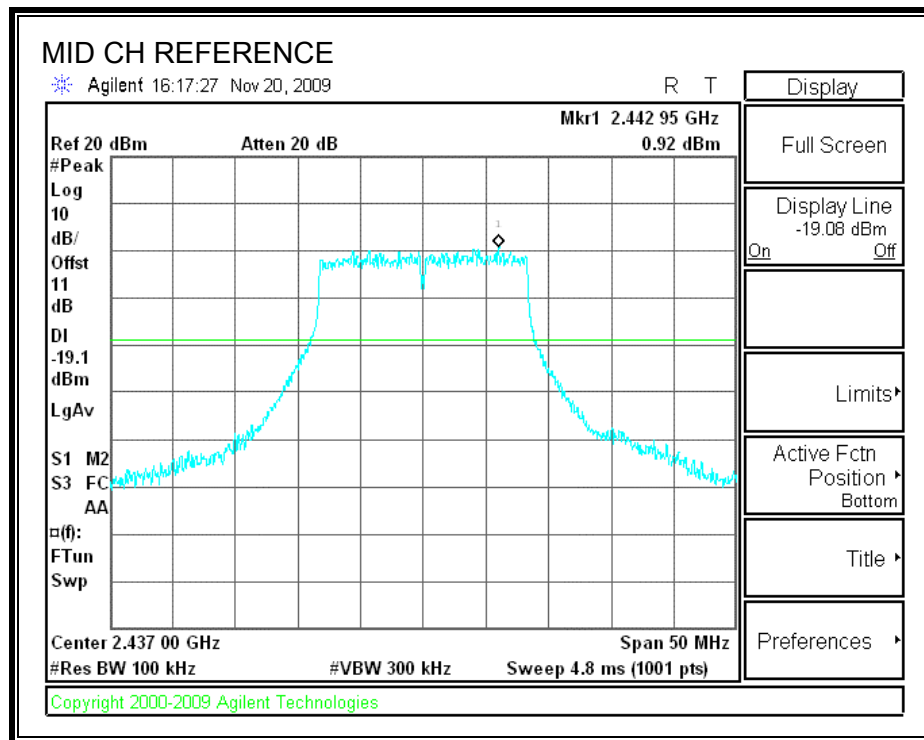
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

## RESULTS

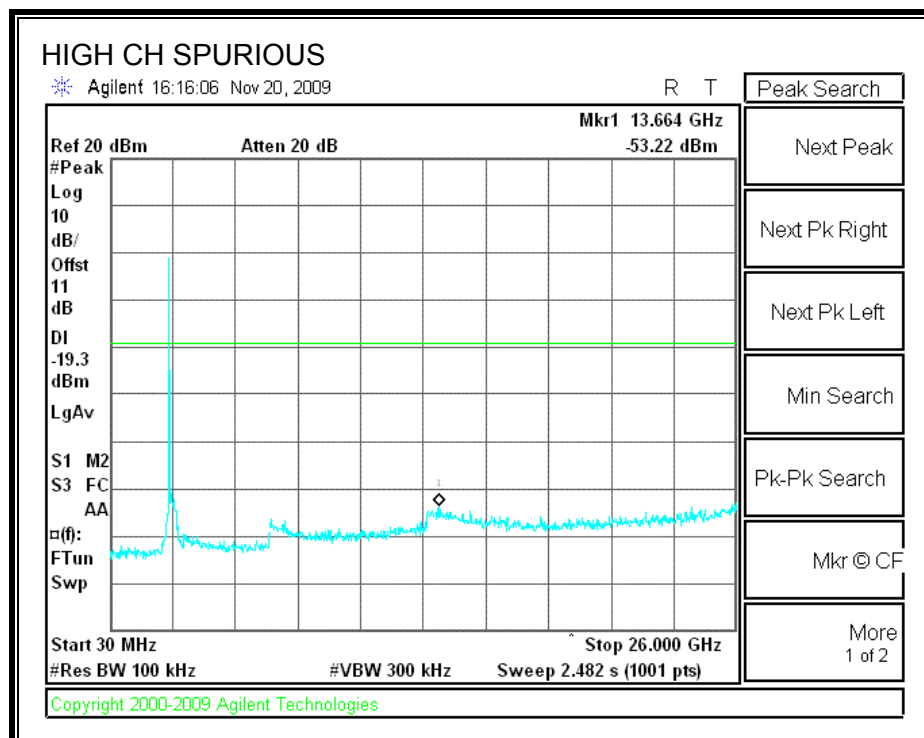
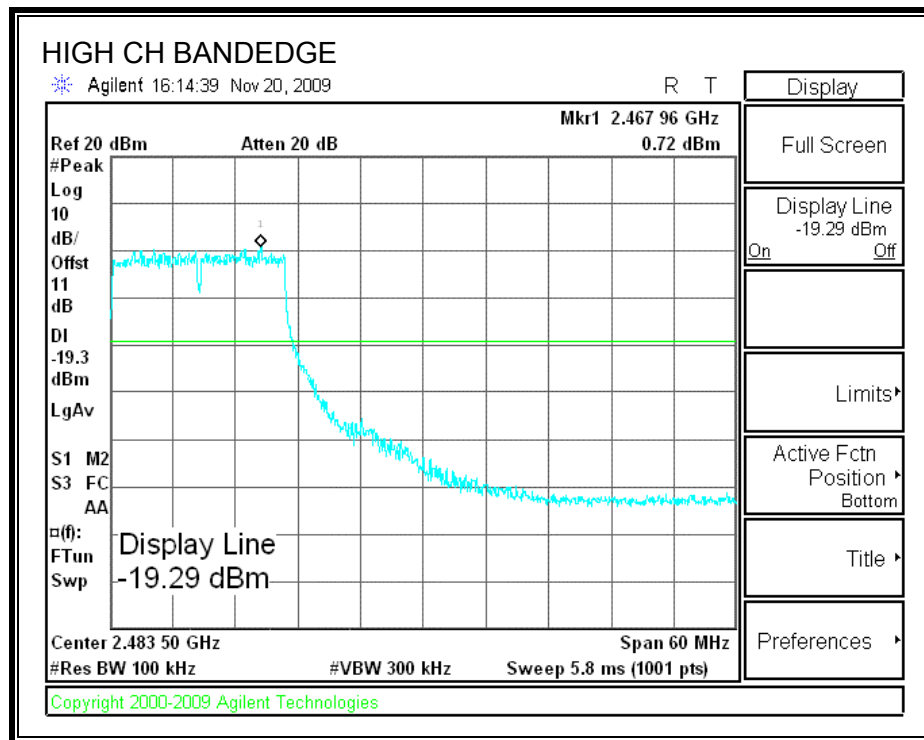
### SPURIOUS EMISSIONS, LOW CHANNEL



## SPURIOUS EMISSIONS, MID CHANNEL



## SPURIOUS EMISSIONS, HIGH CHANNEL





## 8. RADIATED TEST RESULTS

### 8.1. LIMITS AND PROCEDURE

#### LIMITS

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

#### 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.

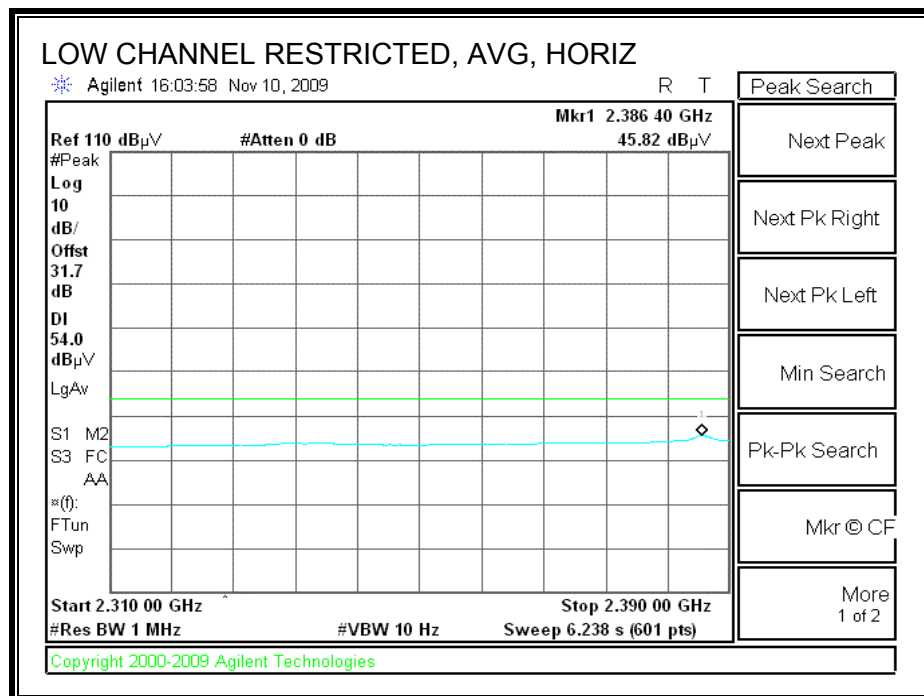
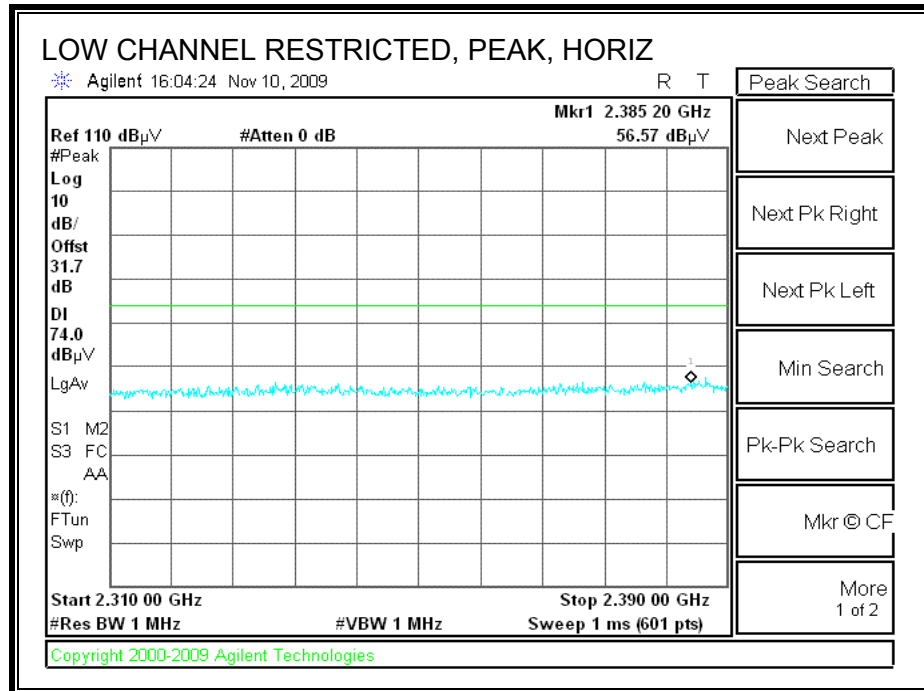
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

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.

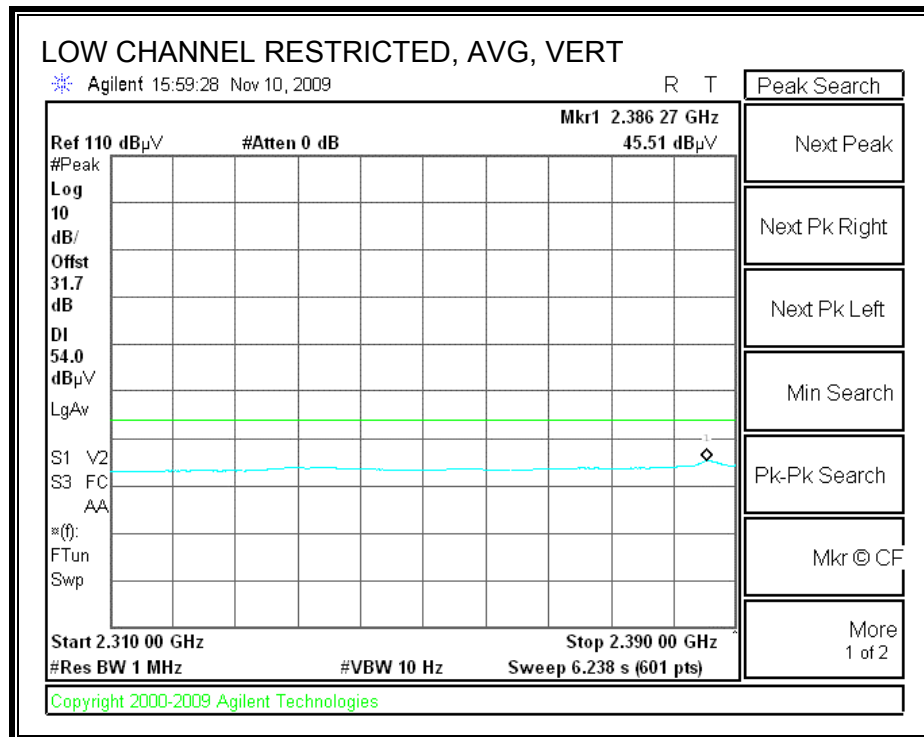
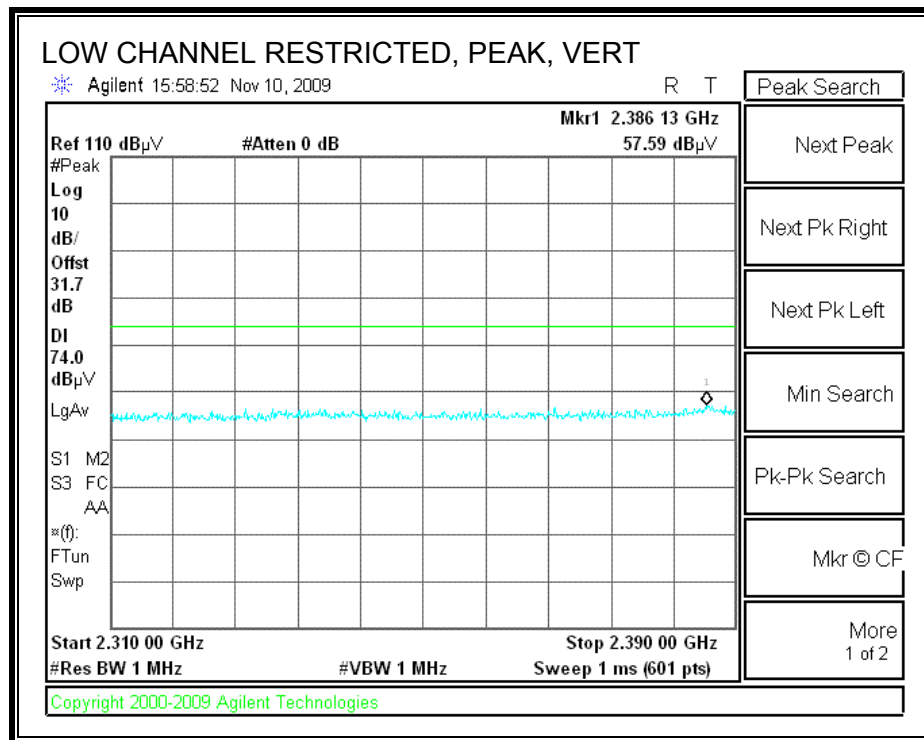
## 8.2. TRANSMITTER ABOVE 1 GHz

### 8.2.1. TRANSMITTER ABOVE 1 GHz FOR 802.11b MODE IN THE 2.4 GHz BAND

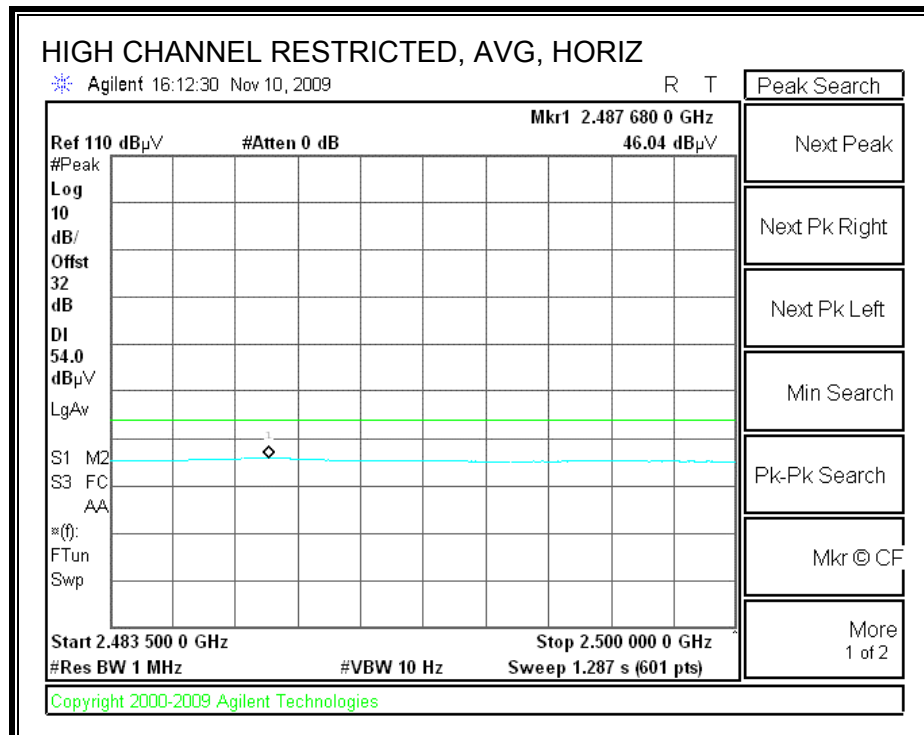
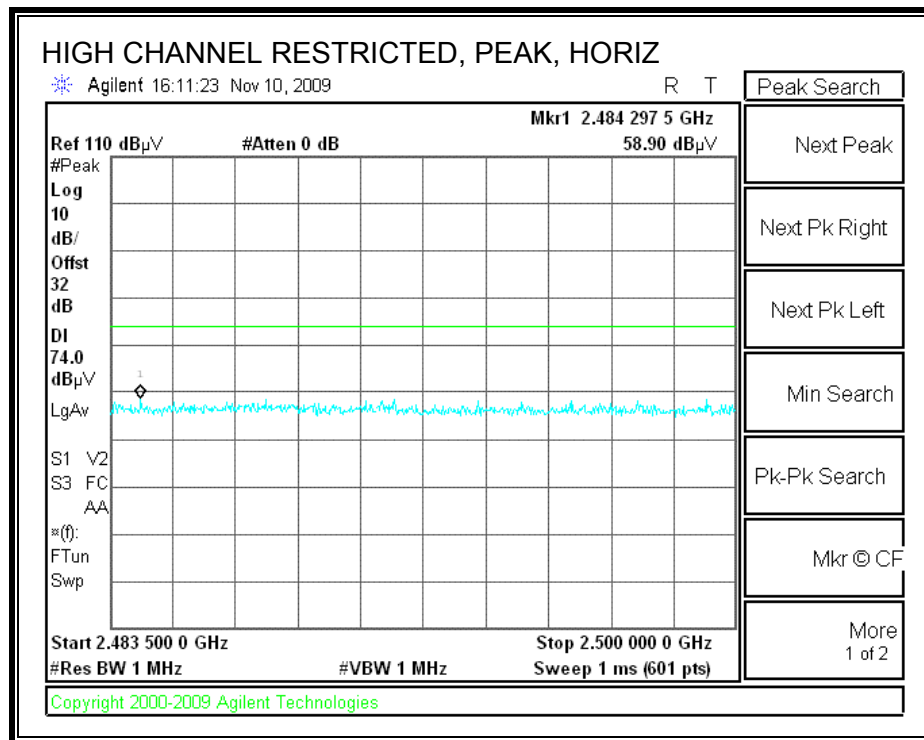
#### RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



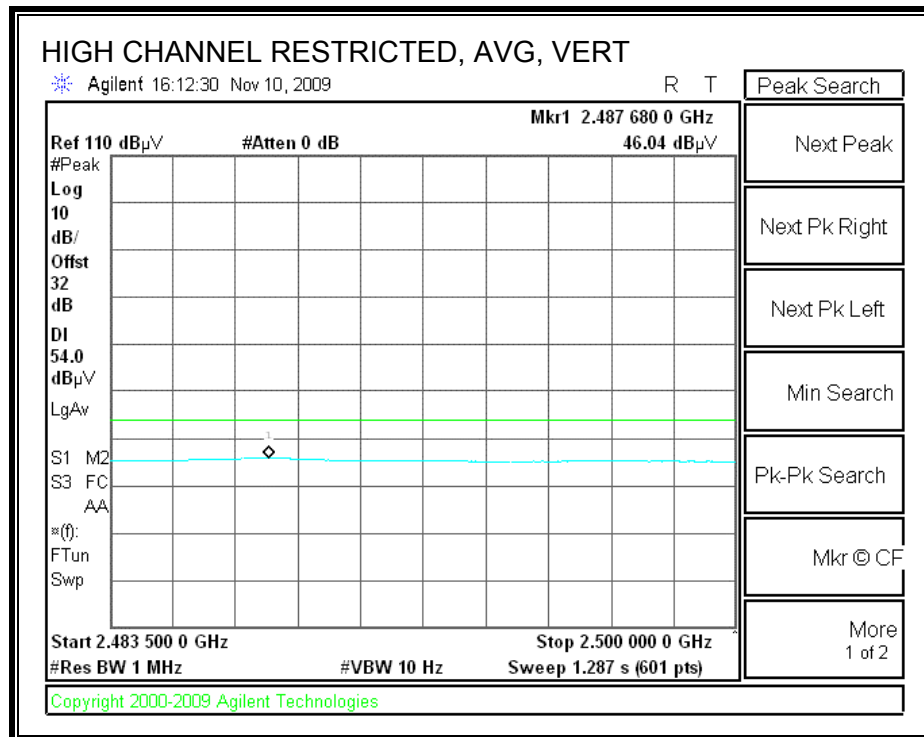
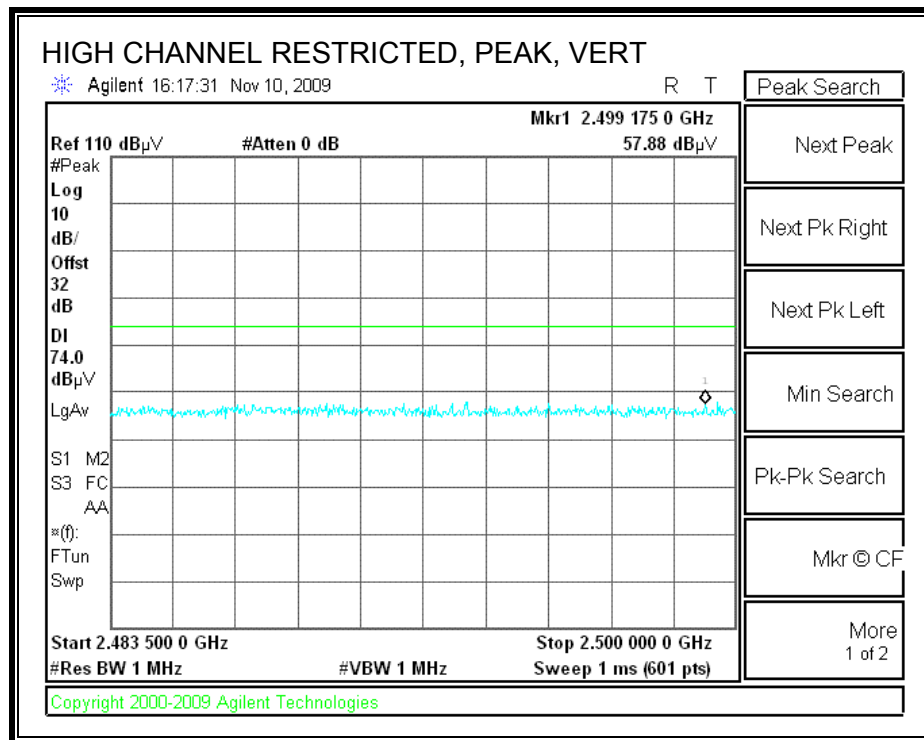
**RESTRICTED BANDEGE (LOW CHANNEL, VERTICAL)**



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



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

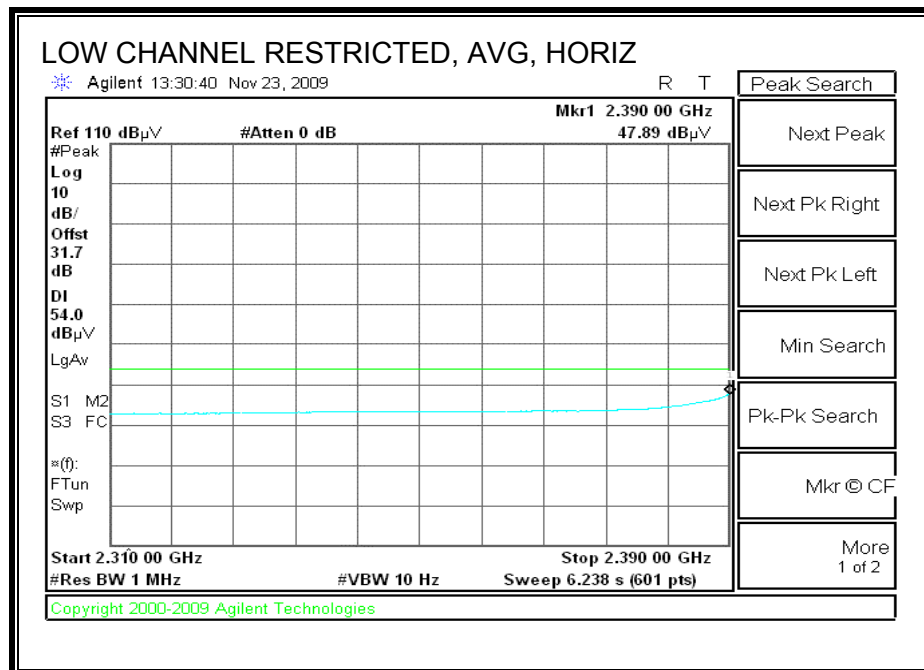
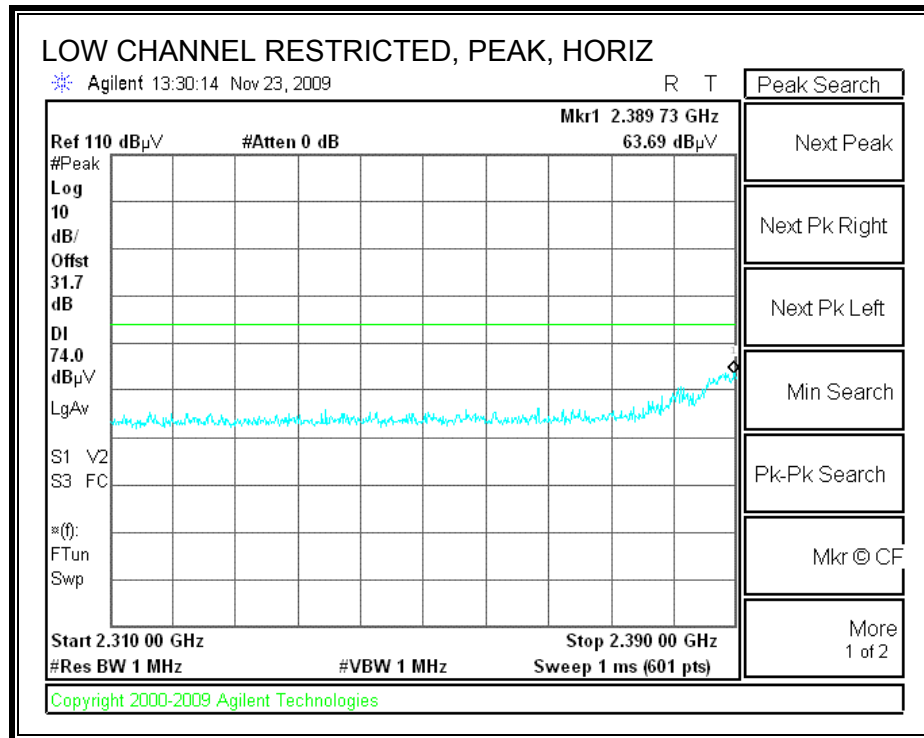


## HARMONICS AND SPURIOUS EMISSIONS

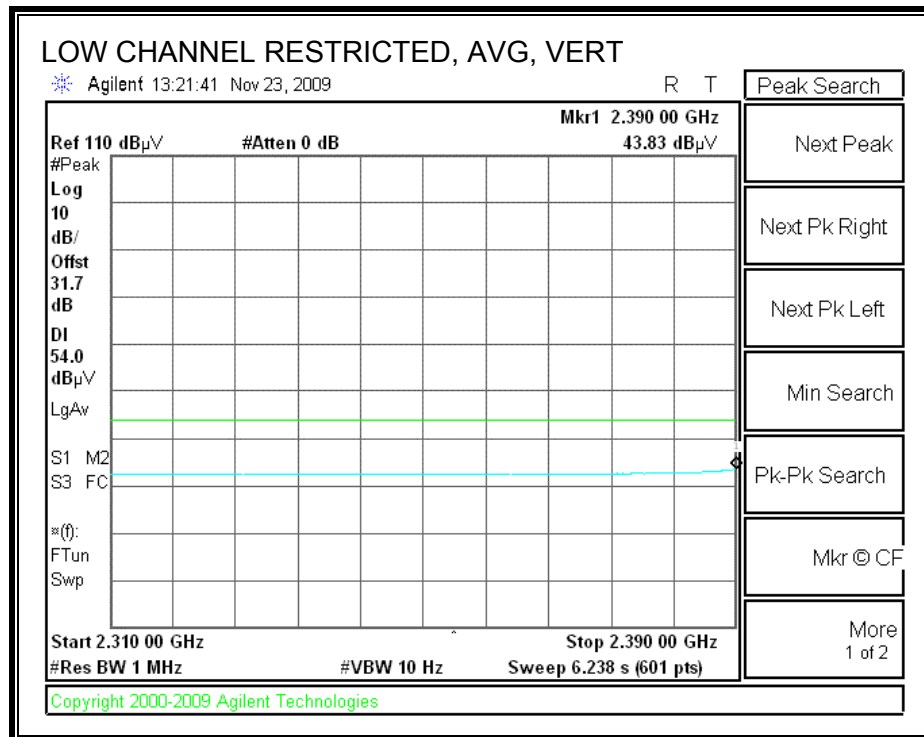
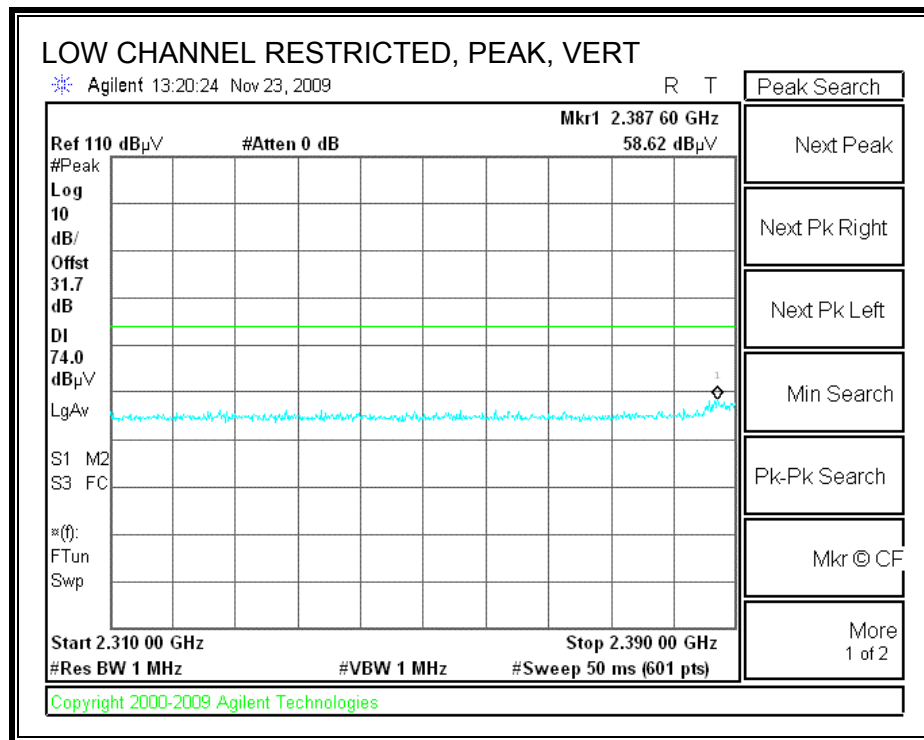
High Frequency Measurement																
Compliance Certification Services, Fremont 5m Chamber																
Company: Plastic Logic																
Project #: 09U12899																
Date: 11/23/2009																
Test Engineer: Chin Pang																
Configuration: EUT only																
Mode: TX, b mode ( Worst Case)																
Test Equipment:																
Horn 1-18GHz		Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit								
T59; S/N: 3245 @3m		T145 Agilent 3008A0056						FCC 15.205								
Hi Frequency Cables																
3' cable 22807700		12' cable 22807600		20' cable 22807500		HPF		Reject Filter		Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz; VBW=10Hz						
3' cable 22807700		12' cable 22807600		20' cable 22807500				R_001								
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Ftr 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</b>																
4.824	3.0	40.0	28.0	32.8	5.8	-34.8	0.0	0.0	43.7	31.7	74	54	-30.3	-22.3	H	
4.824	3.0	40.5	28.5	32.8	5.8	-34.8	0.0	0.0	44.2	32.2	74	54	-29.8	-21.8	V	
<b>Mid Ch</b>																
4.874	3.0	41.4	28.0	32.8	5.8	-34.9	0.0	0.0	45.2	31.8	74	54	-28.8	-22.2	H	
7.311	3.0	42.0	29.0	35.2	7.3	-34.7	0.0	0.0	49.8	36.8	74	54	-24.2	-17.2	H	
4.874	3.0	40.7	28.0	32.8	5.8	-34.9	0.0	0.0	44.5	31.8	74	54	-29.5	-22.2	V	
7.311	3.0	41.4	28.7	35.2	7.3	-34.7	0.0	0.0	49.2	36.5	74	54	-24.8	-17.5	V	
<b>High Ch</b>																
4.924	3.0	40.2	28.0	32.8	5.9	-34.9	0.0	0.0	44.1	31.9	74	54	-29.9	-22.1	H	
7.386	3.0	38.8	27.8	35.3	7.3	-34.6	0.0	0.0	46.8	35.8	74	54	-27.2	-18.2	H	
4.924	3.0	40.5	27.8	32.8	5.9	-34.9	0.0	0.0	44.4	31.7	74	54	-29.6	-22.3	V	
7.386	3.0	41.0	28.5	35.3	7.3	-34.6	0.0	0.0	49.0	36.5	74	54	-25.0	-17.5	V	
Rev. 11.10.08																
Note: No other emissions were detected above the system noise floor.																
f	Measurement Frequency			Amp	Preamp Gain			Avg Lim	Average Field Strength Limit							
Dist	Distance to Antenna			D Corr	Distance Correct to 3 meters			Pk Lim	Peak Field Strength Limit							
Read	Analyzer Reading			Avg	Average Field Strength @ 3 m			Avg Mar	Margin vs. Average Limit							
AF	Antenna Factor			Peak	Calculated Peak Field Strength			Pk Mar	Margin vs. Peak Limit							
CL	Cable Loss			HPF	High Pass Filter											

## 8.2.2. TRANSMITTER ABOVE 1 GHz FOR 802.11g MODE IN THE 2.4 GHz BAND

### RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

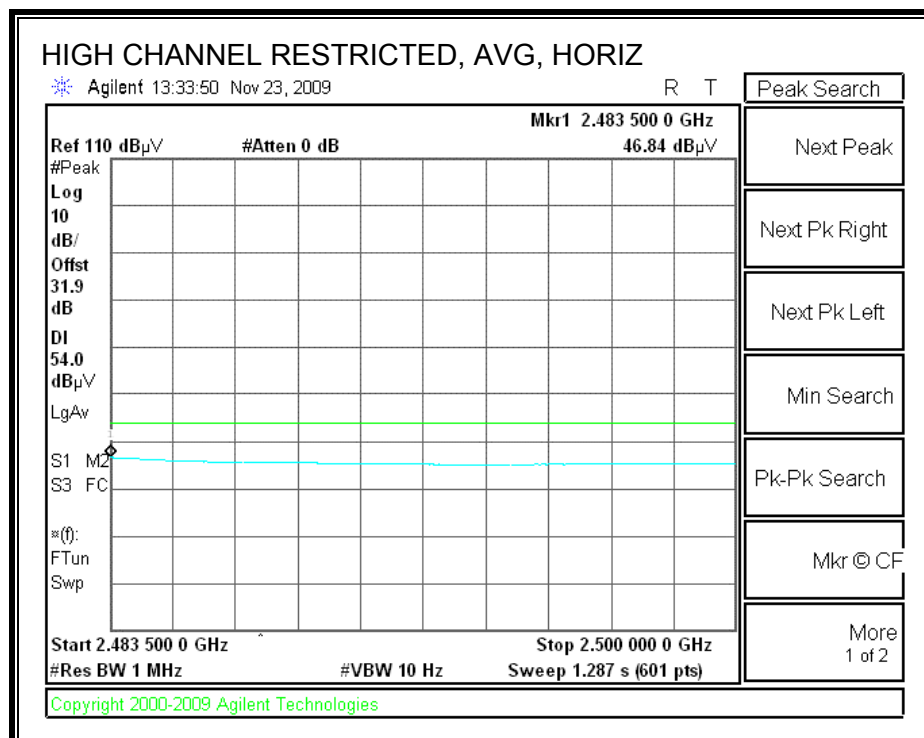
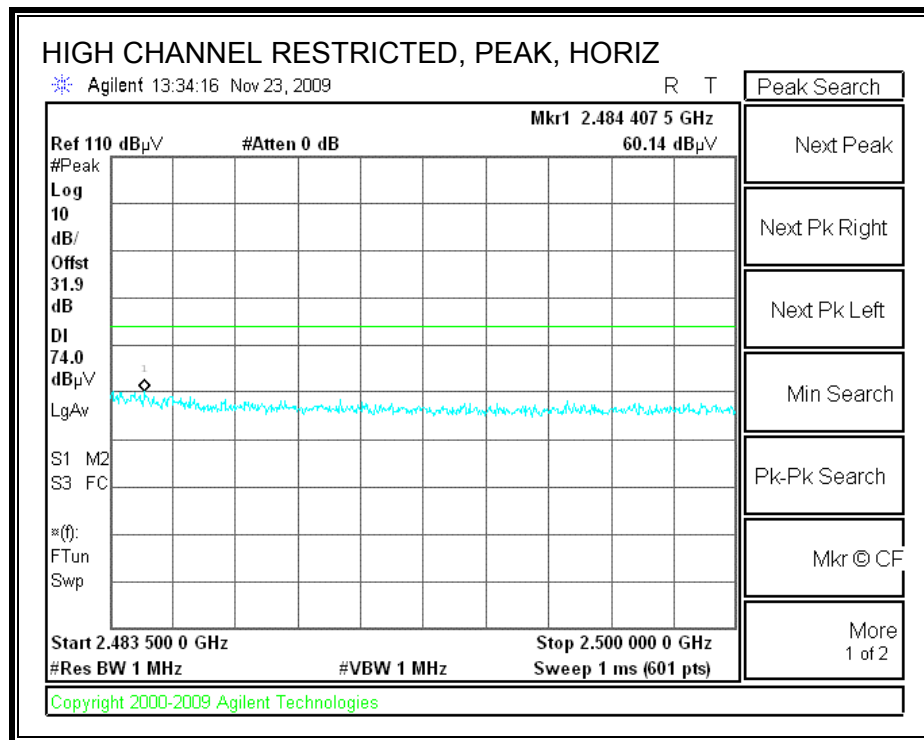


**RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)**

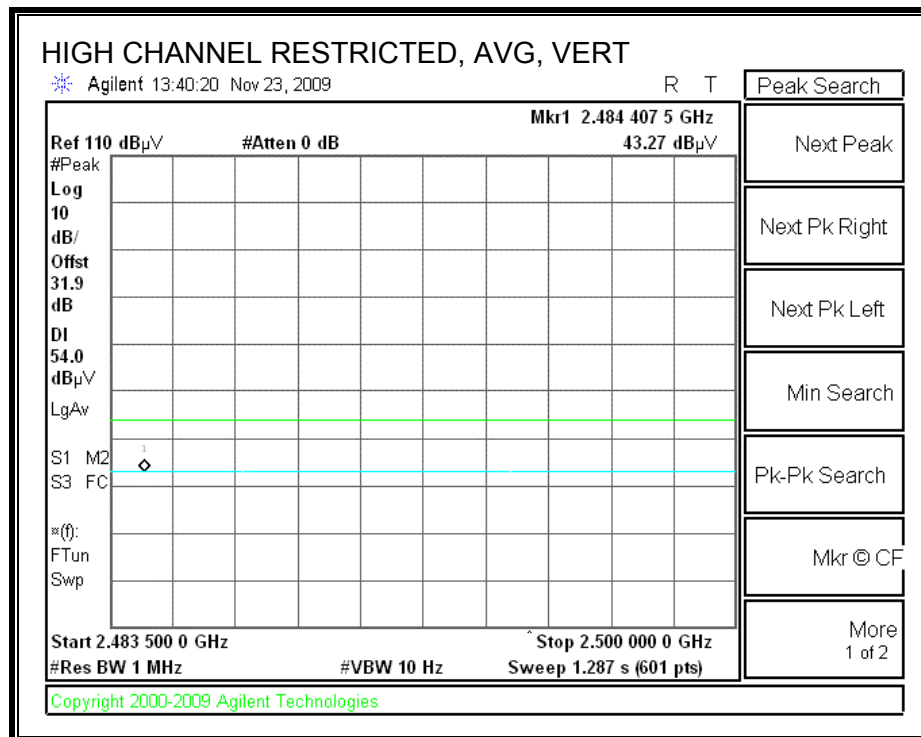
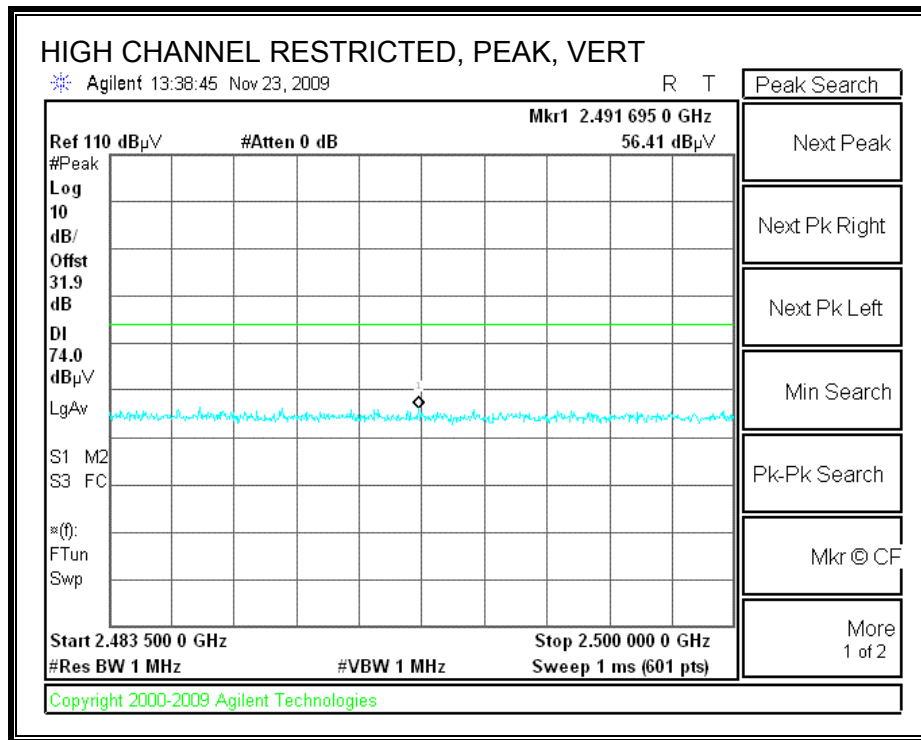




**RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)**



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



## HARMONICS AND SPURIOUS EMISSIONS

### High Frequency Measurement

Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen

Date: 11/17/09

Project #: 09U12899

Company: Plastic Logic

EUT Description: eBook, Wlan, BT and USB Ports

EUT M/N: PLR001

Test Target: FCC 15.247

Mode Oper: TX, g mode

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

f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fitr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
<b>Low Ch</b>													
4.824	3.0	42.0	32.8	5.8	-34.8	0.0	0.0	45.7	74.0	-28.3	H	P	
4.824	3.0	26.2	32.8	5.8	-34.8	0.0	0.0	29.9	54.0	-24.1	H	A	
4.824	3.0	39.2	32.8	5.8	-34.8	0.0	0.0	42.9	74.0	-31.1	V	P	
4.824	3.0	26.3	32.8	5.8	-34.8	0.0	0.0	30.0	54.0	-24.0	V	A	
<b>Mid Ch</b>													
4.874	3.0	38.5	32.8	5.8	-34.9	0.0	0.0	42.3	74.0	-31.7	V	P	
4.874	3.0	26.0	32.8	5.8	-34.9	0.0	0.0	29.8	54.0	-24.2	V	A	
7.311	3.0	39.0	35.2	7.3	-34.7	0.0	0.0	46.8	74.0	-27.2	V	P	
7.311	3.0	26.0	35.2	7.3	-34.7	0.0	0.0	33.8	54.0	-20.2	V	A	
4.874	3.0	39.0	32.8	5.8	-34.9	0.0	0.0	42.8	74.0	-31.2	H	P	
4.874	3.0	26.2	32.8	5.8	-34.9	0.0	0.0	30.0	54.0	-24.0	H	A	
7.311	3.0	38.0	35.2	7.3	-34.7	0.0	0.0	45.8	74.0	-28.2	H	P	
7.311	3.0	25.5	35.2	7.3	-34.7	0.0	0.0	33.3	54.0	-20.7	H	A	
<b>High Ch</b>													
4.924	3.0	38.0	32.8	5.9	-34.9	0.0	0.0	41.9	74.0	-32.1	H	P	
4.924	3.0	26.0	32.8	5.9	-34.9	0.0	0.0	29.9	54.0	-24.1	H	A	
7.386	3.0	38.2	35.3	7.3	-34.6	0.0	0.0	46.2	74.0	-27.8	H	P	
7.386	3.0	25.0	35.3	7.3	-34.6	0.0	0.0	33.0	54.0	-21.0	H	A	
4.924	3.0	38.6	32.8	5.9	-34.9	0.0	0.0	42.4	74.0	-31.6	V	P	
4.924	3.0	25.9	32.8	5.9	-34.9	0.0	0.0	29.8	54.0	-24.2	V	A	
7.386	3.0	37.8	35.3	7.3	-34.6	0.0	0.0	45.8	74.0	-28.2	V	P	
7.386	3.0	25.2	35.3	7.3	-34.6	0.0	0.0	33.2	54.0	-20.8	V	A	

Rev. 4.1.2.7

Note: No other emissions were detected above the system noise floor.

### 8.3. WORST-CASE BELOW 1 GHz

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

##### DATA

##### 30-1000MHz Frequency Measurement

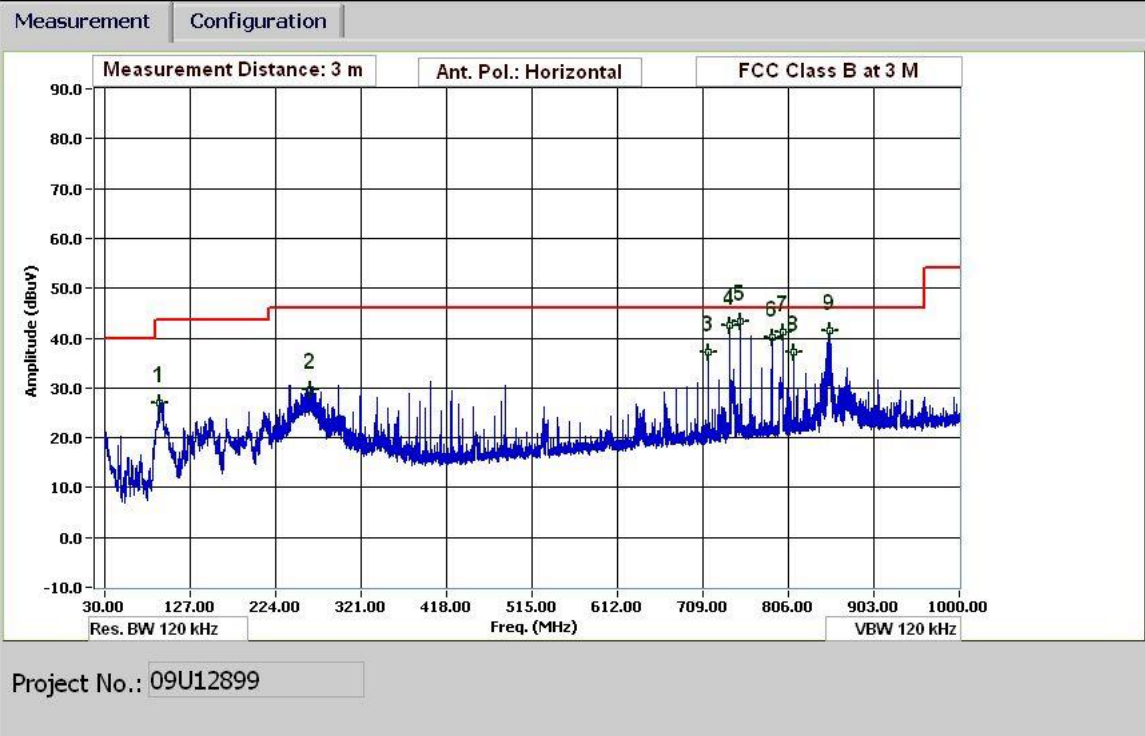
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Chin Pang  
Date: 11/24/09  
Project #: 09U12899  
Company: Plastic Logic  
EUT Description: eBook, Wlan, BT and USB Ports without WWAN  
Configuration: EUT Only  
EUT M/N: PLR001  
Test Target: FCC 15C  
Mode Oper: TX ( Worst Case)

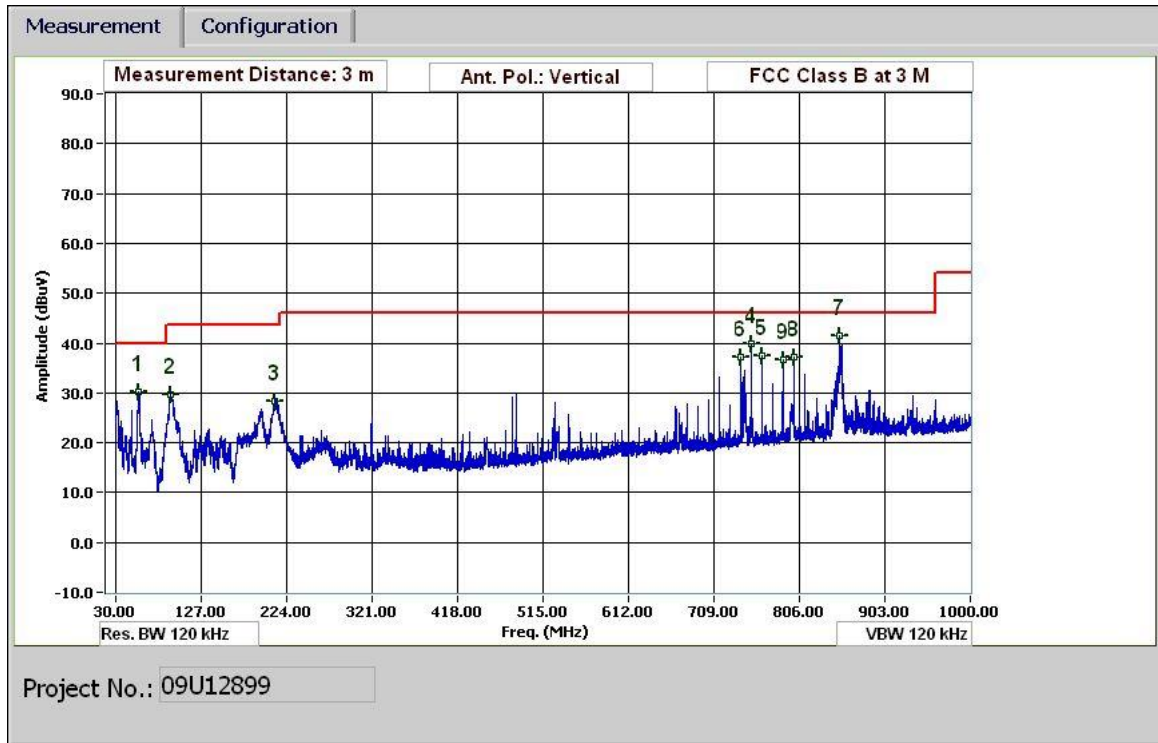
f	Measurement Frequency	Amp	Preamp Gain	Margin	Margin vs. Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters		
Read	Analyzer Reading	Filter	Filter Insert Loss		
AF	Antenna Factor	Corr.	Calculated Field Strength		
CL	Cable Loss	Limit	Field Strength Limit		

f MHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filter dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol V/H	Det. P/A/QP	Notes
horiz													
92.763	3.0	47.5	8.2	0.9	29.6	0.0	0.0	27.1	43.5	-16.4	H	P	
263.890	3.0	44.7	12.2	1.5	28.8	0.0	0.0	29.6	46.0	-16.4	H	P	
714.868	3.0	44.5	19.5	2.6	29.5	0.0	0.0	37.1	46.0	-8.9	H	P	
739.109	3.0	49.3	19.9	2.7	29.4	0.0	0.0	42.5	46.0	-3.5	H	P	
751.230	3.0	49.8	20.1	2.7	29.4	0.0	0.0	43.3	46.0	-2.7	H	P	
787.471	3.0	45.8	20.8	2.8	29.2	0.0	0.0	40.1	46.0	-5.9	H	P	
799.592	3.0	46.5	21.0	2.8	29.2	0.0	0.0	41.1	46.0	-4.9	H	P	
811.712	3.0	42.4	21.1	2.8	29.1	0.0	0.0	37.2	46.0	-8.8	H	P	
853.354	3.0	46.0	21.3	2.9	28.8	0.0	0.0	41.4	46.0	-4.6	H	P	
56.041	3.0	51.4	7.9	0.6	29.6	0.0	0.0	30.3	40.0	-9.7	V	P	
92.163	3.0	50.4	8.1	0.9	29.6	0.0	0.0	29.8	43.5	-13.7	V	P	
210.967	3.0	43.9	12.0	1.3	28.9	0.0	0.0	28.3	43.5	-15.2	V	P	
738.989	3.0	44.1	19.9	2.7	29.4	0.0	0.0	37.3	46.0	-8.7	V	P	
751.110	3.0	46.3	20.1	2.7	29.4	0.0	0.0	39.8	46.0	-6.2	V	P	
763.230	3.0	43.6	20.4	2.7	29.3	0.0	0.0	37.4	46.0	-8.7	V	P	
787.471	3.0	42.3	20.8	2.8	29.2	0.0	0.0	36.6	46.0	-9.4	V	P	
799.592	3.0	42.6	21.0	2.8	29.2	0.0	0.0	37.2	46.0	-8.8	V	P	
852.154	3.0	46.2	21.3	2.9	28.8	0.0	0.0	41.6	46.0	-4.4	V	P	

## HORIZONTAL PLOT



## VERTICAL PLOT



## 9. 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 <sup>*</sup>	56 to 46 <sup>*</sup>
0.5-5	56	46
5-30	60	50

<sup>\*</sup> Decreases with the logarithm of the frequency.

### TEST PROCEDURE

ANSI C63.4

### RESULTS

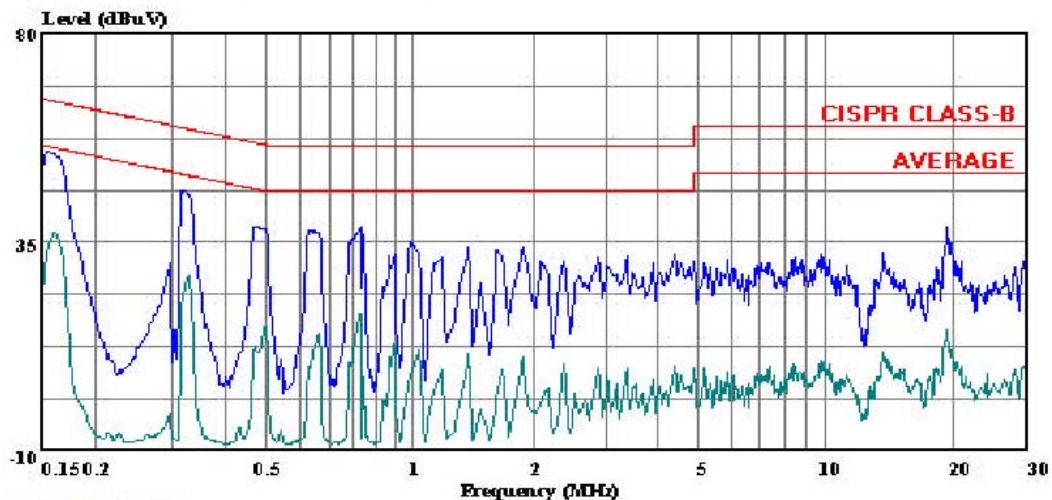
CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	EN B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.16	54.10	--	36.79	0.00	65.36	55.36	-11.26	-18.57	L1
0.33	46.02	--	27.71	0.00	59.48	49.48	-13.46	-21.77	L1
0.83	37.50	--	19.50	0.00	56.00	46.00	-18.50	-26.50	L1
0.16	40.94	--	29.12	0.00	65.41	55.41	-24.47	-26.29	L2
0.32	35.49	--	24.47	0.00	59.71	49.71	-24.22	-25.24	L2
0.80	38.13	--	21.58	0.00	56.00	46.00	-17.87	-24.42	L2
6 Worst Data									

## LINE 1 RESULTS



Compliance Certification Services  
47173 Benicia Street  
Fremont, CA 94538  
Tel: (510) 771-1000  
Fax: (510) 661-0888

Data#: 21 File#: 09U12899\_FCC.EMI Date: 11-24-2009 Time: 08:08:05



(Line Conduction)

Trace: 19

Ref Trace:

Condition: CISPR CLASS-B  
Test Operator: : Chin Pang  
Project #: : 09U12899  
Company: : Plastic Logic  
EUT Description: : eBook, Wlan, BT and USB Ports  
Configuration: : EUT and AC Adapter  
Mode: : TX ( Worst Case)  
Target: : FCC Class B  
Voltage: : 115V / 60Hz  
: L1: Peak (Blue), Average (Green)

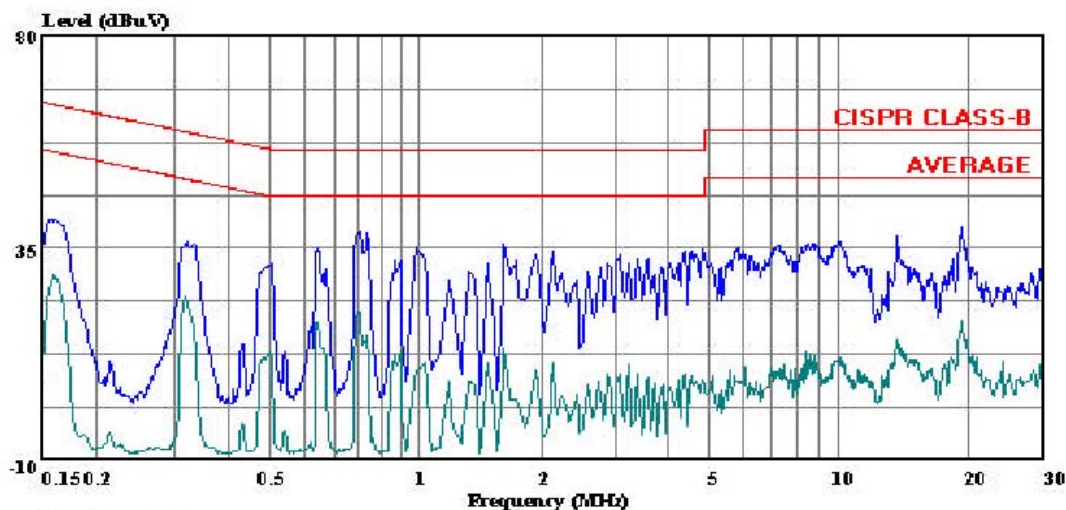


## LINE 2 RESULTS



Compliance Certification Services  
47173 Benicia Street  
Fremont, CA 94538  
Tel: (510) 771-1000  
Fax: (510) 661-0888

Data#: 28 File#: 09U12899\_FCC.EMI Date: 11-24-2009 Time: 08:18:21



(Line Conduction)

Trace: 26

Ref Trace:

Condition: CISPR CLASS-B  
Test Operator: : Chin Pang  
Project #: : 09U12899  
Company: : Plastic Logic  
EUT Description: : eBook, Wlan, BT and USB Ports  
Configuration: : EUT and AC Adapter  
Mode: : TX ( Worst Case)  
Target: : FCC Class B  
Voltage: : 115V / 60Hz  
: L2: Peak (Blue), Average (Green)

## 10. 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 Ex-**  
**posed 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	$280/f$	$2.19/f$		6
10–30	28	$2.19/f$		6
30–300	28	0.073	2*	6
300–1 500	$1.585f^{0.5}$	$0.0042f^{0.5}$	$f/150$	6
1 500–15 000	61.4	0.163	10	6
15 000–150 000	61.4	0.163	10	$616\,000/f^{1.2}$
150 000–300 000	$0.158f^{0.5}$	$4.21 \times 10^{-4}f^{0.5}$	$6.67 \times 10^{-5}f$	$616\,000/f^{1.2}$

\* 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).

## **EQUATIONS**

Power density is given by:

$$S = \text{EIRP} / (4 * \pi * D^2)$$

where

S = Power density in W/m<sup>2</sup>

EIRP = Equivalent Isotropic Radiated Power in W

D = Separation distance in m

Power density in units of W/m<sup>2</sup> is converted to units of mW/cm<sup>2</sup> by dividing by 10.

Distance is given by:

$$D = \text{SQRT} (\text{EIRP} / (4 * \pi * S))$$

where

D = Separation distance in m

EIRP = Equivalent Isotropic Radiated Power in W

S = Power density in W/m<sup>2</sup>

For multiple colocated transmitters operating simultaneously in frequency bands where the limit is identical, the total power density is calculated using the total EIRP obtained by summing the Power \* Gain product (in linear units) of each transmitter.

$$\text{Total EIRP} = (P1 * G1) + (P2 * G2) + \dots + (Pn * Gn)$$

where

Px = Power of transmitter x

Gx = Numeric gain of antenna x

In the table(s) below, Power and Gain are entered in units of dBm and dBi respectively and conversions to linear forms are used for 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**

Band	Mode	Separation Distance (m)	Output Power (dBm)	Antenna Gain (dBi)	IC Power Density (W/m <sup>2</sup> )	FCC Power Density (mW/cm <sup>2</sup> )
2.4 GHz	WLAN	0.20	21.30	2.00	0.43	0.043