FCC CFR47 PART 15 SUBPART C

FOR

CELLULAR/PCS GSM&WCDMA WITH BLUETOOTH&WLAN

MODEL NUMBER: LG840G

FCC ID: ZNFLG840G

REPORT NUMBER: 12U14354-2, Revision A

ISSUE DATE: June 20, 2012

Prepared for
LG ELECTRONICS MOBILECOMM U.S.A., INC.
1000 SYLVAN AVE.
ENGLEWOODS CLIFFS, NJ 07632

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

NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	04/17/12	Initial Issue	T. Lee
A	06/20/12	Updated section 5.5	A. Zaffar

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS 5

2. TEST METHODOLOGY 6

3. FACILITIES AND ACCREDITATION 6

4. CALIBRATION AND UNCERTAINTY 6

4.1. MEASURING INSTRUMENT CALIBRATION 6

4.2. SAMPLE CALCULATION 6

4.3. MEASUREMENT UNCERTAINTY 6

5. EQUIPMENT UNDER TEST 7

5.1. DESCRIPTION OF EUT 7

5.2. MAXIMUM OUTPUT POWER 7

5.3. DESCRIPTION OF AVAILABLE ANTENNAS 7

5.4. SOFTWARE AND FIRMWARE 7

5.5. WORST-CASE CONFIGURATION AND MODE 8

5.6. DESCRIPTION OF TEST SETUP 9

6. TEST AND MEASUREMENT EQUIPMENT 11

7. ANTENNA PORT TEST RESULTS 12

7.1. 802.11b MODE IN THE 2.4 GHz BAND 12

7.1.1. 6 dB BANDWIDTH 12
7.1.2. 99% BANDWIDTH 16
7.1.3. OUTPUT POWER 20
7.1.4. AVERAGE POWER 24
7.1.5. POWER SPECTRAL DENSITY 25
7.1.6. CONDUCTED SPURIOUS EMISSIONS 29

7.2. 802.11g MODE IN THE 2.4 GHz BAND 36

7.2.1. 6 dB BANDWIDTH 36
7.2.2. 99% BANDWIDTH 40
7.2.3. OUTPUT POWER 44
7.2.4. AVERAGE POWER 48
7.2.5. POWER SPECTRAL DENSITY 49
7.2.6. CONDUCTED SPURIOUS EMISSIONS 53

8. RADIATED TEST RESULTS 60

8.1. LIMITS AND PROCEDURE 60

8.1.1. TX ABOVE 1 GHz FOR 802.11b 1TX MODE IN THE 2.4 GHz BAND 61
8.1.2. TX ABOVE 1 GHz FOR 802.11g 1TX MODE IN THE 2.4 GHz BAND 70

8.2. WORST-CASE BELOW 1 GHz 79

9. AC POWER LINE CONDUCTED EMISSIONS 82

10. SETUP PHOTOS 86

1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	LG ELECTRONICS MOBILECOMM U.S.A., INC. 1000 SYLVAN AVE. ENGLEWOODS CLIFFS, NJ 07632
EUT DESCRIPTION:	CELLULAR/PCS GSM&WCDMA WITH BLUETOOTH&WLAN
MODEL:	LG840G
SERIAL NUMBER:	203KPDT156258
DATE TESTED:	APRIL 04-APRIL 27, 2012

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	Pass

Compliance Certification Services (UL 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 UL 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 UL CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL 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 UL CCS By:

TIM LEE
STAFF ENGINEER
UL CCS

Tested By:

DENNIS HUANG
EMC ENGINEER
UL CCS

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2009, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 3, and RSS-210 Issue 8.

3. FACILITIES AND ACCREDITATION

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

UL 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:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

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 cell phone that features Cellular/PCS GSM&WCDMA with Bluetooth & WLAN

The WLAN radio module is manufactured by Qualcomm.

5.2. MAXIMUM OUTPUT POWER

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

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2412 - 2462	802.11b	18.18	65.77
2412 - 2462	802.11g	21.70	147.91

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PIFA antenna, with a maximum gain of -1.41 dBi.

5.4. SOFTWARE AND FIRMWARE

The test utility software used during testing was LG840G-V08i-MAR-21-2012-A

5.5. WORST-CASE CONFIGURATION AND MODE

Radiated emission and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that Z orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Z orientation.

Based on the manufacturer's attestation that the nominal output power is reduced as the data rate increases, the data rates tested represent the highest power and worst-case with respect to EMC performance.

Worst-case data rates were as follows:

802.11b mode: 1 Mbps
802.11g mode: 6 Mbps

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List			
Description	**Manufacturer**	**Model**	**Serial Number**
AC ADAPTER	LG ELECTRONICS	STA-U13WT	TA150000001
HEADSET	LG ELECTRONICS	NA	N/A

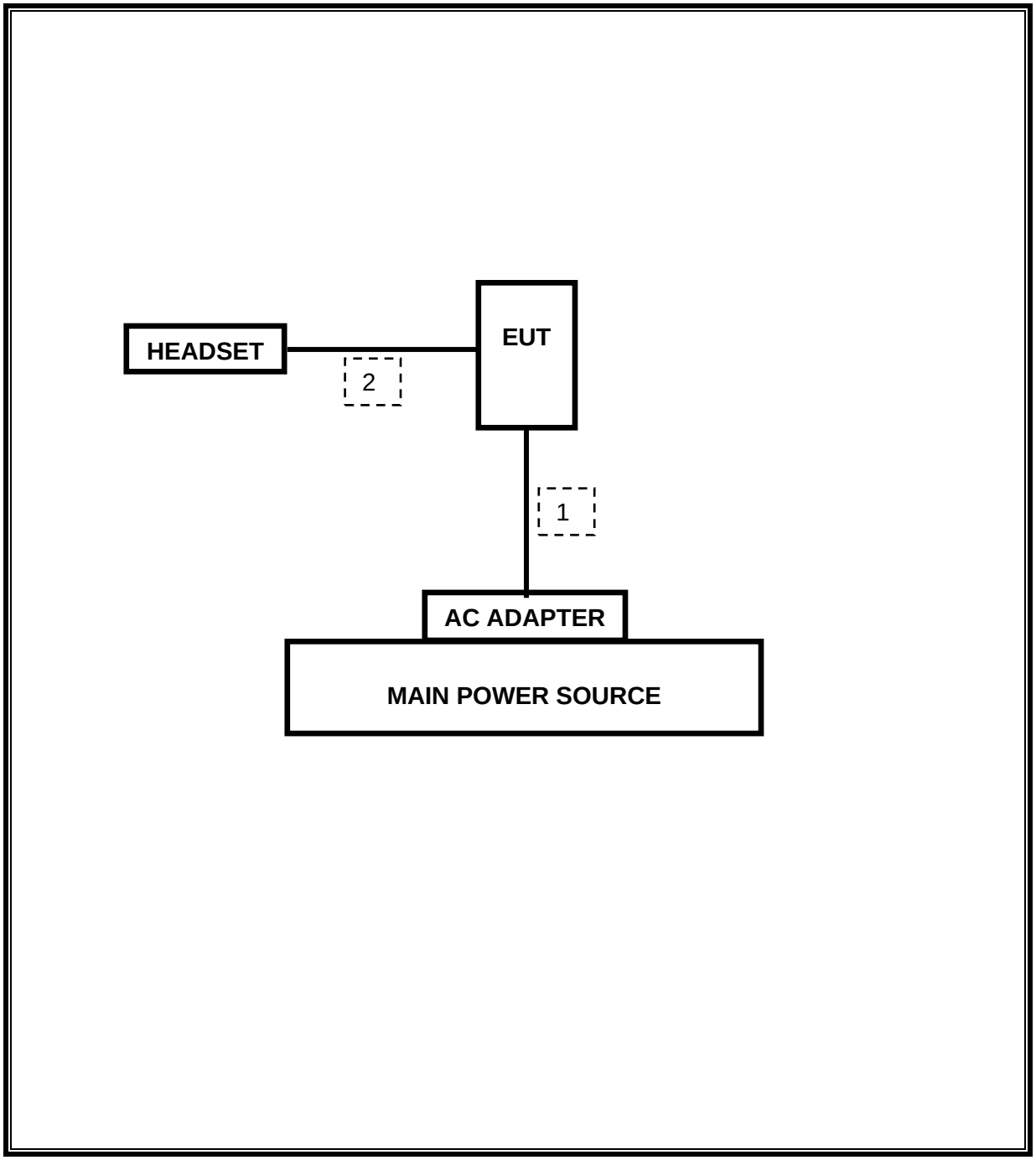
I/O CABLES

I/O Cable List						
Cable No	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	DC	1	MINI USB	UN-SHELDED	1.0m	N/A
2	AUDIO	1	MINI JACK	UN-SHELDED	1.0m	Volume control on cable

TEST SETUP

The EUT was tested with AC adapter and earphones.

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**
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	07/12/12
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00558	11/11/12
Antenna, Horn, 18 GHz	EMCO	3115	C00783	06/29/12
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01016	07/12/12
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00589	07/28/12
Reject Filter, 2.4-2.5 GHz	Micro-Tronics	BRM50702	N02685	CNR
Antenna, Horn, 40 GHz	ARA	MWH-2640/B	C00981	06/14/12
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01161	12/16/12
Preamplifier, 40 GHz	Miteq	NSP4000-SP2	C00990	08/02/12
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01012	09/02/12
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	11/10/12
EMI Test Receiver, 9 kHz-7 GHz	R & S	ESCI 7	1000741	07/06/12
Peak Power Meter	Agilent / HP	E4416A	C00963	03/22/13
Peak / Average Power Sensor	Agilent / HP	E9327A	C00964	12/13/12

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.

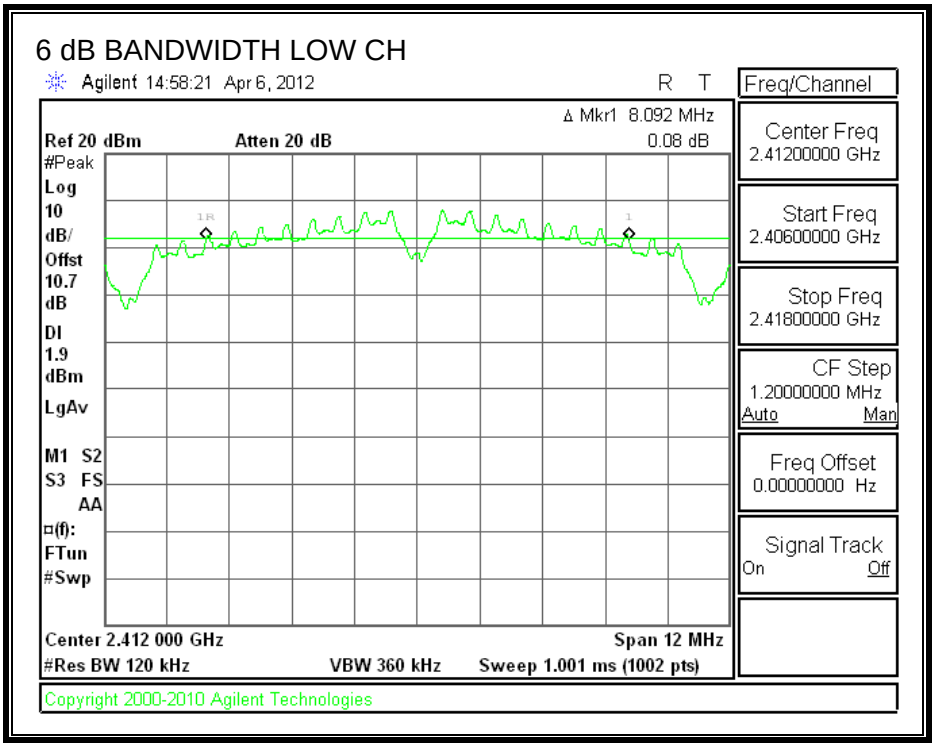
TEST PROCEDURE

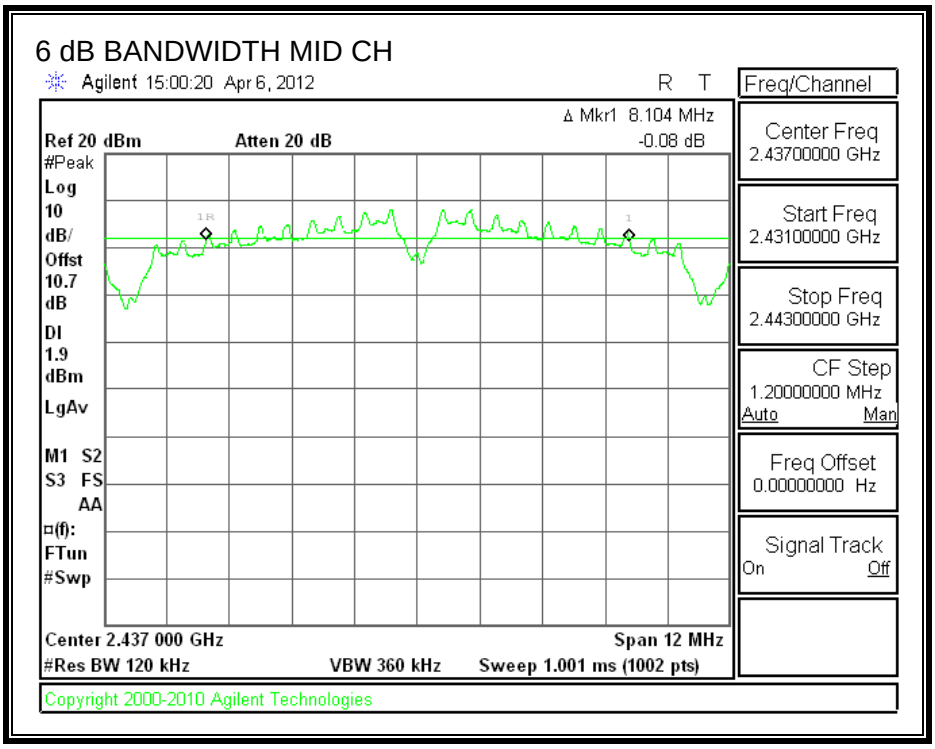
The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

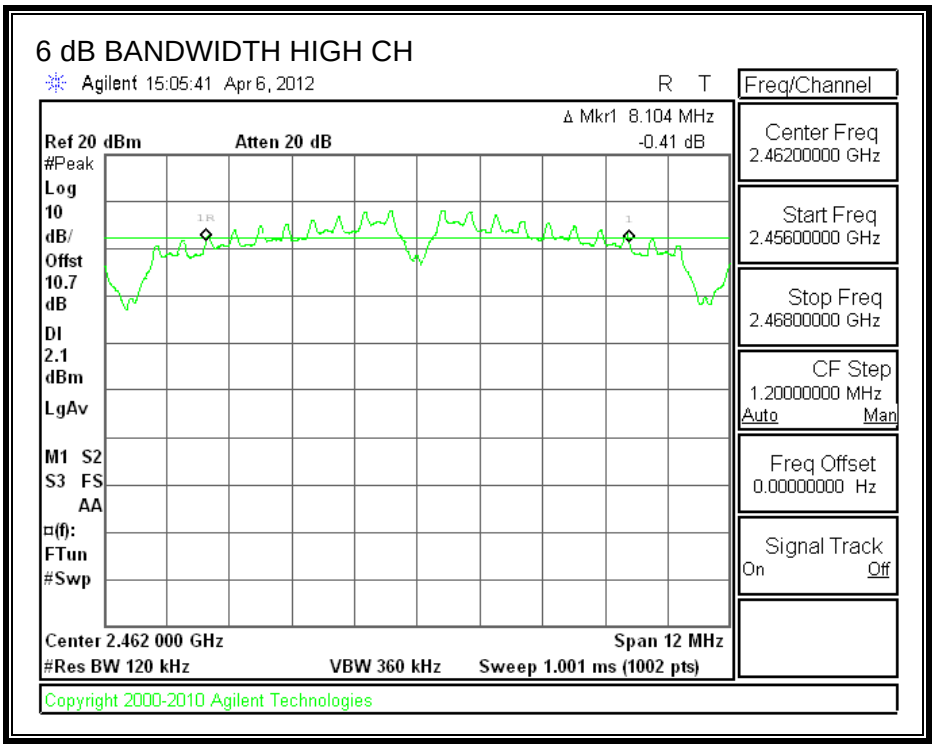
RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	8.092	0.5
Middle	2437	8.104	0.5
High	2462	8.104	0.5

6 dB BANDWIDTH







7.1.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

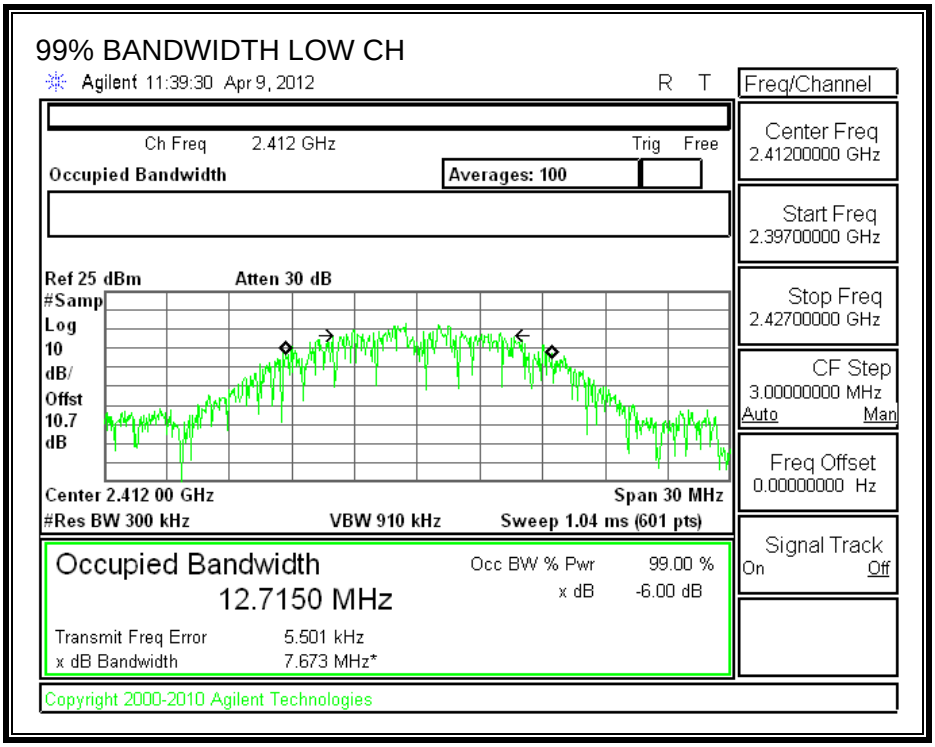
TEST PROCEDURE

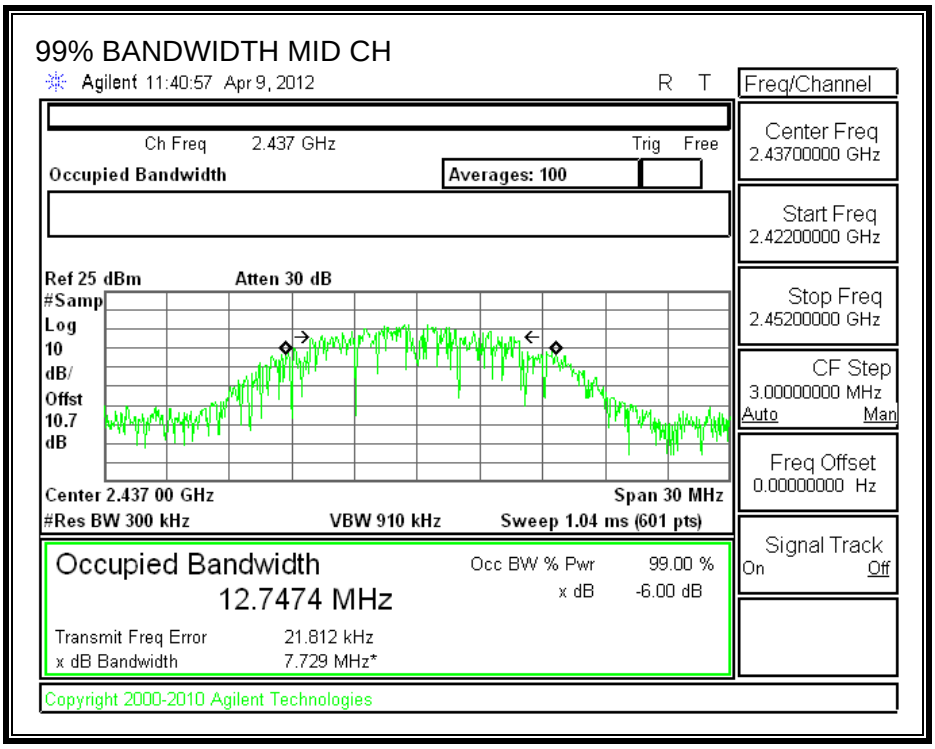
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

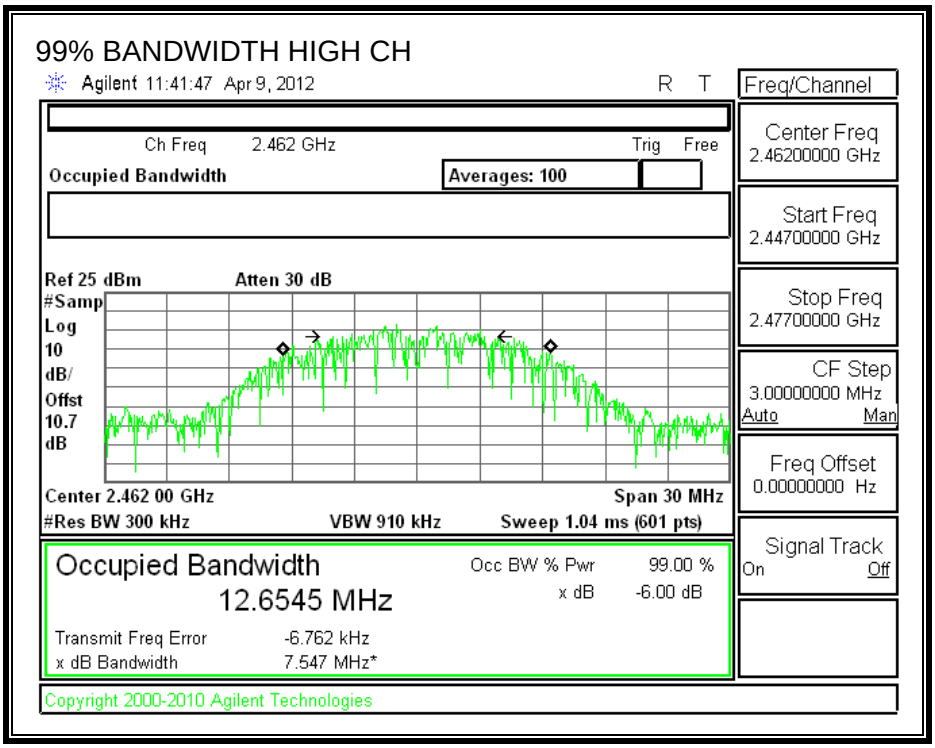
RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	12.715
Middle	2437	12.7474
High	2462	12.6545

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.

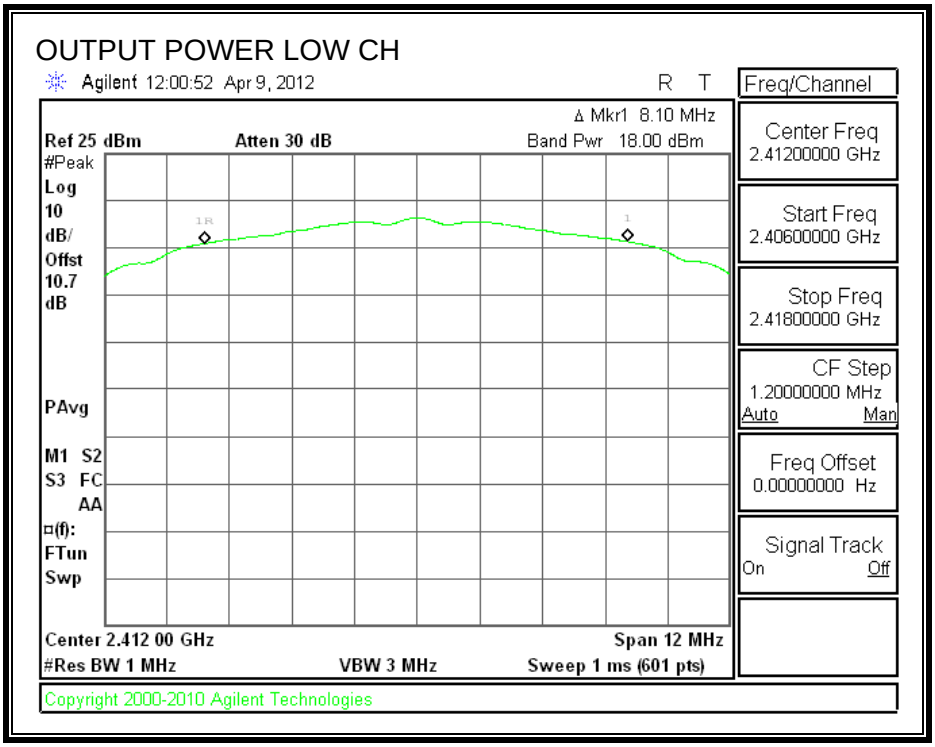
TEST PROCEDURE

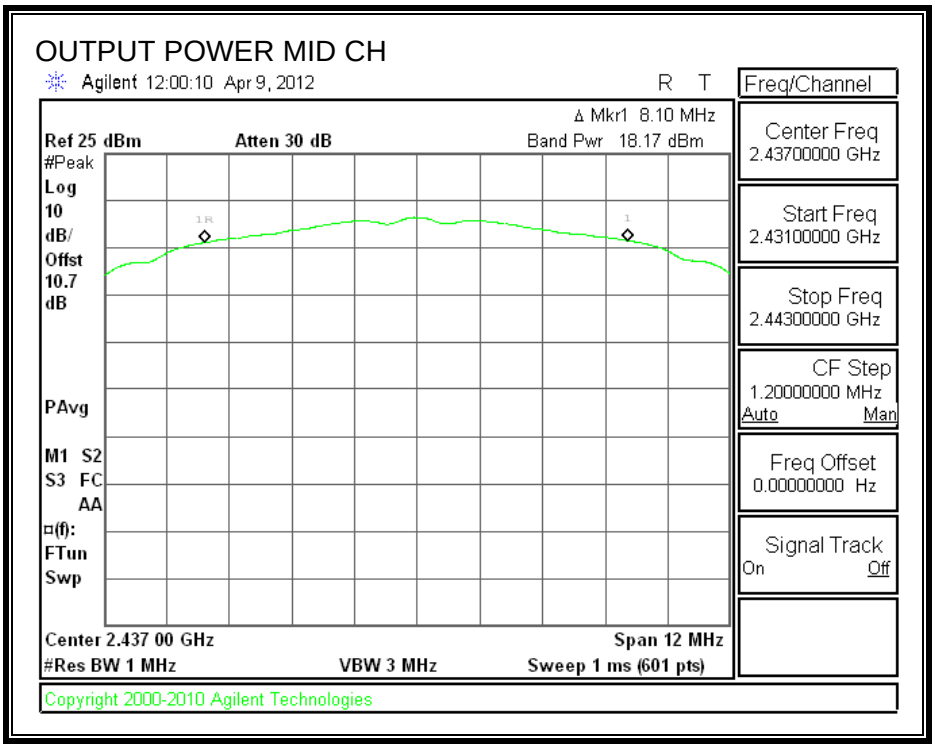
Peak power is measured using the Channel bandwidth Alternative peak output power procedure specified in "TCB Training for Devices covered under Scopes A1 - A4" by Joe Dichoso, May 2003.

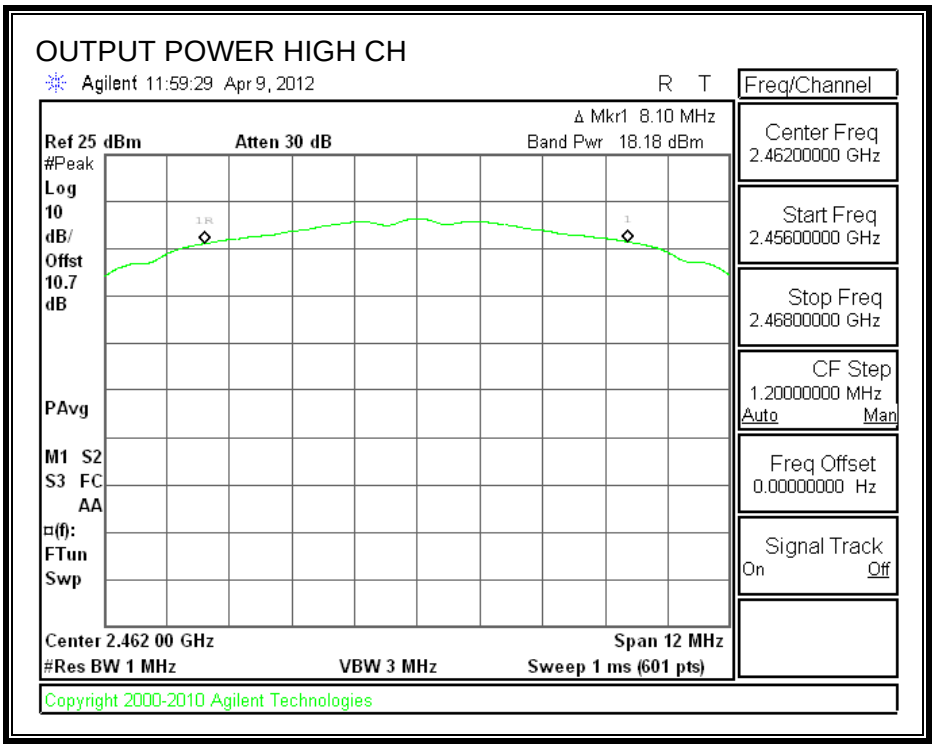
RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	18	18.00	30	-12.00
Middle	2437	18.17	18.17	30	-11.83
High	2462	18.18	18.18	30	-11.82

OUTPUT POWER







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 10.7 dB (including 10 dB pad and 0.7dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Power (dBm)
Low	2412	15.21
Middle	2437	15.35
High	2462	15.42

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.

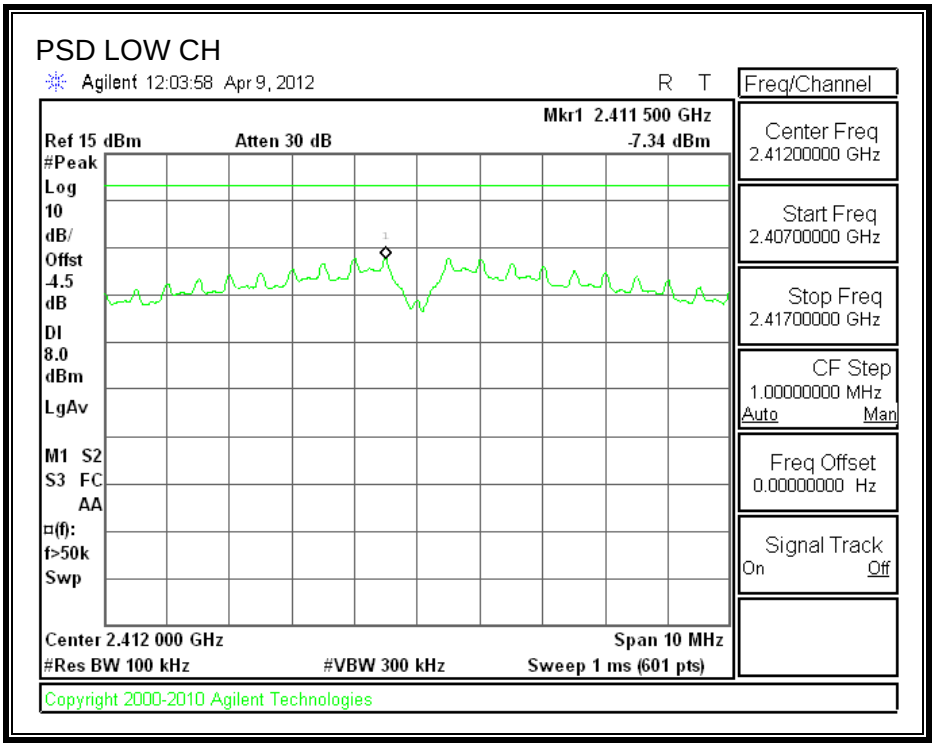
TEST PROCEDURE

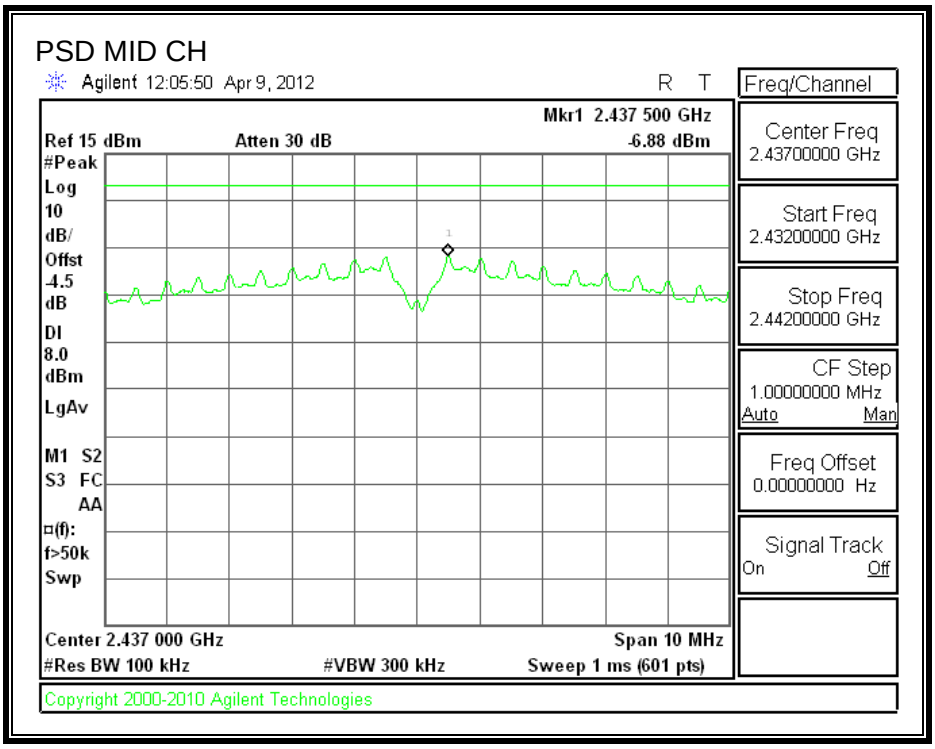
Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005.

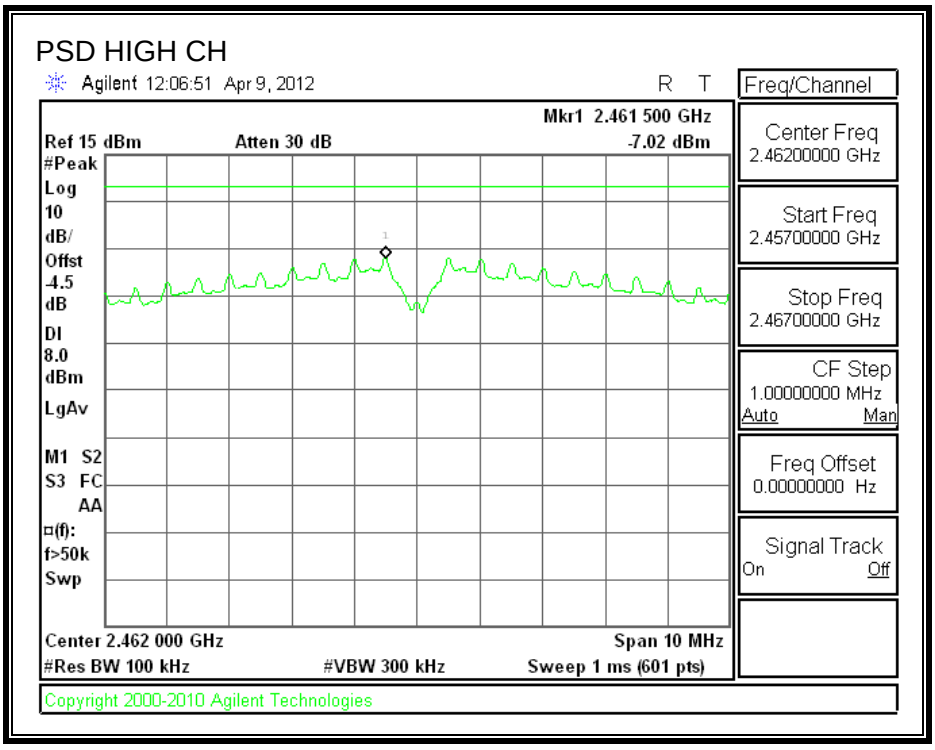
RESULTS

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-7.34	8	-15.34
Middle	2437	-6.88	8	-14.88
High	2462	-7.02	8	-15.02

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.

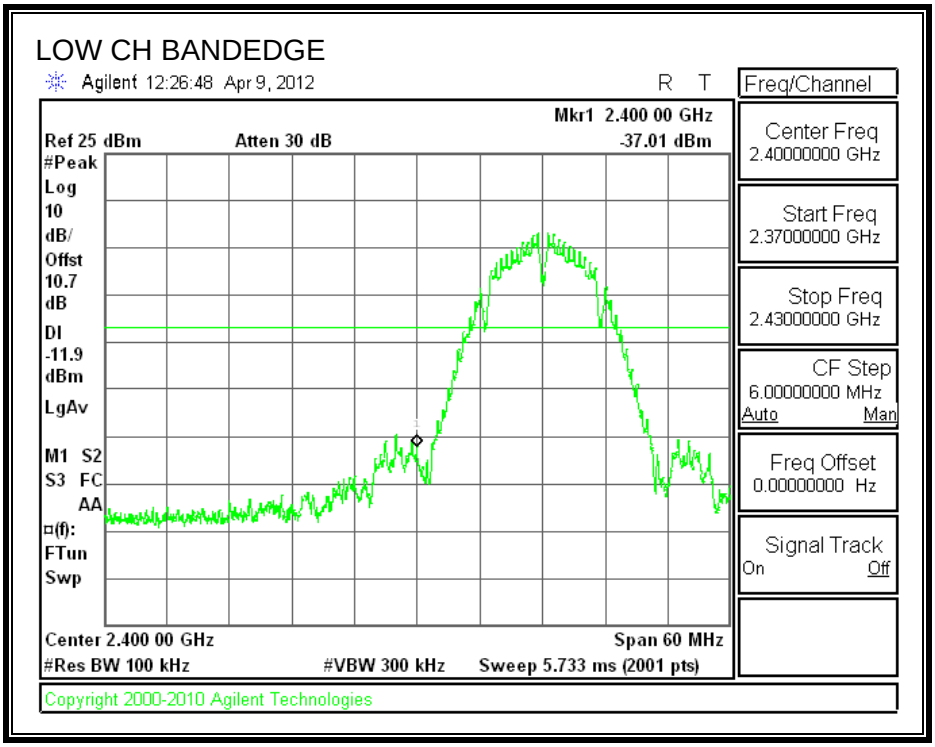
TEST PROCEDURE

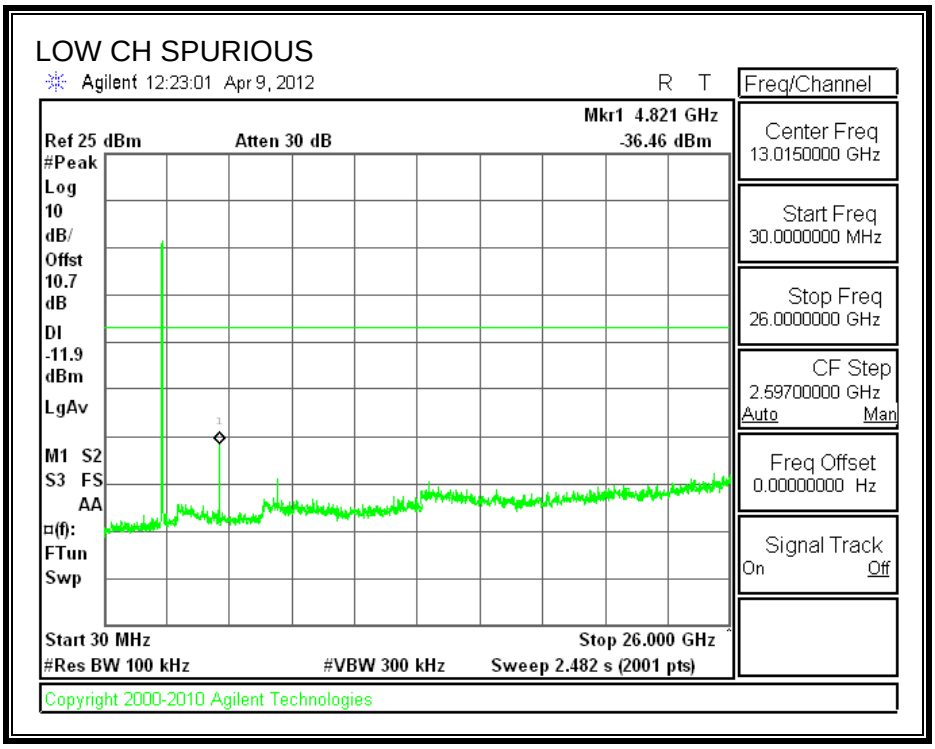
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

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

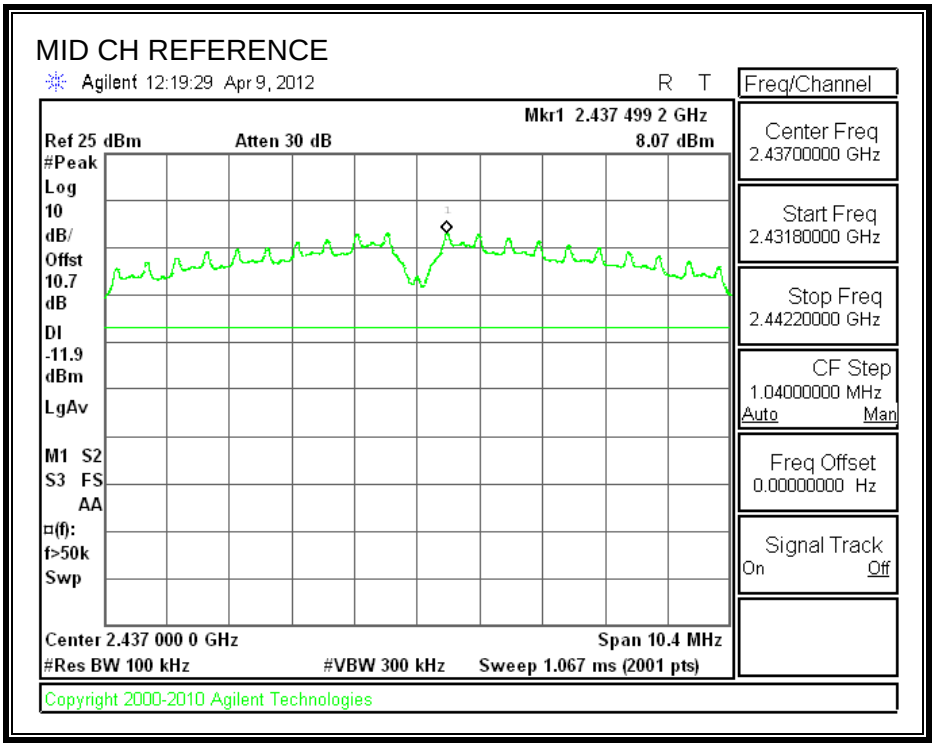
RESULTS

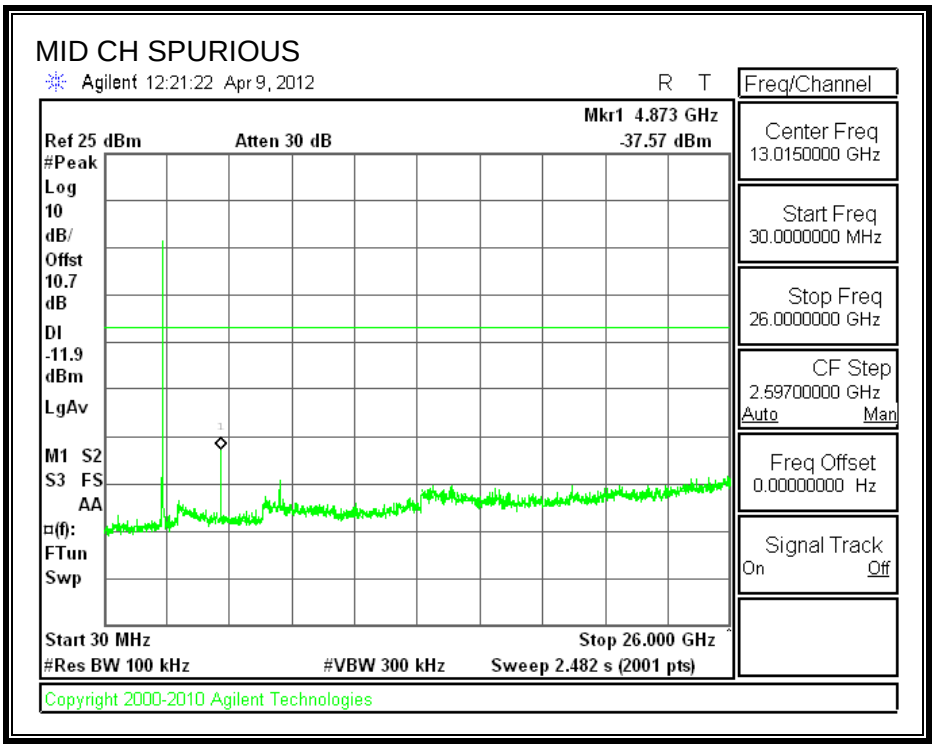
SPURIOUS EMISSIONS, LOW CHANNEL



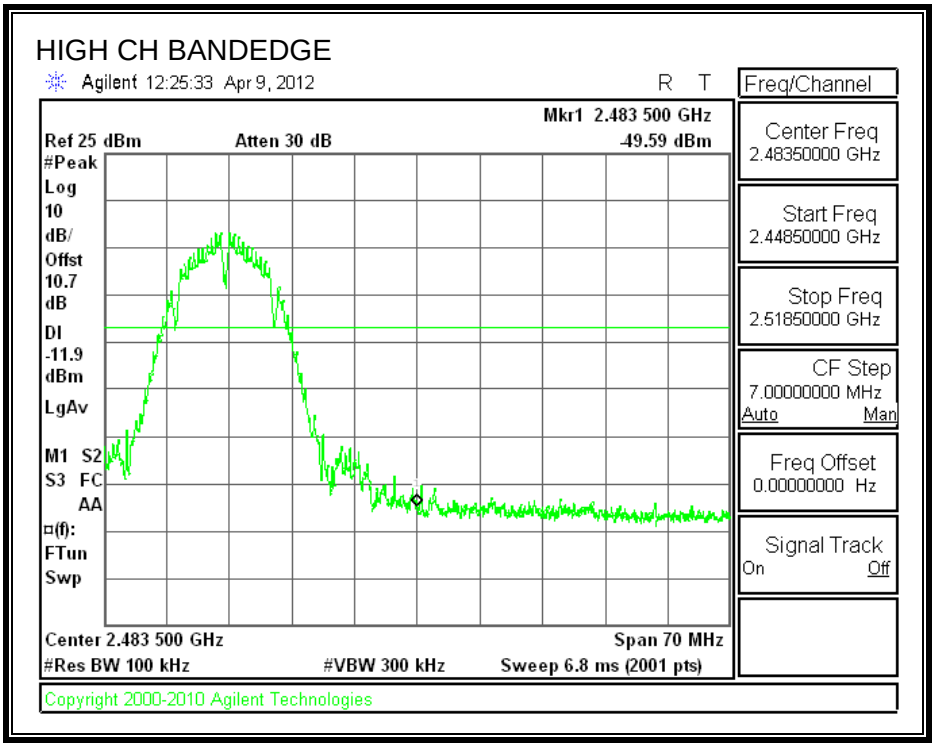


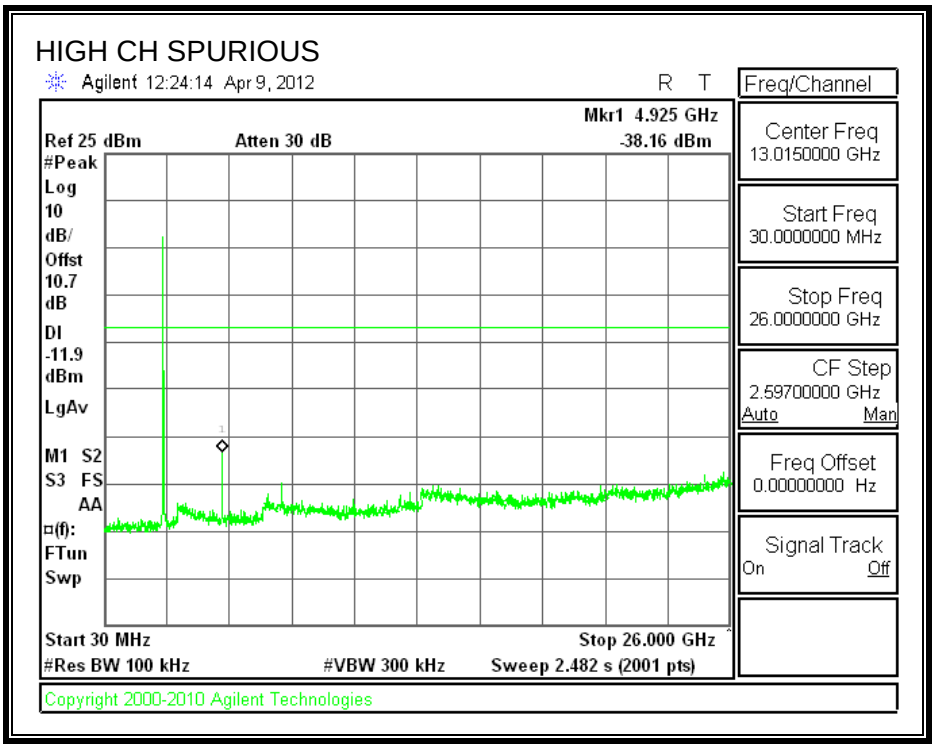
SPURIOUS EMISSIONS, MID CHANNEL





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.

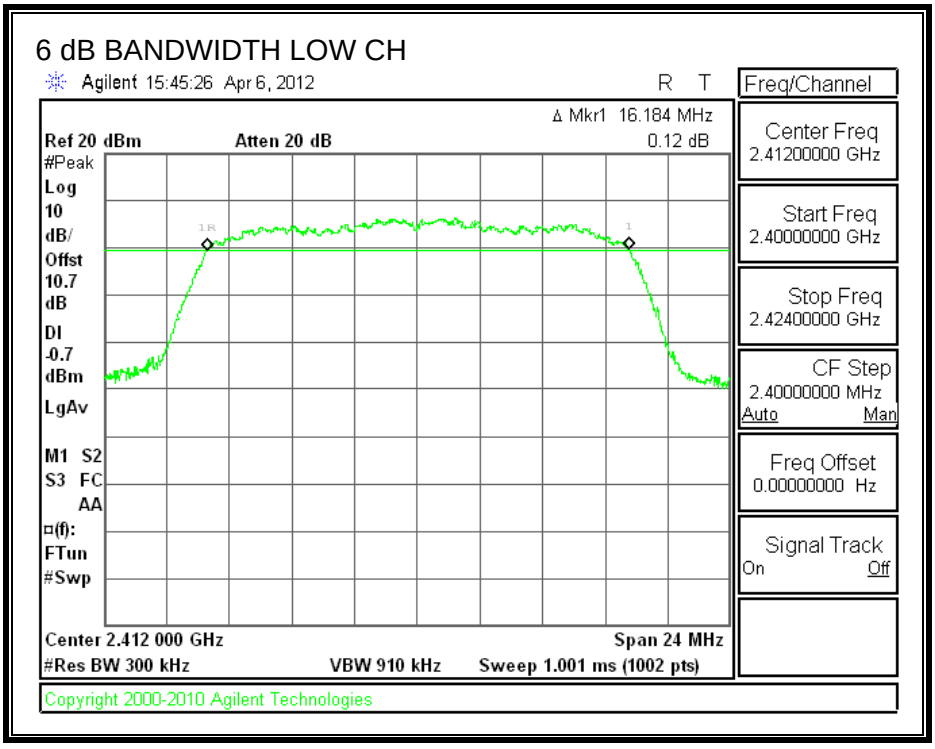
TEST PROCEDURE

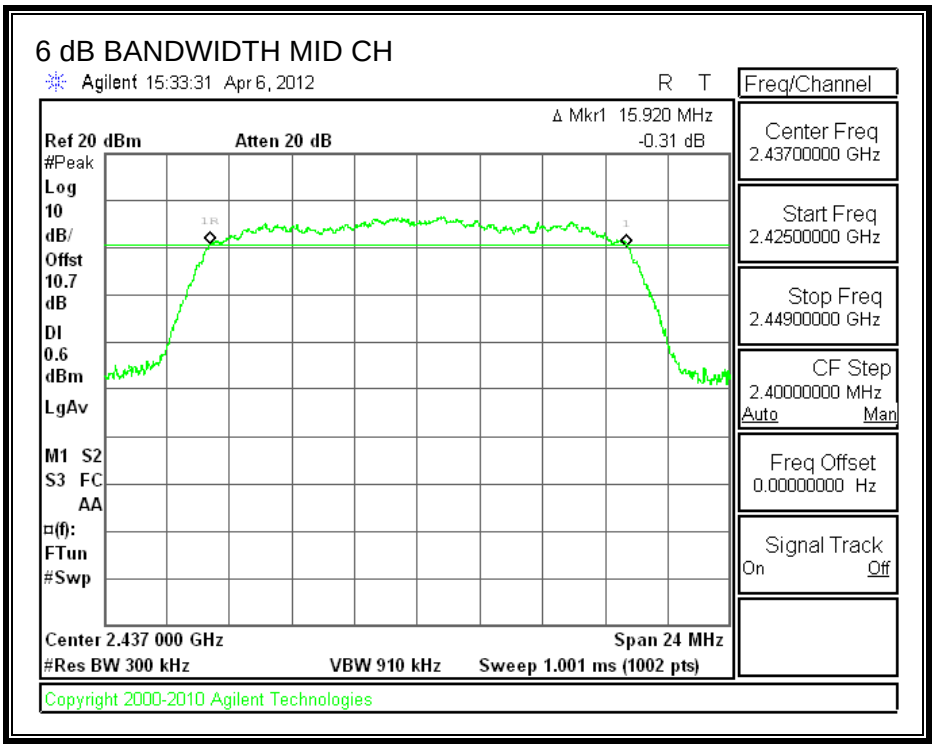
The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

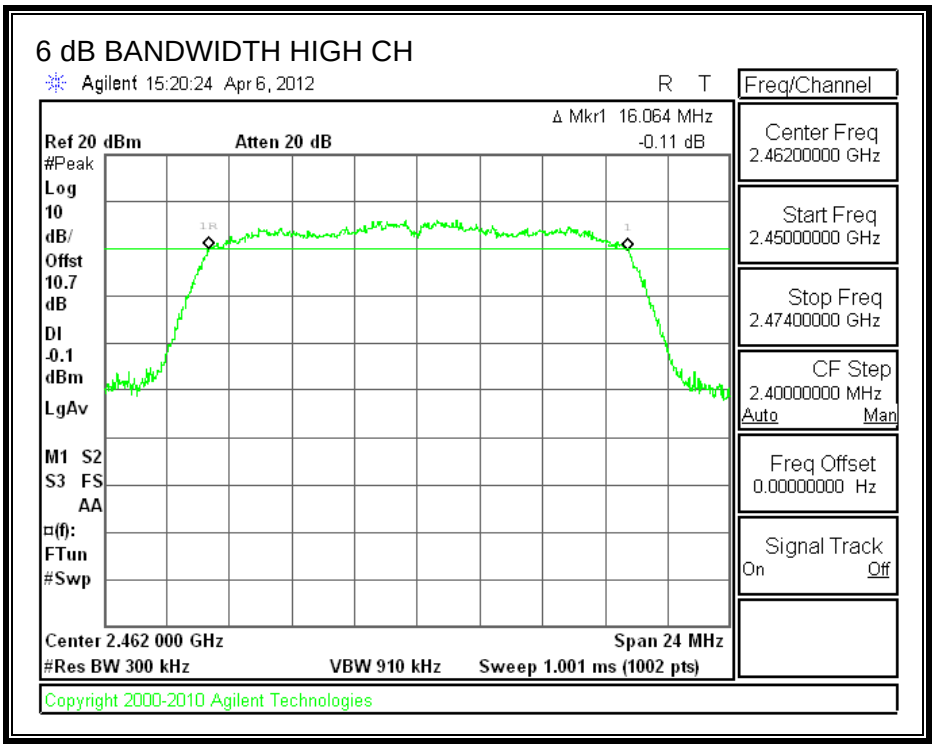
RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	16.184	0.5
Middle	2437	15.92	0.5
High	2462	16.064	0.5

6 dB BANDWIDTH







7.2.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

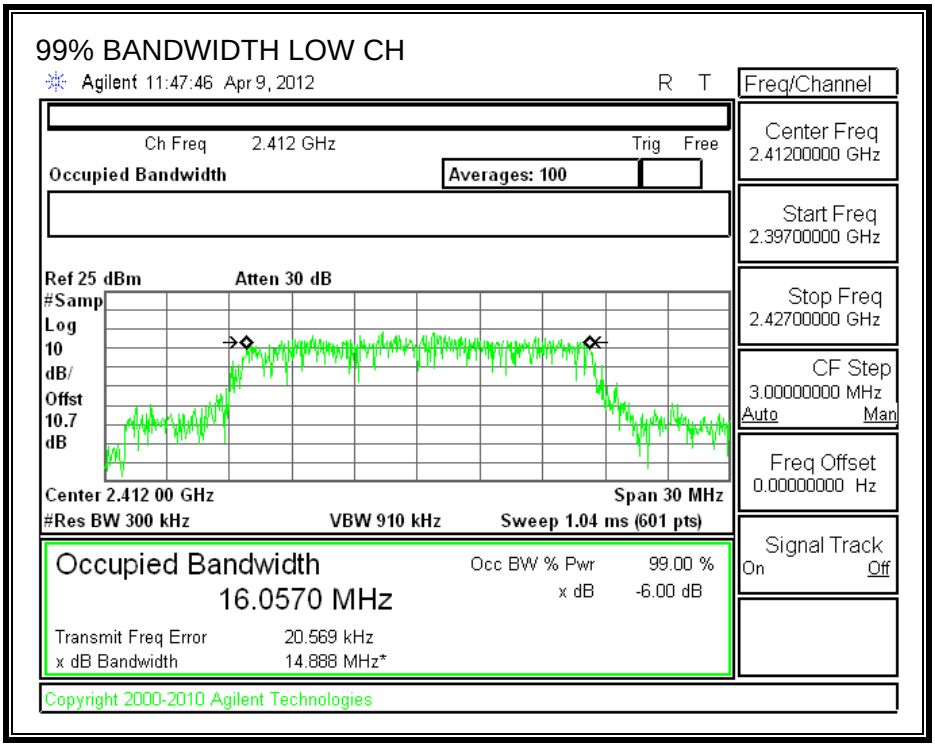
TEST PROCEDURE

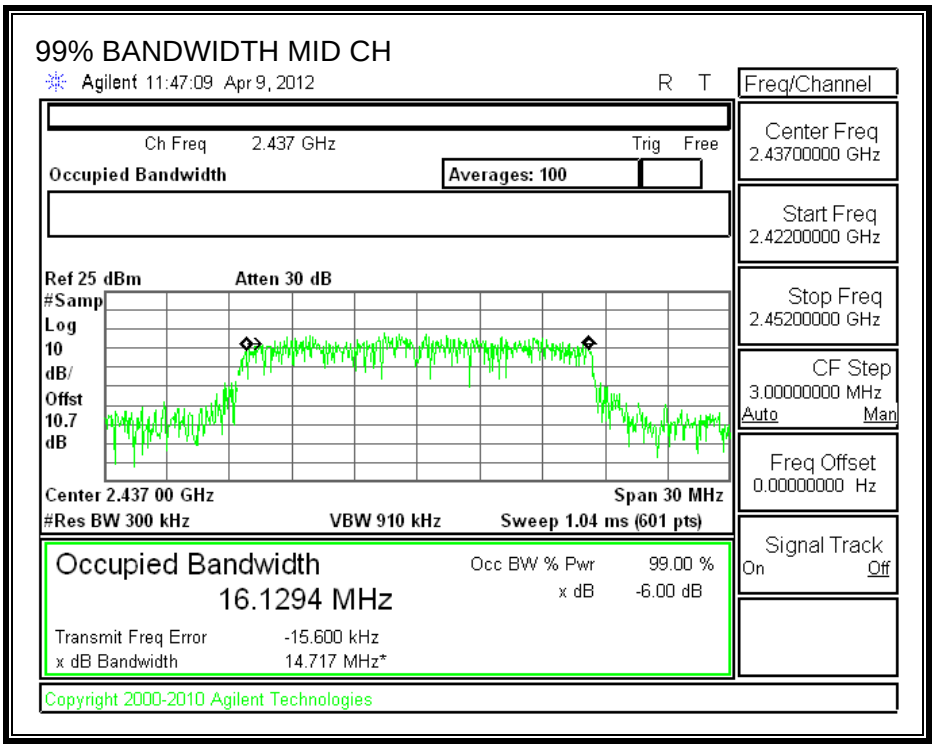
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

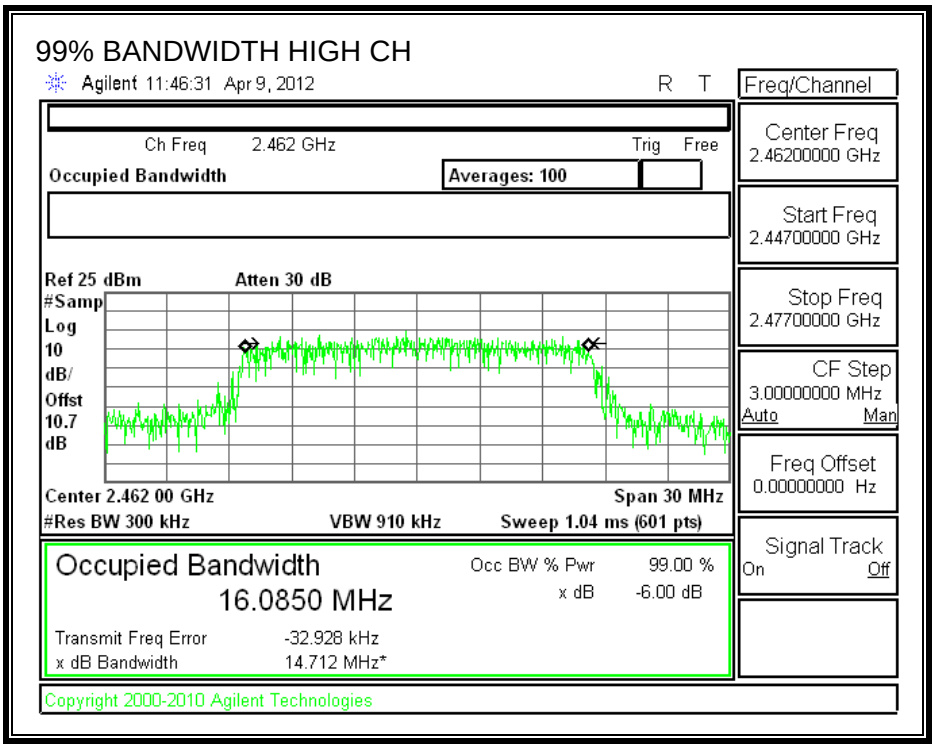
RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	16.057
Middle	2437	16.1294
High	2462	16.085

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.

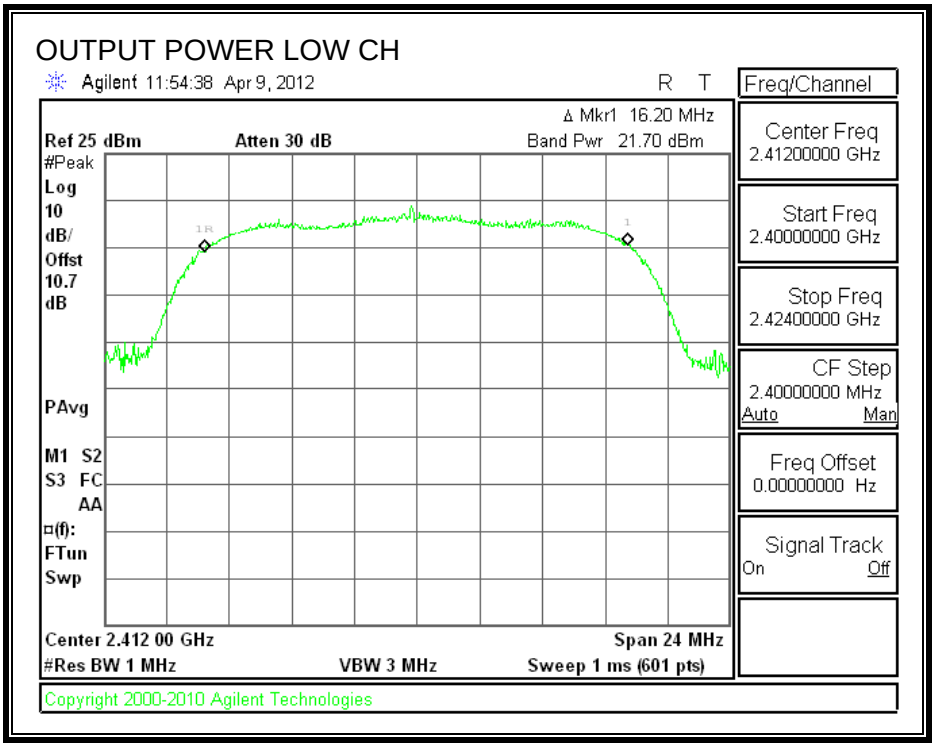
TEST PROCEDURE

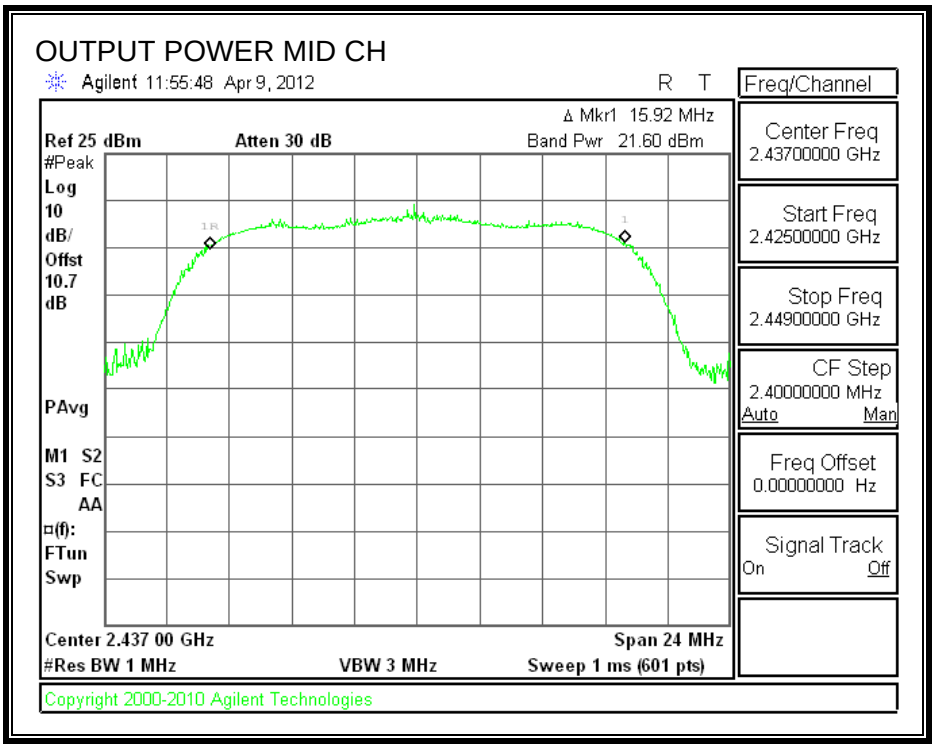
Peak power is measured using the Channel bandwidth Alternative peak output power procedure specified in "TCB Training for Devices covered under Scopes A1 - A4" by Joe Dichoso, May 2003.

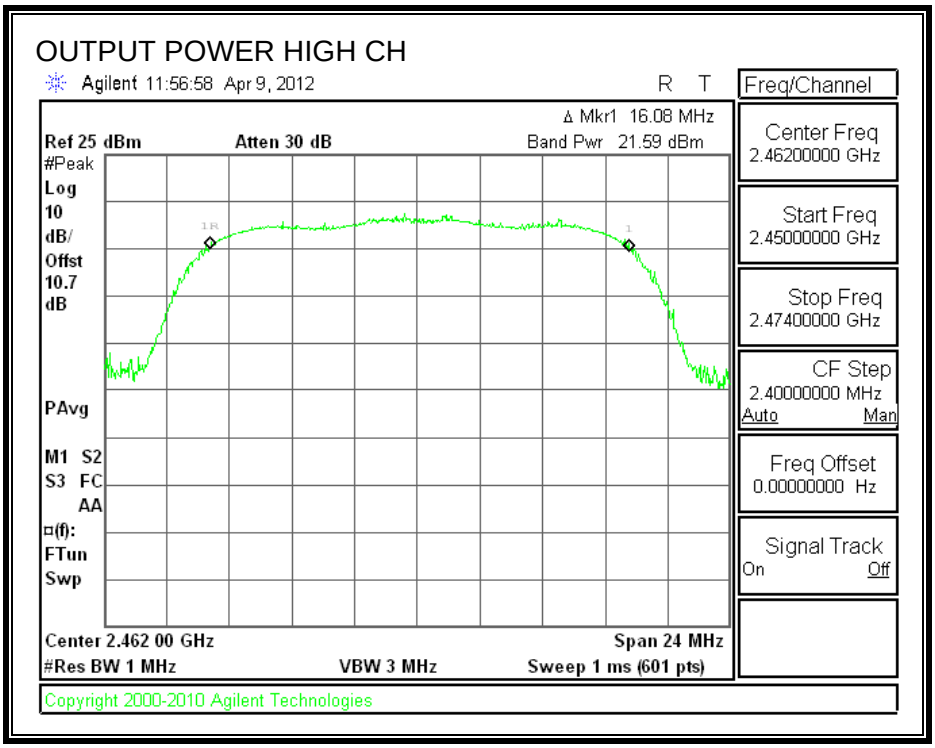
RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	21.7	21.70	30	-8.30
Middle	2437	21.6	21.60	30	-8.40
High	2462	21.59	21.59	30	-8.41

OUTPUT POWER







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 12.7 dB (including 10 dB pad and 0.7 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	13.06
Middle	2437	13.17
High	2462	13.20

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.

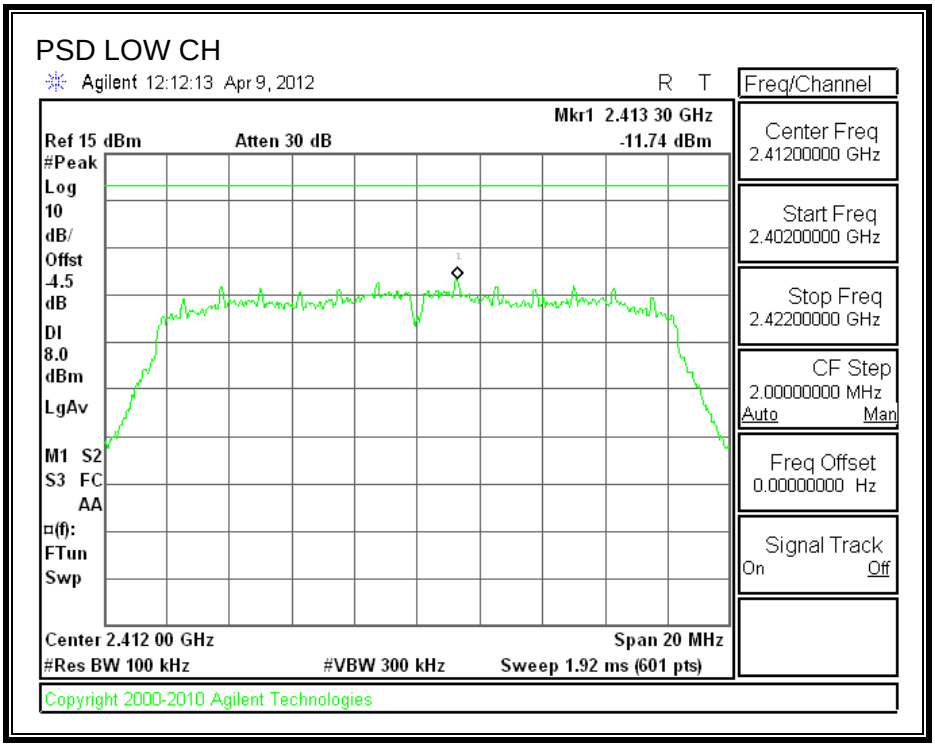
TEST PROCEDURE

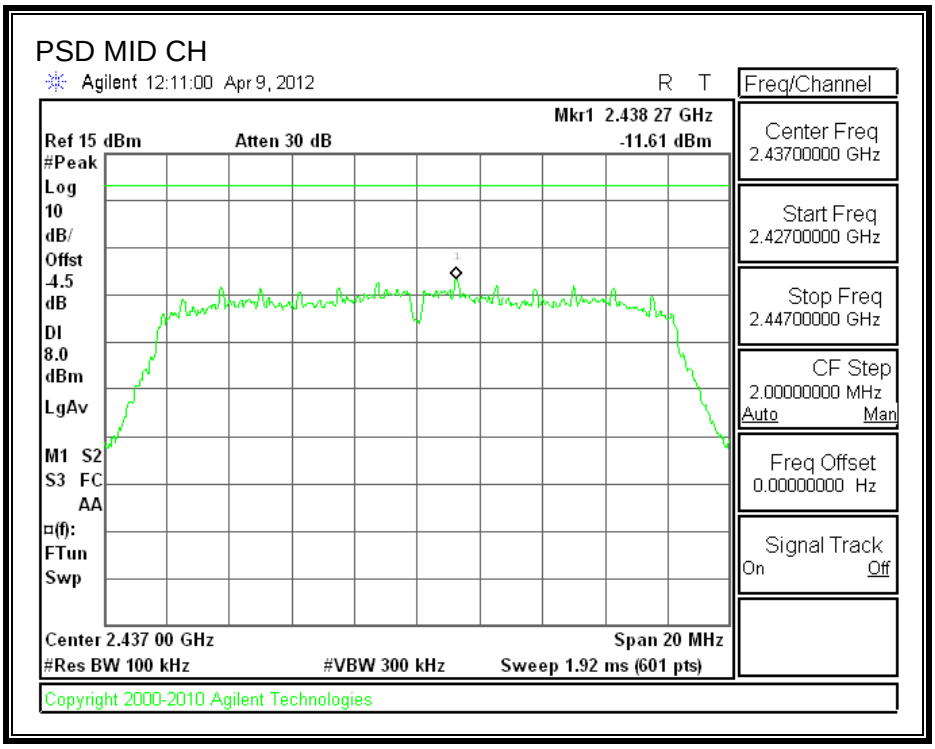
Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005.

RESULTS

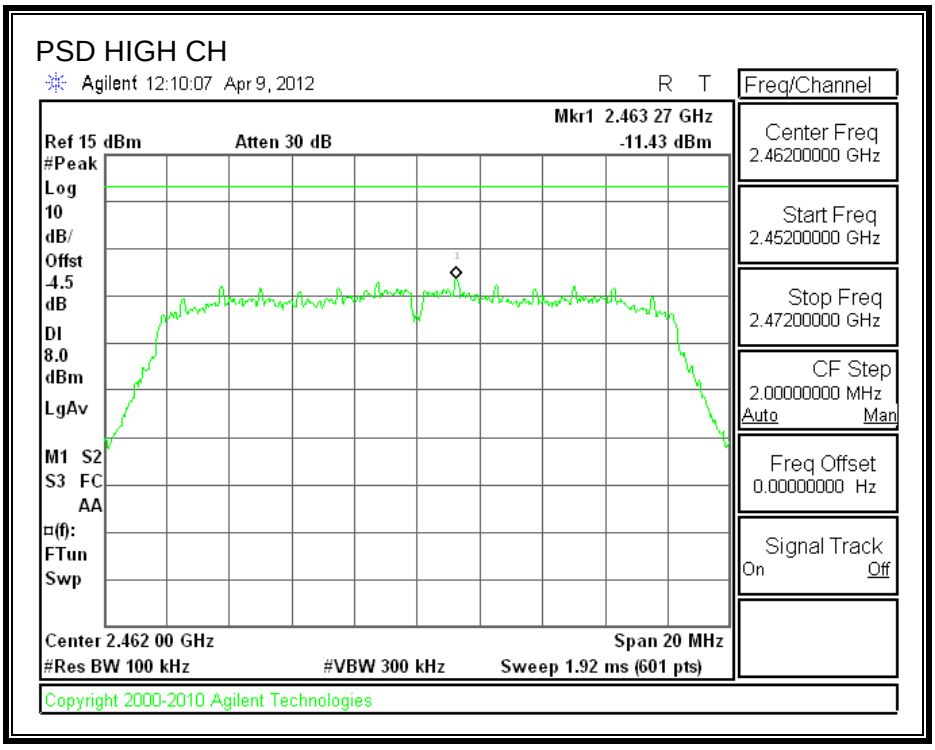
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-11.74	8	-19.74
Middle	2437	-11.61	8	-19.61
High	2462	-11.43	8	-19.43

POWER SPECTRAL DENSITY





PSD HIGH CH



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.

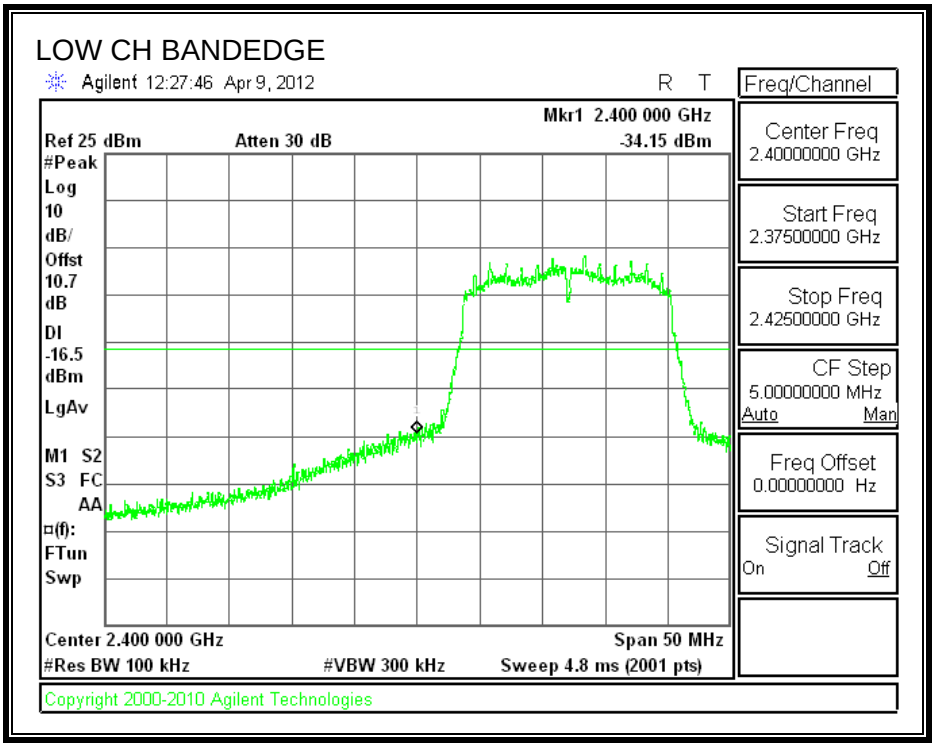
TEST PROCEDURE

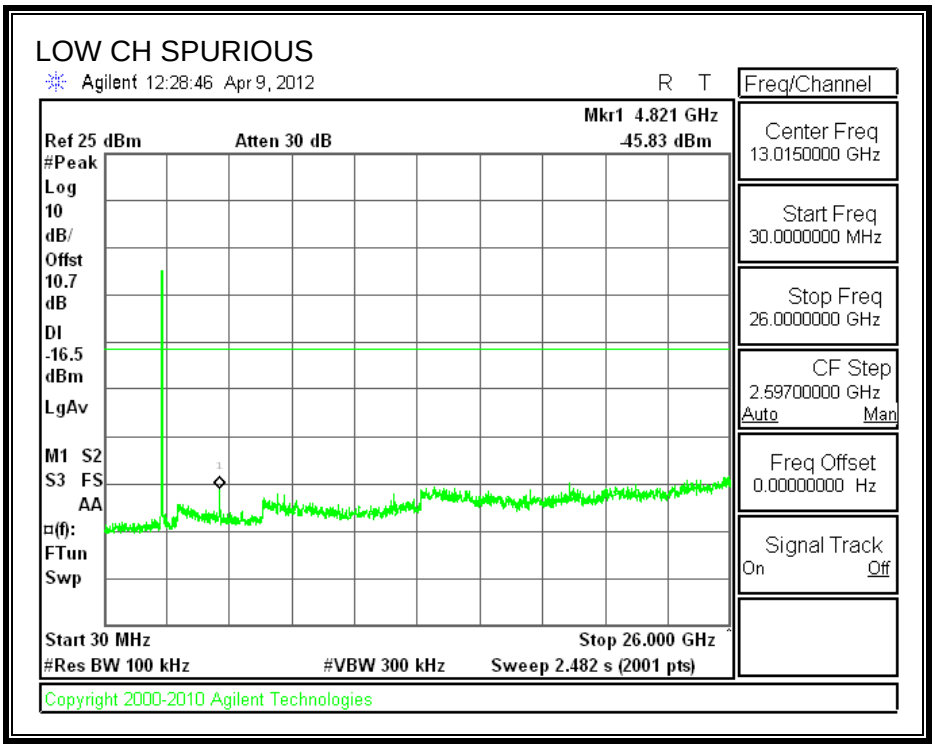
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

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

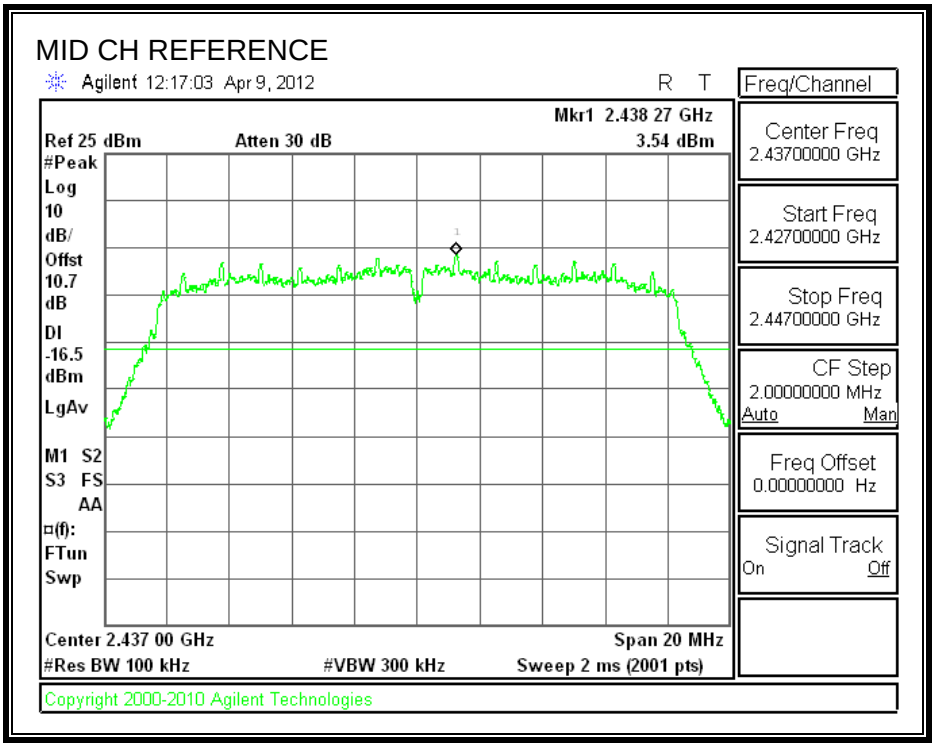
RESULTS

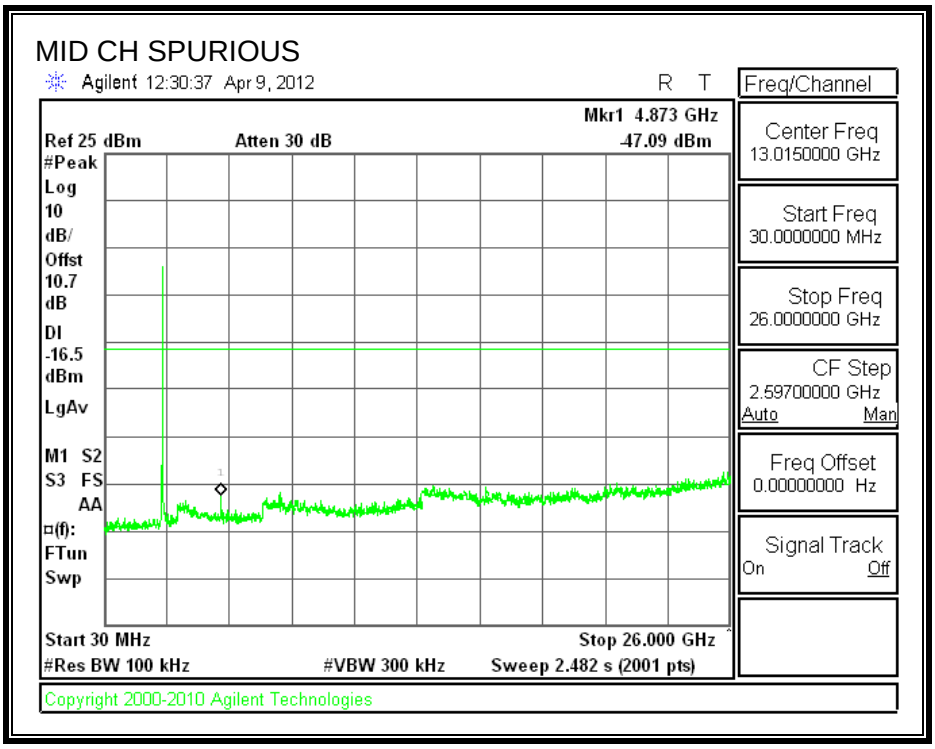
SPURIOUS EMISSIONS, LOW CHANNEL



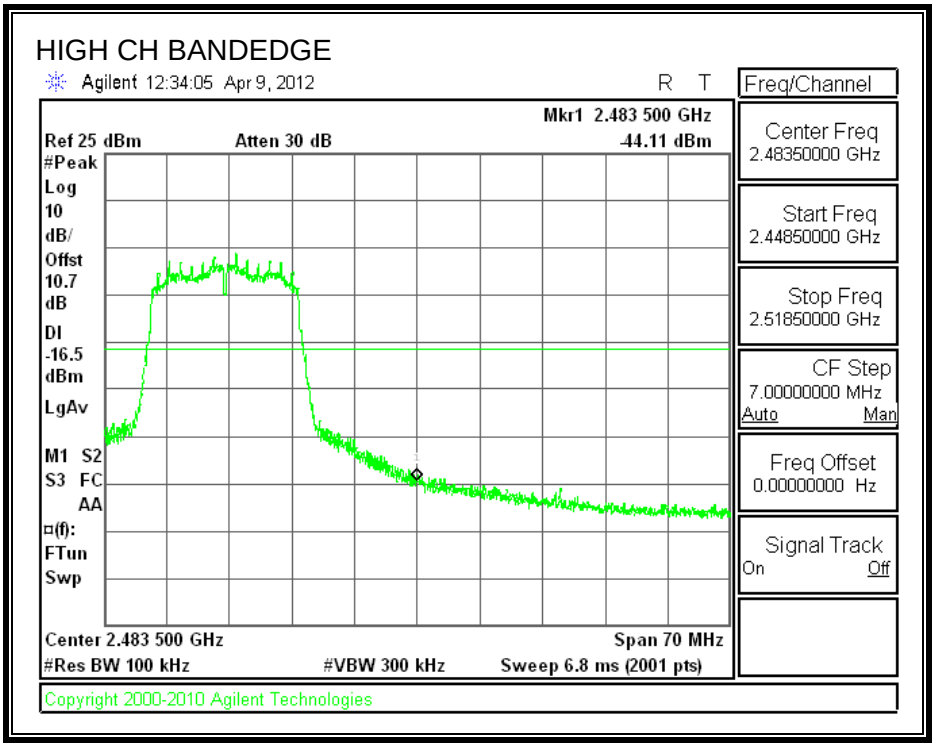


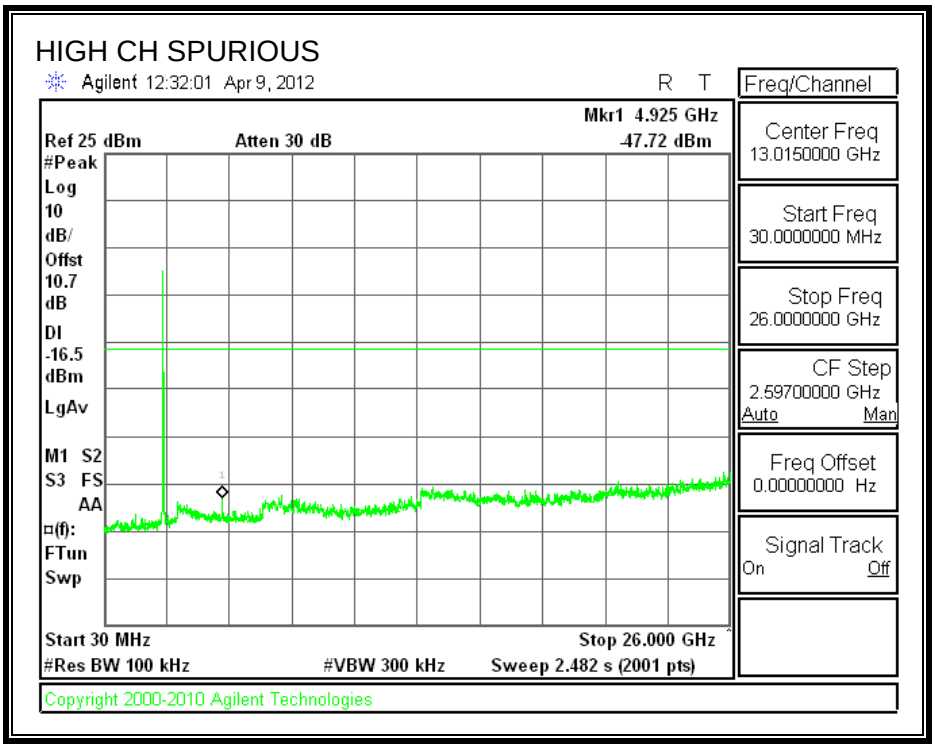
SPURIOUS EMISSIONS, MID CHANNEL





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.

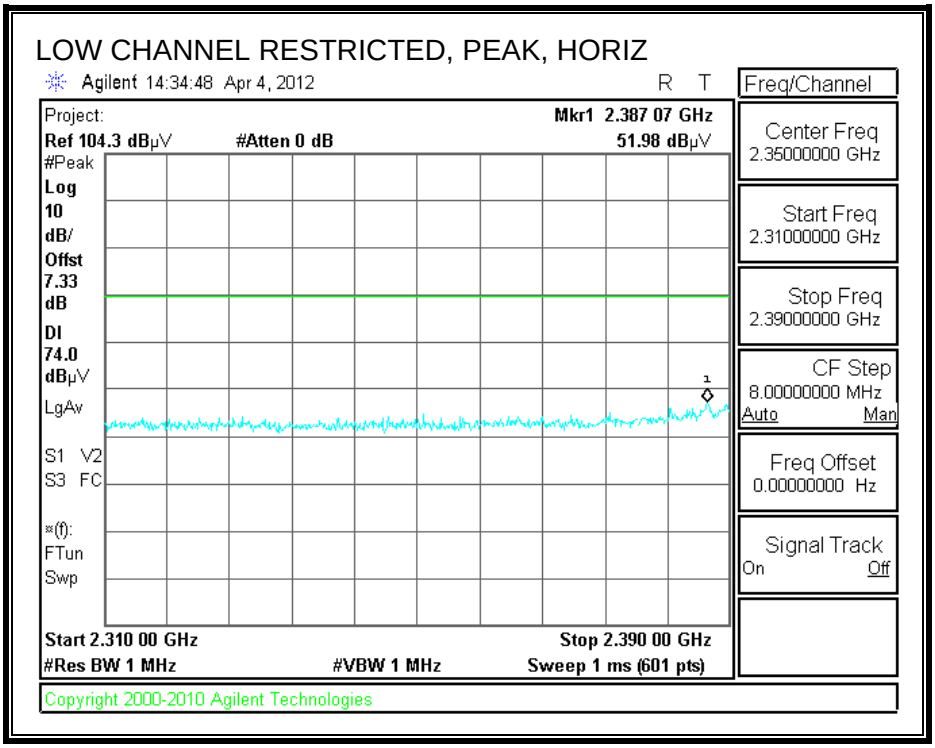
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

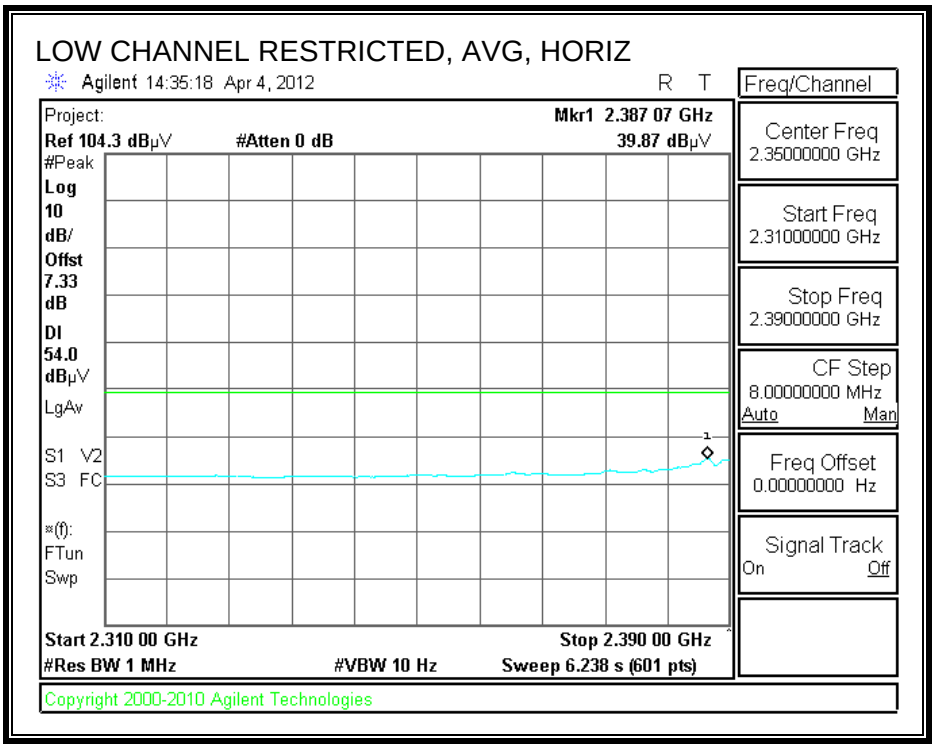
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

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.

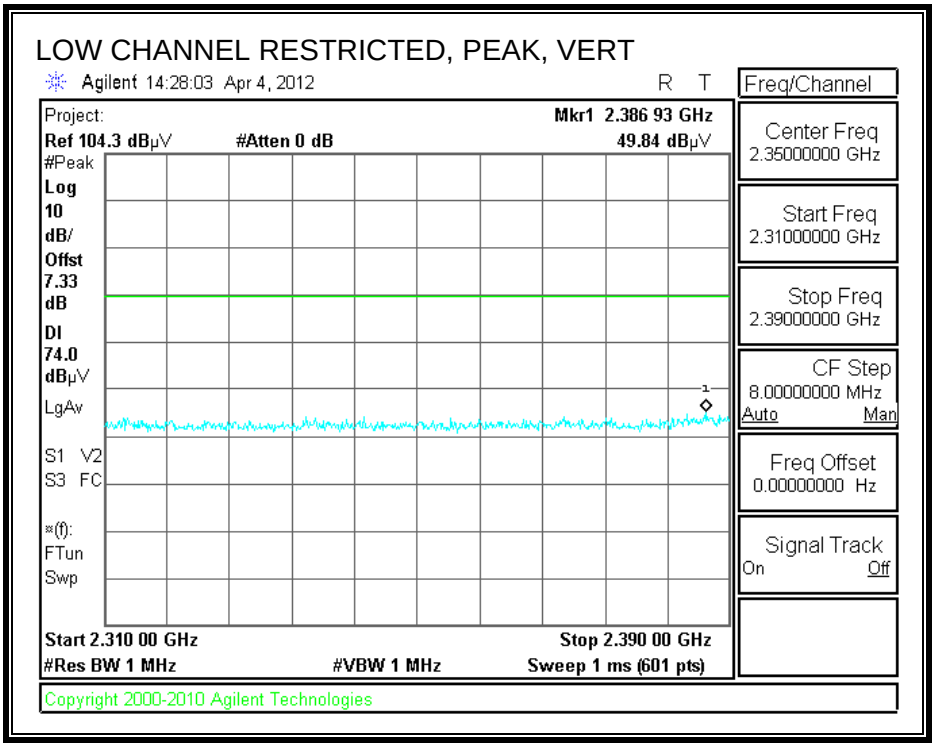
8.1.1. TX ABOVE 1 GHz FOR 802.11b 1TX MODE IN THE 2.4 GHz BAND

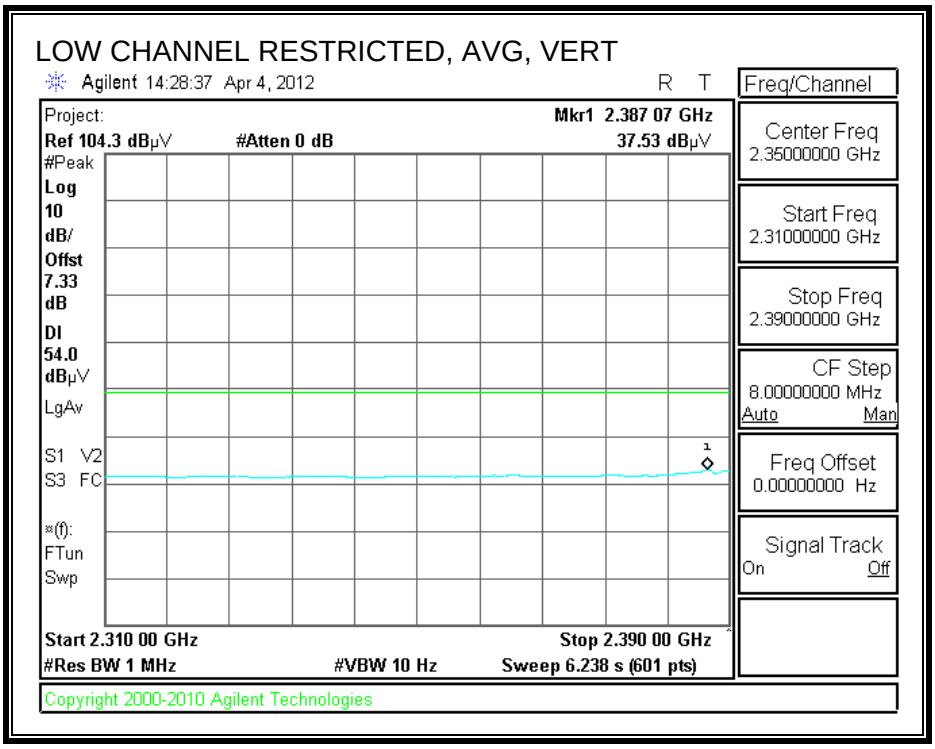
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



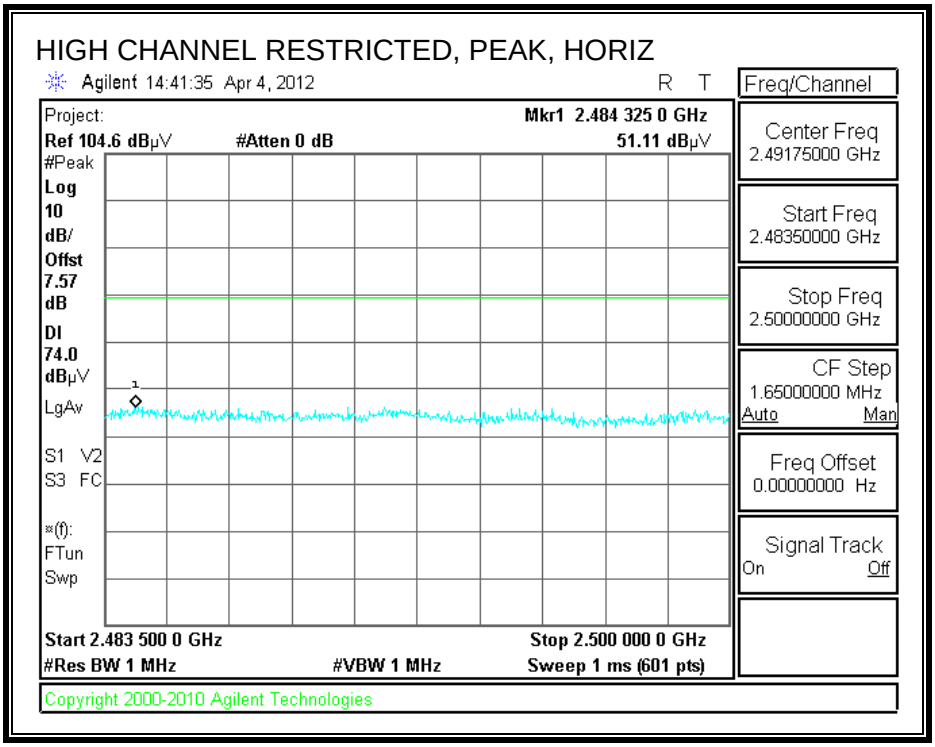


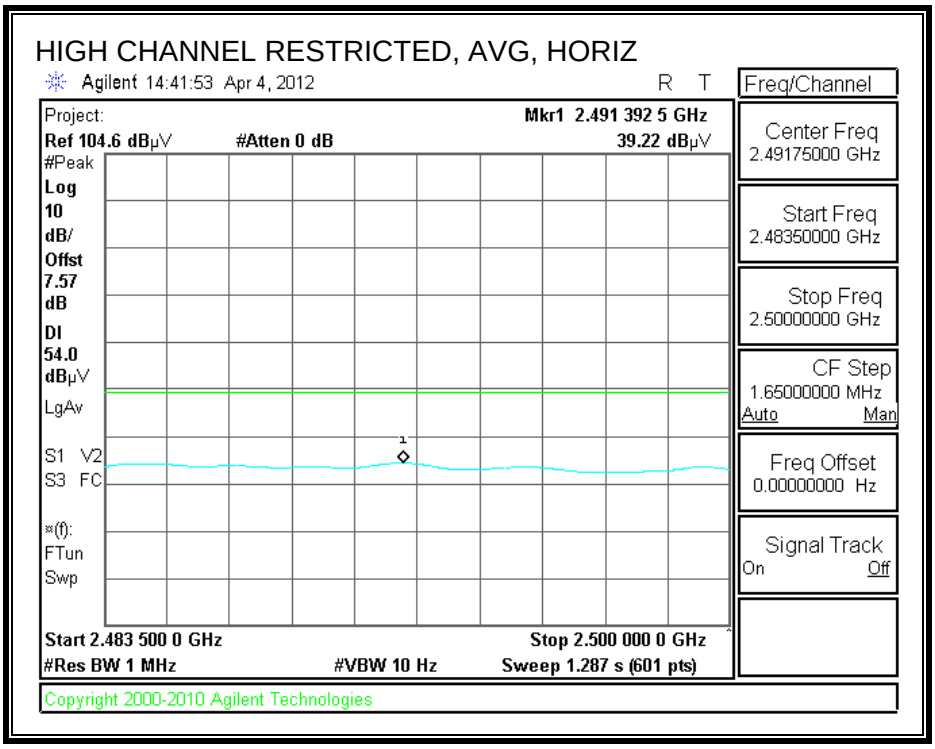
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



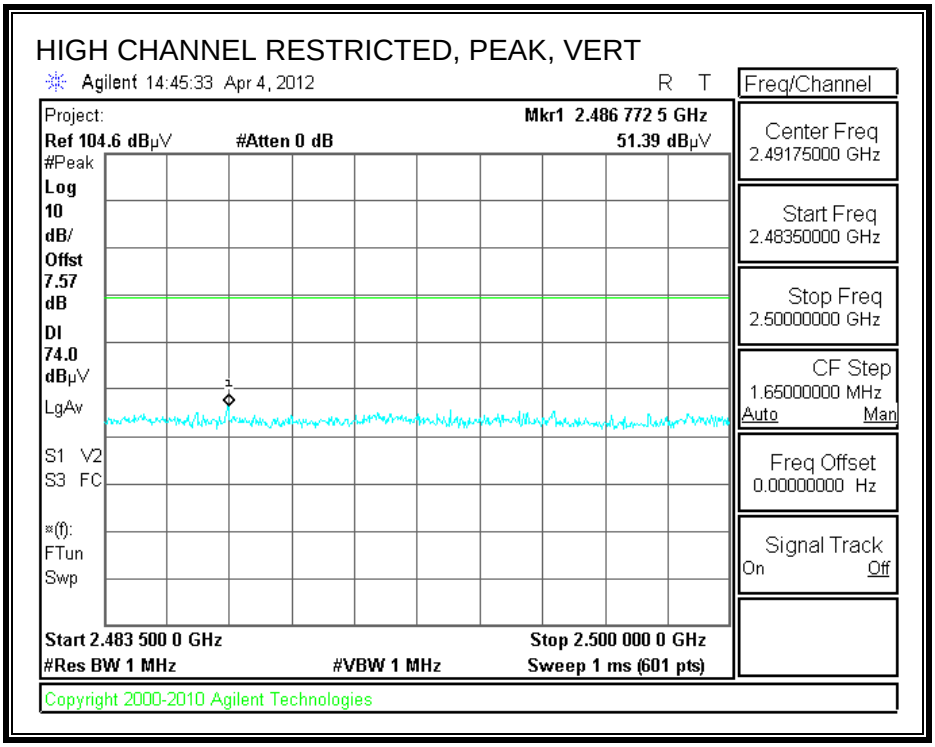


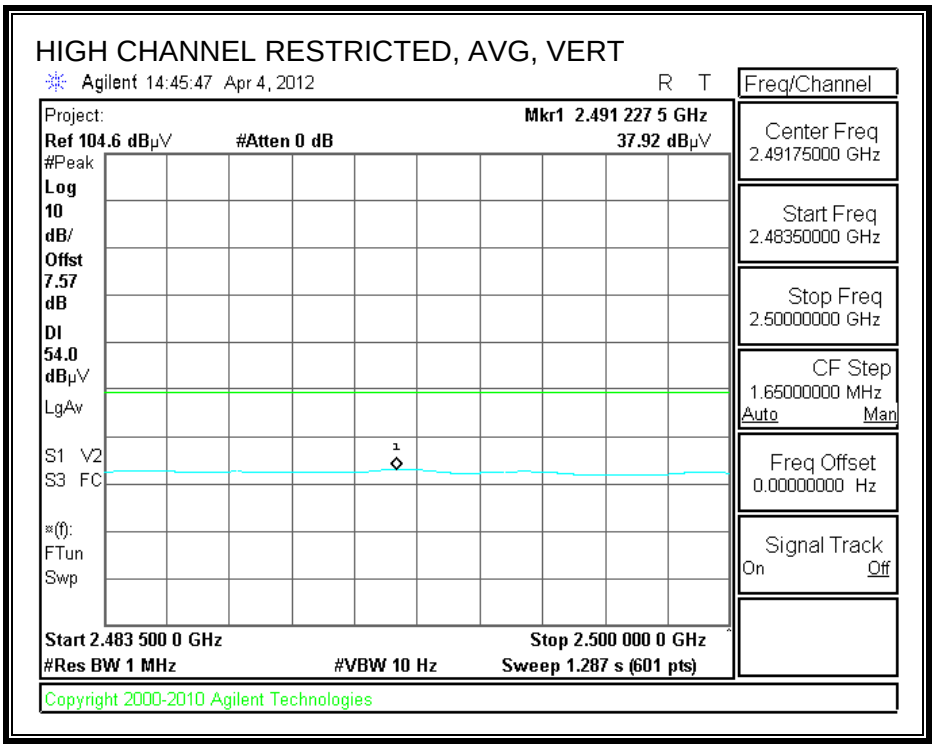
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Vien Tran
Date: 04/04/12
Project #: 12U14254
Company: LG
Test Target: 15.205
Mode Oper: 802.11b Tx

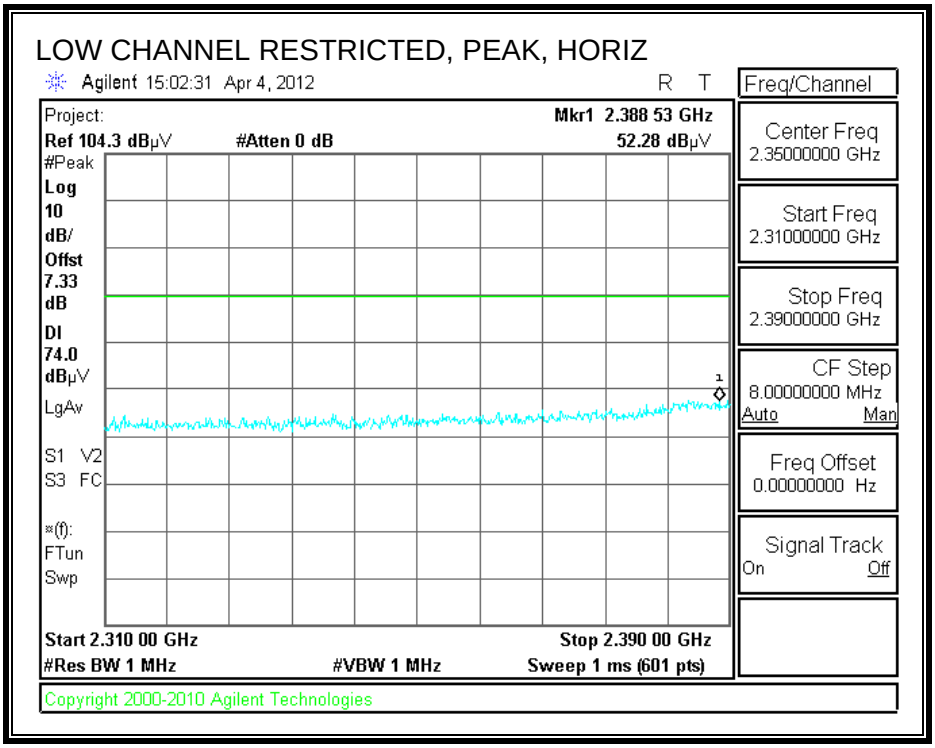
f	Measurement Frequency	Amp	Preamp Gain	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Margin vs.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

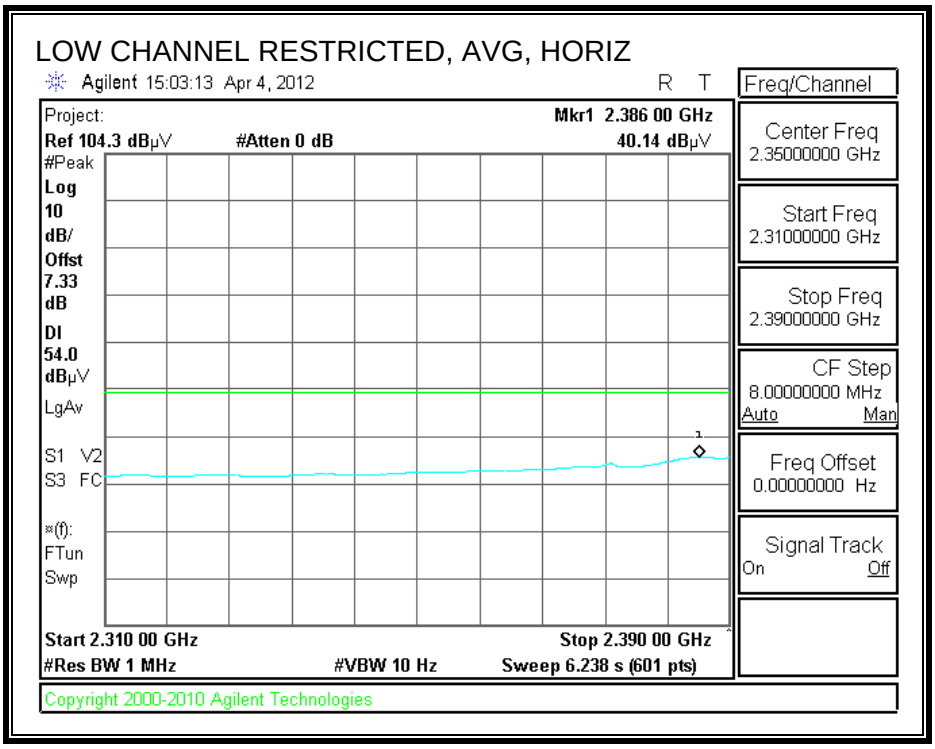
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
Low Channel - 2412MHz															
4.824	3.0	38.7	33.1	6.8	-34.1	0.0	0.0	44.5	74.0	-29.5	V	P	109.0	187.0	
4.824	3.0	31.1	33.1	6.8	-34.1	0.0	0.0	36.9	54.0	-17.1	V	A	109.0	187.0	
4.824	3.0	39.3	33.1	6.8	-34.1	0.0	0.0	45.1	74.0	-28.9	H	P	117.0	122.0	
4.824	3.0	30.7	33.1	6.8	-34.1	0.0	0.0	36.5	54.0	-17.5	H	A	117.0	122.0	
Mid Channel - 2437MHz															
4.874	3.0	38.2	33.1	6.8	-34.0	0.0	0.0	44.1	74.0	-29.9	V	P	98.0	340.0	
4.874	3.0	28.8	33.1	6.8	-34.0	0.0	0.0	34.7	54.0	-19.3	V	A	98.0	340.0	
7.311	3.0	35.9	35.8	9.1	-33.1	0.0	0.0	47.7	74.0	-26.3	V	P	101.0	137.0	
7.311	3.0	25.2	35.8	9.1	-33.1	0.0	0.0	37.0	54.0	-17.0	V	A	101.0	137.0	
12.185	3.0	33.8	39.5	12.0	-32.5	0.0	0.0	52.7	74.0	-21.3	V	P	117.0	169.0	
12.185	3.0	21.1	39.5	12.0	-32.5	0.0	0.0	40.0	54.0	-14.0	V	A	117.0	169.0	
4.874	3.0	38.0	33.1	6.8	-34.0	0.0	0.0	43.9	74.0	-30.1	H	P	117.0	123.0	
4.874	3.0	30.7	33.1	6.8	-34.0	0.0	0.0	36.6	54.0	-17.4	H	A	117.0	123.0	
7.311	3.0	40.2	35.8	9.1	-33.1	0.0	0.0	52.0	74.0	-22.0	H	P	119.0	239.0	
7.311	3.0	33.3	35.8	9.1	-33.1	0.0	0.0	45.1	54.0	-8.9	H	A	119.0	239.0	
12.185	3.0	34.0	39.5	12.0	-32.5	0.0	0.0	52.9	74.0	-21.1	H	P	158.0	113.0	
12.185	3.0	21.1	39.5	12.0	-32.5	0.0	0.0	40.1	54.0	-13.9	H	A	158.0	113.0	
High Channel - 2462MHz															
4.924	3.0	36.9	33.2	6.8	-34.0	0.0	0.0	42.9	74.0	-31.1	V	P	116.0	91.0	
4.924	3.0	28.3	33.2	6.8	-34.0	0.0	0.0	34.3	54.0	-19.7	V	A	116.0	91.0	
7.386	3.0	36.4	35.9	9.1	-33.1	0.0	0.0	48.3	74.0	-25.7	V	P	99.0	159.0	
7.386	3.0	25.2	35.9	9.1	-33.1	0.0	0.0	37.1	54.0	-16.9	V	A	99.0	159.0	
4.924	3.0	38.2	33.2	6.8	-34.0	0.0	0.0	44.2	74.0	-29.8	H	P	98.0	123.0	
4.924	3.0	29.3	33.2	6.8	-34.0	0.0	0.0	35.3	54.0	-18.7	H	A	98.0	123.0	
7.386	3.0	38.0	35.9	9.1	-33.1	0.0	0.0	50.0	74.0	-24.0	H	P	100.0	229.0	
7.386	3.0	28.4	35.9	9.1	-33.1	0.0	0.0	40.4	54.0	-13.6	H	A	100.0	229.0	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

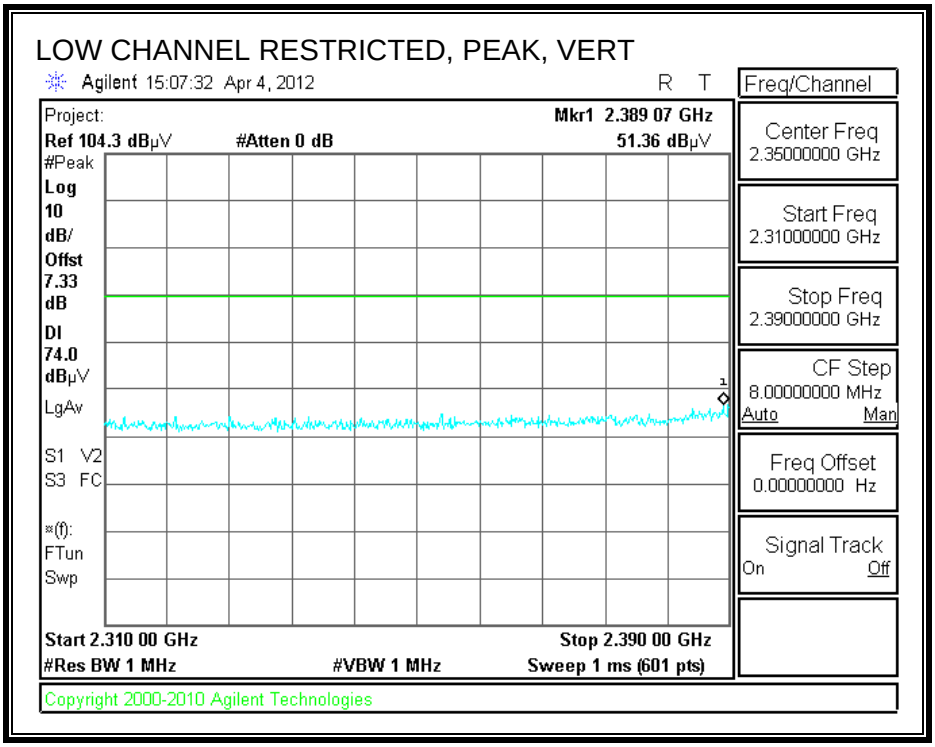
8.1.2. TX ABOVE 1 GHz FOR 802.11g 1TX MODE IN THE 2.4 GHz BAND

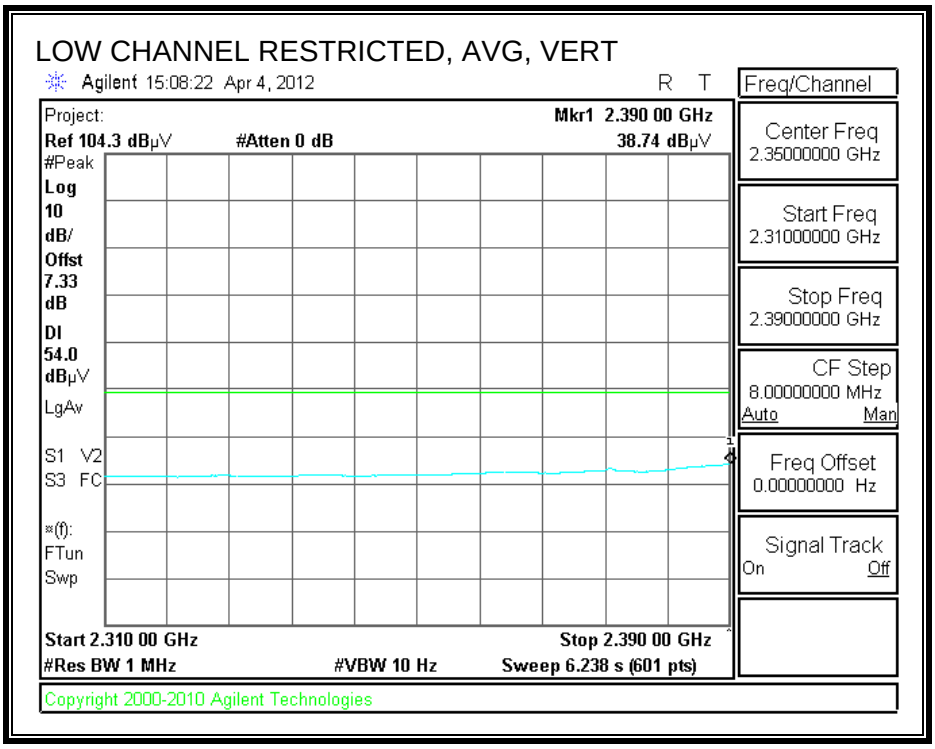
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



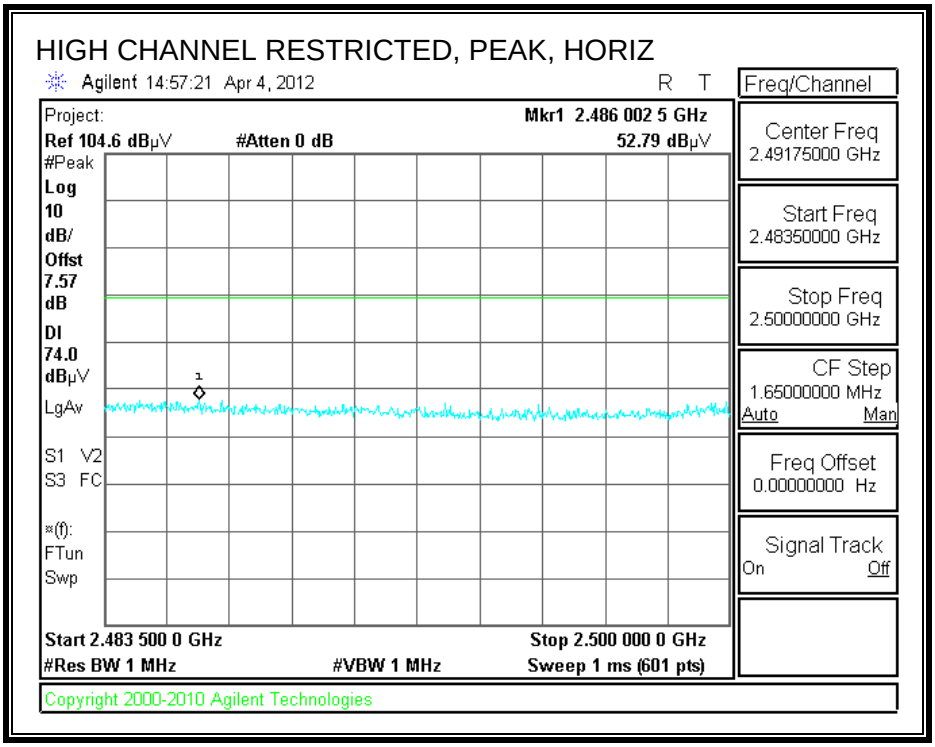


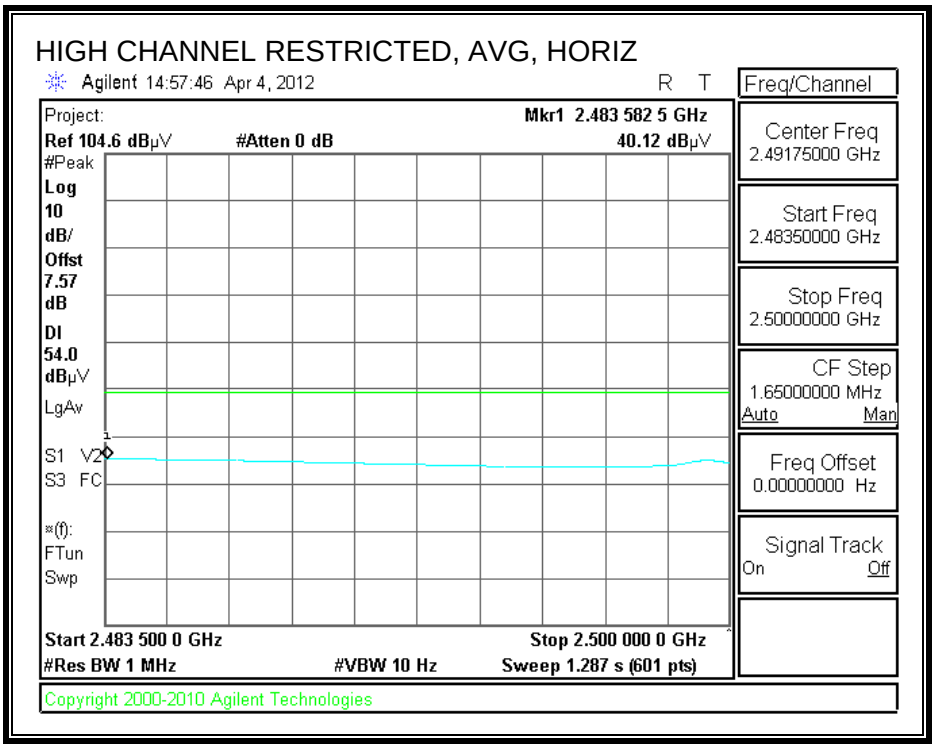
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



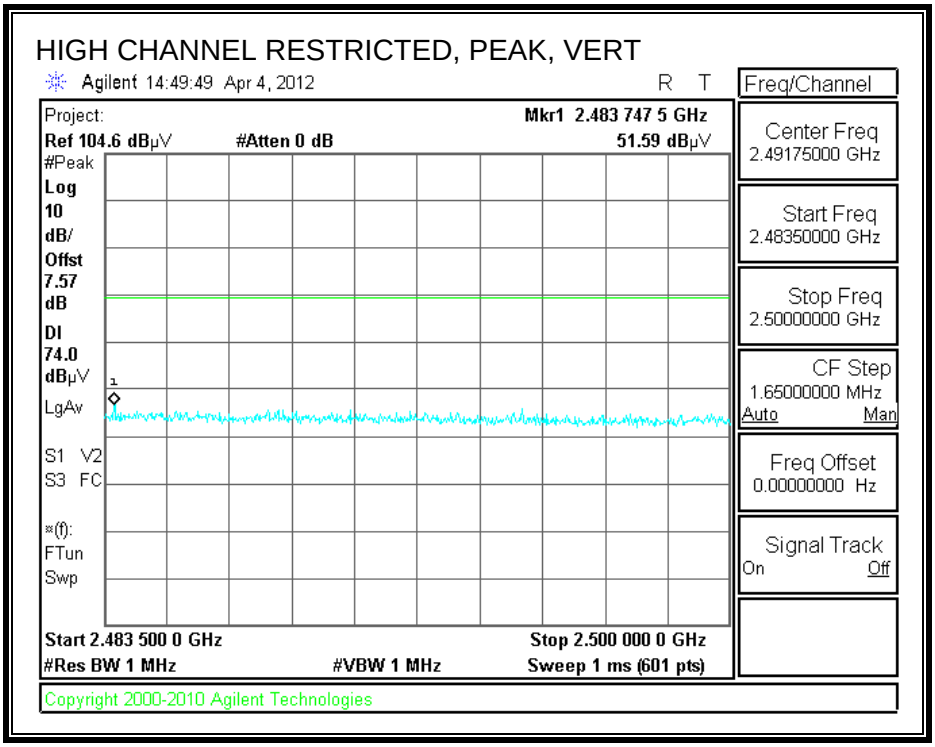


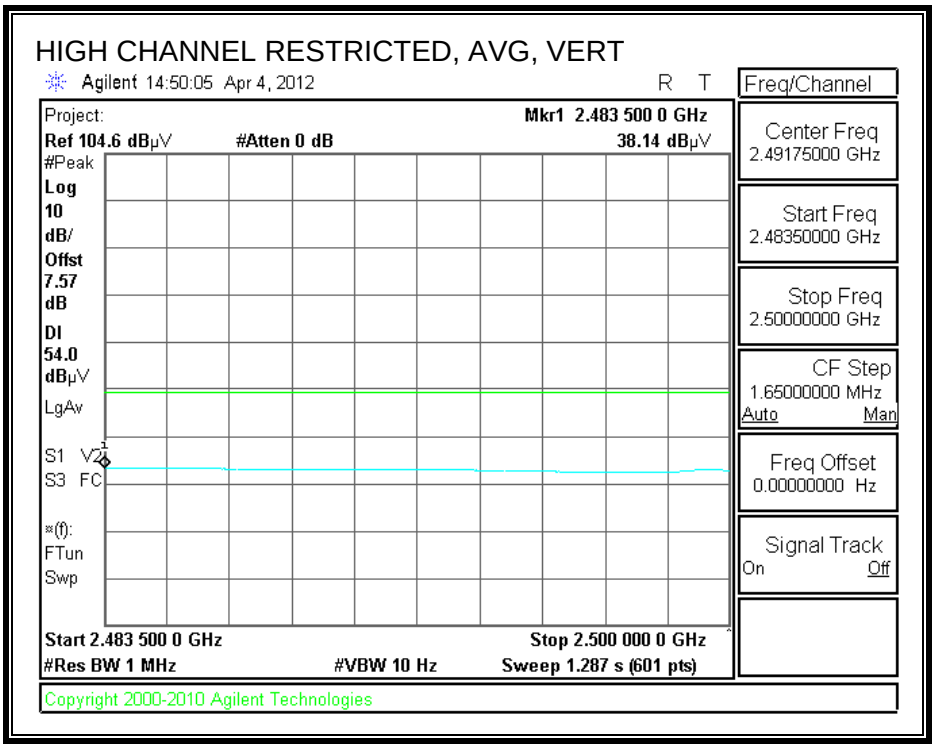
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Vien Tran
Date: 04/04/12
Project #: 12U14254
Company: LG
Test Target: 15.205
Mode Oper: 802.11g Tx

f	Measurement Frequency	Amp	Preamp 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	

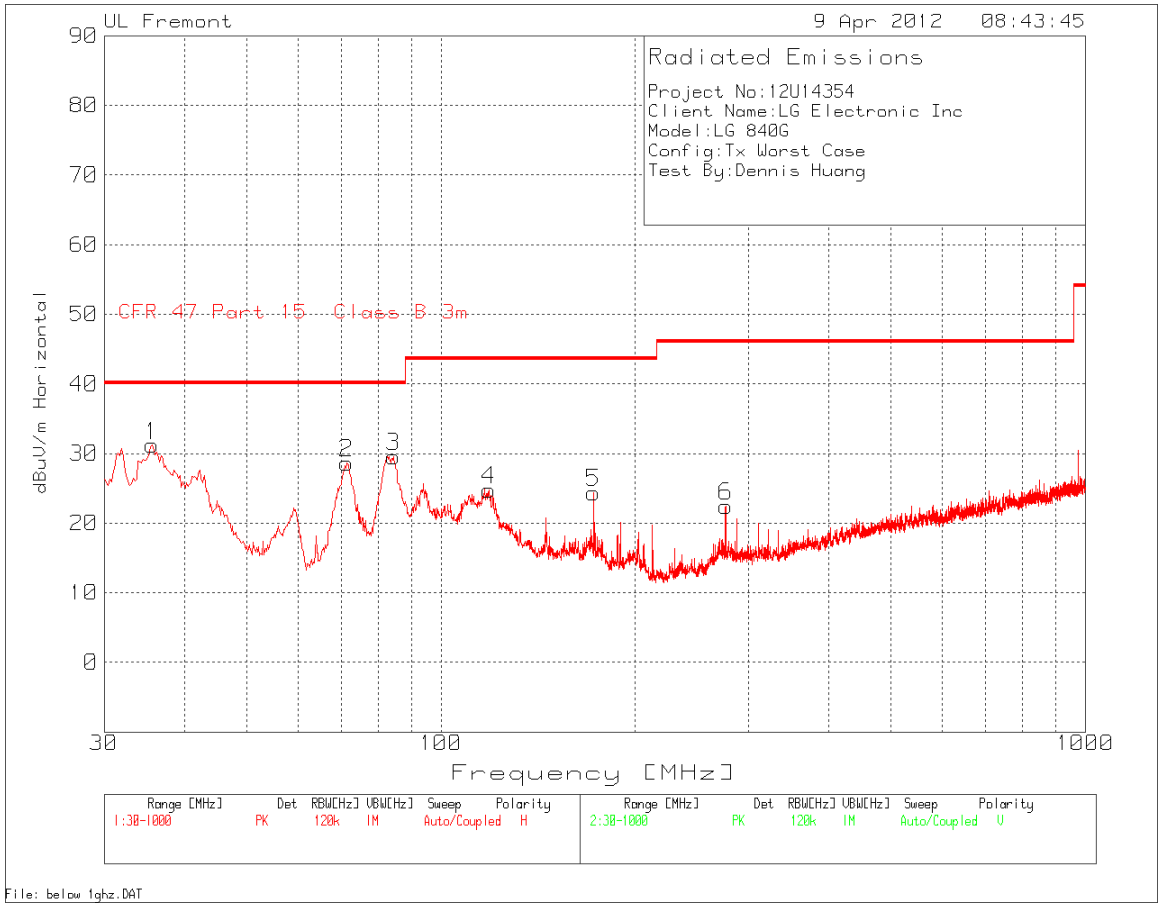
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
Low Channel - 2412MHz															
4.824	3.0	39.4	33.1	6.8	-34.1	0.0	0.0	45.2	74.0	-28.8	H	P	140.0	98.0	
4.824	3.0	25.9	33.1	6.8	-34.1	0.0	0.0	31.7	54.0	-22.3	H	A	140.0	98.0	
4.824	3.0	38.9	33.1	6.8	-34.1	0.0	0.0	44.8	74.0	-29.2	V	P	111.0	185.0	
4.824	3.0	26.3	33.1	6.8	-34.1	0.0	0.0	32.1	54.0	-21.9	V	A	111.0	185.0	
Mid Channel - 2437MHz															
4.874	3.0	38.1	33.1	6.8	-34.0	0.0	0.0	44.0	74.0	-30.0	H	P	128.0	114.0	
4.874	3.0	25.7	33.1	6.8	-34.0	0.0	0.0	31.6	54.0	-22.4	H	A	128.0	114.0	
7.311	3.0	48.1	35.8	9.1	-33.1	0.0	0.0	59.9	74.0	-14.1	H	P	110.0	230.0	
7.311	3.0	32.1	35.8	9.1	-33.1	0.0	0.0	43.9	54.0	-10.1	H	A	110.0	230.0	
12.185	3.0	32.9	39.5	12.0	-32.5	0.0	0.0	51.9	74.0	-22.1	H	P	100.0	70.0	
12.185	3.0	21.1	39.5	12.0	-32.5	0.0	0.0	40.0	54.0	-14.0	H	A	100.0	70.0	
4.874	3.0	37.1	33.1	6.8	-34.0	0.0	0.0	53.0	74.0	-31.0	V	P	98.0	339.0	
4.874	3.0	25.7	33.1	6.8	-34.0	0.0	0.0	41.6	54.0	-22.4	V	A	98.0	339.0	
7.311	3.0	42.0	35.8	9.1	-33.1	0.0	0.0	63.8	74.0	-20.2	V	P	116.0	298.0	
7.311	3.0	27.1	35.8	9.1	-33.1	0.0	0.0	48.9	54.0	-15.1	V	A	116.0	298.0	
12.185	3.0	33.2	39.5	12.0	-32.5	0.0	0.0	62.1	74.0	-21.9	V	P	99.0	296.0	
12.185	3.0	21.1	39.5	12.0	-32.5	0.0	0.0	50.0	54.0	-14.0	V	A	99.0	296.0	
High Channel - 2462MHz															
4.924	3.0	38.6	33.2	6.8	-34.0	0.0	0.0	44.6	74.0	-29.4	H	P	130.0	116.0	
4.924	3.0	25.7	33.2	6.8	-34.0	0.0	0.0	31.7	54.0	-22.3	H	A	130.0	116.0	
7.386	3.0	47.6	35.9	9.1	-33.1	0.0	0.0	59.6	74.0	-14.4	H	P	120.0	243.0	
7.386	3.0	29.4	35.9	9.1	-33.1	0.0	0.0	41.4	54.0	-12.6	H	A	120.0	243.0	
4.924	3.0	37.5	33.2	6.8	-34.0	0.0	0.0	43.5	74.0	-30.5	V	P	112.0	316.0	
4.924	3.0	25.0	33.2	6.8	-34.0	0.0	0.0	31.0	54.0	-23.0	V	A	112.0	316.0	
7.386	3.0	38.3	35.9	9.1	-33.1	0.0	0.0	50.3	74.0	-23.7	V	P	100.0	155.0	
7.386	3.0	24.8	35.9	9.1	-33.1	0.0	0.0	36.8	54.0	-17.2	V	A	100.0	155.0	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

8.2. WORST-CASE BELOW 1 GHz

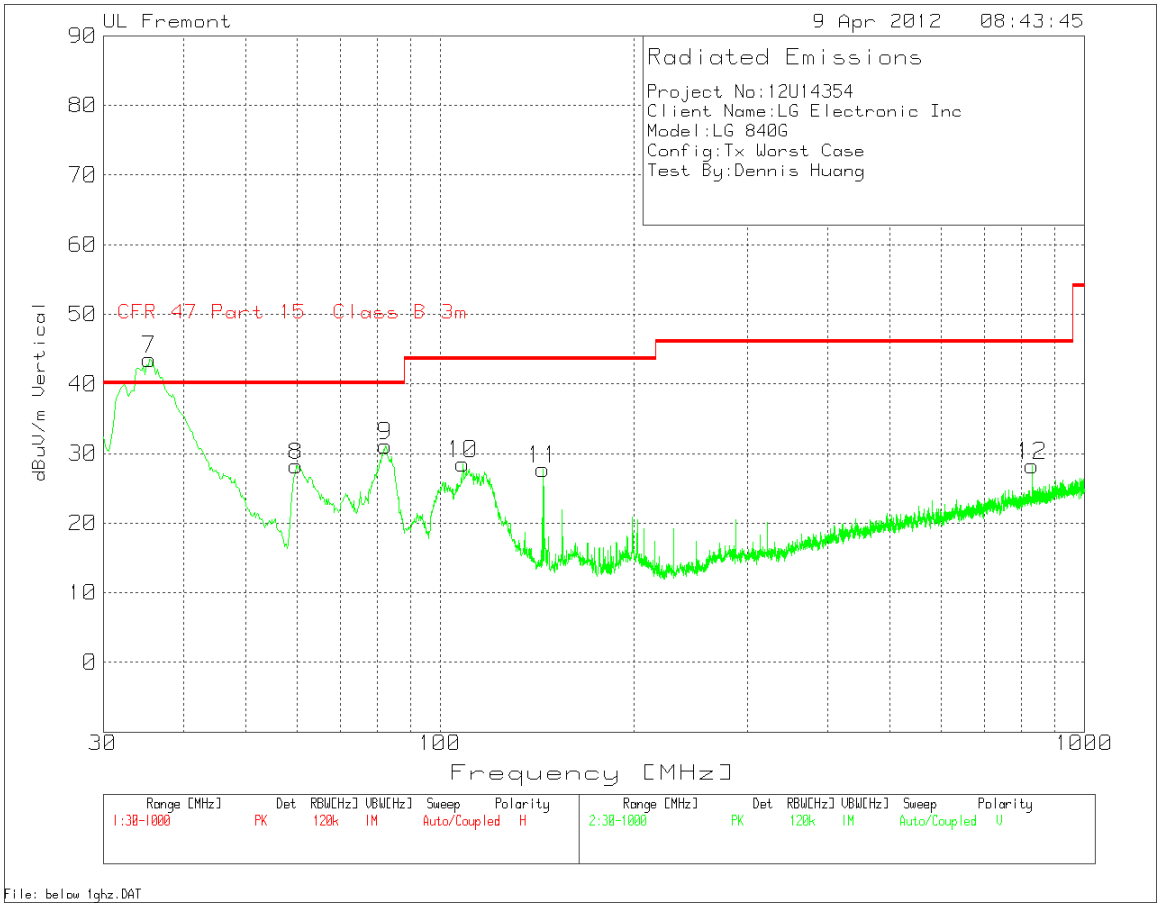
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



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

VERTICAL PLOT



TEST DATA

Project No:12U14354
Client Name:LG Electronic Inc
Model:LG 840G
Config:Tx Worst Case
Test By:Dennis Huang

Test Frequency	Raw Reading (dBuV/m)	Detector	Amplifier + Cable Loss [dB]	Bilog Antenna Loss [dB]	Corrected Reading (dBuV/m)	Part 15 Class B Limit (dBuV/m)	Margin	Antenna Height [cm]	Polarity
35.6215	41.47	PK	-27.5	17.2	31.17	40	-8.83	400	Horz
71.4828	47.61	PK	-27.1	8.1	28.61	40	-11.39	200	Horz
84.4704	49.25	PK	-27.1	7.4	29.55	40	-10.45	400	Horz
118.781	37.52	PK	-26.7	13.9	24.72	43.5	-18.78	300	Horz
172.6699	39.51	PK	-26.5	11.4	24.41	43.5	-19.09	200	Horz
276.5707	34.99	PK	-25.9	13.4	22.49	46	-23.51	100	Horz

Test Frequency	Raw Reading (dBuV/m)	Detector	Amplifier + Cable Loss [dB]	Bilog Antenna Loss [dB]	Corrected Reading (dBuV/m)	Part 15 Class B Limit (dBuV/m)	Margin	Ant Height [cm]	Polarity
35.4277	53.75	PK	-27.5	17.3	43.55	40	3.55	100	Vert
35.3563	43.84	QP	-27.5	17.3	33.64	40	-6.36	139	Vert
59.8521	48.1	PK	-27.2	7.3	28.2	40	-11.8	100	Vert
82.1443	50.65	PK	-27	7.5	31.15	40	-8.85	200	Vert
108.5072	42.92	PK	-26.8	12.4	28.52	43.5	-14.98	100	Vert
144.3685	41.98	PK	-26.6	12.4	27.78	43.5	-15.72	100	Vert
830.7734	30.11	PK	-23.1	21.2	28.21	46	-17.79	300	Vert

PK - Peak detector
QP - Quasi-Peak detector
LnAv - Linear Average detector
LgAv - Log Average detector
Av - Average detector
CAV - CISPR Average detector
RMS - RMS detection
CRMS - CISPR RMS detection
Text File: below 1ghz.TXT
File: below 1ghz.DAT

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 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

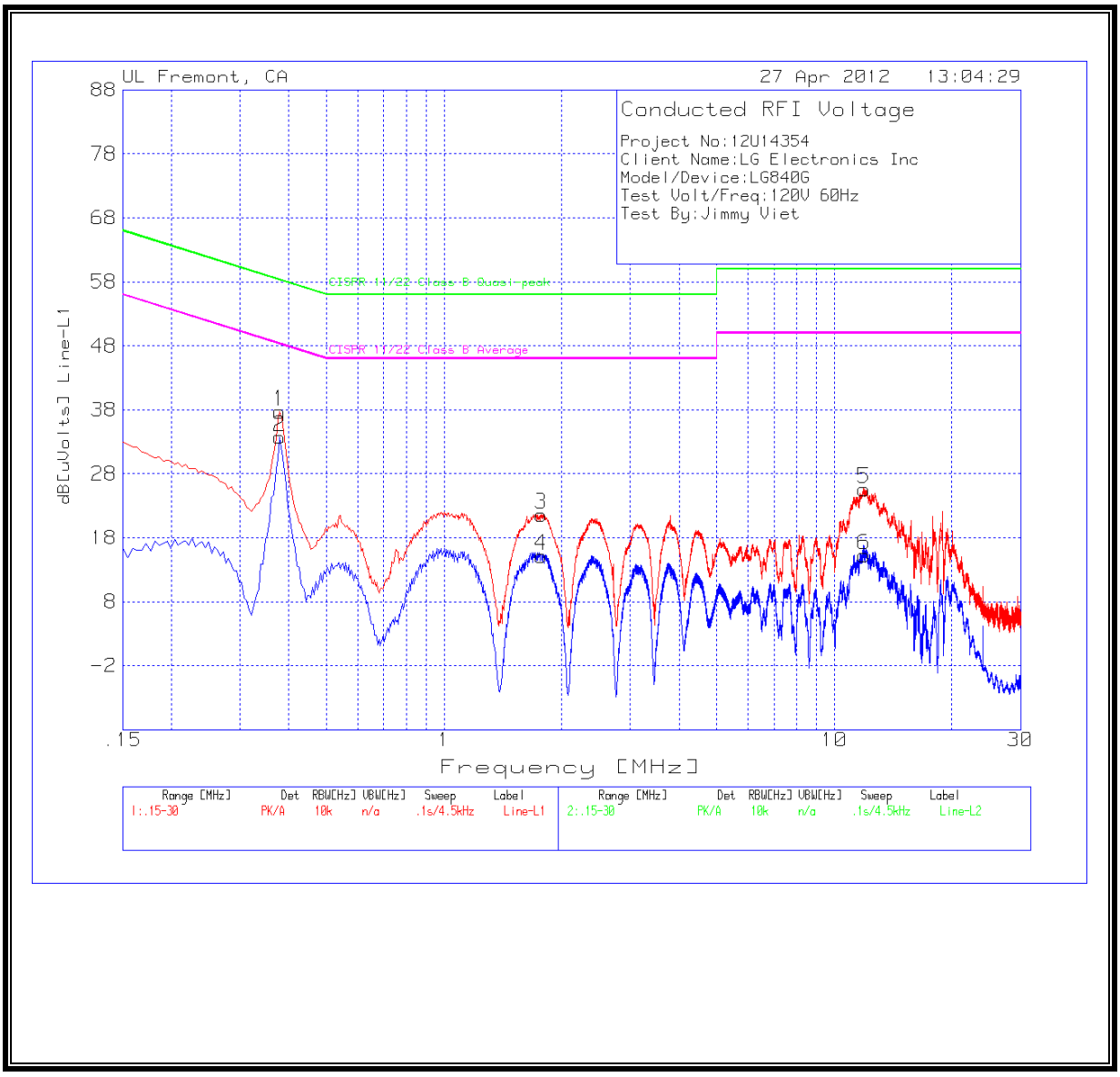
ANSI C63.4

RESULTS

6 WORST EMISSIONS

Project No:12U14354									
Client Name:LG Electronics Inc									
Model/Device:LG840G									
Test Volt/Freq:120V 60Hz									
Test By:Jimmy Viet									
Line-L1 .15 - 30MHz									
Test Frequ	Meter Rea	Detector	T24 IL L1.T	LC Cables	dB[uVolts	CISPR 11/2	Margin	CISPR 11/2	Margin
0.3795	37.67	PK	0.1	0	37.77	58.3	-20.53	-	-
0.3795	33.68	Av	0.1	0	33.78	-	-	48.3	-14.52
1.7745	21.41	PK	0.1	0.1	21.61	56	-34.39	-	-
1.7745	14.94	Av	0.1	0.1	15.14	-	-	46	-30.86
11.913	25.25	PK	0.2	0.2	25.65	60	-34.35	-	-
11.913	14.83	Av	0.2	0.2	15.23	-	-	50	-34.77
Line-L2 .15 - 30MHz									
Test Frequ	Meter Rea	Detector	T24 IL L2.T	LC Cables	dB[uVolts	CISPR 11/2	Margin	CISPR 11/2	Margin
0.3795	35.64	PK	0.1	0	35.74	58.3	-22.56	-	-
0.3795	26.25	Av	0.1	0	26.35	-	-	48.3	-21.95
1.761	18.66	PK	0.1	0.1	18.86	56	-37.14	-	-
1.761	7.24	Av	0.1	0.1	7.44	-	-	46	-38.56
11.895	24.76	PK	0.2	0.2	25.16	60	-34.84	-	-
11.895	12.79	Av	0.2	0.2	13.19	-	-	50	-36.81
Project No:12U14354									
Client Name:LG Electronics Inc									
Model/Device:LG840G									
Test Volt/Freq:120V 60Hz									
Test By:Jimmy Viet									

LINE 1 RESULTS



LINE 2 RESULTS