FCC CFR47 PART 15 SUBPART C
CLASS II PERMISSIVE CHANGE

CERTIFICATION TEST REPORT

FOR

CELL PHONE WITH GSM/CDMA/WCDMA/LTE+BT LE+802.11ABGN (HT20) + NFC WITH WIRELESS BACK COVER

MODEL NUMBER: LG-VS930 and VS930

FCC ID: ZNFVS930

REPORT NUMBER: 12U14433-2

ISSUE DATE: JUNE 4, 2012

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

Prepared by
COMPLIANCE CERTIFICATION SERVICES (UL CCS)
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
	06/04/12	Original	T. LEE

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	LG ELECTRONICS MOBILECOMM U.S.A., INC. 1000 SYLVAN AVE. ENGLEWOOD CLIFFS, NJ UNITED STATES 07632
EUT DESCRIPTION:	CELL PHONE WITH GSM/CDMA/WCDMA/LTE+BT LE+802.11ABGN (HT20) WITH WIRELESS BACK COVER
MODEL:	LG-VS930 and VS930
SERIAL NUMBER:	990000760007452
DATE TESTED:	MAY 25-JUNE 4, 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:

TOM CHEN
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, 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.

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 a Cell Phone with GSM/CDMA/WCDMA/LTE+BT LE+802.11abgn (HT20) + NFC with Wireless Back Cover

5.2. MAXIMUM OUTPUT POWER

The measured average power values were within ± 0.5 dB of the original values. Refer to original report number “12U14331-2A FCC IC DTS WLAN Report” for exact output power values and for all antenna port results.

5.3. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

The change filed under this application has the following changes.

- Changed BT/WIFI matching value.
- Changed Shield CAN structure.
- Changed minor HW for improvement of durability and reliability

5.4. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PIFA (Planar Inverted F Antenna) with a maximum peak gain as follow:

Frequency Band	Peak Gain (dBi)
2.4GHz	-2.44
5.2GHz	-2.59
5.3GHz	-2.28
5.5GHz	0.95
5.8GHz	0.43

5.5. SOFTWARE AND FIRMWARE

The EUT driver software installed during testing was VS930_0311

The test utility software used during testing was FCC Test - LG.

The firmware used during testing was 3.0.8.00001_g114383

5.6. MODEL DIFFERNECE

Model LS-VS930 is identical to Model VS930 except for model designation.

5.7. WORST-CASE CONFIGURATION AND MODE

Radiated emissions below 1 GHz and power line conducted emissions were performed with the EUT set to the channel with highest output power.

For the fundamental investigation, since the EUT is a portable device that has three orientations; X, Y and Z orientations have been investigated, also with AC/DC adapter, and earphone, and the worst case was found to be at Y orientation with AC adapter and earphone for both 2.4GHz and 5GHz band.

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
802.11n mode: MCS0
802.11a, 6Mbps
.

5.8. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

STANDARD AND INDUCTIVE COVER

PERIPHERAL SUPPORT EQUIPMENT LIST			
Description	**Manufacturer**	**Model**	**Serial Number**
AC ADAPTER	LG ELECTRONICS	MCS-01WT	TA1Z0000522
HEADSET	LG ELECTRONICS	NA	N/A

INDUCTIVE CHARGER WITH INDUCTIVE COVER

PERIPHERAL SUPPORT EQUIPMENT LIST			
Description	**Manufacturer**	**Model**	**Serial Number**
AC ADAPTER	LG ELECTRONICS	WCAD01WT	TA120014826
HEADSET	LG ELECTRONICS	NA	N/A
INDUCTIVE CHARGER PAD	LG ELECTRONICS	WCP-700	A1108WP000050

I/O CABLES

STANDARD OND INDUCTIVE COVER

I/O CABLE LIST						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length**	**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

INDUCTIVE CHARGER WITH INDUCTIVE COVER

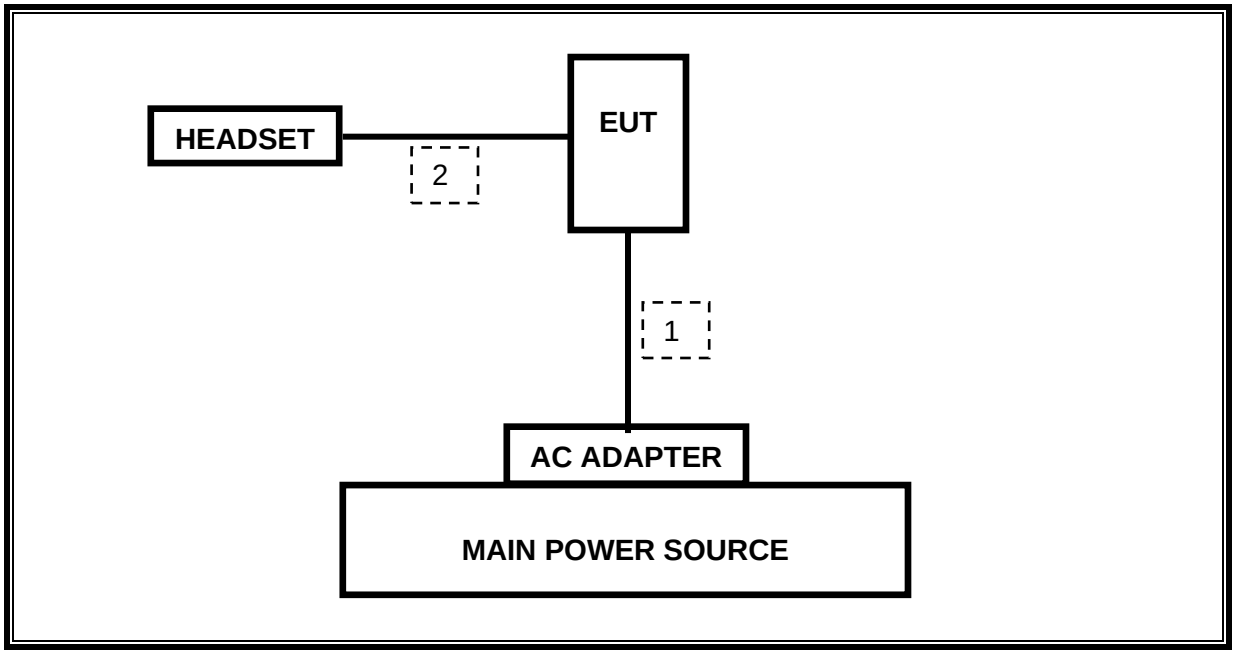
I/O CABLE LIST						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length**	**Remarks**
1	DC	1	MINI USB	UN-SHELDED	1.0m	External ferrite added
2	AUDIO	1	MINI JACK	UN-SHELDED	1.0m	Volume control on cable

TEST SETUP

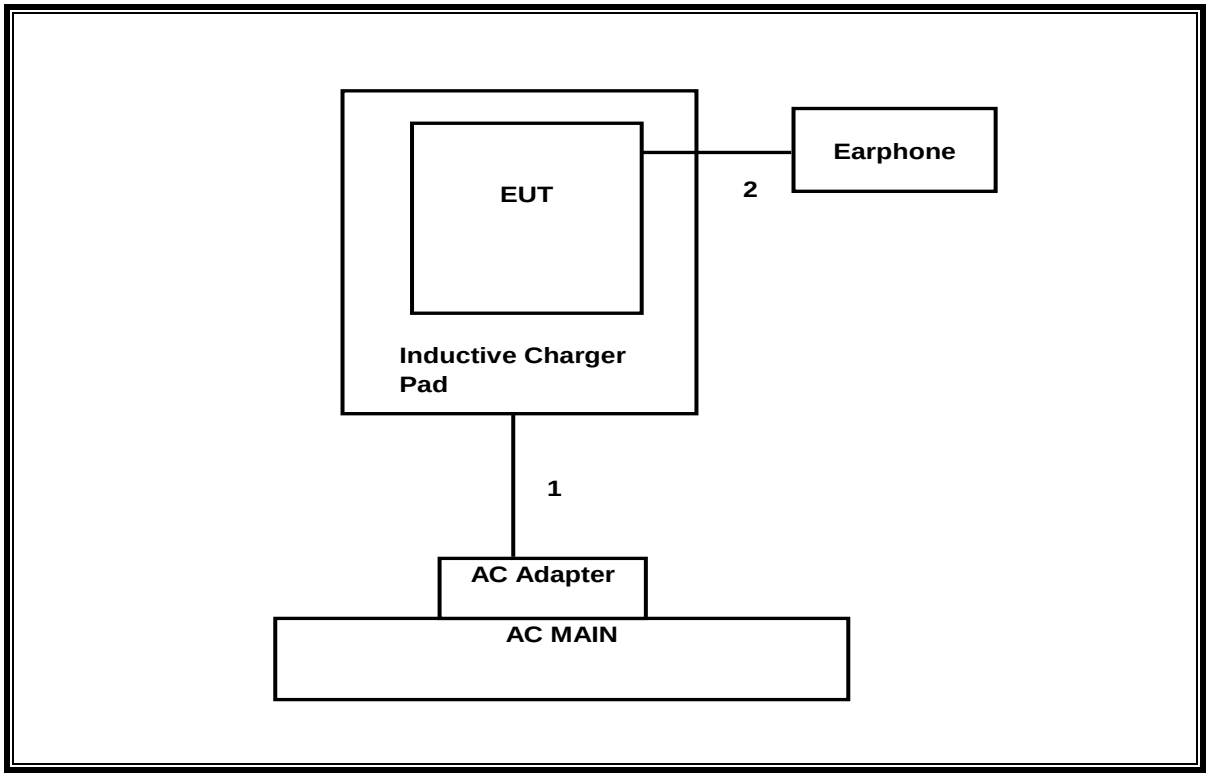
- The EUT is sat on inductive charger was tested with AC adapter and earphones.

SETUP DIAGRAM FOR TESTS

STANDARD AND INDUCTIVE COVER



INDUCTIVE CHARGER AND INDUCTIVE COVER



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
Highpass Filter, 7.6 GHz	Micro-Tronics	HPM13195	N02682	CNR
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	C01069	12/15/12
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. RADIATED TEST RESULTS

7.1. 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.

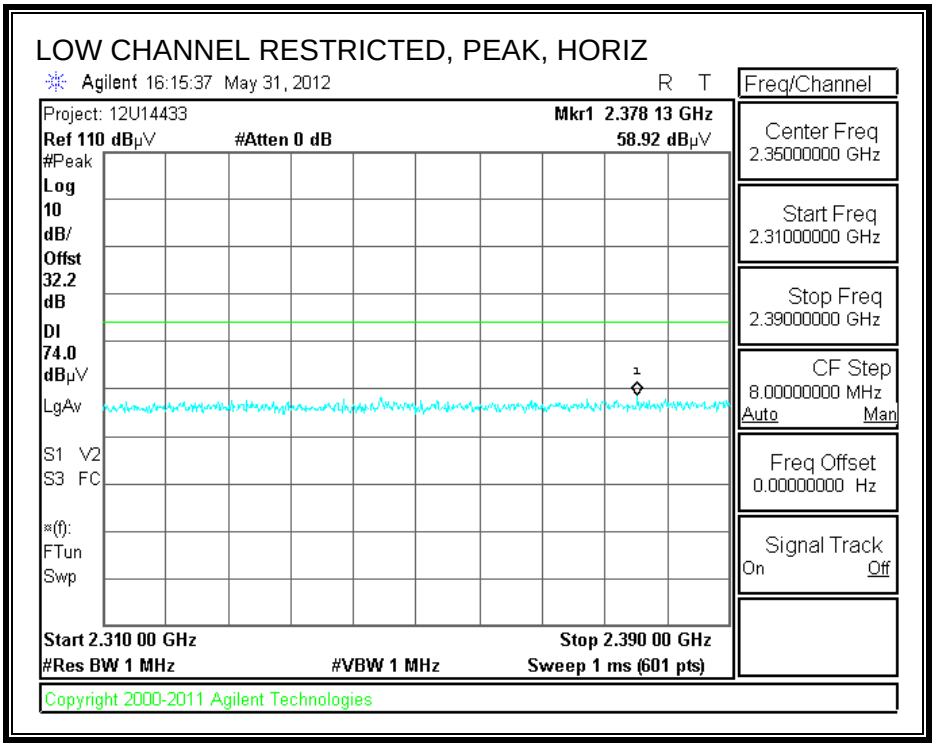
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

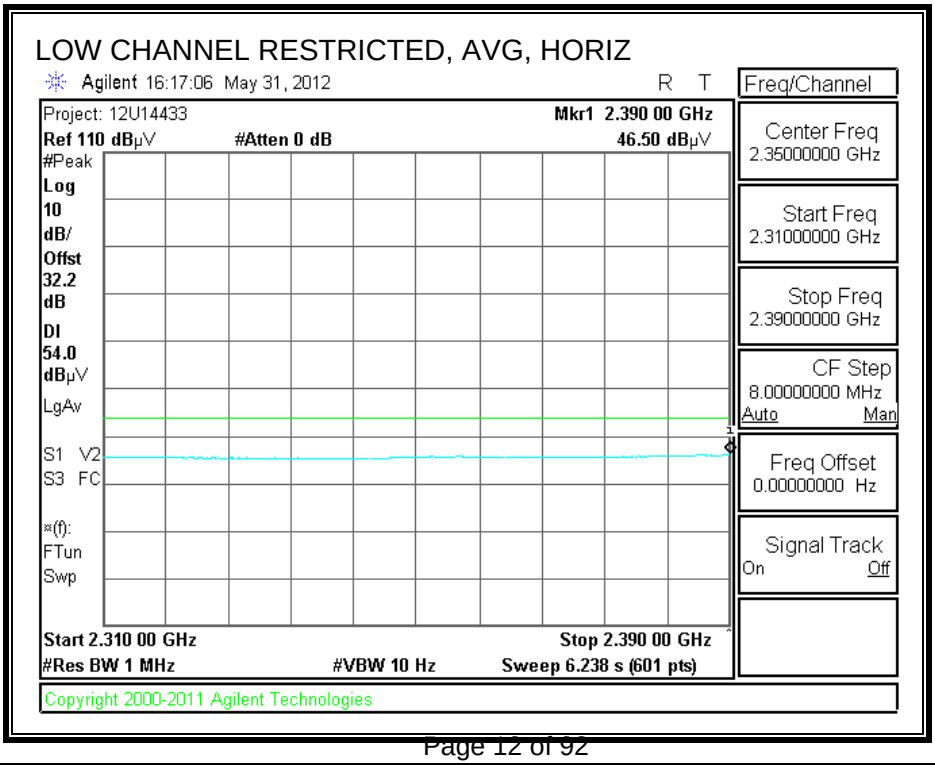
7.2. TRANSMITTER ABOVE 1 GHz

7.2.1. 802.11b MODE IN THE 2.4 GHz BAND

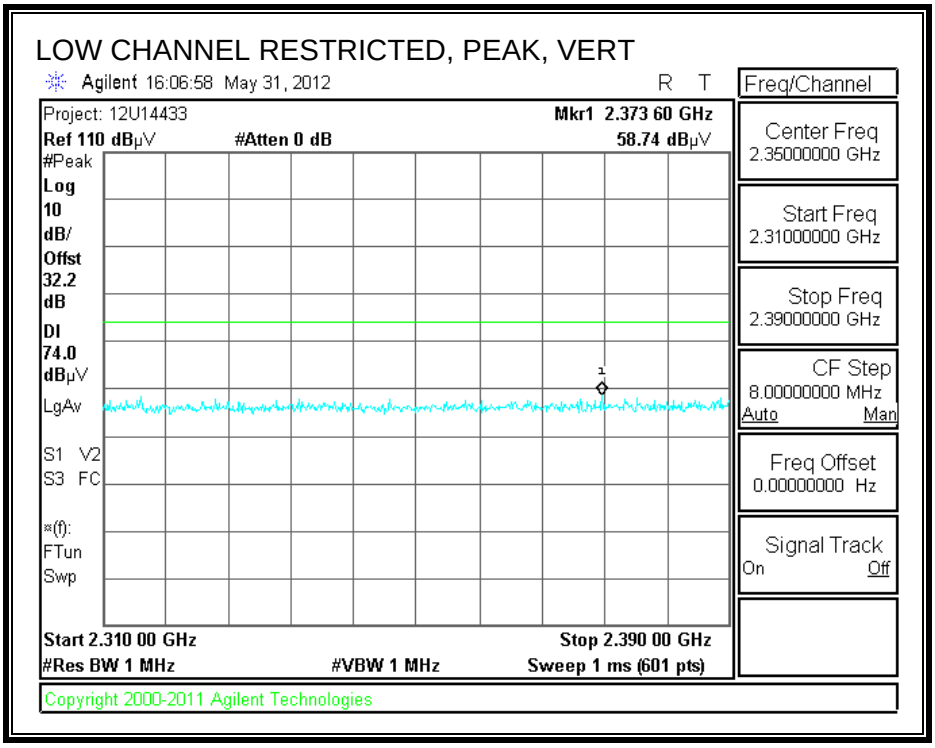
STANDARD COVER

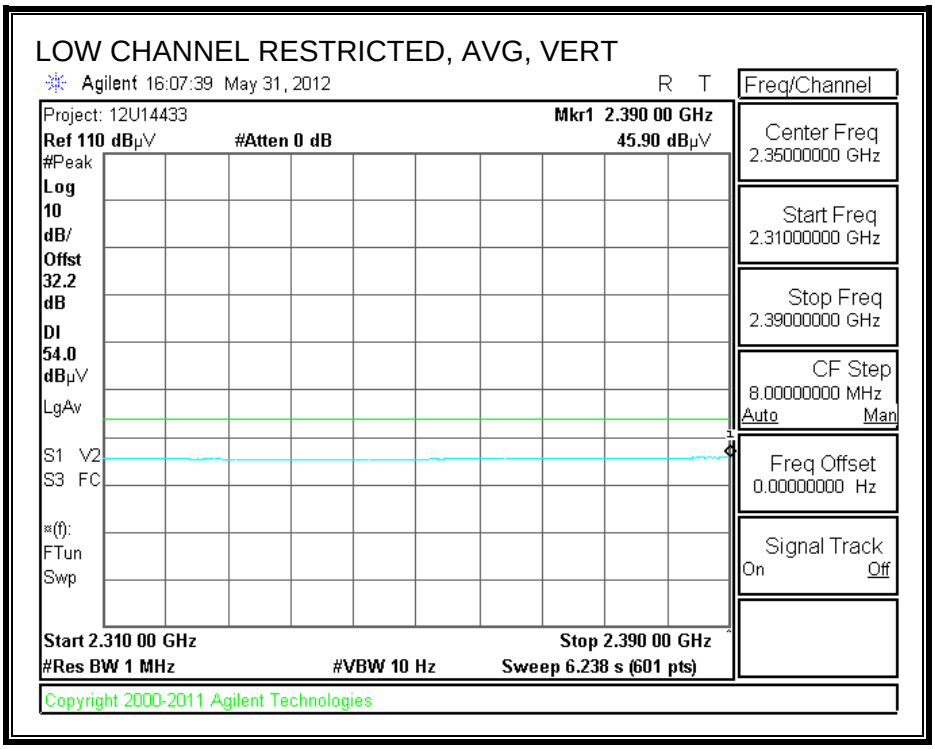
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



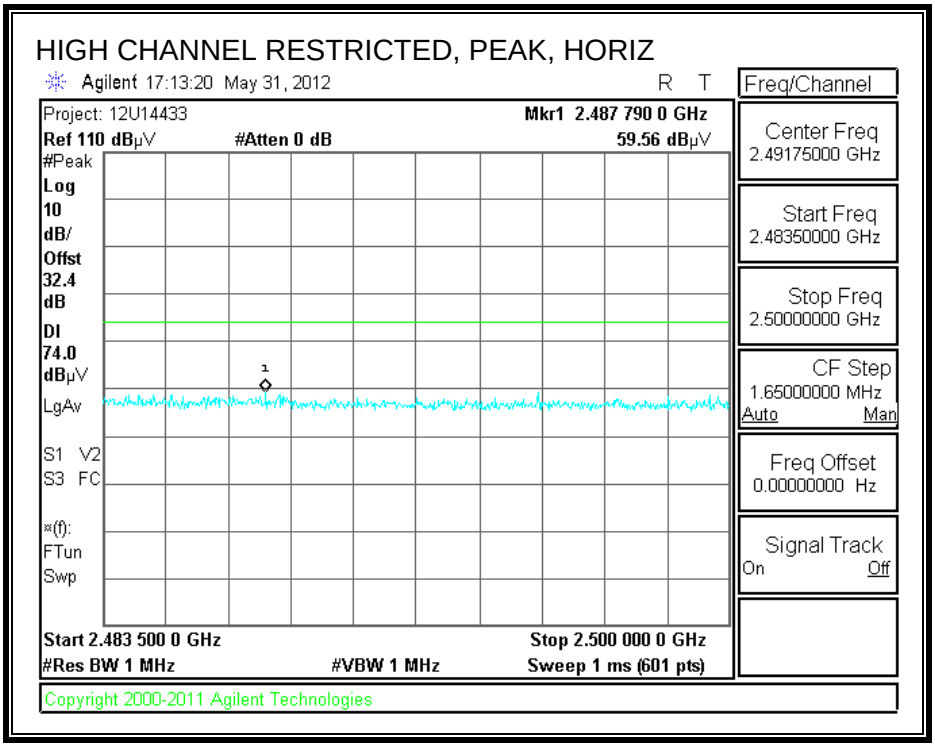


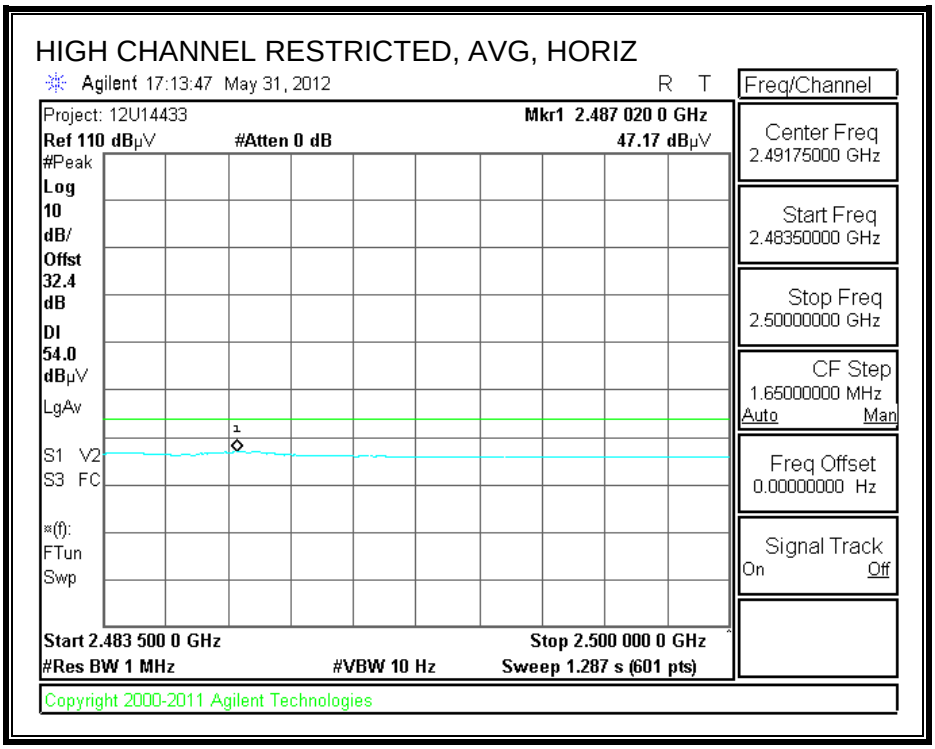
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



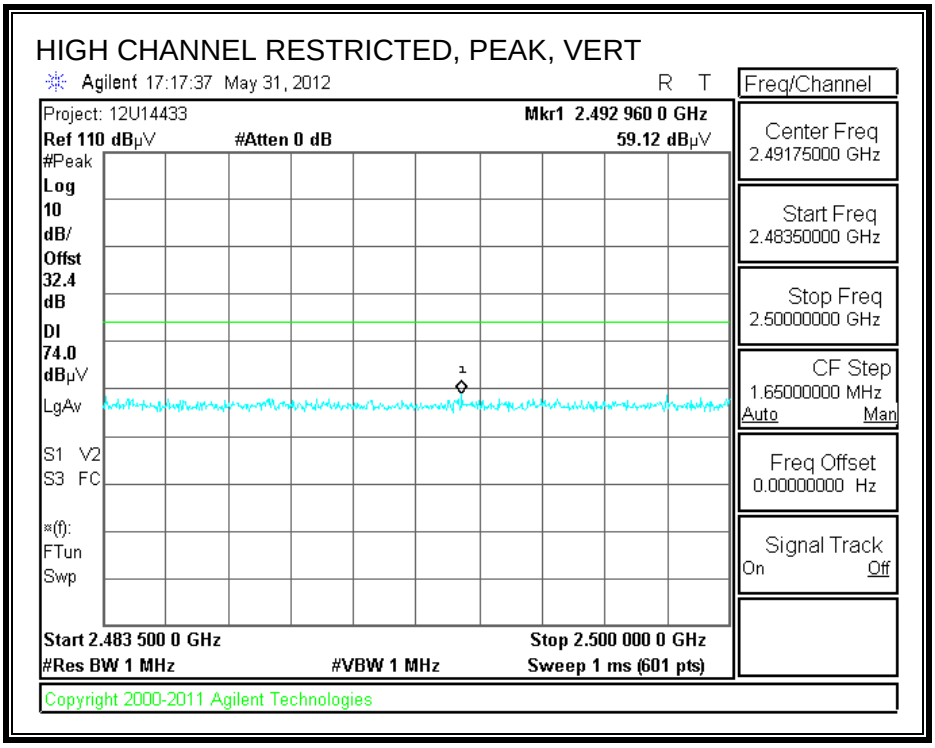


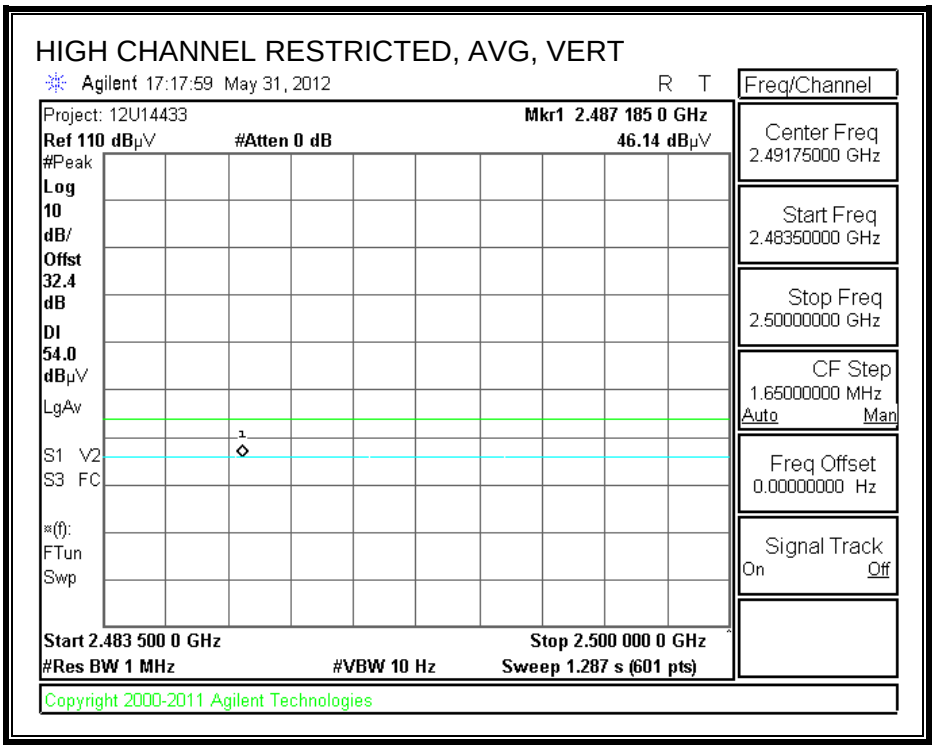
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 06/01/12
Project #: 12U14433
Company: LG Electronics
Test Target: FCC Class B
Mode Oper: 802.11b, TX mode

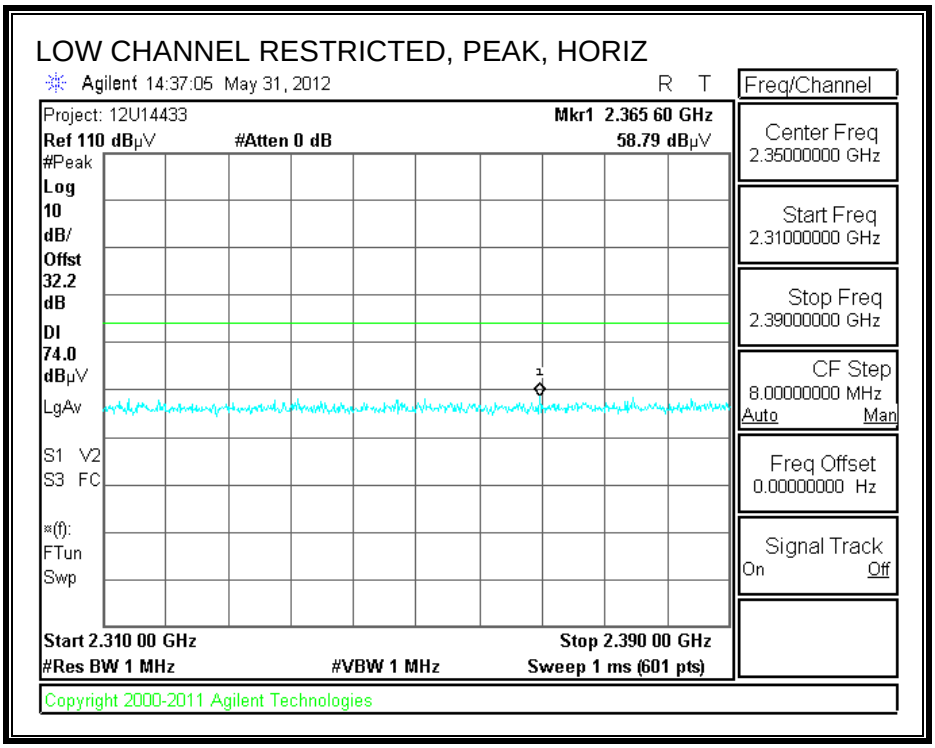
f	Measurement Frequency	Amp	Preamp Gain		Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters		Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m		Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength		Margin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

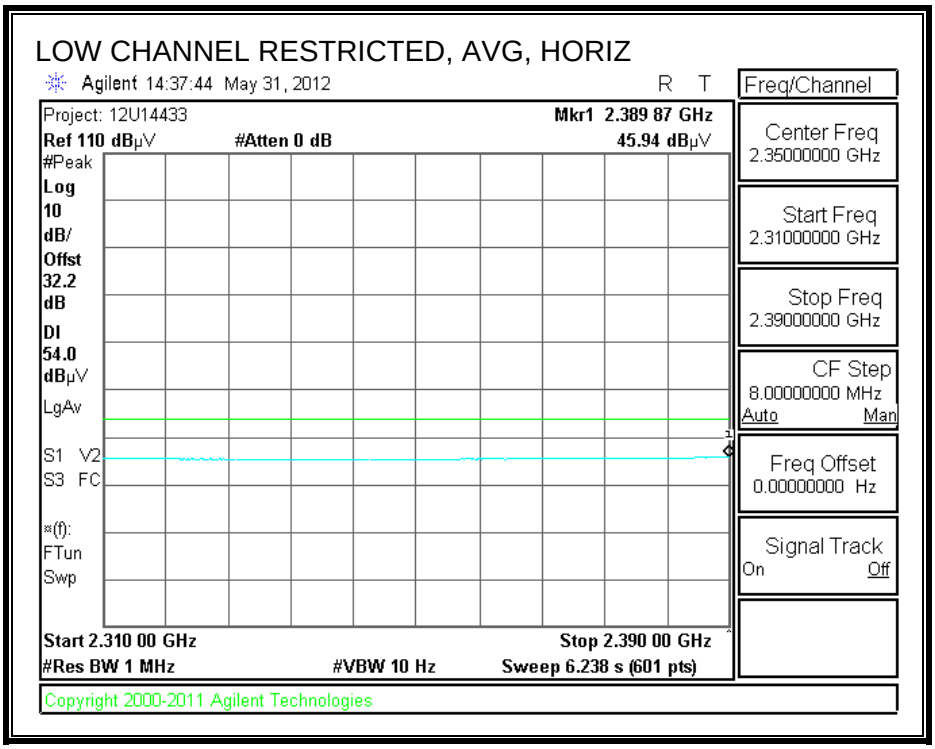
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
2412 MHz 11b													
4.824	3.0	39.2	33.1	6.3	-34.8	0.0	0.0	43.8	74.0	-30.2	V	P	
4.824	3.0	32.7	33.1	6.3	-34.8	0.0	0.0	37.2	54.0	-16.8	V	A	
4.824	3.0	40.6	33.1	6.3	-34.8	0.0	0.0	45.1	74.0	-28.9	H	P	
4.824	3.0	33.6	33.1	6.3	-34.8	0.0	0.0	38.1	54.0	-15.9	H	A	
2437 MHz 11b													
4.874	3.0	41.3	33.1	6.3	-34.8	0.0	0.0	46.0	74.0	-28.0	H	P	
4.874	3.0	36.0	33.1	6.3	-34.8	0.0	0.0	40.6	54.0	-13.4	H	A	
4.874	3.0	40.0	33.1	6.3	-34.8	0.0	0.0	44.7	74.0	-29.3	V	P	
4.874	3.0	33.0	33.1	6.3	-34.8	0.0	0.0	37.6	54.0	-16.4	V	A	
2462 MHz 11b													
4.924	3.0	41.4	33.2	6.3	-34.8	0.0	0.0	46.1	74.0	-27.9	V	P	
4.924	3.0	36.2	33.2	6.3	-34.8	0.0	0.0	40.9	54.0	-13.1	V	A	
4.924	3.0	42.3	33.2	6.3	-34.8	0.0	0.0	47.0	74.0	-27.0	H	P	
4.924	3.0	37.9	33.2	6.3	-34.8	0.0	0.0	42.6	54.0	-11.4	H	A	

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

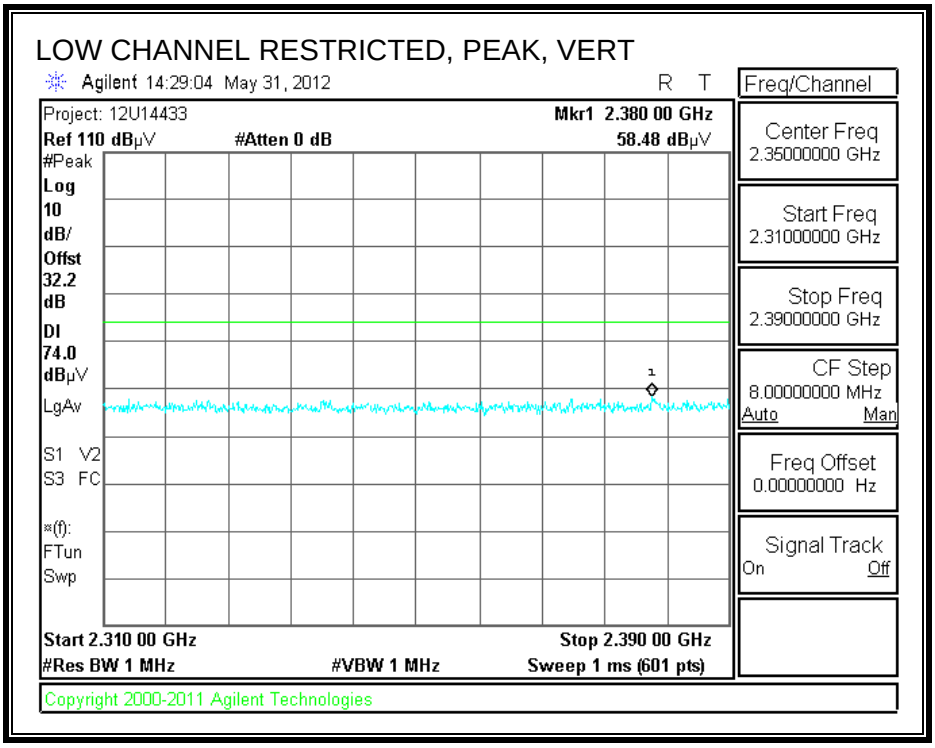
INDUCTIVE COVER

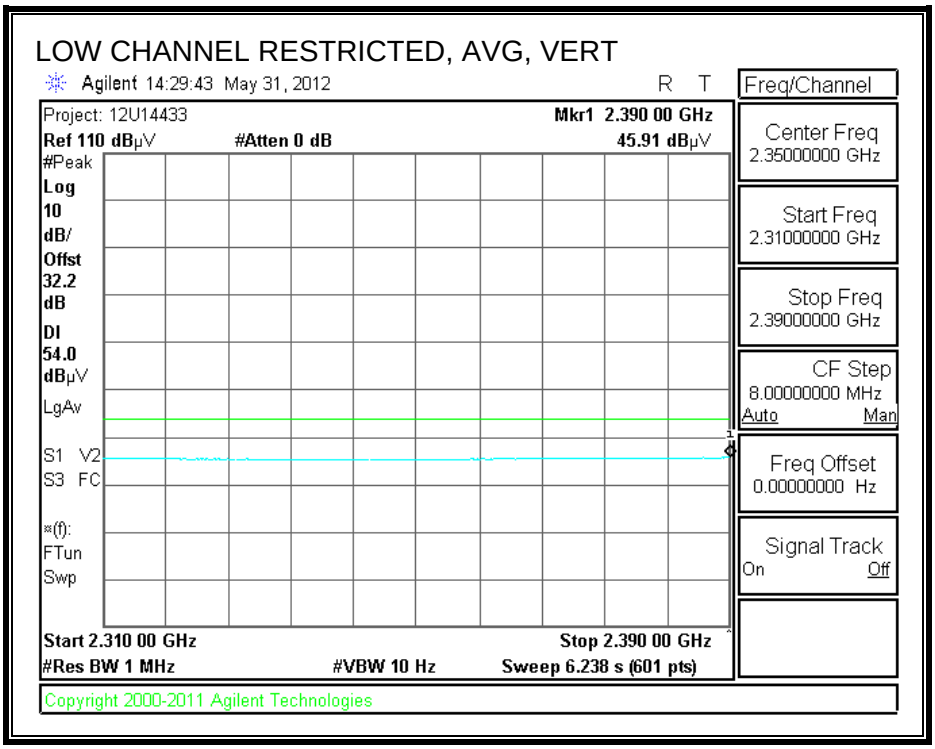
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



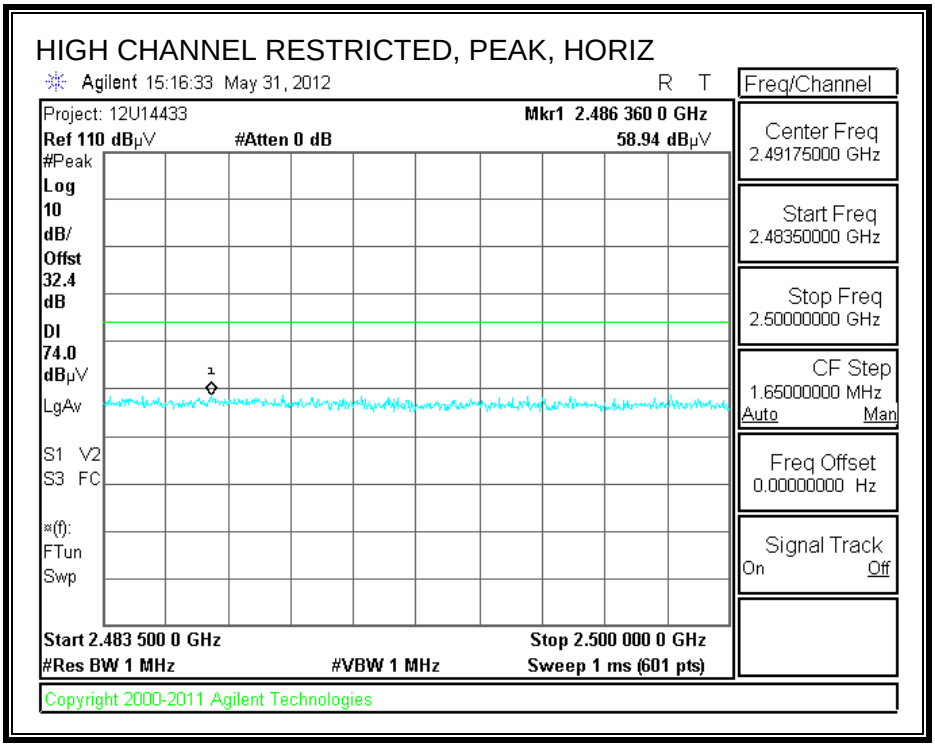


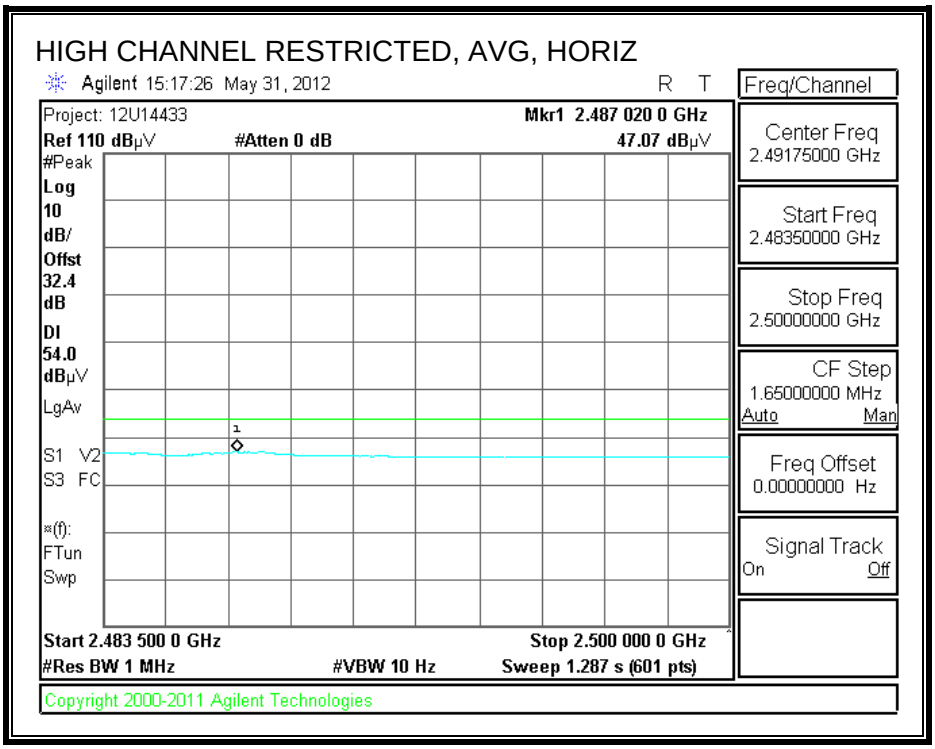
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



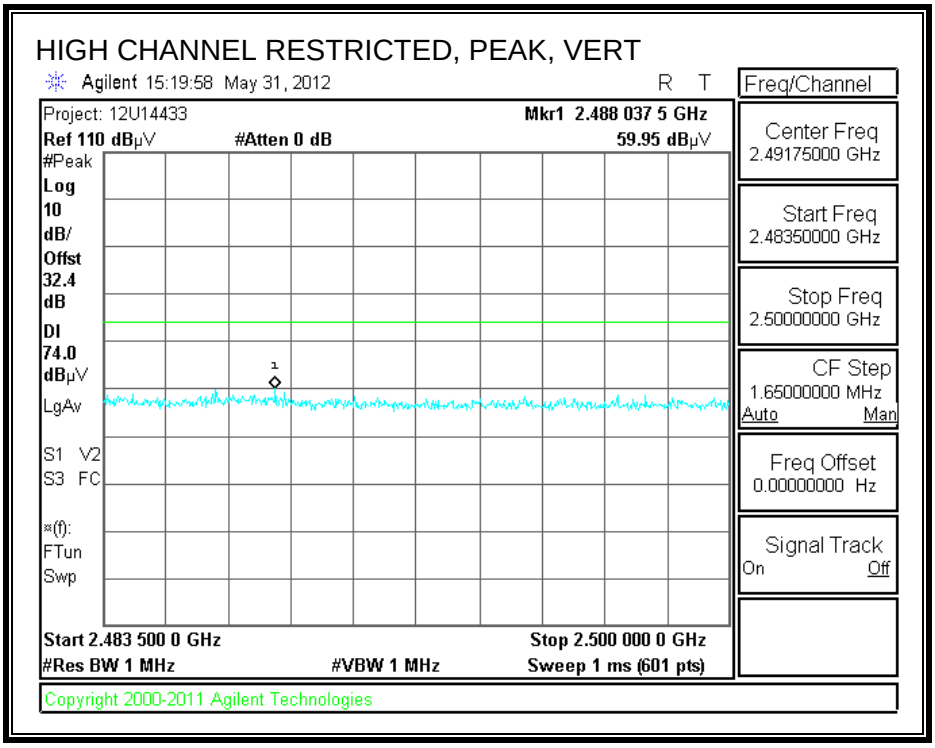


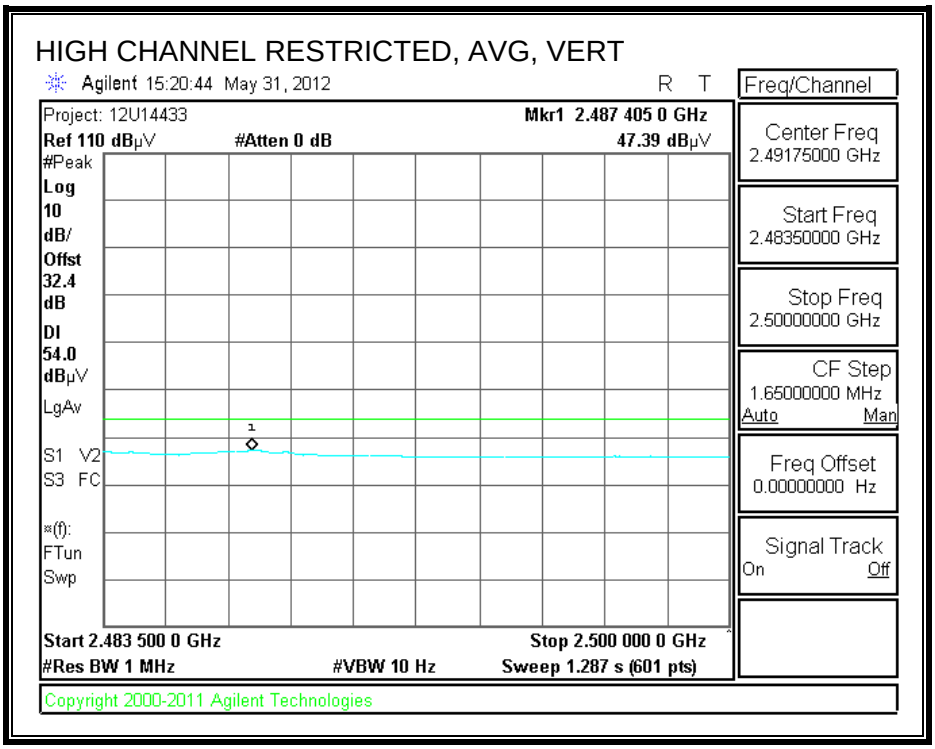
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 06/01/12
Project #: 12U14433
Company: LG Electronics
Test Target: FCC Class B
Mode Oper: 802.11b, TX mode

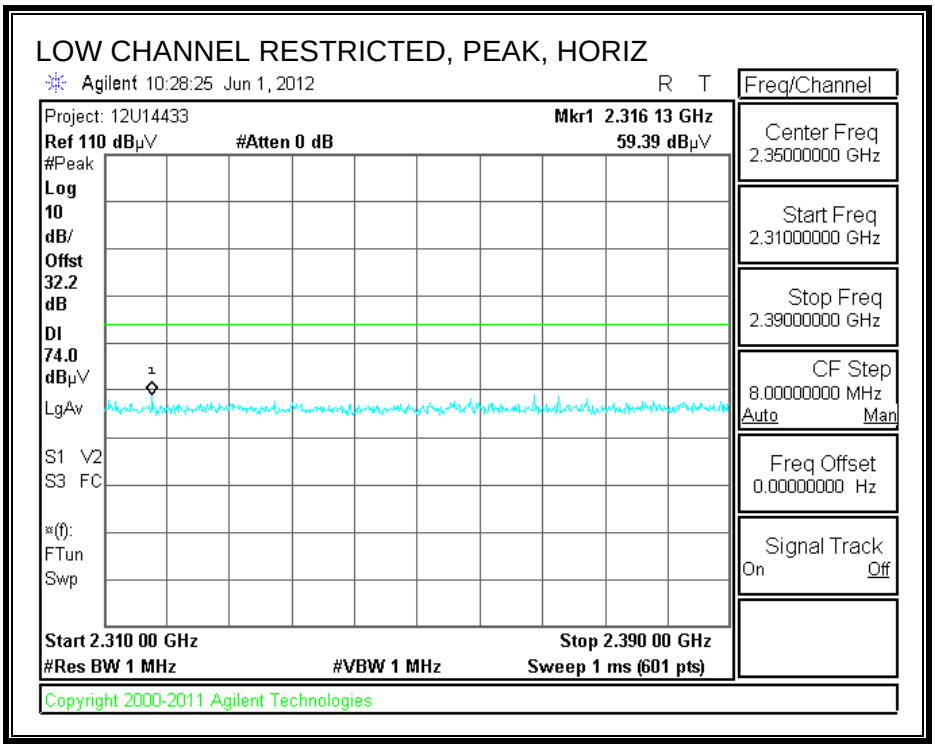
f	Measurement Frequency	Amp	Preamp Gain		Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters		Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m		Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength		Margin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

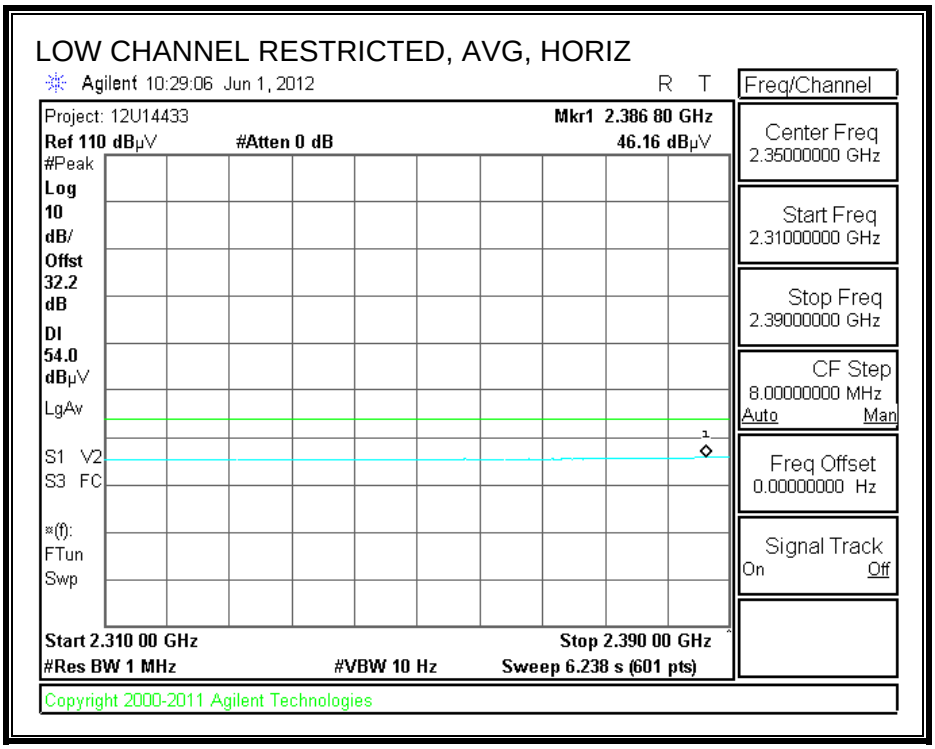
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
2412 MHz 11b													
4.824	3.0	40.4	33.1	6.3	-34.8	0.0	0.0	44.9	74.0	-29.1	V	P	
4.824	3.0	33.8	33.1	6.3	-34.8	0.0	0.0	38.4	54.0	-15.6	V	A	
4.824	3.0	41.7	33.1	6.3	-34.8	0.0	0.0	46.3	74.0	-27.7	H	P	
4.824	3.0	34.7	33.1	6.3	-34.8	0.0	0.0	39.3	54.0	-14.7	H	A	
2437 MHz 11b													
4.874	3.0	42.5	33.1	6.3	-34.8	0.0	0.0	47.1	74.0	-26.9	H	P	
4.874	3.0	37.2	33.1	6.3	-34.8	0.0	0.0	41.8	54.0	-12.2	H	A	
4.874	3.0	41.2	33.1	6.3	-34.8	0.0	0.0	45.9	74.0	-28.1	V	P	
4.874	3.0	34.2	33.1	6.3	-34.8	0.0	0.0	38.8	54.0	-15.2	V	A	
2462 MHz 11b													
4.924	3.0	42.6	33.2	6.3	-34.8	0.0	0.0	47.3	74.0	-26.7	V	P	
4.924	3.0	37.4	33.2	6.3	-34.8	0.0	0.0	42.1	54.0	-11.9	V	A	
4.924	3.0	43.5	33.2	6.3	-34.8	0.0	0.0	48.2	74.0	-25.8	H	P	
4.924	3.0	39.0	33.2	6.3	-34.8	0.0	0.0	43.8	54.0	-10.2	H	A	

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

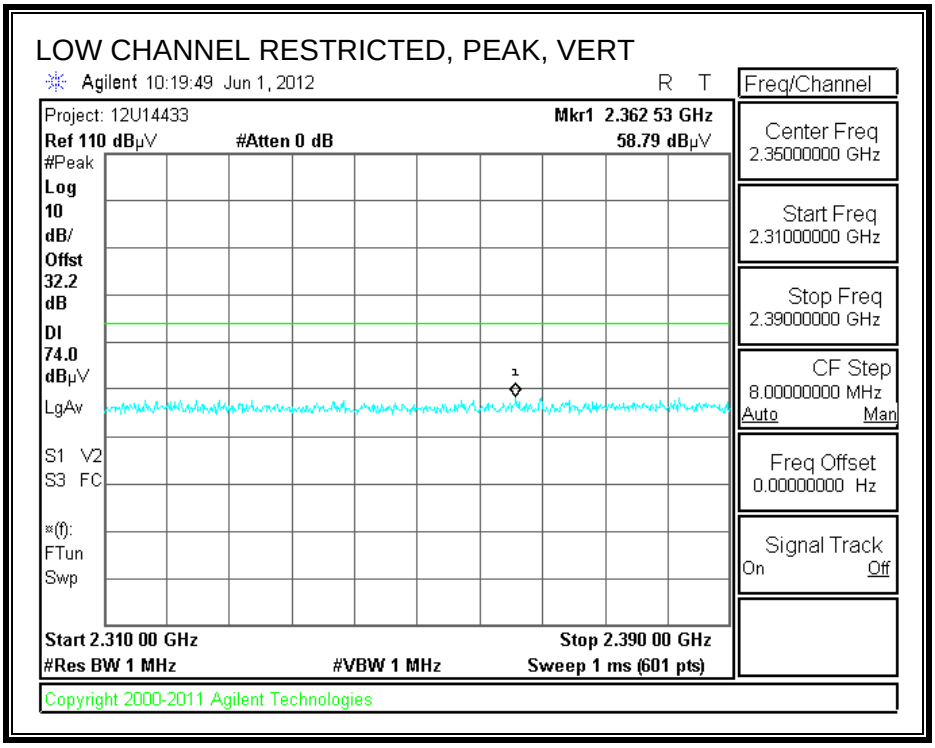
INDUCTIVE CHARGER WITH INDUCTIVE COVER

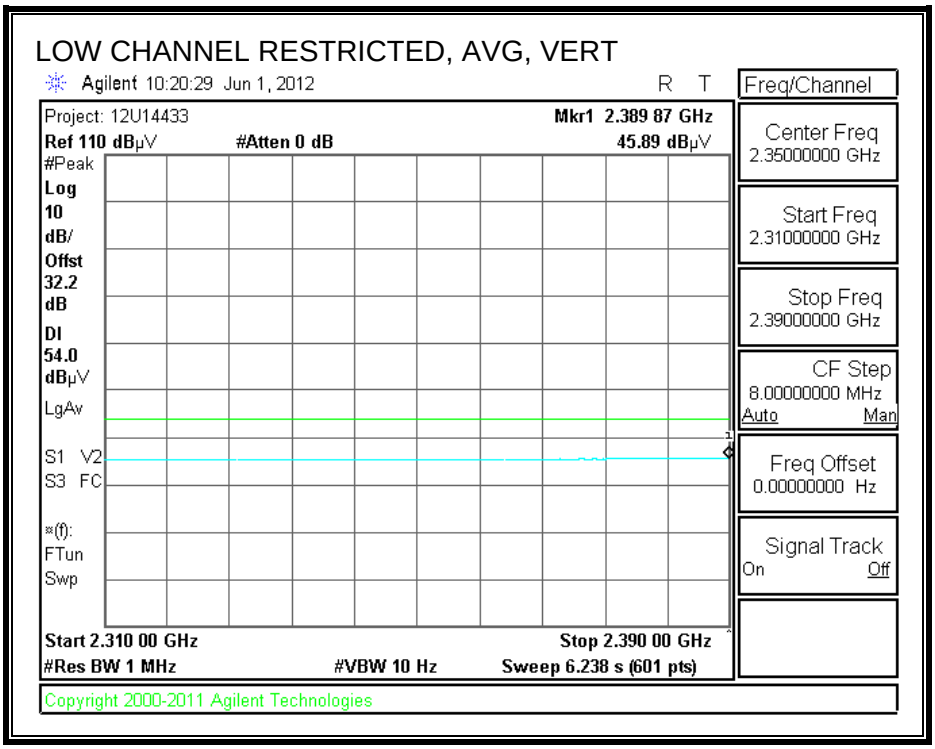
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



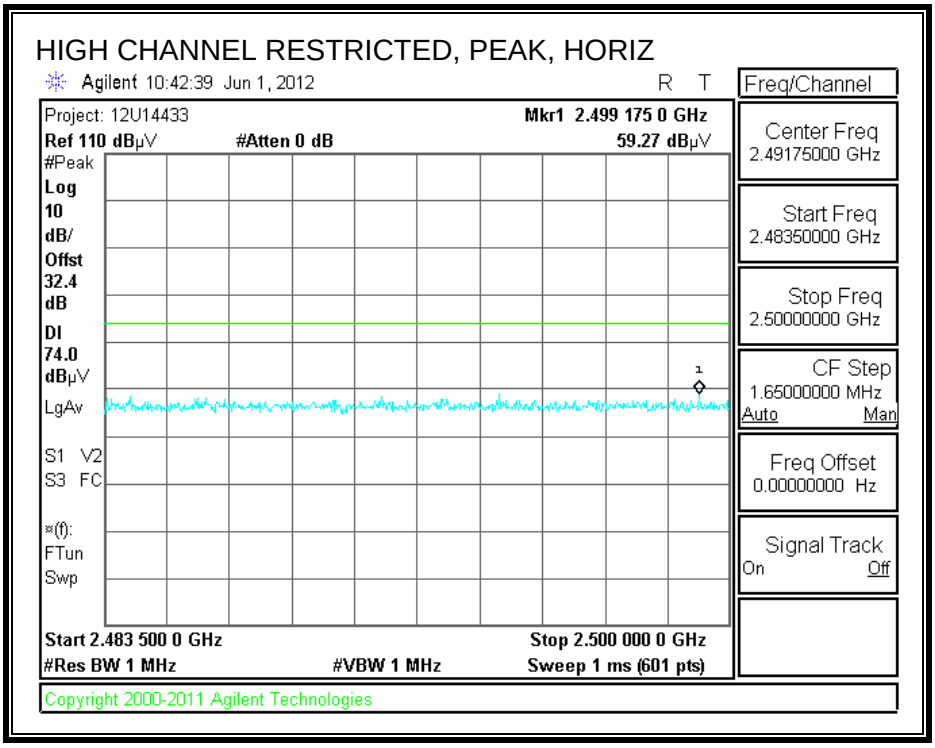


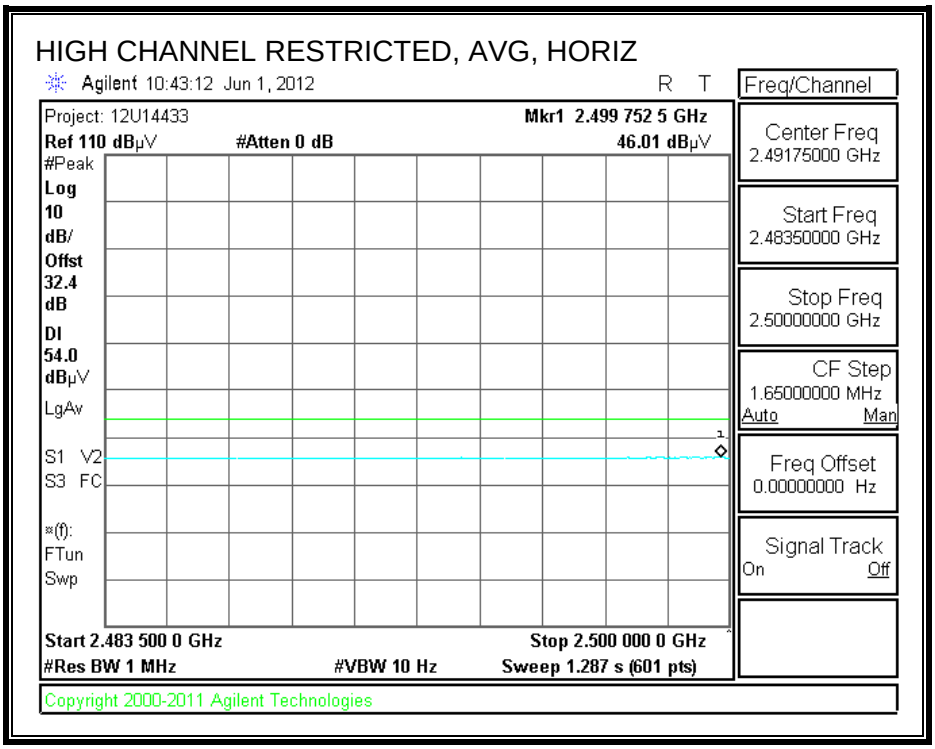
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



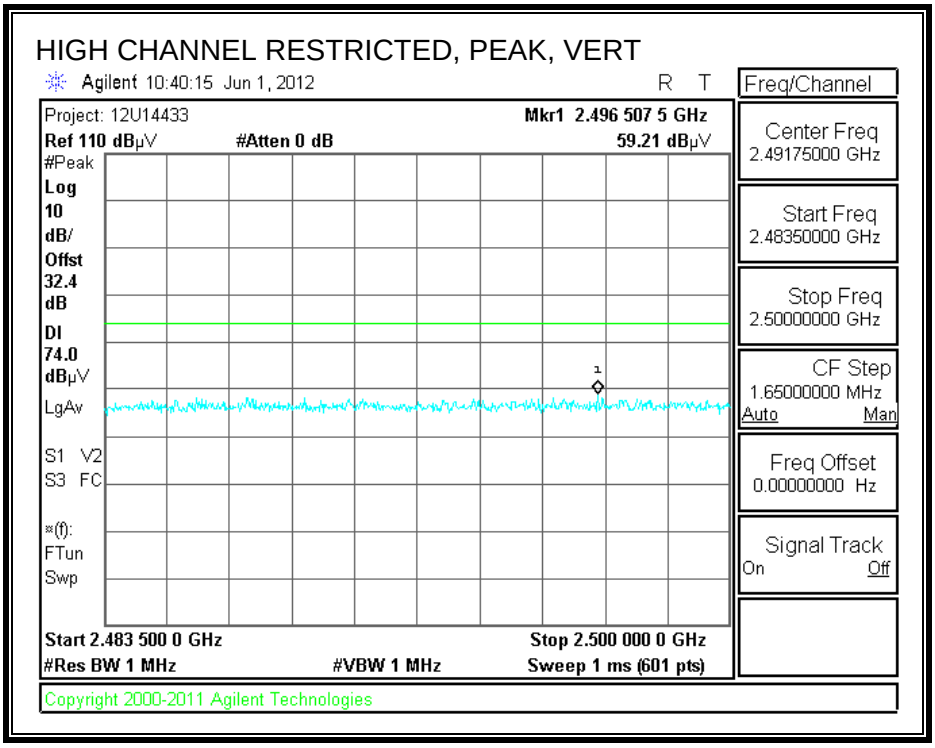


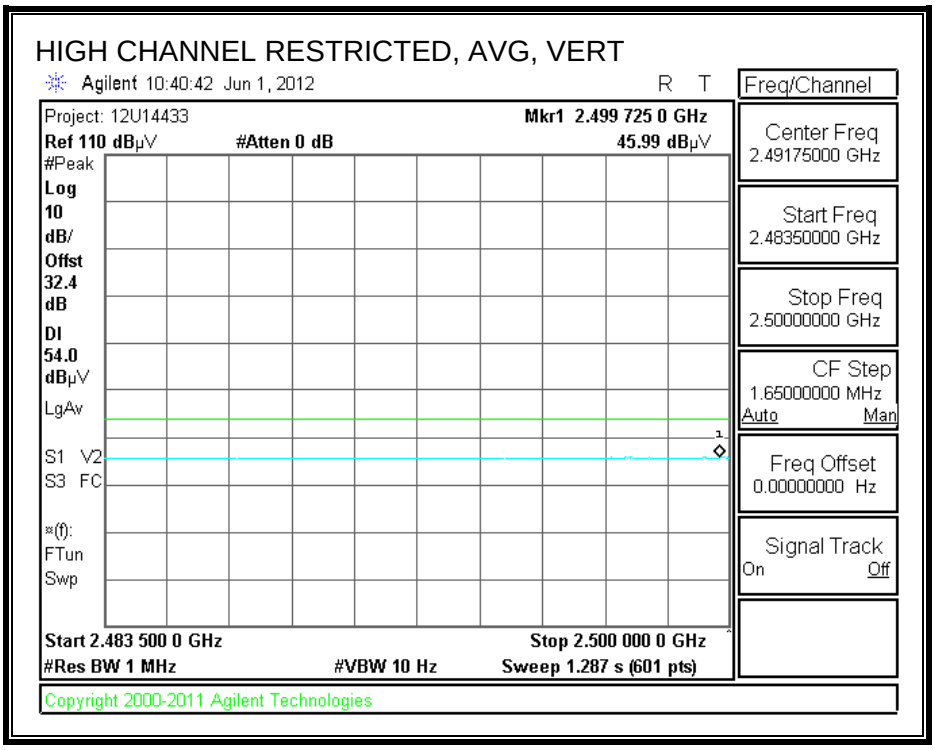
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 06/01/12
Project #: 12U14433
Company: LG Electronics
Test Target: FCC Class B
Mode Oper: 802.11b, TX mode

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		

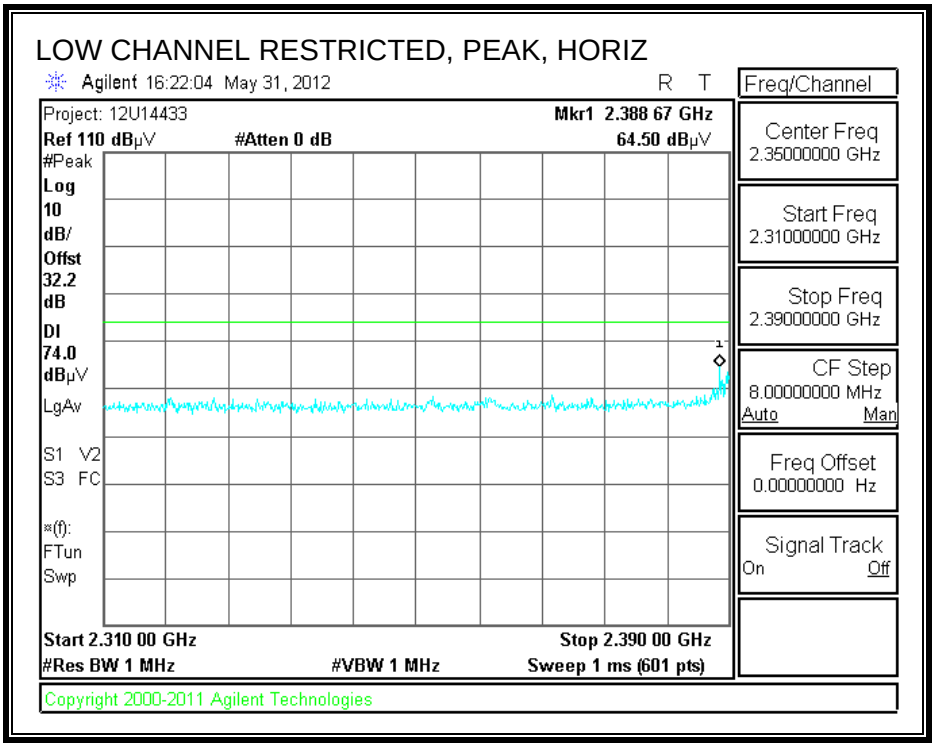
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
2412 MHz 11b													
4.824	3.0	40.7	33.1	6.3	-34.8	0.0	0.0	45.2	74.0	-28.8	V	P	
4.824	3.0	34.4	33.1	6.3	-34.8	0.0	0.0	39.0	54.0	-15.0	V	A	
4.824	3.0	41.4	33.1	6.3	-34.8	0.0	0.0	45.9	74.0	-28.1	H	P	
4.824	3.0	35.9	33.1	6.3	-34.8	0.0	0.0	40.4	54.0	-13.6	H	A	
2437 MHz 11b													
4.874	3.0	41.6	33.1	6.3	-34.8	0.0	0.0	46.2	74.0	-27.8	H	P	
4.874	3.0	34.9	33.1	6.3	-34.8	0.0	0.0	39.6	54.0	-14.4	H	A	
4.874	3.0	39.4	33.1	6.3	-34.8	0.0	0.0	44.0	74.0	-30.0	V	P	
4.874	3.0	31.3	33.1	6.3	-34.8	0.0	0.0	35.9	54.0	-18.1	V	A	
2462 MHz 11b													
4.924	3.0	38.1	33.2	6.3	-34.8	0.0	0.0	42.8	74.0	-31.2	V	P	
4.924	3.0	27.7	33.2	6.3	-34.8	0.0	0.0	32.4	54.0	-21.6	V	A	
4.924	3.0	39.9	33.2	6.3	-34.8	0.0	0.0	44.6	74.0	-29.4	H	P	
4.924	3.0	30.9	33.2	6.3	-34.8	0.0	0.0	35.6	54.0	-18.4	H	A	

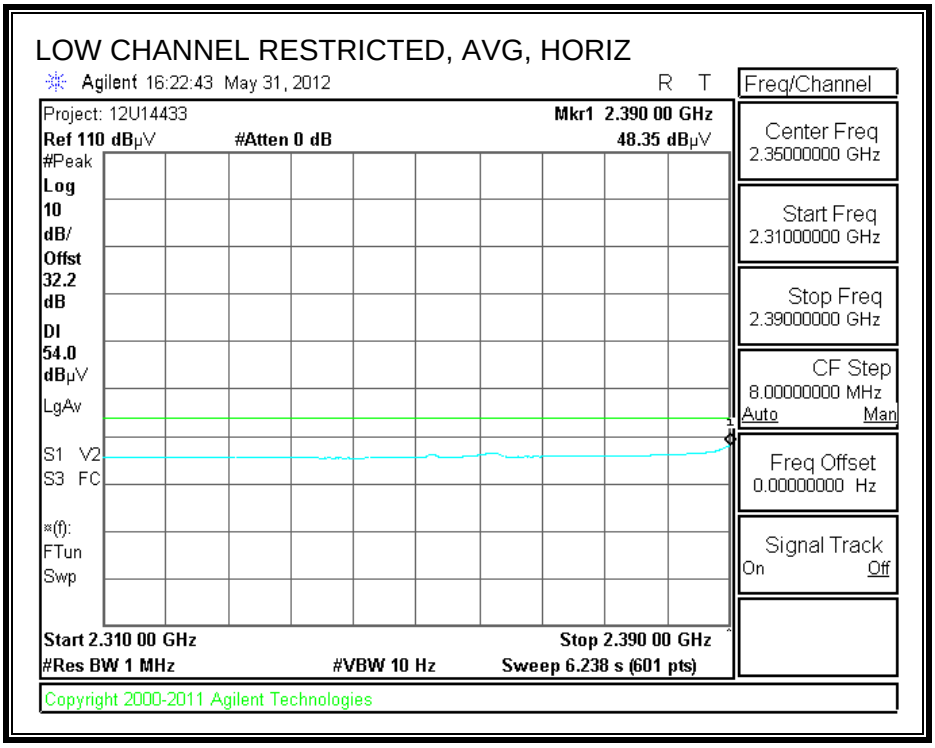
Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

7.2.2. 802.11g MODE IN THE 2.4 GHz BAND

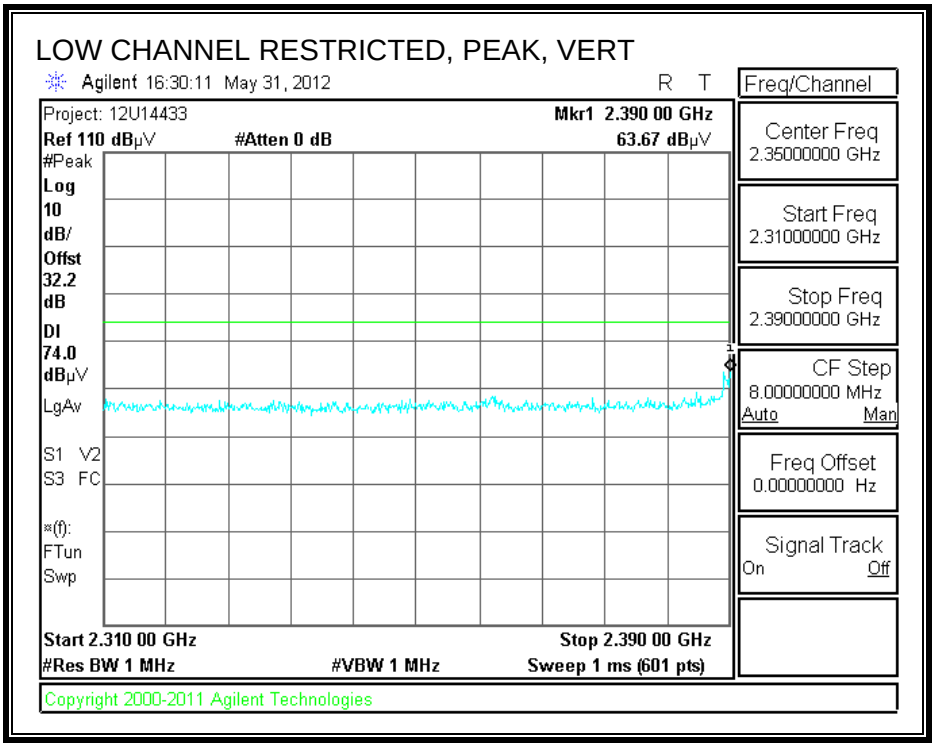
STANDARD COVER

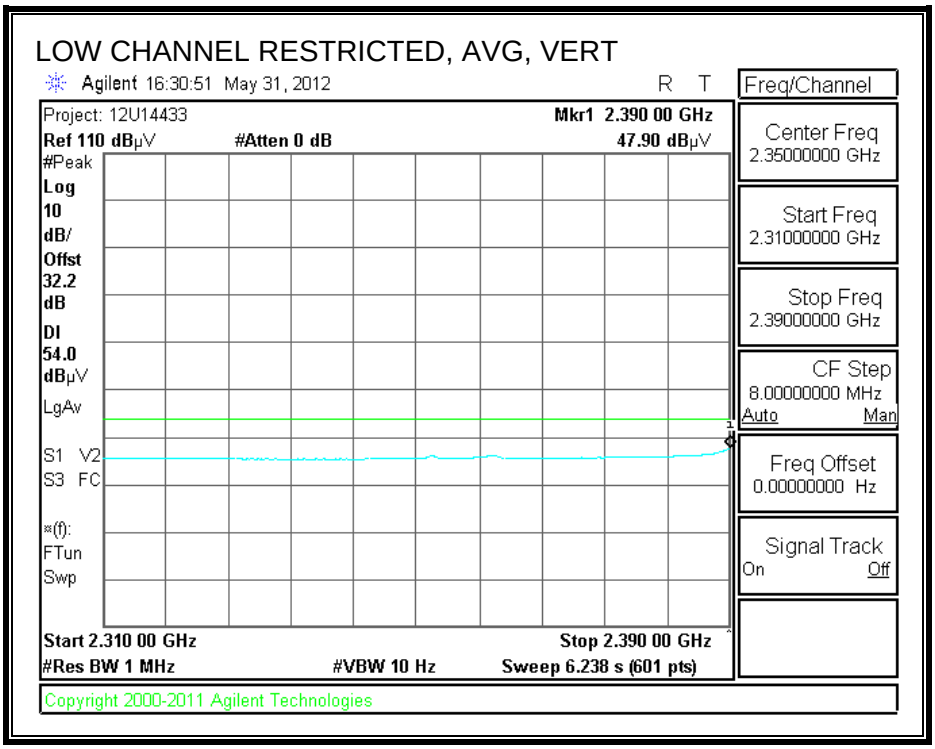
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



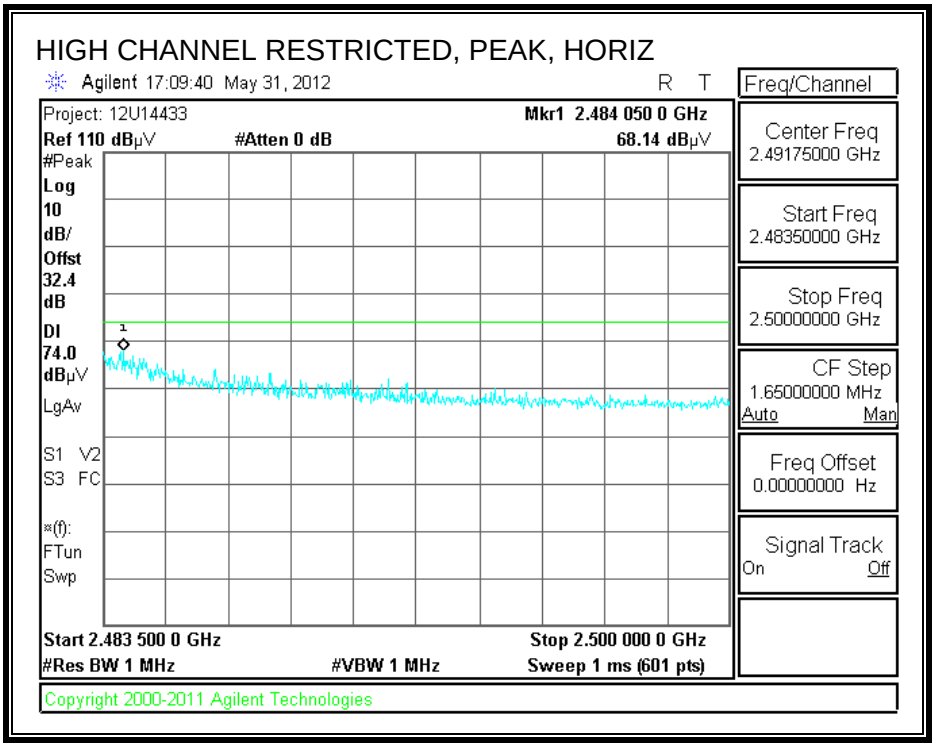


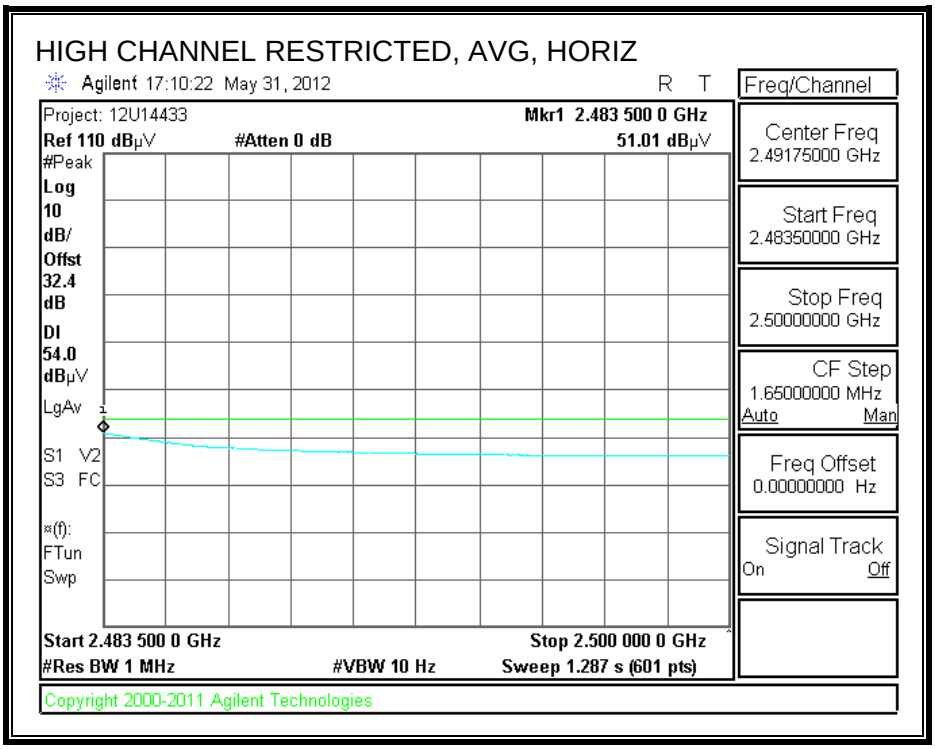
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



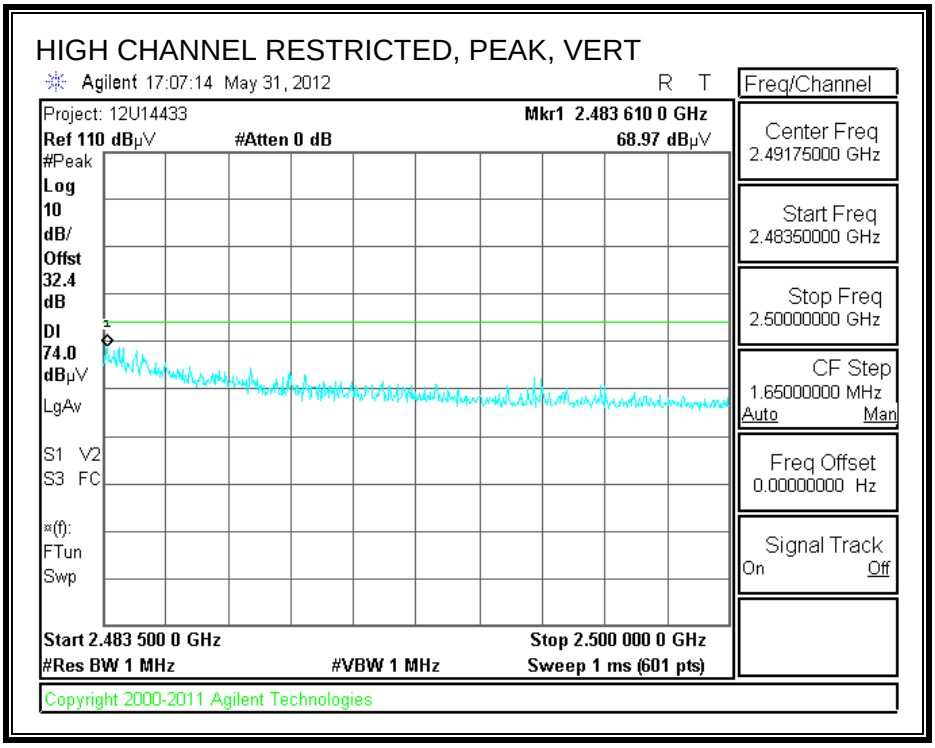


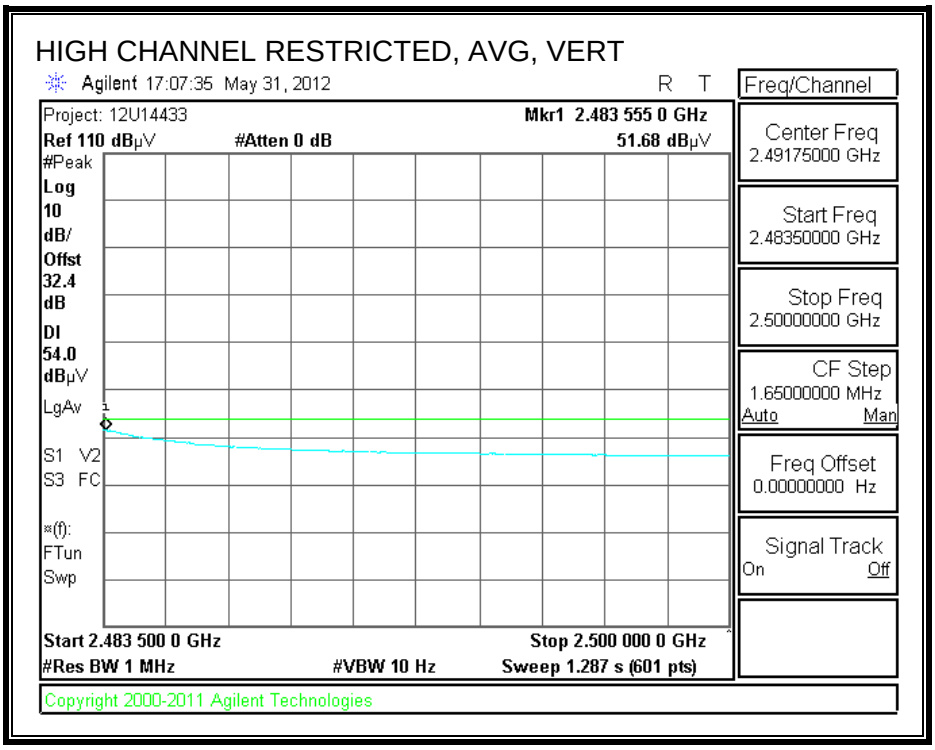
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 06/01/12
Project #: 12U14433
Company: LG Electronics
Test Target: FCC Class B
Mode Oper: 802.11g, TX mode

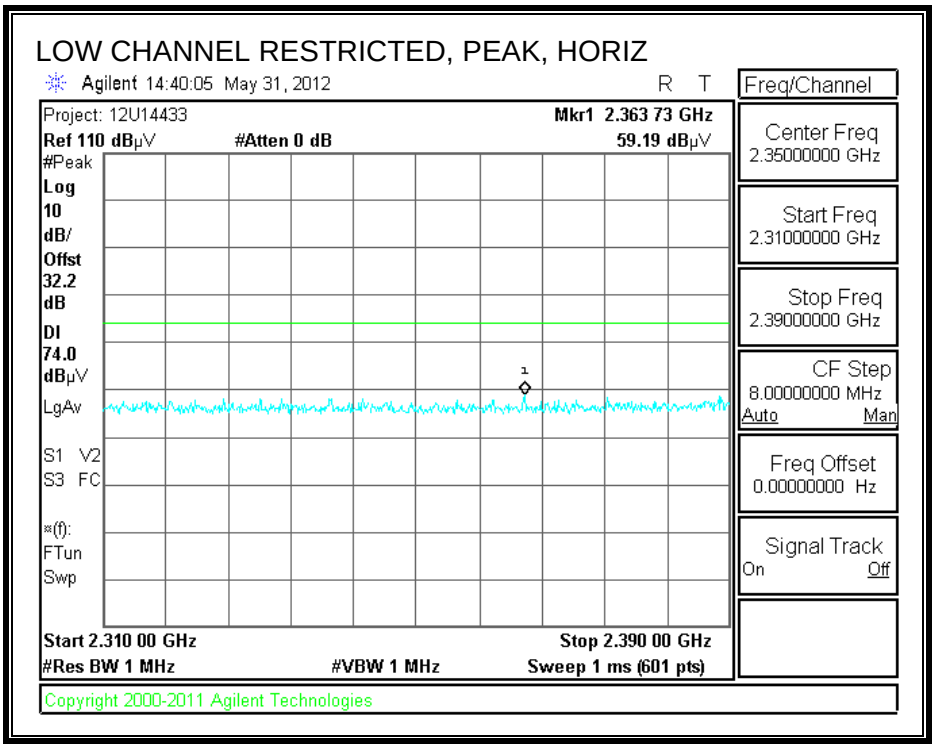
f	Measurement Frequency	Amp	Preamp Gain		Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters		Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m		Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength		Margin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

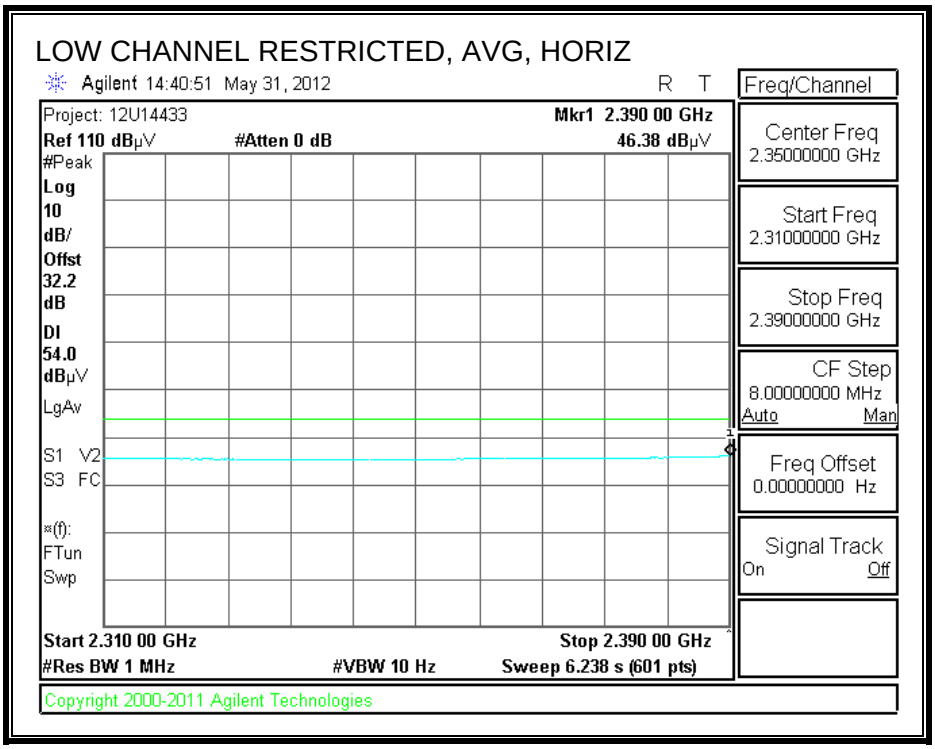
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
2412 MHz 11g													
4.824	3.0	37.1	33.1	6.3	-34.8	0.0	0.0	41.6	74.0	-32.4	V	P	
4.824	3.0	24.7	33.1	6.3	-34.8	0.0	0.0	29.2	54.0	-24.8	V	A	
4.824	3.0	37.1	33.1	6.3	-34.8	0.0	0.0	41.6	74.0	-32.4	H	P	
4.824	3.0	24.4	33.1	6.3	-34.8	0.0	0.0	29.0	54.0	-25.0	H	A	
2437 MHz 11g													
4.874	3.0	36.6	33.1	6.3	-34.8	0.0	0.0	41.2	74.0	-32.8	H	P	
4.874	3.0	23.8	33.1	6.3	-34.8	0.0	0.0	28.4	54.0	-25.6	H	A	
4.874	3.0	36.7	33.1	6.3	-34.8	0.0	0.0	41.3	74.0	-32.7	V	P	
4.874	3.0	23.7	33.1	6.3	-34.8	0.0	0.0	28.4	54.0	-25.6	V	A	
2462 MHz 11g													
4.924	3.0	39.5	33.2	6.3	-34.8	0.0	0.0	44.2	74.0	-29.8	H	P	
4.924	3.0	26.8	33.2	6.3	-34.8	0.0	0.0	31.5	54.0	-22.5	H	A	
4.924	3.0	39.3	33.2	6.3	-34.8	0.0	0.0	44.0	74.0	-30.0	V	P	
4.924	3.0	26.2	33.2	6.3	-34.8	0.0	0.0	30.9	54.0	-23.1	V	A	

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

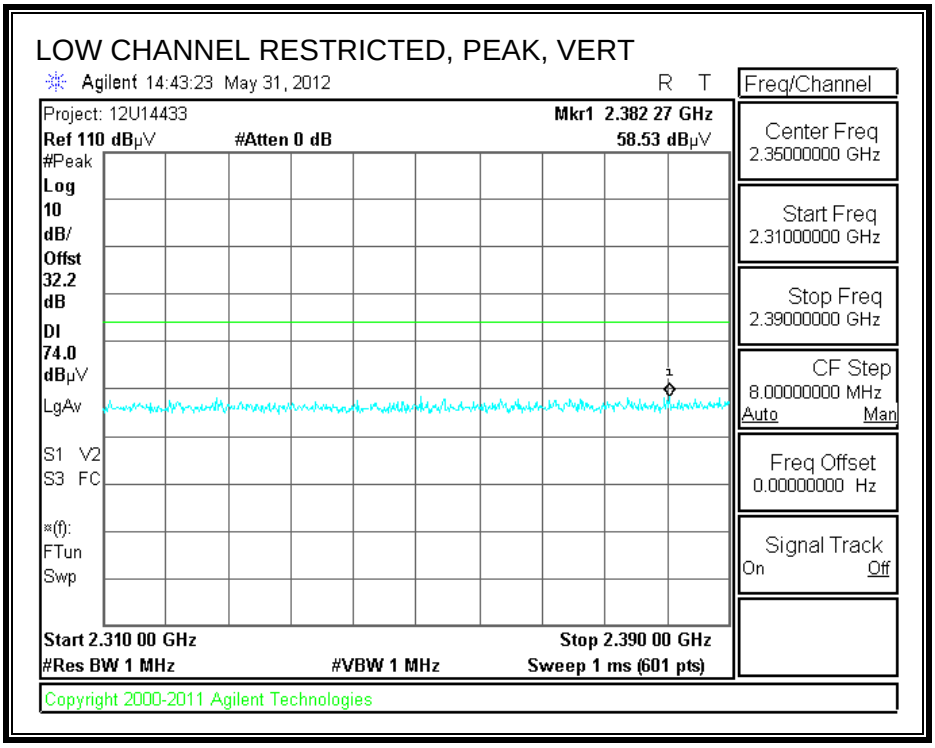
INDUCTIVE COVER

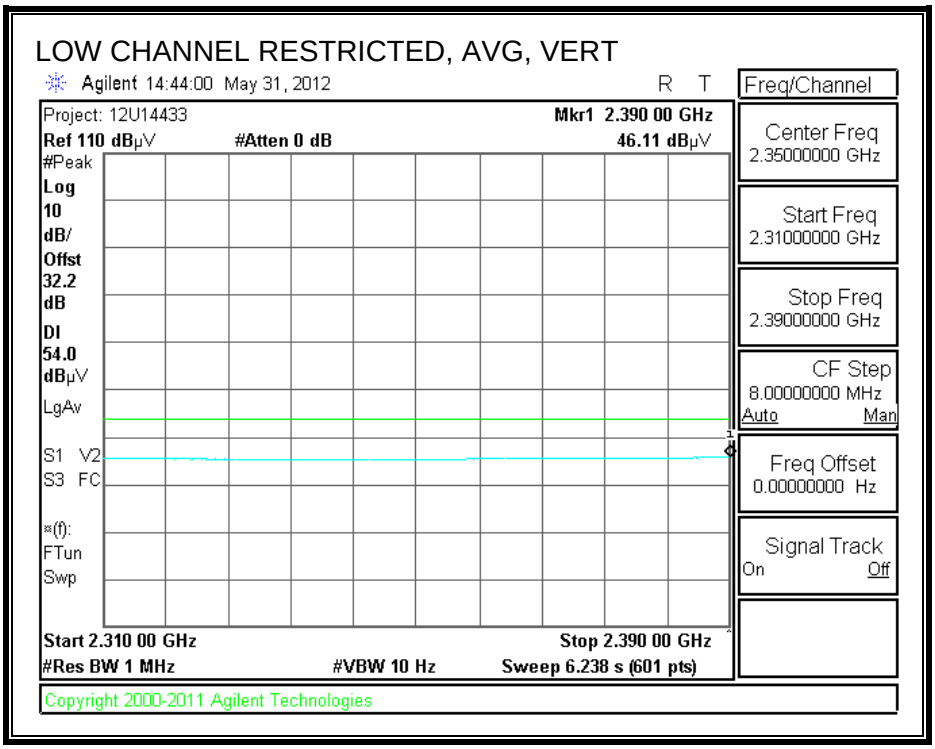
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



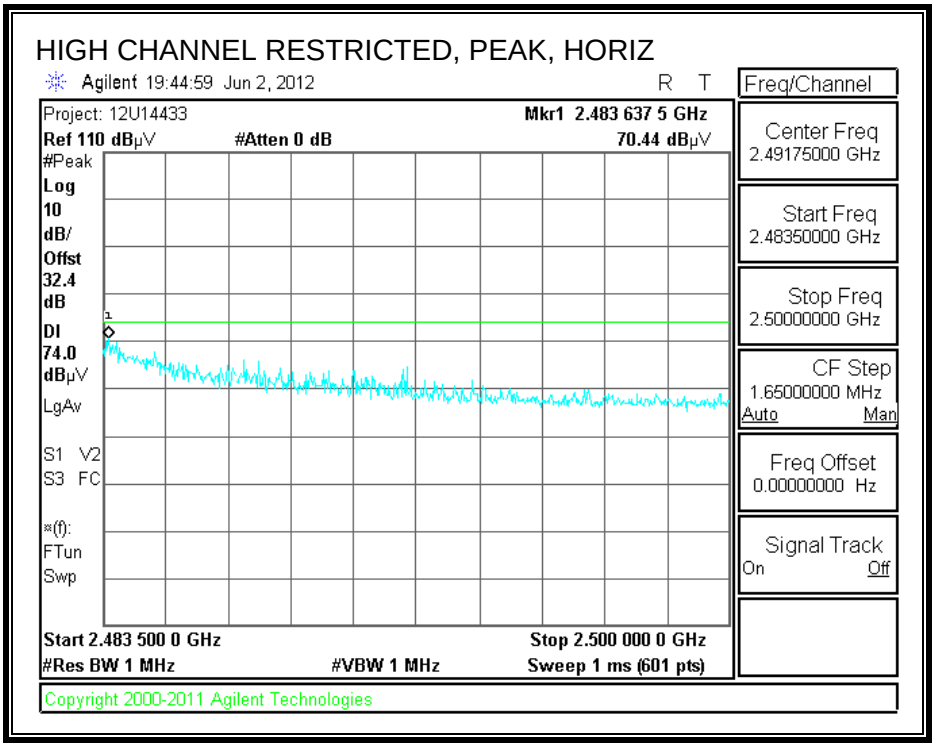


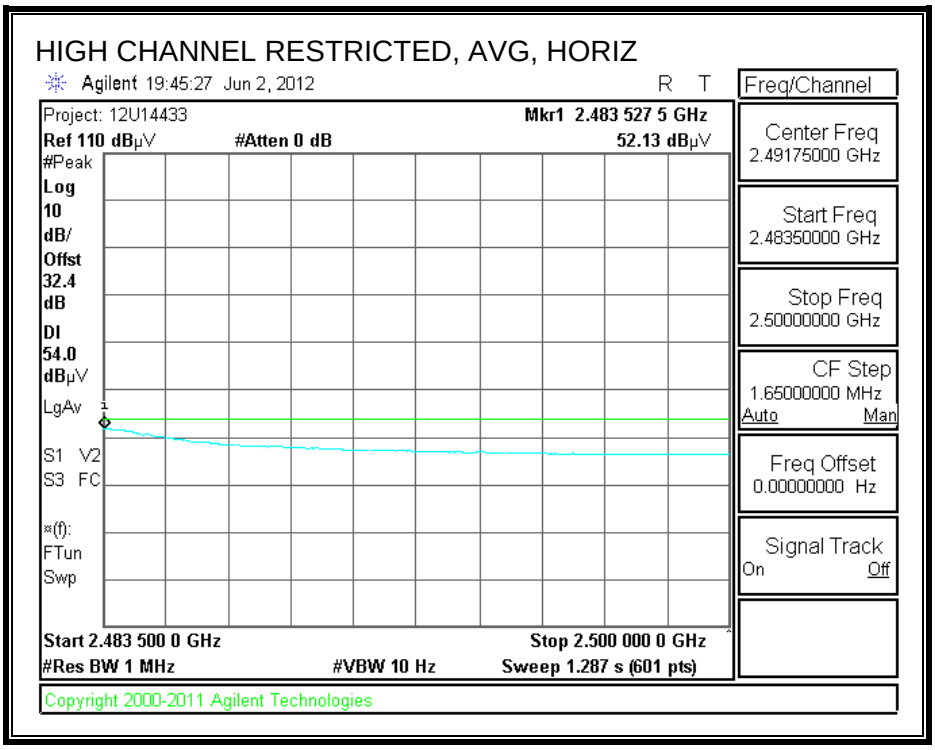
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



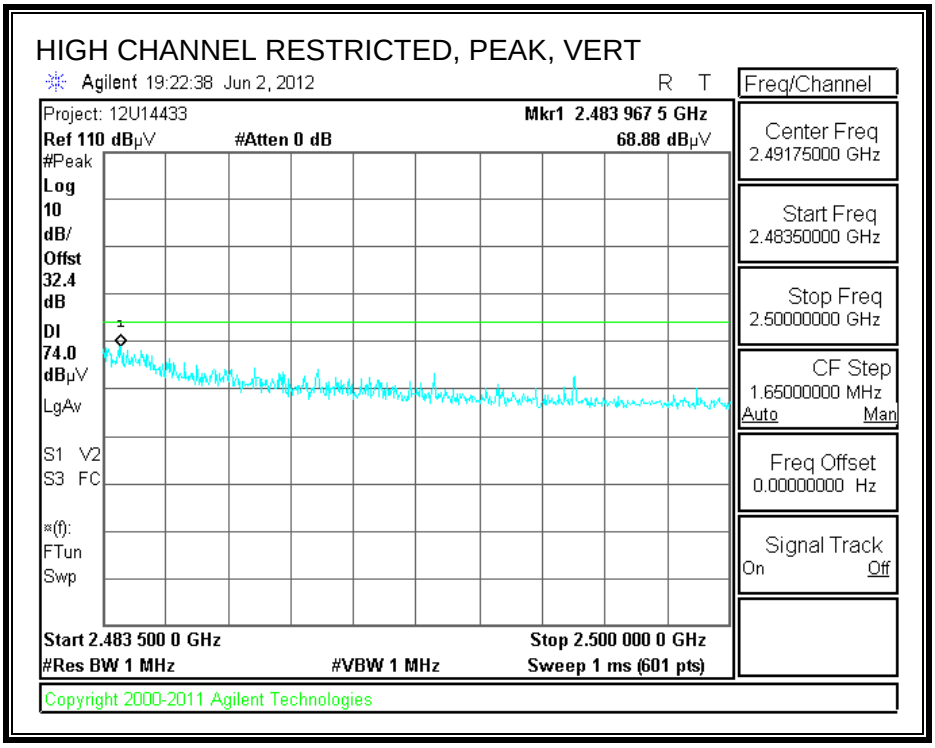


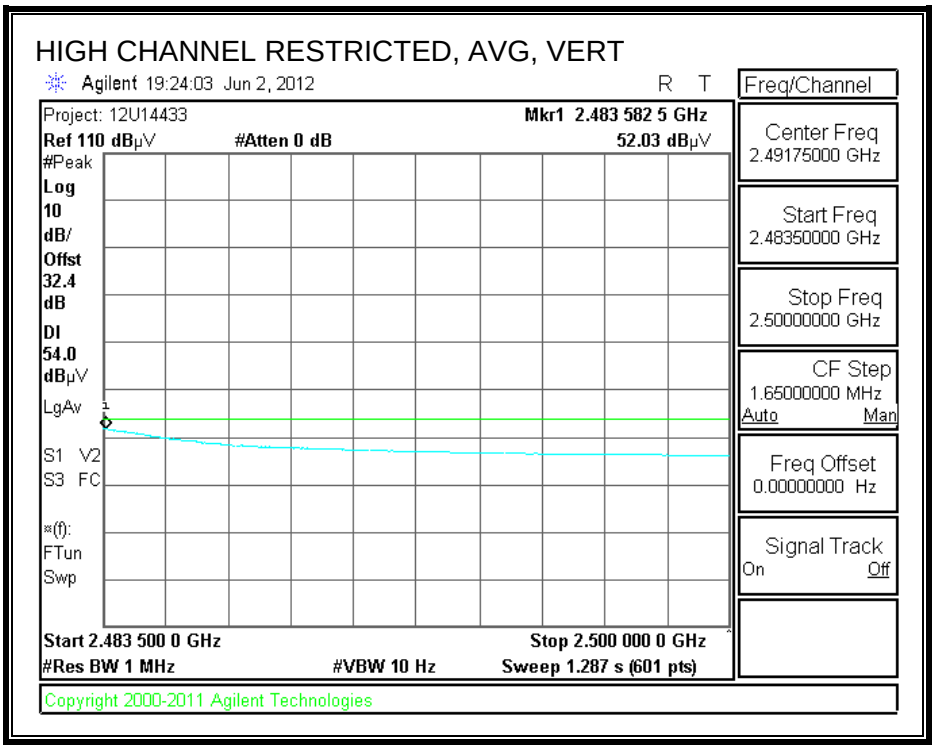
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 06/01/12
Project #: 12U14433
Company: LG Electronics
Test Target: FCC Class B
Mode Oper: 802.11g, TX mode

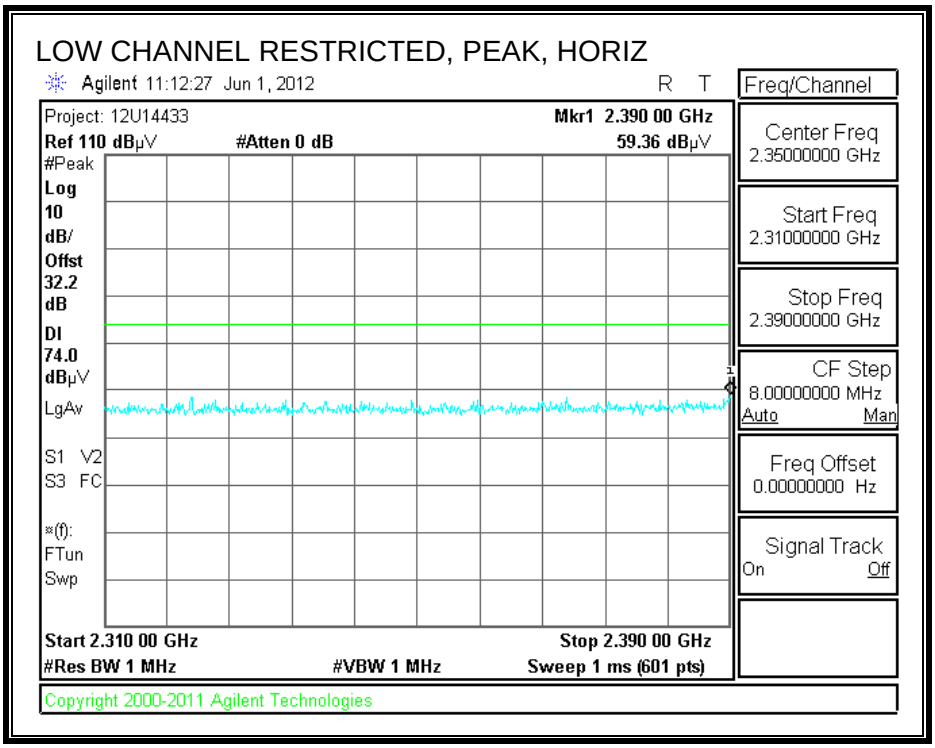
f	Measurement Frequency	Amp	Preamp Gain	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Margin vs.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

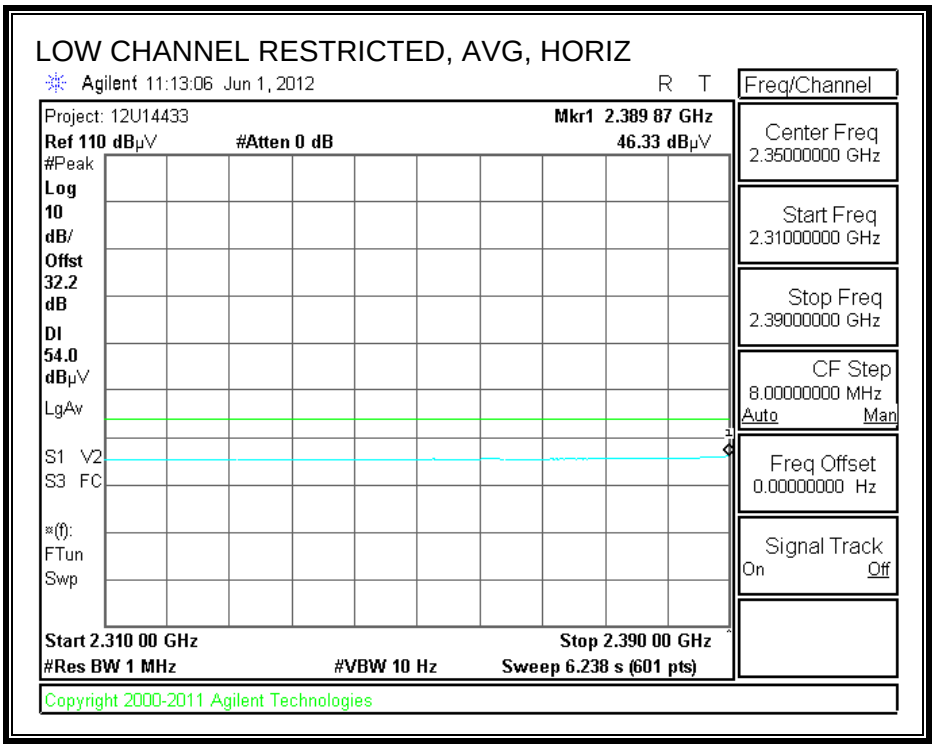
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
2412 MHz 11g													
4.824	3.0	37.1	33.1	6.3	-34.8	0.0	0.0	41.6	74.0	-32.4	V	P	
4.824	3.0	24.7	33.1	6.3	-34.8	0.0	0.0	29.2	54.0	-24.8	V	A	
4.824	3.0	37.1	33.1	6.3	-34.8	0.0	0.0	41.6	74.0	-32.4	H	P	
4.824	3.0	24.4	33.1	6.3	-34.8	0.0	0.0	29.0	54.0	-25.0	H	A	
2437 MHz 11g													
4.874	3.0	36.6	33.1	6.3	-34.8	0.0	0.0	41.2	74.0	-32.8	H	P	
4.874	3.0	23.8	33.1	6.3	-34.8	0.0	0.0	28.4	54.0	-25.6	H	A	
4.874	3.0	36.7	33.1	6.3	-34.8	0.0	0.0	41.3	74.0	-32.7	V	P	
4.874	3.0	23.7	33.1	6.3	-34.8	0.0	0.0	28.4	54.0	-25.6	V	A	
2462 MHz 11g													
4.924	3.0	39.5	33.2	6.3	-34.8	0.0	0.0	44.2	74.0	-29.8	H	P	
4.924	3.0	26.8	33.2	6.3	-34.8	0.0	0.0	31.5	54.0	-22.5	H	A	
4.924	3.0	39.3	33.2	6.3	-34.8	0.0	0.0	44.0	74.0	-30.0	V	P	
4.924	3.0	26.2	33.2	6.3	-34.8	0.0	0.0	30.9	54.0	-23.1	V	A	

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

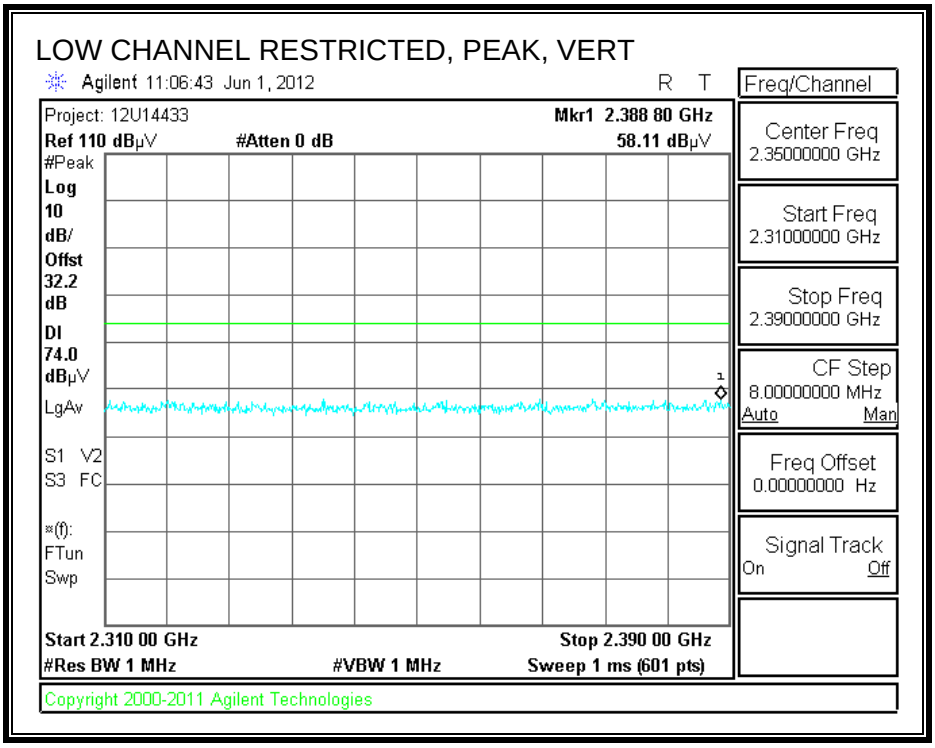
INDUCTIVE CHARGER WITH INDUCTIVE COVER

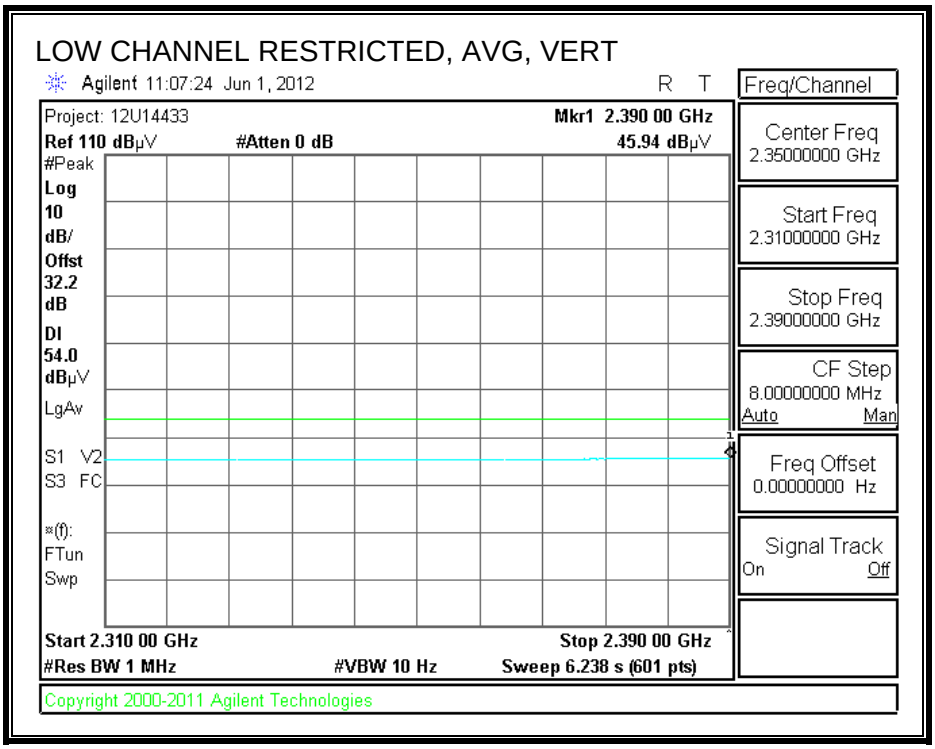
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



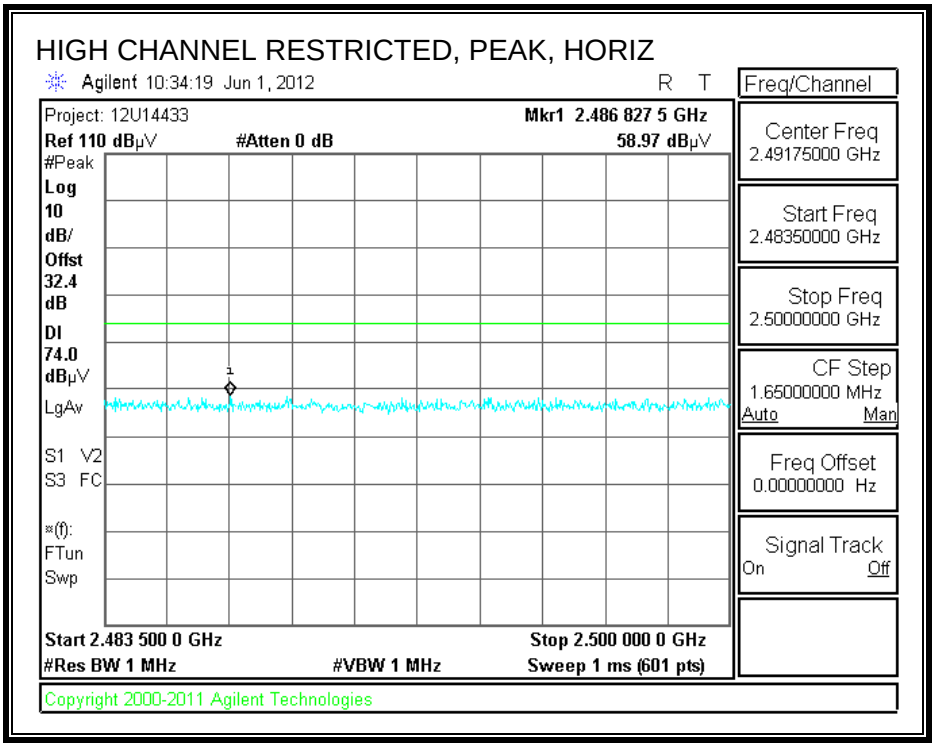


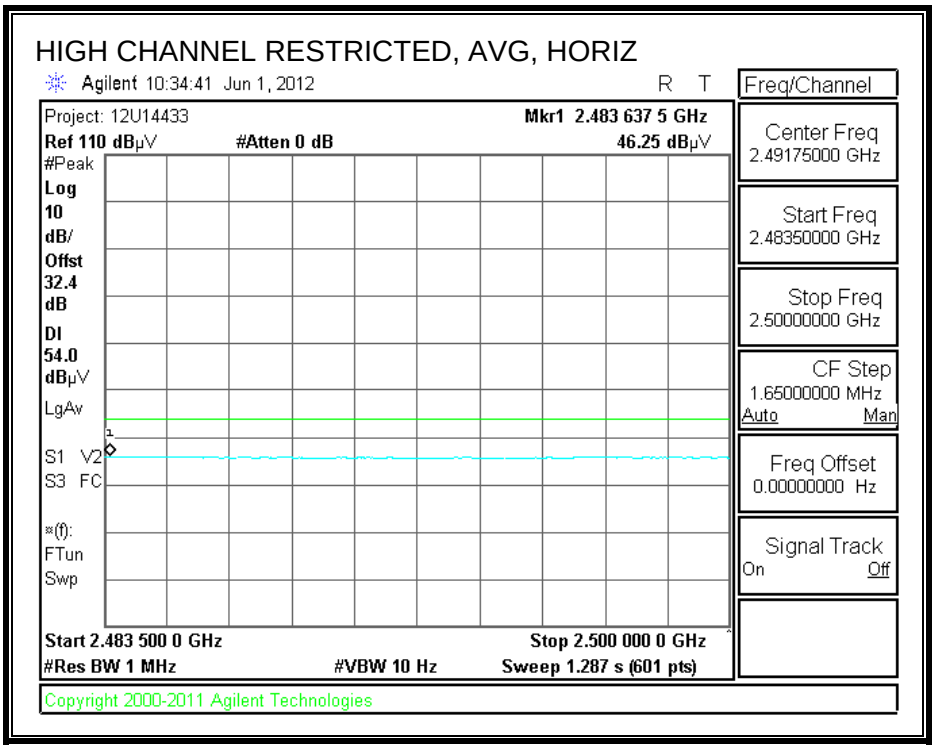
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



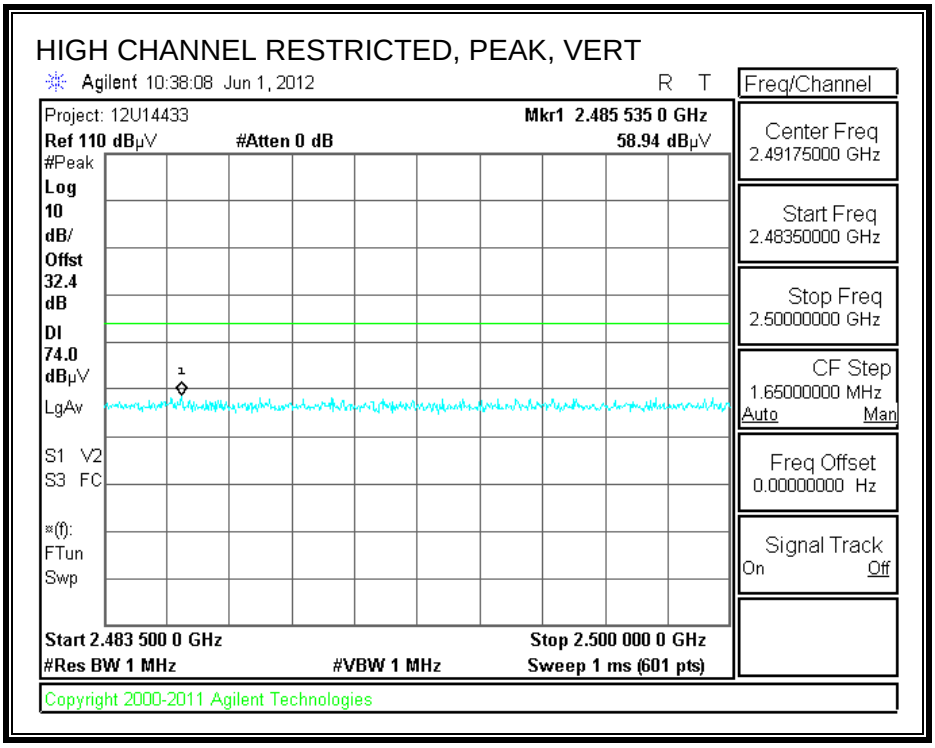


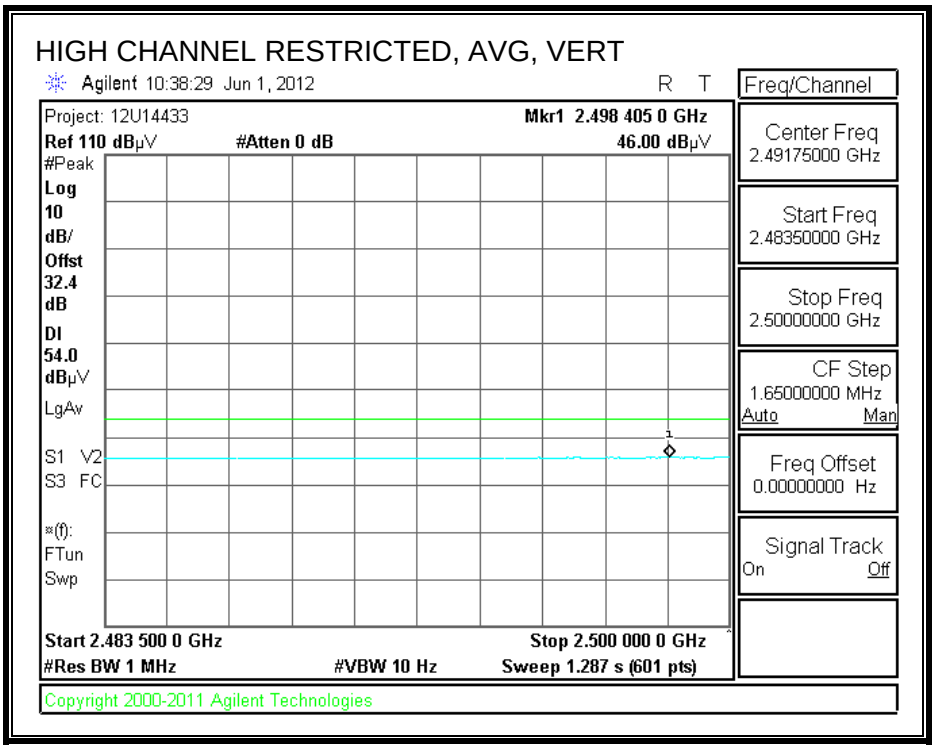
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 06/01/12
Project #: 12U14433
Company: LG Electronics
Test Target: FCC Class B
Mode Oper: 802.11g, TX mode

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		

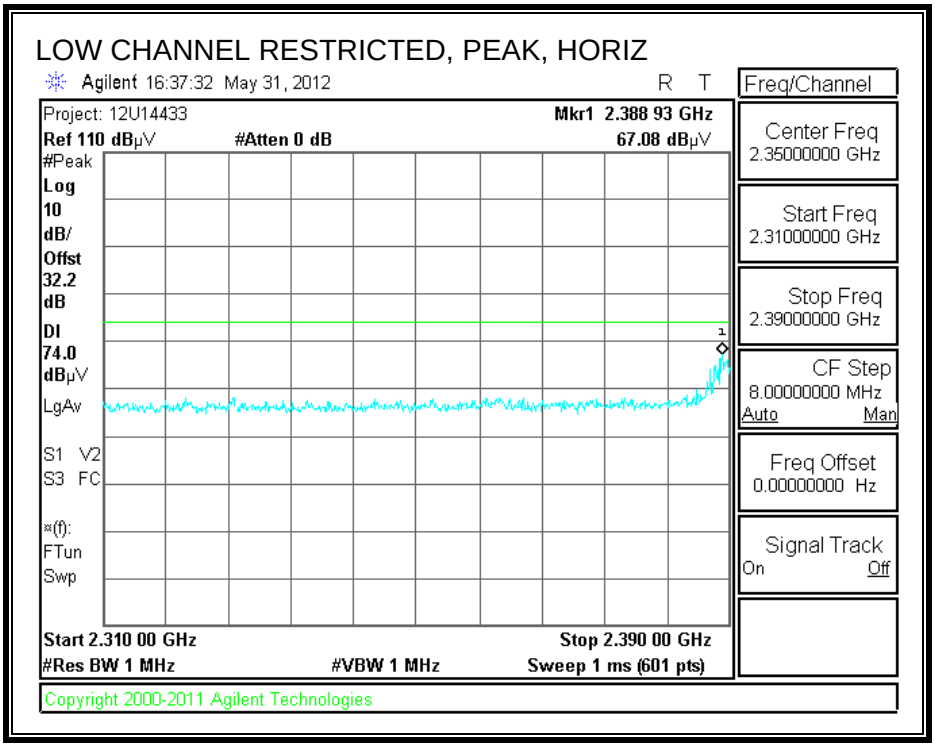
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
2412 MHz 11g													
4.824	3.0	38.2	33.1	6.3	-34.8	0.0	0.0	42.8	74.0	-31.2	H	P	
4.824	3.0	25.6	33.1	6.3	-34.8	0.0	0.0	30.1	54.0	-23.9	H	A	
4.824	3.0	38.3	33.1	6.3	-34.8	0.0	0.0	42.8	74.0	-31.2	V	P	
4.824	3.0	25.8	33.1	6.3	-34.8	0.0	0.0	30.4	54.0	-23.6	V	A	
2437 MHz 11g													
4.874	3.0	37.9	33.1	6.3	-34.8	0.0	0.0	42.6	74.0	-31.5	V	P	
4.874	3.0	25.3	33.1	6.3	-34.8	0.0	0.0	30.0	54.0	-24.0	V	A	
4.874	3.0	37.9	33.1	6.3	-34.8	0.0	0.0	42.5	74.0	-31.5	H	P	
4.874	3.0	25.2	33.1	6.3	-34.8	0.0	0.0	29.9	54.0	-24.1	H	A	
2462 MHz 11g													
4.924	3.0	38.7	33.2	6.3	-34.8	0.0	0.0	43.4	74.0	-30.6	H	P	
4.924	3.0	25.5	33.2	6.3	-34.8	0.0	0.0	30.2	54.0	-23.8	H	A	
4.924	3.0	37.7	33.2	6.3	-34.8	0.0	0.0	42.5	74.0	-31.5	H	P	
4.924	3.0	25.2	33.2	6.3	-34.8	0.0	0.0	29.9	54.0	-24.1	H	A	

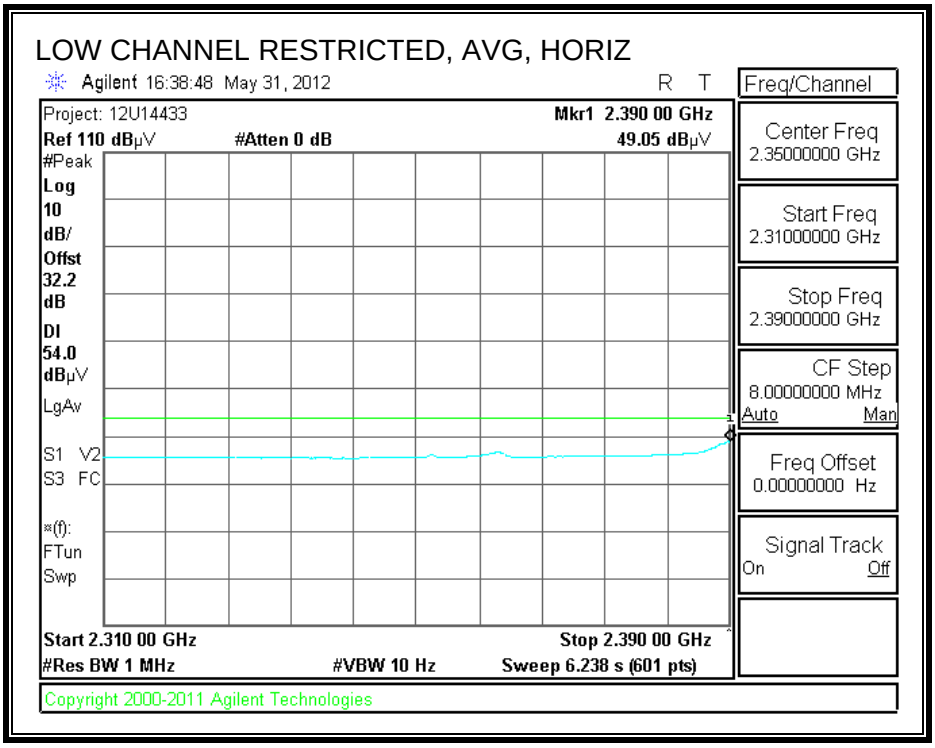
Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

7.2.3. 802.11n HT20 SISO MODE IN THE 2.4 GHz BAND

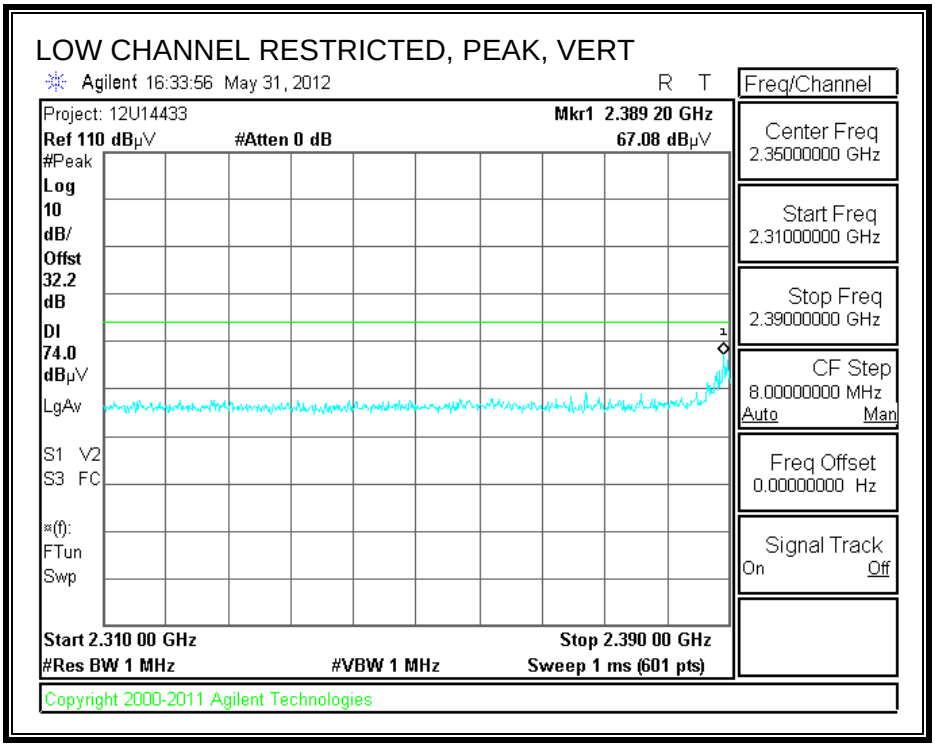
STANDARD COVER

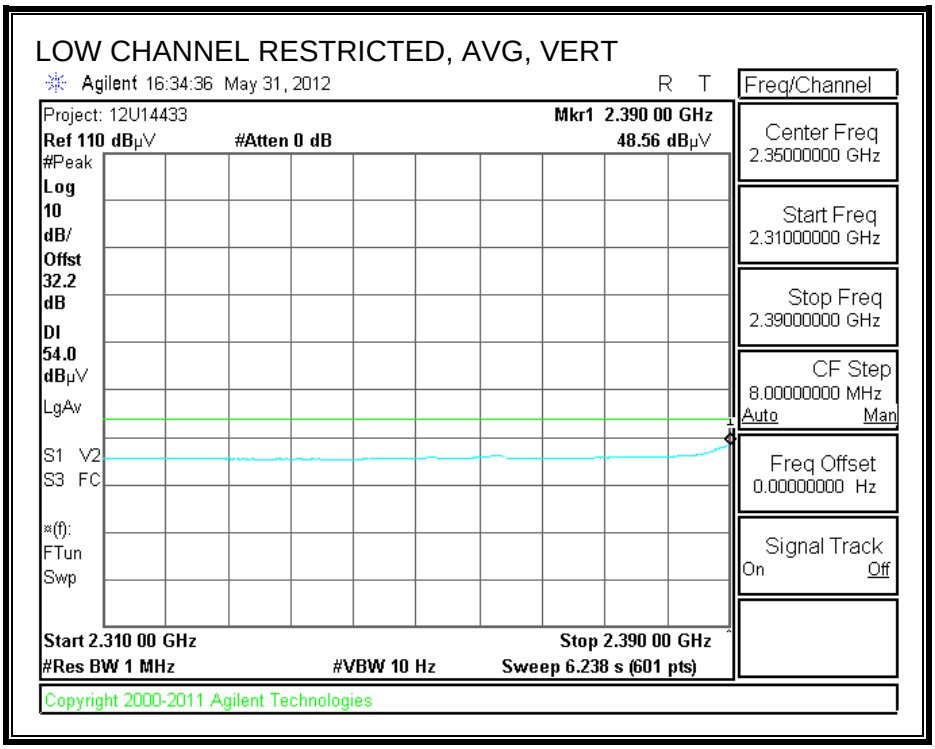
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



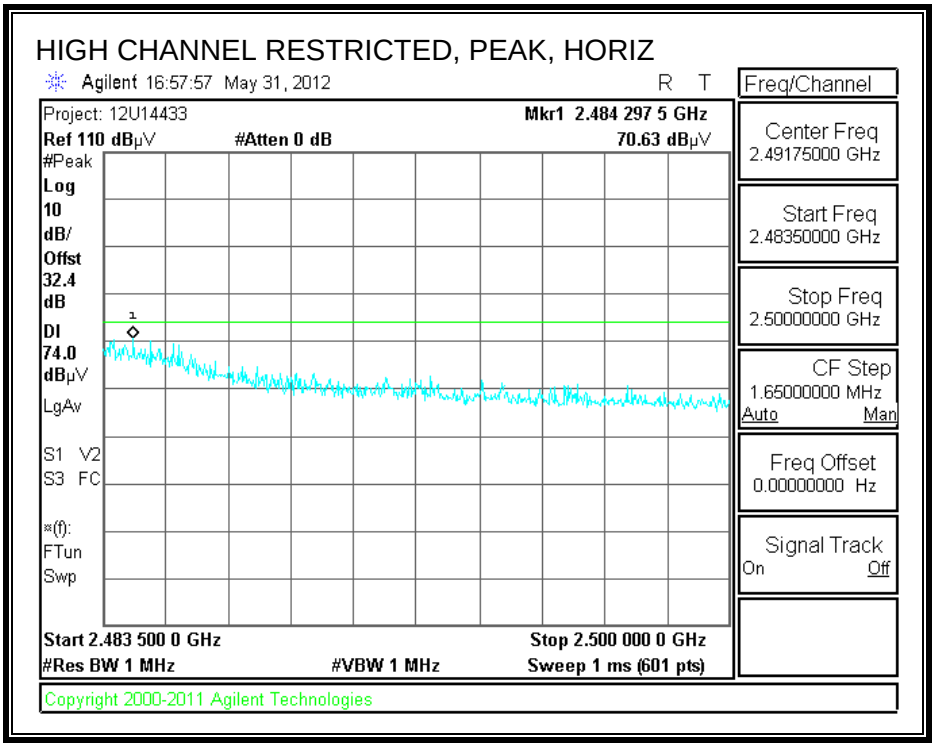


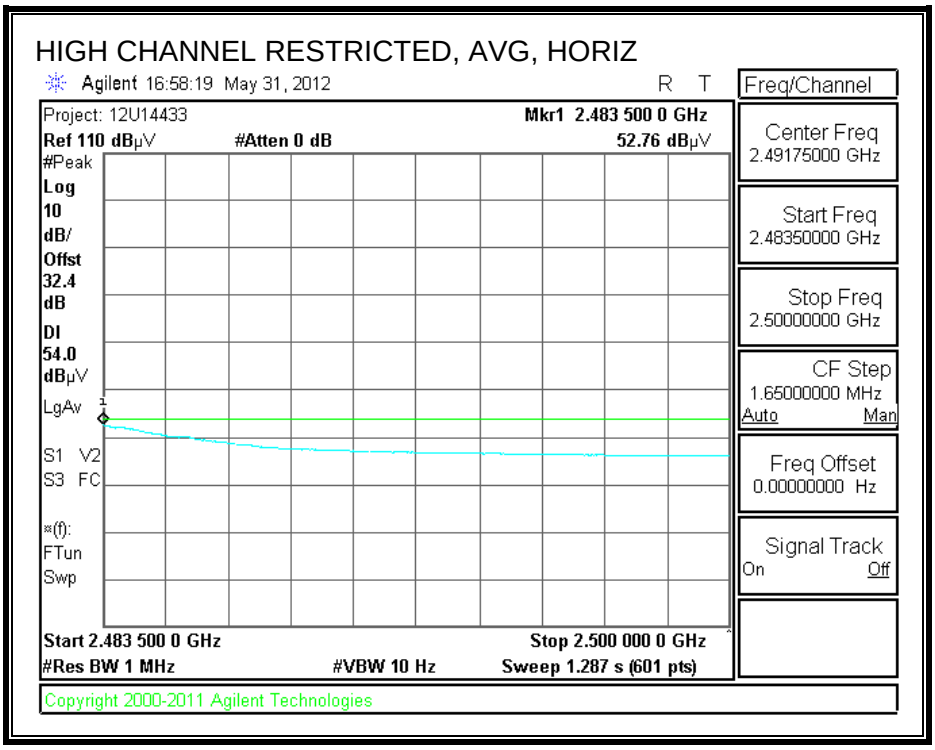
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



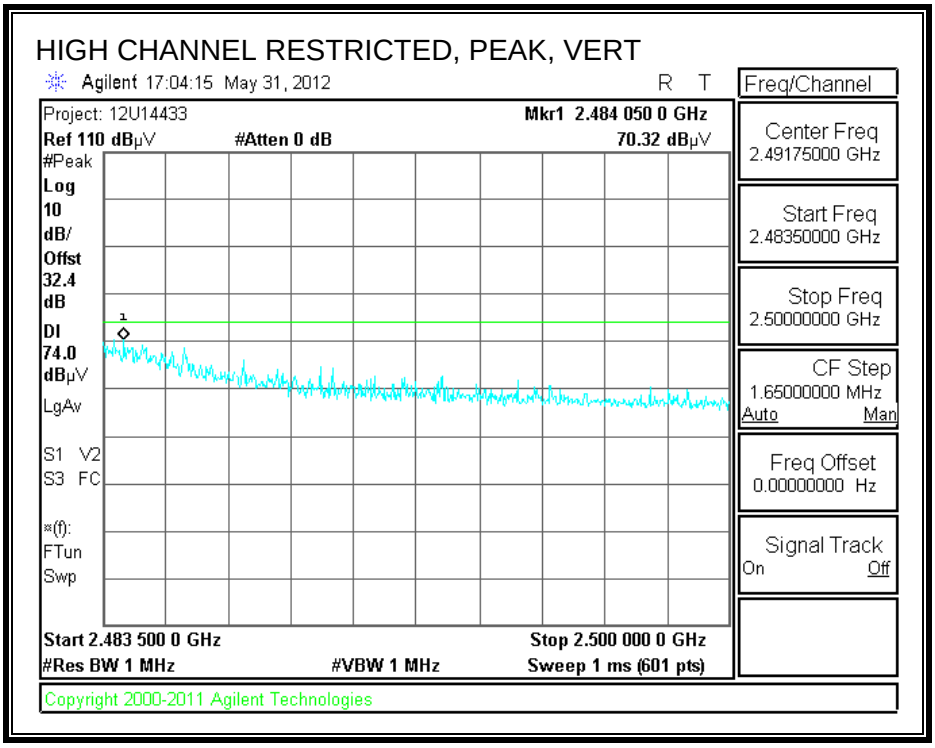


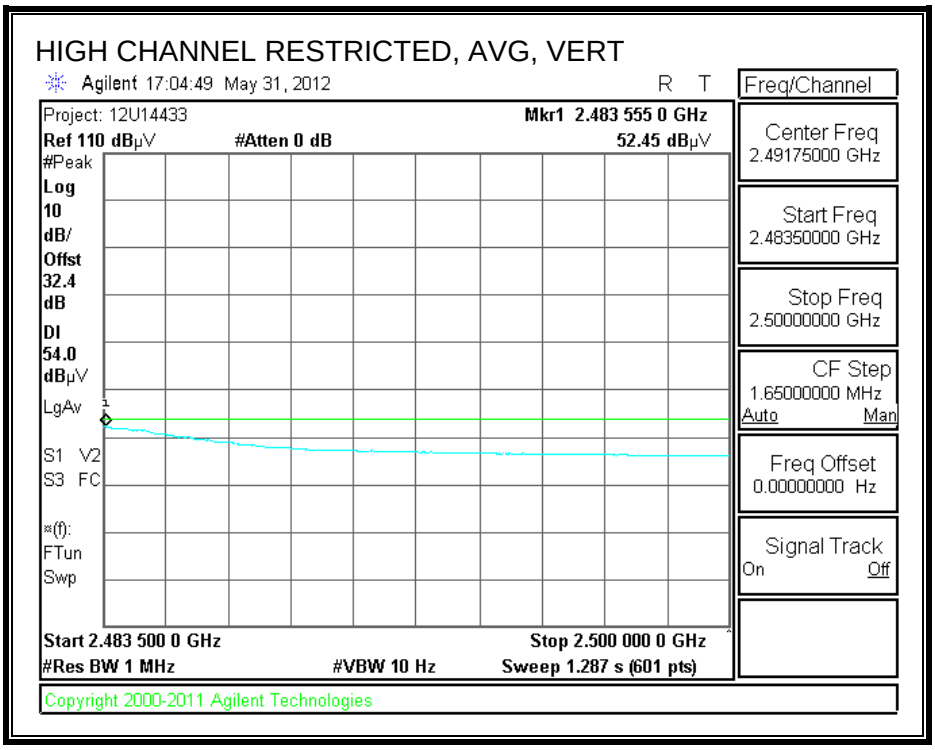
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 06/01/12
Project #: 12U14433
Company: LG Electronics
Test Target: FCC Class B
Mode Oper: 802.11n, TX mode

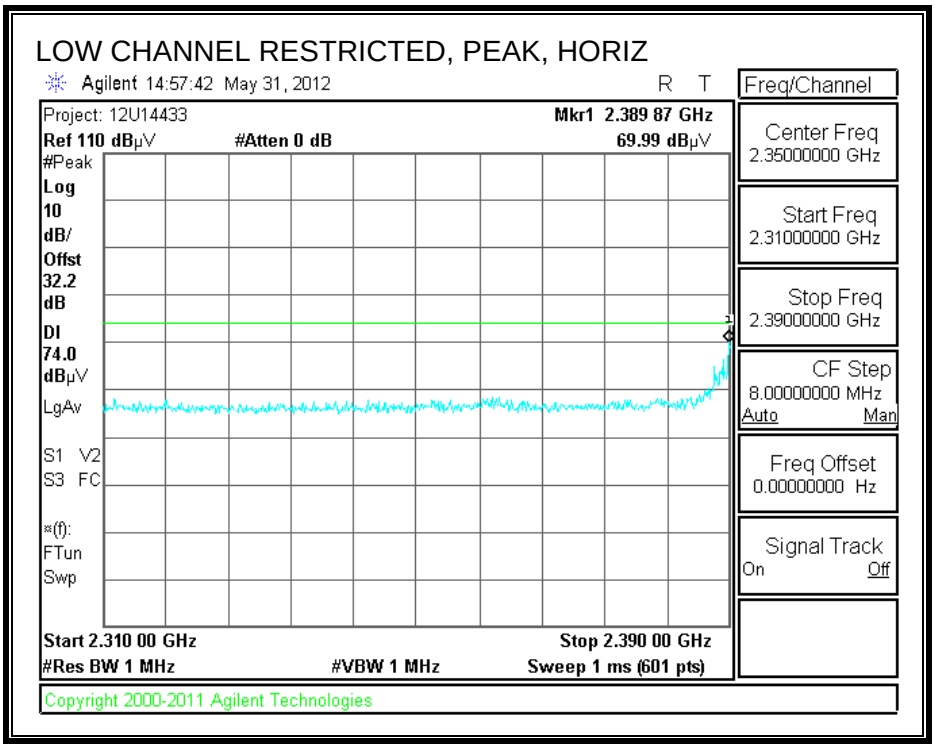
f	Measurement Frequency	Amp	Preamp Gain	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Margin vs.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

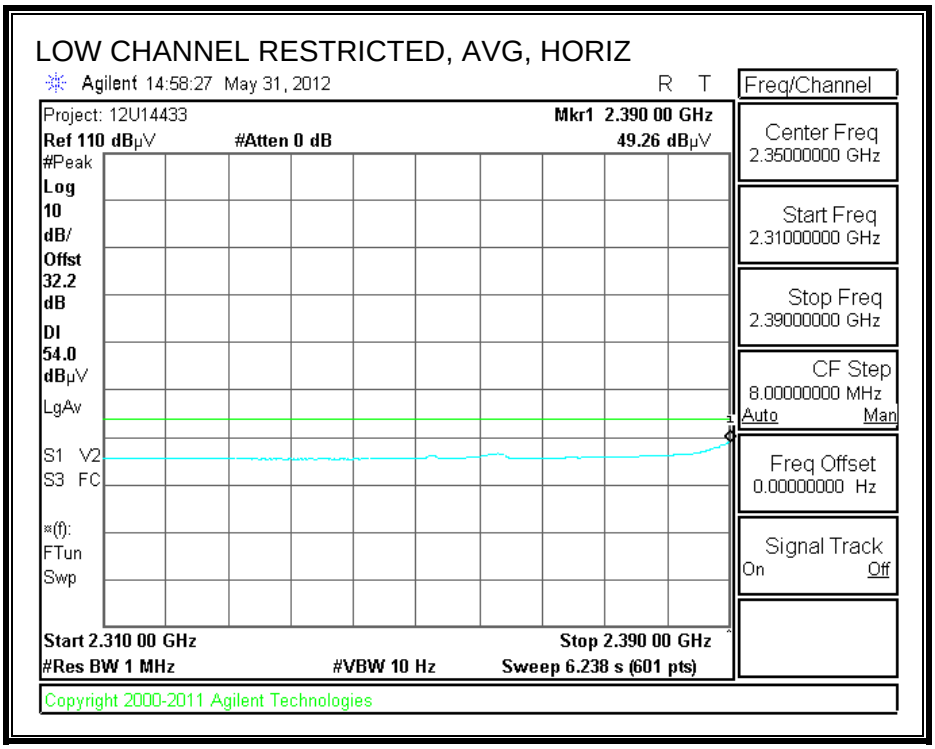
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
2412 MHz 11n													
4.824	3.0	38.3	33.1	6.3	-34.8	0.0	0.0	42.8	74.0	-31.2	H	P	
4.824	3.0	25.1	33.1	6.3	-34.8	0.0	0.0	29.7	54.0	-24.3	H	A	
4.824	3.0	37.5	33.1	6.3	-34.8	0.0	0.0	42.0	74.0	-32.0	V	P	
4.824	3.0	24.6	33.1	6.3	-34.8	0.0	0.0	29.2	54.0	-24.8	V	A	
2437 MHz 11n													
4.874	3.0	38.4	33.1	6.3	-34.8	0.0	0.0	43.0	74.0	-31.0	V	P	
4.874	3.0	25.2	33.1	6.3	-34.8	0.0	0.0	29.8	54.0	-24.2	V	A	
4.874	3.0	39.3	33.1	6.3	-34.8	0.0	0.0	44.0	74.0	-30.0	H	P	
4.874	3.0	26.0	33.1	6.3	-34.8	0.0	0.0	30.6	54.0	-23.4	H	A	
2462 MHz 11n													
4.924	3.0	39.9	33.2	6.3	-34.8	0.0	0.0	44.6	74.0	-29.4	H	P	
4.924	3.0	26.6	33.2	6.3	-34.8	0.0	0.0	31.3	54.0	-22.7	H	A	
4.924	3.0	38.0	33.2	6.3	-34.8	0.0	0.0	42.8	74.0	-31.2	V	P	
4.924	3.0	25.5	33.2	6.3	-34.8	0.0	0.0	30.2	54.0	-23.8	V	A	

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

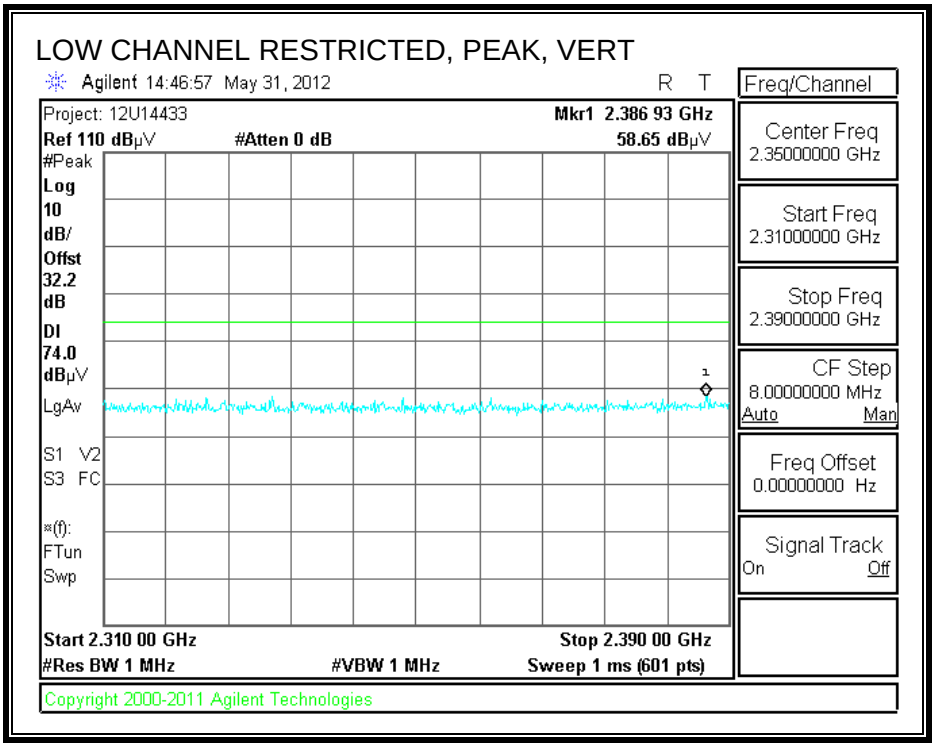
INDUCTIVE COVER

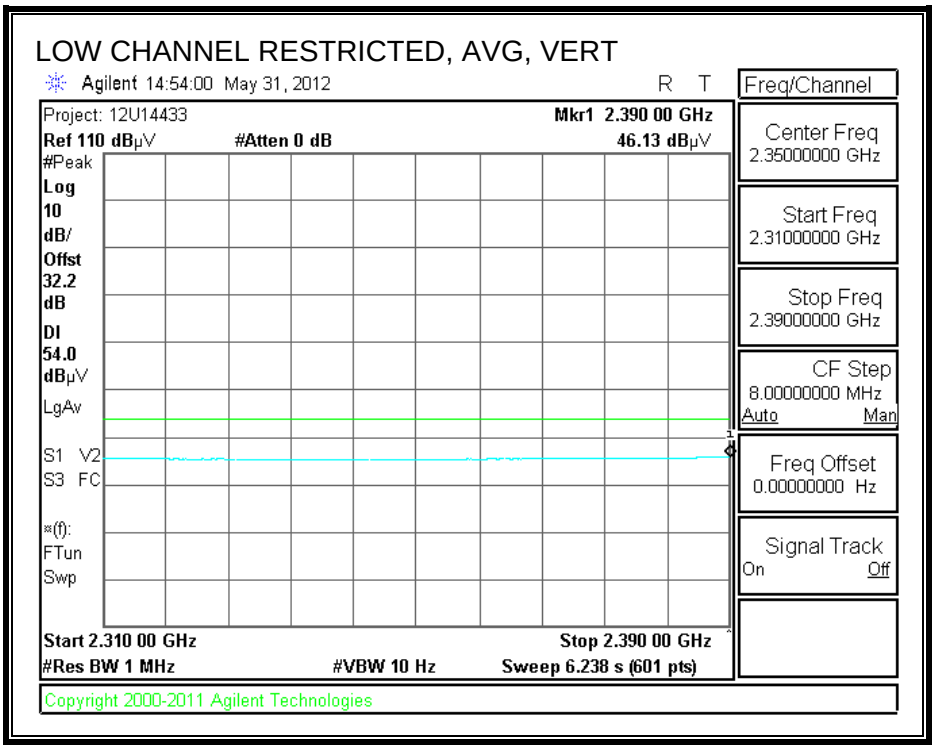
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



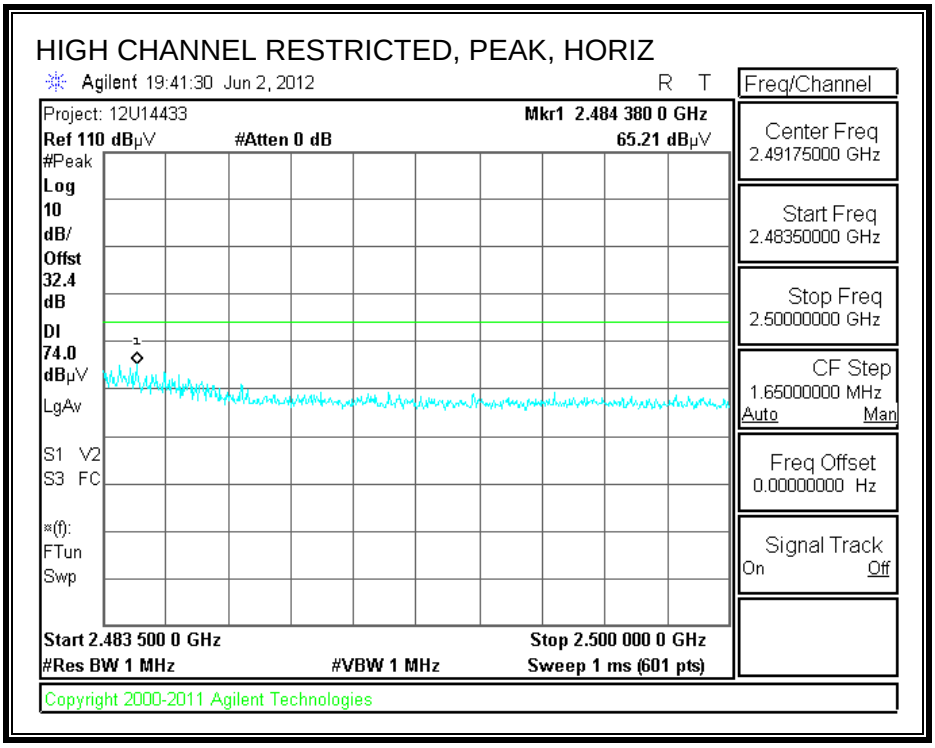


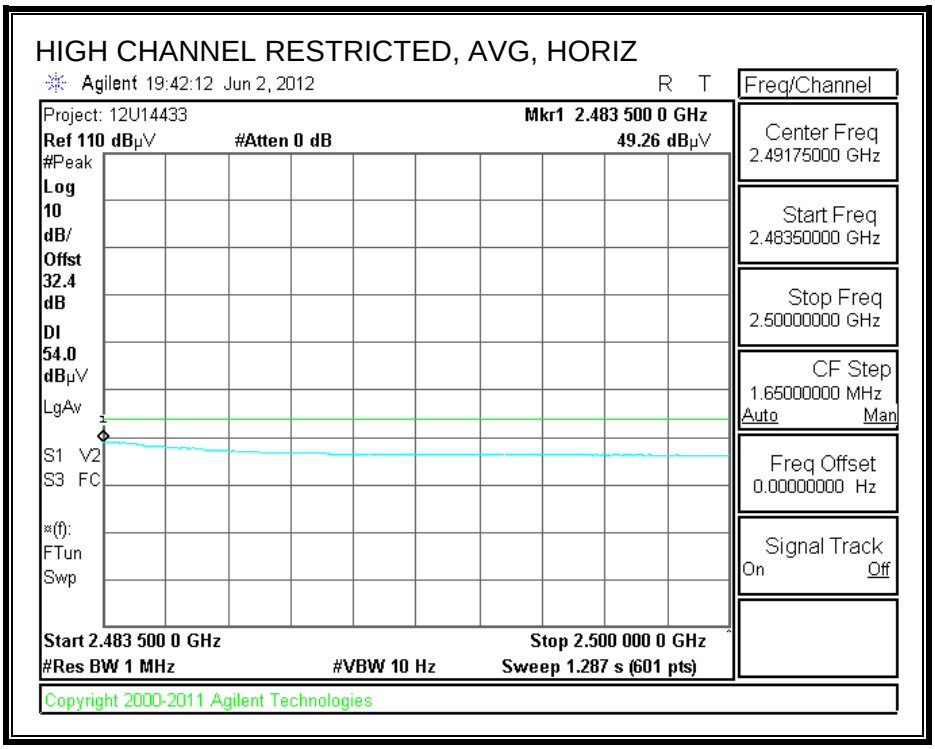
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



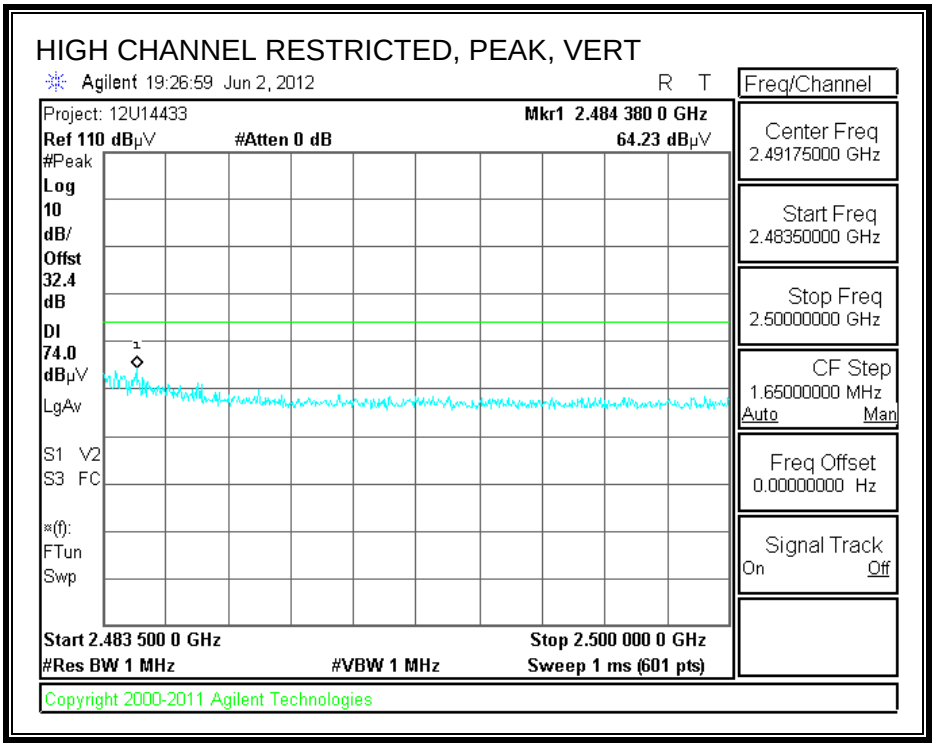


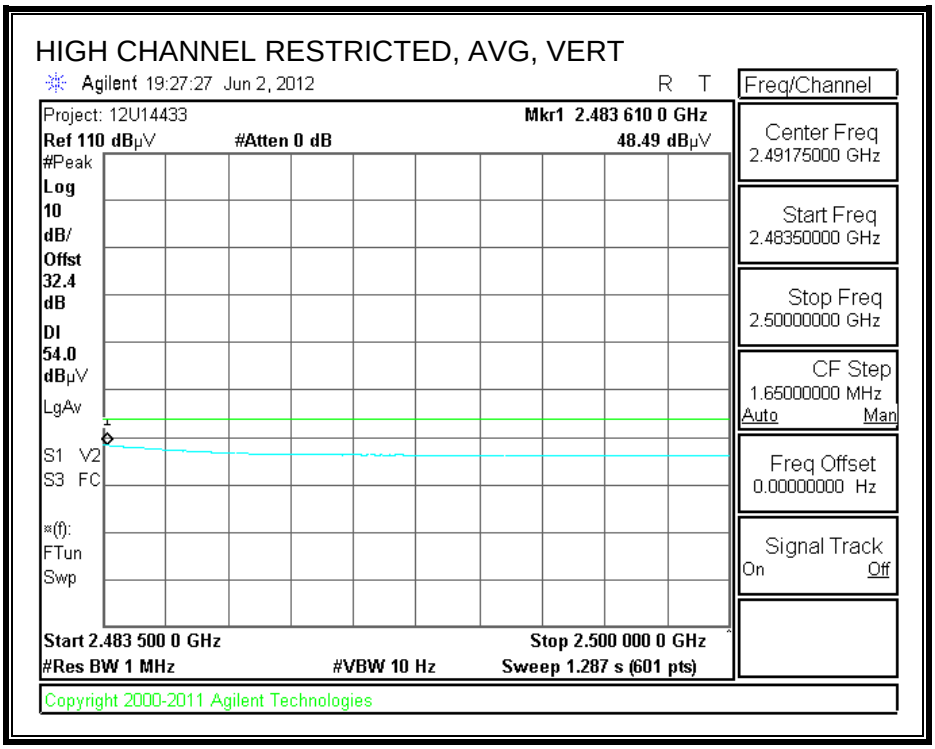
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 06/01/12
Project #: 12U14433
Company: LG Electronics
Test Target: FCC Class B
Mode Oper: 802.11n, TX mode

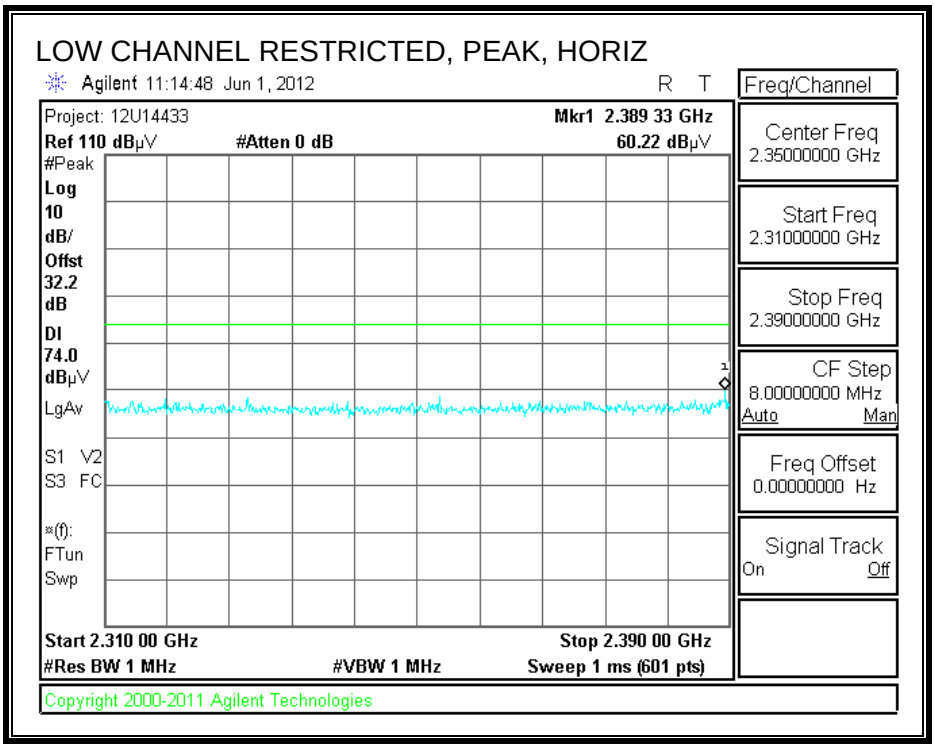
f	Measurement Frequency	Amp	Preamp Gain		Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters		Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m		Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength		Margin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

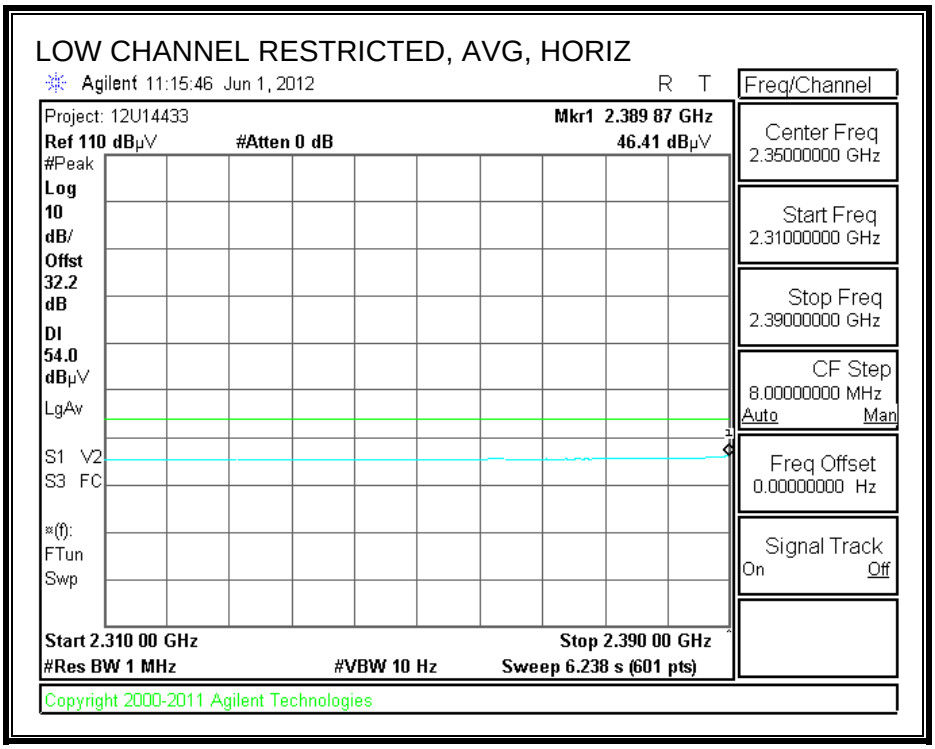
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
2412 MHz 11n													
4.824	3.0	39.4	33.1	6.3	-34.8	0.0	0.0	44.0	74.0	-30.0	H	P	
4.824	3.0	26.3	33.1	6.3	-34.8	0.0	0.0	30.8	54.0	-23.2	H	A	
4.824	3.0	38.6	33.1	6.3	-34.8	0.0	0.0	43.2	74.0	-30.8	V	P	
4.824	3.0	25.8	33.1	6.3	-34.8	0.0	0.0	30.3	54.0	-23.7	V	A	
2437 MHz 11n													
4.874	3.0	39.5	33.1	6.3	-34.8	0.0	0.0	44.2	74.0	-29.8	V	P	
4.874	3.0	26.3	33.1	6.3	-34.8	0.0	0.0	31.0	54.0	-23.0	V	A	
4.874	3.0	40.5	33.1	6.3	-34.8	0.0	0.0	45.1	74.0	-28.9	H	P	
4.874	3.0	27.2	33.1	6.3	-34.8	0.0	0.0	31.8	54.0	-22.2	H	A	
2462 MHz 11n													
4.924	3.0	41.1	33.2	6.3	-34.8	0.0	0.0	45.8	74.0	-28.2	H	P	
4.924	3.0	27.8	33.2	6.3	-34.8	0.0	0.0	32.5	54.0	-21.5	H	A	
4.924	3.0	39.2	33.2	6.3	-34.8	0.0	0.0	43.9	74.0	-30.1	V	P	
4.924	3.0	26.6	33.2	6.3	-34.8	0.0	0.0	31.3	54.0	-22.7	V	A	

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

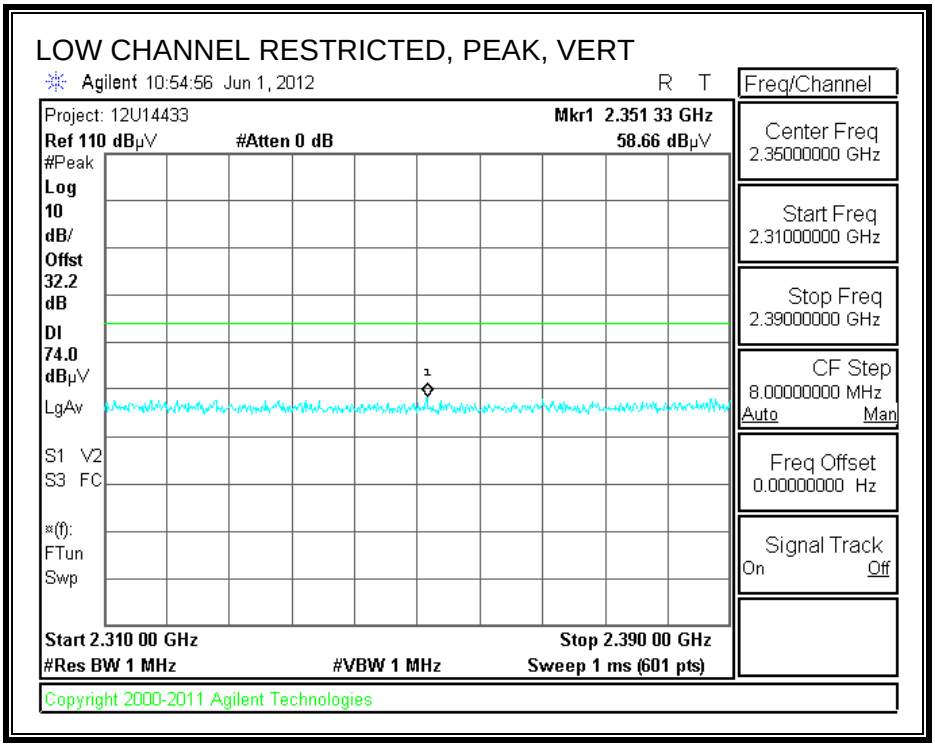
INDUCTIVE CHARGER WITH INDUCTIVE COVER

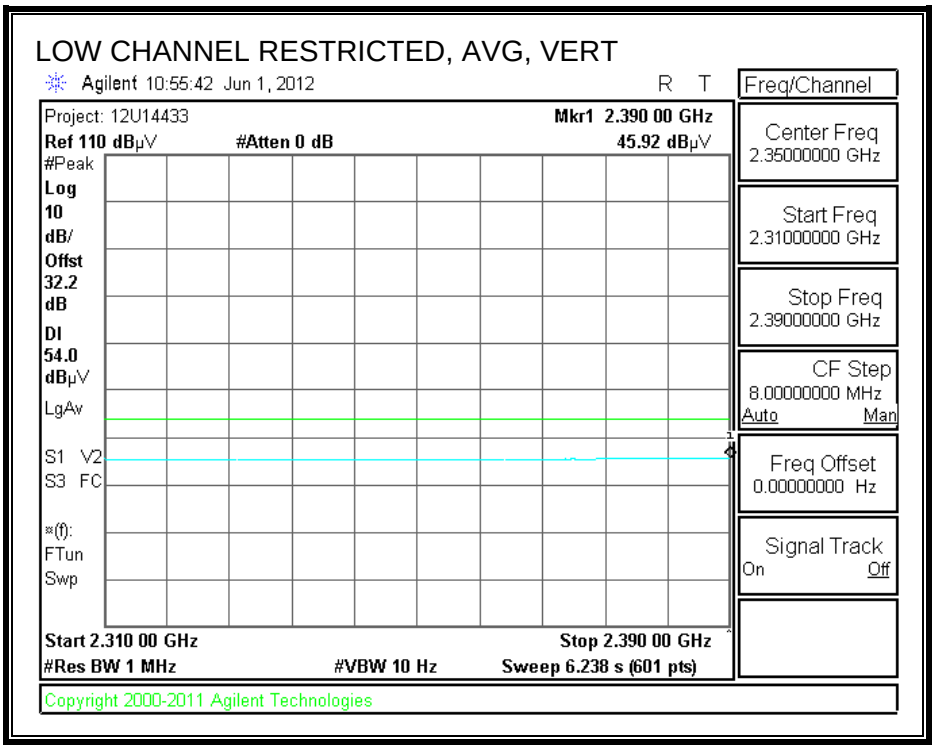
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



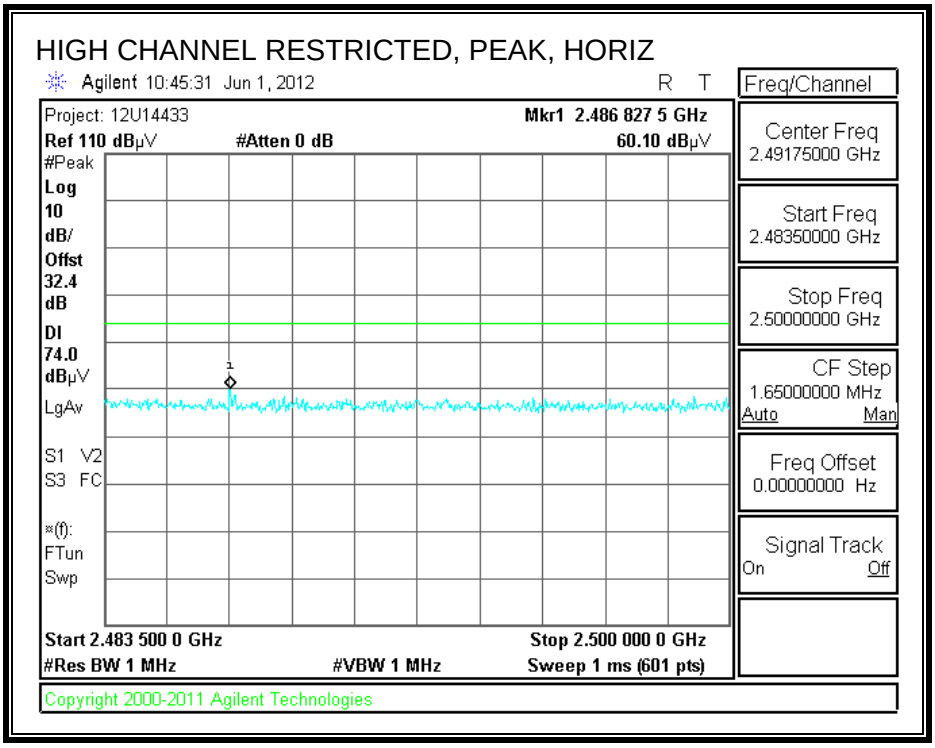


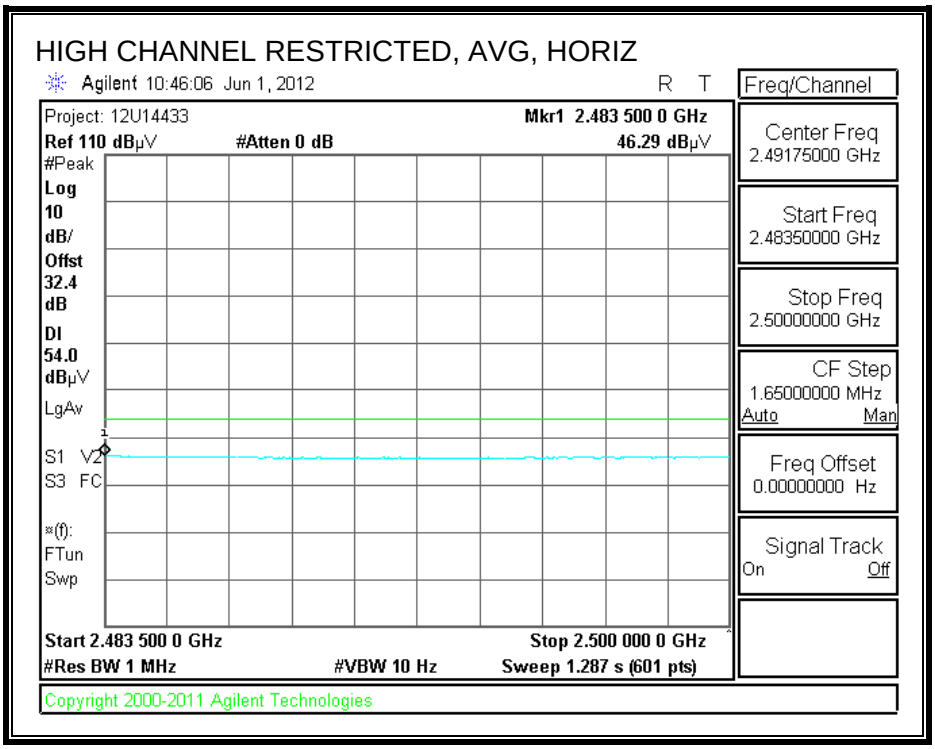
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



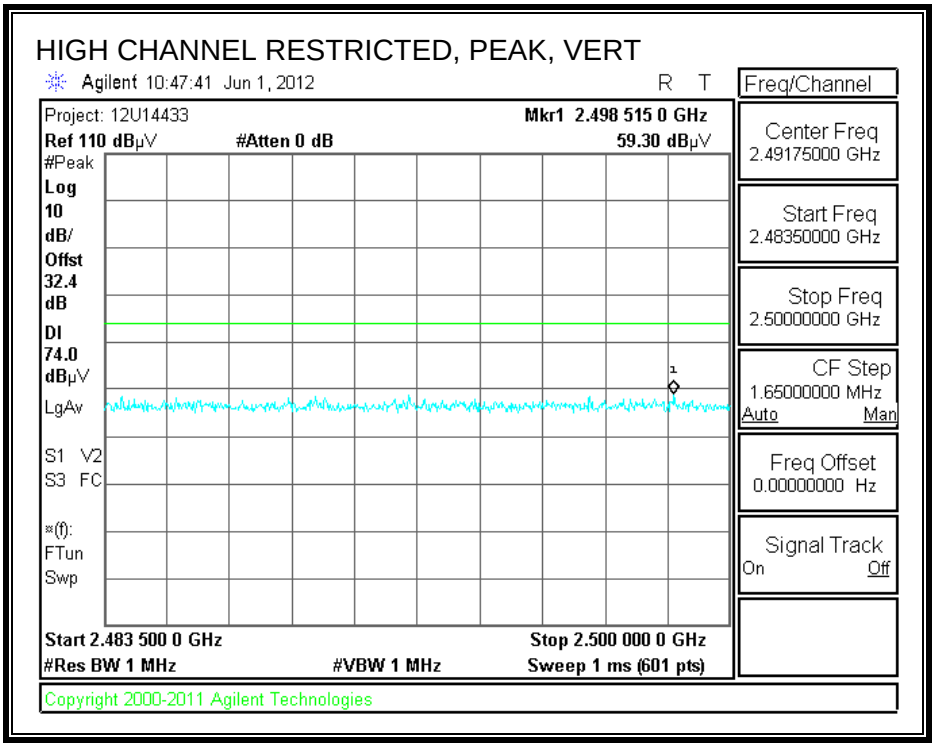


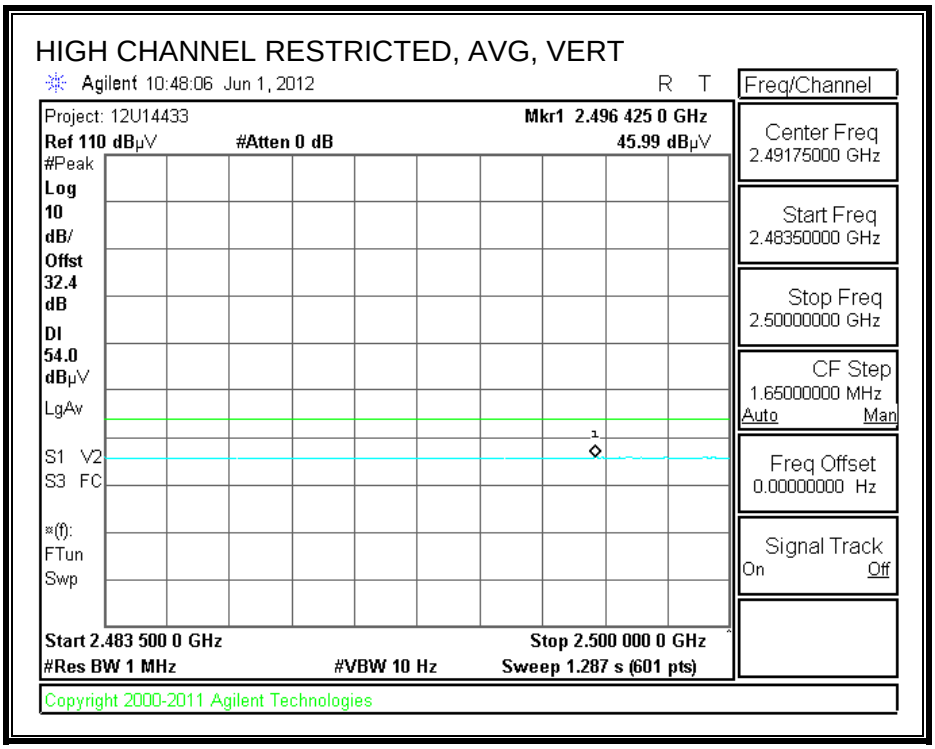
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 06/01/12
Project #: 12U14433
Company: LG Electronics
Test Target: FCC Class B
Mode Oper: 802.11n, TX mode

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	Notes
2412 MHz 11n													
4.824	3.0	38.1	33.1	6.3	-34.8	0.0	0.0	42.6	74.0	-31.4	H	P	
4.824	3.0	25.7	33.1	6.3	-34.8	0.0	0.0	30.2	54.0	-23.8	H	A	
4.824	3.0	39.4	33.1	6.3	-34.8	0.0	0.0	44.0	74.0	-30.0	V	P	
4.824	3.0	25.9	33.1	6.3	-34.8	0.0	0.0	30.5	54.0	-23.5	V	A	
2437 MHz 11n													
4.874	3.0	38.4	33.1	6.3	-34.8	0.0	0.0	43.1	74.0	-30.9	V	P	
4.874	3.0	25.4	33.1	6.3	-34.8	0.0	0.0	30.1	54.0	-23.9	V	A	
4.874	3.0	38.0	33.1	6.3	-34.8	0.0	0.0	42.6	74.0	-31.4	H	P	
4.874	3.0	25.2	33.1	6.3	-34.8	0.0	0.0	29.8	54.0	-24.2	H	A	
2462 MHz 11n													
4.924	3.0	38.0	33.2	6.3	-34.8	0.0	0.0	42.8	74.0	-31.2	H	P	
4.924	3.0	25.4	33.2	6.3	-34.8	0.0	0.0	30.1	54.0	-23.9	H	A	
4.924	3.0	39.7	33.2	6.3	-34.8	0.0	0.0	44.4	74.0	-29.6	V	P	
4.924	3.0	25.5	33.2	6.3	-34.8	0.0	0.0	30.2	54.0	-23.8	V	A	

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

7.2.4. 802.11a MODE IN THE 5.8 GHz BAND

STANDARD COVER

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 05/29/12
Project #: 12U14433
Company: LG Electronics
Test Target: FCC Class B
Mode Oper: 802.11a, W58 TX mode

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	Notes
5745 MHz 11a													
11.490	3.0	33.9	38.8	10.5	-32.9	0.0	0.7	51.0	74.0	-23.0	V	P	
11.490	3.0	23.3	38.8	10.5	-32.9	0.0	0.7	40.4	54.0	-13.6	V	A	
11.490	3.0	35.5	38.8	10.5	-32.9	0.0	0.7	52.7	74.0	-21.3	H	P	
11.490	3.0	28.9	38.8	10.5	-32.9	0.0	0.7	46.1	54.0	-7.9	H	A	
5785 MHz 11a													
11.570	3.0	34.8	38.9	10.6	-32.8	0.0	0.7	52.2	74.0	-21.8	H	P	
11.570	3.0	27.6	38.9	10.6	-32.8	0.0	0.7	45.0	54.0	-9.0	H	A	
11.570	3.0	33.8	38.9	10.6	-32.8	0.0	0.7	51.2	74.0	-22.8	V	P	
11.570	3.0	24.6	38.9	10.6	-32.8	0.0	0.7	42.0	54.0	-12.0	V	A	
5825 MHz 11a													
11.650	3.0	36.4	39.0	10.7	-32.7	0.0	0.7	54.0	74.0	-20.0	H	P	
11.650	3.0	29.2	39.0	10.7	-32.7	0.0	0.7	46.9	54.0	-7.1	H	A	
11.650	3.0	34.9	39.0	10.7	-32.7	0.0	0.7	52.6	74.0	-21.4	V	P	
11.650	3.0	25.6	39.0	10.7	-32.7	0.0	0.7	43.3	54.0	-10.7	V	A	

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

INDUCTIVE COVER

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 05/29/12
Project #: 12U14433
Company: LG Electronics
Test Target: FCC Class B
Mode Oper: 802.11a, W58 TX mode

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	Notes
5745 MHz 11a													
11.490	3.0	36.2	38.8	10.5	-32.9	0.0	0.7	53.4	74.0	-20.6	V	P	
11.490	3.0	25.6	38.8	10.5	-32.9	0.0	0.7	42.8	54.0	-11.2	V	A	
11.490	3.0	37.9	38.8	10.5	-32.9	0.0	0.7	55.0	74.0	-19.0	H	P	
11.490	3.0	31.3	38.8	10.5	-32.9	0.0	0.7	48.5	54.0	-5.5	H	A	
5785 MHz 11a													
11.570	3.0	37.2	38.9	10.6	-32.8	0.0	0.7	54.6	74.0	-19.4	H	P	
11.570	3.0	30.0	38.9	10.6	-32.8	0.0	0.7	47.4	54.0	-6.6	H	A	
11.570	3.0	36.1	38.9	10.6	-32.8	0.0	0.7	53.6	74.0	-20.4	V	P	
11.570	3.0	27.0	38.9	10.6	-32.8	0.0	0.7	44.4	54.0	-9.6	V	A	
5825 MHz 11a													
11.650	3.0	38.7	39.0	10.7	-32.7	0.0	0.7	56.4	74.0	-17.6	H	P	
11.650	3.0	31.6	39.0	10.7	-32.7	0.0	0.7	49.3	54.0	-4.7	H	A	
11.650	3.0	37.3	39.0	10.7	-32.7	0.0	0.7	54.9	74.0	-19.1	V	P	
11.650	3.0	28.0	39.0	10.7	-32.7	0.0	0.7	45.7	54.0	-8.3	V	A	

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

INDUCTIVE CHARGER WITH INDUCTIVE COVER

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 05/29/12
Project #: 12U14433
Company: LG Electronics
Test Target: FCC Class B
Mode Oper: 802.11a, W58 TX mode

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	Notes
5745 MHz 11a													
11.490	3.0	35.6	38.8	10.5	-32.9	0.0	0.7	52.7	74.0	-21.3	H	P	
11.490	3.0	23.2	38.8	10.5	-32.9	0.0	0.7	40.4	54.0	-13.6	H	A	
11.490	3.0	37.2	38.8	10.5	-32.9	0.0	0.7	54.4	74.0	-19.7	V	P	
11.490	3.0	29.3	38.8	10.5	-32.9	0.0	0.7	46.4	54.0	-7.6	V	A	
5785 MHz 11a													
11.570	3.0	36.8	38.9	10.6	-32.8	0.0	0.7	54.2	74.0	-19.8	V	P	
11.570	3.0	27.2	38.9	10.6	-32.8	0.0	0.7	44.6	54.0	-9.4	V	A	
11.570	3.0	35.8	38.9	10.6	-32.8	0.0	0.7	53.2	74.0	-20.8	H	P	
11.570	3.0	24.3	38.9	10.6	-32.8	0.0	0.7	41.7	54.0	-12.3	H	A	
5825 MHz 11a													
11.650	3.0	37.2	39.0	10.7	-32.7	0.0	0.7	54.9	74.0	-19.1	V	P	
11.650	3.0	29.5	39.0	10.7	-32.7	0.0	0.7	47.1	54.0	-6.9	V	A	
11.650	3.0	37.0	39.0	10.7	-32.7	0.0	0.7	54.7	74.0	-19.3	H	P	
11.650	3.0	27.0	39.0	10.7	-32.7	0.0	0.7	44.7	54.0	-9.3	H	A	

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

7.2.5. 802.11n HT20 MODE IN THE 5.8 GHz BAND

STANDARD COVER

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 05/29/12
Project #: 12U14433
Company: LG Electronics
Test Target: FCC Class B
Mode Oper: 802.11n, W58 TX mode

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	Notes
5745 MHz 11n													
11.490	3.0	33.9	38.8	10.5	-32.9	0.0	0.7	51.1	74.0	-22.9	H	P	
11.490	3.0	24.3	38.8	10.5	-32.9	0.0	0.7	41.5	54.0	-12.5	H	A	
11.490	3.0	33.7	38.8	10.5	-32.9	0.0	0.7	50.9	74.0	-23.1	V	P	
11.490	3.0	23.3	38.8	10.5	-32.9	0.0	0.7	40.5	54.0	-13.5	V	A	
5785 MHz 11n													
11.570	3.0	33.7	38.9	10.6	-32.8	0.0	0.7	51.1	74.0	-22.9	V	P	
11.570	3.0	24.9	38.9	10.6	-32.8	0.0	0.7	42.3	54.0	-11.7	V	A	
11.570	3.0	34.0	38.9	10.6	-32.8	0.0	0.7	51.4	74.0	-22.6	H	P	
11.570	3.0	24.9	38.9	10.6	-32.8	0.0	0.7	42.3	54.0	-11.7	H	A	
5825 MHz 11n													
11.650	3.0	34.3	39.0	10.7	-32.7	0.0	0.7	52.0	74.0	-22.0	V	P	
11.650	3.0	25.4	39.0	10.7	-32.7	0.0	0.7	43.1	54.0	-10.9	V	A	
11.650	3.0	35.9	39.0	10.7	-32.7	0.0	0.7	53.6	74.0	-20.4	H	P	
11.650	3.0	27.6	39.0	10.7	-32.7	0.0	0.7	45.3	54.0	-8.7	H	A	

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

INDUCTIVE COVER

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 05/29/12
Project #: 12U14433
Company: LG Electronics
Test Target: FCC Class B
Mode Oper: 802.11n, W58 TX mode

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	Notes
5745 MHz 11n													
11.490	3.0	36.3	38.8	10.5	-32.9	0.0	0.7	53.4	74.0	-20.6	H	P	
11.490	3.0	26.7	38.8	10.5	-32.9	0.0	0.7	43.9	54.0	-10.1	H	A	
11.490	3.0	36.0	38.8	10.5	-32.9	0.0	0.7	53.2	74.0	-20.8	V	P	
11.490	3.0	25.6	38.8	10.5	-32.9	0.0	0.7	42.8	54.0	-11.2	V	A	
5785 MHz 11n													
11.570	3.0	36.0	38.9	10.6	-32.8	0.0	0.7	53.5	74.0	-20.5	V	P	
11.570	3.0	27.2	38.9	10.6	-32.8	0.0	0.7	44.7	54.0	-9.3	V	A	
11.570	3.0	36.3	38.9	10.6	-32.8	0.0	0.7	53.8	74.0	-20.2	H	P	
11.570	3.0	27.3	38.9	10.6	-32.8	0.0	0.7	44.7	54.0	-9.3	H	A	
5825 MHz 11n													
11.650	3.0	36.7	39.0	10.7	-32.7	0.0	0.7	54.4	74.0	-19.6	V	P	
11.650	3.0	27.7	39.0	10.7	-32.7	0.0	0.7	45.4	54.0	-8.6	V	A	
11.650	3.0	38.3	39.0	10.7	-32.7	0.0	0.7	56.0	74.0	-18.0	H	P	
11.650	3.0	30.0	39.0	10.7	-32.7	0.0	0.7	47.7	54.0	-6.3	H	A	

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

INDUCTIVE CHARGER WITH INDUCTIVE COVER

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 05/29/12
Project #: 12U14433
Company: LG Electronics
Test Target: FCC Class B
Mode Oper: 802.11n, W58 TX mode

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	Notes
5745 MHz 11n													
11.490	3.0	36.1	38.8	10.5	-32.9	0.0	0.7	53.3	74.0	-20.7	H	P	
11.490	3.0	22.9	38.8	10.5	-32.9	0.0	0.7	40.0	54.0	-14.0	H	A	
11.490	3.0	35.7	38.8	10.5	-32.9	0.0	0.7	52.9	74.0	-21.1	V	P	
11.490	3.0	25.9	38.8	10.5	-32.9	0.0	0.7	43.0	54.0	-11.0	V	A	
5785 MHz 11n													
11.570	3.0	36.6	38.9	10.6	-32.8	0.0	0.7	54.0	74.0	-20.0	V	P	
11.570	3.0	25.7	38.9	10.6	-32.8	0.0	0.7	43.2	54.0	-10.8	V	A	
11.570	3.0	35.9	38.9	10.6	-32.8	0.0	0.7	53.3	74.0	-20.7	H	P	
11.570	3.0	25.9	38.9	10.6	-32.8	0.0	0.7	43.3	54.0	-10.7	H	A	
5825 MHz 11n													
11.650	3.0	38.1	39.0	10.7	-32.7	0.0	0.7	55.8	74.0	-18.2	V	P	
11.650	3.0	29.4	39.0	10.7	-32.7	0.0	0.7	47.1	54.0	-6.9	V	A	
11.650	3.0	37.3	39.0	10.7	-32.7	0.0	0.7	55.0	74.0	-19.0	H	P	
11.650	3.0	29.7	39.0	10.7	-32.7	0.0	0.7	47.4	54.0	-6.7	H	A	

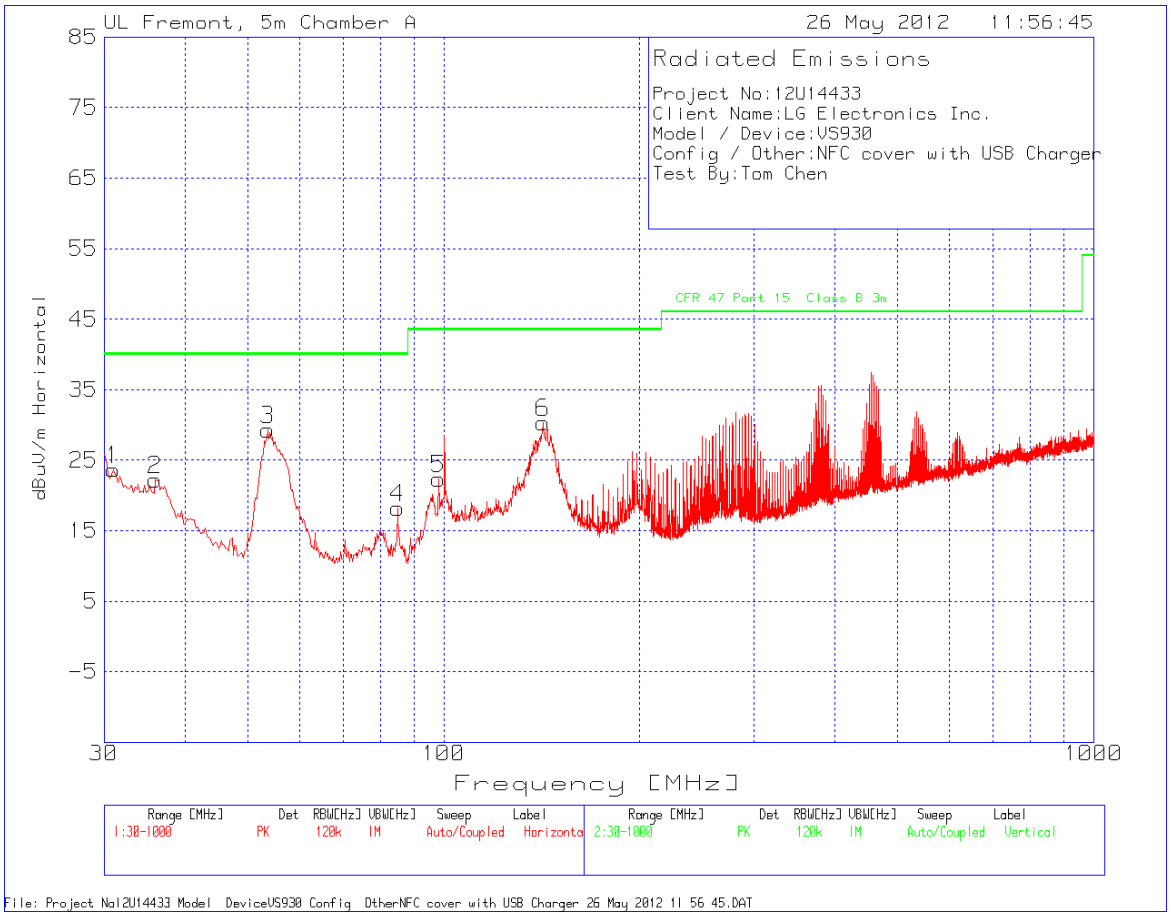
Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

8. WORST-CASE BELOW 1 GHz

STANDARD COVER

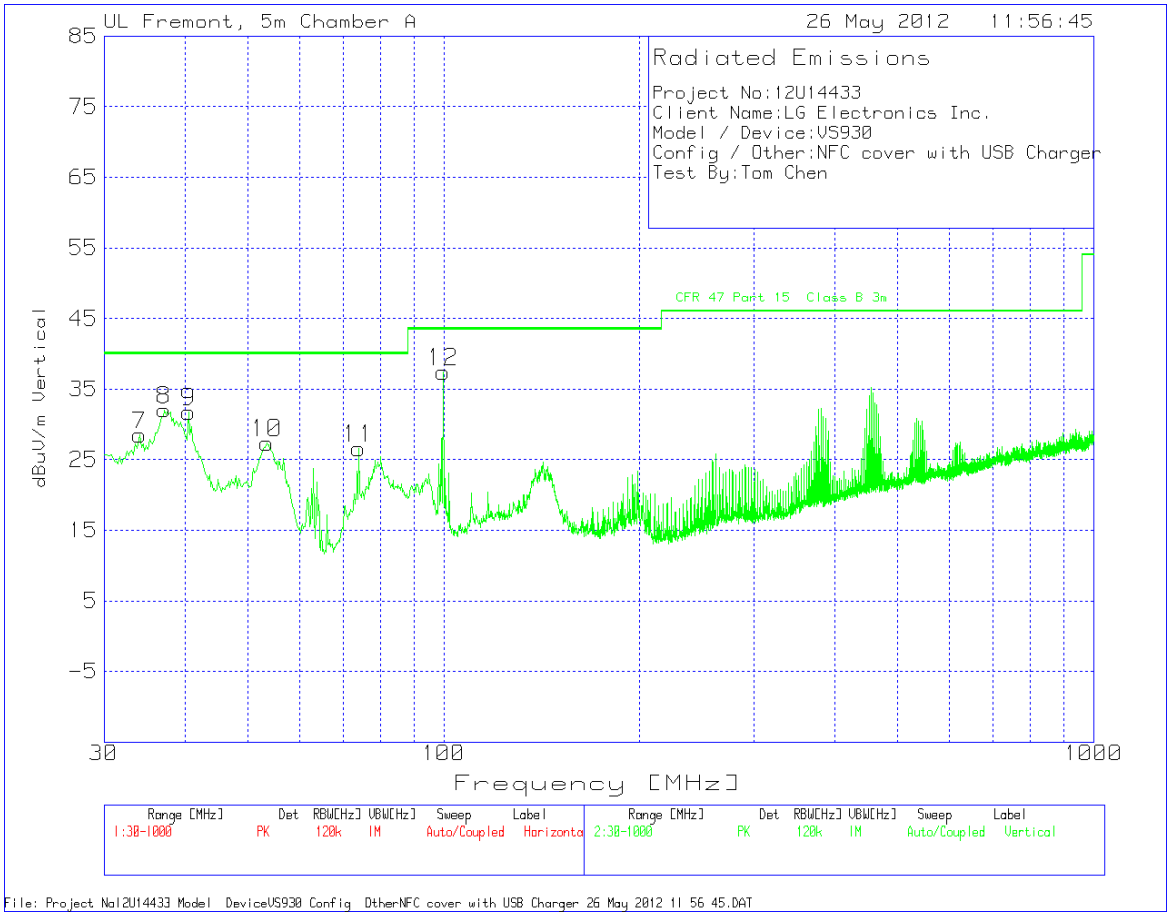
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



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

VERTICAL PLOT



HORIZONTAL AND VERTICAL DATA

Project No:12U14433
Client Name:LG Electronics Inc.
Model / Device:VS930
Config / Other:NFC cover with USB Charger
Test By:Tom Chen

Horizontal 30 - 1000MHz

Test Frequency	Meter Reading	Detector	25MHz-1GHz ChmbrA Amplified.TX (dB)	T243 Sunol Bilog.TXT (dB)	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Polarity
30.9692	30.79	PK	-27.5	20.4	23.69	40	-16.31	Horz
36.0092	32.85	PK	-27.5	16.9	22.25	40	-17.75	Horz
53.6491	49.25	PK	-27.3	7.3	29.25	40	-10.75	Horz
84.8581	38.02	PK	-27.1	7.3	18.22	40	-21.78	Horz
98.2334	39.54	PK	-26.9	9.7	22.34	43.5	-21.16	Horz
142.2362	44.22	PK	-26.6	12.7	30.32	43.5	-13.18	Horz

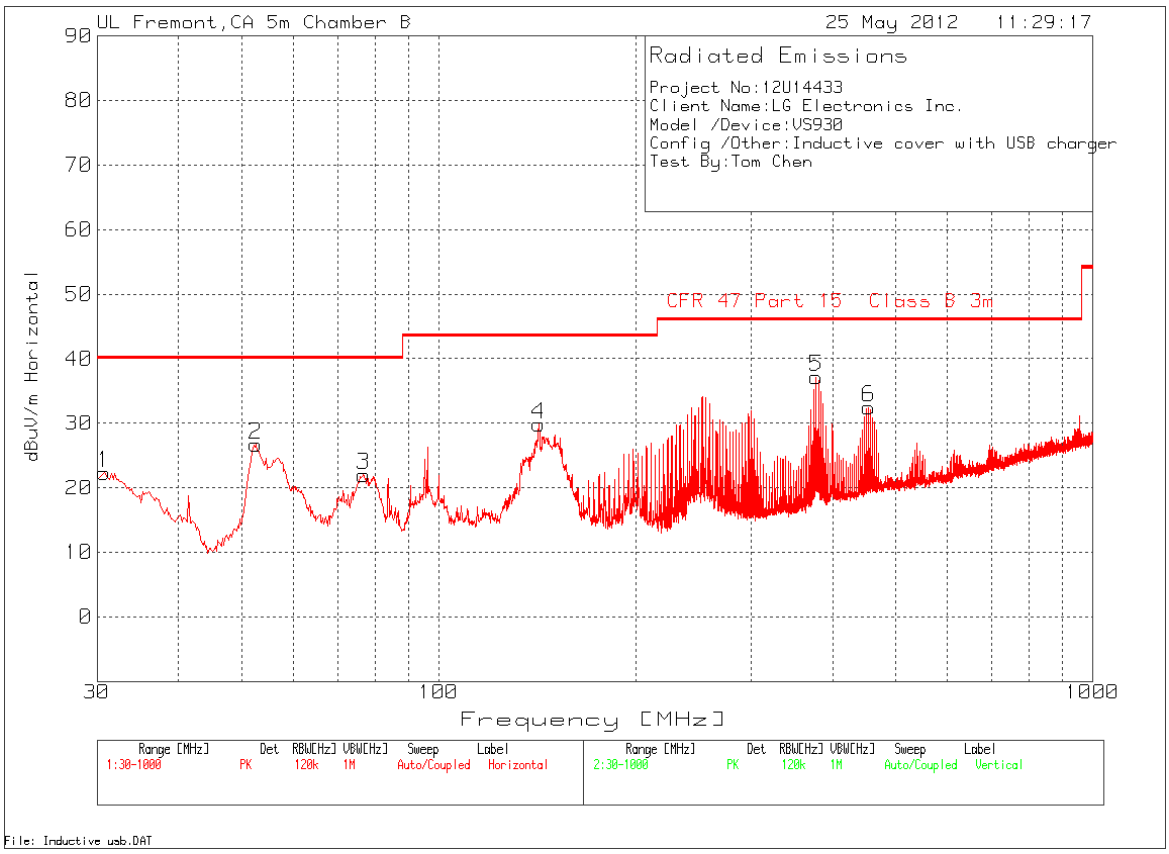
Vertical 30 - 1000MHz

Test Frequency	Meter Reading	Detector	25MHz-1GHz ChmbrA Amplified.TX (dB)	T243 Sunol Bilog.TXT (dB)	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Polarity
34.0707	37.77	PK	-27.6	18.3	28.47	40	-11.53	Vert
37.1723	43.47	PK	-27.4	16	32.07	40	-7.93	Vert
40.4676	45.46	PK	-27.3	13.6	31.76	40	-8.24	Vert
53.4552	47.35	PK	-27.3	7.3	27.35	40	-12.65	Vert
74.0028	45.69	PK	-27.1	8	26.59	40	-13.41	Vert
99.7842	54.17	PK	-26.9	10.1	37.37	43.5	-6.13	Vert

INDUCTIVE COVER

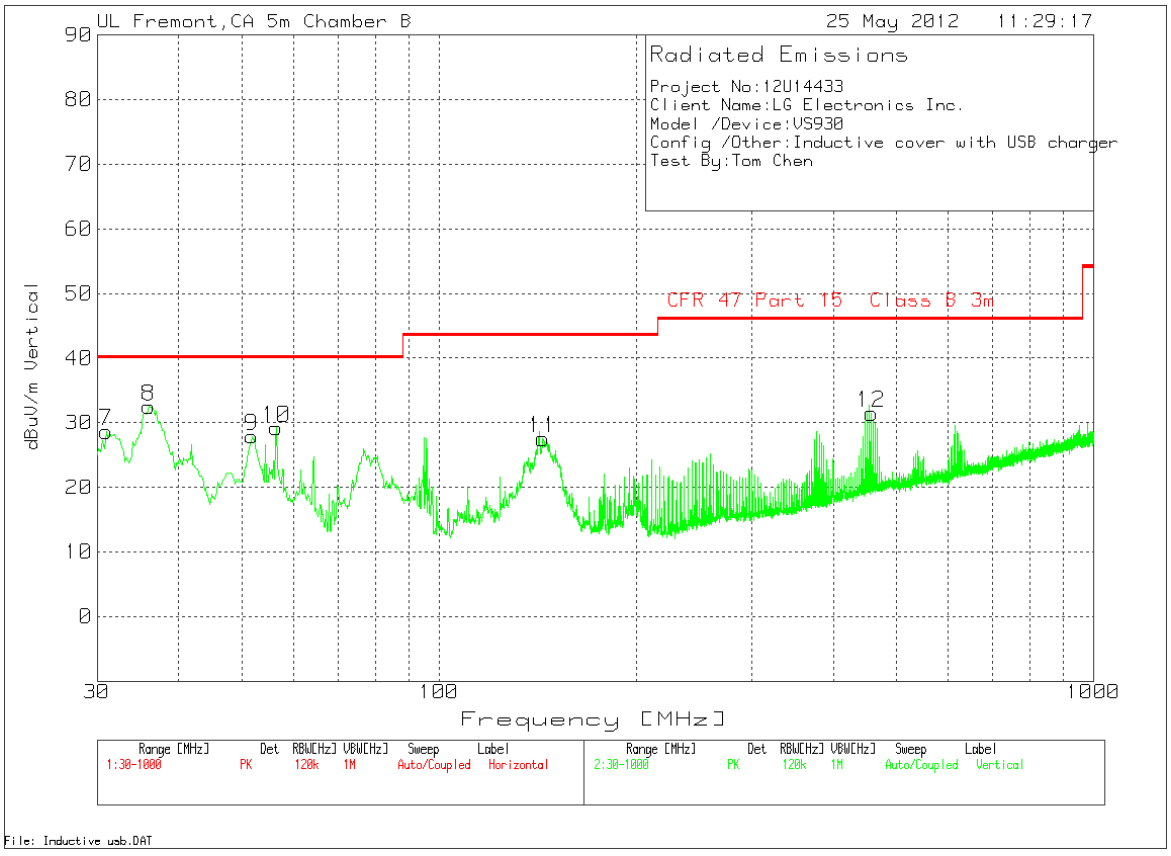
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



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

VERTICAL PLOT



HORIZONTAL AND VERTICAL DATA

Project No:12U14433
Client Name:LG Electronics Inc.
Model /Device:VS930
Config /Other:Inductive cover with USB charger
Test By:Tom Chen

Horizontal 30 - 1000MHz

Test Frequency	Meter Reading	Detector	T122 Sunol Bilog.TXT (dB)	5mB Amp Path 30-1000MHz (dB)	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Polarity
30.7754	30.71	PK	20.9	-29.3	22.31	40	-17.69	Horz
52.486	48.09	PK	7.6	-29	26.69	40	-13.31	Horz
76.7166	42.82	PK	8	-28.8	22.02	40	-17.98	Horz
142.2362	44.96	PK	13	-28.1	29.86	43.5	-13.64	Horz
377.5639	48.93	PK	15	-26.8	37.13	46	-8.87	Horz
454.5204	42.55	PK	16.9	-27	32.45	46	-13.55	Horz

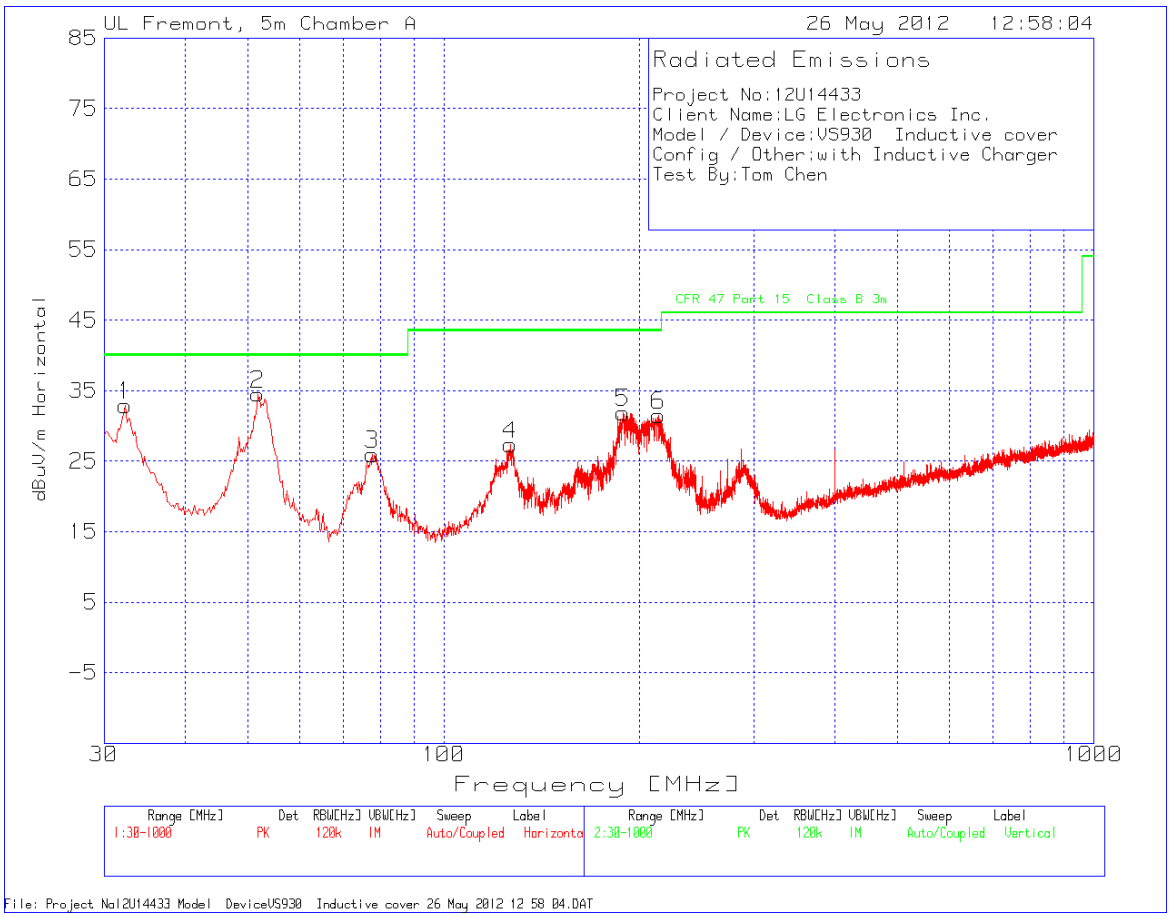
Vertical 30 - 1000MHz

Test Frequency	Meter Reading	Detector	T122 Sunol Bilog.TXT (dB)	5mB Amp Path 30-1000MHz (dB)	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Polarity
30.9692	37.22	PK	20.7	-29.3	28.62	40	-11.38	Vert
36.0092	44.92	PK	16.8	-29.2	32.52	40	-7.48	Vert
51.7106	49.22	PK	7.7	-29	27.92	40	-12.08	Vert
56.3629	51.03	PK	7.2	-29	29.23	40	-10.77	Vert
143.9808	42.82	PK	12.8	-28.1	27.52	43.5	-15.98	Vert
457.6219	41.44	PK	17	-27	31.44	46	-14.56	Vert

INDUCTIVE CHARGER WITH INDUCTIVE COVER

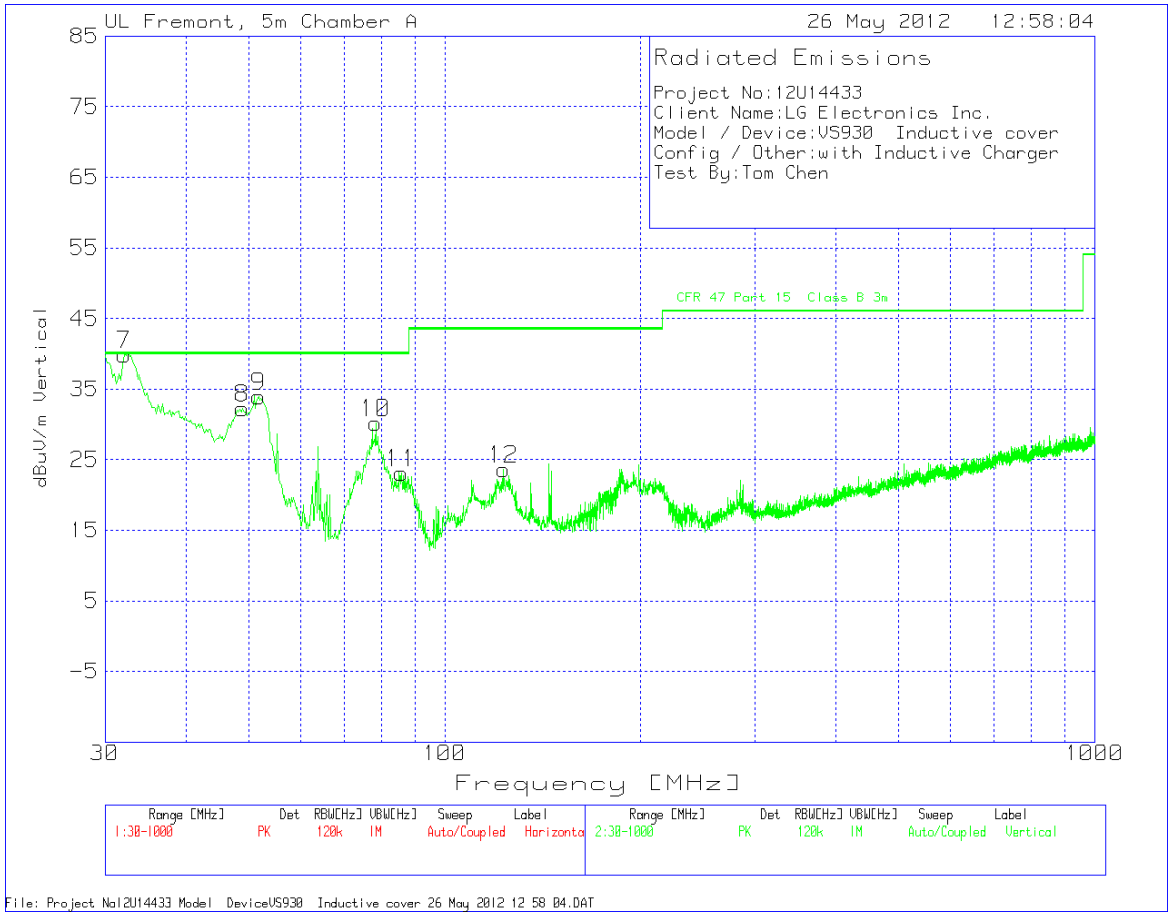
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



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

VERTICAL PLOT



HORIZONTAL AND VERTICAL DATA

Project No:12U14433
Client Name:LG Electronics Inc.
Model / Device:VS930
Config / Other: Inductive cover with Inductive Charger
Test By:Tom Chen

Horizontal 30 - 1000MHz

Test Frequency	Meter Reading	Detector	25MHz-1GHz ChmbrA Amplified.TX (dB)	T243 Sunol Bilog.TXT (dB)	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Polarity
32.3261	41.05	PK	-27.6	19.5	32.95	40	-7.05	Horz
51.7106	54.12	PK	-27.2	7.6	34.52	40	-5.48	Horz
77.6859	45.28	PK	-27.1	7.8	25.98	40	-14.02	Horz
126.7286	40.31	PK	-26.8	13.8	27.31	43.5	-16.19	Horz
188.759	46.89	PK	-26.3	11.3	31.89	43.5	-11.61	Horz
214.3465	47.18	PK	-26.2	10.5	31.48	43.5	-12.02	Horz

Vertical 30 - 1000MHz

Test Frequency	Meter Reading	Detector	25MHz-1GHz ChmbrA Amplified.TX (dB)	T243 Sunol Bilog.TXT (dB)	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Polarity
32.086	47.53	QP	-27.5	19.7	39.73	40	-0.27	Vert
48.803	51.02	PK	-27.3	8.5	32.22	40	-7.78	Vert
51.7106	53.56	PK	-27.2	7.6	33.96	40	-6.04	Vert
78.2674	49.49	PK	-27.1	7.8	30.19	40	-9.81	Vert
85.8273	42.77	PK	-27	7.4	23.17	40	-16.83	Vert
123.2394	36.36	PK	-26.7	14	23.66	43.5	-19.84	Vert

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

STANDARD COVER

6 WORST EMISSIONS

Project No:12U14433
Client Name:LG Electronics Inc.
Model/Device:VS930 / NFC cover
Test Volt/Freq:120 VAC / 60 Hz, USB Charger
Test By:Tom Chen

Line-L1 .15 - 30MHz

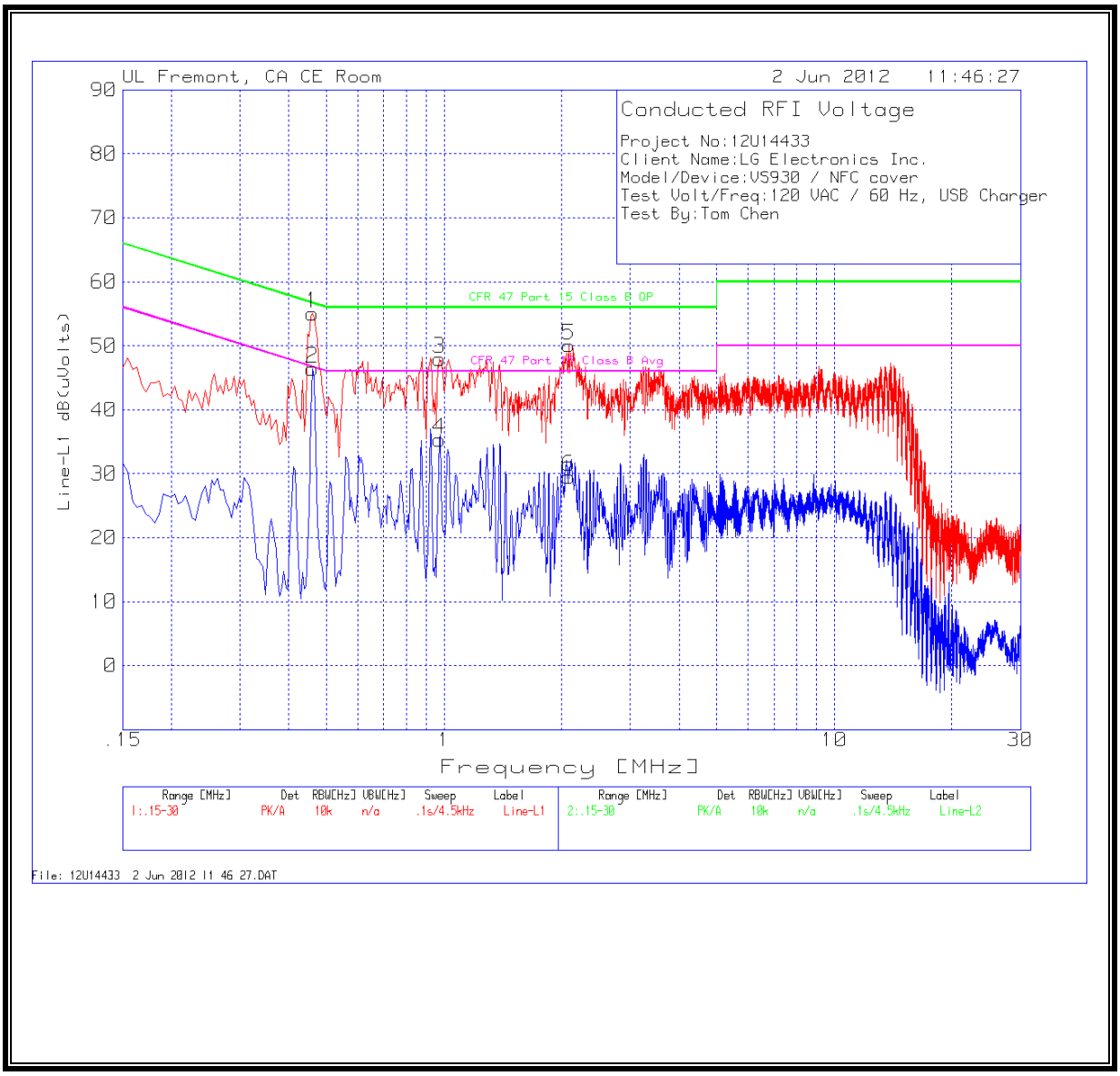
Test Frequency	Meter Reading	Detector	T24 IL L1.TXT (dB)	LC Cables 1&3.TXT (dB)	dB(uVolts)	CFR 47 Part 15 Class B QP	Margin	CFR 47 Part 15 Class B Avg	Margin
0.4605	54.91	PK	0.1	0	55.01	56.7	-1.69	-	-
0.4605	46.34	Av	0.1	0	46.44	-	-	46.7	-0.26
0.9735	47.82	PK	0.1	0	47.92	56	-8.08	-	-
0.9735	35.23	Av	0.1	0	35.33	-	-	46	-10.67
2.085	49.89	PK	0.1	0.1	50.09	56	-5.91	-	-
2.085	29.36	Av	0.1	0.1	29.56	-	-	46	-16.44

Line-L2 .15 - 30MHz

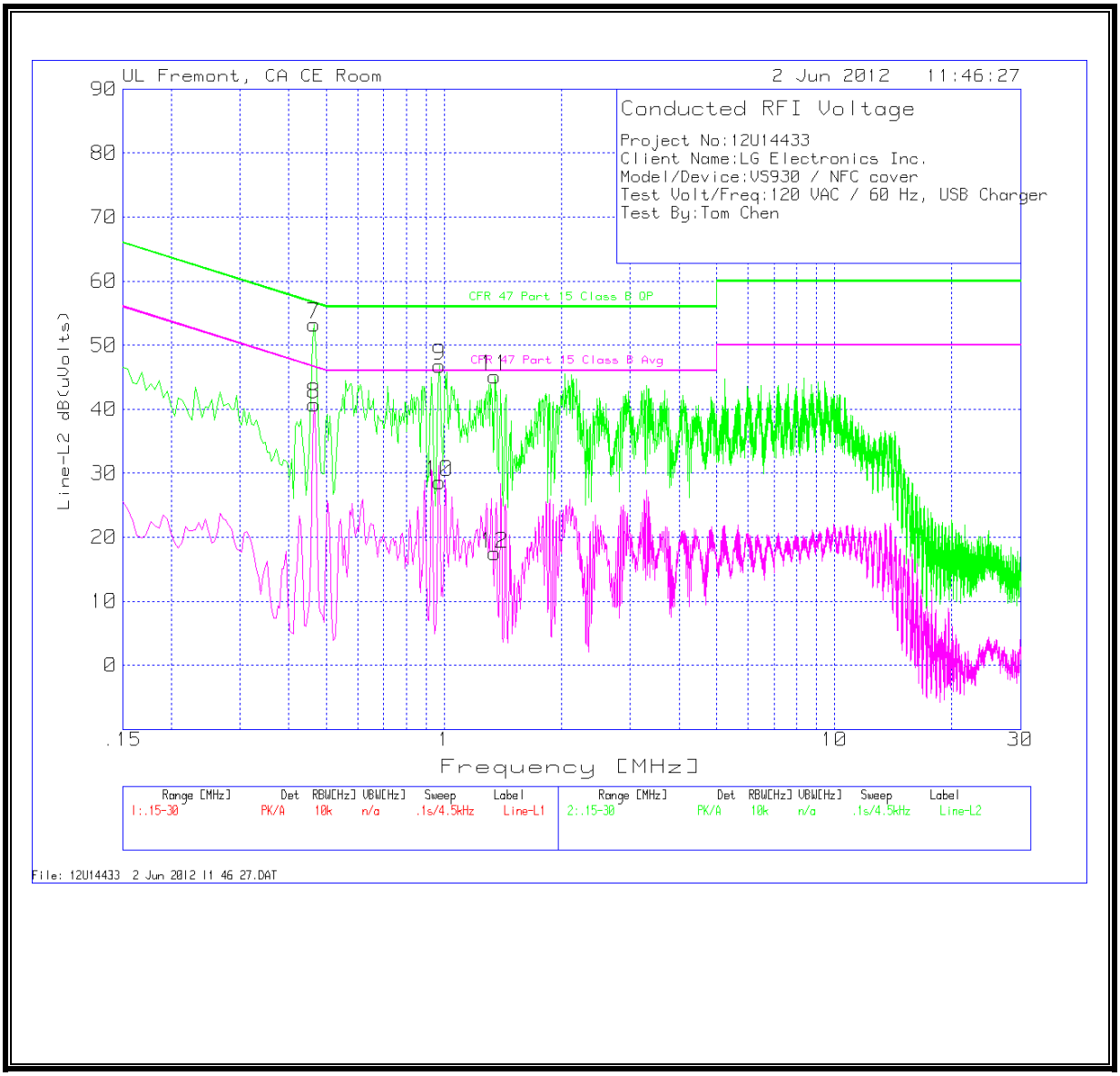
Test Frequency	Meter Reading	Detector	T24 IL L2.TXT (dB)	LC Cables 2&3.TXT (dB)	dB(uVolts)	CFR 47 Part 15 Class B QP	Margin	CFR 47 Part 15 Class B Avg	Margin
0.465	53.1	PK	0.1	0	53.2	56.6	-3.4	-	-
0.465	40.67	Av	0.1	0	40.77	-	-	46.6	-5.83
0.9735	46.56	PK	0.1	0.1	46.76	56	-9.24	-	-
0.9735	28.43	Av	0.1	0.1	28.63	-	-	46	-17.37
1.347	44.98	PK	0.1	0.1	45.18	56	-10.82	-	-
1.347	17.28	Av	0.1	0.1	17.48	-	-	46	-28.52

STANDARD COVER

LINE 1 RESULTS



LINE 2 RESULTS



RESULTS

INDUCTIVE COVER

6 WORST EMISSIONS

Project No:12U14433
Client Name:LG Electronics Inc.
Model/Device:VS930 / Inductive cover, USB charger
Test Volt/Freq:120 VAC / 60 Hz
Test By:Tom Chen

Line-L1 .15 - 30MHz

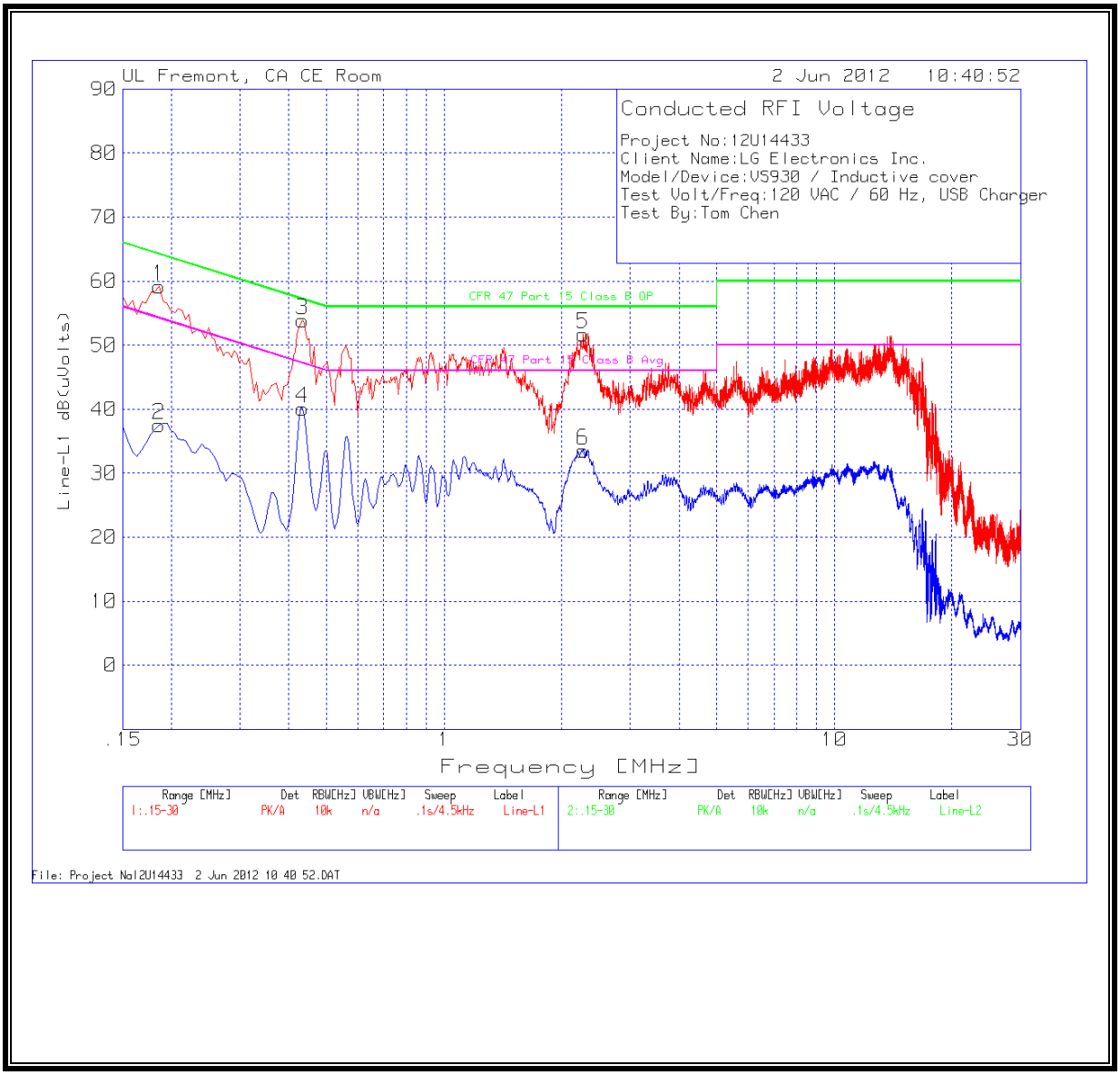
Test Frequency	Meter Reading	Detector	T24 IL L1.TXT (dB)	LC Cables 1&3.TXT (dB)	dB(uVolts)	CFR 47 Part 15 Class B QP	Margin	CFR 47 Part 15 Class B Avg	Margin
0.186	59.04	PK	0.1	0	59.14	64.2	-5.06	-	-
0.186	37.37	Av	0.1	0	37.47	-	-	54.2	-16.73
0.4335	53.83	PK	0.1	0	53.93	57.2	-3.27	-	-
0.4335	39.99	Av	0.1	0	40.09	-	-	47.2	-7.11
2.274	51.51	PK	0.1	0.1	51.71	56	-4.29	-	-
2.274	33.31	Av	0.1	0.1	33.51	-	-	46	-12.49

Line-L2 .15 - 30MHz

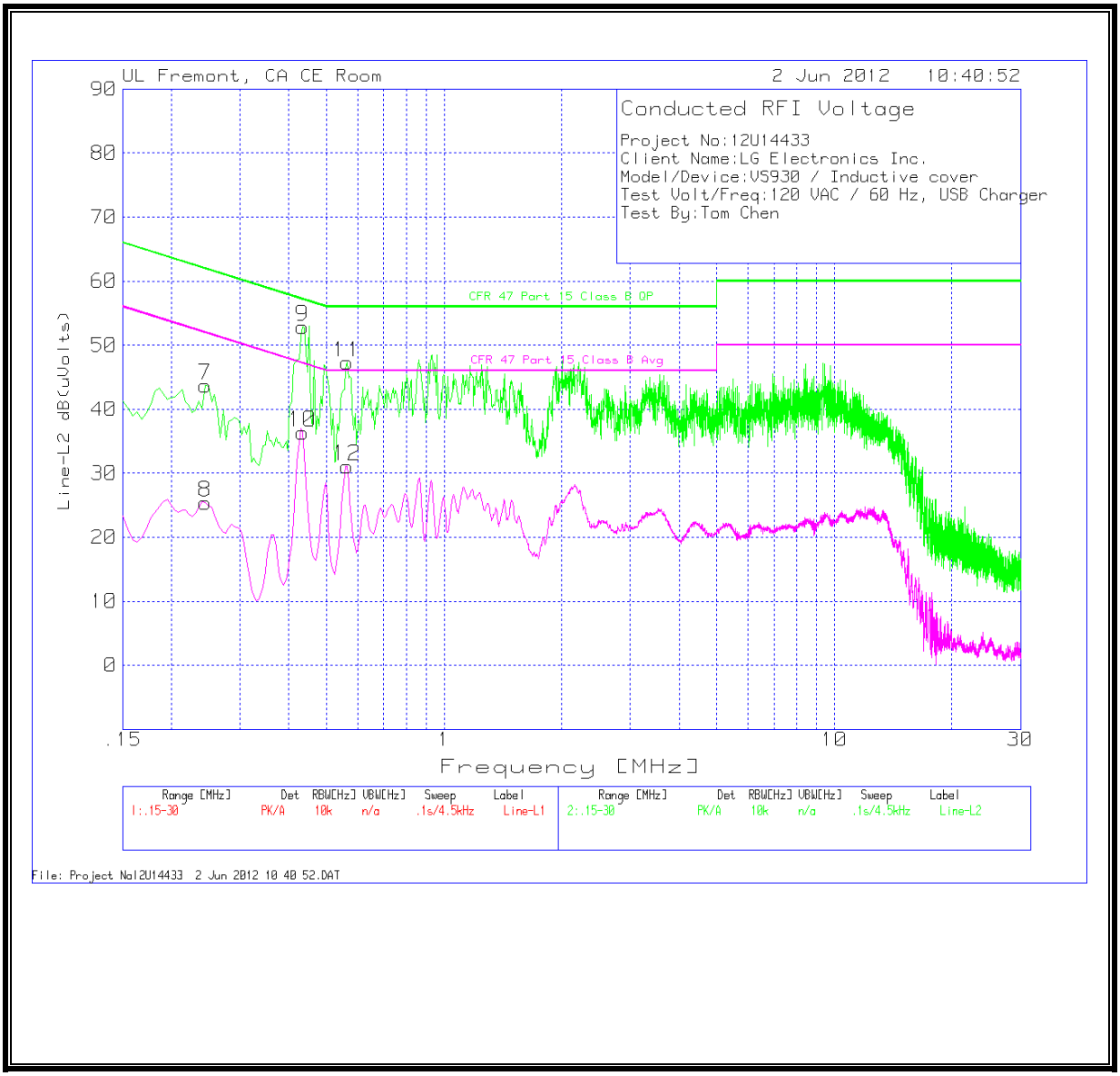
Test Frequency	Meter Reading	Detector	T24 IL L2.TXT (dB)	LC Cables 2&3.TXT (dB)	dB(uVolts)	CFR 47 Part 15 Class B QP	Margin	CFR 47 Part 15 Class B Avg	Margin
0.2445	43.57	PK	0.1	0	43.67	61.9	-18.23	-	-
0.2445	25.36	Av	0.1	0	25.46	-	-	51.9	-26.44
0.4335	52.74	PK	0.1	0	52.84	57.2	-4.36	-	-
0.4335	36.22	Av	0.1	0	36.32	-	-	47.2	-10.88
0.564	47.16	PK	0.1	0	47.26	56	-8.74	-	-
0.564	30.94	Av	0.1	0	31.04	-	-	46	-14.96

INDUCTIVE COVER

LINE 1 RESULTS



LINE 2 RESULTS



RESULTS

INDUCTIVE CHARGER PAD

EUT WITH ANTENNA

6 WORST EMISSIONS

Project No:12U14433
Client Name:LG Electronics Inc.
Model/Device:VS930 / Inductive cover,pad
Test Volt/Freq:120 VAC / 60 Hz, NFC on
Test By:Tom Chen

Line-L1 .15 - 30MHz

Test Frequency	Meter Reading	Detector	T24 IL L1.TXT (dB)	LC Cables 1&3.TXT (dB)	dB(uVolts)	CFR 47 Part 15 Class B QP	Margin	CFR 47 Part 15 Class B Avg	Margin
1.2255	49.73	PK	0.1	0.1	49.93	56	-6.07	-	-
1.2255	41.85	Av	0.1	0.1	42.05	-	-	46	-3.95
1.4955	49.25	PK	0.1	0.1	49.45	56	-6.55	-	-
1.4955	40.74	Av	0.1	0.1	40.94	-	-	46	-5.06
13.56	62.01	PK	0.2	0.2	62.41	60	2.41	-	-
13.56	56.46	Av	0.2	0.2	56.86	-	-	50	6.86

Line-L2 .15 - 30MHz

Test Frequency	Meter Reading	Detector	T24 IL L2.TXT (dB)	LC Cables 2&3.TXT (dB)	dB(uVolts)	CFR 47 Part 15 Class B QP	Margin	CFR 47 Part 15 Class B Avg	Margin
1.2345	47.35	PK	0.1	0.1	47.55	56	-8.45	-	-
1.2345	37.24	Av	0.1	0.1	37.44	-	-	46	-8.56
1.5135	47.23	PK	0.1	0.1	47.43	56	-8.57	-	-
1.5135	37.29	Av	0.1	0.1	37.49	-	-	46	-8.51
13.6635	51.36	PK	0.2	0.2	51.76	60	-8.24	-	-
13.6635	36.45	Av	0.2	0.2	36.85	-	-	50	-13.15

EUT WITH 50 OHM TERMINATOR

6 WORST EMISSIONS

Project No:12U14433
Client Name:LG Electronics Inc.
Model/Device:VS930 / Inductive cover,pad
Test Volt/Freq:120 VAC / 60 Hz, NFC on
Test By:Tom Chen

Line-L1 .15 - 30MHz

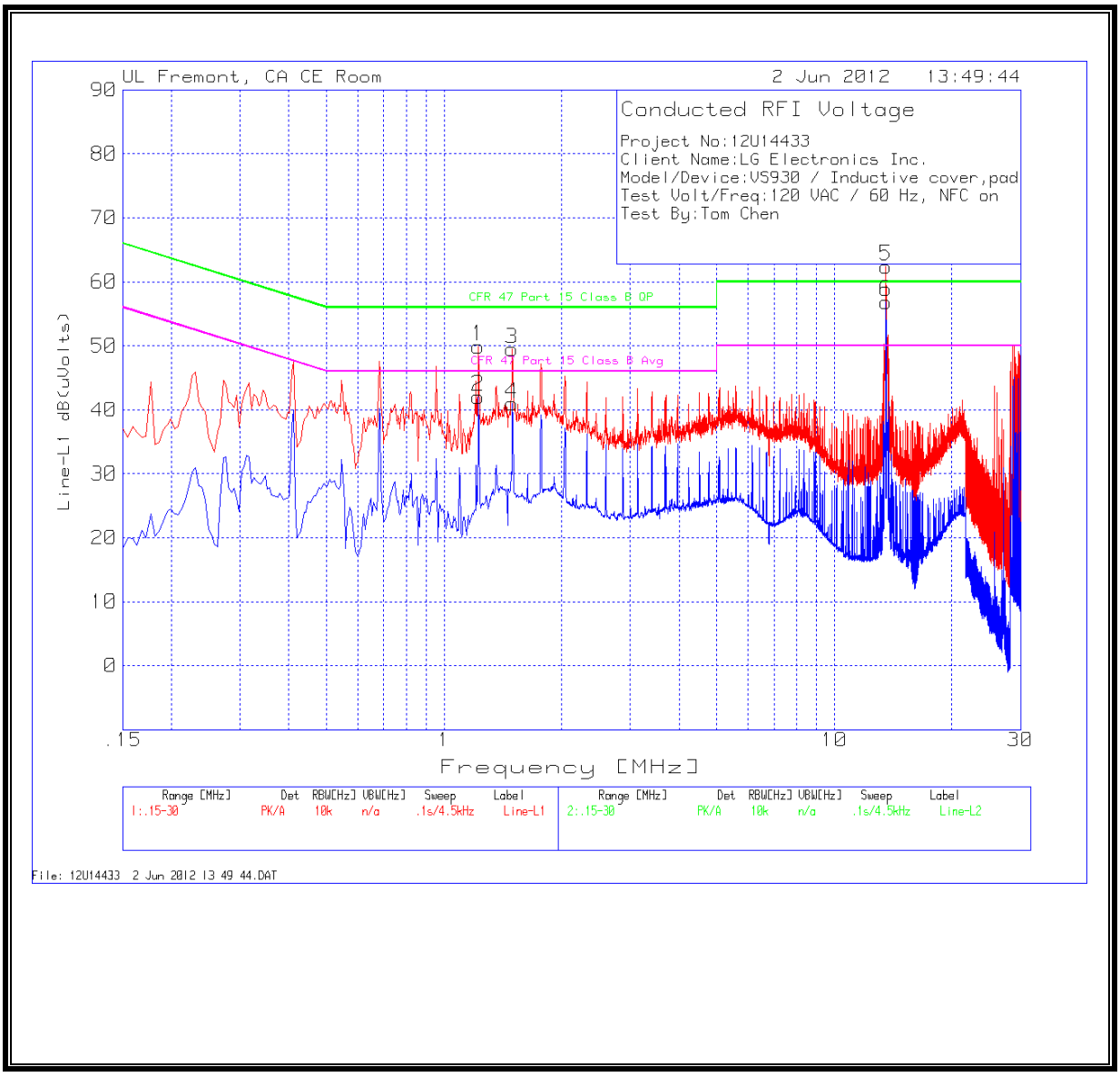
Test Frequency	Meter Reading	Detector	T24 IL L1.TXT (dB)	LC Cables 1&3.TXT (dB)	dB(uVolts)	CFR 47 Part 15 Class B QP	Margin	CFR 47 Part 15 Class B Avg	Margin
0.4605	41.94	PK	0.1	0	42.04	56.7	-14.66	-	-
0.4605	28.71	Av	0.1	0	28.81	-	-	46.7	-17.89
1.2615	45.67	PK	0.1	0.1	45.87	56	-10.13	-	-
1.2615	28.12	Av	0.1	0.1	28.32	-	-	46	-17.68
13.56	54.98	PK	0.2	0.2	55.38	60	-4.62	-	-
13.56	49.5	Av	0.2	0.2	49.9	-	-	50	-0.1

Line-L2 .15 - 30MHz

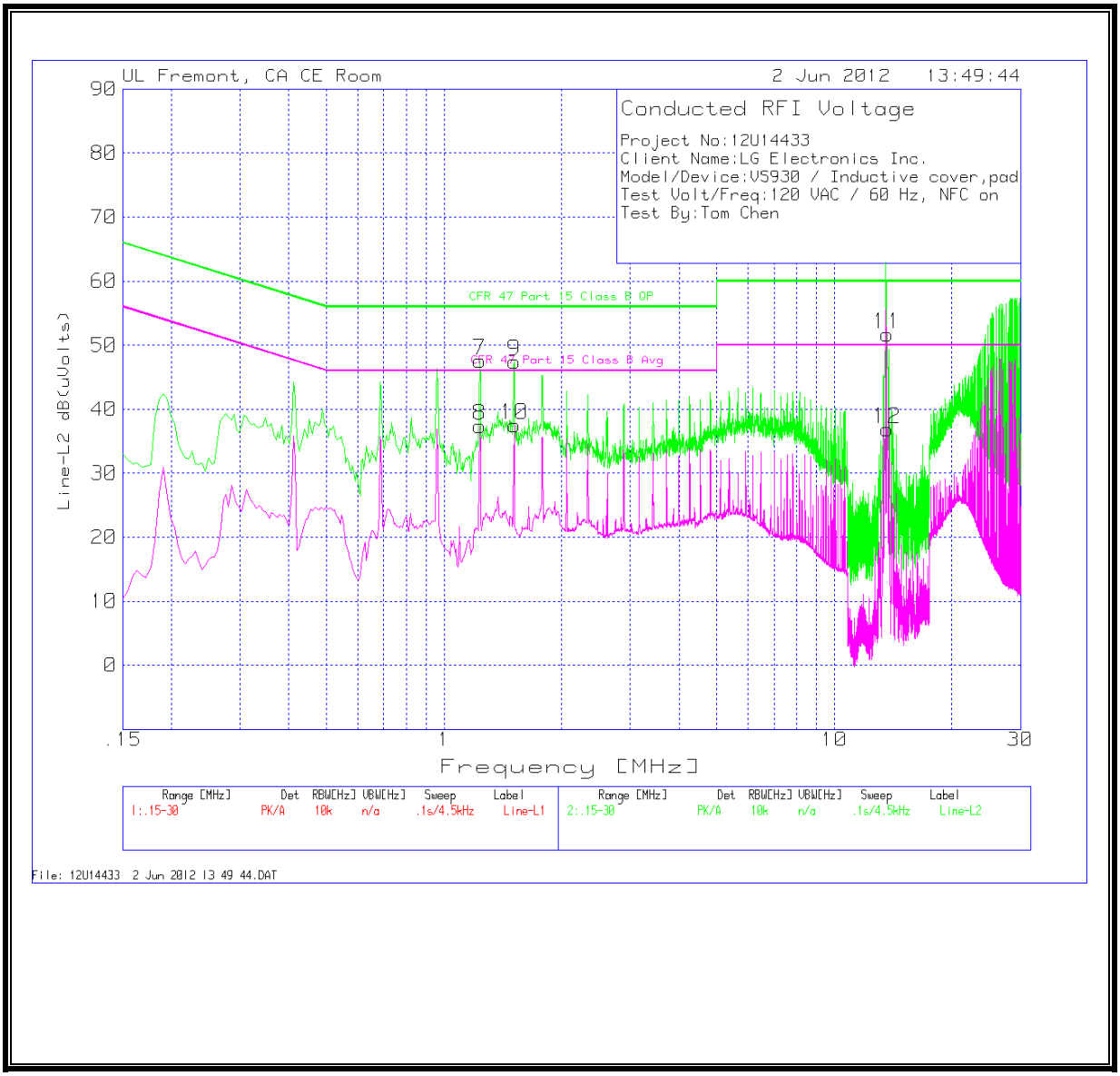
Test Frequency	Meter Reading	Detector	T24 IL L2.TXT (dB)	LC Cables 2&3.TXT (dB)	dB(uVolts)	CFR 47 Part 15 Class B QP	Margin	CFR 47 Part 15 Class B Avg	Margin
0.456	37.69	PK	0.1	0	37.79	56.8	-19.01	-	-
0.456	24.42	Av	0.1	0	24.52	-	-	46.8	-22.28
1.554	33.47	PK	0.1	0.1	33.67	56	-22.33	-	-
1.554	14.62	Av	0.1	0.1	14.82	-	-	46	-31.18
13.7175	29.67	PK	0.2	0.2	30.07	60	-29.93	-	-
13.7175	7.36	Av	0.2	0.2	7.76	-	-	50	-42.24

INDUCTIVE CHARGER PAD WITH ANTENNA

LINE 1 RESULTS

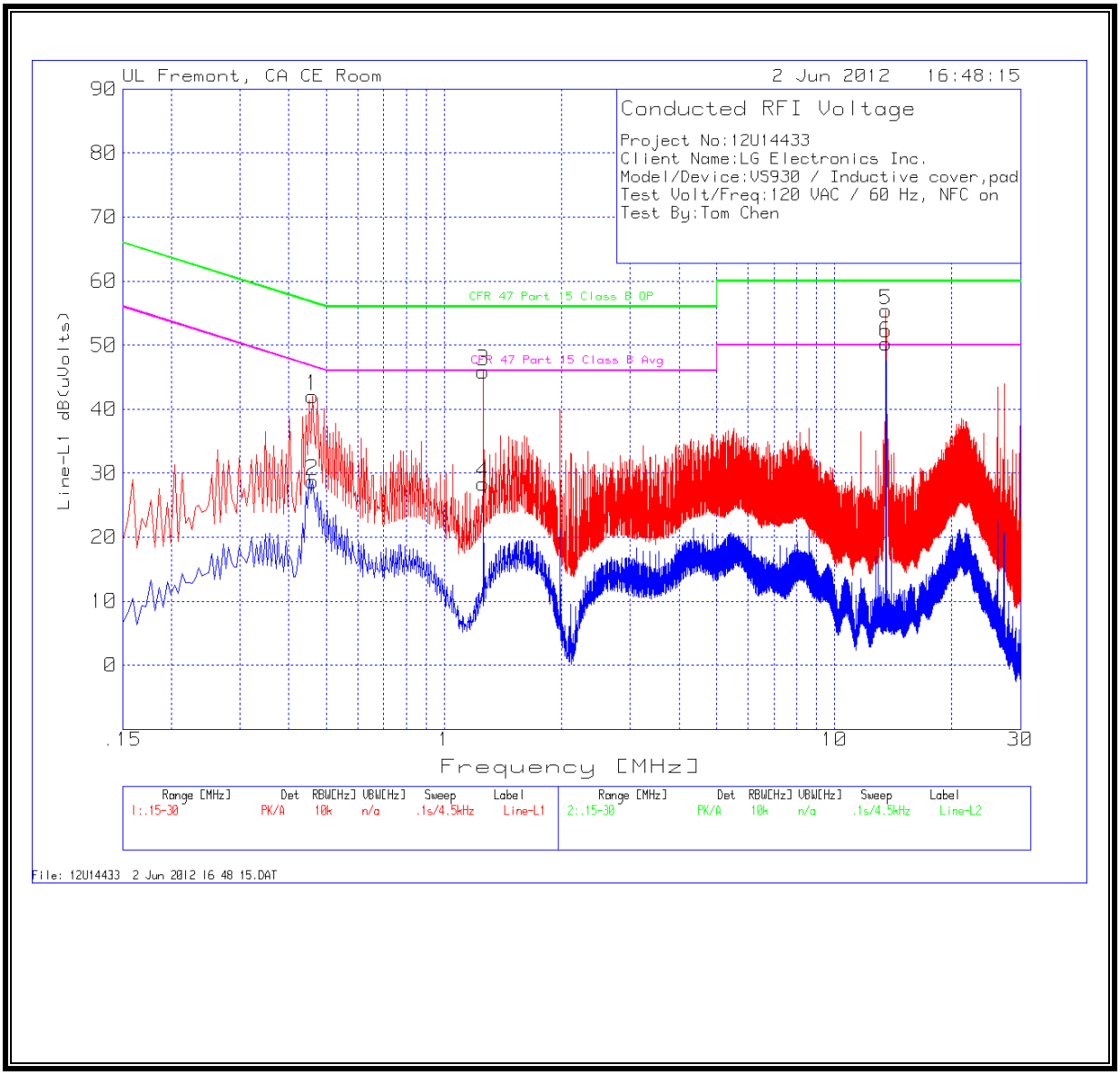


LINE 2 RESULTS



INDUCTIVE CHARGER PAD WITH 50 Ohm Terminator

LINE 1 RESULTS



LINE 2 RESULTS