



## 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) 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.	lssue Date	Revisions	Revised By
	06/04/12	Original	T. LEE

Page 2 of 92

# **TABLE OF CONTENTS**

1.	AT	TESTATION OF TEST RESULTS	4
2.	TES	ST METHODOLOGY	5
3.	FAG	CILITIES AND ACCREDITATION	5
4.	CA	LIBRATION AND UNCERTAINTY	5
4	4.1.	MEASURING INSTRUMENT CALIBRATION	5
2	4.2.	SAMPLE CALCULATION	5
4	4.3.	MEASUREMENT UNCERTAINTY	5
5.	EQ	UIPMENT UNDER TEST	6
ł	5.1.	DESCRIPTION OF EUT	6
ł	5.2.	MAXIMUM OUTPUT POWER	6
ł	5.3.	DESCRIPTION OF CLASS II PERMISSIVE CHANGE	6
ł	5.4.	DESCRIPTION OF AVAILABLE ANTENNAS	6
ł	5.5.	SOFTWARE AND FIRMWARE	7
ł	5.6.	MODEL DIFFERNECE	7
ł	5.7.	WORST-CASE CONFIGURATION AND MODE	7
ł	5.8.	DESCRIPTION OF TEST SETUP	8
6.	TES	ST AND MEASUREMENT EQUIPMENT	10
7.	RA	DIATED TEST RESULTS	11
7	7.1.	LIMITS AND PROCEDURE	
7	7.2.	TRANSMITTER ABOVE 1 GHz	
	7.2. 7.2.		
	7.2.	-	
	7.2.		
	7.2.	.5. 802.11n HT20 MODE IN THE 5.8 GHz BAND	
8.	wo	PRST-CASE BELOW 1 GHz	65
9.	AC	POWER LINE CONDUCTED EMISSIONS	74
10.	S	ETUP PHOTOS	

## **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:

Tested By:

TIM LEE STAFF ENGINEER UL CCS

TOM CHEN EMC ENGINEER UL CCS

Page 4 of 92

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

# 4. CALIBRATION AND UNCERTAINTY

## 4.1. MEASURING INSTRUMENT CALIBRATION

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

# 4.2. 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  $\pm 0.5$  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

Page 6 of 92

## 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

Page 7 of 92

## 5.8. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

### STANDARD AND INDUCTIVE COVER

PERIPHERAL SUPPORT EQUIPMENT LIST						
Description	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

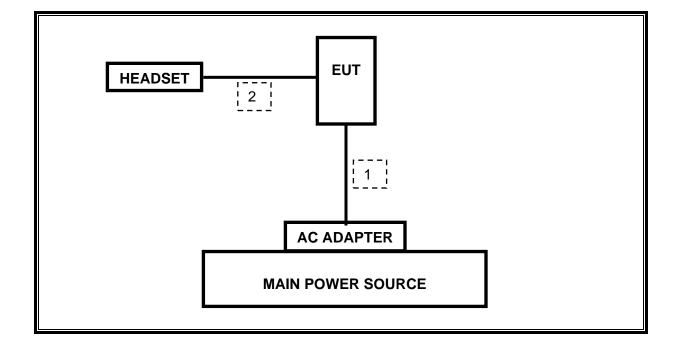
	I/O CABLE LIST							
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks		
1	DC	1	MINI USB	UN-SHELDED	1.0m	External ferrite added		
2	AUDIO	1	MINI JACK	UN-SHELDED	1.0m	Volume control on cable		

## TEST SETUP

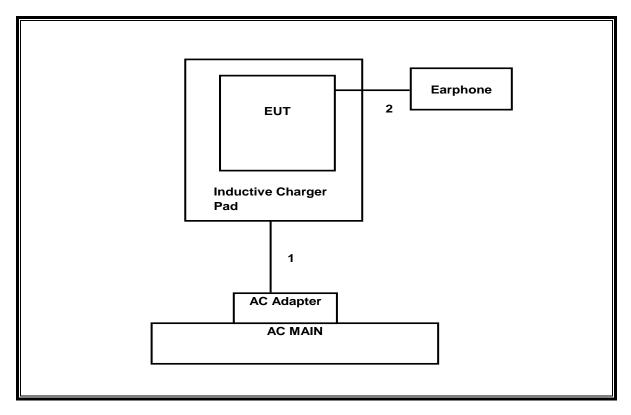
• The EUT is sat on inductive charger was tested with AC adapter and earphones.

## **SETUP DIAGRAM FOR TESTS**

## STANDARD AND INDUCTIVE COVER



## INDUCTIVE CHARGER AND INDUCTIVE COVER



Page 9 of 92

COMPLIANCE CERTIFICATION SERVICES (UL CCS)FORM NO: CCSUP4701D47173 BENICIA STREET, FREMONT, CA 94538, USATEL: (510) 771-1000FAX: (510) 661-0888This report shall not be reproduced except in full, without the written approval of UL CCS.

# 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	

Page 10 of 92

# 7. RADIATED TEST RESULTS

## 7.1. LIMITS AND PROCEDURE

## <u>LIMITS</u>

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.

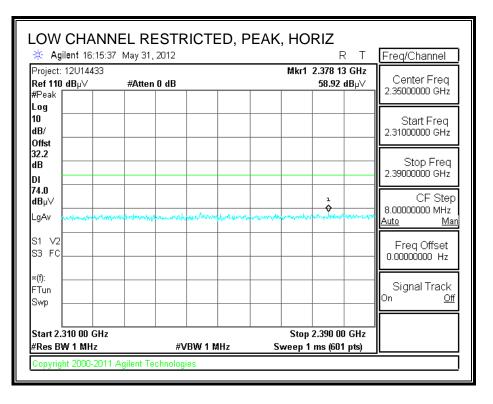
Page 11 of 92

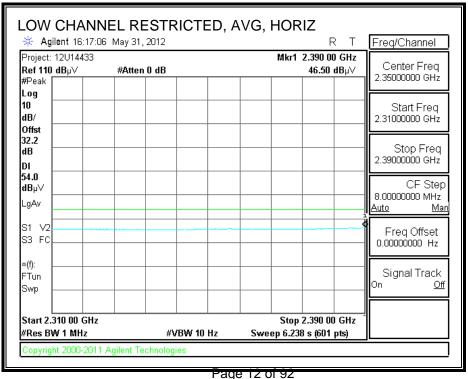
## 7.2. TRANSMITTER ABOVE 1 GHz

## 7.2.1. 802.11b MODE IN THE 2.4 GHz BAND

### STANDARD COVER

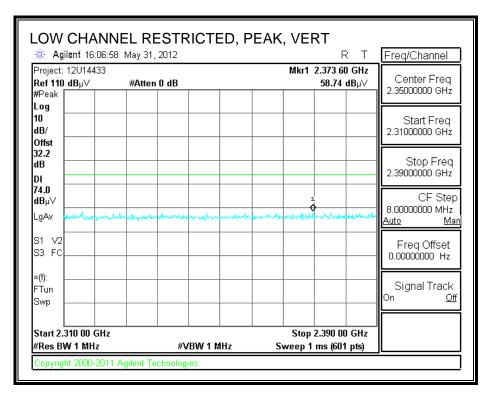
## **RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)**

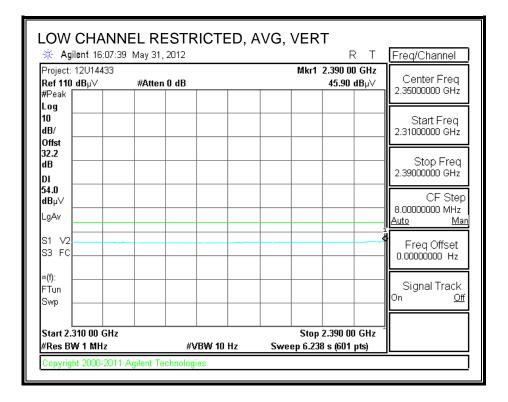




COMPLIANCE CERTIFICATION SERVICES (UL CCS)FORM NO: CCSUP4701D47173 BENICIA STREET, FREMONT, CA 94538, USATEL: (510) 771-1000FAX: (510) 661-0888This report shall not be reproduced except in full, without the written approval of UL CCS.

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

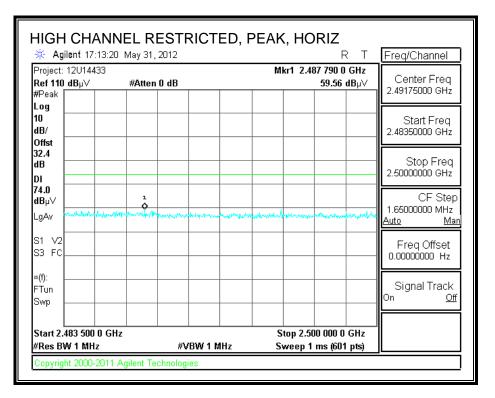


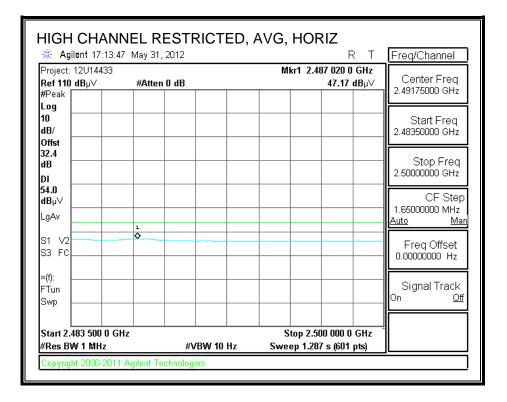


COMPLIANCE CERTIFICATION SERVICES (UL CCS) FORM NO: CCSUP4701D 47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888 This report shall not be reproduced except in full, without the written approval of UL CCS.

Page 13 of 92

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

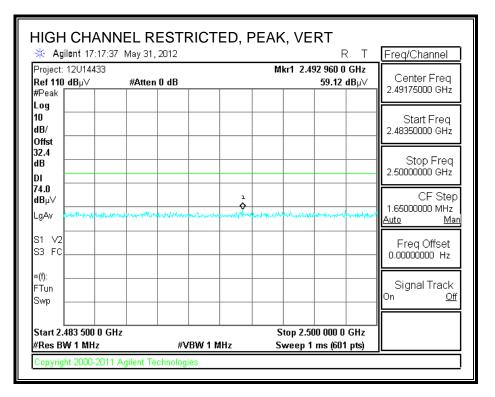


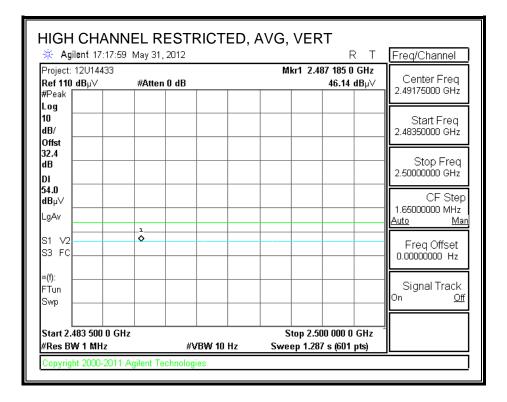


COMPLIANCE CERTIFICATION SERVICES (UL CCS) FORM NO: CCSUP4701D 47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888 This report shall not be reproduced except in full, without the written approval of UL CCS.

Page 14 of 92

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





COMPLIANCE CERTIFICATION SERVICES (UL CCS) FORM NO: CCSUP4701D 47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888 This report shall not be reproduced except in full, without the written approval of UL CCS.

Page 15 of 92

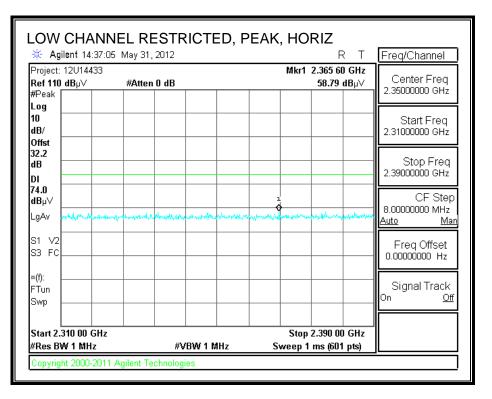
### HARMONICS AND SPURIOUS EMISSIONS

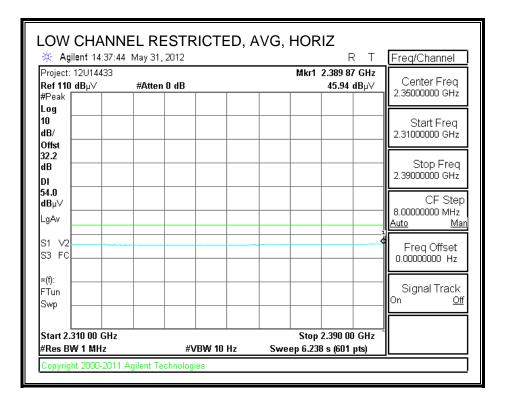
Test Free															
Test Eng	r:	Tom Ch													
Date: 06/01/12															
Project #		12U1443													
Compan		LG Electronics													
Test Targ		FCC Class B 802.11b, TX mode													
Mode O <sub>I</sub>	er:														
	f	Measuren	nent Freq	quency	Amp	Preamp	Gain			Average	Field Stren	gth Limit			
	Dist	Distance to Antenna D Corr Distance Correct to 3 meters Peak Field Strength Limit								Limit					
	Read	Analyzer		Avg	Average	Field S	trength @	3 m	Margin v						
	AF	Antenna	Factor		Peak	Calculate	ed Peak	c Field Str	ength	Margin vs. Peak Limit					
	CL	Cable Los	38		HPF	High Pas	High Pass Filter								
						-						-			
f	Dist	Read	AF	CL		D Corr		:		-	Ant. Pol.		Notes		
GHz	(m)	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dB	V/H	P/A/QP			
2412 MH															
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 4.824	3.0	32.7	33.1 33.1	6.3	-34.8		0.0	37.2	54.0	-16.8	V	A			
4.824 4.824	3.0	40.6 33.6	33.1	6.3 6.3	-34.8 -34.8		0.0	45.1 38.1	74.0 54.0	-28.9 -15.9		P			
4.624 2437 MH		33.0	33.1	0.0	-34.0	0.0	0.0	30,1	24.0	-15.7	H	A			
2407 MIL	3.0	41.3	33.1	6.3	-34.8	0.0	0.0	46.0	74.0	-28.0	Н	P			
4 874	3.0	36.0	33.1	6.3	-34.8	0.0	0.0	40.6	54.0	-13.4	H	Ā			
	3.0	40.0	33.1	6.3	-34.8		0.0	44.7	74.0	-29.3	v	P			
4.874		33.0	33.1	6.3	-34.8		0.0	37.6	54.0	-16.4	V	Ā			
4.874 4.874	3.0														
4.874 4.874 4.874				6.3	-34.8	0.0	0.0	46.1	74.0	-27.9	V	P			
4.874 4.874 4.874 2462 MH		41.4	33.2			******	0.0	40.9	54.0	-13.1	V	Α			
4.874 4.874 4.874 2462 MH 4.924	z 11b	41.4 36.2	33.2 33.2	6.3	-34.8	0.0	; 0.0								
4.874 4.874 4.874 4.874 2462 MH 4.924 4.924 4.924 4.924	z 11b 3.0			6.3 6.3	-34.8 -34.8	0.0	0.0	47.0	74.0	-27.0	H	P			

Page 16 of 92

## **INDUCTIVE COVER**

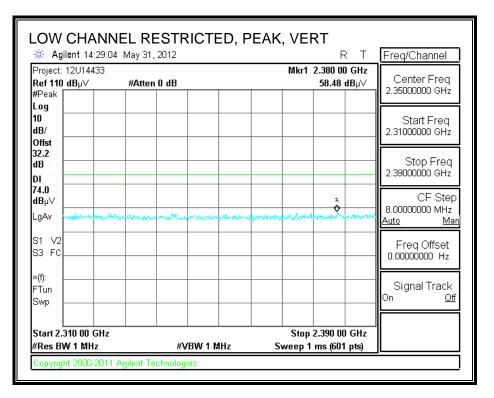
## **RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)**

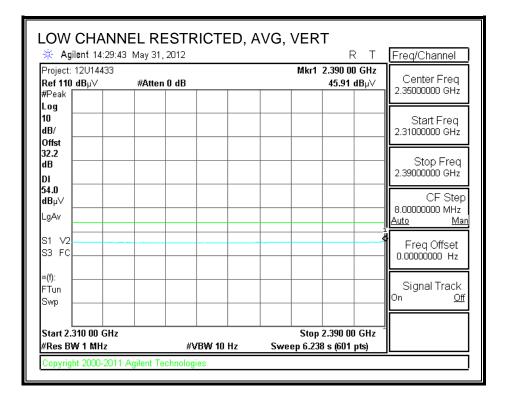




Page 17 of 92

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

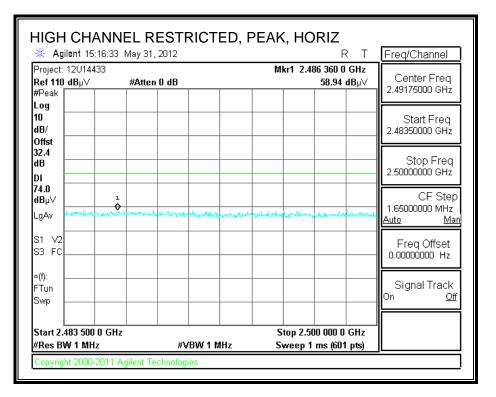


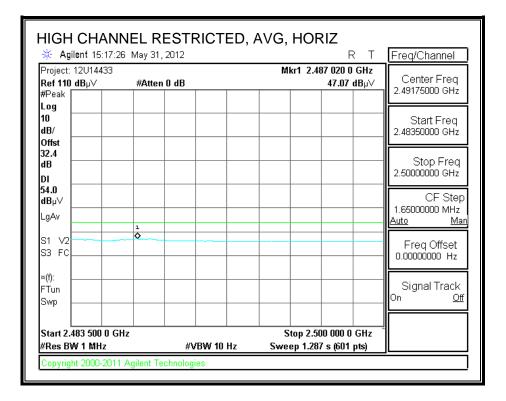


COMPLIANCE CERTIFICATION SERVICES (UL CCS) FORM NO: CCSUP4701D 47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888 This report shall not be reproduced except in full, without the written approval of UL CCS.

Page 18 of 92

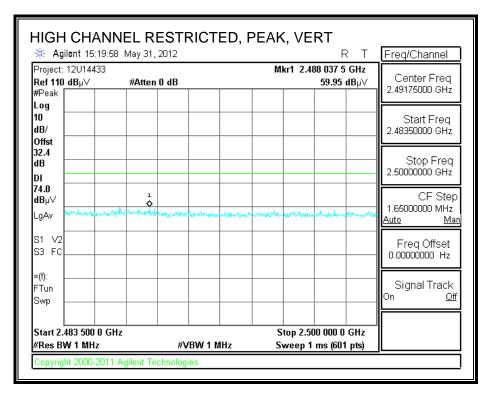
## **RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)**

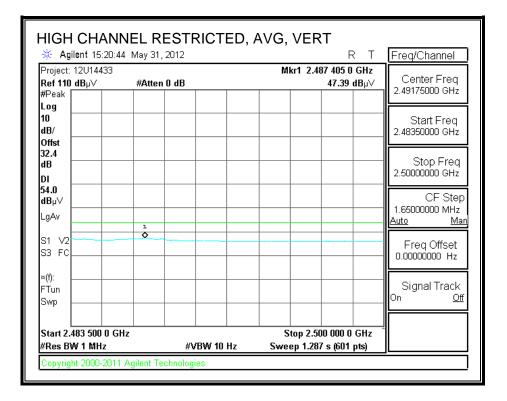




Page 19 of 92 COMPLIANCE CERTIFICATION SERVICES (UL CCS) FORM NO: CCSUP4701D 47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888 This report shall not be reproduced except in full, without the written approval of UL CCS.

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





COMPLIANCE CERTIFICATION SERVICES (UL CCS) FORM NO: CCSUP4701D 47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888 This report shall not be reproduced except in full, without the written approval of UL CCS.

Page 20 of 92

### HARMONICS AND SPURIOUS EMISSIONS

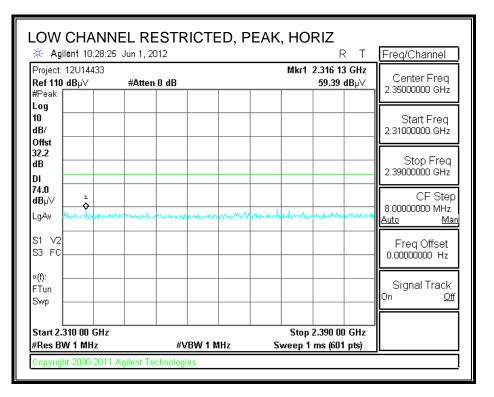
Complia	nce Cer	tification	Service	s, Frei	mont 5n	a Chamb	er						
Test Eng	r:	Tom Ch	en										
Date:		06/01/12											
Project #	÷.	12U1443	3										
Compan	•												
Test Targ	get:	FCC Class B											
Mode Op	er:	802.11b,	TX mod	le									
	f	Measuren		• •		Preamp (				-	Field Stren	-	
Dist Distance to Ant				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									mit		
	CL	Cable Los	58		HPF	High Pas	s Filter						
f	Dist	Read	AF	CL	Amp	D Corr	Fltr	Corr.	Limit	Margin	Ant. Pol.	Det.	Notes
GHz	(m)	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dB	V/H	P/A/QP	
2412 MH	z 11b											ļ	
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 MH	z 11b				ļ	ļ						ļ	
4.874	3.0	42.5	33.1	6.3	-34.8	0.0	0.0	47.1	74.0	- <b>26.9</b>	H	P	
4.874	3.0	37.2	33.1	6.3	-34.8	0.0	0.0		54.0	-12.2	H	Α	
4.874	3.0	41.2	33.1	6.3	-34.8	0.0	0.0	45.9	74.0	- <mark>28.1</mark>	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 MH					ļ	ļ				ļ		ļ	
4.924	3.0	42.6	33.2	6.3	-34.8	0.0	0.0	47.3	74.0	-26.7	V	P	
	3.0	37.4	33.2	6.3	-34.8	0.0	0.0	42.1	54.0	-11.9	V	Α	
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 4.924 4.924	0.0	39.0	33.2		-34.8	0.0	0.0	43.8	54.0	-10.2	н	A	

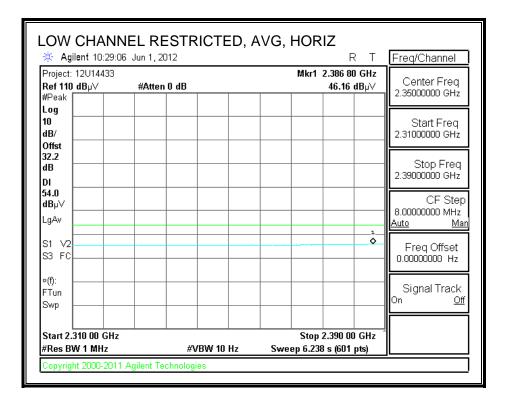
COMPLIANCE CERTIFICATION SERVICES (UL CCS)FORM NO: CCSUP4701D47173 BENICIA STREET, FREMONT, CA 94538, USATEL: (510) 771-1000FAX: (510) 661-0888This report shall not be reproduced except in full, without the written approval of UL CCS.

Page 21 of 92

### **INDUCTIVE CHARGER WITH INDUCTIVE COVER**

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

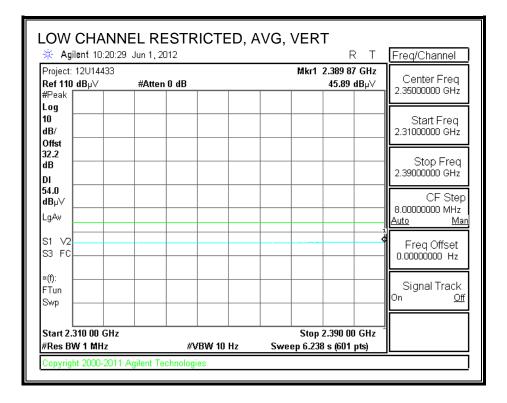




Page 22 of 92

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

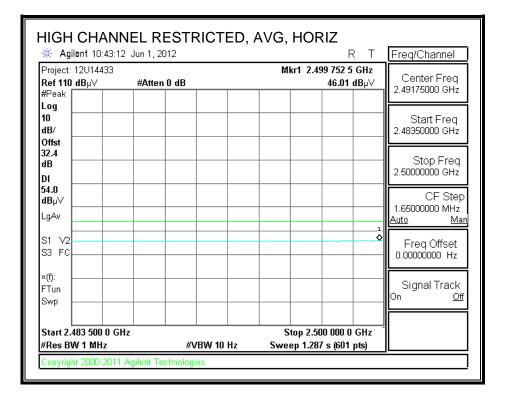
🔆 Agilent 10:19:49 Jun		D, PEAK, VER	RT	Freq/Channel
#Peak	Atten 0 dB		362 53 GHz 58.79 dBµ∨	Center Freq 2.3500000 GHz
Log				Start Freq 2.31000000 GHz
32.2 #B				Stop Freq 2.3900000 GHz
74.0 ββμ∨	and a start and a start and a start and a start		un and	CF Step 8.0000000 MHz <u>Auto Man</u>
51 V2 53 FC				Freq Offset 0.00000000 Hz
x(f): =Tun Swp				Signal Track On <u>Off</u>
Start 2.310 00 GHz #Res BW 1 MHz	#VBW 1 MI	•	390 00 GHz 1s (601 pts)	



Page 23 of 92

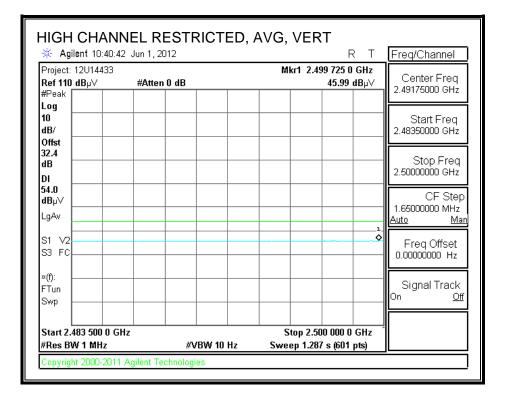
## **RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)**

Project: 12U14433  Ref 110 dBµ∀ #Atten t #Peak Log 10	D dB		GHz						
3		Mkr1 2.499 175 0 GHz Atten 0 dB 59.27 dBµ∨							
dB/				Start Freq 2.48350000 GHz					
32.4 dB DI				Stop Freq 2.5000000 GHz					
<b>74.0</b> dBμV LgAv Urshummudhalauran	an approximation of the same	noghtindhadh qolandur taly mantashara		CF Step 1.65000000 MHz <u>Auto Man</u>					
S1 V2 S3 FC				Freq Offset 0.00000000 Hz					
»(f): FTun Swp				Signal Track <sup>On <u>Off</u></sup>					
Start 2.483 500 0 GHz #Res BW 1 MHz	#VBW 1 MHz	Stop 2.500 000 0 Sweep 1 ms (601							



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

HIGH CHANNEL R	,	PEAK, VERI R T	Freq/Channel
Project: 12U14433 <b>Ref 110 dB</b> µ∨ <b>#Atte</b> #Peak	n 0 dB	Mkr1 2.496 507 5 GHz 59.21 dBµ∨	Center Freq 2.49175000 GHz
Log 10 dB/ Offst			Start Freq 2.48350000 GHz
32.4 dB			Stop Freq 2.5000000 GHz
74.0 dBµ∨	and and the second and the second and		CF Step 1.6500000 MHz <u>Auto Man</u>
S1 V2 S3 FC			Freq Offset 0.00000000 Hz
×(f): FTun Swp			Signal Track On <u>Off</u>
Start 2.483 500 0 GHz #Res BW 1 MHz	#VBW 1 MHz	Stop 2.500 000 0 GHz Sweep 1 ms (601 pts)	



COMPLIANCE CERTIFICATION SERVICES (UL CCS) FORM NO: CCSUP4701D 47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888 This report shall not be reproduced except in full, without the written approval of UL CCS.

Page 25 of 92

### HARMONICS AND SPURIOUS EMISSIONS

compila	nce Cer	tification	Service	s, Frei	nont 5n	n Chamb	er						
Test Eng	r:	Tom Che	en										
Date:		06/01/12											
Project #	ŧ:	12U1443	3										
Compan	y:	LG Elect	ronics										
Test Targ	get:	FCC Class B											
Mode O <sub>I</sub>	per:	802.115,	TX mod	le									
	f	Measuren	ent Fred	wency	Amp	Preamp (	Gain			Average	Field Stren	eth Limit	
	Dist	Distance				Distance		t to 3 me	ters	-	ld Strength	-	
	Read									s. Average			
	AF	Antenna Factor Peak Calculated Peak Field Strength Margin vs. Peak Limit											
	CL	Cable Loss HPF High Pass Filter											
						-							
f	Dist	Read	AF	CL	Amp	D Corr		Corr.			Ant. Pol.		Notes
GHz	(m)	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dB	V/H	P/A/QP	
2412 MH													
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	
14273.00	Z 115 3.0	41.6	33.1	6.3	-34.8	0.0	0.0	46.2	74.0	-27.8	H	T	
	3.0	41.0 34.9	33.1	6.3	-34.8	0.0	0.0	39.6	74.0 54.0	-47.0	п Н	P A	
4.874			33.1	6.3	-34.8	0.0	0.0	44.0	54.0 74.0	-14.4	N V	P	
4.874 4.874		: 194			-0-1-0	; <b>V</b> iV			54.0	-18.1	v	A	
4.874 4.874 4.874	3.0	39.4 31.3		6.3	-34.8	0.0	0.0	35.9					
4.874 4.874 4.874 4.874 4.874	3.0 3.0	39.4 31.3	33.1	6.3	-34.8	0.0	0.0	35.9	54.0		_		
4.874 4.874 4.874 4.874 4.874 2462 MH	3.0 3.0			6.3 6.3	-34.8 -34.8	0.0	0.0	42.8	74.0	-31.2			
4.874 4.874 4.874 4.874 2462 MH 4.924	3.0 3.0 [z 11b	31.3	33.1			ļ		42.8		-31.2		P	
2437 MH 4.874 4.874 4.874 4.874 4.874 2462 MH 4.924 4.924 4.924 4.924	3.0 3.0 [z 11b 3.0	31.3 38.1	33.1 33.2	6.3	-34.8	0.0	0.0		74.0	o	V		

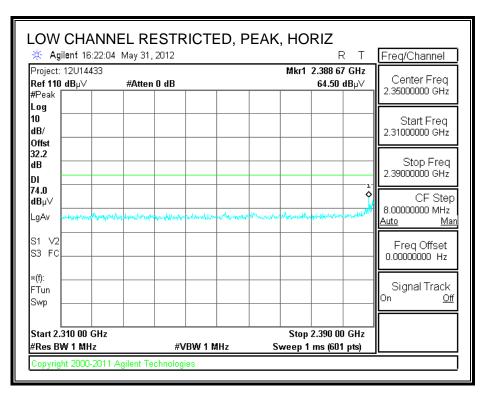
COMPLIANCE CERTIFICATION SERVICES (UL CCS)FORM NO: CCSUP4701D47173 BENICIA STREET, FREMONT, CA 94538, USATEL: (510) 771-1000FAX: (510) 661-0888This report shall not be reproduced except in full, without the written approval of UL CCS.UL CCS.

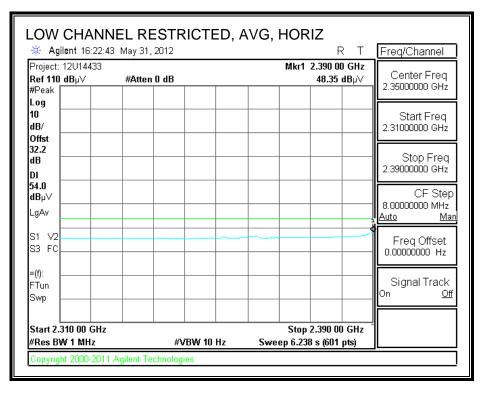
Page 26 of 92

## 7.2.2. 802.11g MODE IN THE 2.4 GHz BAND

### STANDARD COVER

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



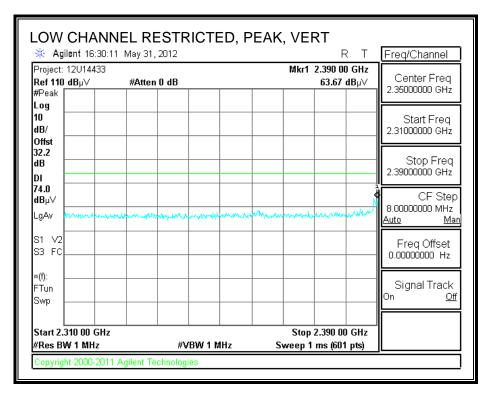


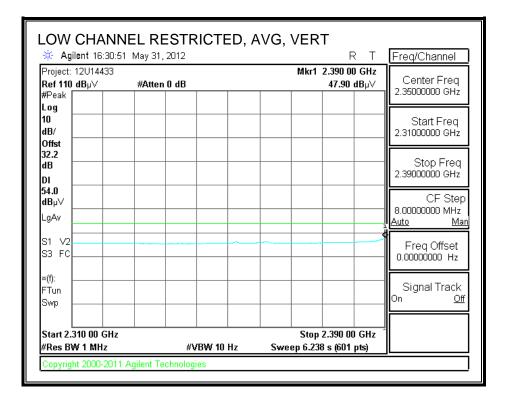
Page 27 of 92

COMPLIANCE CERTIFICATION SERVICES (UL CCS)FORM NO: CCSUP4701D47173 BENICIA STREET, FREMONT, CA 94538, USATEL: (510) 771-1000FAX: (510) 661-0888This report shall not be reproduced except in full, without the written approval of UL CCS.CCS.

Page 28 of 92COMPLIANCE CERTIFICATION SERVICES (UL CCS)FORM NO: CCSUP4701D47173 BENICIA STREET, FREMONT, CA 94538, USATEL: (510) 771-1000FAX: (510) 661-0888This report shall not be reproduced except in full, without the written approval of UL CCS.

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

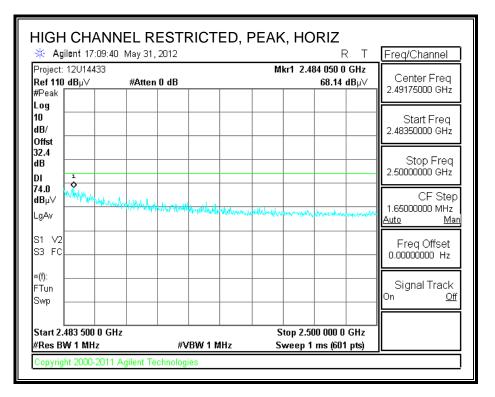


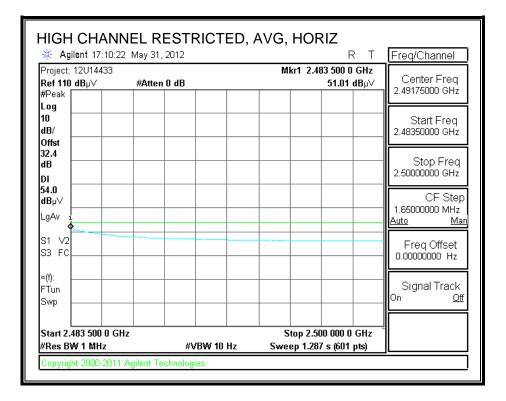


COMPLIANCE CERTIFICATION SERVICES (UL CCS) FORM NO: CCSUP4701D 47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888 This report shall not be reproduced except in full, without the written approval of UL CCS.

Page 29 of 92

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

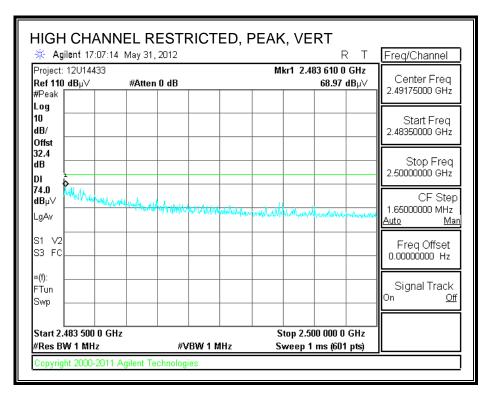


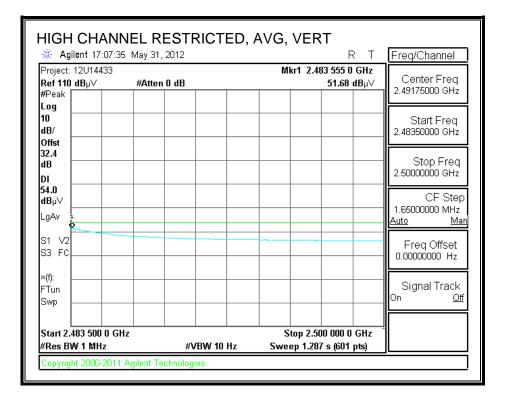


COMPLIANCE CERTIFICATION SERVICES (UL CCS) FORM NO: CCSUP4701D 47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888 This report shall not be reproduced except in full, without the written approval of UL CCS.

Page 30 of 92

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





COMPLIANCE CERTIFICATION SERVICES (UL CCS) FORM NO: CCSUP4701D 47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888 This report shall not be reproduced except in full, without the written approval of UL CCS.

Page 31 of 92

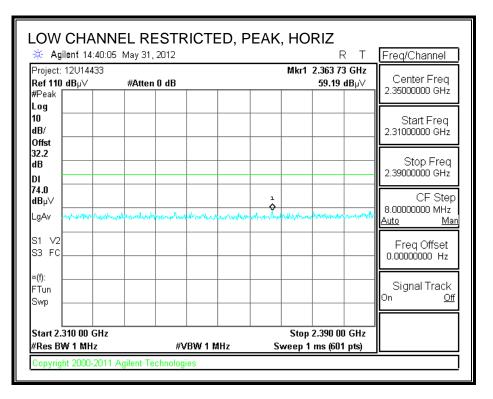
### HARMONICS AND SPURIOUS EMISSIONS

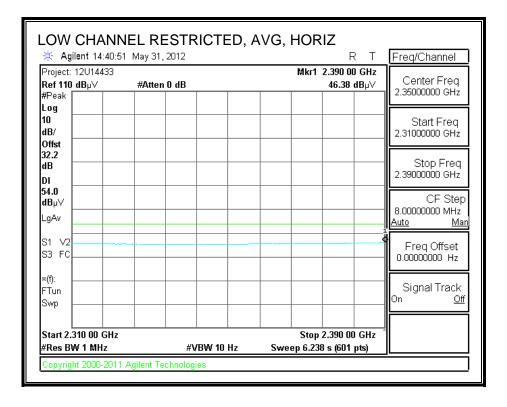
_		Measuren tification		s, Fre	mont 5n	n Chamb	er							
Test Engi		Tom Ch	en											
Date:		06/01/12												
Project #		12U1443	33											
Company	y:	LG Elect	tronics											
Test Targ	et:	FCC Class B												
Mode Op	er:	802.11g,	TX moo	le										
	f	Mazauran	nant Fran	mener	Amo	Preamp (	Sain			Average	Field Stren	eth Limit		
						-		t to 3 me	ters	_		-		
	Distance to Antenna D Corr Distance Correct to 3 meters Peak Field Strength Limit Analyzer Reading Avg Average Field Strength @ 3 m Margin vs. Average Limit													
Read Analyzer Reading AF Antenna Factor					Peak									
	CL	Cable Los			HPF	High Pas					o. a care ton			
f	Dist	Read	AF	CL	-	D Corr					Ant. Pol.		Notes	
GHz	(m)	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dB	V/H	P/A/QP		
2412 MH														
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 MH														
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 MH	····													
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	62	-34.8	0.0	0.0	30.9	54.0	-23.1	V	A		

Page 32 of 92

## **INDUCTIVE COVER**

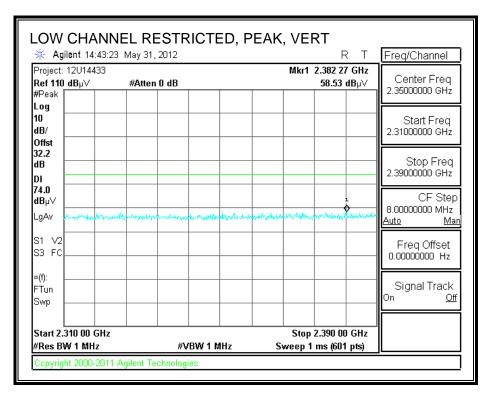
## **RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)**

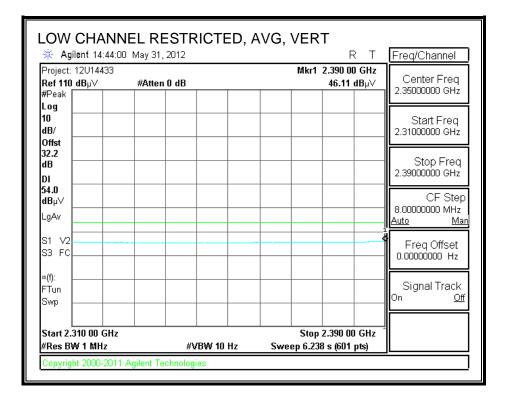




Page 33 of 92

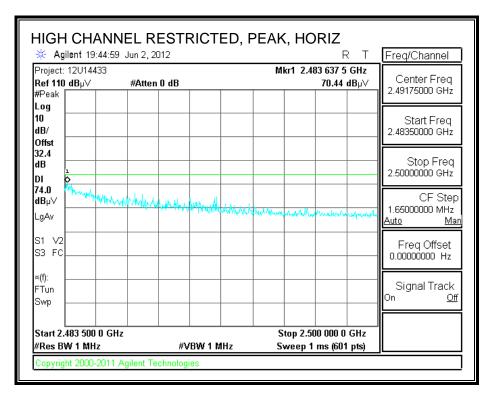
## **RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)**

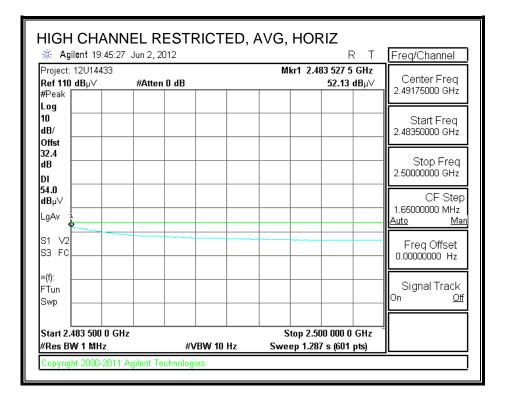




Page 34 of 92

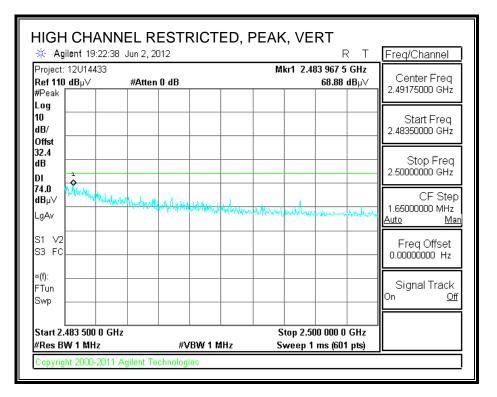
## **RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)**

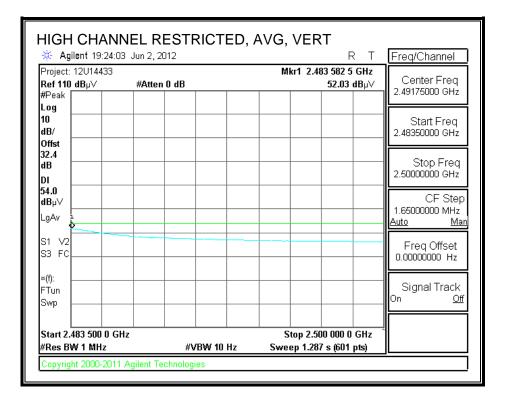




Page 35 of 92

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





COMPLIANCE CERTIFICATION SERVICES (UL CCS) FORM NO: CCSUP4701D 47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888 This report shall not be reproduced except in full, without the written approval of UL CCS.

Page 36 of 92

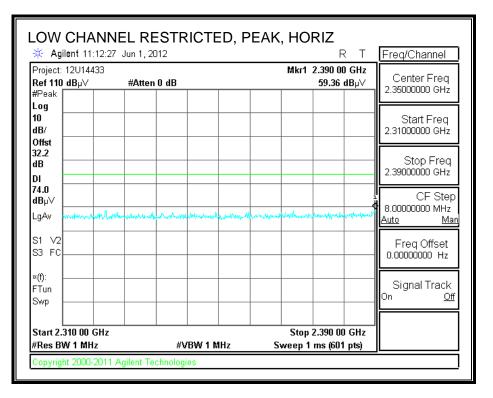
#### HARMONICS AND SPURIOUS EMISSIONS

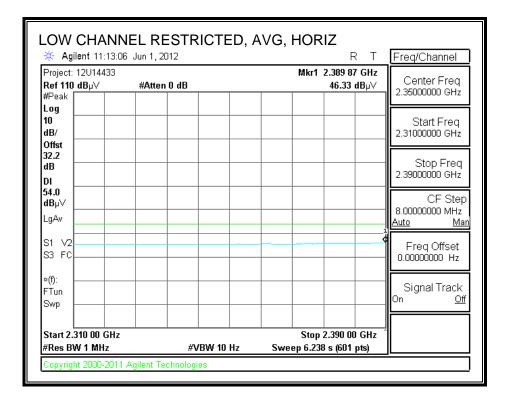
-	• •	Measuren		-		~							
Complia	nce Cer	tification	Service	s, Frei	nont 5n	n Chamb	er						
Test Eng	r:	Tom Ch	en										
Date:		06/01/12											
Project #	ŧ:	12U1443	3										
Compan	y:	LG Elect	ronics										
Test Targ	get:	FCC Cla	ass B										
Mode Op	er:	802.11g,	TX mod	le									
	f	Measuren	nant Fran	menetr	Amo	Preamp (	Sain			Average	Field Stren	ath Limit	
	Dist	Distance				Distance		et to 3 me	ters	-	ld Strength	-	
	Read	Analyzer			Avg			trength @			vs. Average		
	AF	Antenna	_		-	Calculate				_	rs. Peak Lis		
	CL	Cable Los	33		HPF	High Pas							
								-					
f	Dist	Read	AF	CL	•	D Corr		Corr.		_	Ant. Pol.		Notes
GHz	(m)	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dB	V/H	P/A/QP	
2412 MH	···· · · · · · · · · · · · · · · · · ·												
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		54.0	-24.8	V	A	
4.824	3.0	37.1	33.1		-34.8	0.0	0.0		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 MH													
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	28.4	54.0	-25.6	H	A	
4.874	3.0	36.7	33.1	6.3	-34.8		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 MH													
4.924	3.0	39.5	33.2	6.3	-34.8	0.0	0.0	44.2	74.0	- <b>29.8</b>	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	
	3.0	39.3 26.2	33.2 33.2		-34.8 -34.8	0.0	0.0	44.0	74.0	-30.0	V	P	
4.924 4.924	3.0					0.0	0.0	30.9	54.0	-23.1	V	A	

Page 37 of 92

#### **INDUCTIVE CHARGER WITH INDUCTIVE COVER**

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

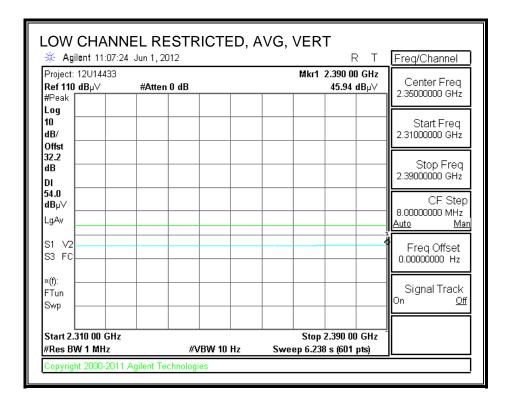




Page 38 of 92

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

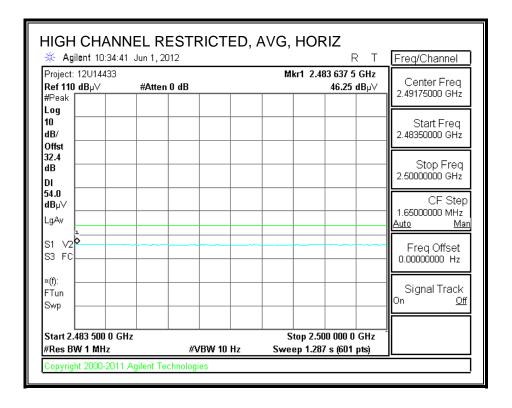
🔆 Agilent 11:08		••==,•=	EAK, VERT	T Freq/Channel
Project: 12U14433 <b>Ref 110 dB</b> µ∨ /Peak	#Atten 0 dB		Mkr1 2.388 80 GH 58.11 dBµ	Contor Frod
.og 0 IB/ Dffst				Start Freq 2.31000000 GHz
				Stop Freq 2.39000000 GHz
<b>'4.0</b> IBμ∨ .gAv ^	and and a second second	Irry Married and Married Married	user to all some of the contract of the second	CF Step 8.0000000 MHz <u>Auto Ma</u>
31 V2 33 FC				Freq Offset 0.00000000 Hz
(f): Tun Swp				Signal Track On
Start 2.310 00 GH Res BW 1 MHz		W 1 MHz	Stop 2.390 00 GF Sweep 1 ms (601 pts	



Page 39 of 92

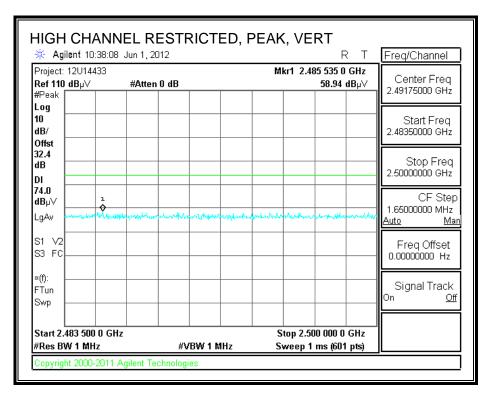
## **RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)**

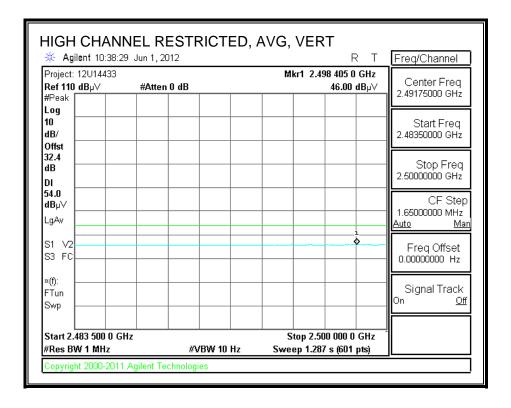
Agilent         10:34:19         Jun           Project:         12U14433	1,2012	R T Mkr1 2.486 827 5 GHz	Freq/Channel
#Peak	tten 0 dB	58.97 dBµ∀	Center Freq 2.49175000 GHz
Log 10 dB/ Offst			Start Freq 2.48350000 GHz
32.4 dB DI			Stop Freq 2.5000000 GHz
74.0 dBµ∨ LgAv	in the second	nother and a standard the margin of the stand	CF Step 1.65000000 MHz <u>Auto Man</u>
S1 V2 S3 FC			Freq Offset 0.00000000 Hz
×(f): FTun Swp			Signal Track On <u>Off</u>
Start 2.483 500 0 GHz #Res BW 1 MHz	#VBW 1 MHz	Stop 2.500 000 0 GHz Sweep 1 ms (601 pts)	



Page 40 of 92

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





Page 41 of 92

#### HARMONICS AND SPURIOUS EMISSIONS

omplia	nce Cer	tification	Service:	s, Frer	nont 5n	a Chambe	er						
Test Engr	r:	Tom Che	en										
Date:		06/01/12											
Project #	<b>h</b> :	12U1443	/ <b>3</b>										
Company	y:	LG Elect	ronics										
Test Targ	get:	FCC Cla	ass B										
Mode Op	er:	802.11g,	TX mod	le									
	f	Measurem	nent Free	mency	Amp	Preamp 0	Gain			Average	Field Stren	oth Limit	
	Dist	Distance t	-		-	Distance		et to 3 me		-	eld Strength	-	
	Read	Analyzer			Avg			trength @			vs. Average		
	AF	Antenna I	-		-	Calculated			-	-	vs. Peak Lir		
	CL	Cable Los			HPF	High Pass							
f	Dist	Read	AF	CL	Amp	D Corr	Fltr	Corr.	Limit	Margin	Ant. Pol.	Det.	Notes
GHz	(m)	dBuV	dB/m		dB	dB	:	1 1	dBuV/m		V/H	P/A/QP	
2412 MH	1 1 1				<u> </u>	<del>  -  </del>	<u> </u>			<u> </u>			
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	30.1	54.0	-23.9	Н	Ā	
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 MH	z 11g	1	[	( )		I	(			1	/		
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 MH	z 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	Α	

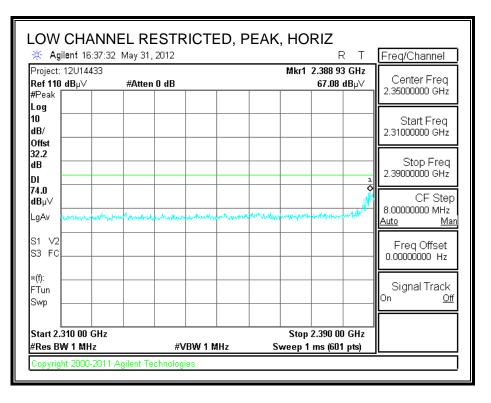
COMPLIANCE CERTIFICATION SERVICES (UL CCS)FORM NO: CCSUP4701D47173 BENICIA STREET, FREMONT, CA 94538, USATEL: (510) 771-1000FAX: (510) 661-0888This report shall not be reproduced except in full, without the written approval of UL CCS.

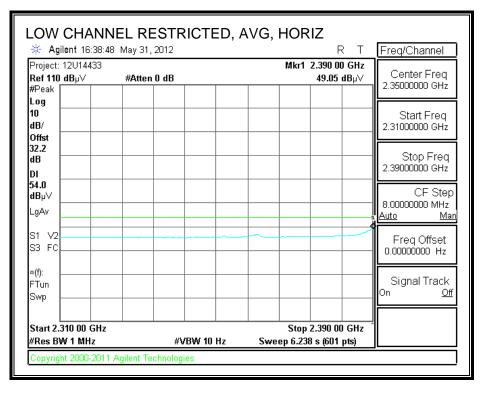
Page 42 of 92

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

#### STANDARD COVER

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



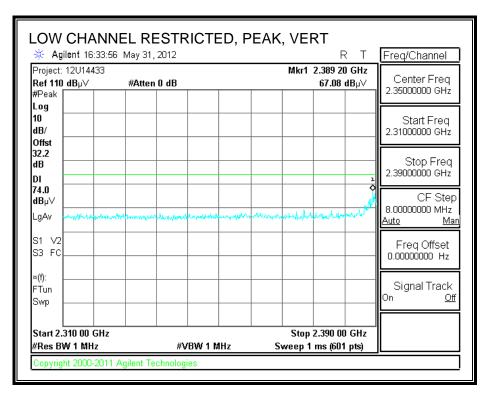


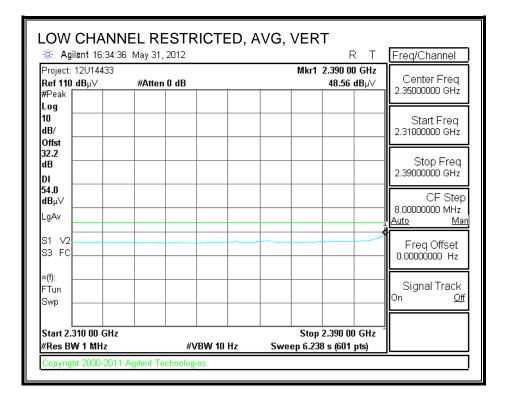
Page 43 of 92

COMPLIANCE CERTIFICATION SERVICES (UL CCS)FORM NO: CCSUP4701D47173 BENICIA STREET, FREMONT, CA 94538, USATEL: (510) 771-1000FAX: (510) 661-0888This report shall not be reproduced except in full, without the written approval of UL CCS.CCS.

Page 44 of 92COMPLIANCE CERTIFICATION SERVICES (UL CCS)FORM NO: CCSUP4701D47173 BENICIA STREET, FREMONT, CA 94538, USATEL: (510) 771-1000FAX: (510) 661-0888This report shall not be reproduced except in full, without the written approval of UL CCS.

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

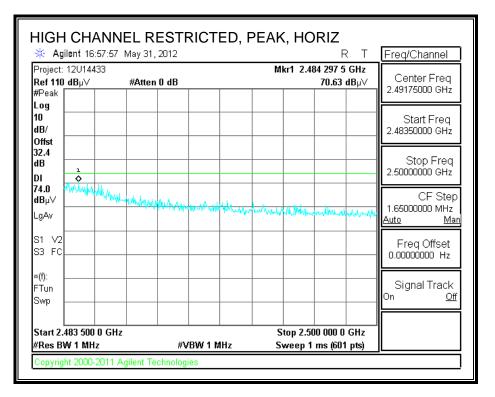


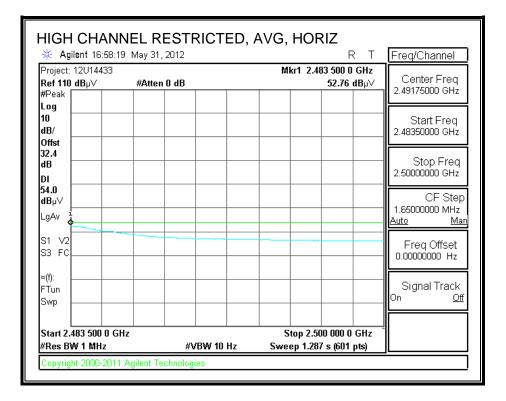


COMPLIANCE CERTIFICATION SERVICES (UL CCS) FORM NO: CCSUP4701D 47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888 This report shall not be reproduced except in full, without the written approval of UL CCS.

Page 45 of 92

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

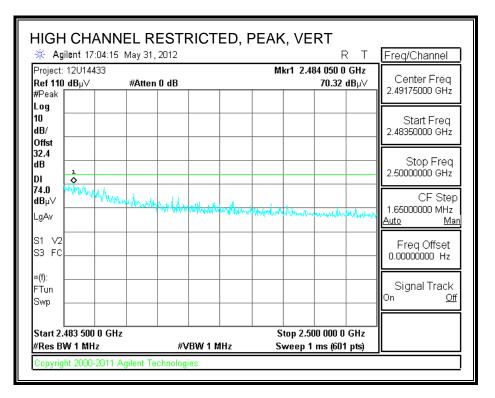


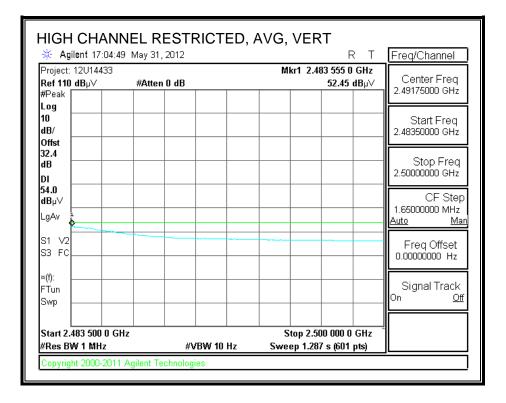


COMPLIANCE CERTIFICATION SERVICES (UL CCS) FORM NO: CCSUP4701D 47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888 This report shall not be reproduced except in full, without the written approval of UL CCS.

Page 46 of 92

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





Page 47 of 92

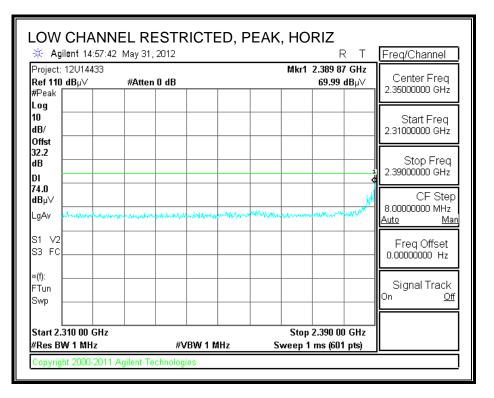
#### HARMONICS AND SPURIOUS EMISSIONS

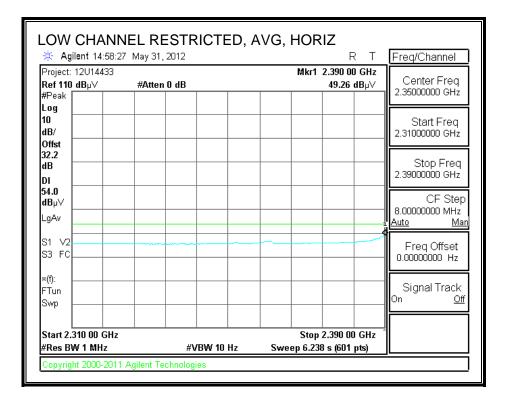
-		Measurer											
Complia	nce Cer	tification	Service	s, Frei	mont 51	n Chamb	er						
Test Engi		Tom Ch	en										
Date:		06/01/12											
Project #		12U1443	3										
Company	V:	LG Elect	tronics										
Test Targ		FCC Cla	ass B										
Mode Op		802.11n,	TX mo	de									
-													
	f	Measuren	nant Fran	manor	Amo	Preamp (	Cain			Average	Field Stren	ath Limit	
	I Dist	Distance			•	Distance		at to 3 mo	tors	-	1d Strength	-	
	Read	Analyzer			Avg			trength @			is Average		
	AF	Antenna	-		Avg Peak	-			/s. Average /s. Peak Lir				
	CL	Cable Los			HPF	High Pas			ngth	Margin V	a. Feak Lii	m	
	CL.	CADIE LOS	55		IIFI'	rngn Pas	a rinei						
f	Dist	Read	AF	CL	Amp	D Corr	Fltr	Corr.	Limit	Margin	Ant. Pol.	Det.	Notes
GHz	(m)	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dB	V/H	P/A/QP	
2412 MH													
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	Α	
2437 MH	••••												
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	- <b>24.2</b>	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	Α	
2462 MH	••••												
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	

Page 48 of 92

## **INDUCTIVE COVER**

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

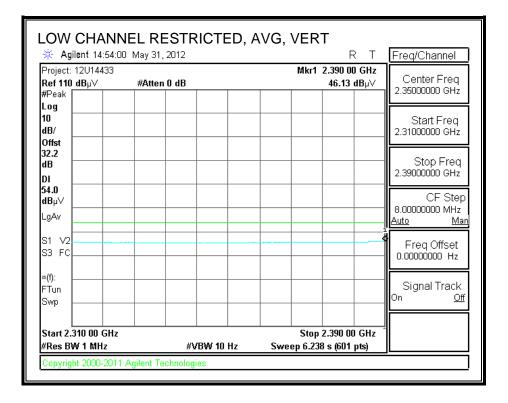




Page 49 of 92

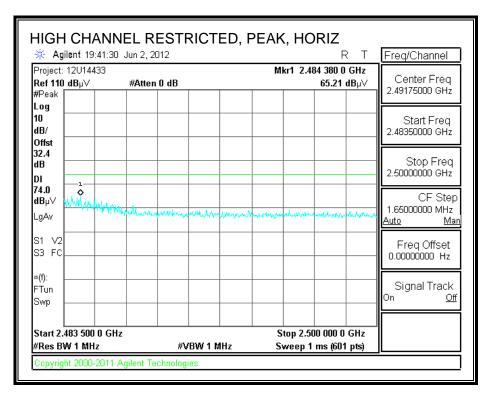
## **RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)**

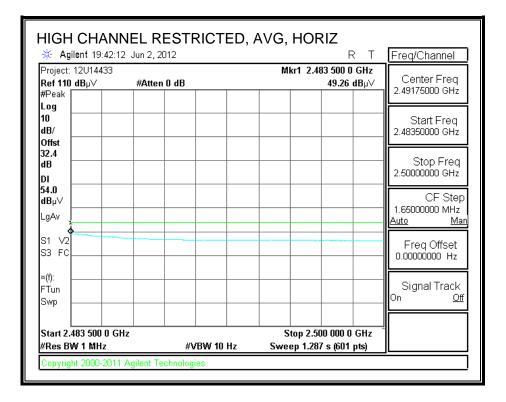
	EL RESTRICT	ED, PEA	-		
🔆 Agilent 14:46:57	May 31, 2012			R T	Freq/Channel
Project: 12∪14433 <b>Ref 110 dB</b> µ∨ #Peak	#Atten 0 dB		Mkr1 2.386 9 58.65		Center Freq 2.3500000 GHz
Log 10 dB/ Offst					Start Freq 2.3100000 GHz
32.2 dB DI					Stop Freq 2.3900000 GHz
74.0 dBµ√ LgAv ununnavladiedu	norgen elles comerciales and	Instruction and the second	-	1 ••••••	CF Step 8.0000000 MHz <u>Auto Man</u>
S1 V2 S3 FC					Freq Offset 0.00000000 Hz
≈(f): FTun Swp					Signal Track On <u>Off</u>
Start 2.310 00 GHz #Res BW 1 MHz	#VBW 1	MHz	Stop 2.390 0 Sweep 1 ms (60'		
Copyright 2000-2011 A	Agilent Technologies				



Page 50 of 92

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

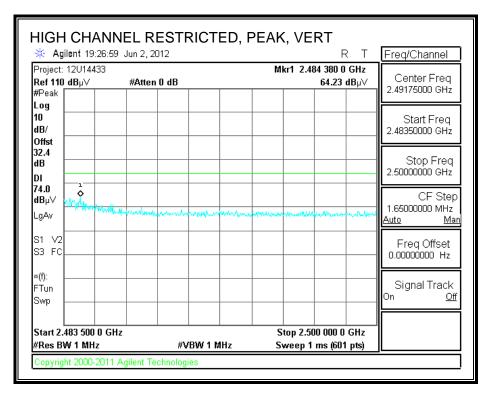


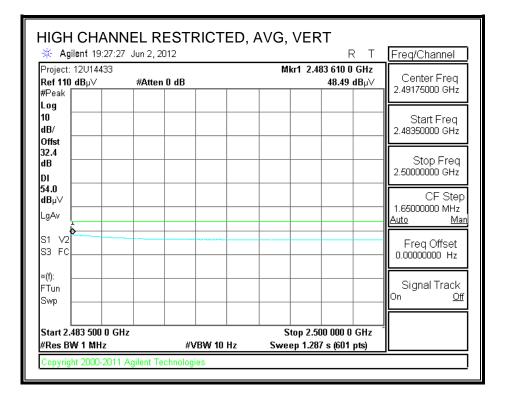


COMPLIANCE CERTIFICATION SERVICES (UL CCS) FORM NO: CCSUP4701D 47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888 This report shall not be reproduced except in full, without the written approval of UL CCS.

Page 51 of 92

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





Page 52 of 92

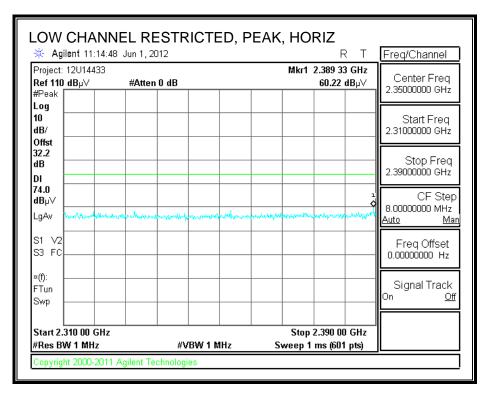
#### HARMONICS AND SPURIOUS EMISSIONS

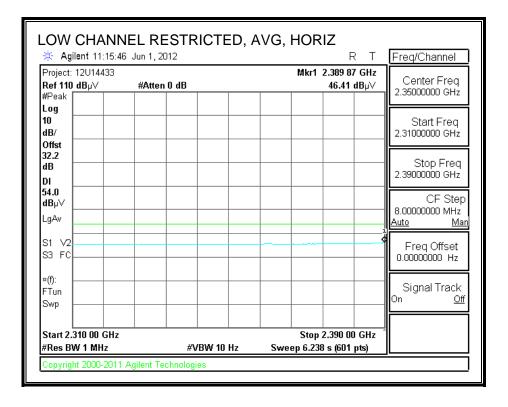
-		Measurer tification		s, Frei	nont 5n	n Chamb	er						
		Tom Ch											
Test Engi													
Date:		06/01/12											
Project #		12U1443	-										
Company		LG Elect											
Test Targ		FCC Cla											
Mode Op	er:	802.11n,	TX moo	de									
	f	Measuren	nent Fred	menev	Amn	Preamp (	lain			Average	Field Stren	eth Limit	
	Dist	Distance		• •		Distance		nt to 3 me	tors		ld Strength		
	Read	Analyzer			Avg			trength (ā			/s. Average		
	AF	Antenna	_		Peak	Calculate			*	_	/s. Average /s. Peak Lir		
	CL	Cable Lo:			HPF	High Pas			ength	Margin V	a. Feak Lii	m	
	CL	Cable LO	55		IIFF	rngn Pas	s rutei	L .					
f	Dist	Read	AF	CL	Amp	D Corr	Fltr	Corr.	Limit	Margin	Ant. Pol.	Det.	Notes
GHz	(m)	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dB	V/H	P/A/QP	
2412 MH	z lln												
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 MH													
4.874	3.0	39.5	33.1		-34.8	0.0	0.0	44.2	74.0	- <b>29.8</b>	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 MH													
4.924	3.0	41.1	33.2		-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	
	3.0	39.2	33.2		-34.8	0.0	0.0	43.9	74.0	-30.1	V	P	
4.924 4.924	3.0	26.6	33.2	6.3	-34.8	0.0	0.0	31.3	54.0	-22.7	V	A	

Page 53 of 92

#### **INDUCTIVE CHARGER WITH INDUCTIVE COVER**

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

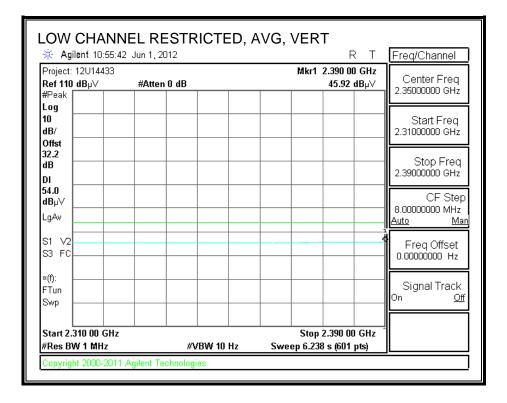




Page 54 of 92

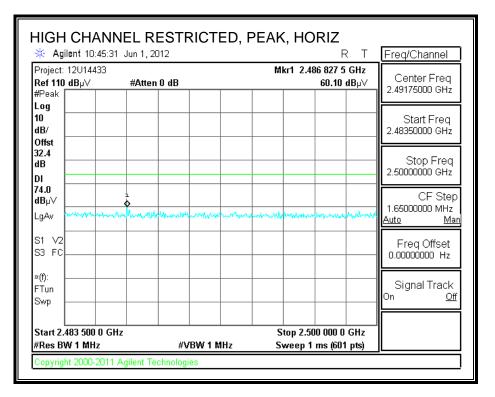
## **RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)**

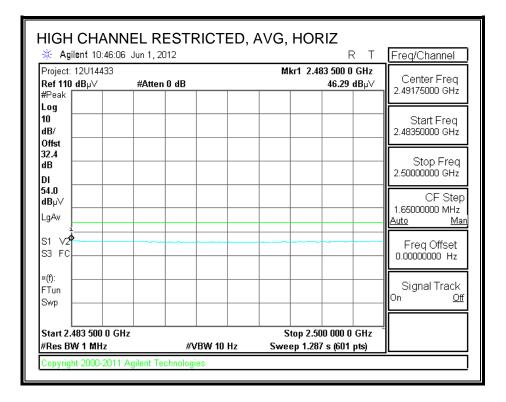
Project: 12U14433  Ref 110 dBµ∨ #Atten #Peak Log 10 dB/ Offst	D dB	Mkr1 2.351 3 58.66		Center Freq 2.3500000 GHz
10 dB/				
				Start Freq 2.31000000 GHz
32.2 dB DI				Stop Freq 2.3900000 GHz
74.0 dBμV LgAv uhan-allitectrantic-second-star	1	er an	orrockeet/tend	CF Step 8.0000000 MHz <u>Auto Man</u>
S1 V2 S3 FC				Freq Offset 0.00000000 Hz
×(f): FTun Swp				Signal Track On <u>Off</u>
Start 2.310 00 GHz #Res BW 1 MHz	#VBW 1 MHz	Stop 2.390 00 Sweep 1 ms (601		



Page 55 of 92

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

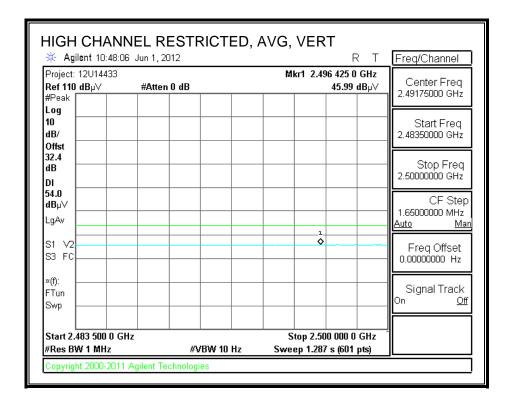




Page 56 of 92 COMPLIANCE CERTIFICATION SERVICES (UL CCS) FORM NO: CCSUP4701D 47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888 This report shall not be reproduced except in full, without the written approval of UL CCS.

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

HIGH CHANNEL R	,	R T	Freq/Channel
Project: 12U14433 <b>Ref 110 dB</b> µ∨ <b>#Atte</b> #Peak	n O dB	Mkr1 2.498 515 0 GHz 59.30 dBµ∨	Center Freq 2.49175000 GHz
Log 10 dB/ Offst			Start Freq 2.48350000 GHz
32.4 dB			Stop Freq 2.5000000 GHz
<b>74.0</b> dBμV LgAv white/ec/ehw/i~en-cover	Hut Marine and Marine Ma	Altreast and a state of the second	CF Step 1.65000000 MHz <u>Auto Man</u>
S1 V2 S3 FC			Freq Offset 0.00000000 Hz
×(f): FTun Swp			Signal Track On <u>Off</u>
Start 2.483 500 0 GHz #Res BW 1 MHz	#VBW 1 MHz	Stop 2.500 000 0 GHz Sweep 1 ms (601 pts)	



Page 57 of 92

#### HARMONICS AND SPURIOUS EMISSIONS

Compila	nce Cer	tification	Service	s, Frei	nont 5n	ı Chamb	er						
Test Eng	r:	Tom Che	n										
Date:		06/01/12											
Project #	ŧ:	12U1443	3										
Compan	y:	LG Elect	ronics										
Test Tar	get:	FCC Cla	ss B										
Mode O	per:	802.11n,	TX mod	le									
	f	Maamaa			1	Preamp (				A	Einld Steen	ath T insis	
	r Dist	Measurem Distance (		-		Distance		* * * * * ****	tors	_	Field Stren ld Strength	-	
	Read	Analyzer			Ave			trength @			is Average		
	AF	Analyzer Antenna l	_		-	Calculate				-	rs. Average rs. Peak Lir		
	CL	Cable Los			HPF	High Pas			ngth	Margin V	s. Feak Li	m	
	CL	Cable Los	8		nrr	riign Pas	s riitei	5					
f	Dist	Read	AF	CL	•	D Corr		Corr.		_	Ant. Pol.		Notes
GHz	(m)	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dB	V/H	P/A/QP	
2412 MH										ļ			
4.824	3.0	38.1	33.1	6.3	-34.8	0.0	0.0	42.6	74.0	-31.4	H	P	
	3.0	25.7	33.1		-34.8		0.0		54.0	-23.8	H	A	
	3.0	39.4 25.9	33.1		-34.8	0.0	0.0		74.0	-30.0	V	P	
4.824	20		33.1	6.3	-34.8	0.0	0.0	30.5	54.0	-23.5	V	Α	
4.824 4.824	3.0	40.9											
4.824 4.824 2437 MH	[z 11n	ļ	33.1	63	34.8	0.0	0.0	43.1	74.0	-30 0	V	D	
4.824 4.824 2437 MH 4.874	[z 11n 3.0	38.4	33.1	6.3	-34.8	0.0	0.0	43.1	74.0 54.0	-30.9	V V	P	
4.824 4.824 2437 MH 4.874 4.874	z 11n 3.0 3.0	38.4 25.4	33.1	6.3	-34.8	0.0	0.0	30.1	54.0	- <b>23.9</b>	V	A	
4.824 4.824 4.824 2437 MH 4.874 4.874 4.874 4.874 4.874 4.874	[z 11n 3.0 3.0 3.0	38.4 25.4 38.0	33.1 33.1	6.3 6.3	-34.8 -34.8	0.0 0.0	0.0 0.0	30.1 42.6	54.0 74.0	-23.9 -31.4	V H	A P	
4.824 4.824 2437 MH 4.874 4.874 4.874 4.874 4.874	[z 11n 3.0 3.0 3.0 3.0 3.0	38.4 25.4	33.1 33.1	6.3 6.3	-34.8	0.0	0.0	30.1	54.0	- <b>23.9</b>	V	A	
4.824 4.824 2437 MH 4.874 4.874 4.874 4.874 4.874 4.874 2462 MH	[z 11n 3.0 3.0 3.0 3.0 3.0	38.4 25.4 38.0	33.1 33.1	6.3 6.3	-34.8 -34.8	0.0 0.0	0.0 0.0	30.1 42.6	54.0 74.0	-23.9 -31.4	V H	A P A	
4.824 4.824 2437 MH 4.874 4.874 4.874 4.874 4.874 2462 MH 4.924	z 11n 3.0 3.0 3.0 3.0 2.0 z 11n	38.4 25.4 38.0 25.2	33.1 33.1 33.1	6.3 6.3 6.3	-34.8 -34.8 -34.8	0.0 0.0 0.0	0.0 0.0 0.0	30.1 42.6 29.8	54.0 74.0 54.0	-23.9 -31.4 -24.2	V H H	A P A P	
4.824 4.824 2437 MH 4.874 4.874 4.874 4.874	z 11n 3.0 3.0 3.0 3.0 (z 11n 3.0	38.4 25.4 38.0 25.2 38.0	33.1 33.1 33.1 33.2	6.3 6.3 6.3 6.3	-34.8 -34.8 -34.8 -34.8	0.0 0.0 0.0	0.0 0.0 0.0	30.1 42.6 29.8 42.8	54.0 74.0 54.0 74.0	-23.9 -31.4 -24.2 -31.2	V H H	A P A	

Page 58 of 92

# 7.2.4. 802.11a MODE IN THE 5.8 GHz BAND

#### STANDARD COVER

#### HARMONICS AND SPURIOUS EMISSIONS

Complia	ice Cer	tification	Service	s, Frei	nont 5n	ı Chamb	er						
Test Engr	:	Tom Che	en										
Date:		05/29/12											
Project #:		12U1443	3										
Company		LG Elect	ronics										
Test Targ		FCC Cla	ass B										
Mode Op	er:	802.11a,	W58 TX	mode	2								
	f	Measuren	nent Fred	wency	Amp	Preamp (	Gain			Average	Field Stren	eth Limit	
	Dist	Distance				Distance		t to 3 me	ters	_	ld Strength	-	
		Analyzer			Avg	Average					s. Average		
	AF	Antenna	-		-	Calculate				-	rs. Peak Lir		
	CL	Cable Los			HPF	High Pas			-			-	
f	Dist	Read	AF	CL	Amp	D Corr	Fltr	Corr.	Limit	Margin	Ant. Pol.	Det.	Notes
GHz	(m)				dB	dB	dB		dBuV/m	dB	V/H	P/A/QP	
5745 MH	z lla												
1.490	3.0	33.9	38.8	10.5	-32.9	0.0	0.7	51.0	74.0	-23.0	V	P	
1.490	3.0	23.3			-32.9	0.0	0.7	40.4	54.0	-13.6		A	
1.490	3.0	35.5		10.5		0.0	0.7	52.7	74.0	-21.3	H	P	
1.490	3.0	28.9	38.8	10.5	-32.9	0.0	0.7	46.1	54.0	-7.9	H	A	
5785 MH										ļ			
1.570	3.0	34.8		••••••	-32.8	0.0	0.7	52.2	74.0	-21.8	H	P	
1.570	3.0	27.6		10.6	þ	0.0	0.7	45.0	54.0	-9.0	H	A	
1.570	3.0	33.8		o	-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 MH: 11.650	z 11a 3.0	364	39.0	10.7	-32.7	0.0	0.7	54.0	74.0	20.0	U	T	
11.650	3.0	36.4 29.2		\$	-32.7	0.0	0.7	54.0 46.9	74.0 54.0	-20.0 -7.1	H H	P	
11.650	3.0	34.9		10.7	þ	0.0	0.7	40.9 52.6	54.0 74.0	-7.1 -21.4	N V	A P	
1.650	3.0	••••••••••••••••••••••••••••		þ	-32.7	¢	0.7			-10.7		A	
Rev. 4.1.2 Note: No		missions	were de	tected	above t	he syster	m nois	e floor.					

## **INDUCTIVE COVER**

## HARMONICS AND SPURIOUS EMISSIONS

Compilat		Measuren tification		s, Frei	mont 5n	n Chamb	er						
Test Engr:		Tom Ch	en										
Date:		05/29/12											
Project #:		12U1443	3										
Company		LG Elect	ronics										
Test Targe	et:	FCC Cla	ass B										
Mode Ope	er:	802.11a,	W58 TX	mod	2								
	f	Measuren	nent Freq	quency	Amp	Preamp (	Gain			Average	Field Streng	gth Limit	
	Dist	Distance	to Anter	ina		Distance	Correc	t to 3 me	ters	Peak Fie	ld Strength	Limit	
	Read	Analyzer	-		Avg					_	s. Average		
	AF	Antenna	Factor		Peak	Calculate			ength	Margin v	s. Peak Lir	nit	
	CL	Cable Los	88		HPF	High Pas	s Filter	T.					
f	Dist			CL	:	: :				: :	Ant. Pol.		Notes
GHz	(m)	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dB	V/H	P/A/QP	
5745 MH2	••••••••••••••••••••								-			_	
11.490	3.0	36.2		å	-32.9	0.0	0.7	53.4	74.0	-20.6	V	P	
11.490	3.0	25.6		o	-32.9	0.0	0.7	42.8	54.0	-11.2	V	A	
11.490 11.490	3.0	37.9 31.3		o	-32.9 -32.9	0.0	0.7 0.7	55.0 48.5	74.0 54.0	-19.0 -5.5	H H	P A	
5785 MH2		31.3	30.0	10.5	-34.7	0.0	0.7	40.2	24.0	-0.0		<b>A</b>	
11.570	3.0	37.2	38.9	10.6	-32.8	0.0	0.7	54.6	74.0	-19.4	Н	P	
11.570	3.0	30.0		o	-32.8	0.0	0.7	47.4	54.0	-6.6	H	A	
11.570	3.0	36.1		o	-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	- <b>9.6</b>	V	Α	
5825 MH2	z 11a												
11.650	3.0	38.7	39.0	10.7	-32.7	0.0	0.7	56.4	74.0	- <b>17.6</b>	H	P	
11.650	3.0	31.6			-32.7	0.0	0.7	49.3	54.0	-4.7	H	A	
11.650	3.0	37.3			-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	- <mark>8.3</mark>	V	A	

Page 60 of 92

## **INDUCTIVE CHARGER WITH INDUCTIVE COVER**

#### HARMONICS AND SPURIOUS EMISSIONS

Test Engr:Tom ChenDate:05/29/12Project #:12U14433Company:LG ElectroTest Target:FCC ClassMode Oper:802.11a, V			3 ronics ss B	mod	2								
R	Dist lead \F L	Measurement Frequency Distance to Antenna Analyzer Reading Antenna Factor Cable Loss			-	D Corr Distance Correct to 3 meters Peak Field Strength Limit Avg Average Field Strength @ 3 m Margin vs. Average Limit Peak Calculated Peak Field Strength Margin vs. Peak Limit							
f	Dist	Read	AF	CL	Amp	D Corr	Fltr	Corr.	Limit	Margin	Ant. Pol.	Det.	Notes
GHz	(m)	dBuV	dB/m	dB	dB	dB		dBuV/m		dB	V/H	P/A/QP	
5745 MHz 1	la											•	
	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	- <b>13.6</b>	H	A	
11.490	3.0	37.2		10.5	å	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	- <b>7.6</b>	V	A	
5785 MHz 1	la												
11.570	3.0	36.8	38.9	10.6	-32.8	0.0	0.7	54.2	74.0	<b>-19.8</b>	V	P	
	3.0	27.2		\$	-32.8	0.0	0.7	44.6	54.0	<b>-9.4</b>	V	A	
	3.0	35.8		o	-32.8	0.0	0.7	53.2	74.0	-20.8	H	P	
	3.0	24.3	38.9	10.6	-32.8	0.0	0.7	41.7	54.0	-12.3	H	A	
5825 MHz 1													
	3.0	37.2		10.7	-32.7	0.0	0.7	54.9	74.0	- <b>19.1</b>	V	P	
	3.0	29.5		10.7	-32.7	0.0	0.7	47.1	54.0	-6.9	V	A	
	3.0	37.0		10.7	\$••••••	0.0	0.7	54.7	74.0	-19.3	H	P	
11.650 Rev. 4.1.2.7	3.0	27.0	39.0	10.7	-32.7	0.0	0.7	44.7	54.0	-9.3	H	A	

COMPLIANCE CERTIFICATION SERVICES (UL CCS) 47173 BENICIA STREET, FREMONT, CA 94538, USA This report shall not be reproduced except in full, without the written approval of UL CCS.

Page 61 of 92

# 7.2.5. 802.11n HT20 MODE IN THE 5.8 GHz BAND

#### STANDARD COVER

#### HARMONICS AND SPURIOUS EMISSIONS

-		Measuren tification		s. Frei	nont 5n	n Chamb	er						
				.,									
Test Engr	•	Tom Ch											
Date:		05/29/12											
Project #		12U14433 LG Electronics											
Company													
Test Target: Mode Oper:		FCC Class B 802.11n, W58 TX mode											
Mode Op	er:	802.11n,	W58 12	( mod	2								
	f	Measuren	nent Fred	uency	Amp	Preamp (	gth Limit						
	Dist	Analyzer Reading Avg Antenna Factor Peak			-	Distance		t to 3 me	ters	Peak Fie			
	Read				Avg	Average	Field S	trength @	3 m		s. Average		
	AF				-	Calculate				_	rs. Peak Lis		
	CL					F High Pass Filter							
f	Dist	Read	AF	CL	Amn	D Corr	Fltr	Corr	Limit	Margin	Ant. Pol.	Det.	Notes
GHz	(m)	dBuV			dB	dB	•	:	dBuV/m	-	V/H	P/A/QP	110125
5745 MH													
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		•••••••	-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	- <b>13.5</b>	V	A	
5785 MH	z 11n												
11.570	3.0	33.7		¢	-32.8	0.0	0.7	51.1	74.0	-22.9	V	P	
11.570	3.0	24.9		¢	-32.8	0.0	0.7	42.3	54.0	-11.7	V	Α	
11.570	3.0	34.0		¢	-32.8	¢	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	Α	
5825 MH	••••••••••••••••••	24.2	20.0	10.7	20.7	0.0	07	50.0	74.0		v	n	
11.650	3.0	34.3		¢	-32.7	0.0	0.7	52.0	74.0	-22.0	V	P	
				¢		¢	٥			• • • • • • • • • • • • • • • • • • • •			
				•••••••		¢	•••••••	•••••••••••••••••••		• • • • • • • • • • • • • • • • • • •			
11.650 11.650 11.650 11.650 Rev. 4.1.2 Note: No	3.0 3.0 3.0 .7	25.4 35.9 27.6	39.0 39.0 39.0	10.7 10.7 10.7	-32.7 -32.7 -32.7	0.0 0.0 0.0	0.7 0.7 0.7	43.1 53.6 45.3	74.0 54.0 74.0 54.0	-22.0 -10.9 -20.4 -8.7	V H H	A P A	

Page 62 of 92

#### **INDUCTIVE COVER**

#### HARMONICS AND SPURIOUS EMISSIONS

Compilar	• •	Measuren tification		s, Frei	nont 5n	n Chamb	er							
Test Engr	:	Tom Che	en											
Date:		05/29/12												
Project #:		12U1443	3											
Company		LG Electronics												
Test Targ	et:	FCC Cla	ass B											
Mode Op	er:	802.11n,	W58 T	( mod	e									
	f Measurement Frequency A					Preamp (	gth Limit							
	Dist	Distance	to Anter	ina	D Corr	Distance	Correc	ct to 3 me	ters	Peak Field Strength Limit				
	Read	Analyzer	Analyzer Reading Avg			Average Field Strength @ 3 m				Margin vs. Average Limit				
	AF	Antenna Factor Peak				Calculate	d Peak	r Field Stre	ength	Margin vs. Peak Limit				
	CL	Cable Los	IS		HPF	High Pas	s Filter	r	_					
f	Dist	:	AF	CL	Amp	D Corr		Corr.			Ant. Pol.		Notes	
GHz	(m)	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dB	V/H	P/A/QP		
5745 MH2		ļ												
11.490	3.0	36.3		10.5	-32.9	0.0	0.7	53.4	74.0	-20.6	H	P		
11.490	3.0	26.7		10.5	\$	0.0	0.7	43.9	54.0	-10.1	H	A		
11.490	3.0	36.0		10.5		0.0	0.7	53.2	74.0	-20.8	V	P		
		25.6	30.0	10.5	-32.9	0.0	0.7	42.8	54.0	-11.2	V	A		
11.490		1												
11.490 5785 MHz	z 11n	36.0	38.9	10.6	-32.8	0.0	0.7	53.5	74.0	-20.5	V	P		
11.490 5785 MHz 11.570	z 11n 3.0	36.0 27.2		o	-32.8 -32.8	0.0	0.7 0.7	53.5 44.7	74.0 54.0	-20.5 -9.3	V V	P		
11.490 5785 MH: 11.570 11.570	z 11n 3.0 3.0	27.2	38.9	10.6	-32.8	0.0	0.7	44.7	54.0	- <b>9.3</b>	V V H	P A		
11.490 5785 MHz 11.570 11.570 11.570 11.570	z 11n 3.0	••••••••••••••••••••••••••••••••••••		10.6 10.6	-32.8 -32.8	\$q			54.0 74.0	-9.3 -20.2	H	P A P		
11.490 5785 MHz 11.570 11.570 11.570 11.570 11.570	z 11n 3.0 3.0 3.0 3.0 3.0	27.2 36.3	38.9 38.9 38.9	10.6 10.6 10.6	-32.8 -32.8 -32.8	0.0 0.0	0.7 0.7 0.7	44.7 53.8	54.0	-9.3 -20.2 -9.3	H H	P A		
11.490 5785 MHz 11.570 11.570 11.570 11.570 5825 MHz 11.650	z 11n 3.0 3.0 3.0 3.0 z 11n 3.0	27.2 36.3 27.3 36.7	38.9 38.9 38.9 38.9	10.6 10.6 10.6 10.7	-32.8 -32.8 -32.8 -32.7	0.0 0.0 0.0	0.7 0.7 0.7 0.7	44.7 53.8 44.7 54.4	54.0 74.0 54.0 74.0	-9.3 -20.2 -9.3 -19.6	H H V	P A P A P		
11.490 5785 MHz 11.570 11.570 11.570 11.570 5825 MHz 11.650 11.650	z 11n 3.0 3.0 3.0 3.0 z 11n 3.0 3.0 3.0	27.2 36.3 27.3 36.7 27.7	38.9 38.9 38.9 39.0 39.0	10.6 10.6 10.6 10.7 10.7	-32.8 -32.8 -32.8 -32.7 -32.7	0.0 0.0 0.0 0.0 0.0	0.7 0.7 0.7 0.7 0.7	44.7 53.8 44.7 54.4 45.4	54.0 74.0 54.0 74.0 54.0	-9.3 -20.2 -9.3 -19.6 -8.6	H H V V	P A P A P A		
11.490 5785 MHz 11.570 11.570 11.570 11.570 5825 MHz 11.650	z 11n 3.0 3.0 3.0 3.0 z 11n 3.0	27.2 36.3 27.3 36.7	38.9 38.9 38.9 39.0 39.0 39.0	10.6 10.6 10.6 10.7 10.7	-32.8 -32.8 -32.8 -32.7 -32.7 -32.7	0.0 0.0 0.0	0.7 0.7 0.7 0.7	44.7 53.8 44.7 54.4	54.0 74.0 54.0 74.0	-9.3 -20.2 -9.3 -19.6	H H V	P A P A P		

Page 63 of 92

#### **INDUCTIVE CHARGER WITH INDUCTIVE COVER**

#### HARMONICS AND SPURIOUS EMISSIONS

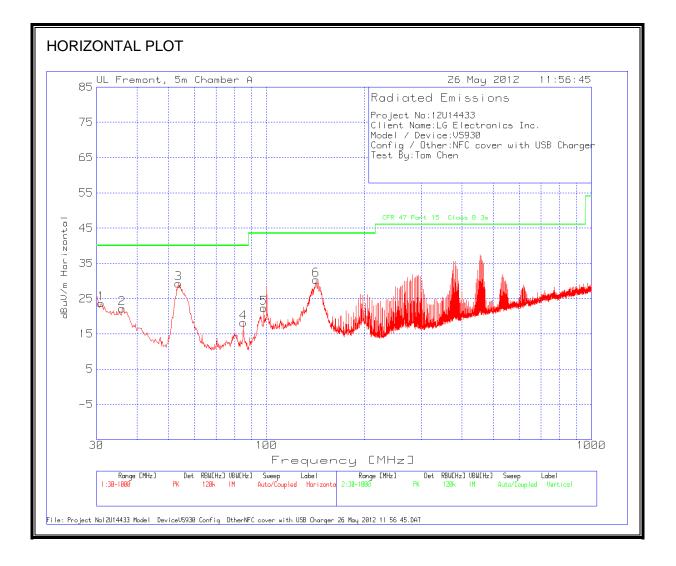
FCC C 802.11: Measure Distance	2 etronics lass B a, W58 T ement Free e to Anter er Reading	X mod quency nna	Amp	Preamp (								
12U144 LG Ele FCC C 802.11 Measure Distanc Analyze Antenn	133 ectronics lass B a, W58 T ement Free e to Anter er Reading	X mod quency nna	Amp	Preamp (								
LG Ele FCC C 802.11: Measure Distance Analyze Antenn	etronics lass B a, W58 D ement Free e to Anter er Reading	X mod quency nna	Amp	Preamp (								
FCC C 802.111 Measure Distance Analyze Antenn	lass B n, W58 T ement Free e to Anter er Reading	X mod quency nna	Amp	Preamp (								
802.11 Measure Distance Analyze Antenn	a, W58 T ement Free e to Anter er Reading	quency nna	Amp	Preamp (								
Measure Distanc Analyze Antenn	ement Free e to Anter er Reading	quency nna	Amp	Preamp (								
Distanc Analyze Antenn	e to Anter er Reading	nna		Preamp (								
Analyz Antenn	er Reading		DO		gth Limit							
Antenn	-		D Corr	Distance	Corre	ct to 3 me	ters	Peak Fie	ld Strength	Limit		
	Faster	l -	Avg	Average I	Field S	trength @	3 m	Margin v	s. Average	Limit		
Cable L	a ractor		Peak	Calculate	d Peak	r Field Stre	ength	Margin vs. Peak Limit				
	DSS		HPF	High Pas	s Filter	r						
st Read								-			Notes	
	dD/m		- 415	0.0	an	in and a state of the state of	ubuv/m	uD.	V/11	ringr		
	38.8	10.5	-32.0	0.0	07	53.3	74.0	-20.7	н	p		
				\$\$						A		
		·		·						P		
				o								
		1		•								
36.6	38.9	10.6	-32.8	0.0	0.7	54.0	74.0	-20.0		P		
) 25.7	38.9	10.6	-32.8	0.0	0.7	43.2	54.0	-10.8		A		
35.9	38.9	••	· • · · · · · · · · · · · · · · · · · ·	0.0			74.0					
·····	38.9	10.6	-32.8	0.0	0.7	43.3	54.0	-10.7	H	A		
										_		
		••	<b>*</b>	•••••••••••••••••••				·····		P		
				· • · · · · · · · · · · · · · · · · · ·	·····							
		• • • • • • • • • • • • • • • • • • • •	• <b>•</b> • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • •								
	)         dBuV           0         36.1           0         22.9           0         35.7           0         25.9           0         36.6           0         25.7           0         35.9           0         25.9           0         35.9           0         25.9           0         35.9           0         25.9           0         38.1           0         29.4           0         37.3           0         29.7	dBuV         dB/m           0         36.1         38.8           0         22.9         38.8           0         35.7         38.8           0         25.9         38.8           0         25.9         38.8           0         36.6         38.9           0         25.7         38.9           0         35.9         38.9           0         25.9         38.9           0         35.9         38.9           0         38.1         39.0           0         29.4         39.0           0         37.3         39.0	dBuV         dB/m         dB           0         36.1         38.8         10.5           0         22.9         38.8         10.5           0         35.7         38.8         10.5           0         35.7         38.8         10.5           0         35.7         38.8         10.5           0         36.6         38.9         10.6           0         36.6         38.9         10.6           0         25.7         38.9         10.6           0         35.9         38.9         10.6           0         25.9         38.9         10.6           0         25.9         38.9         10.6           0         25.9         38.9         10.6           0         25.9         38.9         10.7           0         37.3         39.0         10.7           0         29.7         39.0         10.7	)         dBuV         dB/m         dB         dB           0         36.1         38.8         10.5         -32.9           0         22.9         38.8         10.5         -32.9           0         35.7         38.8         10.5         -32.9           0         25.9         38.8         10.5         -32.9           0         25.9         38.8         10.6         -32.8           0         25.7         38.9         10.6         -32.8           0         25.9         38.9         10.6         -32.8           0         25.9         38.9         10.6         -32.8           0         25.9         38.9         10.6         -32.8           0         25.9         38.9         10.6         -32.8           0         25.9         38.9         10.6         -32.8           0         25.9         38.9         10.7         -32.7           0         38.1         39.0         10.7         -32.7           0         37.3         39.0         10.7         -32.7           0         29.7         39.0         10.7         -32.7	)         dBuV         dB/m         dB         dB         dB         dB           0         36.1         38.8         10.5         -32.9         0.0           0         22.9         38.8         10.5         -32.9         0.0           0         35.7         38.8         10.5         -32.9         0.0           0         25.9         38.8         10.5         -32.9         0.0           0         25.9         38.8         10.5         -32.9         0.0           0         36.6         38.9         10.6         -32.8         0.0           0         25.7         38.9         10.6         -32.8         0.0           0         35.9         38.9         10.6         -32.8         0.0           0         35.9         38.9         10.6         -32.8         0.0           0         25.9         38.9         10.6         -32.7         0.0           0         38.1         39.0         10.7         -32.7         0.0           0         29.4         39.0         10.7         -32.7         0.0           0         29.7         39.0         10.7	)         dBuV         dB/m         dB	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	b)         dBuV         dB/m         dB         dB         dB         dB         dB         dB         dB         dB         dV/m         dB         V/H         P/A/QP           0         36.1         38.8         10.5         -32.9         0.0         0.7         53.3         74.0         -20.7         H         P           0         22.9         38.8         10.5         -32.9         0.0         0.7         40.0         54.0         -14.0         H         A           0         35.7         38.8         10.5         -32.9         0.0         0.7         43.0         54.0         -11.0         V         P           0         25.9         38.8         10.6         -32.9         0.0         0.7         43.0         54.0         -11.0         V         A           0         36.6         38.9         10.6         -32.8         0.0         0.7         43.2         54.0         -10.8         V         A           0         35.9         38.9         10.6         -32.8         0.0         0.7         53.3         74.0         -20.7         H         P           0         25.9         38.9	

Page 64 of 92

# 8. WORST-CASE BELOW 1 GHz

## STANDARD COVER

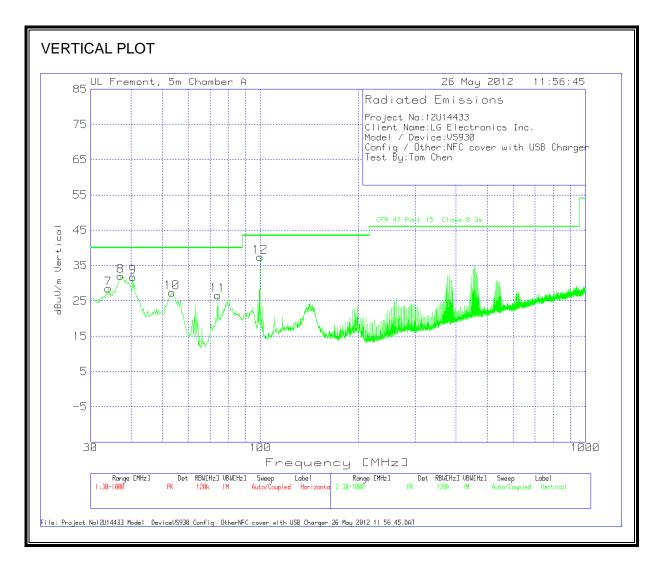
## SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)



COMPLIANCE CERTIFICATION SERVICES (UL CCS) 47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888 This report shall not be reproduced except in full, without the written approval of UL CCS.

Page 65 of 92

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



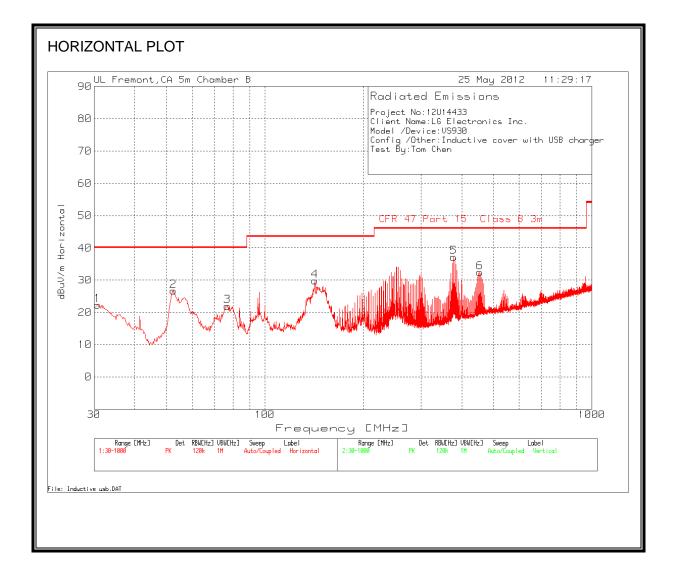
Page 66 of 92

HORIZON	NTAL AN	ID VERT	ICAL DATA					
Project No:	12U14433							
Client Nam	e:LG Electr	onics Inc.						
Model / De	vice:VS930	)						
Config / Otl	her:NFC co	ver with U	SB Charger					
Test By:Ton	n Chen							
Horizontal 3	30 - 1000MI	Hz		7242 A 1				
			25MHz-1GHz	T243 Sunol		CFR 47 Part		
Test	Meter		ChmbrA	Bilog.TXT	10.11	15 Class B		
Frequency			Amplified.TX (dB)	(dB)	dBuV/m	3m	Margin	Polarity
30.9692			-27.5	20.4			-16.31	
36.0092			-27.5		22.25	40		
53.6491	49.25		-27.3	7.3	29.25	40	-10.75	
84.8581	38.02		-27.1	7.3	18.22	40	-21.78	
98.2334	39.54		-26.9	9.7		43.5		
142.2362	44.22	РК	-26.6	12.7	30.32	43.5	-13.18	Horz
Vertical 30	- 1000MHz							
			25MHz-1GHz	T243 Sunol		CFR 47 Part		
Test	Meter		ChmbrA	Bilog.TXT		15 Class B		
Frequency	Reading	Detector	Amplified.TX (dB)	(dB)	dBuV/m	3m	Margin	Polarity
34.0707	37.77	PK	-27.6	18.3	28.47	40	-11.53	Vert
37.1723	43.47	РК	-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	РК	-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

Page 67 of 92

## **INDUCTIVE COVER**

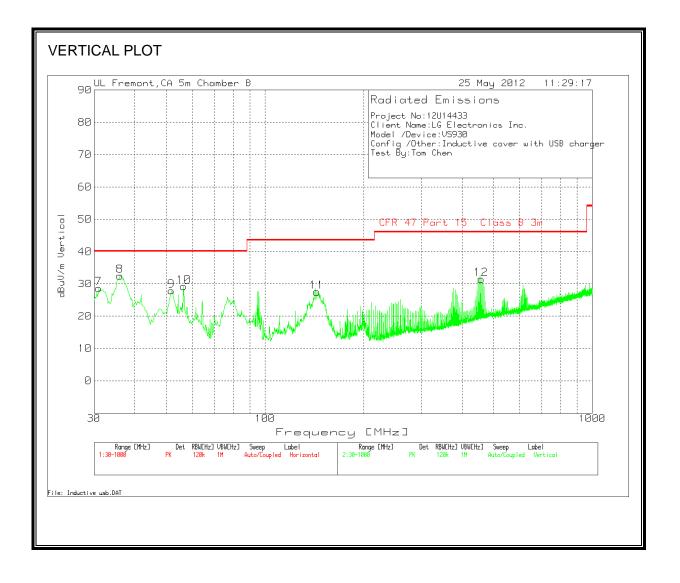
## SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)



COMPLIANCE CERTIFICATION SERVICES (UL CCS) FORM NO: CCSUP4701D 47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888 This report shall not be reproduced except in full, without the written approval of UL CCS.

Page 68 of 92

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



COMPLIANCE CERTIFICATION SERVICES (UL CCS) 47173 BENICIA STREET, FREMONT, CA 94538, USA This report shall not be reproduced except in full, without the written approval of UL CCS. FORM NO: CCSUP4701D TEL: (510) 771-1000 FAX: (510) 661-0888

Page 69 of 92

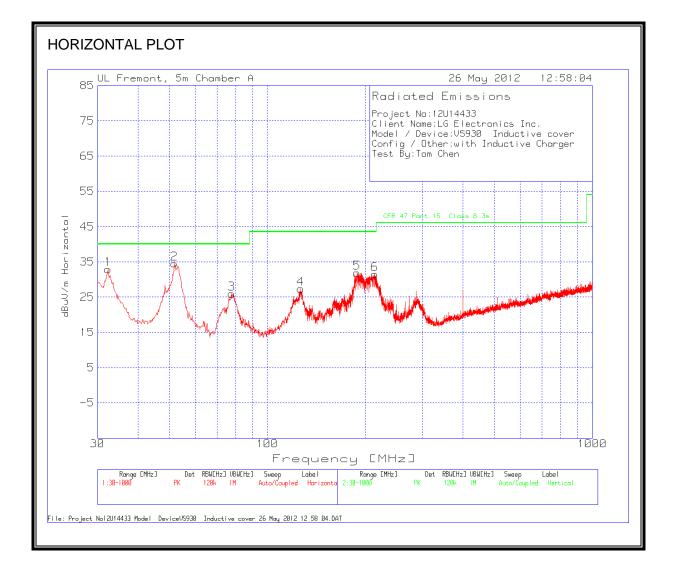
HORIZON	TAL AND	VERTIC	AL DATA					
Project No:1	2014433							
Client Name		onics Inc.						
Model /Devi		Thes have						
		e cover wi	th USB charg	er				
Test By:Tom								
Horizontal 3	0 - 1000MH	z						
		(	T122 Sunol	5mB Amp		CFR 47 Part		
Test	Meter	1	Bilog.TXT	Path 30-		15 Class B		
Frequency	Reading	Detector	(dB)	1000MHz (dB)	dBuV/m	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	РК	8	-28.8	22.02	40	-17.98	Horz
142.2362	44.96	РК	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							
		'	T122 Sunol	5mB Amp		CFR 47 Part		
Test	Meter	1 '	Bilog.TXT	Path 30-		15 Class B		
Frequency	Reading	Detector	(dB)	1000MHz (dB)	dBuV/m	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	РК	12.8	-28.1	27.52	43.5	-15.98	Vert
457.6219	41.44	PK	17	-27	31.44	46	-14.56	Vert

COMPLIANCE CERTIFICATION SERVICES (UL CCS) FORM NO: CCSUP4701D 47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0 This report shall not be reproduced except in full, without the written approval of UL CCS. FAX: (510) 661-0888

Page 70 of 92

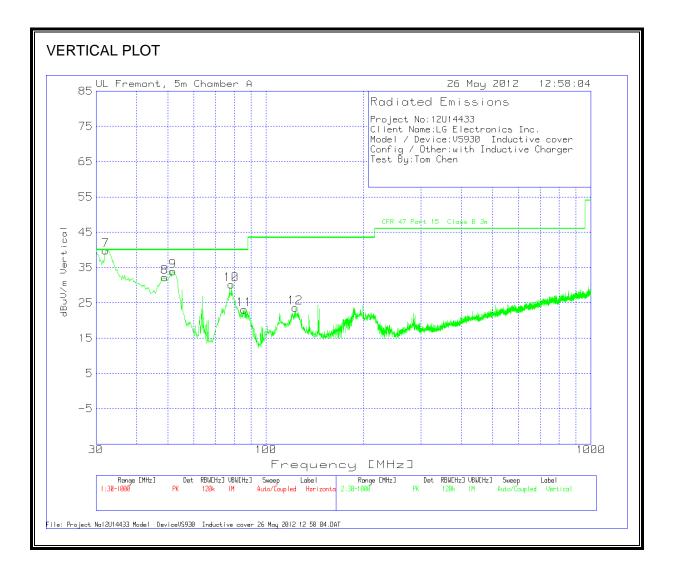
## INDUCTIVE CHARGER WITH INDUCTIVE COVER

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



Page 71 of 92

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



Page 72 of 92

HORIZONTAL AND VERTICAL DATA										
12U14433										
e:LG Electr	onics Inc.									
vice:VS930	)									
her: Induc	tive cover	with Inductive Char	ger							
n Chen										
30 - 1000M	Hz									
		25MHz-1GHz	T243 Sunol		CFR 47 Part					
Meter		ChmbrA	Bilog.TXT		15 Class B					
Reading	Detector	Amplified.TX (dB)	(dB)	dBuV/m	3m	Margin	Polarity			
41.05	PK	-27.6	19.5	32.95	40	-7.05	Horz			
54.12	PK	-27.2	7.6	34.52	40	-5.48	Horz			
45.28	РК	-27.1	7.8	25.98	40	-14.02	Horz			
40.31	РК	-26.8	13.8	27.31	43.5	-16.19	Horz			
46.89	РК	-26.3	11.3	31.89	43.5	-11.61	Horz			
47.18	РК	-26.2	10.5	31.48	43.5	-12.02	Horz			
- 1000MHz										
		25MHz-1GHz	T243 Sunol		CFR 47 Part					
Meter		ChmbrA			15 Class B					
Reading	Detector	Amplified.TX (dB)		dBuV/m	3m	Margin	Polarity			
-		-27.5	19.7	-	40	-	Vert			
	-	-27.3	8.5	32.22	40		Vert			
		-27.2	7.6	33.96	40	-6.04	Vert			
		-27.1	7.8	30.19	40	-9.81	Vert			
		-27	7.4	23.17	40					
		-26.7	14	23.66	43.5	-19.84	Vert			
	e:LG Electr vice:VS930 ner: Induc n Chen 30 - 1000M Meter Reading 41.05 54.12 45.28 40.31 46.89 47.18 - 1000MHz Neter Reading 47.53 51.02 53.56 49.49 42.77	e:LG Electronics Inc. vice:VS930 her: Inductive cover h Chen 30 - 1000MHz Meter Reading 41.05 PK 54.12 PK 45.28 PK 40.31 PK 46.89 PK 46.89 PK 47.18 PK 46.89 Meter Meter	e:LG Electronics Inc. vice:VS930 her: Inductive cover with Inductive Char h Chen 30 - 1000MHz <b>25MHz-1GHz</b> <b>Meter</b> <b>Reading Detector</b> 41.05 PK -27.6 54.12 PK -27.2 45.28 PK -27.1 40.31 PK -26.8 46.89 PK -26.3 47.18 PK -27.1 40.31 PK -26.3 47.18 PK -27.2 49.49 PK -27.3 53.56 PK -27.2 49.49 PK -27.1	e:LG Electronics Inc. vice:VS930 ner: Inductive cover with Inductive Charger n Chen 30 - 1000MHz 30 - 1000MHz 30 - 1000MHz 30 - 1000MHz 41.05 PK 54.12 PK 54.12 PK 727.6 45.28 PK 727.6 45.28 PK 727.1 7.8 40.31 PK 726.8 13.8 46.89 PK 726.8 13.8 46.89 PK 726.3 11.3 47.18 PK 726.3 11.3 7 7 8 40.31 PK 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	e:LG Electronics Inc.       Image: Inductive cover with Inductive Charger       Image: Inductive cover with Inductive Charger         in Chen       Image: Inductive cover with Inductive Charger       Image: Inductive cover with Inductive Charger         in Chen       Image: Inductive cover with Inductive Charger       Image: Inductive Charger         in Chen       Image: Inductive Charger       Image: Inductive Charger         30 - 10000MHz       Image: Inductive Charger       Image: Inductive Charger         Meter       Z5MHz-1GHz       T243 Sunol         Meter       Amplified.TX (dB)       dBuV/m         41.05       PK       -27.2       7.6         54.12       PK       -27.1       7.8       25.98         40.31       PK       -26.3       11.3       31.89         47.18       PK       -26.2       10.5       31.48         1000MHz       Image: Inductive Charger       Image: Inductive Charger       Image: Inductive Charger         Meter       Z5MHz-1GHz       T243 Sunol       Image: Inductive Charger       Image: Inductive Charger         Meter       Detector       Amplified.TX (dB)       Image: Inductive Charger       Image: Inductive Charger         Meter       Detector       Amplified.TX (dB)       Image: Inductive Charger       Image:	e:LG Electronics Inc.       Image: Inductive cover with Inductive Charger       Image: Inductive cover with Inductive Charger         in Chen       Image: Inductive cover with Inductive Charger       Image: Inductive Charger         in Chen       Image: Inductive Charger       Image: Inductive Charger	e:LG Electronics Inc.       Image: Since in the image: Since in t			

COMPLIANCE CERTIFICATION SERVICES (UL CCS) FORM NO: CCSUP4701D 47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0 This report shall not be reproduced except in full, without the written approval of UL CCS. FAX: (510) 661-0888

Page 73 of 92

# 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

Page 74 of 92

#### **RESULTS**

#### STANDARD COVER

#### **6 WORST EMISSIONS**

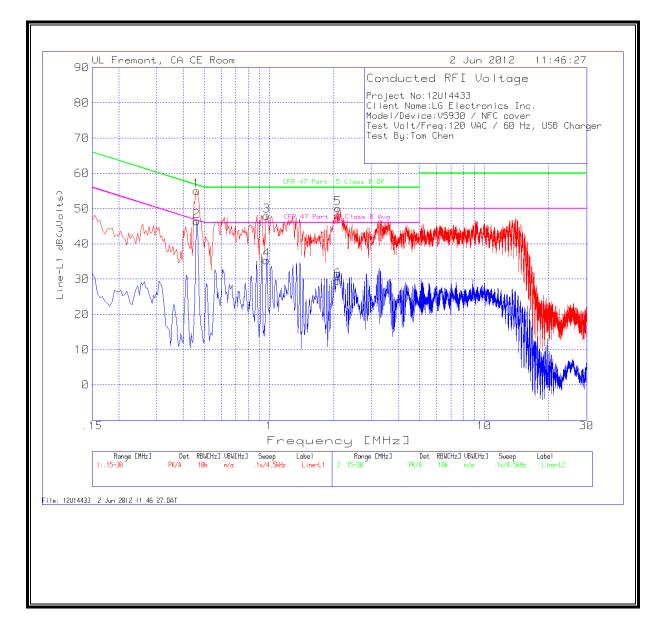
Project No:	12U14433								
Client Nam	e:LG Electr	onics Inc.							
Model/Dev	ice:VS930/	NFC cove	r						
Test Volt/Fr	req:120 VA	C / 60 Hz, l	JSB Charge	r					
Test By:Tom	n Chen								
Line-L1 .15 -	- 30MHz								
			T24 IL	LC Cables		CFR 47 Part		CFR 47 Part	
Test	Meter		L1.TXT	1&3.TXT	dB(uVolt	15 Class B		15 Class B	
Frequency	Reading	Detector	(dB)	(dB)	s)	QP	Margin	Avg	Margin
0.4605	54.91	РК	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	РК	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	РК	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								
			T24 IL	LC Cables		CFR 47 Part		CFR 47 Part	
Test	Meter		L2.TXT	2&3.TXT		15 Class B		15 Class B	
<u> </u>	Reading		(dB)	(dB)	s)	QP	Margin	Avg	Margin
0.465			0.1	0	53.2		-3.4		-
0.465			0.1	0	40.77		-	46.6	-5.83
0.9735			0.1	0.1	46.76		-9.24		-
0.9735	28.43		0.1	0.1	28.63		-	46	-17.37
1.347	44.98		0.1	0.1	45.18	56	-10.82	-	-
1.347	17.28	Av	0.1	0.1	17.48	-	-	46	-28.52

COMPLIANCE CERTIFICATION SERVICES (UL CCS) FORM NO: CCSUP4701D 47173 BENICIA STREET, FREMONT, CA 94538, USÁ TEL: (510) 771-1000 FAX: (510) 661-0888 This report shall not be reproduced except in full, without the written approval of UL CCS.

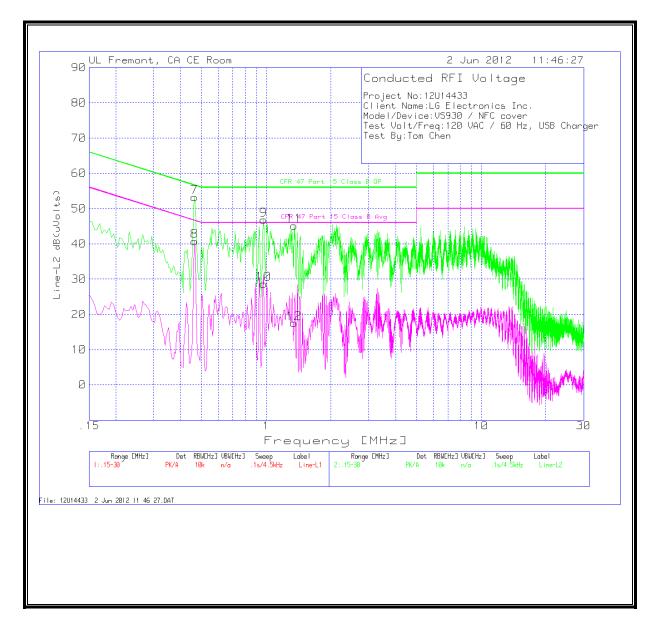
Page 75 of 92

## STANDARD COVER

#### LINE 1 RESULTS



Page 76 of 92



Page 77 of 92

## **RESULTS**

#### **INDUCTIVE COVER**

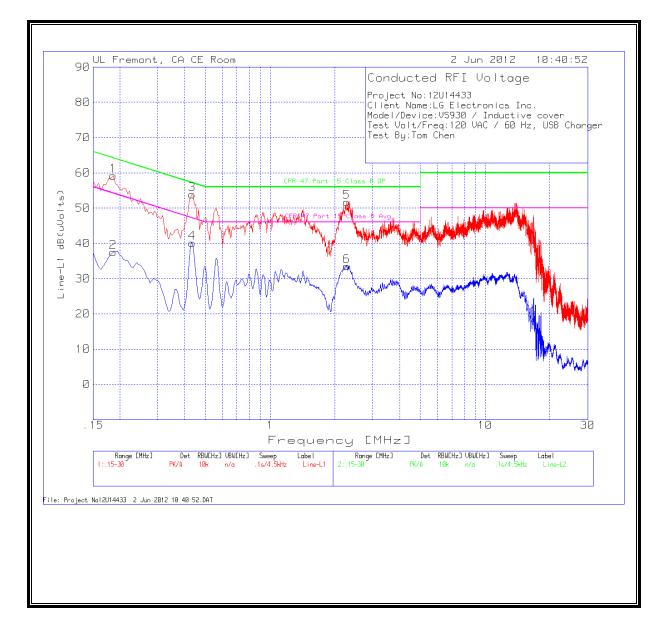
## **6 WORST EMISSIONS**

Project No:12U1	4433								
Client Name:LG	Electronic	s Inc.							
Model/Device:V	/S930 / Ind	uctive cove	er, USB cha	rger					
Test Volt/Freq:1	20 VAC / 6	0 Hz							
Test By:Tom Che	en								
Line-L1 .15 - 30N	1Hz								
	Meter		T24 IL L1.TXT	LC Cables 1&3.TXT	dB(uVolt	CFR 47 Part 15 Class B		CFR 47 Part 15 Class B	
Test Frequency	Reading	Detector	(dB)	(dB)	s)	QP	Margin	Avg	Margin
0.186	59.04	РК	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	РК	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	РК	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 - 30N	1Hz								
			T24 IL	LC Cables		CFR 47 Part		CFR 47 Part	
	Meter		L2.TXT	2&3.TXT	dB(uVolt	15 Class B		15 Class B	
Test Frequency	Reading	Detector	(dB)	(dB)	s)	QP	Margin	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

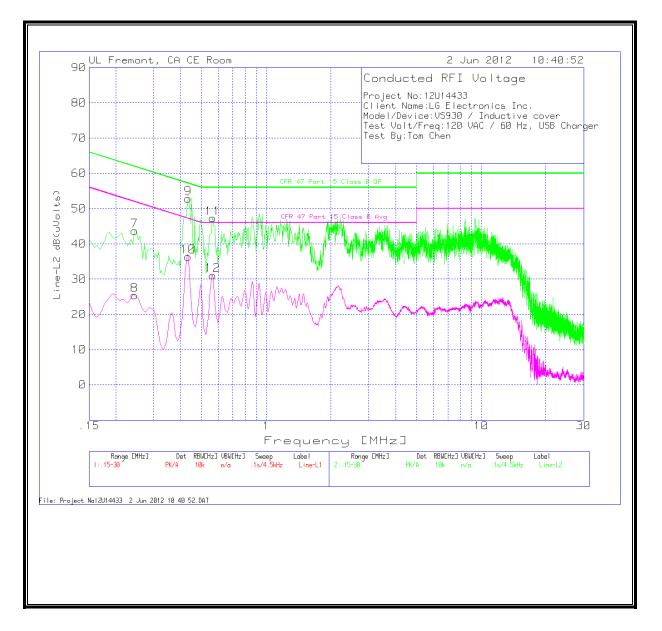
Page 78 of 92

## **INDUCTIVE COVER**

## LINE 1 RESULTS



Page 79 of 92



Page 80 of 92

#### **RESULTS**

#### **INDUCTIVE CHARGER PAD**

#### **EUT WITH ANTENNA**

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

Project No:	12U14433								
Client Name	e:LG Electro	onics Inc.							
Model/Dev	ice:VS930/	/ Inductive	cover,pad						
Test Volt/Fr	eq:120 VA	C / 60 Hz, N	NFC on						
Test By:Tom	n Chen								
Line-L1 .15 -	30MHz								
			T24 IL	LC Cables		CFR 47		CFR 47 Part	
Test	Meter		L1.TXT	1&3.TXT	dB(uVolt	Part 15		15 Class B	
Frequency	Reading	Detector	(dB)	(dB)	s)	Class B QP	Margin	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	РК	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	РК	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								
			T24 IL	LC Cables		CFR 47		CFR 47 Part	
Test	Meter		L2.TXT	2&3.TXT	dB(uVolt	Part 15		15 Class B	
Frequency	Reading	Detector	(dB)	(dB)	s)	Class B QP	Margin	Avg	Margin
1.2345	47.35	РК	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	РК	0.2	0.2	51.76	60	-8.24	-	-
13.6635	36.45	Av	0.2	0.2	36.85	-	-	50	-13.15

Page 81 of 92

## **EUT WITH 50 OHM TERMINATOR**

#### **6 WORST EMISSIONS**

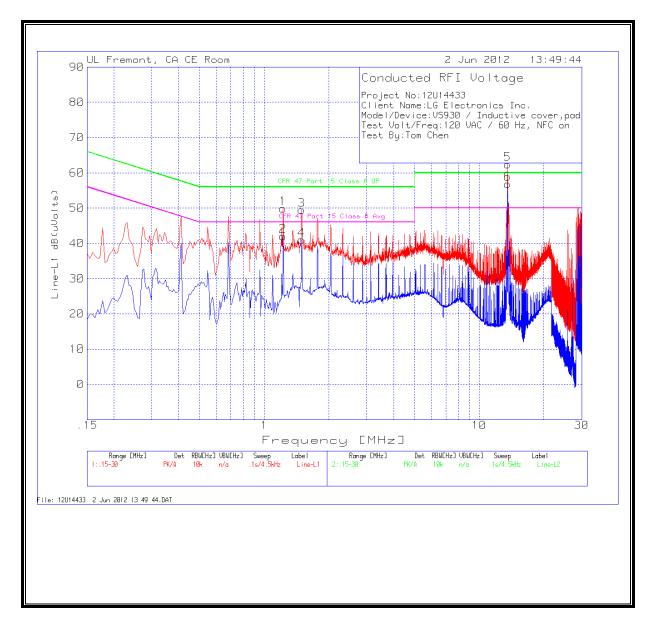
Project No:	12U14433								
<b>Client Nam</b>	e:LG Electr	onics Inc.							
Model/Dev	vice:VS930	/ Inductive	e cover,pac	ł					
Test Volt/F	req:120 VA	C / 60 Hz,	NFC on						
Test By:Tor	n Chen								
Line-L1.15	- 30MHz								
Test	Meter		T24 IL L1.TXT	LC Cables 1&3.TXT	dB(uVolt	CFR 47 Part 15 Class B		CFR 47 Part 15 Class B	
Frequency	Reading	Detector	(dB)	(dB)	s)	QP	Margin	Avg	Margin
0.4605	41.94	РК	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	РК	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	РК	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								
			T24 IL	LC Cables		CFR 47 Part		CFR 47 Part	
Test	Meter		L2.TXT	2&3.TXT	•	15 Class B		15 Class B	
Frequency	J		(dB)	(dB)	s)	QP	Margin	Avg	Margin
0.456			0.1	0	37.79		-19.01		-
0.456	24.42	Av	0.1	0	24.52	-	-	46.8	-22.28
1.554	33.47	РК	0.1	0.1	33.67	56	-22.33	-	-
1.554			0.1	0.1	14.82		-	46	-31.18
13.7175	29.67	РК	0.2	0.2	30.07	60	-29.93	-	-
13.7175	7.36	Av	0.2	0.2	7.76	-	-	50	-42.24

COMPLIANCE CERTIFICATION SERVICES (UL CCS) FORM NO: CCSUP4701D 47173 BENICIA STREET, FREMONT, CA 94538, USÁ TEL: (510) 771-1000 FAX: (510) 661-0888 This report shall not be reproduced except in full, without the written approval of UL CCS.

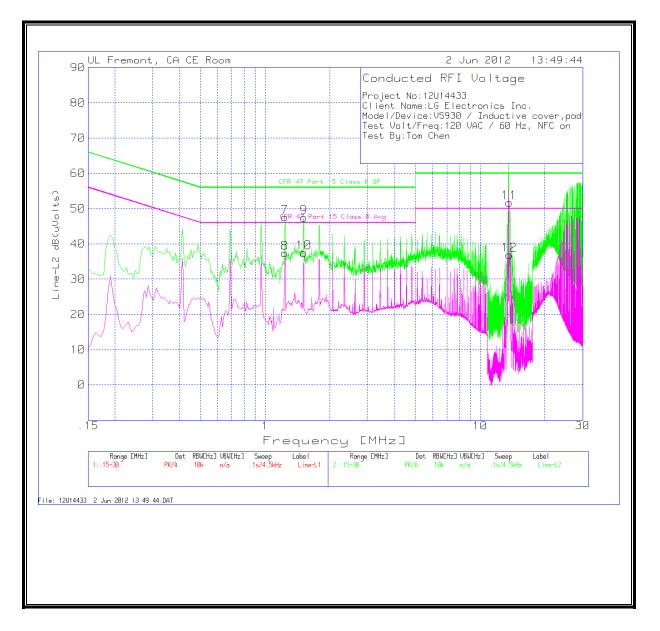
Page 82 of 92

#### **INDUCTIVE CHARGER PAD WITH ANTENNA**

## LINE 1 RESULTS



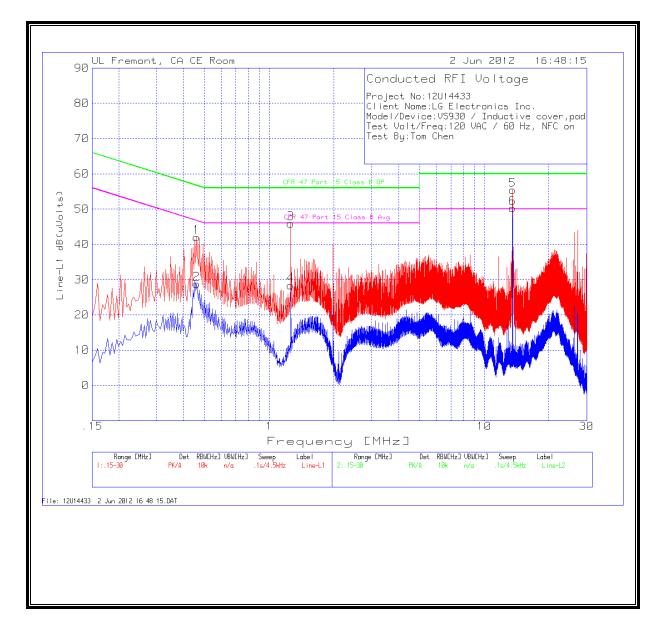
Page 83 of 92



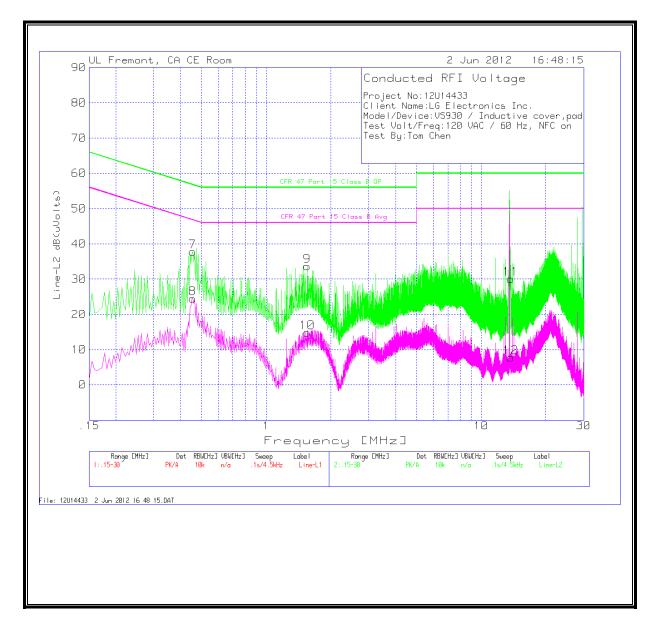
Page 84 of 92

## INDUCTIVE CHARGER PAD WITH 50 Ohm Terminator

## LINE 1 RESULTS



Page 85 of 92



Page 86 of 92