



**FCC CFR47 PART 15 SUBPART C
INDUSTRY CANADA RSS-210 ISSUE 8
BLUETOOTH LOW ENERGY
CERTIFICATION TEST REPORT
FOR**

**SMART WATCH with BT and BLE
MODEL NUMBER: LG-W100, W100, LGW100**

FCC ID: ZNFW100

IC ID: 2703C-W100

REPORT NUMBER: 14U17492-2 Revision A

ISSUE DATE: May 5, 2014

**Prepared for
LG ELECTRONICS MOBILECOMM U.S.A., INC
1000 SYLVAN AVENUE
ENGLEWOOD CLIFFS,
NEW JERSEY, 07632, U.S.A**

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



NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	4/23/14	Initial issue	P. Kim
A	5/5/14	Updated statement	P. Kim

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS.....	4
2. TEST METHODOLOGY	5
3. FACILITIES AND ACCREDITATION.....	5
4. CALIBRATION AND UNCERTAINTY	5
4.1. MEASURING INSTRUMENT CALIBRATION	5
4.2. SAMPLE CALCULATION.....	5
4.3. MEASUREMENT UNCERTAINTY	5
5. EQUIPMENT UNDER TEST	6
5.1. DESCRIPTION OF EUT.....	6
5.2. MAXIMUM OUTPUT POWER.....	6
5.3. DESCRIPTION OF AVAILABLE ANTENNAS	6
5.4. WORST-CASE CONFIGURATION AND MODE.....	7
5.5. DESCRIPTION OF TEST SETUP.....	8
6. TEST AND MEASUREMENT EQUIPMENT	10
7. SUMMARY	11
8. ANTENNA PORT TEST RESULTS	12
8.1. 6 dB BANDWIDTH	12
8.2. 99% BANDWIDTH.....	15
8.3. OUTPUT POWER	18
8.4. AVERAGE POWER.....	21
8.5. POWER SPECTRAL DENSITY	22
8.6. CONDUCTED SPURIOUS EMISSIONS.....	25
9. RADIATED TEST RESULTS	32
9.1. LIMITS AND PROCEDURE	32
9.2. TRANSMITTER ABOVE 1 GHz	33
9.3. WORST-CASE BELOW 1 GHz	46
10. AC POWER LINE CONDUCTED EMISSIONS	49
11. SETUP PHOTOS	53

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: LG ELECTRONICS MOBILECOMM U.S.A., INC.

EUT DESCRIPTION: Smart watch with BT and BLE

MODEL: LG-W100, W100, LGW100

SERIAL NUMBER: 15D9C (RADIATED) & 15D9D (CONDUCTE)

DATE TESTED: April 15 – 23, 2014

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-210 ISSUE 8	Pass
INDUSTRY CANADA RSS-GEN ISSUE 3	Pass

UL Verification Services Inc. 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 Verification Services Inc. 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 Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. 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 Verification Services Inc. By:

Tested By:



PHILIP KIM
CONSUMER TECHNOLOGY DIVISION
PROGRAM MANAGER
UL Verification Services Inc.



STEVEN TRAN
CONSUMER TECHNOLOGY DIVISION
LAB ENGINEER
UL Verification Services Inc.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2009, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 3, and RSS-210 Issue 8.

3. FACILITIES AND ACCREDITATION

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

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

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 18000 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 smart watch with BT and BLE

5.2. MAXIMUM OUTPUT POWER

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

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2402-2480	BLE	5.40	3.47

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an metal antenna, with a maximum gain of -4 dBi.

5.4. WORST-CASE CONFIGURATION AND MODE

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

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

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	LG	MCS-01WD	DB390078751	N/A
Cradle	LG	W0	N/A	N/A

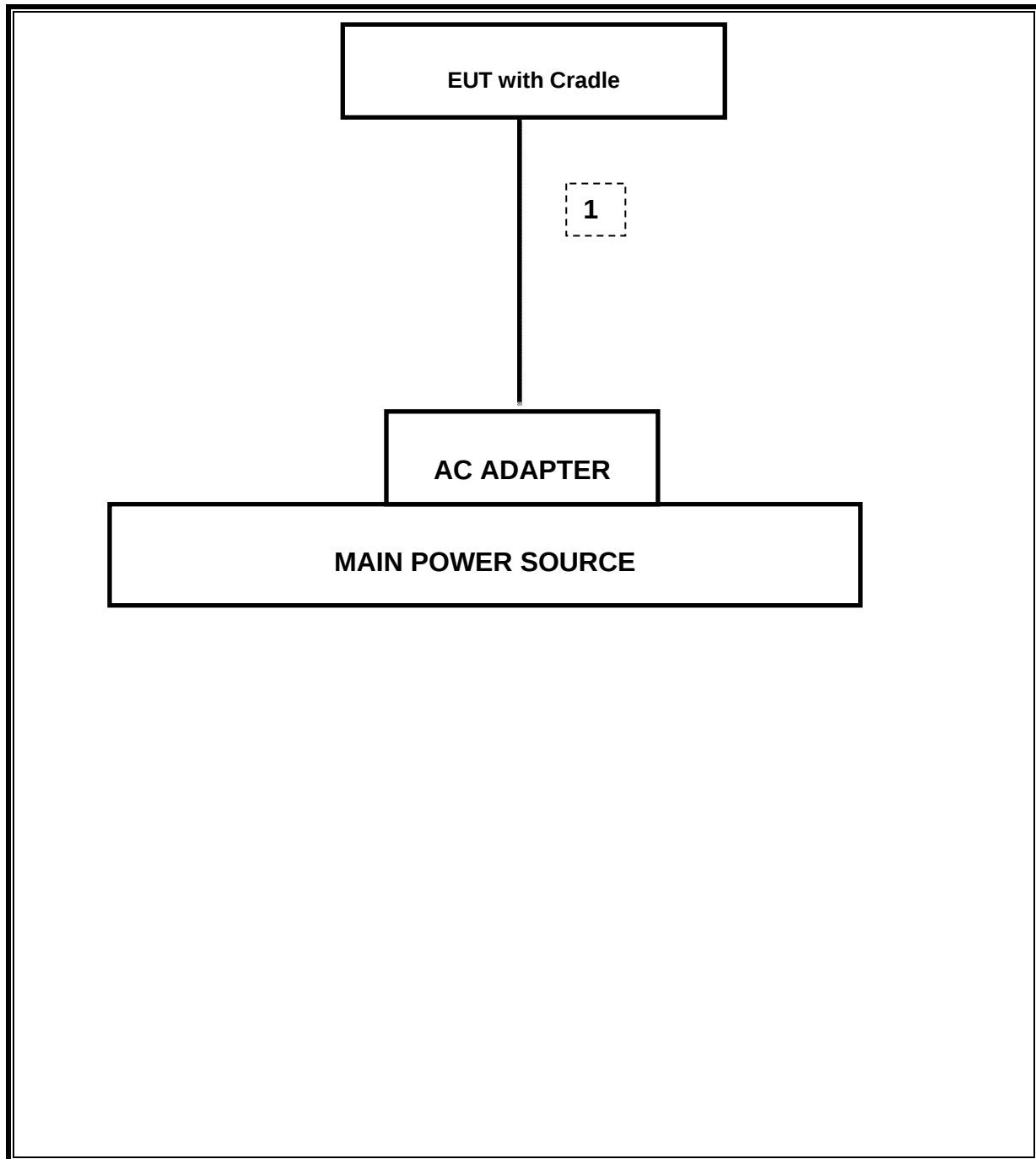
I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC Power	1	Mini-USB	Shielded	1.2m	N/A
2	Audio	1	Mini-Jack	Unshielded	1m	N/A

TEST SETUP

The EUT is continuously communicating to the Bluetooth tester during the tests.
EUT was set in the Hidden menu mode to enable BLE communications.

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment List				
Description	Manufacturer	Model	Asset	Cal Due
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C00986	4/1/2015
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01179	2/26/2015
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	8/8/2014
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00580	5/8/2014
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	10/22/2014
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	N/A	3/6/2015
Antenna, Horn, 18 GHz	ETS	3117	C01022	2/21/2015
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00589	12/17/2014
Peak Power Meter	Agilent / HP	E4416A	C00963	12/13/2014
Peak / Average Power Sensor	Agilent / HP	E9327A	C00964	12/13/2014
LISN, 30 MHz	FCC	50/250-25-2	C00626	1/14/2015

7. SUMMARY

FCC Part Section	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Worst Case
15.247 (a)(2)	RSS-210 A8.2(a)	Occupied Band width (6dB)	>500KHz	Conducted	Pass	0.7095MHz
2.1051, 15.247 (d)	RSS-210 A8.5	Band Edge / Conducted Spurious Emission	-20dBc		Pass	-48.33dBm
15.247	RSS-210 A8.4	TX conducted output power	<30dBm		Pass	5.4dBm
15.247	RSS-210 A8.2	PSD	<8dBm		Pass	-8.53dBm
15.207 (a)	RSS-GEN 7.2.2	AC Power Line conducted emissions	Section 10	Radiated	Pass	47.06dBuV
15.205, 15.209	RSS-210 Clause 2.6, RSS-210 Clause 6	Radiated Spurious Emission	< 54dBuV/m		Pass	52.17dBuV/m

8. ANTENNA PORT TEST RESULTS

8.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

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

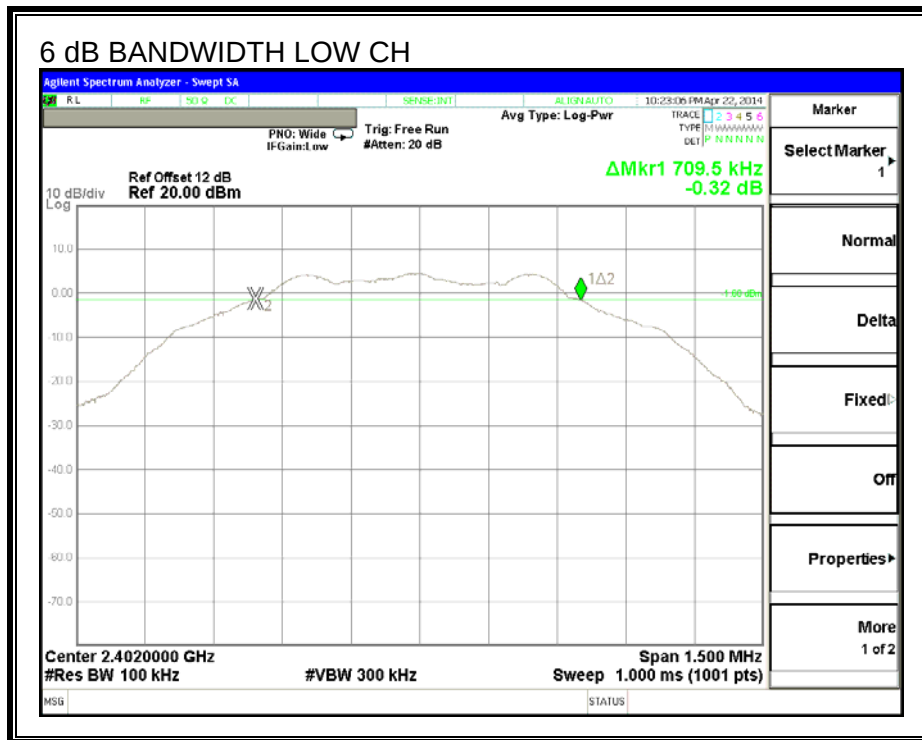
TEST PROCEDURE

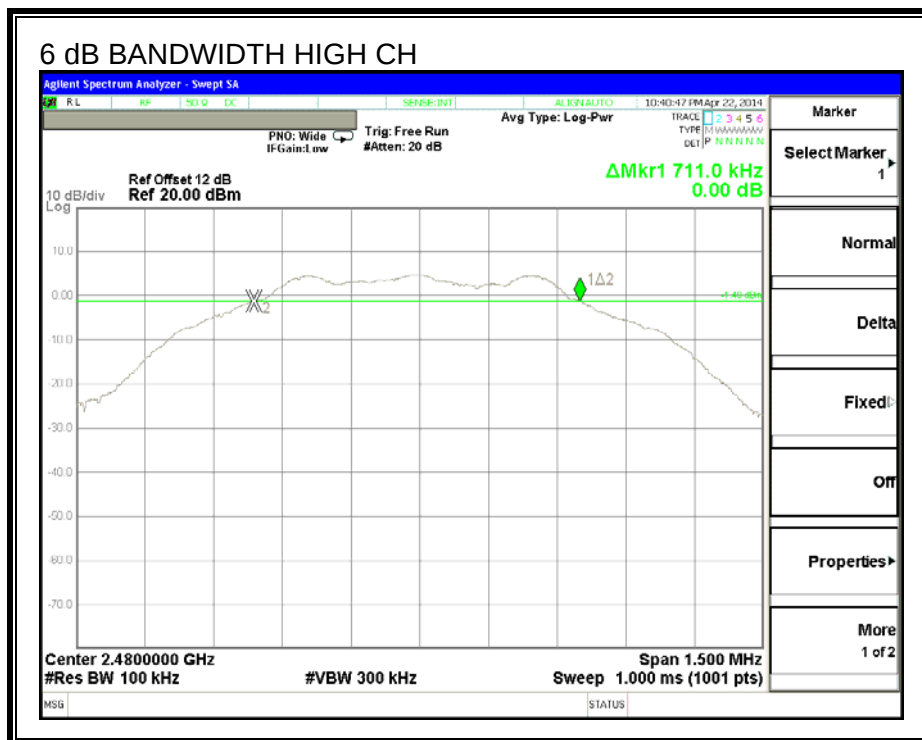
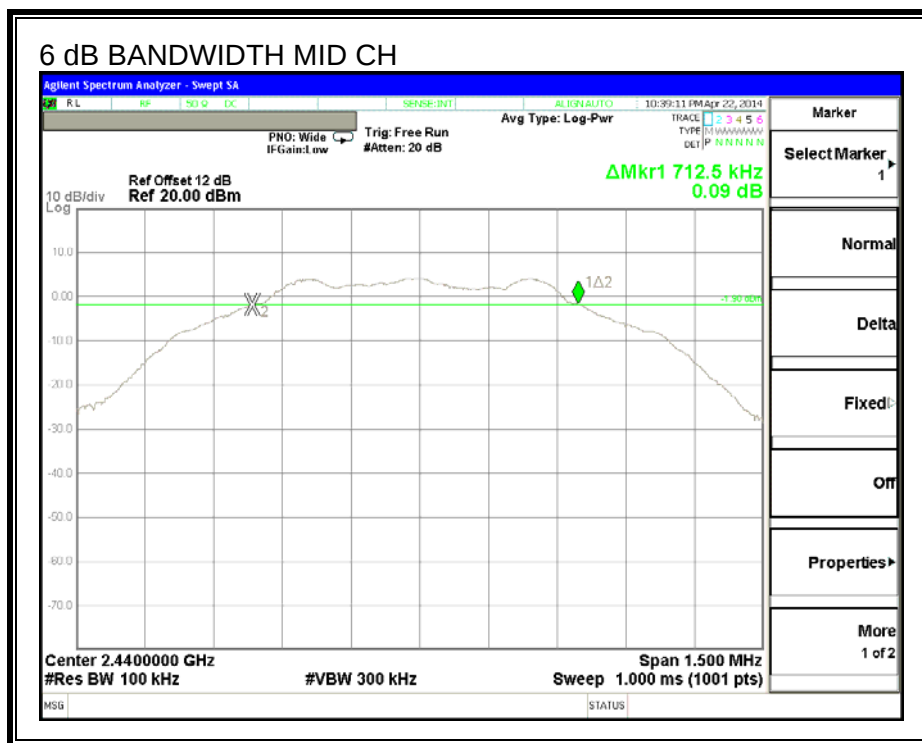
The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.7095	0.5
Middle	2440	0.7125	0.5
High	2480	0.7110	0.5

6 dB BANDWIDTH





8.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

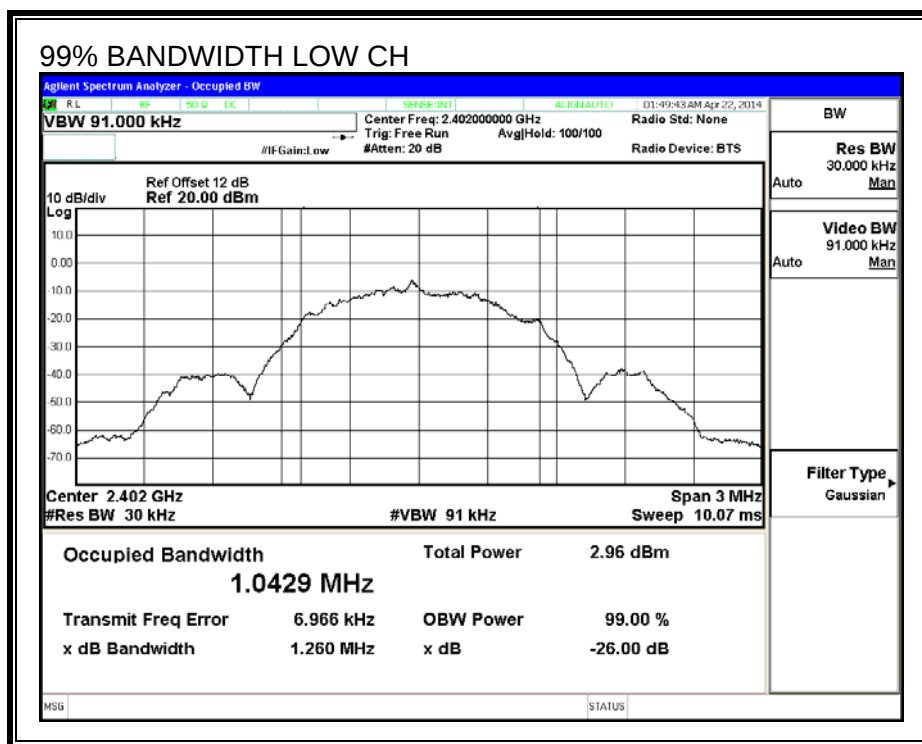
TEST PROCEDURE

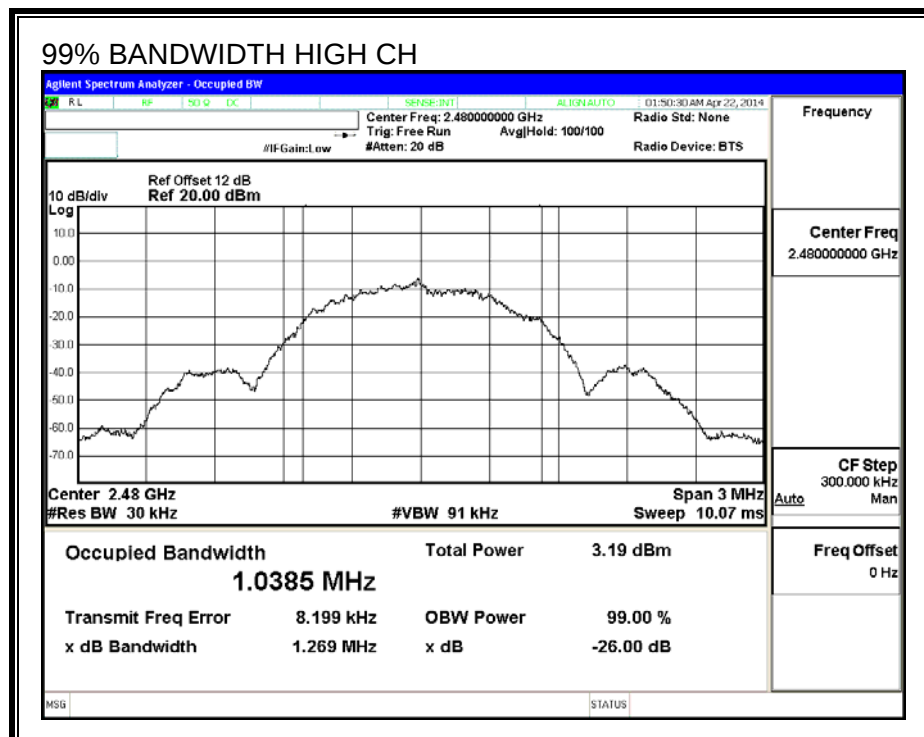
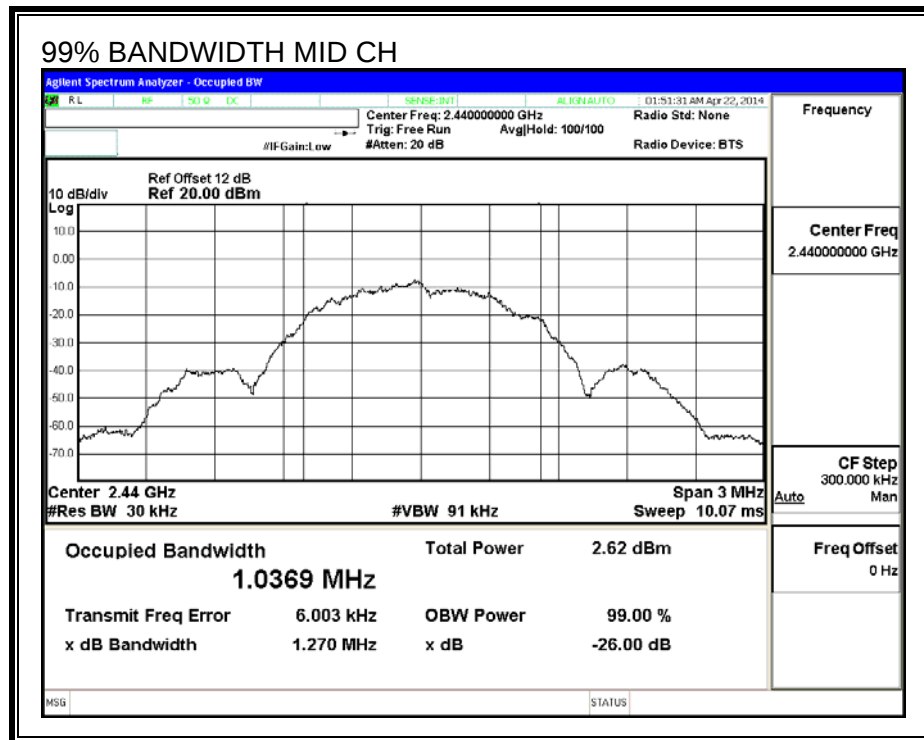
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth and to 1% of the span. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.0429
Middle	2440	1.0369
High	2480	1.0385

99% BANDWIDTH





8.3. OUTPUT POWER

LIMITS

FCC §15.247 (b)

IC RSS-210 A8.4

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

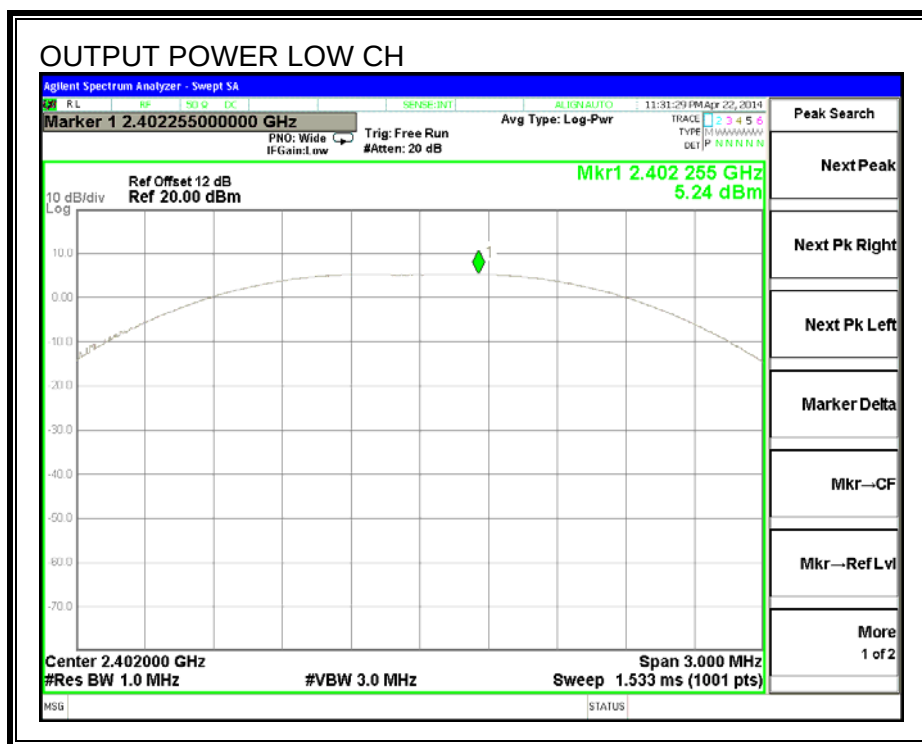
TEST PROCEDURE

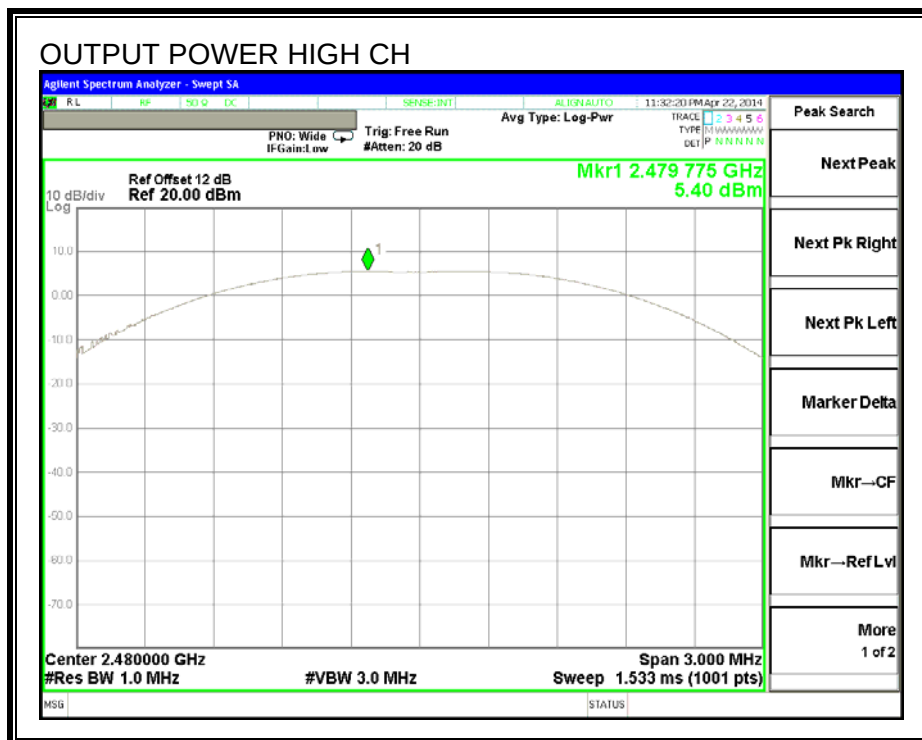
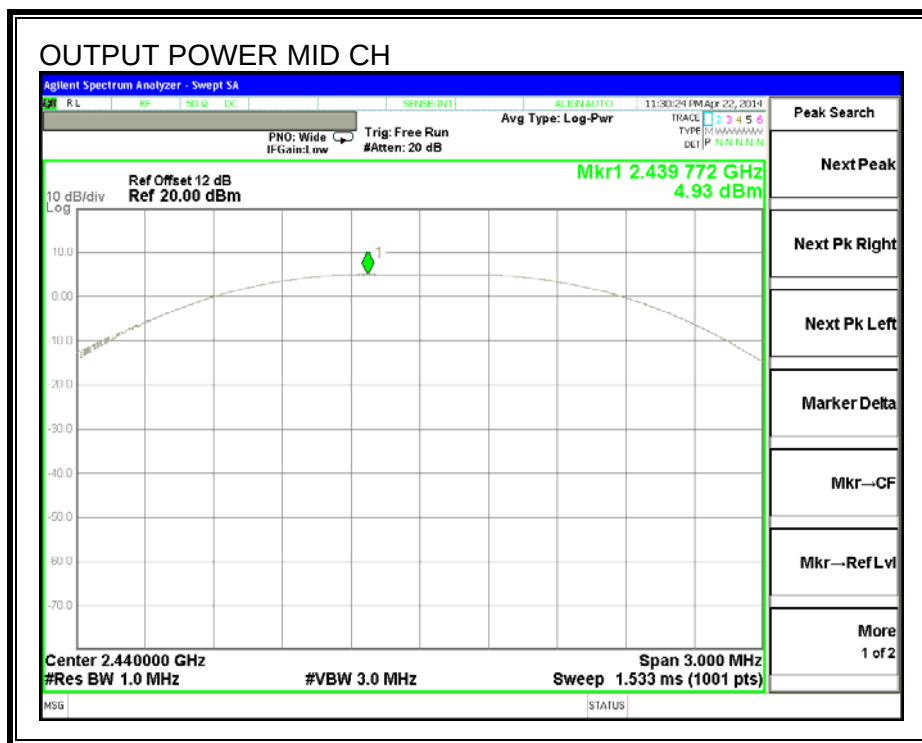
Peak power is measured using KDB558074 April 9, 2013 under section 9.1.1 utilizing spectrum analyzer.

RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	5.240	30	-24.760
Middle	2440	4.930	30	-25.070
High	2480	5.400	30	-24.600

OUTPUT POWER





8.4. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

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

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	5.2
Middle	2440	4.9
High	2480	5.23

8.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

IC RSS-210 A8.2 (b)

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

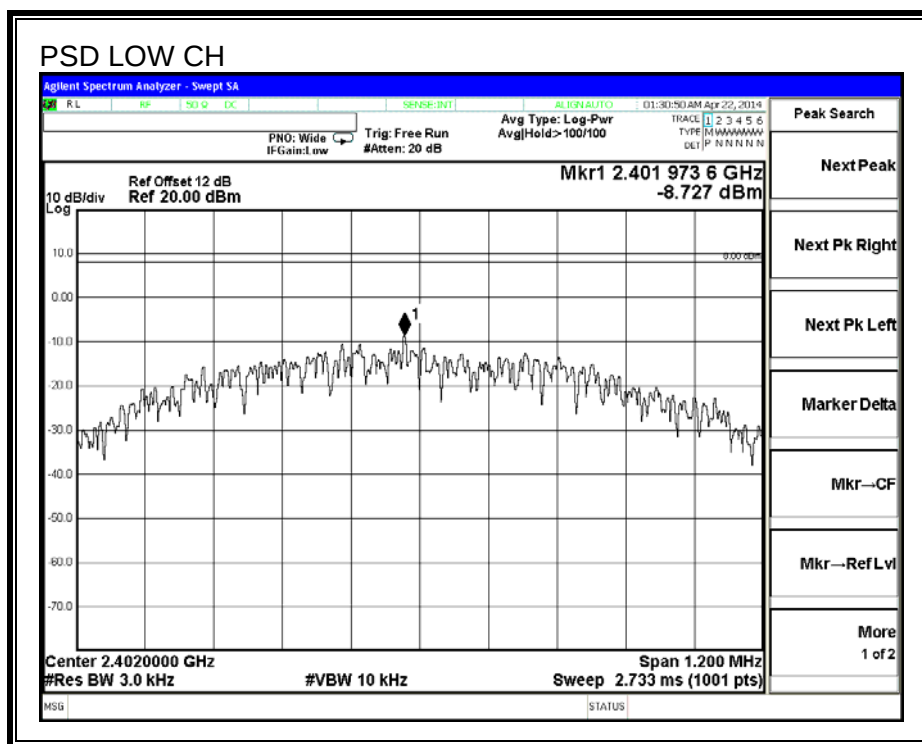
TEST PROCEDURE

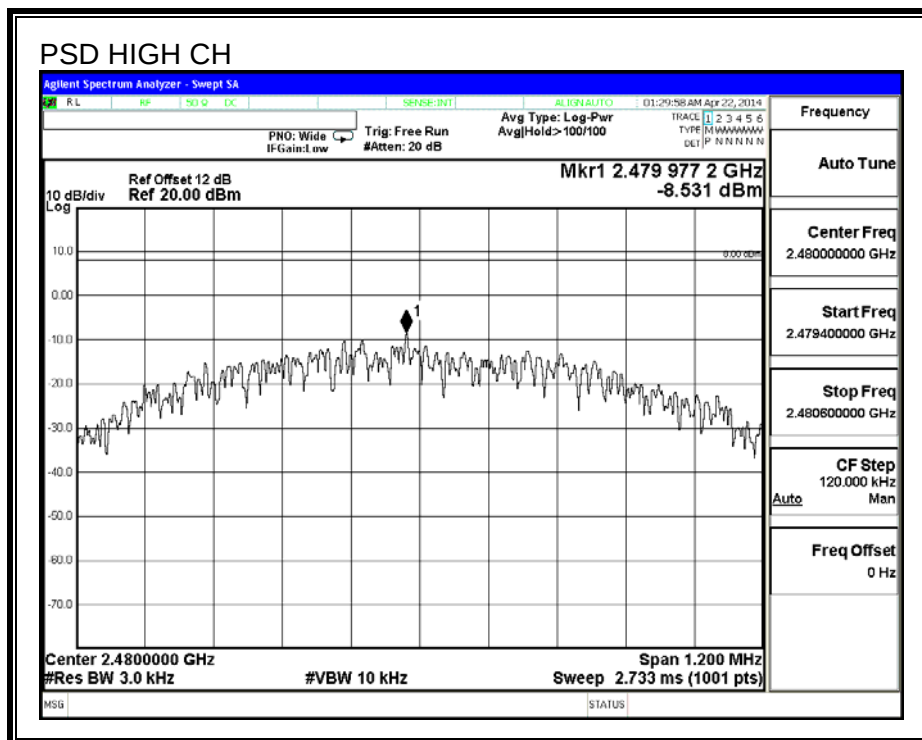
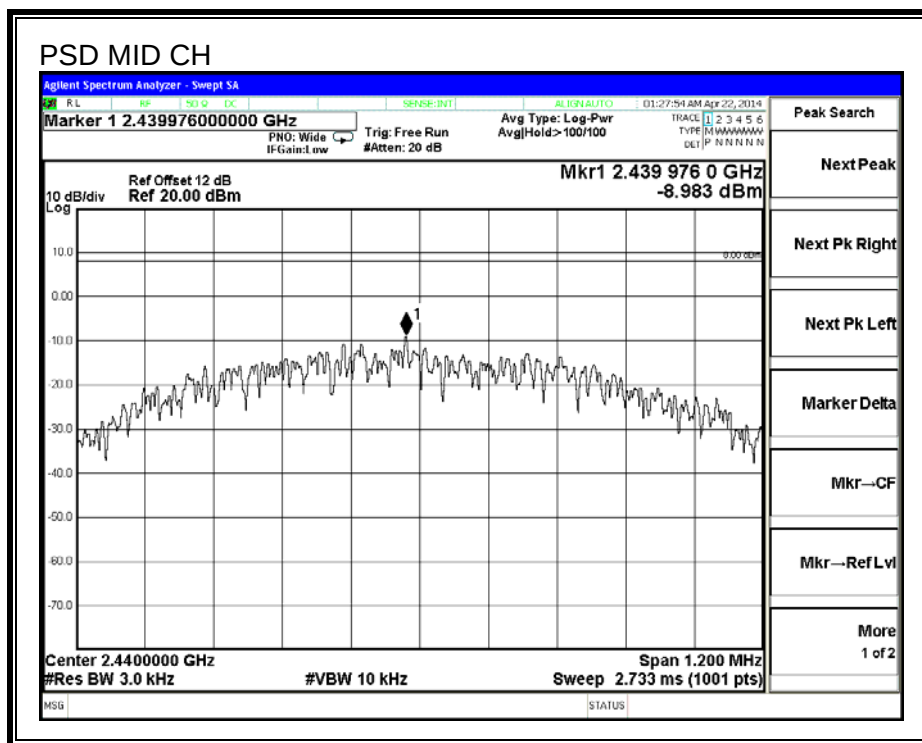
Power Spectral Density was performed utilizing the "Method PKPSD (Peak PSD)" under KDB558074, April 9, 2013

RESULTS

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2402	-8.73	8	-16.73
Middle	2440	-8.98	8	-16.98
High	2480	-8.53	8	-16.53

POWER SPECTRAL DENSITY





8.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

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

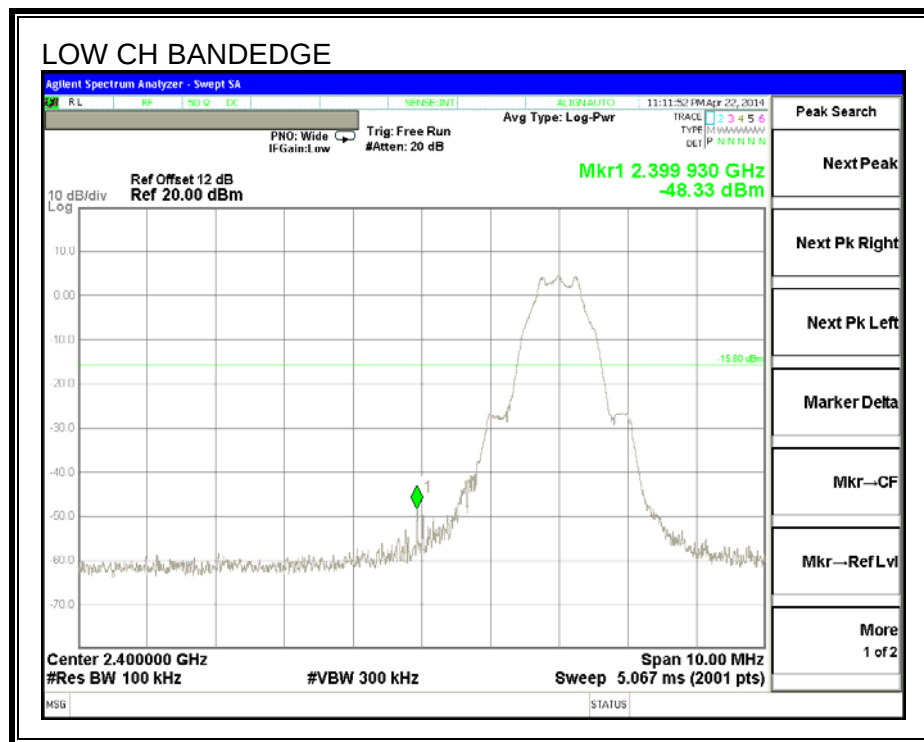
TEST PROCEDURE

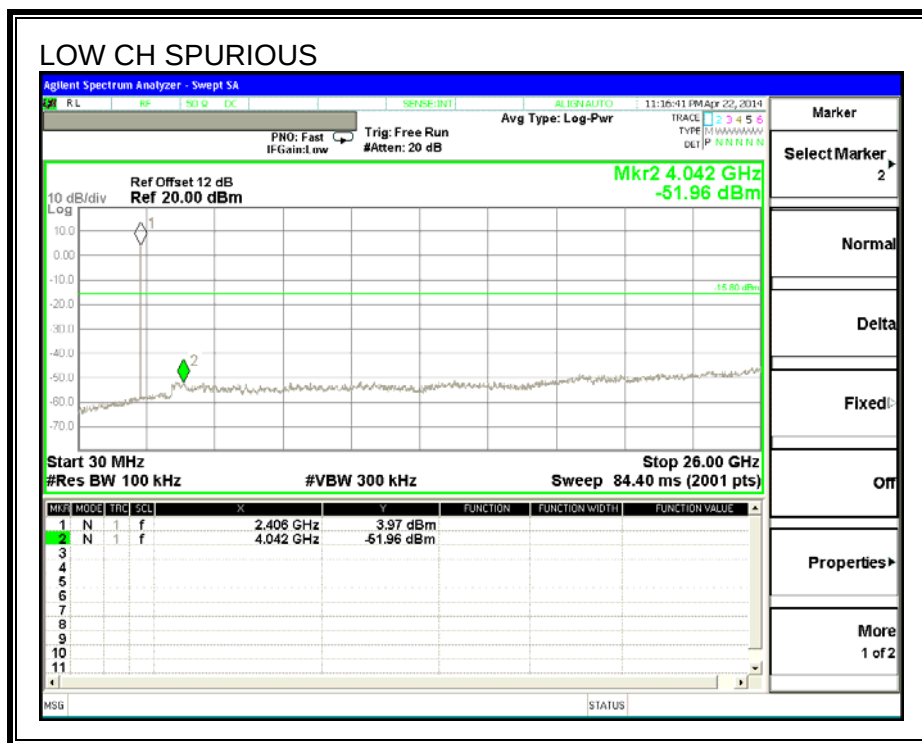
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

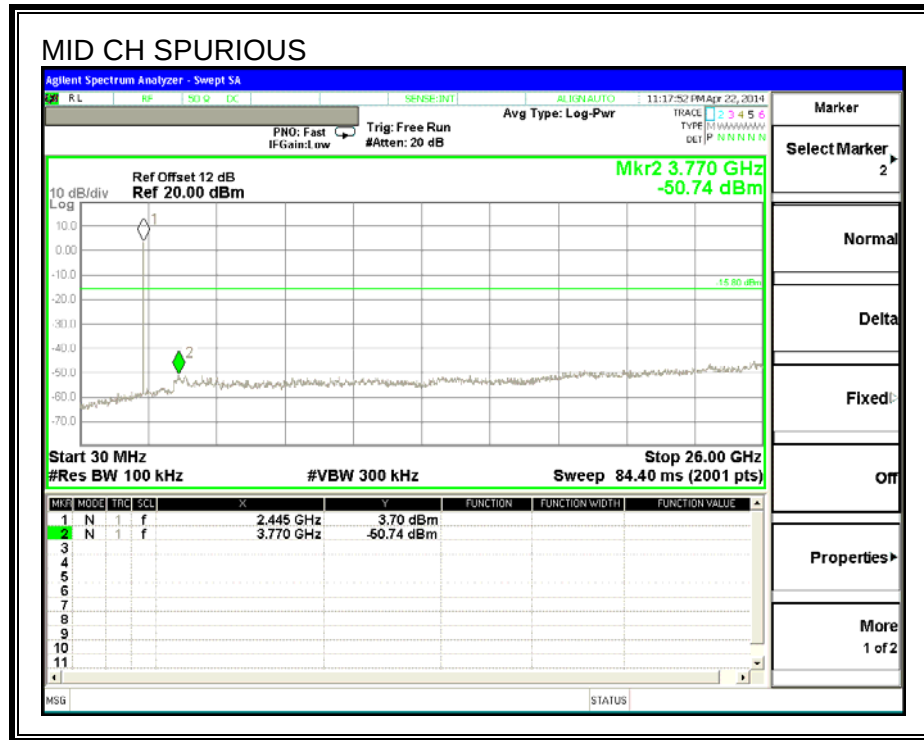
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

RESULTS

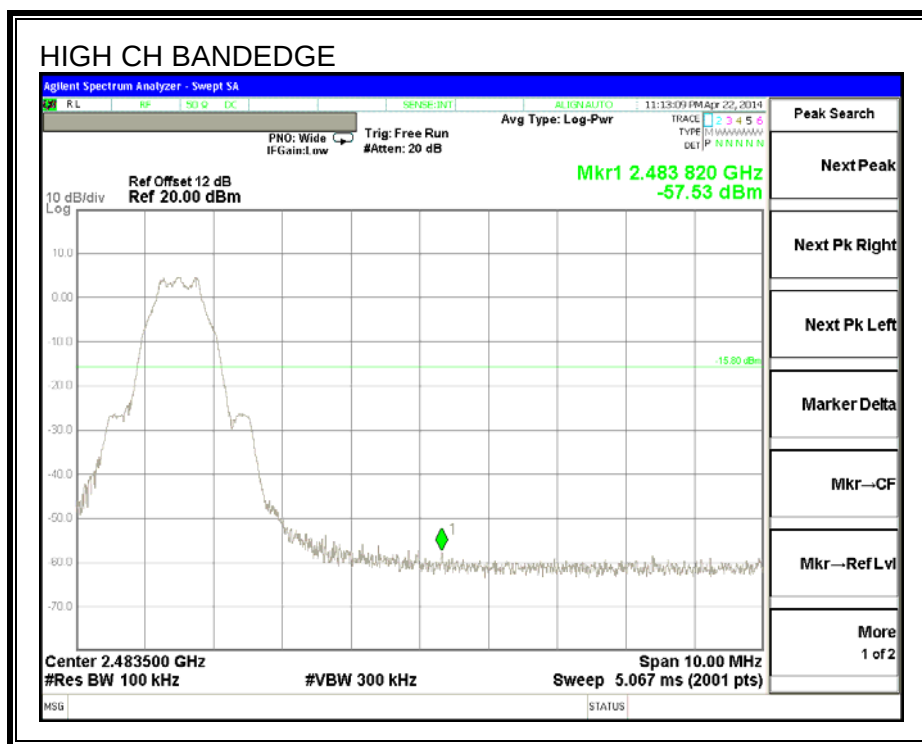
SPURIOUS EMISSIONS, LOW CHANNEL

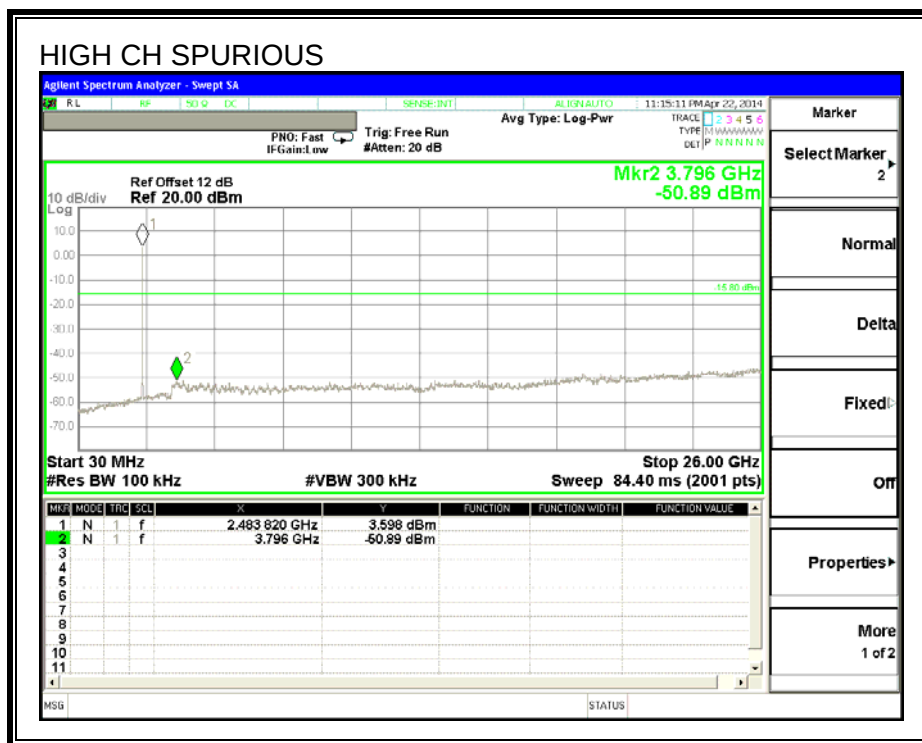






SPURIOUS EMISSIONS, HIGH CHANNEL





9. RADIATED TEST RESULTS

9.1. 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 - 2009. 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 add duty cycle factor for average measurements. Duty cycle factor = $10 \log(1/x)$. For this sample: DCF = $10 \log(1/0.618) = 2.08 \text{ dB}$ (Spectrum Analyzer round it up to 2.1dB)

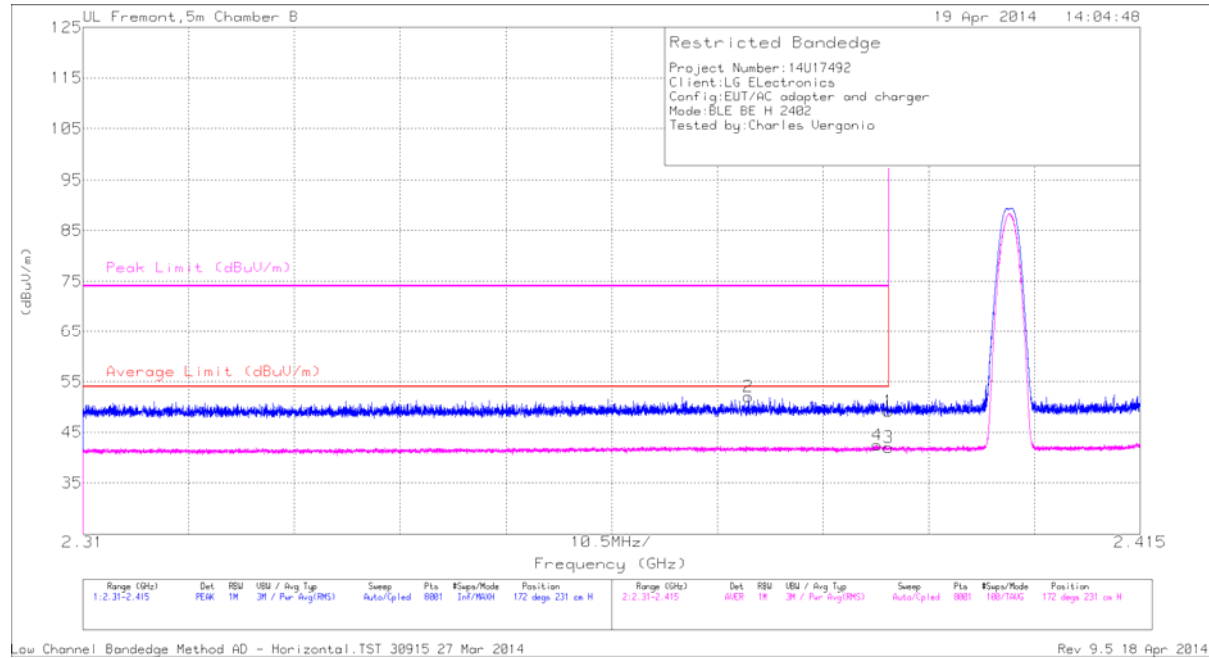
For spurious emission measurement refer to MAV1 - KDB558074 Option 1 Maximum RMS Average

The spectrum from 1GHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz 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.

9.2. TRANSMITTER ABOVE 1 GHz

RESTRICTED BANDEGE (LOW CHANNEL, HORIZONTAL)



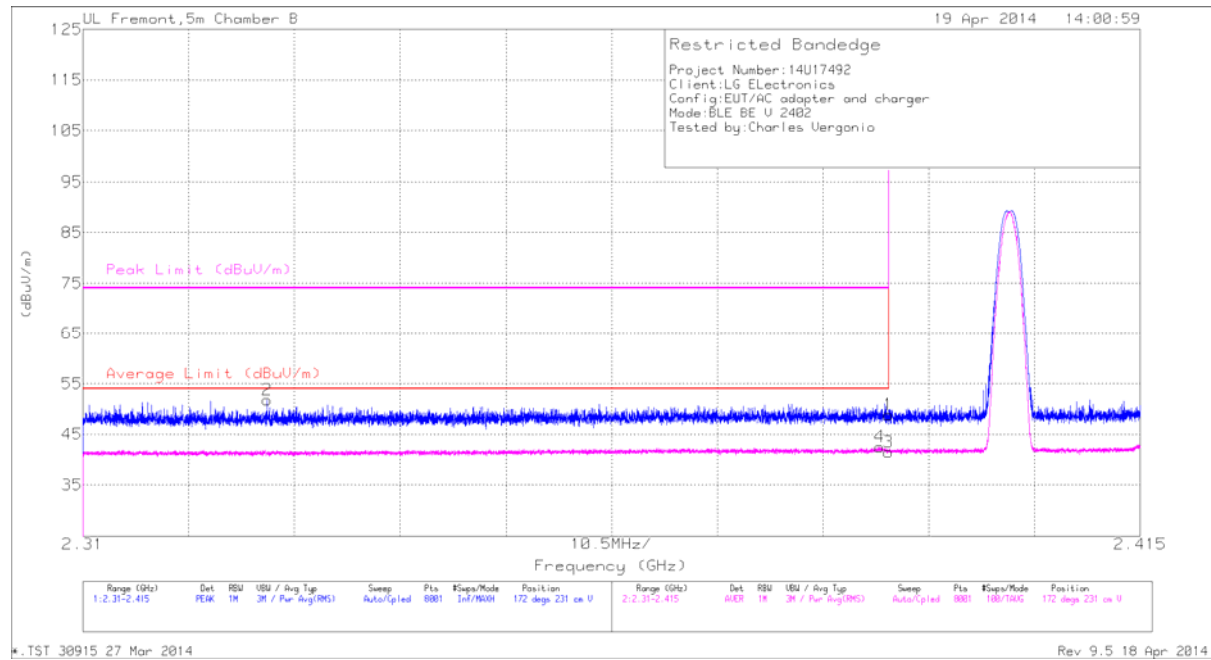
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.99	PK	32.1	-22.9	0	49.19	-	-	74	-24.81	172	231	H
2	* 2.376	42.94	PK	32	-22.9	0	52.04	-	-	74	-21.96	172	231	H
3	* 2.39	30.73	RMS	32.1	-22.9	2.1	42.03	54	-11.97	-	-	172	231	H
4	* 2.389	31.12	RMS	32.1	-22.9	2.1	42.42	54	-11.58	-	-	172	231	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection

RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



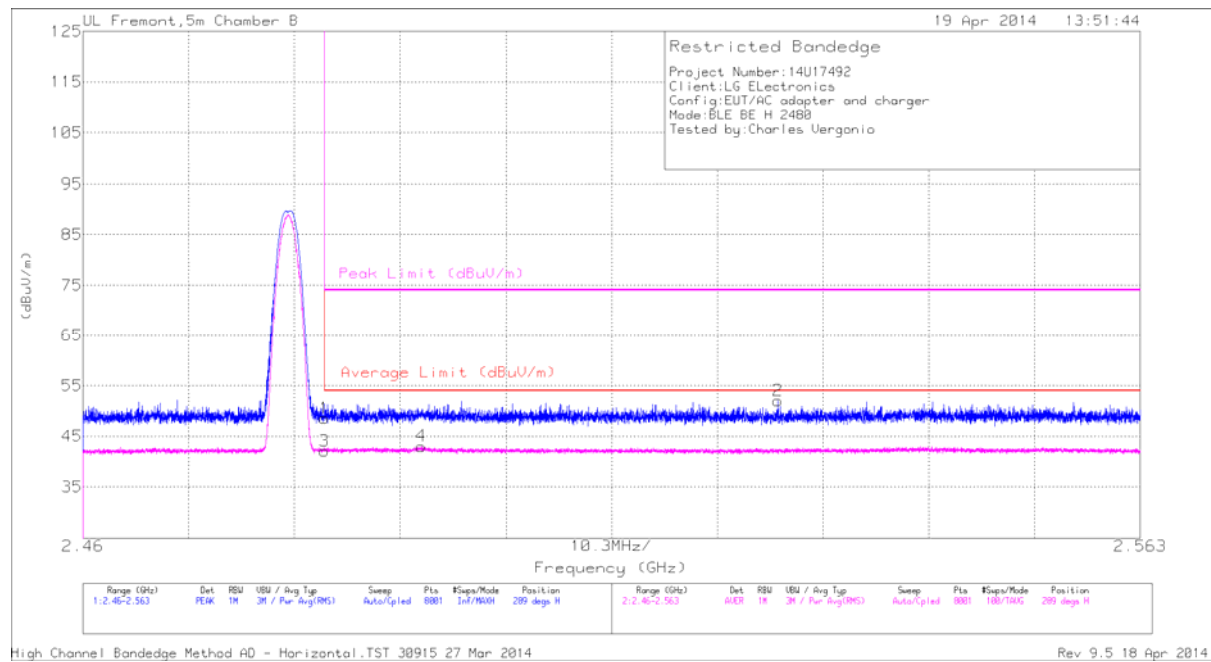
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.66	PK	32.1	-22.9	0	48.86	-	-	74	-25.14	192	211	V
2	* 2.328	43.04	PK	31.8	-23.1	0	51.74	-	-	74	-22.26	192	211	V
3	* 2.39	30.19	RMS	32.1	-22.9	2.1	41.49	54	-12.51	-	-	192	211	V
4	* 2.389	31.23	RMS	32.1	-22.9	2.1	42.53	54	-11.47	-	-	192	211	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection

RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



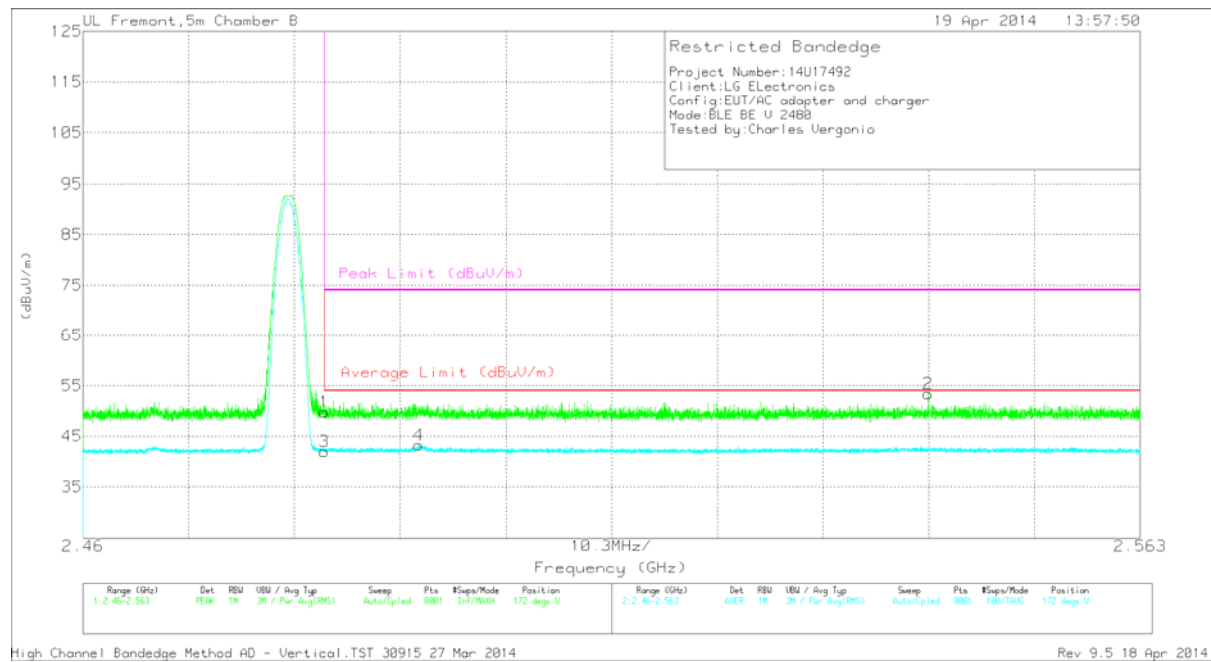
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	38.77	PK	32.4	-22.6	0	48.57	-	-	74	-25.43	289	210	H
3	* 2.484	30.21	RMS	32.4	-22.6	2.1	42.11	54	-11.89	-	-	289	210	H
4	* 2.493	31.23	RMS	32.4	-22.7	2.1	43.03	54	-10.97	-	-	289	210	H
2	2.528	42.2	PK	32.5	-22.7	0	52	-	-	74	-22	289	210	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection

RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	39.97	PK	32.4	-22.6	0	49.77	-	-	74	-24.23	172	231	V
3	* 2.484	30.07	RMS	32.4	-22.6	2.1	41.97	54	-12.03	-	-	172	231	V
4	* 2.493	31.4	RMS	32.4	-22.7	2.1	43.2	54	-10.8	-	-	172	231	V
2	2.542	43.45	PK	32.5	-22.6	0	53.35	-	-	74	-20.65	172	231	V

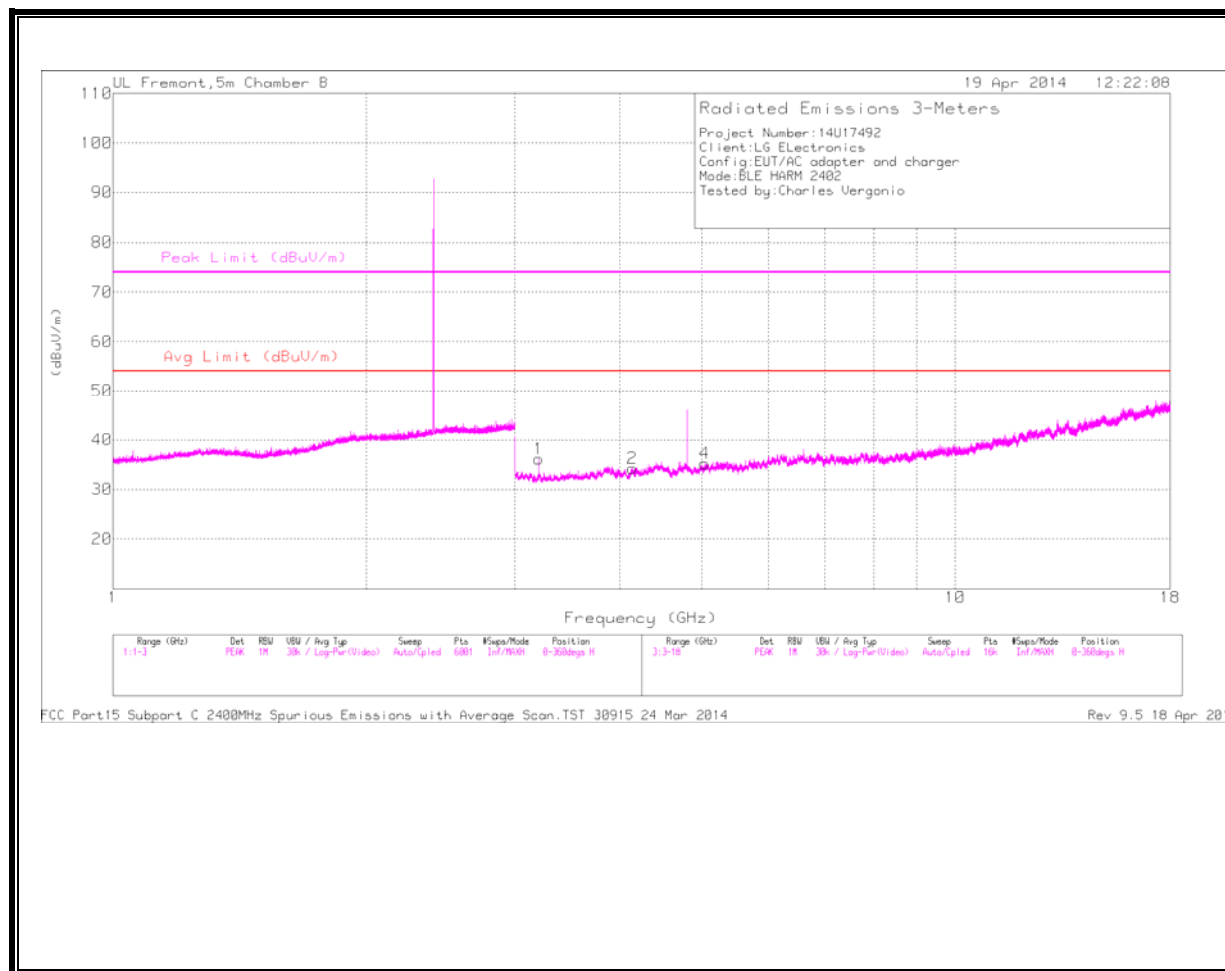
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

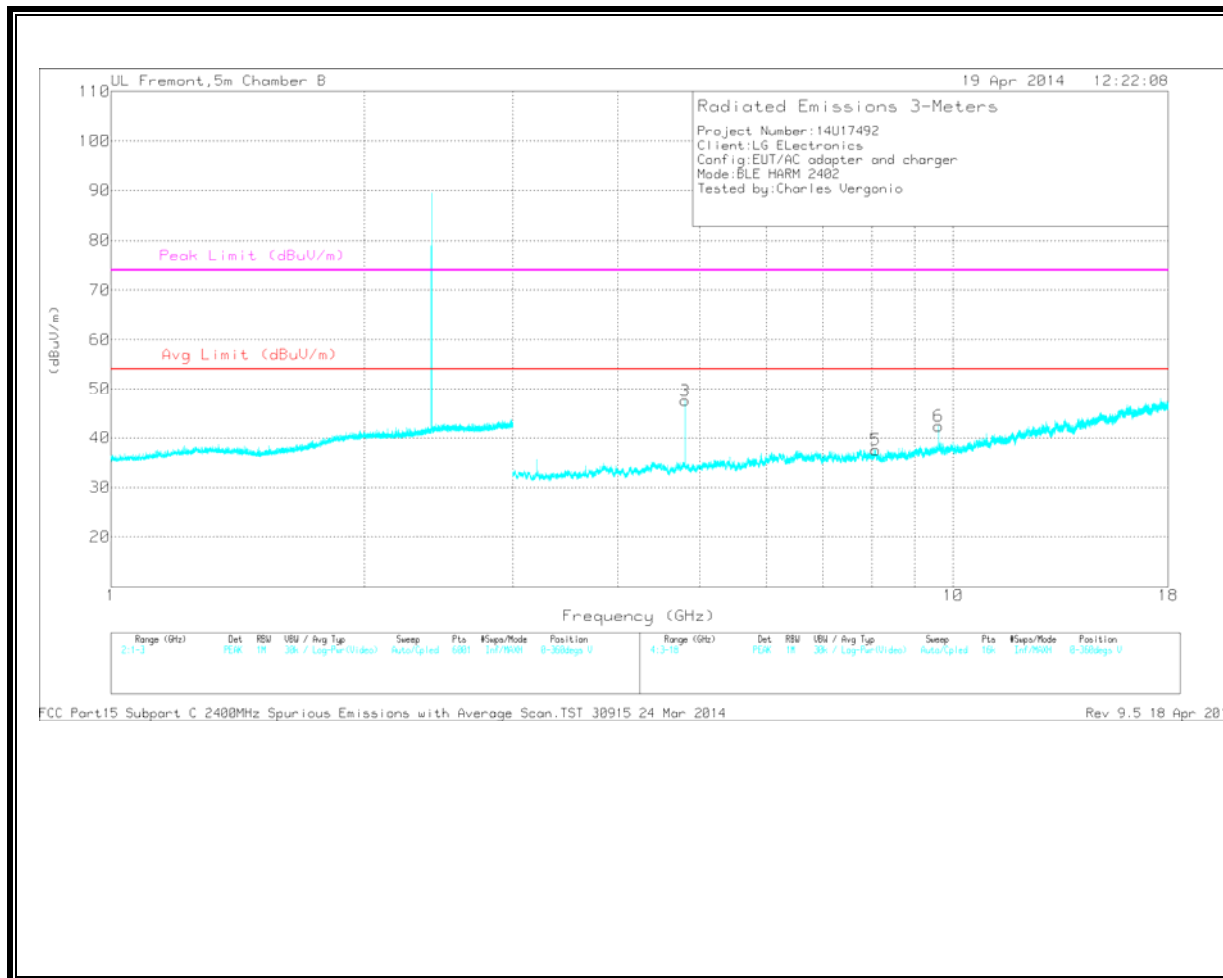
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 4.137	30.51	PK	33.6	-29.8	0	34.31	-	-	74	-39.69	0-360	201	H
4	* 5.043	29.71	PK	34.2	-28.7	0	35.21	-	-	74	-38.79	0-360	99	H
3	* 4.805	42.2	PK	34.2	-28.8	0	47.6	-	-	74	-26.4	0-360	99	V
5	* 8.087	27.69	PK	35.7	-25.8	0	37.59	-	-	74	-36.41	0-360	99	V
1	3.202	34.55	PK	32.8	-31.2	0	36.15	-	-	-	-	0-360	201	H
6	9.607	29.66	PK	36.8	-24.1	0	42.36	-	-	-	-	0-360	202	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

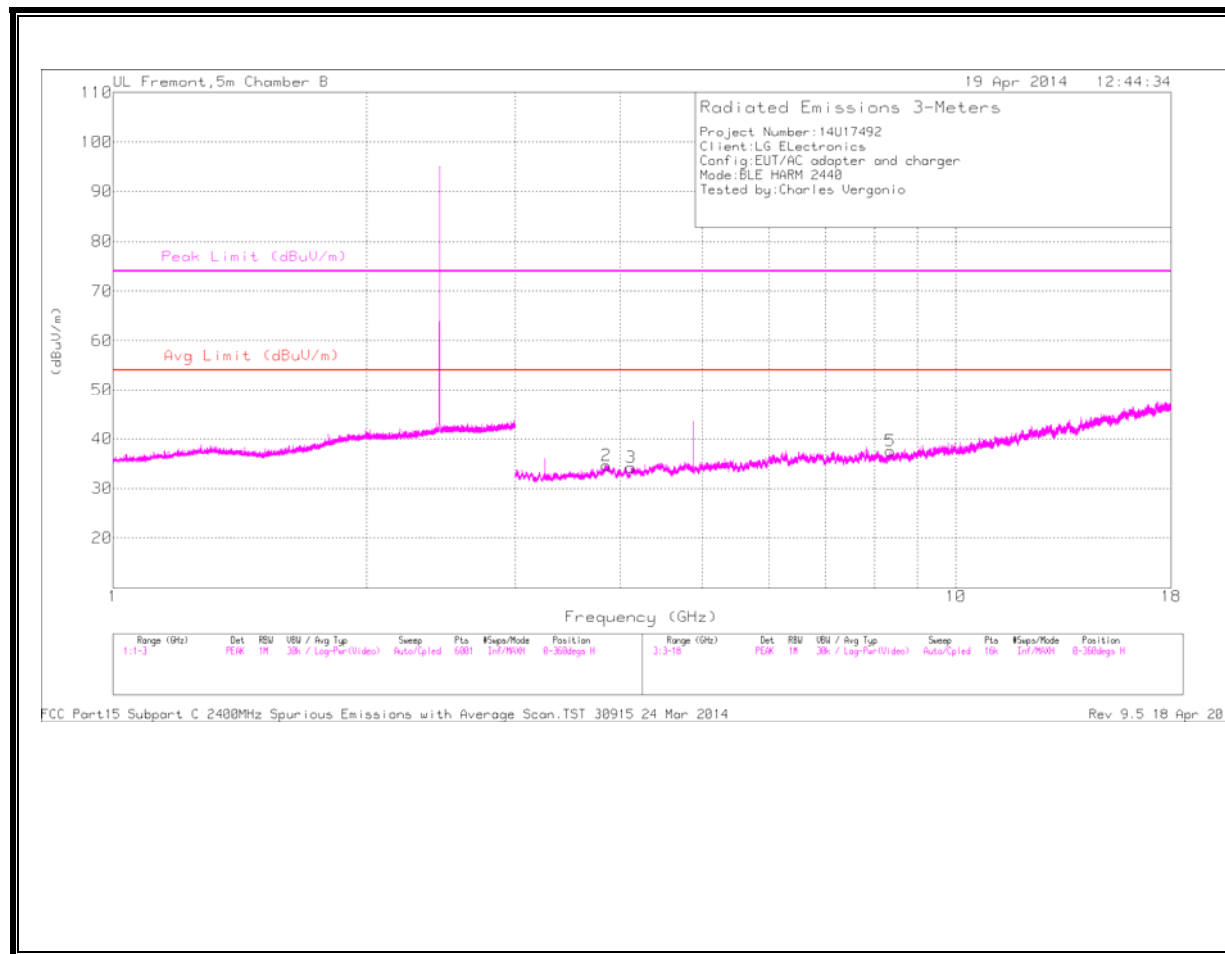
PK - Peak detector

Radiated Emissions

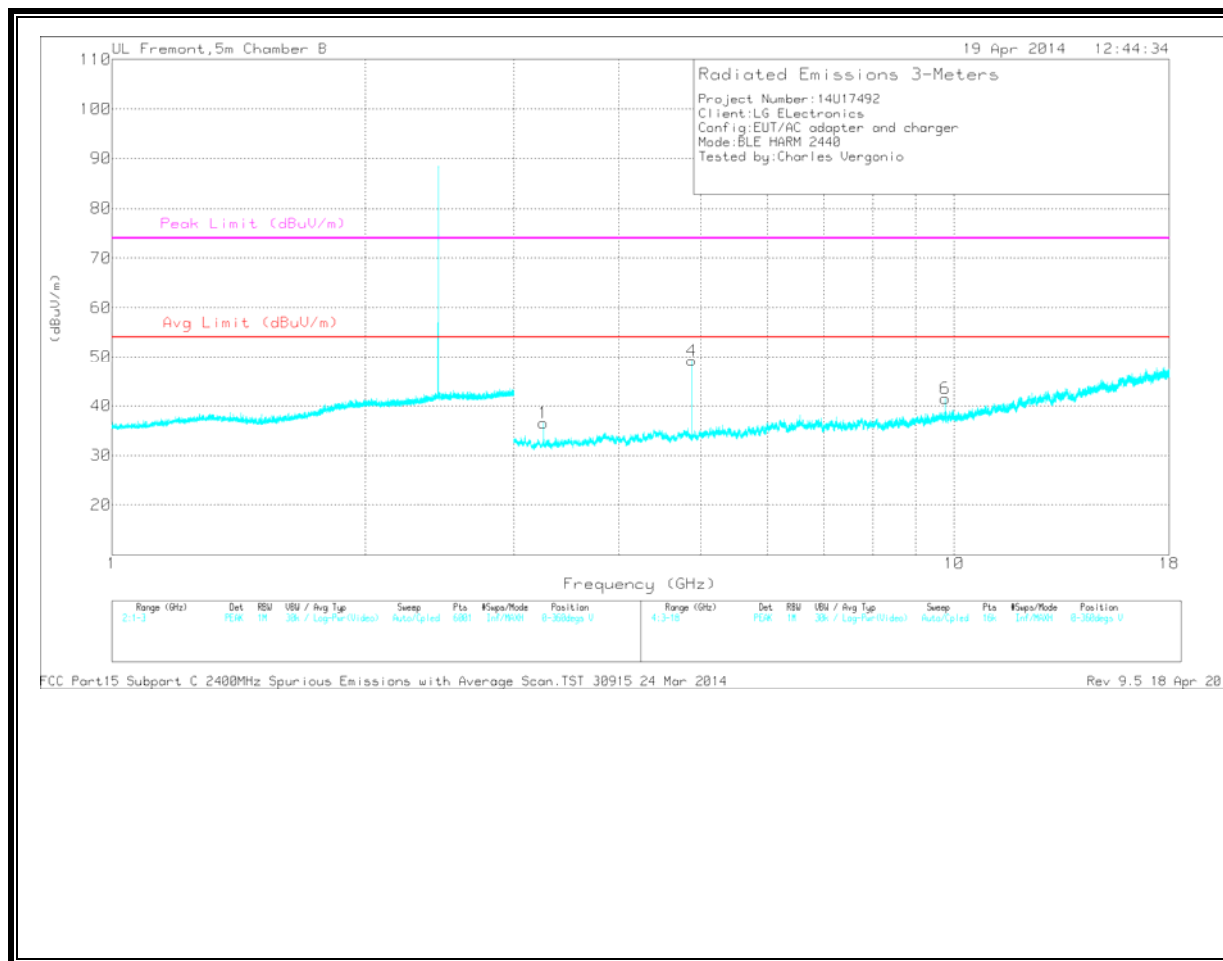
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.135	39.85	PK2	33.6	-29.8	0	43.65			74	-30.35	359	100	H
* 5.044	39.62	PK2	34.2	-28.7	0	45.12			74	-28.88	359	100	H
* 8.086	37.56	PK2	35.7	-25.8	0	47.46			74	-26.54	359	100	V
* 4.804	50.82	PK2	34.2	-28.8	0	56.22			74	-17.78	347	257	V
* 4.804	44.67	MAV1	34.2	-28.8	2.1	52.17	54	-1.83	74	-21.83	347	257	V
3.203	42.84	PK2	32.8	-31.2	0	44.44			74	-29.56	359	100	H
3.203	31.9	MAV1	32.8	-31.2	2.1	35.6	54	-18.4	74	-38.4	359	100	H
9.608	36.44	PK2	36.8	-24.1	0	49.14			74	-24.86	359	100	V
9.608	24.67	MAV1	36.8	-24.1	2.1	39.47	54	-14.53	74	-34.53	359	100	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fil tr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 3.847	31.19	PK	33.7	-30.2	0	34.69	-	-	74	-39.31	0-360	201	H
3	* 4.118	31.09	PK	33.6	-30.4	0	34.29	-	-	74	-39.71	0-360	201	H
5	* 8.363	27.26	PK	35.7	-25.4	0	37.56	-	-	74	-36.44	0-360	201	H
4	* 4.881	45.62	PK	34.2	-30.6	0	49.22	-	-	74	-24.78	0-360	202	V
1	3.253	34.6	PK	32.8	-30.9	0	36.5	-	-	-	-	0-360	202	V
6	9.76	28.92	PK	36.9	-24.3	0	41.52	-	-	-	-	0-360	202	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

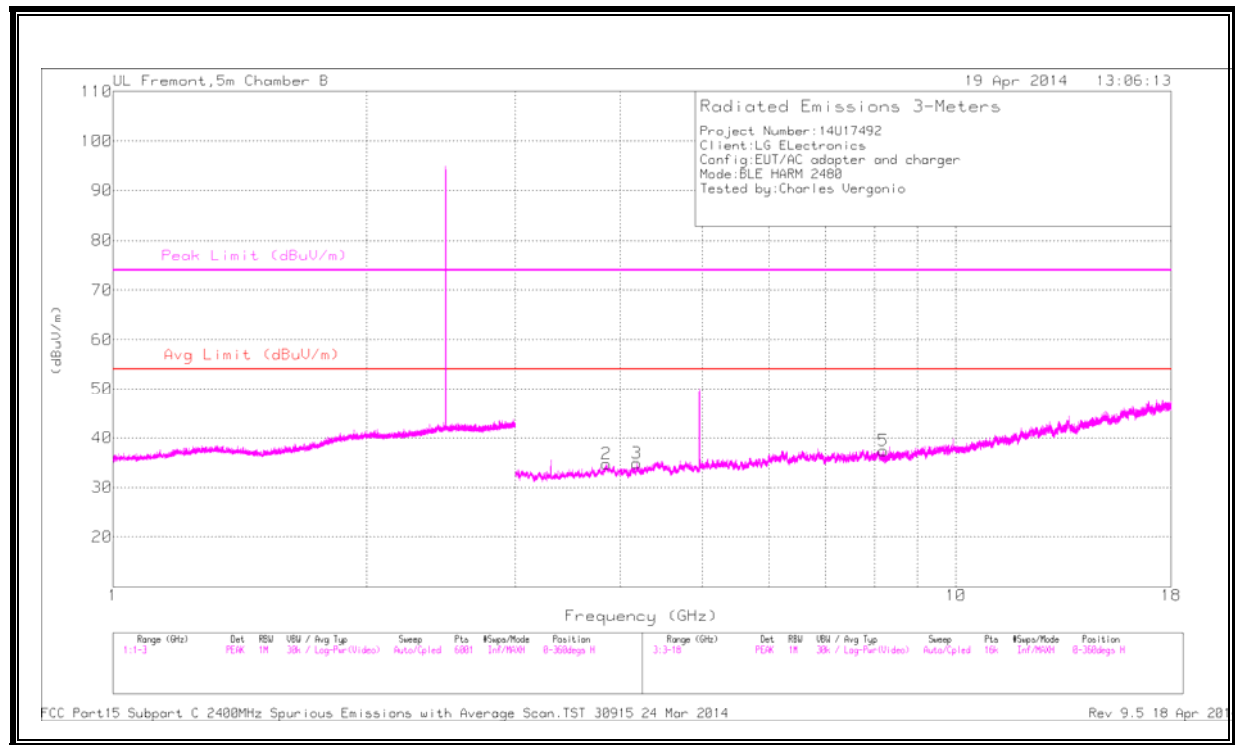
PK - Peak detector
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl /Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 3.848	41.02	PK2	33.7	-30.2	0	44.52			74	-29.48	360	100	H
* 4.119	40.9	PK2	33.6	-30.4	0	44.1			74	-29.9	360	100	H
* 8.363	37.45	PK2	35.7	-25.4	0	47.75			74	-26.25	360	100	H
* 4.881	50.58	PK2	34.2	-30.6	0	54.18			74	-19.82	356	275	V
* 4.88	44.27	MAV1	34.2	-30.6	2.1	49.97	54	-4.03	74	-24.03	356	275	V
3.253	40.59	PK2	32.8	-30.9	0	42.49			74	-31.51	360	100	V
3.253	29.87	MAV1	32.8	-30.9	2.1	33.87	54	-20.13	74	-40.13	360	100	V
9.758	35.29	PK2	36.9	-24.3	0	47.89			74	-26.11	360	100	V
9.76	24.12	MAV1	36.9	-24.3	2.1	38.82	54	-15.18	74	-35.18	360	100	V

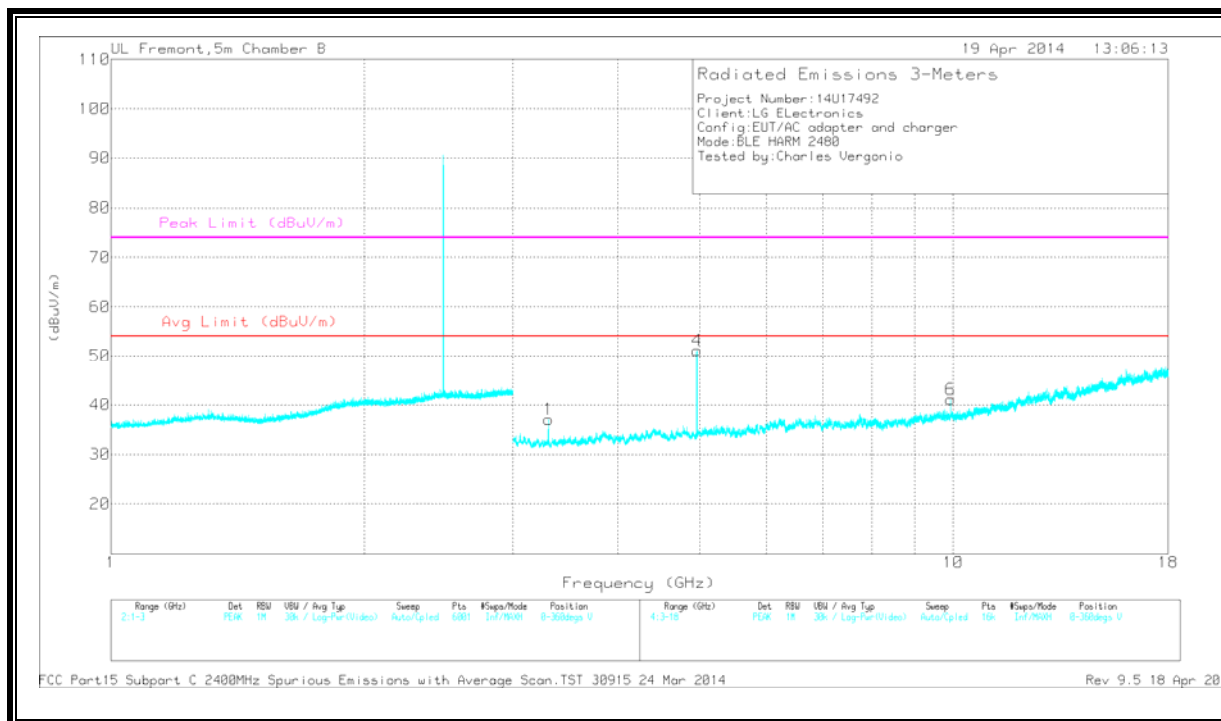
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

HIGH CHANNEL

HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 3.852	31.26	PK	33.7	-30.2	0	34.76	-	-	74	-39.24	0-360	202	H
3	* 4.181	31.04	PK	33.6	-29.8	0	34.84	-	-	74	-39.16	0-360	99	H
5	* 8.206	28.67	PK	35.7	-26.9	0	37.47	-	-	74	-36.53	0-360	99	H
4	* 4.96	47.08	PK	34.2	-30.2	0	51.08	-	-	74	-22.92	0-360	202	V
1	3.307	35.51	PK	32.8	-31.3	0	37.01	-	-	-	-	0-360	202	V
6	9.919	28.07	PK	37	-24	0	41.07	-	-	-	-	0-360	202	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

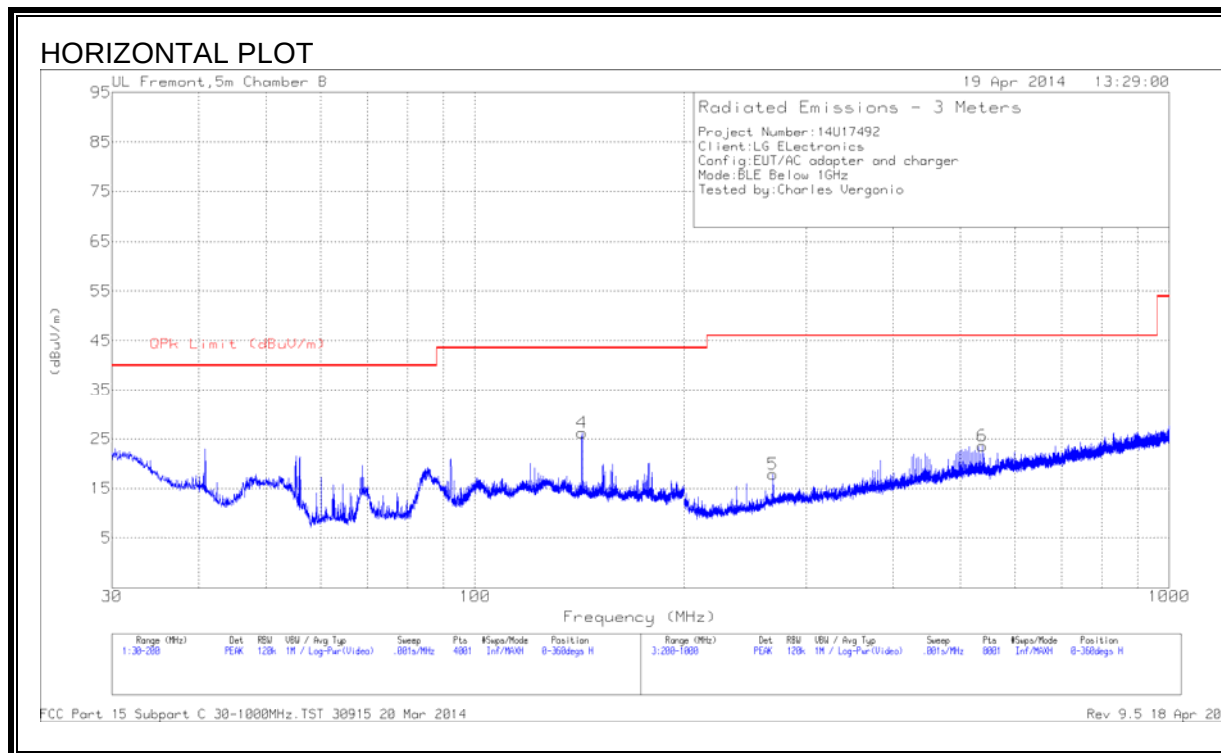
Radiated Emissions

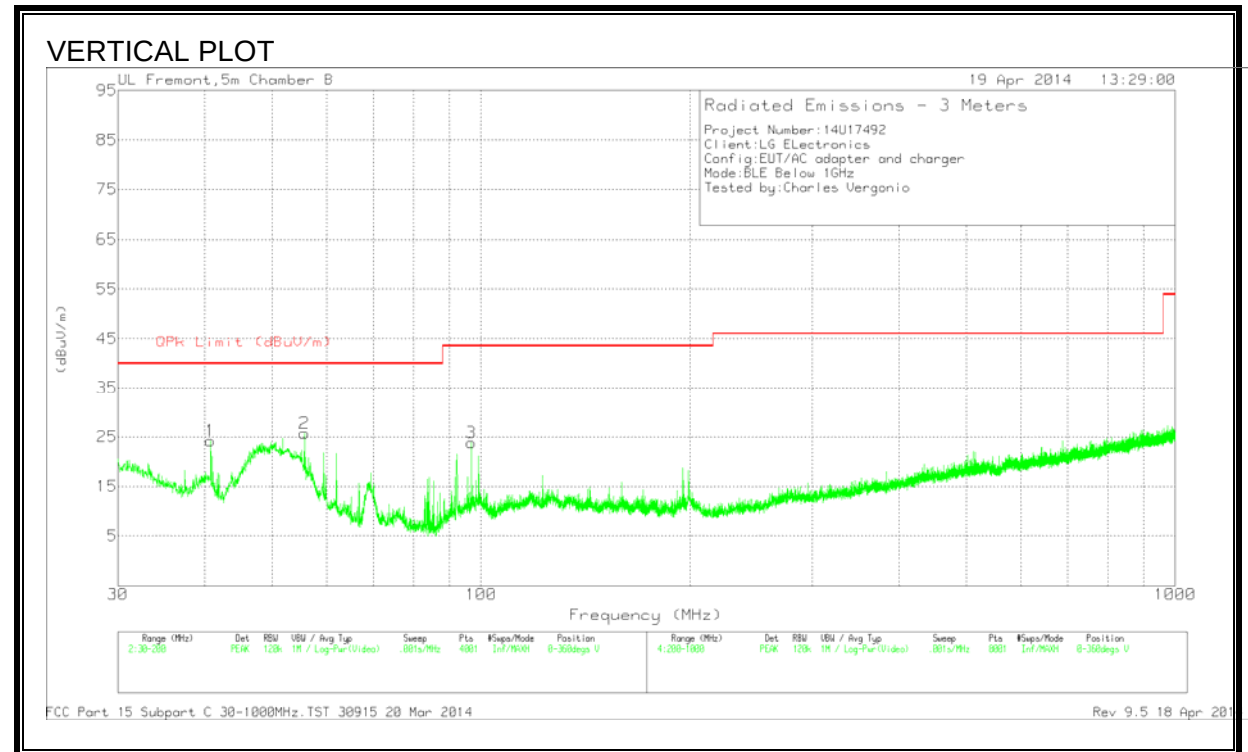
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 3.854	41.36	PK2	33.7	-30.2	0	44.86			74	-29.14	360	100	H
* 4.182	40.48	PK2	33.6	-29.8	0	44.28			74	-29.72	360	100	H
* 8.206	37.13	PK2	35.7	-26.9	0	45.93			74	-28.07	360	100	H
* 4.96	51.55	PK2	34.2	-30.2	0	55.55			74	-18.45	357	273	V
* 4.96	45.49	MAV1	34.2	-30.2	2.1	51.59	54	-2.41	74	-22.41	357	273	V
3.306	41.4	PK2	32.8	-31.3	0	42.9			74	-31.1	360	100	V
3.307	30.41	MAV1	32.8	-31.3	2.1	34.01	54	-19.99	74	-39.99	360	100	V
9.92	35.21	PK2	37	-24	0	48.21			74	-25.79	360	100	V
9.92	24.16	MAV1	37	-24	2.1	39.26	54	-14.74	74	-34.74	360	100	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

9.3. WORST-CASE BELOW 1 GHz

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





Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	* 268.8	31.17	PK	12.9	-26.2	17.87	46.02	-28.15	0-360	101	H
1	40.795	39.9	PK	13	-28.7	24.2	40	-15.8	0-360	101	V
2	55.67	47.35	PK	7	-28.6	25.75	40	-14.25	0-360	101	V
3	96.8525	42.52	PK	9.4	-28.1	23.82	43.52	-19.7	0-360	101	V
4	142.625	41.23	PK	12.6	-27.6	26.23	43.52	-17.29	0-360	200	H
6	537.6	31.03	PK	18.2	-25.7	23.53	46.02	-22.49	0-360	200	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

10. 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 - 2009

RESULTS

6 WORST EMISSIONS

Line-L1 .15 - 30MHz

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1 (dB)	LC Cables 1&3 (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	Margin to Limit (dB)	CFR 47 Part 15 Class B Avg	Margin to Limit (dB)
1	.168	45.86	PK	1.2	0	47.06	65.1	-18.04	55.1	-8.04
2	.168	19.65	Av	1.2	0	20.85	65.1	-44.25	55.1	-34.25
3	1.3965	35.99	PK	.2	.1	36.29	56	-19.71	46	-9.71
4	1.3965	18.8	Av	.2	.1	19.1	56	-36.9	46	-26.9
5	13.2405	34.79	PK	.2	.2	35.19	60	-24.81	50	-14.81
6	13.2405	17.96	Av	.2	.2	18.36	60	-41.64	50	-31.64

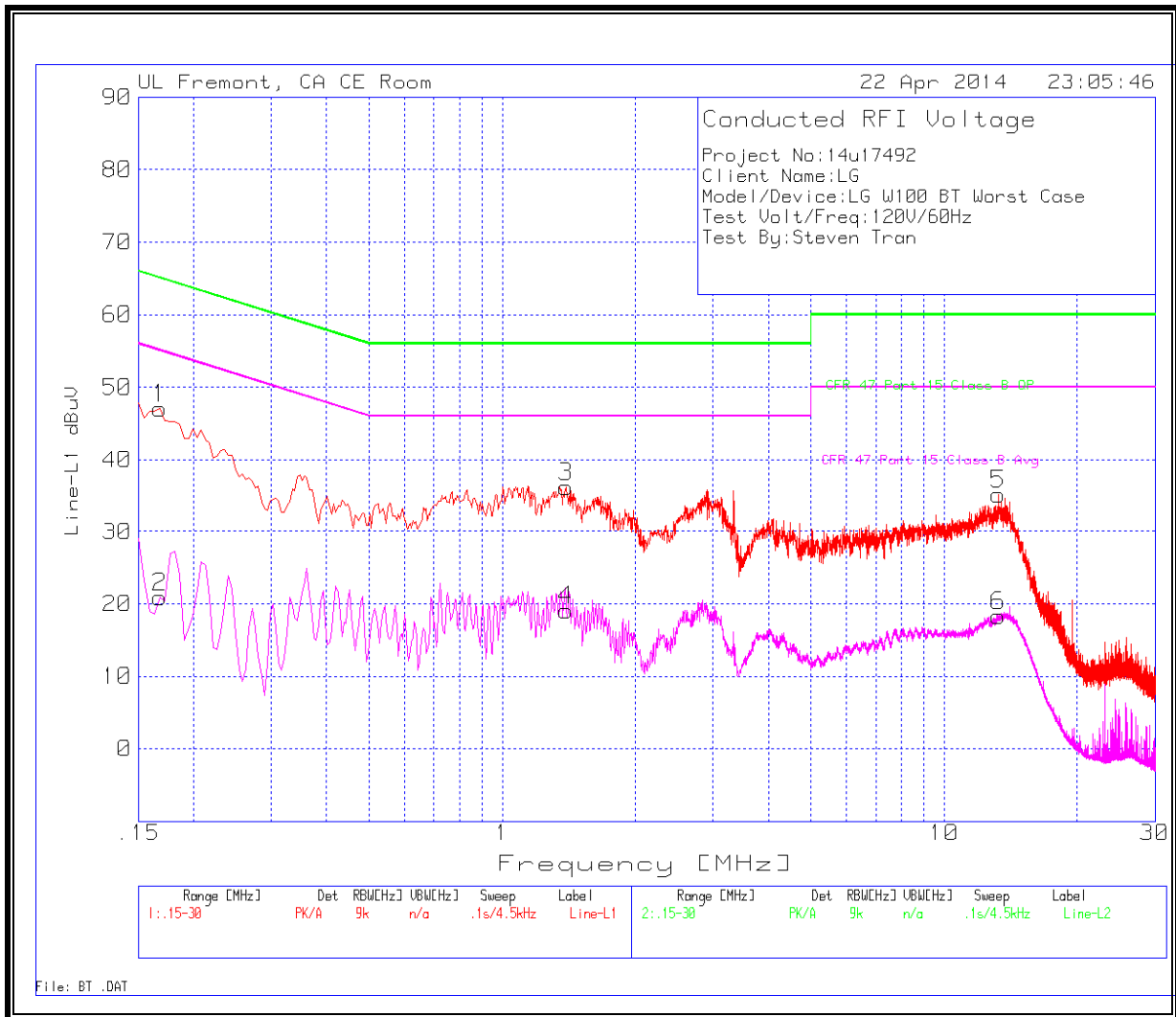
Line-L2 .15 - 30MHz

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2 (dB)	LC Cables 2&3 (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	Margin to Limit (dB)	CFR 47 Part 15 Class B Avg	Margin to Limit (dB)
7	.1635	38.68	PK	1.3	0	39.98	65.3	-25.32	55.3	-15.32
8	.1635	20.23	Av	1.3	0	21.53	65.3	-43.77	55.3	-33.77
9	1.086	33.86	PK	.3	0	34.16	56	-21.84	46	-11.84
10	1.086	16.6	Av	.3	0	16.9	56	-39.1	46	-29.1
11	13.623	31.91	PK	.3	.2	32.41	60	-27.59	50	-17.59
12	13.623	14.79	Av	.3	.2	15.29	60	-44.71	50	-34.71

PK - Peak detector
Av - average detection

LINE 1 RESULTS



LINE 2 RESULTS

