FCC CFR47 PART 15 SUBPART C

CERTIFICATION TEST REPORT

FOR

CELLULAR/PCS CDMA AND LTE PHONE WITH BLUETOOTH AND WLAN

MODEL NUMBER: VS840, LG-VS840, LGVS840

FCC ID: ZNFVS840

REPORT NUMBER: 11U14141-3, Revision A

ISSUE DATE: December 19, 2011

Prepared for
LG ELECTRONICS MOBILECOMM U.S.A., INC.
10101 OLD GROVE ROAD
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Prepared by
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*The models covered by this report are identical

NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	12/09/11	Initial Issue	F. Ibrahim
A	12/19/11	Added inductive charger data	F. Ibrahim

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	LG ELECTRONICS MOBILECOMM U.S.A., INC. 10101 OLD GROVE ROAD SAN DIEGO, CA 92131
EUT DESCRIPTION:	Cellular/PCS CDMA and LTE Phone with Bluetooth and WLAN
MODEL:	VS840, LG-VS840, LGVS840
SERIAL NUMBER:	99000075000112, 9900075000113
DATE TESTED:	NOVEMBER 14 – DECEMBER 17, 2011

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:

FRANK IBRAHIM
EMC SUPERVISOR
UL CCS

Tested By:

OLIVER SU
EMC ENGINEER
UL CCS

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2009, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 2, and RSS-210 Issue 7.

3. FACILITIES AND ACCREDITATION

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

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

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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

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

4.3. MEASUREMENT UNCERTAINTY

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

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

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a smart-phone that features Cellular/PCS CDMA and LTE with Bluetooth and WLAN.

The radio module is manufactured by Broadcom Co.

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	Basic GFSK	9.93	9.84
2402 - 2480	Enhanced 8PSK	9.73	9.40

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a Direct Printed Antenna, with a maximum peak gain of -3.16 dBi.

5.4. SOFTWARE AND FIRMWARE

The software installed in the EUT during testing was VS840Z09.

The test utility software used during testing was Bluetooth FCC Test.

5.5. WORST-CASE CONFIGURATION AND MODE

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

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

For Radiated Emission test – during the fundamental investigation, since the EUT is a portable device that has three orientations; X, Y and Z orientations had been investigated, either EUT was stand-alone with headset, or also with AC/DC adapter and headset, or Wireless Charging Pad with AC-DC Adapter and headset; and the worst case was found to be at X orientation with EUT stand-alone with headset.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
AC-DC Adapter (1)	LG Electronics	MCS-02WR	RA190000054	N/A
Wireless Charging Pad	LG Electronics	WCP-700	A1106WP000029	BEJWCP700
AC-DC Adapter (2)	LG Electronics	WCA-D01WT	TA180000002	N/A
Ear Phone	LG Electronics	N/A	N/A	N/A

I/O CABLES

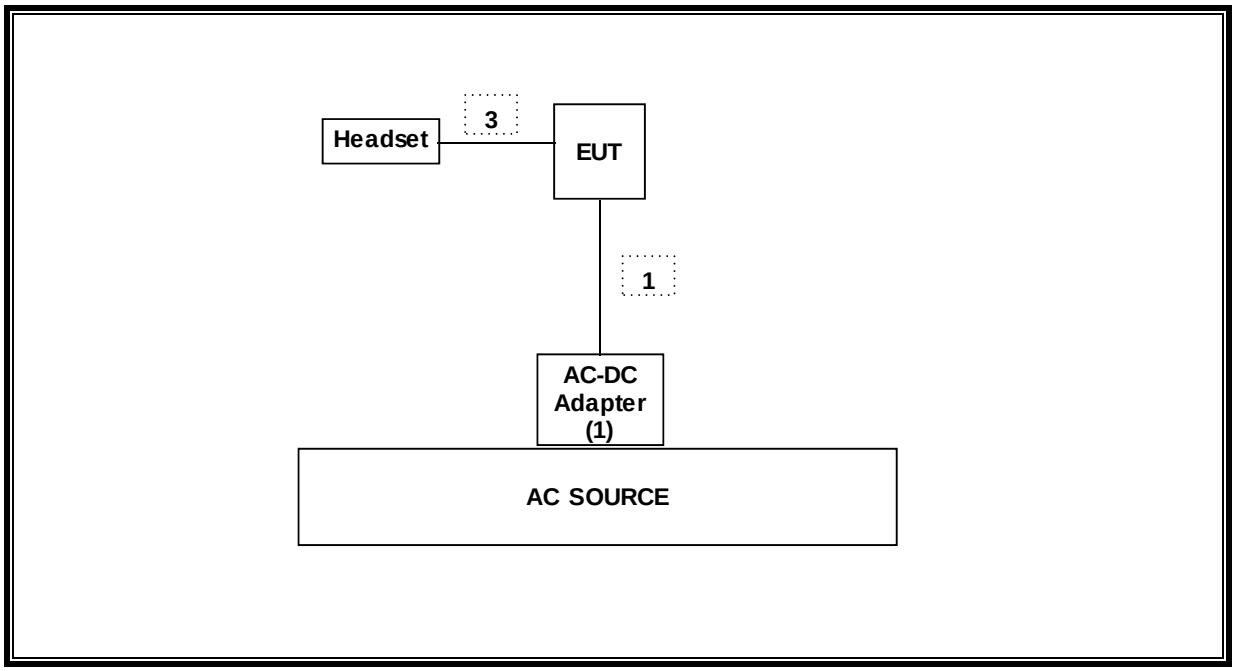
I/O CABLE LIST						
Cable No.	Port	# of Identica Ports	Connector Type	Cable Type	Cable Length	Remarks
1	DC	1	Mini Jack	Un-Shielded	1.2m	N/A
2	DC	1	Mini Jack	Un-Shielded	1.6m	N/A
3	Audio	1	Mini Jack	Un-Shielded	1.2m	Volume control on cable

TEST SETUP

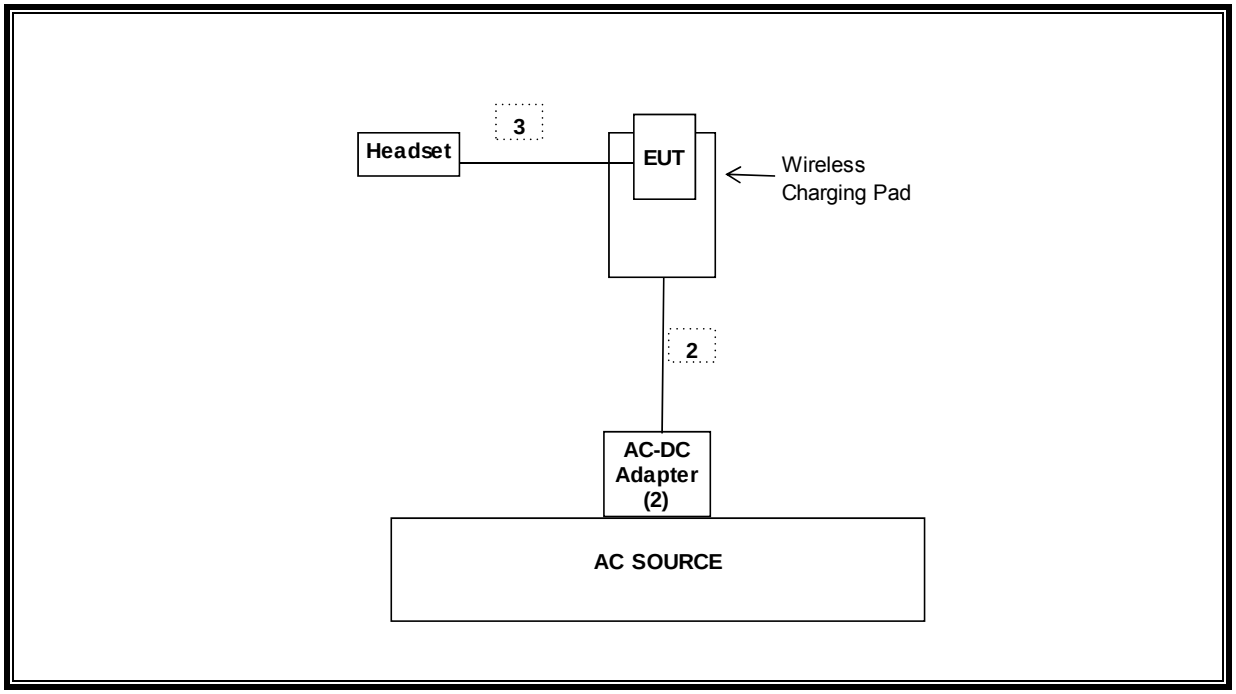
Bluetooth Tester was used to control the EUT.

SETUP DIAGRAM FOR TESTS

EUT WITH STANDARD OR INDUCTIVE COVER



EUT WITH INDUCTIVE COVER AND WIRELESS CHARGING PAD



6. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Asset**	**Cal Due**
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01176	08/15/12
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C00749	07/08/12
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00558	01/27/12
Antenna, Horn, 18 GHz	EMCO	3115	C00872	06/30/12
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01171	07/16/12
Reject Filter, 2.4-2.5 GHz	Micro-Tronics	BRM50702	N02685	CNR
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01159	08/11/12
P-Seies single channel Power	Agilent / HP	N1911A	N/A	08/04/12
Peak / Average Power Sensor	Agilent / HP	E9323A	N/A	08/04/12
EMI Test Receiver, 9 kHz-7 GHz	R & S	ESCI 7	1000741	07/06/12
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	11/15/12
Bluetooth Tester	R & S	1153.9000K35	N/A	04/22/12

7. ANTENNA PORT TEST RESULTS

7.1. BASIC DATA RATE GFSK MODULATION

7.1.1. 20 dB BANDWIDTH

LIMIT

None; for reporting purposes only.

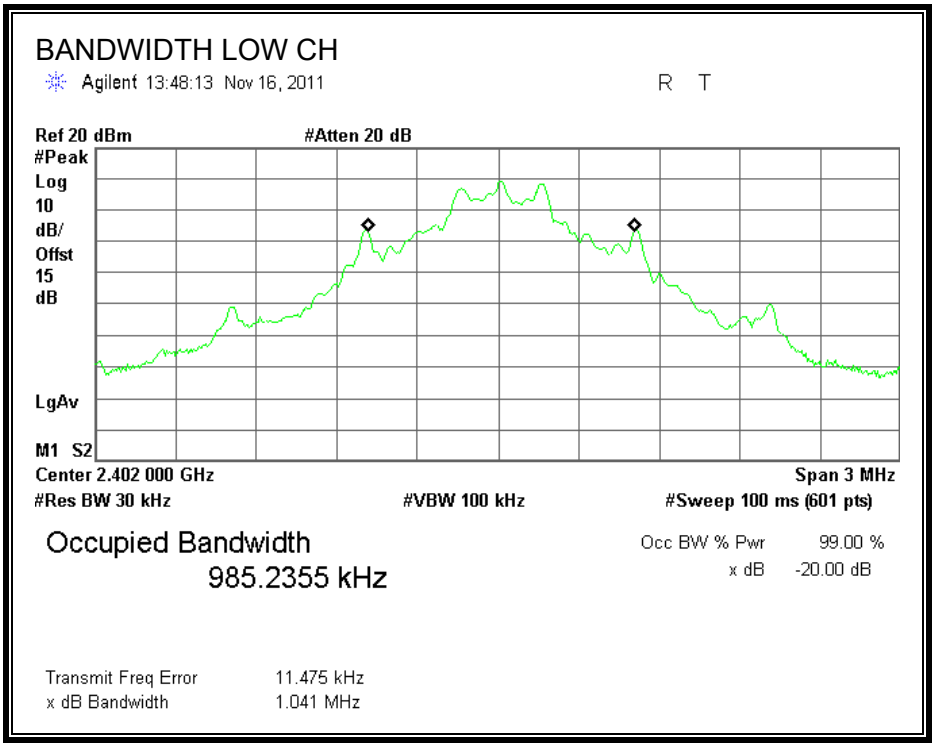
TEST PROCEDURE

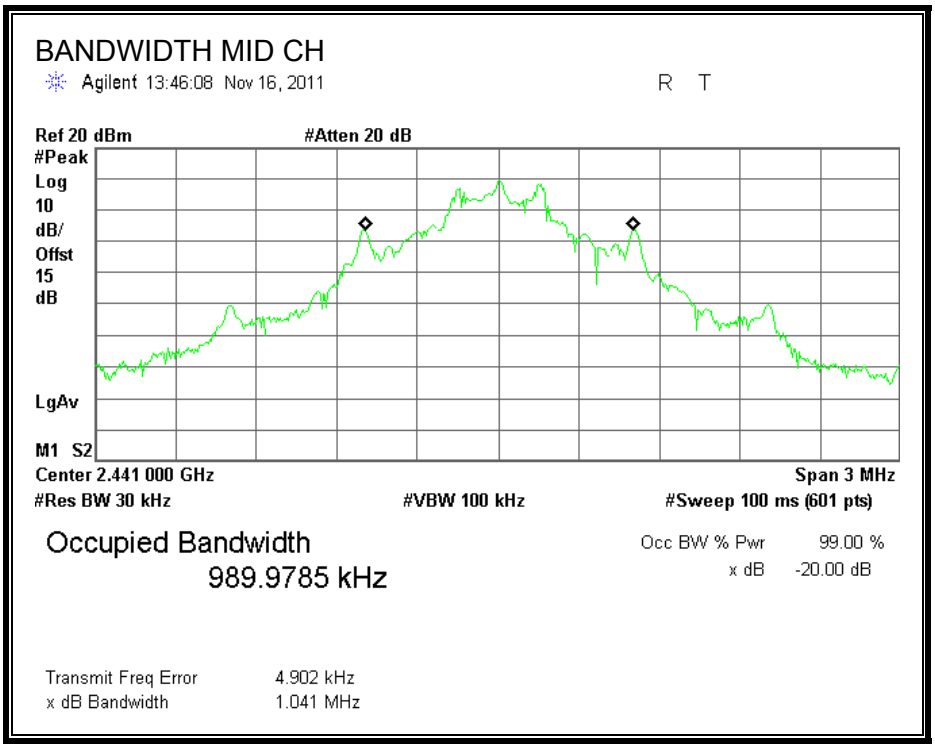
The transmitter output is connected to a spectrum analyzer. The RBW is set to ≥ 1% of the 20 dB bandwidth. The VBW is set to ≥ RBW. The sweep time is coupled.

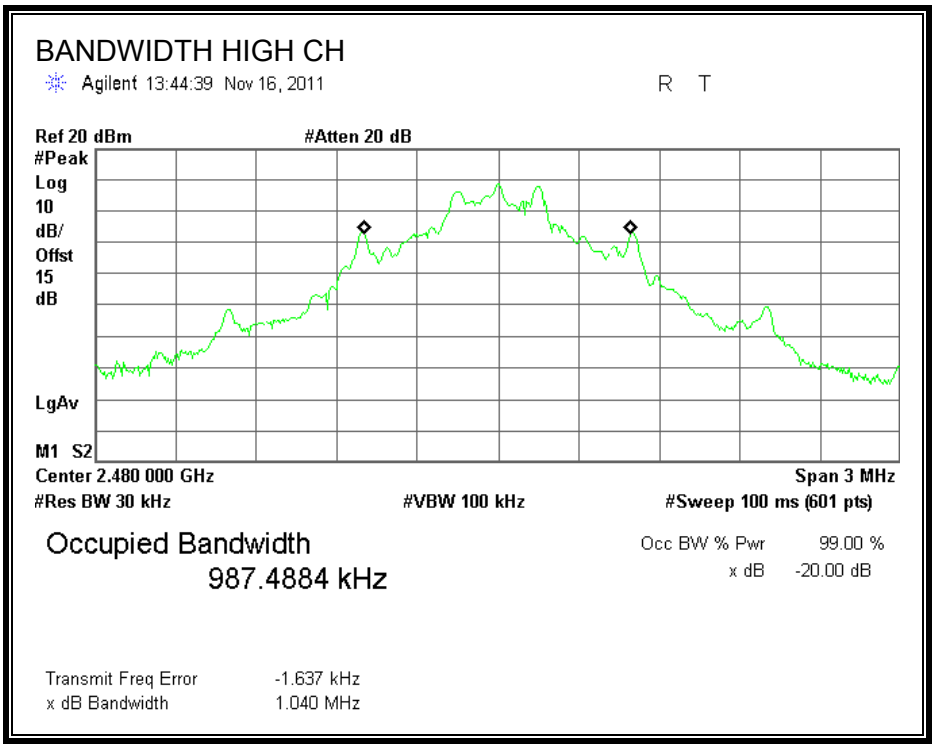
RESULTS

Channel	Frequency (MHz)	20 dB Bandwidth (kHz)
Low	2402	1041
Middle	2441	1041
High	2480	1040

20 dB BANDWIDTH







7.1.2. HOPPING FREQUENCY SEPARATION

LIMIT

FCC §15.247 (a) (1)

IC RSS-210 A8.1 (b)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hoping channel, whichever is greater.

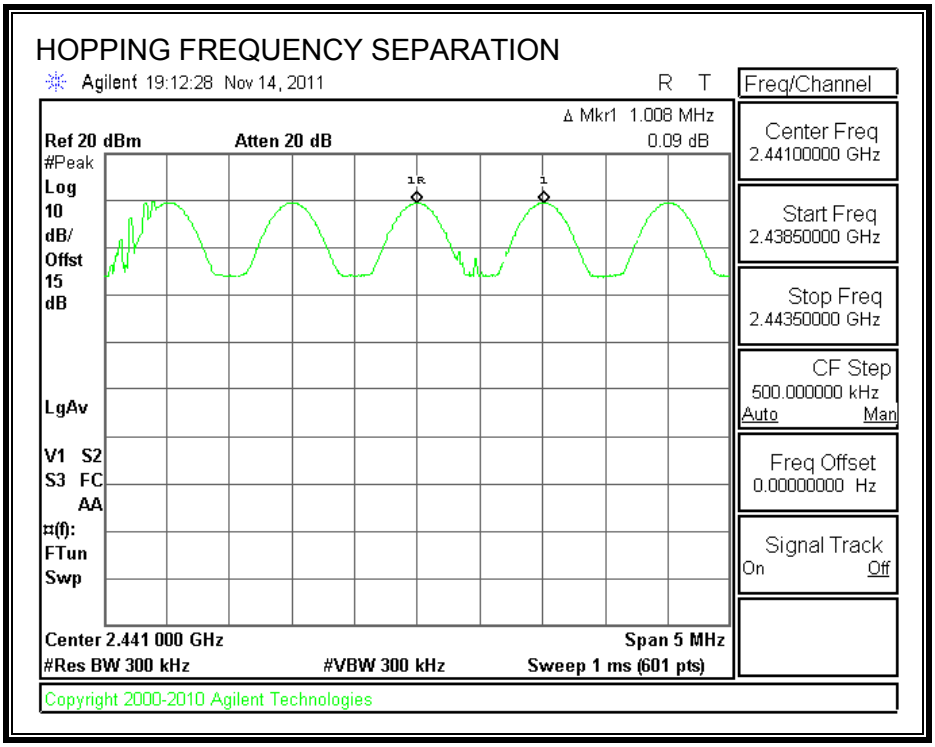
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

TEST PROCEDURE

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

RESULTS

HOPPING FREQUENCY SEPARATION



7.1.3. NUMBER OF HOPPING CHANNELS

LIMIT

FCC §15.247 (a) (1) (iii)

IC RSS-210 A8.1 (d)

Frequency hopping systems in the 2400 – 2483.5 MHz band shall use at least 15 non-overlapping channels.

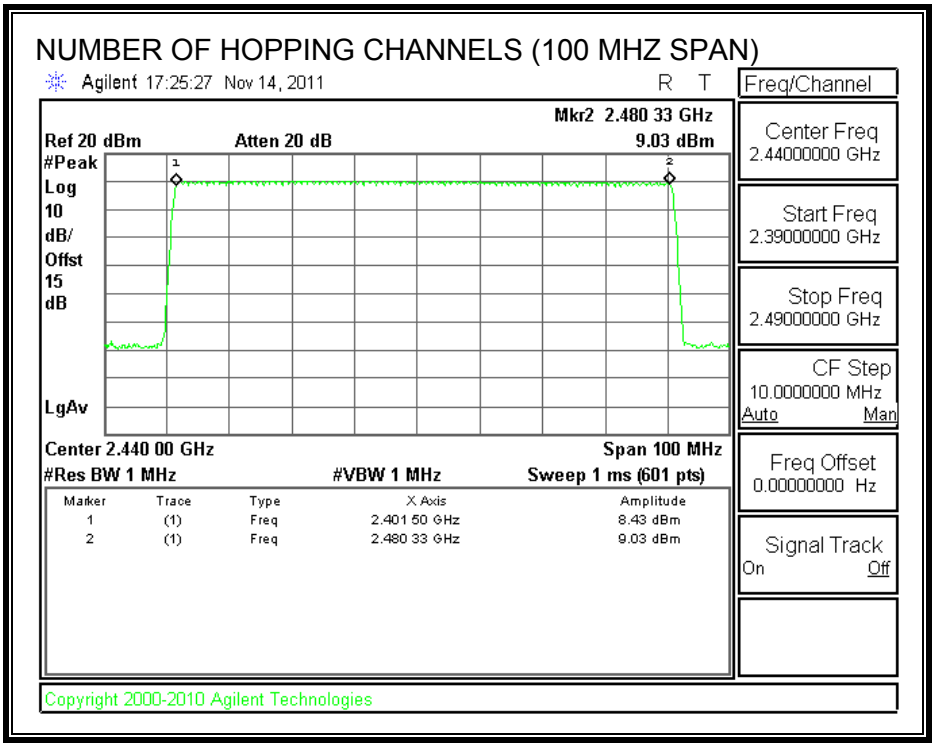
TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

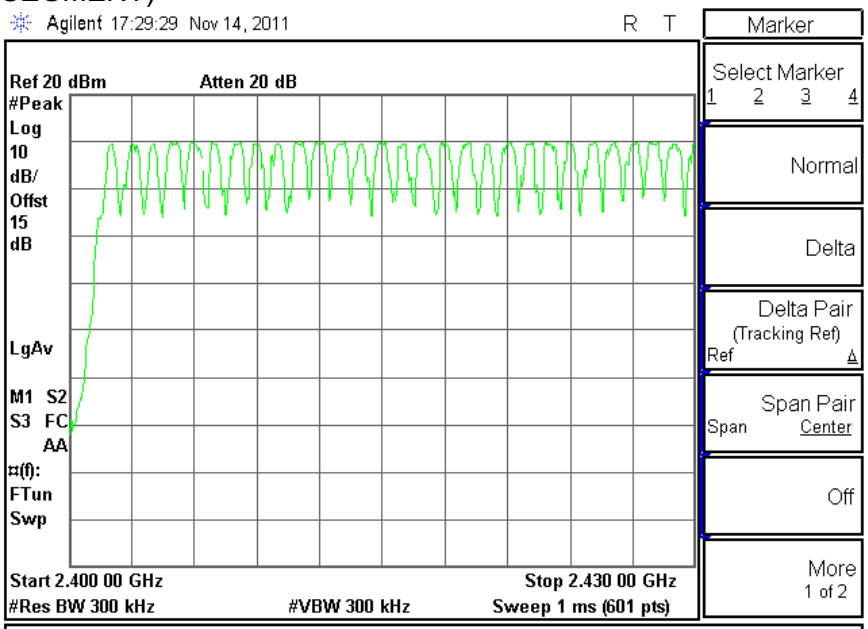
RESULTS

79 Channels observed.

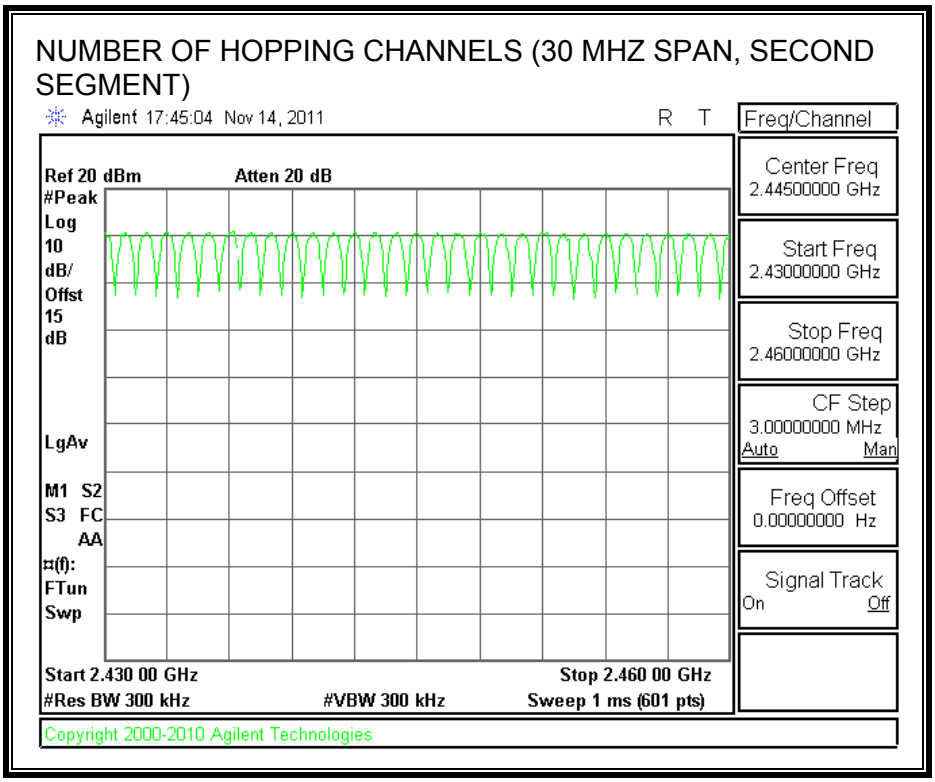
NUMBER OF HOPPING CHANNELS



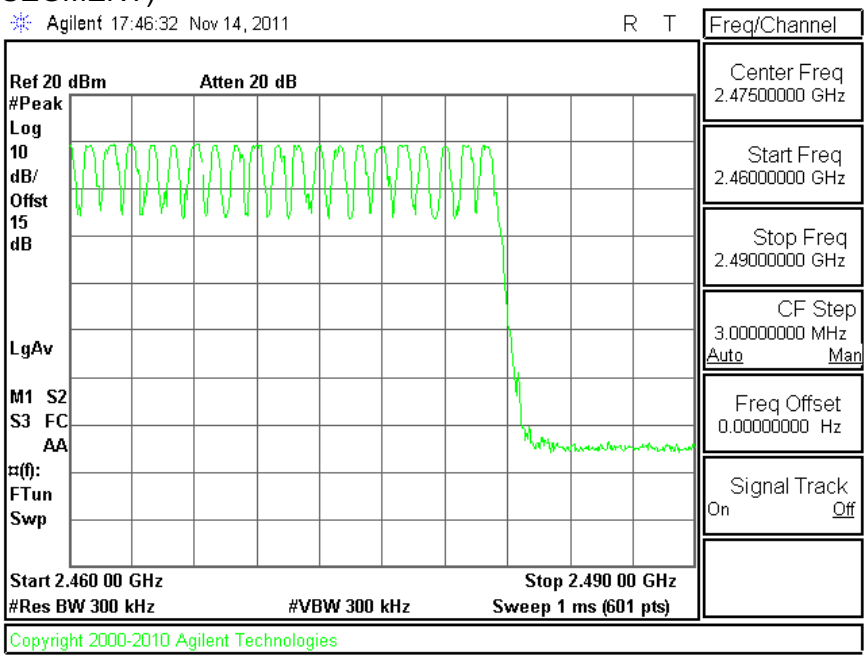
NUMBER OF HOPPING CHANNELS (30 MHZ SPAN, FIRST SEGMENT)



NUMBER OF HOPPING CHANNELS (30 MHZ SPAN, SECOND SEGMENT)



NUMBER OF HOPPING CHANNELS (30 MHZ SPAN, THIRD SEGMENT)



7.1.4. AVERAGE TIME OF OCCUPANCY

LIMIT

FCC §15.247 (a) (1) (iii)

IC RSS-210 A8.1 (d)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The span is set to 0 Hz, centered on a single, selected hopping channel. The width of a single pulse is measured in a fast scan. The number of pulses is measured in a 3.16 second scan, to enable resolution of each occurrence.

The average time of occupancy in the specified 31.6 second period (79 channels * 0.4 s) is equal to 10 * (# of pulses in 3.16 s) * pulse width.

RESULTS

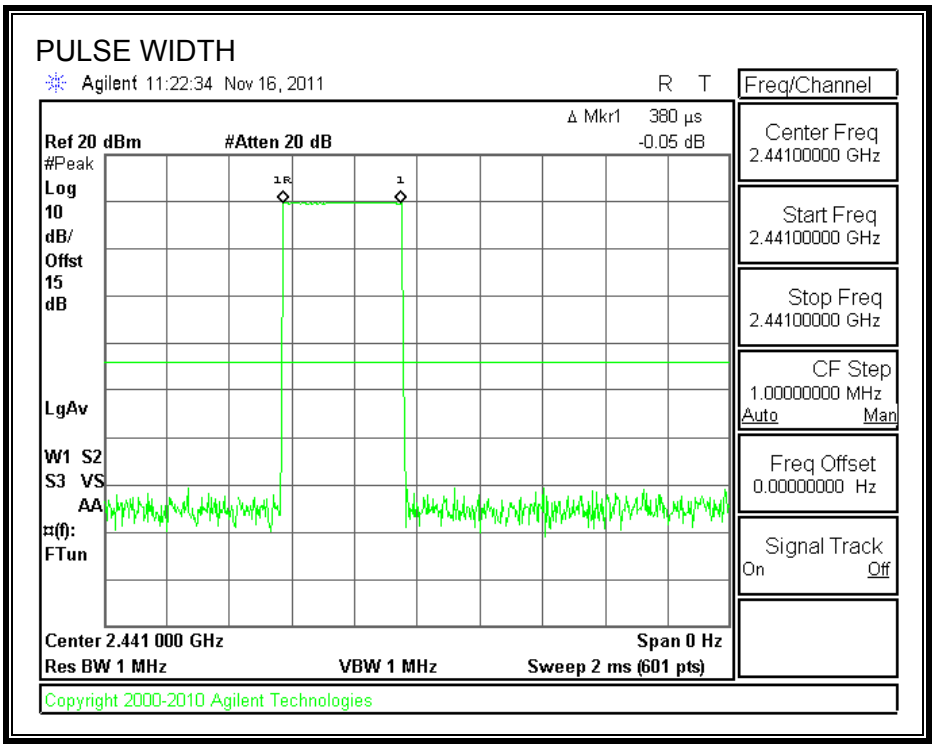
Time Of Occupancy = 10 * xx pulses * yy msec = zz msec

GFSK Mode

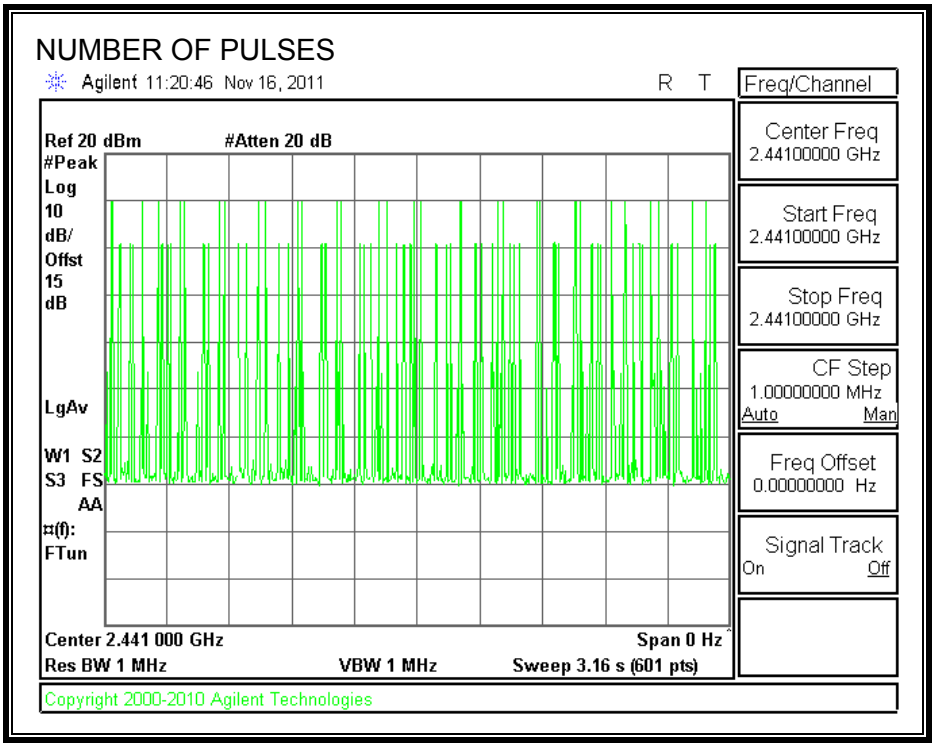
DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of (sec)	Limit (sec)	Margin (sec)
DH1	0.38	31	0.118	0.4	0.282
DH3	1.635	16	0.262	0.4	0.138
DH5	2.891	10	0.289	0.4	0.111

DH1

PULSE WIDTH

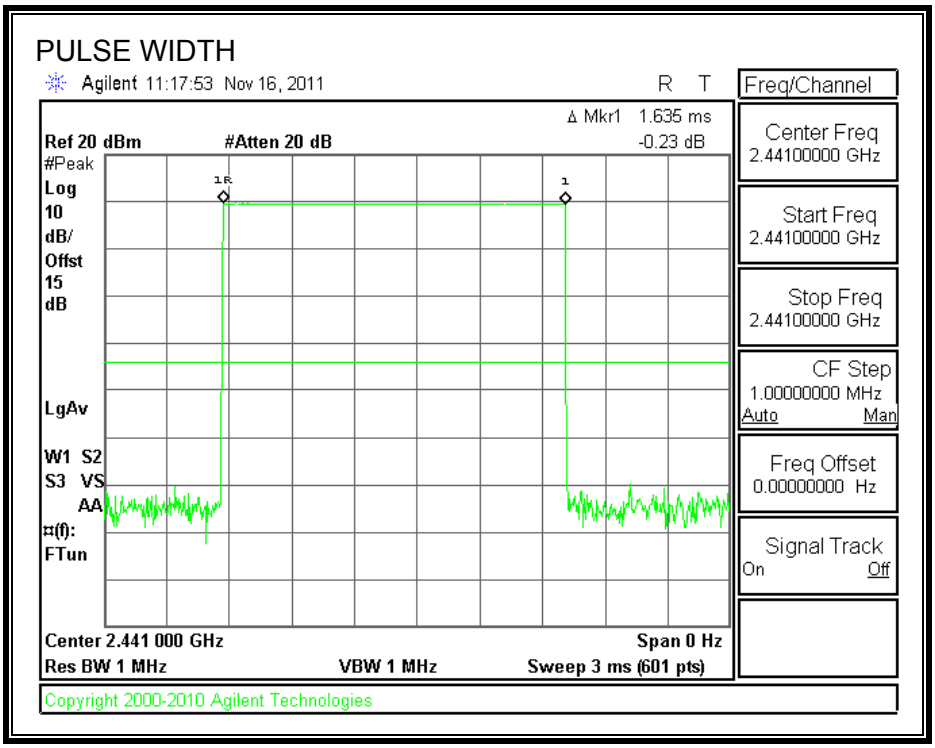


NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD

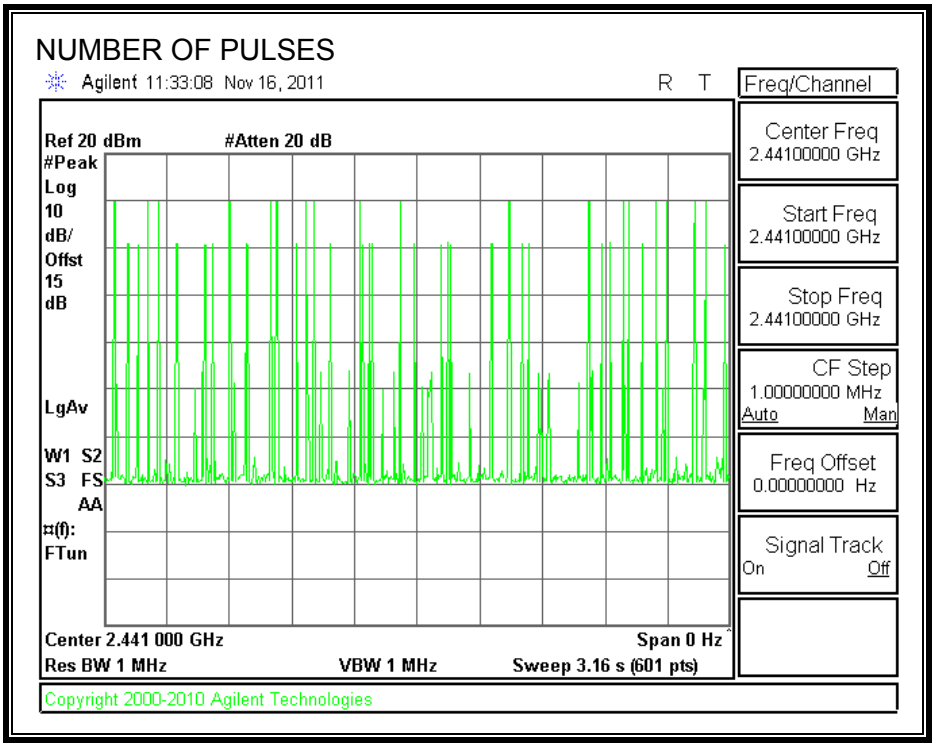


DH3

PULSE WIDTH

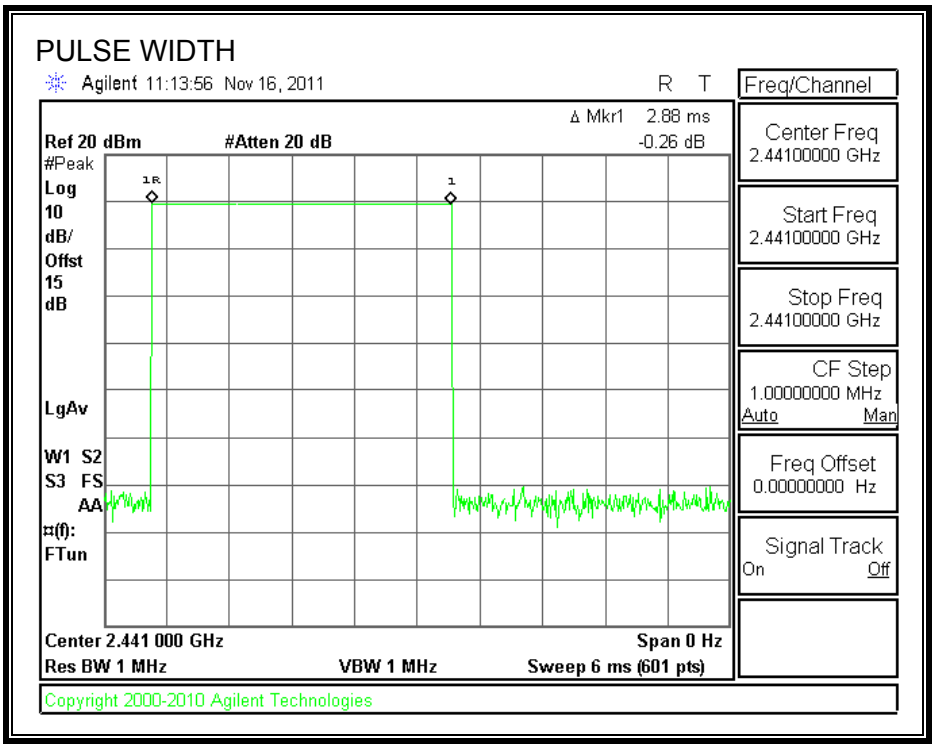


NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD

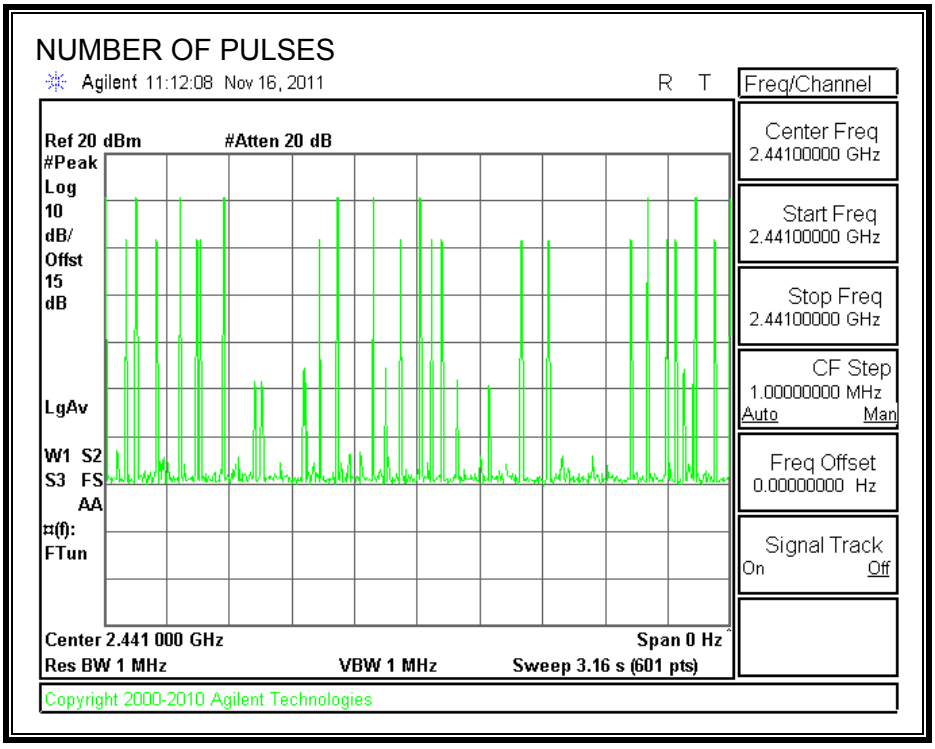


DH5

PULSE WIDTH



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD



7.1.5. OUTPUT POWER

LIMIT

§15.247 (b) (1)

RSS-210 Issue 7 Clause A8.4

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

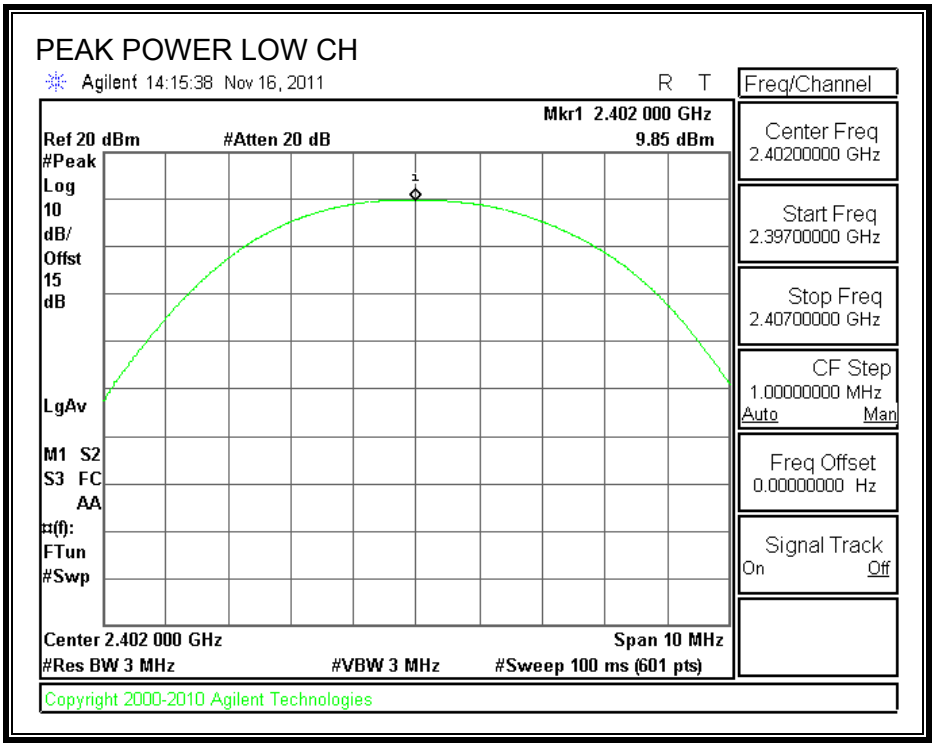
TEST PROCEDURE

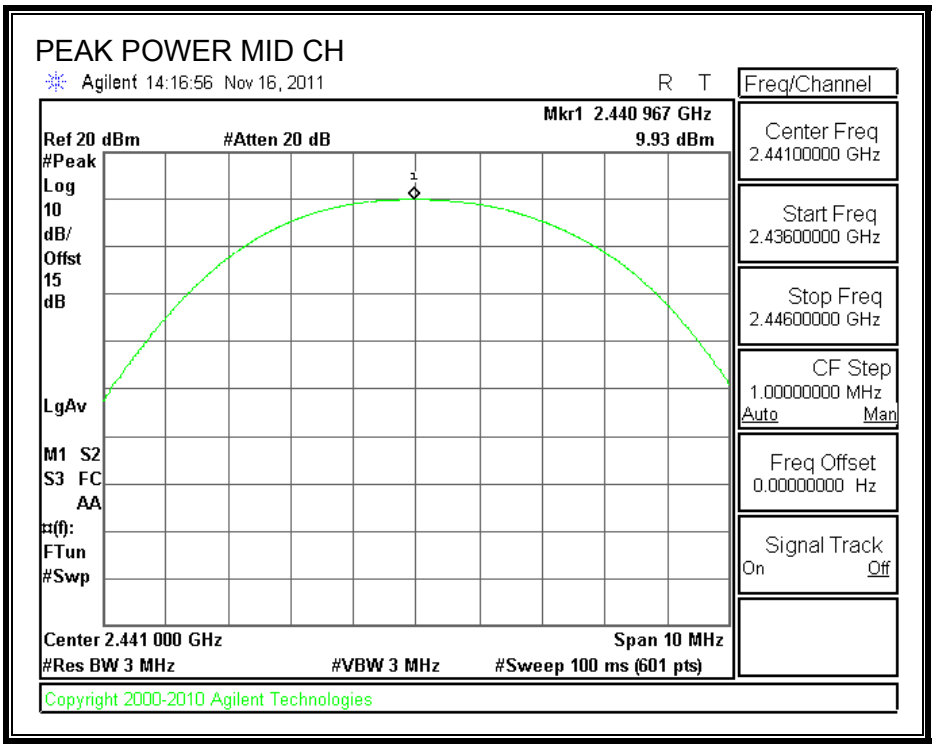
The transmitter output is connected to a spectrum analyzer the analyzer bandwidth is set to a value greater than the 20 dB bandwidth of the EUT.

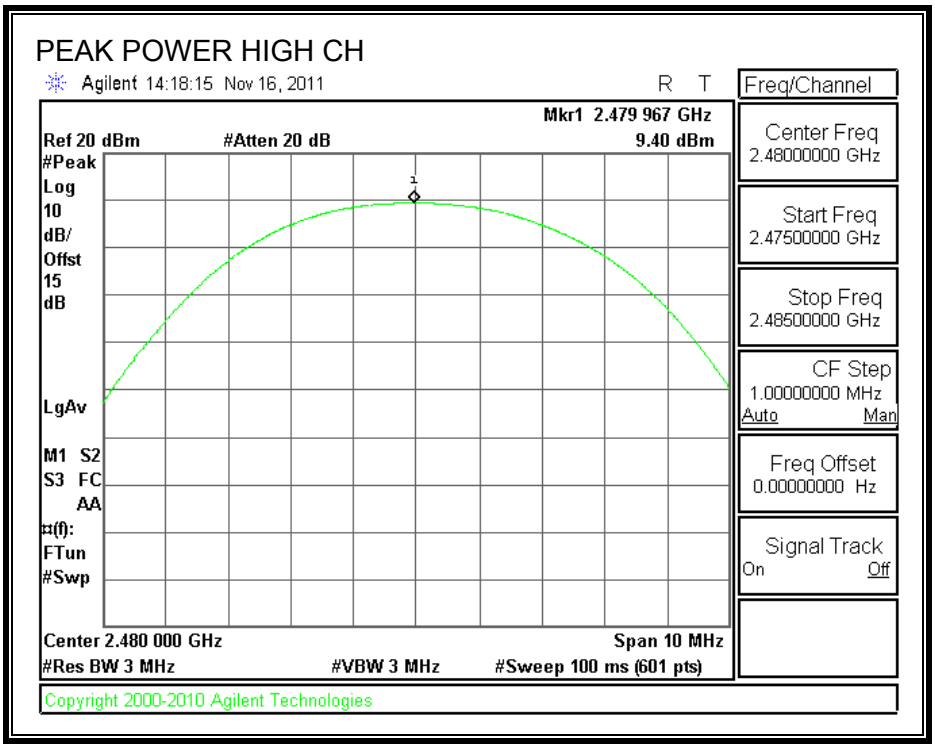
RESULTS

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	9.85	30	-20.15
Middle	2441	9.93	30	-20.07
High	2480	9.40	30	-20.60

OUTPUT POWER







7.1.6. AVERAGE POWER

LIMIT

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

The cable assembly insertion loss of 10.4 dB (including 10 dB pad and 0.4 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	9.40
Middle	2441	9.40
High	2480	9.30

7.1.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

Limit = -20 dBc

TEST PROCEDURE

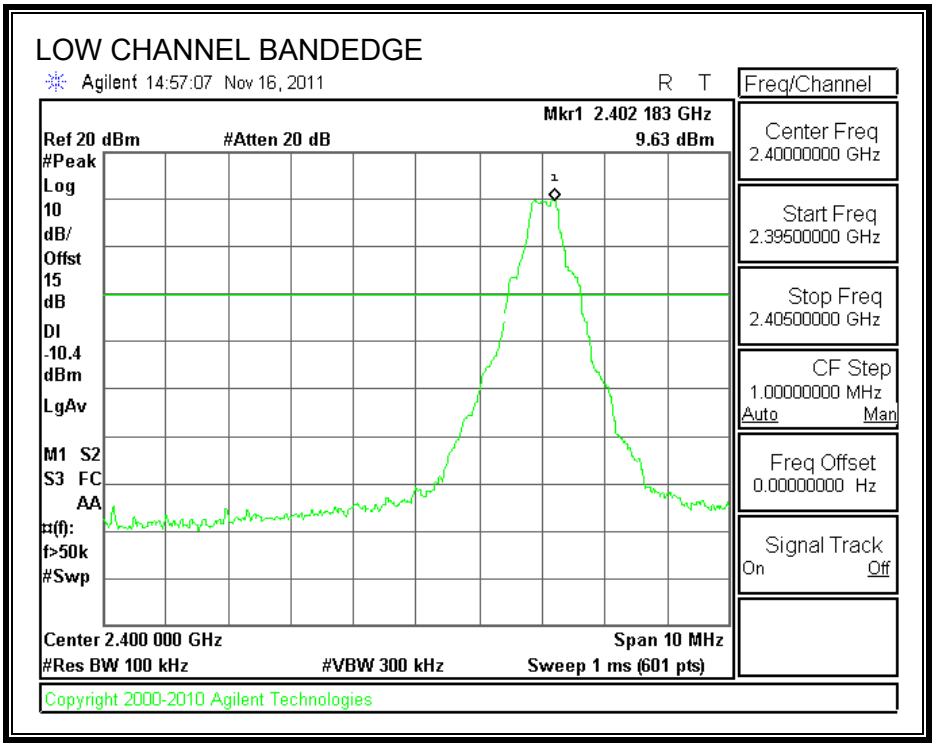
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

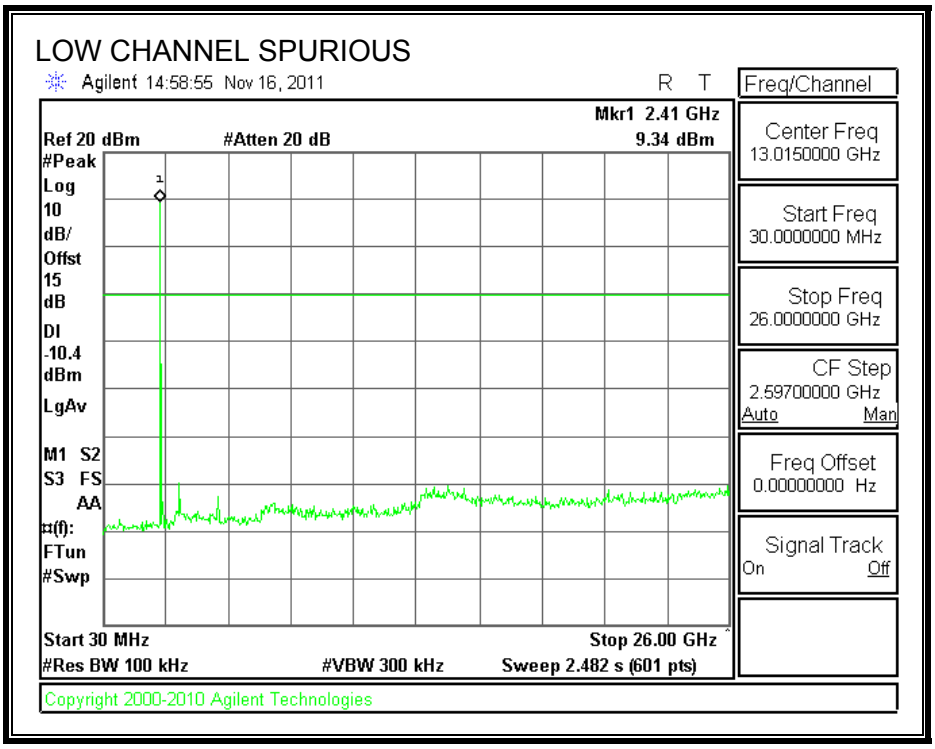
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

The bandedges at 2.4 and 2.4835 GHz are investigated with the transmitter set to the normal hopping mode.

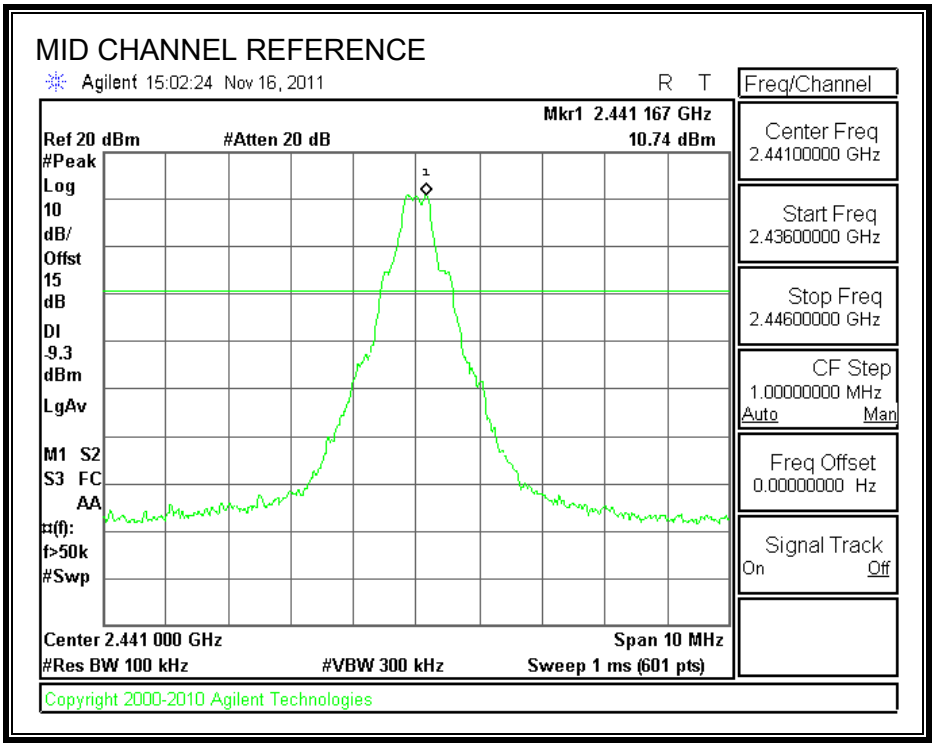
RESULTS

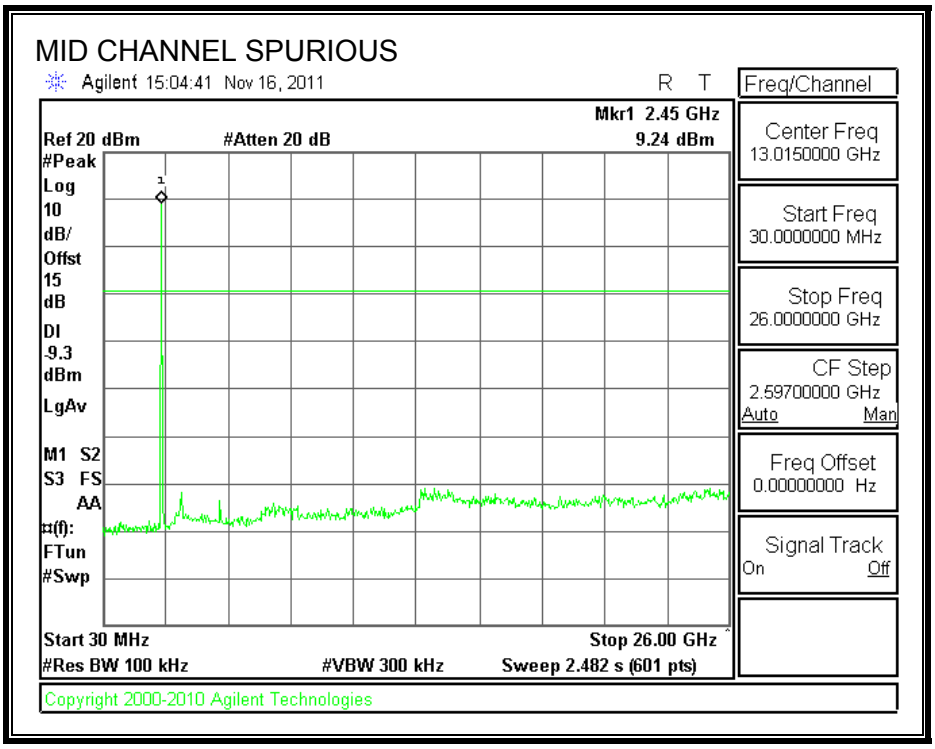
SPURIOUS EMISSIONS, LOW CHANNEL



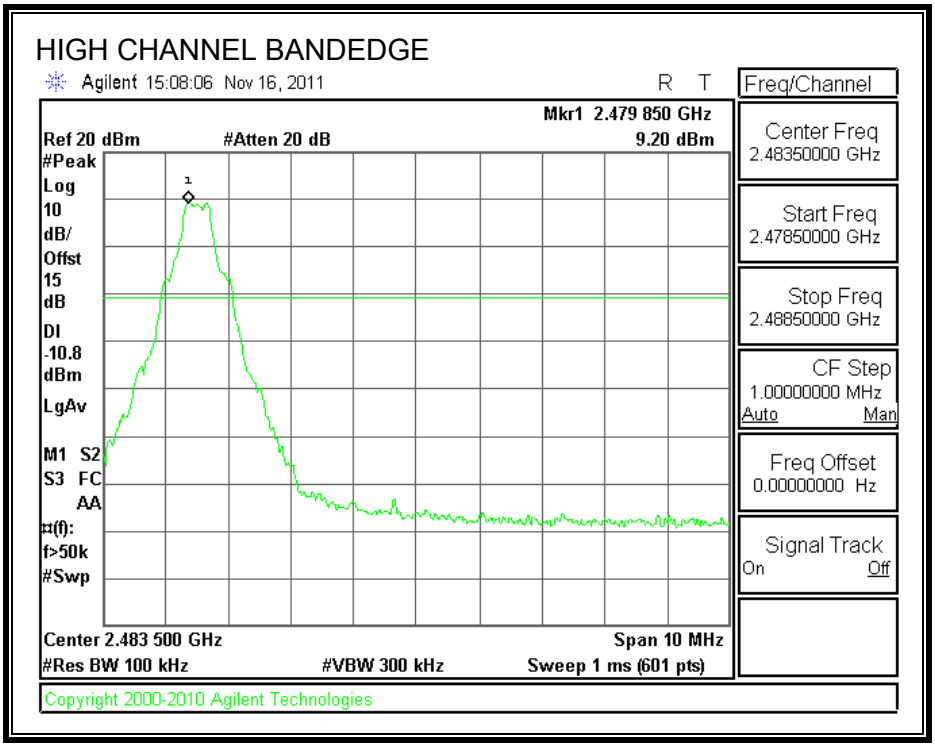


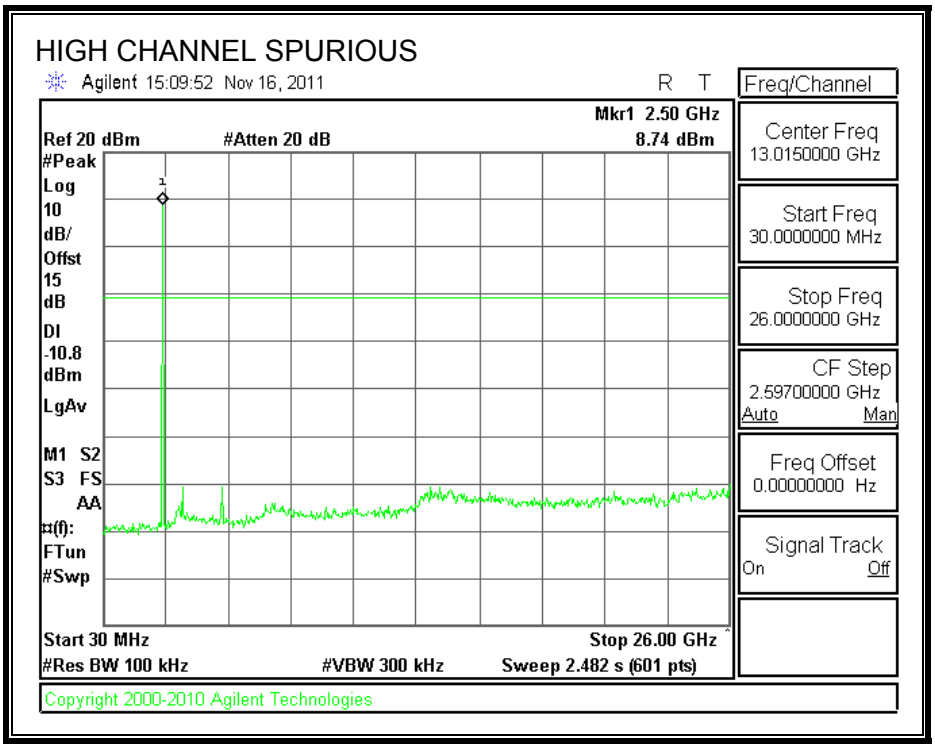
SPURIOUS EMISSIONS, MID CHANNEL



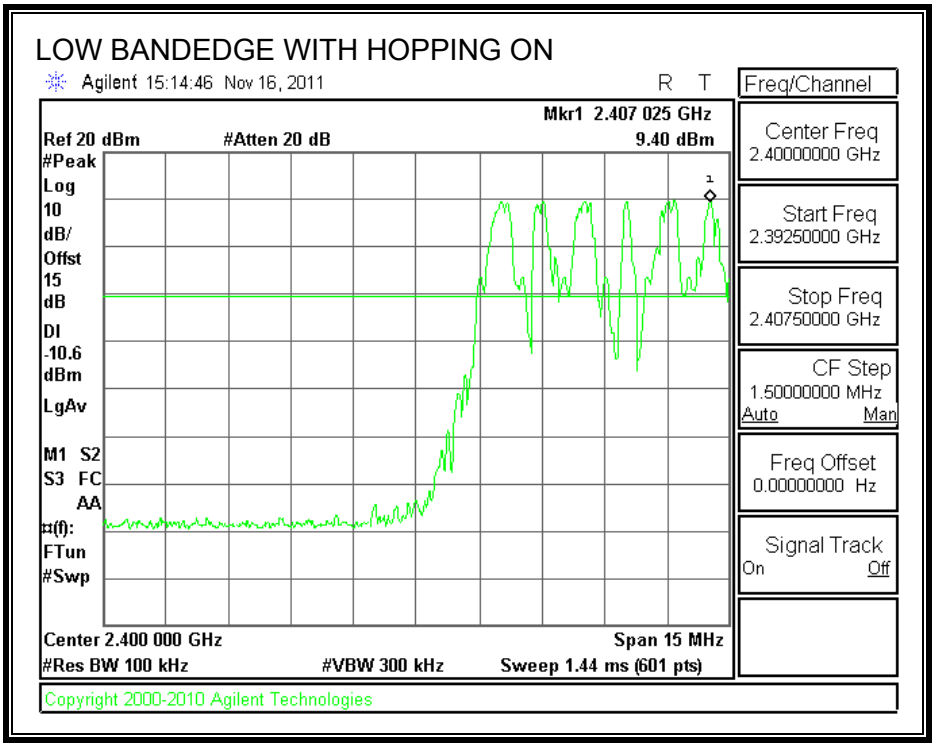


SPURIOUS EMISSIONS, HIGH CHANNEL

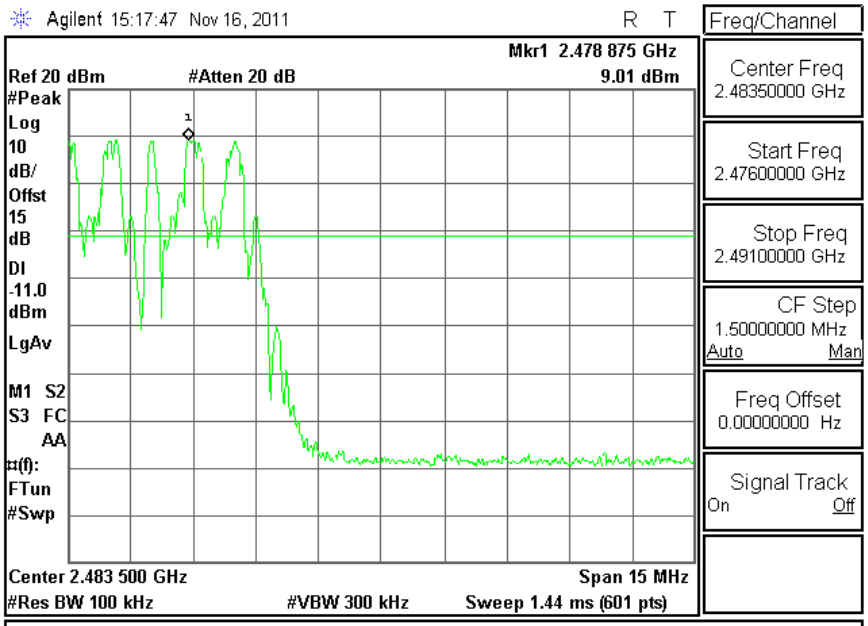




SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON



HIGH BANDEDGE WITH HOPPING ON



7.2. ENHANCED DATA RATE 8PSK MODULATION

7.2.1. 20 dB BANDWIDTH

LIMIT

None; for reporting purposes only.

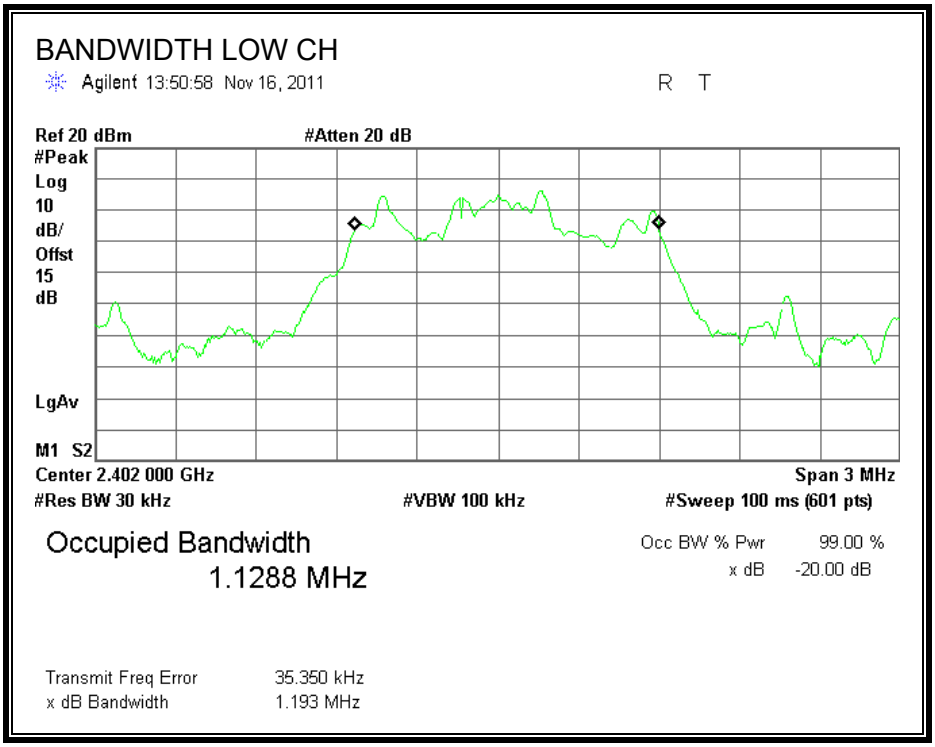
TEST PROCEDURE

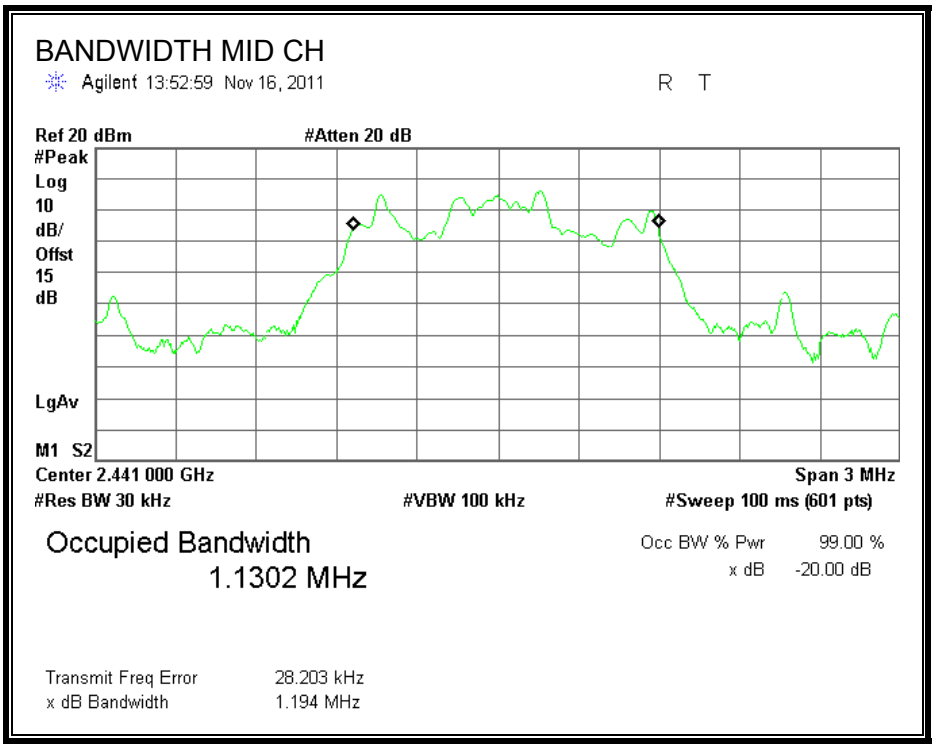
The transmitter output is connected to a spectrum analyzer. The RBW is set to ≥ 1% of the 20 dB bandwidth. The VBW is set to ≥ RBW. The sweep time is coupled.

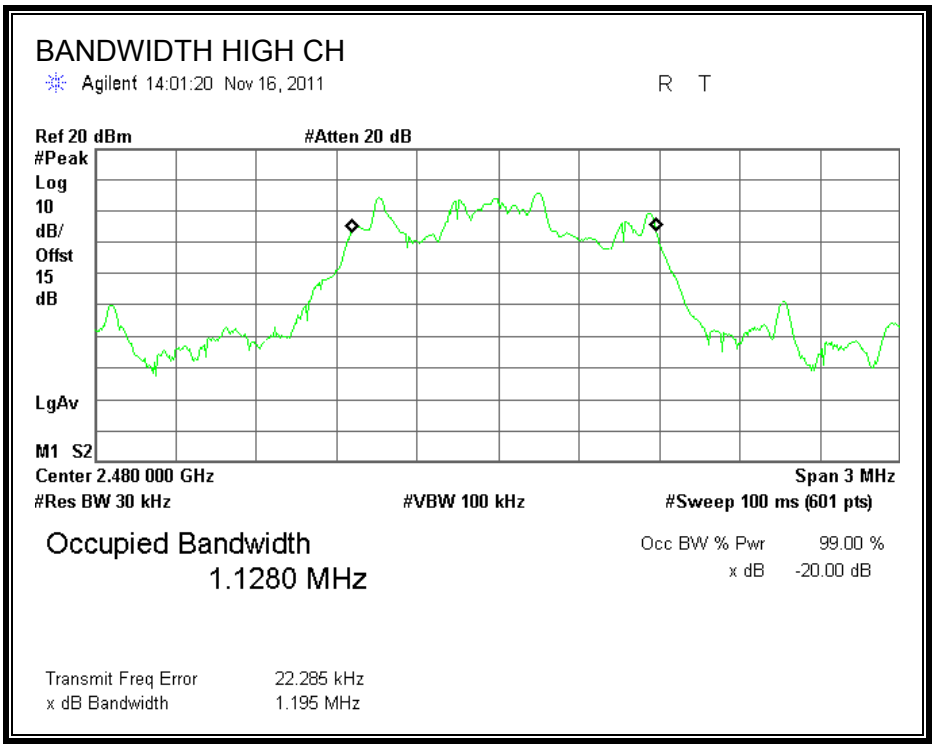
RESULTS

Channel	Frequency (MHz)	20 dB Bandwidth (kHz)
Low	2402	1193
Middle	2441	1194
High	2480	1195

20 dB BANDWIDTH







7.2.2. HOPPING FREQUENCY SEPARATION

LIMIT

FCC §15.247 (a) (1)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hoping channel, whichever is greater.

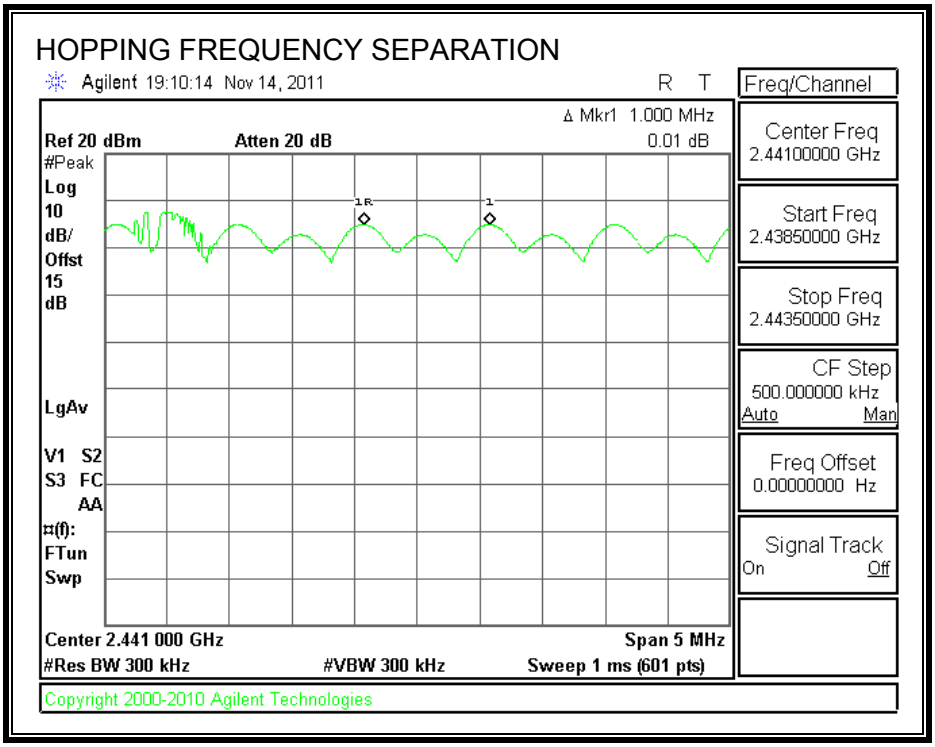
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

TEST PROCEDURE

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

RESULTS

HOPPING FREQUENCY SEPARATION



7.2.3. NUMBER OF HOPPING CHANNELS

LIMIT

FCC §15.247 (a) (1) (iii)

Frequency hopping systems in the 2400 – 2483.5 MHz band shall use at least 15 non-overlapping channels.

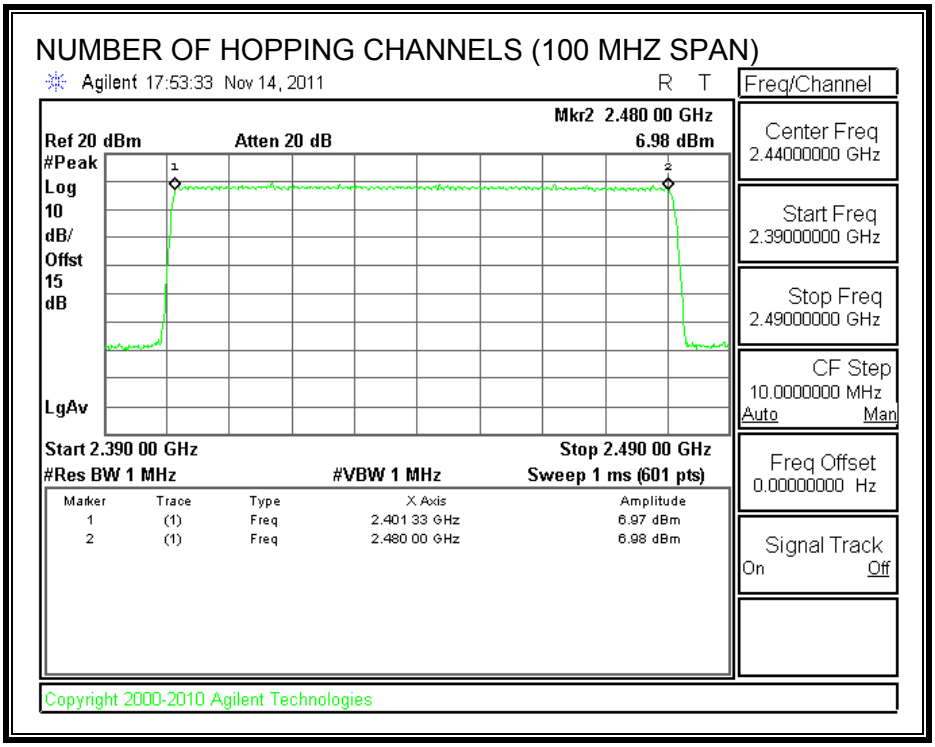
TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

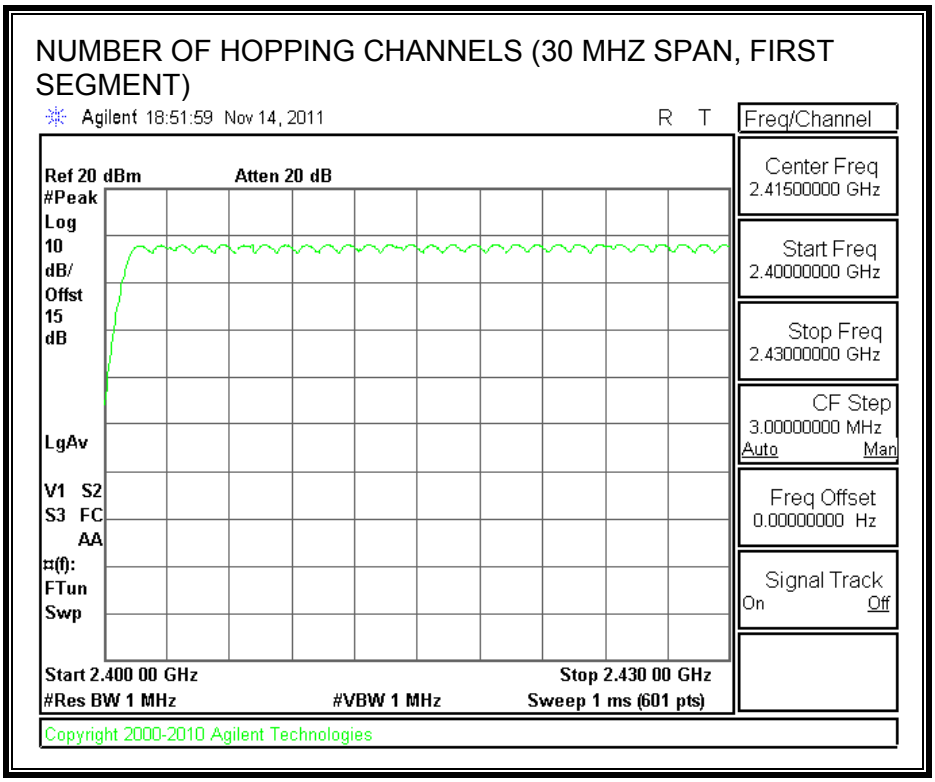
RESULTS

79 Channels observed.

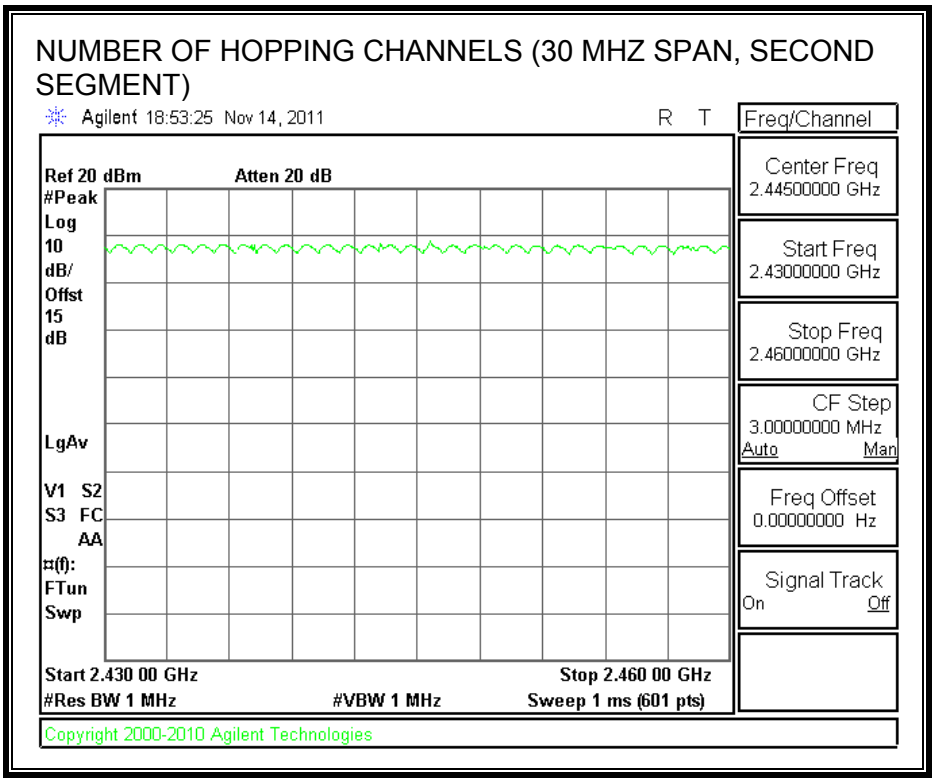
NUMBER OF HOPPING CHANNELS



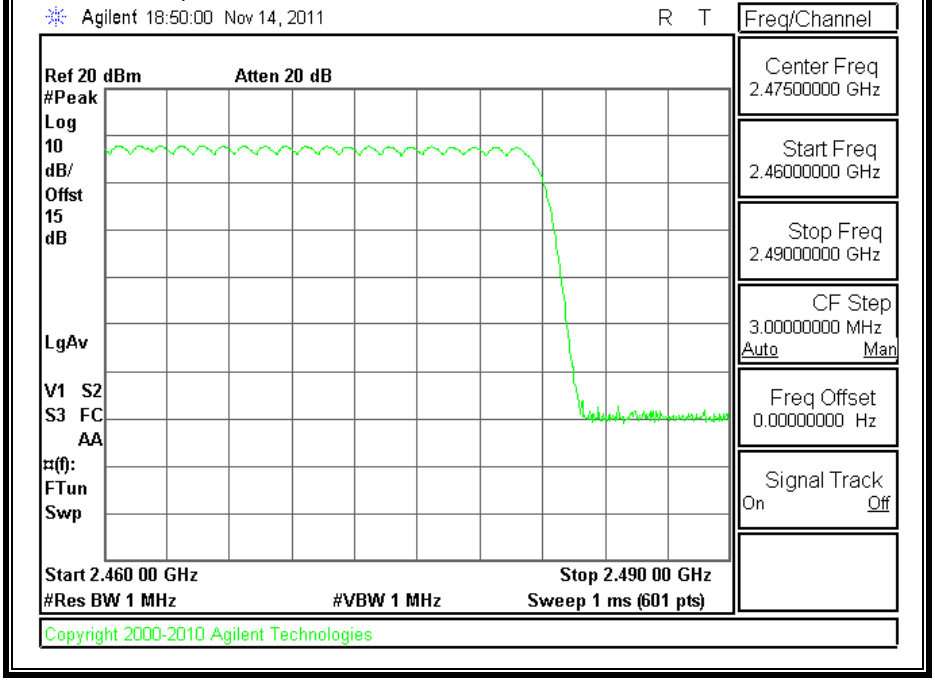
NUMBER OF HOPPING CHANNELS (30 MHZ SPAN, FIRST SEGMENT)



NUMBER OF HOPPING CHANNELS (30 MHZ SPAN, SECOND SEGMENT)



NUMBER OF HOPPING CHANNELS (30 MHZ SPAN, THIRD SEGMENT)



7.2.4. AVERAGE TIME OF OCCUPANCY

LIMIT

FCC §15.247 (a) (1) (iii)

IC RSS-210 A8.1 (d)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The span is set to 0 Hz, centered on a single, selected hopping channel. The width of a single pulse is measured in a fast scan. The number of pulses is measured in a 3.16 second scan, to enable resolution of each occurrence.

The average time of occupancy in the specified 31.6 second period (79 channels * 0.4 s) is equal to 10 * (# of pulses in 3.16 s) * pulse width.

RESULTS

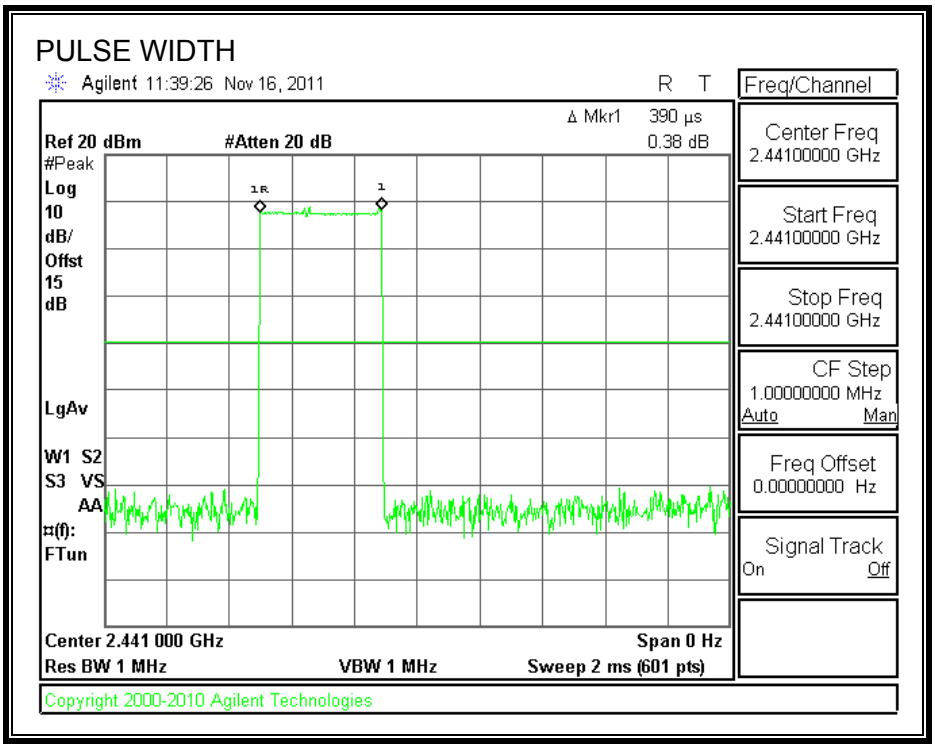
Time Of Occupancy = 10 * xx pulses * yy msec = zz msec

8PSK Mode

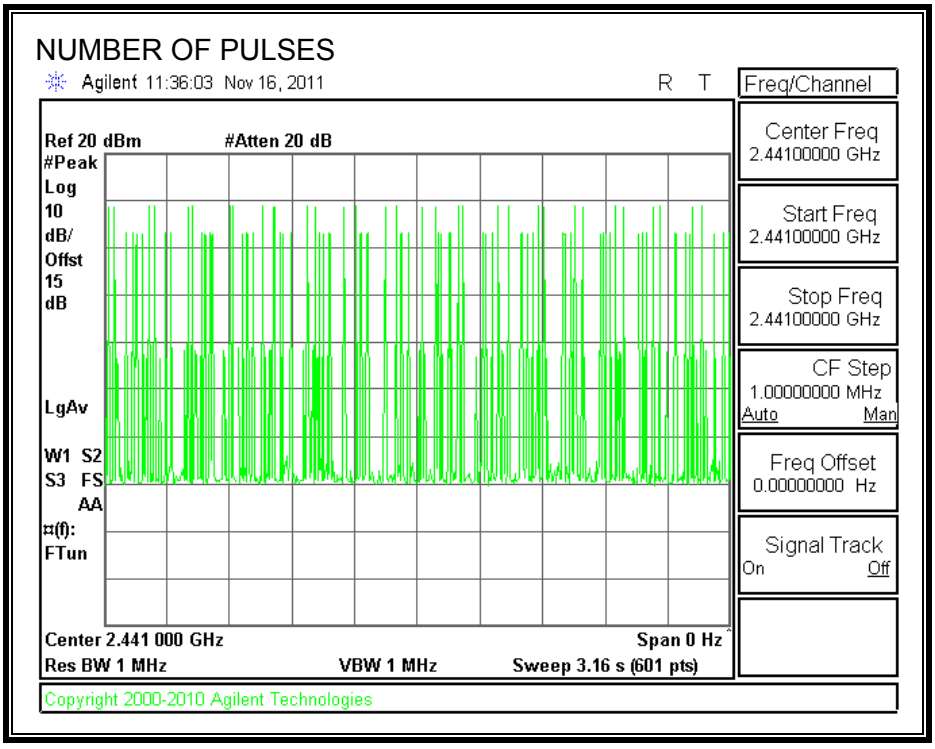
DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of (sec)	Limit (sec)	Margin (sec)
DH1	0.39	32	0.125	0.4	0.275
DH3	1.637	15	0.246	0.4	0.154
DH5	2.89	13	0.376	0.4	0.024

DH1

PULSE WIDTH

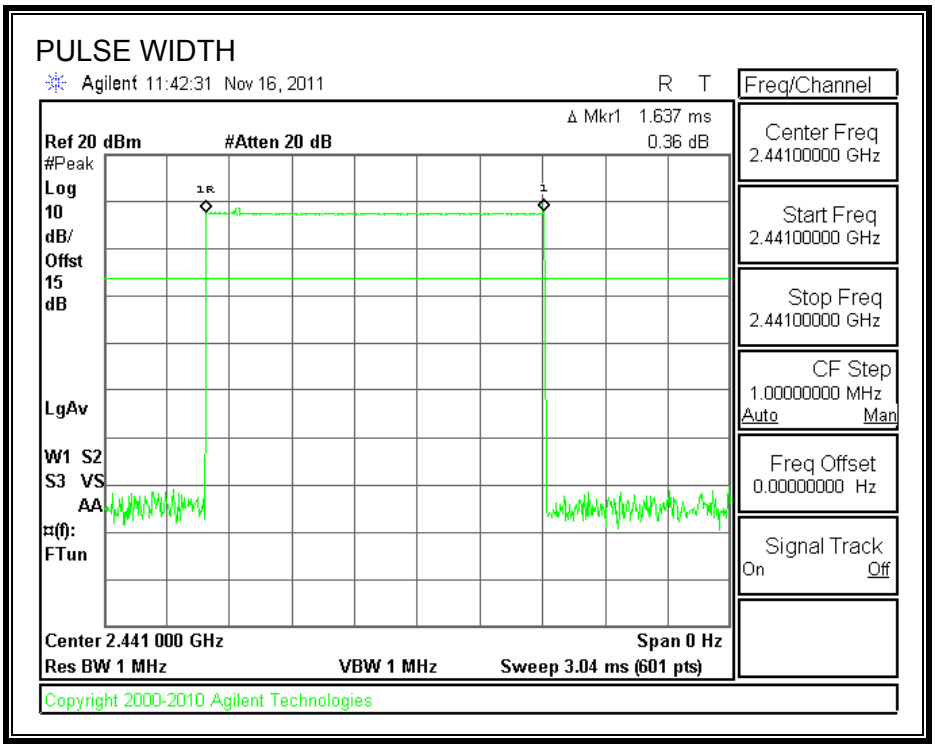


NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD

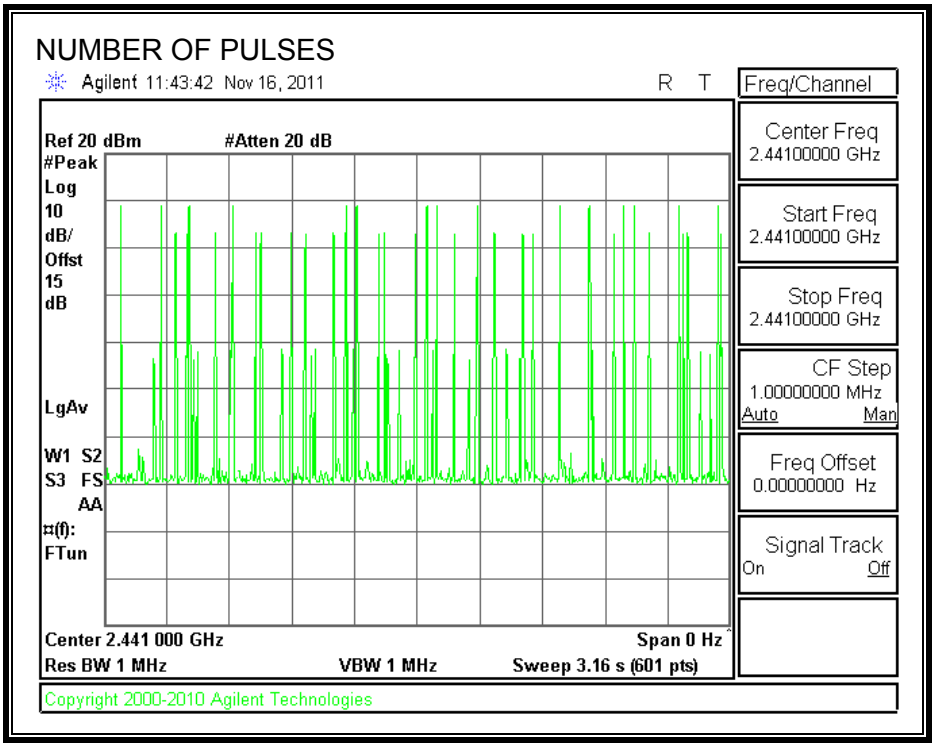


DH3

PULSE WIDTH

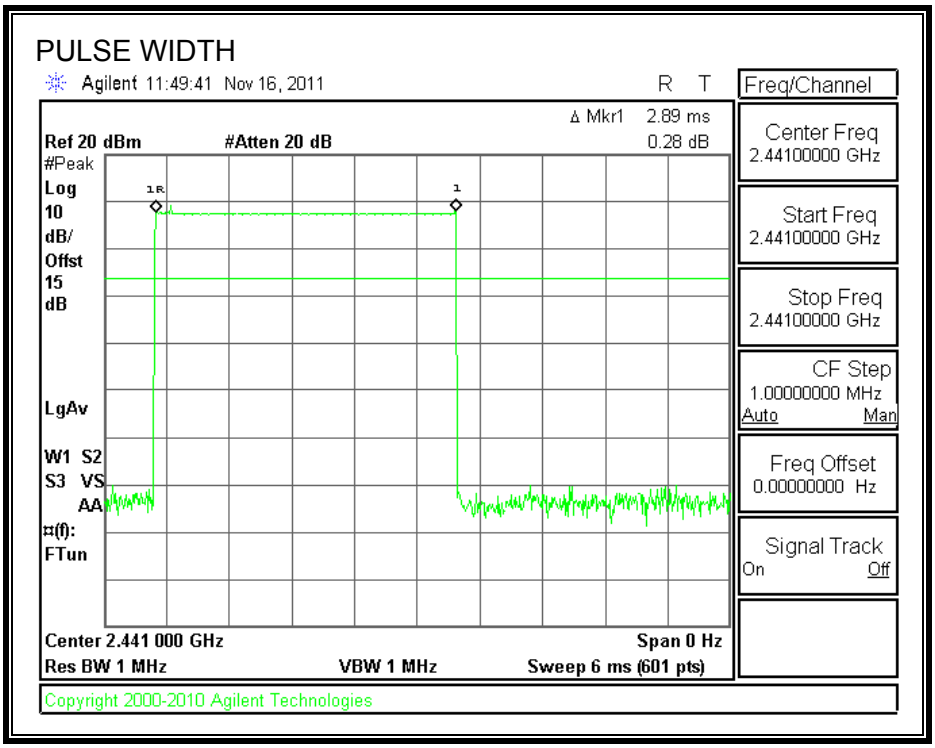


NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD

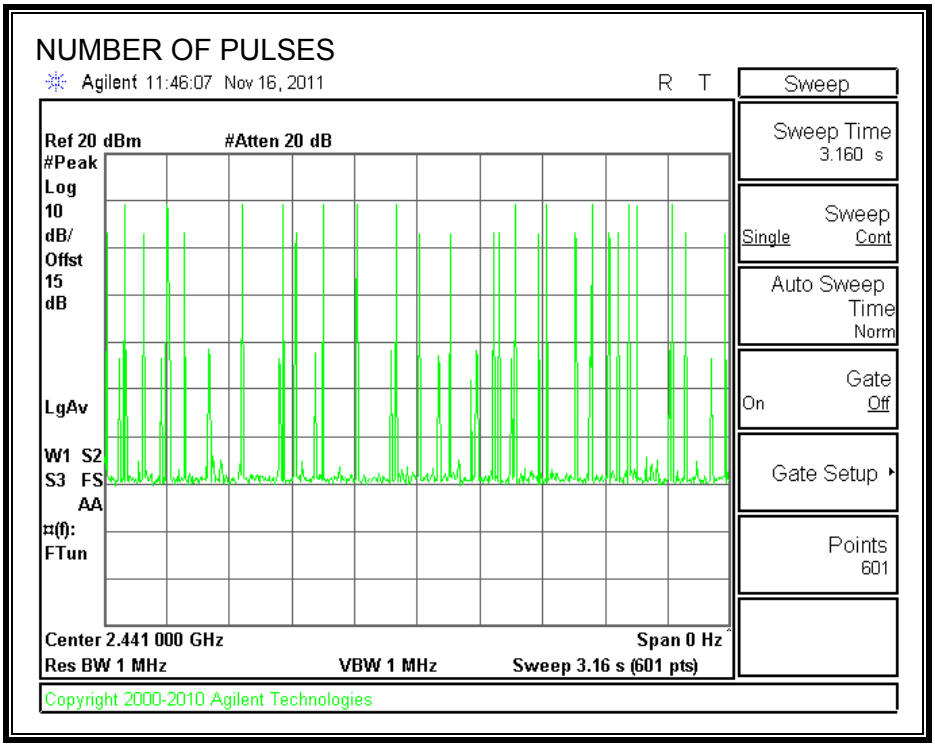


DH5

PULSE WIDTH



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD



7.2.5. OUTPUT POWER

LIMIT

§15.247 (b) (1)

RSS-210 Issue 7 Clause A8.4

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

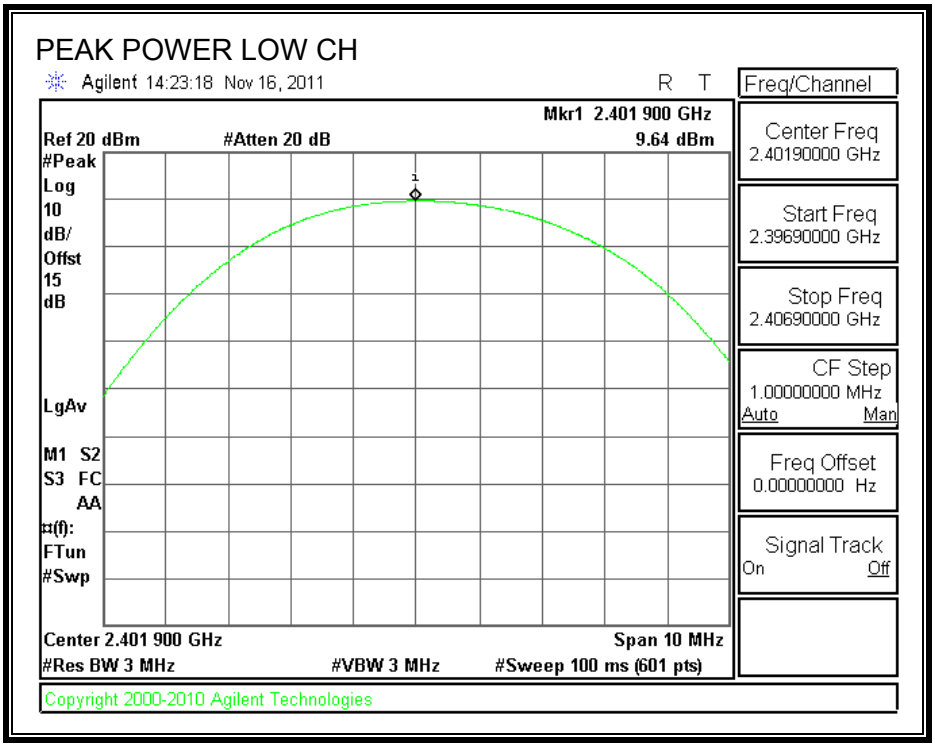
TEST PROCEDURE

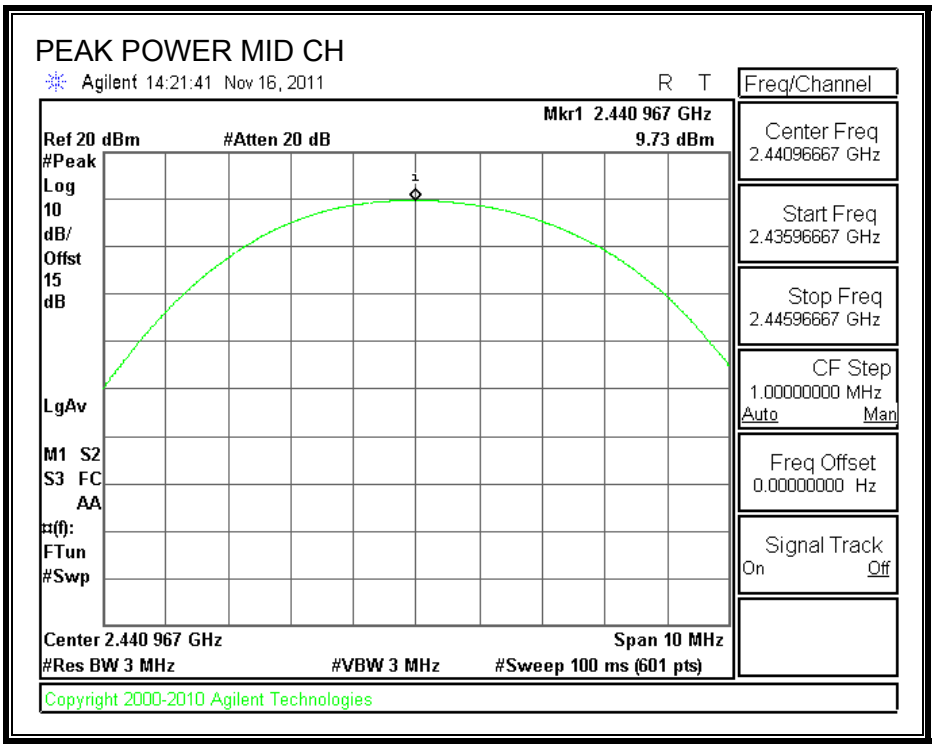
The transmitter output is connected to a spectrum analyzer the analyzer bandwidth is set to a value greater than the 20 dB bandwidth of the EUT.

RESULTS

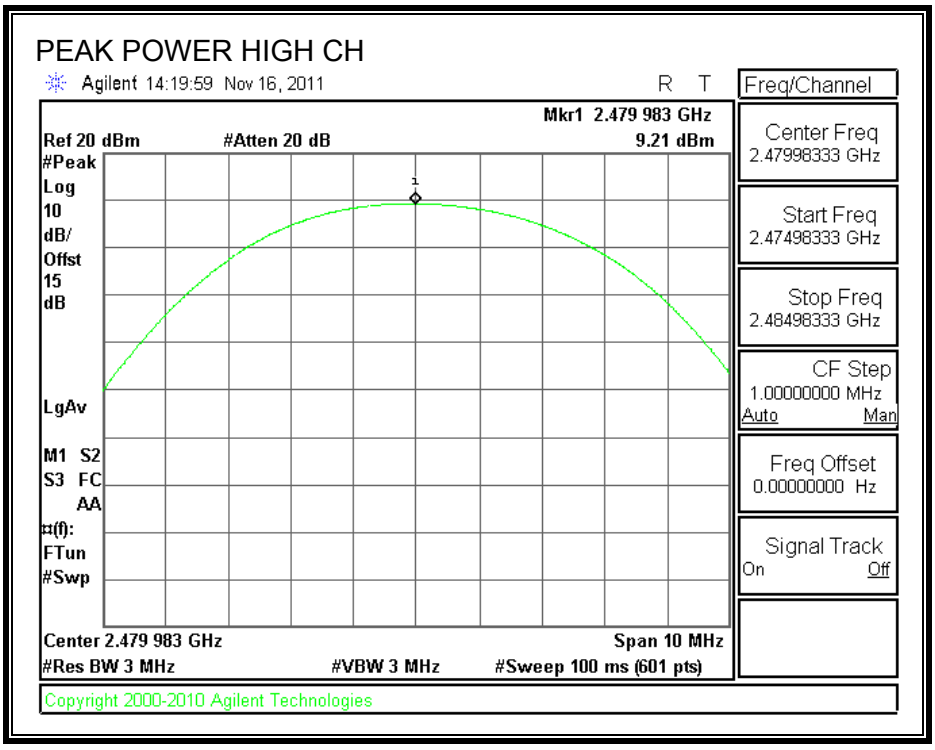
Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	9.64	30	-20.36
Middle	2441	9.73	30	-20.27
High	2480	9.21	30	-20.79

OUTPUT POWER





PEAK POWER HIGH CH



7.2.6. AVERAGE POWER

LIMIT

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

The cable assembly insertion loss of 10.4 dB (including 10 dB pad and 0.4 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	7.30
Middle	2441	7.30
High	2480	7.30

7.2.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

Limit = -20 dBc

TEST PROCEDURE

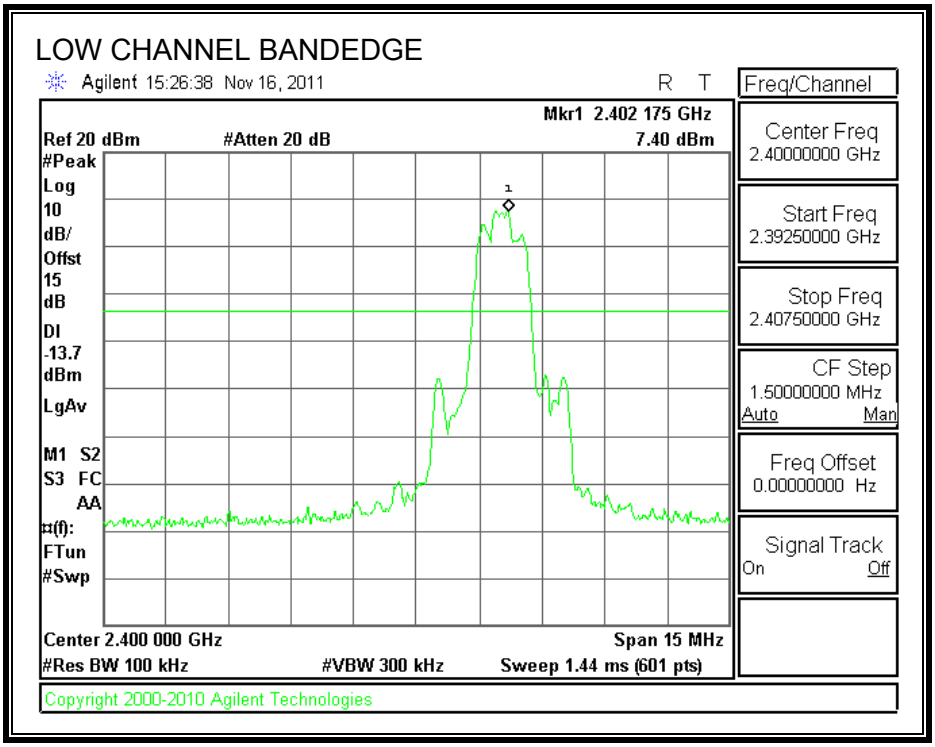
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

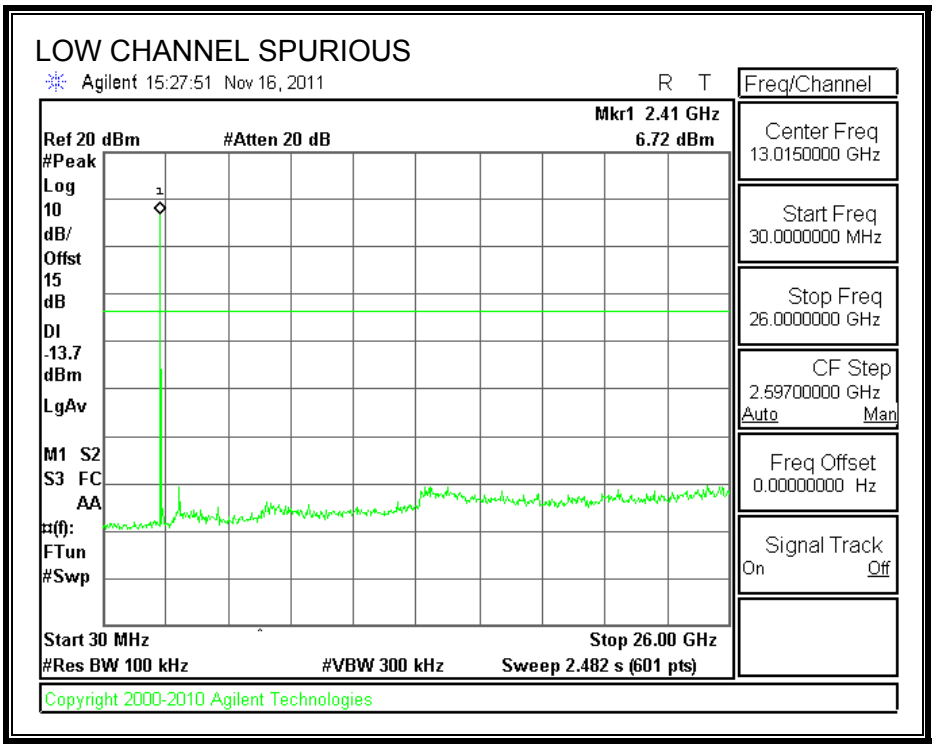
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

The bandedges at 2.4 and 2.4835 GHz are investigated with the transmitter set to the normal hopping mode.

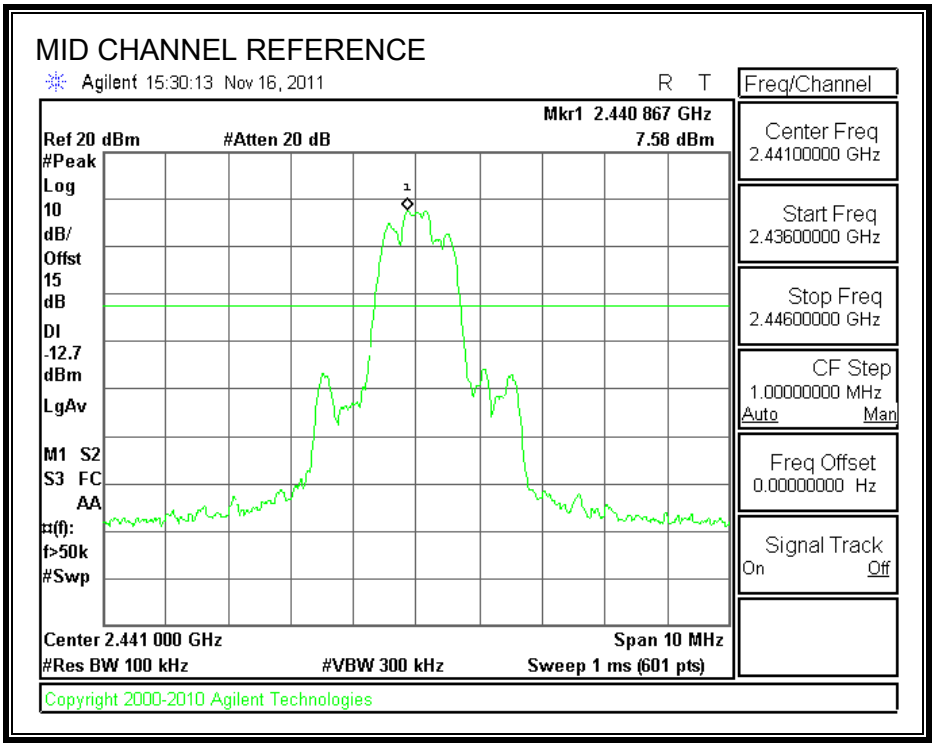
RESULTS

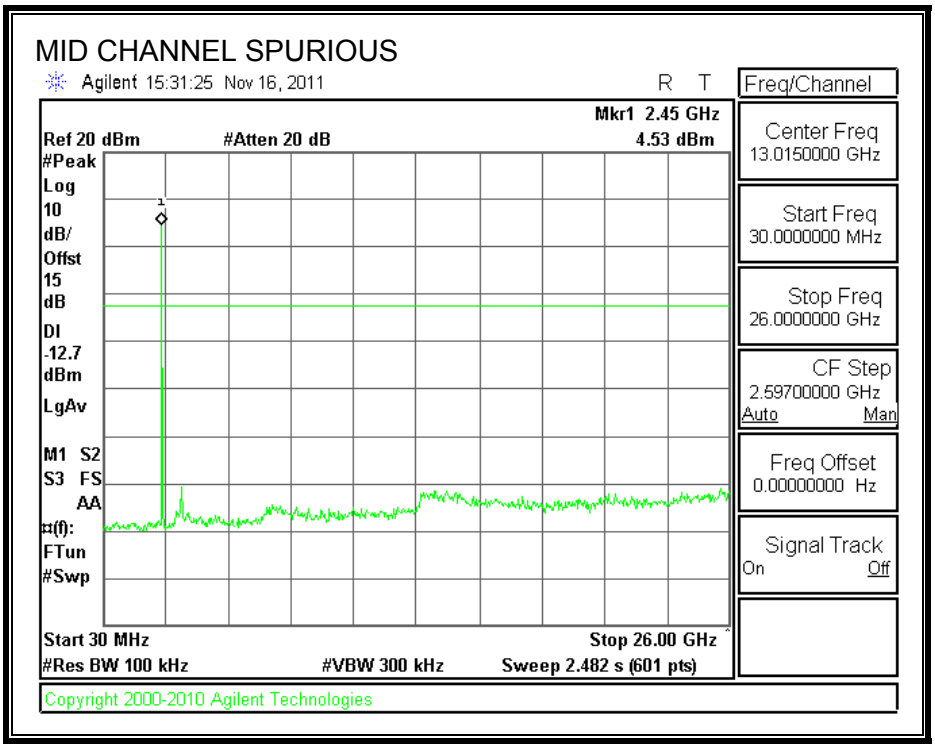
SPURIOUS EMISSIONS, LOW CHANNEL



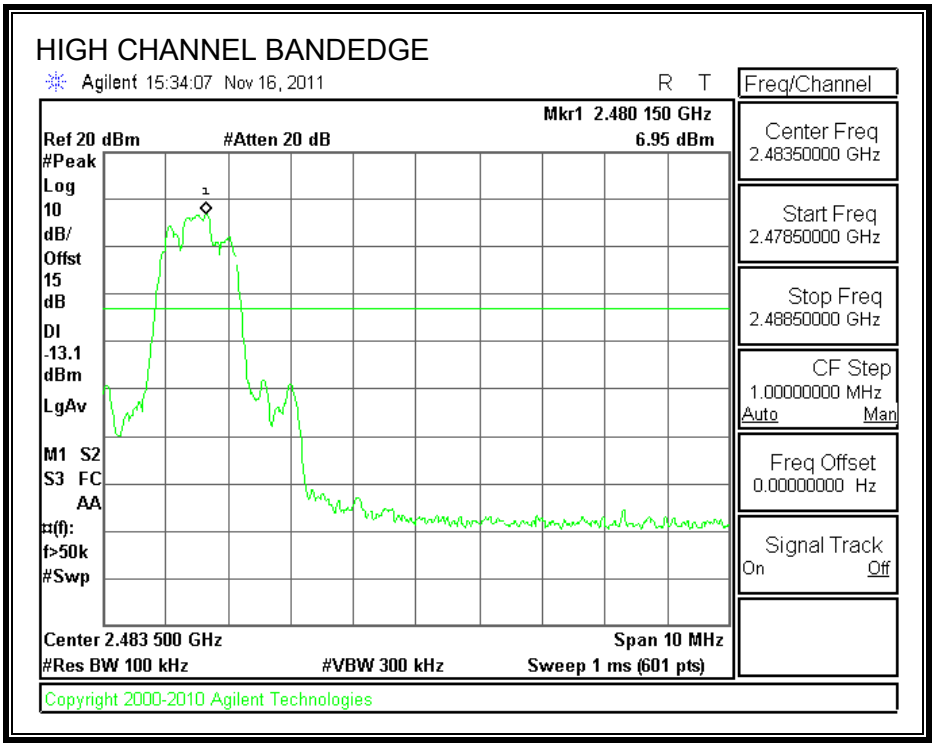


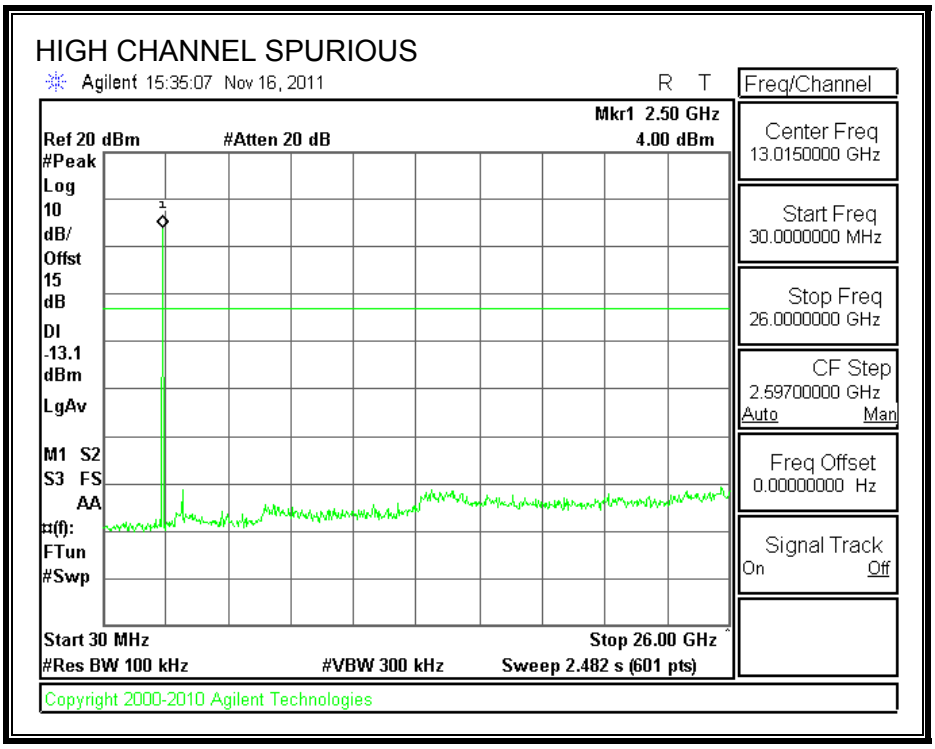
SPURIOUS EMISSIONS, MID CHANNEL



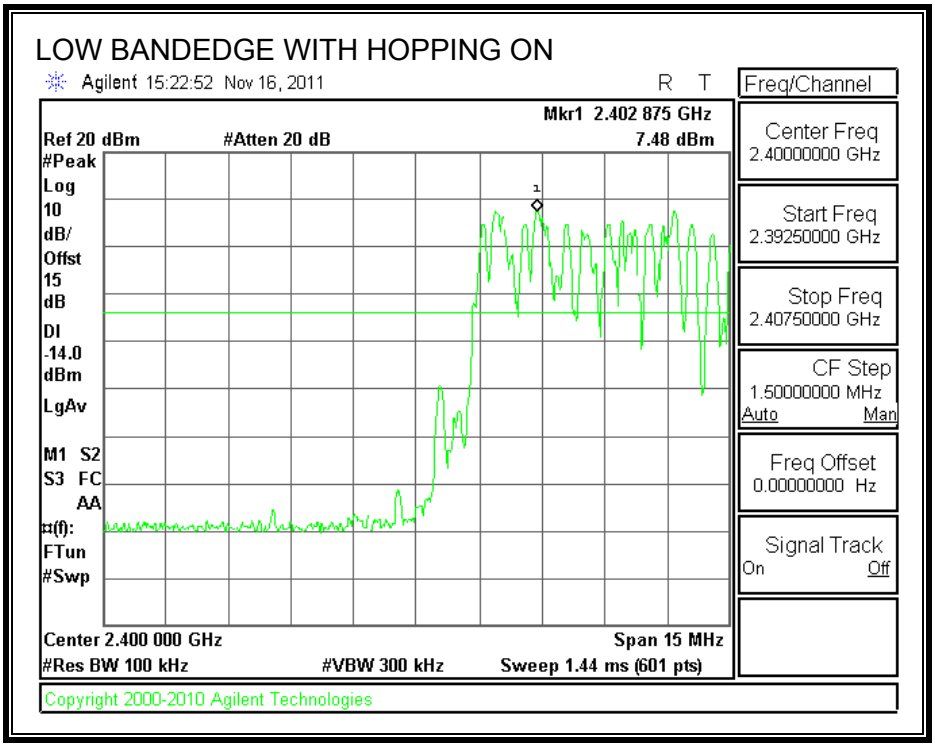


SPURIOUS EMISSIONS, HIGH CHANNEL

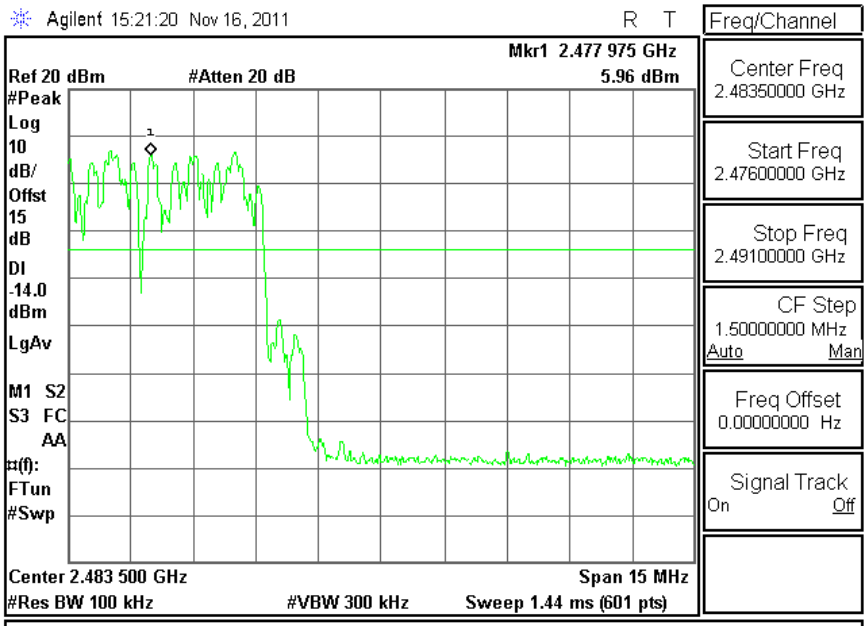




SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON



HIGH BANDEDGE WITH HOPPING ON



8. RADIATED TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

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

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

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

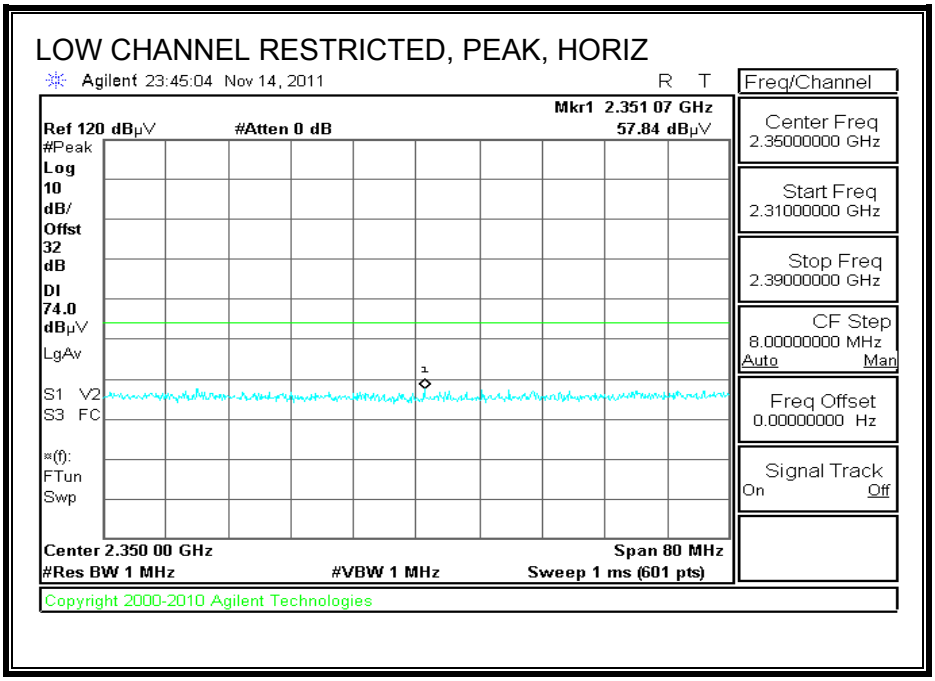
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

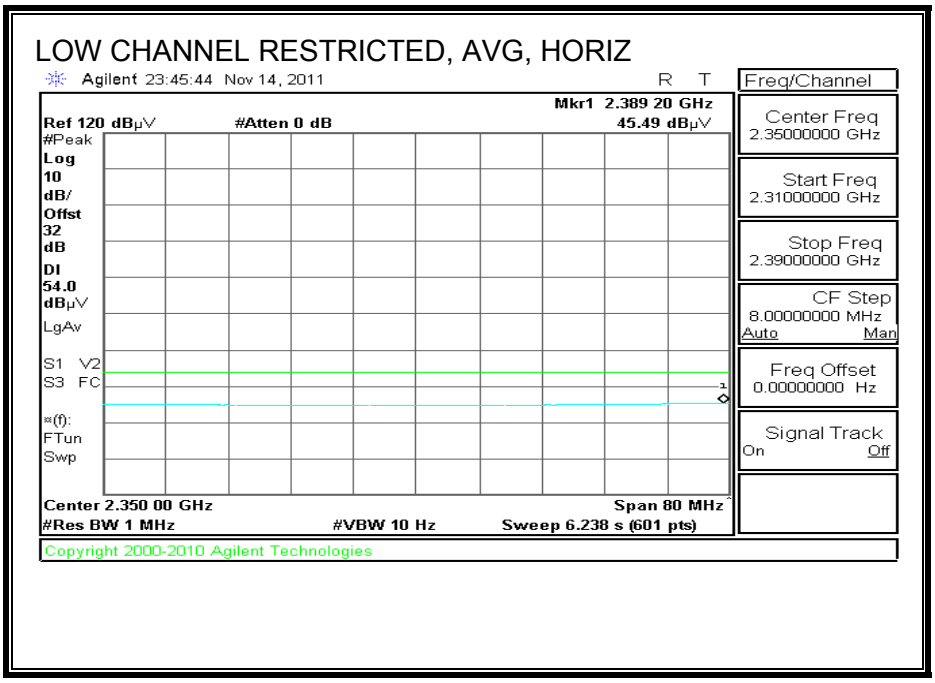
8.2. TRANSMITTER ABOVE 1 GHz

8.2.1. BASIC DATA RATE GFSK MODULATION

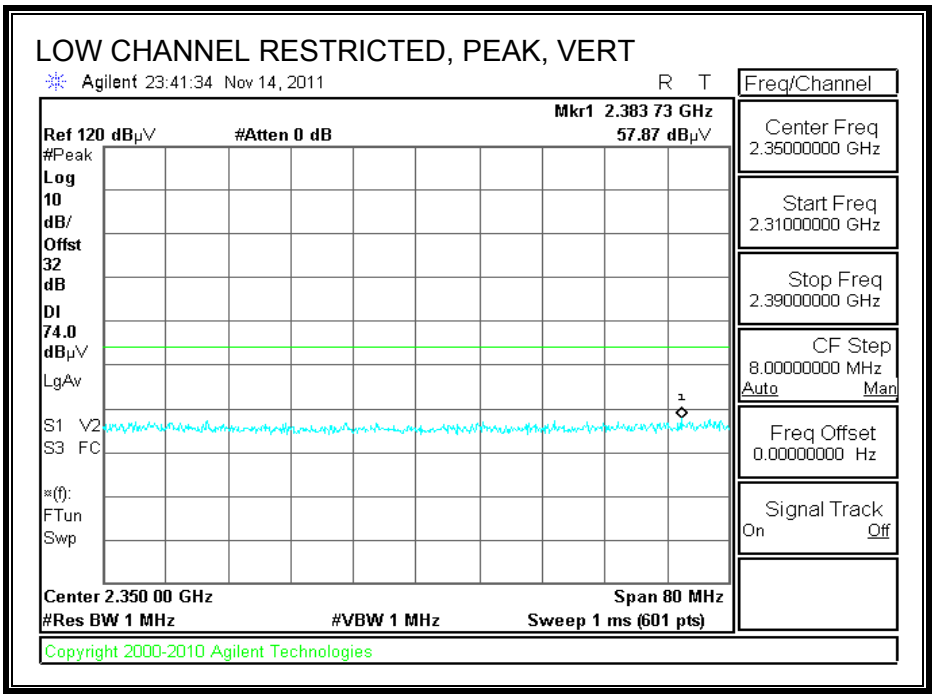
STANDARD COVER

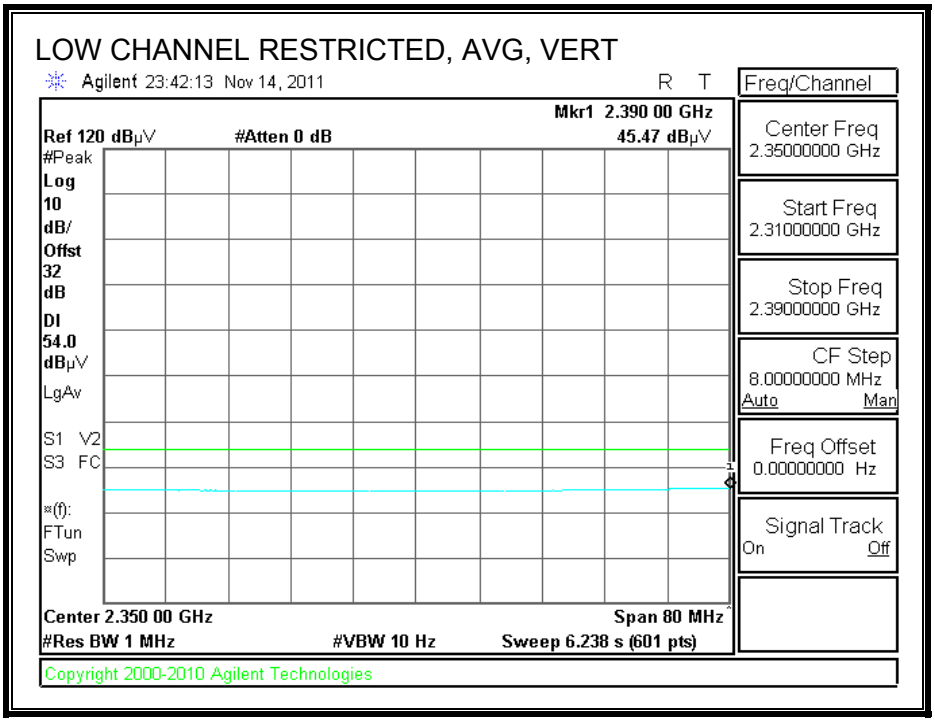
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



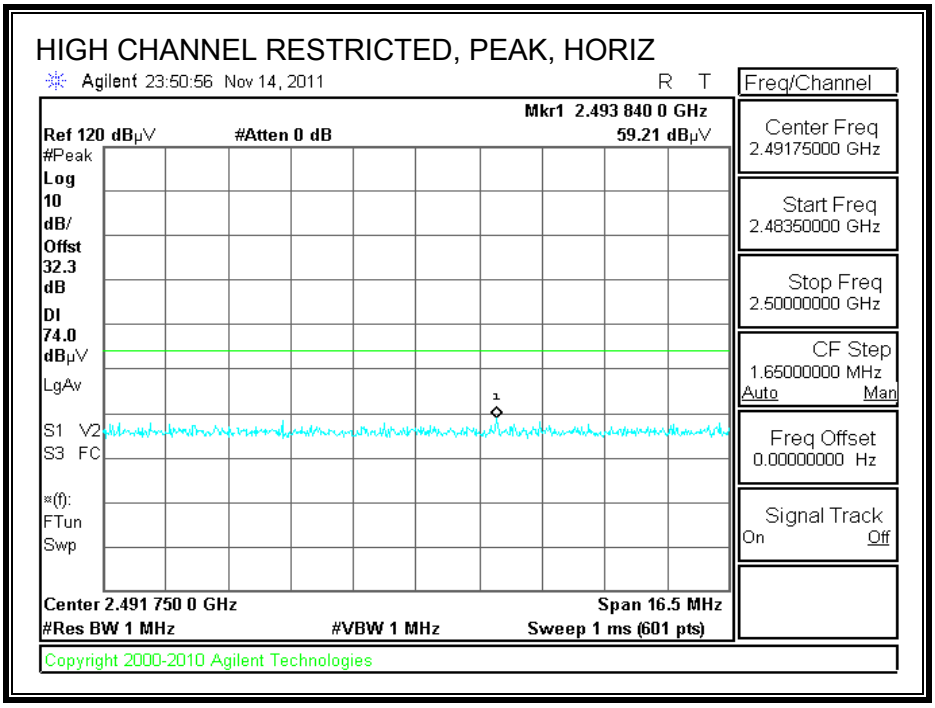


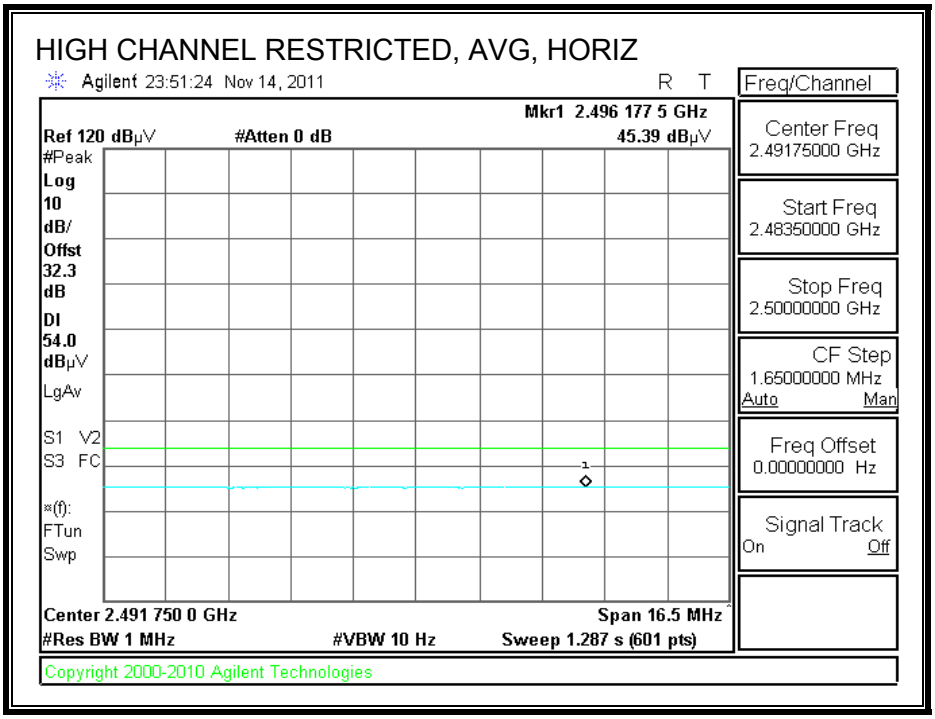
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



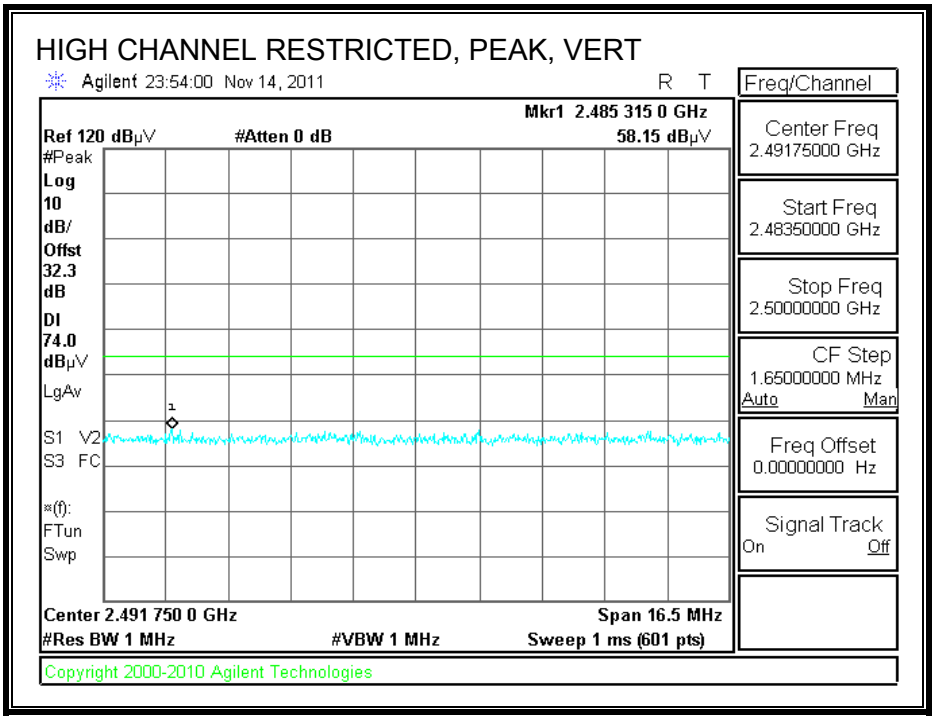


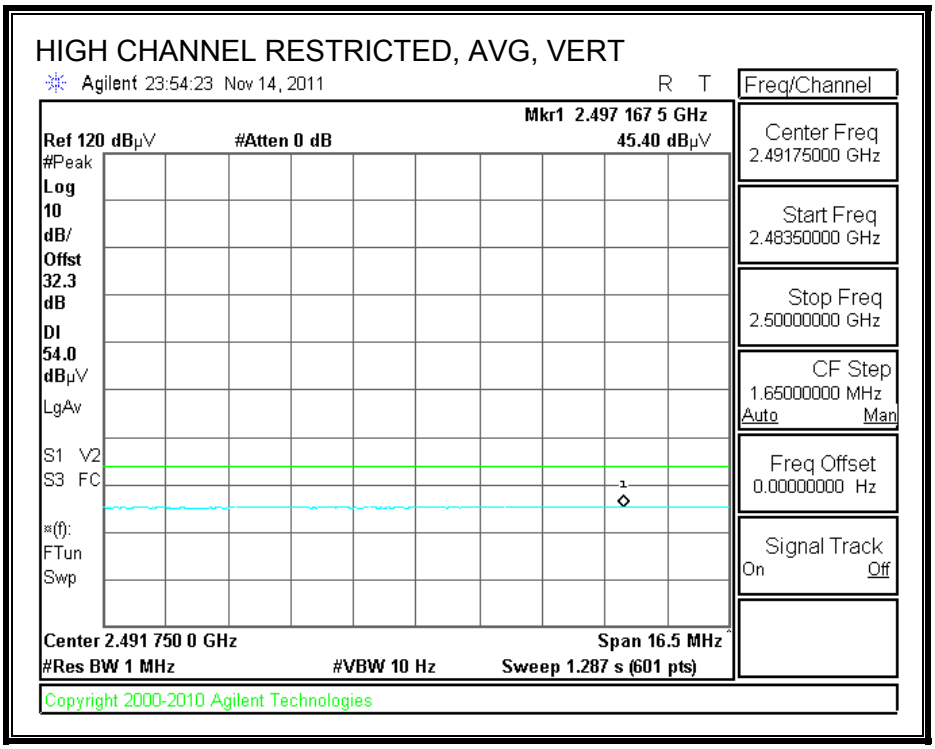
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 3m Chamber

Company: LG
Project #: 11U14141
Date: 11/15/2011
Test Engineer: Thanh Nguyen
Configuration: EUT with battery at worst position
Mode: Transmit GFSK

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T34 HP 8449B			FCC 15.205

Hi Frequency Cables

3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF	Reject Filter
3' cable 22807700	12' cable 22807600	20' cable 22807500		R_001

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

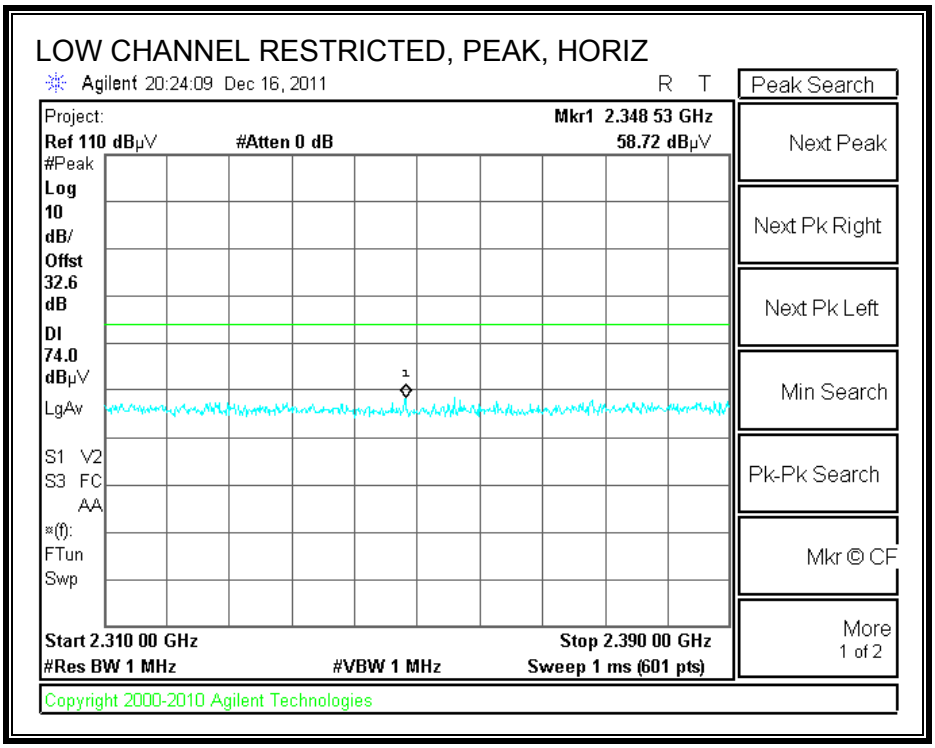
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
High Ch															
4.960	3.0	36.7	27.5	33.2	6.9	-34.0	0.0	0.0	42.8	33.6	74	54	-31.2	-20.4	Noise floor/V
4.960	3.0	40.1	27.5	33.2	6.9	-34.0	0.0	0.0	46.2	33.5	74	54	-27.8	-20.5	Noise floor/H
Mid Ch															
4.882	3.0	40.5	27.9	33.2	6.8	-34.0	0.0	0.0	46.4	33.8	74	54	-27.6	-20.2	Noise floor/H
4.882	3.0	40.3	27.8	33.2	6.8	-34.0	0.0	0.0	46.2	33.7	74	54	-27.8	-20.3	Noise floor/V
Low Ch															
4.804	3.0	40.4	27.5	33.1	6.8	-34.1	0.0	0.0	46.2	33.3	74	54	-27.8	-20.7	Noise floor/V
4.804	3.0	40.4	27.7	33.1	6.8	-34.1	0.0	0.0	46.2	33.5	74	54	-27.8	-20.5	Noise floor/H
No other emissions were detected above the system noise floor															

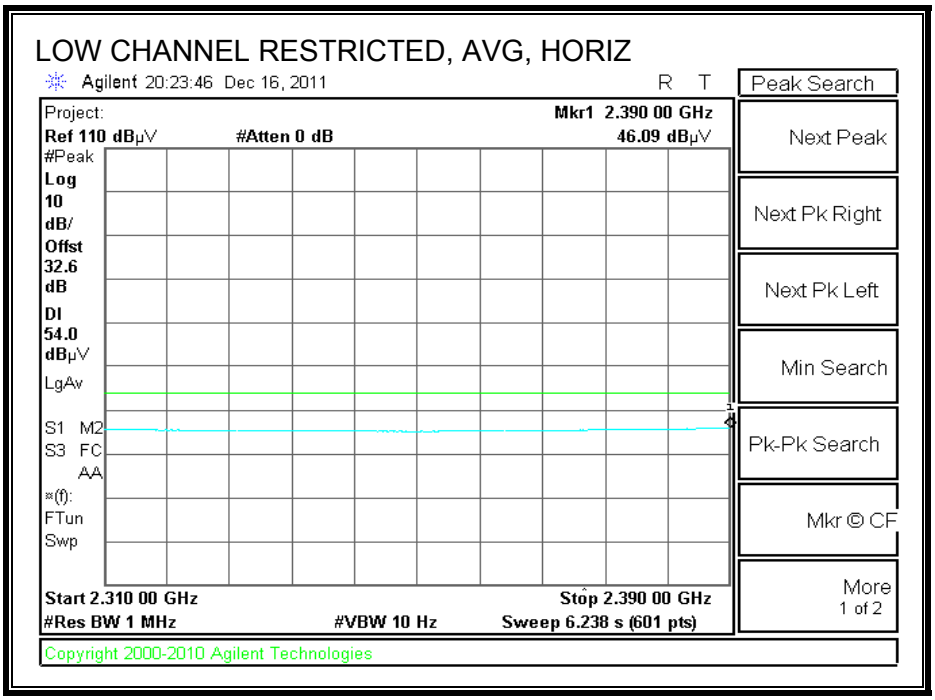
Rev. 07.08.11

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

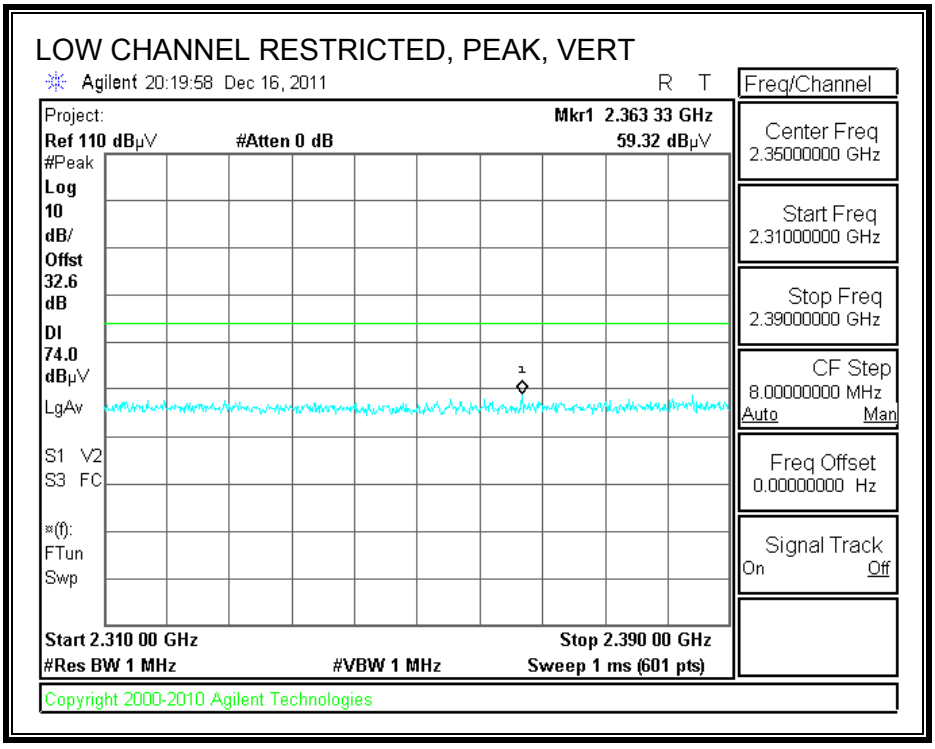
INDUCTIVE COVER

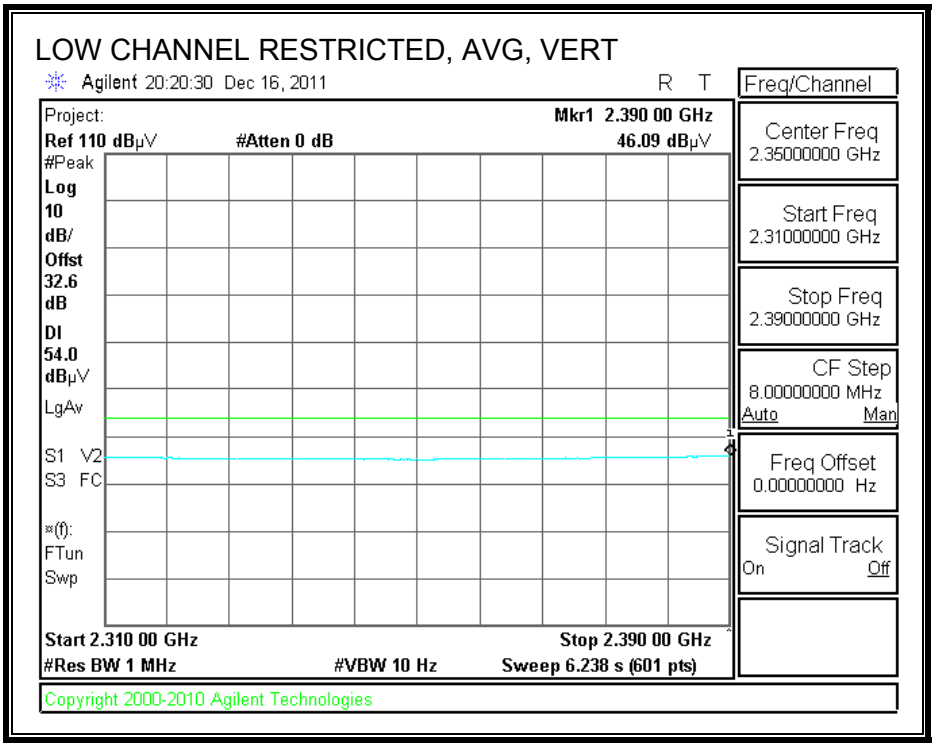
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



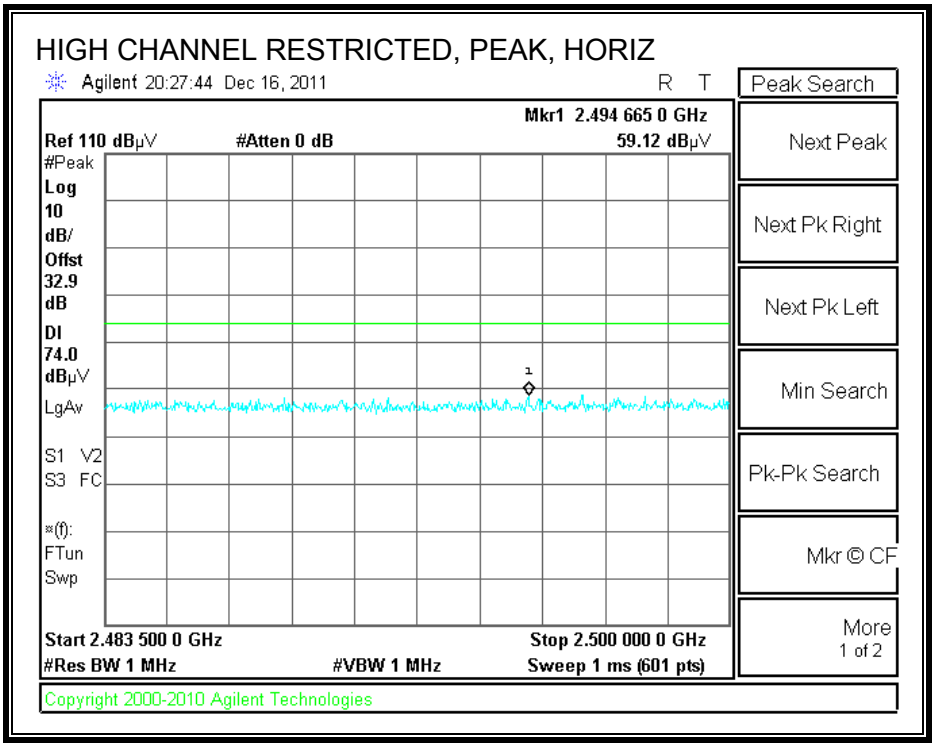


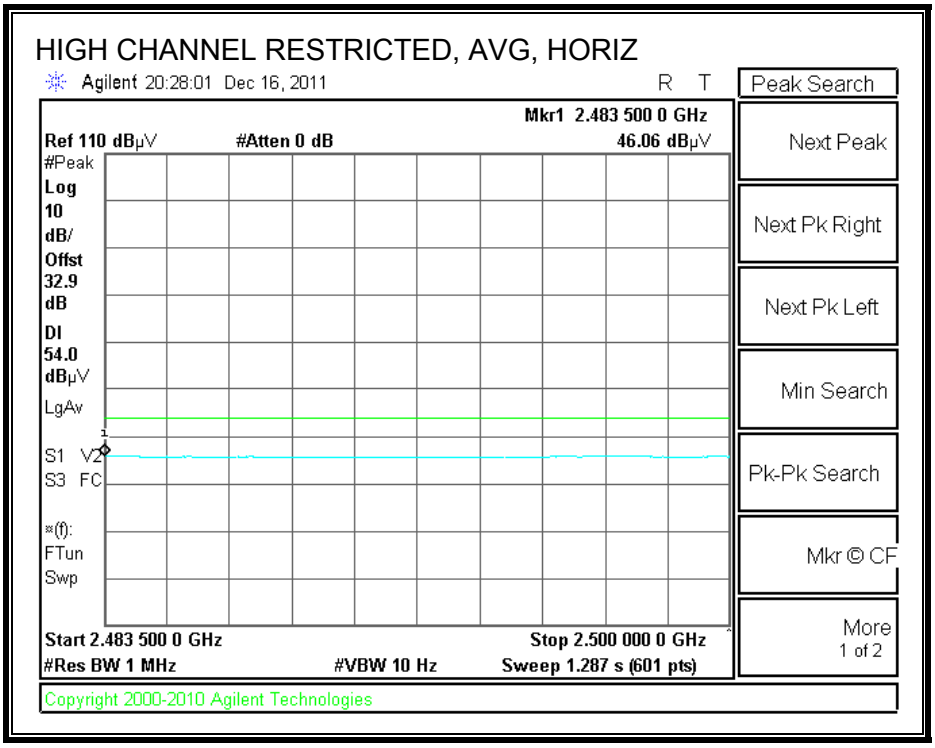
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



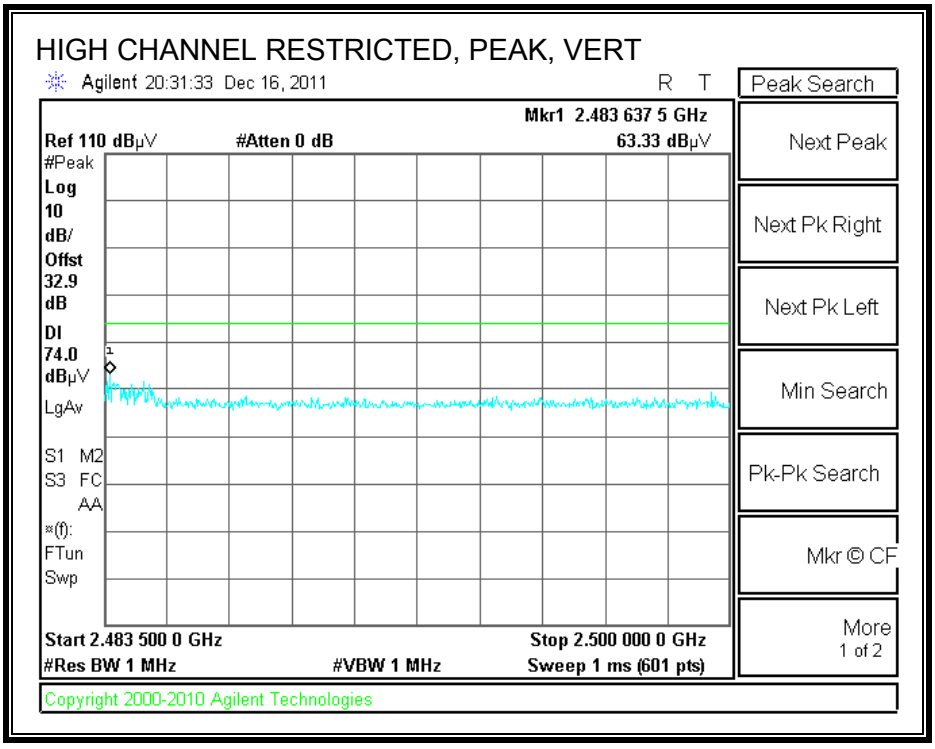


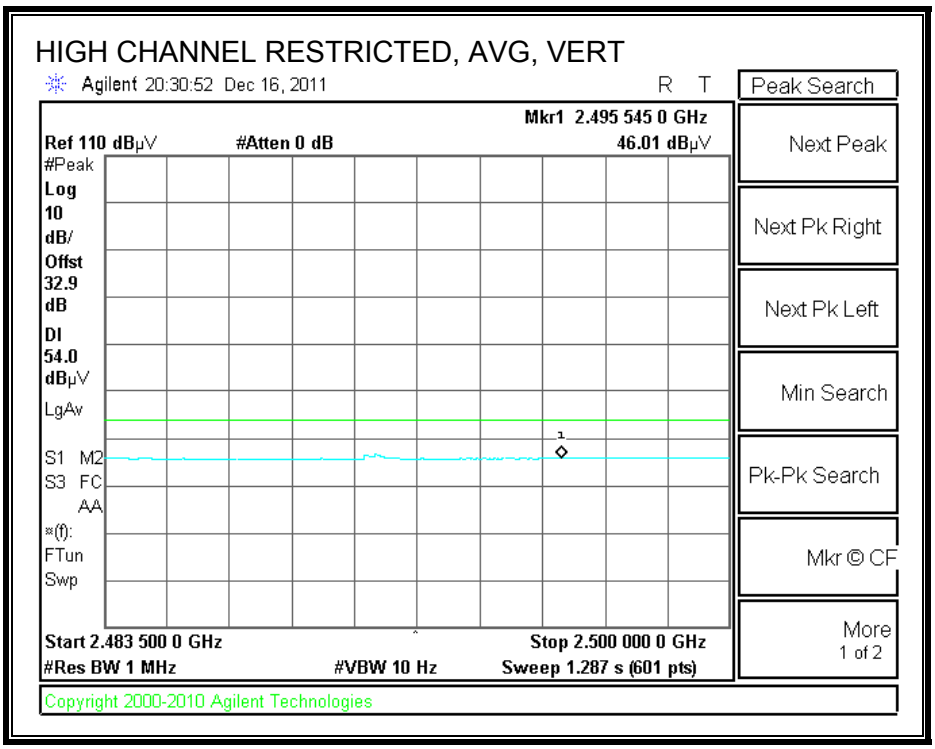
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Chin Pang
Date: 12/16/11
Project #: 11U14141
Company: LG
Test Target: FCC 15C
Mode Oper: BT, TX GHSK
EUT with inductive Cover

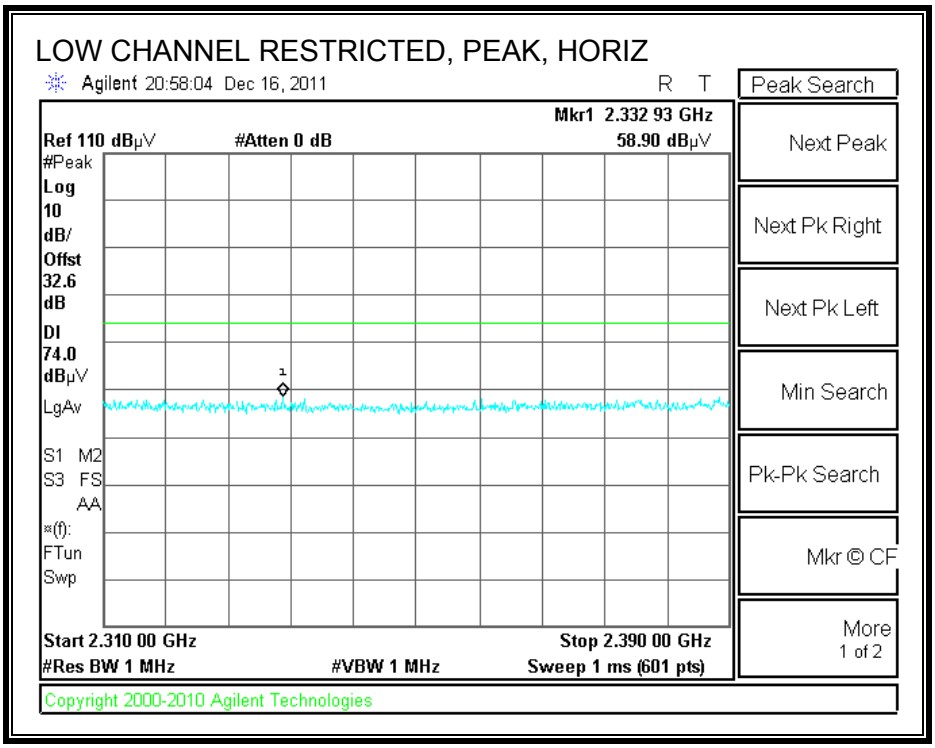
f	Measurement Frequency	Amp	Preamp Gain		Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters		Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m		Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength		Margin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

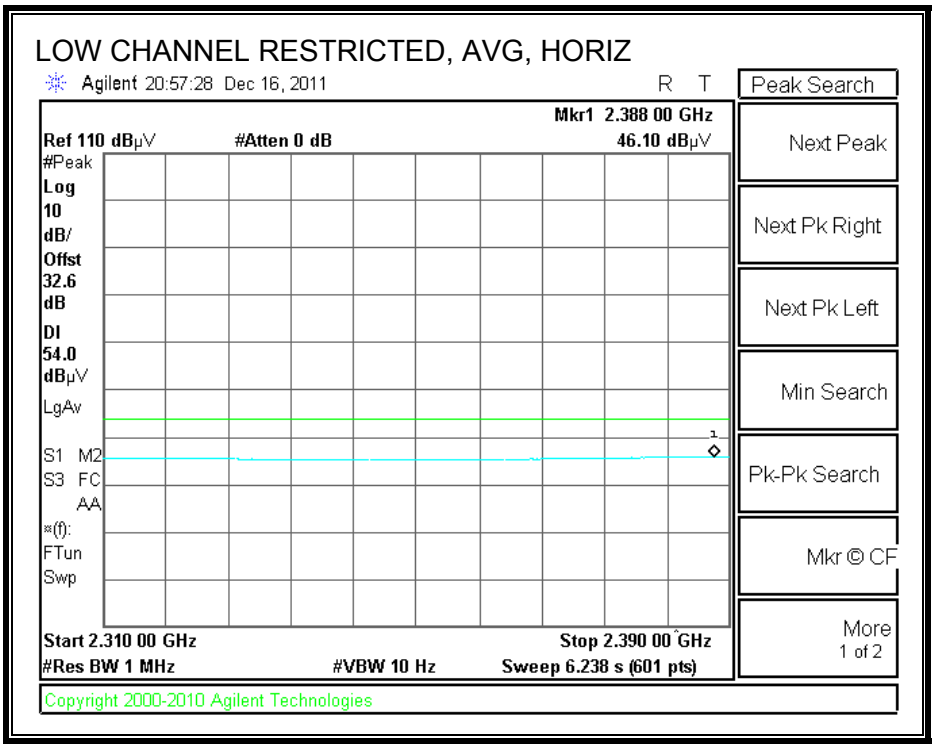
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
Low Ch 2402MHz													
4.804	3.0	37.7	33.1	6.8	-34.8	0.0	0.0	42.8	74.0	-31.2	V	P	
4.804	3.0	25.6	33.1	6.8	-34.8	0.0	0.0	30.7	54.0	-23.3	V	A	
4.804	3.0	38.8	33.1	6.8	-34.8	0.0	0.0	43.9	74.0	-30.1	H	P	
4.804	3.0	27.4	33.1	6.8	-34.8	0.0	0.0	32.5	54.0	-21.5	H	A	
Mid Ch, 2441MHz													
4.882	3.0	38.2	33.2	6.8	-34.8	0.0	0.0	43.4	74.0	-30.6	V	P	
4.882	3.0	25.5	33.2	6.8	-34.8	0.0	0.0	30.7	54.0	-23.3	V	A	
7.323	3.0	36.5	36.2	9.1	-34.1	0.0	0.0	47.7	74.0	-26.3	V	P	
7.323	3.0	24.5	36.2	9.1	-34.1	0.0	0.0	35.7	54.0	-18.3	V	A	
4.882	3.0	39.4	33.2	6.8	-34.8	0.0	0.0	44.6	74.0	-29.4	H	P	
4.882	3.0	29.3	33.2	6.8	-34.8	0.0	0.0	34.5	54.0	-19.5	H	A	
7.323	3.0	36.3	36.2	9.1	-34.1	0.0	0.0	47.5	74.0	-26.5	H	P	
7.323	3.0	24.0	36.2	9.1	-34.1	0.0	0.0	35.2	54.0	-18.8	H	A	
High Ch, 2480MHz													
4.960	3.0	37.4	33.2	6.9	-34.8	0.0	0.0	42.7	74.0	-31.3	V	P	
4.960	3.0	25.3	33.2	6.9	-34.8	0.0	0.0	30.6	54.0	-23.4	V	A	
7.440	3.0	36.0	36.5	9.1	-34.1	0.0	0.0	47.5	74.0	-26.5	V	P	
7.440	3.0	24.0	36.5	9.1	-34.1	0.0	0.0	35.5	54.0	-18.5	V	A	
4.960	3.0	39.0	33.2	6.9	-34.8	0.0	0.0	44.3	74.0	-29.7	H	P	
4.960	3.0	30.0	33.2	6.9	-34.8	0.0	0.0	35.3	54.0	-18.7	H	A	
7.440	3.0	35.7	36.5	9.1	-34.1	0.0	0.0	47.2	74.0	-26.8	H	P	
7.440	3.0	23.6	36.5	9.1	-34.1	0.0	0.0	35.1	54.0	-18.9	H	A	

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

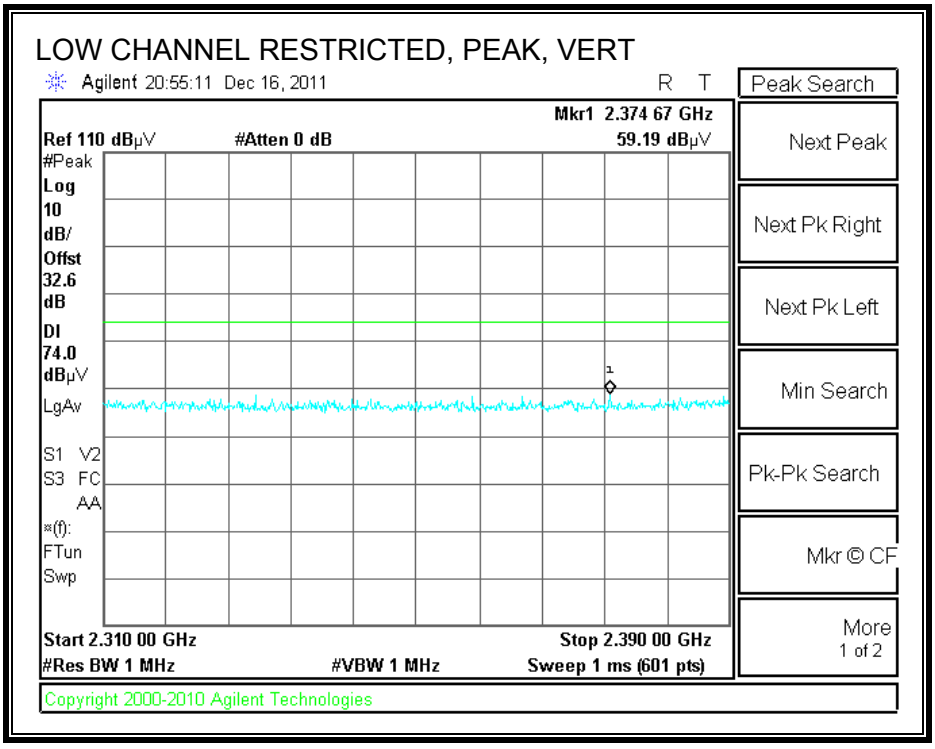
INDUCTIVE CHARGER AND INDUCTIVE COVER

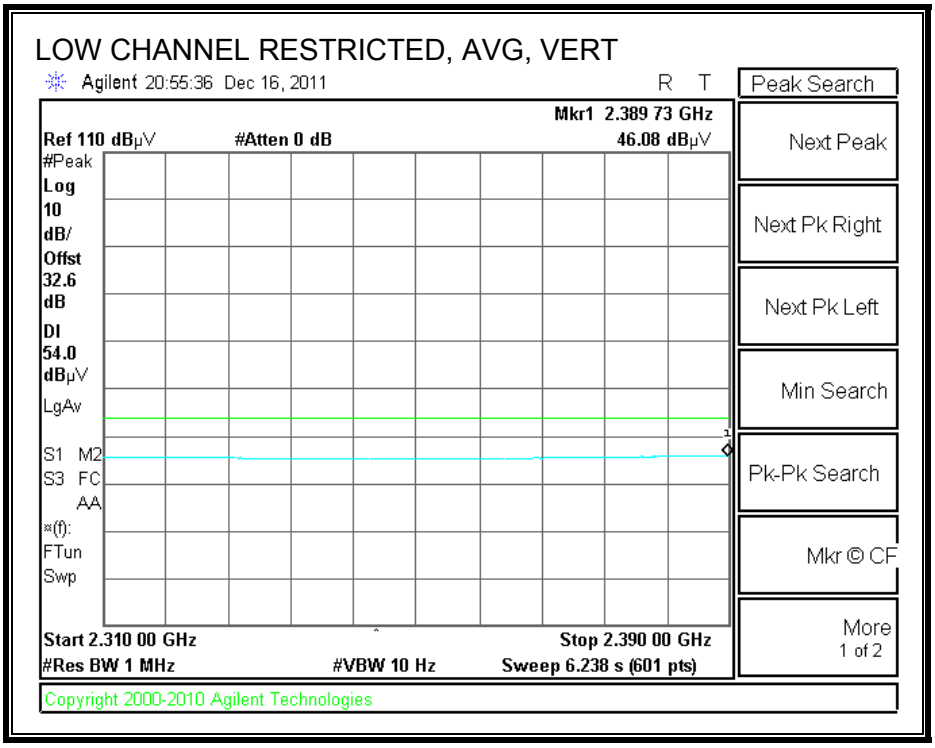
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



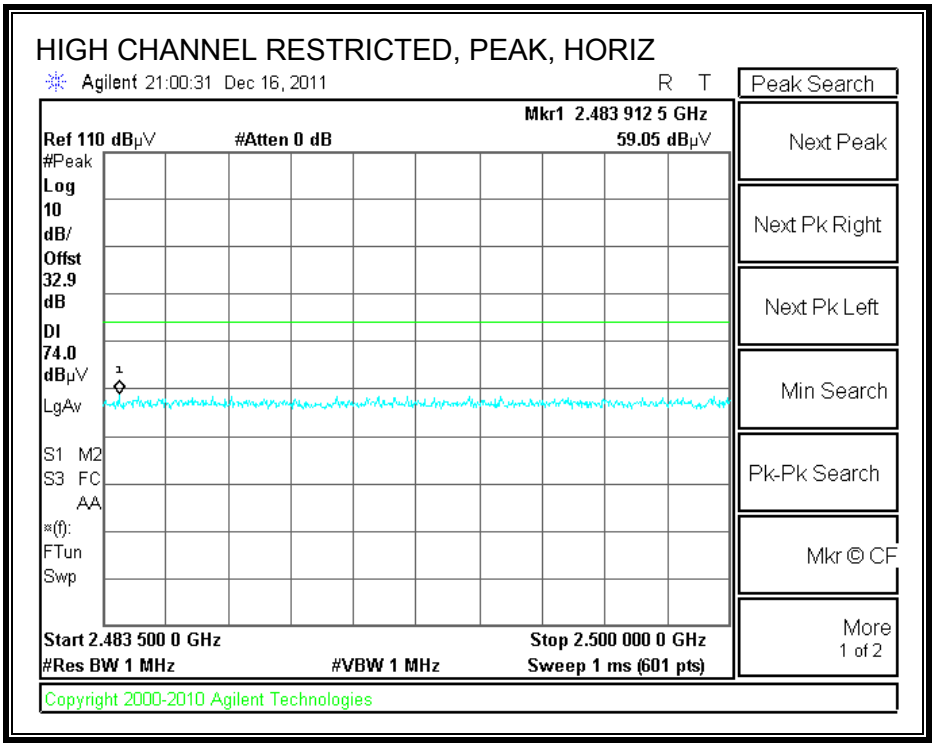


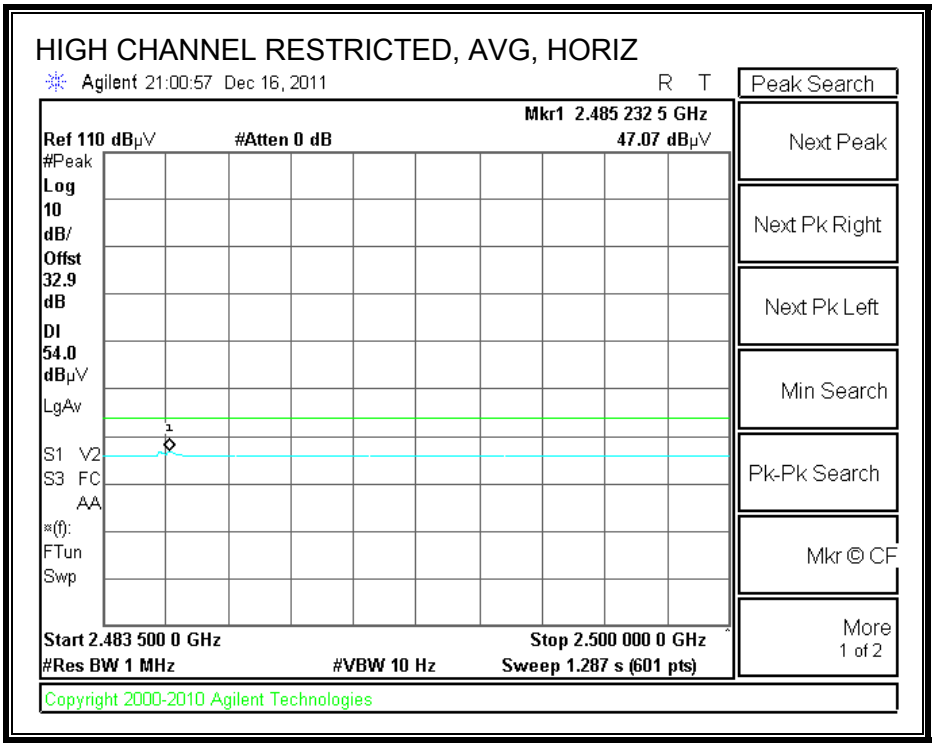
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



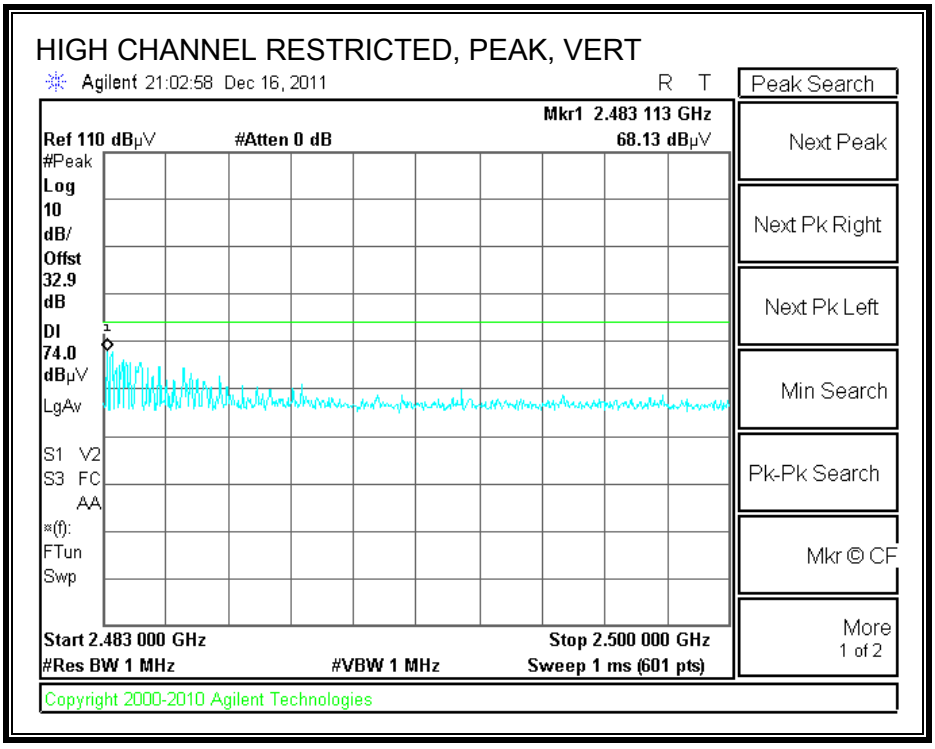


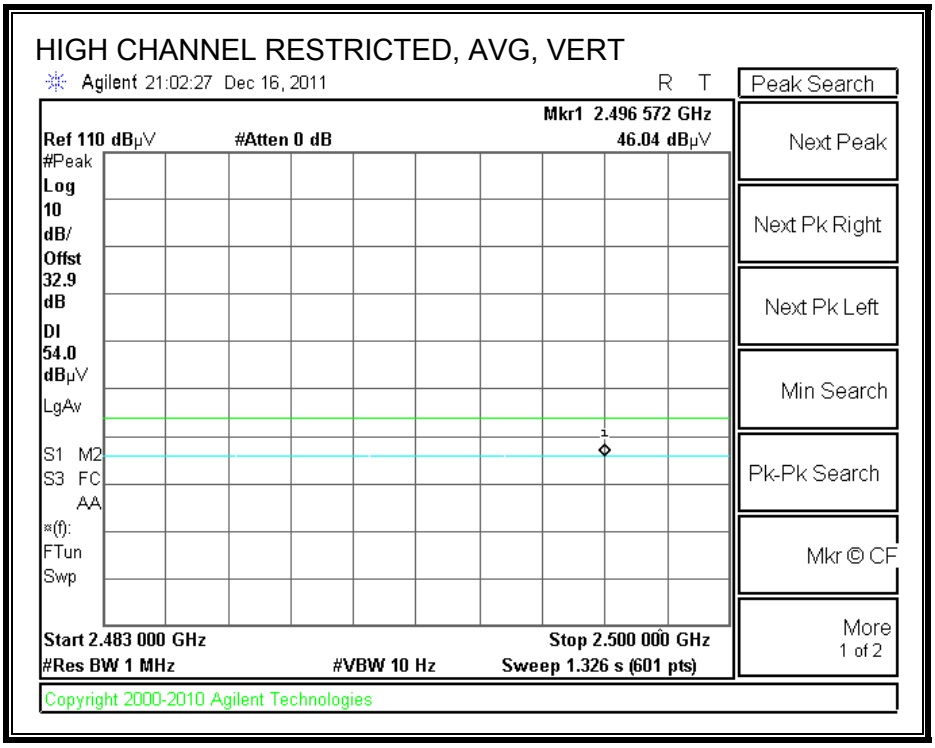
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Chin Pang
Date: 12/16/11
Project #: 11U14141
Company: LG
Test Target: FCC 15C
Mode Oper: BT, TX GHSK
Inductive Chatger with inductive Cover

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

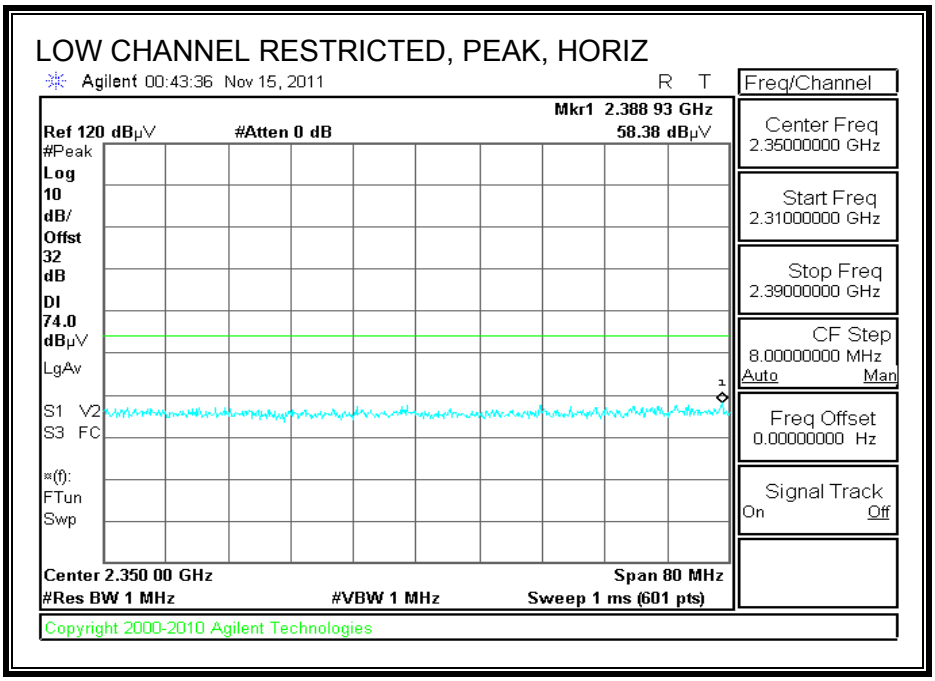
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
Low Ch 2402MHz													
4.804	3.0	38.6	33.1	6.8	-34.8	0.0	0.0	43.7	74.0	-30.3	H	P	
4.804	3.0	27.3	33.1	6.8	-34.8	0.0	0.0	32.4	54.0	-21.6	H	A	
4.804	3.0	37.8	33.1	6.8	-34.8	0.0	0.0	42.9	74.0	-31.1	V	P	
4.804	3.0	25.4	33.1	6.8	-34.8	0.0	0.0	30.5	54.0	-23.5	V	A	
Mid Ch, 2441MHz													
4.882	3.0	39.2	33.2	6.8	-34.8	0.0	0.0	44.4	74.0	-29.6	H	P	
4.882	3.0	25.3	33.2	6.8	-34.8	0.0	0.0	30.5	54.0	-23.5	H	A	
7.323	3.0	36.5	36.2	9.1	-34.1	0.0	0.0	47.7	74.0	-26.3	H	P	
7.323	3.0	25.0	36.2	9.1	-34.1	0.0	0.0	36.2	54.0	-17.8	H	A	
4.882	3.0	36.8	33.2	6.8	-34.8	0.0	0.0	42.0	74.0	-32.0	V	P	
4.882	3.0	25.2	33.2	6.8	-34.8	0.0	0.0	30.4	54.0	-23.6	V	A	
7.323	3.0	36.0	36.2	9.1	-34.1	0.0	0.0	47.2	74.0	-26.8	V	P	
7.323	3.0	23.7	36.2	9.1	-34.1	0.0	0.0	34.9	54.0	-19.1	V	A	
High Ch, 2480MHz													
4.960	3.0	38.6	33.3	6.9	-34.8	0.0	0.0	44.0	74.0	-30.0	H	P	
4.960	3.0	26.5	33.3	6.9	-34.8	0.0	0.0	31.9	54.0	-22.1	H	A	
7.440	3.0	35.6	36.4	9.1	-34.1	0.0	0.0	47.0	74.0	-27.0	H	P	
7.440	3.0	23.3	36.4	9.1	-34.1	0.0	0.0	34.7	54.0	-19.3	H	A	
4.960	3.0	36.7	33.3	6.9	-34.8	0.0	0.0	42.1	74.0	-31.9	V	P	
4.960	3.0	26.3	33.3	6.9	-34.8	0.0	0.0	31.7	54.0	-22.3	V	A	
7.440	3.0	35.9	36.4	9.1	-34.1	0.0	0.0	47.3	74.0	-26.7	V	P	
7.440	3.0	23.3	36.4	9.1	-34.1	0.0	0.0	34.7	54.0	-19.3	V	A	

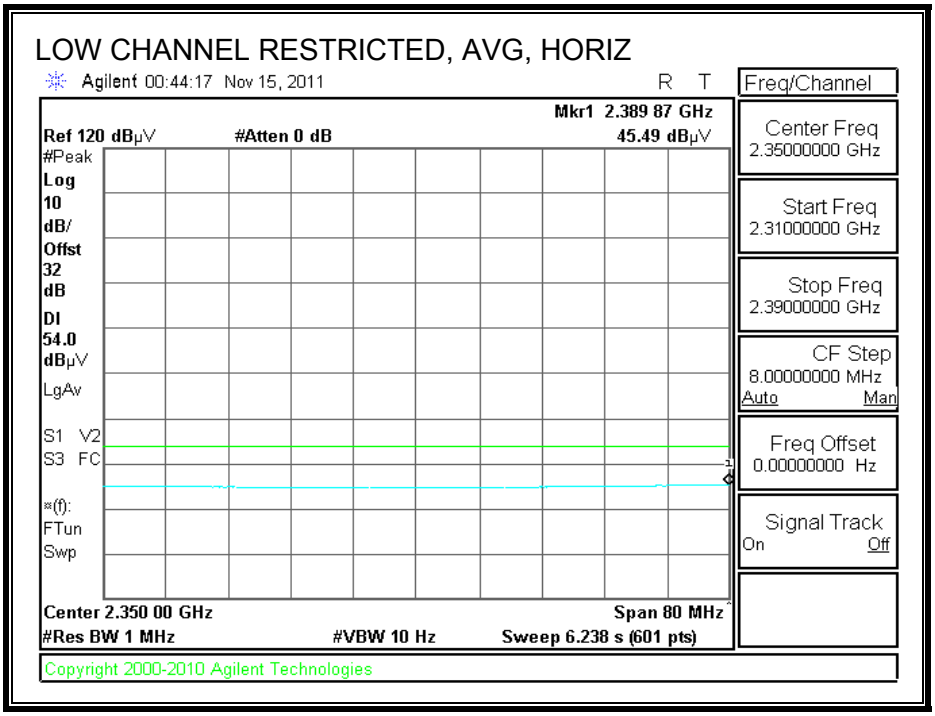
Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

8.2.2. ENHANCED DATA RATE 8PSK MODULATION

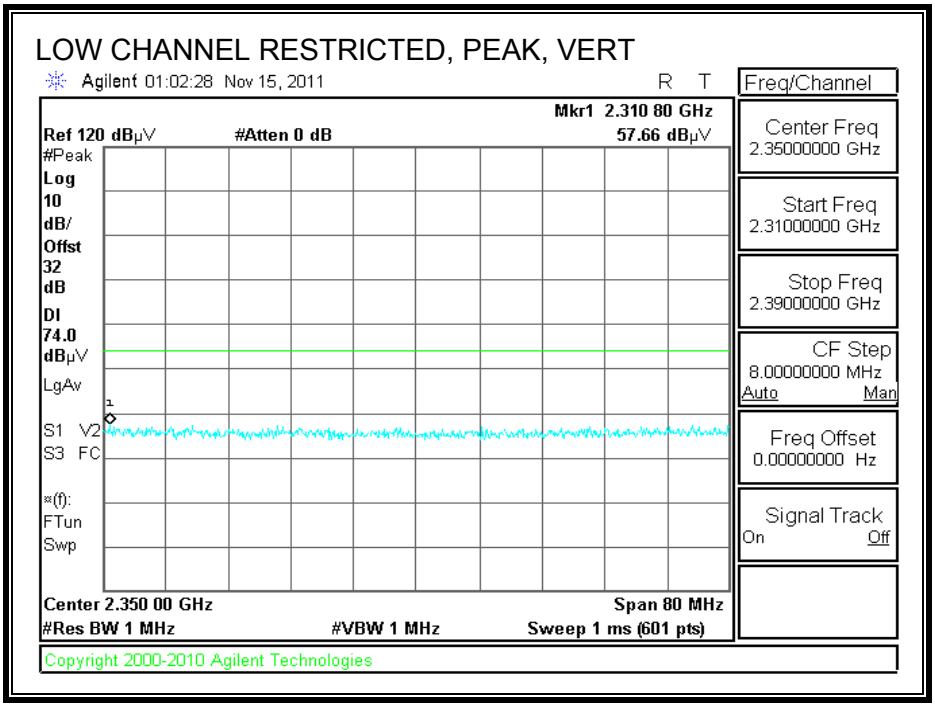
STANDARD COVER

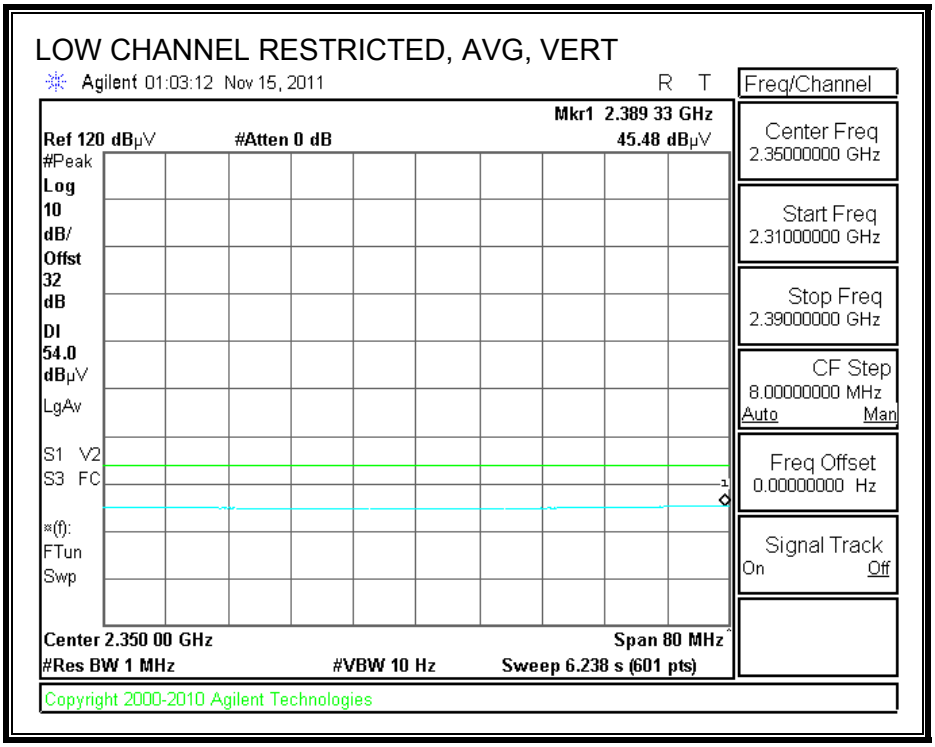
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



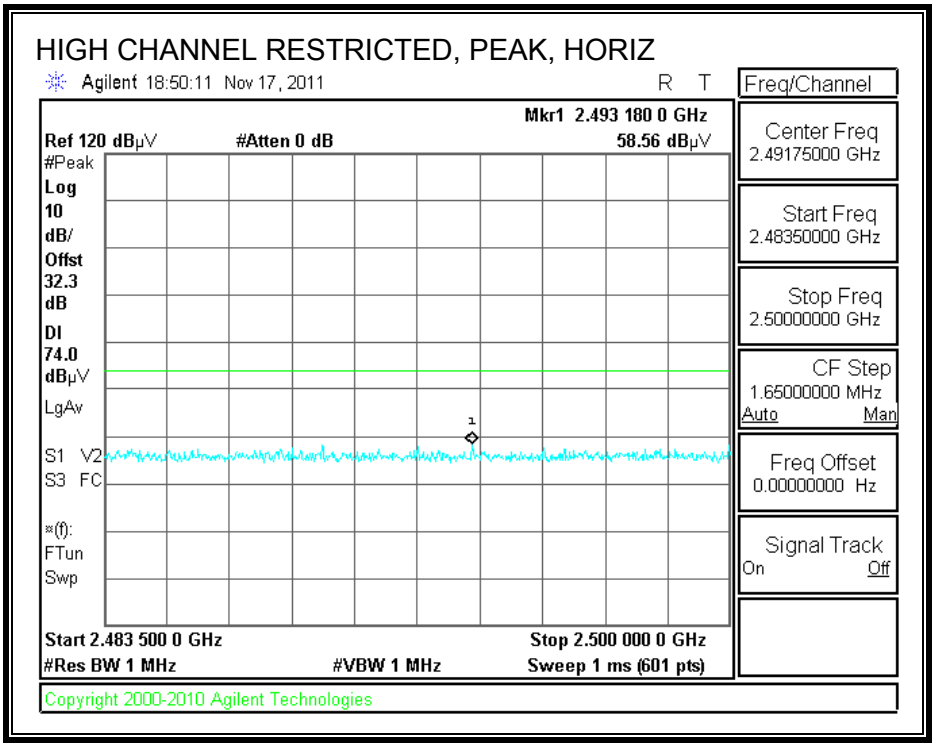


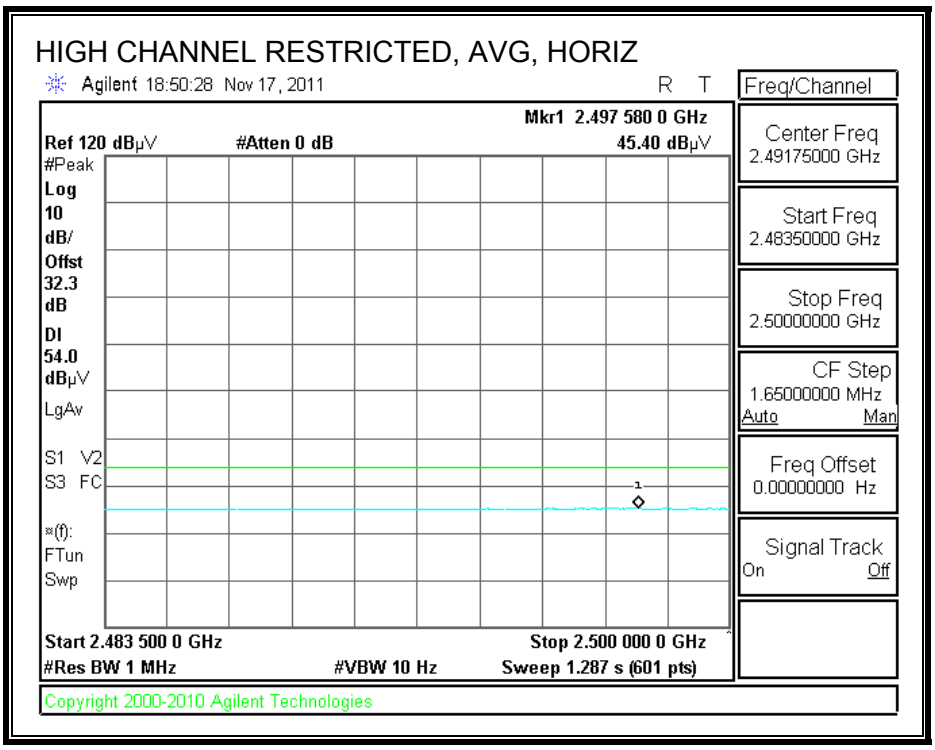
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



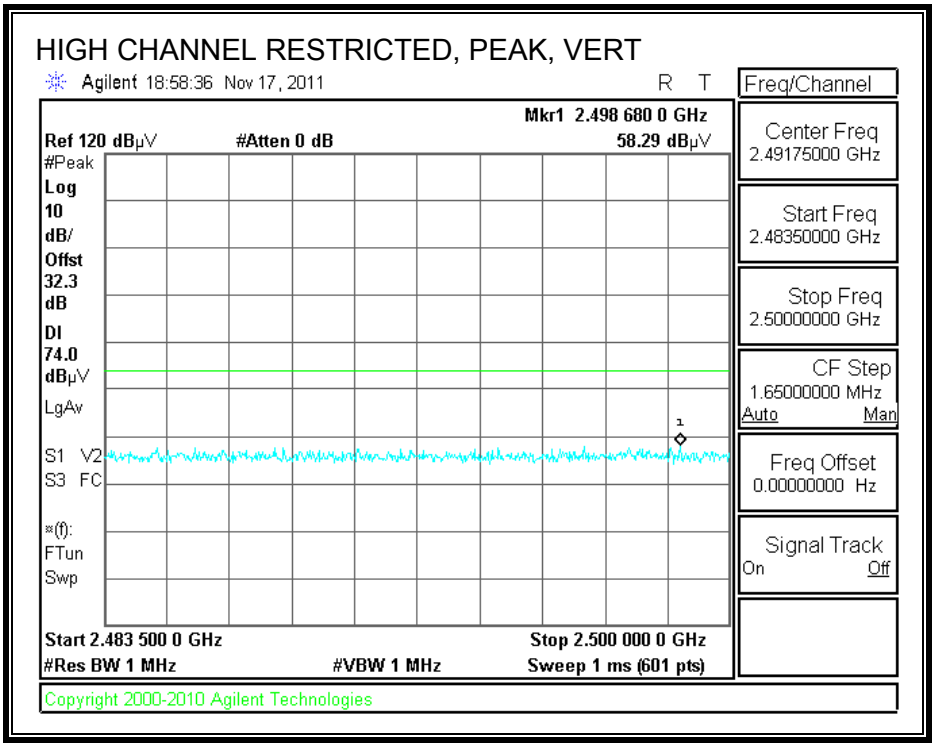


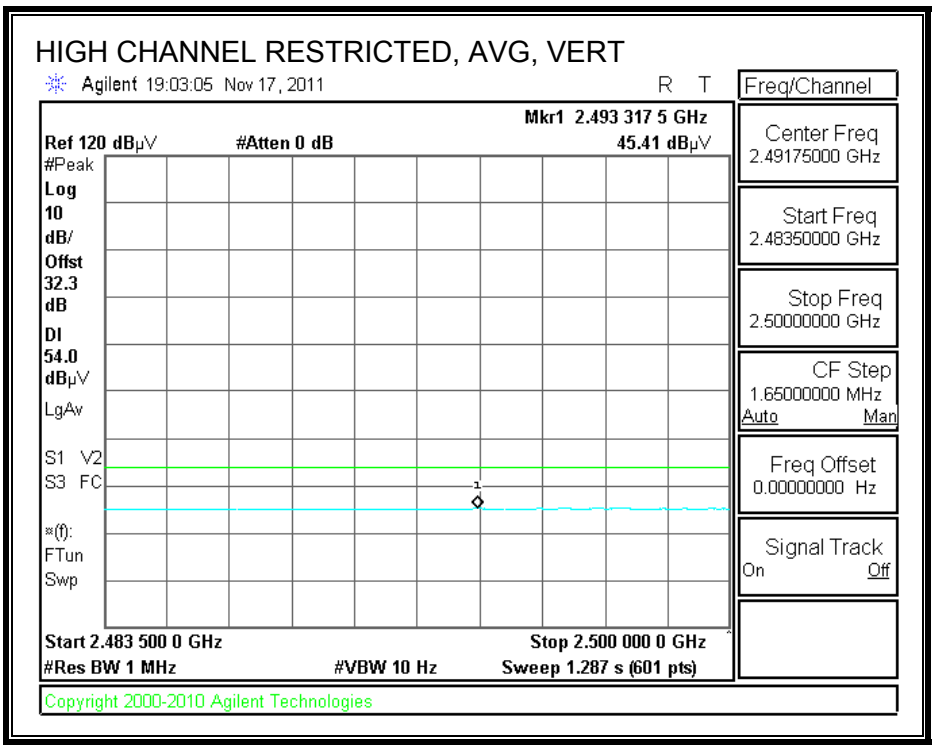
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 3m Chamber

Company:	LG
Project #:	11U14141
Date:	11/15/2011
Test Engineer:	Thanh Nguyen
Configuration:	EUT with battery at worst position
Mode:	Transmit 8PSK

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T34 HP 8449B			FCC 15.205

Hi Frequency Cables

3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF	Reject Filter
3' cable 22807700	12' cable 22807600	20' cable 22807500		R_001

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

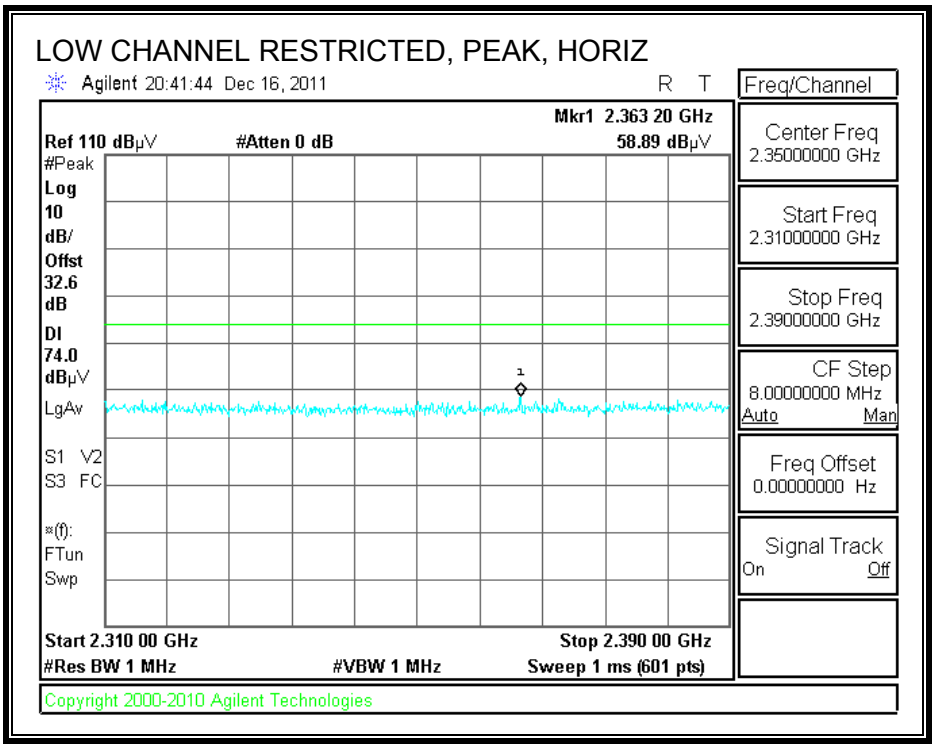
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch															
4.804	3.0	39.8	27.5	33.1	6.8	-34.1	0.0	0.0	45.6	33.3	74	54	-28.4	-20.7	Noise floor/V
4.804	3.0	40.2	27.5	33.1	6.8	-34.1	0.0	0.0	46.0	33.3	74	54	-28.0	-20.7	Noise floor/H
Mid Ch															
4.882	3.0	40.7	27.9	33.2	6.8	-34.0	0.0	0.0	46.6	33.8	74	54	-27.4	-20.2	Noise floor/V
4.882	3.0	40.6	27.9	33.2	6.8	-34.0	0.0	0.0	46.6	33.9	74	54	-27.4	-20.1	Noise floor/V
High Ch															
4.960	3.0	40.3	27.6	33.2	6.9	-34.0	0.0	0.0	46.4	33.7	74	54	-27.6	-20.3	Noise floor/V
4.960	3.0	40.2	27.5	33.2	6.9	-34.0	0.0	0.0	46.3	33.6	74	54	-27.7	-20.4	Noise floor/H
No other emissions were detected above the system noise floor															

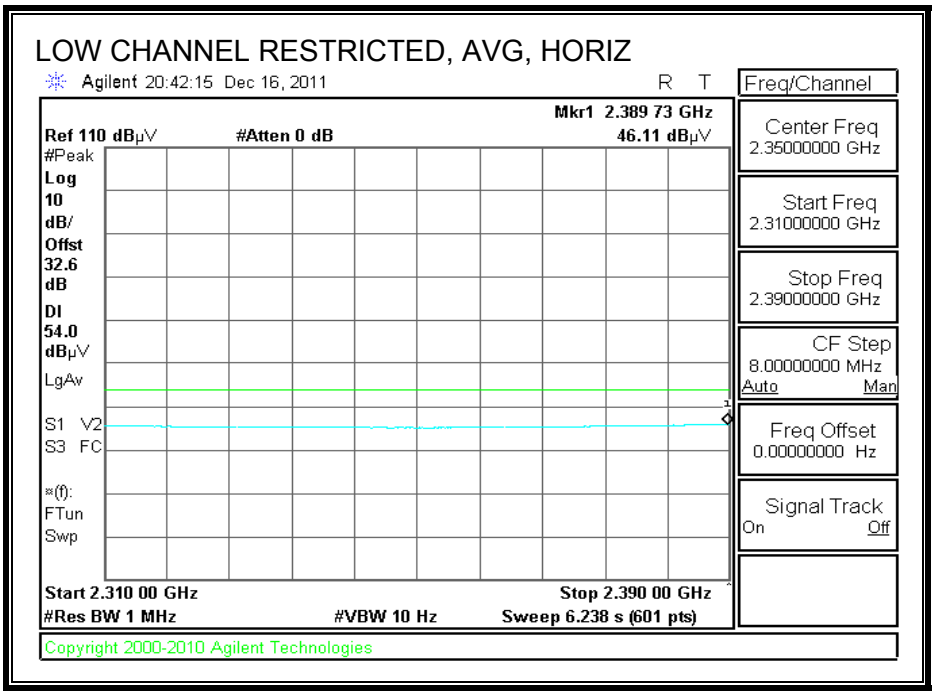
Rev. 07.08.11

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

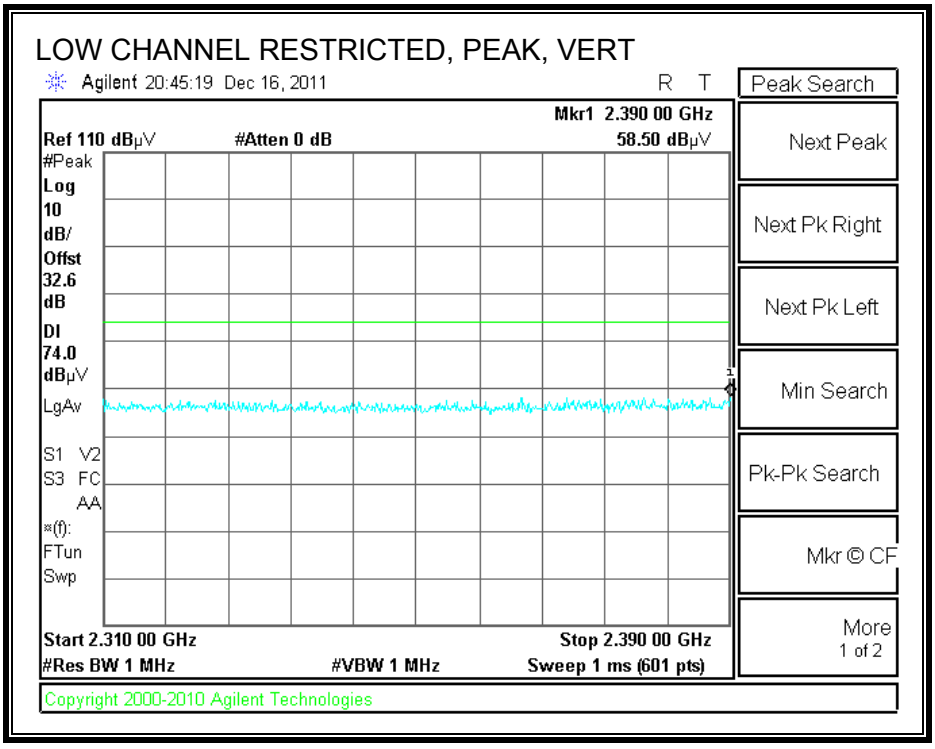
INDUCTIVE COVER

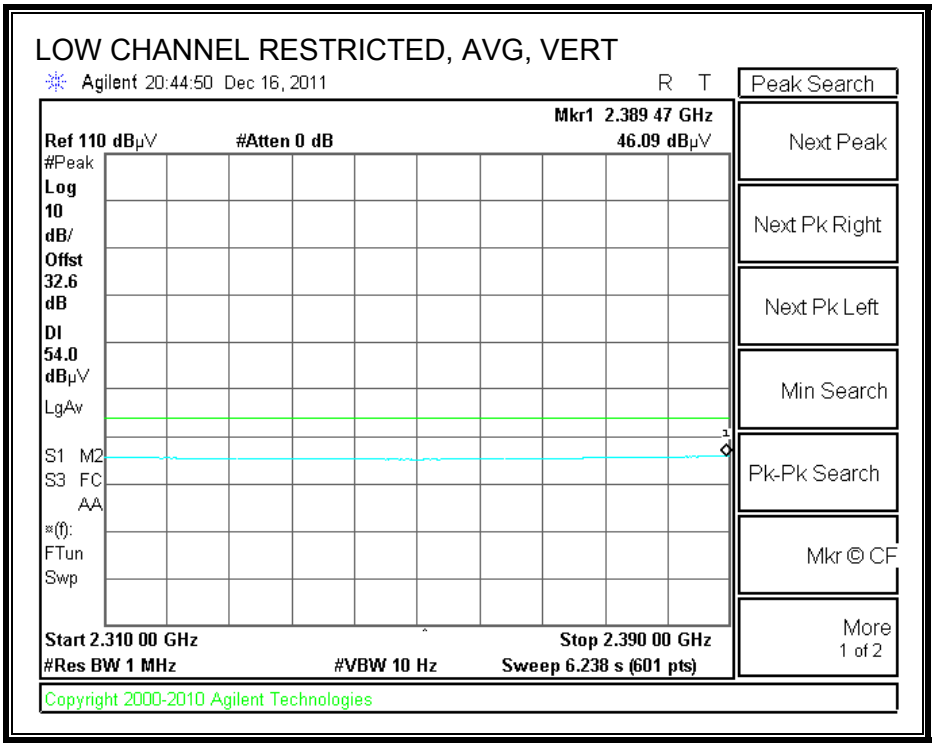
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



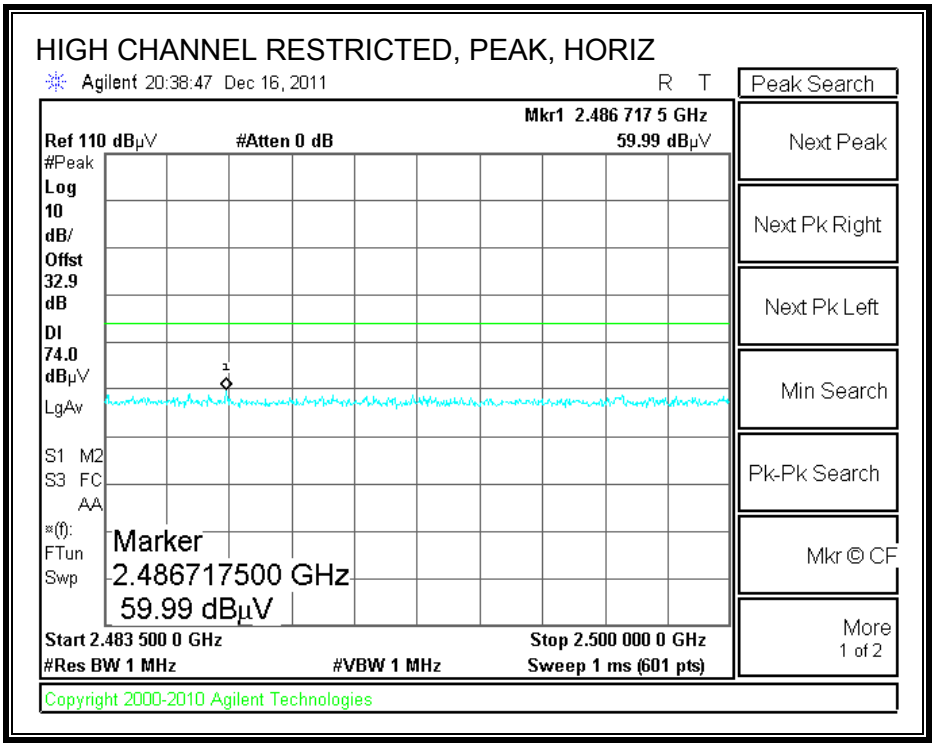


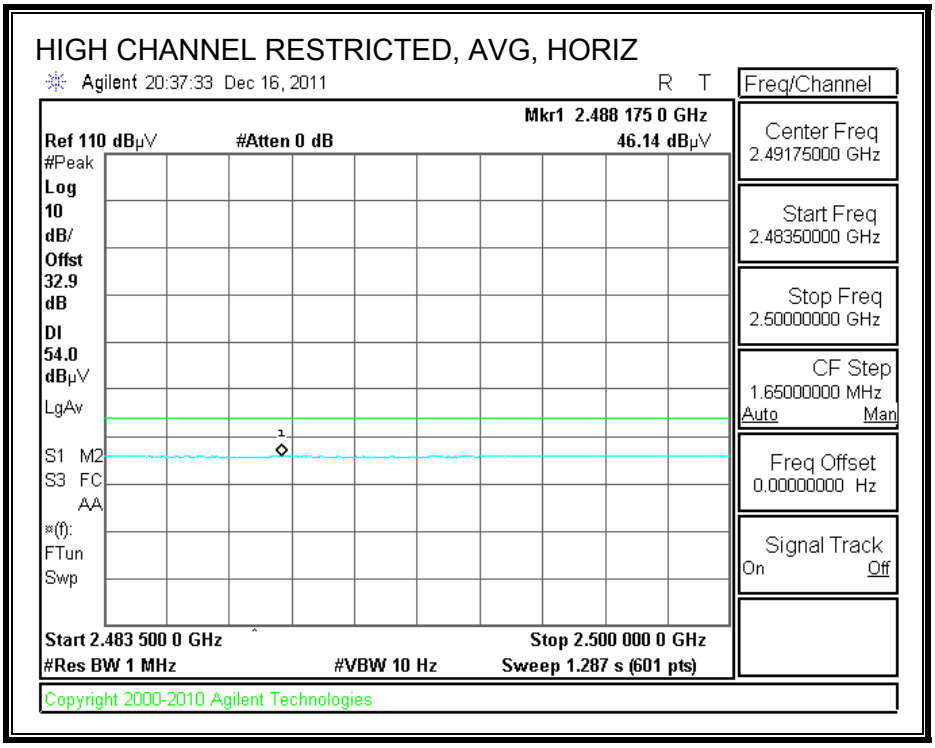
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



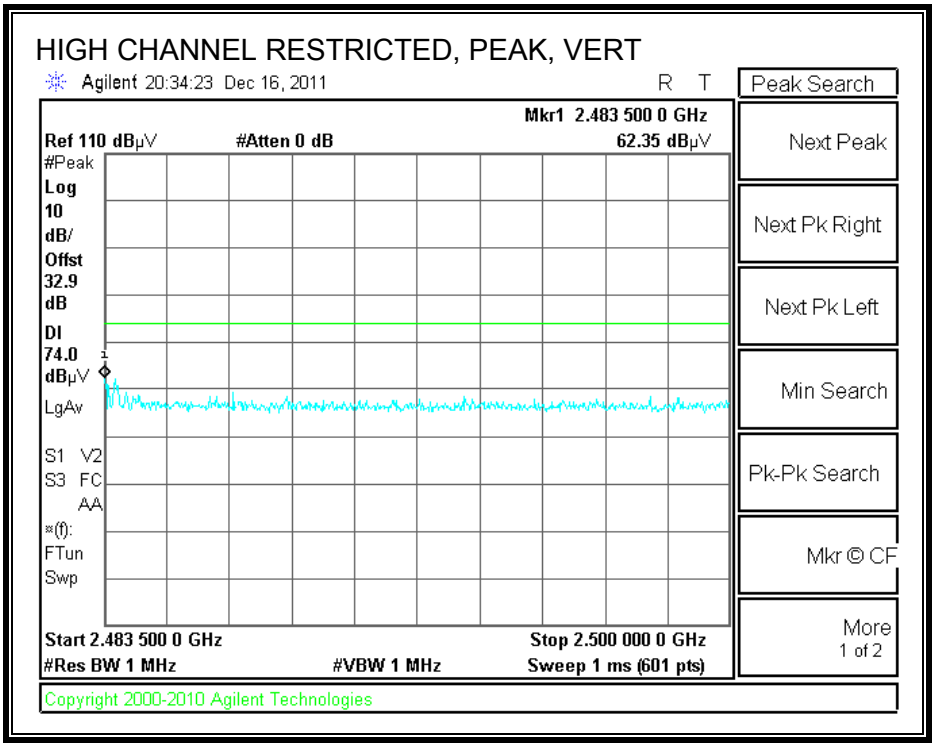


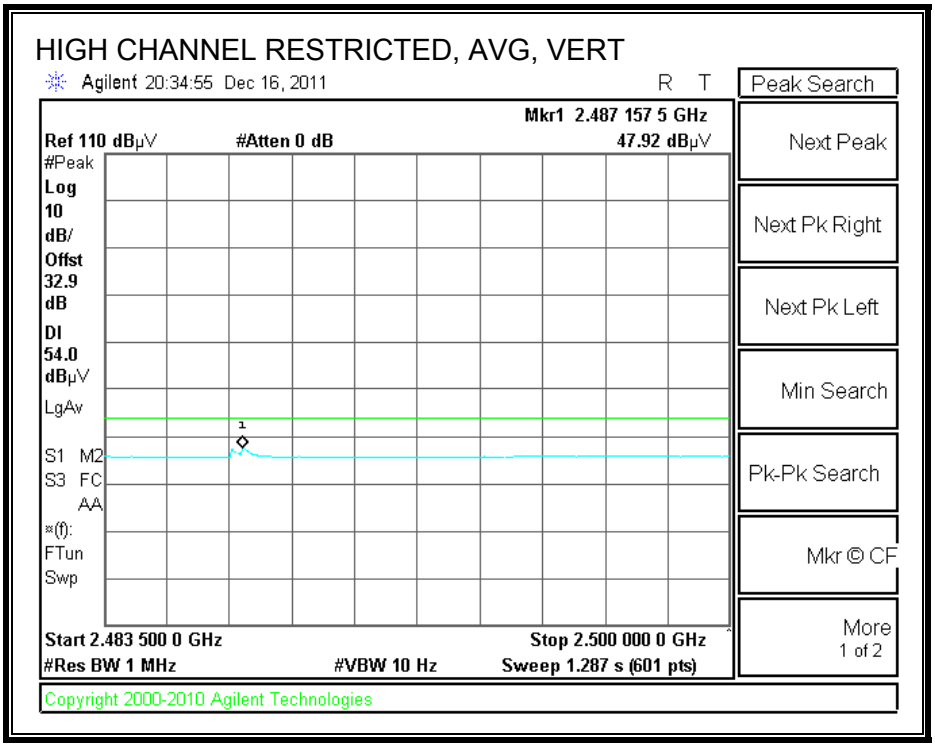
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Chin Pang
Date: 12/16/11
Project #: 11U14141
Company: LG
Test Target: FCC 15C
Mode Oper: BT, TX 8PSK
EUT with inductive Cover

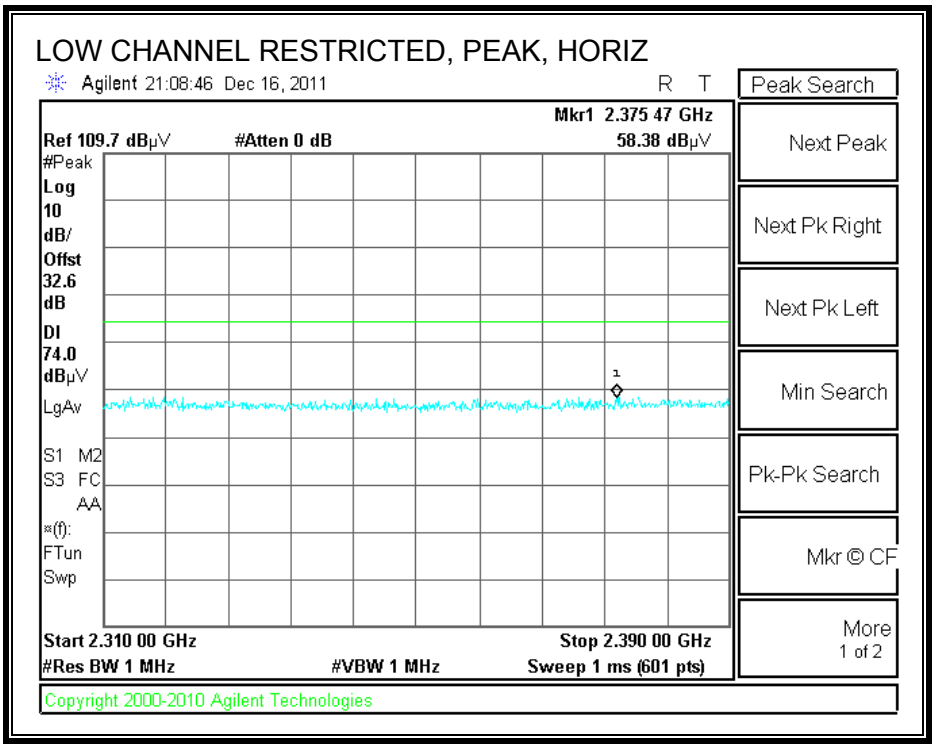
f	Measurement Frequency	Amp	Preamp Gain		Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters		Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m		Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength		Margin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

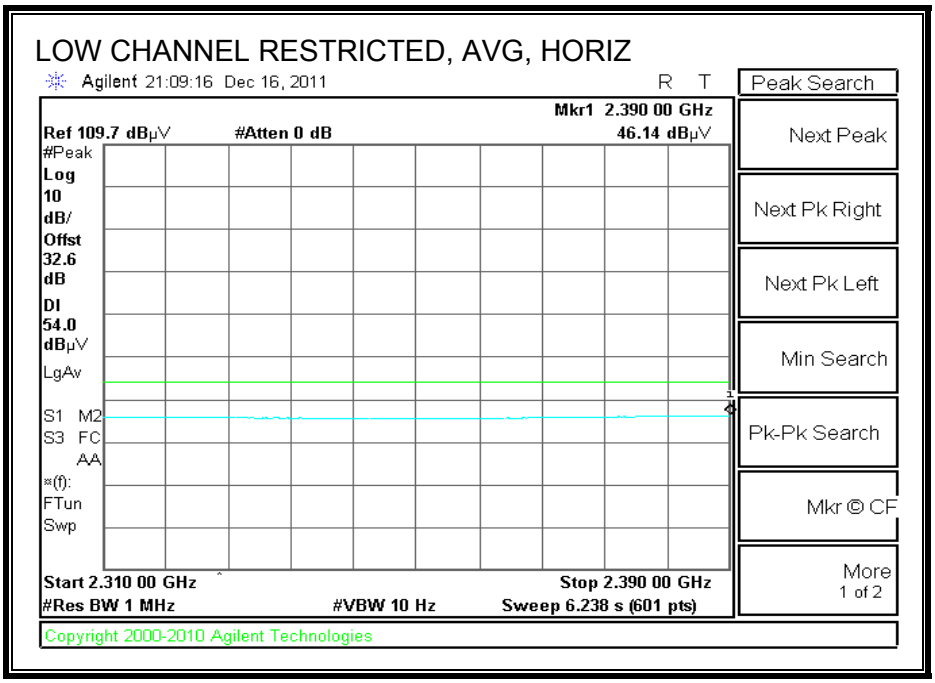
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
Low Ch 2402MHz													
4.804	3.0	39.1	33.1	6.8	-34.8	0.0	0.0	44.2	74.0	-29.8	H	P	
4.804	3.0	27.5	33.1	6.8	-34.8	0.0	0.0	32.6	54.0	-21.4	H	A	
4.804	3.0	37.3	33.1	6.8	-34.8	0.0	0.0	42.4	74.0	-31.6	V	P	
4.804	3.0	24.4	33.1	6.8	-34.8	0.0	0.0	29.5	54.0	-24.5	V	A	
Mid Ch, 2441MHz													
4.882	3.0	39.3	33.2	6.8	-34.8	0.0	0.0	44.5	74.0	-29.5	H	P	
4.882	3.0	27.5	33.2	6.8	-34.8	0.0	0.0	32.7	54.0	-21.3	H	A	
7.323	3.0	36.3	36.2	9.1	-34.1	0.0	0.0	47.5	74.0	-26.5	H	P	
7.323	3.0	23.5	36.2	9.1	-34.1	0.0	0.0	34.7	54.0	-19.3	H	A	
4.882	3.0	36.6	33.2	6.8	-34.8	0.0	0.0	41.8	74.0	-32.2	V	P	
4.882	3.0	35.0	33.2	6.8	-34.8	0.0	0.0	40.2	54.0	-13.8	V	A	
7.323	3.0	35.4	36.2	9.1	-34.1	0.0	0.0	46.6	74.0	-27.4	V	P	
7.323	3.0	24.0	36.2	9.1	-34.1	0.0	0.0	35.2	54.0	-18.8	V	A	
High Ch, 2480MHz													
4.960	3.0	39.0	33.2	6.9	-34.8	0.0	0.0	44.3	74.0	-29.7	H	P	
4.960	3.0	27.7	33.2	6.9	-34.8	0.0	0.0	33.0	54.0	-21.0	H	A	
7.440	3.0	36.2	36.5	9.1	-34.1	0.0	0.0	47.7	74.0	-26.3	H	P	
7.440	3.0	23.3	36.5	9.1	-34.1	0.0	0.0	34.8	54.0	-19.2	H	A	
4.960	3.0	36.3	33.2	6.9	-34.8	0.0	0.0	41.5	74.0	-32.5	V	P	
4.960	3.0	24.6	33.2	6.9	-34.8	0.0	0.0	29.9	54.0	-24.1	V	A	
7.440	3.0	35.0	36.5	9.1	-34.1	0.0	0.0	46.5	74.0	-27.5	V	P	
7.440	3.0	23.2	36.5	9.1	-34.1	0.0	0.0	34.7	54.0	-19.3	V	A	

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

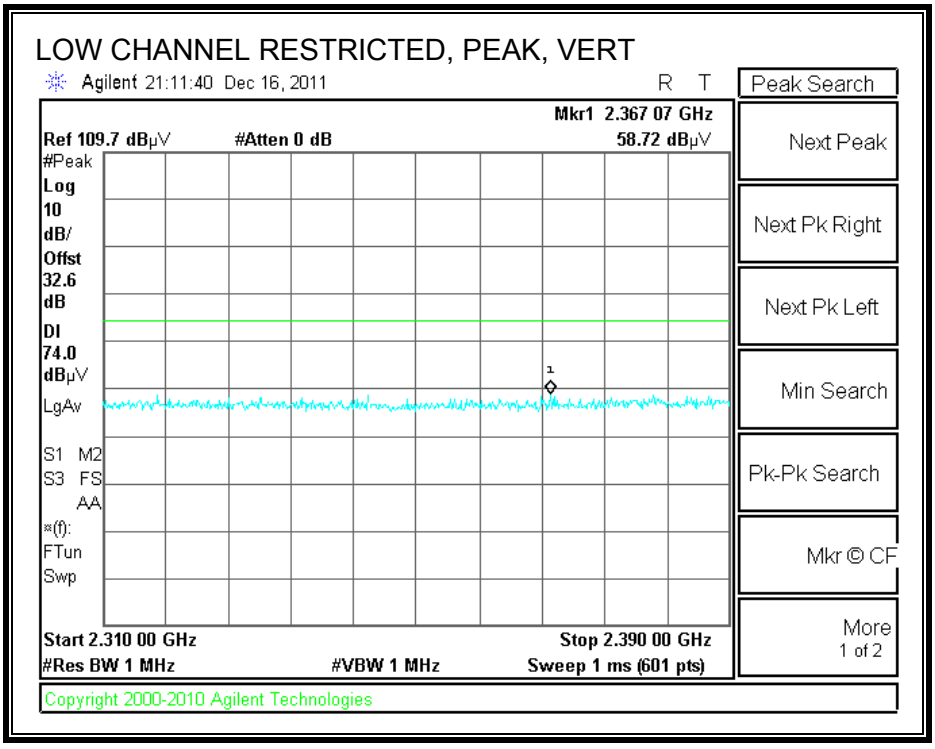
INDUCTIVE CHARGER AND INDUCTIVE COVER

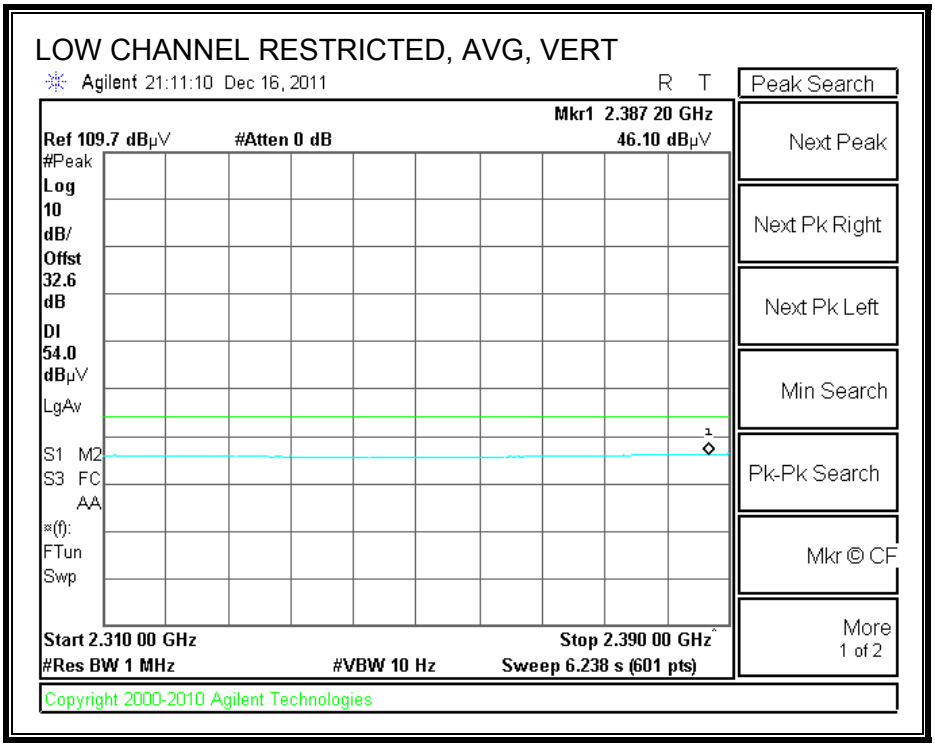
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



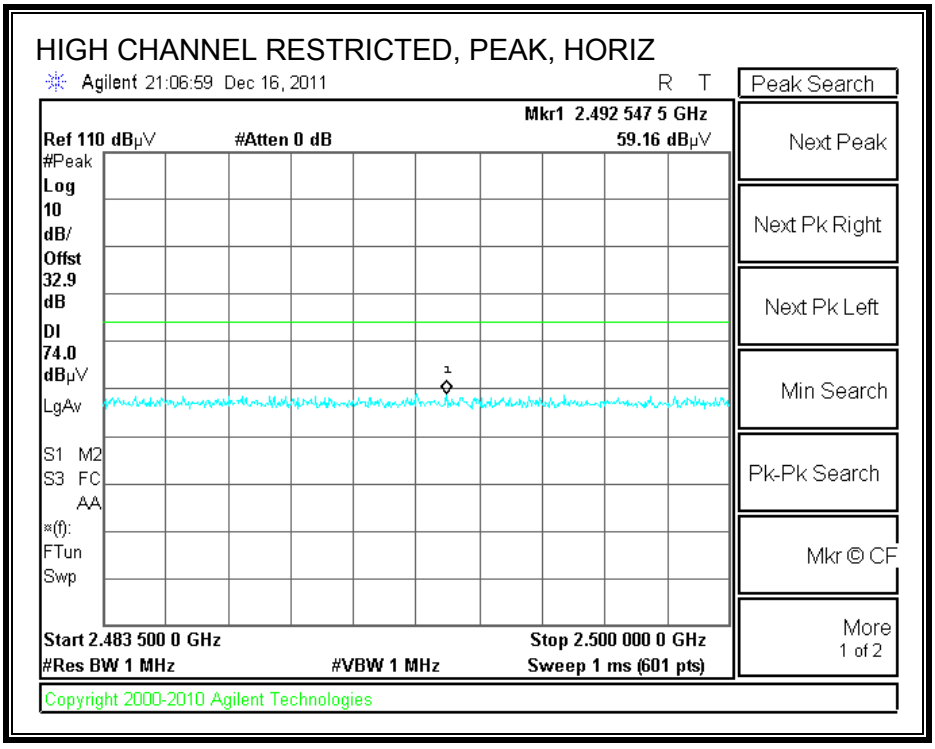


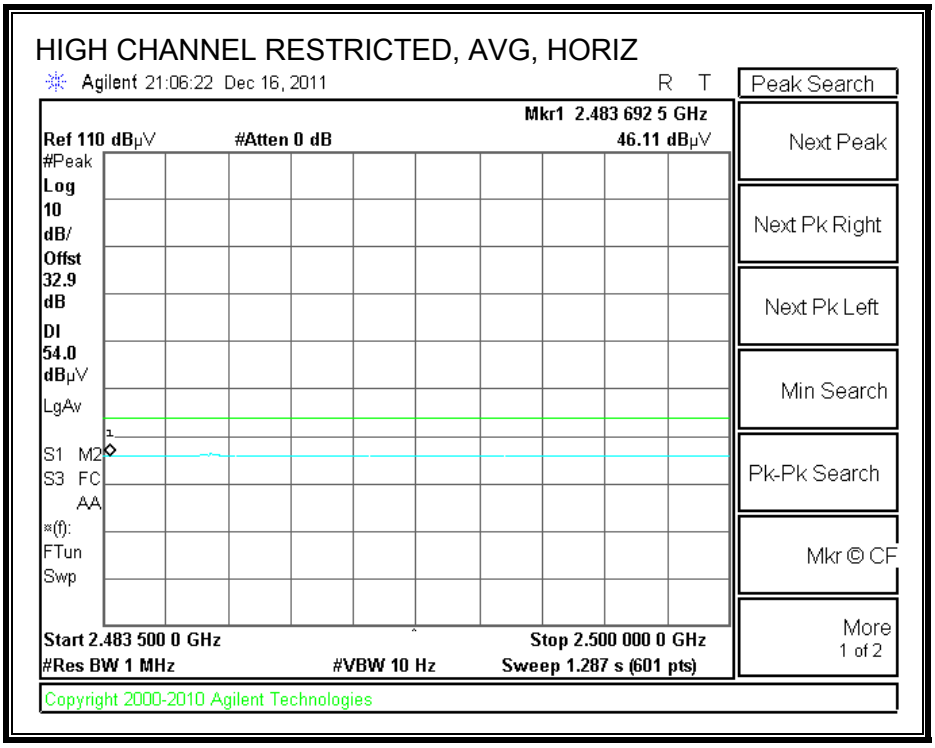
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



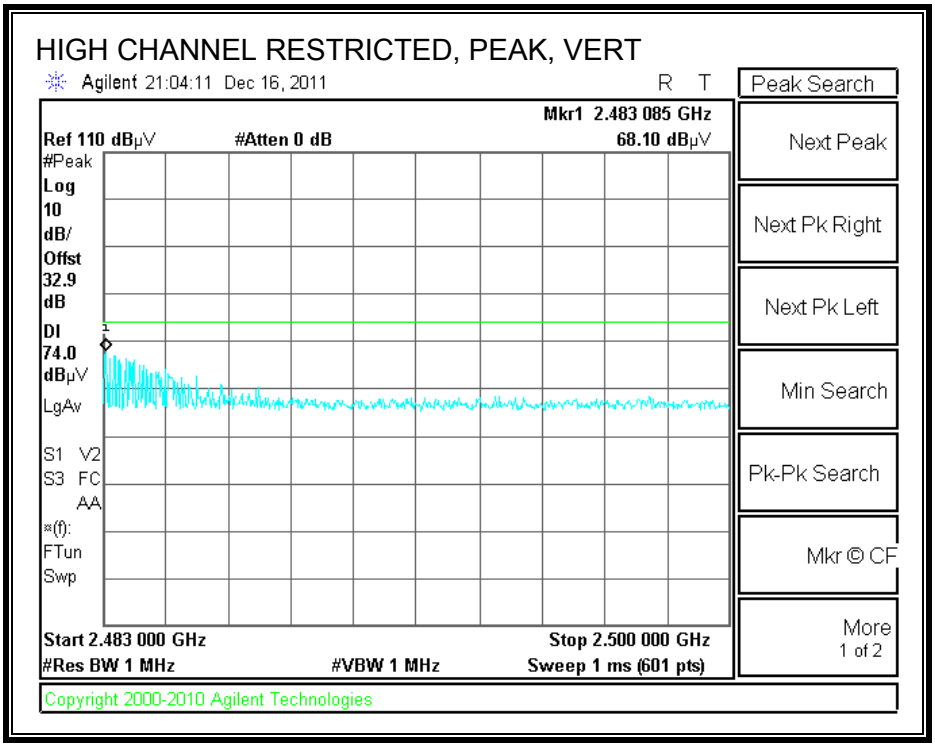


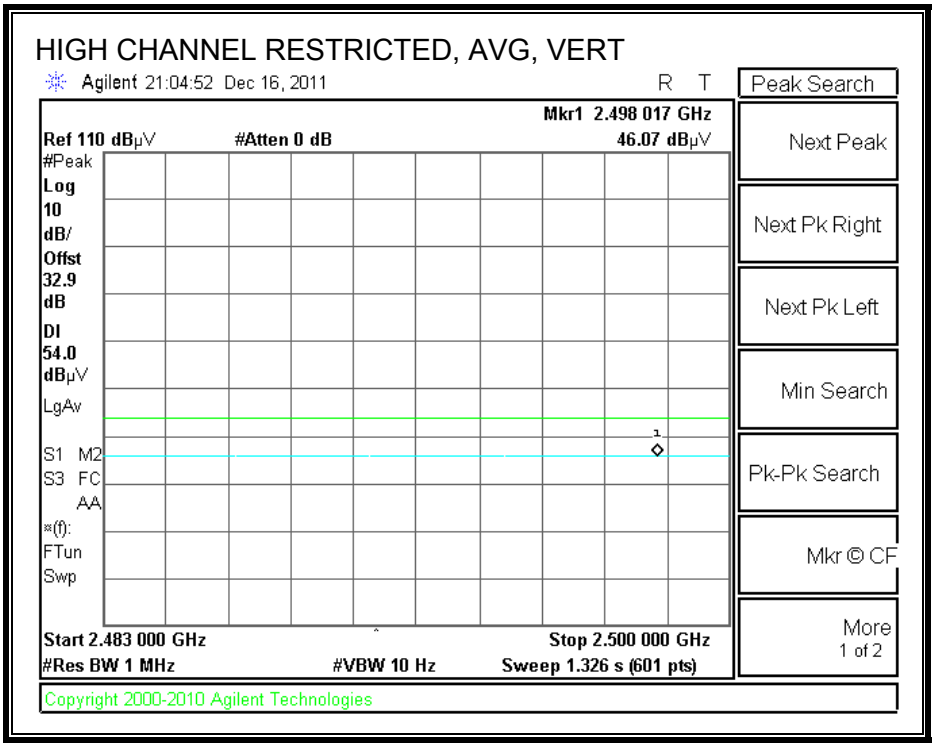
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Chin Pang
Date: 12/16/11
Project #: 11U14141
Company: LG
Test Target: FCC 15C
Mode Oper: BT, TX 8PSK
Inductive Chatger with inductive Cover

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

f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
Low Ch 2402MHz													
4.804	3.0	37.5	33.1	6.8	-34.8	0.0	0.0	42.5	74.0	-31.5	H	P	
4.804	3.0	26.4	33.1	6.8	-34.8	0.0	0.0	31.4	54.0	-22.6	H	A	
4.804	3.0	37.3	33.1	6.8	-34.8	0.0	0.0	42.3	74.0	-31.7	V	P	
4.804	3.0	24.8	33.1	6.8	-34.8	0.0	0.0	29.8	54.0	-24.2	V	A	
Mid Ch, 2441MHz													
4.882	3.0	36.5	33.2	6.8	-34.8	0.0	0.0	41.7	74.0	-32.3	H	P	
4.882	3.0	24.6	33.2	6.8	-34.8	0.0	0.0	29.8	54.0	-24.2	H	A	
7.323	3.0	35.6	36.2	9.1	-34.1	0.0	0.0	46.8	74.0	-27.2	H	P	
7.323	3.0	23.5	36.2	9.1	-34.1	0.0	0.0	34.7	54.0	-19.3	H	A	
4.882	3.0	38.4	33.2	6.8	-34.8	0.0	0.0	43.6	74.0	-30.4	V	P	
4.882	3.0	24.8	33.2	6.8	-34.8	0.0	0.0	30.0	54.0	-24.0	V	A	
7.323	3.0	36.2	36.2	9.1	-34.1	0.0	0.0	47.4	74.0	-26.6	V	P	
7.323	3.0	23.4	36.2	9.1	-34.1	0.0	0.0	34.6	54.0	-19.4	V	A	
High Ch, 2480MHz													
4.960	3.0	37.1	33.3	6.9	-34.8	0.0	0.0	42.5	74.0	-31.5	H	P	
4.960	3.0	26.7	33.3	6.9	-34.8	0.0	0.0	32.0	54.0	-22.0	H	A	
7.440	3.0	35.4	36.4	9.1	-34.1	0.0	0.0	46.8	74.0	-27.2	H	P	
7.440	3.0	23.1	36.4	9.1	-34.1	0.0	0.0	34.5	54.0	-19.5	H	A	
4.960	3.0	36.2	33.3	6.9	-34.8	0.0	0.0	41.6	74.0	-32.4	V	P	
4.960	3.0	24.3	33.3	6.9	-34.8	0.0	0.0	29.7	54.0	-24.3	V	A	
7.440	3.0	36.0	36.4	9.1	-34.1	0.0	0.0	47.4	74.0	-26.6	V	P	
7.440	3.0	23.3	36.4	9.1	-34.1	0.0	0.0	34.7	54.0	-19.3	V	A	

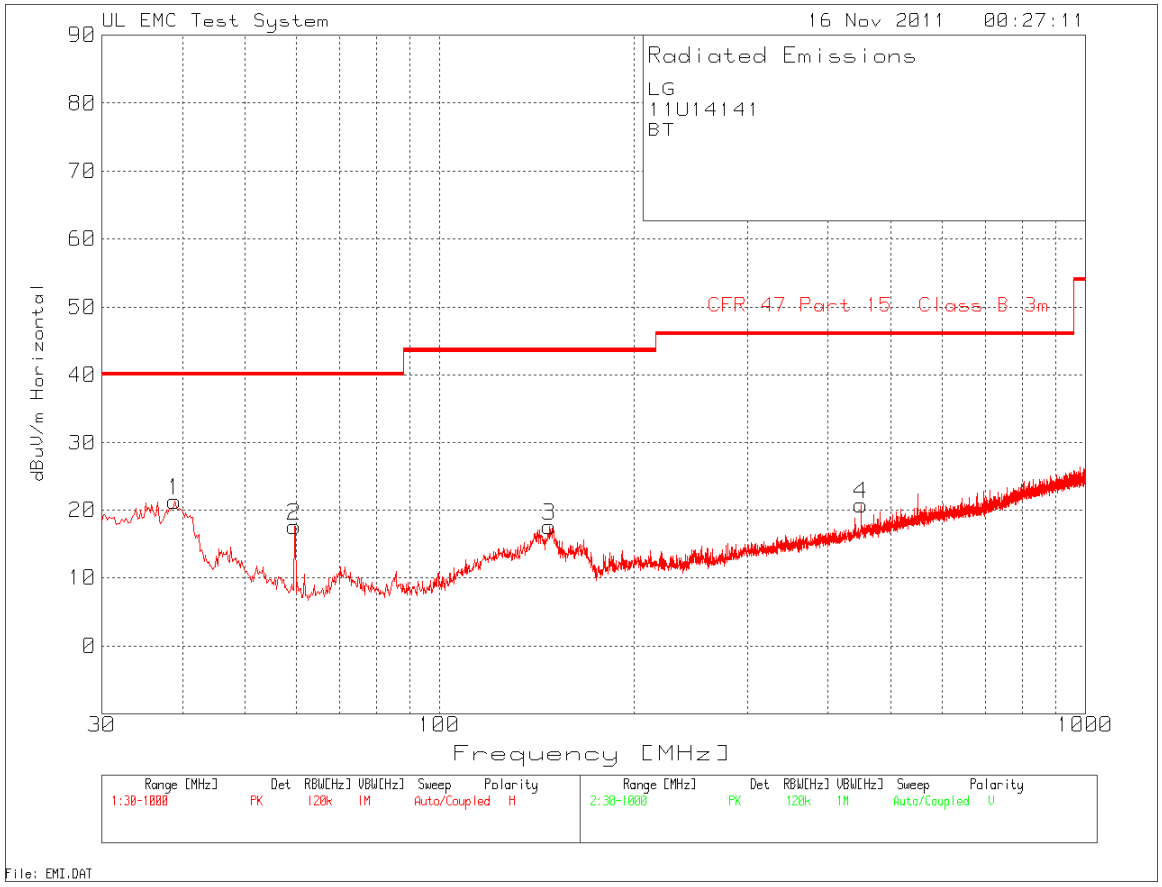
Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

8.3. WORST-CASE BELOW 1 GHz

STANDARD COVER

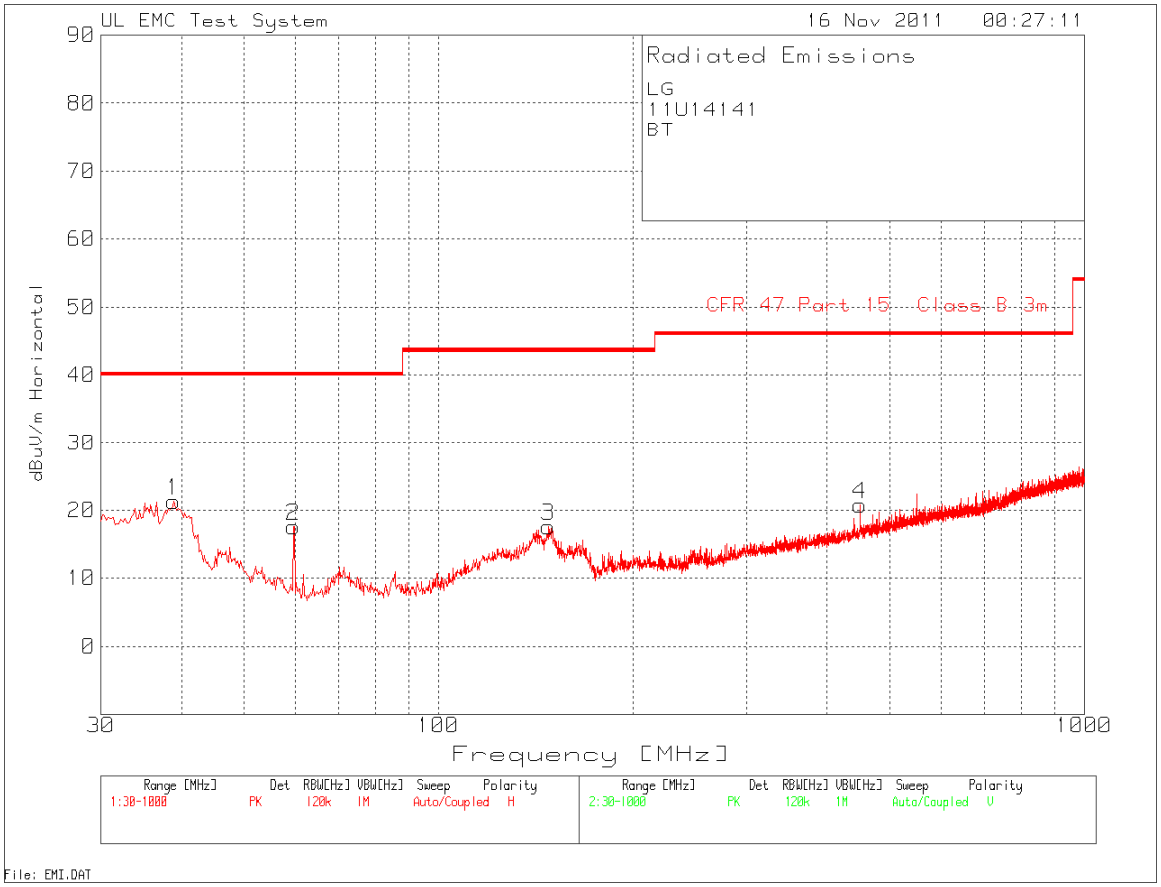
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



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

VERTICAL PLOT



HORIZONTAL DATA AND VERTICAL DATA

LG
11U14141
BT

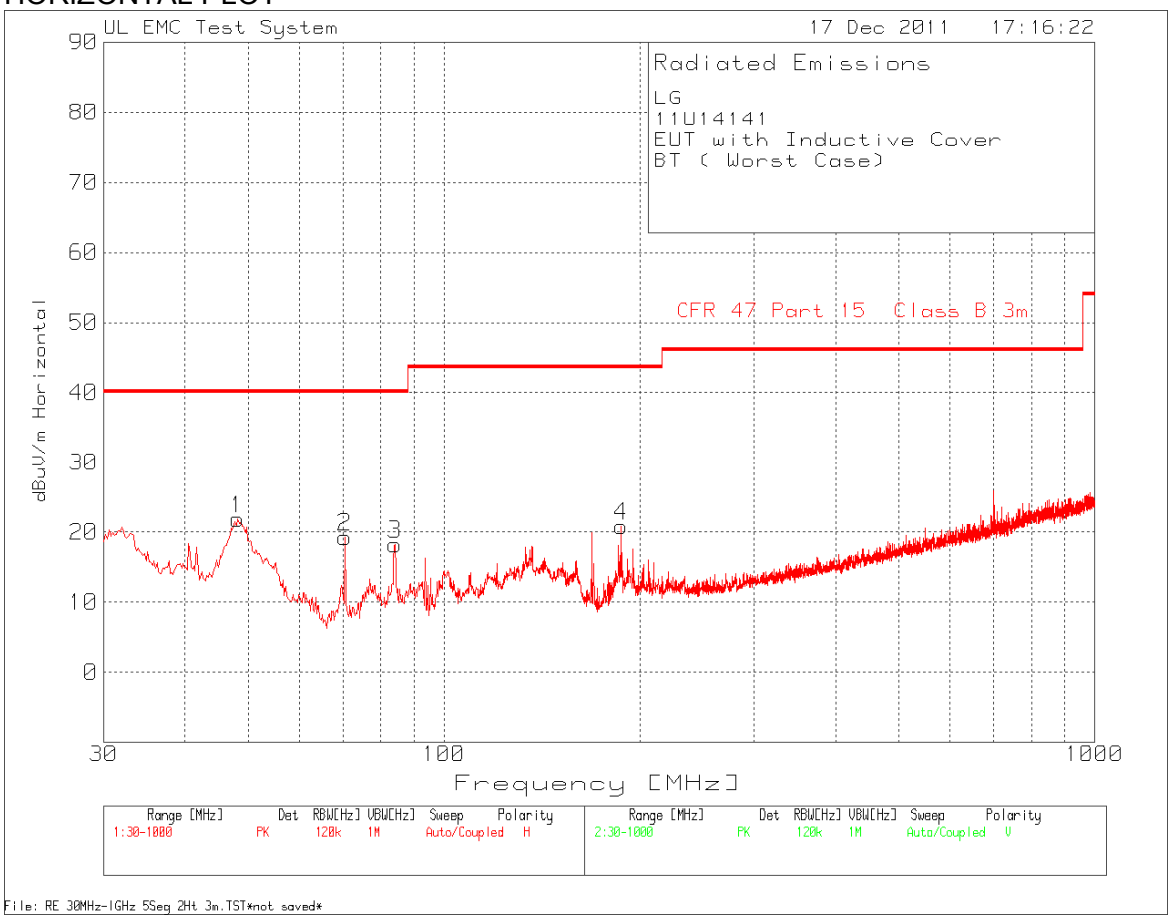
Range: 1 30 - 1000MHz									
Test Frequency	Meter Reading	Detector	25MHz-1GHz Chambr 3m Amplified [dB]	T185 3m Bilog below 1GHz.TXT [dB]	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
38.9169	34.49	PK	-27.4	14.2	21.29	40	-18.71	250	Horz
59.6583	36.9	PK	-27.2	7.9	17.6	40	-22.4	250	Horz
148.0516	31.2	PK	-26.4	12.8	17.6	43.5	-25.9	176	Horz
450.062	30.67	PK	-25.8	15.9	20.77	46	-25.23	99	Horz
Range: 2 30 - 1000MHz									
38.5292	45.71	PK	-27.4	14.6	32.91	40	-7.09	99	Vert
47.446	45.02	PK	-27.3	10.6	28.32	40	-11.68	99	Vert
156.3869	43.73	PK	-26.3	13	30.43	43.5	-13.07	175	Vert
381.6347	34.36	PK	-25.5	14.7	23.56	46	-22.44	251	Vert
696.0512	35.47	PK	-25.2	18.9	29.17	46	-16.83	99	Vert
900.1699	32.9	PK	-24	22.1	31	46	-15	99	Vert

PK - Peak detector
QP - Quasi-Peak detector

INDUCTIVE COVER

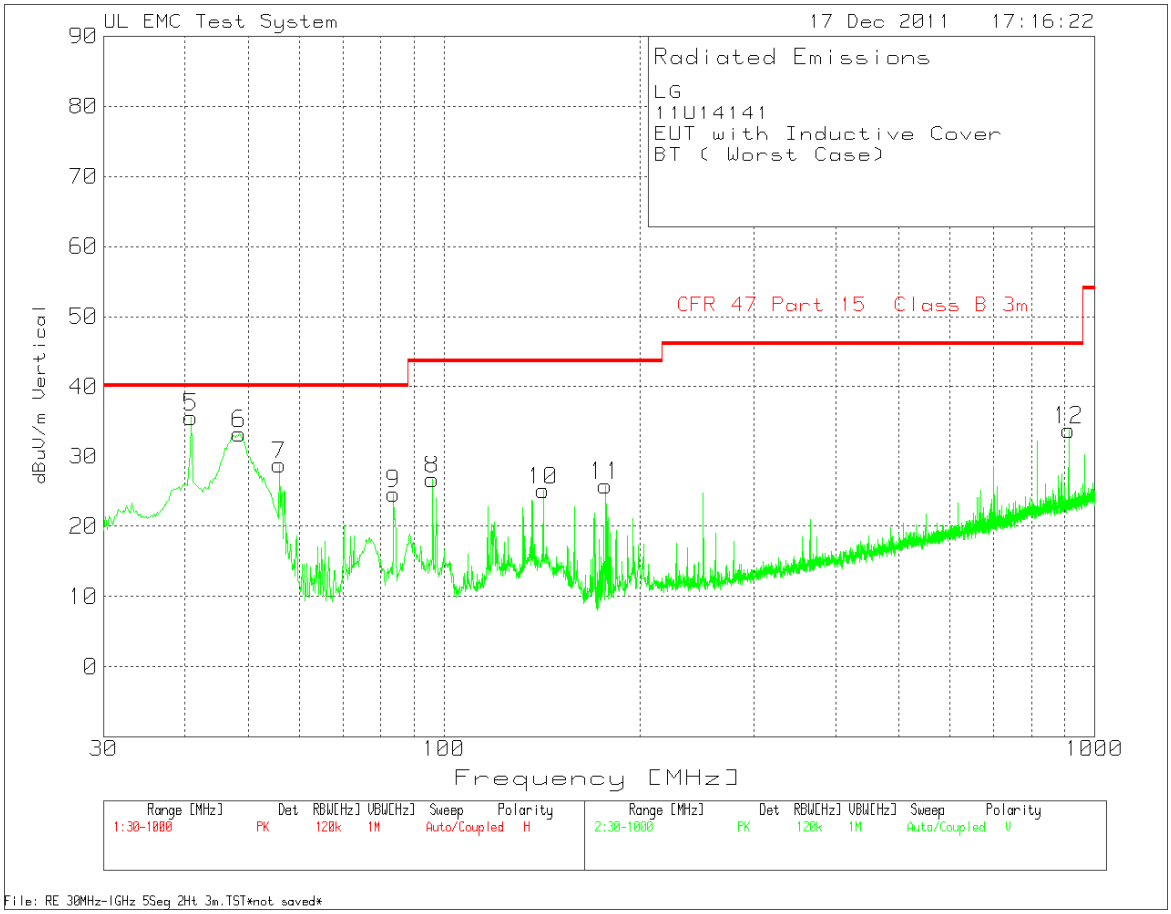
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



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

VERTICAL PLOT



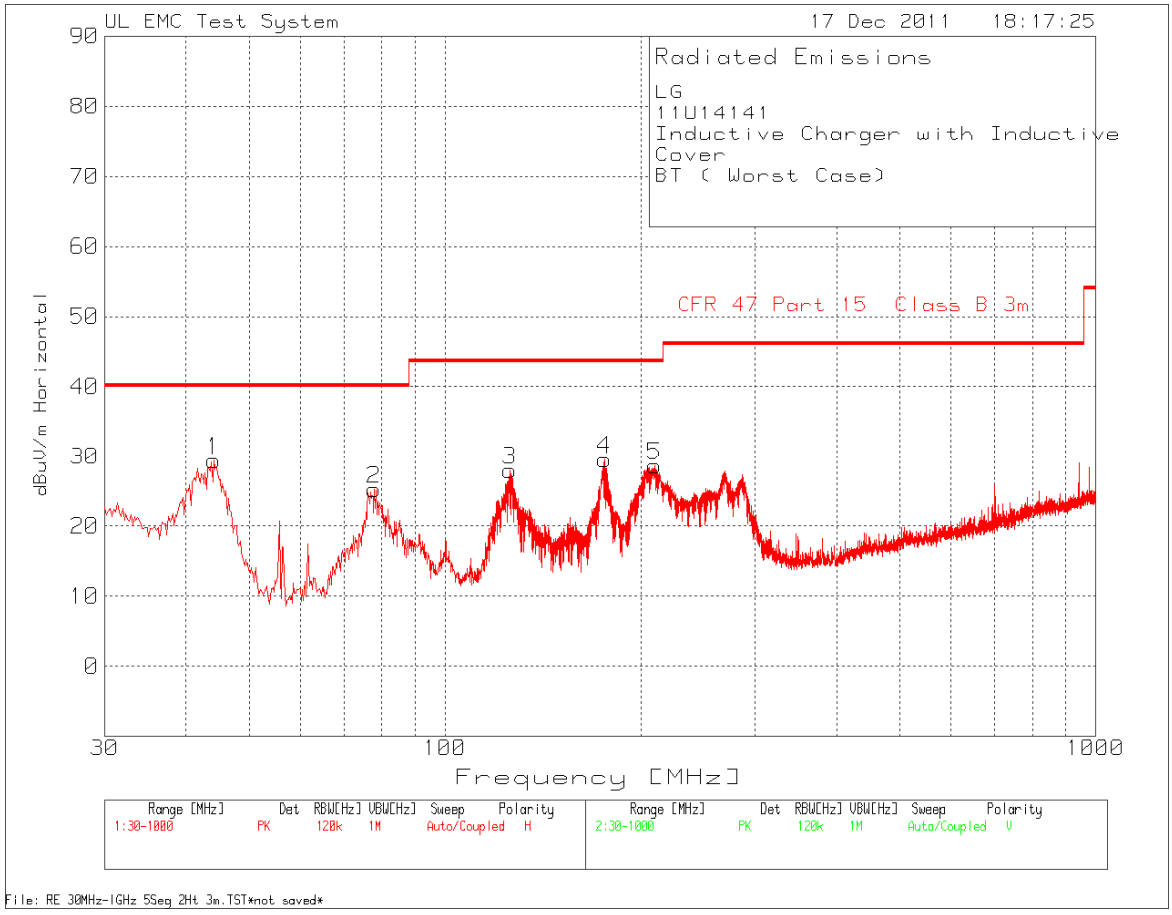
HORIZONTAL AND VERTICAL DATA

LG								
11U14141								
EUT with Inductive Cover								
BT (Worst Case)								
Range 1 30 - 1000MHz								
Frequency	Reading	Detector	Amp Gain[dB]	Ant Factors.[dB]	dBuV/m	15 Class B 3m	Margin	Polarity
48.2214	41.81	PK	-29.1	9.1	21.81	40	-18.19	Horz
70.5136	39.85	PK	-28.8	8.2	19.25	40	-20.75	Horz
84.0827	39.48	PK	-28.7	7.5	18.28	40	-21.72	Horz
187.4021	37.39	PK	-27.7	11.1	20.79	43.5	-22.71	Horz
Range 2 30 - 1000MHz								
Frequency	Reading	Detector	Amp Gain[dB]	Ant Factors.[dB]	dBuV/m	15 Class B 3m	Margin	Polarity
40.8553	51.22	PK	-29.2	13.6	35.62	40	-4.38	Vert
48.4153	53.46	PK	-29.1	9	33.36	40	-6.64	Vert
55.7814	49.87	PK	-29	7.9	28.77	40	-11.23	Vert
96.1011	46.18	PK	-28.6	9.1	26.68	43.5	-16.82	Vert
83.695	45.72	PK	-28.7	7.6	24.62	40	-15.38	Vert
142.0424	40.06	PK	-28.1	13.1	25.06	43.5	-18.44	Vert
177.3221	43.21	PK	-27.8	10.4	25.81	43.5	-17.69	Vert
912.7698	36.7	PK	-24.6	21.7	33.8	46	-12.2	Vert

INDUCTIVE CHARGER WITH INDUCTIVE COVER

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

HORIZONTAL PLOT



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

VERTICAL PLOT

HORIZONTAL AND VERTICAL DATA

LG								
11U14141								
Inductive Charger with Inductive								
Cover								
BT (Worst Case)								
Range 1 30 - 1000MHz								
Frequency	Reading	Detector	Amp gain	Ant Factors.[dB]	dBuV/m	15 Class B	Margin	Polarity
44.1507	46.89	PK	-29.1	11.6	29.39	40	-10.61	Horz
77.8797	46.29	PK	-28.8	7.7	25.19	40	-14.81	Horz
125.9532	42.53	PK	-28.3	13.8	28.03	43.5	-15.47	Horz
175.9652	47.22	PK	-27.8	10.1	29.52	43.5	-13.98	Horz
210.0819	44.12	PK	-27.5	12	28.62	43.5	-14.88	Horz
Range 2 30 - 1000MHz								
Frequency	Reading	Detector	Amp gain	Ant Factors.[dB]	dBuV/m	15 Class B	Margin	Polarity
47.6399	55.34	PK	-29.1	9.4	35.64	40	-4.36	Vert
40.0799	48.21	PK	-29.2	14	33.01	40	-6.99	Vert
55.006	49.37	PK	-29	7.9	28.27	40	-11.73	Vert
785.9952	46.23	PK	-25.5	20.8	41.53	46	-4.47	Vert

9. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

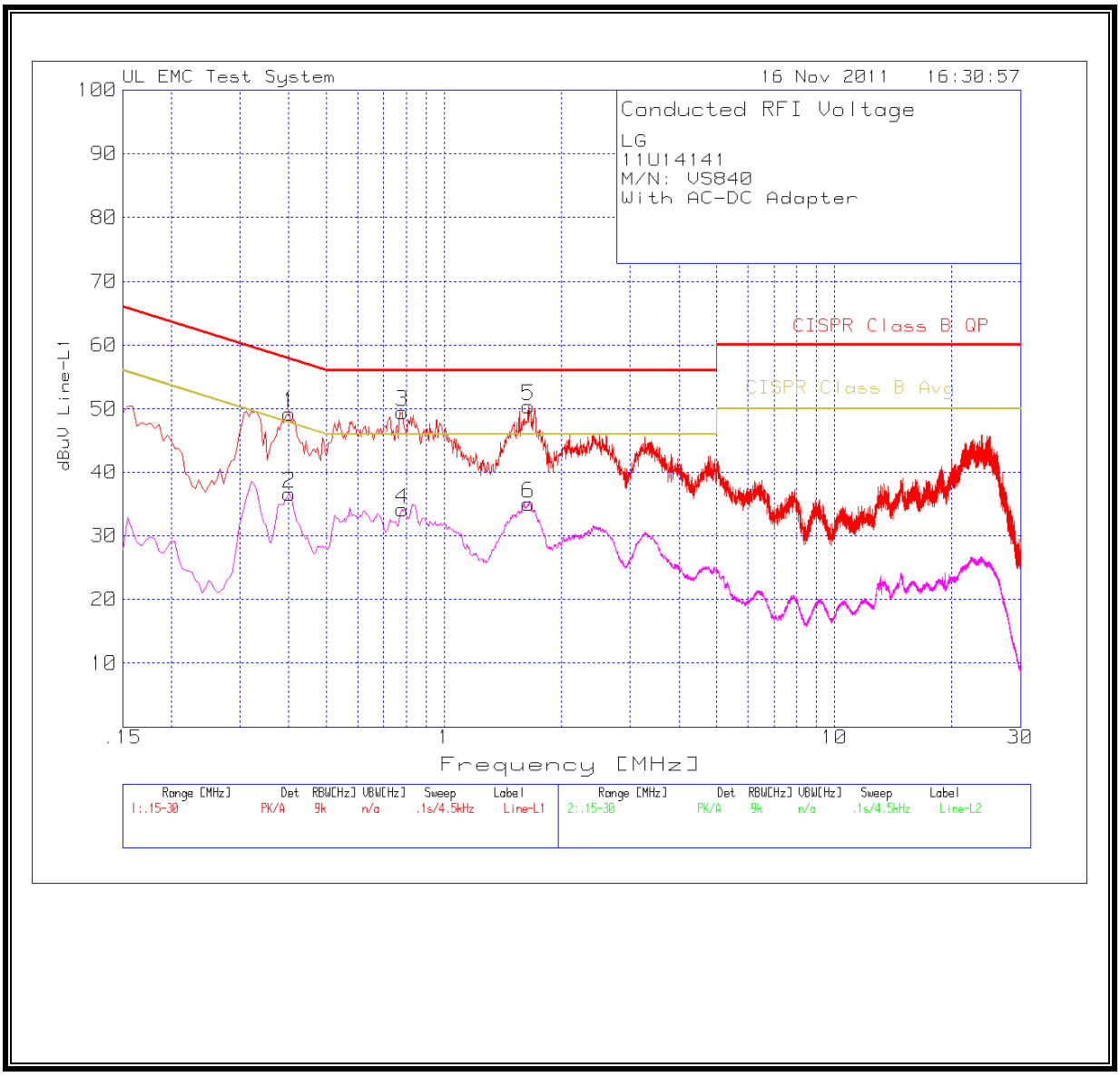
RESULTS (EUT WITH AC-DC ADAPTER)

STANDARD COVER

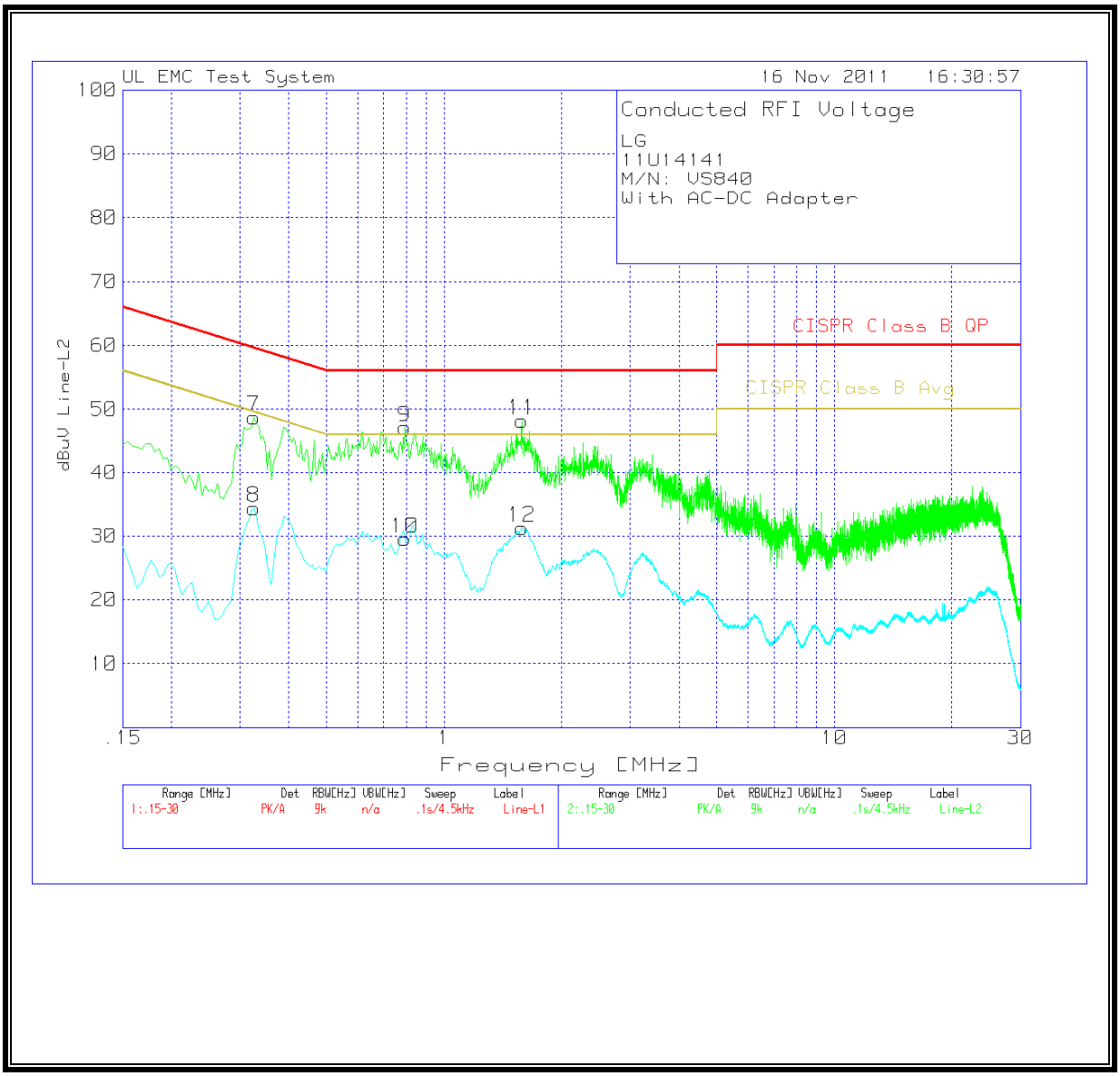
6 WORST EMISSIONS

LG								
11U14141								
M/N: VS840. BT Tx mode								
With AC-DC Adapter								
Line-L1 .15 - 30MHz								
Test Frequency	Meter Reading	Detector	Lisn T25 Path Loss Line 1.TXT [dB]	dBuV	CISPR Class B QP	Margin	CISPR Class B Avg	Margin
0.402	48.71	PK	0.5	49.21	57.8	-8.59	-	-
0.402	36.07	Av	0.5	36.57	57.8	-21.23	47.8	-11.23
0.78	49.18	PK	0.3	49.48	56	-6.52	-	-
0.78	33.76	Av	0.3	34.06	56	-21.94	46	-11.94
1.644	50.11	PK	0.3	50.41	56	-5.59	-	-
1.644	34.68	Av	0.3	34.98	56	-21.02	46	-11.02
Line-L2 .15 - 30MHz								
0.3255	48.03	PK	0.7	48.73	59.6	-10.87	-	-
0.3255	33.73	Av	0.7	34.43	59.6	-25.17	49.6	-15.17
0.7935	46.83	PK	0.3	47.13	56	-8.87	-	-
0.7935	29.23	Av	0.3	29.53	56	-26.47	46	-16.47
1.5855	47.89	PK	0.3	48.19	56	-7.81	-	-
1.5855	30.97	Av	0.3	31.27	56	-24.73	46	-14.73
PK - Peak detector								
QP - Quasi-Peak detector								

LINE 1 RESULTS



LINE 2 RESULTS

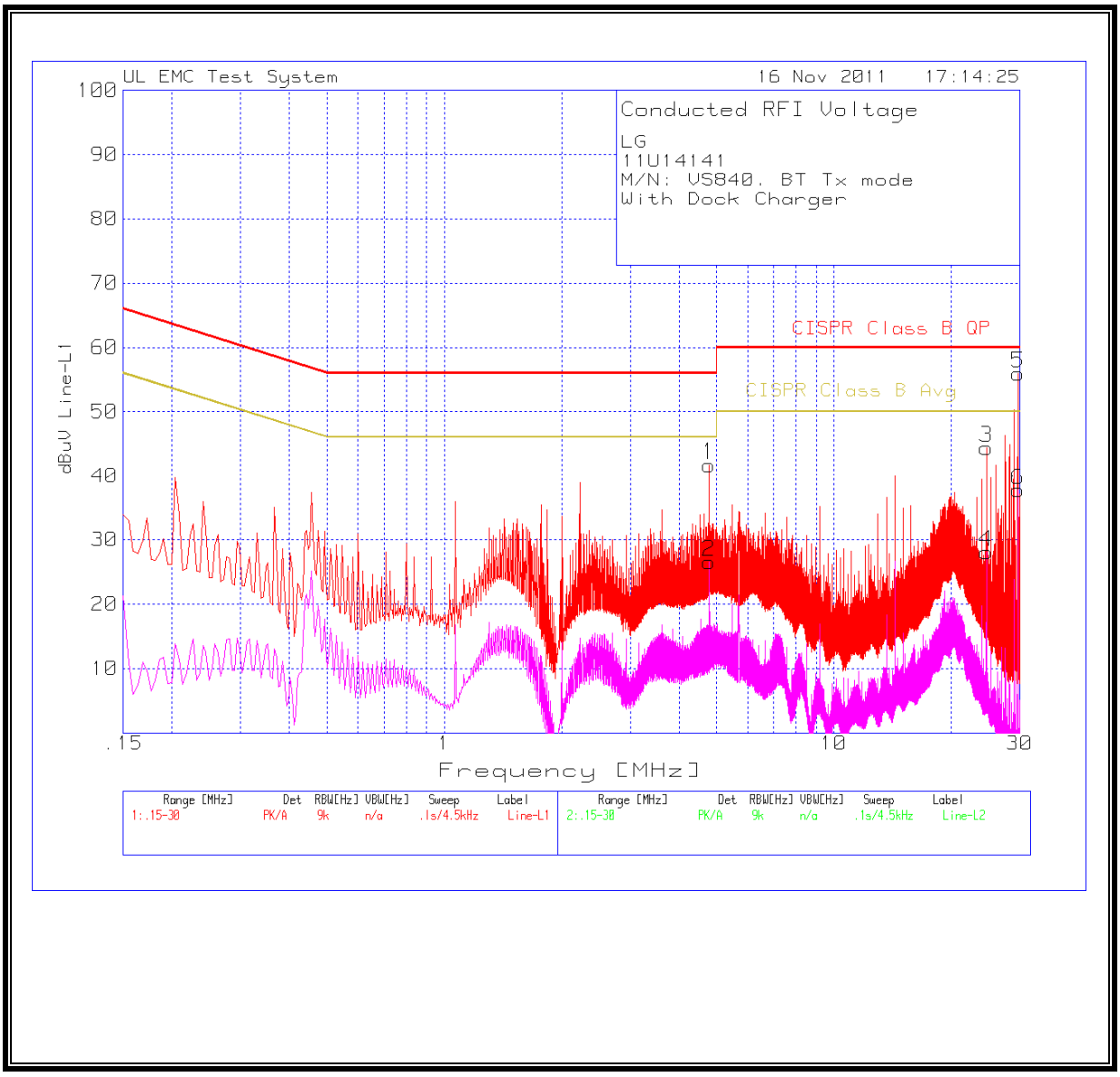


RESULTS (EUT WITH WIRELESS CHARGING PAD AND AC-DC ADAPTER)

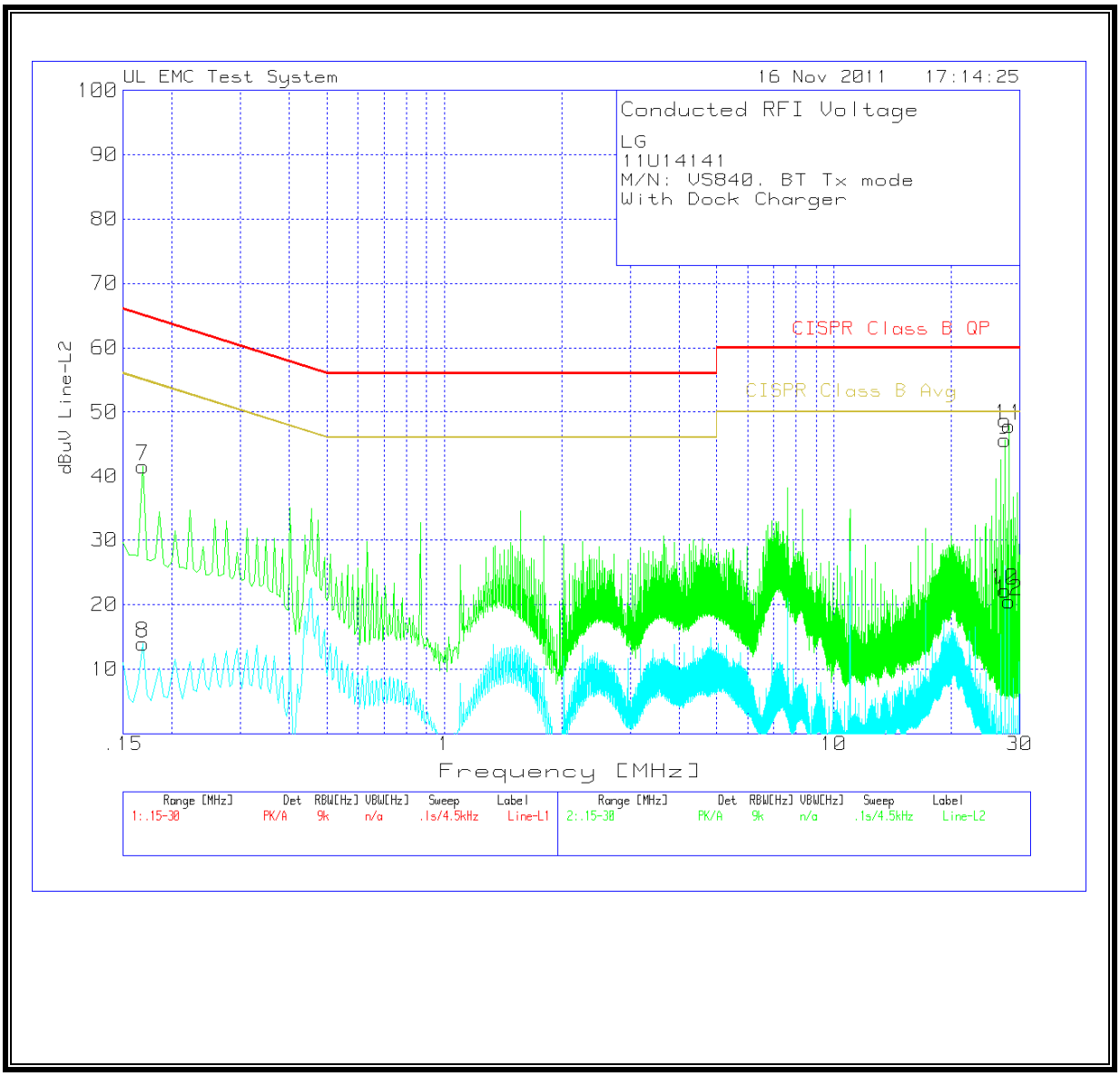
6 WORST EMISSIONS

LG								
11U14141								
M/N: VS840. BT Tx mode								
With Dock Charger								
Line-L1 .15 - 30MHz								
Test Frequency	Meter Reading	Detector	Lisn T25 Path Loss Line 1.TXT [dB]	dBuV	CISPR Class B QP	Margin	CISPR Class B Avg	Margin
4.7895	41.45	PK	0.3	41.75	56	-14.25	-	-
4.7895	26.26	Av	0.3	26.56	56	-29.44	46	-19.44
24.6255	43.92	PK	0.5	44.42	60	-15.58	-	-
24.6255	27.6	Av	0.5	28.1	60	-31.9	50	-21.9
29.7645	55.38	PK	0.6	55.98	60	-4.02	-	-
29.7645	37.09	Av	0.6	37.69	60	-22.31	50	-12.31
Line-L2 .15 - 30MHz								
0.168	39.91	PK	1.7	41.61	65.1	-23.49	-	-
0.168	12.26	Av	1.7	13.96	65.1	-51.14	55.1	-41.14
27.4605	45.05	PK	0.6	45.65	60	-14.35	-	-
27.4605	21.58	Av	0.6	22.18	60	-37.82	50	-27.82
28.167	47.21	PK	0.6	47.81	60	-12.19	-	-
28.167	19.9	Av	0.6	20.5	60	-39.5	50	-29.5
PK - Peak detector								
QP - Quasi-Peak detector								

LINE 1 RESULTS



LINE 2 RESULTS

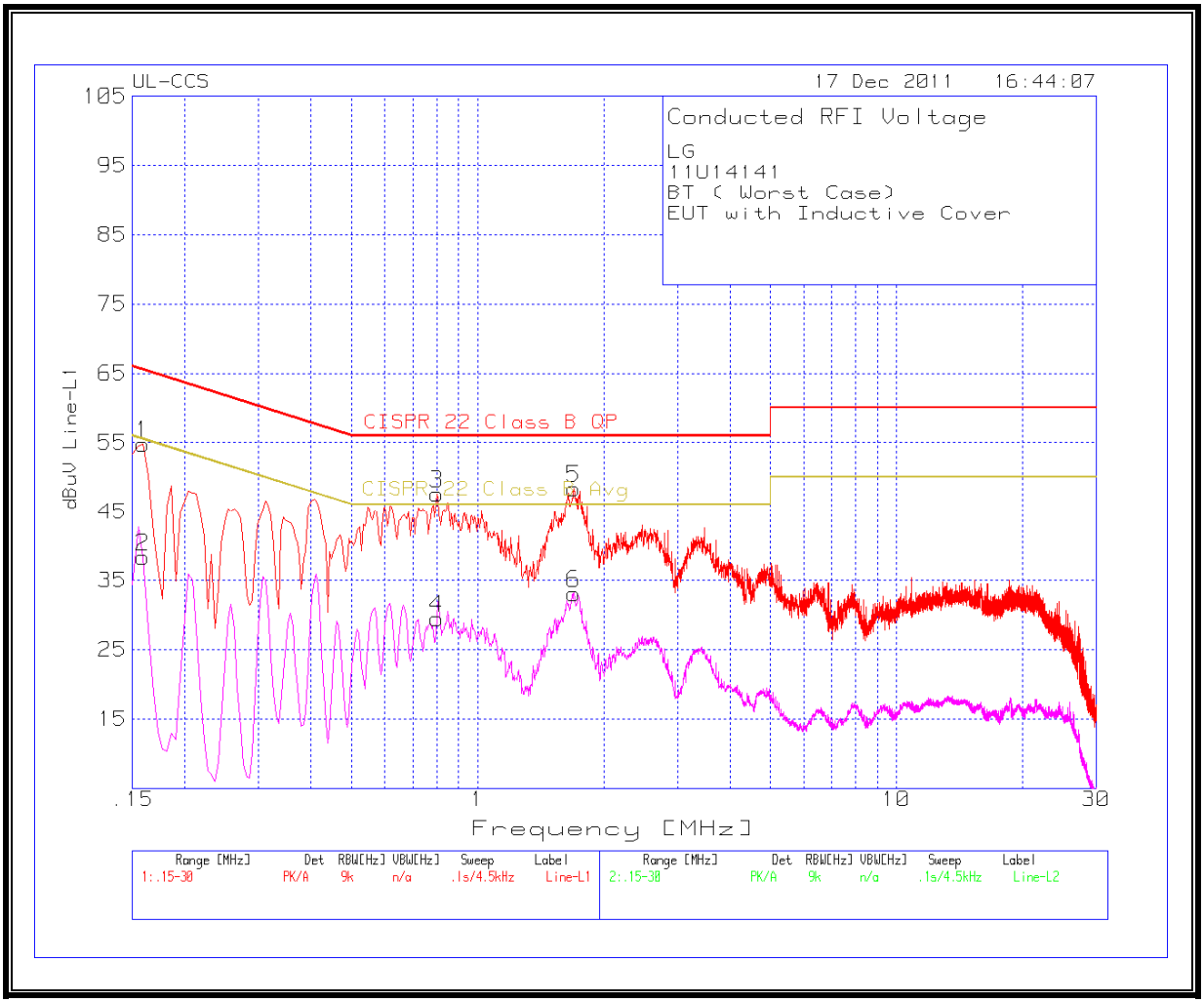


INDUCTIVE COVER

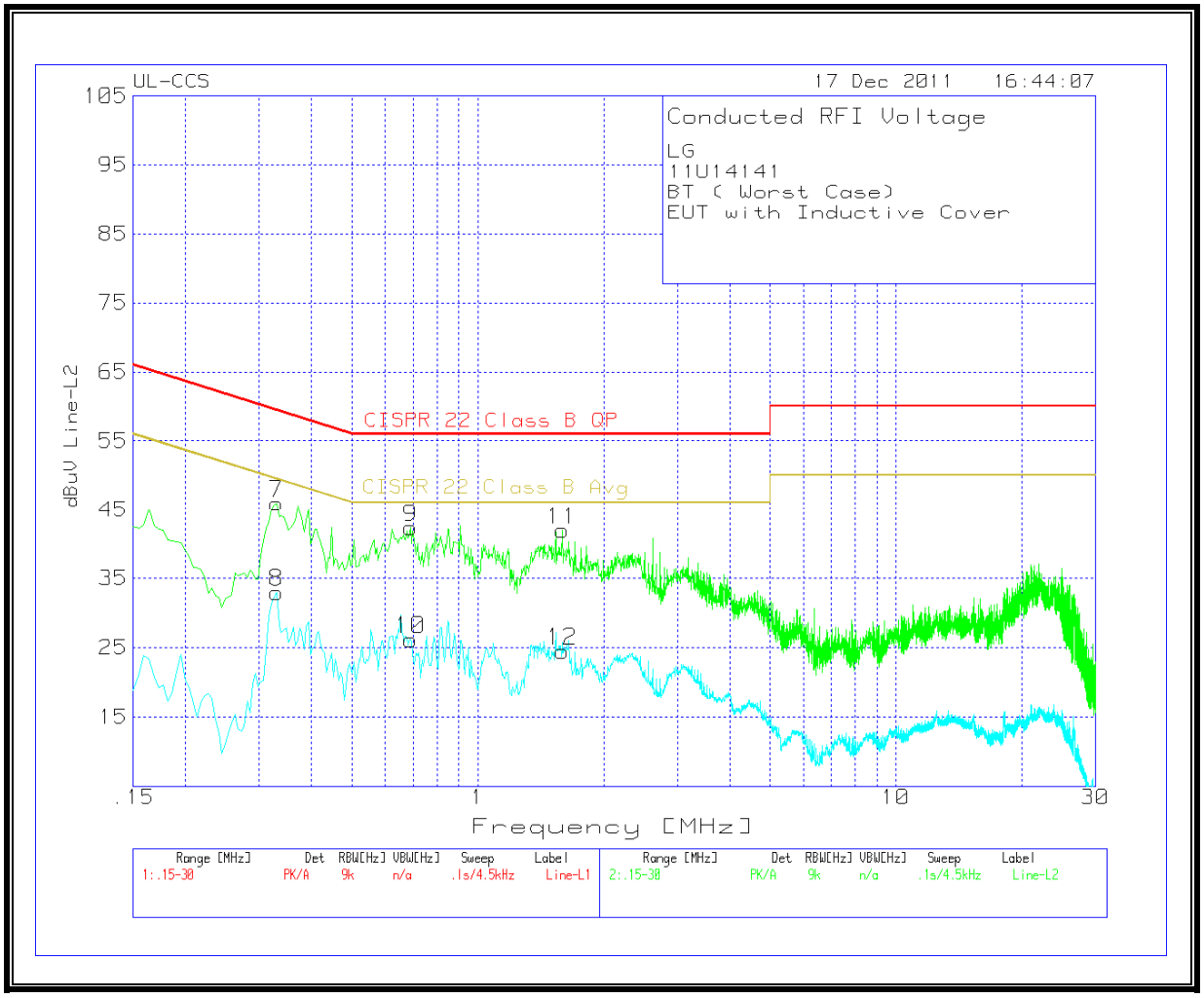
6 WORST EMISSIONS

LG							
11U14141							
BT (Worst Case)							
EUT with Inductive Cover							
Line-L1 .15 - 30MHz							
Frequency	Reading	Detector	dBuV	Class B QP	Margin	Class B Avg	Margin
0.159	54.64	PK	54.74	65.5	-10.76	-	-
0.159	38.25	Av	38.35	-	-	55.5	-17.15
0.798	47.54	PK	47.64	56	-8.36	-	-
0.798	29.37	Av	29.47	-	-	46	-16.53
1.698	48.19	PK	48.39	56	-7.61	-	-
1.698	32.84	Av	33.04	-	-	46	-12.96
Line-L2 .15 - 30MHz							
Frequency	Reading	Detector	dBuV	Class B QP	Margin	Class B Avg	Margin
0.33	45.83	PK	45.93	59.5	-13.57	-	-
0.33	32.85	Av	32.95	-	-	49.5	-16.55
0.69	42.27	PK	42.37	56	-13.63	-	-
0.69	26.04	Av	26.14	-	-	46	-19.86
1.59	41.71	PK	41.91	56	-14.09	-	-
1.59	24.3	Av	24.5	-	-	46	-21.5

LINE 1 RESULTS



LINE 2 RESULTS

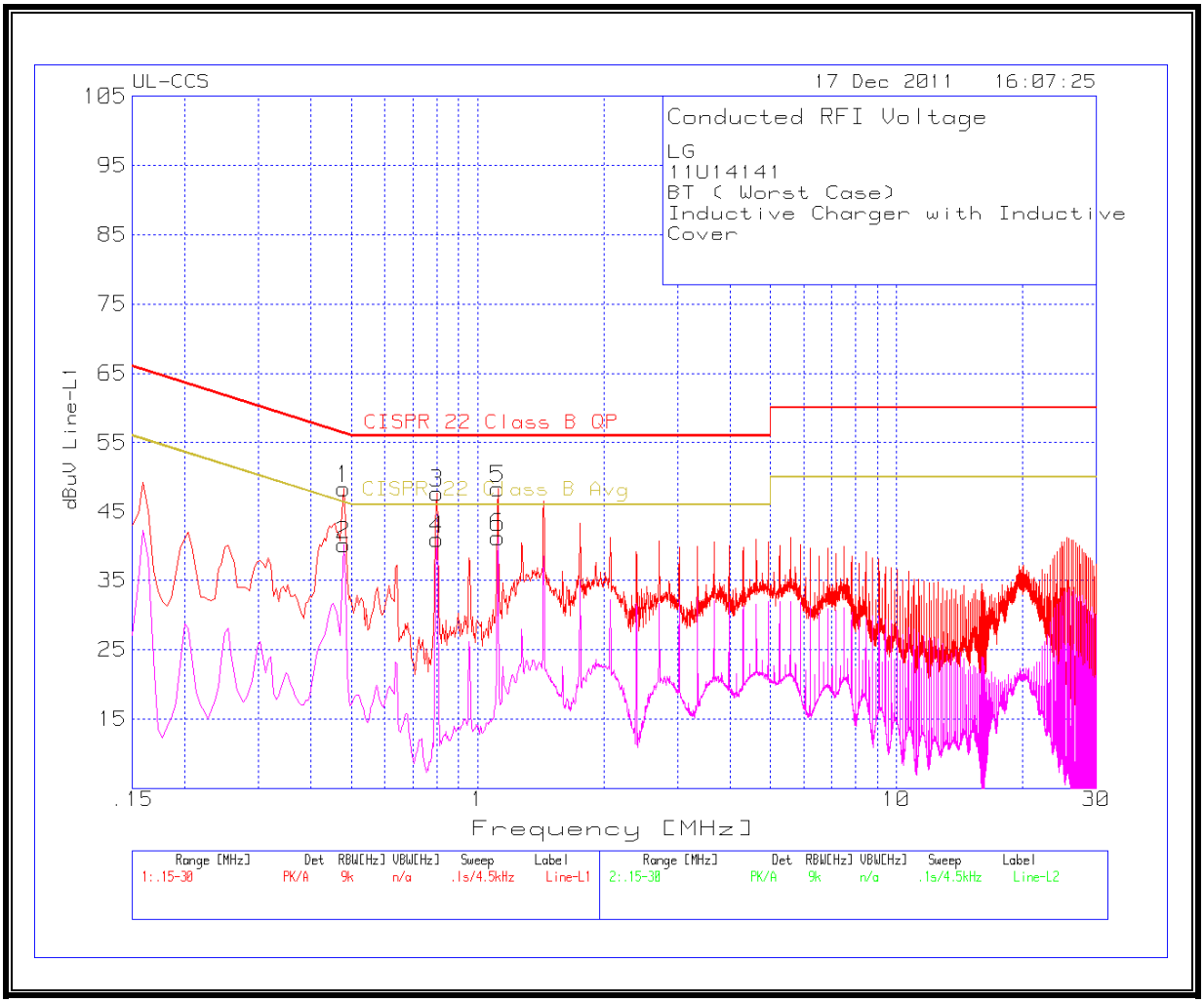


INDUCTIVE CHARGER WITH INDUCTIVE COVER

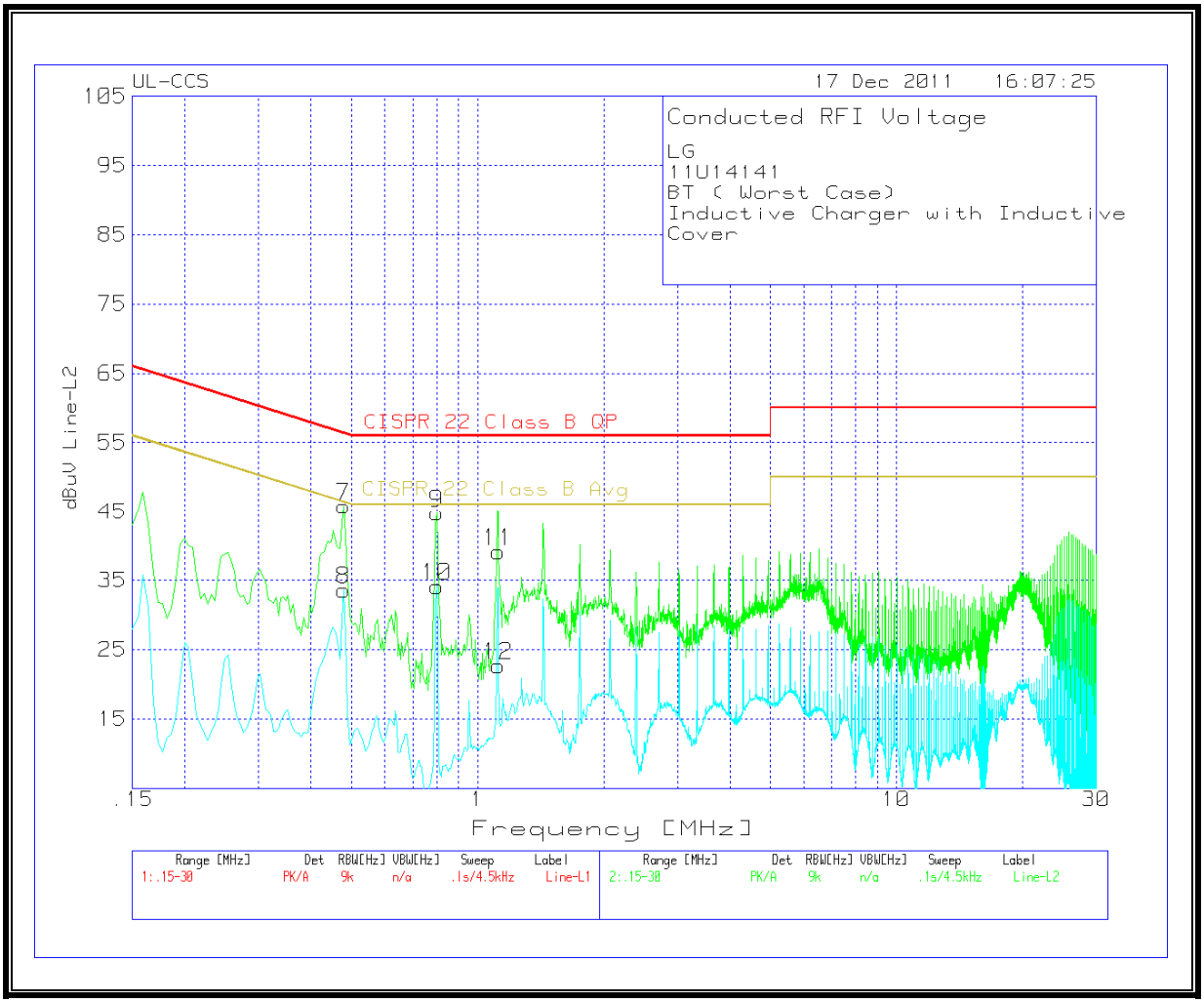
6 WORST EMISSIONS

LG							
11U14141							
BT (Worst Case)							
Inductive Charger with Inductive							
Cover							
Line-L1 .15 - 30MHz							
Frequency	Reading	Detector	dBuV	Class B QP	Margin	Class B Avg	Margin
0.4785	48.29	PK	48.39	56.4	-8.01	-	-
0.4785	40	Av	40.1	-	-	46.4	-6.3
0.798	47.65	PK	47.75	56	-8.25	-	-
0.798	40.82	Av	40.92	-	-	46	-5.08
1.1175	48.21	PK	48.31	56	-7.69	-	-
1.1175	41.13	Av	41.23	-	-	46	-4.77
Line-L2 .15 - 30MHz							
Frequency	Reading	Detector	dBuV	Class B QP	Margin	Class B Avg	Margin
0.4785	45.64	PK	45.74	56.4	-10.66	-	-
0.4785	33.44	Av	33.54	-	-	46.4	-12.86
0.798	44.69	PK	44.79	56	-11.21	-	-
0.798	34.05	Av	34.15	-	-	46	-11.85
1.122	38.9	PK	39.1	56	-16.9	-	-
1.122	22.51	Av	22.71	-	-	46	-23.29

LINE 1 RESULTS



LINE 1 RESULTS



10. MAXIMUM PERMISSIBLE EXPOSURE

FCC RULES

§1.1310 The criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of §2.1093 of this chapter.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f^2)	6
30–300	61.4	0.163	1.0	6
300–1500			f/300	6
1500–100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f^2)	30

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)—Continued

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
30–300	27.5	0.073	0.2	30
300–1500			f/1500	30
1500–100,000			1.0	30

f = frequency in MHz
* = Plane-wave equivalent power density

NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

IC RULES

IC Safety Code 6, Section 2.2.1 (a) A person other than an RF and microwave exposed worker shall not be exposed to electromagnetic radiation in a frequency band listed in Column 1 of Table 5, if the field strength exceeds the value given in Column 2 or 3 of Table 5, when averaged spatially and over time, or if the power density exceeds the value given in Column 4 of Table 5, when averaged spatially and over time.

Table 5
Exposure Limits for Persons Not Classed As RF and Microwave Exposed Workers (Including the General Public)

1 Frequency (MHz)	2 Electric Field Strength; rms (V/m)	3 Magnetic Field Strength; rms (A/m)	4 Power Density (W/m^2)	5 Averaging Time (min)
0.003–1	280	2.19		6
1–10	$280/f$	$2.19/f$		6
10–30	28	$2.19/f$		6
30–300	28	0.073	2*	6
300–1 500	$1.585f^{0.5}$	$0.0042f^{0.5}$	$f/150$	6
1 500–15 000	61.4	0.163	10	6
15 000–150 000	61.4	0.163	10	$616\,000/f^{1.2}$
150 000–300 000	$0.158f^{0.5}$	$4.21 \times 10^{-4}f^{0.5}$	$6.67 \times 10^{-5}f$	$616\,000/f^{1.2}$

* Power density limit is applicable at frequencies greater than 100 MHz.

Notes: 1. Frequency, f, is in MHz.
2. A power density of 10 W/m^2 is equivalent to 1 mW/cm^2.
3. A magnetic field strength of 1 A/m corresponds to 1.257 microtesla (μT) or 12.57 milligauss (mG).

EQUATIONS

Power density is given by:

S = EIRP / (4 * Pi * D^2)

where

S = Power density in W/m^2
EIRP = Equivalent Isotropic Radiated Power in W
D = Separation distance in m

Power density in units of W/m^2 is converted to units of mWc/m^2 by dividing by 10.

Distance is given by:

D = SQRT (EIRP / (4 * Pi * S))

where

D = Separation distance in m
EIRP = Equivalent Isotropic Radiated Power in W
S = Power density in W/m^2

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

Total EIRP = (P1 * G1) + (P2 * G2) + ... + (Pn * Pn)

where

Px = Power of transmitter x
Gx = Numeric gain of antenna x

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

LIMITS

From FCC §1.1310 Table 1 (B), the maximum value of S = 1.0 mW/cm^2

From IC Safety Code 6, Section 2.2 Table 5 Column 4, S = 10 W/m^2

RESULTS

(MPE distance equals 20 cm)

Band	Mode	Separation Distance (m)	Output Power (dBm)	Antenna Gain (dBi)	IC Power Density (W/m^2)	FCC Power Density (mW/cm^2)
2.4 GHz	Bluetooth	0.20	9.93	-3.16	0.01	0.001