FCC CFR47 PART 15 SUBPART C

CERTIFICATION TEST REPORT

FOR

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

MODEL NUMBER: LG-VS930 and VS930

FCC ID: ZNFVS930

REPORT NUMBER: 12U14331-3, Revision A

ISSUE DATE: May 25, 2012

Prepared for
LG ELECTRONICS INC.
60-39 GASAN-DONG, GEUMCHEON-GU
SEOUL, KOREA 153-801, SOUTH KOREA

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

NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
	04/27/2012	Original	T. LEE
A	05/25/2012	Added AFH mode	T. LEE

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	LG ELECTRONICS 60-39 GASAN-DONG, GEUMCHEON-GU SEOUL, SOUTH KOREA, 153-801
EUT DESCRIPTION:	CELL PHONE WITH GSM/CDMA/WCDMA/LTE+BT LE+802.11ABGN (HT20) WITH WIRELESS BACK COVER
MODEL:	LG-VS930
SERIAL NUMBER:	990000760004152
DATE TESTED:	APRIL 02-APRIL 20, 2012

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

Compliance Certification Services (UL CCS) tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL CCS based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL CCS will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For UL CCS By:

TIM LEE
STAFF ENGINEER
UL CCS

Tested By:

CHIN PANG
EMC ENGINEER
UL CCS

2. TEST METHODOLOGY

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

3. FACILITIES AND ACCREDITATION

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

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

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

4.3. MEASUREMENT UNCERTAINTY

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

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

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

4.4. DESCRIPTION OF EUT

The EUT is a Cell Phone with GSM/CDMA/WCDMA/LTE + BT + 802.11abgn + NFC w/ Wireless Back Cover

The unit supports AFH mode. The manufacturer attested the following.

- It is in compliance with Bluetooth Specification 1.2 or later specification.
- The number of hopping channel in AFH mode is 79 channels
- The output power do not transmit over than 125 mW
- The channel separation is based upon 2/3 of 20 dB channel bandwidth

4.5. 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	9.62	9.16
2402 - 2480	DQPSK	9.54	8.99
2402 - 2480	Enhanced 8PSK	10.06	10.14

4.6. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PIFA (Planar Inverted F Antenna) with a maximum peak gain of -2.44 dBi .

4.1. SOFTWARE AND FIRMWARE

The EUT driver software installed during testing was VS930_0311

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

The firmware used during testing was 3.0.8.00001_g114383

4.2. MODIFICATIONS

A ferrite was added on the Charging Pad’s AC Adapter in order to pass 30-1000MHz emissions test. Ferrite: Manufacture: TDK, Serial Number: ZCAT 2035-0930.

4.3. MODEL DIFFERNECE

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

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

4.5. DESCRIPTION OF TEST SETUP

RADIATED TESTS SUPPORT EQUIPMENT

STANDARD OR INDUCTIVE COVER

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

INDUCTIVE CHARGER WITH INDUCTIVE COVER

PERIPHERAL SUPPORT EQUIPMENT LIST			
Description	**Manufacturer**	**Model**	**Serial Number**
AC ADAPTER	LG ELECTRONICS	WCAD01WT	TA120012180
HEADSET	LG ELECTRONICS	NA	N/A
INDUCTIVE CHARGER PAD	LG ELECTRONICS	WCP-700	A1108WP000002

CONDUCTED TESTS I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identica Ports	Connector Type	Cable Type	Cable Length	Remarks
1	DC	1	MINI USB	UN-SHELDED	1.0m	N/A
2	RF	1	RF	SHELDED	0.1m	N/A
3	RF	1	SMA	SHELDED	0.6 m	N/A

RADIATED TESTS I/O CABLES

STANDARD OR INDUCTIVE COVER

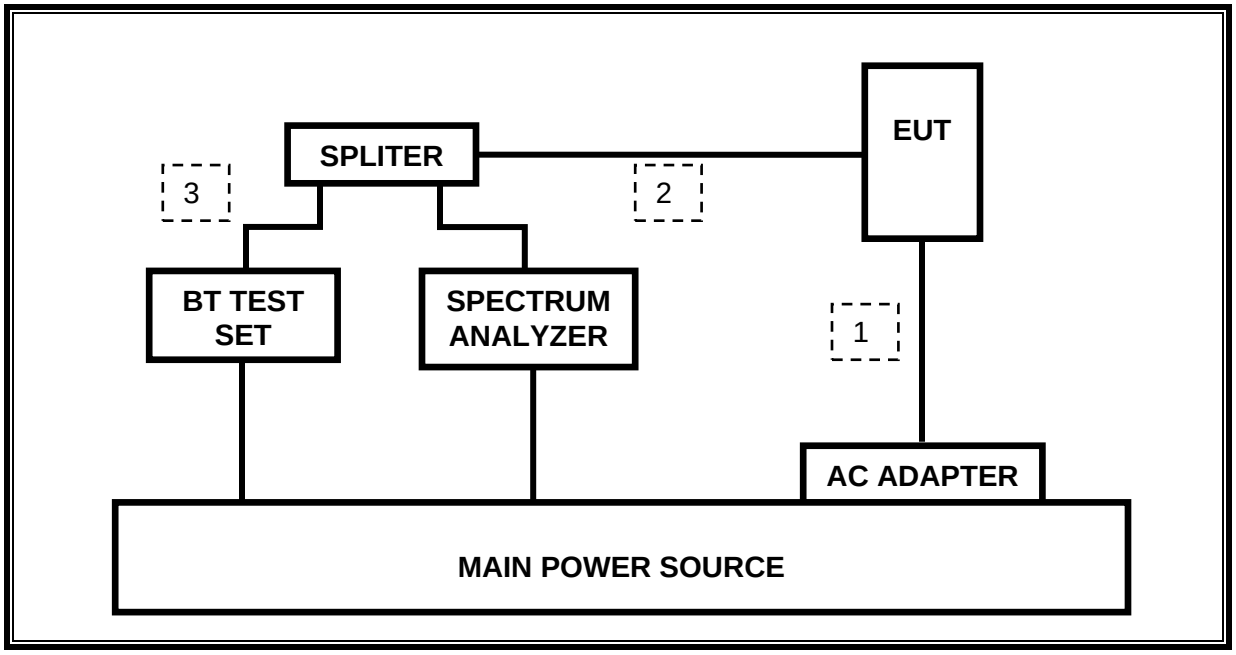
I/O CABLE LIST						
Cable No.	Port	# of Identica Ports	Connector Type	Cable Type	Cable Length	Remarks
1	DC	1	MINI USB	UN-SHELDED	1.0m	N/A
2	AUDIO	1	MINI JACK	UN-SHELDED	1.0m	Volume control on cable

INDUCTIVE CHARGER WITH INDUCTIVE COVER

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

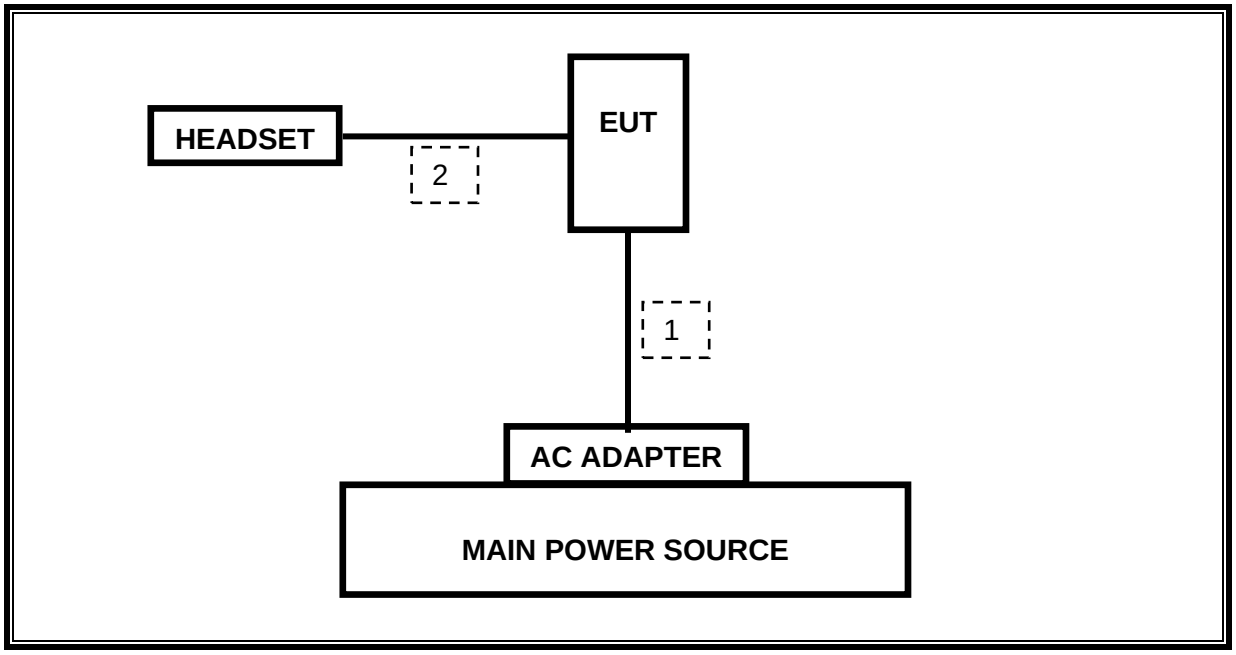
CONDUCTED SETUP DIAGRAM FOR TESTS

STANDARD OR INDUCTIVE COVER

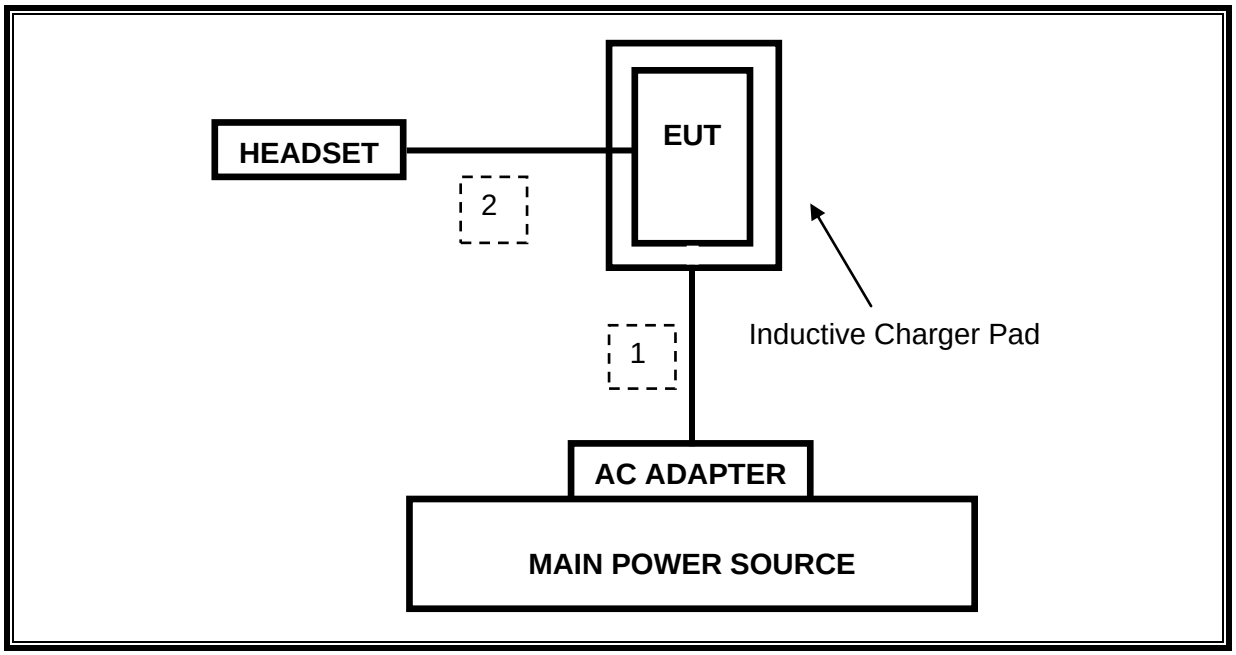


RADIATED SETUP DIAGRAM FOR TESTS

STANDARD OR INDUCTIVE COVER



INDUCTIVE CHRGER AND INDUCTIVE COVER



5. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Asset**	**Cal Due**
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	07/12/12
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00558	11/11/12
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C00986	03/22/13
Antenna, Horn, 18 GHz	EMCO	3115	C00783	06/29/12
Antenna, Horn, 40 GHz	ARA	MWH-2640/B	C00981	06/14/12
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01016	07/12/12
Reject Filter, 2.4-2.5 GHz	Micro-Tronics	BRM50702	N02685	CNR
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	11/10/12
EMI Test Receiver, 9 kHz-7 GHz	R & S	ESCI 7	1000741	07/06/12
Peak Power Meter	Agilent / HP	E4416A	C00963	03/22/13
Peak / Average Power Sensor	Agilent / HP	E9327A	C00964	12/13/12
BT Test set	Agilent / HP	N4010A	N/A	04/22/13
Directional Coupler	RF-Lambda	RFDC5M06G15	None	CNR

6. ANTENNA PORT TEST RESULTS

6.1. BASIC DATA RATE GFSK MODULATION

6.1.1. 20 dB BANDWIDTH

LIMIT

None; for reporting purposes only.

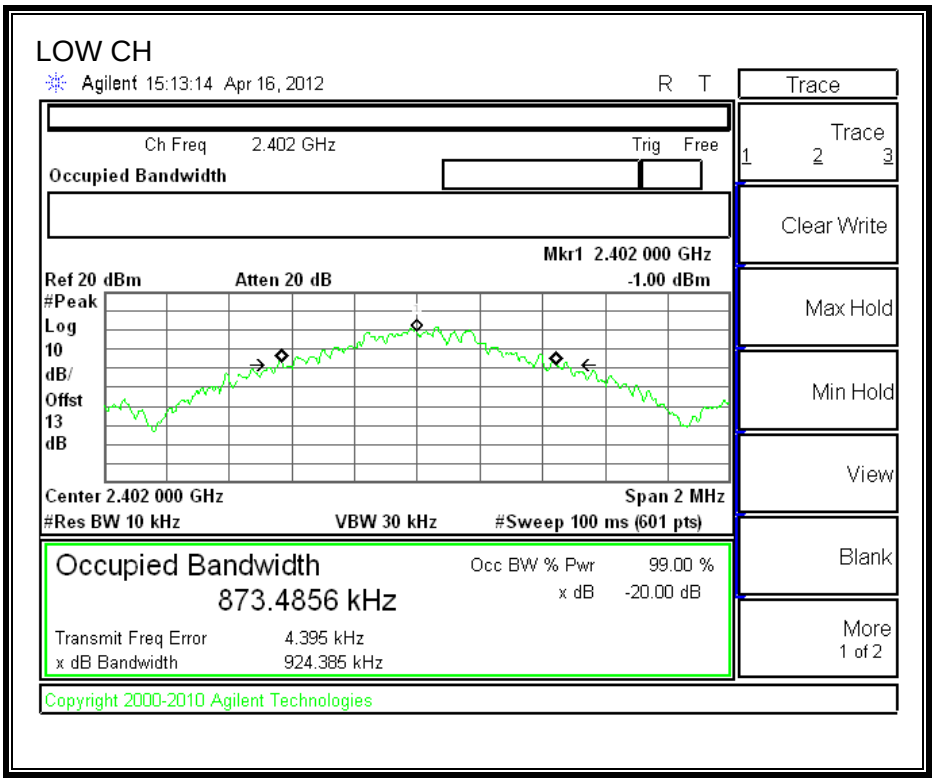
TEST PROCEDURE

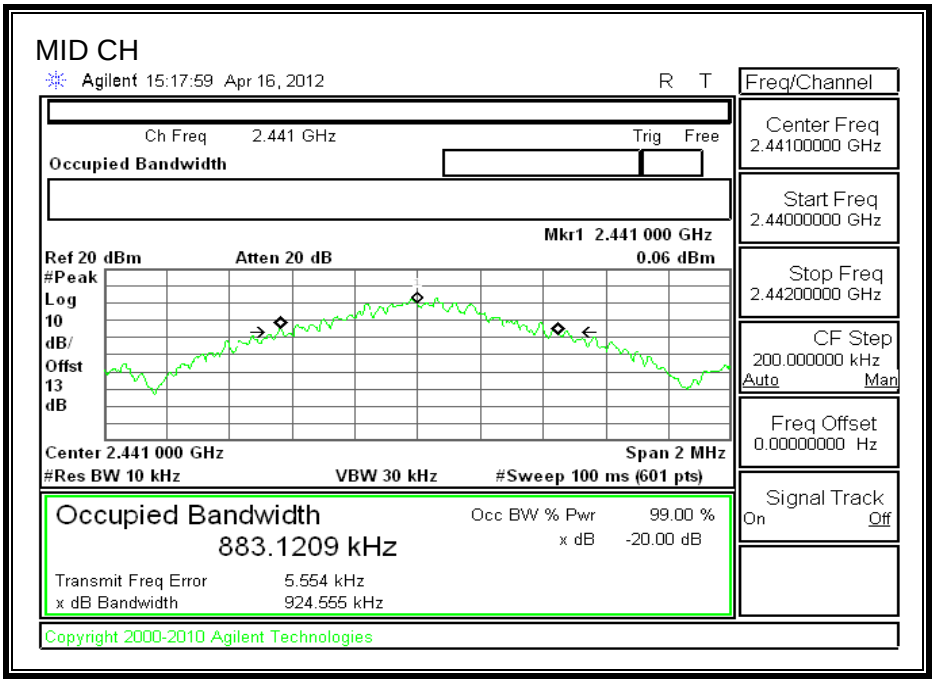
The transmitter output is connected to a spectrum analyzer. The RBW is set to ≥ 1% of the 20 dB bandwidth. The VBW is set to ≥ RBW. The sweep time is coupled.

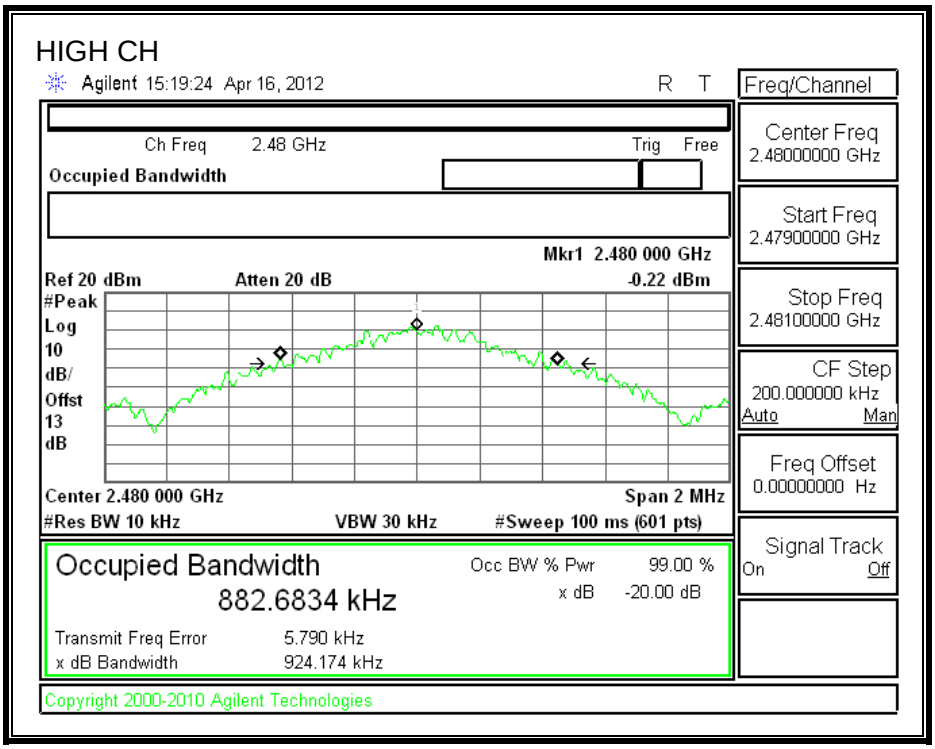
RESULTS

Channel	Frequency (MHz)	20 dB Bandwidth (kHz)
Low	2402	873.4856
Middle	2441	883.1209
High	2480	882.6834

20 dB BANDWIDTH







6.1.2. 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.

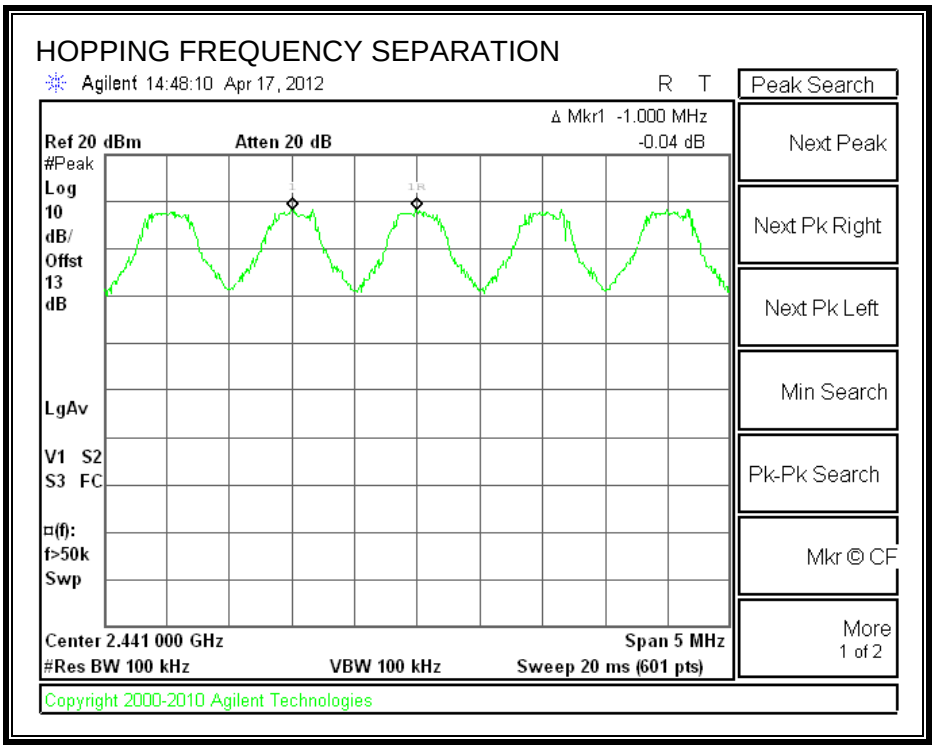
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than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



6.1.3. 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

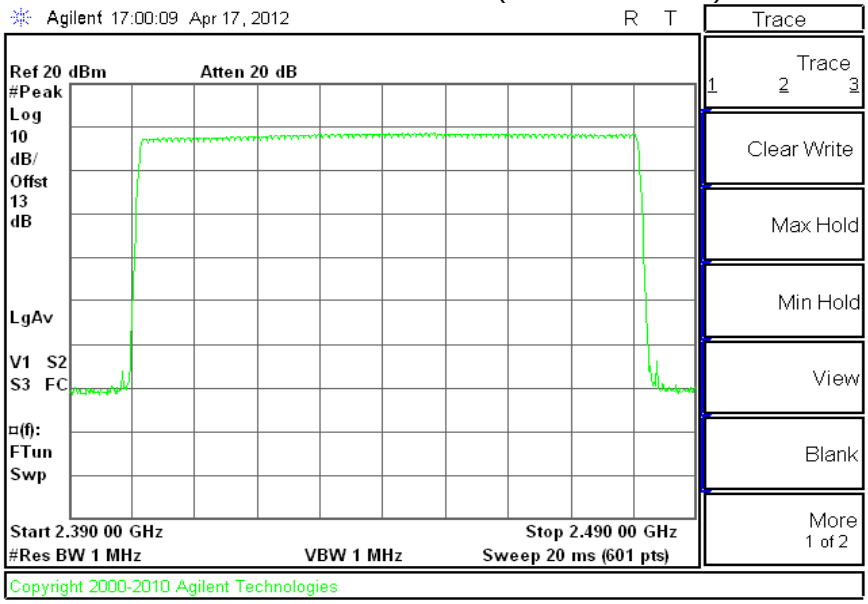
The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

RESULTS

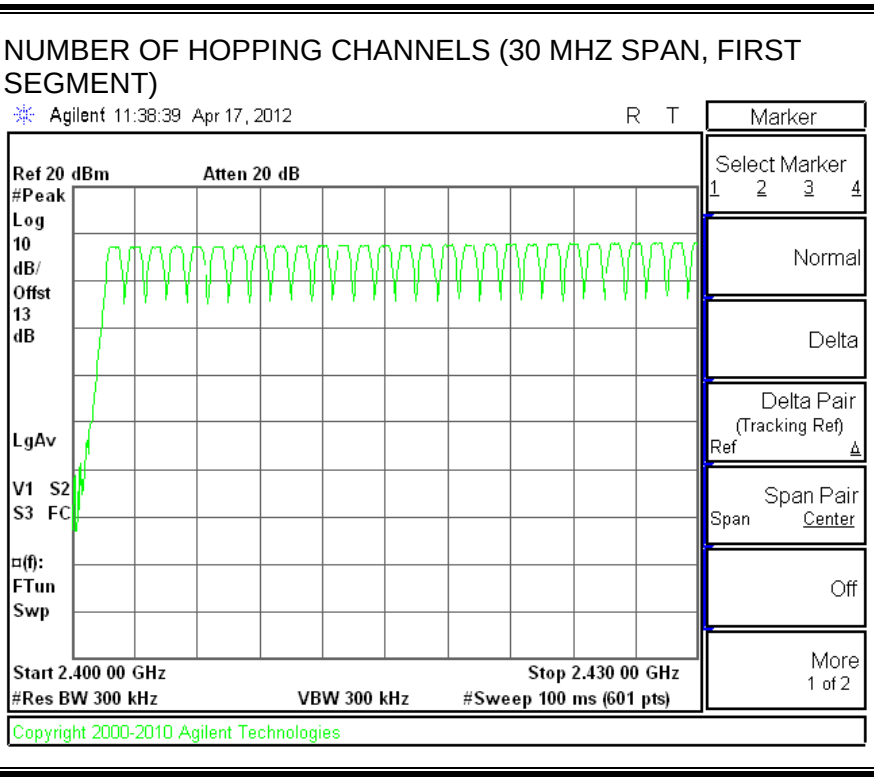
79 Channels observed.

NUMBER OF HOPPING CHANNELS

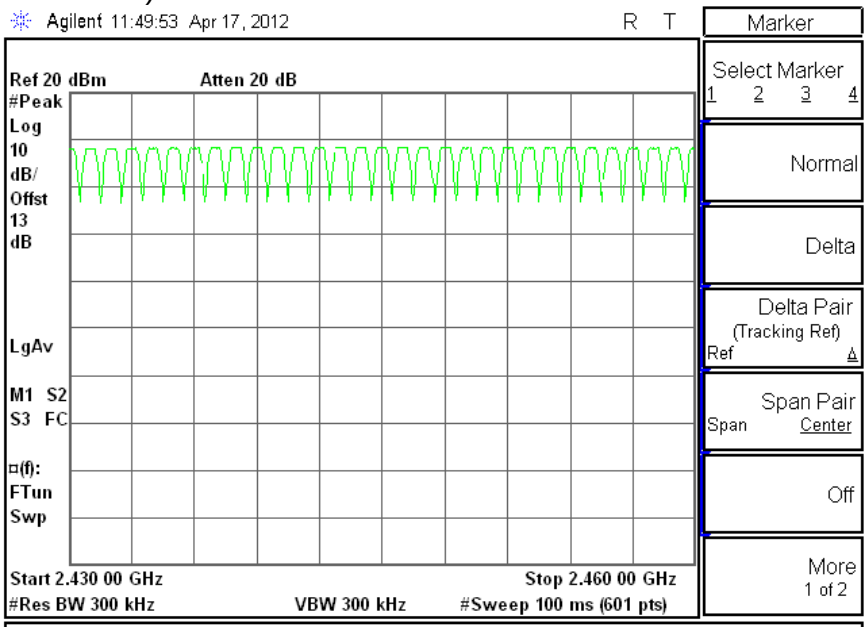
NUMBER OF HOPPING CHANNELS (100 MHZ SPAN)



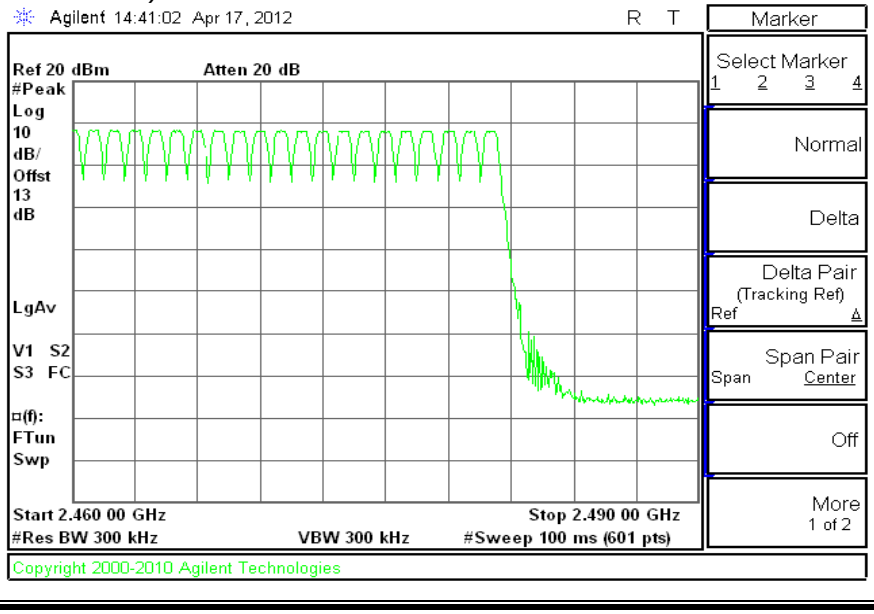
NUMBER OF HOPPING CHANNELS (30 MHZ SPAN, FIRST SEGMENT)



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



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



6.1.4. 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.

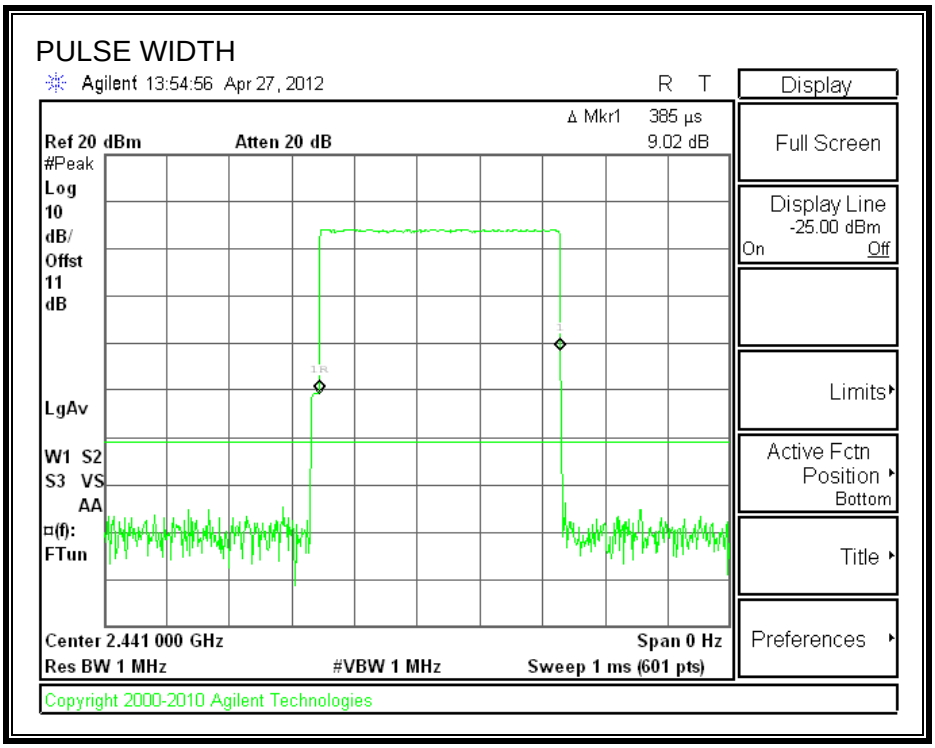
RESULTS

GFSK Mode

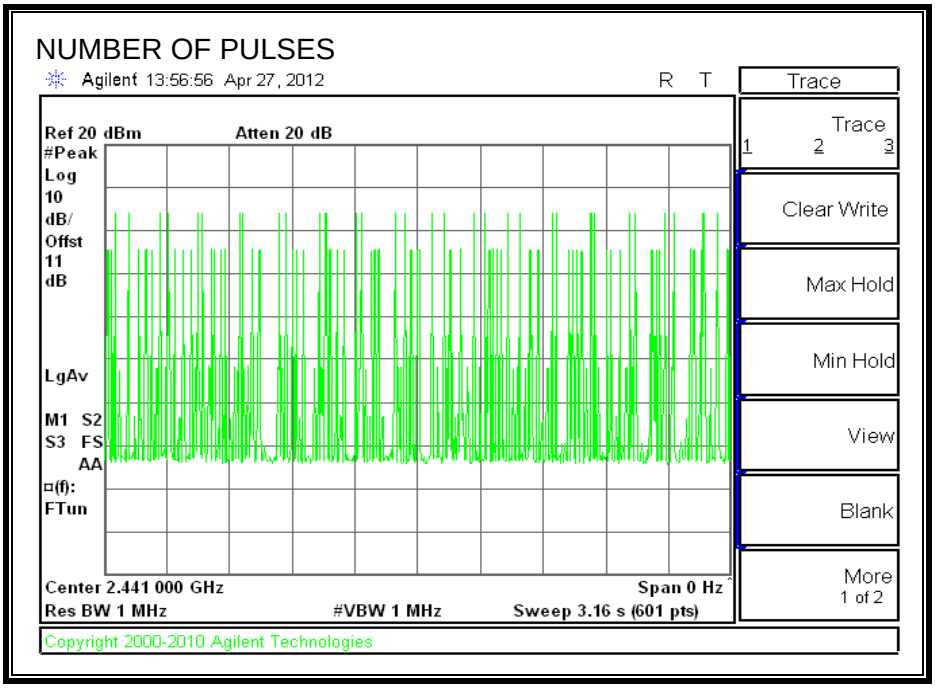
DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of (sec)	Limit (sec)	Margin (sec)
DH1	0.3876	35	0.136	0.4	0.264
DH3	1.642	21	0.345	0.4	0.055
DH5	2.867	13	0.373	0.4	0.027

DH1

PULSE WIDTH

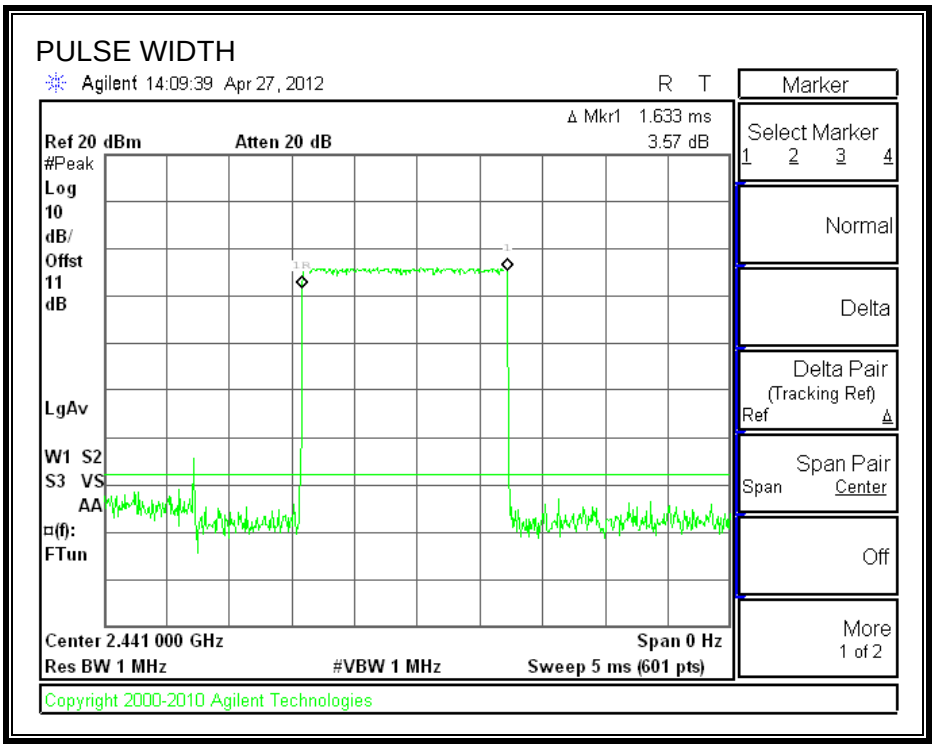


NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD

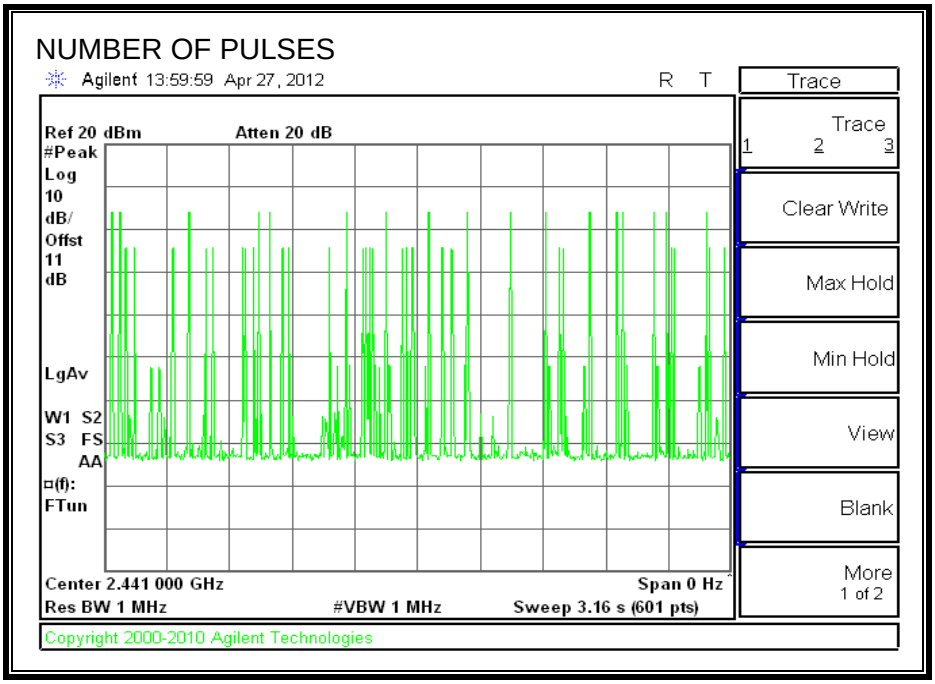


DH3

PULSE WIDTH

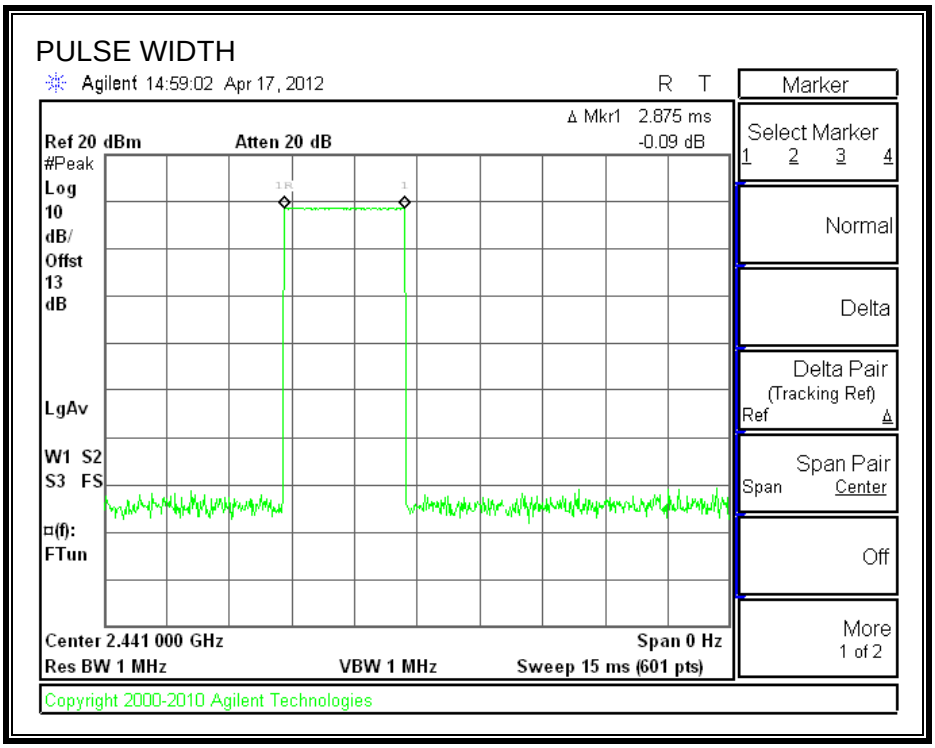


NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD

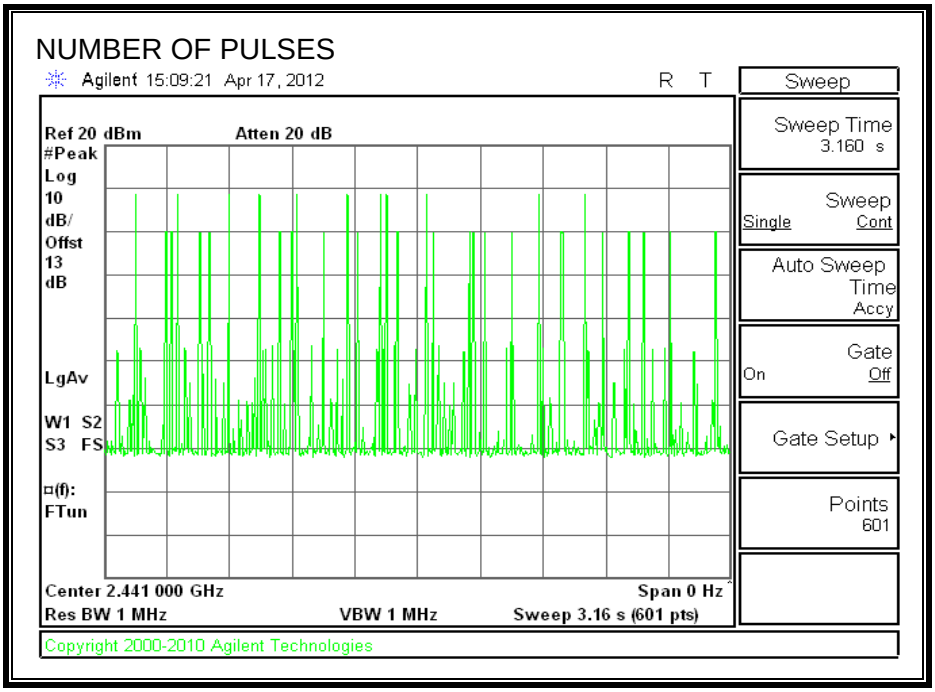


DH5

PULSE WIDTH



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD



6.1.5. 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.

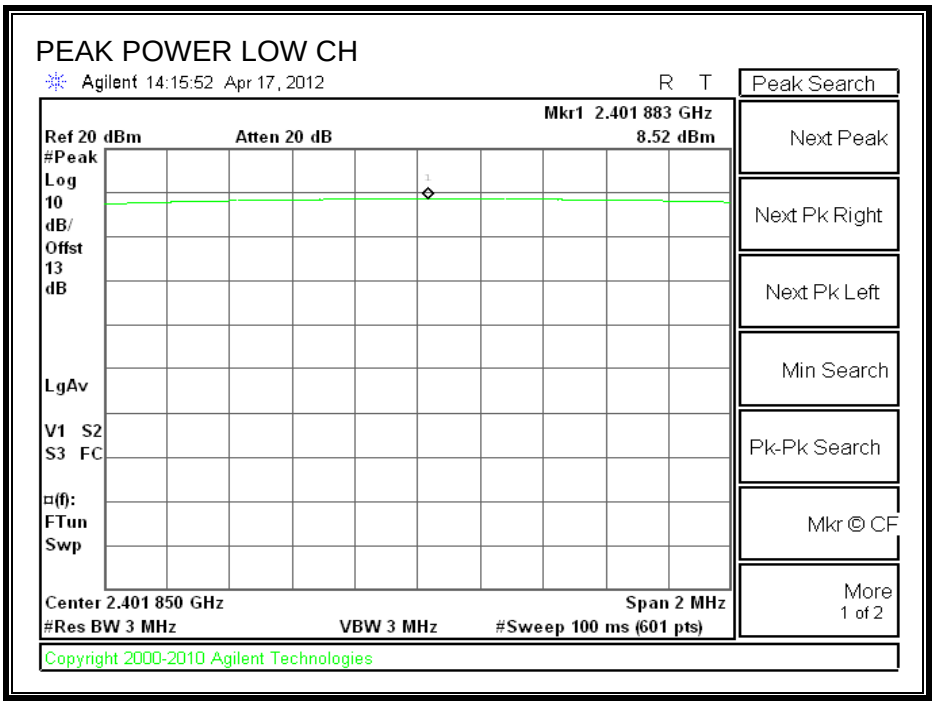
TEST PROCEDURE

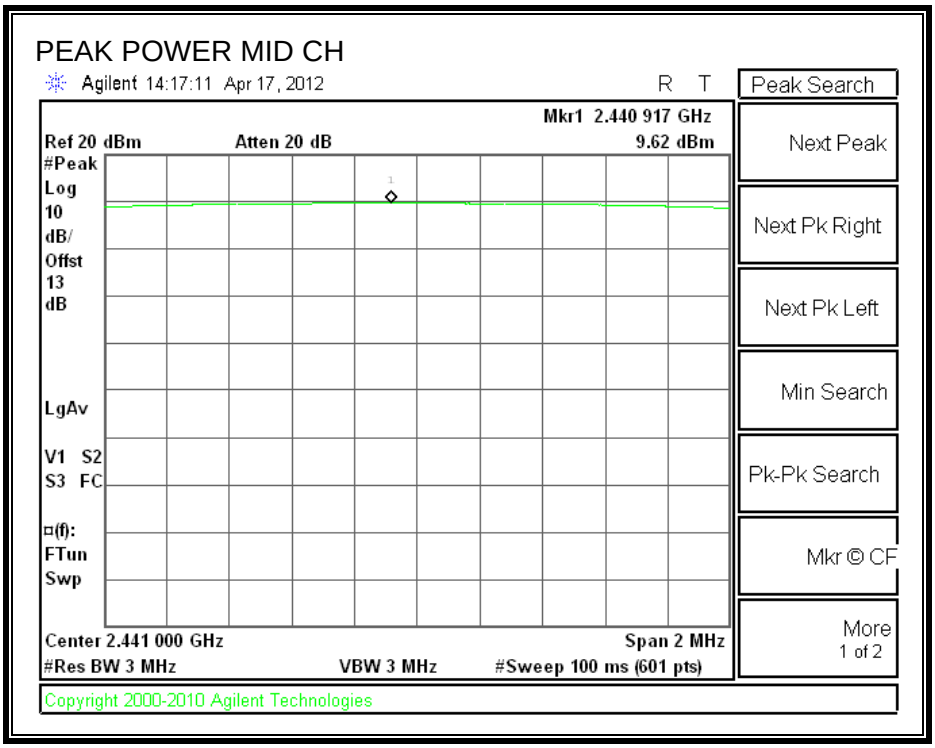
The transmitter output is connected to a spectrum analyzer the analyzer bandwidth is set to a value greater than the 20 dB bandwidth of the EUT.

RESULTS

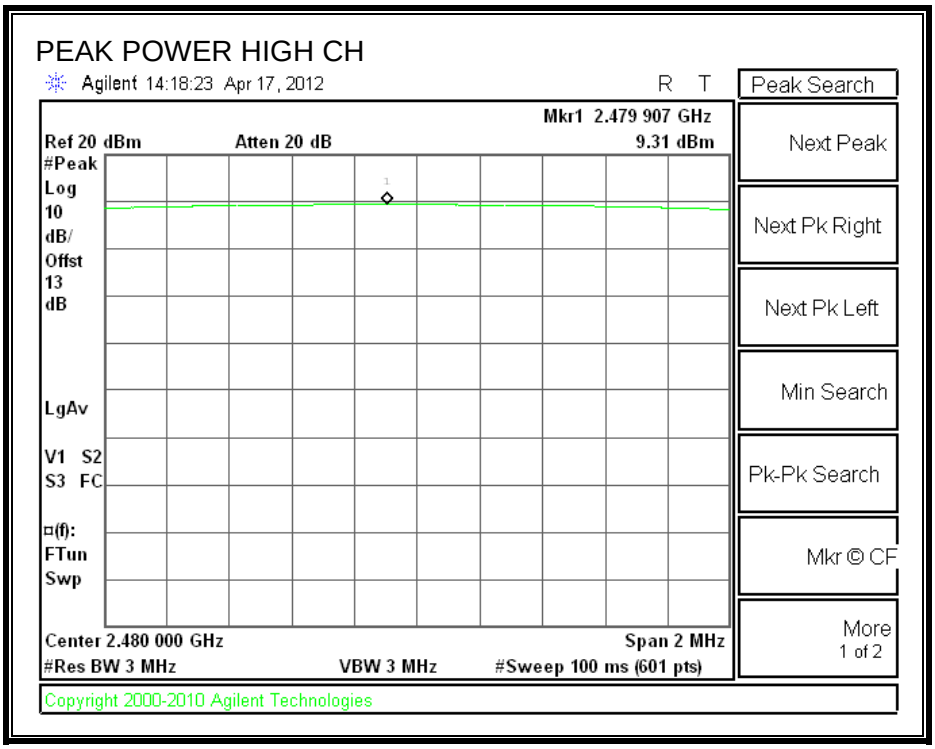
Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	8.52	30	-21.48
Middle	2441	9.62	30	-20.38
High	2480	9.31	30	-20.69

OUTPUT POWER





PEAK POWER HIGH CH



6.1.6. 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 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)	Average Power (dBm)
Low	2402	7.80
Middle	2441	7.90
High	2480	8.50

6.1.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

Limit = -20 dBc

TEST PROCEDURE

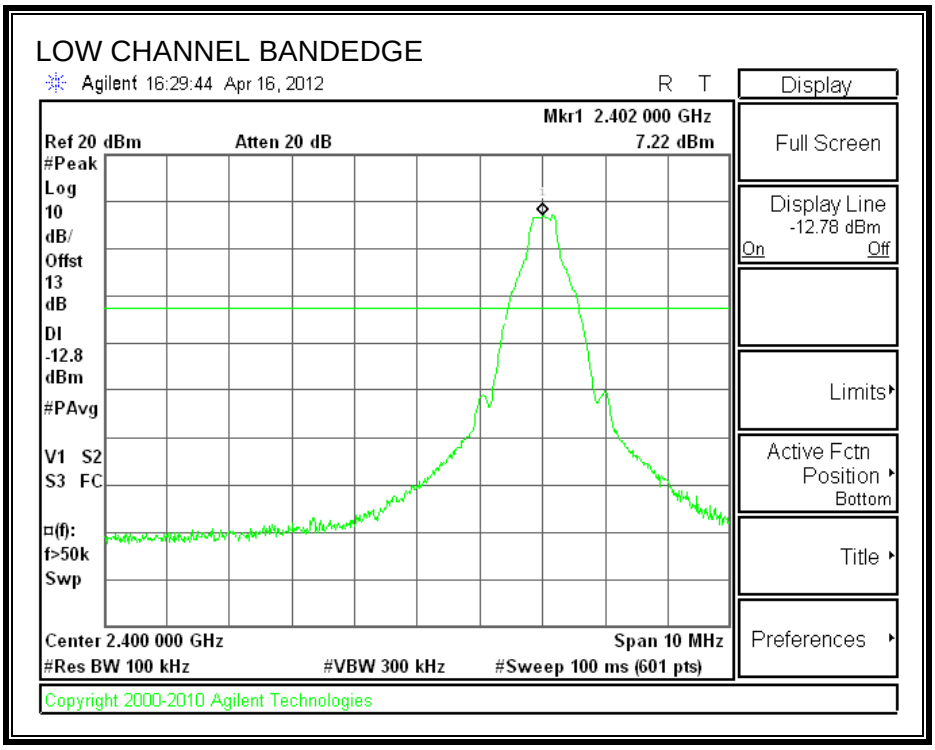
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

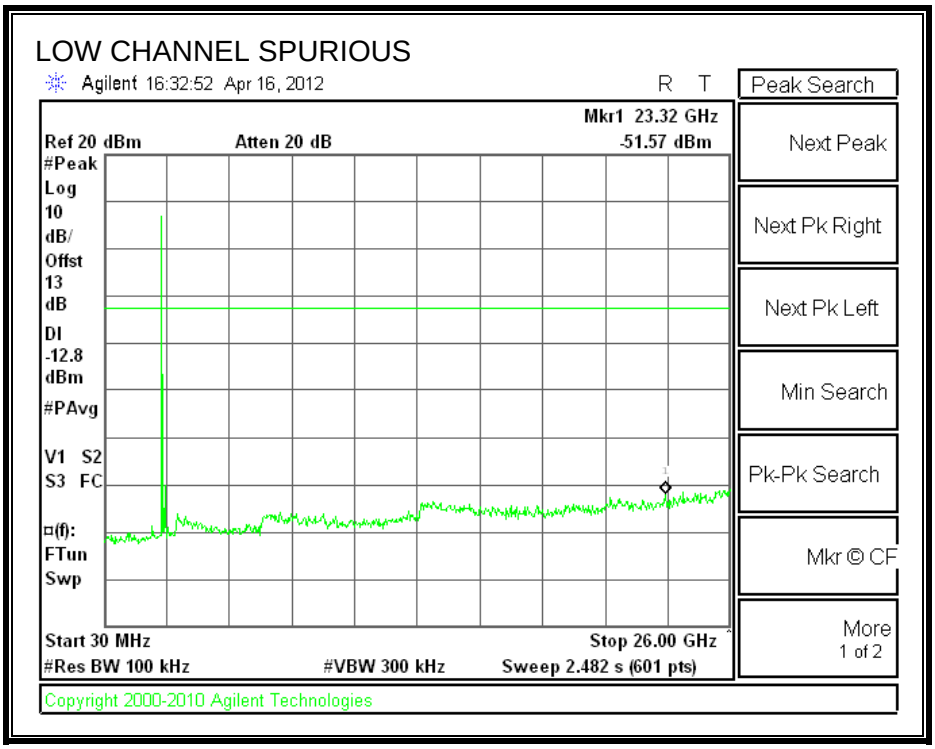
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

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

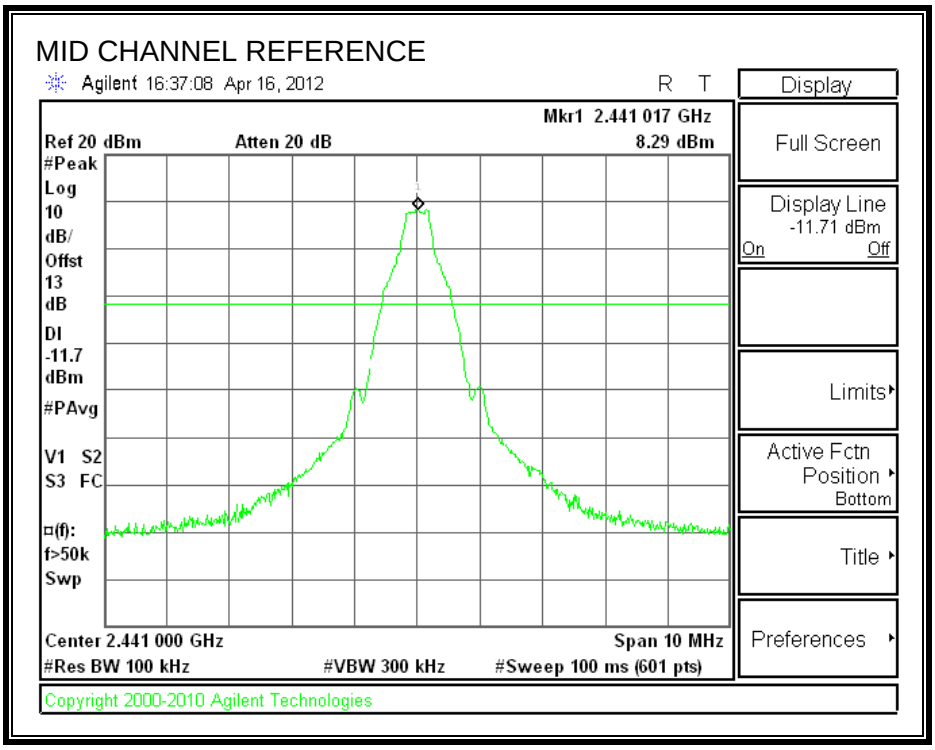
RESULTS

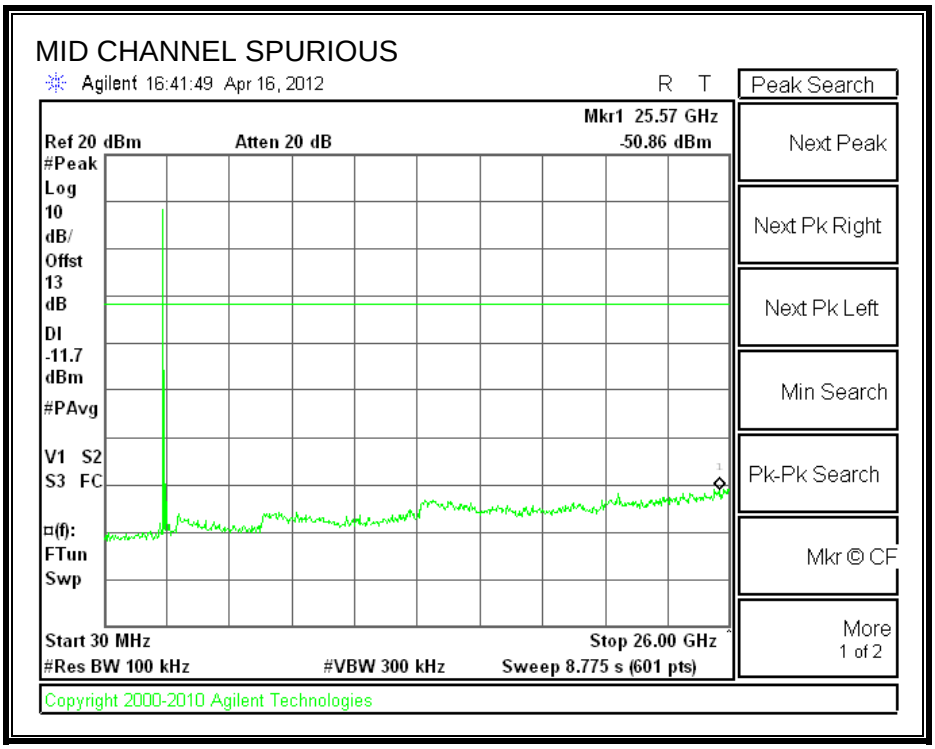
SPURIOUS EMISSIONS, LOW CHANNEL



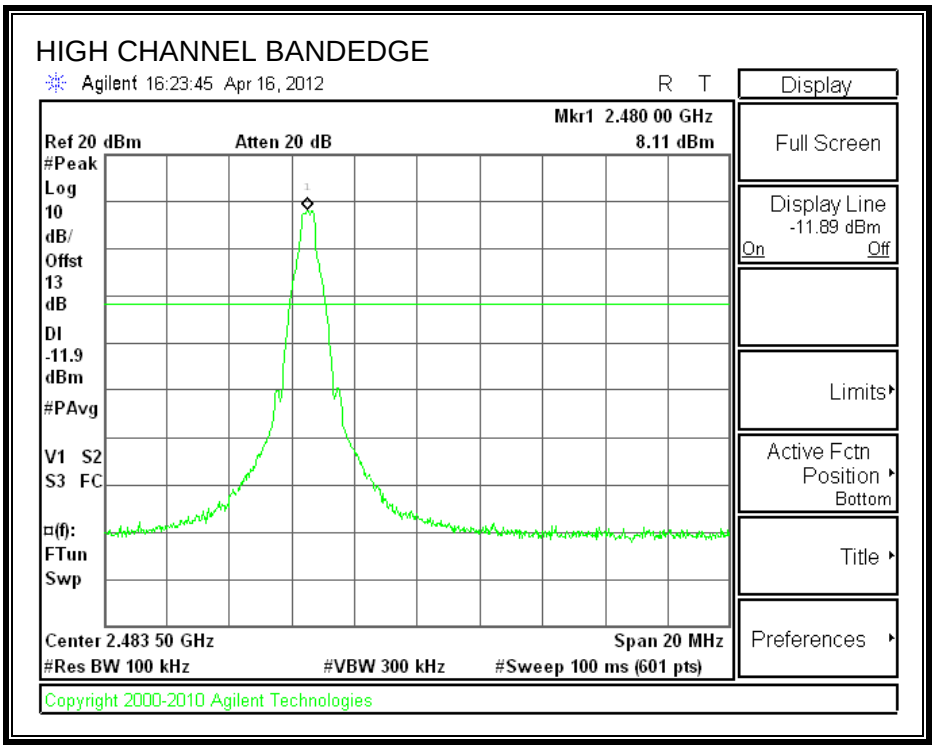


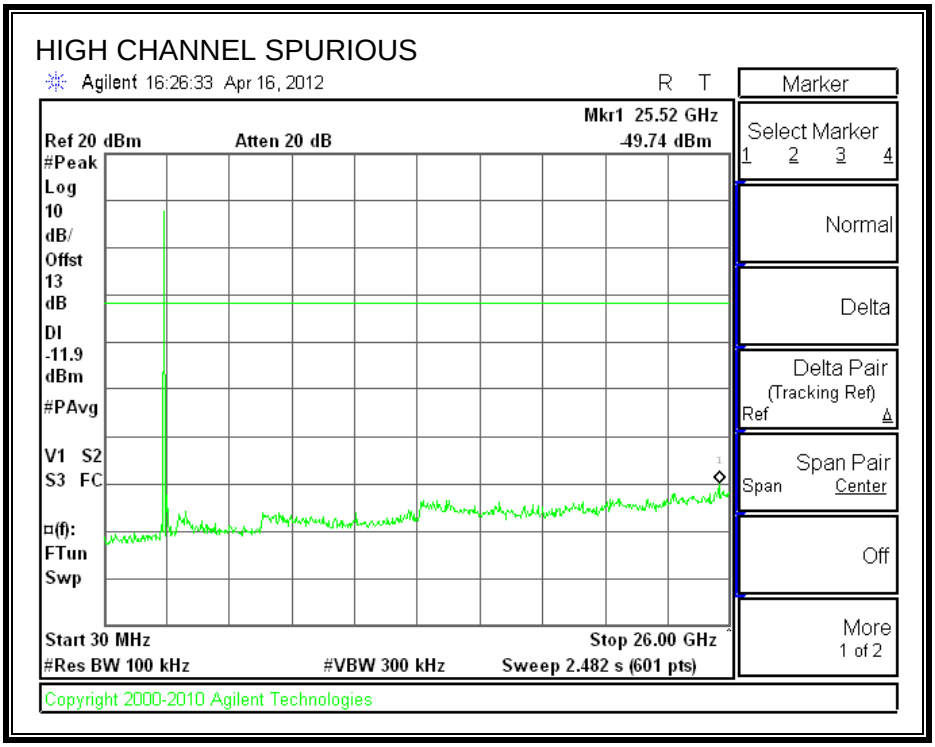
SPURIOUS EMISSIONS, MID CHANNEL





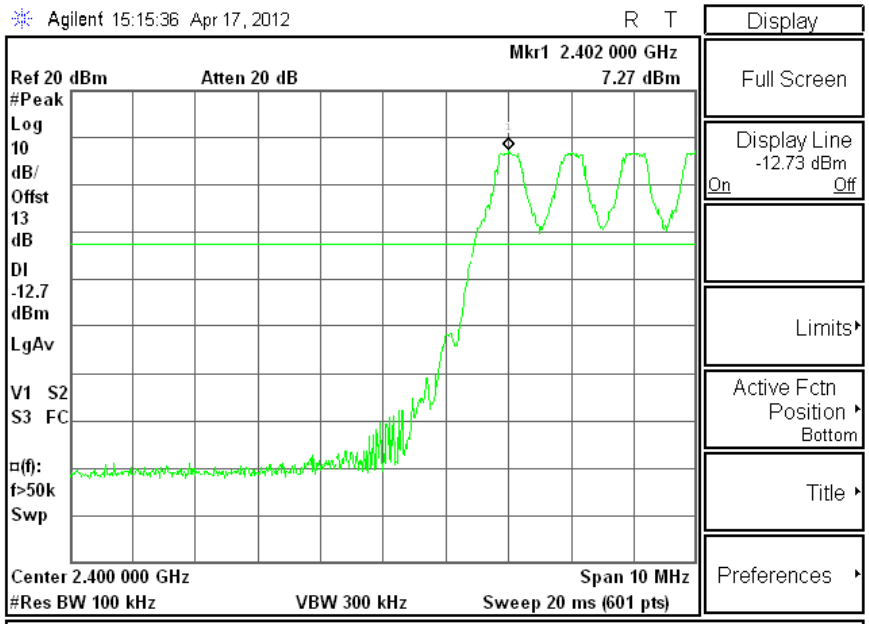
SPURIOUS EMISSIONS, HIGH CHANNEL



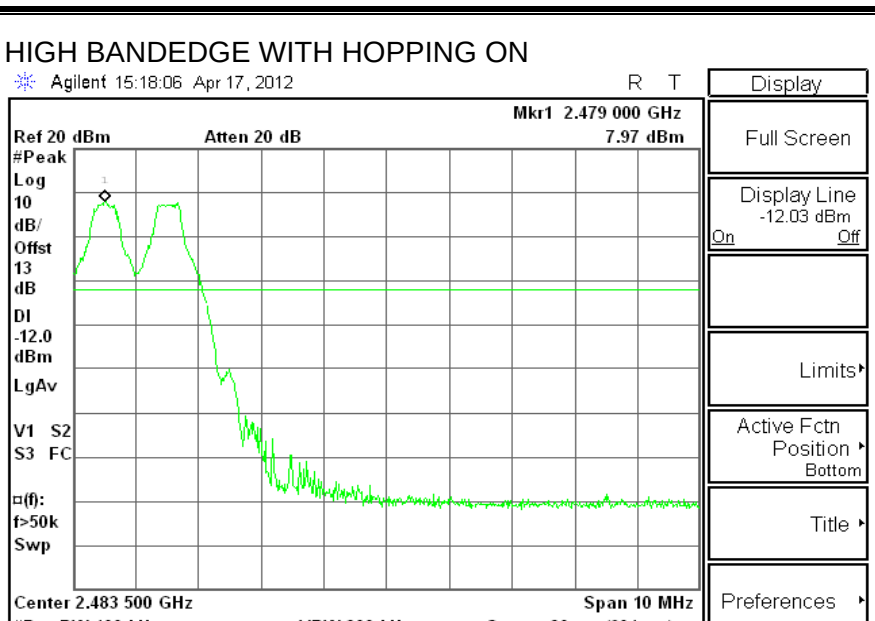


SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON

LOW BANDEDGE WITH HOPPING ON



HIGH BANDEDGE WITH HOPPING ON



6.2. DQPSK MODULATION

6.2.1. 20 dB AND 99% BANDWIDTH

LIMIT

None; for reporting purposes only.

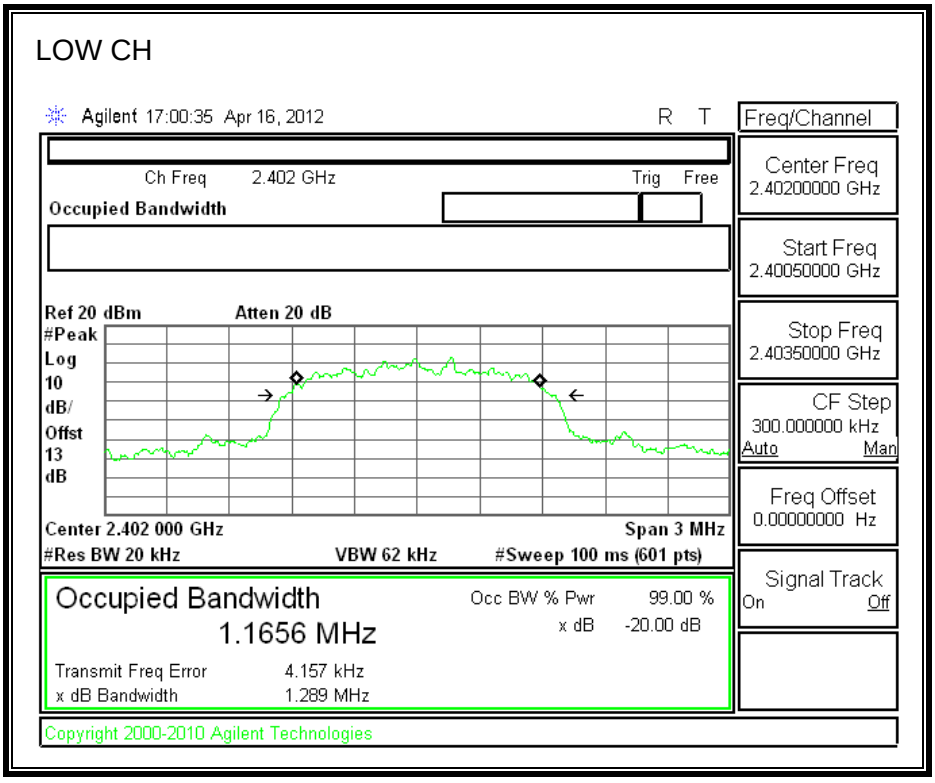
TEST PROCEDURE

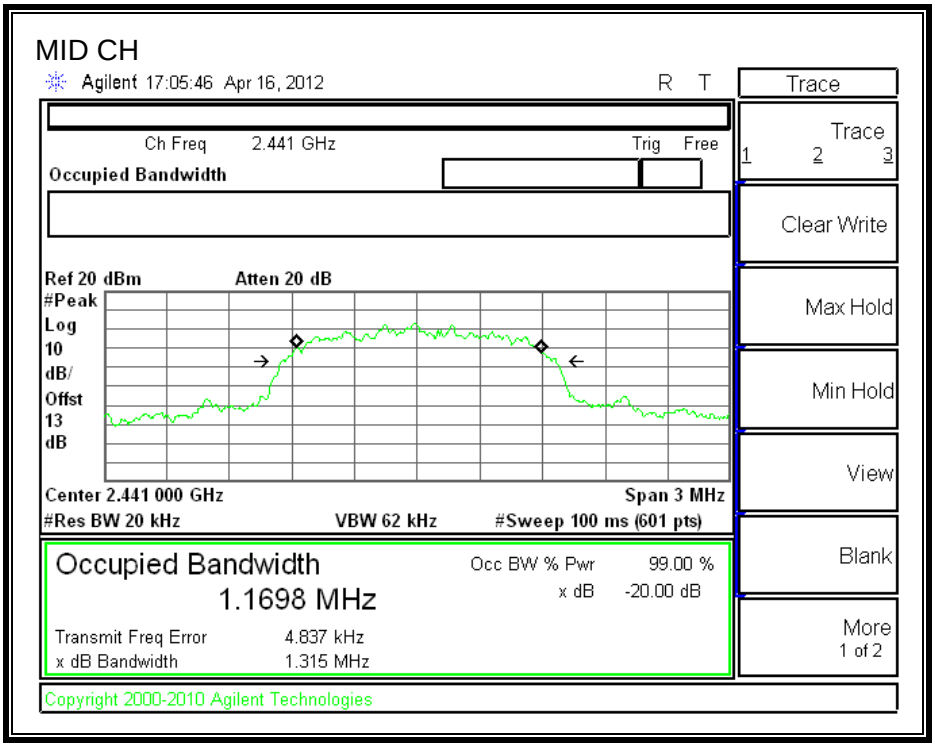
The transmitter output is connected to a spectrum analyzer. The RBW is set to ≥ 1% of the 20 dB bandwidth. The VBW is set to ≥ RBW. The sweep time is coupled.

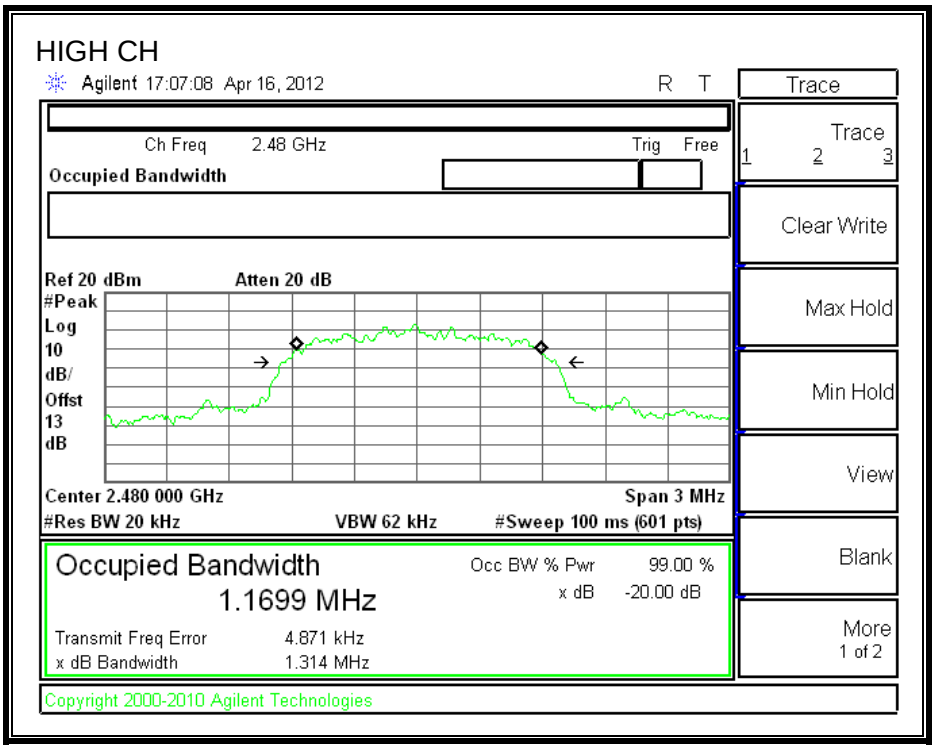
RESULTS

Channel	Frequency (MHz)	20 dB Bandwidth (MHz)
Low	2402	1.1656
Middle	2441	1.1698
High	2480	1.6990

20 dB BANDWIDTH







6.2.2. 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.

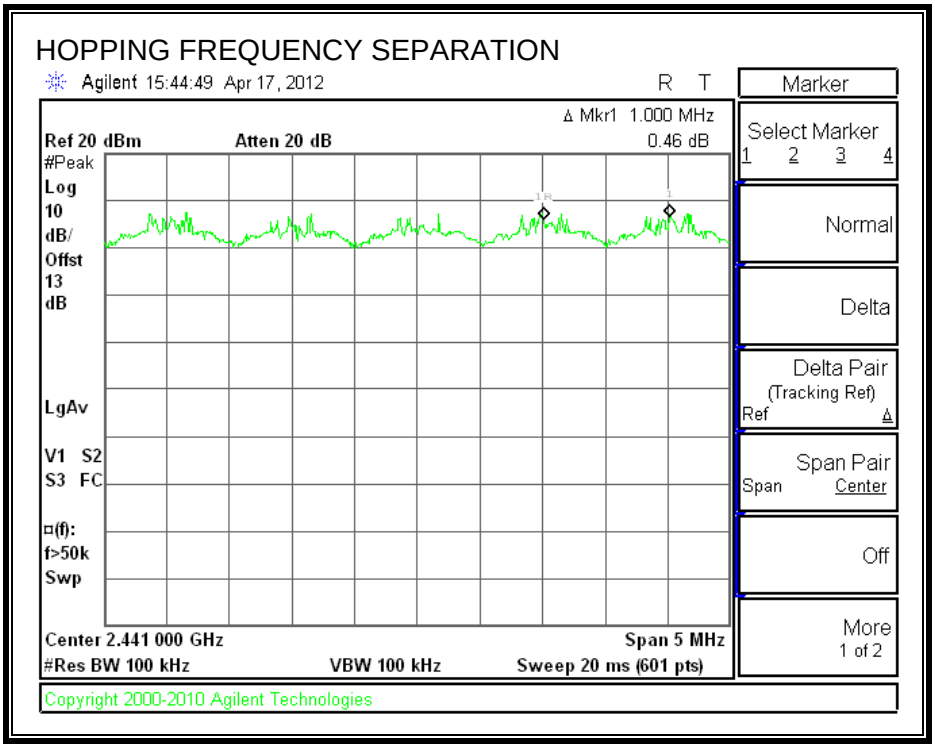
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than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



6.2.3. 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

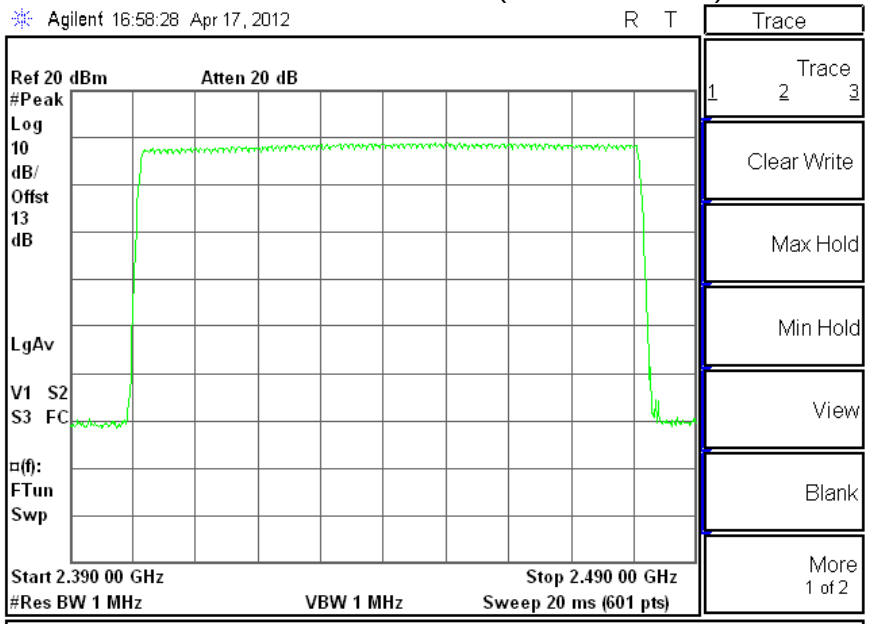
The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

RESULTS

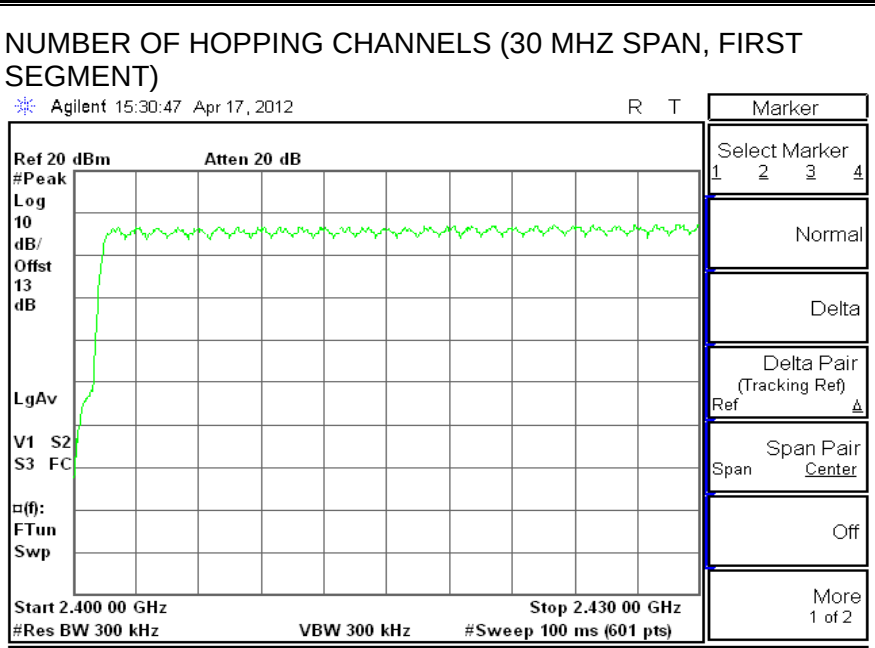
79 Channels observed.

NUMBER OF HOPPING CHANNELS

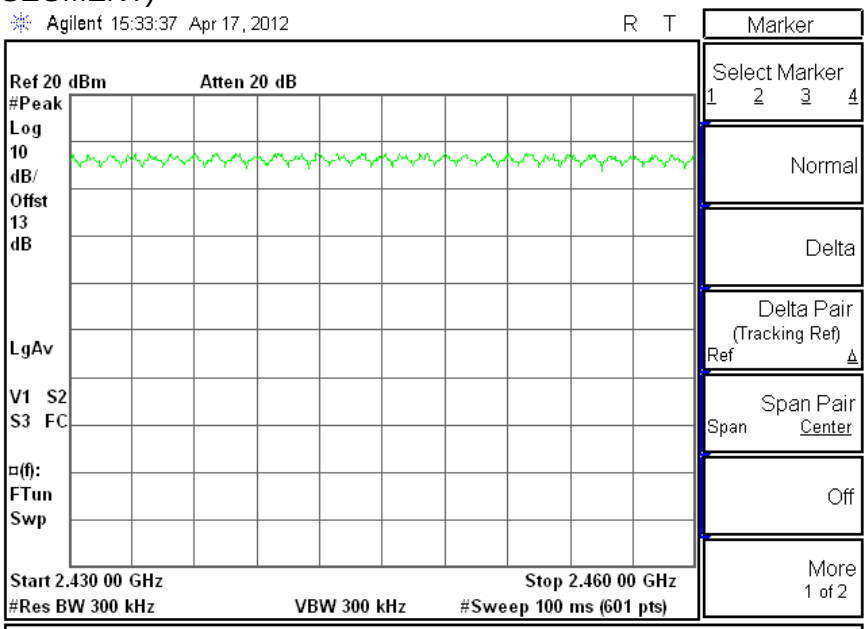
NUMBER OF HOPPING CHANNELS (100 MHZ SPAN)



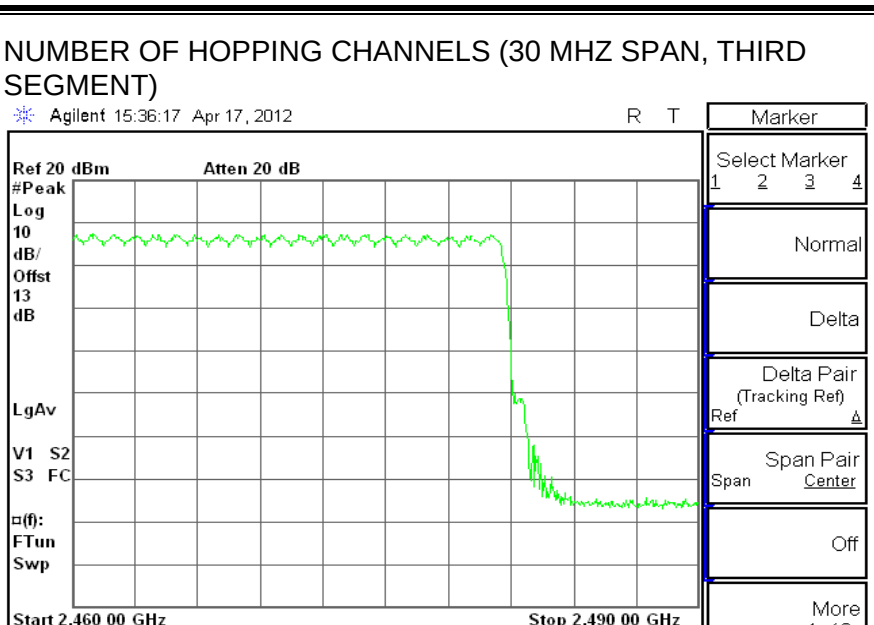
NUMBER OF HOPPING CHANNELS (30 MHZ SPAN, FIRST SEGMENT)



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



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



6.2.4. 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.

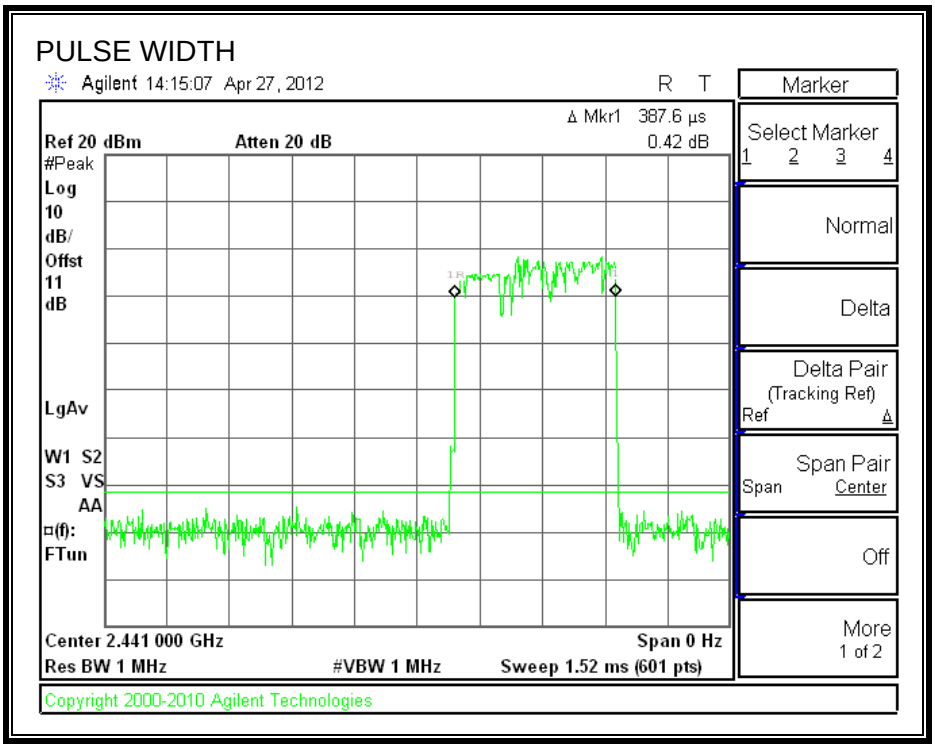
RESULTS

GFSK Mode

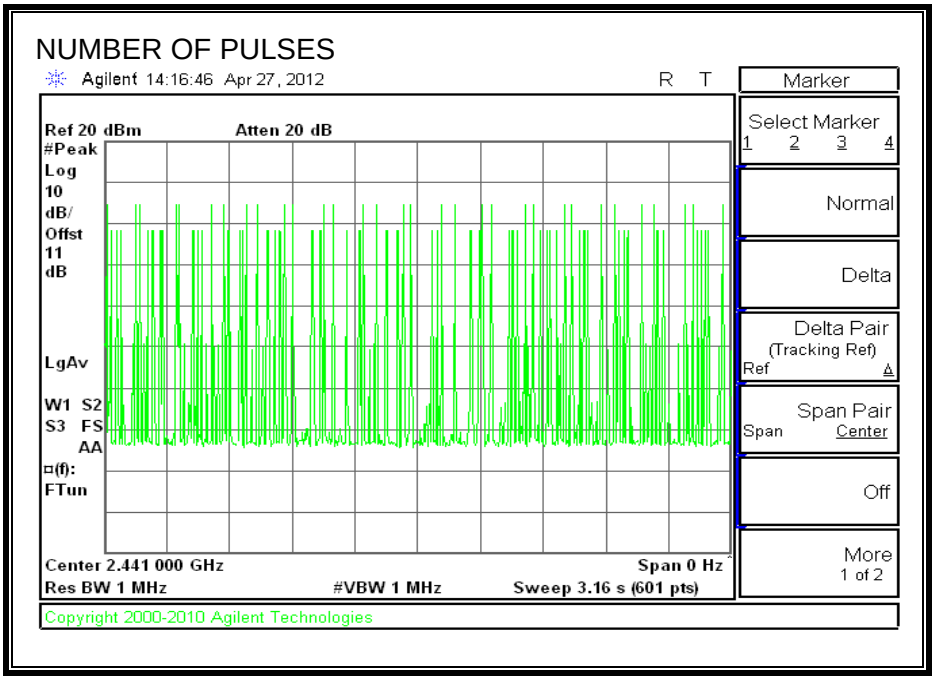
DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of (sec)	Limit (sec)	Margin (sec)
2DH1	0.3876	32	0.124	0.4	0.276
2DH3	1.642	17	0.279	0.4	0.121
2DH5	2.867	12	0.344	0.4	0.056

DH1

PULSE WIDTH

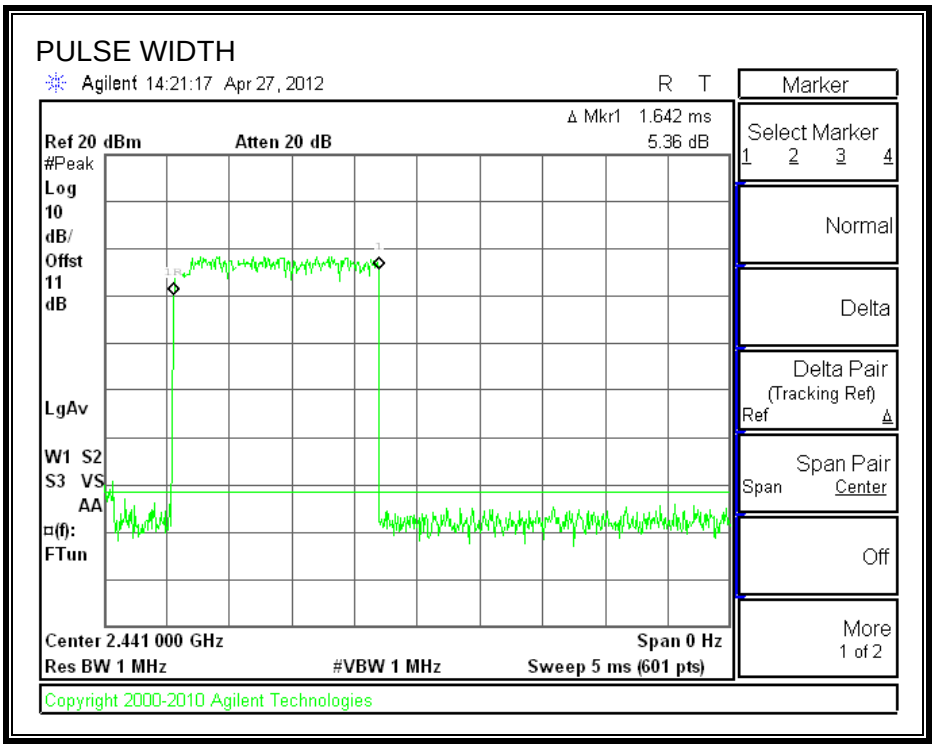


NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD

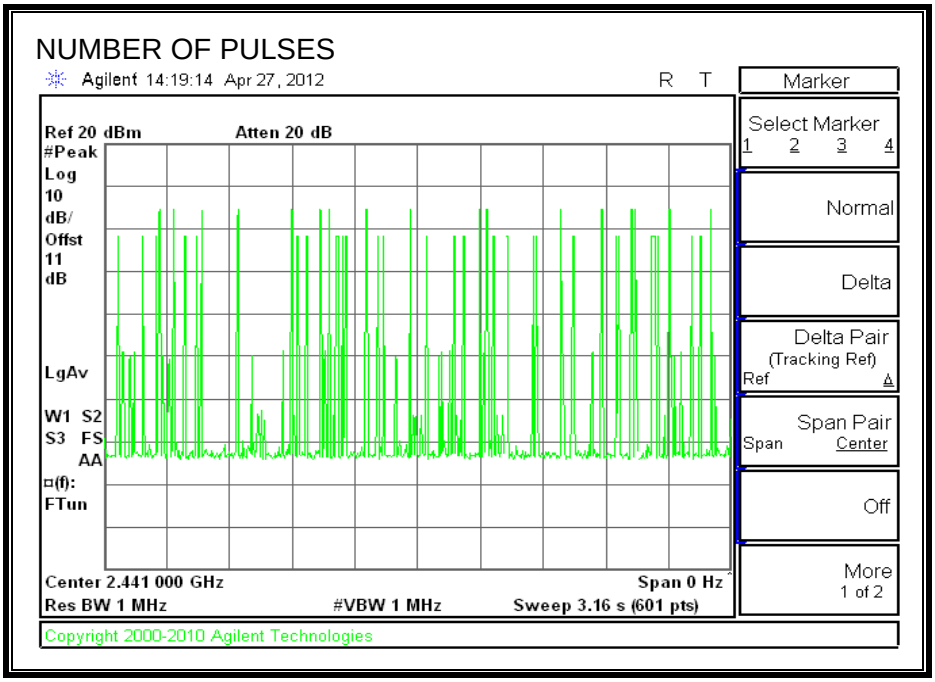


DH3

PULSE WIDTH

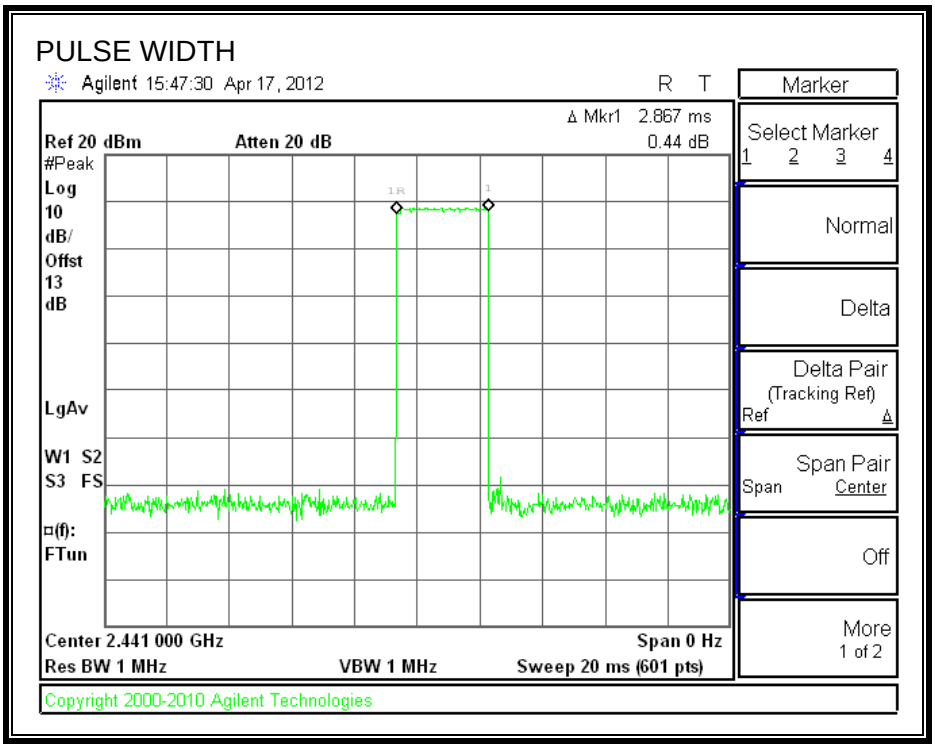


NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD

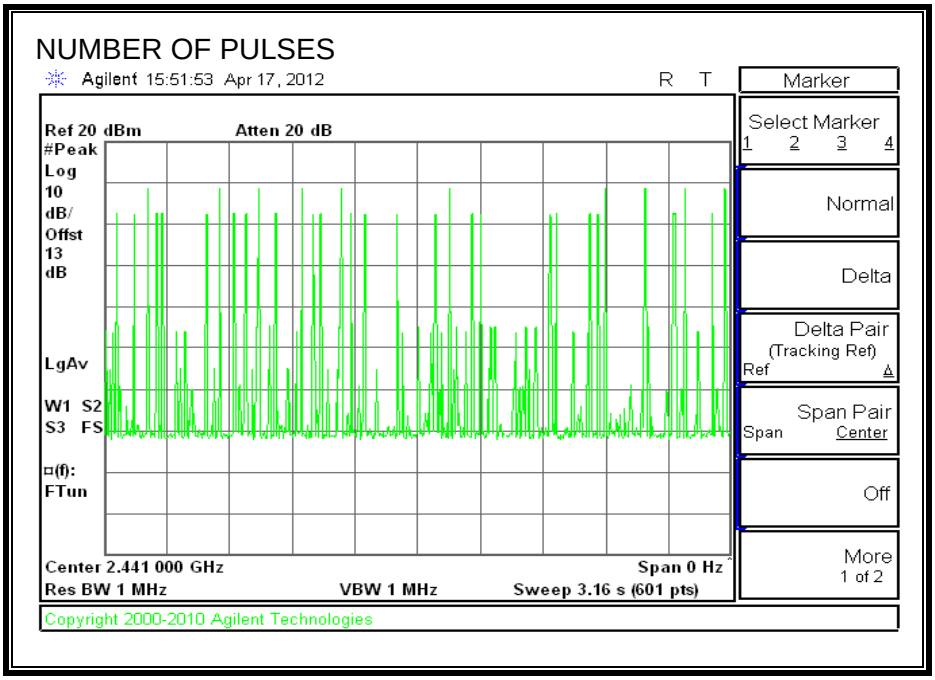


2DH5

PULSE WIDTH



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD



6.2.5. 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

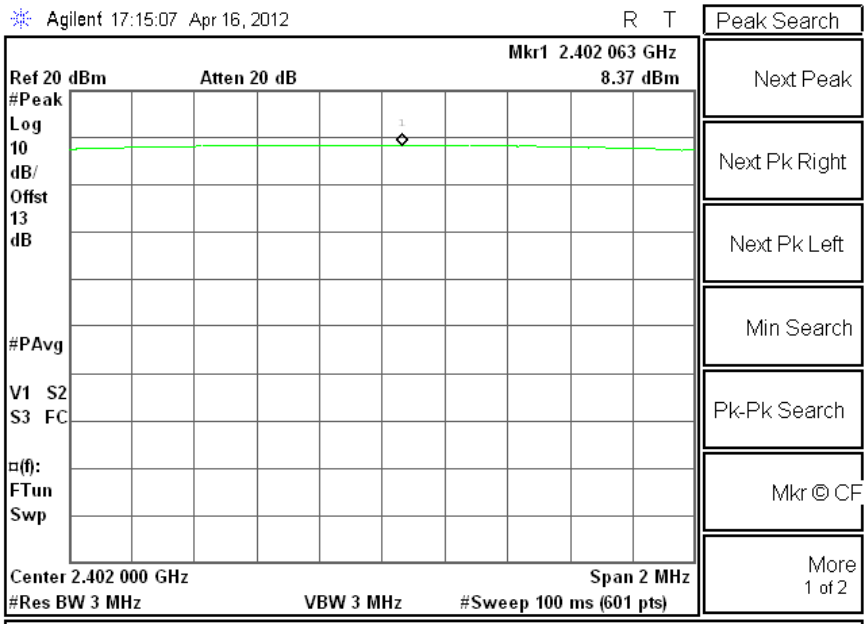
The transmitter output is connected to a spectrum analyzer the analyzer bandwidth is set to a value greater than the 20 dB bandwidth of the EUT.

RESULTS

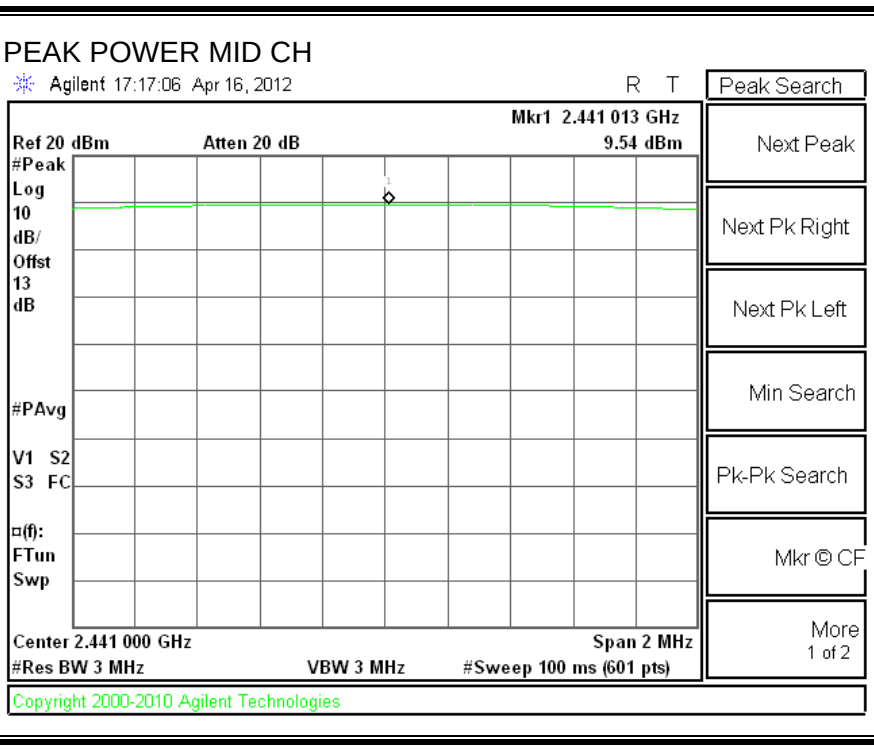
Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	8.37	30	-21.63
Middle	2441	9.54	30	-20.46
High	2480	9.26	30	-20.74

OUTPUT POWER

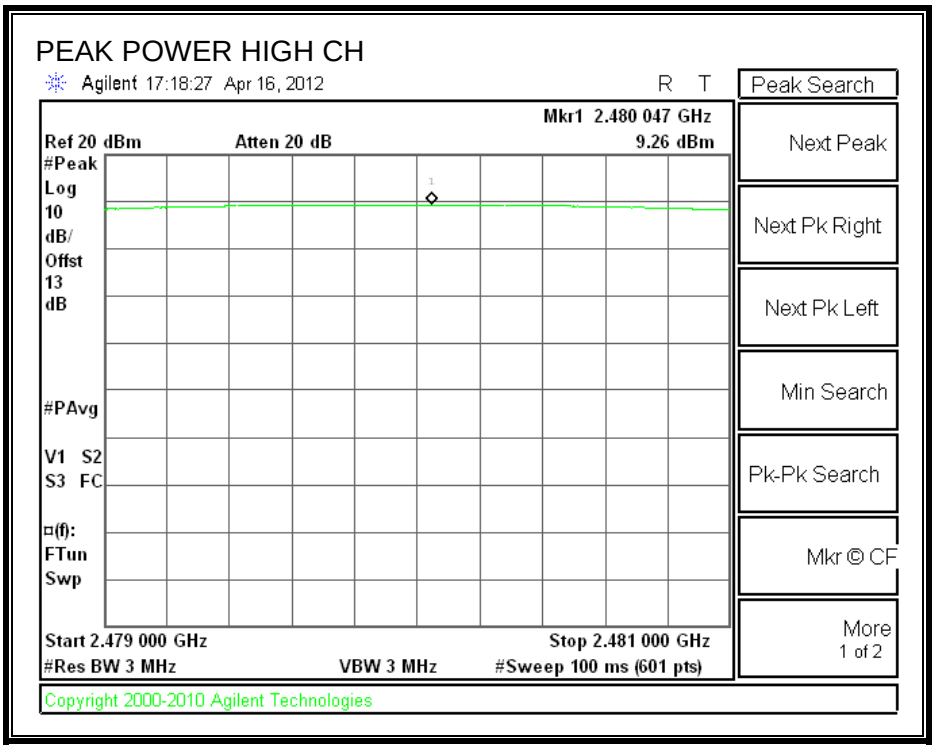
PEAK POWER LOW CH



PEAK POWER MID CH



PEAK POWER HIGH CH



6.2.6. 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 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)	Average Power (dBm)
Low	2402	7.20
Middle	2441	6.50
High	2480	7.00

6.2.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

Limit = -20 dBc

TEST PROCEDURE

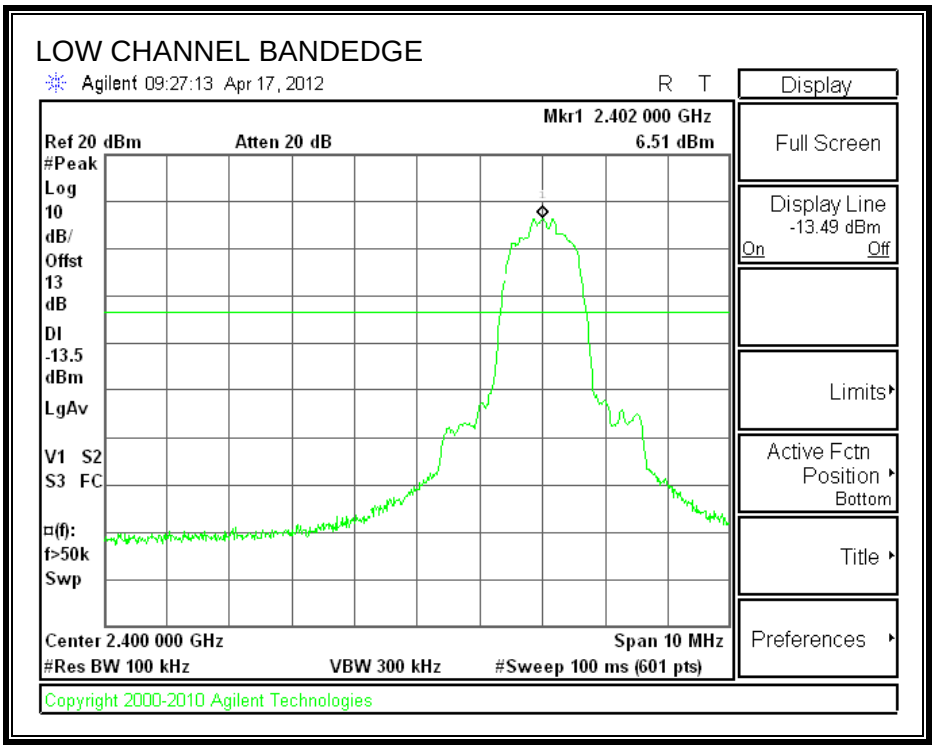
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

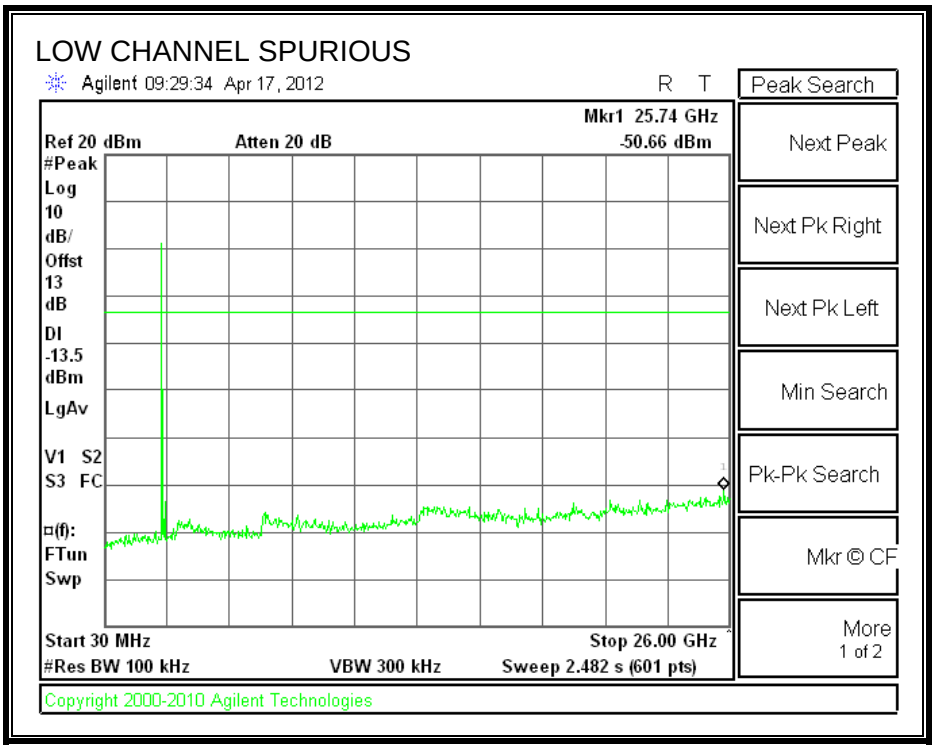
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

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

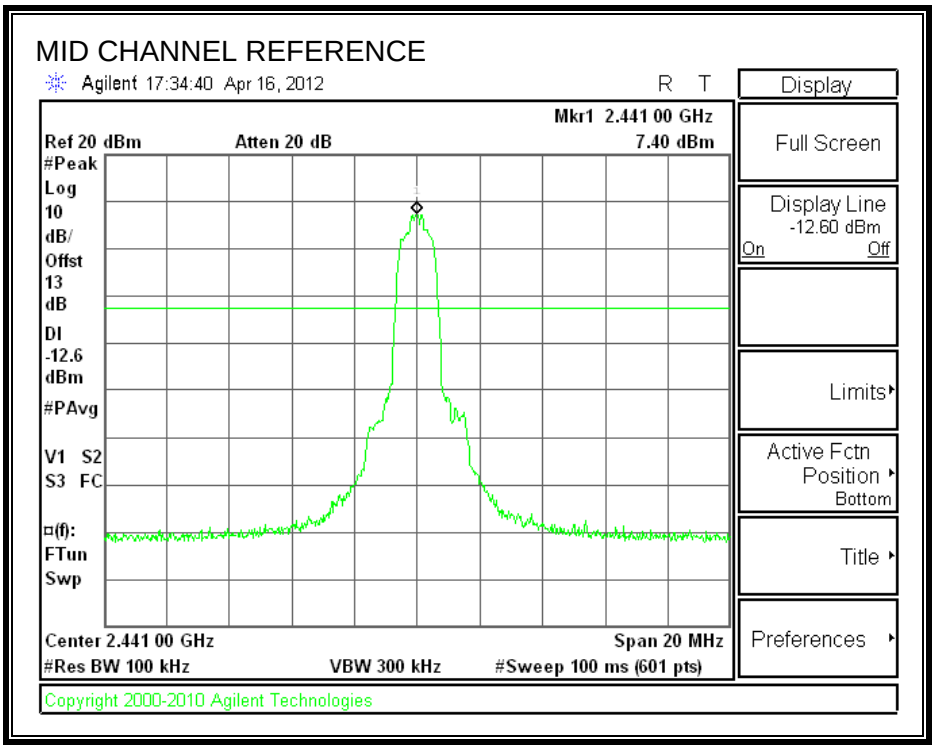
RESULTS

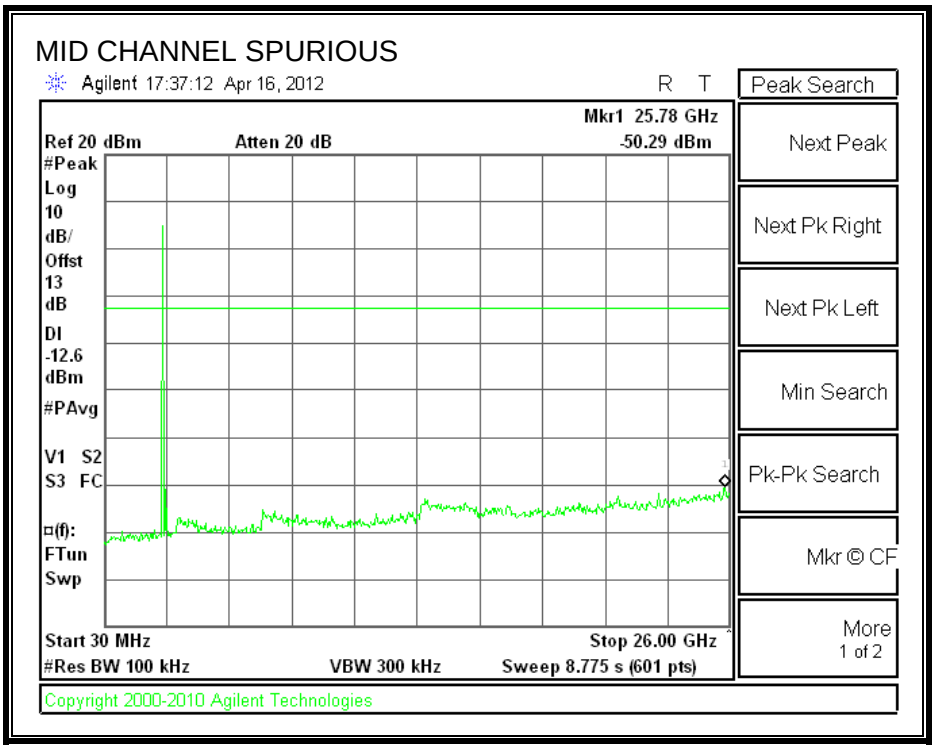
SPURIOUS EMISSIONS, LOW CHANNEL



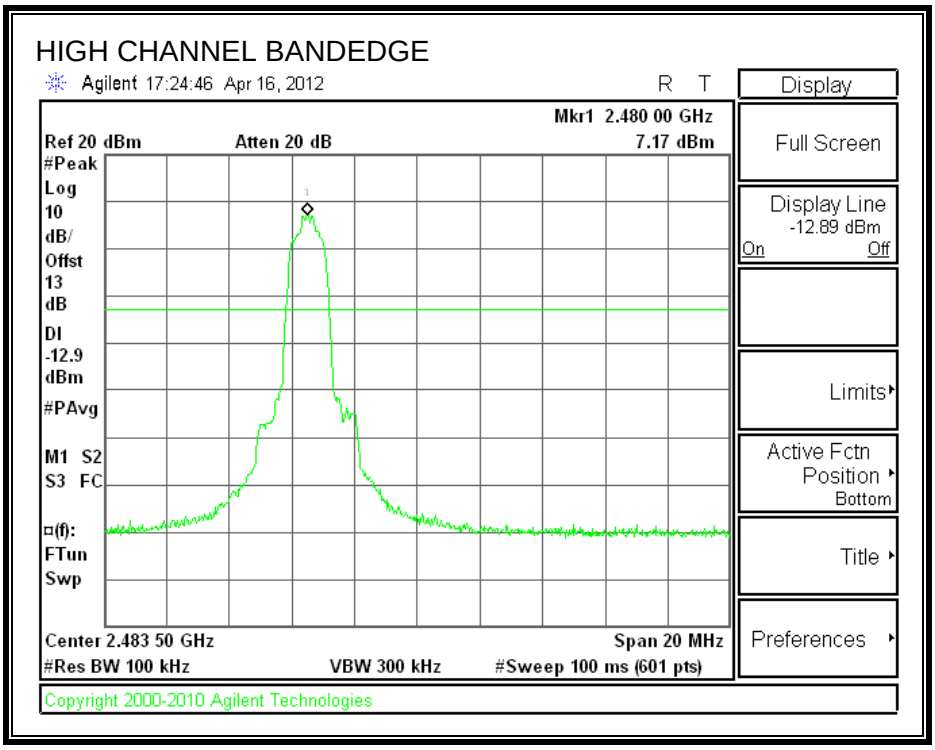


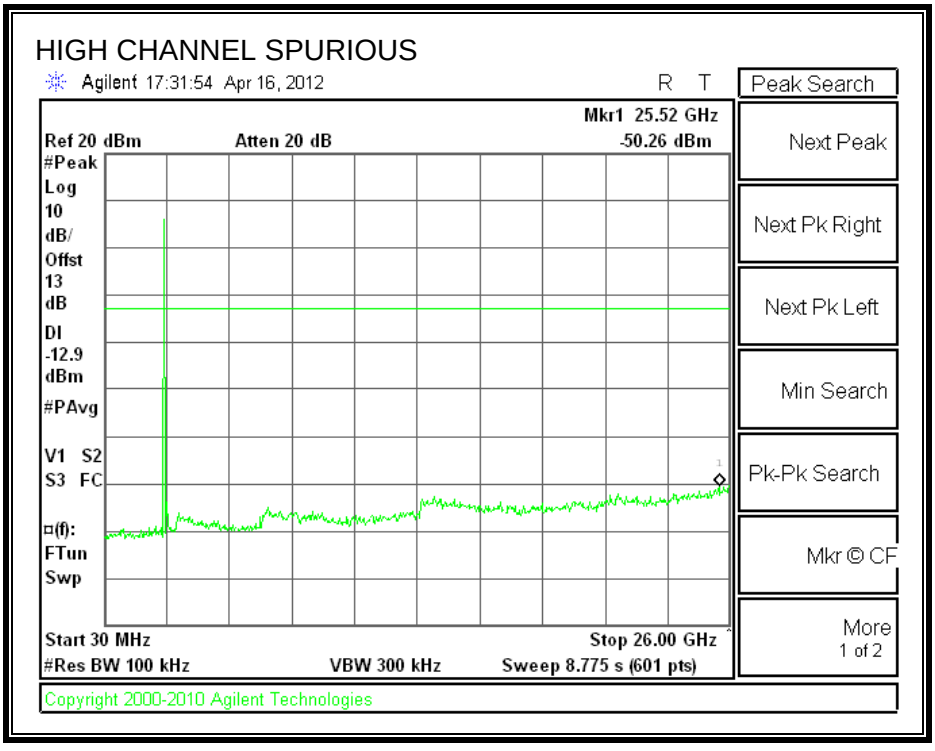
SPURIOUS EMISSIONS, MID CHANNEL





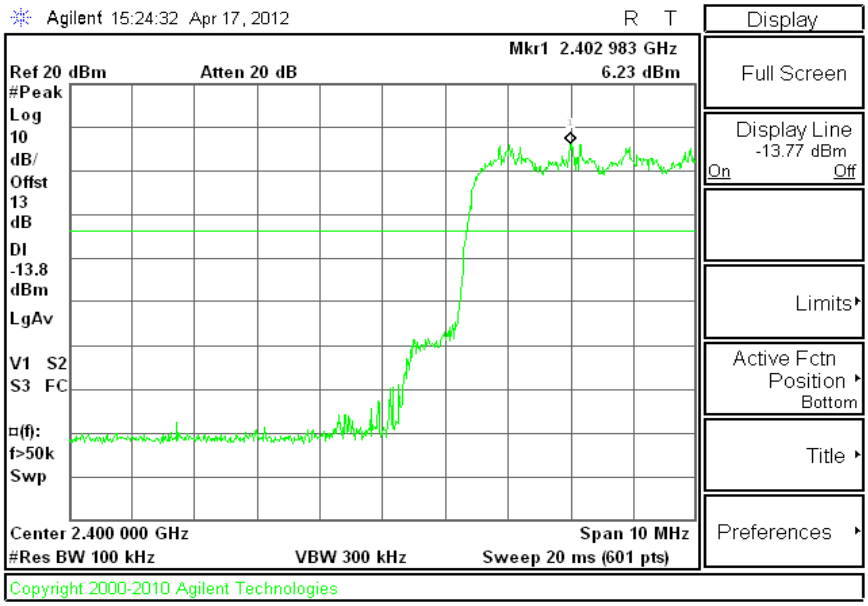
SPURIOUS EMISSIONS, HIGH CHANNEL



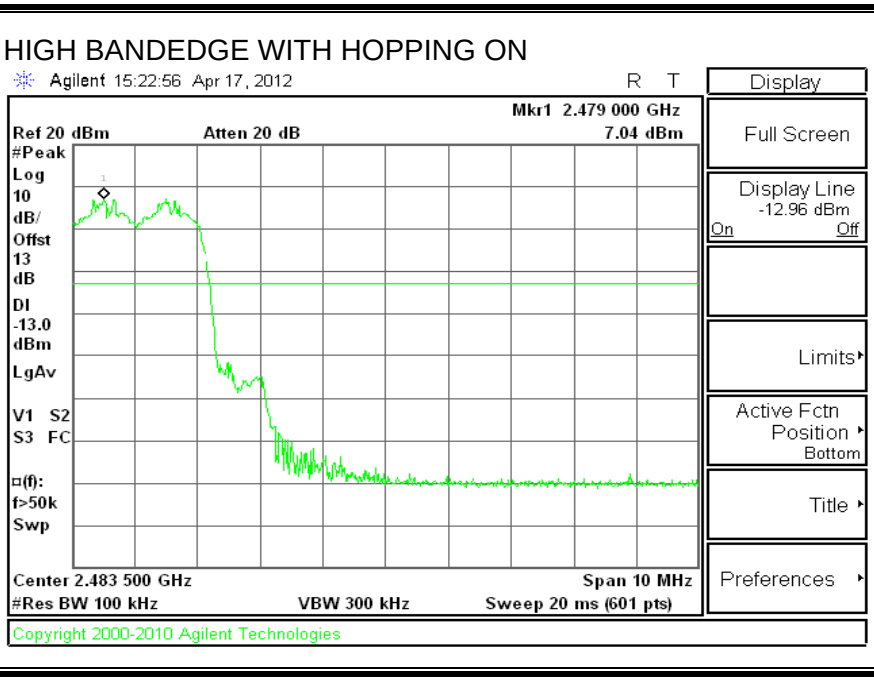


SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON

LOW BANDEDGE WITH HOPPING ON



HIGH BANDEDGE WITH HOPPING ON



6.3. ENHANCED DATA RATE 8PSK MODULATION

6.3.1. 20 dB BANDWIDTH

LIMIT

None; for reporting purposes only.

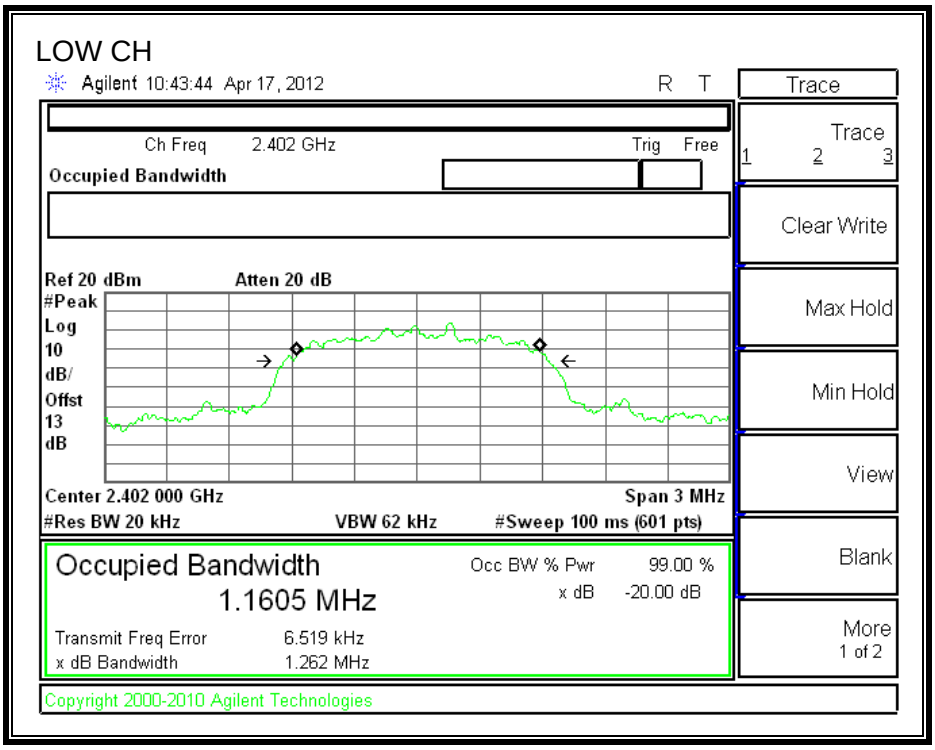
TEST PROCEDURE

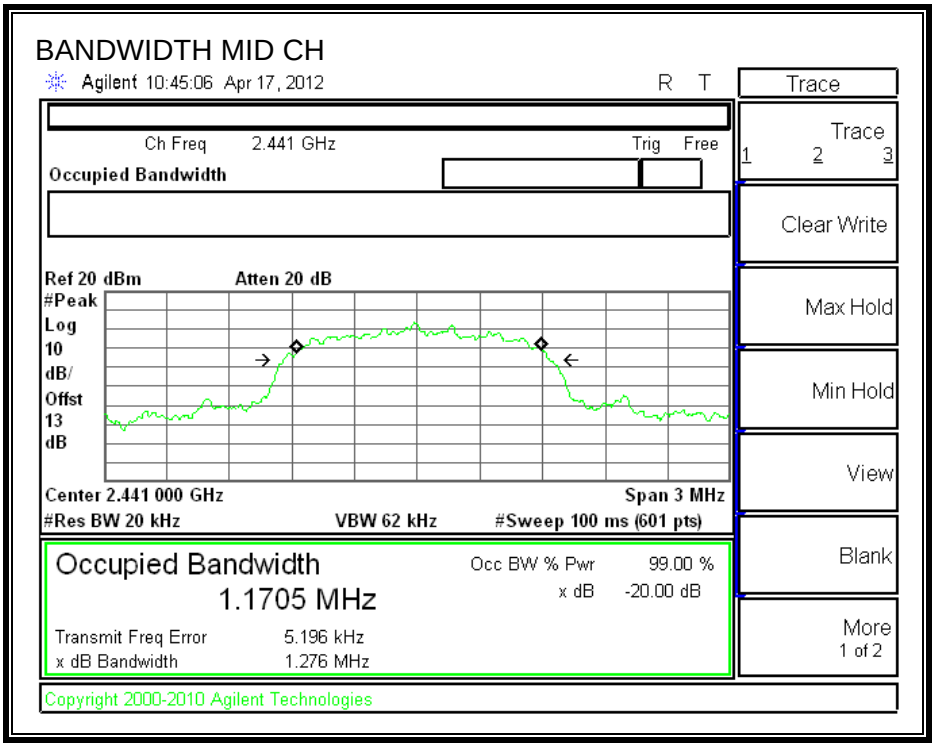
The transmitter output is connected to a spectrum analyzer. The RBW is set to ≥ 1% of the 20 dB bandwidth. The VBW is set to ≥ RBW. The sweep time is coupled.

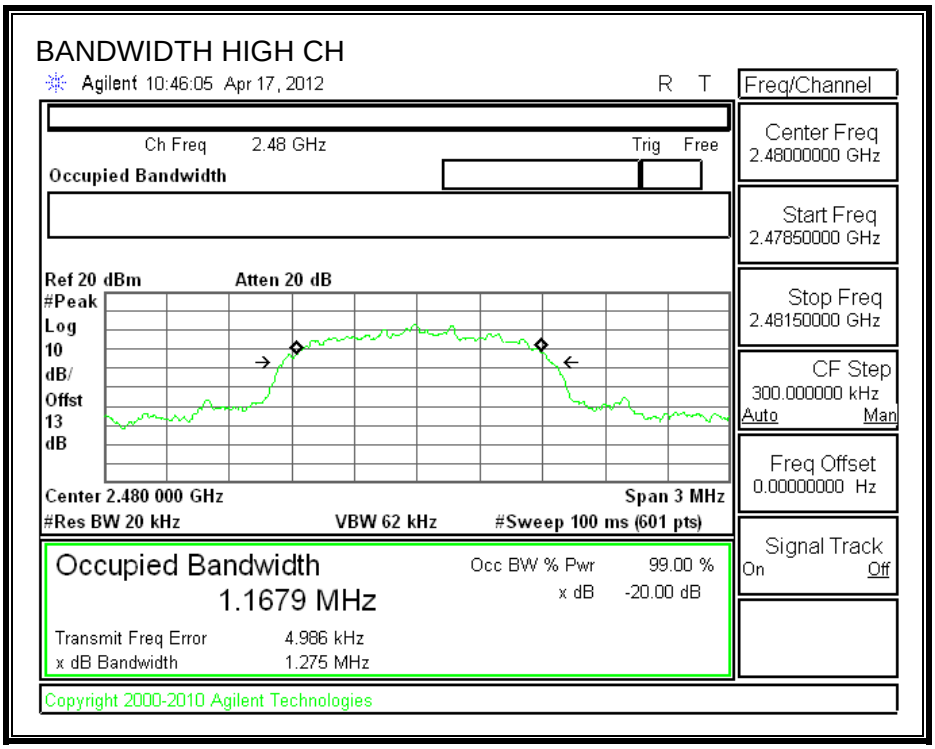
RESULTS

Channel	Frequency (MHz)	20 dB Bandwidth (MHz)
Low	2402	1.1605
Middle	2441	1.1705
High	2480	1.1679

20 dB BANDWIDTH







6.3.2. 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.

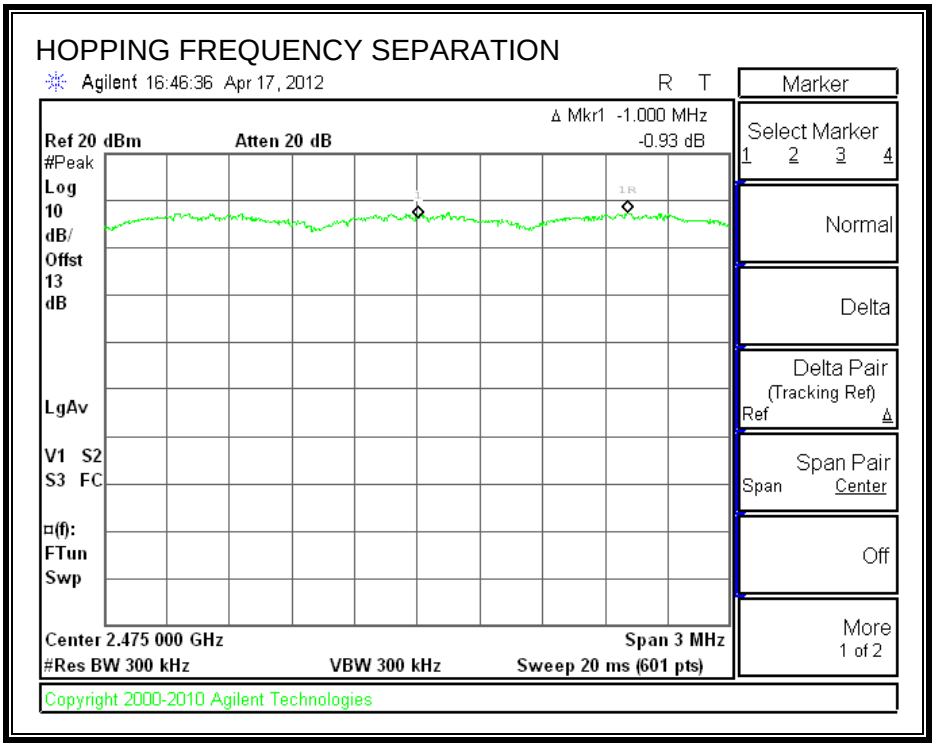
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than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



6.3.3. 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

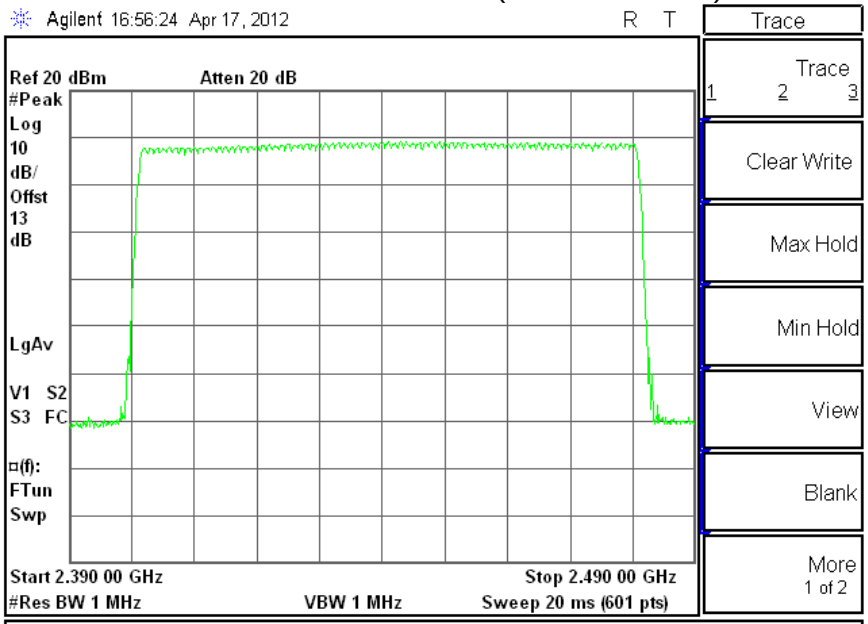
The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

RESULTS

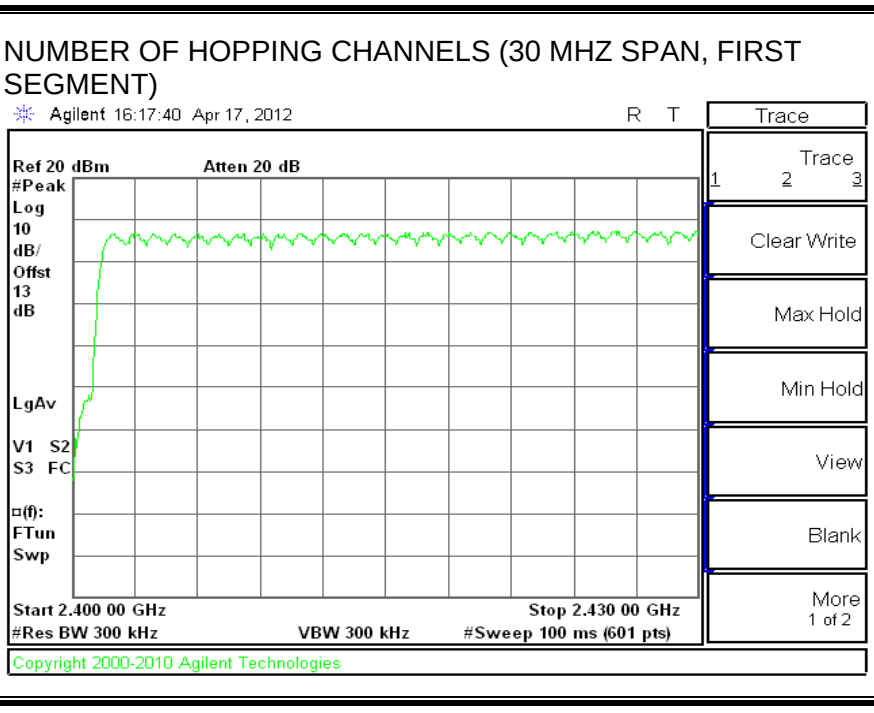
79 Channels observed.

NUMBER OF HOPPING CHANNELS

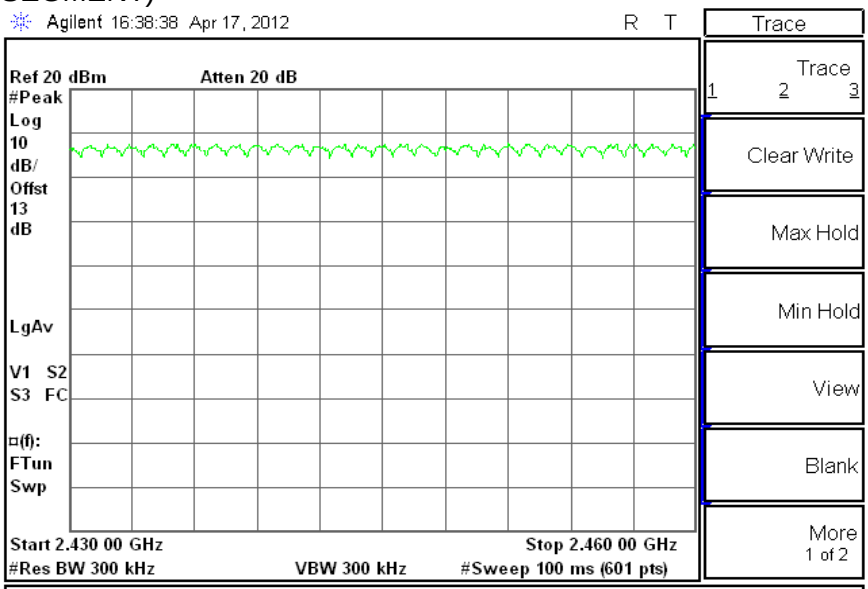
NUMBER OF HOPPING CHANNELS (100 MHZ SPAN)



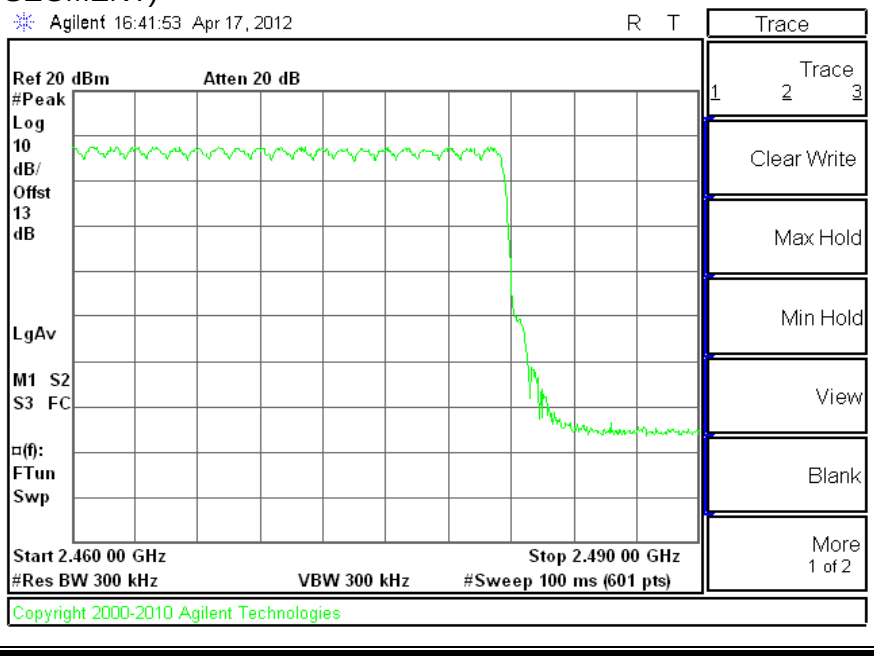
NUMBER OF HOPPING CHANNELS (30 MHZ SPAN, FIRST SEGMENT)



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



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



6.3.4. 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.

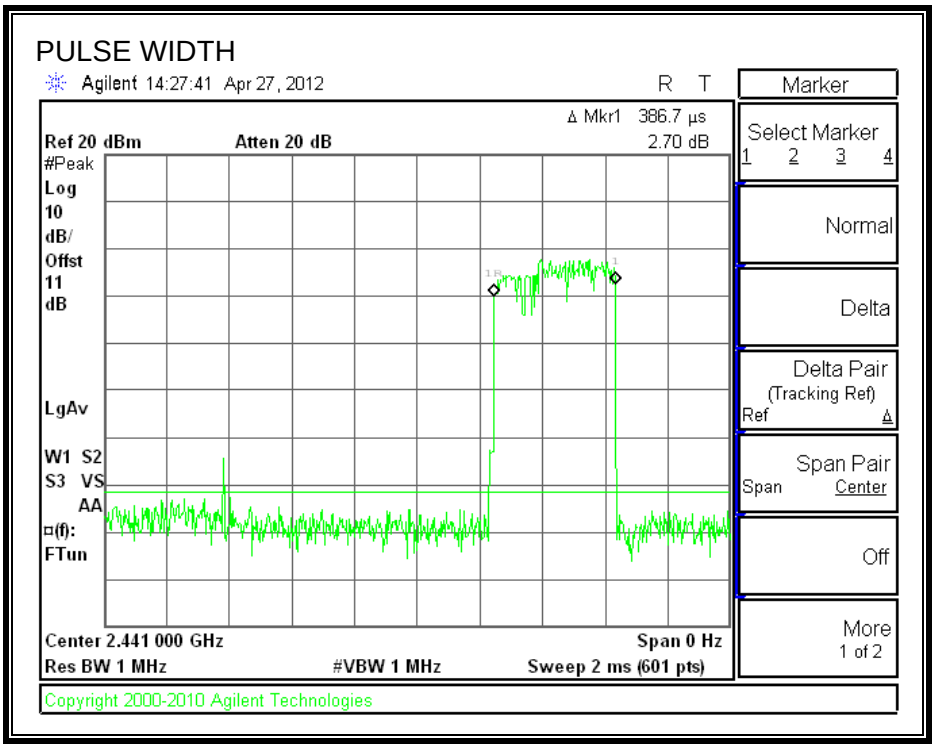
RESULTS

8PSK Mode

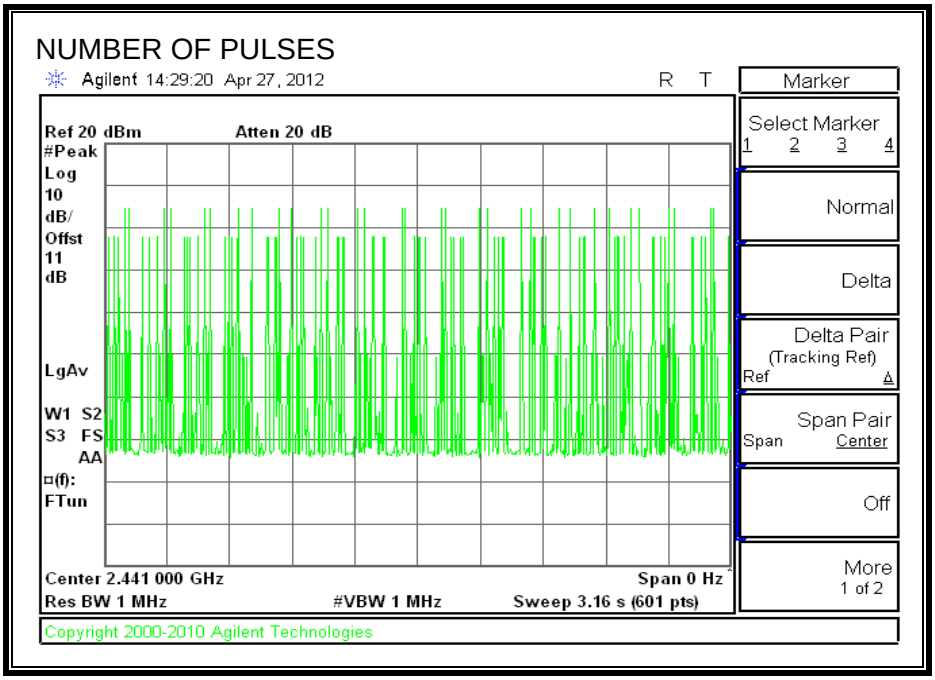
DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
3DH1	0.3867	32	0.124	0.4	0.276
3DH3	1.633	18	0.294	0.4	0.106
3DH5	2.867	11	0.315	0.4	0.085

3DH1

PULSE WIDTH

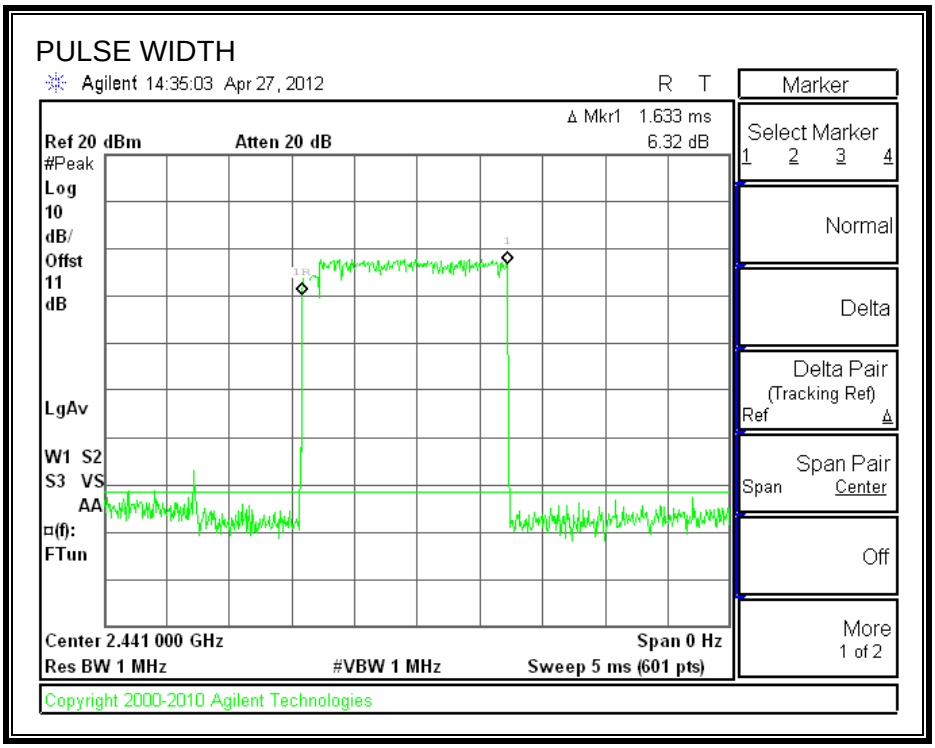


NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD

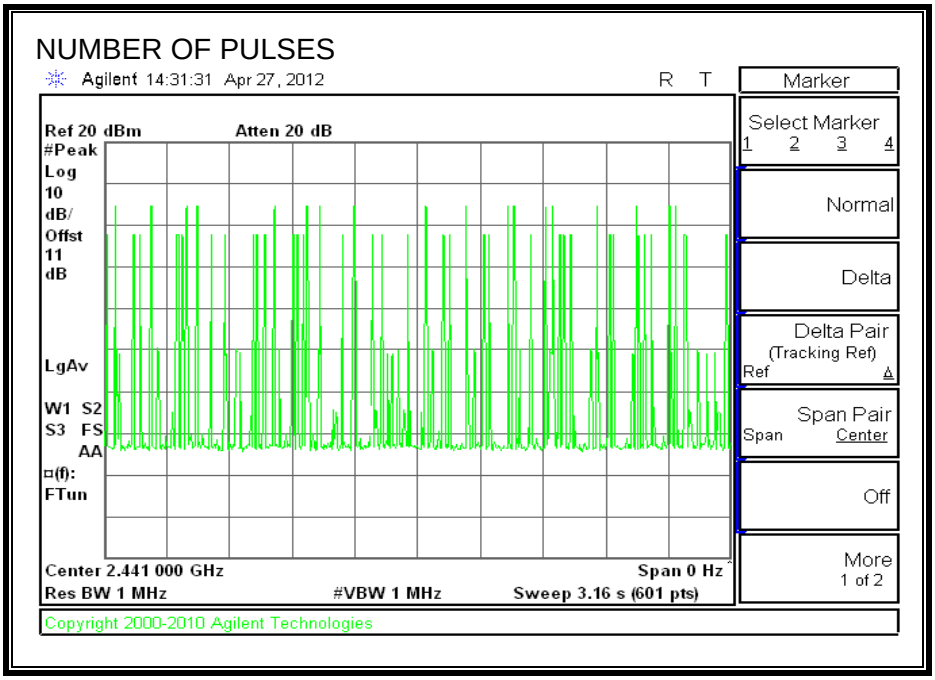


2DH3

PULSE WIDTH

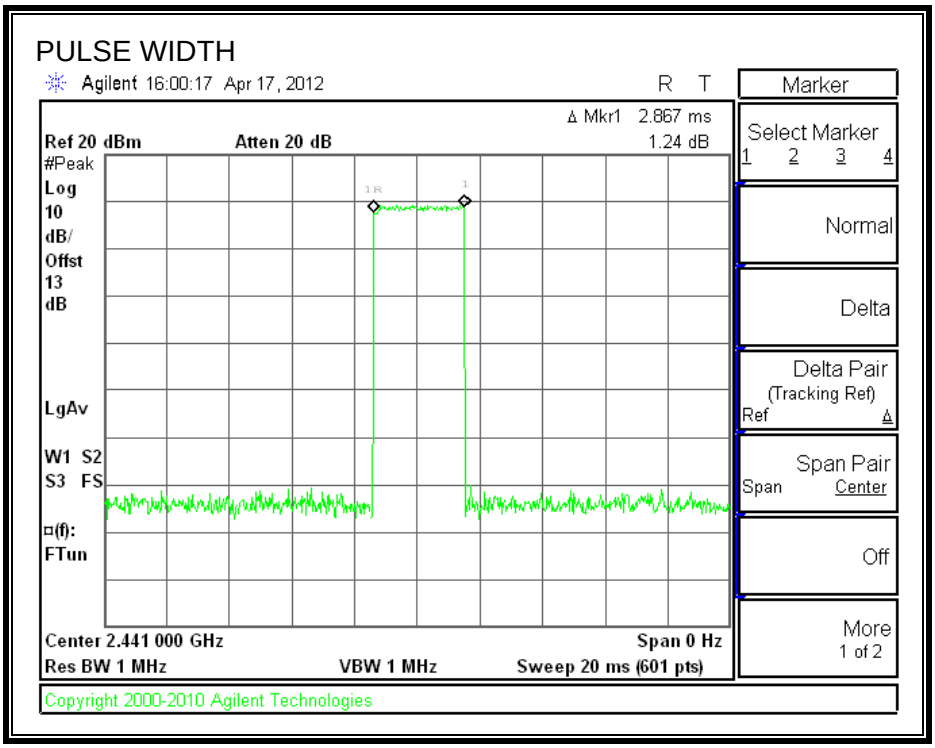


NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD

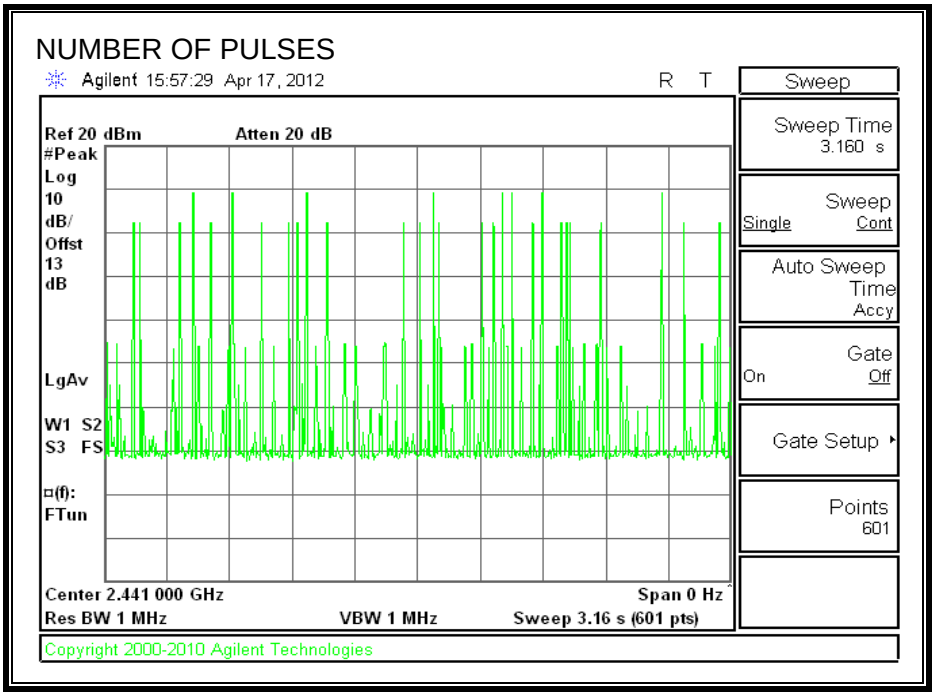


3DH5

PULSE WIDTH



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD



6.3.5. 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.

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.

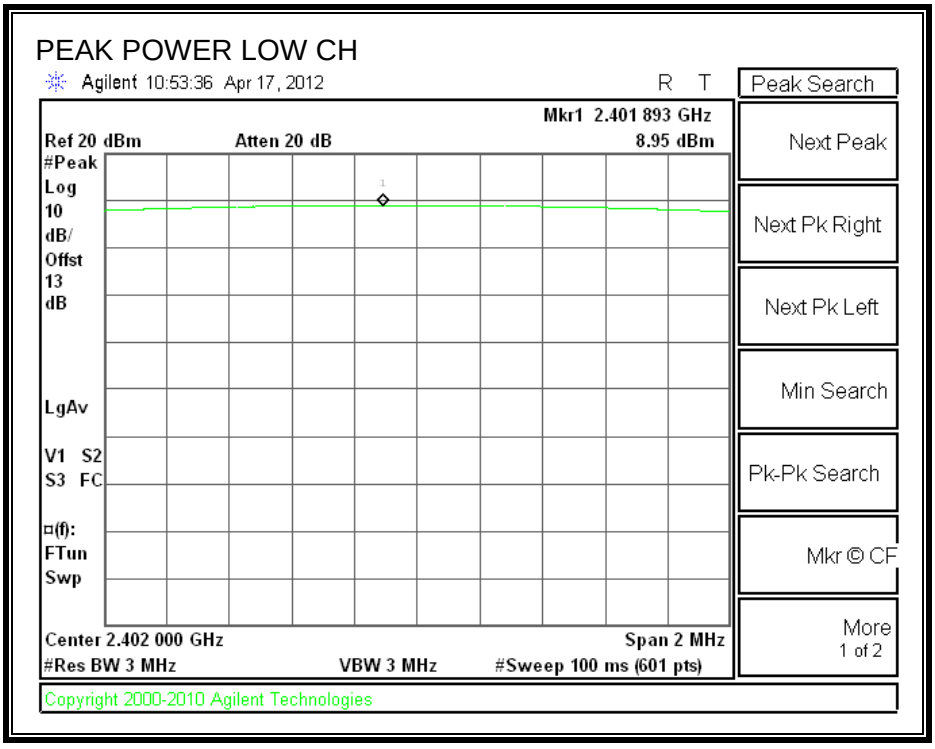
TEST PROCEDURE

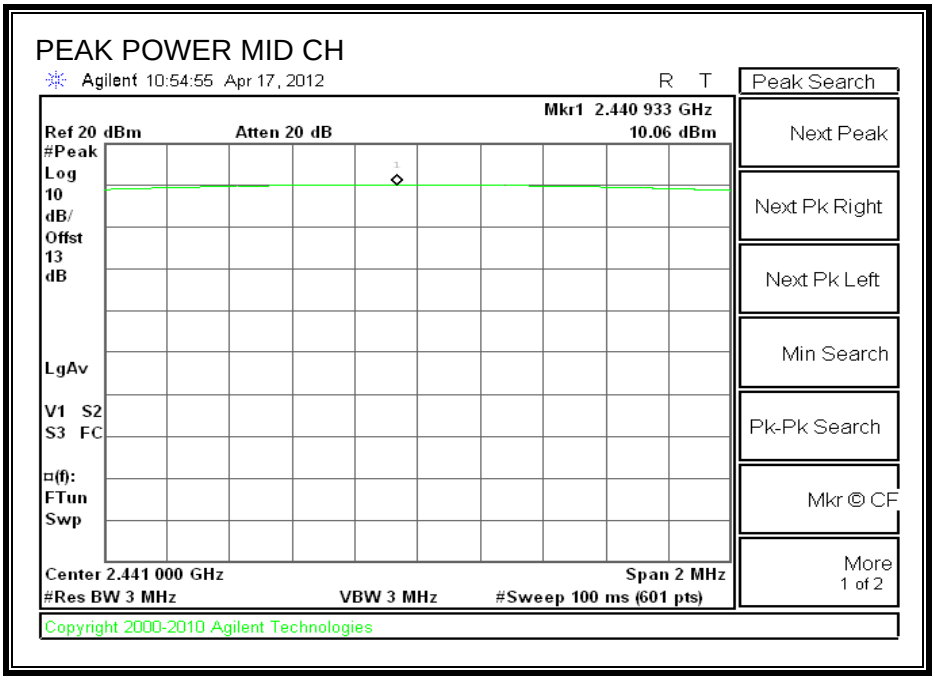
The transmitter output is connected to a spectrum analyzer the analyzer bandwidth is set to a value greater than the 20 dB bandwidth of the EUT.

RESULTS

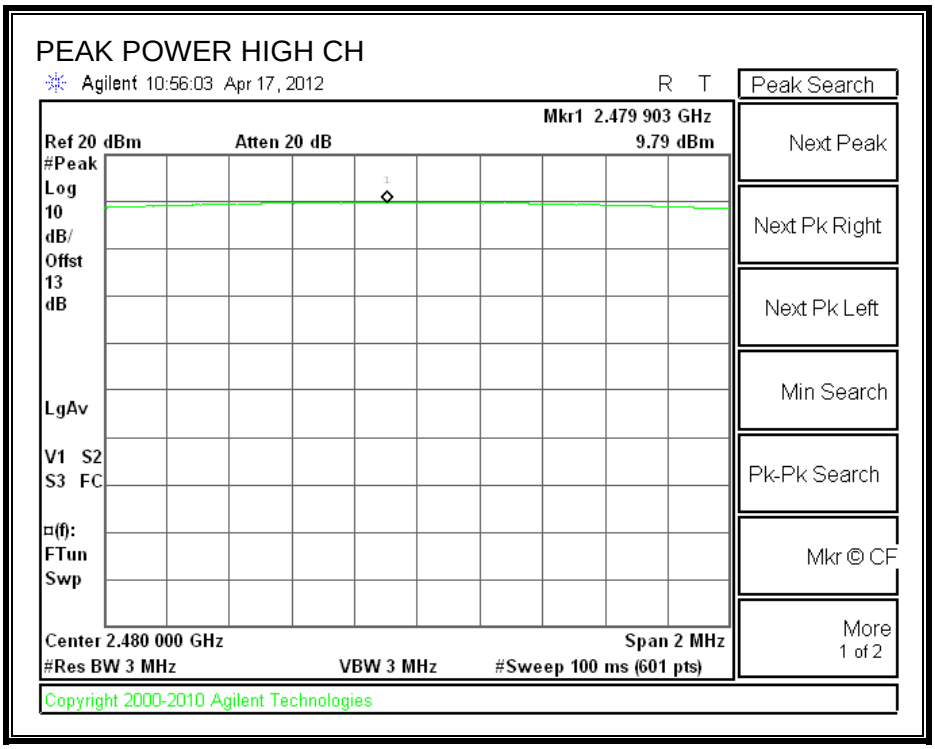
Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	8.95	21	-12.05
Middle	2441	10.06	21	-10.94
High	2480	9.79	21	-11.21

OUTPUT POWER





PEAK POWER HIGH CH



6.3.6. 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 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)	Average Power (dBm)
Low	2402	6.20
Middle	2441	6.40
High	2480	6.90

6.3.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

Limit = -20 dBc

TEST PROCEDURE

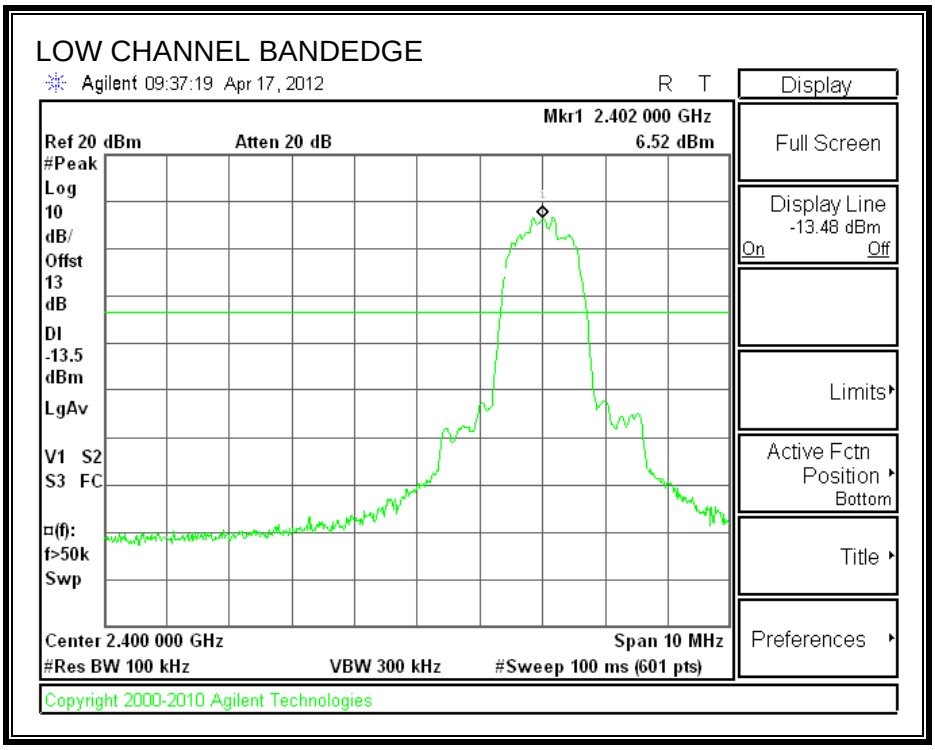
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

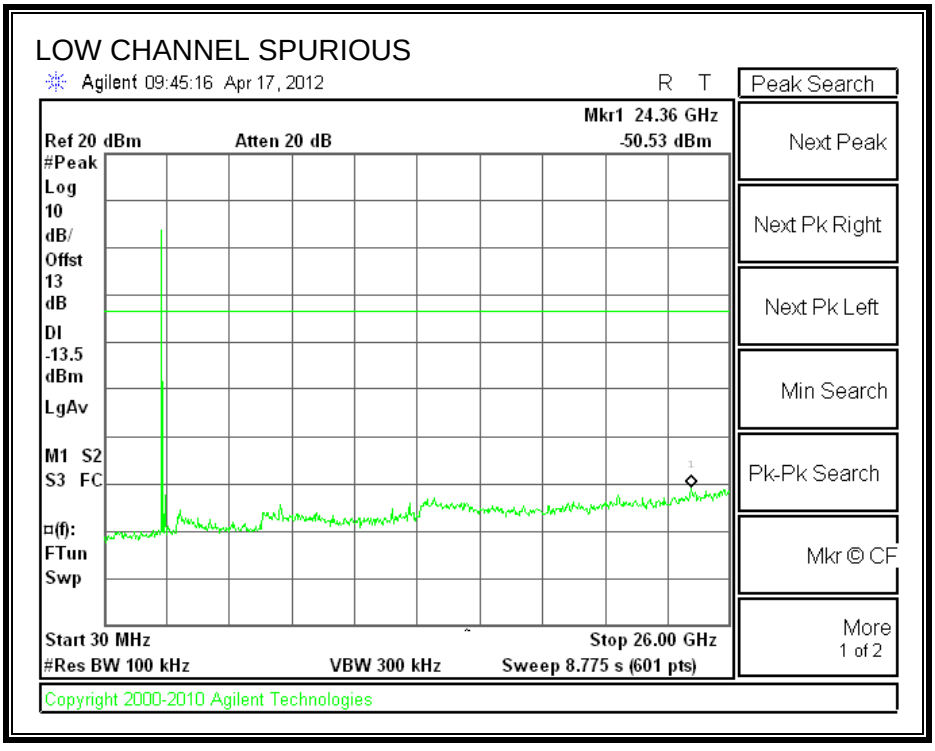
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

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

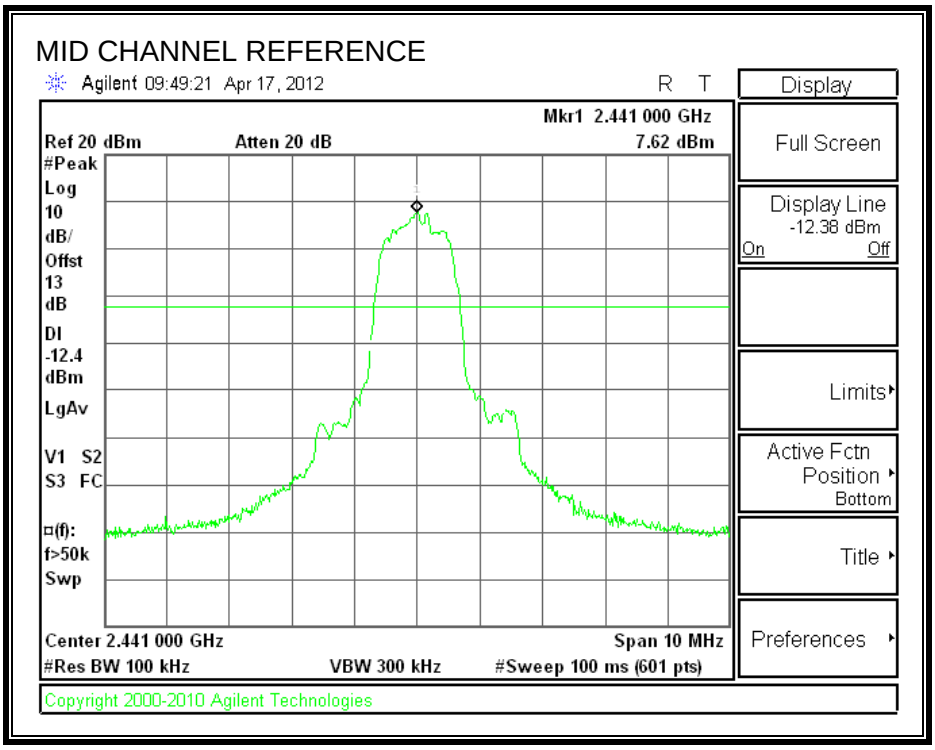
RESULTS

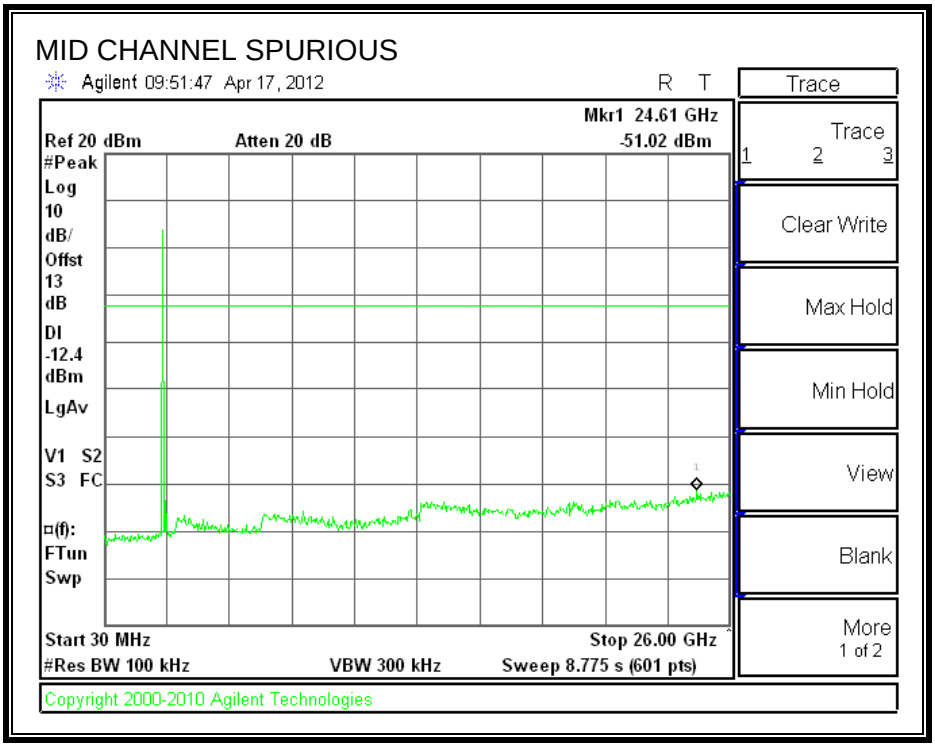
SPURIOUS EMISSIONS, LOW CHANNEL



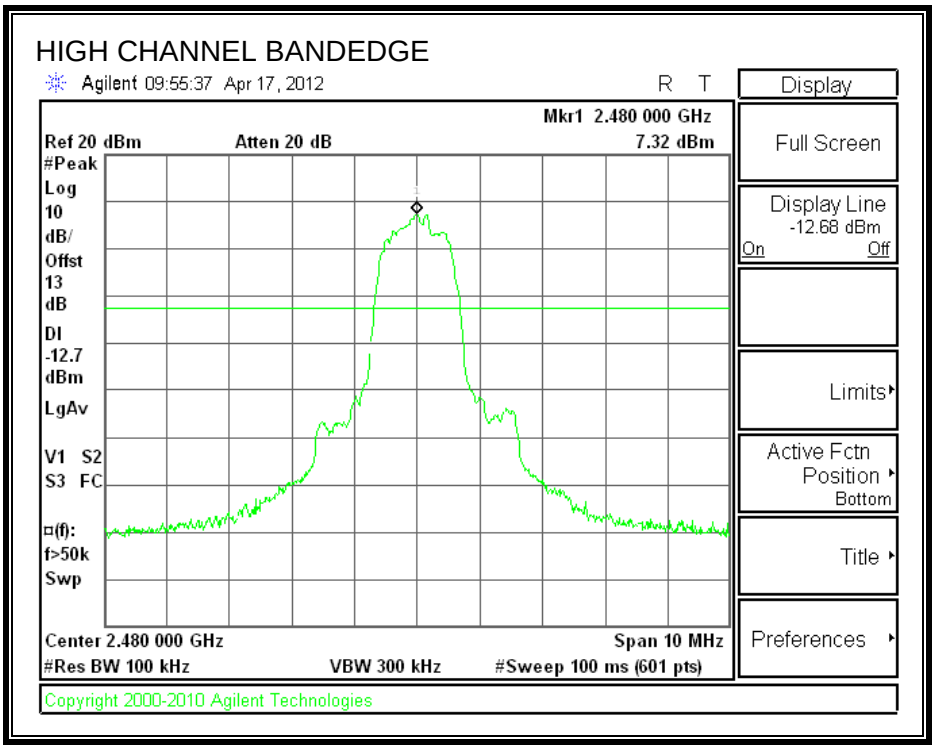


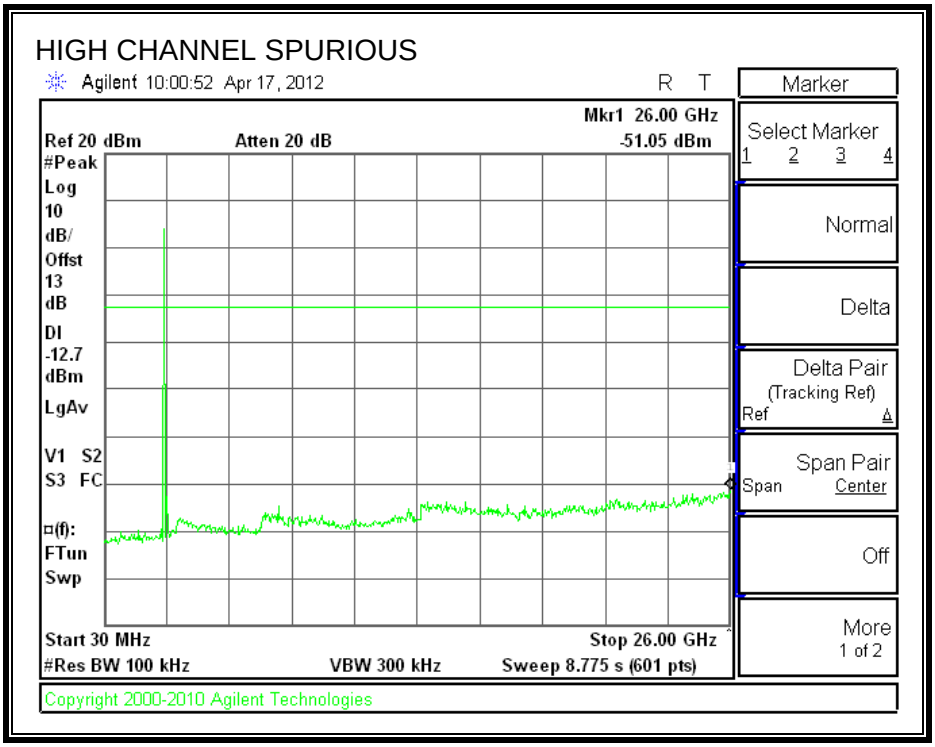
SPURIOUS EMISSIONS, MID CHANNEL





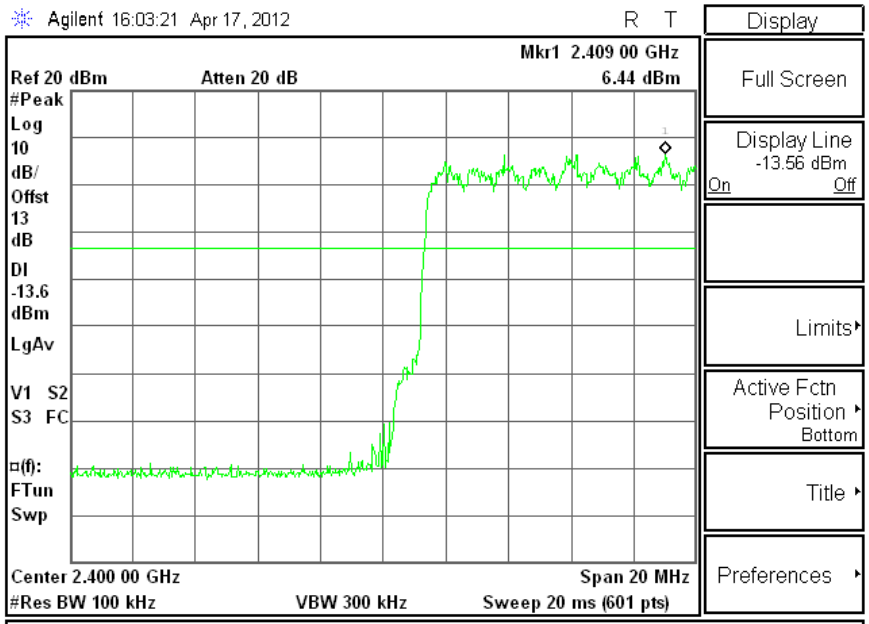
SPURIOUS EMISSIONS, HIGH CHANNEL



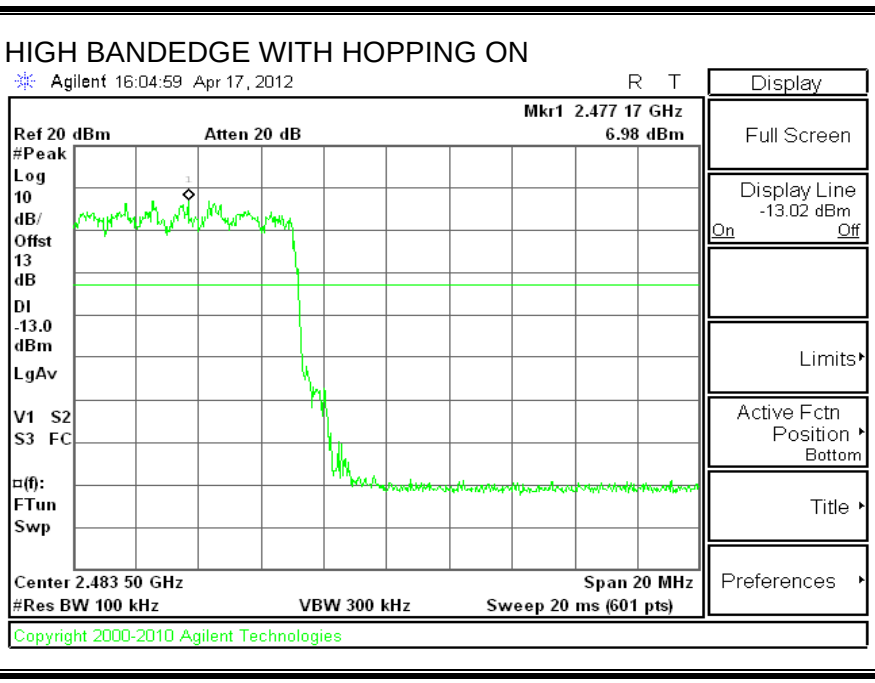


SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON

LOW BANDEDGE WITH HOPPING ON



HIGH BANDEDGE WITH HOPPING ON



7. RADIATED TEST RESULTS

7.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

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

TEST PROCEDURE

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

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

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

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

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

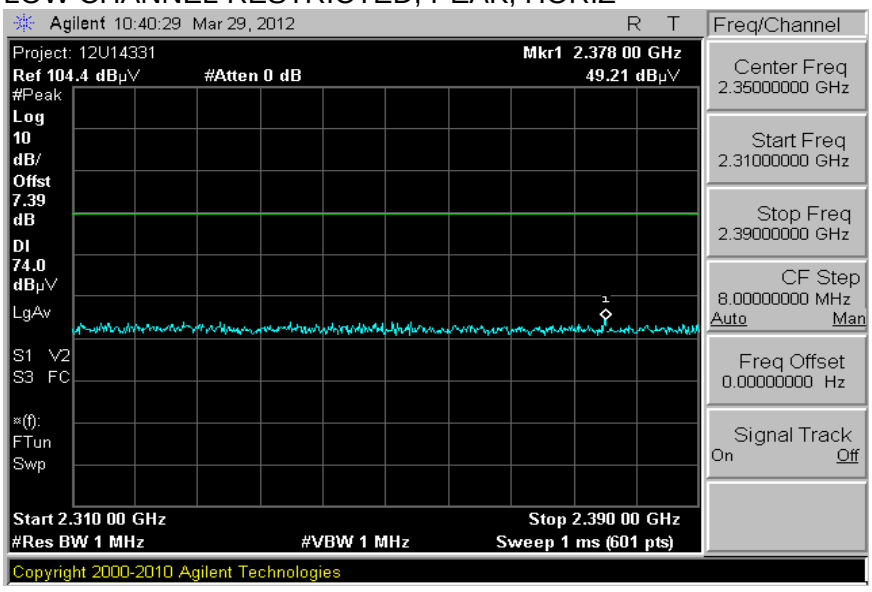
7.2. TRANSMITTER ABOVE 1 GHz

7.2.1. BASIC DATA RATE GFSK MODULATION

STANDARD COVER

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

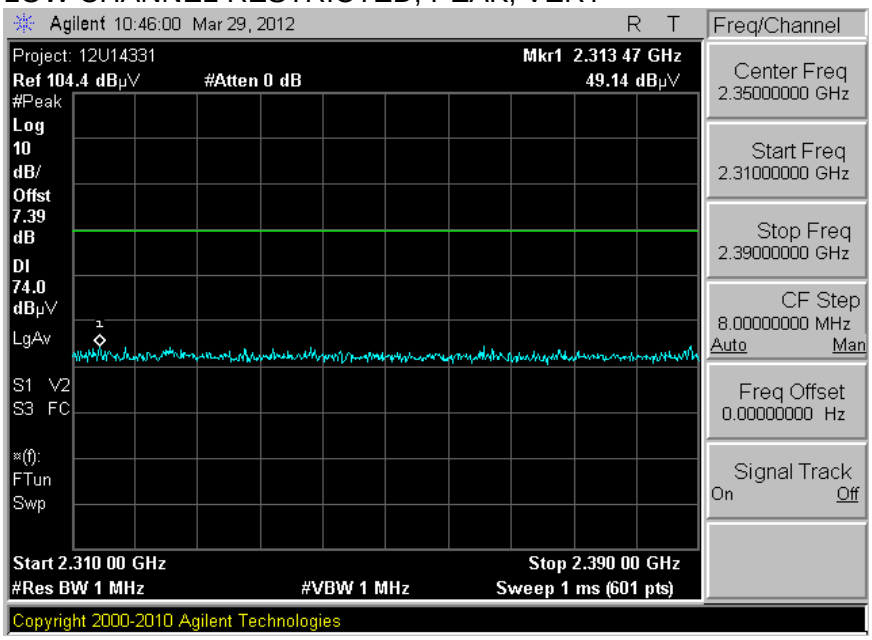
LOW CHANNEL RESTRICTED, PEAK, HORIZ



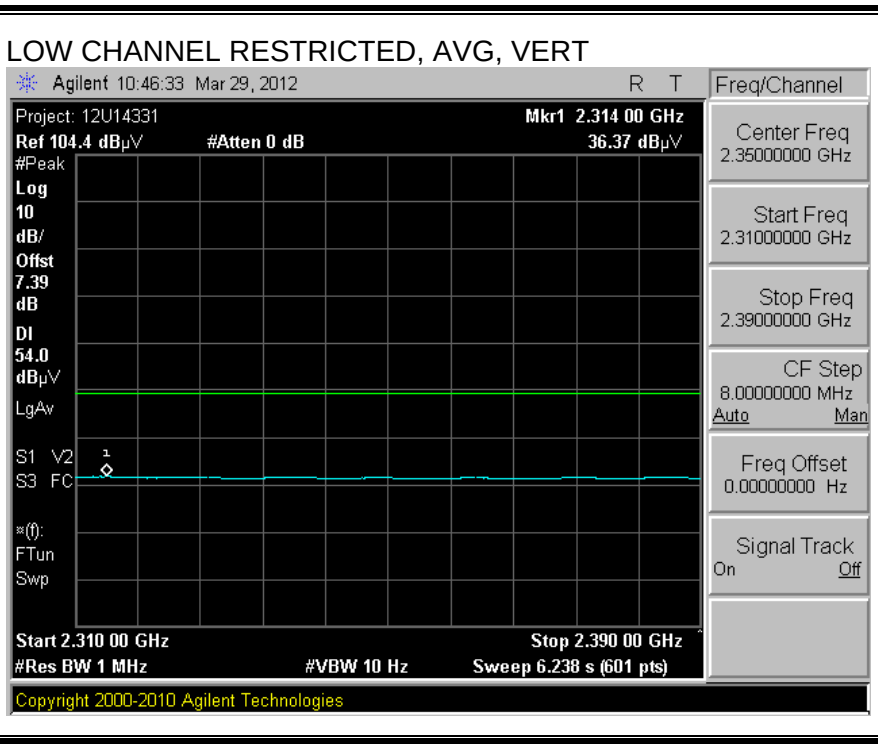
LOW CHANNEL RESTRICTED, AVG, HORIZ

RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

LOW CHANNEL RESTRICTED, PEAK, VERT

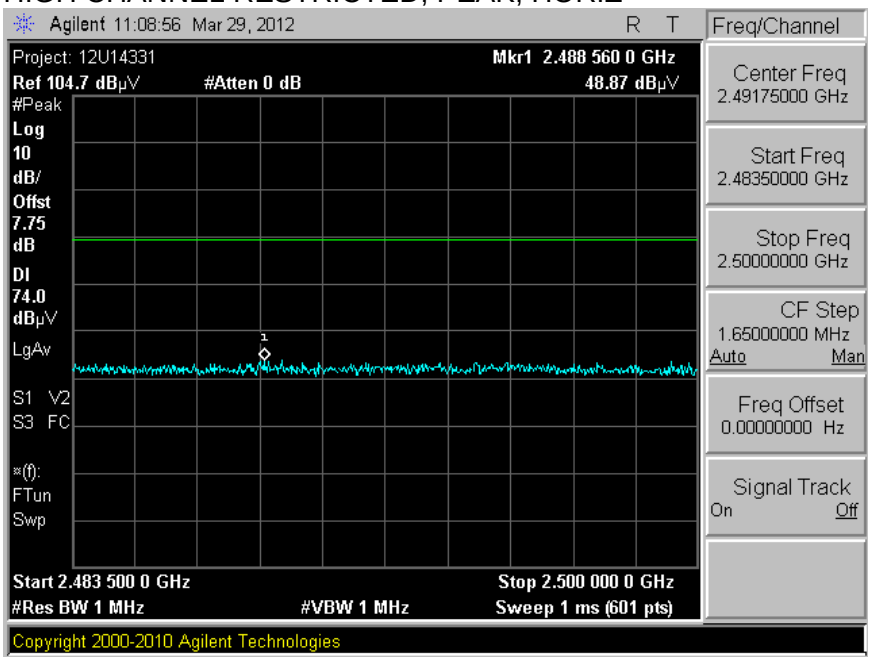


LOW CHANNEL RESTRICTED, AVG, VERT

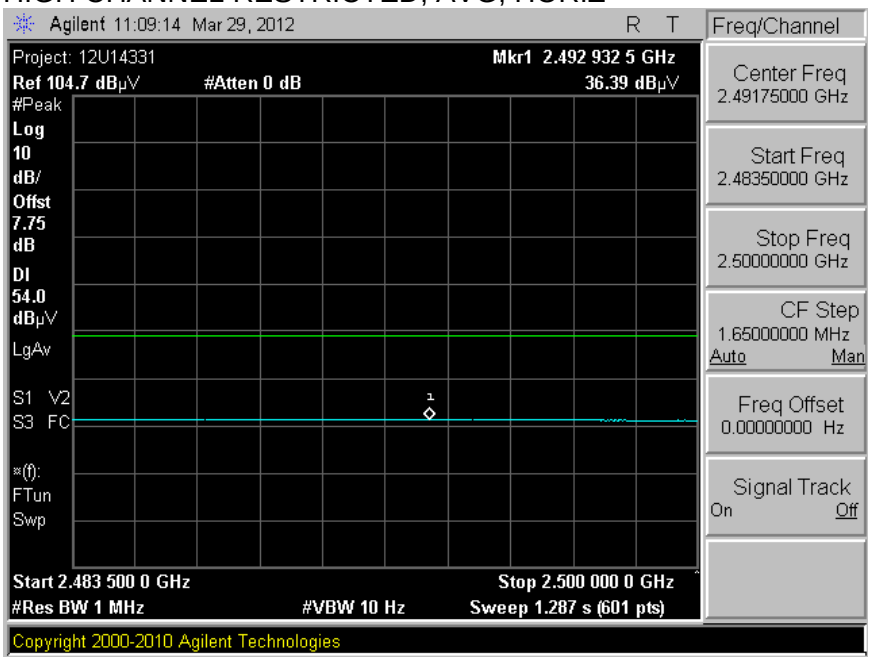


RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

HIGH CHANNEL RESTRICTED, PEAK, HORIZ

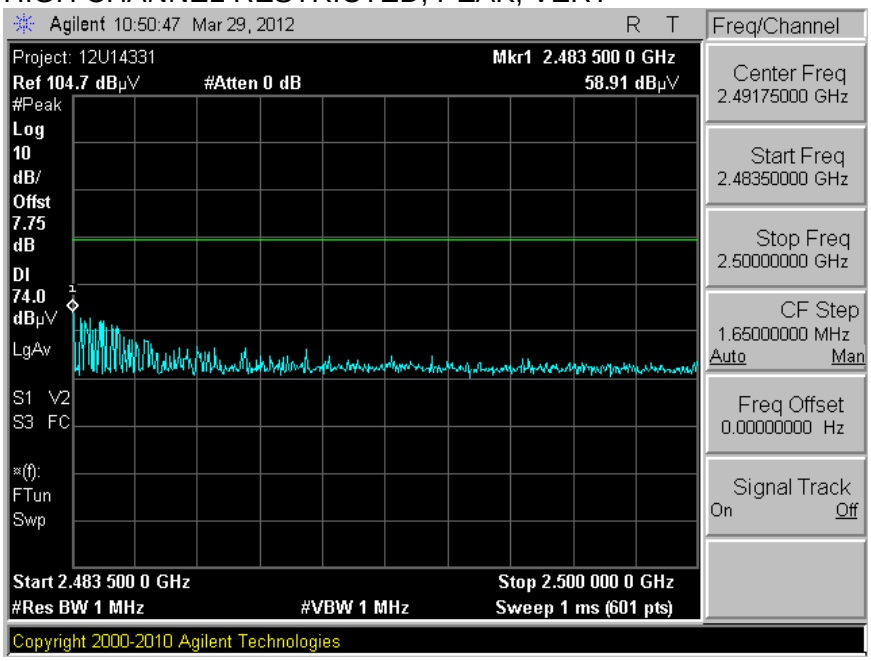


HIGH CHANNEL RESTRICTED, AVG, HORIZ

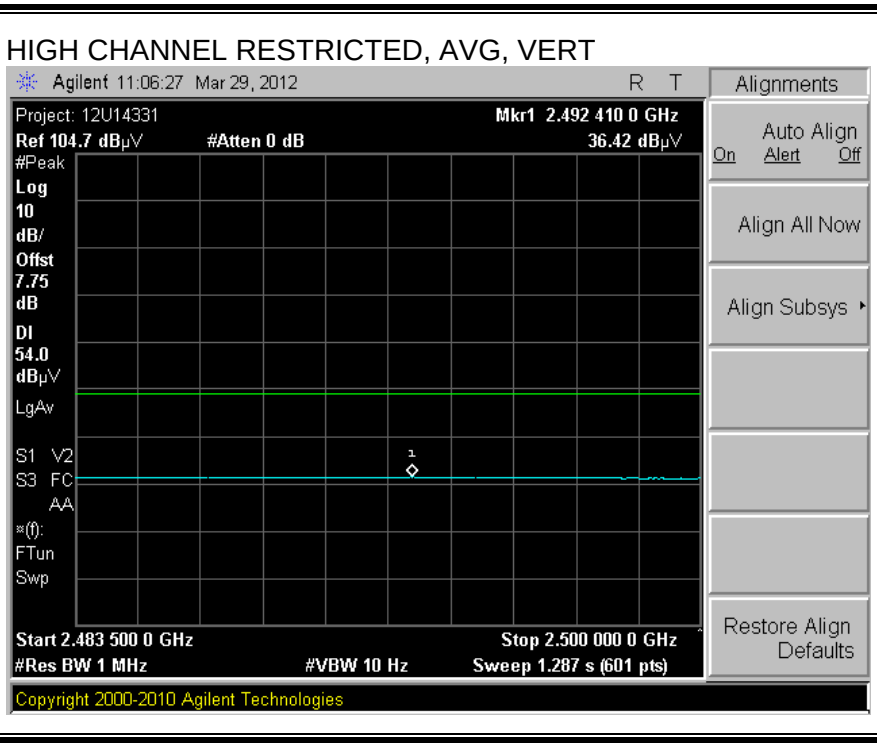


RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

HIGH CHANNEL RESTRICTED, PEAK, VERT



HIGH CHANNEL RESTRICTED, AVG, VERT



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 3m Chamber

Company: LG
Project #: 12U14331
Date: 3/29/2012
Test Engineer: D. Garcia
Configuration: Y position (worst case), AC adapter, standard back cover
Mode: GFSK, Bluetooth

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T34 HP 8449B		T39; ARA 18-26GHz; S/N:1013	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

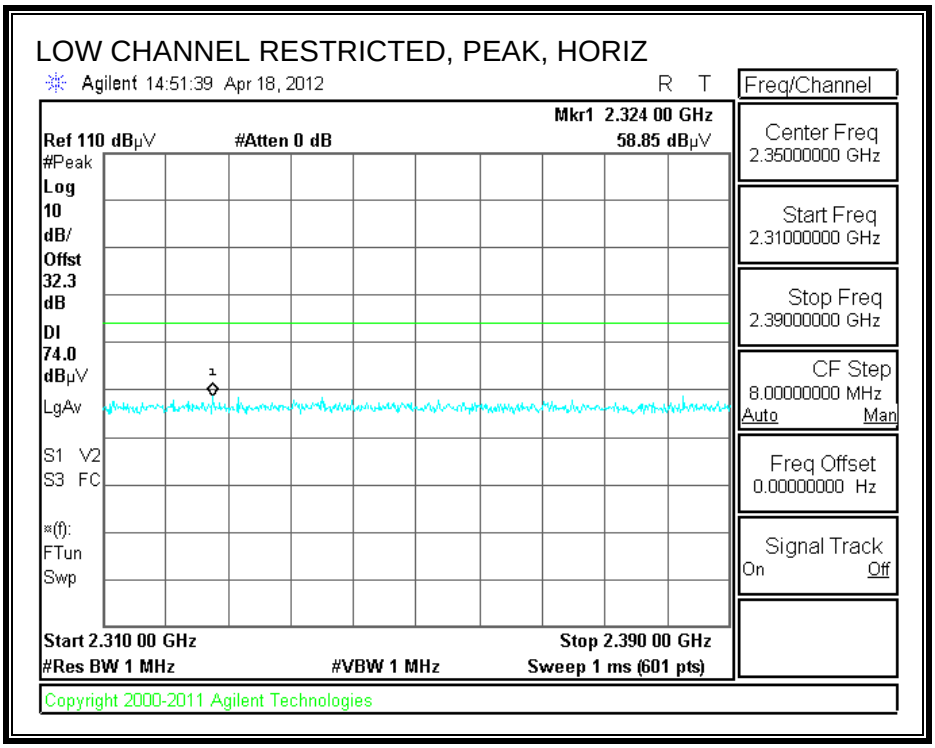
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Channel: 2402 MHz															
4.804	3.0	45.7	38.5	33.1	6.8	-34.1	0.0	0.0	51.5	44.3	74	54	-22.5	-9.7	H
4.804	3.0	44.2	37.3	33.1	6.8	-34.1	0.0	0.0	50.0	43.1	74	54	-24.0	-10.9	V
Mid Channel: 2441 MHz															
4.882	3.0	46.2	38.2	33.2	6.8	-34.0	0.0	0.0	52.1	44.1	74	54	-21.9	-9.9	H
7.323	3.0	45.8	36.8	36.3	9.1	-33.1	0.0	0.0	58.1	49.1	74	54	-15.9	-4.9	H
4.882	3.0	46.1	38.6	33.2	6.8	-34.0	0.0	0.0	52.0	44.5	74	54	-22.0	-9.5	V
7.323	3.0	43.3	33.6	36.3	9.1	-33.1	0.0	0.0	55.6	45.9	74	54	-18.4	-8.1	V
High Channel: 2480 MHz															
4.960	3.0	45.5	37.9	33.2	6.9	-34.0	0.0	0.0	51.6	43.9	74	54	-22.4	-10.1	H
7.440	3.0	47.1	38.8	36.5	9.1	-33.0	0.0	0.0	59.6	51.3	74	54	-14.4	-2.7	H
4.960	3.0	45.6	38.0	33.2	6.9	-34.0	0.0	0.0	51.6	44.0	74	54	-22.4	-10.0	V
7.440	3.0	46.2	37.5	36.5	9.1	-33.0	0.0	0.0	58.8	50.0	74	54	-15.2	-4.0	V

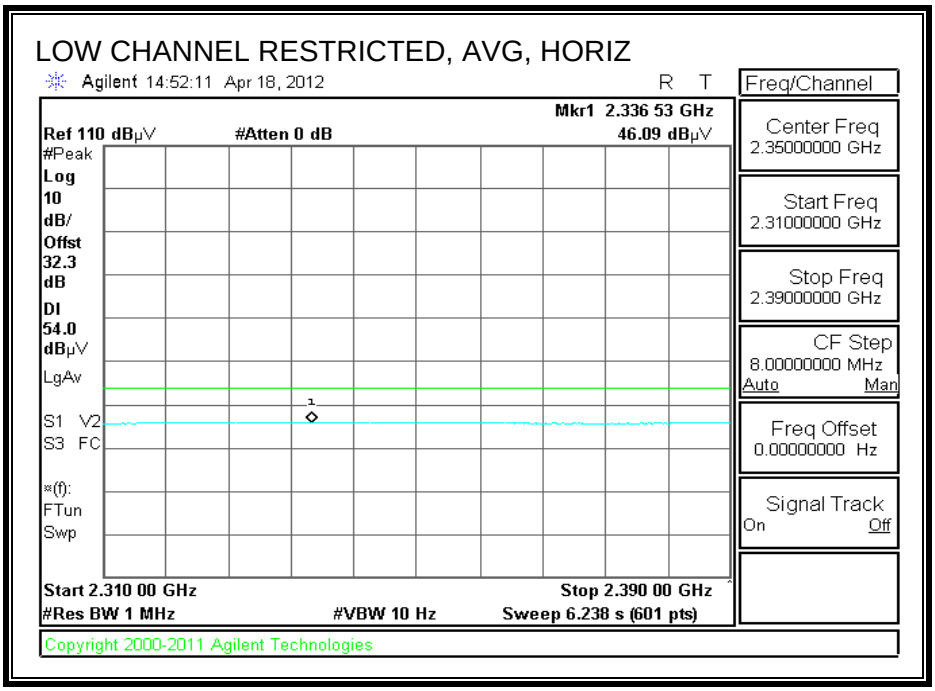
Rev. 11.10.11

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		

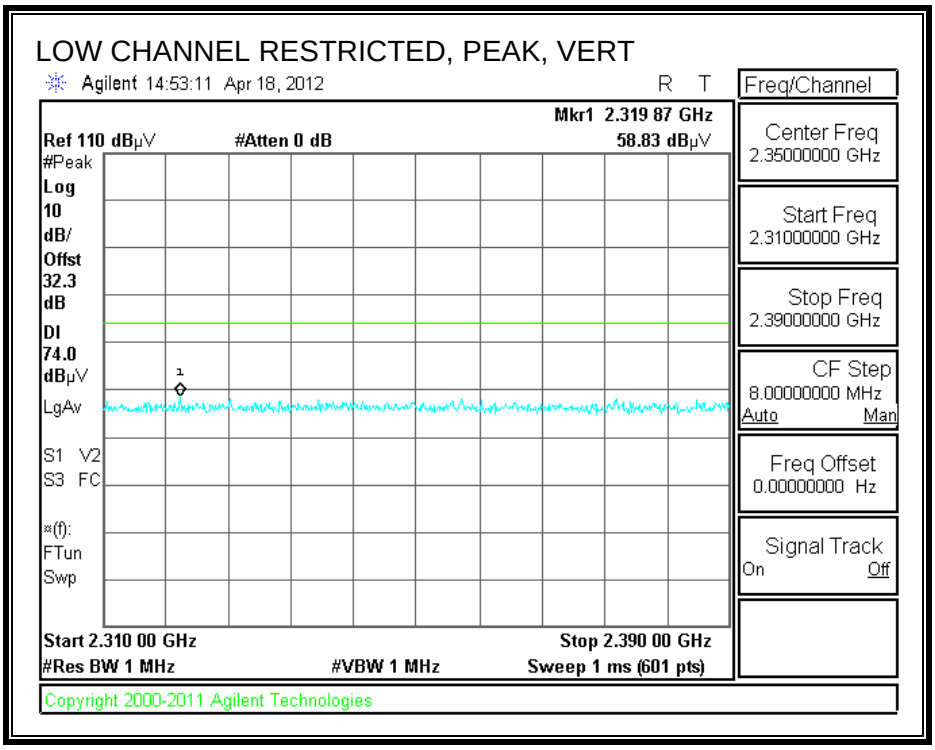
INDUCTIVE COVER

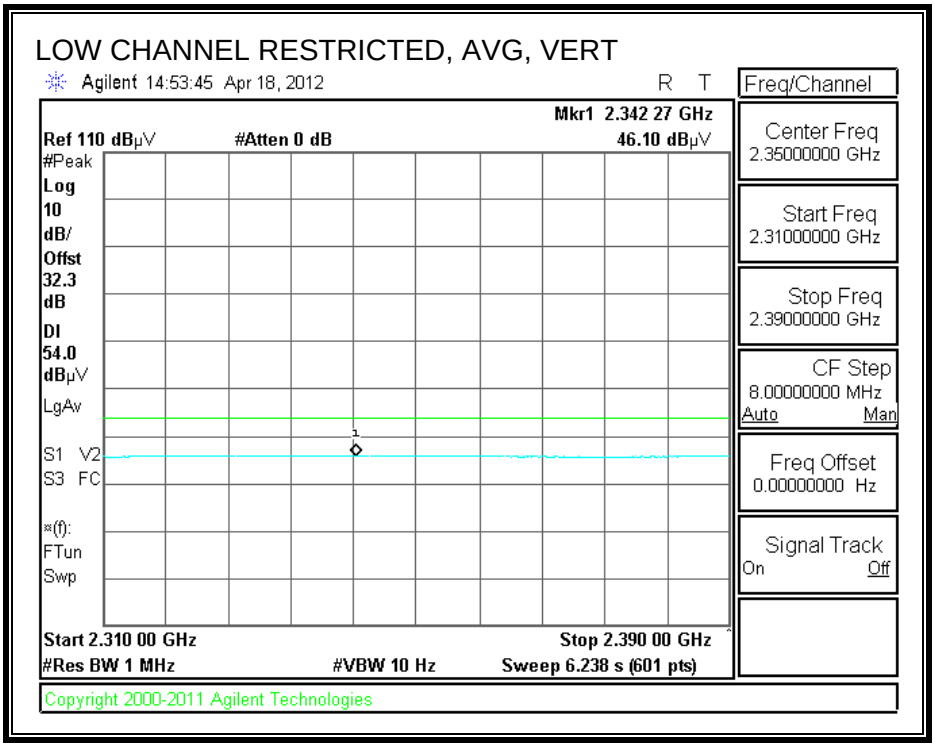
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



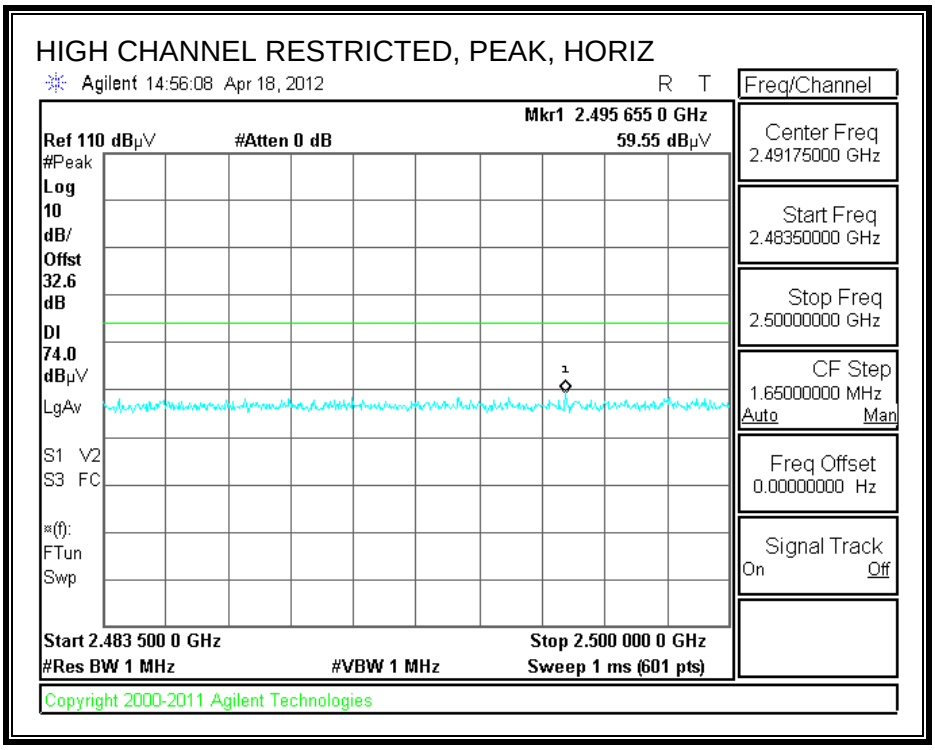


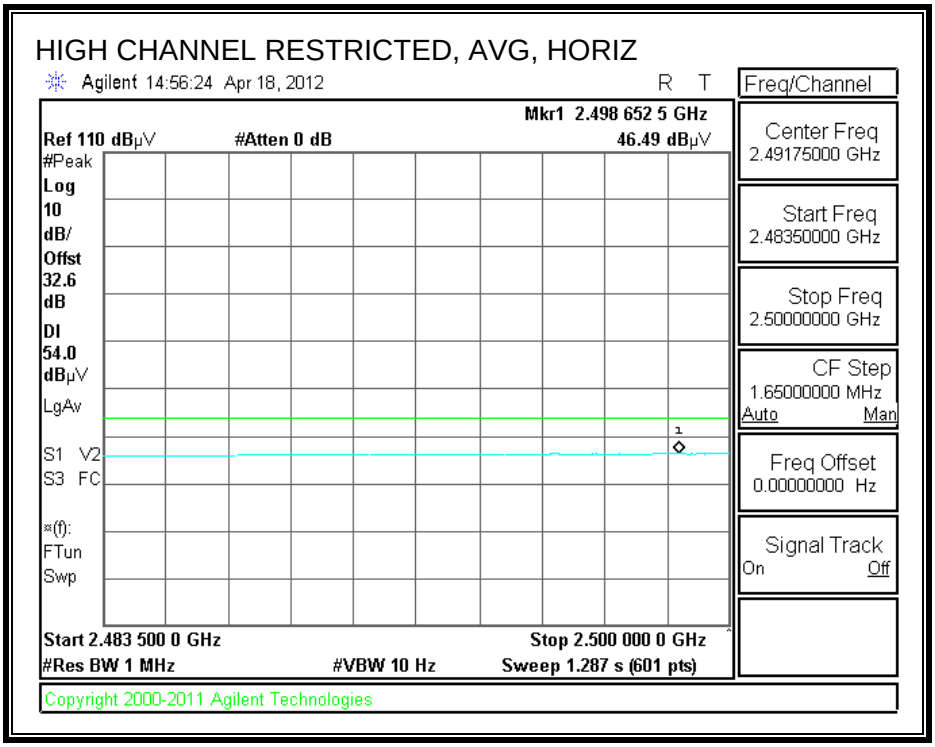
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



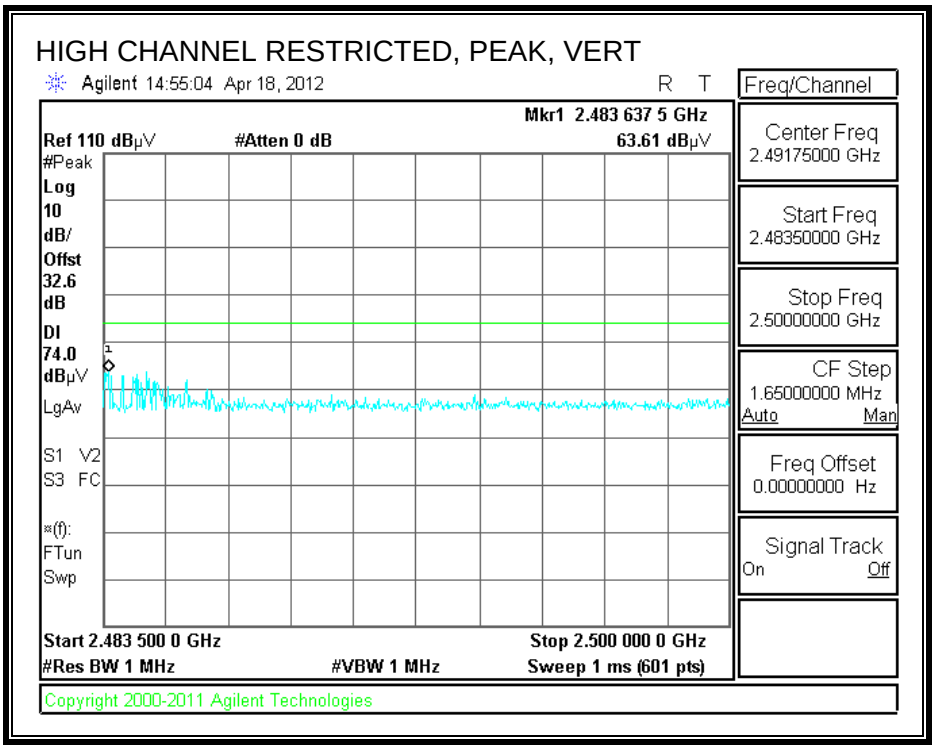


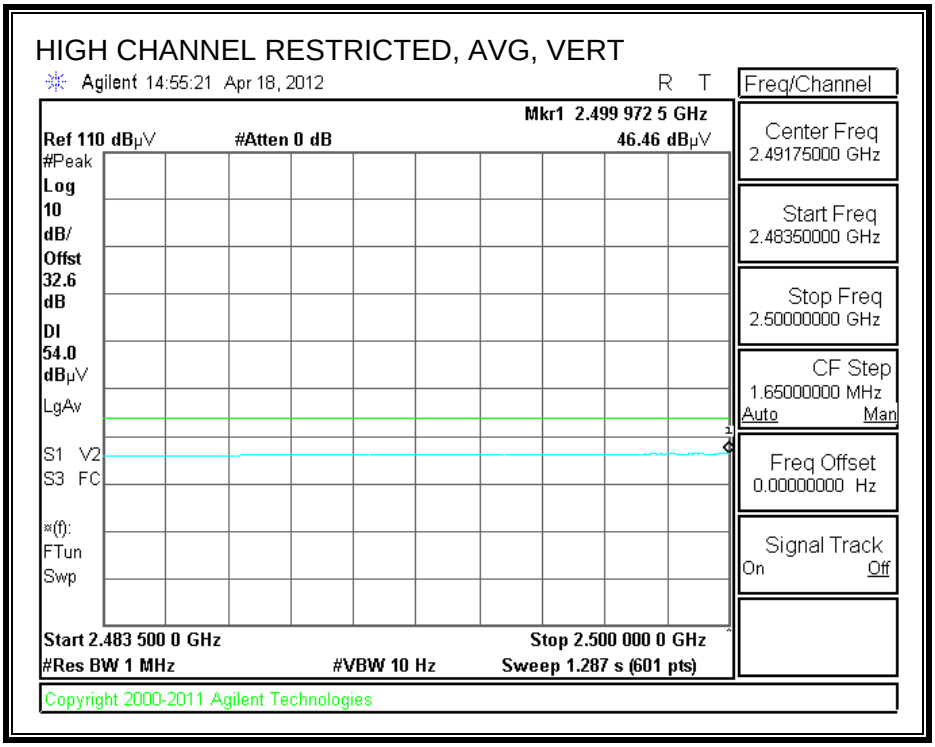
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Chin Pang
Date: 04/18/12
Project #: 12U14331
Company: LG
Test Target: FCC 15.247
Configuration: EUT (Inductive Cover)
Mode Oper: TX, GFSK

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

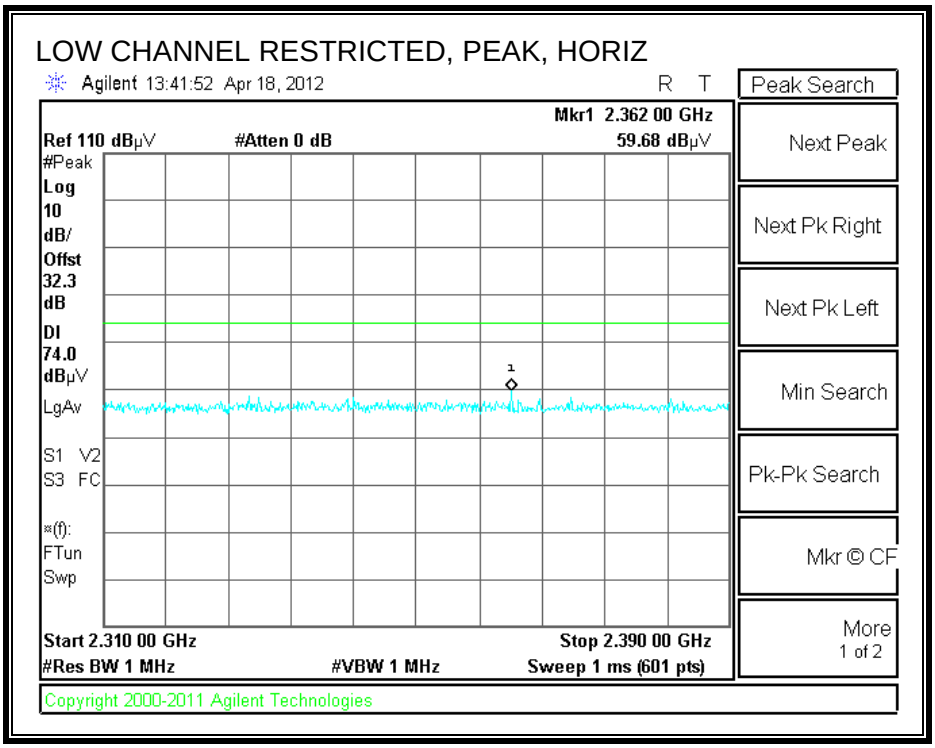
Average Field Strength Limit
Peak Field Strength Limit
Margin vs. Average Limit
Margin vs. Peak Limit

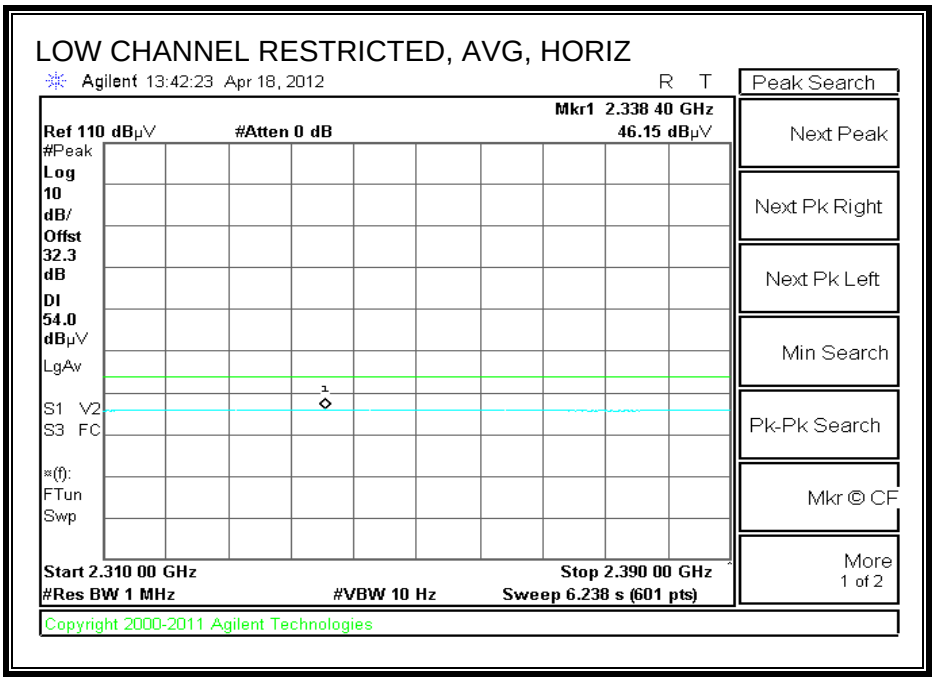
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
Low Ch, 2402MHz													
4.804	3.0	41.3	33.4	5.5	-35.5	0.0	0.0	44.7	74.0	-29.3	H	P	
4.804	3.0	34.0	33.4	5.5	-35.5	0.0	0.0	37.4	54.0	-16.6	H	A	
4.804	3.0	39.6	33.4	5.5	-35.5	0.0	0.0	43.1	74.0	-30.9	V	P	
4.804	3.0	30.4	33.4	5.5	-35.5	0.0	0.0	33.8	54.0	-20.2	V	A	
Mid Ch, 2441MHz													
4.882	3.0	40.0	33.5	5.6	-35.5	0.0	0.0	43.6	74.0	-30.4	V	P	
4.882	3.0	31.3	33.5	5.6	-35.5	0.0	0.0	34.8	54.0	-19.2	V	A	
7.323	3.0	40.1	35.7	7.5	-35.4	0.0	0.0	47.9	74.0	-26.1	V	P	
7.323	3.0	30.4	35.7	7.5	-35.4	0.0	0.0	38.2	54.0	-15.8	V	A	
4.882	3.0	43.1	33.5	5.6	-35.5	0.0	0.0	46.7	74.0	-27.3	H	P	
4.882	3.0	35.2	33.5	5.6	-35.5	0.0	0.0	38.7	54.0	-15.3	H	A	
7.323	3.0	41.4	35.7	7.5	-35.4	0.0	0.0	49.2	74.0	-24.8	H	P	
7.323	3.0	32.7	35.7	7.5	-35.4	0.0	0.0	40.5	54.0	-13.5	H	A	
High Ch, 2480MHz													
4.960	3.0	40.9	33.6	5.6	-35.5	0.0	0.0	44.6	74.0	-29.4	V	P	
4.960	3.0	31.9	33.6	5.6	-35.5	0.0	0.0	35.6	54.0	-18.4	V	A	
7.440	3.0	44.1	35.9	7.5	-35.5	0.0	0.0	52.1	74.0	-21.9	V	P	
7.440	3.0	35.9	35.9	7.5	-35.5	0.0	0.0	43.9	54.0	-10.1	V	A	
4.960	3.0	40.8	33.6	5.6	-35.5	0.0	0.0	44.5	74.0	-29.5	H	P	
4.960	3.0	31.2	33.6	5.6	-35.5	0.0	0.0	34.9	54.0	-19.1	H	A	
7.440	3.0	41.4	35.9	7.5	-35.5	0.0	0.0	49.4	74.0	-24.6	H	P	
7.440	3.0	33.1	35.9	7.5	-35.5	0.0	0.0	41.1	54.0	-12.9	H	A	

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

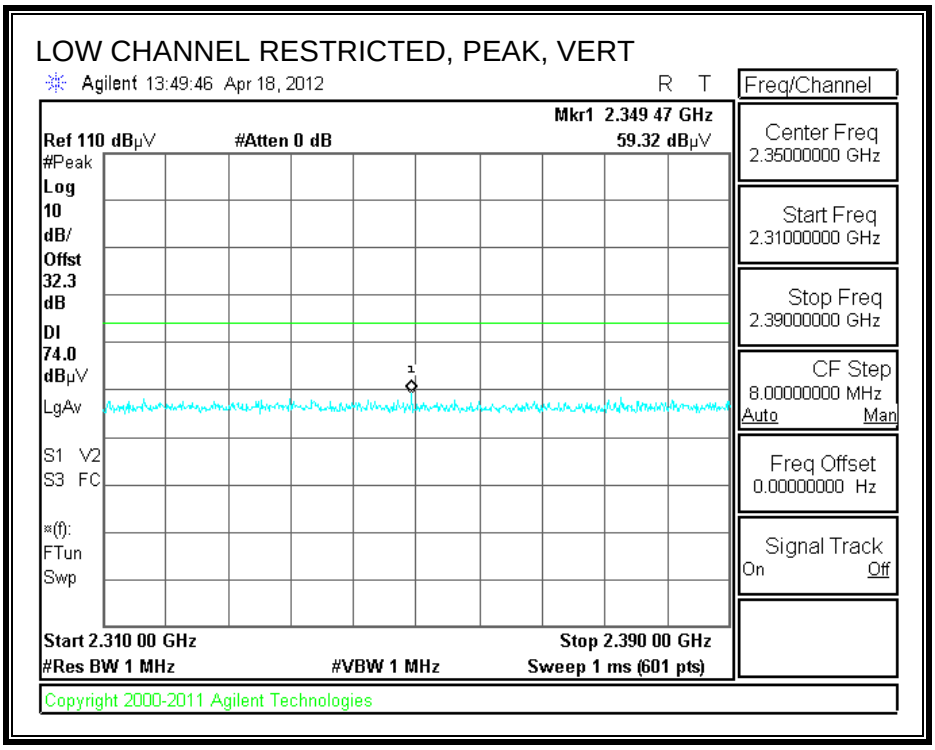
INDUCTIVE CHARGER AND INDUCTIVE COVER

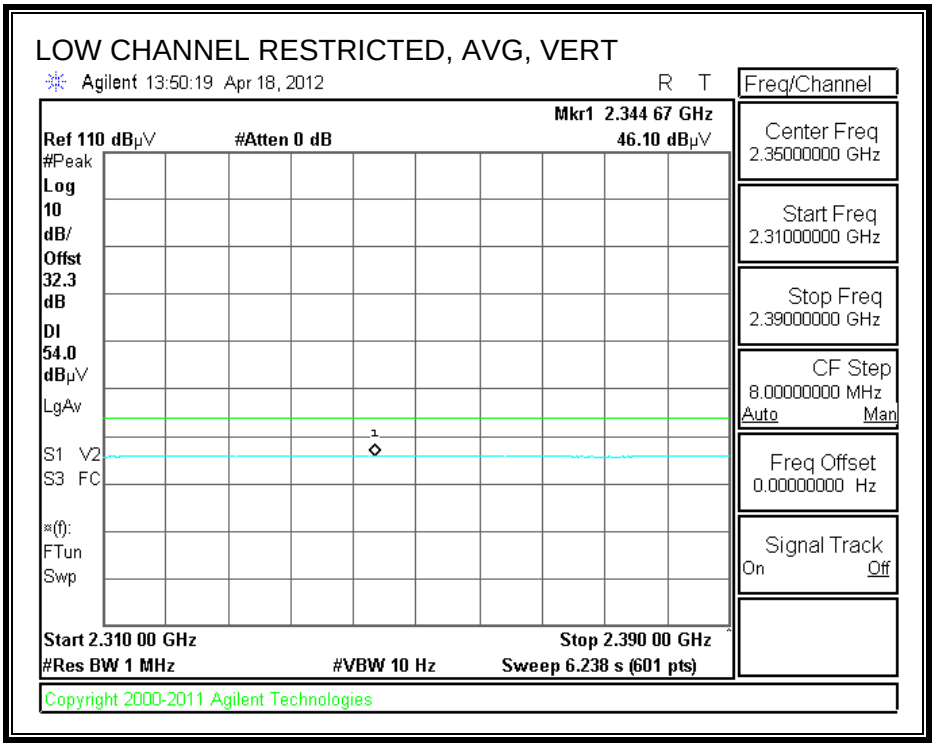
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



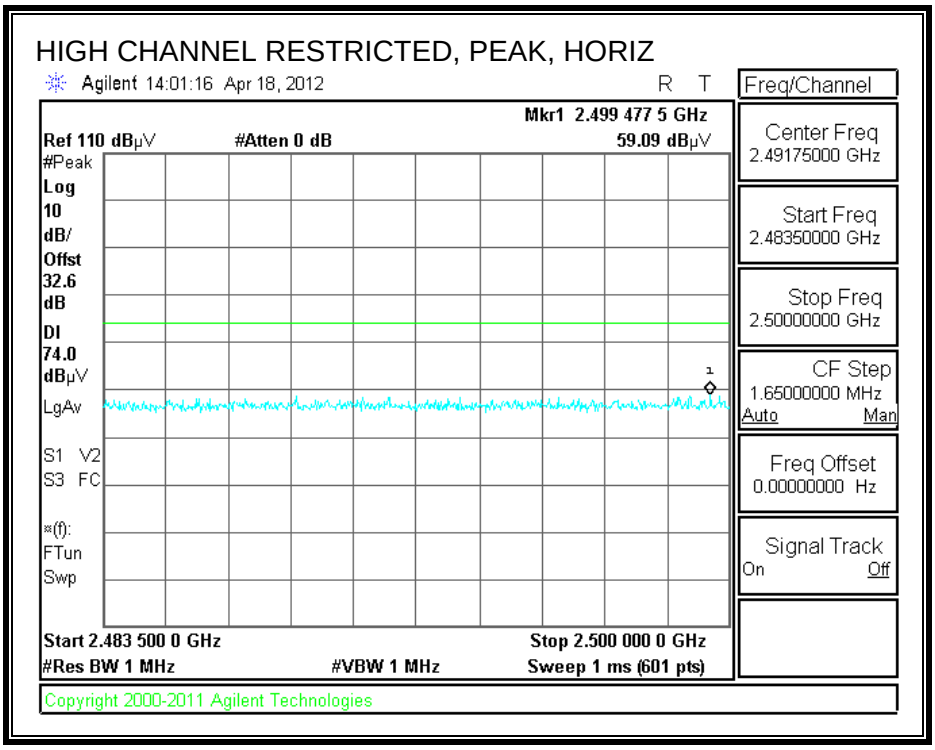


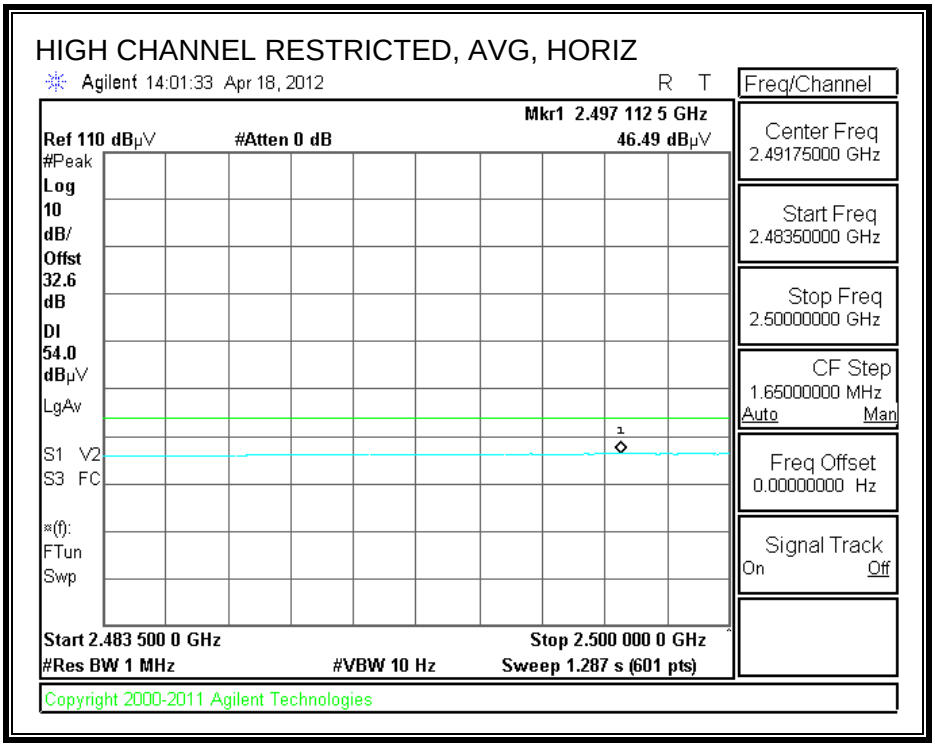
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



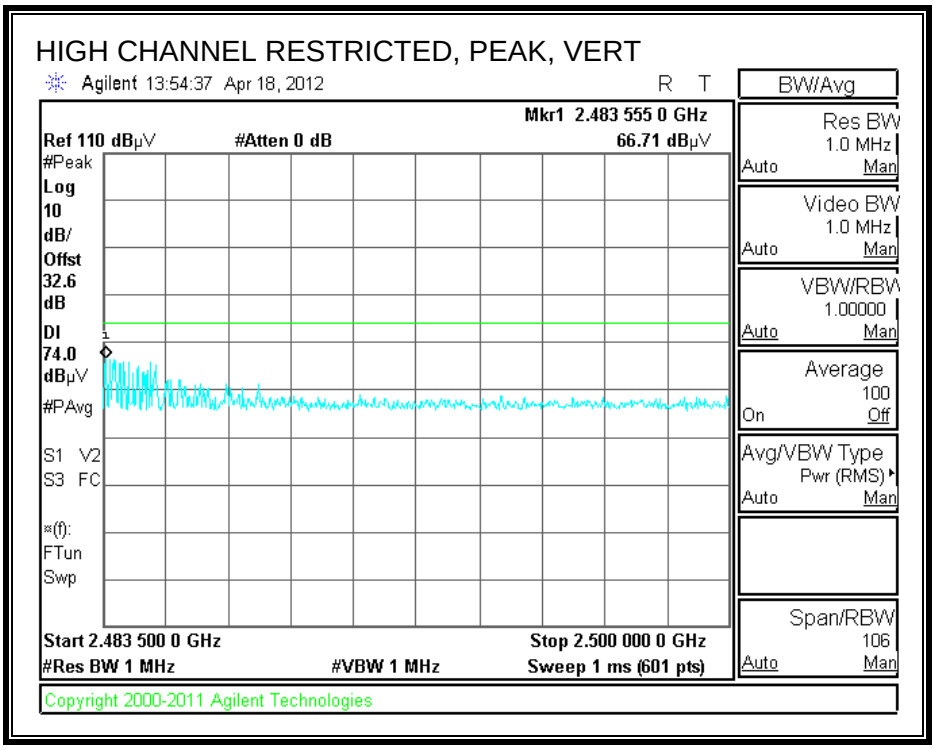


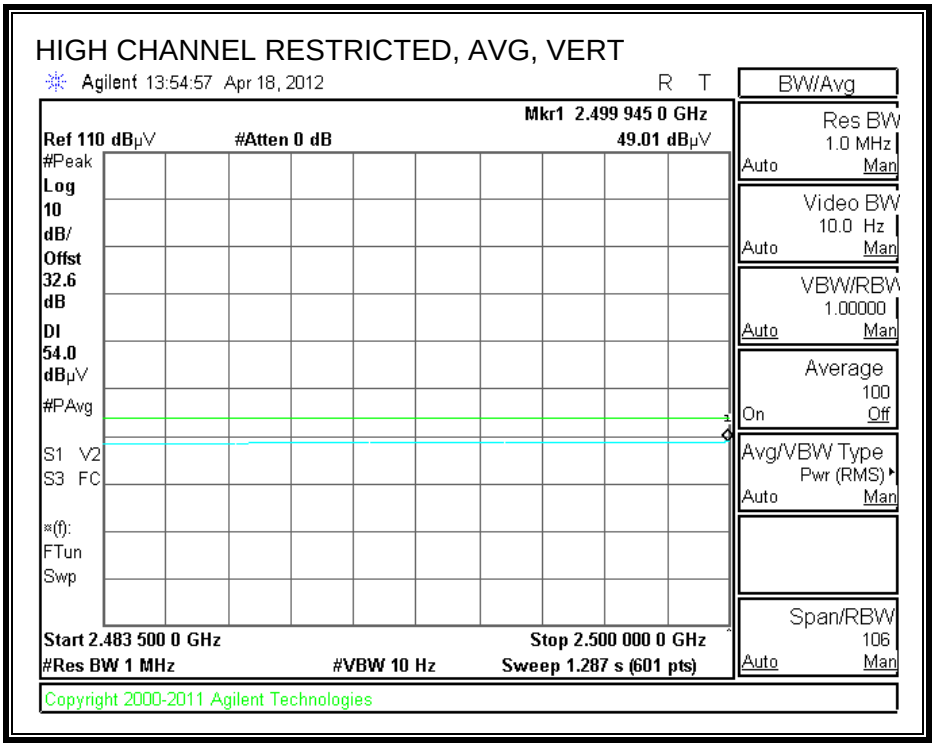
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Chin Pang
Date: 04/18/12
Project #: 12U14331
Company: LG
Test Target: FCC 15.247
Configuration: EUT (On Inductive charging Pad)
Mode Oper: TX, GFSK

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	39.4	33.4	6.2	-35.5	0.0	0.0	43.5	74.0	-30.5	H	P	
4.804	3.0	29.3	33.4	6.2	-35.5	0.0	0.0	33.4	54.0	-20.6	H	A	
4.804	3.0	41.0	33.4	6.2	-35.5	0.0	0.0	45.1	74.0	-28.9	V	P	
4.804	3.0	31.5	33.4	6.2	-35.5	0.0	0.0	35.6	54.0	-18.4	V	A	
Mid Ch, 2441MHz													
4.882	3.0	37.9	33.5	6.2	-35.5	0.0	0.0	42.1	74.0	-31.9	H	P	
4.882	3.0	27.7	33.5	6.2	-35.5	0.0	0.0	31.9	54.0	-22.1	H	A	
7.323	3.0	43.6	35.7	8.4	-35.4	0.0	0.0	52.3	74.0	-21.7	H	P	
7.323	3.0	35.4	35.7	8.4	-35.4	0.0	0.0	44.1	54.0	-9.9	H	A	
4.882	3.0	39.0	33.5	6.2	-35.5	0.0	0.0	43.2	74.0	-30.8	V	P	
4.882	3.0	28.8	33.5	6.2	-35.5	0.0	0.0	33.0	54.0	-21.0	V	A	
7.323	3.0	41.1	35.7	8.4	-35.4	0.0	0.0	49.8	74.0	-24.2	V	P	
7.323	3.0	32.9	35.7	8.4	-35.4	0.0	0.0	41.6	54.0	-12.4	V	A	
High Ch, 2480MHz													
4.960	3.0	37.2	33.6	6.3	-35.5	0.0	0.0	41.6	74.0	-32.4	H	P	
4.960	3.0	26.7	33.6	6.3	-35.5	0.0	0.0	31.1	54.0	-22.9	H	A	
7.440	3.0	46.1	35.9	8.4	-35.5	0.0	0.0	55.0	74.0	-19.0	H	P	
7.440	3.0	38.0	35.9	8.4	-35.5	0.0	0.0	46.9	54.0	-7.1	H	A	
4.960	3.0	38.0	33.6	6.3	-35.5	0.0	0.0	42.4	74.0	-31.6	V	P	
4.960	3.0	28.4	33.6	6.3	-35.5	0.0	0.0	32.8	54.0	-21.2	V	A	
7.440	3.0	43.3	35.9	8.4	-35.5	0.0	0.0	52.1	74.0	-21.9	V	P	
7.440	3.0	35.1	35.9	8.4	-35.5	0.0	0.0	43.9	54.0	-10.1	V	A	

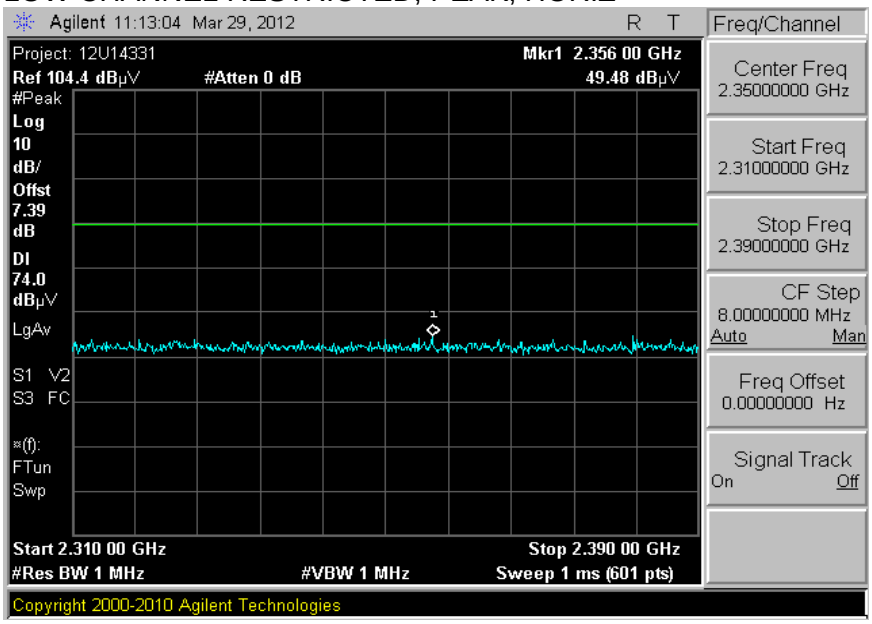
Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

7.2.2. DQPSK MODULATION

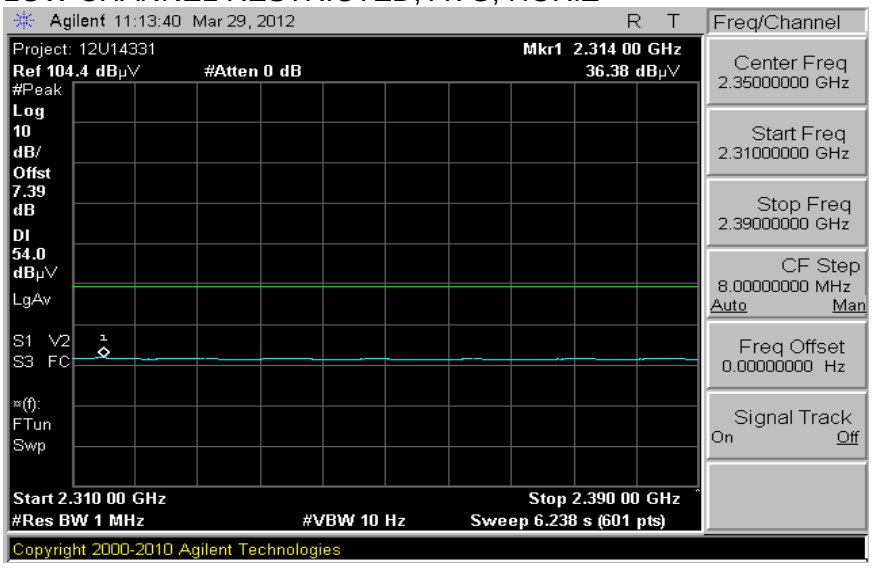
STANDARD COVER

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

LOW CHANNEL RESTRICTED, PEAK, HORIZ

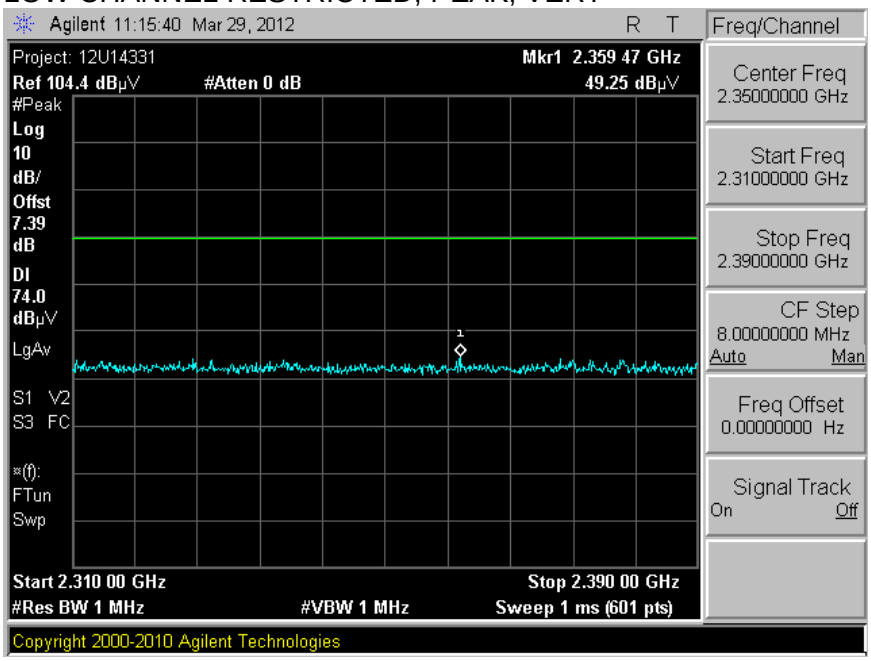


LOW CHANNEL RESTRICTED, AVG, HORIZ

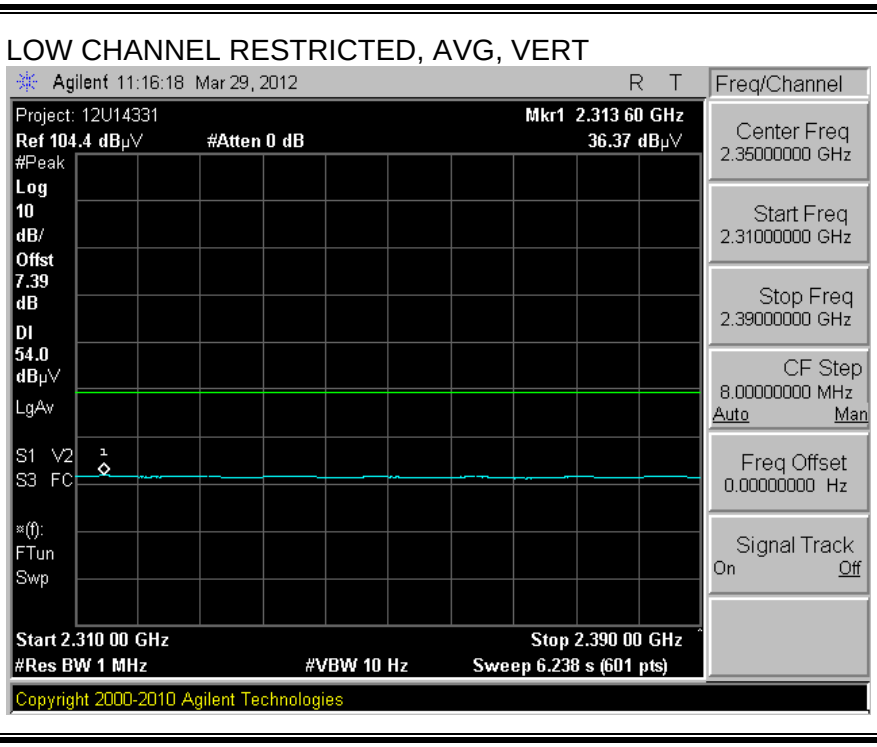


RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

LOW CHANNEL RESTRICTED, PEAK, VERT

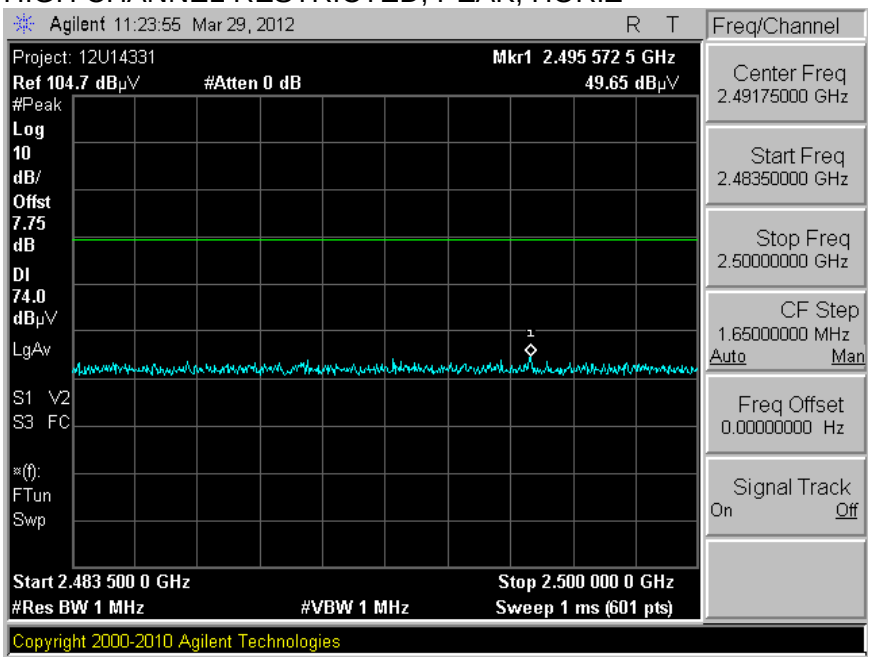


LOW CHANNEL RESTRICTED, AVG, VERT

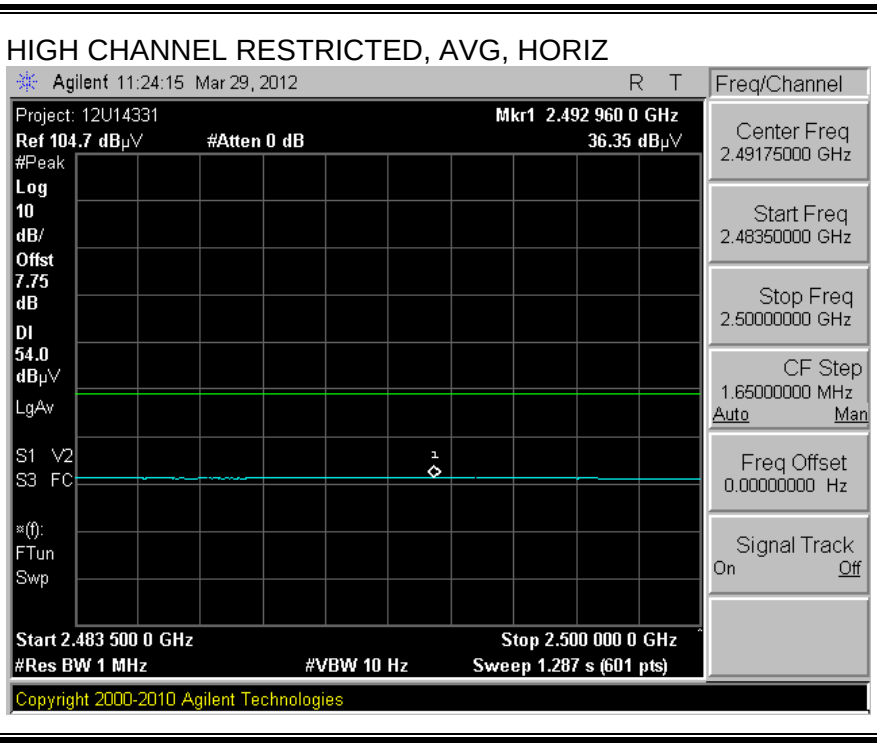


RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

HIGH CHANNEL RESTRICTED, PEAK, HORIZ

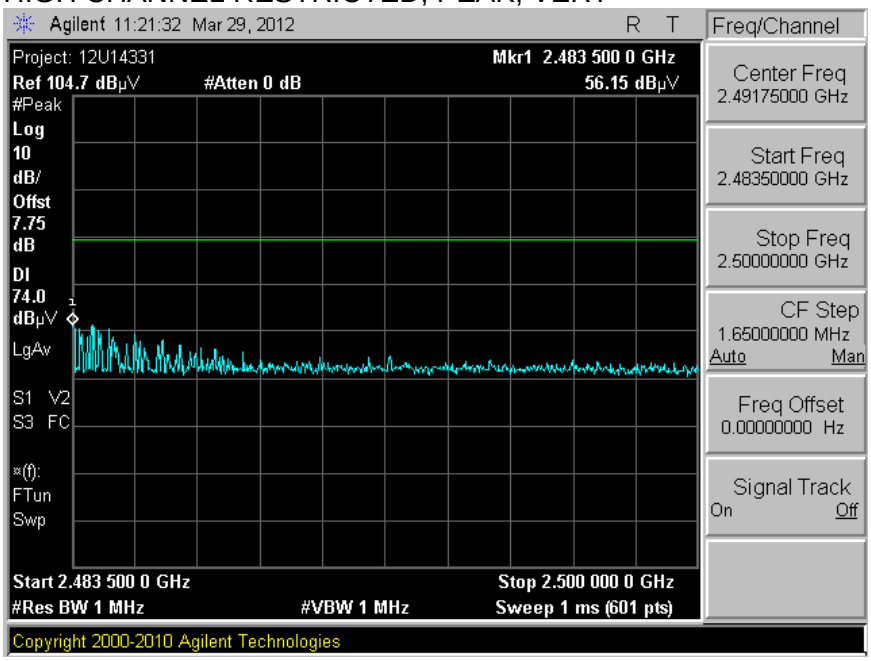


HIGH CHANNEL RESTRICTED, AVG, HORIZ

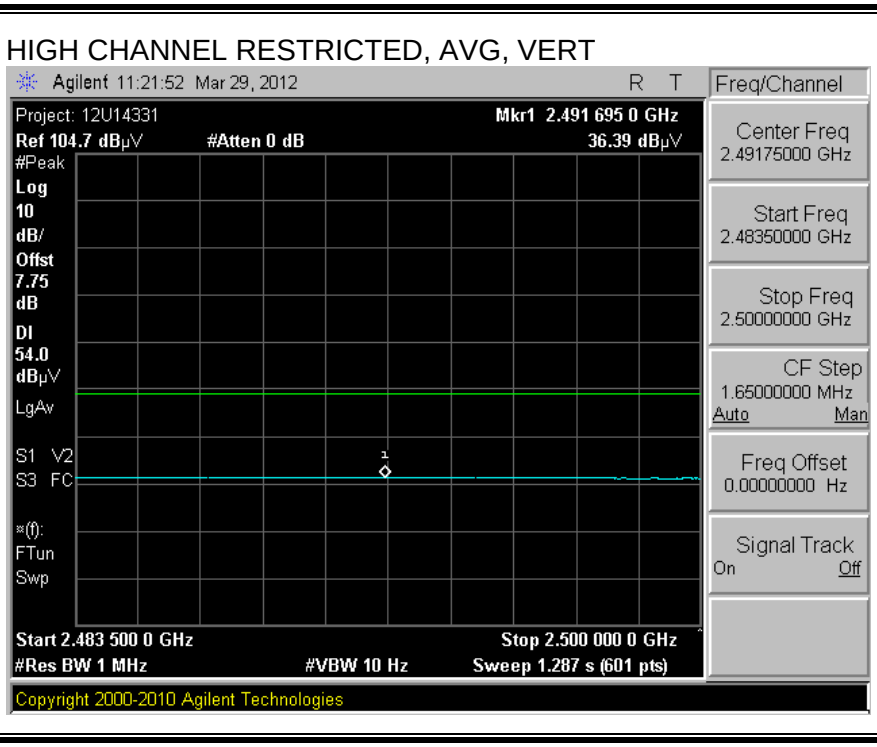


RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

HIGH CHANNEL RESTRICTED, PEAK, VERT



HIGH CHANNEL RESTRICTED, AVG, VERT



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 3m Chamber

Company: LG
Project #: 12U14331
Date: 3/29/2012
Test Engineer: D. Garcia
Configuration: Y position (worst case), AC adapter, standard back cover
Mode: QPSK, Bluetooth

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T34 HP 8449B		T39; ARA 18-26GHz; S/N:1013	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

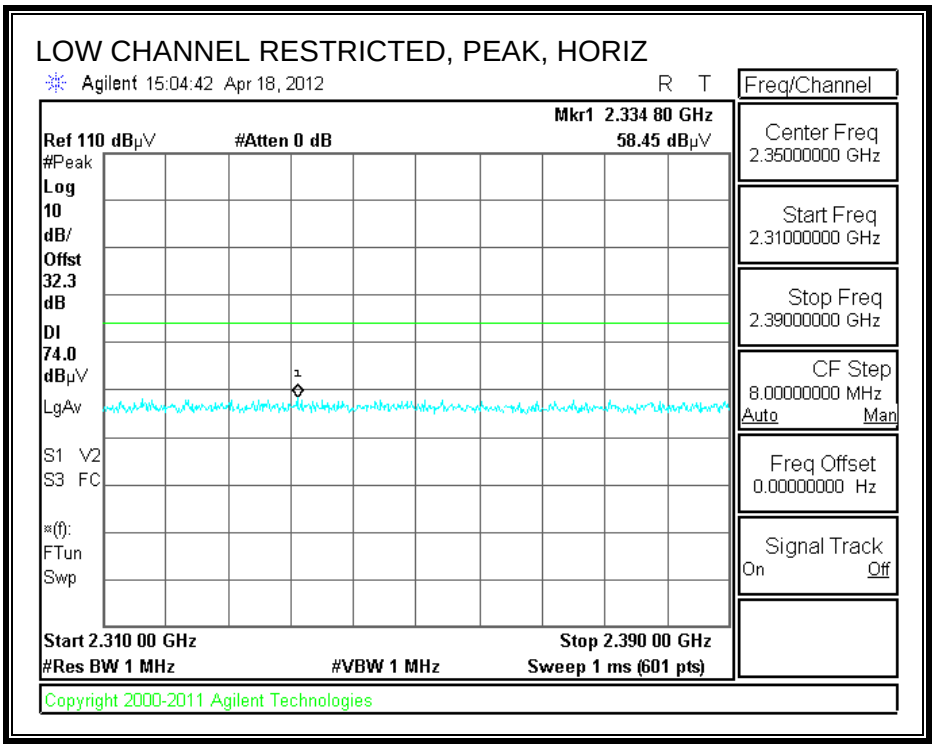
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Channel: 2402 MHz															
4.804	3.0	45.1	35.8	33.1	6.8	-34.1	0.0	0.0	50.9	41.6	74	54	-23.1	-12.4	H
4.804	3.0	43.1	34.2	33.1	6.8	-34.1	0.0	0.0	48.9	40.0	74	54	-25.1	-14.0	V
Mid Channel: 2441 MHz															V
4.882	3.0	45.4	35.1	33.2	6.8	-34.0	0.0	0.0	51.4	41.0	74	54	-22.6	-13.0	H
7.323	3.0	45.3	33.7	36.3	9.1	-33.1	0.0	0.0	57.6	46.0	74	54	-16.4	-8.0	H
4.882	3.0	45.3	35.4	33.2	6.8	-34.0	0.0	0.0	51.2	41.3	74	54	-22.8	-12.7	V
7.323	3.0	42.7	31.3	36.3	9.1	-33.1	0.0	0.0	55.0	43.6	74	54	-19.0	-10.4	V
High Channel: 2480 MHz															
4.960	3.0	44.3	34.7	33.2	6.9	-34.0	0.0	0.0	50.4	40.7	74	54	-23.6	-13.3	H
7.440	3.0	46.4	35.3	36.5	9.1	-33.0	0.0	0.0	59.0	47.8	74	54	-15.0	-6.2	H
4.960	3.0	44.4	34.8	33.2	6.9	-34.0	0.0	0.0	50.4	40.8	74	54	-23.6	-13.2	V
7.440	3.0	47.5	34.2	36.5	9.1	-33.0	0.0	0.0	60.0	46.7	74	54	-14.0	-7.3	V

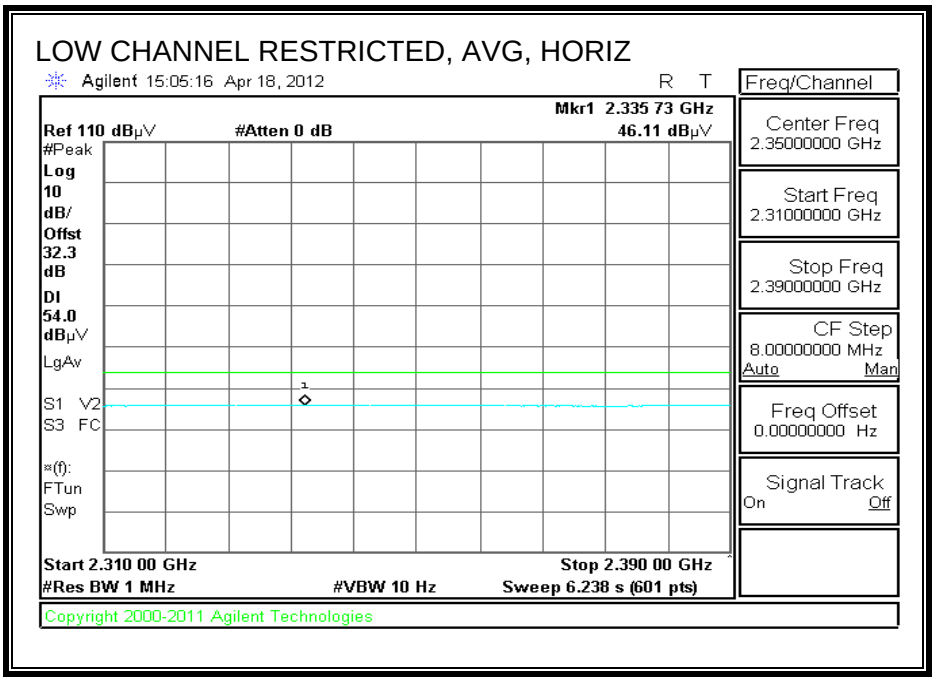
Rev. 11.10.11

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		

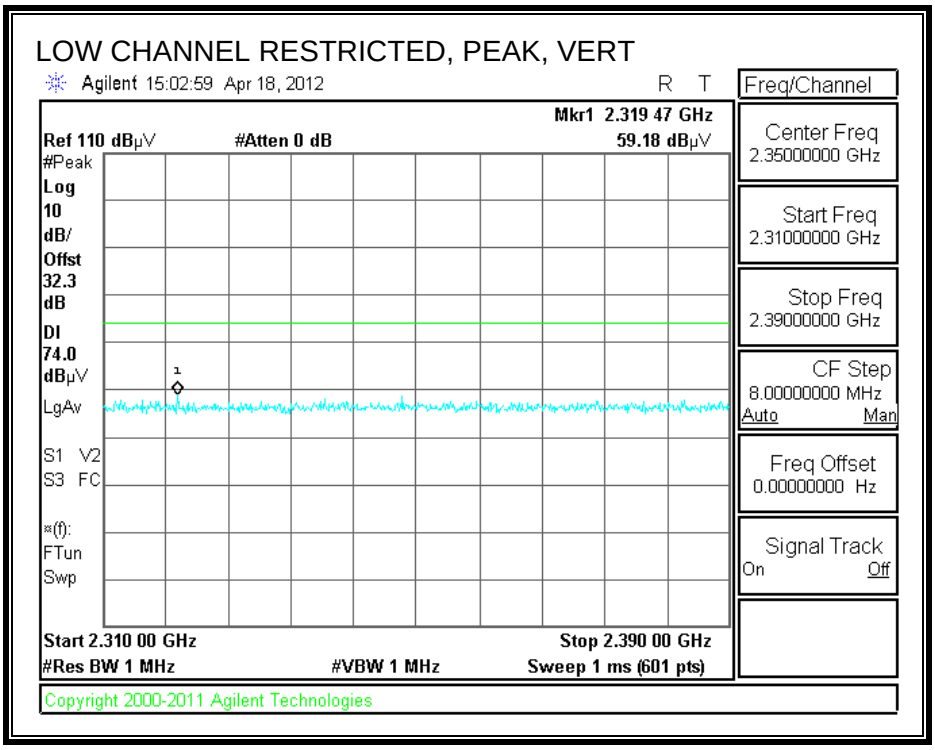
INDUCTIVE COVER

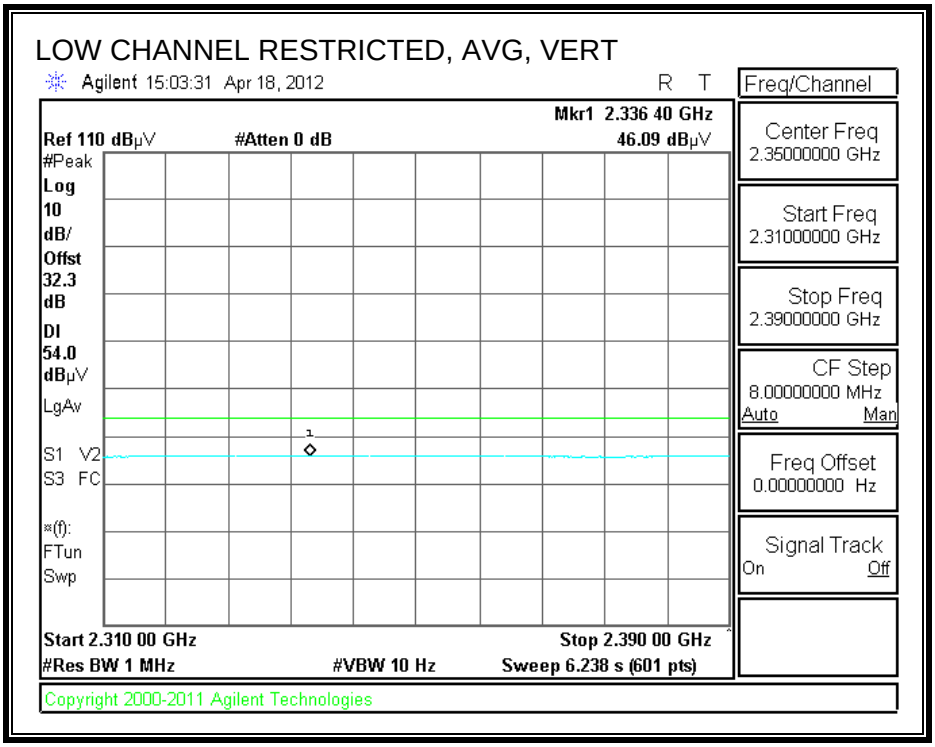
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



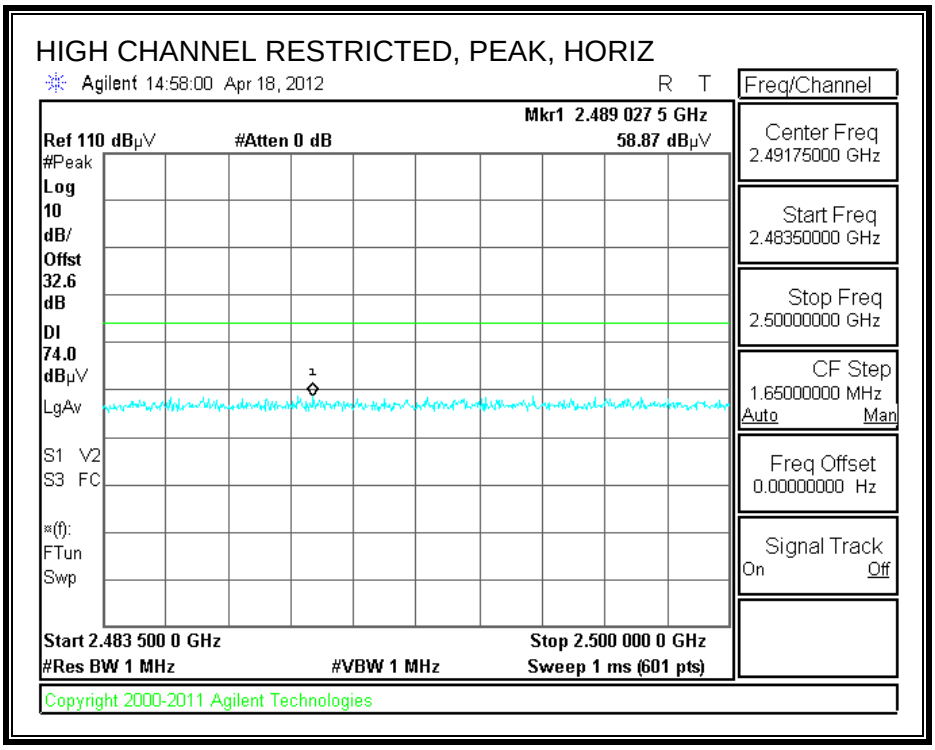


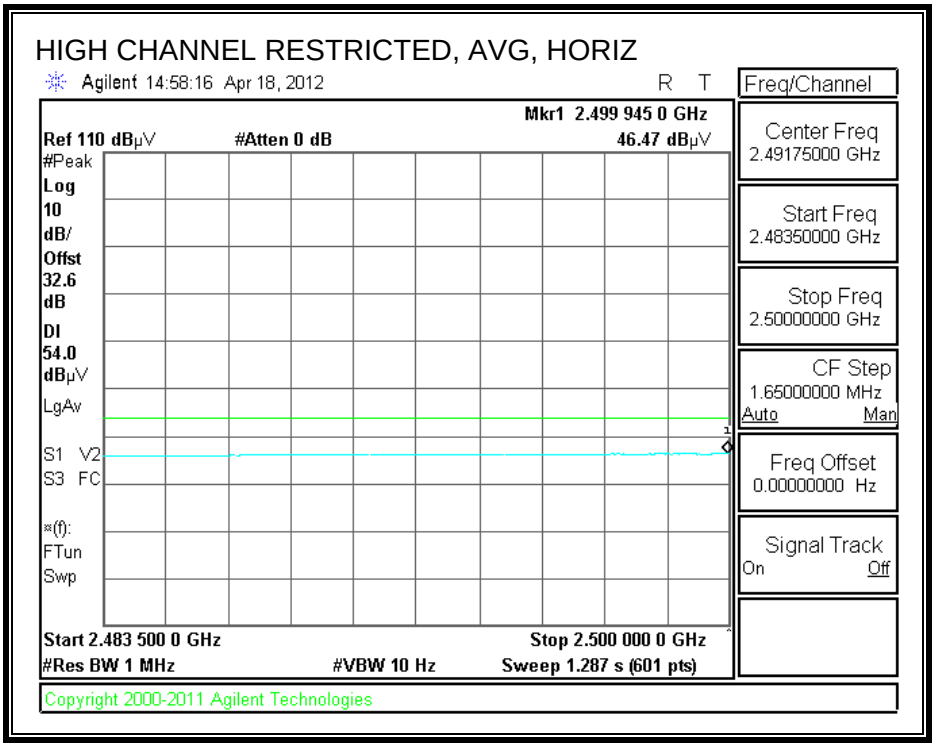
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



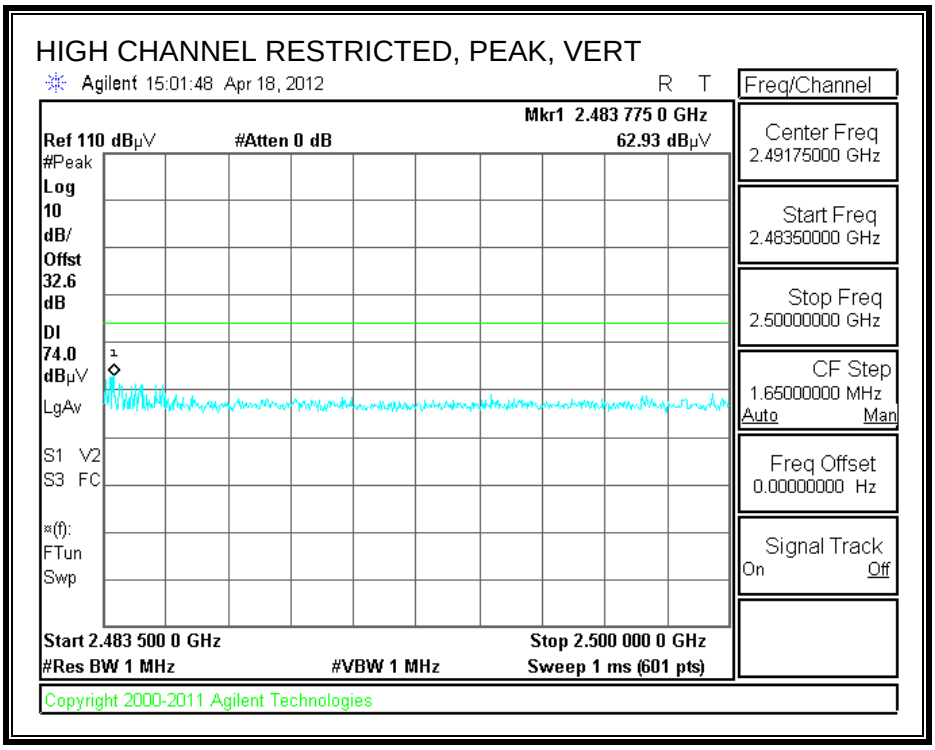


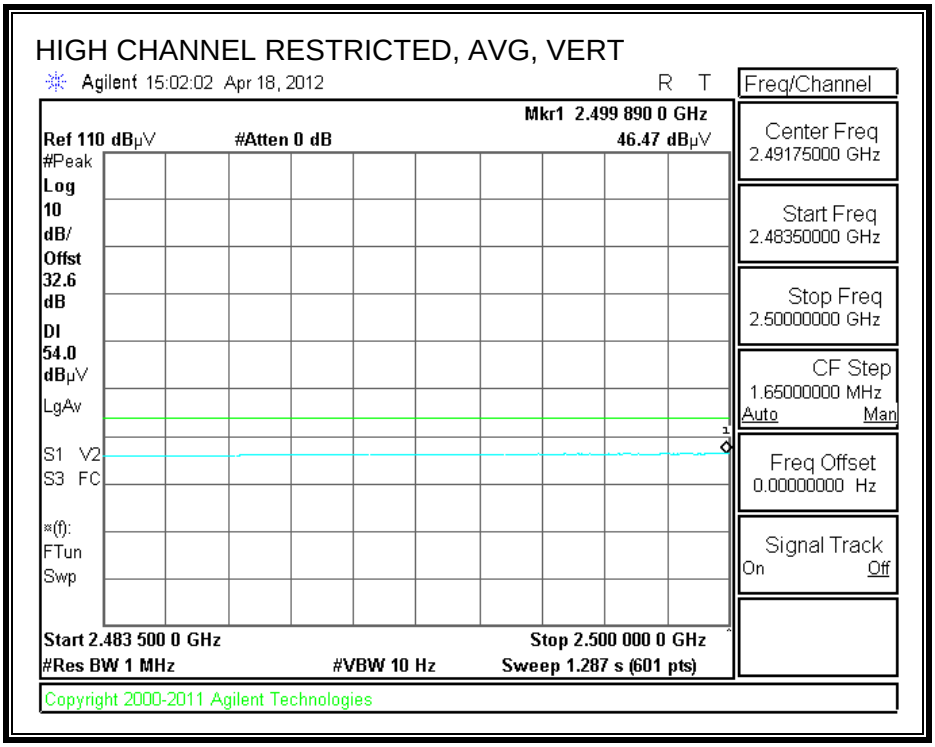
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Chin Pang
Date: 04/18/12
Project #: 12U14331
Company: LG
Test Target: FCC 15.247
Configuration: EUT(Inductive Cover)
Mode Oper: QPSK, TX

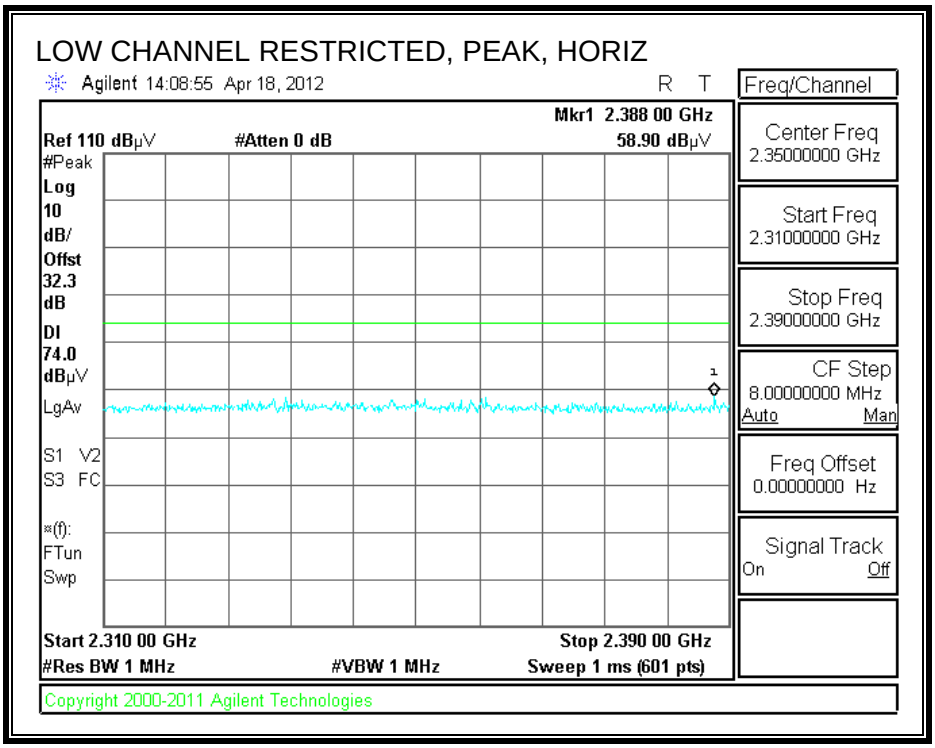
f	Measurement Frequency	Amp	Preamp Gain		Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters		Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m		Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength		Margin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

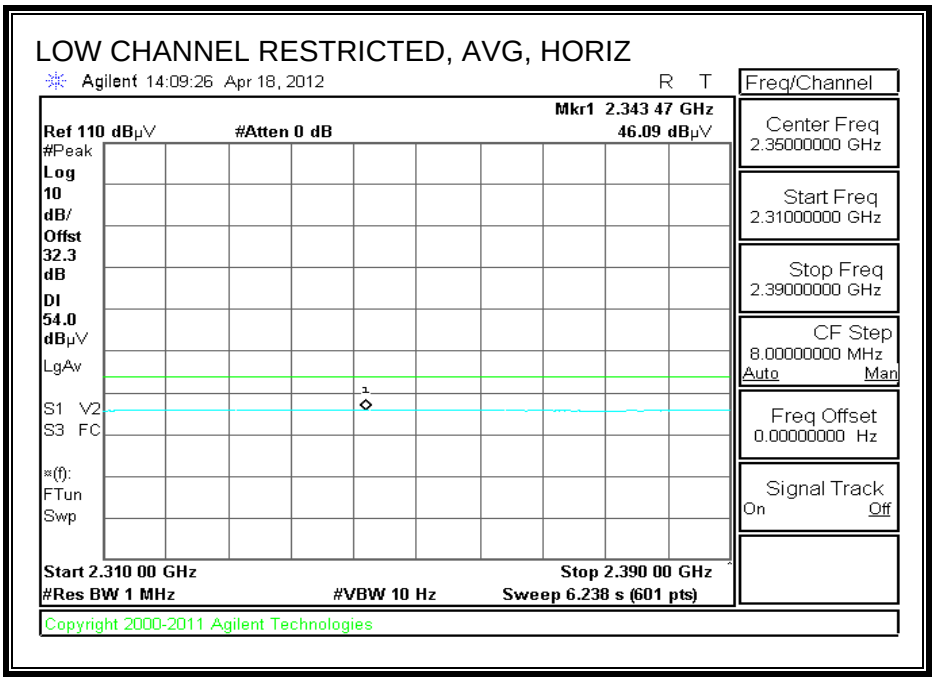
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
Low Ch, 2402MHz													
4.804	3.0	41.6	33.4	6.2	-35.5	0.0	0.0	45.7	74.0	-28.3	H	P	
4.804	3.0	31.4	33.4	6.2	-35.5	0.0	0.0	35.5	54.0	-18.5	H	A	
4.804	3.0	41.4	33.4	6.2	-35.5	0.0	0.0	45.5	74.0	-28.5	V	P	
4.804	3.0	31.3	33.4	6.2	-35.5	0.0	0.0	35.4	54.0	-18.6	V	A	
Mid Ch, 2441MHz													
4.882	3.0	42.3	33.5	6.2	-35.5	0.0	0.0	46.5	74.0	-27.5	H	P	
4.882	3.0	31.8	33.5	6.2	-35.5	0.0	0.0	36.1	54.0	-17.9	H	A	
7.323	3.0	45.0	35.7	8.4	-35.4	0.0	0.0	53.7	74.0	-20.3	H	P	
7.323	3.0	32.5	35.7	8.4	-35.4	0.0	0.0	41.2	54.0	-12.8	H	A	
4.882	3.0	40.7	33.5	6.2	-35.5	0.0	0.0	44.9	74.0	-29.1	V	P	
4.882	3.0	30.6	33.5	6.2	-35.5	0.0	0.0	34.9	54.0	-19.1	V	A	
7.323	3.0	40.8	35.7	8.4	-35.4	0.0	0.0	49.5	74.0	-24.5	V	P	
7.323	3.0	29.4	35.7	8.4	-35.4	0.0	0.0	38.1	54.0	-15.9	V	A	
High Ch, 2480MHz													
4.960	3.0	39.6	33.6	6.3	-35.5	0.0	0.0	44.0	74.0	-30.0	H	P	
4.960	3.0	28.9	33.6	6.3	-35.5	0.0	0.0	33.2	54.0	-20.8	H	A	
7.440	3.0	45.5	35.9	8.4	-35.5	0.0	0.0	54.4	74.0	-19.6	H	P	
7.440	3.0	32.5	35.9	8.4	-35.5	0.0	0.0	41.4	54.0	-12.6	H	A	
4.960	3.0	39.1	33.6	6.3	-35.5	0.0	0.0	43.4	74.0	-30.6	V	P	
4.960	3.0	28.7	33.6	6.3	-35.5	0.0	0.0	33.1	54.0	-20.9	V	A	
7.440	3.0	44.7	35.9	8.4	-35.5	0.0	0.0	53.6	74.0	-20.4	V	P	
7.440	3.0	32.3	35.9	8.4	-35.5	0.0	0.0	41.2	54.0	-12.8	V	A	

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

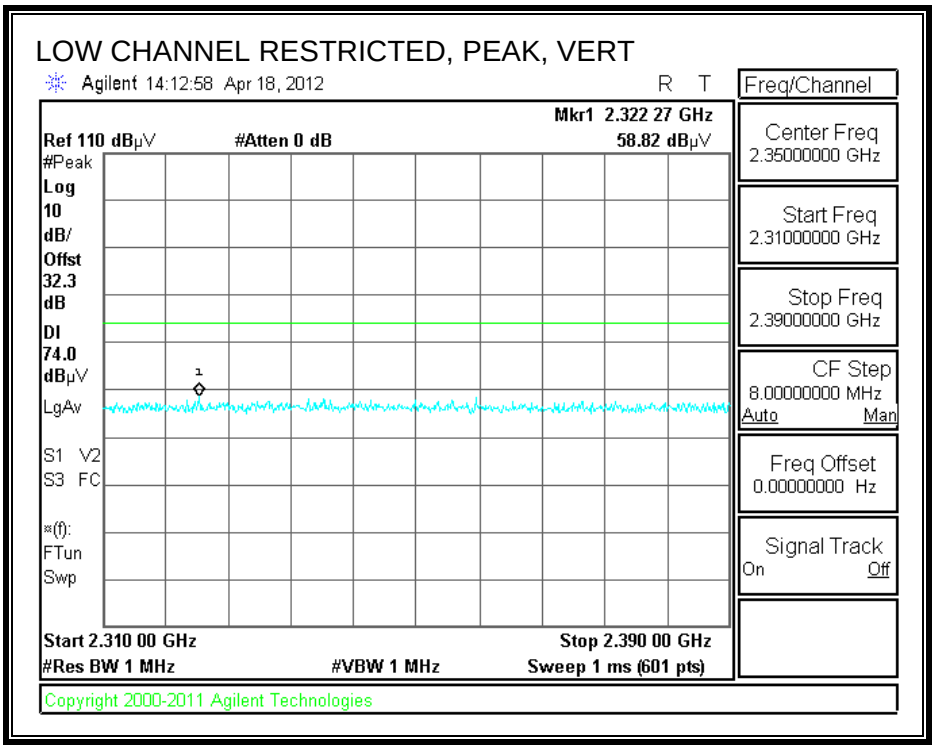
INDUCTIVE CHARGER AND INDUCTIVE COVER

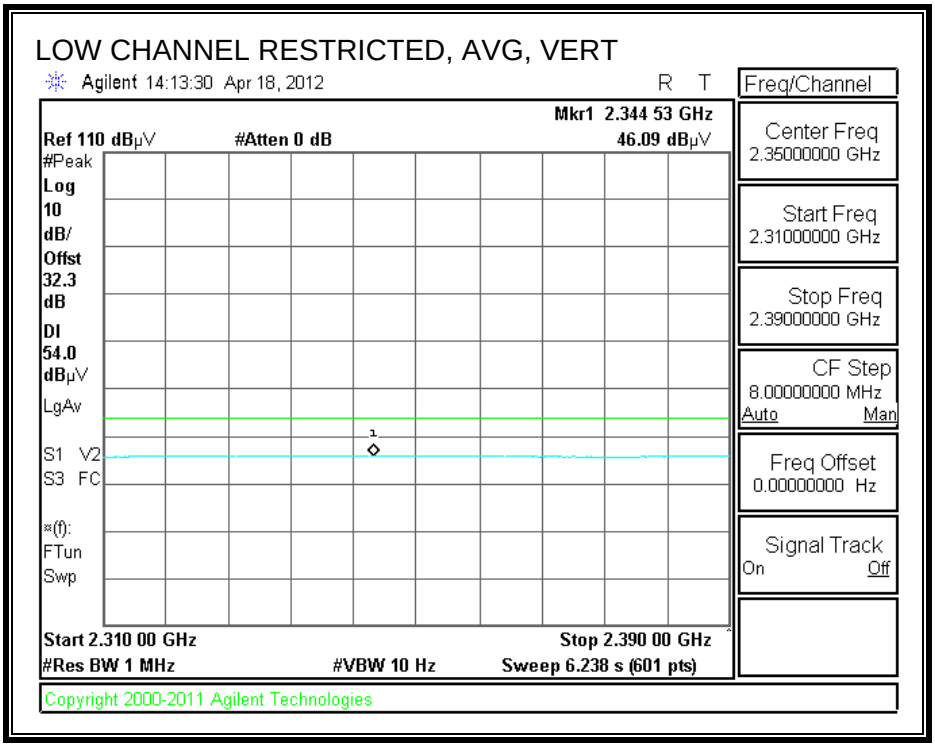
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



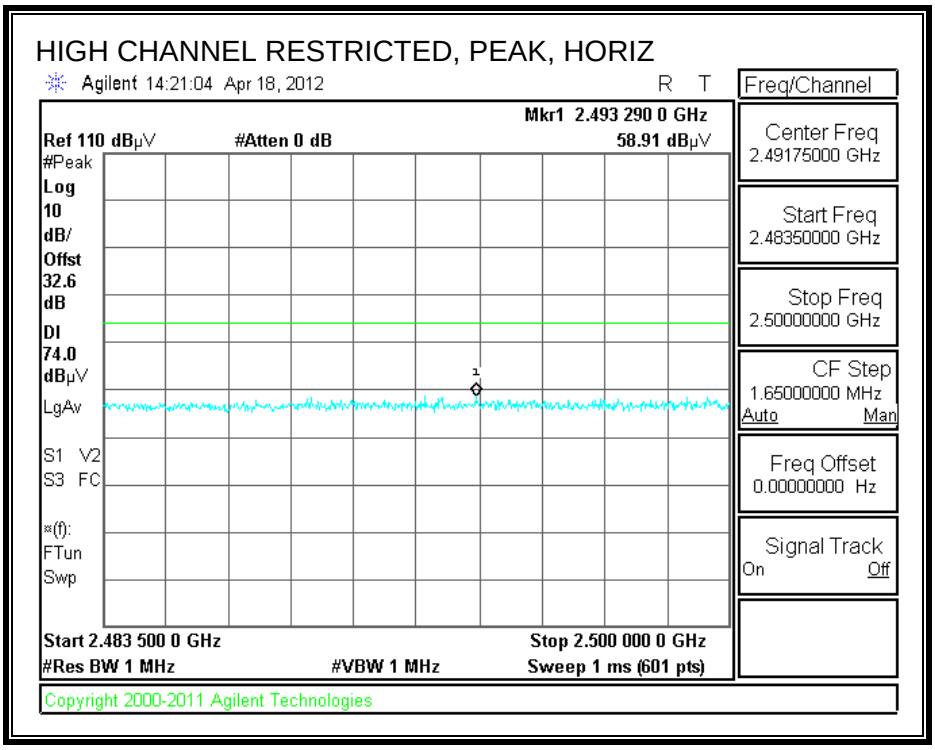


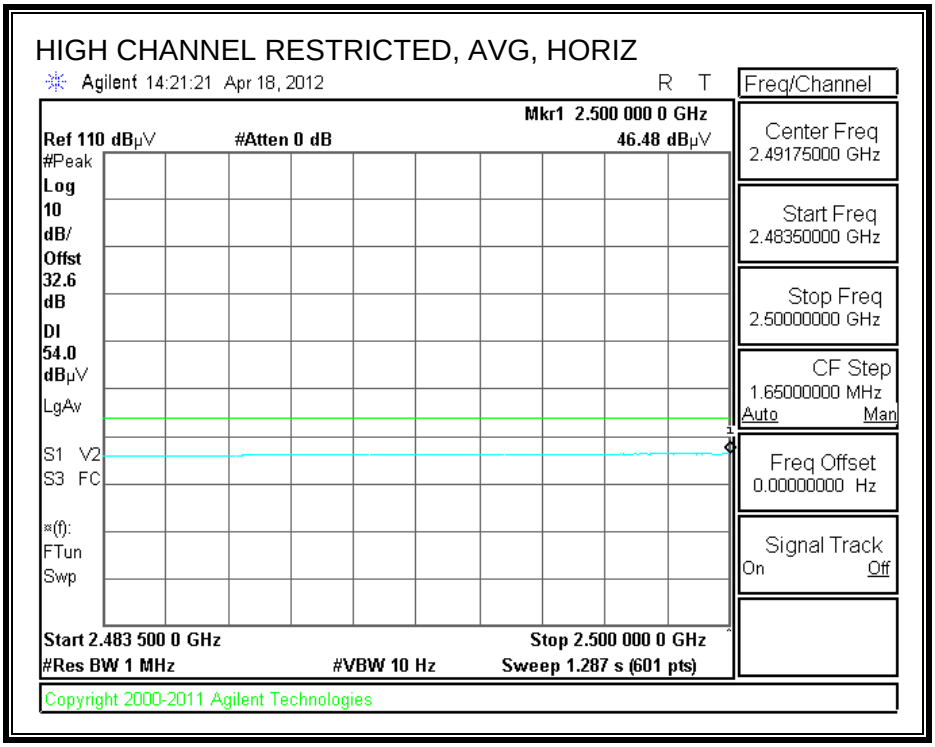
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



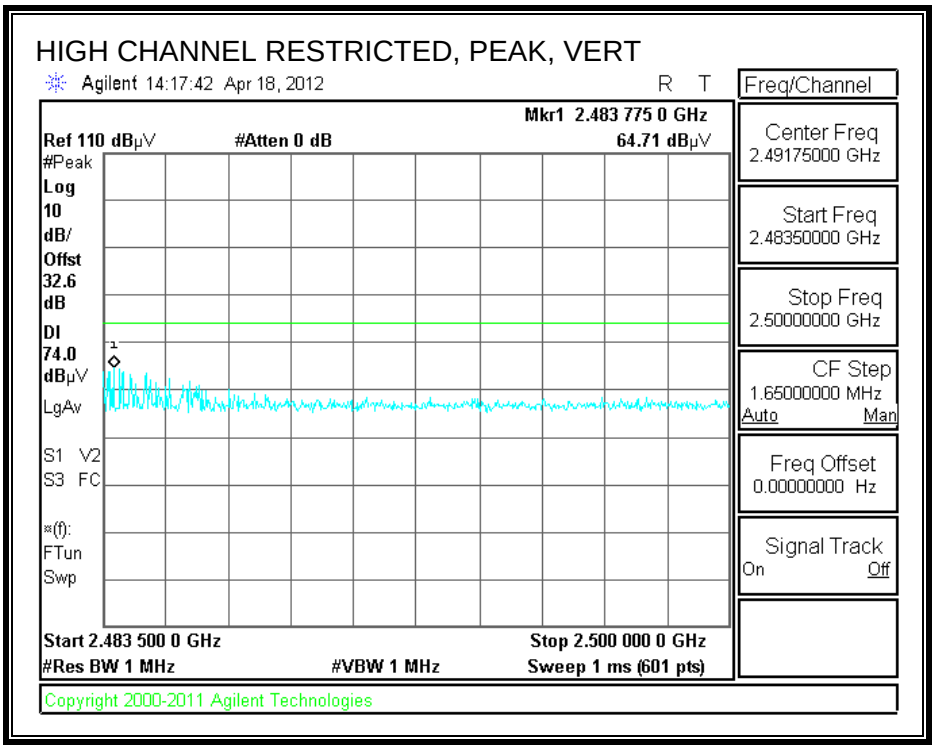


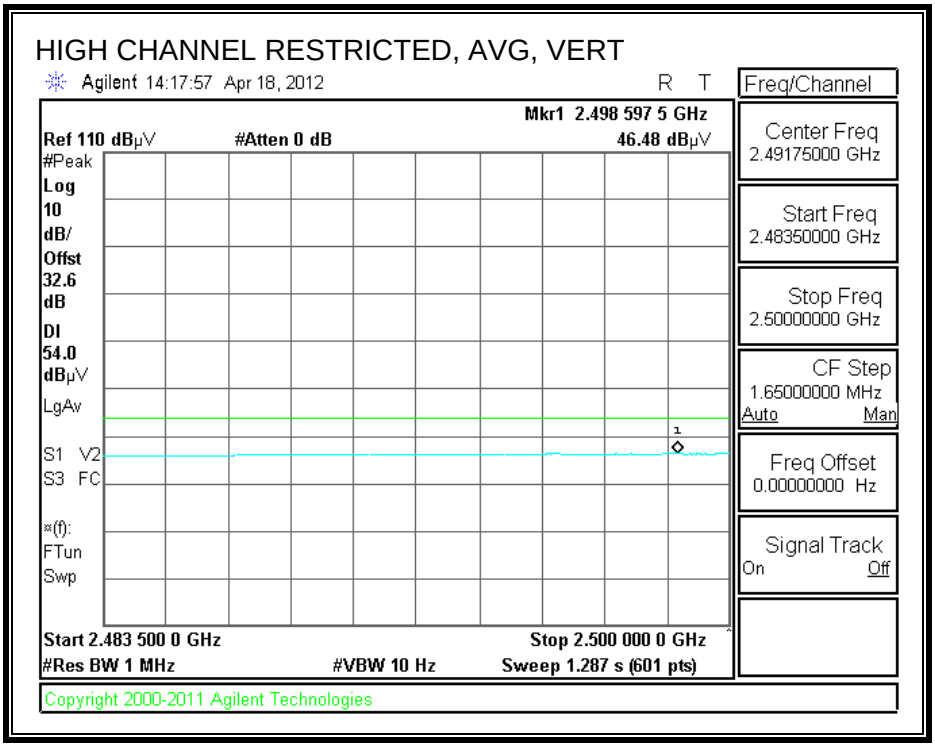
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Chin Pang
Date: 04/18/12
Project #: 12U14331
Company: LG
Test Target: FCC 15.247
Configuration: EUT(On Inductive Charging Pad)
Mode Oper: QPSK, TX

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

f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
Low Ch, 2402MHz													
4.804	3.0	39.7	33.4	6.2	-35.5	0.0	0.0	43.8	74.0	-30.2	V	P	
4.804	3.0	28.2	33.4	6.2	-35.5	0.0	0.0	32.3	54.0	-21.7	V	A	
4.804	3.0	38.9	33.4	6.2	-35.5	0.0	0.0	43.0	74.0	-31.0	H	P	
4.804	3.0	27.1	33.4	6.2	-35.5	0.0	0.0	31.2	54.0	-22.8	H	A	
Mid Ch, 2441MHz													
4.882	3.0	38.4	33.5	6.2	-35.5	0.0	0.0	42.6	74.0	-31.4	V	P	
4.882	3.0	27.4	33.5	6.2	-35.5	0.0	0.0	31.7	54.0	-22.3	V	A	
7.323	3.0	43.4	35.7	8.4	-35.4	0.0	0.0	52.0	74.0	-22.0	V	P	
7.323	3.0	30.8	35.7	8.4	-35.4	0.0	0.0	39.4	54.0	-14.6	V	A	
4.882	3.0	38.3	33.5	6.2	-35.5	0.0	0.0	42.6	74.0	-31.4	H	P	
4.882	3.0	27.5	33.5	6.2	-35.5	0.0	0.0	31.7	54.0	-22.3	H	A	
7.323	3.0	43.9	35.7	8.4	-35.4	0.0	0.0	52.6	74.0	-21.4	H	P	
7.323	3.0	31.6	35.7	8.4	-35.4	0.0	0.0	40.3	54.0	-13.7	H	A	
High Ch, 2480MHz													
4.960	3.0	38.8	33.6	6.3	-35.5	0.0	0.0	43.2	74.0	-30.8	V	P	
4.960	3.0	26.9	33.6	6.3	-35.5	0.0	0.0	31.3	54.0	-22.7	V	A	
7.440	3.0	42.9	35.9	8.4	-35.5	0.0	0.0	51.8	74.0	-22.2	V	P	
7.440	3.0	31.1	35.9	8.4	-35.5	0.0	0.0	40.0	54.0	-14.0	V	A	
4.960	3.0	38.3	33.6	6.3	-35.5	0.0	0.0	42.7	74.0	-31.3	H	P	
4.960	3.0	26.1	33.6	6.3	-35.5	0.0	0.0	30.5	54.0	-23.5	H	A	
7.440	3.0	47.2	35.9	8.4	-35.5	0.0	0.0	56.1	74.0	-17.9	H	P	
7.440	3.0	34.8	35.9	8.4	-35.5	0.0	0.0	43.7	54.0	-10.3	H	A	

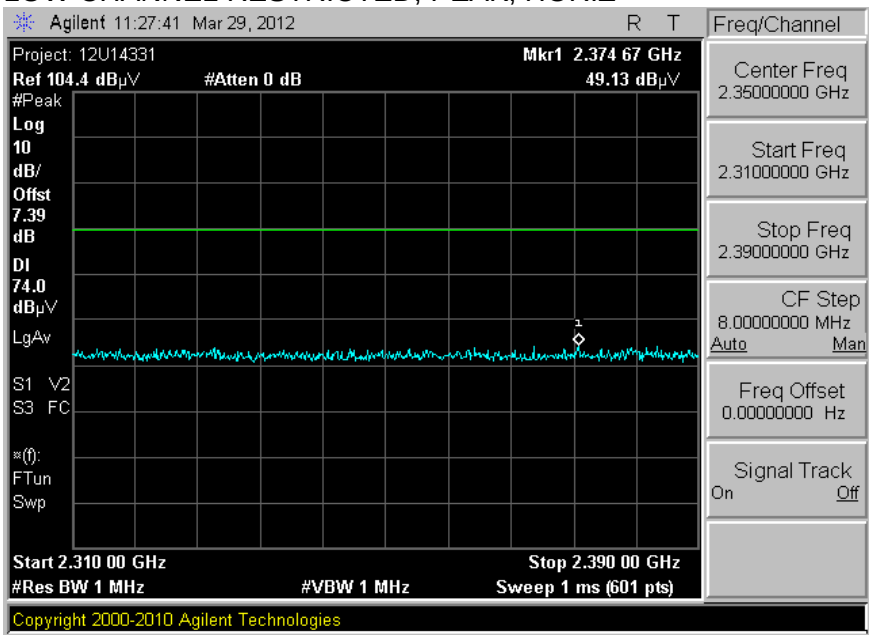
Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

7.2.3. ENHANCED DATA RATE 8PSK MODULATION

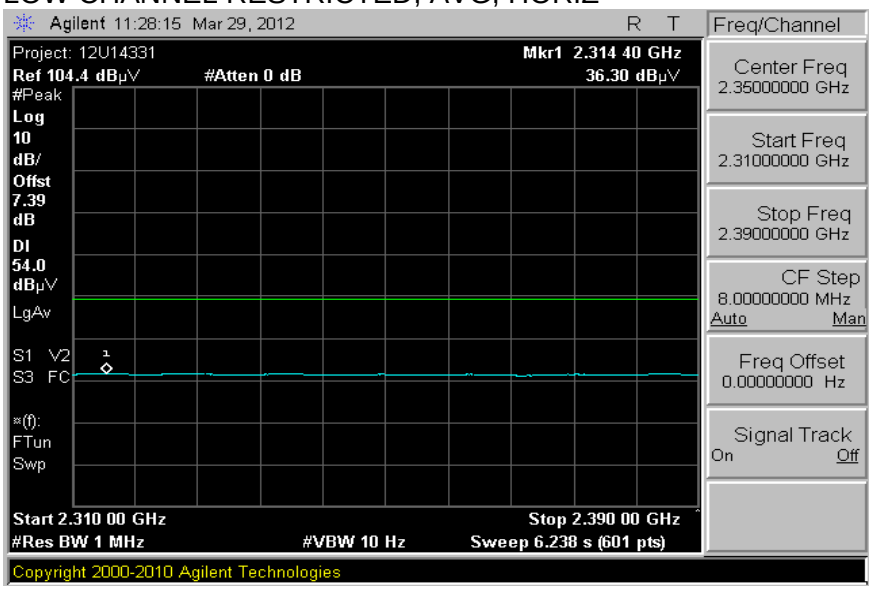
STANDARD COVER

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

LOW CHANNEL RESTRICTED, PEAK, HORIZ

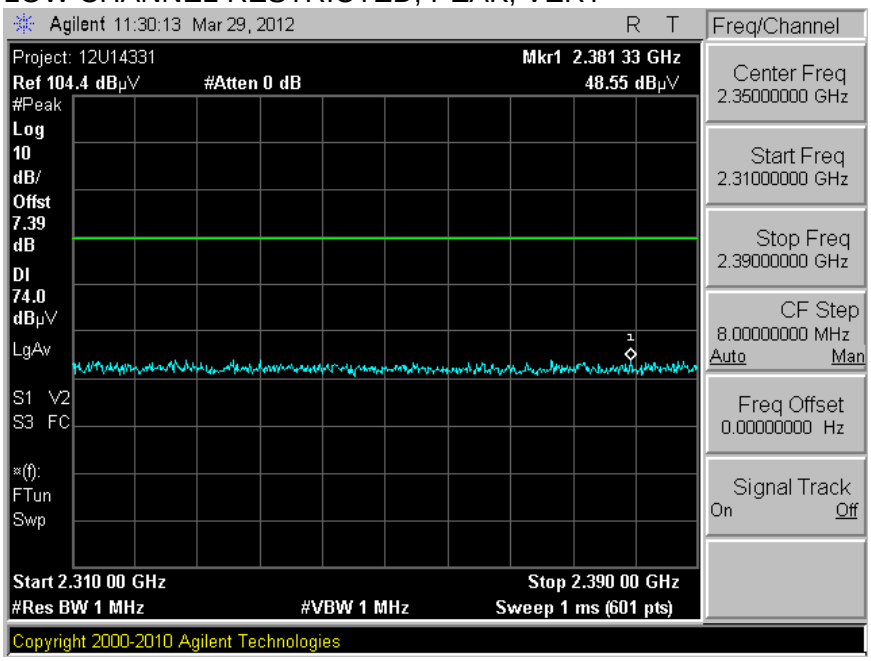


LOW CHANNEL RESTRICTED, AVG, HORIZ

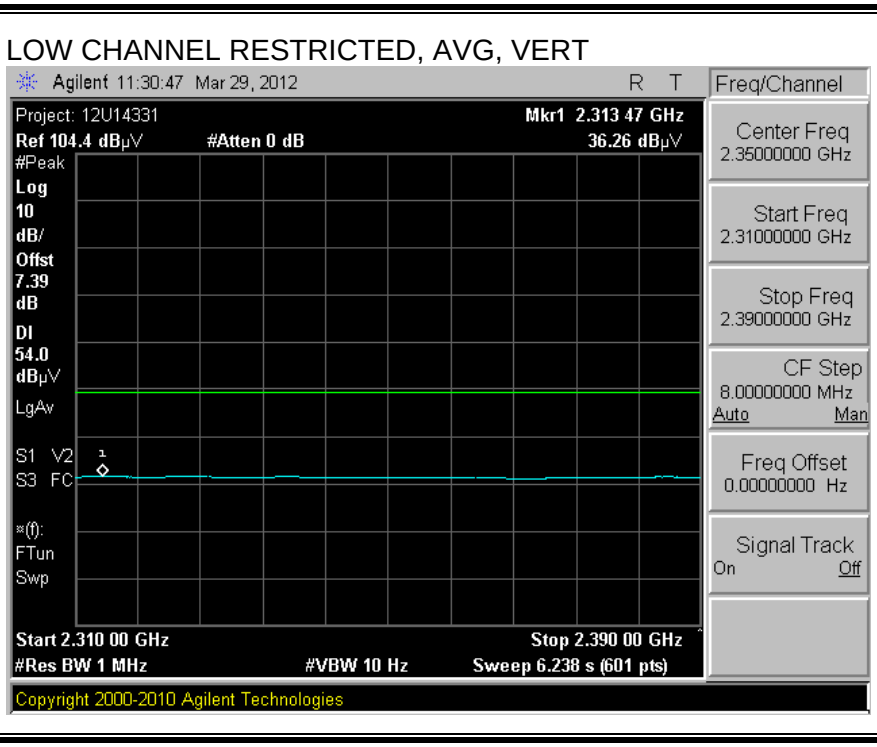


RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

LOW CHANNEL RESTRICTED, PEAK, VERT

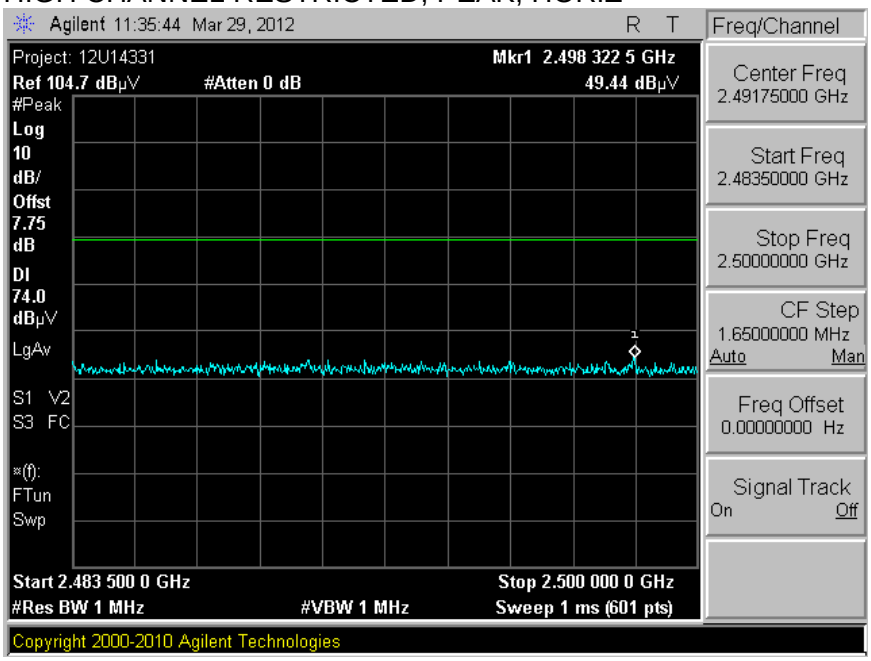


LOW CHANNEL RESTRICTED, AVG, VERT

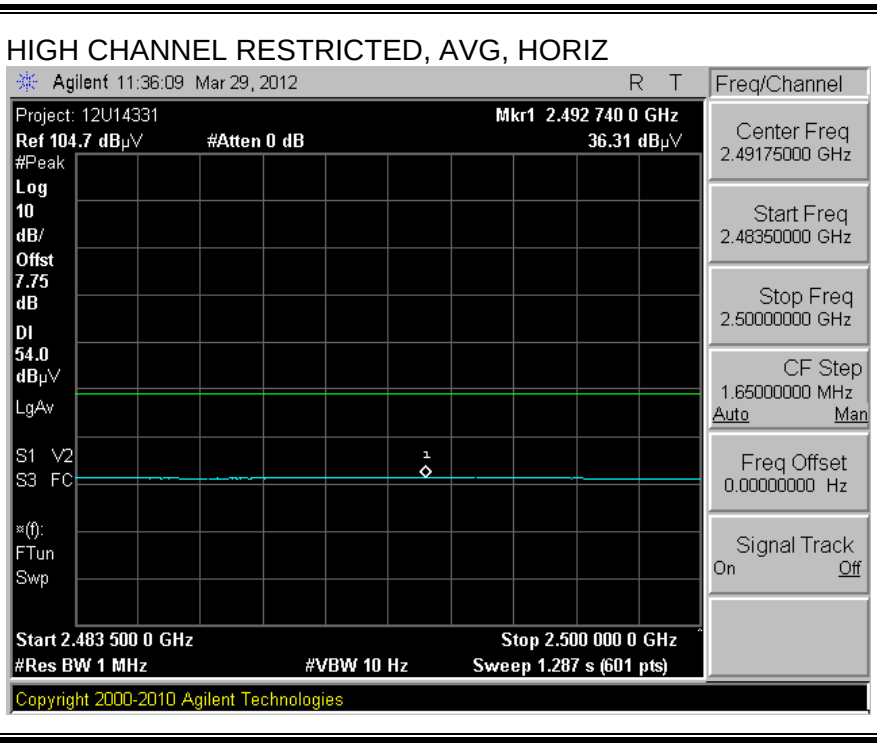


RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

HIGH CHANNEL RESTRICTED, PEAK, HORIZ

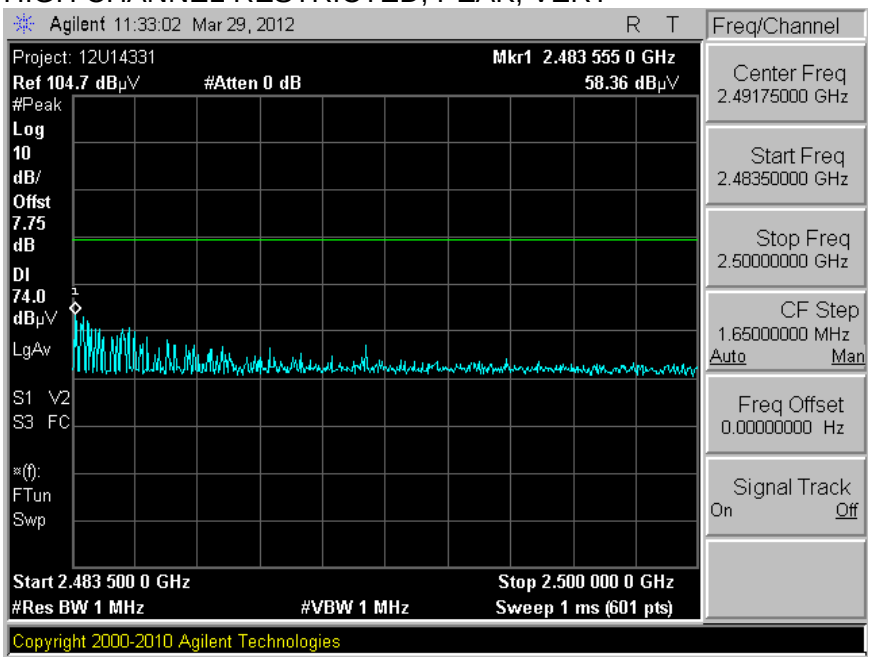


HIGH CHANNEL RESTRICTED, AVG, HORIZ

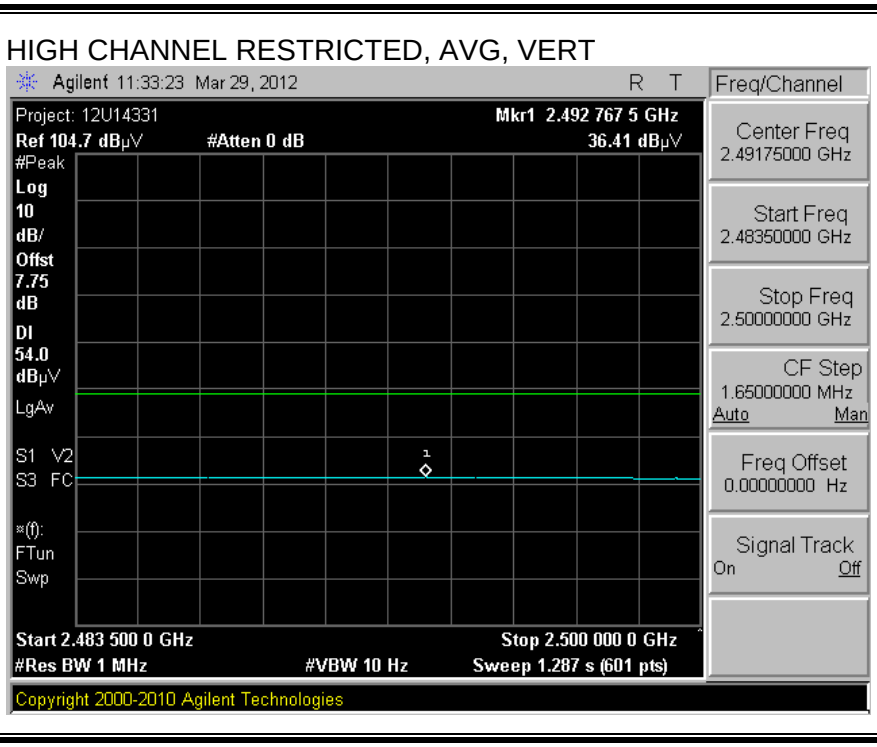


RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

HIGH CHANNEL RESTRICTED, PEAK, VERT



HIGH CHANNEL RESTRICTED, AVG, VERT



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 3m Chamber

Company: LG
Project #: 12U14331
Date: 3/29/2012
Test Engineer: D. Garcia
Configuration: Y position (worst case), AC adapter, standard back cover
Mode: 8PSK, Bluetooth

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T34 HP 8449B		T39; ARA 18-26GHz; S/N:1013	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

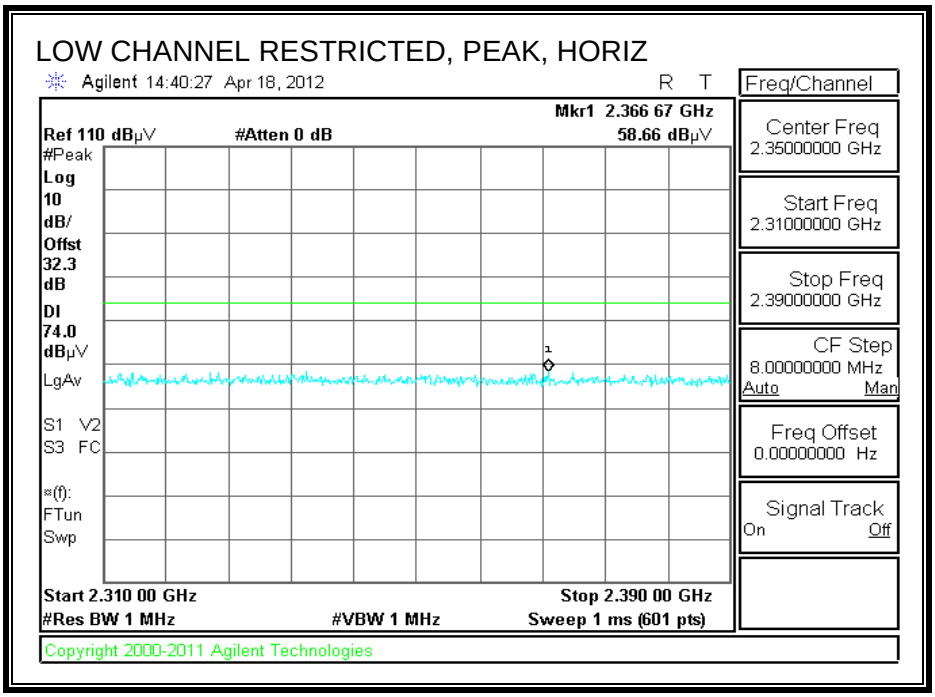
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Channel: 2402 MHz															
4.804	3.0	45.9	36.0	33.1	6.8	-34.1	0.0	0.0	51.7	41.8	74	54	-22.3	-12.2	H
4.804	3.0	45.2	34.1	33.1	6.8	-34.1	0.0	0.0	51.0	39.9	74	54	-23.0	-14.1	V
Mid Channel: 2441 MHz															
4.882	3.0	45.1	35.1	33.2	6.8	-34.0	0.0	0.0	51.0	41.0	74	54	-23.0	-13.0	H
7.323	3.0	46.6	33.5	36.3	9.1	-33.1	0.0	0.0	58.9	45.8	74	54	-15.1	-8.2	H
4.882	3.0	44.5	35.7	33.2	6.8	-34.0	0.0	0.0	50.5	41.6	74	54	-23.5	-12.4	V
7.323	3.0	43.8	31.3	36.3	9.1	-33.1	0.0	0.0	56.1	43.6	74	54	-17.9	-10.4	V
High Channel: 2480 MHz															
4.960	3.0	44.6	34.7	33.2	6.9	-34.0	0.0	0.0	50.7	40.8	74	54	-23.3	-13.2	H
7.440	3.0	47.1	34.8	36.5	9.1	-33.0	0.0	0.0	59.6	47.3	74	54	-14.4	-6.7	H
4.960	3.0	44.8	34.8	33.2	6.9	-34.0	0.0	0.0	50.8	40.8	74	54	-23.2	-13.2	V
7.440	3.0	46.1	33.9	36.5	9.1	-33.0	0.0	0.0	58.6	46.4	74	54	-15.4	-7.6	V

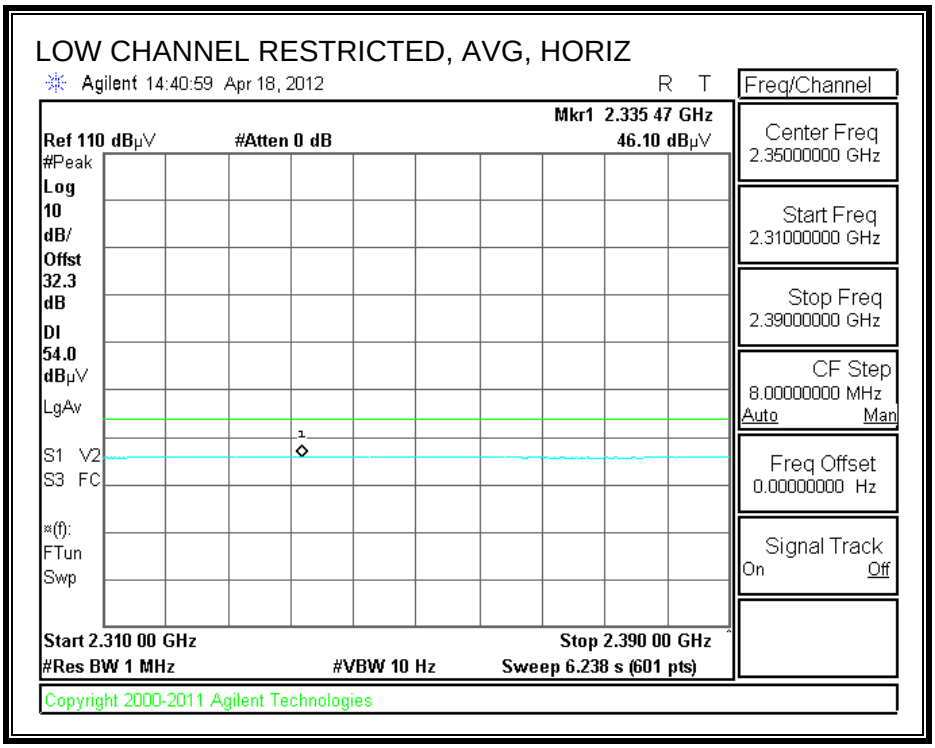
Rev. 11.10.11

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		

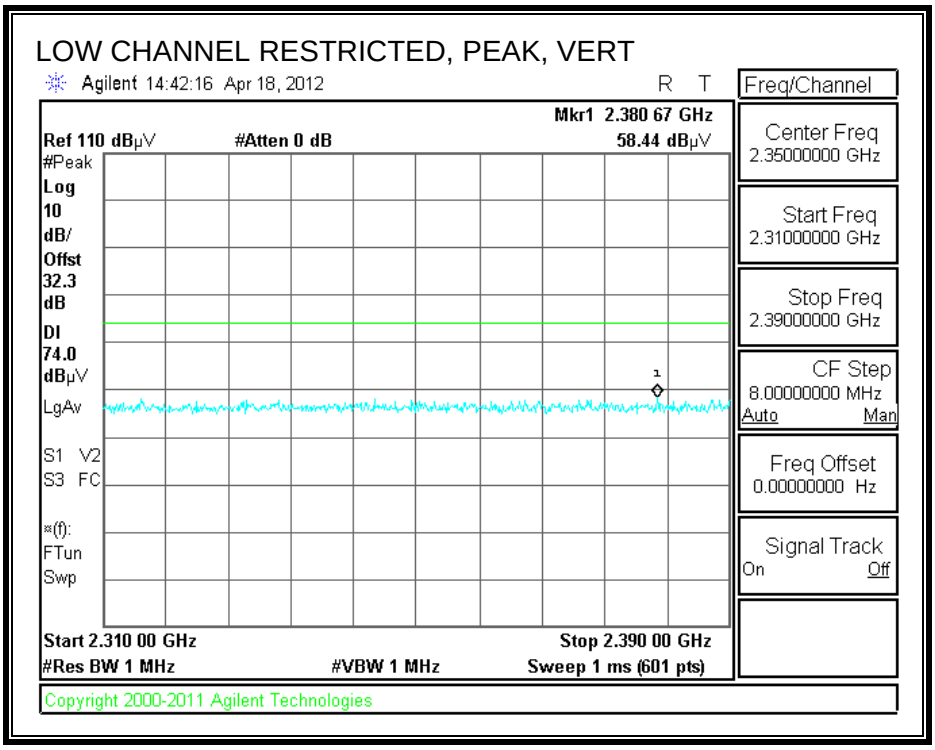
INDUCTIVE COVER

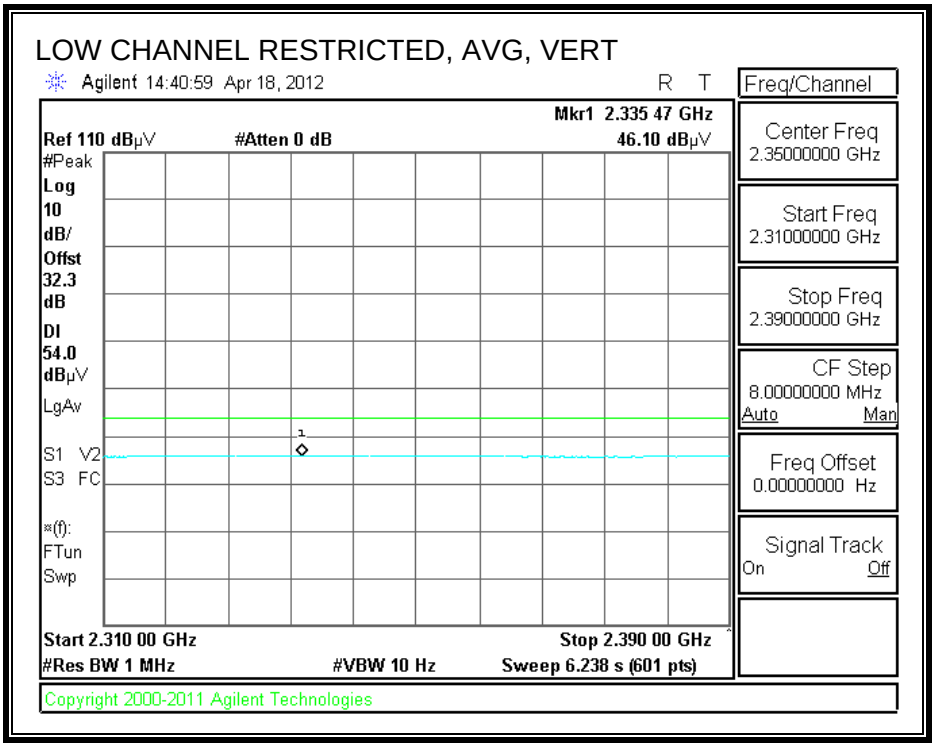
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



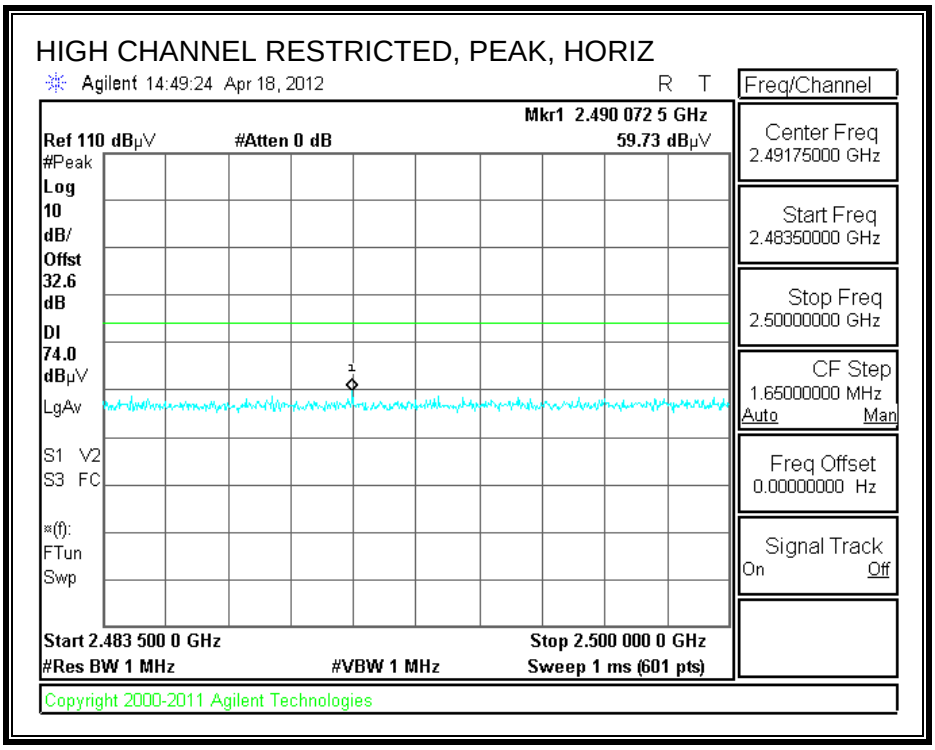


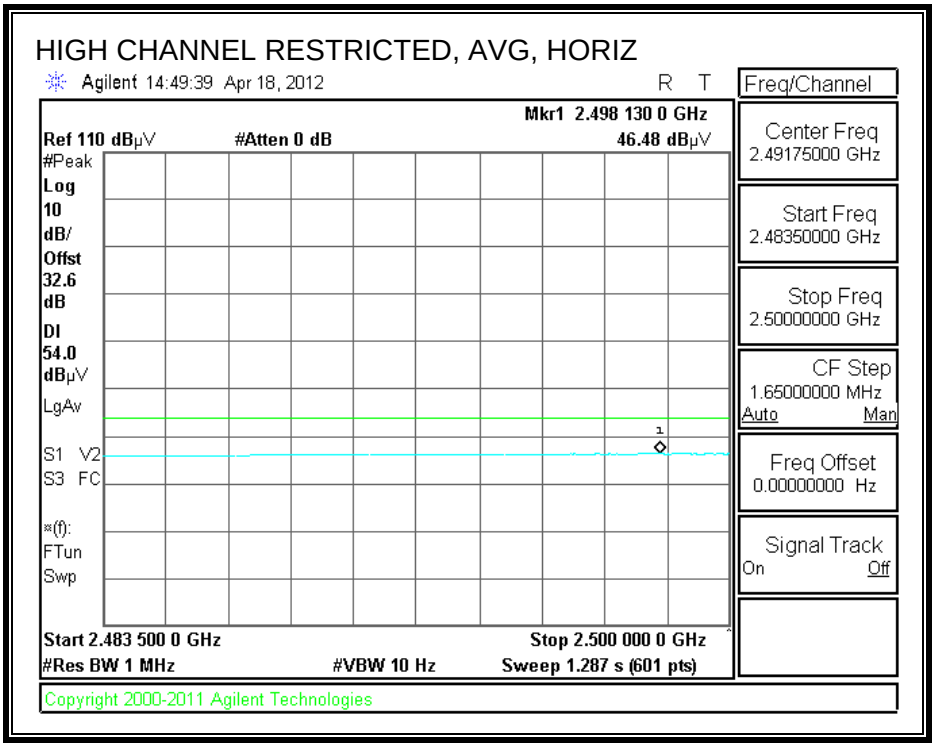
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



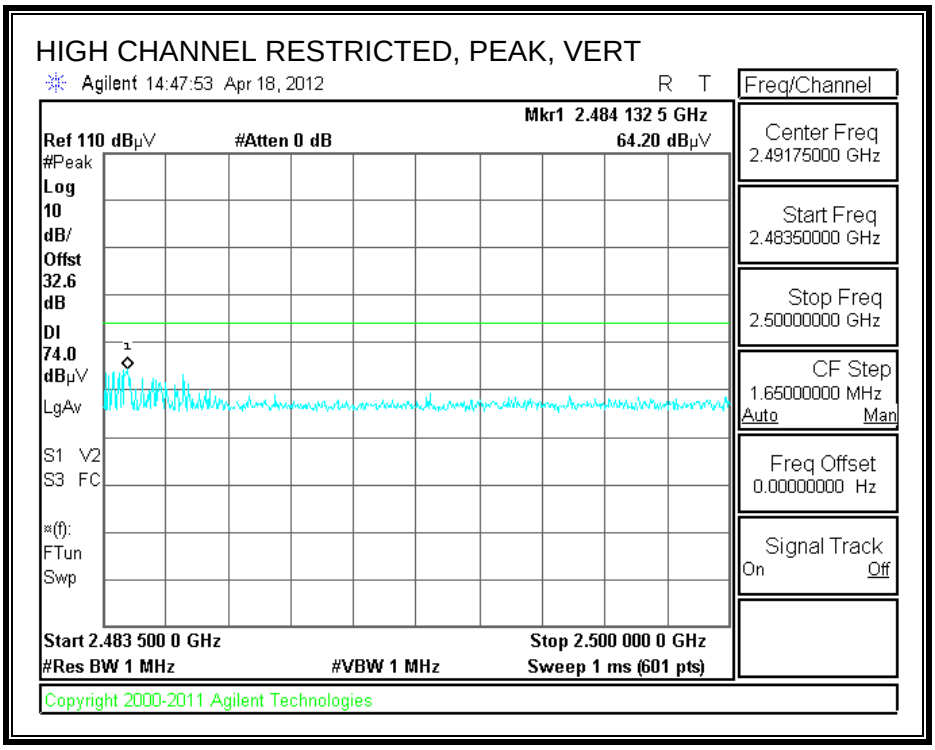


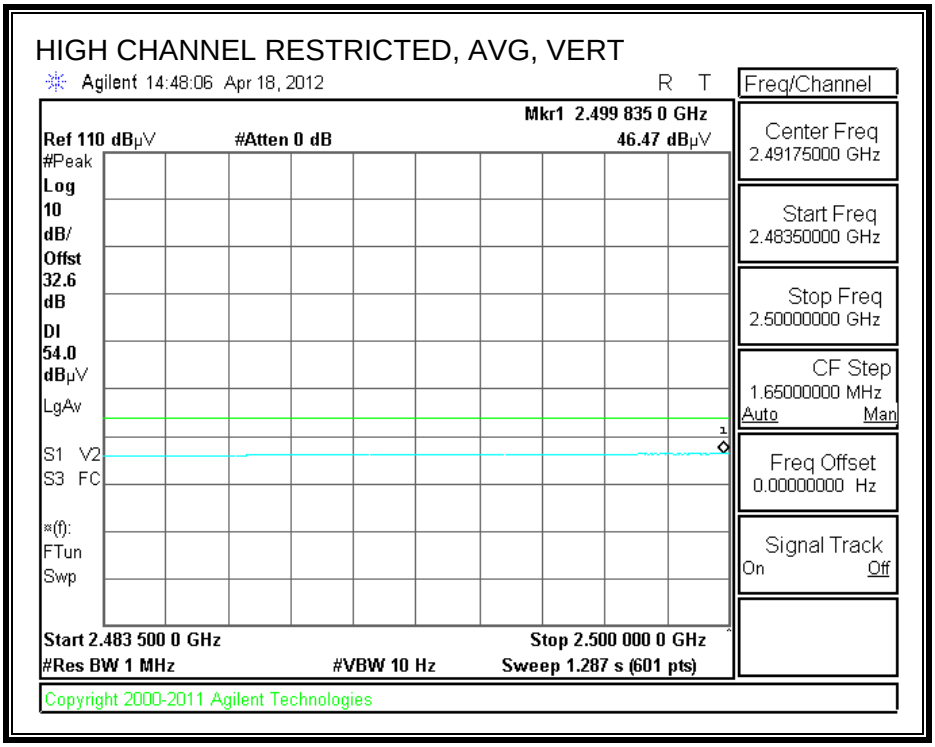
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Chin Pang
Date: 04/18/12
Project #: 12U14331
Company: LG
Test Target: FCC 15.247
Configuration: EUT (Inductive Cover)
Mode Oper: TX, 8PSK

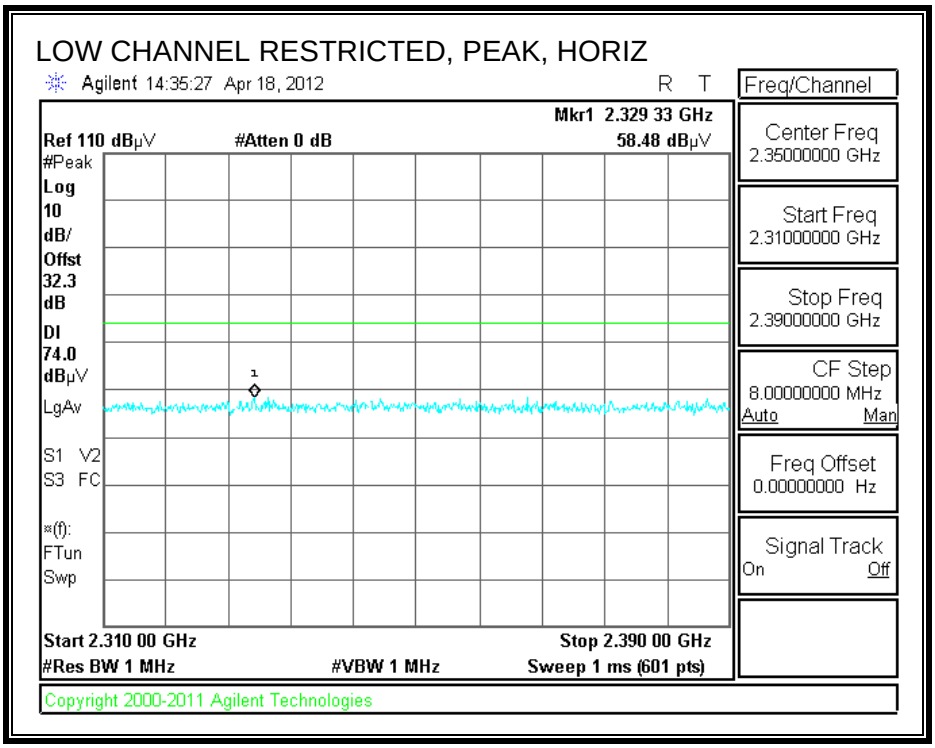
f	Measurement Frequency	Amp	Preamp Gain		Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters		Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m		Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength		Margin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

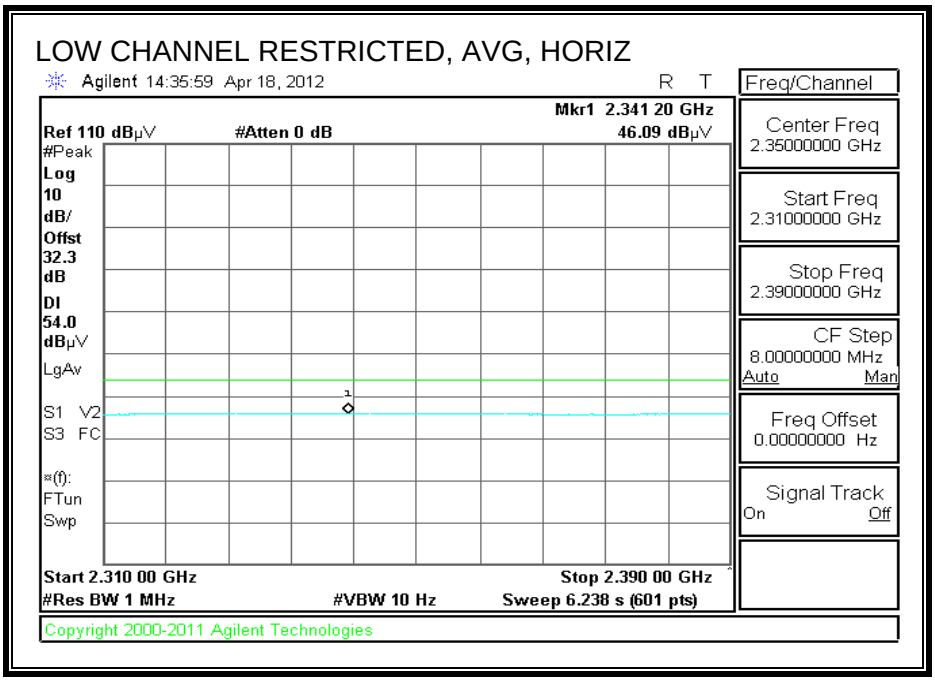
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
Low Ch, 2402MHz													
4.804	3.0	41.7	33.4	6.2	-35.5	0.0	0.0	45.8	74.0	-28.2	V	P	
4.804	3.0	31.2	33.4	6.2	-35.5	0.0	0.0	35.3	54.0	-18.7	V	A	
4.804	3.0	44.3	33.4	6.2	-35.5	0.0	0.0	48.4	74.0	-25.6	H	P	
4.804	3.0	34.2	33.4	6.2	-35.5	0.0	0.0	38.4	54.0	-15.6	H	A	
Mid Ch, 2441MHz													
4.882	3.0	40.5	33.5	6.2	-35.5	0.0	0.0	44.7	74.0	-29.3	V	P	
4.882	3.0	29.6	33.5	6.2	-35.5	0.0	0.0	33.9	54.0	-20.1	V	A	
7.323	3.0	42.6	35.7	8.4	-35.4	0.0	0.0	51.3	74.0	-22.7	V	P	
7.323	3.0	28.9	35.7	8.4	-35.4	0.0	0.0	37.5	54.0	-16.5	V	A	
4.882	3.0	41.4	33.5	6.2	-35.5	0.0	0.0	45.6	74.0	-28.4	H	P	
4.882	3.0	31.1	33.5	6.2	-35.5	0.0	0.0	35.3	54.0	-18.7	H	A	
7.323	3.0	45.5	35.7	8.4	-35.4	0.0	0.0	54.2	74.0	-19.8	H	P	
7.323	3.0	30.9	35.7	8.4	-35.4	0.0	0.0	39.6	54.0	-14.4	H	A	
High Ch, 2480MHz													
4.960	3.0	39.7	33.6	6.3	-35.5	0.0	0.0	44.1	74.0	-29.9	V	P	
4.960	3.0	28.5	33.6	6.3	-35.5	0.0	0.0	32.9	54.0	-21.1	V	A	
7.440	3.0	46.2	35.9	8.4	-35.5	0.0	0.0	55.1	74.0	-18.9	V	P	
7.440	3.0	32.3	35.9	8.4	-35.5	0.0	0.0	41.2	54.0	-12.8	V	A	
4.960	3.0	38.9	33.6	6.3	-35.5	0.0	0.0	43.3	74.0	-30.7	H	P	
4.960	3.0	27.9	33.6	6.3	-35.5	0.0	0.0	32.3	54.0	-21.7	H	A	
7.440	3.0	48.1	35.9	8.4	-35.5	0.0	0.0	57.0	74.0	-17.0	H	P	
7.440	3.0	33.7	35.9	8.4	-35.5	0.0	0.0	42.6	54.0	-11.4	H	A	

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

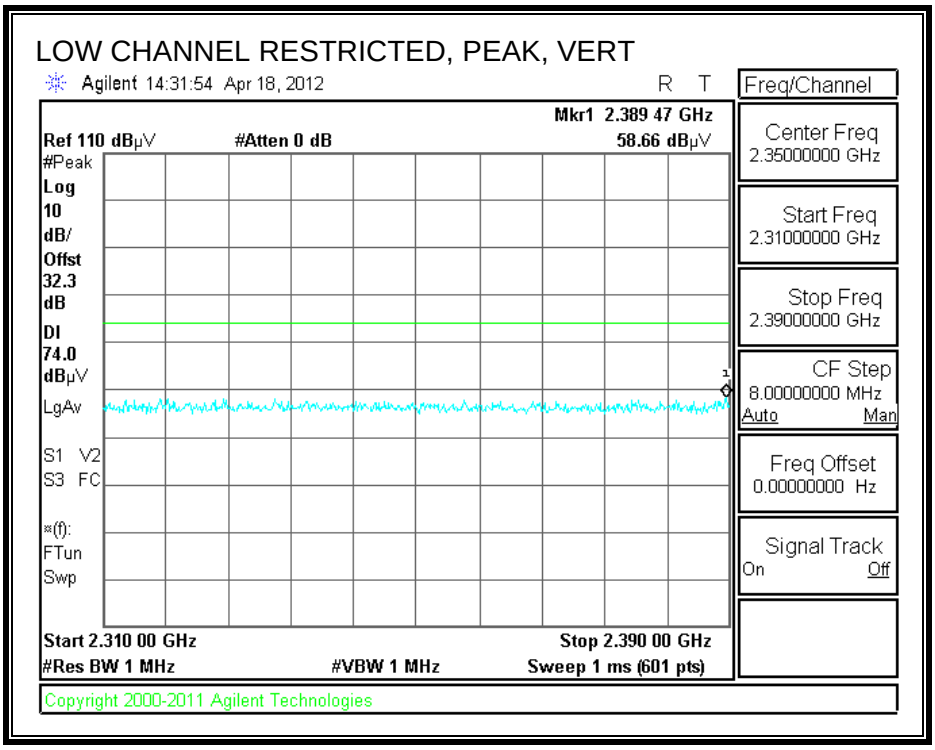
INDUCTIVE CHARGER AND INDUCTIVE COVER

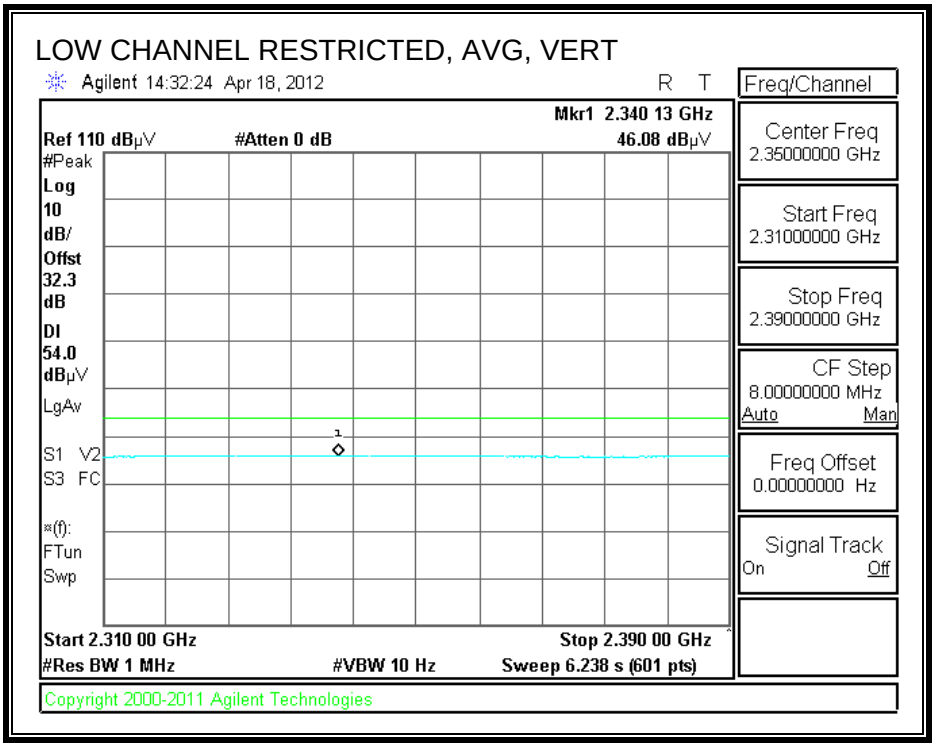
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



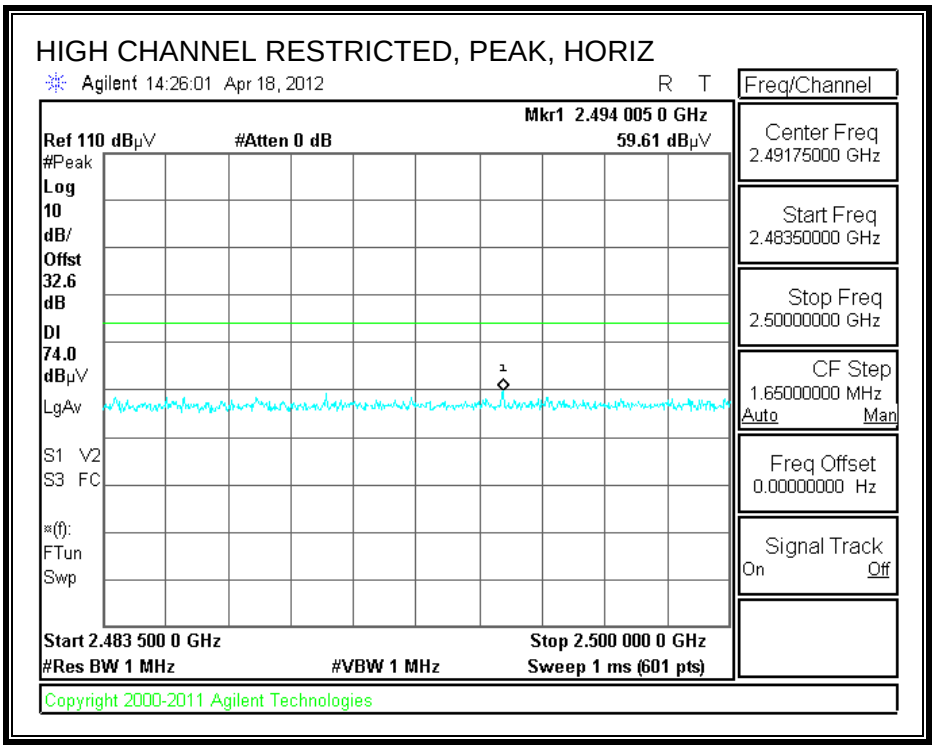


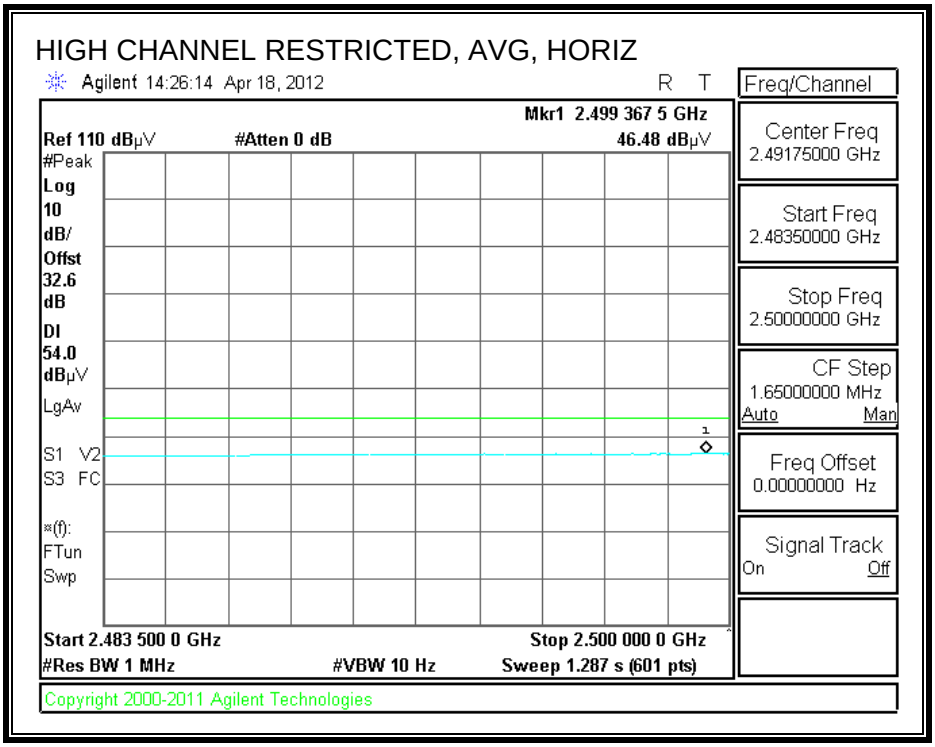
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



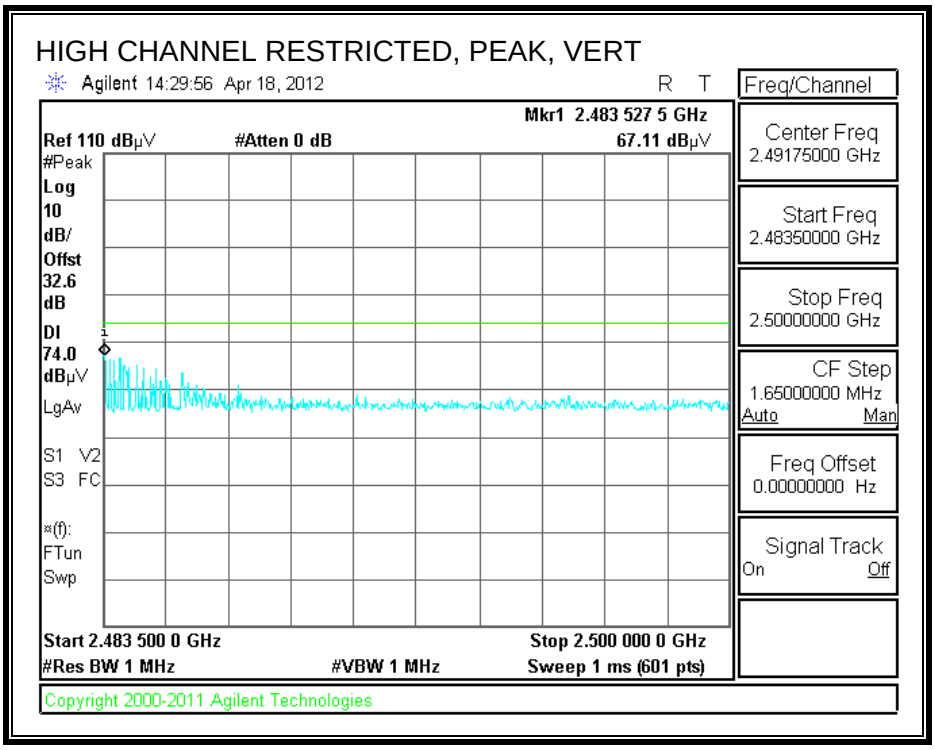


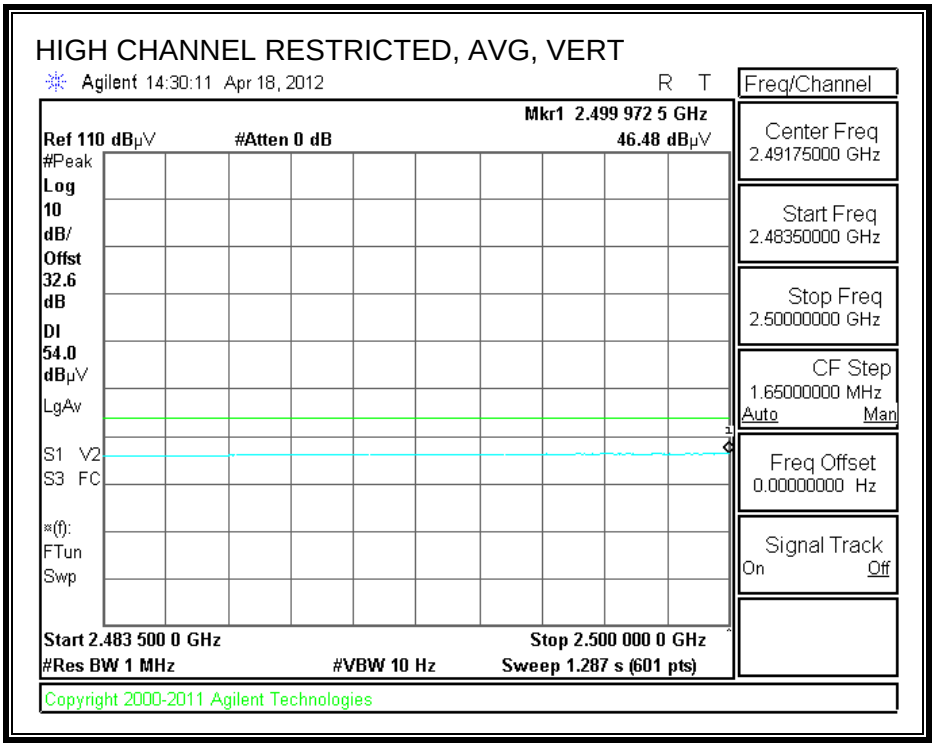
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Chin Pang
Date: 04/18/12
Project #: 12U14331
Company: LG
Test Target: FCC 15.247
Configuration: EUT (On Inductive Charging Pad)
Mode Oper: TX, 8PSK

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	39.4	33.4	6.2	-35.5	0.0	0.0	43.5	74.0	-30.5	H	P	
4.804	3.0	28.3	33.4	6.2	-35.5	0.0	0.0	32.4	54.0	-21.6	H	A	
4.804	3.0	40.5	33.4	6.2	-35.5	0.0	0.0	44.6	74.0	-29.4	V	P	
4.804	3.0	29.0	33.4	6.2	-35.5	0.0	0.0	33.1	54.0	-20.9	V	A	
Mid Ch, 2441MHz													
4.882	3.0	38.9	33.5	6.2	-35.5	0.0	0.0	43.2	74.0	-30.8	H	P	
4.882	3.0	27.4	33.5	6.2	-35.5	0.0	0.0	31.6	54.0	-22.4	H	A	
7.323	3.0	44.1	35.7	8.4	-35.4	0.0	0.0	52.8	74.0	-21.2	H	P	
7.323	3.0	30.1	35.7	8.4	-35.4	0.0	0.0	38.7	54.0	-15.3	H	A	
4.882	3.0	37.6	33.5	6.2	-35.5	0.0	0.0	41.9	74.0	-32.1	V	P	
4.882	3.0	26.8	33.5	6.2	-35.5	0.0	0.0	31.1	54.0	-22.9	V	A	
7.323	3.0	40.7	35.7	8.4	-35.4	0.0	0.0	49.3	74.0	-24.7	V	P	
7.323	3.0	26.5	35.7	8.4	-35.4	0.0	0.0	35.2	54.0	-18.8	V	A	
High Ch, 2480MHz													
4.960	3.0	38.1	33.6	6.3	-35.5	0.0	0.0	42.5	74.0	-31.5	H	P	
4.960	3.0	26.1	33.6	6.3	-35.5	0.0	0.0	30.5	54.0	-23.5	H	A	
7.440	3.0	47.6	35.9	8.4	-35.5	0.0	0.0	56.5	74.0	-17.5	H	P	
7.440	3.0	34.1	35.9	8.4	-35.5	0.0	0.0	43.0	54.0	-11.0	H	A	
4.960	3.0	38.1	33.6	6.3	-35.5	0.0	0.0	42.5	74.0	-31.5	V	P	
4.960	3.0	26.2	33.6	6.3	-35.5	0.0	0.0	30.6	54.0	-23.4	V	A	
7.440	3.0	41.9	35.9	8.4	-35.5	0.0	0.0	50.8	74.0	-23.2	V	P	
7.440	3.0	29.3	35.9	8.4	-35.5	0.0	0.0	38.2	54.0	-15.9	V	A	

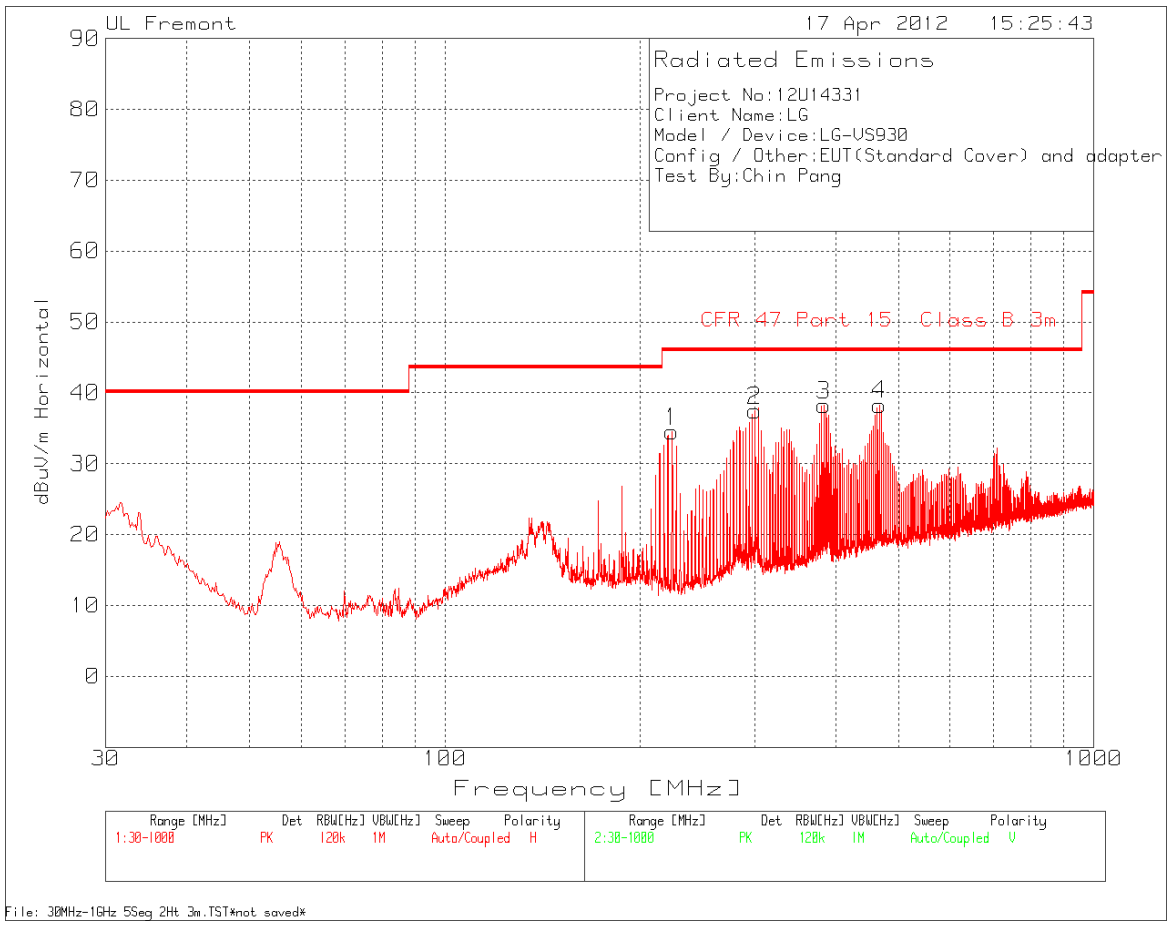
Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

7.3. WORST-CASE BELOW 1 GHz

STANDARD COVER

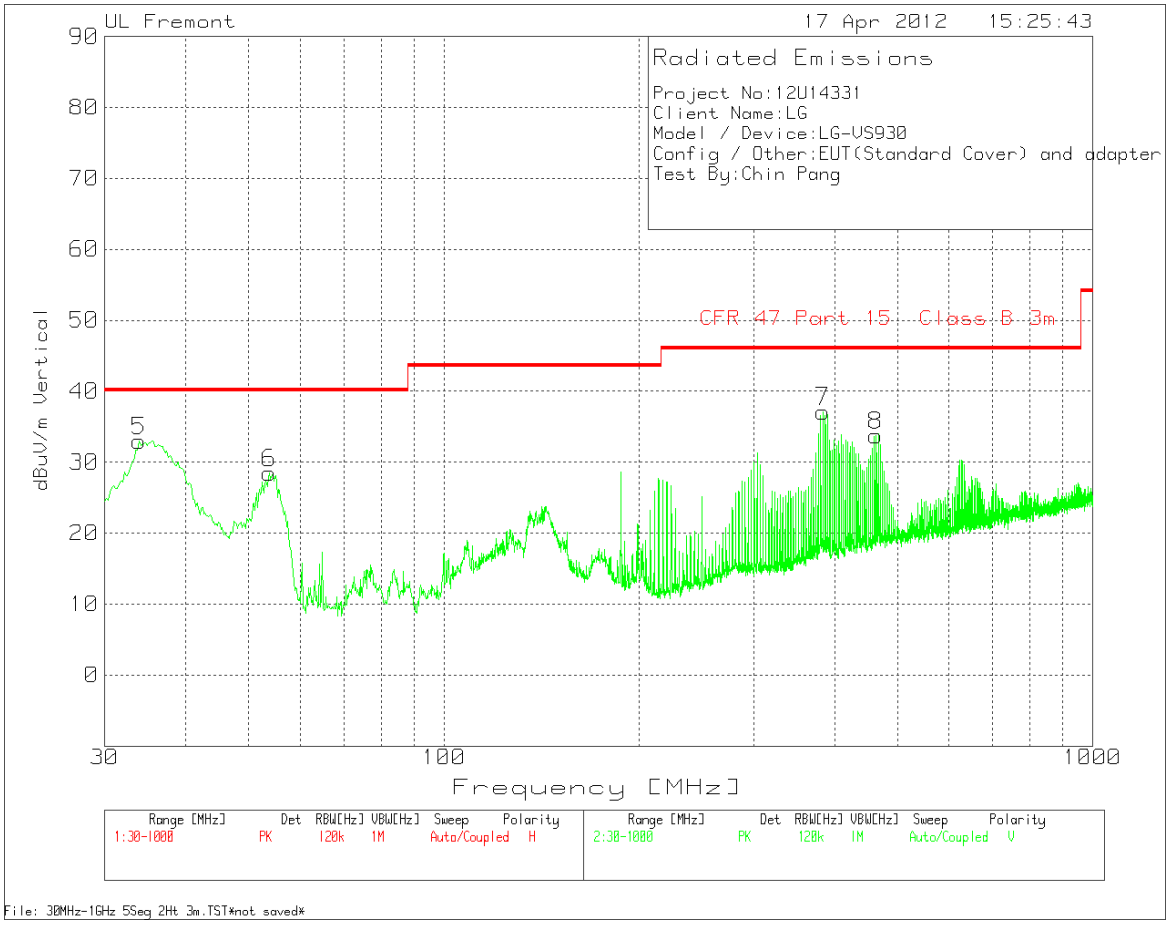
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



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

VERTICAL PLOT



HORIZONTAL AND VERTICAL DATA

Project No:12U14331
Client Name:LG
Model / Device:LG-VS930
Config / Other:EUT(Standard Cover) and adapter
Test By:Chin Pang

Range 1 30 - 1000MHz

Test Frequency	Meter Reading	Detector	25MHz-1GHz ChmbrA Amplified.TX [dB]	T243 Sunol Bilog.TXT [dB]	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
223.8449	49.94	PK	-26	10.6	34.54	46	-11.46	100	Horz
300.8014	50.08	PK	-25.8	13.2	37.48	46	-8.52	100	Horz
383.9608	48.56	PK	-25.3	15	38.26	46	-7.74	100	Horz
467.3141	46.31	PK	-25.1	17.1	38.31	46	-7.69	200	Horz

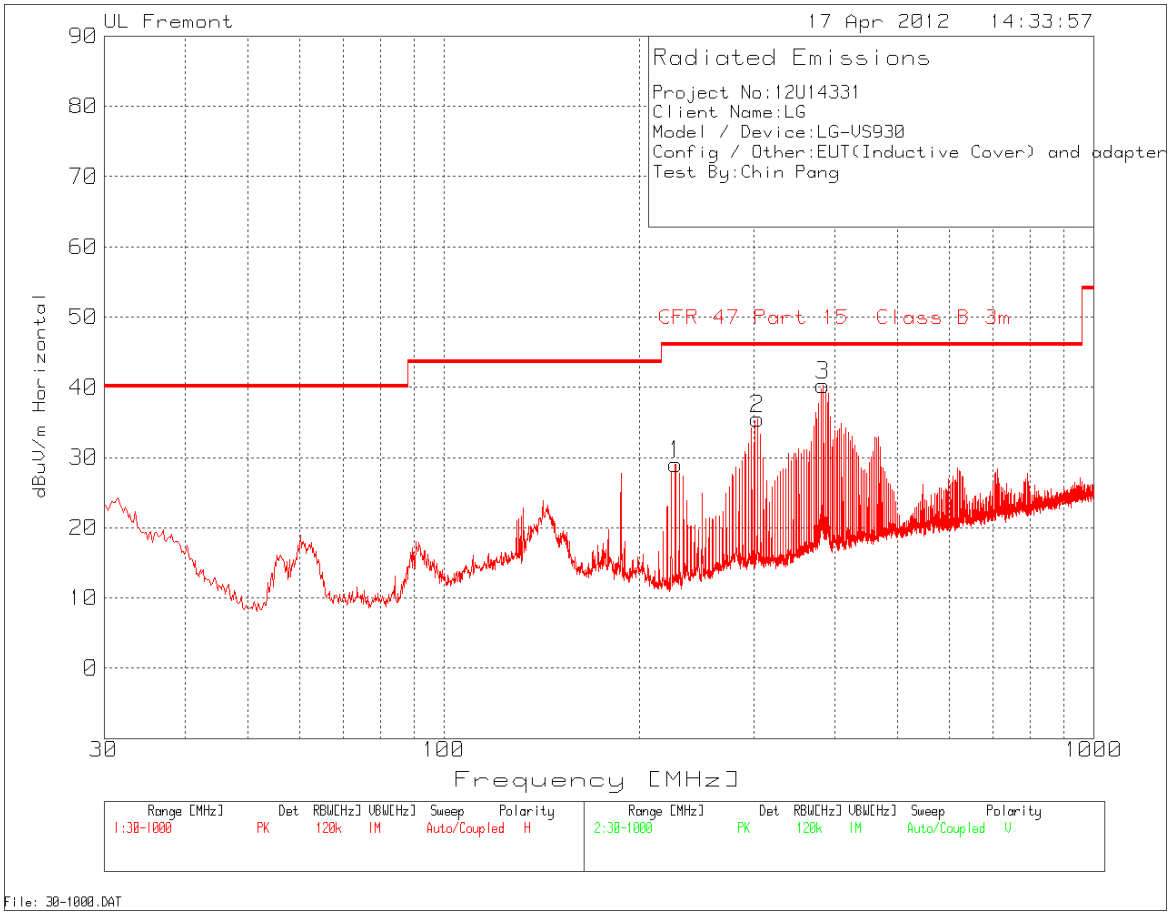
Range 2 30 - 1000MHz

Test Frequency	Meter Reading	Detector	25MHz-1GHz ChmbrA Amplified.TX [dB]	T243 Sunol Bilog.TXT [dB]	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
33.8769	42.17	PK	-27.6	18.4	32.97	40	-7.03	109	Vert
53.8429	48.43	PK	-27.3	7.3	28.43	40	-11.57	109	Vert
383.9608	47.45	PK	-25.3	15	37.15	46	-8.85	109	Vert
464.0188	41.9	PK	-25	16.9	33.8	46	-12.2	109	Vert

INDUCTIVE COVER

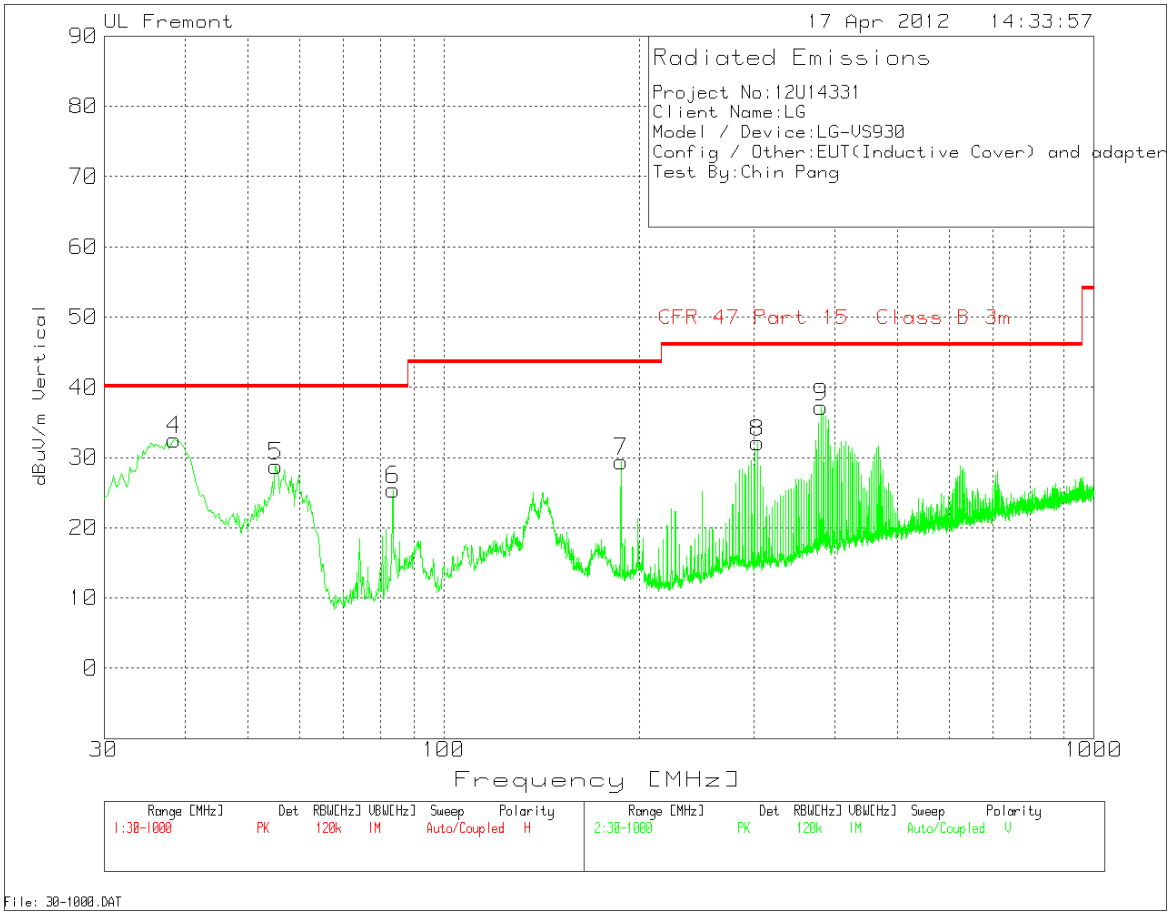
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



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

VERTICAL PLOT



HORIZONTAL AND VERTICAL DATA

Project No:12U14331
Client Name:LG
Model / Device:LG-VS930
Config / Other:EUT(Inductive Cover) and adapter
Test By:Chin Pang

Range 1 30 - 1000MHz

Test Frequency	Meter Reading	Detector	25MHz-1GHz ChmbrA Amplified.TX [dB]	T243 Sunol Bilog.TXT [dB]	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
227.3341	44.48	PK	-26.1	10.7	29.08	46	-16.92	91	Horz
303.9029	48.06	PK	-25.8	13.3	35.56	46	-10.44	91	Horz
383.9608	50.54	PK	-25.3	15	40.24	46	-5.76	91	Horz

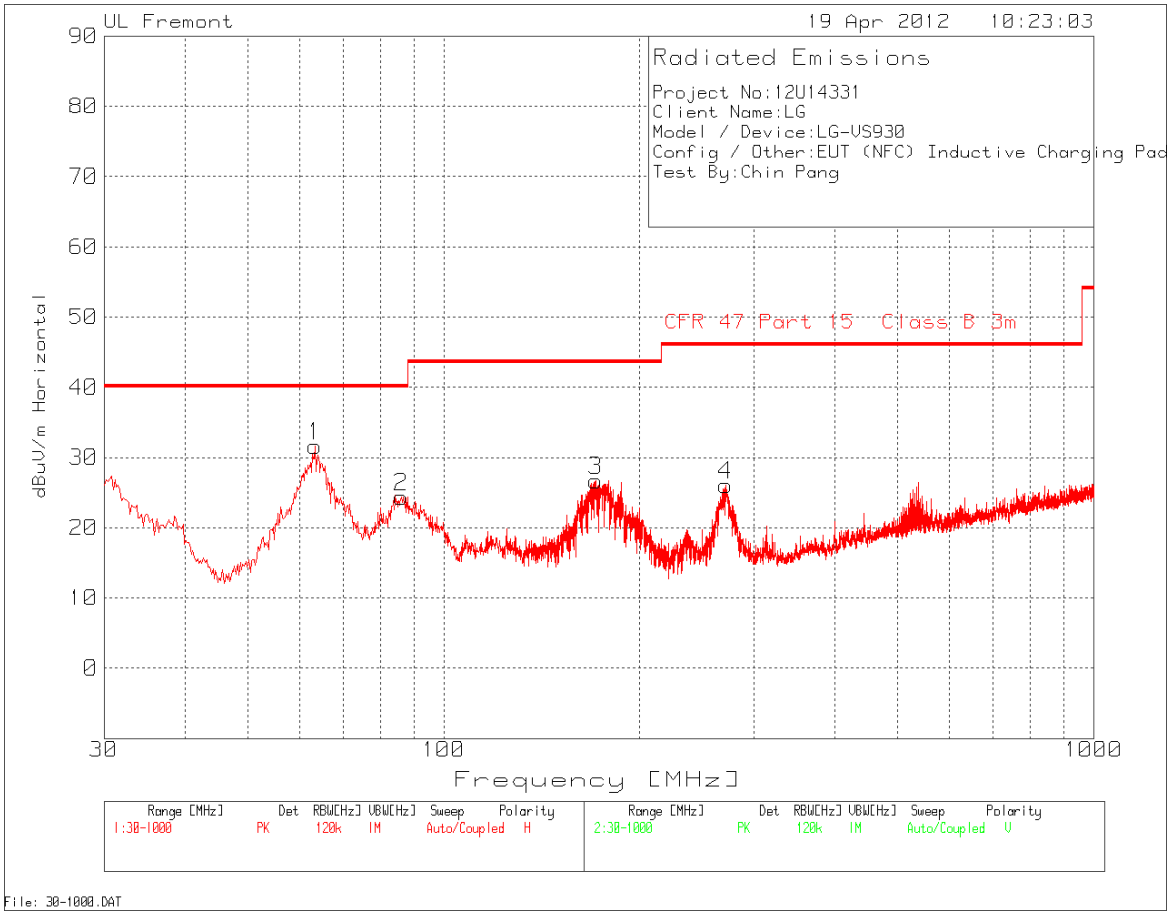
Range 2 30 - 1000MHz

Test Frequency	Meter Reading	Detector	25MHz-1GHz ChmbrA Amplified.TX [dB]	T243 Sunol Bilog.TXT [dB]	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
38.5292	44.9	PK	-27.4	15	32.5	40	-7.5	100	Vert
55.1998	49	PK	-27.3	7.1	28.8	40	-11.2	200	Vert
83.5012	45	PK	-27	7.4	25.4	40	-14.6	200	Vert
187.4021	44.43	PK	-26.3	11.3	29.43	43.5	-14.07	200	Vert
303.9029	44.58	PK	-25.8	13.3	32.08	46	-13.92	100	Vert
380.6655	47.37	PK	-25.3	15.1	37.17	46	-8.83	100	Vert

INDUCTIVE CHARGER WITH INDUCTIVE COVER

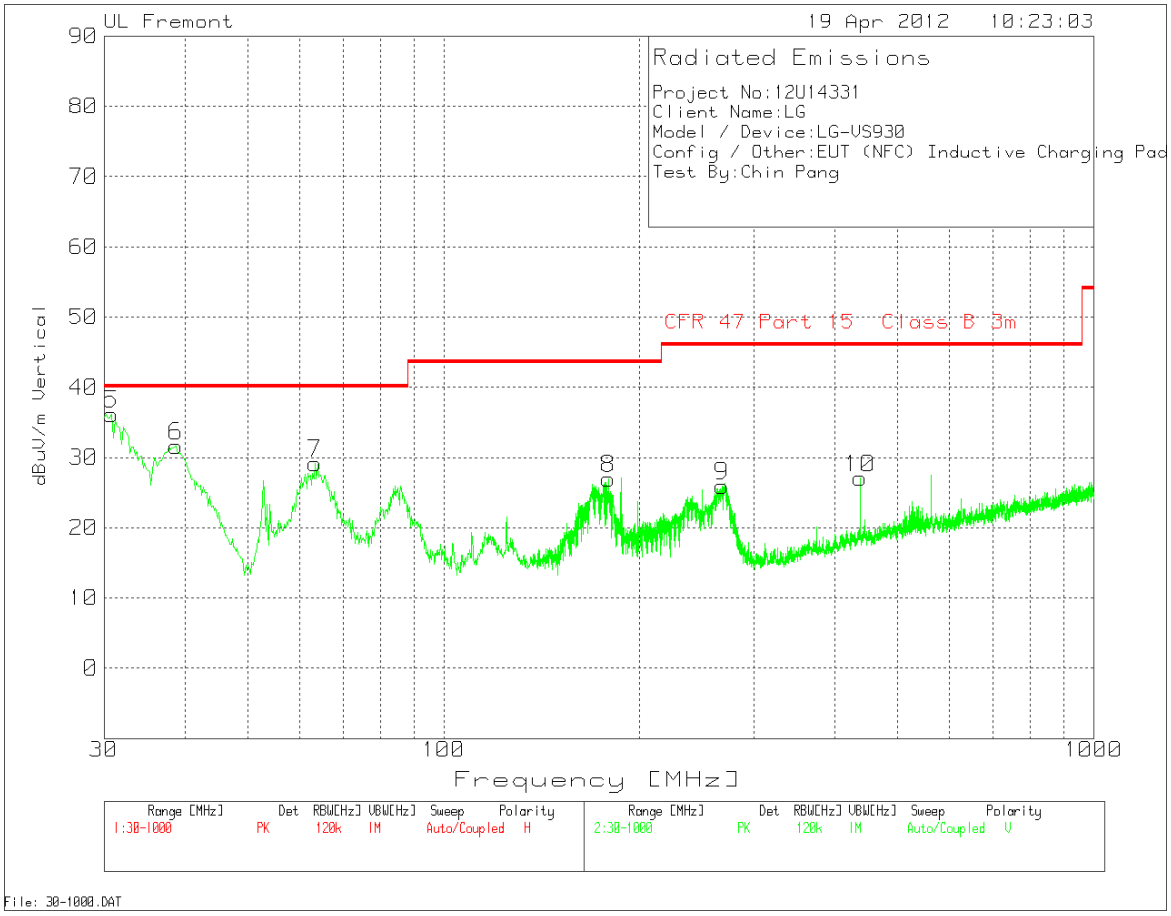
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



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

VERTICAL PLOT



HORIZONTAL AND VERTICAL DATA

Project No:12U14331
Client Name:LG
Model / Device:LG-VS930
Config / Other:EUT (NFC) Inductive Charging Pad
Test By:Chin Pang

Range 1 30 - 1000MHz

Test Frequency	Meter Reading	Detector	25MHz-1GHz ChmbrA Amplified.TX [dB]	T243 Sunol Bilog.TXT [dB]	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
63.3413	51.23	PK	-27.2	7.6	31.63	40	-8.37	300	Horz
86.0212	44.01	PK	-27	7.4	24.41	40	-15.59	200	Horz
171.313	41.58	PK	-26.5	11.6	26.68	43.5	-16.82	200	Horz
271.7246	38.76	PK	-25.8	13.1	26.06	46	-19.94	100	Horz

Range 2 30 - 1000MHz

Test Frequency	Meter Reading	Detector	25MHz-1GHz ChmbrA Amplified.TX [dB]	T243 Sunol Bilog.TXT [dB]	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
30.7754	43.09	PK	-27.5	20.6	36.19	40	-3.81	100	Vert
30.7754	41.41	QP	-27.5	21.1	35.01	40	-4.99	242	Vert
38.723	44.18	PK	-27.4	14.9	31.68	40	-8.32	100	Vert
63.3413	48.79	PK	-27.2	7.6	29.19	40	-10.81	300	Vert
179.0667	42.13	PK	-26.4	11.2	26.93	43.5	-16.57	100	Vert
268.0416	38.8	PK	-25.8	12.9	25.9	46	-20.1	100	Vert
437.6559	35.63	PK	-25.3	16.7	27.03	46	-18.97	100	Vert

8. 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.

NOTE

The configuration with inductive cover + charger was also tested with a 50 ohm load since the same configuration exceeded the limit at transmit frequency, 13.56 MHz, when tested with antenna.

RESULTS

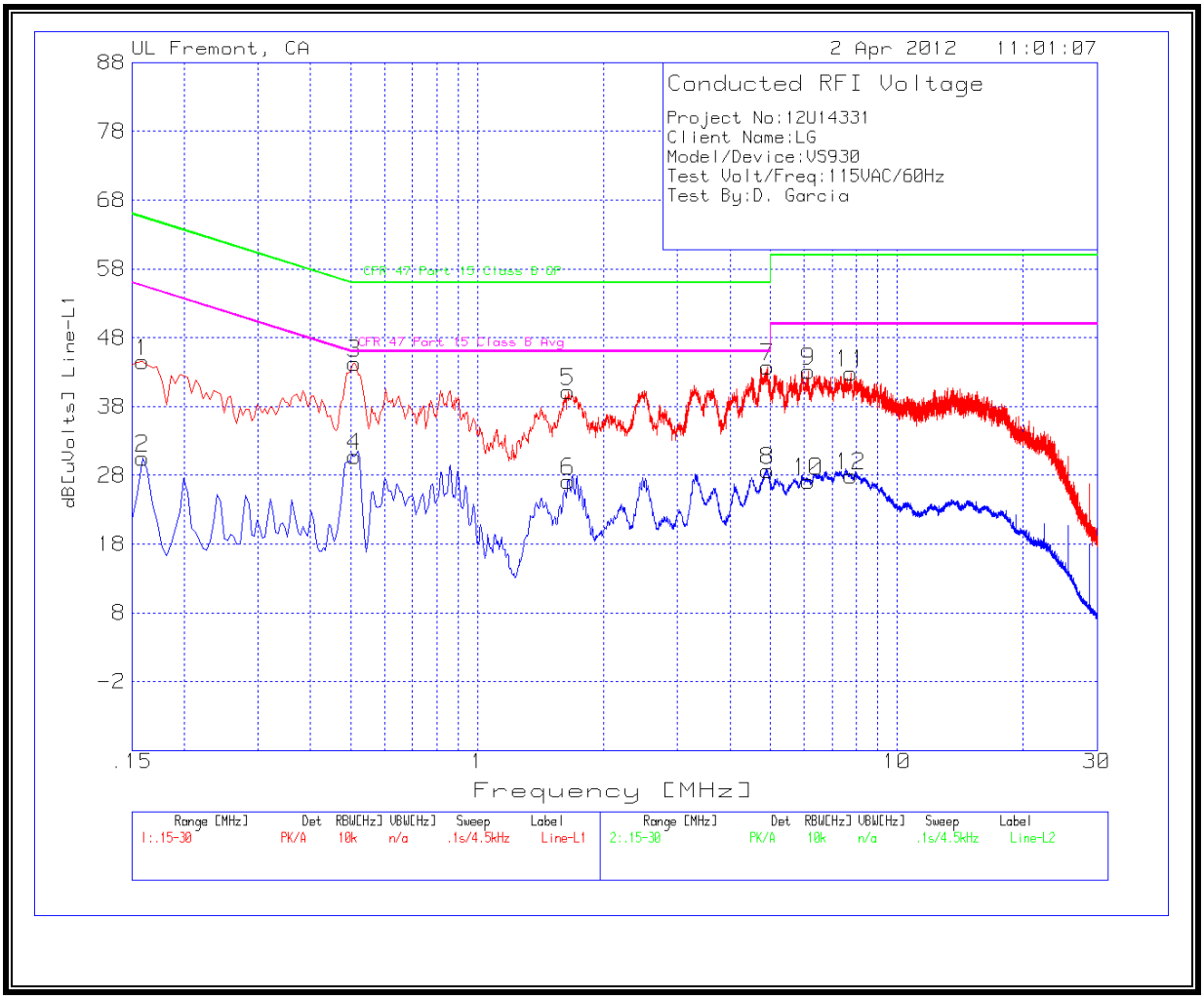
STANDARD COVER

6 WORST EMISSIONS

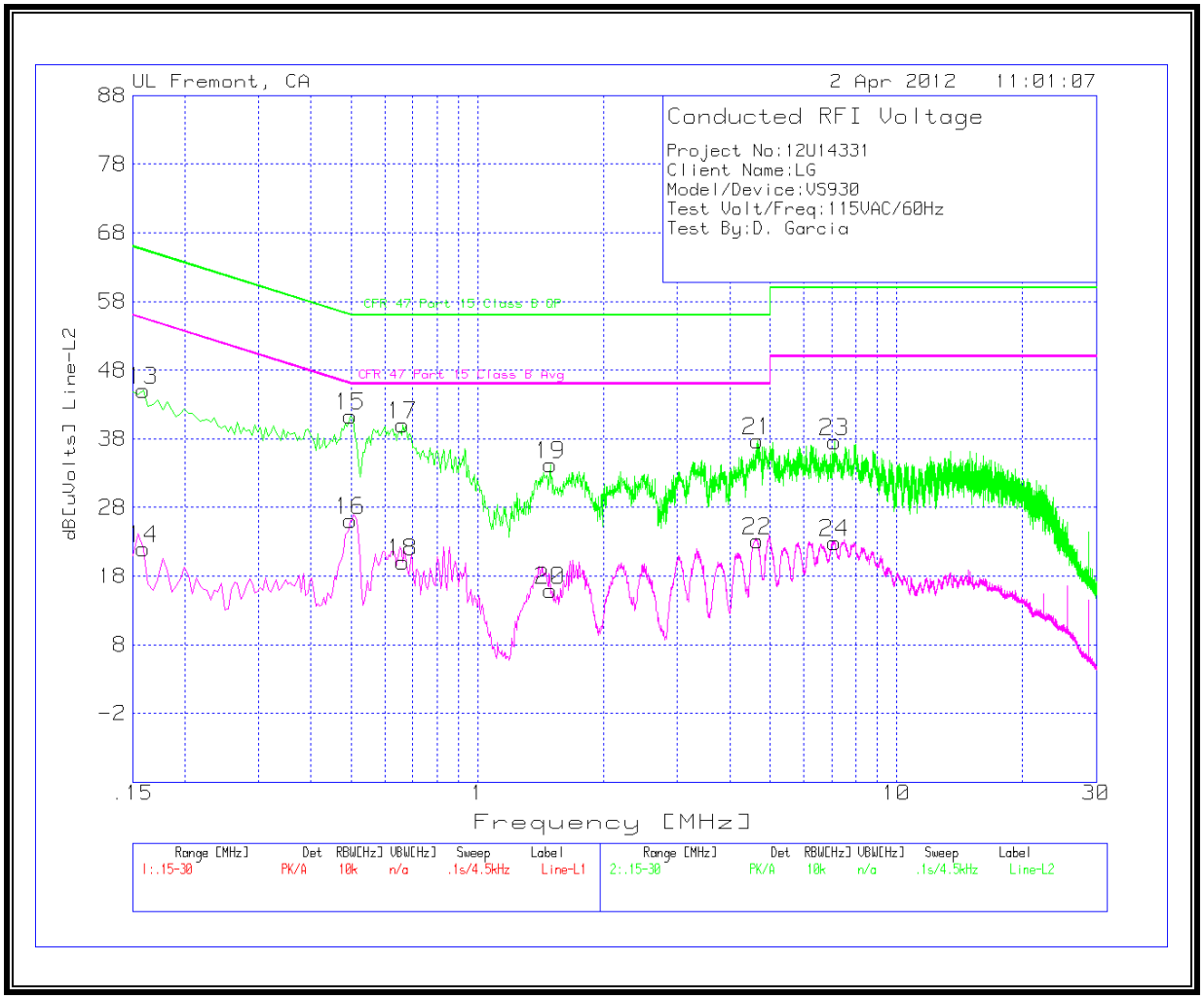
Project No:	12U14331
Client Name:	LG
Model/Device:	VS930 with Standard Back Cover
Test Volt/Freq:	115VAC/60Hz
Test By:	D. Garcia

Line-L1 .15 - 30MHz									
Test Frequency	Meter Reading	Detector	T24 IL L1.TXT [dB]	LC Cables 1&3.TXT [dB]	dB[uVolts]	CFR 47 Part 15 Class B QP	Margin	CFR 47 Part 15 Class B Avg	Margin
0.159	44.39	PK	0.1	0	44.49	65.5	-21.01	-	-
0.159	30.36	Av	0.1	0	30.46	-	-	55.5	-25.04
0.51	44.23	PK	0.1	0	44.33	56	-11.67	-	-
0.51	30.67	Av	0.1	0	30.77	-	-	46	-15.23
1.6485	39.93	PK	0.1	0.1	40.13	56	-15.87	-	-
1.6485	26.98	Av	0.1	0.1	27.18	-	-	46	-18.82
4.9155	43.53	PK	0.1	0.1	43.73	56	-12.27	-	-
4.9155	28.48	Av	0.1	0.1	28.68	-	-	46	-17.32
6.153	42.88	PK	0.1	0.1	43.08	60	-16.92	-	-
6.153	26.99	Av	0.1	0.1	27.19	-	-	50	-22.81
7.764	42.72	PK	0.1	0.1	42.92	60	-17.08	-	-
7.764	27.74	Av	0.1	0.1	27.94	-	-	50	-22.06
Line-L2 .15 - 30MHz									
0.159	44.95	PK	0.1	0	45.05	65.5	-20.45	-	-
0.159	21.88	Av	0.1	0	21.98	-	-	55.5	-33.52
0.4965	41.17	PK	0.1	0	41.27	56.1	-14.83	-	-
0.4965	25.98	Av	0.1	0	26.08	-	-	46.1	-20.02
0.663	39.96	PK	0.1	0	40.06	56	-15.94	-	-
0.663	19.93	Av	0.1	0	20.03	-	-	46	-25.97
1.491	34.06	PK	0.1	0.1	34.26	56	-21.74	-	-
1.491	15.74	Av	0.1	0.1	15.94	-	-	46	-30.06
4.65	37.46	PK	0.1	0.1	37.66	56	-18.34	-	-
4.65	22.97	Av	0.1	0.1	23.17	-	-	46	-22.83
7.116	37.39	PK	0.1	0.1	37.59	60	-22.41	-	-
7.116	22.65	Av	0.1	0.1	22.85	-	-	50	-27.15

LINE 1 RESULTS



LINE 2 RESULTS



INDUCTIVE COVER

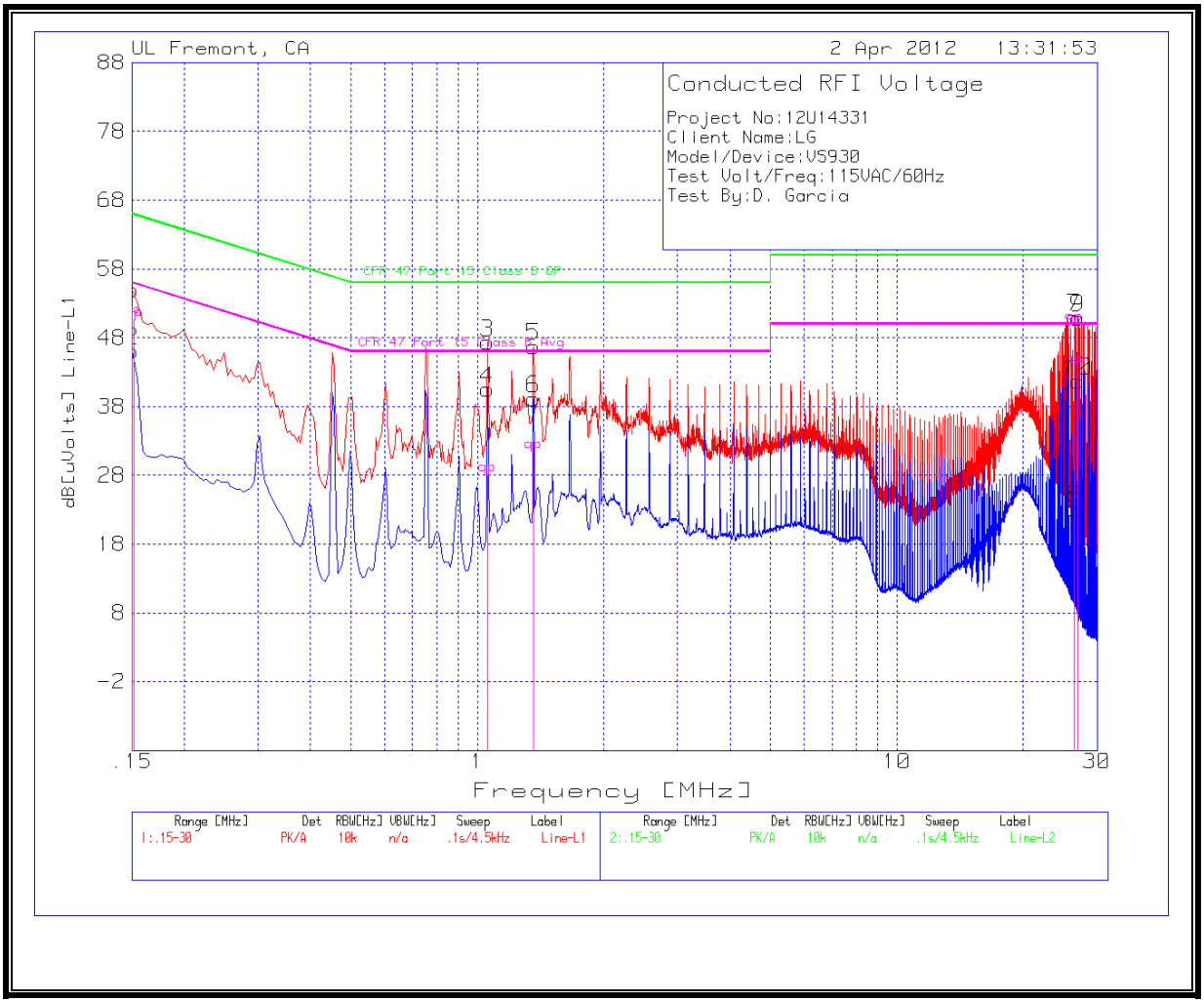
6 WORST EMISSIONS

Project No:	12U14331
Client Name:	LG
Model/Device:	VS930 w/INDUCTIVE COVER
Test Volt/Freq:	115VAC/60Hz
Test By:	D. Garcia

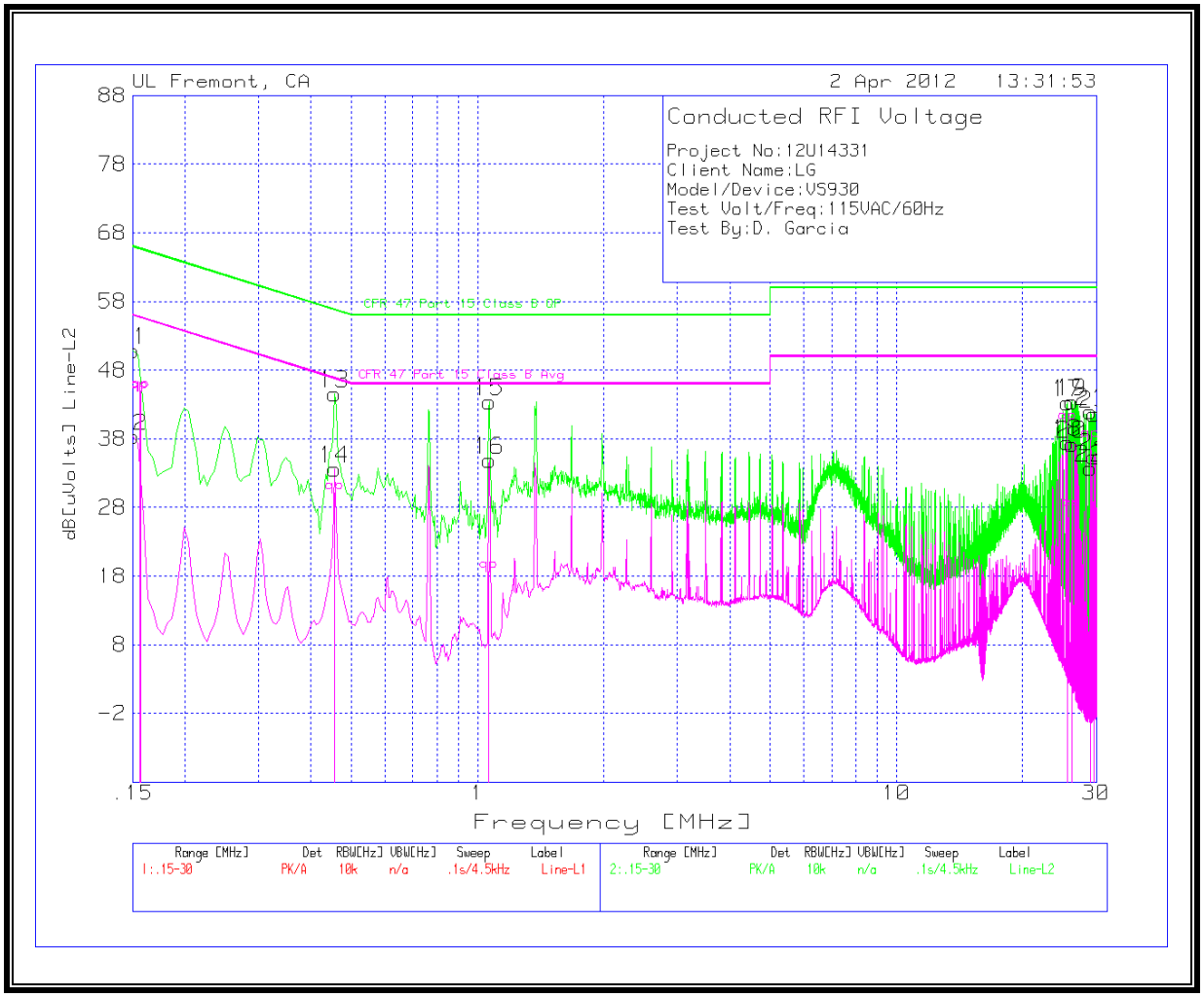
Test Frequency	Meter Reading	Detector	T24 IL L1.TXT [dB]	LC Cables 1&3.TXT [dB]	dB[uVolts]	CFR 47 Part 15 Class B QP	Margin	CFR 47 Part 15 Class B Avg	Margin
Line-L1 .15 - 30MHz									
0.15	54.83	PK	0.1	0	54.93	66	-11.07	-	-
0.15	46.02	Av	0.1	0	46.12	-	-	56	-9.88
1.0545	47.22	PK	0.1	0	47.32	56	-8.68	-	-
1.0545	40.39	Av	0.1	0	40.49	-	-	46	-5.51
1.3605	46.59	PK	0.1	0.1	46.79	56	-9.21	-	-
1.3605	38.94	Av	0.1	0.1	39.14	-	-	46	-6.86
26.4705	50.2	PK	0.5	0.3	51.00	60	-9.00	-	-
26.4705	22.38	Av	0.5	0.3	23.18	-	-	50	-26.82
26.934	50.04	PK	0.5	0.3	50.84	60	-9.16	-	-
26.934	40.92	Av	0.5	0.3	41.72	-	-	50	-8.28
Line-L2 .15 - 30MHz									
0.15	50.74	PK	0.1	0	50.84	66	-15.16	-	-
0.15	38.2	Av	0.1	0	38.30	-	-	56	-17.70
0.456	44.4	PK	0.1	0	44.50	56.8	-12.30	-	-
0.456	33.54	Av	0.1	0	33.64	-	-	46.8	-13.16
1.068	43.18	PK	0.1	0.1	43.38	56	-12.62	-	-
1.068	34.72	Av	0.1	0.1	34.92	-	-	46	-11.08
25.6065	42.46	PK	0.5	0.3	43.26	60	-16.74	-	-
25.6065	36.68	Av	0.5	0.3	37.48	-	-	50	-12.52
26.2185	42.55	PK	0.5	0.3	43.35	60	-16.65	-	-
26.2185	36.4	Av	0.5	0.3	37.20	-	-	50	-12.80
29.0625	41.17	PK	0.5	0.3	41.97	60	-18.03	-	-
29.0625	32.92	Av	0.5	0.3	33.72	-	-	50	-16.28
29.6745	40.82	PK	0.5	0.3	41.62	60	-18.38	-	-
29.6745	34.62	Av	0.5	0.3	35.42	-	-	50	-14.58

PK - Peak detector
QP - Quasi-Peak detector
Av - Average detector

LINE 1 RESULTS



LINE 2 RESULTS



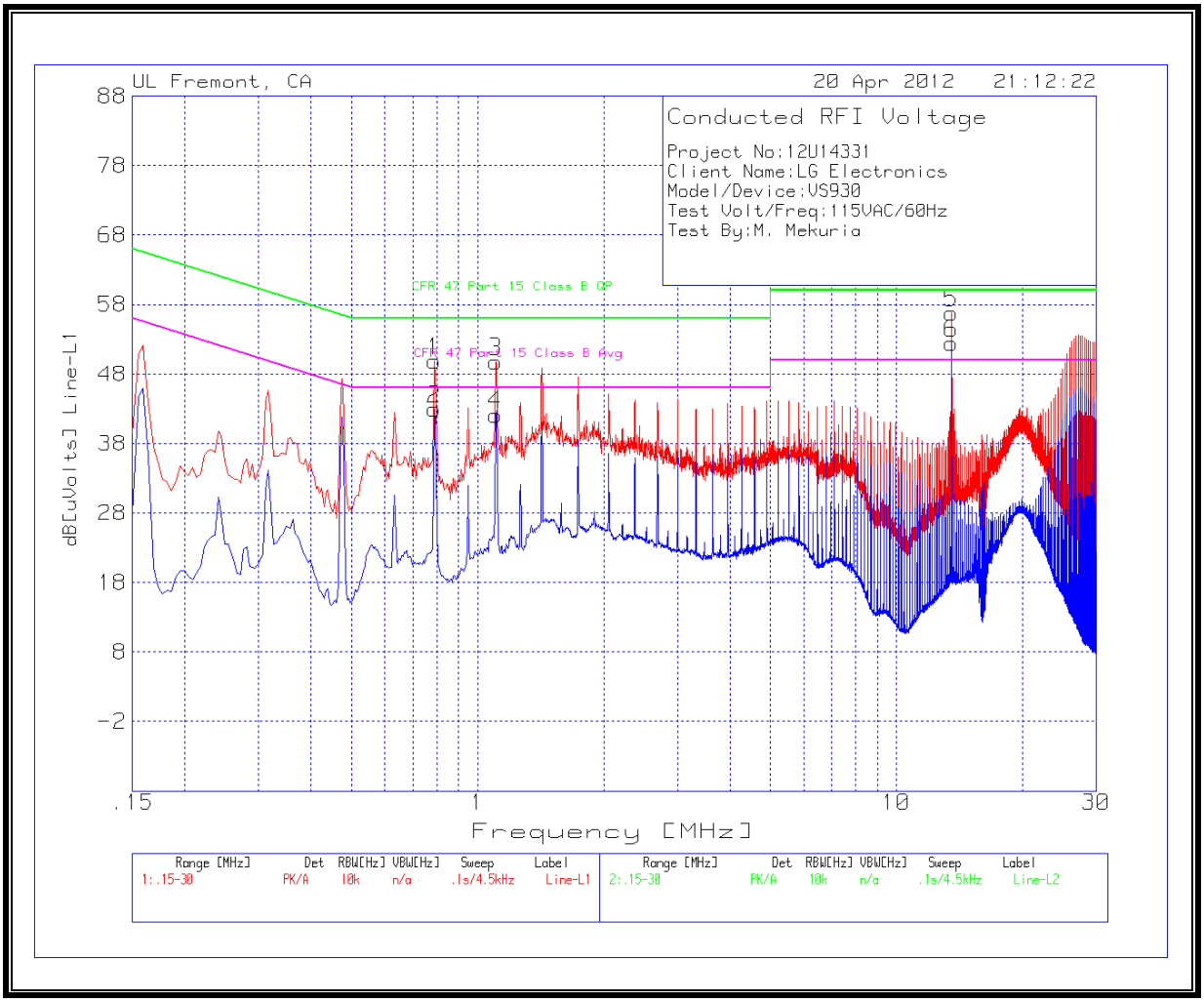
INDUCTIVE CHARGER WITH INDUCTIVE COVER

6 WORST EMISSIONS

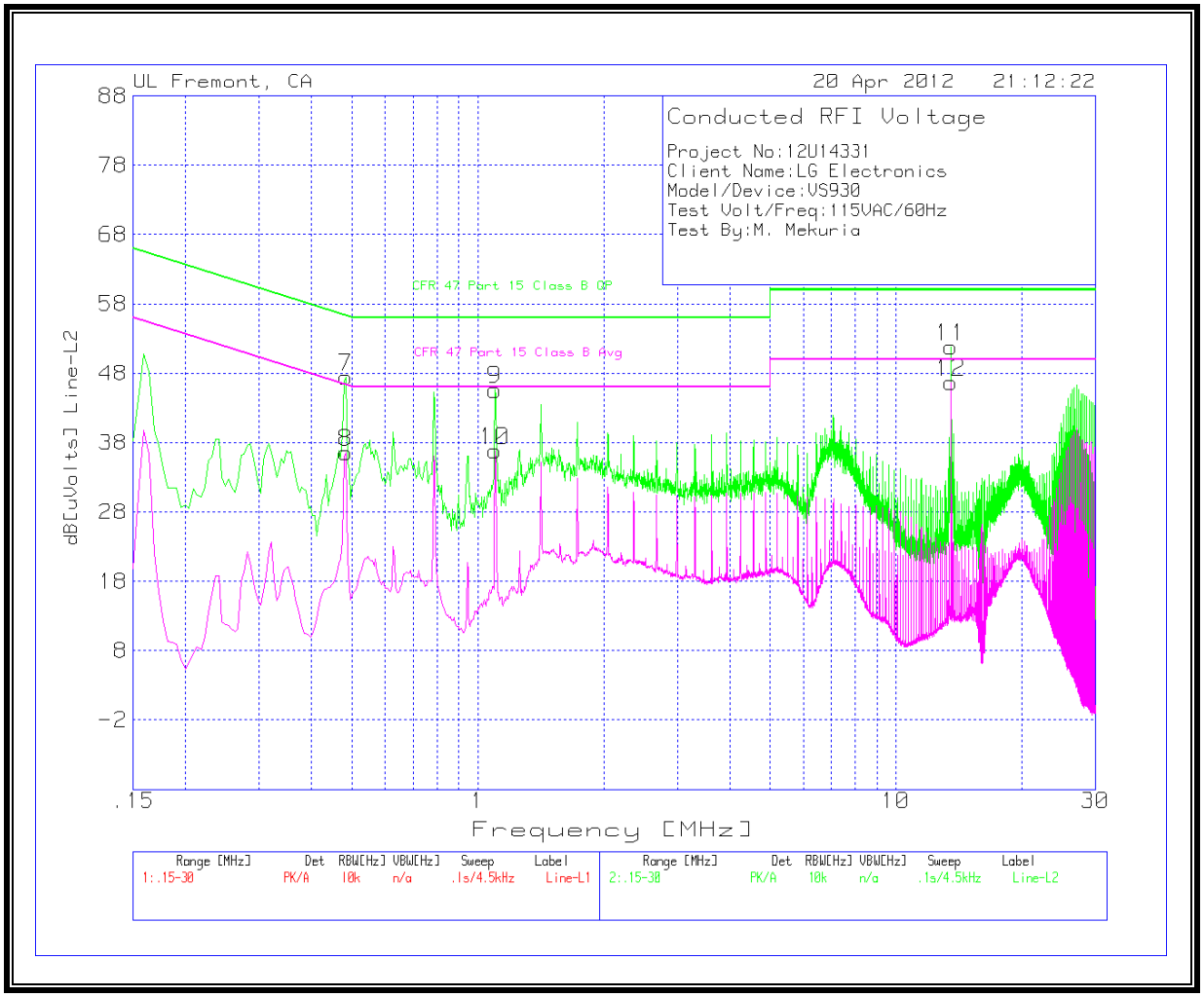
Project No:12U14331									
Client Name:LG Electronics									
Model/Device:VS930									
Test Volt/Freq:115VAC/60Hz									
Test By:M. Mekuria									
Line-L1 .15 - 30MHz									
Test Frequency	Meter Reading	Detector	T24 IL L1	LC Cables	dB[uVolts]	Part 15B QP	Margin	Part 15B Avg	Margin
0.789	49.83	PK	0.1	0	49.93	56	-6.07	-	-
0.789	42.89	Av	0.1	0	42.99	-	-	46	-3.01
1.104	49.71	PK	0.1	0	49.81	56	-6.19	-	-
1.104	42.04	Av	0.1	0	42.14	-	-	46	-3.86
13.56	56.35	PK	0.2	0.2	56.75	60	-3.25	-	-
13.56	52.01	Av	0.2	0.2	52.41	-	-	50	2.41
Line-L2 .15 - 30MHz									
Test Frequency	Meter Reading	Detector	T24 IL L1	LC Cables	dB[uVolts]	Part 15B QP	Margin	Part 15B Avg	Margin
0.483	47.4	PK	0.1	0	47.5	56.3	-8.8	-	-
0.483	36.51	Av	0.1	0	36.61	-	-	46.3	-9.69
1.0995	45.4	PK	0.1	0.1	45.6	56	-10.4	-	-
1.0995	36.67	Av	0.1	0.1	36.87	-	-	46	-9.13
13.56	51.45	PK	0.2	0.2	51.85	60	-8.15	-	-
13.56	46.33	Av	0.2	0.2	46.73	-	-	50	-3.27

EUT with Antenna

LINE 1 RESULTS



LINE 2 RESULTS

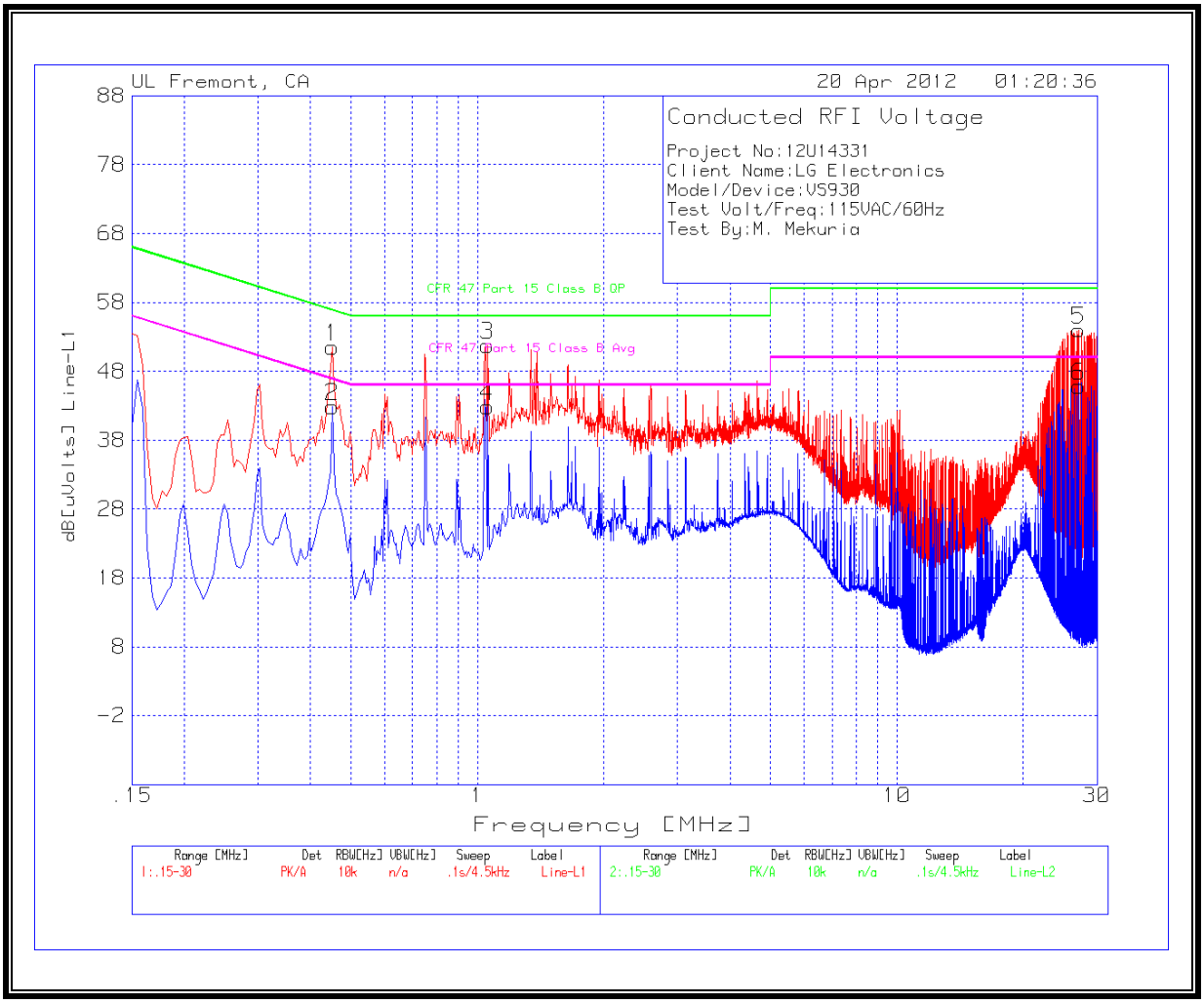


EUT WITH 50 Ohm Load

6 WORST EMISSIONS

Project No:12U14331									
Client Name:LG Electronics									
Model/Device:VS930									
Test Volt/Freq:115VAC/60Hz									
Test By:M. Mekuria									
Line-L1 .15 - 30MHz									
Test Frequency	Meter Reading	Detector	T24 IL L1.TXT [dB]	LC Cables 1&3.TXT [dB]	dB[uVolts]	CFR 47 Part 15 Class B QP	Margin	CFR 47 Part 15 Class B Avg	Margin
0.4515	51.38	PK	0.1	0	51.48	56.8	-5.32	-	-
0.4515	42.77	Av	0.1	0	42.87	-	-	46.8	-3.93
1.059	51.72	PK	0.1	0	51.82	56	-4.18	-	-
1.059	42.79	Av	0.1	0	42.89	-	-	46	-3.11
27.1275	53.22	PK	0.5	0.3	54.02	60	-5.98	-	-
27.1275	45.01	Av	0.5	0.3	45.81	-	-	50	-4.19
ıe-L2 .15 - 30MHz									
Test Frequency	Meter Reading	Detector	T24 IL L1.TXT [dB]	LC Cables 1&3.TXT [dB]	dB[uVolts]	CFR 47 Part 15 Class B QP	Margin	CFR 47 Part 15 Class B Avg	Margin
0.4515	48.03	PK	0.1	0	48.13	56.8	-8.67	-	-
0.4515	36.34	Av	0.1	0	36.44	-	-	46.8	-10.36
1.05	48.05	PK	0.1	0	48.15	56	-7.85	-	-
1.05	38.07	Av	0.1	0	38.17	-	-	46	-7.83
1.3425	48.33	PK	0.1	0	48.43	56	-7.57	-	-
1.3425	37.48	Av	0.1	0	37.58	-	-	46	-8.42

LINE 1 RESULTS



LINE 2 RESULTS