



FCC CFR47 PART 15 SUBPART C

CERTIFICATION TEST REPORT

FOR

GSM/WCDMA BAND PHONE WITH BT, WLAN, AND NFC

MODEL NUMBER: LG-P880g, LGP880g, P880g, LG-P880G, LGP880G, P880G

FCC ID: ZNFP880G

REPORT NUMBER: 12U14550-5, REVISION A

ISSUE DATE: SEPTEMBER 19, 2012

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

Prepared by
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
--	08/27/2012	Initial Issue	T. LEE
A	09/19/2012	Corrected Antenna Gains	T. LEE

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS.....	5
2. TEST METHODOLOGY	6
3. FACILITIES AND ACCREDITATION.....	6
4. CALIBRATION AND UNCERTAINTY	6
4.1. MEASURING INSTRUMENT CALIBRATION	6
4.2. SAMPLE CALCULATION.....	6
4.3. MEASUREMENT UNCERTAINTY	6
5. EQUIPMENT UNDER TEST	7
5.1. DESCRIPTION OF EUT.....	7
5.2. MAXIMUM OUTPUT POWER.....	7
5.3. DESCRIPTION OF AVAILABLE ANTENNAS	7
5.4. SOFTWARE AND FIRMWARE	7
5.5. MODEL DIFFERENCES	8
5.6. WORST-CASE CONFIGURATION AND MODE.....	8
7.1. DESCRIPTION OF TEST SETUP.....	9
8. TEST AND MEASUREMENT EQUIPMENT	11
9. ANTENNA PORT TEST RESULTS	12
9.1. BASIC DATA RATE GFSK MODULATION	12
9.1.1. 20 dB AND 99% BANDWIDTH	12
9.1.2. HOPPING FREQUENCY SEPARATION	19
9.1.3. NUMBER OF HOPPING CHANNELS.....	21
9.1.4. AVERAGE TIME OF OCCUPANCY	26
9.1.5. OUTPUT POWER	33
9.1.6. AVERAGE POWER	37
9.1.7. CONDUCTED SPURIOUS EMISSIONS.....	38
9.2. ENHANCED DATA RATE 8PSK MODULATION	47
9.2.1. 20 dB AND 99% BANDWIDTH	47
9.2.2. HOPPING FREQUENCY SEPARATION	54
9.2.3. NUMBER OF HOPPING CHANNELS.....	56
9.2.4. AVERAGE TIME OF OCCUPANCY	61
9.2.5. OUTPUT POWER	68
9.2.6. AVERAGE POWER	72
9.2.7. CONDUCTED SPURIOUS EMISSIONS.....	73
10. RADIATED TEST RESULTS.....	82
10.1. LIMITS AND PROCEDURE.....	82
10.2. TRANSMITTER ABOVE 1 GHz.....	83
10.2.1. BASIC DATA RATE GFSK MODULATION	83

10.2.2.	ENHANCED DATA RATE 8PSK MODULATION	92
10.3.	WORST-CASE BELOW 1 GHz	101
11.	AC POWER LINE CONDUCTED EMISSIONS	104
12.	SETUP PHOTOS	108

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: LG ELECTRONICS MOBILECOMM U.S.A., INC.
1000 SYLVAN AVE.
ENGLEWOODS CLIFFS, NJ 07632

EUT DESCRIPTION: GSM/WCDMA DUAL-BAND PHONE WITH BT, WLAN, AND NFC

MODEL: LG-P880g, LGP880g, P880g, LG-P880G, LGP880G, P880G

SERIAL NUMBER: 207KPLC217104 for Conducted, 207KPED217106 for Emissions

DATE TESTED: August 9- 25, 2012

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

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:



THANH NGUYEN
EMC ENGINEER
UL CCS

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2009, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 3, and RSS-210 Issue 8.

3. FACILITIES AND ACCREDITATION

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

UL 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:

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

4.3. MEASUREMENT UNCERTAINTY

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

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

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA Tri-Band Phone that also supports BLUETOOTH, WLAN and NFC operating at 13.56MHz.

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 20 channels
- The output power do not transmit over than 125 mW
- The channel separation is based upon 2/3 of 20 dB channel bandwidth

5.2. MAXIMUM OUTPUT POWER

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

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2402 - 2480	Basic GFSK	9.66	9.25
2402 - 2480	Enhanced 8PSK	9.62	9.16

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PIFA antenna, with a maximum gain of -2.19 dBi.

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was Kernel, Version 2.6.39.4

The test utility software used during testing was LG-P880g-V09a July 3, 2012.

The driver installed was Android Version 2.6.39.4

5.5 MODEL DIFFERENCES

Model P880G is identical to Models LGP880G and LG-P880G except for model designation.

5.6 WORST-CASE CONFIGURATION AND MODE

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

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

It was determined that DH5 produced the worse-case data rate.

7.1. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	LG	MCS-01WD	DA260003271	DoC
Earphone	LG	N/A	N/A	N/A

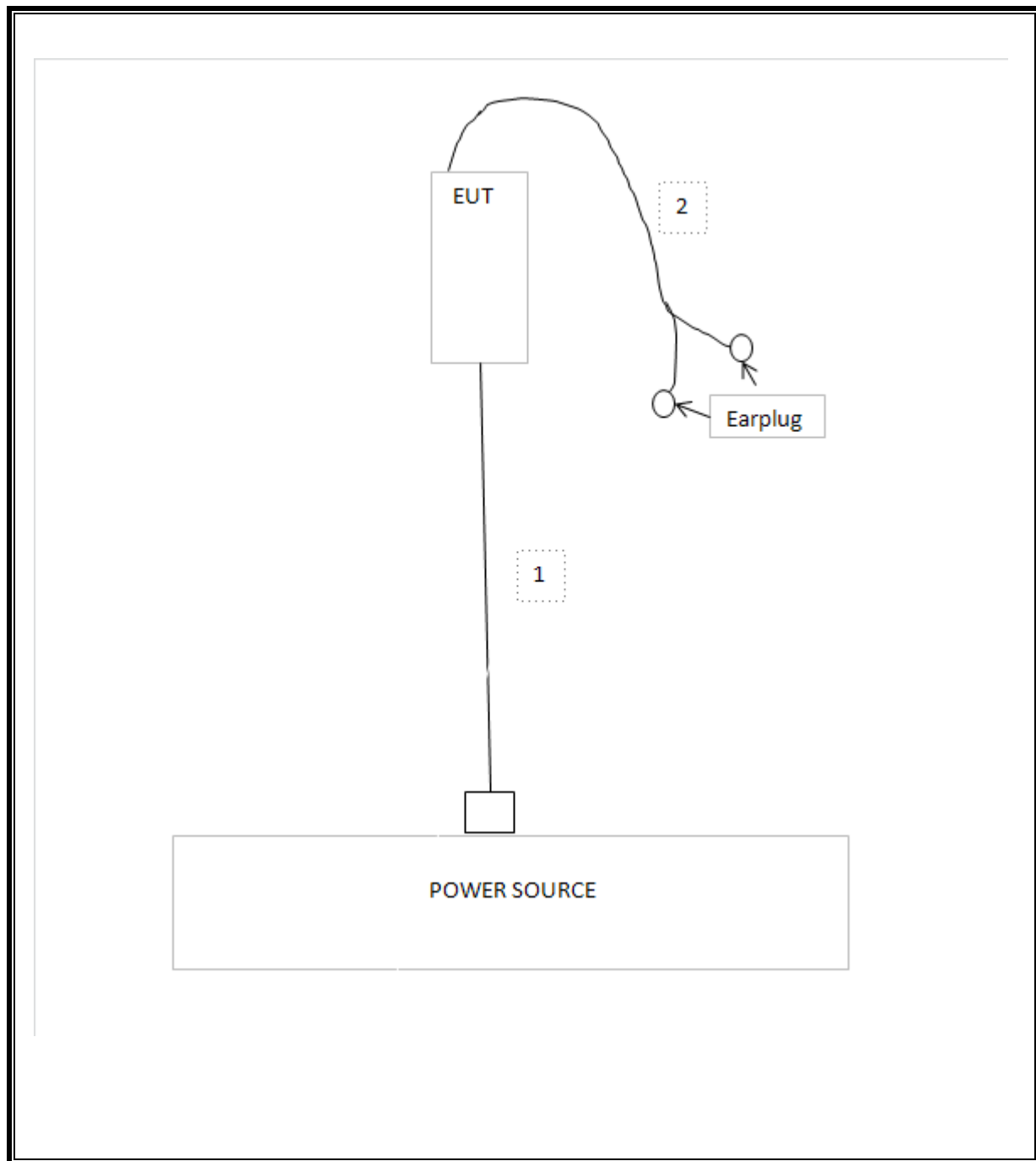
I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC Power	1	Mini-USB	Shielded	1.2 m	NA
2	Audio	1	Mini-Jack	Un-Shielded	1.5 m	NA

TEST SETUP

The EUT is setup to transmit continuously.

SETUP DIAGRAM FOR TESTS



8. 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 Date	Cal Due
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	01/00/00	10/13/12
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00580	11/11/11	11/11/12
1-18GHz Horn Ant	EMCO	3115	C00783	04/15/12	04/15/13
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C00749	09/27/11	09/27/12
Antenna, Horn, 26.5 GHz	ARA	SWH-28	C01015	10/06/11	10/06/12
PSA	Agilent / HP	E4446A	C01012	09/02/11	12/02/12
Power Meter	HP	437B	T226	07/25/12	07/25/13
Power Sensor	HP	HP8481A	T269	07/26/12	07/26/13
LISN, 30 MHz	FCC	LISN-50/250-25-	N02625	11/15/11	11/15/12
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	C01011	3/23/2012	3/23/2013
EMI Test Receiver	R&S	ESHS 20	N02396	08/06/12	08/06/13
CBT Bluetooth Tester	R&S	CBT	T258	05/15/12	05/15/13

9. ANTENNA PORT TEST RESULTS

9.1. BASIC DATA RATE GFSK MODULATION

9.1.1. 20 dB AND 99% BANDWIDTH

LIMIT

None; for reporting purposes only.

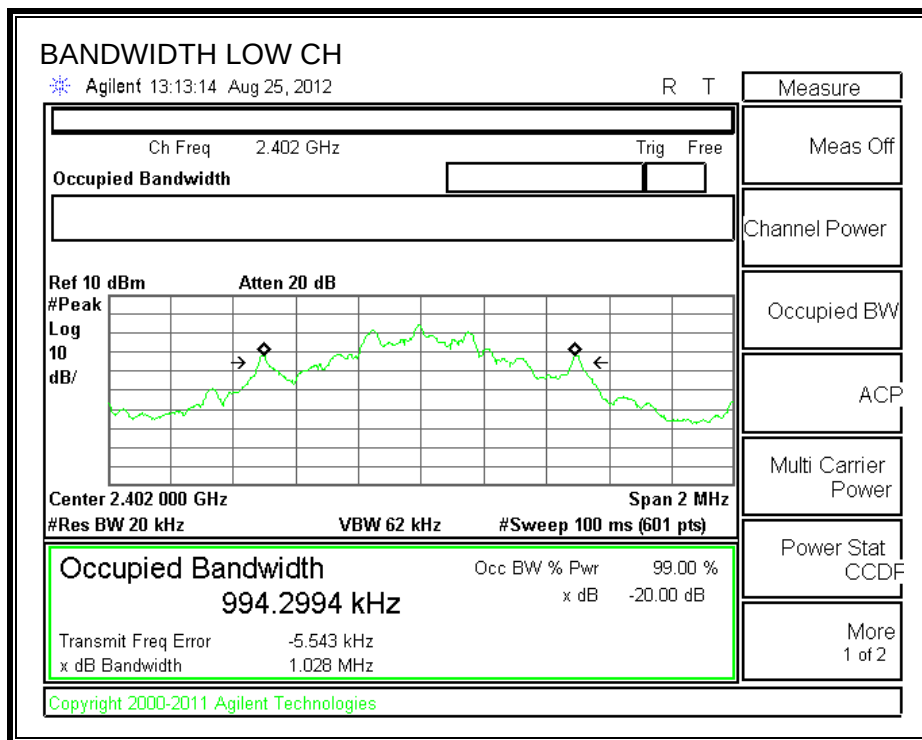
TEST PROCEDURE

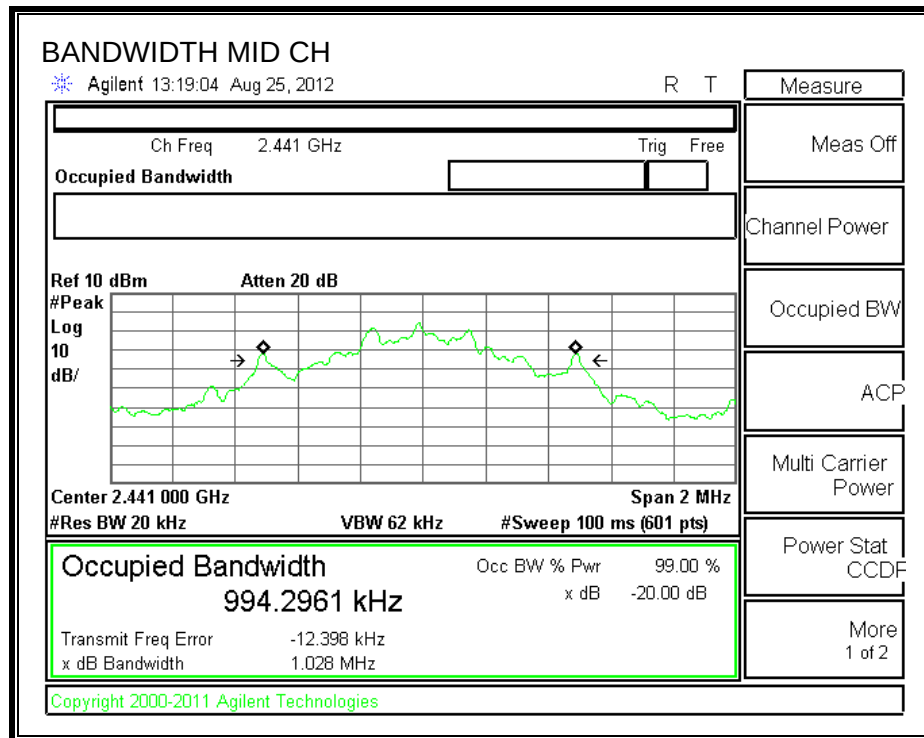
The transmitter output is connected to a spectrum analyzer. The RBW is set to $\geq 1\%$ of the 20 dB bandwidth. The VBW is set to $\geq$ RBW. The sweep time is coupled.

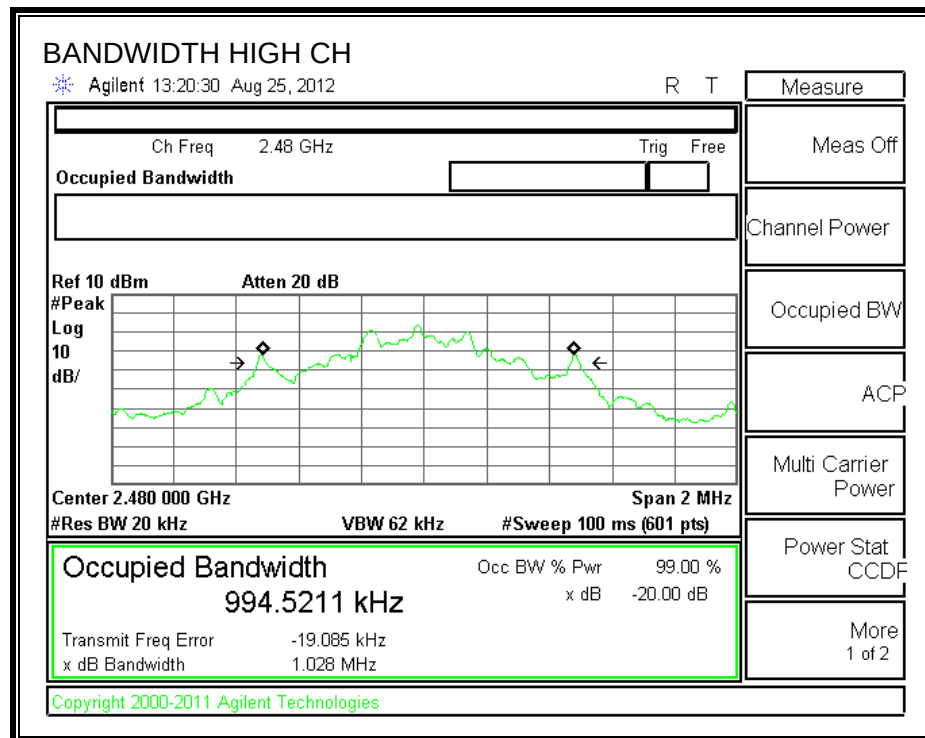
RESULTS

Channel	Frequency (MHz)	20 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2402	1.028	1.0396
Middle	2441	1.028	1.0210
High	2480	1.028	1.0226

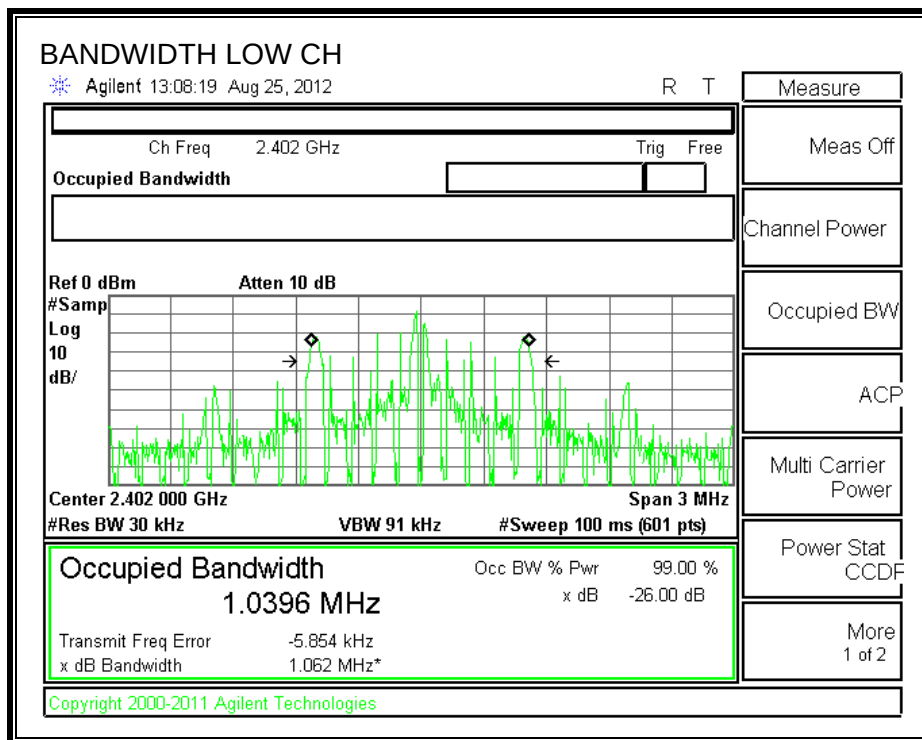
20 dB BANDWIDTH

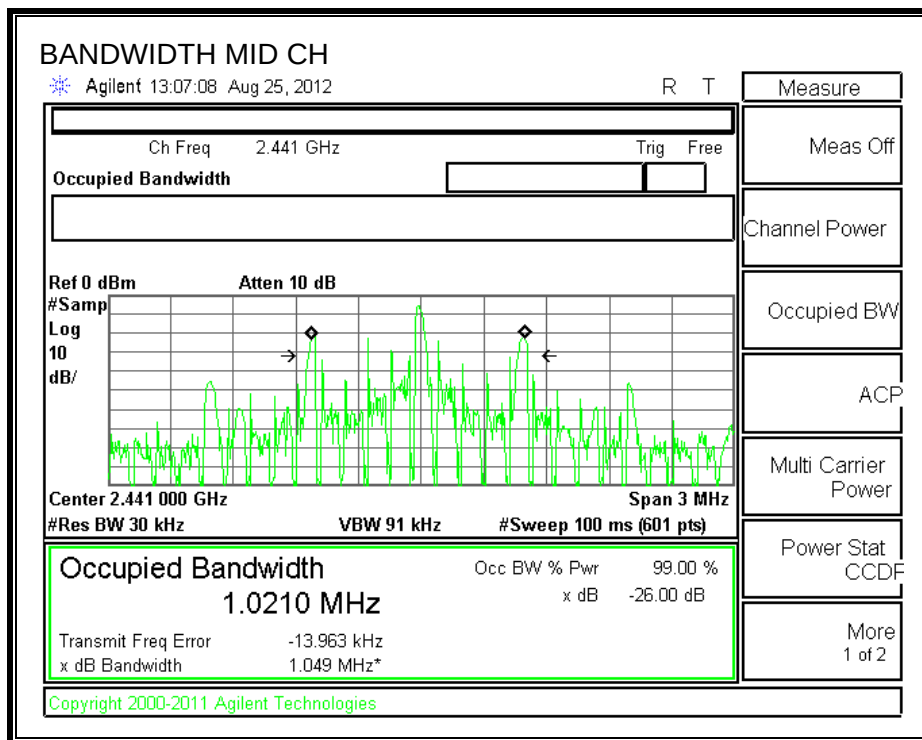


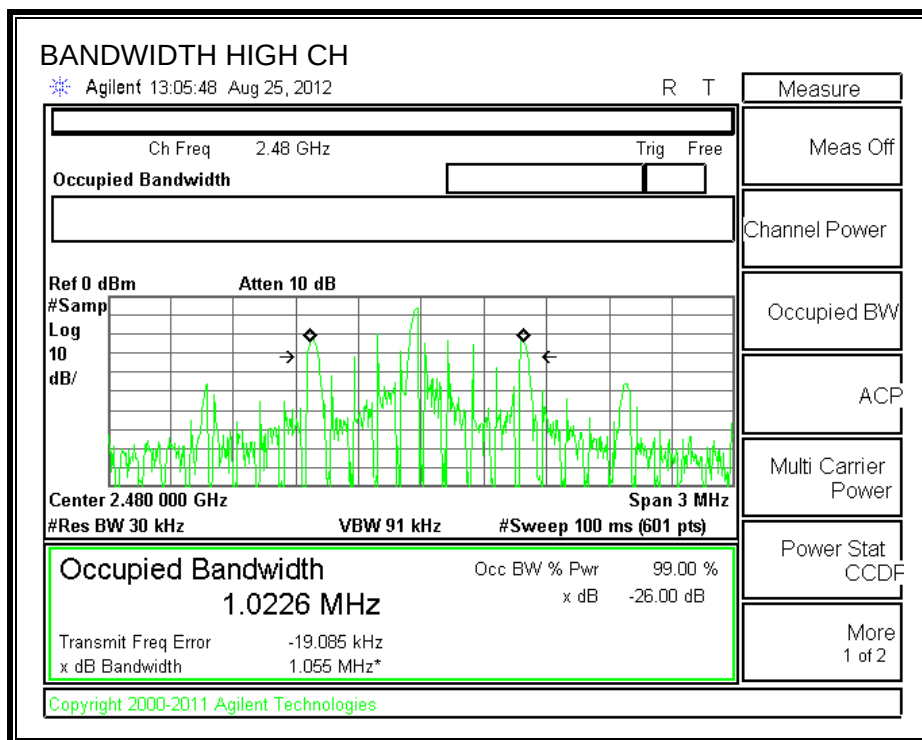




99% BANDWIDTH







9.1.2. 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 hopping channel, whichever is greater.

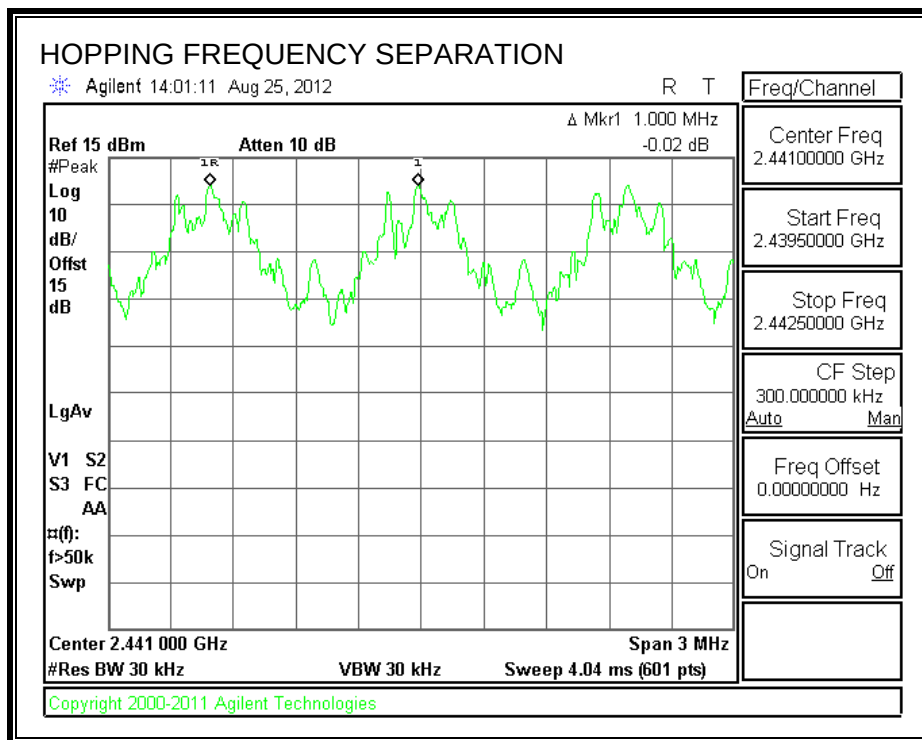
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than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



9.1.3. 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.

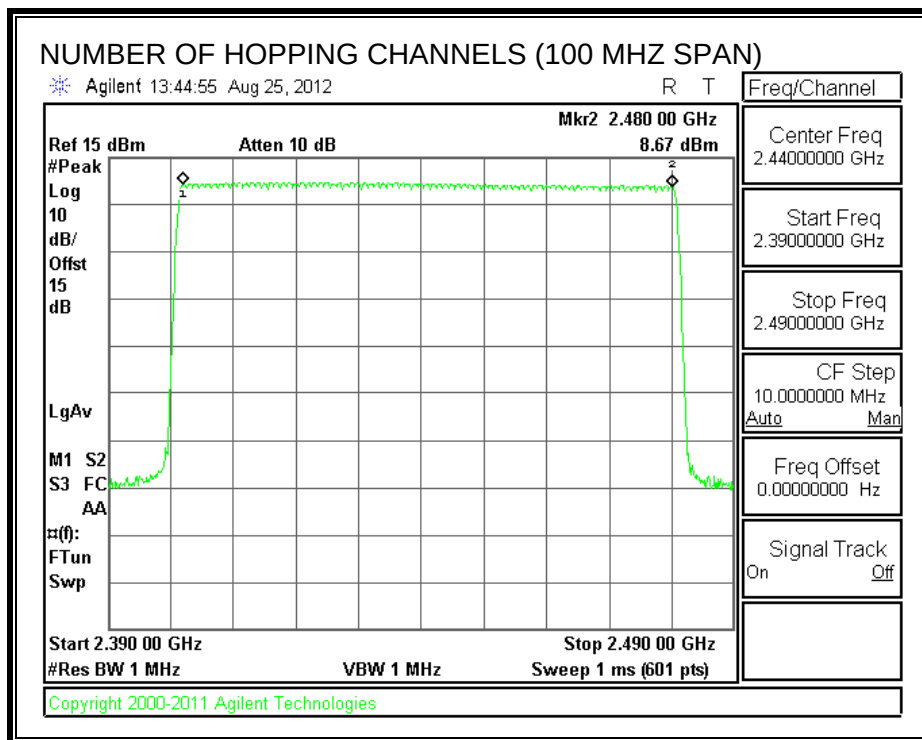
TEST PROCEDURE

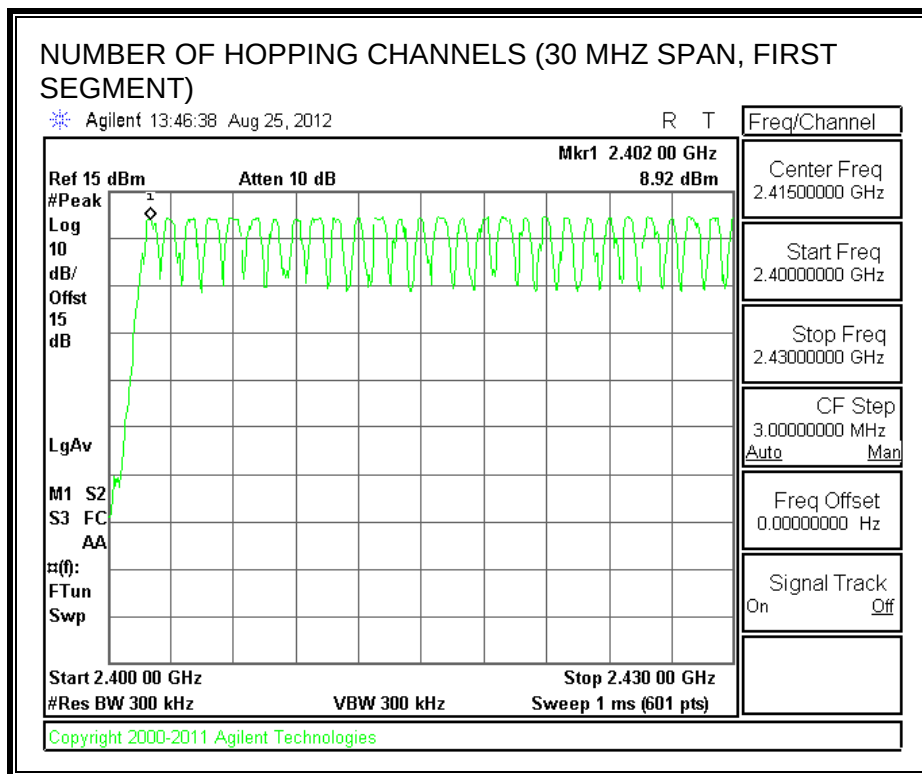
The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

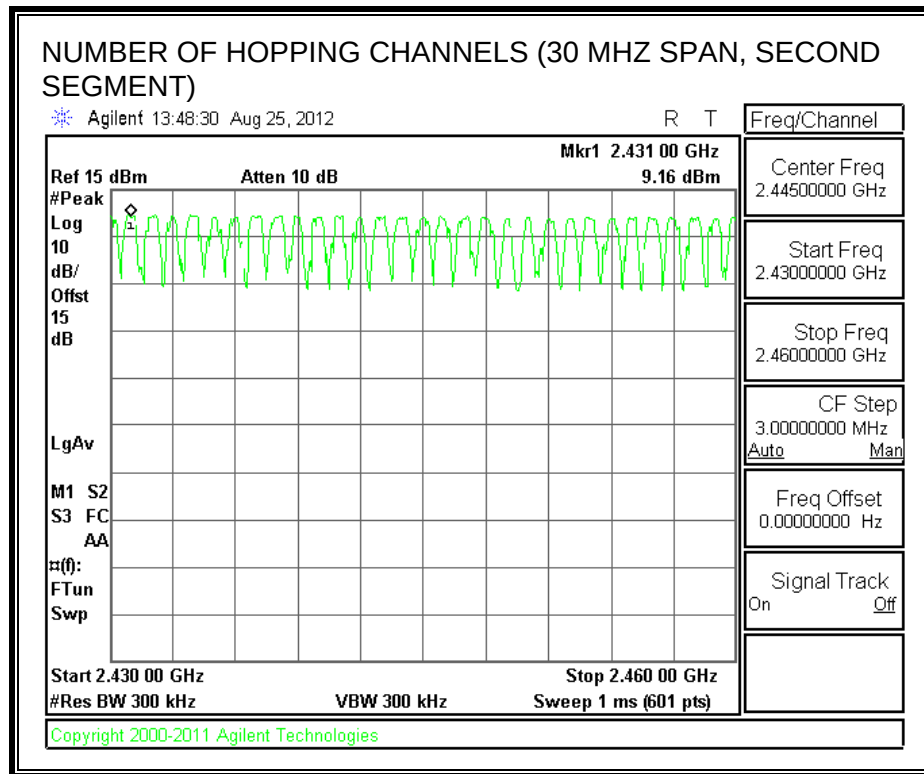
RESULTS

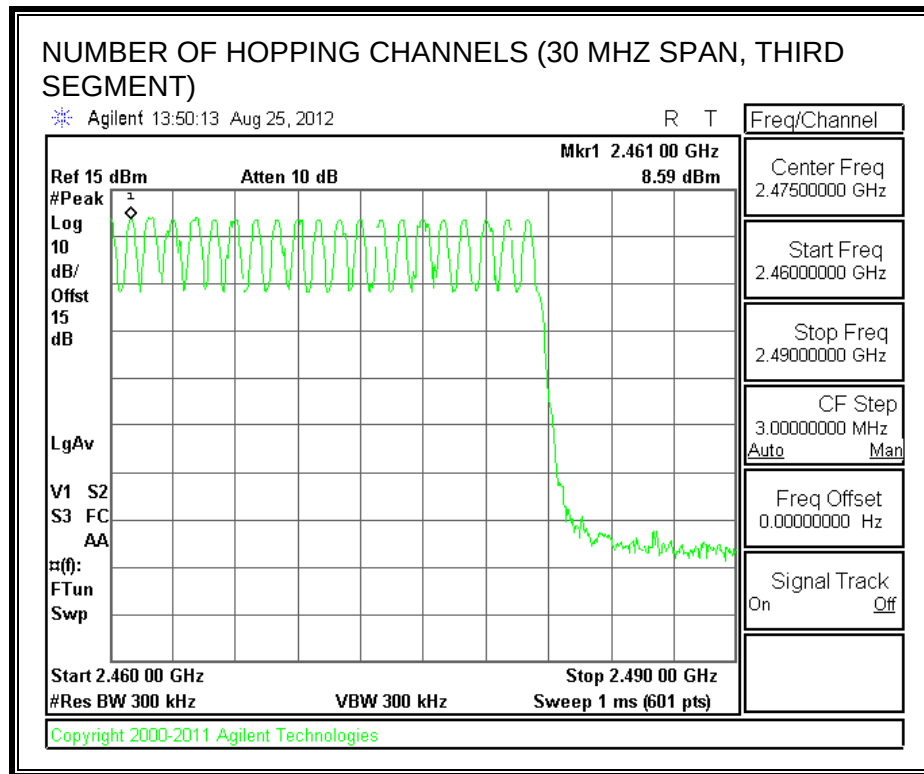
79 Channels observed.

NUMBER OF HOPPING CHANNELS









9.1.4. 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 $10 * (\# \text{ of pulses in } 3.16 \text{ s}) * \text{pulse width}$.

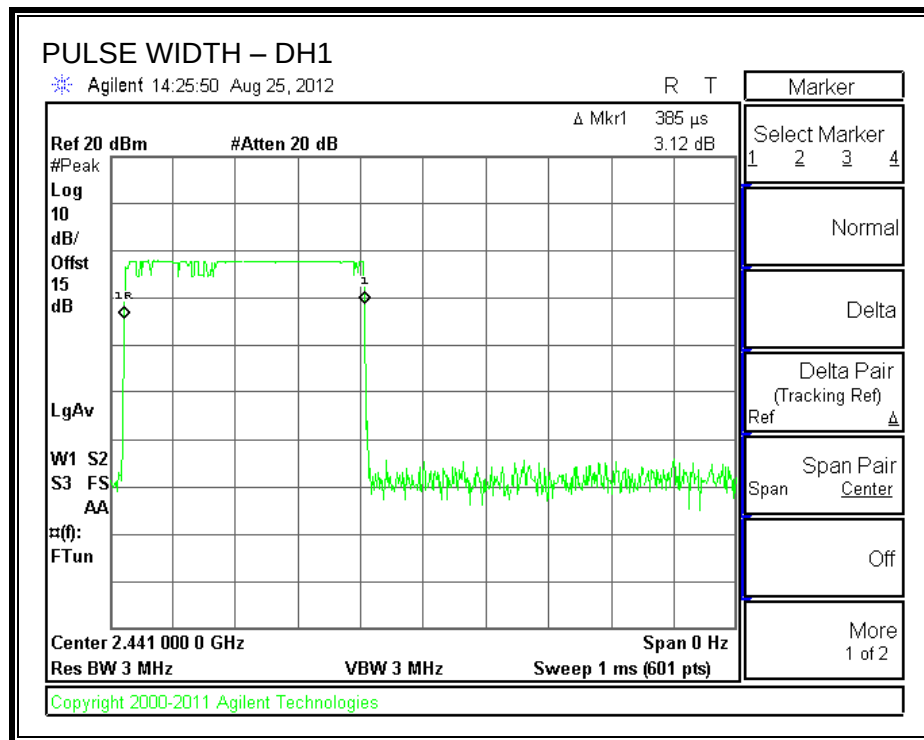
RESULTS

Time Of Occupancy = $10 * xx \text{ pulses} * yy \text{ msec} = zz \text{ msec}$

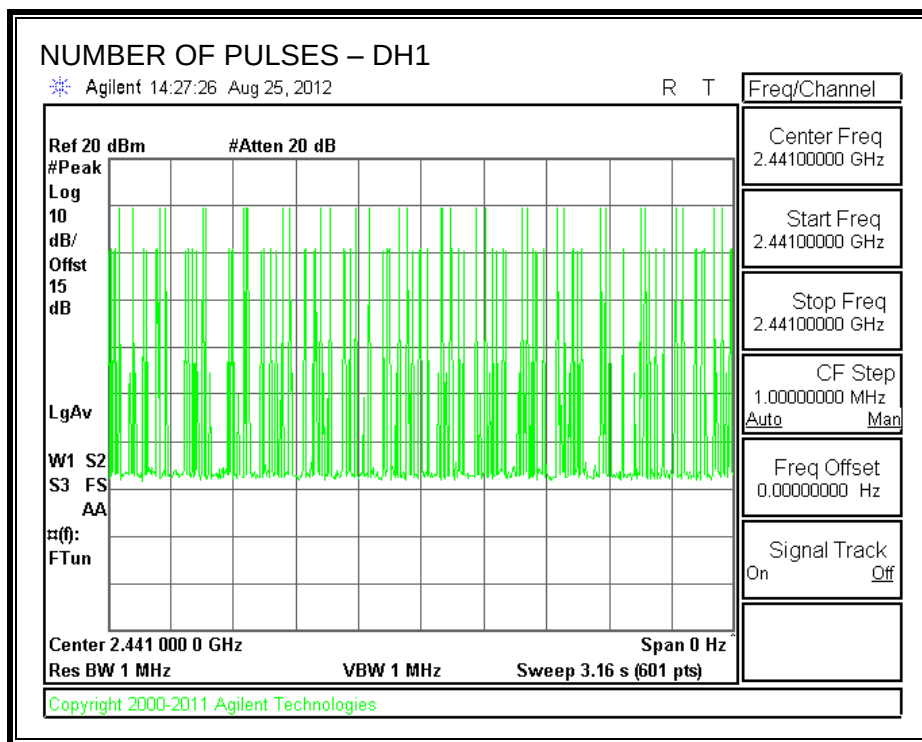
GFSK Mode

DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of (sec)	Limit (sec)	Margin (sec)
DH1	0.385	32	0.123	0.4	-0.277
DH3	1.640	12	0.197	0.4	-0.203
DH5	2.882	11	0.317	0.4	-0.083

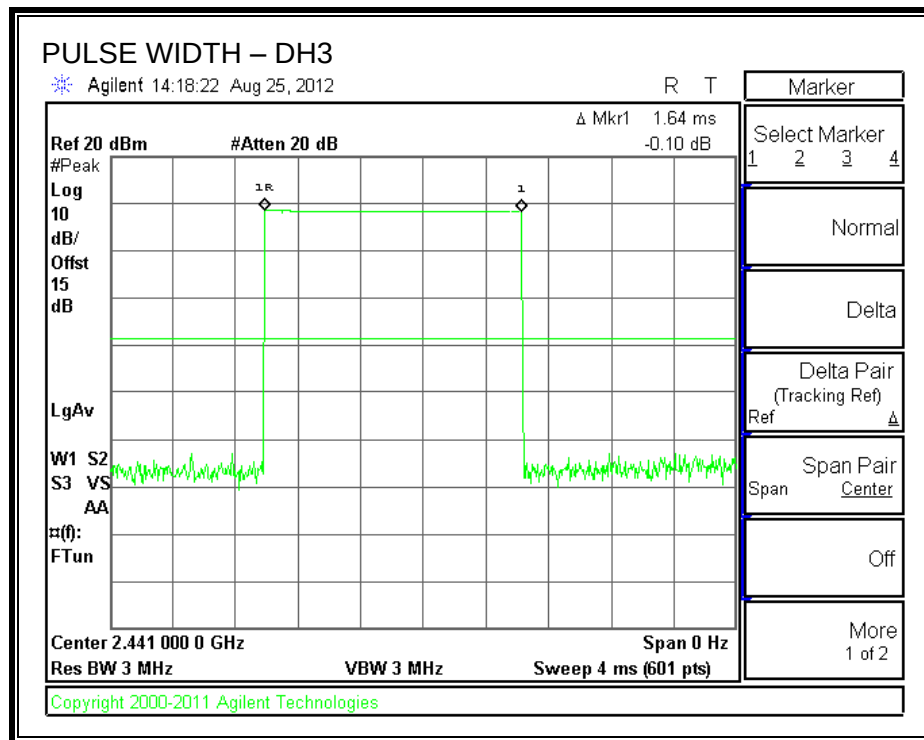
PULSE WIDTH - DH1



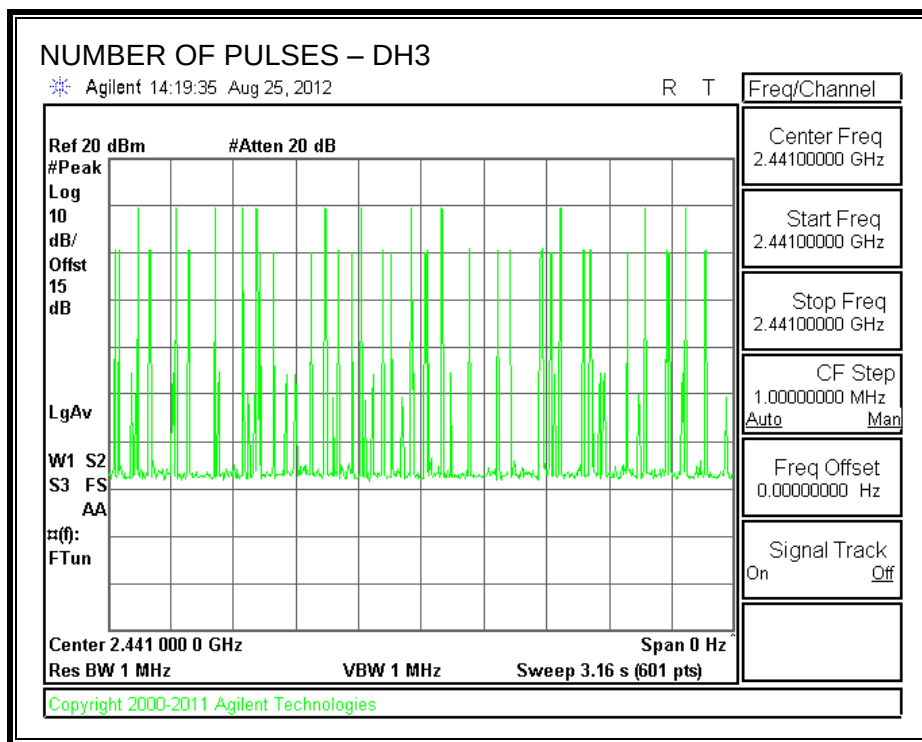
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH1



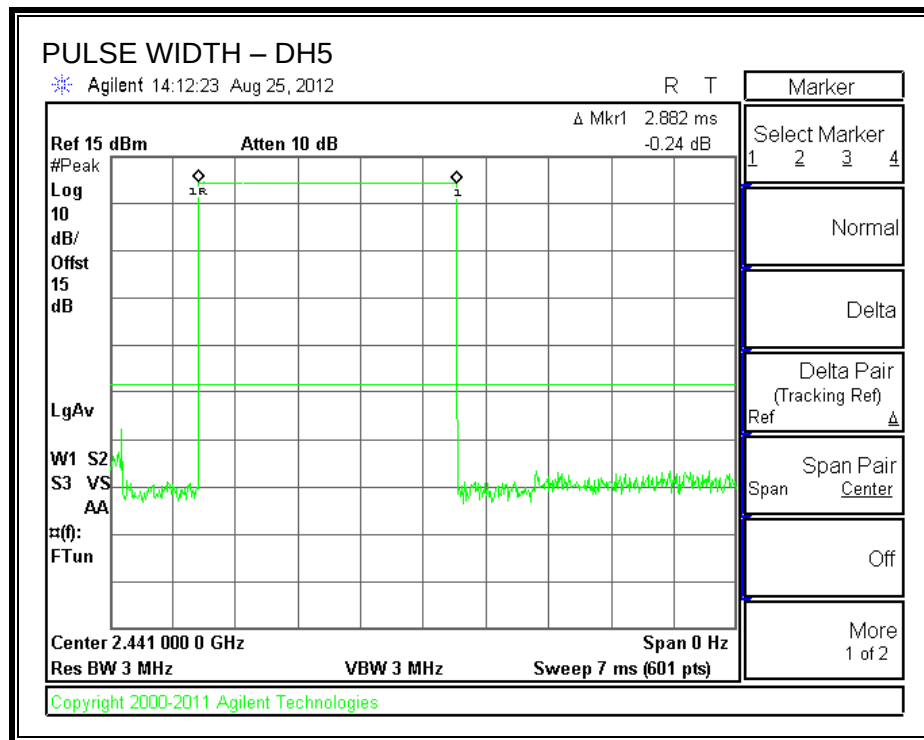
PULSE WIDTH – DH3



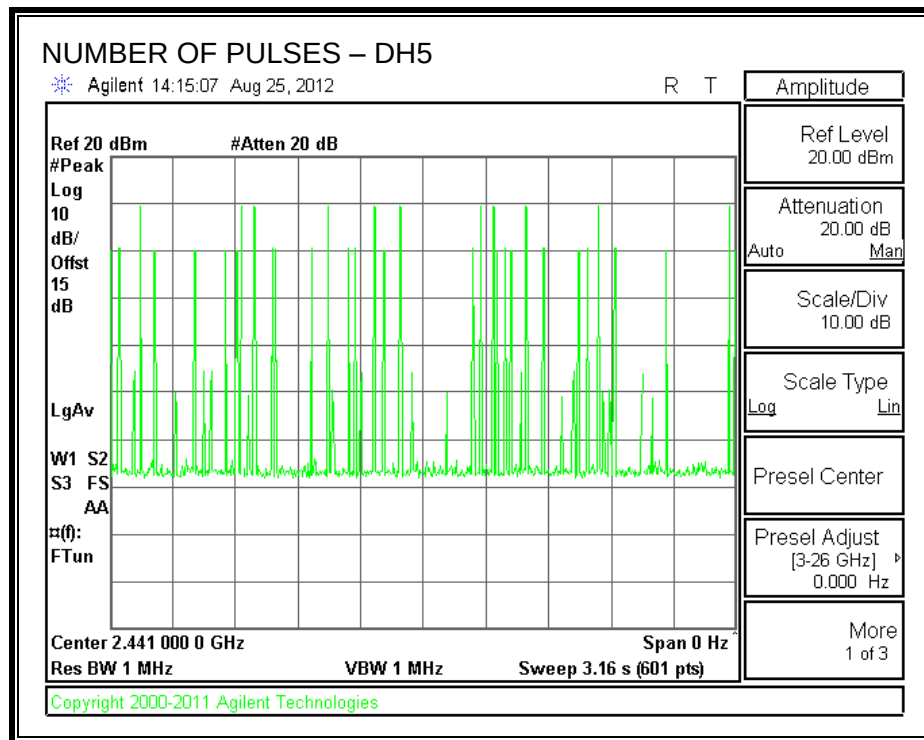
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH3



PULSE WIDTH – DH5



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH5



9.1.5. OUTPUT POWER

LIMIT

§15.247 (b) (1)

RSS-210 Issue 7 Clause A8.4

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

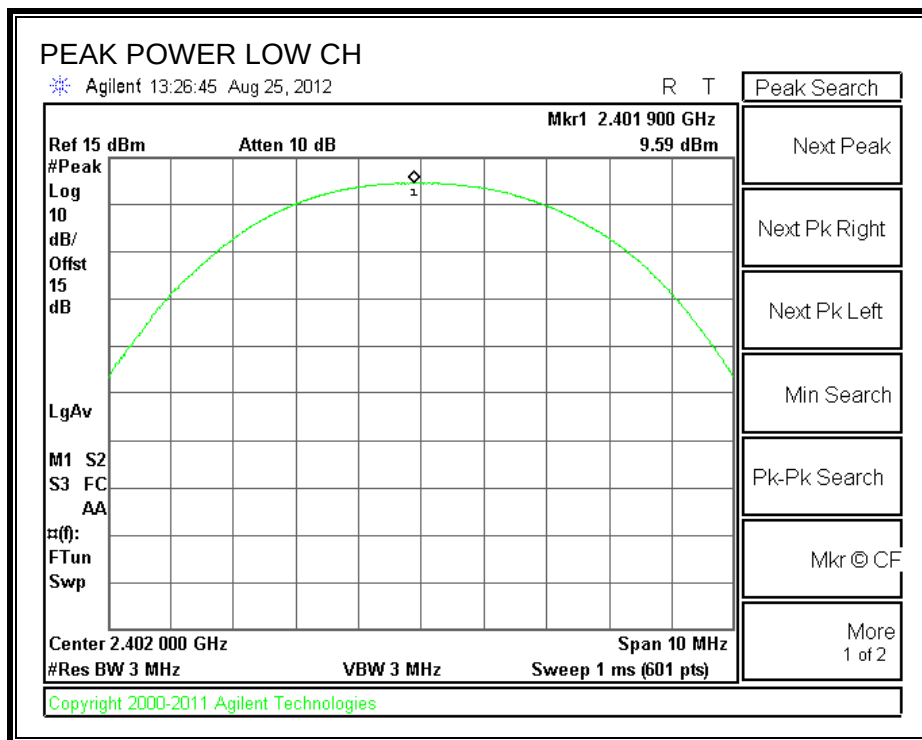
TEST PROCEDURE

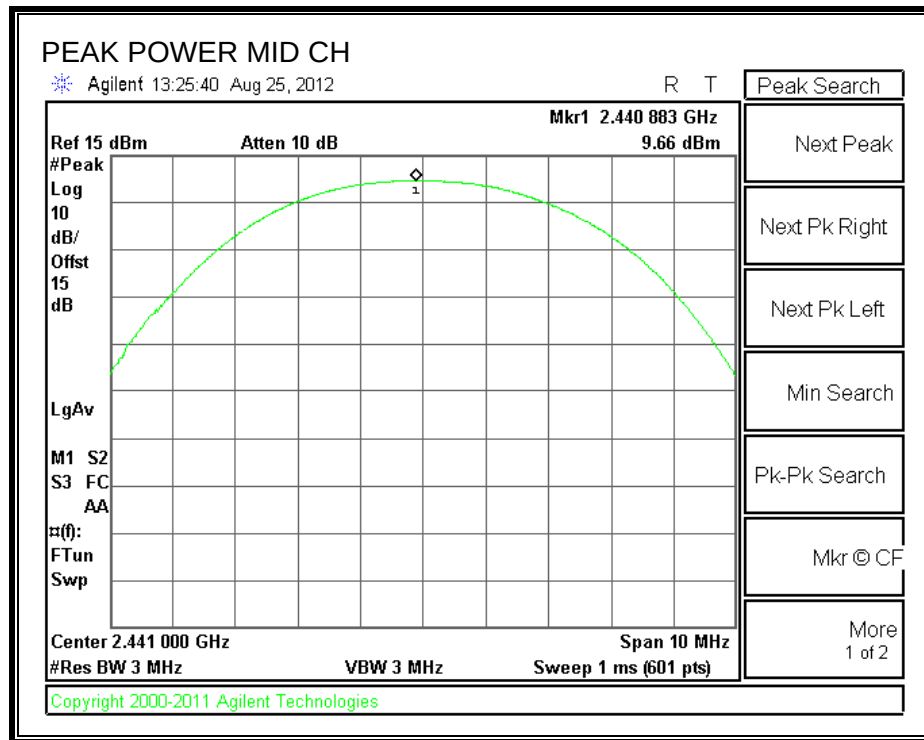
The transmitter output is connected to a spectrum analyzer the analyzer bandwidth is set to a value greater than the 20 dB bandwidth of the EUT.

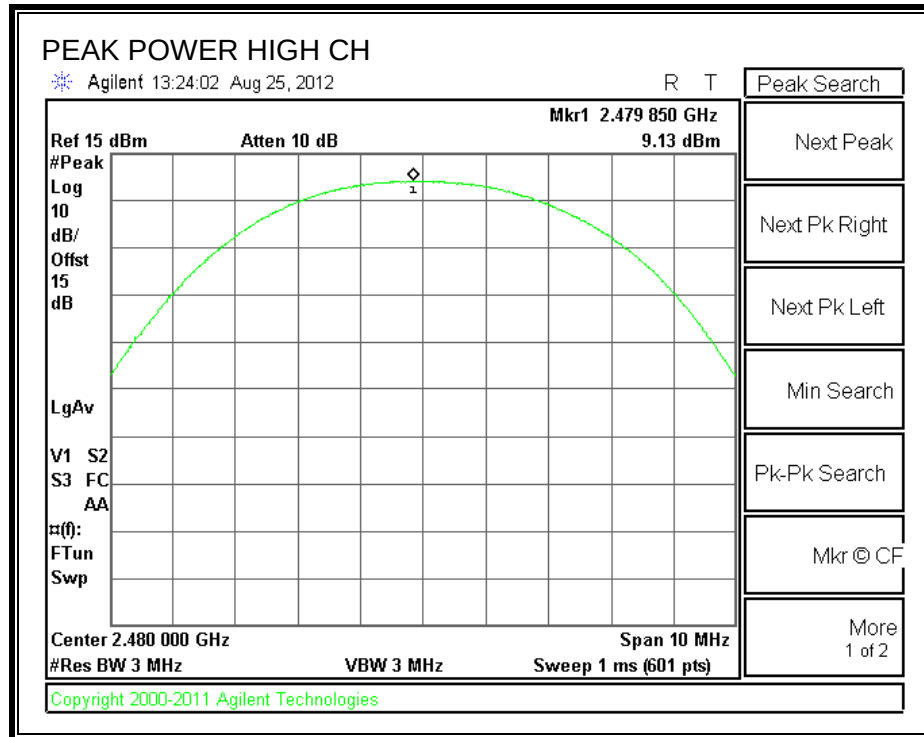
RESULTS

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	9.59	30	-20.41
Middle	2441	9.66	30	-20.34
High	2480	9.13	30	-20.87

OUTPUT POWER







9.1.6. 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 13 dB (including 12 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	8.70
Middle	2441	9.00
High	2480	8.30

9.1.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

Limit = -20 dBc

TEST PROCEDURE

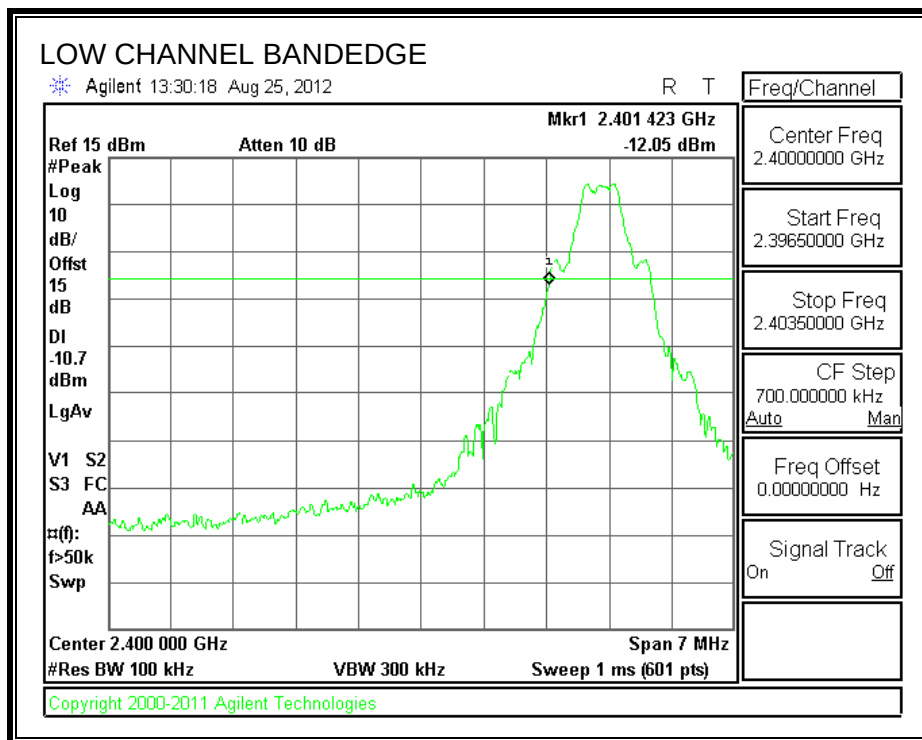
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

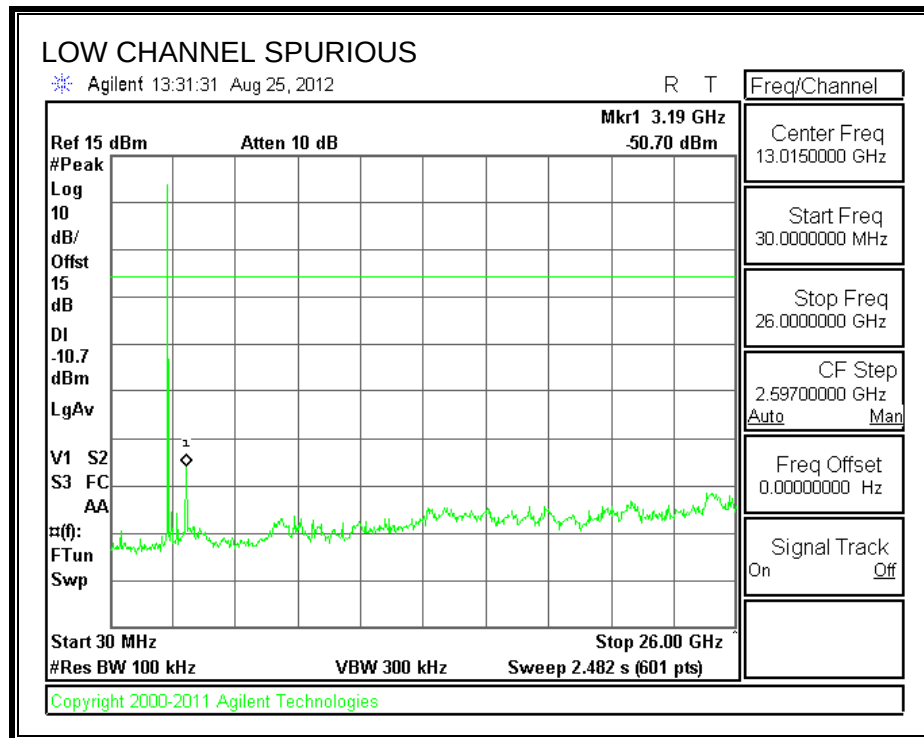
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

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

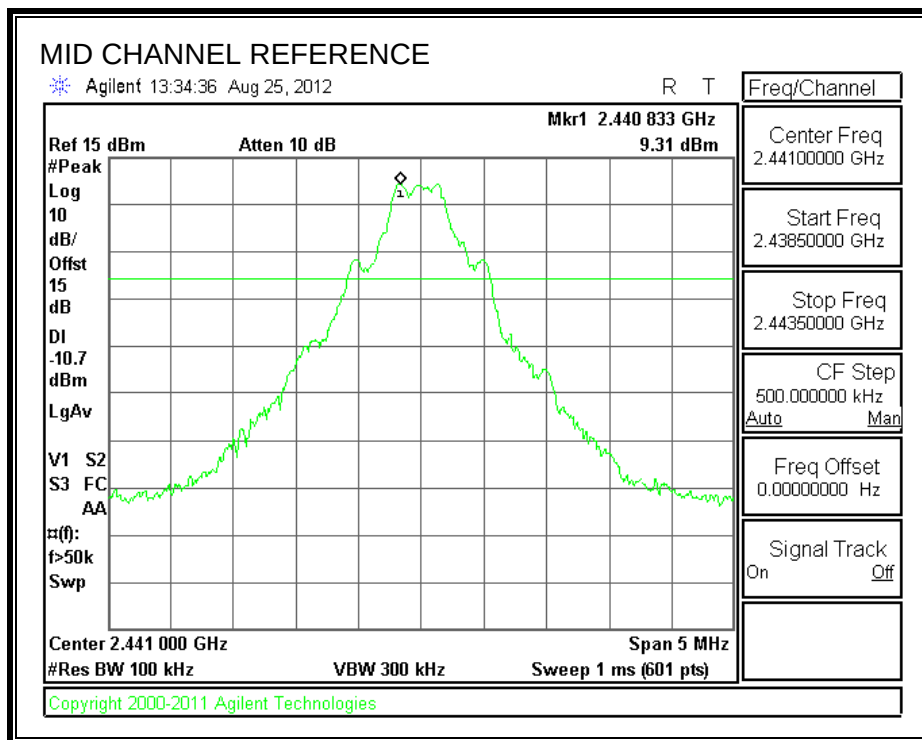
RESULTS

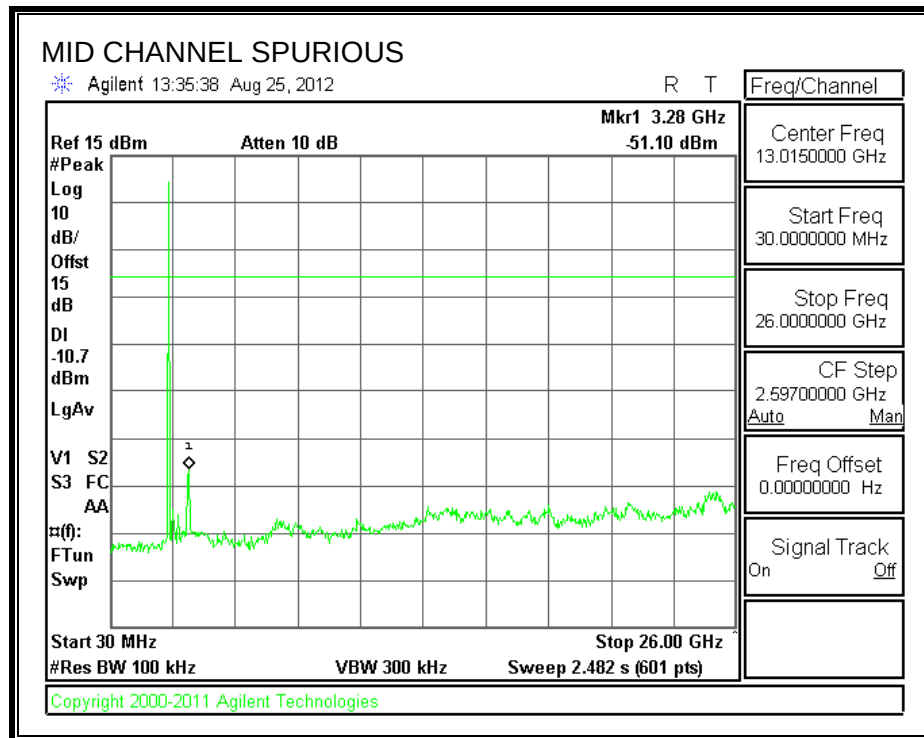
SPURIOUS EMISSIONS, LOW CHANNEL



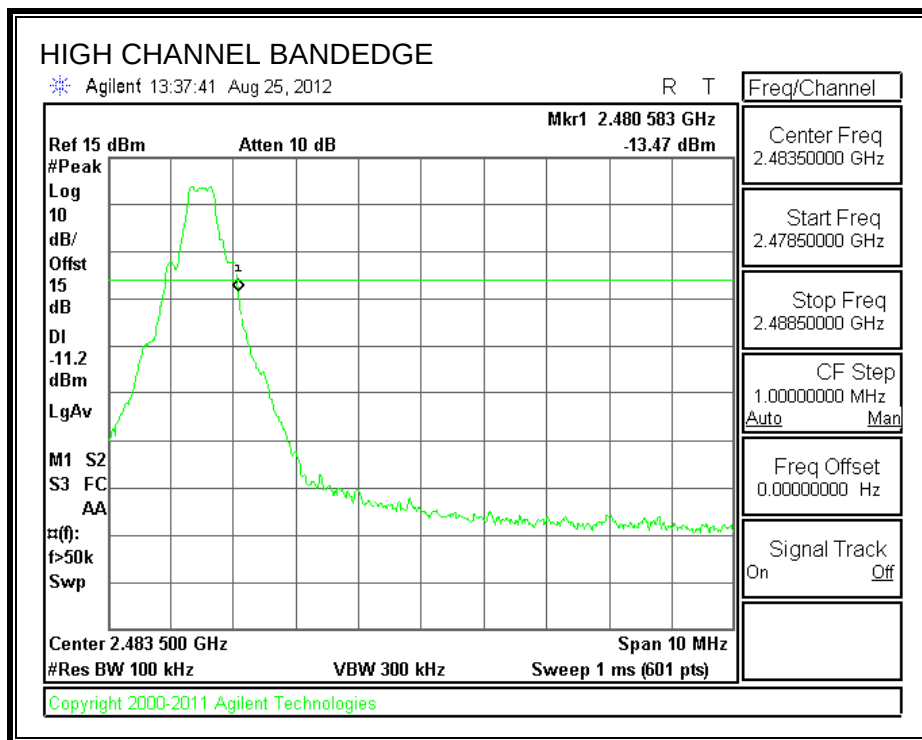


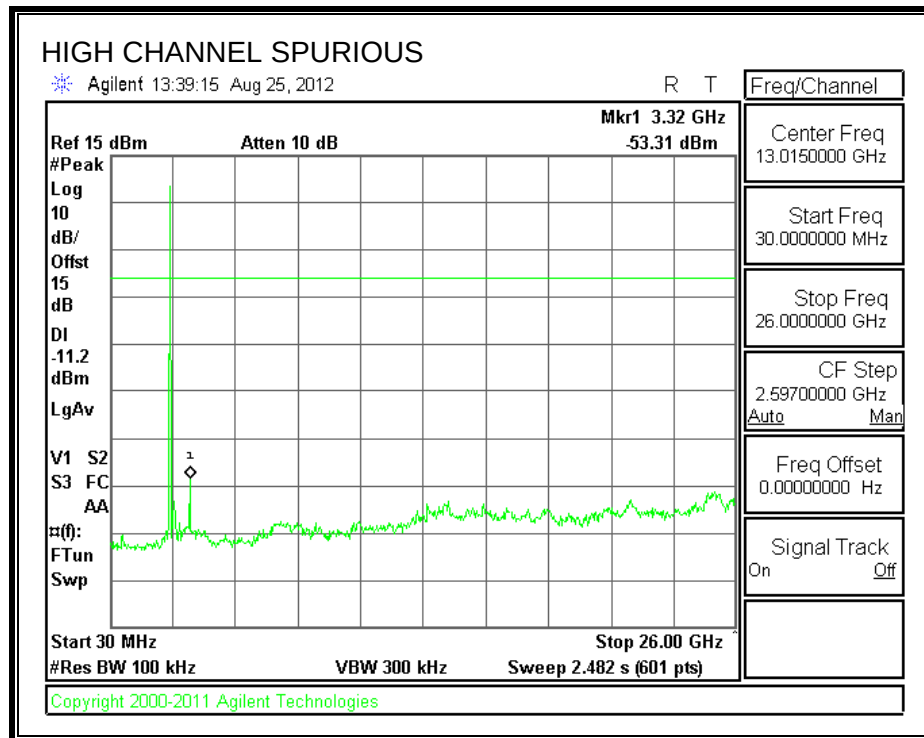
SPURIOUS EMISSIONS, MID CHANNEL



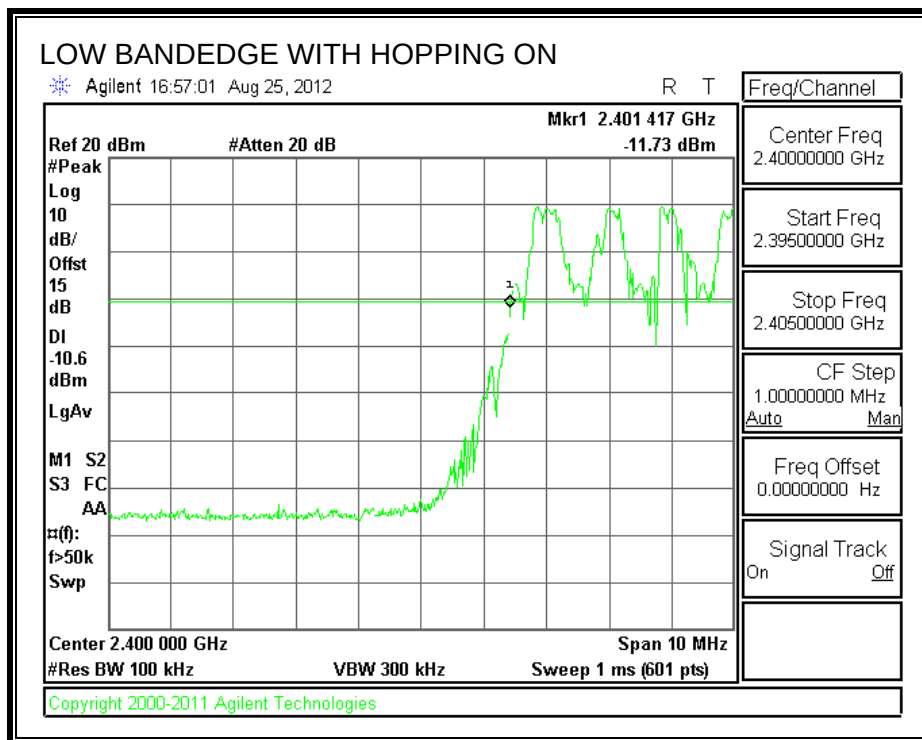


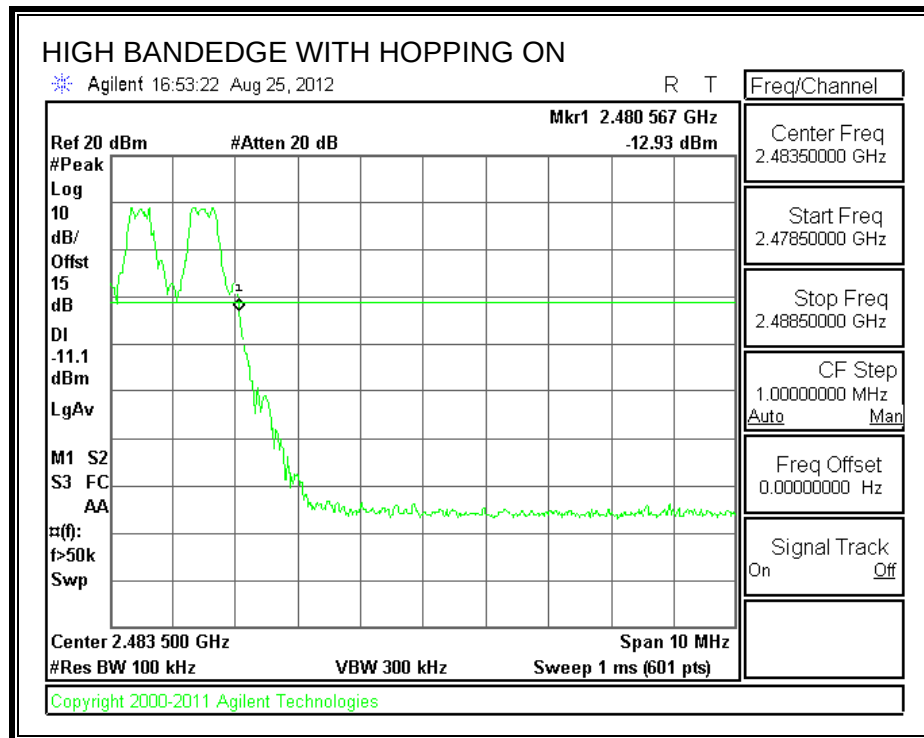
SPURIOUS EMISSIONS, HIGH CHANNEL





SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON





9.2. ENHANCED DATA RATE 8PSK MODULATION

9.2.1. 20 dB AND 99% BANDWIDTH

LIMIT

None; for reporting purposes only.

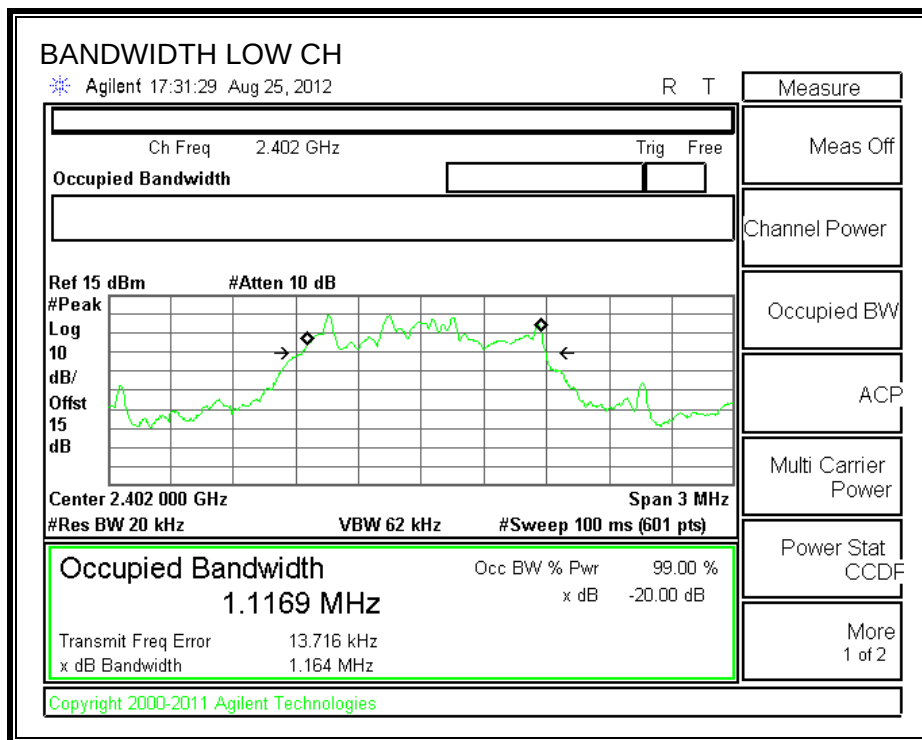
TEST PROCEDURE

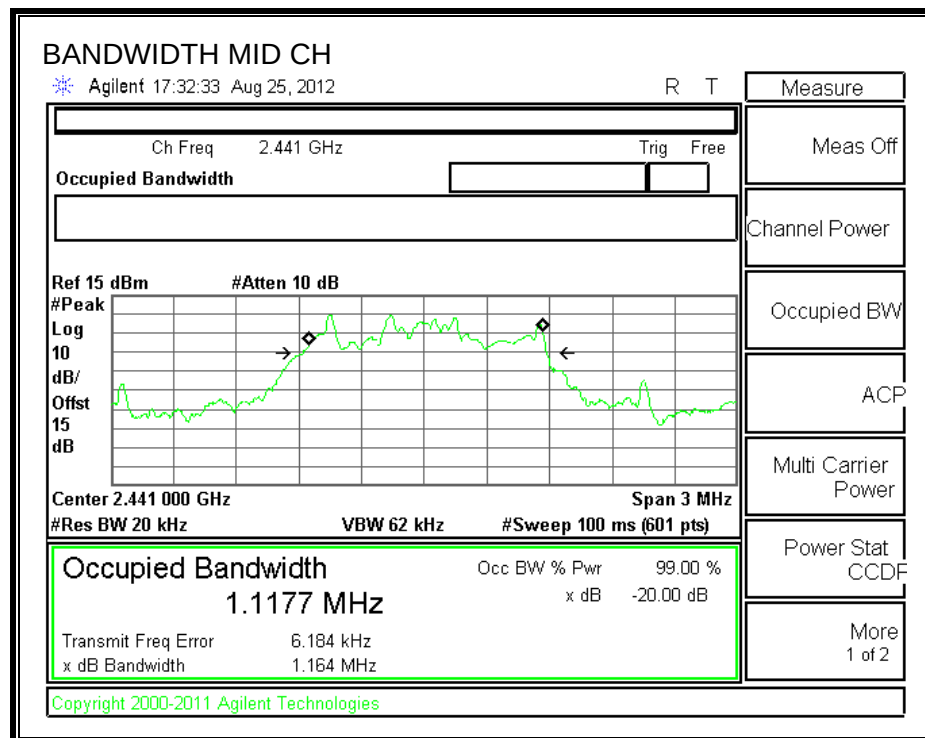
The transmitter output is connected to a spectrum analyzer. The RBW is set to $\geq 1\%$ of the 20 dB bandwidth. The VBW is set to $\geq$ RBW. The sweep time is coupled.

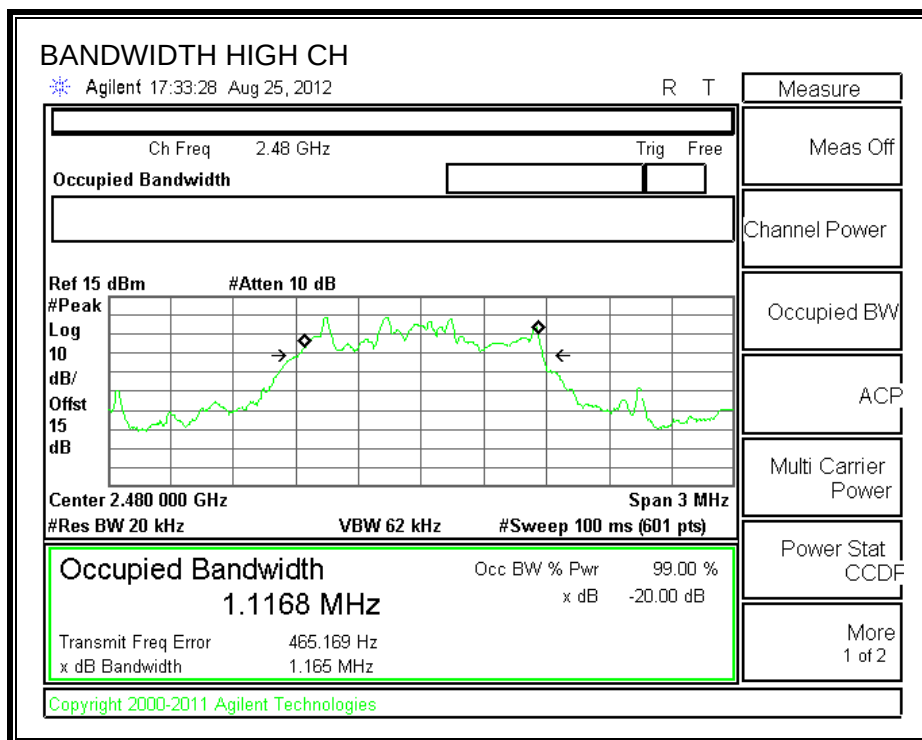
RESULTS

Channel	Frequency (MHz)	20 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2402	1.1169	1.075
Middle	2441	1.1164	1.0319
High	2480	1.1165	1.0307

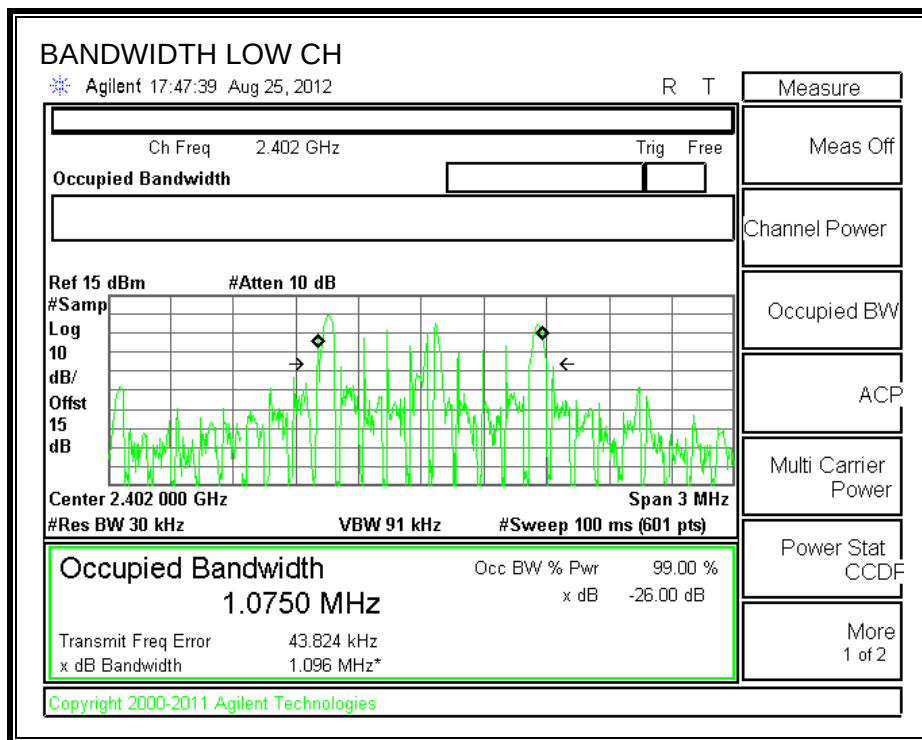
20 dB BANDWIDTH

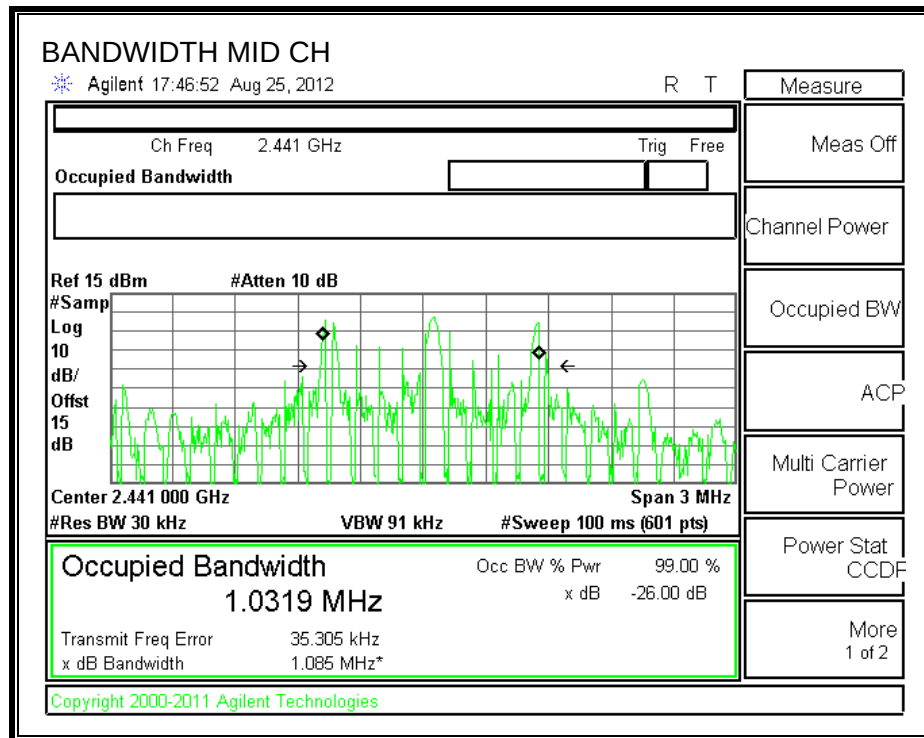


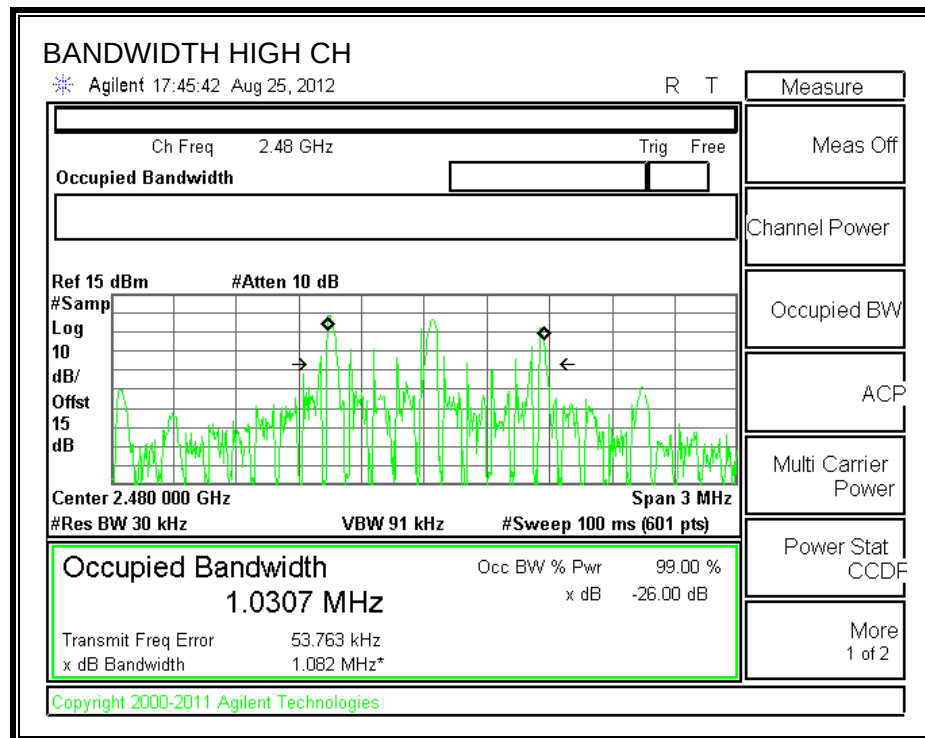




99% BANDWIDTH







9.2.2. 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 hopping channel, whichever is greater.

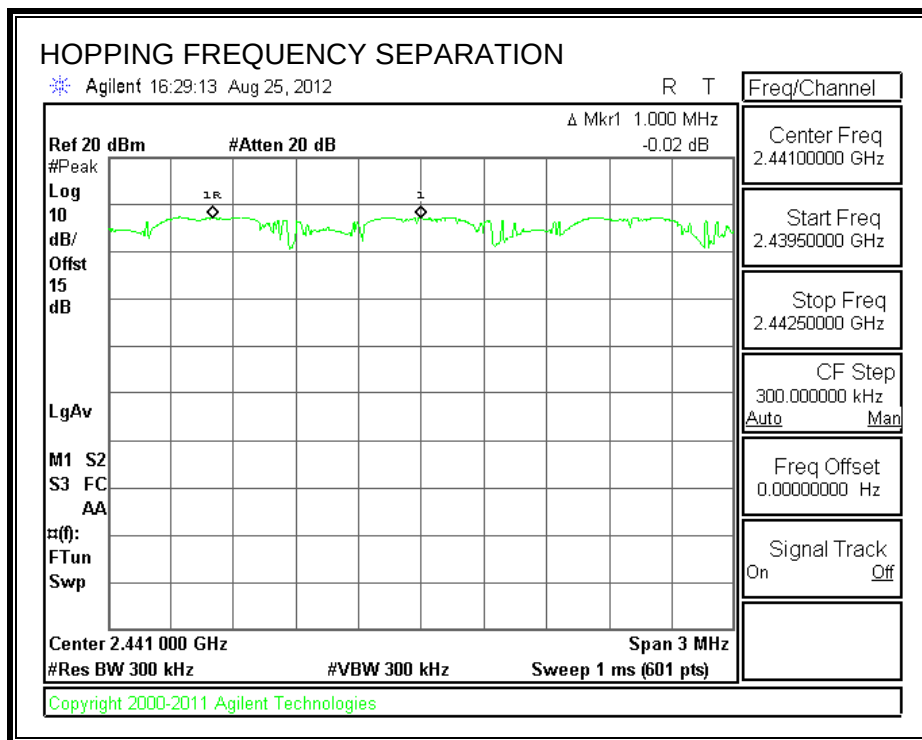
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than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



9.2.3. 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.

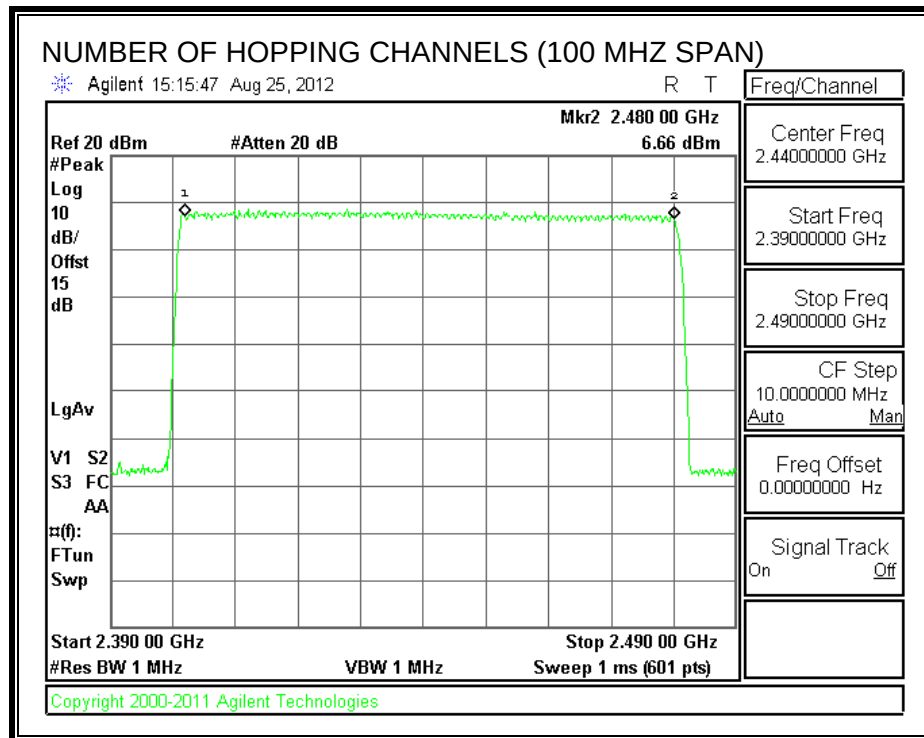
TEST PROCEDURE

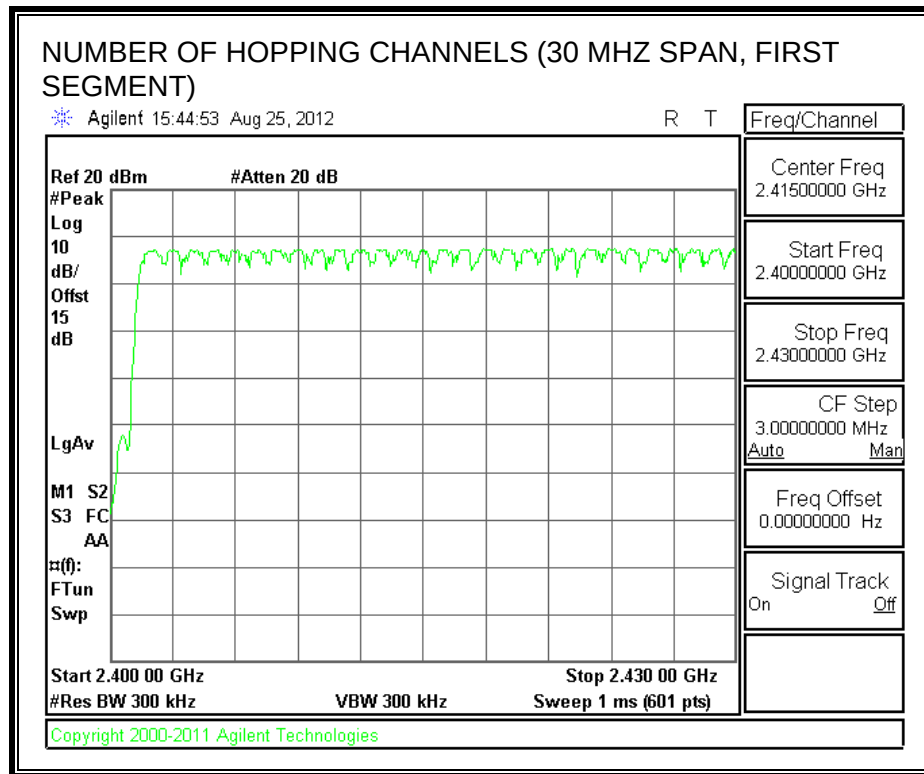
The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

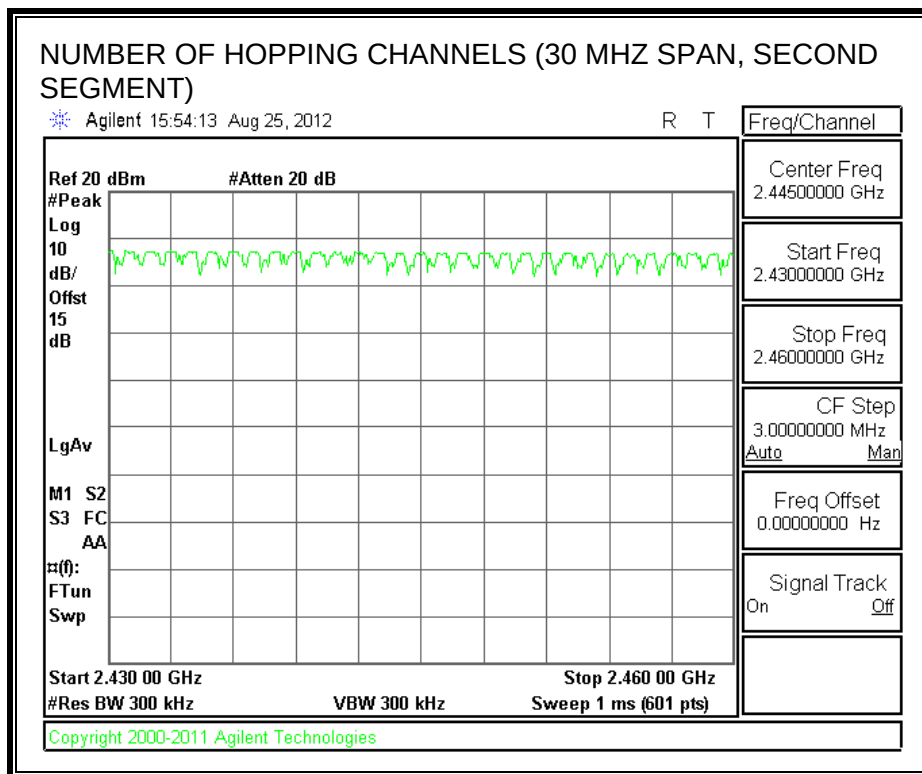
RESULTS

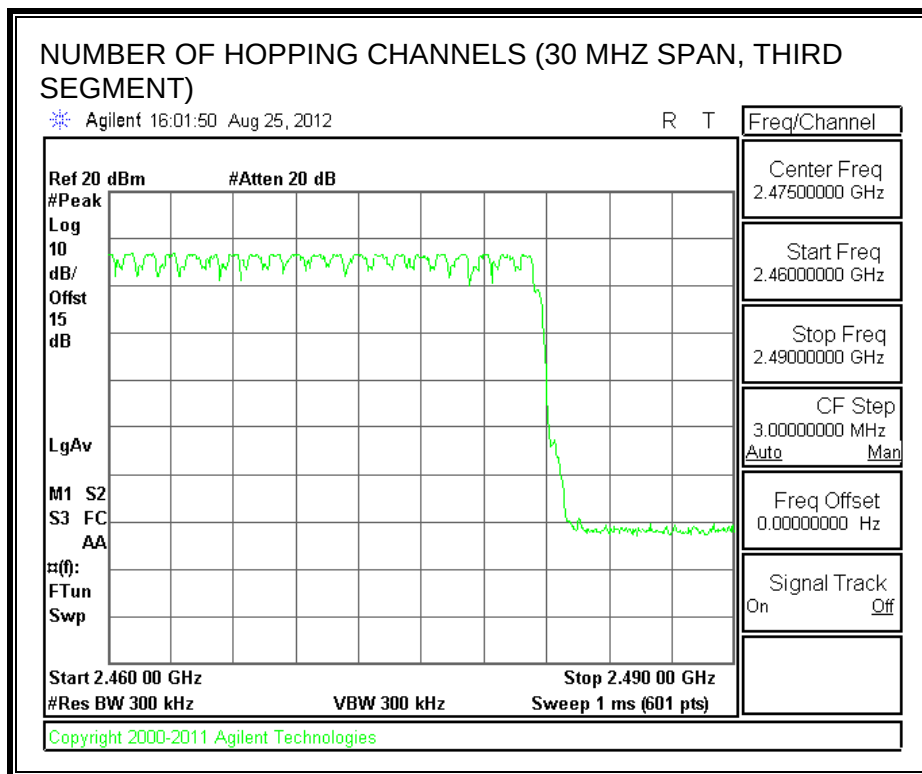
79 Channels observed.

NUMBER OF HOPPING CHANNELS









9.2.4. 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 $10 * (\# \text{ of pulses in } 3.16 \text{ s}) * \text{pulse width}$.

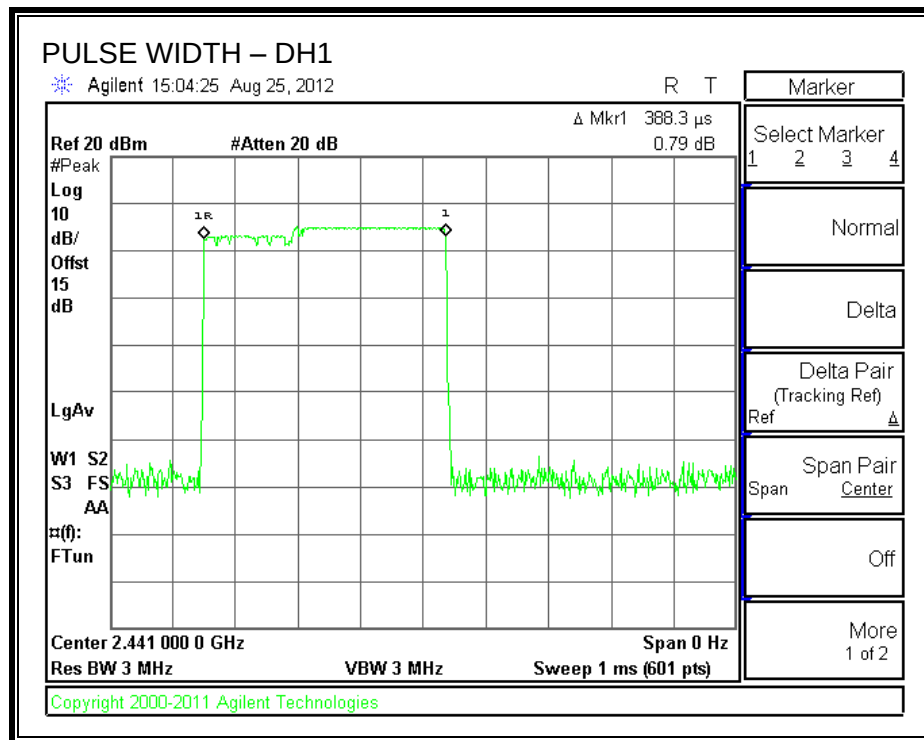
RESULTS

Time Of Occupancy = $10 * xx \text{ pulses} * yy \text{ msec} = zz \text{ msec}$

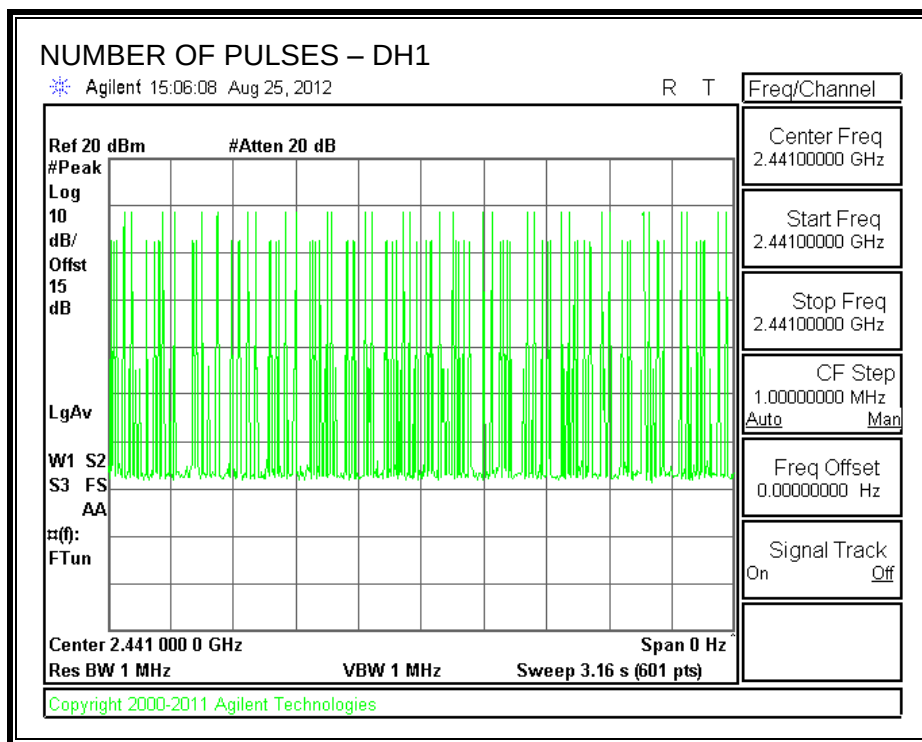
8PSK (EDR) Mode

DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of (sec)	Limit (sec)	Margin (sec)
DH1	0.3883	32	0.124	0.4	-0.276
DH3	1.64	16	0.262	0.4	-0.138
DH5	2.892	11	0.318	0.4	-0.082

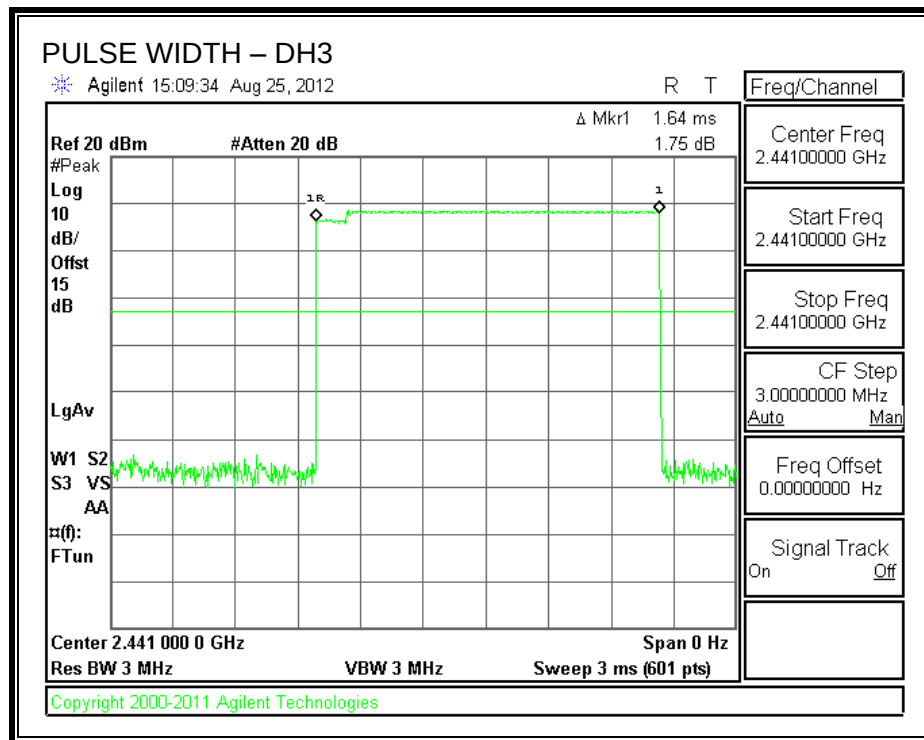
PULSE WIDTH - DH1



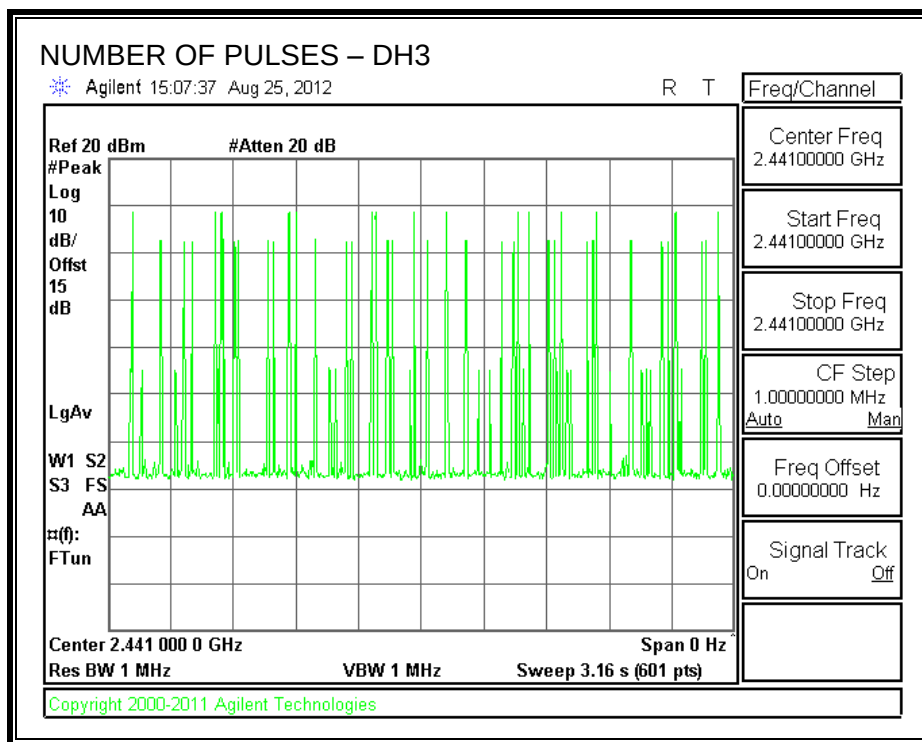
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH1



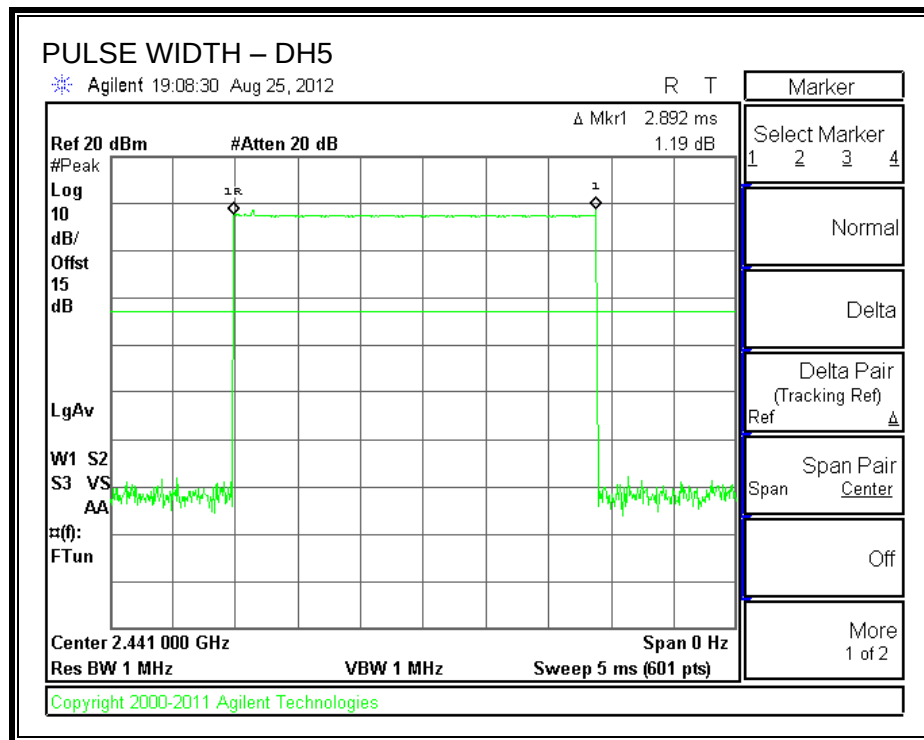
PULSE WIDTH – DH3



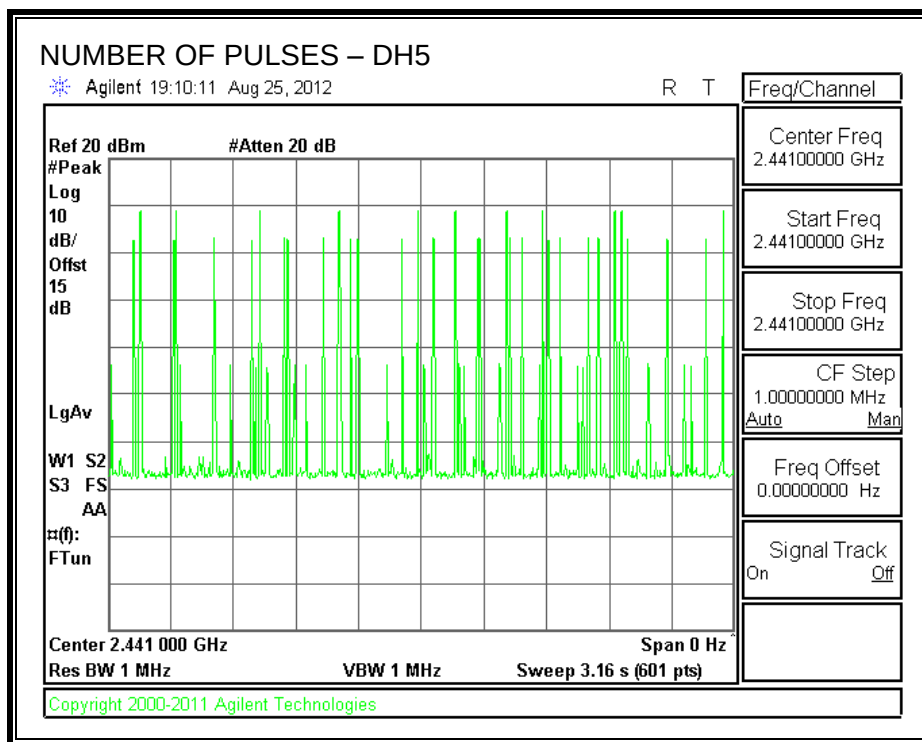
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH3



PULSE WIDTH – DH5



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH5



9.2.5. OUTPUT POWER

LIMIT

§15.247 (b) (1)

RSS-210 Issue 7 Clause A8.4

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

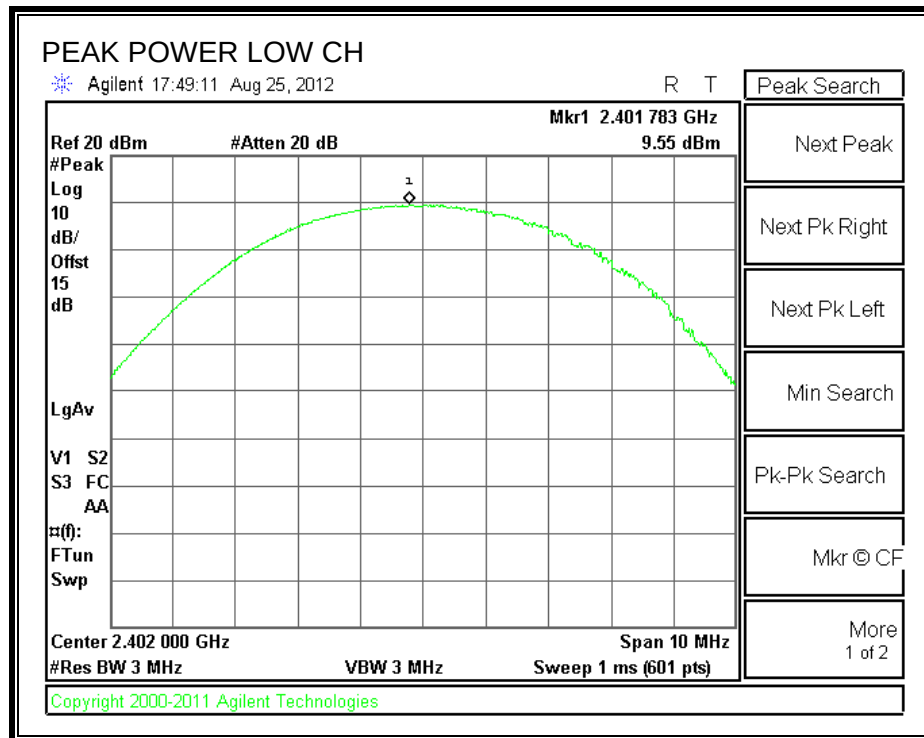
TEST PROCEDURE

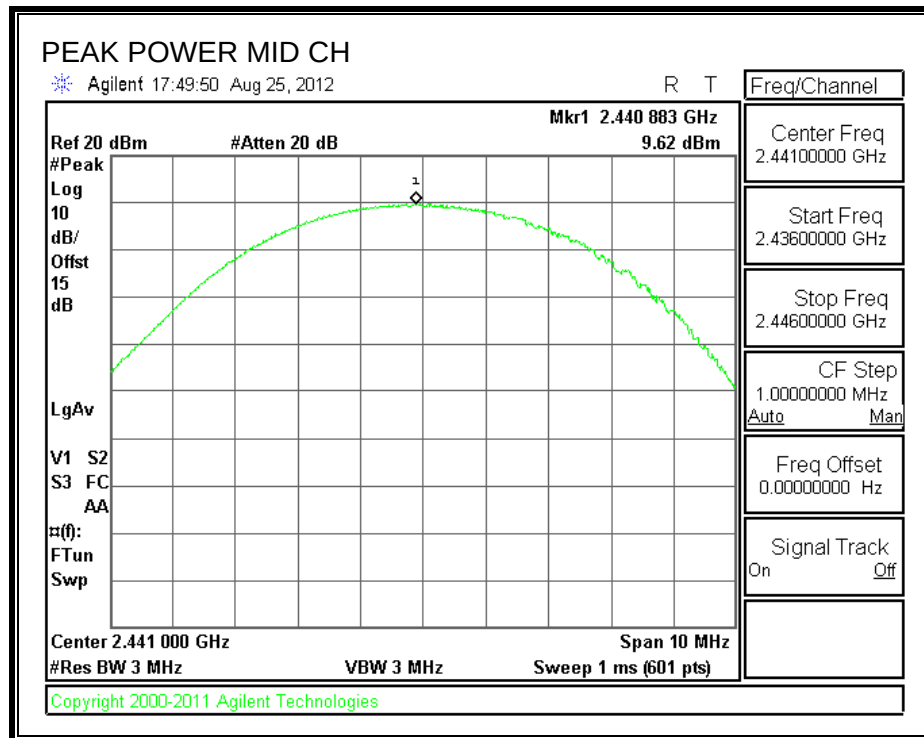
The transmitter output is connected to a spectrum analyzer the analyzer bandwidth is set to a value greater than the 20 dB bandwidth of the EUT.

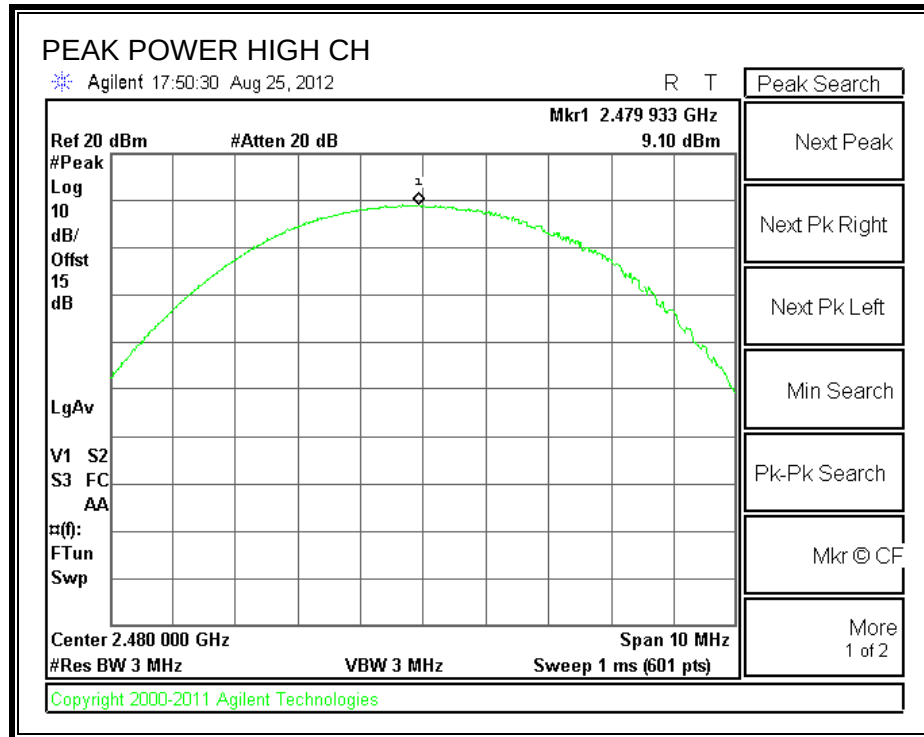
RESULTS

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	9.55	30	-20.45
Middle	2441	9.62	30	-20.38
High	2480	9.10	30	-20.90

OUTPUT POWER







9.2.6. AVERAGE POWER

LIMIT

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

The cable assembly insertion loss of 10.7dB (including 10 dB pad and .7 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	6.60
Middle	2441	6.90
High	2480	6.20

9.2.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

Limit = -20 dBc

TEST PROCEDURE

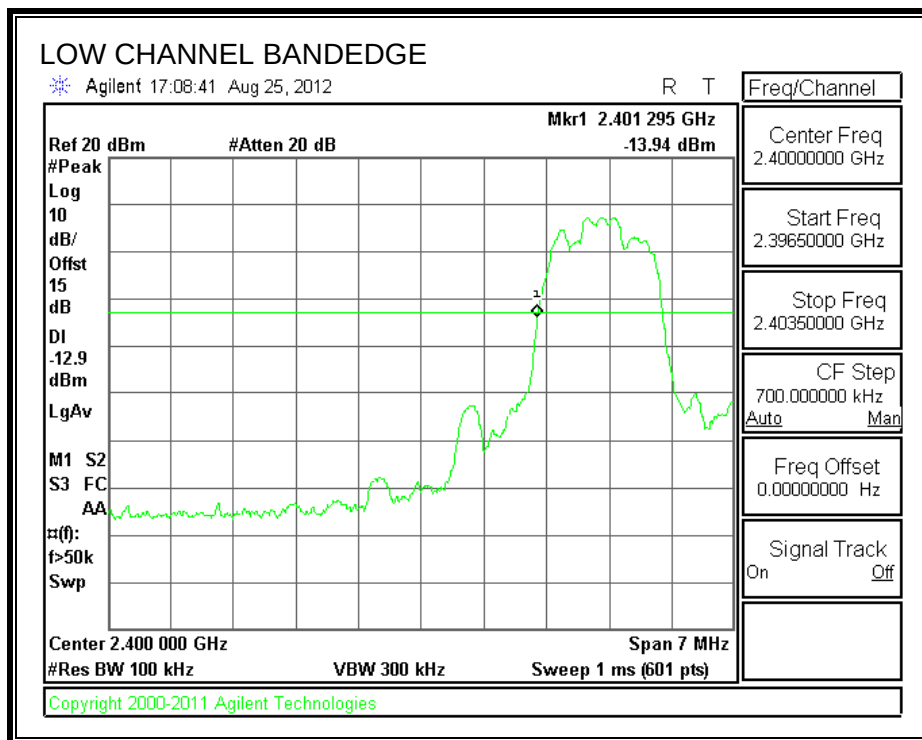
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

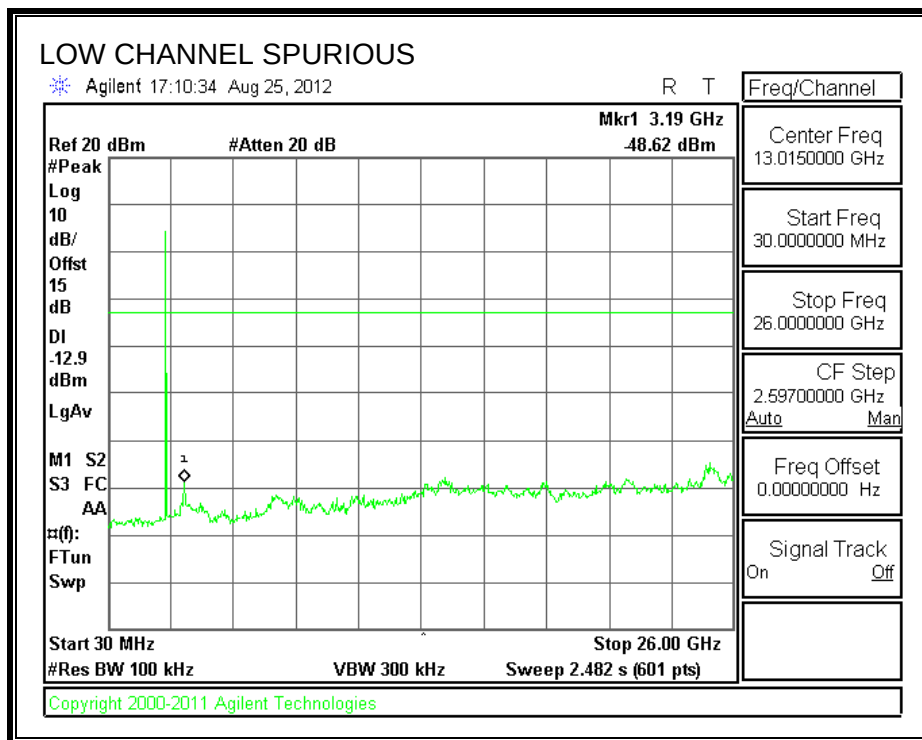
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

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

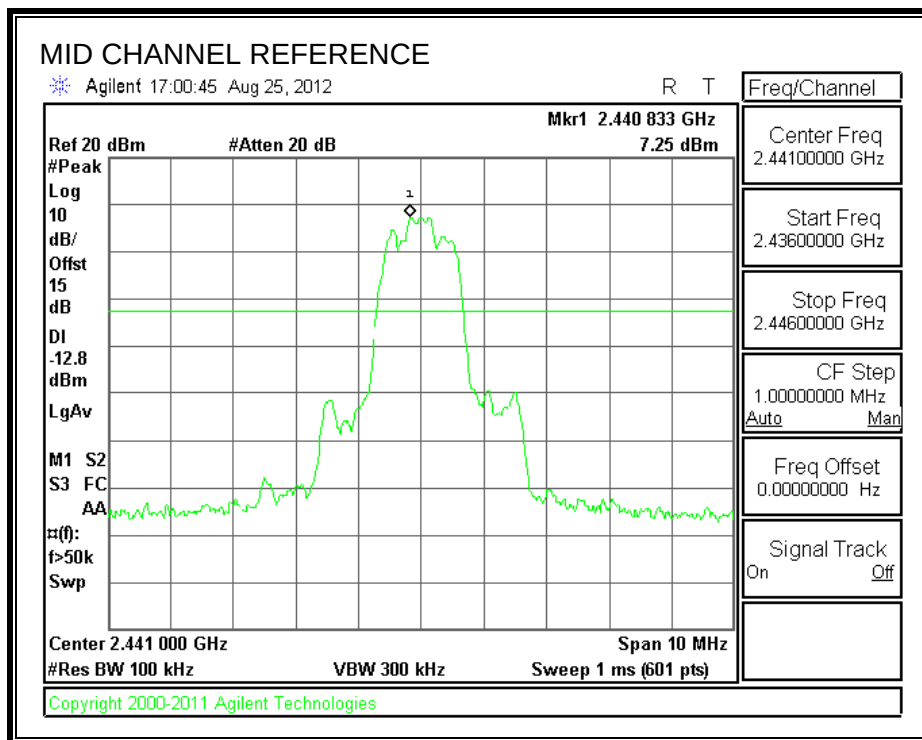
RESULTS

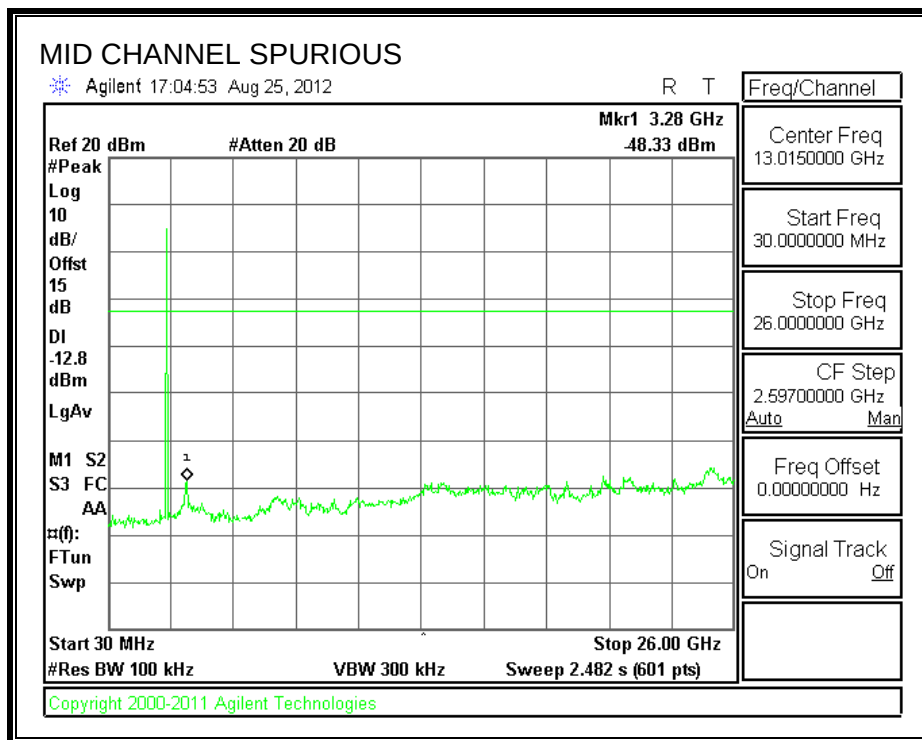
SPURIOUS EMISSIONS, LOW CHANNEL



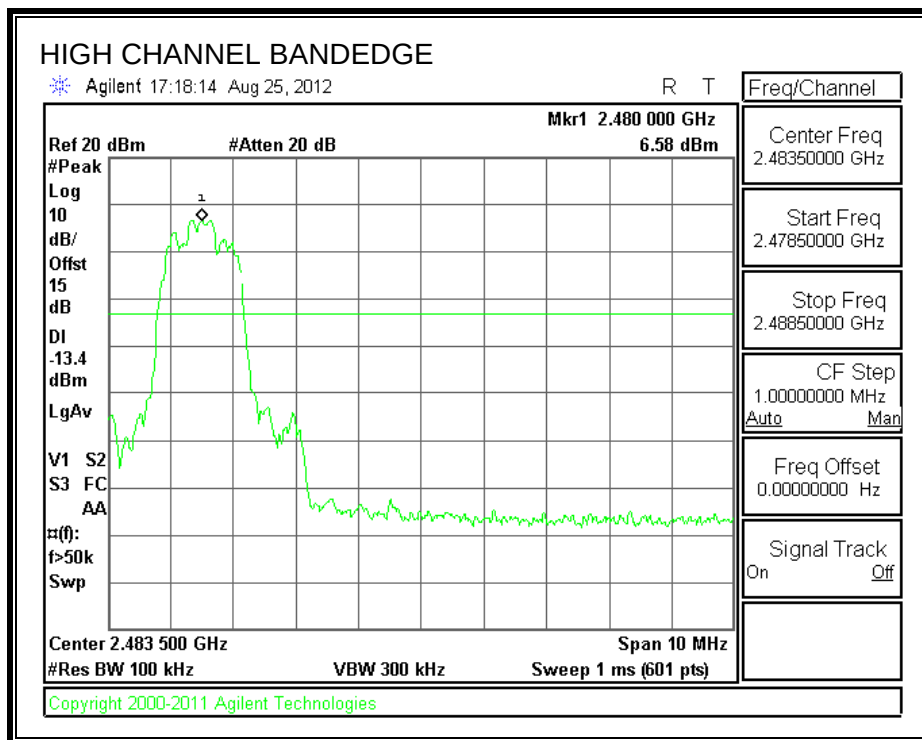


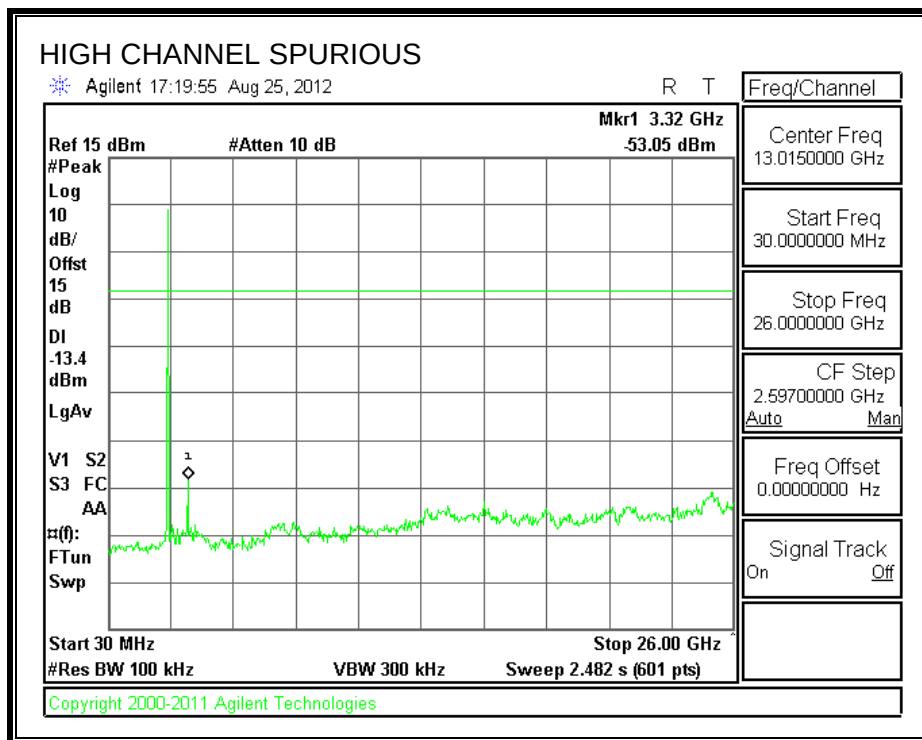
SPURIOUS EMISSIONS, MID CHANNEL



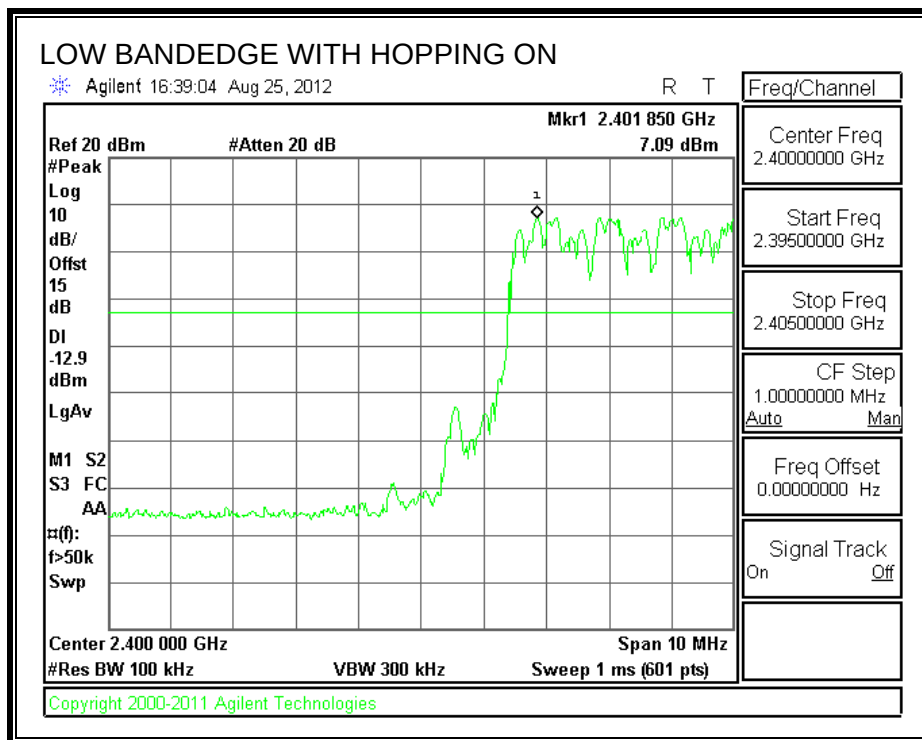


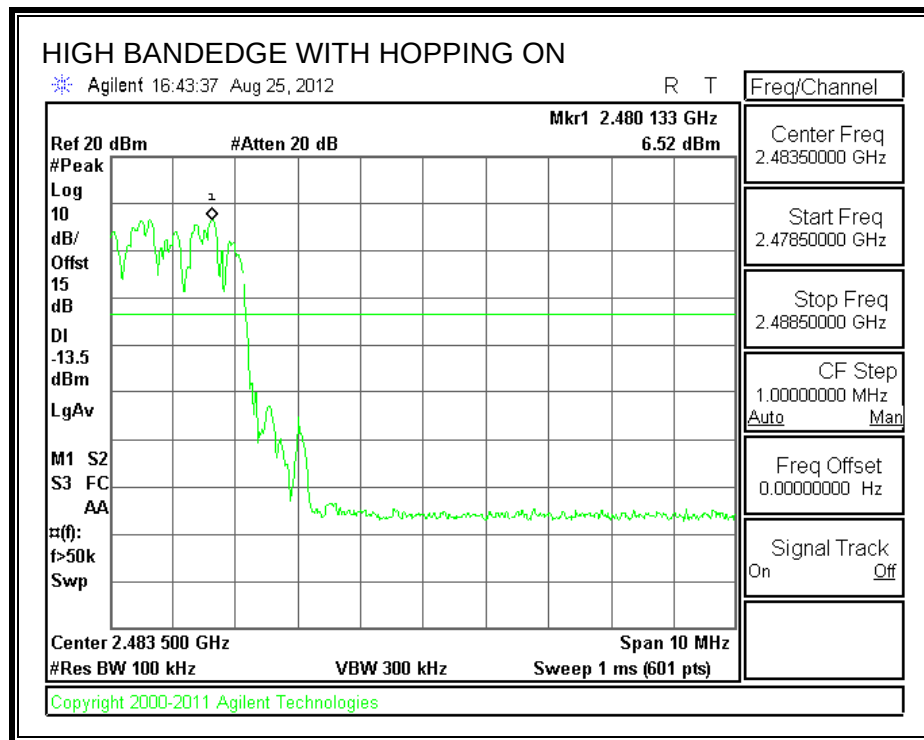
SPURIOUS EMISSIONS, HIGH CHANNEL





SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON





10. RADIATED TEST RESULTS

10.1. 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.

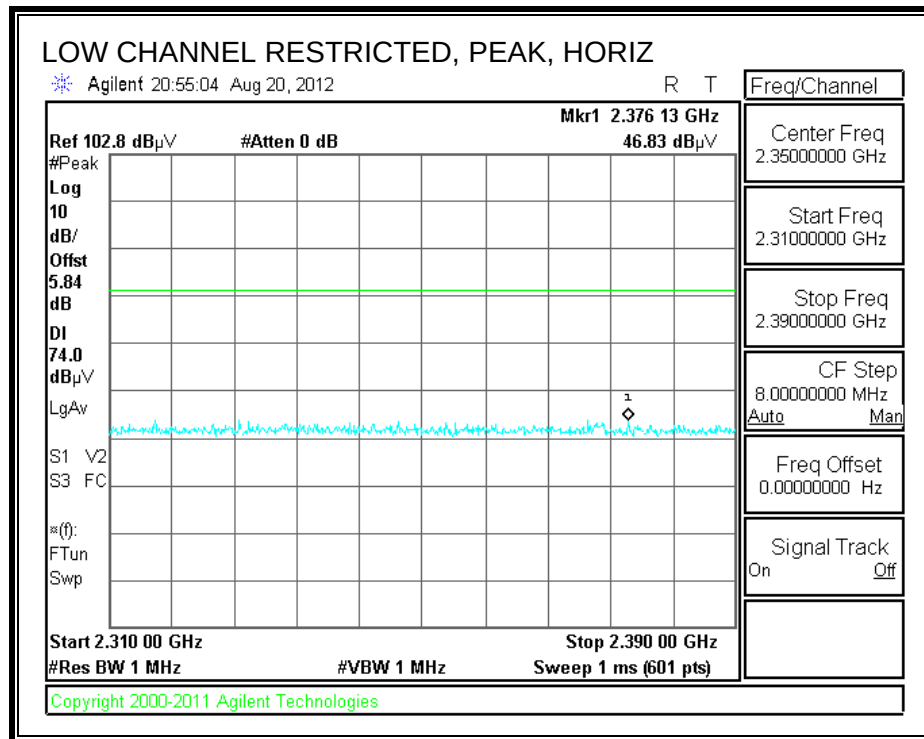
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

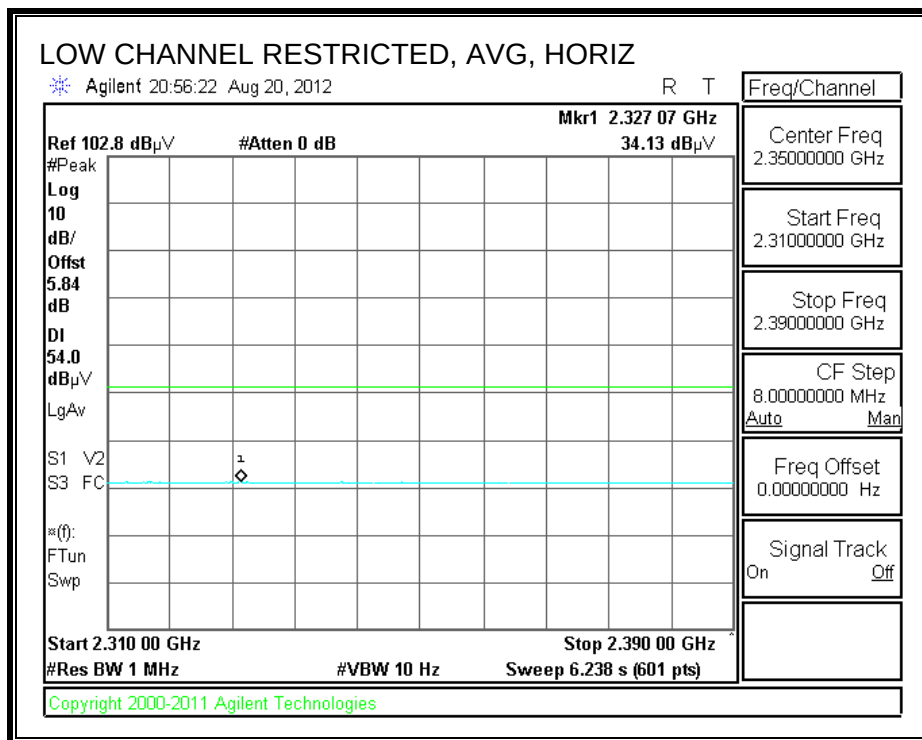
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

10.2. TRANSMITTER ABOVE 1 GHz

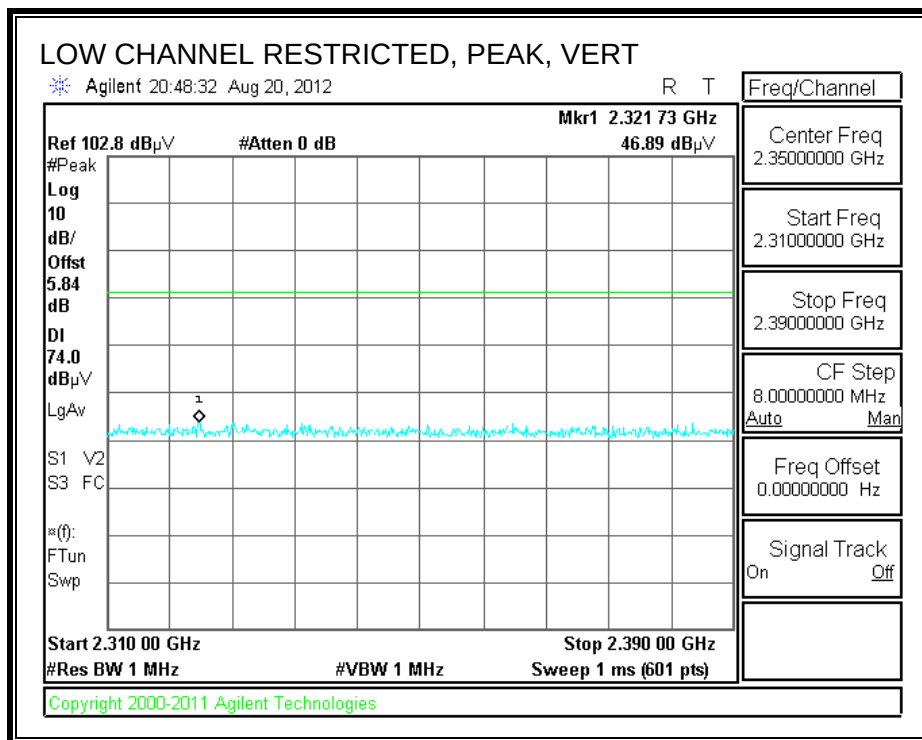
10.2.1. BASIC DATA RATE GFSK MODULATION

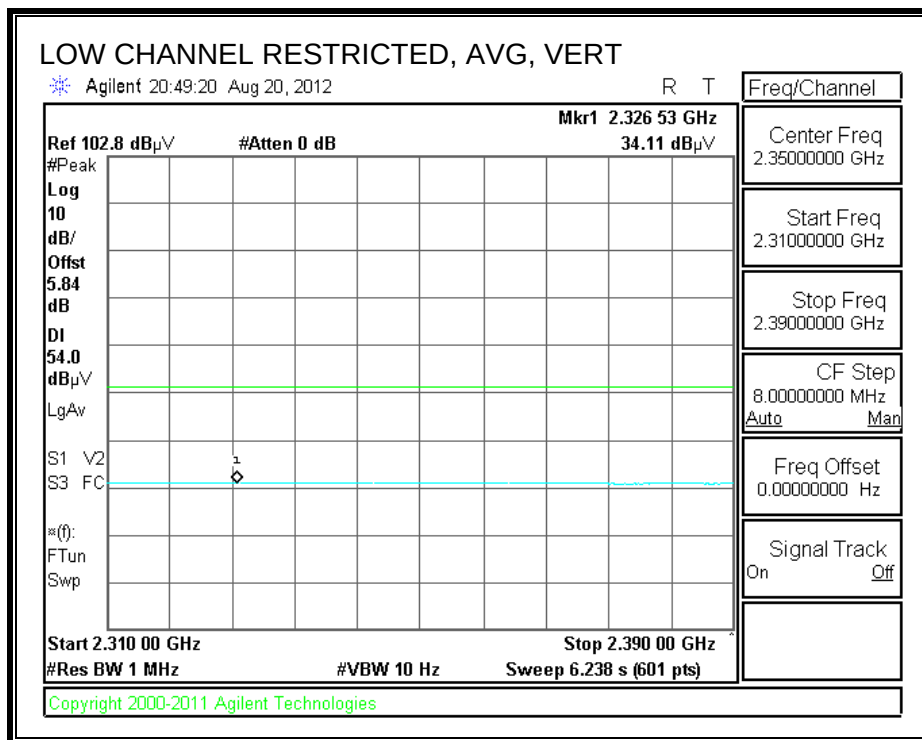
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



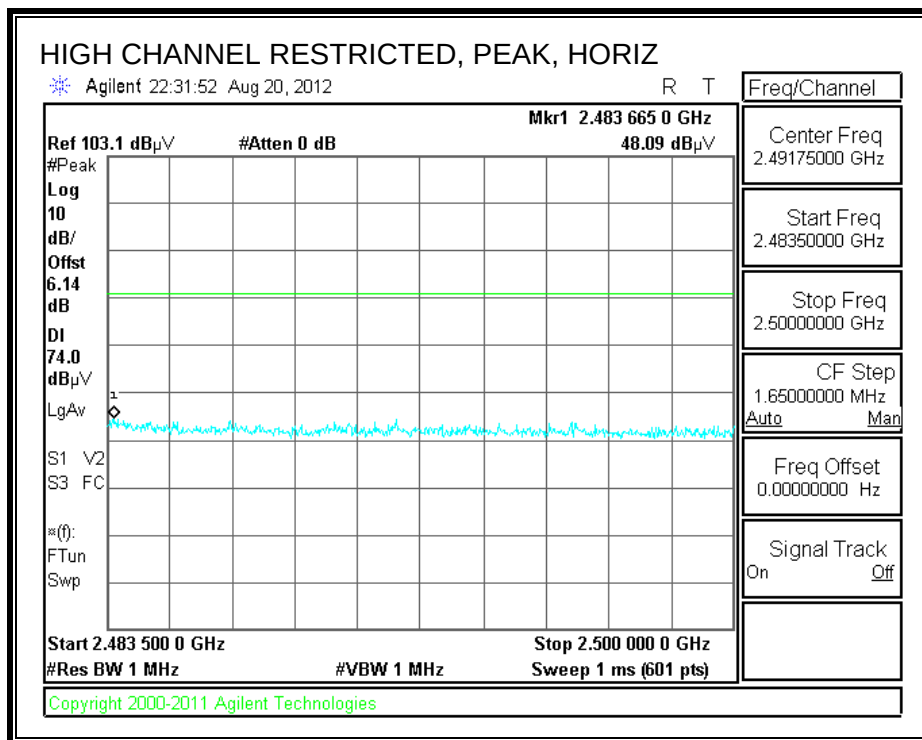


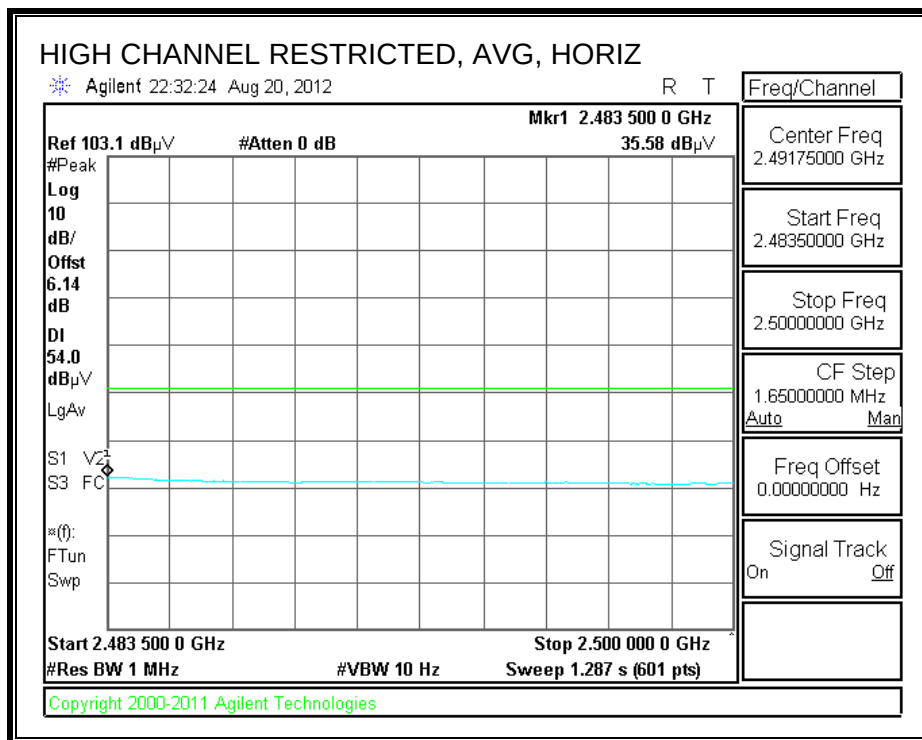
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



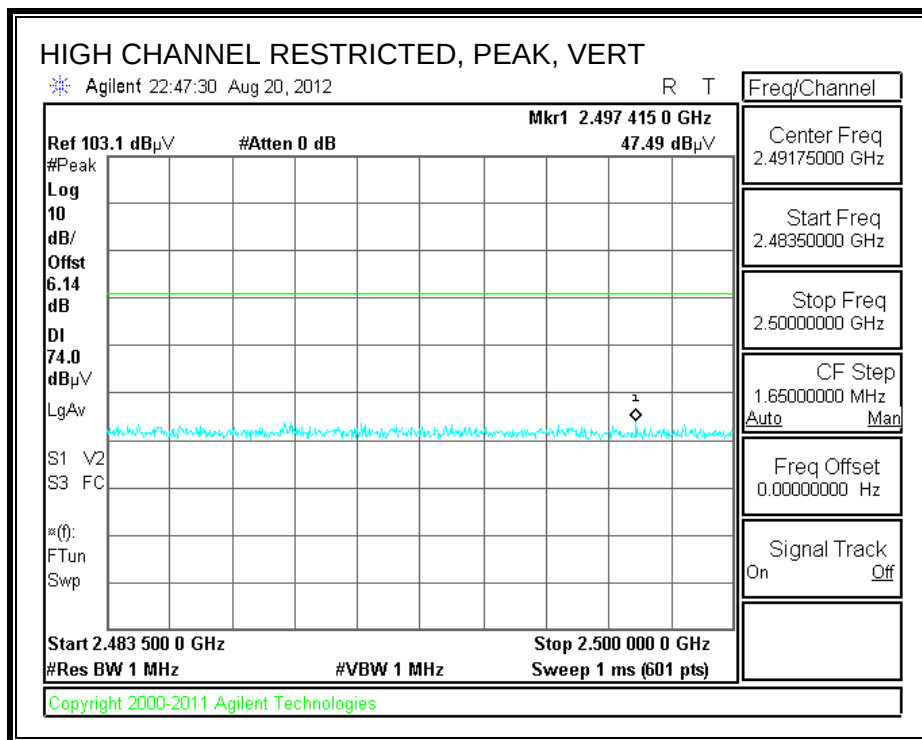


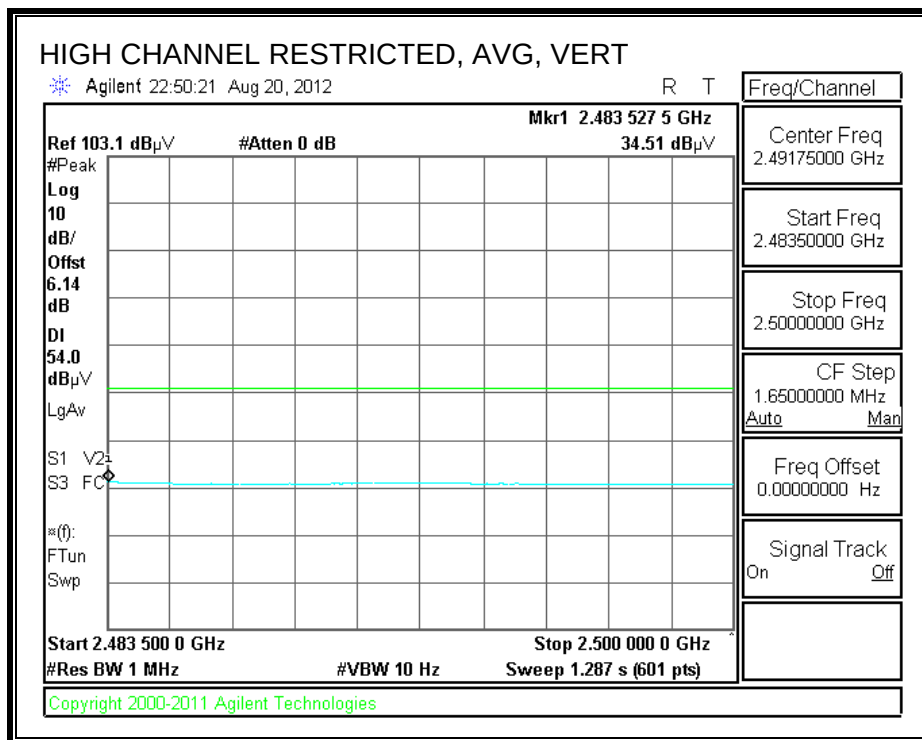
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



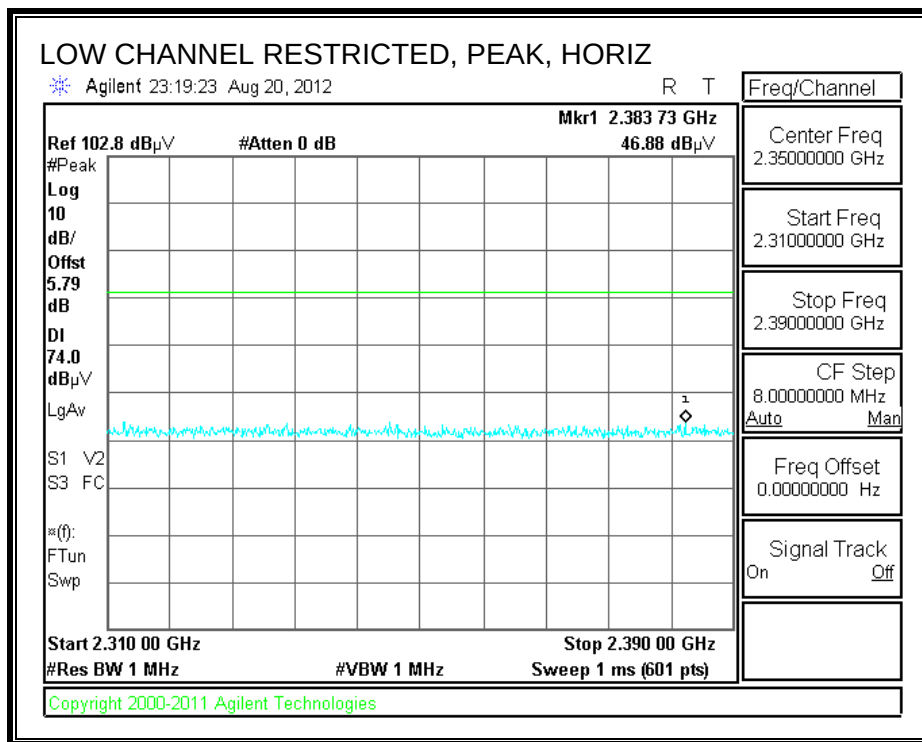


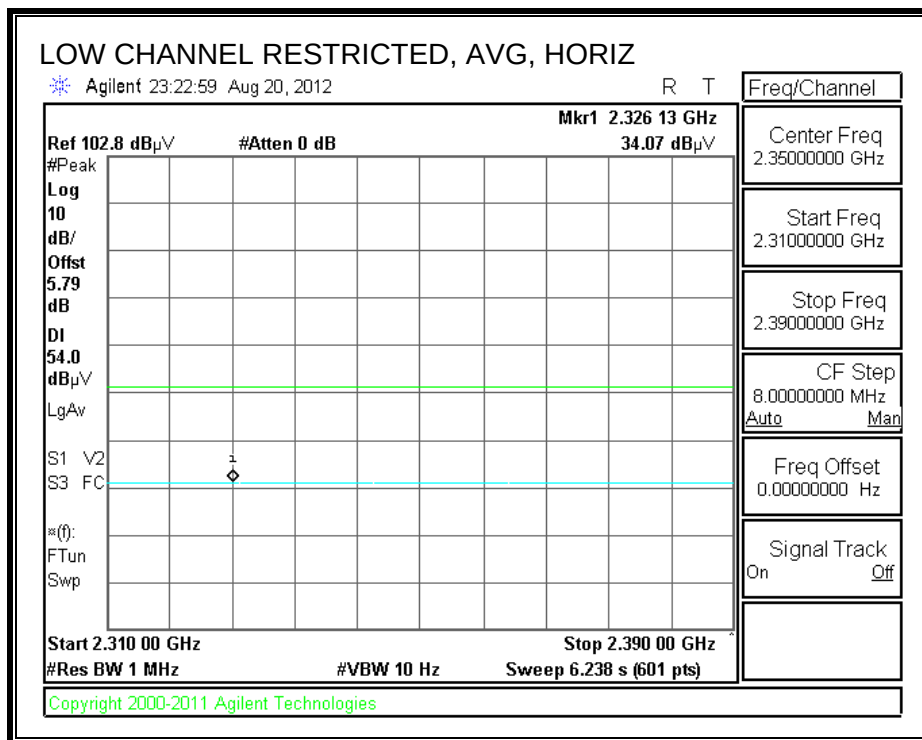
HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement																
Compliance Certification Services, Fremont 5m Chamber-A																
Company:		LG Electronics Mobilecomm U.S.A														
Project #:		12U14550														
Date:		8/21/2012														
Test Engineer:		Thanh Nguyen														
Configuration:		EUT at worst position														
Mode:		Transmit GFSK														
Test Equipment:																
Horn 1-18GHz			Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit				
T73; S/N: 6717 @3m			T144 Miteq 3008A00931						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		<u>Peak Measurements</u> RBW=VBW=1MHz <u>Average Measurements</u> RBW=1MHz ; VBW=10Hz		
3' cable 22807700			12' cable 22807600			20' cable 22807500						R_001				
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)	
Low ch																
4.804	3.0	41.43	27.34	33.4	6.2	-35.5	0.0	0.0	45.5	31.4	74	54	-28.5	-22.6	Noise floor/V	
4.804	3.0	41.23	27.36	33.4	6.2	-35.5	0.0	0.0	45.3	31.5	74	54	-28.7	-22.5	Noise floor/H	
Mid Ch																
4.882	3.0	40.63	27.22	33.5	6.2	-35.5	0.0	0.0	44.9	31.5	74	54	-29.1	-22.5	Noise floor/V	
4.882	3.0	40.52	27.50	33.5	6.2	-35.5	0.0	0.0	44.8	31.7	74	54	-29.2	-22.3	Noise floor/H	
High ch																
4.960	3.0	40.23	27.36	33.6	6.3	-35.5	0.0	0.0	44.6	31.7	74	54	-29.4	-22.3	Noise floor/V	
4.960	3.0	40.63	27.33	33.6	6.3	-35.5	0.0	0.0	45.0	31.7	74	54	-29.0	-22.3	Noise floor/H	
Rev. 10.24.11																
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												

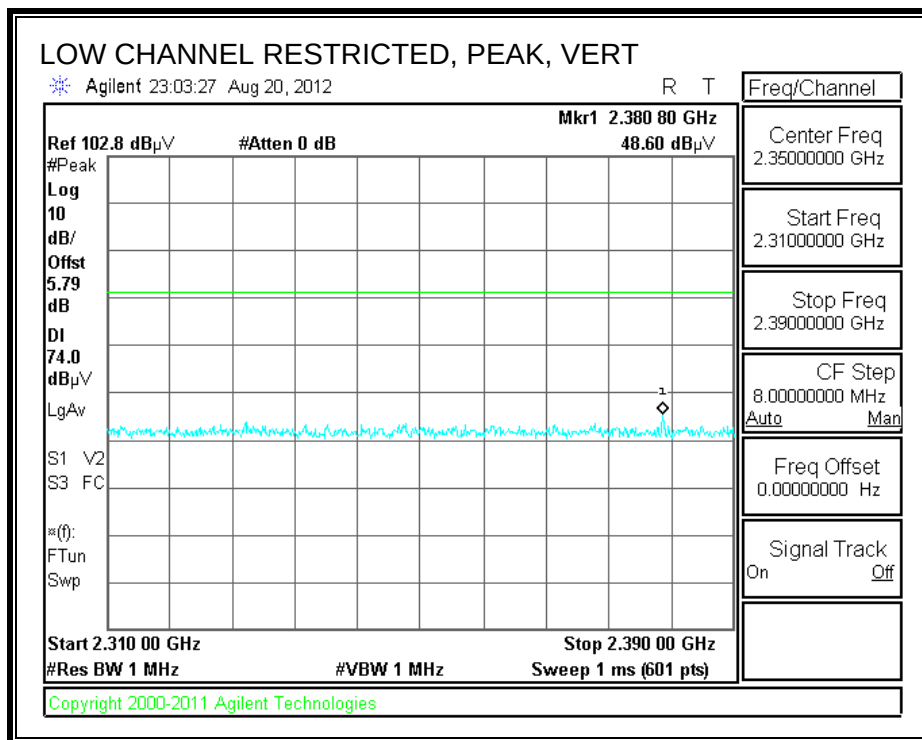
10.2.2. ENHANCED DATA RATE 8PSK MODULATION

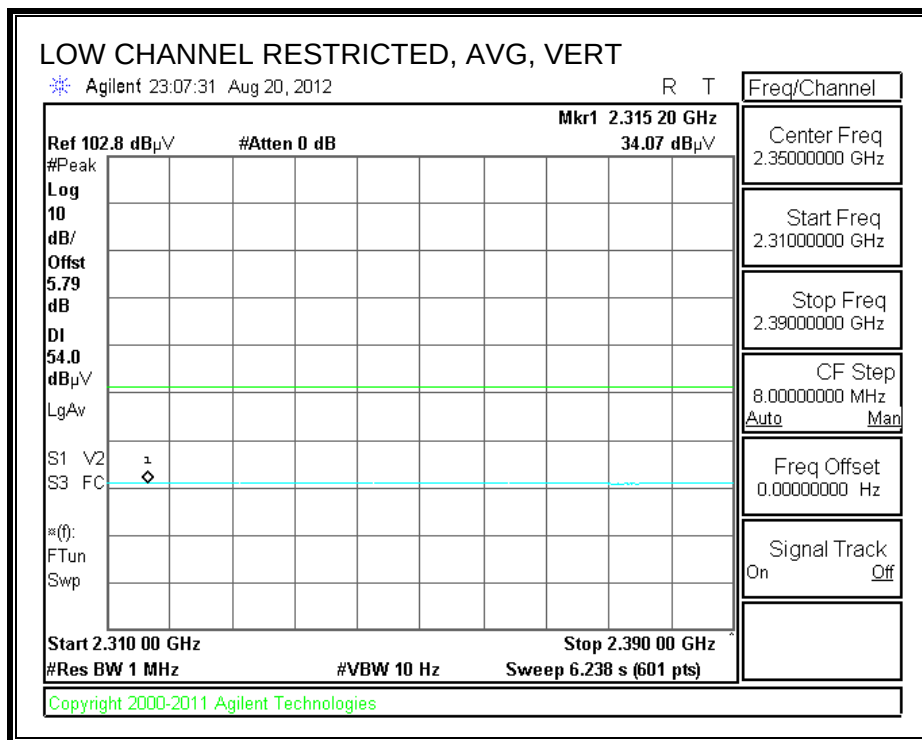
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



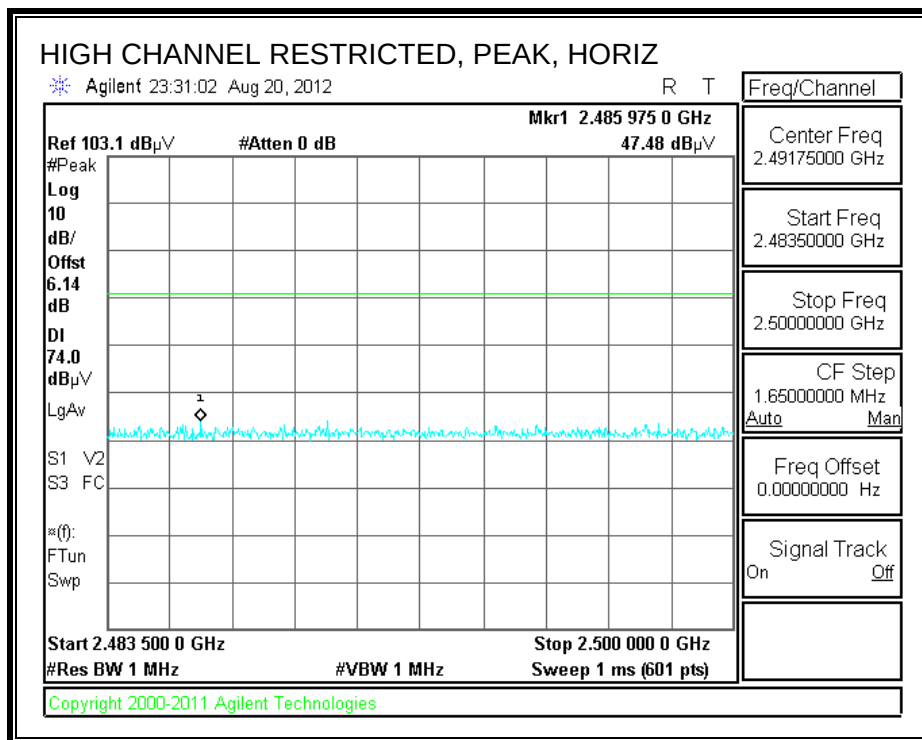


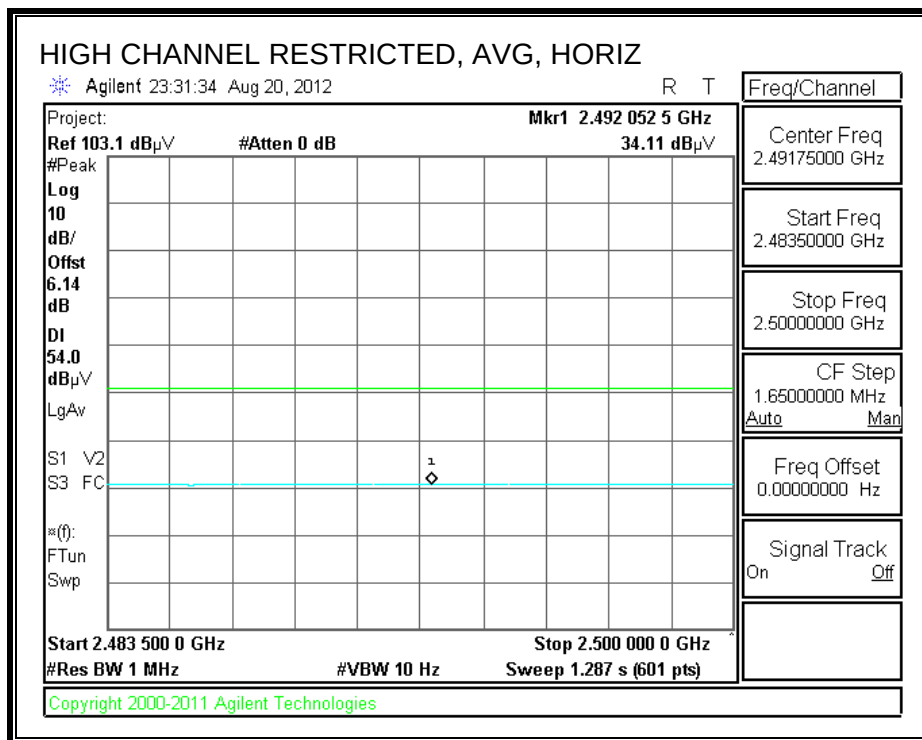
RESTRICTED BANEDGE (LOW CHANNEL, VERTICAL)



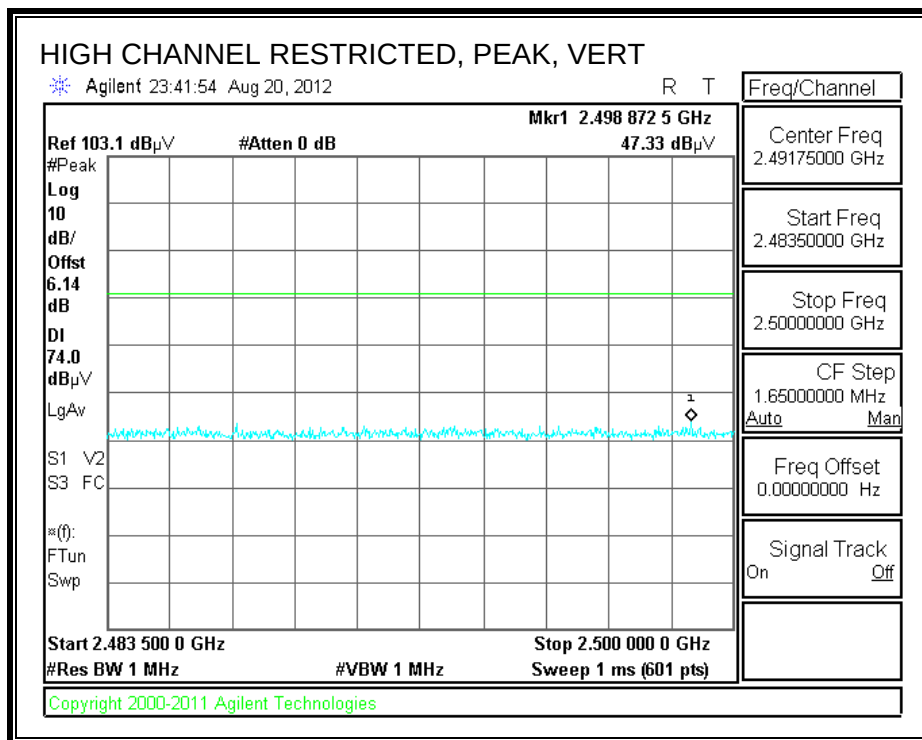


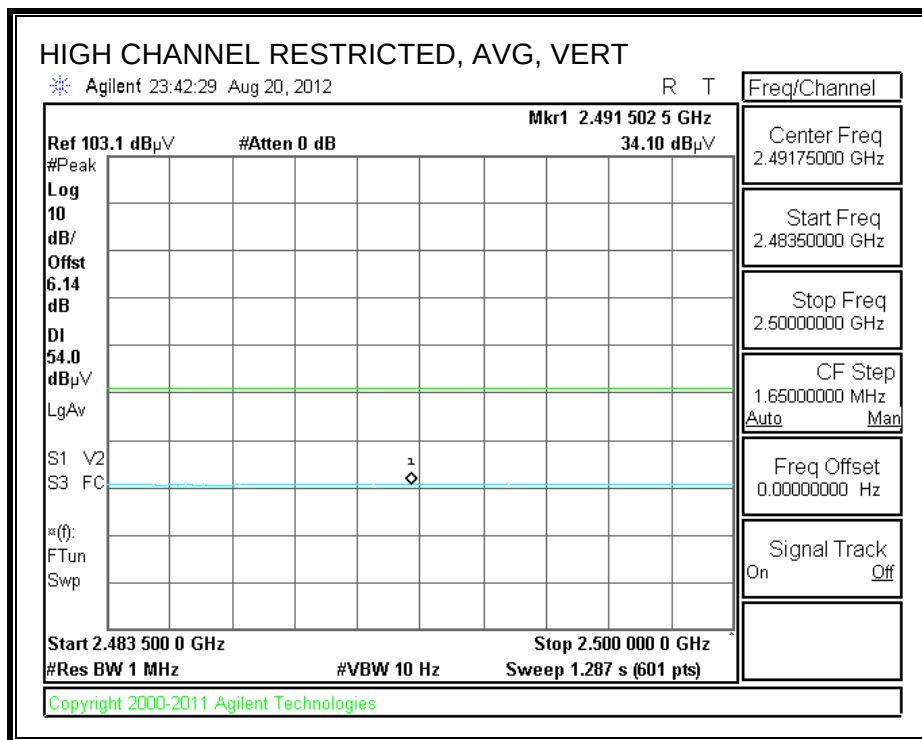
RESTRICTED BANEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANEDGE (HIGH CHANNEL, VERTICAL)



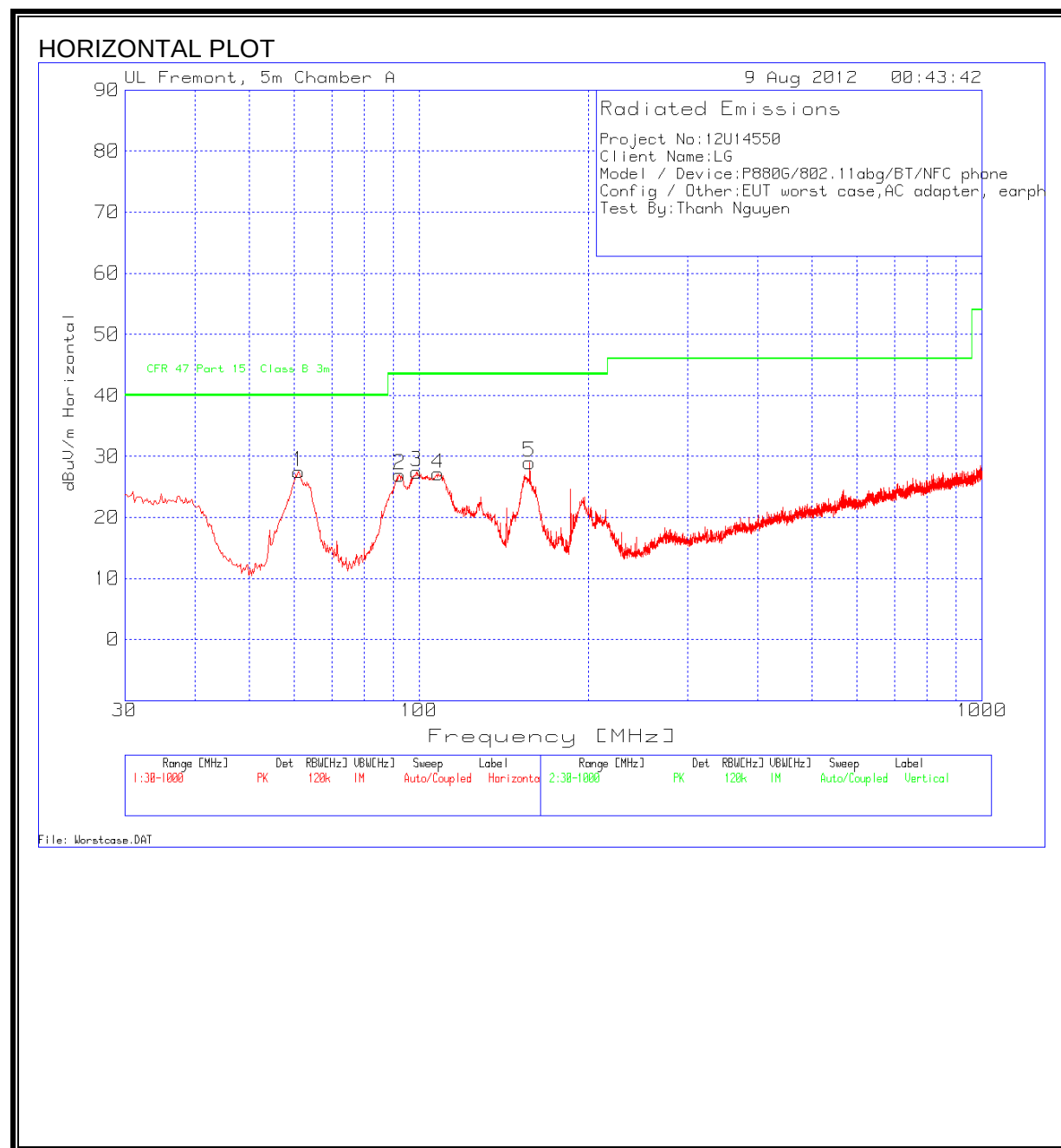


HARMONICS AND SPURIOUS EMISSIONS

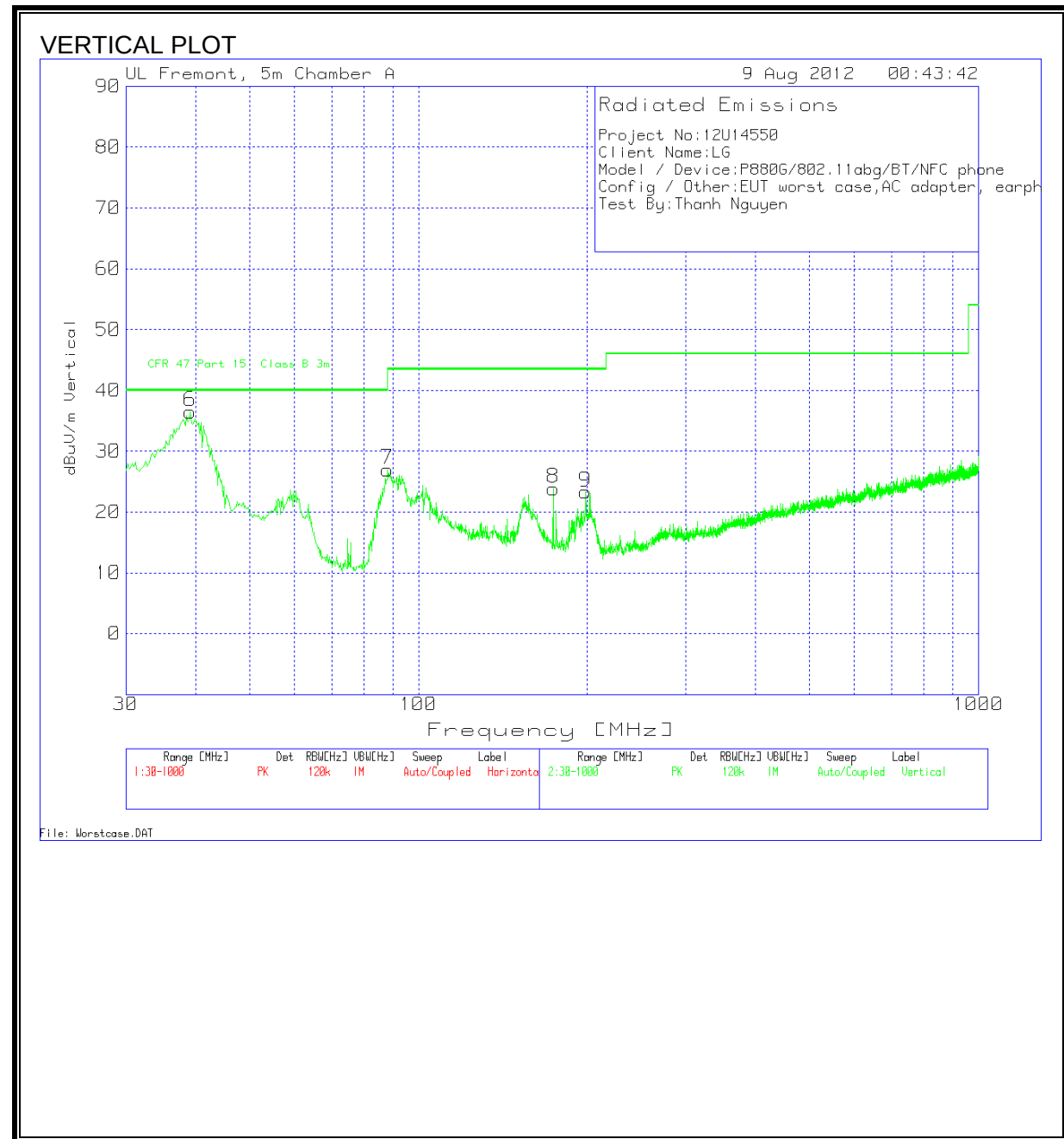
High Frequency Measurement															
Compliance Certification Services, Fremont 5m Chamber-A															
Company:		LG Electronics Mobilecomm U.S.A													
Project #:		12U14550													
Date:		8/21/2012													
Test Engineer:		Thanh Nguyen													
Configuration:		EUT at worst position													
Mode:		Transmit 8PSK													
Test Equipment:															
Horn 1-18GHz		Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit							
T73; S/N: 6717 @3m		T144 Miteq 3008A00931				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		Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz ; VBW=10Hz					
3' cable 22807700		12' cable 22807600		20' cable 22807500				R_001							
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low ch															
4.804	3.0	41.33	27.69	33.4	6.2	-35.5	0.0	0.0	45.4	31.8	74	54	-28.6	-22.2	Noise floor/V
4.804	3.0	41.01	27.72	33.4	6.2	-35.5	0.0	0.0	45.1	31.8	74	54	-28.9	-22.2	Noise floor/H
Mid Ch															
4.882	3.0	40.50	27.63	33.5	6.2	-35.5	0.0	0.0	44.7	31.9	74	54	-29.3	-22.1	Noise floor/V
4.882	3.0	40.54	27.58	33.5	6.2	-35.5	0.0	0.0	44.8	31.8	74	54	-29.2	-22.2	Noise floor/H
High ch															
4.960	3.0	39.98	27.41	33.6	6.3	-35.5	0.0	0.0	44.4	31.8	74	54	-29.6	-22.2	Noise floor/V
4.960	3.0	41.23	27.63	33.6	6.3	-35.5	0.0	0.0	45.6	32.0	74	54	-28.4	-22.0	Noise floor/H
Rev. 10.24.11															
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										

10.3. WORST-CASE BELOW 1 GHz

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



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



HORIZONTAL AND VERTICAL DATA

Project No:12U14550

Client Name:LG

Model / Device:P880G/802.11abg/BT/NFC phone

Config / Other:EUT worst case,AC adapter, earph

Test By:Thanh Nguyen

Horizontal 30 - 1000MHz

Test Frequency	Meter Reading	Detector	25MHz-1GHz ChmbrA Amplifie d.TX (dB)	T243 Sunol Bilog.TXT (dB)	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
61.209	47.33	PK	-27.2	7.4	27.53	40	-12.47	300	Horz
92.4181	45.89	PK	-27	8.1	26.99	43.5	-16.51	200	Horz
99.0088	44.42	PK	-26.9	9.9	27.42	43.5	-16.08	300	Horz
108.3133	41.65	PK	-26.8	12.3	27.15	43.5	-16.35	300	Horz
157.3561	43.49	PK	-26.5	12	28.99	43.5	-14.51	200	Horz

Vertical 30 - 1000MHz

Test Frequency	Meter Reading	Detector	25MHz-1GHz ChmbrA Amplifie d.TX (dB)	T243 Sunol Bilog.TXT (dB)	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
39.1107	49.24	PK	-27.4	14.6	36.44	40	-3.56	100	Vert
39.117	43.71	QP	-27.4	14.6	30.91	40	-9.09	344	Vert
88.1535	46.52	PK	-27	7.4	26.92	43.5	-16.58	100	Vert
174.2206	38.85	PK	-26.4	11.4	23.85	43.5	-19.65	100	Vert
199.0328	37.28	PK	-26.2	12.2	23.28	43.5	-20.22	100	Vert

11. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

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

^{*} Decreases with the logarithm of the frequency.

TEST PROCEDURE

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

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

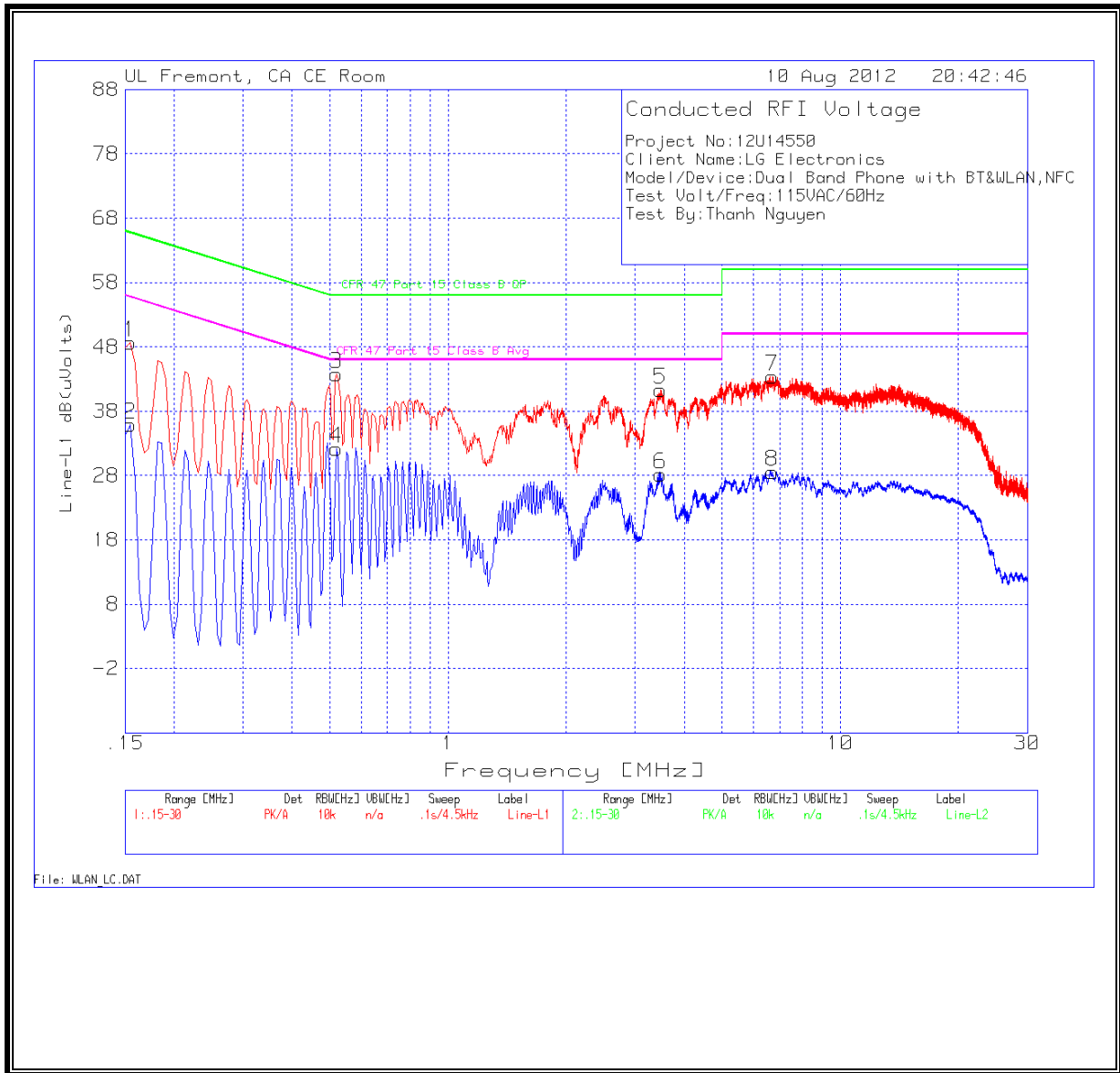
Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

6 WORST EMISSIONS

Project No:12U14550									
Client Name:LG Electronics									
Model/Device:Dual Band Phone with BT&WLAN,NFC									
Test Volt/Freq:115VAC/60Hz									
Test By:Thanh Nguyen									
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
0.1545	48.52	PK	0.1	0	48.62	65.8	-17.18	-	-
0.1545	35.78	Av	0.1	0	35.88	-	-	55.8	-19.92
0.519	43.72	PK	0.1	0	43.82	56	-12.18	-	-
0.519	32.03	Av	0.1	0	32.13	-	-	46	-13.87
3.489	41.11	PK	0.1	0.1	41.31	56	-14.69	-	-
3.489	27.99	Av	0.1	0.1	28.19	-	-	46	-17.81
6.7155	43.15	PK	0.1	0.1	43.35	60	-16.65	-	-
6.7155	28.33	Av	0.1	0.1	28.53	-	-	50	-21.47
Line-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
0.3705	41.86	PK	0.1	0	41.96	58.5	-16.54	-	-
0.3705	28.8	Av	0.1	0	28.9	-	-	48.5	-19.6
0.555	42.36	PK	0.1	0	42.46	56	-13.54	-	-
0.555	30.17	Av	0.1	0	30.27	-	-	46	-15.73
0.681	41.83	PK	0.1	0	41.93	56	-14.07	-	-
0.681	29.44	Av	0.1	0	29.54	-	-	46	-16.46
6.153	39.25	PK	0.1	0.1	39.45	60	-20.55	-	-
6.153	23.77	Av	0.1	0.1	23.97	-	-	50	-26.03

LINE 1 RESULTS



LINE 2 RESULTS

