



**FCC CFR47 PART 15 SUBPART C
INDUSTRY CANADA RSS-210 ISSUE 8**

CERTIFICATION TEST REPORT

FOR

TABLET

MODEL NUMBER: BP710A

**FCC ID: PSZ-BP710A
IC: 1000F-BP710A**

REPORT NUMBER: 12U14748-2, REVISION C

ISSUE DATE: APRIL 2, 2013

Prepared for
**INTEL CORPORATION
2200 MISSION COLLEGE BLVD.
SANTA CLARA, CA 95054-1549, USA**

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
--	02/14/2013	Initial Issue	T. LEE
A	03/18/2013	Corrections	G.PERSONS
B	03/28/2013	Correction to model number on Attestation page	G.PERSONS
C	04/02/2013	Correction to address and Updated Bandwidth Table	G.PERSONS

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. WORST-CASE CONFIGURATION AND MODE	8
5.6. DESCRIPTION OF TEST SETUP.....	9
6. TEST AND MEASUREMENT EQUIPMENT	12
7. ANTENNA PORT TEST RESULTS	13
7.1. BASIC DATA RATE GFSK MODULATION	13
7.1.1. 20 dB AND 99% BANDWIDTH	13
7.1.2. HOPPING FREQUENCY SEPARATION	20
7.1.3. NUMBER OF HOPPING CHANNELS.....	22
7.1.4. AVERAGE TIME OF OCCUPANCY	27
7.1.5. MAXIMUM OUTPUT POWER	34
7.1.6. CONDUCTED SPURIOUS EMISSIONS.....	38
7.2. ENHANCED DATA RATE QPSK MODULATION.....	47
7.2.1. MAXIMUM OUTPUT POWER	47
7.3. ENHANCED DATA RATE 8PSK MODULATION	51
7.3.1. 20 dB AND 99% BANDWIDTH	51
7.3.2. HOPPING FREQUENCY SEPARATION	58
7.3.3. NUMBER OF HOPPING CHANNELS.....	60
7.3.4. AVERAGE TIME OF OCCUPANCY	65
7.3.5. MAXIMUM OUTPUT POWER	72
7.3.6. CONDUCTED SPURIOUS EMISSIONS.....	76
8. RADIATED TEST RESULTS.....	85
8.1. LIMITS AND PROCEDURE	85
8.2. TRANSMITTER ABOVE 1 GHz	86
8.2.1. BASIC DATA RATE GFSK MODULATION	86
8.2.2. ENHANCED DATA RATE 8PSK MODULATION	95

8.3.	<i>WORST-CASE BELOW 1 GHz</i>	104
9.	AC POWER LINE CONDUCTED EMISSIONS	107
10.	SETUP PHOTOS	111

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: INTEL CORPORATION
2200 MISSION COLLEGE BLVD.
SANTA CLARA, CA 95054-1549, USA

EUT DESCRIPTION: Tablet

MODEL: BP710A

SERIAL NUMBER: YKB311604755 (Radiated unit), YKB311605082 (Conducted unit)

DATE TESTED: FEBRUARY 6~12, 2013

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

Tested By:



TIM LEE
WISE PROGRAM MANAGER
UL CCS



TOM CHEN
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:

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

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 tablet with 802.11b/g/n and Bluetooth.

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 125mW
- 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	9.00	7.94
2402 - 2480	DQPSK	8.93	7.82
2402 - 2480	Enhanced 8PSK	9.23	8.38

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a chip antenna, with a maximum gain of 2.5 dBi.

5.4. SOFTWARE AND FIRMWARE

The test utility software used during testing was YKB JB 11976

The EUT is also linked in Bluetooth Enable Test mode with Rohde & Schwarz CBT Test box.

5.5. 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.

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.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	Intel	S11A02	130300073060	DoC
Power Splitter	Krytar	158010	99250	N/A
Headset	N/A	N/A	N/A	N/A

I/O CABLES (Conducted Setup)

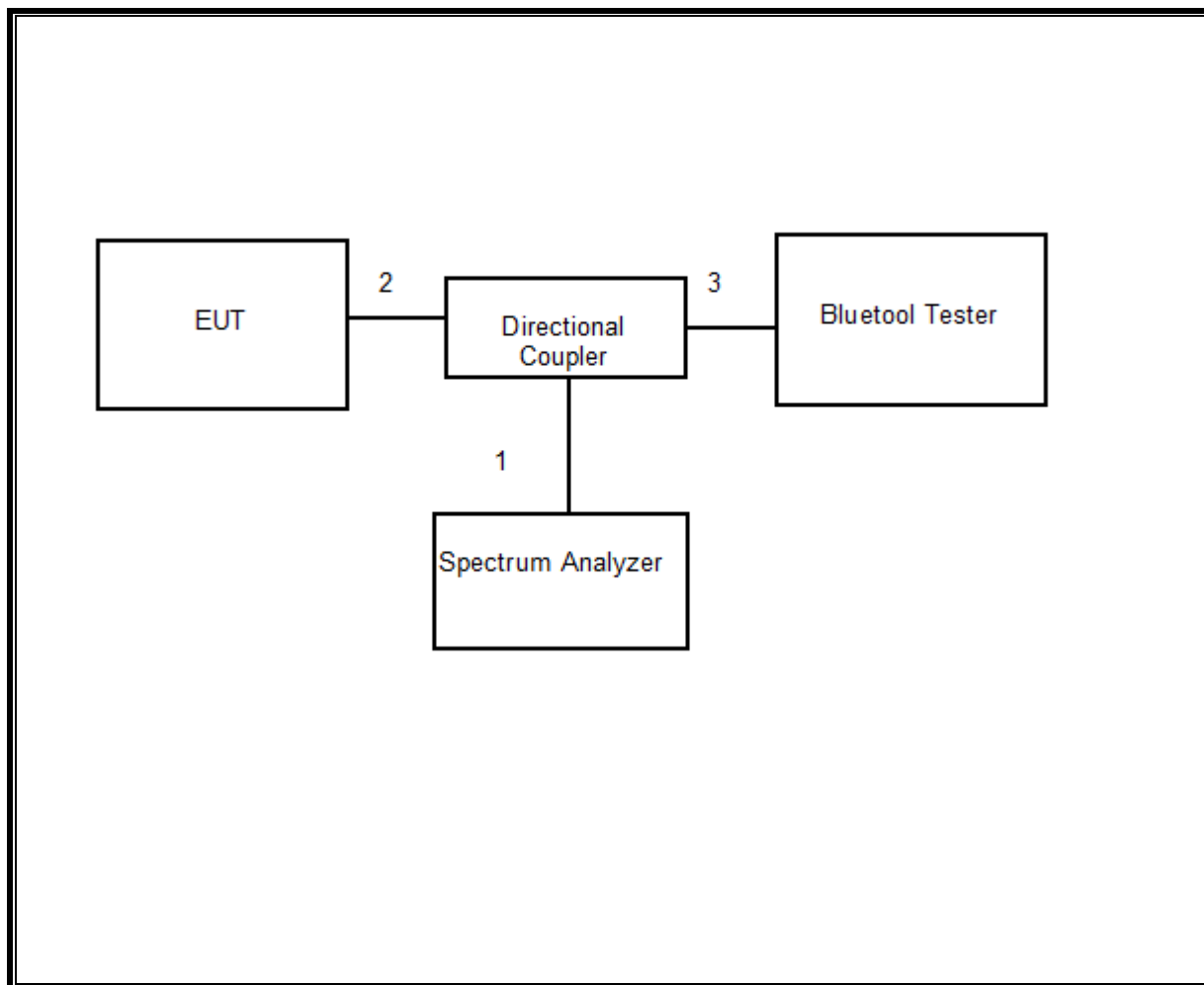
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	In/Out	1	SMA	Shielded	0.2m	NA
2	In/Out	1	SMA	Shielded	0.6m	NA
3	Antenna Port	1	SMA	Shielded	0.1m	NA

I/O CABLES (Radiated Setup)

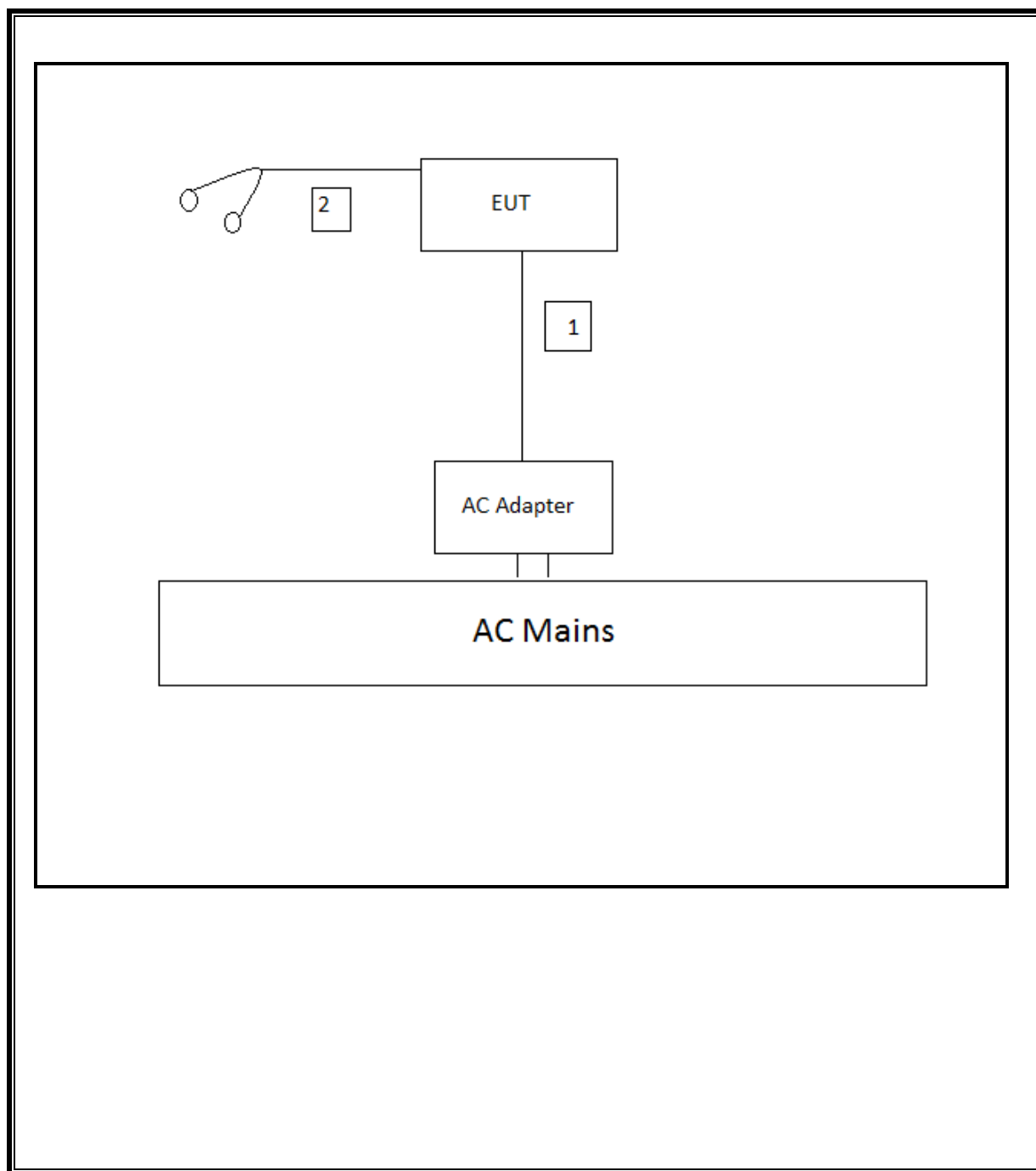
I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC	1	MINI USB	UN-SHELDED	0.7m	N/A
2	AUDIO	1	MINI JACK	UN-SHELDED	1.0m	N/A

TEST SETUP

SETUP DIAGRAM FOR CONDUCTED TESTS



SETUP DIAGRAM FOR RADIATED TESTS



6. TEST AND MEASUREMENT EQUIPMENT

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

Test Equipment List				
Description	Manufacturer	Model	Asset	Cal Due
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01052	11/11/13
Antenna, Horn, 18 GHz	EMCO	3115	C00945	10/06/13
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00580	11/11/13
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	03/23/13
Horn Antenna, 26.5 GHz	ARA	MWH-1826/B	C00589	04/23/13
Reject Filter, 2.0-2.9 GHz	Micro-Tronics	BRM50702	N02684	CNR
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01069	12/20/14
CBT Bluetooth tester	Rohde Schwarz	CBT	10090	05/15/13
Reject Filter, 2.4-2.5 GHz	Micro-Tronics	BRM50702	N02685	CNR
EMI Test Receiver, 30MHz	R & S	ESHS 20	N02396	08/08/13
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	01/14/14

7. ANTENNA PORT TEST RESULTS

7.1. BASIC DATA RATE GFSK MODULATION

7.1.1. 20 dB AND 99% BANDWIDTH

LIMIT

None; for reporting purposes only.

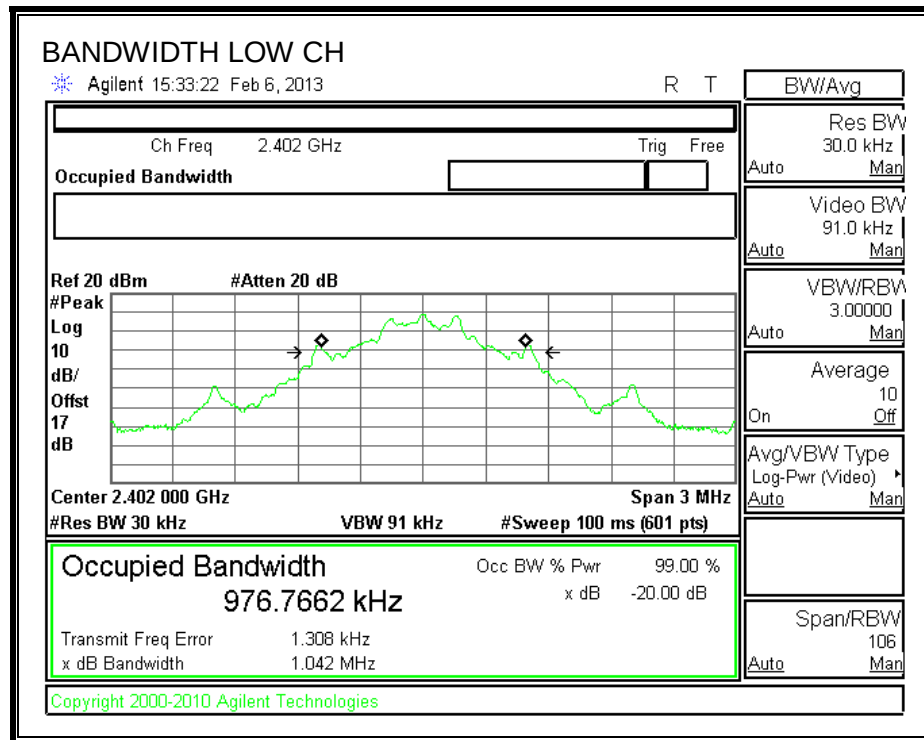
TEST PROCEDURE

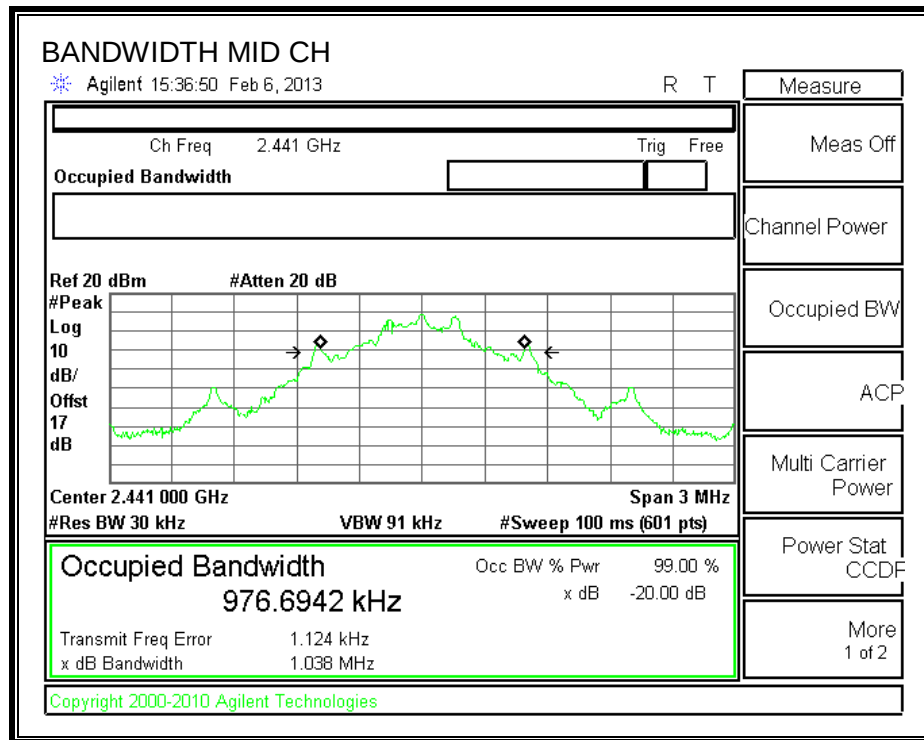
The transmitter output is connected to a spectrum analyzer. The RBW is set to $\geq 1\%$ of the 20 dB bandwidth. The VBW is set to $\geq$ RBW. The sweep time is coupled.

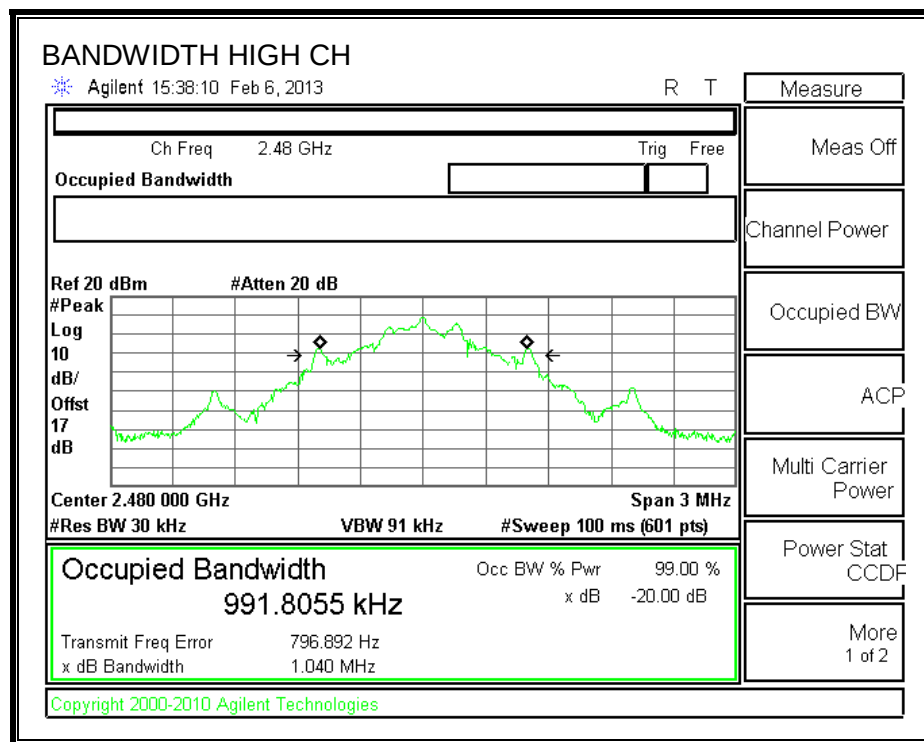
RESULTS

Channel	Frequency (MHz)	20 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2402	1.042	1.0051
Middle	2441	1.038	1.0059
High	2480	1.040	0.9975

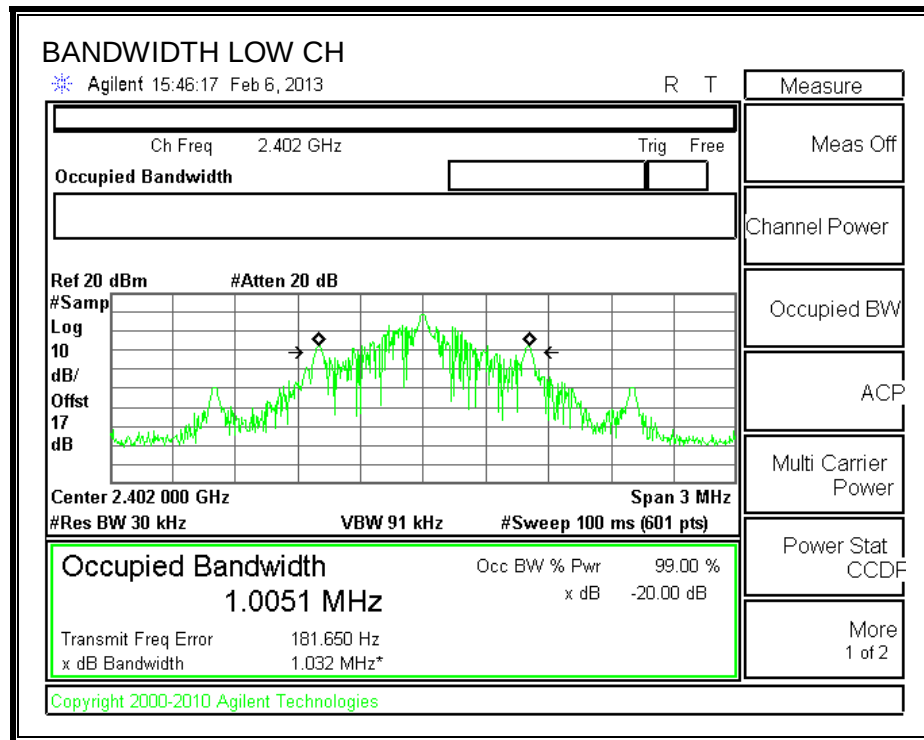
20 dB BANDWIDTH

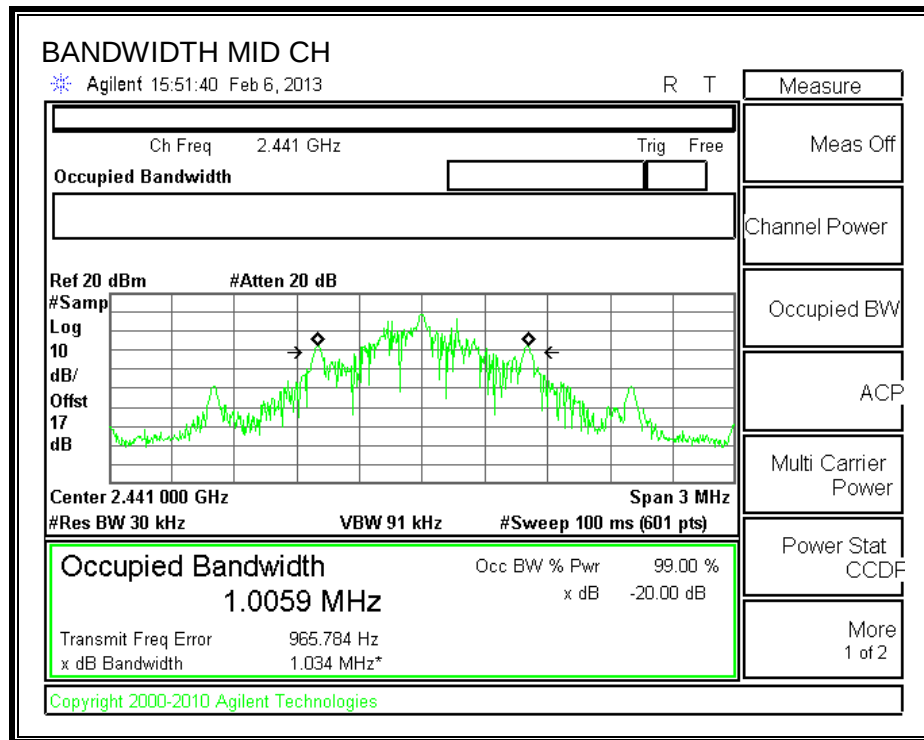


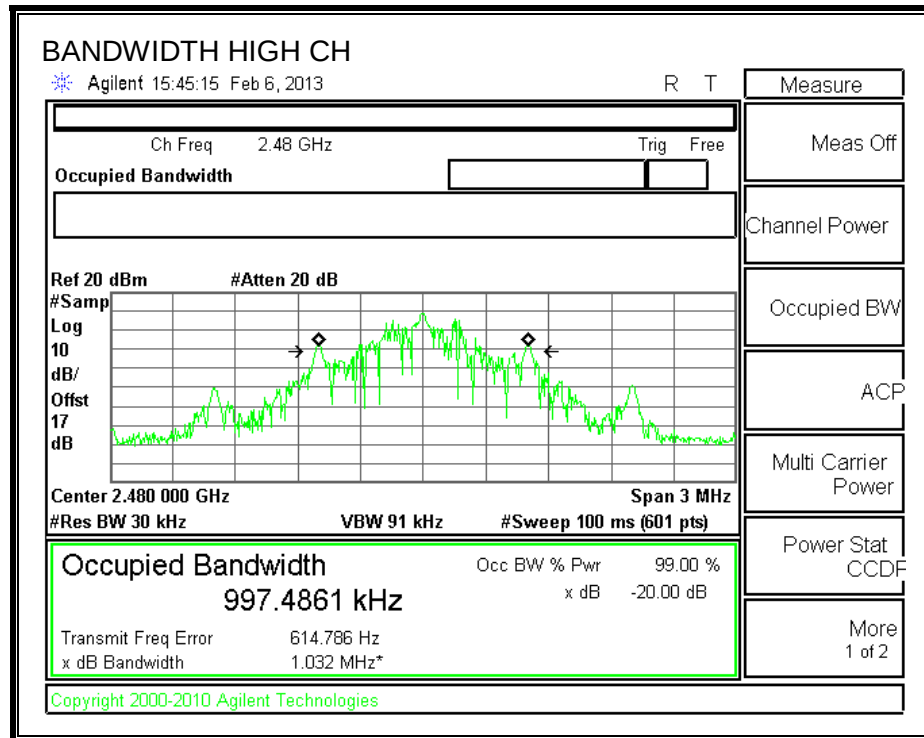




99% BANDWIDTH







7.1.2. HOPPING FREQUENCY SEPARATION

LIMIT

FCC §15.247 (a) (1)

IC RSS-210 A8.1 (b)

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

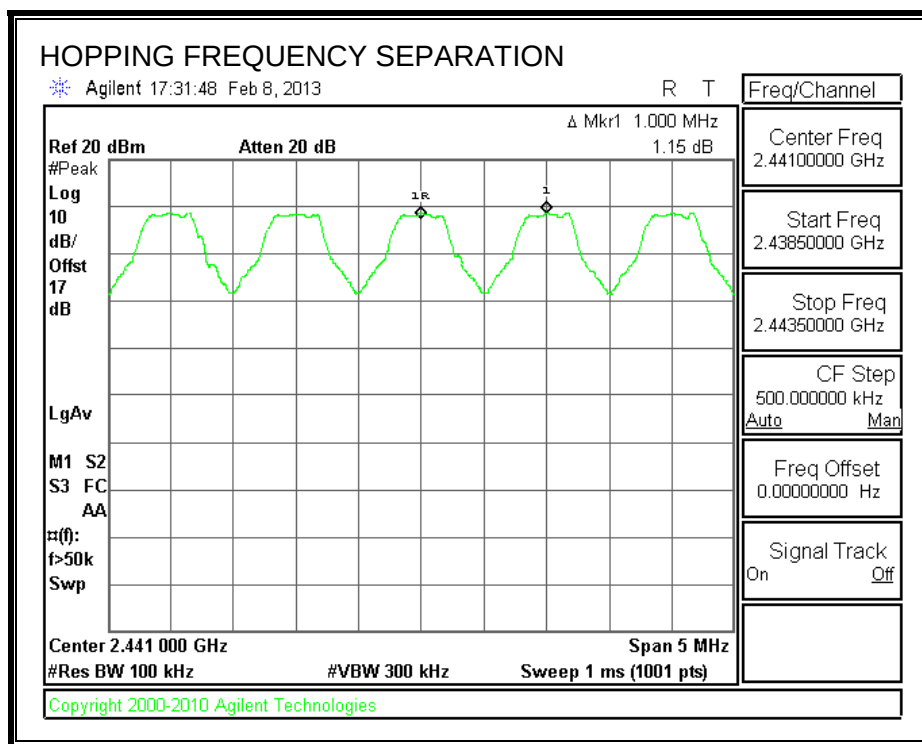
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than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



7.1.3. NUMBER OF HOPPING CHANNELS

LIMIT

FCC §15.247 (a) (1) (iii)

IC RSS-210 A8.1 (d)

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

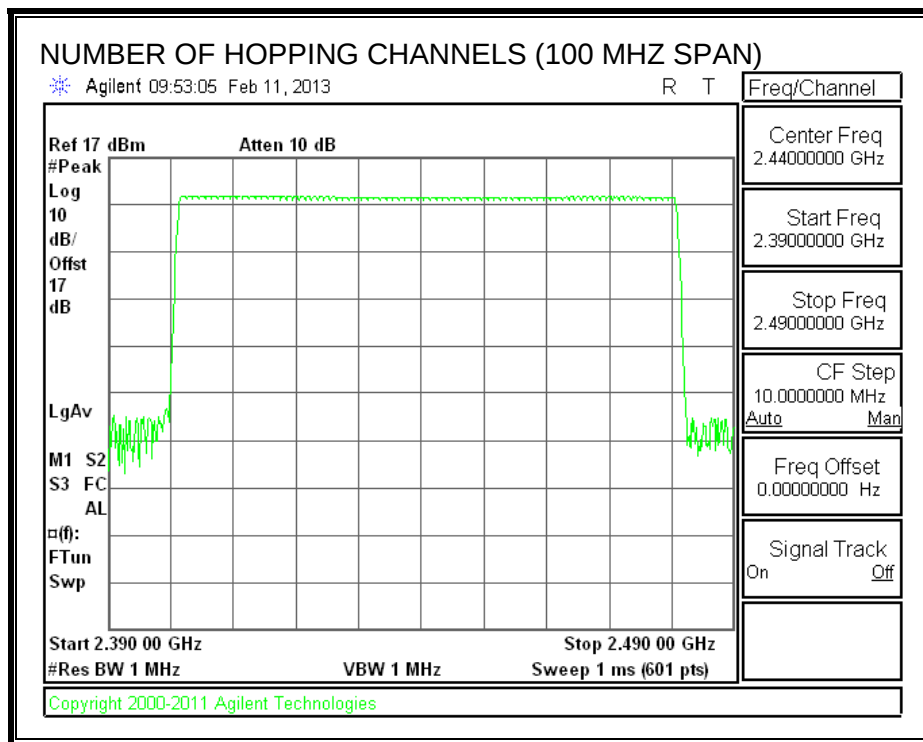
TEST PROCEDURE

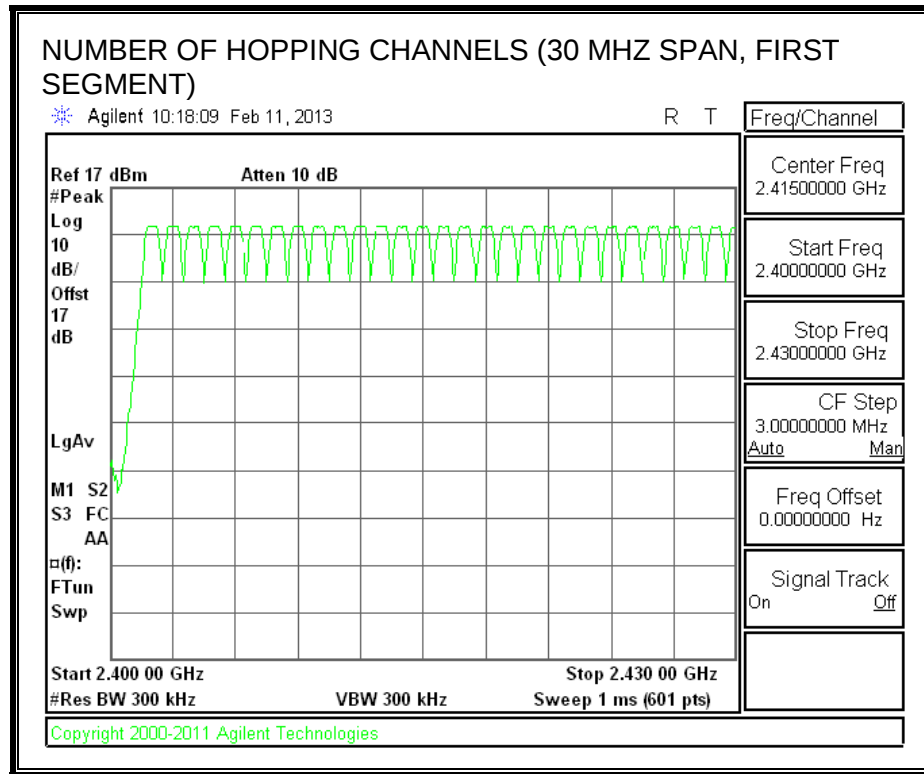
The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

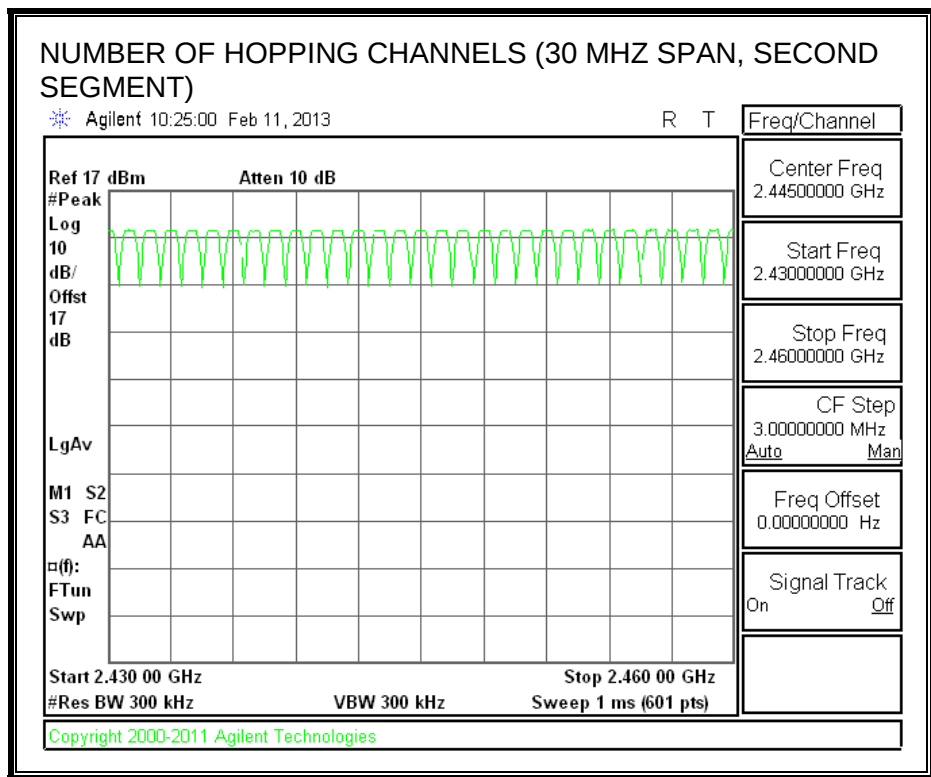
RESULTS

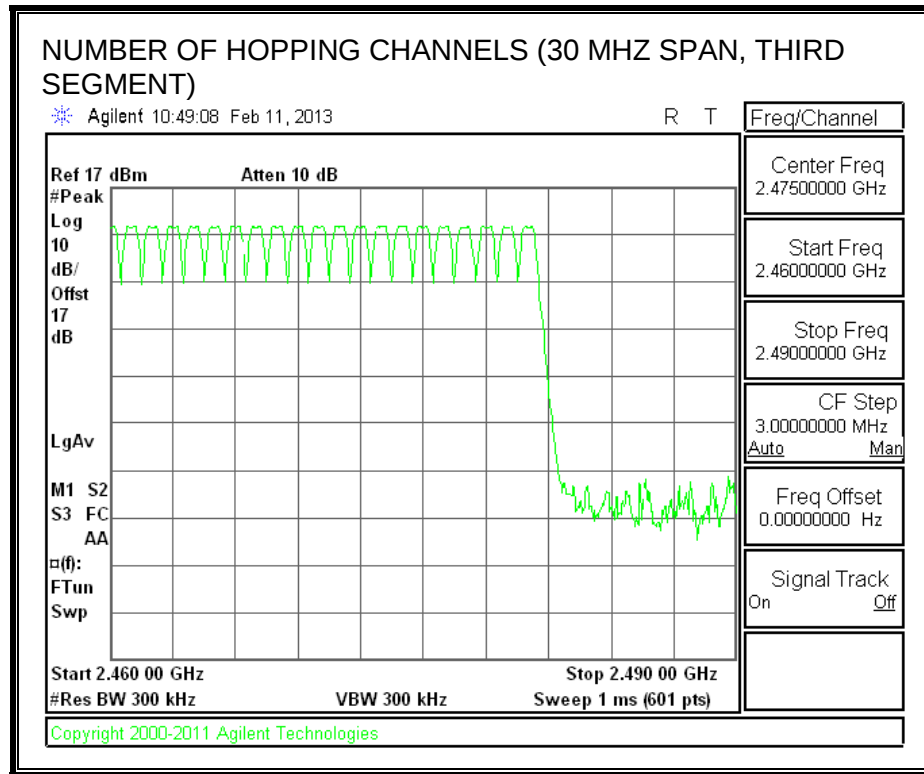
Normal Mode: 79 Channels observed.

NUMBER OF HOPPING CHANNELS









7.1.4. AVERAGE TIME OF OCCUPANCY

LIMIT

FCC §15.247 (a) (1) (iii)

IC RSS-210 A8.1 (d)

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

TEST PROCEDURE

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

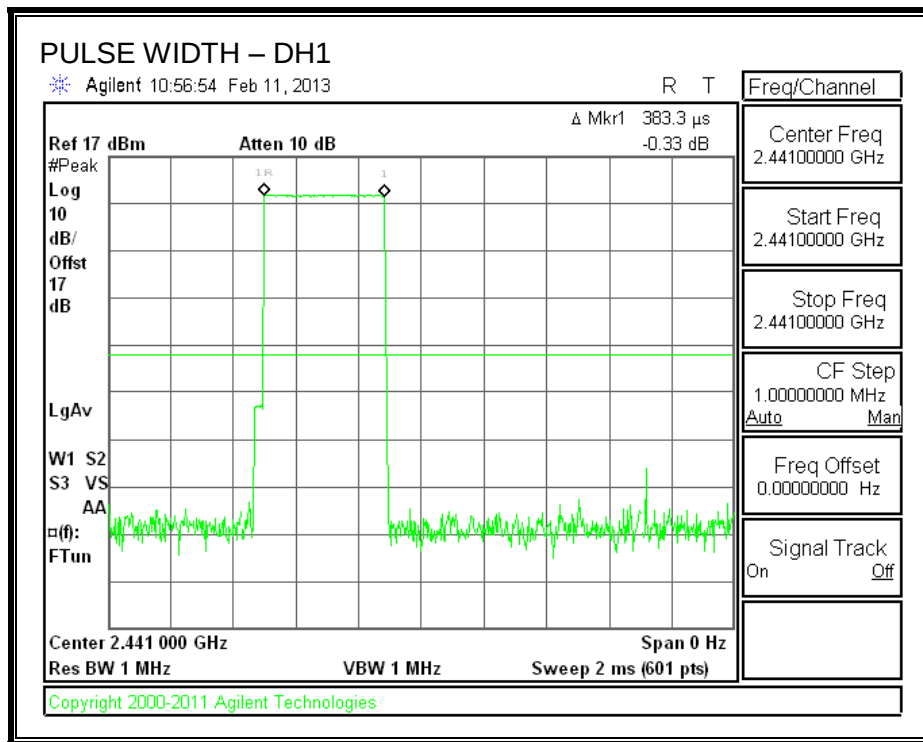
The average time of occupancy in the specified 31.6 second period (79 channels * 0.4 s) is equal to $10 * (\# \text{ of pulses in } 3.16 \text{ s}) * \text{pulse width}$.

For AFH mode, the average time of occupancy in the specified 8 second period (20 channels * 0.4 seconds) is equal to $10 * (\# \text{ of pulses in } 0.8 \text{ s}) * \text{pulse width}$.

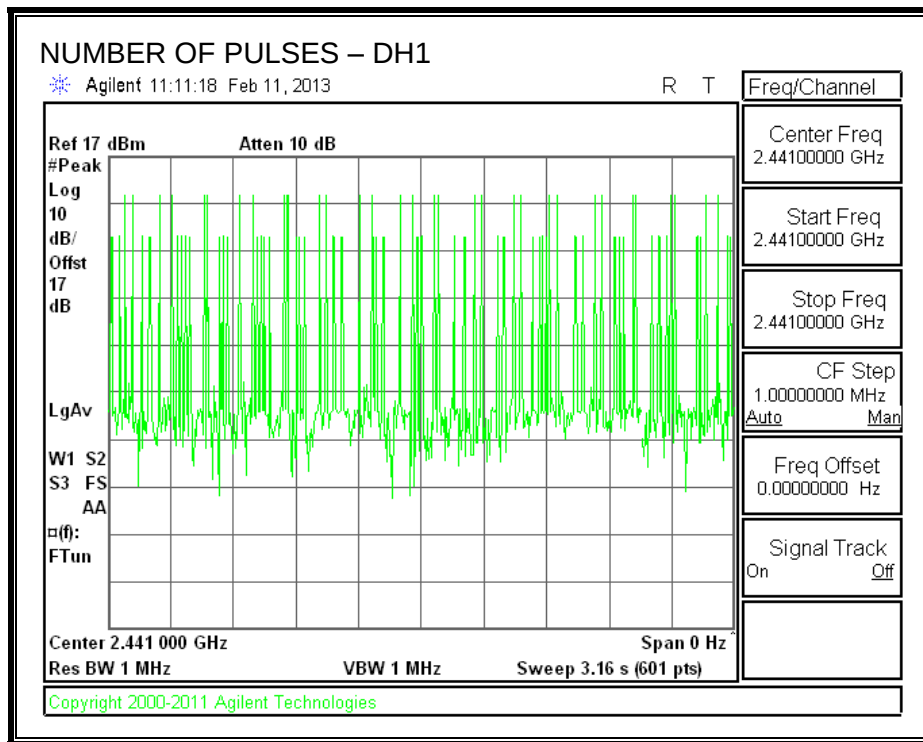
RESULTS

DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
GFSK Normal Mode					
DH1	0.3833	32	0.123	0.4	-0.277
DH3	1.642	18	0.296	0.4	-0.104
DH5	2.892	11	0.318	0.4	-0.082

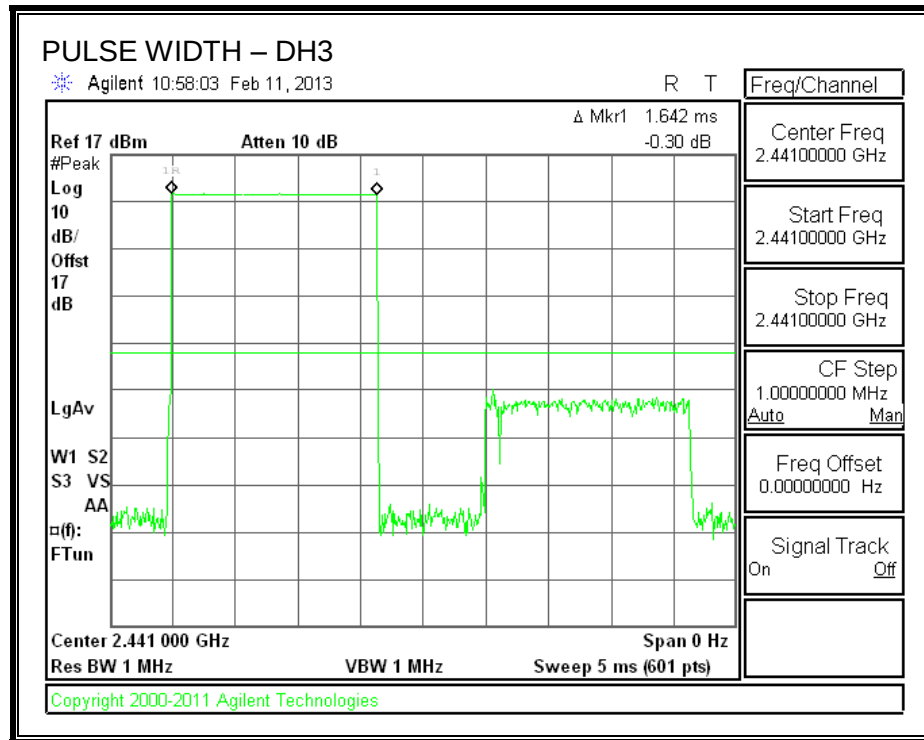
PULSE WIDTH - DH1



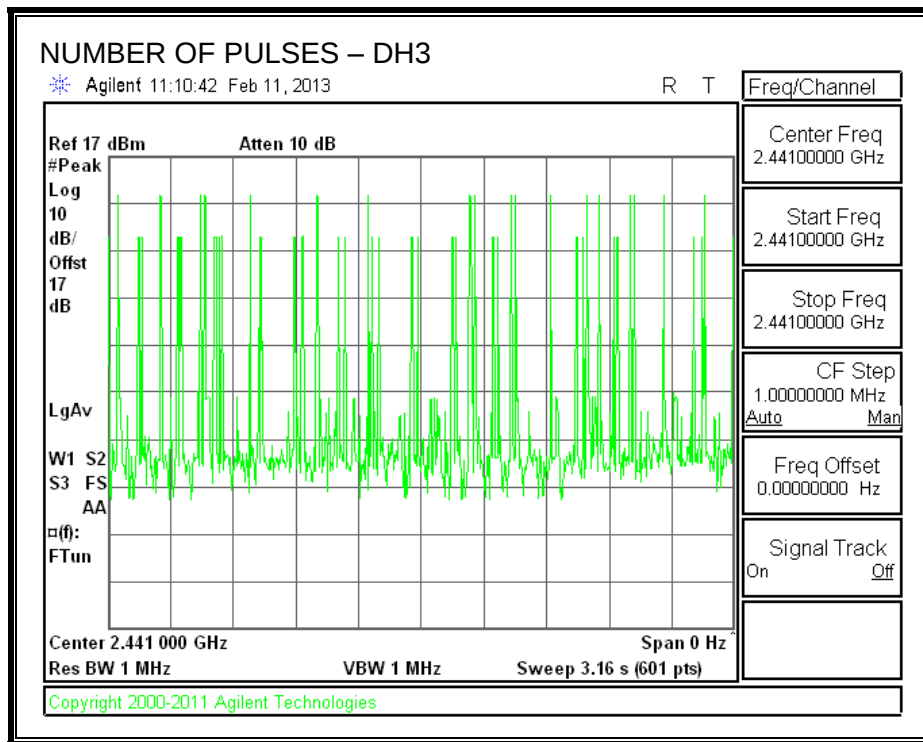
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH1



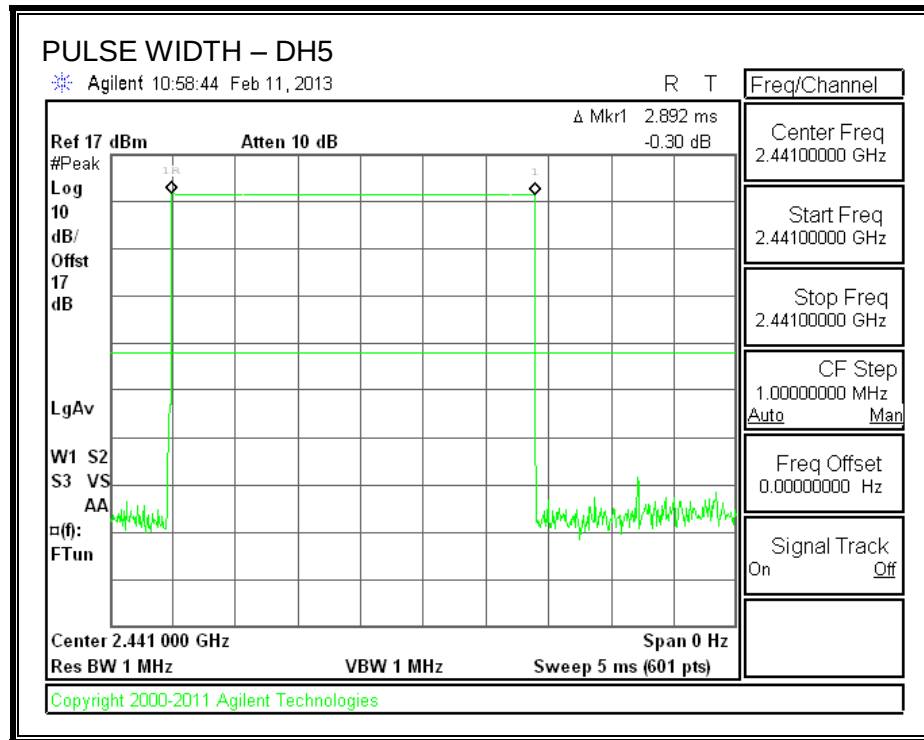
PULSE WIDTH – DH3



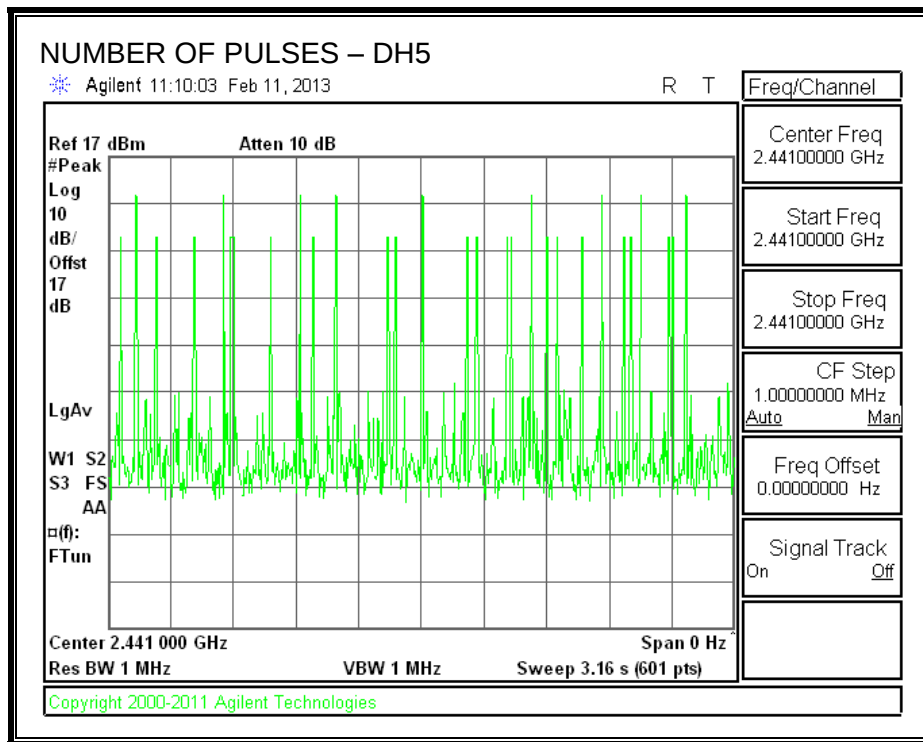
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH3



PULSE WIDTH – DH5



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH5



7.1.5. MAXIMUM 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.

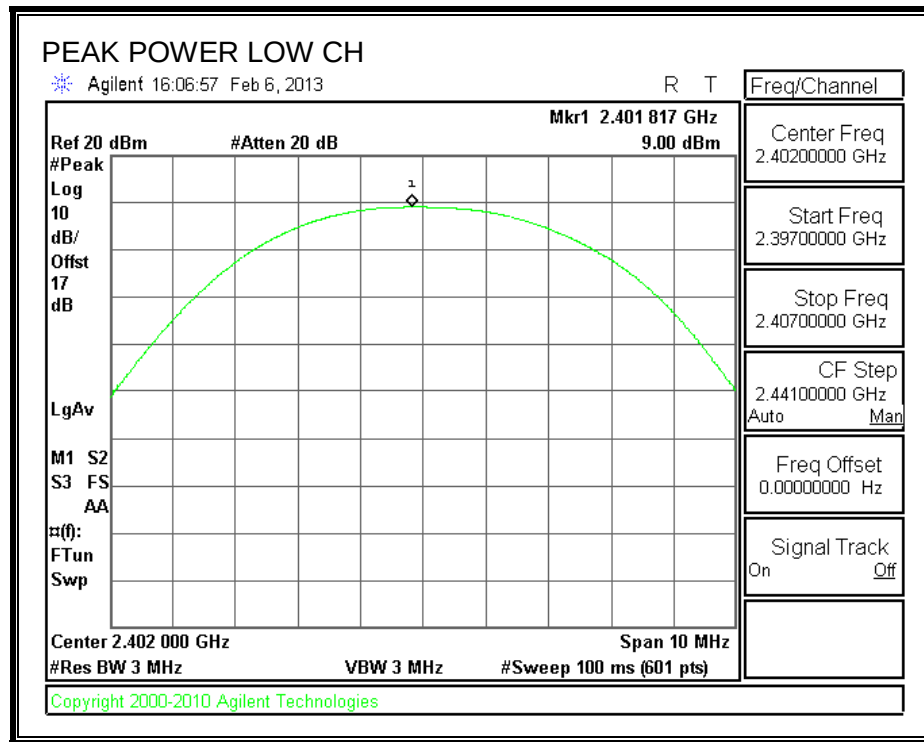
TEST PROCEDURE

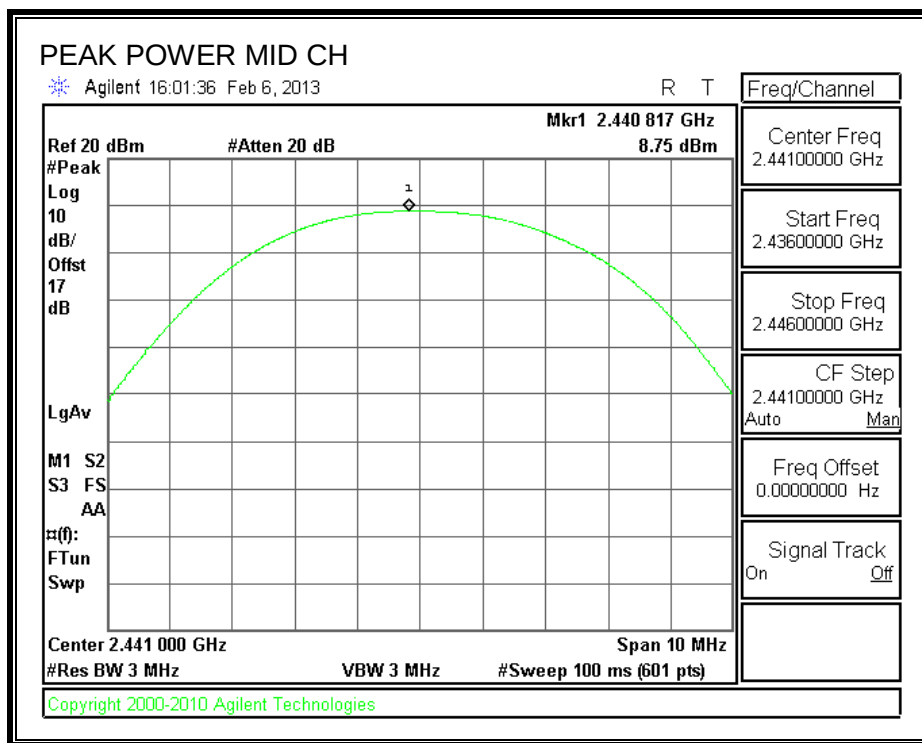
The transmitter output is connected to a spectrum analyzer the analyzer bandwidth is set to a value greater than the 20 dB bandwidth of the EUT.

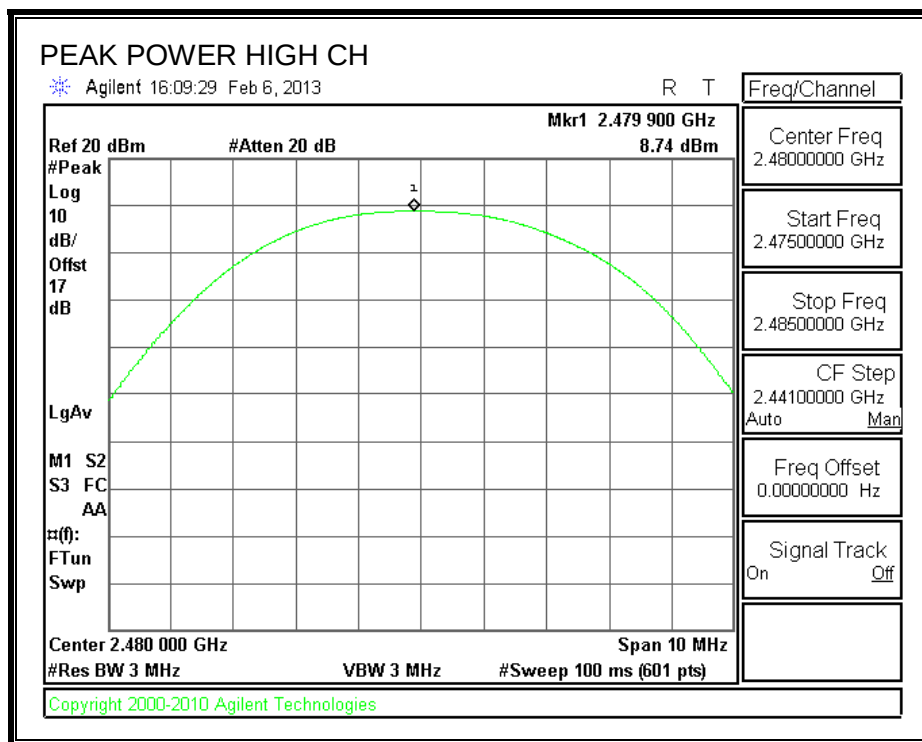
RESULTS

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	9.00	30	-21.00
Middle	2441	8.75	30	-21.25
High	2480	8.74	30	-21.26

OUTPUT POWER







7.1.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

Limit = -20 dBc

TEST PROCEDURE

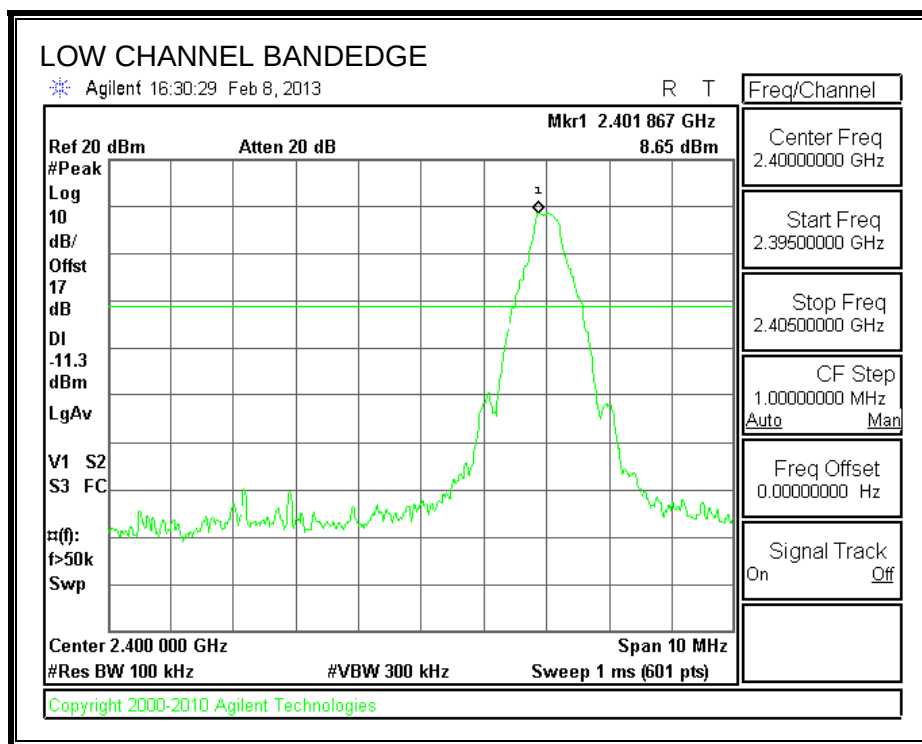
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

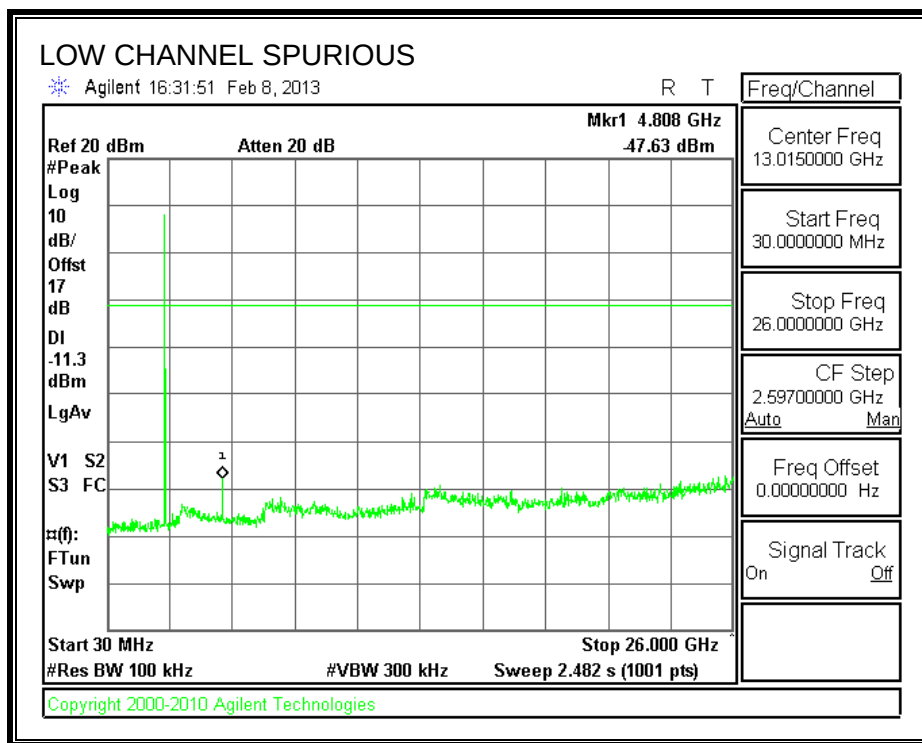
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

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

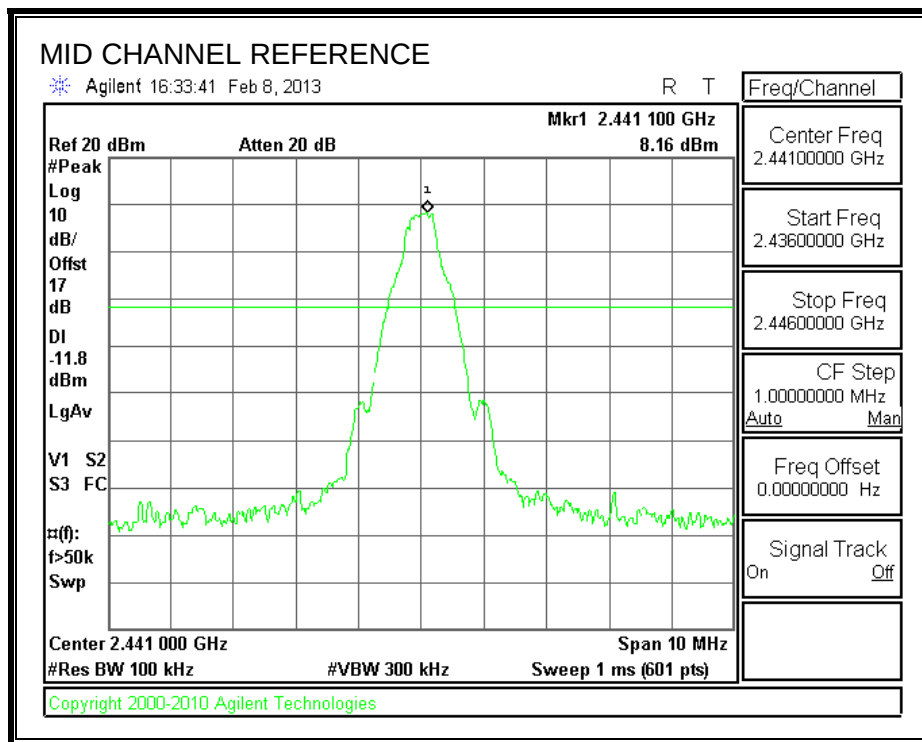
RESULTS

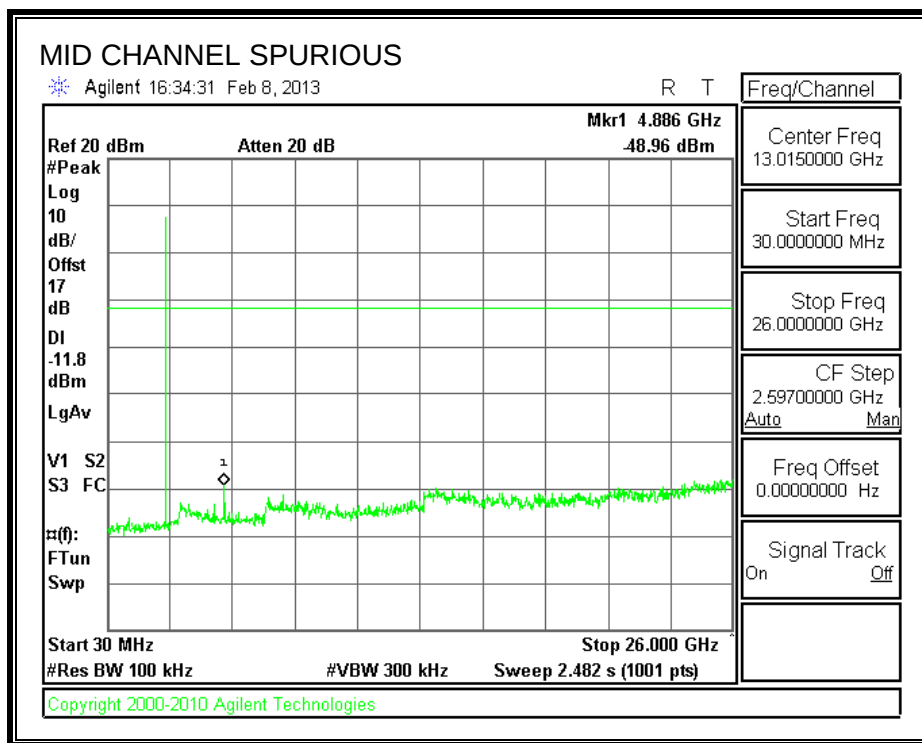
SPURIOUS EMISSIONS, LOW CHANNEL



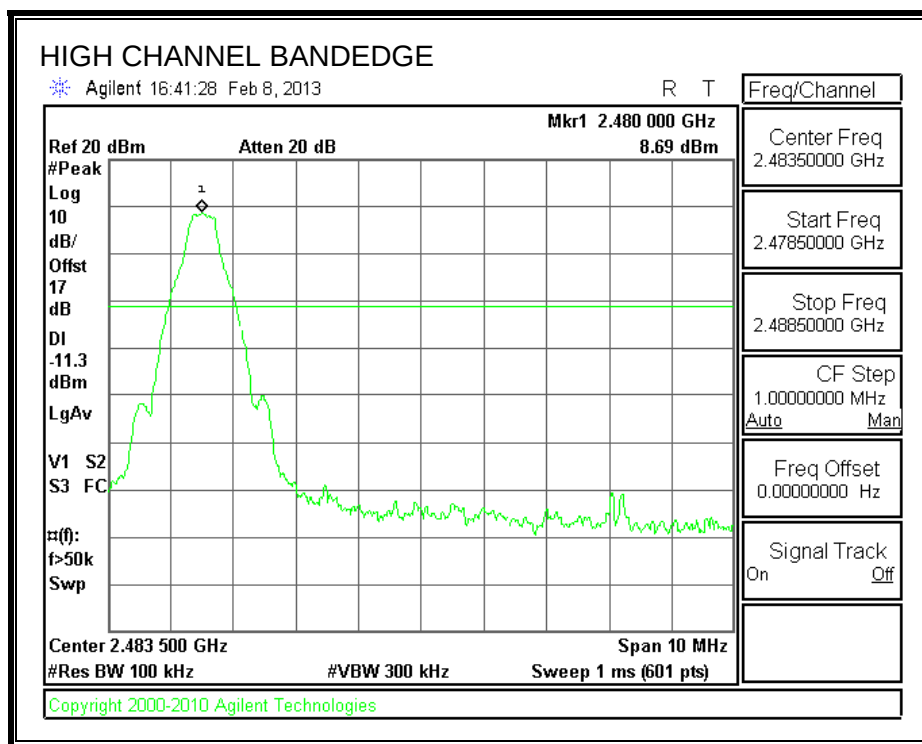


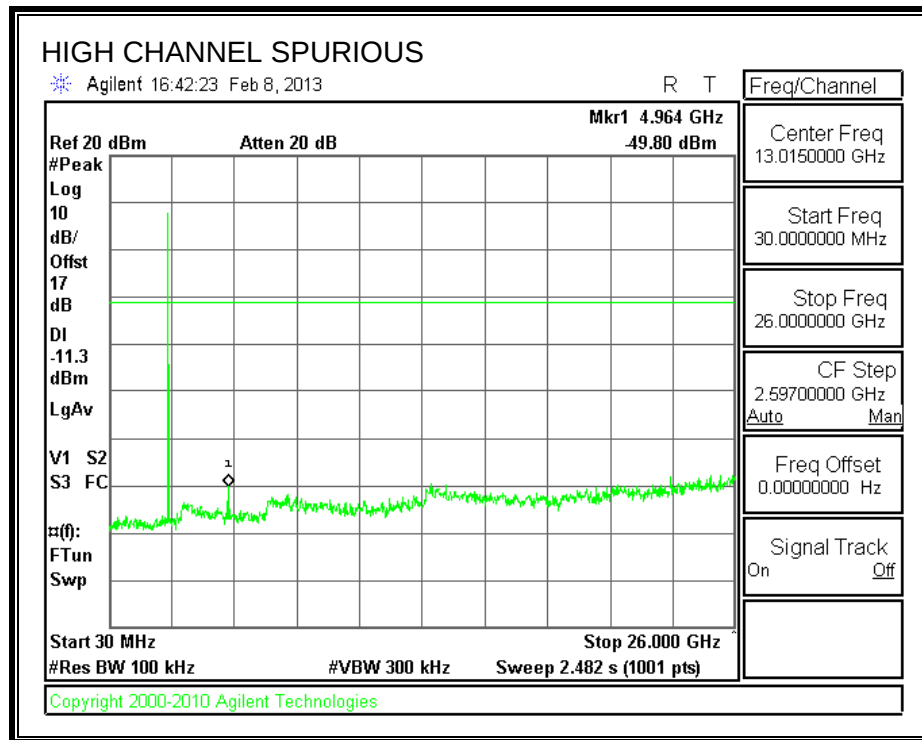
SPURIOUS EMISSIONS, MID CHANNEL



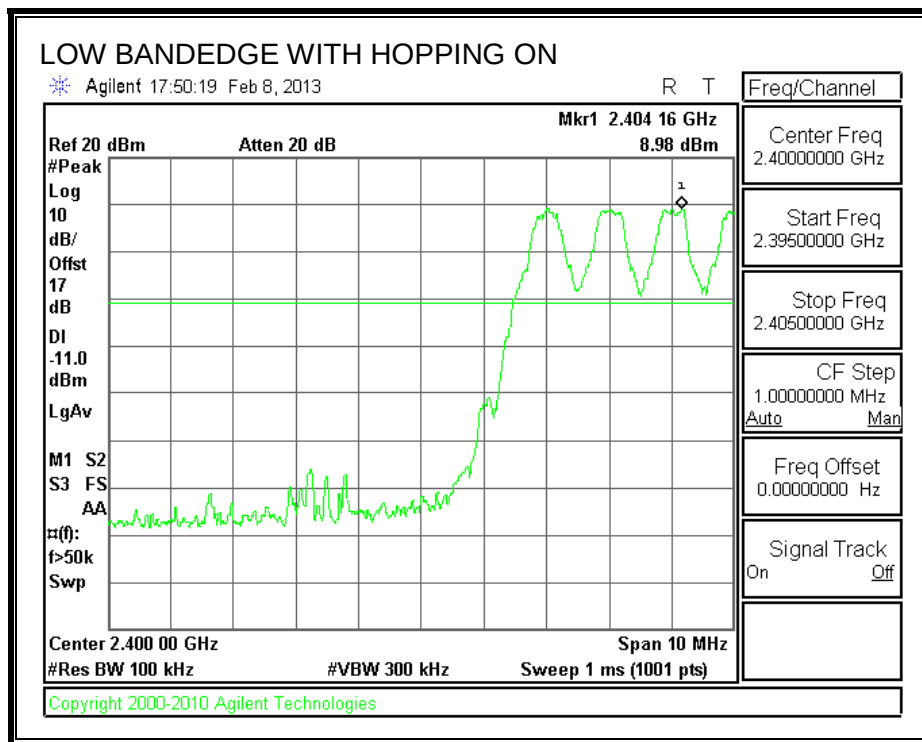


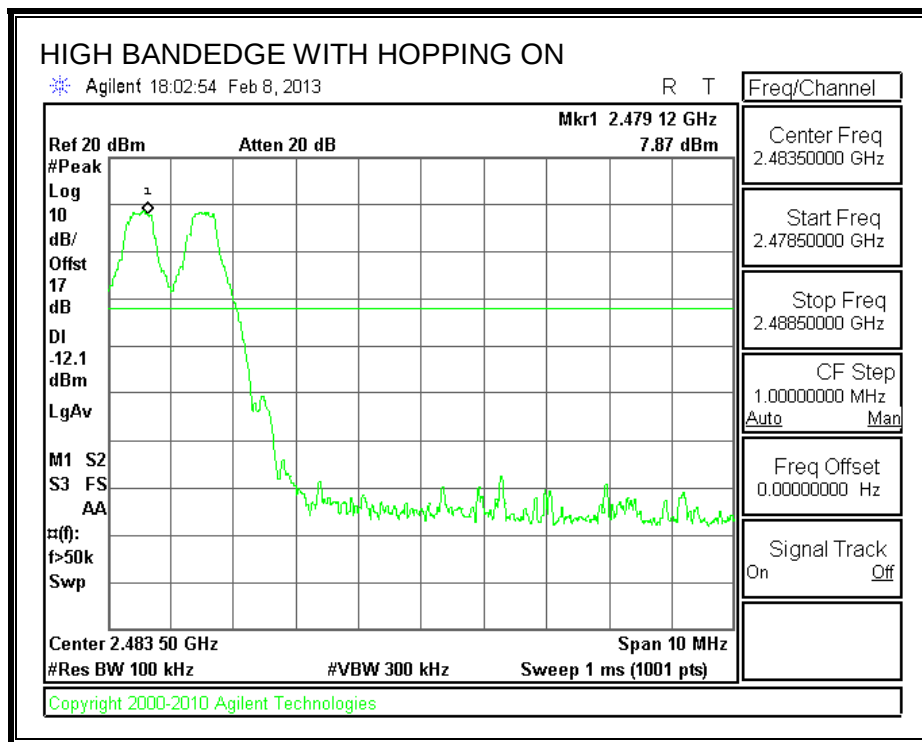
SPURIOUS EMISSIONS, HIGH CHANNEL





SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON





7.2. ENHANCED DATA RATE QPSK MODULATION

7.2.1. MAXIMUM 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.

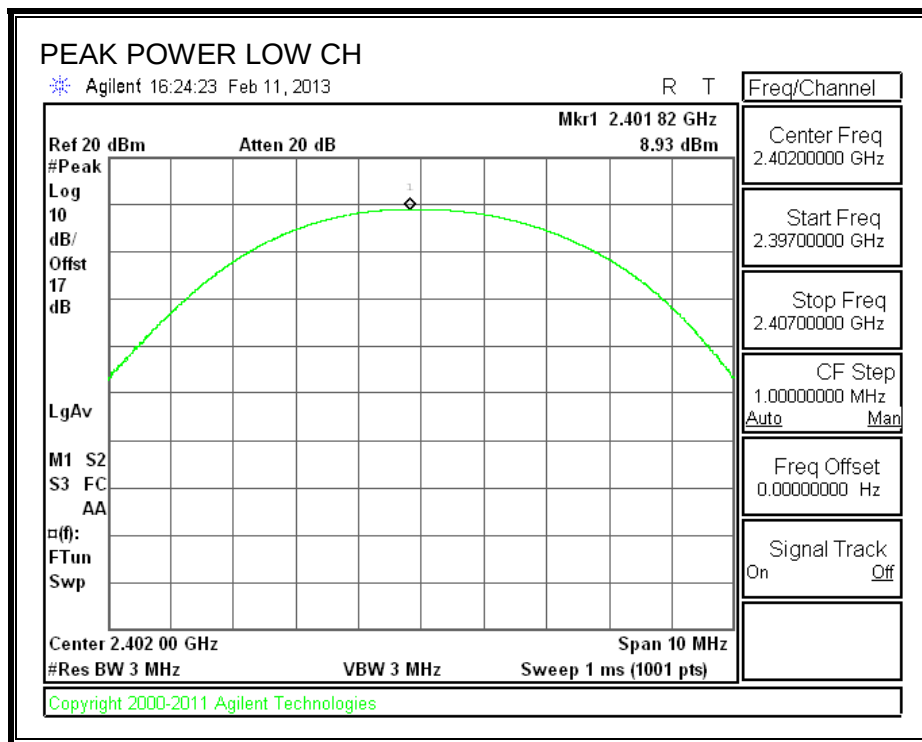
TEST PROCEDURE

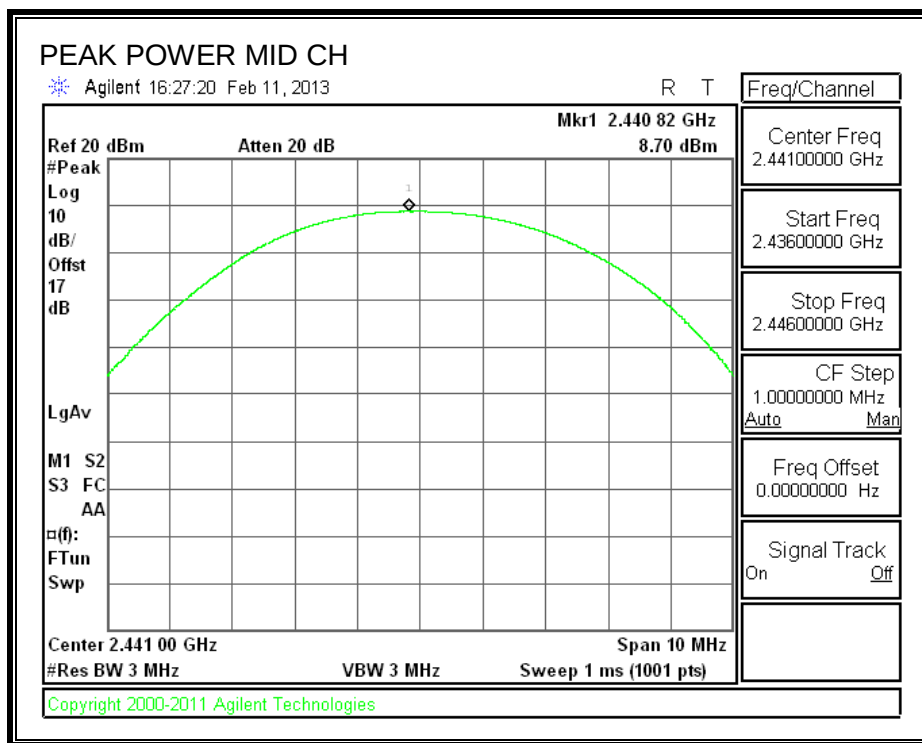
The transmitter output is connected to a spectrum analyzer the analyzer bandwidth is set to a value greater than the 20 dB bandwidth of the EUT.

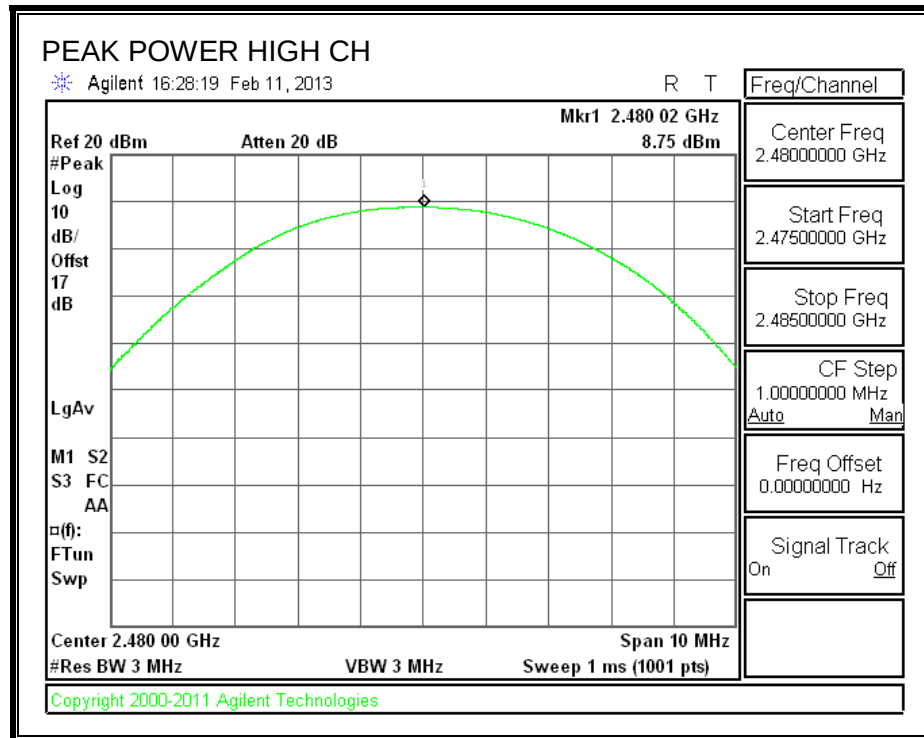
RESULTS

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	8.93	30	-21.07
Middle	2441	8.70	30	-21.30
High	2480	8.75	30	-21.25

OUTPUT POWER







7.3. ENHANCED DATA RATE 8PSK MODULATION

7.3.1. 20 dB AND 99% BANDWIDTH

LIMIT

None; for reporting purposes only.

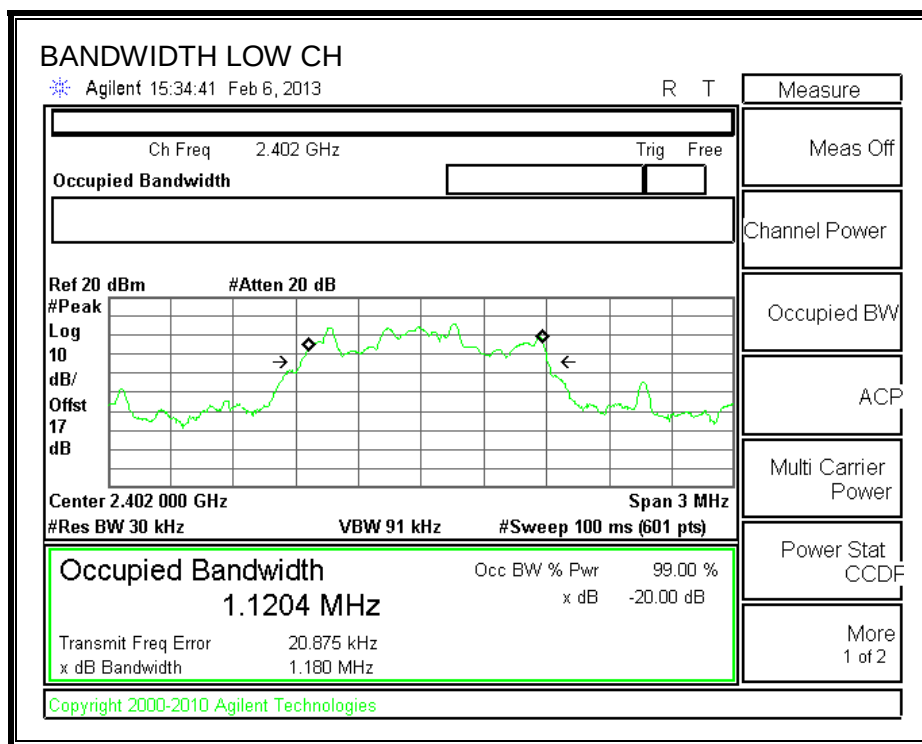
TEST PROCEDURE

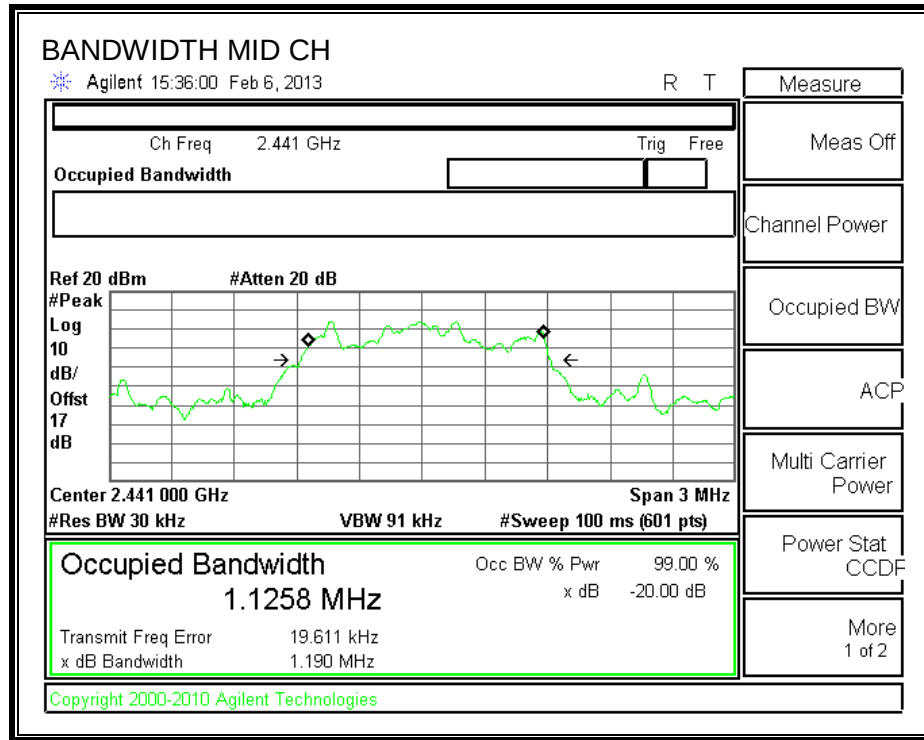
The transmitter output is connected to a spectrum analyzer. The RBW is set to $\geq 1\%$ of the 20 dB bandwidth. The VBW is set to $\geq$ RBW. The sweep time is coupled.

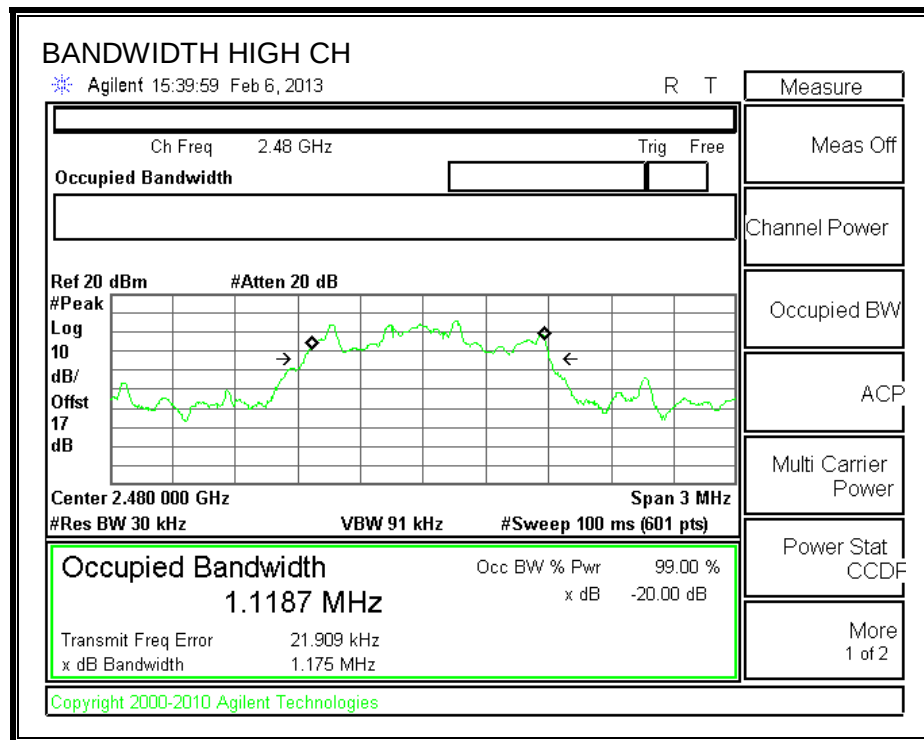
RESULTS

Channel	Frequency (MHz)	20 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2402	1.180	1.1274
Middle	2441	1.190	1.084
High	2480	1.175	1.1011

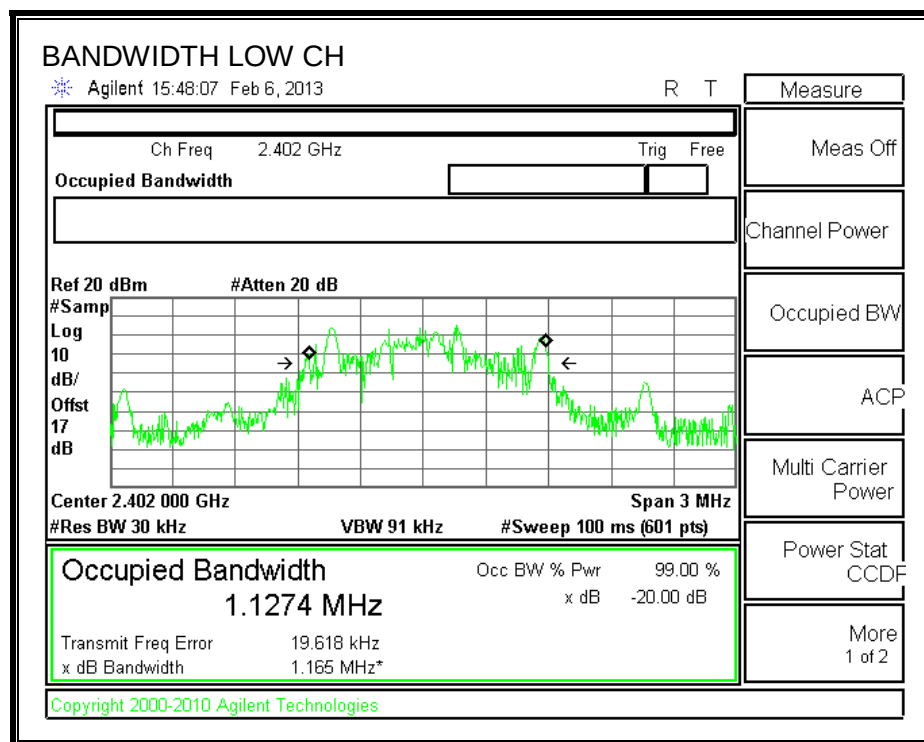
20 dB BANDWIDTH

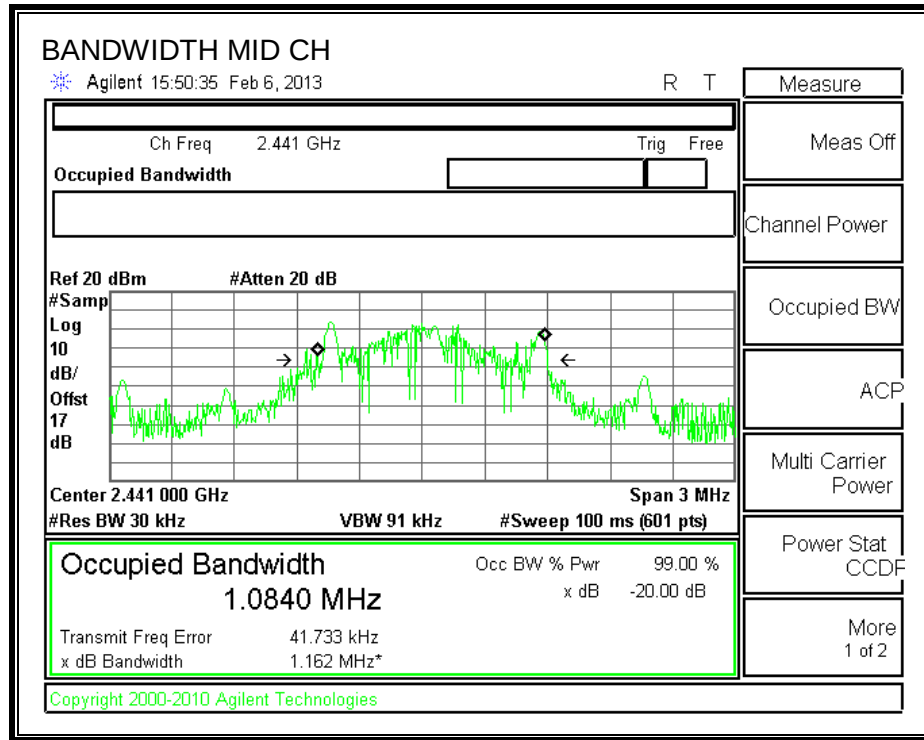


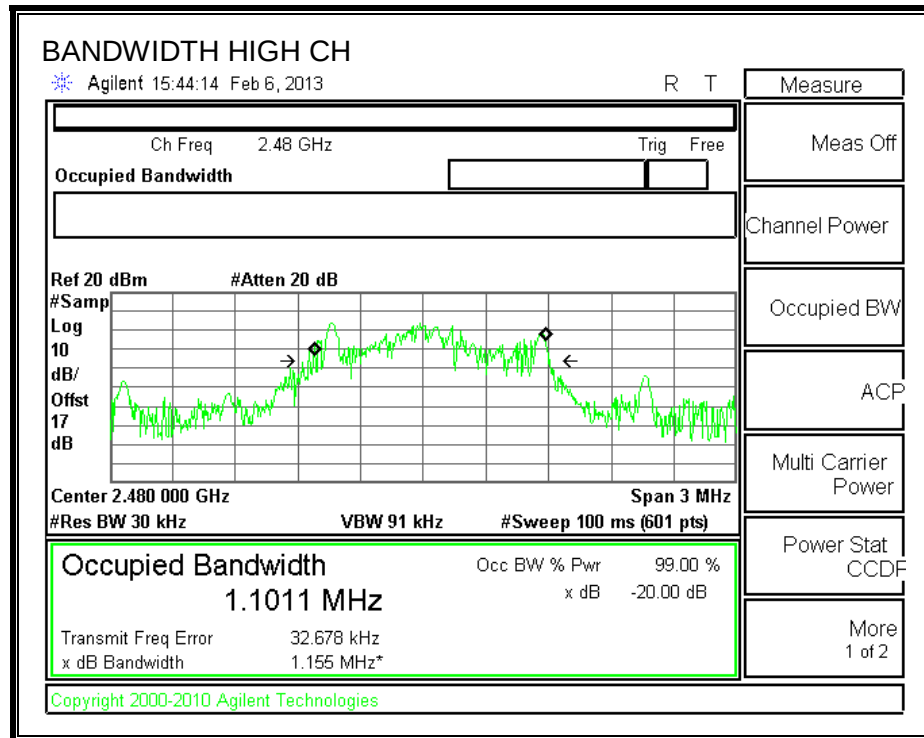




99% BANDWIDTH







7.3.2. 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 hopping channel, whichever is greater.

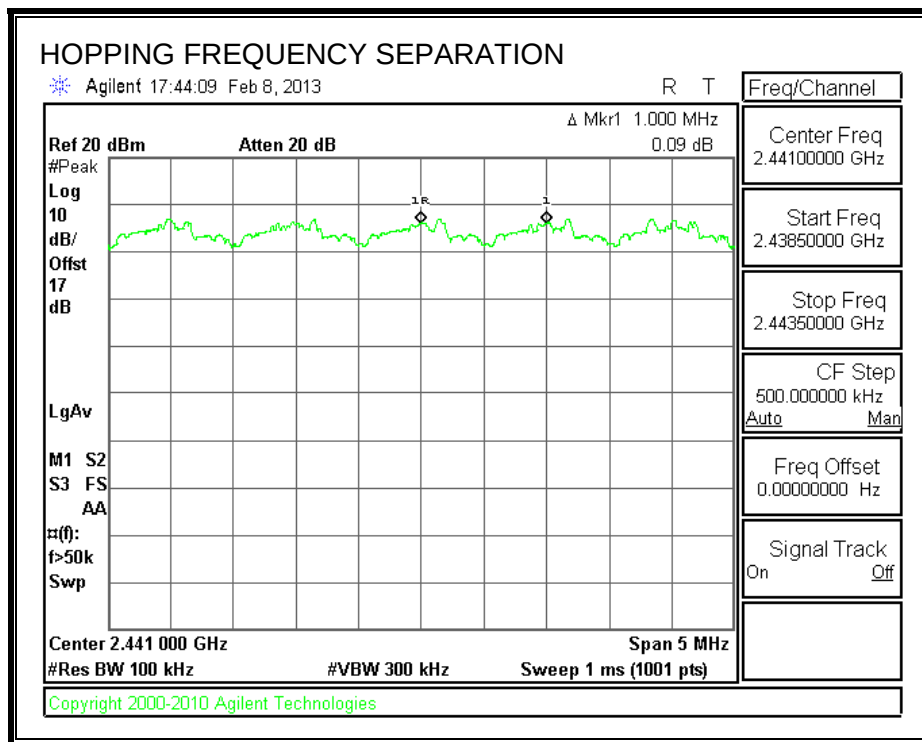
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than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



7.3.3. 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.

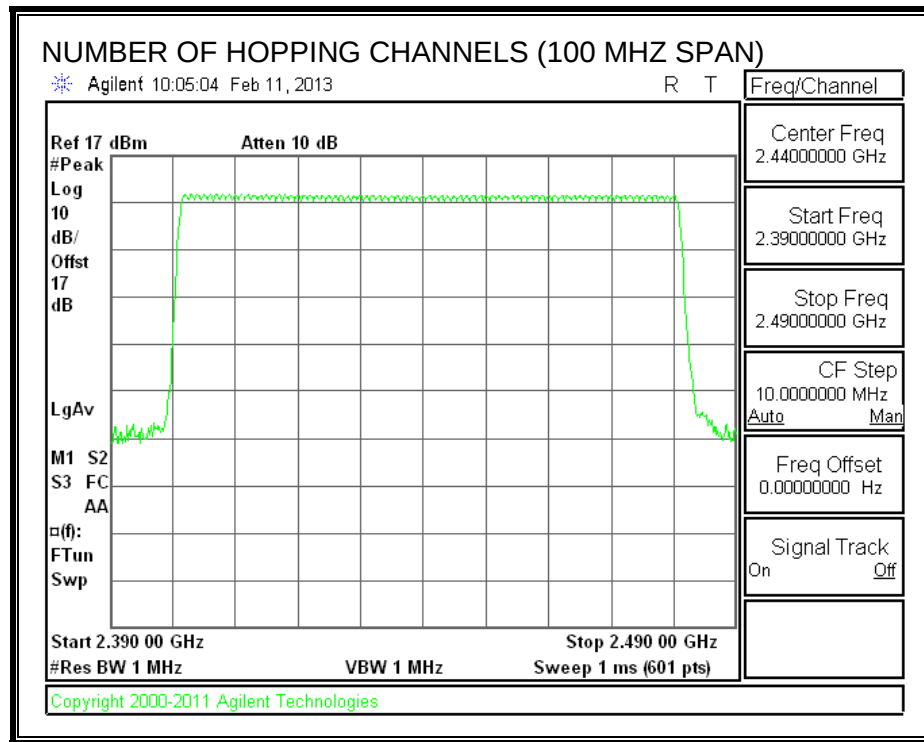
TEST PROCEDURE

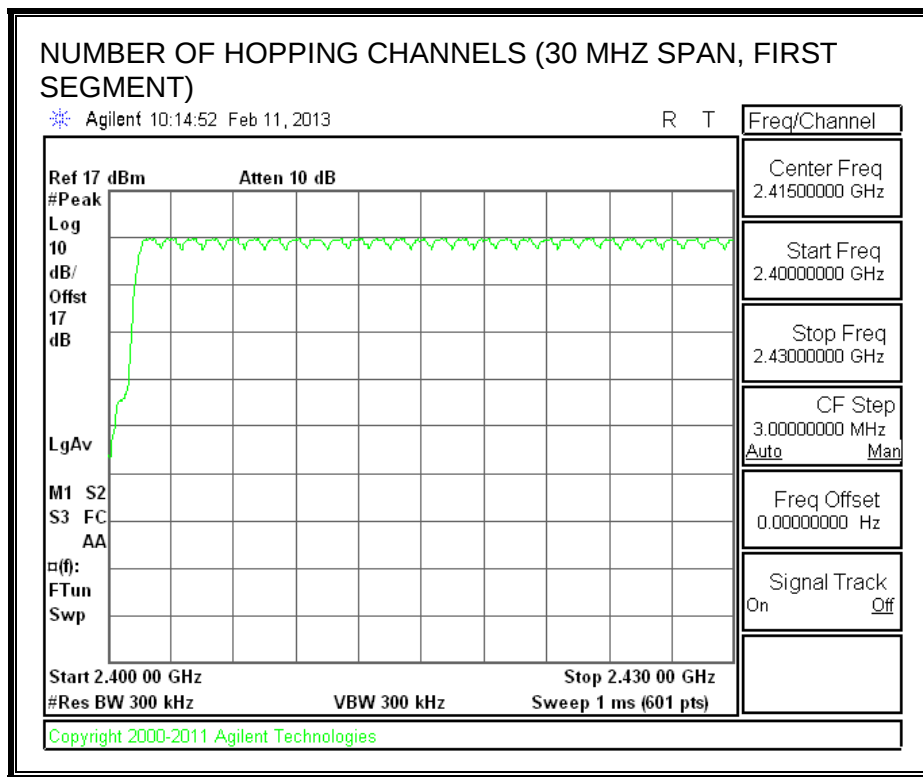
The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

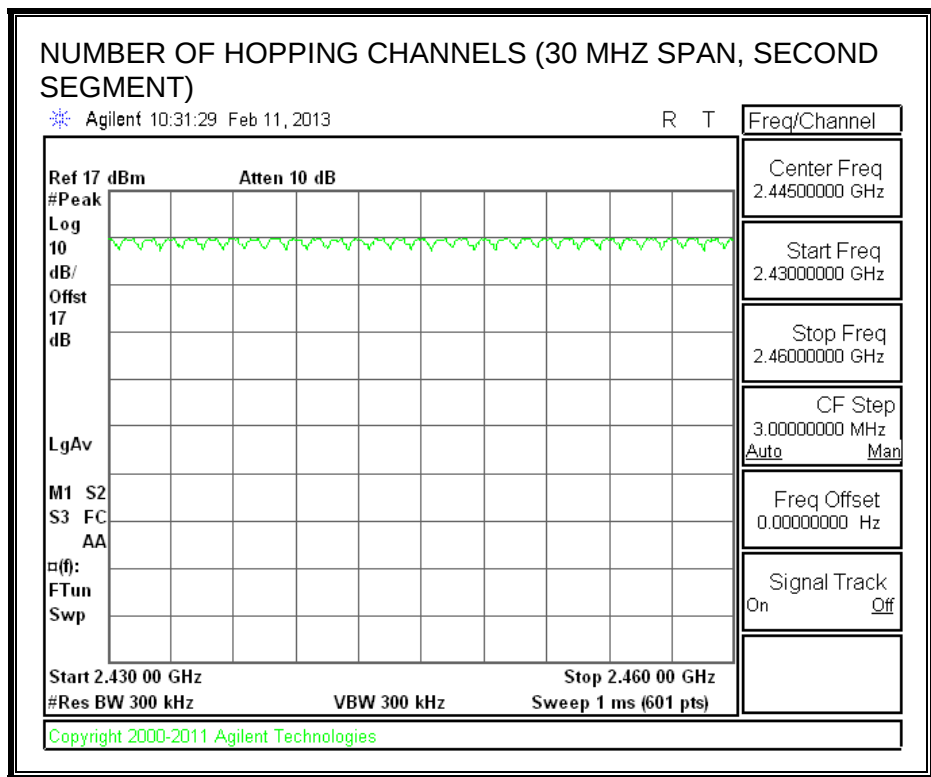
RESULTS

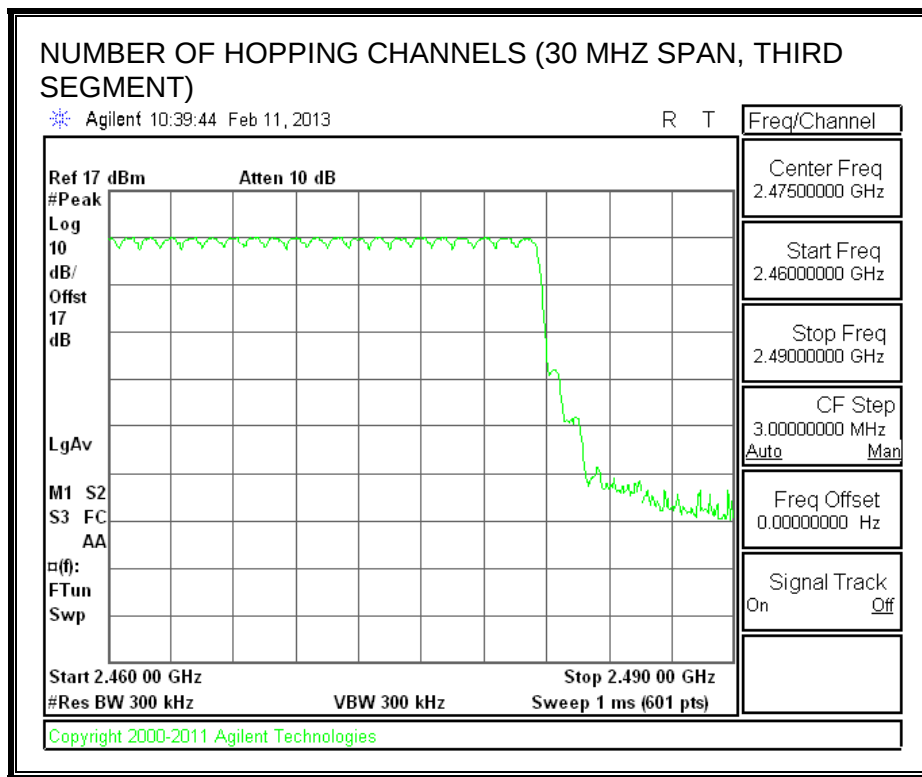
Normal Mode: 79 Channels observed.

NUMBER OF HOPPING CHANNELS









7.3.4. 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.

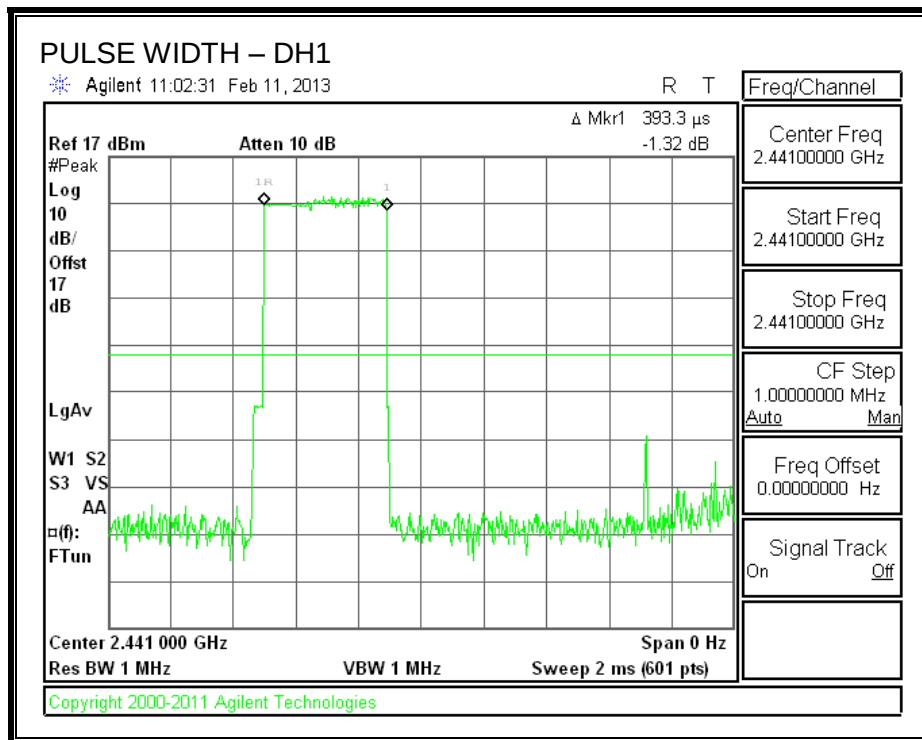
The average time of occupancy in the specified 31.6 second period (79 channels * 0.4 s) is equal to $10 * (\# \text{ of pulses in } 3.16 \text{ s}) * \text{pulse width}$.

RESULTS

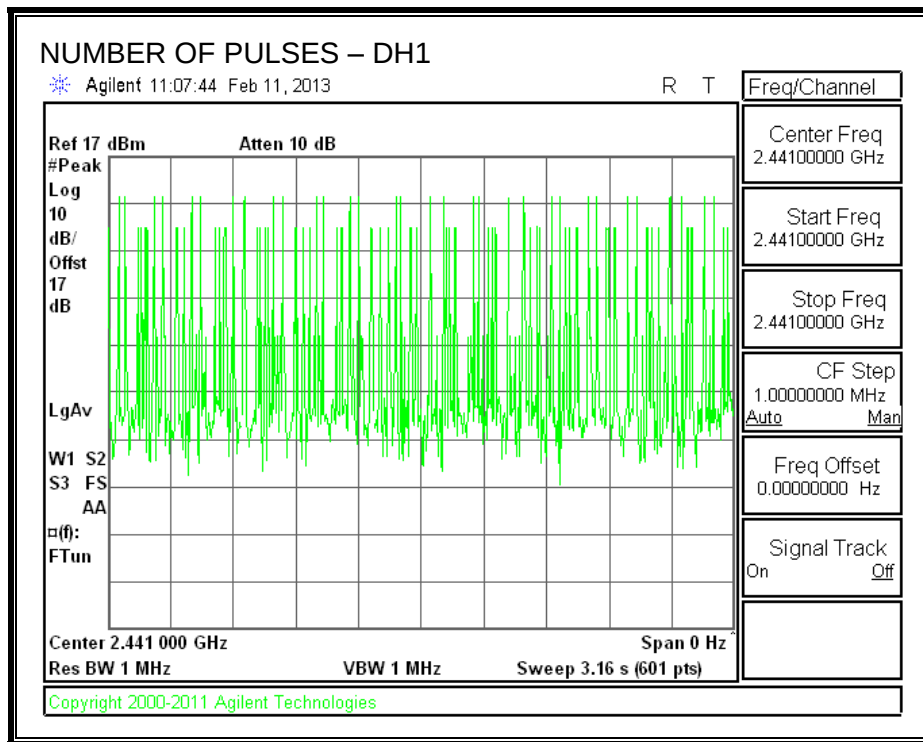
8PSK (EDR) Mode

DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of (sec)	Limit (sec)	Margin (sec)
DH1	0.3933	32	0.126	0.4	-0.274
DH3	1.642	17	0.279	0.4	-0.121
DH5	2.892	11	0.318	0.4	-0.082

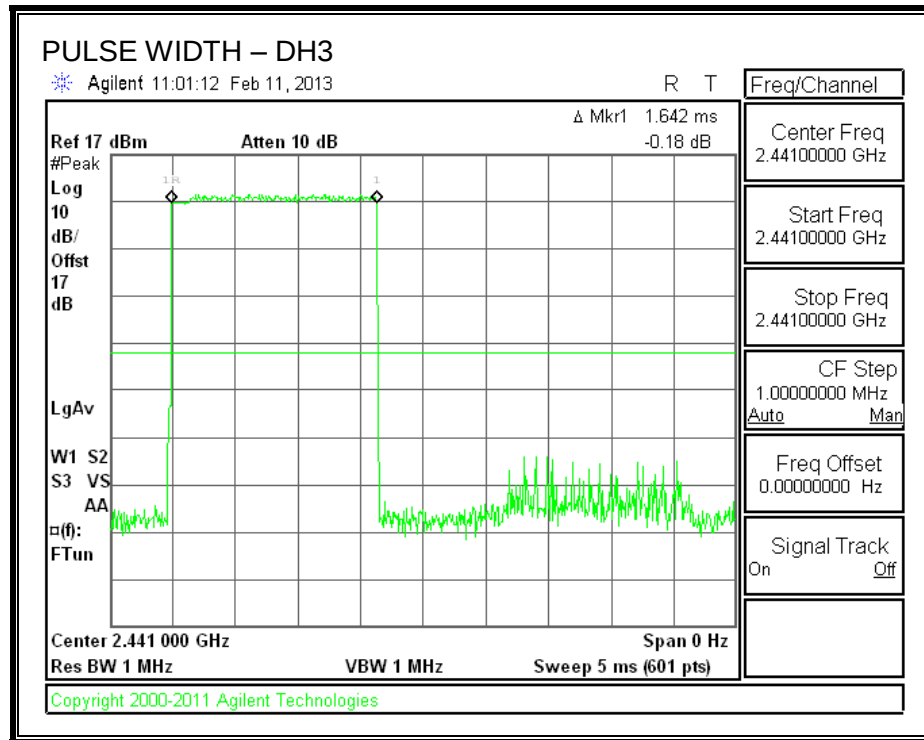
PULSE WIDTH - DH1



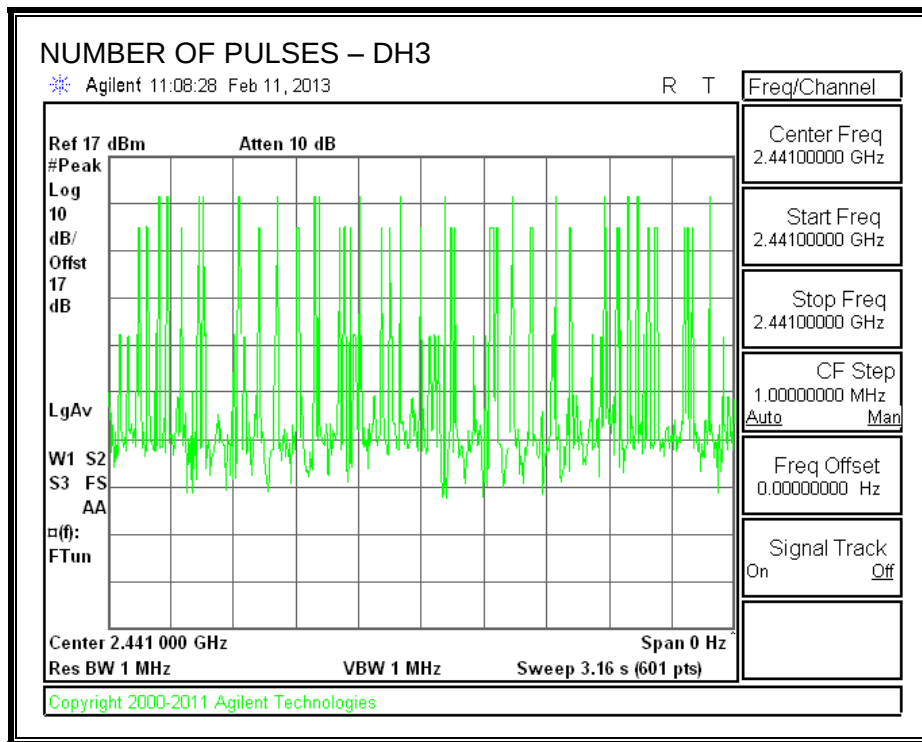
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH1



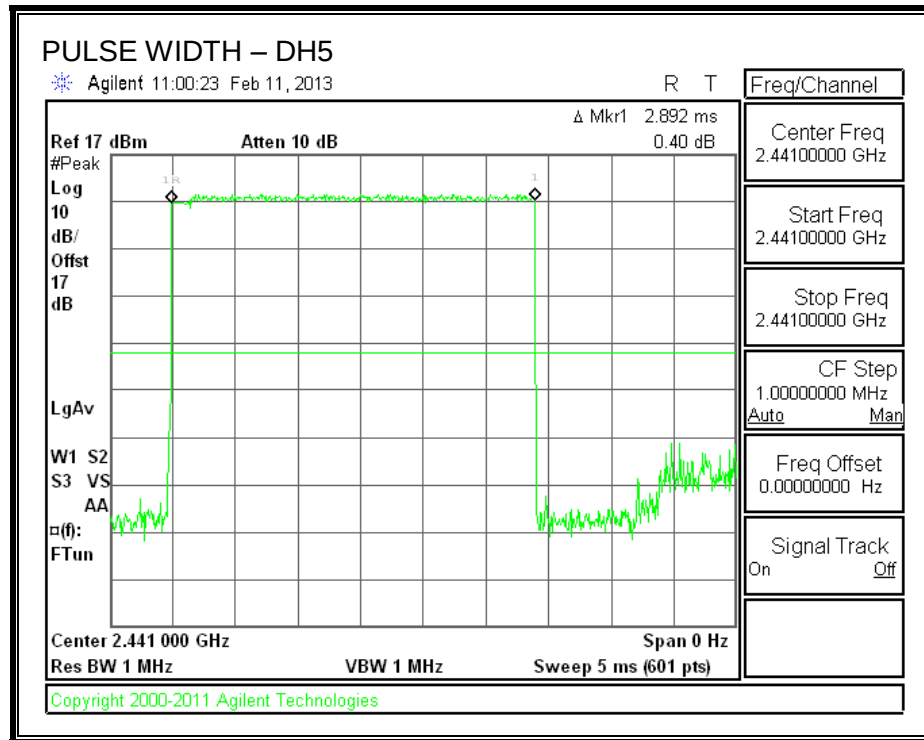
PULSE WIDTH – DH3



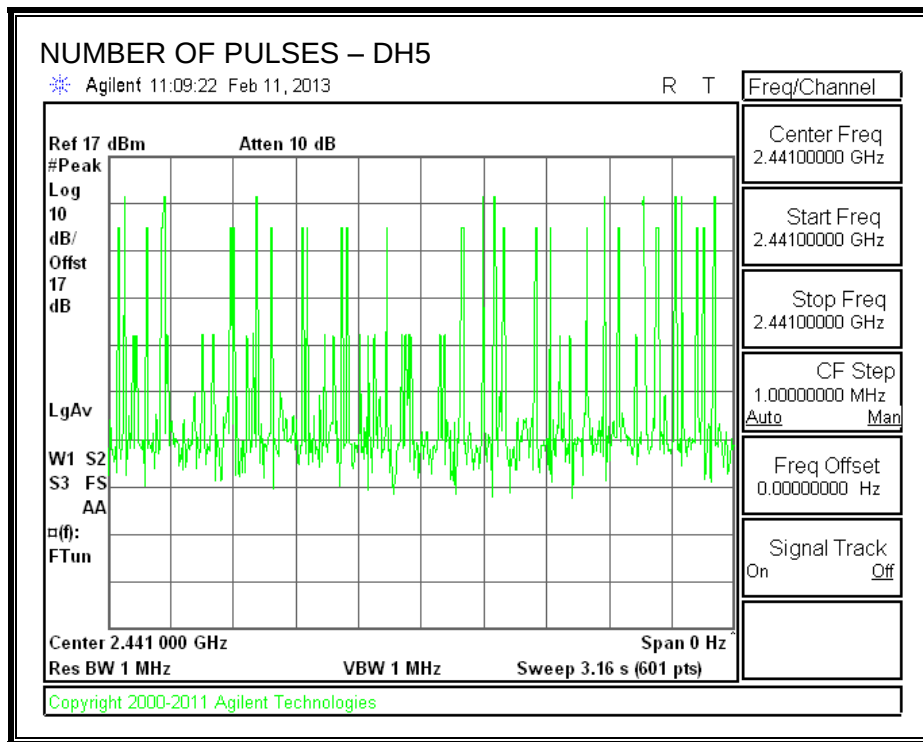
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH3



PULSE WIDTH – DH5



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH5



7.3.5. MAXIMUM 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.

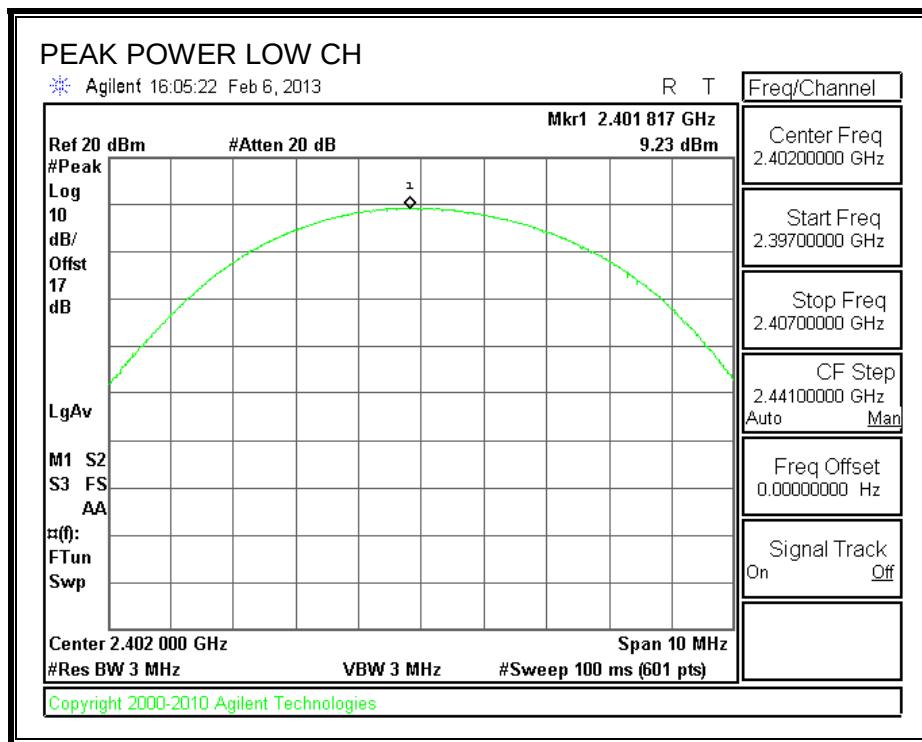
TEST PROCEDURE

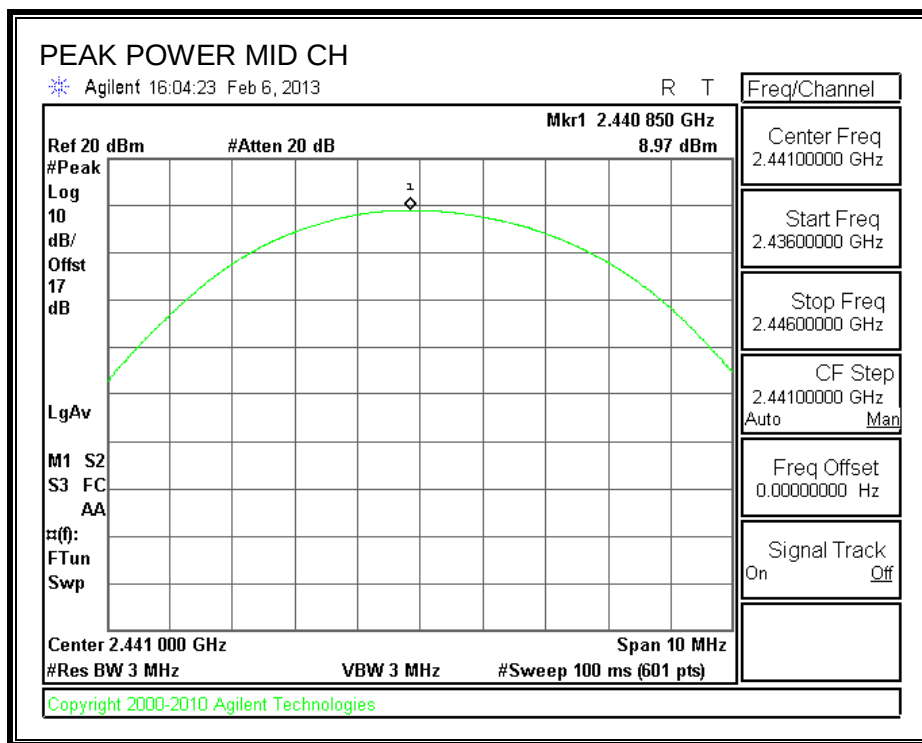
The transmitter output is connected to a spectrum analyzer the analyzer bandwidth is set to a value greater than the 20 dB bandwidth of the EUT.

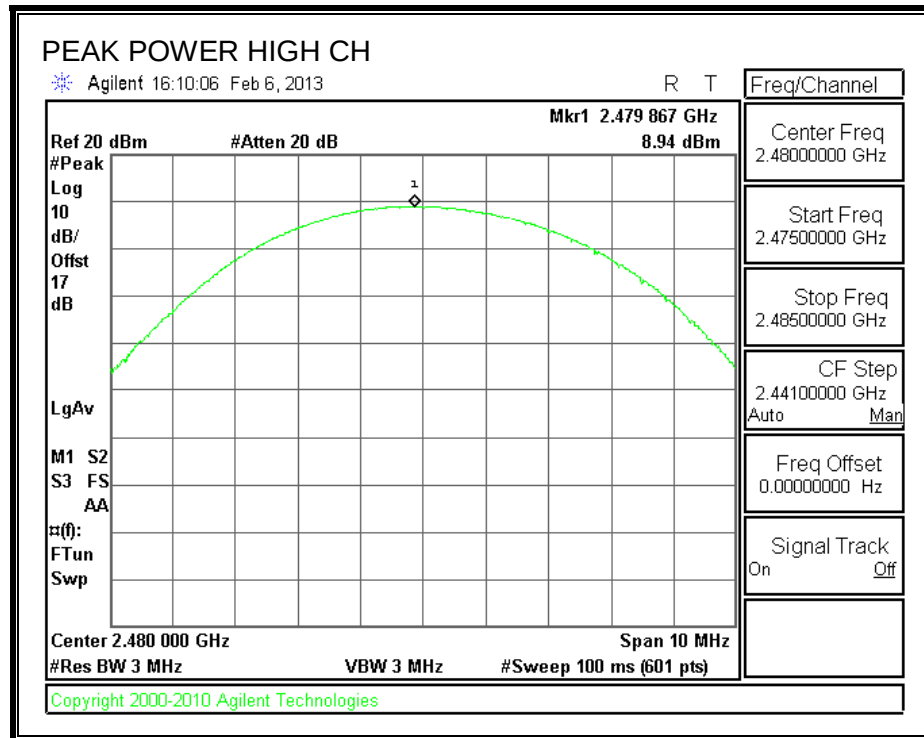
RESULTS

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	9.23	30	-20.77
Middle	2441	8.97	30	-21.03
High	2480	8.94	30	-21.06

OUTPUT POWER







7.3.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

Limit = -20 dBc

TEST PROCEDURE

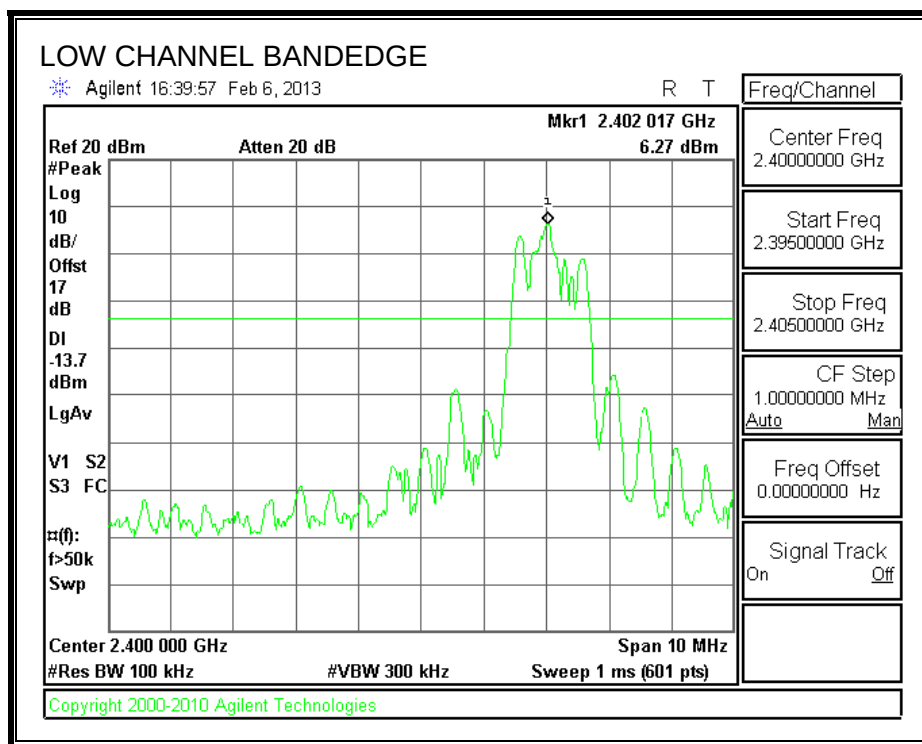
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

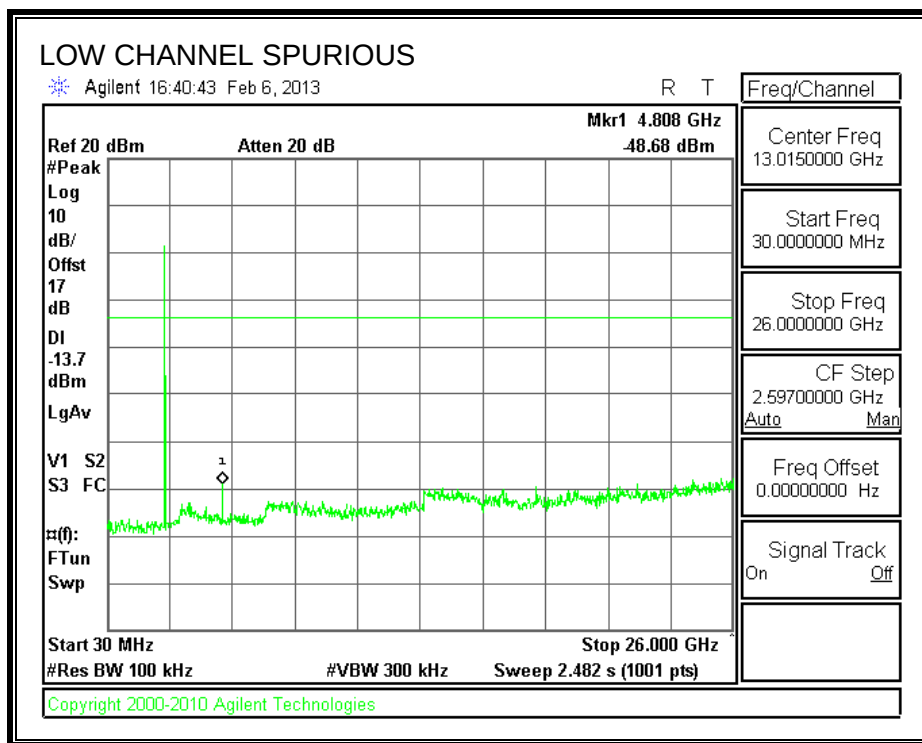
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

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

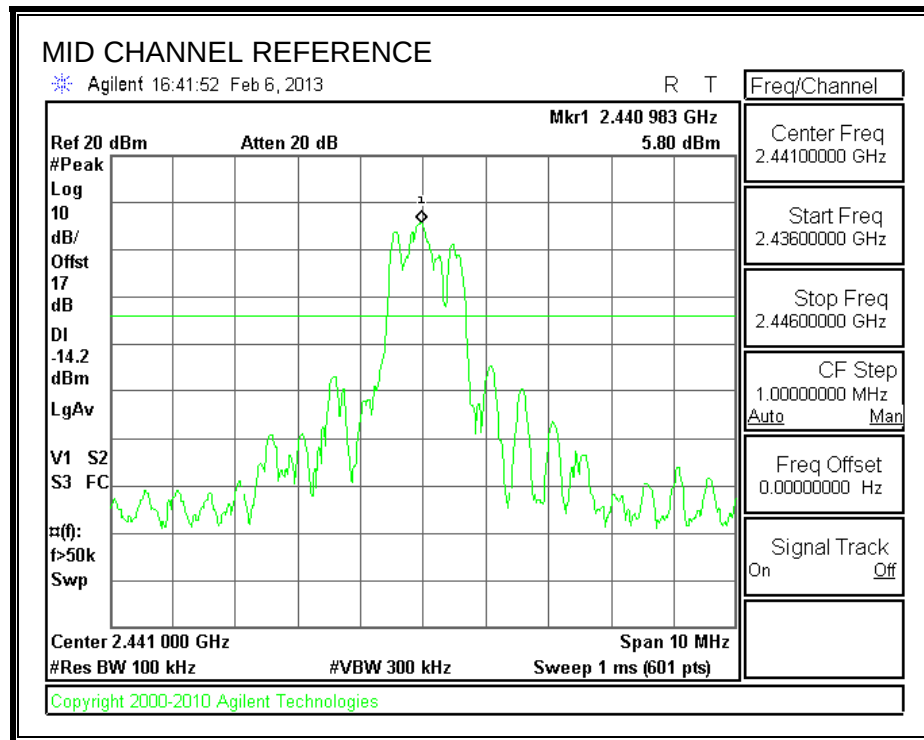
RESULTS

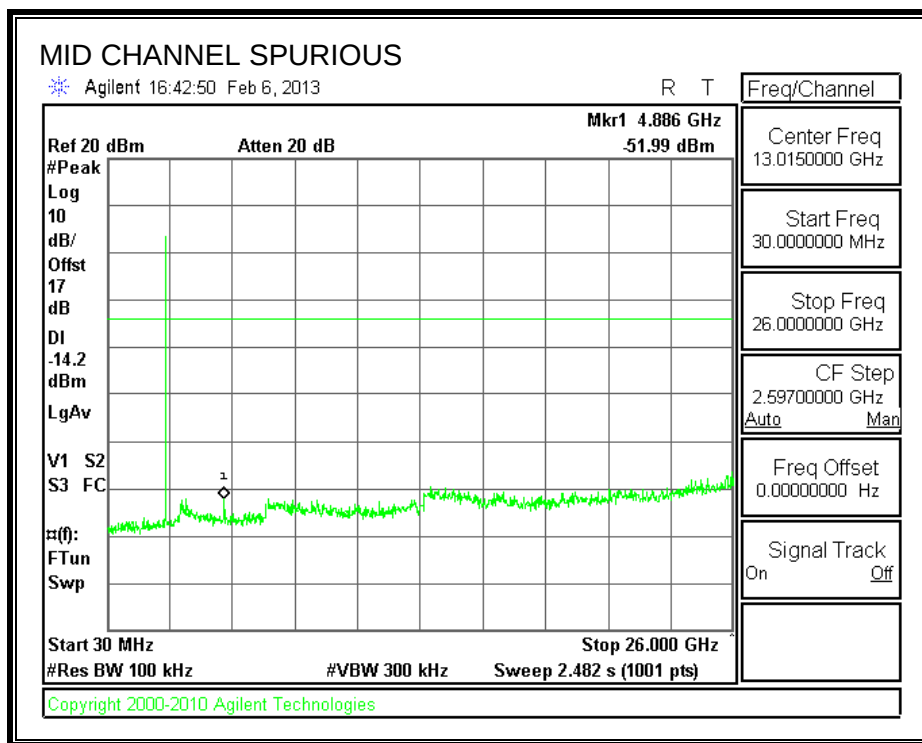
SPURIOUS EMISSIONS, LOW CHANNEL



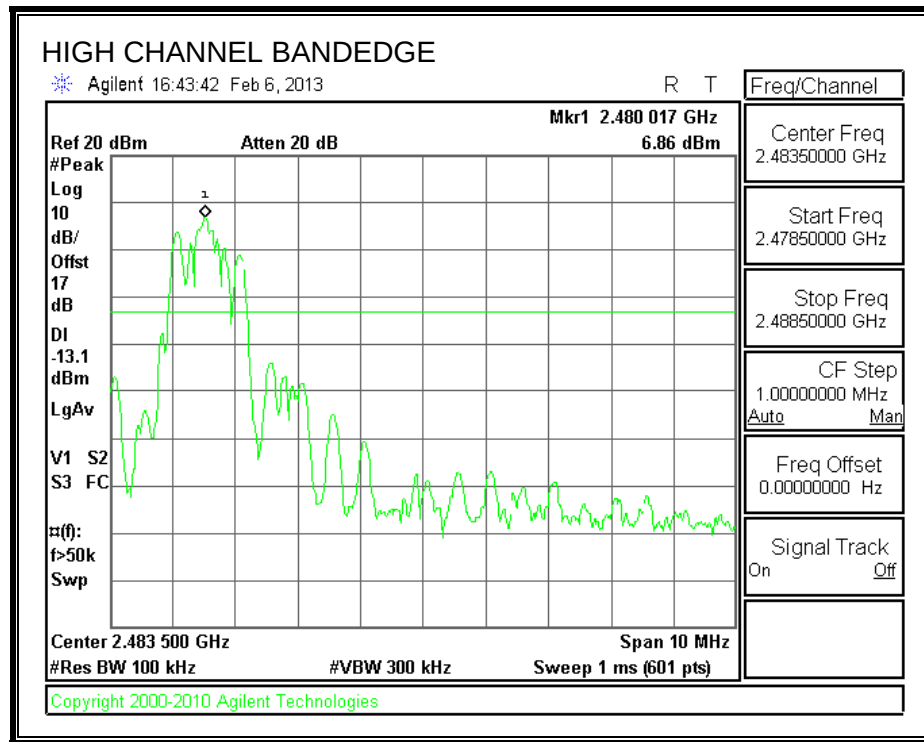


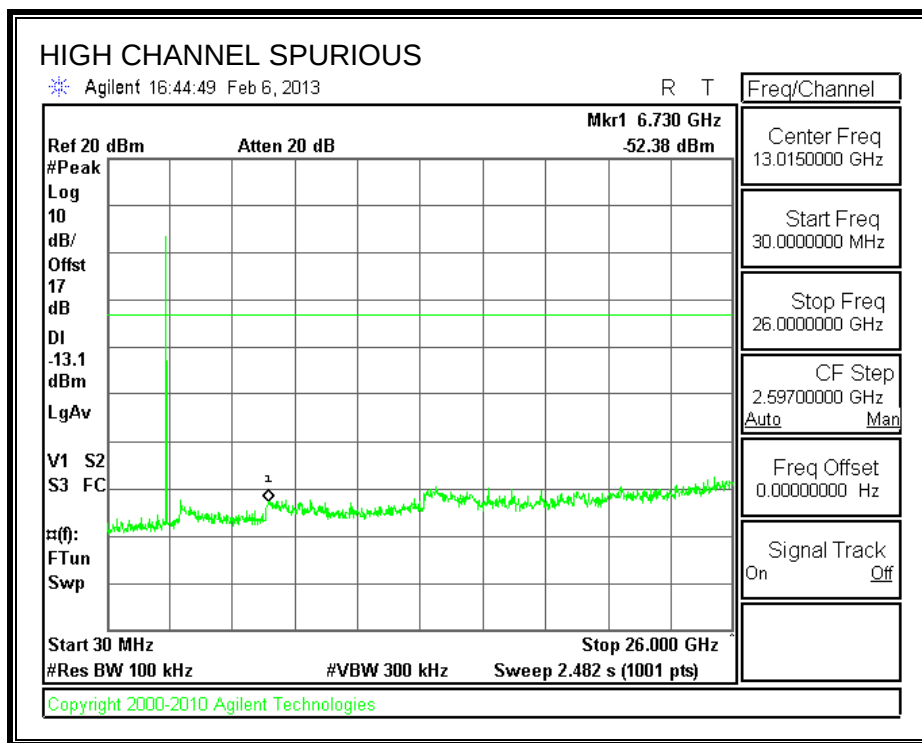
SPURIOUS EMISSIONS, MID CHANNEL



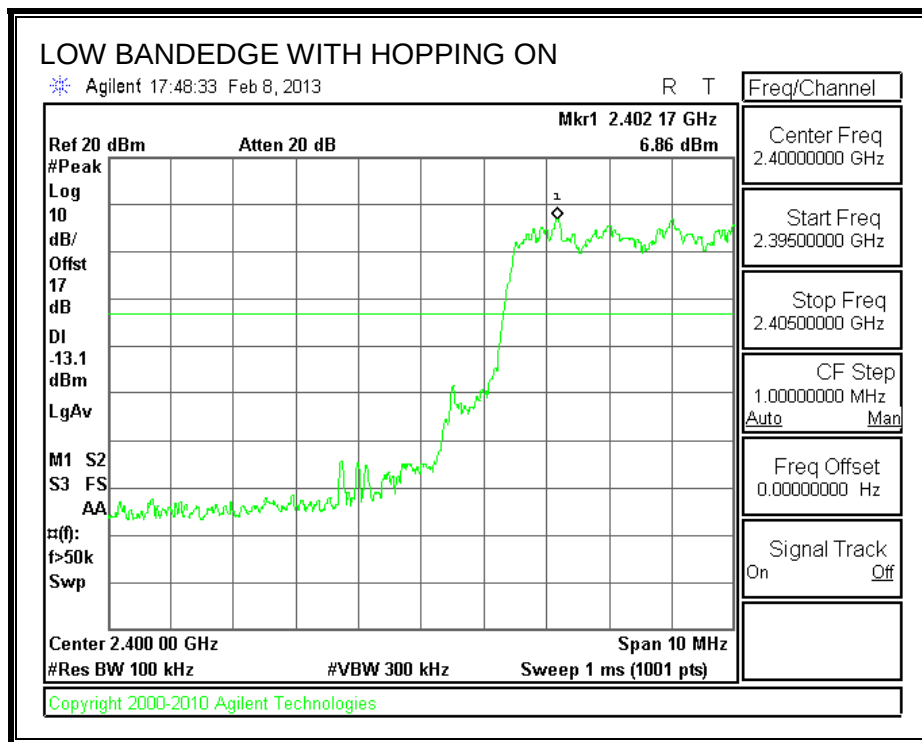


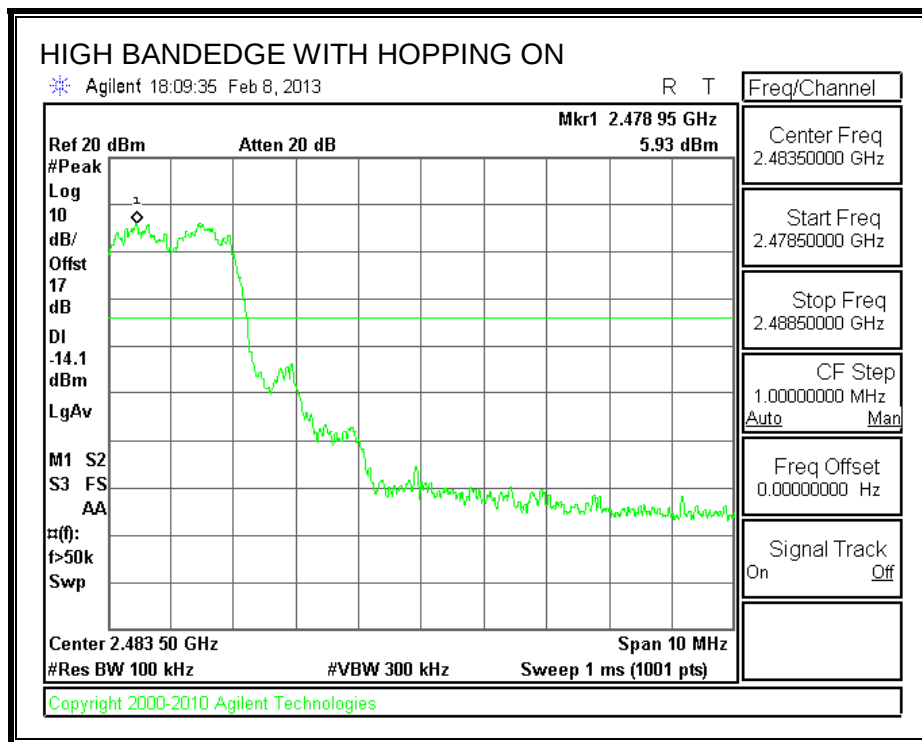
SPURIOUS EMISSIONS, HIGH CHANNEL





SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON





8. RADIATED TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

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

TEST PROCEDURE

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

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

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

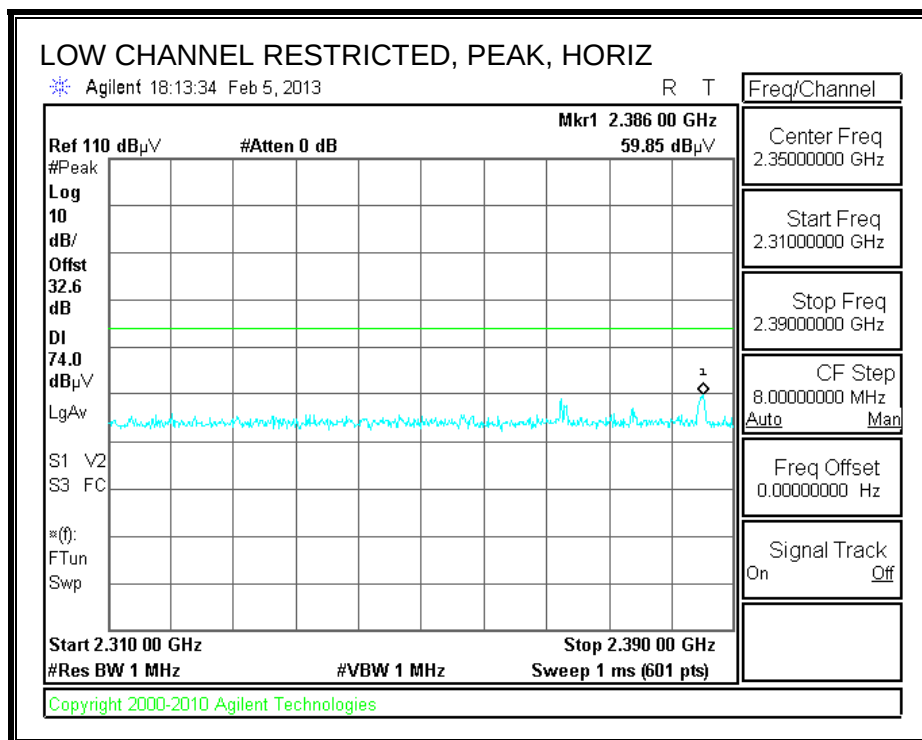
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

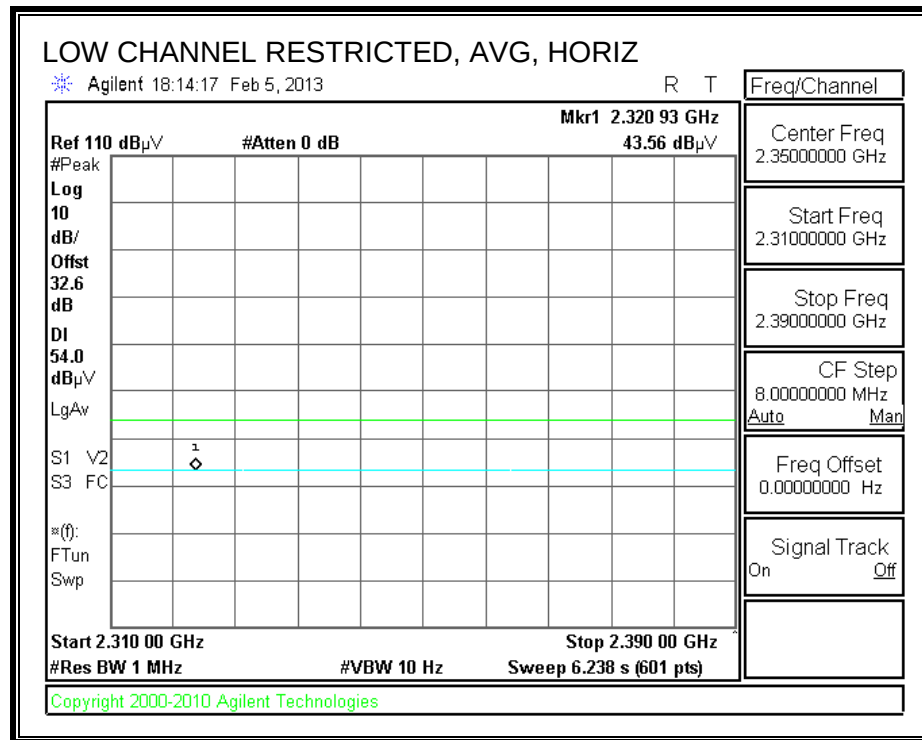
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

8.2. TRANSMITTER ABOVE 1 GHz

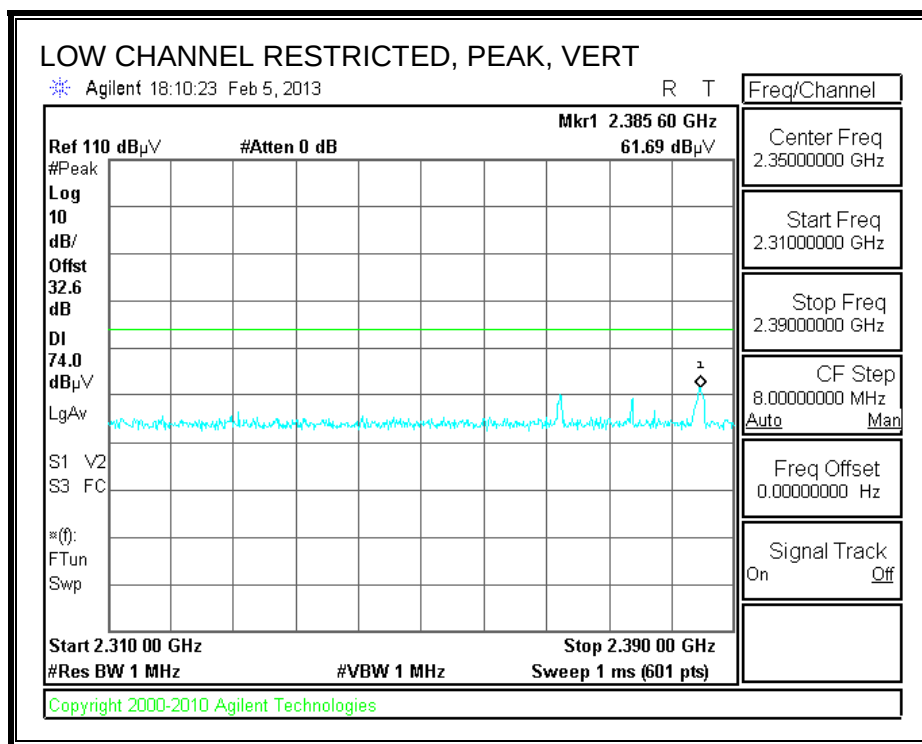
8.2.1. BASIC DATA RATE GFSK MODULATION

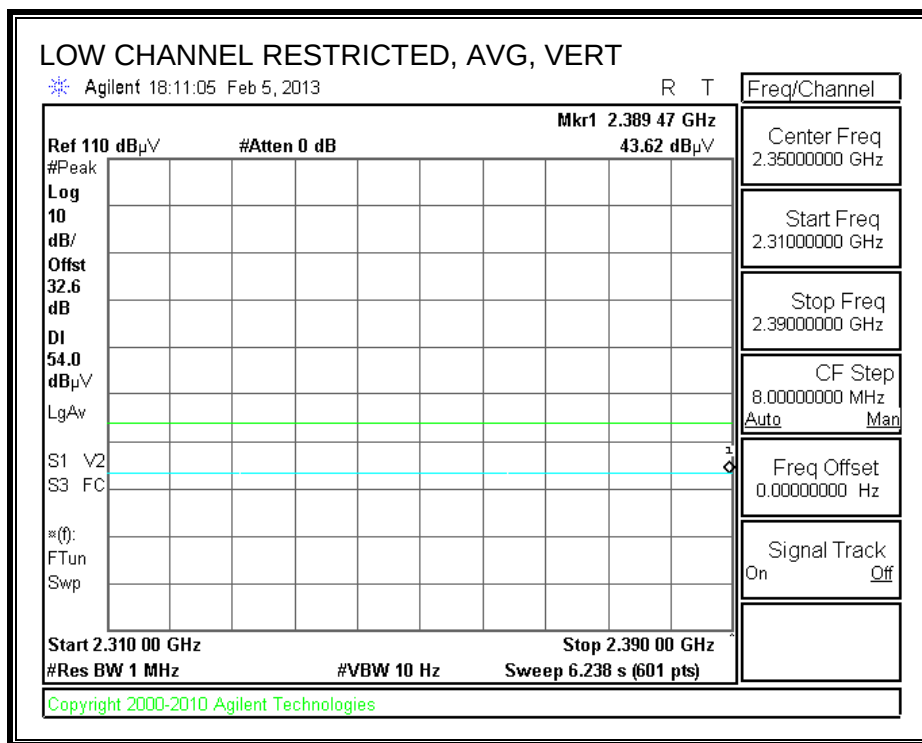
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



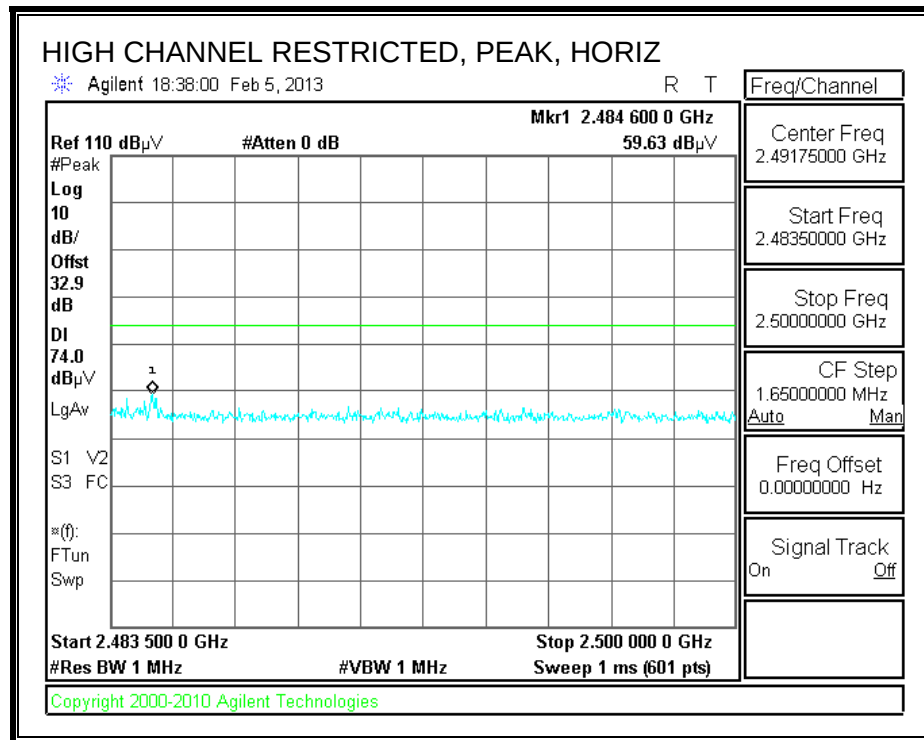


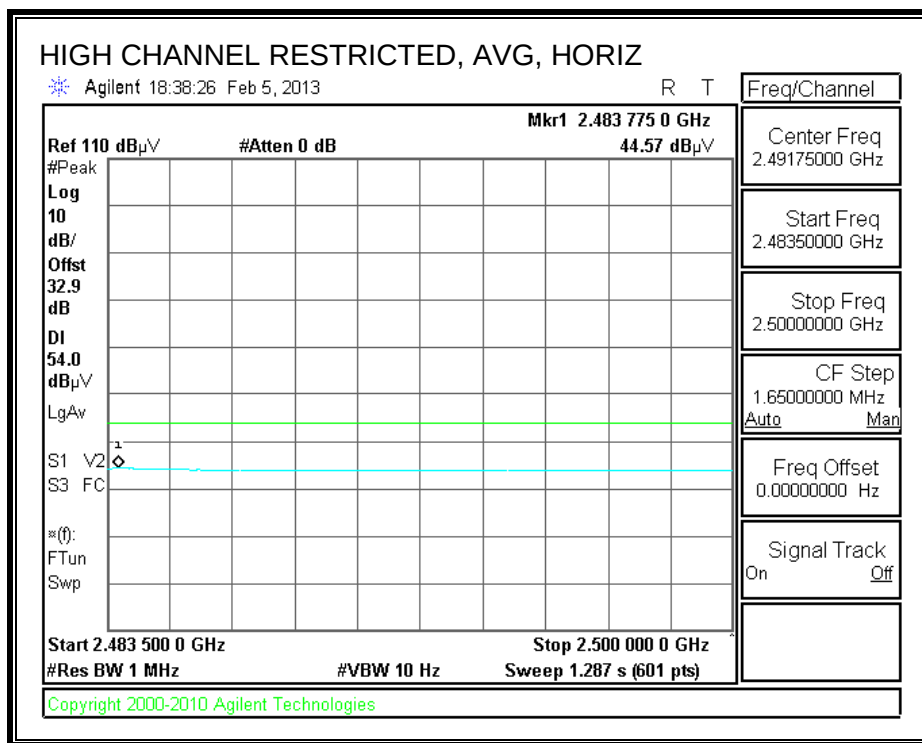
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



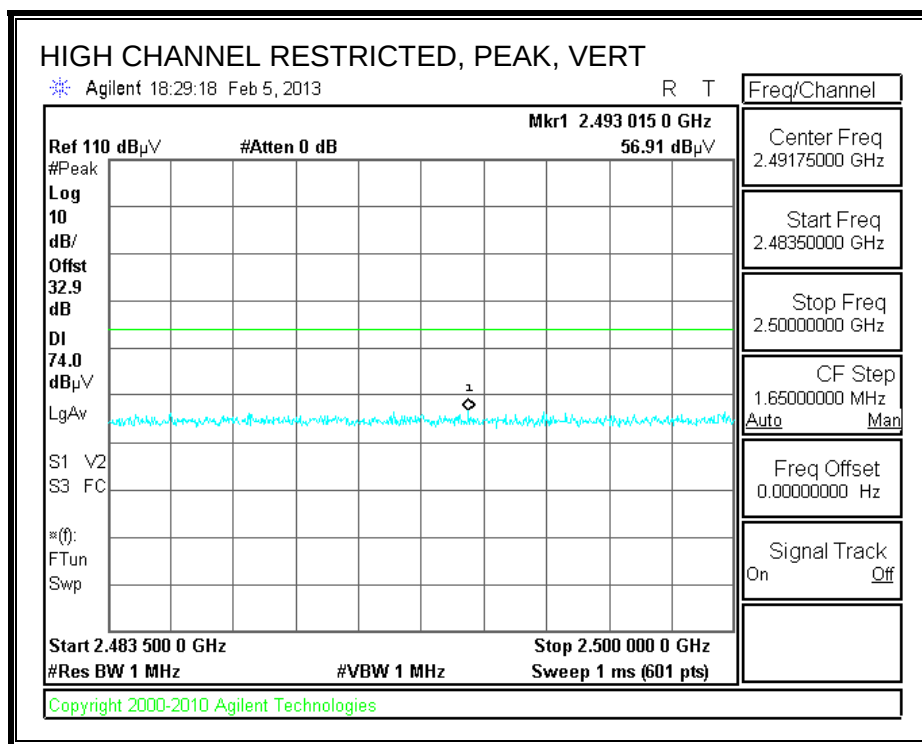


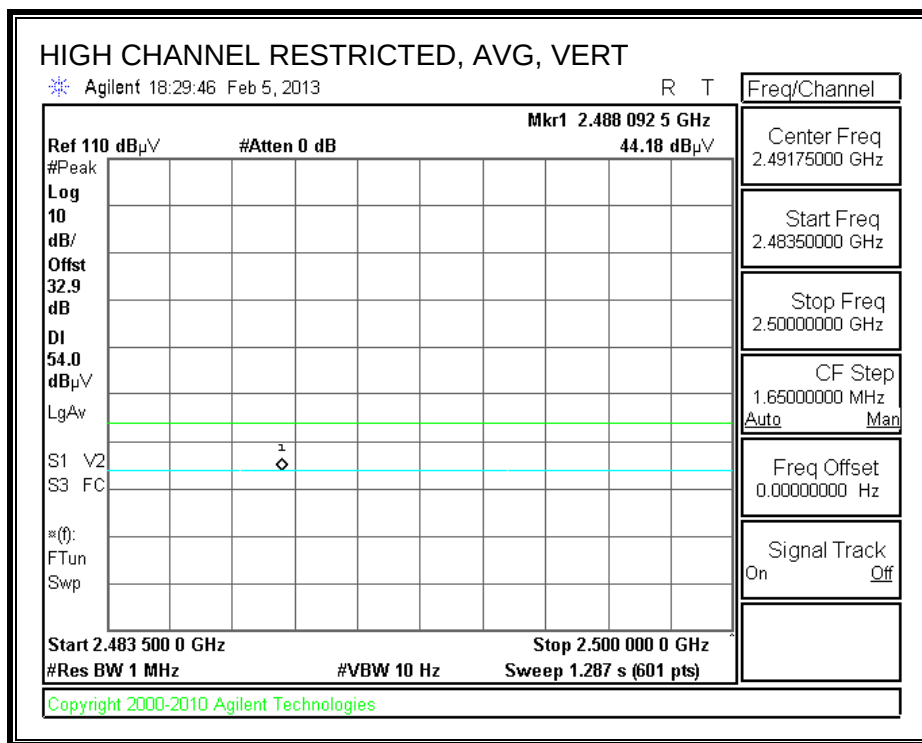
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement

Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 02/06/13
Project #: 12U14748
Company: Intel Inc.
Test Target: FCC Class B
Mode Oper: GFSK, TX mode

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

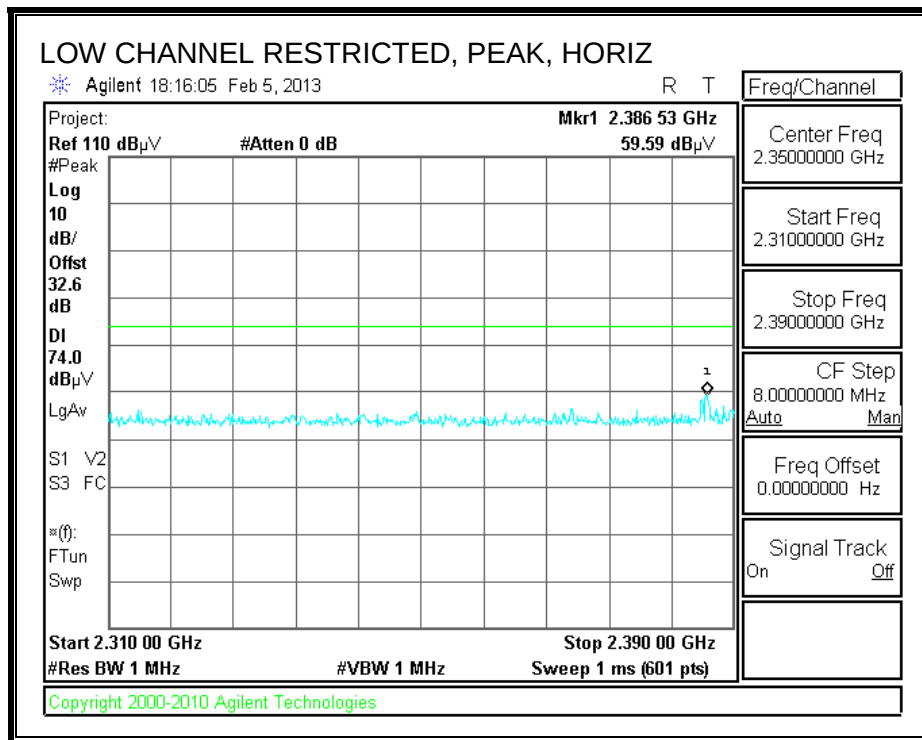
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Ftr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/Q/P	Notes
2402MHz GFSK													
4.804	3.0	36.4	33.1	6.0	-34.1	0.0	0.0	41.5	74.0	-32.5	H	P	
4.804	3.0	23.8	33.1	6.0	-34.1	0.0	0.0	28.9	54.0	-25.1	H	A	
4.804	3.0	36.0	33.1	6.0	-34.1	0.0	0.0	41.1	74.0	-32.9	V	P	
4.804	3.0	25.0	33.1	6.0	-34.1	0.0	0.0	30.1	54.0	-23.9	V	A	
2441MHz GFSK													
4.882	3.0	36.0	33.2	6.1	-34.0	0.0	0.0	41.2	74.0	-32.8	V	P	
4.882	3.0	25.0	33.2	6.1	-34.0	0.0	0.0	30.2	54.0	-23.8	V	A	
4.882	3.0	36.3	33.2	6.1	-34.0	0.0	0.0	41.5	74.0	-32.5	H	P	
4.882	3.0	23.6	33.2	6.1	-34.0	0.0	0.0	28.8	54.0	-25.2	H	A	
2480 MHz GFSK													
4.960	3.0	35.4	33.2	6.9	-34.0	0.0	0.0	41.5	74.0	-32.5	H	P	
4.960	3.0	23.3	33.2	6.9	-34.0	0.0	0.0	29.4	54.0	-24.6	H	A	
4.960	3.0	36.0	33.2	6.9	-34.0	0.0	0.0	42.0	74.0	-32.0	V	P	
4.960	3.0	23.4	33.2	6.9	-34.0	0.0	0.0	29.5	54.0	-24.5	V	A	

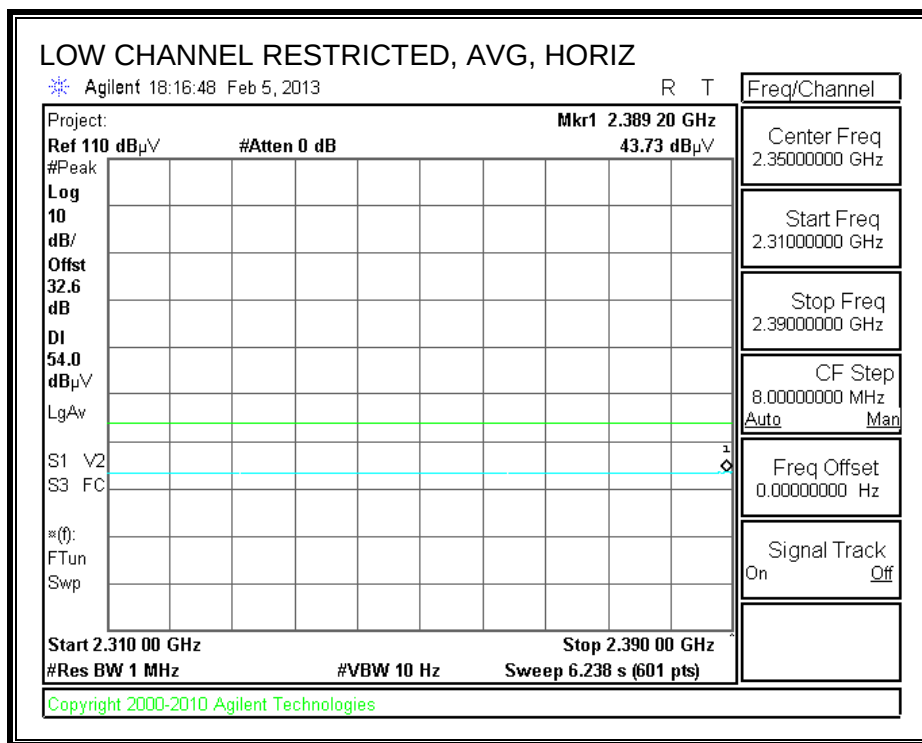
Rev. 4.1.2.7

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

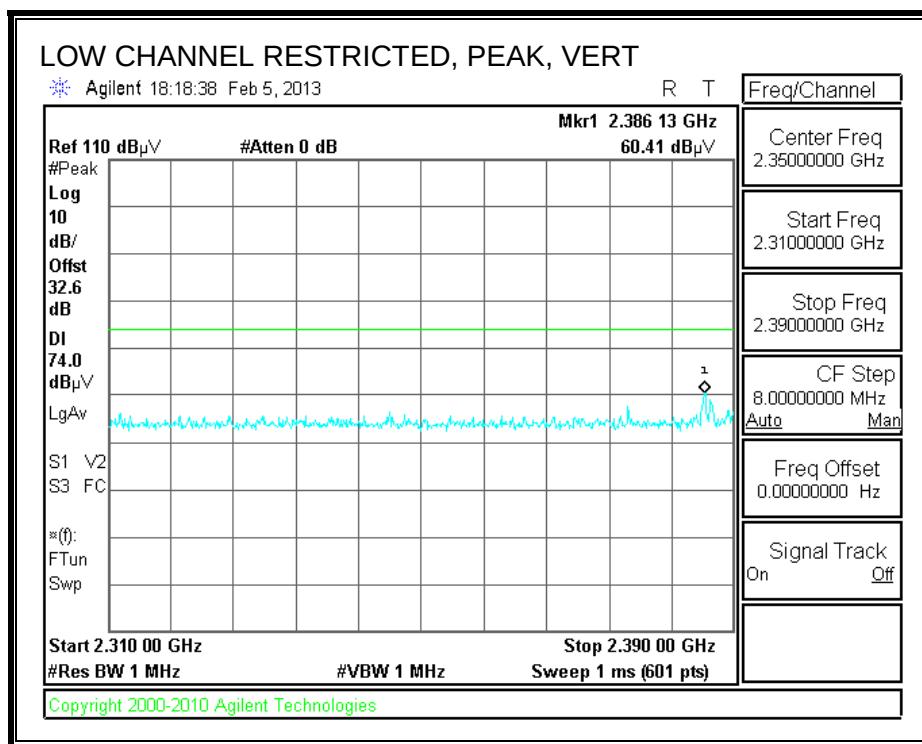
8.2.2. ENHANCED DATA RATE 8PSK MODULATION

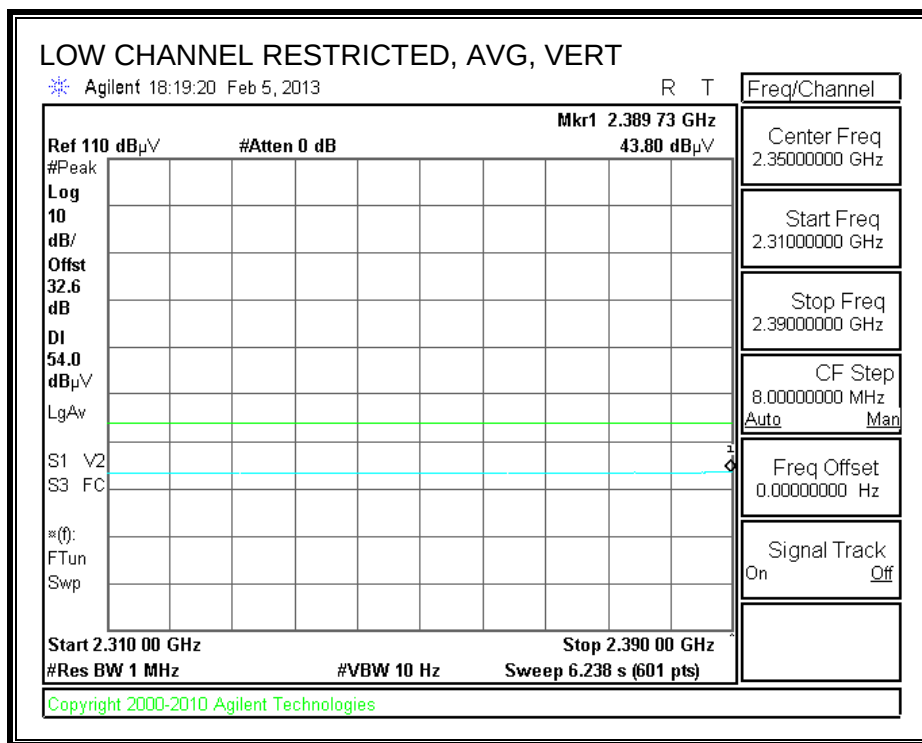
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



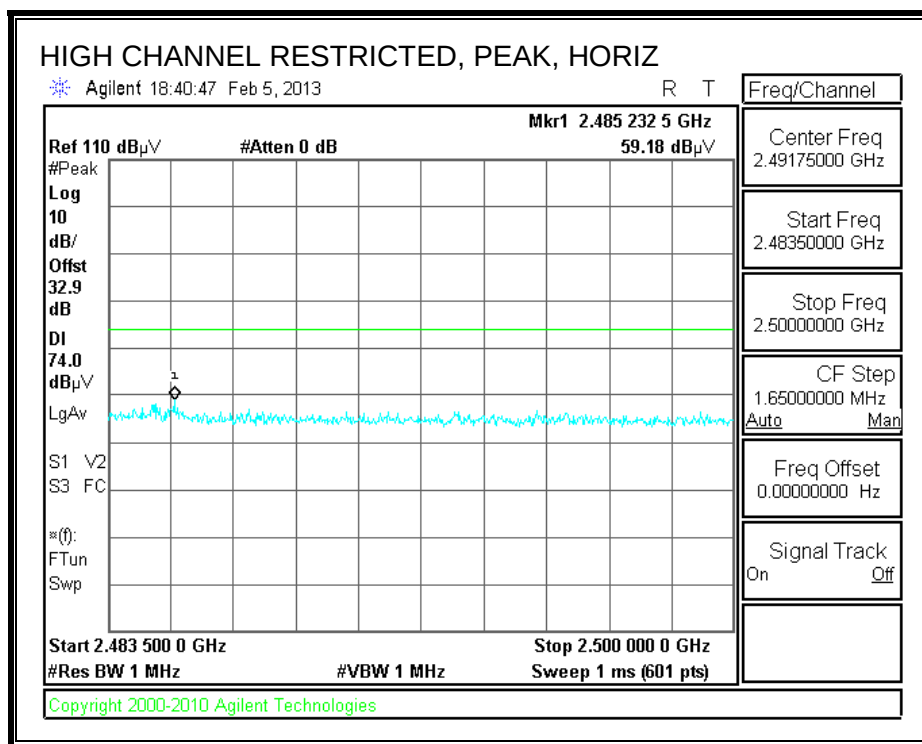


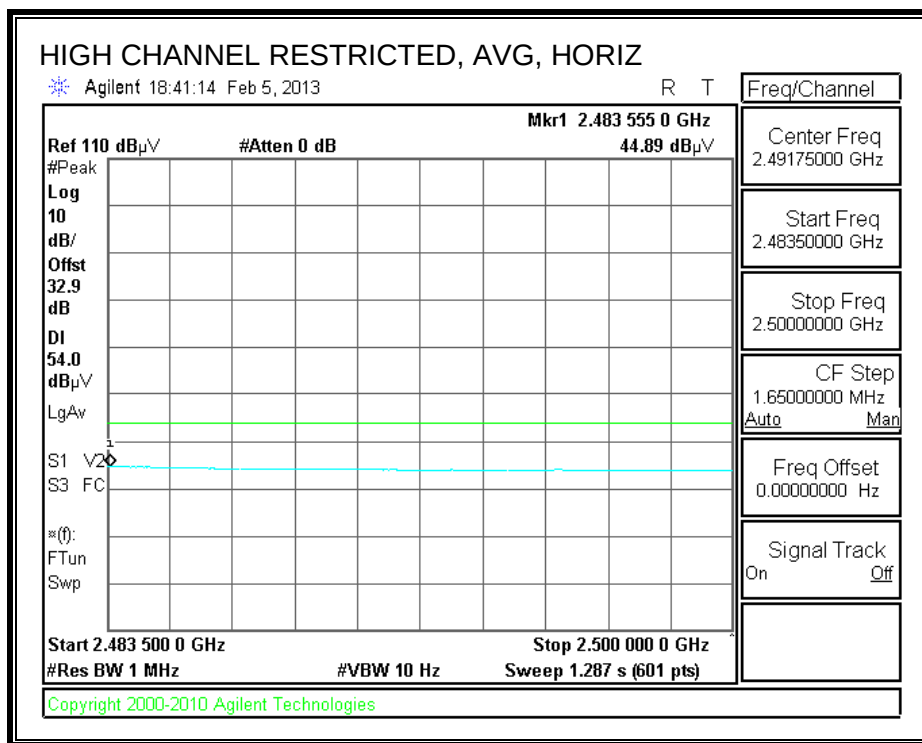
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



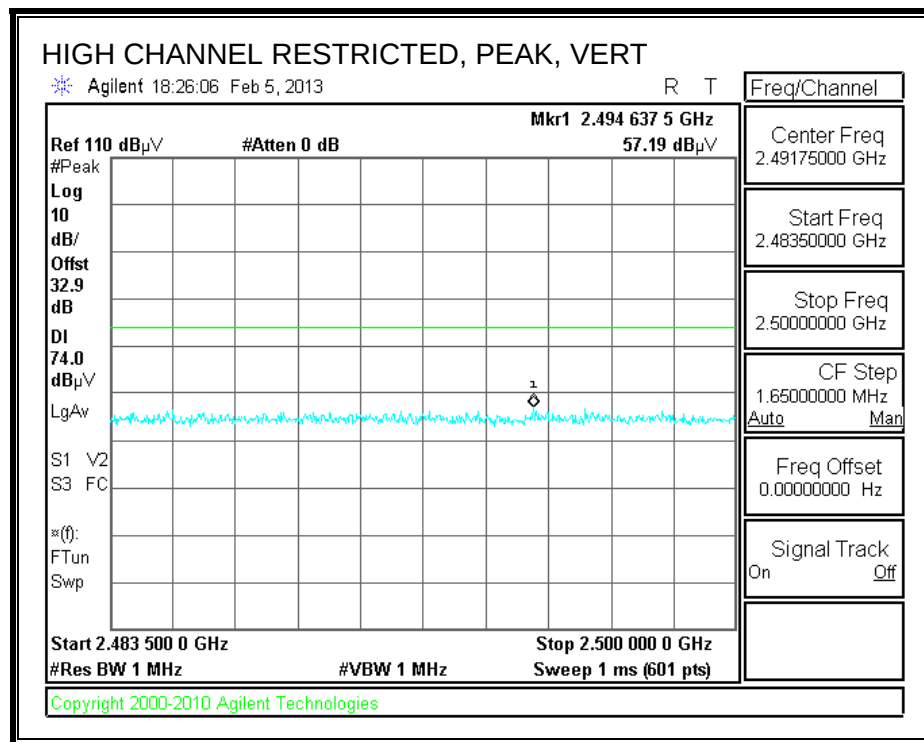


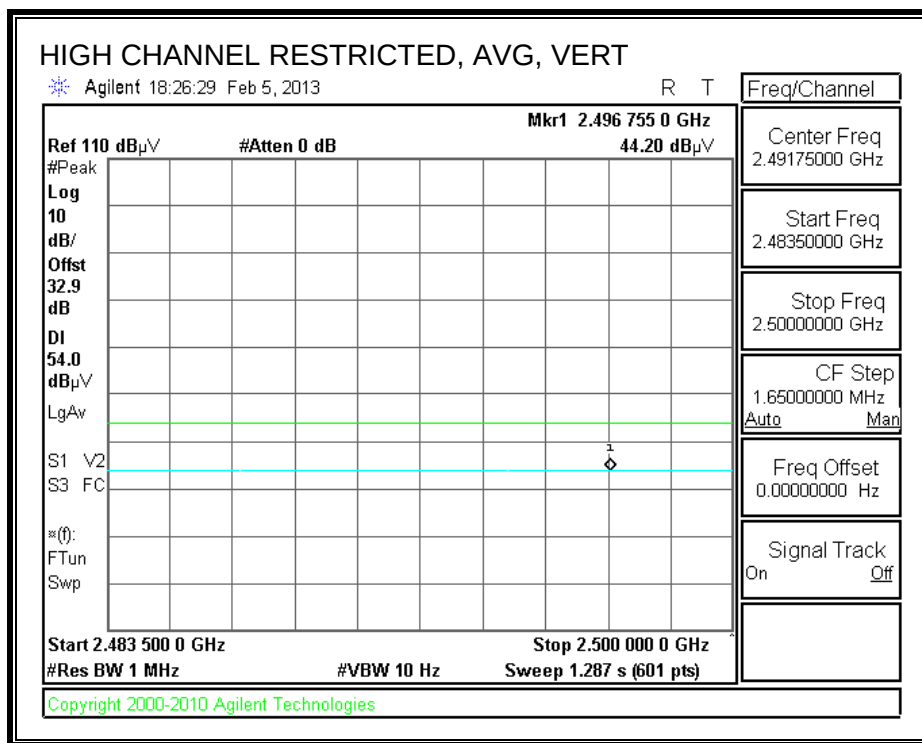
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 02/06/13
Project #: 12U14748
Company: Intel Inc.
Test Target: FCC Class B
Mode Oper: 8PSK, TX mode

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

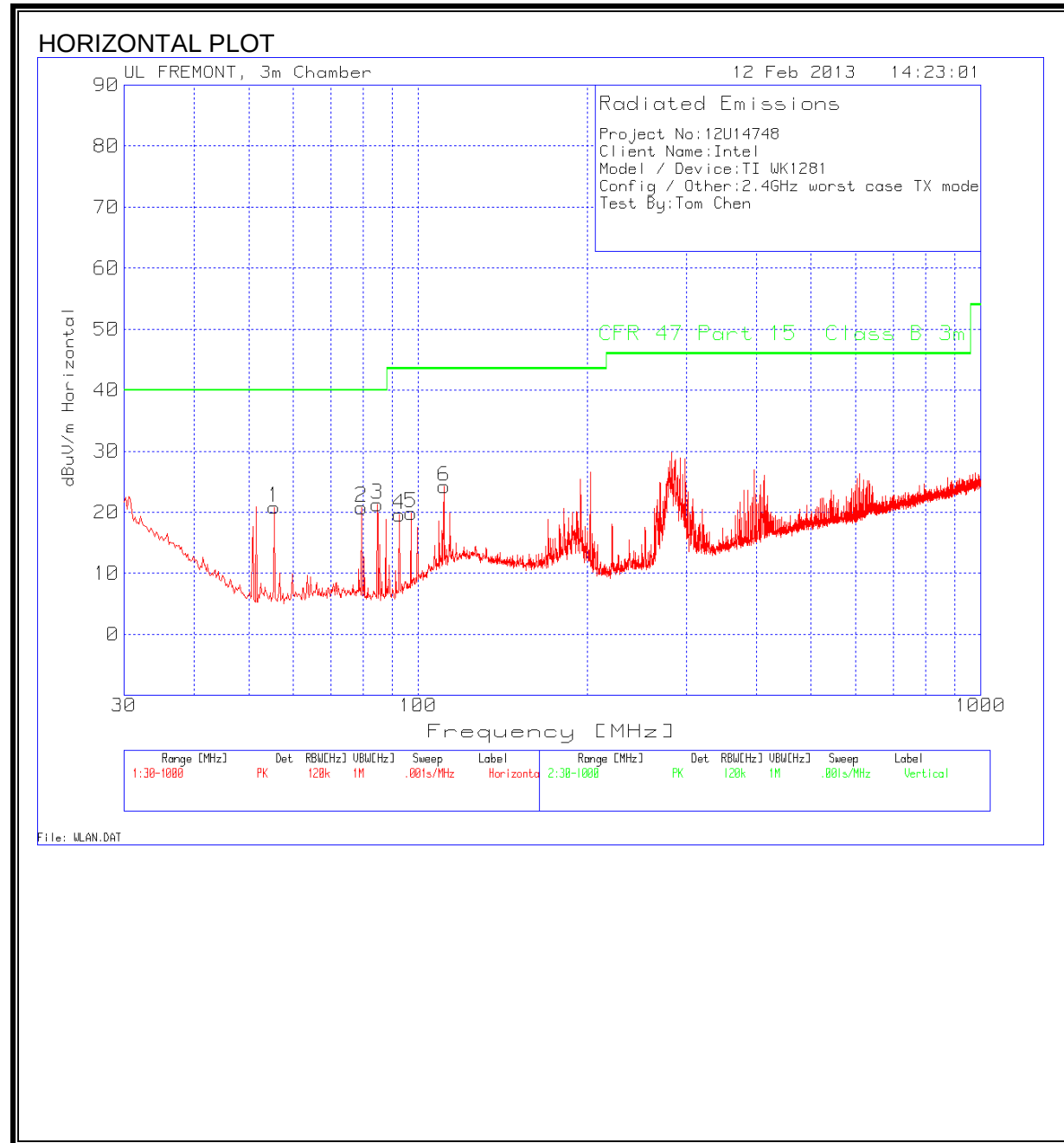
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Ftr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/Q/P	Notes
2402 MHZ 8PSK													
4.804	3.0	36.6	33.1	6.8	-34.1	0.0	0.0	42.4	74.0	-31.6	H	P	
4.804	3.0	24.0	33.1	6.8	-34.1	0.0	0.0	29.8	54.0	-24.2	H	A	
4.804	3.0	36.0	33.1	6.8	-34.1	0.0	0.0	41.8	74.0	-32.2	V	P	
4.804	3.0	24.1	33.1	6.8	-34.1	0.0	0.0	29.9	54.0	-24.1	V	A	
2441 MHZ 8PSK													
4.882	3.0	36.1	33.2	6.8	-34.0	0.0	0.0	42.1	74.0	-31.9	V	P	
4.882	3.0	23.8	33.2	6.8	-34.0	0.0	0.0	29.7	54.0	-24.3	V	A	
4.882	3.0	35.4	33.2	6.8	-34.0	0.0	0.0	41.4	74.0	-32.6	H	P	
4.882	3.0	23.5	33.2	6.8	-34.0	0.0	0.0	29.4	54.0	-24.6	H	A	
2480 MHZ 8PSK													
4.960	3.0	35.6	33.2	6.9	-34.0	0.0	0.0	41.7	74.0	-32.3	V	P	
4.960	3.0	23.5	33.2	6.9	-34.0	0.0	0.0	29.6	54.0	-24.4	V	A	
4.960	3.0	36.1	33.2	6.9	-34.0	0.0	0.0	42.2	74.0	-31.8	H	P	
4.960	3.0	23.5	33.2	6.9	-34.0	0.0	0.0	29.6	54.0	-24.4	H	A	

Rev. 4.1.2.7

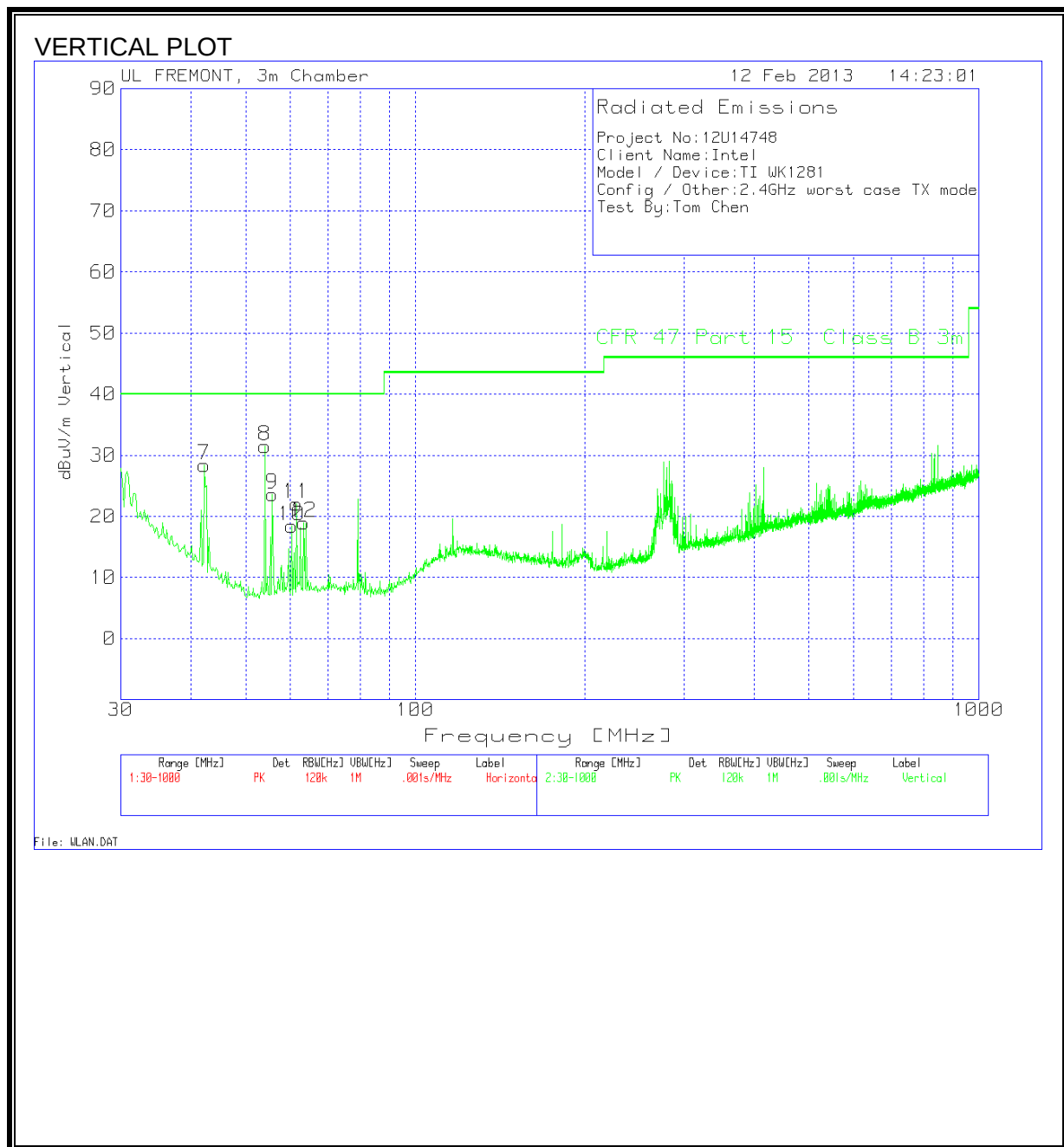
Note: No other emissions were detected above the system noise floor.

8.3. 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:12U14748

Client Name: Intel

Model / Device: TI WK1281

Config / Other: 2.4GHz worst case TX mode

Test By: Tom Chen

Horizontal 30 - 1000MHz

Marker No.	Test Frequency	Meter Reading	Detector	T130 8-14-12 (dB)	3m Loop (dB)	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Polarity
1	55.5875	41.14	PK	6.9	-27.2	20.84	40	-19.16	Horz
2	79.4305	40.33	PK	7.5	-27	20.83	40	-19.17	Horz
3	84.6643	41.04	PK	7.2	-27	21.24	40	-18.76	Horz
4	92.6119	38.36	PK	8.1	-26.9	19.56	43.5	-23.94	Horz
5	97.0703	37.35	PK	9.3	-26.8	19.85	43.5	-23.65	Horz
6	111.221	38.2	PK	12.7	-26.7	24.2	43.5	-19.3	Horz

Vertical 30 - 1000MHz

Marker No.	Test Frequency	Meter Reading	Detector	T130 8-14-12 (dB)	3m Loop (dB)	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Polarity
7	42.2122	43.92	PK	11.9	-27.4	28.42	40	-11.58	Vert
8	54.0368	51.9	PK	6.8	-27.2	31.5	40	-8.5	Vert
9	55.7814	43.92	PK	6.9	-27.2	23.62	40	-16.38	Vert
10	60.4337	38.19	PK	7.4	-27.2	18.39	40	-21.61	Vert
11	61.5967	41.73	PK	7.6	-27.2	22.13	40	-17.87	Vert
12	63.3413	38.38	PK	7.8	-27.2	18.98	40	-21.02	Vert

9. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

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

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

TEST PROCEDURE

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

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

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

RESULTS

6 WORST EMISSIONS

Project No:12U14748
Client Name: Intel Inc.
Model/Device: TI WK1281, 2.4G worst case
Test Volt/Freq: 120 VAC/ 60Hz,
Test By: Tom Chen

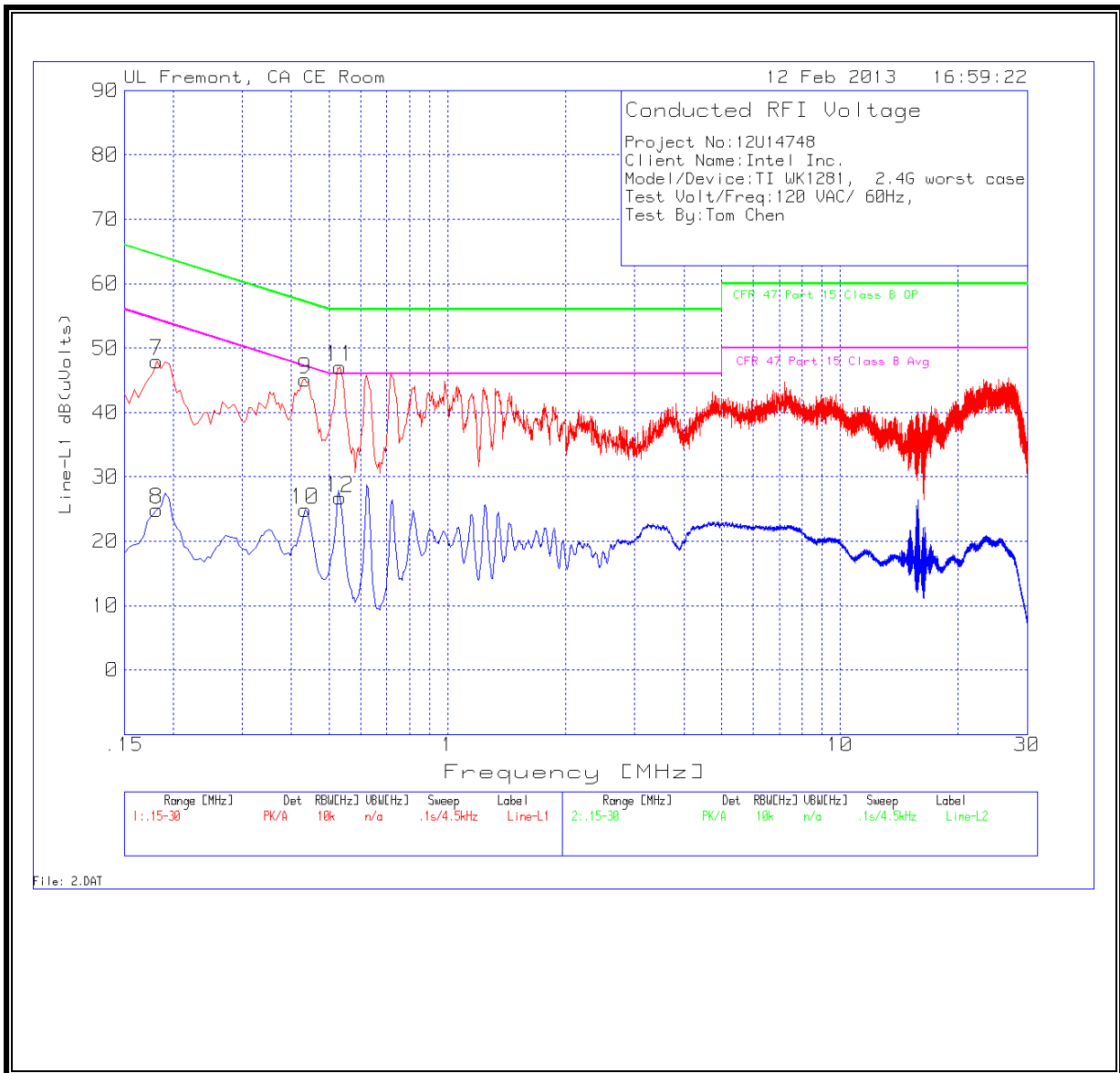
Line-L1 .15 - 30MHz

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
0.1815	47.81	PK	0.1	0	47.91	64.4	-16.49	-	-
0.1815	24.76	Av	0.1	0	24.86	-	-	54.4	-29.54
0.4335	45.03	PK	0.1	0	45.13	57.2	-12.07	-	-
0.4335	24.85	Av	0.1	0	24.95	-	-	47.2	-22.25
0.5325	46.97	PK	0.1	0	47.07	56	-8.93	-	-
0.5325	26.66	Av	0.1	0	26.76	-	-	46	-19.24

Line-L2 .15 - 30MHz

Test Frequency	Meter Reading	Detector	T24 IL L2.TXT (dB)	LC Cables 2&3.TXT (dB)	dB(uVolts)	CFR 47 Part 15 Class B QP	Margin	CFR 47 Part 15 Class B Avg	Margin
0.1905	49.85	PK	0.1	0	49.95	64	-14.05	-	-
0.1905	29.26	Av	0.1	0	29.36	-	-	54	-24.64
0.5325	49.54	PK	0.1	0	49.64	56	-6.36	-	-
0.5325	31.58	Av	0.1	0	31.68	-	-	46	-14.32
0.7215	47.75	PK	0.1	0	47.85	56	-8.15	-	-
0.7215	27.78	Av	0.1	0	27.88	-	-	46	-18.12

LINE 1 RESULTS



LINE 2 RESULTS

