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

CERTIFICATION TEST REPORT

FOR

CELLULAR/PCS GSM&WCDMA WITH BLUETOOTH&WLAN

MODEL NUMBER: LG840G

FCC ID: ZNFLG840G

REPORT NUMBER: 12U14354-3

ISSUE DATE: MAY 07, 2012

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

Prepared by
COMPLIANCE CERTIFICATION SERVICES (UL CCS)
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
	5/7/12	Original	T. LEE

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1. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: CELLULAR/PCS GSM&WCDMA WITH BLUETOOTH&WLAN

MODEL: LG840G

SERIAL NUMBER: 203KPCA156203 (Radiated), 203KPDT156258 (Conducted),

DATE TESTED: APRIL 30 TO MAY 06, 2012

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

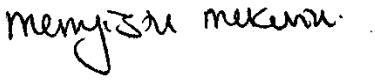
Compliance Certification Services (UL CCS) tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL CCS based on interpretations and/or observations of test results. Measurement Uncertainties 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:



MENGISTU MEKURIA
EMC ENGINEER
UL CCS

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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:

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%.

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5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a Cellular/PCS GSM&WCDMA Phone with Bluetooth and WLAN capabilities. The EUT is manufactured by LG electronics Inc.

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	11.90	15.49
2402 - 2480	Enhanced 8PSK	11.60	14.45

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PIFA antenna, with a maximum gain of -1.41 dBi.

5.4. SOFTWARE AND FIRMWARE

The test utility software used during testing was LG840G-V08i-MAR-21-2012-A

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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.

The fundamental of the EUT was investigated in three orthogonal orientations X, Y, and Z, and the worst case among them with an AC Adapter and Headset. After the investigation the worst case determine to be X orientation with the Headset. Therefore, all final radiated testing was performed with the EUT in X orientation and Headset.

Worst-case data rates as provided by the client were:
Based on the baseline scan, the worst-case data rates were:

GFSK DH5 mode
8PSK 3-DH5 mode

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5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

RADIATED TESTS SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST			
Description	**Manufacturer**	**Model**	**Serial Number**
AC ADAPTER	LG ELECTRONICS	STA-U13WT	TA150000001
HEADSET	LG ELECTRONICS	NA	N/A

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	0.4m	N/A
3	RF	1	SMA	SHELDED	0.6 m	N/A

RADIATED 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	AUDIO	1	MINI JACK	UN-SHELDED	1.0m	Volume control on cable

TEST SETUP

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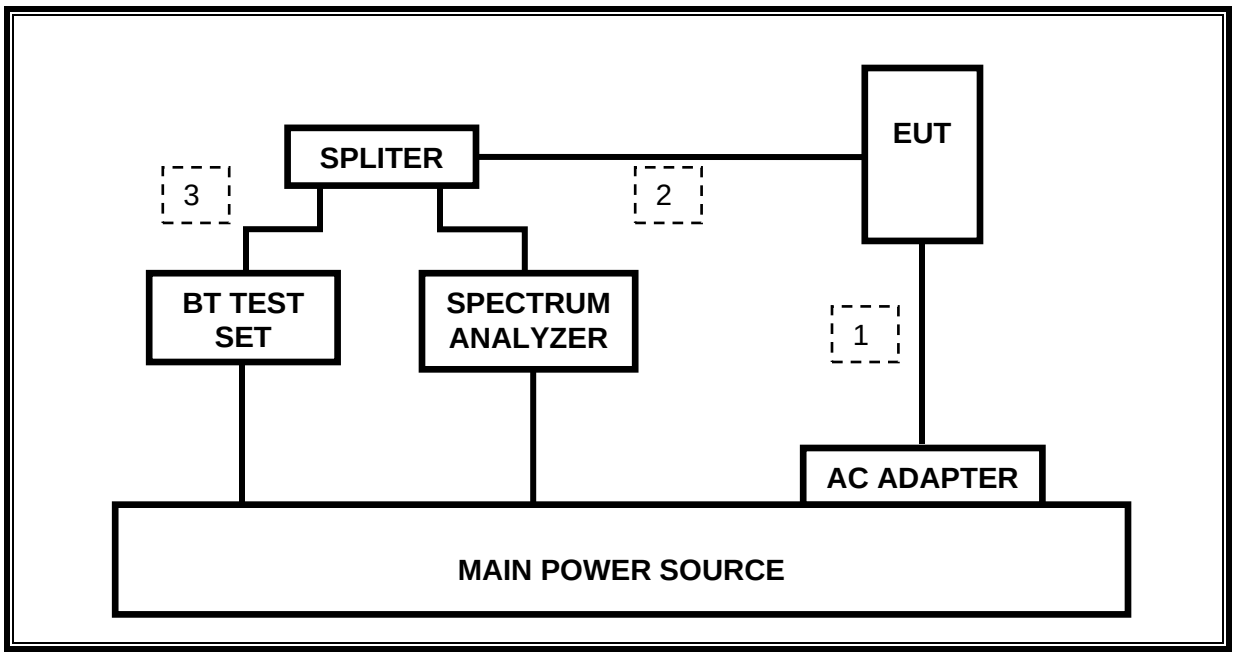
CONDUCTED SETUP DIAGRAM FOR TESTS



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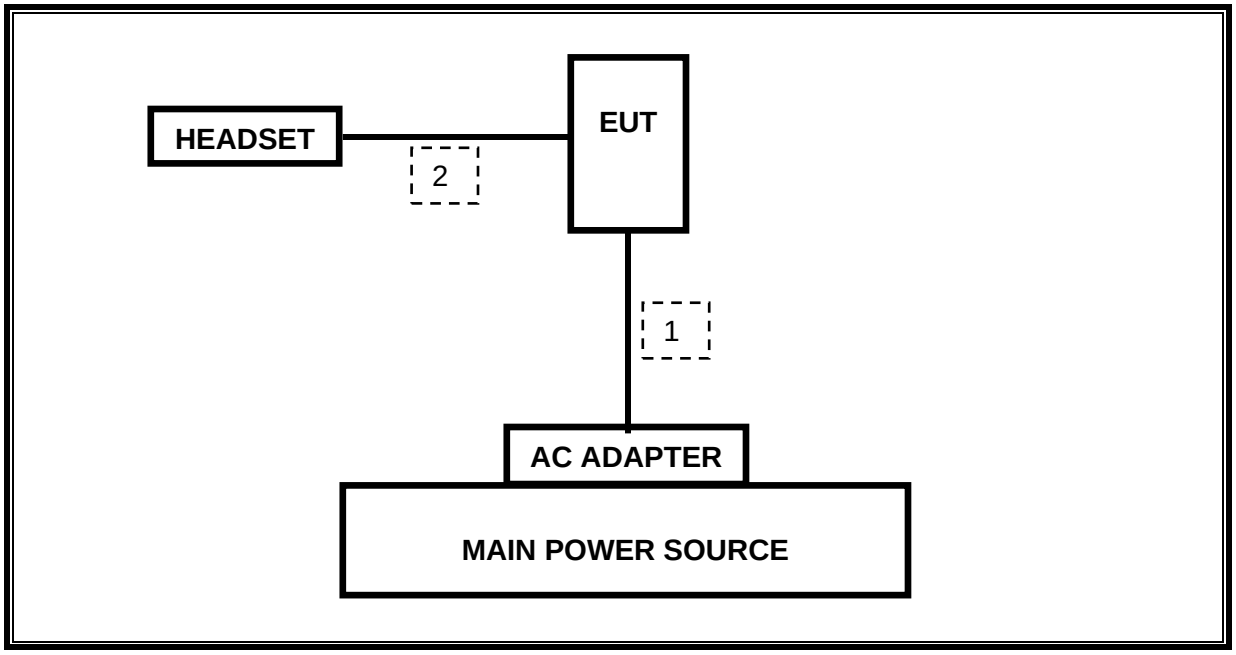
RADIATED SETUP DIAGRAM FOR TESTS



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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	07/12/12
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00580	11/11/12
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01176	08/04/12
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01069	12/15/12
Antenna, Horn, 18 GHz	EMCO	3115	C00945	10/06/12
Antenna, Horn, 40 GHz	ARA	MWH-2640/B	C00981	06/14/12
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	C01171	01/26/13
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
BT Test set	Agilent / HP	N4010A	N/A	04/22/13
Directional Coupler	RF-Lambda	RFDC5M06G15	None	CNR

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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 ≥ 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)	99% Bandwidth (kHz)
Low	2402	1039	1031.8
Middle	2441	1039	1015.6
High	2480	1040	1033.2

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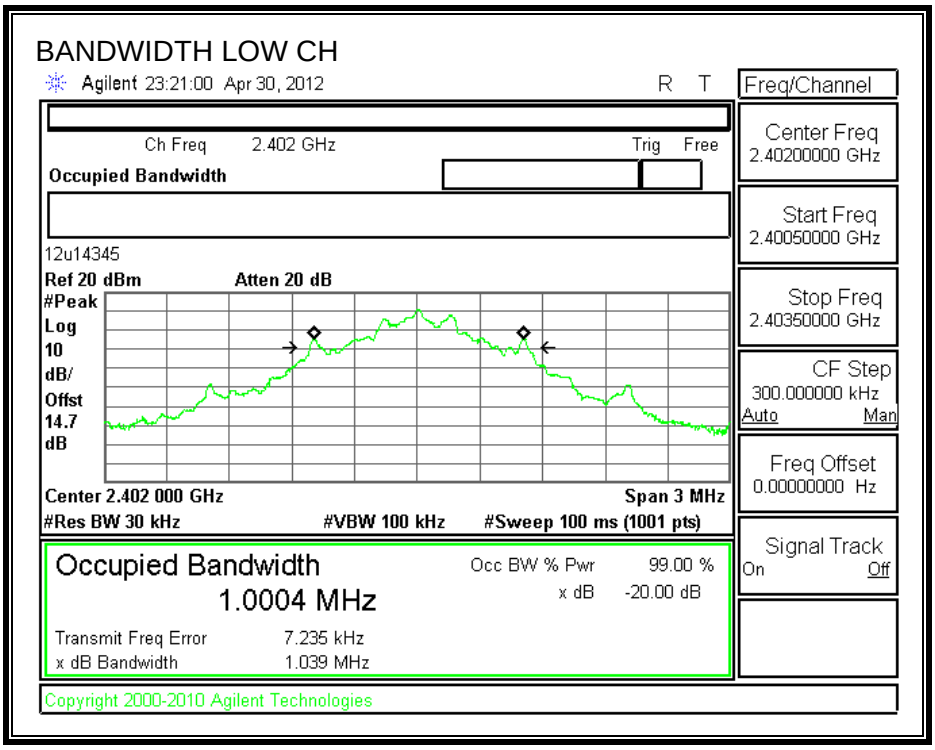
20 dB BANDWIDTH



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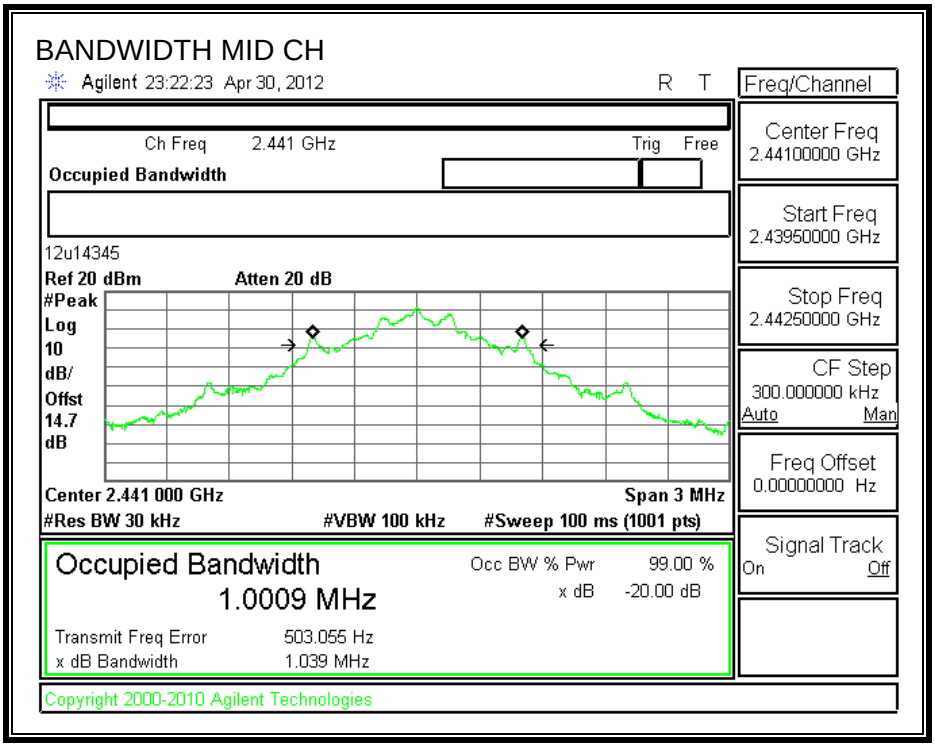

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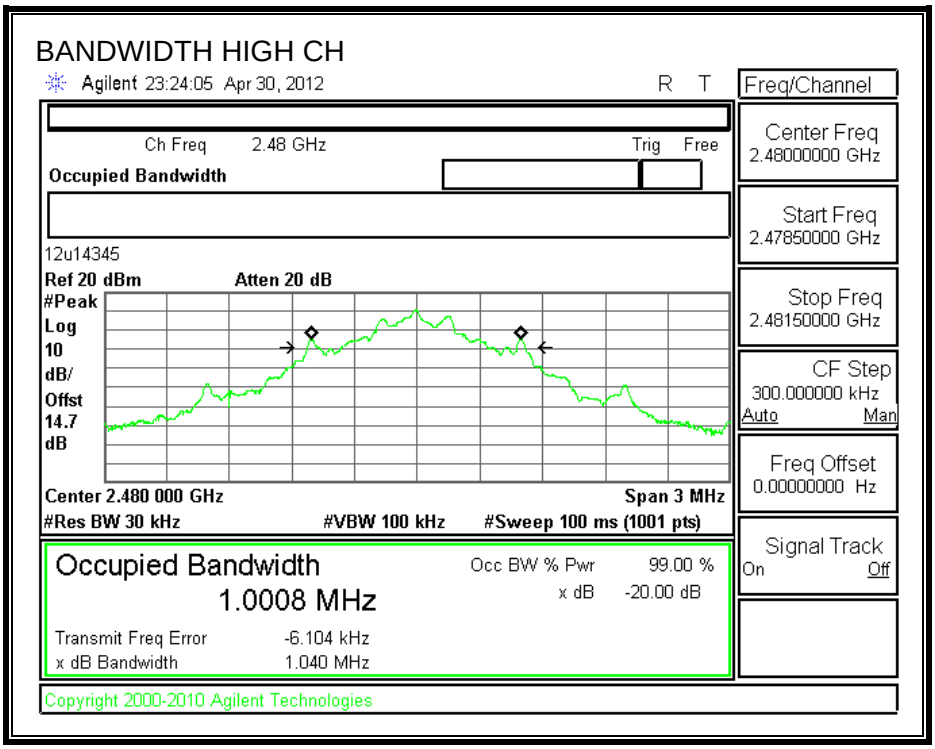

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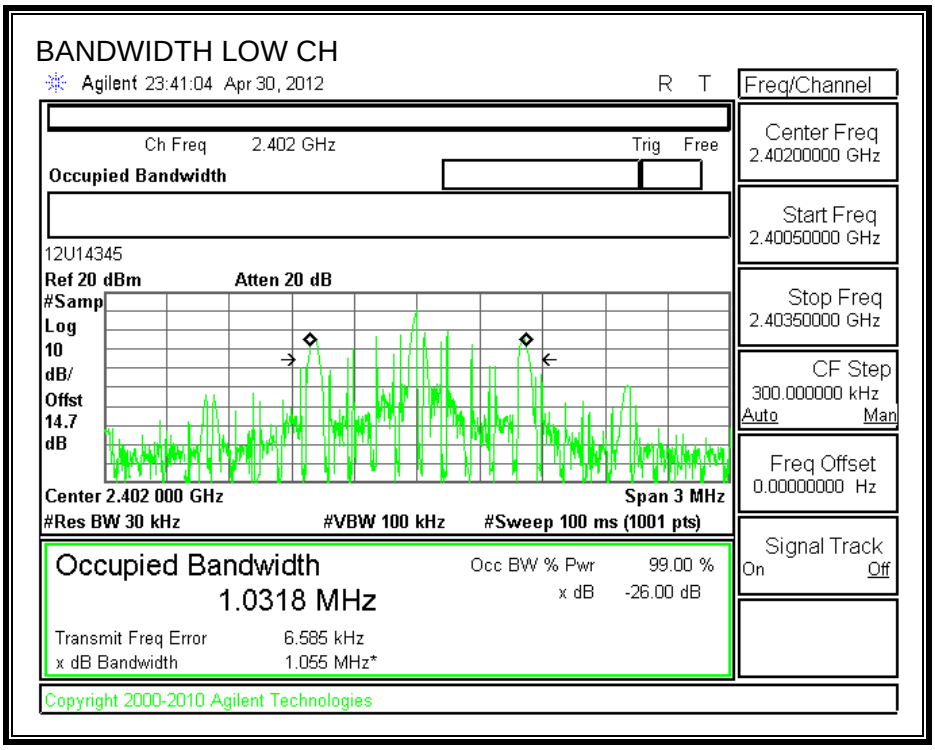
99% BANDWIDTH



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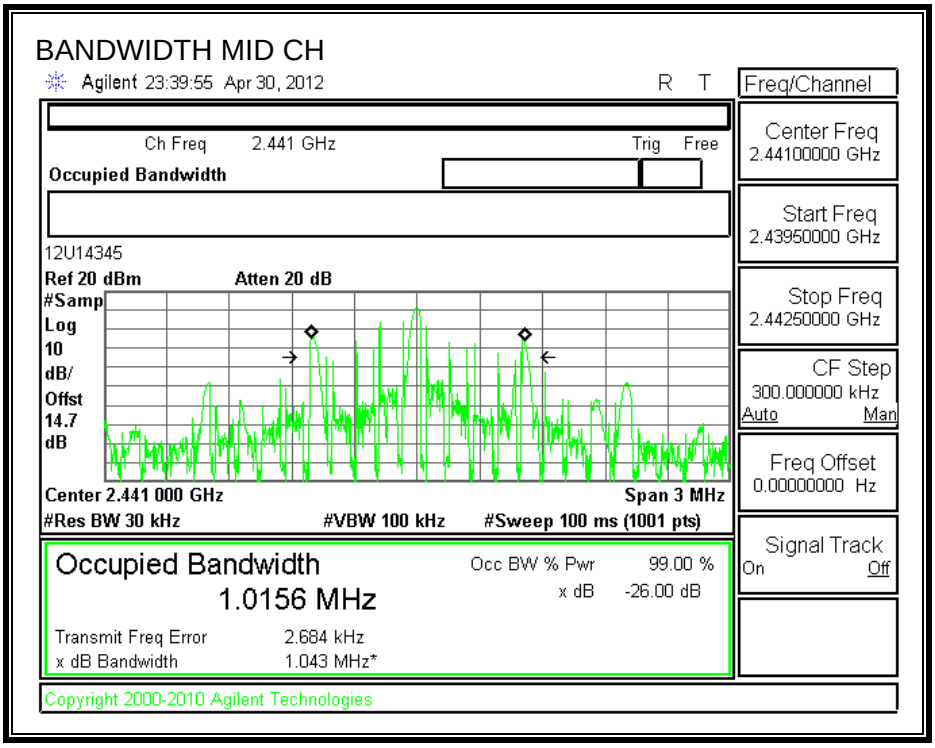

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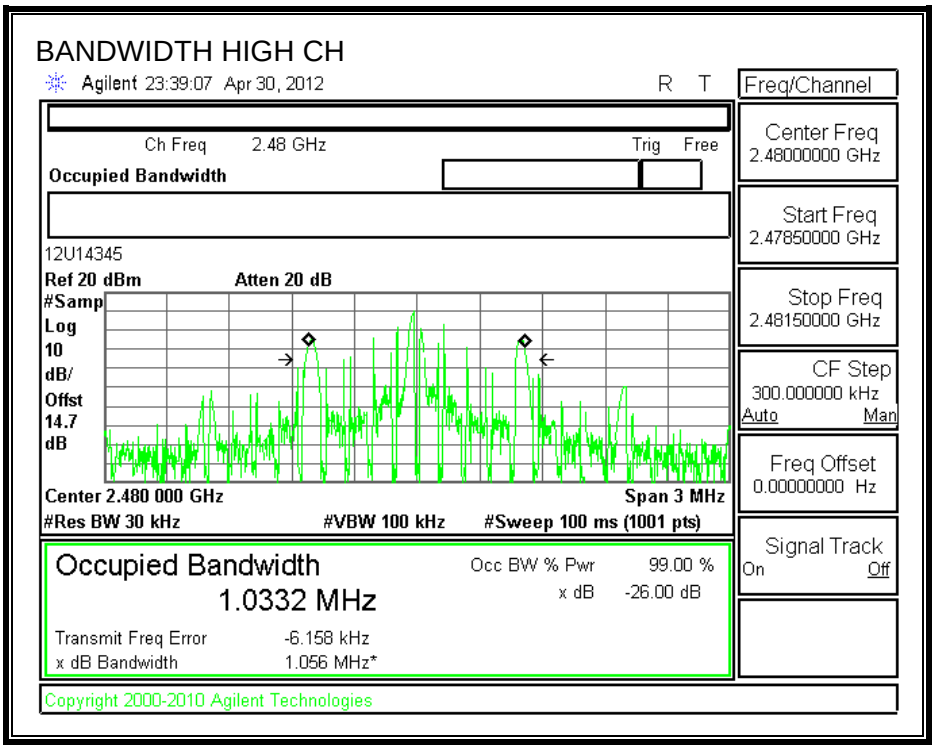

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7.1.2. HOPPING FREQUENCY SEPARATION

LIMIT

FCC §15.247 (a) (1)

IC RSS-210 A8.1 (b)

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

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

TEST PROCEDURE

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

RESULTS

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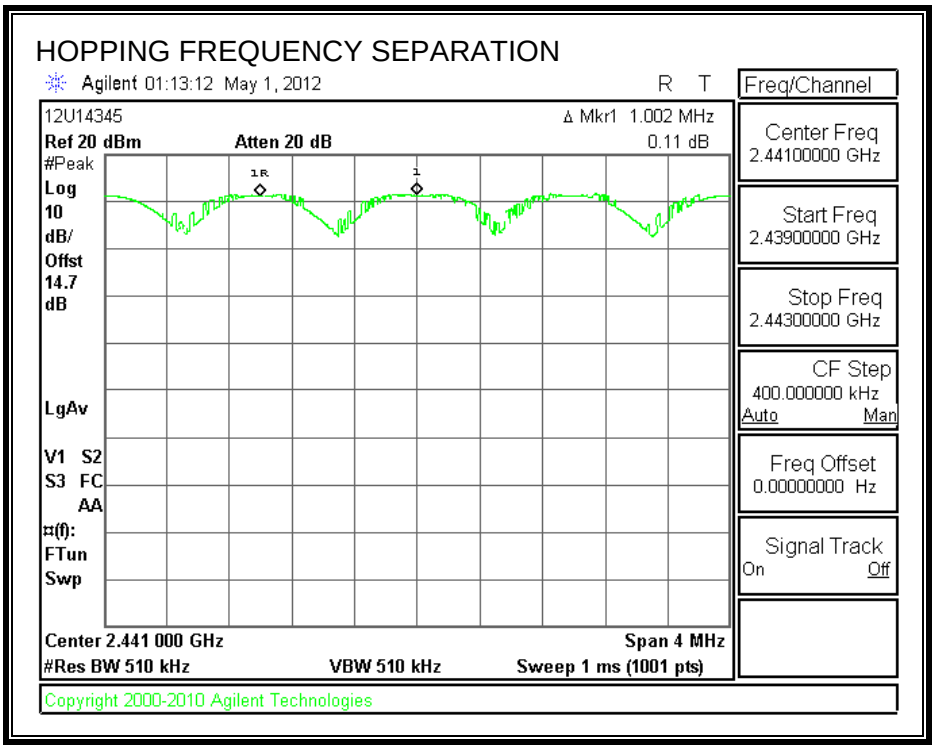
HOPPING FREQUENCY SEPARATION



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7.1.3. NUMBER OF HOPPING CHANNELS

LIMIT

FCC §15.247 (a) (1) (iii)

IC RSS-210 A8.1 (d)

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

TEST PROCEDURE

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

RESULTS

79 Channels observed.

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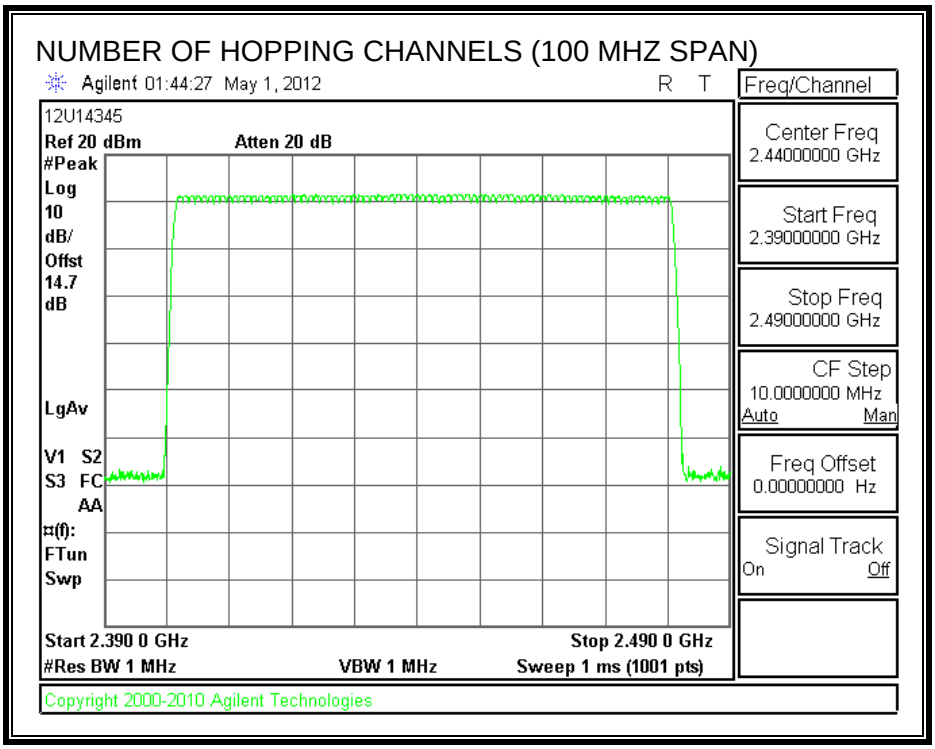
NUMBER OF HOPPING CHANNELS



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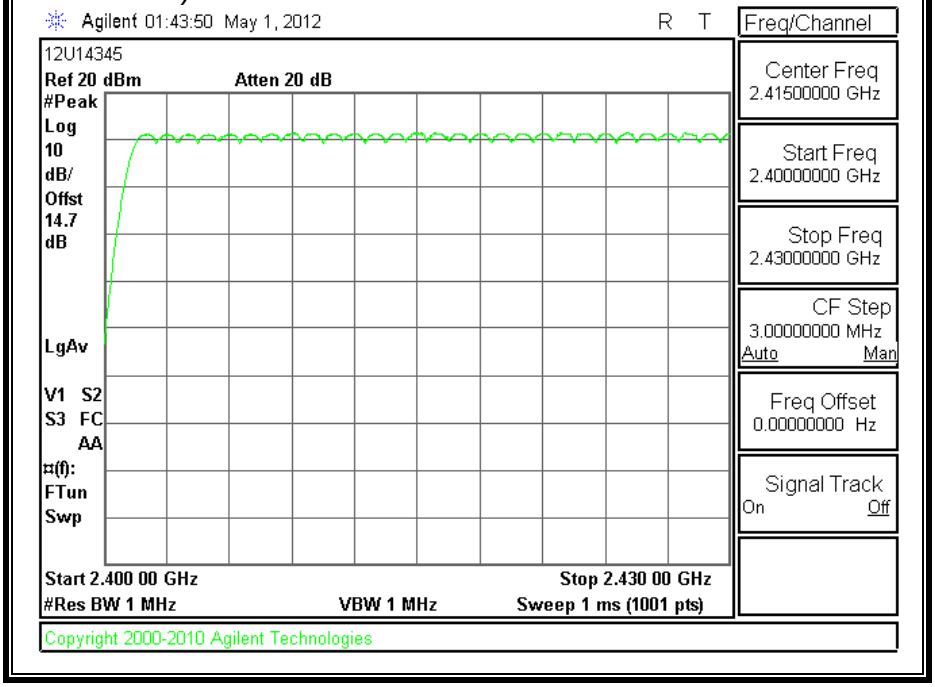
NUMBER OF HOPPING CHANNELS (30 MHZ SPAN, FIRST SEGMENT)



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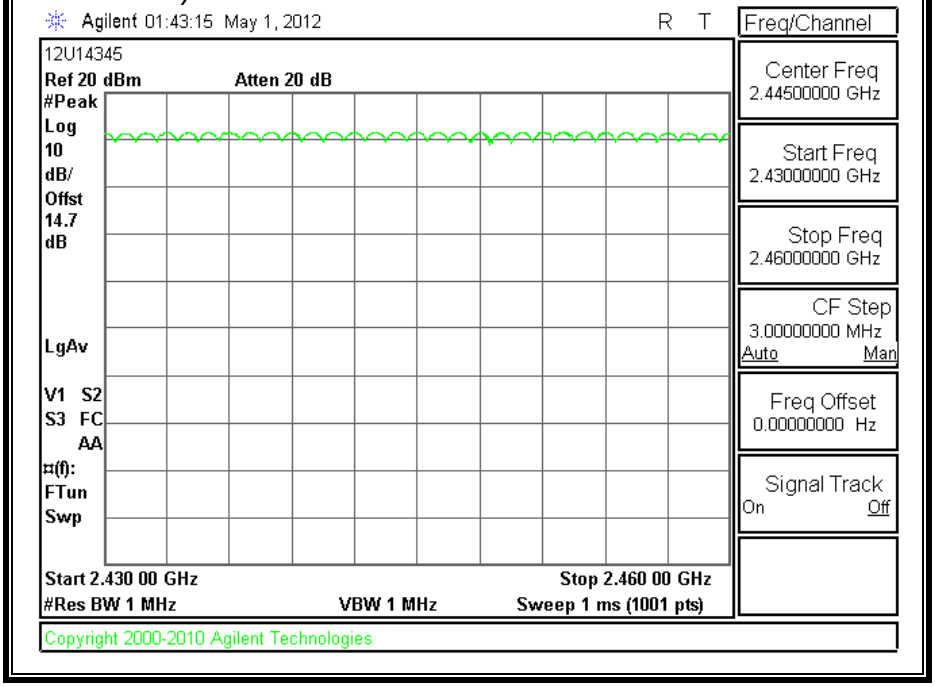
NUMBER OF HOPPING CHANNELS (30 MHZ SPAN, SECOND SEGMENT)



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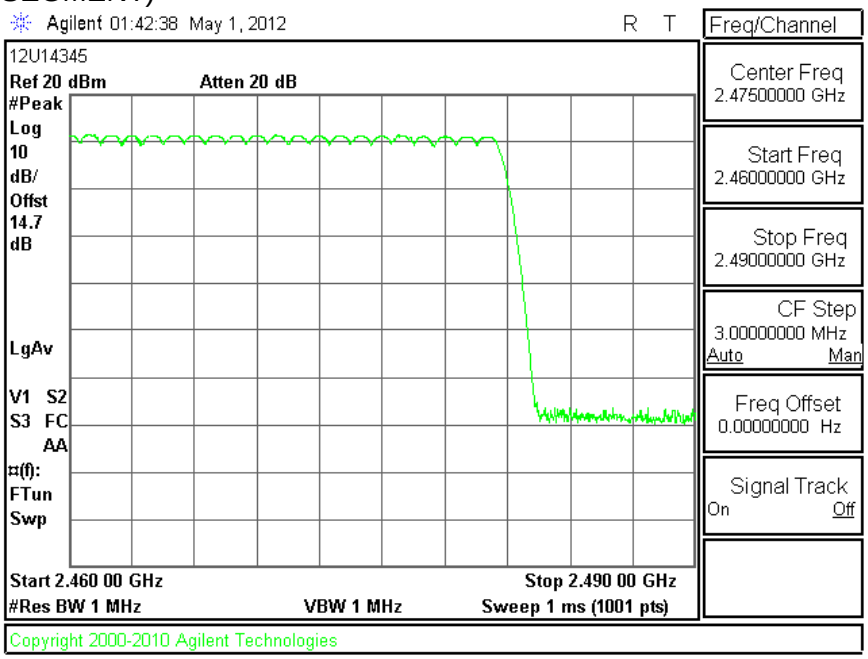
NUMBER OF HOPPING CHANNELS (30 MHZ SPAN, THIRD SEGMENT)



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7.1.4. AVERAGE TIME OF OCCUPANCY

LIMIT

FCC §15.247 (a) (1) (iii)

IC RSS-210 A8.1 (d)

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

TEST PROCEDURE

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

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

RESULTS

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

GFSK Mode

DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of (sec)	Limit (sec)	Margin (sec)
DH1	0.385	33	0.127	0.4	-0.273
DH3	1.642	21	0.345	0.4	-0.055
DH5	2.895	11	0.318	0.4	-0.082

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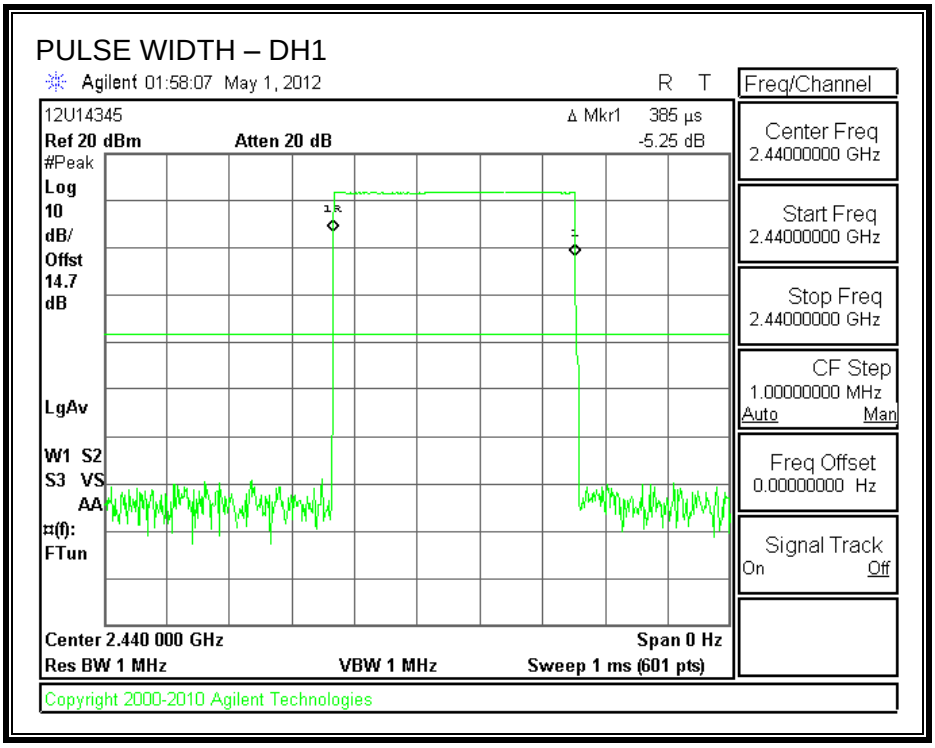
PULSE WIDTH - DH1



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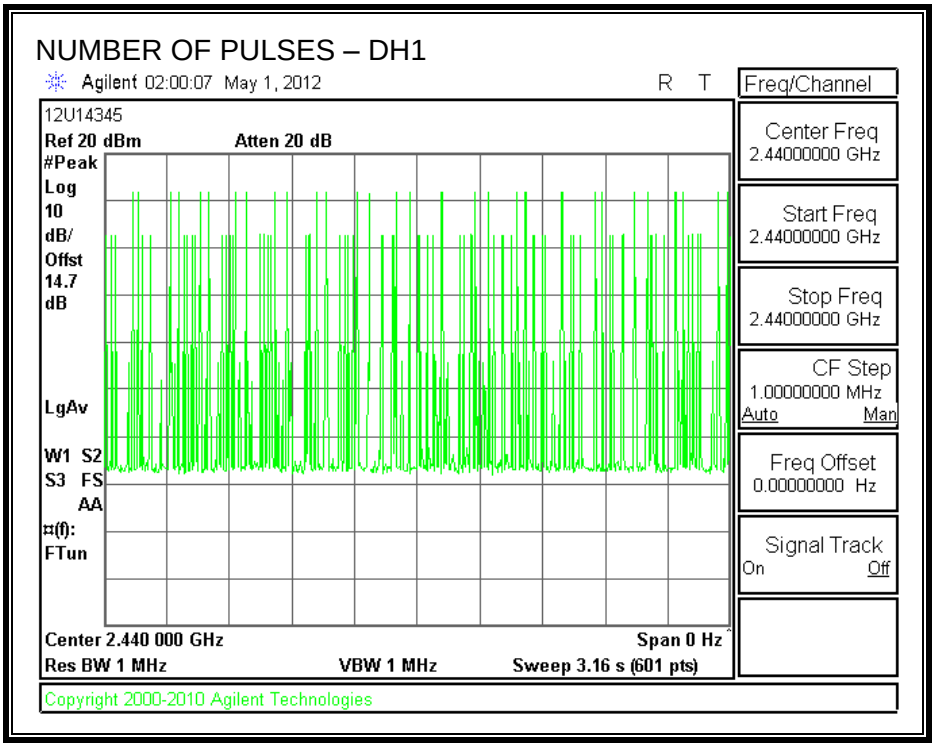
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH1



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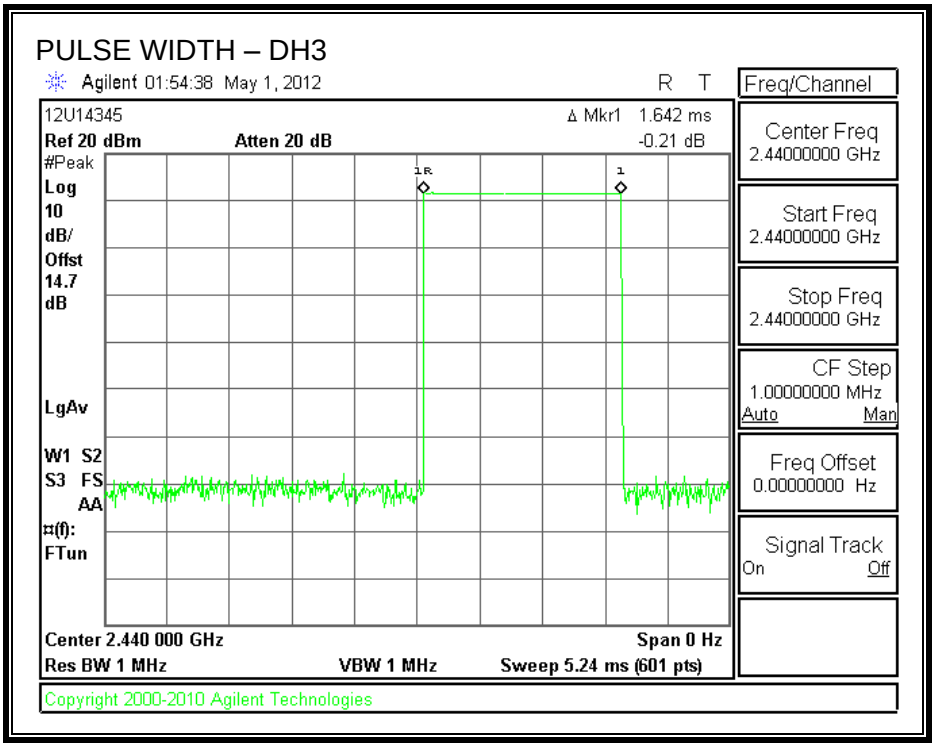
PULSE WIDTH – DH3



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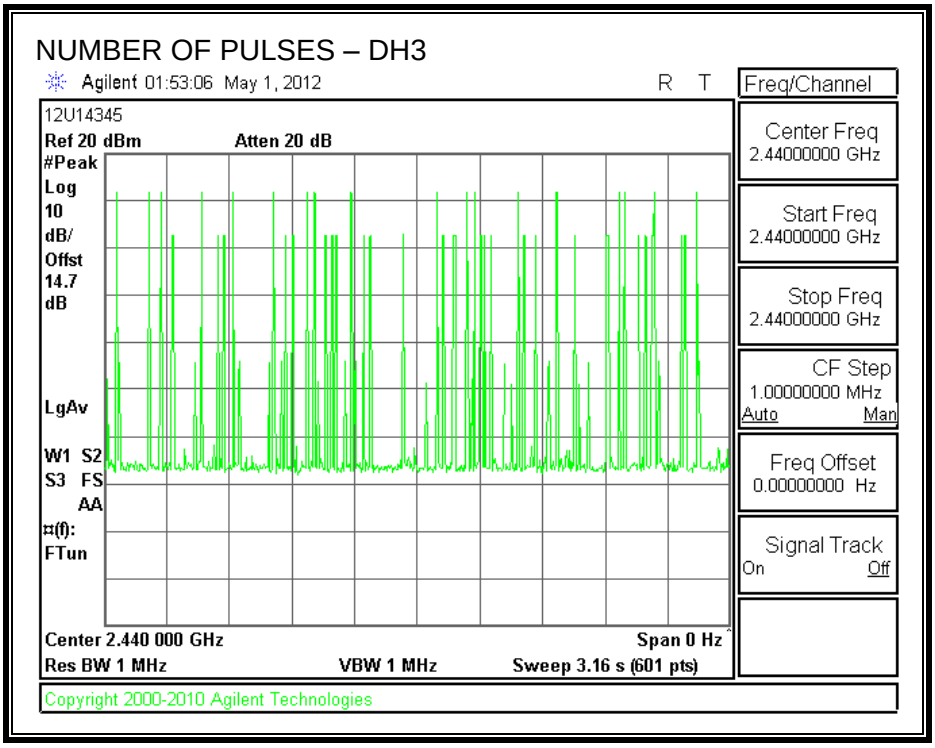
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH3



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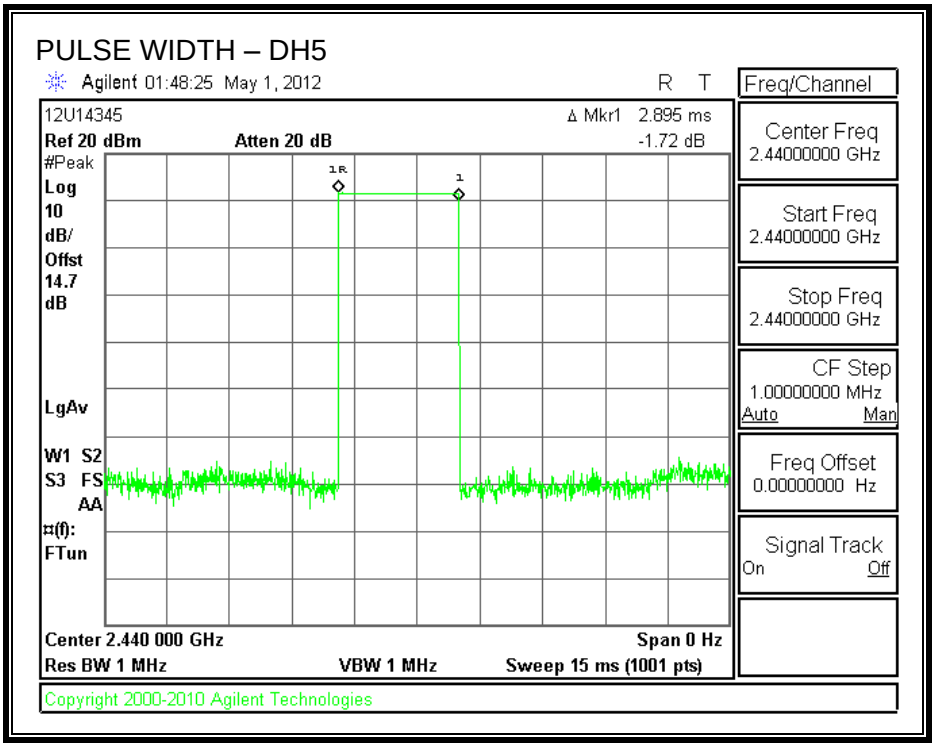
PULSE WIDTH – DH5



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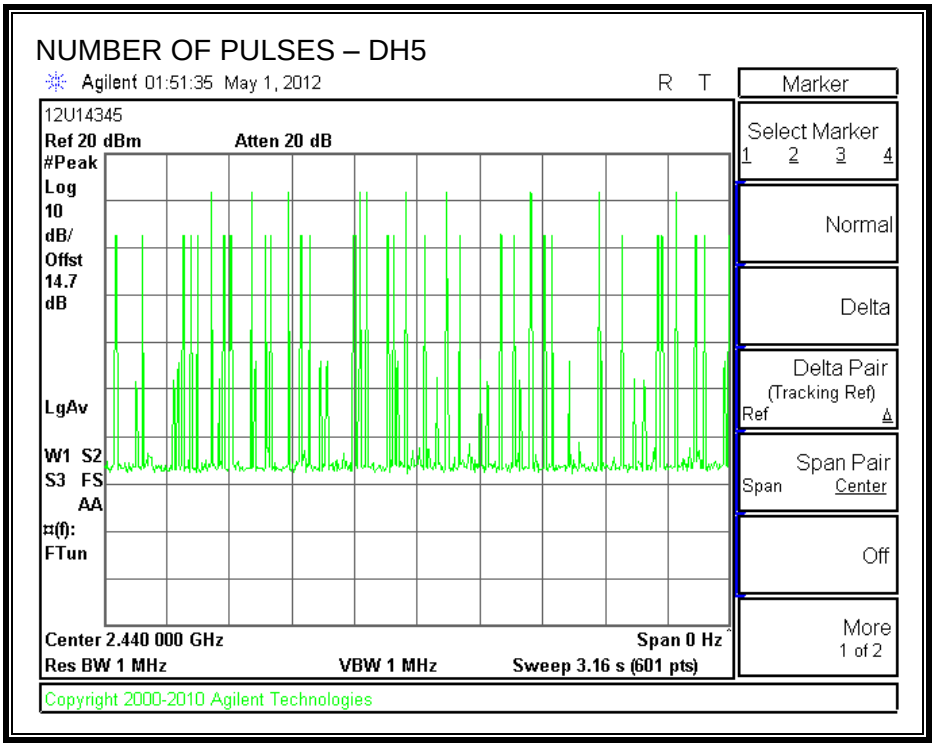
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH5



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7.1.5. OUTPUT POWER

LIMIT

§15.247 (b) (1)

RSS-210 Issue 7 Clause A8.4

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

TEST PROCEDURE

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

RESULTS

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	11.80	30	-18.20
Middle	2441	11.90	30	-18.10
High	2480	11.50	30	-18.50

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7.1.6. AVERAGE POWER

LIMIT

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

The cable assembly insertion loss of 0.8 dB (including 0.5 dB pad and 0.3 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

DH1

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	11.30
Middle	2441	11.50
High	2480	11.10

DH3

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	11.10
Middle	2441	11.40
High	2480	11.00

DH5

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	11.00
Middle	2441	11.20
High	2480	10.80

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7.1.7. 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

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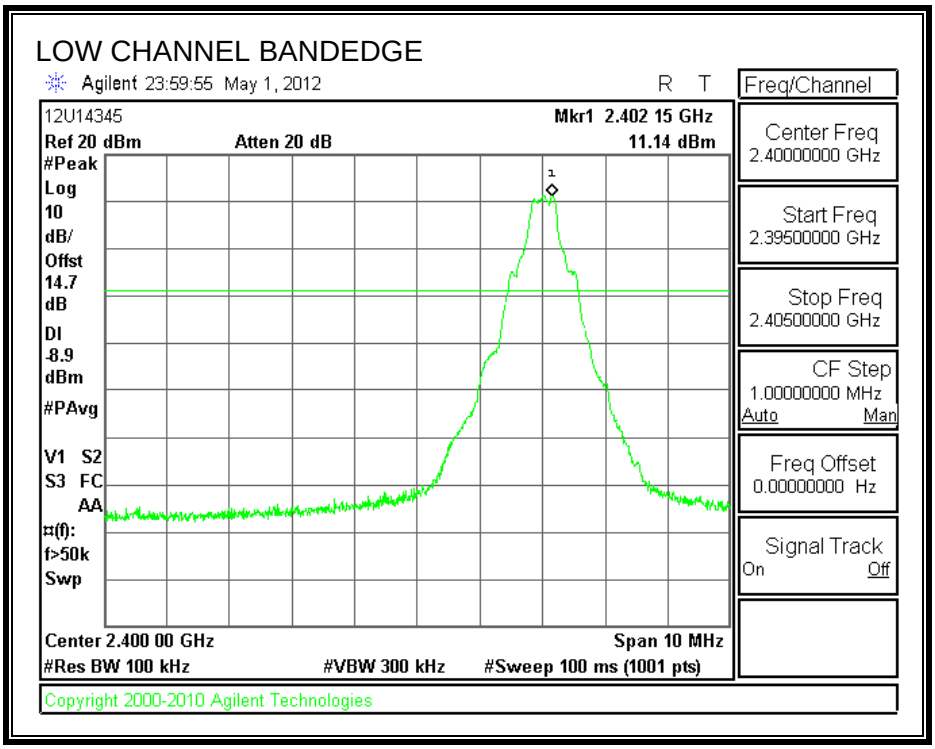
SPURIOUS EMISSIONS, LOW CHANNEL



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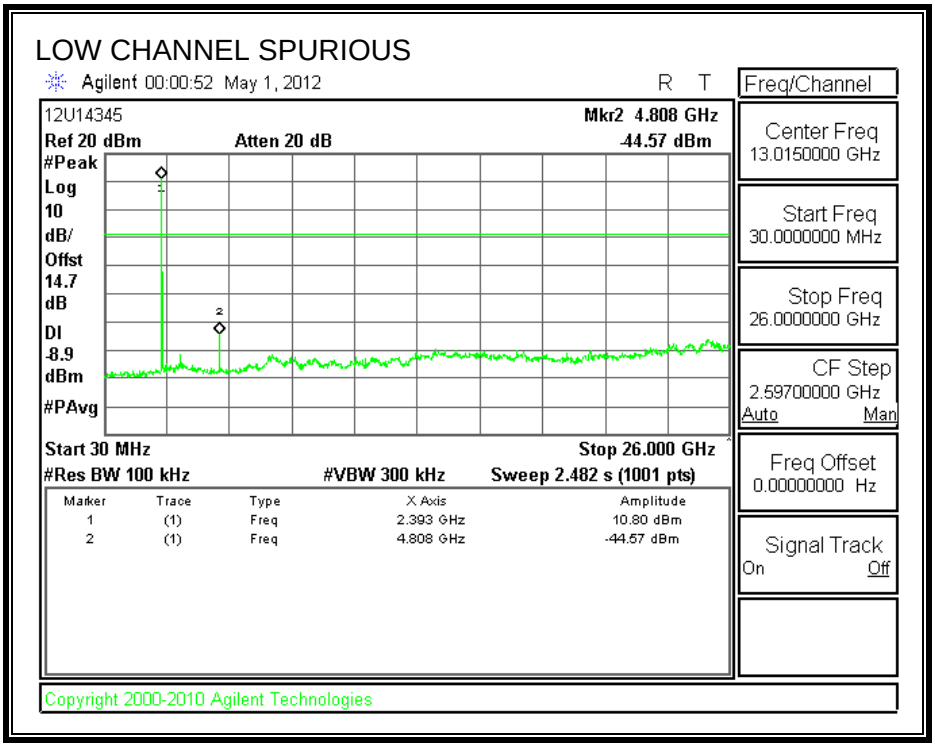

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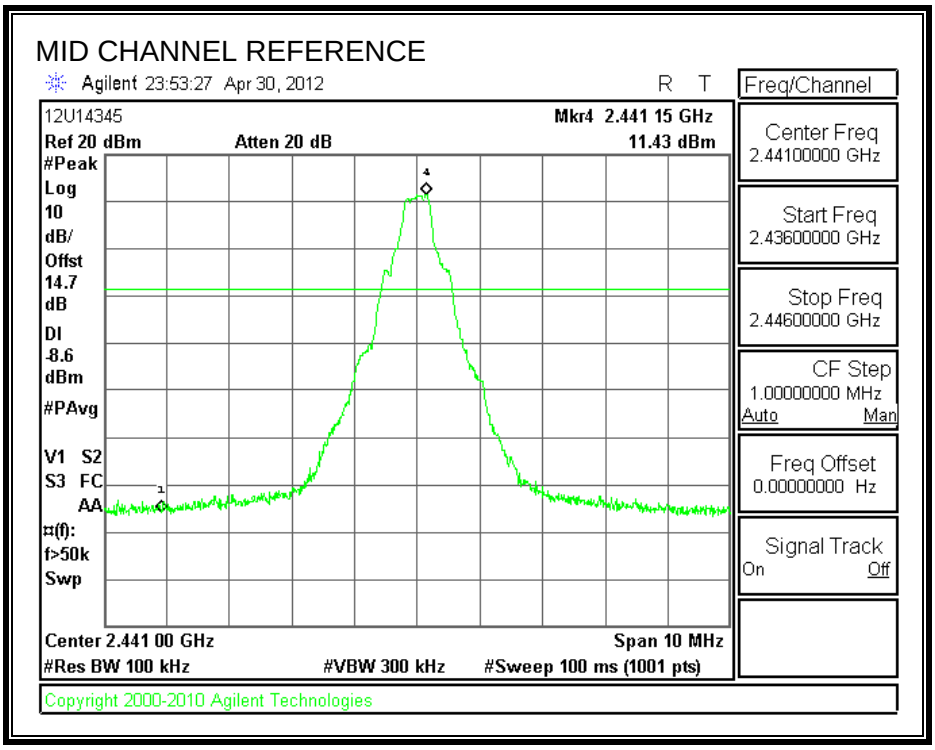
SPURIOUS EMISSIONS, MID CHANNEL



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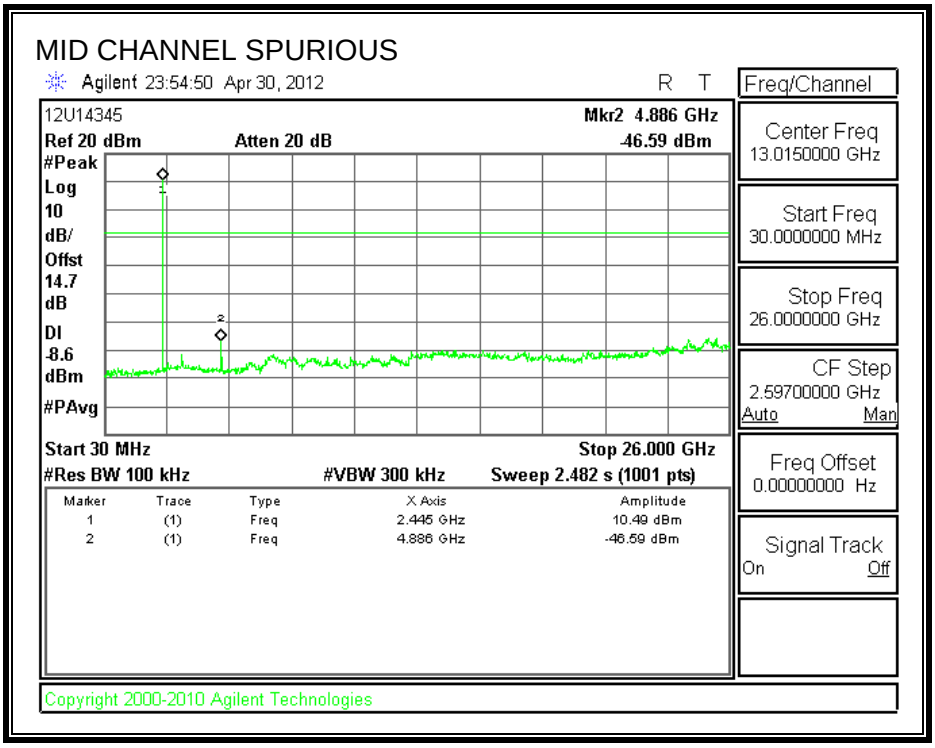
MID CHANNEL SPURIOUS



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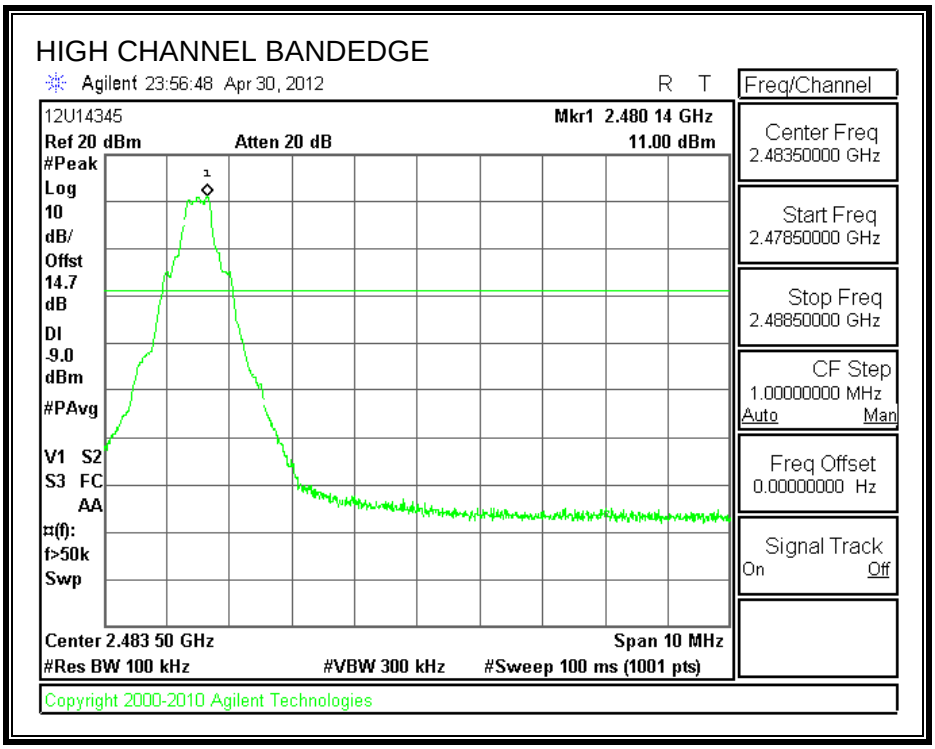

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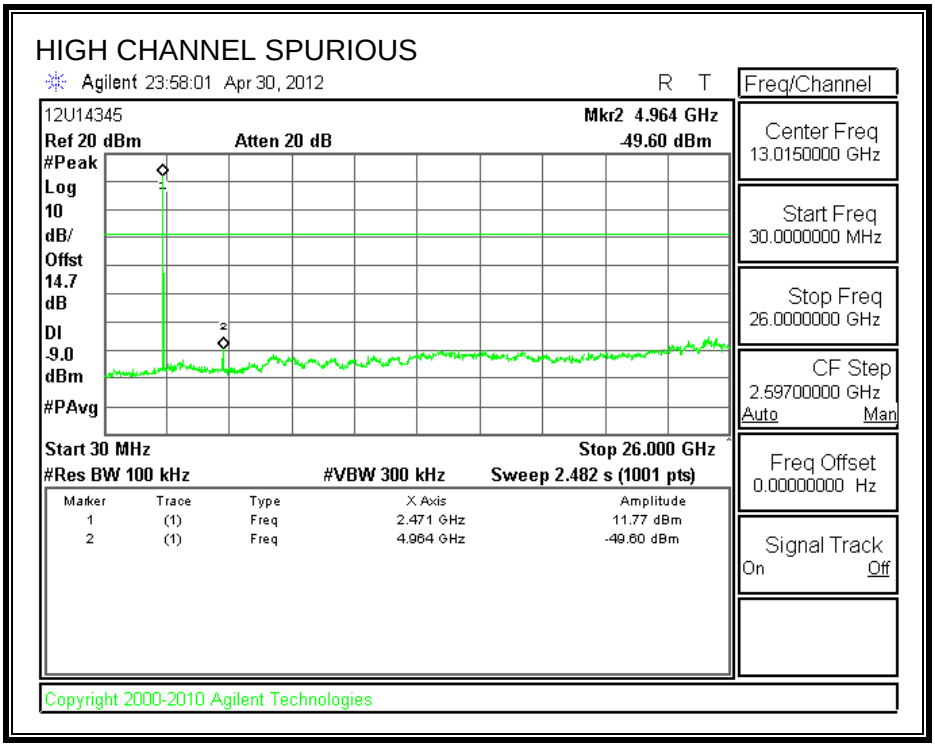

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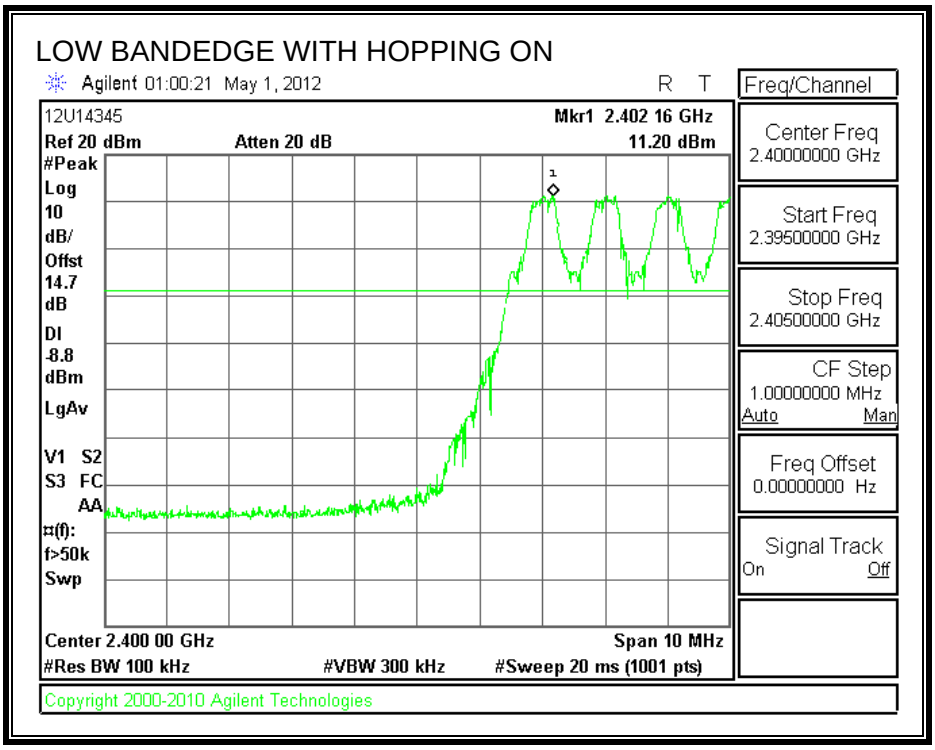
SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON



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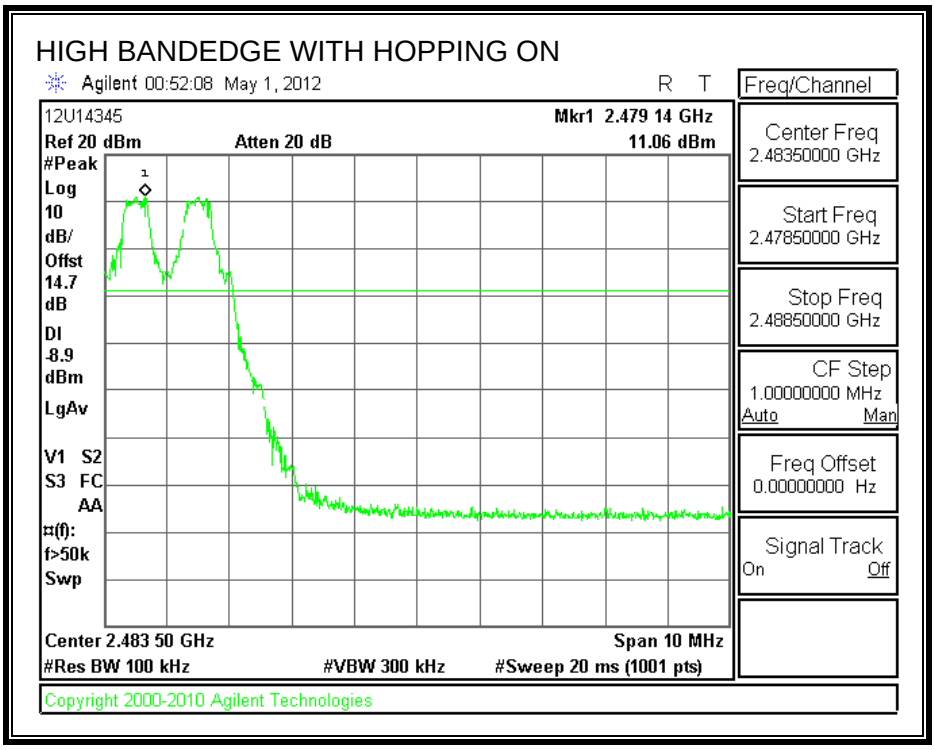

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7.2. ENHANCED DATA RATE 8PSK MODULATION

7.2.1. 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 (kHz)	99% Bandwidth (kHz)
Low	2402	1187.000	1071.000
Middle	2441	1186.000	1101.000
High	2480	1186.000	1096.000

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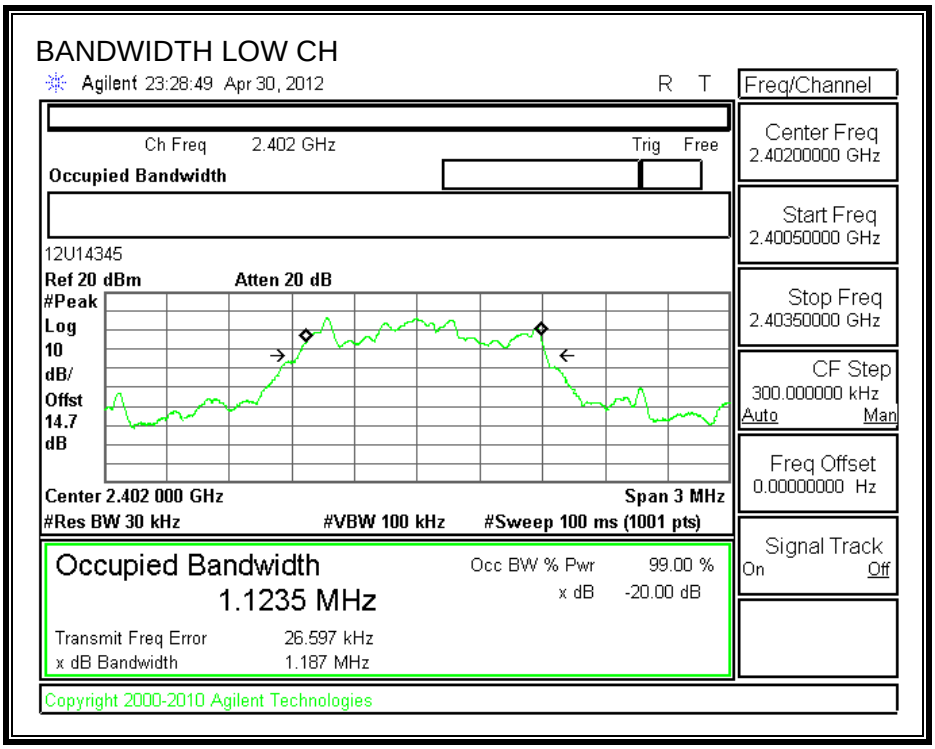
20 dB BANDWIDTH



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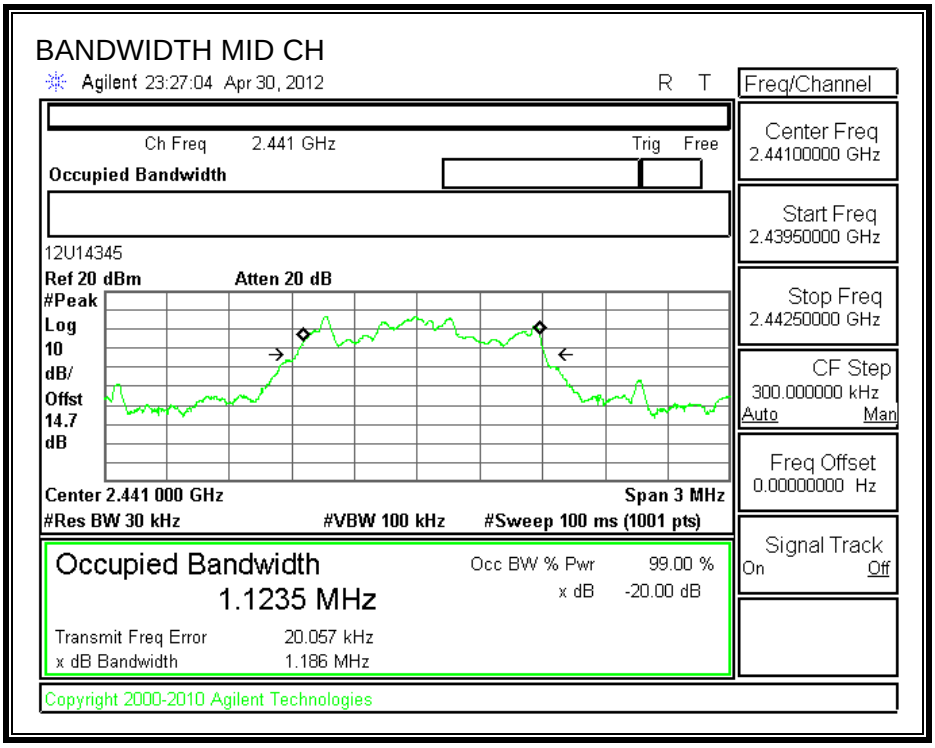

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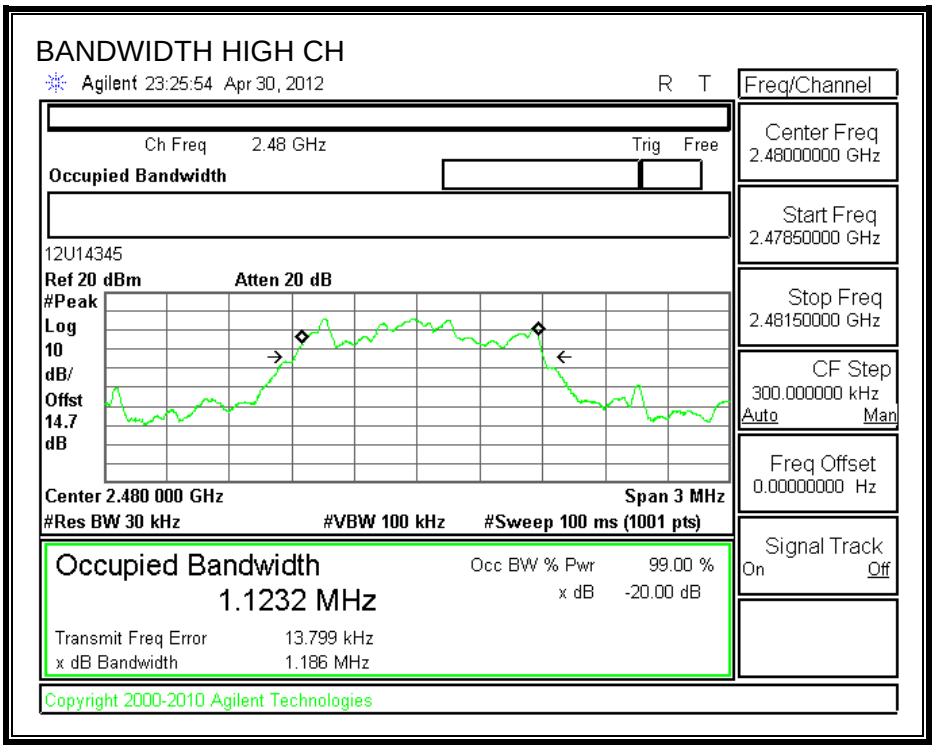

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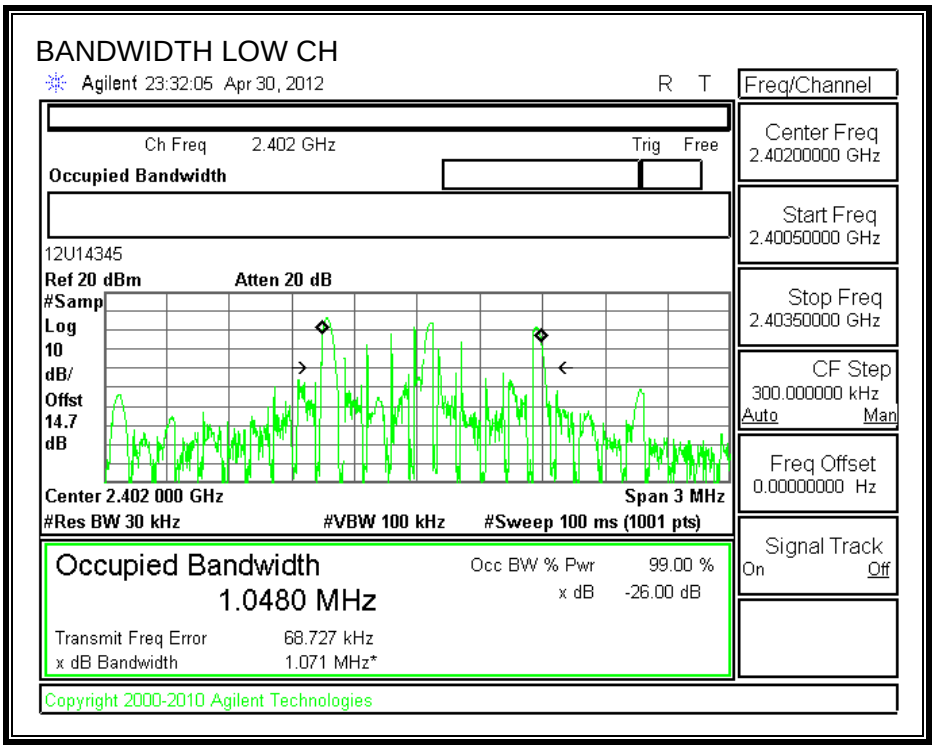
99% BANDWIDTH



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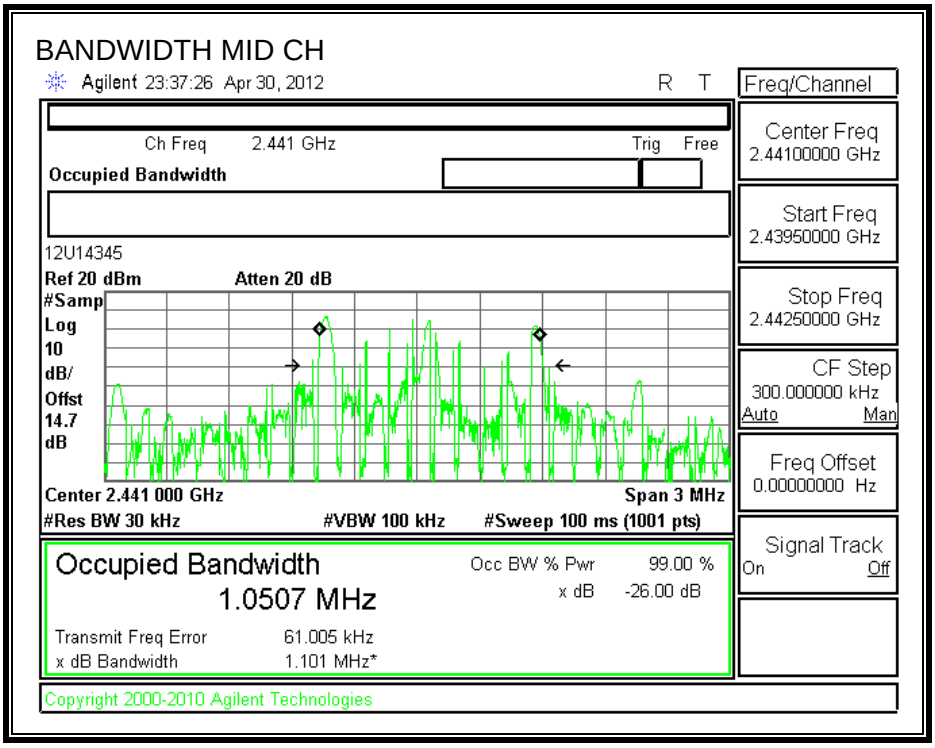

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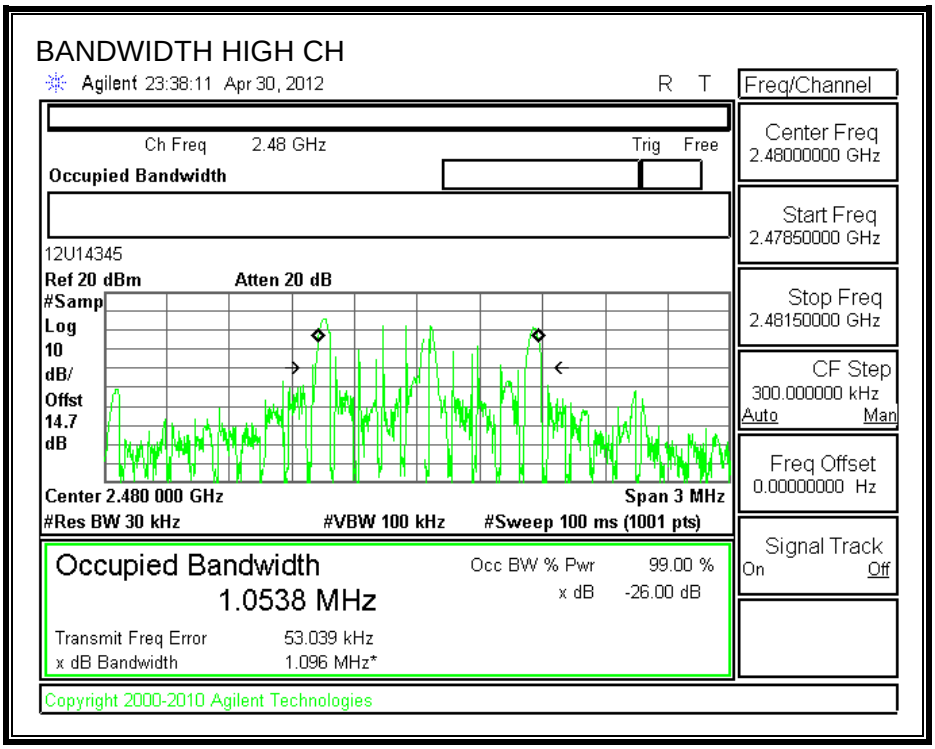

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7.2.2. HOPPING FREQUENCY SEPARATION

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

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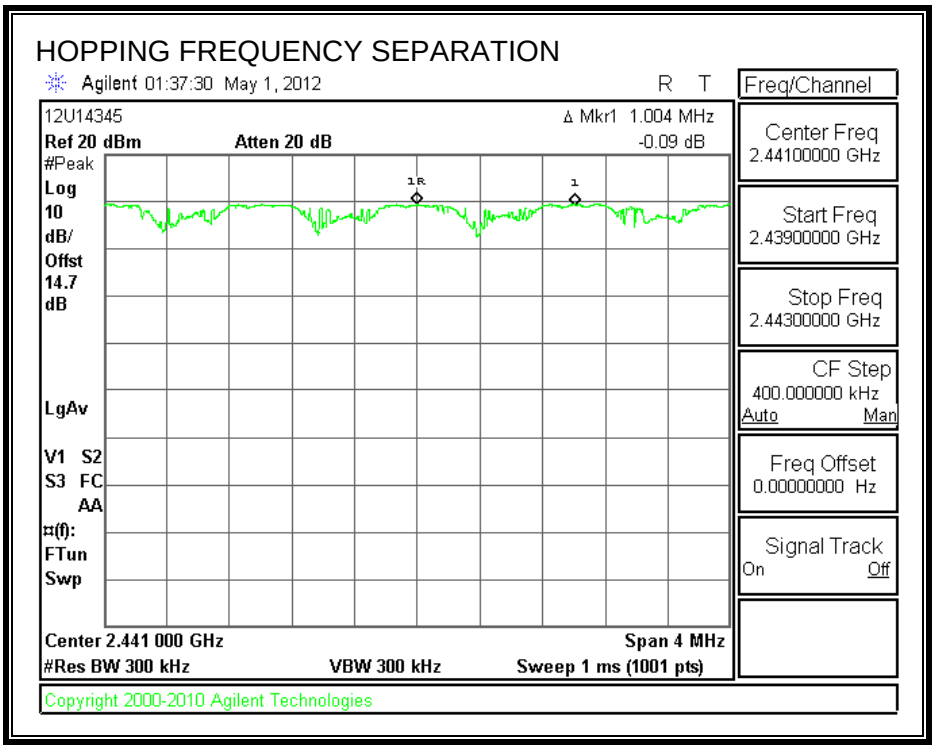
HOPPING FREQUENCY SEPARATION



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7.2.3. 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.

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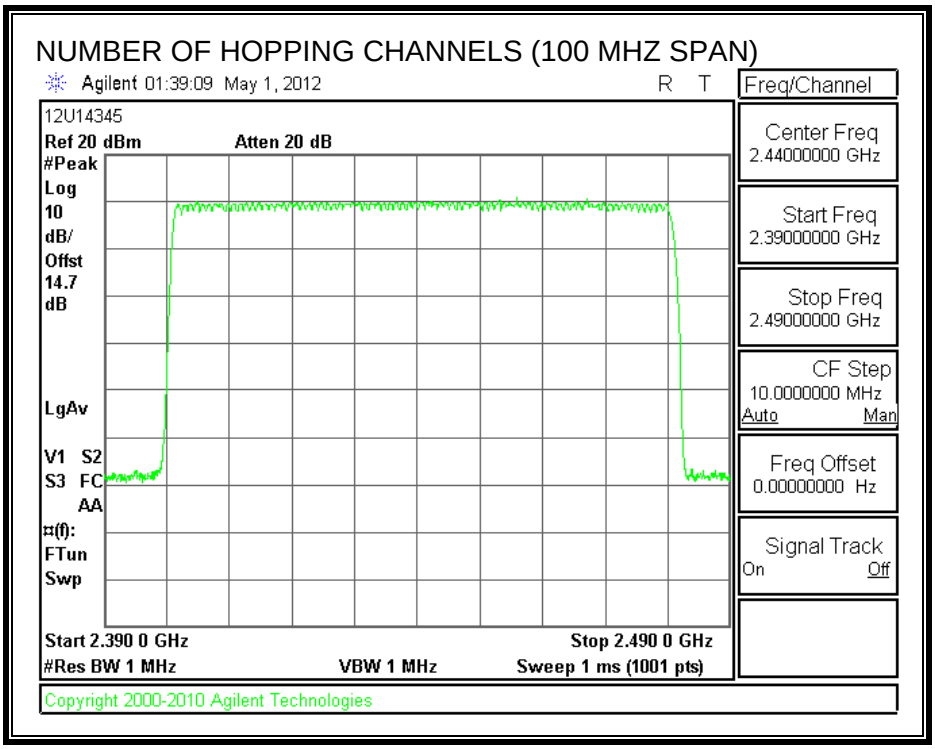
NUMBER OF HOPPING CHANNELS



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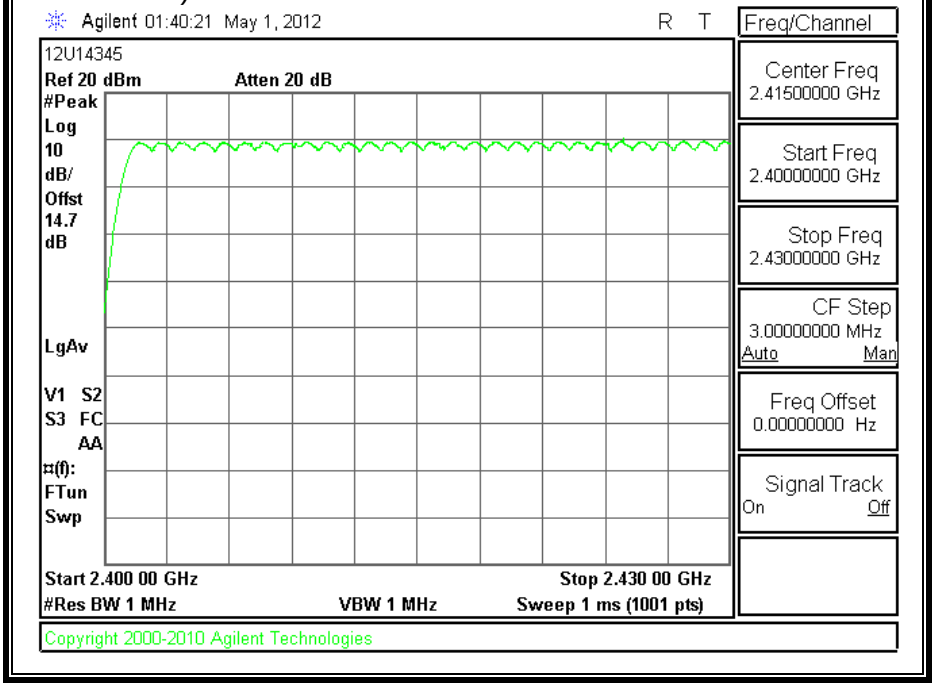
NUMBER OF HOPPING CHANNELS (30 MHZ SPAN, FIRST SEGMENT)



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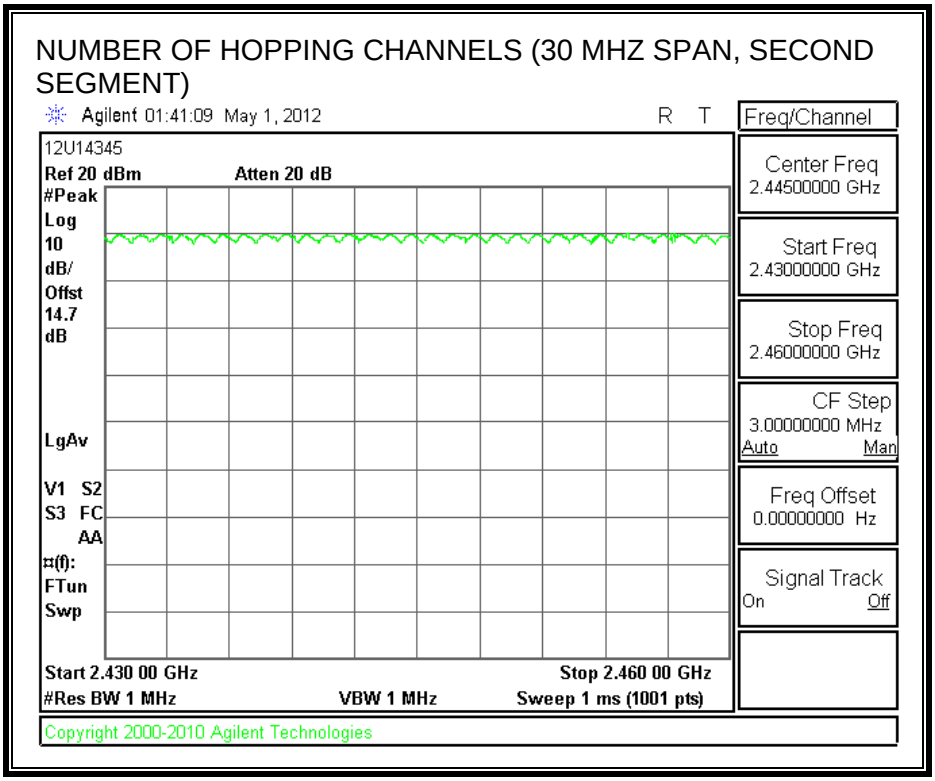
NUMBER OF HOPPING CHANNELS (30 MHZ SPAN, SECOND SEGMENT)



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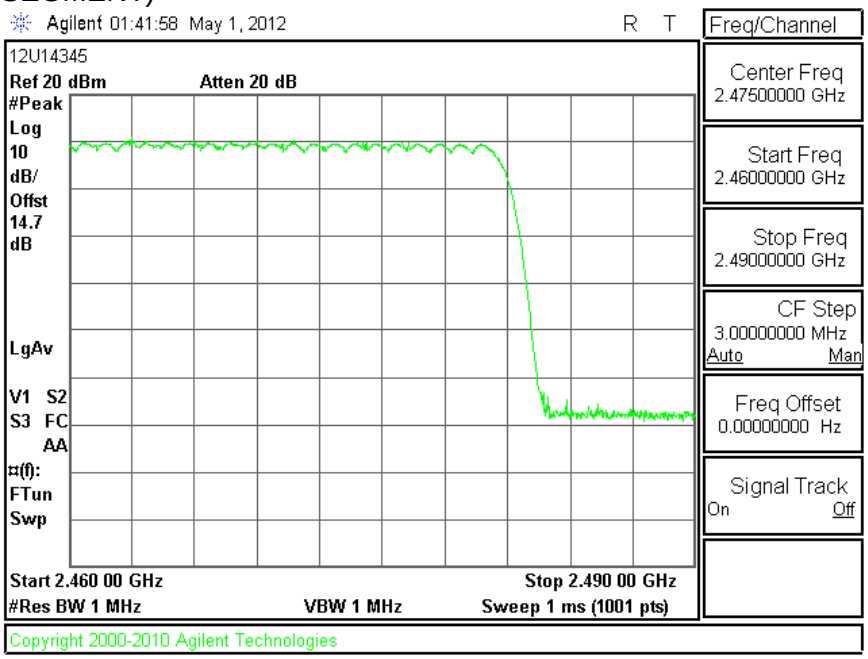
NUMBER OF HOPPING CHANNELS (30 MHZ SPAN, THIRD SEGMENT)



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7.2.4. AVERAGE TIME OF OCCUPANCY

LIMIT

FCC §15.247 (a) (1) (iii)

IC RSS-210 A8.1 (d)

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

TEST PROCEDURE

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

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

RESULTS

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

8PSK (EDR) Mode

DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of (sec)	Limit (sec)	Margin (sec)
DH1	0.3917	32	0.125	0.4	-0.275
DH3	1.6500	23	0.380	0.4	-0.021
DH5	2.9000	13	0.377	0.4	-0.023

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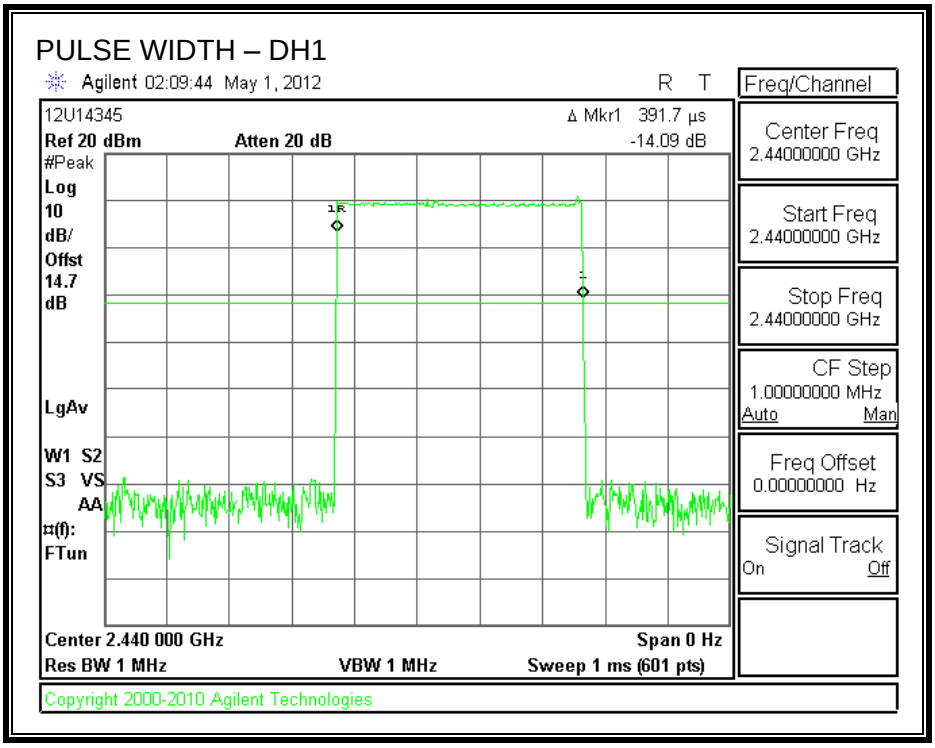
PULSE WIDTH - DH1



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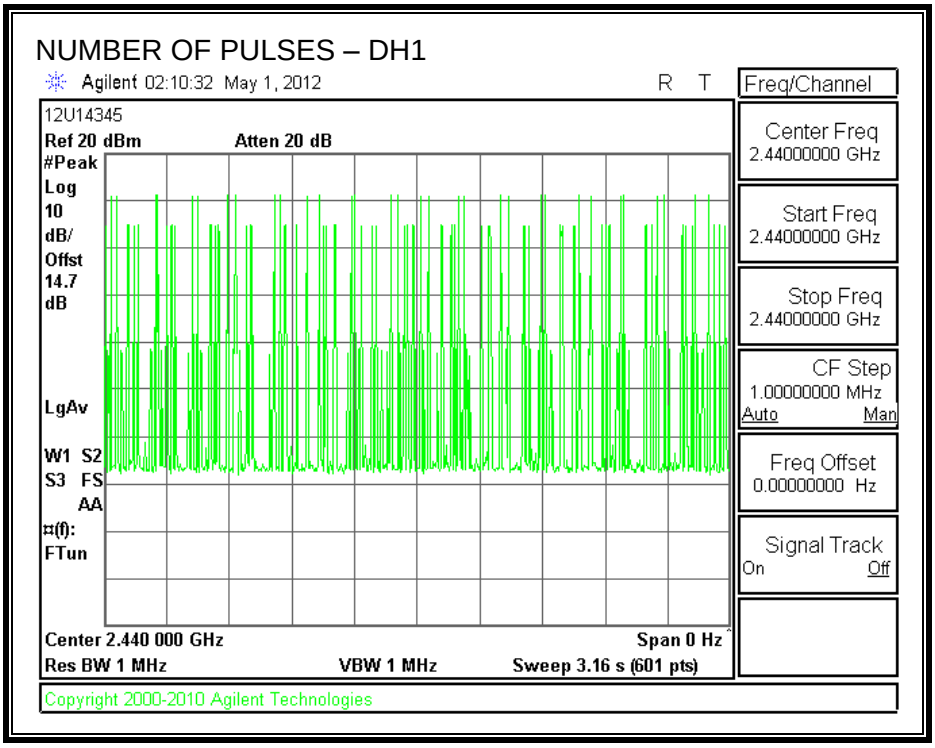
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH1



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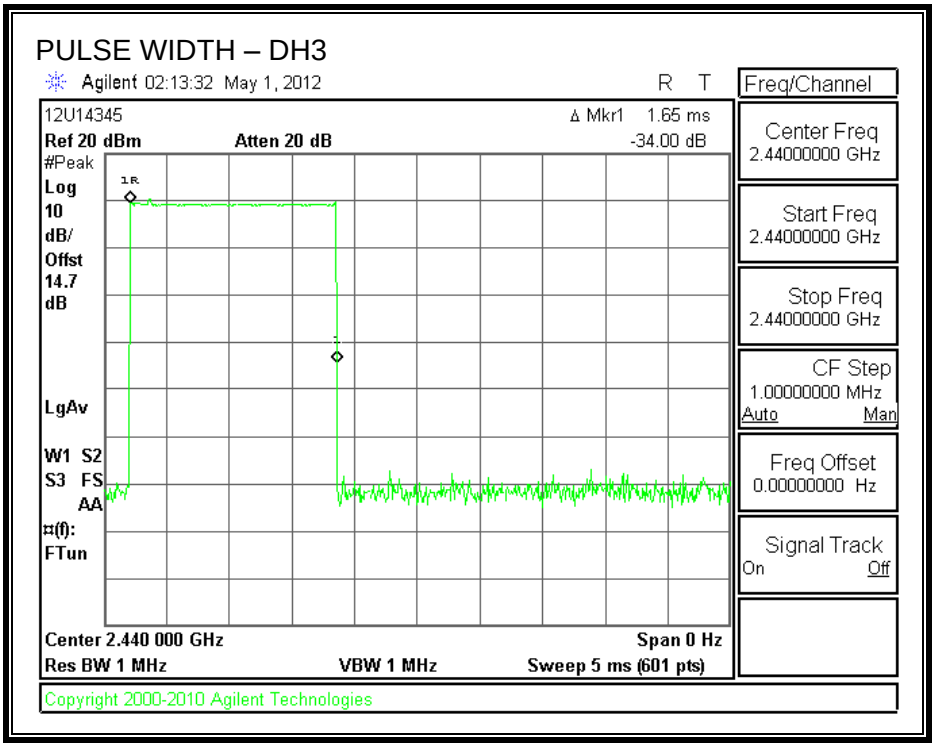
PULSE WIDTH – DH3



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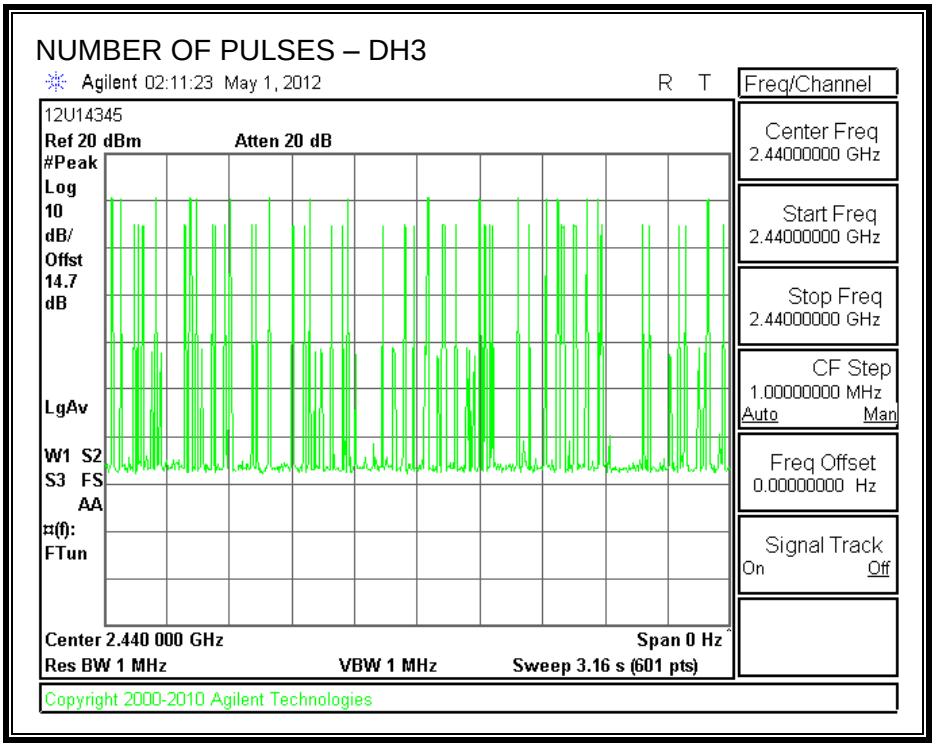
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH3



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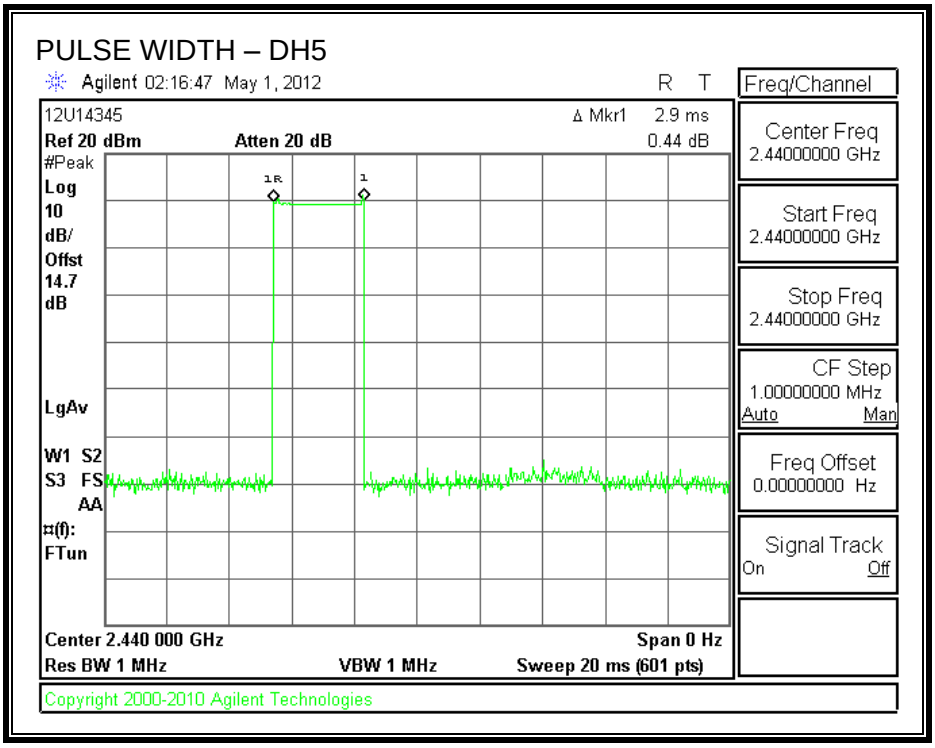
PULSE WIDTH – DH5



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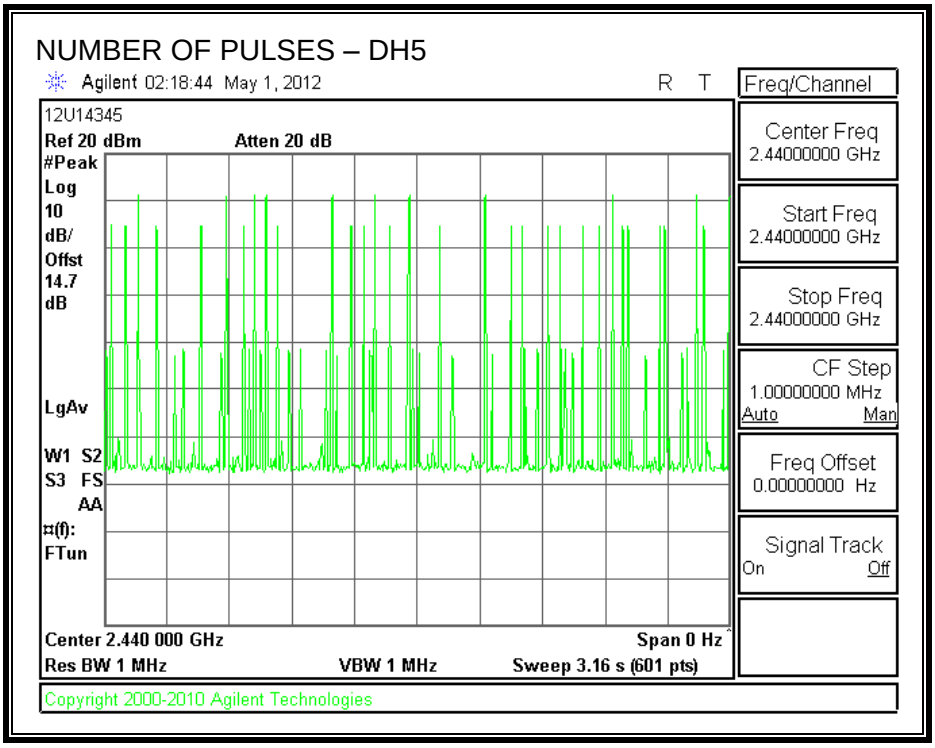
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH5



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7.2.5. OUTPUT POWER

LIMIT

§15.247 (b) (1)

RSS-210 Issue 7 Clause A8.4

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

TEST PROCEDURE

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

RESULTS

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	11.50	30	-18.50
Middle	2441	11.60	30	-18.40
High	2480	11.20	30	-18.80

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7.2.6. AVERAGE POWER

LIMIT

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

The cable assembly insertion loss of 0.8 dB (including 0.5 dB pad and 0.3 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

DH1

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	8.90
Middle	2441	9.10
High	2480	8.80

DH3

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	9.00
Middle	2441	9.00
High	2480	8.70

DH5

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	8.90
Middle	2441	9.10
High	2480	8.70

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7.2.7. 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

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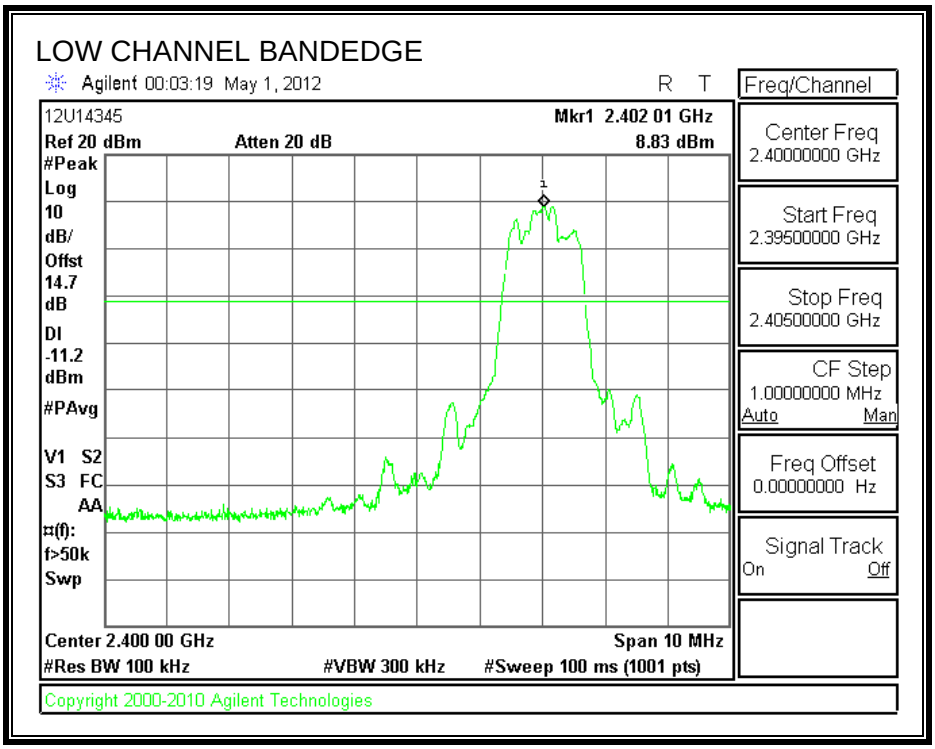
SPURIOUS EMISSIONS, LOW CHANNEL



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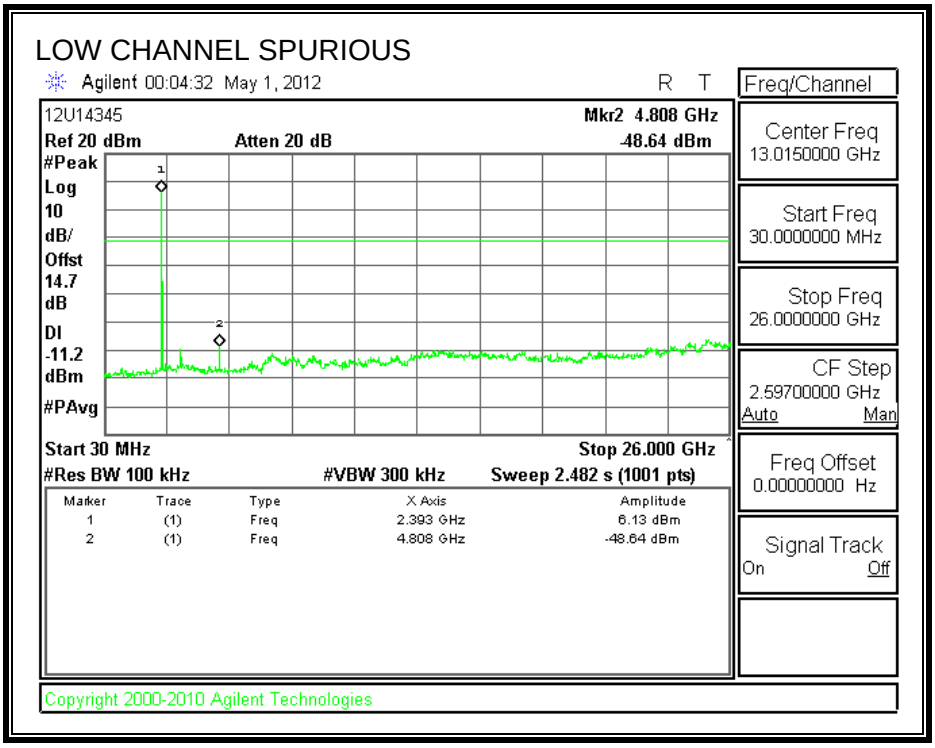

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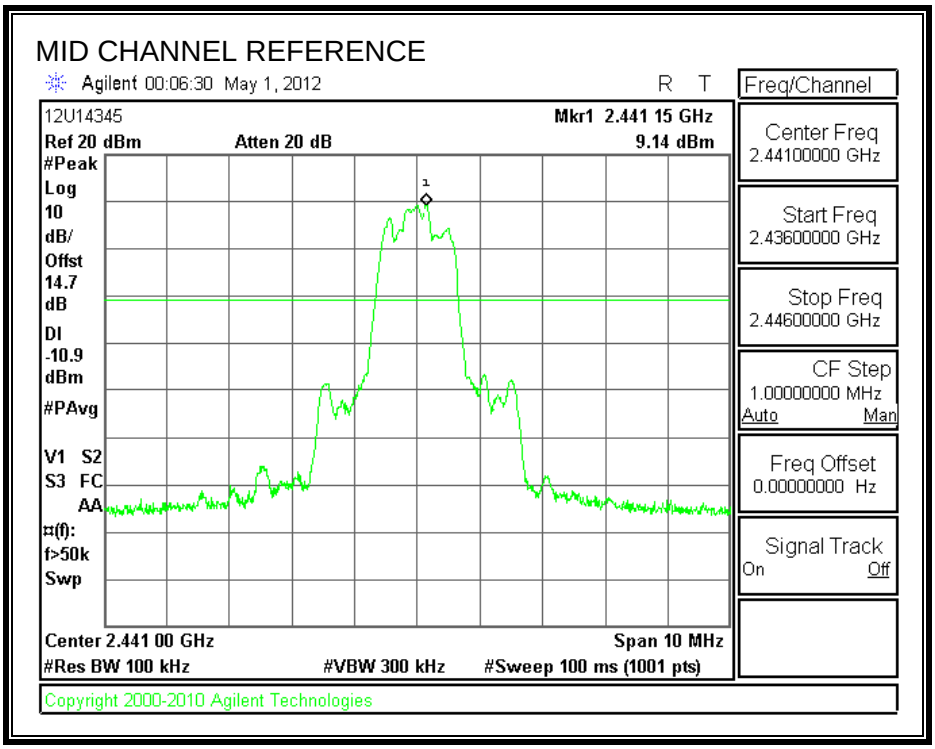
SPURIOUS EMISSIONS, MID CHANNEL



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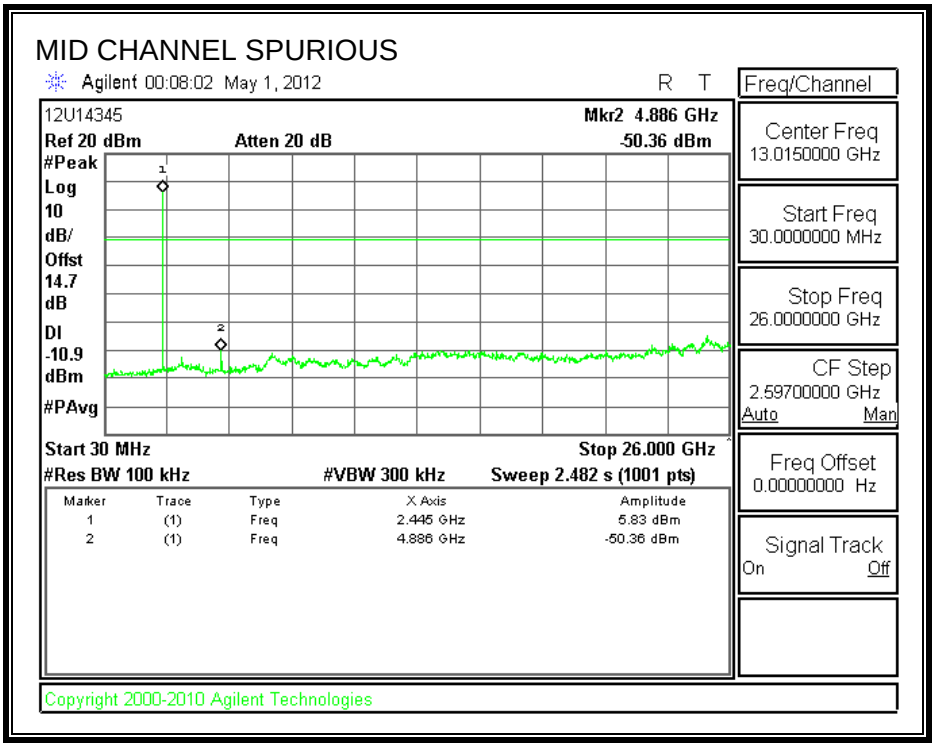

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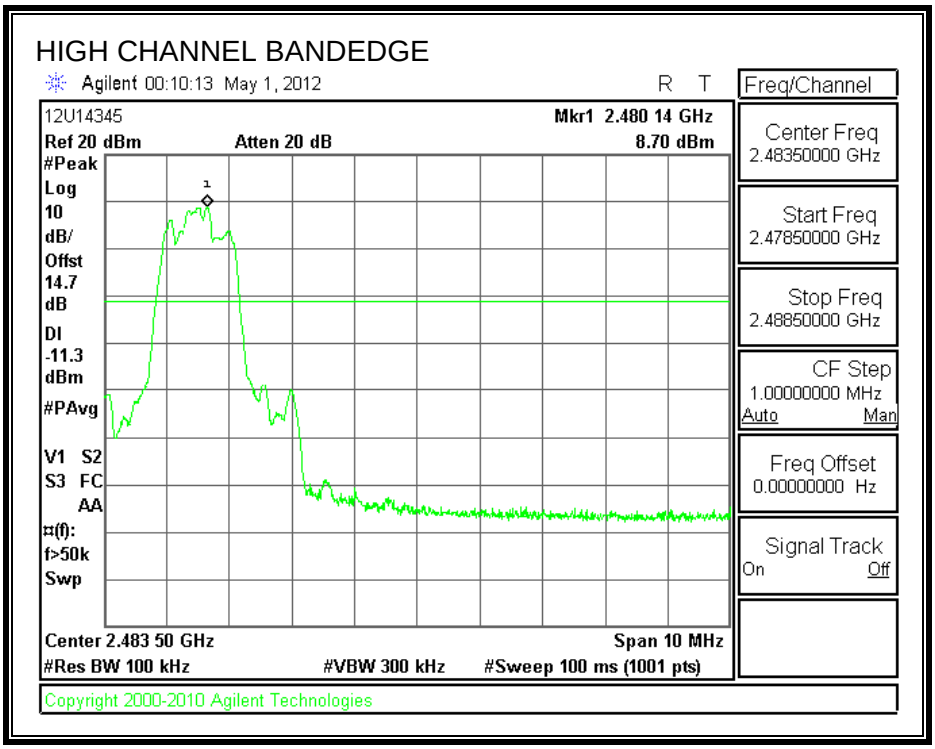
SPURIOUS EMISSIONS, HIGH CHANNEL



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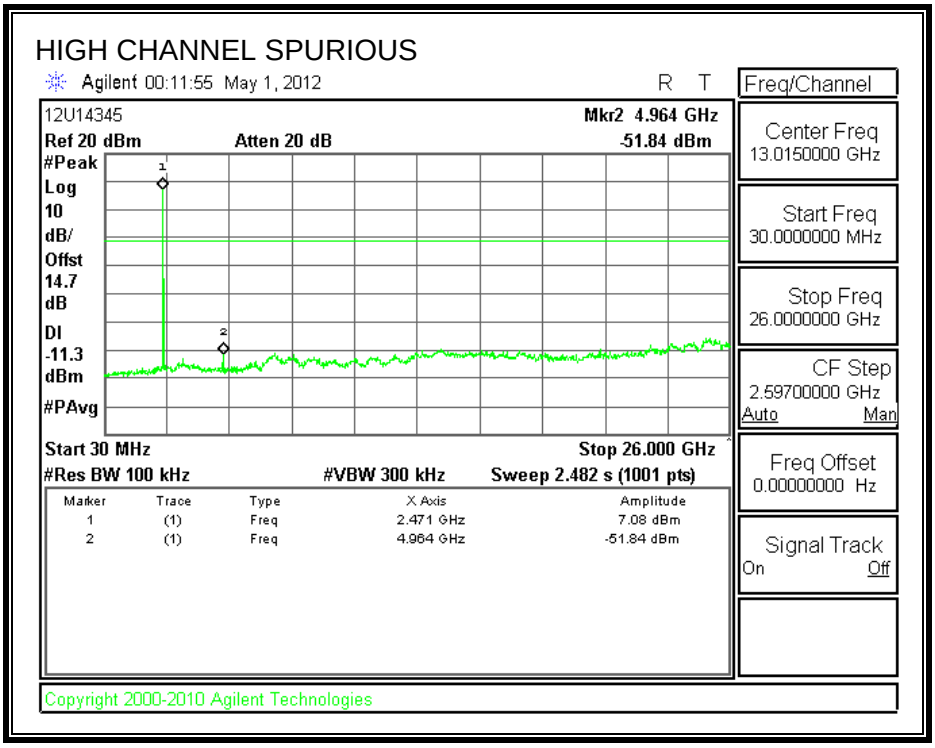

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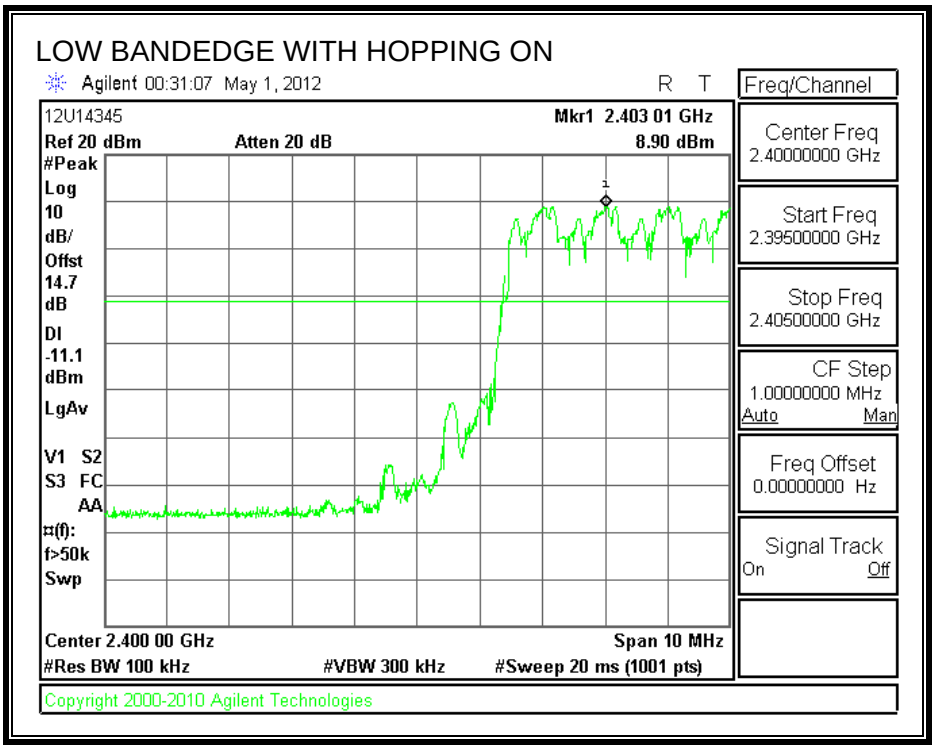
SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON



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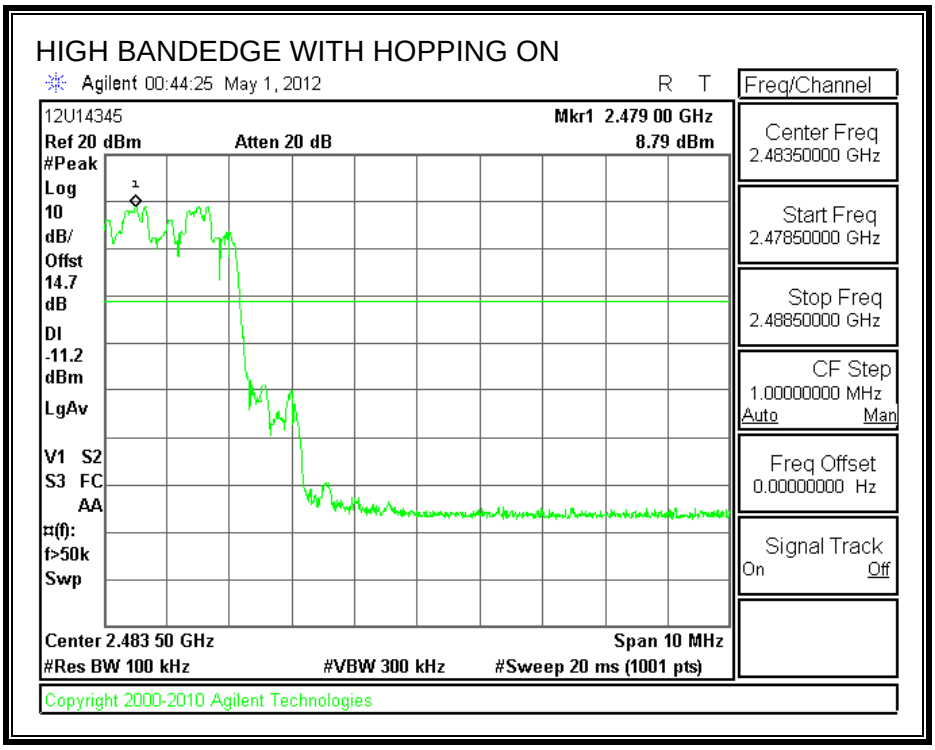

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8. RADIATED TEST RESULTS

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.

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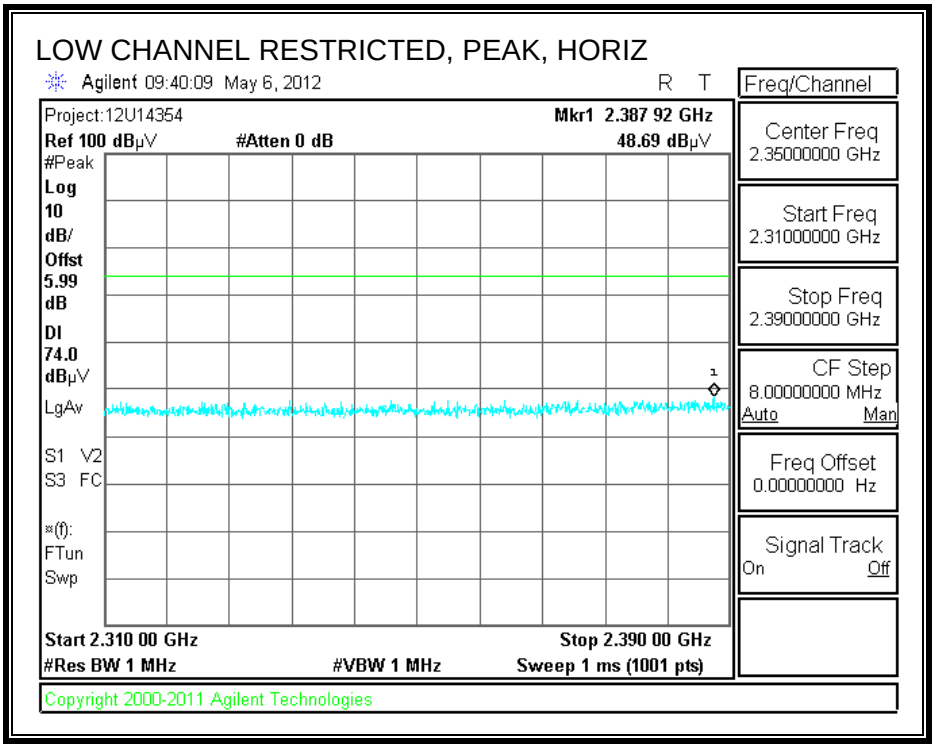
8.2. TRANSMITTER ABOVE 1 GHz

8.2.1. BASIC DATA RATE GFSK MODULATION

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



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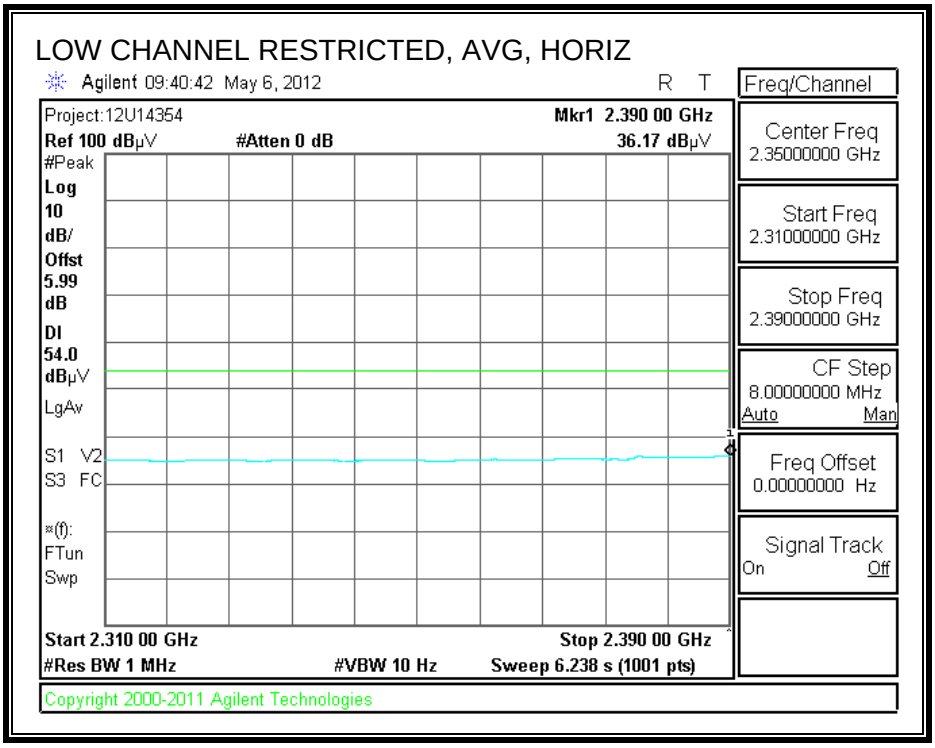
LOW CHANNEL RESTRICTED, AVG, HORIZ



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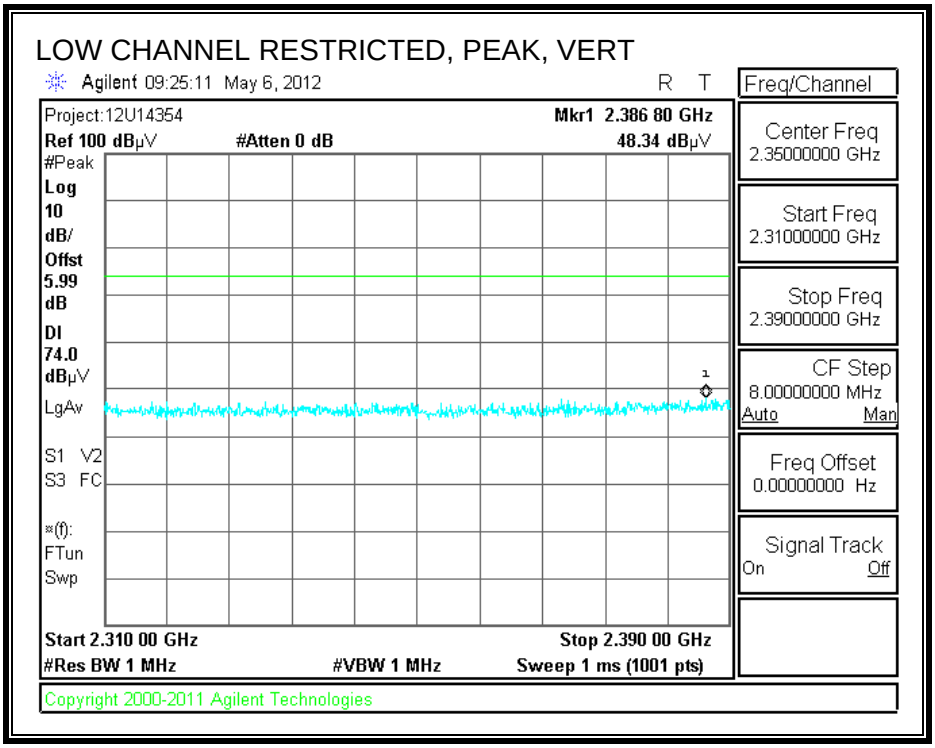
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



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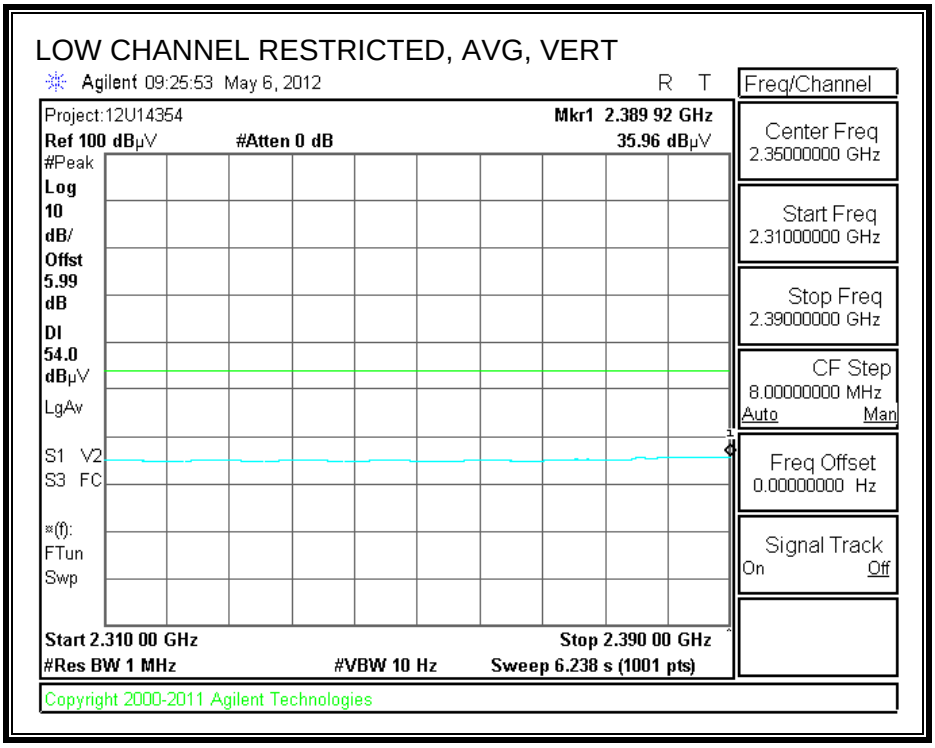

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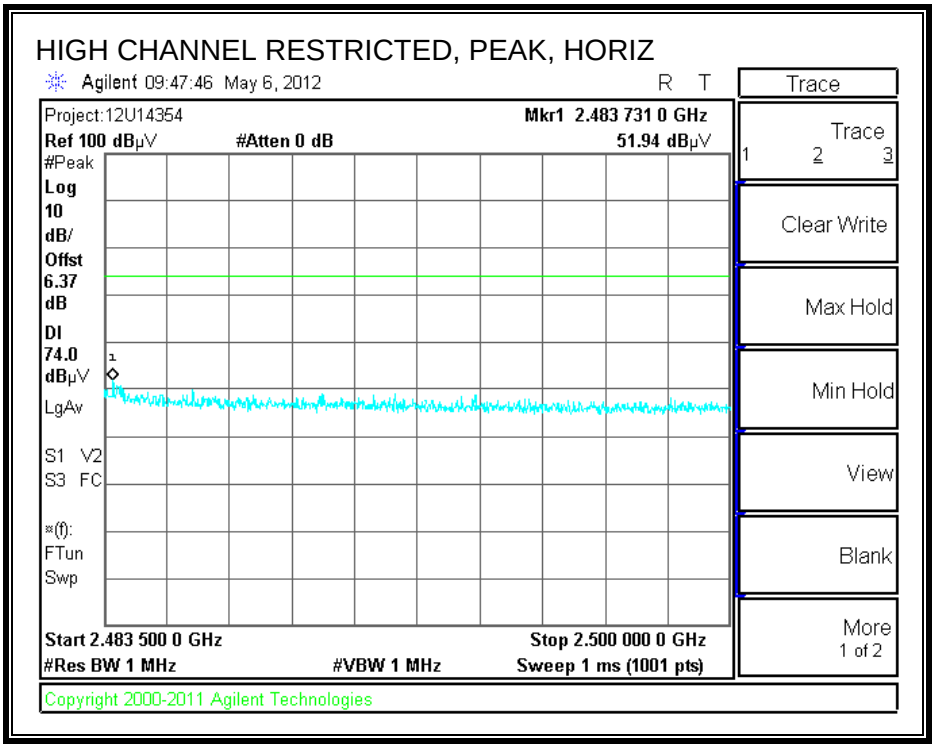
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



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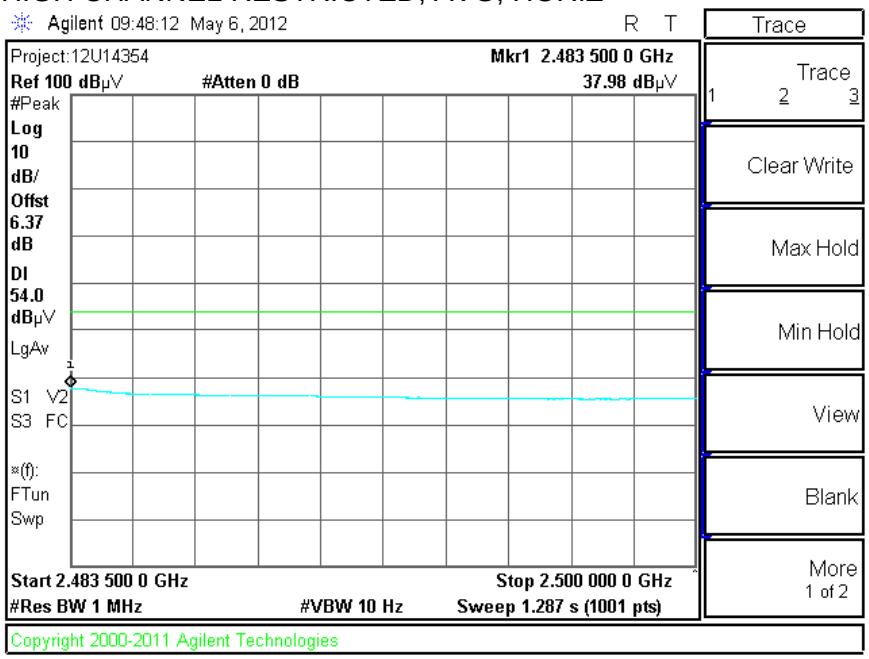
HIGH CHANNEL RESTRICTED, AVG, HORIZ



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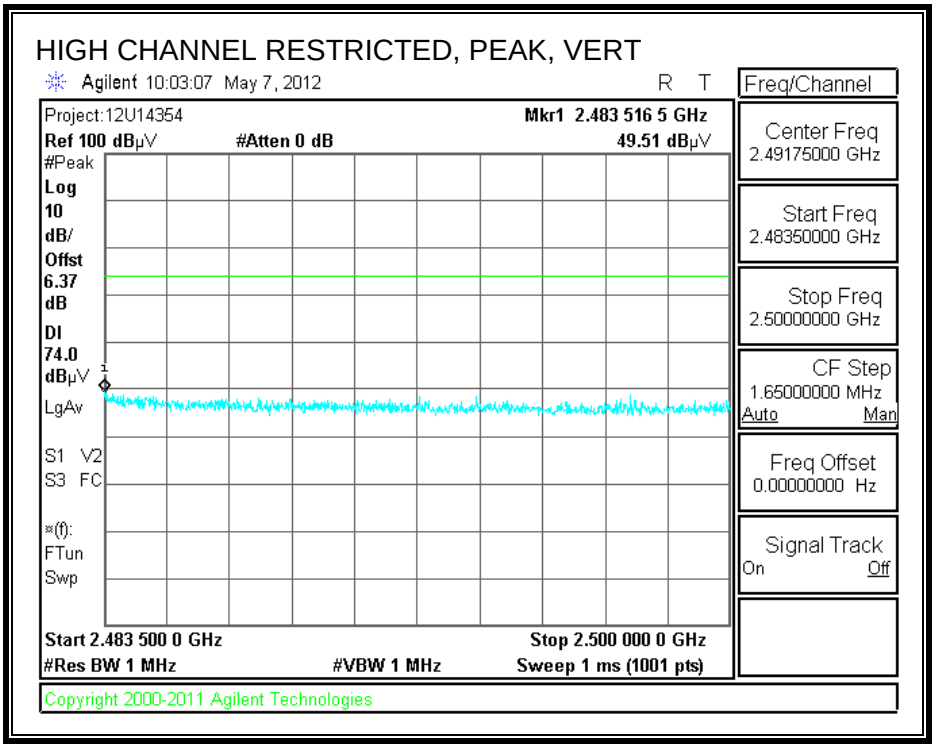
RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



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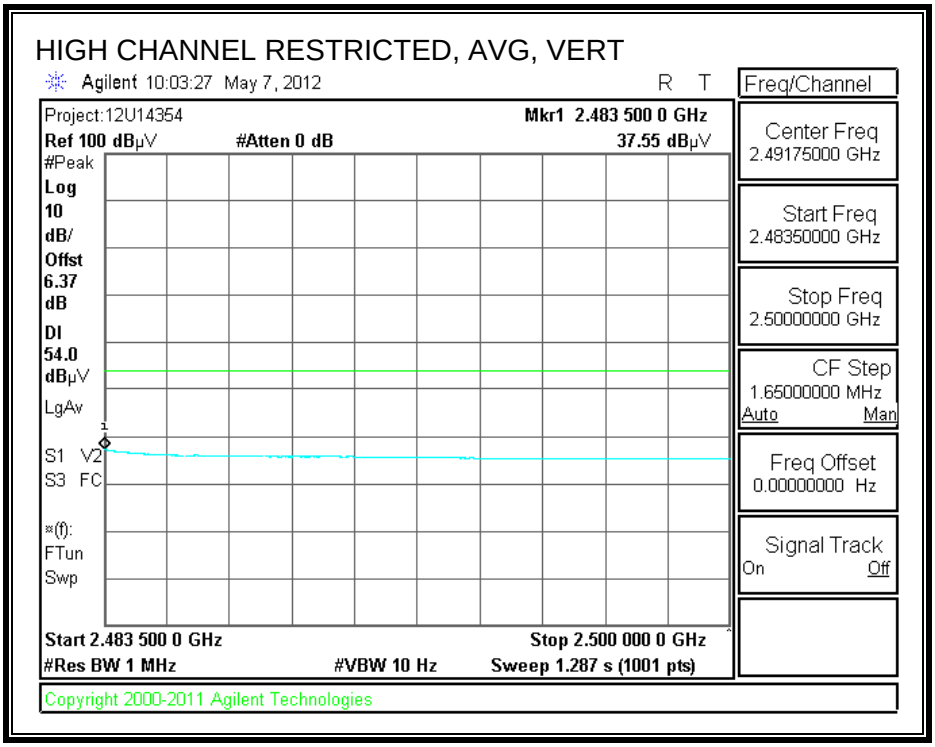
HIGH CHANNEL RESTRICTED, AVG, VERT



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HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: MENGISTU MEKURIA
Date: 05/06/12
Project #: 12U14354
Company: LG ELECTRONICS
Test Target: FCC PART 15C
Mode Oper: TX, GFSK MODE

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

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 Channel													
4.804	3.0	47.6	33.4	6.2	-35.5	0.0	0.0	51.7	74.0	-22.3	V	P	
4.804	3.0	40.6	33.4	6.2	-35.5	0.0	0.0	44.7	54.0	-9.3	V	A	
7.206	3.0	37.3	35.5	8.4	-35.4	0.0	0.0	45.8	74.0	-28.2	V	P	
7.206	3.0	26.1	35.5	8.4	-35.4	0.0	0.0	34.5	54.0	-19.5	V	A	
4.804	3.0	43.6	33.4	6.2	-35.5	0.0	0.0	47.7	74.0	-26.3	H	P	
4.804	3.0	36.2	33.4	6.2	-35.5	0.0	0.0	40.3	54.0	-13.7	H	A	
7.206	3.0	36.4	35.5	8.4	-35.4	0.0	0.0	44.9	74.0	-29.1	H	P	
7.206	3.0	24.3	35.5	8.4	-35.4	0.0	0.0	32.8	54.0	-21.2	H	A	
Mid Channel													
4.882	3.0	46.4	33.5	6.2	-35.5	0.0	0.0	50.7	74.0	-23.3	V	P	
4.882	3.0	39.5	33.5	6.2	-35.5	0.0	0.0	43.7	54.0	-10.3	V	A	
7.323	3.0	38.6	35.7	8.4	-35.4	0.0	0.0	47.3	74.0	-26.7	V	P	
7.323	3.0	28.2	35.7	8.4	-35.4	0.0	0.0	36.9	54.0	-17.1	V	A	
4.882	3.0	43.1	33.5	6.2	-35.5	0.0	0.0	47.3	74.0	-26.7	H	P	
4.882	3.0	35.8	33.5	6.2	-35.5	0.0	0.0	40.1	54.0	-13.9	H	A	
7.323	3.0	36.7	35.7	8.4	-35.4	0.0	0.0	45.4	74.0	-28.6	H	P	
7.323	3.0	24.9	35.7	8.4	-35.4	0.0	0.0	33.5	54.0	-20.5	H	A	
High Channel													
4.960	3.0	44.7	33.6	6.3	-35.5	0.0	0.0	49.1	74.0	-24.9	V	P	
4.960	3.0	37.3	33.6	6.3	-35.5	0.0	0.0	41.7	54.0	-12.3	V	A	
7.440	3.0	38.8	35.9	8.4	-35.5	0.0	0.0	47.7	74.0	-26.3	V	P	
7.440	3.0	28.8	35.9	8.4	-35.5	0.0	0.0	37.7	54.0	-16.3	V	A	
9.920	3.0	37.2	38.1	9.0	-35.9	0.0	0.0	48.5	74.0	-25.5	V	P	
9.920	3.0	25.6	38.1	9.0	-35.9	0.0	0.0	36.8	54.0	-17.2	V	A	
4.960	3.0	42.3	33.6	6.3	-35.5	0.0	0.0	46.7	74.0	-27.3	H	P	
4.960	3.0	35.3	33.6	6.3	-35.5	0.0	0.0	39.7	54.0	-14.3	H	A	
7.440	3.0	37.4	35.9	8.4	-35.5	0.0	0.0	46.3	74.0	-27.7	H	P	
7.440	3.0	24.5	35.9	8.4	-35.5	0.0	0.0	33.3	54.0	-20.7	H	A	
9.920	3.0	35.2	38.1	9.0	-35.9	0.0	0.0	46.5	74.0	-27.5	H	P	
9.920	3.0	23.7	38.1	9.0	-35.9	0.0	0.0	35.0	54.0	-19.0	H	A	

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

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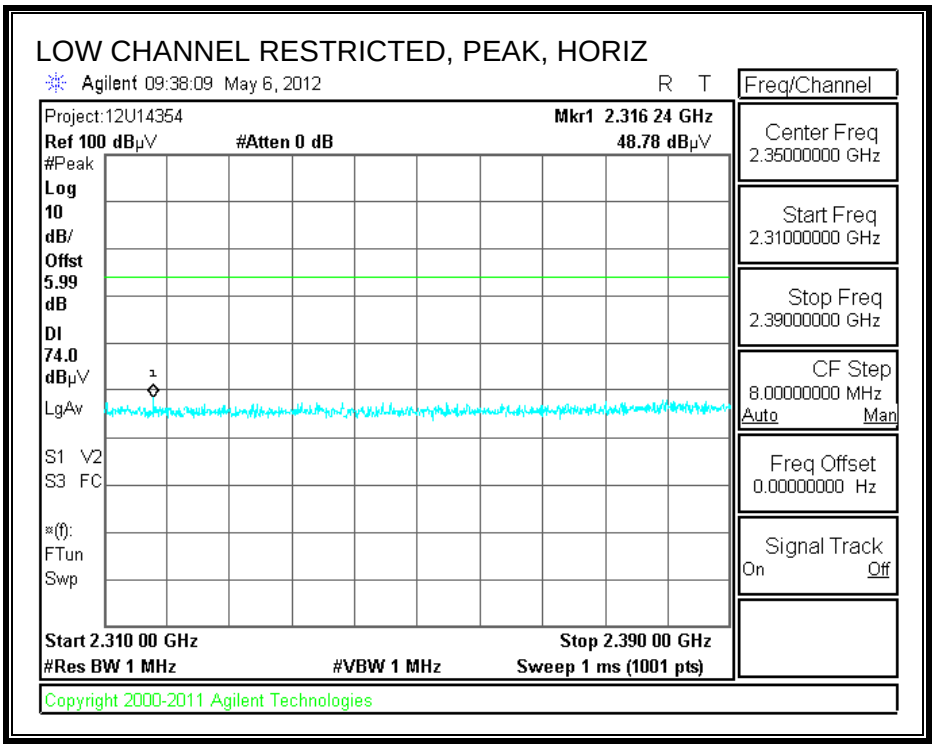
8.2.2. ENHANCED DATA RATE 8PSK MODULATION

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



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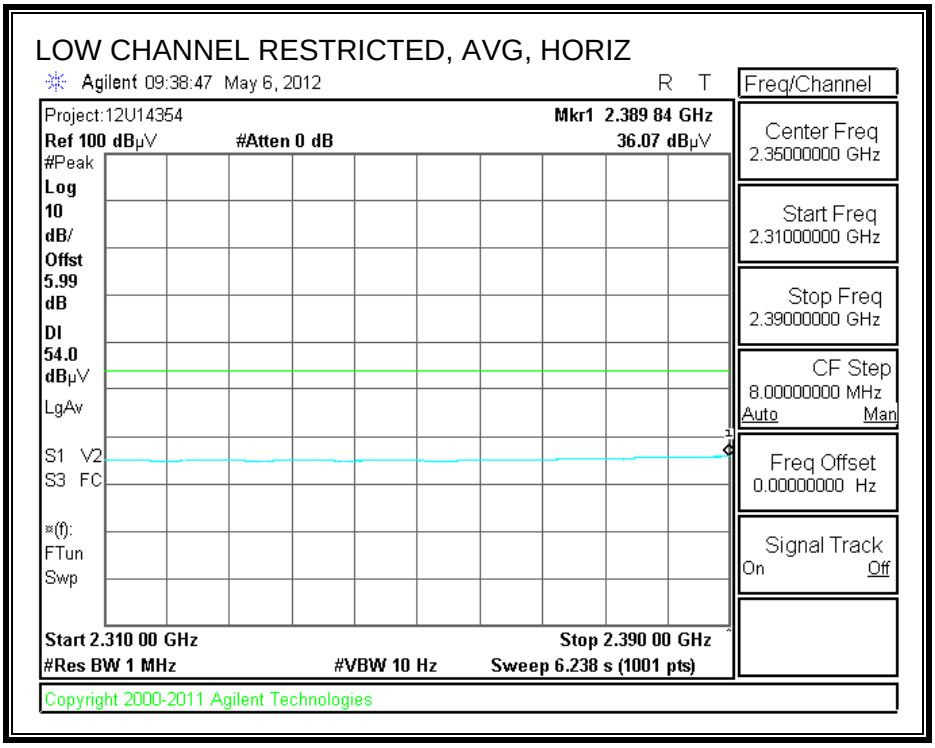

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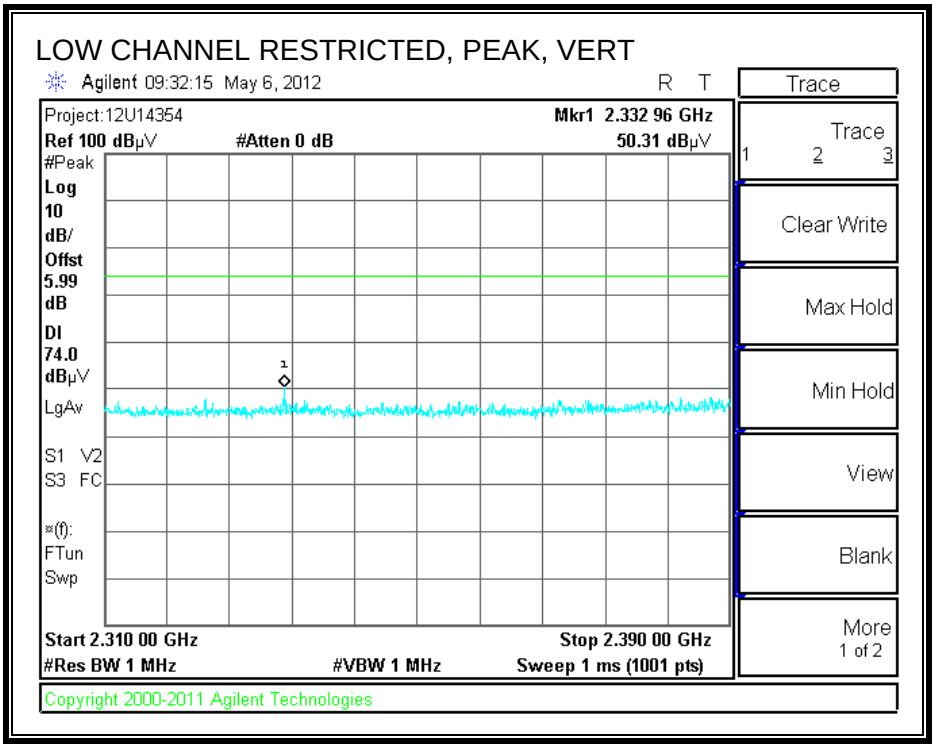
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



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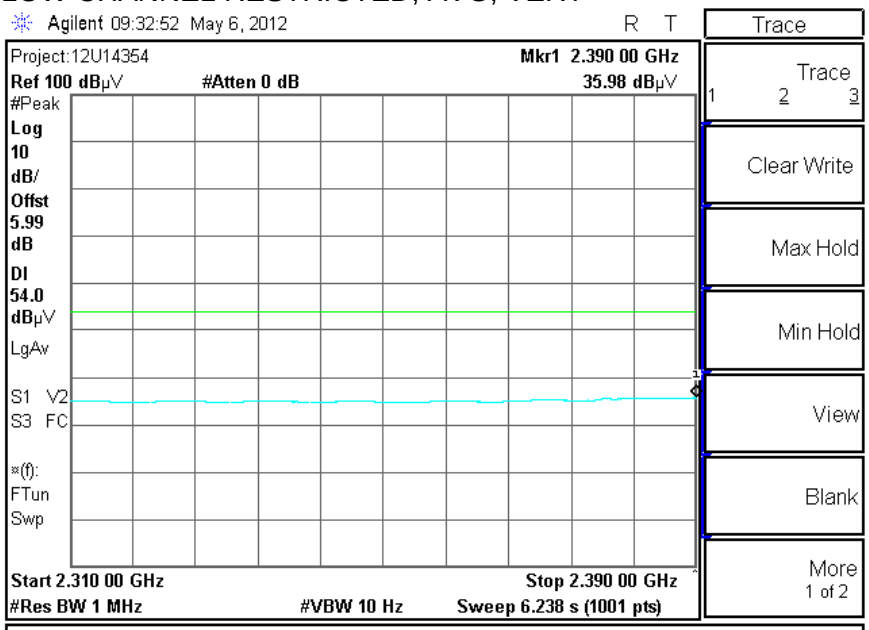
LOW CHANNEL RESTRICTED, AVG, VERT



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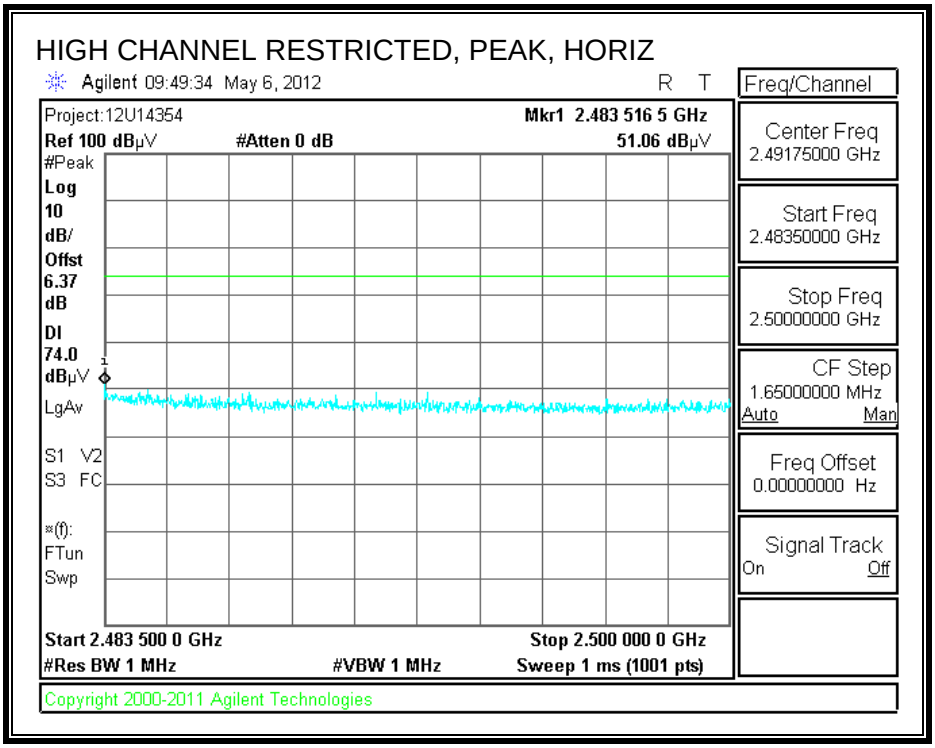
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



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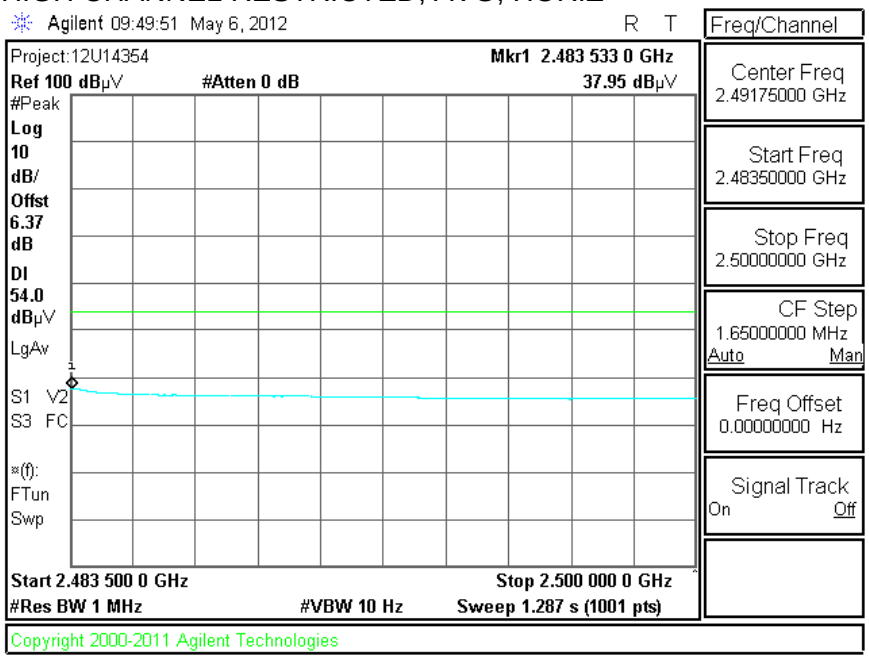
HIGH CHANNEL RESTRICTED, AVG, HORIZ



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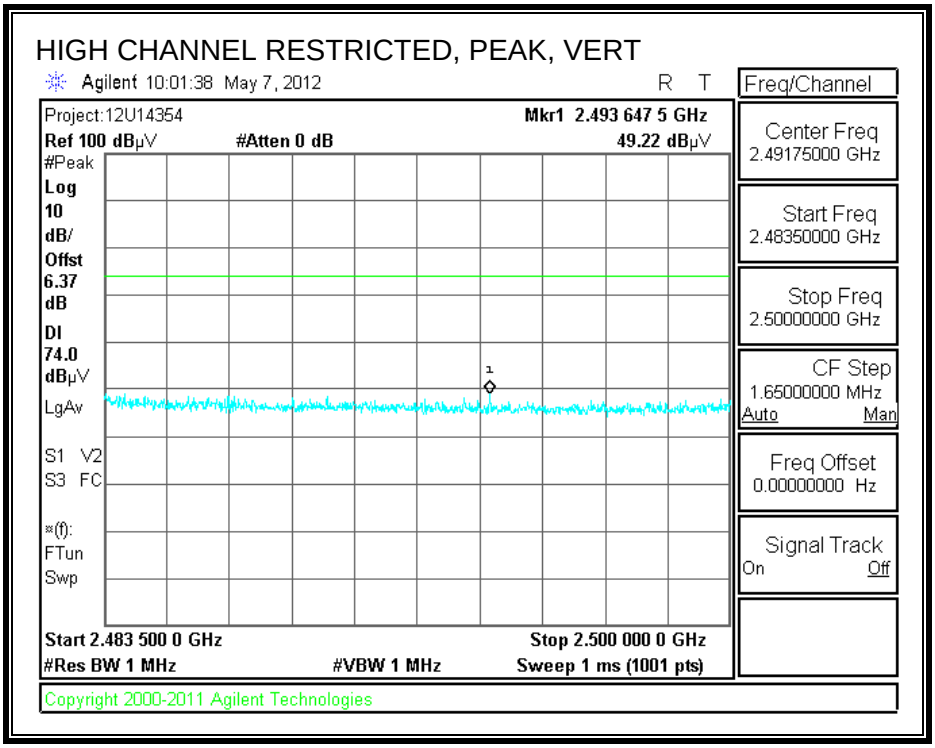
RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



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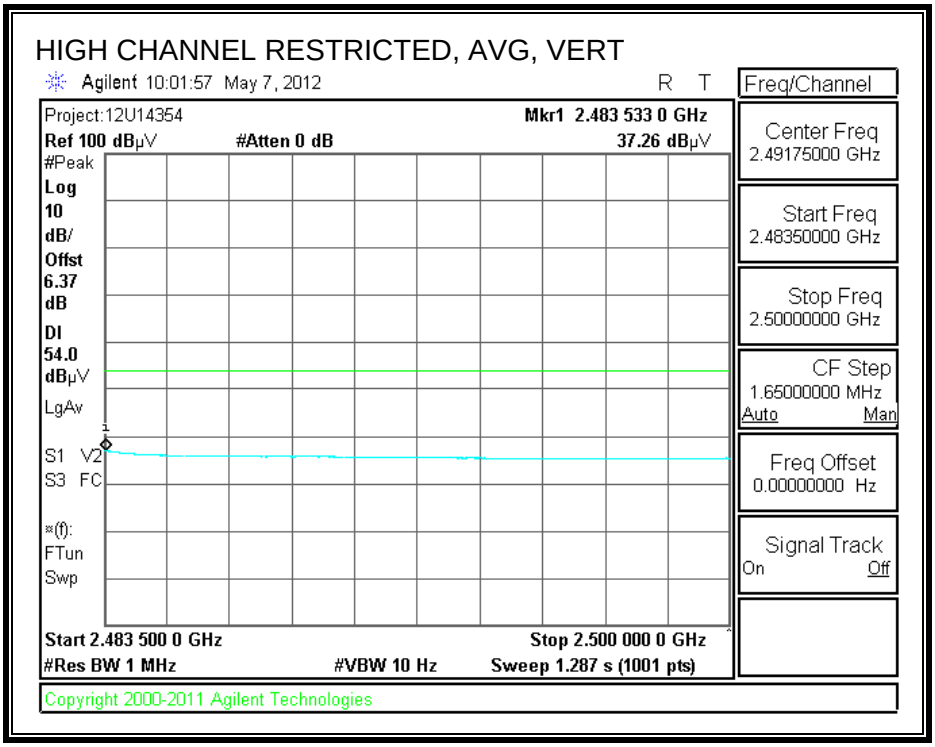
HIGH CHANNEL RESTRICTED, AVG, VERT



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HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: MENGISTU MEKURIA
Date: 05/06/12
Project #: 12U14354
Company: LG ELECTRONICS
Test Target: FCC PART 15C
Mode Oper: TX, 8PSK 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	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
Low Channel													
4.804	3.0	45.4	33.4	6.2	-35.5	0.0	0.0	49.5	74.0	-24.5	V	P	
4.804	3.0	37.2	33.4	6.2	-35.5	0.0	0.0	41.3	54.0	-12.7	V	A	
7.206	3.0	36.8	35.5	8.4	-35.4	0.0	0.0	45.2	74.0	-28.8	V	P	
7.206	3.0	24.4	35.5	8.4	-35.4	0.0	0.0	32.8	54.0	-21.2	V	A	
4.804	3.0	42.6	33.4	6.2	-35.5	0.0	0.0	46.7	74.0	-27.3	H	P	
4.804	3.0	33.0	33.4	6.2	-35.5	0.0	0.0	37.1	54.0	-16.9	H	A	
7.206	3.0	36.3	35.5	8.4	-35.4	0.0	0.0	44.8	74.0	-29.2	H	P	
7.206	3.0	24.0	35.5	8.4	-35.4	0.0	0.0	32.4	54.0	-21.6	H	A	
Mid Channel													
4.882	3.0	44.4	33.5	6.2	-35.5	0.0	0.0	48.7	74.0	-25.3	V	P	
4.882	3.0	36.0	33.5	6.2	-35.5	0.0	0.0	40.3	54.0	-13.7	V	A	
7.323	3.0	38.7	35.7	8.4	-35.4	0.0	0.0	47.4	74.0	-26.6	V	P	
7.323	3.0	25.7	35.7	8.4	-35.4	0.0	0.0	34.4	54.0	-19.6	V	A	
4.882	3.0	41.8	33.5	6.2	-35.5	0.0	0.0	46.0	74.0	-28.0	H	P	
4.882	3.0	32.4	33.5	6.2	-35.5	0.0	0.0	36.7	54.0	-17.3	H	A	
7.323	3.0	36.7	35.7	8.4	-35.4	0.0	0.0	45.4	74.0	-28.6	H	P	
7.323	3.0	24.0	35.7	8.4	-35.4	0.0	0.0	32.7	54.0	-21.3	H	A	
High Channel													
4.960	3.0	42.6	33.6	6.3	-35.5	0.0	0.0	47.0	74.0	-27.0	V	P	
4.960	3.0	34.1	33.6	6.3	-35.5	0.0	0.0	38.5	54.0	-15.5	V	A	
7.440	3.0	37.3	35.9	8.4	-35.5	0.0	0.0	46.2	74.0	-27.8	V	P	
7.440	3.0	26.0	35.9	8.4	-35.5	0.0	0.0	34.8	54.0	-19.2	V	A	
9.920	3.0	36.4	38.1	9.0	-35.9	0.0	0.0	47.7	74.0	-26.3	V	P	
9.920	3.0	23.6	38.1	9.0	-35.9	0.0	0.0	34.9	54.0	-19.1	V	A	
4.960	3.0	41.1	33.6	6.3	-35.5	0.0	0.0	45.5	74.0	-28.5	H	P	
4.960	3.0	32.0	33.6	6.3	-35.5	0.0	0.0	36.4	54.0	-17.6	H	A	
7.440	3.0	37.5	35.9	8.4	-35.5	0.0	0.0	46.4	74.0	-27.6	H	P	
7.440	3.0	24.5	35.9	8.4	-35.5	0.0	0.0	33.3	54.0	-20.7	H	A	
9.920	3.0	35.2	38.1	9.0	-35.9	0.0	0.0	46.5	74.0	-27.5	H	P	
9.920	3.0	23.0	38.1	9.0	-35.9	0.0	0.0	34.3	54.0	-19.7	H	A	

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

COMPLIANCE CERTIFICATION SERVICES (UL CCS) FORM NO: CCSUP4701F
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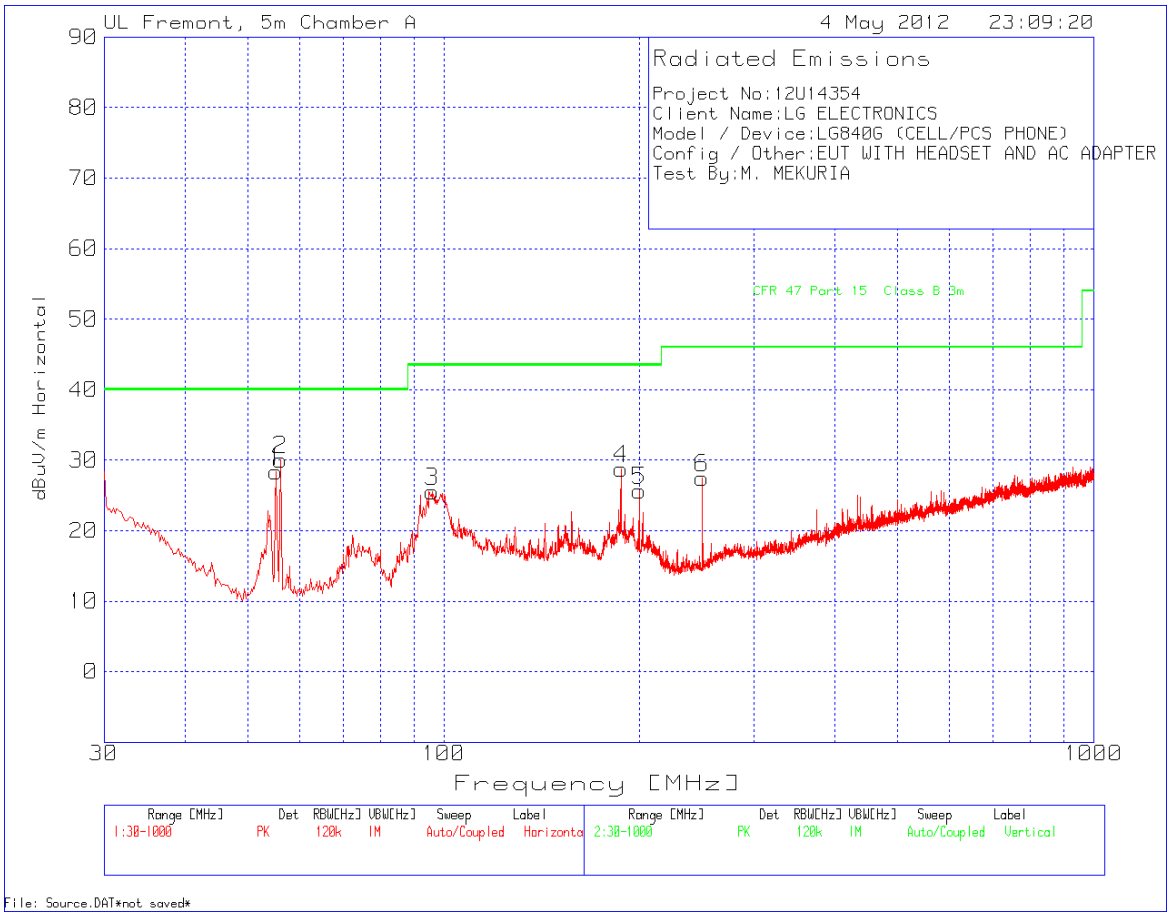
8.3. WORST-CASE BELOW 1 GHz

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

HORIZONTAL PLOT



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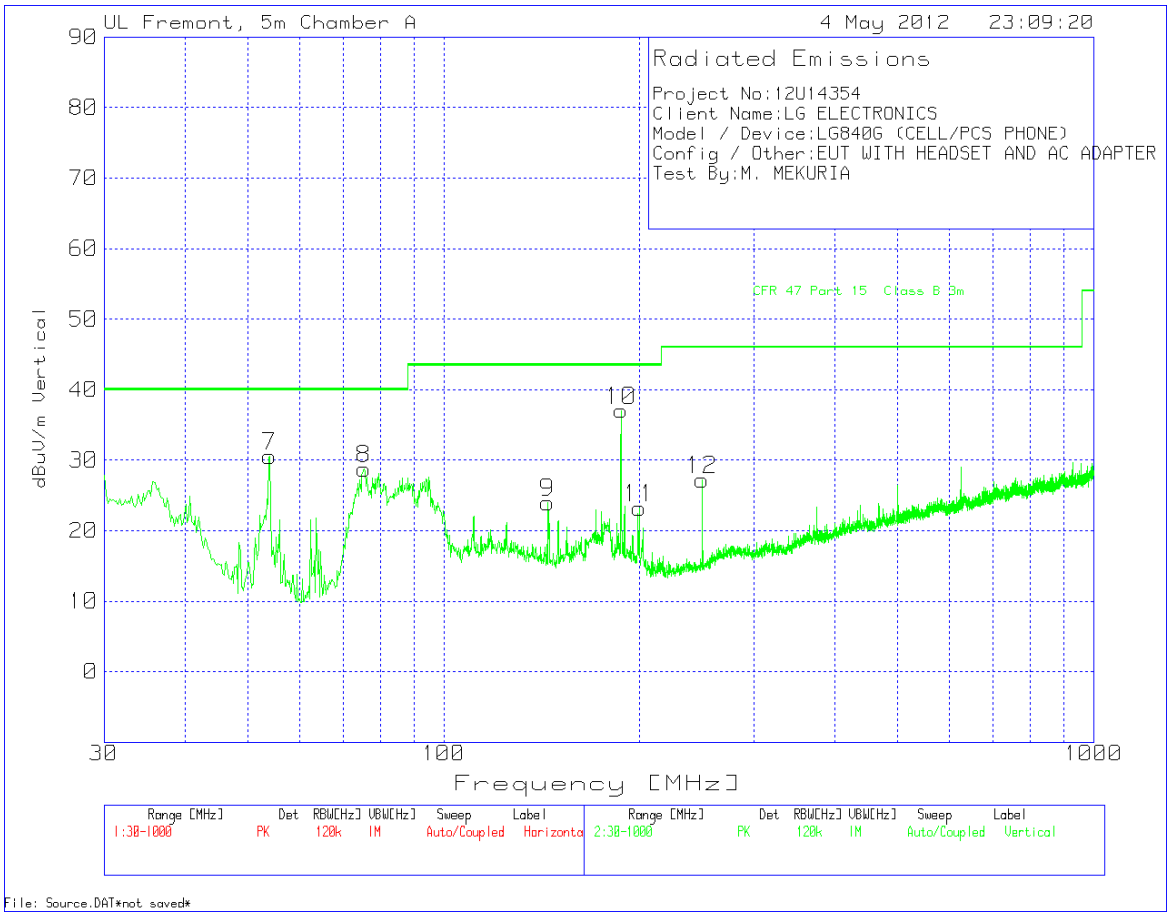
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)

VERTICAL PLOT



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HORIZONTAL AND VERTICAL DATA

Project No:12U14354									
Client Name:LG ELECTRONICS									
Model / Device:LG840G (CELL/PCS PHONE)									
Config / Other:EUT WITH HEADSET AND AC ADAPTER									
Test By:M. MEKURIA									
Horizontal 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
55.1998	48.57	PK	-27.3	7.1	28.37	40	-11.63	400	Horz
56.1691	50.23	PK	-27.3	7.1	30.03	40	-9.97	400	Horz
96.1011	43.37	PK	-26.9	9.1	25.57	43.5	-17.93	200	Horz
187.4021	43.72	PK	-26.3	11.3	28.72	43.5	-14.78	100	Horz
199.8082	39.52	PK	-26.2	12.3	25.62	43.5	-17.88	100	Horz
250.014	41.86	PK	-25.9	11.5	27.46	46	-18.54	100	Horz
Vertical 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
54.0368	50.62	PK	-27.3	7.3	30.62	40	-9.38	100	Vert
75.3597	47.87	PK	-27.1	8	28.77	40	-11.23	100	Vert
144.7562	38.33	PK	-26.6	12.3	24.03	43.5	-19.47	100	Vert
187.4021	52.07	PK	-26.3	11.3	37.07	43.5	-6.43	100	Vert
199.8082	37.11	PK	-26.2	12.3	23.21	43.5	-20.29	100	Vert
250.014	41.67	PK	-25.9	11.5	27.27	46	-18.73	100	Vert

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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

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6 WORST EMISSIONS

Project No:12U14354									
Client Name:LG ELECTRONICS									
Model/Device:LG840G (CELL PHONE)									
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)	dBuV	CFR 47 Part 15 Class B QP	Margin	CFR 47 Part 15 Class B Avg	Margin
0.1635	49.09	PK	0.1	0	49.19	65.3	-16.11	55.3	-6.11
0.1635	30.23	Av	0.1	0	30.33	65.3	-34.97	55.3	-24.97
0.186	47.09	PK	0.1	0	47.19	64.2	-17.01	54.2	-7.01
0.186	28.16	Av	0.1	0	28.26	64.2	-35.94	54.2	-25.94
0.375	41.26	PK	0.1	0	41.36	58.4	-17.04	48.4	-7.04
0.375	32.57	Av	0.1	0	32.67	58.4	-25.73	48.4	-15.73
Line-L2 .15 - 30MHz									
Test Frequency	Meter Reading	Detector	T24 IL L1.TXT (dB)	LC Cables 1&3.TXT (dB)	dBuV	CFR 47 Part 15 Class B QP	Margin	CFR 47 Part 15 Class B Avg	Margin
0.168	47.65	PK	0.1	0	47.75	65.1	-17.35	55.1	-7.35
0.168	22.86	Av	0.1	0	22.96	65.1	-42.14	55.1	-32.14
0.1815	45.76	PK	0.1	0	45.86	64.4	-18.54	54.4	-8.54
0.1815	23.14	Av	0.1	0	23.24	64.4	-41.16	54.4	-31.16
0.384	40.01	PK	0.1	0	40.11	58.2	-18.09	48.2	-8.09
0.384	23.67	Av	0.1	0	23.77	58.2	-34.43	48.2	-24.43

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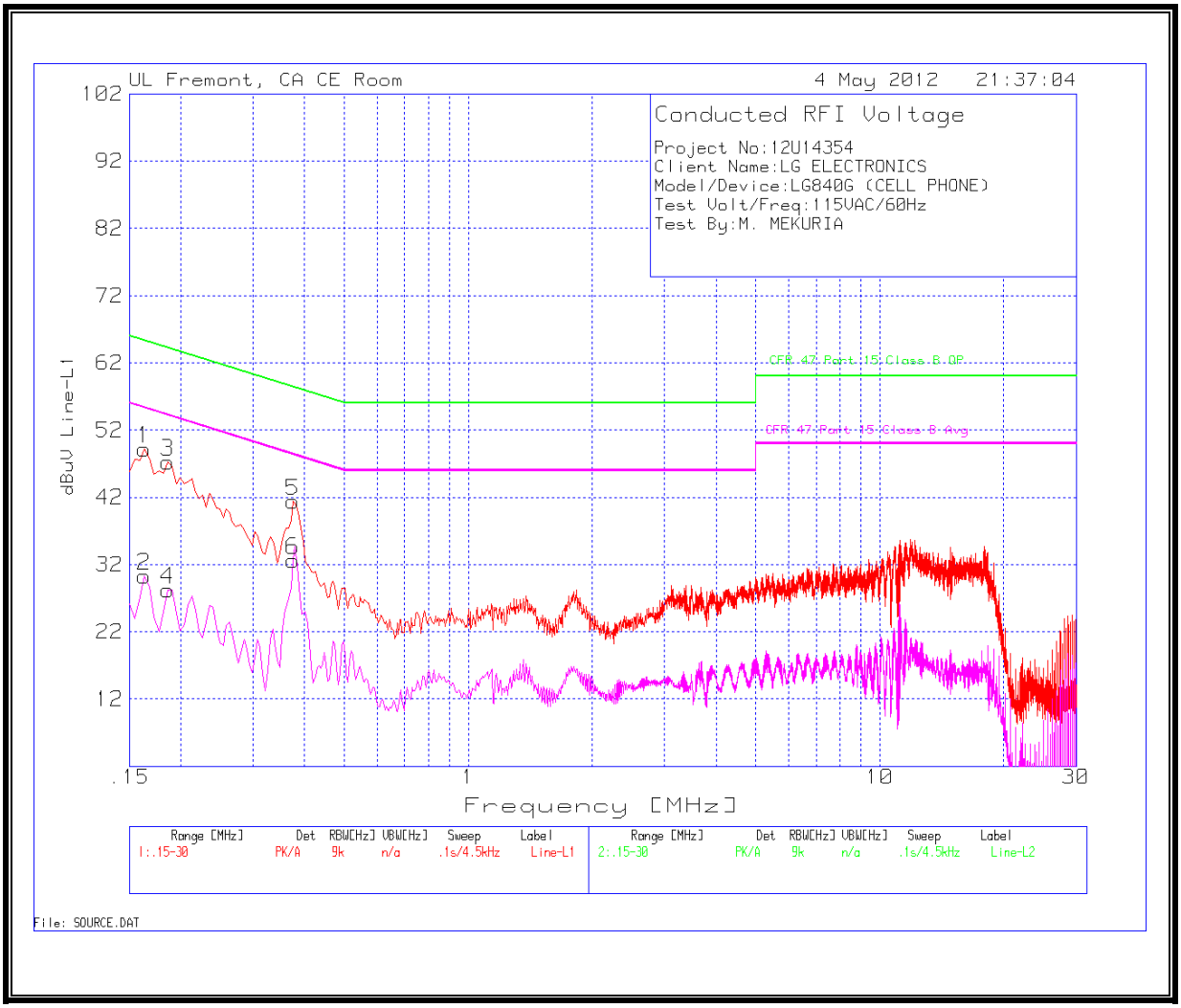
LINE 1 RESULTS



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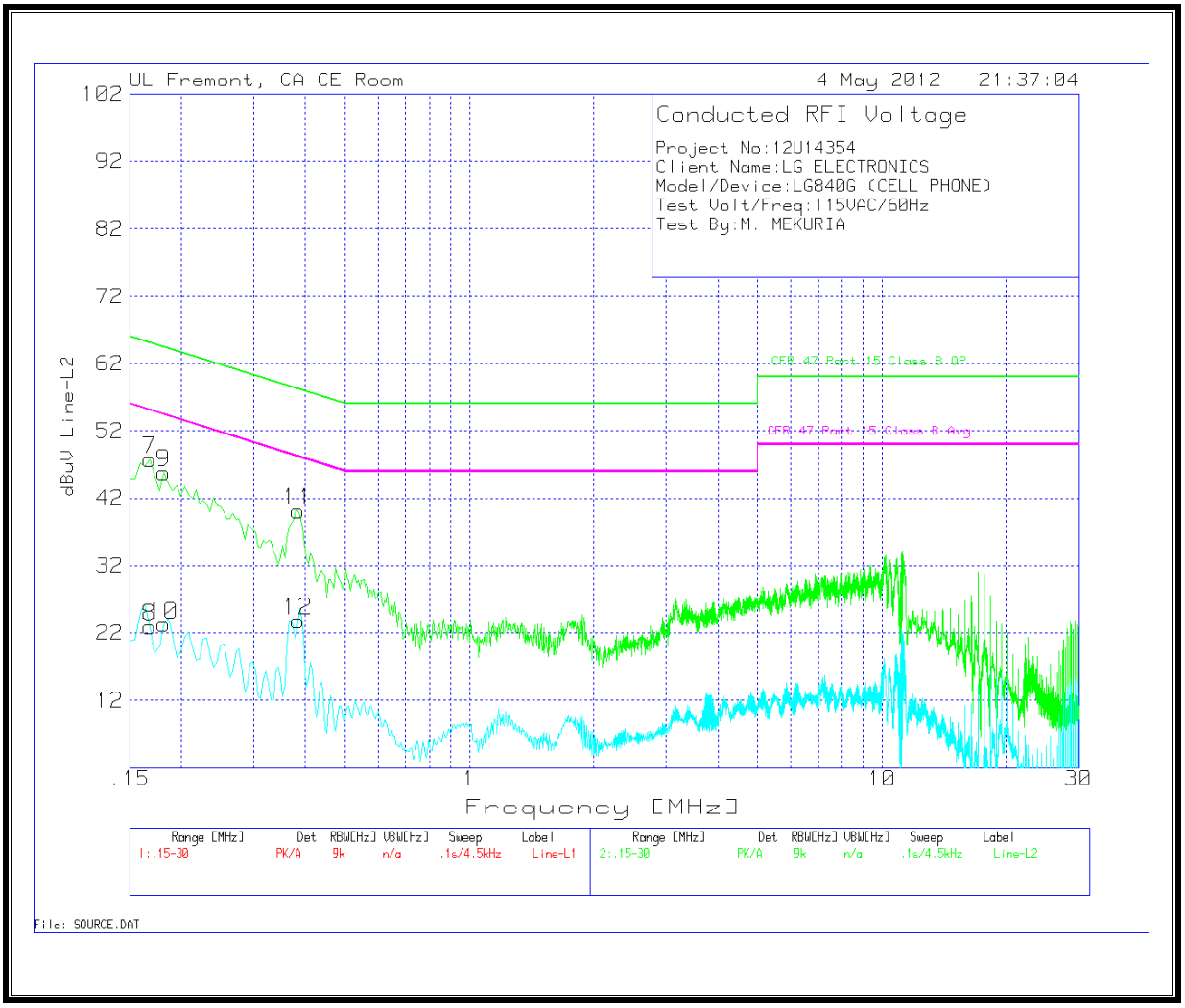
LINE 2 RESULTS



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