



FCC 47 CFR PART 15 SUBPART C

**CERTIFICATION TEST REPORT
FOR
GSM/WCDMA/CDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n/ac & NFC**

MODEL NUMBER: LG-US991, US991, LGUS991

FCC ID: ZNFUS991

REPORT NUMBER: 15I20405 – E2

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NVLAP LAB CODE 200065-0

Revision History

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: LG ELECTRONICS MOBILECOMM U.S.A., INC.
EUT DESCRIPTION: GSM/WCDMA/CDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n/ac & NFC.
MODEL: LG-US991, US991, LGUS991
SERIAL NUMBER: 0699-0243 (Radiated); 0699-0249 (Conducted)
DATE TESTED: MAR 27 – APR 16, 2015

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

UL Verification Services Inc. 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 Verification Services Inc. 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 Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. 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.

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UL Verification Services Inc. By:

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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.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

47173 Benicia Street	47266 Benicia Street
<input type="checkbox"/> Chamber A(IC: 2324B-1)	<input type="checkbox"/> Chamber D(IC: 2324B-4)
<input type="checkbox"/> Chamber B(IC: 2324B-2)	<input type="checkbox"/> Chamber E(IC: 2324B-5)
<input checked="" type="checkbox"/> Chamber C(IC: 2324B-3)	<input type="checkbox"/> Chamber F(IC: 2324B-6)
	<input type="checkbox"/> Chamber G(IC: 2324B-7)
	<input type="checkbox"/> Chamber H(IC: 2324B-8)

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://ts.nist.gov/standards/scopes/2000650.htm>.

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:

$$\text{Field Strength (dBuV/m)} = \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)} - \text{Preamp Gain (dB)}$$

$$36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} = 28.9 \text{ dBuV/m}$$

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 26000 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/CDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n/ac & NFC.

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	10.02	10.05
2402 - 2480	Enhanced 8PSK	8.98	7.91

Note: GFSK, Pi/4-DQPSK, 8PSK average Power are all investigated, The GFSK & 8PSK Power are the worst case. Testing is based on this mode to showing compliance. For average power data please refer to section 8.6.

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antenna, with a maximum gain of -0.52 dBi.

5.4. 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 X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

Spots check also performed on SMART COVER and CHARGING DOCK station.

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	LG	MCS-04WD2	EAY62991904	N/A
Smart Case Cover	LG	LG-P1	DK0227	N/A
Wireless Charger	LG	WCD-110	LF1212625283010049	N/A
Earphone	LG	N/A	N/A	N/A

I/O CABLES

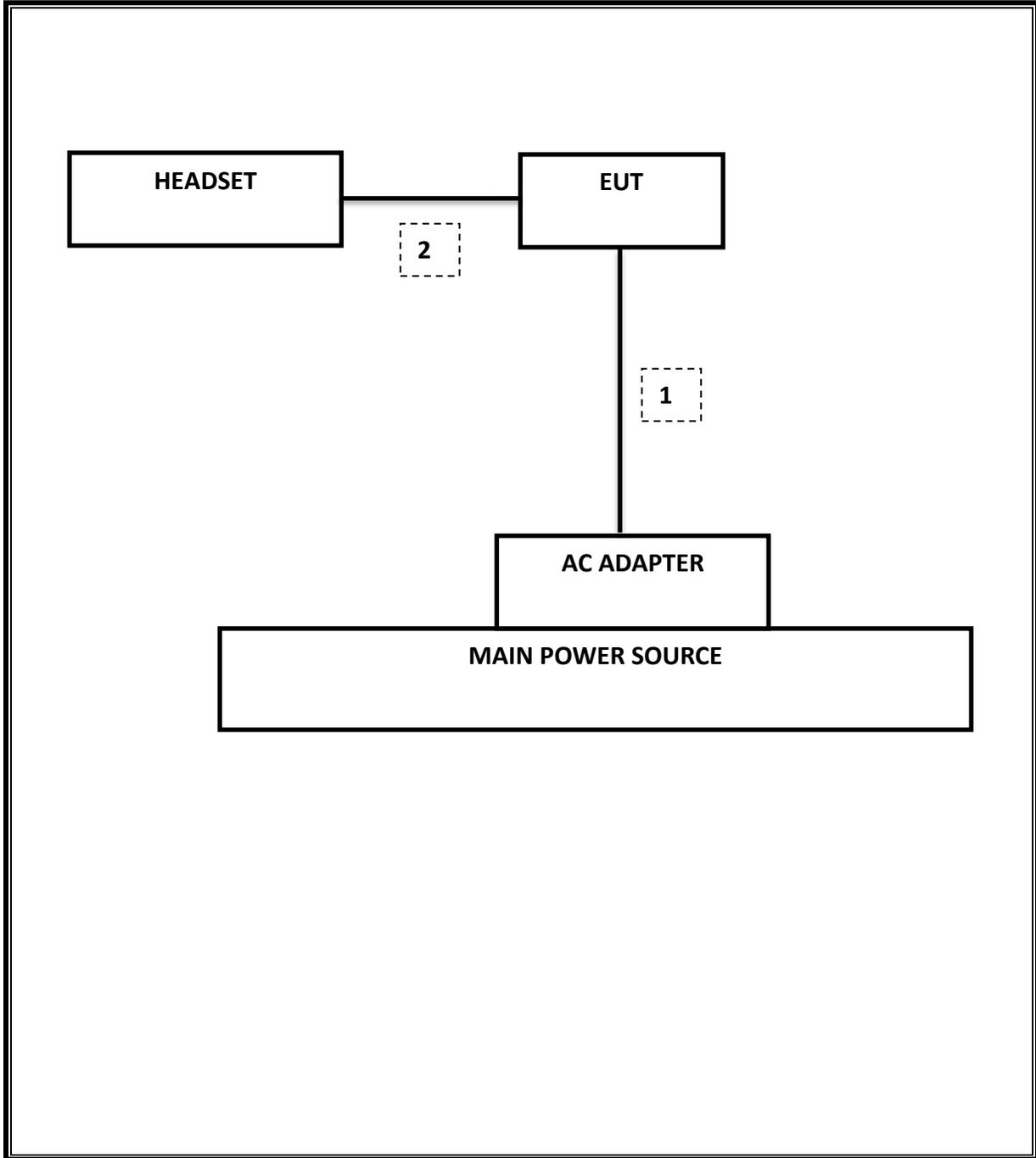
I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC Power	1	Mini-USB	Shielded	1.2m	N/A
2	Audio	1	Mini-Jack	Unshielded	1m	N/A

TEST SETUP

The EUT is continuously communicating to the Bluetooth tester during the tests.

EUT was set in the Hidden menu mode to enable BT communications.

SETUP DIAGRAM FOR 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
Antenna, Biconolog, 30MHz-1 GHz	Sunol Sciences	JB1	C01171	02/13/16
Antenna, Horn, 18GHz	EMCO	3115	C00783	10/25/15
Antenna, Horn, 25.5 GHz	ARA	MWH-1826/B	C00980	11/14/15
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00580	01/28/16
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01052	10/22/15
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01069	12/20/15
CBT Bluetooth Tester	R & S	CBT	None	07/12/15
Peak Power Meter	Agilent / HP	E4416A	C00963	12/13/15
Peak / Average Power Sensor	Agilent / HP	E9327A	C00964	12/13/15
LISN, 30 MHz	FCC	50/250-25-2	C00626	01/14/16
Reject Filter, 2.4GHz	Micro-Tronics	BRM50702	N02684	CNR

Test Software List			
Description	Manufacturer	Model	Version
Radiated Software	UL	UL EMC	Version 9.5, 07/22/14
Conducted Software	UL	UL EMC	Version 9.5, 05/17/14
CLT Software	UL	UL RF	Version 1.0, 02/02/15
Antenna Port Software	UL	UL RF	Version 2.1.1.1, 1/20/15

7. SUMMARY TABLE

FCC Part Section	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Worst Case
2.1049	RSS-GEN 4.6	Occupied Band width (99%)	N/A	Conducted	Pass	1.2187 MHz
2.1051, 15.247 (d)	RSS-210 A8.5	Band Edge / Conducted Spurious Emission	-20dBc		Pass	-50.05 dBm
15.247 (b)(1)	RSS-210 A8.4	TX conducted output power	<21dBm		Pass	10.02 dBm
15.247 (a)(1)	RSS-210 A8.1(b)	Hopping frequency separation	> 25KHz		Pass	1 MHz
15.247 (a)(1)(iii)	RSS-210 A8.1(d)	Number of Hopping channels	More than 15 non-overlapping channels		Pass	79
15.247 (a)(1)(iii)	RSS-210 A8.1(d)	Avg Time of Occupancy	< 0.4sec		Pass	0.25992 s
15.207 (a)	RSS-GEN 7.2.2	AC Power Line conducted emissions	Section 10	Radiated	Pass	53.41 dBuV
15.205, 15.209	RSS-210 Clause 2.6, RSS-210 Clause 6	Radiated Spurious Emission	< 54dBuV/m		Pass	45.08 dBuV/m

8. ANTENNA PORT TEST RESULTS

8.1. 20 dB AND 99% BANDWIDTH

LIMIT

None; for reporting purposes only.

TEST PROCEDURE

DA 00-705: 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

8.1.1. BASIC DATA RATE GFSK MODULATION

Channel	Frequency (MHz)	20 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2402	0.9425	0.8997175
Middle	2441	0.9559	0.9071801
High	2480	0.9494	0.9035883
Worst		0.9559	0.9071801

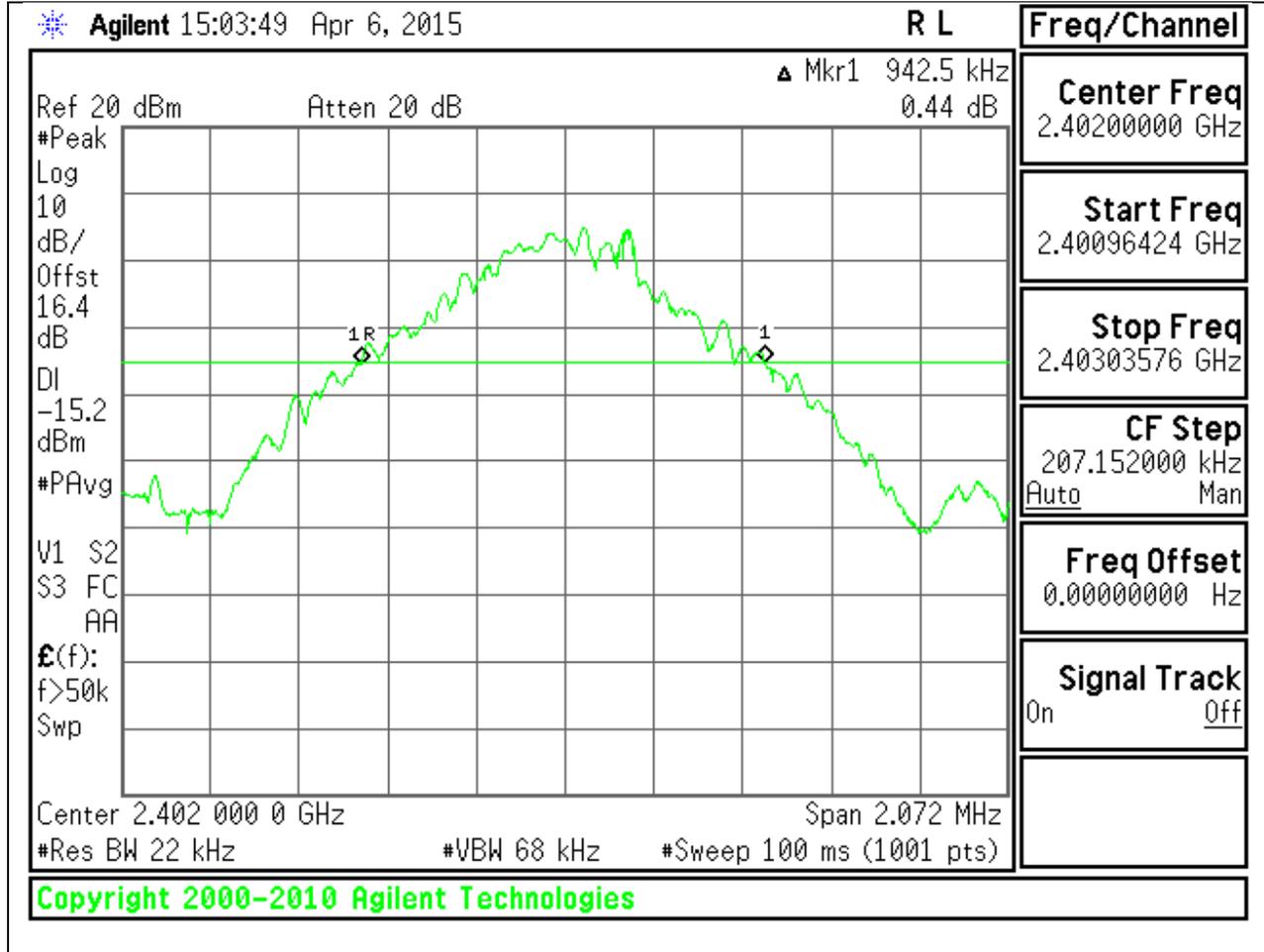
8.1.2. ENHANCED DATA RATE 8PSK MODULATION

Channel	Frequency (MHz)	20 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2402	1.3294	1.2171
Middle	2441	1.3294	1.2187
High	2480	1.3323	1.2166
Worst		1.3323	1.2187

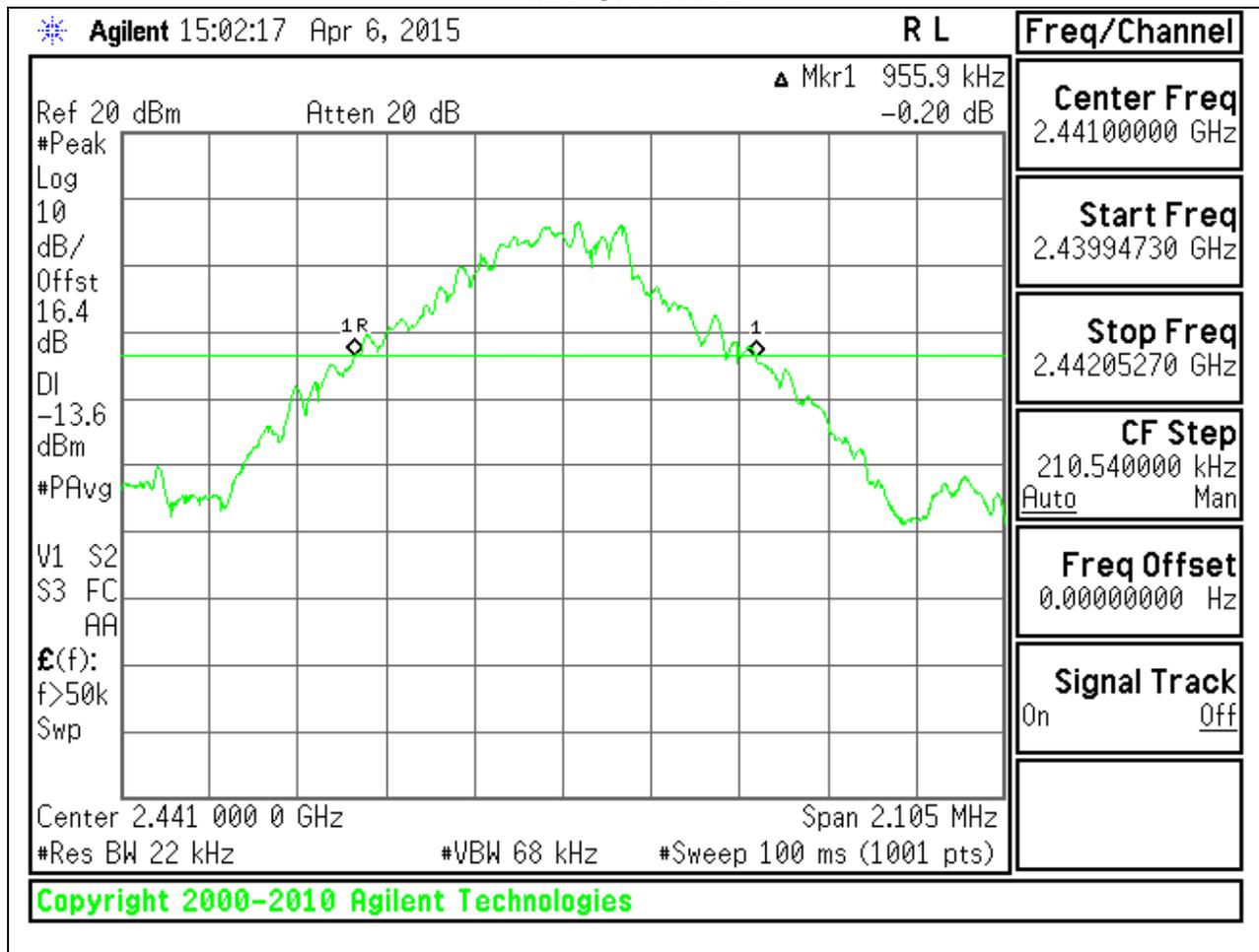
20 dB AND 99% BANDWIDTH PLOTS

GFSK 20 dB BANDWIDTH

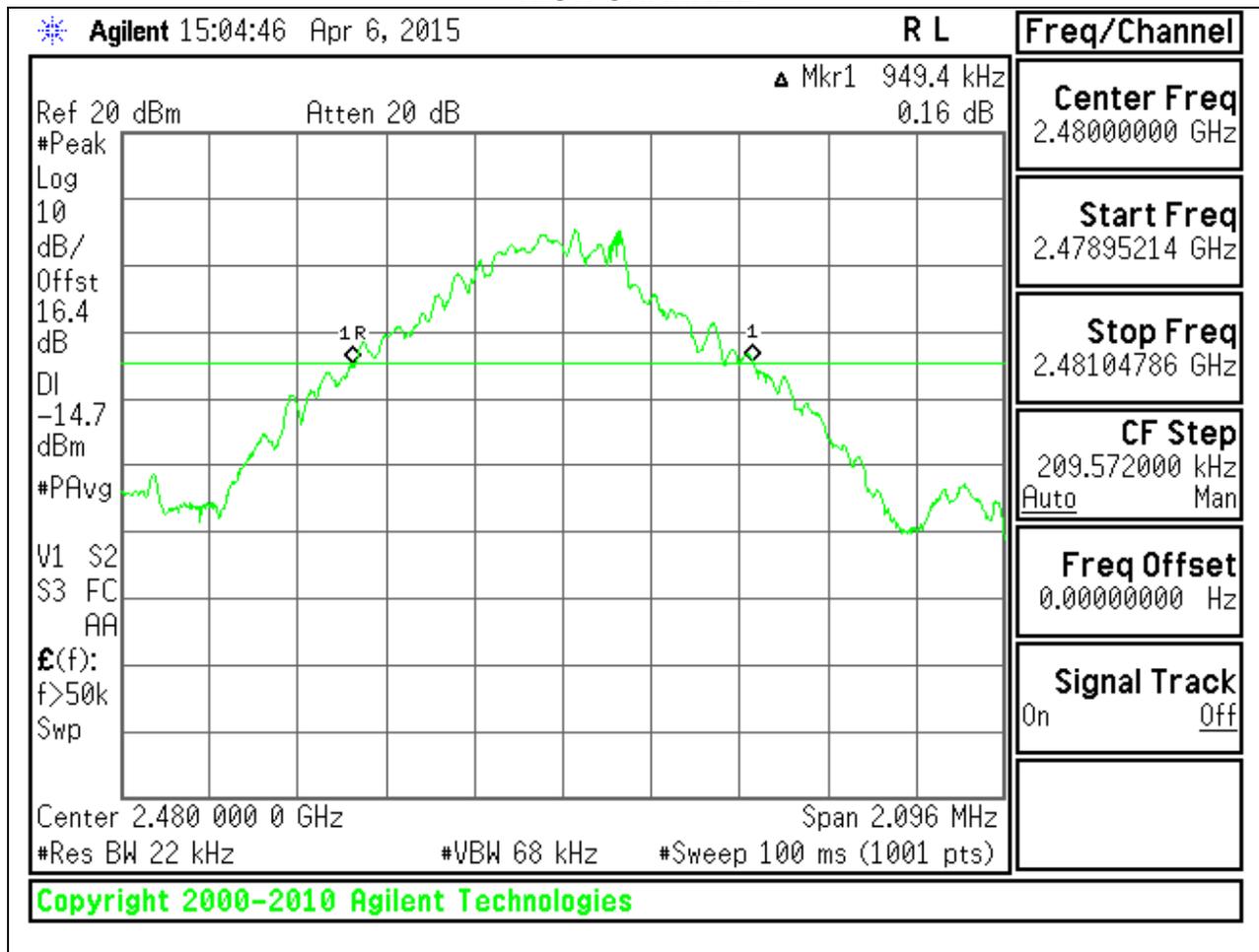
LOW CHANNEL



MID CHANNEL

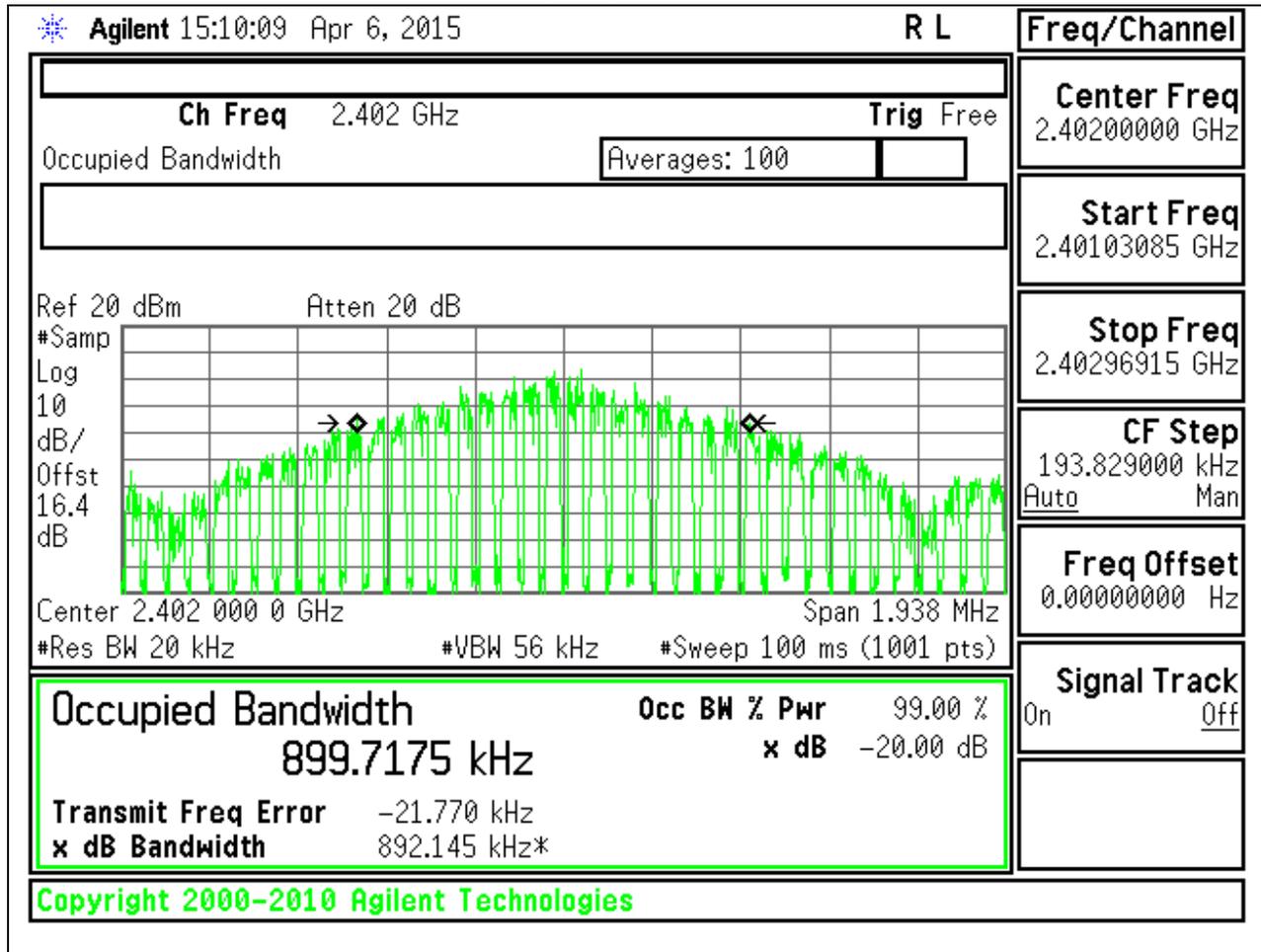


HIGH CHANNEL

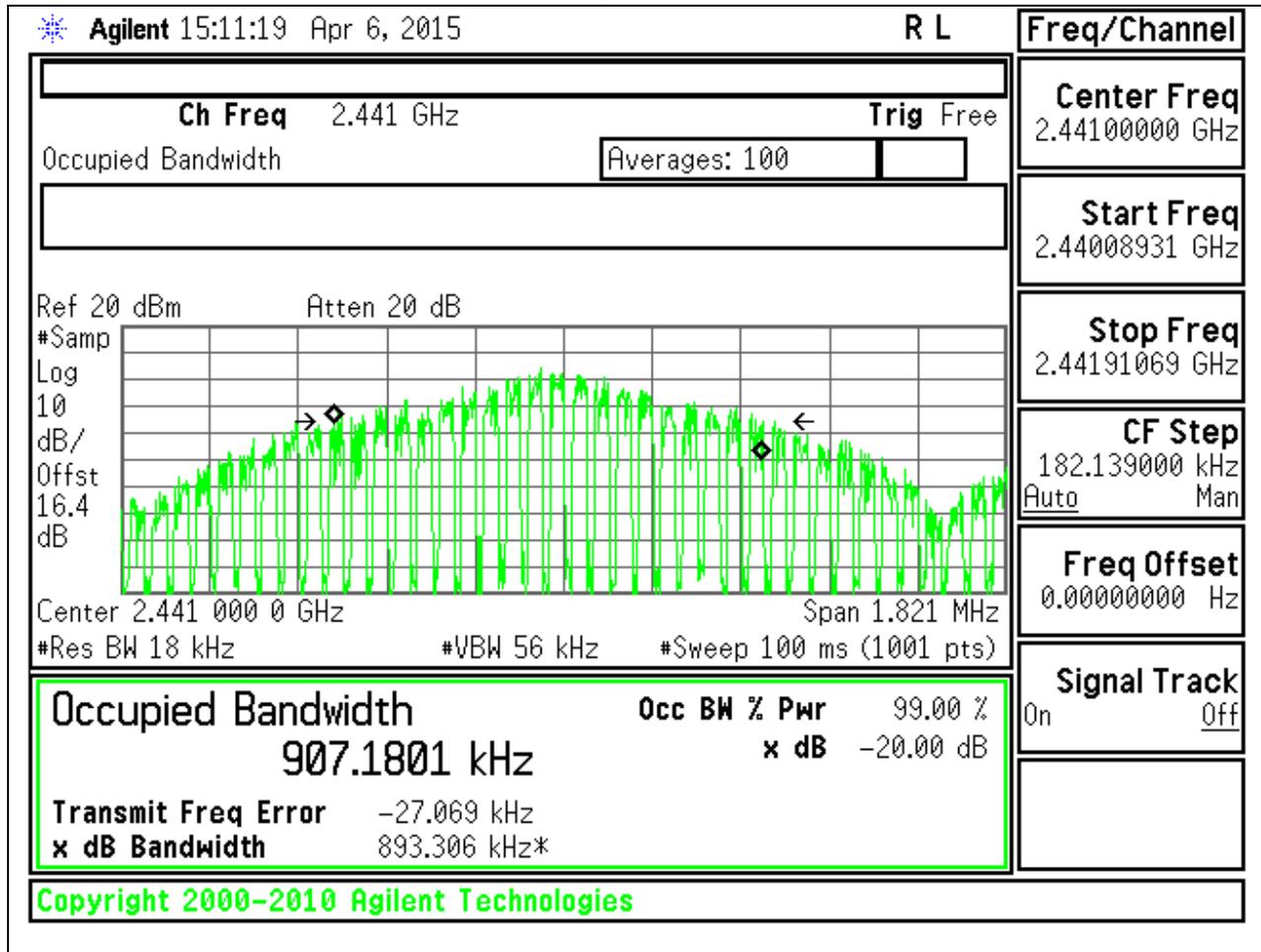


GFSK 99% BANDWIDTH

LOW CHANNEL



MID CHANNEL

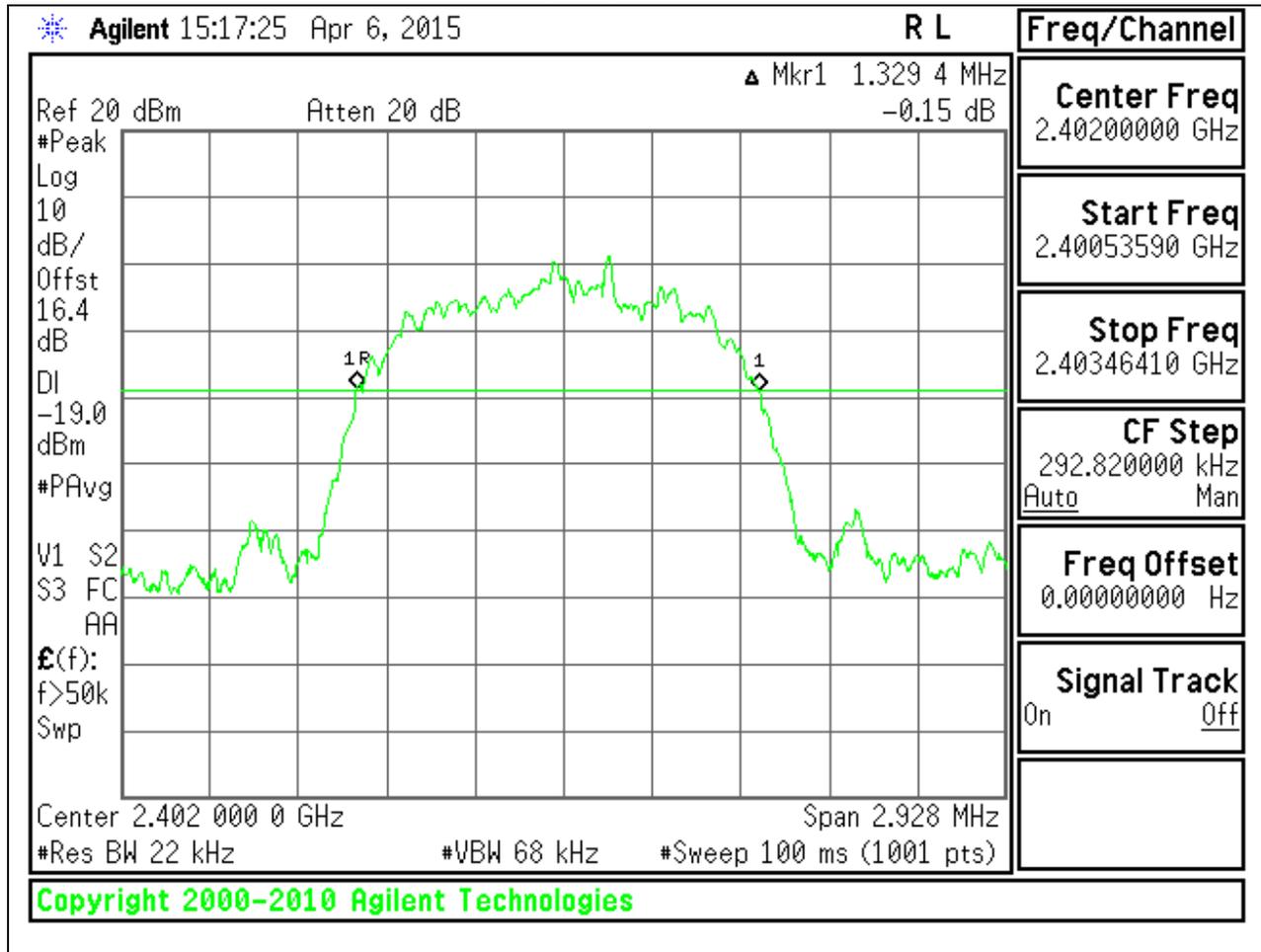


HIGH CHANNEL

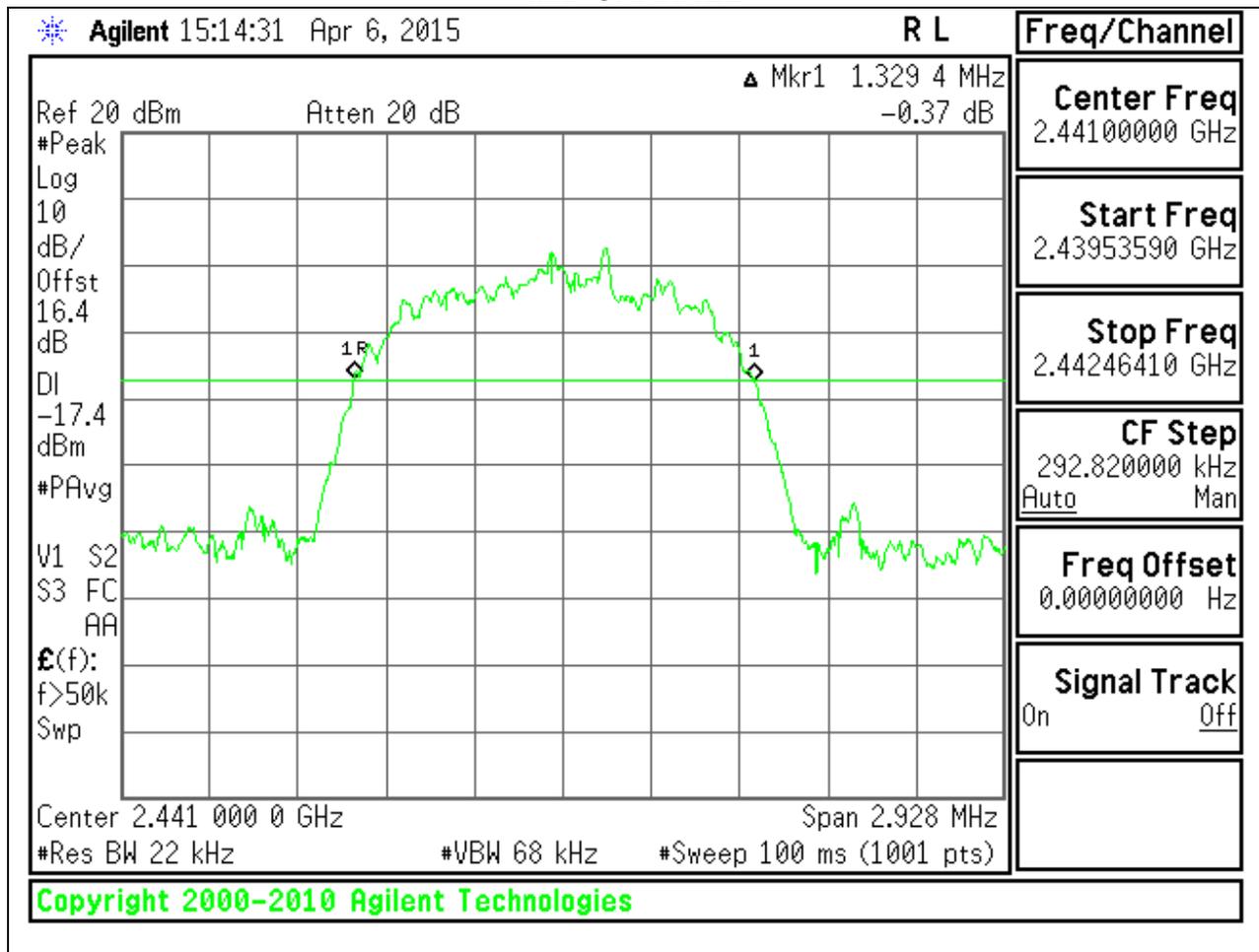
Agilent 15:12:18 Apr 6, 2015		R L	Freq/Channel
Ch Freq 2.48 GHz		Trig Free	Center Freq 2.48000000 GHz
Occupied Bandwidth		Averages: 100	Start Freq 2.47901155 GHz
Ref 20 dBm Atten 20 dB		Stop Freq 2.48098845 GHz	
#Samp Log 10 dB/ Offst 16.4 dB			CF Step 197.690000 kHz Auto Man
Center 2.480 000 0 GHz		Span 1.977 MHz	
#Res BW 20 kHz		#VBW 62 kHz #Sweep 100 ms (1001 pts)	
Occupied Bandwidth 903.5883 kHz		Occ BW % Pwr 99.00 % x dB -20.00 dB	
Transmit Freq Error -27.049 kHz		Signal Track On Off	
x dB Bandwidth 868.665 kHz*			
Copyright 2000–2010 Agilent Technologies			

8PSK 20 dB BANDWIDTH

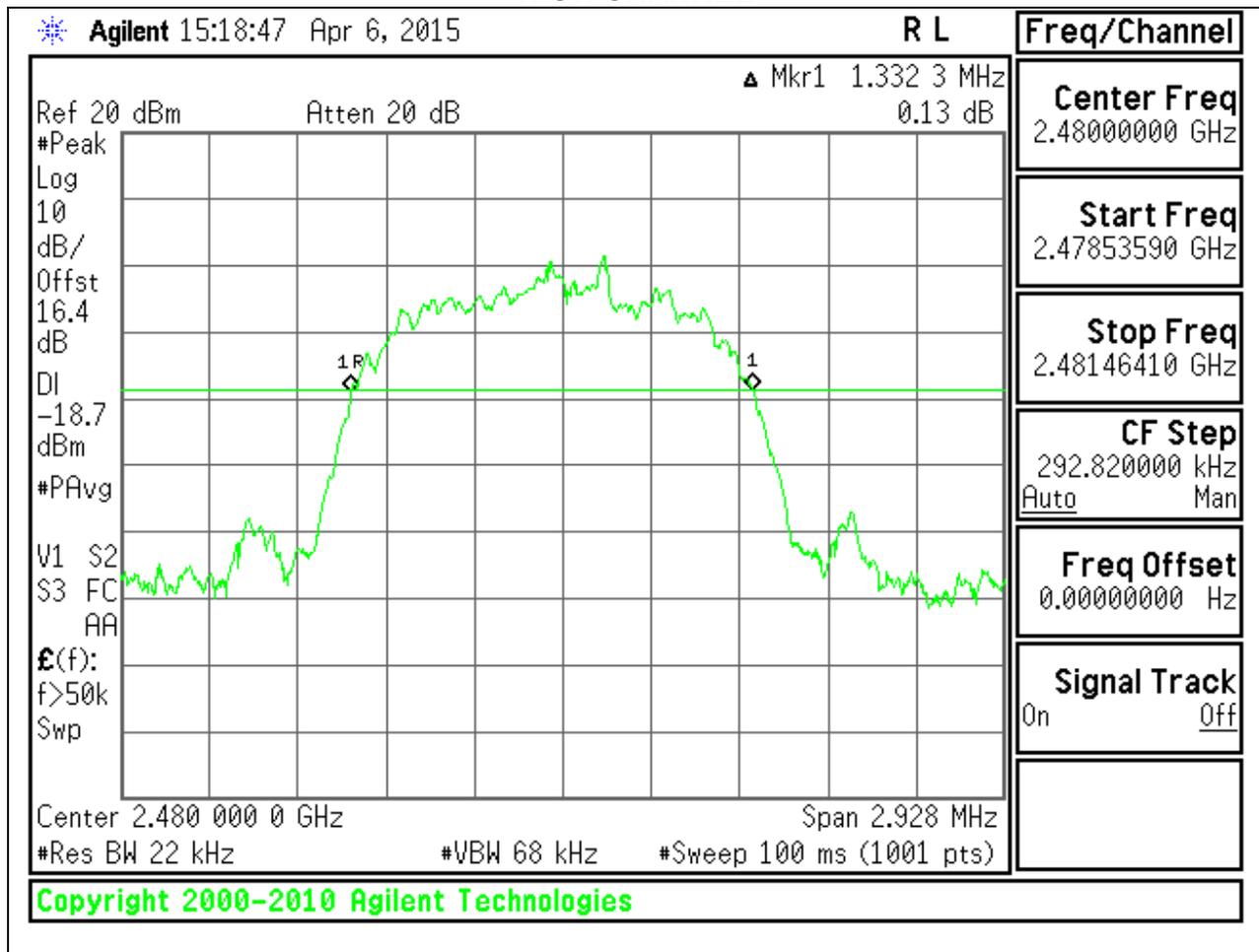
LOW CHANNEL



MID CHANNEL

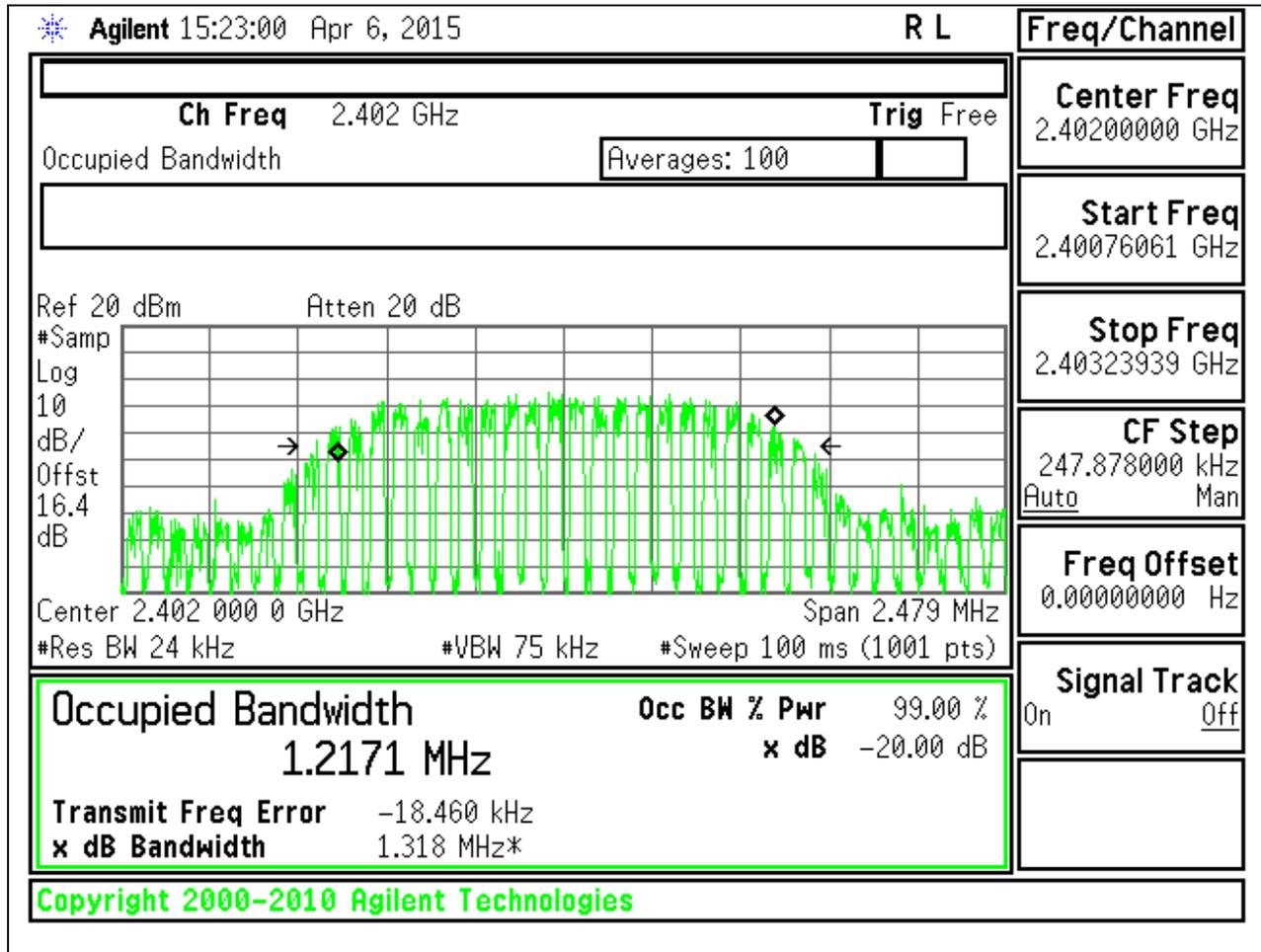


HIGH CHANNEL

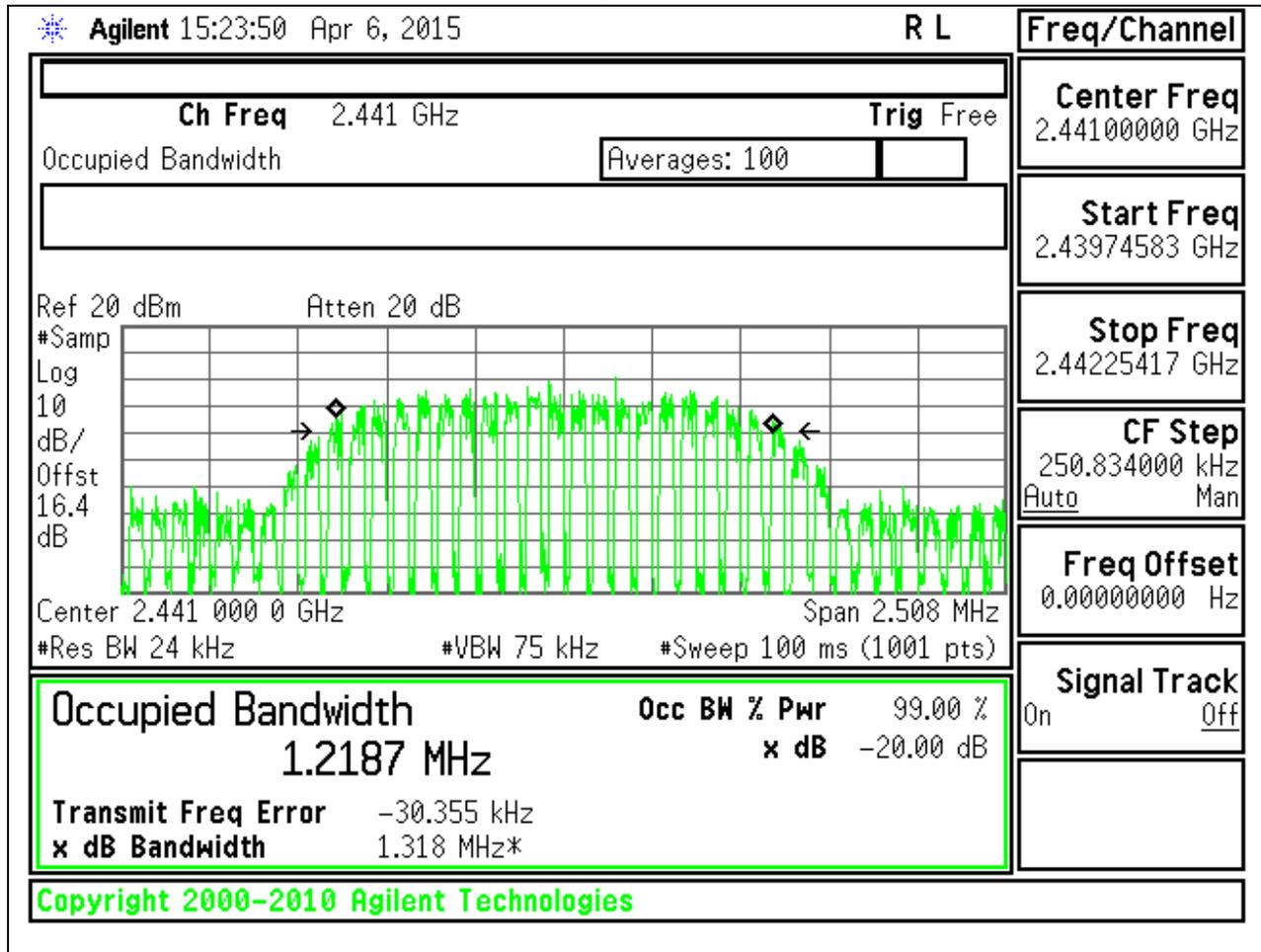


8PSK 99% BANDWIDTH

LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

* Agilent 15:25:41 Apr 6, 2015		R L	Freq/Channel
Ch Freq 2.48 GHz		Trig Free	Center Freq 2.48000000 GHz
Occupied Bandwidth		Averages: 100	Start Freq 2.47877289 GHz
Ref 20 dBm Atten 20 dB #Samp Log 10 dB/ Offst 16.4 dB			Stop Freq 2.48122711 GHz
			CF Step 245.423000 kHz Auto Man
			Freq Offset 0.00000000 Hz
Center 2.480 000 0 GHz Span 2.454 MHz #Res BW 24 kHz #VBW 75 kHz #Sweep 100 ms (1001 pts)			Signal Track On Off
Occupied Bandwidth 1.2166 MHz		Occ BW % Pwr 99.00 % x dB -20.00 dB	
Transmit Freq Error -36.136 kHz x dB Bandwidth 1.312 MHz*			
Copyright 2000–2010 Agilent Technologies			

8.2. 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.

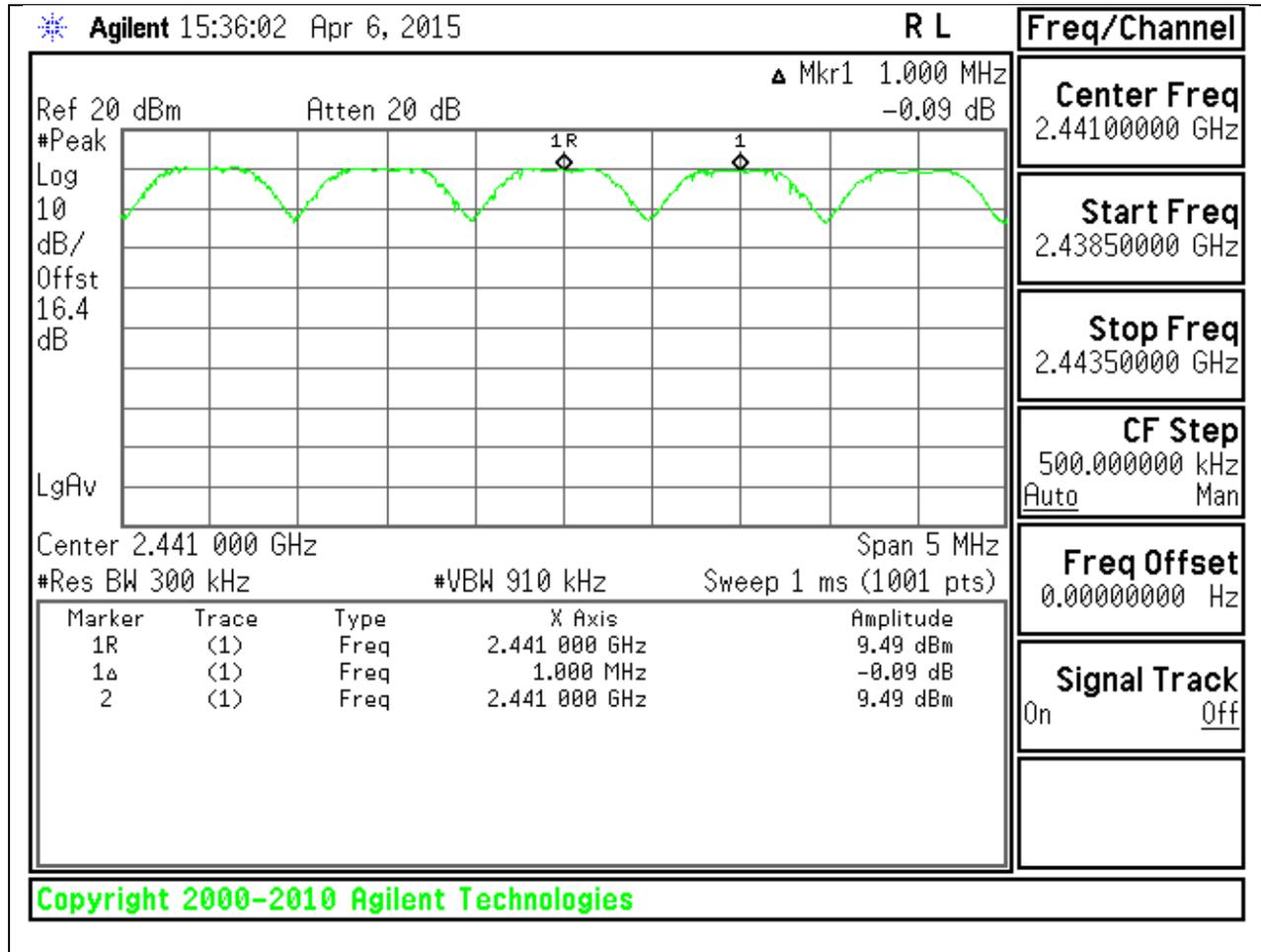
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than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

TEST PROCEDURE

DA 00-705: The transmitter output is connected to a spectrum analyzer. The RBW is set to 300 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

RESULTS

HOPPING FREQUENCY SEPARATION PLOT



8.3. 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

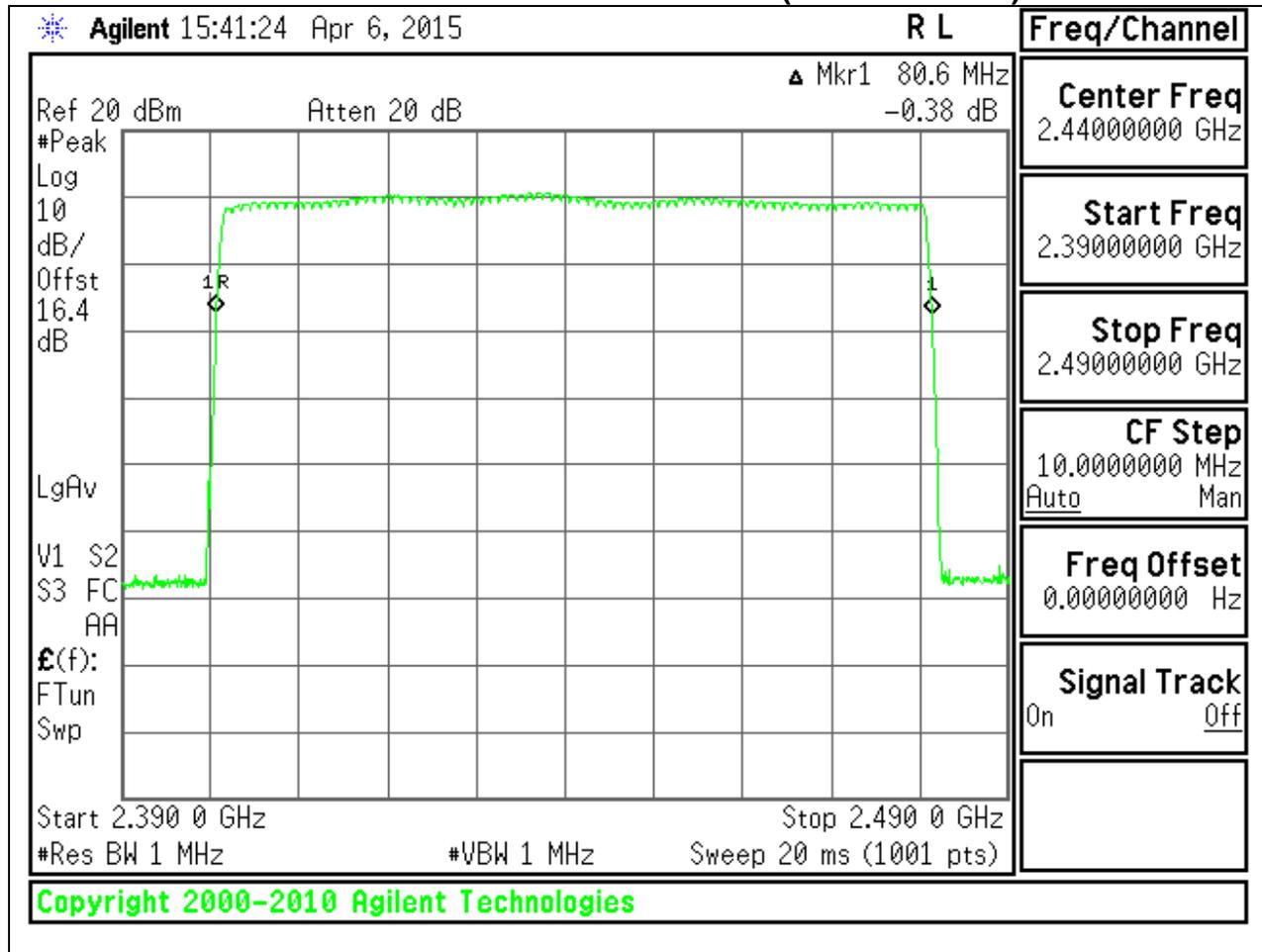
DA 00-705: The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

RESULTS

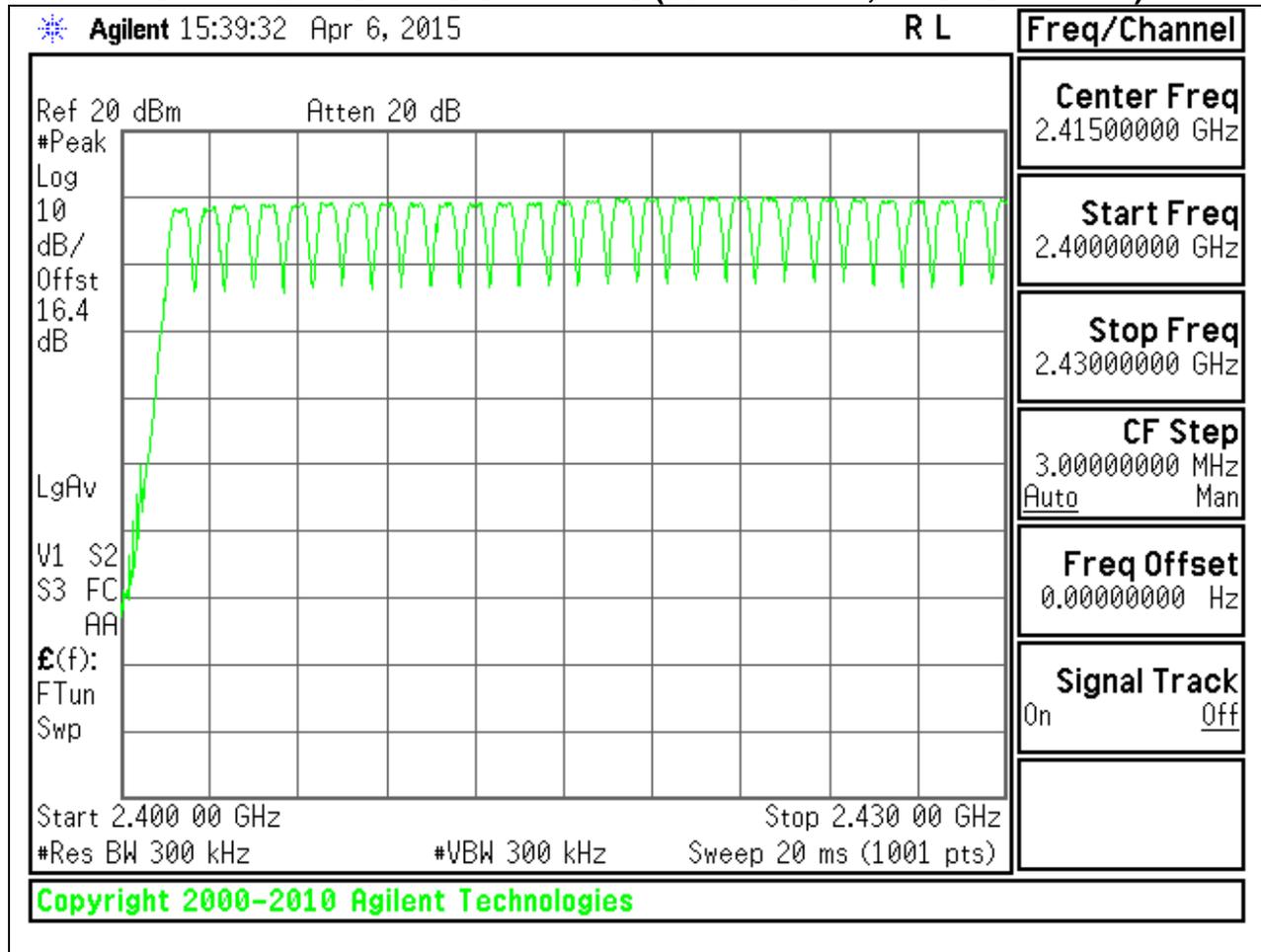
Normal Mode: 79 Channels observed.

NUMBER OF HOPPING CHANNELS PLOTS

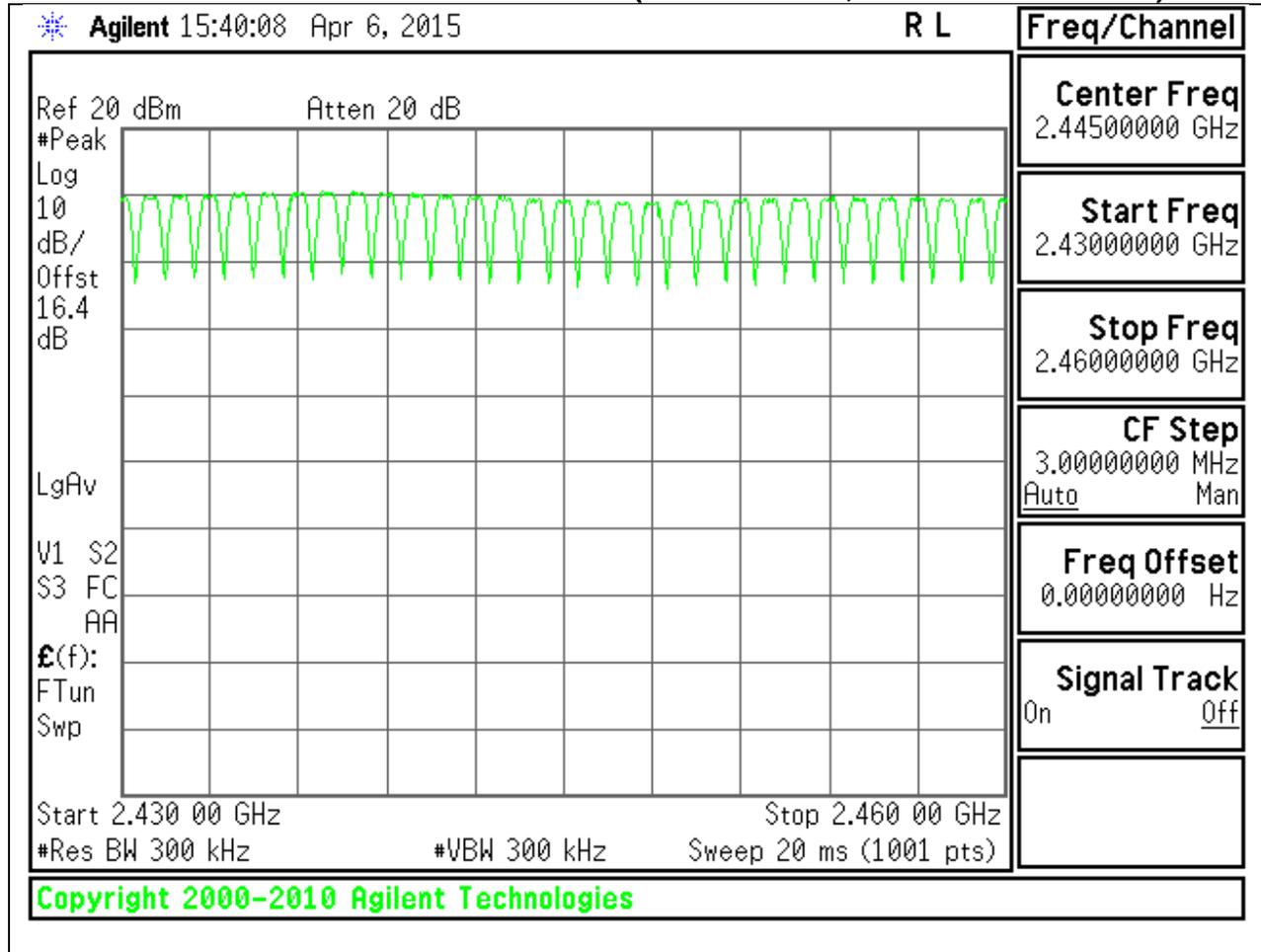
NUMBER OF HOPPING CHANNELS (100 MHZ SPAN)



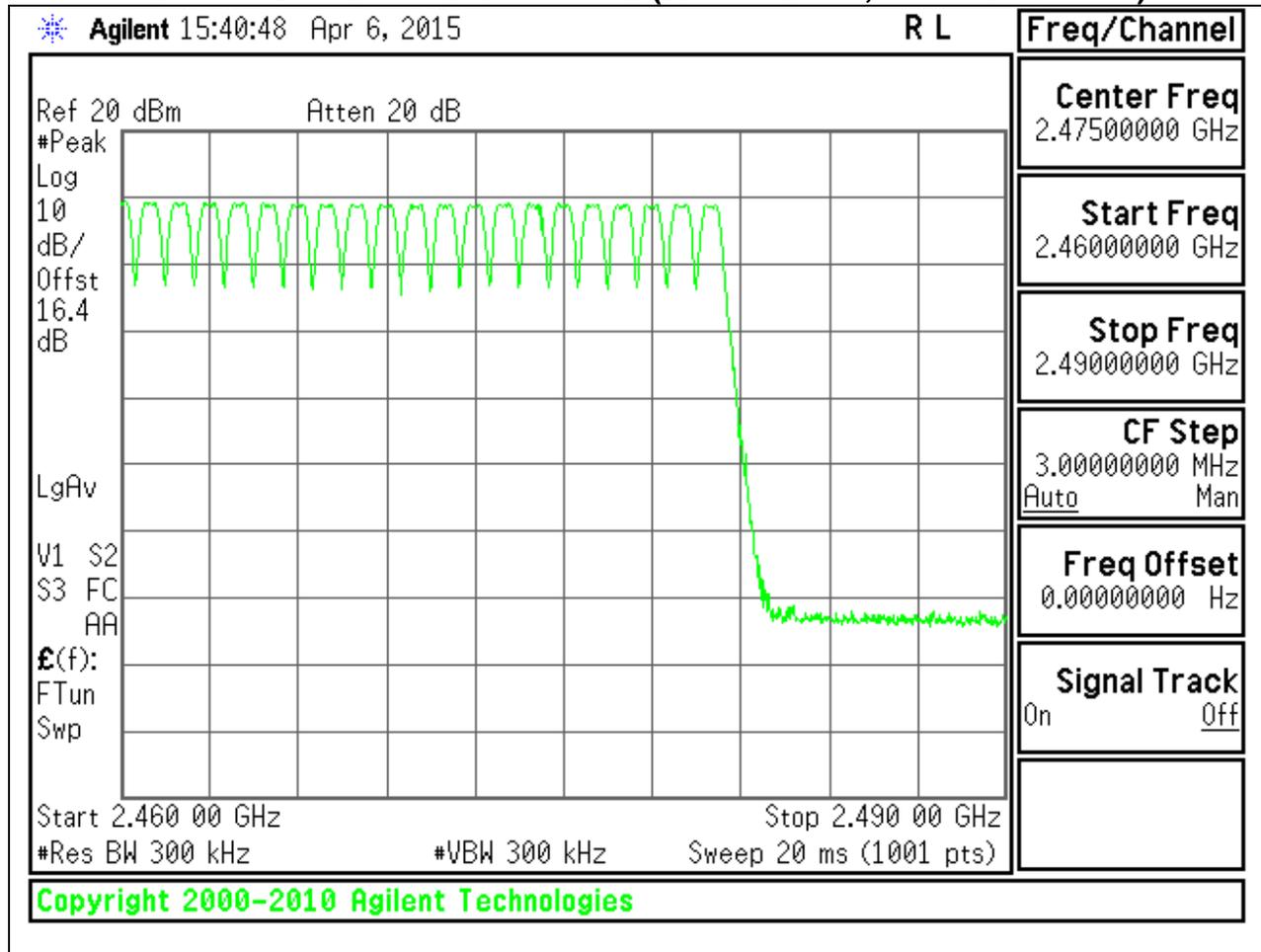
NUMBER OF HOPPING CHANNELS (30 MHZ SPAN, FIRST SEGMENT)



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



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



8.4. 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.

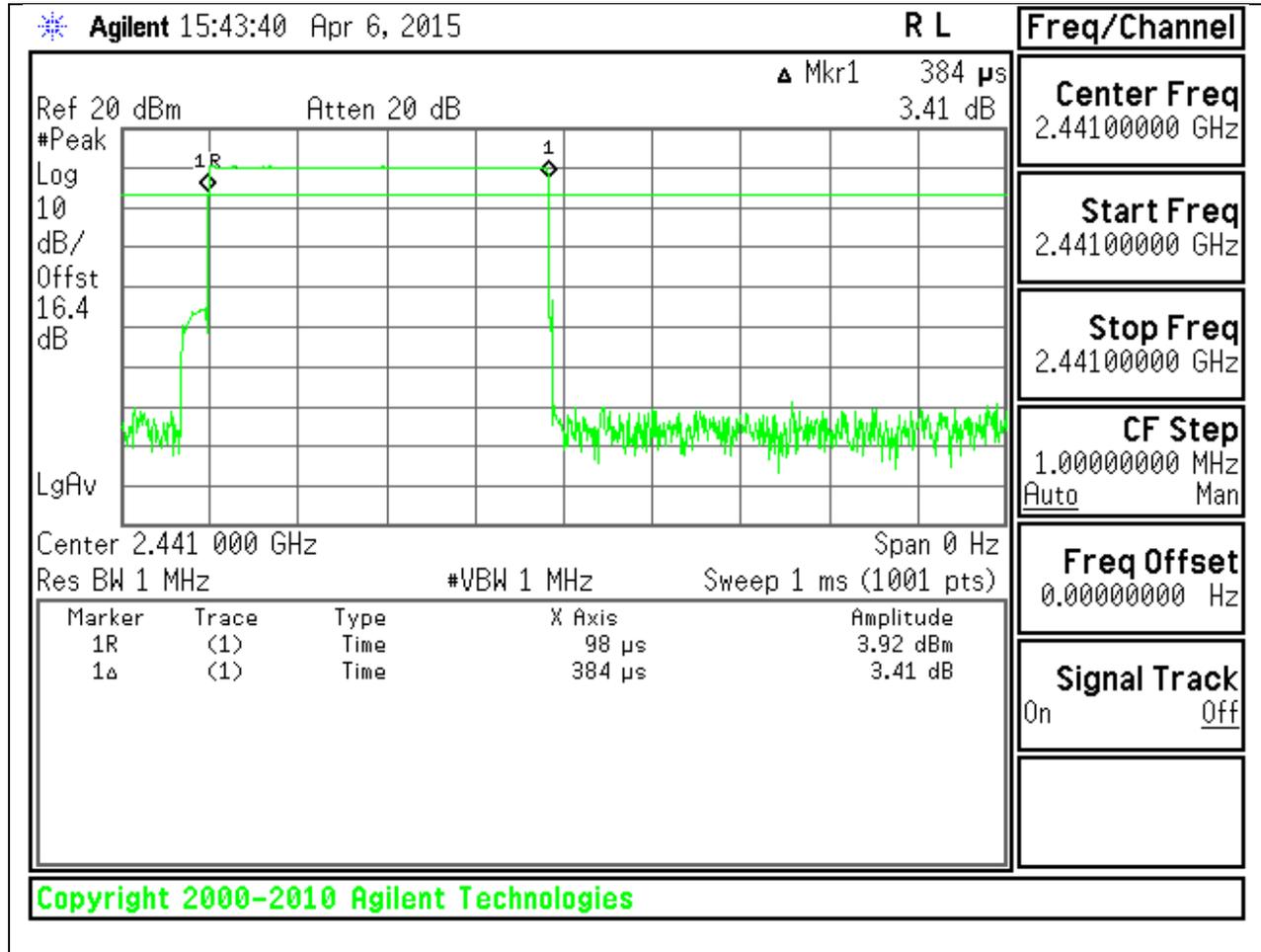
The average time of occupancy in the specified 31.6 second period (79 channels * 0.4 s) is equal to $10 * (\# \text{ of pulses in } 3.16 \text{ s}) * \text{ pulse width}$.

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

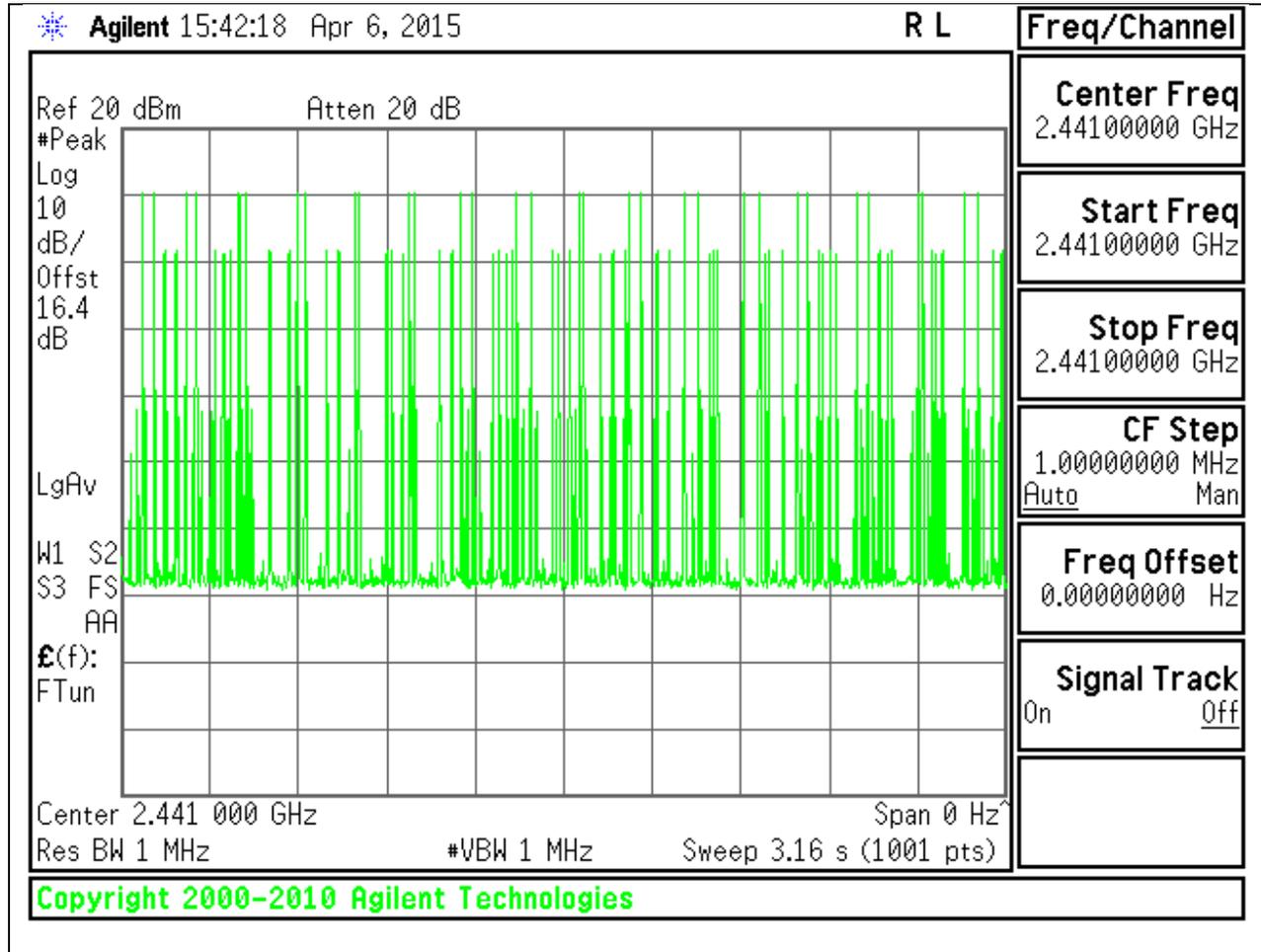
RESULTS

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	0.384	31	0.11904	0.4	-0.28096
DH3	1.646	12	0.19752	0.4	-0.20248
DH5	2.888	9	0.25992	0.4	-0.14008
DH Packet	Pulse Width (msec)	Number of Pulses in 0.8 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
GFSK AFH Mode					
DH1	0.384	7.75	0.02976	0.4	-0.37024
DH3	1.646	3	0.04938	0.4	-0.35062
DH5	2.888	2.25	0.06498	0.4	-0.33502

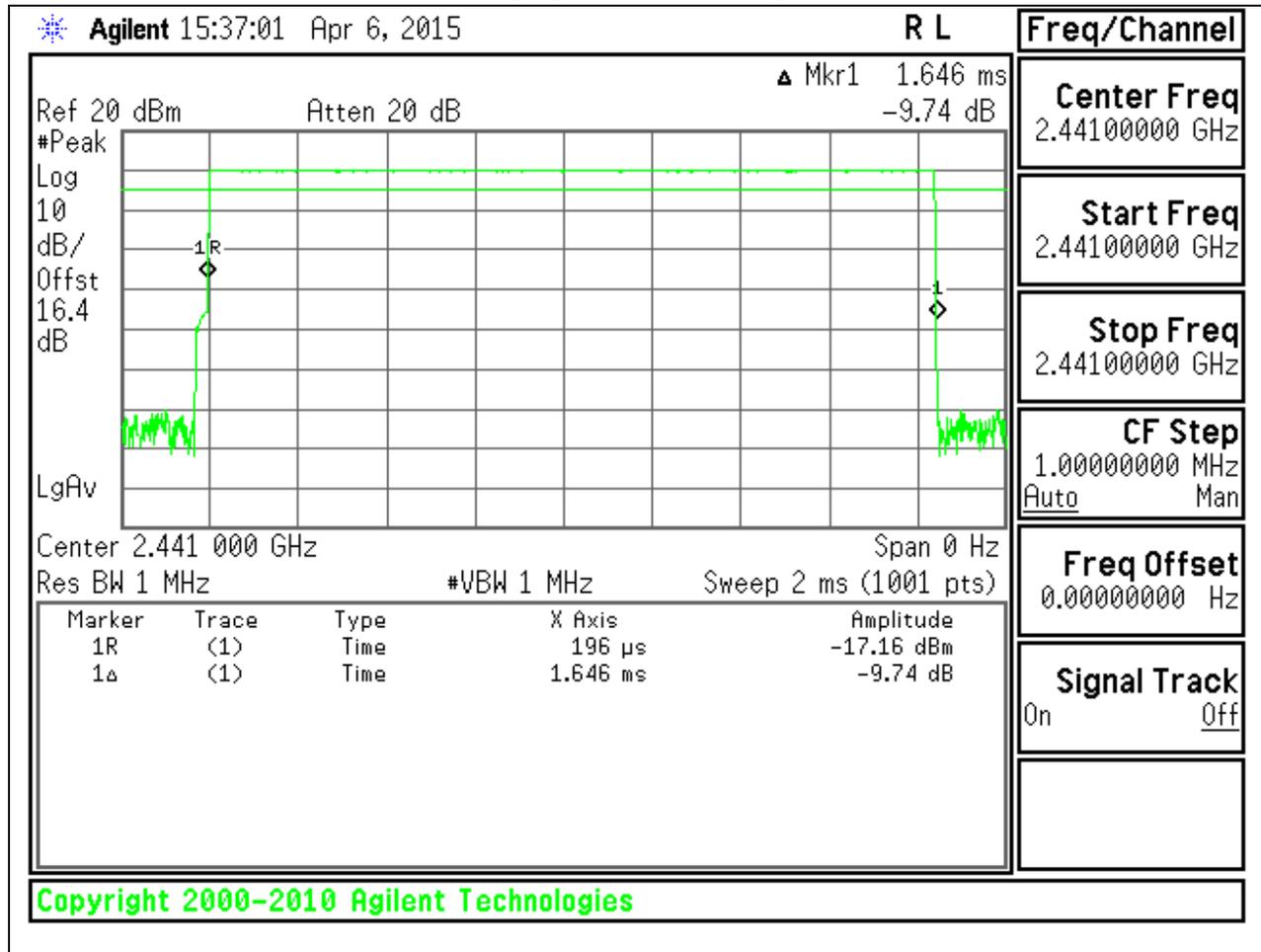
PULSE WIDTH - DH1



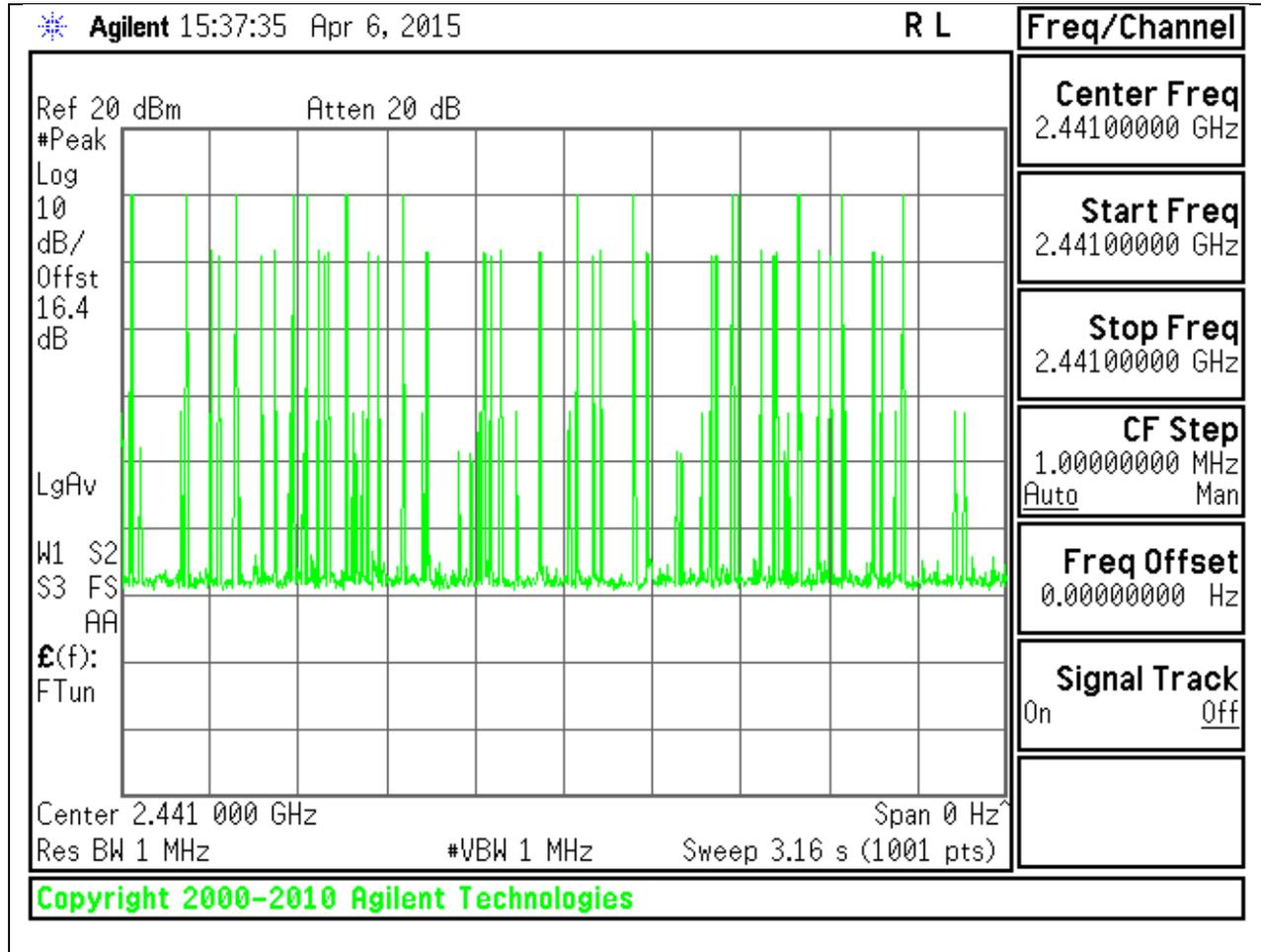
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD - DH1



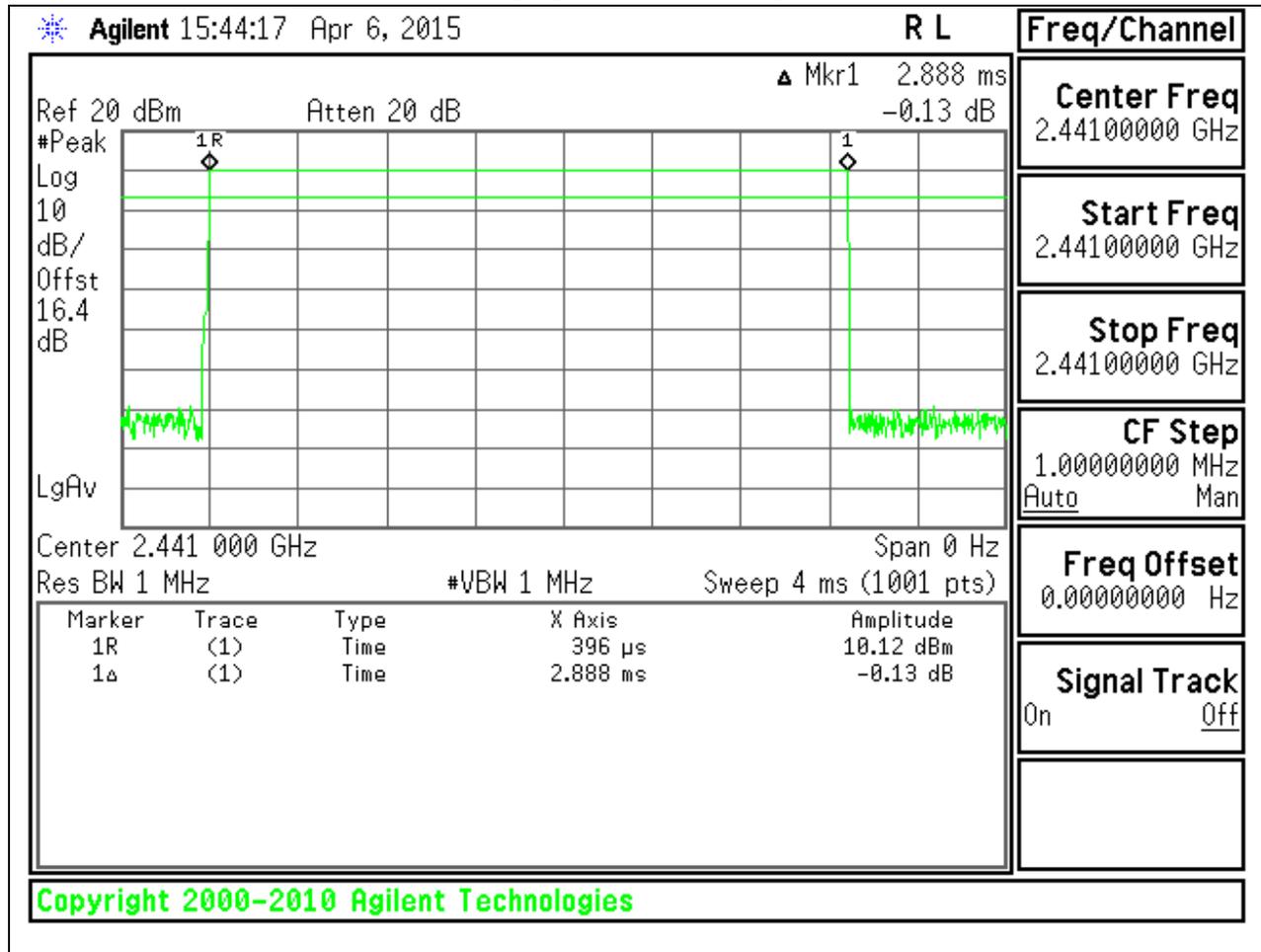
PULSE WIDTH - DH3



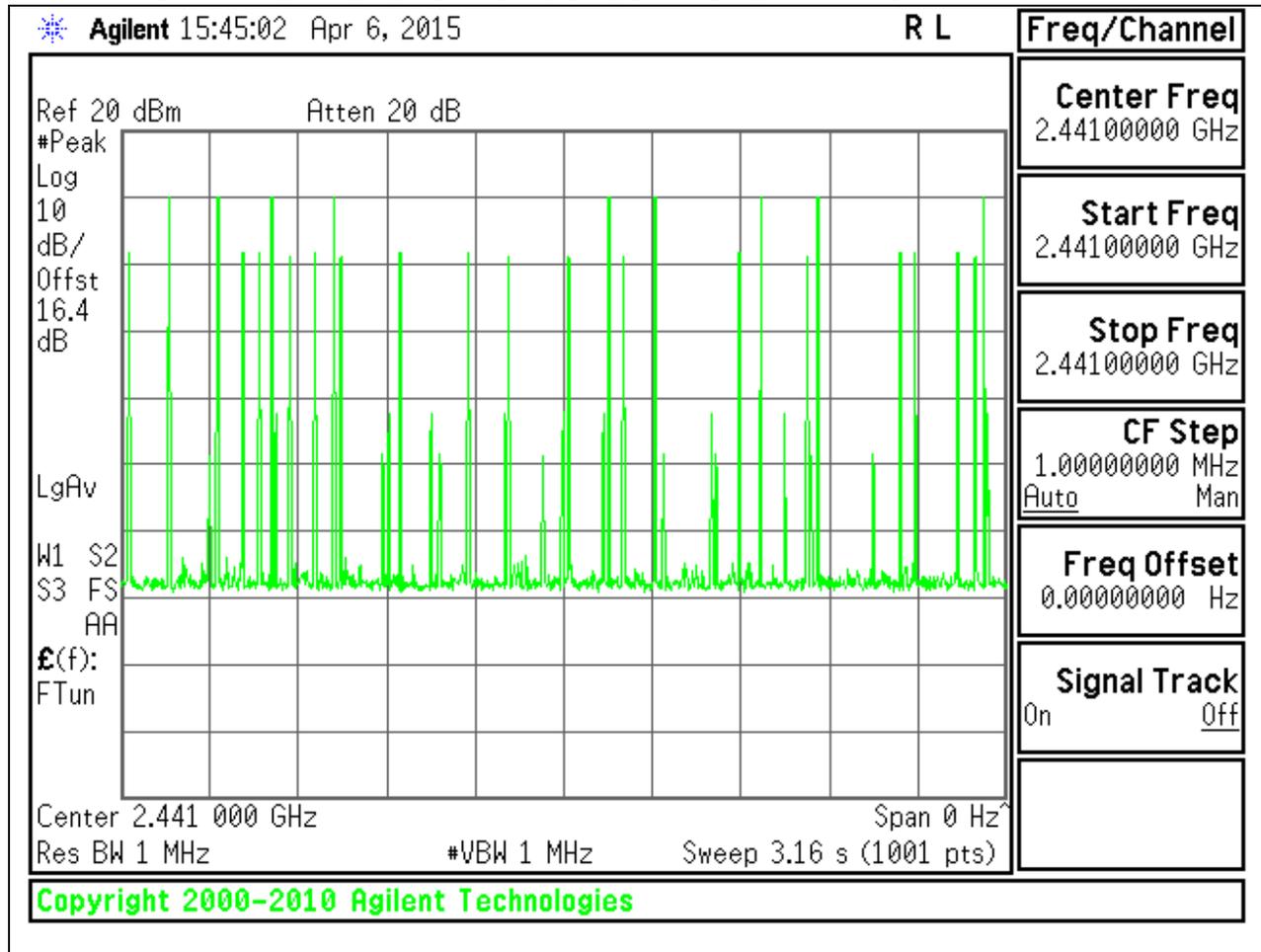
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD - DH3



PULSE WIDTH - DH5



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD - DH5



8.5. 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 21 dBm.

TEST PROCEDURE

DA 00-705: 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

8.5.1. BASIC DATA RATE GFSK MODULATION

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	8.34	21	-12.66
Middle	2441	10.02	21	-10.98
High	2480	8.91	21	-12.09
Worst		10.02		-10.98

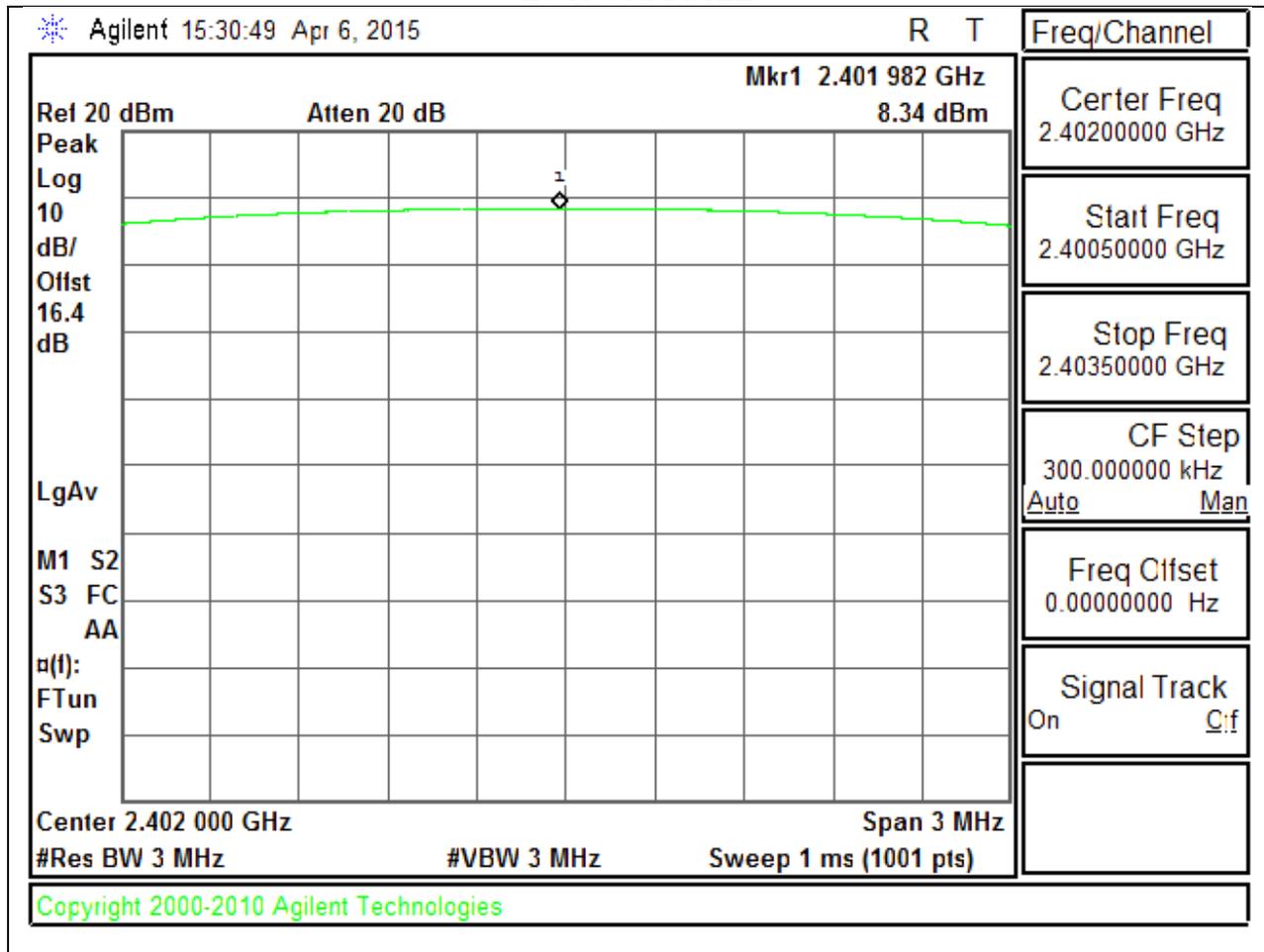
8.5.2. ENHANCED DATA RATE 8PSK MODULATION

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	7.39	21	-13.61
Middle	2441	8.98	21	-12.02
High	2480	7.83	21	-13.17
Worst		8.98		-12.02

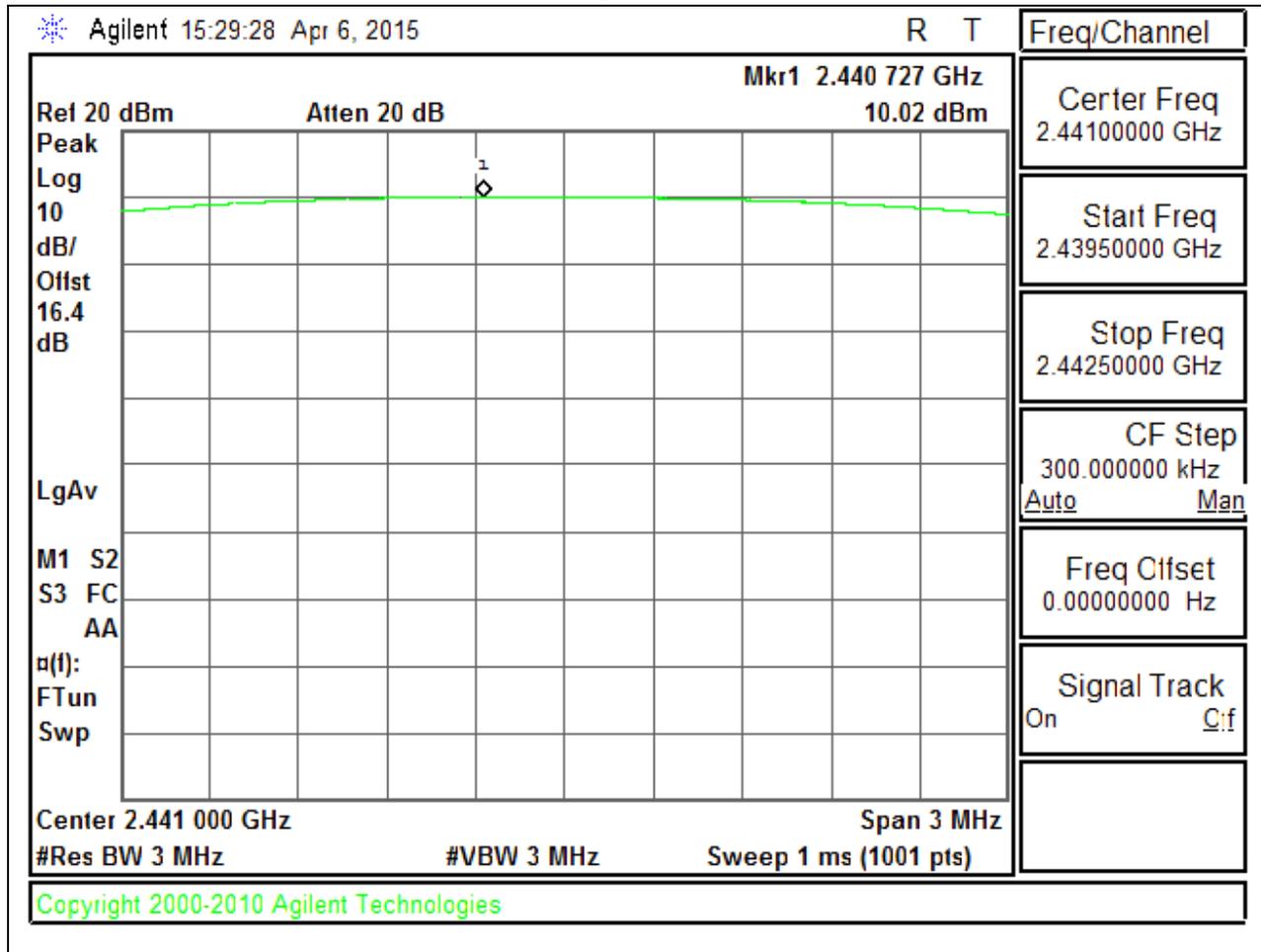
8.5.3. OUTPUT POWER PLOTS

GFSK OUTPUT POWER

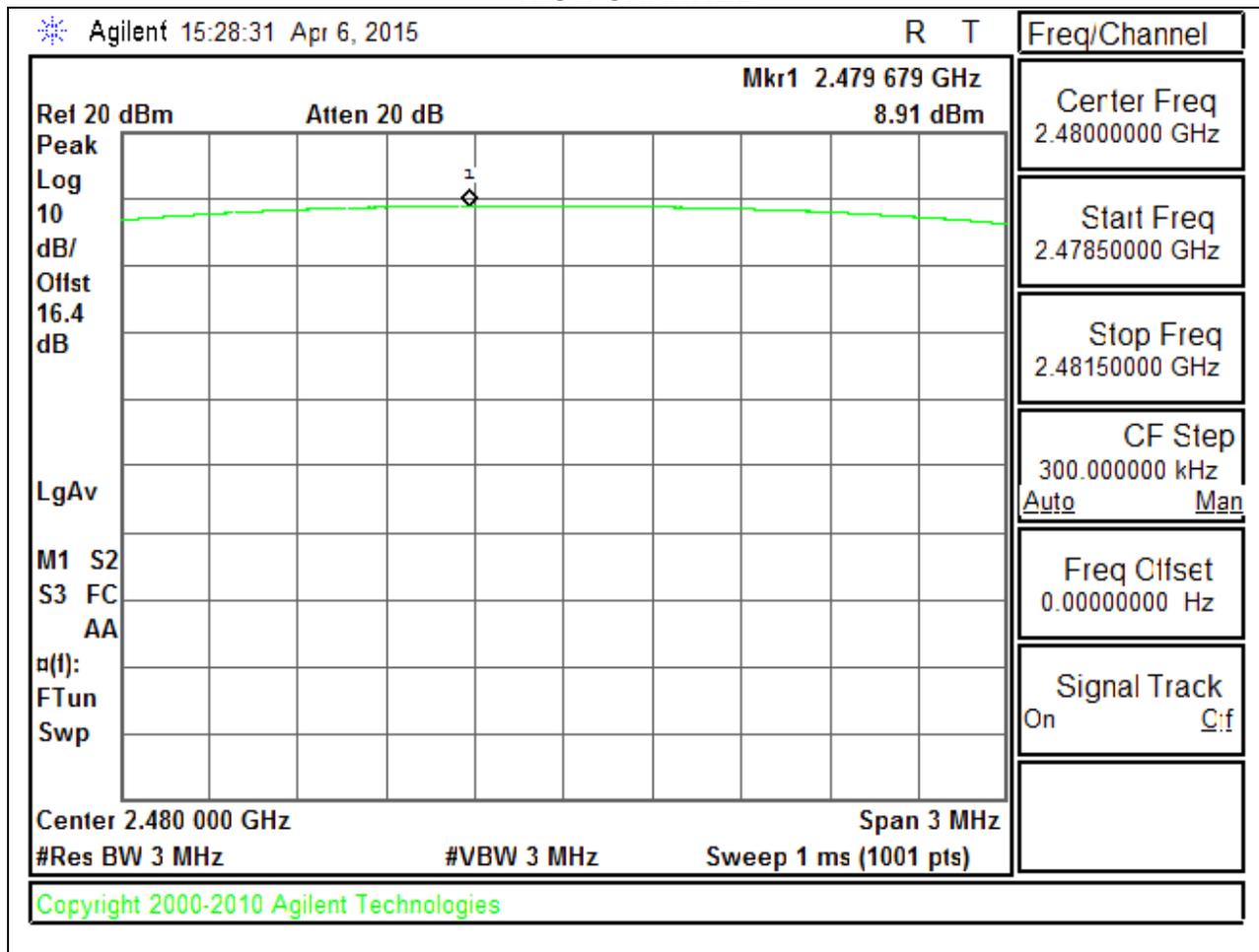
LOW CHANNEL



MID CHANNEL

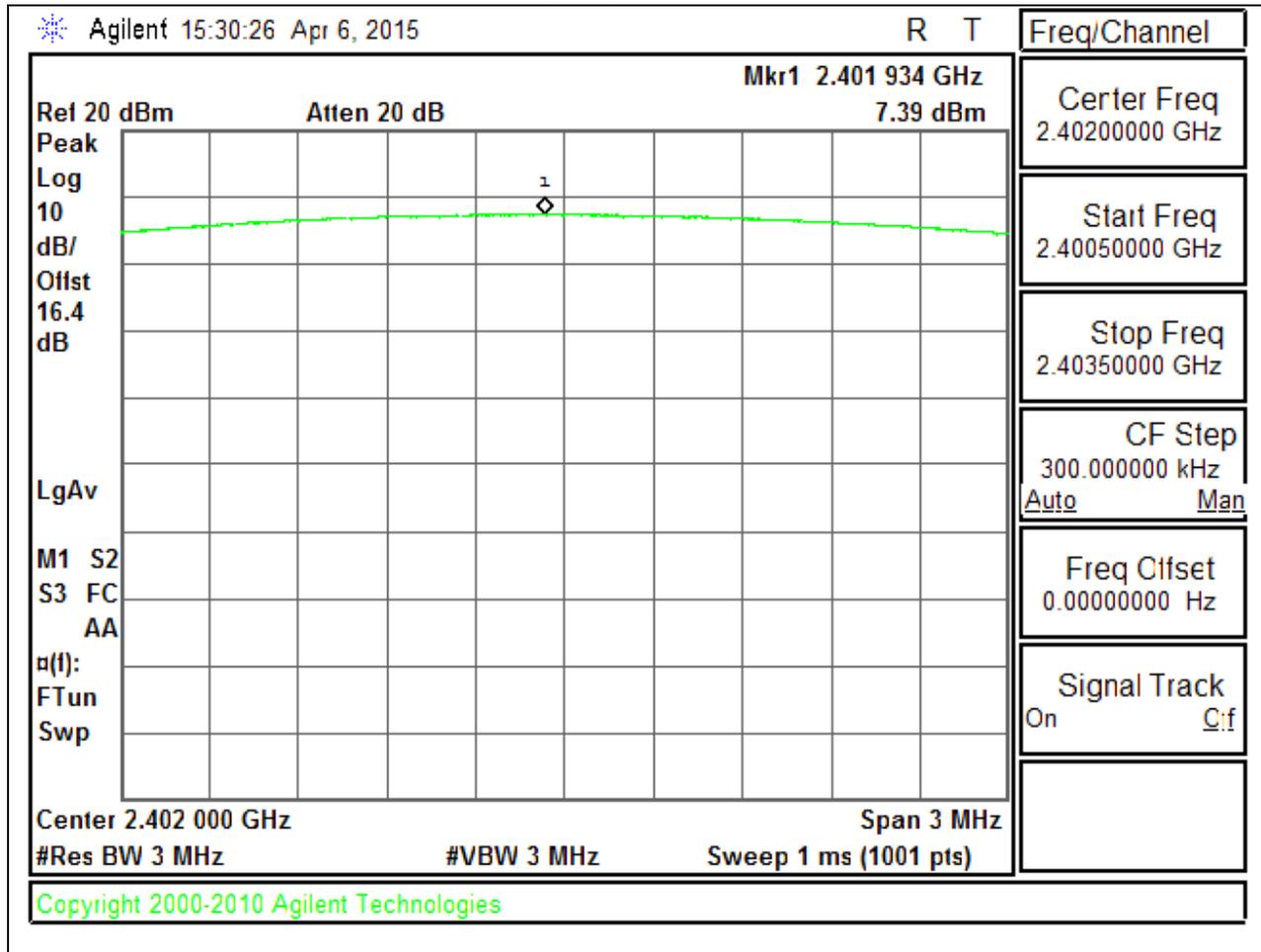


HIGH CHANNEL

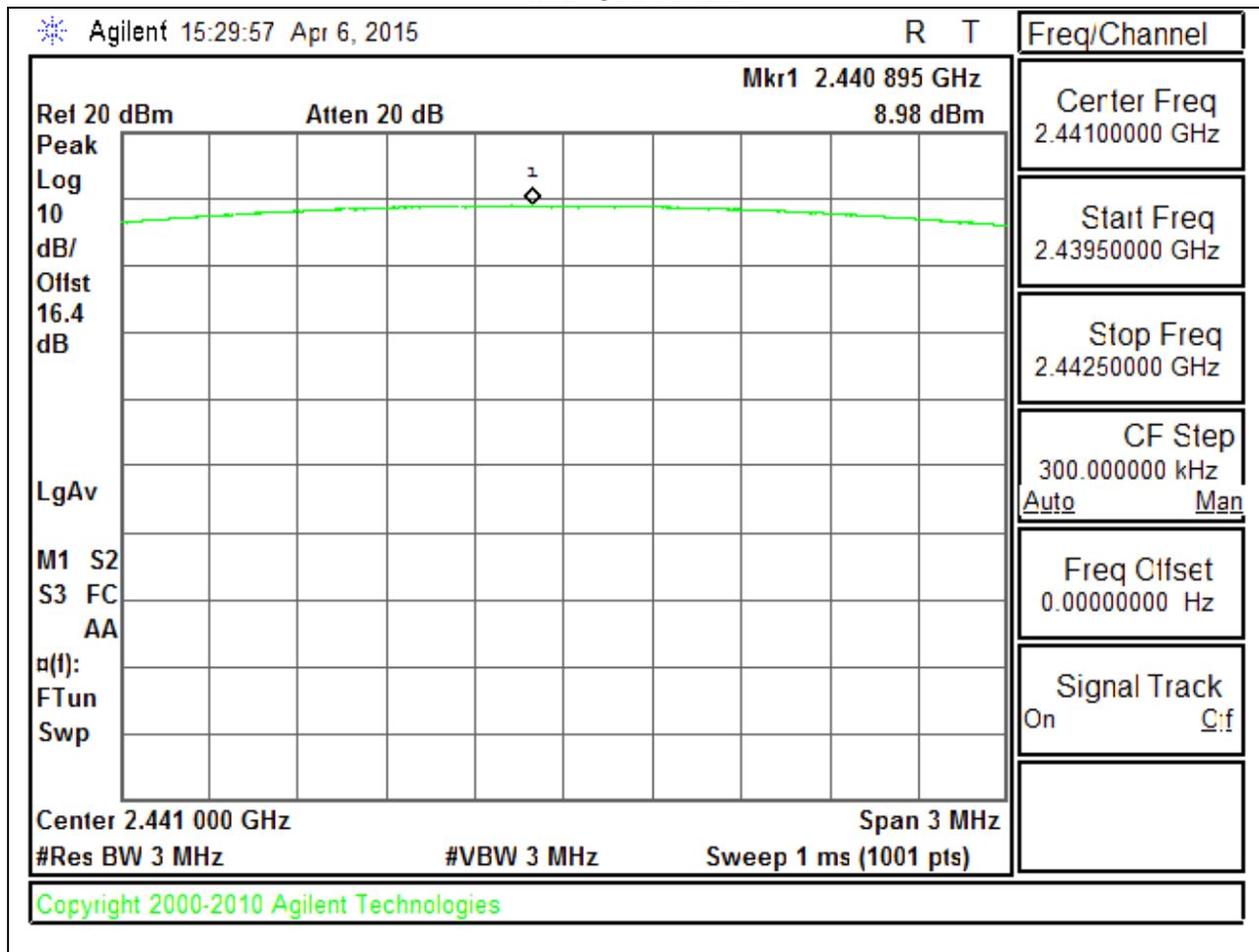


8PSK OUTPUT POWER

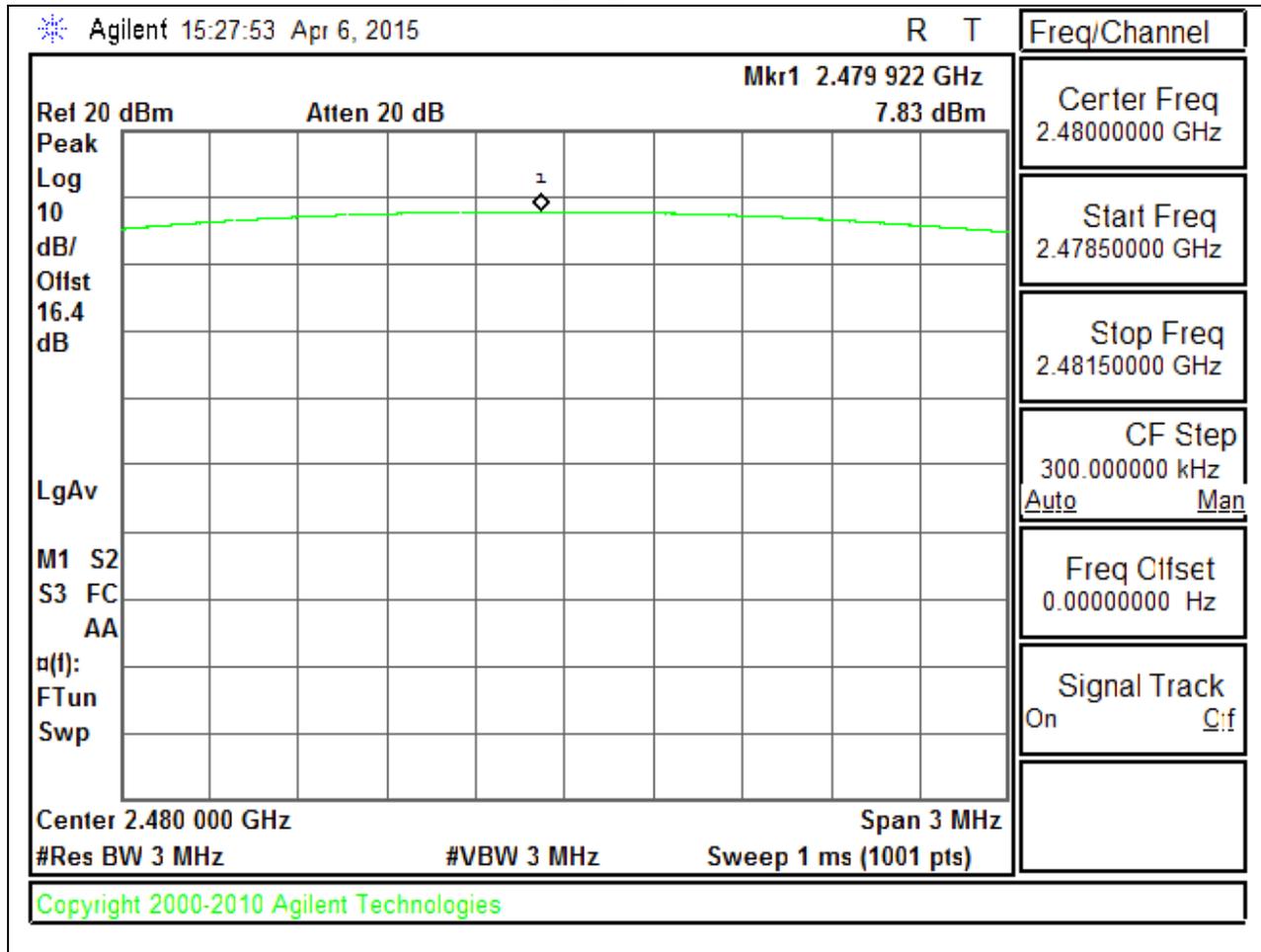
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



8.6. AVERAGE POWER

LIMIT

None; for reporting purposes only.

TEST PROCEDURE

DA 00-705: The transmitter output is connected to a power meter.

RESULTS

The cable assembly insertion loss of 10.7 dB (including 10 dB pad and 0.7 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

8.6.1. BASIC DATA RATE GFSK MODULATION

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	8.3
Middle	2441	9.9
High	2480	8.9
Worst		9.9

8.6.2. DATA RATE PI/4-DQPSK MODULATION

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	5.00
Middle	2441	5.90
High	2480	5.30
Worst		5.90

8.6.3. ENHANCED DATA RATE 8PSK MODULATION

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	5
Middle	2441	6.3
High	2480	5.3
Worst		6.3

8.7. 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.

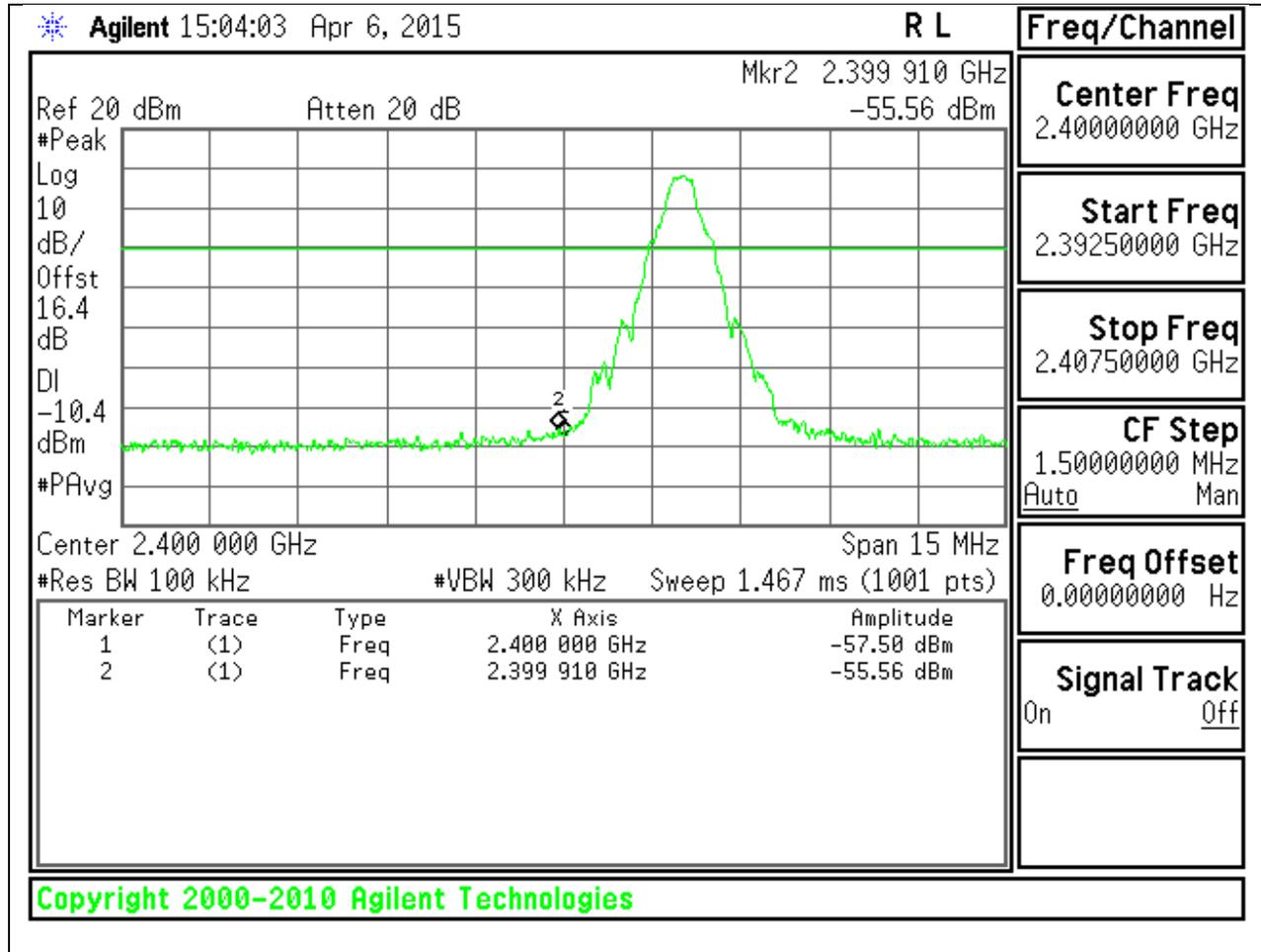
The bandedges at 2.4 and 2.4835 GHz are investigated with the transmitter set to the normal hopping mode.

RESULTS

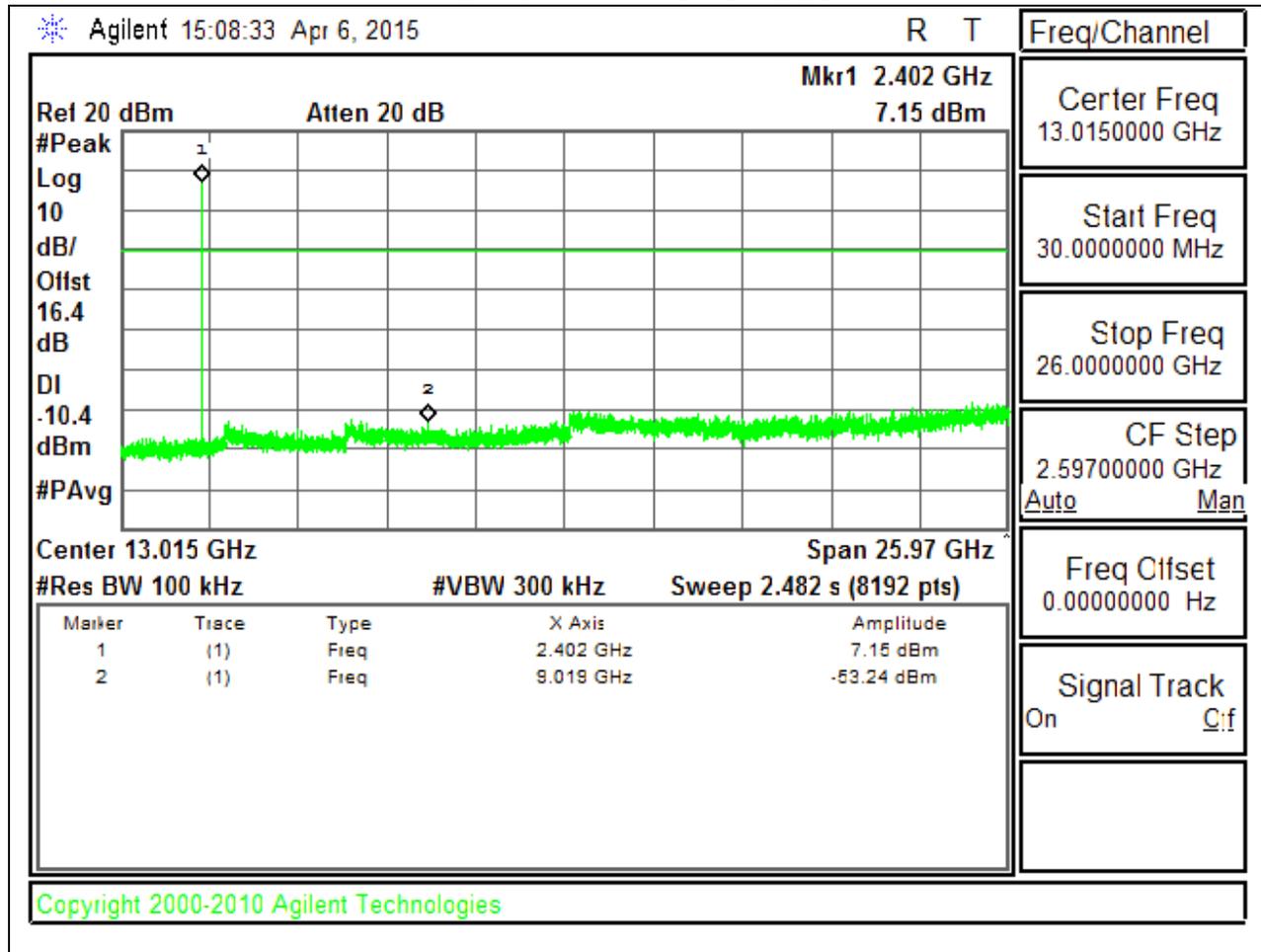
8.7.1. BASIC DATA RATE GFSK MODULATION

SPURIOUS EMISSIONS, LOW CHANNEL

LOW CHANNEL BANDEDGE

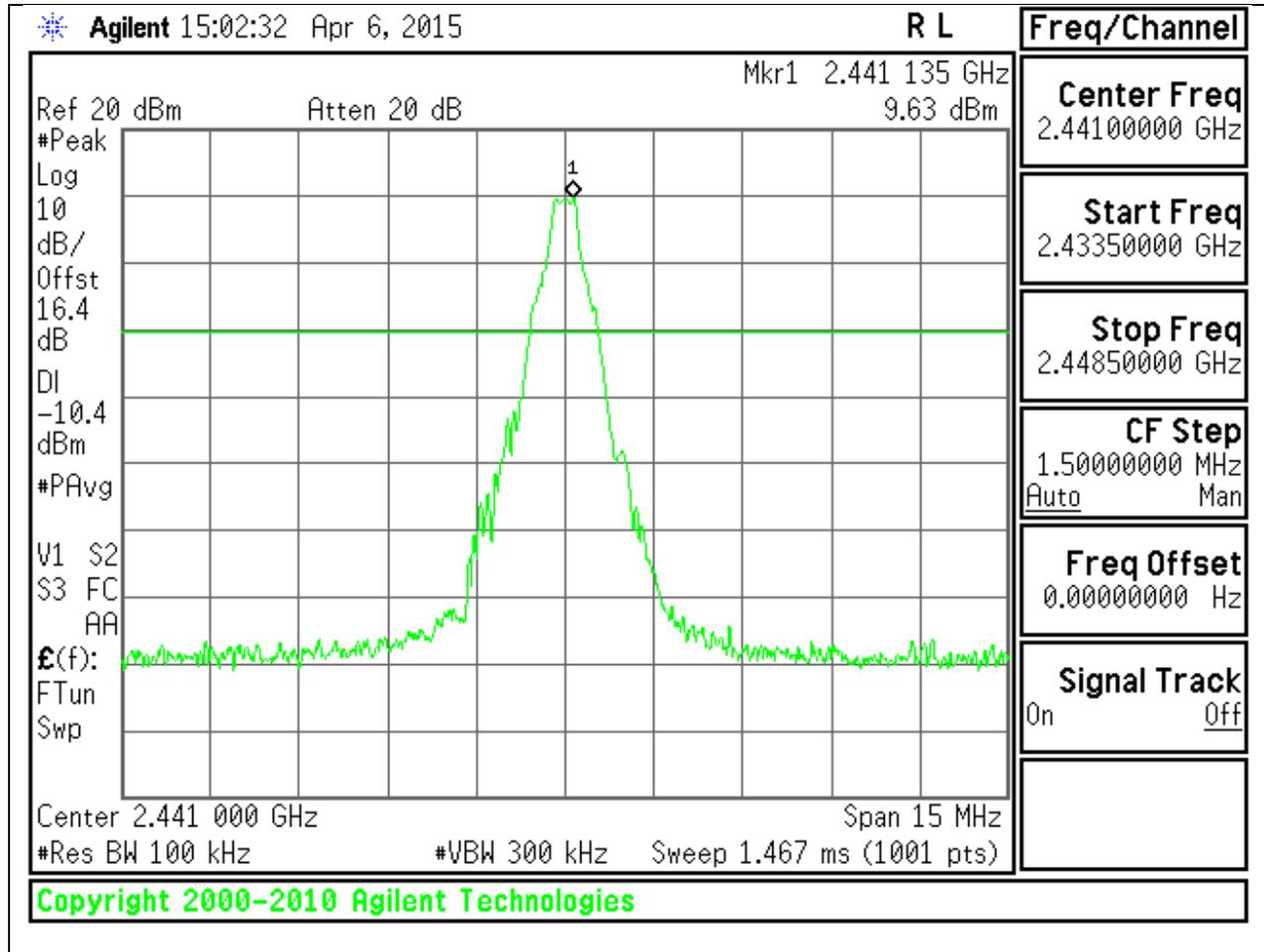


LOW CHANNEL SPURIOUS

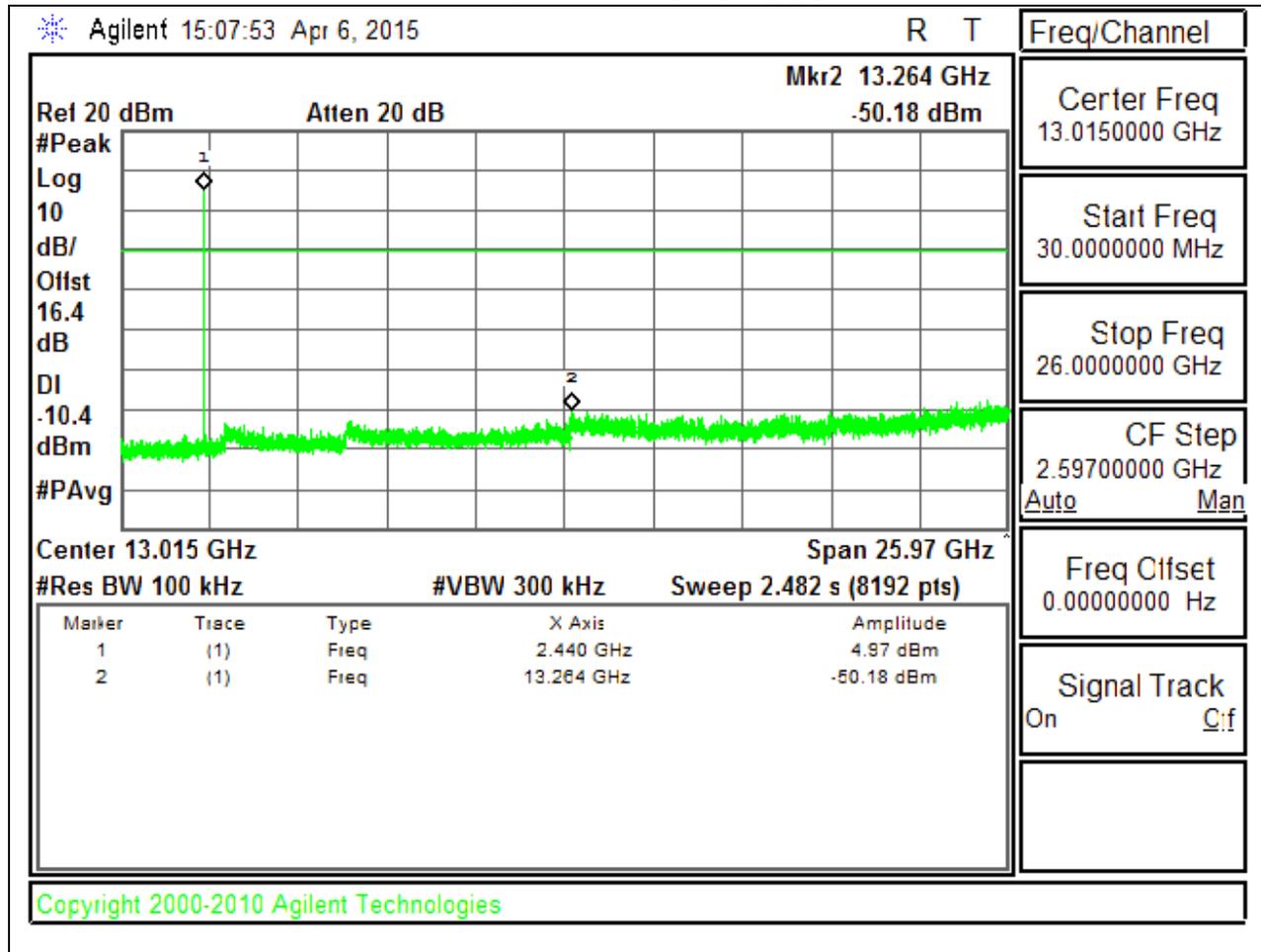


SPURIOUS EMISSIONS, MID CHANNEL

MID CHANNEL BANDEDGE

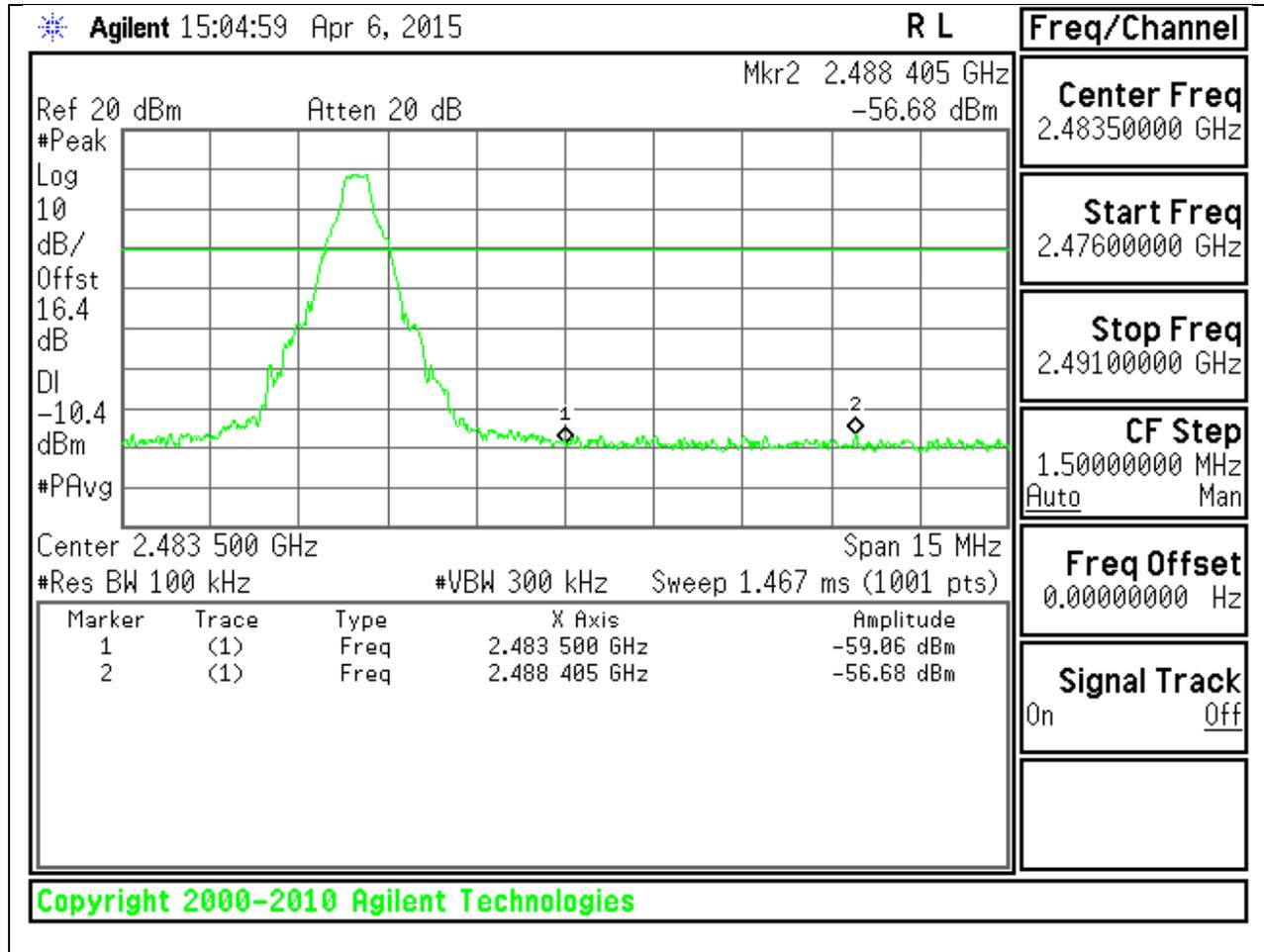


MID CHANNEL SPURIOUS

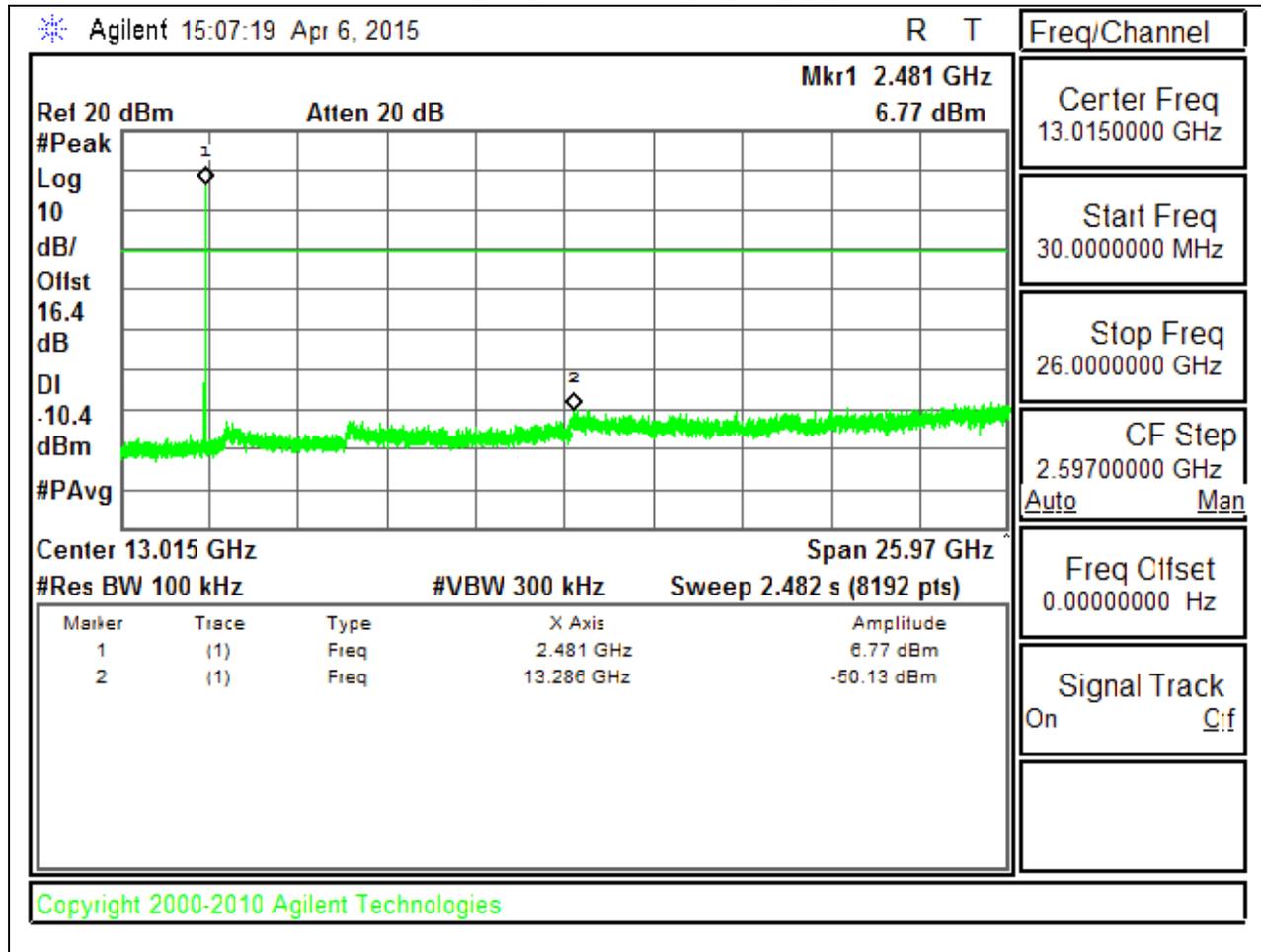


SPURIOUS EMISSIONS, HIGH CHANNEL

HIGH CHANNEL BANDEDGE

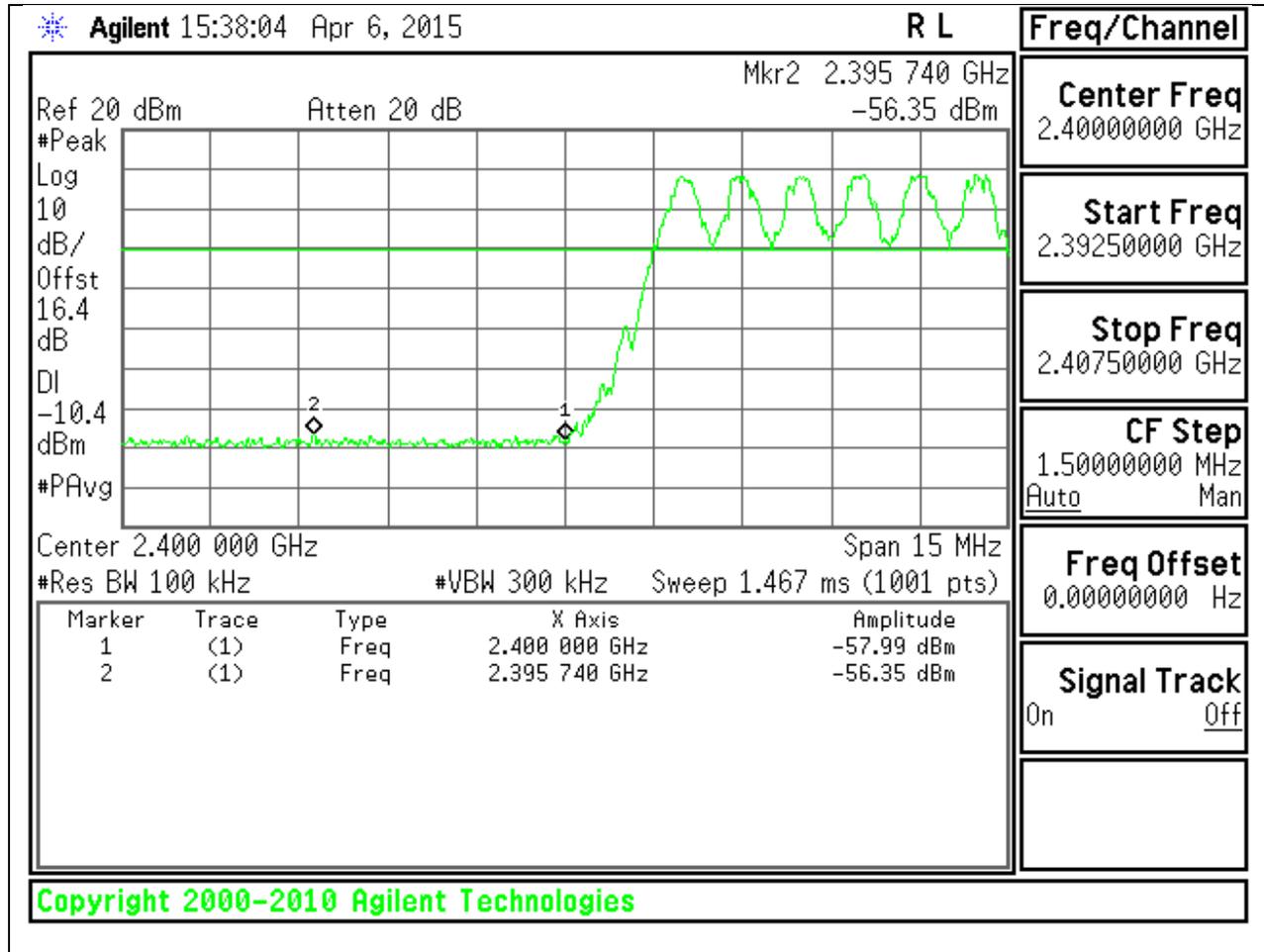


HIGH CHANNEL SPURIOUS

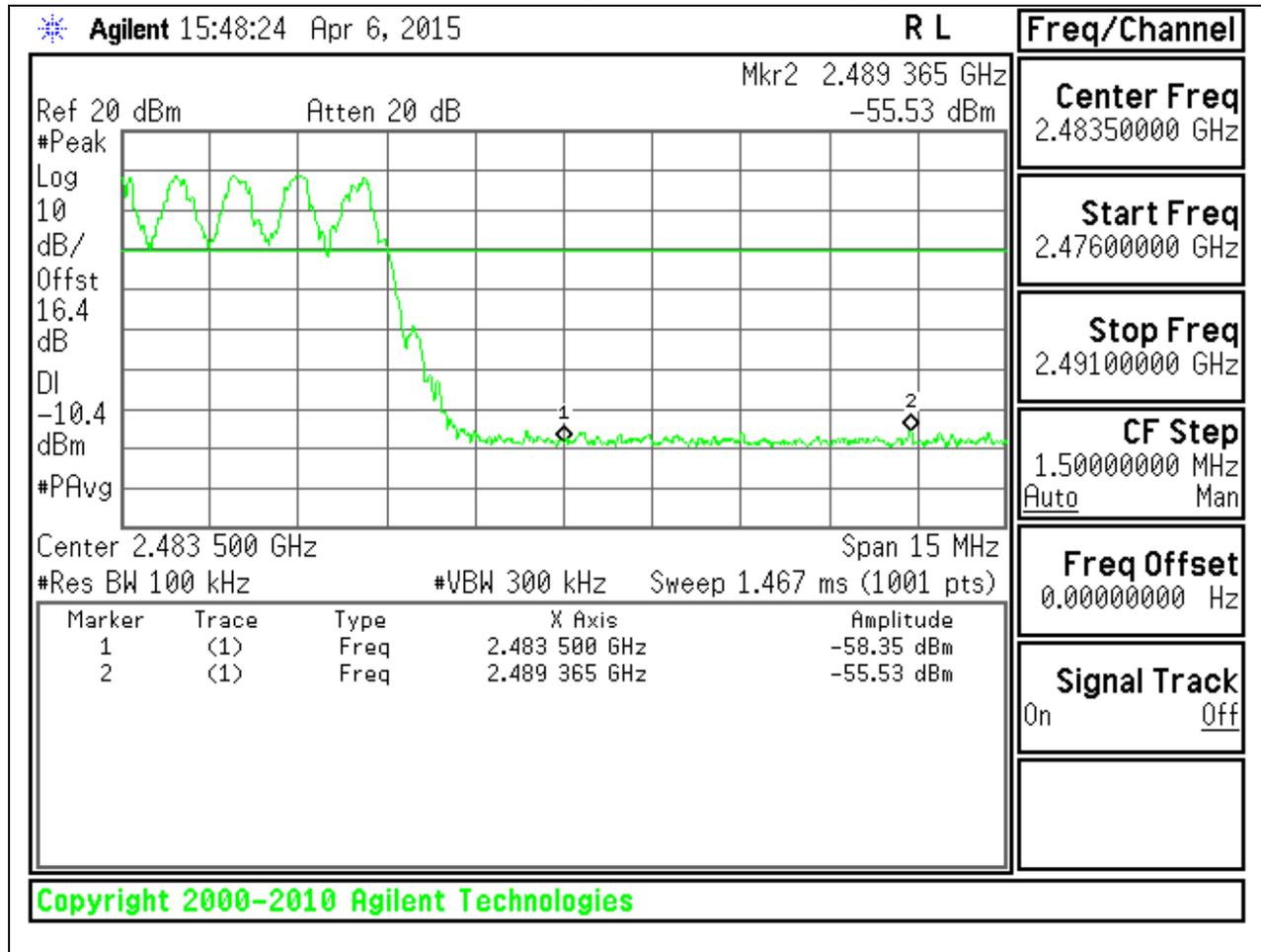


SPURIOUS BANDEGE EMISSIONS WITH HOPPING ON

LOW BANDEGE WITH HOPPING ON



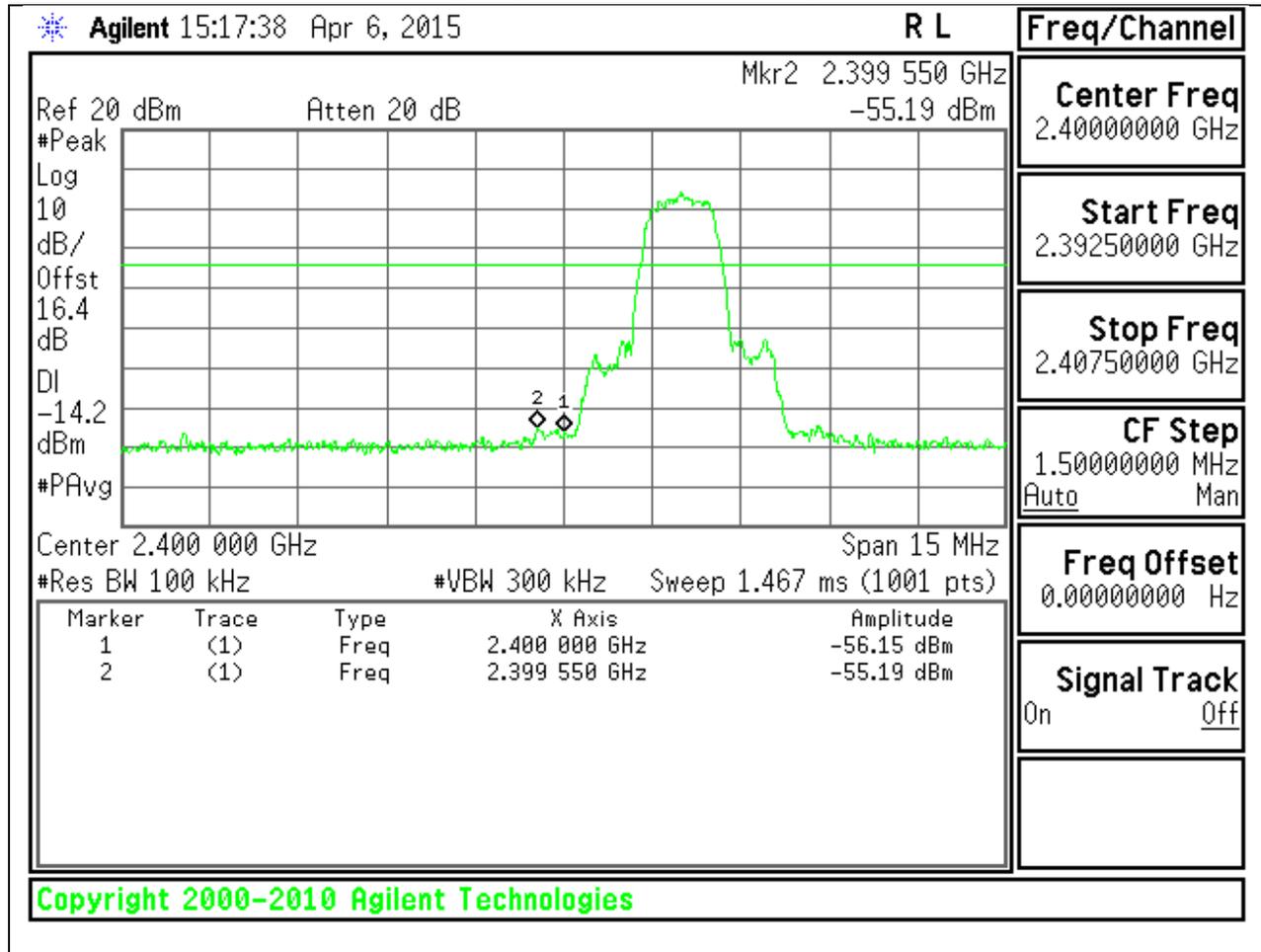
HIGH BANDEDGE WITH HOPPING ON



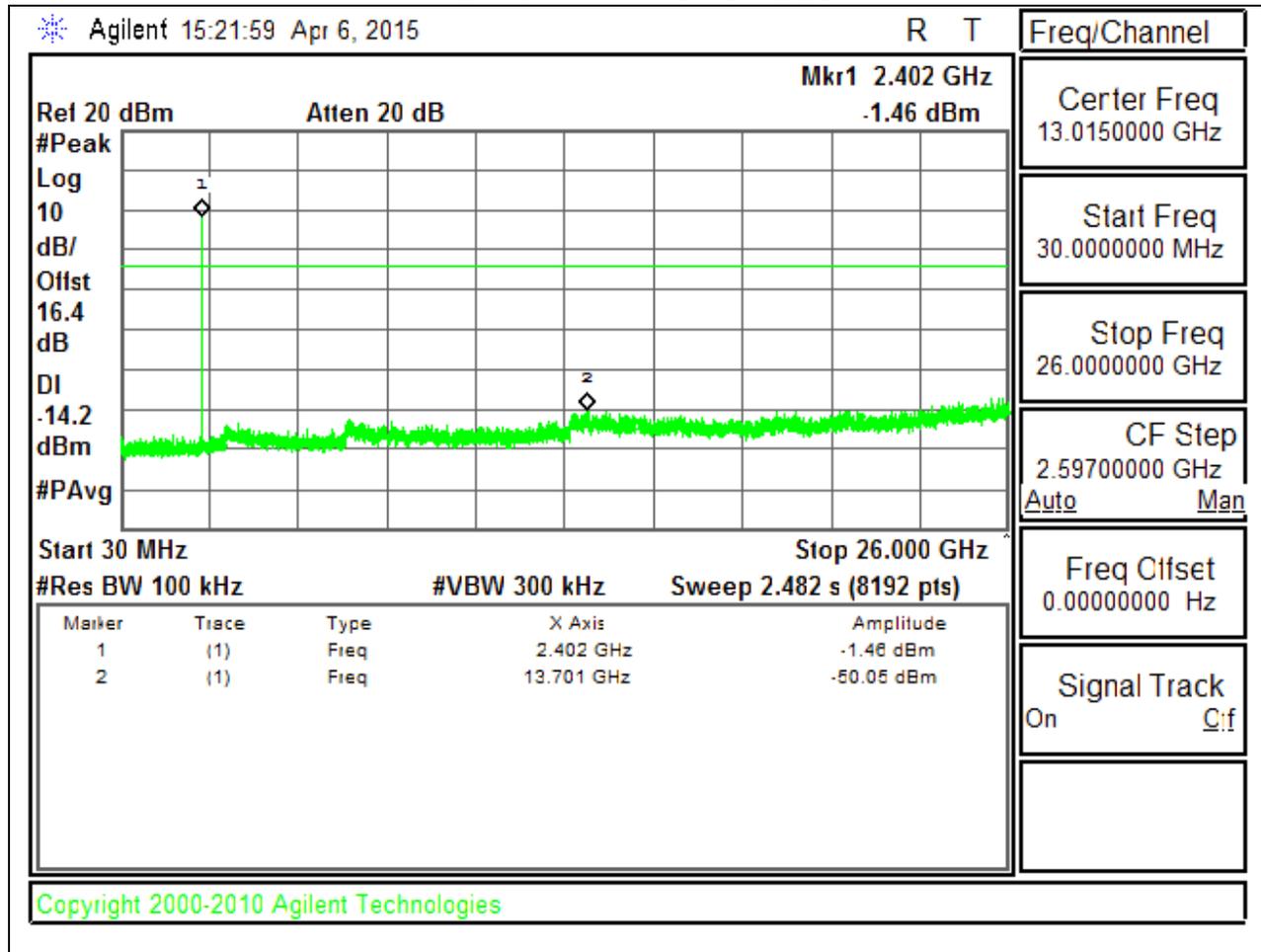
ENHANCED DATA RATE 8PSK MODULATION

SPURIOUS EMISSIONS, LOW CHANNEL

LOW CHANNEL BANDEDGE

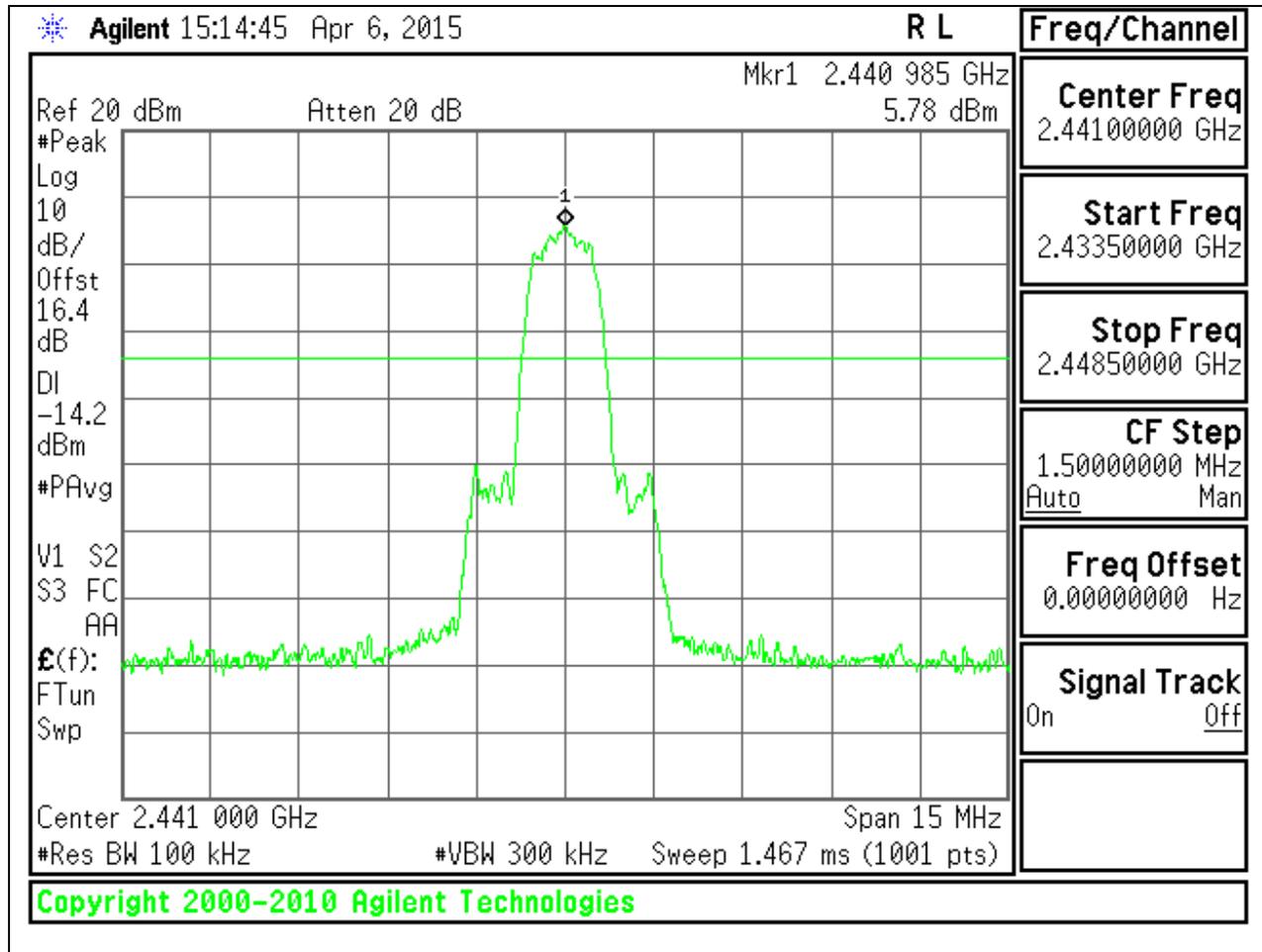


LOW CHANNEL SPURIOUS

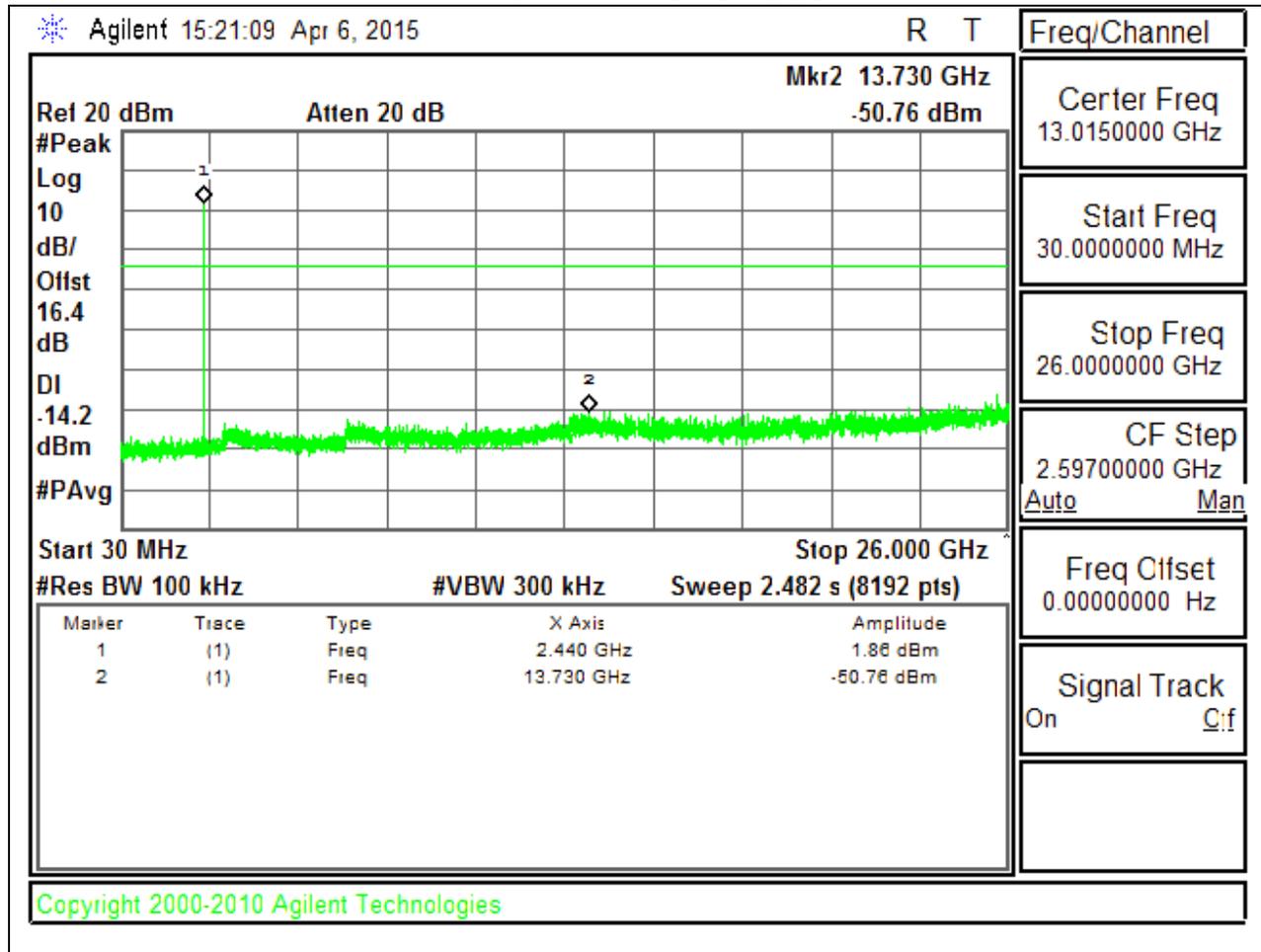


SPURIOUS EMISSIONS, MID CHANNEL

MID CHANNEL BANDEDGE

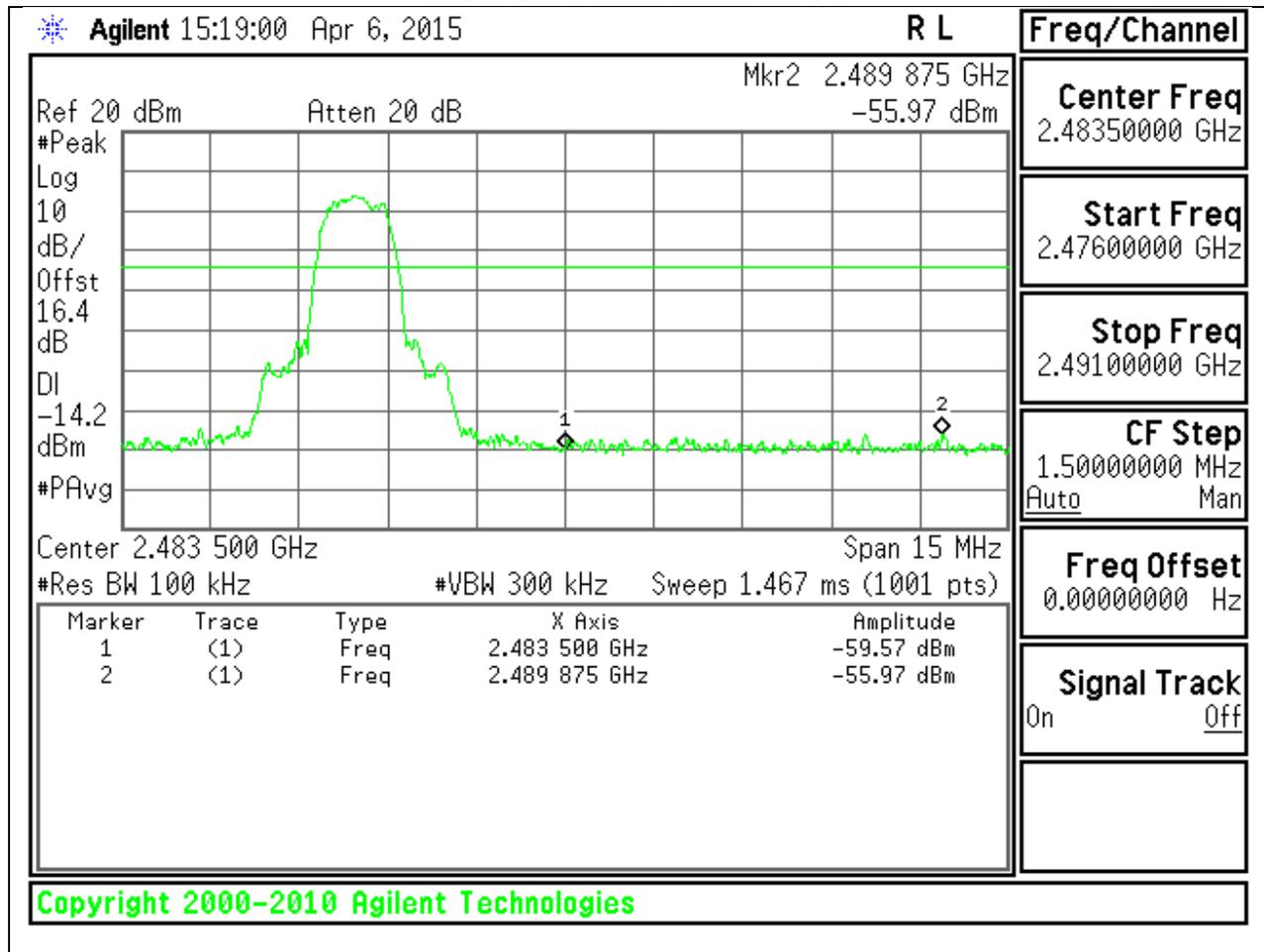


MID CHANNEL SPURIOUS

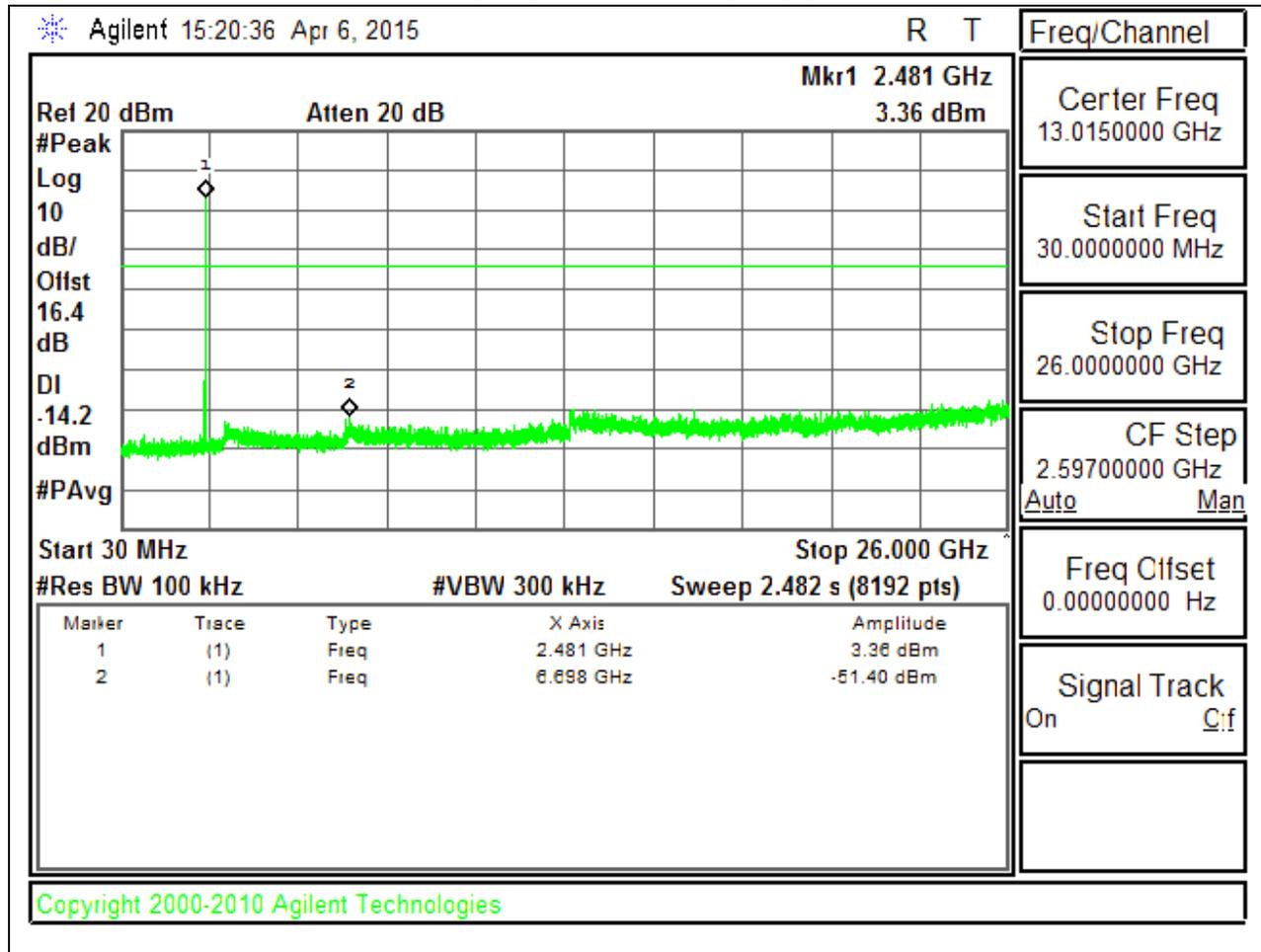


SPURIOUS EMISSIONS, HIGH CHANNEL

HIGH CHANNEL BANDEDGE

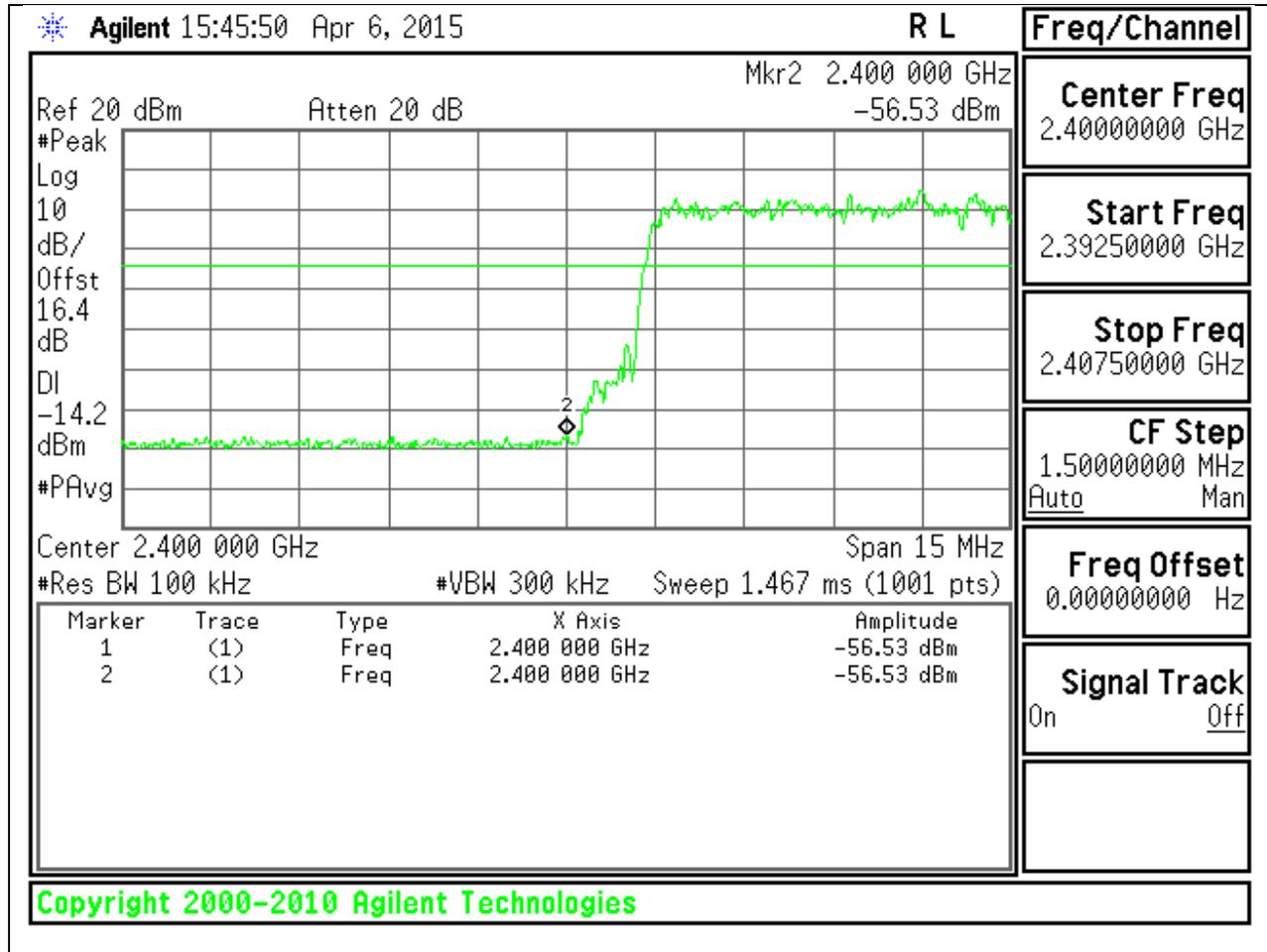


HIGH CHANNEL SPURIOUS

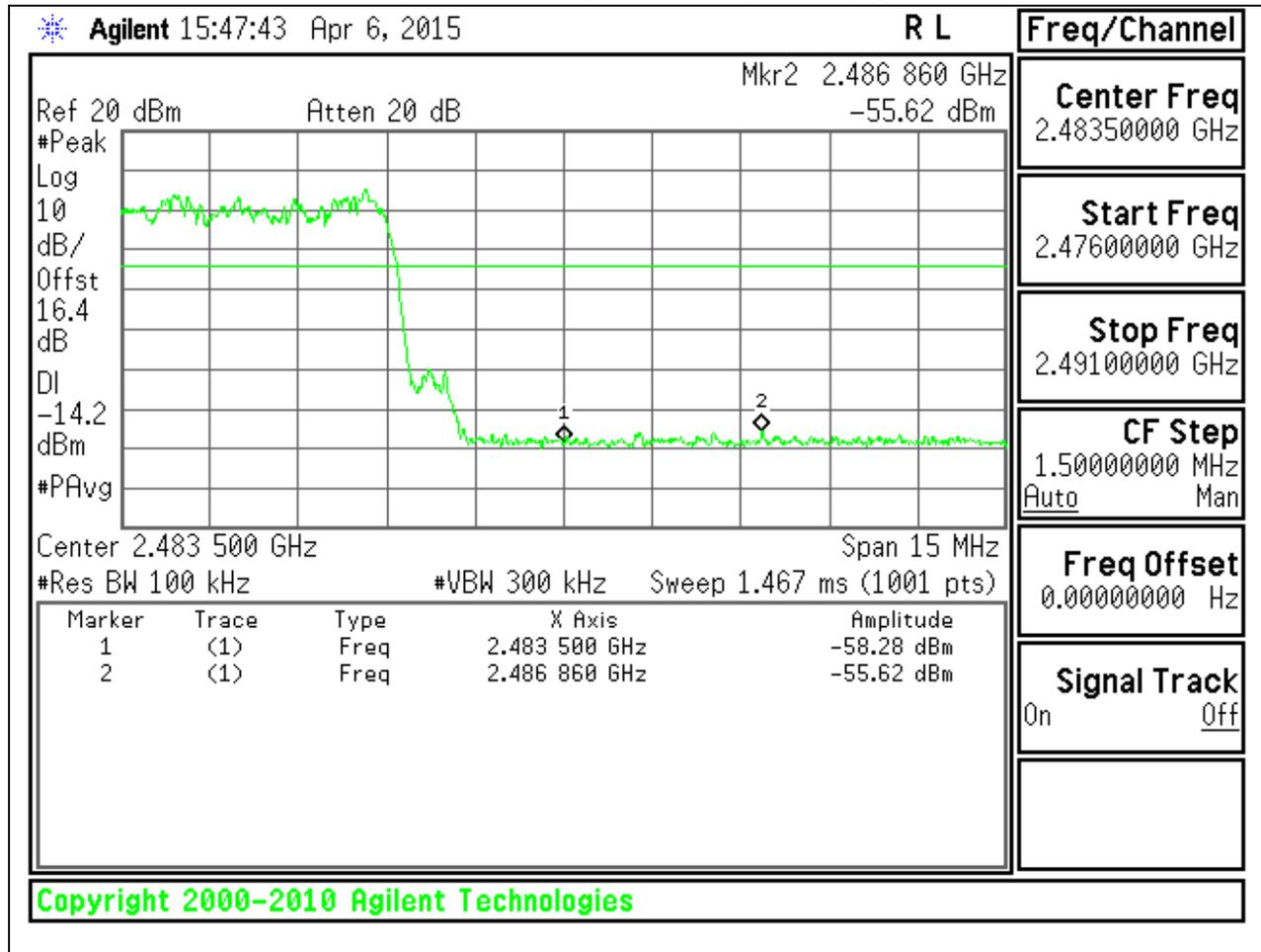


SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON

LOW BANDEDGE WITH HOPPING ON



HIGH BANDEGE WITH HOPPING ON



9. RADIATED TEST RESULTS

9.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-GEN Clause 8.9 (Transmitter)

IC RSS-GEN Clause 7 (Receiver)

Frequency Range (MHz)	Field Strength Limit ($\mu\text{V}/\text{m}$) at 3 m	Field Strength Limit (dB $\mu\text{V}/\text{m}$) 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 C63.10. 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 band edge 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 1/T (on time) for average measurement.

$$\text{GFSK} = 1/T = 1 / 0.00288 \text{ S} = 350\text{Hz}.$$

The spectrum from 1GHzHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

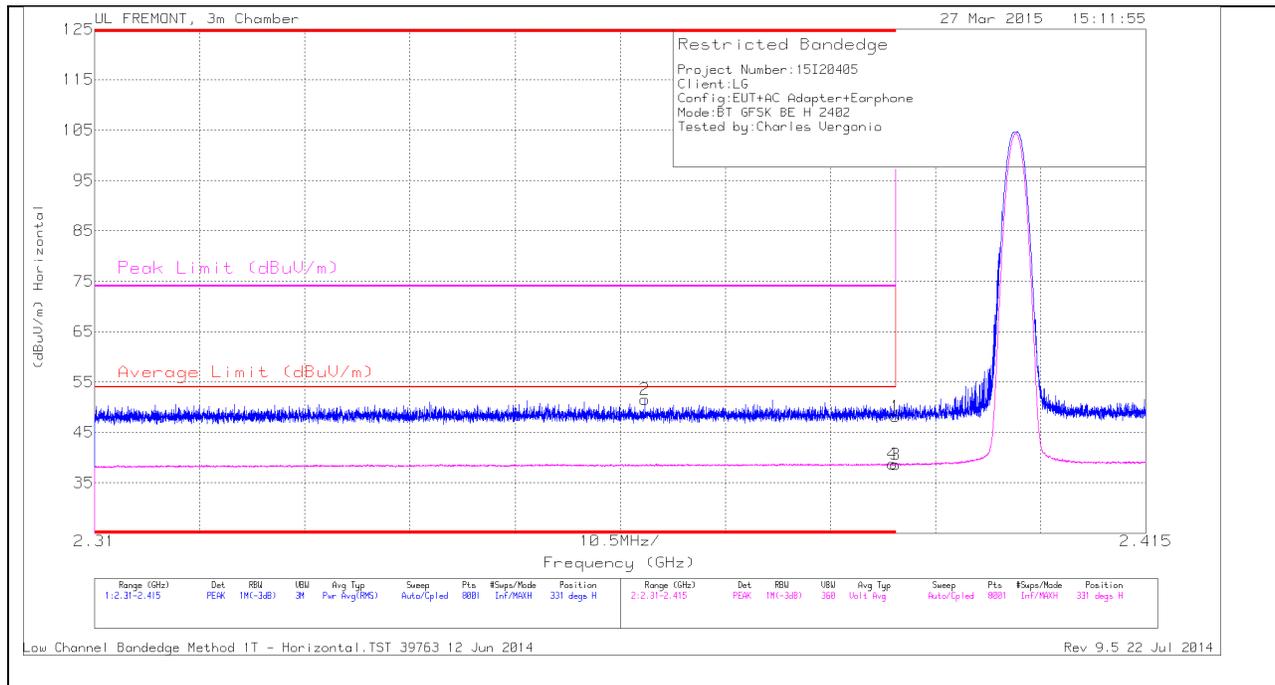
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

9.2. TRANSMITTER ABOVE 1 GHz

9.2.1. BASIC DATA RATE GFSK MODULATION

RESTRICTED BANDEDGE (LOW CHANNEL)

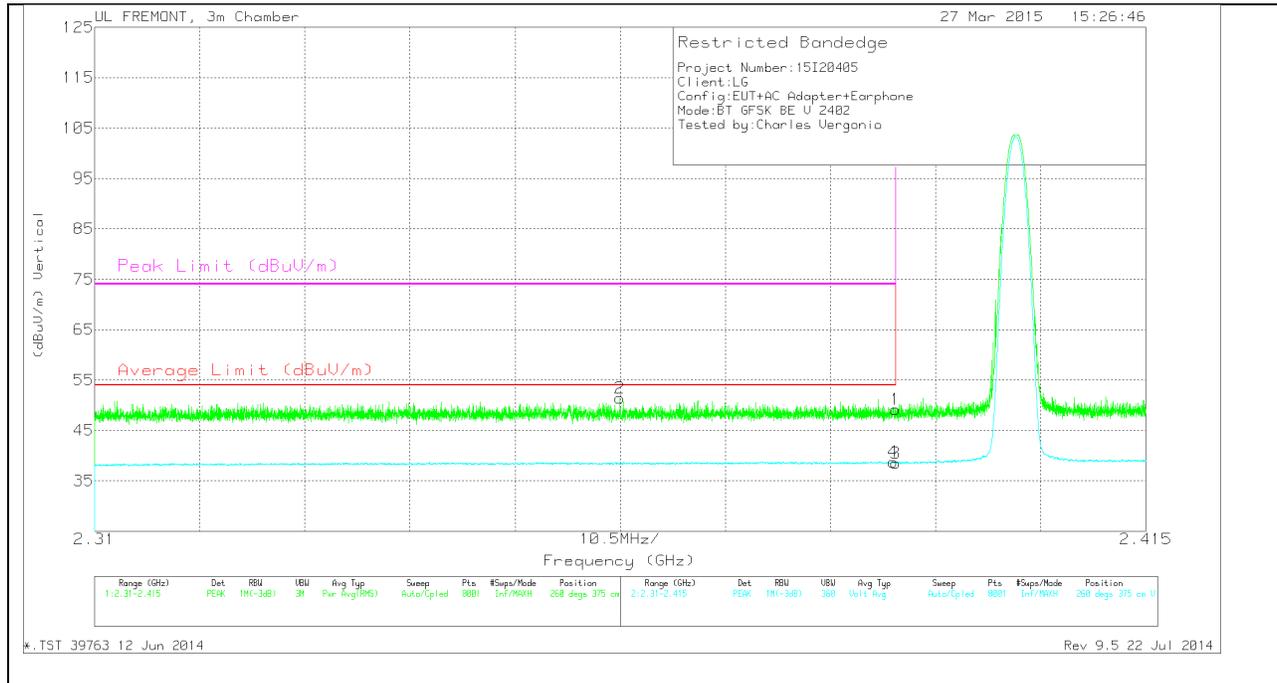
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.365	42.89	PK	31.9	-23.2	51.59	-	-	74	-22.41	331	304	H
1	* 2.39	39.26	PK	32	-23.1	48.16	-	-	74	-25.84	331	304	H
3	* 2.39	29.7	VB1T	32	-23.1	38.6	54	-15.4	-	-	331	304	H
4	* 2.39	29.87	VB1T	32	-23.1	38.77	54	-15.23	-	-	331	304	H

VERTICAL PEAK AND AVERAGE PLOT

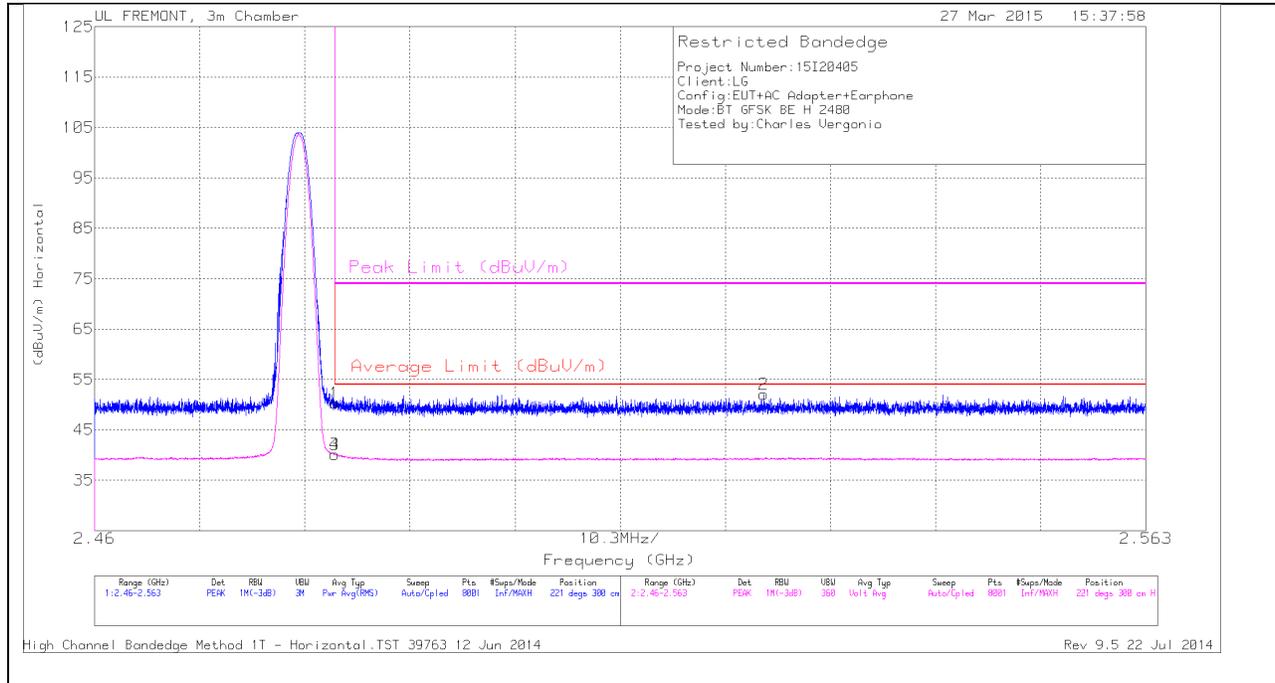


VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	2.362	42.56	PK	31.9	-23.1	51.36	-	-	74	-22.64	260	375	V
1	2.39	40.24	PK	32	-23.1	49.14	-	-	74	-24.86	260	375	V
3	2.39	29.63	VB1T	32	-23.1	38.53	54	-15.47	-	-	260	375	V
4	2.39	29.86	VB1T	32	-23.1	38.76	54	-15.24	-	-	260	375	V

AUTHORIZED BANDEDGE (HIGH CHANNEL)

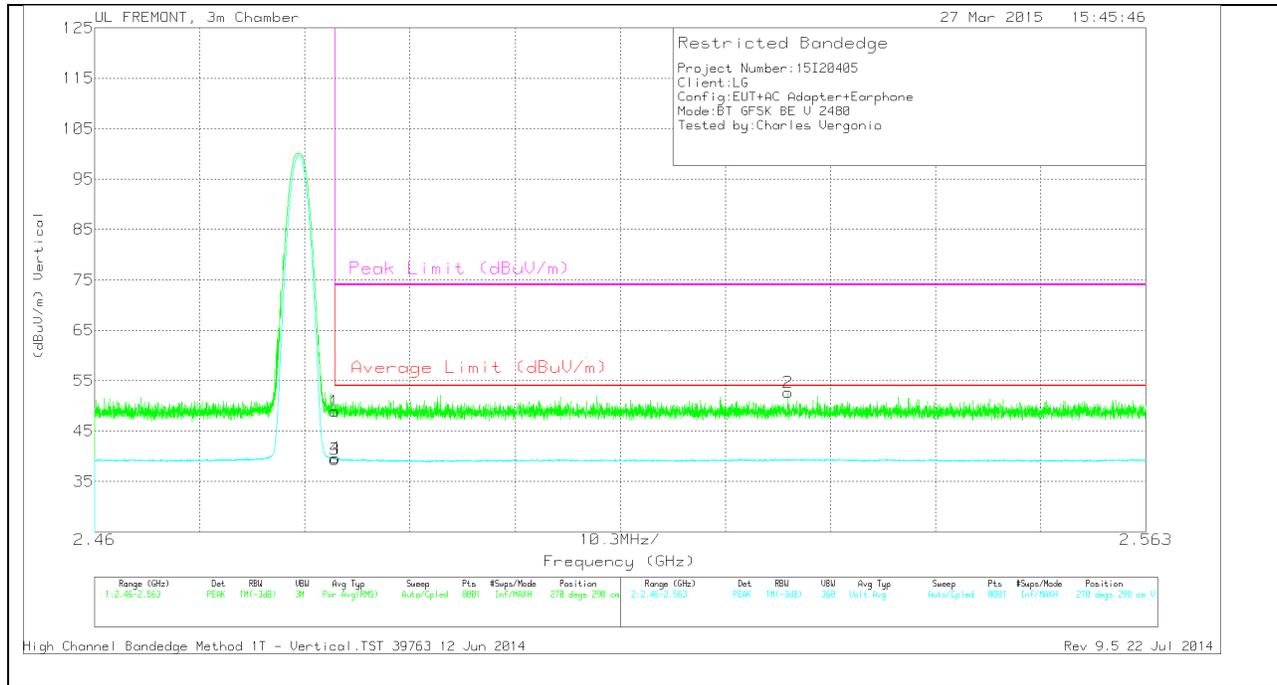
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cb/ Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.484	40.82	PK	32.3	-22.8	50.32	-	-	74	-23.68	221	300	H
3	2.484	30.64	VB1T	32.3	-22.8	40.14	54	-13.86	-	-	221	300	H
4	2.484	30.63	VB1T	32.3	-22.8	40.13	54	-13.87	-	-	221	300	H
2	2.526	42.38	PK	32.4	-22.7	52.08	-	-	74	-21.92	221	300	H

VERTICAL PEAK AND AVERAGE PLOT

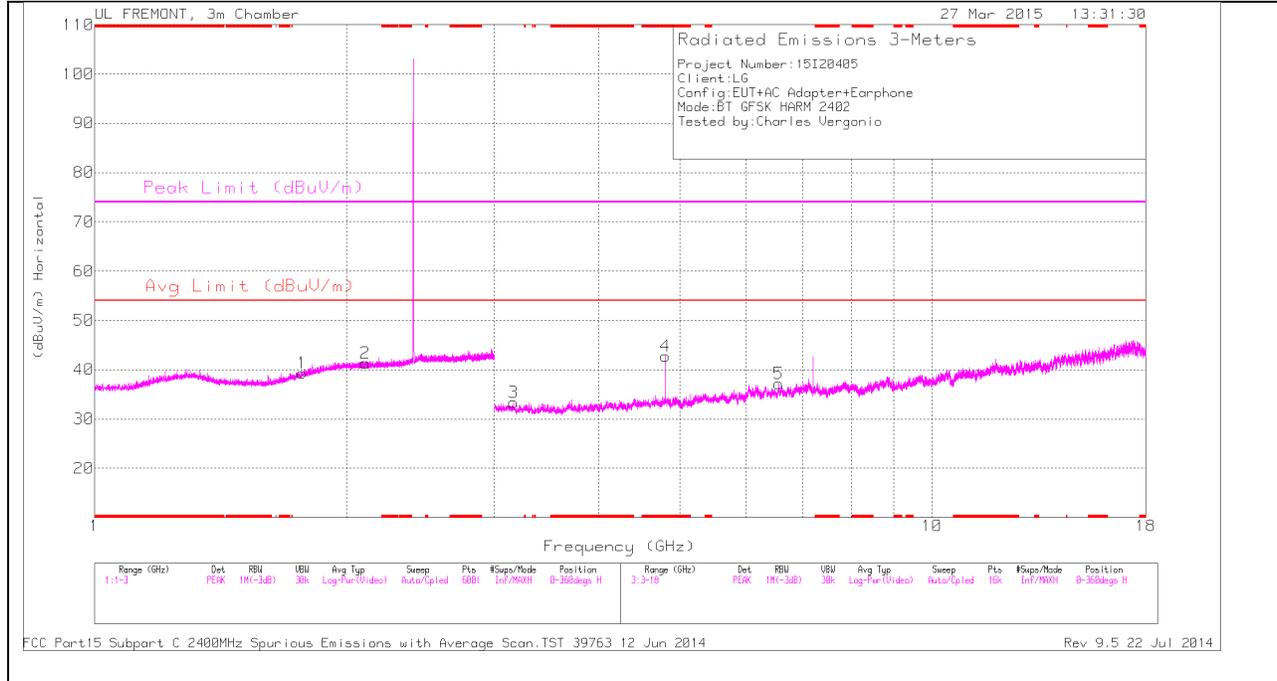


VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.484	39.44	PK	32.3	-22.8	48.94	-	-	74	-25.06	270	298	V
3	2.484	29.89	VB1T	32.3	-22.8	39.39	54	-14.61	-	-	270	298	V
4	2.484	30.15	VB1T	32.3	-22.8	39.65	54	-14.35	-	-	270	298	V
2	2.528	42.92	PK	32.4	-22.7	52.62	-	-	74	-21.38	270	298	V

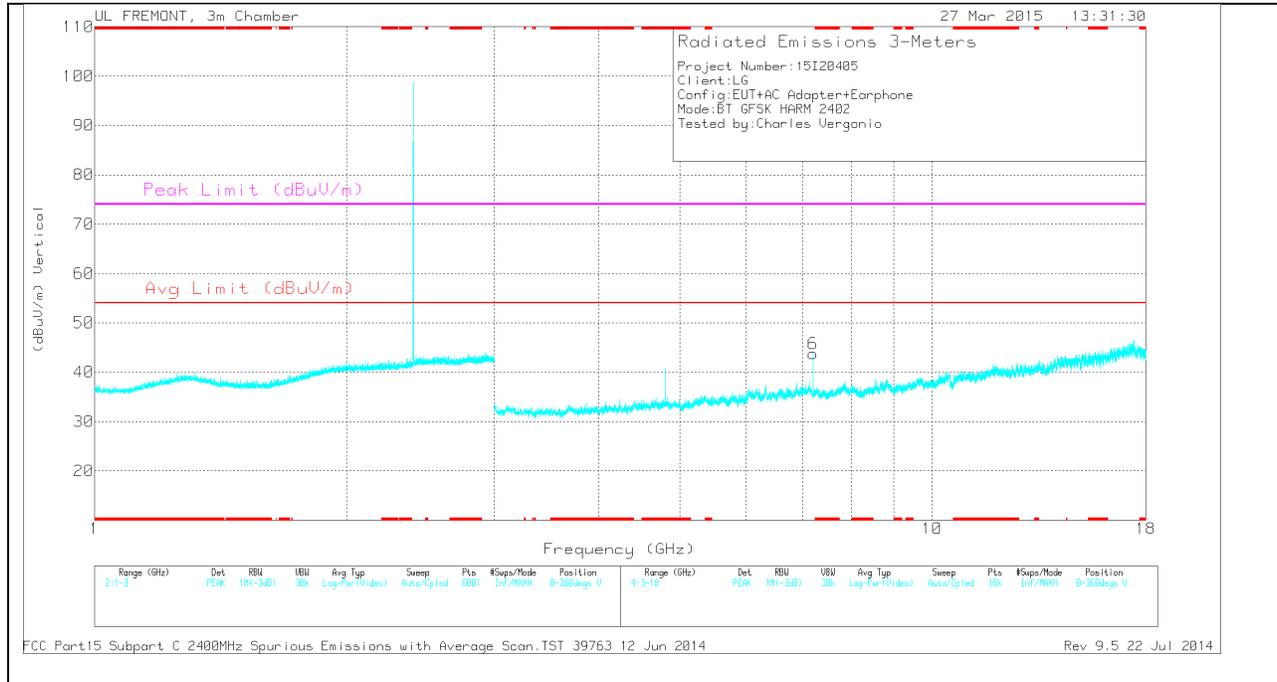
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AFT119 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 4.805	39.01	PK	34	-30.3	42.71	-	-	74	-31.29	0-360	200	H
1	1.769	32.86	PK	29.8	-23.3	39.36	-	-	-	-	0-360	100	H
2	2.103	32.91	PK	31.5	-23	41.41	-	-	-	-	0-360	100	H
3	3.164	31.72	PK	32.7	-31	33.42	-	-	-	-	0-360	200	H
5	6.562	30.32	PK	35.6	-28.8	37.12	-	-	-	-	0-360	200	H
6	7.206	37.34	PK	35.6	-29.2	43.74	-	-	-	-	0-360	200	V

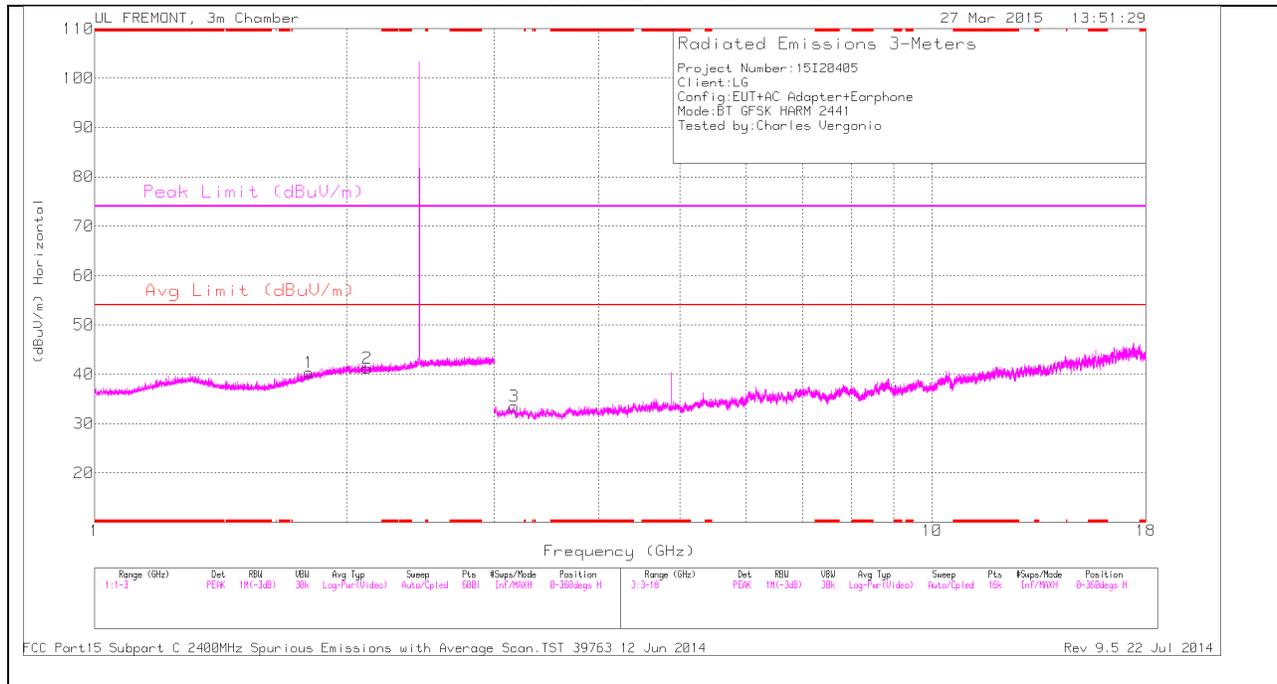
PK - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AFT119 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.804	45.76	PK3	34	-30.3	49.46	-	-	74	-24.54	227	304	H
* 4.804	40.04	VB1T	34	-30.3	43.74	54	-10.26	-	-	227	304	H
7.206	44.12	PK3	35.6	-29.2	50.52	-	-	-	-	192	266	V
7.206	37.41	VB1T	35.6	-29.2	43.81	-	-	-	-	192	266	V

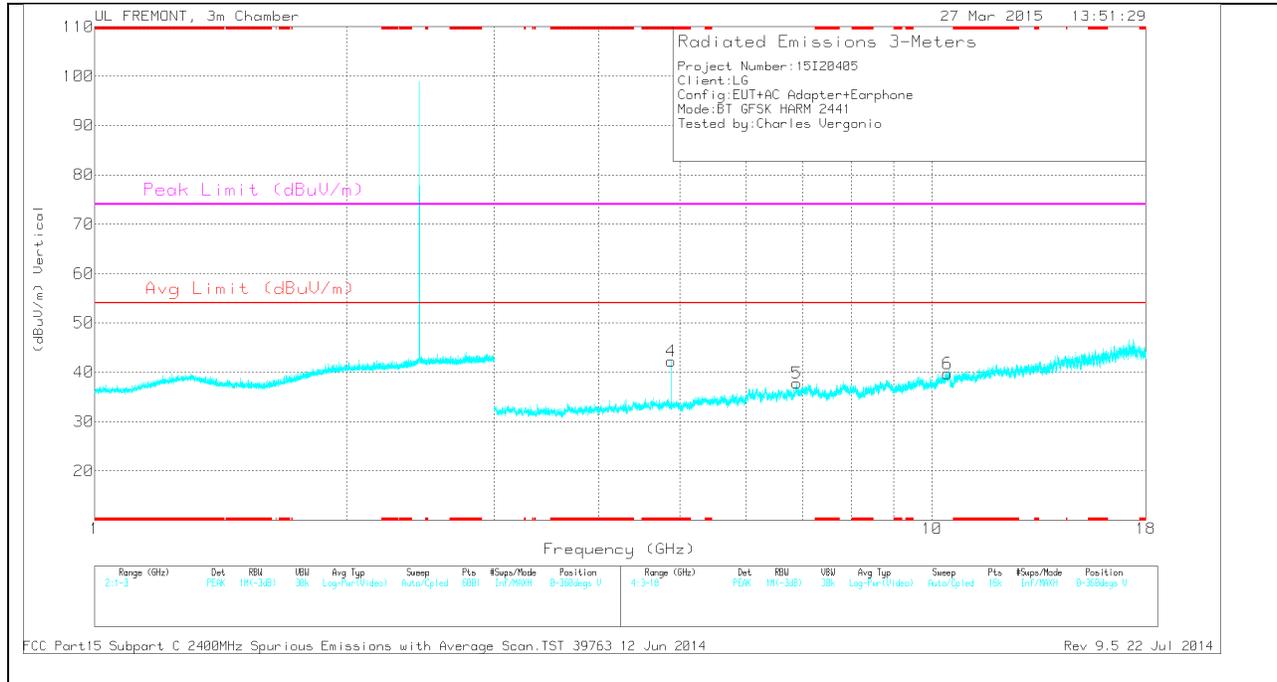
FCC Part15 Subpart C T186 2400MHz Spurious Emissions.TST 12746Rev 9.5 12 Jun 2013

MID CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AFT119 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 4.881	38.46	PK	34	-30.2	42.26	-	-	74	-31.74	0-360	200	V
1	1.804	33.41	PK	30.3	-23.4	40.31	-	-	-	-	0-360	200	H
2	2.117	32.78	PK	31.5	-23	41.28	-	-	-	-	0-360	100	H
3	3.17	31.89	PK	32.7	-31.1	33.49	-	-	-	-	0-360	100	H
5	6.897	30.68	PK	35.6	-28.5	37.78	-	-	-	-	0-360	200	V
6	10.427	27.56	PK	37.3	-25.2	39.66	-	-	-	-	0-360	200	V

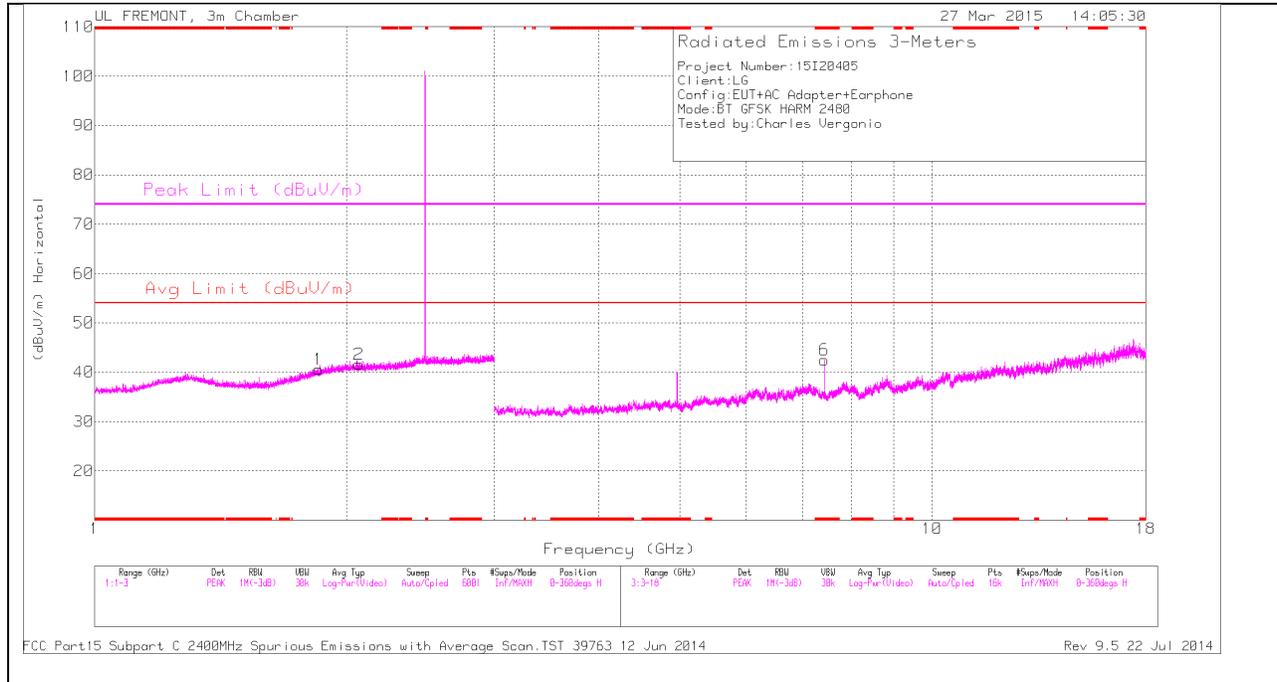
PK - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AFT119 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.882	44.8	PK3	34	-30.1	48.7	-	-	74	-25.3	154	333	V
* 4.882	38.59	VB1T	34	-30.1	42.49	54	-11.51	-	-	154	333	V

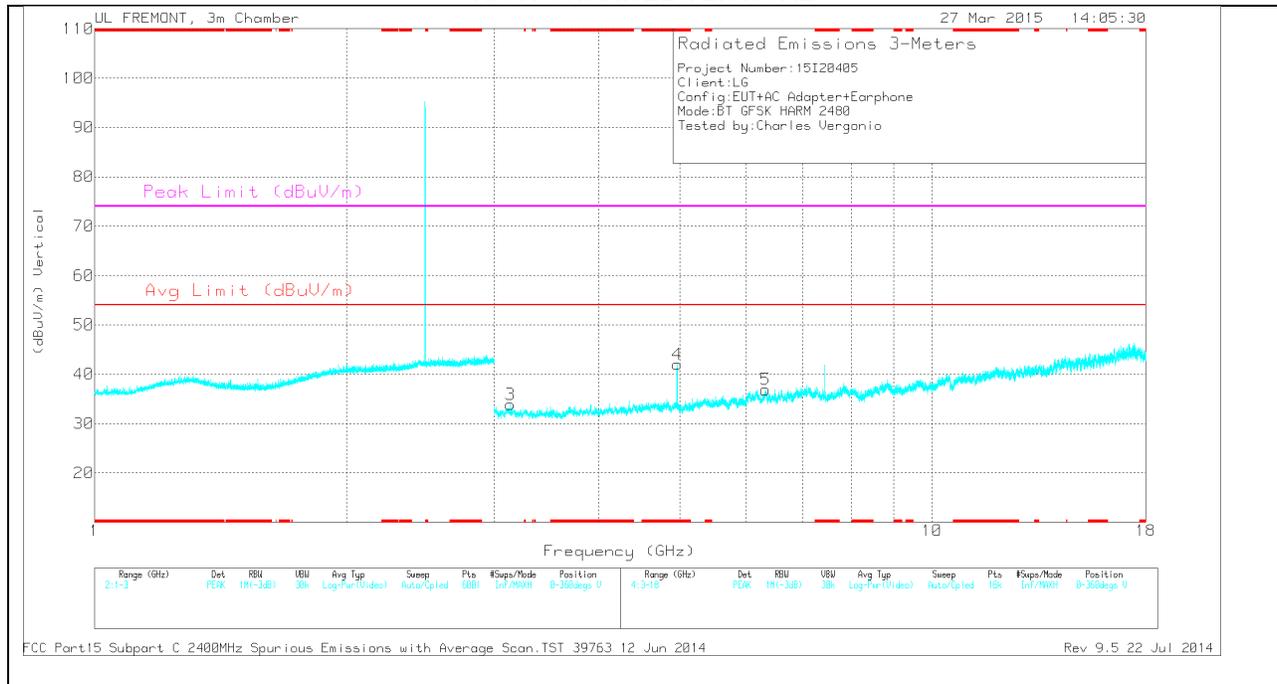
FCC Part15 Subpart C T186 2400MHz Spurious Emissions.TST 12746Rev 9.5 12 Jun 2013

HIGH CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AFT119 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
6	* 7.44	35.66	PK	35.7	-28.9	42.46	-	-	74	-31.54	0-360	200	H
4	* 4.96	38.97	PK	34	-31	41.97	-	-	74	-32.03	0-360	200	V
1	1.85	33.09	PK	30.7	-23.2	40.59	-	-	-	-	0-360	100	H
2	2.067	33.14	PK	31.5	-23	41.64	-	-	-	-	0-360	100	H
3	3.135	32.34	PK	32.7	-31.2	33.84	-	-	-	-	0-360	100	V
5	6.326	30.56	PK	35.4	-29.1	36.86	-	-	-	-	0-360	100	V

PK - Peak detector

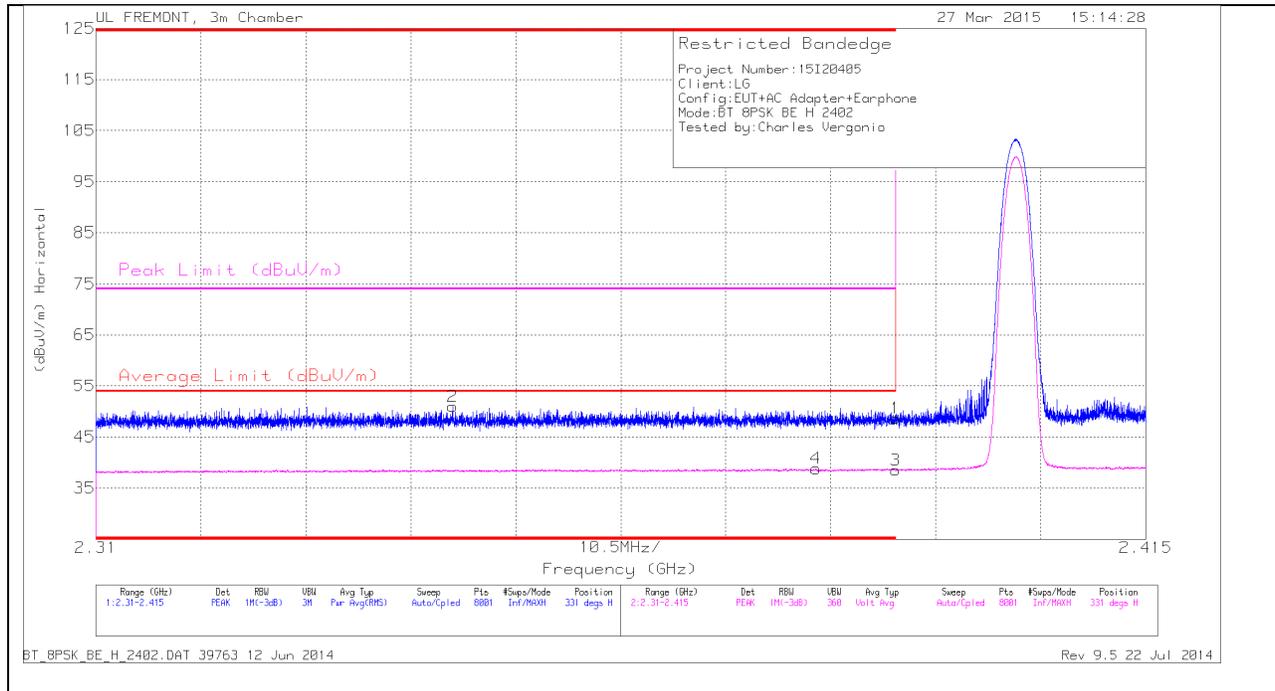
RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AFT119 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 7.44	42.68	PK3	35.7	-28.9	49.48	-	-	74	-24.52	47	367	H
* 7.44	34.69	VB1T	35.7	-28.9	41.49	54	-12.51	-	-	47	367	H
* 4.96	45.41	PK3	34	-31	48.41	-	-	74	-25.59	133	399	V
* 4.96	38.79	VB1T	34	-31	41.79	54	-12.21	-	-	133	399	V

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9.2.2. ENHANCED DATA RATE 8PSK MODULATION RESTRICTED BANDEDGE (LOW CHANNEL)

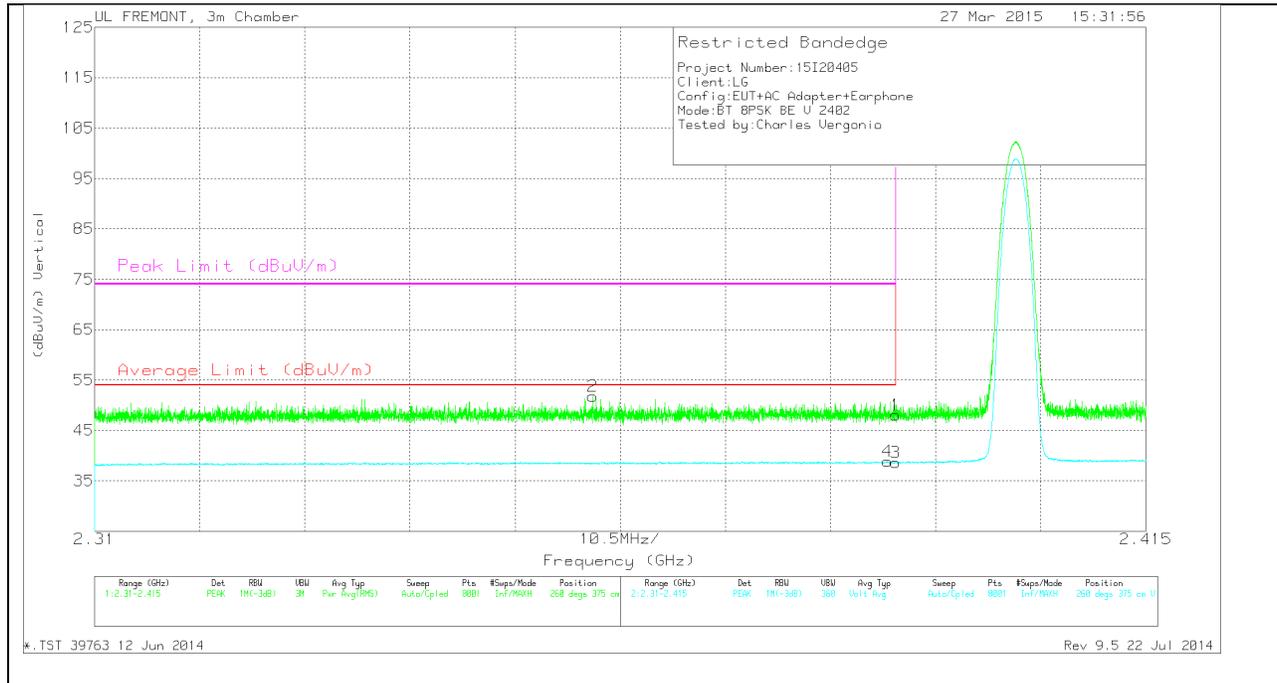
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.76	PK	32	-23.1	48.66	-	-	74	-25.34	331	304	H
2	* 2.346	42.29	PK	31.8	-23.1	50.99	-	-	74	-23.01	331	304	H
3	* 2.39	29.63	VB1T	32	-23.1	38.53	54	-15.47	-	-	331	304	H
4	* 2.382	29.94	VB1T	32	-23.1	38.84	54	-15.16	-	-	331	304	H

VERTICAL PEAK AND AVERAGE PLOT

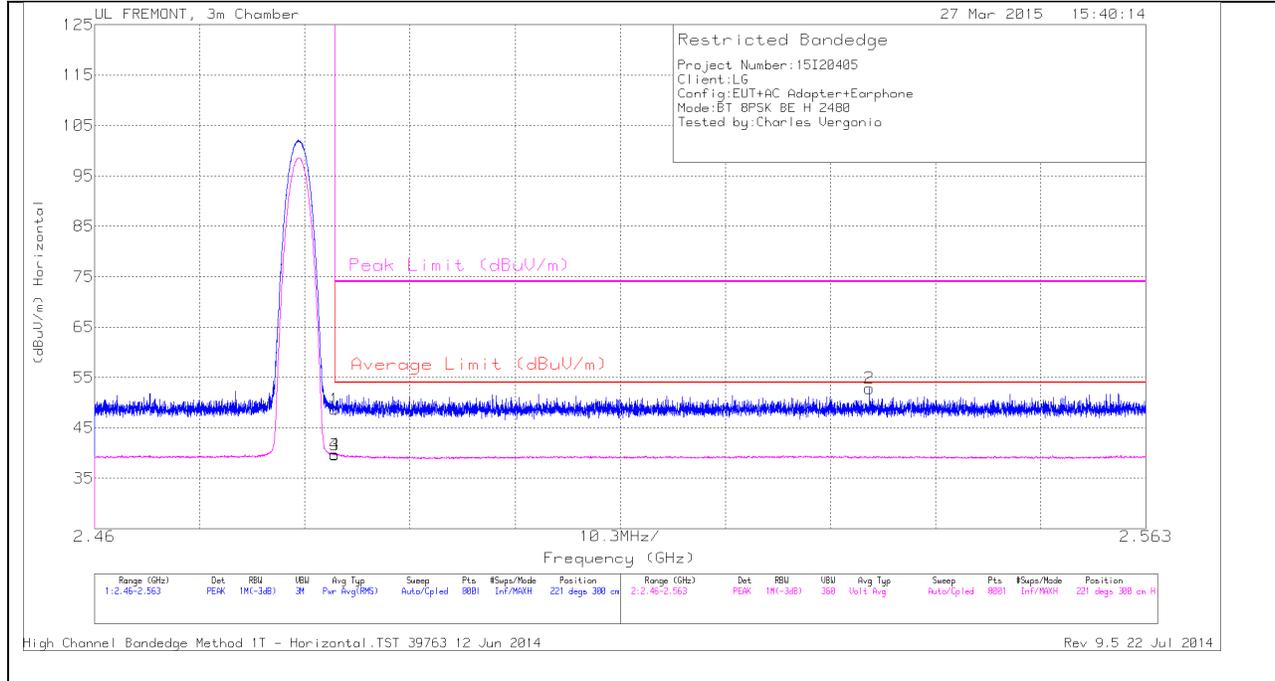


VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	2.36	43.01	PK	31.9	-23.1	51.81	-	-	74	-22.19	260	375	V
4	2.389	29.92	VB1T	32	-23.1	38.82	54	-15.18	-	-	260	375	V
1	2.39	39.1	PK	32	-23.1	48	-	-	74	-26	260	375	V
3	2.39	29.75	VB1T	32	-23.1	38.65	54	-15.35	-	-	260	375	V

AUTHORIZED BANDEDGE (HIGH CHANNEL)

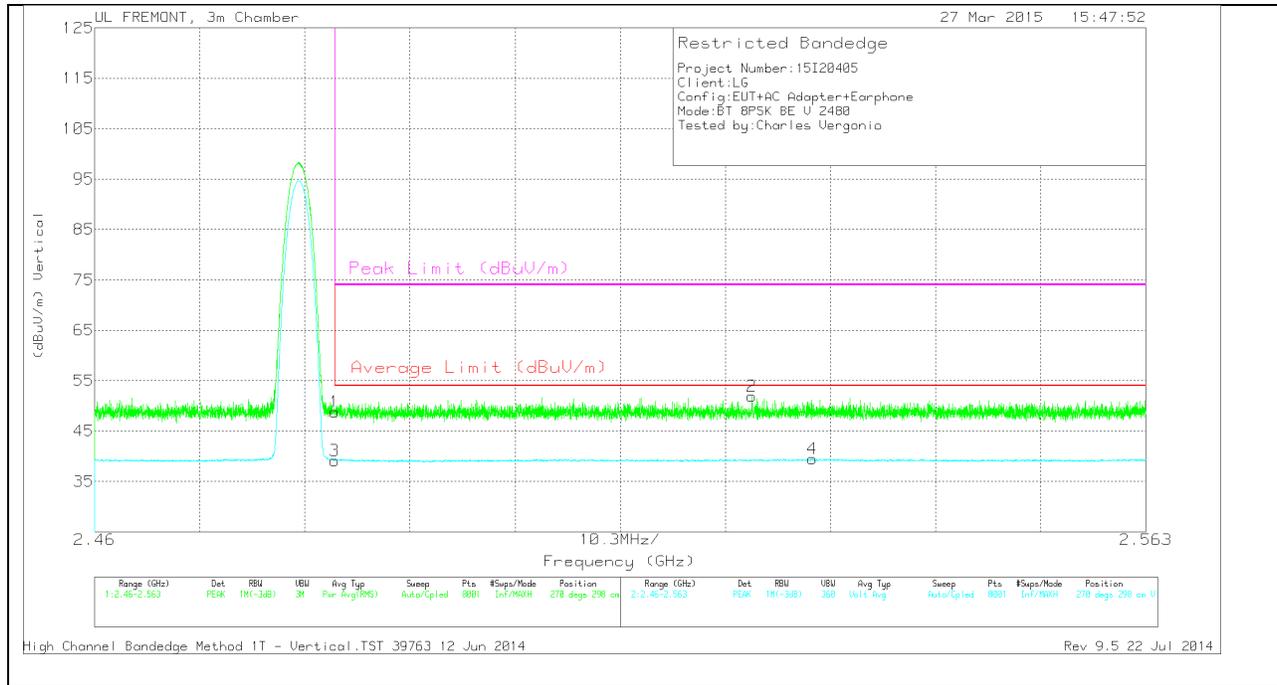
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cb/ Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.484	39.23	PK	32.3	-22.8	48.73	-	-	74	-25.27	221	300	H
3	2.484	30.16	VB1T	32.3	-22.8	39.66	54	-14.34	-	-	221	300	H
4	2.484	30.29	VB1T	32.3	-22.8	39.79	54	-14.21	-	-	221	300	H
2	2.536	43.24	PK	32.4	-22.8	52.84	-	-	74	-21.16	221	300	H

VERTICAL PEAK AND AVERAGE PLOT

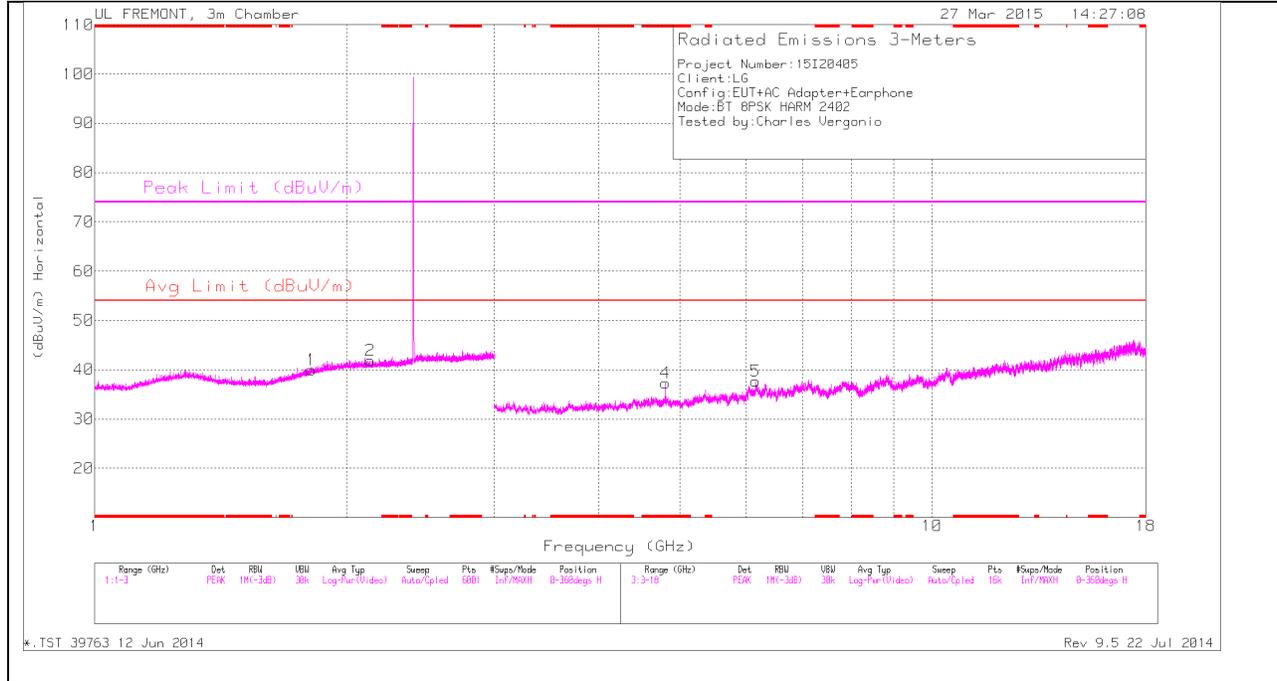


VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.484	39.28	PK	32.3	-22.8	48.78	-	-	74	-25.22	270	298	V
3	2.484	29.67	VB1T	32.3	-22.8	39.17	54	-14.83	-	-	270	298	V
2	2.524	42.21	PK	32.4	-22.7	51.91	-	-	74	-22.09	270	298	V
4	2.53	29.73	VB1T	32.4	-22.6	39.53	54	-14.47	-	-	270	298	V

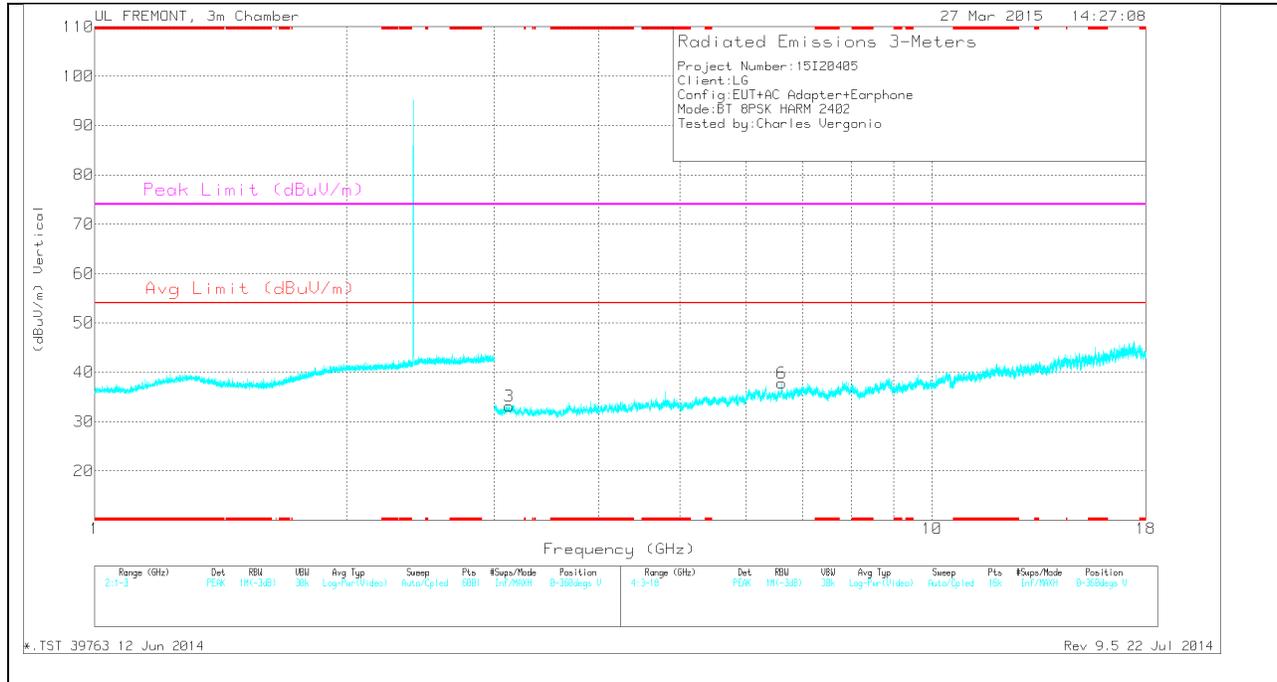
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AFT119 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 4.805	33.58	PK	34	-30.3	37.28	-	-	74	-36.72	0-360	200	H
1	1.817	32.85	PK	30.4	-23.3	39.95	-	-	-	-	0-360	100	H
2	2.135	33.37	PK	31.5	-23	41.87	-	-	-	-	0-360	200	H
3	3.125	31.83	PK	32.7	-31.4	33.13	-	-	-	-	0-360	100	V
5	6.159	32.11	PK	35.3	-29.7	37.71	-	-	-	-	0-360	200	H
6	6.619	30.7	PK	35.6	-28.5	37.8	-	-	-	-	0-360	100	V

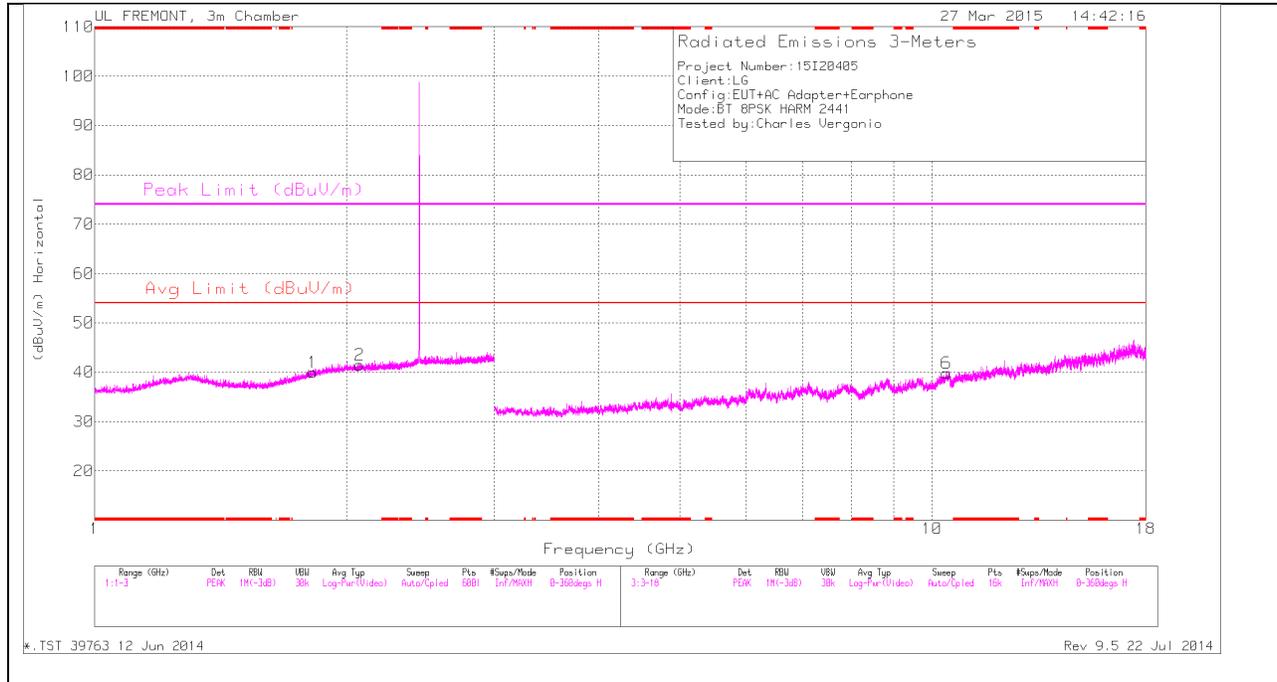
PK - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AFT119 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.804	42.74	PK3	34	-30.3	46.44	-	-	74	-27.56	95	200	H
* 4.804	31.81	VB1T	34	-30.3	35.51	54	-18.49	-	-	95	200	H

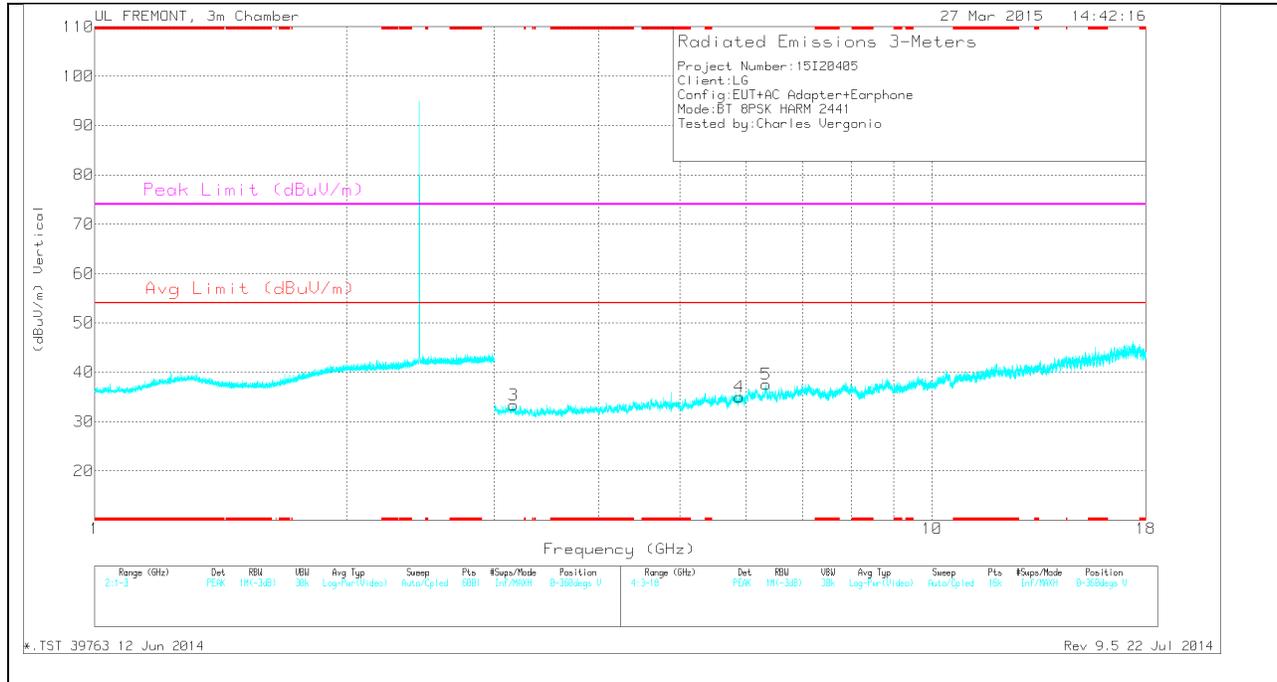
FCC Part15 Subpart C T186 2400MHz Spurious Emissions.TST 12746Rev 9.5 12 Jun 2013

MID CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL DATA

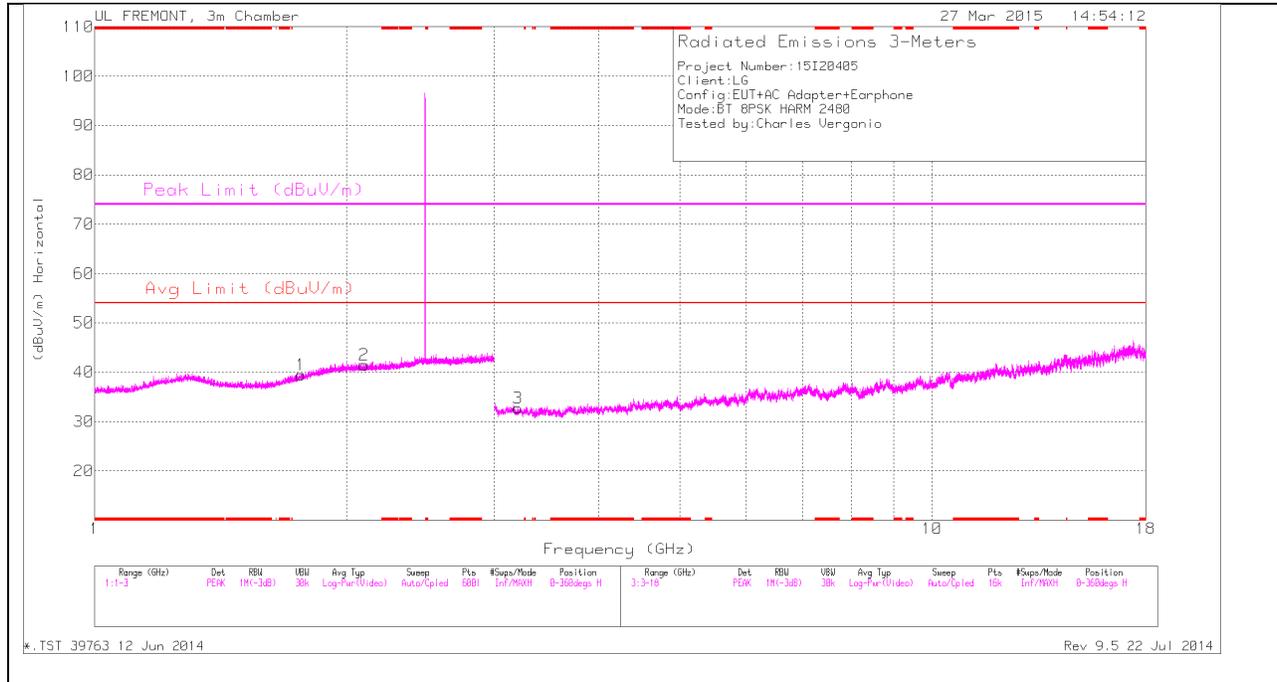
TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AFT119 (dB/m)	Amp/Cbl/Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.821	32.92	PK	30.4	-23.3	40.02	-	-	-	-	0-360	100	H
2	2.071	33.12	PK	31.5	-23.1	41.52	-	-	-	-	0-360	200	H
3	3.165	31.77	PK	32.7	-31.1	33.37	-	-	-	-	0-360	100	V
4	5.882	29.82	PK	35	-29.8	35.02	-	-	-	-	0-360	100	V
5	6.342	31.1	PK	35.4	-29	37.5	-	-	-	-	0-360	100	V
6	10.407	27.56	PK	37.3	-25	39.86	-	-	-	-	0-360	100	H

PK - Peak detector

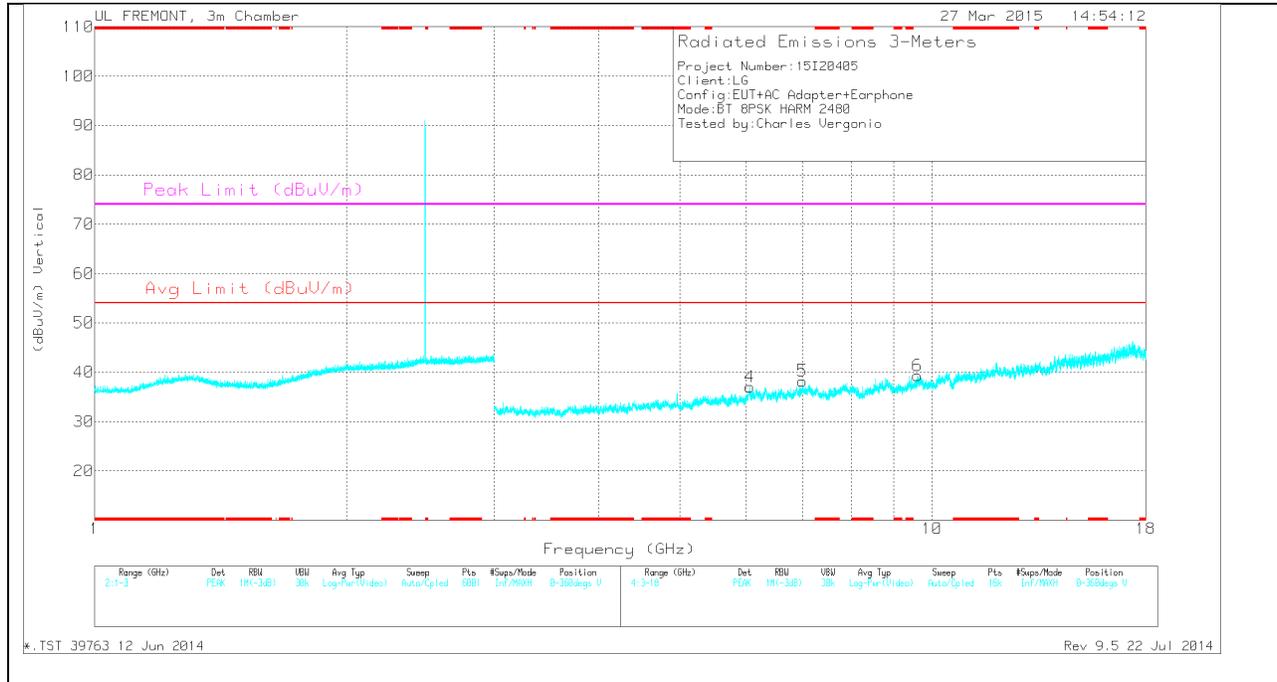
FCC Part15 Subpart C T186 2400MHz Spurious Emissions.TST 12746Rev 9.5 12 Jun 2013

HIGH CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL DATA

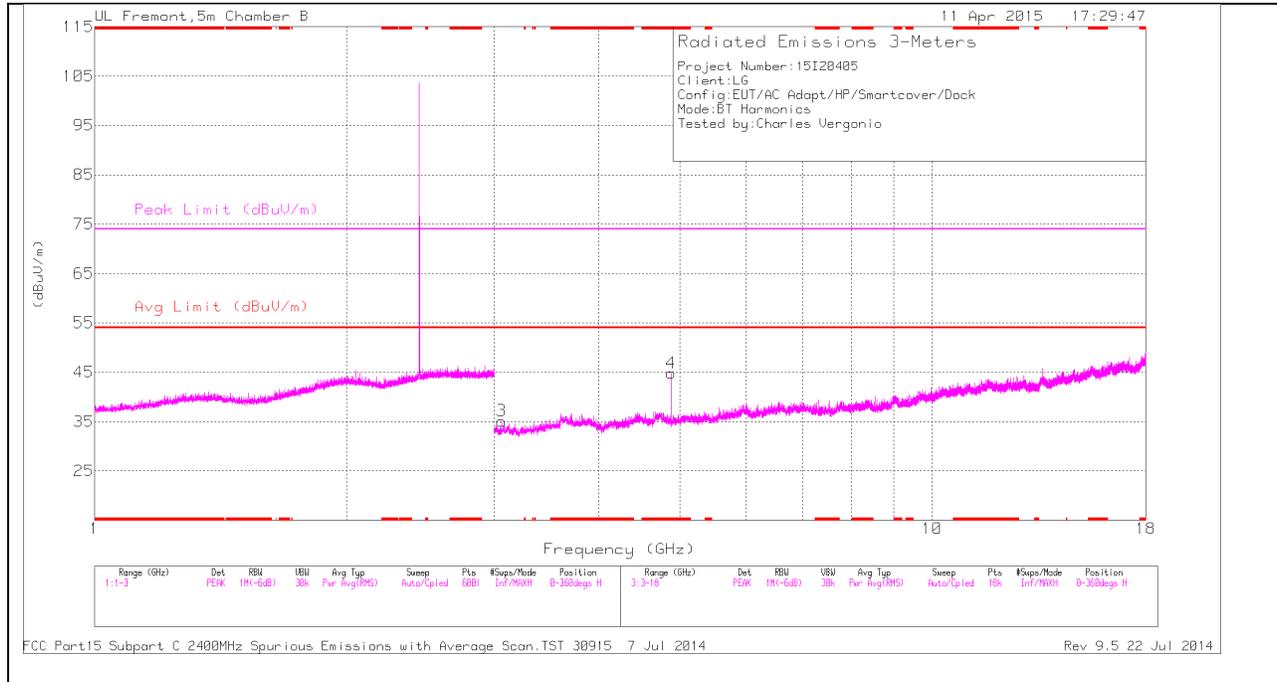
TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AFT119 (dB/m)	Amp/Cbl/Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.762	33.21	PK	29.7	-23.4	39.51	-	-	-	-	0-360	100	H
2	2.097	32.94	PK	31.5	-23	41.44	-	-	-	-	0-360	100	H
3	3.202	31.28	PK	32.6	-31.2	32.68	-	-	-	-	0-360	100	H
4	6.057	30.96	PK	35.2	-29.1	37.06	-	-	-	-	0-360	100	V
5	7.004	31.85	PK	35.6	-29.2	38.25	-	-	-	-	0-360	100	V
6	9.613	27.9	PK	36.7	-25.3	39.3	-	-	-	-	0-360	100	V

PK - Peak detector

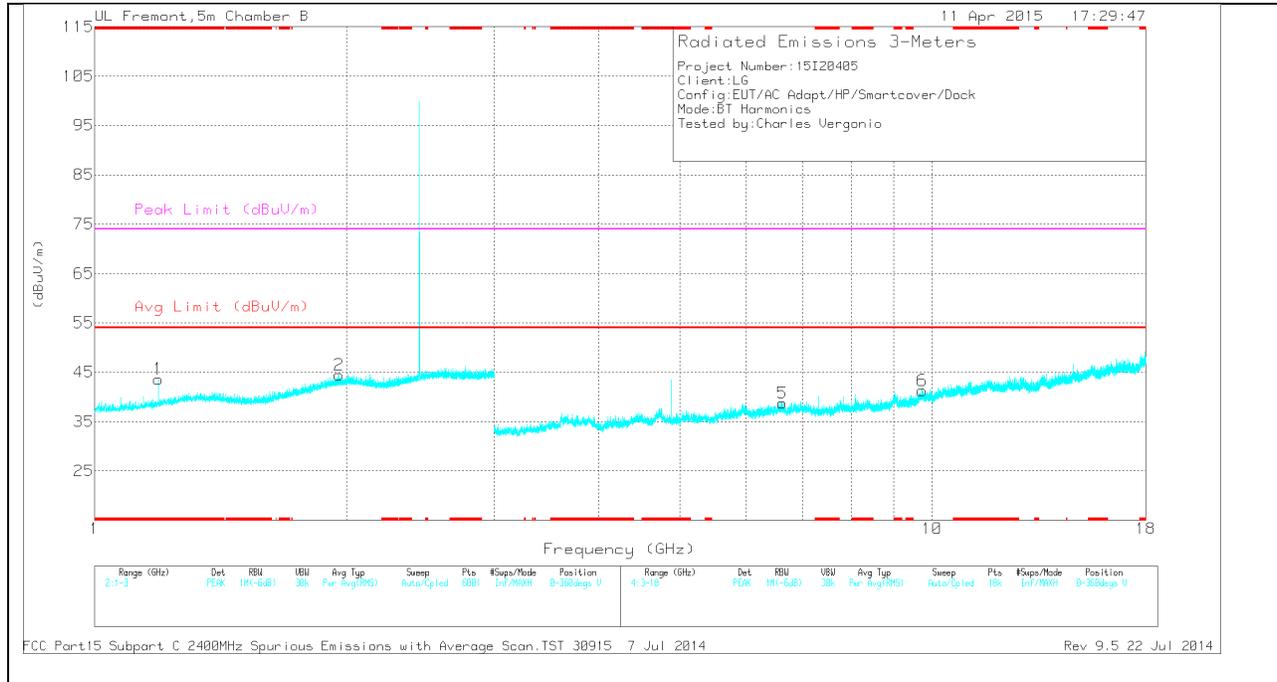
FCC Part15 Subpart C T186 2400MHz Spurious Emissions.TST 12746Rev 9.5 12 Jun 2013

MID CHANNEL HORIZONTAL WITH SMARTCOVER



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL VERTICAL WITH SMARTCOVER



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL DATA WITH SMARTCOVER

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cb/Filtr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.192	39.53	PK	28.4	-24.3	0	43.63	-	-	74	-30.37	0-360	199	V
4	* 4.882	40.99	PK	34.2	-30.4	0	44.79	-	-	74	-29.21	0-360	101	H
2	1.957	35.61	PK	32.1	-23.2	0	44.51	-	-	-	-	0-360	101	V
3	3.062	34.03	PK	32.6	-31.5	0	35.13	-	-	-	-	0-360	101	H
5	6.627	30.93	PK	35.9	-28.1	0	38.73	-	-	-	-	0-360	101	V
6	9.732	28.24	PK	36.9	-23.8	0	41.34	-	-	-	-	0-360	199	V

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cb/Filtr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.191	43.01	PK3	28.4	-24.3	0	47.11	-	-	74	-26.89	211	182	V
* 1.192	30.67	VB1T	28.4	-24.3	0	34.77	54	-19.23	-	-	211	182	V
* 4.882	45.67	PK3	34.2	-30.4	0	49.47	-	-	74	-24.53	226	115	H
* 4.882	41.28	VB1T	34.2	-30.4	0	45.08	54	-8.92	-	-	226	115	H

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK3 - FHSS Method: Maximum Peak

VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

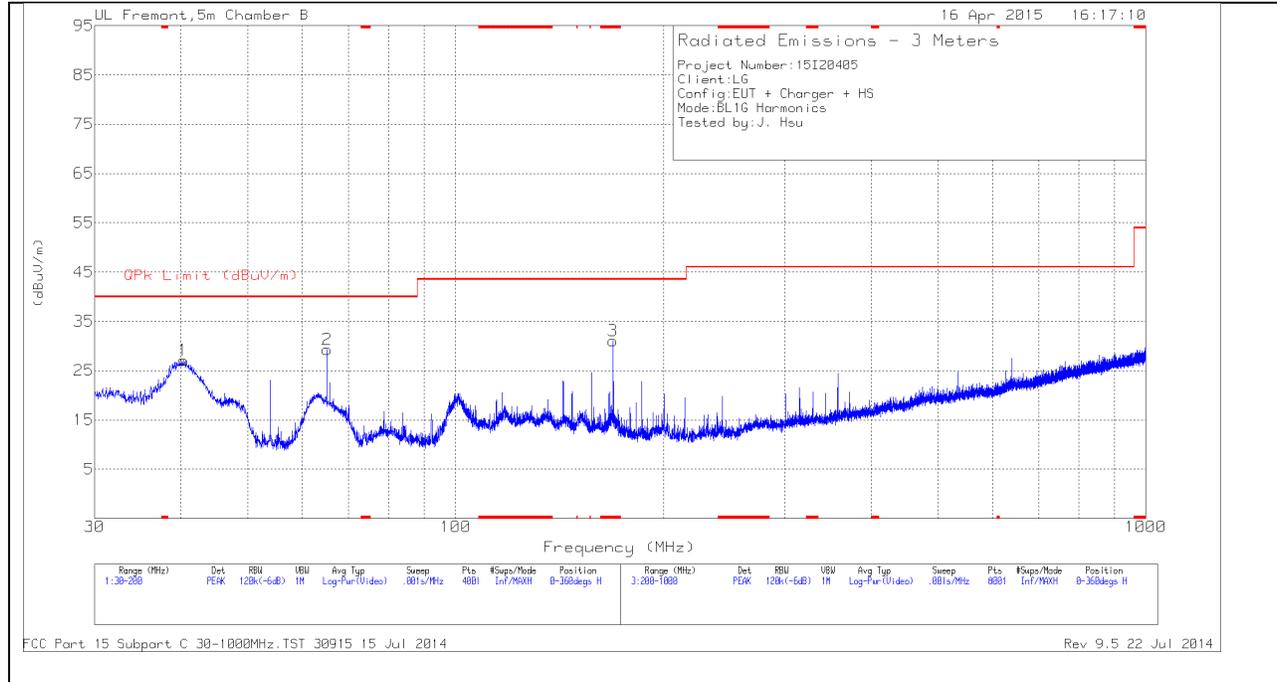
FCC Part15 Subpart C 2400MHz Spurious Emissions with Average Scan.TST 30915 7 Jul 2014

Rev 9.5 22 Jul 2014

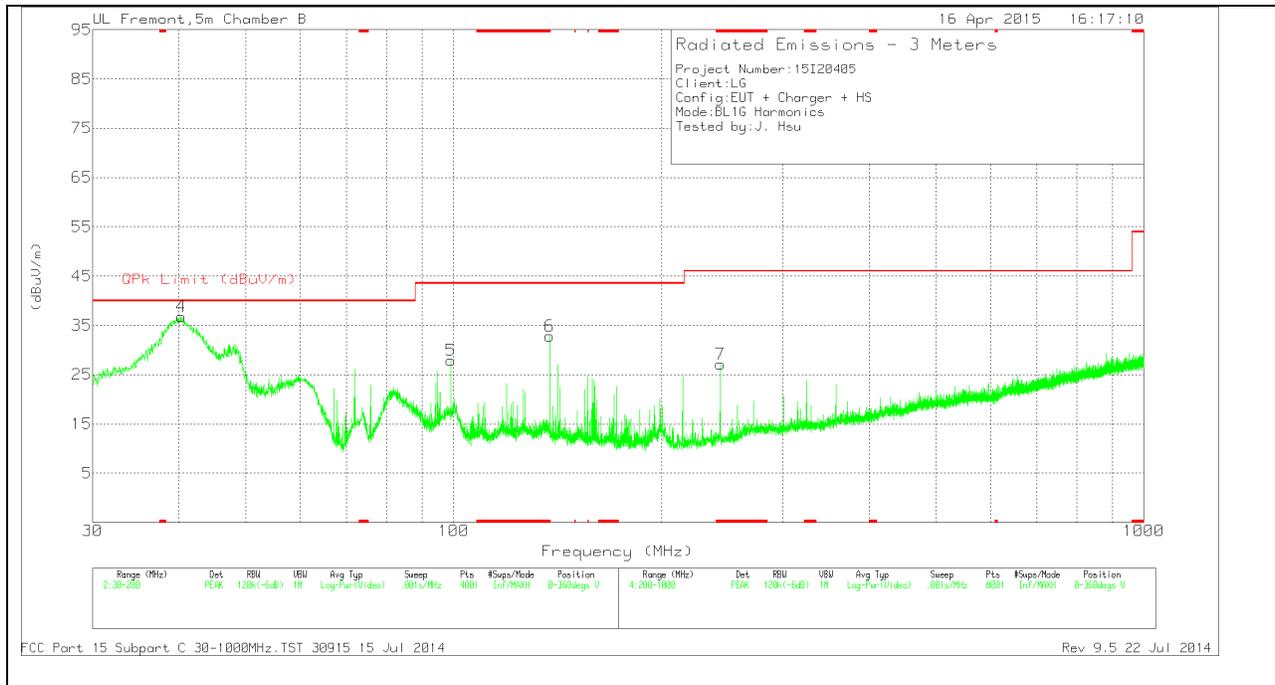
9.3. WORST-CASE BELOW 1 GHz

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

HORIZONTAL PLOT



VERTICAL PLOT



BELOW 1 GHz TABLE

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T243 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 169.1875	46.67	PK	11.7	-27.3	31.07	43.52	-12.45	0-360	101	H
6	* 137.865	47.1	PK	13.3	-27.6	32.8	43.52	-10.72	0-360	101	V
7	* 243.4	41.97	PK	11.6	-26.5	27.07	46.02	-18.95	0-360	200	V
1	40.3275	42.14	PK	13.8	-28.8	27.14	40	-12.86	0-360	300	H
4	40.3275	51.83	PK	13.8	-28.8	36.83	40	-3.17	0-360	101	V
2	65.19	49.84	PK	7.9	-28.5	29.24	40	-10.76	0-360	400	H
5	99.1475	46.02	PK	10	-28.1	27.92	43.52	-15.6	0-360	101	V

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

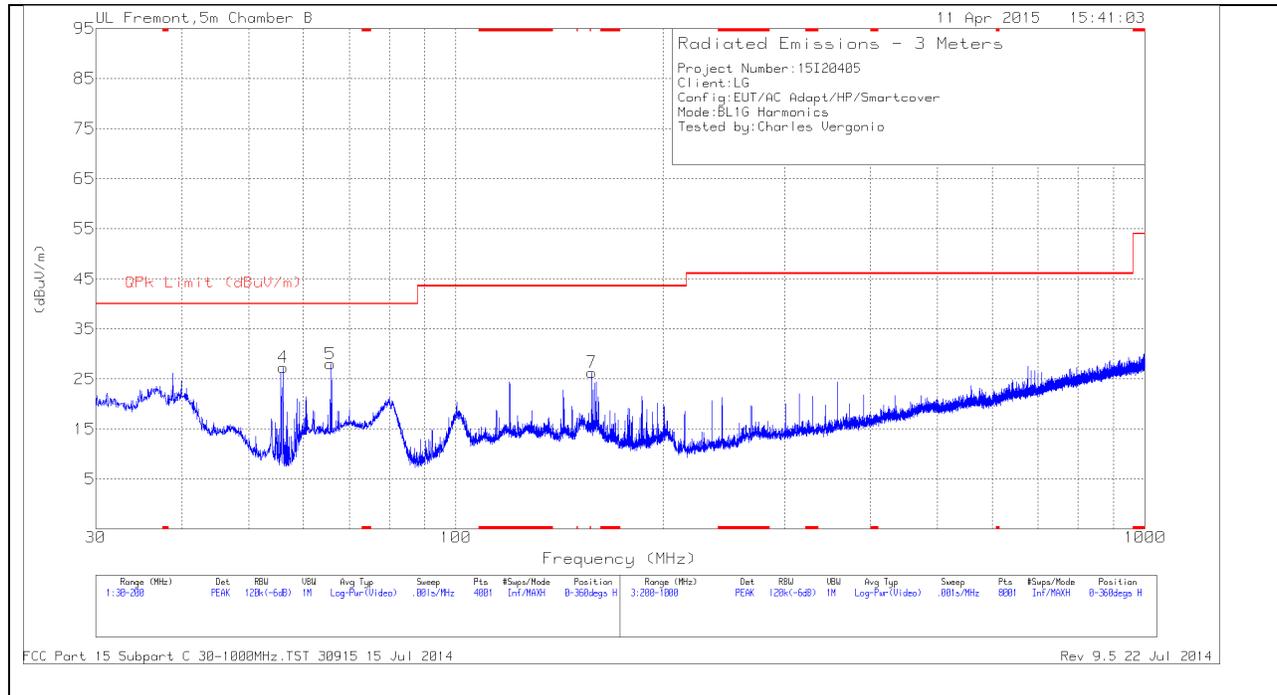
PK - Peak detector

FCC Part 15 Subpart C 30-1000MHz.TST 30915 15 Jul 2014

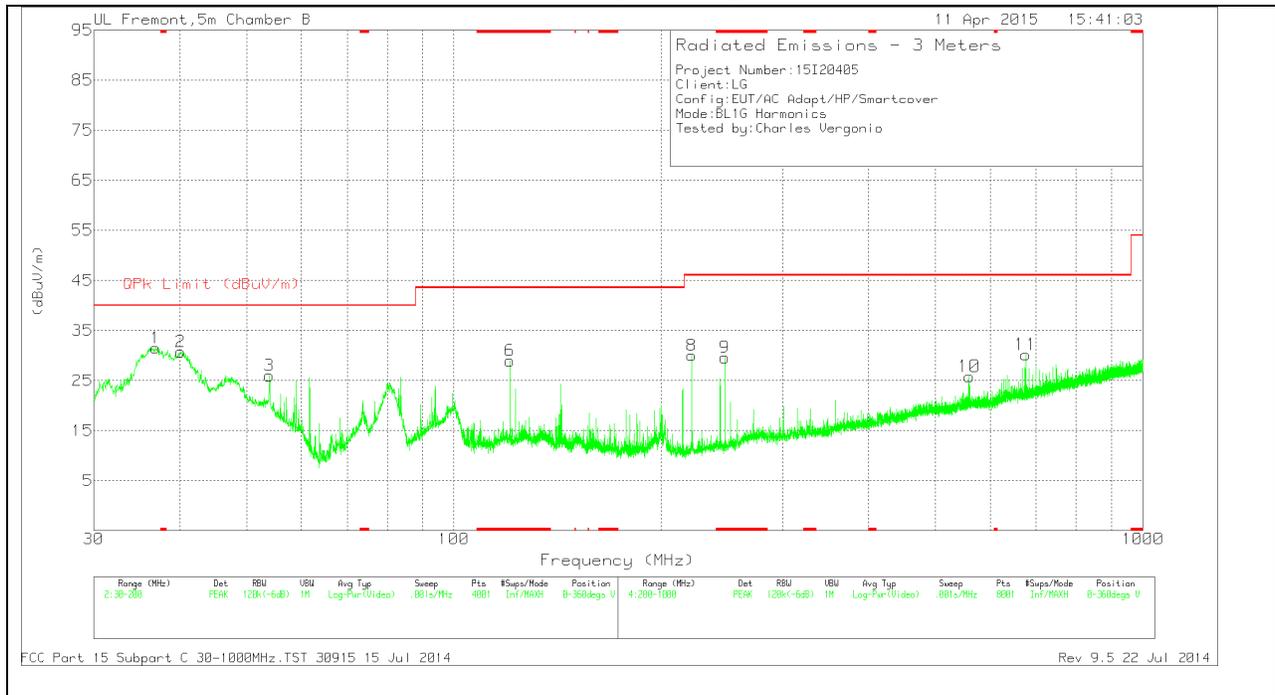
Rev 9.5 22 Jul 2014

GFSK SPURIOUS EMISSIONS 30 TO 1000 MHz (WITH SMARTCOVER)

HORIZONTAL PLOT



VERTICAL PLOT



BELOW 1 GHz TABLE

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T243 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
6	* 120.61	42.77	PK	14.1	-27.9	28.97	43.52	-14.55	0-360	101	V
9	* 247.4	44.51	PK	11.6	-26.5	29.61	46.02	-16.41	0-360	101	V
1	36.885	44.09	PK	16.2	-28.8	31.49	40	-8.51	0-360	101	V
2	40.115	45.53	PK	14	-28.8	30.73	40	-9.27	0-360	101	V
3	53.97	47.18	PK	7.4	-28.6	25.98	40	-14.02	0-360	101	V
4	56.1375	48.59	PK	7.3	-28.6	27.29	40	-12.71	0-360	300	H
5	65.7425	48.63	PK	7.9	-28.5	28.03	40	-11.97	0-360	400	H
7	157.5	41.4	PK	12.3	-27.4	26.3	43.52	-17.22	0-360	200	H
8	221.4	46.03	PK	10.7	-26.7	30.03	46.02	-15.99	0-360	300	V
10	560	32.72	PK	18.7	-25.6	25.82	46.02	-20.2	0-360	101	V
11	676	35.1	PK	19.9	-24.8	30.2	46.02	-15.82	0-360	200	V

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

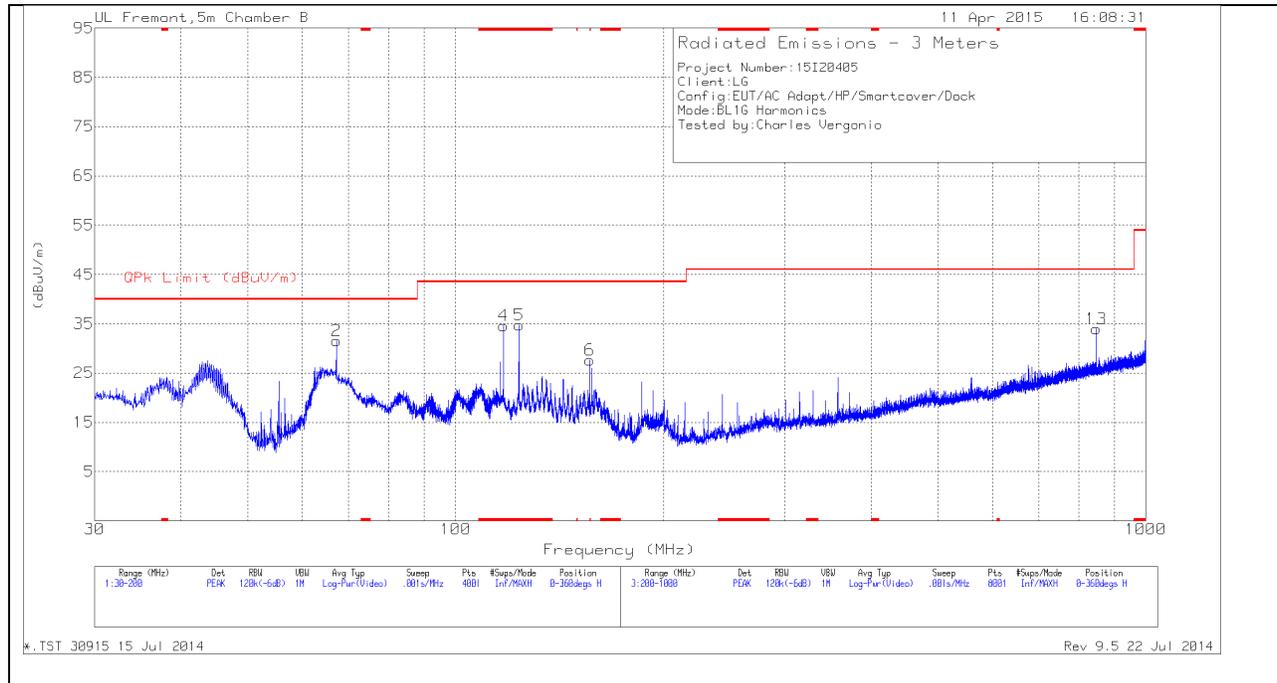
PK - Peak detector

FCC Part 15 Subpart C 30-1000MHz.TST 30915 15 Jul 2014

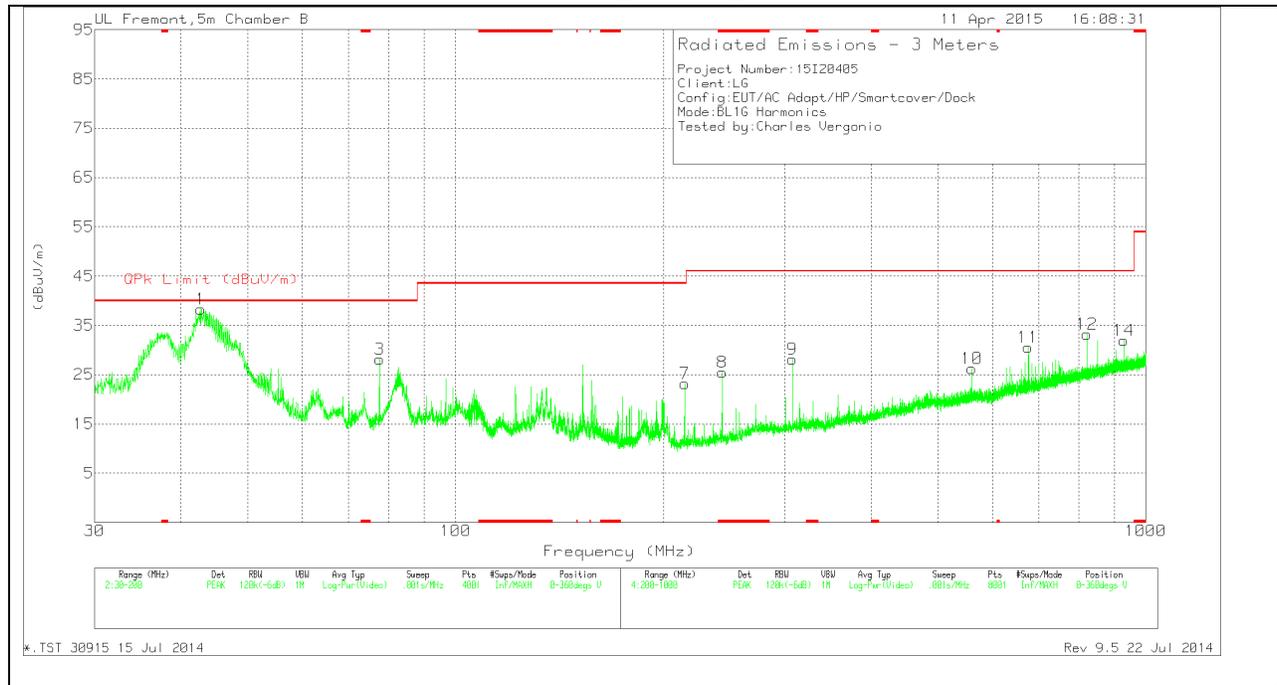
Rev 9.5 22 Jul 2014

GFSK SPURIOUS EMISSIONS 30 TO 1000 MHz (WITH SMARTCOVER + DOCK)

HORIZONTAL PLOT



VERTICAL PLOT



BELOW 1 GHz TABLE

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T243 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 117.3375	48.77	PK	13.8	-27.9	34.67	43.52	-8.85	0-360	200	H
5	* 123.5425	48.39	PK	14.2	-27.8	34.79	43.52	-8.73	0-360	200	H
8	* 243.4	40.37	PK	11.6	-26.5	25.47	46.02	-20.55	0-360	300	V
1	42.7925	54.89	PK	12.1	-28.7	38.29	40	-1.71	0-360	101	V
2	67.1875	52.03	PK	8	-28.5	31.53	40	-8.47	0-360	400	H
3	77.6	48.71	PK	7.7	-28.3	28.11	40	-11.89	0-360	101	V
6	156.5225	42.74	PK	12.3	-27.4	27.64	43.52	-15.88	0-360	300	H
7	214.8	39.37	PK	10.6	-26.8	23.17	43.52	-20.35	0-360	200	V
9	307.4	40.44	PK	13.7	-26	28.14	46.02	-17.88	0-360	200	V
10	560	33.12	PK	18.7	-25.6	26.22	46.02	-19.8	0-360	101	V
11	676	35.47	PK	19.9	-24.8	30.57	46.02	-15.45	0-360	300	V
12	821.9	35.16	PK	21.7	-23.6	33.26	46.02	-12.76	0-360	101	V
13	848	35.42	PK	22	-23.4	34.02	46.02	-12	0-360	200	H
14	930	31.91	PK	22.7	-22.7	31.91	46.02	-14.11	0-360	101	V

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	AF T243 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
42.893	50.56	QP	12	-28.7	33.86	40	-6.14	341	117	V

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

QP - Quasi-Peak detector

*.TST 30915 15 Jul 2014

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10. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

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 C63.10.

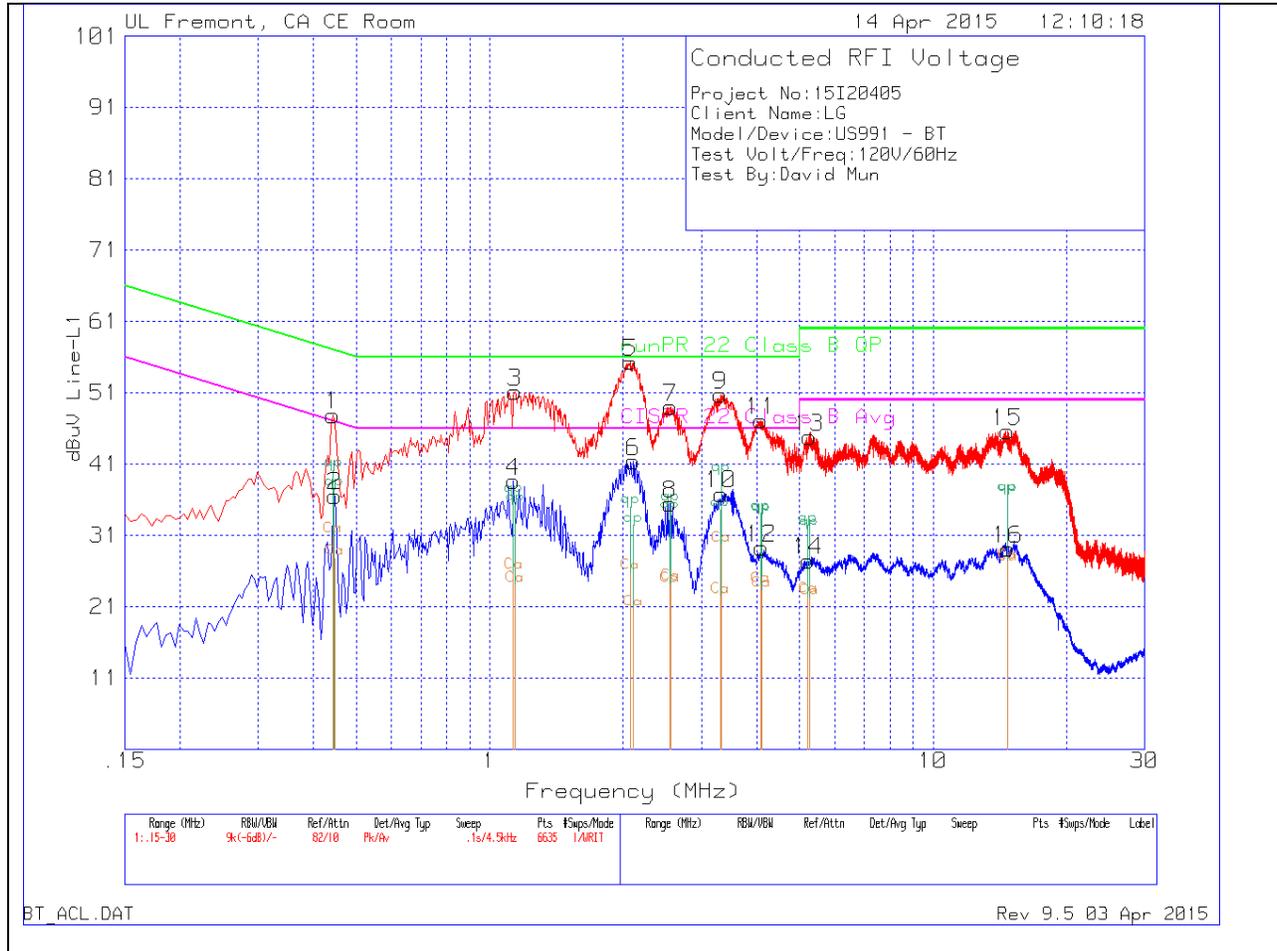
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

6 WORST EMISSIONS

LINE 1 PLOT



LINE 1 RESULTS

Trace Markers

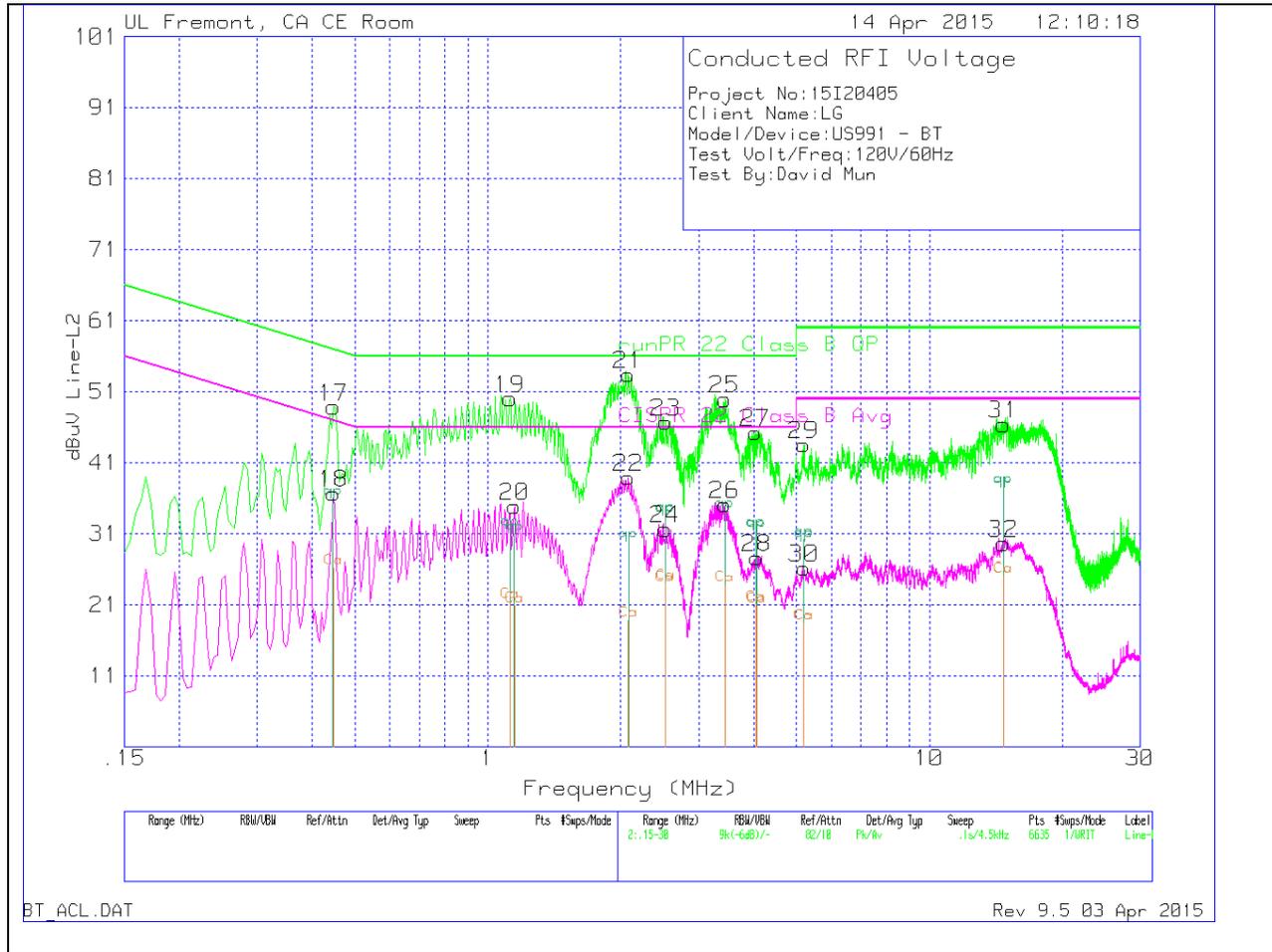
Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Corrected Reading dBuV	runPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
1	.4425	47.45	Pk	.4	0	47.85	57.01	-9.16	-	-
2	.447	36.14	Av	.4	0	36.54	-	-	46.93	-10.39
3	1.14	50.93	Pk	.2	0	51.13	56	-4.87	-	-
4	1.131	38.41	Av	.2	0	38.61	-	-	46	-7.39
5	2.076	55	Pk	.2	.1	55.3	56	-.7	-	-
6	2.1075	41.07	Av	.2	.1	41.37	-	-	46	-4.63
7	2.5575	48.71	Pk	.2	.1	49.01	56	-6.99	-	-
8	2.5485	35.15	Av	.2	.1	35.45	-	-	46	-10.55
9	3.3135	50.41	Pk	.2	.1	50.71	56	-5.29	-	-
10	3.327	36.5	Av	.2	.1	36.8	-	-	46	-9.2
11	4.0875	46.8	Pk	.2	.1	47.1	56	-8.9	-	-
12	4.1055	28.97	Av	.2	.1	29.27	-	-	46	-16.73
13	5.262	44.49	Pk	.2	.1	44.79	60	-15.21	-	-
14	5.2215	27.15	Av	.2	.1	27.45	-	-	50	-22.55
15	14.721	45.17	Pk	.2	.2	45.57	60	-14.43	-	-
16	14.748	28.73	Av	.2	.2	29.13	-	-	50	-20.87

Pk - Peak detector

Av - Average detection

LINE 2 PLOT



LINE 2 RESULTS

Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	Corrected Reading dBuV	runPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
17	.447	48.47	Pk	.4	0	48.87	56.93	-8.06	-	-
18	.447	36.32	Av	.4	0	36.72	-	-	46.93	-10.21
19	1.122	49.66	Pk	.3	.1	50.06	56	-5.94	-	-
20	1.149	34.57	Av	.3	0	34.87	-	-	46	-11.13
21	2.0805	53.11	Pk	.2	.1	53.41	56	-2.59	-	-
22	2.0805	38.63	Av	.2	.1	38.93	-	-	46	-7.07
23	2.526	46.45	Pk	.2	.1	46.75	56	-9.25	-	-
24	2.5215	31.36	Av	.2	.1	31.66	-	-	46	-14.34
25	3.4395	49.67	Pk	.2	.1	49.97	56	-6.03	-	-
26	3.4395	34.84	Av	.2	.1	35.14	-	-	46	-10.86
27	4.038	44.98	Pk	.2	.1	45.28	56	-10.72	-	-
28	4.065	27.34	Av	.2	.1	27.64	-	-	46	-18.36
29	5.1945	43.27	Pk	.2	.1	43.57	60	-16.43	-	-
30	5.199	25.9	Av	.2	.1	26.2	-	-	50	-23.8
31	14.7255	46.01	Pk	.2	.2	46.41	60	-13.59	-	-
32	14.7165	29.27	Av	.2	.2	29.67	-	-	50	-20.33

Pk - Peak detector

Av - Average detection