



FCC CFR47 PART 15 SUBPART C

CERTIFICATION TEST REPORT

FOR

GSM/WCDMA/LTE Phone + Bluetooth, 2.4GHz DTS & NFC

MODEL NUMBER : SM-G388F

FCC ID: A3LSMG388F

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Prepared for

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ACCREDITED

TL-637

Revision History

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.
EUT DESCRIPTION: GSM/WCDMA/LTE Phone + Bluetooth, 2.4GHz DTS & NFC
MODEL NUMBER: SM-G388F
SERIAL NUMBER: R38G10B0RAZ (RADIATED); R38G10B0NMN (CONDUCTED)
DATE TESTED: JANUARY 24 - FEBRUARY 01, 2015

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

UL Korea, Ltd. 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 Korea, Ltd. 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 Korea, Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Korea, Ltd. 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 IAS, any agency of the Federal Government, or any agency of any government.

Approved & Released For
UL Korea, Ltd. By:

Tested By:



Ji Ho Choi
Suwon Lab Manager
UL Korea, Ltd.

CY Choi
Suwon Lab Engineer
UL Korea, Ltd.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2009, 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 218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 443-823, Korea. Line conducted emissions are measured only at the 218 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.

218 Maeyeong-ro	
☒	Chamber 1
☐	Chamber 2

UL Korea, Ltd. is accredited by IAS, Laboratory Code TL-637. The full scope of accreditation can be viewed at <http://www.iasonline.org/PDF/TL/TL-637.pdf>.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	2.32 dB
Radiated Disturbance, Below 1GHz	4.14 dB
Radiated Disturbance, Above 1 GHz	5.97 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/LTE Phone + Bluetooth, 2.4GHz DTS & NFC
This test report addresses the DSS (BT) operational mode.

5.2. MAXIMUM OUTPUT POWER

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

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2402 - 2480	Basic GFSK	9.17	8.25
2402 - 2480	Enhanced Pi/4-DPSK	8.54	7.15
2402 - 2480	Enhanced 8PSK	8.51	7.09

Note: GFSK, Pi/4-DQPSK, 8PSK average Power are all investigated, The GFSK & Pi/4-DPSK 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 -0.18 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 and Z it was determined that X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Charger	SAMSUNG	ETA0U10EBE	N/A	N/A
Data Cable	SAMSUNG	GH39-01710A	N/A	N/A
Earphone	SAMSUNG	GH59-11129H	N/A	N/A

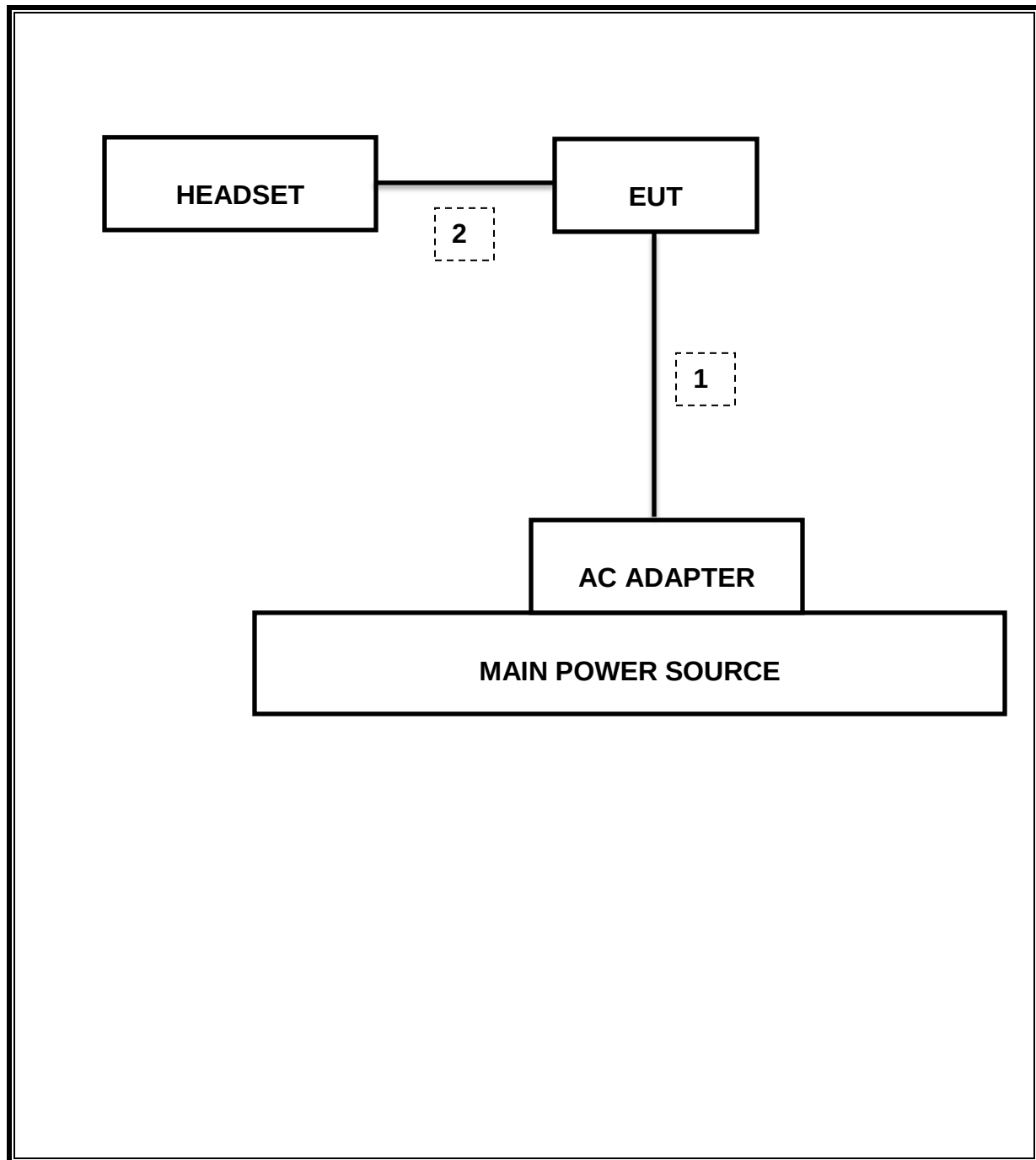
I/O CABLES

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	0.8m	N/A
2	Audio	1	Mini-Jack	Unshielded	1.0m	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	S/N	Cal Due
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	950	11-17-15
Antenna, Horn, 18 GHz	ETS	3115	00167211	09-20-15
Antenna, Horn, 40 GHz	ETS	3116C	00166255	09-23-15
Antenna, Horn, 40 GHz	ETS	3116C-PA	00168841	09-29-15
Preamplifier, 1000 MHz	Sonoma	310N	341282	11-17-15
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1876511	11-18-15
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54170614	09-23-15
Bluetooth Tester	TESCOM	TC-3000C	3000C000546	11-17-15
Average Power Sensor	R&S	NRZ-Z91	102681	11-17-15
Average Power Sensor	Agilent / HP	U2000	MY54270007	09-23-15
EMI Test Receive, 40 GHz	R&S	ESU40	100439	11-17-15
EMI Test Receive, 3 GHz	R&S	ESR3	101832	11-17-15
Attenuator / Switch driver	HP	11713A	3748A04272	N/A
Low Pass Filter 3GHz	Micro-Tronics	LPS17541	009	11-17-15
High Pass Filter 5GHz	Micro-Tronics	HPS17542	009	11-17-15
High Pass Filter 6GHz	Micro-Tronics	HPM17543	010	11-17-15

7. SUMMARY TABLE

FCC Part Section	Test Description	Test Limit	Test Condition	Test Result	Worst Case
2.1049	Occupied Band width (99%)	N/A	Conducted	Pass	1.200 MHz
2.1051, 15.247 (d)	Band Edge / Conducted Spurious Emission	-20dBc		Pass	-36.69 dBm
15.247 (b)(1)	TX conducted output power	<21dBm		Pass	9.165 dBm
15.247 (a)(1)	Hopping frequency separation	> 25KHz		Pass	1 MHz
15.247 (a)(1)(iii)	Number of Hopping channels	More than 15 non-overlapping channels		Pass	79
15.247 (a)(1)(iii)	Avg Time of Occupancy	< 0.4sec		Pass	0.317 sec
15.207 (a)	AC Power Line conducted emissions	Section 10	Power Line conducted	Pass	35.56 dBuV (AV)
15.205, 15.209	Radiated Spurious Emission	< 54dBuV/m	Radiated	Pass	38.84 dBuV/m (AV)

8. ANTENNA PORT TEST RESULTS

8.1. 20 dB AND 99% BANDWIDTH

LIMITS

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	0.887	0.899
Mid	2440	0.896	0.896
High	2480	0.900	0.902
Worst		0.900	0.902

8.1.2. ENHANCED DATA RATE Pi/4-DQPSK MODULATION

Channel	Frequency (MHz)	20 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2402	1.236	1.163
Mid	2440	1.247	1.133
High	2480	1.229	1.166
Worst		1.247	1.166

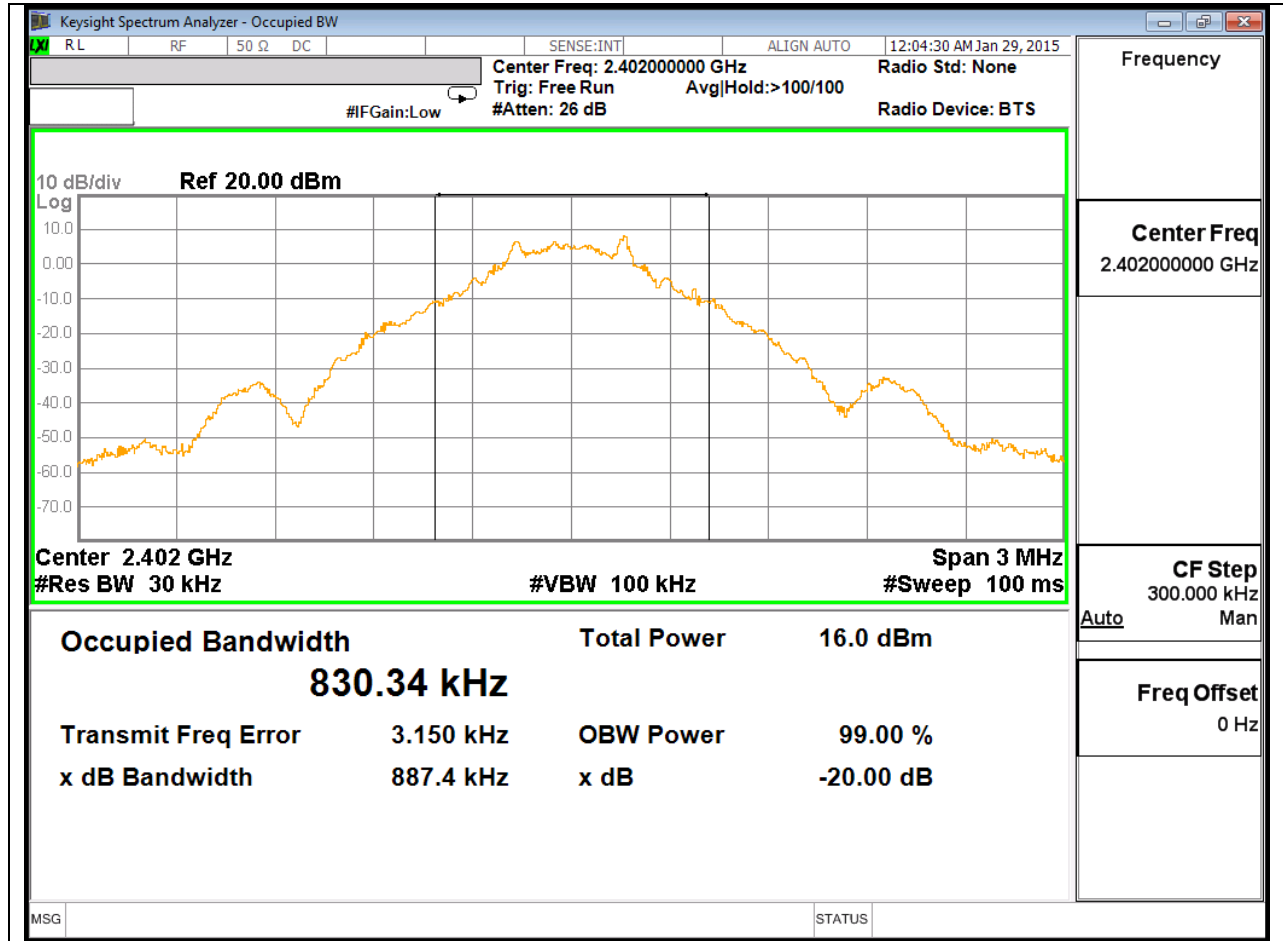
8.1.3. ENHANCED DATA RATE 8PSK MODULATION

Channel	Frequency (MHz)	20 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2402	1.275	1.200
Mid	2440	1.278	1.198
High	2480	1.279	1.159
Worst		1.279	1.200

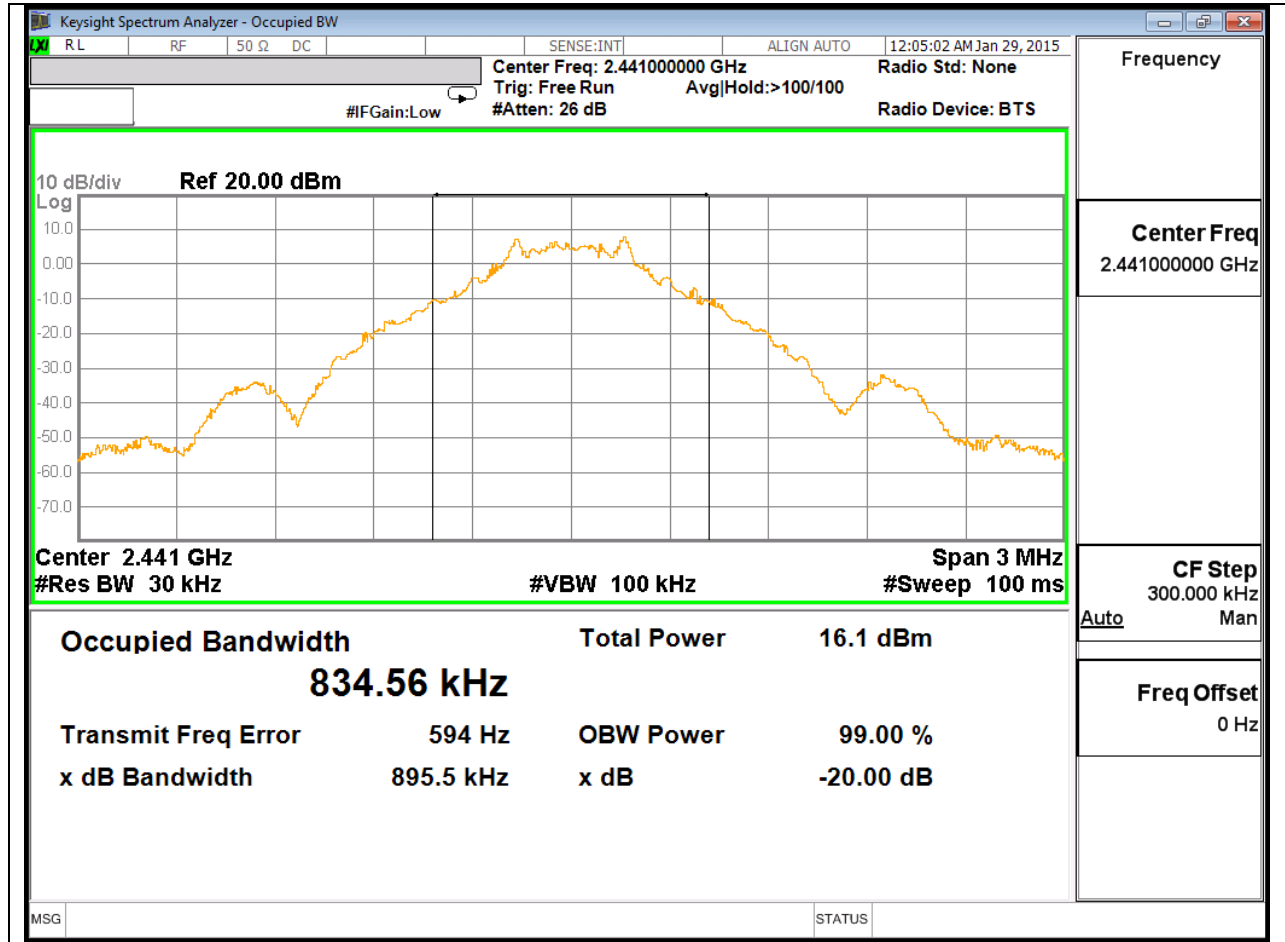
8.1.4. 20 dB AND 99% BANDWIDTH PLOTS

GFSK 20 dB BANDWIDTH

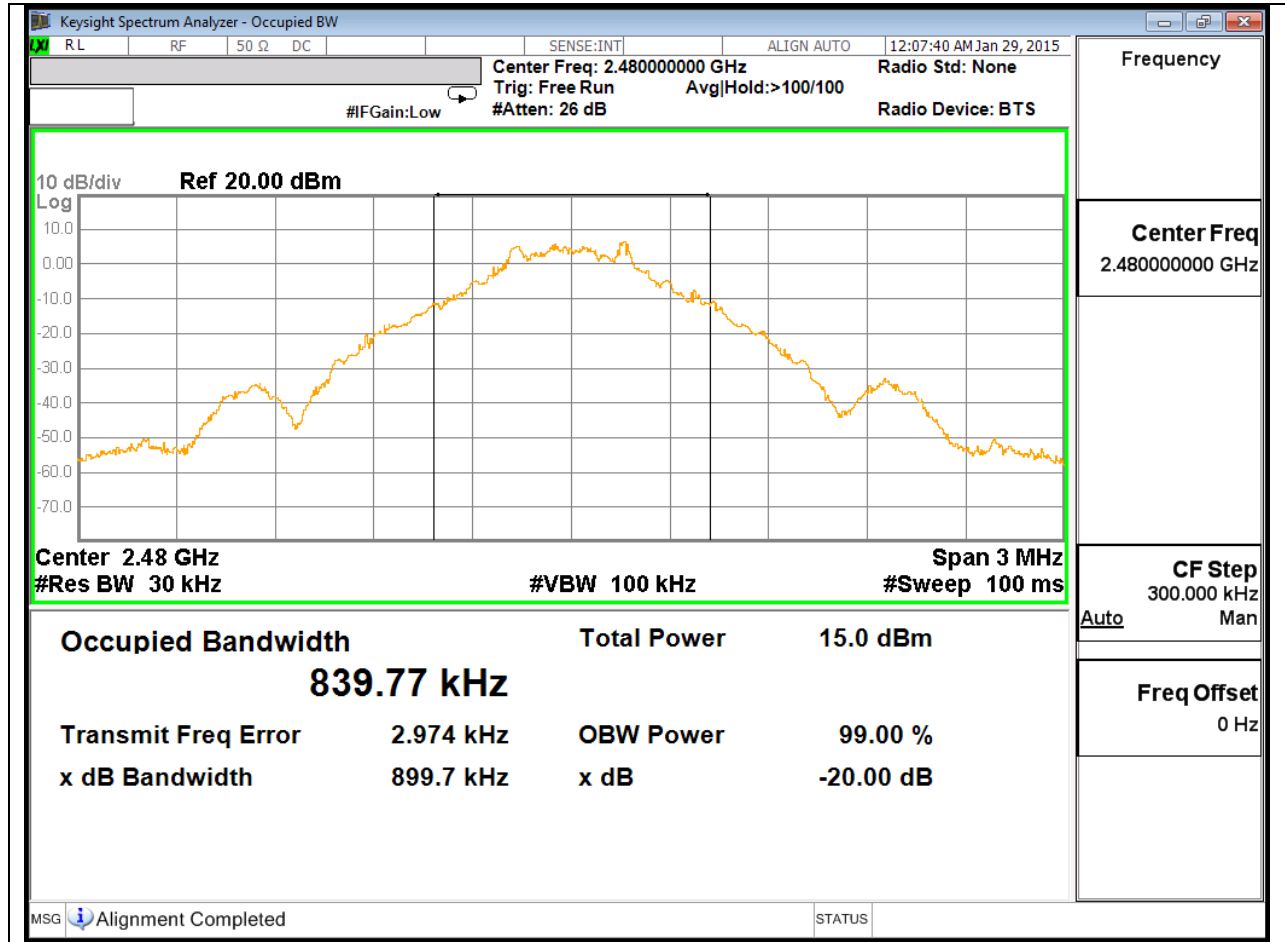
LOW CHANNEL



MID CHANNEL

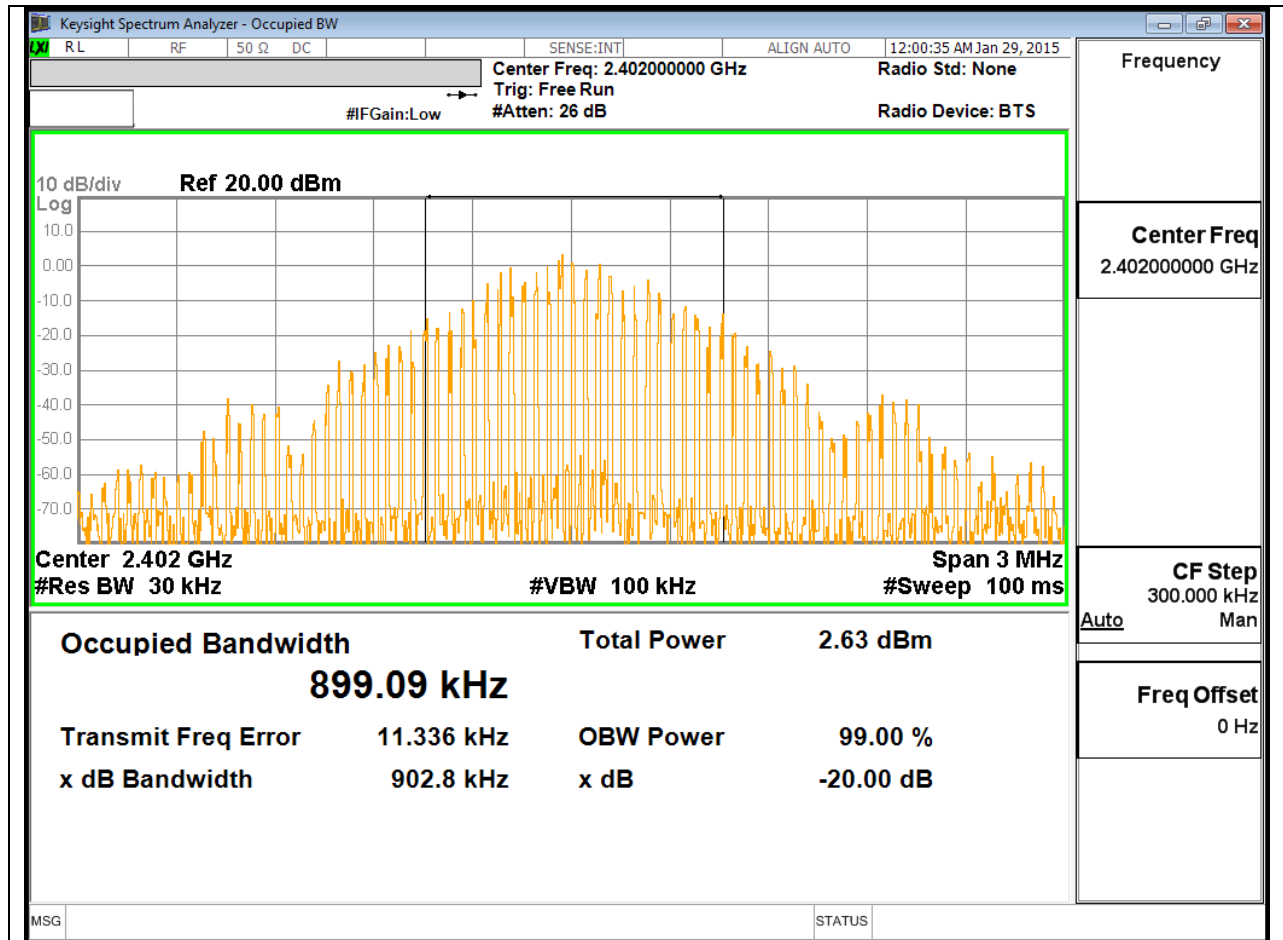


HIGH CHANNEL

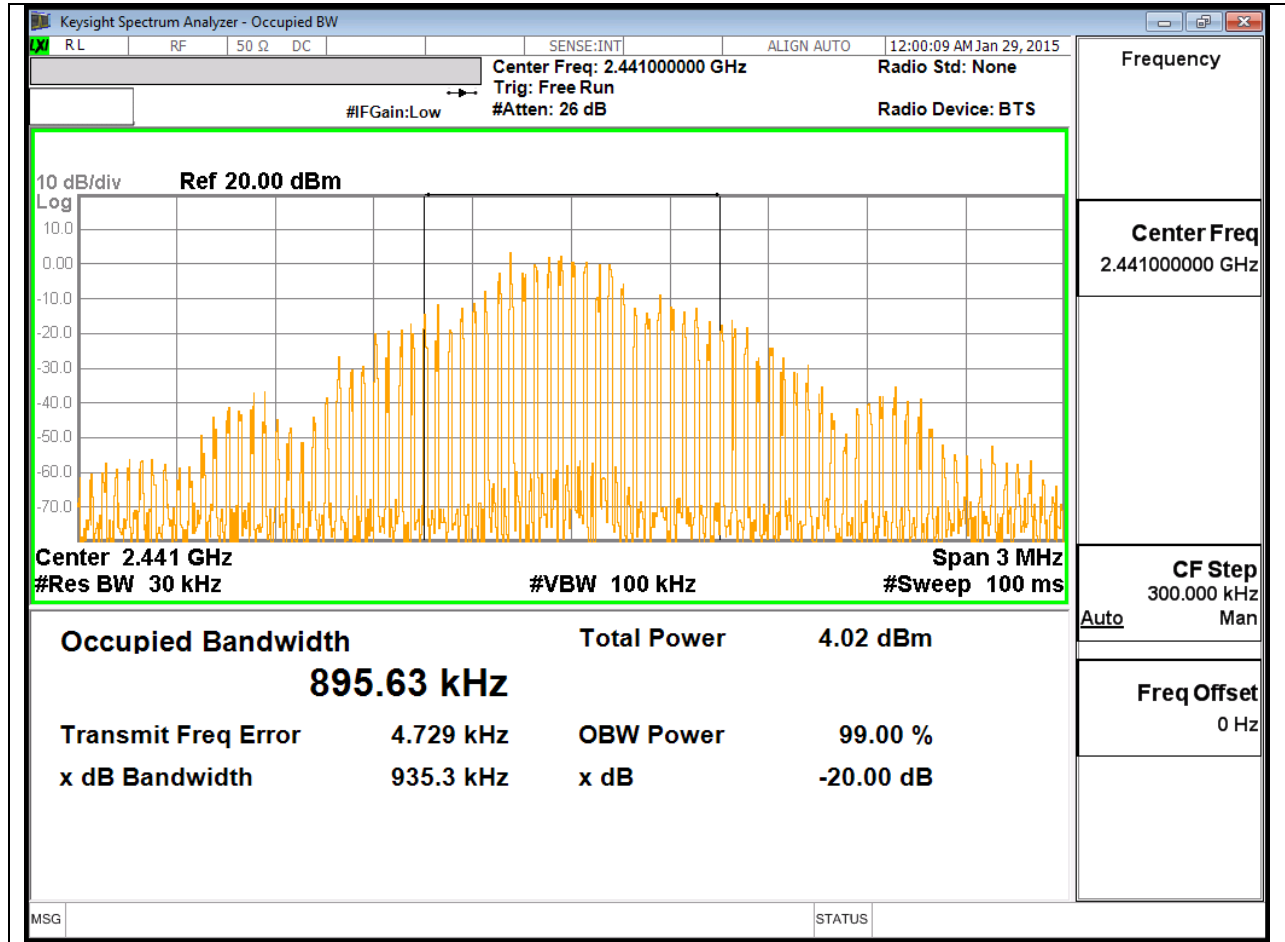


GFSK 99% BANDWIDTH

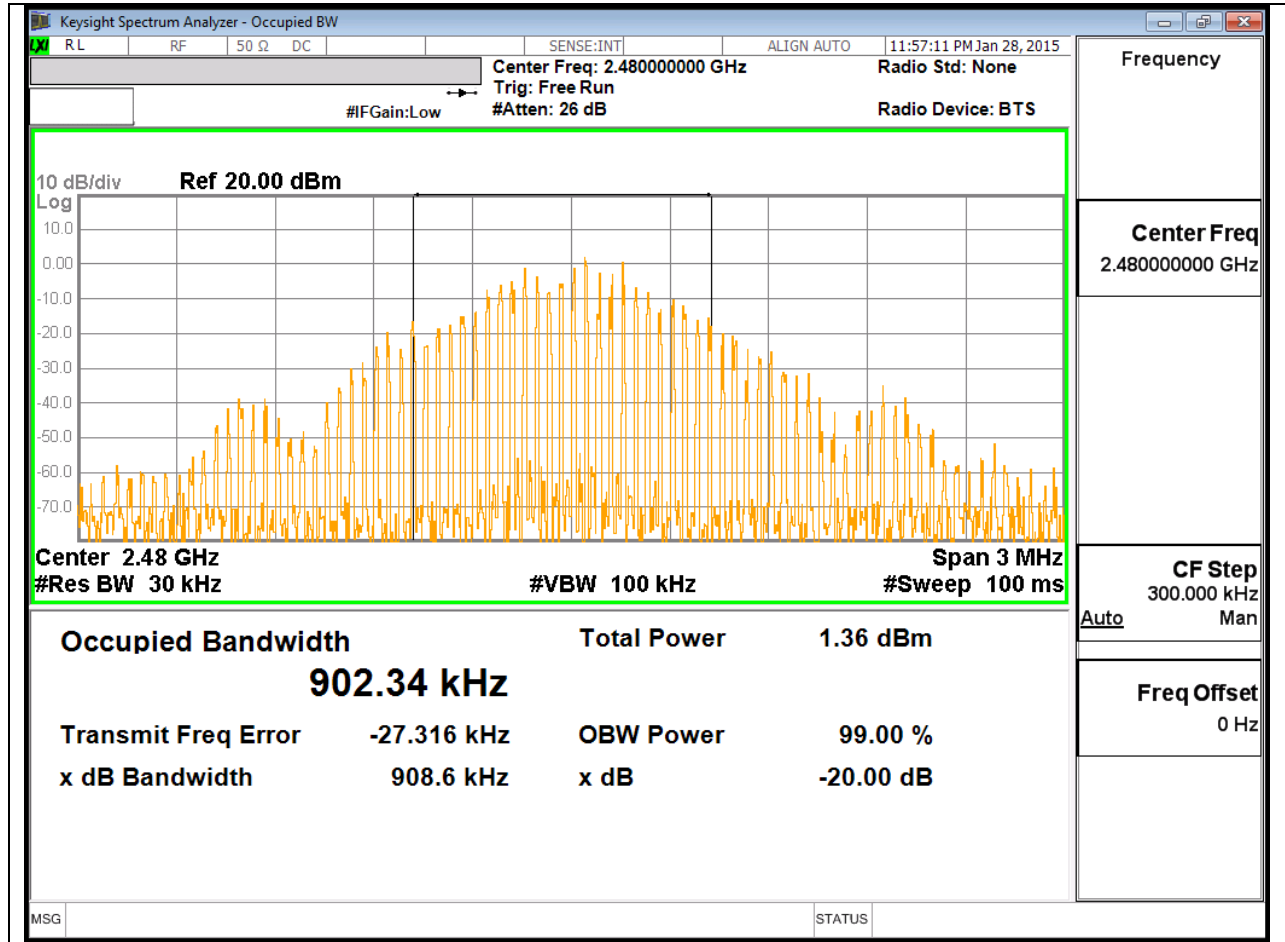
LOW CHANNEL



MID CHANNEL

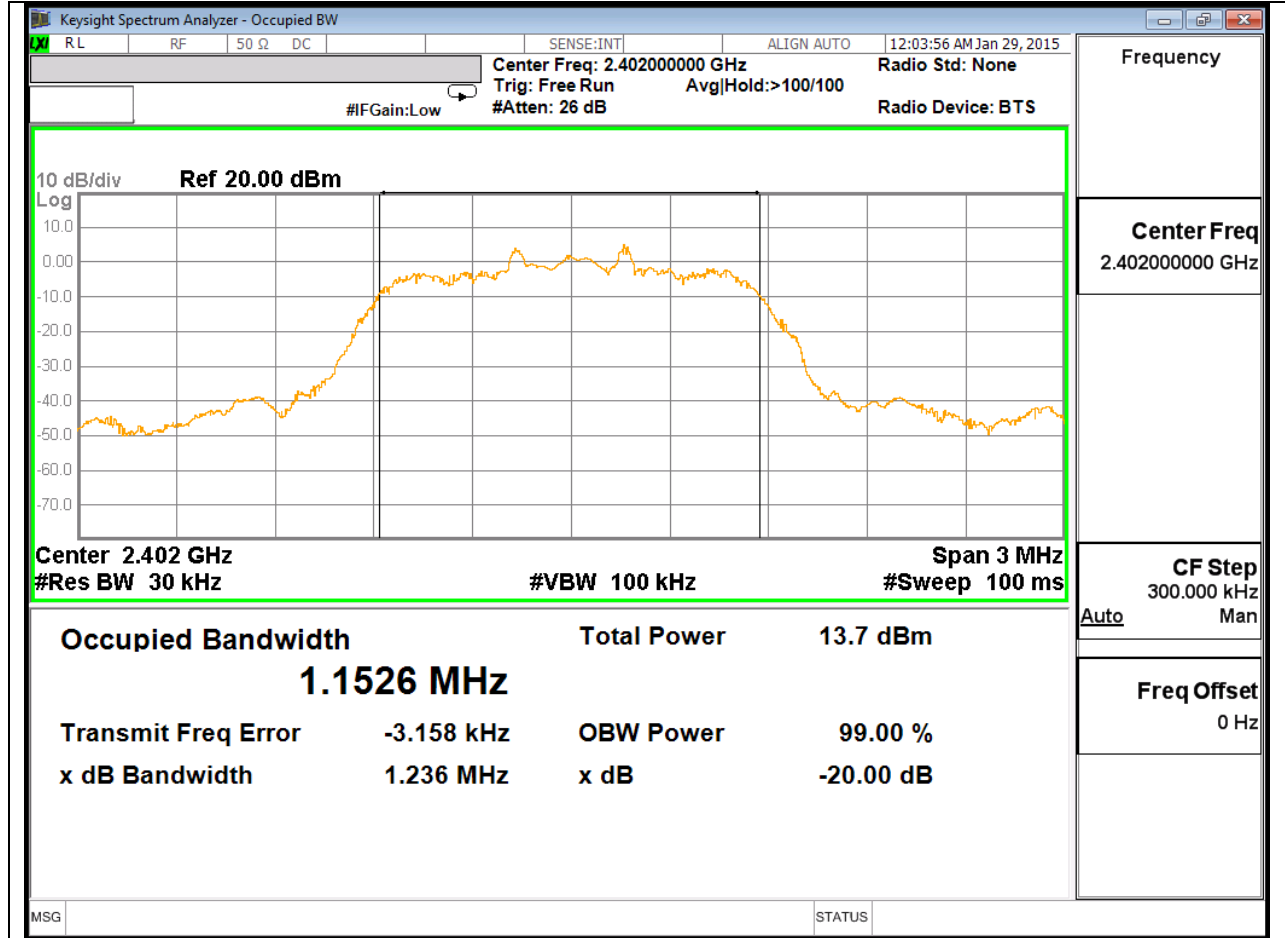


HIGH CHANNEL

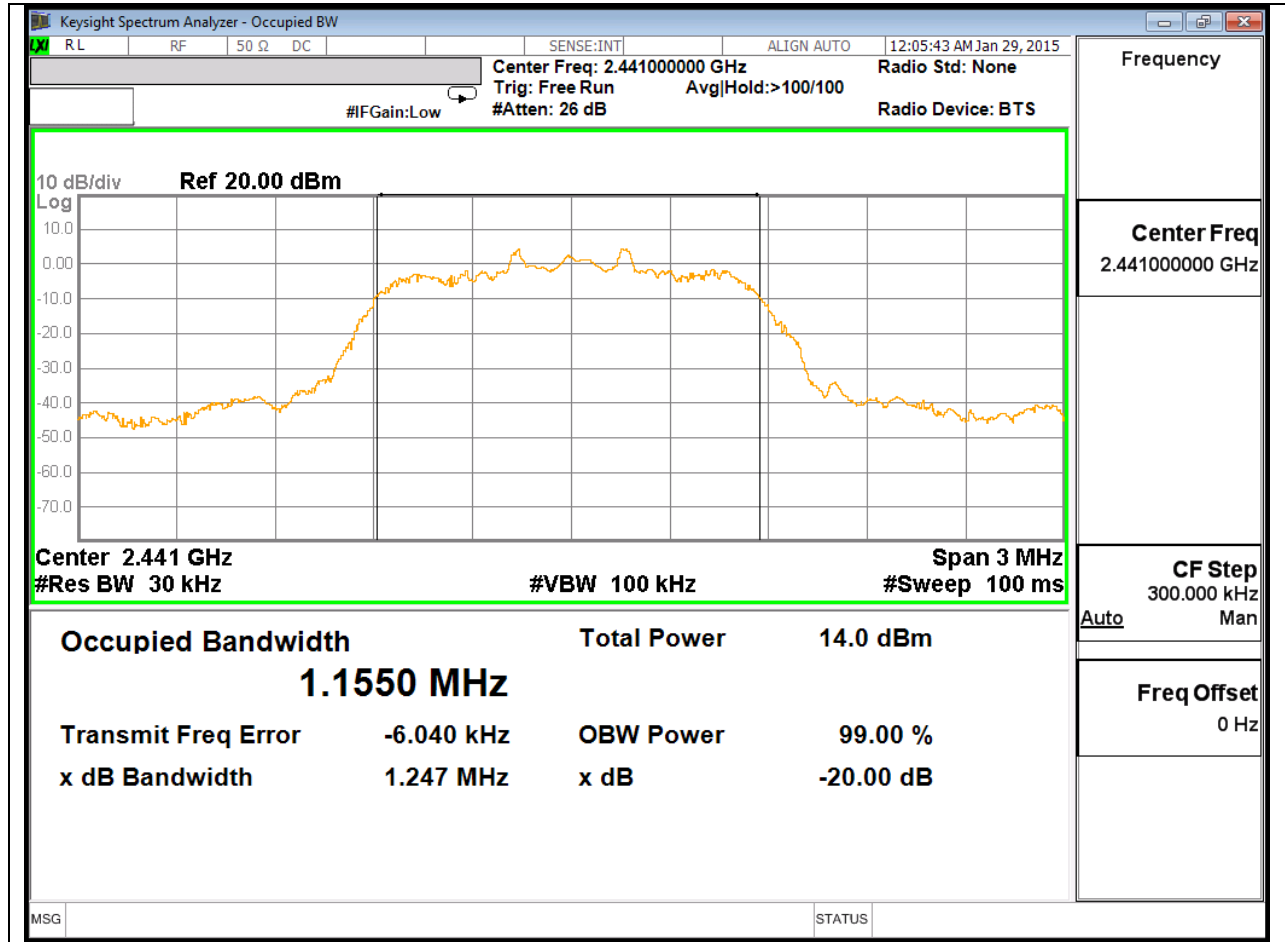


Pi/4-DQPSK 20 dB BANDWIDTH

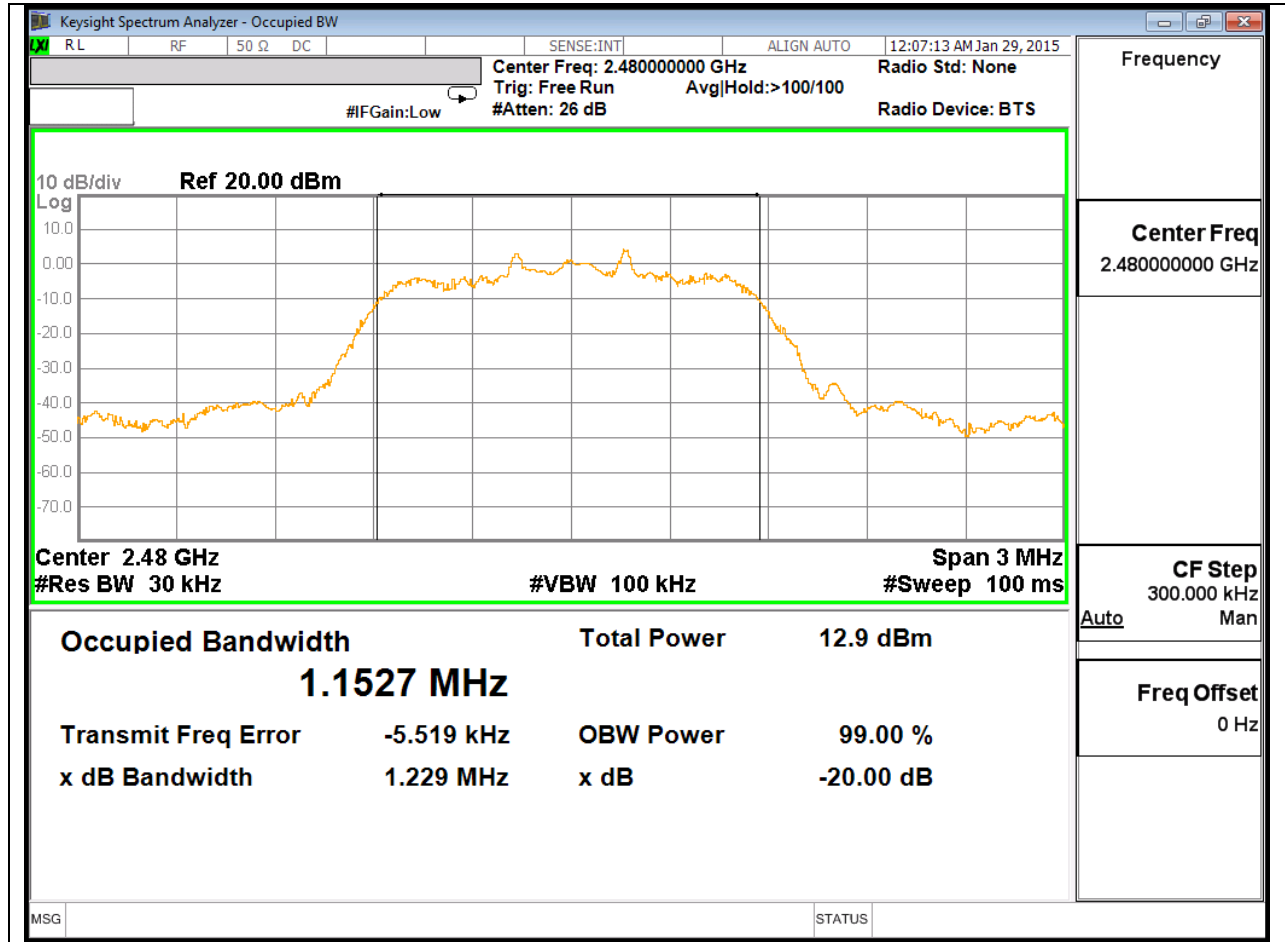
LOW CHANNEL



MID CHANNEL

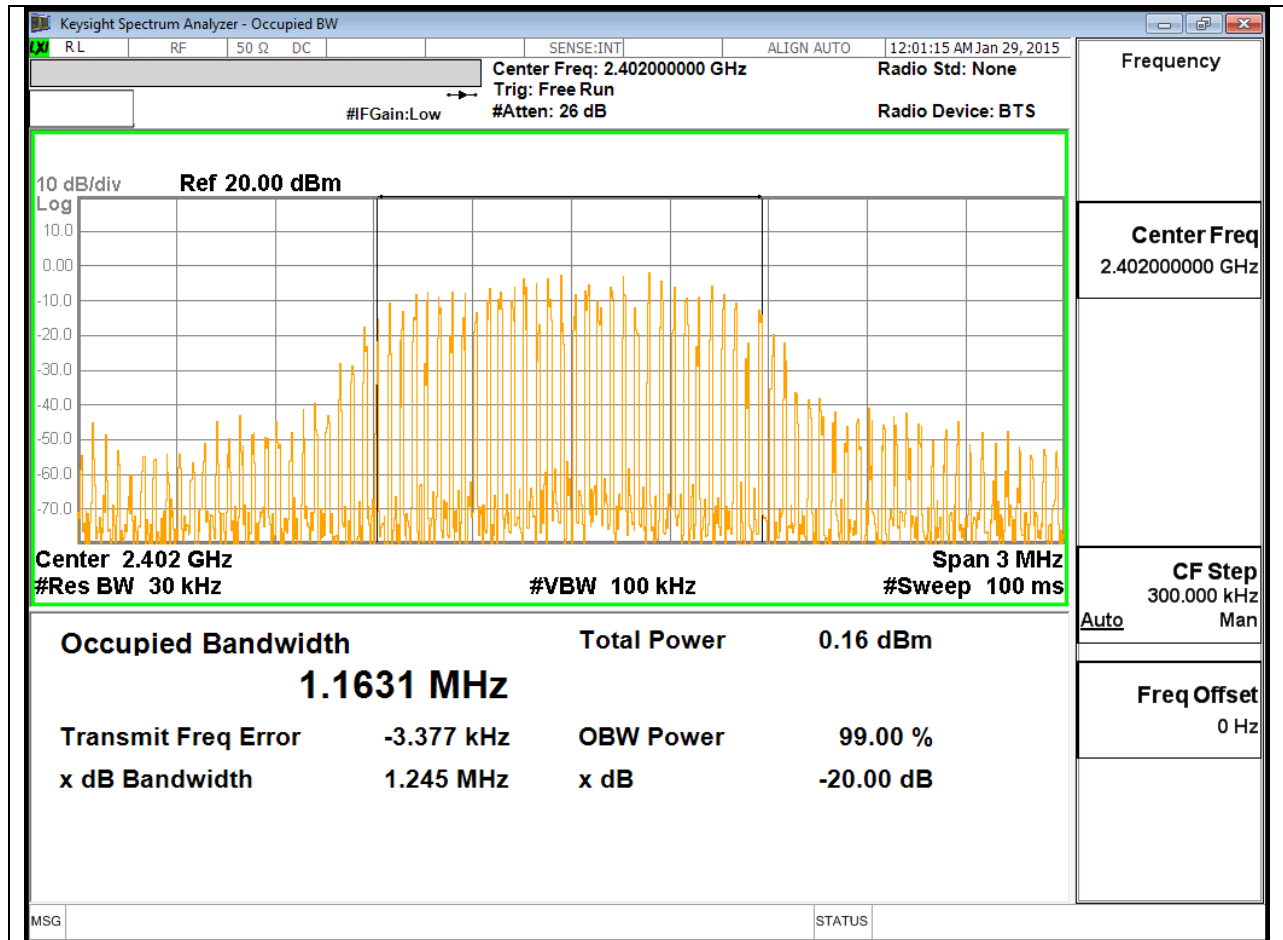


HIGH CHANNEL

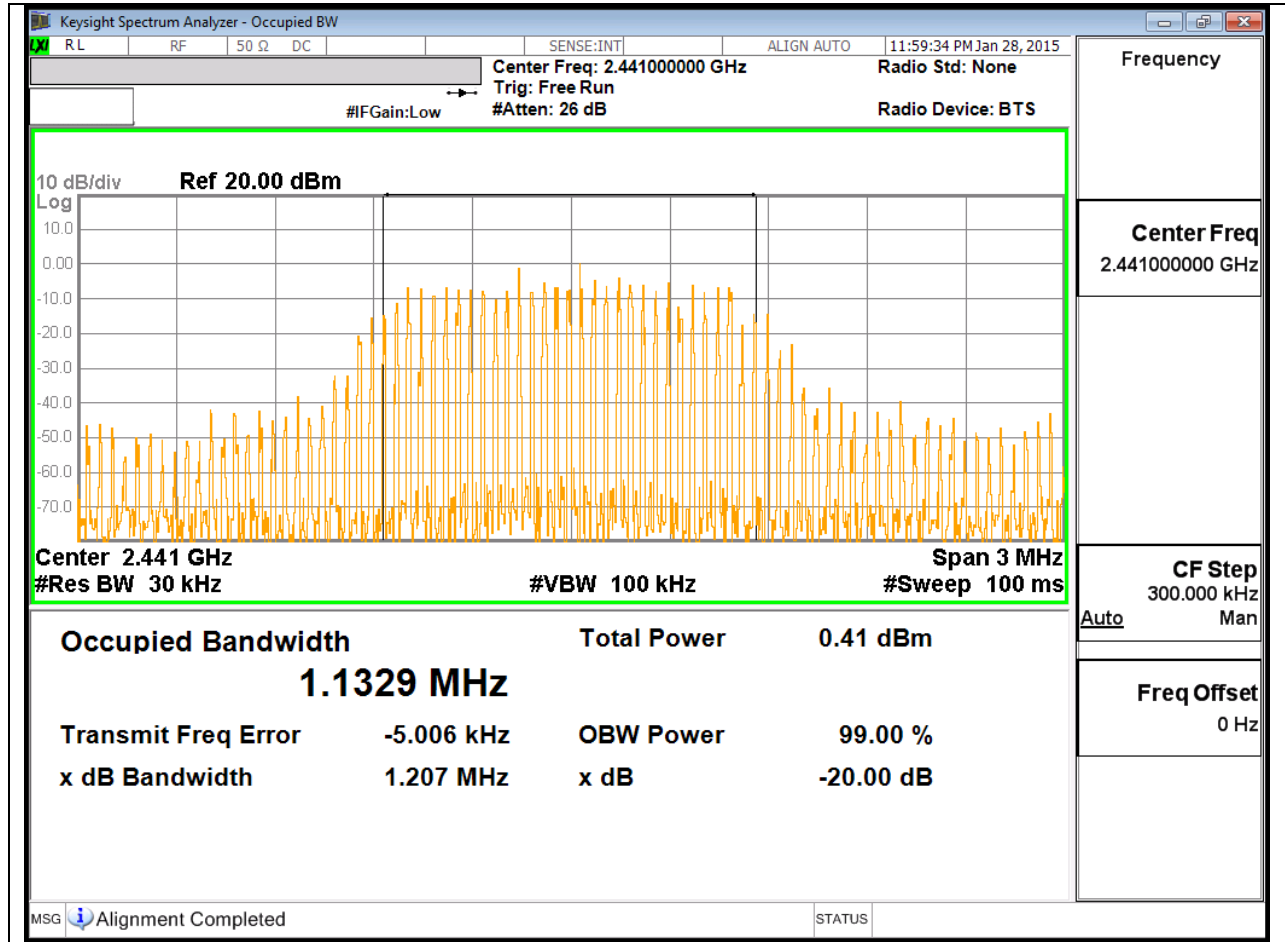


Pi/4-DQPSK 99% BANDWIDTH

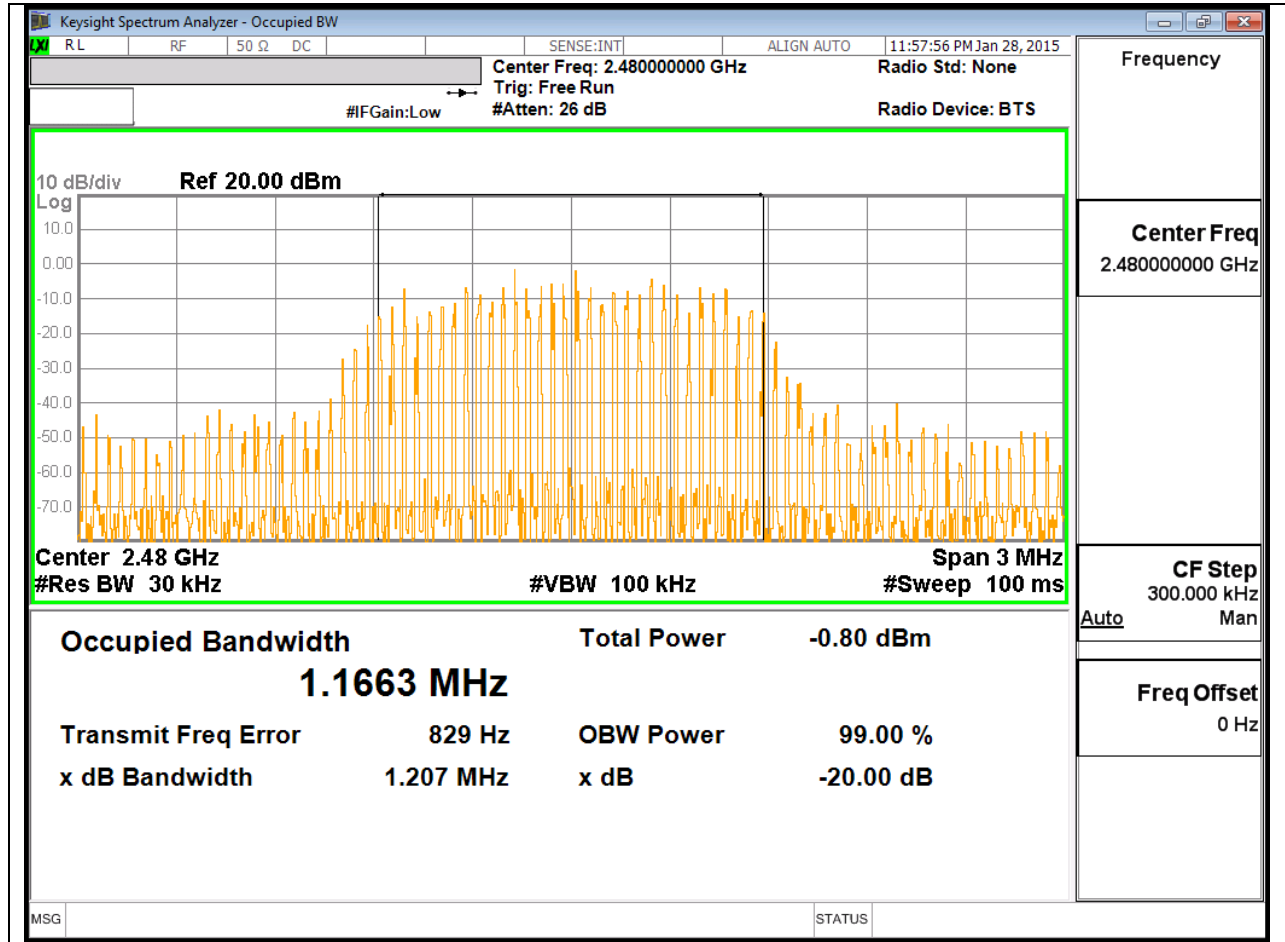
LOW CHANNEL



MID CHANNEL

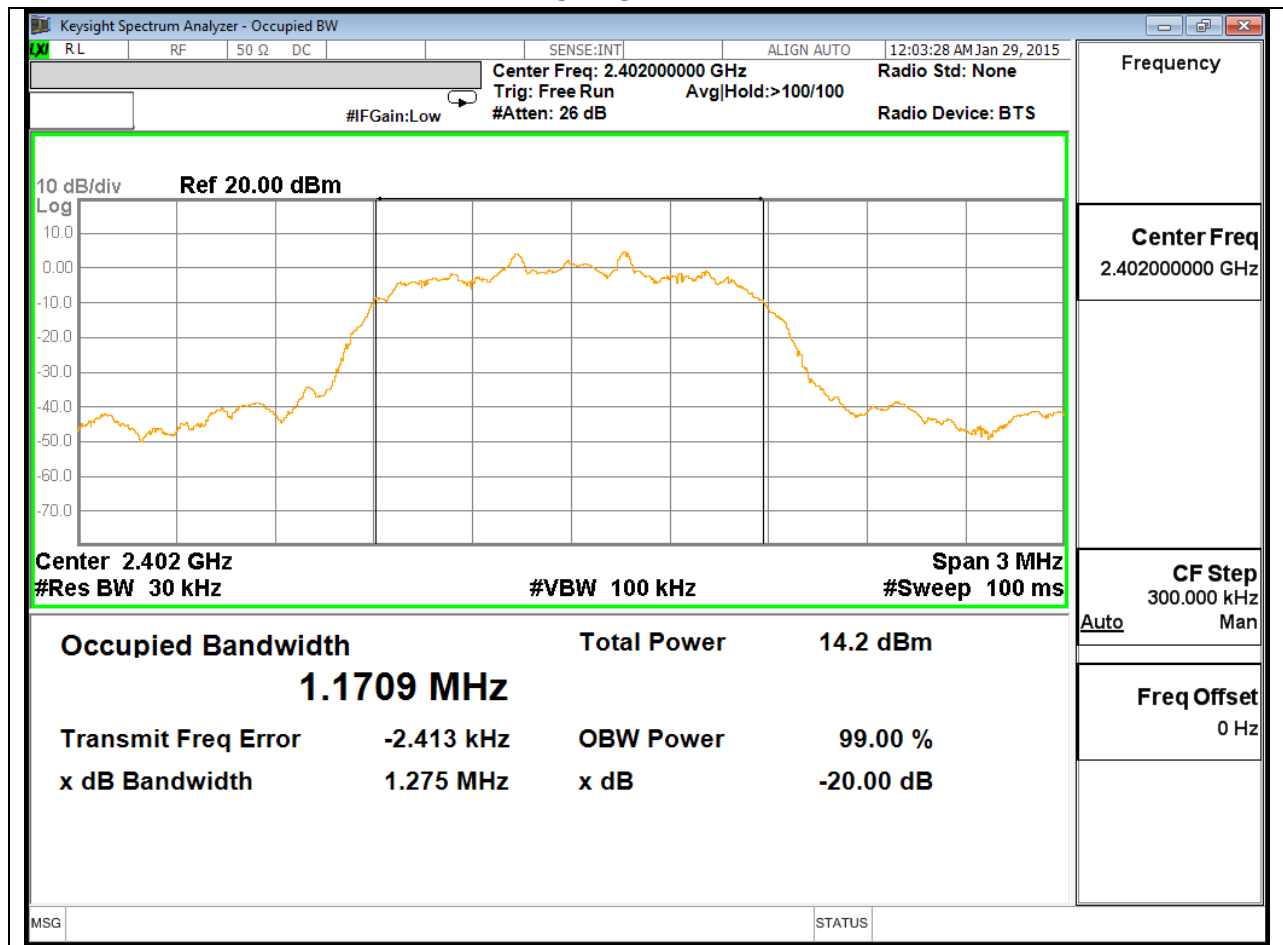


HIGH CHANNEL

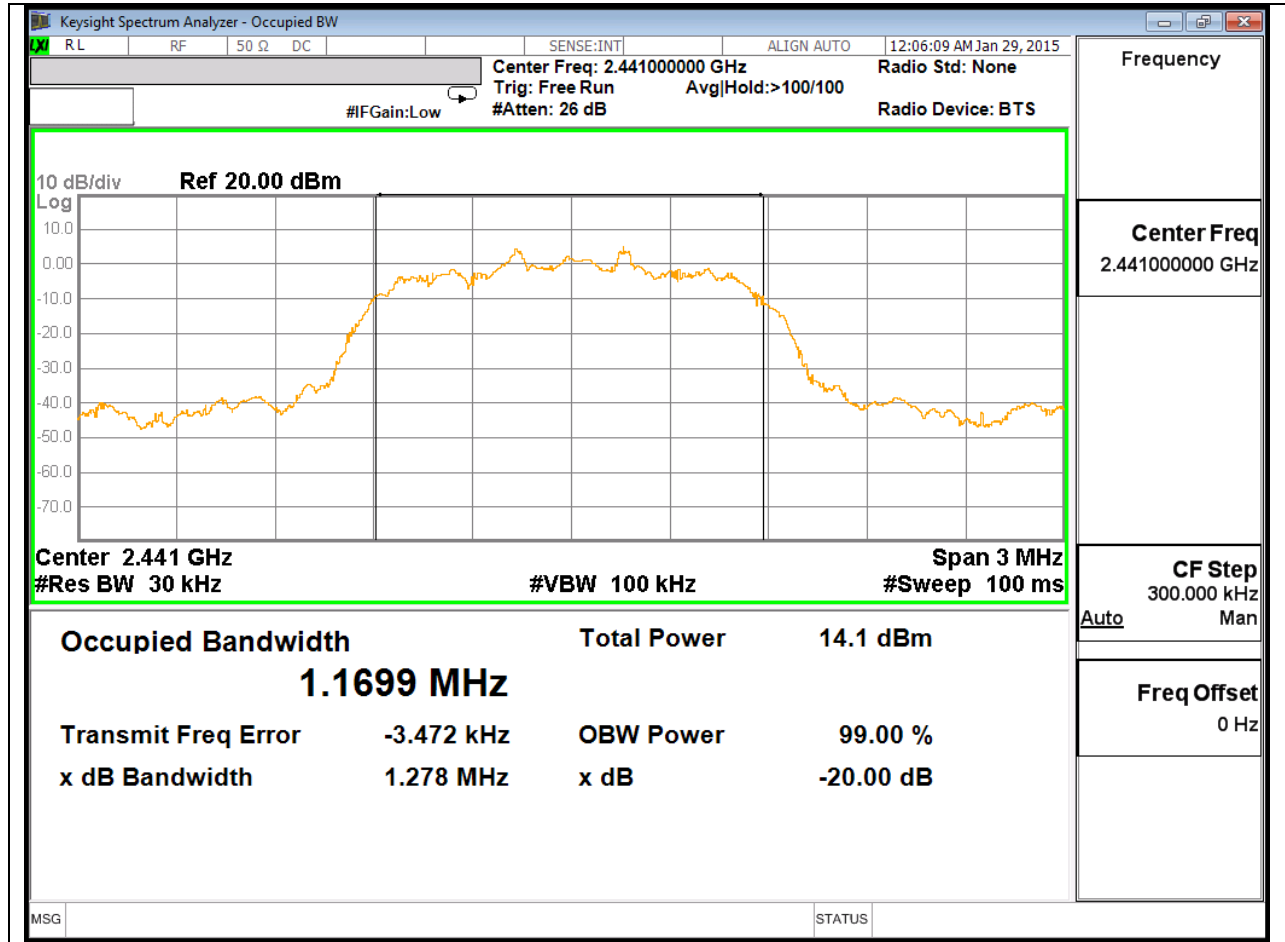


8PSK 20 dB BANDWIDTH

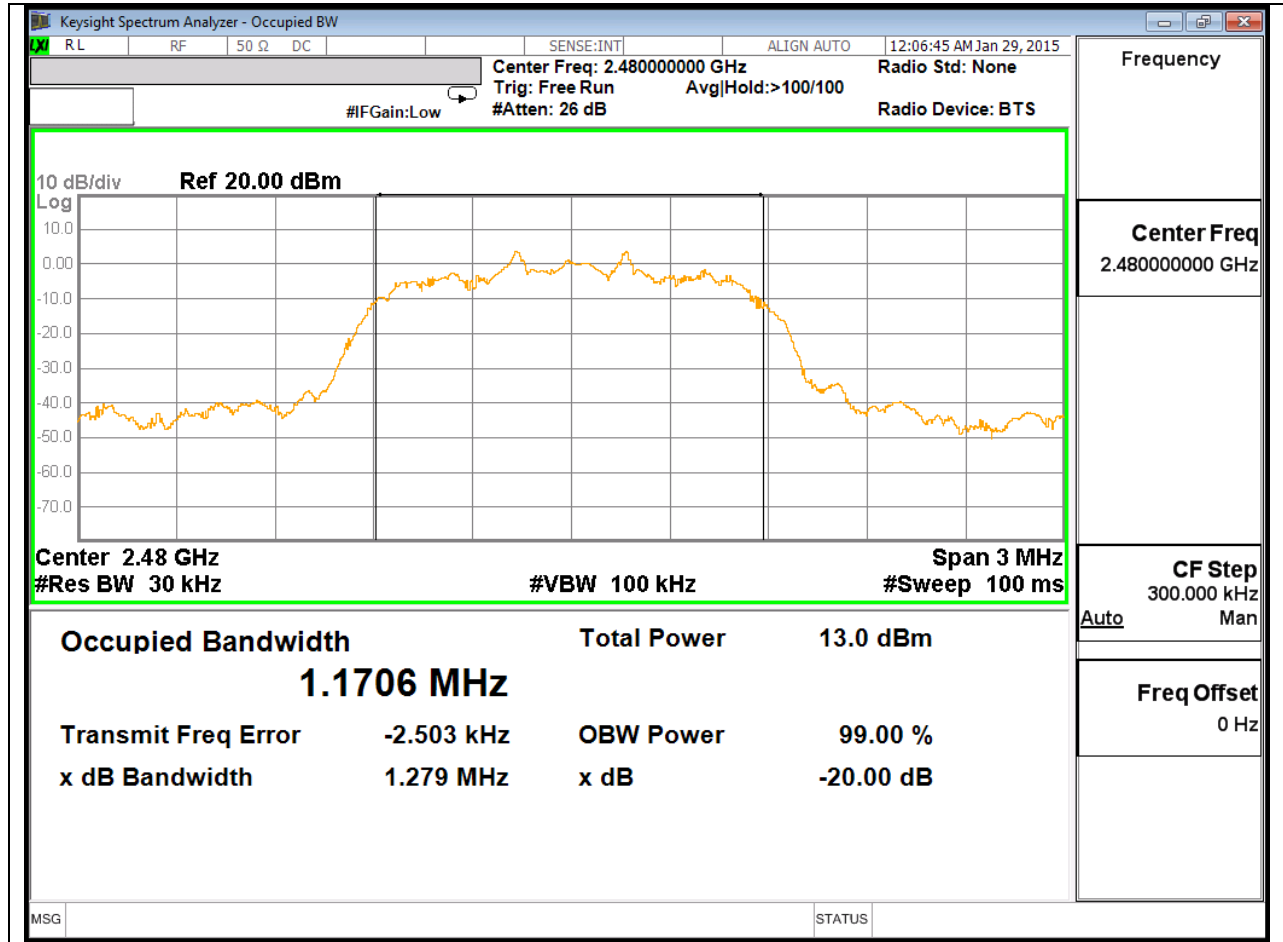
LOW CHANNEL



MID CHANNEL

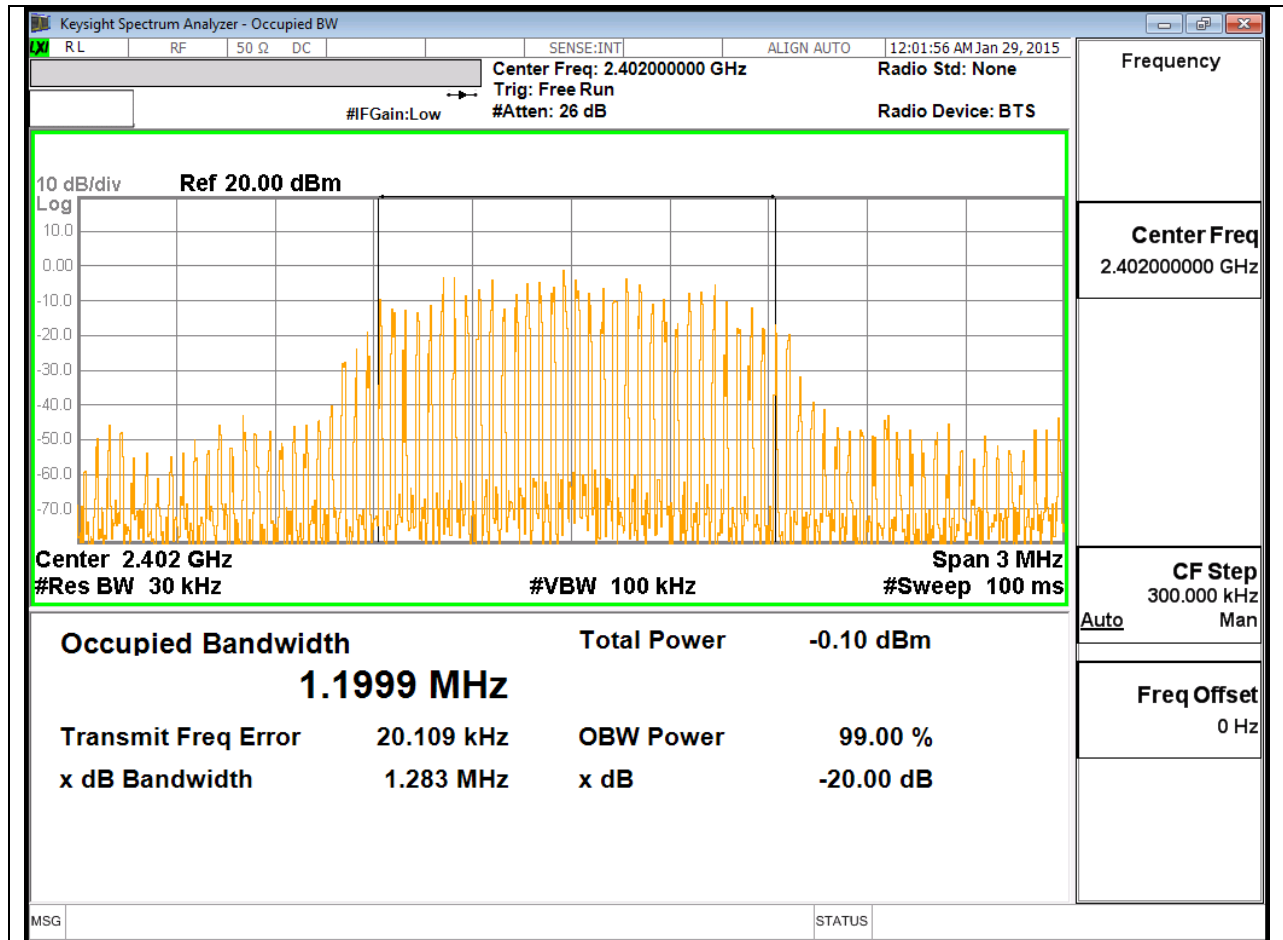


HIGH CHANNEL

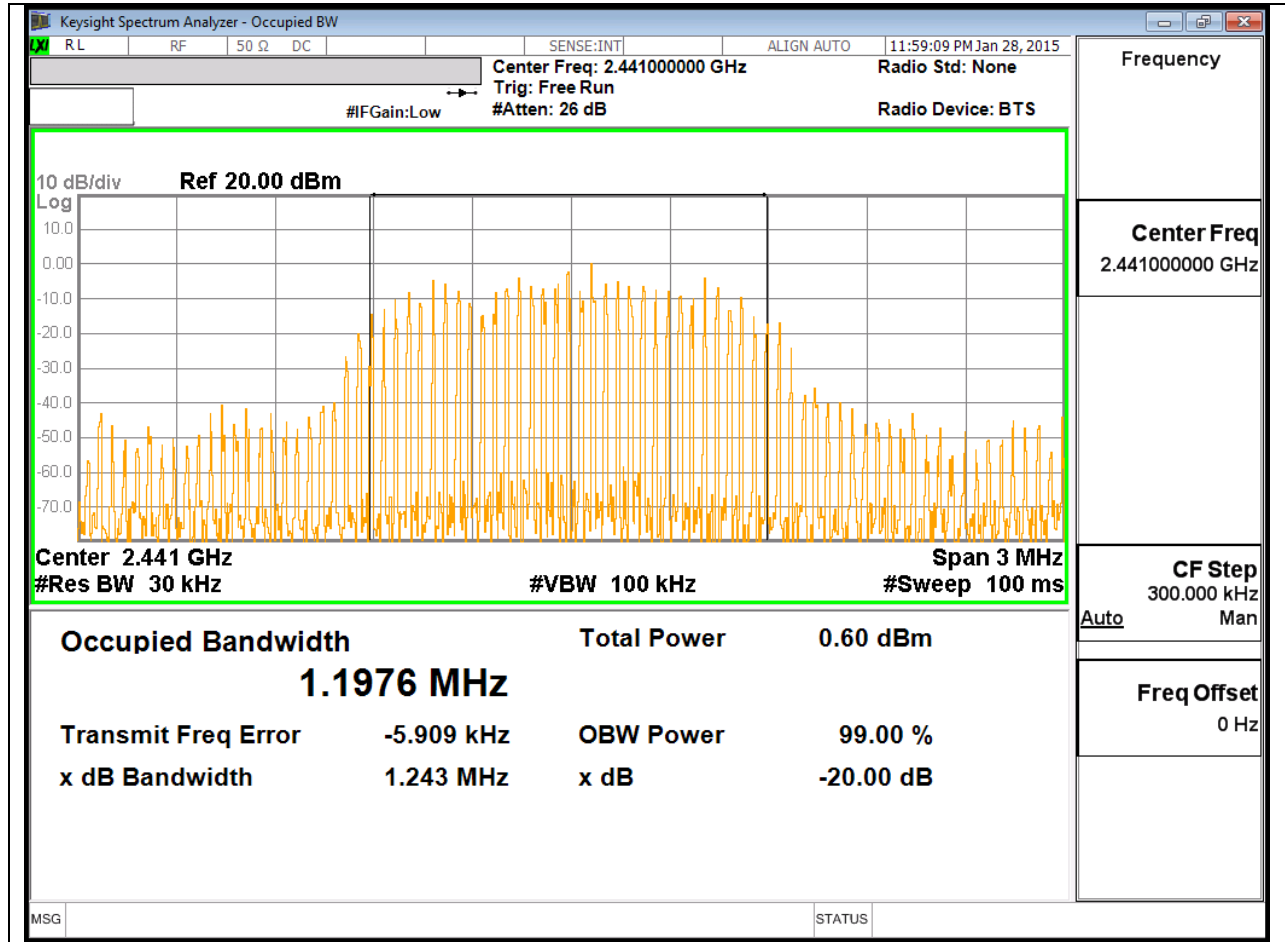


8PSK 99% BANDWIDTH

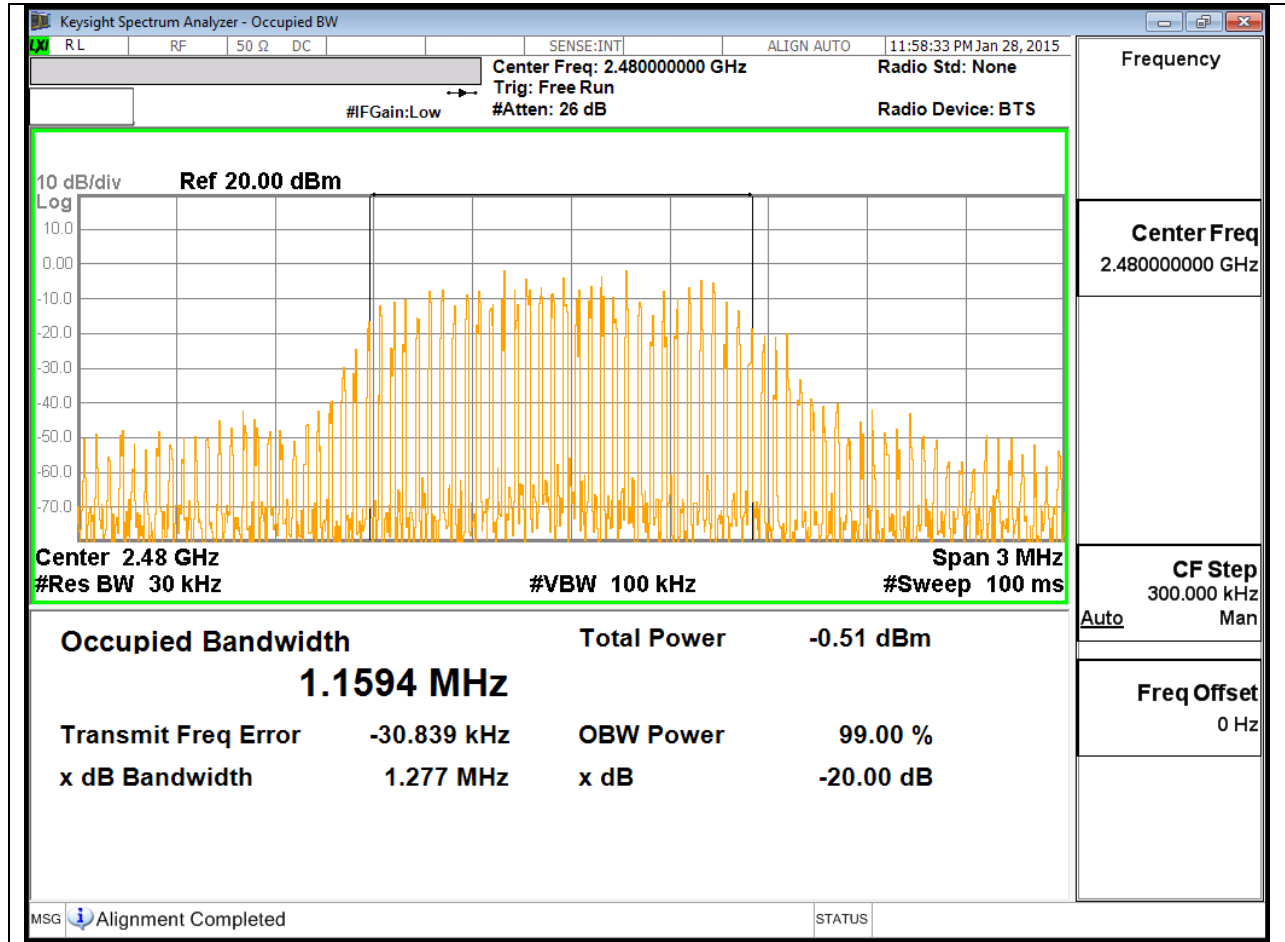
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



8.2. HOPPING FREQUENCY SEPARATION

LIMIT

FCC §15.247 (a) (1)

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.

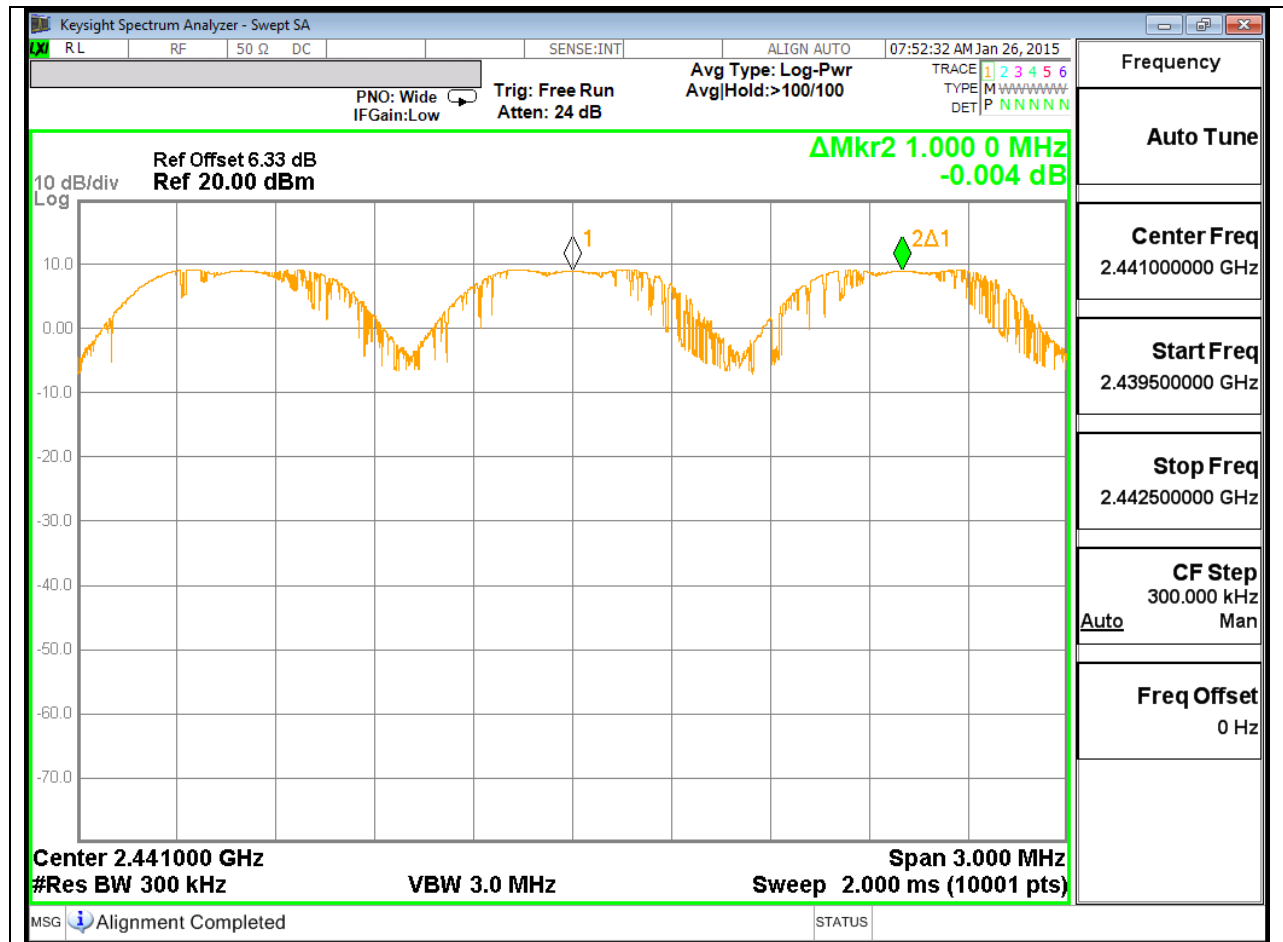
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than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

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

TEST PROCEDURE

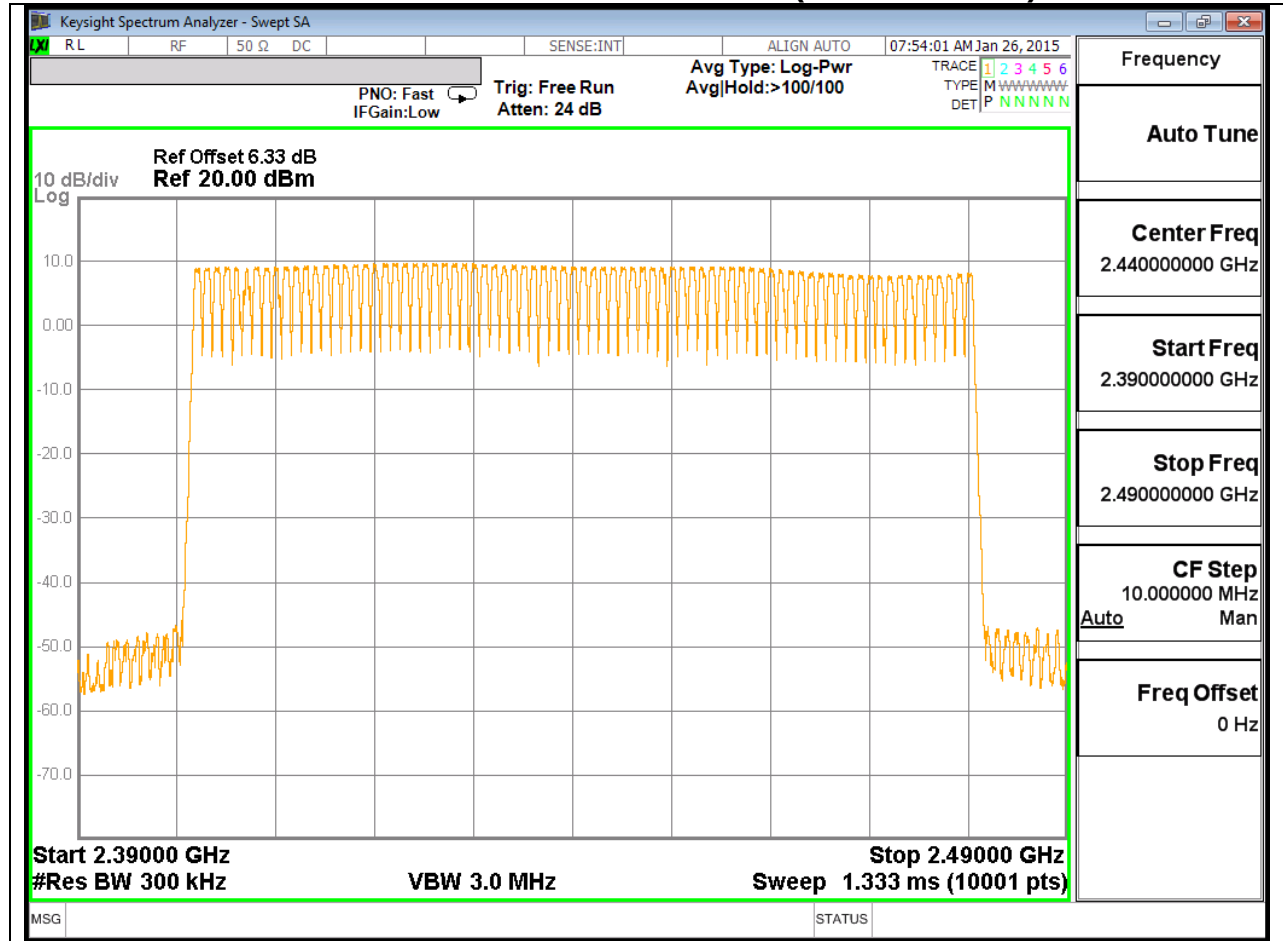
DA 00-705: The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

RESULTS

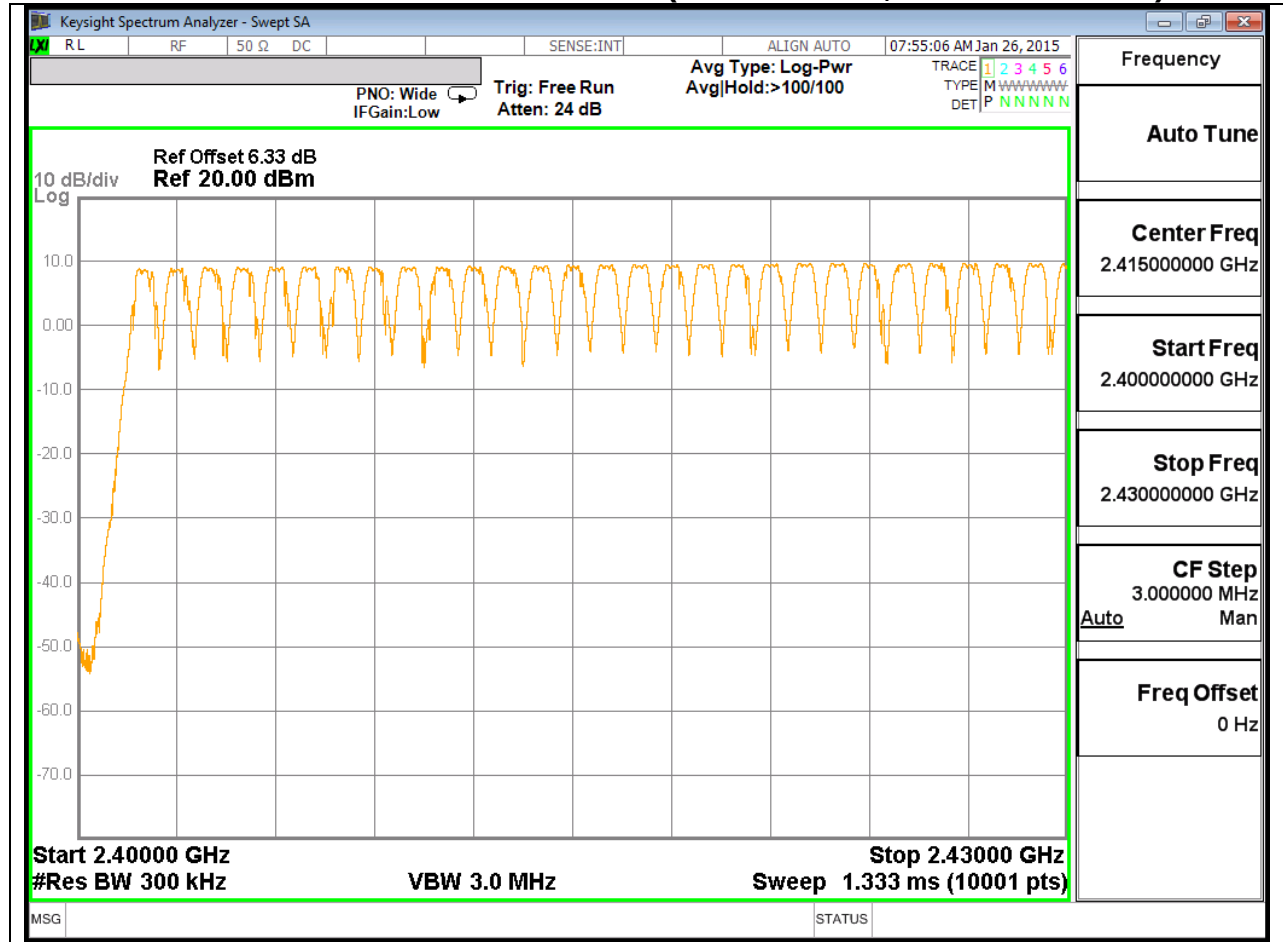
Normal Mode: 79 Channels observed.

NUMBER OF HOPPING CHANNELS PLOTS

NUMBER OF HOPPING CHANNELS (100 MHZ SPAN)



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



Keysight Spectrum Analyzer - Swept SA

RL RF 50 Ω DC SENSE:INT ALIGN AUTO 07:55:50 AM Jan 26, 2015

PNO: Wide IFGain:Low Trig: Free Run Atten: 24 dB Avg Type: Log-Pwr Avg|Hold:>100/100

TRACE 1 2 3 4 5 6 TYPE M W W W W W W W DET P N N N N N N

Ref Offset 6.33 dB Ref 20.00 dBm

10 dB/div Log

Start 2.43000 GHz Stop 2.46000 GHz #Res BW 300 kHz VBW 3.0 MHz Sweep 1.333 ms (10001 pts)

Frequency: Auto Tune

Center Freq: 2.445000000 GHz

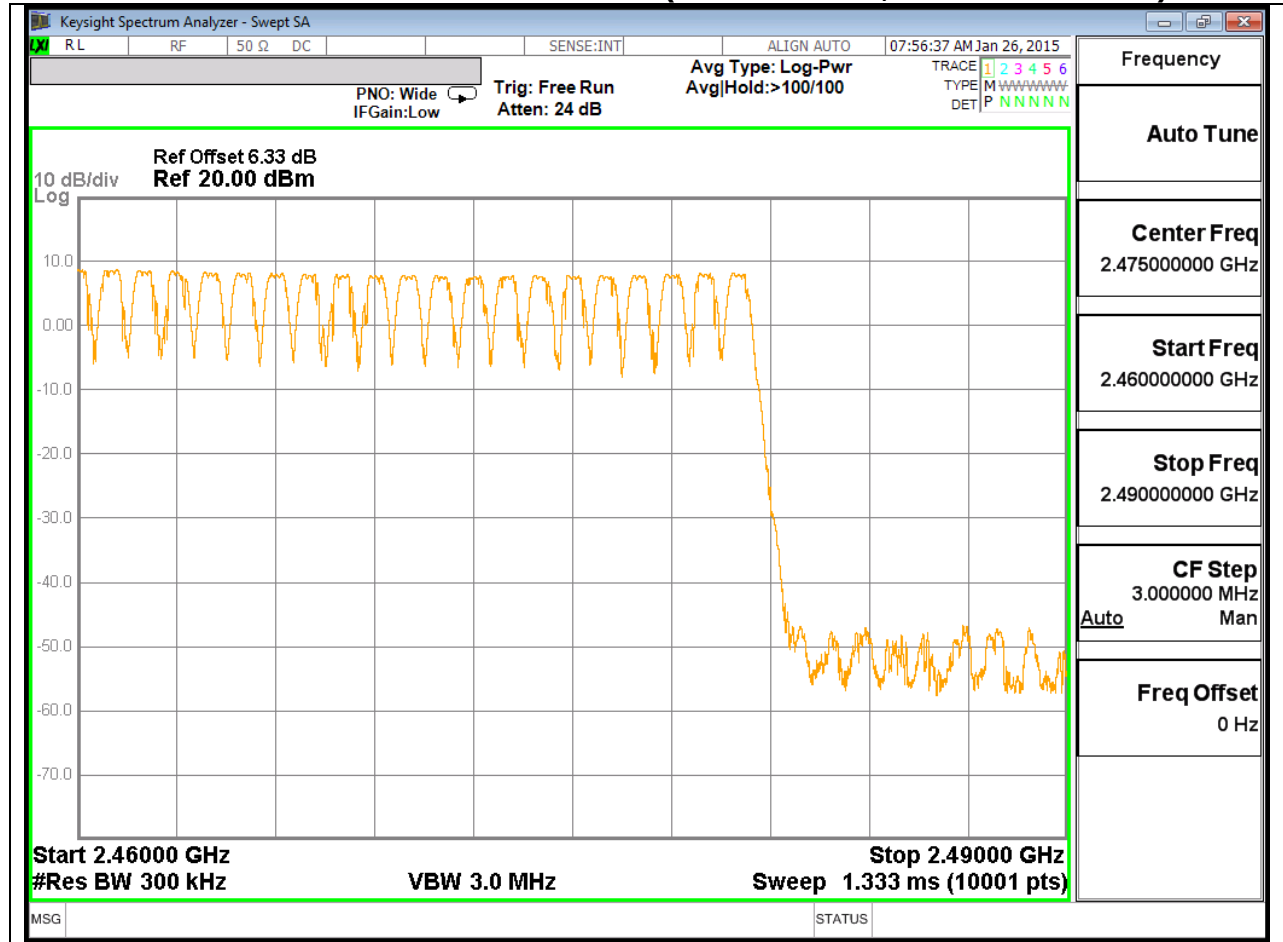
Start Freq: 2.430000000 GHz

Stop Freq: 2.460000000 GHz

CF Step: 3.000000 MHz (Auto/Man)

Freq Offset: 0 Hz

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



8.4. AVERAGE TIME OF OCCUPANCY

LIMIT

FCC §15.247 (a) (1) (iii)

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.

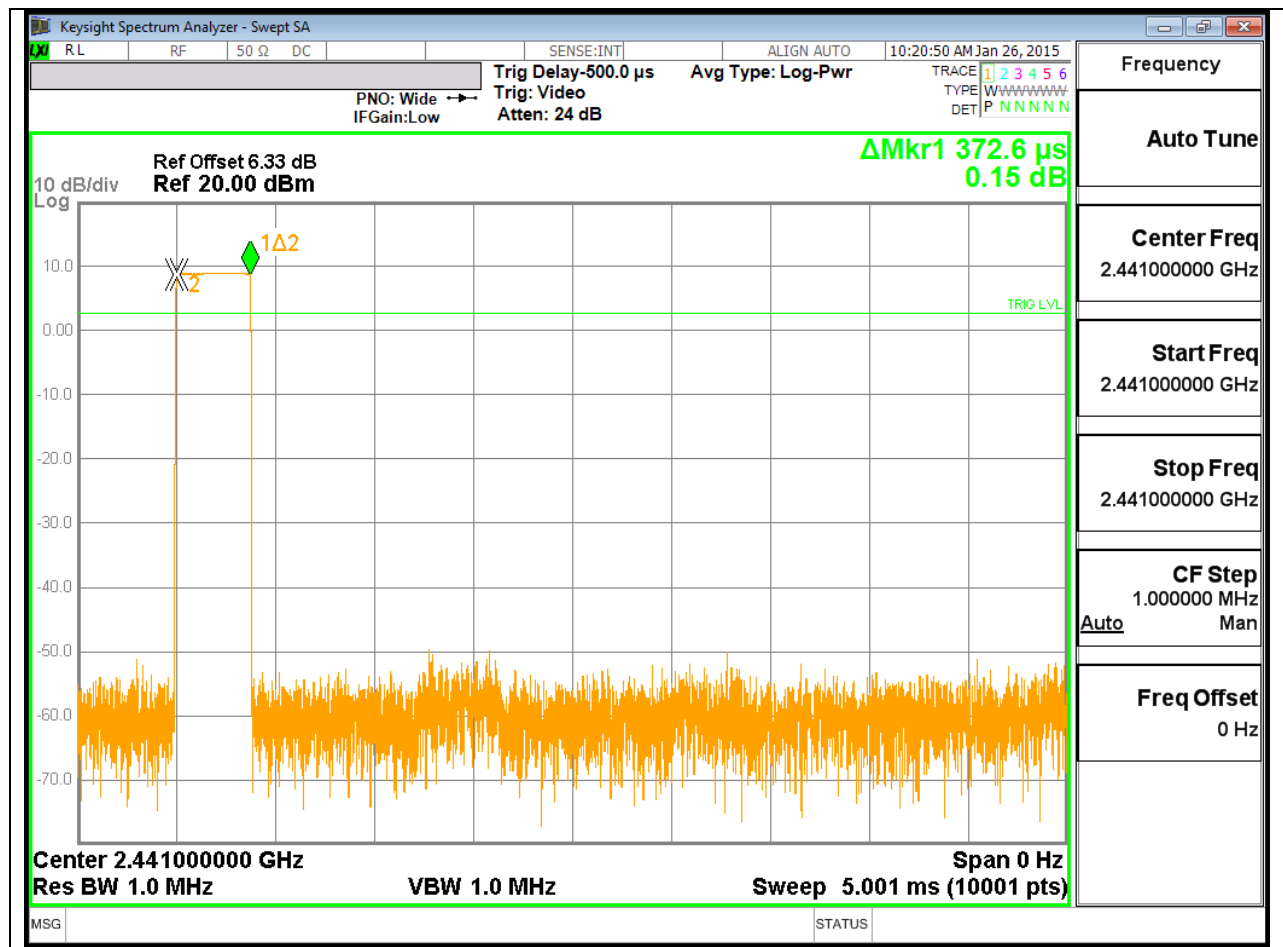
The average time of occupancy in the specified 31.6 second period (79 channels * 0.4 s) is equal to $10 * (\# \text{ of pulses in } 3.16 \text{ s}) * \text{pulse width}$.

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

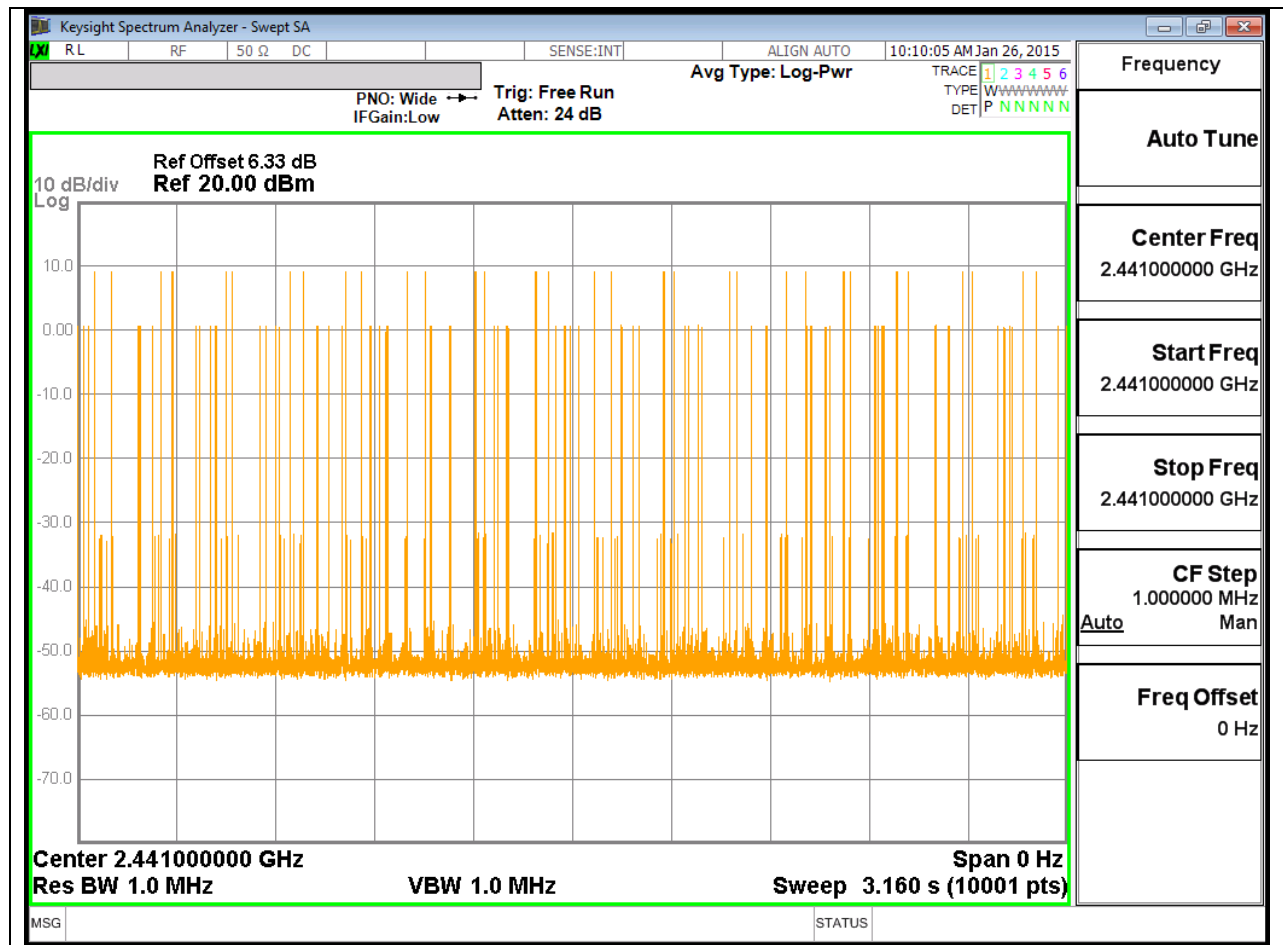
RESULTS

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	0.373	32	0.119232	0.4	-0.2808
DH3	1.628	14	0.22792	0.4	-0.1721
DH5	2.878	11	0.31658	0.4	-0.0834
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	0.373	8	0.029808	0.4	-0.3702
DH3	1.628	3.5	0.05698	0.4	-0.343
DH5	2.878	2.75	0.079145	0.4	-0.3209

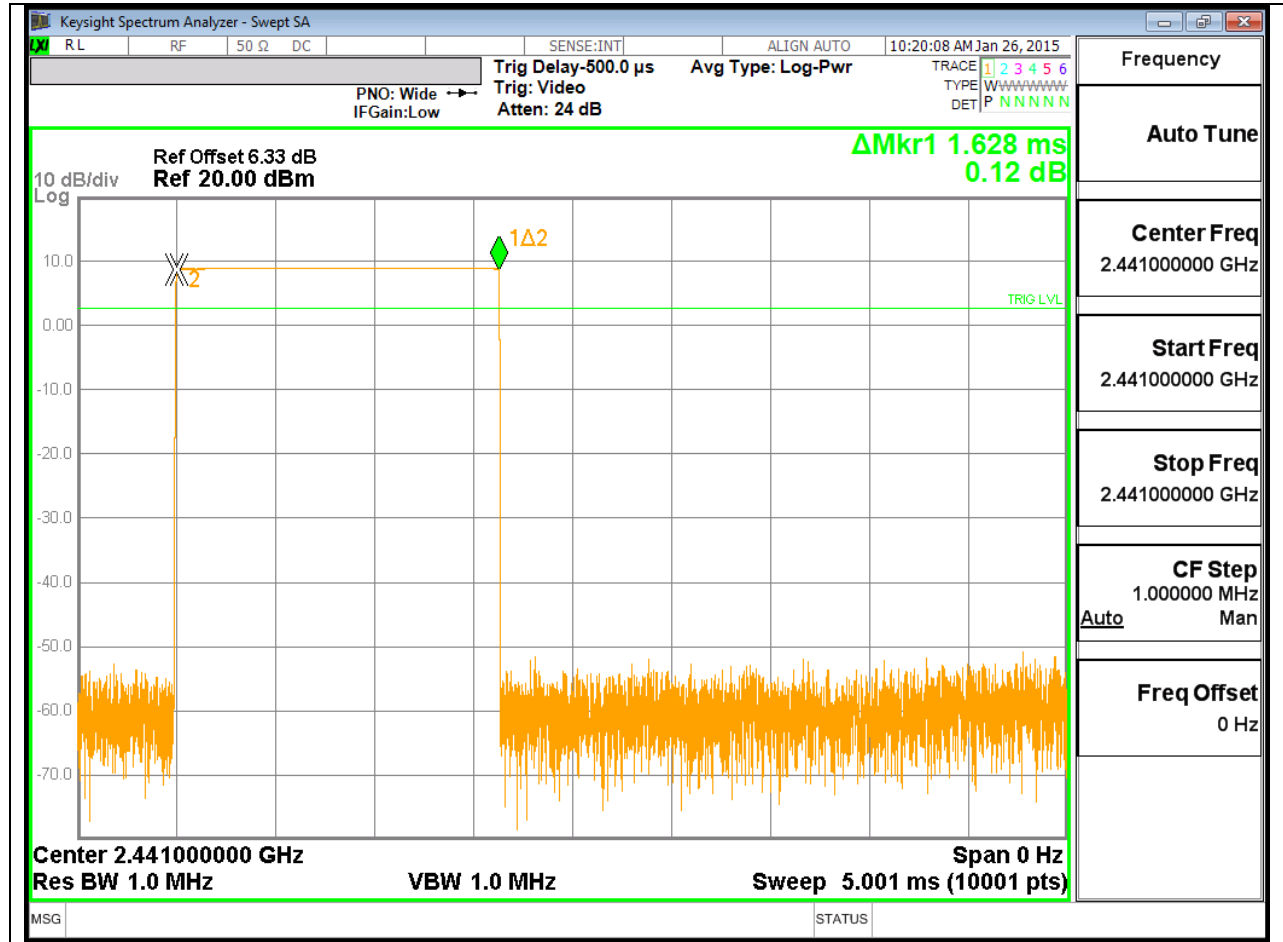
PULSE WIDTH - DH1



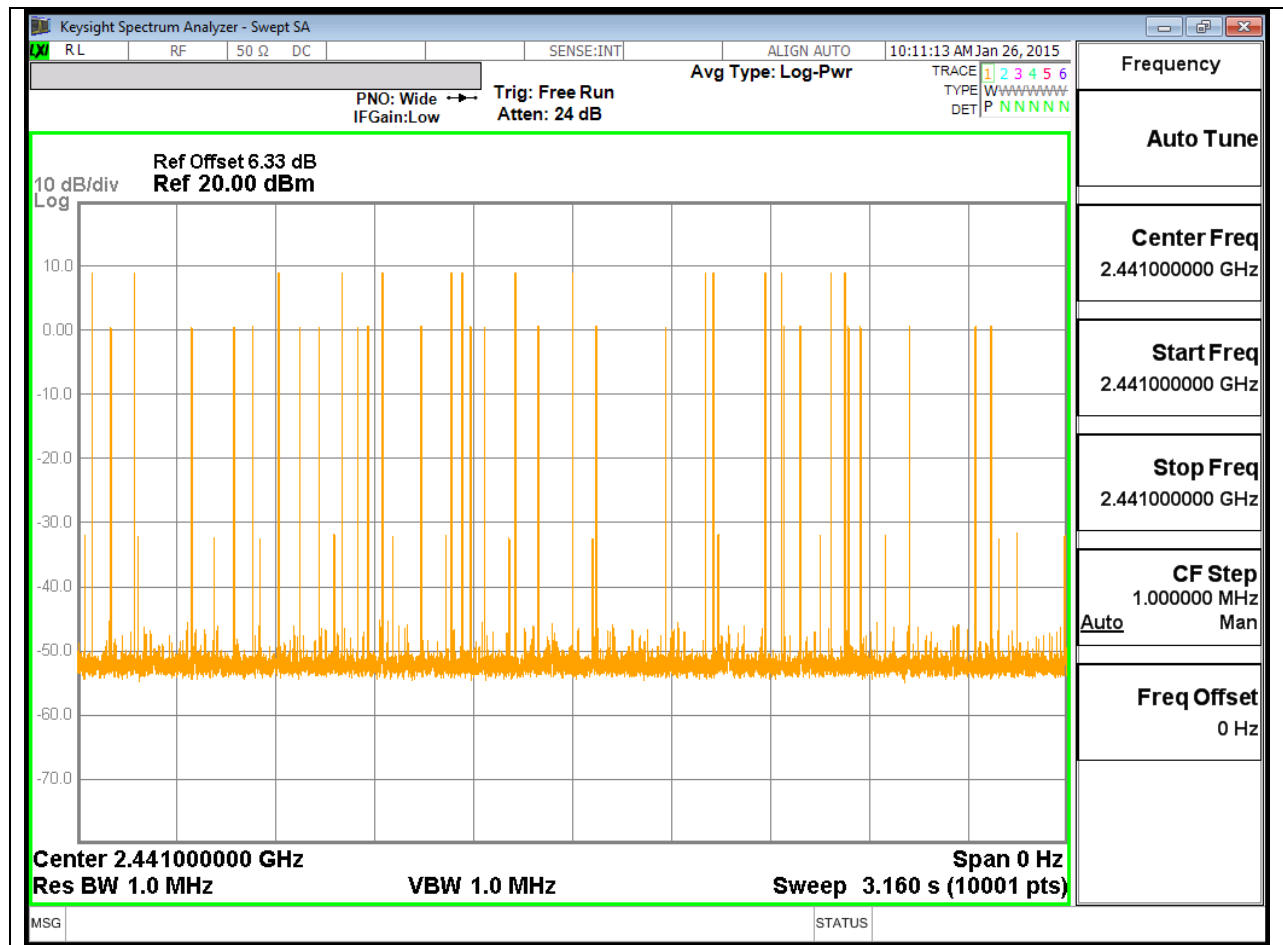
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD - DH1



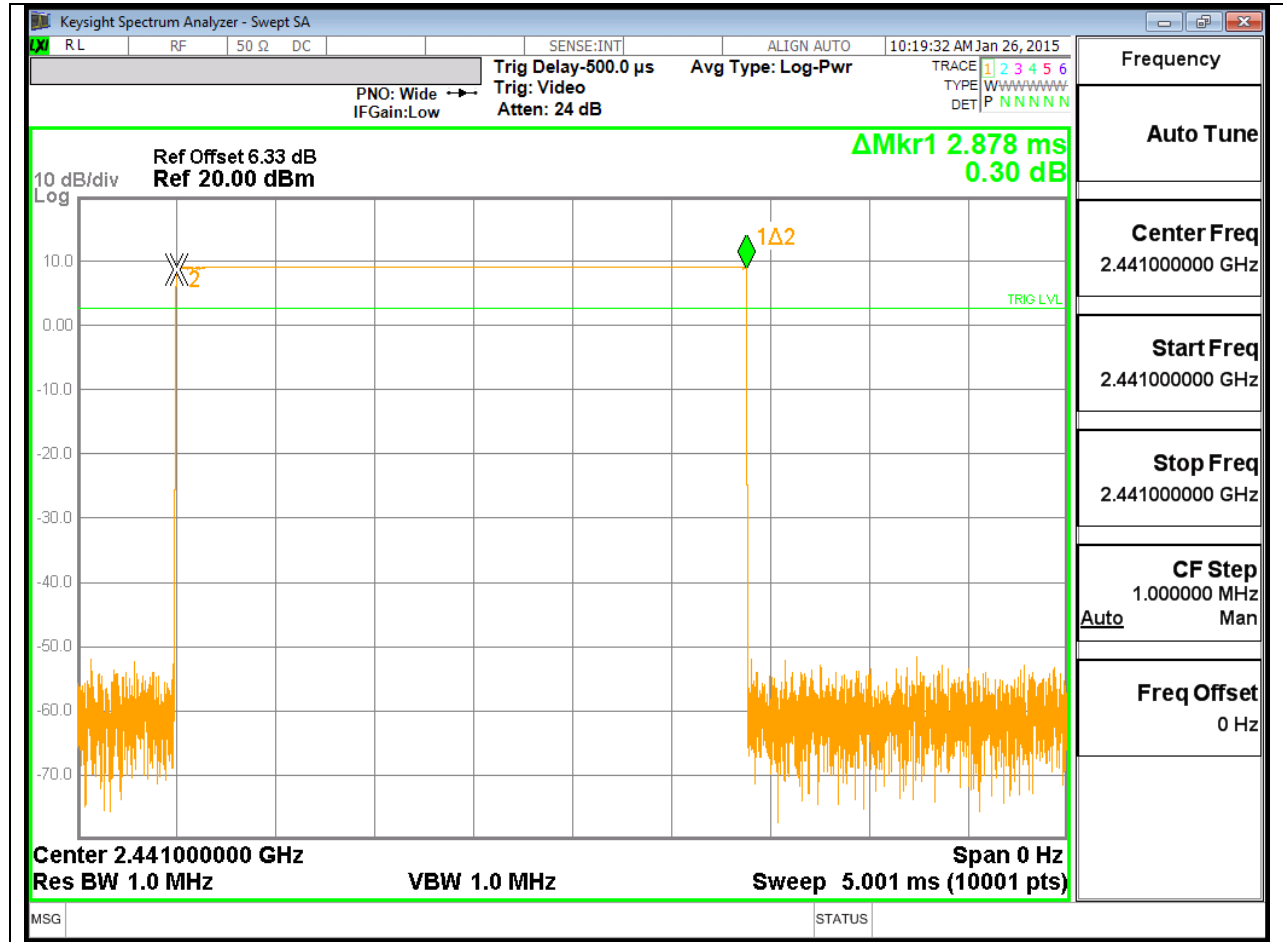
PULSE WIDTH - DH3



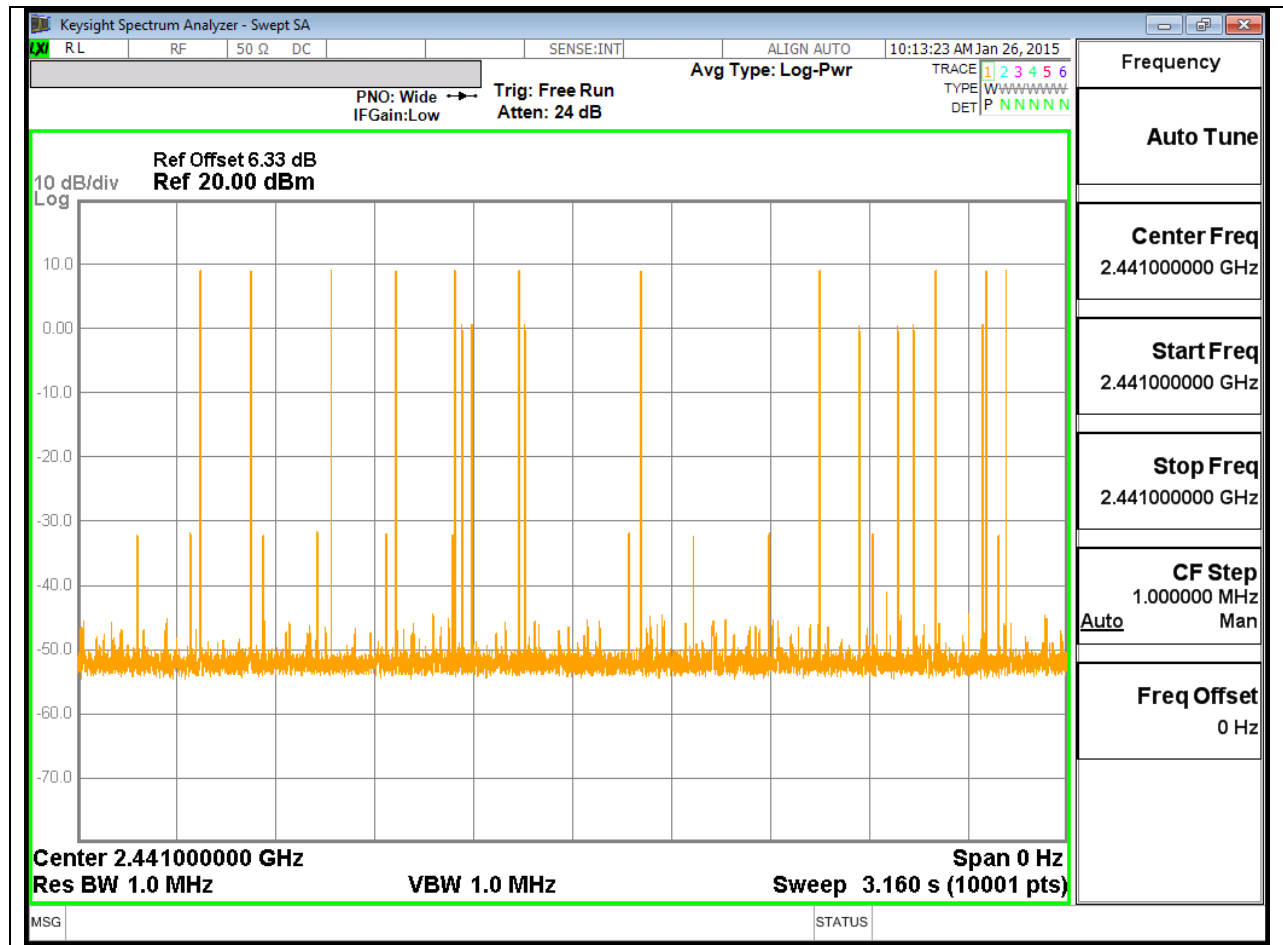
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD - DH3



PULSE WIDTH - DH5



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD - DH5



8.5. OUTPUT POWER

LIMIT

§15.247 (b) (1)

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	8.838	21	-12.162
Middle	2441	9.165	21	-11.835
High	2480	8.105	21	-12.895
Worst		9.165		-11.835

8.5.2. ENHANCED DATA RATE Pi/4-DPSK MODULATION

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	8.267	21	-12.733
Middle	2441	8.544	21	-12.456
High	2480	7.479	21	-13.521
Worst		8.544		-12.456

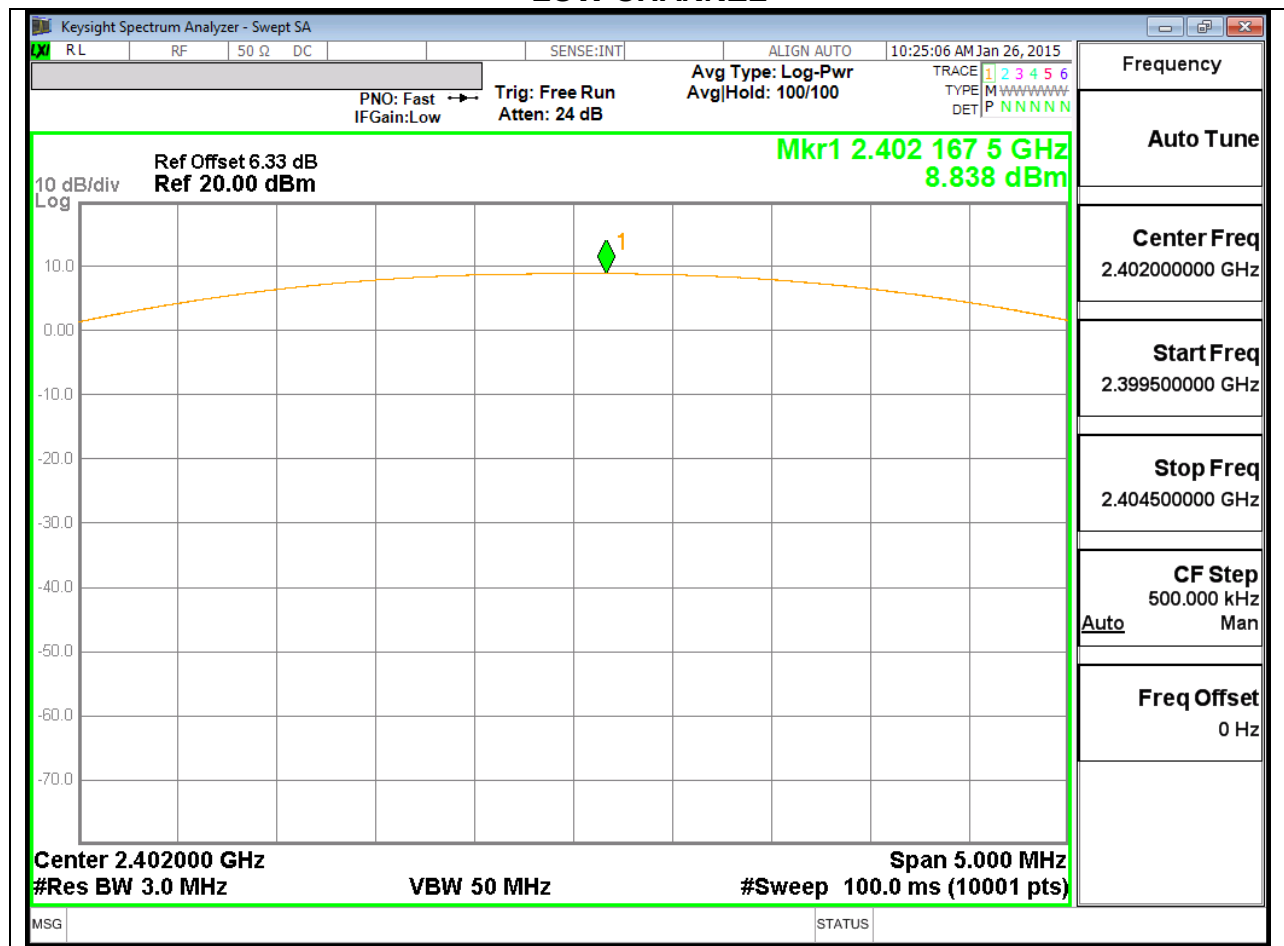
8.5.3. ENHANCED DATA RATE 8PSK MODULATION

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	8.232	21	-12.768
Middle	2441	8.509	21	-12.491
High	2480	7.418	21	-13.582
Worst		8.509		-12.491

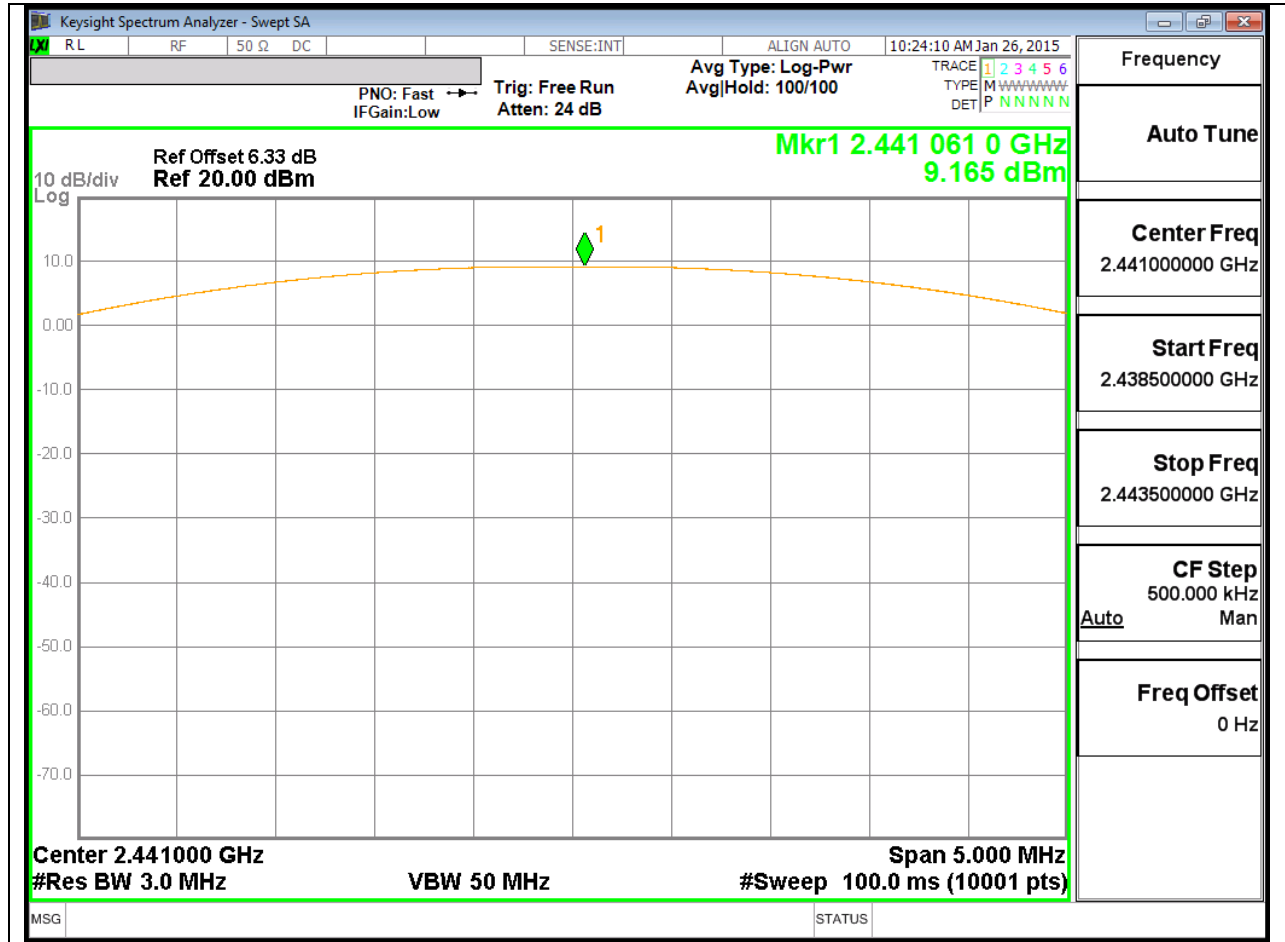
8.5.4. OUTPUT POWER PLOTS

GFSK OUTPUT POWER

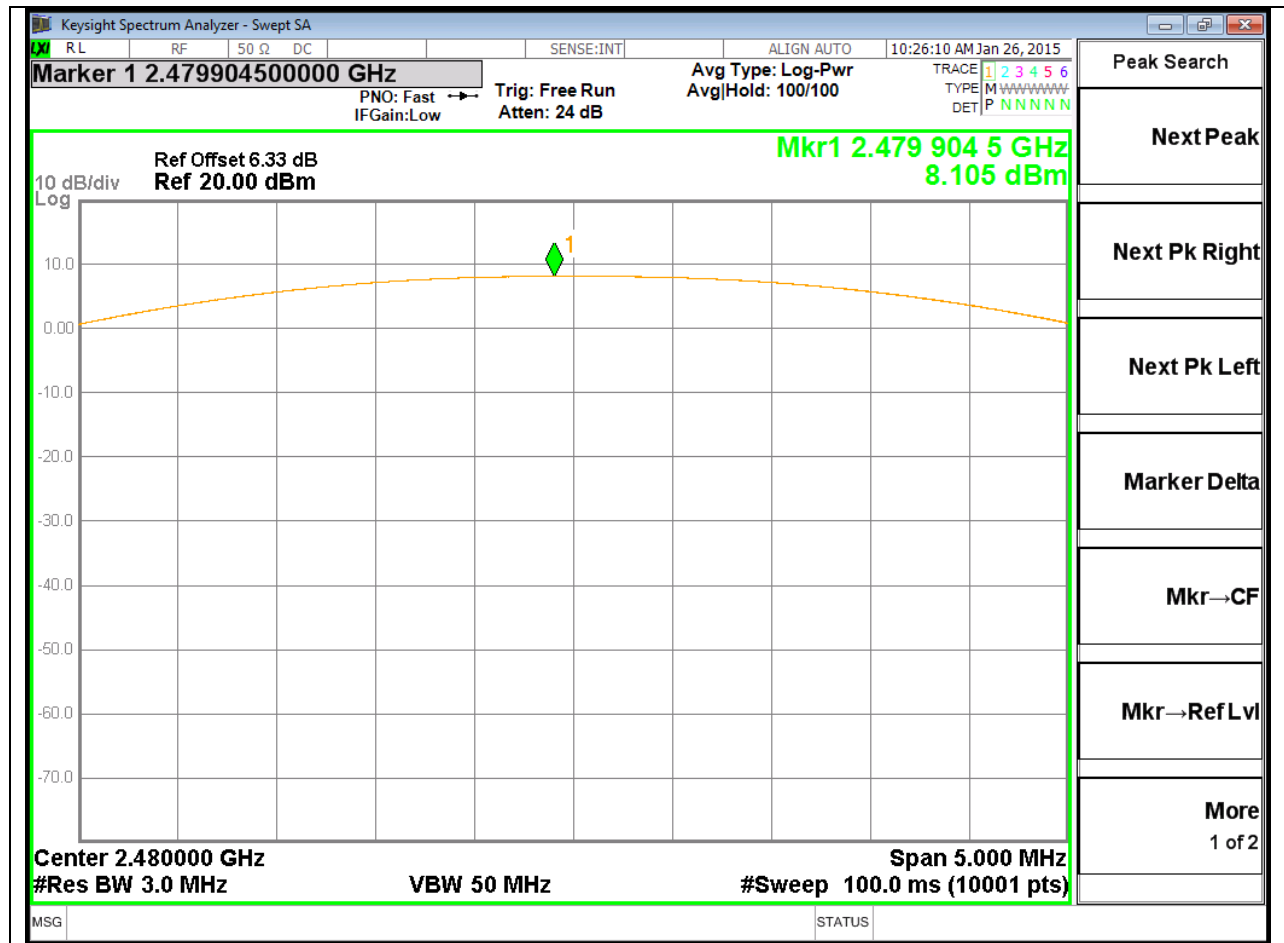
LOW CHANNEL



MID CHANNEL

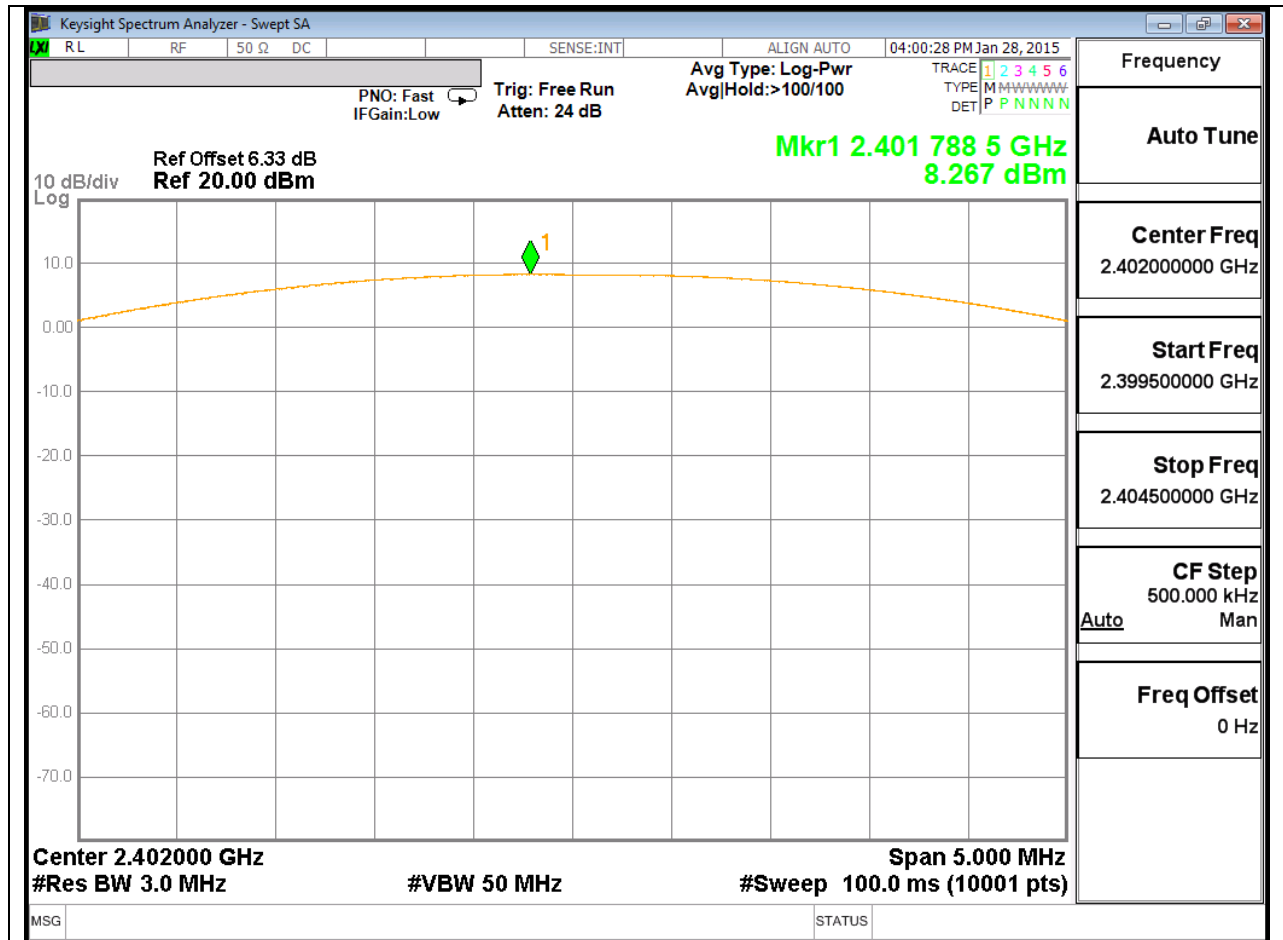


HIGH CHANNEL

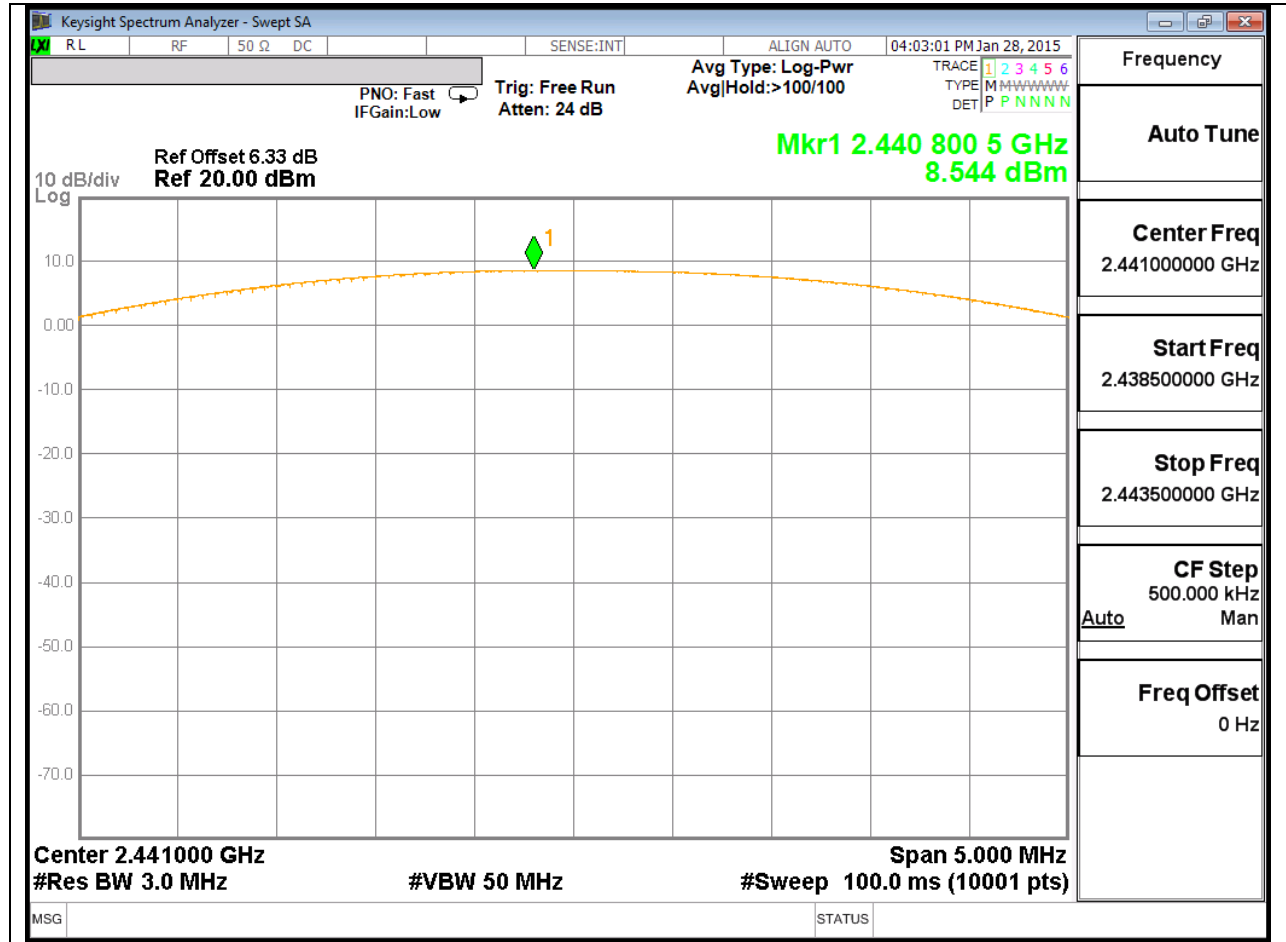


Pi/4-DPSK OUTPUT POWER

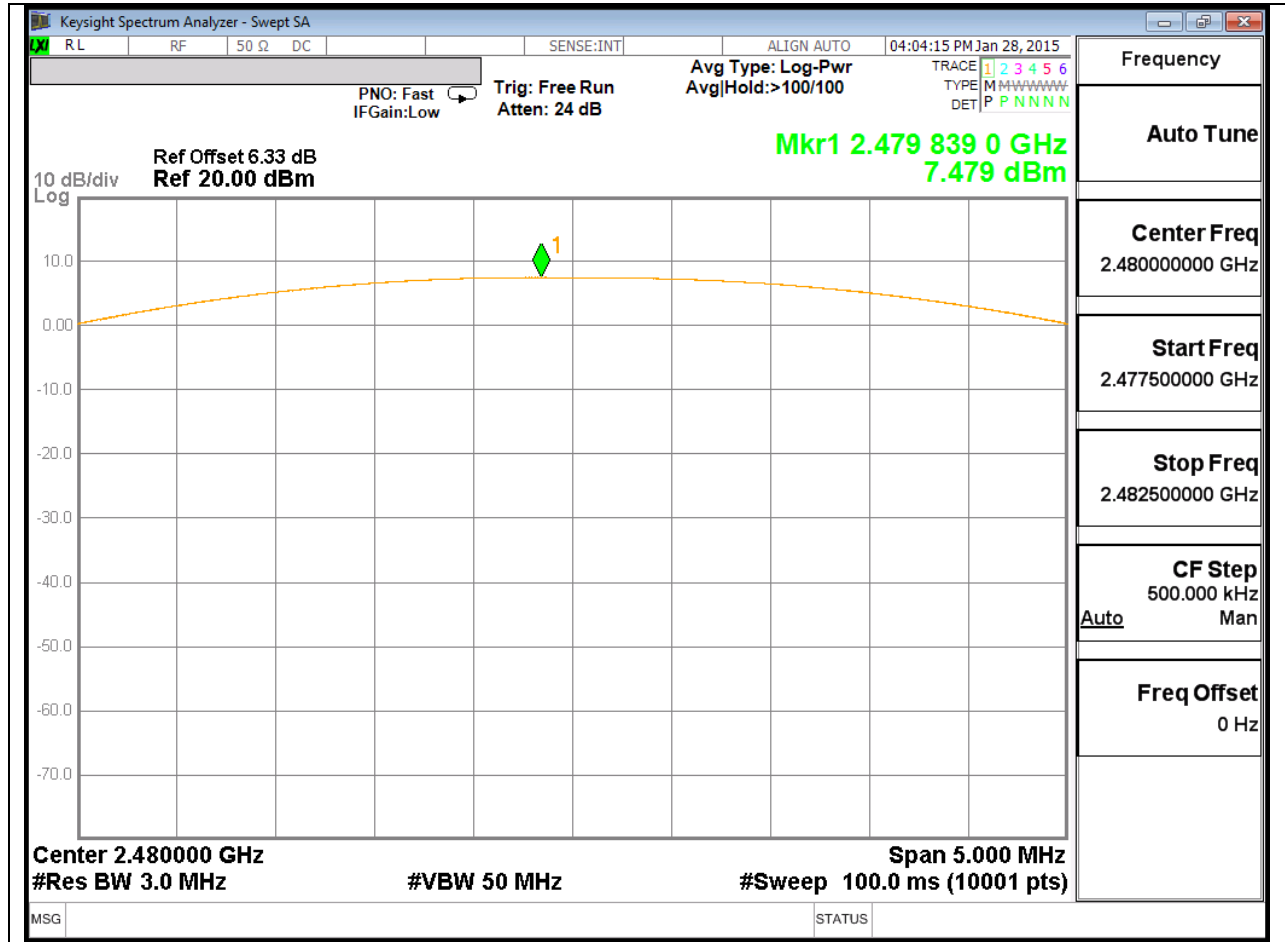
LOW CHANNEL



MID CHANNEL

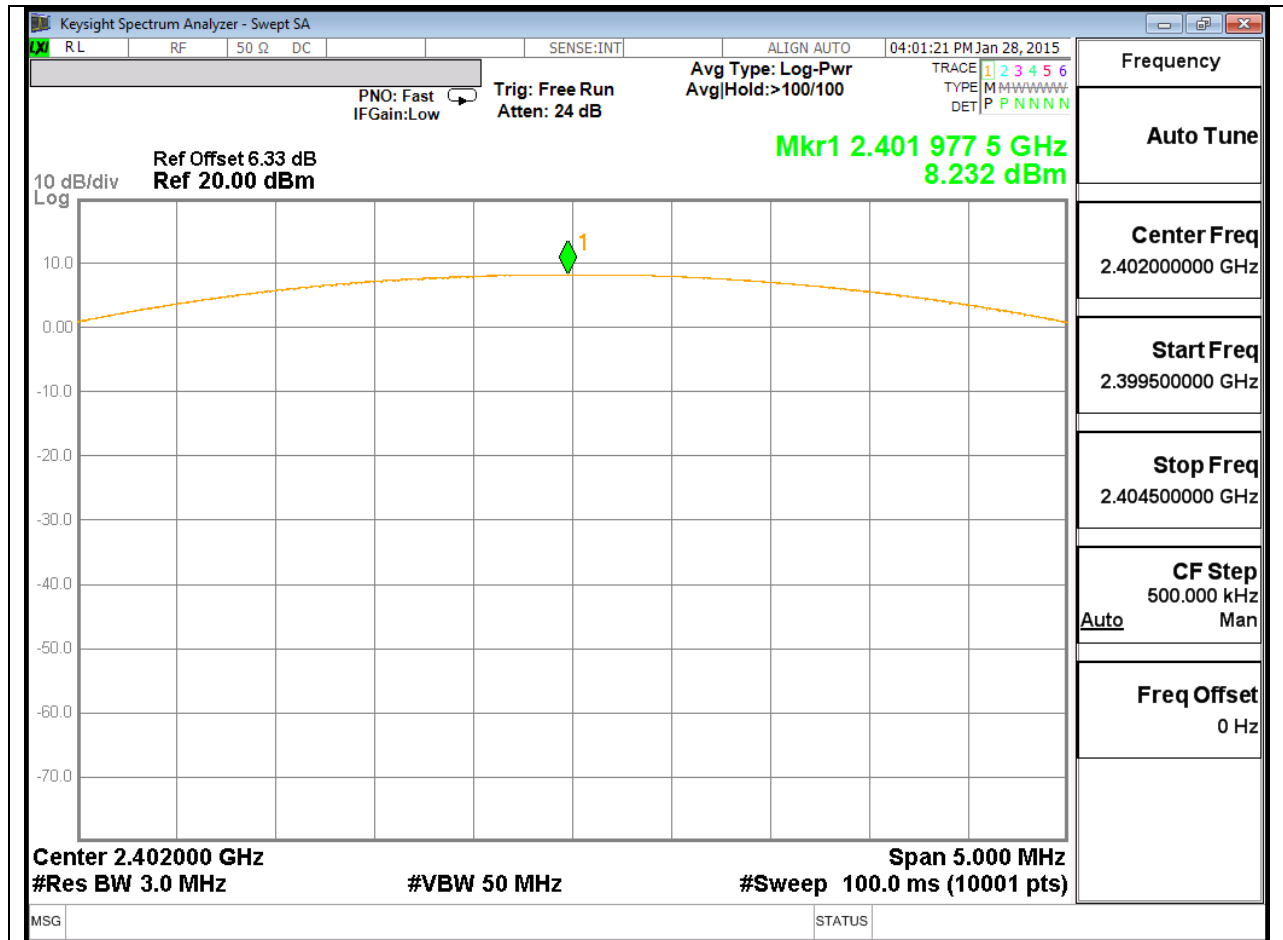


HIGH CHANNEL

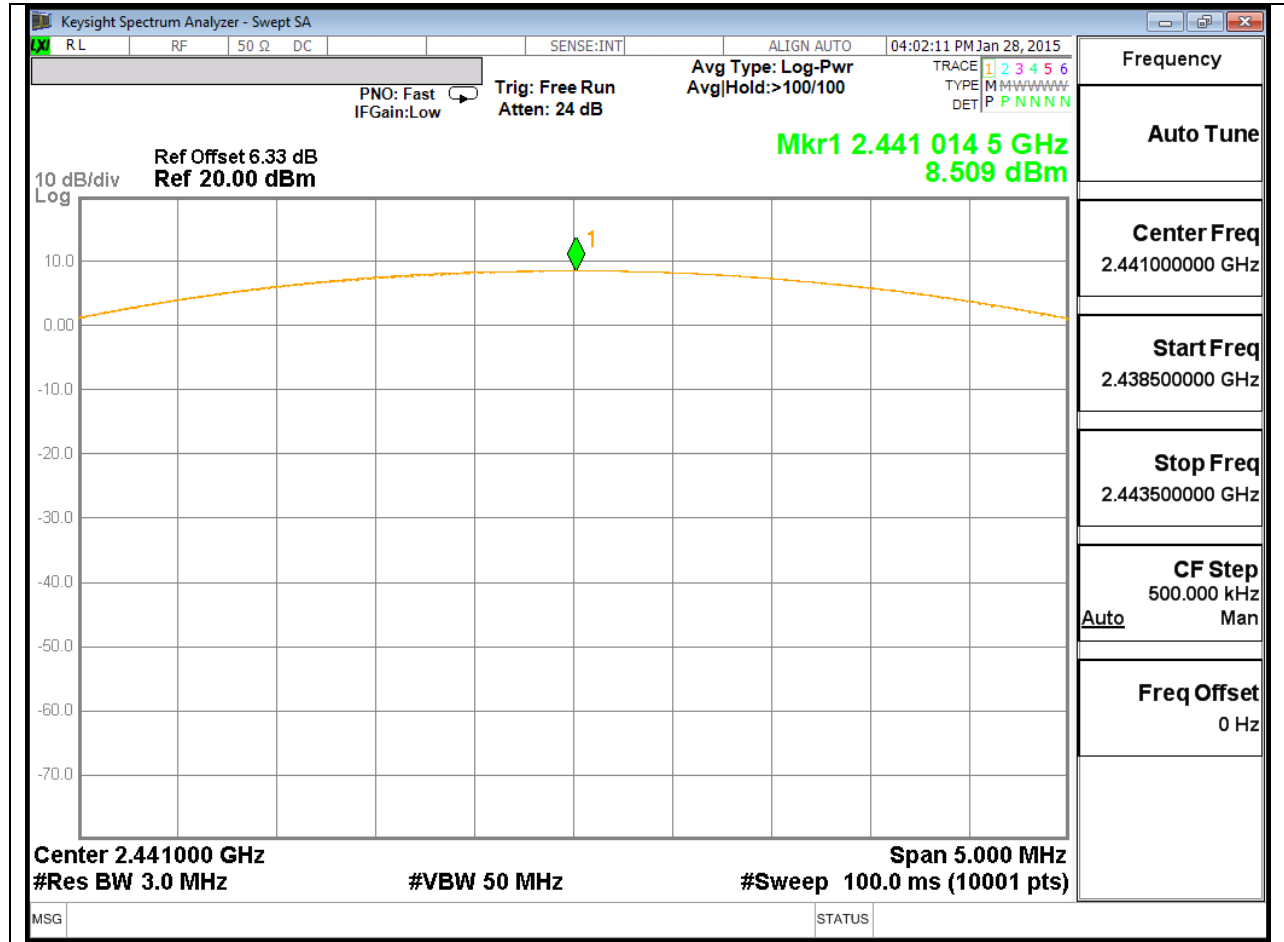


8PSK OUTPUT POWER

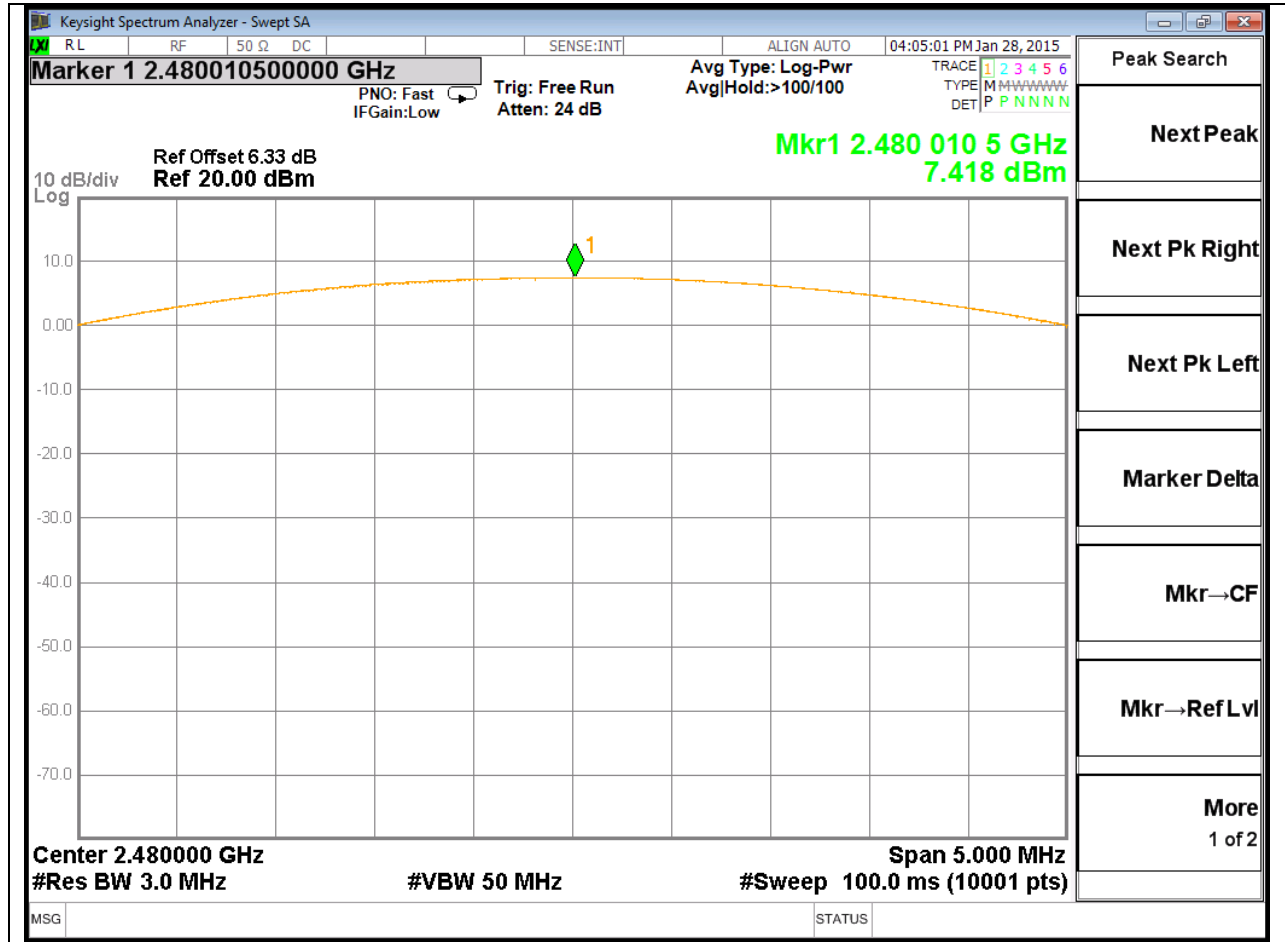
LOW CHANNEL



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 0.1 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	8.734
Middle	2441	9.029
High	2480	8.030
Worst		9.029

8.6.2. DATA RATE PI/4-DQPSK MODULATION

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	6.091
Middle	2441	6.325
High	2480	5.239
Worst		6.325

8.6.3. ENHANCED DATA RATE 8PSK MODULATION

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	5.807
Middle	2441	6.066
High	2480	4.993
Worst		6.066

8.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

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.

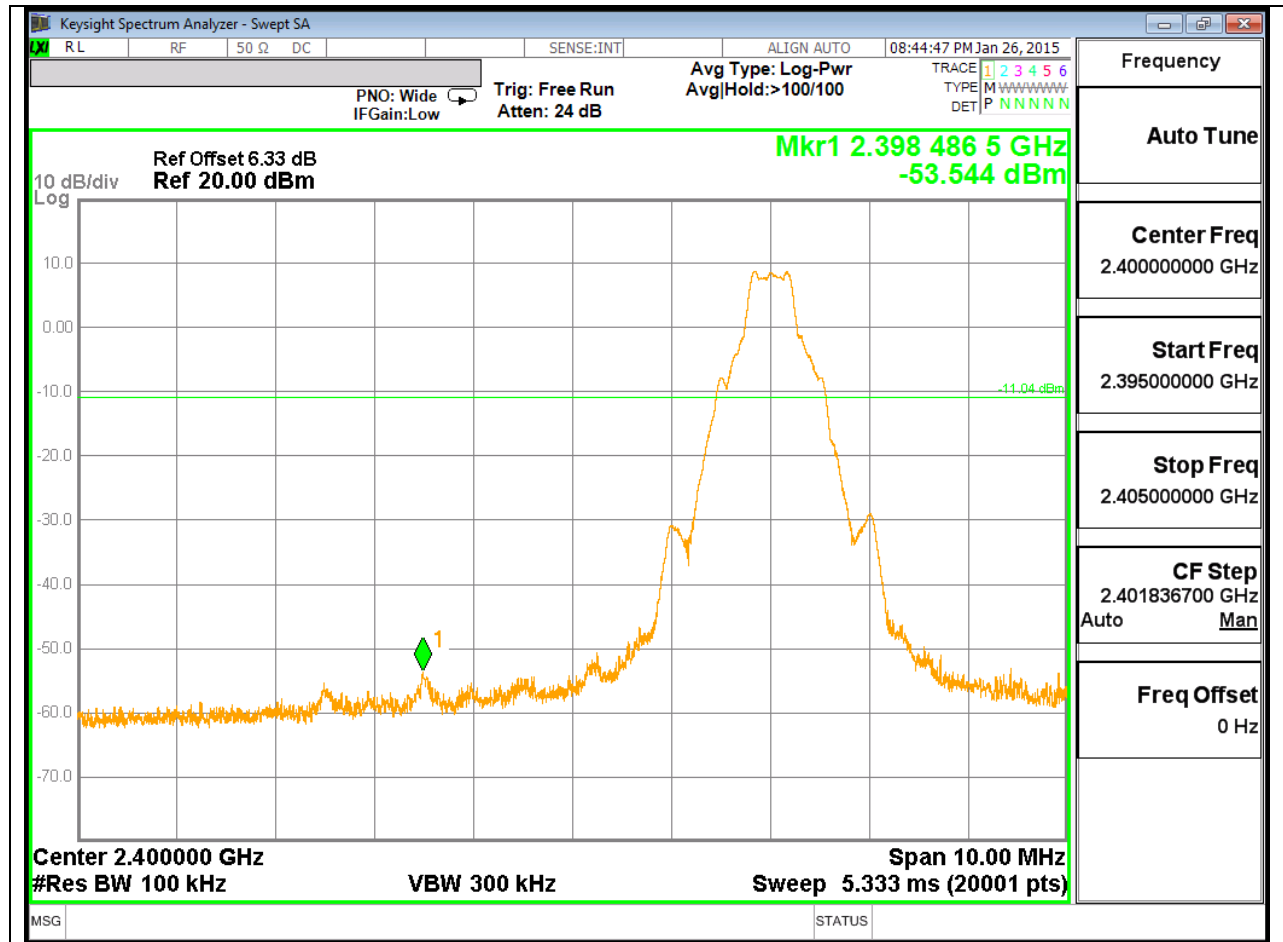
The bandedges at 2.4 and 2.4835 GHz are investigated with the transmitter set to the normal hopping mode.

RESULTS

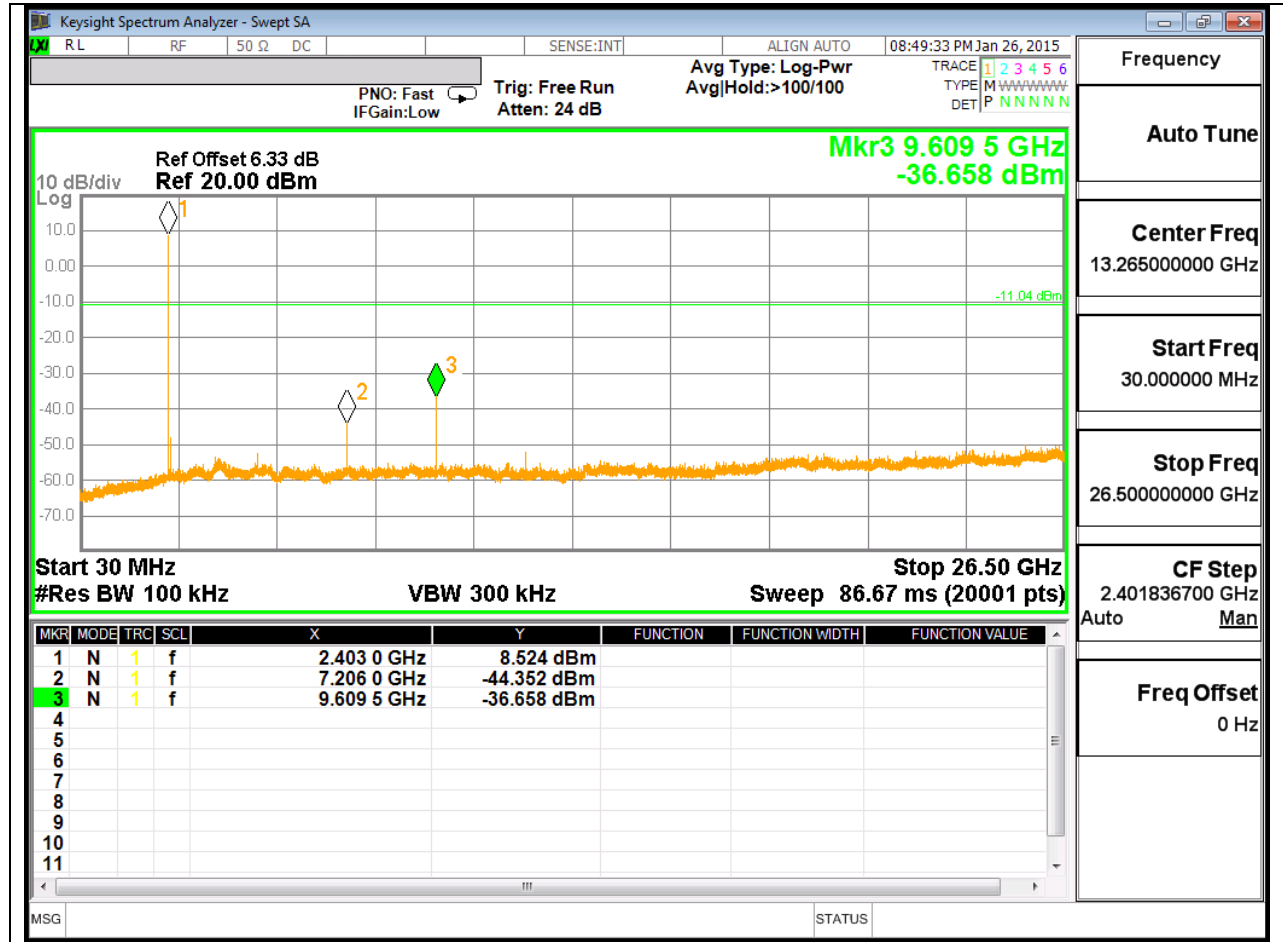
8.7.1. BASIC DATA RATE GFSK MODULATION

SPURIOUS EMISSIONS, LOW CHANNEL

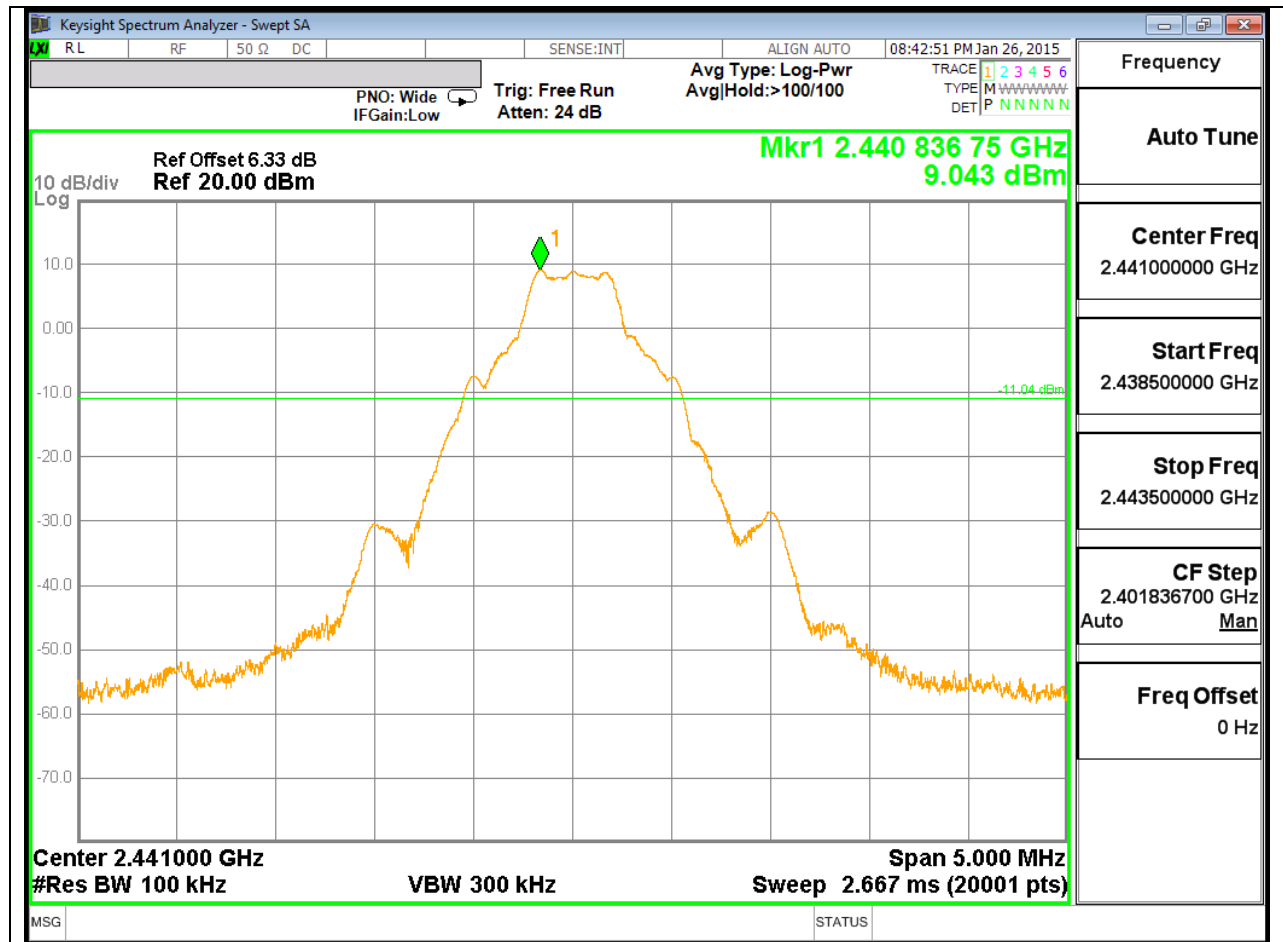
LOW CHANNEL BANDEDGE



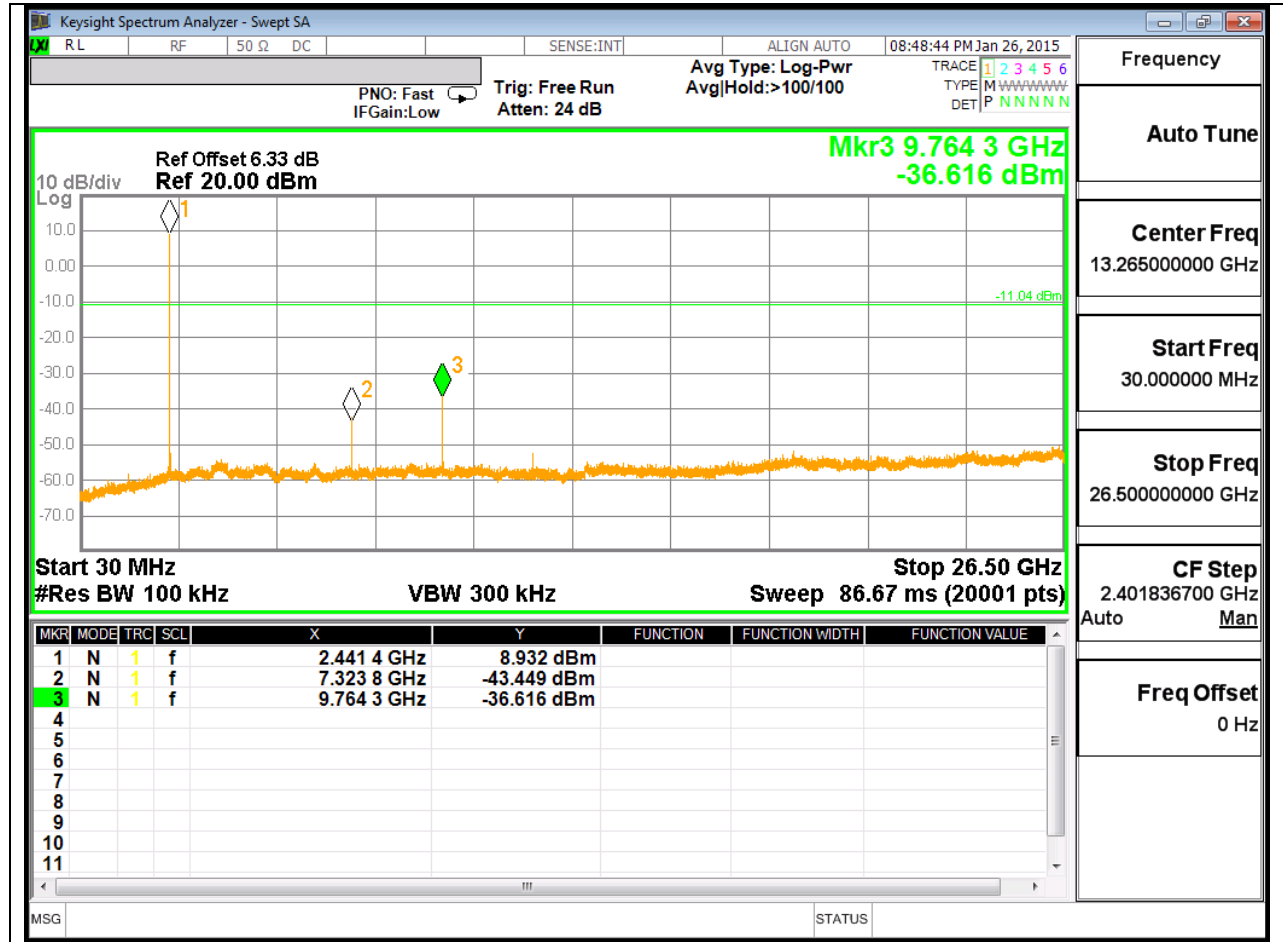
LOW CHANNEL SPURIOUS



MID CHANNEL BANDEDGE

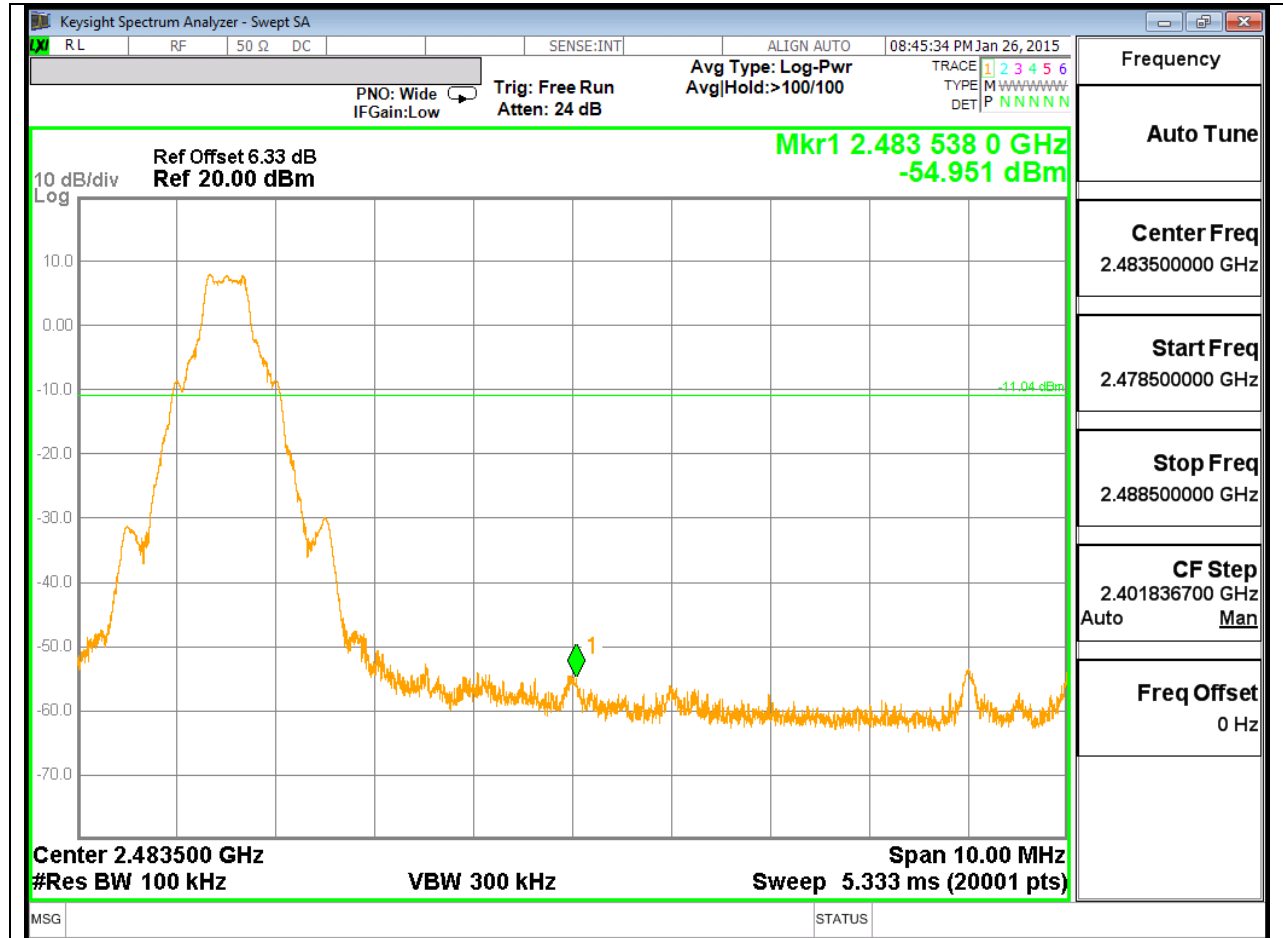


MID CHANNEL SPURIOUS

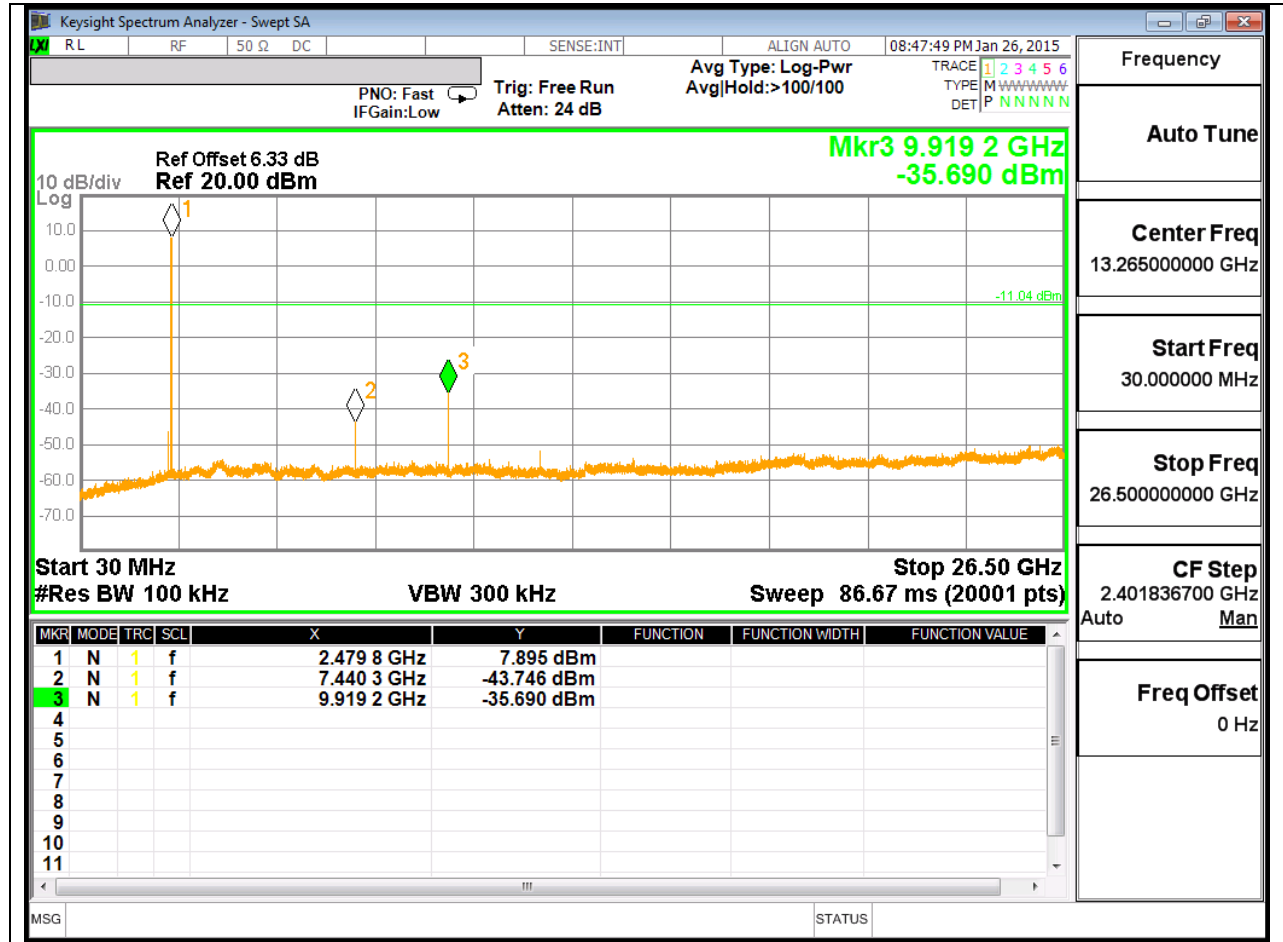


SPURIOUS EMISSIONS, HIGH CHANNEL

HIGH CHANNEL BANDEDGE

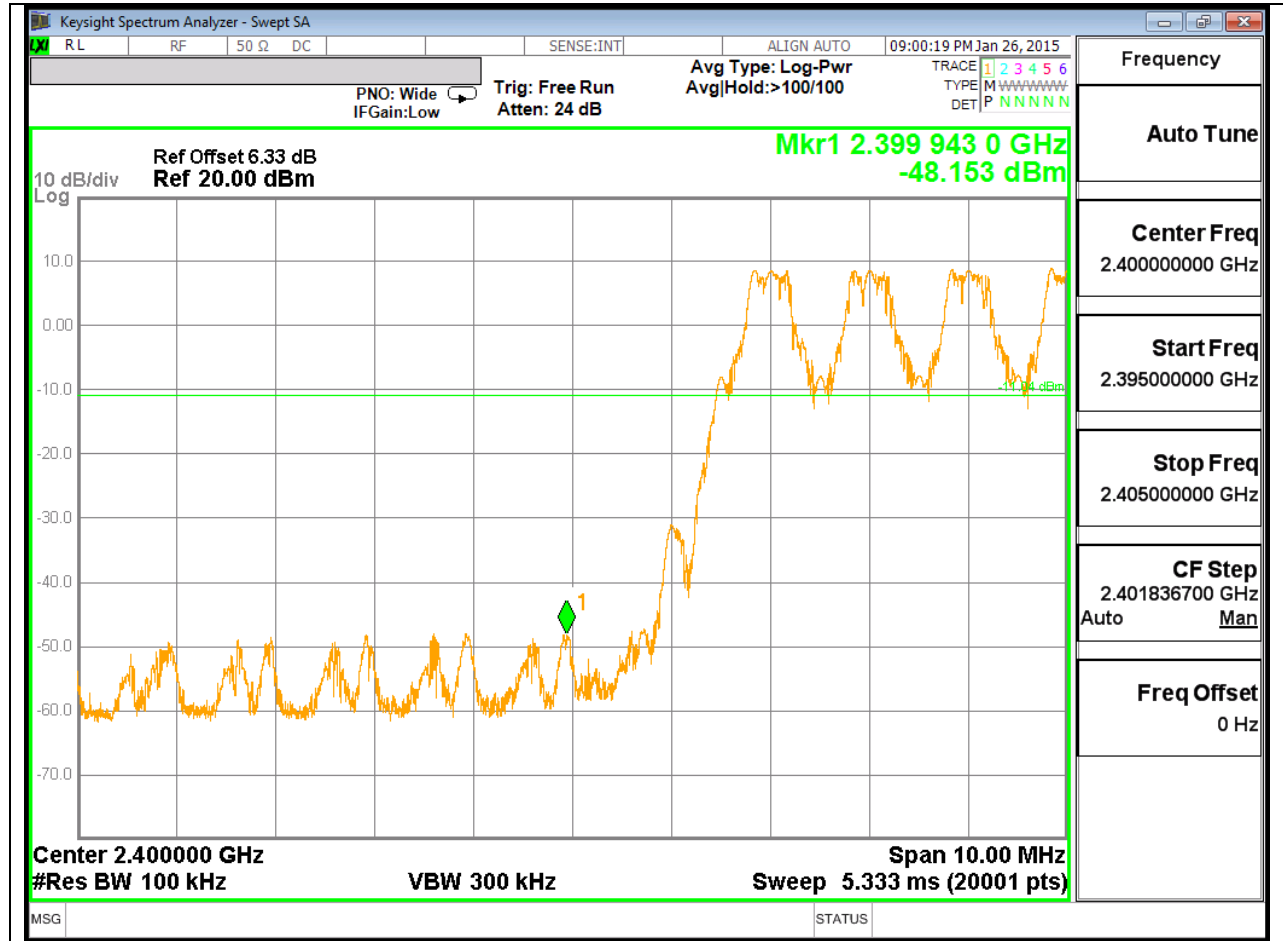


HIGH CHANNEL SPURIOUS

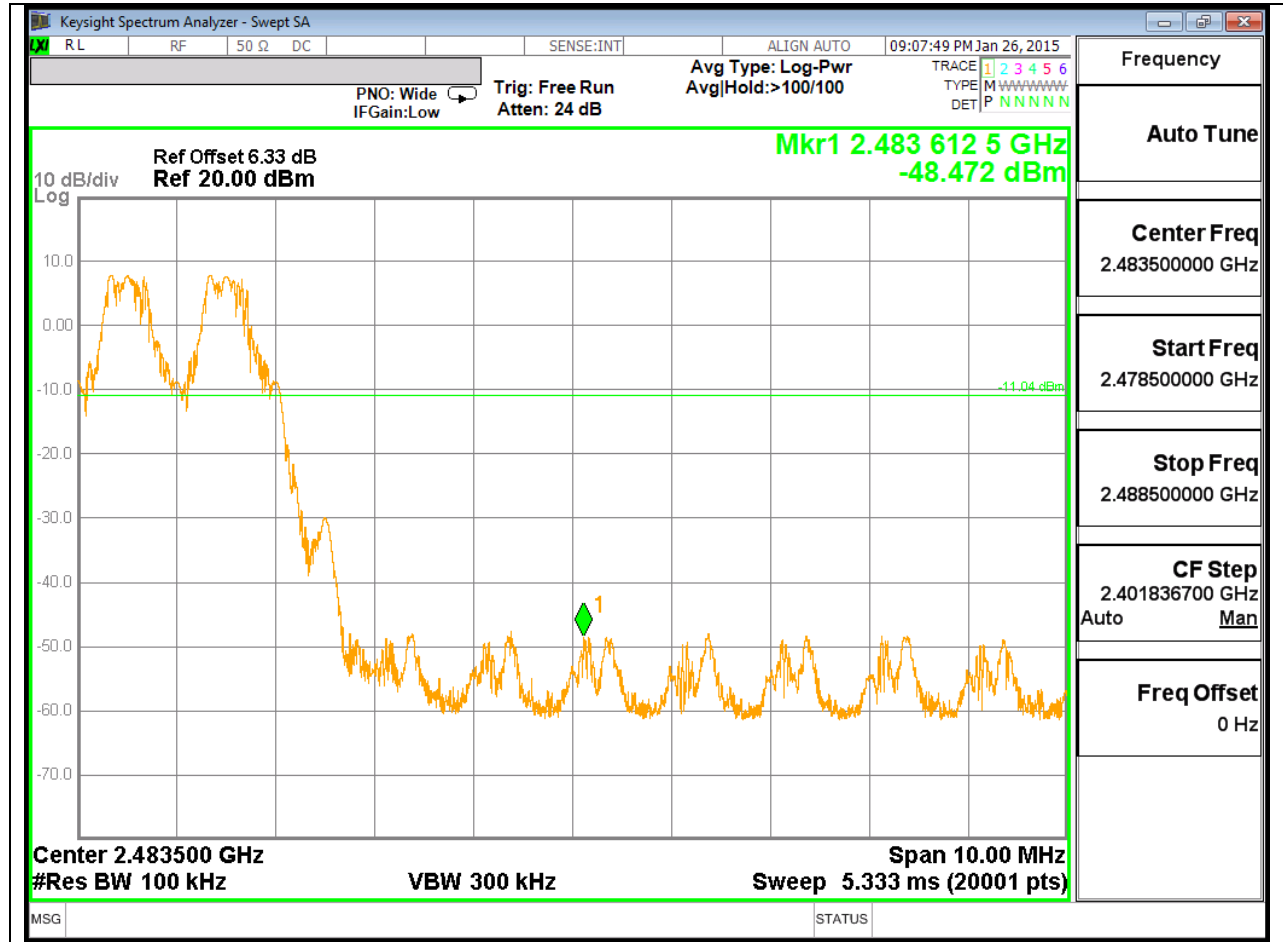


SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON

LOW BANDEDGE WITH HOPPING ON



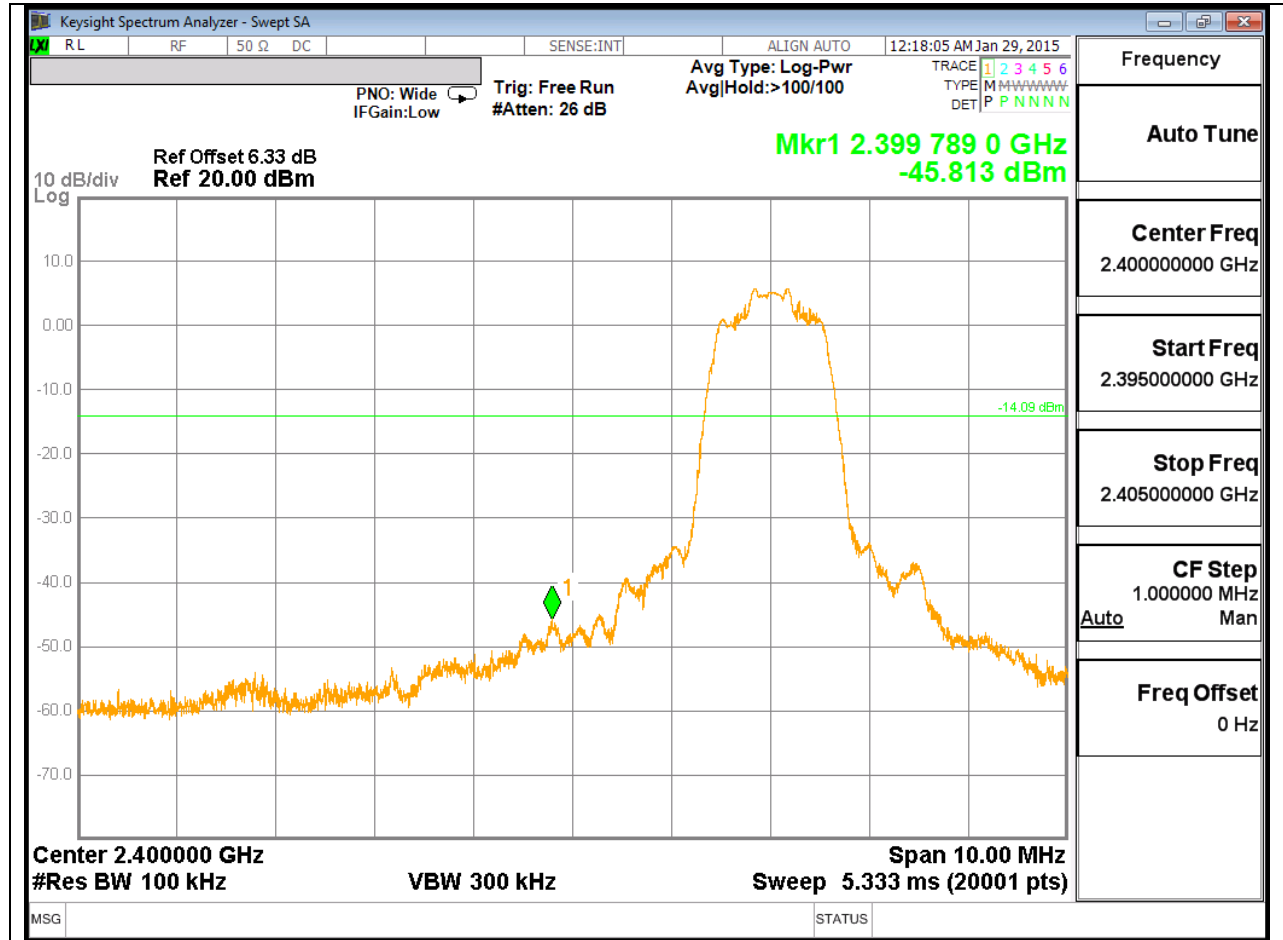
HIGH BANDEDGE WITH HOPPING ON



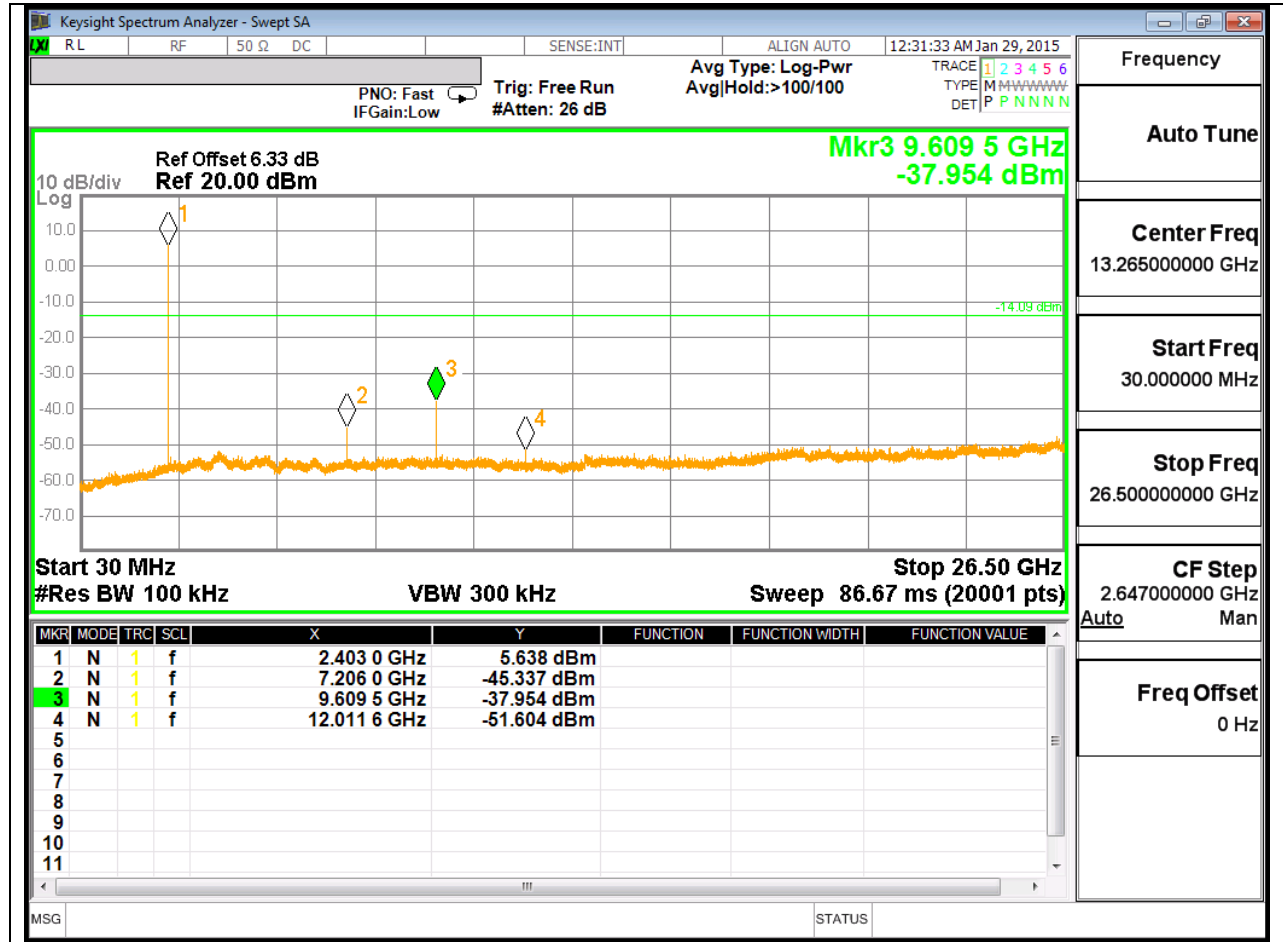
8.7.2. ENHANCED DATA RATE Pi/4-DPSK MODULATION

SPURIOUS EMISSIONS, LOW CHANNEL

LOW CHANNEL BANDEDGE

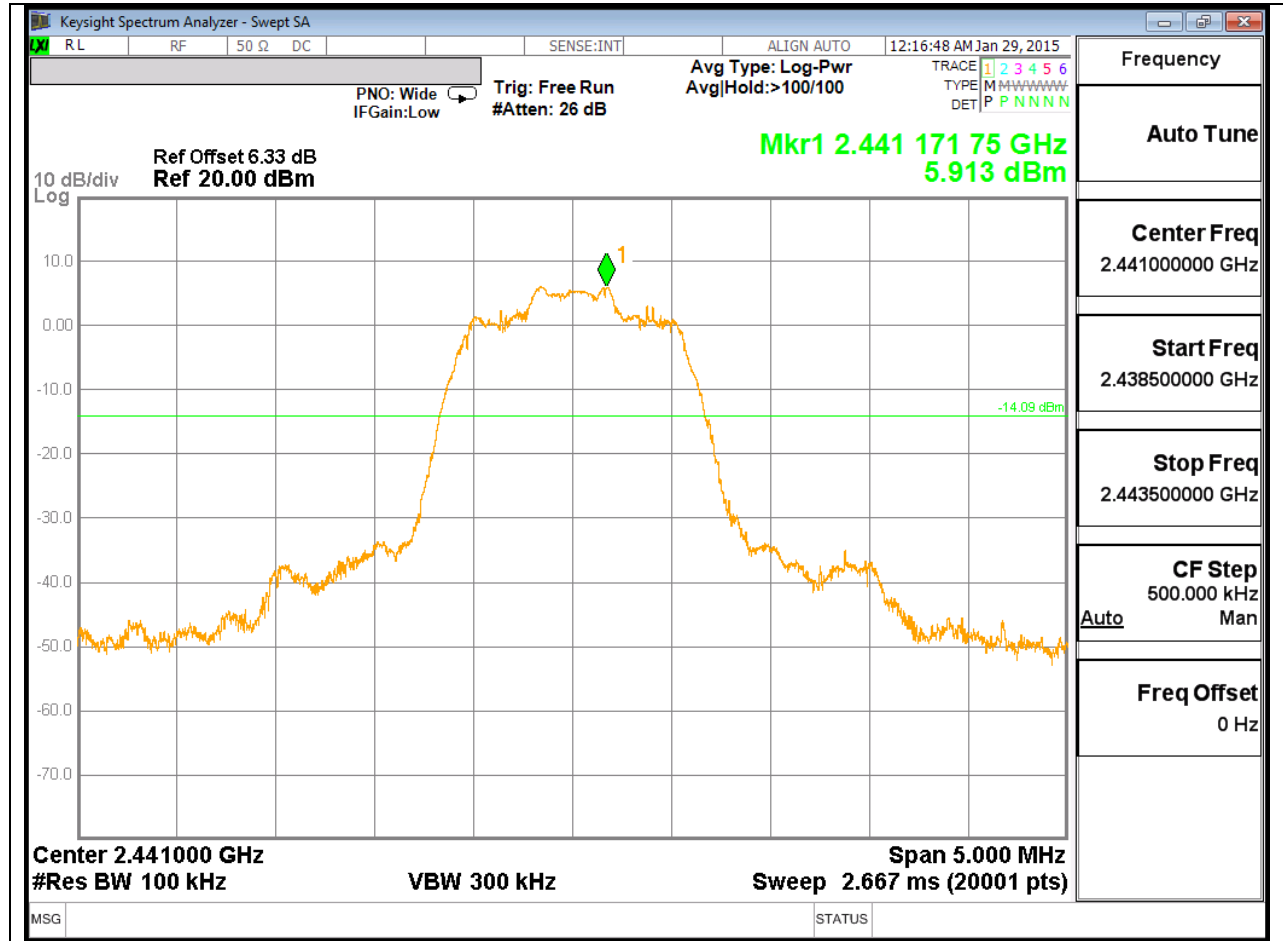


LOW CHANNEL SPURIOUS

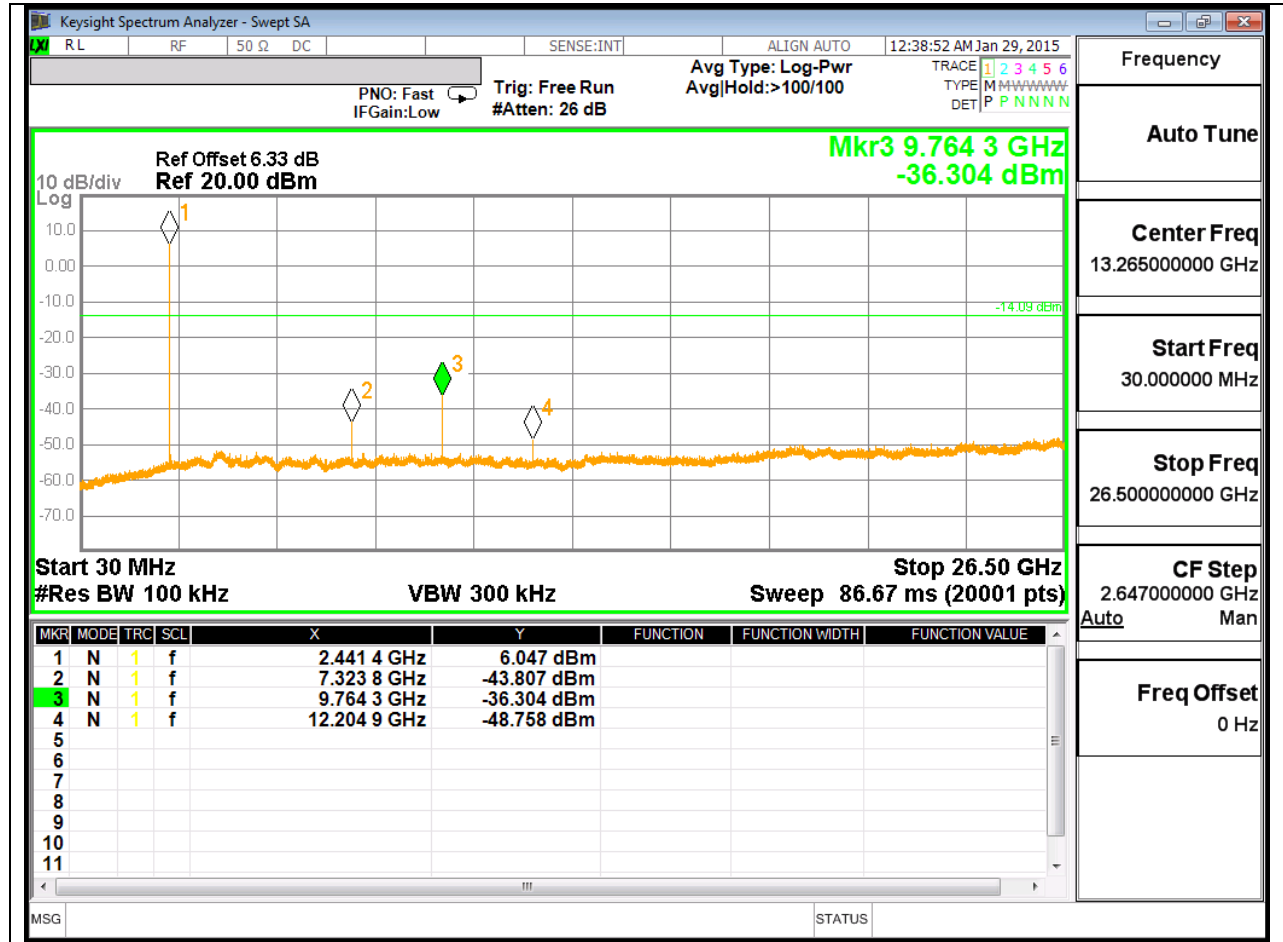


SPURIOUS EMISSIONS, MID CHANNEL

MID CHANNEL BANDEDGE

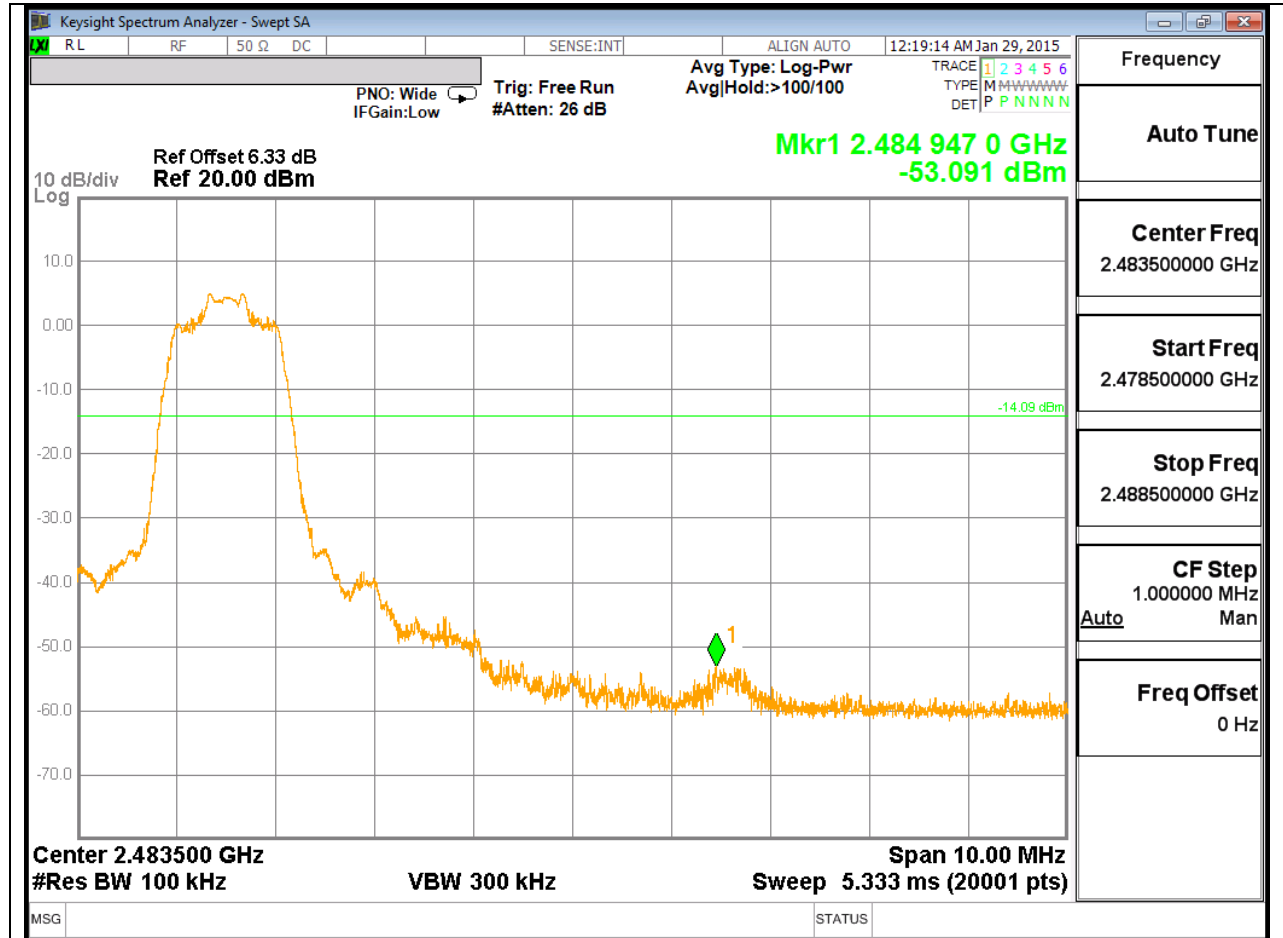


MID CHANNEL SPURIOUS

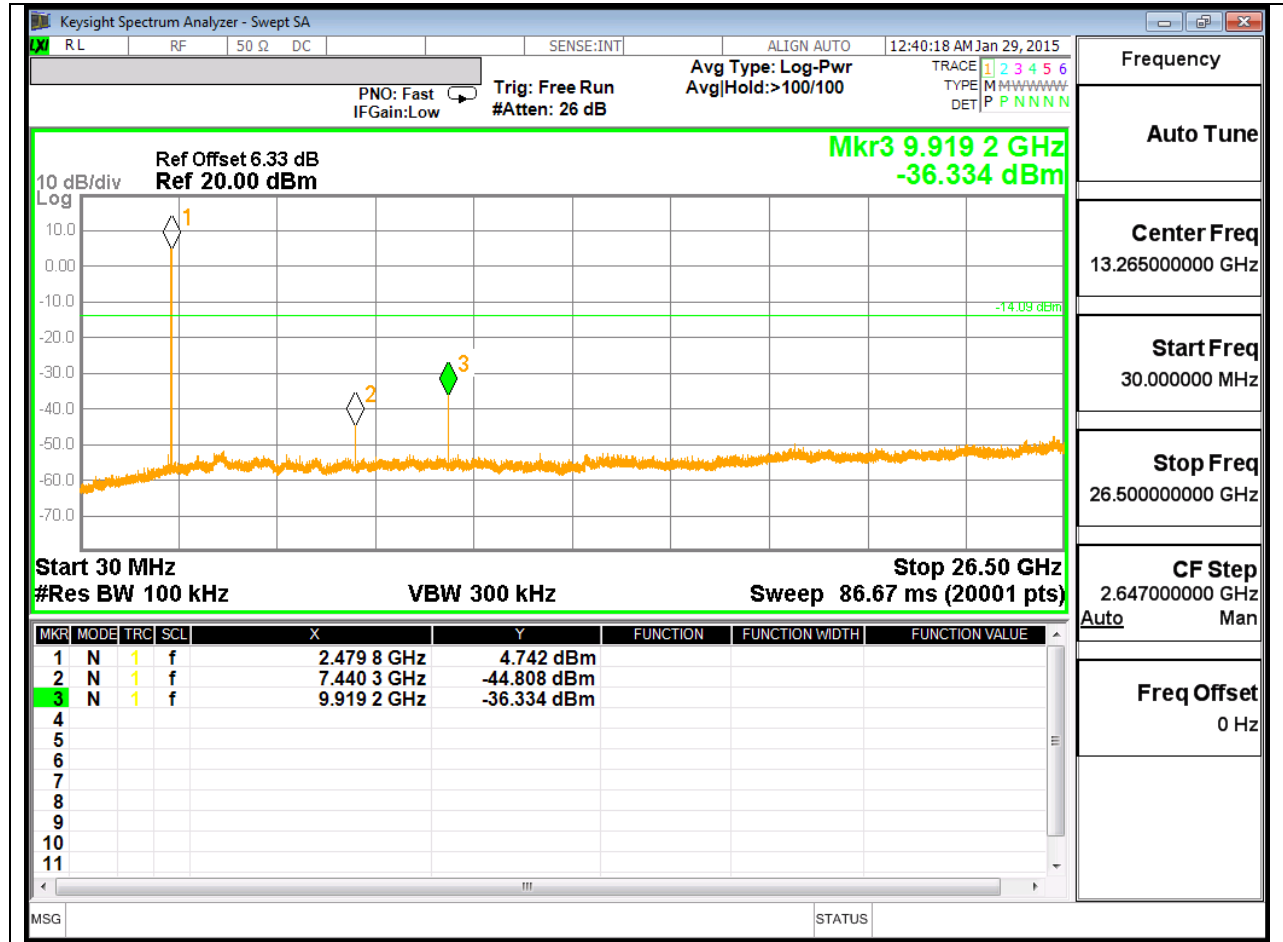


SPURIOUS EMISSIONS, HIGH CHANNEL

HIGH CHANNEL BANDEDGE

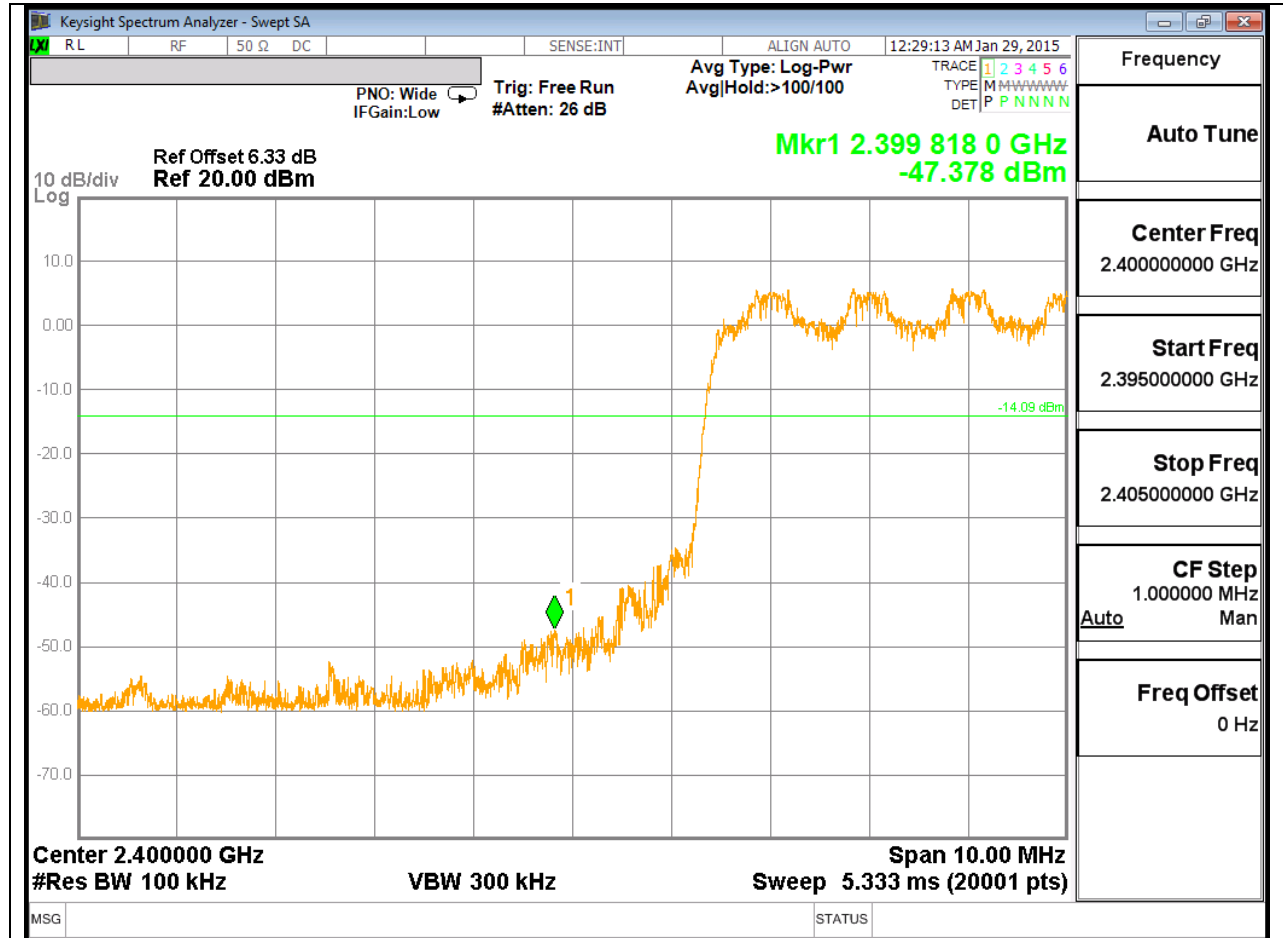


HIGH CHANNEL SPURIOUS

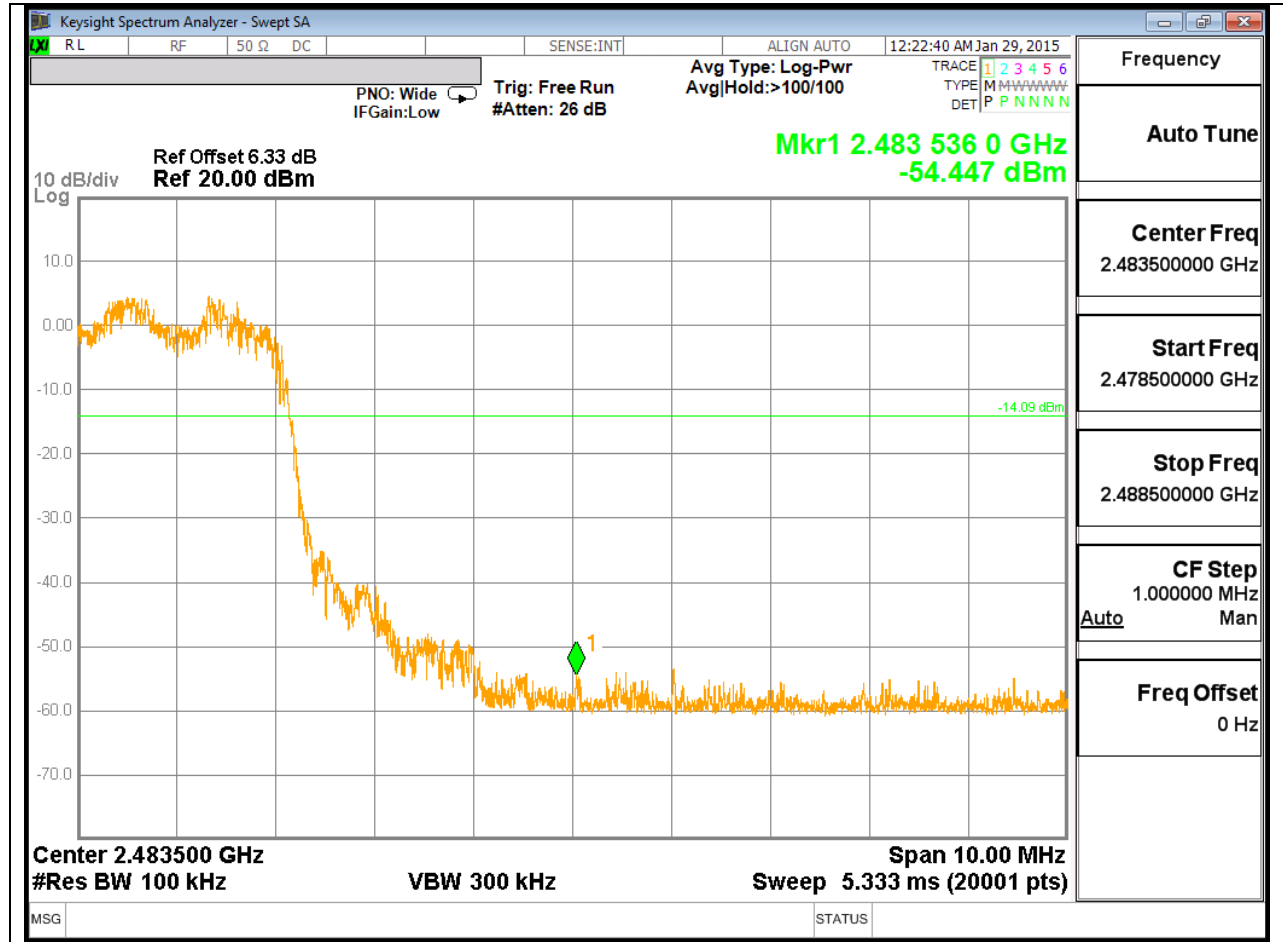


SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON

LOW BANDEDGE WITH HOPPING ON



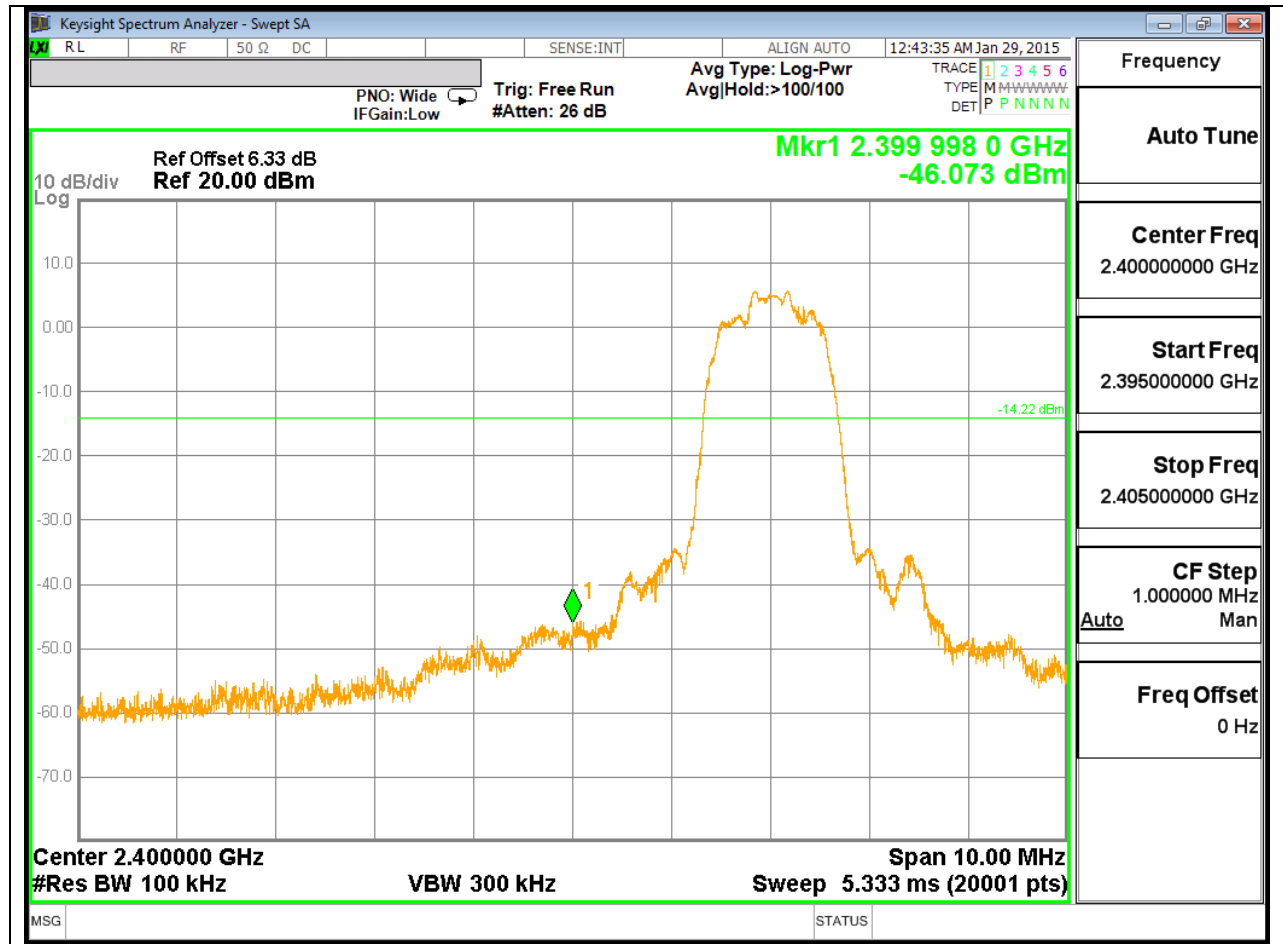
HIGH BANDEDGE WITH HOPPING ON



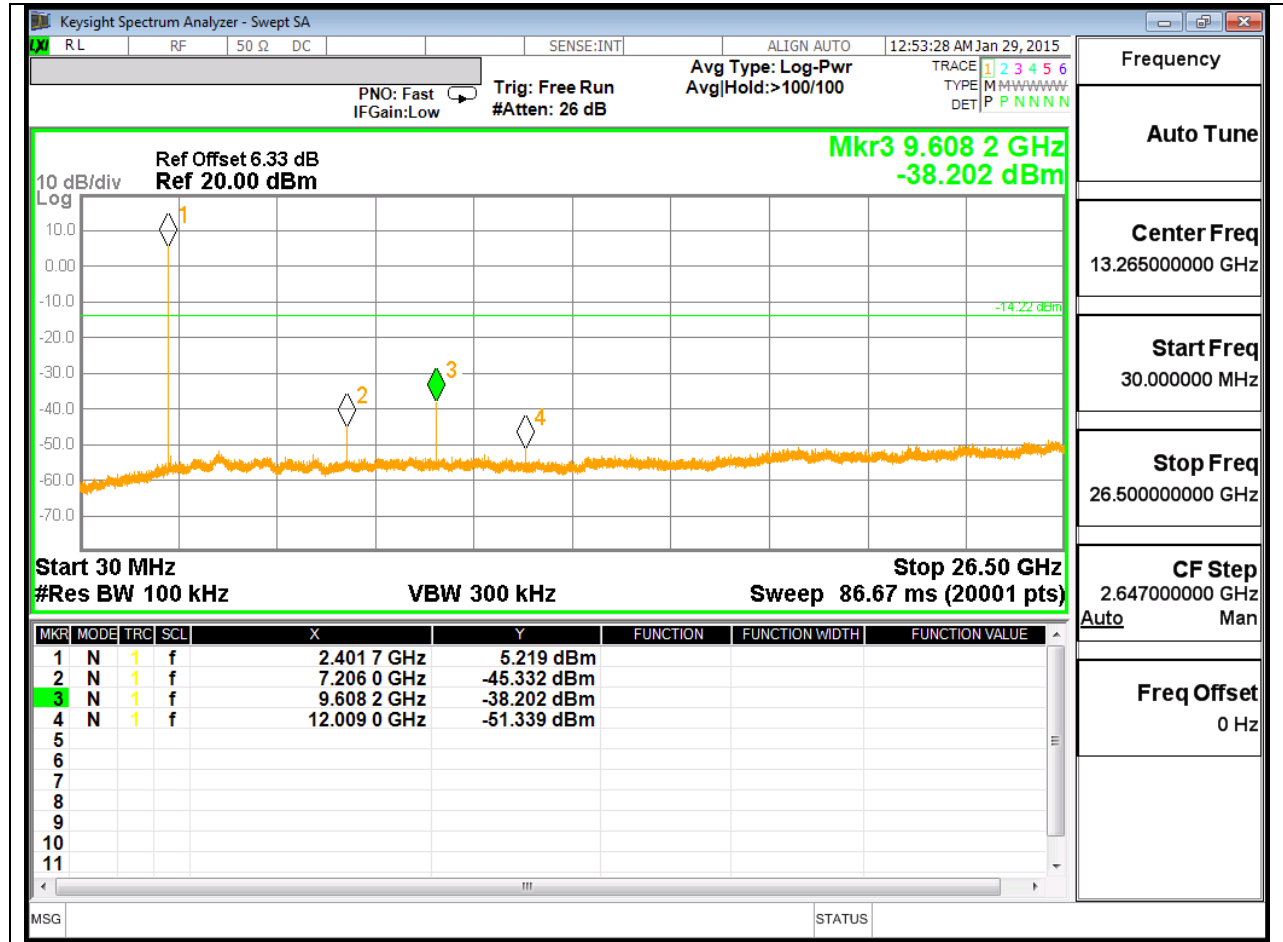
ENHANCED DATA RATE 8PSK MODULATION

SPURIOUS EMISSIONS, LOW CHANNEL

LOW CHANNEL BANDEDGE

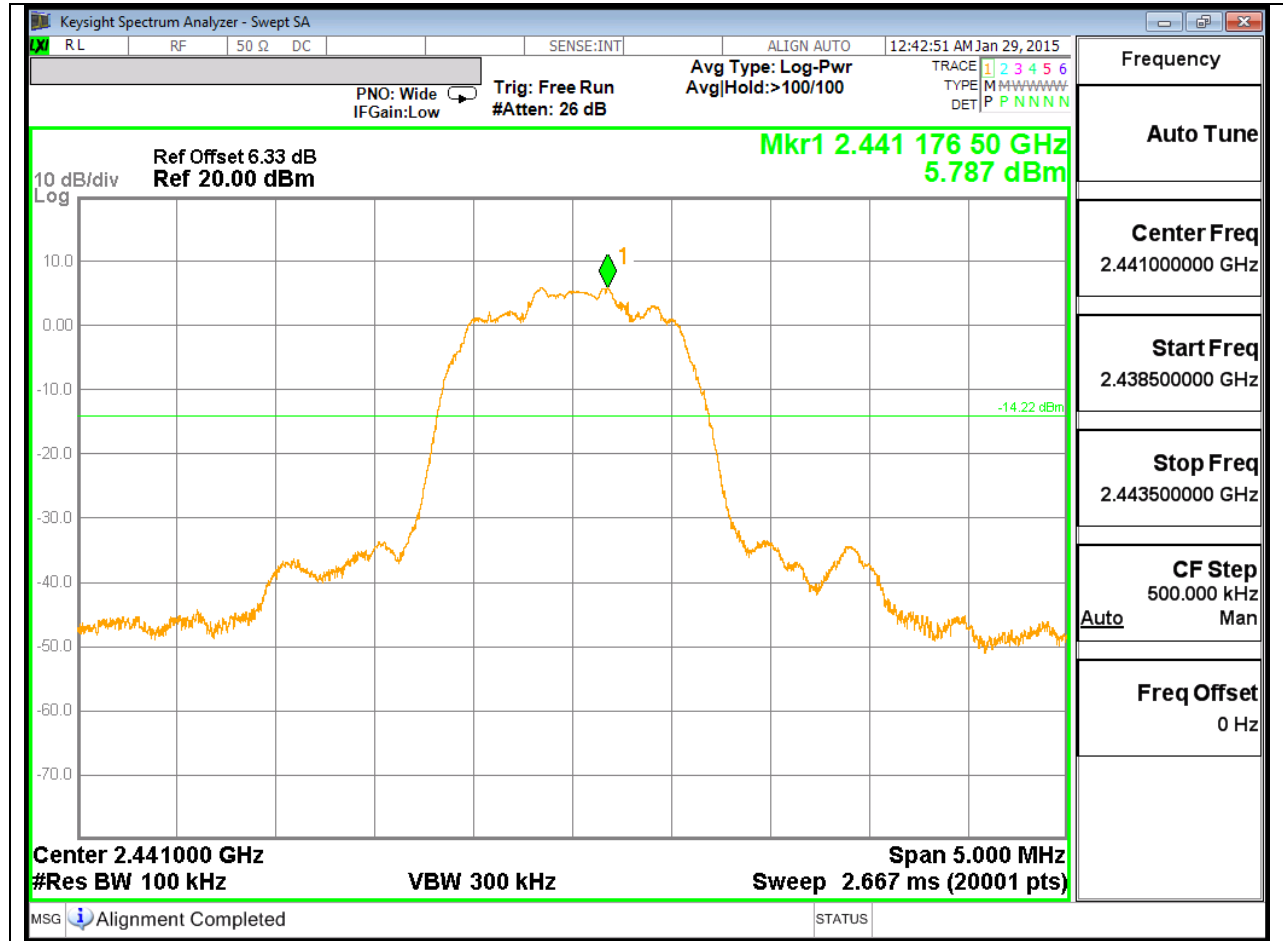


LOW CHANNEL SPURIOUS

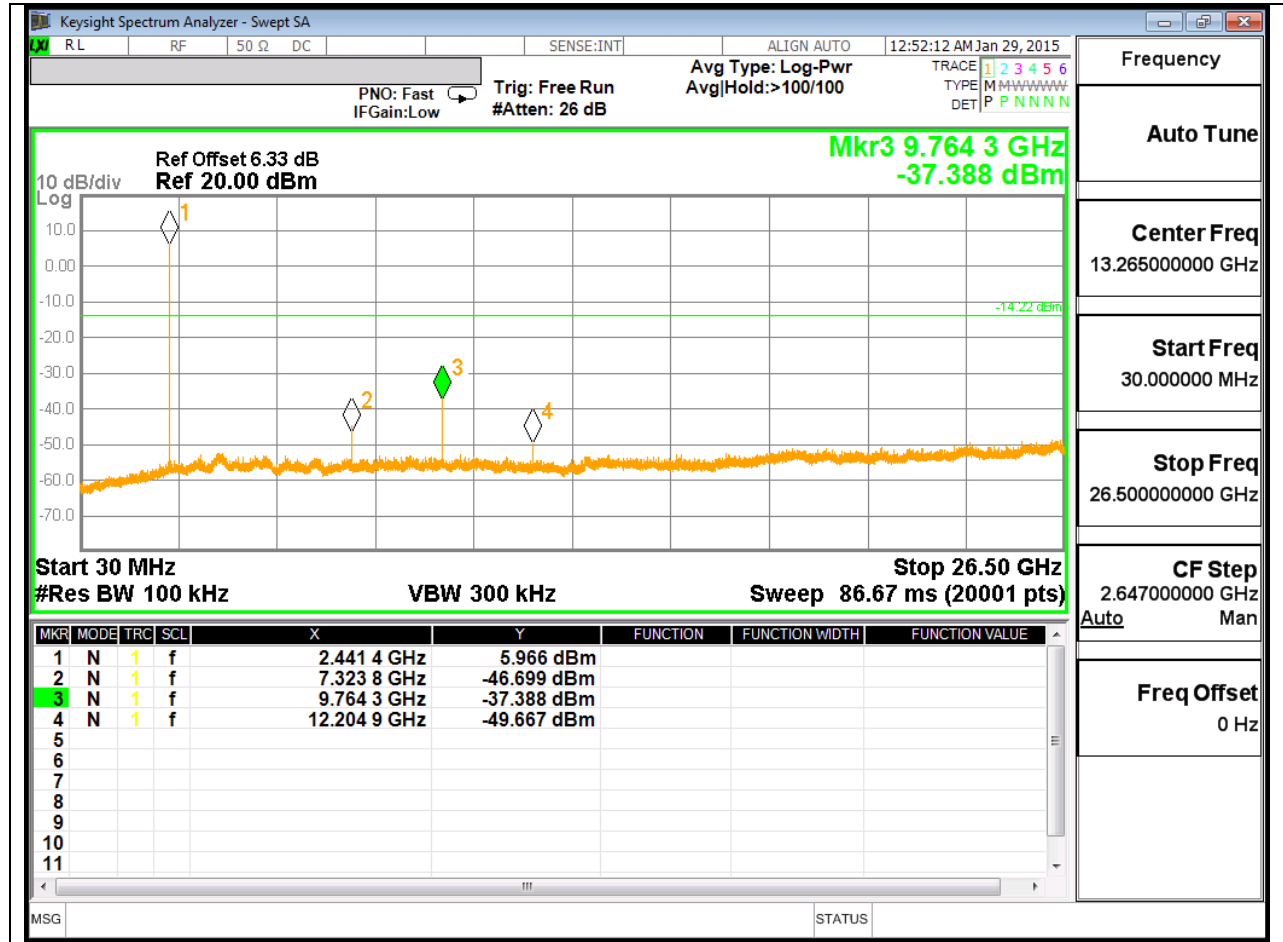


SPURIOUS EMISSIONS, MID CHANNEL

MID CHANNEL BANDEDGE



MID CHANNEL SPURIOUS

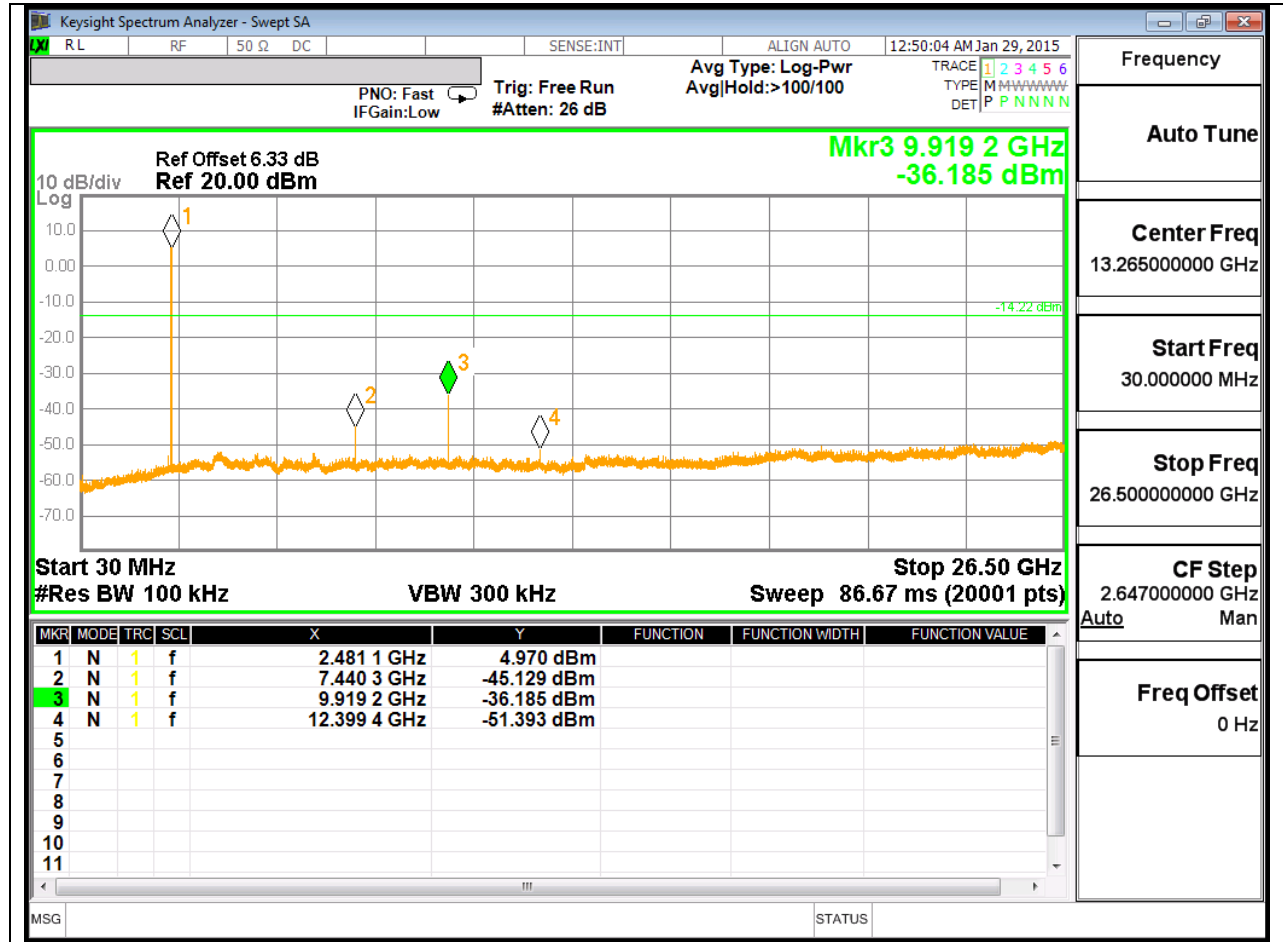


SPURIOUS EMISSIONS, HIGH CHANNEL

HIGH CHANNEL BANDEDGE

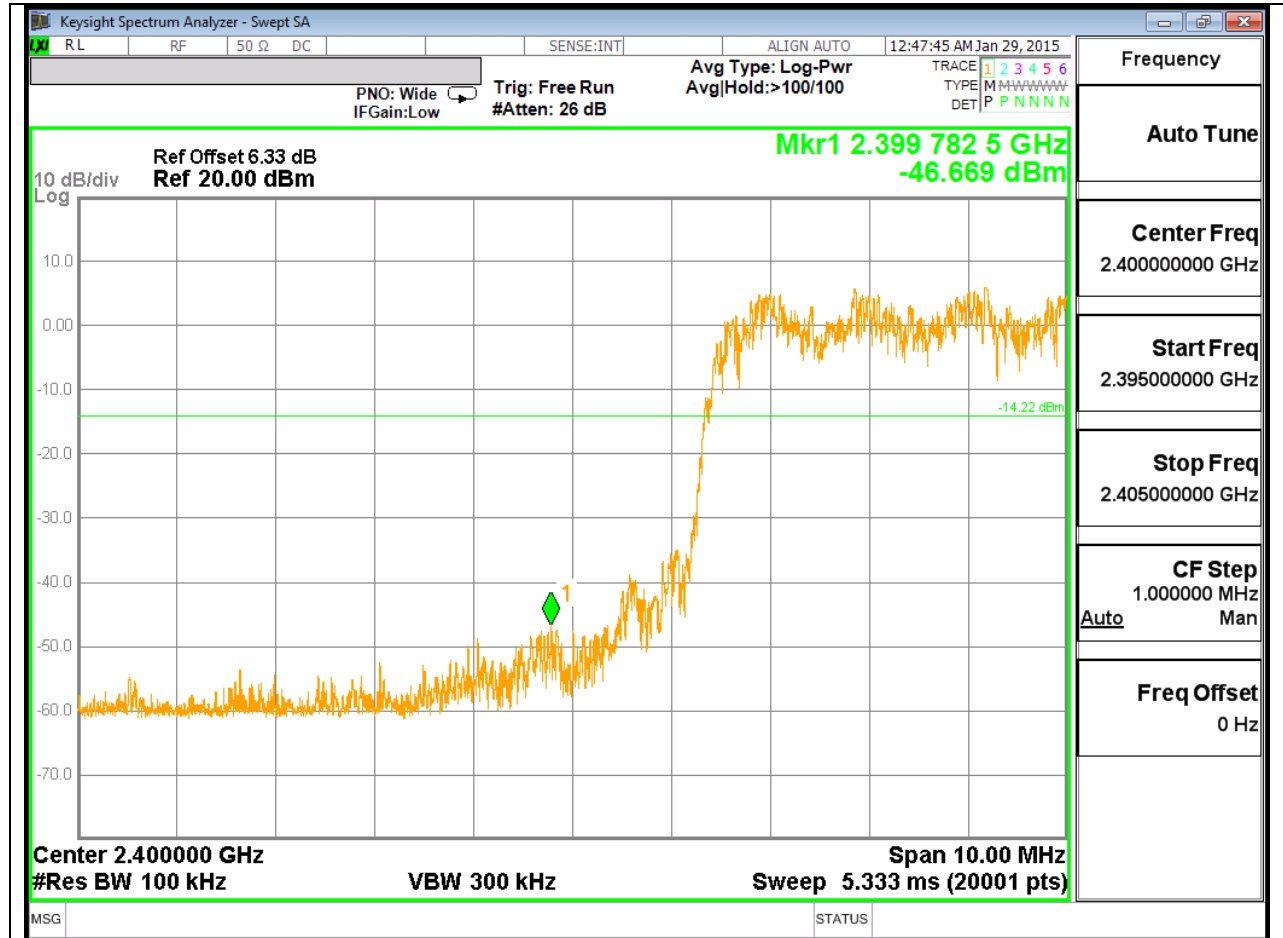


HIGH CHANNEL SPURIOUS

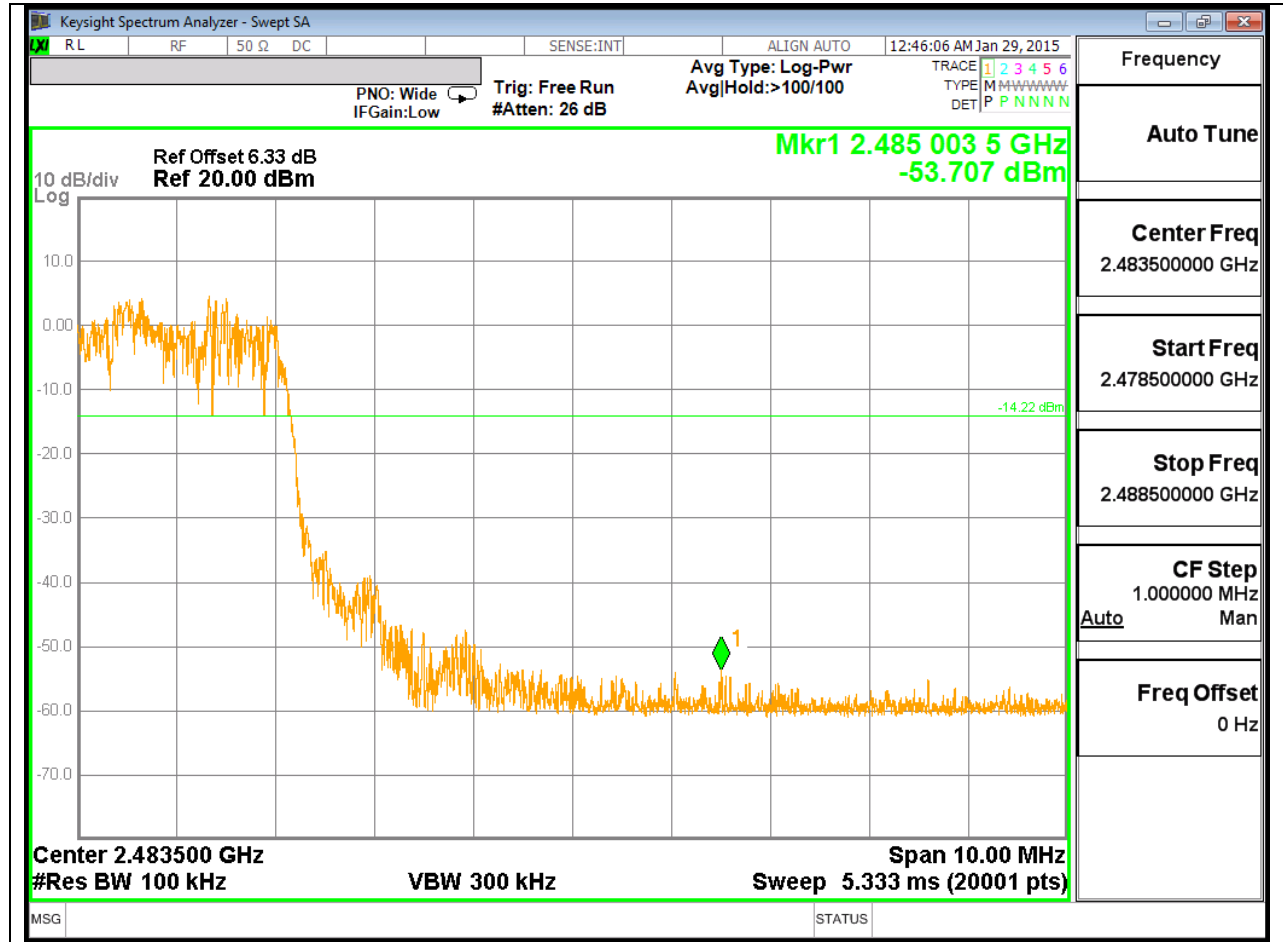


SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON

LOW BANDEDGE WITH HOPPING ON



HIGH BANDEDGE WITH HOPPING ON



9. RADIATED TEST RESULTS

9.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

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 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.

$$GFSK = 1/T = 1 / 0.0029S = 350Hz.$$

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.

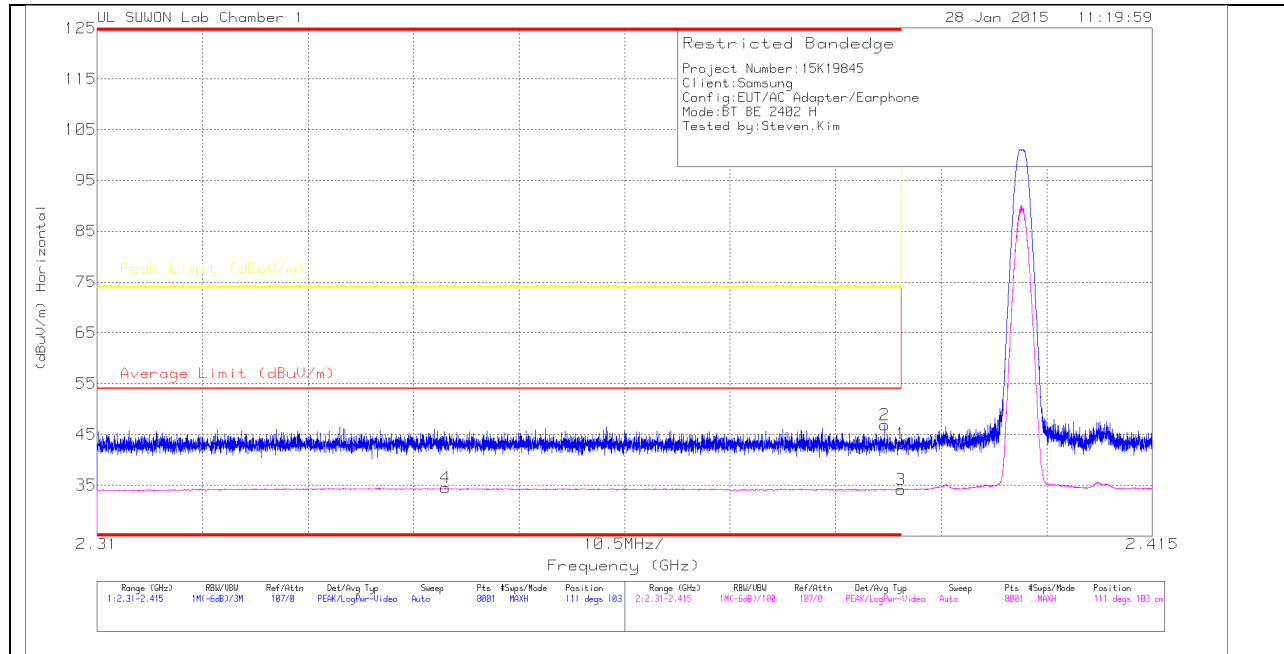
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

Trace Markers

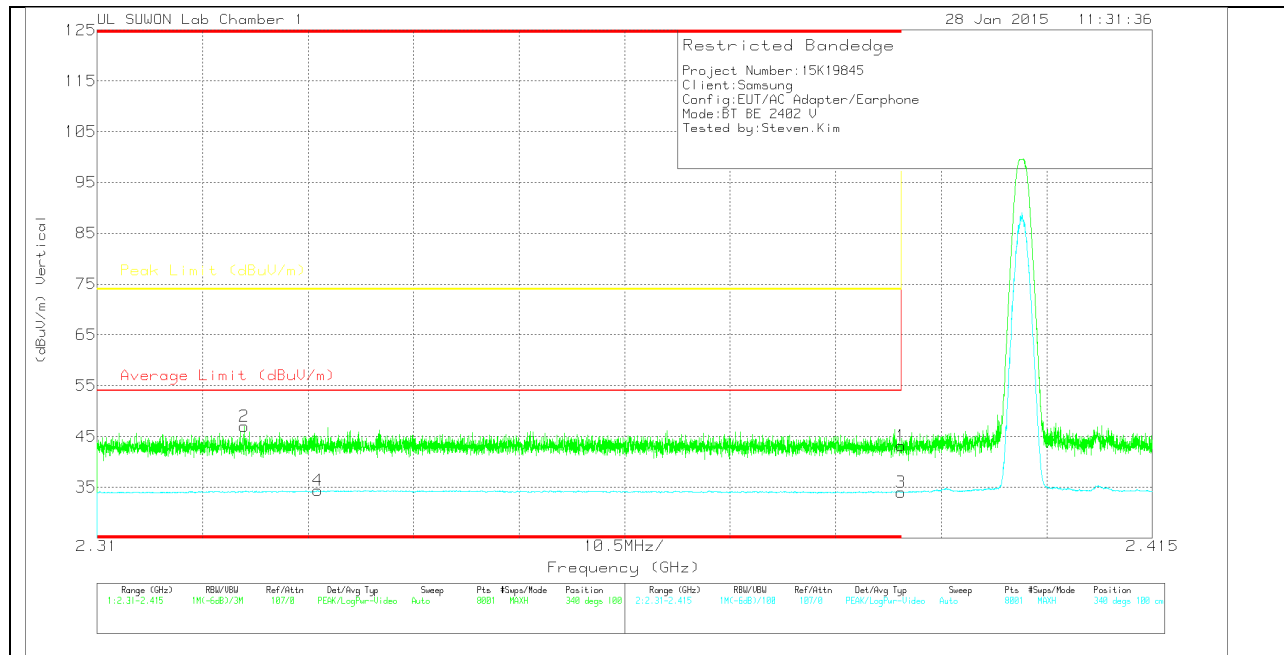
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	10dB_Path 2	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	37.83	Pk	27.9	-22.6	43.13	-	-	74	-30.87	111	103	H
2	* 2.388	41.58	Pk	27.9	-22.6	46.88	-	-	74	-27.12	111	103	H
3	* 2.39	28.85	VB1T	27.9	-22.6	34.15	54	-19.85	-	-	111	103	H
4	* 2.345	29.36	VB1T	27.8	-22.7	34.46	54	-19.54	-	-	111	103	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

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

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	10dB_Path 2	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	37.8	Pk	27.9	-22.6	43.1	-	-	74	-30.9	340	100	V
2	* 2.325	41.95	Pk	27.8	-22.8	46.95	-	-	74	-27.05	340	100	V
3	* 2.39	28.7	VB1T	27.9	-22.6	34	54	-20	-	-	340	100	V
4	* 2.332	29.24	VB1T	27.8	-22.7	34.34	54	-19.66	-	-	340	100	V

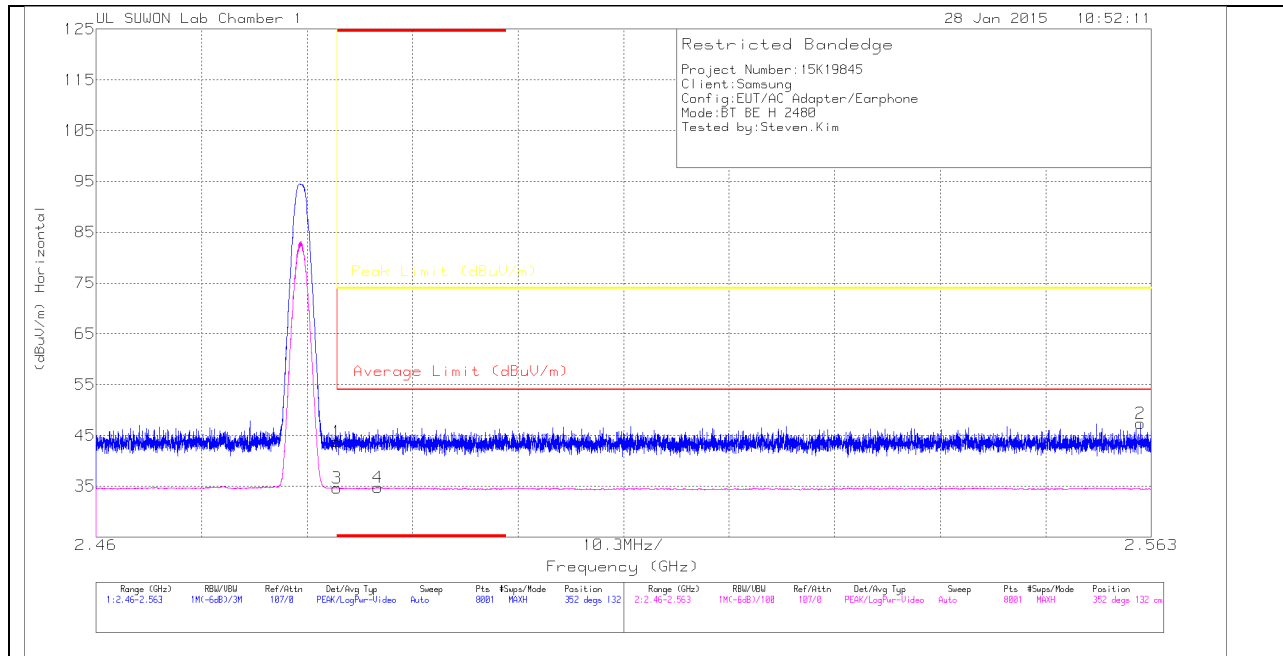
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

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

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

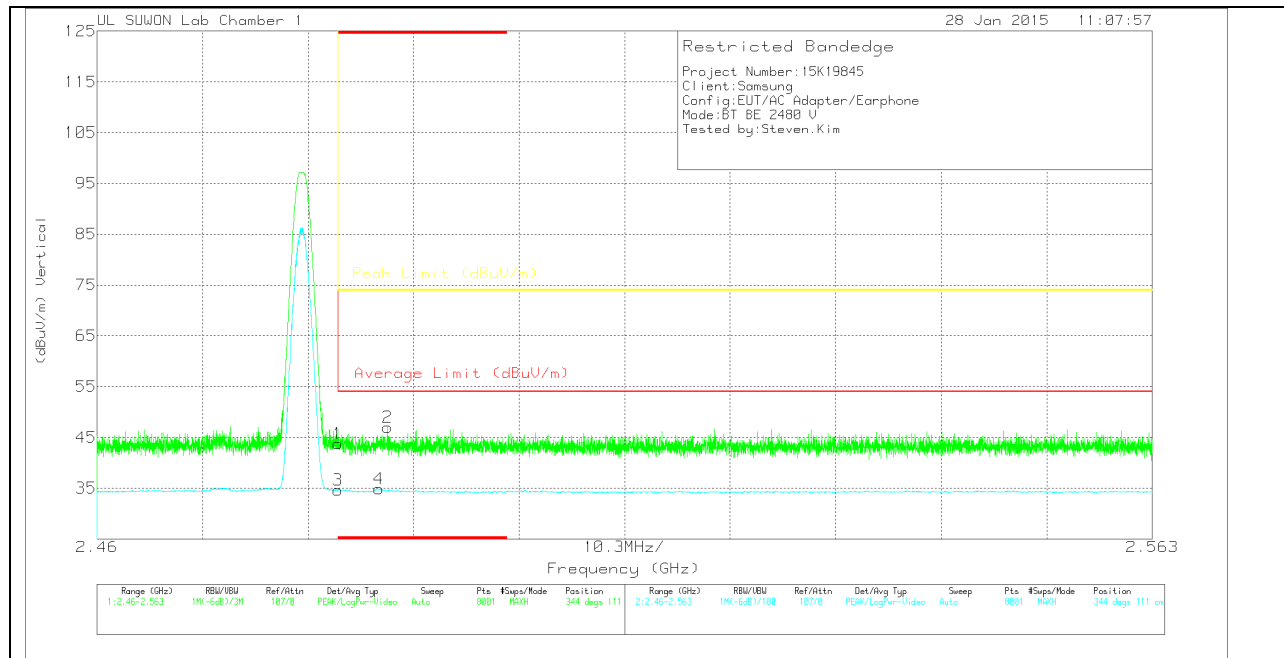
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	10dB_Path 2	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	38.35	Pk	27.9	-22.5	43.75	-	-	74	-30.25	352	132	H
2	2.562	41.86	Pk	27.9	-22.4	47.36	-	-	74	-26.64	352	132	H
3	* 2.484	29.22	VB1T	27.9	-22.5	34.62	54	-19.38	-	-	352	132	H
4	* 2.488	29.33	VB1T	27.9	-22.5	34.73	54	-19.27	-	-	352	132	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

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

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

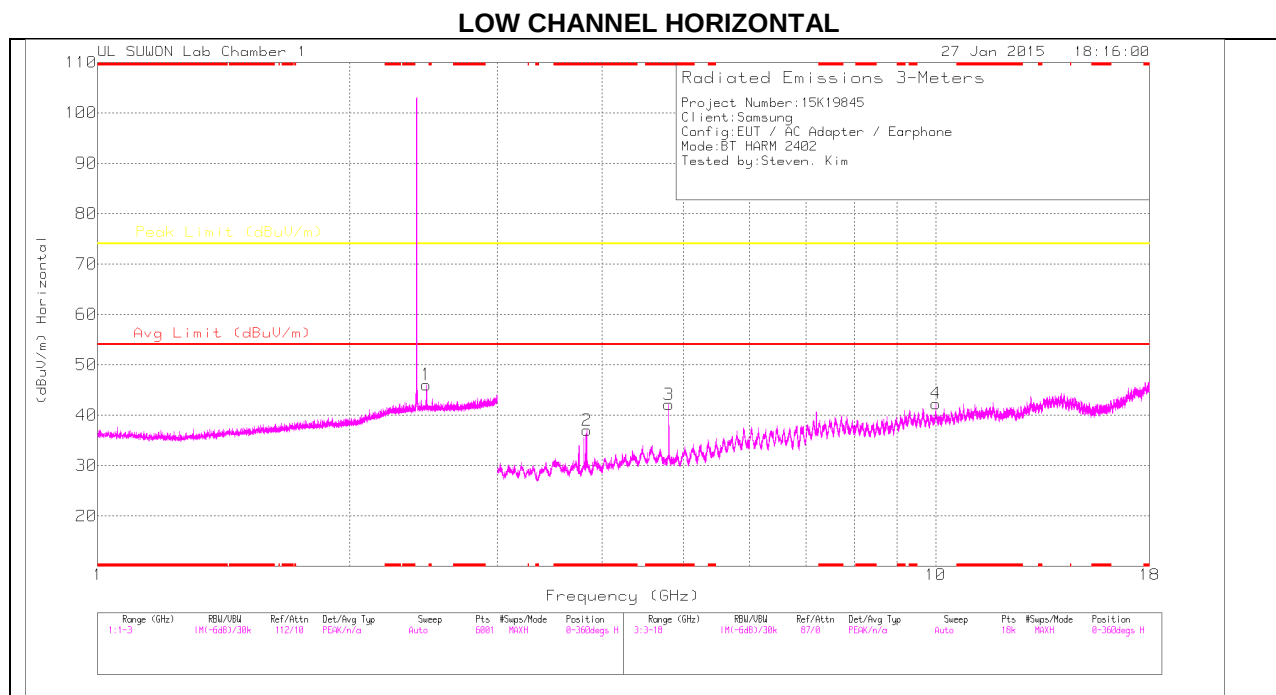
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	10dB_Path 2	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	38.33	Pk	27.9	-22.5	43.73	-	-	74	-30.27	344	111	V
2	* 2.488	41.63	Pk	27.9	-22.5	47.03	-	-	74	-26.97	344	111	V
3	* 2.484	29.18	VB1T	27.9	-22.5	34.58	54	-19.42	-	-	344	111	V
4	* 2.488	29.41	VB1T	27.9	-22.5	34.81	54	-19.19	-	-	344	111	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

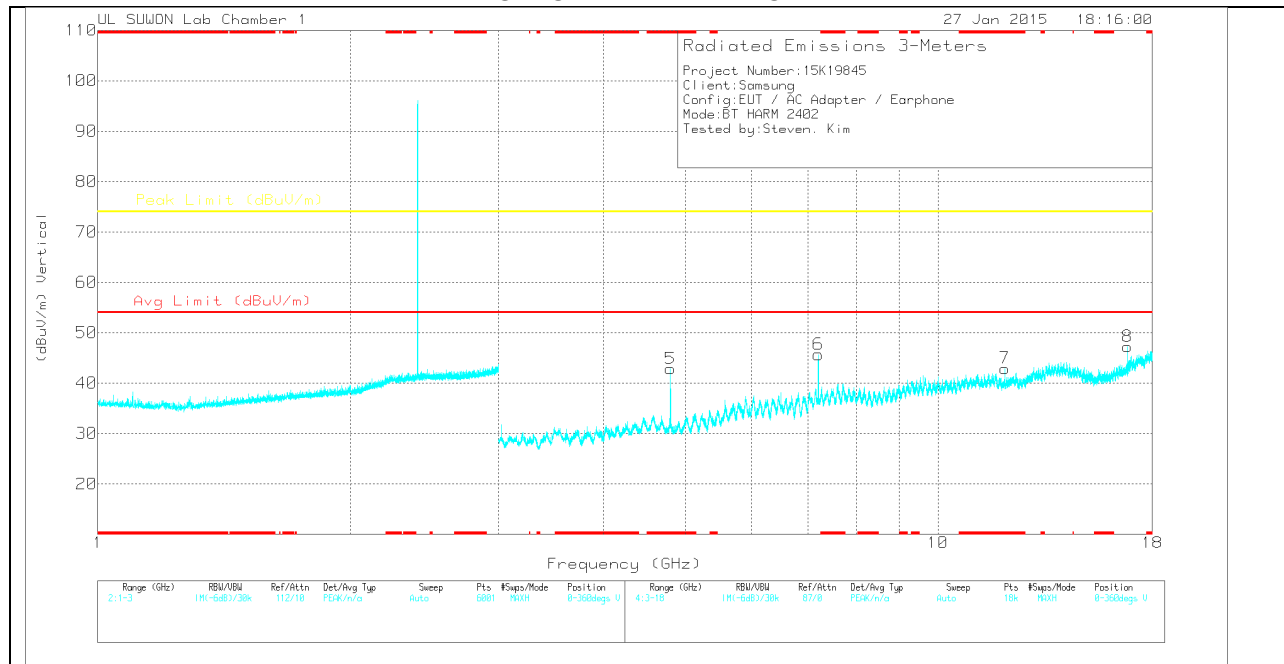
VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

HARMONICS AND SPURIOUS EMISSIONS



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	3115D Factor	10dB_Path 2	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.465	40.64	PK	27.9	-22.5	46.04	-	-	-	-	0-360	100	H
2	* 3.834	36.47	PK	30.4	-29.9	36.97	-	-	74	-37.03	0-360	100	H
3	* 4.804	39.51	PK	31.9	-29.3	42.11	-	-	74	-31.89	0-360	100	H
4	10.005	24.81	PK	38	-20.5	42.31	-	-	-	-	0-360	100	H
5	* 4.804	40.25	PK	31.9	-29.3	42.85	-	-	74	-31.15	0-360	100	V
6	7.206	34.29	PK	37	-25.6	45.69	-	-	-	-	0-360	100	V
7	* 12.009	25.13	PK	38.6	-20.8	42.93	-	-	74	-31.07	0-360	100	V
8	16.813	24.37	PK	40.3	-17.4	47.27	-	-	-	-	0-360	100	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK – Peak Detector

Radiated Emissions

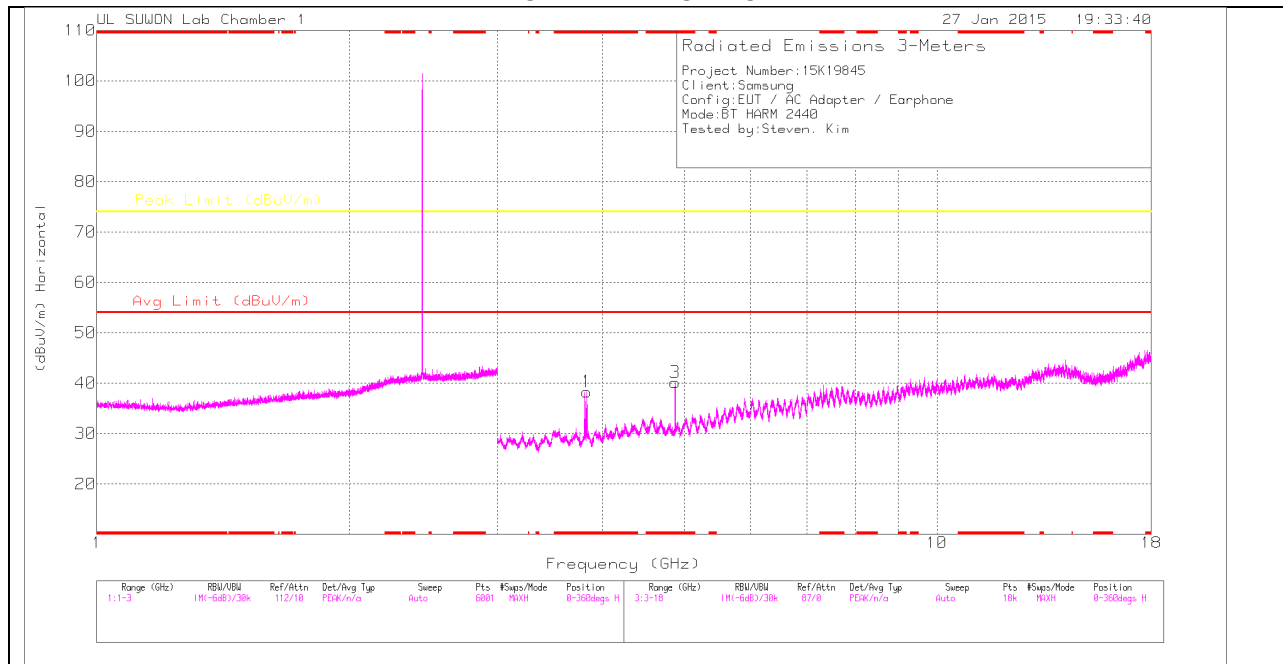
Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	10dB_Path 2	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2.465	46.46	PK3	27.9	-22.5	51.86	-	-	-	-	165	107	H
2.465	30.8	VB1T	27.9	-22.5	36.2	-	-	-	-	165	107	H
* 3.83	35.41	PK3	30.4	-29.9	35.91	-	-	74	-38.09	149	370	H
* 4.804	35.66	PK3	31.9	-29.3	38.26	-	-	74	-35.74	172	102	H
10.003	31.96	PK3	38	-20.5	49.46	-	-	-	-	279	385	H
* 4.804	45.58	PK3	31.9	-29.3	48.18	-	-	74	-25.82	295	391	V
7.206	37.22	PK3	37	-25.6	48.62	-	-	-	-	2	322	V
* 12.009	32.87	PK3	38.6	-20.8	50.67	-	-	74	-23.33	116	183	V
16.815	30.62	PK3	40.3	-17.4	53.52	-	-	-	-	301	330	V
* 3.834	25.52	VB1T	30.4	-29.9	26.02	54	-27.98	-	-	149	370	H
* 4.804	30.34	VB1T	31.9	-29.3	32.94	54	-21.06	-	-	172	102	H
10.006	19.15	VB1T	38	-20.5	36.65	-	-	-	-	279	385	H
* 4.804	30.89	VB1T	31.9	-29.3	33.49	54	-20.51	-	-	295	391	V
7.206	24.32	VB1T	37	-25.6	35.72	-	-	-	-	2	322	V
* 12.01	18.09	VB1T	38.6	-20.8	35.89	54	-18.11	-	-	116	183	V
16.813	16.09	VB1T	40.3	-17.4	38.99	-	-	-	-	301	330	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK3 - FHSS Method: Maximum Peak

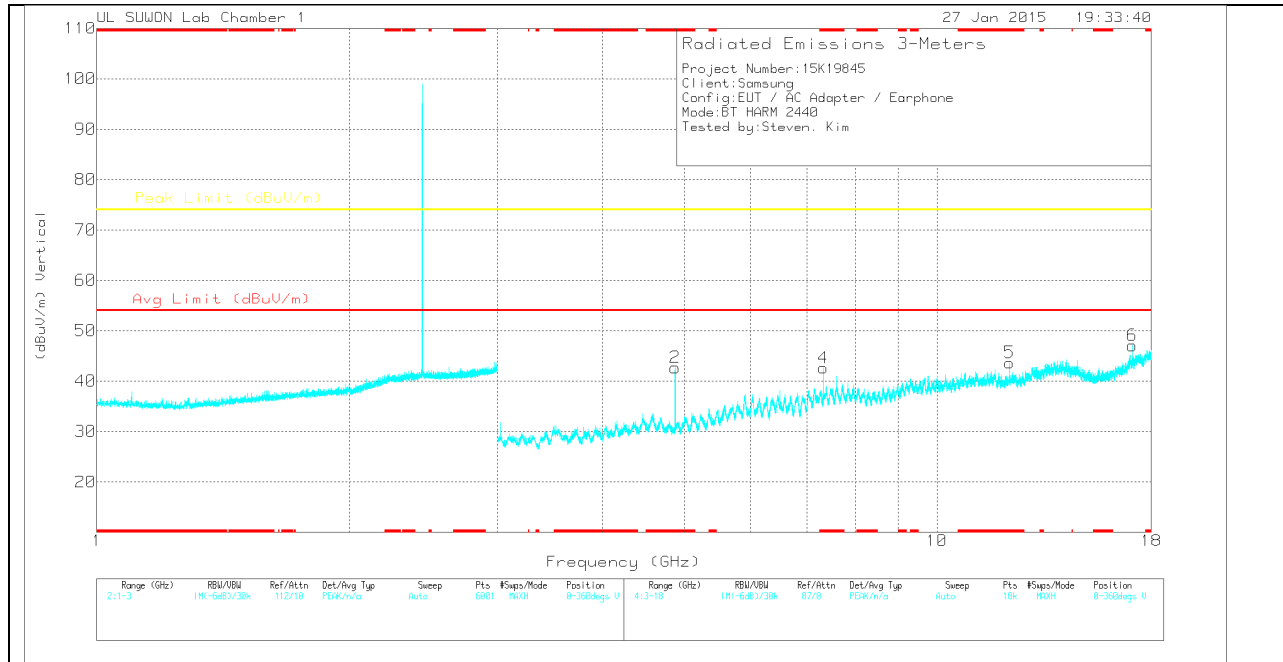
VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

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	3115D Factor	3 GHz HPF_Path3	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.83	37.79	PK	30.4	-29.9	38.29	-	-	74	-35.71	0-360	100	H
3	* 4.88	37.25	PK	32	-29.1	40.15	-	-	74	-33.85	0-360	100	H
2	* 4.88	39.79	PK	32	-29.1	42.69	-	-	74	-31.31	0-360	100	V
4	* 7.32	31.13	PK	37.1	-25.6	42.63	-	-	74	-31.37	0-360	100	V
5	* 12.199	26.57	PK	38.6	-21.5	43.67	-	-	74	-30.33	0-360	200	V
6	17.079	22.67	PK	41	-16.6	47.07	-	-	-	-	0-360	100	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK – Peak Detector

Radiated Emissions

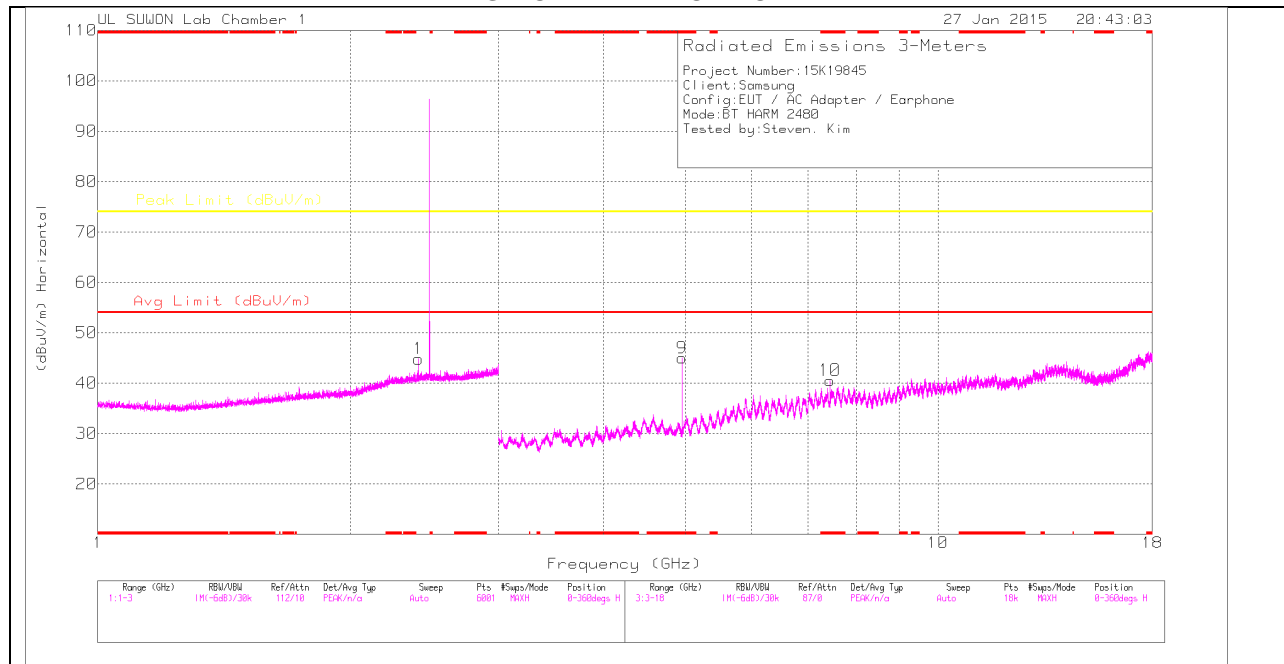
Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	3 GHz HPF_Path3	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 3.829	39.75	PK3	30.4	-29.9	40.25	-	-	74	-33.75	32	135	H
* 3.831	25.31	VB1T	30.4	-29.9	25.81	54	-28.19	-	-	32	135	H
* 4.879	40.17	PK3	32	-29.1	43.07	-	-	74	-30.93	126	323	H
* 4.88	25.05	VB1T	32	-29.1	27.95	54	-26.05	-	-	126	323	H
* 4.88	45.51	PK3	32	-29.1	48.41	-	-	74	-25.59	304	101	V
* 4.88	29.39	VB1T	32	-29.1	32.29	54	-21.71	-	-	304	101	V
* 7.32	36.63	PK3	37.1	-25.6	48.13	-	-	74	-25.87	205	340	V
* 7.32	24.1	VB1T	37.1	-25.6	35.6	54	-18.4	-	-	205	340	V
* 12.196	33.79	PK3	38.6	-21.4	50.99	-	-	74	-23.01	166	352	V
* 12.196	18.86	VB1T	38.6	-21.4	36.06	54	-17.94	-	-	166	352	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK3 - FHSS Method: Maximum Peak

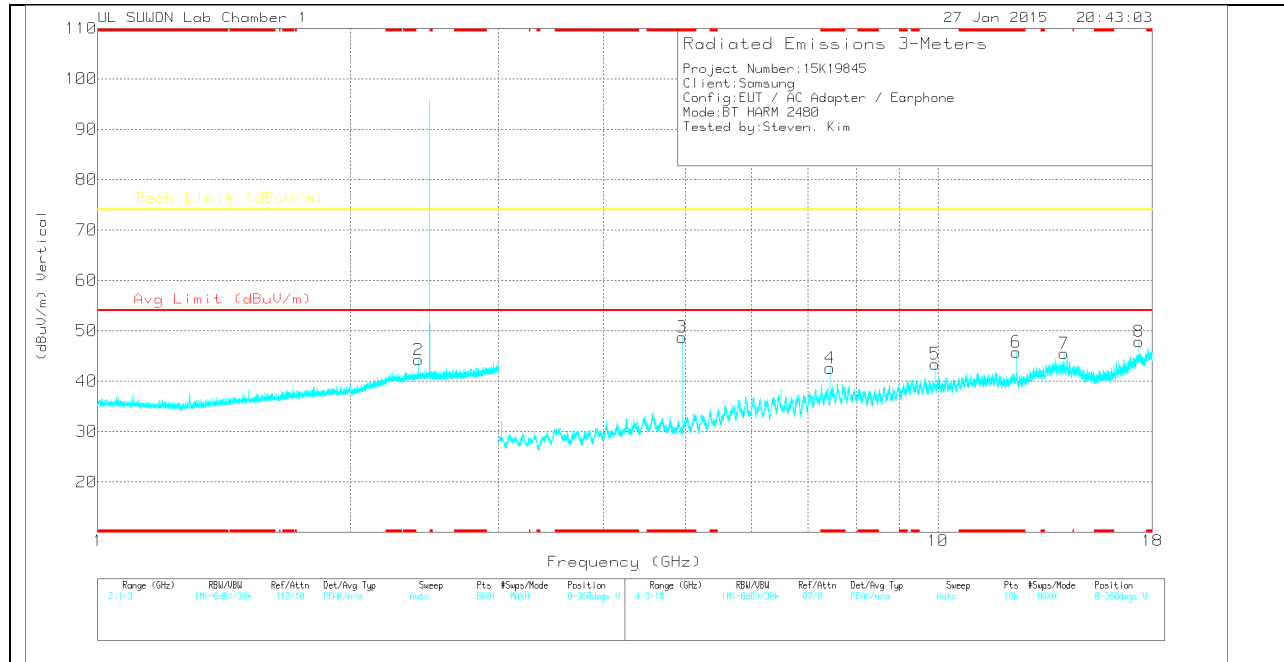
VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

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	3115D Factor	10dB_Path 2	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.408	39.52	PK	27.9	-22.6	44.82	-	-	-	-	0-360	100	H
2	2.408	38.94	PK	27.9	-22.6	44.24	-	-	-	-	0-360	100	V
6	* 12.399	28.17	PK	38.4	-20.8	45.77	-	-	74	-28.23	0-360	100	V
9	* 4.96	41.68	PK	32.1	-28.8	44.98	-	-	74	-29.02	0-360	100	H
3	* 4.96	45.39	PK	32.1	-28.8	48.69	-	-	74	-25.31	0-360	100	V
10	* 7.439	28.23	PK	37.3	-25	40.53	-	-	74	-33.47	0-360	200	H
4	* 7.44	30.27	PK	37.3	-25	42.57	-	-	74	-31.43	0-360	100	V
7	14.126	26.28	PK	40.7	-21.5	45.48	-	-	-	-	0-360	100	V
8	17.359	21.76	PK	41.7	-15.6	47.86	-	-	-	-	0-360	200	V
5	9.92	26	PK	37.9	-20.5	43.4	-	-	-	-	0-360	100	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK – Peak Detector

Radiated Emissions

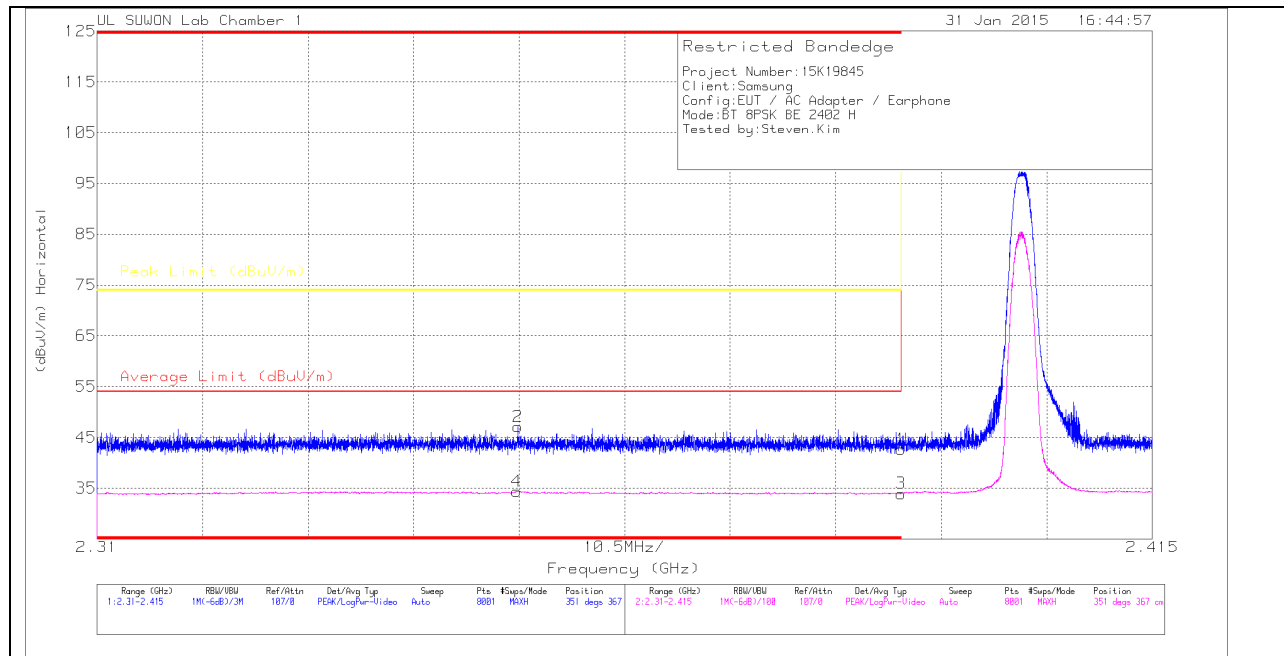
Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	3 GHz HPF_Path3	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.96	47.05	PK3	32.1	-28.8	50.35	-	-	74	-23.65	59	145	H
* 4.96	29.94	VB1T	32.1	-28.8	33.24	54	-20.76	-	-	59	145	H
* 7.44	37.43	PK3	37.3	-25	49.73	-	-	74	-24.27	119	330	H
* 7.44	22.89	VB1T	37.3	-25	35.19	54	-18.81	-	-	119	330	H
* 4.96	50.46	PK3	32.1	-28.8	53.76	-	-	74	-20.24	289	332	V
* 4.96	31.27	VB1T	32.1	-28.8	34.57	54	-19.43	-	-	289	332	V
* 7.44	36.37	PK3	37.3	-25	48.67	-	-	74	-25.33	357	305	V
* 7.44	21.88	VB1T	37.3	-25	34.18	54	-19.82	-	-	357	305	V
* 12.4	35.35	PK3	38.4	-20.8	52.95	-	-	74	-21.05	300	187	V
* 12.4	20.14	VB1T	38.4	-20.8	37.74	54	-16.26	-	-	300	187	V

* - indicates frequency in CFR15.205/IC7.2.2 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

9.2.2. ENHANCED DATA RATE Pi/4-DPSK MODULATION RESTRICTED BANDEDGE (LOW CHANNEL)



HORIZONTAL DATA

Trace Markers

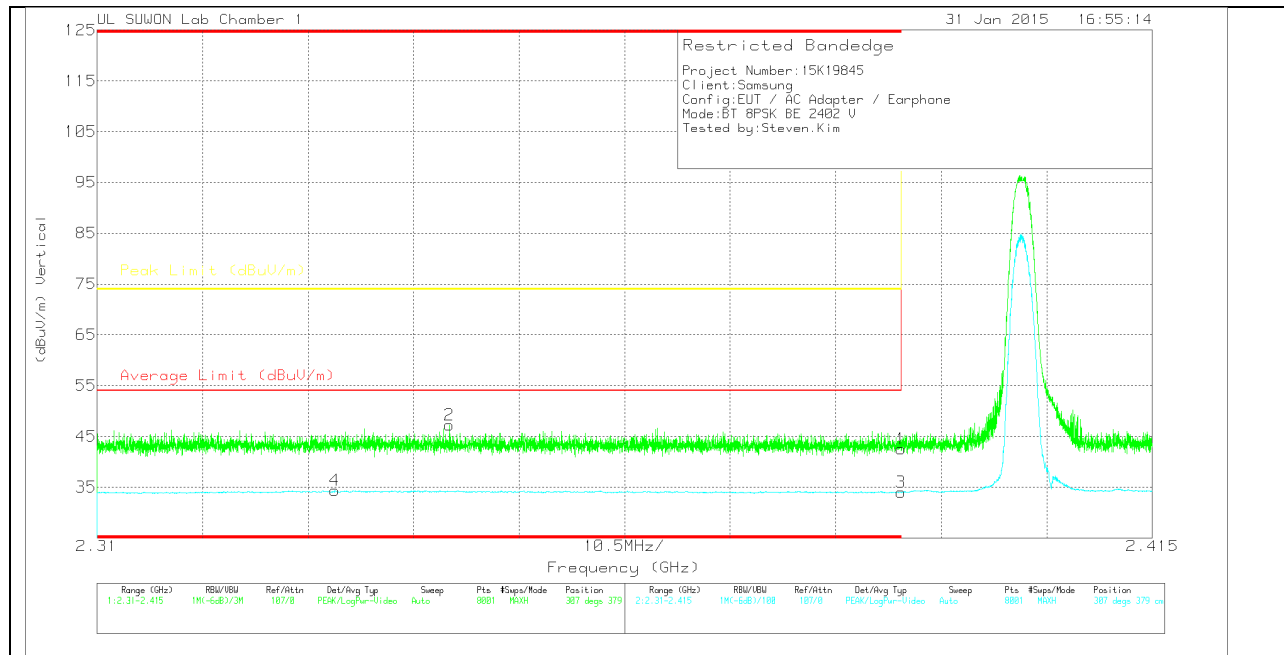
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	10dB_Path 2	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	37.36	Pk	27.9	-22.6	42.66	-	-	74	-31.34	351	367	H
2	* 2.352	42.02	Pk	27.8	-22.7	47.12	-	-	74	-26.88	351	367	H
3	* 2.39	28.64	VB1T	27.9	-22.6	33.94	54	-20.06	-	-	351	367	H
4	* 2.352	29.29	VB1T	27.8	-22.7	34.39	54	-19.61	-	-	351	367	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

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

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	10dB_Path 2	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	37.23	Pk	27.9	-22.6	42.53	-	-	74	-31.47	307	379	V
2	* 2.345	42.17	Pk	27.8	-22.7	47.27	-	-	74	-26.73	307	379	V
3	* 2.39	28.68	VB1T	27.9	-22.6	33.98	54	-20.02	-	-	307	379	V
4	* 2.334	29.22	VB1T	27.8	-22.7	34.32	54	-19.68	-	-	307	379	V

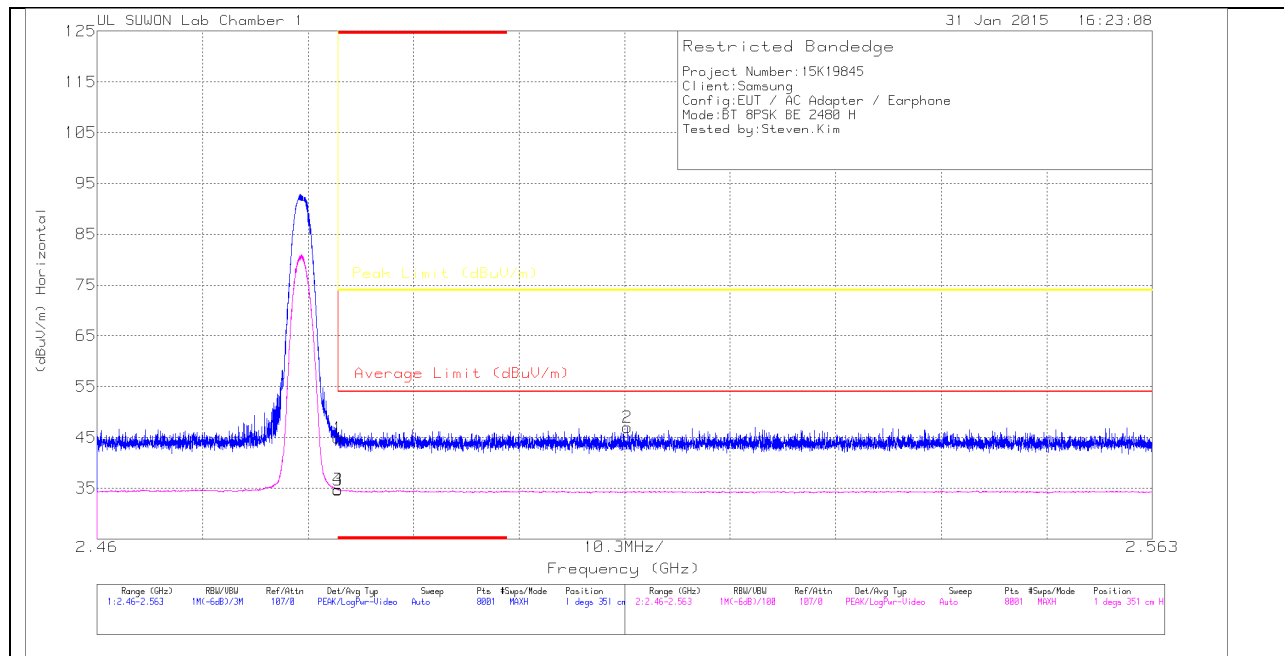
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

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

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

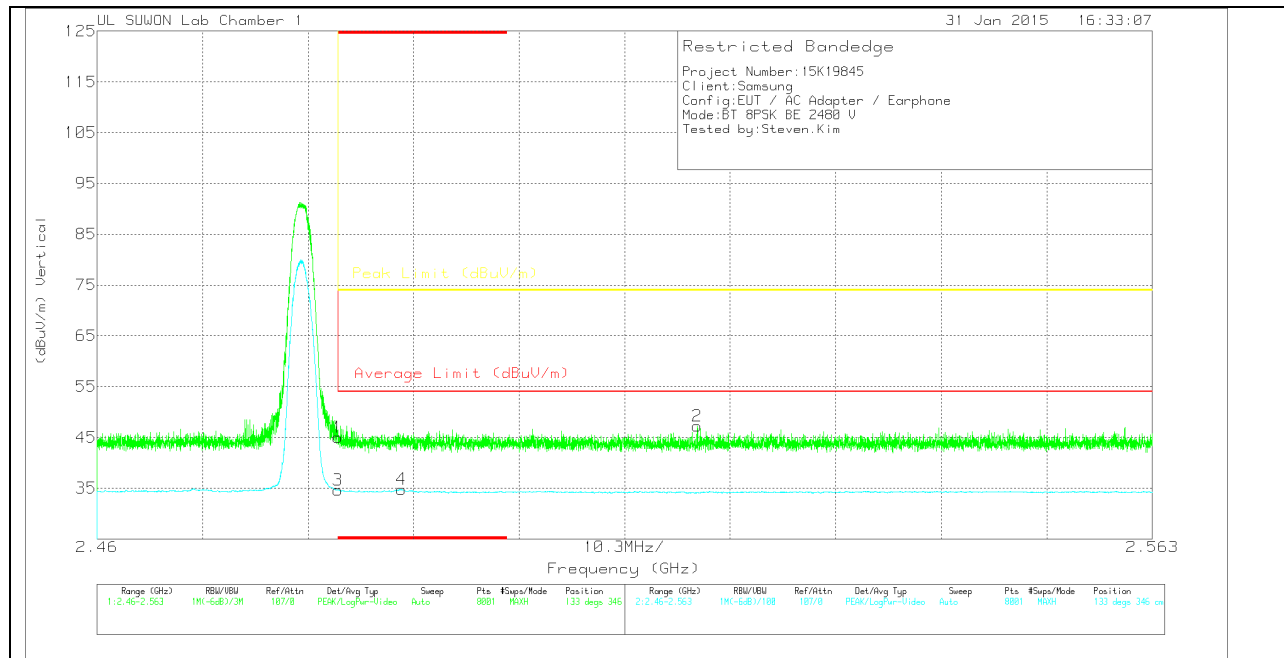
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	10dB_Path 2	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	39.51	Pk	27.9	-22.5	44.91	-	-	74	-29.09	1	351	H
2	2.512	41.56	Pk	27.9	-22.5	46.96	-	-	74	-27.04	1	351	H
3	* 2.484	29.28	VB1T	27.9	-22.5	34.68	54	-19.32	-	-	1	351	H
4	* 2.484	29.31	VB1T	27.9	-22.5	34.71	54	-19.29	-	-	1	351	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

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

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	10dB_Path 2	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	39.56	Pk	27.9	-22.5	44.96	-	-	74	-29.04	133	346	V
2	2.519	41.89	Pk	27.9	-22.5	47.29	-	-	74	-26.71	133	346	V
3	* 2.484	29.24	VB1T	27.9	-22.5	34.64	54	-19.36	-	-	133	346	V
4	* 2.49	29.4	VB1T	27.9	-22.5	34.8	54	-19.2	-	-	133	346	V

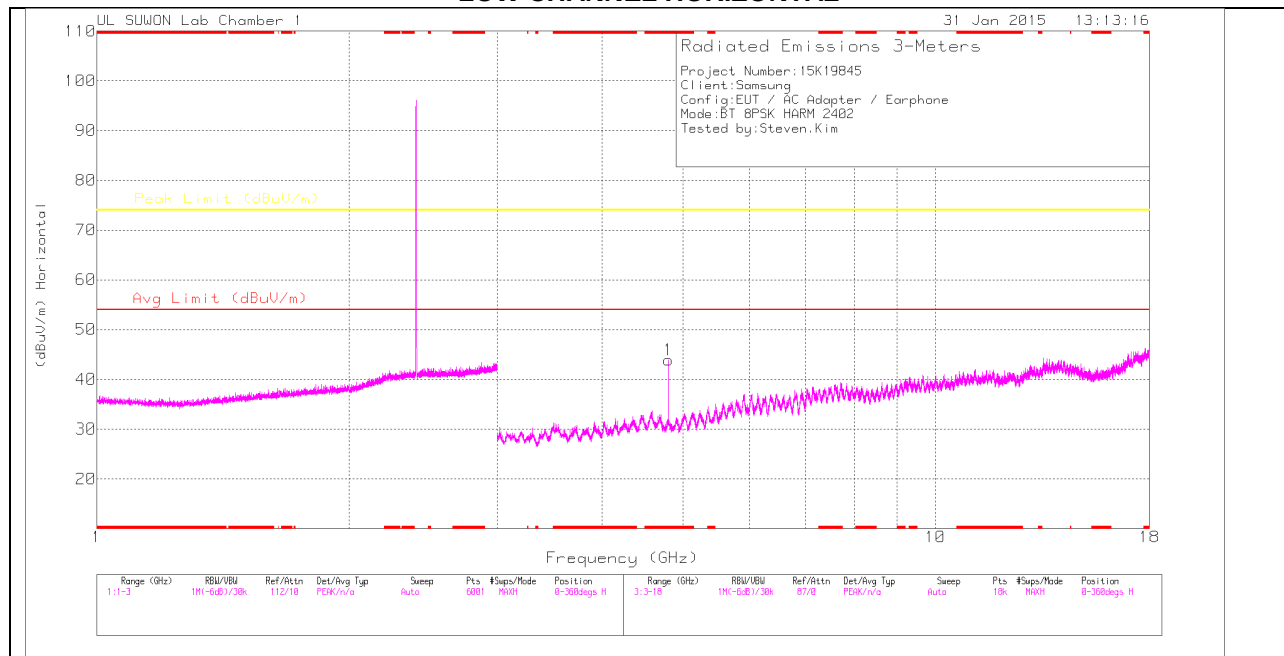
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

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

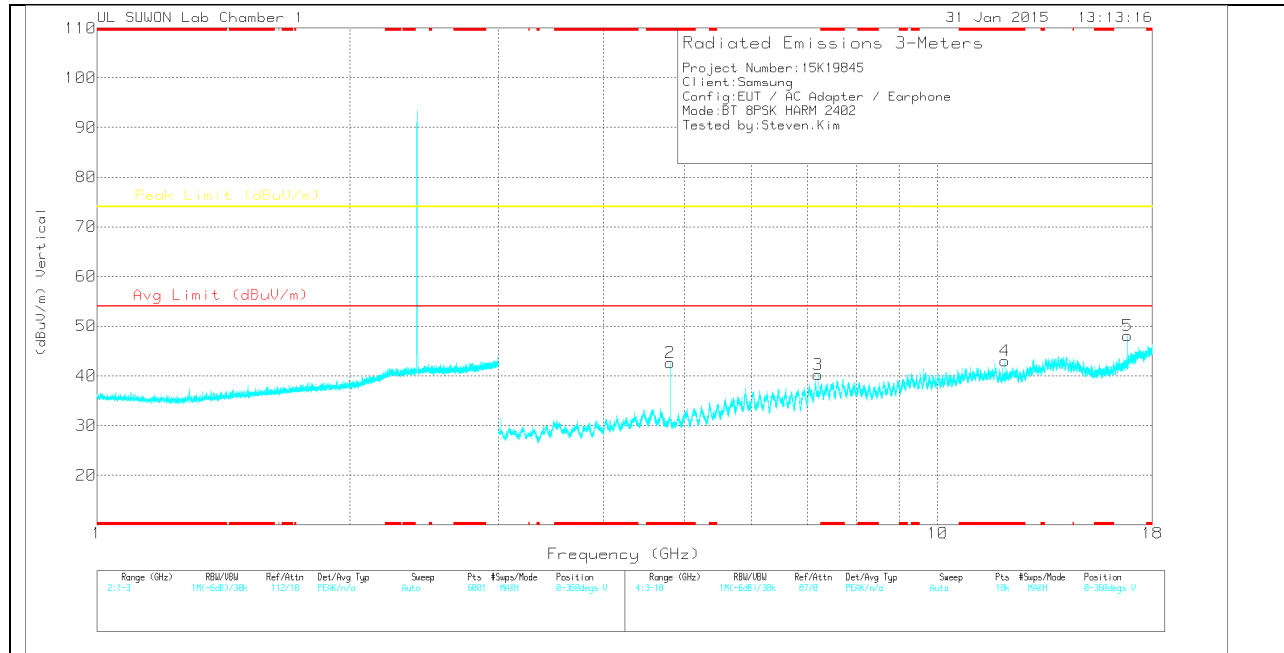
HARMONICS AND SPURIOUS EMISSIONS

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	3115D Factor	3 GHz HPF_Path3	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.803	41.27	PK	31.9	-29.3	43.87	-	-	74	-30.13	0-360	100	H
2	* 4.803	40.06	PK	31.9	-29.3	42.66	-	-	74	-31.34	0-360	100	V
3	7.205	28.83	PK	37	-25.6	40.23	-	-	-	-	0-360	100	V
4	* 12.009	25.26	PK	38.6	-20.8	43.06	-	-	74	-30.94	0-360	100	V
5	16.815	25.16	PK	40.3	-17.4	48.06	-	-	-	-	0-360	100	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak Detector

Radiated Emissions

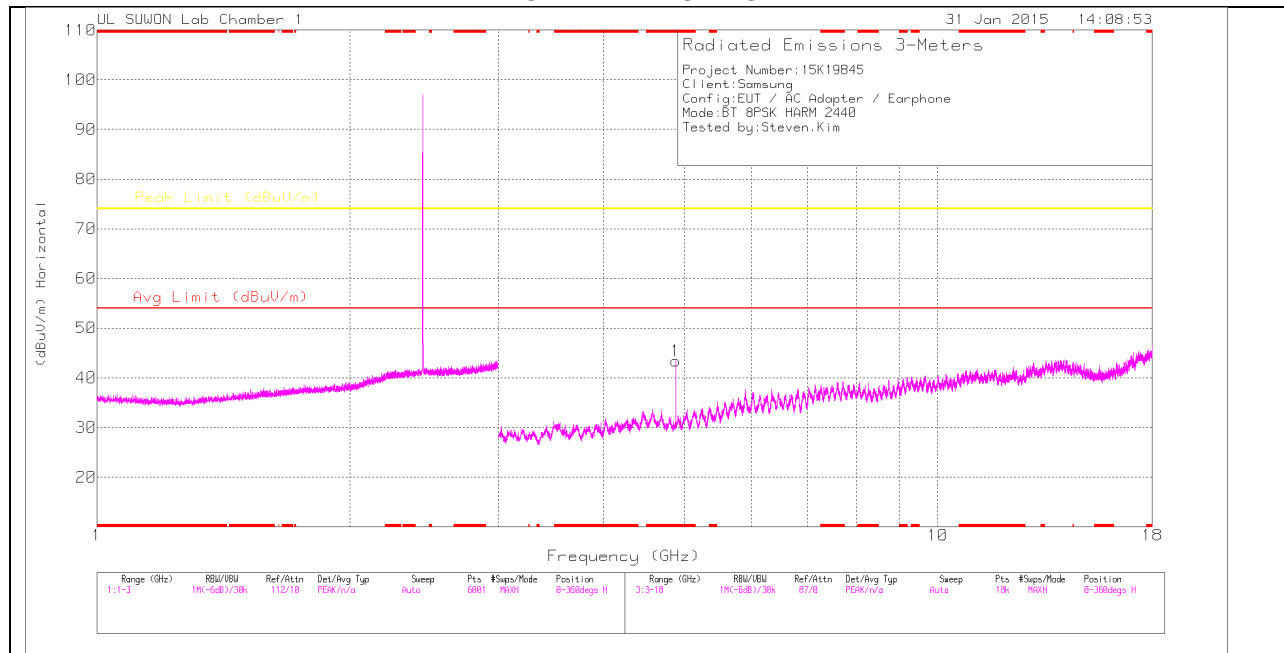
Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	3 GHz HPF_Path3	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.804	46.05	PK3	31.9	-29.3	48.65	-	-	74	-25.35	58	165	H
* 4.804	31.57	VB1T	31.9	-29.3	34.17	54	-19.83	-	-	58	165	H
* 4.803	47.38	PK3	31.9	-29.3	49.98	-	-	74	-24.02	343	285	V
* 4.804	31.53	VB1T	31.9	-29.3	34.13	54	-19.87	-	-	343	285	V
* 12.009	32.07	PK3	38.6	-20.8	49.87	-	-	74	-24.13	134	112	V
* 12.01	19.08	VB1T	38.6	-20.8	36.88	54	-17.12	-	-	134	112	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK3 - FHSS Method: Maximum Peak

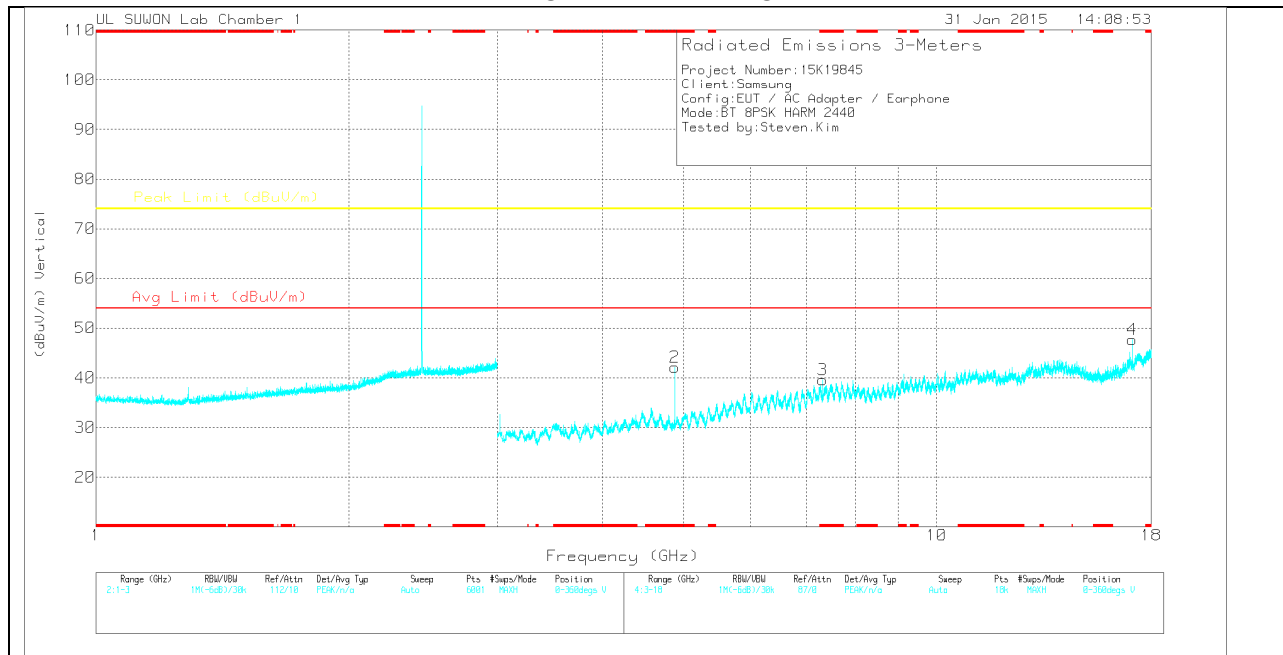
VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

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	3115D Factor	3 GHz HPF_Path3	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.879	40.55	PK	32	-29.1	43.45	-	-	74	-30.55	0-360	100	H
2	* 4.88	39.25	PK	32	-29.1	42.15	-	-	74	-31.85	0-360	100	V
3	* 7.32	28.14	PK	37.1	-25.6	39.64	-	-	74	-34.36	0-360	100	V
4	17.079	23.28	PK	41	-16.6	47.68	-	-	-	-	0-360	100	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK – Peak Detector

Radiated Emissions

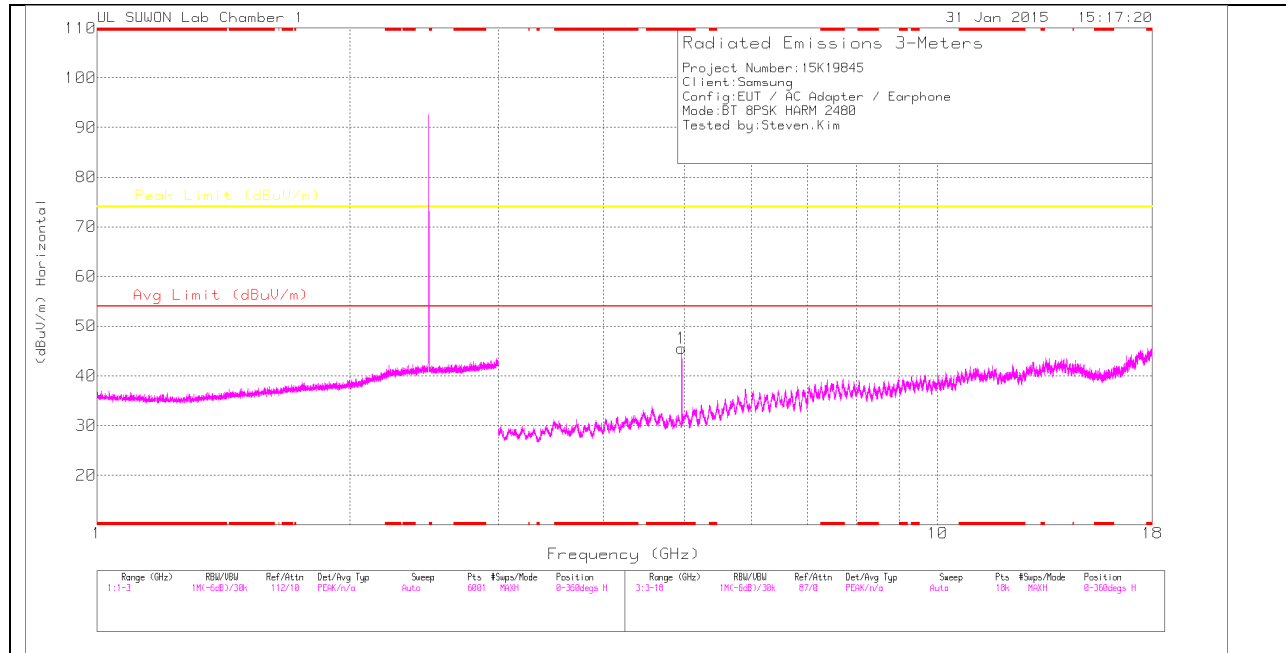
Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	3 GHz HPF_Path3	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.88	43.77	PK3	32	-29.1	46.67	-	-	74	-27.33	78	328	H
* 4.88	28.82	VB1T	32	-29.1	31.72	54	-22.28	-	-	78	328	H
* 4.88	45.64	PK3	32	-29.1	48.54	-	-	74	-25.46	303	336	V
* 4.88	29.9	VB1T	32	-29.1	32.8	54	-21.2	-	-	303	336	V
* 7.32	38.93	PK3	37.1	-25.6	50.43	-	-	74	-23.57	15	113	V
* 7.32	23.59	VB1T	37.1	-25.6	35.09	54	-18.91	-	-	15	113	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

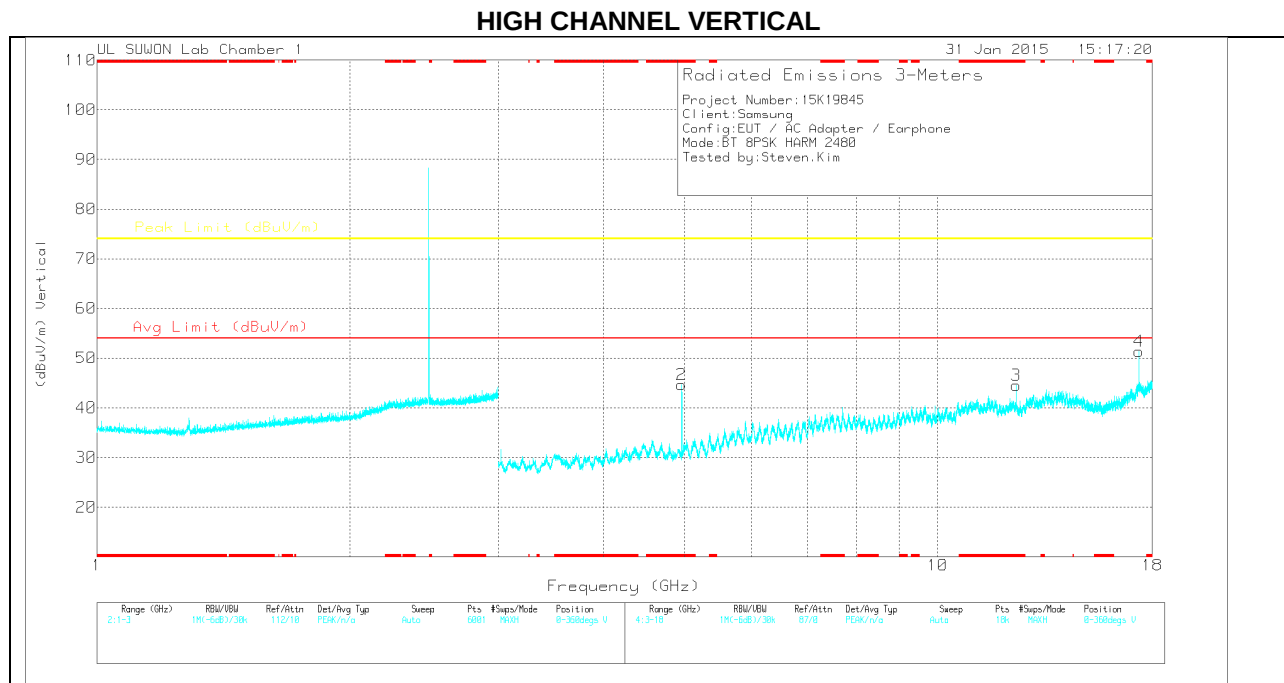
PK3 - FHSS Method: Maximum Peak

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

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.



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	3115D Factor	3 GHz HPF_Path3	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.96	42.22	PK	32.1	-28.8	45.52	-	-	74	-28.48	0-360	100	H
2	* 4.96	41.35	PK	32.1	-28.8	44.65	-	-	74	-29.35	0-360	100	V
3	* 12.399	26.92	PK	38.4	-20.8	44.52	-	-	74	-29.48	0-360	100	V
4	17.359	25.27	PK	41.7	-15.6	51.37	-	-	-	-	0-360	200	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK – Peak Detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	3 GHz HPF_Path3	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.96	47.2	PK3	32.1	-28.8	50.5	-	-	74	-23.5	62	179	H
* 4.96	29.88	VB1T	32.1	-28.8	33.18	54	-20.82	-	-	62	179	H
* 4.96	48.85	PK3	32.1	-28.8	52.15	-	-	74	-21.85	123	358	V
* 4.96	30.58	VB1T	32.1	-28.8	33.88	54	-20.12	-	-	123	358	V
* 12.4	36.59	PK3	38.4	-20.8	54.19	-	-	74	-19.81	125	115	V
* 12.4	21.24	VB1T	38.4	-20.8	38.84	54	-15.16	-	-	125	115	V
17.359	32.37	PK3	41.7	-15.6	58.47	-	-	-	-	117	188	V
17.359	16.02	VB1T	41.7	-15.6	42.12	-	-	-	-	117	188	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

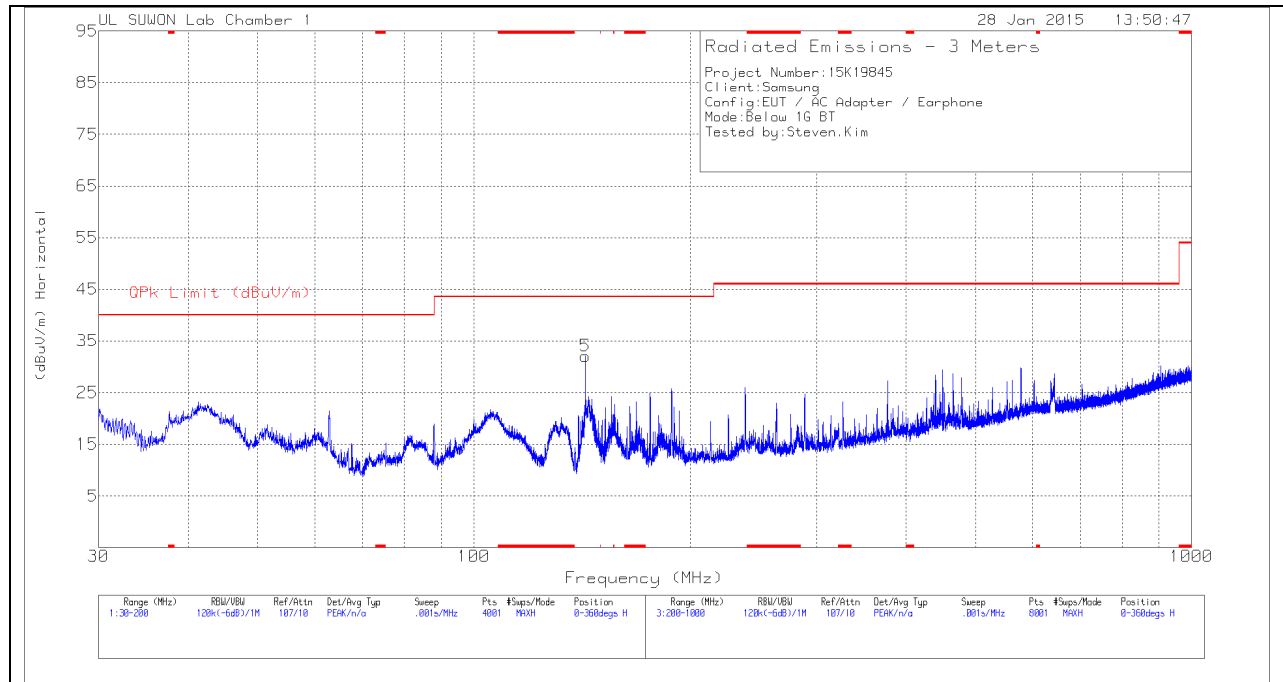
PK3 - FHSS Method: Maximum Peak

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

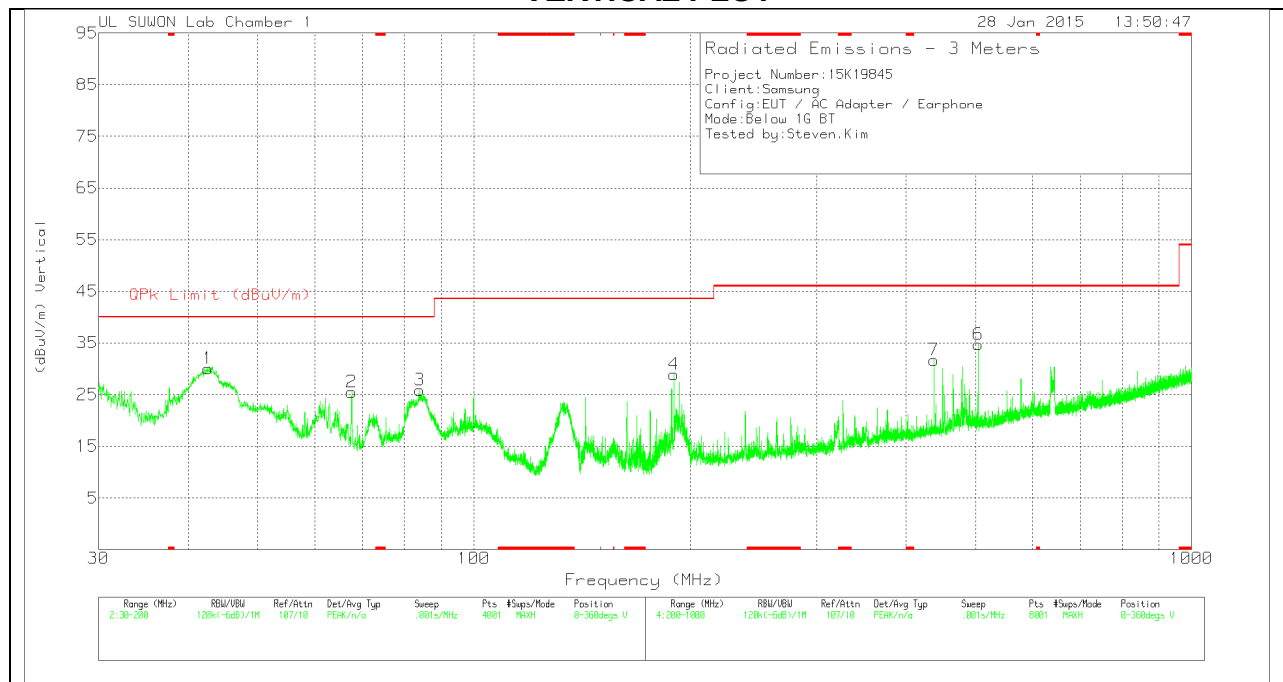
9.3. WORST-CASE BELOW 1 GHz

GFSK SPURIOUS 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	VULB9163-750	Bi-Log Ant Pathloss	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	142.965	53.29	Pk	7.9	-29.1	32.09	43.52	-11.43	0-360	200	H
1	42.58	47.47	Pk	13.1	-30.5	30.07	40	-9.93	0-360	100	V
2	67.57	45.21	Pk	10.4	-30.1	25.51	40	-14.49	0-360	200	V
3	84.145	47.69	Pk	8	-29.8	25.89	40	-14.11	0-360	100	V
4	190.14	47.05	Pk	10.4	-28.5	28.95	43.52	-14.57	0-360	100	V
6	504	43.98	Pk	17.1	-26.4	34.68	46.02	-11.34	0-360	101	V
7	437.5	42.39	Pk	16.1	-26.8	31.69	46.02	-14.33	0-360	101	V

Pk - Peak detector

10. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

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

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

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

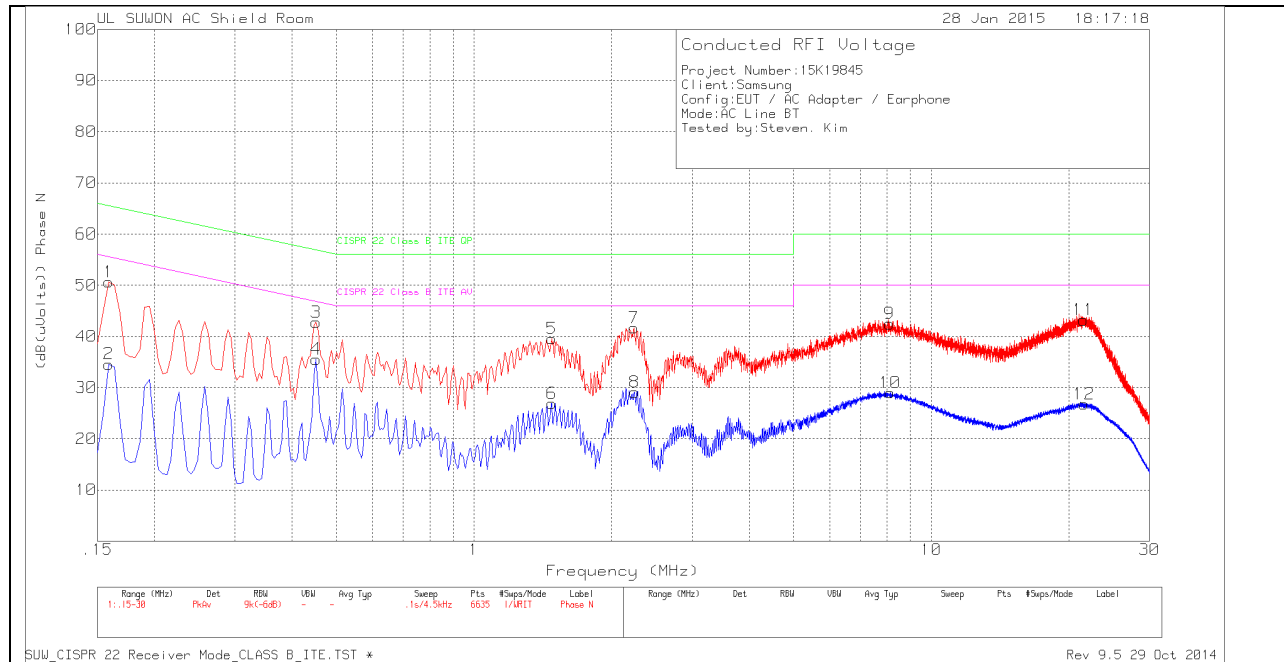
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

6 WORST EMISSIONS

LINE 1 PLOT



LINE 1 RESULTS

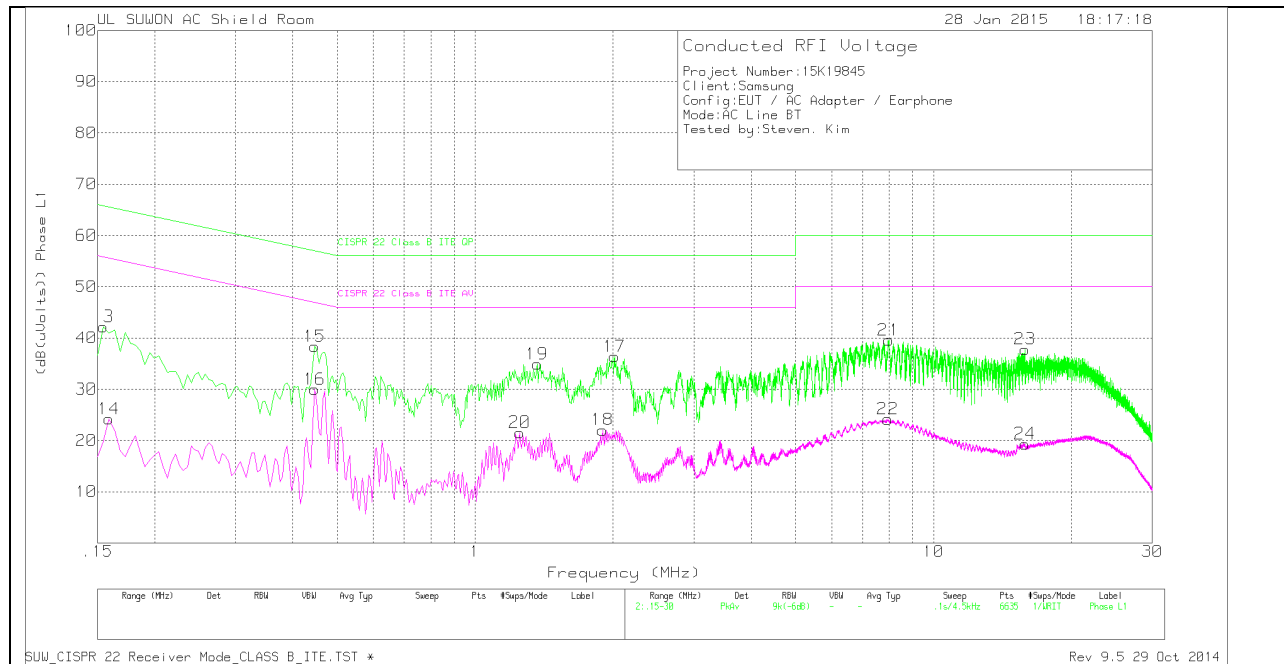
Phase N .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101837_N	CE Shield Room	Corrected Reading (dB(uVolts))	CISPR 22 Class B ITE QP	Margin (dB)	CISPR 22 Class B ITE AV	Margin (dB)
1	.159	40.59	Pk	10	0	50.59	65.52	-14.93	-	-
2	.159	24.59	Av	10	0	34.59	-	-	55.52	-20.93
3	.4515	32.64	Pk	10.1	0	42.74	56.85	-14.11	-	-
4	.4515	25.46	Av	10.1	0	35.56	-	-	46.85	-11.29
5	1.4775	29.65	Pk	9.8	.1	39.55	56	-16.45	-	-
6	1.4775	17.04	Av	9.8	.1	26.94	-	-	46	-19.06
7	2.238	31.79	Pk	9.8	.1	41.69	56	-14.31	-	-
8	2.2425	19.17	Av	9.8	.1	29.07	-	-	46	-16.93
9	8.097	32.67	Pk	9.7	.1	42.47	60	-17.53	-	-
10	8.1195	19.18	Av	9.7	.1	28.98	-	-	50	-21.02
11	21.525	33.21	Pk	9.8	.2	43.21	60	-16.79	-	-
12	21.5655	16.82	Av	9.8	.2	26.82	-	-	50	-23.18

Pk - Peak detector

Av - Average detection

LINE 2 PLOT



LINE 2 RESULTS

Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101837_L 1	CE Shield Room	Corrected Reading (dB(uVolts))	CISPR 22 Class B ITE QP	Margin (dB)	CISPR 22 Class B ITE AV	Margin (dB)
13	.1545	32.5	Pk	9.7	0	42.2	65.75	-23.55	-	-
14	.159	14.43	Av	9.8	0	24.23	-	-	55.52	-31.29
15	.447	28.37	Pk	10	0	38.37	56.93	-18.56	-	-
16	.447	20.02	Av	10	0	30.02	-	-	46.93	-16.91
17	2.013	26.83	Pk	9.4	.1	36.33	56	-19.67	-	-
18	1.896	12.55	Av	9.4	.1	22.05	-	-	46	-23.95
19	1.365	25.31	Pk	9.5	.1	34.91	56	-21.09	-	-
20	1.2525	11.95	Av	9.5	.1	21.55	-	-	46	-24.45
21	7.9845	30.2	Pk	9.3	.1	39.6	60	-20.4	-	-
22	7.9485	14.75	Av	9.3	.1	24.15	-	-	50	-25.85
23	15.819	28.19	Pk	9.4	.2	37.79	60	-22.21	-	-
24	15.837	9.73	Av	9.4	.2	19.33	-	-	50	-30.67

Pk - Peak detector

Av - Average detection