



FCC CFR47 PART 15 SUBPART C

CERTIFICATION TEST REPORT

FOR

GSM/WCDMA/LTE Phone + Bluetooth/BLE, DTS/UNII a/b/g/n/ac and ANT+

MODEL NUMBER : SM-A800YZ

FCC ID: A3LSMA800YZ

REPORT NUMBER: 15K21021-E3

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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/BLE, DTS/UNII a/b/g/n/ac and ANT+
MODEL NUMBER: SM-A800YZ
SERIAL NUMBER: 4100e2844799149 (RADIATED); 4100855ef27d91c3 (CONDUCTED)
DATE TESTED: JUN 06 - JUN 23, 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
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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 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/BLE, DTS/UNII a/b/g/n/ac and ANT+.

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	Power Mode	Output Power [dBm]	Output Power [mW]
2402 - 2480	Basic GFSK	Average	8.65	7.32
		Peak	8.74	7.48
	Enhanced Pi/4-DPSK	Average	4.72	2.97
		Peak	6.99	5.00
	Enhanced 8PSK	Average	4.83	3.04
		Peak	7.37	5.46

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 -0.15 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	EP-TA12JWS	N/A	N/A
Data Cable	SAMSUNG	EP-DG920UWE	N/A	N/A
Earphone	SAMSUNG	EHS64AVFWE	N/A	N/A

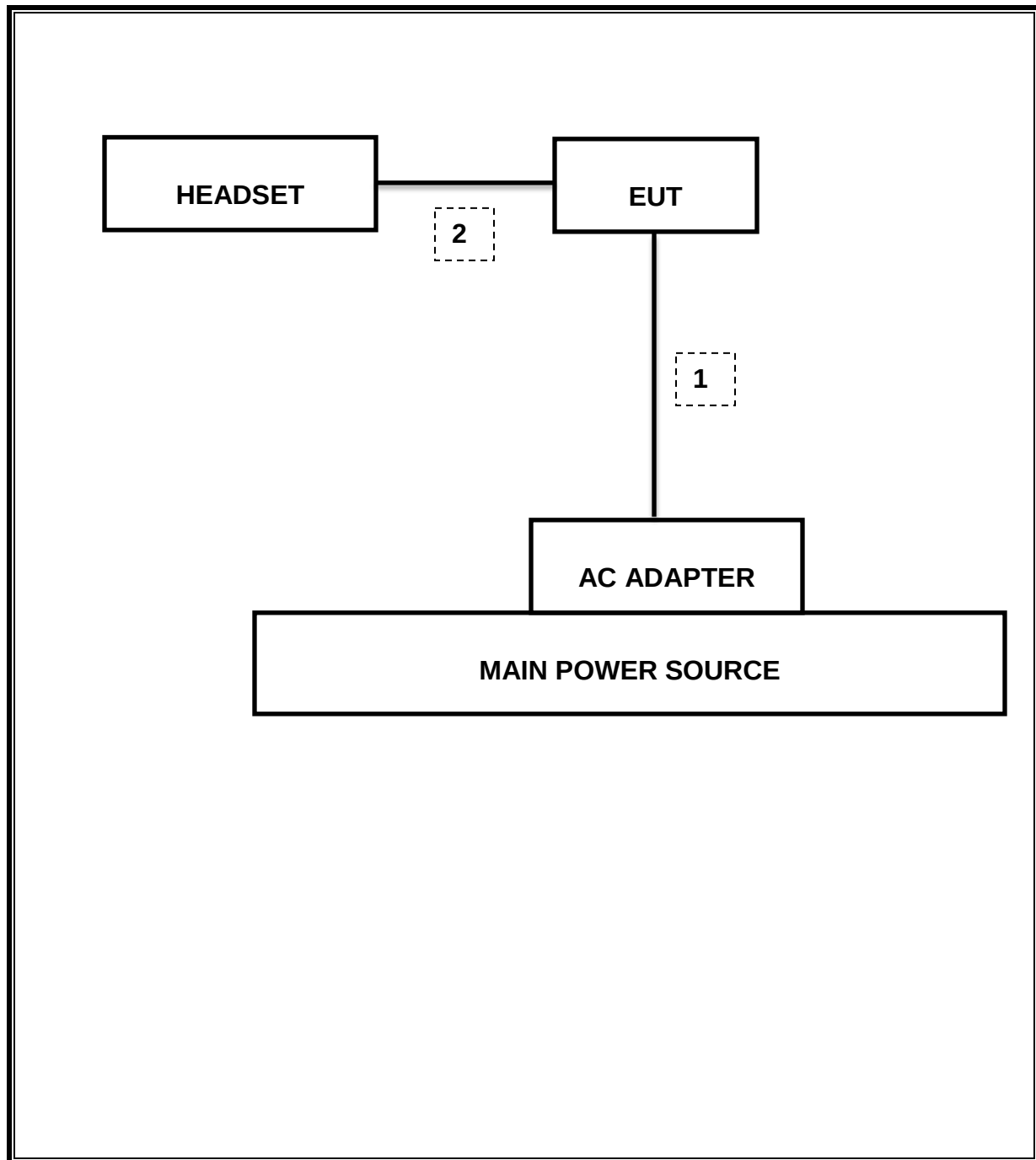
I/O CABLES

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
LISN	R&S	ENV-216	101836	04-09-16
LISN	R&S	ENV-216	101837	04-09-16

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	1.231 MHz
2.1051, 15.247 (d)	Band Edge / Conducted Spurious Emission	-20dBc		Pass	-47.07 dBm
15.247 (b)(1)	TX conducted output power	<21dBm		Pass	8.74 dBm (Peak)
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	0.375 sec
15.207 (a)	AC Power Line conducted emissions	Section 10	Power Line conducted	Pass	40.87 dBuV (QP)
15.205, 15.209	Radiated Spurious Emission	< 54dBuV/m	Radiated	Pass	39.44 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	1.058	0.928
Mid	2441	1.057	0.942
High	2480	1.059	0.933
Worst		1.059	0.942

8.1.2. ENHANCED DATA RATE $\pi/4$ -DQPSK MODULATION

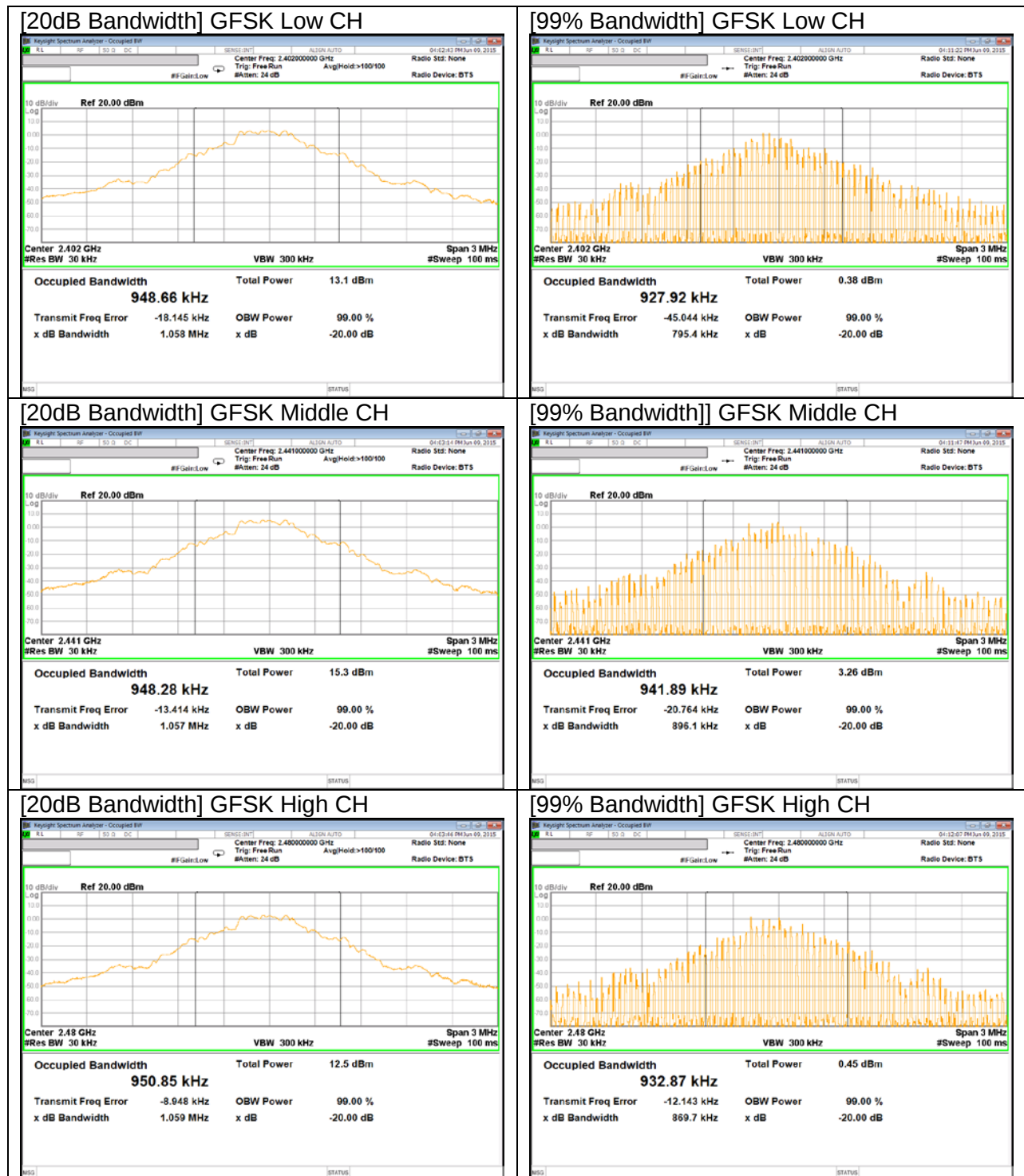
Channel	Frequency [MHz]	20 dB Bandwidth [MHz]	99% Bandwidth [MHz]
Low	2402	1.363	1.203
Mid	2441	1.362	1.194
High	2480	1.363	1.198
Worst		1.363	1.203

8.1.3. ENHANCED DATA RATE 8PSK MODULATION

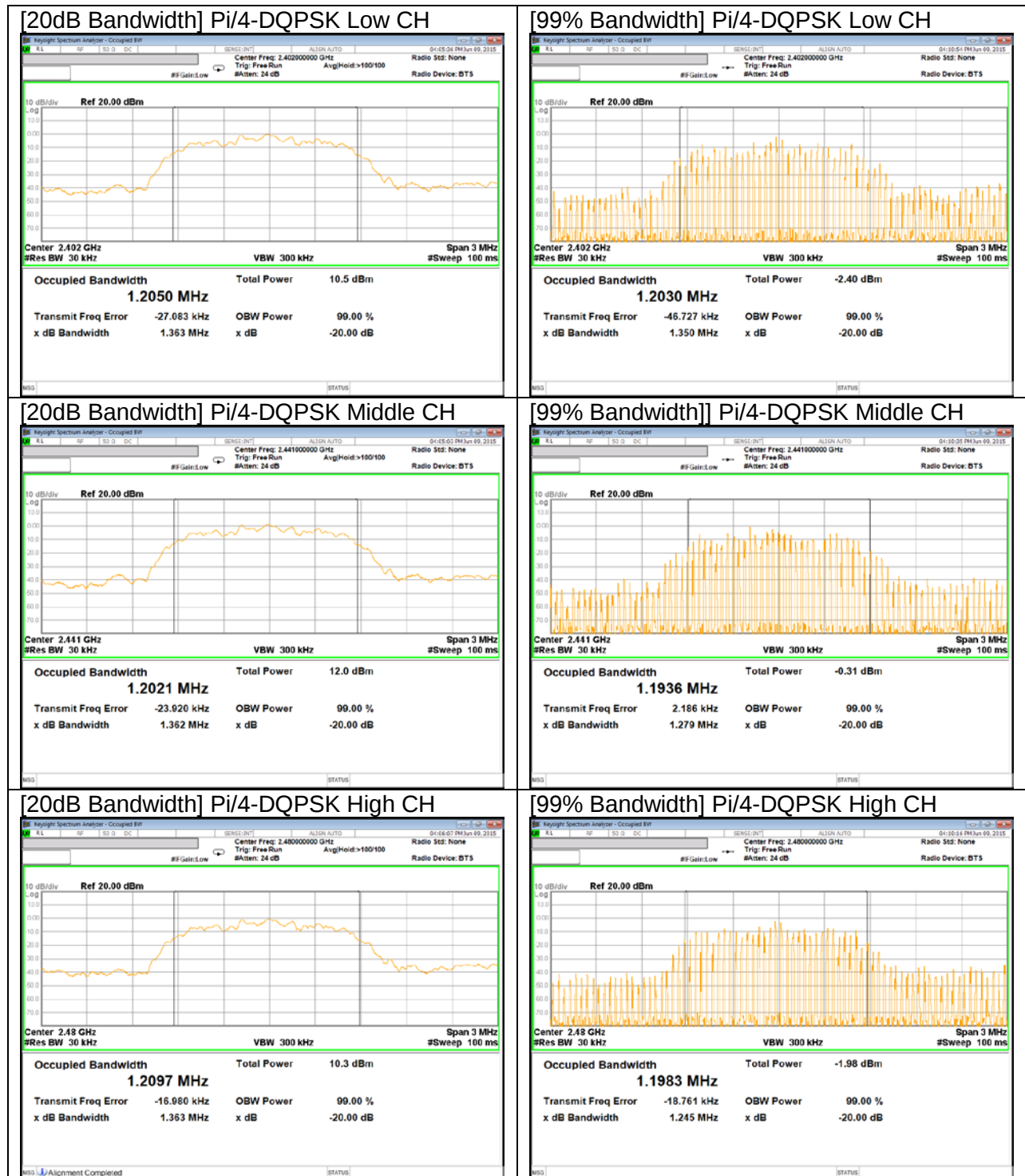
Channel	Frequency [MHz]	20 dB Bandwidth [MHz]	99% Bandwidth [MHz]
Low	2402	1.323	1.231
Mid	2441	1.322	1.169
High	2480	1.324	1.200
Worst		1.324	1.231

8.1.4. 20 dB AND 99% BANDWIDTH PLOTS

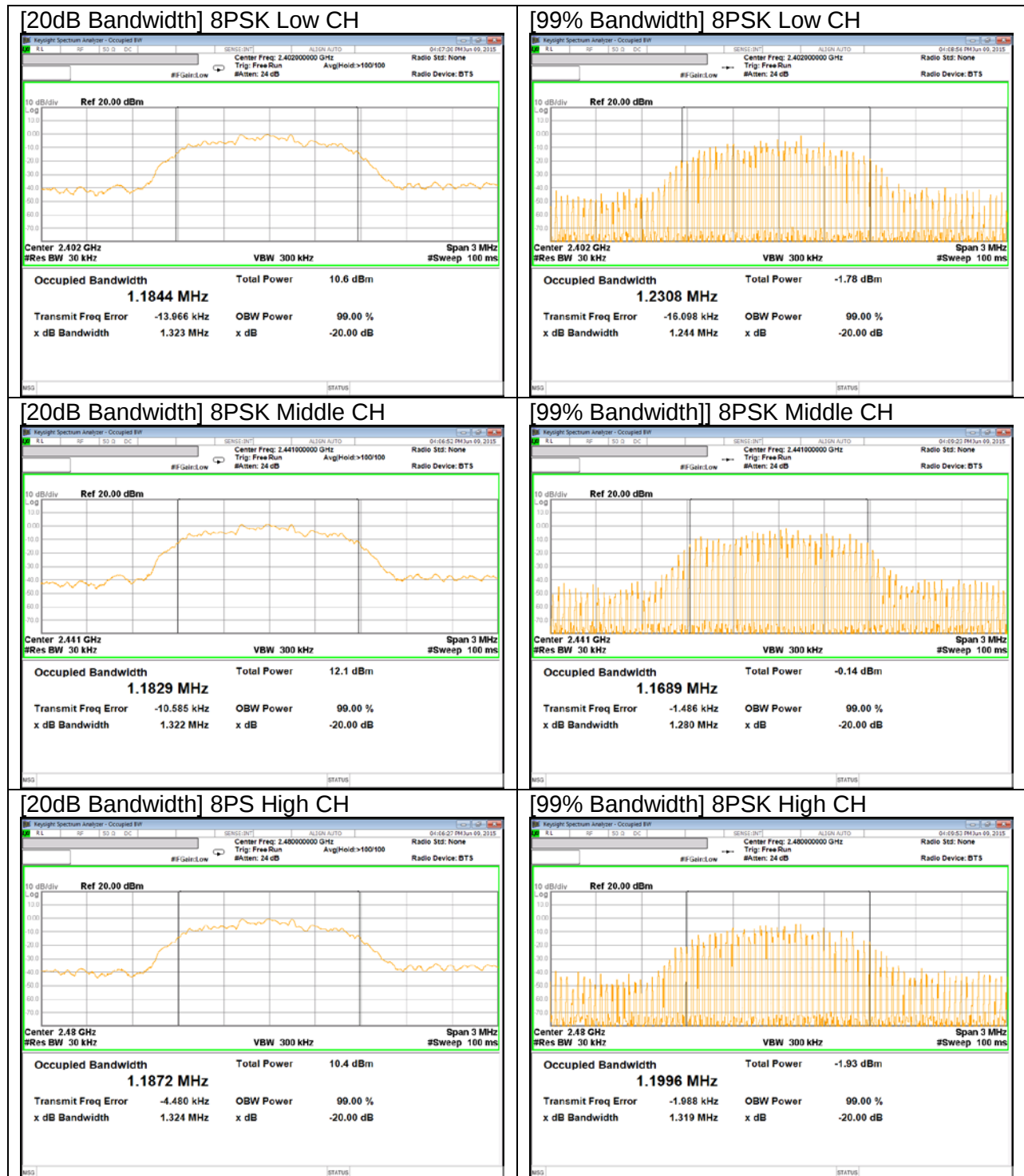
GFSK BANDWIDTH



Pi/4-DQPSK BANDWIDTH



8PSK BANDWIDTH



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.

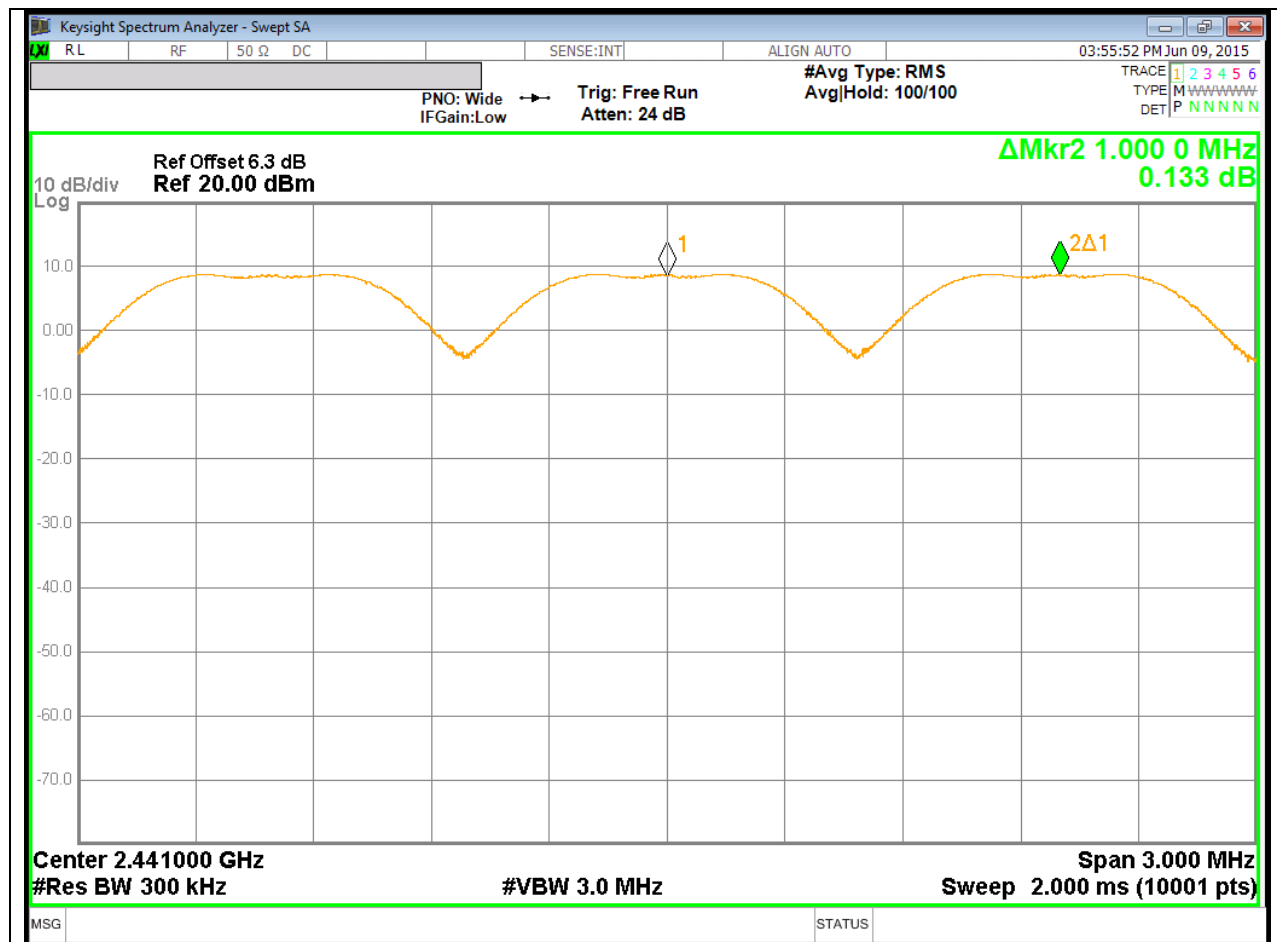
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than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

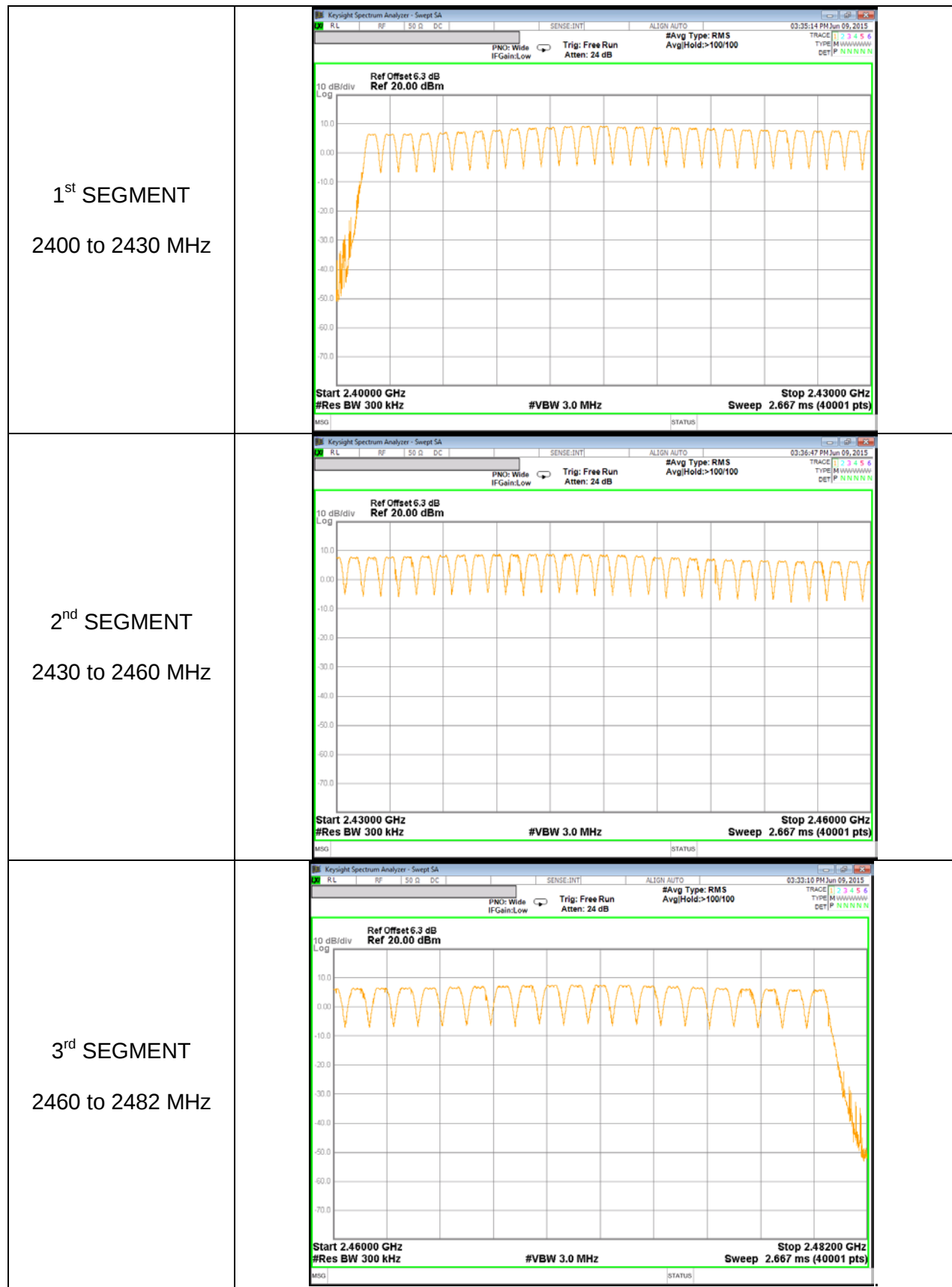
Frequency hopping systems in the 2400 – 2483.5 MHz band shall use at least 15 non-overlapping channels.

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.



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.

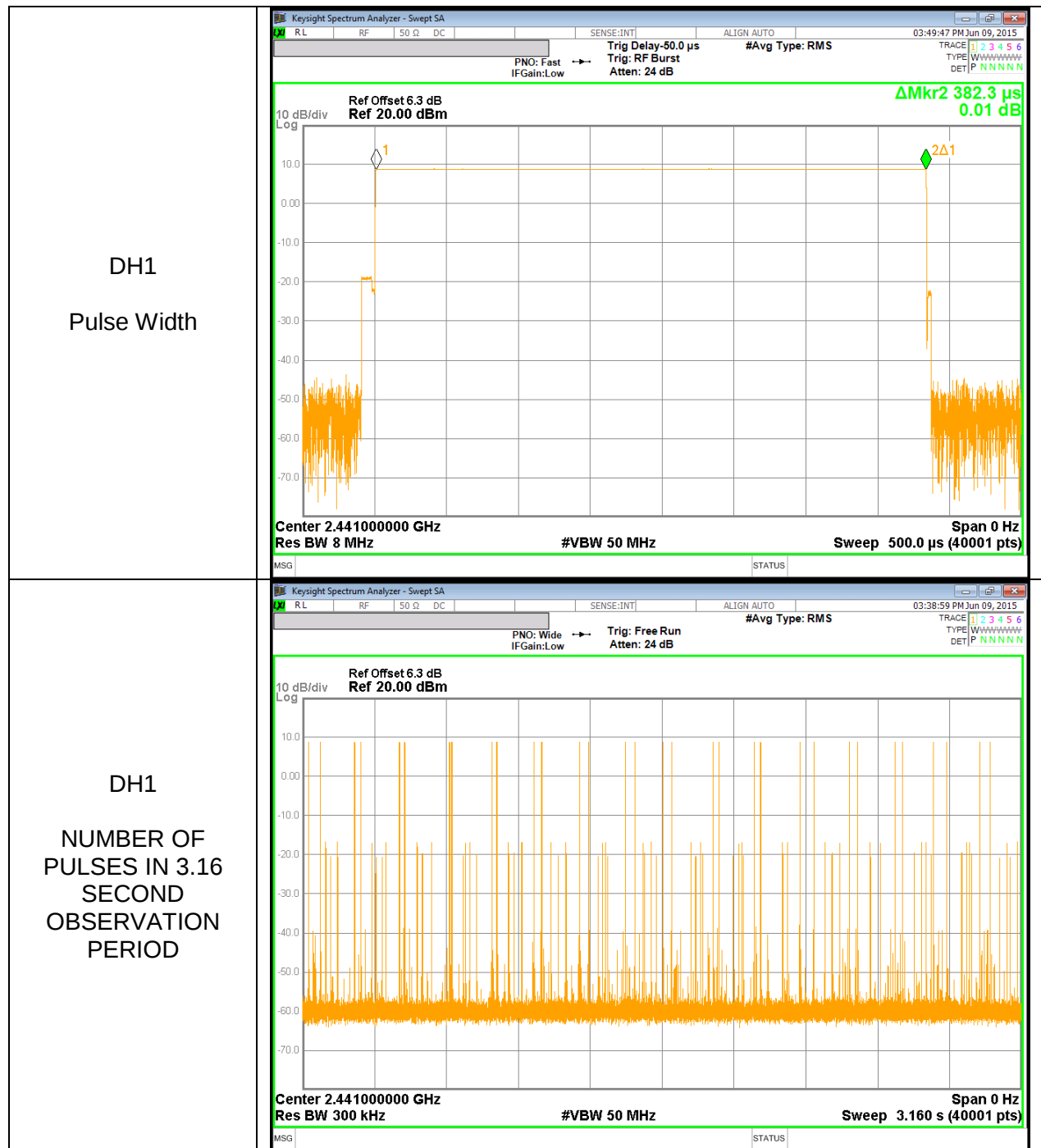
The average time of occupancy in the specified 31.6 second period (79 channels * 0.4 s) is equal to $10 * (\# \text{ of pulses in } 3.16 \text{ s}) * \text{pulse width}$.

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

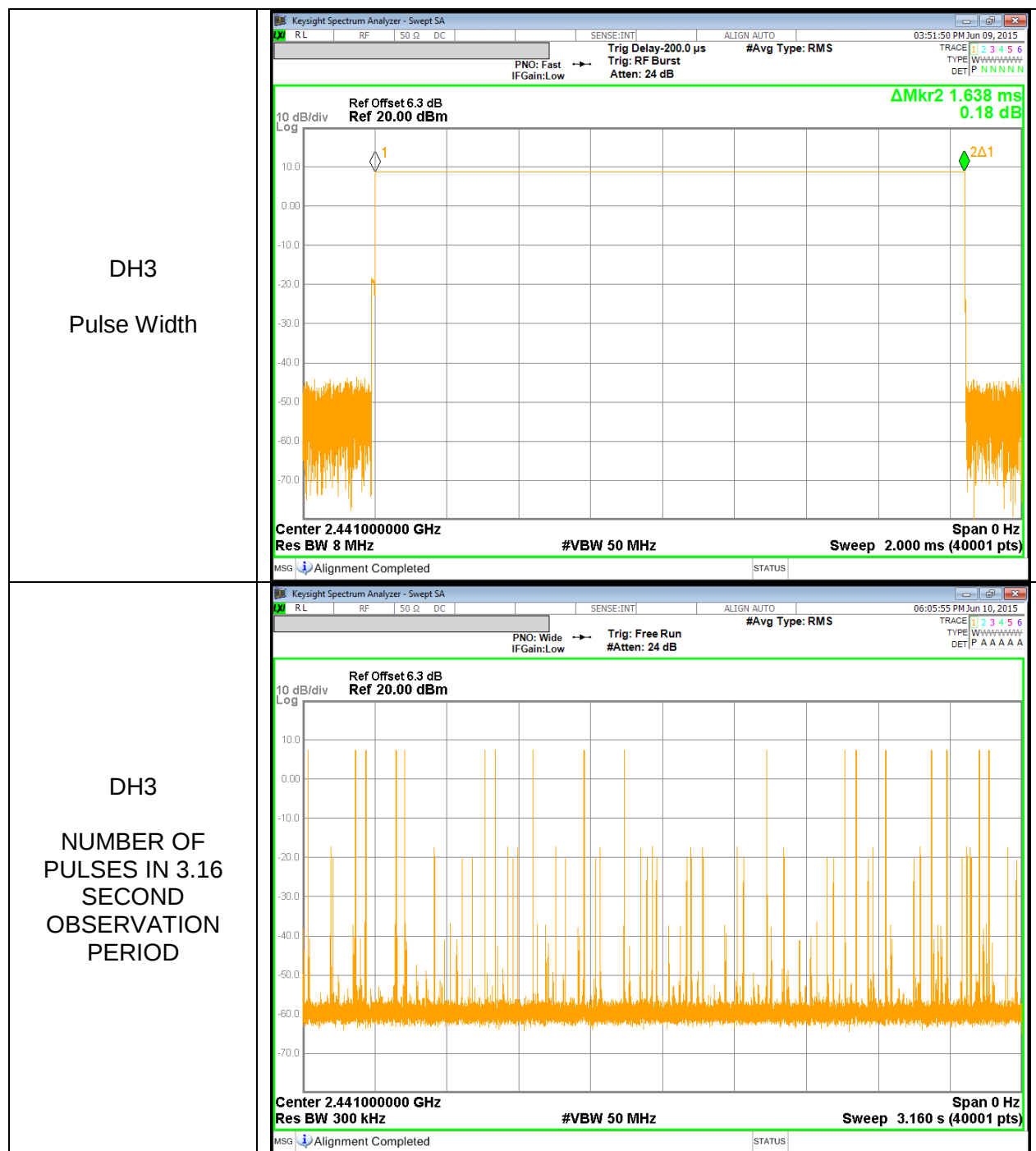
RESULTS

DH Packet	Pulse Width [msec]	Number of Pulses in 3.16 seconds	Average Time of Occupancy [sec]	Limit [sec]	Margin [sec]
GFSK Normal					
DH1	0.382	32	0.122240	0.4	-0.2778
DH3	1.637	18	0.294660	0.4	-0.1053
DH5	2.887	13	0.375310	0.4	-0.0247
DH Packet	Pulse Width [msec]	Number of Pulses in 0.8 seconds	Average Time of Occupancy [sec]	Limit [sec]	Margin [sec]
GFSK AFH					
DH1	0.382	8	0.030560	0.4	-0.3694
DH3	1.637	4.5	0.073665	0.4	-0.3263
DH5	2.887	3.25	0.093828	0.4	-0.3062

DH1



DH3



DH5

Pulse Width

Key parameters from the screenshot:

- Center: 2.441000000 GHz
- Res BW: 8 MHz
- #VBW: 50 MHz
- Sweep: 3.500 ms (40001 pts)
- Ref Offset: 6.3 dB
- Ref: 20.00 dBm
- Trig Delay: 300.0 μ s
- Trig: RF Burst
- Atten: 24 dB
- #Avg Type: RMS
- Span: 0 Hz

DH5

NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD

Key parameters from the screenshot:

- Center: 2.441000000 GHz
- Res BW: 300 kHz
- #VBW: 50 MHz
- Sweep: 3.160 s (40001 pts)
- Ref Offset: 6.3 dB
- Ref: 20.00 dBm
- Trig: Free Run
- Atten: 24 dB
- #Avg Type: RMS
- Span: 0 Hz

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	6.487	21	-14.513
Middle	2441	8.737	21	-12.263
High	2480	5.962	21	-15.038
Worst		8.737	21	-12.263

8.5.2. ENHANCED DATA RATE Pi/4-DPSK MODULATION

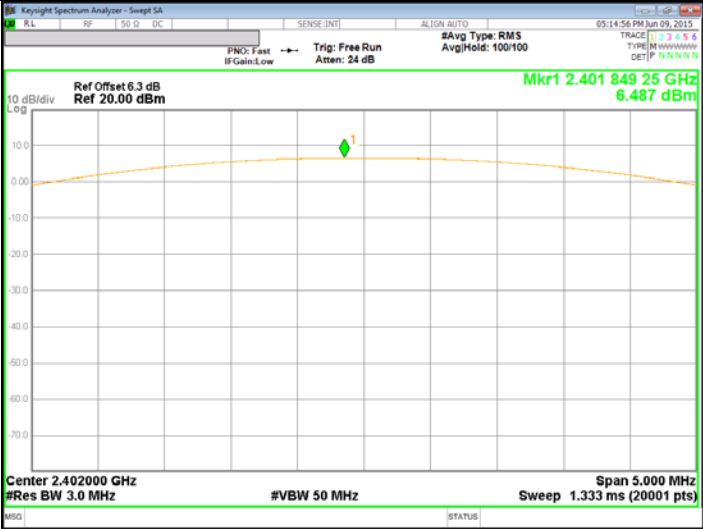
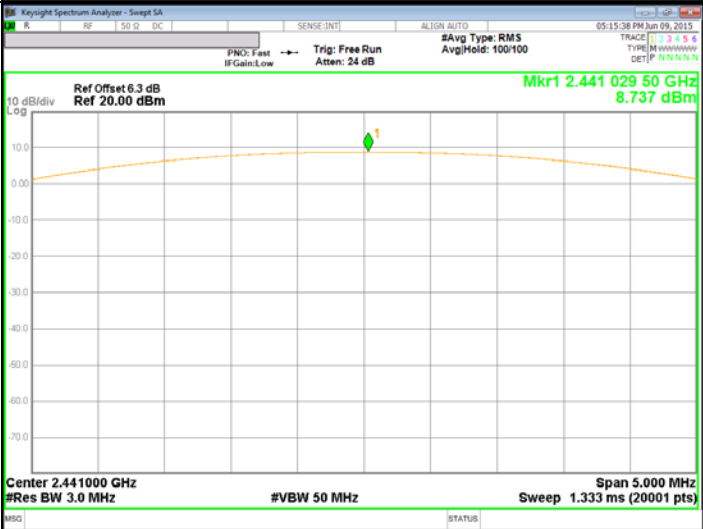
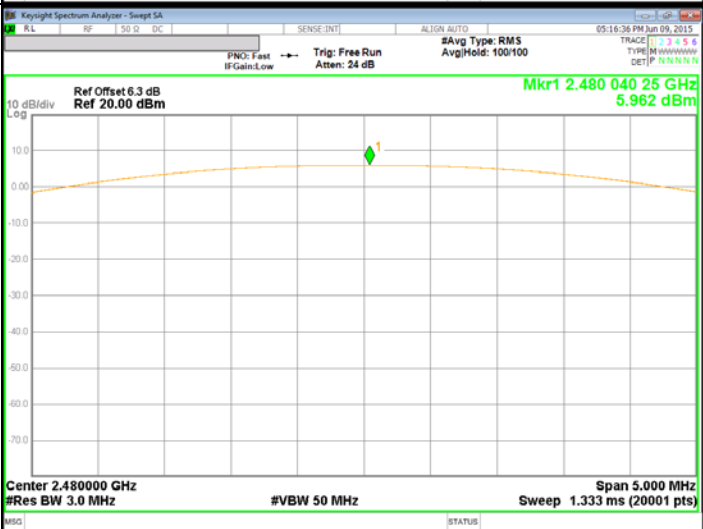
Channel	Frequency [MHz]	Output Power [dBm]	Limit [dBm]	Margin [dB]
Low	2402	5.322	21	-15.678
Middle	2441	6.993	21	-14.007
High	2480	4.929	21	-16.071
Worst		6.993	21	-14.007

8.5.3. ENHANCED DATA RATE 8PSK MODULATION

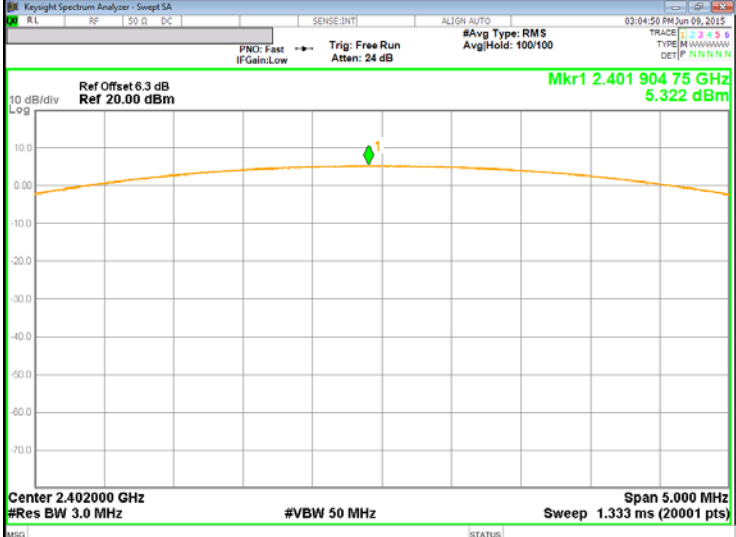
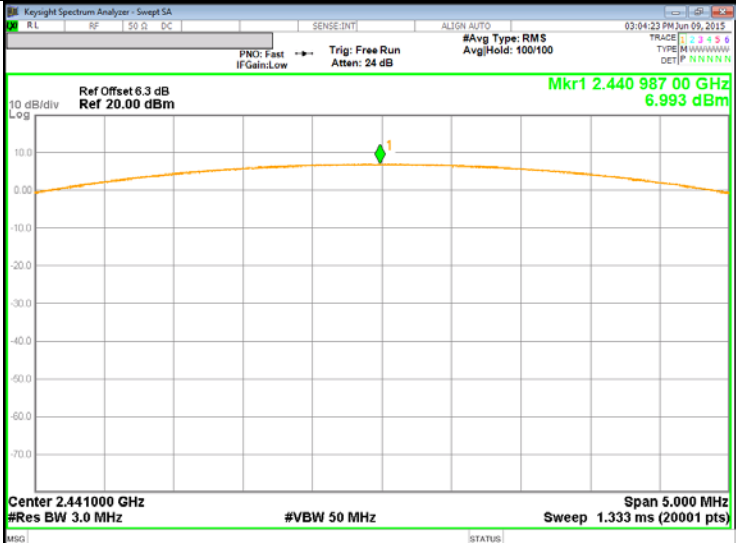
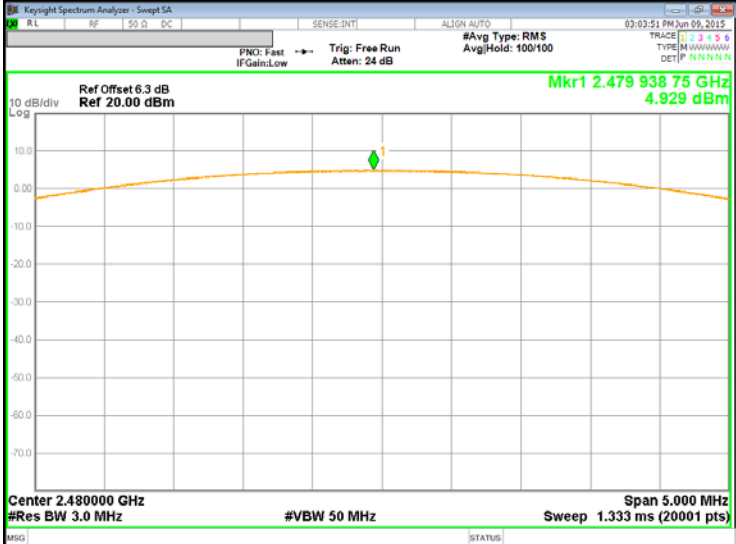
Channel	Frequency [MHz]	Output Power [dBm]	Limit [dBm]	Margin [dB]
Low	2402	5.675	21	-15.325
Middle	2441	7.369	21	-13.631
High	2480	5.273	21	-15.727
Worst		7.369	21	-13.631

8.5.4. OUTPUT POWER PLOTS

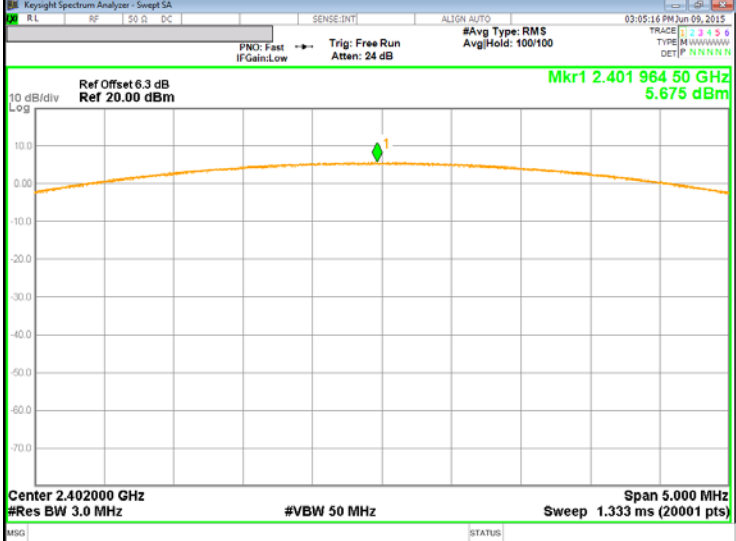
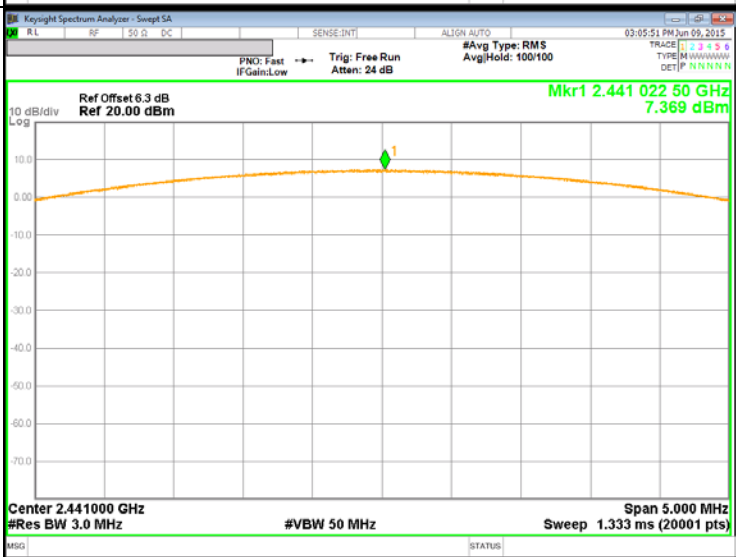
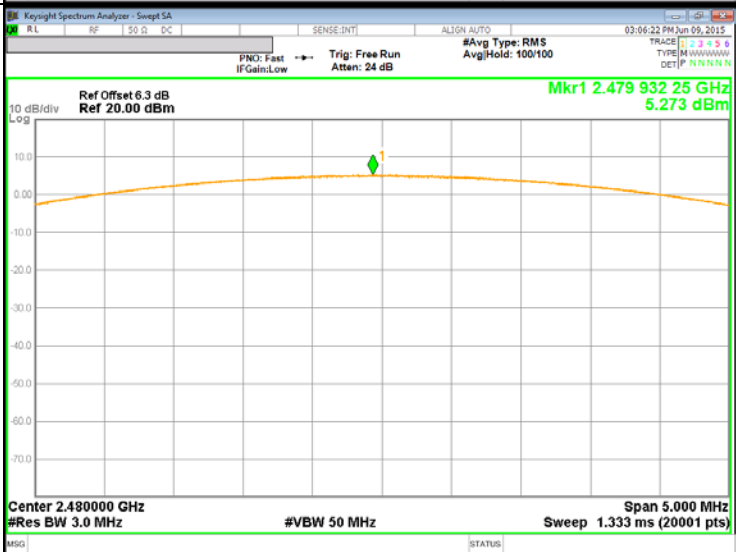
GFSK OUTPUT POWER

GFSK Low CH	 KeySight Spectrum Analyzer - Swept SA RL RF 50 D DC SENSE:INT ALIGN AUTO 05:14:56 PM Jun 09, 2015 PNO: Fast Trig: Free Run #Avg Type: RM5 AvgHold: 100/100 Ref Offset 6.3 dB Ref 20.00 dBm Mkr1 2.401 849 25 GHz 6.487 dBm 10 dB/div Log Center 2.402000 GHz #Res BW 3.0 MHz #VBW 50 MHz Span 5.000 MHz Sweep 1.333 ms (20001 pts)
GFSK Middle CH	 KeySight Spectrum Analyzer - Swept SA RL RF 50 D DC SENSE:INT ALIGN AUTO 05:15:38 PM Jun 09, 2015 PNO: Fast Trig: Free Run #Avg Type: RM5 AvgHold: 100/100 Ref Offset 6.3 dB Ref 20.00 dBm Mkr1 2.441 029 50 GHz 8.737 dBm 10 dB/div Log Center 2.441000 GHz #Res BW 3.0 MHz #VBW 50 MHz Span 5.000 MHz Sweep 1.333 ms (20001 pts)
GFSK High CH	 KeySight Spectrum Analyzer - Swept SA RL RF 50 D DC SENSE:INT ALIGN AUTO 05:16:38 PM Jun 09, 2015 PNO: Fast Trig: Free Run #Avg Type: RM5 AvgHold: 100/100 Ref Offset 6.3 dB Ref 20.00 dBm Mkr1 2.480 040 25 GHz 5.962 dBm 10 dB/div Log Center 2.480000 GHz #Res BW 3.0 MHz #VBW 50 MHz Span 5.000 MHz Sweep 1.333 ms (20001 pts)

Pi/4-DPSK OUTPUT POWER

Pi/4-DPSK Low CH	
Pi/4-DPSK Middle CH	
Pi/4-DPSK High CH	

8PSK OUTPUT POWER

8PSK Low CH	 KeySight Spectrum Analyzer - Swept SA PNO: Fast IFGain: Low Trig: Free Run Atten: 24 dB #Avg Type: RMS AvgHold: 100/100 Ref Offset: 6.3 dB Ref: 20.00 dBm Mkr1 2.40196450 GHz 5.675 dBm Center 2.402000 GHz #Res BW 3.0 MHz #VBW 50 MHz Span 5.000 MHz Sweep 1.333 ms (20001 pts)
8PSK Middle CH	 KeySight Spectrum Analyzer - Swept SA PNO: Fast IFGain: Low Trig: Free Run Atten: 24 dB #Avg Type: RMS AvgHold: 100/100 Ref Offset: 6.3 dB Ref: 20.00 dBm Mkr1 2.44102250 GHz 7.369 dBm Center 2.441000 GHz #Res BW 3.0 MHz #VBW 50 MHz Span 5.000 MHz Sweep 1.333 ms (20001 pts)
8PSK High CH	 KeySight Spectrum Analyzer - Swept SA PNO: Fast IFGain: Low Trig: Free Run Atten: 24 dB #Avg Type: RMS AvgHold: 100/100 Ref Offset: 6.3 dB Ref: 20.00 dBm Mkr1 2.47993225 GHz 5.273 dBm Center 2.480000 GHz #Res BW 3.0 MHz #VBW 50 MHz Span 5.000 MHz Sweep 1.333 ms (20001 pts)

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]	AV power [dBm]	AV power [mW]
Low	2402	6.40	4.36
Middle	2441	8.65	7.32
High	2480	5.87	3.86

8.6.2. DATA RATE PI/4-DQPSK MODULATION

Channel	Frequency [MHz]	AV power [dBm]	AV power [mW]
Low	2402	3.20	2.09
Middle	2441	4.72	2.97
High	2480	2.96	1.97

8.6.3. ENHANCED DATA RATE 8PSK MODULATION

Channel	Frequency [MHz]	AV power [dBm]	AV power [mW]
Low	2402	3.26	2.12
Middle	2441	4.83	3.04
High	2480	3.08	2.03

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.

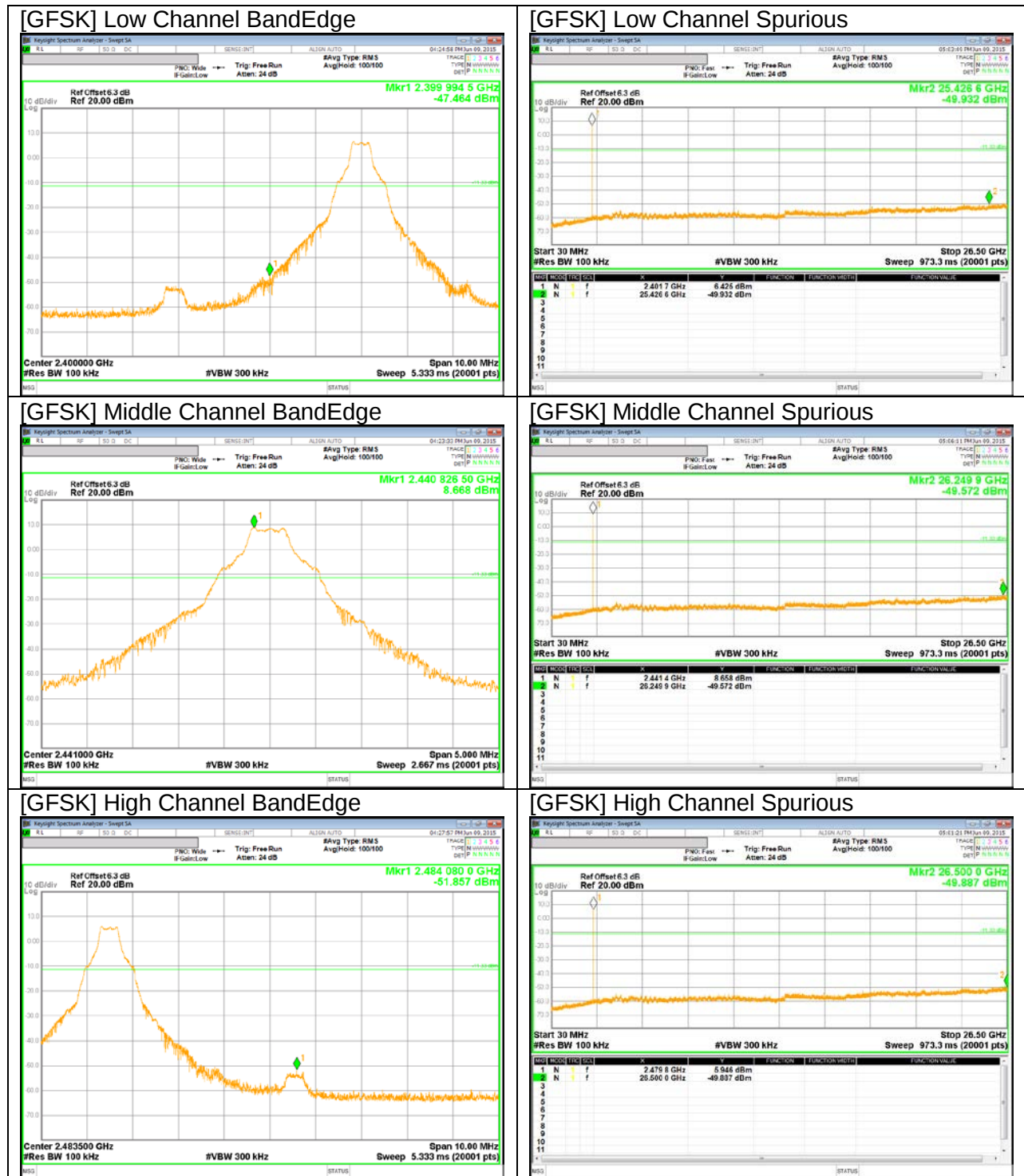
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

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

RESULTS

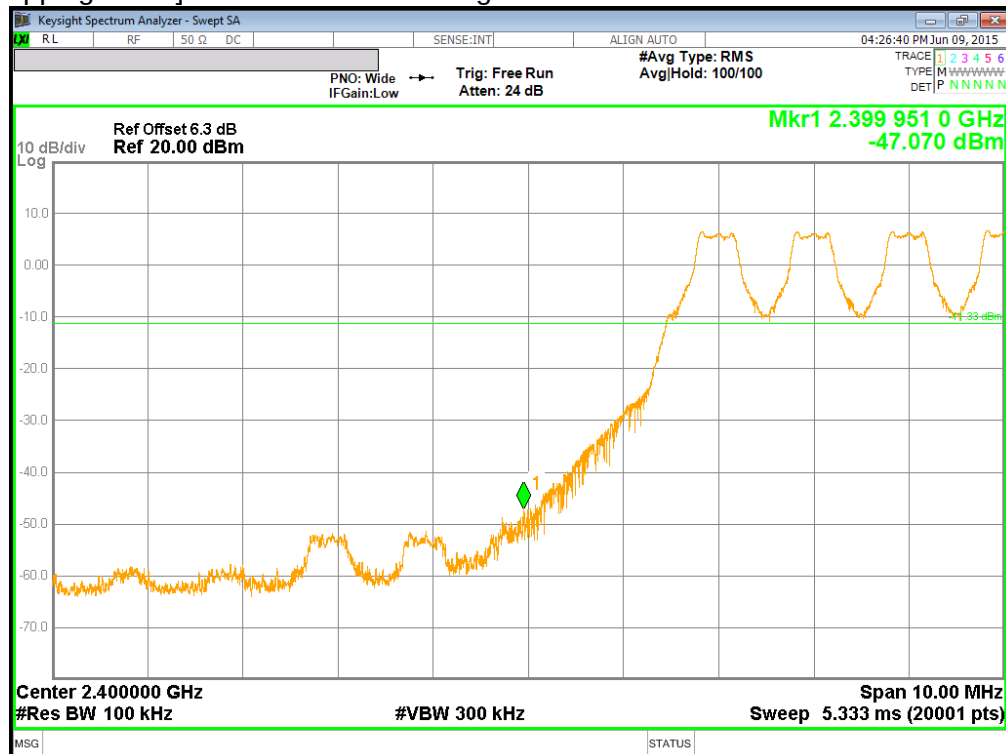
8.7.1. BASIC DATA RATE GFSK MODULATION

GFSK Mode

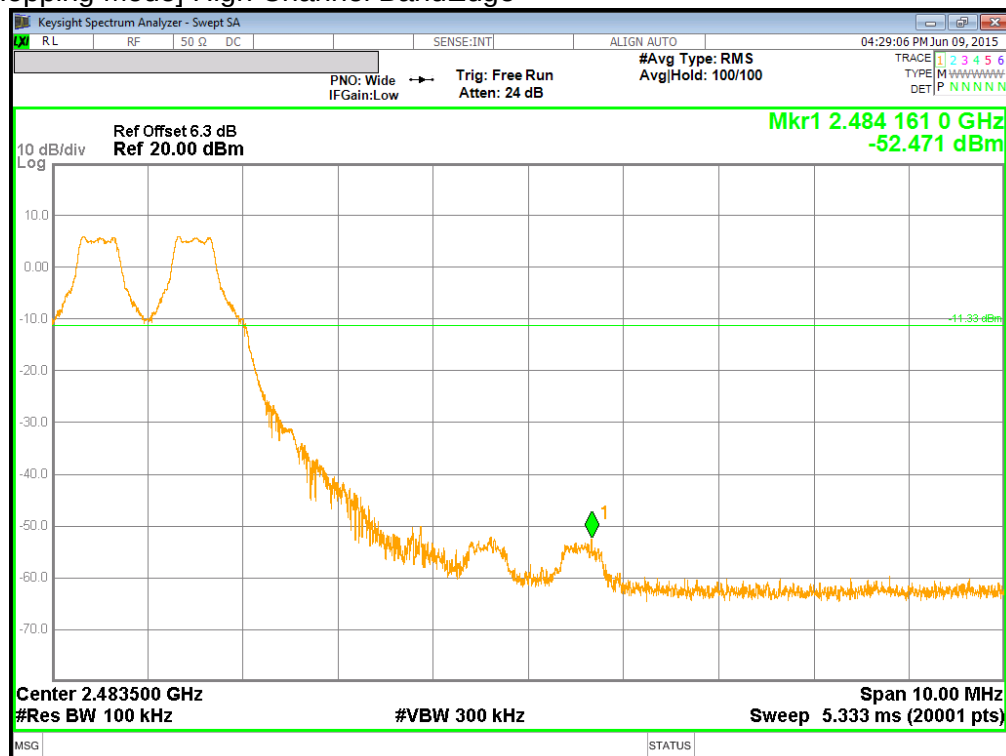


BandEdge Emission at GFSK Hopping Mode

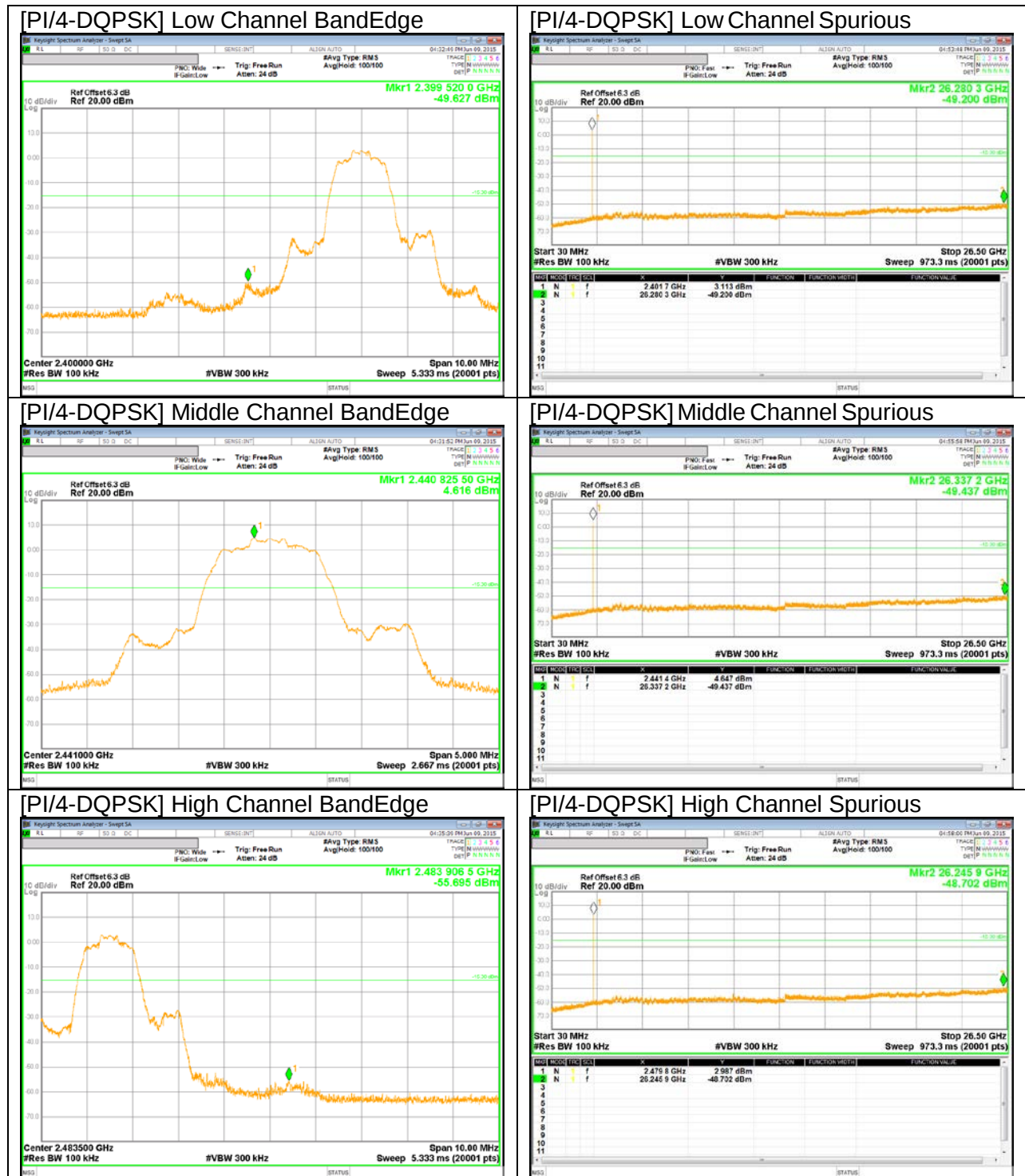
[GFSK Hopping Mode] Low Channel BandEdge



[GFSK Hopping Mode] High Channel BandEdge

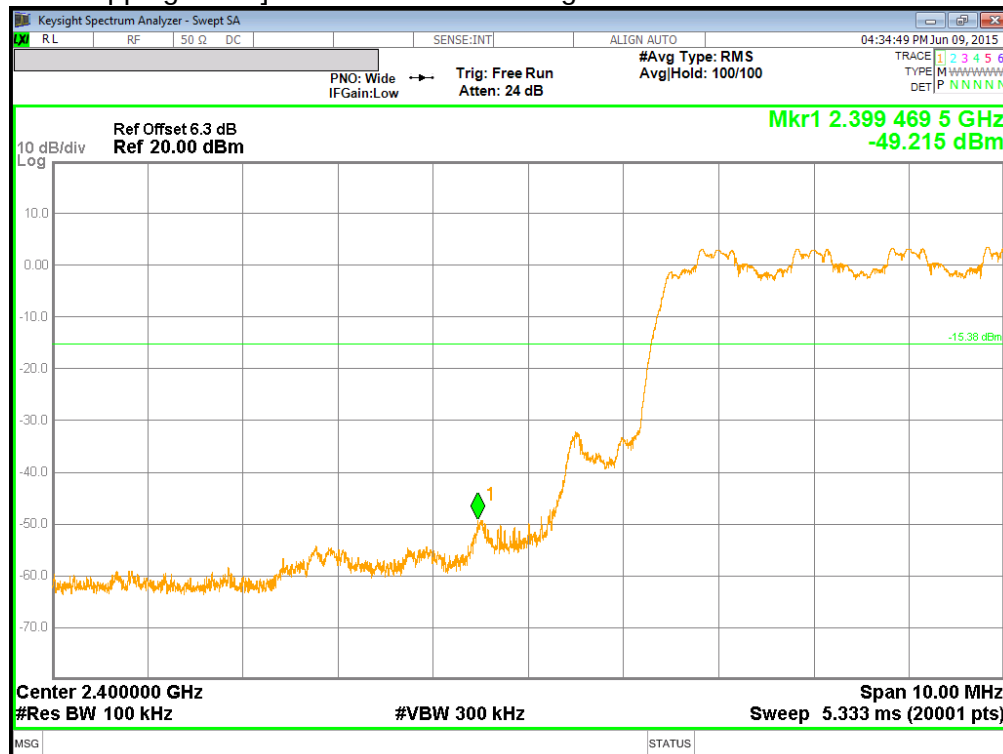


PI/4-DQPSK Mode

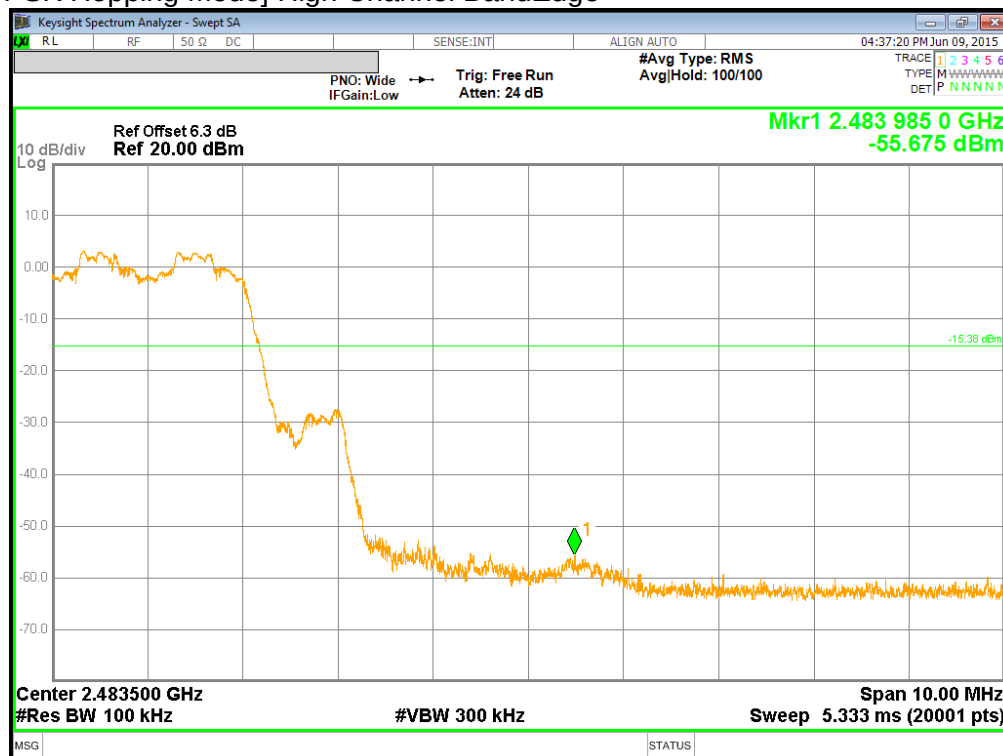


BandEdge Emission at PI/4-DQPSK Hopping Mode

[PI/4-DQPSK Hopping Mode] Low Channel BandEdge



[PI/4-DQPSK Hopping Mode] High Channel BandEdge

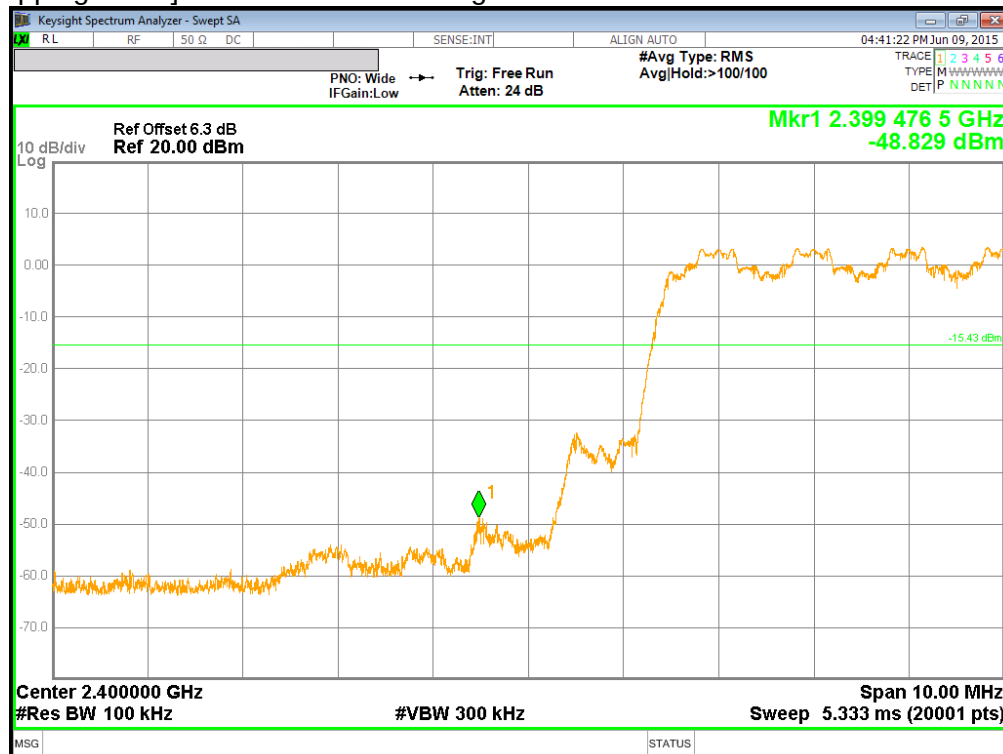


8PSK Mode

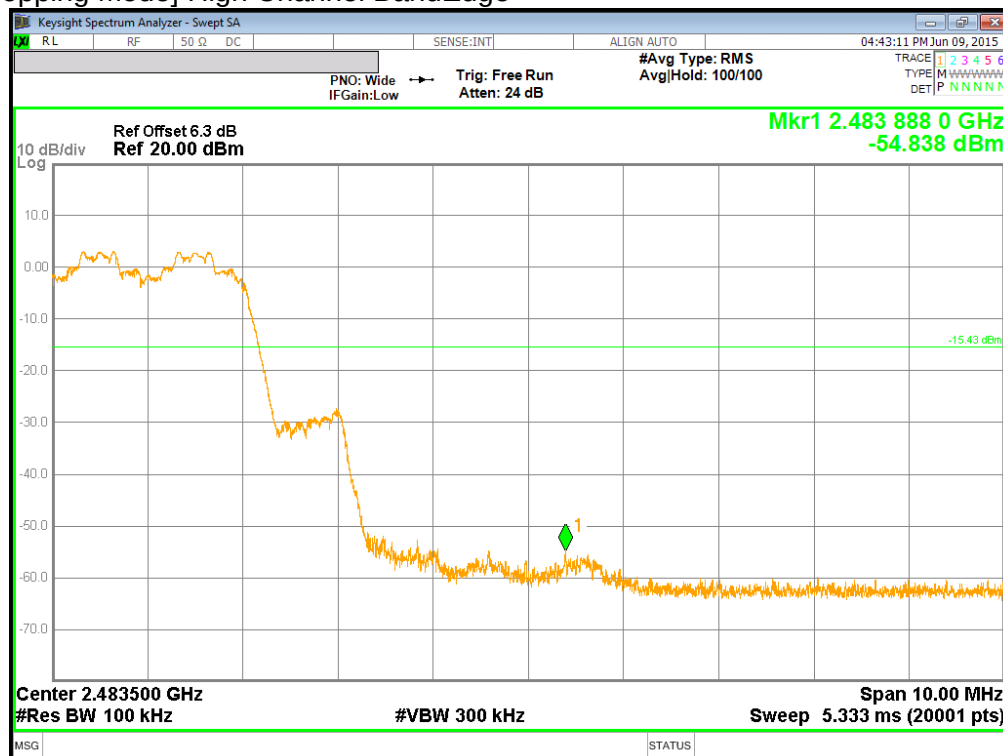


BandEdge Emission at 8PSK Hopping Mode

[8PSK Hopping Mode] Low Channel BandEdge



[8PSK Hopping Mode] High Channel BandEdge



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.

$$\text{GFSK} = 1/T = 1 / 0.0029\text{S} = 350\text{Hz}.$$

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.

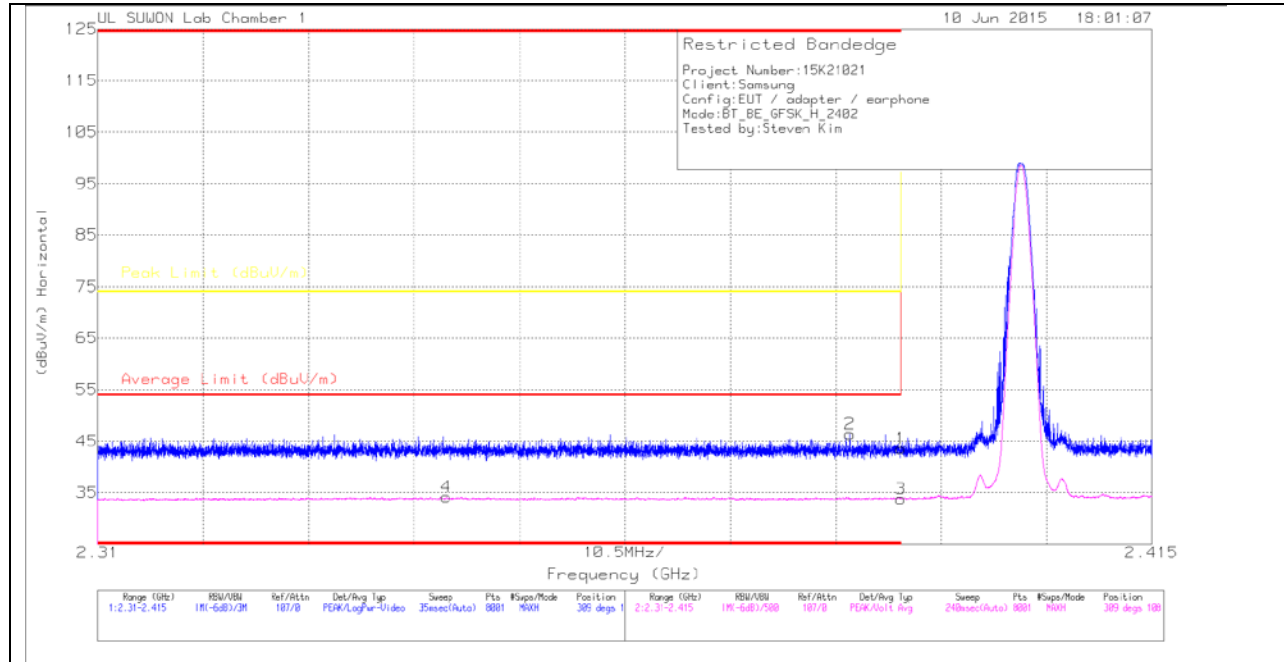
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

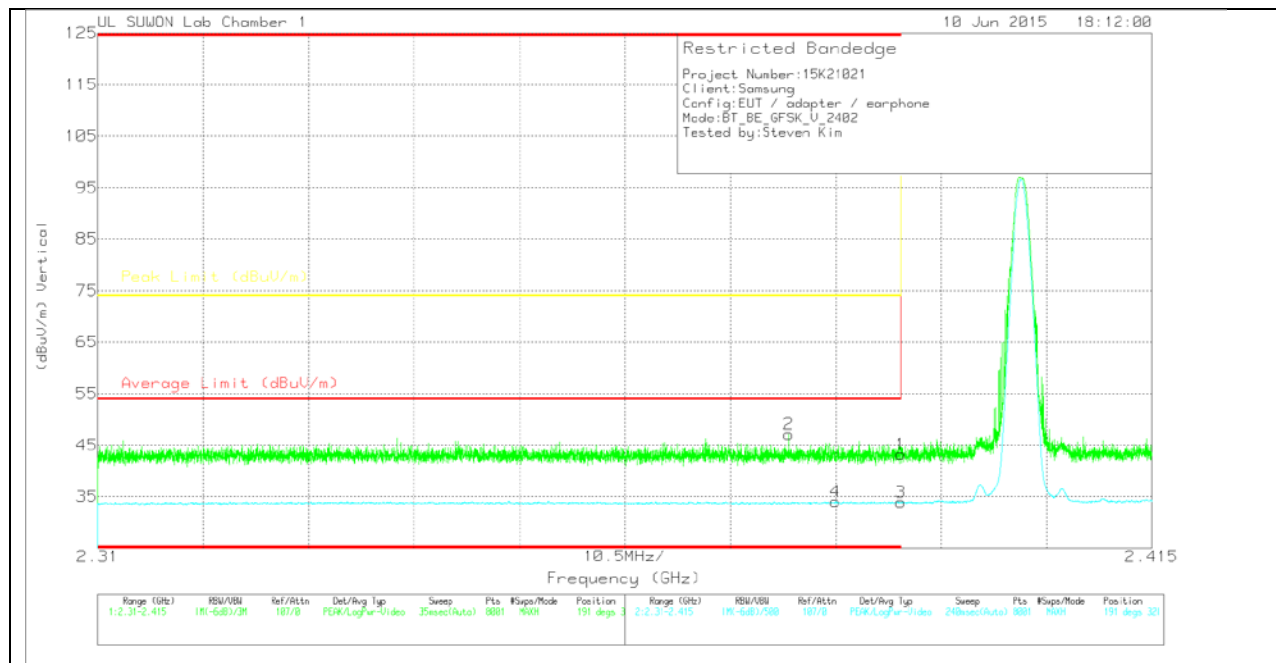
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_2_10 dB	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	38.46	Pk	27.9	-22.8	43.56	-	-	74	-30.44	309	108	H
2	* 2.385	41.27	Pk	27.9	-22.8	46.37	-	-	74	-27.63	309	108	H
3	* 2.39	28.67	VB1T	27.9	-22.8	33.77	54	-20.23	-	-	309	108	H
4	* 2.345	29.23	VB1T	27.8	-22.9	34.13	54	-19.87	-	-	309	108	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

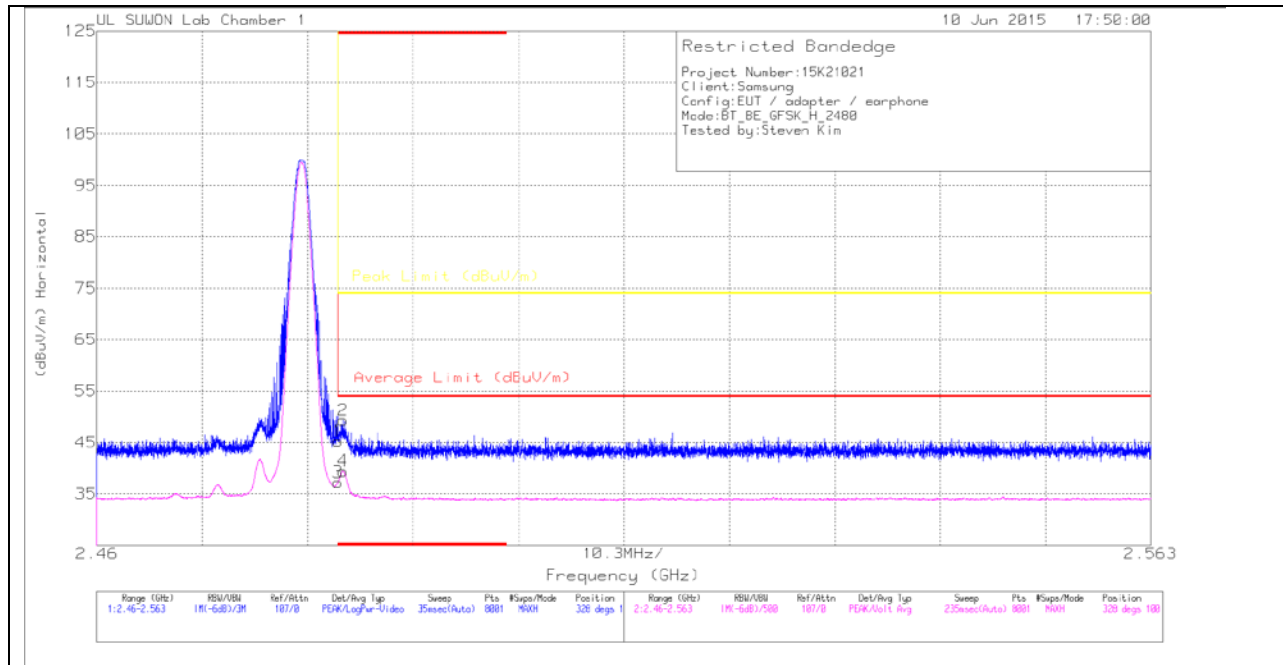
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_2_10 dB	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	38.12	Pk	27.9	-22.8	43.22	-	-	74	-30.78	191	321	V
2	* 2.379	41.98	Pk	27.9	-22.8	47.08	-	-	74	-26.92	191	321	V
3	* 2.39	28.81	VB1T	27.9	-22.8	33.91	54	-20.09	-	-	191	321	V
4	* 2.383	28.95	VB1T	27.9	-22.8	34.05	54	-19.95	-	-	191	321	V

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

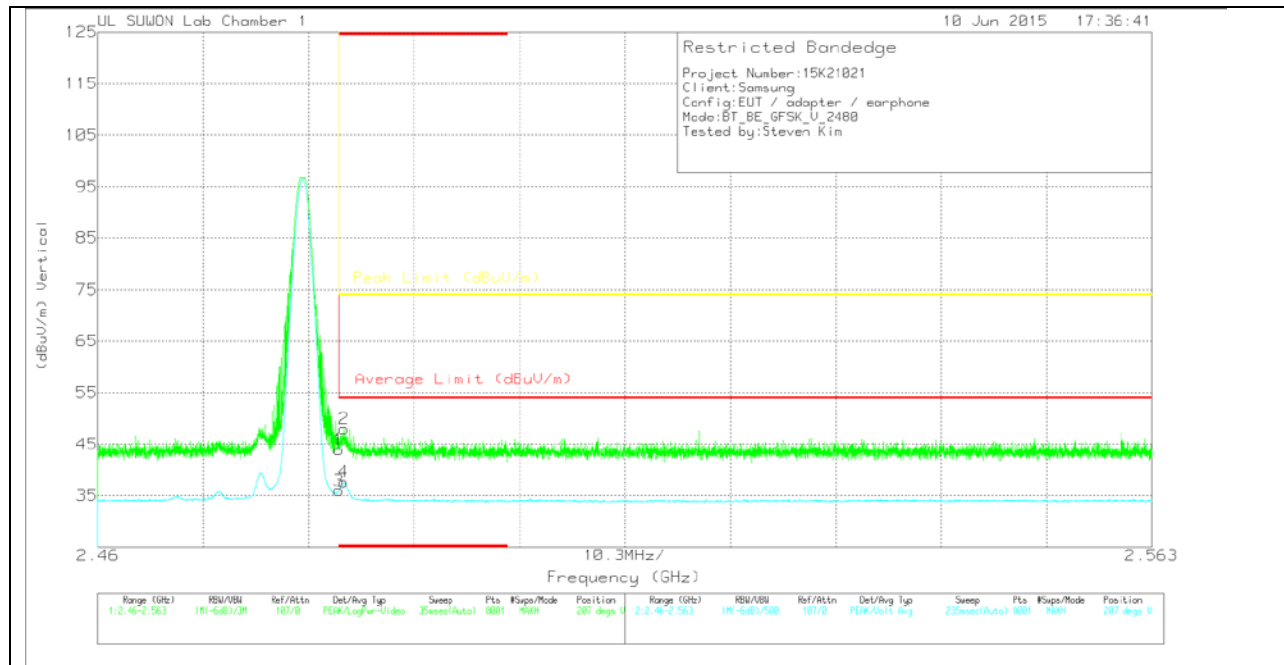
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_2_10 dB	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	40.01	Pk	27.9	-22.6	45.31	-	-	74	-28.69	328	100	H
2	* 2.484	44.01	Pk	27.9	-22.6	49.31	-	-	74	-24.69	328	100	H
3	* 2.484	31.96	VB1T	27.9	-22.6	37.26	54	-16.74	-	-	328	100	H
4	* 2.484	34.14	VB1T	27.9	-22.6	39.44	54	-14.56	-	-	328	100	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	Path_2_10 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	38.62	Pk	27.9	-22.6	43.92	-	-	74	-30.08	207	366	V
2	* 2.484	42.67	Pk	27.9	-22.6	47.97	-	-	74	-26.03	207	366	V
3	* 2.484	30.7	VB1T	27.9	-22.6	36	54	-18	-	-	207	366	V
4	* 2.484	32.36	VB1T	27.9	-22.6	37.66	54	-16.34	-	-	207	366	V

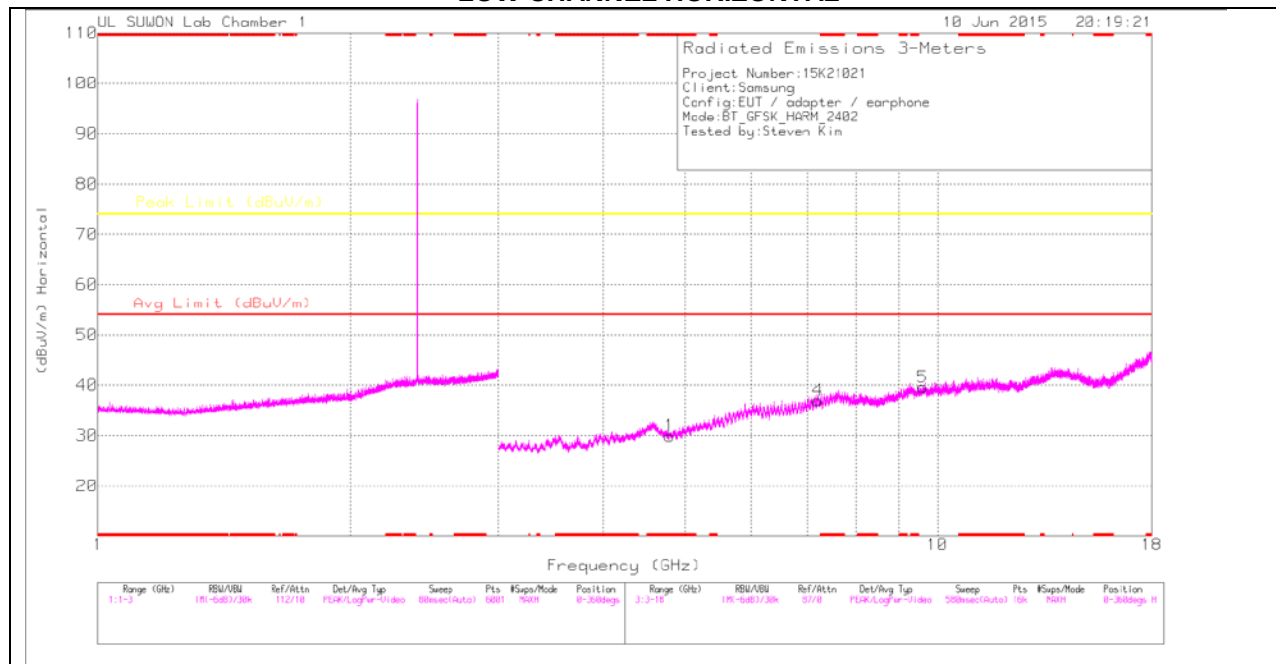
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

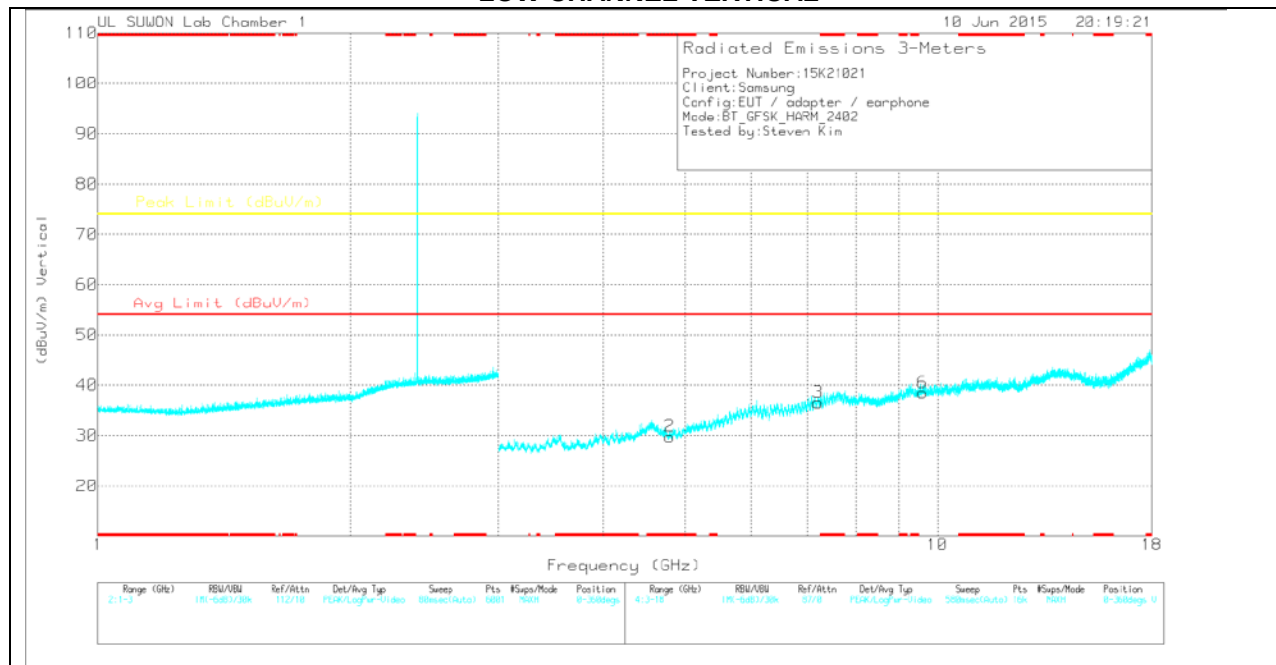
VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



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	Path_3_3G HP	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.804	27.82	PK	31.9	-29.8	29.92	-	-	74	-44.08	0-360	200	H
4	7.206	25.36	PK	37	-25.4	36.96	-	-	-	-	0-360	100	H
5	9.608	22.93	PK	37.7	-21	39.63	-	-	-	-	0-360	200	H
2	* 4.804	27.72	PK	31.9	-29.8	29.82	-	-	74	-44.18	0-360	100	V
3	7.206	24.98	PK	37	-25.4	36.58	-	-	-	-	0-360	100	V
6	9.608	21.81	PK	37.7	-21	38.51	-	-	-	-	0-360	100	V

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

PK – Peak detector

Radiated Emissions

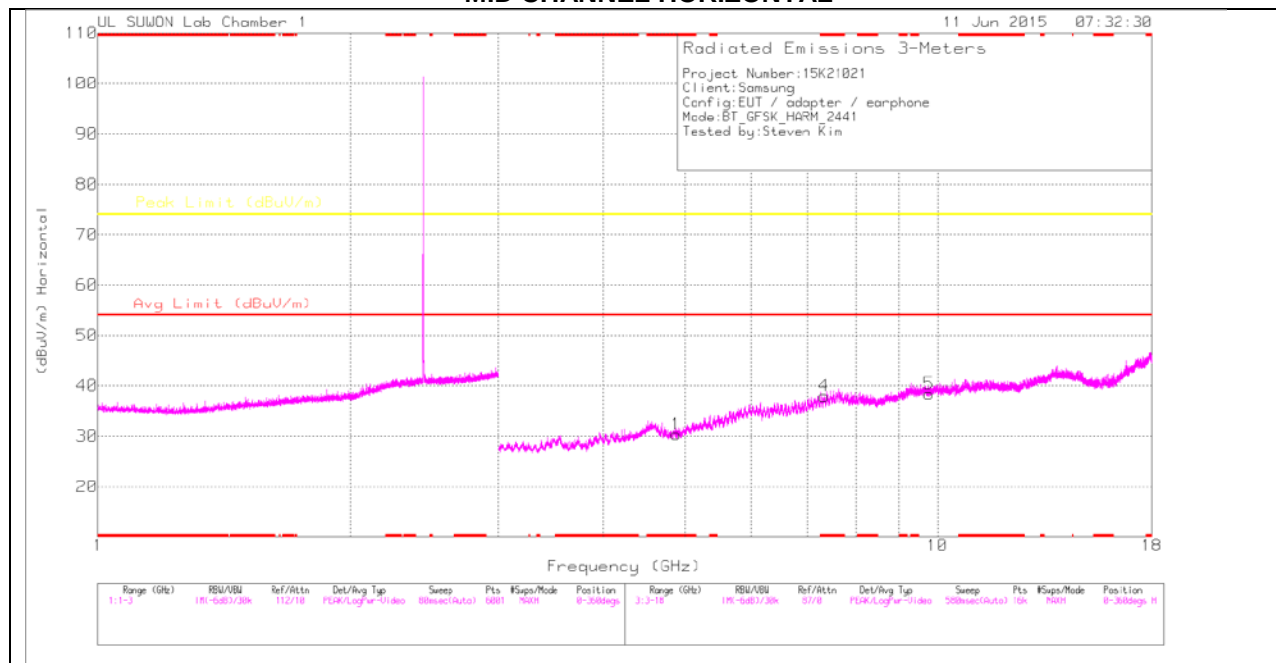
Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_3_3G HP	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.803	39.87	PK3	31.9	-29.8	41.97	-	-	74	-32.03	295	397	H
* 4.803	25.4	VB1T	31.9	-29.8	27.5	54	-26.5	-	-	295	397	H
7.211	29.56	PK3	37	-25.4	41.16	-	-	-	-	72	120	H
7.21	22.26	VB1T	37	-25.4	33.86	-	-	-	-	72	120	H
9.609	25.17	PK3	37.7	-21	41.87	-	-	-	-	72	220	H
9.607	19.39	VB1T	37.7	-21	36.09	-	-	-	-	72	220	H
* 4.803	32.4	PK3	31.9	-29.8	34.5	-	-	74	-39.5	295	100	V
* 4.803	25.42	VB1T	31.9	-29.8	27.52	54	-26.48	-	-	295	100	V
7.205	32.57	PK3	37	-25.4	44.17	-	-	-	-	54	371	V
7.206	22.41	VB1T	37	-25.4	34.01	-	-	-	-	54	371	V
9.609	26.19	PK3	37.7	-21	42.89	-	-	-	-	1	138	V
9.609	19.34	VB1T	37.7	-21	36.04	-	-	-	-	1	138	V

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

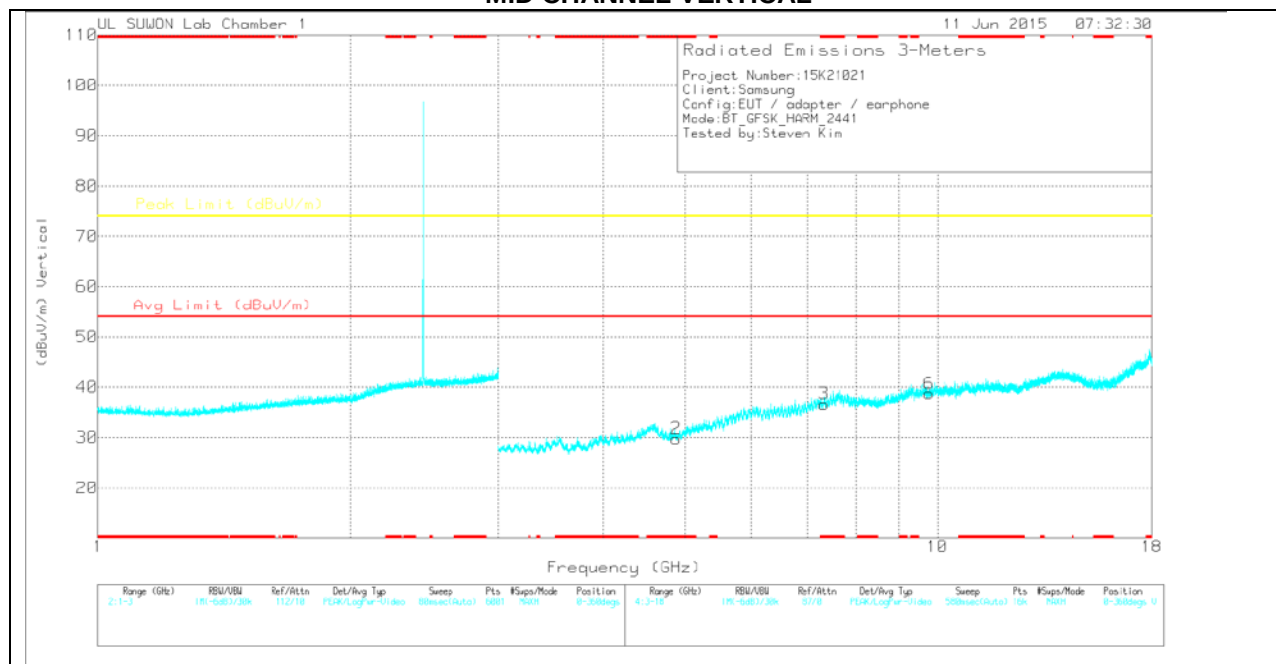
PK3 - FHSS Method: Maximum Peak

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

MID CHANNEL HORIZONTAL



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	Path_3_3G HP	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.882	27.46	PK	32	-29.1	30.36	-	-	74	-43.64	0-360	100	H
4	* 7.323	26.35	PK	37.2	-25.6	37.95	-	-	74	-36.05	0-360	200	H
5	9.764	22.8	PK	37.6	-22	38.4	-	-	-	-	0-360	100	H
2	* 4.882	26.89	PK	32	-29.1	29.79	-	-	74	-44.21	0-360	100	V
3	* 7.323	25.09	PK	37.2	-25.6	36.69	-	-	74	-37.31	0-360	200	V
6	9.764	23.16	PK	37.6	-22	38.76	-	-	-	-	0-360	200	V

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

PK – Peak detector

Radiated Emissions

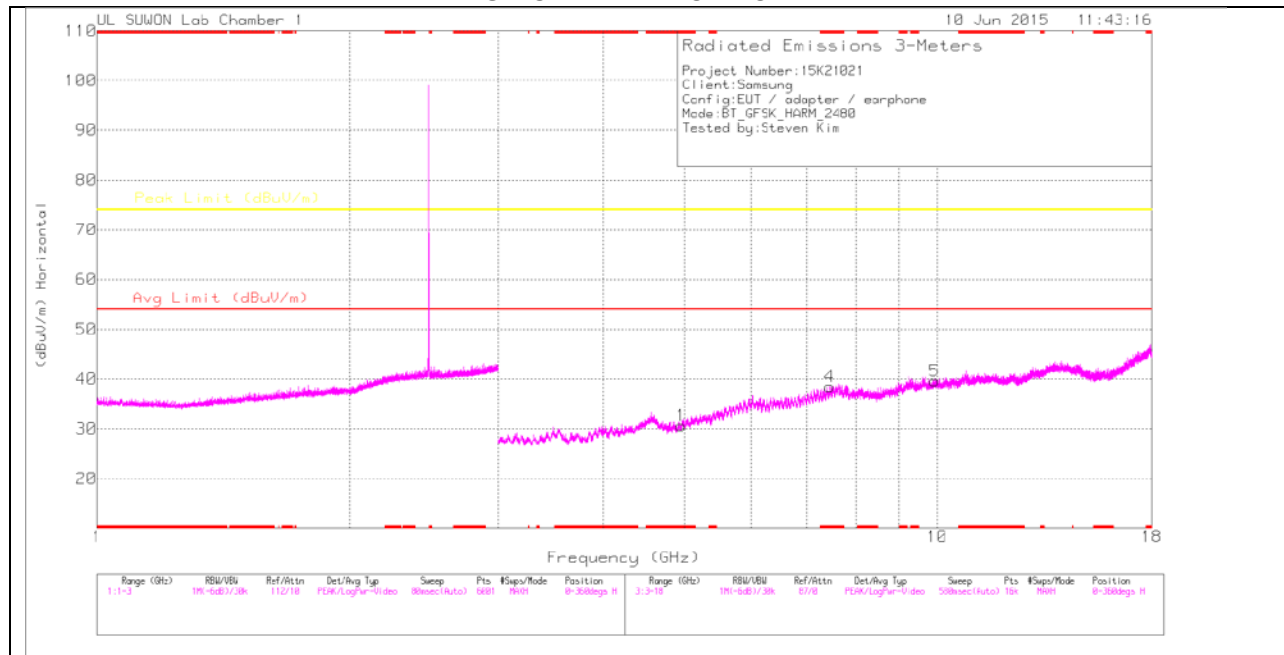
Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_3_3G HP	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.882	39.51	PK2	32	-29.1	42.41	-	-	74	-31.59	14	190	H
* 4.883	26.75	MAv1	32	-29.1	29.65	54	-24.35	-	-	14	190	H
* 7.322	36.87	PK2	37.2	-25.6	48.47	-	-	74	-25.53	243	211	H
* 7.323	24.67	MAv1	37.2	-25.6	36.27	54	-17.73	-	-	243	211	H
9.764	33.94	PK2	37.6	-22	49.54	-	-	-	-	64	306	H
9.763	20.9	MAv1	37.6	-22	36.5	-	-	-	-	64	306	H
* 4.882	38.37	PK2	32	-29.1	41.27	-	-	74	-32.73	216	143	V
* 4.882	26.11	MAv1	32	-29.1	29.01	54	-24.99	-	-	216	143	V
* 7.323	37.01	PK2	37.2	-25.6	48.61	-	-	74	-25.39	301	277	V
* 7.323	24.43	MAv1	37.2	-25.6	36.03	54	-17.97	-	-	301	277	V
9.764	33.29	PK2	37.6	-22	48.89	-	-	-	-	64	200	V
9.762	21.8	MAv1	37.6	-22	37.4	-	-	-	-	64	200	V

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

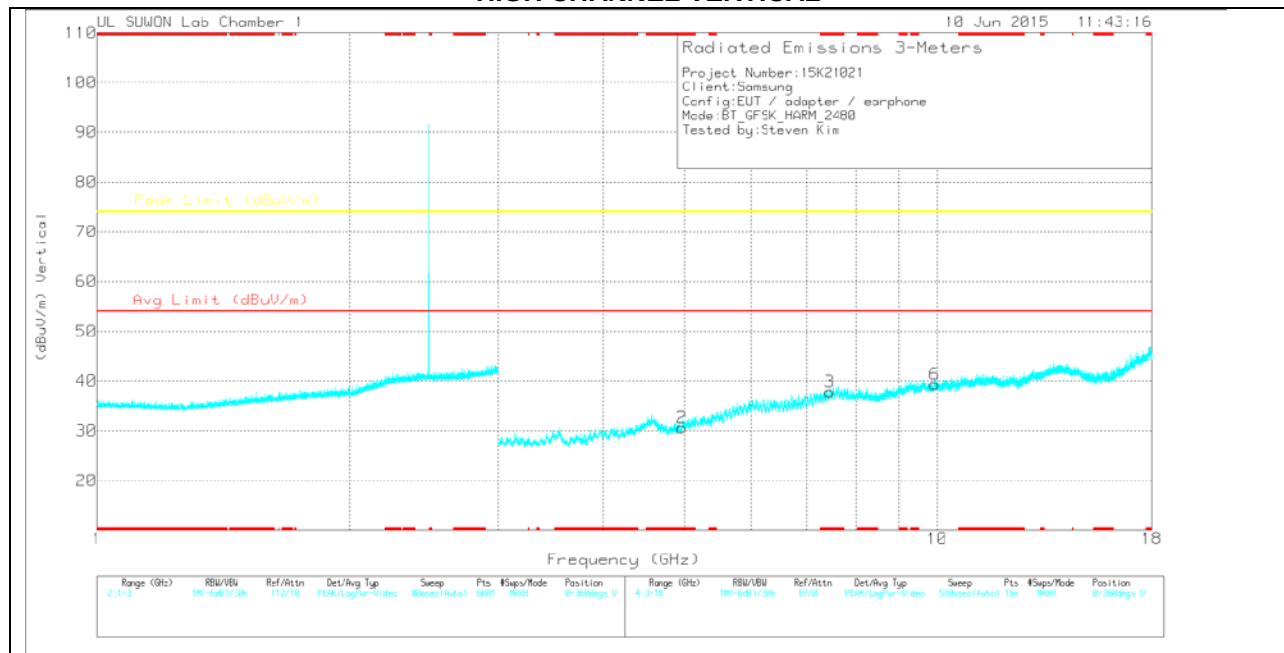
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL HORIZONTAL



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	Path_3_3G HP	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.96	27.38	PK	32.1	-28.9	30.58	-	-	74	-43.42	0-360	200	H
4	* 7.443	25.96	PK	37.3	-24.8	38.46	-	-	74	-35.54	0-360	100	H
5	9.921	22.13	PK	37.9	-20.4	39.63	-	-	-	-	0-360	100	H
2	* 4.963	27.39	PK	32.1	-28.9	30.59	-	-	74	-43.41	0-360	100	V
3	* 7.44	25.32	PK	37.3	-24.8	37.82	-	-	74	-36.18	0-360	200	V
6	9.924	21.82	PK	37.9	-20.4	39.32	-	-	-	-	0-360	100	V

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

PK – Peak detector

Radiated Emissions

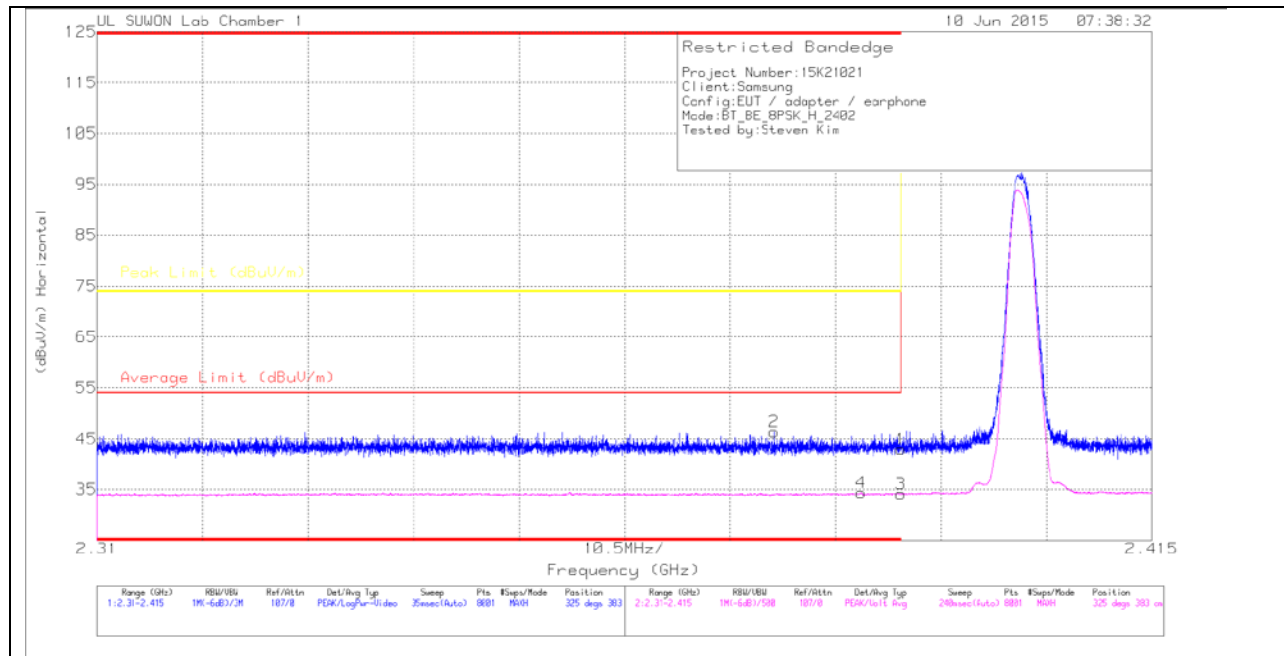
Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_3_3G HP	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.961	38.36	PK3	32.1	-28.9	41.56	-	-	74	-32.44	27	303	H
* 4.962	24.42	VB1T	32.1	-28.9	27.62	54	-26.38	-	-	27	303	H
* 7.442	35.55	PK3	37.3	-24.8	48.05	-	-	74	-25.95	141	332	H
* 7.445	21.73	VB1T	37.3	-24.8	34.23	54	-19.77	-	-	141	332	H
9.922	32.73	PK3	37.9	-20.4	50.23	-	-	-	-	22	309	H
9.921	18.39	VB1T	37.9	-20.4	35.89	-	-	-	-	22	309	H
* 4.964	38.62	PK3	32.1	-28.9	41.82	-	-	74	-32.18	38	337	V
* 4.965	24.51	VB1T	32.1	-28.9	27.71	54	-26.29	-	-	38	337	V
* 7.44	35.72	PK3	37.3	-24.8	48.22	-	-	74	-25.78	110	381	V
* 7.441	21.62	VB1T	37.3	-24.8	34.12	54	-19.88	-	-	110	381	V
9.923	32.56	PK3	37.9	-20.4	50.06	-	-	-	-	22	100	V
9.92	18.43	VB1T	37.9	-20.4	35.93	-	-	-	-	22	100	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 8PSK MODULATION RESTRICTED BANDEDGE (LOW CHANNEL)



HORIZONTAL DATA

Trace Markers

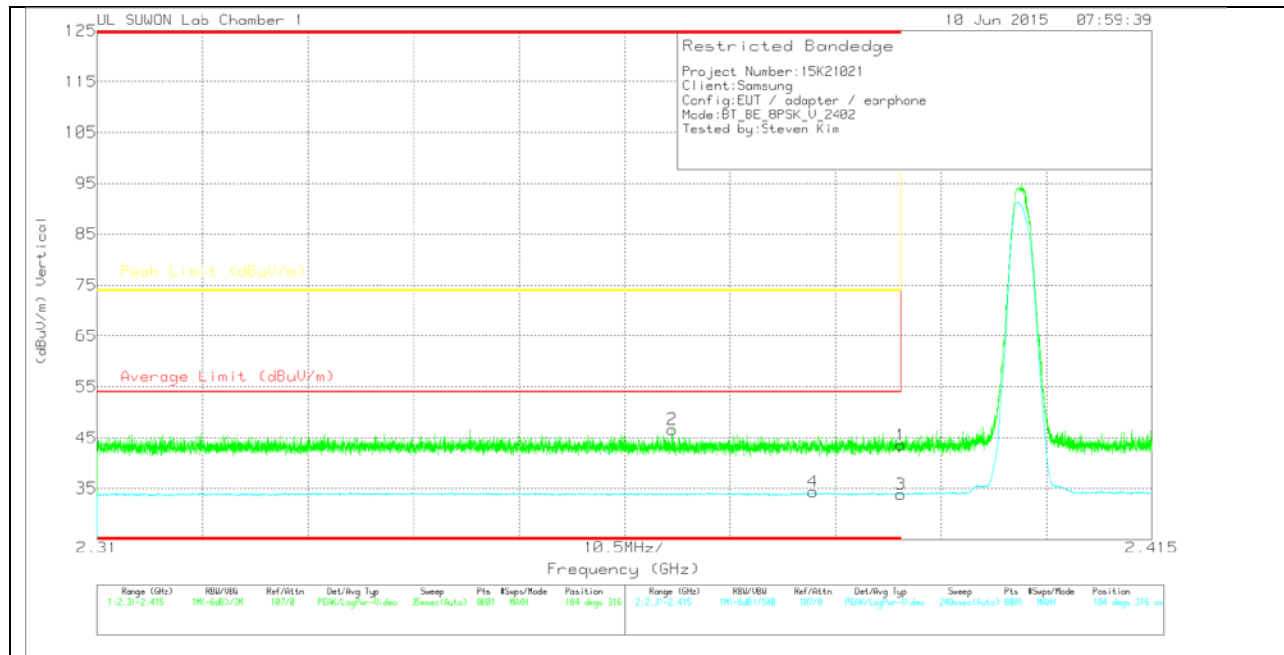
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_2_10 dB	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	37.8	Pk	27.9	-22.8	42.9	-	-	74	-31.1	325	383	H
2	* 2.377	41.23	Pk	27.9	-22.8	46.33	-	-	74	-27.67	325	383	H
3	* 2.39	29	VB1T	27.9	-22.8	34.1	54	-19.9	-	-	325	383	H
4	* 2.386	29.28	VB1T	27.9	-22.8	34.38	54	-19.62	-	-	325	383	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	Path_2_10 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	38.39	Pk	27.9	-22.8	43.49	-	-	74	-30.51	184	316	V
2	* 2.367	41.61	Pk	27.8	-22.8	46.61	-	-	74	-27.39	184	316	V
3	* 2.39	28.82	VB1T	27.9	-22.8	33.92	54	-20.08	-	-	184	316	V
4	* 2.381	29.23	VB1T	27.9	-22.8	34.33	54	-19.67	-	-	184	316	V

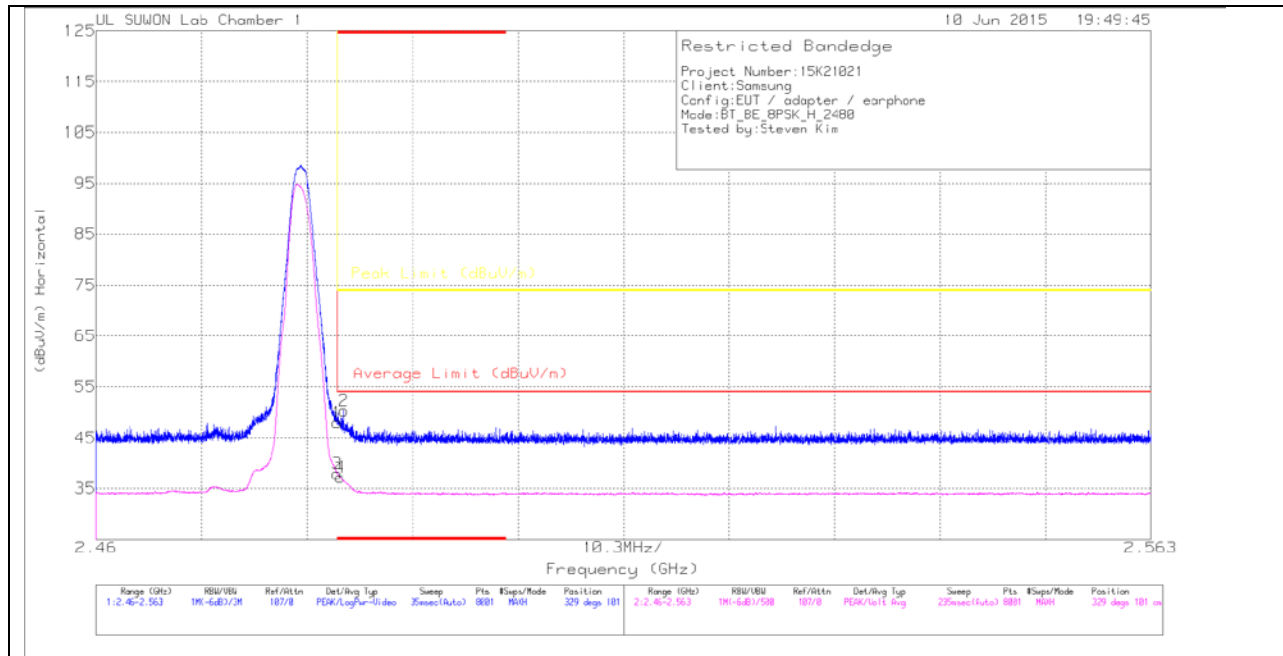
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

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

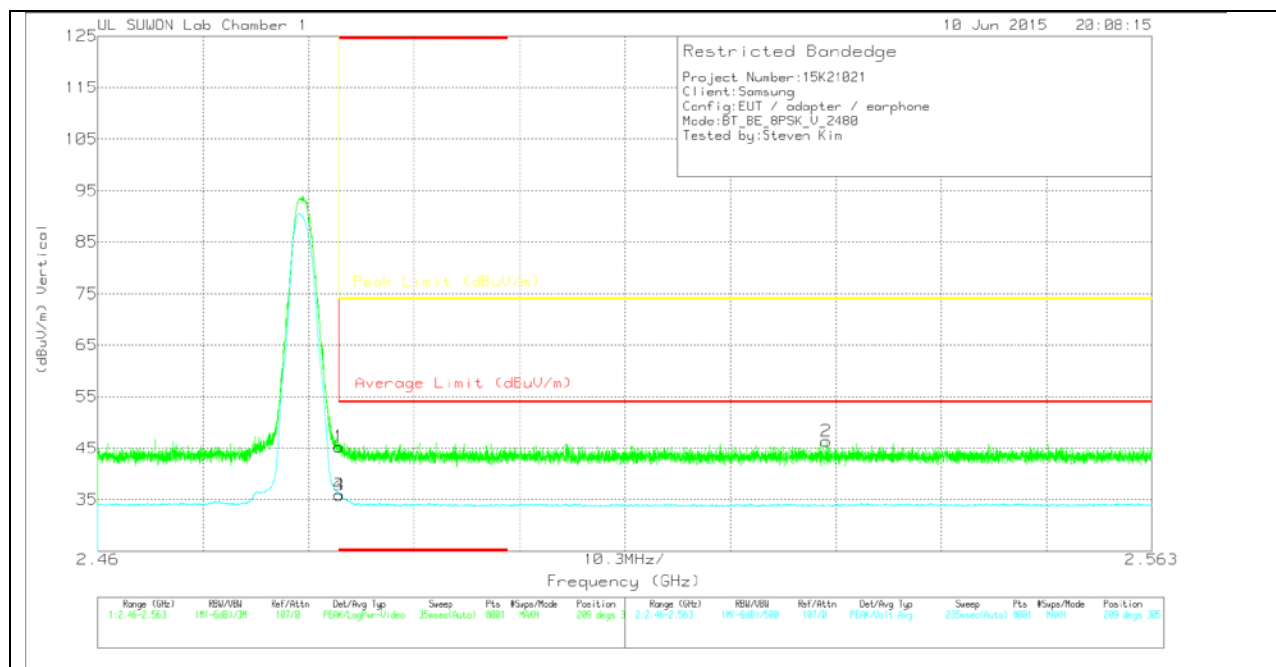
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_2_10 dB	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	42.65	Pk	27.9	-22.6	47.95	-	-	74	-26.05	329	101	H
2	* 2.484	44.97	Pk	27.9	-22.6	50.27	-	-	74	-23.73	329	101	H
3	* 2.484	32.68	VB1T	27.9	-22.6	37.98	54	-16.02	-	-	329	101	H
4	* 2.484	31.89	VB1T	27.9	-22.6	37.19	54	-16.81	-	-	329	101	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	Path_2_10 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	40.01	Pk	27.9	-22.6	45.31	-	-	74	-28.69	209	305	V
2	2.531	41.06	Pk	27.9	-22.6	46.36	-	-	74	-27.64	209	305	V
3	* 2.484	30.6	VB1T	27.9	-22.6	35.9	54	-18.1	-	-	209	305	V
4	* 2.484	30.62	VB1T	27.9	-22.6	35.92	54	-18.08	-	-	209	305	V

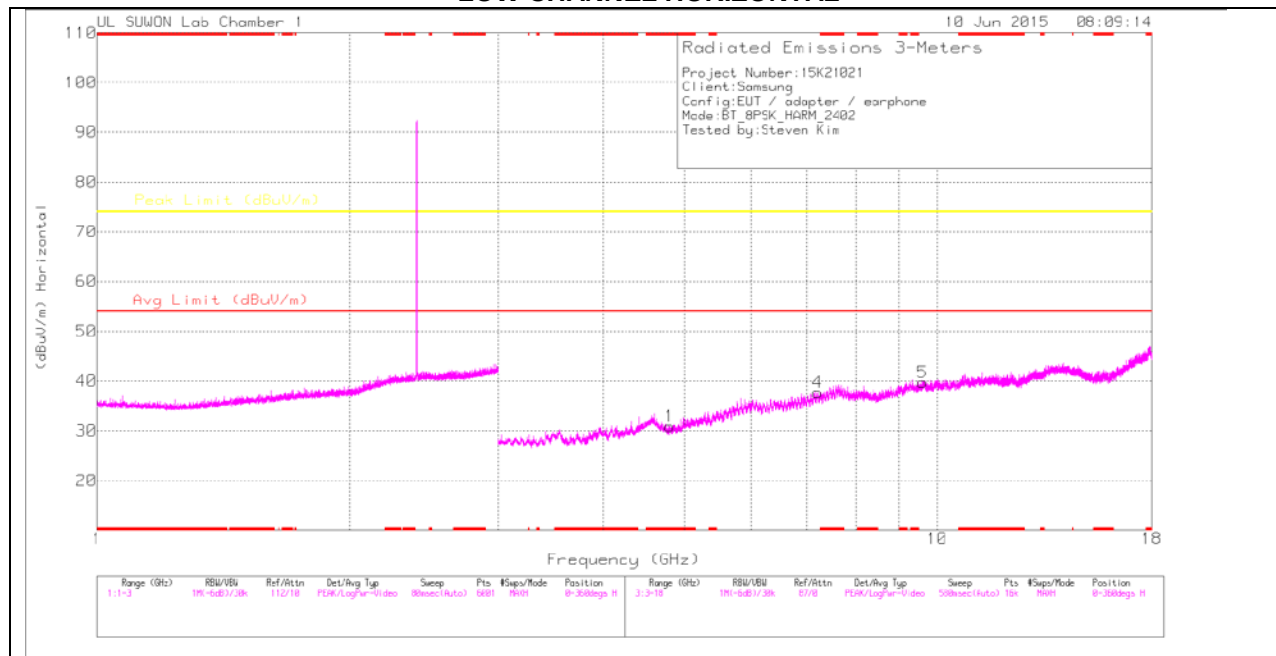
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

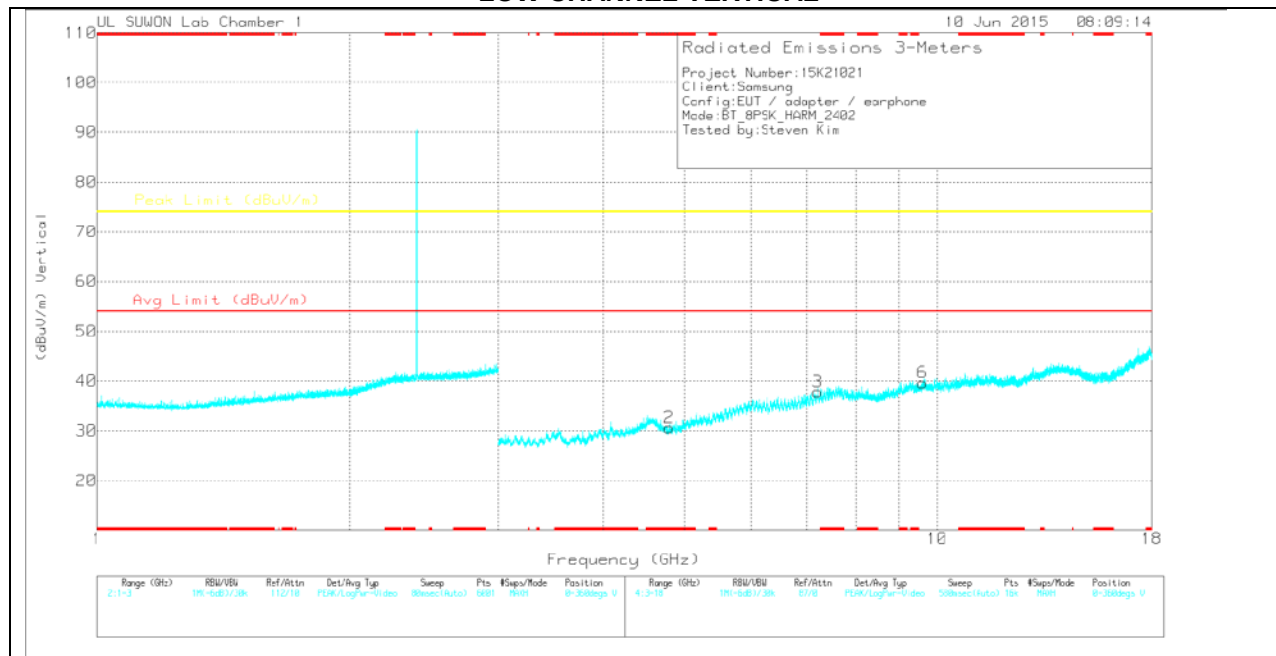
VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



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	Path_3_3G HP	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.805	28.76	PK	31.9	-29.8	30.86	-	-	74	-43.14	0-360	100	H
4	7.209	26.14	PK	37	-25.4	37.74	-	-	-	-	0-360	200	H
5	9.611	23.04	PK	37.7	-21	39.74	-	-	-	-	0-360	200	H
2	* 4.8	28.62	PK	31.9	-29.9	30.62	-	-	74	-43.38	0-360	100	V
3	7.204	26.23	PK	37	-25.4	37.83	-	-	-	-	0-360	100	V
6	9.607	22.97	PK	37.7	-21	39.67	-	-	-	-	0-360	100	V

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

PK – Peak detector

Radiated Emissions

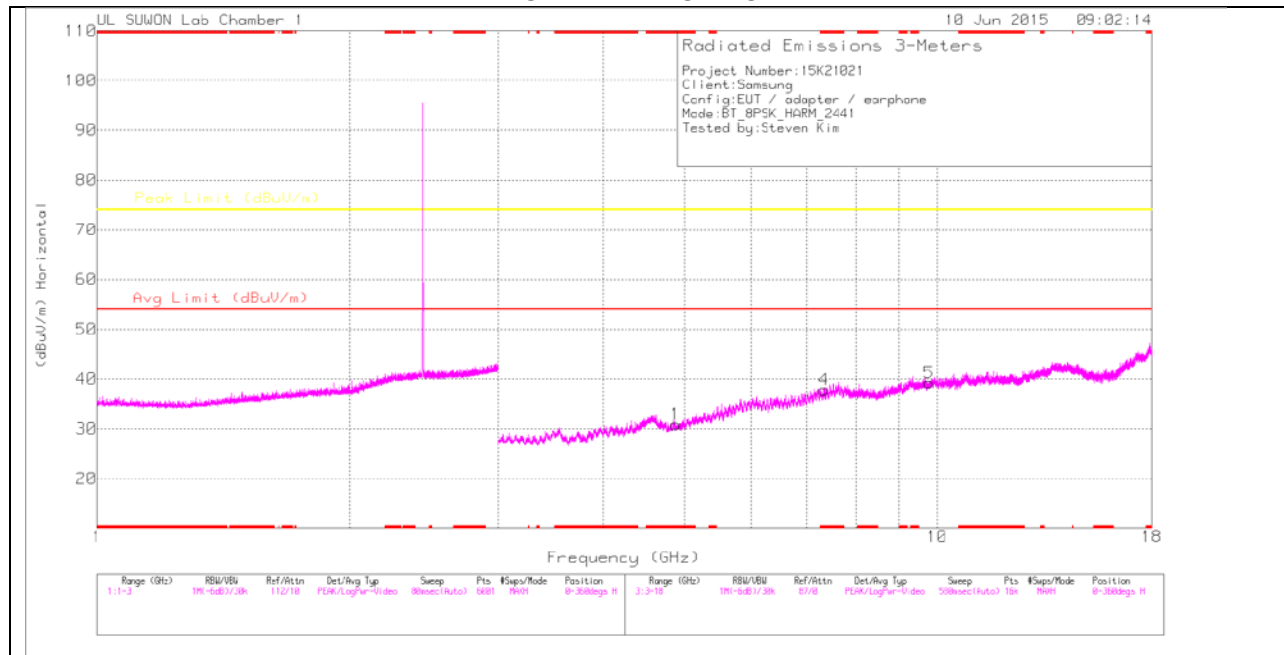
Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_3_3G HP	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.806	39.72	PK3	31.9	-29.8	41.82	-	-	74	-32.18	358	100	H
* 4.804	25.61	VB1T	31.9	-29.8	27.71	54	-26.29	-	-	358	100	H
7.208	37.05	PK3	37	-25.4	48.65	-	-	-	-	358	200	H
7.208	22.26	VB1T	37	-25.4	33.86	-	-	-	-	358	200	H
9.612	33.96	PK3	37.7	-21	50.66	-	-	-	-	358	200	H
9.613	19.56	VB1T	37.7	-21	36.26	-	-	-	-	358	200	H
* 4.8	36.68	PK3	31.9	-29.9	38.68	-	-	74	-35.32	358	100	V
* 4.8	25.6	VB1T	31.9	-29.9	27.6	54	-26.4	-	-	358	100	V
7.205	36.36	PK3	37	-25.4	47.96	-	-	-	-	358	100	V
7.204	22.28	VB1T	37	-25.4	33.88	-	-	-	-	358	100	V
9.605	34.18	PK3	37.7	-21	50.88	-	-	-	-	358	100	V
9.606	19.63	VB1T	37.7	-21	36.33	-	-	-	-	358	100	V

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

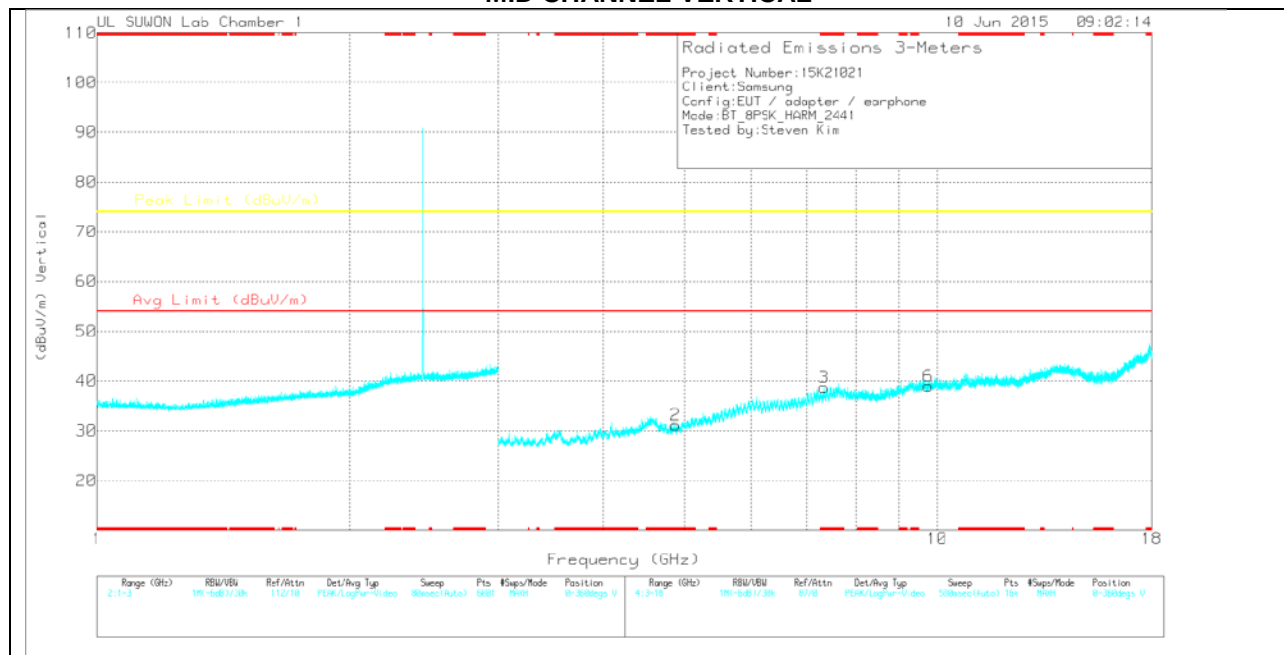
PK3 - FHSS Method: Maximum Peak

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

MID CHANNEL HORIZONTAL



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	Path_3_3G HP	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.884	27.97	PK	32	-29.1	30.87	-	-	74	-43.13	0-360	100	H
4	* 7.329	26.2	PK	37.2	-25.6	37.8	-	-	74	-36.2	0-360	100	H
5	9.766	23.77	PK	37.6	-22.1	39.27	-	-	-	-	0-360	100	H
2	* 4.88	28.24	PK	32	-29.1	31.14	-	-	74	-42.86	0-360	200	V
3	* 7.326	27.15	PK	37.2	-25.6	38.75	-	-	74	-35.25	0-360	100	V
6	9.762	23.41	PK	37.6	-22	39.01	-	-	-	-	0-360	200	V

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

PK – Peak detector

Radiated Emissions

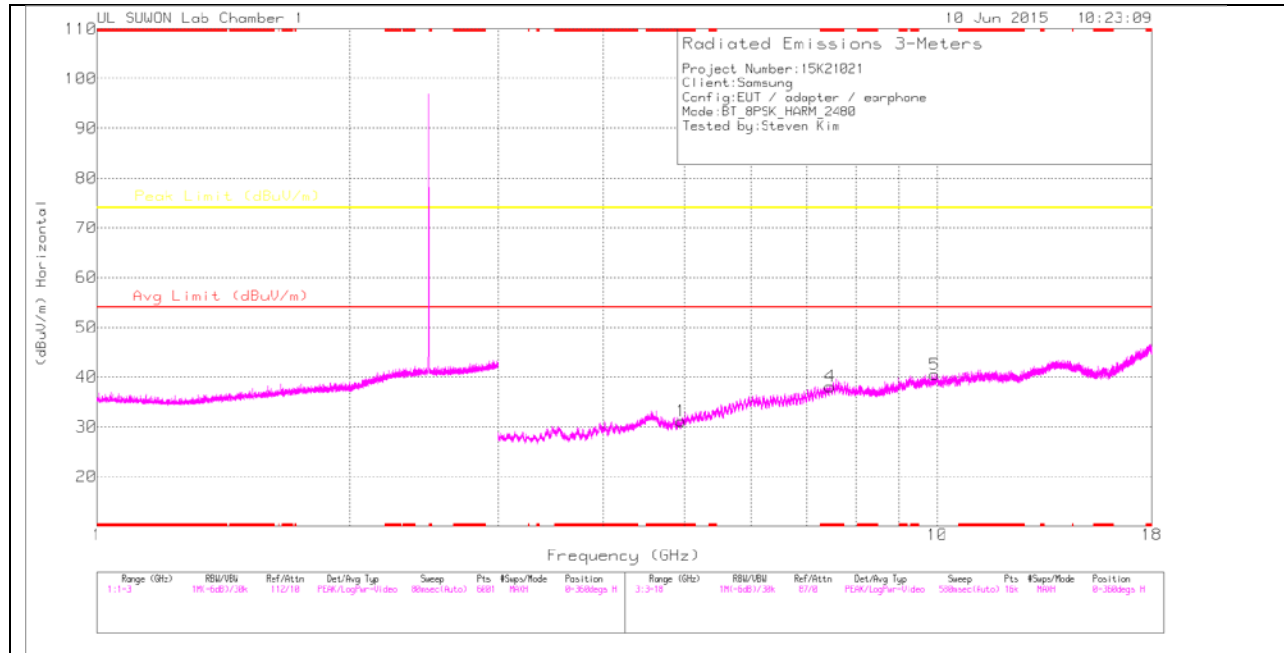
Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_3_3G HP	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.883	40.02	PK3	32	-29.1	42.92	-	-	74	-31.08	358	100	H
* 4.885	24.48	VB1T	32	-29.1	27.38	54	-26.62	-	-	358	100	H
* 7.327	36.78	PK3	37.2	-25.6	48.38	-	-	74	-25.62	358	100	H
* 7.329	22.74	VB1T	37.2	-25.6	34.34	54	-19.66	-	-	358	100	H
9.765	33.24	PK3	37.6	-22.1	48.74	-	-	-	-	214	380	H
9.765	19.18	VB1T	37.6	-22.1	34.68	-	-	-	-	214	380	H
* 4.878	39.03	PK3	32	-29.1	41.93	-	-	74	-32.07	358	200	V
* 4.879	24.47	VB1T	32	-29.1	27.37	54	-26.63	-	-	358	200	V
* 7.328	36.87	PK3	37.2	-25.6	48.47	-	-	74	-25.53	358	100	V
* 7.326	22.76	VB1T	37.2	-25.6	34.36	54	-19.64	-	-	358	100	V
9.762	33.6	PK3	37.6	-22	49.2	-	-	-	-	150	383	V
9.762	19.21	VB1T	37.6	-22	34.81	-	-	-	-	150	383	V

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

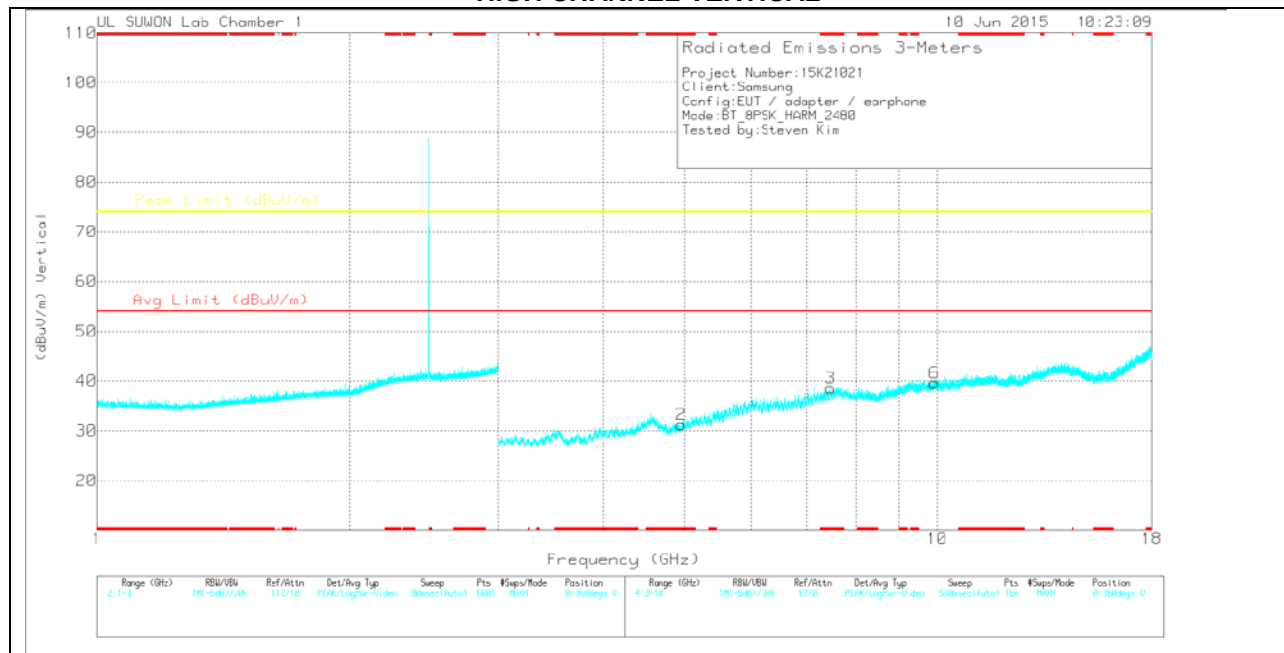
PK3 - FHSS Method: Maximum Peak

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

HIGH CHANNEL HORIZONTAL



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	Path_3_3GHP	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.956	27.89	PK	32.1	-28.9	0	31.09	-	-	74	-42.91	0-360	200	H
4	* 7.45	25.56	PK	37.3	-24.8	0	38.06	-	-	74	-35.94	0-360	100	H
5	9.924	22.98	PK	37.9	-20.4	0	40.48	-	-	-	-	0-360	100	H
2	* 4.959	28.1	PK	32.1	-28.9	0	31.3	-	-	74	-42.7	0-360	100	V
3	* 7.454	26.11	PK	37.3	-24.8	0	38.61	-	-	74	-35.39	0-360	200	V
6	9.917	22.23	PK	37.9	-20.5	0	39.63	-	-	-	-	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	Path_3_3 GHP	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.957	38.68	PK3	32.1	-28.9	0	41.88	-	-	74	-32.12	40	317	H
* 4.955	24.25	VB1T	32.1	-29	0	27.35	54	-26.65	-	-	40	317	H
* 7.452	35.97	PK3	37.3	-24.8	0	48.47	-	-	74	-25.53	138	334	H
* 7.451	22.05	VB1T	37.3	-24.8	0	34.55	54	-19.45	-	-	138	334	H
9.923	33.44	PK3	37.9	-20.4	0	50.94	-	-	-	-	224	400	H
9.924	18.41	VB1T	37.9	-20.4	0	35.91	-	-	-	-	224	400	H
* 4.96	39.44	PK3	32.1	-28.9	0	42.64	-	-	74	-31.36	0	325	V
* 4.958	24.25	VB1T	32.1	-28.9	0	27.45	54	-26.55	-	-	0	325	V
* 7.454	36.77	PK3	37.3	-24.8	0	49.27	-	-	74	-24.73	0	200	V
* 7.455	22.12	VB1T	37.3	-24.8	0	34.62	54	-19.38	-	-	0	200	V
9.916	33.22	PK3	37.9	-20.5	0	50.62	-	-	-	-	39	163	V
9.917	18.55	VB1T	37.9	-20.5	0	35.95	-	-	-	-	39	163	V

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

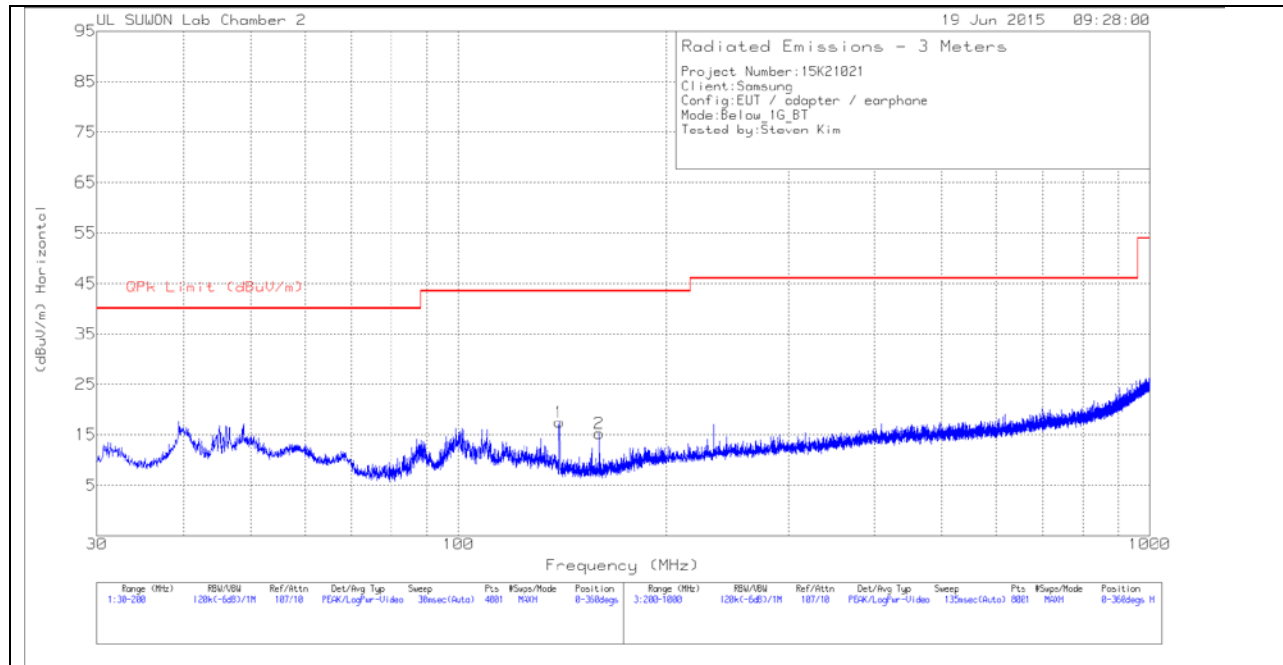
PK3 - FHSS Method: Maximum Peak

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

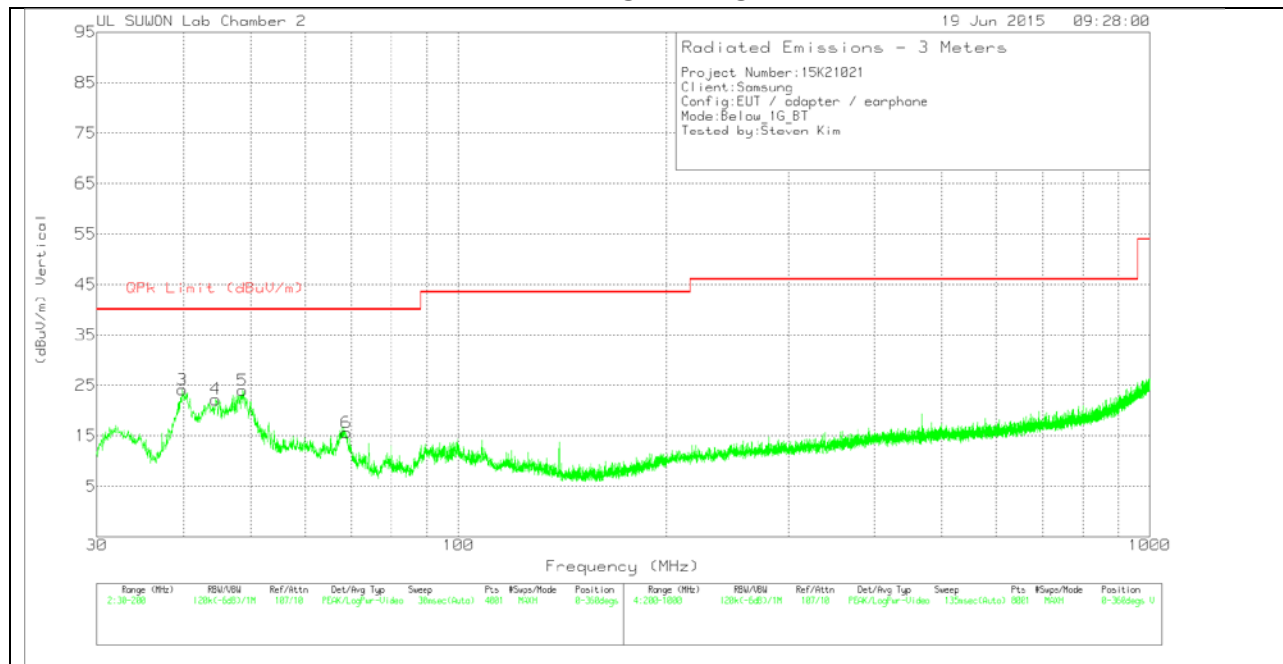
9.3. WORST-CASE BELOW 1 GHz

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	VULB9163-749	Below_1G	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	139.9475	39.89	Pk	8	-30.4	17.49	43.52	-26.03	0-360	200	H
2	159.965	37.12	Pk	8.5	-30.4	15.22	43.52	-28.3	0-360	100	H
3	39.8175	42.19	Pk	12.7	-30.8	24.09	40	-15.91	0-360	100	V
4	44.535	39.1	Pk	13.8	-30.7	22.2	40	-17.8	0-360	100	V
5	48.7425	40.69	Pk	14.1	-30.8	23.99	40	-16.01	0-360	200	V
6	68.845	36.21	Pk	10	-30.6	15.61	40	-24.39	0-360	200	V

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

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.

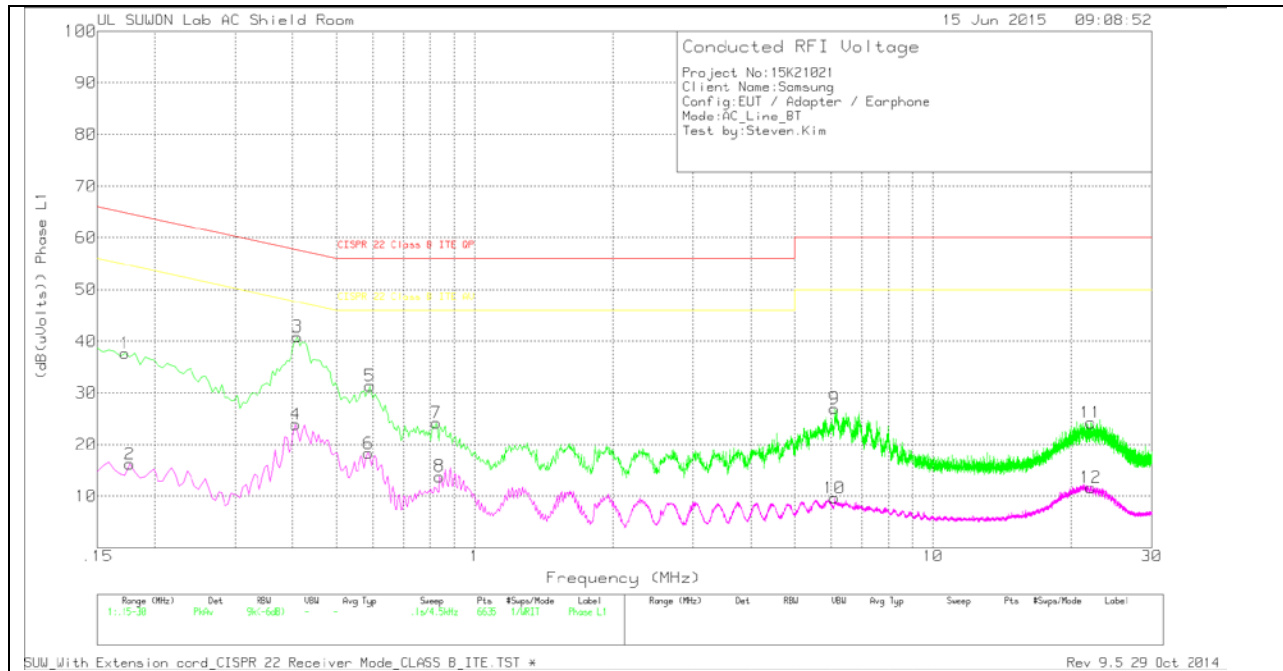
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

6 WORST EMISSIONS

LINE 1 PLOT



LINE 1 RESULTS

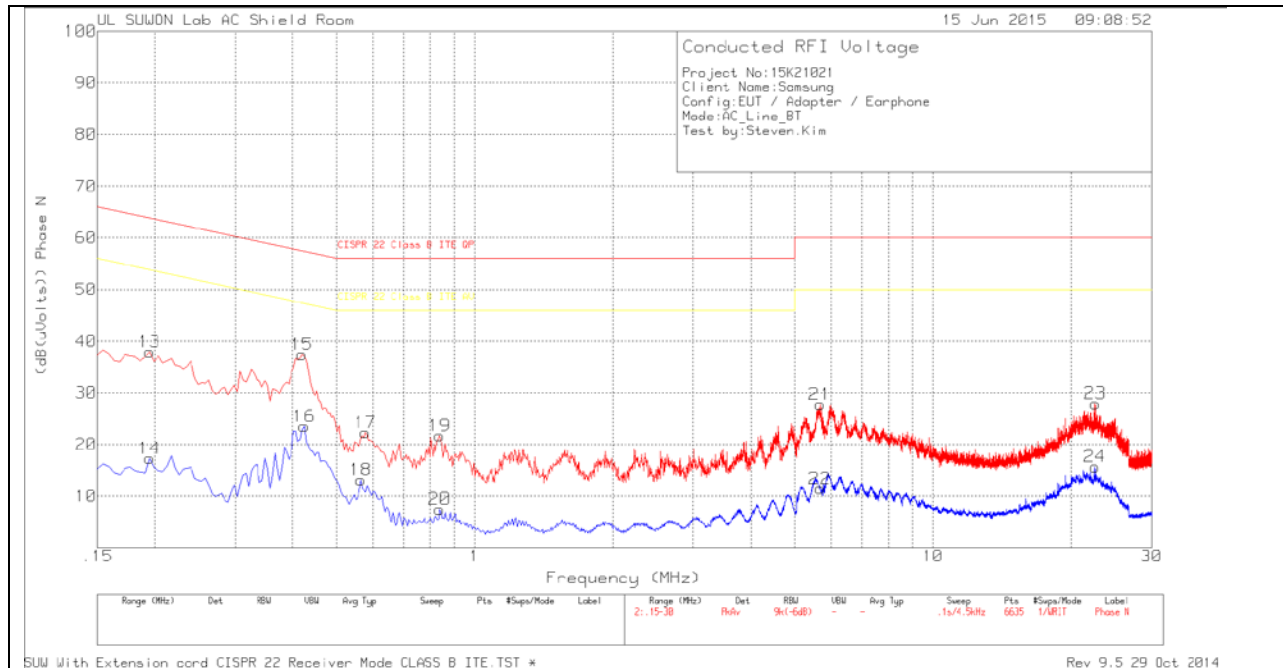
Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101837_w ith ex-cord_L1	CE Shield Room	Corrected Reading (dBuV)	CISPR 22 Class B ITE QP	Margin (dB)	CISPR 22 Class B ITE AV	Margin (dB)
1	.1725	27.37	Pk	10.3	0	37.67	64.84	-27.17	-	-
2	.177	6.01	Av	10.2	0	16.21	-	-	54.63	-38.42
3	.411	30.77	Pk	10.1	0	40.87	57.63	-16.76	-	-
4	.4065	13.81	Av	10.1	0	23.91	-	-	47.72	-23.81
5	.591	21.24	Pk	10.1	0	31.34	56	-24.66	-	-
6	.5865	8.19	Av	10.1	0	18.29	-	-	46	-27.71
7	.825	14.16	Pk	10	0	24.16	56	-31.84	-	-
8	.8385	3.95	Av	9.9	0	13.85	-	-	46	-32.15
9	6.0945	17.07	Pk	9.8	.1	26.97	60	-33.03	-	-
10	6.0945	-24	Av	9.8	.1	9.66	-	-	50	-40.34
11	22.083	13.63	Pk	10.4	.2	24.23	60	-35.77	-	-
12	22.092	1.08	Av	10.4	.2	11.68	-	-	50	-38.32

Pk - Peak detector

Av - Average detection

LINE 2 PLOT



LINE 2 RESULTS

Phase N .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101837_w ith ex-cord_N	CE Shield Room	Corrected Reading (dBuV)	CISPR 22 Class B ITE QP	Margin (dB)	CISPR 22 Class B ITE AV	Margin (dB)
13	.195	27.93	Pk	10	0	37.93	63.82	-25.89	-	-
14	.195	7.3	Av	10	0	17.3	-	-	53.82	-36.52
15	.42	27.33	Pk	10.1	0	37.43	57.45	-20.02	-	-
16	.4245	13.43	Av	10.1	0	23.53	-	-	47.36	-23.83
17	.5775	12.23	Pk	10.1	0	22.33	56	-33.67	-	-
18	.564	3.07	Av	10.1	0	13.17	-	-	46	-32.83
19	.8385	11.78	Pk	9.9	0	21.68	56	-34.32	-	-
20	.8385	-2.41	Av	9.9	0	7.49	-	-	46	-38.51
21	5.6625	17.89	Pk	9.8	.1	27.79	60	-32.21	-	-
22	5.6625	1.56	Av	9.8	.1	11.46	-	-	50	-38.54
23	22.605	17.06	Pk	10.7	.2	27.96	60	-32.04	-	-
24	22.5555	4.79	Av	10.7	.2	15.69	-	-	50	-34.31

Pk - Peak detector

Av - Average detection