



FCC CFR47 PART 15 SUBPART C

Bluetooth

CERTIFICATION TEST REPORT

FOR

BT/BLE and DTS b/g/n Tablet

MODEL NUMBER : SM-T280

FCC ID: A3LSMT280

REPORT NUMBER: 16K22597-E3

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Revision History

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.
EUT DESCRIPTION: BT/BLE and DTS b/g/n Tablet
MODEL NUMBER: SM-T280
SERIAL NUMBER: R32GC007RWX (RADIATED); R32GC007RSB (CONDUCTED)
DATE TESTED: DEC 30, 2015 - JAN 26, 2016

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:



CY Choi
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UL Korea, Ltd.

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UL Korea, Ltd.

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, 16675, 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:

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

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 BT/BLE and DTS b/g/n Tablet.
This test report addresses the DSS (BT) operational mode.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

Frequency Range [MHz]	Mode	Power Mode	Output Power [dBm]	Output Power [mW]
2402 - 2480	Basic GFSK	Average	11.41	13.84
		Peak	11.87	15.39
	Enhanced Pi/4-DPSK	Average	10.90	12.29
		Peak	13.02	20.04
	Enhanced 8PSK	Average	10.91	12.32
		Peak	13.17	20.74

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 -1.01 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	ETA0U83EWE	DW1GB01PS/A-E	N/A
Data Cable	SAMSUNG	ECB-DU68WE	N/A	N/A
Earphone	SAMSUNG	EHS61ASFWE	N/A	N/A

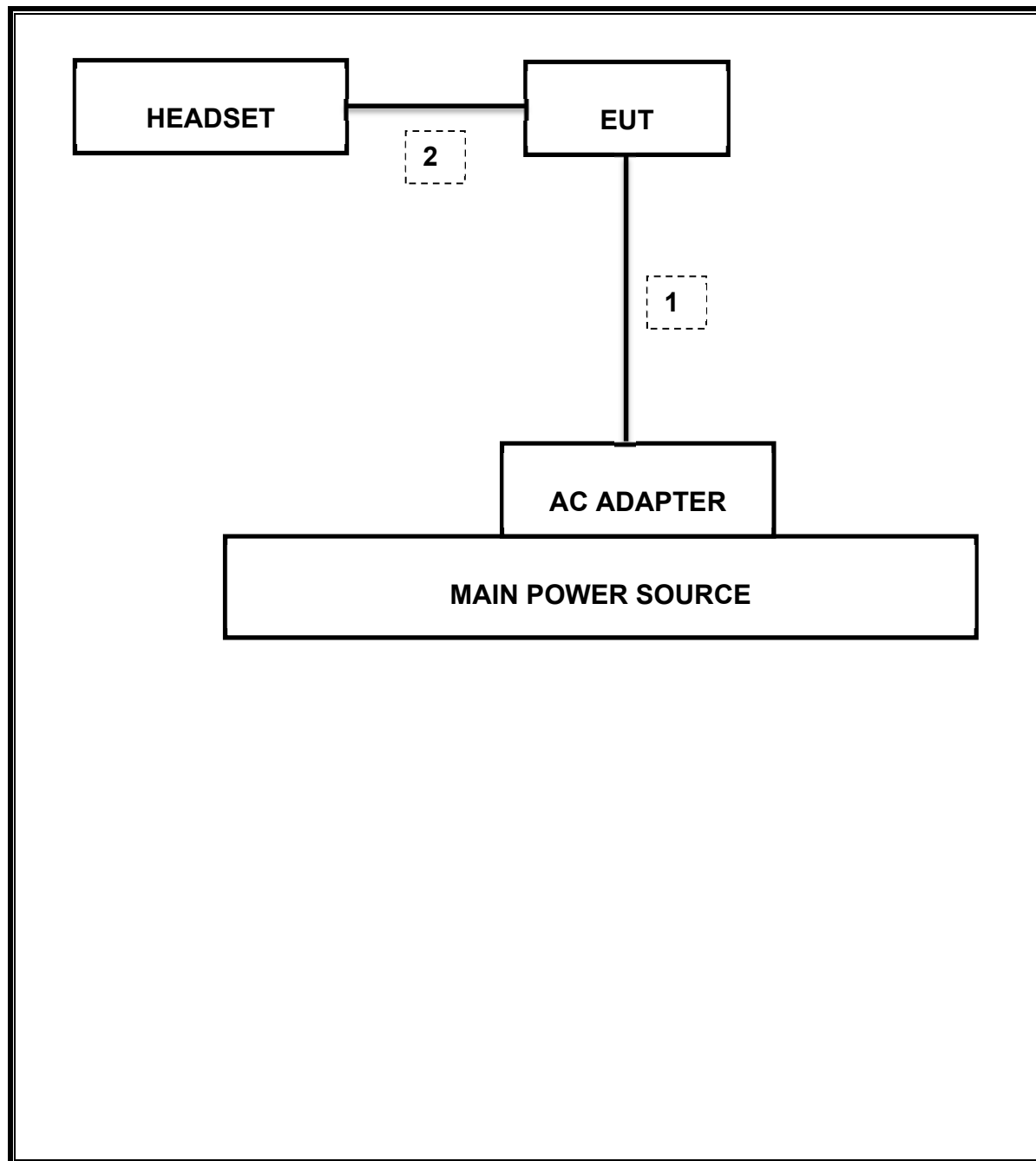
I/O CABLES

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
1	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	750	11-17-16
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	749	04-25-17
Antenna, Horn, 18 GHz	ETS	3115	00167211	09-20-16
Antenna, Horn, 18 GHz	ETS	3115	00161451	05-17-17
Antenna, Horn, 18 GHz	ETS	3117	00168724	06-17-17
Antenna, Horn, 18 GHz	ETS	3117	00168717	06-17-17
Antenna, Horn, 40 GHz	ETS	3116C	00166155	09-23-16
Antenna, Horn, 40 GHz	ETS	3116C-PA	00168841	08-24-17
Preamplifier, 1000 MHz	Sonoma	310N	341282	08-18-16
Preamplifier, 1000 MHz	Sonoma	310N	351741	08-18-16
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1876511	08-18-16
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1896138	08-18-16
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54170614	08-19-16
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54490312	08-19-16
Bluetooth Tester	TESCOM	TC-3000C	3000C000546	08-18-16
Average Power Sensor	R&S	NRZ-Z91	102681	08-18-16
Average Power Sensor	Agilent / HP	U2000	MY54270007	08-18-16
EMI Test Receive, 40 GHz	R&S	ESU40	100439	08-19-16
EMI Test Receive, 40 GHz	R&S	ESU40	100457	08-19-16
EMI Test Receive, 3 GHz	R&S	ESR3	101832	08-19-16
Attenuator / Switch driver	HP	11713A	3748A04272	N/A
Low Pass Filter 3GHz	Micro-Tronics	LPS17541	009	08-18-16
Low Pass Filter 3GHz	Micro-Tronics	LPS17541	015	08-18-16
High Pass Filter 5GHz	Micro-Tronics	HPS17542	009	08-18-16
High Pass Filter 6GHz	Micro-Tronics	HPM17543	010	08-18-16
High Pass Filter 5GHz	Micro-Tronics	HPS17542	016	08-18-16
High Pass Filter 6GHz	Micro-Tronics	HPM17543	015	08-18-16
LISN	R&S	ENV-216	101836	08-19-16
LISN	R&S	ENV-216	101837	08-19-16
Combiner	WEINSCHEL	1575	2154	08-20-16

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	1.194 MHz
2.1051, 15.247 (d)	Band Edge / Conducted Spurious Emission	-20dBc		Pass	-33.105 dBm
15.247 (b)(1)	TX conducted output power	<21dBm		Pass	13.168 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	0.350 sec
15.207 (a)	AC Power Line conducted emissions	Section 10	Power Line conducted	Pass	44.64 dBuV (QP)
15.205, 15.209	Radiated Spurious Emission	< 54dBuV/m	Radiated	Pass	52.16 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	871.300	853.350
Mid	2441	896.000	830.270
High	2480	896.100	830.320
Worst		896.100	853.350

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

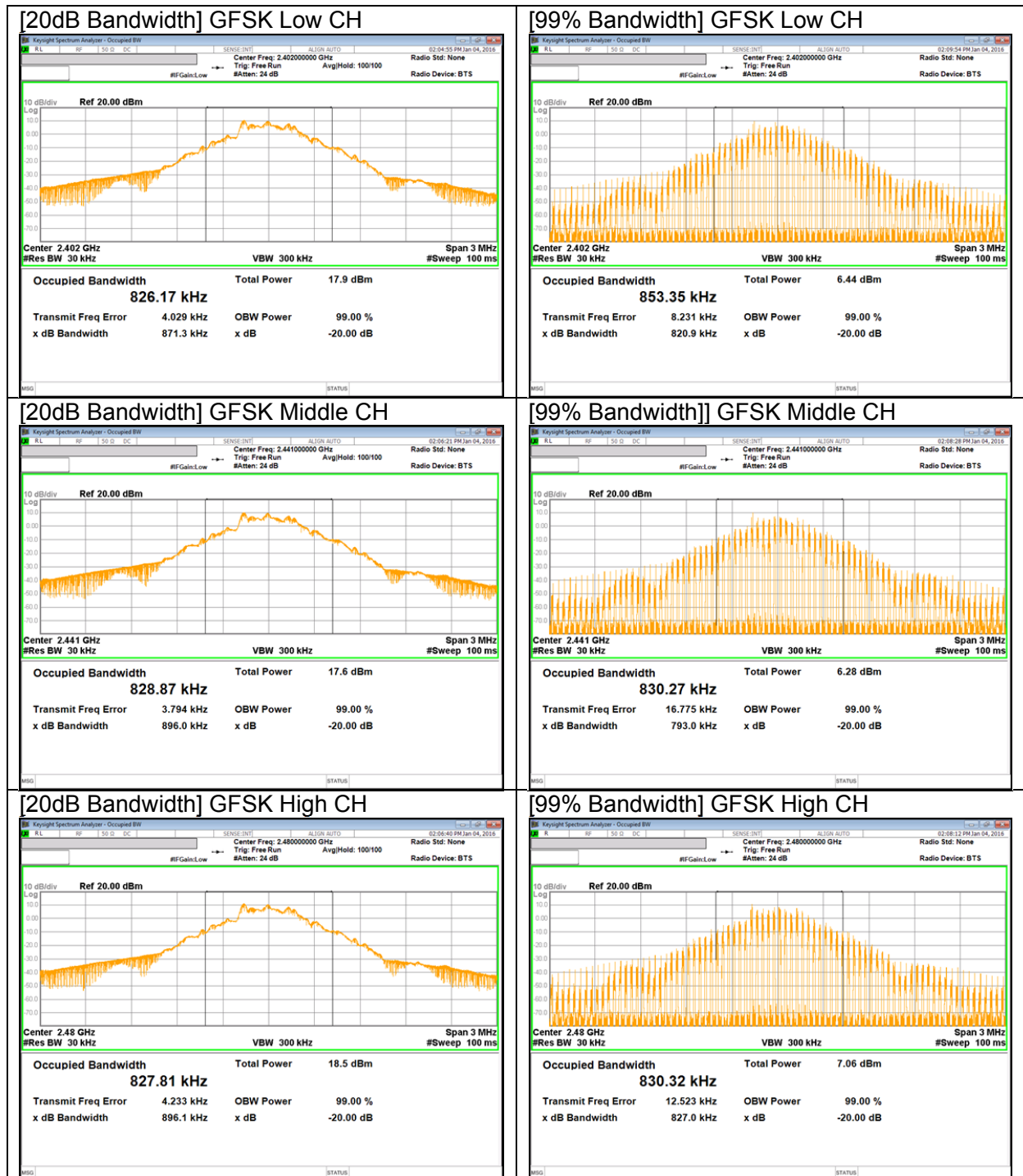
Channel	Frequency [MHz]	20 dB Bandwidth [MHz]	99% Bandwidth [MHz]
Low	2402	1.260	1.194
Mid	2441	1.259	1.165
High	2480	1.254	1.167
Worst		1.260	1.194

8.1.3. ENHANCED DATA RATE 8PSK MODULATION

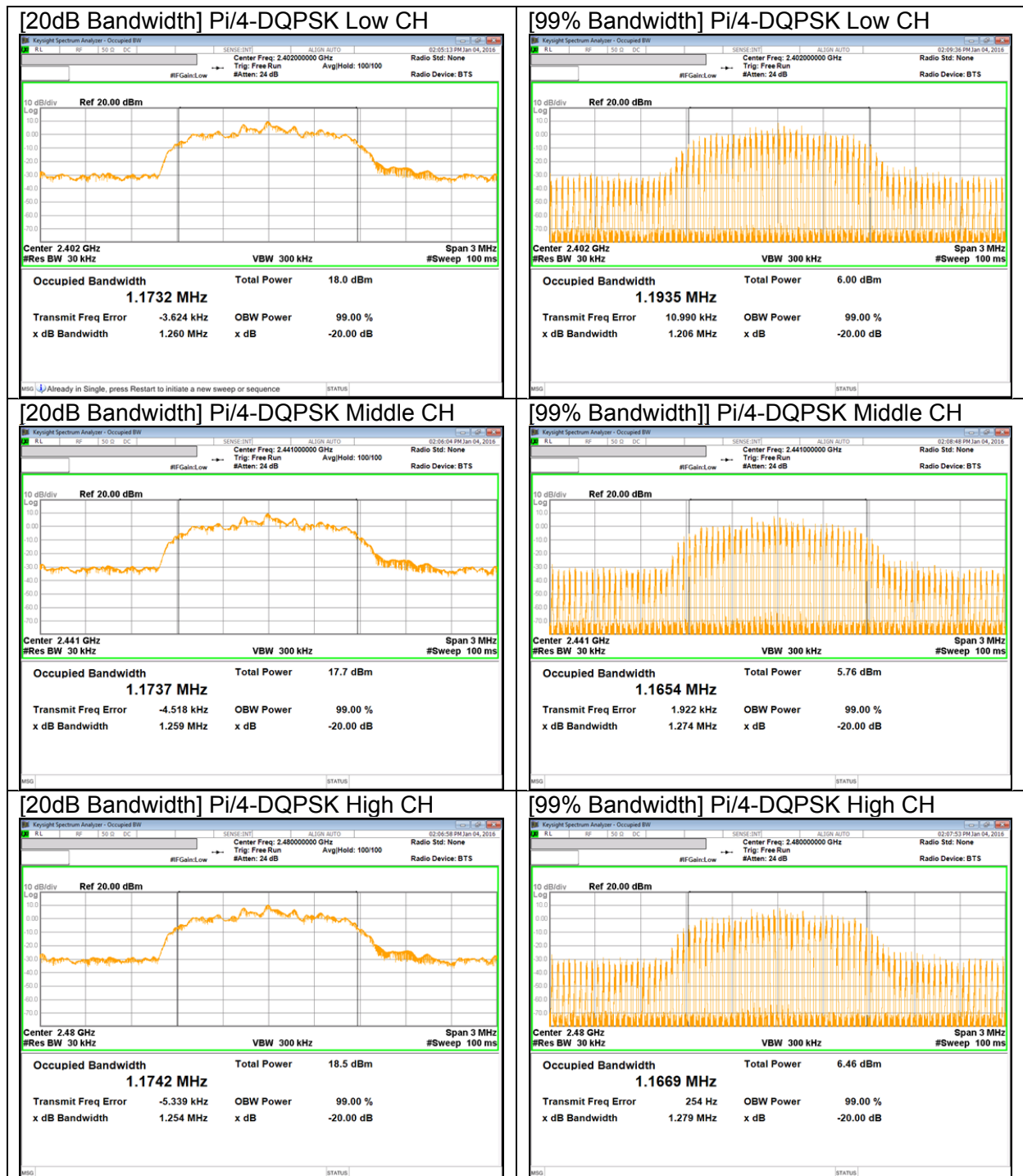
Channel	Frequency [MHz]	20 dB Bandwidth [MHz]	99% Bandwidth [MHz]
Low	2402	1.243	1.194
Mid	2441	1.242	1.194
High	2480	1.245	1.194
Worst		1.245	1.194

8.1.4. 20 dB AND 99% BANDWIDTH PLOTS

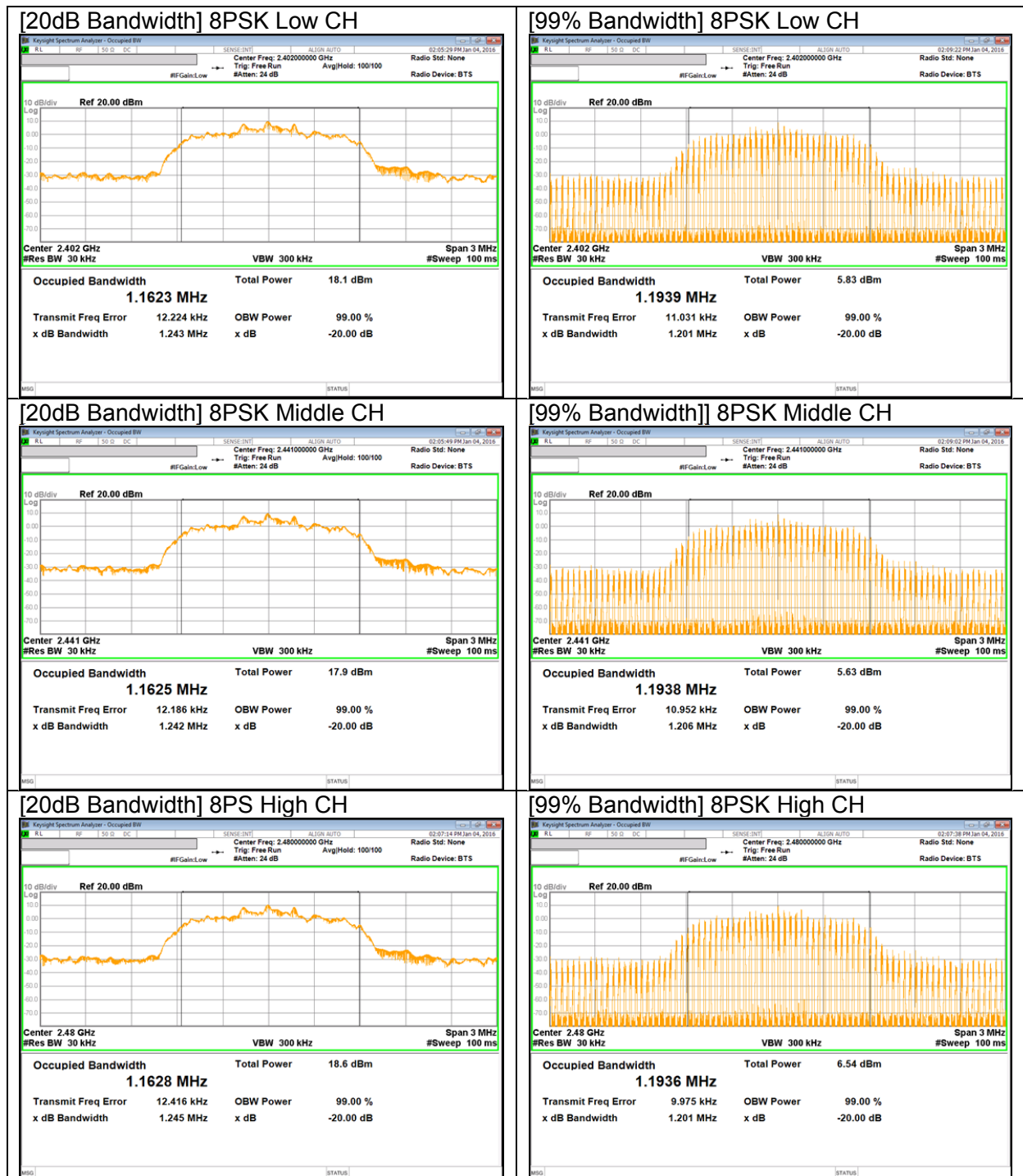
GFSK BANDWIDTH



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.

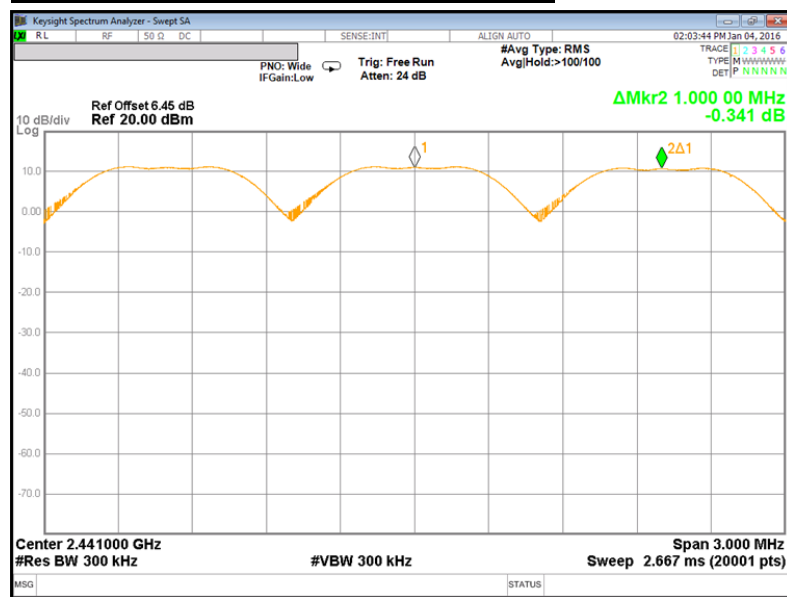
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than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

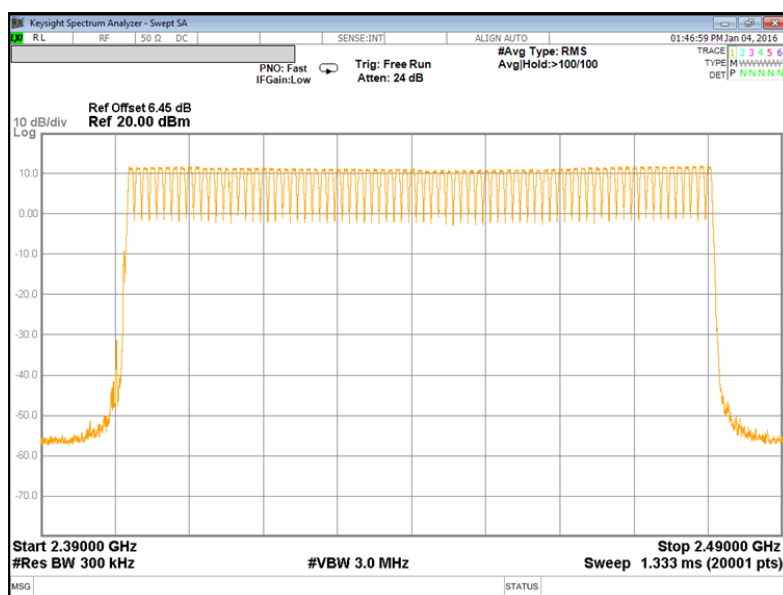
DA 00-705: The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

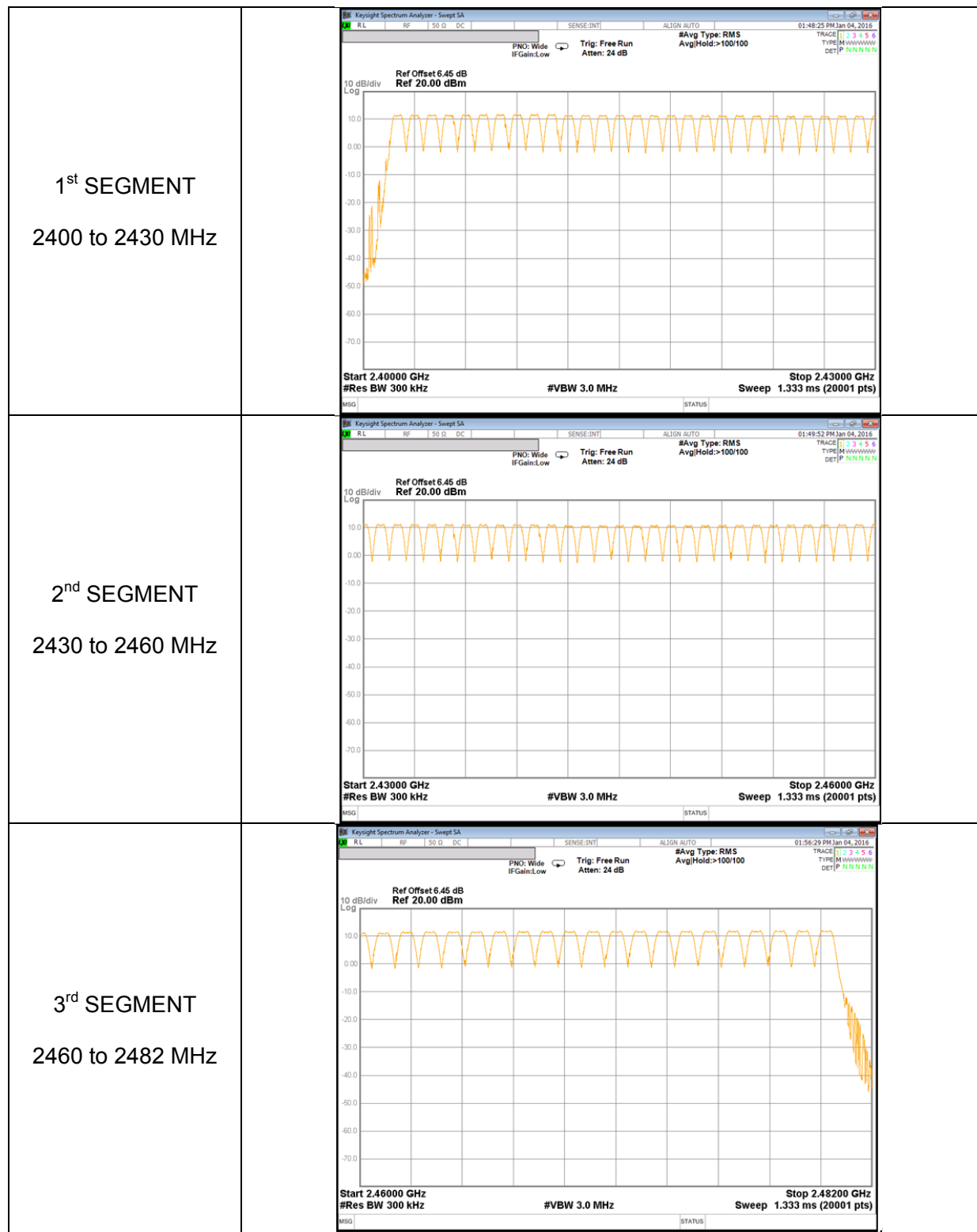
RESULTS

Normal Mode: 79 Channels observed.

NUMBER OF HOPPING CHANNELS PLOTS

NUMBER OF HOPPING CHANNELS (100 MHZ SPAN)





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.

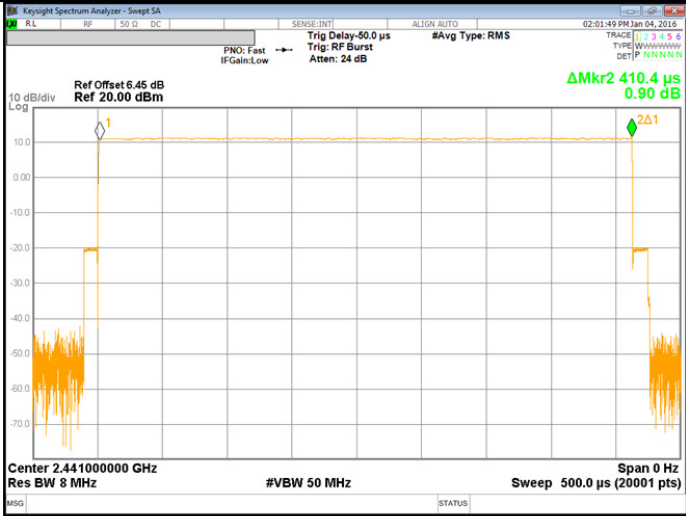
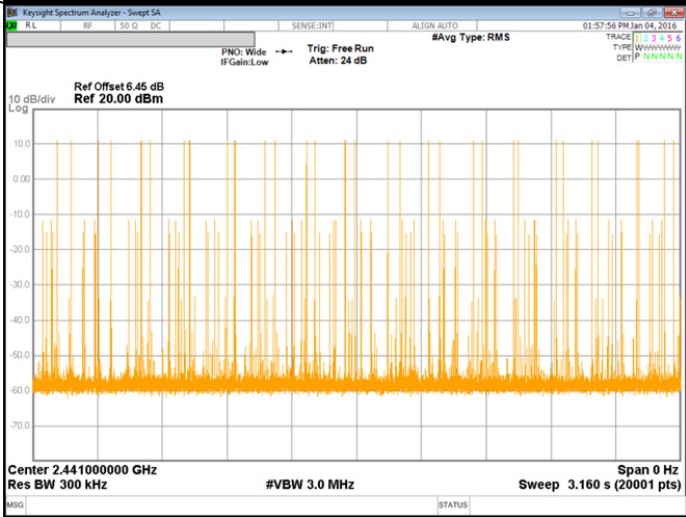
The average time of occupancy in the specified 31.6 second period (79 channels * 0.4 s) is equal to $10 * (\# \text{ of pulses in } 3.16 \text{ s}) * \text{pulse width}$.

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	0.410	32	0.131328	0.4	-0.2687
DH3	1.666	17	0.283220	0.4	-0.1168
DH5	2.913	12	0.349560	0.4	-0.0504
DH Packet	Pulse Width [msec]	Number of Pulses in 0.8 seconds	Average Time of Occupancy [sec]	Limit [sec]	Margin [sec]
GFSK AFH					
DH1	0.410	8	0.032832	0.4	-0.36717
DH3	1.666	4.25	0.070805	0.4	-0.3292
DH5	2.913	3	0.087390	0.4	-0.31261

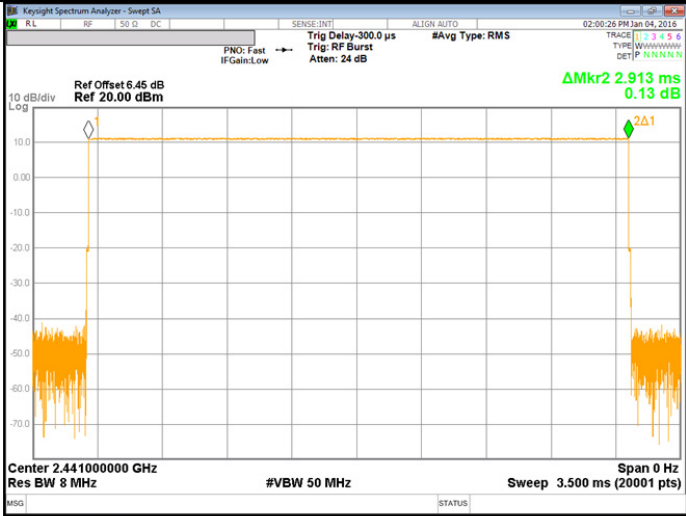
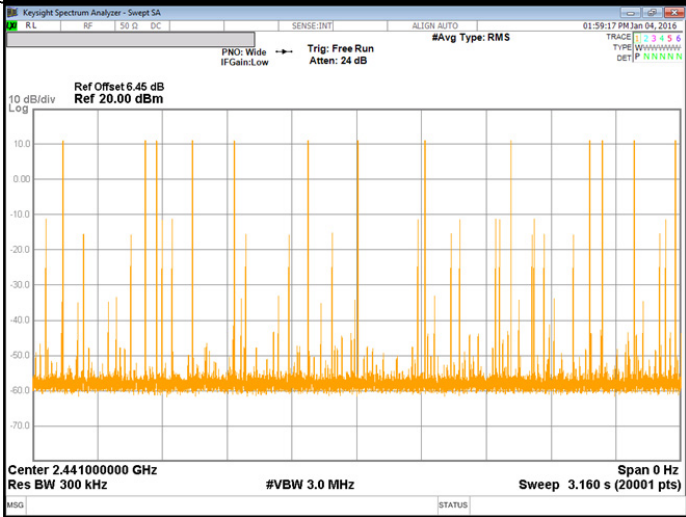
DH1

DH1 Pulse Width	 Key: Keysight Spectrum Analyzer - Swept SA Ref Offset: 6.45 dB Ref: 20.00 dBm PNO: Fast IF Gain: Low Trig Delay: 50.0 μs Trig: RF Burst Atten: 24 dB #Avg Type: RMS 02:01:49 PM Jan 04, 2016 TRACE 1 2 3 4 5 6 TYPE WWWWWWW DET P NNNNN ΔMkr2 410.4 μs 0.90 dB 2d1 Center 2.441000000 GHz Res BW 8 MHz #VBW 50 MHz Sweep 500.0 μs (20001 pts) Span 0 Hz
DH1 NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD	 Key: Keysight Spectrum Analyzer - Swept SA Ref Offset: 6.45 dB Ref: 20.00 dBm PNO: Wide IF Gain: Low Trig: Free Run Atten: 24 dB #Avg Type: RMS 01:57:56 PM Jan 04, 2016 TRACE 1 2 3 4 5 6 TYPE WWWWWWW DET P NNNNN Center 2.441000000 GHz Res BW 300 kHz #VBW 3.0 MHz Sweep 3.160 s (20001 pts) Span 0 Hz

DH3

DH3 Pulse Width	 KeySight Spectrum Analyzer - Swept SA Ref Offset: 6.45 dB Ref: 20.00 dBm ΔMkr2: 1.666 ms 0.56 dB Center: 2.441000000 GHz Res BW: 8 MHz #VBW: 50 MHz Sweep: 2.000 ms (20001 pts)
DH3 NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD	 KeySight Spectrum Analyzer - Swept SA Ref Offset: 6.45 dB Ref: 20.00 dBm Center: 2.441000000 GHz Res BW: 300 kHz #VBW: 3.0 MHz Sweep: 3.160 s (20001 pts)

DH5

DH5 Pulse Width	 Key parameters from screenshot: - Center: 2.441000000 GHz - Res BW: 8 MHz #VBW: 50 MHz - Sweep: 3.500 ms (20001 pts) - Ref Offset: 6.45 dB - Ref: 20.00 dBm - ΔMkr2: 2.913 ms 0.13 dB
DH5 NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD	 Key parameters from screenshot: - Center: 2.441000000 GHz - Res BW: 300 kHz #VBW: 3.0 MHz - Sweep: 3.160 s (20001 pts) - Ref Offset: 6.45 dB - Ref: 20.00 dBm

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	11.680	21	-9.32
Middle	2441	11.647	21	-9.353
High	2480	11.873	21	-9.127
Worst		11.873	21	-9.127

8.5.2. ENHANCED DATA RATE Pi/4-DPSK MODULATION

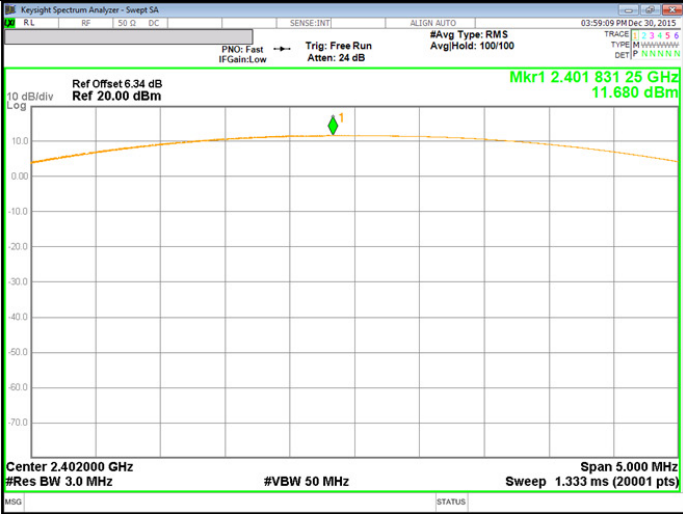
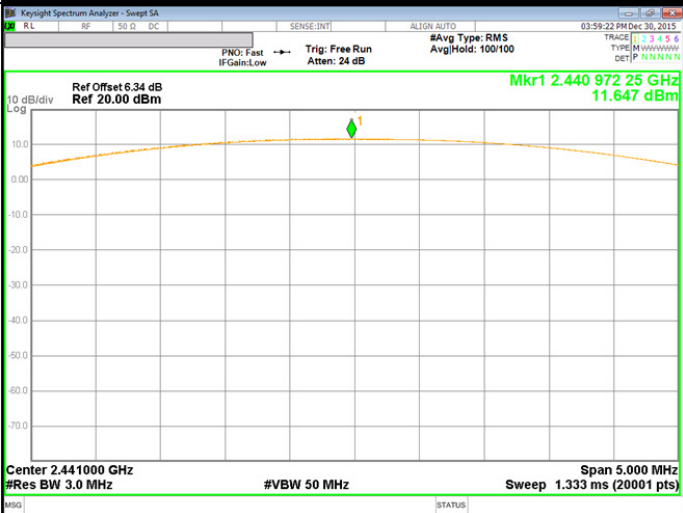
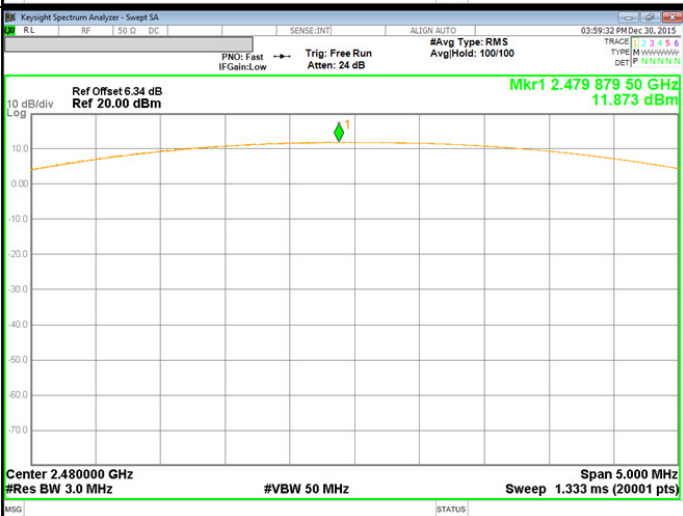
Channel	Frequency [MHz]	Output Power [dBm]	Limit [dBm]	Margin [dB]
Low	2402	13.018	21	-7.982
Middle	2441	12.854	21	-8.146
High	2480	12.787	21	-8.213
Worst		13.018	21	-7.982

8.5.3. ENHANCED DATA RATE 8PSK MODULATION

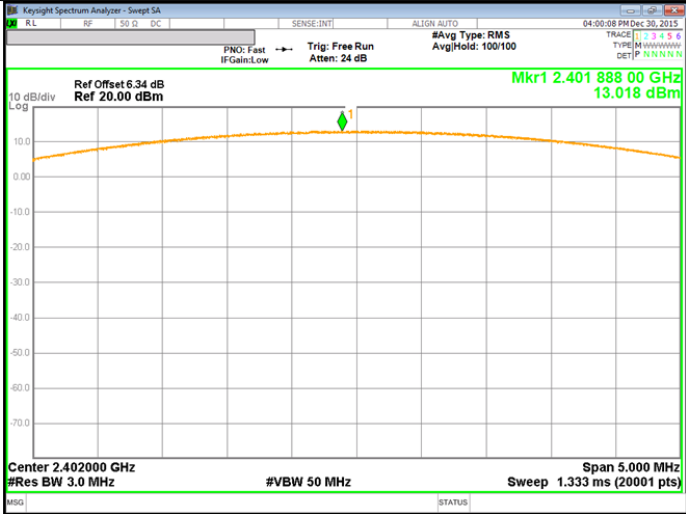
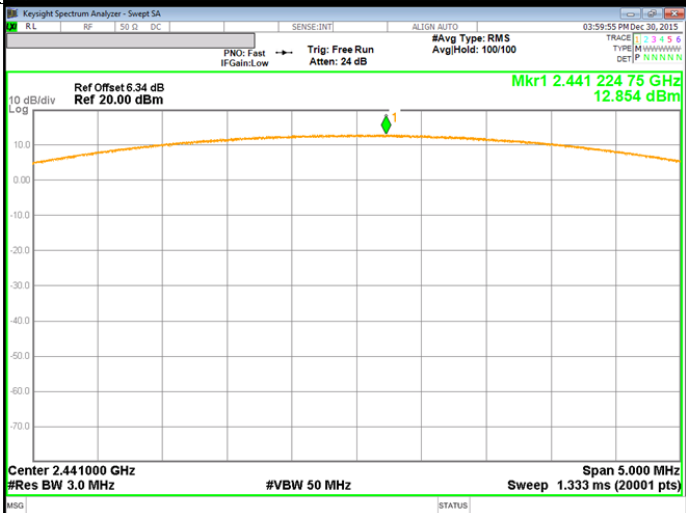
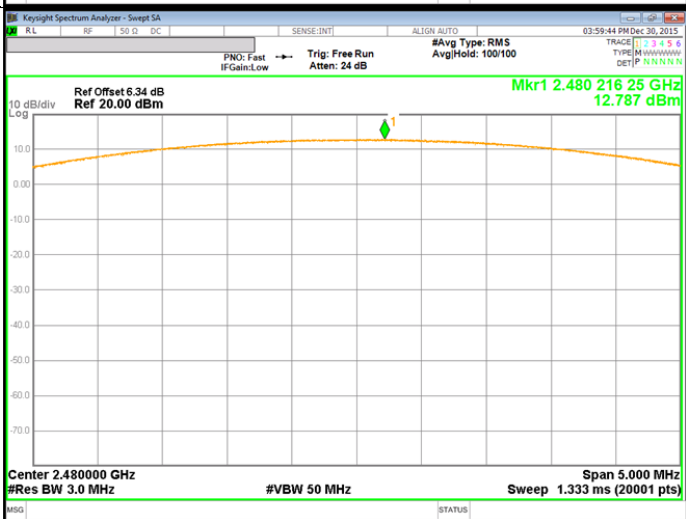
Channel	Frequency [MHz]	Output Power [dBm]	Limit [dBm]	Margin [dB]
Low	2402	13.168	21	-7.832
Middle	2441	12.996	21	-8.004
High	2480	12.902	21	-8.098
Worst		13.168	21	-7.832

8.5.4. OUTPUT POWER PLOTS

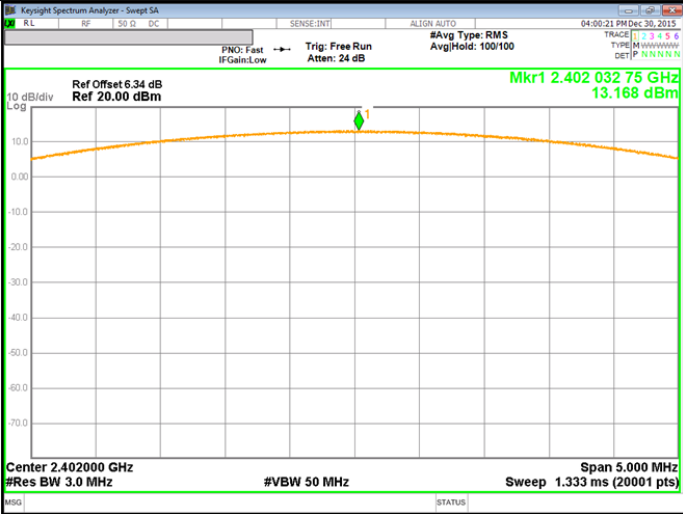
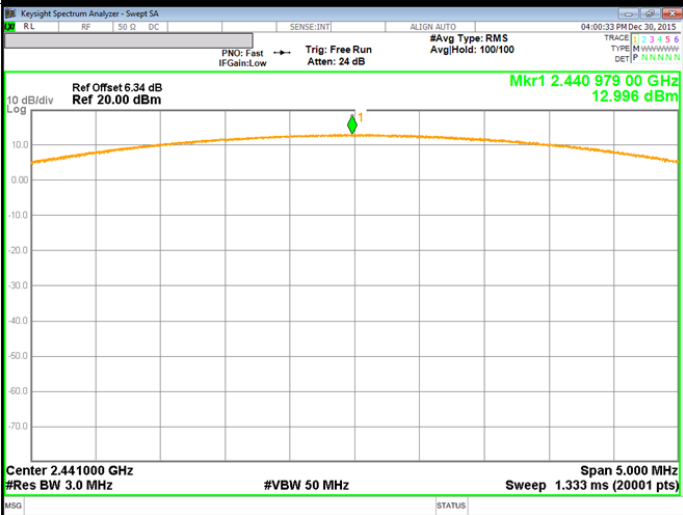
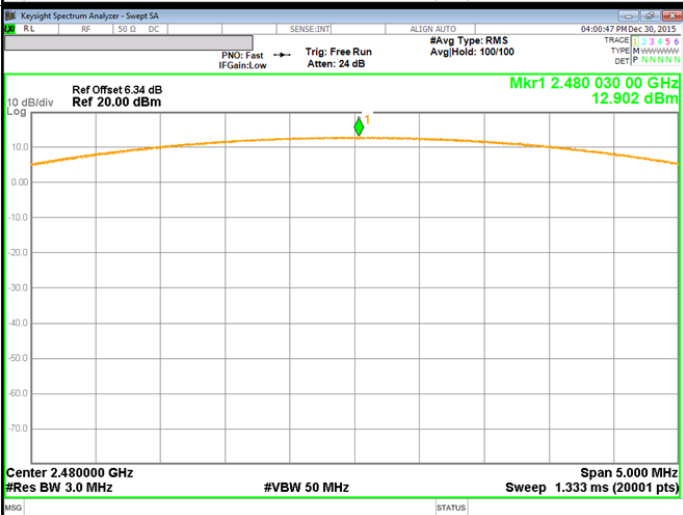
GFSK OUTPUT POWER

GFSK Low CH	 Key: Keysight Spectrum Analyzer - Sweep SA RL RF 50 Ω DC SENSE:INT1 ALIGN: AUTO 03:59:09 PM Dec 30, 2015 PNO: Fast IF Gain: Low Trig: Free Run Atten: 24 dB #Avg Type: RMS Avg Hold: 100/100 Ref Offset 6.34 dB Ref 20.00 dBm Mkr1 2.401 831 25 GHz 11.680 dBm Center 2.402000 GHz Span 5.000 MHz #Res BW 3.0 MHz #VBW 50 MHz Sweep 1.333 ms (20001 pts)
GFSK Middle CH	 Key: Keysight Spectrum Analyzer - Sweep SA RL RF 50 Ω DC SENSE:INT1 ALIGN: AUTO 03:59:22 PM Dec 30, 2015 PNO: Fast IF Gain: Low Trig: Free Run Atten: 24 dB #Avg Type: RMS Avg Hold: 100/100 Ref Offset 6.34 dB Ref 20.00 dBm Mkr1 2.440 972 25 GHz 11.647 dBm Center 2.441000 GHz Span 5.000 MHz #Res BW 3.0 MHz #VBW 50 MHz Sweep 1.333 ms (20001 pts)
GFSK High CH	 Key: Keysight Spectrum Analyzer - Sweep SA RL RF 50 Ω DC SENSE:INT1 ALIGN: AUTO 03:59:32 PM Dec 30, 2015 PNO: Fast IF Gain: Low Trig: Free Run Atten: 24 dB #Avg Type: RMS Avg Hold: 100/100 Ref Offset 6.34 dB Ref 20.00 dBm Mkr1 2.479 879 50 GHz 11.873 dBm Center 2.480000 GHz Span 5.000 MHz #Res BW 3.0 MHz #VBW 50 MHz Sweep 1.333 ms (20001 pts)

PI/4-DPSK OUTPUT POWER

Pi/4-DPSK Low CH	 KeySight Spectrum Analyzer - Swept SA RL RF 50 Ω DC SENSE:INT ALIGN AUTO 04:00:08 PM Dec 30, 2015 PNO: Fast IF Gain: Low Trig: Free Run Att: 24 dB #Avg Type: RMS AvgHold: 100/100 Ref Offset 6.34 dB Ref 20.00 dBm Mkr1 2.401 888 00 GHz 13.018 dBm 10 dB/div Log Center 2.402000 GHz Span 5.000 MHz #Res BW 3.0 MHz #VBW 50 MHz Sweep 1.333 ms (20001 pts) MSG STATUS
Pi/4-DPSK Middle CH	 KeySight Spectrum Analyzer - Swept SA RL RF 50 Ω DC SENSE:INT ALIGN AUTO 03:59:55 PM Dec 30, 2015 PNO: Fast IF Gain: Low Trig: Free Run Att: 24 dB #Avg Type: RMS AvgHold: 100/100 Ref Offset 6.34 dB Ref 20.00 dBm Mkr1 2.441 224 75 GHz 12.854 dBm 10 dB/div Log Center 2.441000 GHz Span 5.000 MHz #Res BW 3.0 MHz #VBW 50 MHz Sweep 1.333 ms (20001 pts) MSG STATUS
Pi/4-DPSK High CH	 KeySight Spectrum Analyzer - Swept SA RL RF 50 Ω DC SENSE:INT ALIGN AUTO 03:59:44 PM Dec 30, 2015 PNO: Fast IF Gain: Low Trig: Free Run Att: 24 dB #Avg Type: RMS AvgHold: 100/100 Ref Offset 6.34 dB Ref 20.00 dBm Mkr1 2.480 216 25 GHz 12.787 dBm 10 dB/div Log Center 2.480000 GHz Span 5.000 MHz #Res BW 3.0 MHz #VBW 50 MHz Sweep 1.333 ms (20001 pts) MSG STATUS

8PSK OUTPUT POWER

8PSK Low CH	
8PSK Middle CH	
8PSK High CH	

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 10.1 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	11.172	13.10
Middle	2441	11.156	13.05
High	2480	11.411	13.84

8.6.2. DATA RATE PI/4-DQPSK MODULATION

Channel	Frequency [MHz]	AV power [dBm]	AV power [mW]
Low	2402	10.707	11.77
Middle	2441	10.668	11.66
High	2480	10.897	12.29

8.6.3. ENHANCED DATA RATE 8PSK MODULATION

Channel	Frequency [MHz]	AV power [dBm]	AV power [mW]
Low	2402	10.720	11.80
Middle	2441	10.675	11.68
High	2480	10.905	12.32

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.

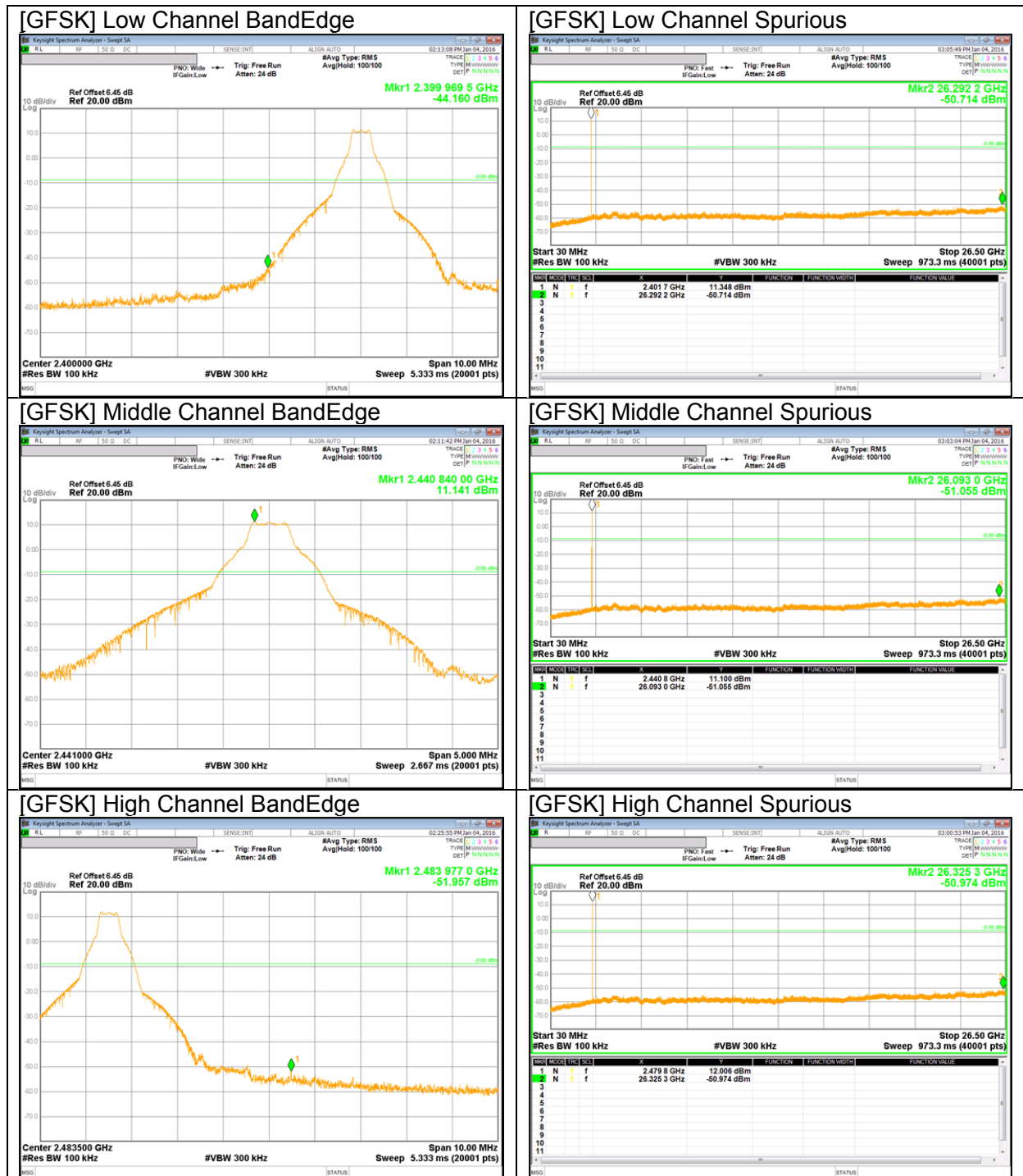
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

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

RESULTS

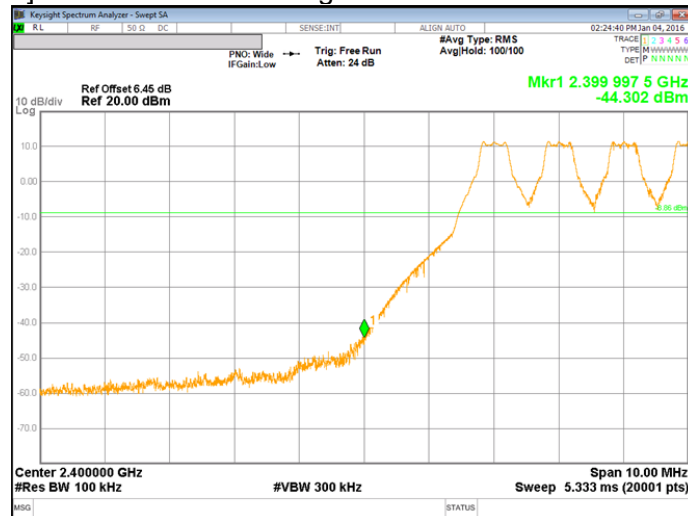
8.7.1. BASIC DATA RATE GFSK MODULATION

GFSK Mode

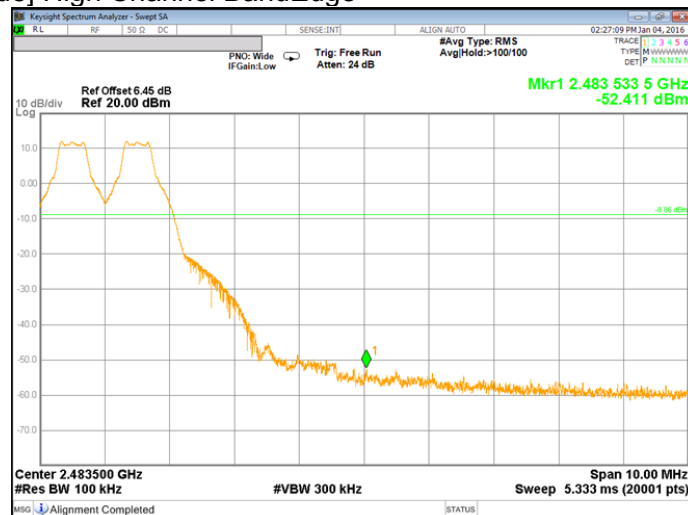


BandEdge Emission at GFSK Hopping Mode

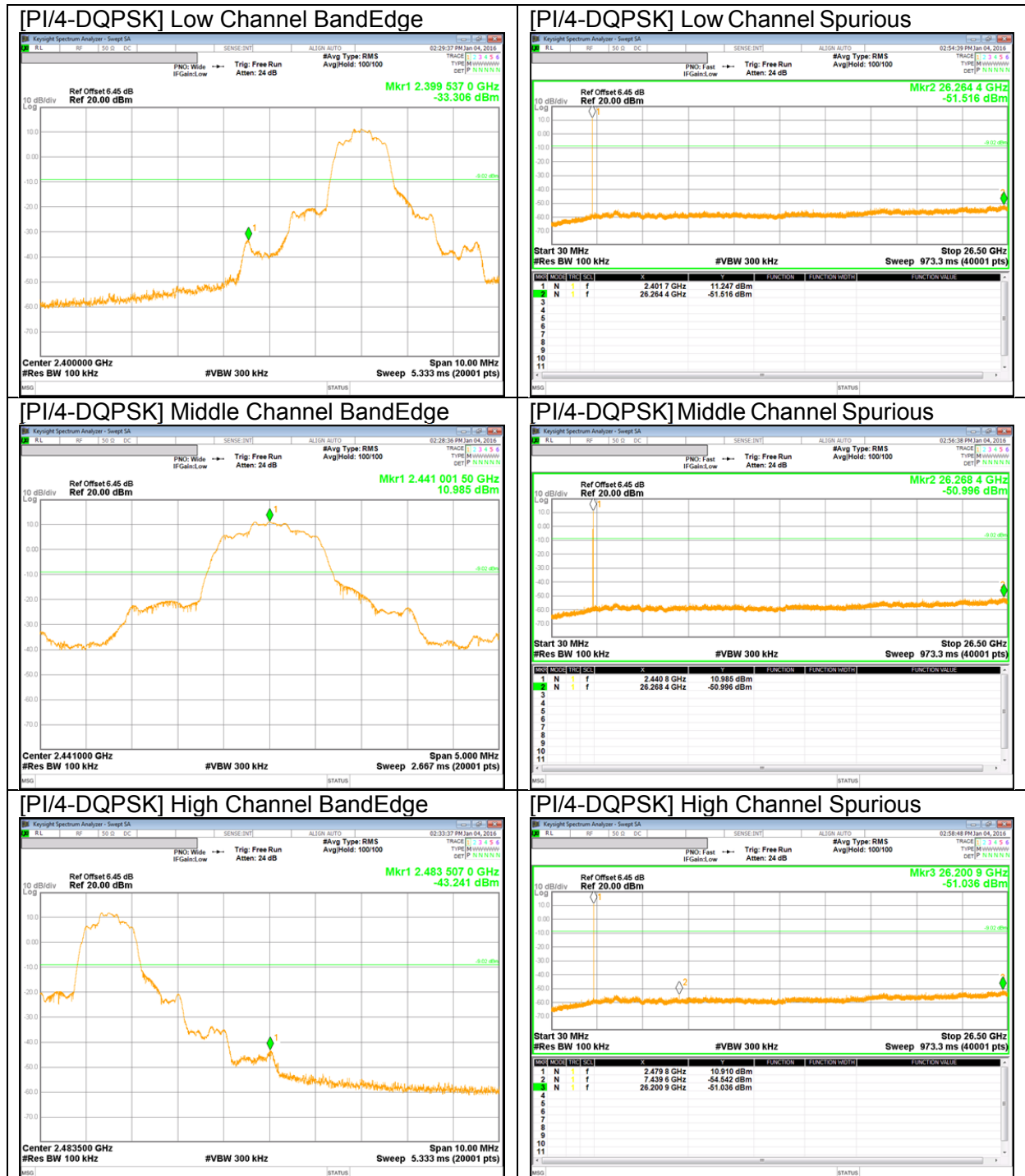
[GFSK Hopping Mode] Low Channel BandEdge



[GFSK Hopping Mode] High Channel BandEdge

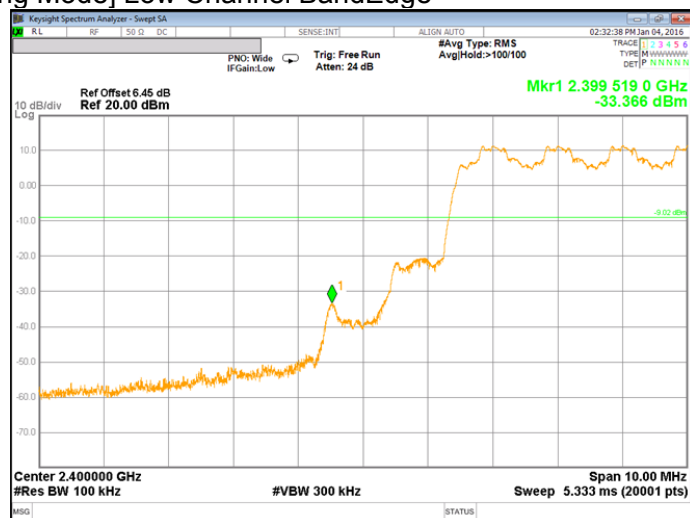


PI/4-DQPSK Mode



BandEdge Emission at PI/4-DQPSK Hopping Mode

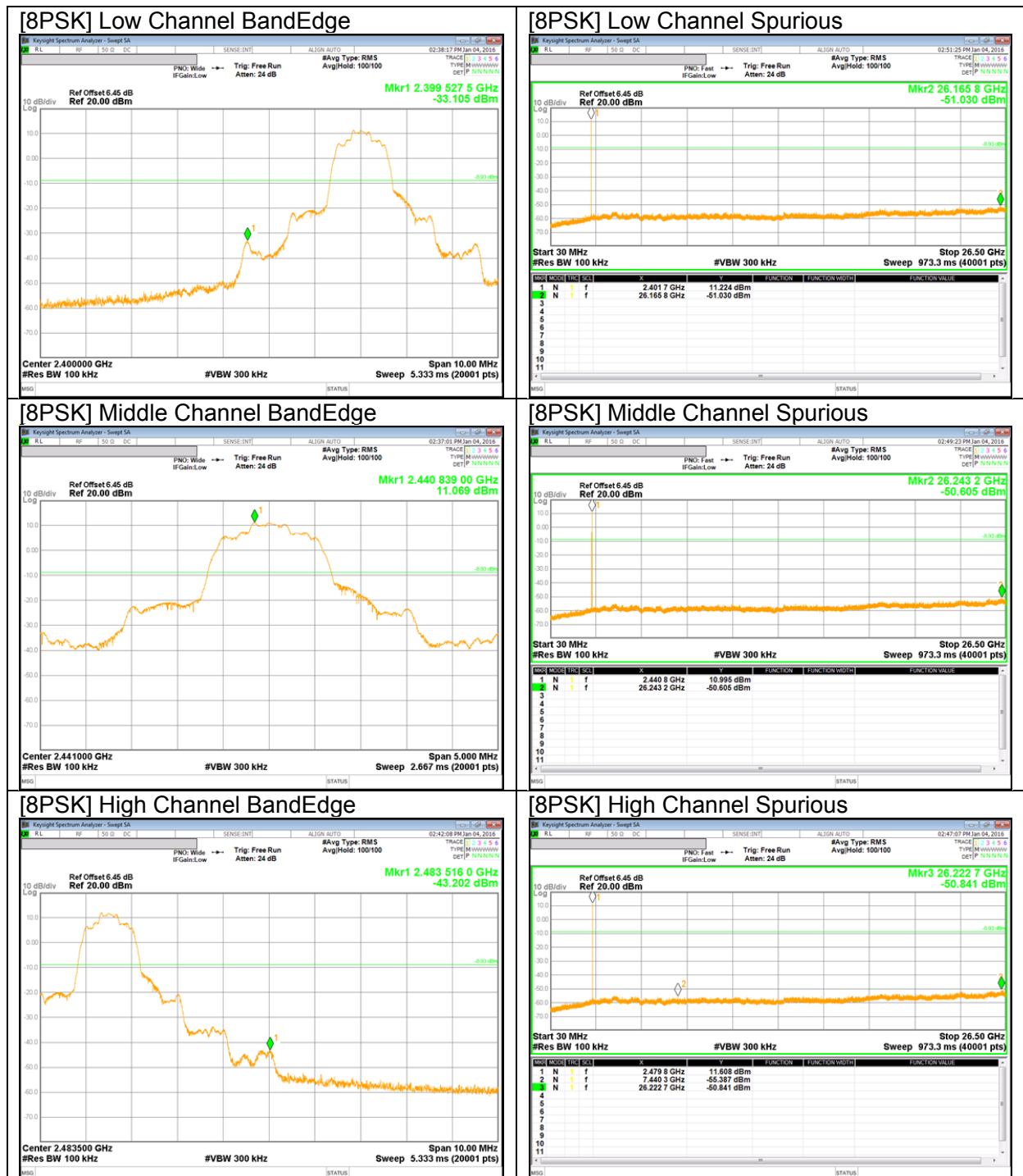
[PI/4-DQPSK Hopping Mode] Low Channel BandEdge



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

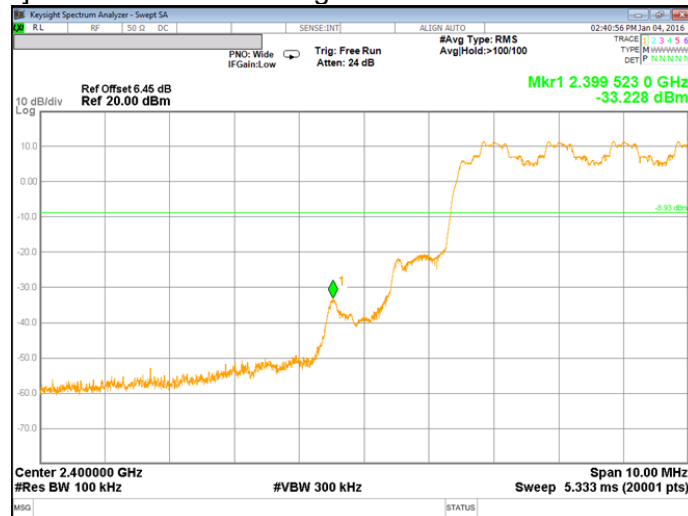


8PSK Mode



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 C63.10. The EUT is set to transmit in a continuous mode.

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

For band edge measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 1/T (on time) for average measurement.

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

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.

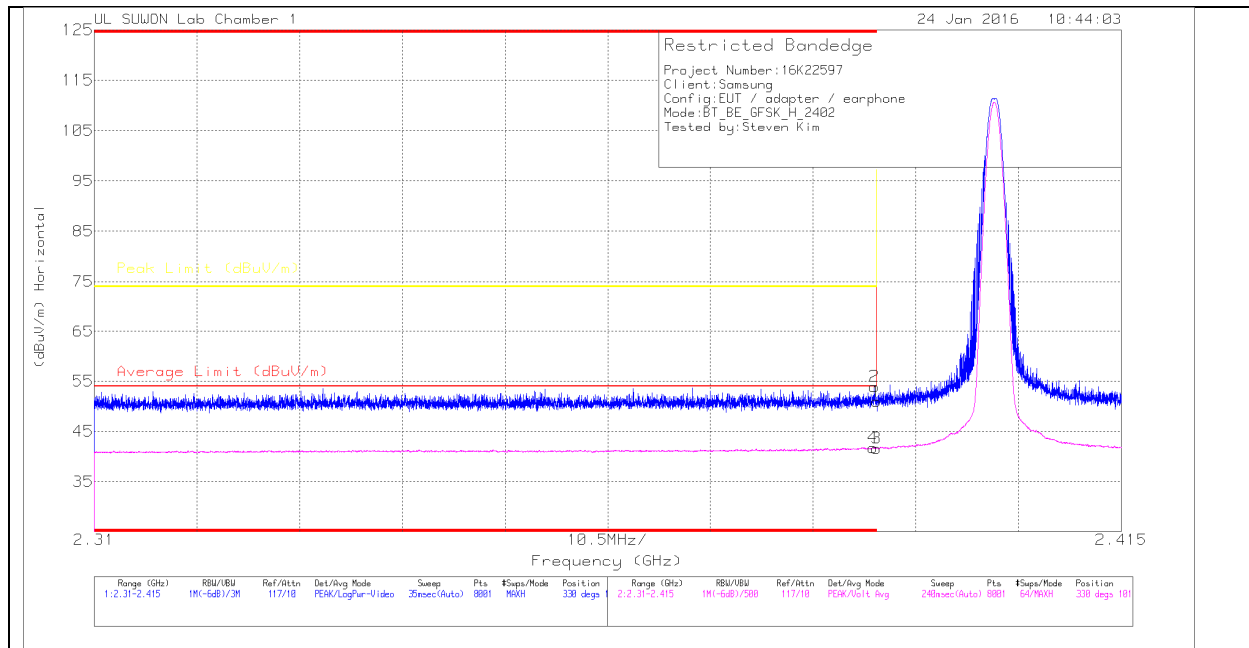
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

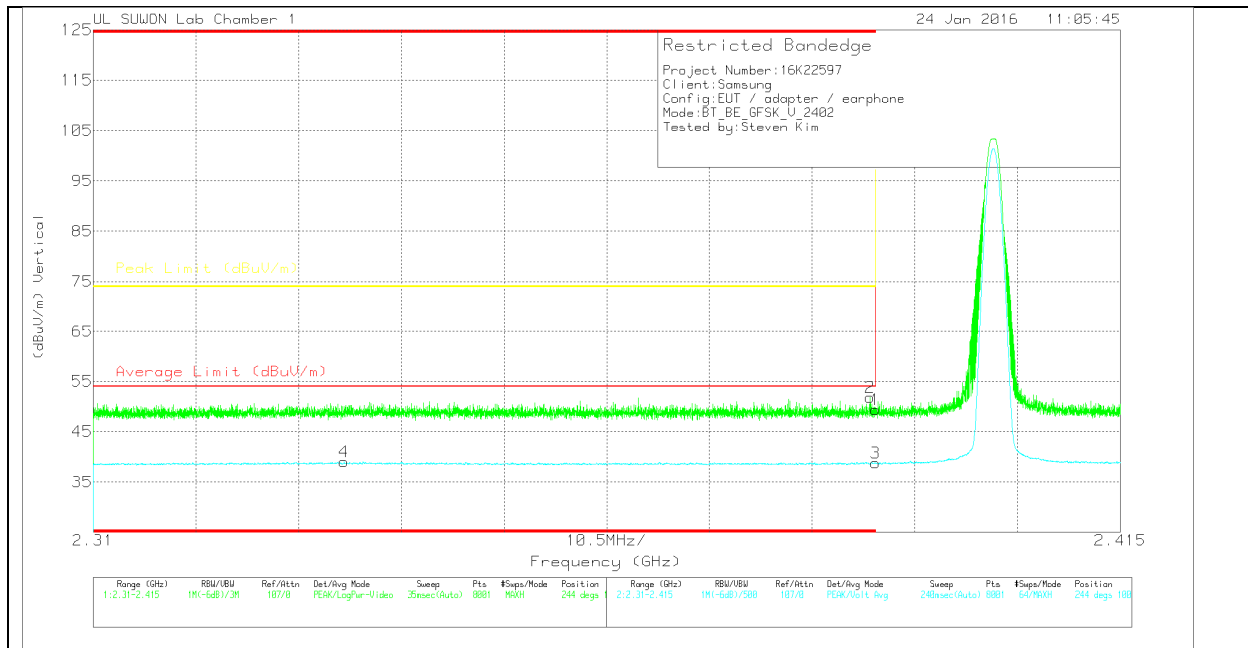
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	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	48.18	Pk	31.8	-29	50.98	-	-	74	-23.02	330	101	H
2	* 2.39	51.15	Pk	31.8	-29	53.95	-	-	74	-20.05	330	101	H
3	* 2.39	38.86	V1TV	31.8	-29	41.66	54	-12.34	-	-	330	101	H
4	* 2.39	38.97	V1TV	31.8	-29	41.77	54	-12.23	-	-	330	101	H

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

Pk - Peak detector

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

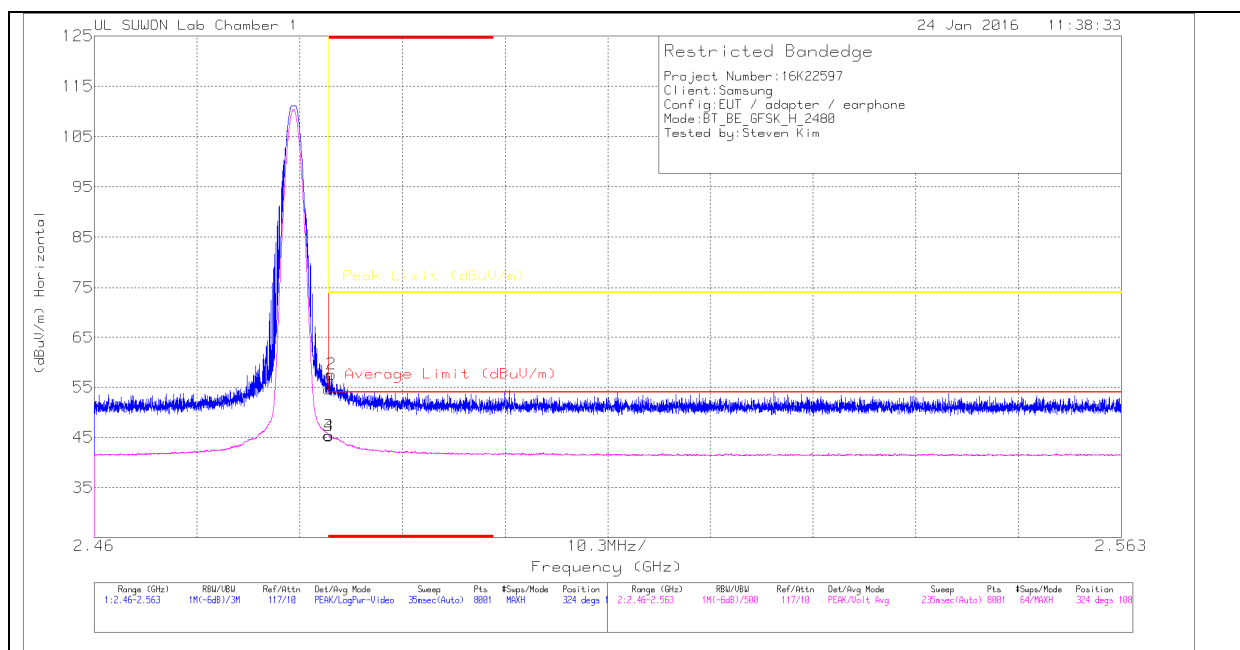
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	Path_2	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	46.56	Pk		-29	49.36	-	-	74	-24.64	244	100	V
2	* 2.389	48.99	Pk		-29	51.79	-	-	74	-22.21	244	100	V
3	* 2.39	35.97	V1TV		-29	38.77	54	-15.23	-	-	244	100	V
4	* 2.336	36.33	V1TV		-29	39.03	54	-14.97	-	-	244	100	V

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

Pk - Peak detector

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

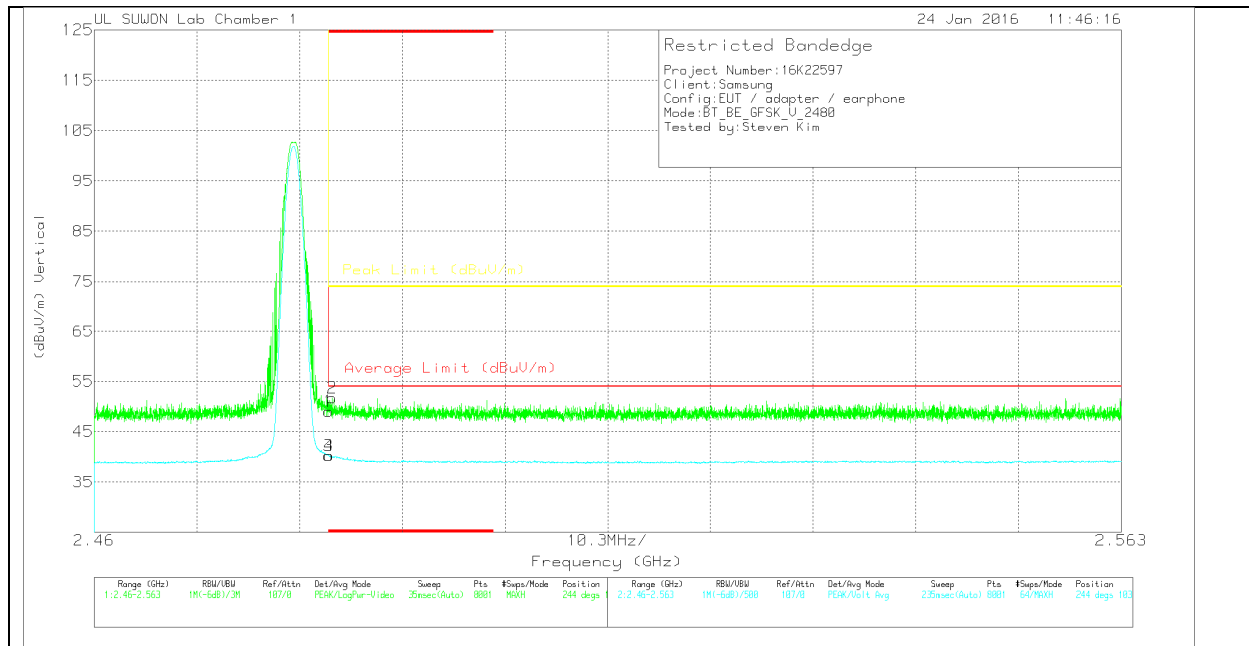
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	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	51.55	Pk	32	-28.9	54.65	-	-	74	-19.35	324	108	H
2	* 2.484	54.5	Pk	32	-28.9	57.6	-	-	74	-16.4	324	108	H
3	* 2.484	42.25	V1TV	32	-28.9	45.35	54	-8.65	-	-	324	108	H
4	* 2.484	42.22	V1TV	32	-28.9	45.32	54	-8.68	-	-	324	108	H

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

Pk - Peak detector

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

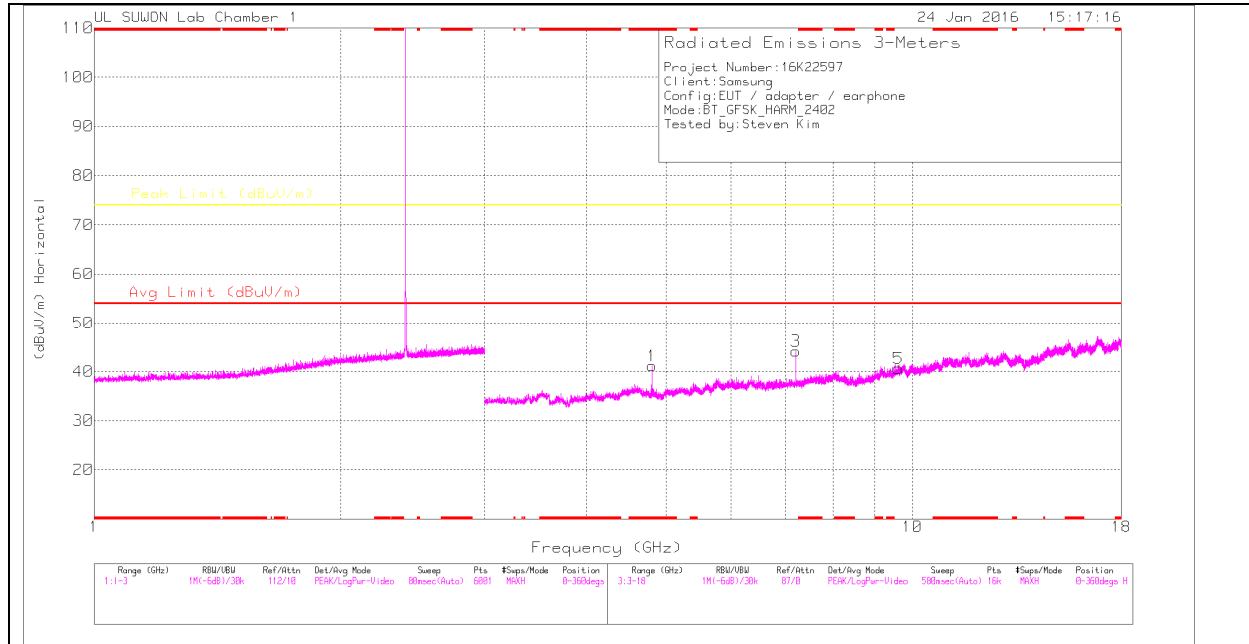
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	Path_2	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	45.96	Pk	32	-28.9	49.06	-	-	74	-24.94	244	103	V
2	* 2.484	48.62	Pk	32	-28.9	51.72	-	-	74	-22.28	244	103	V
3	* 2.484	37.17	V1TV	32	-28.9	40.27	54	-13.73	-	-	244	103	V
4	* 2.484	37.14	V1TV	32	-28.9	40.24	54	-13.76	-	-	244	103	V

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

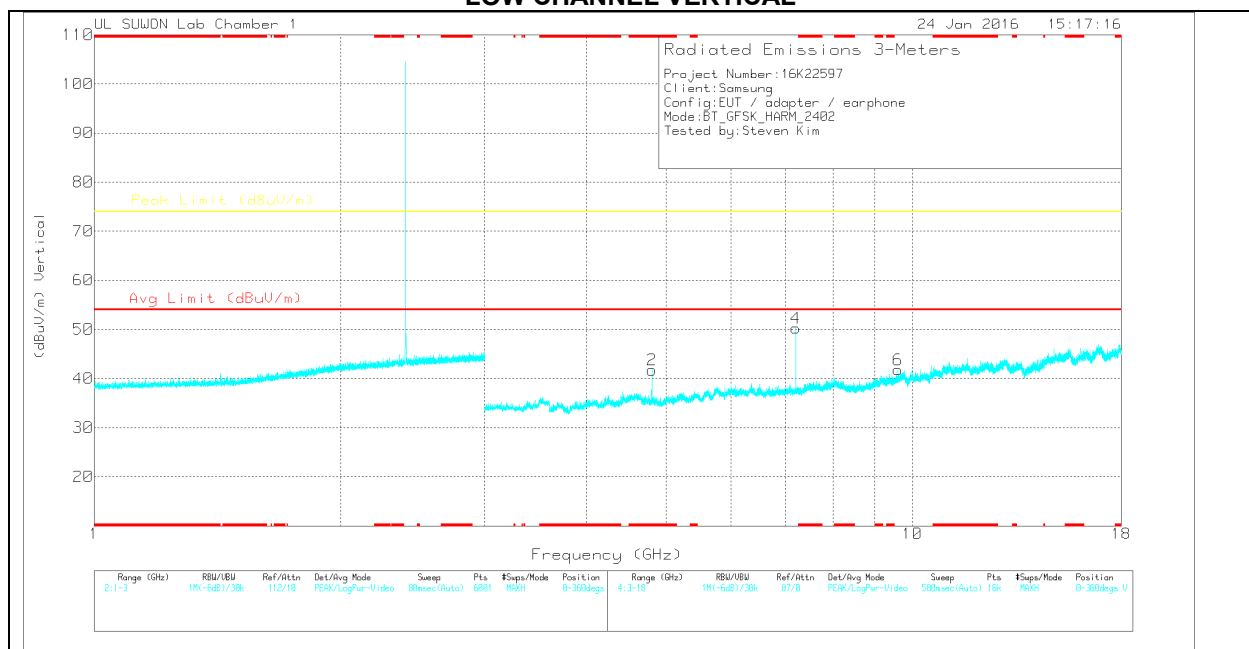
Pk - Peak detector

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	3117(0016 8717)_150 619	Path_3	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.804	40.95	PK	34	-33.8	41.15	-	-	74	-32.85	0-360	100	H
3	7.205	39.28	PK	35.7	-30.8	44.18	-	-	74	-29.82	0-360	200	H
5	9.612	30.92	PK	37	-27.3	40.62	-	-	74	-33.38	0-360	100	H
2	* 4.804	41.55	PK	34	-33.8	41.75	-	-	74	-32.25	0-360	100	V
4	7.205	45.33	PK	35.7	-30.8	50.23	-	-	74	-23.77	0-360	100	V
6	9.608	32.09	PK	37	-27.3	41.79	-	-	74	-32.21	0-360	100	V

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

PK – Peak detector

Radiated Emissions

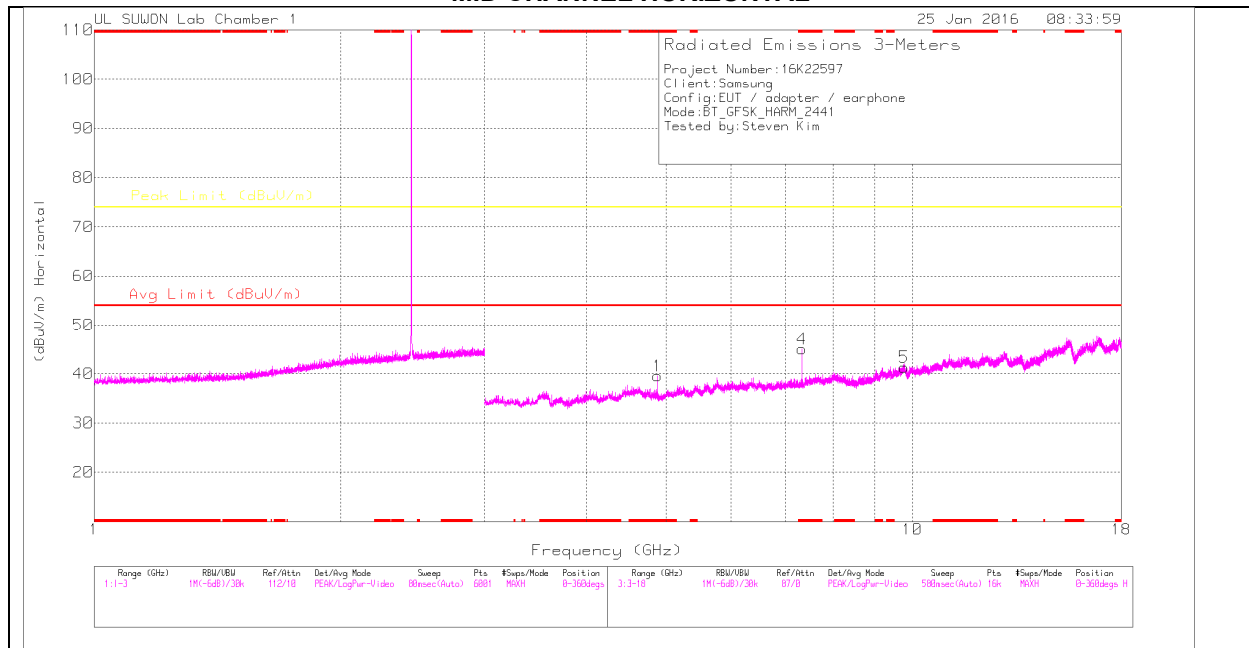
Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	Path_3	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.804	49.71	PK2	34	-33.8	49.91	-	-	74	-24.09	356	112	H
* 4.804	40.19	VA1T	34	-33.8	40.39	54	-13.61	-	-	356	112	H
7.206	47.08	PK2	35.7	-30.8	51.98	-	-	74	-22.02	261	170	H
* 4.804	41.12	PK2	34	-33.8	41.32	-	-	74	-32.68	39	101	V
* 4.804	42.74	VA1T	34	-33.8	42.94	54	-11.06	-	-	39	101	V
7.206	52.1	PK2	35.7	-30.8	57	-	-	74	-17	273	100	V

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

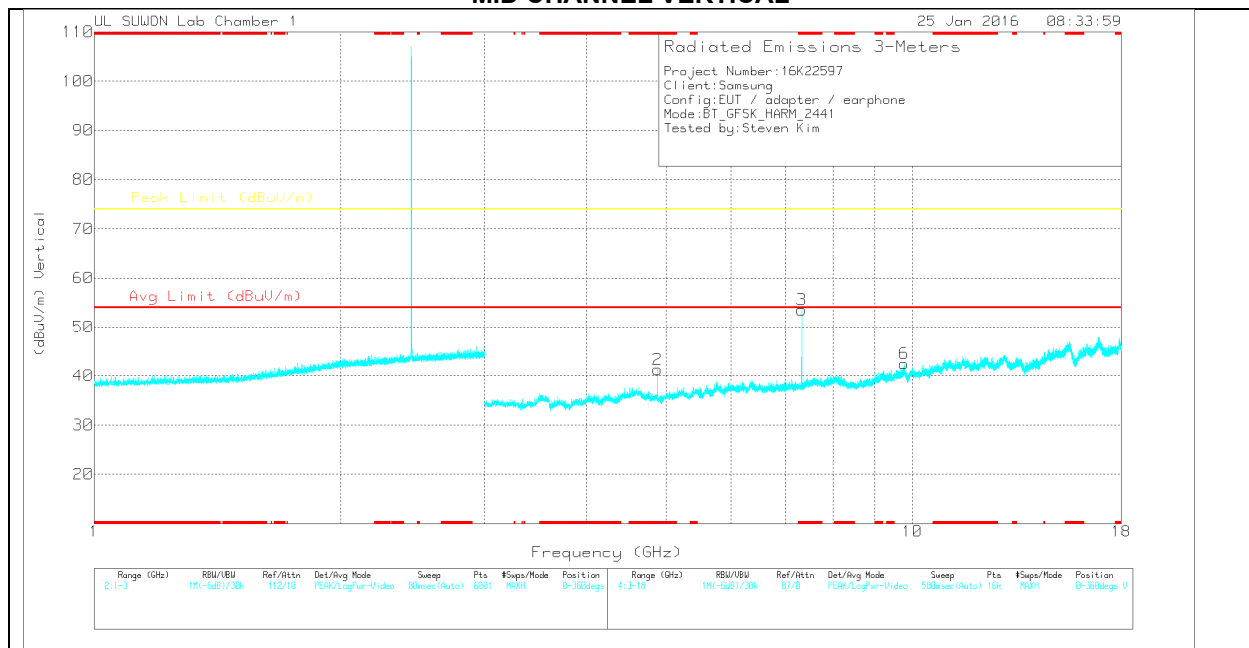
PK2 - KDB558074 Method: Maximum Peak

VA1T - FHSS: Linear Voltage Average $V_B = 1/T_{on}$ where: T_{on} is transmit duration

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	3117(0016 8717)_150 619	Path_3	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.881	39.54	PK	34	-34	39.54	-	-	74	-34.46	0-360	100	H
4	* 7.323	40.13	PK	35.8	-30.9	45.03	-	-	74	-28.97	0-360	200	H
5	9.765	30.71	PK	37.2	-26.6	41.31	-	-	74	-32.69	0-360	100	H
2	* 4.881	41.25	PK	34	-34	41.25	-	-	74	-32.75	0-360	100	V
3	* 7.323	48.67	PK	35.8	-30.9	53.57	-	-	74	-20.43	0-360	100	V
6	9.764	31.87	PK	37.2	-26.6	42.47	-	-	74	-31.53	0-360	100	V

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

PK – Peak detector

Radiated Emissions

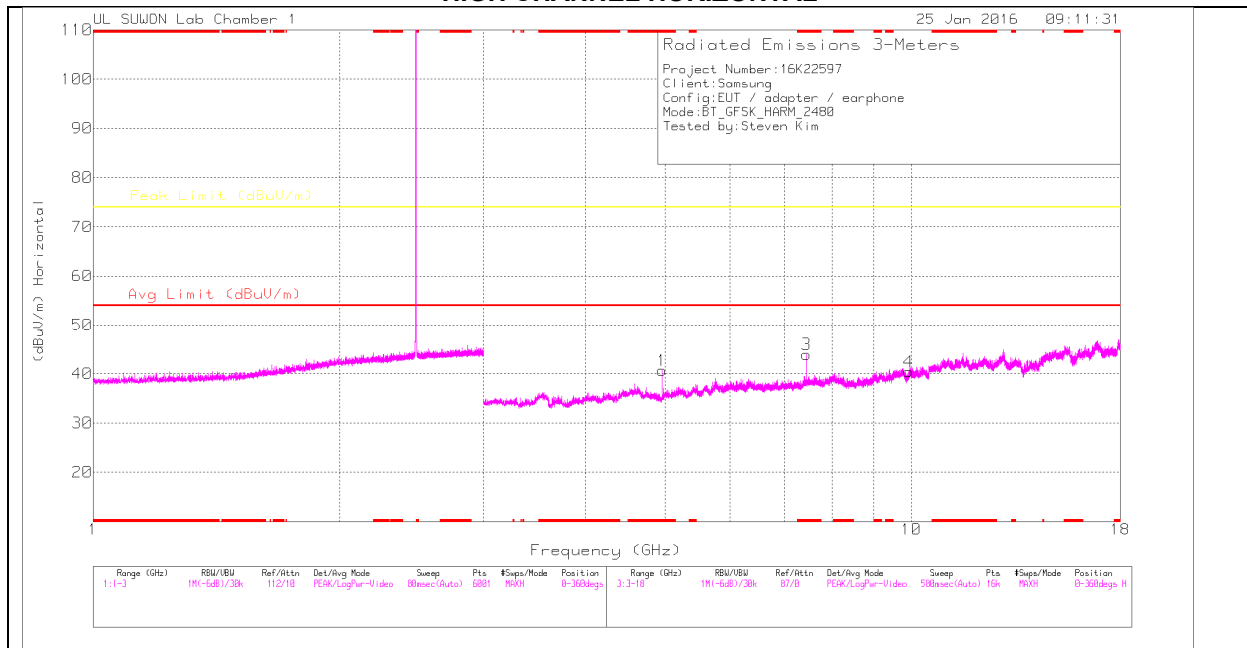
Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	Path_3	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.881	48.58	PK2	34	-34	48.58	-	-	74	-25.42	172	100	H
* 4.882	38.29	VA1T	34	-34	38.29	54	-15.71	-	-	172	100	H
* 4.882	48.66	PK2	34	-34	48.66	-	-	74	-25.34	181	270	V
* 4.882	39.16	VA1T	34	-34	39.16	54	-14.84	-	-	181	270	V
* 7.322	52.92	PK2	35.8	-30.9	57.82	-	-	74	-16.18	110	100	V
* 7.323	47.26	VA1T	35.8	-30.9	52.16	54	-1.84	-	-	110	100	V
* 7.323	50.73	PK2	35.8	-30.9	55.63	-	-	74	-18.37	155	346	H
* 7.323	43.97	VA1T	35.8	-30.9	48.87	54	-5.13	-	-	155	346	H

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

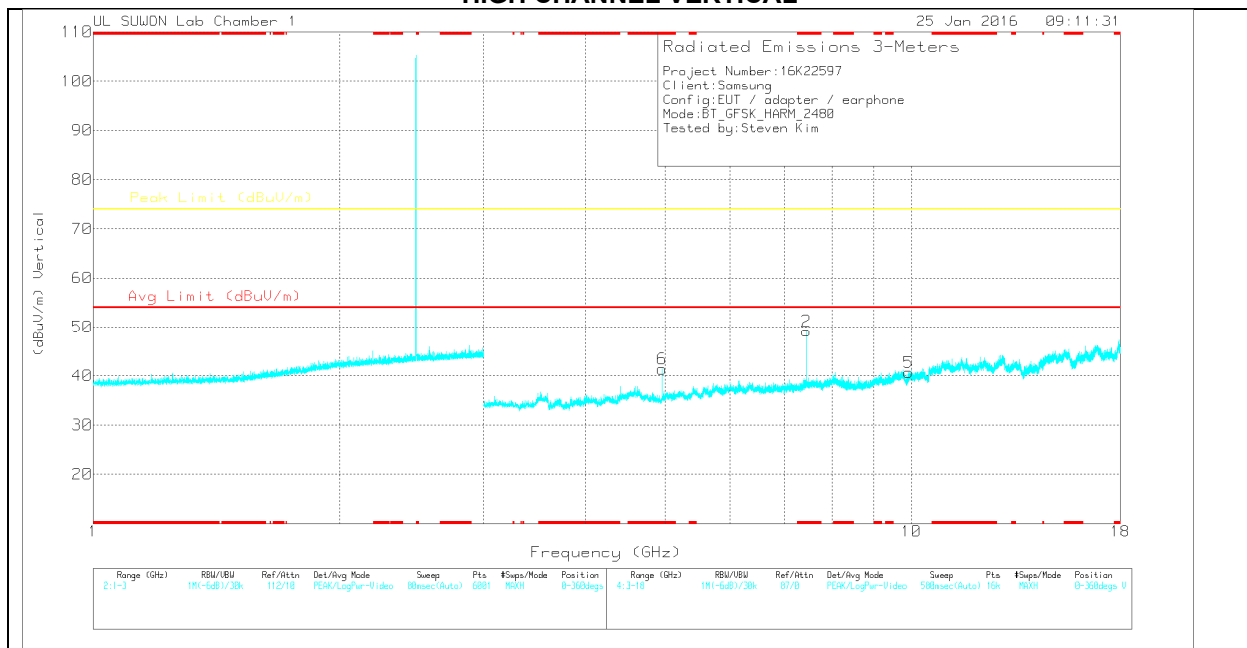
PK2 - Maximum Peak

VA1T - FHSS: Linear Voltage Average $V_B = 1/T_{on}$ where: T_{on} is transmit duration

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	3117(0016 8717)_150 619	Path_3	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.959	40.65	PK	34	-34	40.65	-	-	74	-33.35	0-360	100	H
3	* 7.44	38.83	PK	35.8	-30.7	43.93	-	-	74	-30.07	0-360	200	H
4	9.918	30.33	PK	37.4	-27.3	40.43	-	-	74	-33.57	0-360	100	H
2	* 7.441	44.05	PK	35.8	-30.7	49.15	-	-	74	-24.85	0-360	100	V
5	9.92	30.45	PK	37.4	-27.2	40.65	-	-	74	-33.35	0-360	100	V
6	* 4.959	41.37	PK	34	-34	41.37	-	-	74	-32.63	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	3117(0016 8717)_150 619	Path_3	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.96	48.63	PK2	34	-34	48.63	-	-	74	-25.37	149	186	H
* 4.96	39.24	VA1T	34	-34	39.24	54	-14.76	-	-	149	186	H
* 4.96	49.74	PK2	34	-34	49.74	-	-	74	-24.26	215	255	V
* 4.96	40.86	VA1T	34	-34	40.86	54	-13.14	-	-	215	255	V
* 7.441	50.12	PK2	35.8	-30.7	55.22	-	-	74	-18.78	115	366	V
* 7.44	43.44	VA1T	35.8	-30.7	48.54	54	-5.46	-	-	115	366	V
* 7.44	46.01	PK2	35.8	-30.7	51.11	-	-	74	-22.89	355	101	H
* 7.44	35.16	VA1T	35.8	-30.7	40.26	54	-13.74	-	-	355	101	H

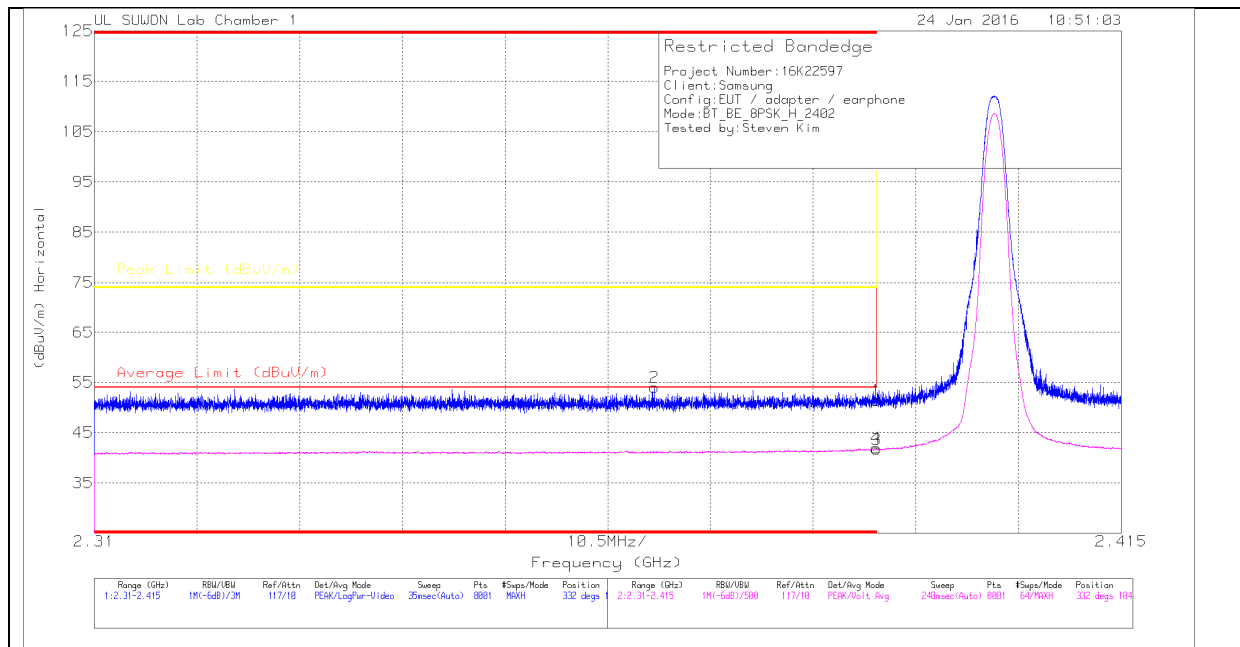
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - Maximum Peak

VA1T - FHSS: Linear Voltage Average $V_B = 1/T_{on}$ where: T_{on} is transmit duration

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

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

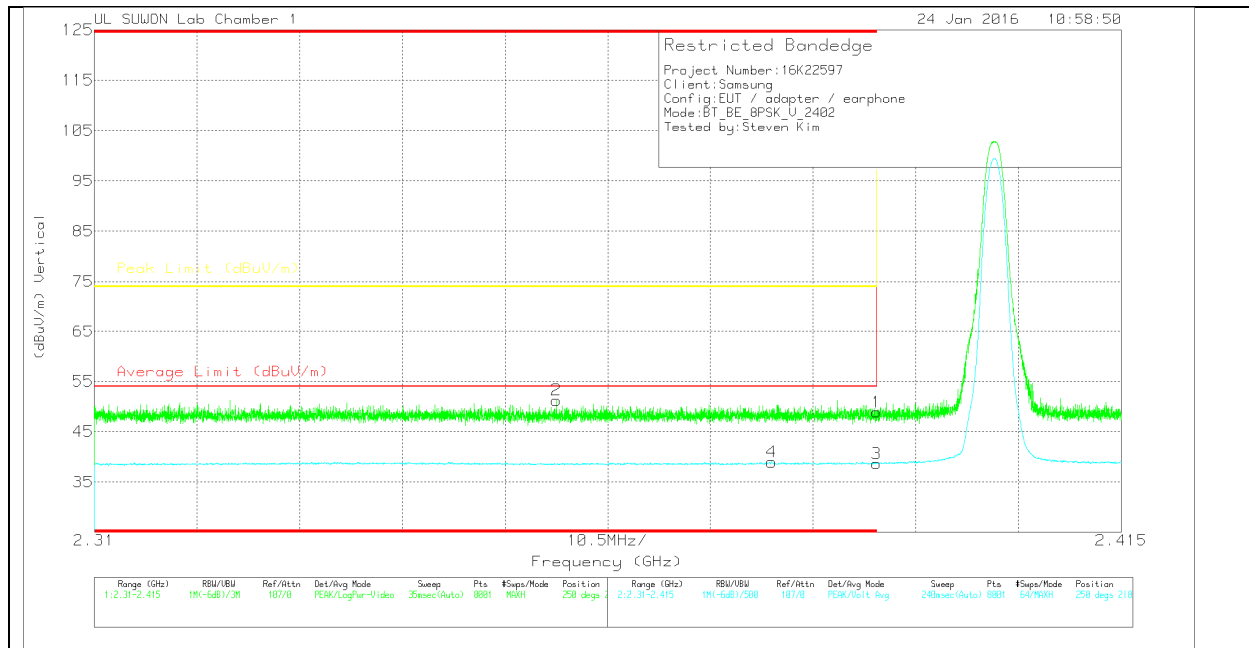
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	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	48.57	Pk	31.8	-29	51.37	-	-	74	-22.63	332	104	H
2	* 2.367	51.18	Pk	31.8	-29	53.98	-	-	74	-20.02	332	104	H
3	* 2.39	38.89	V1TV	31.8	-29	41.69	54	-12.31	-	-	332	104	H
4	* 2.39	39.13	V1TV	31.8	-29	41.93	54	-12.07	-	-	332	104	H

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

Pk - Peak detector

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

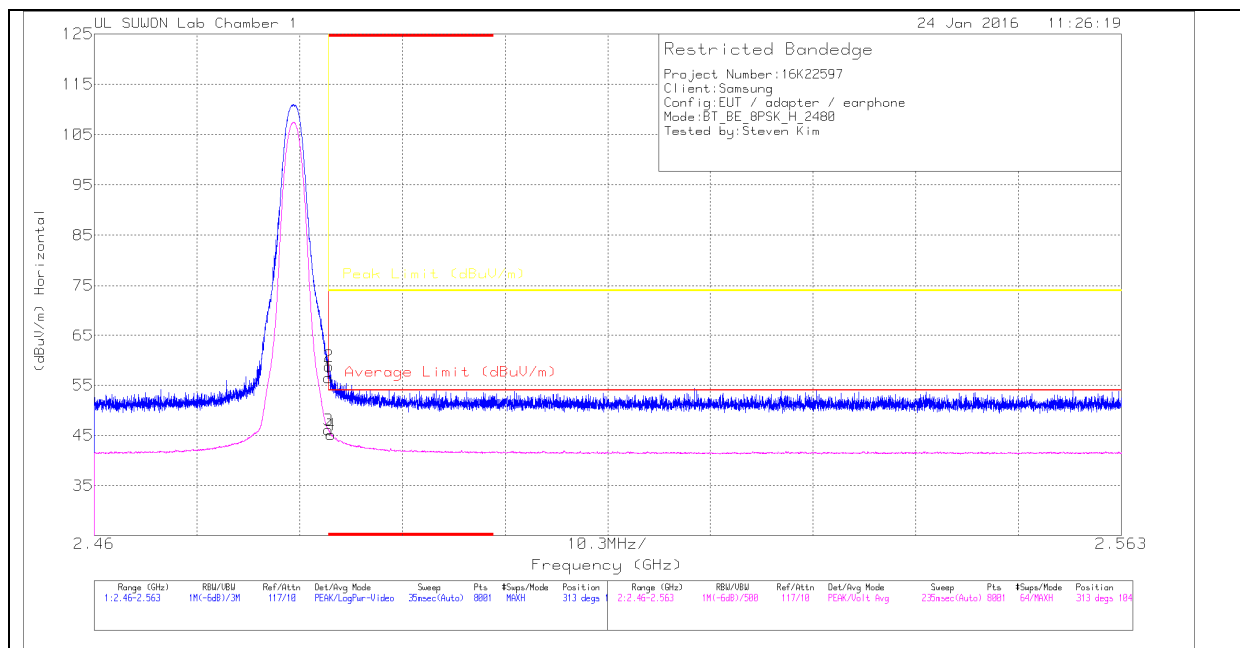
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	Path_2	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	46.09	Pk		-29	48.89	-	-	74	-25.11	250	218	V
2	* 2.357	48.57	Pk		-29	51.27	-	-	74	-22.73	250	218	V
3	* 2.39	35.88	V1TV		-29	38.68	54	-15.32	-	-	250	218	V
4	* 2.379	36.19	V1TV		-29	38.99	54	-15.01	-	-	250	218	V

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

Pk - Peak detector

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

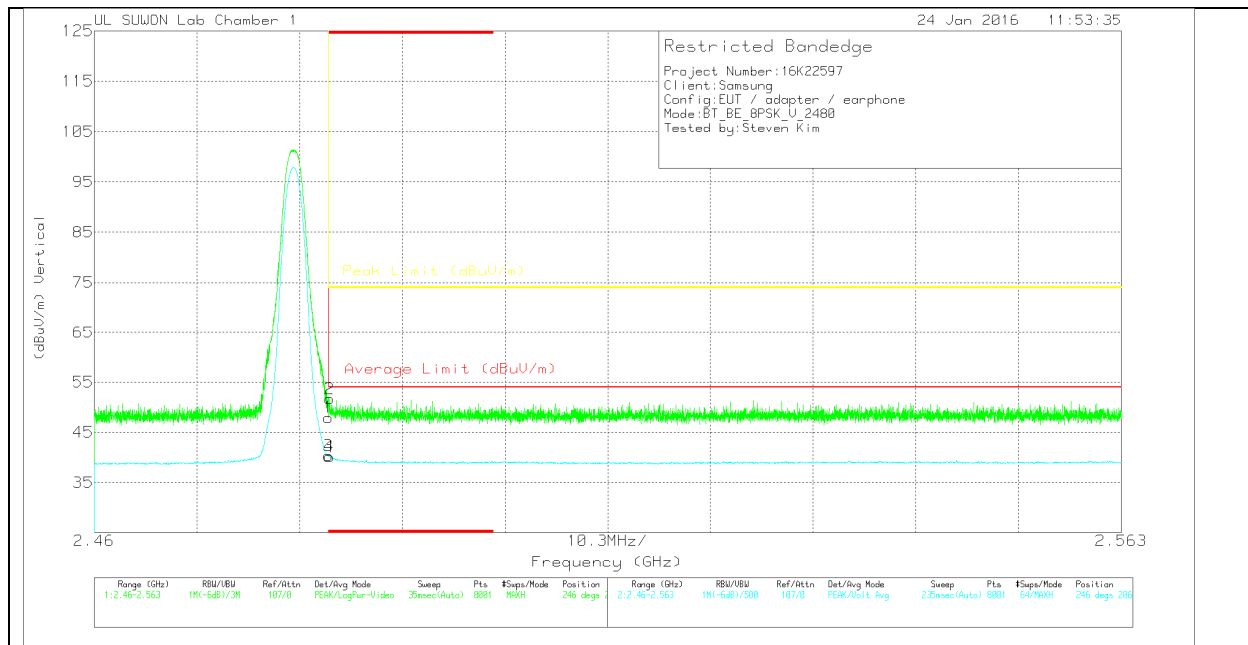
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	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	53.41	Pk	32	-28.9	56.51	-	-	74	-17.49	313	104	H
2	* 2.484	55.71	Pk	32	-28.9	58.81	-	-	74	-15.19	313	104	H
3	* 2.484	42.97	V1TV	32	-28.9	46.07	54	-7.93	-	-	313	104	H
4	* 2.484	42.07	V1TV	32	-28.9	45.17	54	-8.83	-	-	313	104	H

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

Pk - Peak detector

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

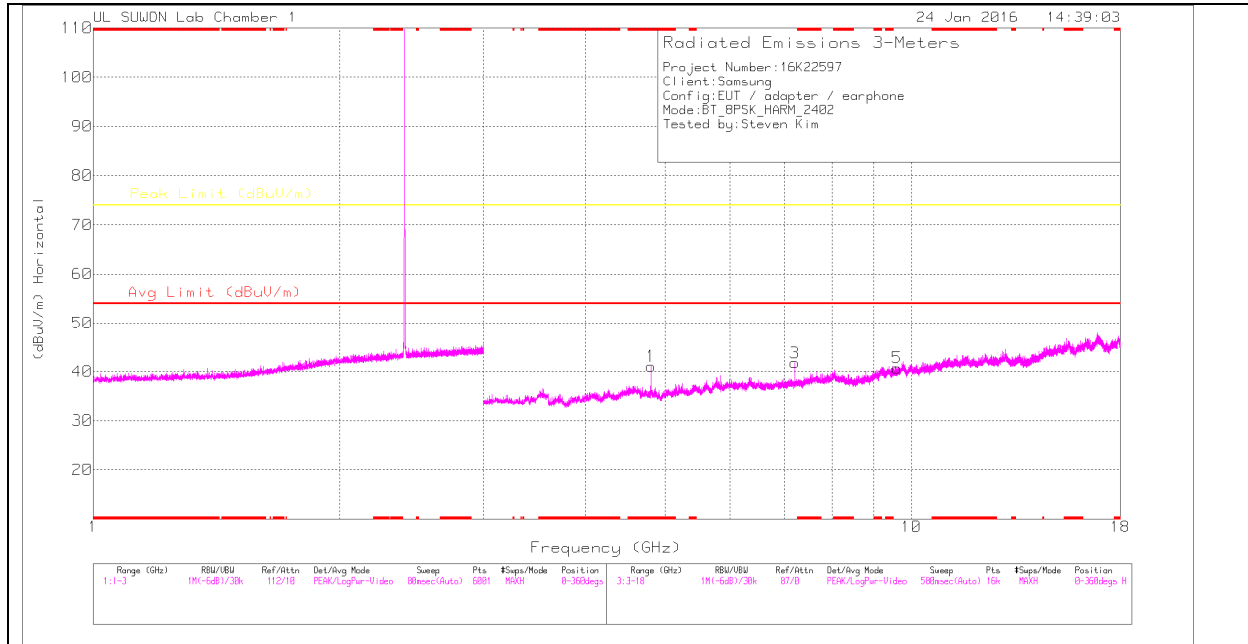
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	Path_2	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	44.88	Pk	32	-28.9	47.98	-	-	74	-26.02	246	206	V
2	* 2.484	48.6	Pk	32	-28.9	51.7	-	-	74	-22.3	246	206	V
3	* 2.484	37.27	V1TV	32	-28.9	40.37	54	-13.63	-	-	246	206	V
4	* 2.484	37.08	V1TV	32	-28.9	40.18	54	-13.82	-	-	246	206	V

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

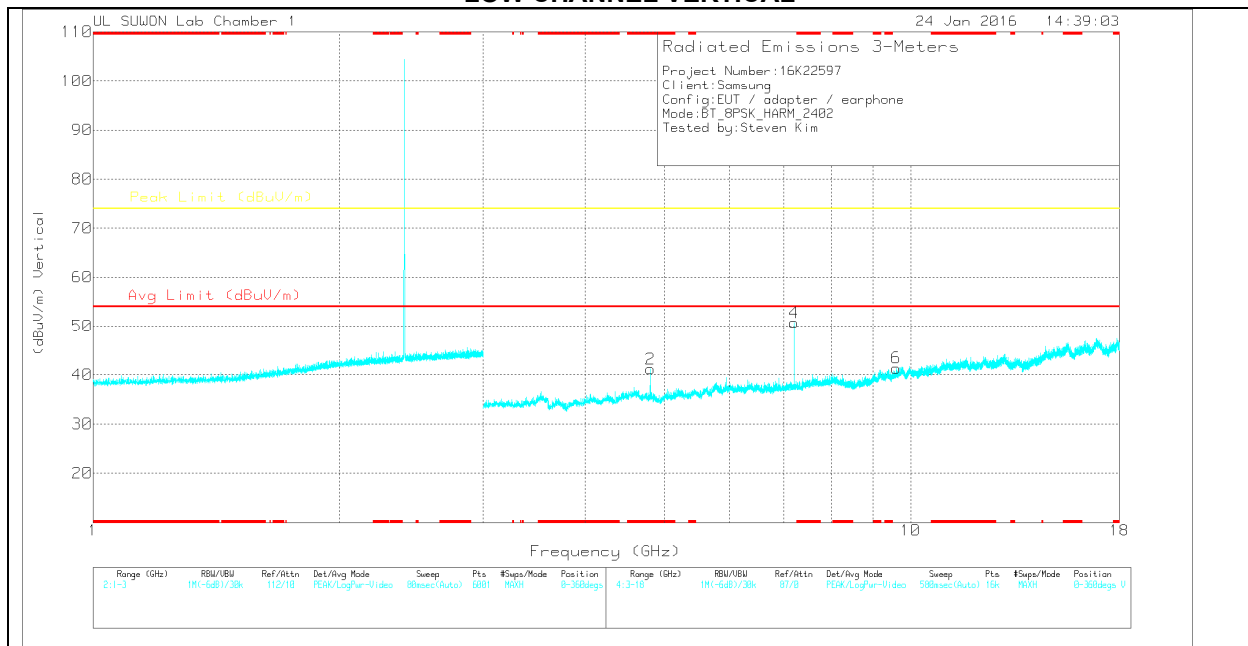
Pk - Peak detector

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	3117(0016 8717)_150 619	Path_3	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.804	40.87	PK	34	-33.8	41.07	-	-	74	-32.93	0-360	100	H
3	7.206	36.86	PK	35.7	-30.8	41.76	-	-	74	-32.24	0-360	200	H
5	9.608	31.03	PK	37	-27.3	40.73	-	-	74	-33.27	0-360	200	H
2	* 4.804	40.97	PK	34	-33.8	41.17	-	-	74	-32.83	0-360	100	V
4	7.206	45.82	PK	35.7	-30.8	50.72	-	-	74	-23.28	0-360	100	V
6	9.608	31.65	PK	37	-27.3	41.35	-	-	74	-32.65	0-360	100	V

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

PK – Peak detector

Radiated Emissions

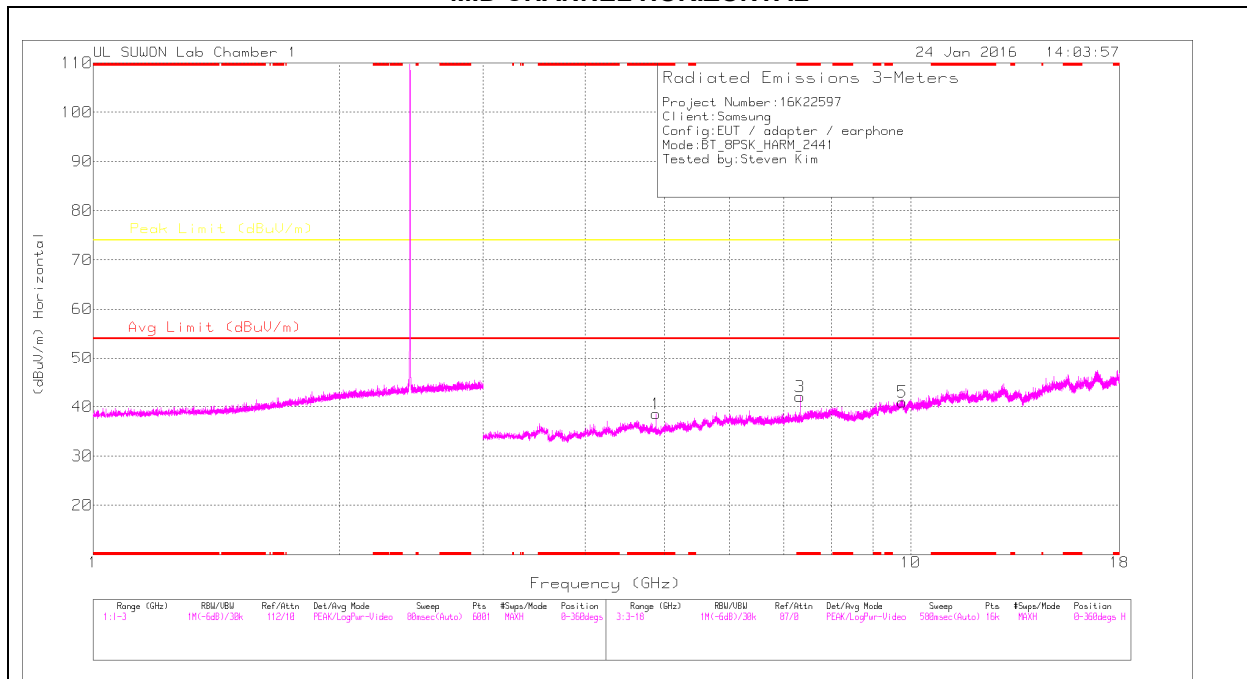
Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	Path_3	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.804	48.22	PK2	34	-33.8	48.42	-	-	74	-25.58	149	234	H
* 4.804	35.42	VA1T	34	-33.8	35.62	54	-18.38	-	-	149	234	H
7.206	47.35	PK2	35.7	-30.8	52.25	-	-	74	-21.75	228	249	H
* 4.804	50.26	PK2	34	-33.8	50.46	-	-	74	-23.54	34	235	V
* 4.804	38.4	VA1T	34	-33.8	38.6	54	-15.4	-	-	34	235	V
7.206	55.76	PK2	35.7	-30.8	60.66	-	-	74	-13.34	275	104	V

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

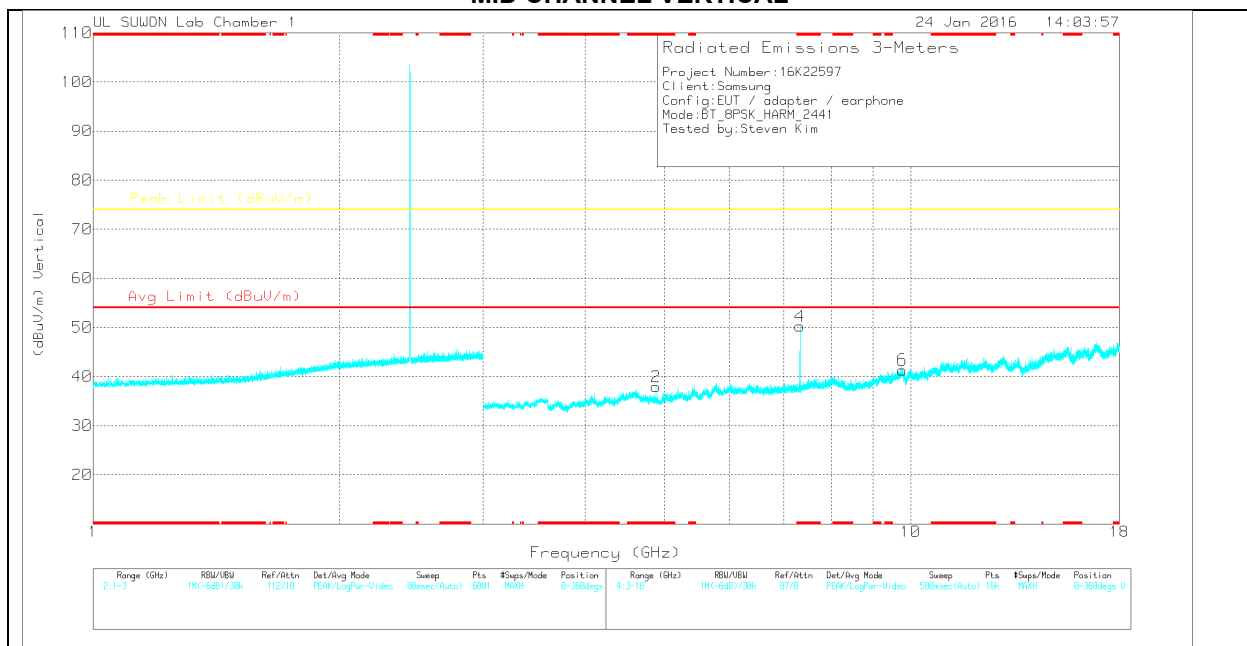
PK2 - KDB558074 Method: Maximum Peak

VA1T - FHSS: Linear Voltage Average $V_B = 1/T_{on}$ where: T_{on} is transmit duration

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	3117(0016 8717)_150 619	Path_3	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.881	38.54	PK	34	-34	38.54	-	-	74	-35.46	0-360	100	H
3	* 7.323	37.12	PK	35.8	-30.9	42.02	-	-	74	-31.98	0-360	100	H
5	9.766	30.24	PK	37.2	-26.5	40.94	-	-	74	-33.06	0-360	200	H
2	* 4.882	37.93	PK	34	-34	37.93	-	-	74	-36.07	0-360	100	V
4	* 7.323	45.35	PK	35.8	-30.9	50.25	-	-	74	-23.75	0-360	100	V
6	9.766	30.74	PK	37.2	-26.6	41.34	-	-	74	-32.66	0-360	100	V

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

PK – Peak detector

Radiated Emissions

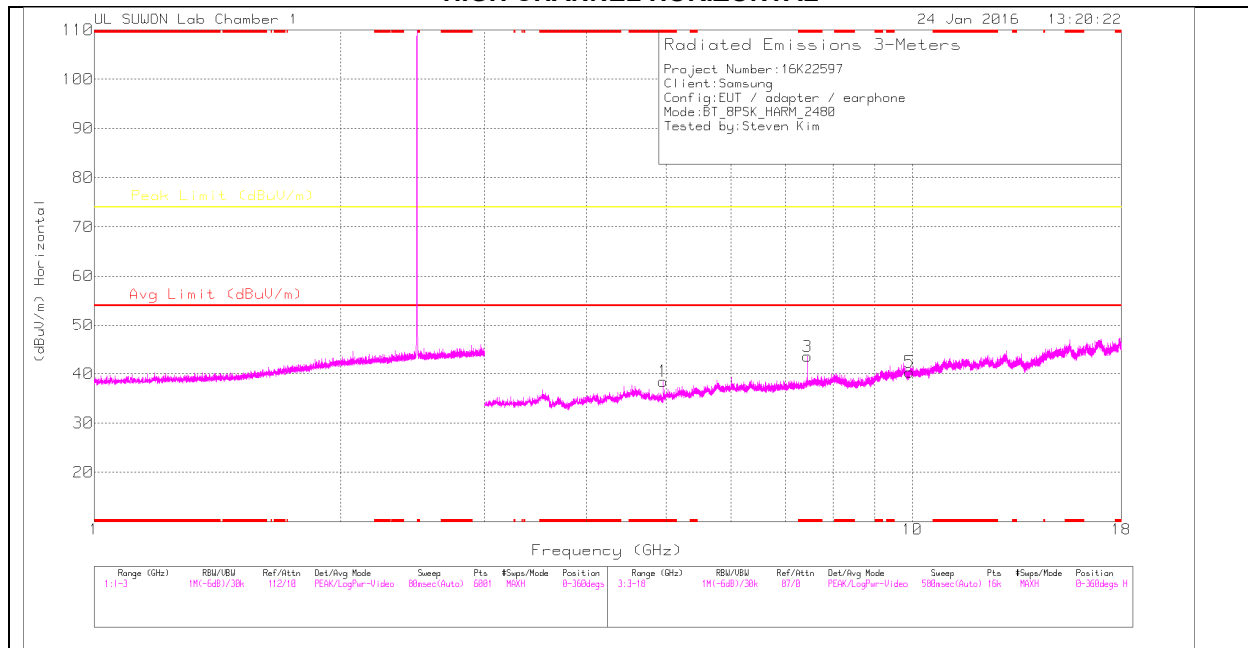
Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	Path_3	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.883	47.69	PK2	34	-34	47.69	-	-	74	-26.31	174	120	H
* 4.882	34.82	VA1T	34	-34	34.82	54	-19.18	-	-	174	120	H
* 7.323	50.44	PK2	35.8	-30.9	55.34	-	-	74	-18.66	253	371	H
* 7.323	38.03	VA1T	35.8	-30.9	42.93	54	-11.07	-	-	253	371	H
* 4.883	48.07	PK2	34	-34	48.07	-	-	74	-25.93	184	292	V
* 4.882	35.47	VA1T	34	-34	35.47	54	-18.53	-	-	184	292	V
* 7.323	55.99	PK2	35.8	-30.9	60.89	-	-	74	-13.11	290	100	V
* 7.323	44.98	VA1T	35.8	-30.9	49.88	54	-4.12	-	-	290	100	V

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

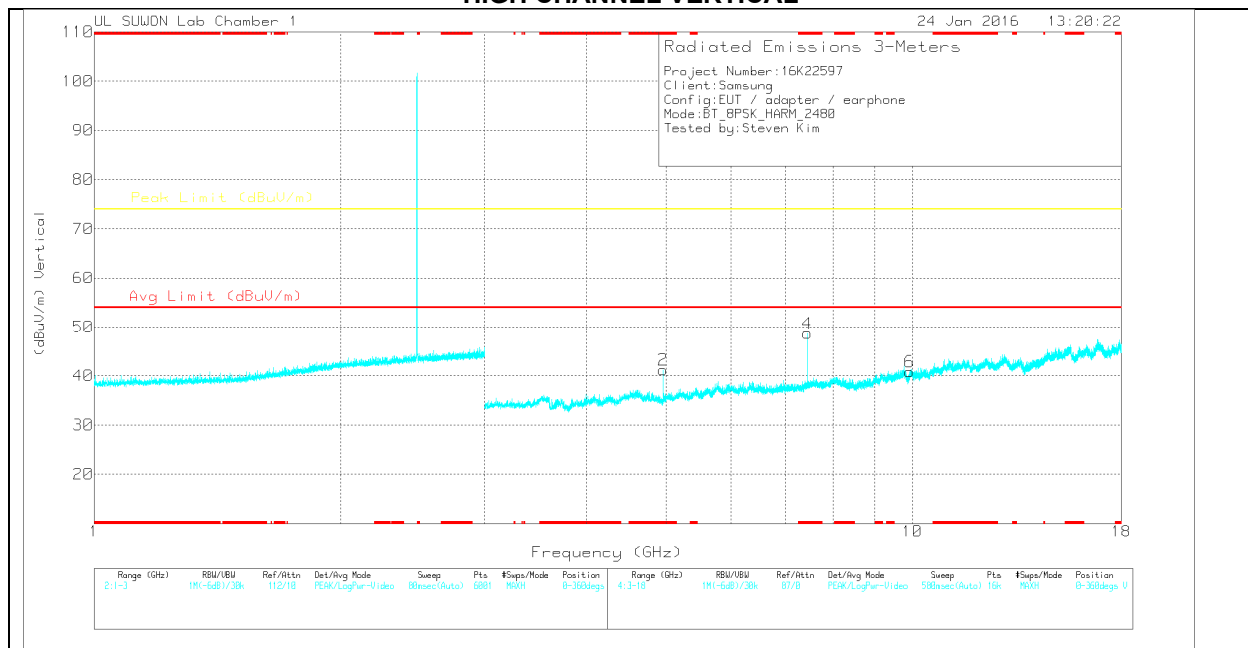
PK2 - KDB558074 Method: Maximum Peak

VA1T - FHSS: Linear Voltage Average $V_B = 1/T_{on}$ where: T_{on} is transmit duration

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	3117(0016 8717)_150 619	Path_3	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.959	38.46	PK	34	-34	38.46	-	-	74	-35.54	0-360	100	H
3	* 7.44	38.43	PK	35.8	-30.7	43.53	-	-	74	-30.47	0-360	200	H
5	9.923	30.04	PK	37.4	-27.1	40.34	-	-	74	-33.66	0-360	100	H
2	* 4.96	41.21	PK	34	-34	41.21	-	-	74	-32.79	0-360	100	V
4	* 7.44	43.6	PK	35.8	-30.7	48.7	-	-	74	-25.3	0-360	100	V
6	9.924	30.51	PK	37.4	-27.1	40.81	-	-	74	-33.19	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	3117(0016 8717)_150 619	Path_3	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.96	47.87	PK2	34	-34	47.87	-	-	74	-26.13	151	114	H
* 4.96	35.08	VA1T	34	-34	35.08	54	-18.92	-	-	151	114	H
* 7.44	48.3	PK2	35.8	-30.7	53.4	-	-	74	-20.6	197	149	H
* 7.44	34.41	VA1T	35.8	-30.7	39.51	54	-14.49	-	-	197	149	H
* 4.96	49.08	PK2	34	-34	49.08	-	-	74	-24.92	195	260	V
* 4.96	37.91	VA1T	34	-34	37.91	54	-16.09	-	-	195	260	V
* 7.44	53.93	PK2	35.8	-30.7	59.03	-	-	74	-14.97	284	100	V
* 7.44	42.24	VA1T	35.8	-30.7	47.34	54	-6.66	-	-	284	100	V

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

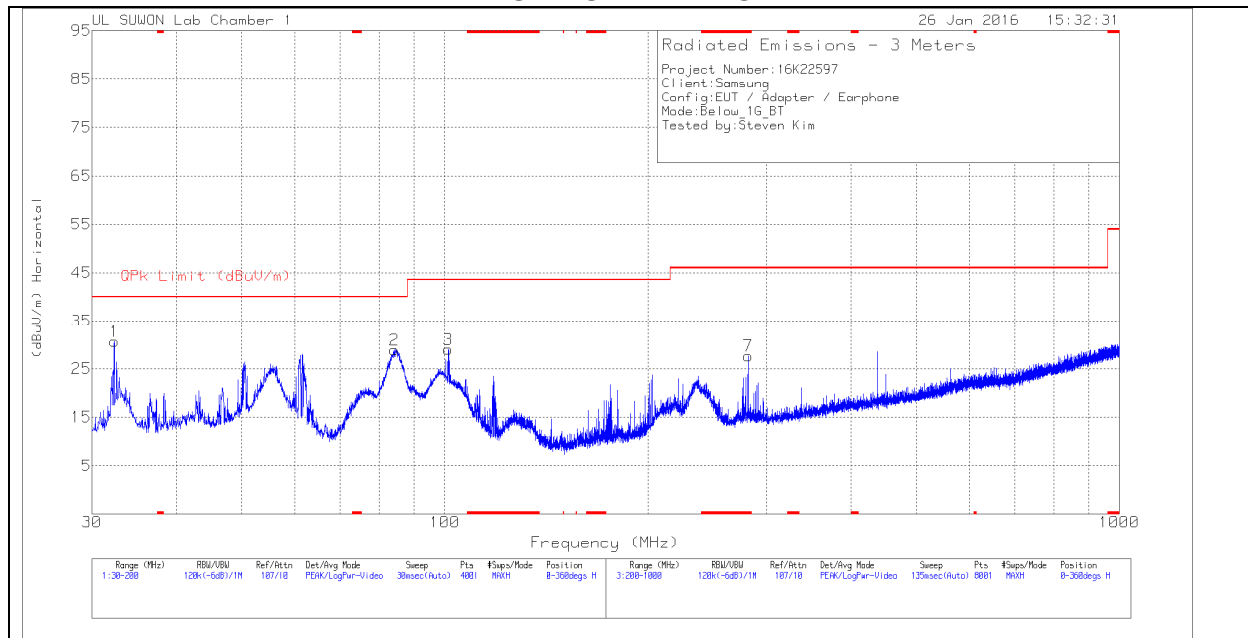
PK2 - KDB558074 Method: Maximum Peak

VA1T - FHSS: Linear Voltage Average $V_B = 1/T_{on}$ where: T_{on} is transmit duration

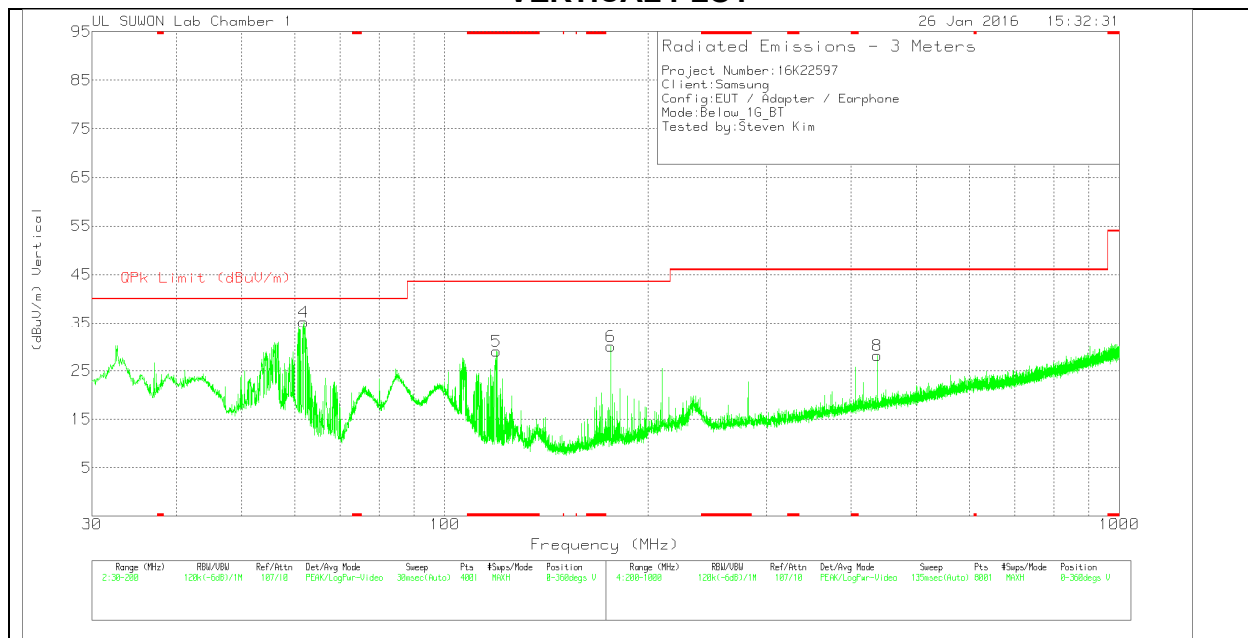
9.3. WORST-CASE BELOW 1 GHz

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	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	32.38	50.77	Pk	10.4	-30.5	30.67	40	-9.33	0-360	200	H
2	84.2725	50.45	Pk	8	-29.5	28.95	40	-11.05	0-360	200	H
3	101.23	46.89	Pk	11.4	-29.3	28.99	43.52	-14.53	0-360	300	H
4	61.79	52.97	Pk	12.1	-29.9	35.17	40	-4.83	0-360	300	V
5	* 119.42	48.03	Pk	10	-29	29.03	43.52	-14.49	0-360	100	V
6	176.3275	49.29	Pk	9.2	-28.4	30.09	43.52	-13.43	0-360	100	V
7	* 281.6	42.2	Pk	13	-27.5	27.7	46.02	-18.32	0-360	101	H
8	437.5	38.64	Pk	16.1	-26.6	28.14	46.02	-17.88	0-360	101	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 C63.10.

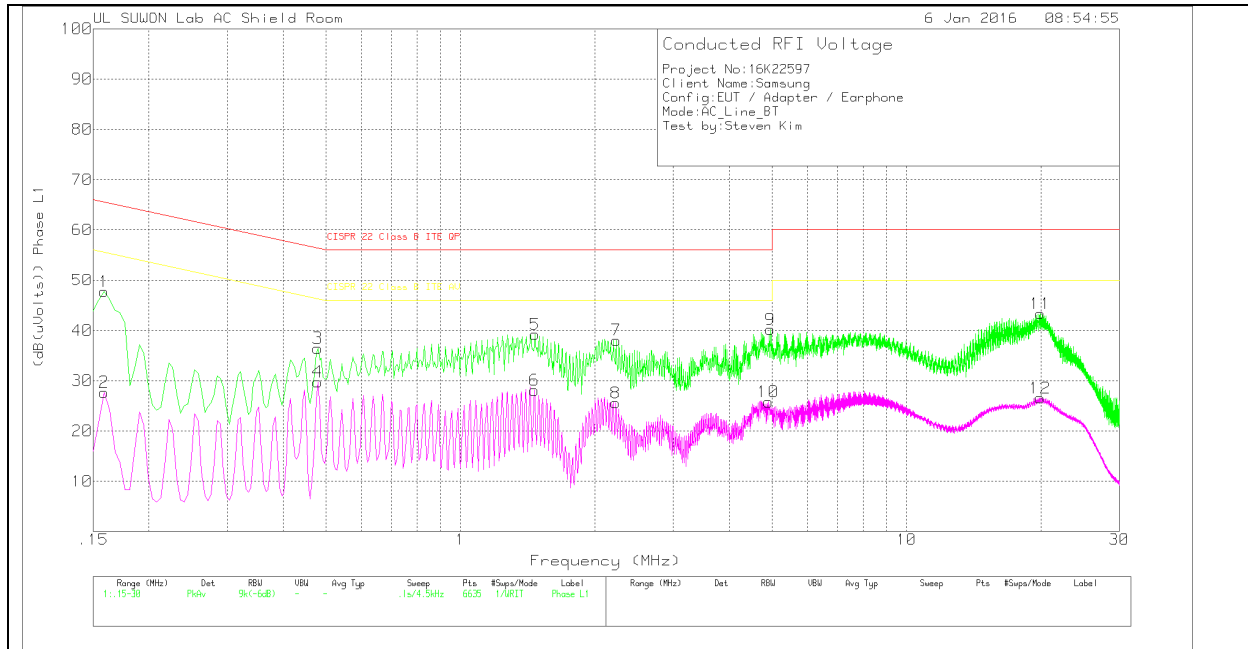
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

6 WORST EMISSIONS

LINE 1 PLOT



LINE 1 RESULTS

Trace Markers

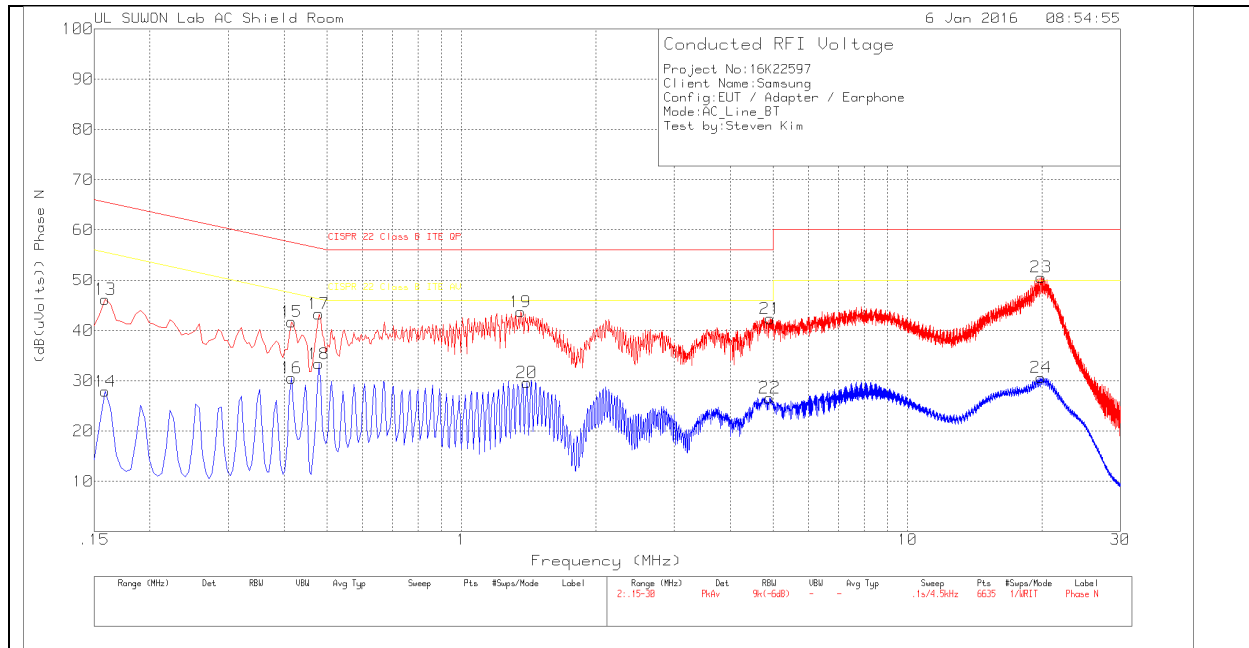
Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101837_w ith ex- cord_L1	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	37.77	Pk	10	0	47.77	65.52	-17.75	-	-
2	.159	17.7	Av	10	0	27.7	-	-	55.52	-27.82
3	.4785	26.27	Pk	10.2	0	36.47	56.37	-19.9	-	-
4	.4785	19.59	Av	10.2	0	29.79	-	-	46.37	-16.58
5	1.4685	29.33	Pk	9.8	.1	39.23	56	-16.77	-	-
6	1.464	18.21	Av	9.8	.1	28.11	-	-	46	-17.89
7	2.2335	28.18	Pk	9.8	.1	38.08	56	-17.92	-	-
8	2.229	15.71	Av	9.8	.1	25.61	-	-	46	-20.39
9	4.947	30.28	Pk	9.8	.1	40.18	56	-15.82	-	-
10	4.8975	15.9	Av	9.8	.1	25.8	-	-	46	-20.2
11	19.9545	32.78	Pk	10.4	.2	43.38	60	-16.62	-	-
12	19.9275	15.98	Av	10.4	.2	26.58	-	-	50	-23.42

Pk - Peak detector

Av - Average detection

LINE 2 PLOT



LINE 2 RESULTS

Trace Markers

Phase N .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101837_w ith ex-cord_N	CE Shield Room	Corrected Reading (dB(uVolts))	CISPR 22 Class B ITE QP	Margin (dB)	CISPR 22 Class B ITE AV	Margin (dB)
13	.159	36.2	Pk	10	0	46.2	65.52	-19.32	-	-
14	.159	17.9	Av	10	0	27.9	-	-	55.52	-27.62
15	.4155	31.64	Pk	10.1	0	41.74	57.54	-15.8	-	-
16	.4155	20.46	Av	10.1	0	30.56	-	-	47.54	-16.98
17	.4785	33.22	Pk	10.1	0	43.32	56.37	-13.05	-	-
18	.4785	23.29	Av	10.1	0	33.39	-	-	46.37	-12.98
19	1.356	33.83	Pk	9.8	.1	43.73	56	-12.27	-	-
20	1.401	19.75	Av	9.8	.1	29.65	-	-	46	-16.35
21	4.92	32.45	Pk	9.8	.1	42.35	56	-13.65	-	-
22	4.9065	16.72	Av	9.8	.1	26.62	-	-	46	-19.38
23	19.932	39.82	Pk	10.6	.2	50.62	60	-9.38	-	-
24	19.923	19.85	Av	10.6	.2	30.65	-	-	50	-19.35

Pk - Peak detector

Av - Average detection

Quasi-Peak Emissions

Phase N .15 - 30MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	101837_wit h ex-cord_N	CE Shield Room	Corrected Reading (dB(uVolts))	CISPR 22 Class B ITE QP	Margin (dB)	CISPR 22 Class B ITE AV	Margin (dB)
19.981	33.84	Qp	10.6	.2	44.64	60	-15.36	-	-

Qp – Quasi-Peak detector