



FCC CFR47 PART 15 SUBPART C

Bluetooth

CERTIFICATION TEST REPORT

FOR

LTE Phone + Bluetooth/BLE and DTS b/g/n

MODEL NUMBER : SM-Z400F/DS

FCC ID: A3LSMZ400F

REPORT NUMBER: 4787852400-E3V1

ISSUE DATE: MAR 07, 2017

Prepared for
SAMSUNG ELECTRONICS CO., LTD.
129 SAMSUNG-RO, YEONGTONG-GU, SUWON-SI,
GYEONGGI-DO, 16677, KOREA

Prepared by
UL Korea, Ltd. Suwon Laboratory
218 Maeyeong-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16675, Korea
TEL: (031) 337-9902
FAX: (031) 213-5433



Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V1	03/07/17	Initial issue	Junwhan Lee

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	5
2. TEST METHODOLOGY	6
3. FACILITIES AND ACCREDITATION	6
4. CALIBRATION AND UNCERTAINTY	6
4.1. <i>MEASURING INSTRUMENT CALIBRATION</i>	6
4.2. <i>SAMPLE CALCULATION</i>	6
4.3. <i>MEASUREMENT UNCERTAINTY</i>	6
5. EQUIPMENT UNDER TEST	7
5.1. <i>DESCRIPTION OF EUT</i>	7
5.2. <i>MAXIMUM OUTPUT POWER</i>	7
5.3. <i>DESCRIPTION OF AVAILABLE ANTENNAS</i>	7
5.4. <i>WORST-CASE CONFIGURATION AND MODE</i>	7
5.5. <i>DESCRIPTION OF TEST SETUP</i>	8
6. TEST AND MEASUREMENT EQUIPMENT	10
7. REFERENCE MEASUREMENT RESULTS	11
7.1. <i>20 dB AND 99% BANDWIDTH</i>	11
7.1.1. <i>BASIC DATA RATE GFSK MODULATION</i>	11
7.1.2. <i>ENHANCED DATA RATE PI/4-DQPSK MODULATION</i>	11
7.1.3. <i>ENHANCED DATA RATE 8PSK MODULATION</i>	11
7.1.4. <i>20 dB AND 99% BANDWIDTH PLOTS</i>	12
8. SUMMARY TABLE	15
9. ANTENNA PORT TEST RESULTS	16
9.1. <i>HOPPING FREQUENCY SEPARATION</i>	16
9.2. <i>NUMBER OF HOPPING CHANNELS</i>	17
9.3. <i>AVERAGE TIME OF OCCUPANCY</i>	19
9.4. <i>OUTPUT POWER</i>	23
9.4.1. <i>BASIC DATA RATE GFSK MODULATION</i>	23
9.4.2. <i>ENHANCED DATA RATE PI/4-DPSK MODULATION</i>	23
9.4.3. <i>ENHANCED DATA RATE 8PSK MODULATION</i>	23
9.4.4. <i>OUTPUT POWER PLOTS</i>	24
9.5. <i>AVERAGE POWER</i>	27
9.5.1. <i>BASIC DATA RATE GFSK MODULATION</i>	27
9.5.2. <i>DATA RATE PI/4-DQPSK MODULATION</i>	27
9.5.3. <i>ENHANCED DATA RATE 8PSK MODULATION</i>	27

9.6.	CONDUCTED SPURIOUS EMISSIONS.....	28
9.6.1.	BASIC DATA RATE GFSK MODULATION.....	29
10.	RADIATED TEST RESULTS.....	41
10.1.	LIMITS AND PROCEDURE.....	41
10.2.	TRANSMITTER ABOVE 1 GHz.....	43
10.2.1.	BASIC DATA RATE GFSK MODULATION.....	43
10.2.2.	ENHANCED DATA RATE 8PSK MODULATION.....	53
10.3.	WORST-CASE BELOW 1 GHz.....	63
11.	AC POWER LINE CONDUCTED EMISSIONS.....	65
12.	SETUP PHOTOS.....	70

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.
EUT DESCRIPTION: LTE Phone + Bluetooth/BLE and DTS b/g/n
MODEL NUMBER: SM-Z400F/DS
SERIAL NUMBER: R38J10147LK (RADIATED);
R38J208T1LJ (CONDUCTED)
DATE TESTED: FEB 08, 2017 - FEB 27, 2017

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

UL Korea, Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Korea, Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Korea, Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Korea, Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by IAS, any agency of the Federal Government, or any agency of any government.

Approved & Released For
UL Korea, Ltd. By:

Tested By:



SungGil Park
Suwon Lab Engineer
UL Korea, Ltd.



Junwhan Lee
Suwon Lab Engineer
UL Korea, Ltd.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with following methods.

1. FCC CFR 47 Part 2.
2. FCC CFR 47 Part 15.
3. FCC DA 00-705 Filling and measurement guidelines for FHSS systems
4. ANSI C63.10-2013.

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	
<input checked="" type="checkbox"/>	Chamber 1
<input type="checkbox"/>	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 LTE Phone + Bluetooth/BLE and DTS b/g/n.
 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	6.106	4.079
		Peak	6.725	4.704
	Enhanced Pi/4-DPSK	Average	5.524	3.568
		Peak	8.109	6.470
	Enhanced 8PSK	Average	5.542	3.583
		Peak	8.465	7.023

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an internal antenna, with a maximum gain of 0.91 dBi

5.4. WORST-CASE CONFIGURATION AND MODE

Radiated emission below 1GHz and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

Radiated emission above 1GHz was performed with the EUT set to transmit low/mid/high channels.

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.

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 9.5.

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Adapter	SAMSUNG	EP-TA60EBE	R37H81V 01Y2HM3	N/A
Earphone	SAMSUNG	EHS61ASFWE	N/A	N/A

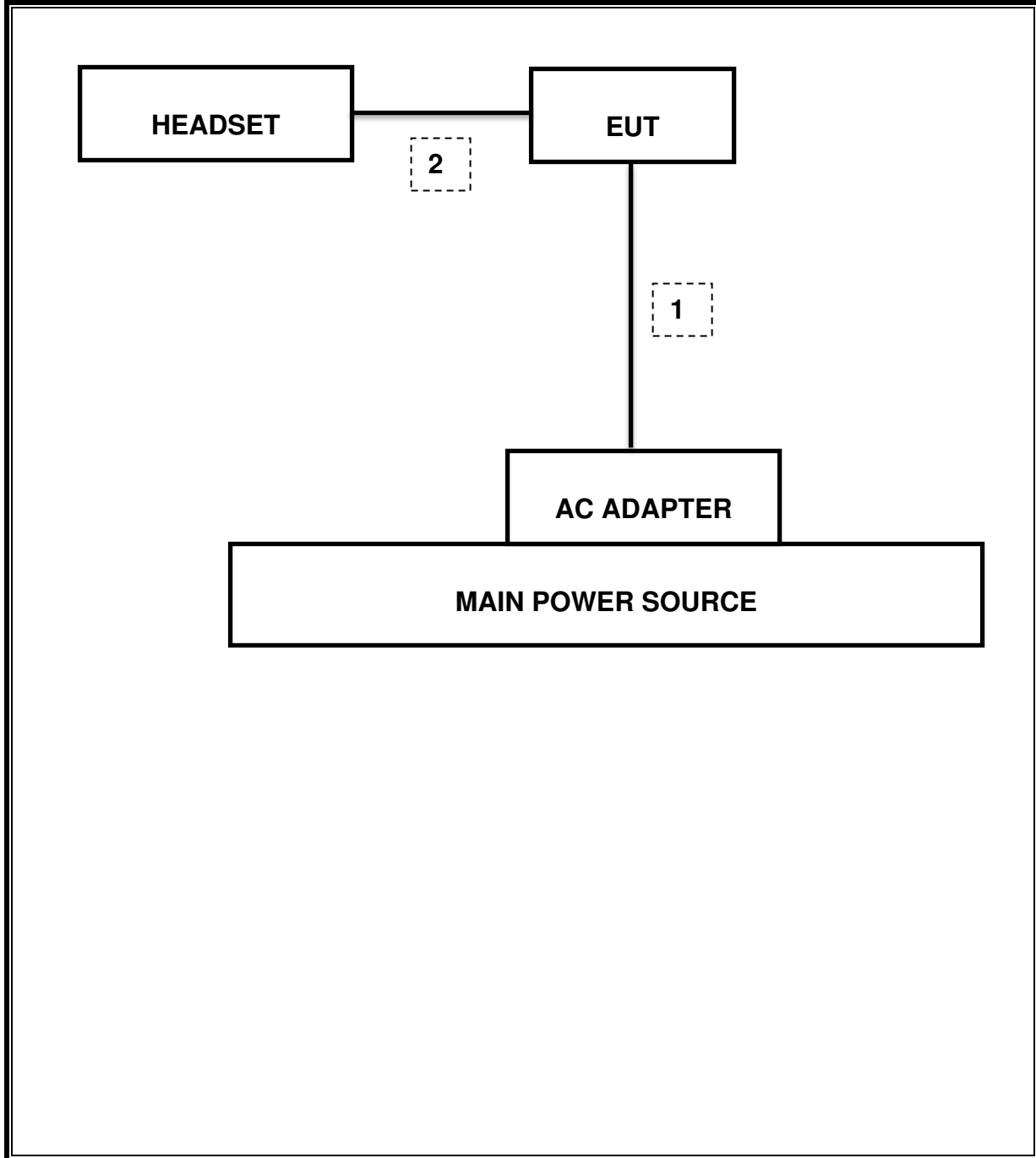
I/O CABLES

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	1.0m	N/A
2	Audio	2	Mini-Jack	Unshielded	1.5m	N/A

TEST SETUP

The EUT is continuously communicating to the Bluetooth tester during the tests. Test software 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	10-14-18
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	749	04-25-17
Antenna, Horn, 18 GHz	ETS	3115	00167211	10-14-18
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	11-30-17
Antenna, Horn, 40 GHz	ETS	3116C-PA	00168841	12-15-17
Antenna, Loop, 9kHz-30MHz	R&S	HFH2-Z2	100418	11-25-17
Preamplifier, 1000 MHz	Sonoma	310N	341282	08-17-17
Preamplifier, 1000 MHz	Sonoma	310N	351741	08-16-17
Preamplifier	ETS	3115-PA	00167475	08-17-17
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1896138	08-16-17
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54170614	08-17-17
Spectrum Analyzer, 7 GHz	Agilent / HP	N9010A	MY54200580	08-17-17
Bluetooth Tester	TESCOM	TC-3000C	3000C000546	08-18-17
Average Power Sensor	Agilent / HP	U2000	MY54270007	08-17-17
EMI Test Receive, 40 GHz	R&S	ESU40	100439	08-17-17
EMI Test Receive, 40 GHz	R&S	ESU40	100457	08-16-17
EMI Test Receive, 3 GHz	R&S	ESR3	101832	08-16-17
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	009	08-17-17
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	015	08-16-17
High Pass Filter 3GHz	Micro-Tronics	HPM17543	010	08-17-17
High Pass Filter 3GHz	Micro-Tronics	HPM17543	015	08-16-17
High Pass Filter 6GHz	Micro-Tronics	HPM17542	009	08-17-17
High Pass Filter 6GHz	Micro-Tronics	HPM17542	016	08-16-17
LISN	R&S	ENV-216	101836	08-16-17
LISN	R&S	ENV-216	101837	08-16-17
Combiner	WEINSCHTEL	1575	2152	08-16-17
UL Software				
Description	Manufacturer	Model	Version	
Radiated software	UL	UL EMC	Ver 9.5	
AC Line Conducted software	UL	UL EMC	Ver 9.5	

7. REFERENCE MEASUREMENT RESULTS

7.1. 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

7.1.1. BASIC DATA RATE GFSK MODULATION

Channel	Frequency [MHz]	20 dB Bandwidth [KHz]	99% Bandwidth [KHz]
Low	2402	899.700	825.420
Mid	2441	898.000	827.470
High	2480	901.900	830.100
Worst		901.900	830.100

7.1.2. ENHANCED DATA RATE Pi/4-DQPSK MODULATION

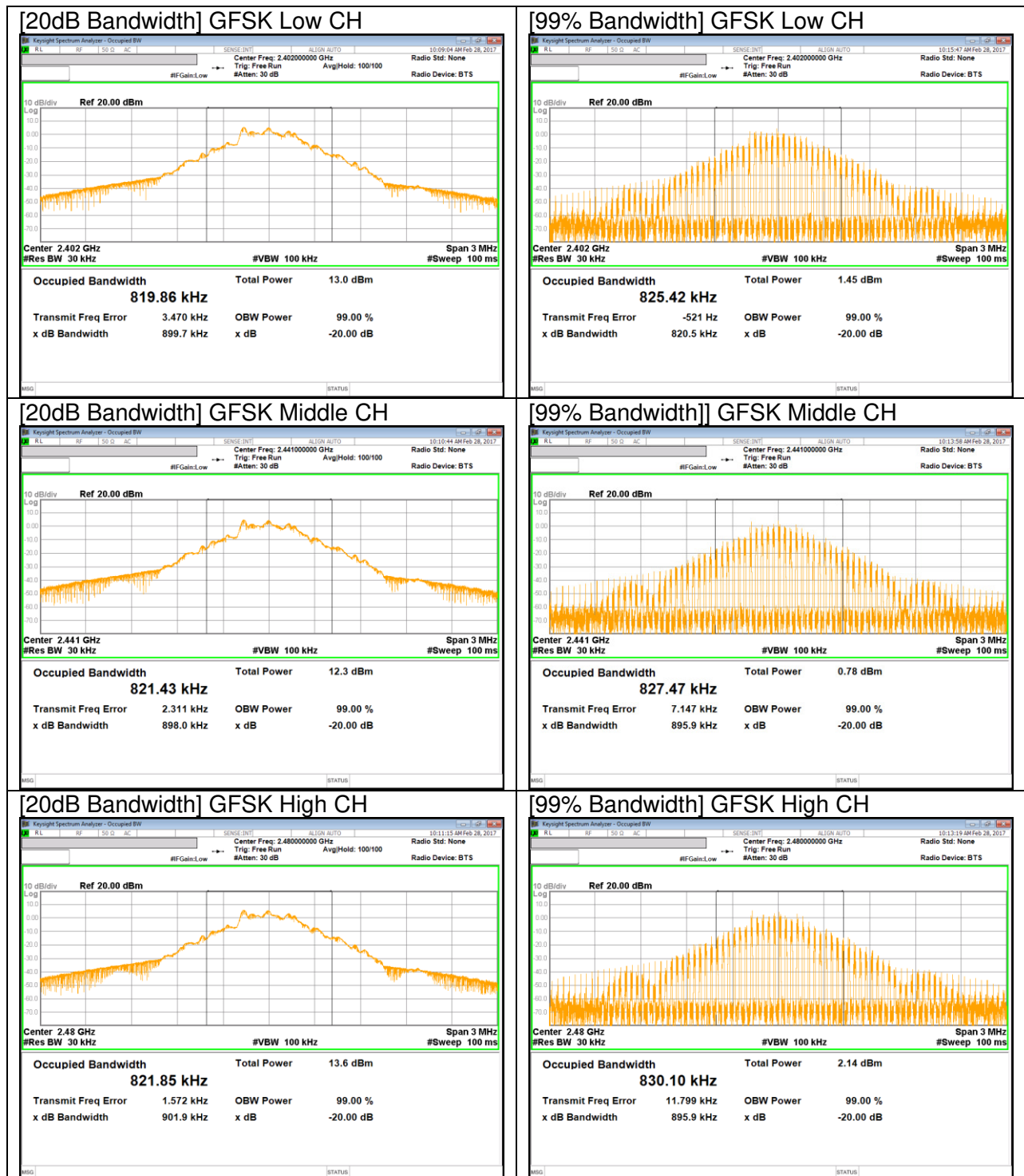
Channel	Frequency [MHz]	20 dB Bandwidth [MHz]	99% Bandwidth [MHz]
Low	2402	1.255	1.131
Mid	2441	1.255	1.162
High	2480	1.256	1.162
Worst		1.256	1.162

7.1.3. ENHANCED DATA RATE 8PSK MODULATION

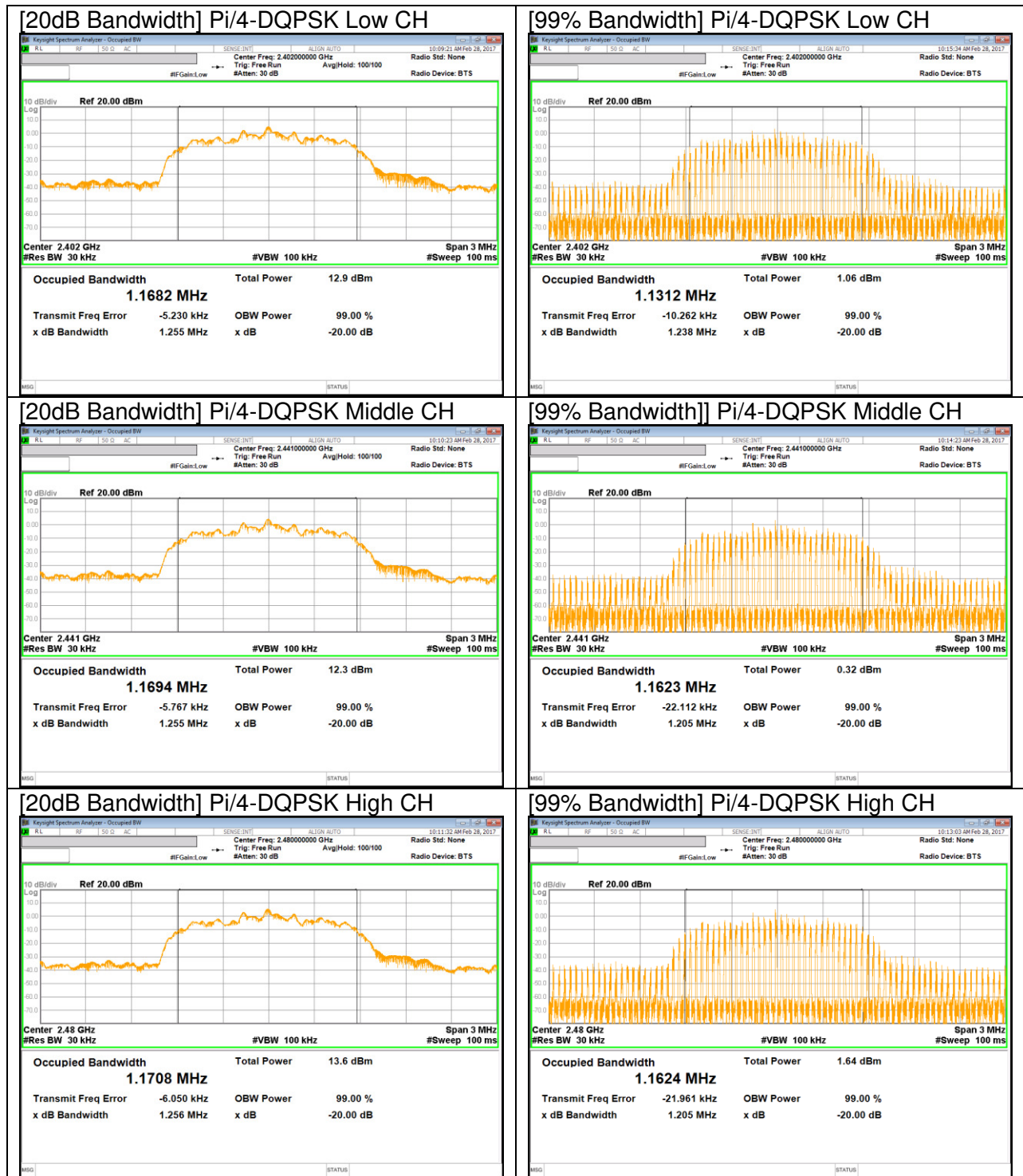
Channel	Frequency [MHz]	20 dB Bandwidth [MHz]	99% Bandwidth [MHz]
Low	2402	1.220	1.163
Mid	2441	1.240	1.162
High	2480	1.221	1.164
Worst		1.240	1.164

7.1.4. 20 dB AND 99% BANDWIDTH PLOTS

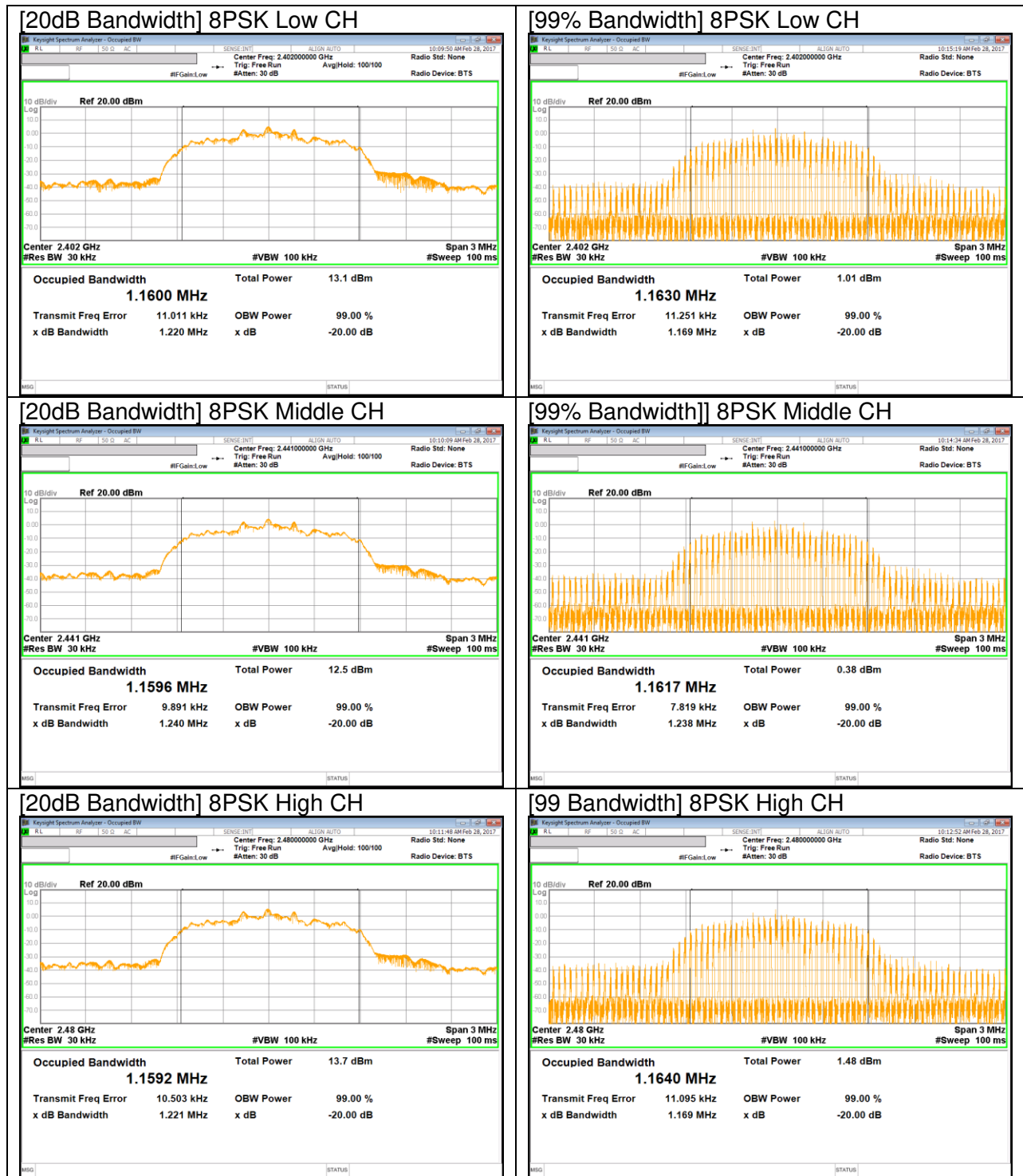
GFSK BANDWIDTH



Pi/4-DQPSK BANDWIDTH



8PSK BANDWIDTH



8. SUMMARY TABLE

FCC Part Section	Test Description	Test Limit	Test Condition	Test Result	Worst Case
2.1051, 15.247 (d)	Band Edge / Conducted Spurious Emission	-20dBc		Pass	-45.646 dBm
15.247 (b)(1)	TX conducted output power	<21dBm		Pass	8.465 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	0.3498 sec
15.207 (a)	AC Power Line conducted emissions	Section 10	Power Line conducted	Pass	43.64 dBuV (Pk)
15.205, 15.209	Radiated Spurious Emission	< 54dBuV/m	Radiated	Pass	41.64 dBuV/m (Av)

9. ANTENNA PORT TEST RESULTS

9.1. 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.

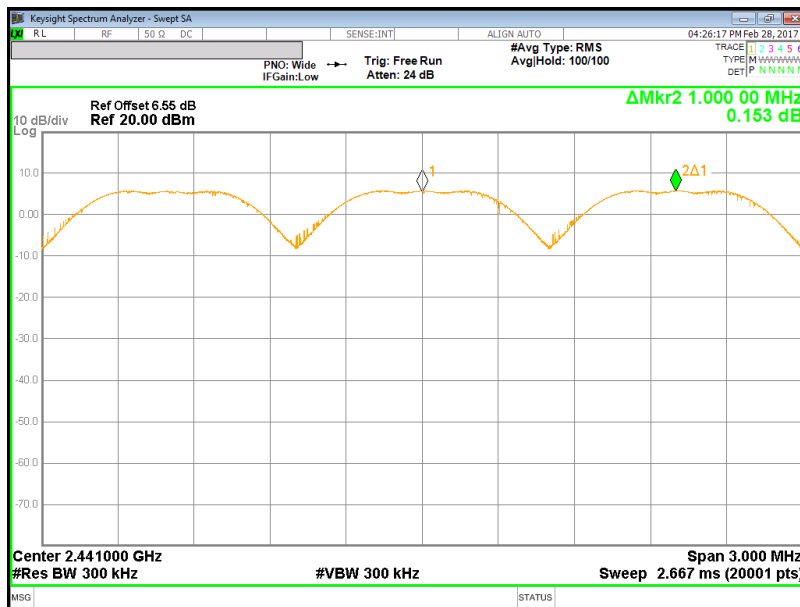
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than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



9.2. 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

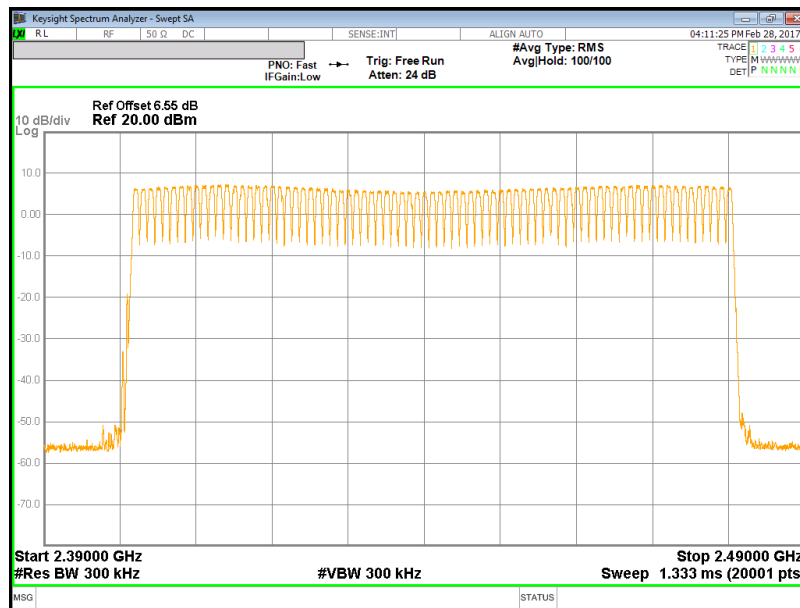
DA 00-705: The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

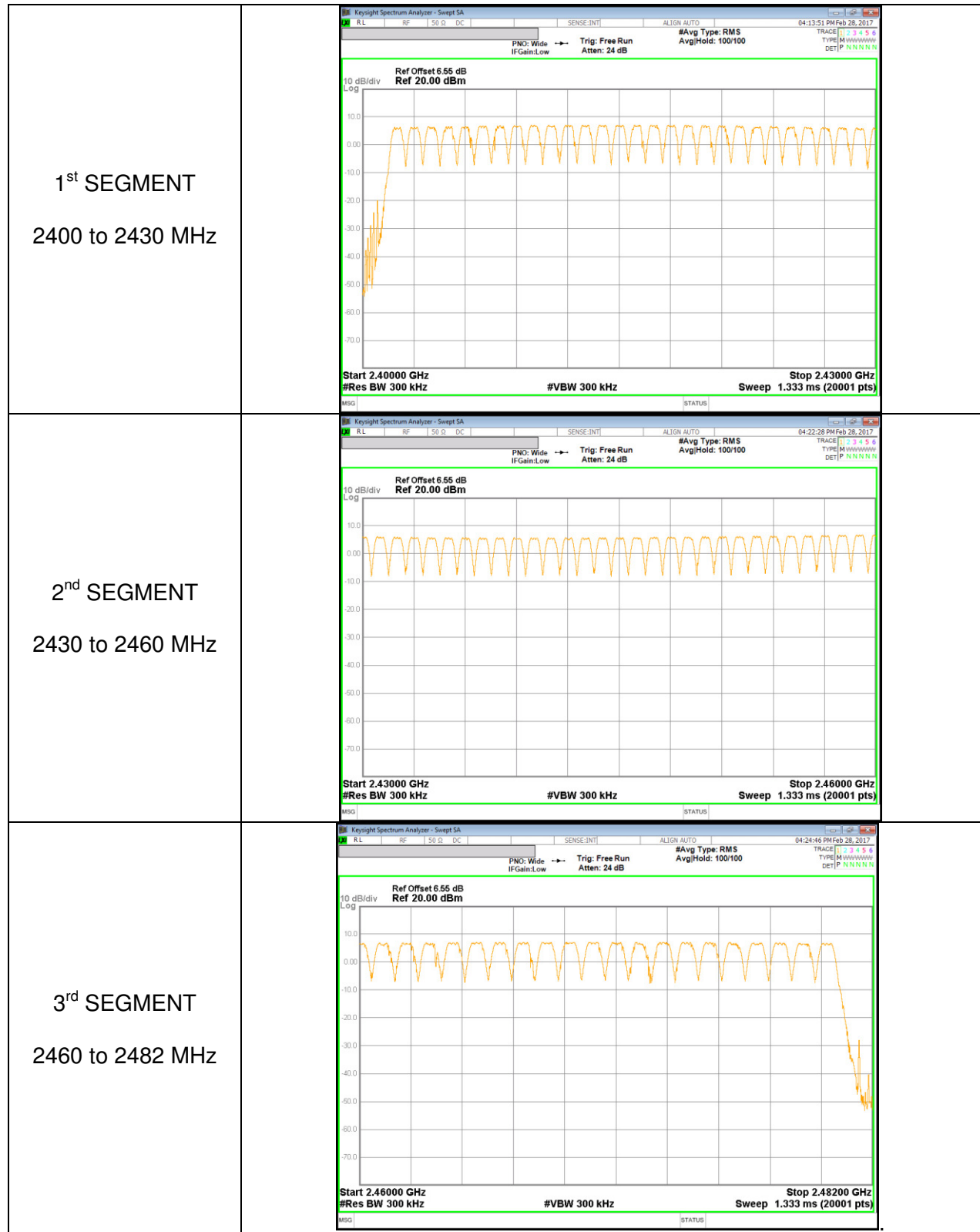
RESULTS

Normal Mode: 79 Channels observed.

NUMBER OF HOPPING CHANNELS PLOTS

NUMBER OF HOPPING CHANNELS (100 MHz SPAN)





9.3. 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.

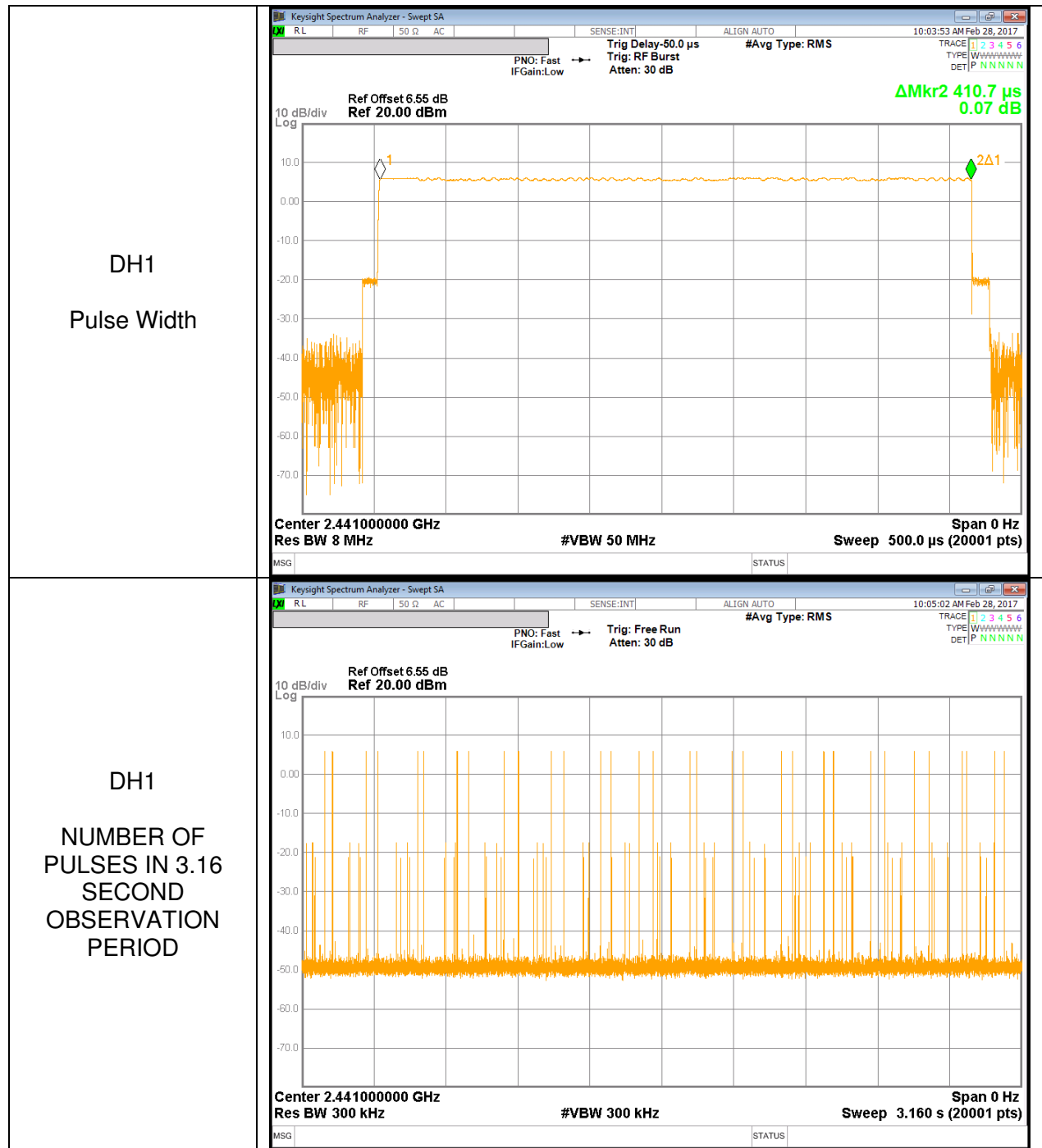
The average time of occupancy in the specified 31.6 second period (79 channels * 0.4 s) is equal to $10 * (\# \text{ of pulses in } 3.16 \text{ s}) * \text{ pulse width}$.

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

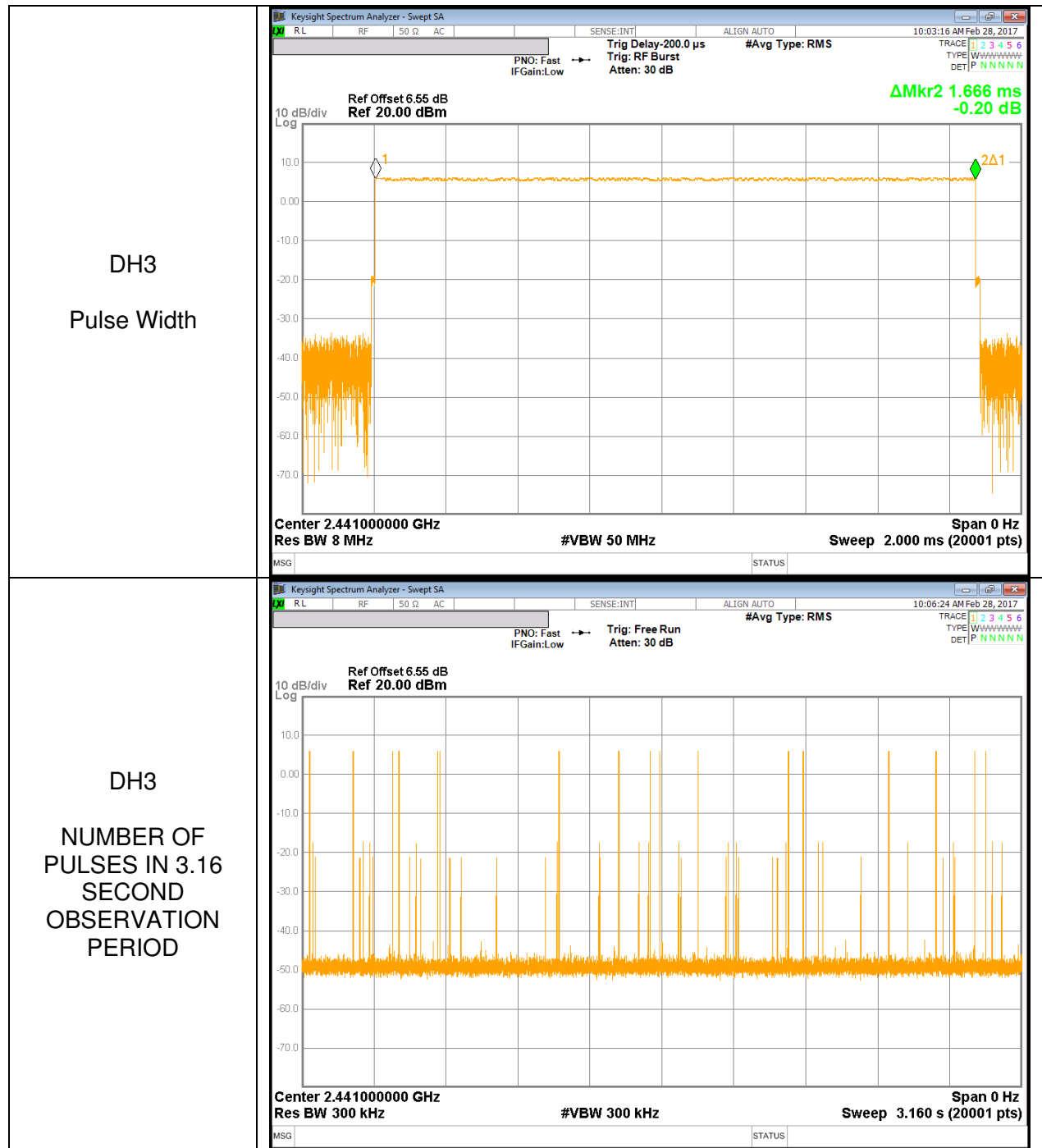
RESULTS

DH Packet	Pulse Width [msec]	Number of Pulses in 3.16 seconds	Average Time of Occupancy [sec]	Limit [sec]	Margin [sec]
GFSK Normal					
DH1	0.411	32	0.131424	0.4	-0.2686
DH3	1.666	17	0.283220	0.4	-0.1168
DH5	2.915	12	0.349800	0.4	-0.0502
GFSK AFH					
DH Packet	Pulse Width [msec]	Number of Pulses in 0.8 seconds	Average Time of Occupancy [sec]	Limit [sec]	Margin [sec]
GFSK AFH					
DH1	0.411	8	0.032856	0.4	-0.36714
DH3	1.666	4.25	0.070805	0.4	-0.3292
DH5	2.915	3	0.087450	0.4	-0.31255

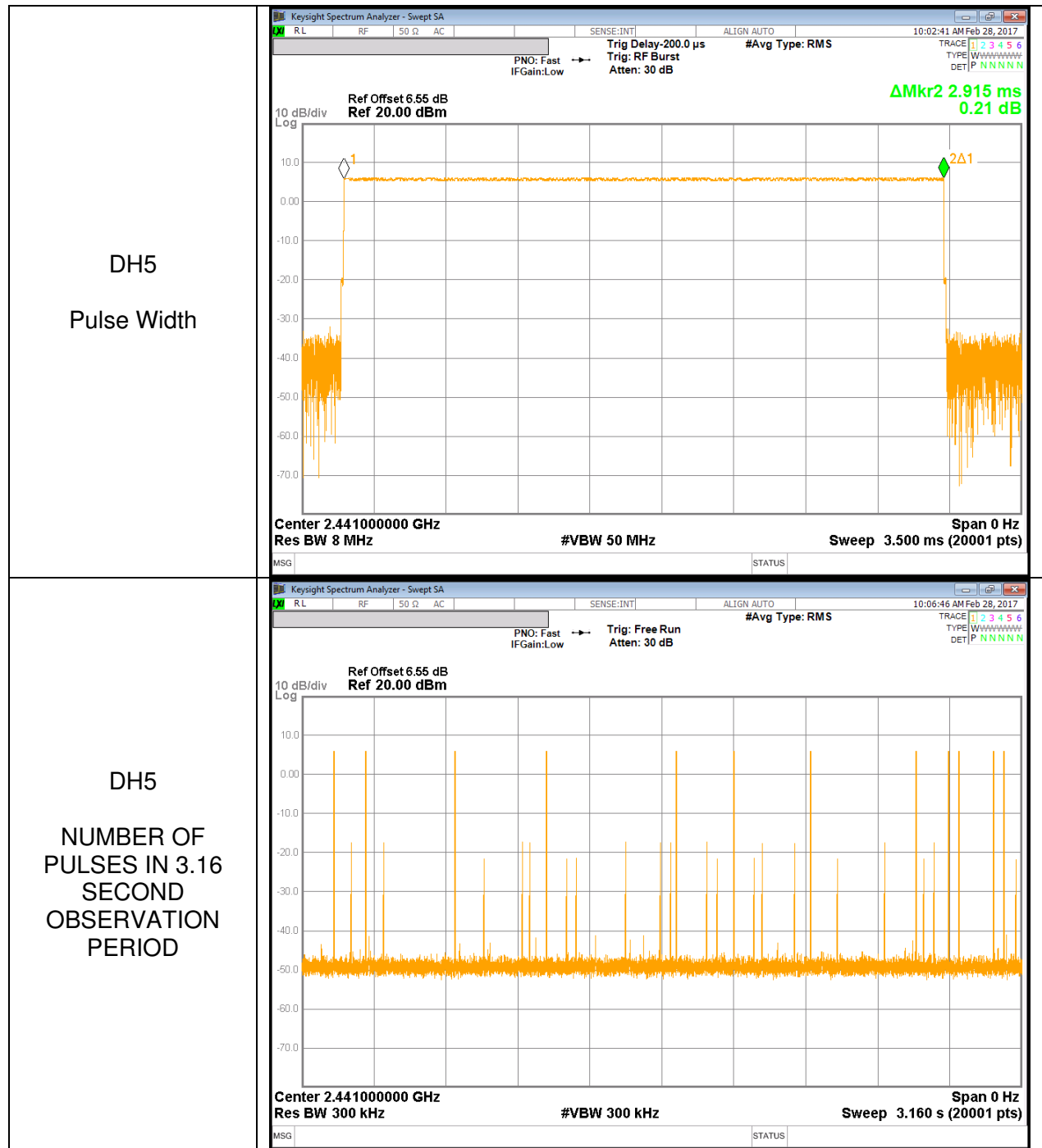
DH1



DH3



DH5



9.4. 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

9.4.1. BASIC DATA RATE GFSK MODULATION

Channel	Frequency [MHz]	Output Power [dBm]	Limit [dBm]	Margin [dB]
Low	2402	6.373	21	-14.627
Middle	2441	5.560	21	-15.44
High	2480	6.725	21	-14.275
Worst		6.725	21	-14.275

9.4.2. ENHANCED DATA RATE Pi/4-DPSK MODULATION

Channel	Frequency [MHz]	Output Power [dBm]	Limit [dBm]	Margin [dB]
Low	2402	7.796	21	-13.204
Middle	2441	7.056	21	-13.944
High	2480	8.109	21	-12.891
Worst		8.109	21	-12.891

9.4.3. ENHANCED DATA RATE 8PSK MODULATION

Channel	Frequency [MHz]	Output Power [dBm]	Limit [dBm]	Margin [dB]
Low	2402	0.213	21	-20.787
Middle	2441	7.476	21	-13.524
High	2480	8.465	21	-12.535
Worst		8.465	21	-12.535

9.4.4. OUTPUT POWER PLOTS

GFSK OUTPUT POWER

<p>GFSK Low CH</p>	
<p>GFSK Middle CH</p>	
<p>GFSK High CH</p>	

Pi/4-DPSK OUTPUT POWER

<p>Pi/4-DPSK Low CH</p>	<p>KeySight Spectrum Analyzer - Swept SA Ref: 20.00 dBm Mkr1 2.402 051 5 GHz 7.796 dBm Center 2.402000 GHz #Res BW 3.0 MHz #VBW 50 MHz Span 10.00 MHz Sweep 1.333 ms (20001 pts)</p>
<p>Pi/4-DPSK Middle CH</p>	<p>KeySight Spectrum Analyzer - Swept SA Ref: 20.00 dBm Mkr1 2.440 979 0 GHz 7.056 dBm Center 2.441000 GHz #Res BW 3.0 MHz #VBW 50 MHz Span 10.00 MHz Sweep 1.333 ms (20001 pts)</p>
<p>Pi/4-DPSK High CH</p>	<p>KeySight Spectrum Analyzer - Swept SA Ref: 20.00 dBm Mkr1 2.479 830 0 GHz 8.109 dBm Center 2.480000 GHz #Res BW 3.0 MHz #VBW 50 MHz Span 10.00 MHz Sweep 1.333 ms (20001 pts)</p>

8PSK OUTPUT POWER

<p>8PSK Low CH</p>	<p>KeySight Spectrum Analyzer - Swept SA Ref: 20.00 dBm Mkr1 2.402 001 5 GHz 8.213 dBm Center 2.402000 GHz #Res BW 3.0 MHz #VBW 50 MHz Span 10.00 MHz Sweep 1.333 ms (20001 pts)</p>
<p>8PSK Middle CH</p>	<p>KeySight Spectrum Analyzer - Swept SA Ref: 20.00 dBm Mkr1 2.441 028 0 GHz 7.476 dBm Center 2.441000 GHz #Res BW 3.0 MHz #VBW 50 MHz Span 10.00 MHz Sweep 1.333 ms (20001 pts)</p>
<p>8PSK High CH</p>	<p>KeySight Spectrum Analyzer - Swept SA Ref: 20.00 dBm Mkr1 2.480 055 5 GHz 8.465 dBm Center 2.480000 GHz #Res BW 3.0 MHz #VBW 50 MHz Span 10.00 MHz Sweep 1.333 ms (20001 pts)</p>

9.5. 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 was entered as an offset in the power meter to allow for direct reading of power.

9.5.1. BASIC DATA RATE GFSK MODULATION

Channel	Frequency [MHz]	AV power [dBm]	AV power [mW]
Low	2402	5.764	3.77
Middle	2441	4.948	3.12
High	2480	6.106	4.08

9.5.2. DATA RATE PI/4-DQPSK MODULATION

Channel	Frequency [MHz]	AV power [dBm]	AV power [mW]
Low	2402	5.164	3.28
Middle	2441	4.351	2.72
High	2480	5.524	3.57

9.5.3. ENHANCED DATA RATE 8PSK MODULATION

Channel	Frequency [MHz]	AV power [dBm]	AV power [mW]
Low	2402	5.189	3.30
Middle	2441	4.384	2.74
High	2480	5.542	3.58

9.6. 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.

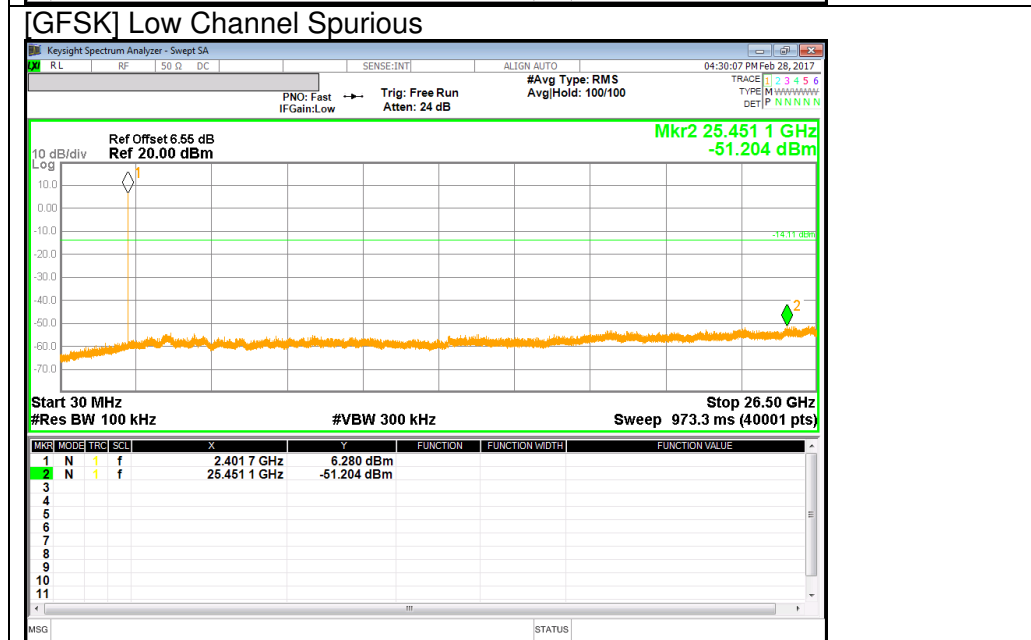
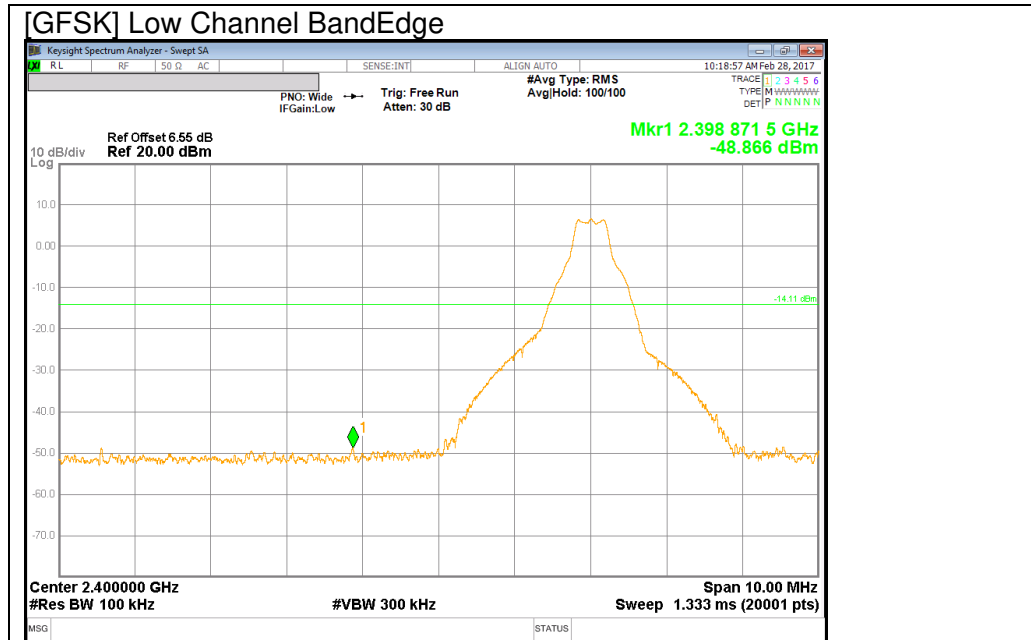
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

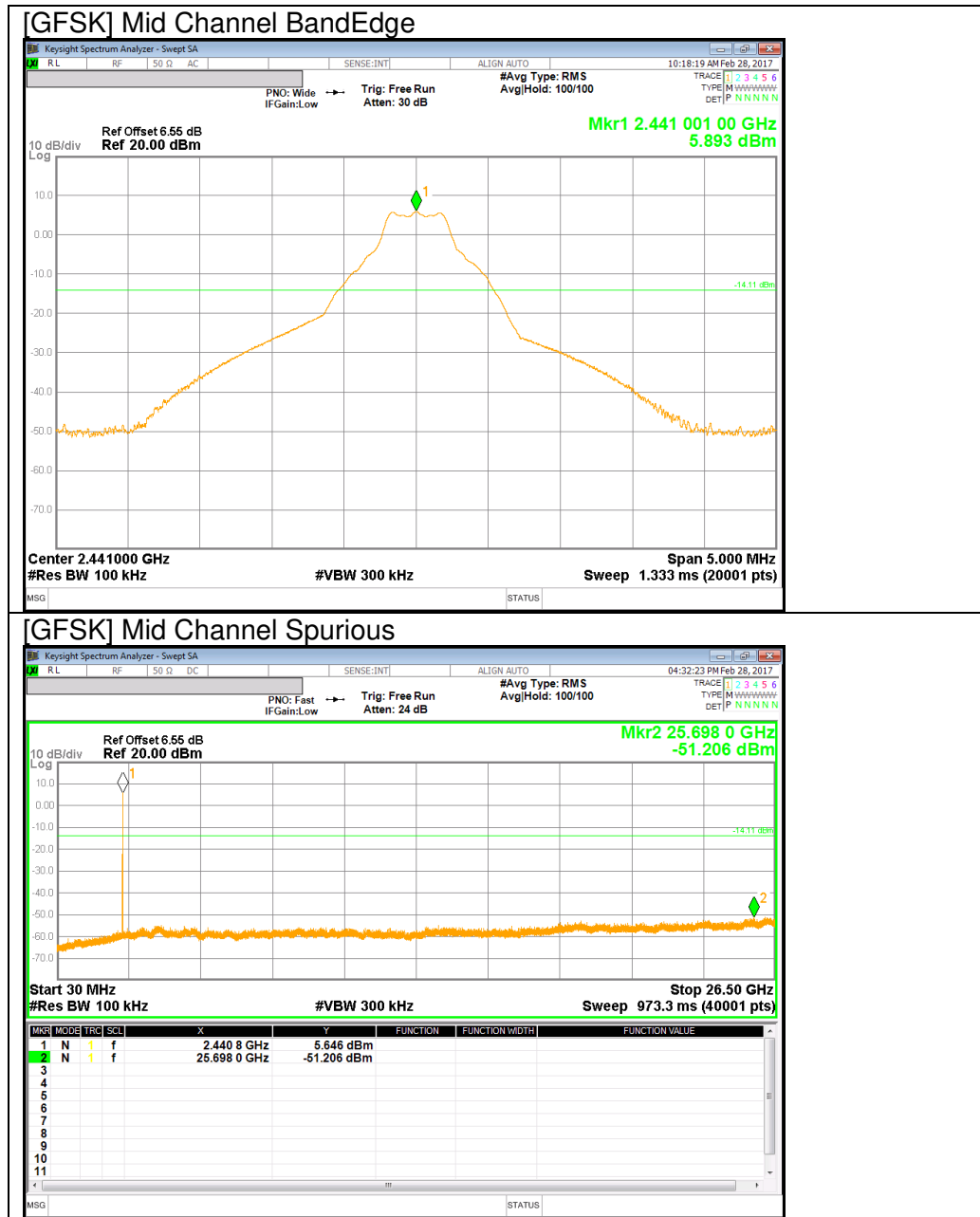
The bandedges at 2.4 and 2.4835 GHz are investigated with the transmitter set to the normal hopping mode.

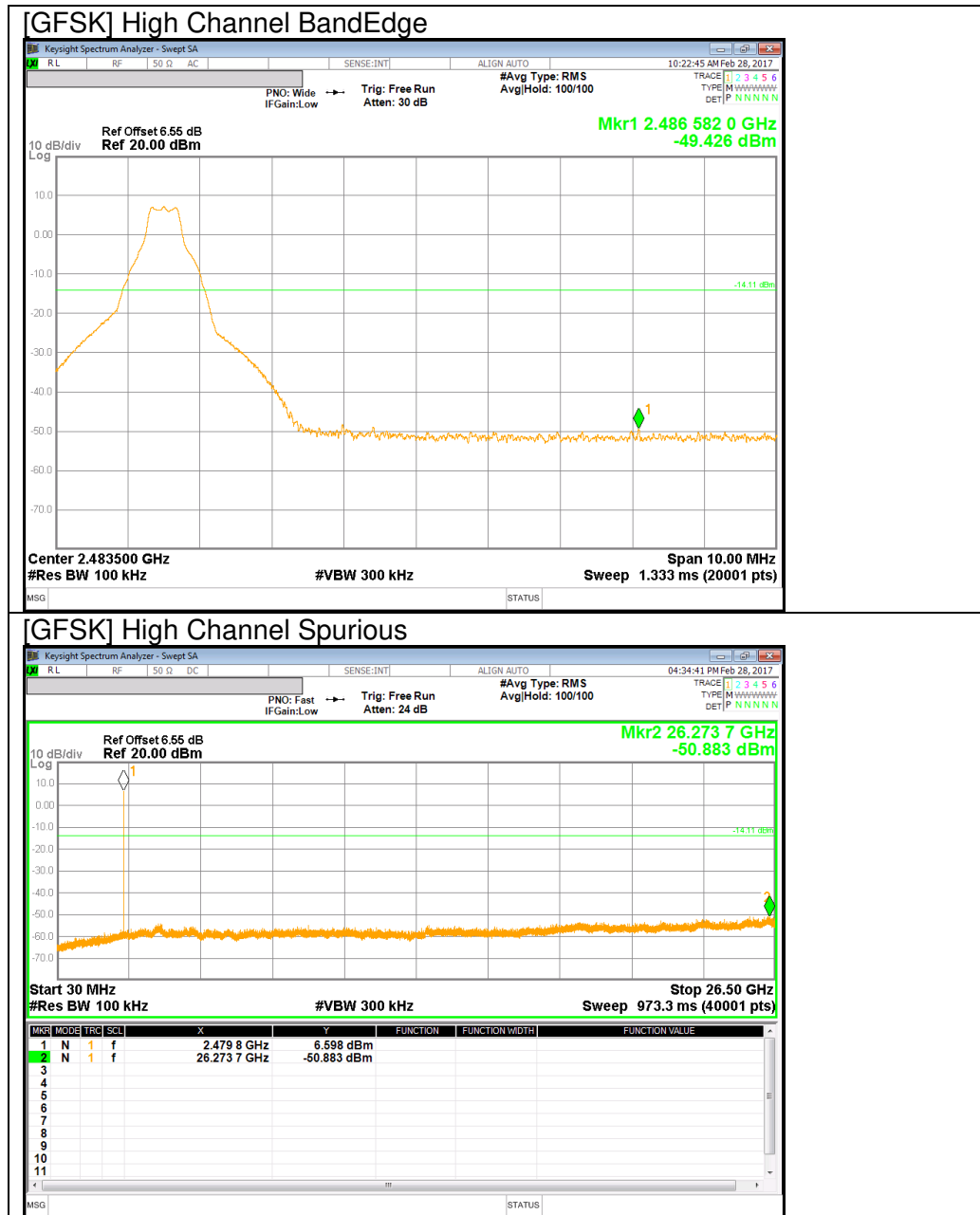
RESULTS

9.6.1. BASIC DATA RATE GFSK MODULATION

GFSK Mode

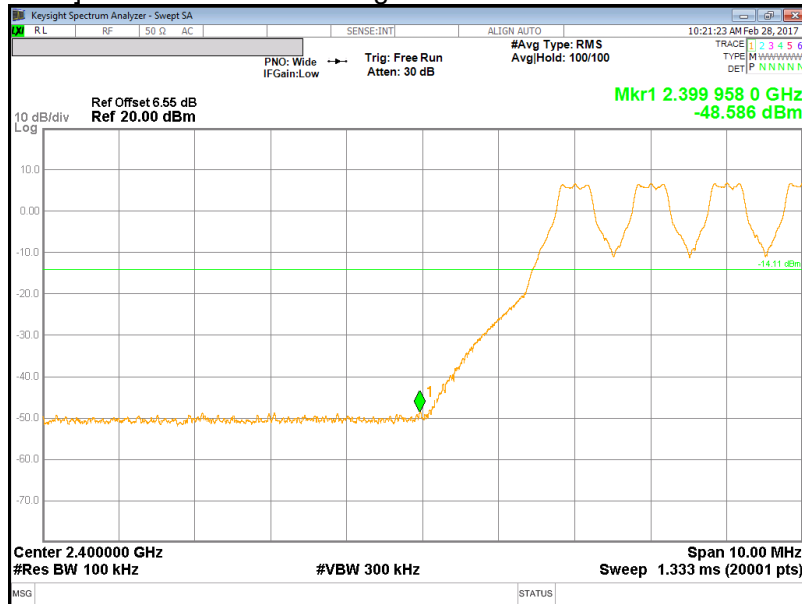




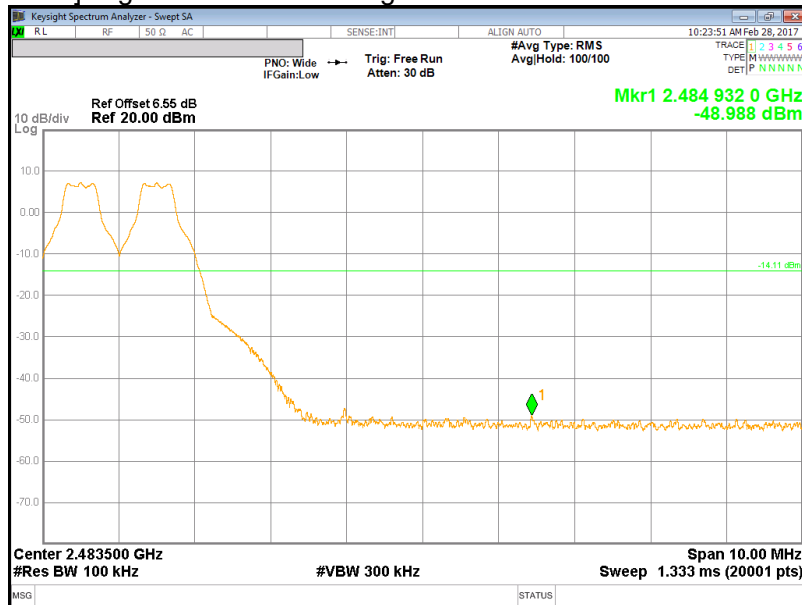


BandEdge Emission at GFSK Hopping Mode

[GFSK Hopping Mode] Low Channel BandEdge

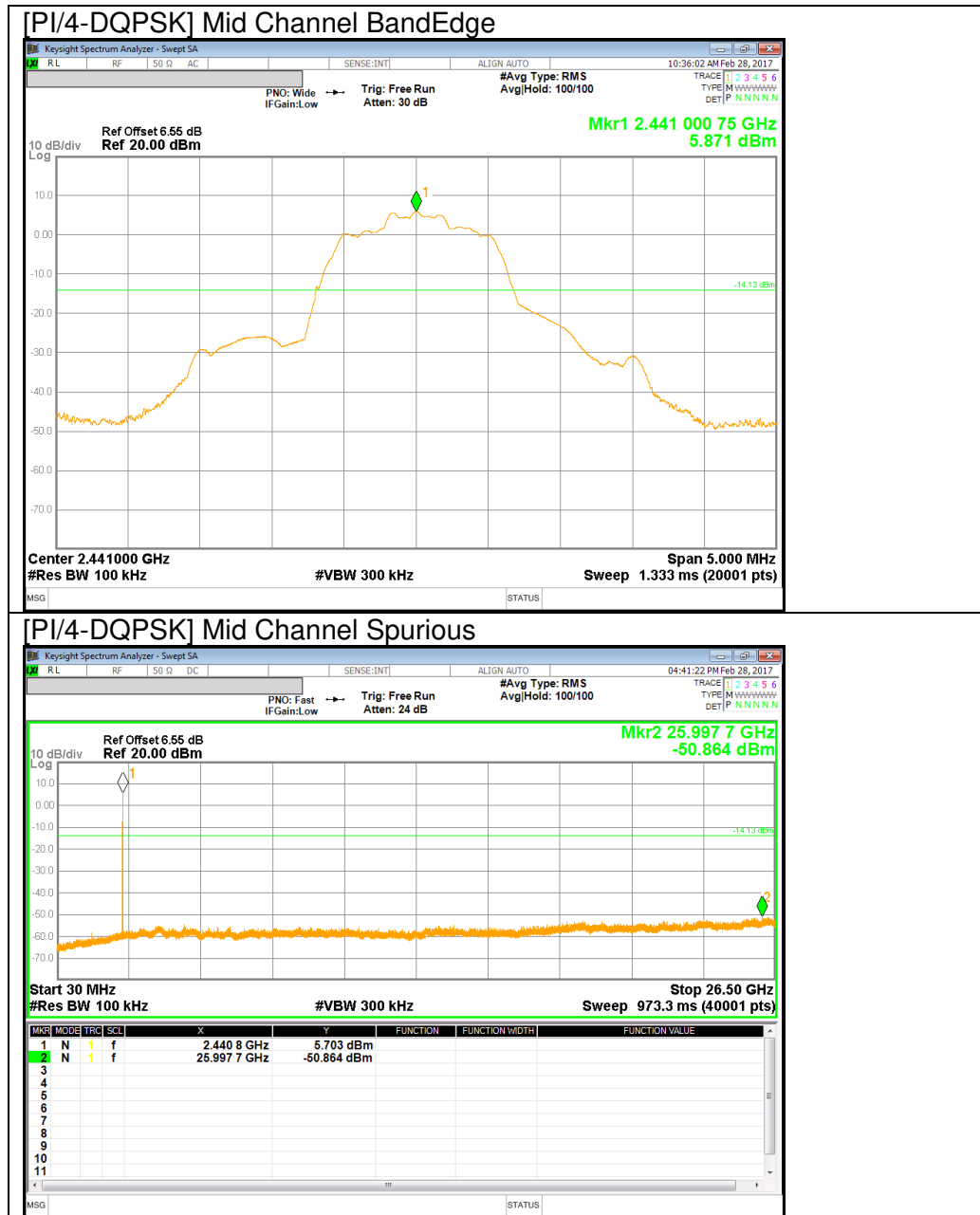


[GFSK Hopping Mode] High Channel BandEdge



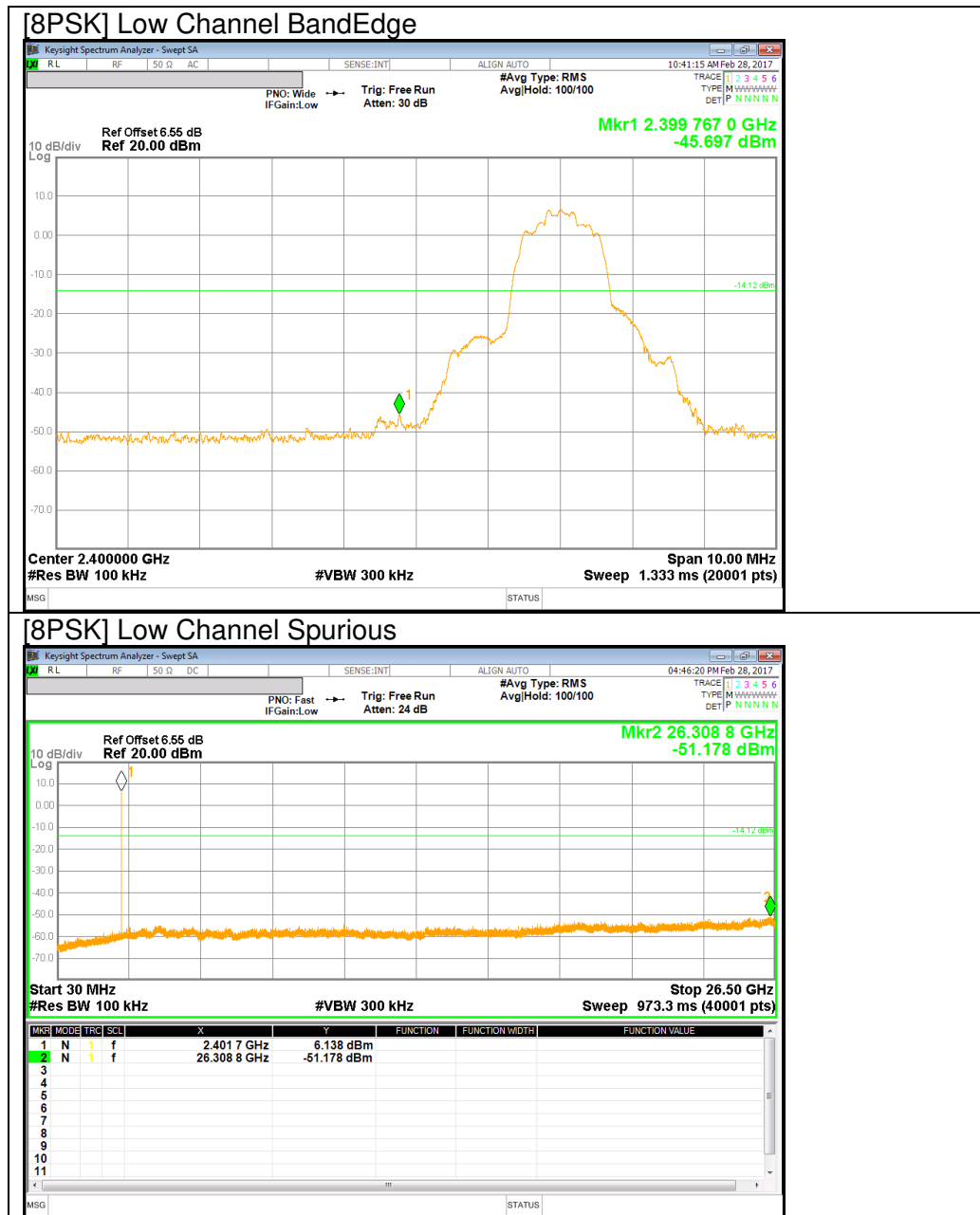
PI/4-DQPSK Mode

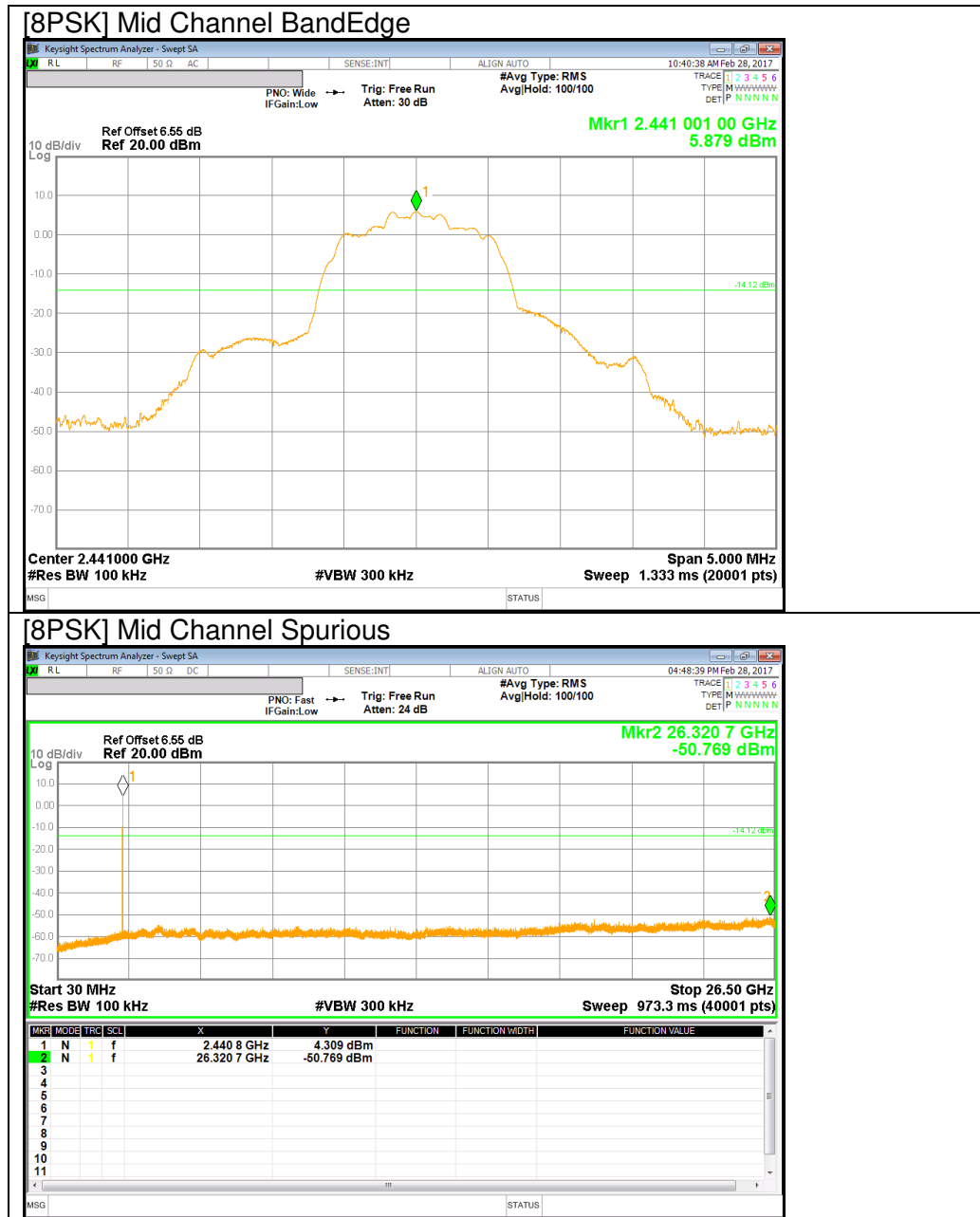


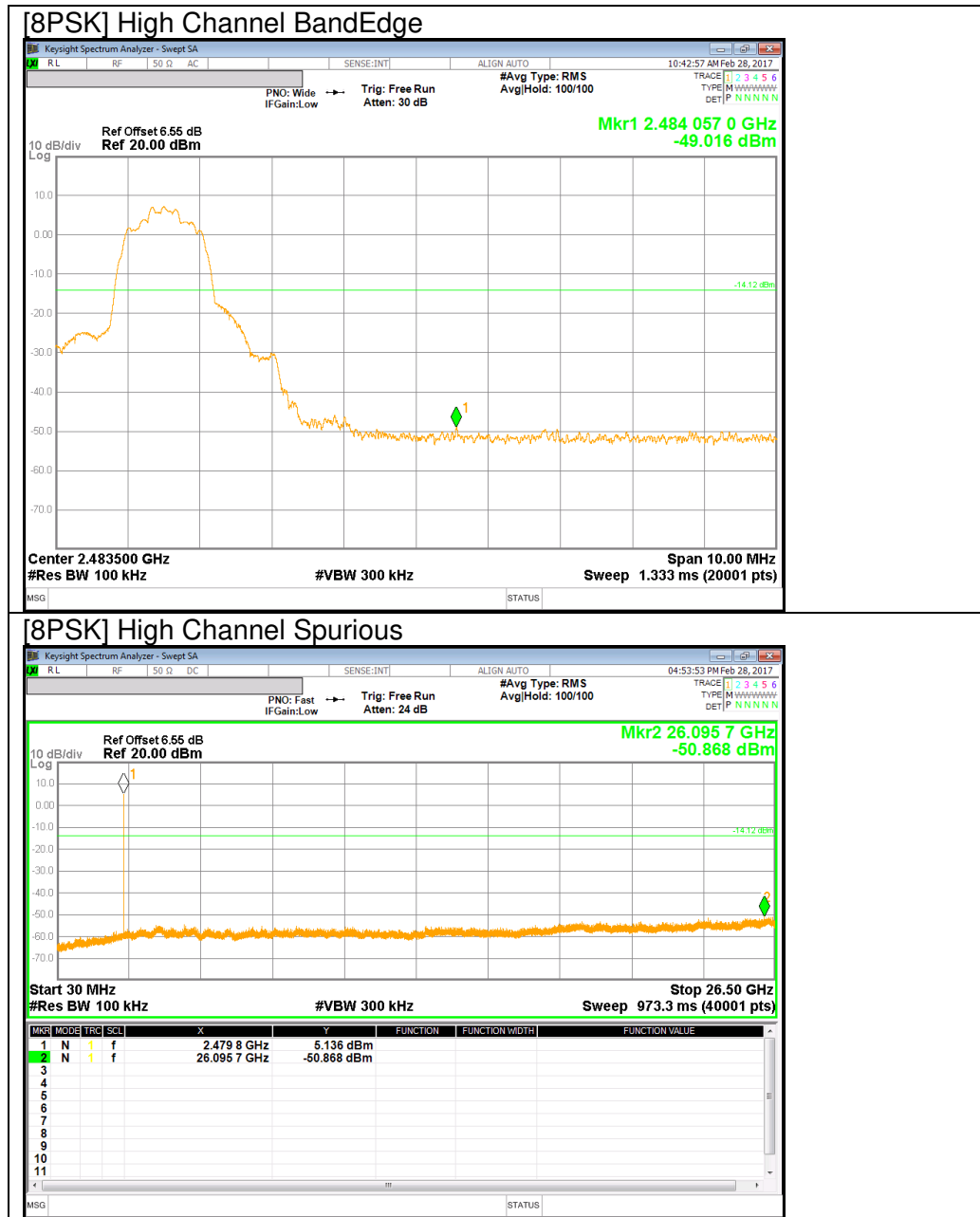




8PSK Mode

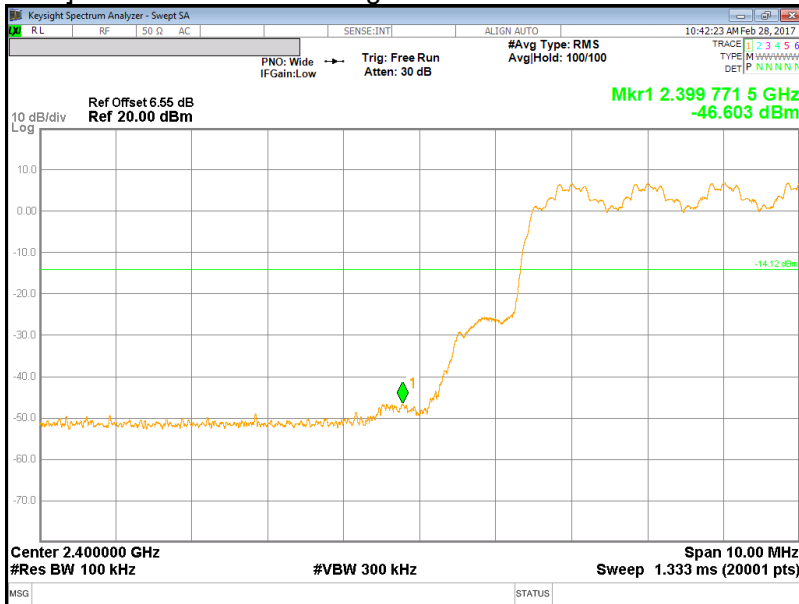




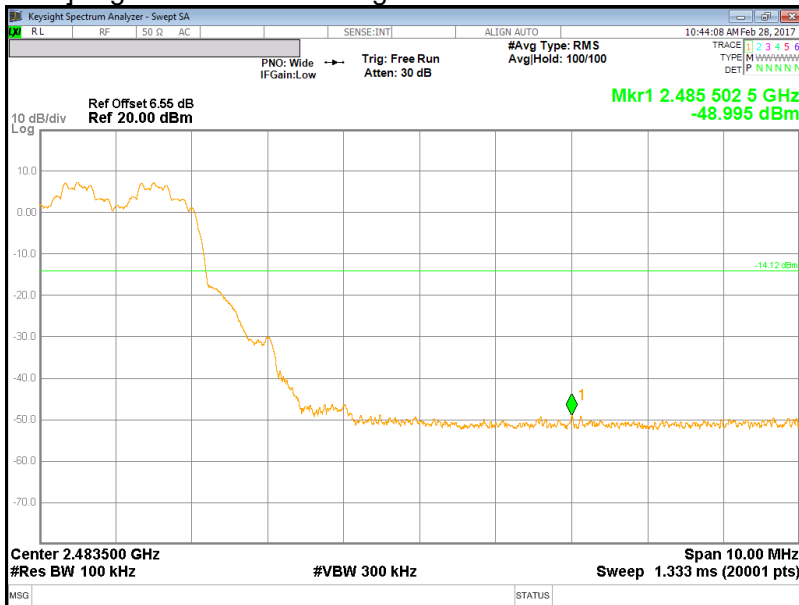


BandEdge Emission at 8PSK Hopping Mode

[8PSK Hopping Mode] Low Channel BandEdge



[8PSK Hopping Mode] High Channel BandEdge



10. RADIATED TEST RESULTS

10.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

Limits for radiated disturbance of an intentional radiator		
Frequency range (MHz)	Limits (µV/m)	Measurement Distance (m)
0.009 – 0.490	2400 / F (kHz)	300
0.490 – 1.705	24000 / F (kHz)	30
1.705 – 30.0	30	30
30 – 88	100**	3
88 - 216	150**	3
216 – 960	200**	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g. §§ 15.231 and 15.241.

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1GHz and 150 cm for above 1GHz. 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 measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements.(Pre-scans to detect harmonic and spurious emissions, the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 KHz for peak measurements.)

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 minimum VBW was 350Hz, but test receiver(ESU40) couldn't set value 350Hz. Due to this reason, testing VBW was set to 500Hz(Worst cases).

The spectrum from 1GHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.
(From 30MHz to 1GHz, test was performed with the EUT set to transmit at the channel with highest output power)

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.

Note : Emission was pre-scanned from 9KHz to 30MHz; No emissions were detected which was at least 20dB below the specification limit (consider distance correction factor).
Per FCC part 15.31(o), test results were not reported.

Formula for converting the filed strength from uV/m to dBuV/m is:
Limit (dBuV/m) = 20 log limit (uV/m)

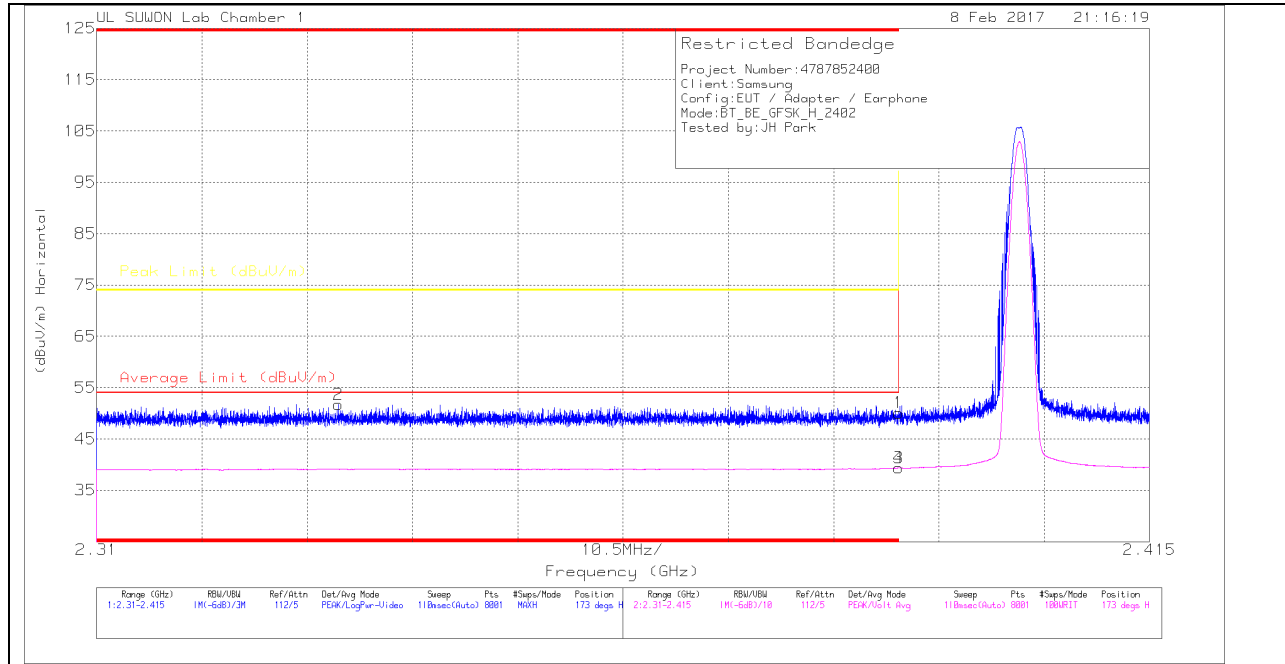
Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site.
Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the one of tests made in an open field based on KDB 937606.

10.2. TRANSMITTER ABOVE 1 GHz

10.2.1. BASIC DATA RATE GFSK MODULATION

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

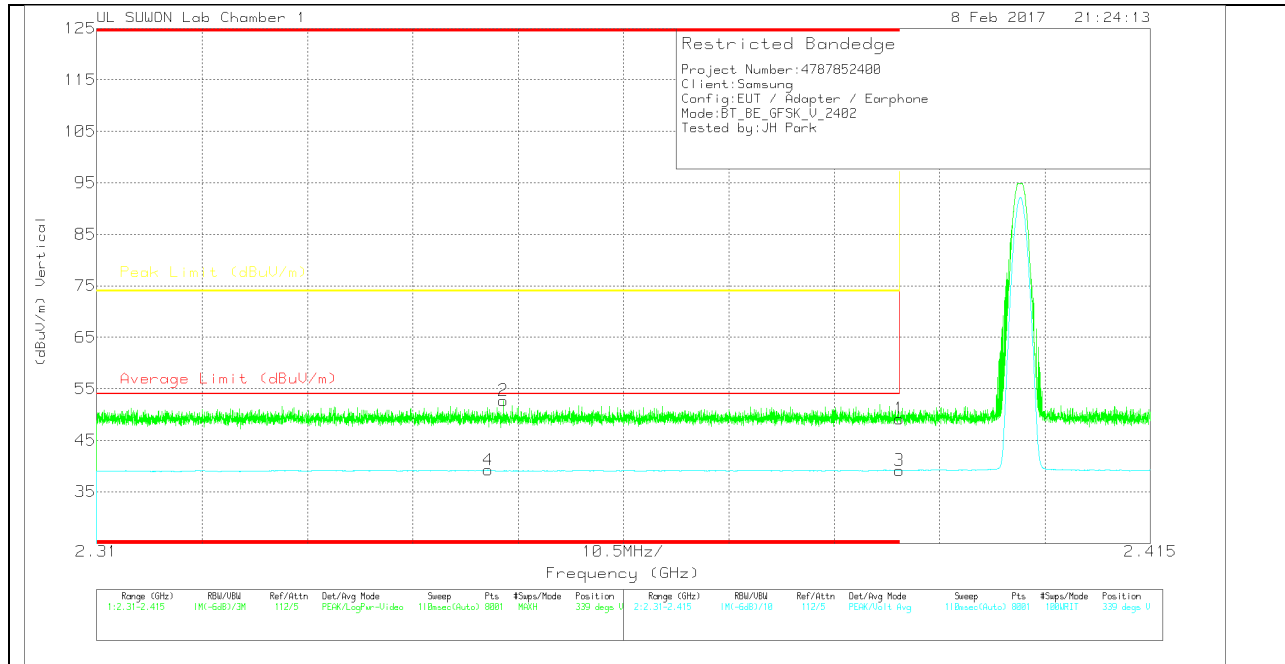
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	10dB_Att(dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	46.98	Pk	31.8	-28.7	50.08	-	-	74	-23.92	173	146	H
2	* 2.334	48.81	Pk	31.7	-28.8	51.71	-	-	74	-22.29	173	146	H
3	* 2.39	36.24	VA1T	31.8	-28.7	39.34	54	-14.66	-	-	173	146	H
4	* 2.39	36.24	VA1T	31.8	-28.7	39.34	54	-14.66	-	-	173	146	H

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

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	10dB_Att (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	46.11	Pk	31.8	-28.7	49.21	-	-	74	-24.79	339	102	V
2	* 2.351	49.82	Pk	31.7	-28.8	52.72	-	-	74	-21.28	339	102	V
3	* 2.39	36.05	VA1T	31.8	-28.7	39.15	54	-14.85	-	-	339	102	V
4	* 2.349	36.21	VA1T	31.7	-28.7	39.21	54	-14.79	-	-	339	102	V

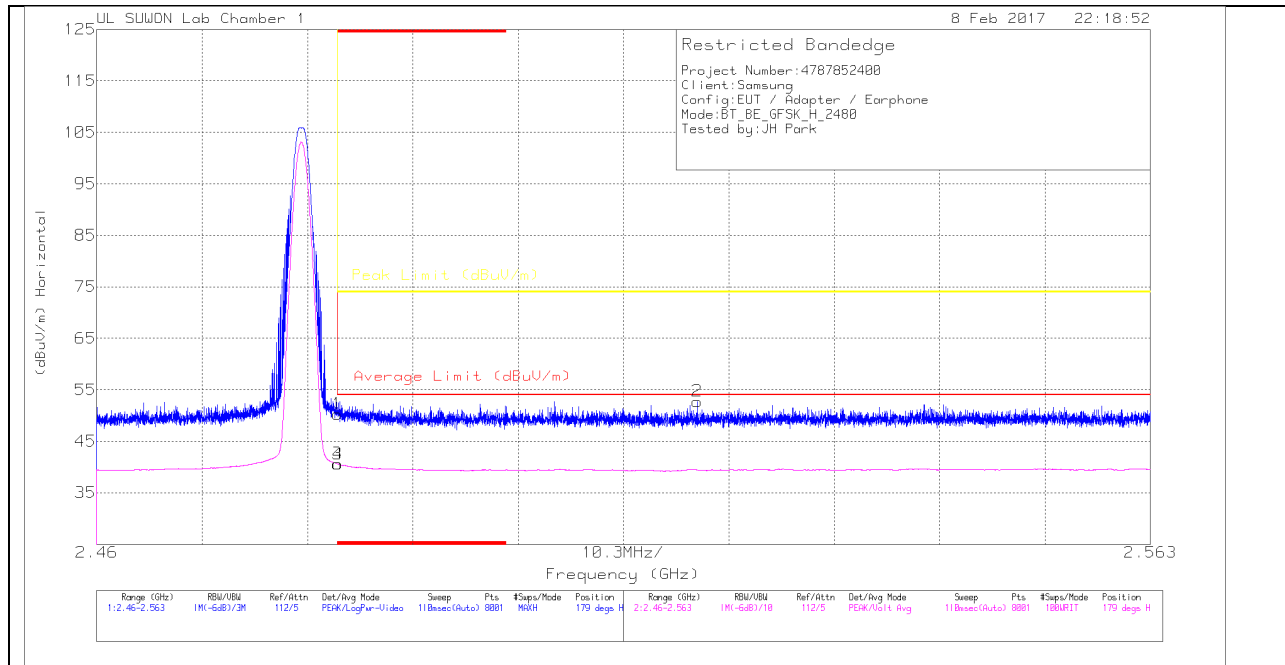
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

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

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

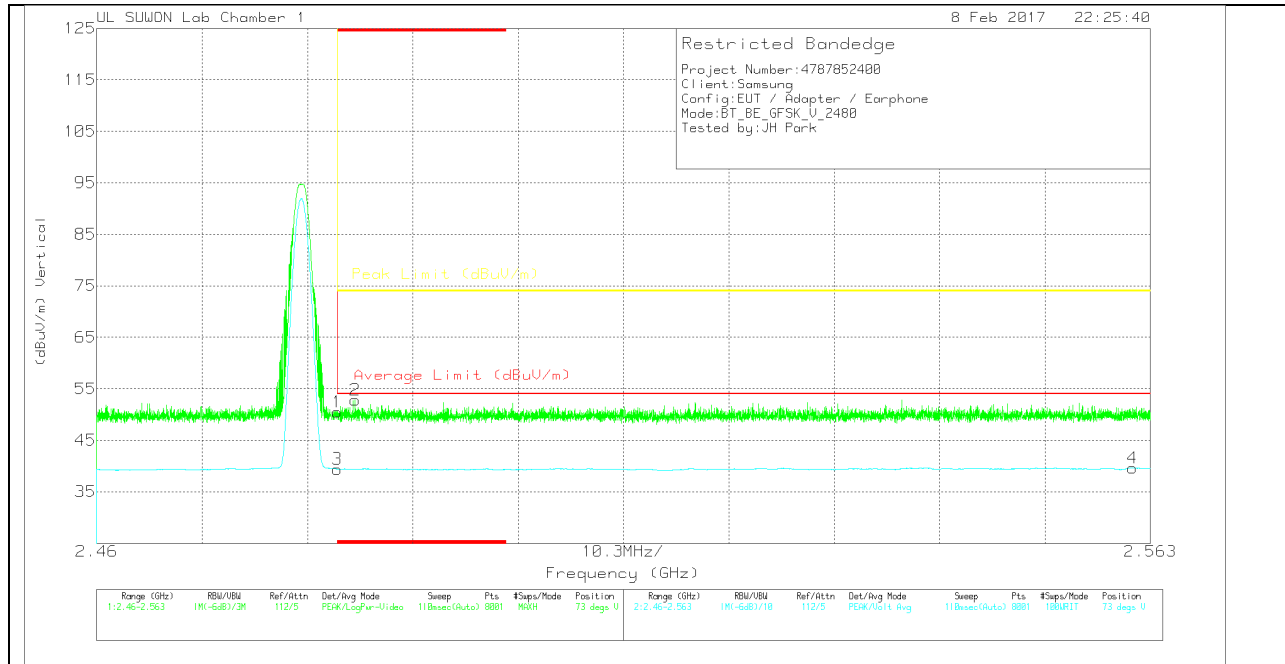
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	10dB_Att(dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	47	Pk	32	-28.7	50.3	-	-	74	-23.7	179	247	H
2	2.519	49.36	Pk	32	-28.6	52.76	-	-	74	-21.24	179	247	H
3	* 2.484	37.32	VA1T	32	-28.7	40.62	54	-13.38	-	-	179	247	H
4	* 2.484	37.26	VA1T	32	-28.7	40.56	54	-13.44	-	-	179	247	H

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

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	10dB_Att (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	47.2	Pk	32	-28.7	50.5	-	-	74	-23.5	73	326	V
2	* 2.485	49.53	Pk	32	-28.7	52.83	-	-	74	-21.17	73	326	V
3	* 2.484	36.1	VA1T	32	-28.7	39.4	54	-14.6	-	-	73	326	V
4	2.561	36.03	VA1T	32	-28.4	39.63	54	-14.37	-	-	73	326	V

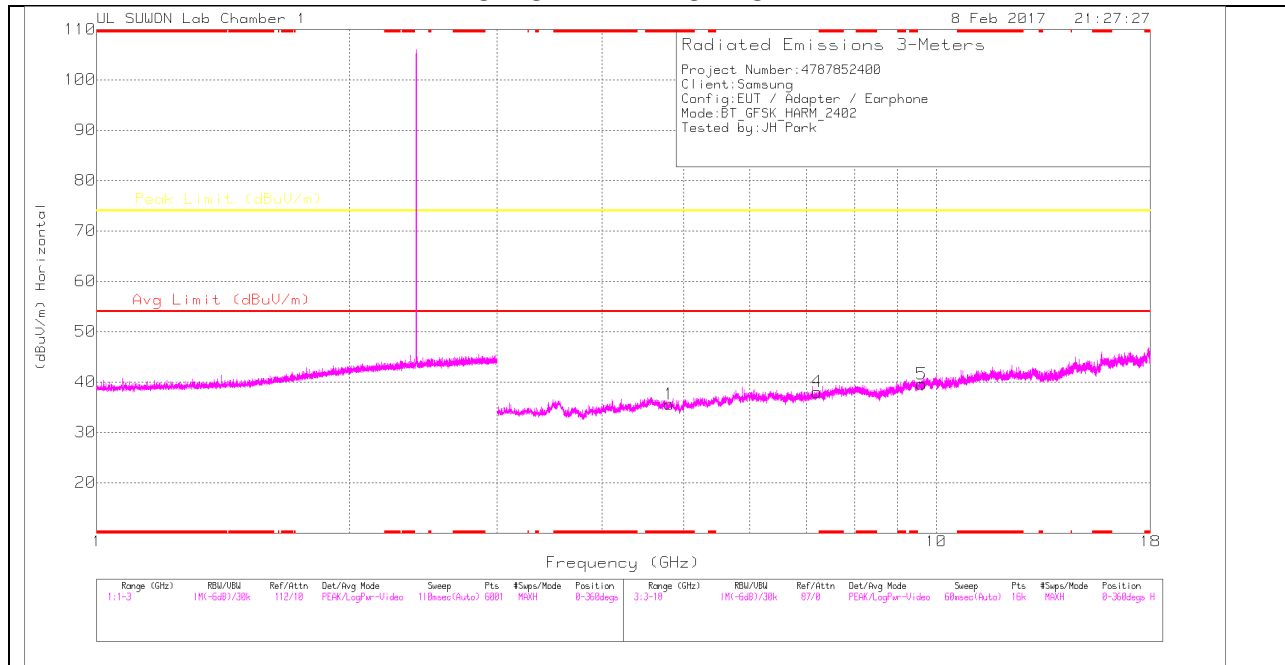
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

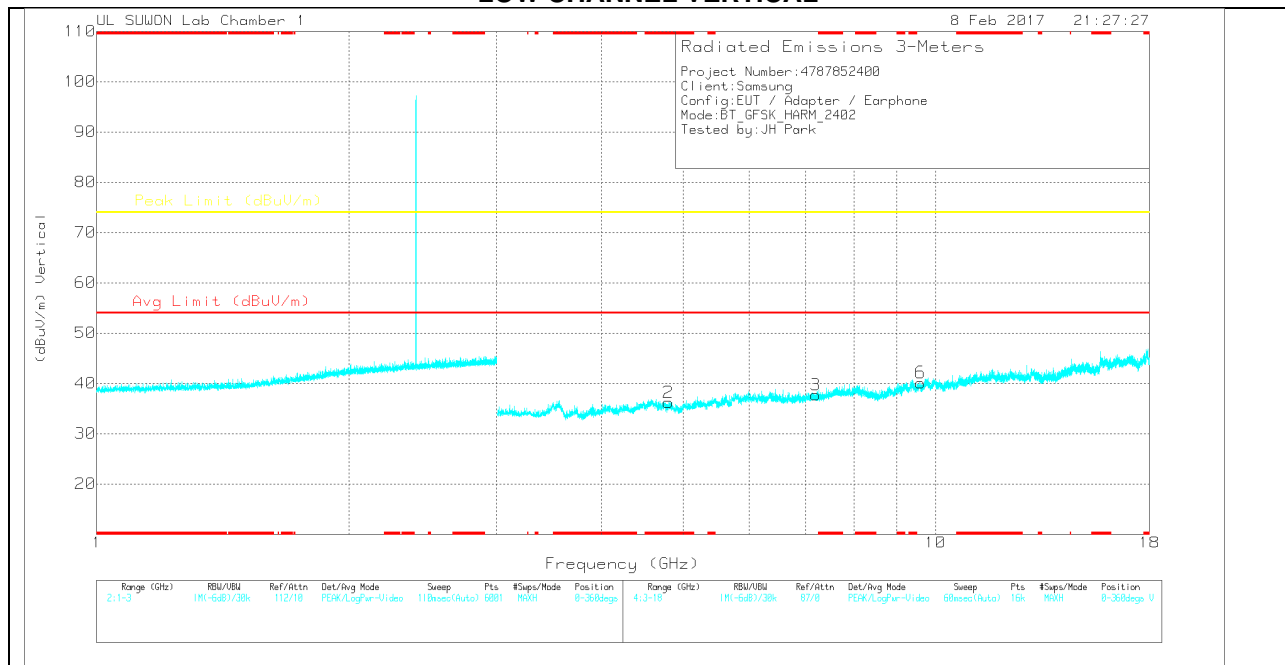
VA1T - FHSS: Linear Voltage Average $V_B=1/T_{on}$ where: T_{on} is transmit duration

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

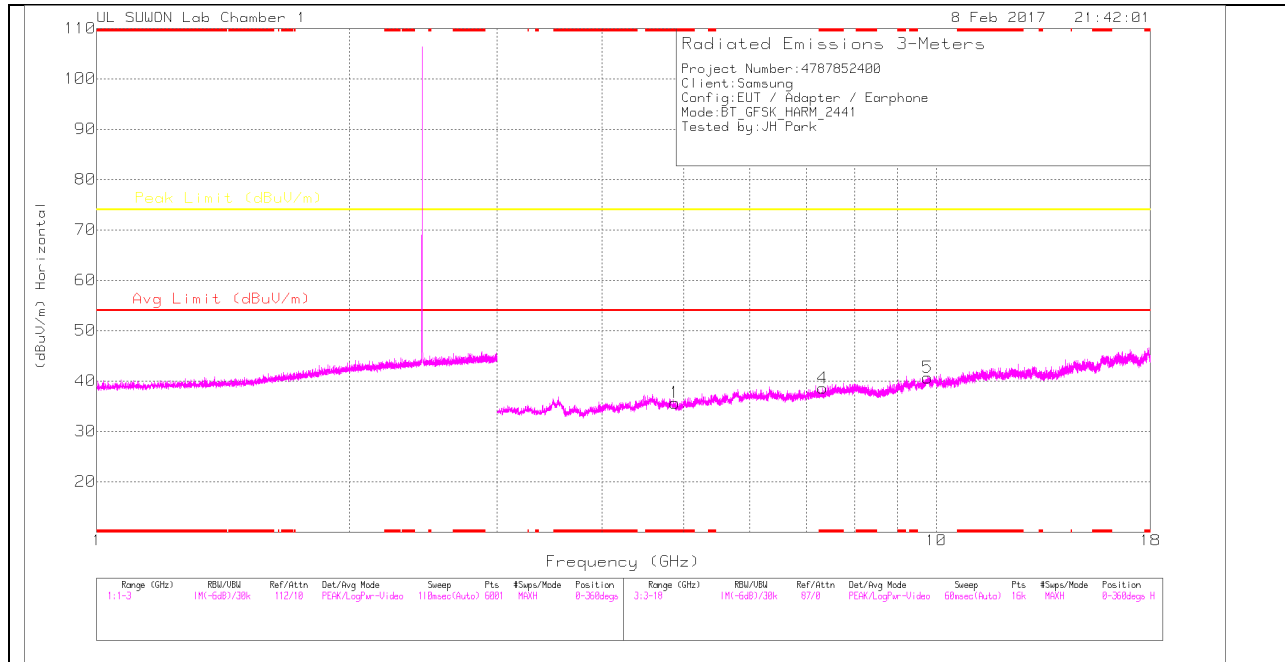
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	3Ghz_HP(d B)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.807	35.58	PK	34	-34	35.58	-	-	74	-38.42	0-360	150	H
4	7.209	33.53	PK	35.7	-31.2	38.03	-	-	74	-35.97	0-360	250	H
5	9.611	30.77	PK	37	-28.2	39.57	-	-	74	-34.43	0-360	250	H
2	* 4.805	36.19	PK	34	-34	36.19	-	-	74	-37.81	0-360	150	V
3	7.203	33.23	PK	35.7	-31.2	37.73	-	-	74	-36.27	0-360	250	V
6	9.603	31.33	PK	37	-28.2	40.13	-	-	74	-33.87	0-360	150	V

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

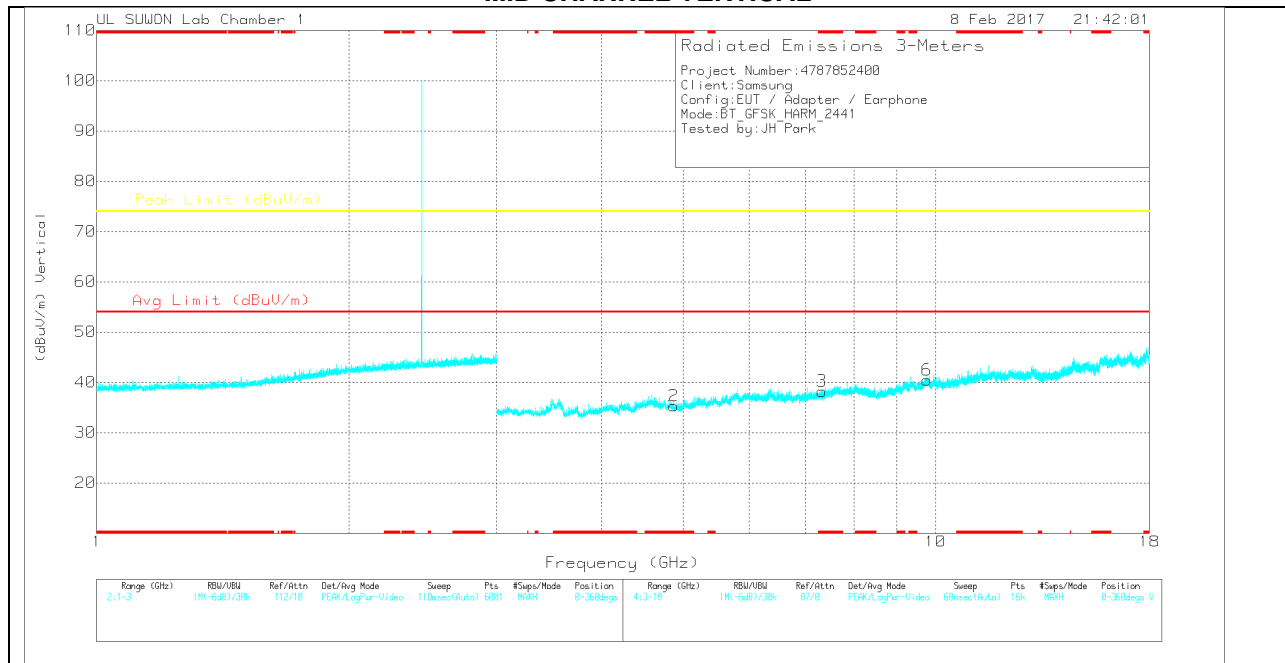
PK – Peak Detctor

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

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

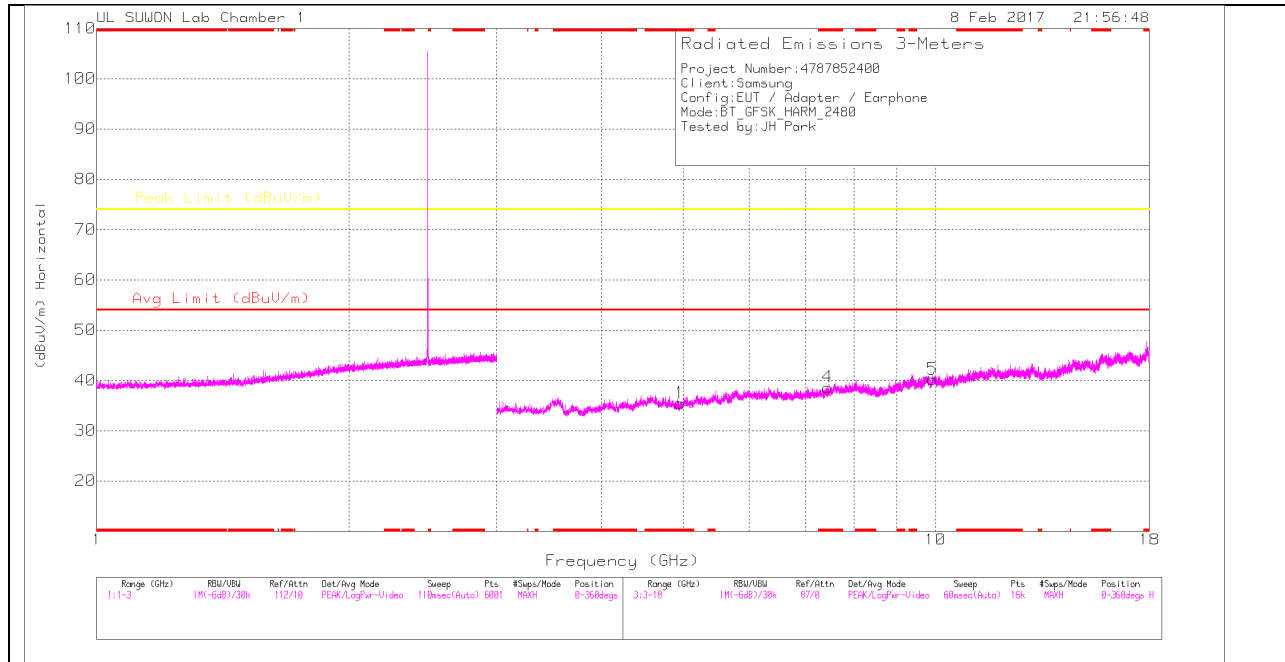
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	3Ghz_HP(d B)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.881	35.85	PK	34	-34.2	35.65	-	-	74	-38.35	0-360	150	H
4	* 7.327	33.76	PK	35.8	-31	38.56	-	-	74	-35.44	0-360	250	H
5	9.766	30.86	PK	37.2	-27.4	40.66	-	-	74	-33.34	0-360	250	H
2	* 4.879	35.41	PK	34	-34.1	35.31	-	-	74	-38.69	0-360	150	V
3	* 7.323	33.35	PK	35.8	-30.9	38.25	-	-	74	-35.75	0-360	150	V
6	9.767	30.65	PK	37.2	-27.4	40.45	-	-	74	-33.55	0-360	250	V

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

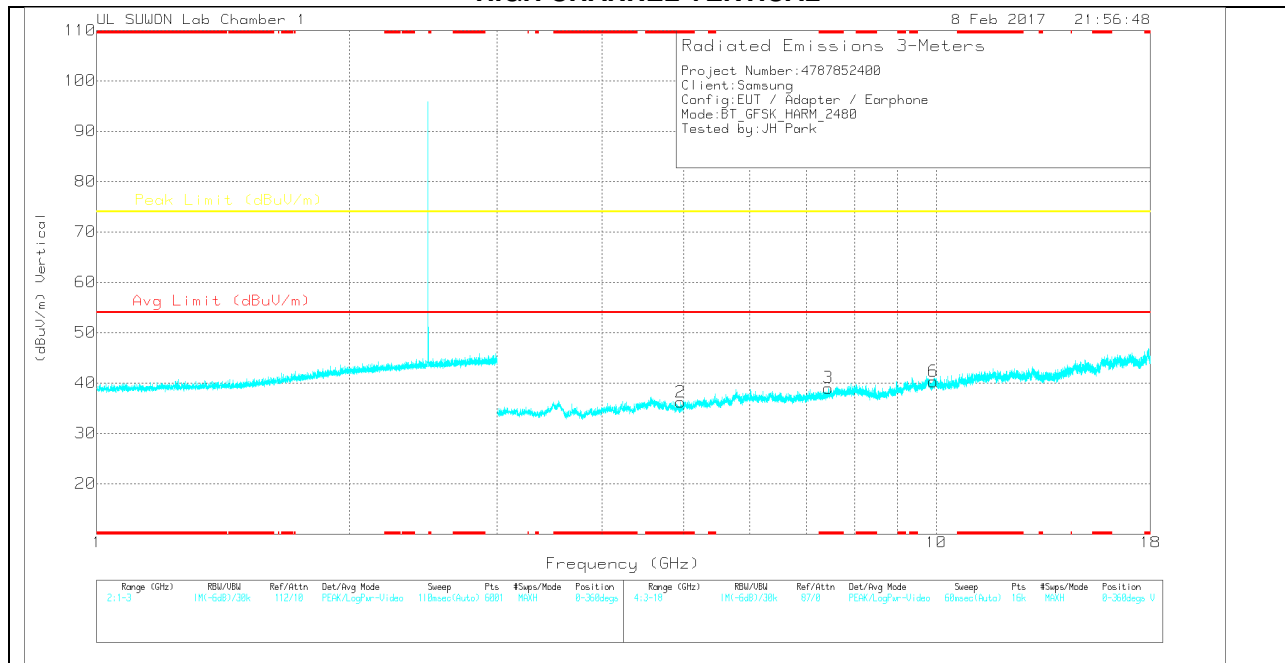
PK – Peak Detector

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

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	3Ghz_HP(d B)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.964	35.59	PK	34	-34.1	35.49	-	-	74	-38.51	0-360	150	H
4	* 7.438	33.94	PK	35.8	-31.1	38.64	-	-	74	-35.36	0-360	250	H
5	9.921	30.76	PK	37.4	-27.9	40.26	-	-	74	-33.74	0-360	150	H
2	* 4.963	36.21	PK	34	-34	36.21	-	-	74	-37.79	0-360	250	V
3	* 7.44	34.32	PK	35.8	-31.1	39.02	-	-	74	-34.98	0-360	250	V
6	9.925	30.59	PK	37.4	-27.7	40.29	-	-	74	-33.71	0-360	250	V

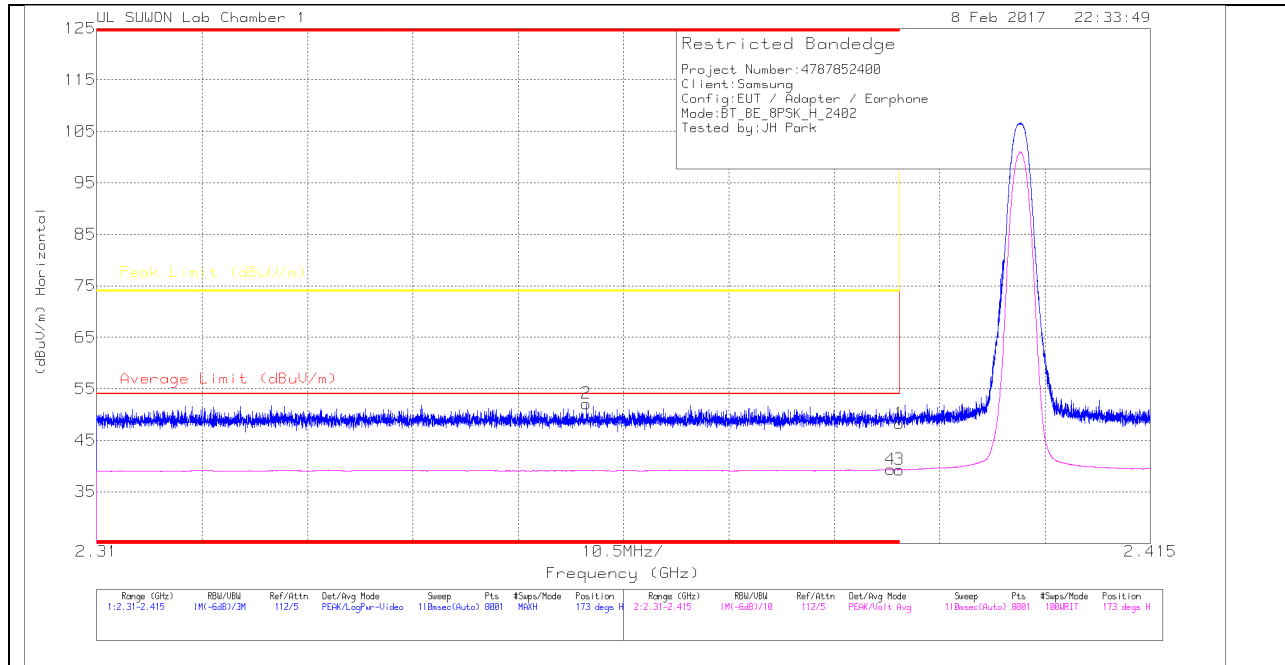
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK – Peak Detector

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

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

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

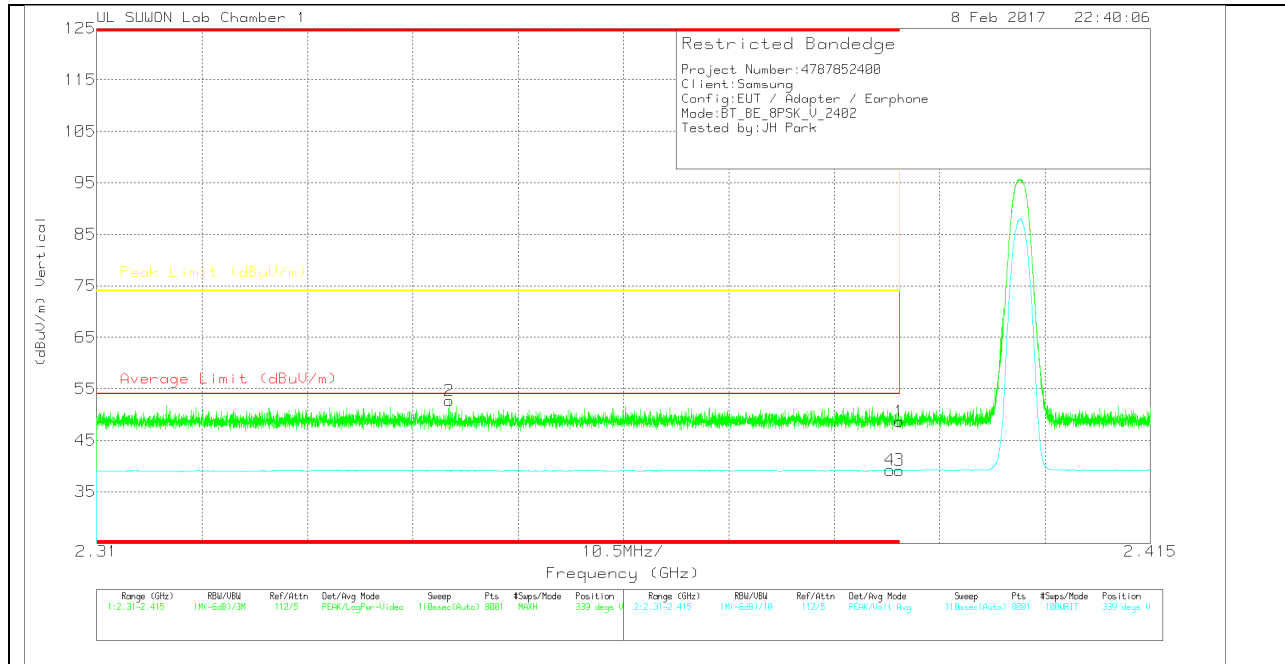
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	10dB_Att (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	45.2	Pk	31.8	-28.7	48.3	-	-	74	-25.7	173	147	H
2	* 2.359	49.14	Pk	31.7	-28.7	52.14	-	-	74	-21.86	173	147	H
3	* 2.39	36.21	VA1T	31.8	-28.7	39.31	54	-14.69	-	-	173	147	H
4	* 2.389	36.25	VA1T	31.8	-28.7	39.35	54	-14.65	-	-	173	147	H

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

Pk - Peak detector

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

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	10dB_Att(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	45.58	Pk	31.8	-28.7	48.68	-	-	74	-25.32	339	102	V
2	* 2.345	49.78	Pk	31.7	-28.8	52.68	-	-	74	-21.32	339	102	V
3	* 2.39	36.07	VA1T	31.8	-28.7	39.17	54	-14.83	-	-	339	102	V
4	* 2.389	36.1	VA1T	31.8	-28.7	39.2	54	-14.8	-	-	339	102	V

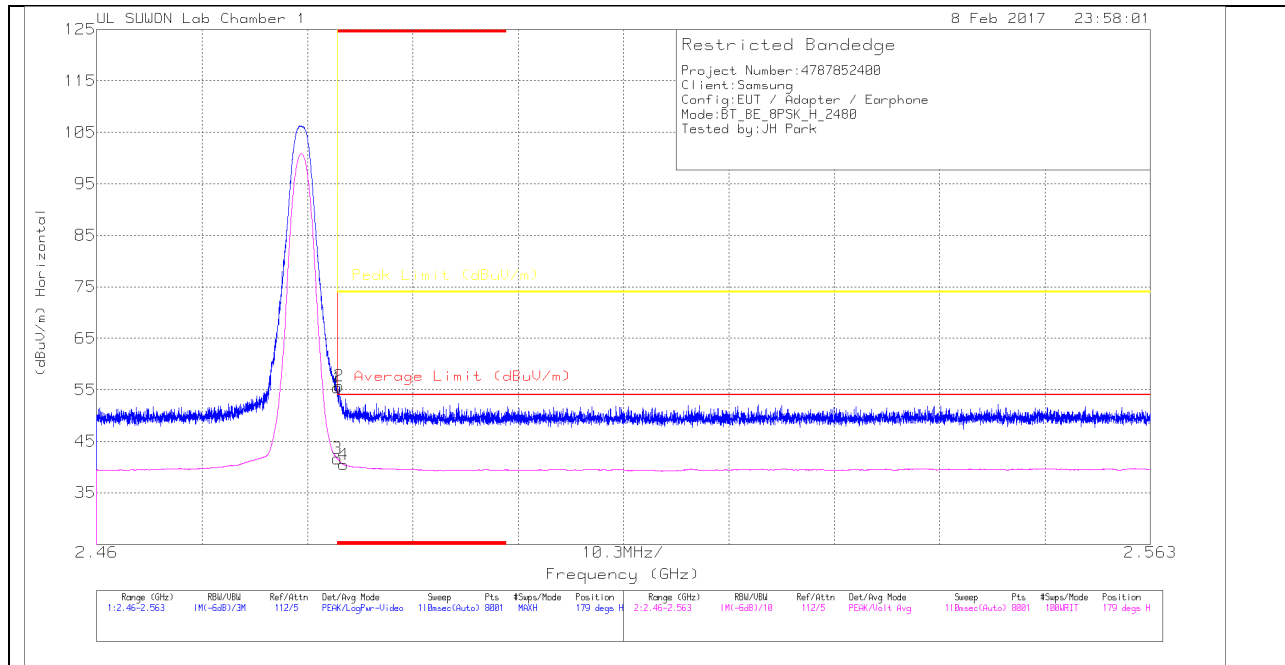
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

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

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

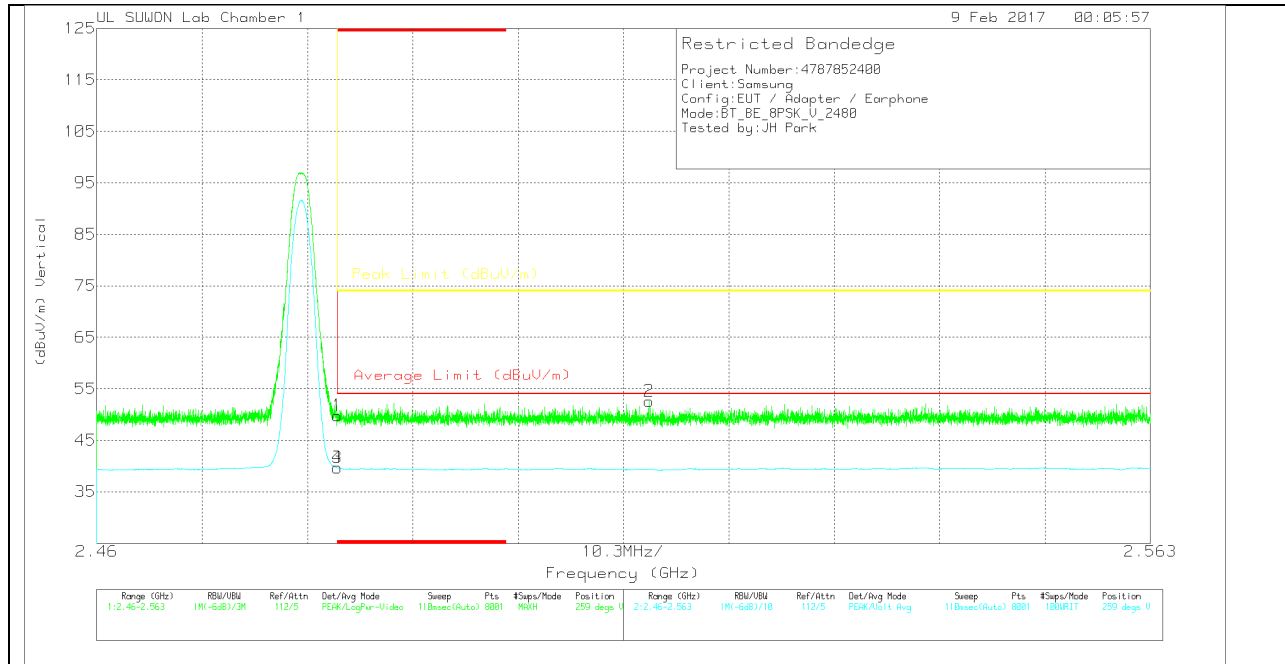
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	10dB_Att(dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	52.06	Pk	32	-28.7	55.36	-	-	74	-18.64	179	246	H
2	* 2.484	52.47	Pk	32	-28.7	55.77	-	-	74	-18.23	179	246	H
3	* 2.484	38.34	VA1T	32	-28.7	41.64	54	-12.36	-	-	179	246	H
4	* 2.484	37.14	VA1T	32	-28.7	40.44	54	-13.56	-	-	179	246	H

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

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	10dB_Att(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	46.51	Pk	32	-28.7	49.81	-	-	74	-24.19	259	400	V
2	2.514	49.22	Pk	32	-28.6	52.62	-	-	74	-21.38	259	400	V
3	* 2.484	36.38	VA1T	32	-28.7	39.68	54	-14.32	-	-	259	400	V
4	* 2.484	36.38	VA1T	32	-28.7	39.68	54	-14.32	-	-	259	400	V

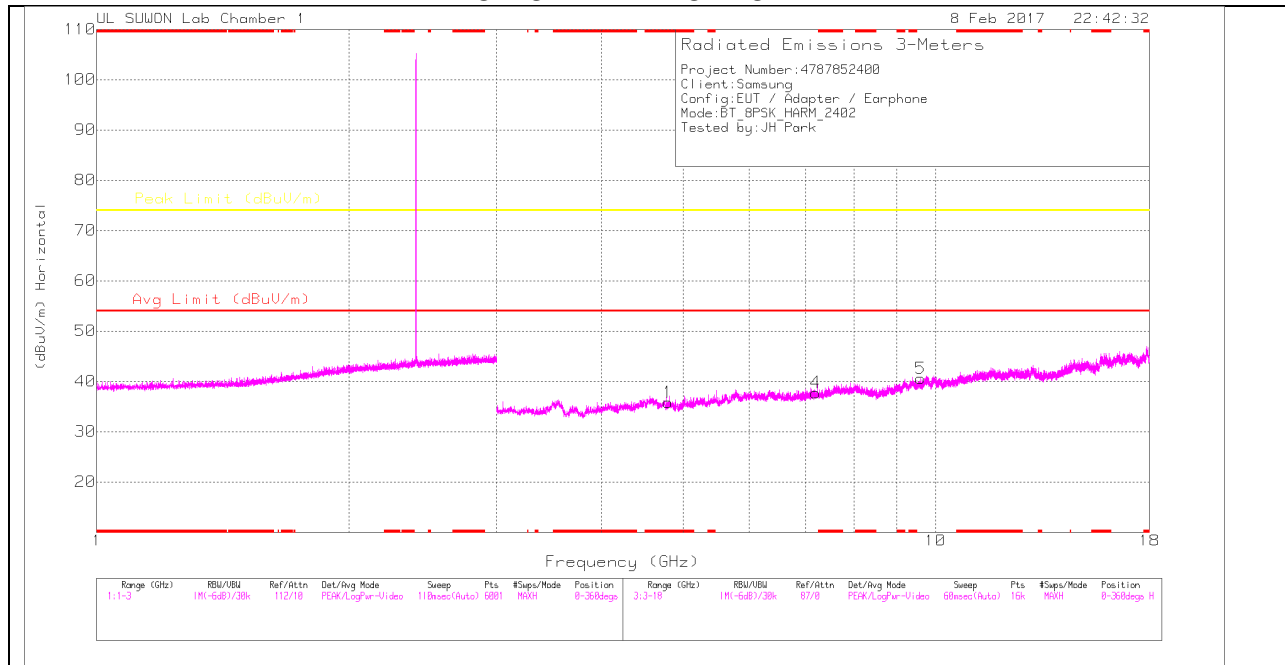
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

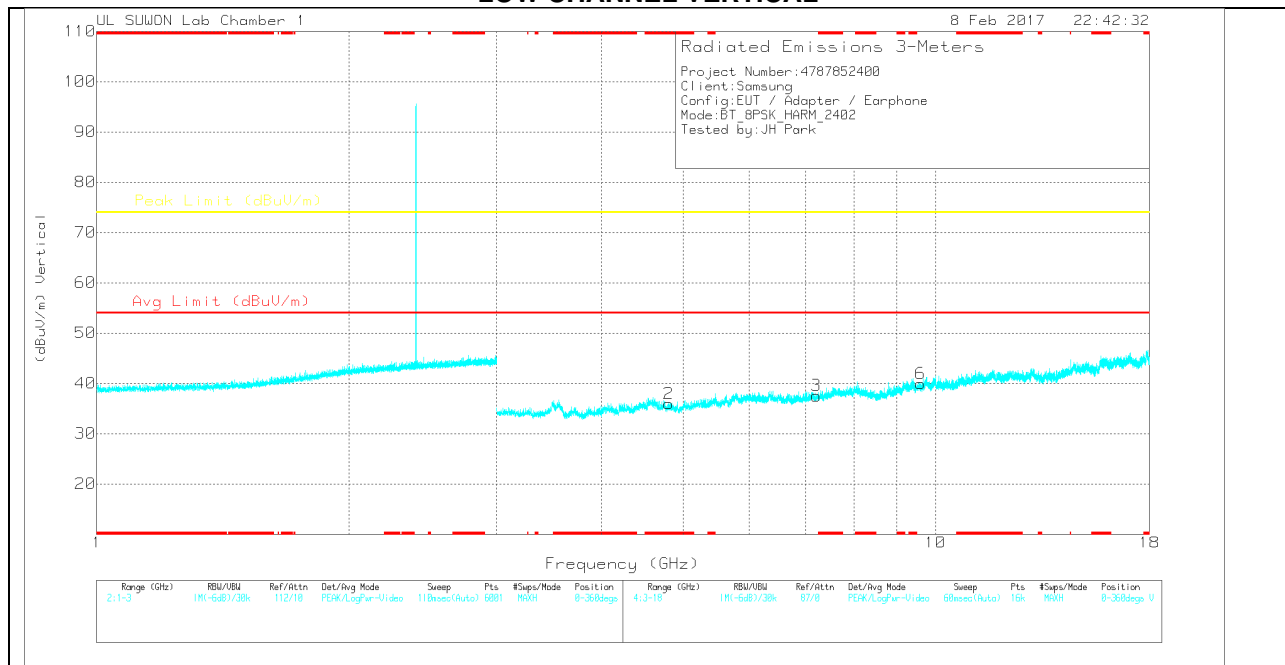
VA1T - FHSS: Linear Voltage Average $V_B=1/T_{on}$ where: T_{on} is transmit duration

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

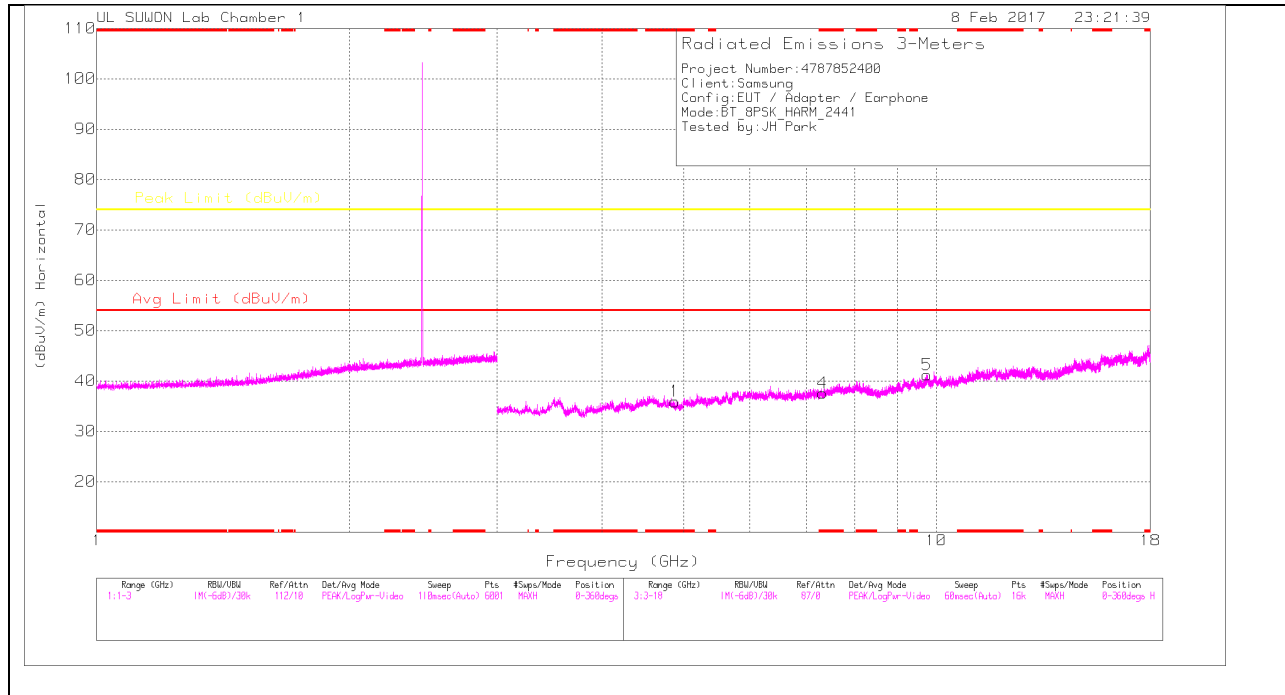
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	3Ghz_HP(d B)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.803	35.9	PK	34	-34.1	35.8	-	-	74	-38.2	0-360	250	H
4	7.203	33.24	PK	35.7	-31.2	37.74	-	-	74	-36.26	0-360	250	H
5	9.607	31.67	PK	37	-28.1	40.57	-	-	74	-33.43	0-360	250	H
2	* 4.807	35.95	PK	34	-34	35.95	-	-	74	-38.05	0-360	250	V
3	7.208	33.04	PK	35.7	-31.2	37.54	-	-	74	-36.46	0-360	150	V
6	9.608	31.17	PK	37	-28.2	39.97	-	-	74	-34.03	0-360	250	V

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

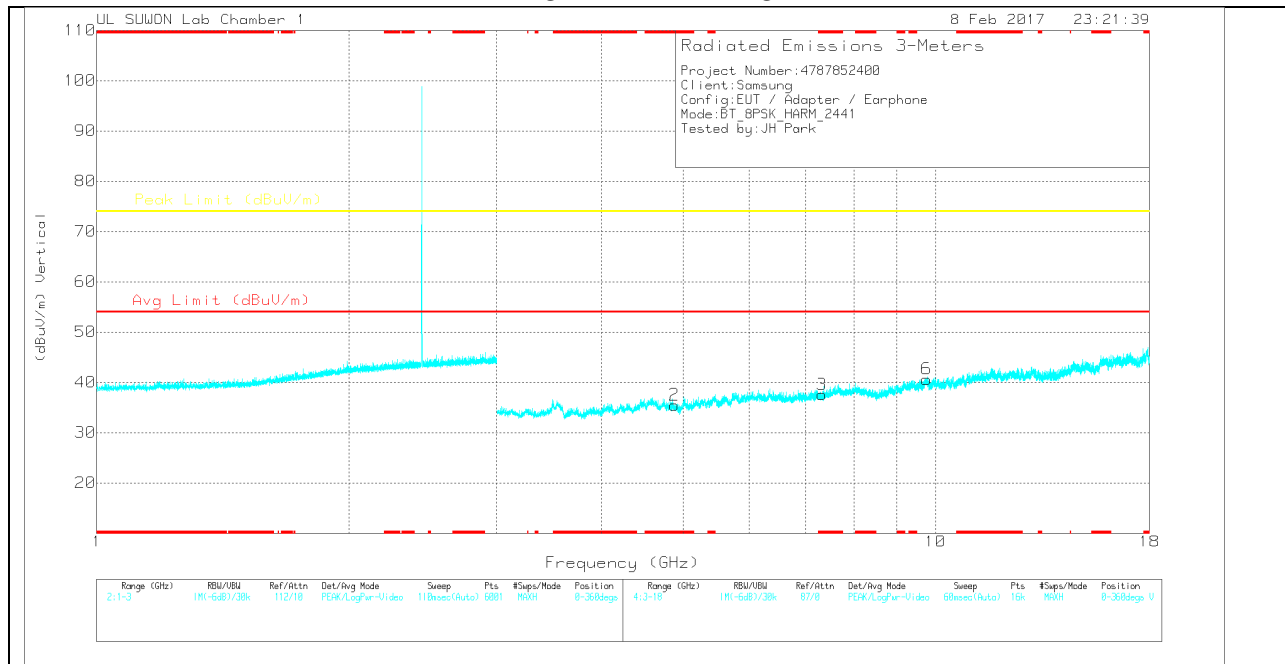
PK – Peak Detector

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

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

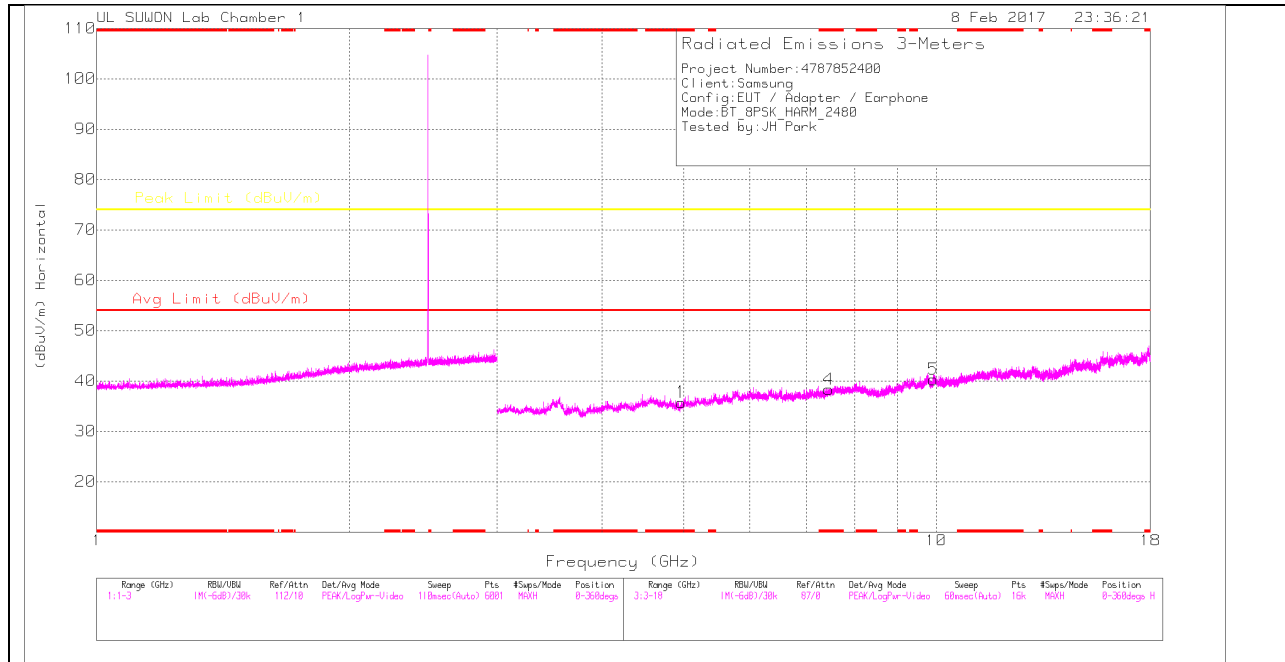
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	3Ghz_HP(d B)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.886	36.1	PK	34	-34.2	35.9	-	-	74	-38.1	0-360	150	H
4	* 7.321	32.76	PK	35.8	-31	37.56	-	-	74	-36.44	0-360	250	H
5	9.755	31.47	PK	37.2	-27.5	41.17	-	-	74	-32.83	0-360	150	H
2	* 4.882	35.61	PK	34	-34.1	35.51	-	-	74	-38.49	0-360	250	V
3	* 7.323	32.66	PK	35.8	-30.9	37.56	-	-	74	-36.44	0-360	150	V
6	9.76	30.94	PK	37.2	-27.5	40.64	-	-	74	-33.36	0-360	250	V

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

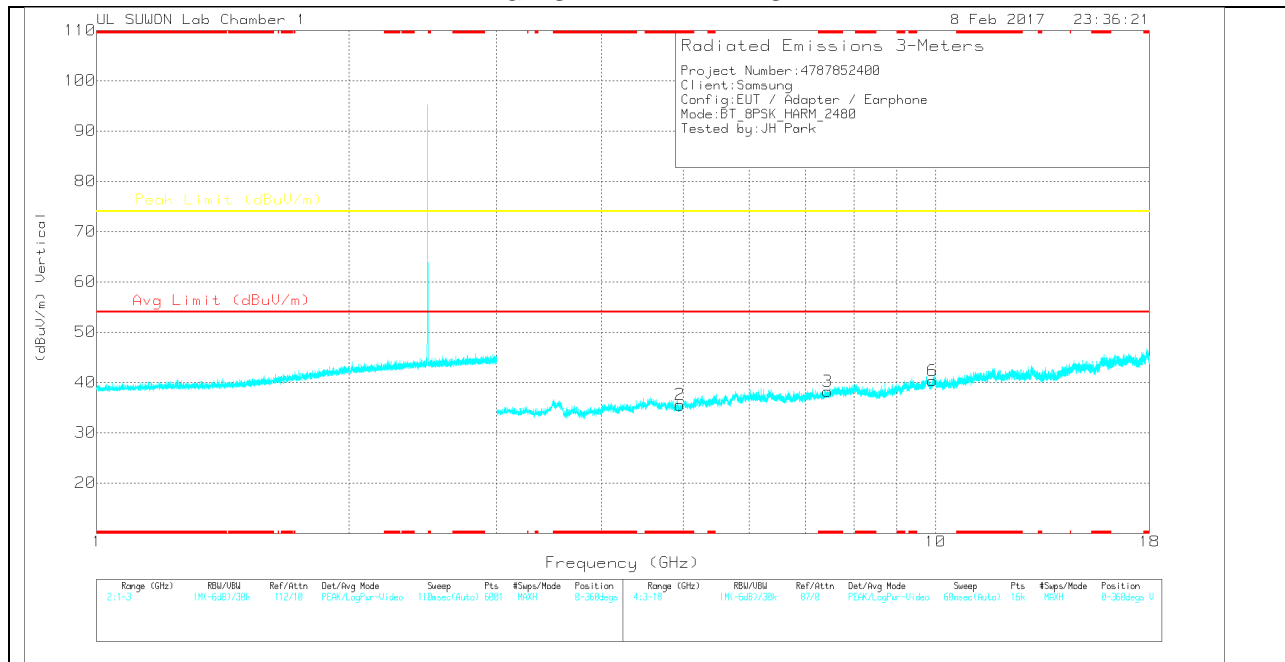
PK – Peak Detector

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

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	3Ghz_HP(d B)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.971	35.75	PK	34.1	-34.1	35.75	-	-	74	-38.25	0-360	250	H
4	* 7.446	33.52	PK	35.8	-31	38.32	-	-	74	-35.68	0-360	250	H
5	9.921	30.78	PK	37.4	-27.9	40.28	-	-	74	-33.72	0-360	250	H
2	* 4.963	35.54	PK	34	-34	35.54	-	-	74	-38.46	0-360	150	V
3	* 7.439	33.51	PK	35.8	-31.1	38.21	-	-	74	-35.79	0-360	250	V
6	9.924	30.72	PK	37.4	-27.8	40.32	-	-	74	-33.68	0-360	150	V

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

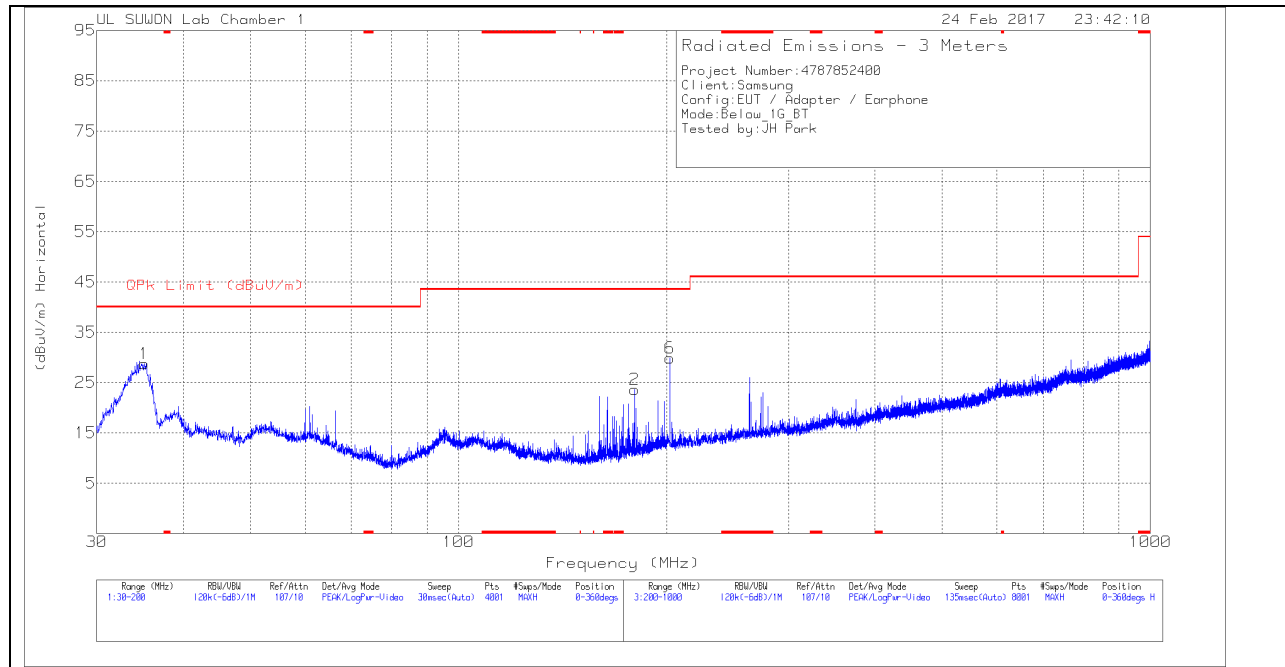
PK – Peak Detector

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

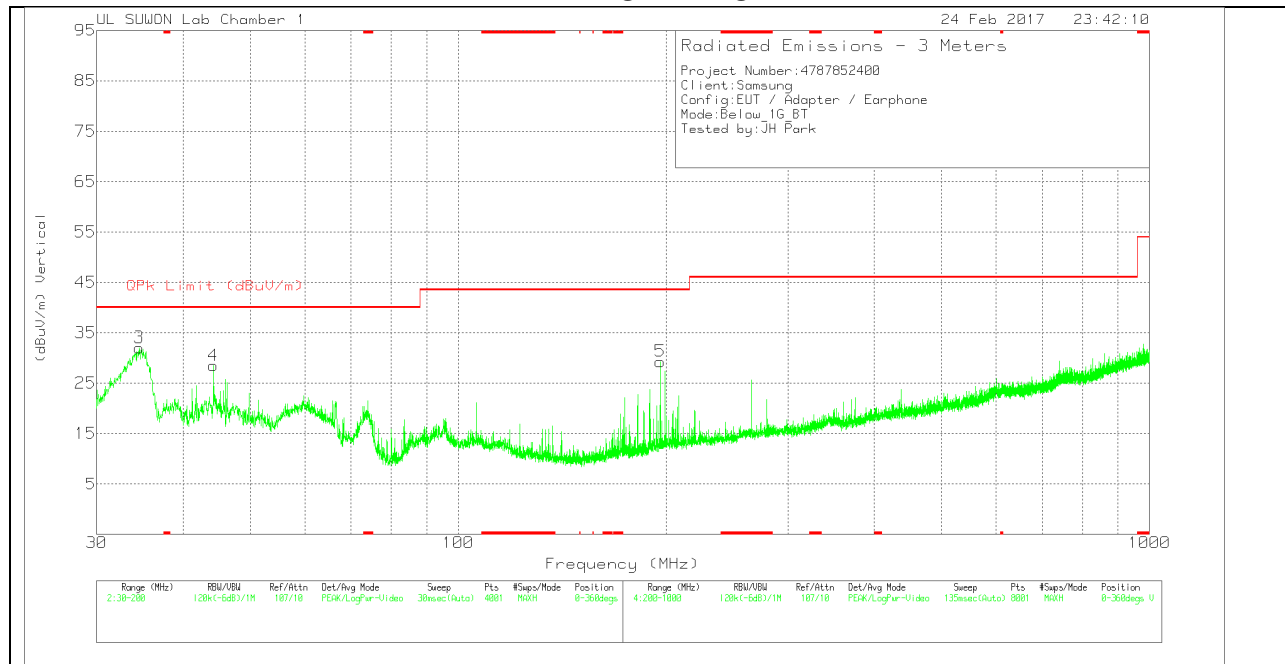
10.3. WORST-CASE BELOW 1 GHz

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_7 50(dB)	30-1000MHz(dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	35.1425	46.56	Pk	10.8	-28.6	28.76	40	-11.24	0-360	300	H
2	179.6	40.79	Pk	9.4	-26.6	23.59	43.52	-19.93	0-360	200	H
3	34.5475	49.85	Pk	10.7	-28.5	32.05	40	-7.95	0-360	100	V
4	44.2375	43.06	Pk	13.4	-28	28.46	40	-11.54	0-360	100	V
5	196.005	44.91	Pk	11	-26.6	29.31	43.52	-14.21	0-360	200	V
6	202	45.58	Pk	10.9	-26.6	29.88	43.52	-13.64	0-360	200	H

Pk - Peak detector

11. 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.

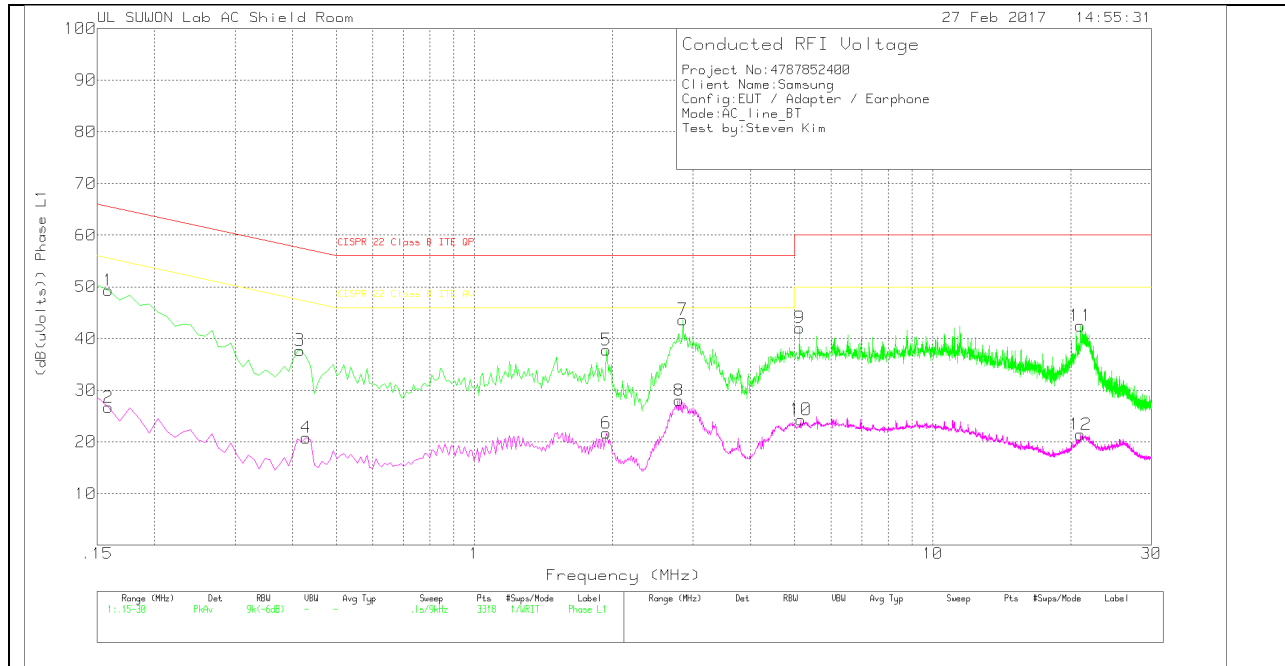
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

6 WORST EMISSIONS

LINE 1 PLOT



LINE 1 RESULTS

Trace Markers

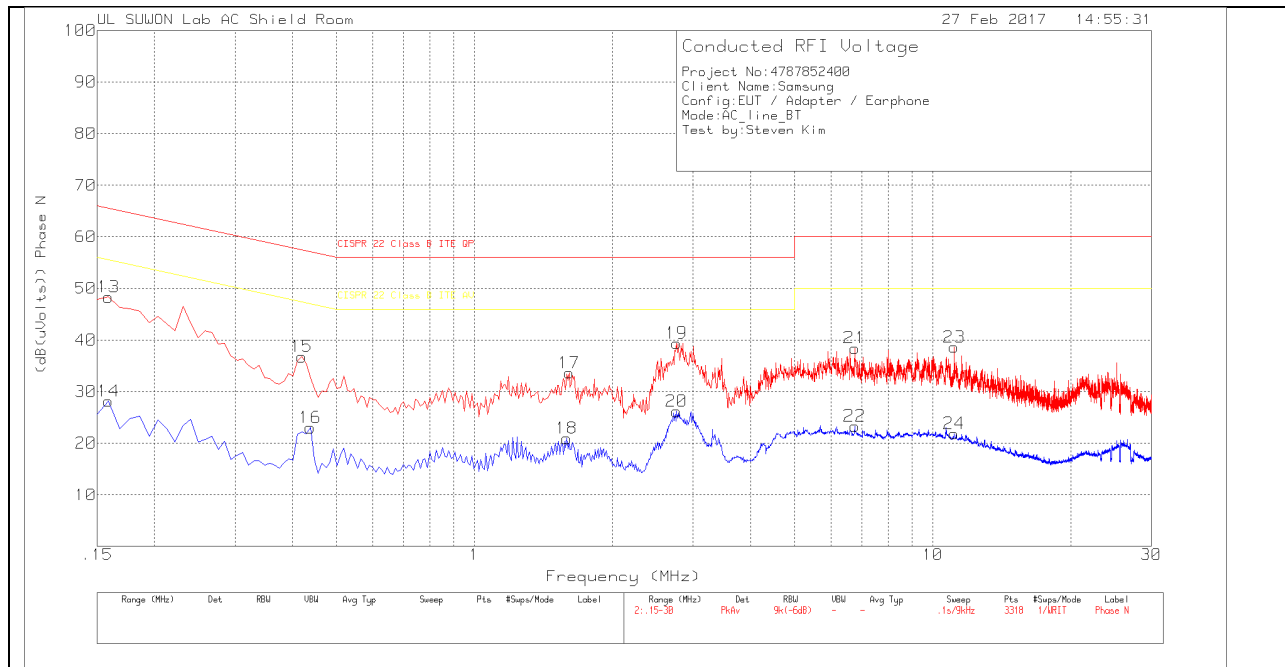
Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101837_w ith ex-cord_L1	CABLELOS S(dB)	Corrected Reading (dB(uVolts))	CISPR 22 Class B ITE QP	Margin (dB)	CISPR 22 Class B ITE AV	Margin (dB)
1	.159	39.33	Pk	9.9	.1	49.33	65.52	-16.19	-	-
2	.159	16.68	Av	9.9	.1	26.68	-	-	55.52	-28.84
3	.4155	27.59	Pk	9.9	.2	37.69	57.54	-19.85	-	-
4	.429	10.72	Av	9.9	.2	20.82	-	-	47.27	-26.45
5	1.941	27.79	Pk	9.7	.3	37.79	56	-18.21	-	-
6	1.941	11.72	Av	9.7	.3	21.72	-	-	46	-24.28
7	2.85	33.64	Pk	9.7	.3	43.64	56	-12.36	-	-
8	2.796	18.01	Av	9.7	.3	28.01	-	-	46	-17.99
9	5.118	31.99	Pk	9.8	.3	42.09	60	-17.91	-	-
10	5.154	14.21	Av	9.8	.3	24.31	-	-	50	-25.69
11	21.021	31.68	Pk	10.4	.4	42.48	60	-17.52	-	-
12	21.021	10.63	Av	10.4	.4	21.43	-	-	50	-28.57

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	CABLELOS S(dB)	Corrected Reading (dB(uVolts))	CISPR 22 Class B ITE QP	Margin (dB)	CISPR 22 Class B ITE AV	Margin (dB)
13	.159	38.32	Pk	9.9	.1	48.32	65.52	-17.2	-	-
14	.159	18.17	Av	9.9	.1	28.17	-	-	55.52	-27.35
15	.42	26.66	Pk	9.9	.2	36.76	57.45	-20.69	-	-
16	.438	12.91	Av	9.9	.2	23.01	-	-	47.1	-24.09
17	1.608	23.65	Pk	9.7	.3	33.65	56	-22.35	-	-
18	1.59	10.94	Av	9.7	.3	20.94	-	-	46	-25.06
19	2.76	29.38	Pk	9.7	.3	39.38	56	-16.62	-	-
20	2.76	16.17	Av	9.7	.3	26.17	-	-	46	-19.83
21	6.756	28.24	Pk	9.9	.3	38.44	60	-21.56	-	-
22	6.756	13.11	Av	9.9	.3	23.31	-	-	50	-26.69
23	11.148	28.1	Pk	10.2	.3	38.6	60	-21.4	-	-
24	11.13	11.36	Av	10.2	.3	21.86	-	-	50	-28.14

Pk - Peak detector

Av - Average detection