



FCC CFR47 PART 15 SUBPART C

Bluetooth

CERTIFICATION TEST REPORT

FOR

GSM/WCDMA/LTE Phone + BT/BLE and DTS/UNII a/b/g/n

MODEL NUMBER : SM-G615F/DS, SM-G615FU/DS

FCC ID: A3LSMG615F

REPORT NUMBER: 4787892916-E3V2

ISSUE DATE: APR 10, 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	04/07/17	Initial issue	Junwhan Lee
V2	04/10/17	Revised section 9.3	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. MEASURING INSTRUMENT CALIBRATION	6
4.2. SAMPLE CALCULATION	6
4.3. MEASUREMENT UNCERTAINTY.....	6
5. EQUIPMENT UNDER TEST	7
5.1. DESCRIPTION OF EUT	7
5.2. MAXIMUM OUTPUT POWER.....	7
5.3. DESCRIPTION OF AVAILABLE ANTENNAS	7
5.4. WORST-CASE CONFIGURATION AND MODE.....	7
5.5. DESCRIPTION OF TEST SETUP.....	8
6. TEST AND MEASUREMENT EQUIPMENT	10
7. REFERENCE MEASUREMENT RESULTS.....	11
7.1. 20 dB AND 99% BANDWIDTH	11
7.1.1. BASIC DATA RATE GFSK MODULATION	11
7.1.2. ENHANCED DATA RATE PI/4-DQPSK MODULATION.....	11
7.1.3. ENHANCED DATA RATE 8PSK MODULATION	11
7.1.4. 20 dB AND 99% BANDWIDTH PLOTS.....	12
8. SUMMARY TABLE	15
9. ANTENNA PORT TEST RESULTS.....	16
9.1. HOPPING FREQUENCY SEPARATION	16
9.2. NUMBER OF HOPPING CHANNELS.....	17
9.3. AVERAGE TIME OF OCCUPANCY.....	19
9.4. OUTPUT POWER.....	23
9.4.1. BASIC DATA RATE GFSK MODULATION	23
9.4.2. ENHANCED DATA RATE PI/4-DPSK MODULATION	23
9.4.3. ENHANCED DATA RATE 8PSK MODULATION	23
9.4.4. OUTPUT POWER PLOTS.....	24
9.5. AVERAGE POWER.....	27
9.5.1. BASIC DATA RATE GFSK MODULATION	27
9.5.2. DATA RATE PI/4-DQPSK MODULATION	27
9.5.3. ENHANCED DATA RATE 8PSK MODULATION	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: GSM/WCDMA/LTE Phone + BT/BLE and DTS/UNII a/b/g/n
MODEL NUMBER: SM-G615F/DS, SM-G615FU/DS
SERIAL NUMBER: R38J10CMN2H (RADIATED);
4210c557ce68b36b (CONDUCTED)
DATE TESTED: MAR 14, 2017 – APR 05, 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 checked="" 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 GSM/WCDMA/LTE Phone + BT/BLE and DTS/UNII a/b/g/n.
 This test report addresses the DSS (BT) operational mode.

SM-G615F/DS and SM-G615FU/DS are same H/W and only difference is Main camera led and Deco of rear side. PED document described the differences in detail.
 SM-G615F/DS was used for the test.

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	9.180	8.280
		Peak	9.371	8.652
	Enhanced Pi/4-DPSK	Average	6.936	4.939
		Peak	9.021	7.982
	Enhanced 8PSK	Average	7.047	5.066
		Peak	9.449	8.808

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an internal antenna, with a maximum gain of -1.87 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
Charger	SAMSUNG	EP-TA50IWE	RC3J202AS/A -E	N/A
Data Cable	SAMSUNG	ECB-DU68WE	N/A	N/A
Earphone	SAMSUNG	EHS61ASFWE	N/A	N/A

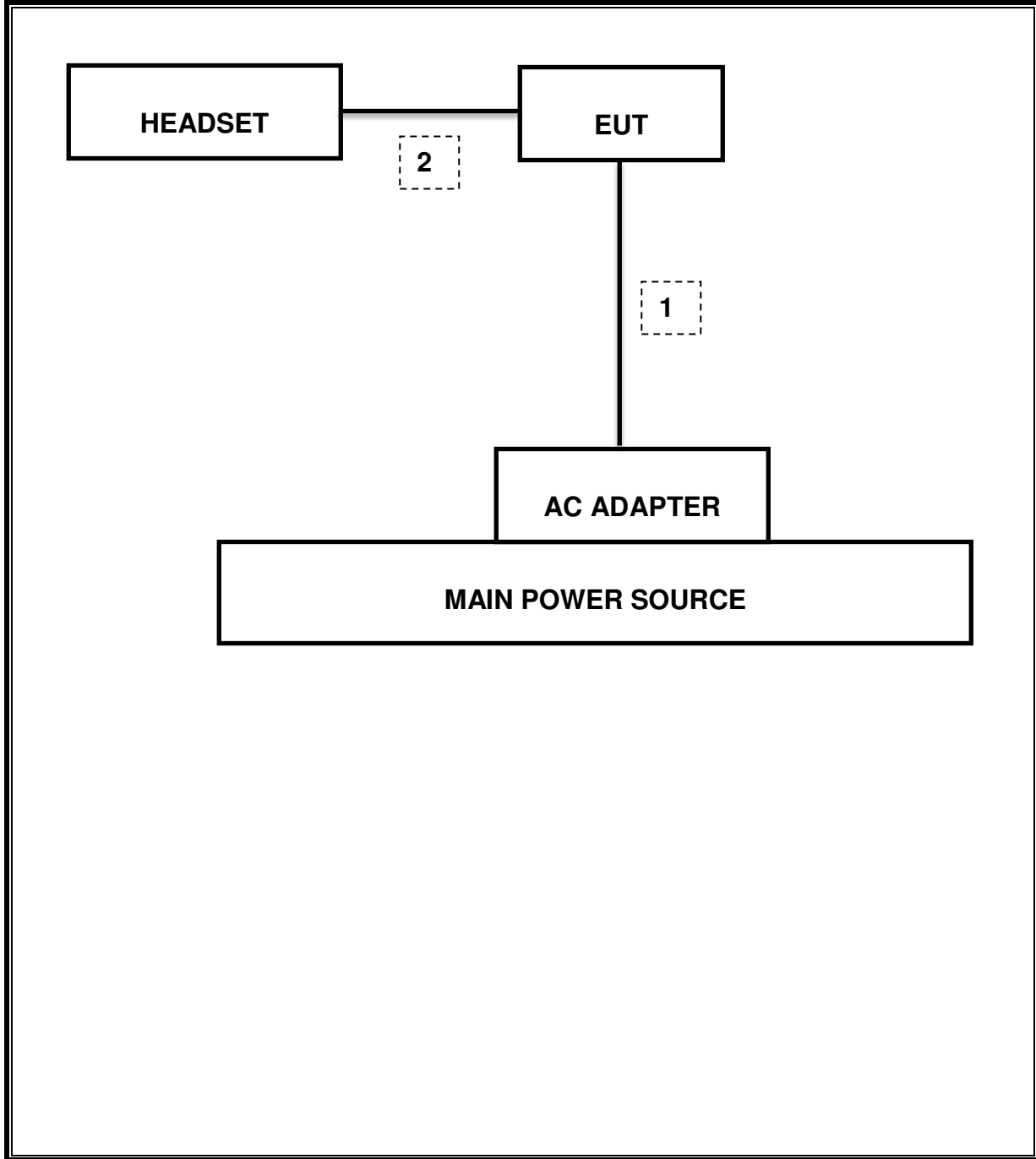
I/O CABLES

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
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
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, 44 GHz	Agilent / HP	N9030A	MY54490312	03-09-18
Antenna, Loop, 9kHz-30MHz	R&S	HFH2-Z2	100418	11-25-17
Average Power Sensor	R&S	NRP-Z91	102681	08-16-17
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	101837	08-16-17
Bluetooth Tester	TESCOM	TC-3000C	3000C000546	08-18-17
Combiner	WEINSCHTEL	1575	2154	08-17-17
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	948.900	862.650
Mid	2441	945.400	865.740
High	2480	950.400	863.460
Worst		950.400	865.740

7.1.2. ENHANCED DATA RATE Pi/4-DQPSK MODULATION

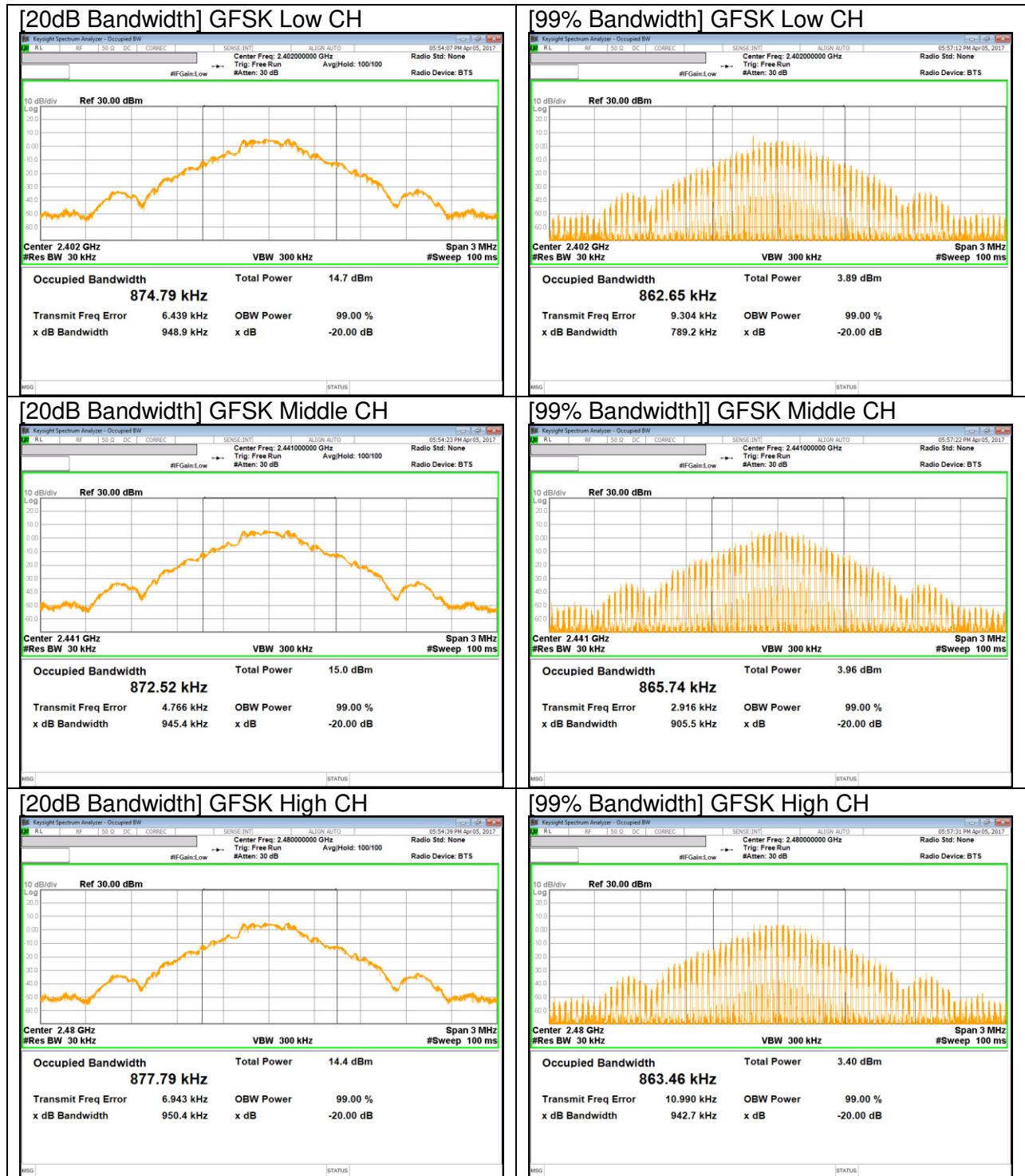
Channel	Frequency [MHz]	20 dB Bandwidth [MHz]	99% Bandwidth [MHz]
Low	2402	1.232	1.164
Mid	2441	1.279	1.162
High	2480	1.283	1.131
Worst		1.283	1.164

7.1.3. ENHANCED DATA RATE 8PSK MODULATION

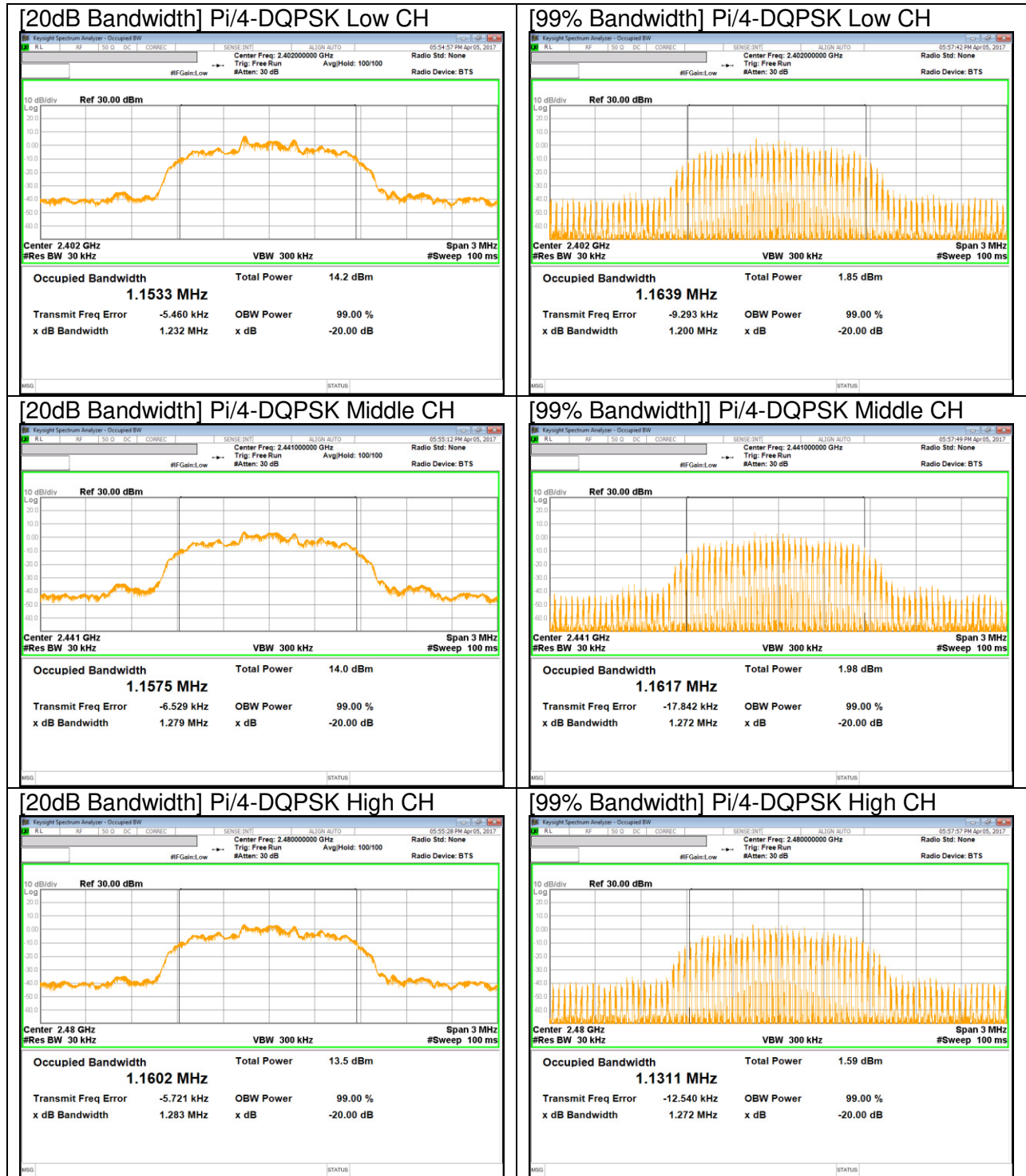
Channel	Frequency [MHz]	20 dB Bandwidth [MHz]	99% Bandwidth [MHz]
Low	2402	1.258	1.162
Mid	2441	1.261	1.162
High	2480	1.263	1.162
Worst		1.263	1.162

7.1.4. 20 dB AND 99% BANDWIDTH PLOTS

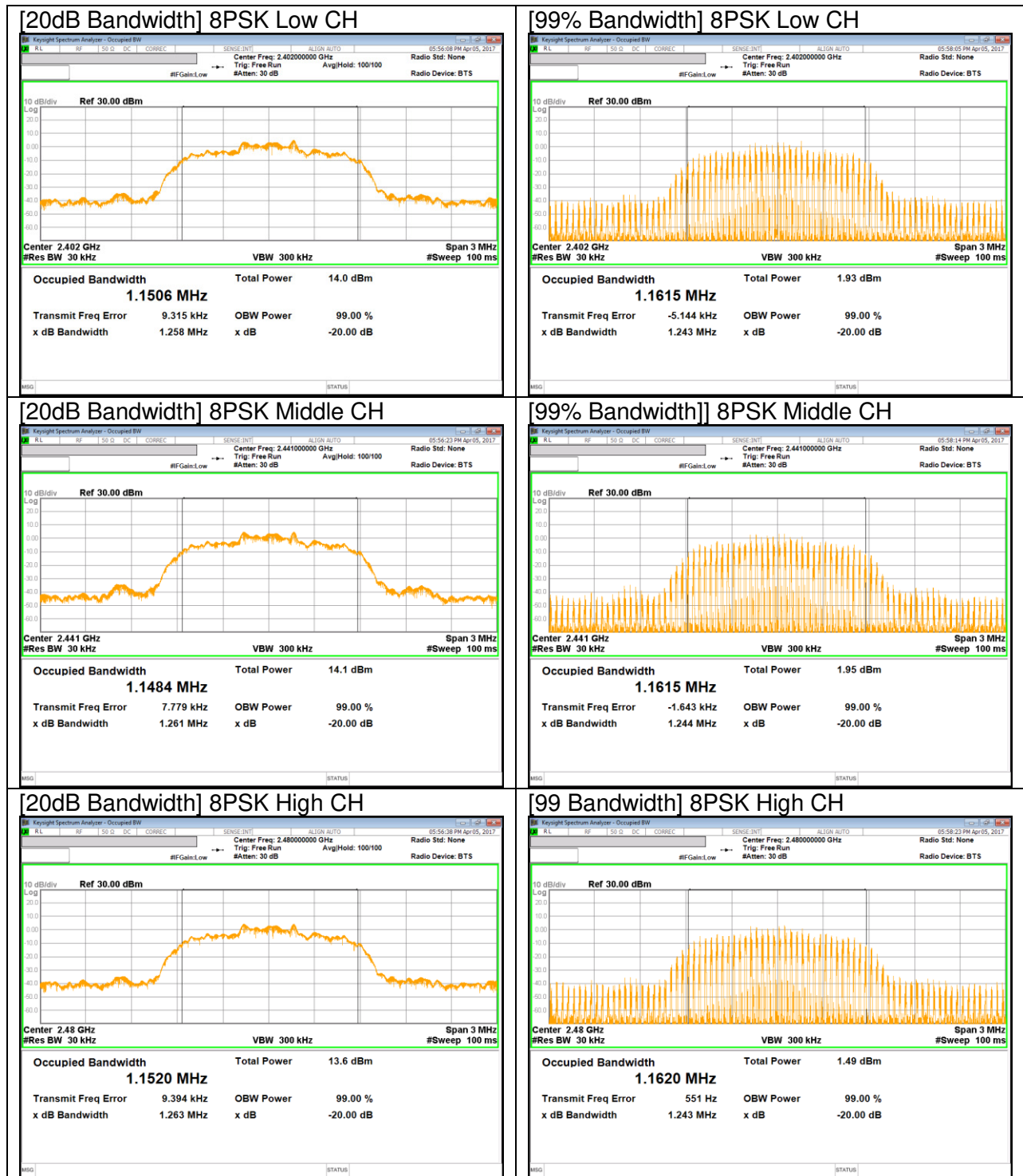
GFSK BANDWIDTH



Pi/4-DQPSK BANDWIDTH

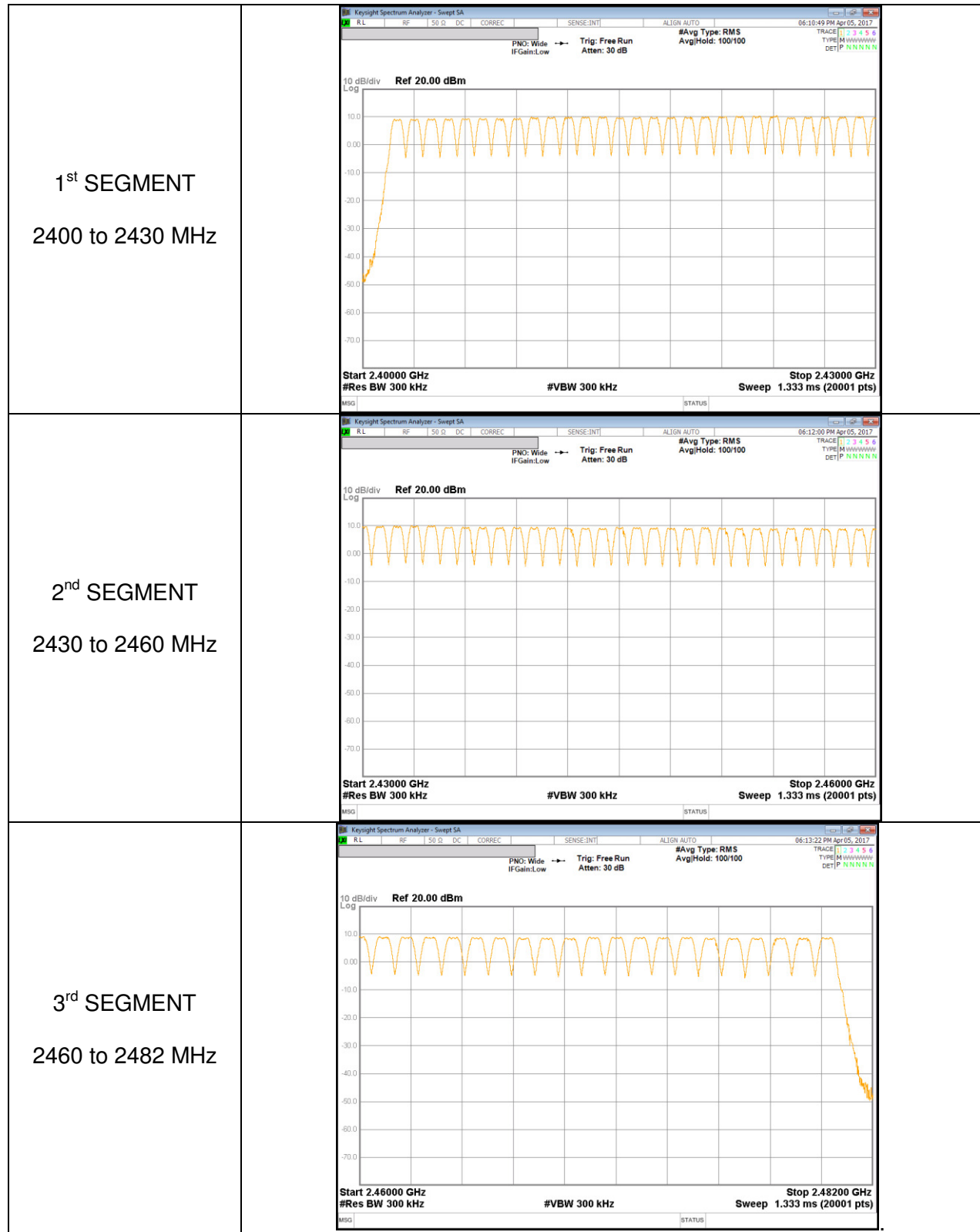


8PSK BANDWIDTH



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	-39.167 dBm
15.247 (b)(1)	TX conducted output power	<21dBm		Pass	9.449 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	0.34464 sec
15.207 (a)	AC Power Line conducted emissions	Section 10	Power Line conducted	Pass	39.49 dBuV (Pk)
15.205, 15.209	Radiated Spurious Emission	< 54dBuV/m	Radiated	Pass	45.05 dBuV/m (Av)



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.

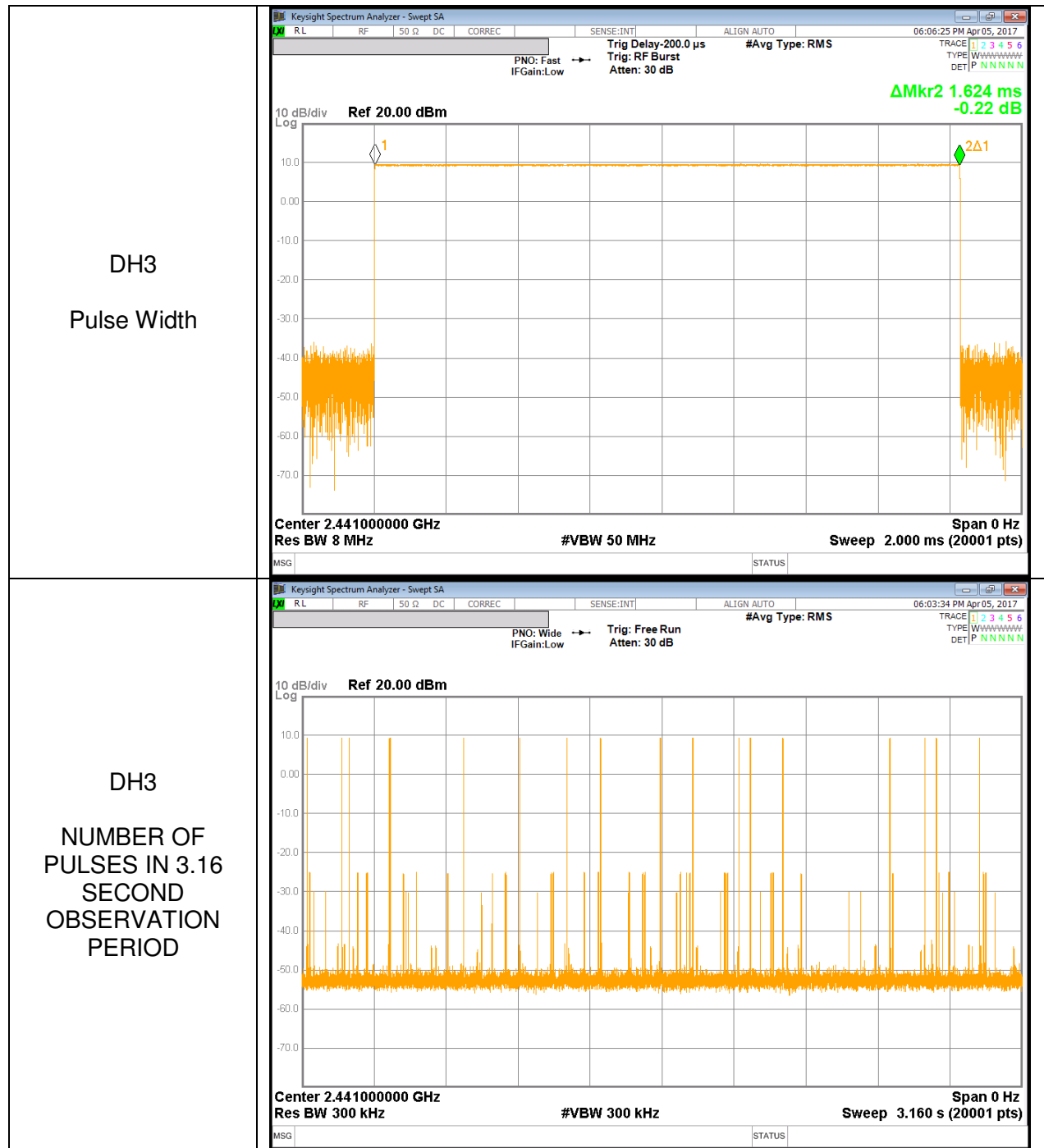
The average time of occupancy in the specified 31.6 second period (79 channels * 0.4 s) is equal to $10 * (\# \text{ of pulses in } 3.16 \text{ s}) * \text{ pulse width}$.

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

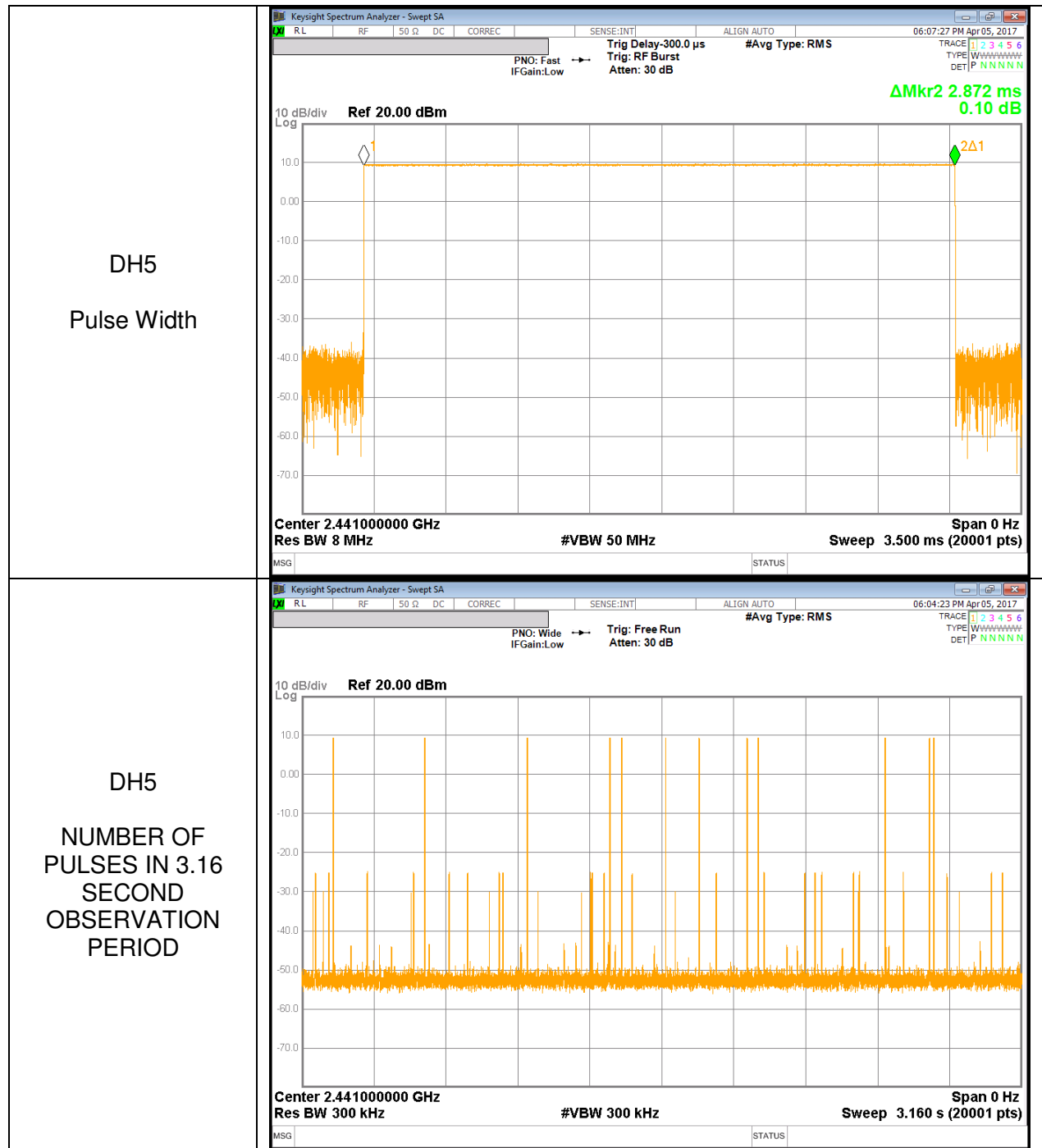
RESULTS

DH Packet	Pulse Width [msec]	Number of Pulses in 3.16 seconds	Average Time of Occupancy [sec]	Limit [sec]	Margin [sec]
GFSK Normal					
DH1	0.3682	32	0.117824	0.4	-0.2822
DH3	1.624	17	0.276080	0.4	-0.1239
DH5	2.872	12	0.344640	0.4	-0.0554
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	0.3682	8	0.029456	0.4	-0.37054
DH3	1.624	4.25	0.069020	0.4	-0.33098
DH5	2.872	3	0.086160	0.4	-0.31384

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	9.164	21	-11.836
Middle	2441	9.371	21	-11.629
High	2480	8.884	21	-12.116
Worst		9.371	21	-11.629

9.4.2. ENHANCED DATA RATE Pi/4-DPSK MODULATION

Channel	Frequency [MHz]	Output Power [dBm]	Limit [dBm]	Margin [dB]
Low	2402	8.700	21	-12.300
Middle	2441	9.021	21	-11.979
High	2480	8.401	21	-12.599
Worst		9.021	21	-11.979

9.4.3. ENHANCED DATA RATE 8PSK MODULATION

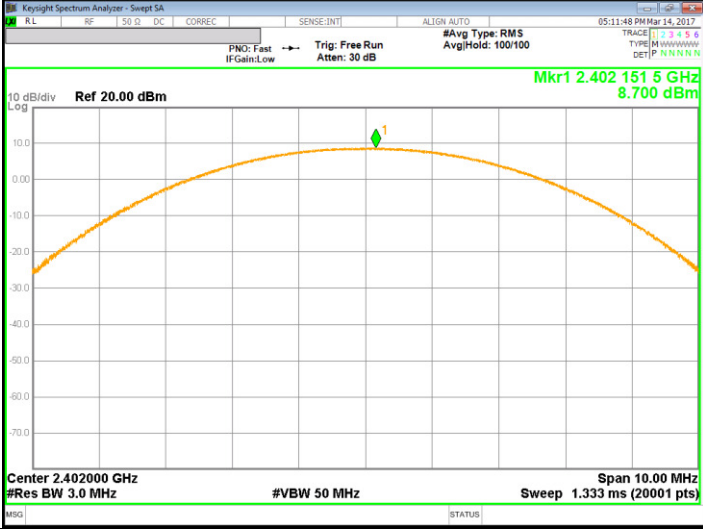
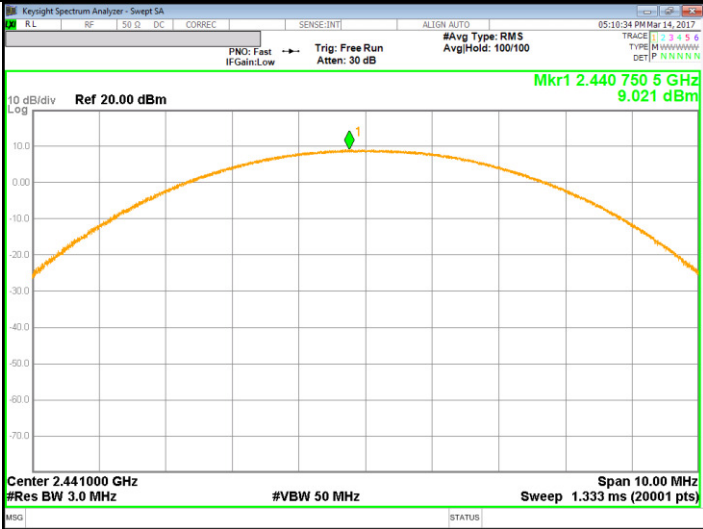
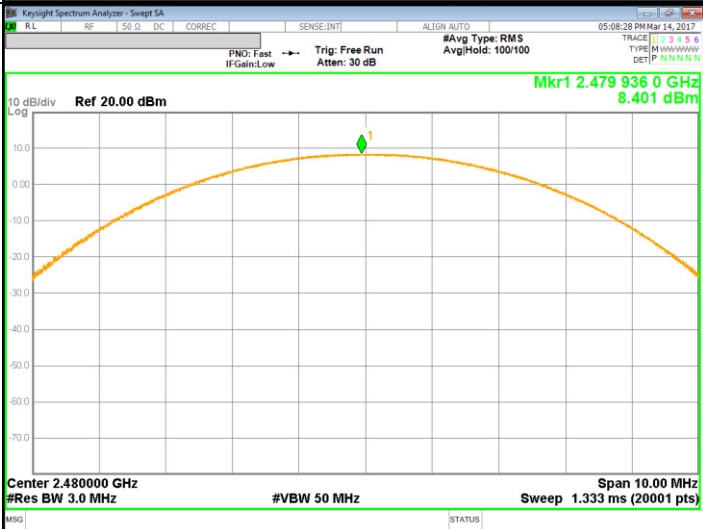
Channel	Frequency [MHz]	Output Power [dBm]	Limit [dBm]	Margin [dB]
Low	2402	9.164	21	-11.836
Middle	2441	9.449	21	-11.551
High	2480	8.887	21	-12.113
Worst		9.449	21	-11.551

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>Pi/4-DPSK Middle CH</p>	
<p>Pi/4-DPSK High CH</p>	

8PSK OUTPUT POWER

<p>8PSK Low CH</p>	<p>KeySight Spectrum Analyzer - Swept SA 05:11:27 PM Mar 14, 2017 #Avg Type: RMS Avg/Hold: 100/100 Mkr1 2.401 973 5 GHz 9.164 dBm Ref 20.00 dBm 10 dB/div Log Center 2.402000 GHz #Res BW 3.0 MHz #VBW 50 MHz Sweep 1.333 ms (20001 pts)</p>
<p>8PSK Middle CH</p>	<p>KeySight Spectrum Analyzer - Swept SA 05:18:52 PM Mar 14, 2017 #Avg Type: RMS Avg/Hold: 100/100 Mkr1 2.440 985 5 GHz 9.449 dBm Ref 20.00 dBm 10 dB/div Log Center 2.441000 GHz #Res BW 3.0 MHz #VBW 50 MHz Sweep 1.333 ms (20001 pts)</p>
<p>8PSK High CH</p>	<p>KeySight Spectrum Analyzer - Swept SA 05:08:12 PM Mar 14, 2017 #Avg Type: RMS Avg/Hold: 100/100 Mkr1 2.479 935 0 GHz 8.887 dBm Ref 20.00 dBm 10 dB/div Log Center 2.480000 GHz #Res BW 3.0 MHz #VBW 50 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	8.863	7.70
Middle	2441	9.180	8.28
High	2480	8.612	7.26

9.5.2. DATA RATE PI/4-DQPSK MODULATION

Channel	Frequency [MHz]	AV power [dBm]	AV power [mW]
Low	2402	6.693	4.67
Middle	2441	6.936	4.94
High	2480	6.393	4.36

9.5.3. ENHANCED DATA RATE 8PSK MODULATION

Channel	Frequency [MHz]	AV power [dBm]	AV power [mW]
Low	2402	6.775	4.76
Middle	2441	7.047	5.07
High	2480	6.402	4.37

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.

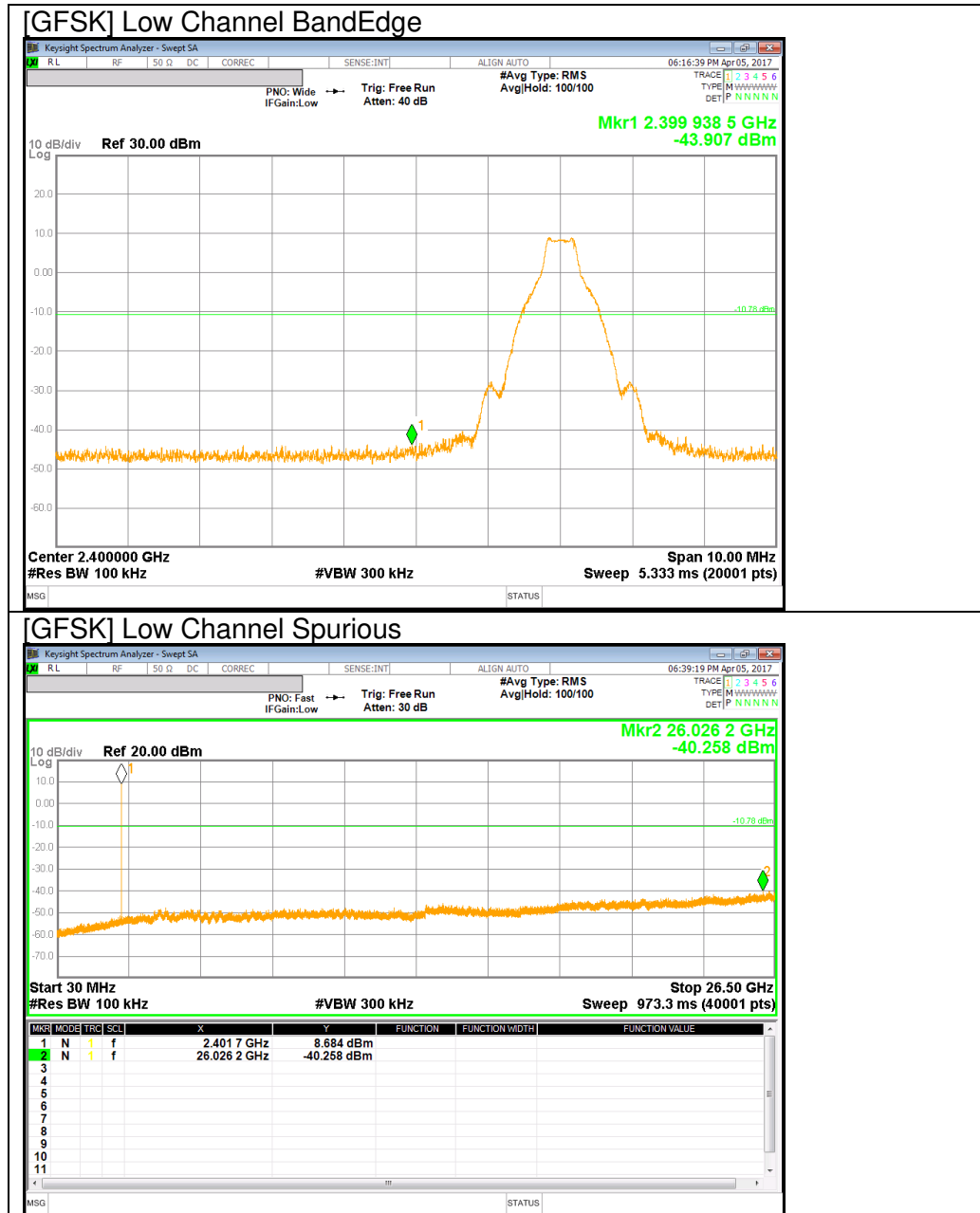
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

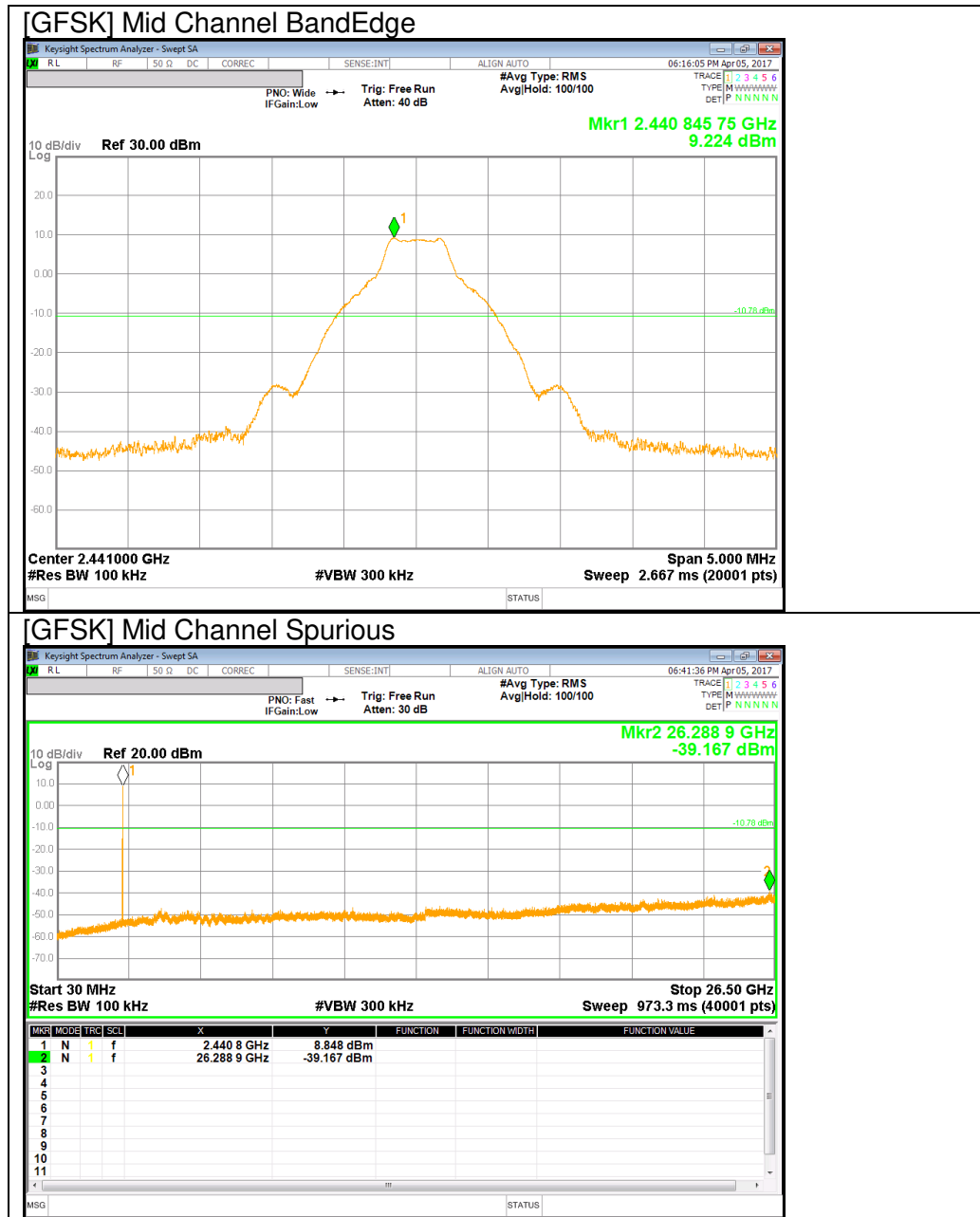
The bandedges at 2.4 and 2.4835 GHz are investigated with the transmitter set to the normal hopping mode.

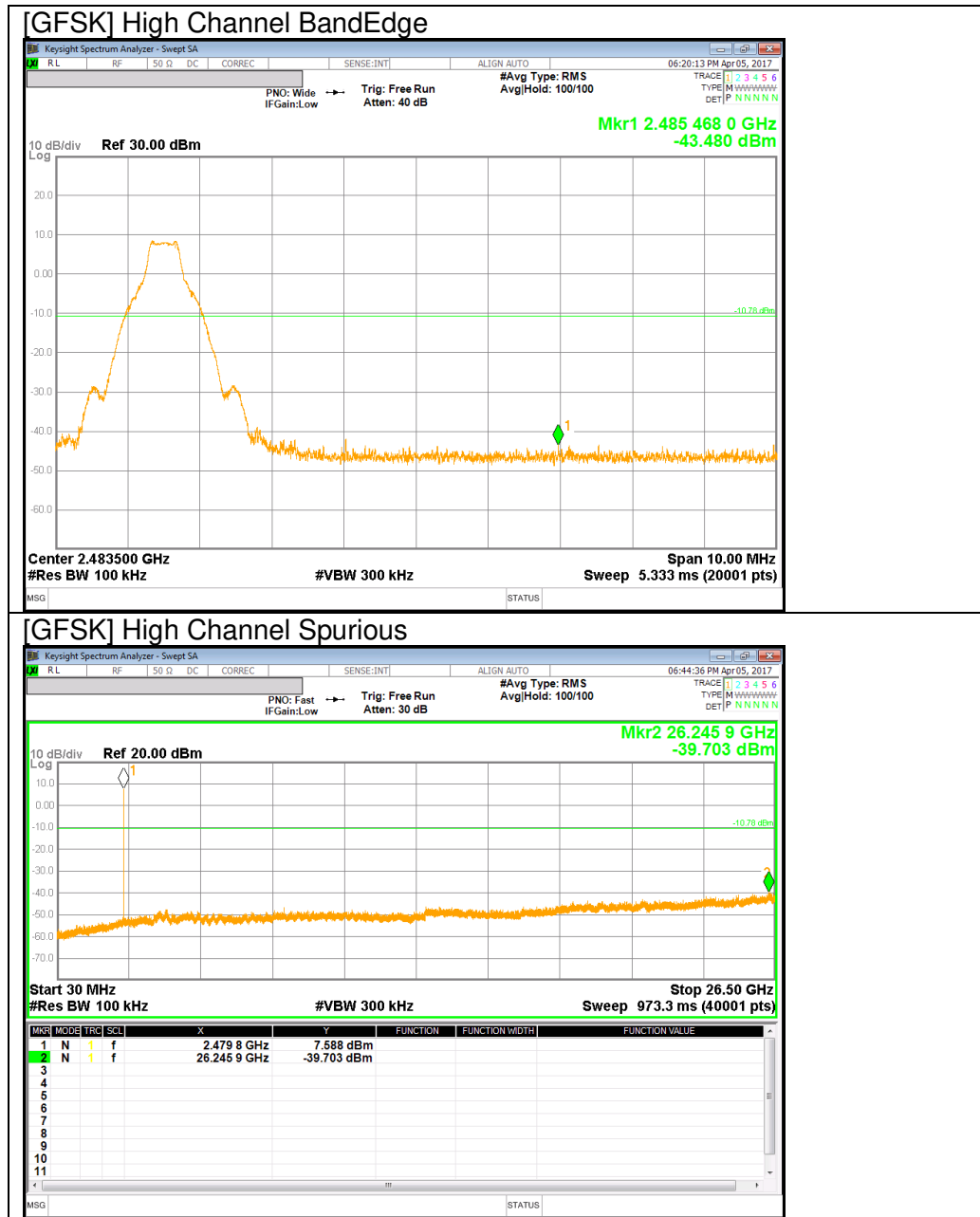
RESULTS

9.6.1. BASIC DATA RATE GFSK MODULATION

GFSK Mode

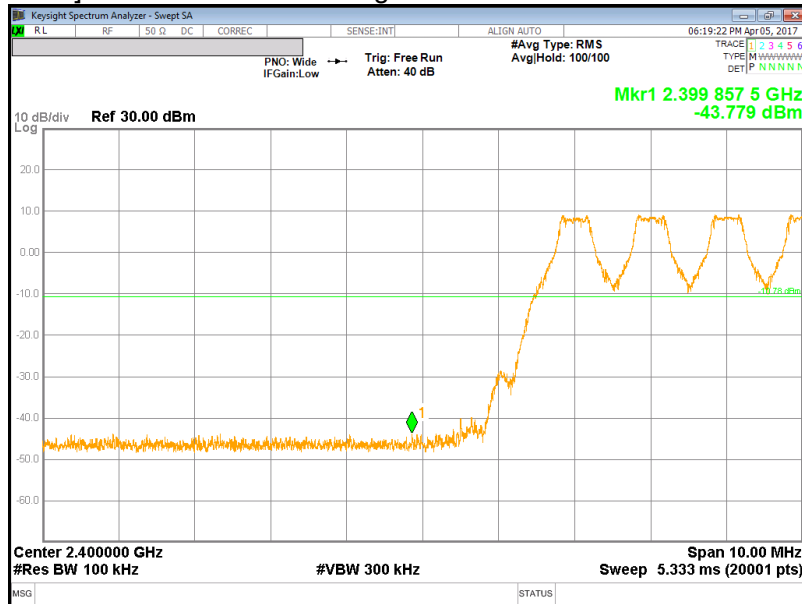




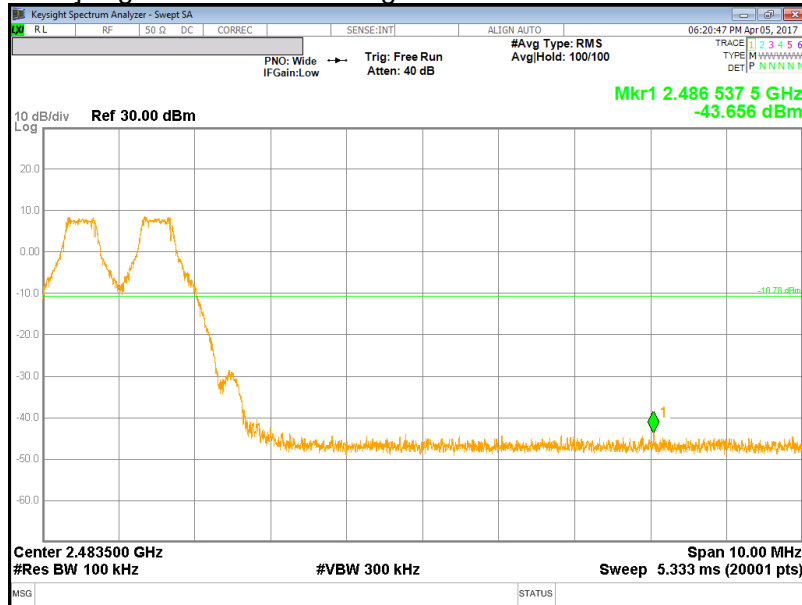


BandEdge Emission at GFSK Hopping Mode

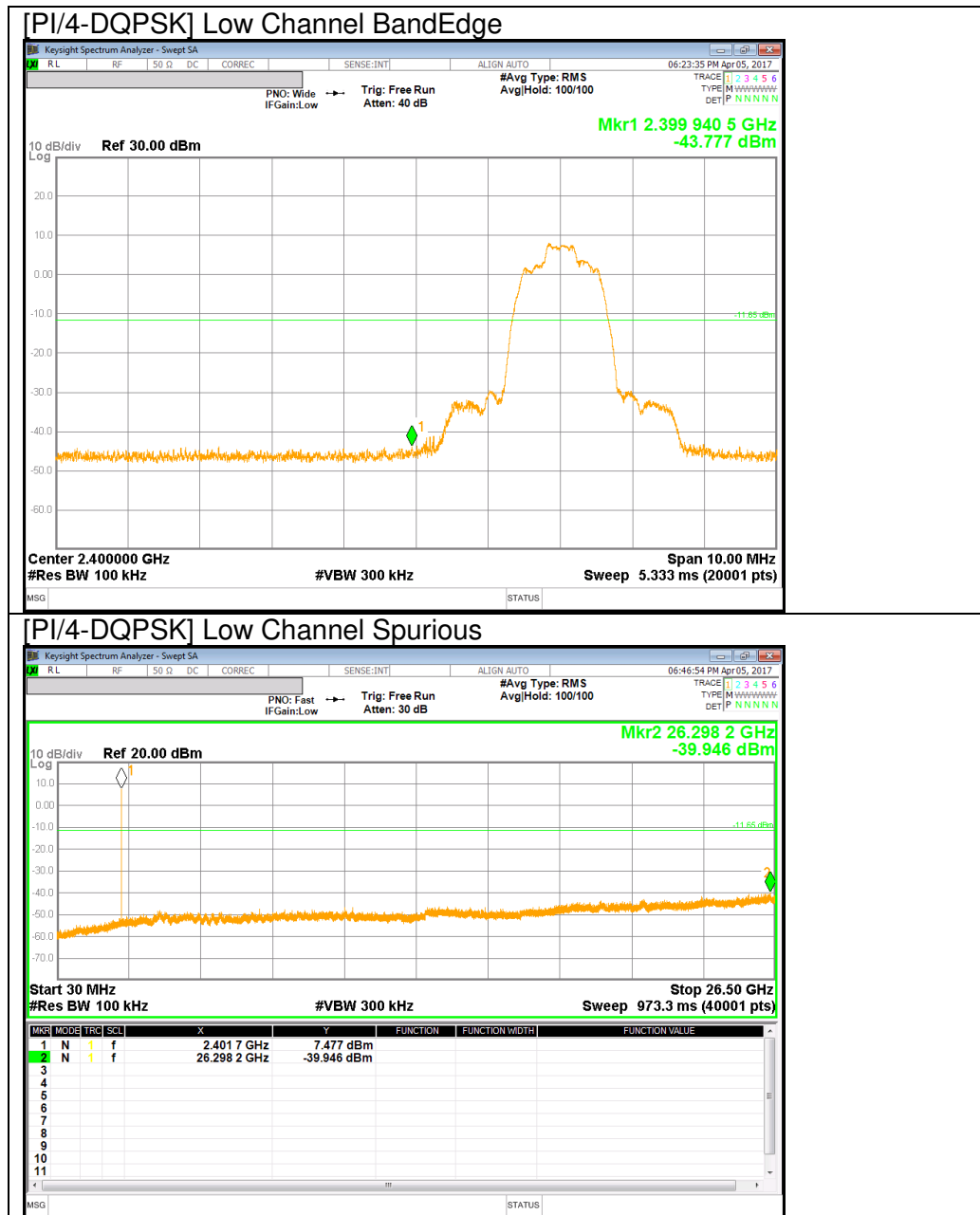
[GFSK Hopping Mode] Low Channel BandEdge

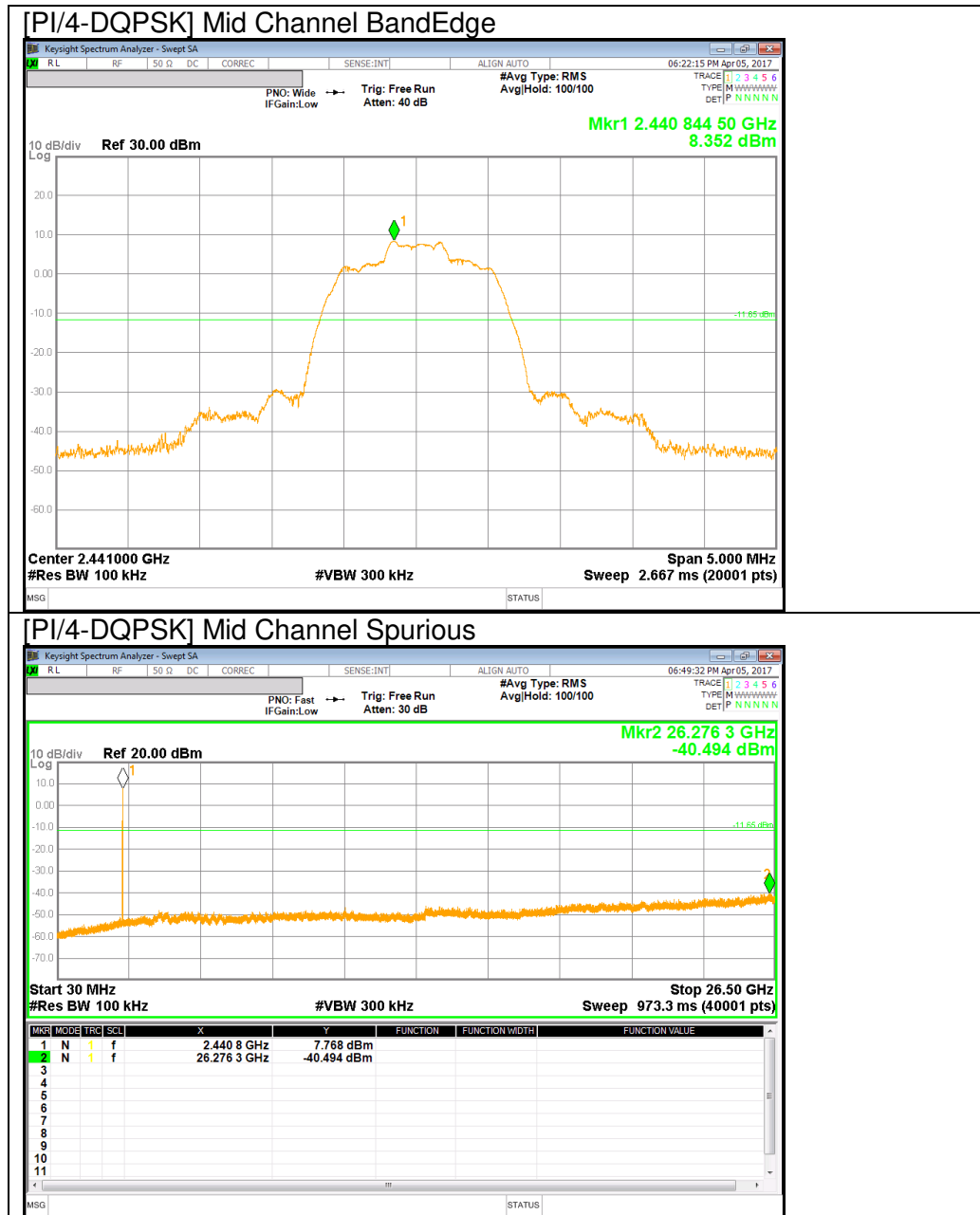


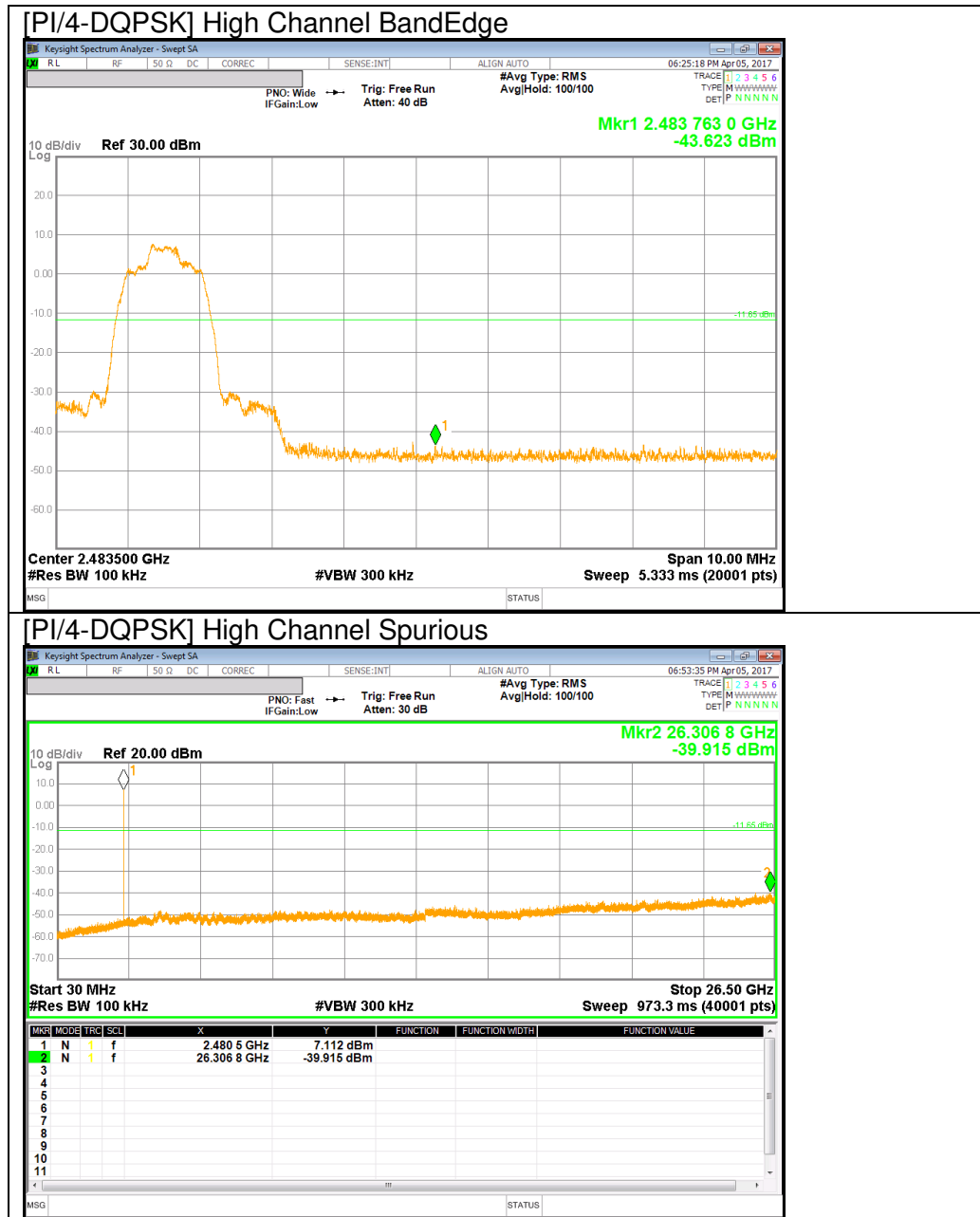
[GFSK Hopping Mode] High Channel BandEdge



PI/4-DQPSK Mode

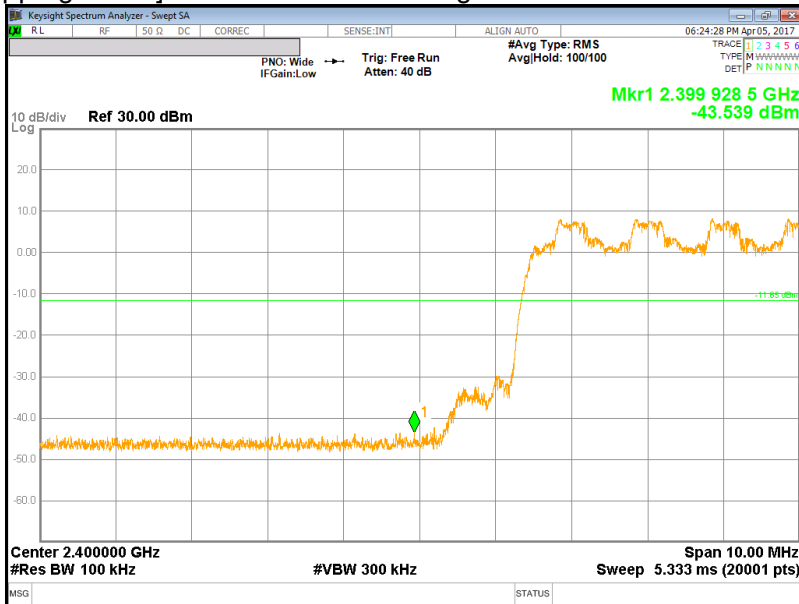




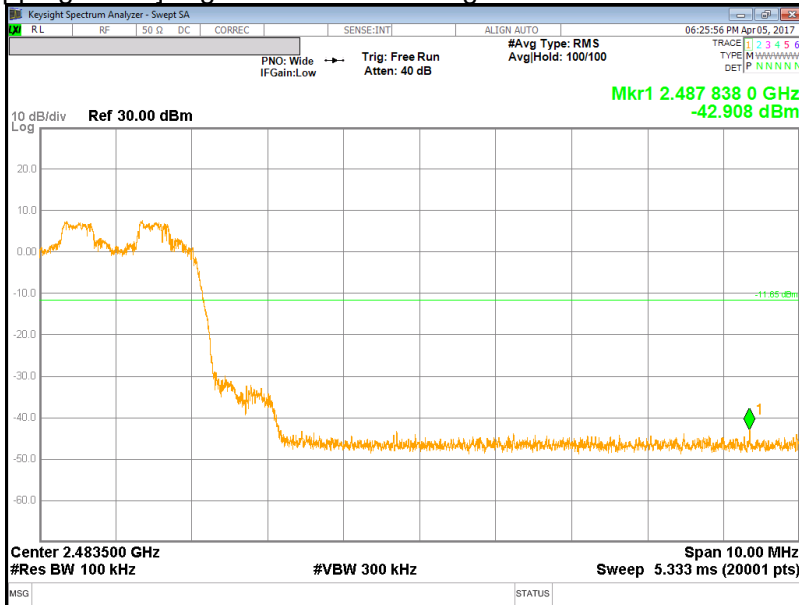


BandEdge Emission at PI/4-DQPSK Hopping Mode

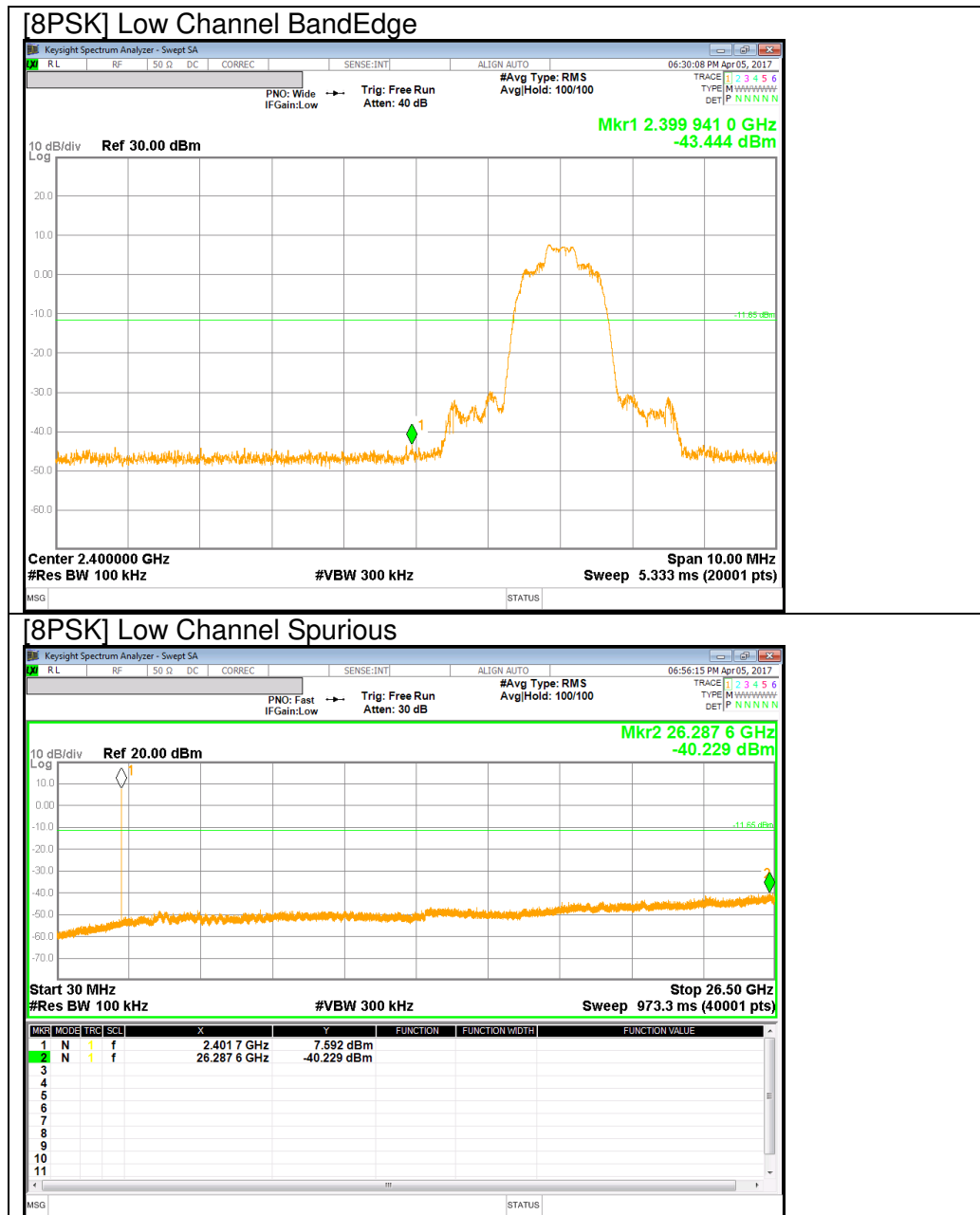
[PI/4-DQPSK Hopping Mode] Low Channel BandEdge

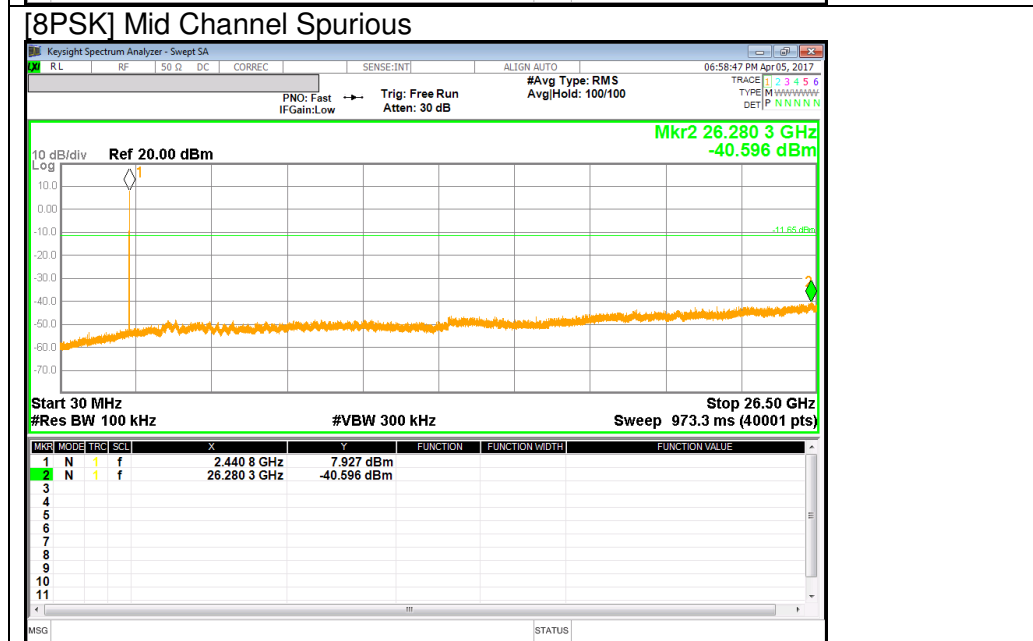
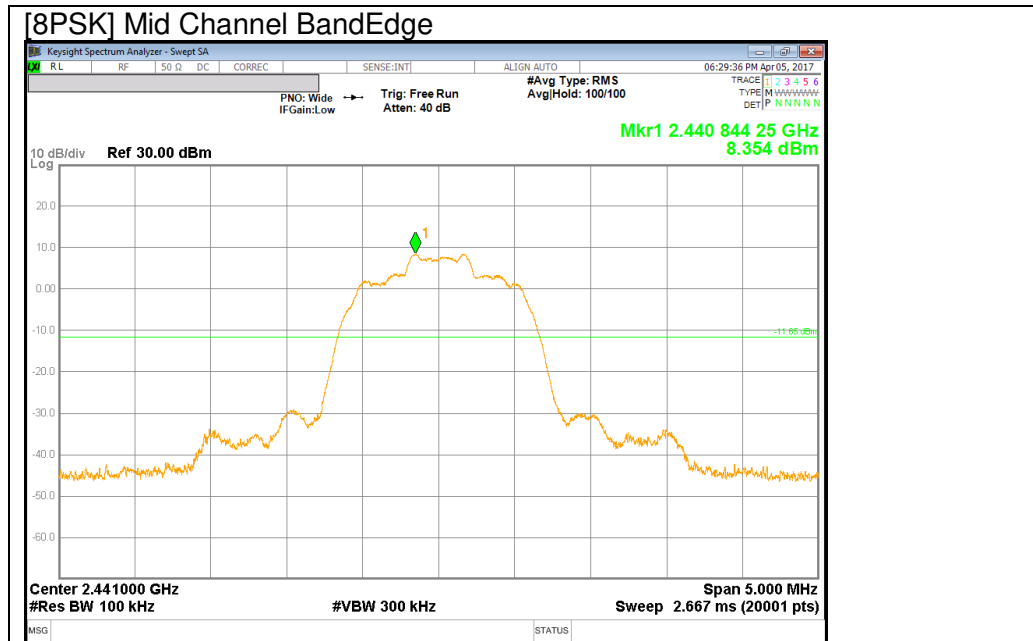


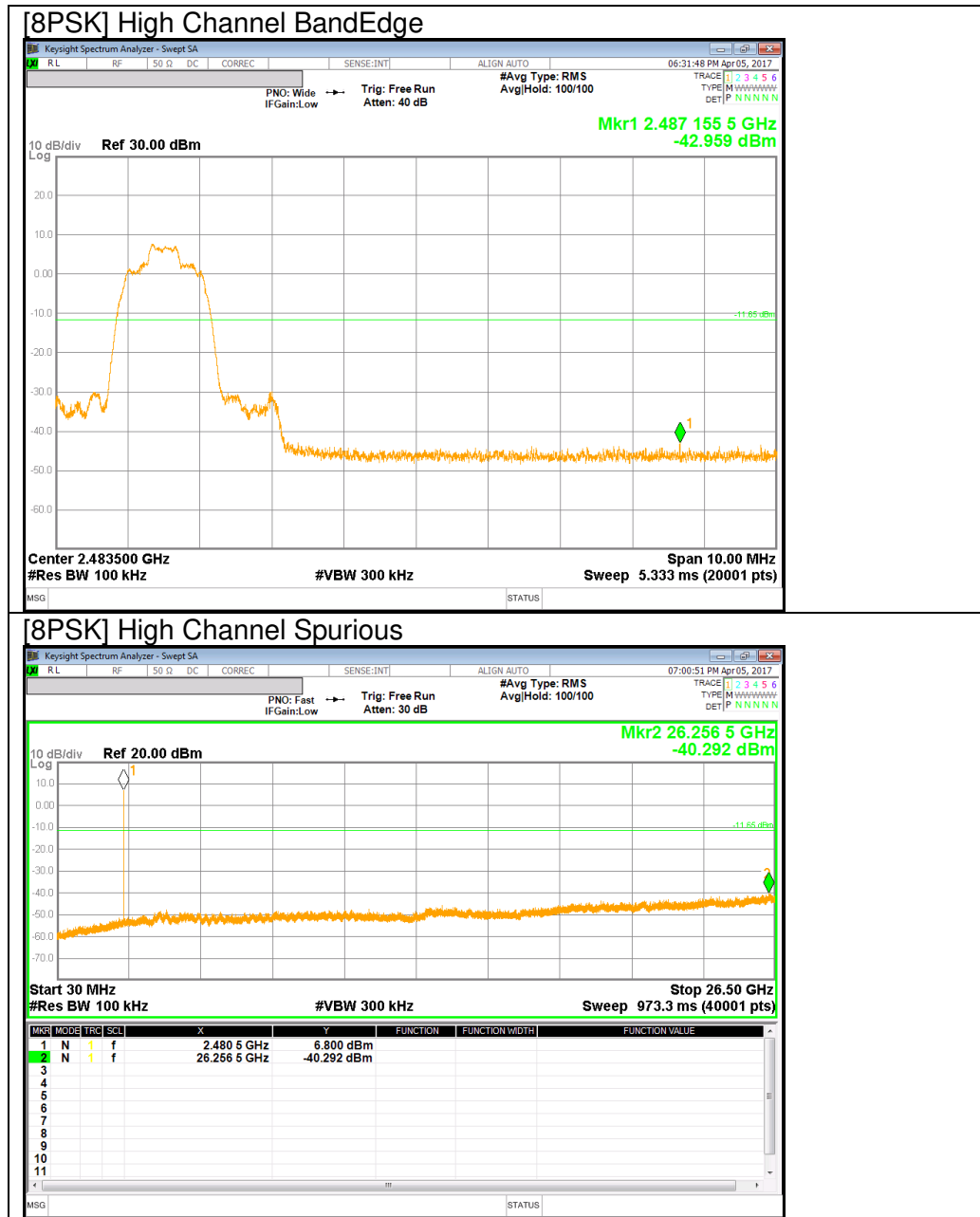
[PI/4-DQPSK Hopping Mode] High Channel BandEdge



8PSK Mode





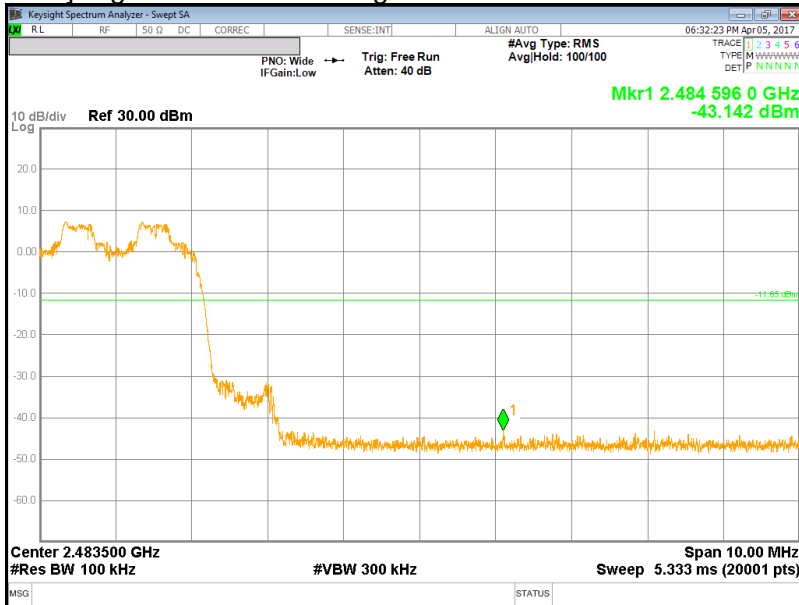


BandEdge Emission at 8PSK Hopping Mode

[8PSK Hopping Mode] Low Channel BandEdge



[8PSK Hopping Mode] High Channel BandEdge



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 ($\mu\text{V/m}$)	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.

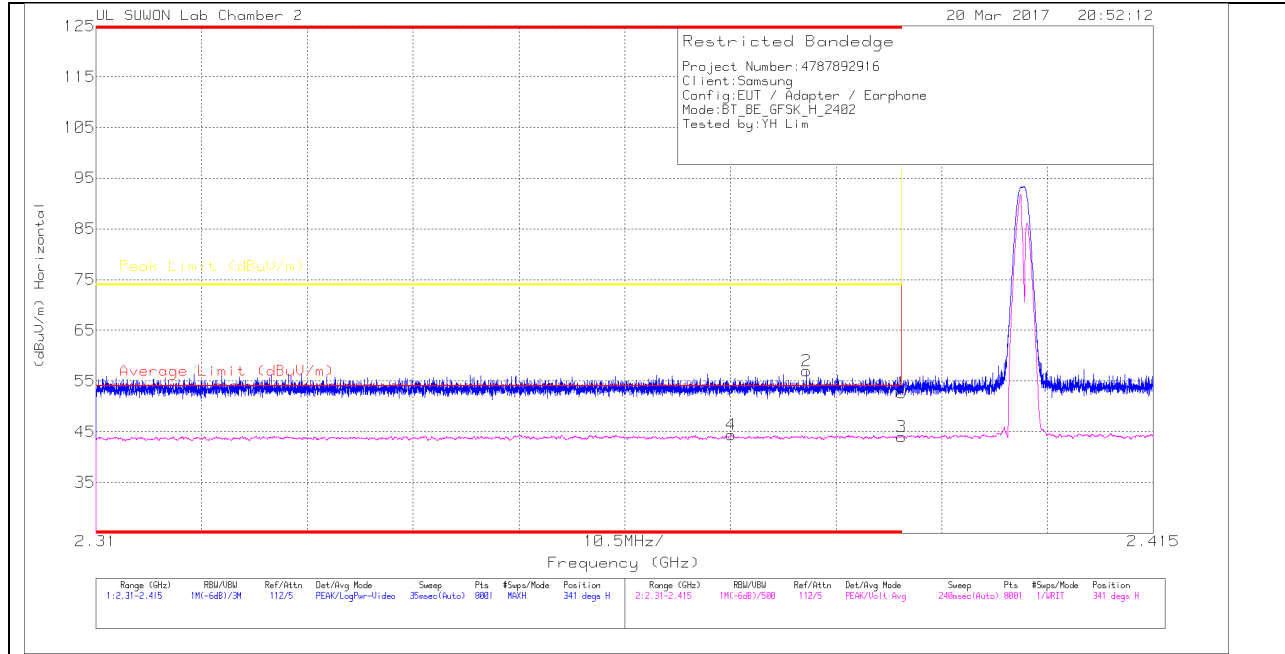
Formula for converting the filed strength from uV/m to dBuV/m is:
Limit (dBuV/m) = 20 log limit (uV/m)

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

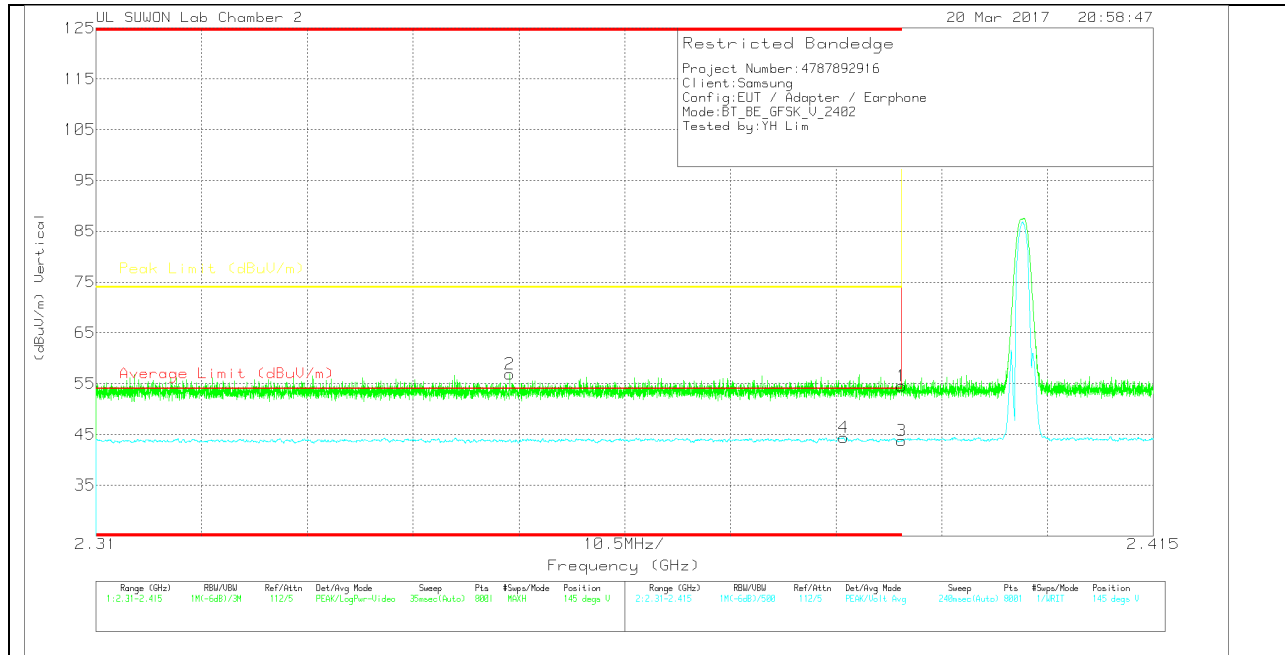
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8724)_150 619	10dB[dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.18	Pk	31.7	-18.2	52.68	-	-	74	-21.32	341	178	H
2	* 2.381	43.58	Pk	31.7	-18.3	56.98	-	-	74	-17.02	341	178	H
3	* 2.39	30.52	VA1T	31.7	-18.2	44.02	54	-9.98	-	-	341	178	H
4	* 2.373	31.02	VA1T	31.7	-18.3	44.42	54	-9.58	-	-	341	178	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 8724)_150 619	10dB[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	41.01	Pk	31.7	-18.2	54.51	-	-	74	-19.49	145	325	V
2	* 2.351	43.54	Pk	31.6	-18.3	56.84	-	-	74	-17.16	145	325	V
3	* 2.39	30.3	VA1T	31.7	-18.2	43.8	54	-10.2	-	-	145	325	V
4	* 2.384	30.85	VA1T	31.7	-18.2	44.35	54	-9.65	-	-	145	325	V

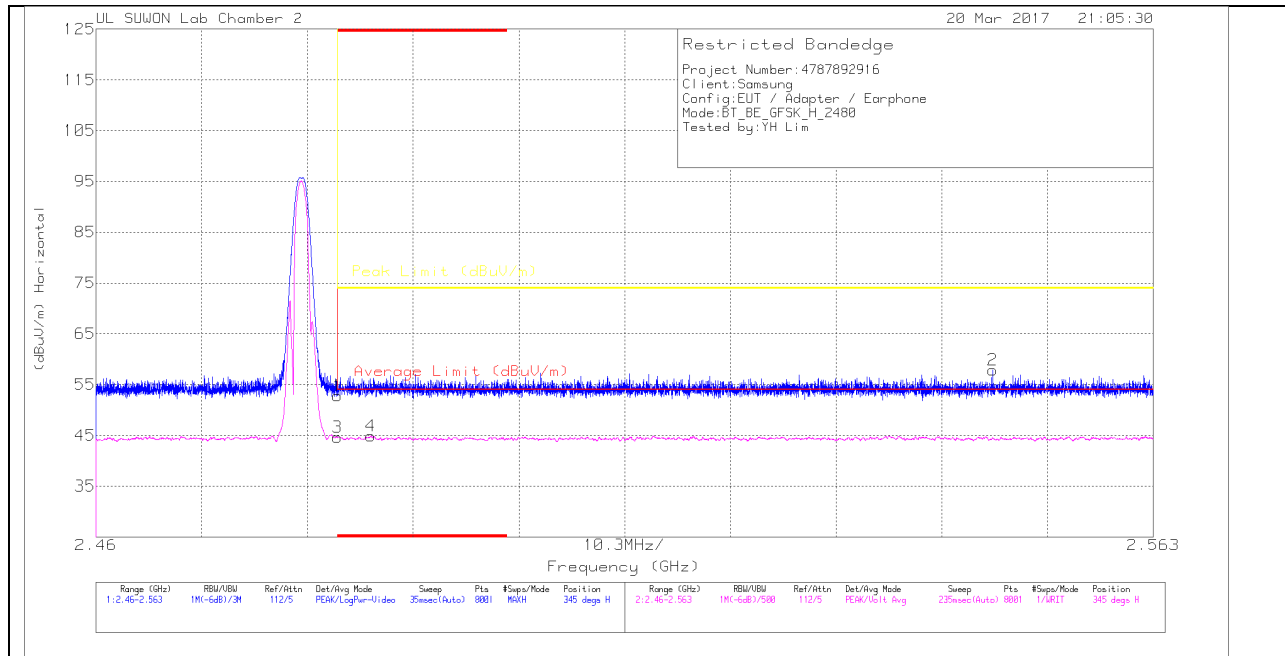
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

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

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

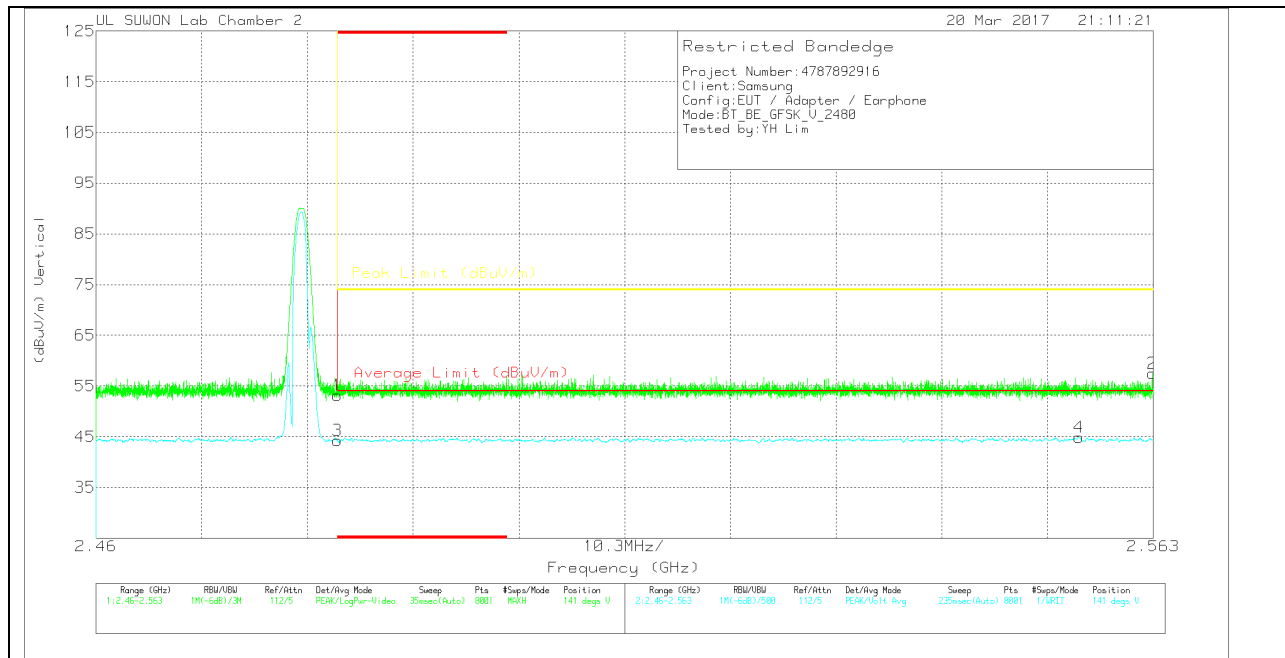
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8724)_150 619	10dB[dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	39.02	Pk		-18	52.82	-	-	74	-21.18	345	121	H
2	2.547	43.96	Pk		-18	57.86	-	-	74	-16.14	345	121	H
3	* 2.484	30.81	VA1T		-18	44.61	54	-9.39	-	-	345	121	H
4	* 2.487	31.07	VA1T		-18	44.87	54	-9.13	-	-	345	121	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 8724)_150 619	10dB[dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	39.33	Pk		-18	53.13	-	-	74	-20.87	141	352	V
2	2.563	43.55	Pk		-18	57.45	-	-	74	-16.55	141	352	V
3	* 2.484	30.48	VA1T		-18	44.28	54	-9.72	-	-	141	352	V
4	2.556	31.04	VA1T		-18	44.94	54	-9.06	-	-	141	352	V

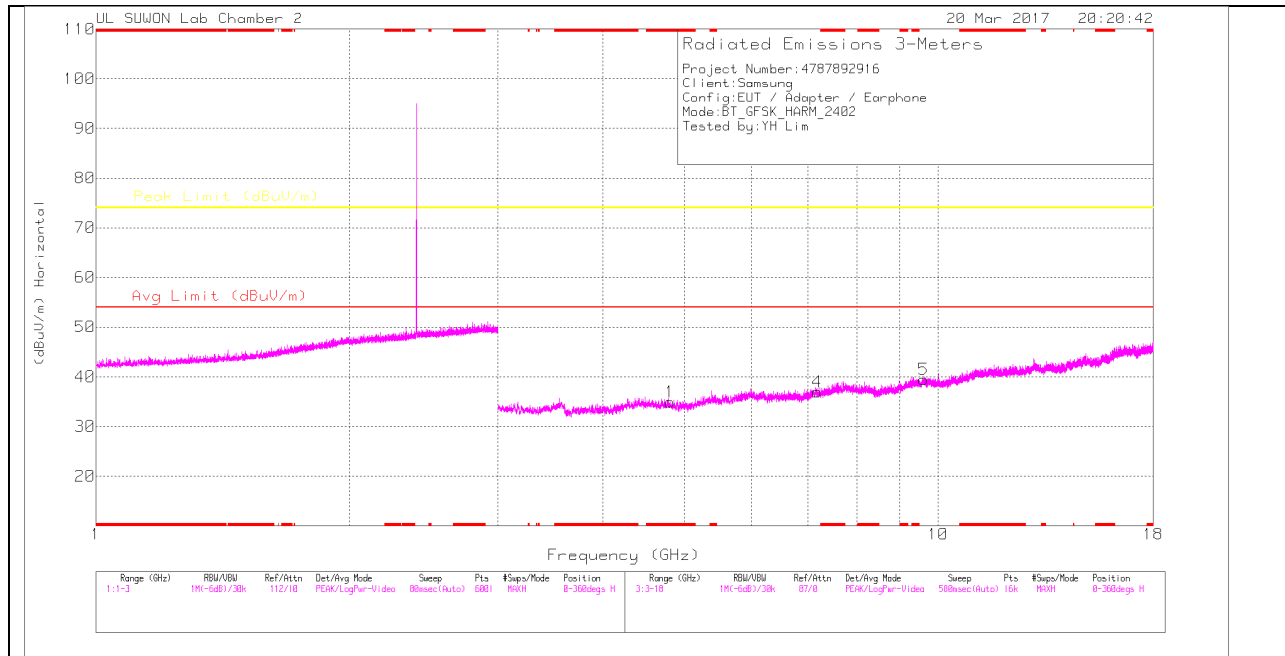
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

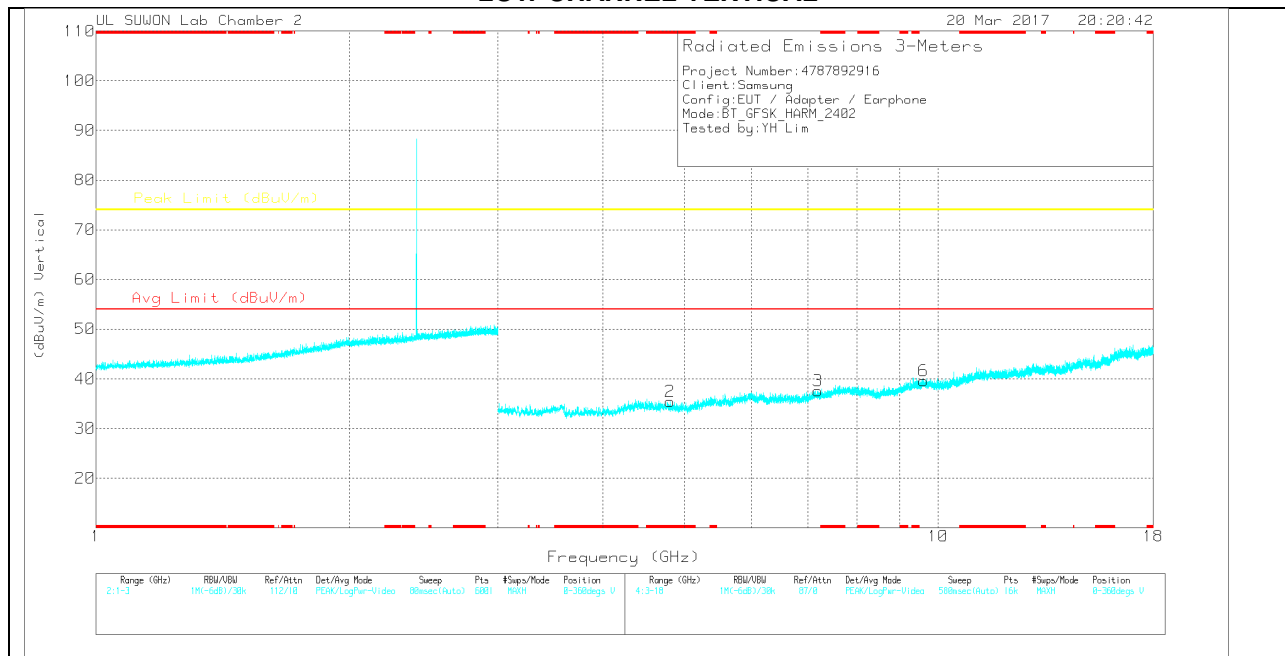
VA1T - FHSS: Linear Voltage Average $V_B=1/T_{on}$ where: T_{on} is transmit duration

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

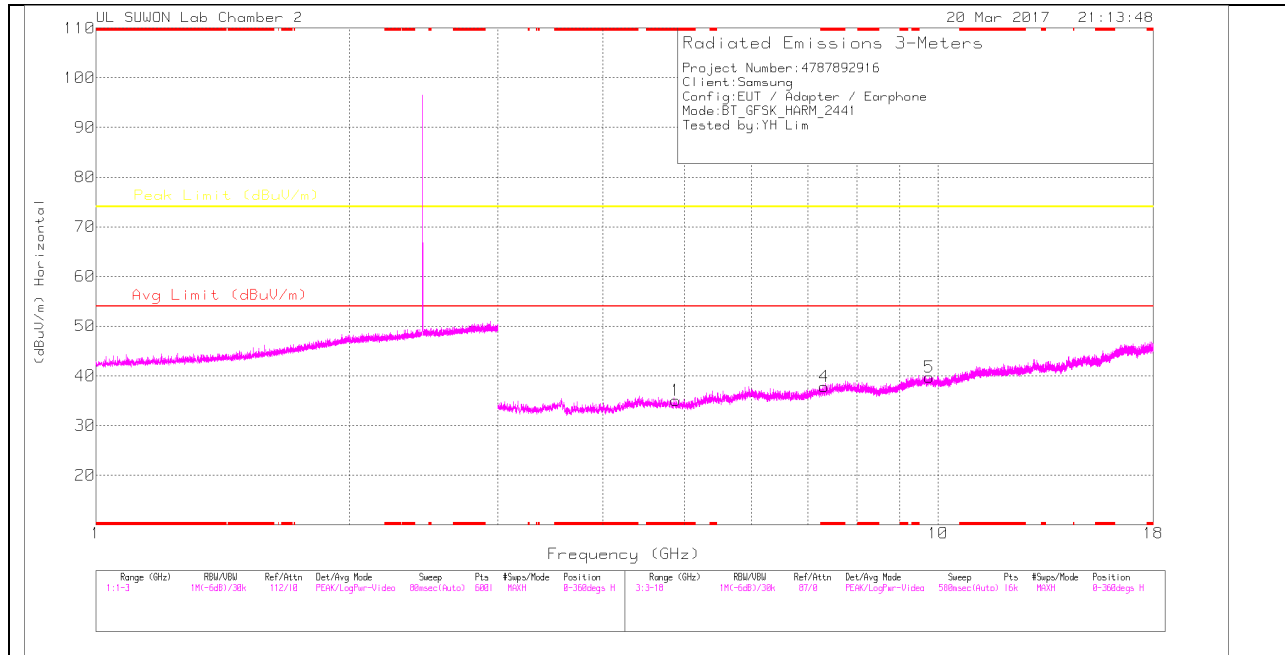
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8724)_150 619	3GHz_HP[d B]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.801	25.28	PK	33.9	-24.3	34.88	-	-	74	-39.12	0-360	150	H
4	7.188	22.79	PK	35.7	-21.5	36.99	-	-	74	-37.01	0-360	150	H
5	9.601	21.01	PK	36.9	-18.4	39.51	-	-	74	-34.49	0-360	250	H
2	* 4.806	25.85	PK	33.9	-24.3	35.45	-	-	74	-38.55	0-360	150	V
3	7.202	23.52	PK	35.7	-21.6	37.62	-	-	74	-36.38	0-360	250	V
6	9.6	21.07	PK	36.9	-18.4	39.57	-	-	74	-34.43	0-360	150	V

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

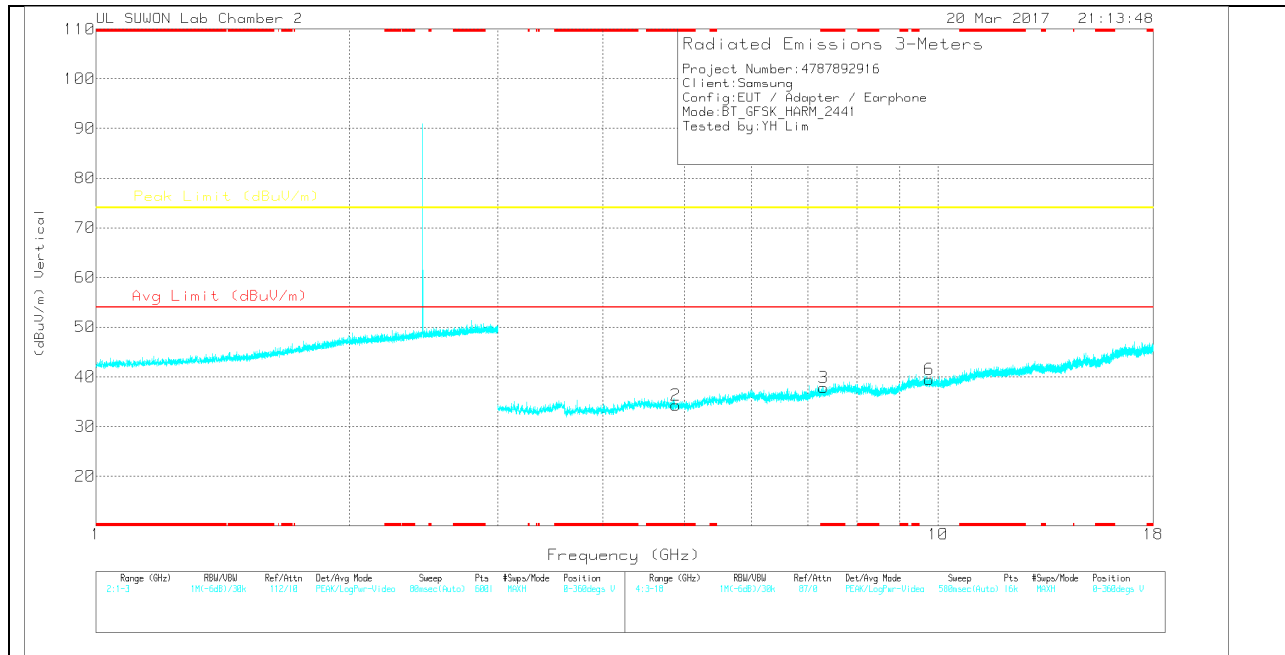
PK – Peak detector

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

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

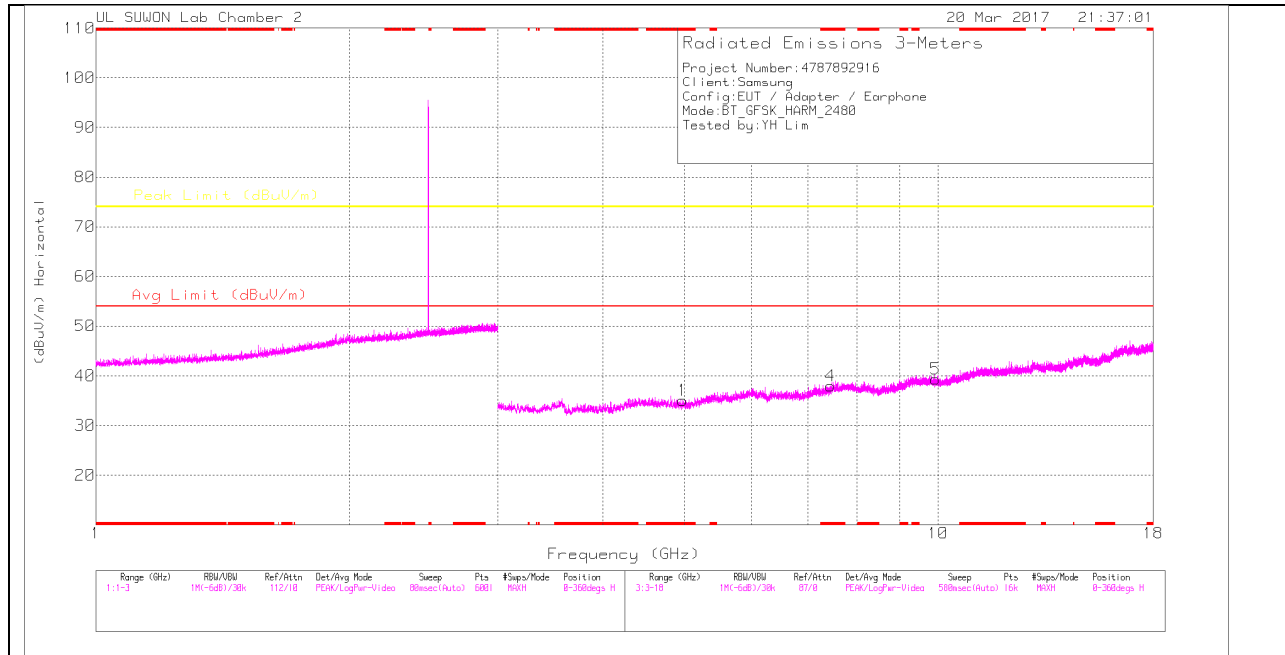
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8724)_150 619	3GHz_HP[d B]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.881	25.72	PK	33.9	-24.6	35.02	-	-	74	-38.98	0-360	150	H
4	* 7.319	23.89	PK	35.9	-22	37.79	-	-	74	-36.21	0-360	150	H
5	9.757	20.69	PK	37	-18	39.69	-	-	74	-34.31	0-360	150	H
2	* 4.881	24.99	PK	33.9	-24.6	34.29	-	-	74	-39.71	0-360	250	V
3	* 7.314	23.9	PK	35.9	-22	37.8	-	-	74	-36.2	0-360	150	V
6	9.763	20.5	PK	37	-18	39.5	-	-	74	-34.5	0-360	150	V

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

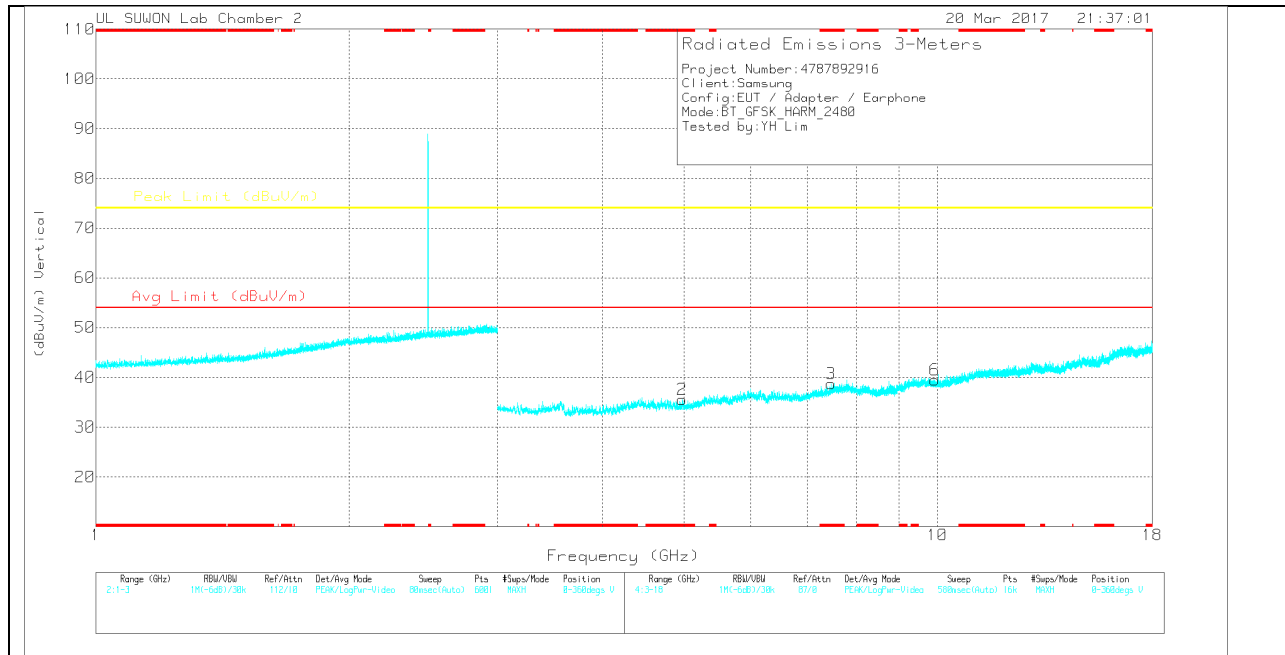
PK – Peak detector

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

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 8724)_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	* 4.976	25.83	PK	33.9	-24.7	35.03	-	-	74	-38.97	0-360	150	H
4	* 7.455	22.98	PK	36	-21	37.98	-	-	74	-36.02	0-360	250	H
5	9.925	20.1	PK	37.2	-18	39.3	-	-	74	-34.7	0-360	150	H
2	* 4.976	26.39	PK	33.9	-24.7	35.59	-	-	74	-38.41	0-360	150	V
3	* 7.469	23.64	PK	36	-20.9	38.74	-	-	74	-35.26	0-360	250	V
6	9.918	20.38	PK	37.1	-18	39.48	-	-	74	-34.52	0-360	150	V

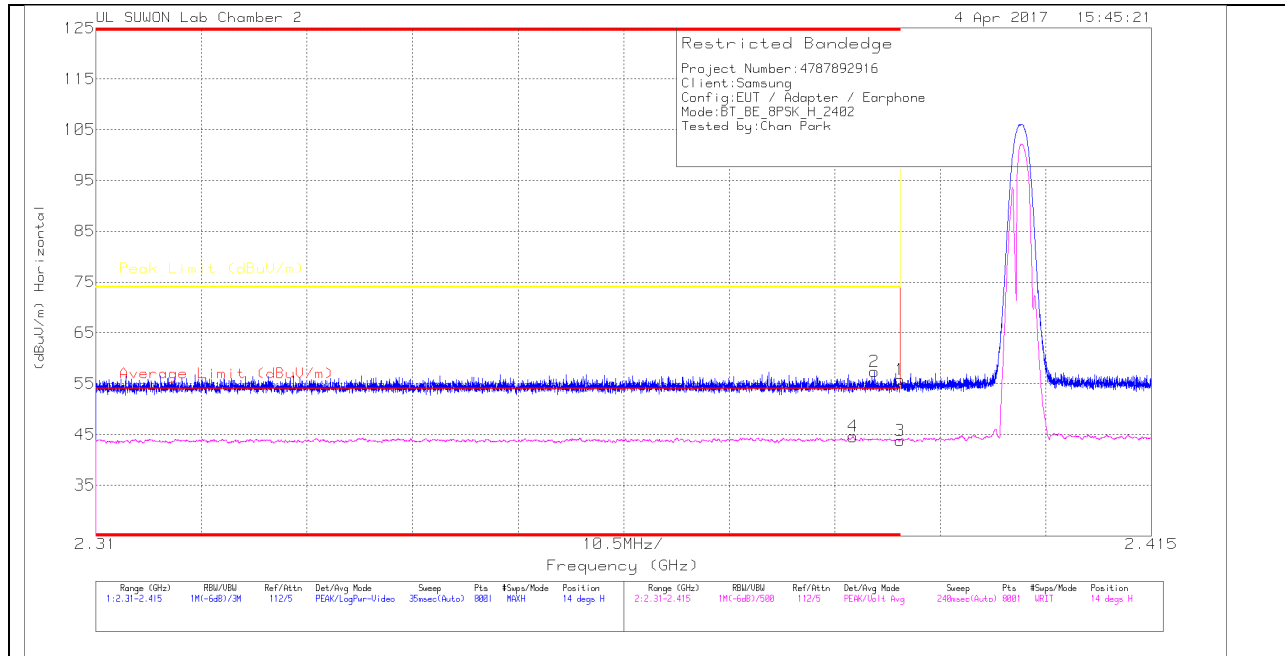
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK – Peak detector

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

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

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

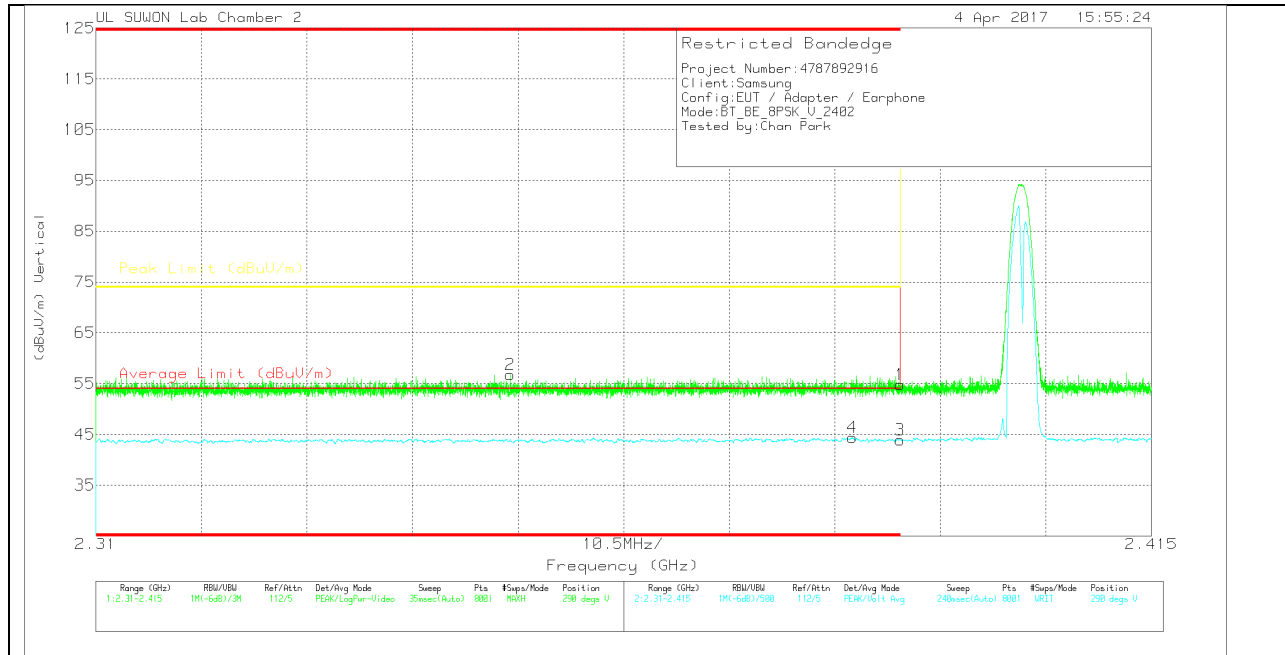
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8724)_150 619	10dB[dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	42.3	Pk	31.7	-18.2	55.8	-	-	74	-18.2	14	131	H
2	* 2.387	43.88	Pk	31.7	-18.2	57.38	-	-	74	-16.62	14	131	H
3	* 2.39	30.32	VA1T	31.7	-18.2	43.82	54	-10.18	-	-	14	131	H
4	* 2.385	31.08	VA1T	31.7	-18.2	44.58	54	-9.42	-	-	14	131	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 8724)_150 619	10dB[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	41.33	Pk		-18.2	54.83	-	-	74	-19.17	290	131	V
2	* 2.351	43.42	Pk		-18.3	56.72	-	-	74	-17.28	290	131	V
3	* 2.39	30.43	VA1T		-18.2	43.93	54	-10.07	-	-	290	131	V
4	* 2.385	30.84	VA1T		-18.2	44.34	54	-9.66	-	-	290	131	V

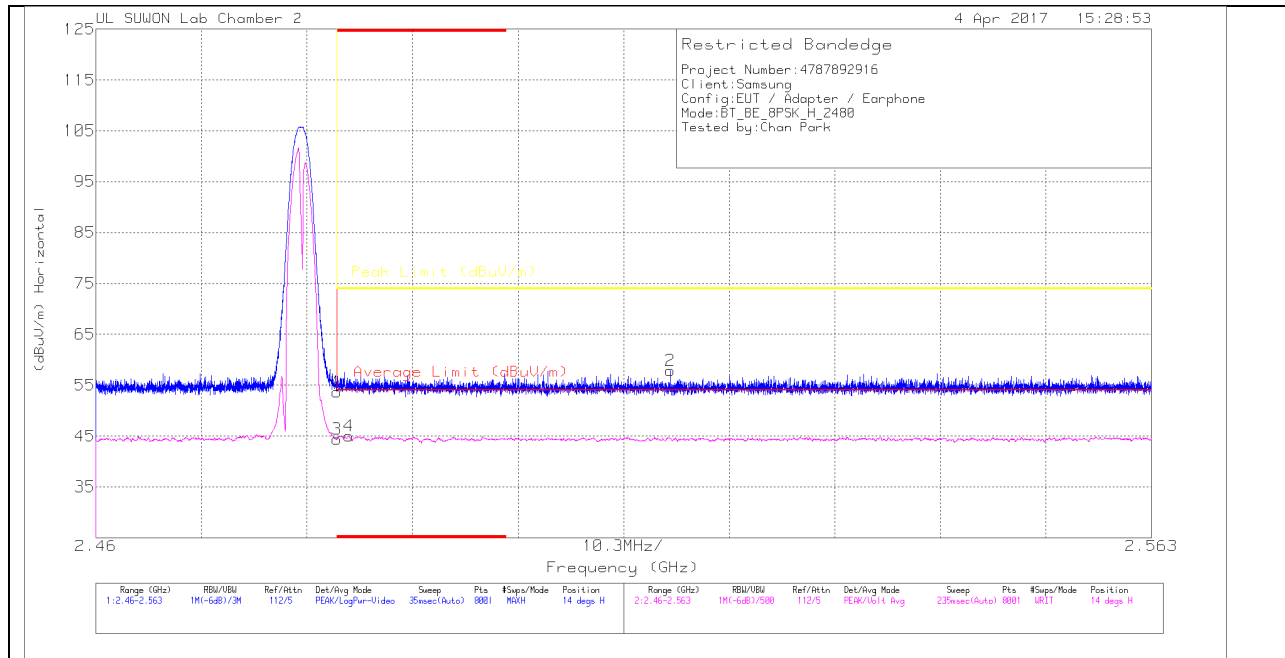
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

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

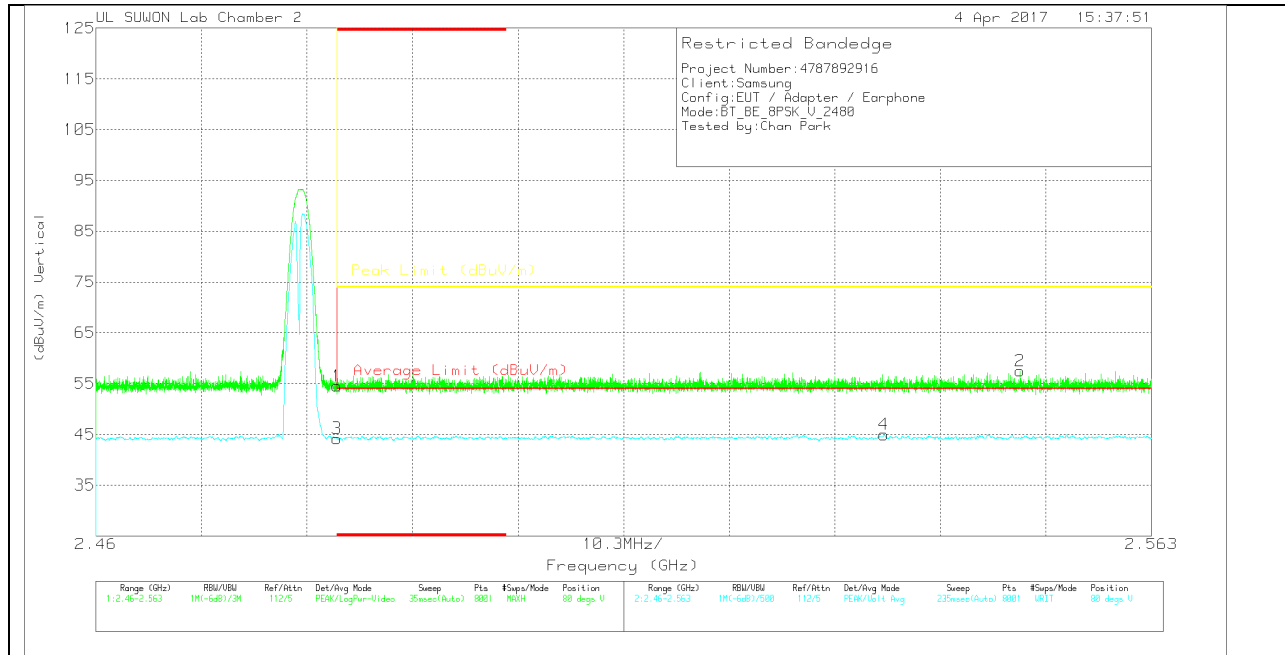
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8724)_150 619	10dB[dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	39.86	Pk		-18	53.66	-	-	74	-20.34	14	142	H
2	2.516	43.97	Pk		-18	57.87	-	-	74	-16.13	14	142	H
3	* 2.484	30.55	VA1T		-18	44.35	54	-9.65	-	-	14	142	H
4	* 2.485	31.25	VA1T		-18	45.05	54	-8.95	-	-	14	142	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 8724)_150 619	10dB[dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	40.78	Pk		-18	54.58	-	-	74	-19.42	80	151	V
2	2.55	43.61	Pk		-18	57.51	-	-	74	-16.49	80	151	V
3	* 2.484	30.4	VA1T		-18	44.2	54	-9.8	-	-	80	151	V
4	2.537	31.05	VA1T		-18	44.95	54	-9.05	-	-	80	151	V

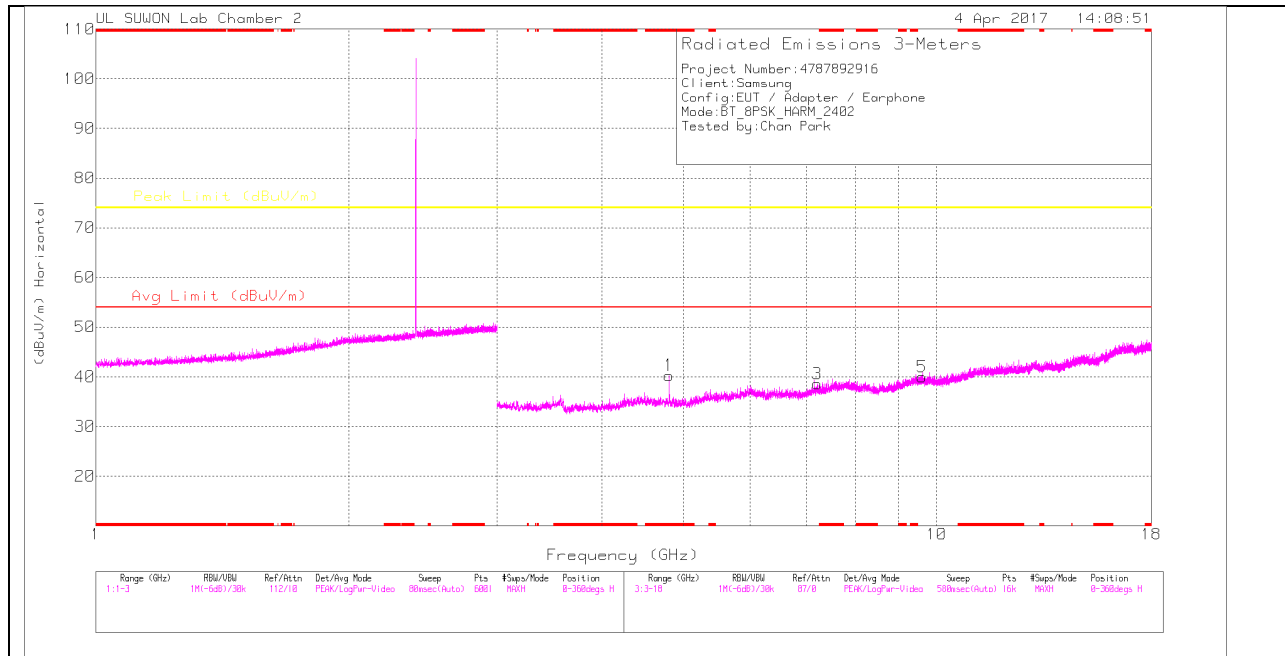
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

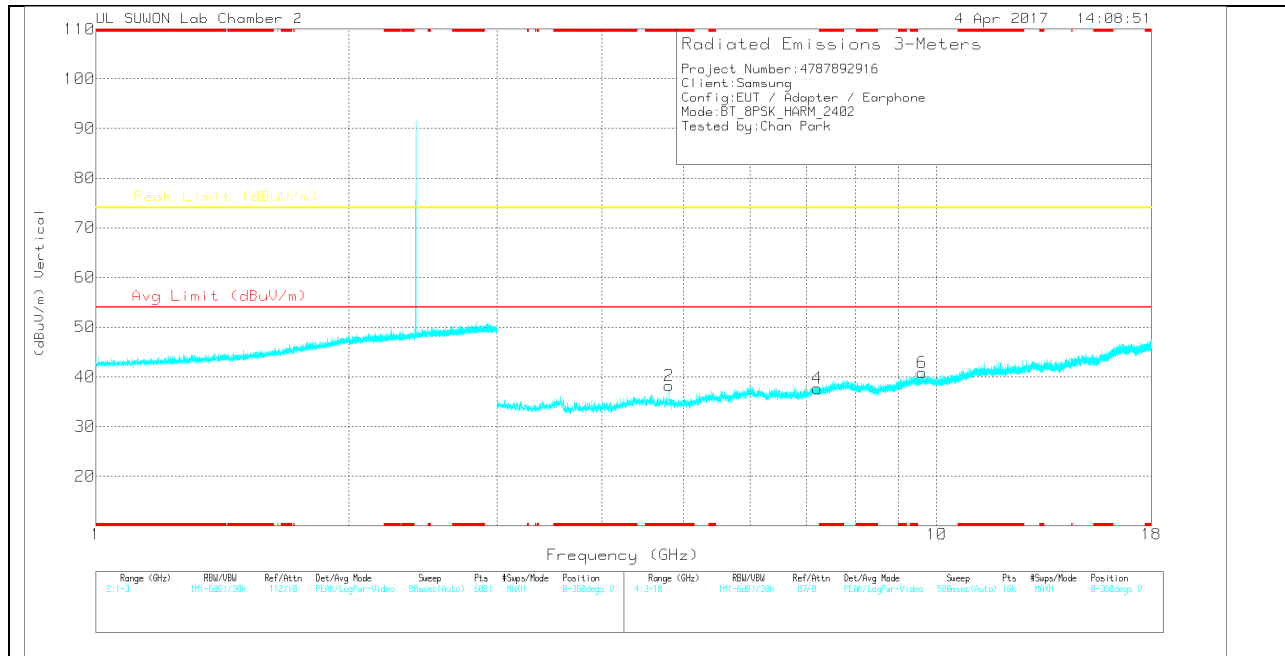
VA1T - FHSS: Linear Voltage Average $V_B=1/T_{on}$ where: T_{on} is transmit duration

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 8724)_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	* 4.804	30.7	PK	33.9	-24.3	40.3	-	-	74	-33.7	0-360	250	H
3	7.206	24.5	PK	35.8	-21.7	38.6	-	-	74	-35.4	0-360	250	H
5	9.606	21.49	PK	36.9	-18.4	39.99	-	-	74	-34.01	0-360	250	H
2	* 4.804	28.64	PK	33.9	-24.3	38.24	-	-	74	-35.76	0-360	150	V
4	7.206	23.55	PK	35.8	-21.7	37.65	-	-	74	-36.35	0-360	150	V
6	9.606	22.41	PK	36.9	-18.4	40.91	-	-	74	-33.09	0-360	150	V

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

PK – Peak detector

Radiated Emissions

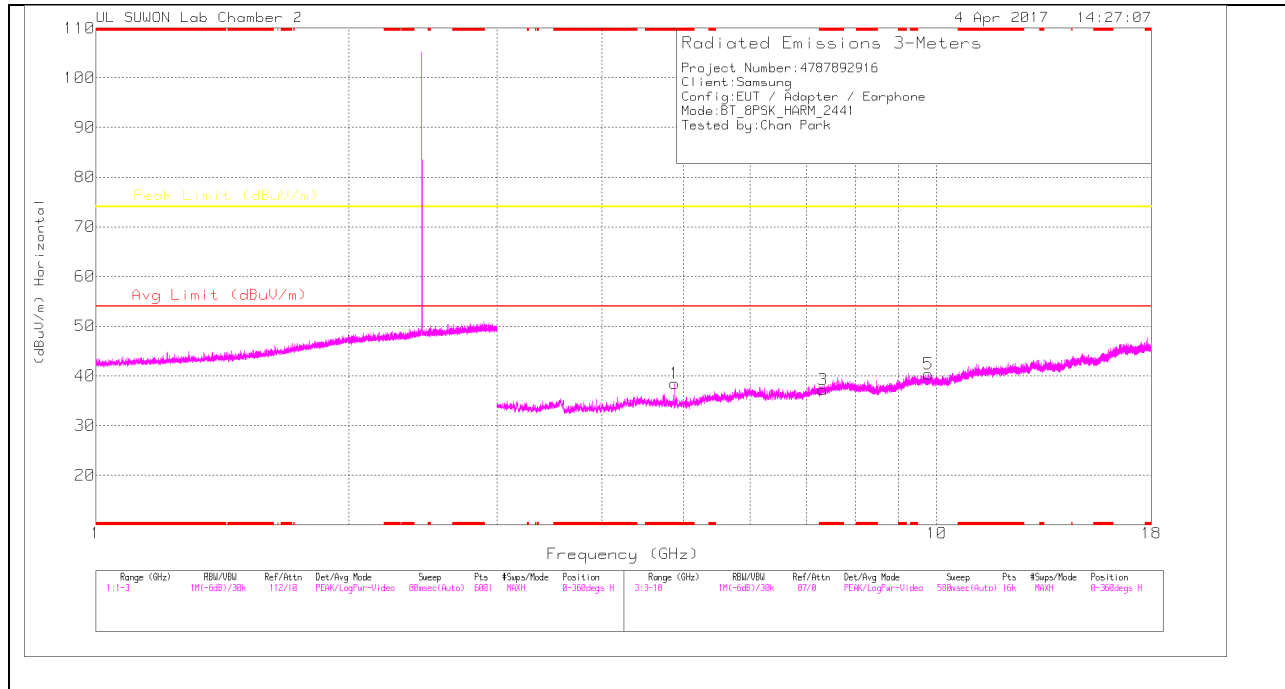
Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8724)_150 619	3GHz_HP[d B]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.804	39.19	PK2	33.9	-24.3	48.79	-	-	74	-25.21	38	245	H
* 4.804	27.99	VA1T	33.9	-24.3	37.59	54	-16.41	-	-	38	245	H
* 4.805	38.21	PK2	33.9	-24.3	47.81	-	-	74	-26.19	27	147	V
* 4.804	25.67	VA1T	33.9	-24.3	35.27	54	-18.73	-	-	27	147	V

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

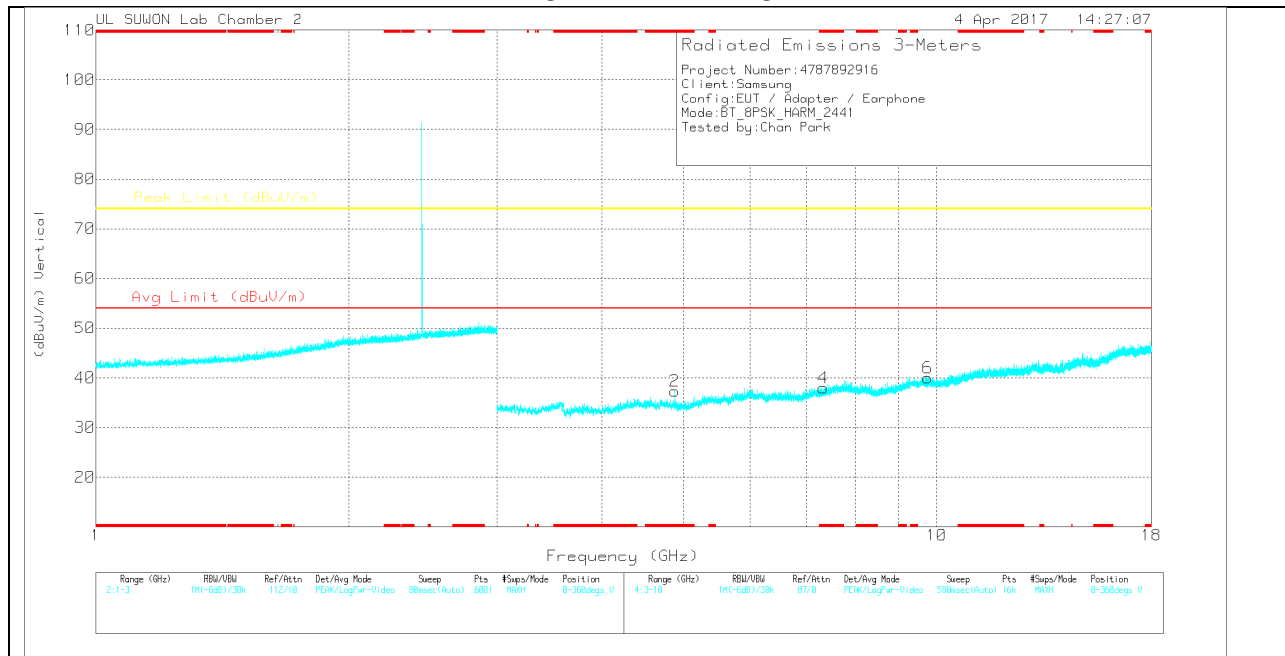
PK2 - KDB558074 Method: Maximum Peak

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton 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 8724)_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	* 4.882	29.13	PK	33.9	-24.6	38.43	-	-	74	-35.57	0-360	150	H
3	* 7.323	23.22	PK	35.9	-21.9	37.22	-	-	74	-36.78	0-360	150	H
5	9.767	21.42	PK	37	-18	40.42	-	-	74	-33.58	0-360	250	H
2	* 4.881	28	PK	33.9	-24.6	37.3	-	-	74	-36.7	0-360	150	V
4	* 7.328	23.97	PK	35.9	-21.9	37.97	-	-	74	-36.03	0-360	250	V
6	9.762	20.94	PK	37	-18	39.94	-	-	74	-34.06	0-360	250	V

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

PK – Peak detector

Radiated Emissions

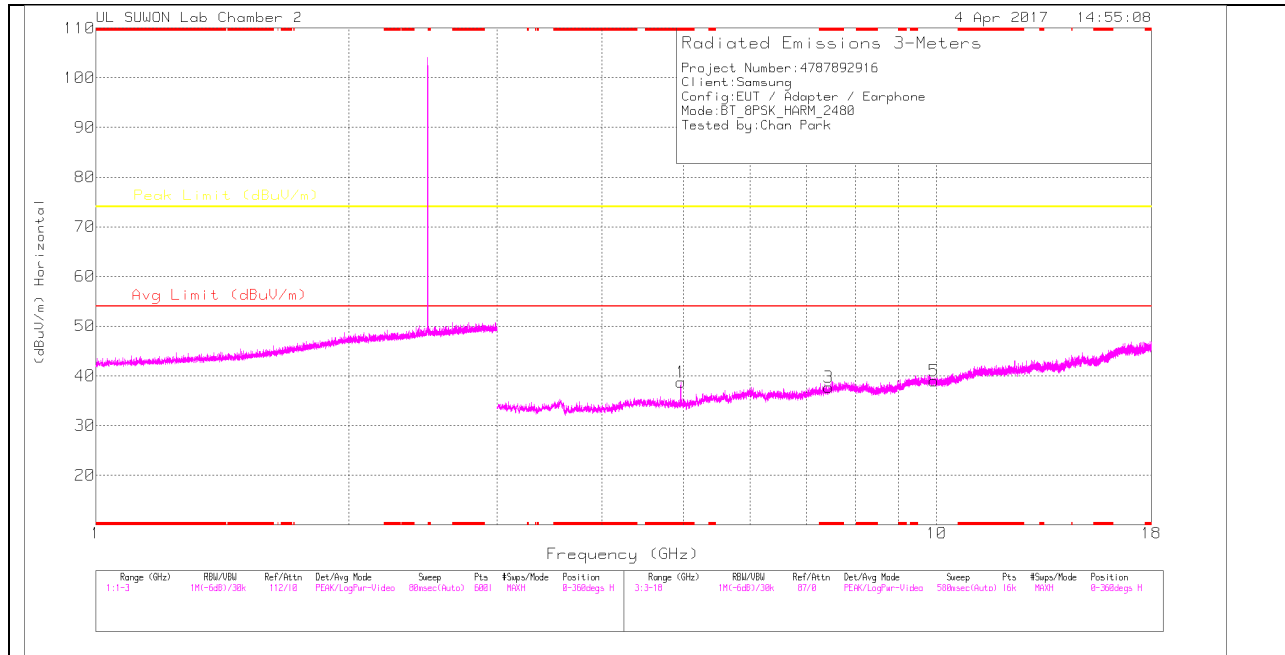
Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8724)_150 619	3GHz_HP[d B]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.883	38.87	PK2	33.9	-24.6	48.17	-	-	74	-25.83	27	147	H
* 4.882	26.87	VA1T	33.9	-24.6	36.17	54	-17.83	-	-	27	147	H
* 4.881	37.98	PK2	33.9	-24.6	47.28	-	-	74	-26.72	12	130	V
* 4.882	25.5	VA1T	33.9	-24.6	34.8	54	-19.2	-	-	12	130	V

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

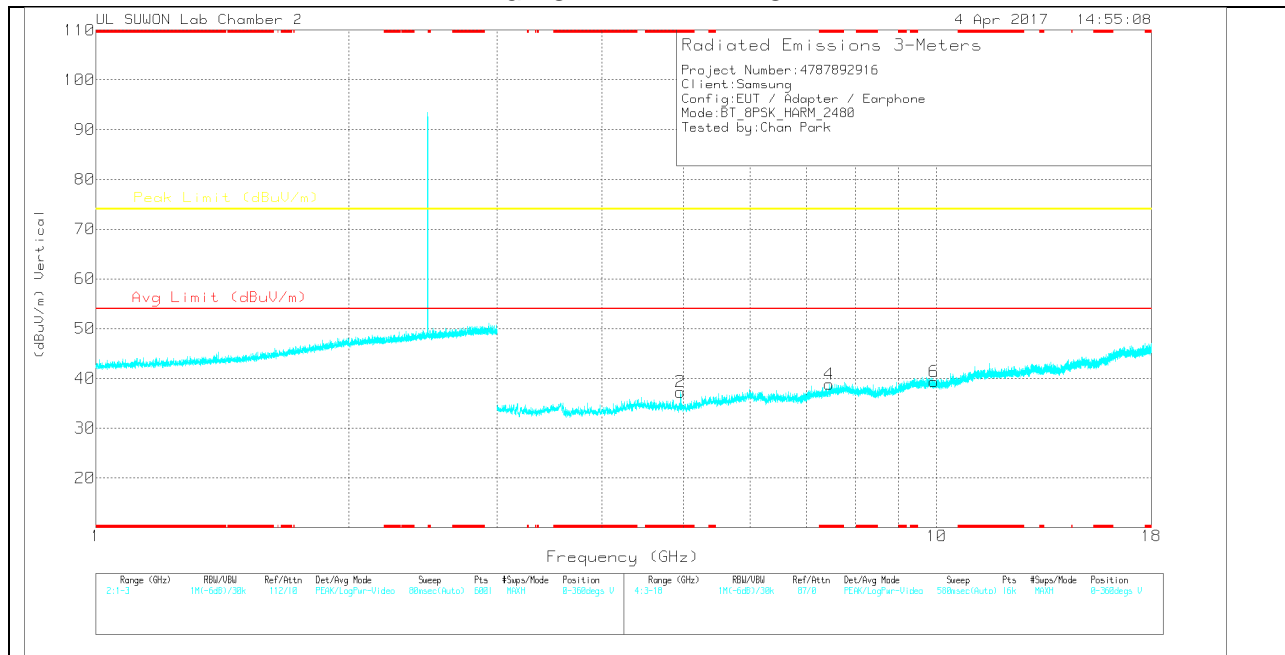
PK2 - KDB558074 Method: Maximum Peak

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton 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 8724)_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	* 4.96	29.5	PK	33.9	-24.7	38.7	-	-	74	-35.3	0-360	150	H
3	* 7.441	22.75	PK	36	-21	37.75	-	-	74	-36.25	0-360	250	H
5	9.921	19.73	PK	37.2	-18	38.93	-	-	74	-35.07	0-360	150	H
2	* 4.959	28.07	PK	33.9	-24.7	37.27	-	-	74	-36.73	0-360	150	V
4	* 7.443	23.88	PK	36	-21	38.88	-	-	74	-35.12	0-360	250	V
6	9.919	20.2	PK	37.1	-18	39.3	-	-	74	-34.7	0-360	250	V

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

PK – Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8724)_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
* 4.96	38.77	PK2	33.9	-24.7	47.97	-	-	74	-26.03	325	147	H
* 4.96	27.24	VA1T	33.9	-24.7	36.44	54	-17.56	-	-	325	147	H
* 4.96	37.78	PK2	33.9	-24.7	46.98	-	-	74	-27.02	34	107	V
* 4.96	25.63	VA1T	33.9	-24.7	34.83	54	-19.17	-	-	34	107	V

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

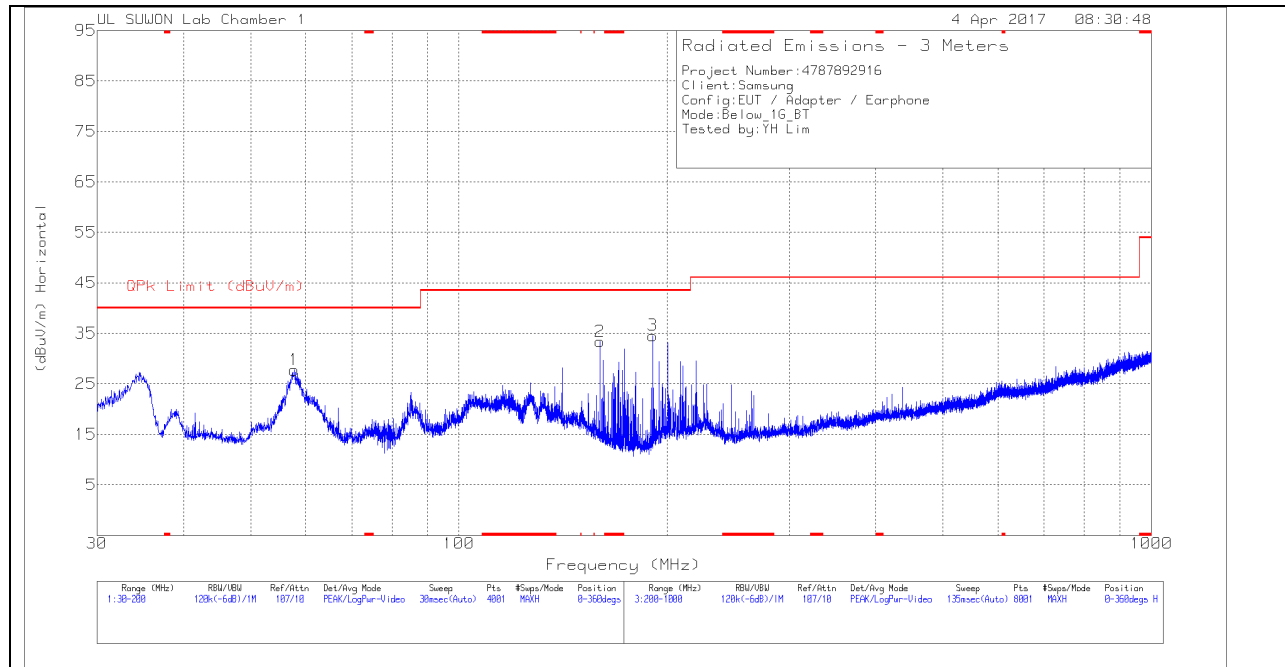
PK2 - KDB558074 Method: Maximum Peak

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

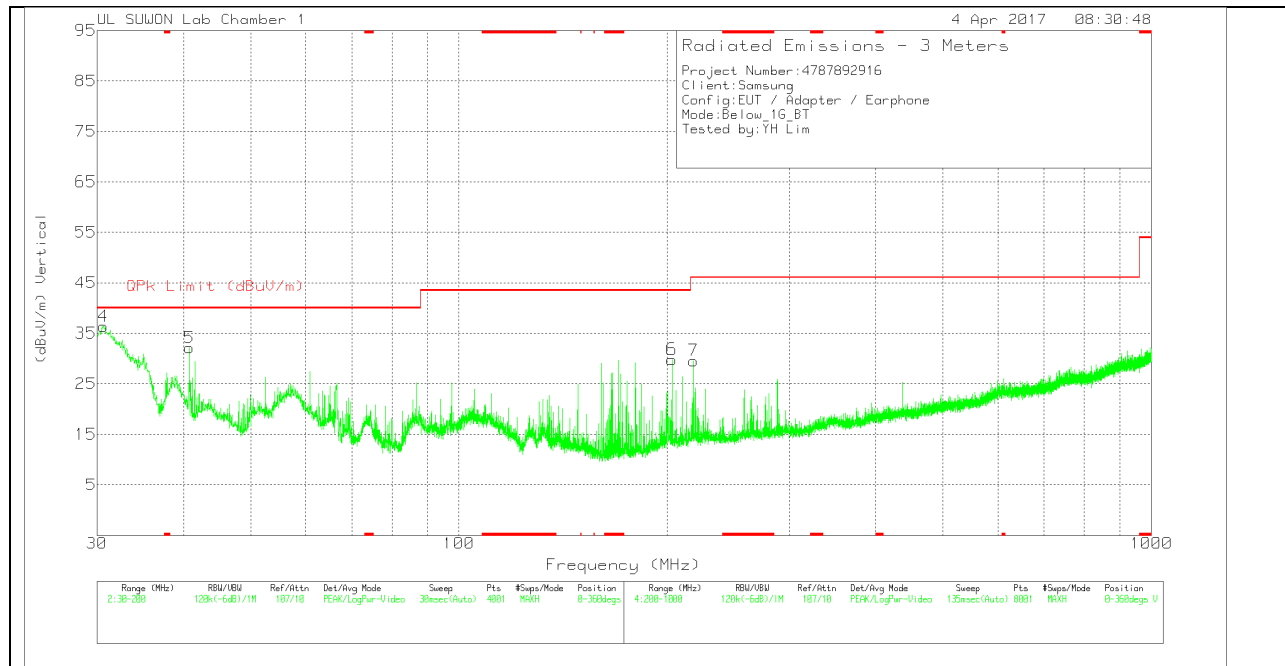
10.3. WORST-CASE BELOW 1 GHz

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	57.795	42.43	Pk	13	-27.7	27.73	40	-12.27	0-360	400	H
2	159.88	51.89	Pk	8.4	-26.9	33.39	43.52	-10.13	0-360	200	H
3	190.6075	50.86	Pk	10.4	-26.7	34.56	43.52	-8.96	0-360	200	H
4	30.6375	54.18	Pk	10.4	-28.2	36.38	40	-3.62	0-360	100	V
5	40.795	47.43	Pk	12.7	-28	32.13	40	-7.87	0-360	100	V
6	203	45.62	Pk	10.9	-26.7	29.82	43.52	-13.7	0-360	100	V
7	218	44.98	Pk	11.2	-26.6	29.58	46.02	-16.44	0-360	100	V

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.

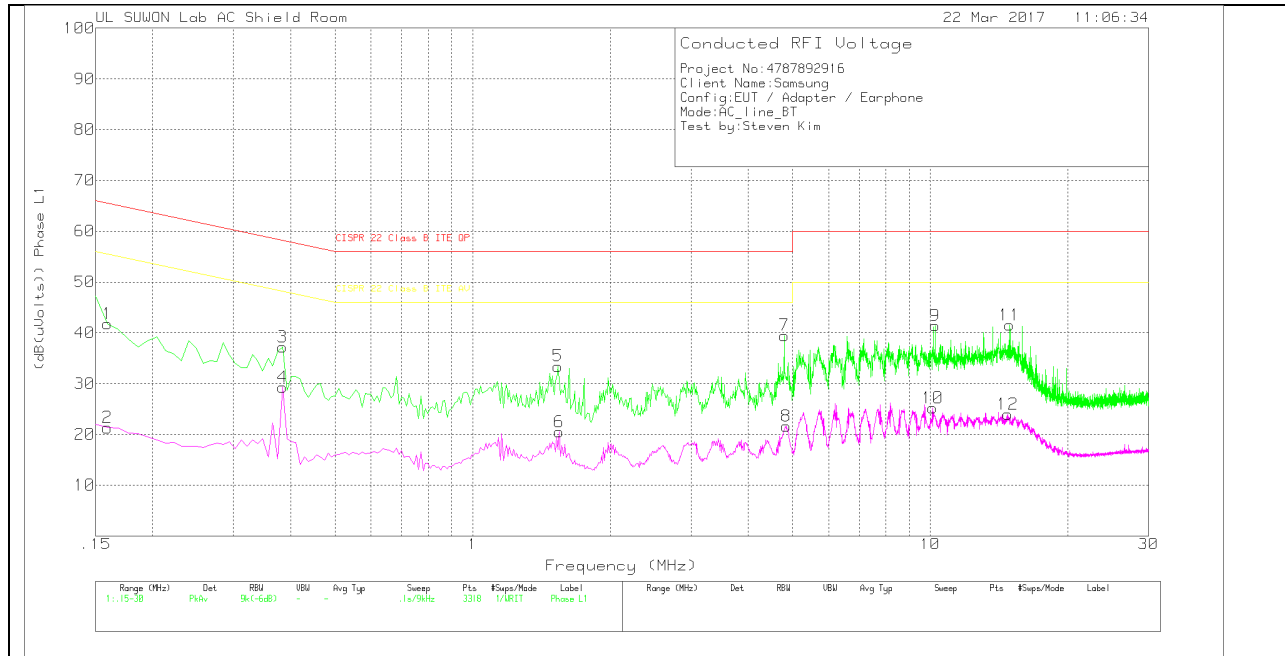
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

6 WORST EMISSIONS

LINE 1 PLOT



LINE 1 RESULTS

Trace Markers

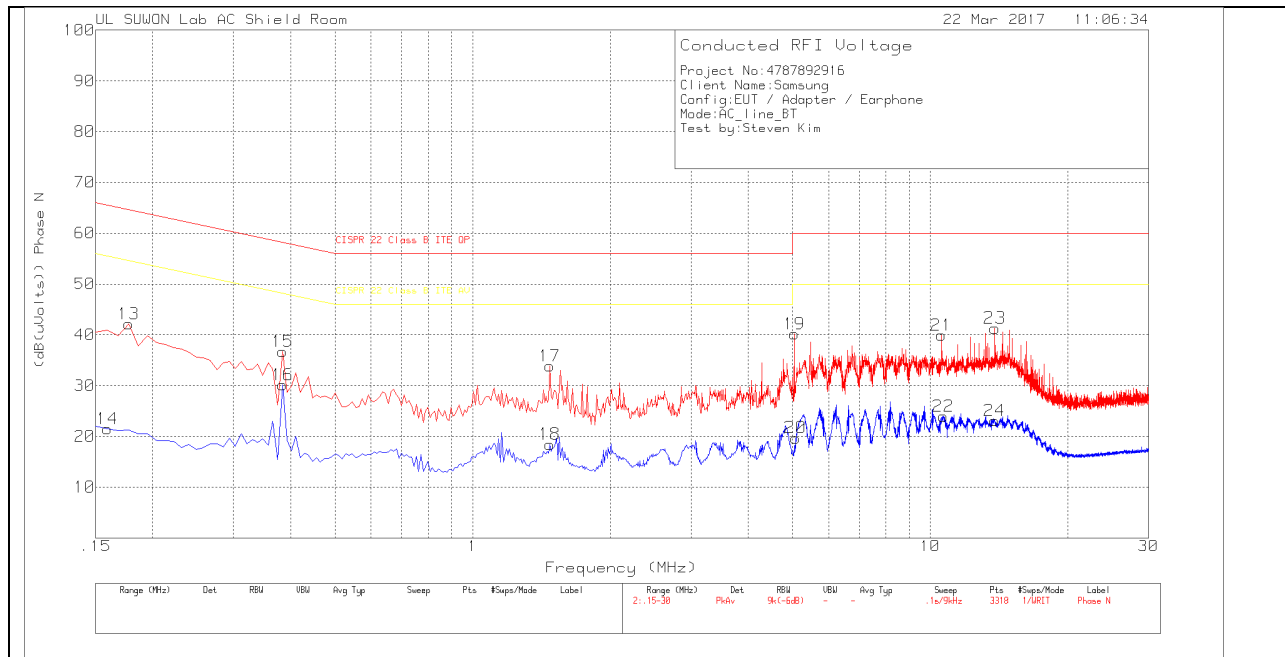
Phase L1 .15 - 30MHz

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	31.76	Pk	9.9	.1	41.76	65.52	-23.76	-	-
2	.159	11.31	Av	9.9	.1	21.31	-	-	55.52	-34.21
3	.384	27.1	Pk	9.9	.2	37.2	58.19	-20.99	-	-
4	.384	19.19	Av	9.9	.2	29.29	-	-	48.19	-18.9
5	1.536	23.43	Pk	9.7	.3	33.43	56	-22.57	-	-
6	1.545	10.54	Av	9.7	.3	20.54	-	-	46	-25.46
7	4.794	29.39	Pk	9.8	.3	39.49	56	-16.51	-	-
8	4.848	11.52	Av	9.8	.3	21.62	-	-	46	-24.38
9	10.248	31.05	Pk	10	.4	41.45	60	-18.55	-	-
10	10.122	14.78	Av	10	.4	25.18	-	-	50	-24.82
11	14.892	31.01	Pk	10.1	.4	41.51	60	-18.49	-	-
12	14.766	13.45	Av	10.1	.4	23.95	-	-	50	-26.05

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	.177	31.9	Pk	10	.2	42.1	64.63	-22.53	-	-
14	.159	11.49	Av	9.9	.1	21.49	-	-	55.52	-34.03
15	.384	26.61	Pk	9.9	.2	36.71	58.19	-21.48	-	-
16	.384	20.04	Av	9.9	.2	30.14	-	-	48.19	-18.05
17	1.473	23.79	Pk	9.8	.3	33.89	56	-22.11	-	-
18	1.473	8.36	Av	9.8	.3	18.46	-	-	46	-27.54
19	5.046	30.04	Pk	9.8	.3	40.14	60	-19.86	-	-
20	5.073	9.6	Av	9.8	.3	19.7	-	-	50	-30.3
21	10.59	29.42	Pk	10.1	.4	39.92	60	-20.08	-	-
22	10.68	13.46	Av	10.1	.4	23.96	-	-	50	-26.04
23	13.848	30.64	Pk	10.3	.4	41.34	60	-18.66	-	-
24	13.839	12.43	Av	10.3	.4	23.13	-	-	50	-26.87

Pk - Peak detector

Av - Average detection