



FCC CFR47 PART 15 SUBPART C

Bluetooth

CERTIFICATION TEST REPORT

FOR

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

MODEL NUMBER : SM-A605K

FCC ID: A3LSMA605K

REPORT NUMBER: 4788480738-E3V2

ISSUE DATE: MAY 30, 2018

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

Prepared by
UL Korea, Ltd.
26th floor, 152, Teheran-ro, Gangnam-gu Seoul, 06236, Korea

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



ACCREDITED*

Testing
Laboratory

TL-637

Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V1	05/24/18	Initial issue	Junwhan Lee
V2	05/30/18	Updated to address TCB's question	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	7
5. EQUIPMENT UNDER TEST	8
5.1. DESCRIPTION OF EUT.....	8
5.1. MAXIMUM OUTPUT POWER.....	8
5.2. DESCRIPTION OF AVAILABLE ANTENNAS	8
5.3. WORST-CASE CONFIGURATION AND MODE	8
5.4. DESCRIPTION OF TEST SETUP	9
6. MEASUREMENT METHODS	11
7. TEST AND MEASUREMENT EQUIPMENT	12
8. REFERENCE MEASUREMENT RESULTS.....	13
8.1. ON TIME AND DUTY CYCLE RESULTS.....	13
8.2. 20 dB AND 99% BANDWIDTH.....	14
8.2.1. BASIC DATA RATE GFSK MODULATION.....	14
8.2.2. ENHANCED DATA RATE Pi/4-DQPSK MODULATION.....	14
8.2.3. ENHANCED DATA RATE 8PSK MODULATION	14
8.2.4. 20 dB AND 99% BANDWIDTH PLOTS.....	15
9. SUMMARY TABLE	18
10. ANTENNA PORT TEST RESULTS	19
10.1. HOPPING FREQUENCY SEPARATION	19
10.2. NUMBER OF HOPPING CHANNELS.....	20
10.3. AVERAGE TIME OF OCCUPANCY.....	22
10.4. OUTPUT POWER.....	26
10.4.1. BASIC DATA RATE GFSK MODULATION.....	26
10.4.2. ENHANCED DATA RATE Pi/4-DPSK MODULATION	26
10.4.3. ENHANCED DATA RATE 8PSK MODULATION	26
10.4.4. OUTPUT POWER PLOTS.....	27
10.5. AVERAGE POWER.....	30

10.5.1.	BASIC DATA RATE GFSK MODULATION.....	30
10.5.2.	DATA RATE PI/4-DQPSK MODULATION	30
10.5.3.	ENHANCED DATA RATE 8PSK MODULATION	30
10.6.	CONDUCTED SPURIOUS EMISSIONS.....	31
10.6.1.	BASIC DATA RATE GFSK MODULATION.....	32
11.	RADIATED TEST RESULTS	44
11.1.	LIMITS AND PROCEDURE	44
11.2.	TRANSMITTER ABOVE 1 GHz	46
11.2.1.	BASIC DATA RATE GFSK MODULATION.....	46
11.2.2.	ENHANCED DATA RATE 8PSK MODULATION	56
11.3.	WORST-CASE BELOW 1 GHz.....	66
12.	AC POWER LINE CONDUCTED EMISSIONS	68
13.	SETUP PHOTOS	73

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.
EUT DESCRIPTION: GSM/WCDMA/LTE Phone + BT/BLE, DTS/UNII a/b/g/n, ANT+ and NFC
MODEL NUMBER: SM-A605K
SERIAL NUMBER: R39K30GTZ6H (RADIATED);
R39K30GTV6B (CONDUCTED)
DATE TESTED: MAY 03, 2018 - MAY 21, 2018

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 type="checkbox"/>	Chamber 1
<input checked="" type="checkbox"/>	Chamber 2
<input type="checkbox"/>	Chamber 3

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	3.86 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, DTS/UNII a/b/g/n, ANT+ and NFC. This test report addresses the DSS (BT) operational mode.

5.1. 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	12.418	17.450
		Peak	12.630	18.323
	Enhanced Pi/4-DPSK	Average	10.312	10.745
		Peak	12.554	18.005
	Enhanced 8PSK	Average	10.320	10.765
		Peak	12.927	19.620

5.2. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an internal antenna, with a maximum gain of -3.25 dBi.

5.3. 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 Y orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Y 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. All radiated and power line conducted tests were performed connected with earphone and charger for evaluation of worst case mode.

5.4. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Charger	SAMSUNG	EP-TA50KWK	DK4K207VS/A- E	N/A
Data Cable	SAMSUNG	ECB-DU68WE	N/A	N/A
Earphone	SAMSUNG	EHS64AVFWE	N/A	N/A

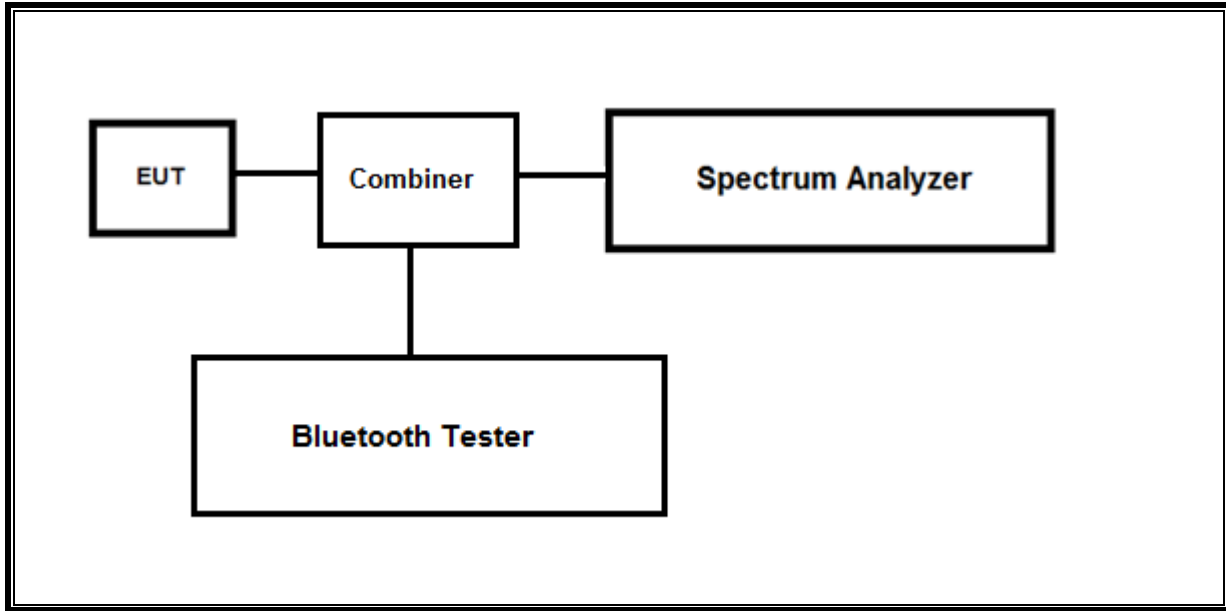
I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC Power	1	Mini-USB	Shielded	1.2m	N/A
2	Audio	2	Mini-Jack	Unshielded	1.2m	N/A

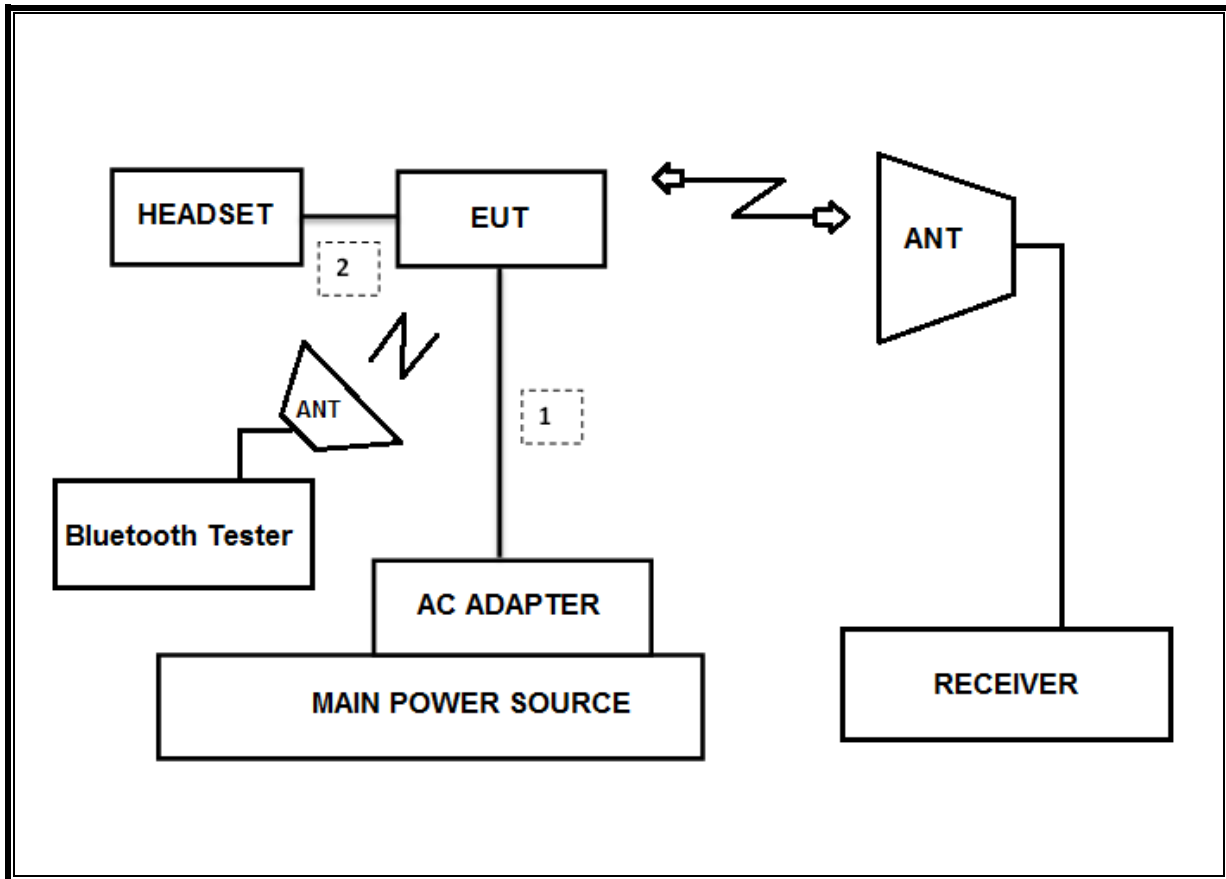
TEST SETUP

The EUT is continuously communicating to the Bluetooth tester during the tests.
 Test software enable BT communications.

SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



6. MEASUREMENT METHODS

20dB BW : ANSI C63.10, Section 6.9.2

99% BW : ANSI C63.10, Section 6.9.3

HOPPING FREQUENCY SEPARATION : ANSI C63.10, Section 7.8.2

NUMBER OF HOPPING CHANNELS : ANSI C63.10, Section 7.8.3

AVERAGE TIME OF OCCUPANCY : ANSI C63.10, Section 7.8.4

OUTPUT POWER : ANSI C63.10, Section 7.8.5.

Out-of-band EMISSIONS (Conducted) : ANSI C63.10, Section 7.8.6, 7.8.8

Out-of-band EMISSIONS IN NON-RESTRICTED BANDS: ANSI C63.10, Section 6.

Out-of-band EMISSIONS IN RESTRICTED BANDS : ANSI C63.10, Section 6.

AC Power Line Conducted Emission : ANSI C63.10-2013, Section 6.2.

7. 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	08-31-19
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	749	09-14-19
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	845	08-31-19
Antenna, Horn, 18 GHz	ETS	3115	00167211	10-14-18
Antenna, Horn, 18 GHz	ETS	3115	00161451	03-10-19
Antenna, Horn, 18 GHz	ETS	3117	00168724	05-31-19
Antenna, Horn, 18 GHz	ETS	3117	00168717	05-31-19
Antenna, Horn, 18 GHz	ETS	3117	00205959	11-29-18
Antenna, Horn, 40 GHz	ETS	3116C	00166155	12-04-19
Antenna, Horn, 40 GHz	ETS	3116C	00168645	12-04-19
Antenna, Horn, 40 GHz	ETS	3116C-PA	00168841	11-13-19
Preamplifier, 1000 MHz	Sonoma	310N	341282	08-09-18
Preamplifier, 1000 MHz	Sonoma	310N	351741	08-07-18
Preamplifier, 1000 MHz	Sonoma	310N	370599	08-10-18
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1876511	08-08-18
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1896138	08-08-18
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	2029169	08-11-18
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54170614	08-08-18
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54490312	08-08-18
Average Power Sensor	Agilent / HP	U2000	MY54270007	08-08-18
Bluetooth Tester	TESCOM	TC-3000C	3000C000546	08-08-18
Combiner	WEINCHEL	1575	2152	08-08-18
Attenuator	PASTERNAK	PE7087-10	A001	08-08-18
Attenuator	PASTERNAK	PE7087-10	A008	08-08-18
Attenuator	PASTERNAK	PE7087-10	2	08-10-18
EMI Test Receive, 40 GHz	R&S	ESU40	100439	08-08-18
EMI Test Receive, 40 GHz	R&S	ESU40	100457	08-08-18
EMI Test Receive, 44 GHz	R&S	ESW44	101590	08-09-18
EMI Test Receive, 3 GHz	R&S	ESR3	101832	08-07-18
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	009	08-08-18
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	015	08-08-18
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	020	08-11-18
High Pass Filter 3GHz	Micro-Tronics	HPM17543	010	08-08-18
High Pass Filter 3GHz	Micro-Tronics	HPM17543	015	08-08-18
High Pass Filter 3GHz	Micro-Tronics	HPM17543	020	08-11-18
High Pass Filter 6GHz	Micro-Tronics	HPS17542	009	08-08-18
High Pass Filter 6GHz	Micro-Tronics	HPS17542	016	08-08-18
High Pass Filter 6GHz	Micro-Tronics	HPS17542	021	08-11-18
LISN	R&S	ENV-216	101837	08-09-18
UL Software				
Description	Manufacturer	Model	Version	
Radiated software	UL	UL EMC	Ver 9.5	
AC Line Conducted software	UL	UL EMC	Ver 9.5	

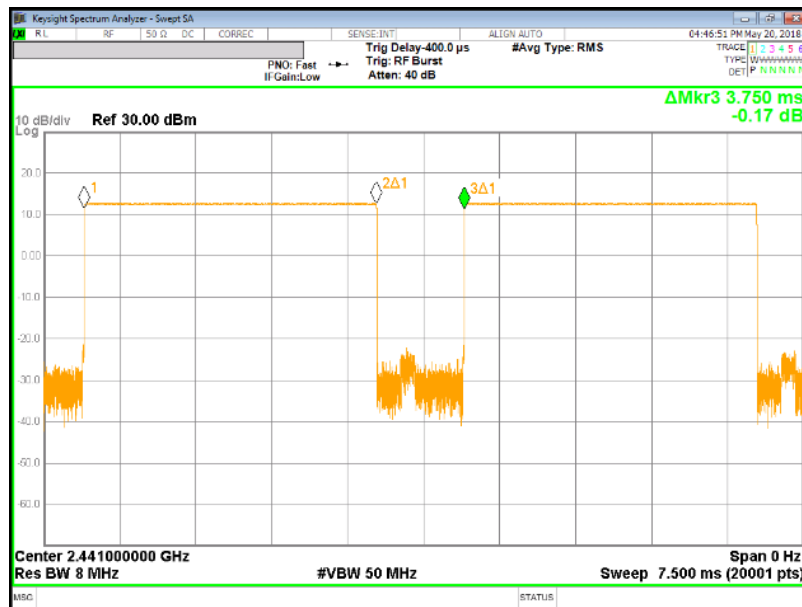
8. REFERENCE MEASUREMENT RESULTS

8.1. ON TIME AND DUTY CYCLE RESULTS

LIMITS

None: for reporting purposes only.

Mode	ON Time B [msec]	Period [msec]	Duty Cycle x [linear]	Duty Cycle [%]	Duty Cycle Correction Factor [dB]	1/T Minimum VBW [kHz]
2400MHz Bands						
BT	2.884	3.750	0.769	76.9%	1.14	0.347



8.2. 20 dB AND 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to $\geq 1\%$ of the 20 dB bandwidth. The VBW is set to \geq RBW. The sweep time is coupled.

RESULTS

8.2.1. BASIC DATA RATE GFSK MODULATION

Channel	Frequency [MHz]	20 dB Bandwidth [MHz]	99% Bandwidth [kHz]
Low	2402	1.009	903.040
Mid	2441	1.009	901.210
High	2480	1.010	902.150
Worst		1.010	903.040

8.2.2. ENHANCED DATA RATE Pi/4-DQPSK MODULATION

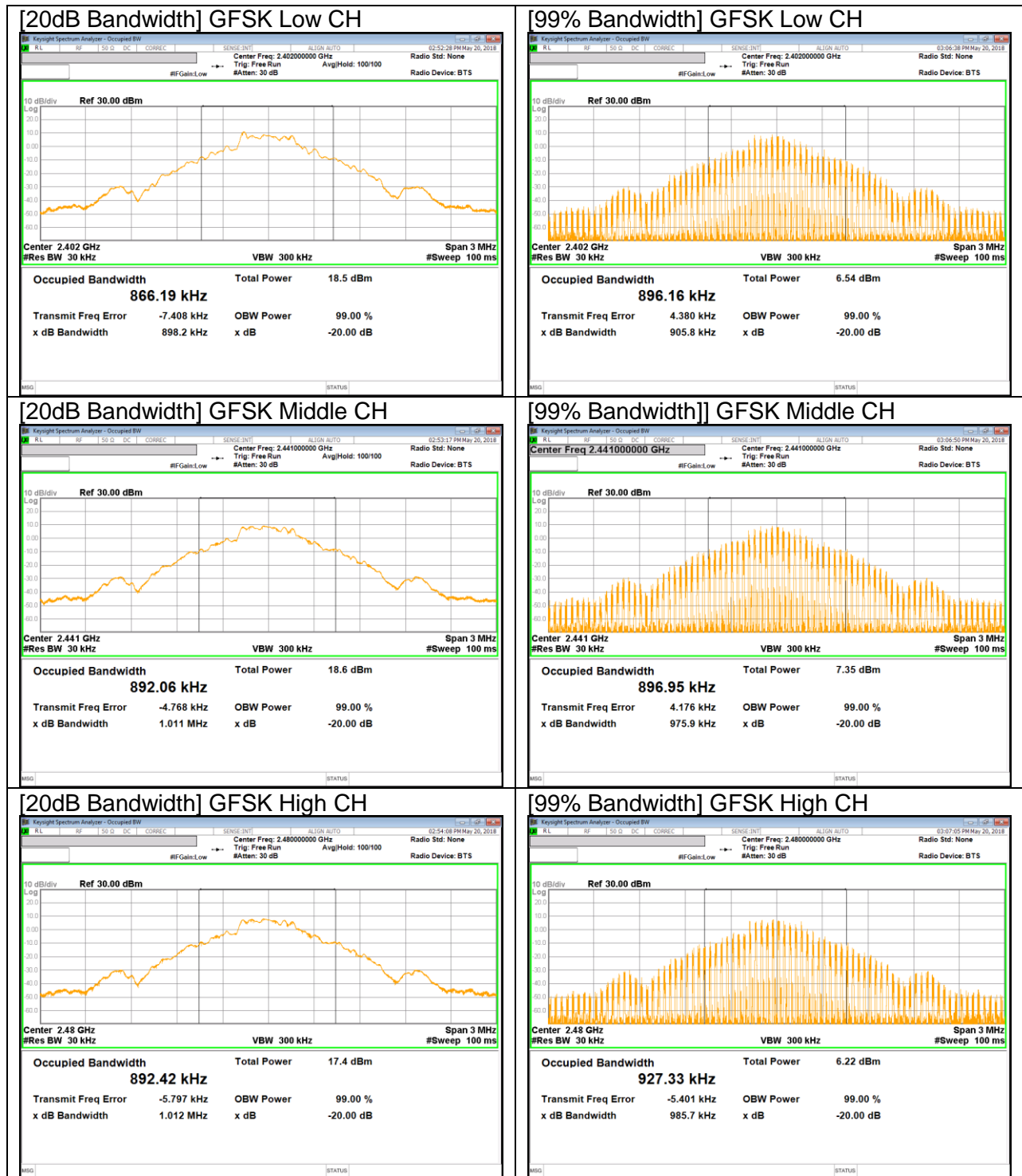
Channel	Frequency [MHz]	20 dB Bandwidth [MHz]	99% Bandwidth [MHz]
Low	2402	1.222	1.161
Mid	2441	1.305	1.161
High	2480	1.304	1.163
Worst		1.305	1.163

8.2.3. ENHANCED DATA RATE 8PSK MODULATION

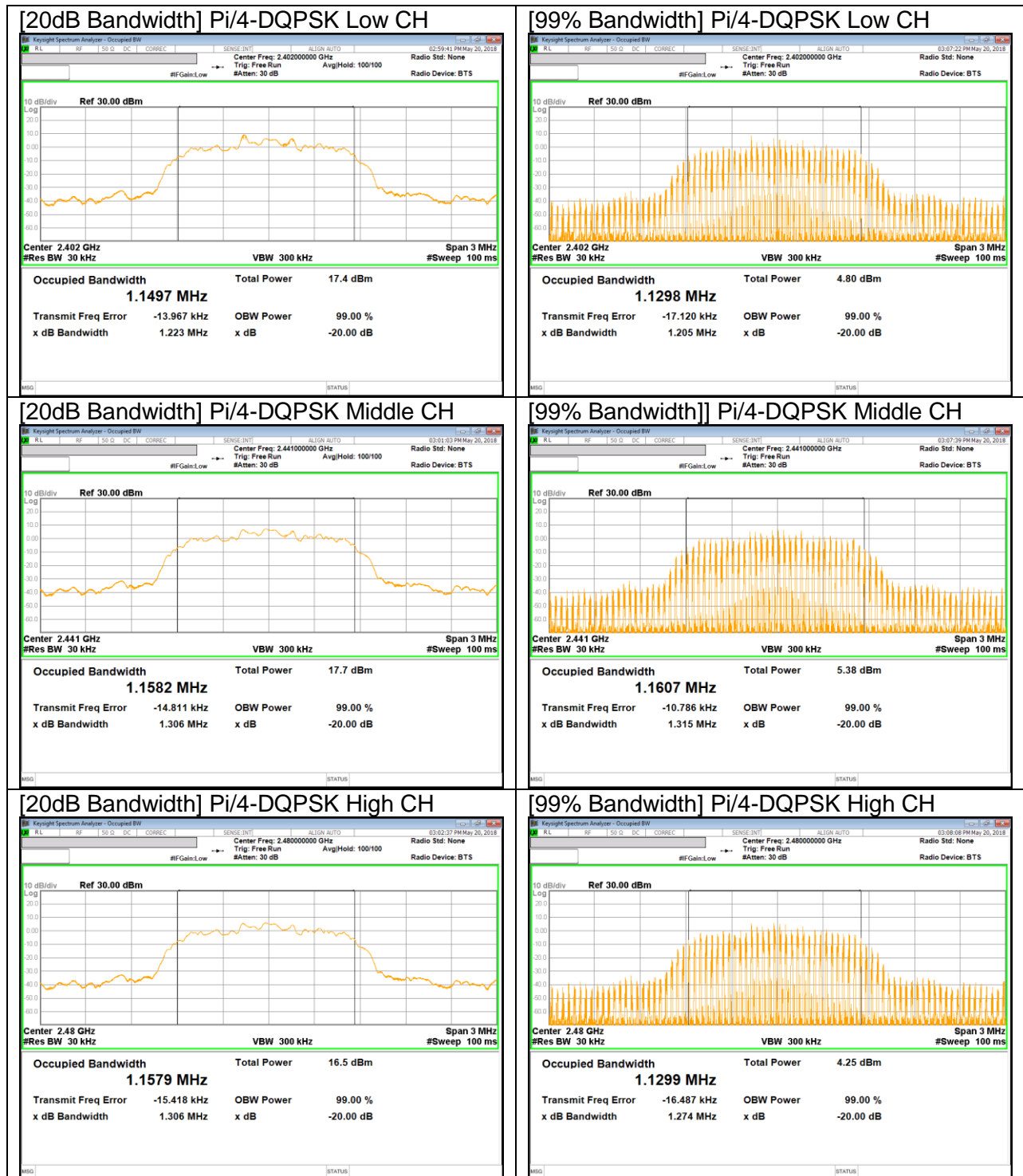
Channel	Frequency [MHz]	20 dB Bandwidth [MHz]	99% Bandwidth [MHz]
Low	2402	1.256	1.161
Mid	2441	1.261	1.160
High	2480	1.259	1.162
Worst		1.261	1.162

8.2.4. 20 dB AND 99% BANDWIDTH PLOTS

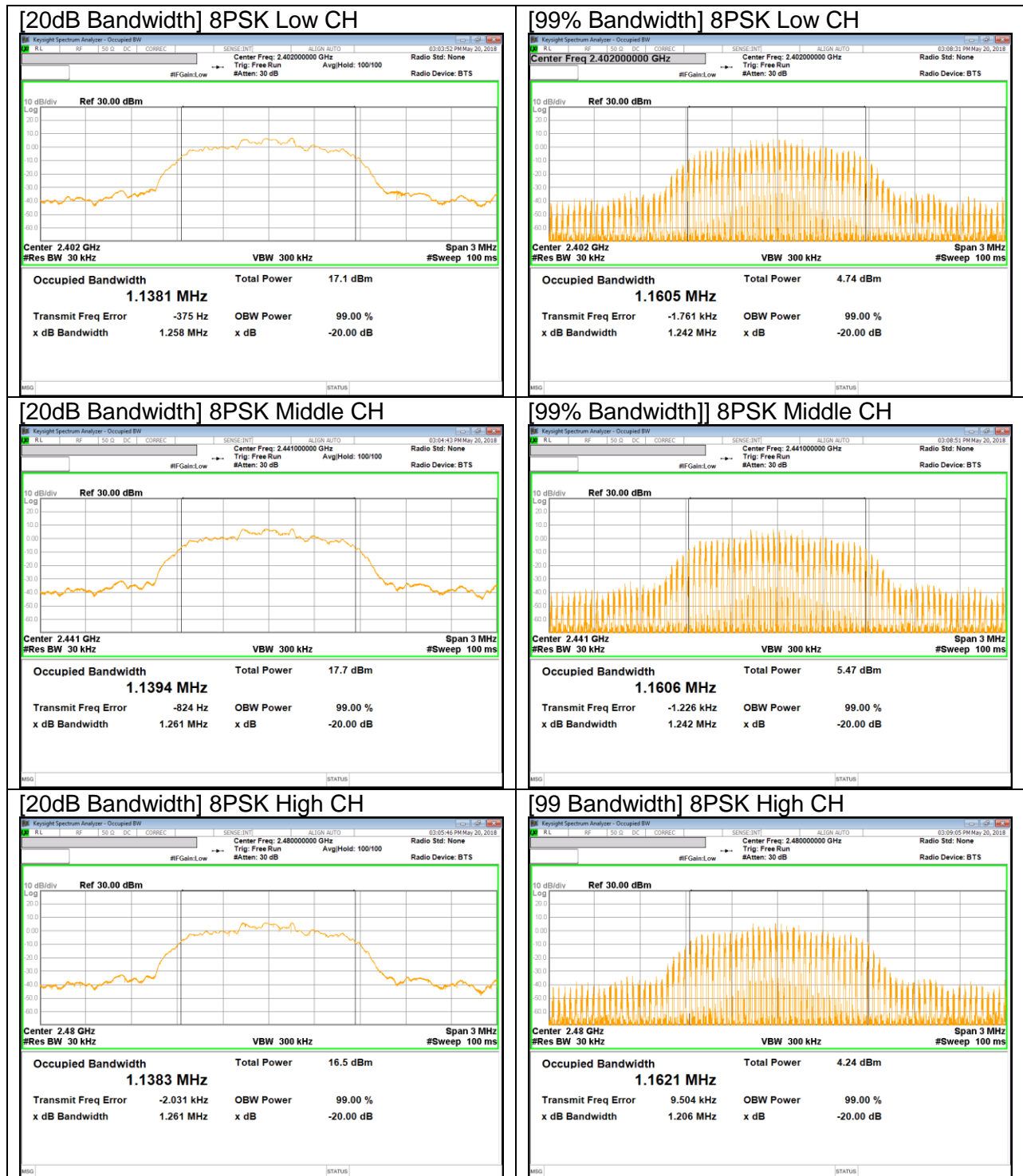
GFSK BANDWIDTH



Pi/4-DQPSK BANDWIDTH



8PSK BANDWIDTH



9. SUMMARY TABLE

FCC Part Section	Test Description	Test Limit	Test Condition	Test Result
2.1051, 15.247 (d)	Band Edge / Conducted Spurious Emission	-20dBc		Pass
15.247 (b)(1)	TX conducted output power	<30dBm		Pass
15.247 (a)(1)	Hopping frequency separation	> two-thirds of the 20 dB bandwidth		Pass
15.247 (a)(1)(iii)	Number of Hopping channels	More than 15 non-overlapping channels		Pass
15.247 (a)(1)(iii)	Avg Time of Occupancy	< 0.4sec		Pass
15.207 (a)	AC Power Line conducted emissions	Section 10	Power Line conducted	Pass
15.205, 15.209	Radiated Spurious Emission	< 54dBuV/m	Radiated	Pass

10. ANTENNA PORT TEST RESULTS

10.1. 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.

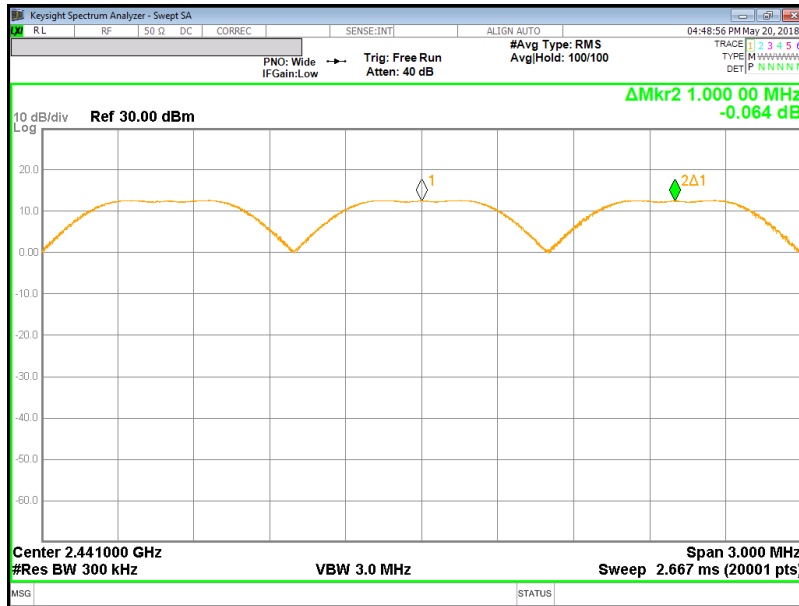
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

TEST PROCEDURE

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



10.2. 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

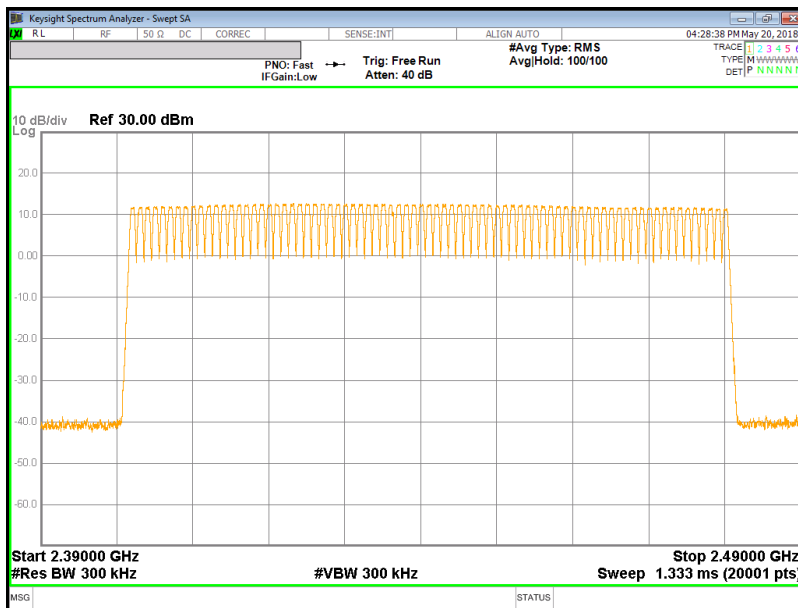
The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

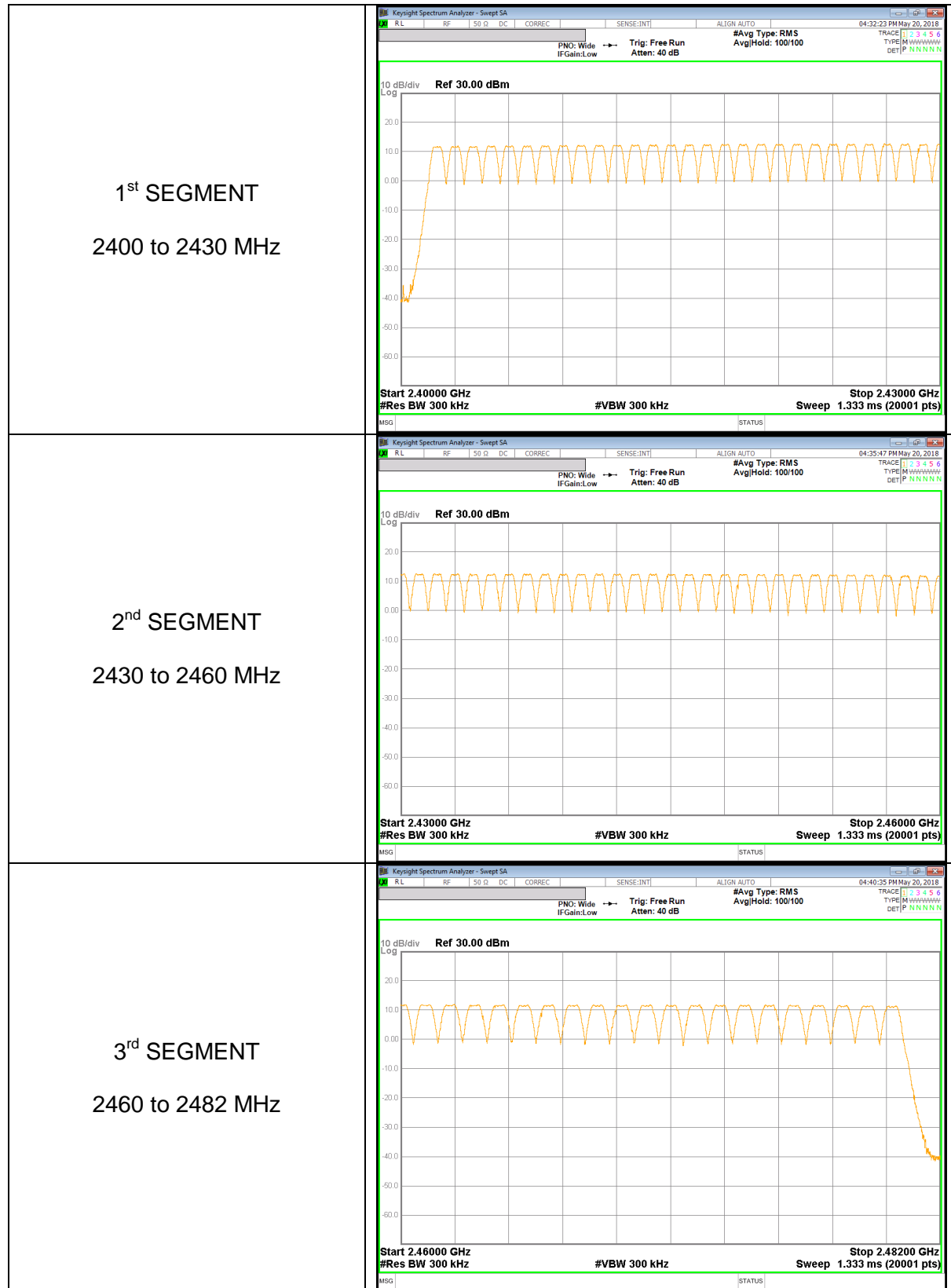
RESULTS

Normal Mode: 79 Channels observed.

NUMBER OF HOPPING CHANNELS PLOTS

NUMBER OF HOPPING CHANNELS (100 MHZ SPAN)





10.3. 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.

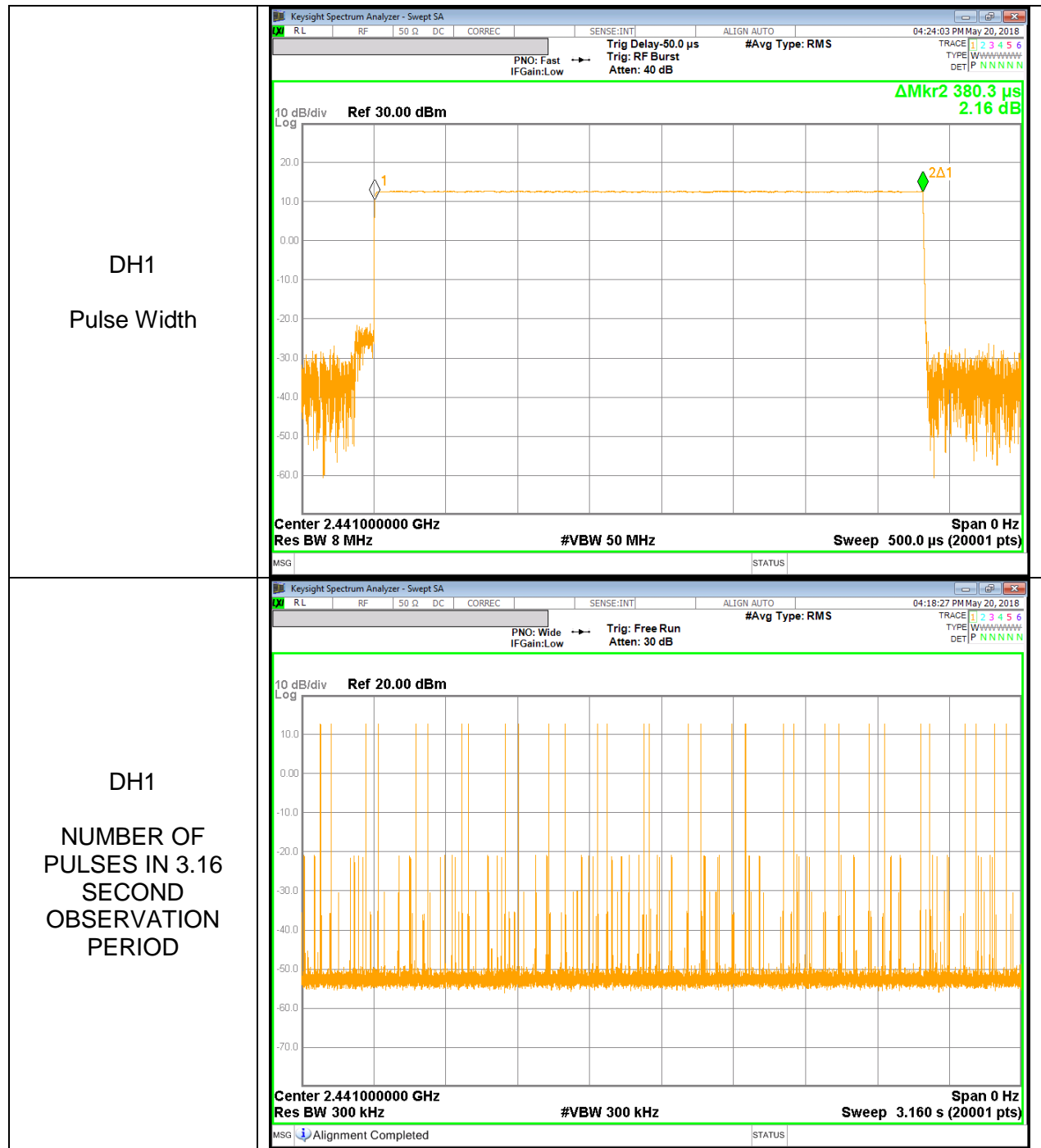
The average time of occupancy in the specified 31.6 second period (79 channels * 0.4 s) is equal to $10 * (\# \text{ of pulses in } 3.16 \text{ s}) * \text{ pulse width}$.

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

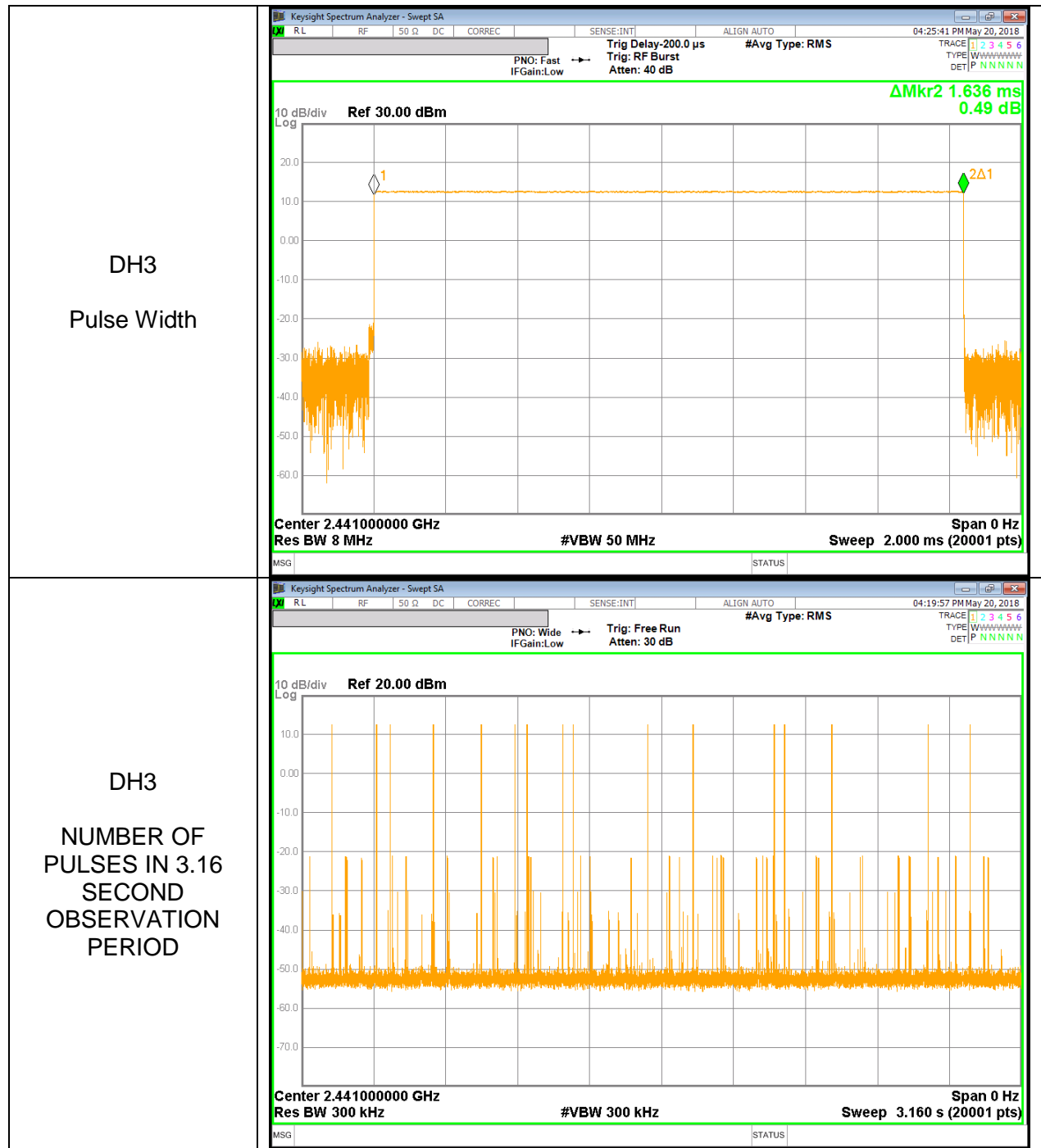
RESULTS[GFSK]

DH Packet	Pulse Width [msec]	Number of Pulses in 3.16 seconds	Average Time of Occupancy [sec]	Limit [sec]	Margin [sec]
GFSK Normal					
DH1	0.379	32	0.121216	0.4	-0.2788
DH3	1.635	16	0.261600	0.4	-0.1384
DH5	2.883	12	0.345960	0.4	-0.0540
GFSK AFH					
DH Packet	Pulse Width [msec]	Number of Pulses in 0.8 seconds	Average Time of Occupancy [sec]	Limit [sec]	Margin [sec]
DH1	0.379	8	0.030304	0.4	-0.3697
DH3	1.635	4	0.065400	0.4	-0.3346
DH5	2.883	3	0.086490	0.4	-0.3135

DH1



DH3



DH5



10.4. OUTPUT POWER

LIMIT

§15.247 (b) (1)

The maximum antenna gain is less than 6 dBi, therefore the limit is 21 dBm.

TEST PROCEDURE

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

10.4.1. BASIC DATA RATE GFSK MODULATION

Channel	Frequency [MHz]	Output Power [dBm]	Limit [dBm]	Margin [dB]
Low	2402	12.077	21	-8.923
Middle	2441	12.630	21	-8.37
High	2480	11.526	21	-9.474
Worst		12.630	21	-8.37

10.4.2. ENHANCED DATA RATE Pi/4-DPSK MODULATION

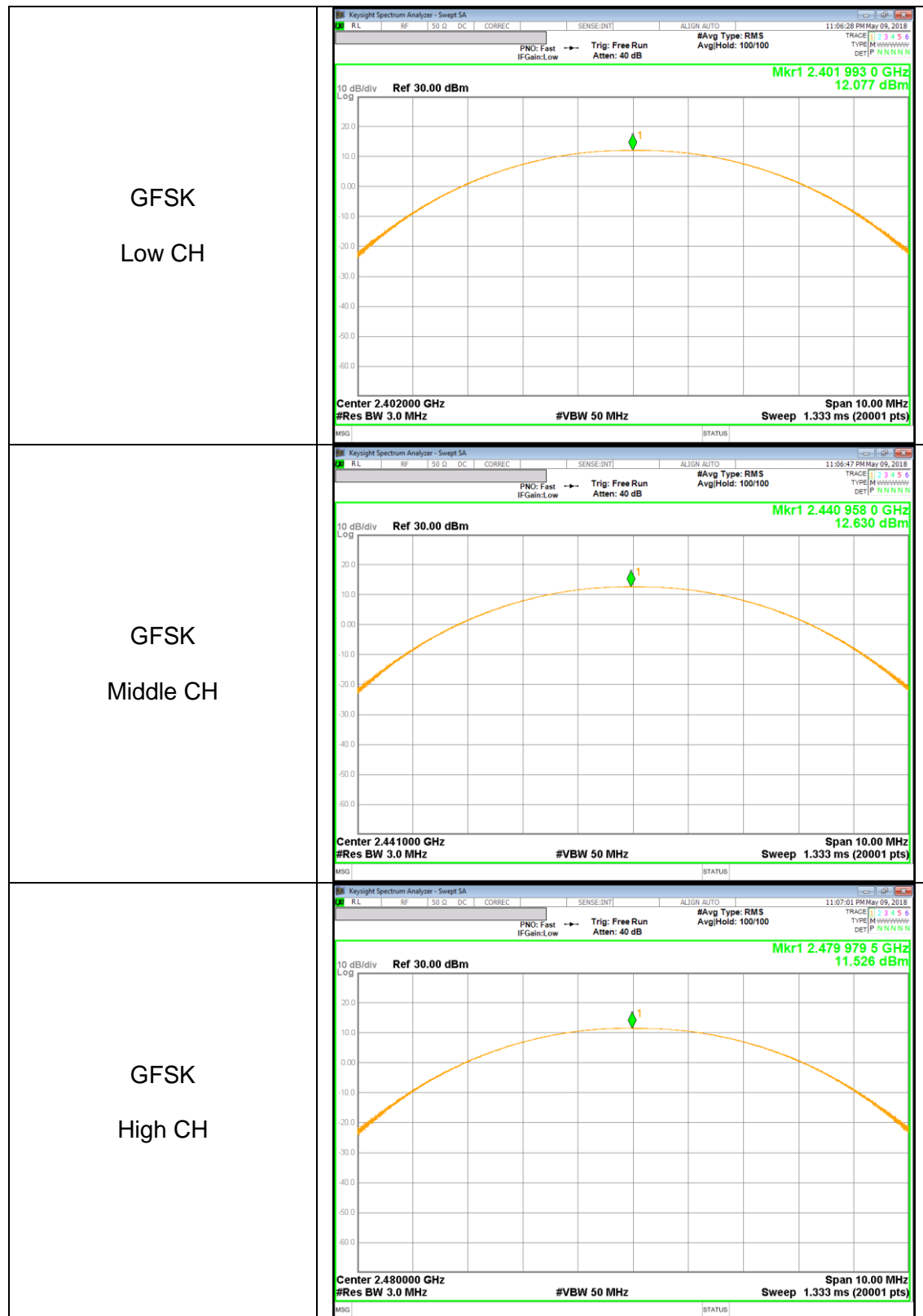
Channel	Frequency [MHz]	Output Power [dBm]	Limit [dBm]	Margin [dB]
Low	2402	11.999	21	-9.001
Middle	2441	12.554	21	-8.446
High	2480	11.412	21	-9.588
Worst		12.554	21	-8.446

10.4.3. ENHANCED DATA RATE 8PSK MODULATION

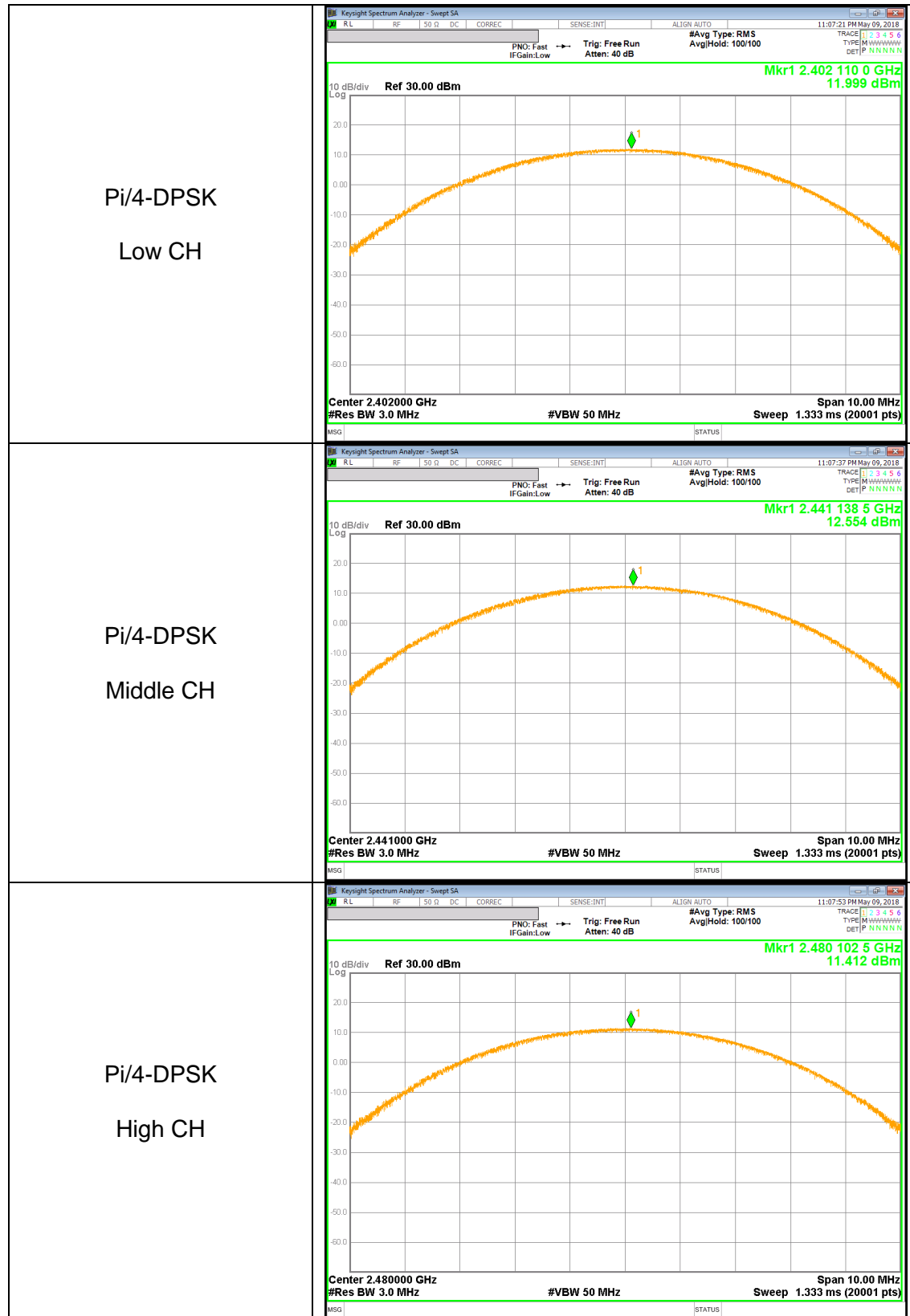
Channel	Frequency [MHz]	Output Power [dBm]	Limit [dBm]	Margin [dB]
Low	2402	12.407	21	-8.593
Middle	2441	12.927	21	-8.073
High	2480	11.852	21	-9.148
Worst		12.927	21	-8.073

10.4.4. OUTPUT POWER PLOTS

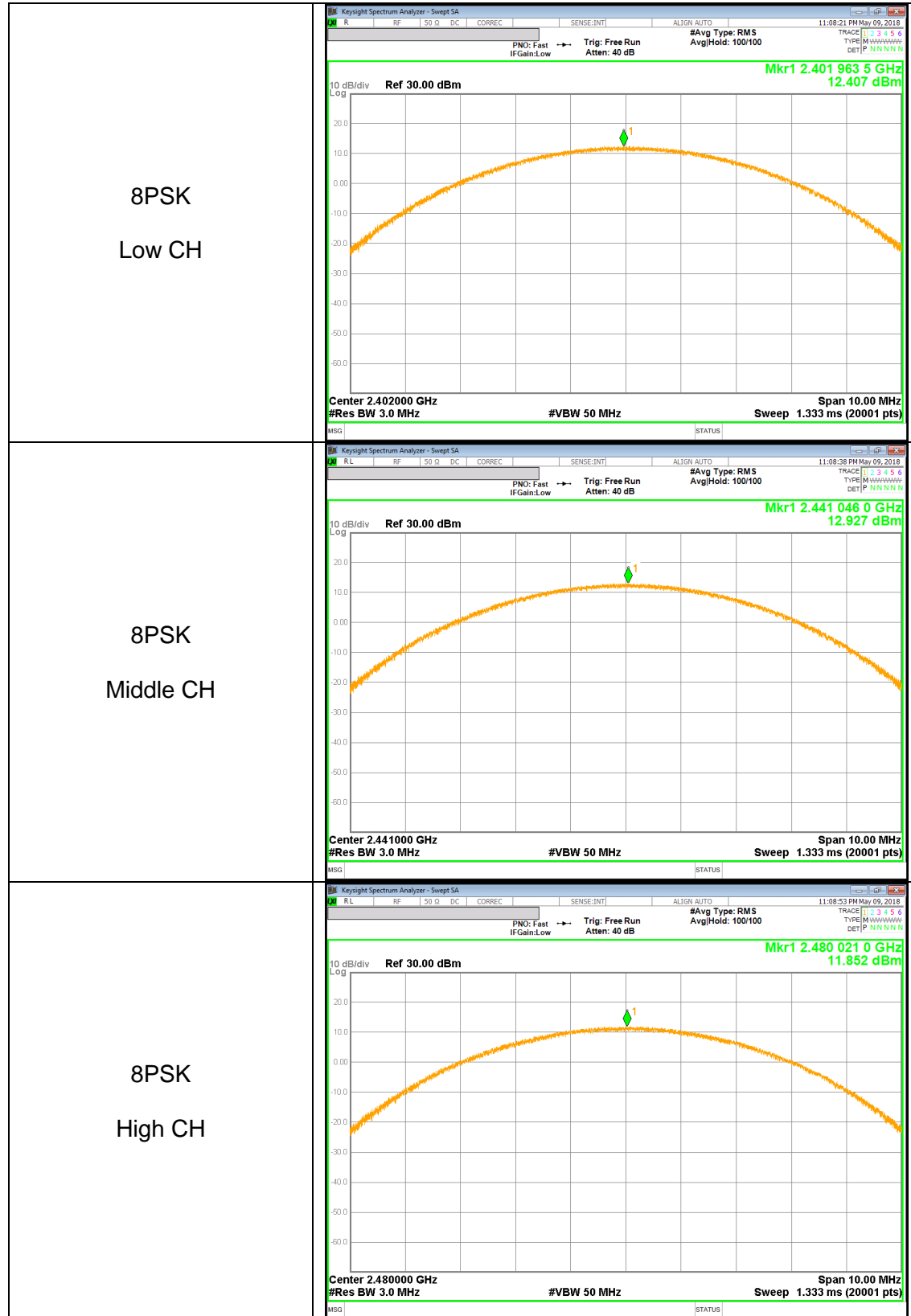
GFSK OUTPUT POWER



Pi/4-DPSK OUTPUT POWER



8PSK OUTPUT POWER



10.5. AVERAGE POWER

LIMIT

None; for reporting purposes only.

TEST PROCEDURE

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.

10.5.1. BASIC DATA RATE GFSK MODULATION

Channel	Frequency [MHz]	AV power [dBm]	AV power [mW]
Low	2402	11.868	15.37
Middle	2441	12.418	17.45
High	2480	11.295	13.47

10.5.2. DATA RATE PI/4-DQPSK MODULATION

Channel	Frequency [MHz]	AV power [dBm]	AV power [mW]
Low	2402	9.742	9.42
Middle	2441	10.312	10.74
High	2480	9.162	8.25

10.5.3. ENHANCED DATA RATE 8PSK MODULATION

Channel	Frequency [MHz]	AV power [dBm]	AV power [mW]
Low	2402	9.753	9.45
Middle	2441	10.320	10.76
High	2480	9.173	8.27

10.6. 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.

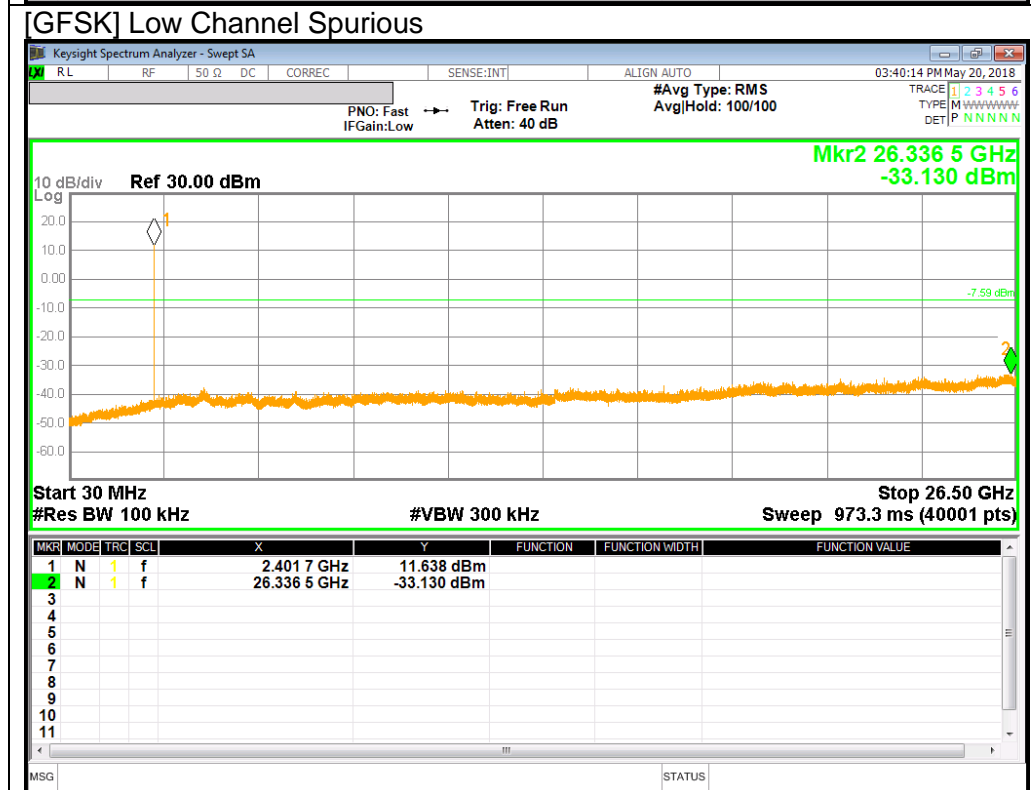
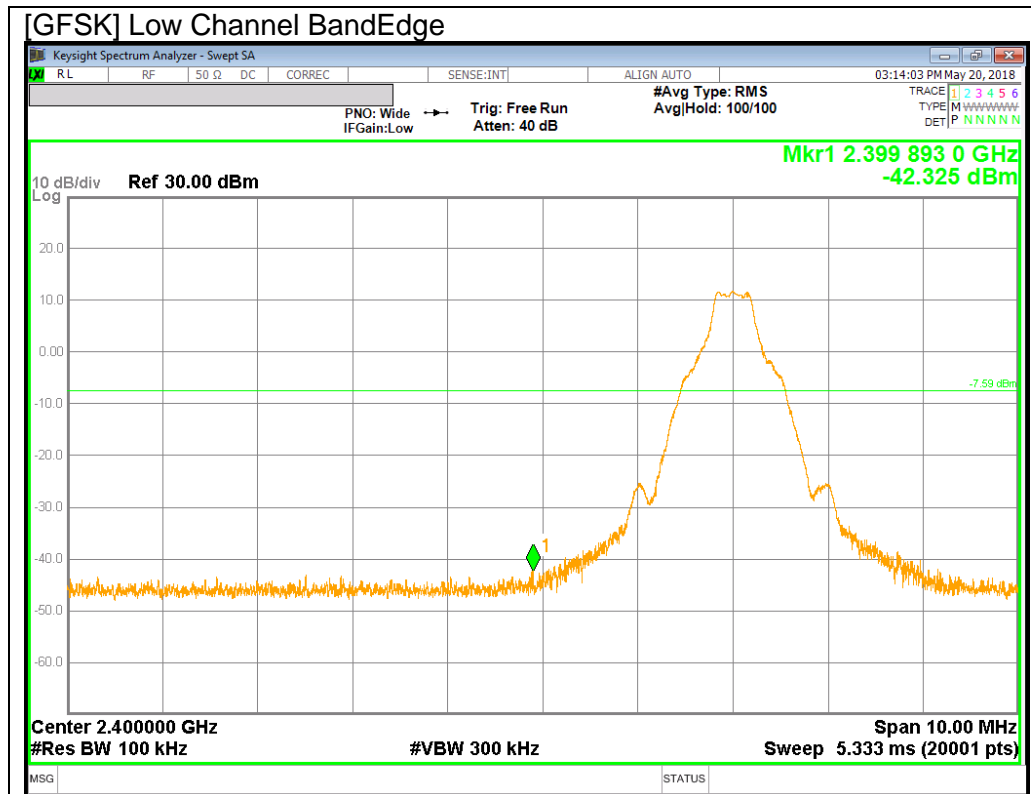
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

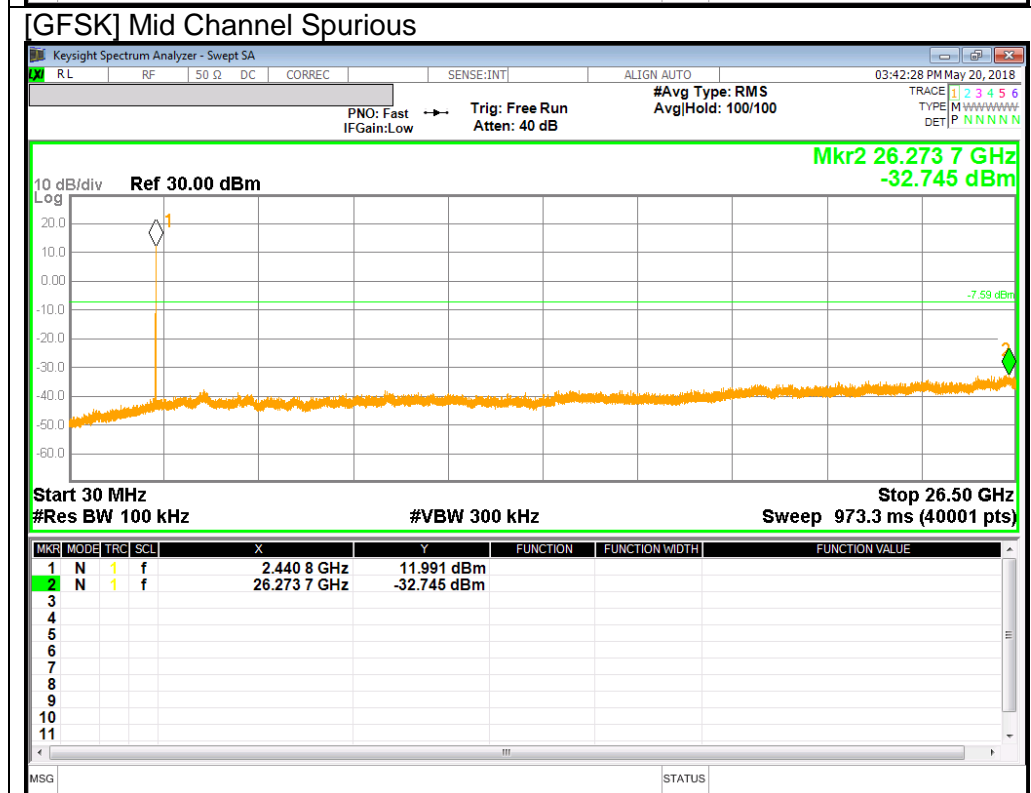
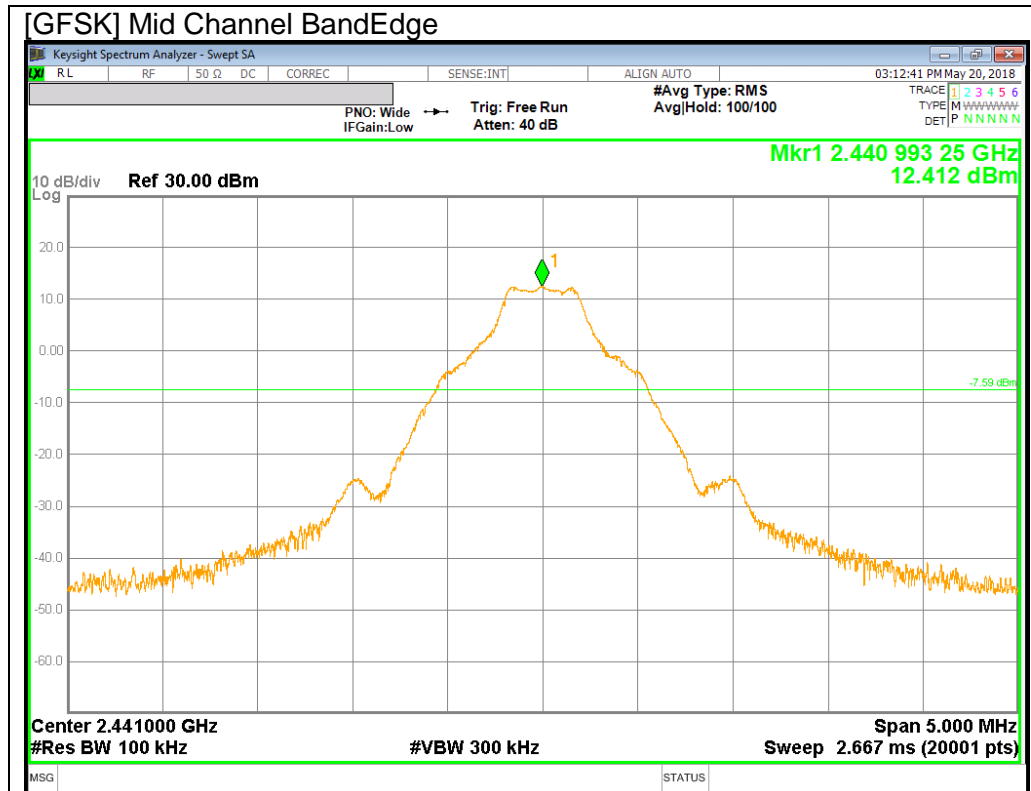
The bandedges at 2.4 and 2.4835 GHz are investigated with the transmitter set to the normal hopping mode.

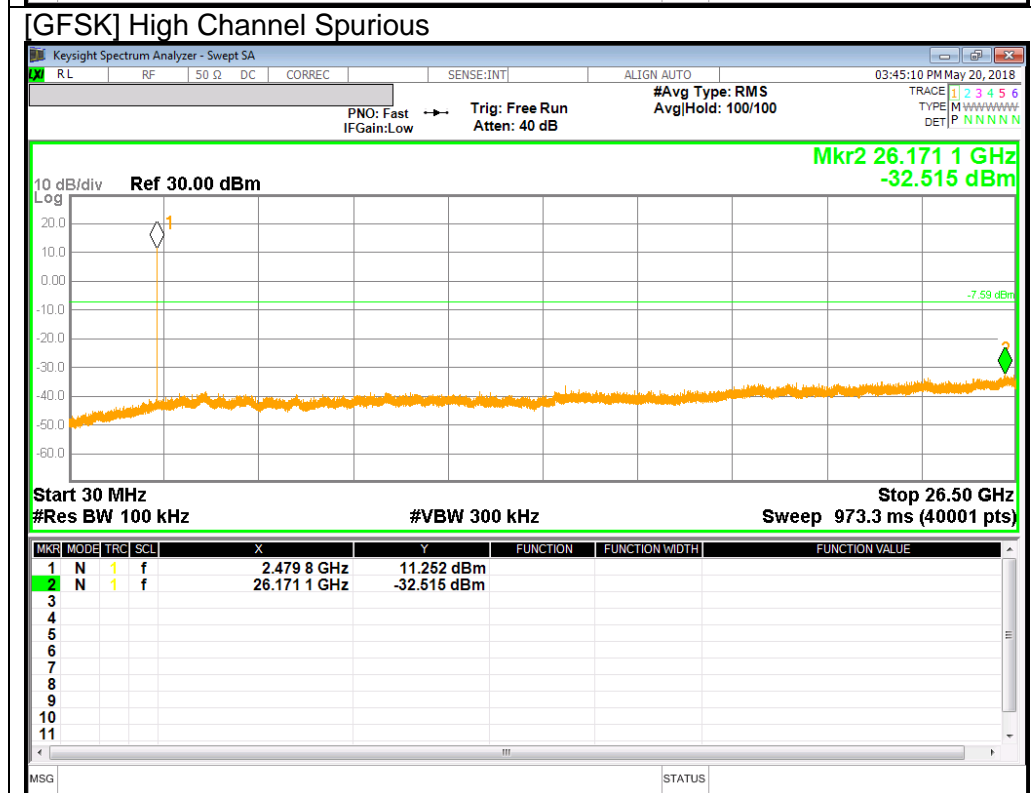
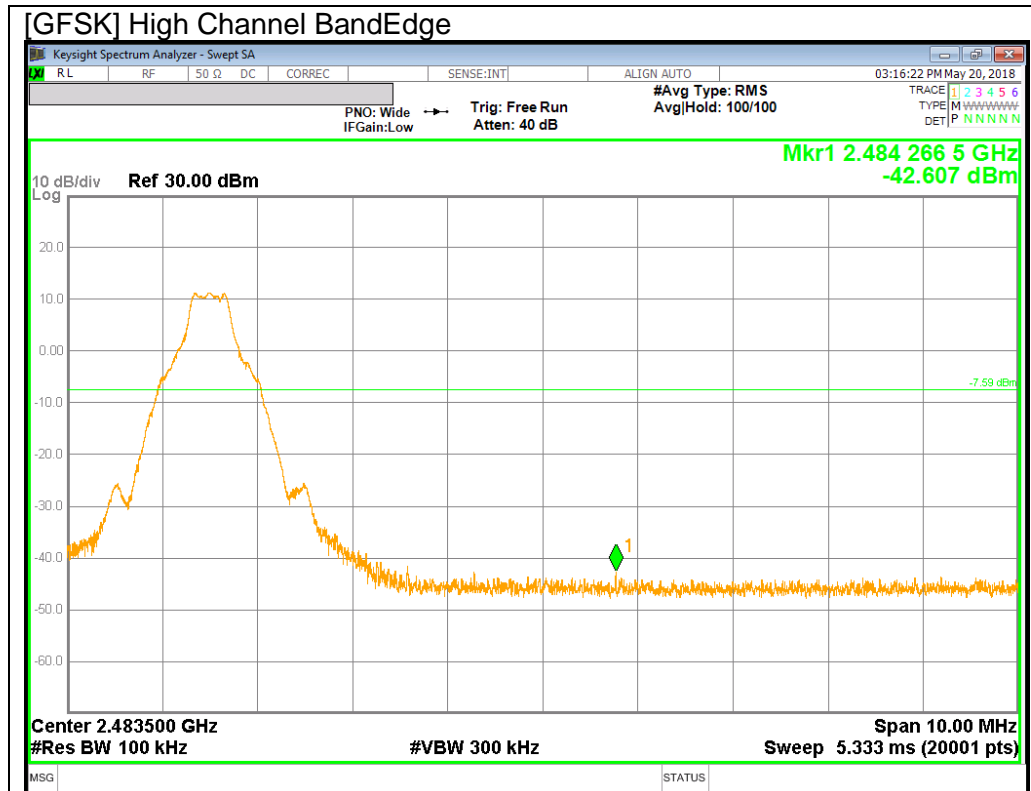
RESULTS

10.6.1. BASIC DATA RATE GFSK MODULATION

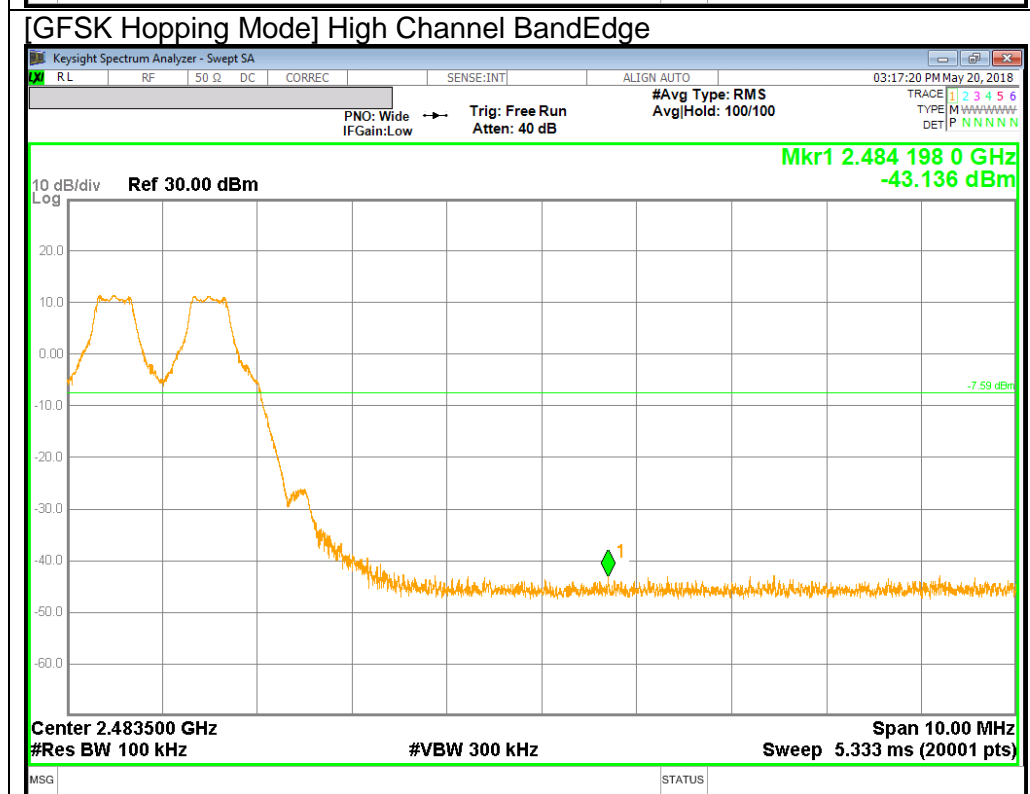
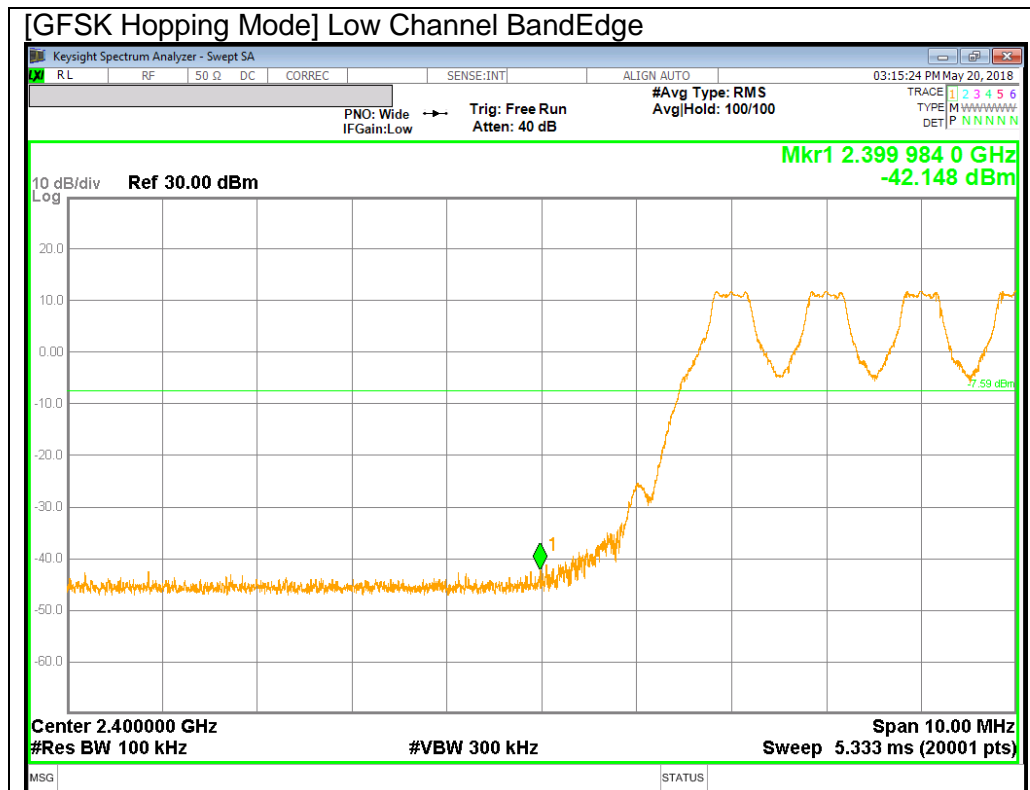
GFSK Mode



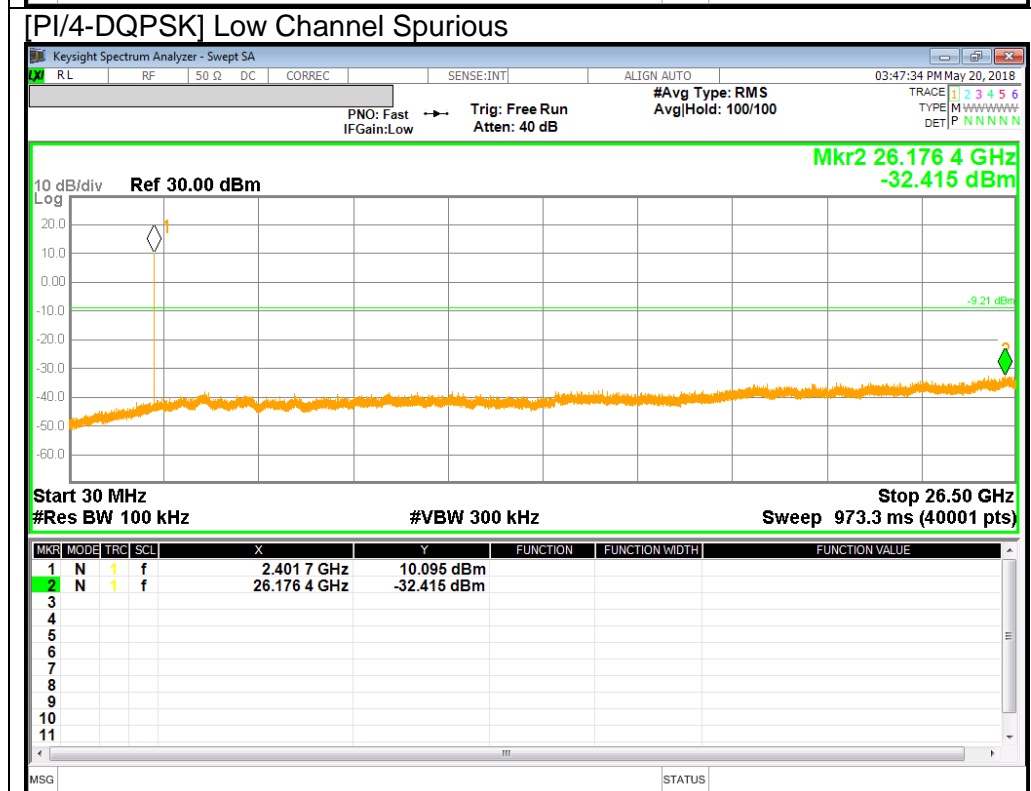
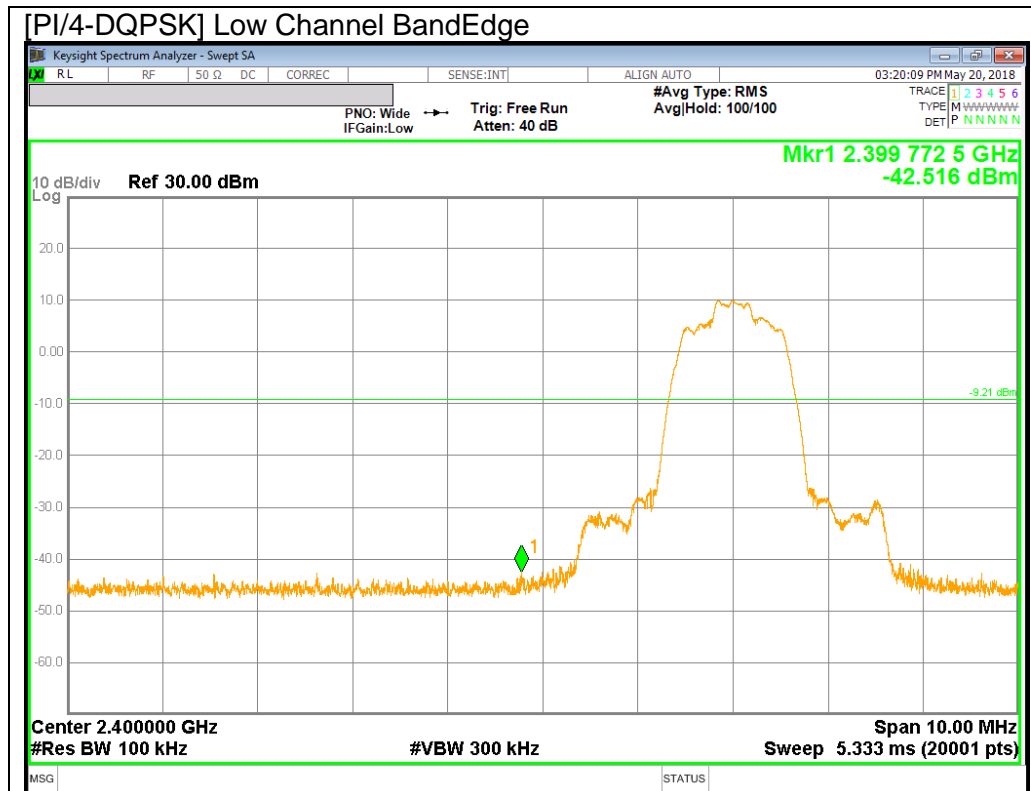


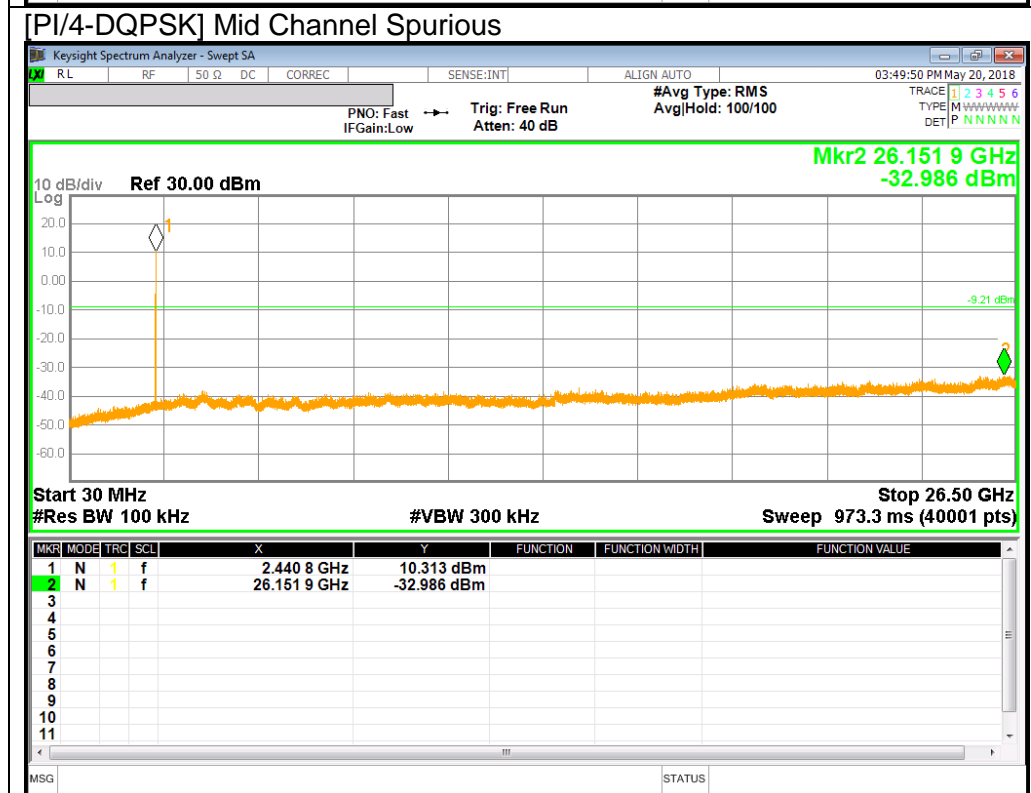
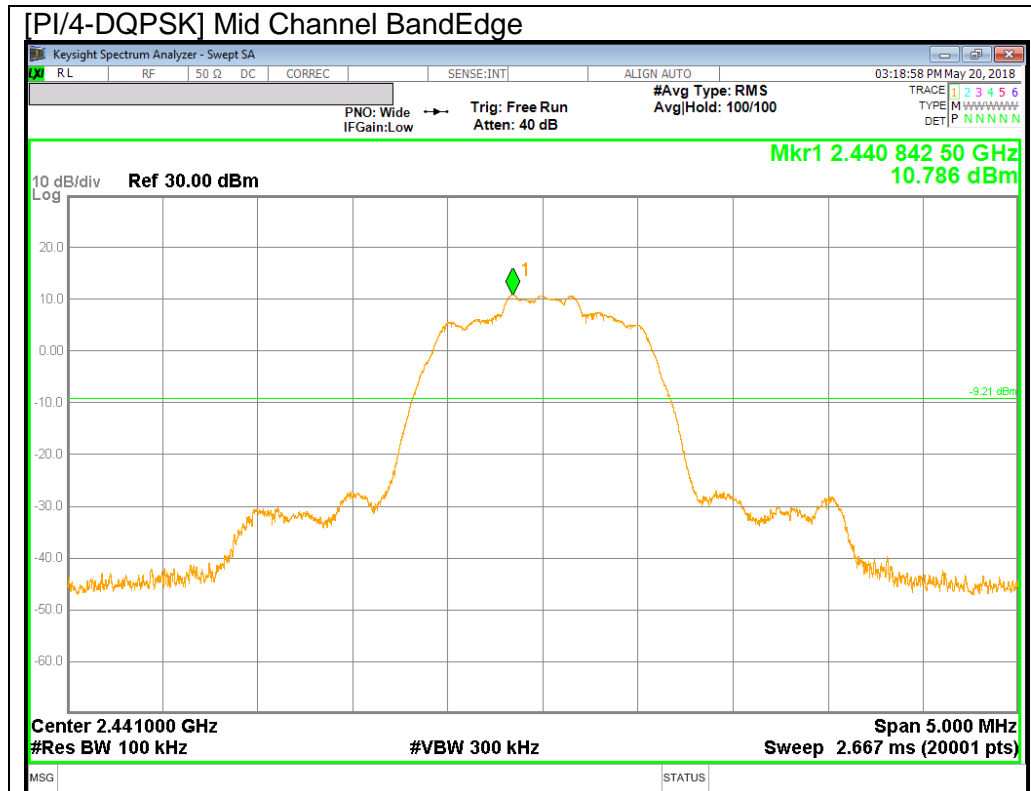


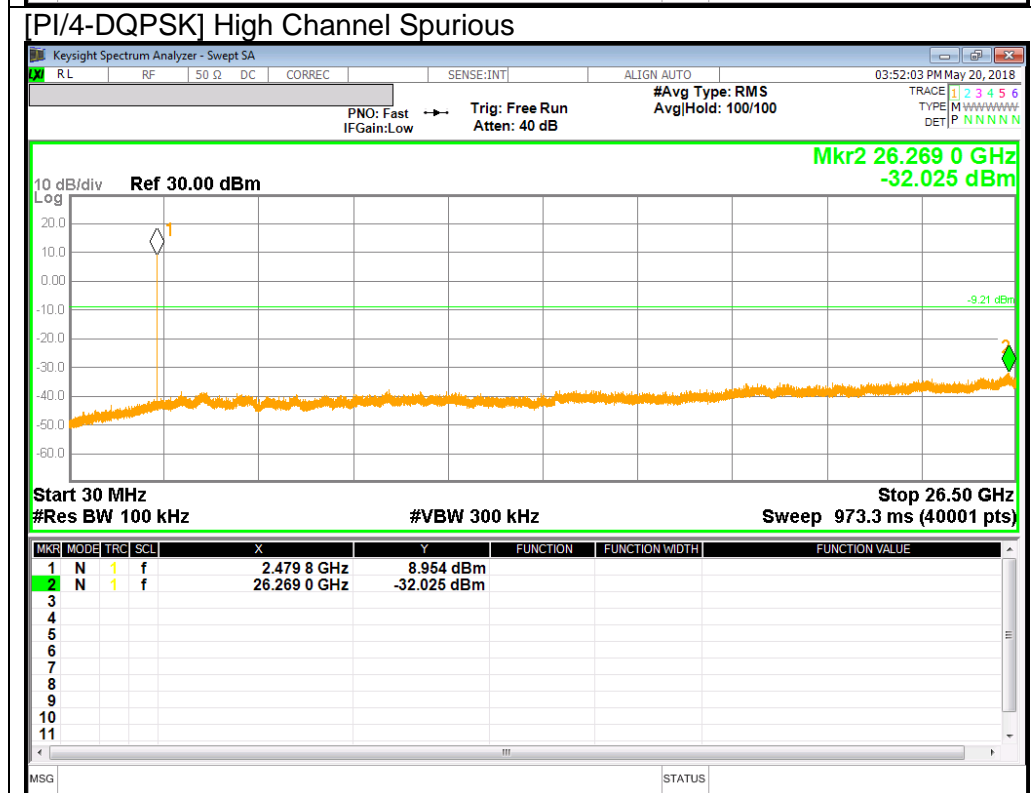
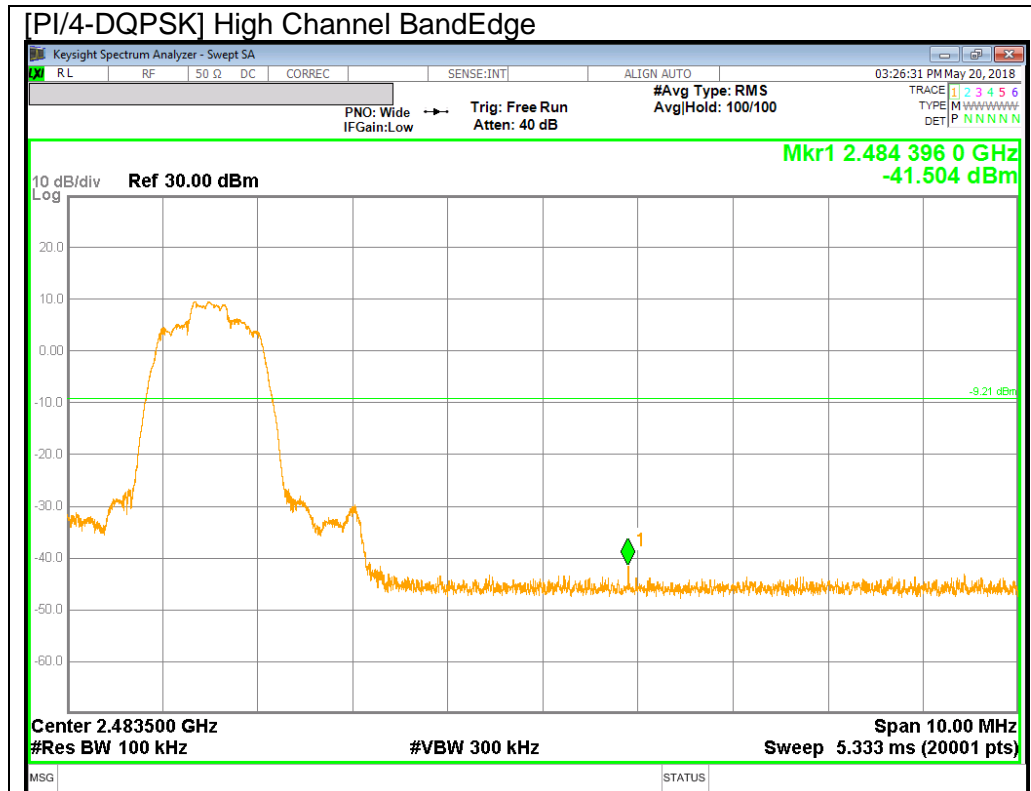
BandEdge Emission at GFSK Hopping Mode



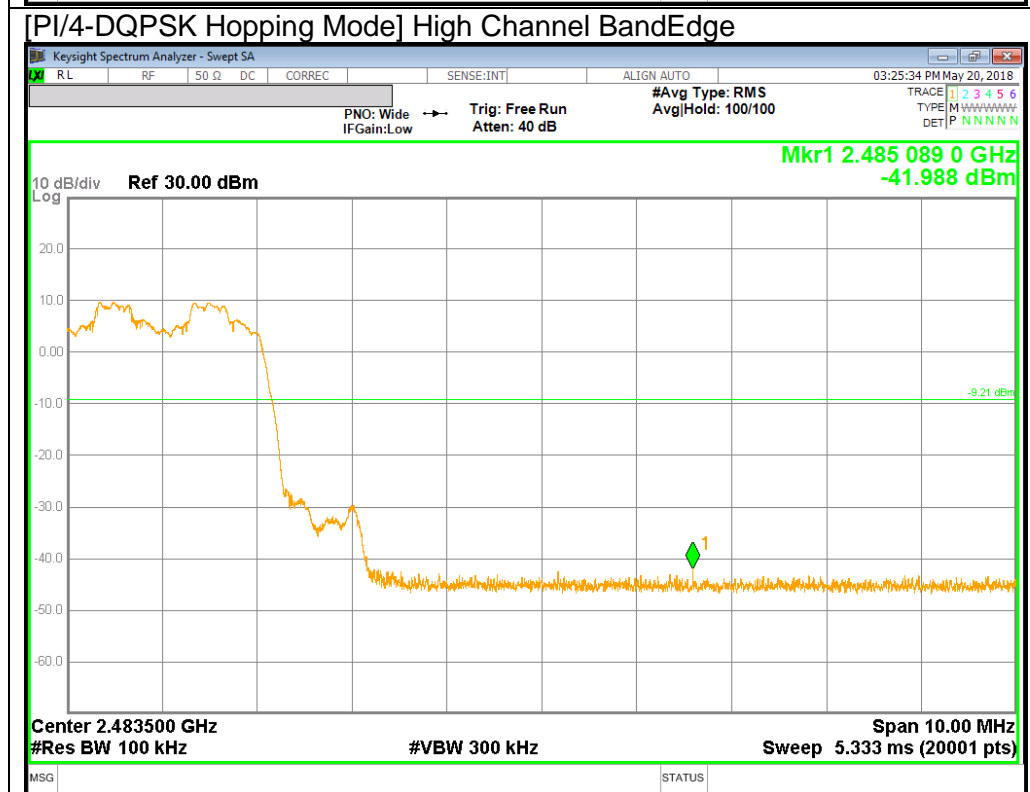
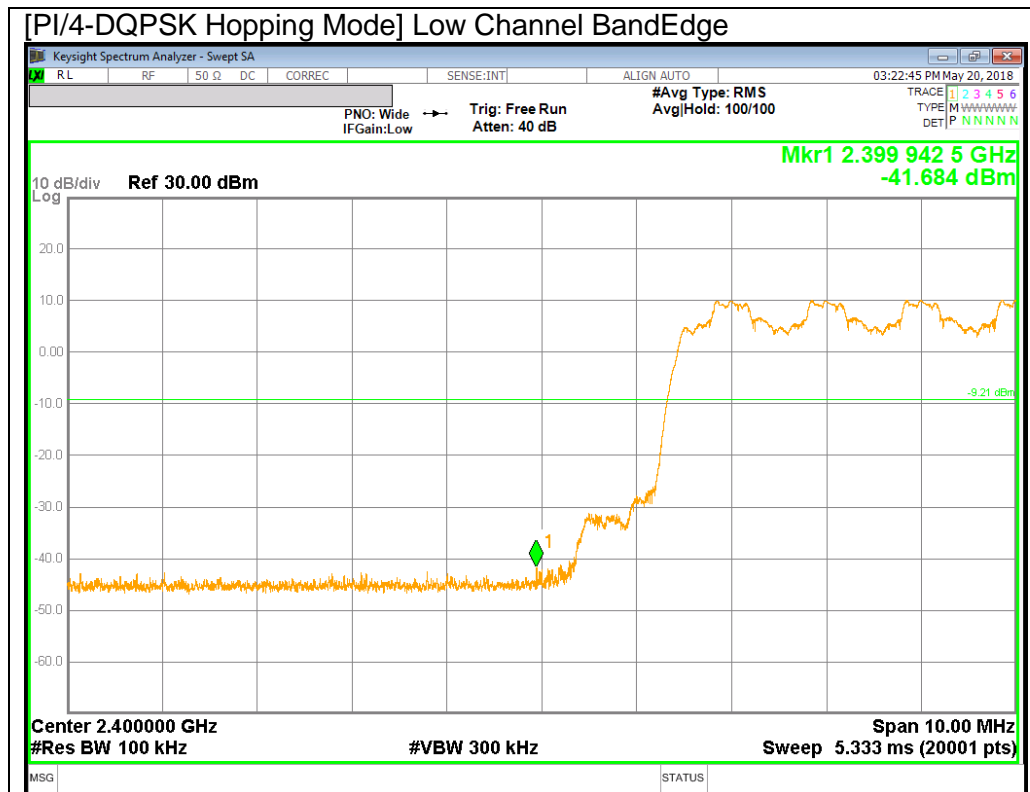
PI/4-DQPSK Mode



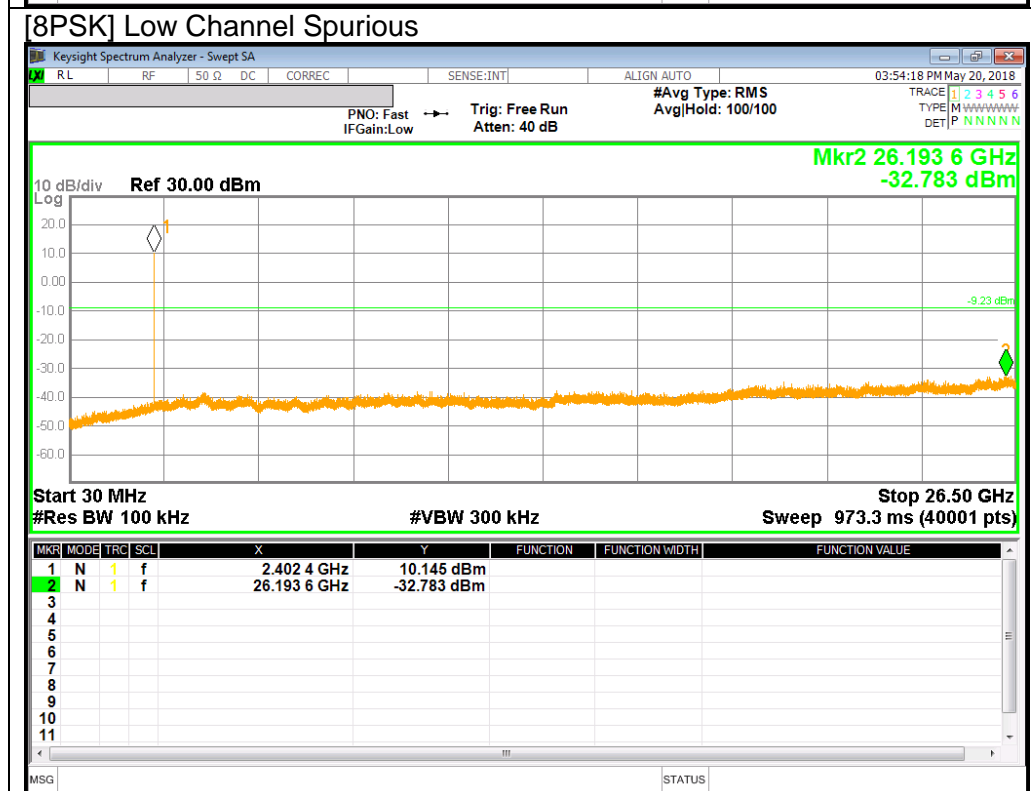
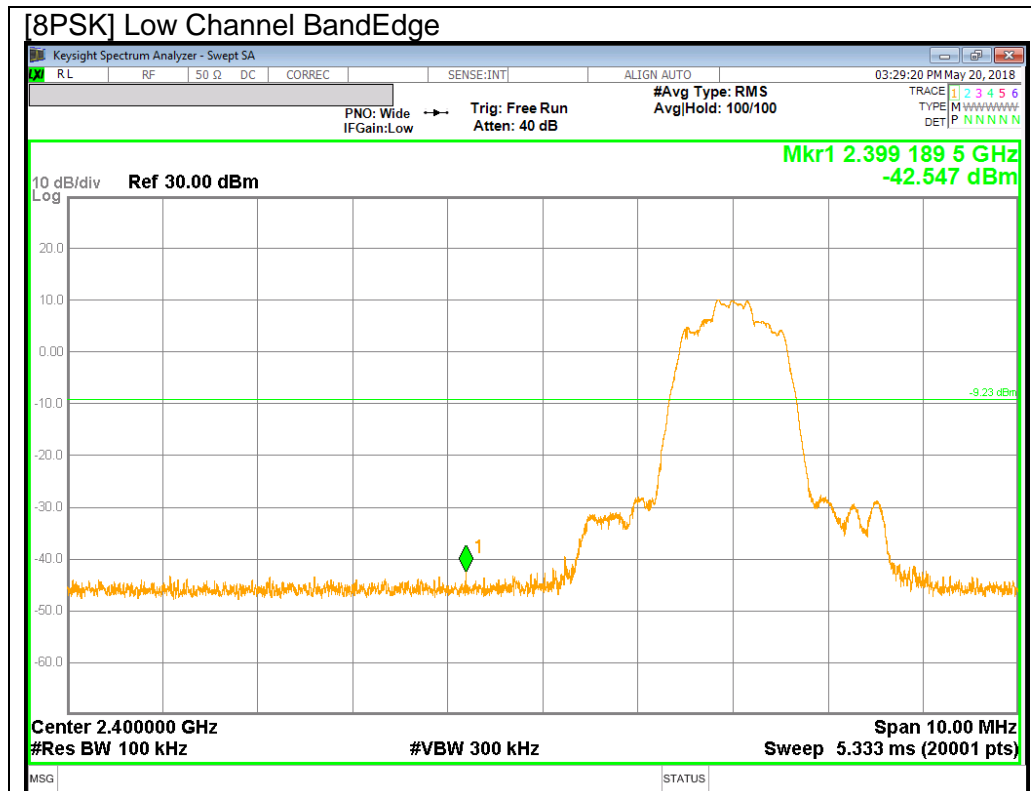


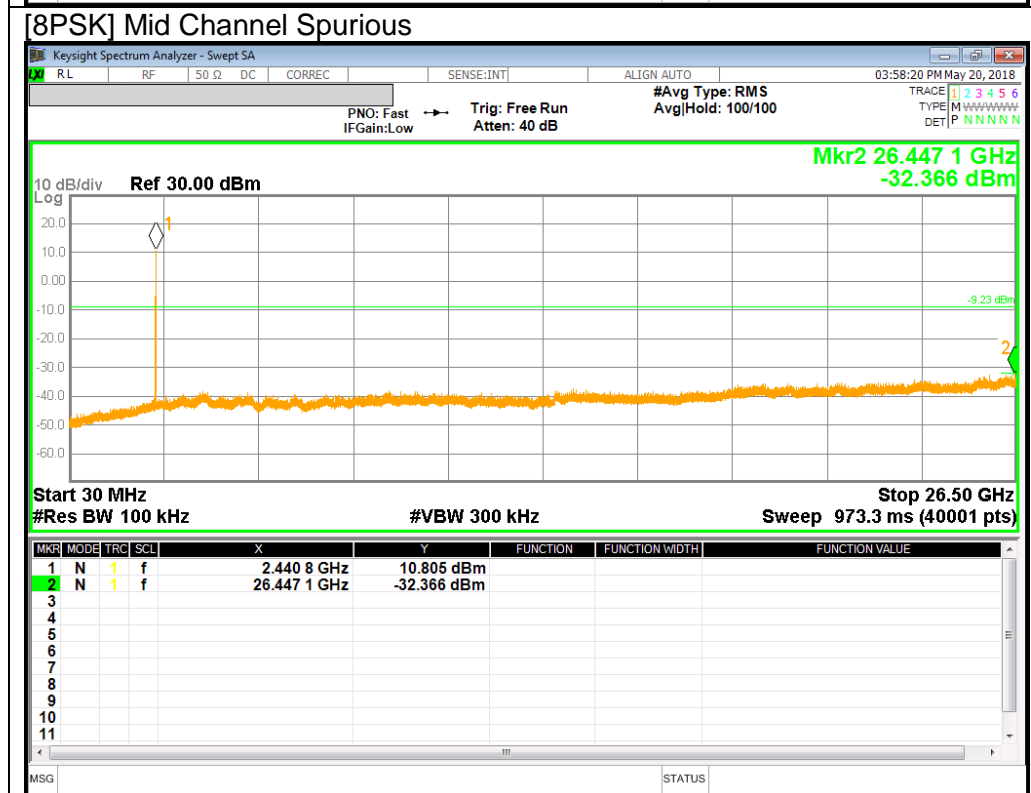
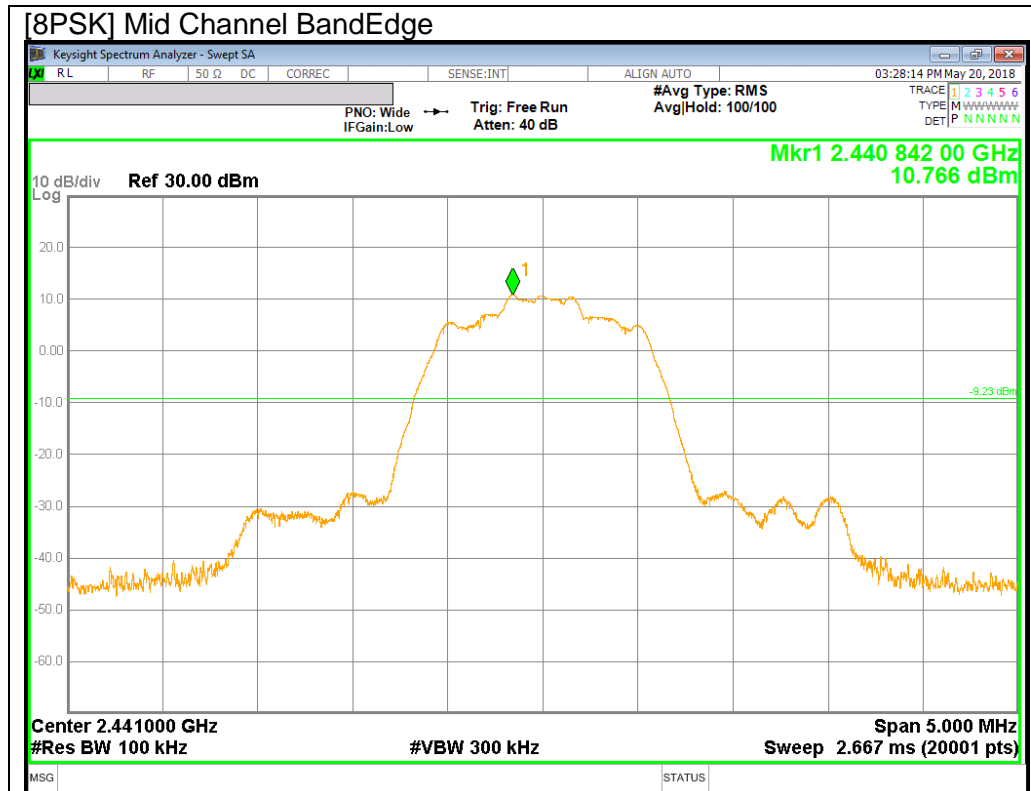


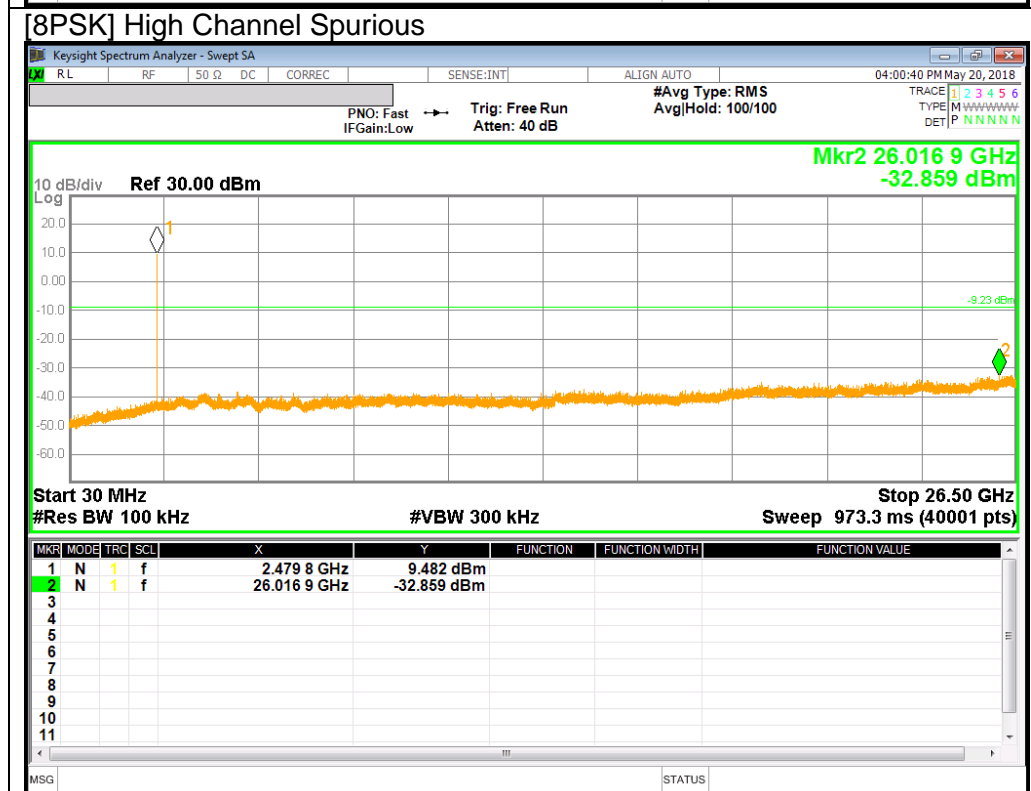
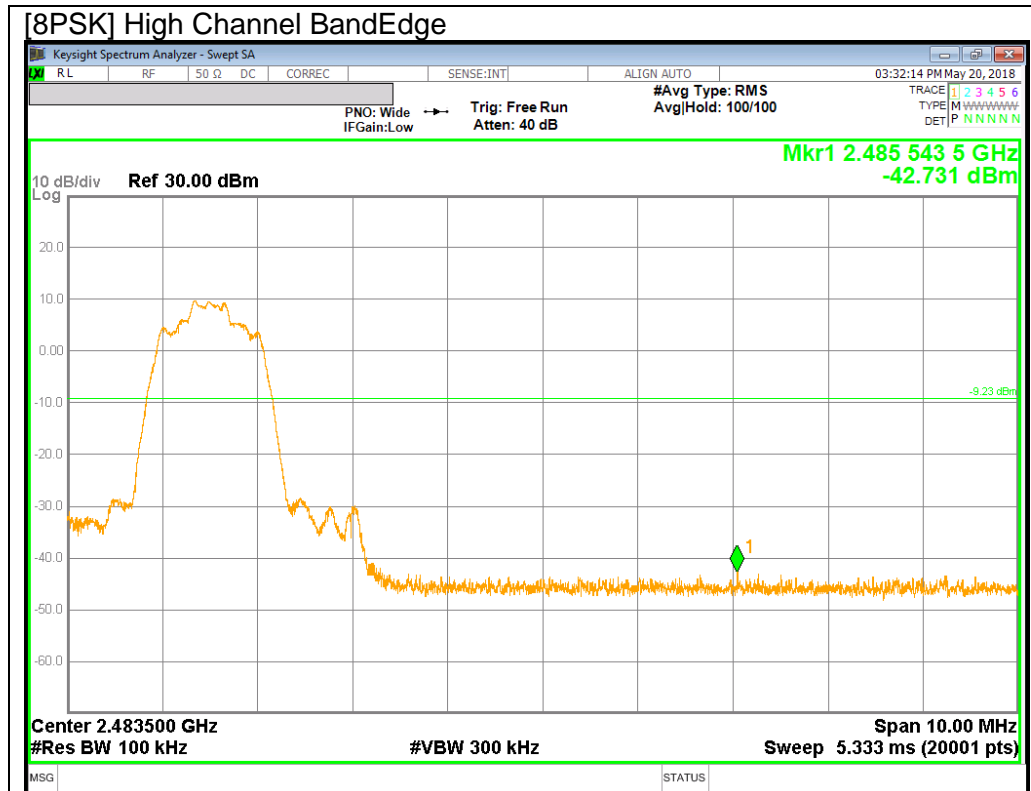
BandEdge Emission at PI/4-DQPSK Hopping Mode



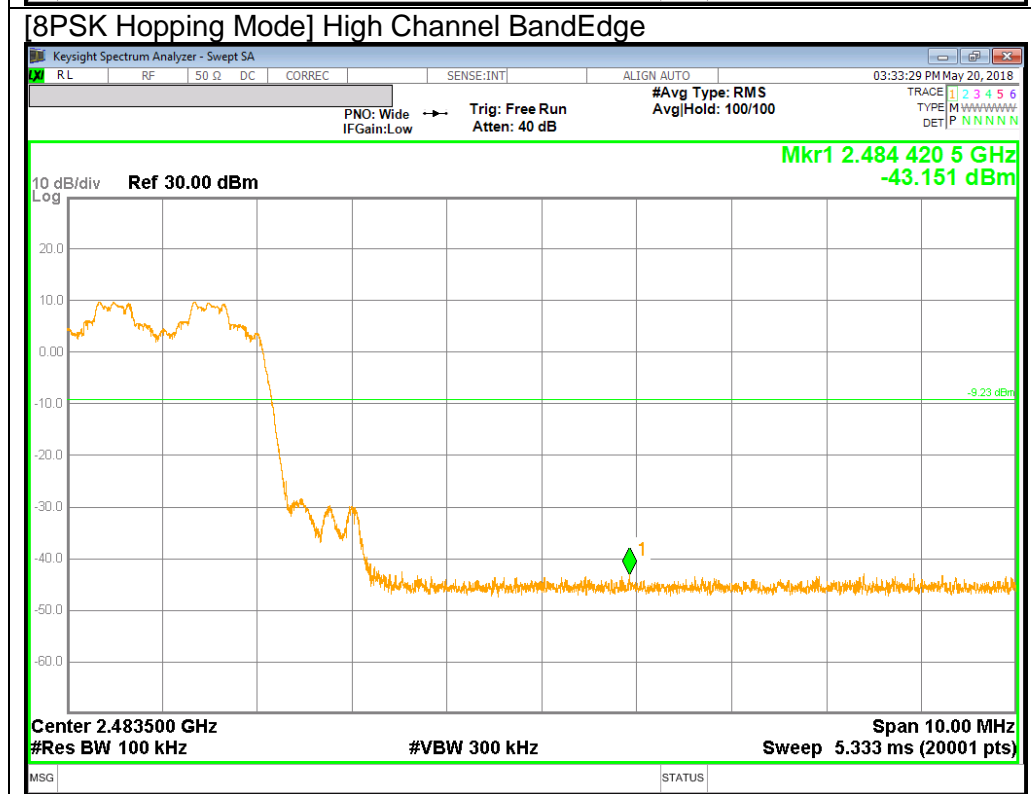
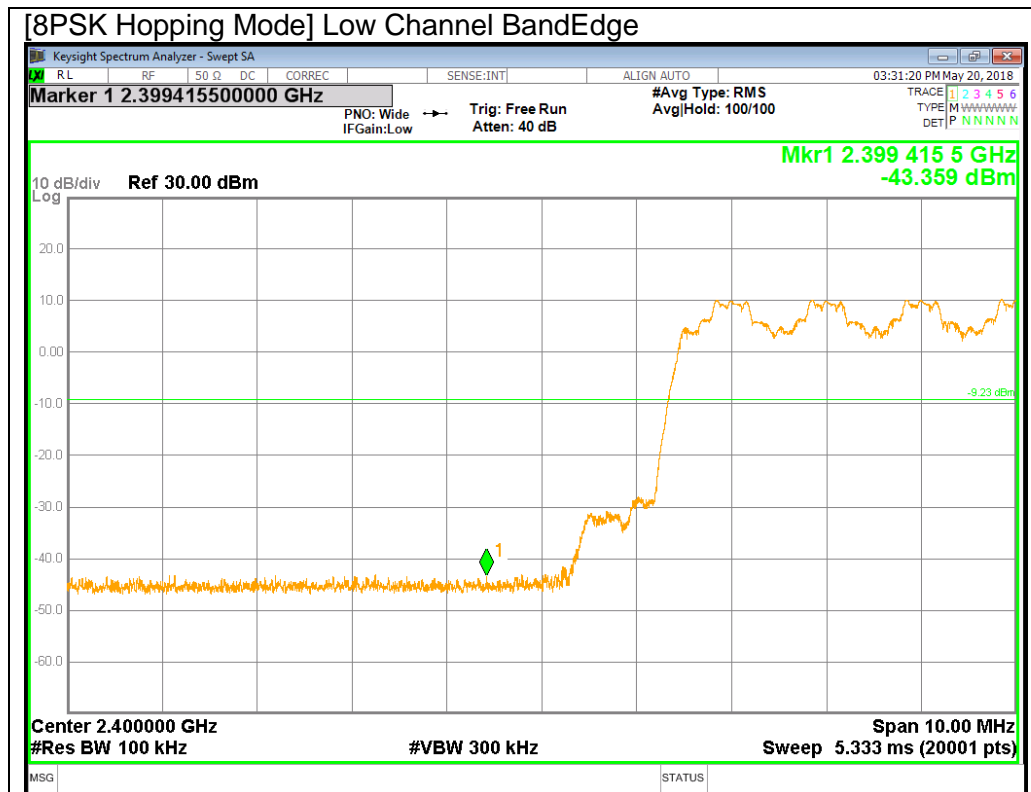
8PSK Mode







BandEdge Emission at 8PSK Hopping Mode



11. RADIATED TEST RESULTS

11.1. 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 3 MHz for peak measurements and 1/T (on time) for average measurement.

$$\text{GFSK} = 1/T = 1 / 0.002884\text{S} = 347\text{Hz}.$$

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)

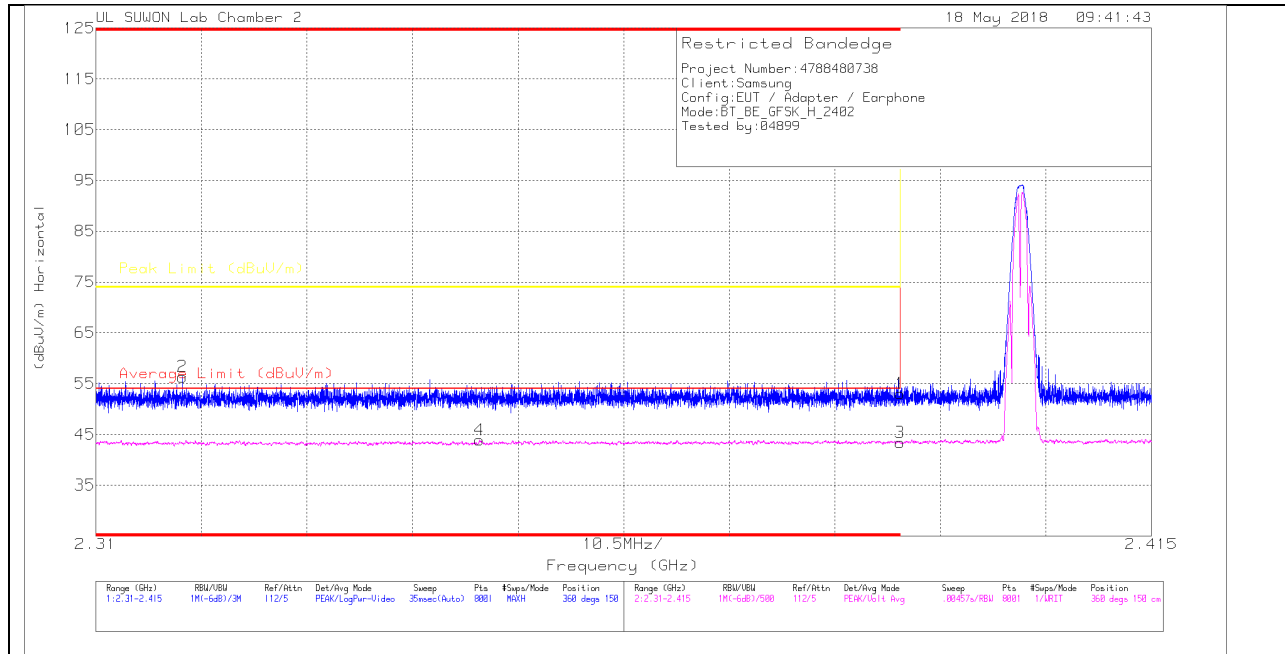
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

11.2. TRANSMITTER ABOVE 1 GHz

11.2.1. 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	170531_3117[0016 8724]	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	39.91	Pk		-18.2	53.01	-	-	74	-20.99	360	150	H
2	* 2.319	43.53	Pk		-18.4	56.33	-	-	74	-17.67	360	150	H
3	* 2.39	30.31	VA1T		-18.2	43.41	54	-10.59	-	-	360	150	H
4	* 2.348	30.94	VA1T		-18.3	43.84	54	-10.16	-	-	360	150	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-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	170531_3117[0016 8724]	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	39.43	Pk	31.3	-18.2	52.53	-	-	74	-21.47	231	207	V
2	* 2.387	42.85	Pk	31.3	-18.2	55.95	-	-	74	-18.05	231	207	V
3	* 2.39	30.4	VA1T	31.3	-18.2	43.5	54	-10.5	-	-	231	207	V
4	* 2.354	30.91	VA1T	31.2	-18.3	43.81	54	-10.19	-	-	231	207	V

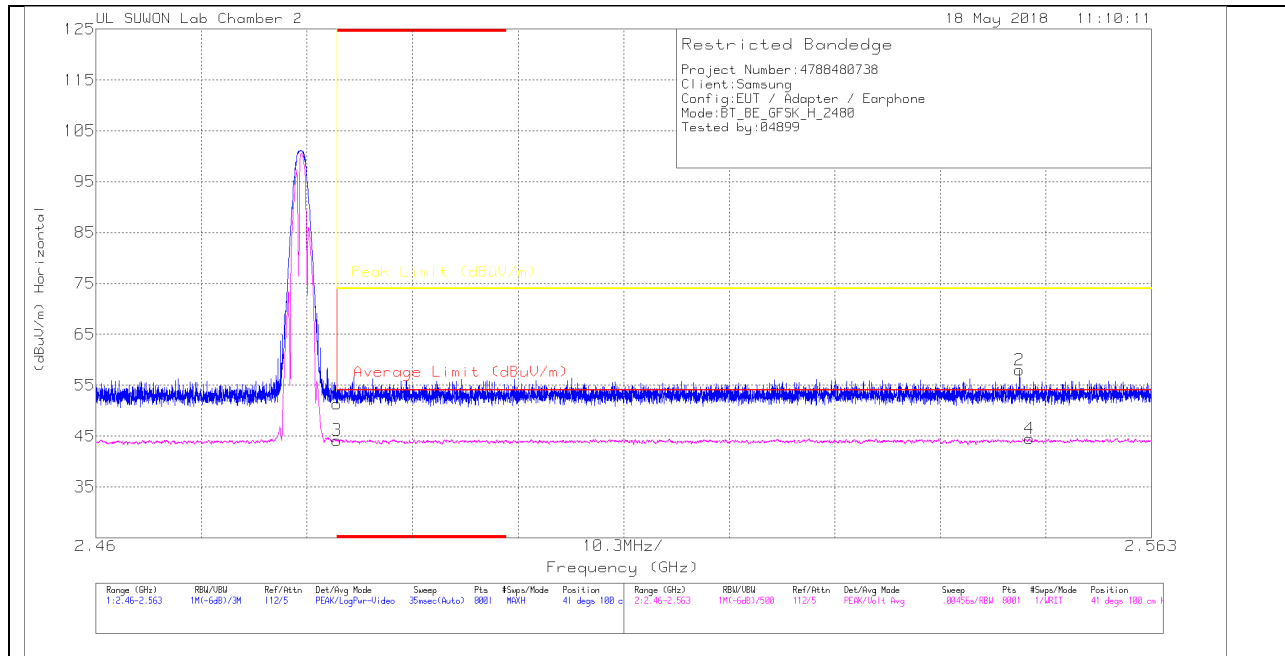
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

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

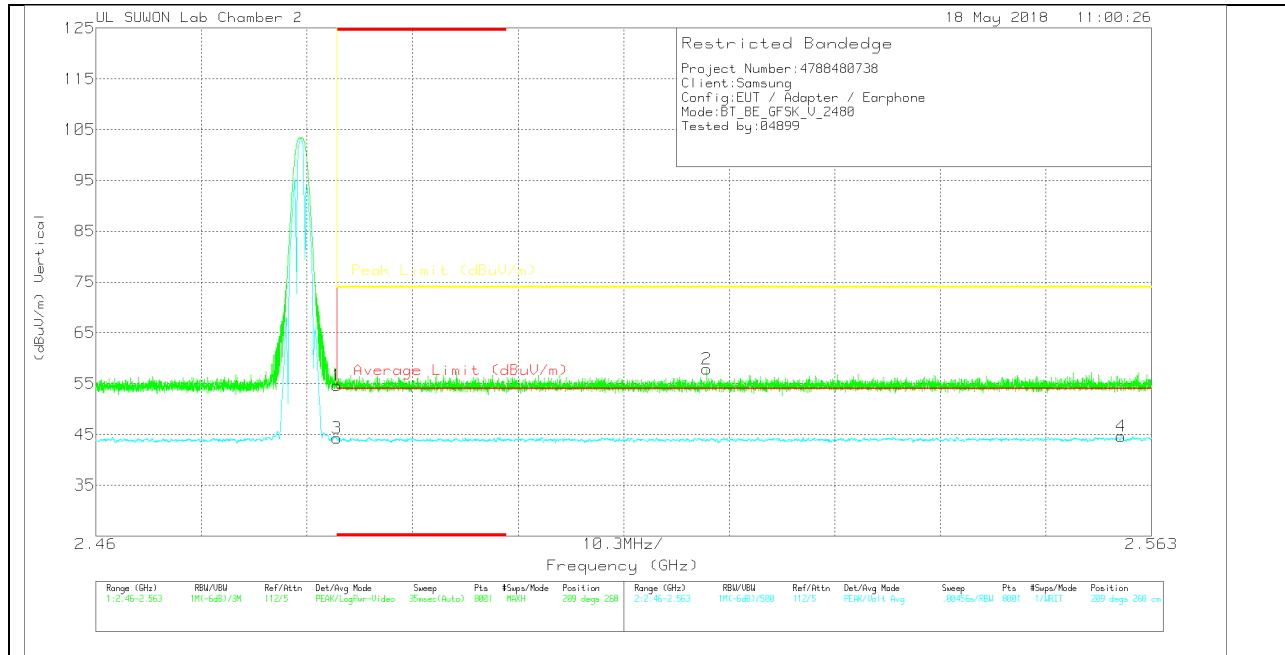
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	170531_3117[0016 8724]	10dB[dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	37.68	Pk		-18	51.28	-	-	74	-22.72	41	100	H
2	2.55	44.27	Pk		-18	57.97	-	-	74	-16.03	41	100	H
3	* 2.484	30.6	VA1T		-18	44.2	54	-9.8	-	-	41	100	H
4	2.551	30.87	VA1T		-18	44.57	54	-9.43	-	-	41	100	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-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	170531_3117[0016 8724]	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	41.11	Pk		-18	54.71	-	-	74	-19.29	209	268	V
2	2.52	44.29	Pk		-18	57.89	-	-	74	-16.11	209	268	V
3	* 2.484	30.67	VA1T		-18	44.27	54	-9.73	-	-	209	268	V
4	2.56	30.89	VA1T		-18	44.59	54	-9.41	-	-	209	268	V

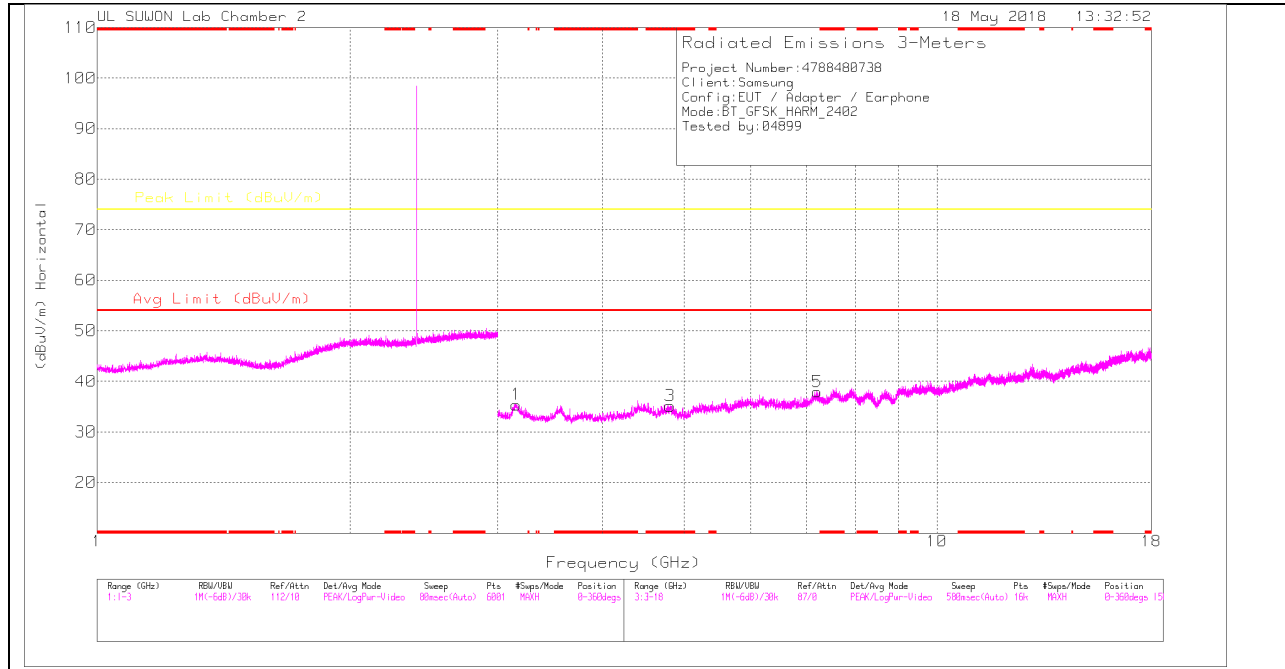
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

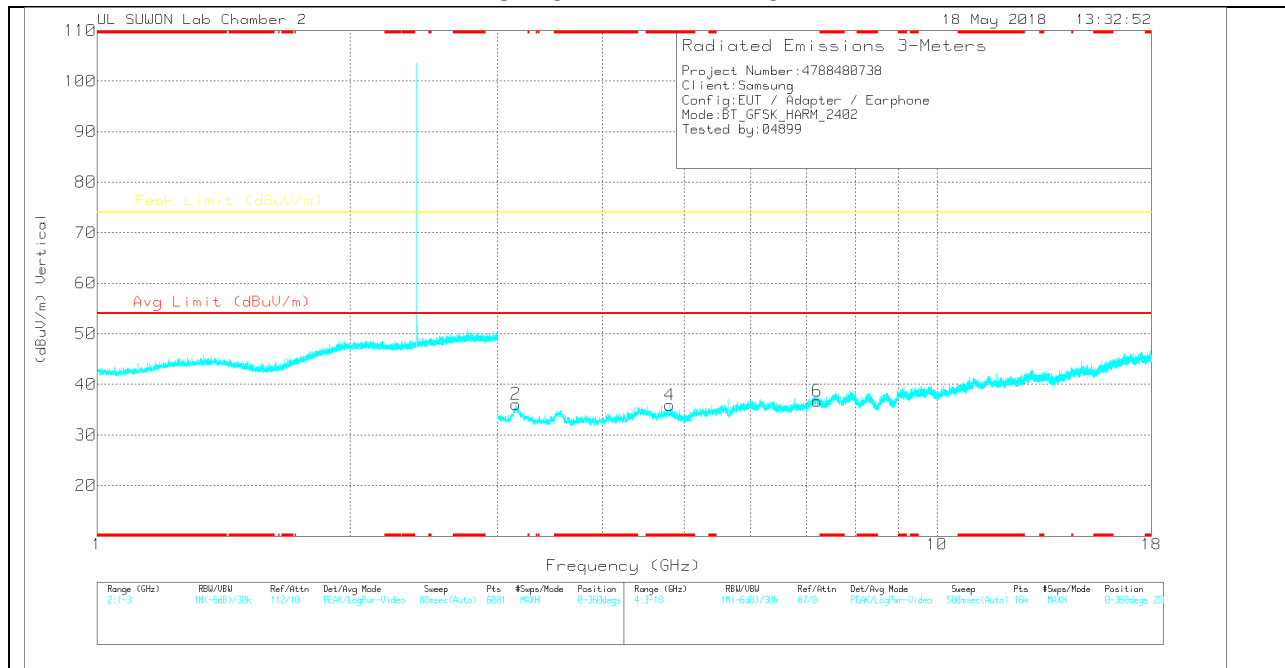
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

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

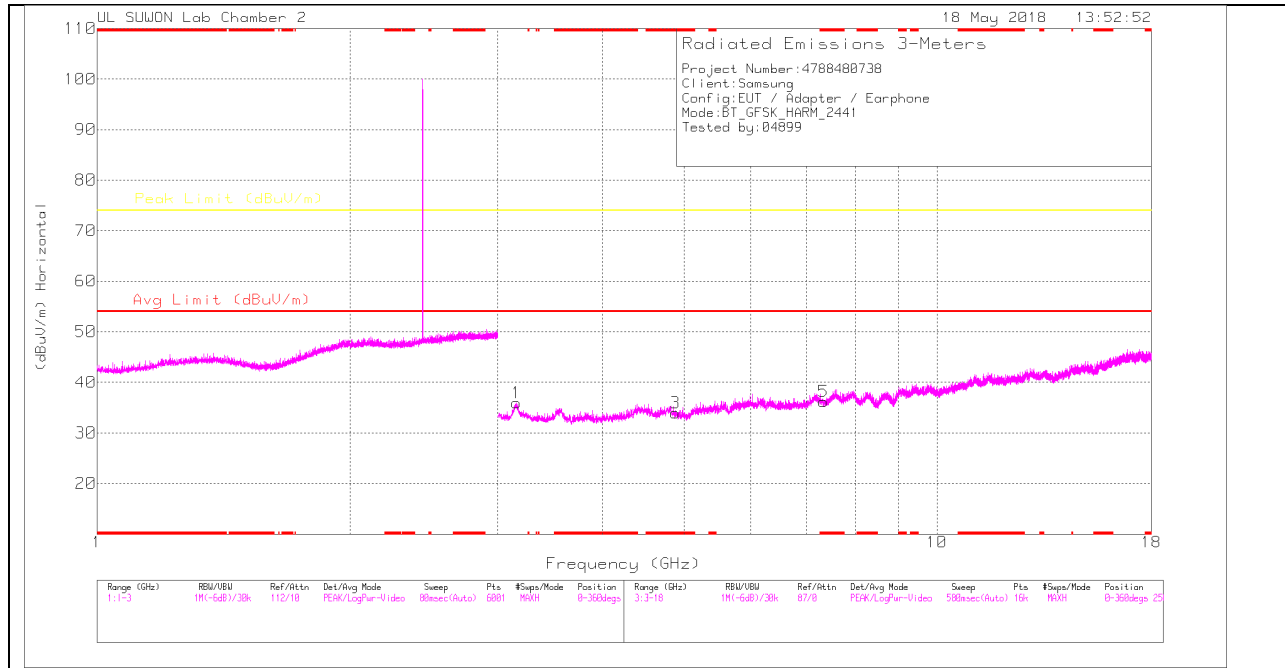
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	170531_3117[0016 8724]	3GHz_HP[dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	3.156	26.38	PK	34.7	-25.7	35.38	-	-	74	-38.62	0-360	150	H
3	* 4.811	25.65	PK	33.8	-24.3	35.15	-	-	74	-38.85	0-360	150	H
5	7.203	23.6	PK	35.9	-21.6	37.9	-	-	74	-36.1	0-360	150	H
2	3.155	26.99	PK	34.8	-25.7	36.09	-	-	74	-37.91	0-360	150	V
4	* 4.804	26.4	PK	33.8	-24.3	35.9	-	-	74	-38.1	0-360	250	V
6	7.203	22.41	PK	35.9	-21.6	36.71	-	-	74	-37.29	0-360	150	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

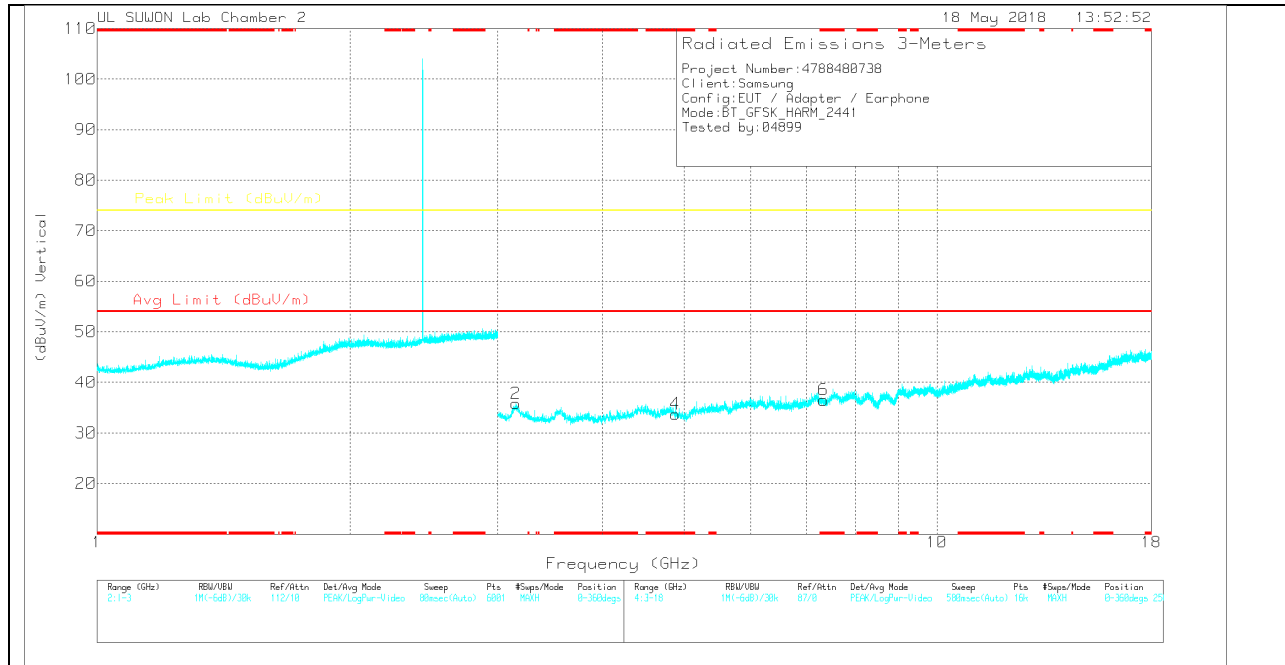
PK – Peak detector

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

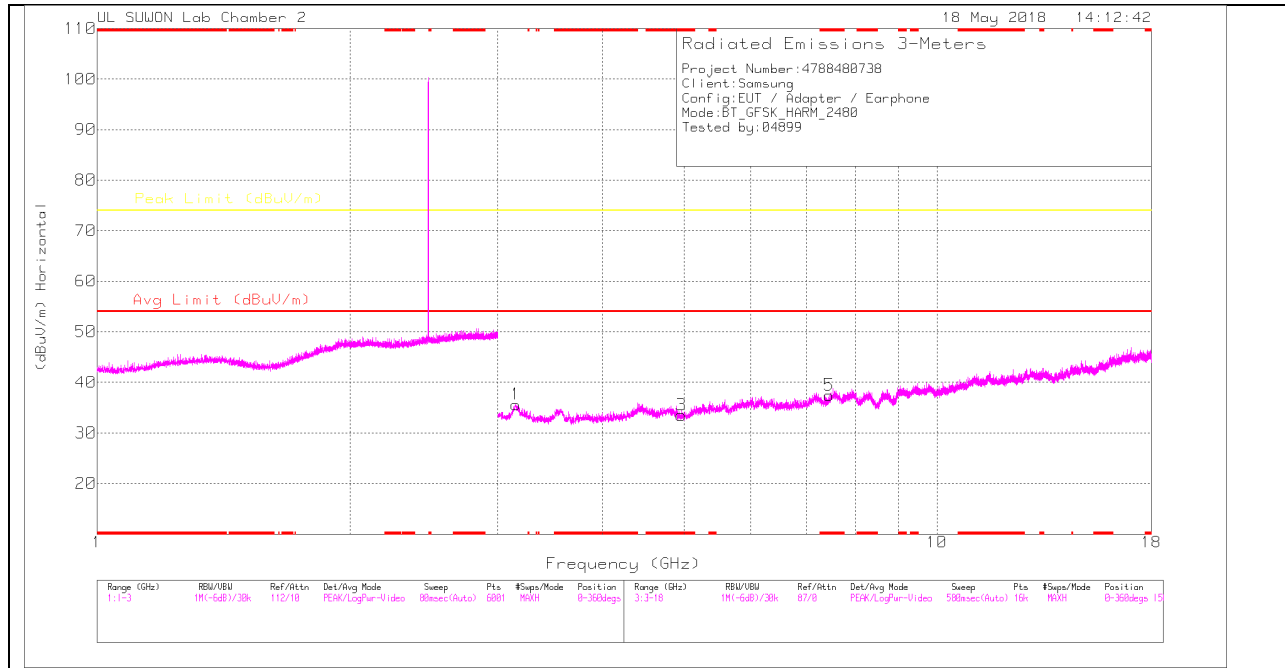
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	170531_3117[0016 8724]	3GHz_HP[dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	3.157	26.95	PK	34.7	-25.7	35.95	-	-	74	-38.05	0-360	150	H
3	* 4.882	24.72	PK	33.8	-24.6	33.92	-	-	74	-40.08	0-360	250	H
5	* 7.323	22.17	PK	35.9	-21.9	36.17	-	-	74	-37.83	0-360	250	H
2	3.153	26.68	PK	34.8	-25.7	35.78	-	-	74	-38.22	0-360	150	V
4	* 4.882	24.53	PK	33.8	-24.6	33.73	-	-	74	-40.27	0-360	250	V
6	* 7.323	22.51	PK	35.9	-21.9	36.51	-	-	74	-37.49	0-360	250	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

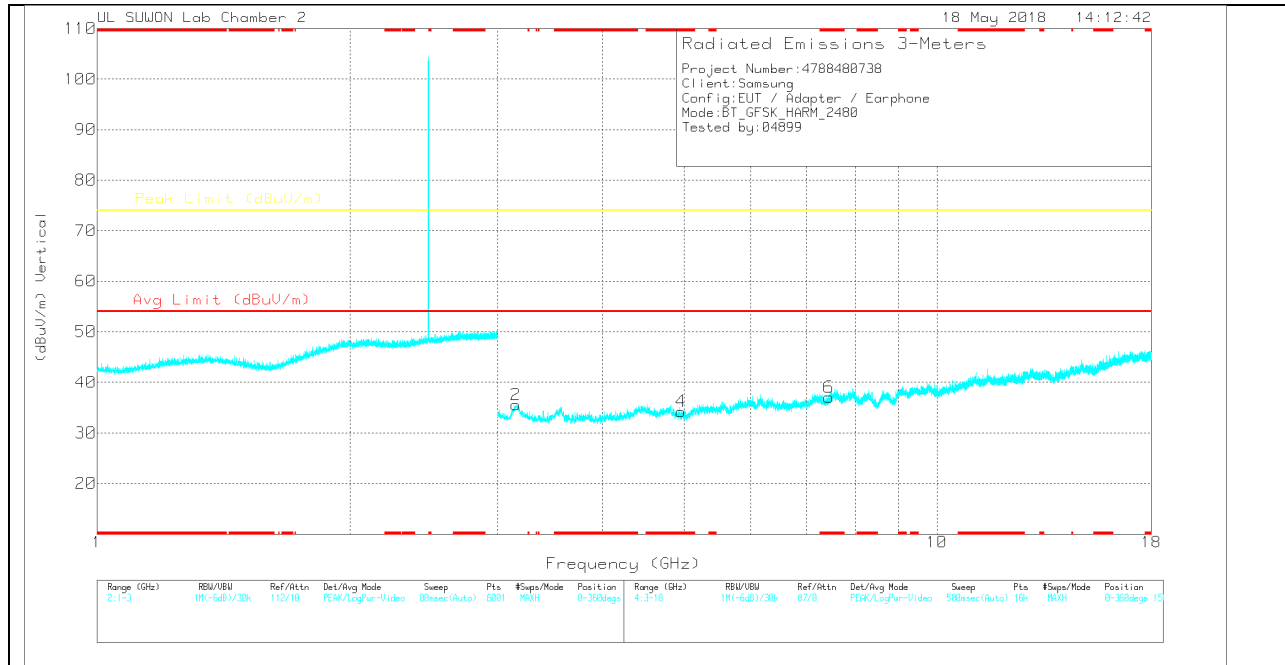
PK – Peak detector

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	170531_3117[0016 8724]	3GHz_HP[dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	3.155	26.53	PK	34.8	-25.7	35.63	-	-	74	-38.37	0-360	250	H
3	* 4.962	24.42	PK	33.8	-24.7	33.52	-	-	74	-40.48	0-360	250	H
5	* 7.442	22.55	PK	35.9	-21	37.45	-	-	74	-36.55	0-360	150	H
2	3.153	26.45	PK	34.8	-25.7	35.55	-	-	74	-38.45	0-360	250	V
4	* 4.959	25.13	PK	33.8	-24.7	34.23	-	-	74	-39.77	0-360	250	V
6	* 7.437	22.13	PK	35.9	-21	37.03	-	-	74	-36.97	0-360	250	V

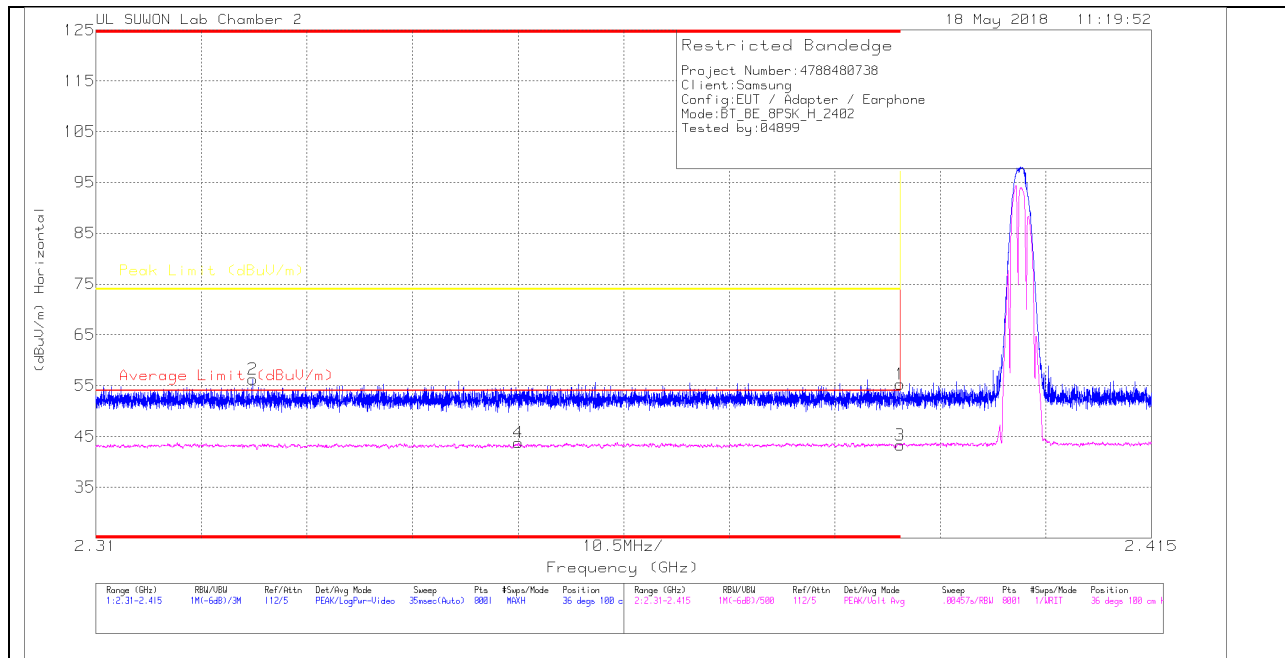
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK – Peak detector

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

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

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

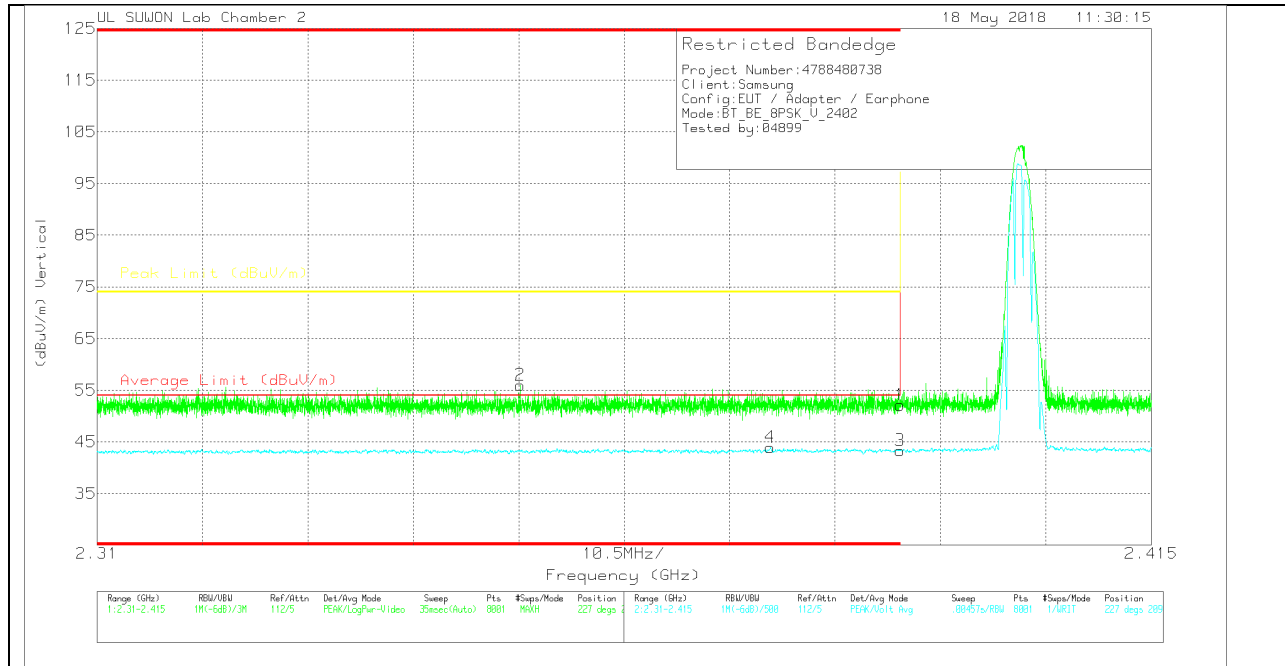
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	170531_3117[0016 8724]	10dB[dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	42.14	Pk		-18.2	55.24	-	-	74	-18.76	36	100	H
2	* 2.326	43.44	Pk		-18.4	56.24	-	-	74	-17.76	36	100	H
3	* 2.39	30.23	VA1T		-18.2	43.33	54	-10.67	-	-	36	100	H
4	* 2.352	30.86	VA1T		-18.3	43.76	54	-10.24	-	-	36	100	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-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	170531_3117[0016 8724]	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	39.05	Pk	31.3	-18.2	52.15	-	-	74	-21.85	227	209	V
2	* 2.352	43.11	Pk	31.2	-18.3	56.01	-	-	74	-17.99	227	209	V
3	* 2.39	30.22	VA1T	31.3	-18.2	43.32	54	-10.68	-	-	227	209	V
4	* 2.377	30.95	VA1T	31.3	-18.3	43.95	54	-10.05	-	-	227	209	V

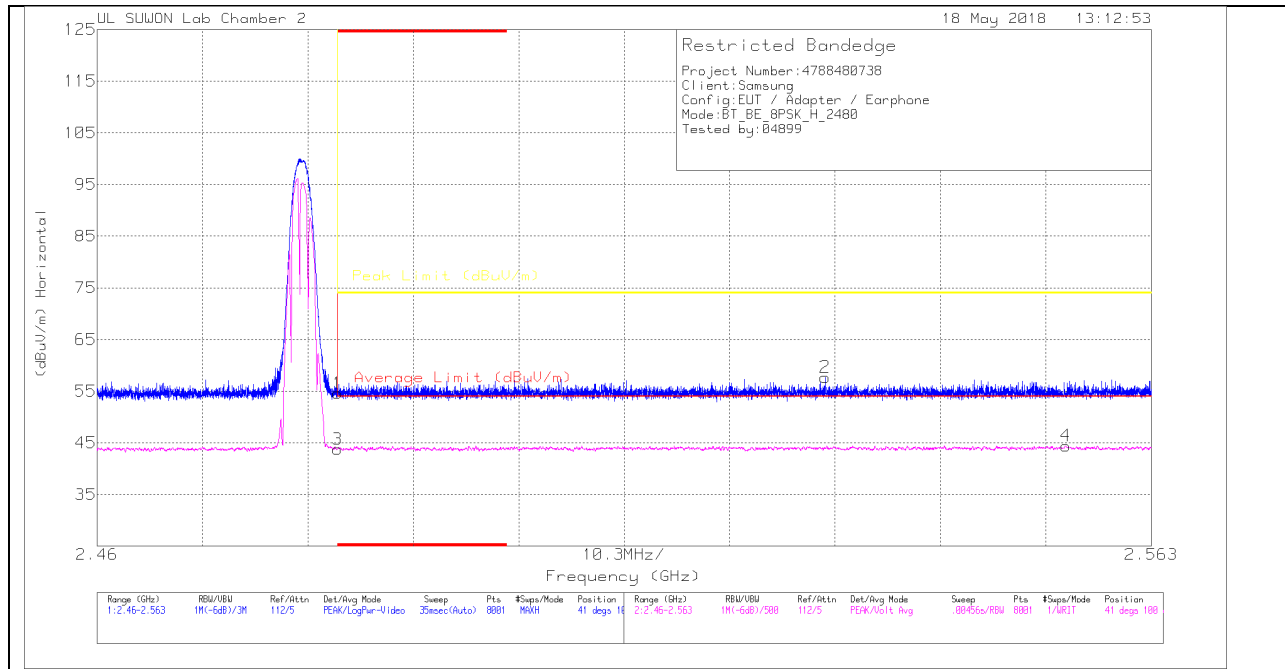
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

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

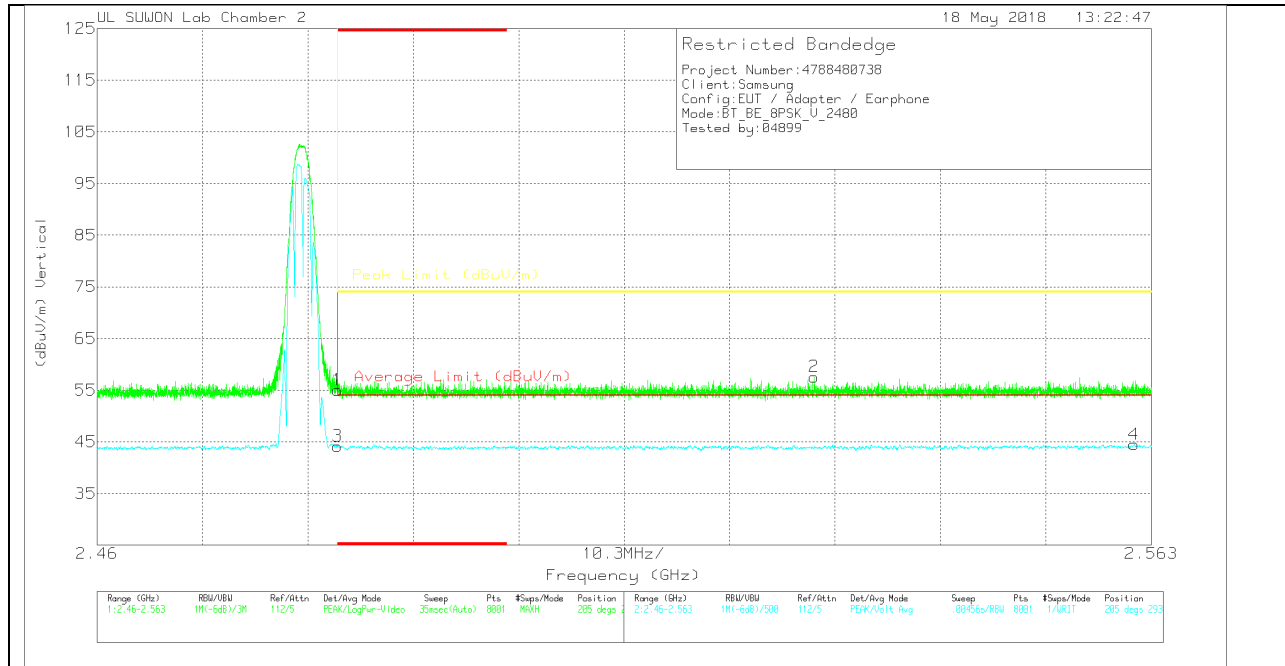
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	170531_3117[0016 8724]	10dB[dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	41.01	Pk		-18	54.61	-	-	74	-19.39	41	100	H
2	2.531	44	Pk		-18	57.7	-	-	74	-16.3	41	100	H
3	* 2.484	30.19	VA1T		-18	43.79	54	-10.21	-	-	41	100	H
4	2.555	30.74	VA1T		-18	44.44	54	-9.56	-	-	41	100	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-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	170531_3117[0016 8724]	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	41.46	Pk		-18	55.06	-	-	74	-18.94	205	293	V
2	2.53	43.9	Pk		-18	57.6	-	-	74	-16.4	205	293	V
3	* 2.484	30.6	VA1T		-18	44.2	54	-9.8	-	-	205	293	V
4	2.561	30.83	VA1T		-18	44.53	54	-9.47	-	-	205	293	V

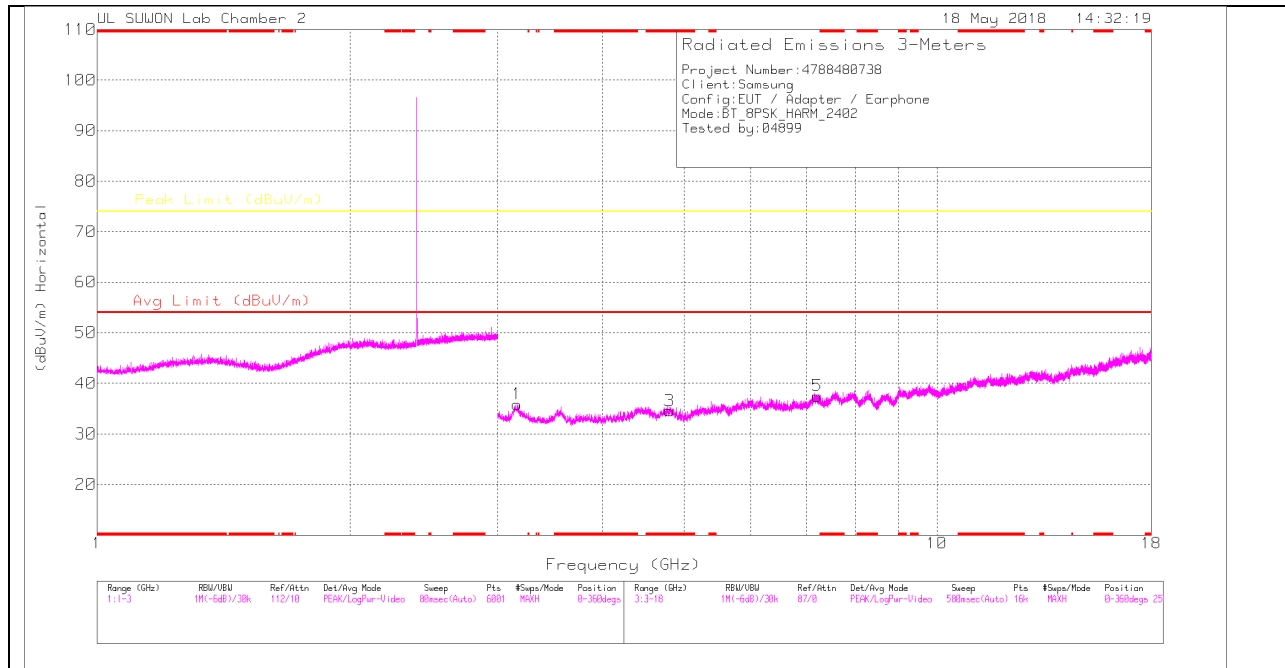
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

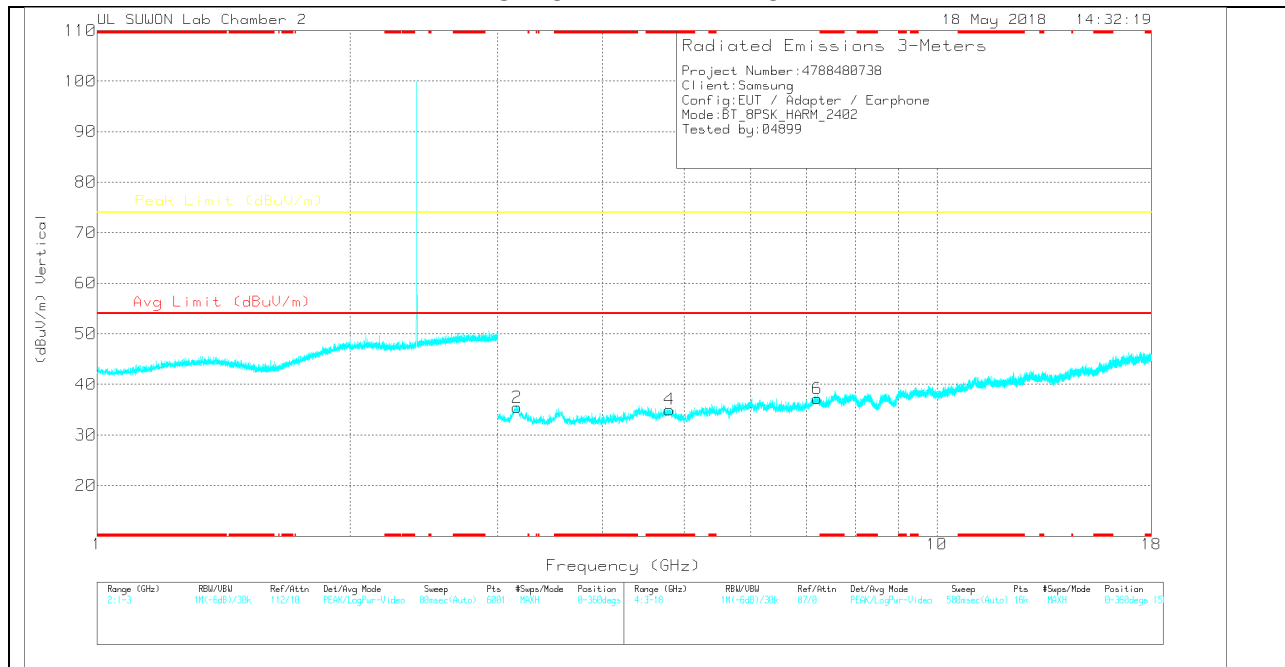
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

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

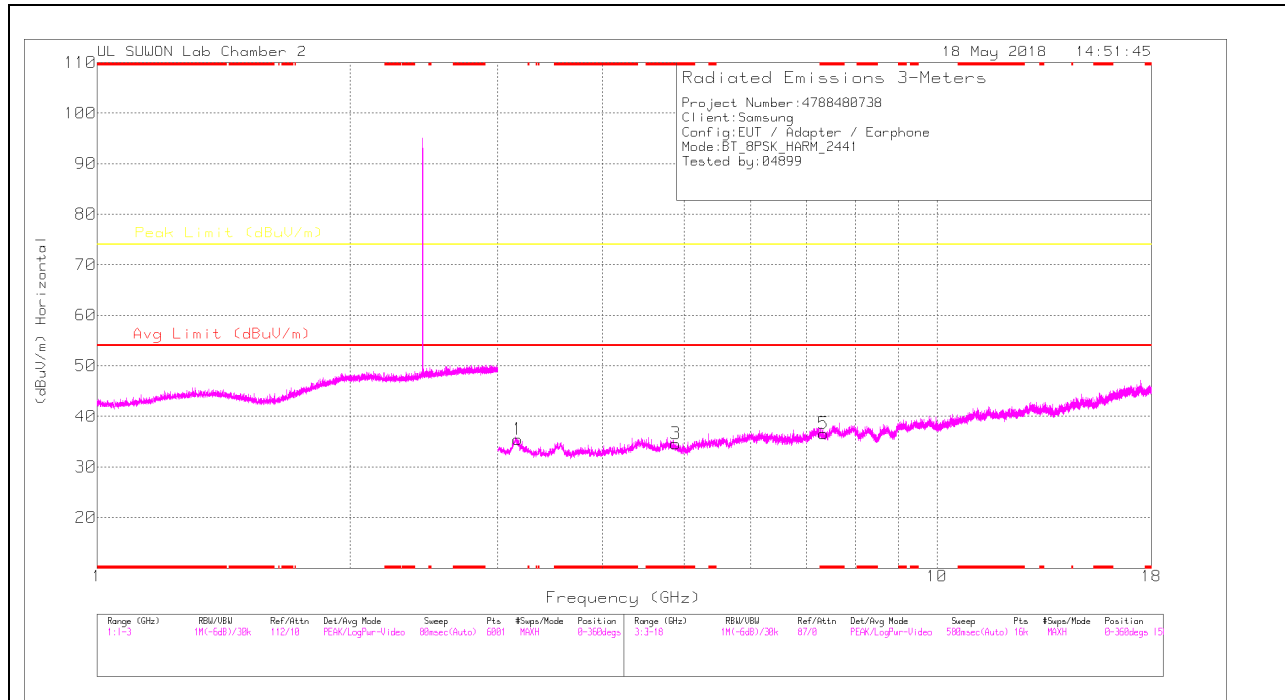
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	170531_3117[0016 8724]	3GHz_HP[dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	3.164	26.98	PK	34.5	-25.6	35.88	-	-	74	-38.12	0-360	250	H
3	* 4.803	25.07	PK	33.8	-24.3	34.57	-	-	74	-39.43	0-360	250	H
5	7.199	23.19	PK	35.9	-21.6	37.49	-	-	74	-36.51	0-360	150	H
2	3.163	26.65	PK	34.5	-25.7	35.45	-	-	74	-38.55	0-360	250	V
4	* 4.803	25.5	PK	33.8	-24.3	35	-	-	74	-39	0-360	150	V
6	7.204	22.96	PK	35.9	-21.7	37.16	-	-	74	-36.84	0-360	150	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

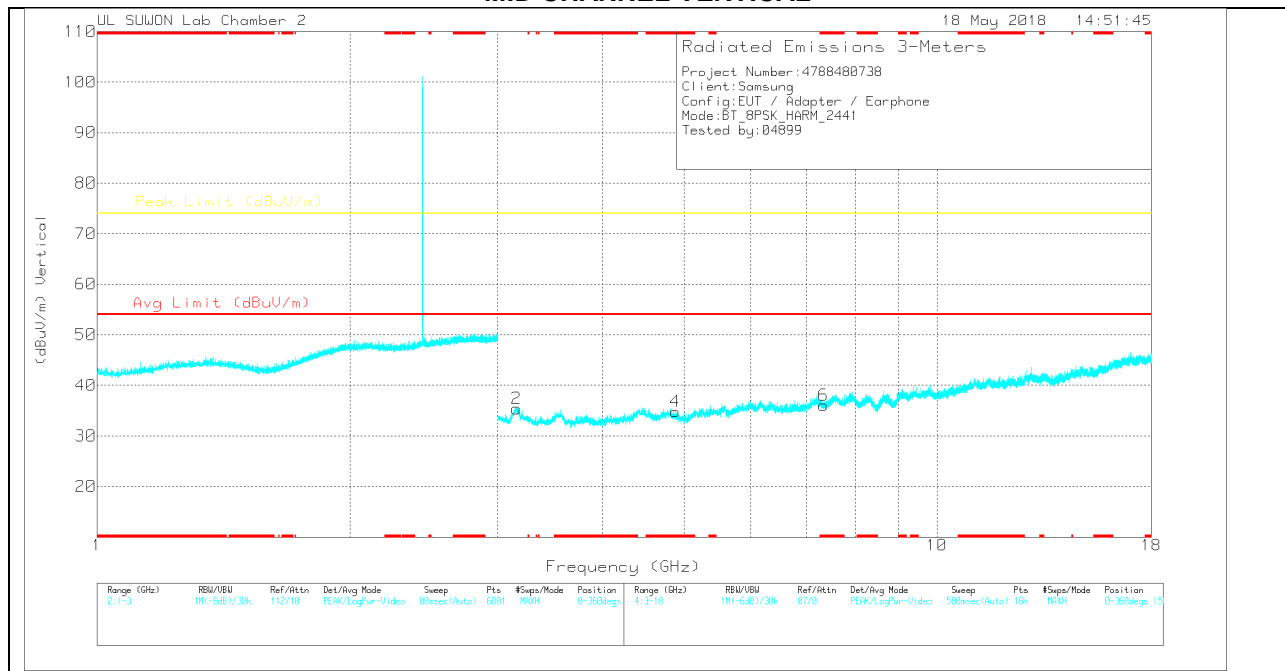
PK – Peak detector

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

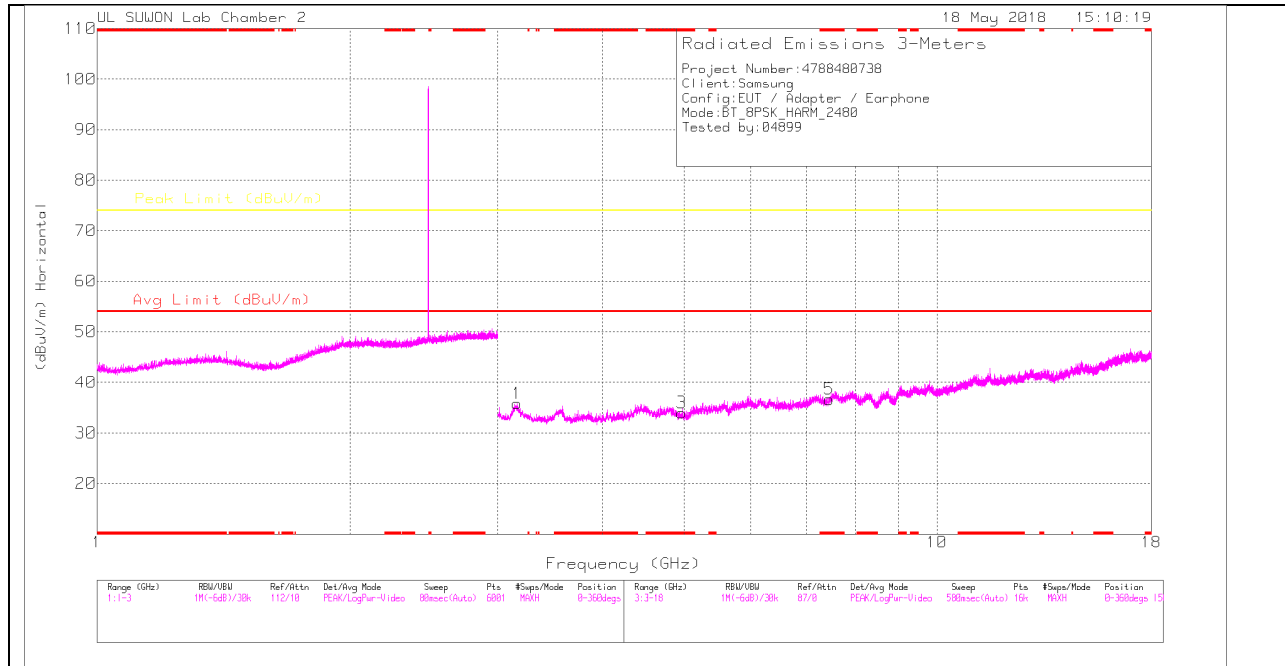
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	170531_3117[0016 8724]	3GHz_HP[dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	3.17	26.87	PK	34.3	-25.7	35.47	-	-	74	-38.53	0-360	250	H
3	* 4.886	25.41	PK	33.8	-24.6	34.61	-	-	74	-39.39	0-360	150	H
5	* 7.323	22.59	PK	35.9	-21.9	36.59	-	-	74	-37.41	0-360	250	H
2	3.157	26.4	PK	34.7	-25.7	35.4	-	-	74	-38.6	0-360	150	V
4	* 4.881	25.63	PK	33.8	-24.6	34.83	-	-	74	-39.17	0-360	250	V
6	* 7.323	22.05	PK	35.9	-21.9	36.05	-	-	74	-37.95	0-360	250	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

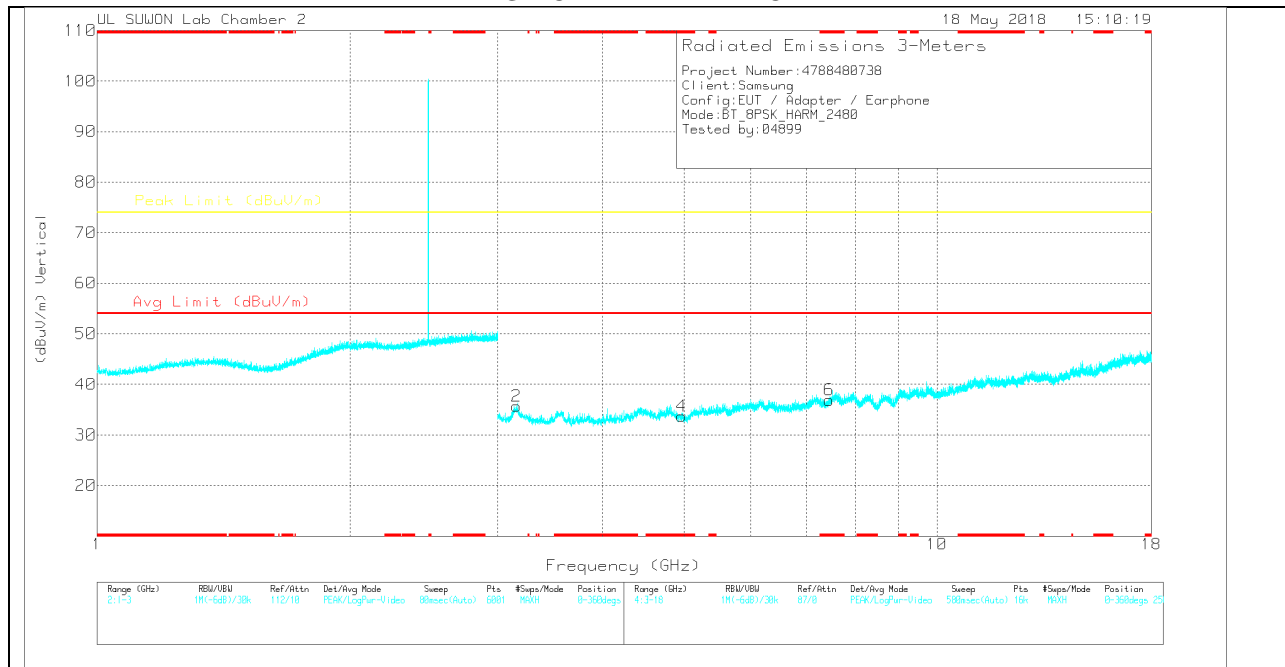
PK – Peak detector

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	170531_3117[0016 8724]	3GHz_HP[dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	3.162	26.98	PK	34.5	-25.7	35.78	-	-	74	-38.22	0-360	250	H
3	* 4.967	24.87	PK	33.8	-24.7	33.97	-	-	74	-40.03	0-360	250	H
5	* 7.44	21.74	PK	35.9	-21	36.64	-	-	74	-37.36	0-360	150	H
2	3.158	26.76	PK	34.6	-25.7	35.66	-	-	74	-38.34	0-360	150	V
4	* 4.964	24.6	PK	33.8	-24.7	33.7	-	-	74	-40.3	0-360	150	V
6	* 7.44	21.99	PK	35.9	-21	36.89	-	-	74	-37.11	0-360	250	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

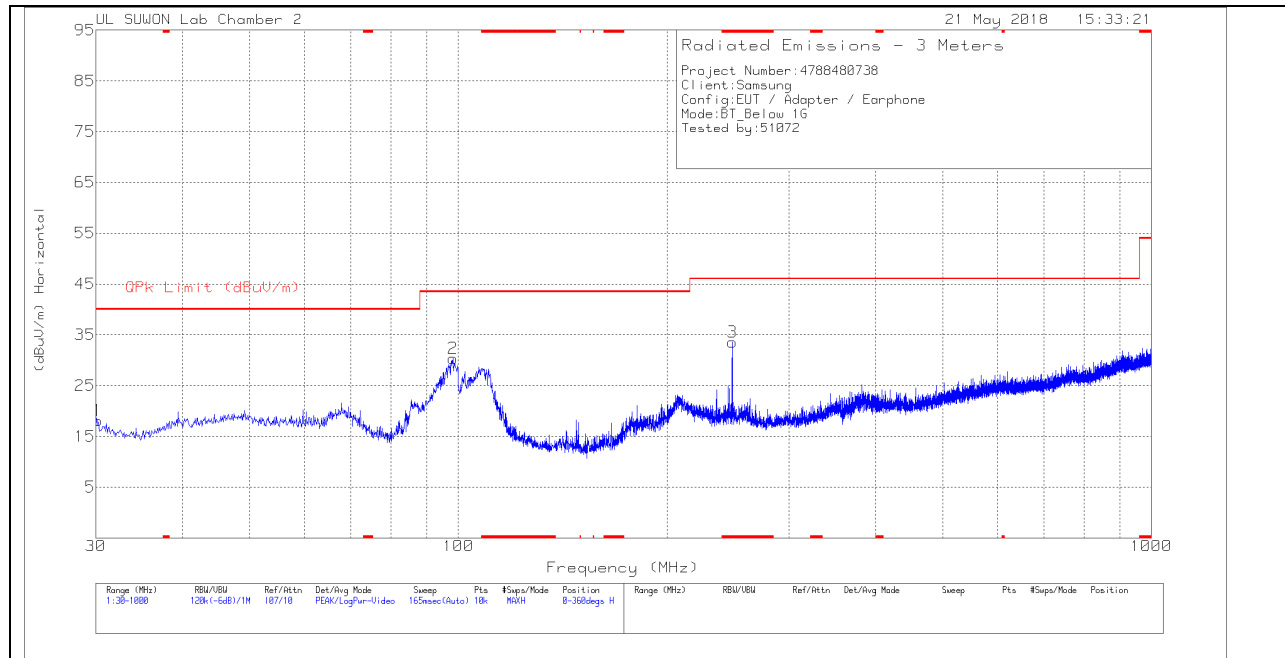
PK – Peak detector

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

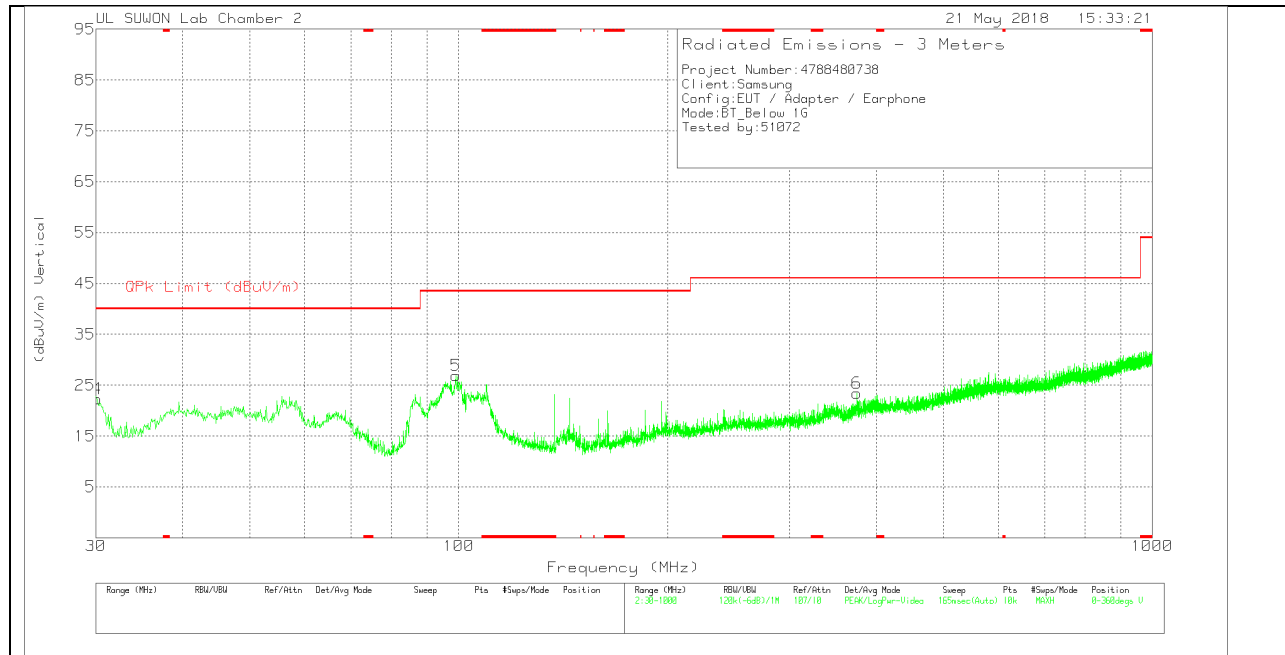
11.3. WORST-CASE BELOW 1 GHz

GFSK SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



VERTICAL PLOT



BELOW 1 GHz TABLE

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163-749	30-1000MHz[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	30.194	33.58	Pk	16.1	-31.6	18.08	40	-21.92	0-360	400	H
2	98.191	44.23	Pk	17.2	-31.1	30.33	43.52	-13.19	0-360	300	H
3	* 248.444	45.61	Pk	18.2	-30.3	33.51	46.02	-12.51	0-360	100	H
4	30.097	37.76	Pk	16.1	-31.6	22.26	40	-17.74	0-360	100	V
5	99.064	40.72	Pk	17.3	-31.1	26.92	43.52	-16.6	0-360	100	V
6	375.029	32.74	Pk	20.6	-29.9	23.44	46.02	-22.58	0-360	200	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

12. 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.

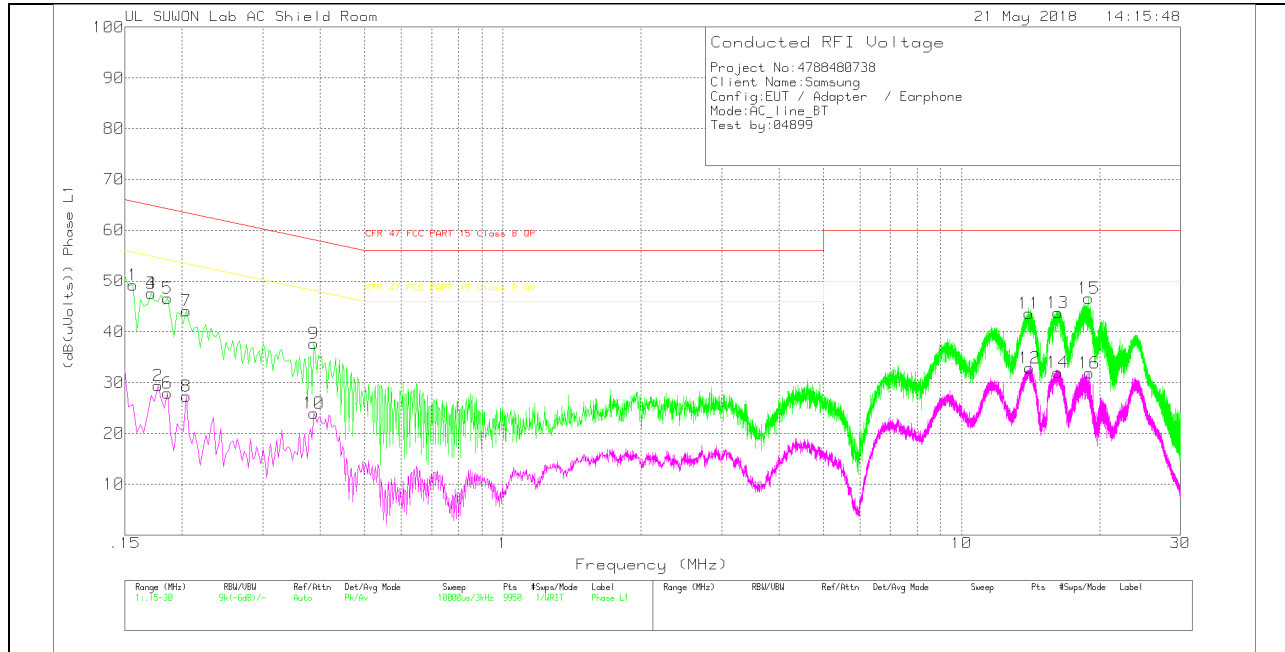
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

WORST EMISSIONS

LINE 1 PLOT



LINE 1 RESULTS

Trace Markers

Range 1: Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101837_L1_with extension	CABLELOSS(dB)	Corrected Reading (dB(uVolts))	CFR 47 FCC PART 15 Class B QP	Margin (dB)	CFR 47 FCC PART 15 Class B AV	Margin (dB)
1	.156	39.05	Pk	10	.1	49.15	65.67	-16.52	-	-
2	.177	19.35	Av	9.9	.2	29.45	-	-	54.63	-25.18
3	.171	37.41	Pk	10	.2	47.61	64.91	-17.3	-	-
4	.171	37.41	Pk	10	.2	47.61	64.91	-17.3	-	-
5	.186	36.47	Pk	9.9	.2	46.57	64.21	-17.64	-	-
6	.186	17.82	Av	9.9	.2	27.92	-	-	54.21	-26.29
7	.204	34.11	Pk	9.8	.2	44.11	63.45	-19.34	-	-
8	.204	17.33	Av	9.8	.2	27.33	-	-	53.45	-26.12
9	.387	27.85	Pk	9.7	.2	37.75	58.13	-20.38	-	-
10	.387	14.03	Av	9.7	.2	23.93	-	-	48.13	-24.2
11	14.043	33.46	Pk	9.8	.4	43.66	60	-16.34	-	-
12	14.064	22.69	Av	9.8	.4	32.89	-	-	50	-17.11
13	16.233	33.46	Pk	9.9	.4	43.76	60	-16.24	-	-
14	16.23	21.73	Av	9.9	.4	32.03	-	-	50	-17.97
15	18.954	36.19	Pk	10	.4	46.59	60	-13.41	-	-
16	18.963	21.44	Av	10	.4	31.84	-	-	50	-18.16

Pk - Peak detector

Av - Average detection

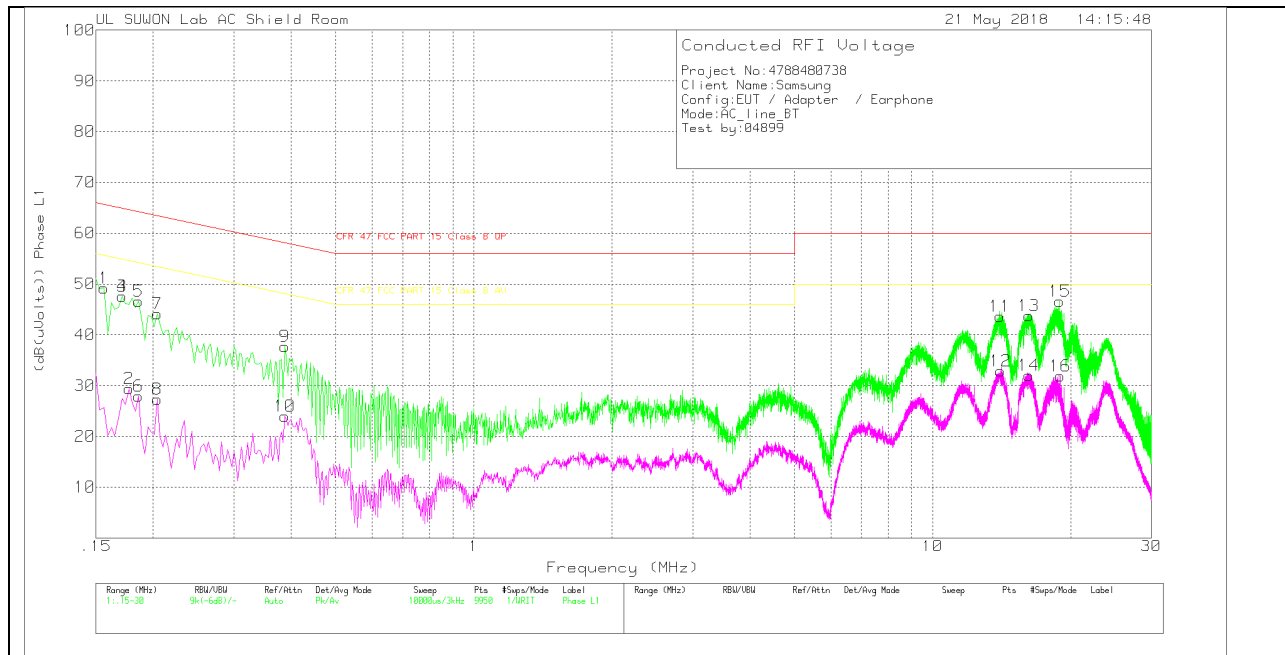
Quasi-Peak Emissions

Range 1: Phase L1 .15 - 30MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	101837_L1_with extension	CABLELOSS(dB)	Corrected Reading (dB(uVolts))	CFR 47 FCC PART 15 Class B QP	Margin (dB)	CFR 47 FCC PART 15 Class B AV	Margin (dB)
.15525	33.44	Qp	10	.1	43.54	65.71	-22.17	-	-
.17715	31.46	Qp	9.9	.2	41.56	64.62	-23.06	-	-
.17115	31.71	Qp	10	.2	41.91	64.9	-22.99	-	-
.18525	29.72	Qp	9.9	.2	39.82	64.25	-24.43	-	-
.20415	27.67	Qp	9.8	.2	37.67	63.44	-25.77	-	-
.38775	21.87	Qp	9.7	.2	31.77	58.11	-26.34	-	-
14.0438	28.92	Qp	9.8	.4	39.12	60	-20.88	-	-
14.0642	29.07	Qp	9.8	.4	39.27	60	-20.73	-	-
16.2332	28.62	Qp	9.9	.4	38.92	60	-21.08	-	-
16.2302	29.13	Qp	9.9	.4	39.43	60	-20.57	-	-
18.9542	27.44	Qp	10	.4	37.84	60	-22.16	-	-
18.9632	28.51	Qp	10	.4	38.91	60	-21.09	-	-

Qp - Quasi-Peak detector

LINE 2 PLOT



LINE 2 RESULTS

Trace Markers

Range 2: Phase N .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101837_N_with extension	CABLELOSS(dB)	Corrected Reading (dB(uVolts))	CFR 47 FCC PART 15 Class B QP	Margin (dB)	CFR 47 FCC PART 15 Class B AV	Margin (dB)
17	.153	39.59	Pk	10	.1	49.69	65.84	-16.15	-	-
18	.153	16.46	Av	10	.1	26.56	-	-	55.84	-29.28
19	.165	36.04	Pk	10	.1	46.14	65.21	-19.07	-	-
20	.183	16.85	Av	10	.2	27.05	-	-	54.35	-27.3
21	.408	28.21	Pk	9.8	.2	38.21	57.69	-19.48	-	-
22	.417	14.86	Av	9.8	.2	24.86	-	-	47.51	-22.65
23	14.145	31.88	Pk	9.9	.4	42.18	60	-17.82	-	-
24	14.145	21.53	Av	9.9	.4	31.83	-	-	50	-18.17
25	16.203	31.73	Pk	9.9	.4	42.03	60	-17.97	-	-
26	16.197	21.64	Av	9.9	.4	31.94	-	-	50	-18.06
27	18.795	32.28	Pk	10	.4	42.68	60	-17.32	-	-
28	18.771	18.83	Av	10	.4	29.23	-	-	50	-20.77

Pk - Peak detector

Av - Average detection

Quasi-Peak Emissions

Range 2: Phase N .15 - 30MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	101837_N_with extension	CABLELOSS(dB)	Corrected Reading (dB(uVolts))	CFR 47 FCC PART 15 Class B QP	Margin (dB)	CFR 47 FCC PART 15 Class B AV	Margin (dB)
.15225	33.33	Qp	10	.1	43.43	65.88	-22.45	-	-
.16515	29.88	Qp	10	.1	39.98	65.2	-25.22	-	-
.18315	28.45	Qp	10	.2	38.65	64.34	-25.69	-	-
.40875	22.67	Qp	9.8	.2	32.67	57.67	-25	-	-
.41775	23.56	Qp	9.8	.2	33.56	57.49	-23.93	-	-
14.1443	26.4	Qp	9.9	.4	36.7	60	-23.3	-	-
16.2023	26.62	Qp	9.9	.4	36.92	60	-23.08	-	-
16.1972	27.57	Qp	9.9	.4	37.87	60	-22.13	-	-
18.7952	26.03	Qp	10	.4	36.43	60	-23.57	-	-
18.7703	26.76	Qp	10	.4	37.16	60	-22.84	-	-

Qp - Quasi-Peak detector