



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-C701F/DS

FCC ID: A3LSMC701F

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Revision History

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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-C701F/DS

SERIAL NUMBER: R38J10TDT3R (RADIATED);
R38J10TDQ7J (CONDUCTED)

DATE TESTED: FEB 24, 2017 - MAR 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	
☐	Chamber 1
☒	Chamber 2

UL Korea, Ltd. is accredited by IAS, Laboratory Code TL-637. The full scope of accreditation can be viewed at <http://www.iasonline.org/PDF/TL/TL-637.pdf>.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	2.32 dB
Radiated Disturbance, Below 1GHz	4.14 dB
Radiated Disturbance, Above 1 GHz	5.97 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is 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.

5.2. 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	9.896	9.763
		Peak	10.115	10.268
	Enhanced Pi/4-DPSK	Average	7.769	5.983
		Peak	9.384	8.678
	Enhanced 8PSK	Average	7.788	6.009
		Peak	10.504	11.231

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an internal antenna, with a maximum gain of -0.3 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-TA20IWE	R37H7JNHYW1SE3	N/A
Data Cable	SAMSUNG	EP-DN930CWE	N/A	N/A
Earphone	SAMSUNG	EHS64AVFWE	N/A	N/A

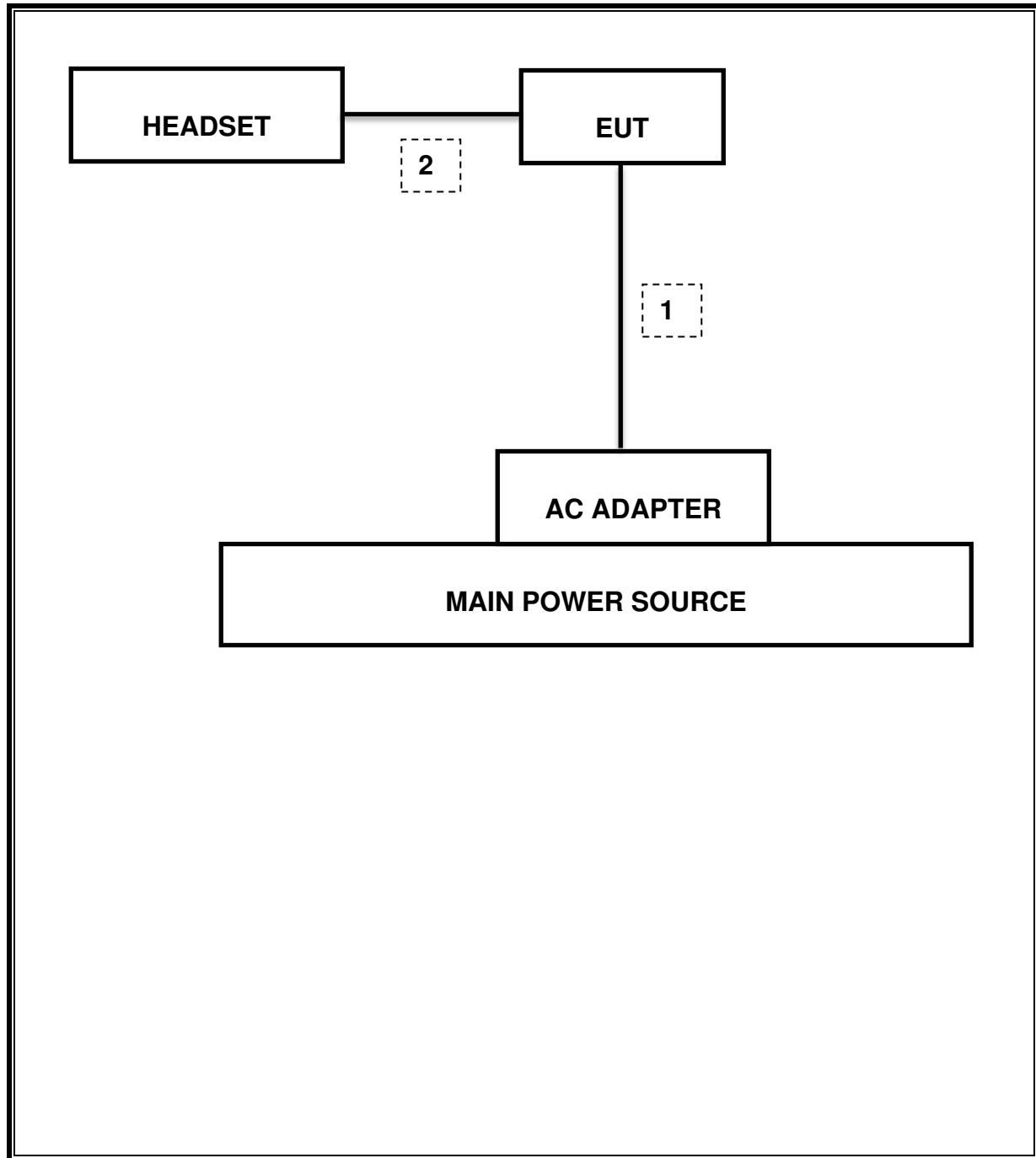
I/O CABLES

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

TEST SETUP

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

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment List				
Description	Manufacturer	Model	S/N	Cal Due
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	750	10-14-18
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	749	04-25-17
Antenna, Horn, 18 GHz	ETS	3115	00167211	10-14-18
Antenna, Horn, 18 GHz	ETS	3117	00168724	06-17-17
Antenna, Horn, 18 GHz	ETS	3117	00168717	06-17-17
Antenna, Horn, 40 GHz	ETS	3116C	00166155	11-30-17
Antenna, Horn, 40 GHz	ETS	3116C-PA	00168841	12-15-17
Antenna, Loop, 9kHz-30MHz	R&S	HFH2-Z2	100418	11-25-17
Preamplifier, 1000 MHz	Sonoma	310N	341282	08-17-17
Preamplifier, 1000 MHz	Sonoma	310N	351741	08-16-17
Preamplifier	ETS	3115-PA	00167475	08-17-17
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1896138	08-16-17
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54170614	08-17-17
Spectrum Analyzer, 7 GHz	Agilent / HP	N9010A	MY54200580	08-17-17
Bluetooth Tester	TESCOM	TC-3000C	3000C000546	08-18-17
Average Power Sensor	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	101836	08-16-17
LISN	R&S	ENV-216	101837	08-16-17
Attenuator	PASTERNAK	PE7087-10	A009	08-16-17
Combiner	WEINSCHEL	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	888.200	898.470
Mid	2441	941.900	895.440
High	2480	833.400	897.350
Worst		941.900	898.470

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

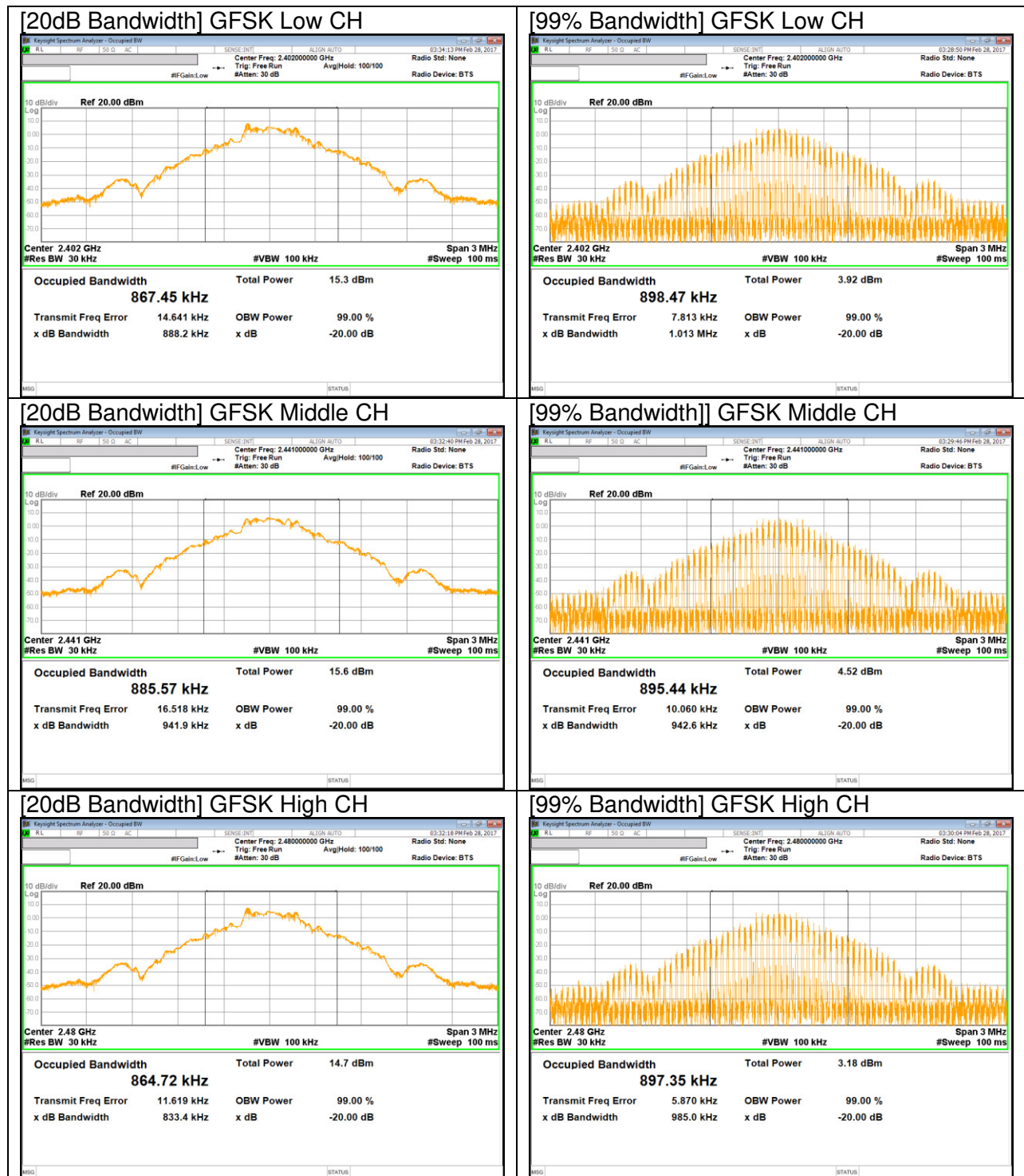
Channel	Frequency [MHz]	20 dB Bandwidth [MHz]	99% Bandwidth [MHz]
Low	2402	1.230	1.161
Mid	2441	1.227	1.131
High	2480	1.225	1.162
Worst		1.230	1.162

7.1.3. ENHANCED DATA RATE 8PSK MODULATION

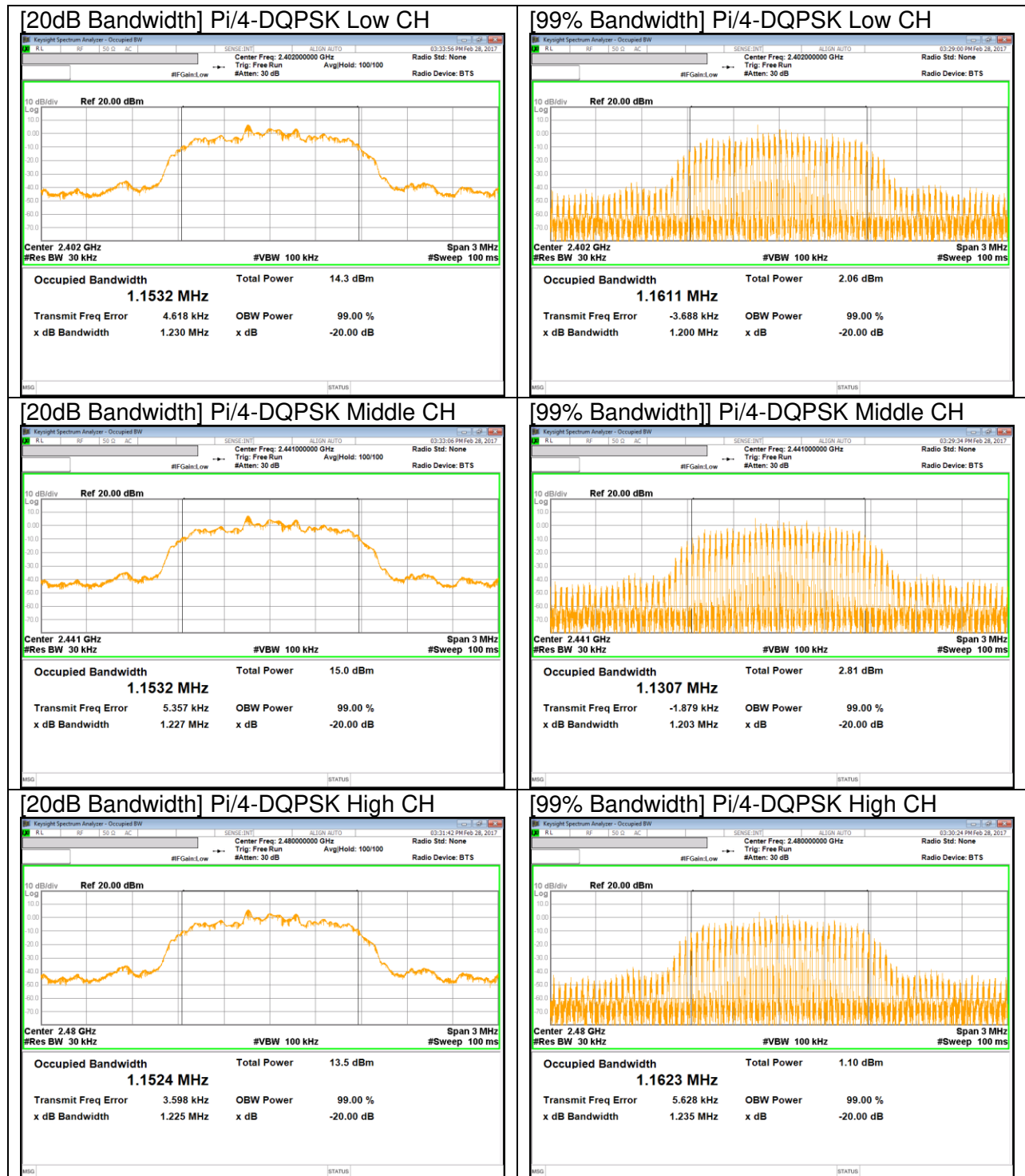
Channel	Frequency [MHz]	20 dB Bandwidth [MHz]	99% Bandwidth [MHz]
Low	2402	1.261	1.160
Mid	2441	1.257	1.161
High	2480	1.257	1.162
Worst		1.261	1.162

7.1.4. 20 dB AND 99% BANDWIDTH PLOTS

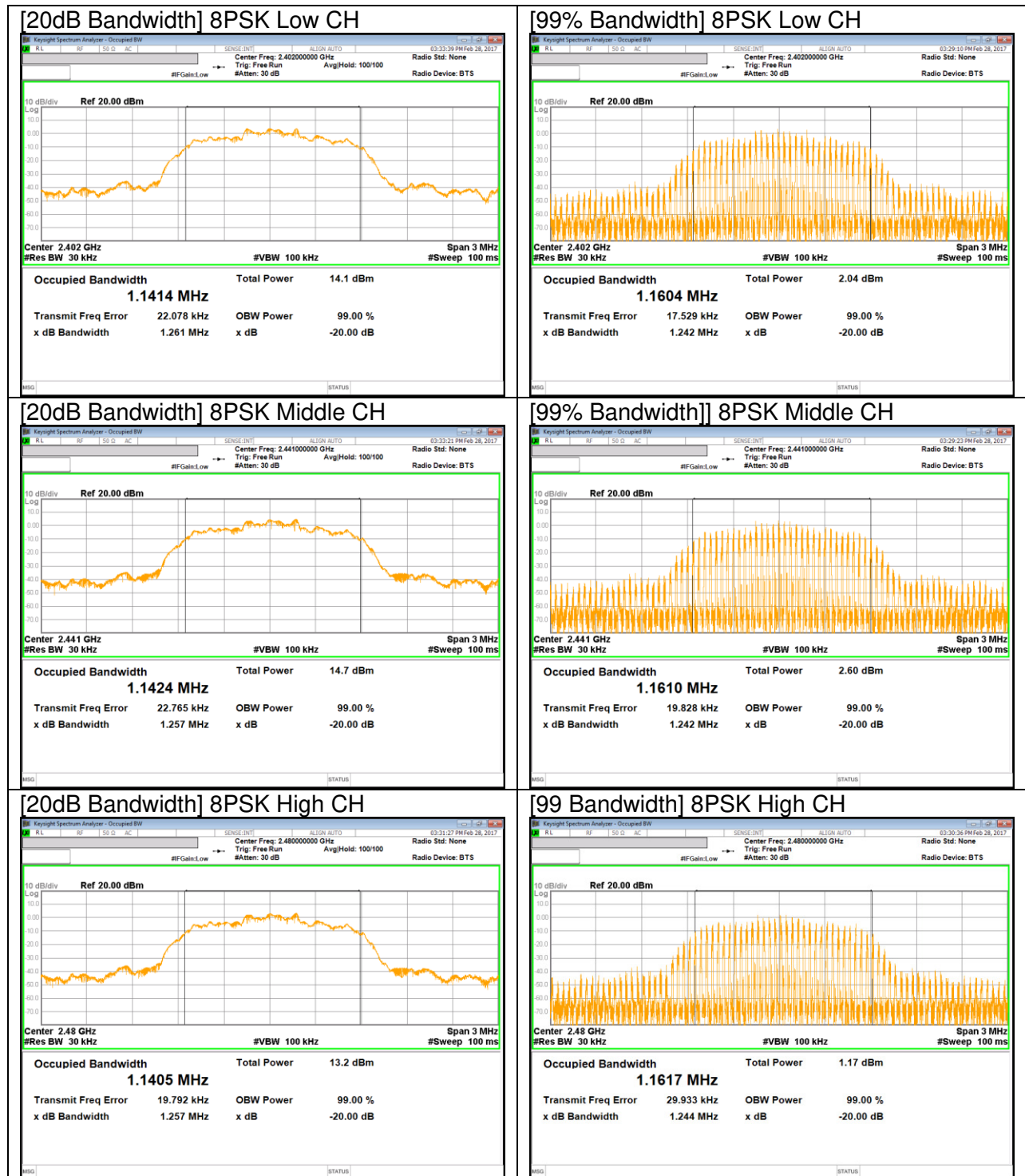
GFSK BANDWIDTH



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	-46.394 dBm
15.247 (b)(1)	TX conducted output power	<21dBm		Pass	10.504 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	0.37492 sec
15.207 (a)	AC Power Line conducted emissions	Section 10	Power Line conducted	Pass	47.35 dBuV (Pk)
15.205, 15.209	Radiated Spurious Emission	< 54dBuV/m	Radiated	Pass	50.1 dBuV/m (Av)

9. ANTENNA PORT TEST RESULTS

9.1. HOPPING FREQUENCY SEPARATION

LIMIT

FCC §15.247 (a) (1)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

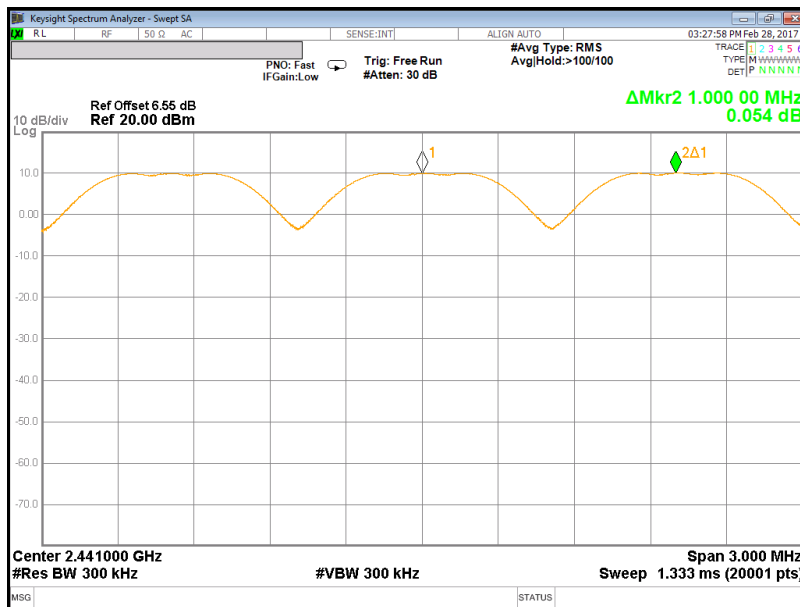
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than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

TEST PROCEDURE

DA 00-705: The transmitter output is connected to a spectrum analyzer. The RBW is set to 300 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

RESULTS

HOPPING FREQUENCY SEPARATION PLOT



9.2. NUMBER OF HOPPING CHANNELS

LIMIT

FCC §15.247 (a) (1) (iii)

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

TEST PROCEDURE

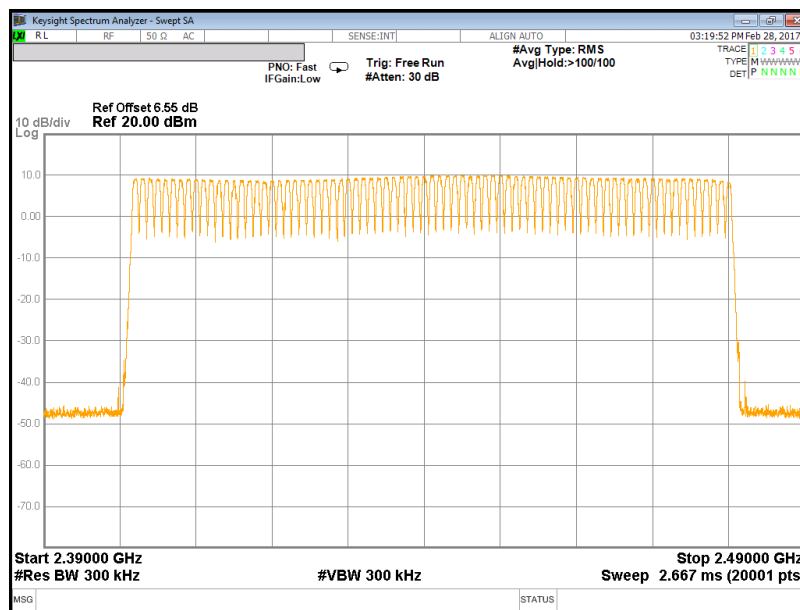
DA 00-705: The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

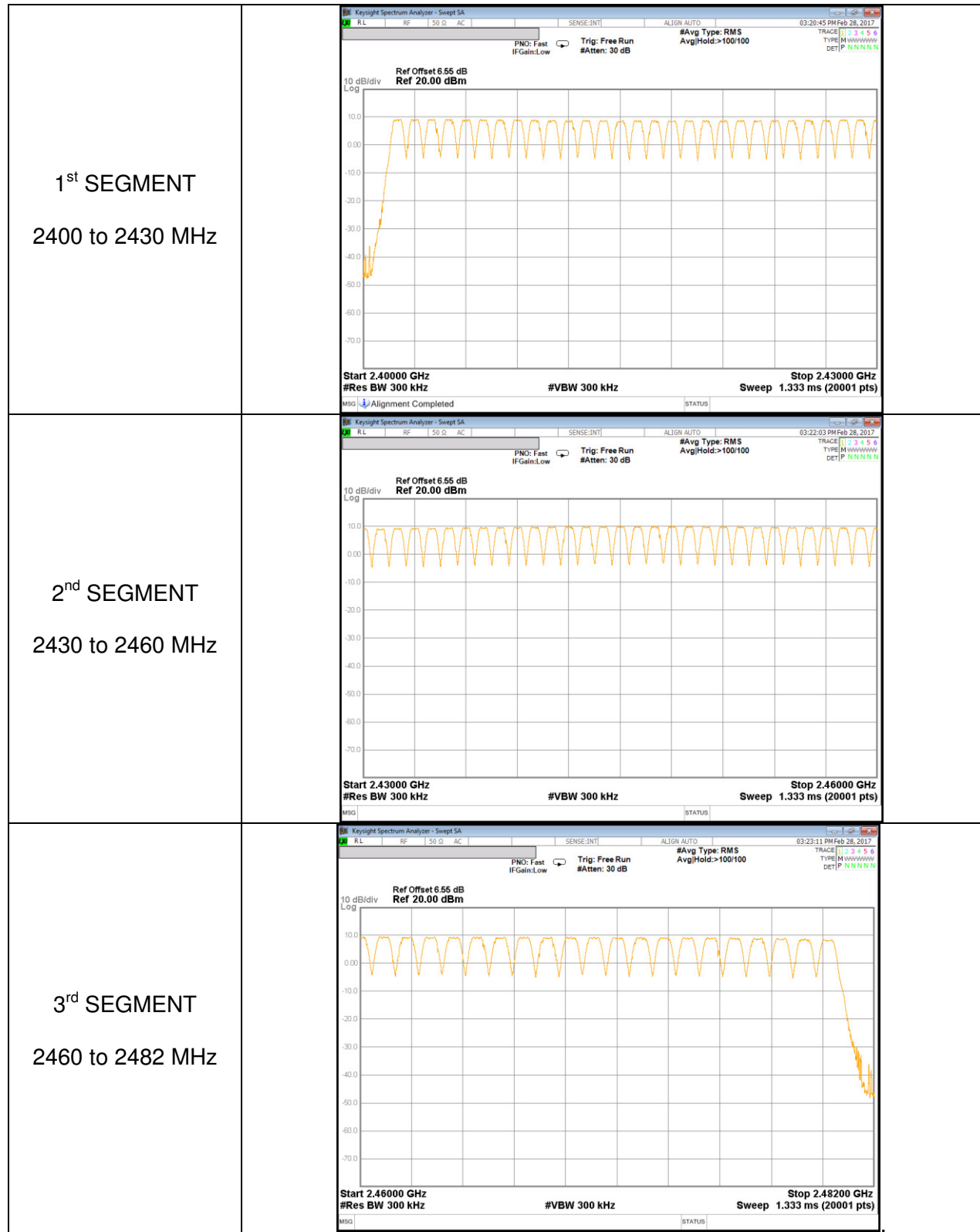
RESULTS

Normal Mode: 79 Channels observed.

NUMBER OF HOPPING CHANNELS PLOTS

NUMBER OF HOPPING CHANNELS (100 MHZ SPAN)





9.3. AVERAGE TIME OF OCCUPANCY

LIMIT

FCC §15.247 (a) (1) (iii)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The span is set to 0 Hz, centered on a single, selected hopping channel. The width of a single pulse is measured in a fast scan. The number of pulses is measured in a 3.16 second scan, to enable resolution of each occurrence.

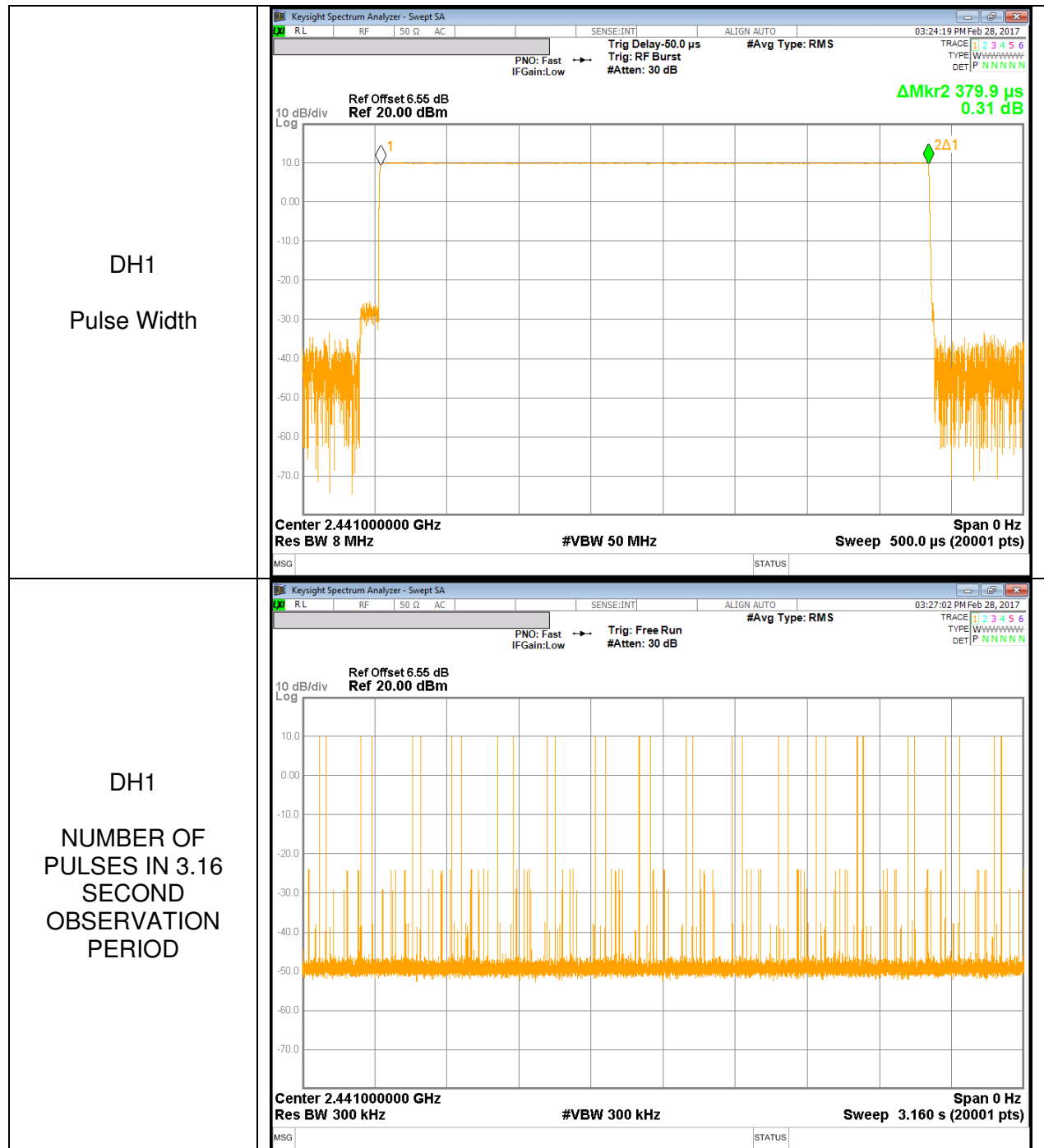
The average time of occupancy in the specified 31.6 second period (79 channels * 0.4 s) is equal to $10 * (\# \text{ of pulses in } 3.16 \text{ s}) * \text{pulse width}$.

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

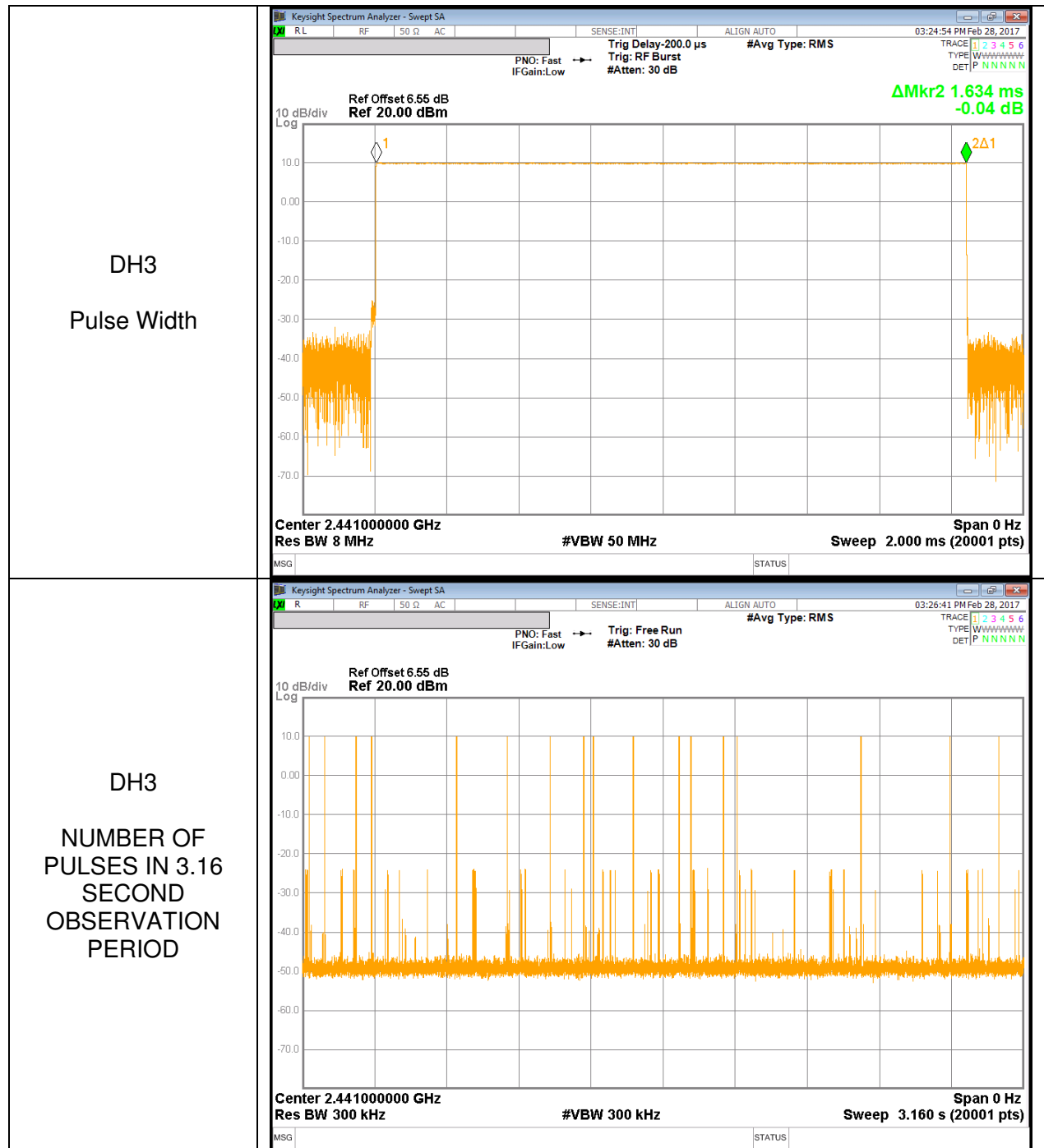
RESULTS

DH Packet	Pulse Width [msec]	Number of Pulses in 3.16 seconds	Average Time of Occupancy [sec]	Limit [sec]	Margin [sec]
GFSK Normal					
DH1	0.380	32	0.121568	0.4	-0.2784
DH3	1.634	17	0.277780	0.4	-0.1222
DH5	2.884	13	0.374920	0.4	-0.0251
DH Packet	Pulse Width [msec]	Number of Pulses in 0.8 seconds	Average Time of Occupancy [sec]	Limit [sec]	Margin [sec]
GFSK AFH					
DH1	0.380	8	0.030392	0.4	-0.36961
DH3	1.634	4.25	0.069445	0.4	-0.33056
DH5	2.884	3.25	0.093730	0.4	-0.30627

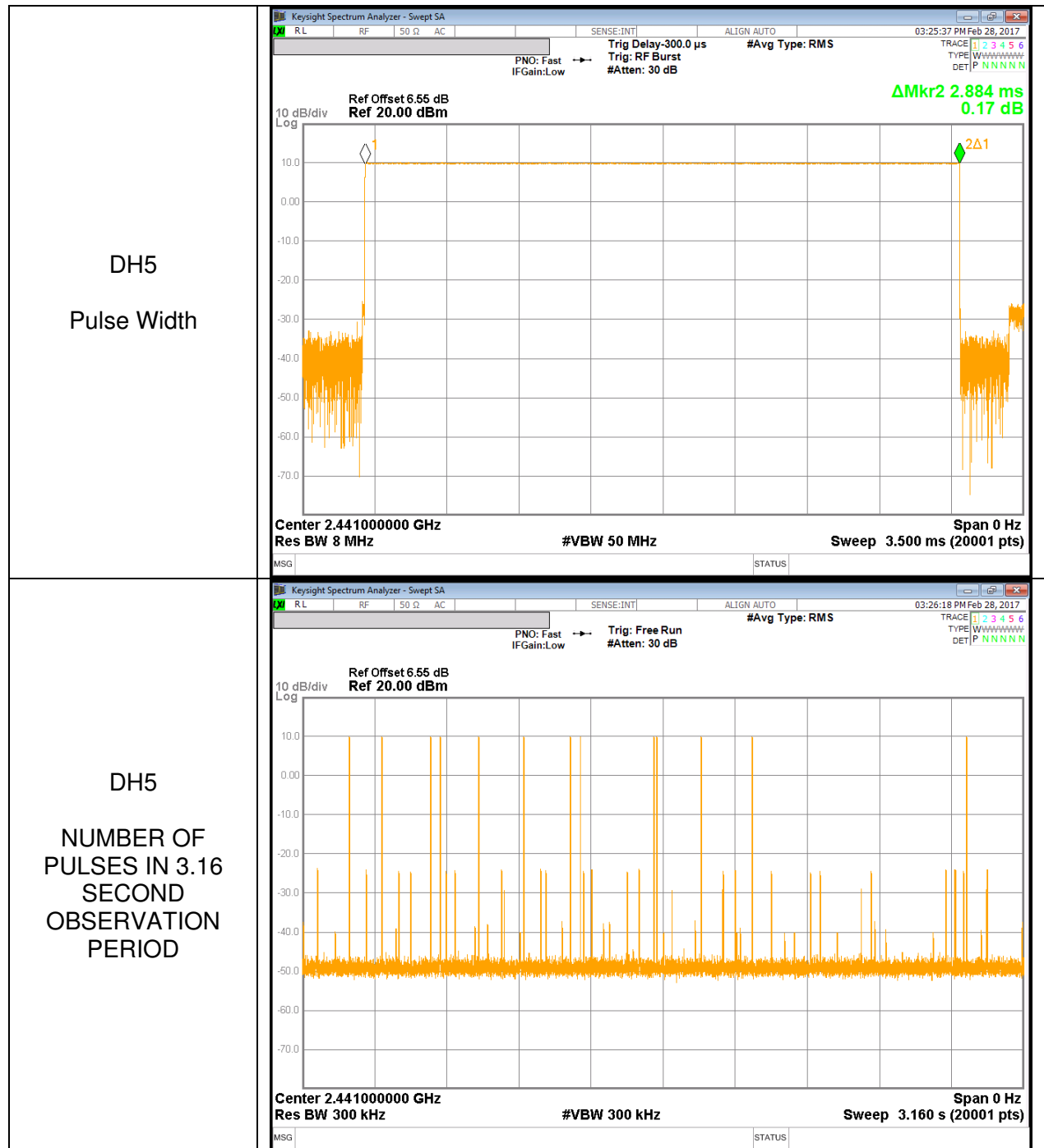
DH1



DH3



DH5



9.4. OUTPUT POWER

LIMIT

§15.247 (b) (1)

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

TEST PROCEDURE

DA 00-705: The transmitter output is connected to a spectrum analyzer the analyzer bandwidth is set to a value greater than the 20 dB bandwidth of the EUT.

RESULTS

9.4.1. BASIC DATA RATE GFSK MODULATION

Channel	Frequency [MHz]	Output Power [dBm]	Limit [dBm]	Margin [dB]
Low	2402	8.981	21	-12.019
Middle	2441	10.115	21	-10.885
High	2480	8.570	21	-12.43
Worst		10.115	21	-10.885

9.4.2. ENHANCED DATA RATE Pi/4-DPSK MODULATION

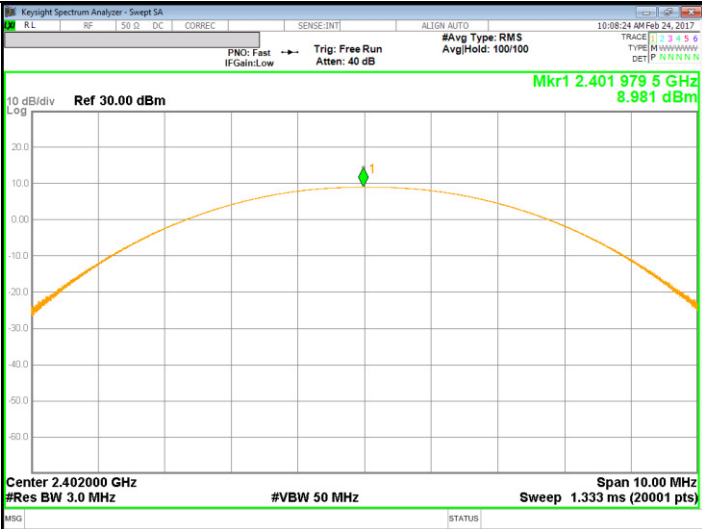
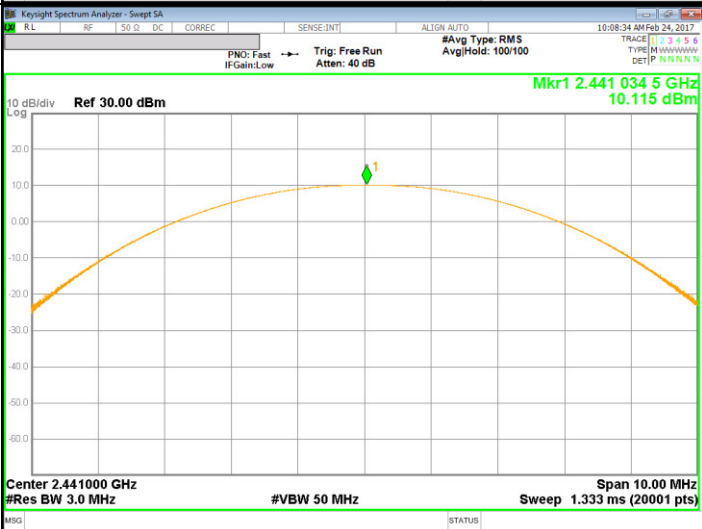
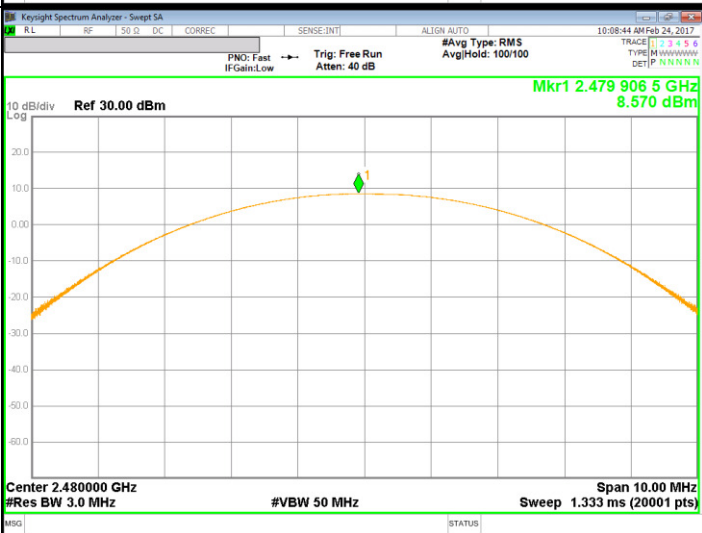
Channel	Frequency [MHz]	Output Power [dBm]	Limit [dBm]	Margin [dB]
Low	2402	8.920	21	-12.080
Middle	2441	8.476	21	-12.524
High	2480	9.384	21	-11.616
Worst		9.384	21	-11.616

9.4.3. ENHANCED DATA RATE 8PSK MODULATION

Channel	Frequency [MHz]	Output Power [dBm]	Limit [dBm]	Margin [dB]
Low	2402	10.504	21	-10.496
Middle	2441	8.953	21	-12.047
High	2480	10.089	21	-10.911
Worst		10.504	21	-10.496

9.4.4. OUTPUT POWER PLOTS

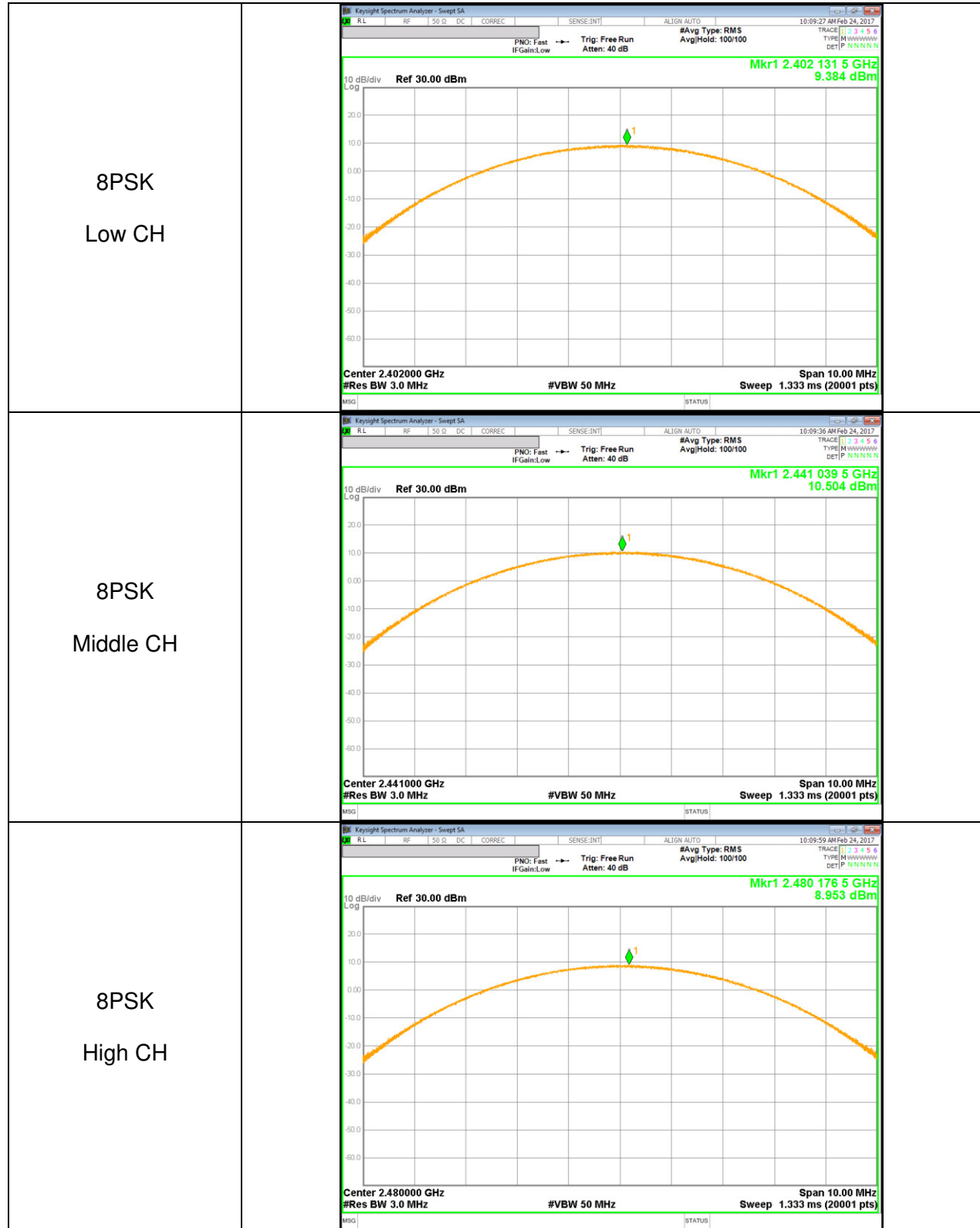
GFSK OUTPUT POWER

GFSK Low CH	
GFSK Middle CH	
GFSK High CH	

Pi/4-DPSK OUTPUT POWER

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

8PSK OUTPUT POWER



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	8.784	7.56
Middle	2441	9.896	9.76
High	2480	8.323	6.80

9.5.2. DATA RATE PI/4-DQPSK MODULATION

Channel	Frequency [MHz]	AV power [dBm]	AV power [mW]
Low	2402	6.625	4.60
Middle	2441	7.769	5.98
High	2480	6.127	4.10

9.5.3. ENHANCED DATA RATE 8PSK MODULATION

Channel	Frequency [MHz]	AV power [dBm]	AV power [mW]
Low	2402	6.644	4.62
Middle	2441	7.788	6.01
High	2480	6.149	4.12

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.

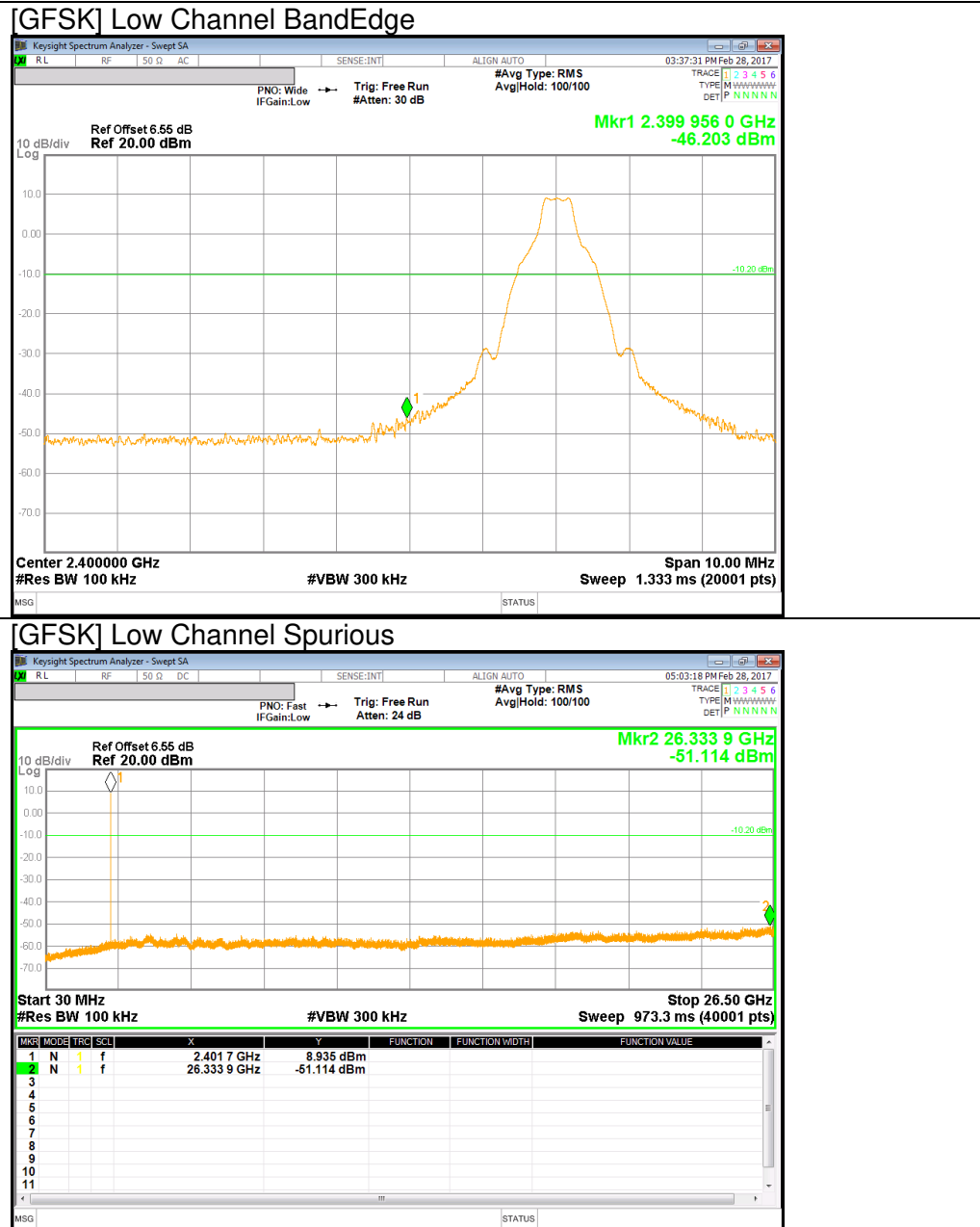
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

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

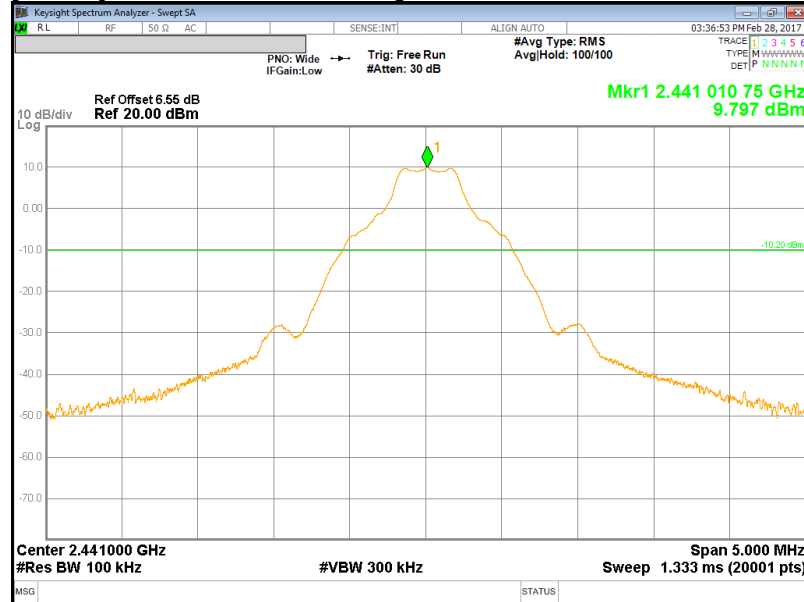
RESULTS

9.6.1. BASIC DATA RATE GFSK MODULATION

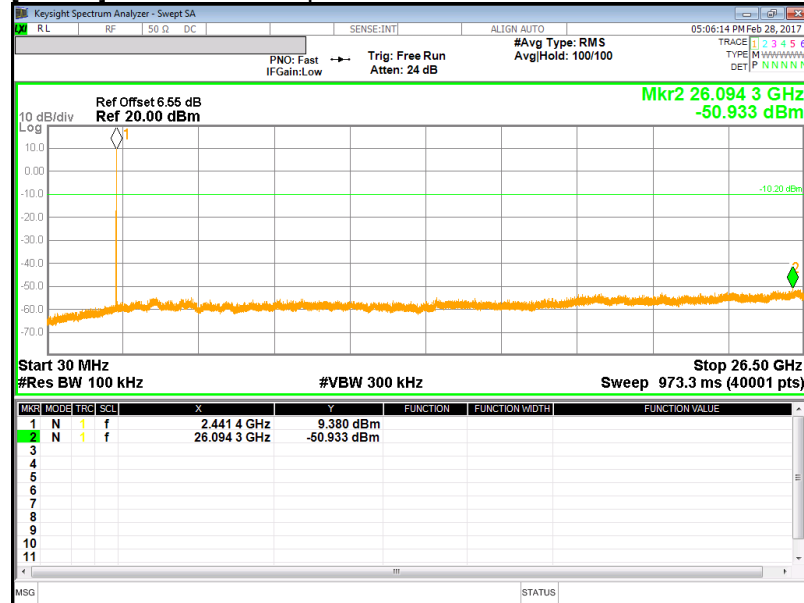
GFSK Mode



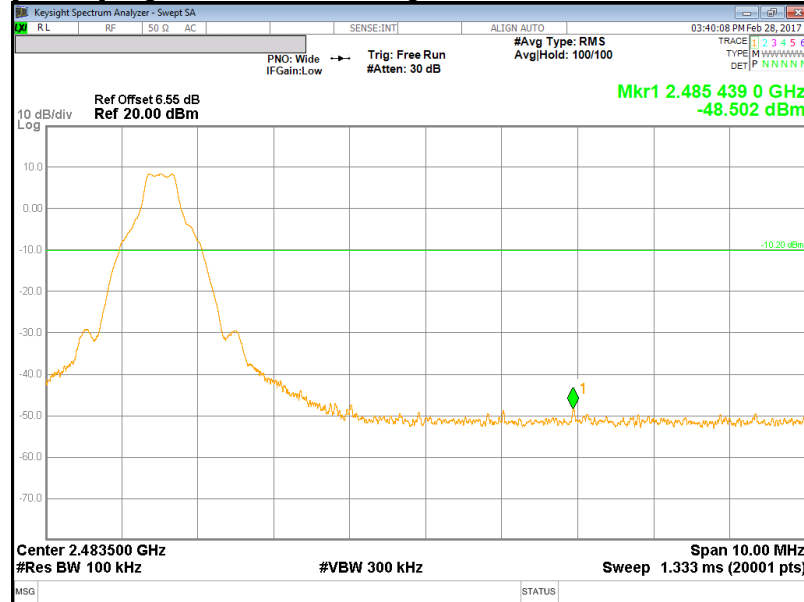
[GFSK] Mid Channel BandEdge



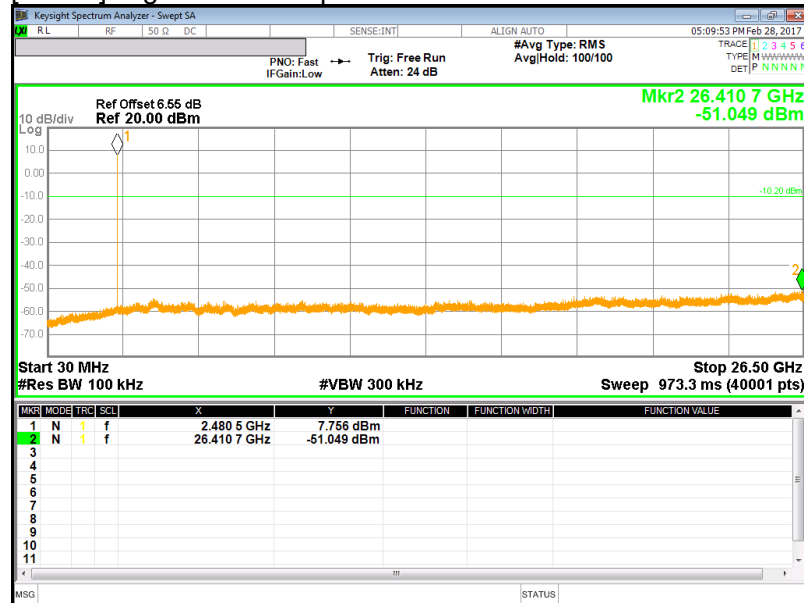
[GFSK] Mid Channel Spurious



[GFSK] High Channel BandEdge

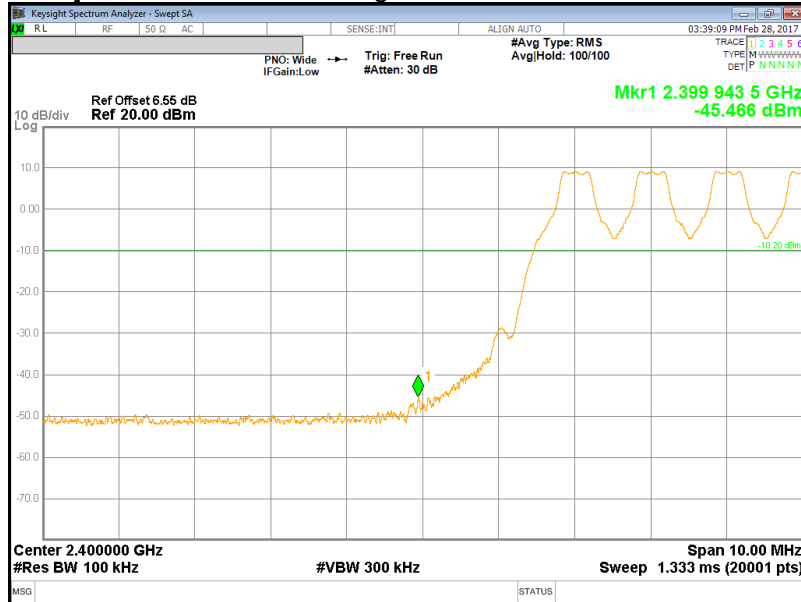


[GFSK] High Channel Spurious

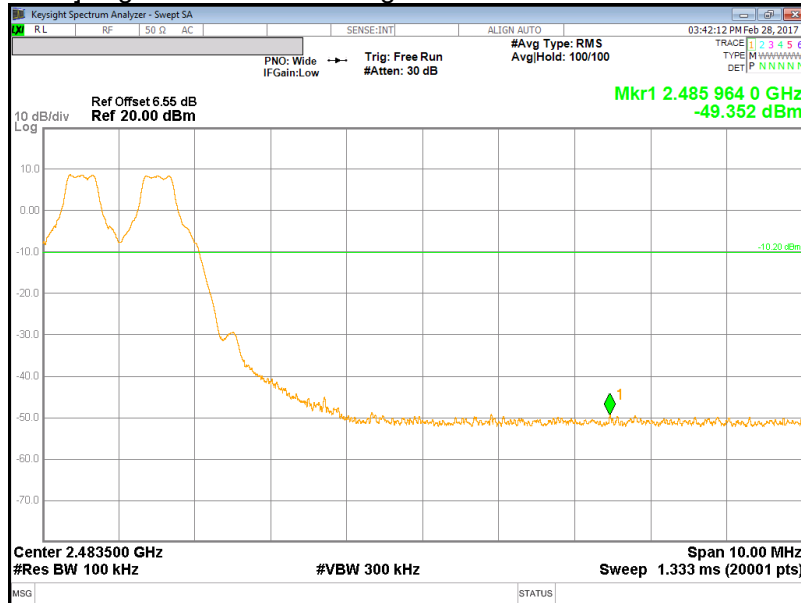


BandEdge Emission at GFSK Hopping Mode

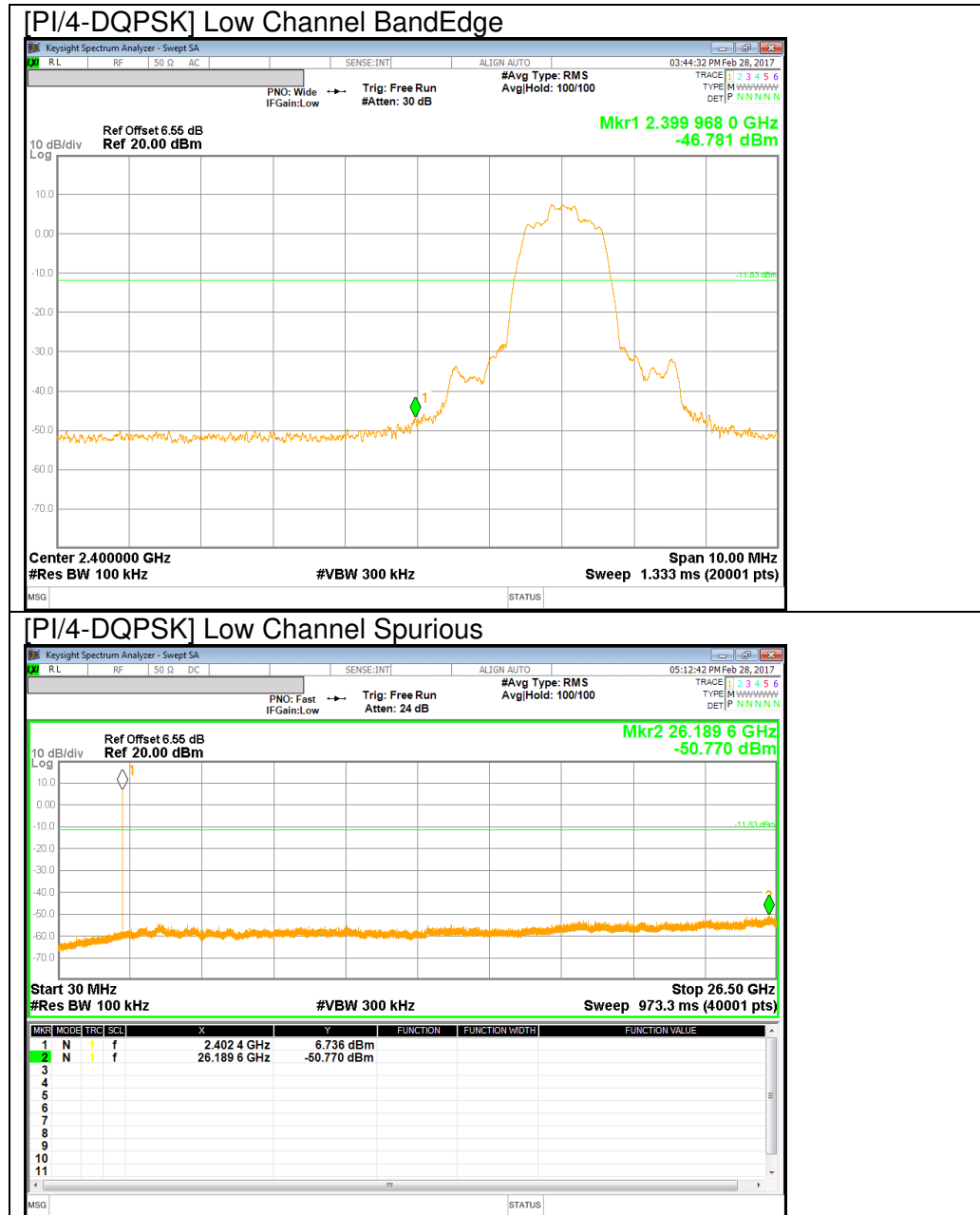
[GFSK Hopping Mode] Low Channel BandEdge



[GFSK Hopping Mode] High Channel BandEdge



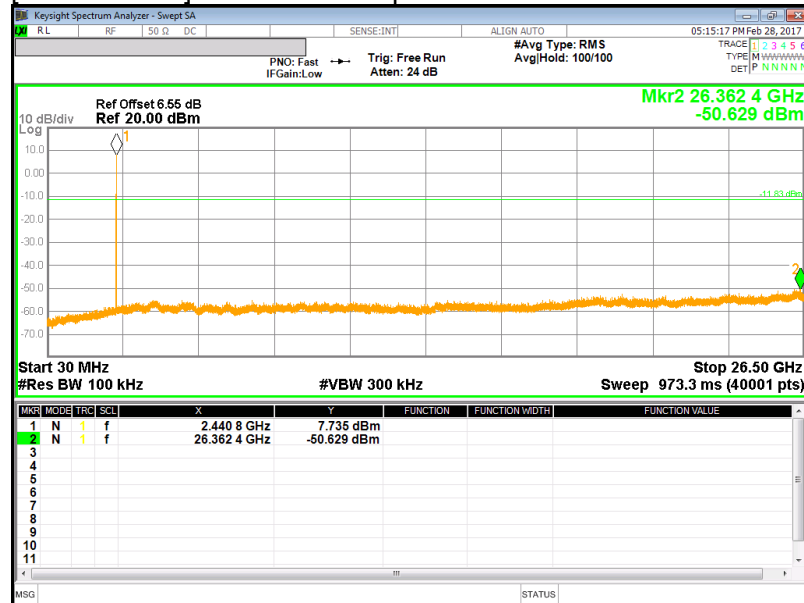
PI/4-DQPSK Mode



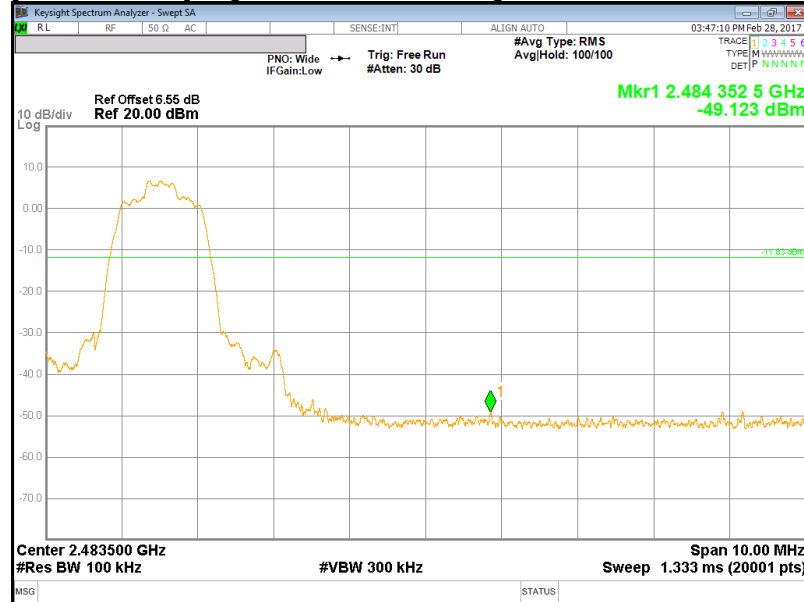
[PI/4-DQPSK] Mid Channel BandEdge



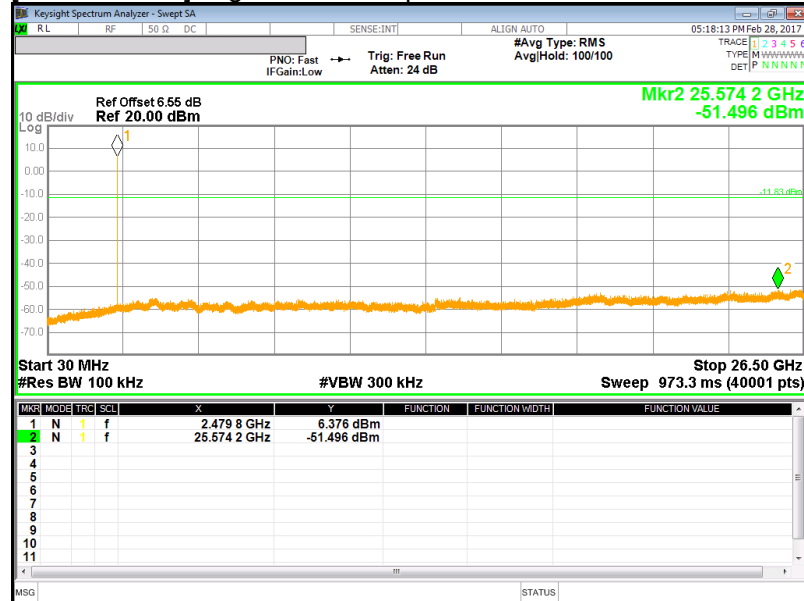
[PI/4-DQPSK] Mid Channel Spurious



[PI/4-DQPSK] High Channel BandEdge



[PI/4-DQPSK] High Channel Spurious

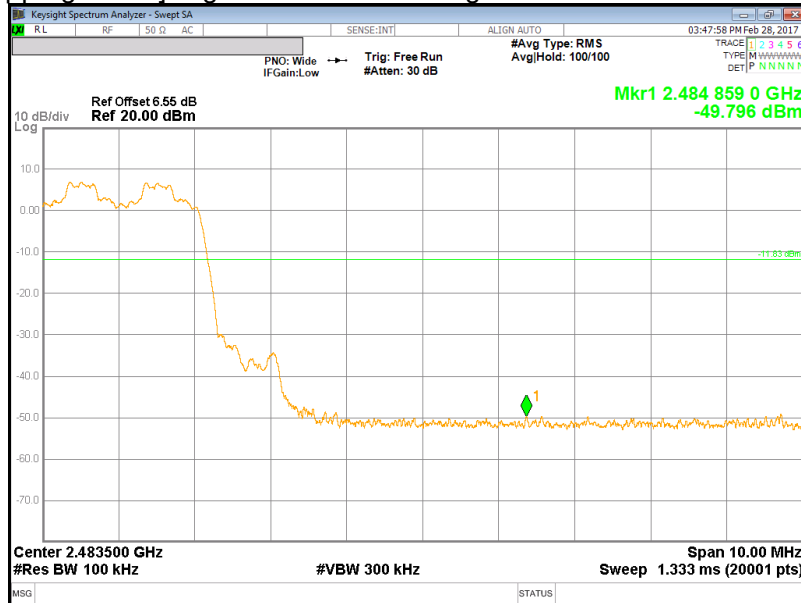


BandEdge Emission at PI/4-DQPSK Hopping Mode

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



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



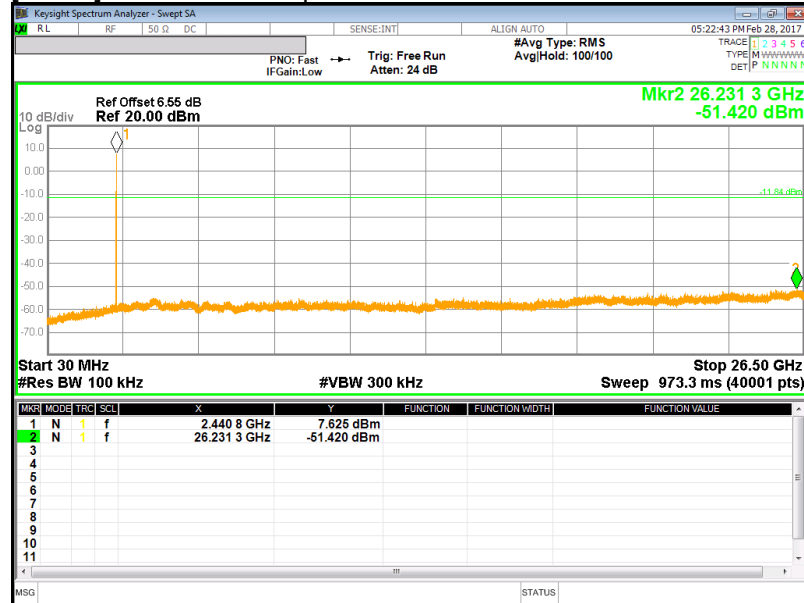
8PSK Mode



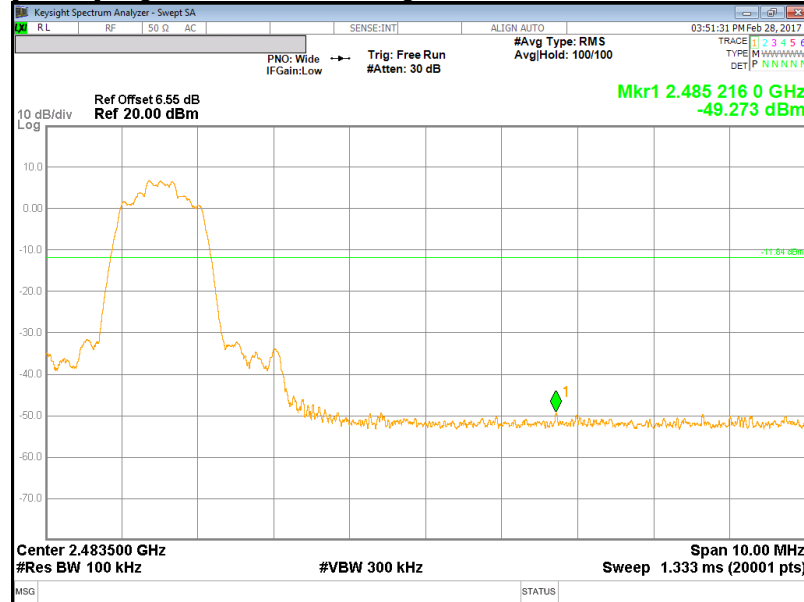
[8PSK] Mid Channel BandEdge



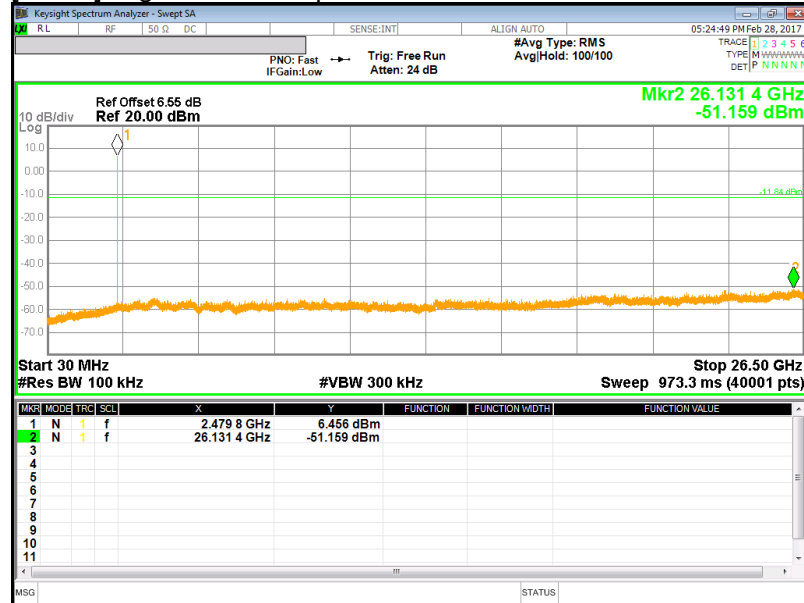
[8PSK] Mid Channel Spurious



[8PSK] High Channel BandEdge

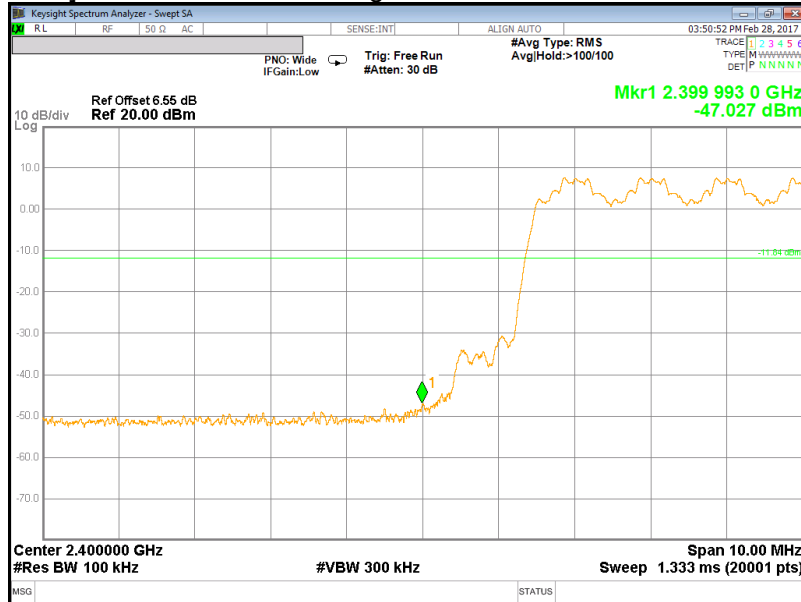


[8PSK] High Channel Spurious

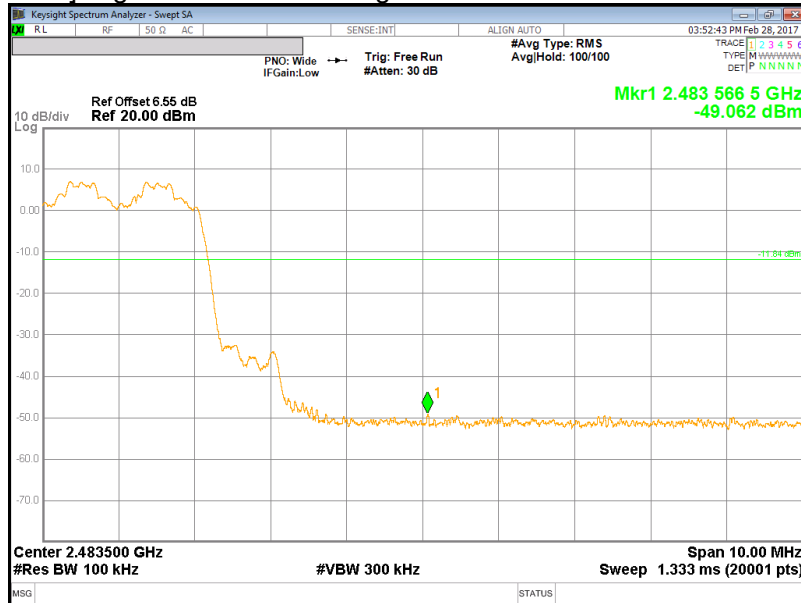


BandEdge Emission at 8PSK Hopping Mode

[8PSK Hopping Mode] Low Channel BandEdge



[8PSK Hopping Mode] High Channel BandEdge



10. RADIATED TEST RESULTS

10.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

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

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

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1GHz and 150 cm for above 1GHz. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

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

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements.(Pre-scans to detect harmonic and spurious emissions, the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 KHz for peak measurements.)

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

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

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

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

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

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

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

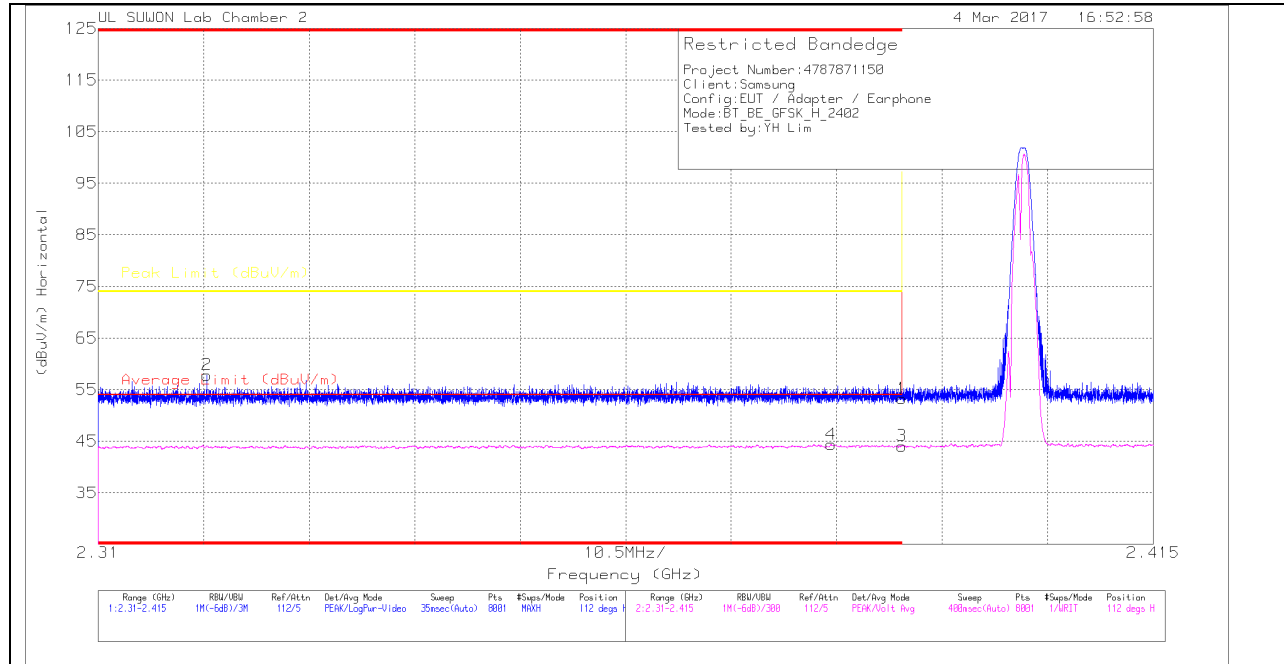
Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site.
Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the one of tests made in an open field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

10.2. TRANSMITTER ABOVE 1 GHz

10.2.1. BASIC DATA RATE GFSK MODULATION

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

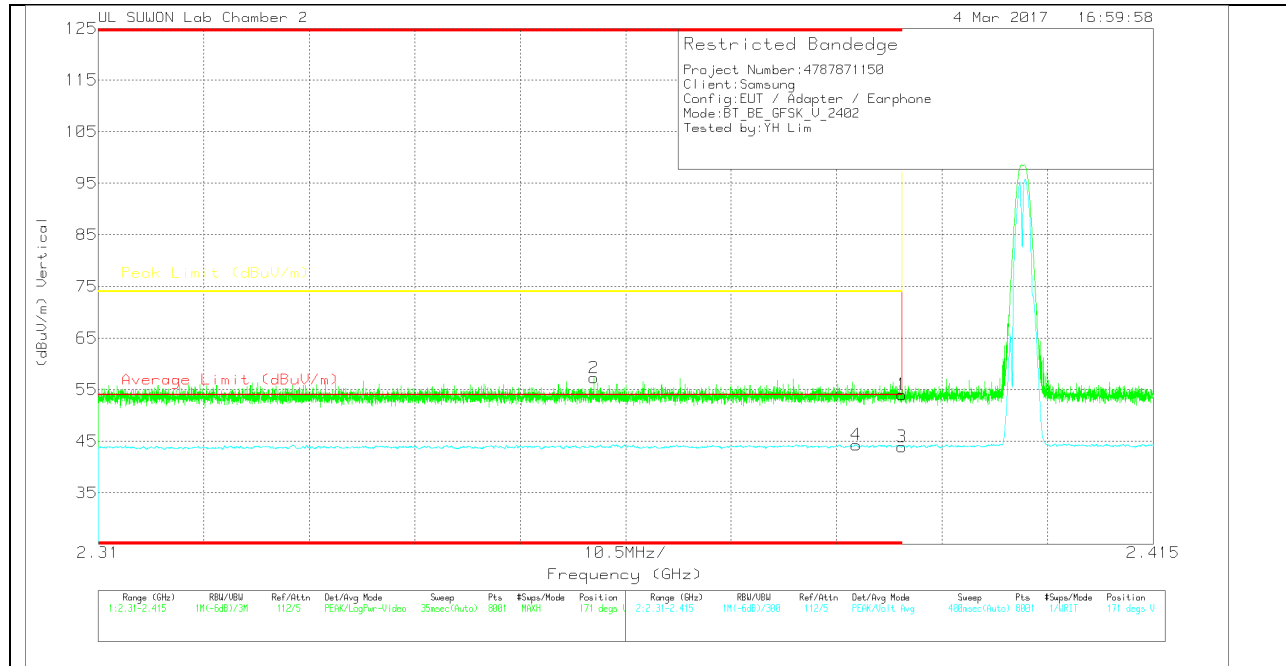
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8724)_150 619	10dB[dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.79	Pk	31.7	-18.2	53.29	-	-	74	-20.71	112	151	H
2	* 2.321	44.65	Pk	31.6	-18.4	57.85	-	-	74	-16.15	112	151	H
3	* 2.39	30.59	VA1T	31.7	-18.2	44.09	54	-9.91	-	-	112	151	H
4	* 2.383	30.88	VA1T	31.7	-18.2	44.38	54	-9.62	-	-	112	151	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	40.56	Pk	31.7	-18.2	54.06	-	-	74	-19.94	171	387	V
2	* 2.359	43.88	Pk	31.7	-18.3	57.28	-	-	74	-16.72	171	387	V
3	* 2.39	30.43	VA1T	31.7	-18.2	43.93	54	-10.07	-	-	171	387	V
4	* 2.385	30.79	VA1T	31.7	-18.2	44.29	54	-9.71	-	-	171	387	V

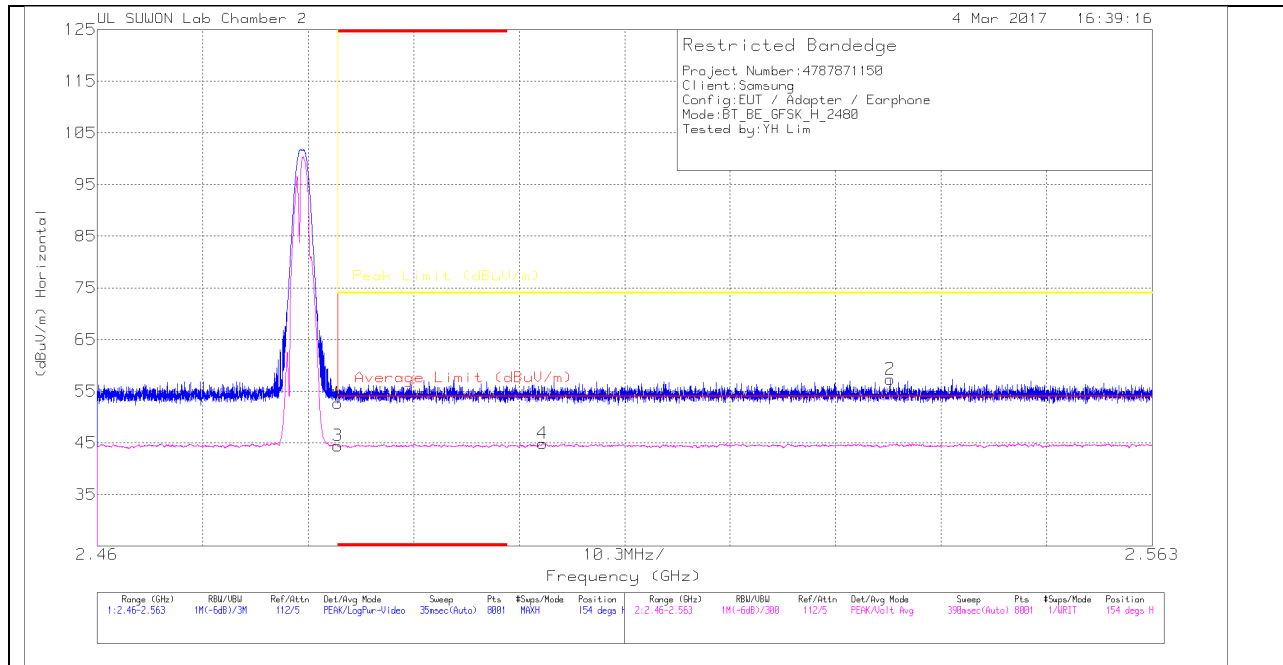
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

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

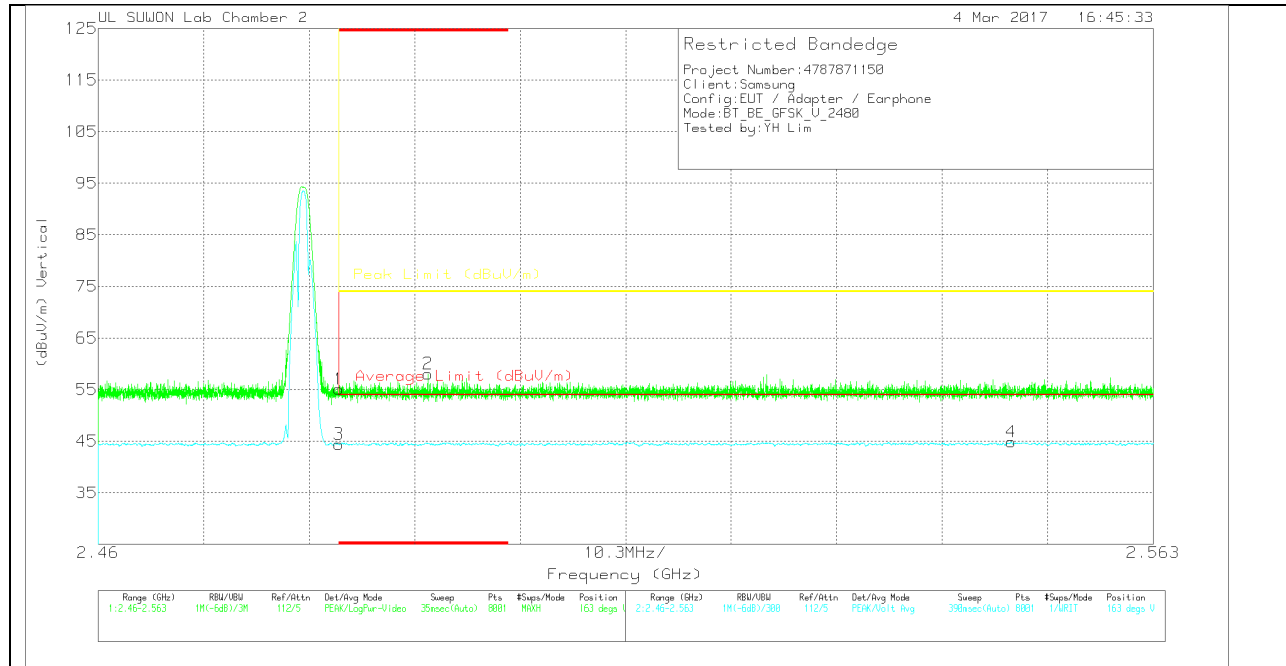
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8724)_150 619	10dB[dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	38.92	Pk	31.8	-18	52.72	-	-	74	-21.28	154	107	H
2	2.537	43.43	Pk	31.9	-18	57.33	-	-	74	-16.67	154	107	H
3	* 2.484	30.66	VA1T	31.8	-18	44.46	54	-9.54	-	-	154	107	H
4	2.504	31.02	VA1T	31.9	-18	44.92	54	-9.08	-	-	154	107	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	* 2.484	41.3	Pk	31.8	-18	55.1	-	-	74	-18.9	163	397	V
2	* 2.492	44.27	Pk	31.8	-18	58.07	-	-	74	-15.93	163	397	V
3	* 2.484	30.63	VA1T	31.8	-18	44.43	54	-9.57	-	-	163	397	V
4	2.549	30.96	VA1T	31.9	-18	44.86	54	-9.14	-	-	163	397	V

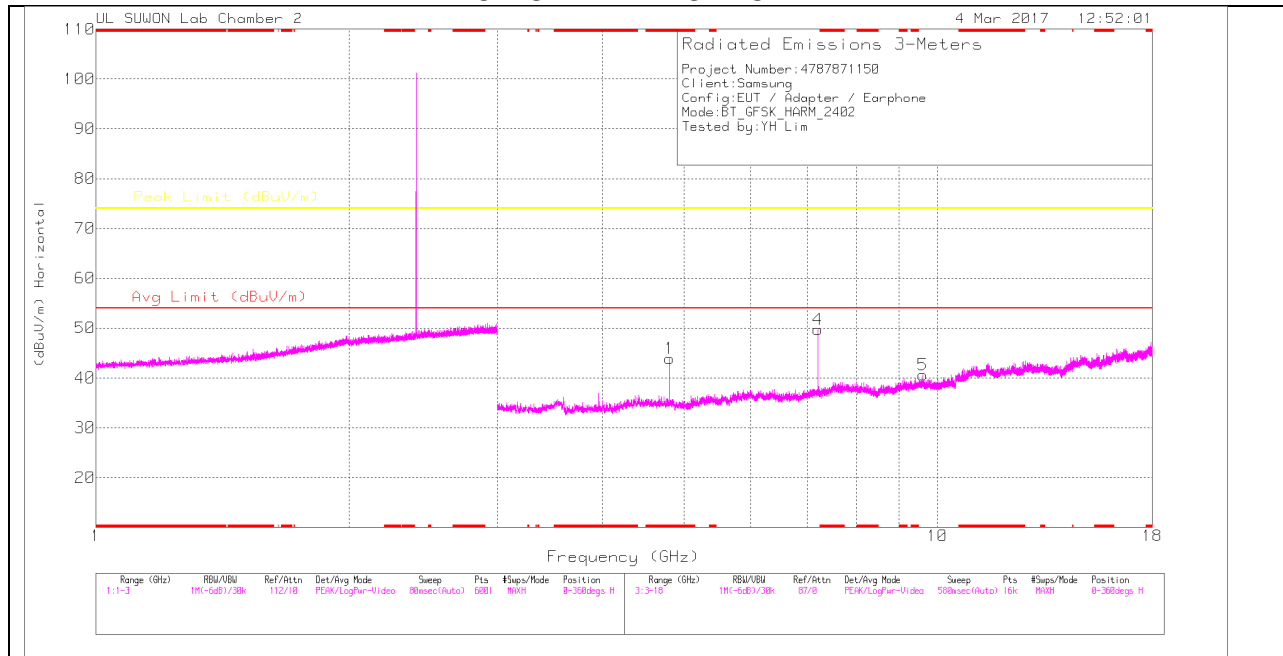
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

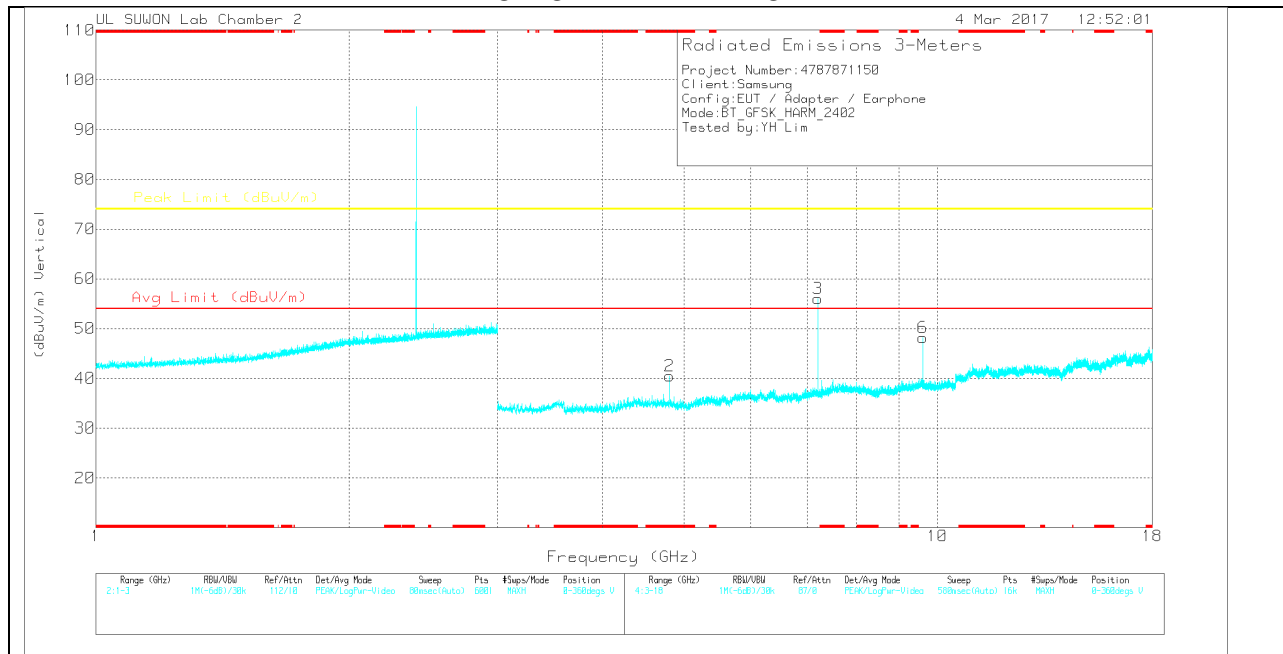
VA1T - FHSS: Linear Voltage Average $V_B=1/T_{on}$ where: T_{on} is transmit duration

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	34.28	PK	33.9	-24.3	43.88	-	-	74	-30.12	0-360	150	H
4	7.206	35.65	PK	35.8	-21.7	49.75	-	-	74	-24.25	0-360	150	H
5	9.608	22.06	PK	36.9	-18.4	40.56	-	-	74	-33.44	0-360	150	H
2	* 4.804	30.94	PK	33.9	-24.3	40.54	-	-	74	-33.46	0-360	250	V
3	7.205	41.89	PK	35.8	-21.7	55.99	-	-	74	-18.01	0-360	250	V
6	9.608	29.68	PK	36.9	-18.4	48.18	-	-	74	-25.82	0-360	250	V

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

PK – Peak detector

Radiated Emissions

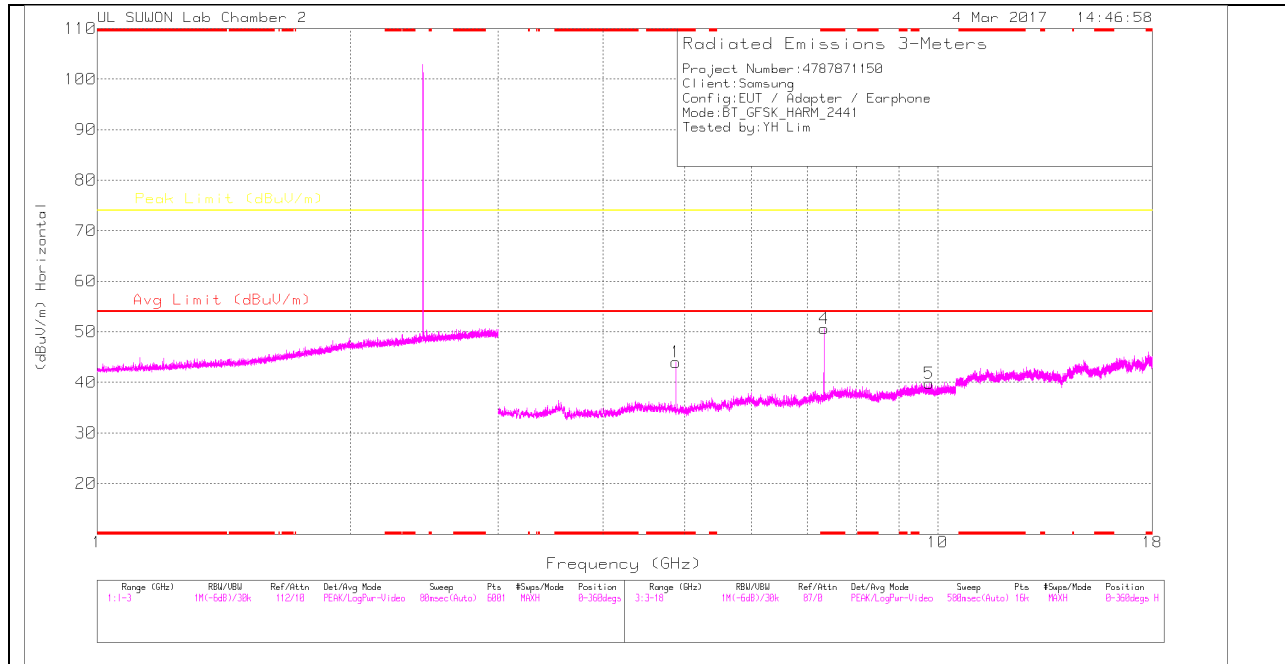
Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8724)_150 619	3GHz_HP[d B]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.804	40.48	PK2	33.9	-24.3	50.08	-	-	74	-23.92	154	191	H
* 4.804	36.73	VA1T	33.9	-24.3	46.33	54	-7.67	-	-	154	191	H
* 4.804	37.98	PK2	33.9	-24.3	47.58	-	-	74	-26.42	104	345	V
* 4.804	33.15	VA1T	33.9	-24.3	42.75	54	-11.25	-	-	104	345	V
7.206	46.21	PK2	35.8	-21.7	60.31	-	-	74	-13.69	184	247	V
7.206	42.61	PK2	35.8	-21.7	56.71	-	-	74	-17.29	148	180	H
9.608	34.46	PK2	36.9	-18.4	52.96	-	-	74	-21.04	320	388	H
9.608	36.75	PK2	36.9	-18.4	55.25	-	-	74	-18.75	202	273	V

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

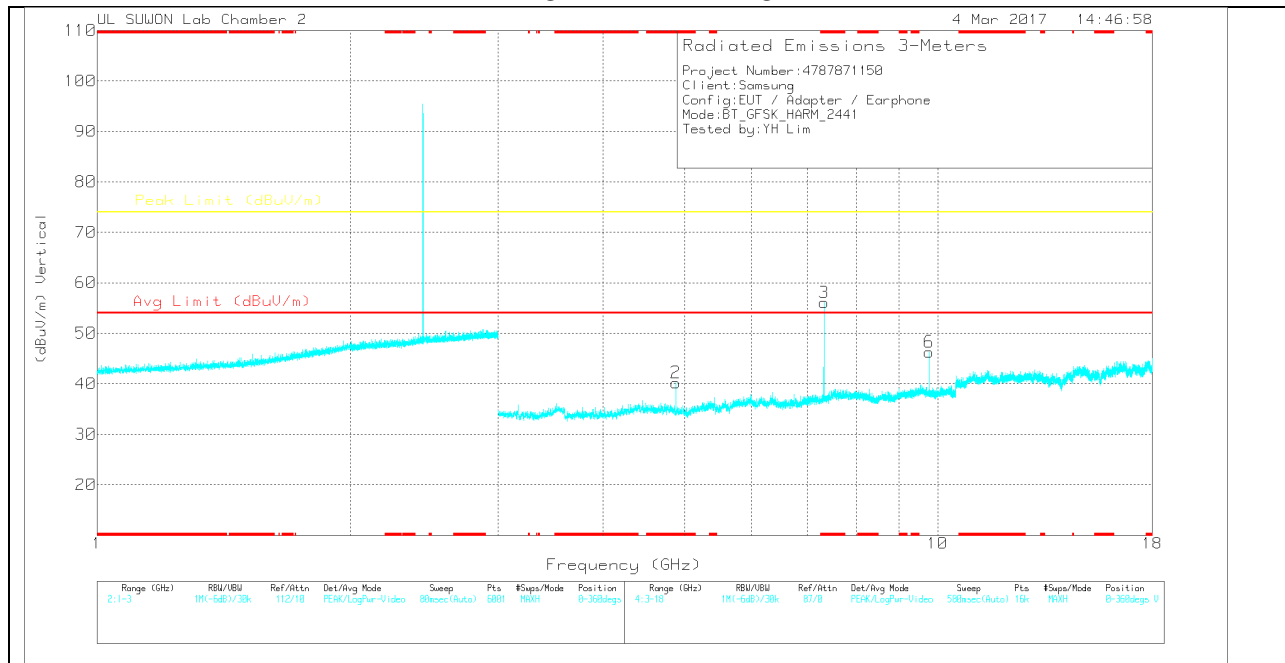
PK2 - KDB558074 Method: Maximum Peak

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	* 4.881	34.68	PK	33.9	-24.6	43.98	-	-	74	-30.02	0-360	150	H
4	* 7.323	36.59	PK	35.9	-21.9	50.59	-	-	74	-23.41	0-360	150	H
5	9.764	20.79	PK	37	-18	39.79	-	-	74	-34.21	0-360	150	H
2	* 4.882	30.92	PK	33.9	-24.6	40.22	-	-	74	-33.78	0-360	250	V
3	* 7.323	42.08	PK	35.9	-21.9	56.08	-	-	74	-17.92	0-360	150	V
6	9.764	27.28	PK	37	-18	46.28	-	-	74	-27.72	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
* 4.882	40.86	PK2	33.9	-24.6	50.16	-	-	74	-23.84	158	229	H
* 4.882	34.64	VA1T	33.9	-24.6	43.94	54	-10.06	-	-	158	229	H
* 4.882	38.32	PK2	33.9	-24.6	47.62	-	-	74	-26.38	140	225	V
* 4.882	29.18	VA1T	33.9	-24.6	38.48	54	-15.52	-	-	140	225	V
* 7.323	46.04	PK2	35.9	-21.9	60.04	-	-	74	-13.96	185	211	V
* 7.323	42.3	PK2	35.9	-21.9	56.3	-	-	74	-17.7	123	280	H
* 7.323	36.1	VA1T	35.9	-21.9	50.1	54	-3.9	-	-	123	280	H
9.764	32.02	PK2	37	-18	51.02	-	-	74	-22.98	158	394	H
9.764	34.65	PK2	37	-18	53.65	-	-	74	-20.35	158	122	V

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

PK2 - KDB558074 Method: Maximum Peak

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

* For marker 3, 7.323 GHz(Vertical), used the following method to do averaging:

$DCCF = 20 \times \log(T_{on}/100ms)$

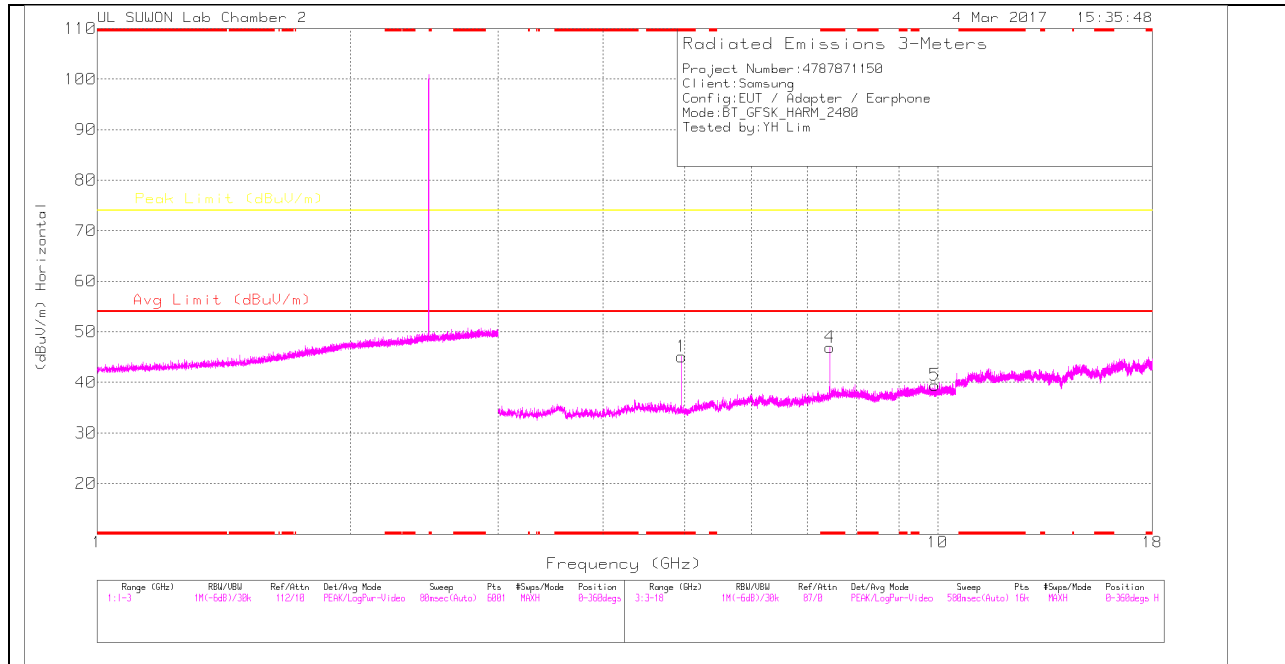
$T_{on} = 2.884ms$

$DCCF = 30.8$

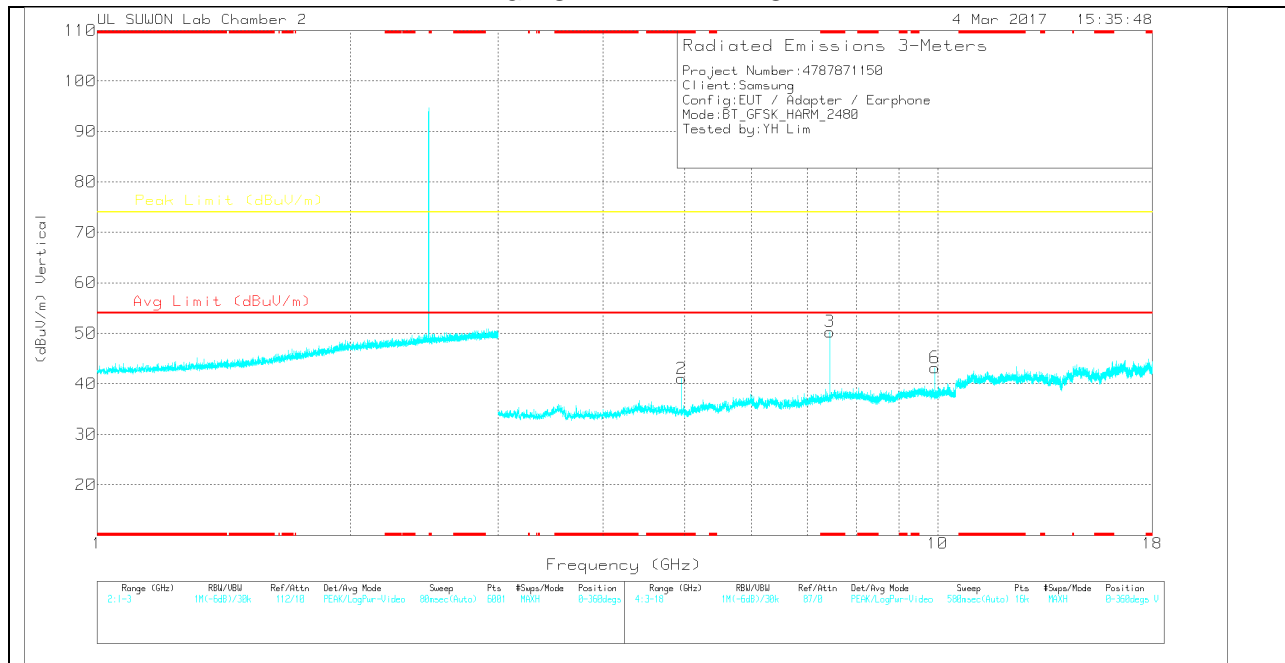
Corrected AV reading = Peak Reading – DCCF

= $60.04 - 30.8 = 29.24 \text{ dBuV/m}$

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	* 4.96	35.9	PK	33.9	-24.7	45.1	-	-	74	-28.9	0-360	150	H
4	* 7.44	31.93	PK	36	-21	46.93	-	-	74	-27.07	0-360	250	H
5	9.92	20.37	PK	37.1	-18	39.47	-	-	74	-34.53	0-360	250	H
2	* 4.959	31.83	PK	33.9	-24.7	41.03	-	-	74	-32.97	0-360	250	V
3	* 7.44	35.31	PK	36	-21	50.31	-	-	74	-23.69	0-360	250	V
6	9.92	24.08	PK	37.1	-18	43.18	-	-	74	-30.82	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
* 4.96	41.04	PK2	33.9	-24.7	50.24	-	-	74	-23.76	137	162	H
* 4.96	35.12	VA1T	33.9	-24.7	44.32	54	-9.68	-	-	137	162	H
* 4.96	38.88	PK2	33.9	-24.7	48.08	-	-	74	-25.92	144	247	V
* 4.96	30.09	VA1T	33.9	-24.7	39.29	54	-14.71	-	-	144	247	V
* 7.44	41.24	PK2	36	-21	56.24	-	-	74	-17.76	186	134	V
* 7.44	34.15	VA1T	36	-21	49.15	54	-4.85	-	-	186	134	V
* 7.44	39.42	PK2	36	-21	54.42	-	-	74	-19.58	128	163	H
* 7.44	30.74	VA1T	36	-21	45.74	54	-8.26	-	-	128	163	H
9.921	31.73	PK2	37.2	-18	50.93	-	-	74	-23.07	124	348	H
9.92	33.25	PK2	37.1	-18	52.35	-	-	74	-21.65	158	117	V

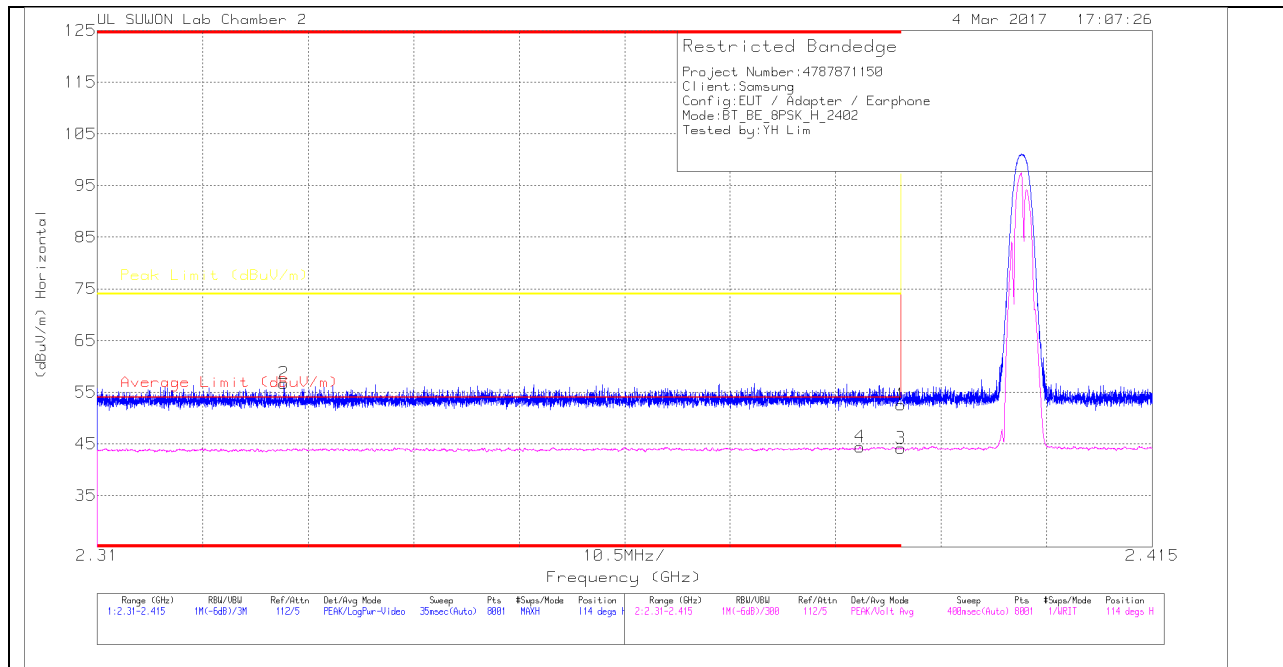
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

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

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

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

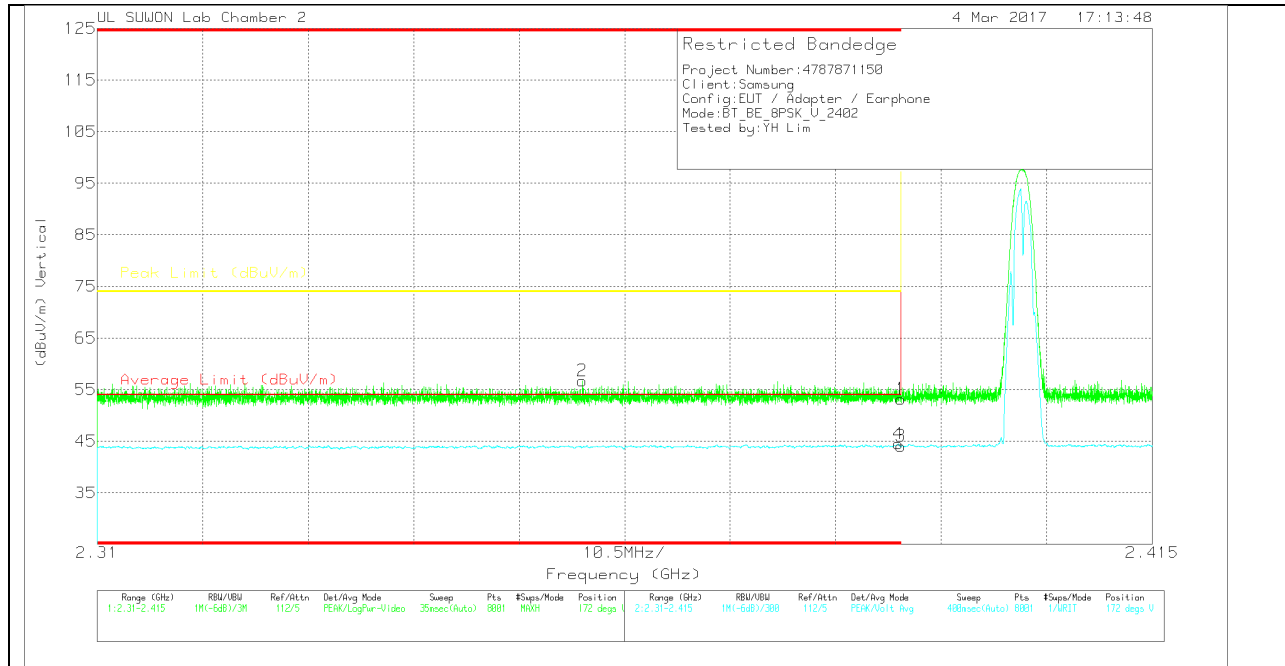
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8724)_150 619	10dB[dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.09	Pk		-18.2	52.59	-	-	74	-21.41	114	151	H
2	* 2.329	43.51	Pk		-18.4	56.71	-	-	74	-17.29	114	151	H
3	* 2.39	30.67	VA1T		-18.2	44.17	54	-9.83	-	-	114	151	H
4	* 2.386	30.94	VA1T		-18.2	44.44	54	-9.56	-	-	114	151	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	39.69	Pk	31.7	-18.2	53.19	-	-	74	-20.81	172	387	V
2	* 2.358	43.32	Pk	31.7	-18.3	56.72	-	-	74	-17.28	172	387	V
3	* 2.39	30.58	VA1T	31.7	-18.2	44.08	54	-9.92	-	-	172	387	V
4	* 2.39	31	VA1T	31.7	-18.2	44.5	54	-9.5	-	-	172	387	V

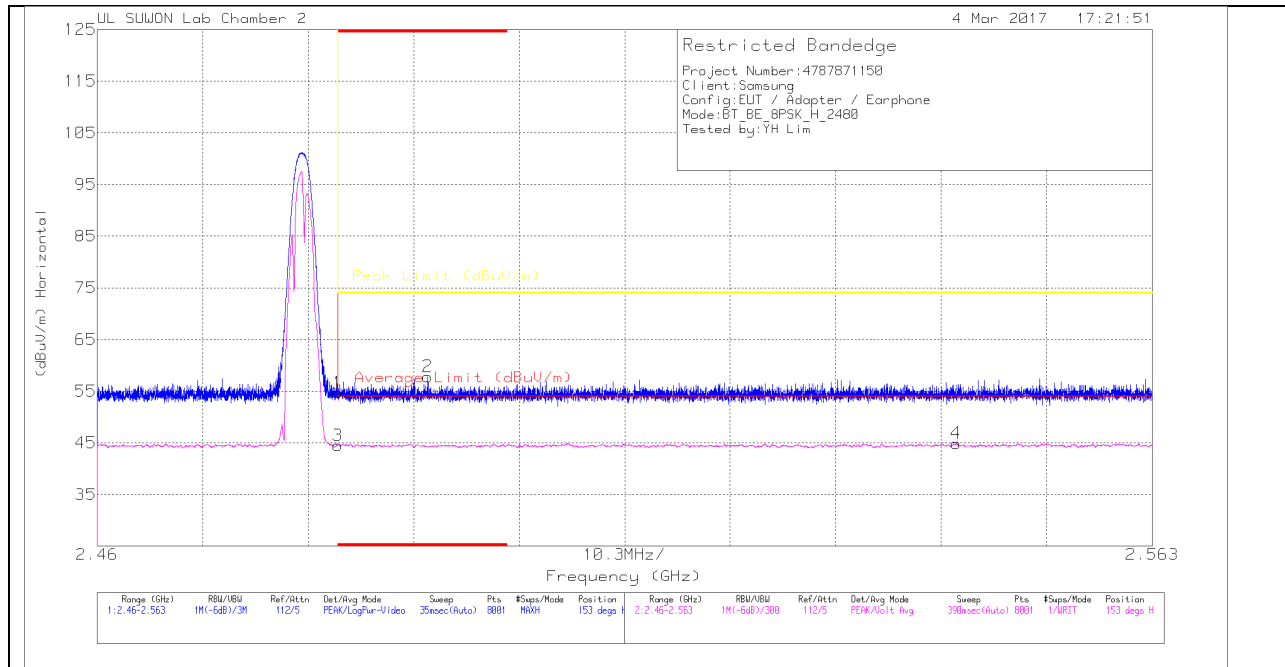
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

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

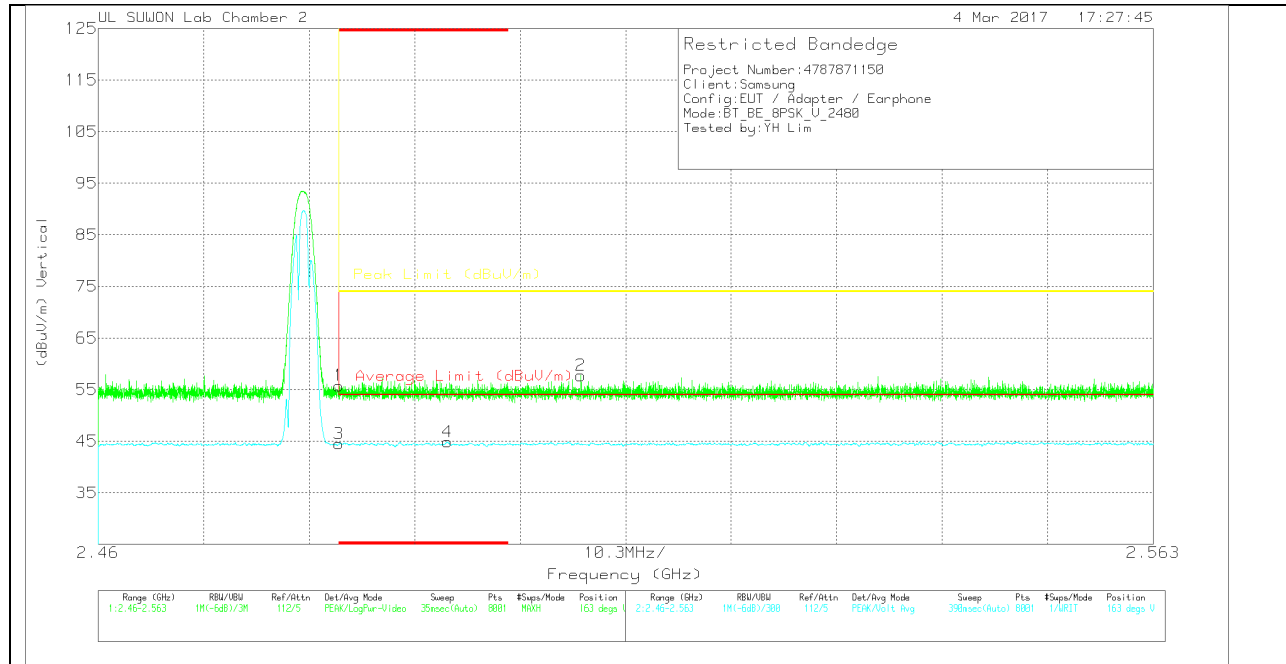
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8724)_150 619	10dB[dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	40.93	Pk	31.8	-18	54.73	-	-	74	-19.27	153	109	H
2	* 2.492	44.02	Pk	31.8	-18	57.82	-	-	74	-16.18	153	109	H
3	* 2.484	30.71	VA1T	31.8	-18	44.51	54	-9.49	-	-	153	109	H
4	2.544	31.02	VA1T	31.9	-18	44.92	54	-9.08	-	-	153	109	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	* 2.484	41.97	Pk	31.8	-18	55.77	-	-	74	-18.23	163	400	V
2	2.507	43.84	Pk	31.9	-18	57.74	-	-	74	-16.26	163	400	V
3	* 2.484	30.71	VA1T	31.8	-18	44.51	54	-9.49	-	-	163	400	V
4	* 2.494	31.08	VA1T	31.8	-18	44.88	54	-9.12	-	-	163	400	V

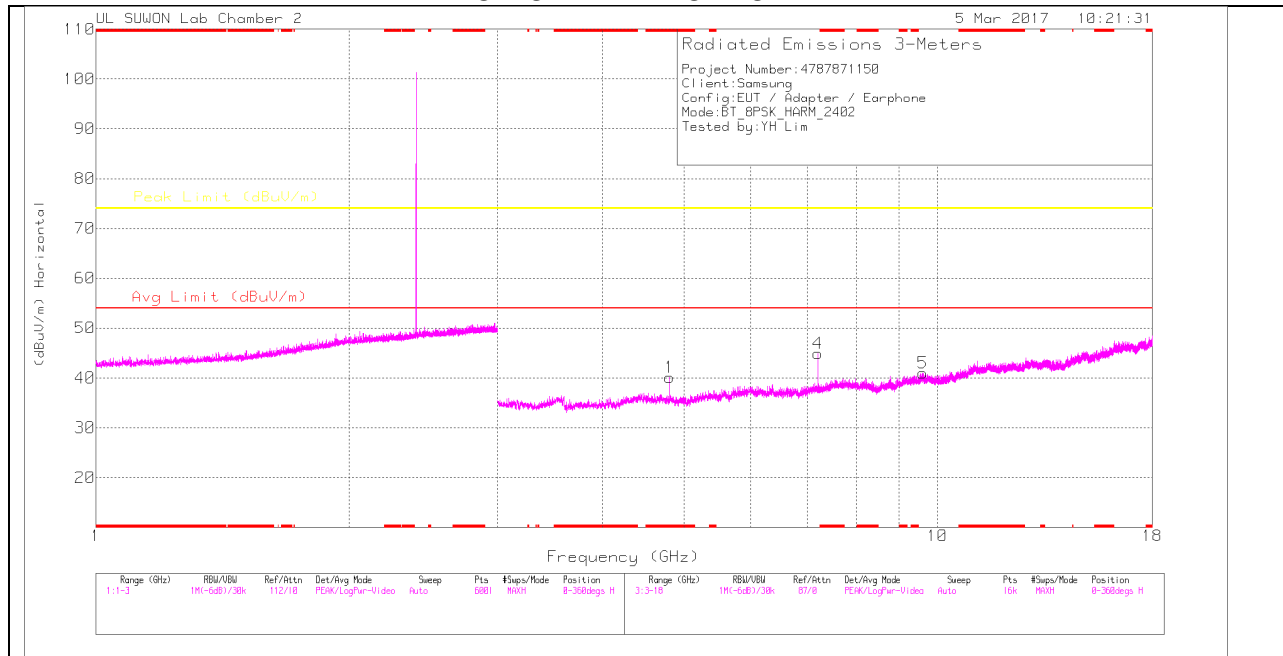
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

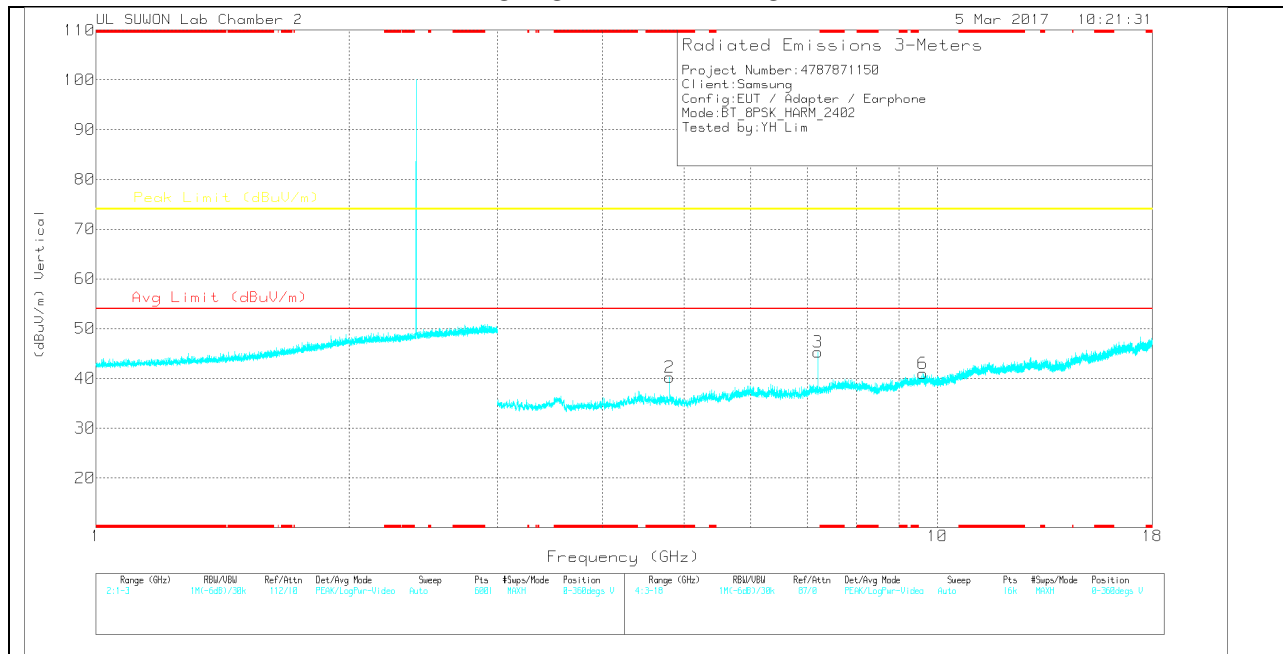
VA1T - FHSS: Linear Voltage Average $V_B = 1/T_{on}$ where: T_{on} is transmit duration

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	3GHz_HP[dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	* 4.804	30.49	PK	33.9	-24.3	40.09	-	-	74	-33.91	0-360
4	7.205	30.78	PK	35.8	-21.7	44.88	-	-	74	-29.12	0-360
5	9.608	22.44	PK	36.9	-18.4	40.94	-	-	74	-33.06	0-360
2	* 4.804	30.63	PK	33.9	-24.3	40.23	-	-	74	-33.77	0-360
3	7.205	31.23	PK	35.8	-21.7	45.33	-	-	74	-28.67	0-360
6	9.608	22.47	PK	36.9	-18.4	40.97	-	-	74	-33.03	0-360

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

PK – Peak detector

Radiated Emissions

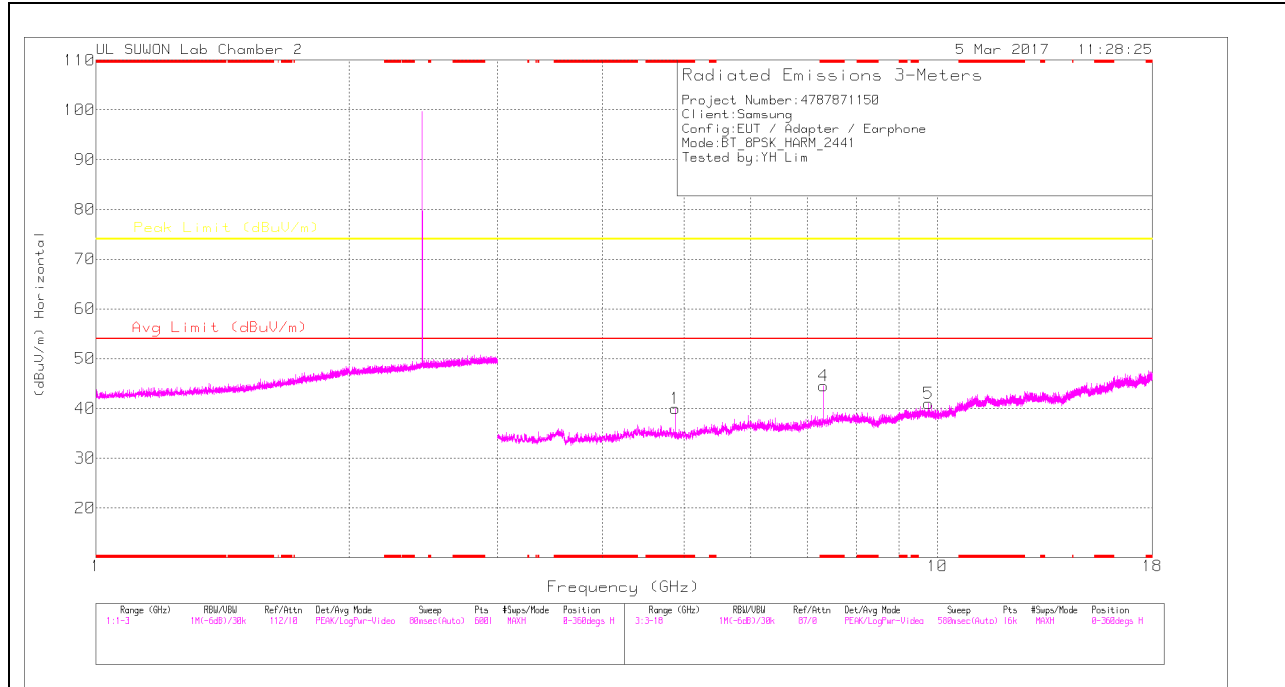
Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	3GHz_HP[dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.804	39.94	PK2	33.9	-24.3	49.54	-	-	74	-24.46	158	187	H
* 4.804	28.68	VA1T	33.9	-24.3	38.28	54	-15.72	-	-	158	187	H
* 4.804	37.66	PK2	33.9	-24.3	47.26	-	-	74	-26.74	333	145	V
* 4.804	23.97	VA1T	33.9	-24.3	33.57	54	-20.43	-	-	333	145	V
7.206	45.67	PK2	35.8	-21.7	59.77	-	-	74	-14.23	189	249	V
7.206	41.08	PK2	35.8	-21.7	55.18	-	-	74	-18.82	155	207	H

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

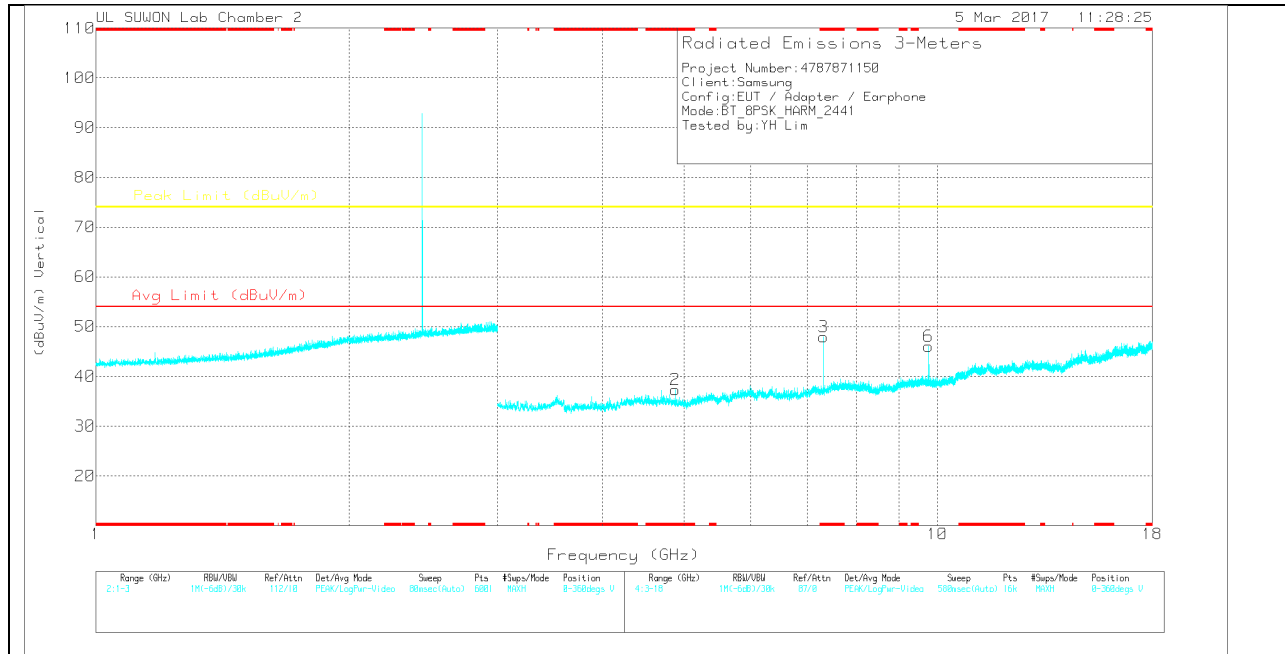
PK2 - KDB558074 Method: Maximum Peak

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	* 4.881	30.64	PK	33.9	-24.6	39.94	-	-	74	-34.06	0-360	150	H
4	* 7.323	30.48	PK	35.9	-21.9	44.48	-	-	74	-29.52	0-360	250	H
5	9.764	21.99	PK	37	-18	40.99	-	-	74	-33.01	0-360	250	H
2	* 4.881	28.03	PK	33.9	-24.6	37.33	-	-	74	-36.67	0-360	250	V
3	* 7.323	33.91	PK	35.9	-21.9	47.91	-	-	74	-26.09	0-360	150	V
6	9.764	27.03	PK	37	-18	46.03	-	-	74	-27.97	0-360	250	V

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

PK – Peak detector

Radiated Emissions

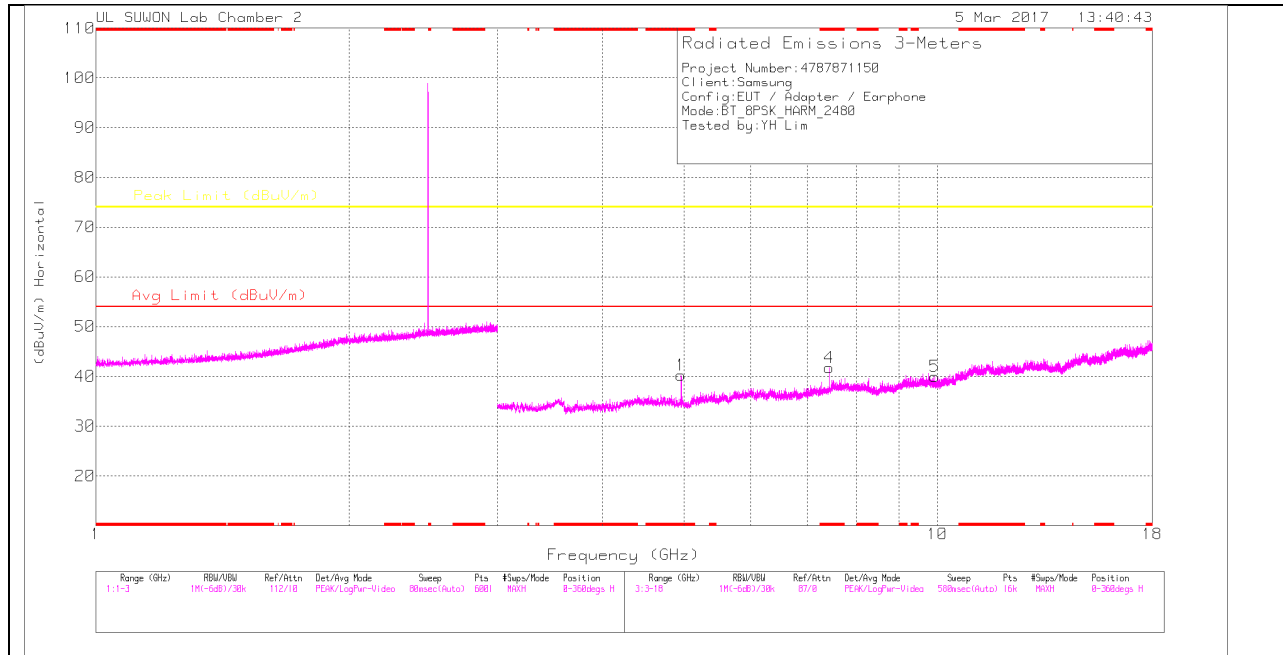
Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8724)_150 619	3GHz_HP[d B]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.882	40	PK2	33.9	-24.6	49.3	-	-	74	-24.7	155	173	H
* 4.882	28.81	VA1T	33.9	-24.6	38.11	54	-15.89	-	-	155	173	H
* 4.882	36.96	PK2	33.9	-24.6	46.26	-	-	74	-27.74	326	115	V
* 4.882	23.47	VA1T	33.9	-24.6	32.77	54	-21.23	-	-	326	115	V
* 7.323	45.04	PK2	35.9	-21.9	59.04	-	-	74	-14.96	186	231	V
* 7.323	32.33	VA1T	35.9	-21.9	46.33	54	-7.67	-	-	186	231	V
* 7.323	42.15	PK2	35.9	-21.9	56.15	-	-	74	-17.85	152	204	H
* 7.323	29.02	VA1T	35.9	-21.9	43.02	54	-10.98	-	-	152	204	H
9.764	33.29	PK2	37	-18	52.29	-	-	74	-21.71	185	398	H
9.764	35.1	PK2	37	-18	54.1	-	-	74	-19.9	223	241	V

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

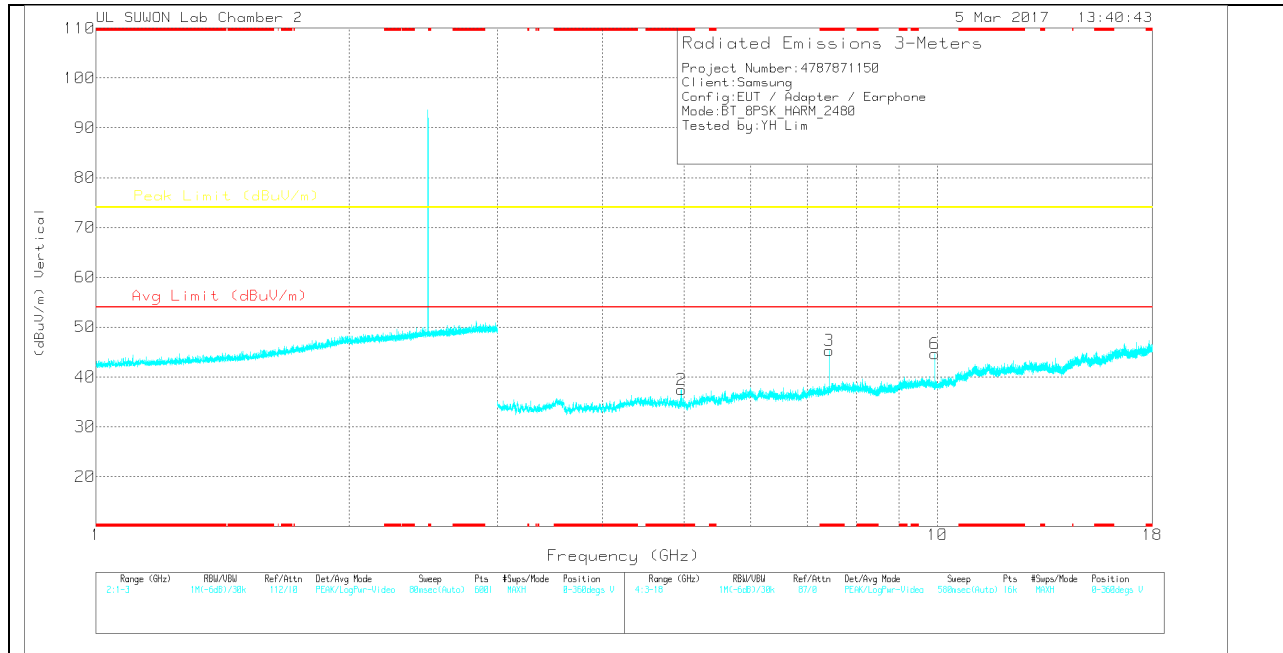
PK2 - KDB558074 Method: Maximum Peak

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	* 4.959	31.01	PK	33.9	-24.7	40.21	-	-	74	-33.79	0-360	150	H
4	* 7.44	26.7	PK	36	-21	41.7	-	-	74	-32.3	0-360	250	H
5	9.92	20.88	PK	37.1	-18	39.98	-	-	74	-34.02	0-360	250	H
2	* 4.96	28.21	PK	33.9	-24.7	37.41	-	-	74	-36.59	0-360	250	V
3	* 7.44	30.34	PK	36	-21	45.34	-	-	74	-28.66	0-360	250	V
6	9.92	25.54	PK	37.1	-18	44.64	-	-	74	-29.36	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	40.19	PK2	33.9	-24.7	49.39	-	-	74	-24.61	152	133	H
* 4.96	29.37	VA1T	33.9	-24.7	38.57	54	-15.43	-	-	152	133	H
* 4.961	38.27	PK2	33.9	-24.7	47.47	-	-	74	-26.53	150	282	V
* 4.96	25.59	VA1T	33.9	-24.7	34.79	54	-19.21	-	-	150	282	V
* 7.44	40.51	PK2	36	-21	55.51	-	-	74	-18.49	184	270	V
* 7.44	27.5	VA1T	36	-21	42.5	54	-11.5	-	-	184	270	V
* 7.44	38.3	PK2	36	-21	53.3	-	-	74	-20.7	129	169	H
* 7.44	24.79	VA1T	36	-21	39.79	54	-14.21	-	-	129	169	H
9.92	31.63	PK2	37.1	-18	50.73	-	-	74	-23.27	147	155	H
9.92	34.04	PK2	37.1	-18	53.14	-	-	74	-20.86	161	110	V

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

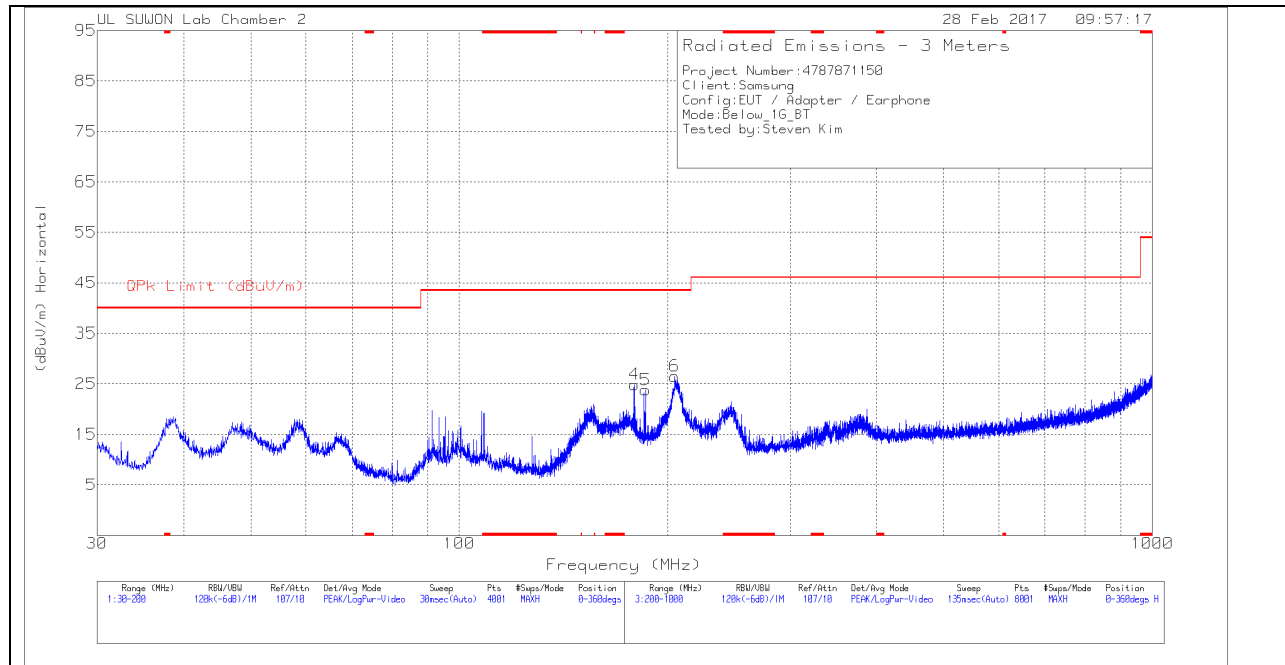
PK2 - KDB558074 Method: Maximum Peak

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

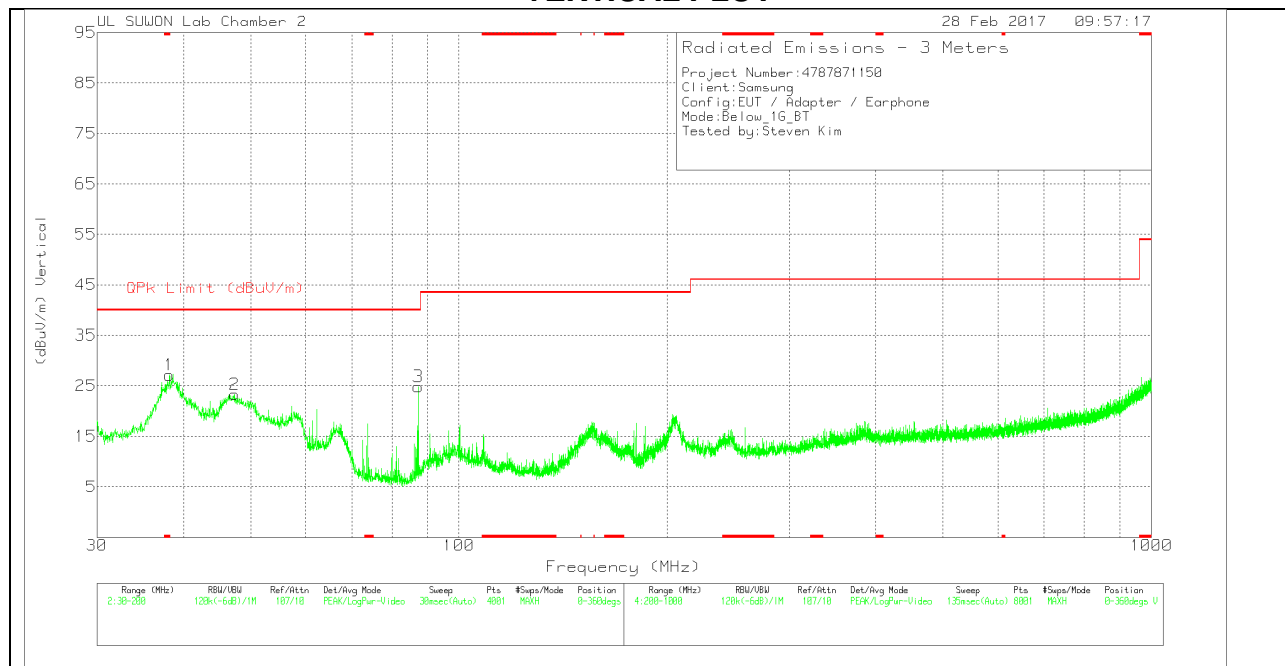
10.3. WORST-CASE BELOW 1 GHz

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	VUL89163-749	30-1000MHz[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	179.0475	46.05	Pk	9.4	-30.6	24.85	43.52	-18.67	0-360	100	H
5	185.5925	44.41	Pk	10	-30.6	23.81	43.52	-19.71	0-360	300	H
1	* 38.16	46.72	Pk	12	-31.6	27.12	40	-12.88	0-360	100	V
2	47.3825	40.81	Pk	14	-31.5	23.31	40	-16.69	0-360	100	V
3	87.3325	47.02	Pk	8.9	-31.1	24.82	40	-15.18	0-360	200	V
6	204.5	45.48	Pk	11.5	-30.5	26.48	43.52	-17.04	0-360	100	H

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

Pk - Peak detector

11. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

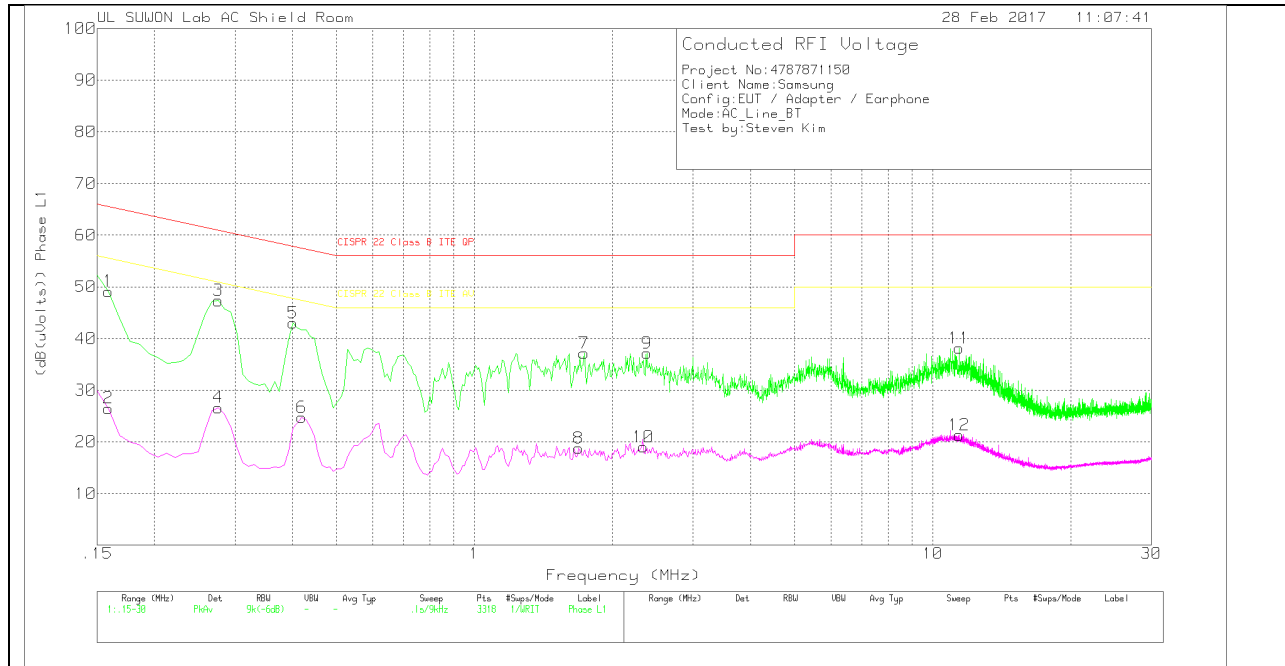
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

6 WORST EMISSIONS

LINE 1 PLOT



LINE 1 RESULTS

Trace Markers

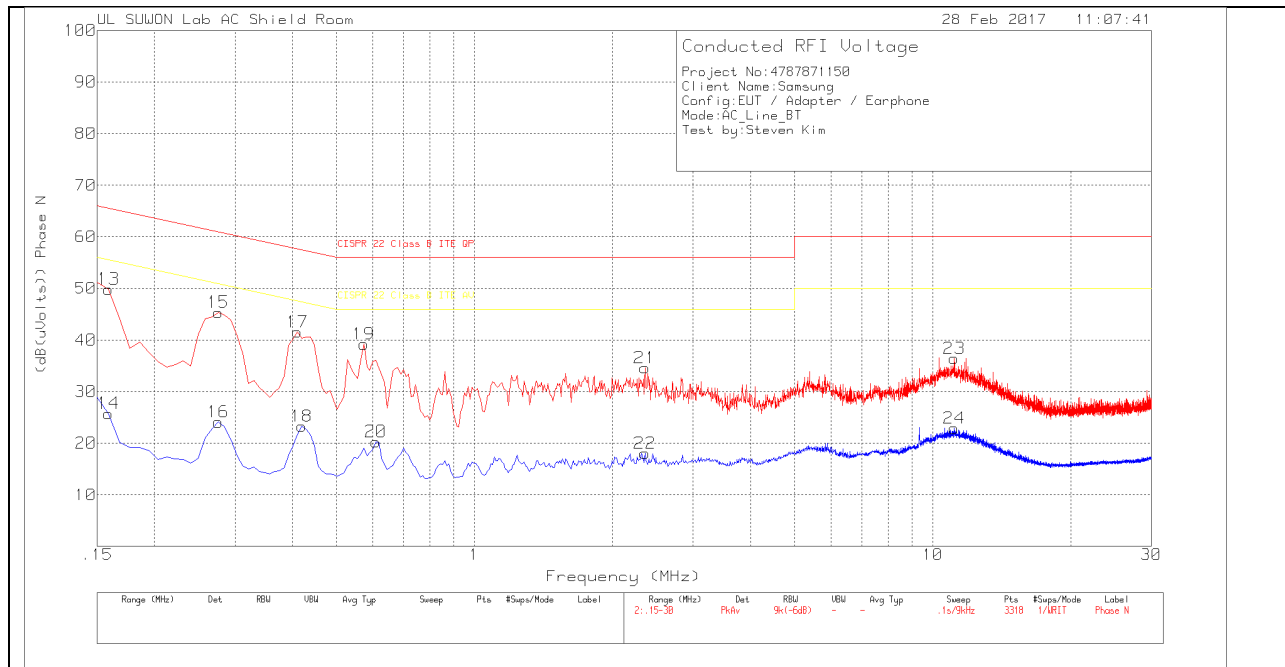
Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101837_w ith ex- cord_L1	CABLELOS S(dB)	Corrected Reading (dB(uVolts)	CISPR 22 Class B ITE QP	Margin (dB)	CISPR 22 Class B ITE AV	Margin (dB)
1	.159	39.14	Pk	9.9	.1	49.14	65.52	-16.38	-	-
2	.159	16.51	Av	9.9	.1	26.51	-	-	55.52	-29.01
3	.276	37.45	Pk	9.7	.2	47.35	60.94	-13.59	-	-
4	.276	16.74	Av	9.7	.2	26.64	-	-	50.94	-24.3
5	.402	32.92	Pk	9.9	.2	43.02	57.81	-14.79	-	-
6	.42	14.65	Av	9.9	.2	24.75	-	-	47.45	-22.7
7	1.734	27.14	Pk	9.7	.3	37.14	56	-18.86	-	-
8	1.689	8.79	Av	9.7	.3	18.79	-	-	46	-27.21
9	2.382	27.14	Pk	9.7	.3	37.14	56	-18.86	-	-
10	2.337	9.01	Av	9.7	.3	19.01	-	-	46	-26.99
11	11.418	27.84	Pk	10	.3	38.14	60	-21.86	-	-
12	11.418	11	Av	10	.3	21.3	-	-	50	-28.7

Pk - Peak detector

Av - Average detection

LINE 2 PLOT



LINE 2 RESULTS

Trace Markers

Phase N .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101837_w ith ex- cord_N	CABLELOS S(dB)	Corrected Reading (dB(uVolts)	CISPR 22 Class B ITE QP	Margin (dB)	CISPR 22 Class B ITE AV	Margin (dB)
13	.159	39.87	Pk	9.9	.1	49.87	65.52	-15.65	-	-
14	.159	15.77	Av	9.9	.1	25.77	-	-	55.52	-29.75
15	.276	35.44	Pk	9.7	.2	45.34	60.94	-15.6	-	-
16	.276	14.2	Av	9.7	.2	24.1	-	-	50.94	-26.84
17	.411	31.42	Pk	9.9	.2	41.52	57.63	-16.11	-	-
18	.42	13.19	Av	9.9	.2	23.29	-	-	47.45	-24.16
19	.573	29.1	Pk	9.9	.2	39.2	56	-16.8	-	-
20	.609	10.19	Av	9.9	.2	20.29	-	-	46	-25.71
21	2.355	24.58	Pk	9.7	.3	34.58	56	-21.42	-	-
22	2.355	8.04	Av	9.7	.3	18.04	-	-	46	-27.96
23	11.148	25.93	Pk	10.2	.3	36.43	60	-23.57	-	-
24	11.148	12.38	Av	10.2	.3	22.88	-	-	50	-27.12

Pk - Peak detector

Av - Average detection