



# TEST REPORT

**Report Number. :** 13571601-E1V2

**Applicant :** APPLE INC.  
1 APPLE PARK WAY  
CUPERTINO, CA 95104, U.S.A

**Model :** A2483 (Parent Model, Full Test)  
A2640, A2636, A2638, A2639 (Variant Models)

**FCC ID :** BCG-E4000A (Parent Model)  
BCG-E4034A, BCG-E4002A, BCG-E4033A (Variant Models)

**IC :** 579C-E4000A (Parent Model)  
579C-E4034A, 579C-E4002A, 579C-E4033A (Variant Models)

**EUT Description :** SMARTPHONE

**Test Standard(s) :** FCC 47 CFR PART 15 SUBPART C  
ISED RSS-247 ISSUE 2  
ISED RSS-GEN Issue 5 + A1 + A2

**Date Of Issue:**

July 16, 2021

**Prepared by:**

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**REPORT REVISION HISTORY**

Rev.	Issue Date	Revisions	Revised By
V1	6/30/2021	Initial Issue	Chin Pang
V2	7/16/2021	Address TCB's Question on GFSK iPA tune power change to 11dBm	Chin Pang

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**1. ATTESTATION OF TEST RESULTS**

**COMPANY NAME:** APPLE INC.  
1 APPLE PARK WAY  
CUPERTINO, CA 95014, U.S.A

**EUT DESCRIPTION:** SMARTPHONE

**MODEL:** A2483 (PARENT MODEL)  
A2640, A2636, A2638, A2639 (VARIANT MODELS)

**BRAND:** APPLE

**FCC ID:** BCG-E4000A (PARENT MODEL)  
BCG-E4034A, BCG-E4002A, BCG-E4033A (VARIANT MODELS)

**IC ID:** 579C-E4000A (PARENT MODEL)  
579C-E4034A, 579C-E4002A, 579C-E4033A, (VARIANT MODELS)

**SERIAL NUMBER:** G6TD800R0GLG, HXKPFHXK2

**SAMPLE RECEIPT DATE:** 10/23/2020, 06/11/2021

**DATE TESTED:** NOVEMBER 06, 2020 – JULY 15, 2021

<b>APPLICABLE STANDARDS</b>	
<b>STANDARD</b>	<b>TEST RESULTS</b>
CFR 47 Part 15 Subpart C	Complies
ISED RSS-247 Issue 2	Complies
ISED RSS-GEN Issue 5 + A1 + A2	Complies

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. 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 A2LA, NIST, any agency of the Federal Government, or any agency of the U.S. government.

Approved & Released For

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UL VERIFICATION SERVICES INC.

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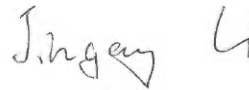
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UL Verification Services Inc. By:

Prepared By:



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UL Verification Services Inc.

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Test Engineer  
Consumer Technology Division  
UL Verification Services Inc.

## 2. TEST RESULTS SUMMARY

This report contains data provided by the customer which can impact the validity of results. UL Verification Services Inc. is only responsible for the validity of results after the integration of the data provided by the customer.

FCC Clause	ISED Clause	Requirement	Result	Comment
See Comment		Duty Cycle	Reporting purposes only	Per ANSI C63.10, Section 11.6.
See Comment	RSS-GEN 6.7	20dB BW/99% OBW	Reporting purposes only	ANSI C63.10 Sections 6.9.2 and 6.9.3
15.247 (a)(1)	RSS-247 (5.1) (b)	Hopping Frequency Separation	Complies	None.
15.247 (a)(1)(iii)	RSS-247 (5.1) (d)	Number of Hopping Channels	Complies	None.
15.247 (a)(1)(iii)	RSS-247 (5.1) (d)	Average Time of Occupancy	Complies	None.
15.247 (b)(1)	RSS-247 (5.4) (b)	Output Power	Complies	None.
See Comment		Average Power	Reporting purposes only	Per ANSI C63.10, Section 11.9.2.3.2.
15.247 (d)	RSS-247 (5.5)	Conducted Spurious Emissions	Complies	None.
15.209, 15.205	RSS-GEN 8.9, 8.10	Radiated Emissions	Complies	None.
15.207	RSS-Gen 8.8	AC Mains Conducted Emissions	Complies	None.

## 3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2013, KDB 558074 D01 15.247 Meas Guidance v05r02, KDB 414788 D01 Radiated Test Site v01r01, KDB 662911, RSS-GEN Issue 5 + A1 + A2, and RSS-247 Issue 2.

## 4. FACILITIES AND ACCREDITATION

UL Verification Services Inc. is accredited by A2LA, certification #0751.05, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

	Address	ISED CABID	ISED Company Number	FCC Registration
<input type="checkbox"/>	Building 1: 47173 Benicia Street, Fremont, CA 94538	US0104	2324A	208313
<input checked="" type="checkbox"/>	Building 2: 47266 Benicia Street, Fremont, CA 94538	US0104	22541	208313
<input checked="" type="checkbox"/>	Building 4: 47658 Kato Rd, Fremont, CA 94538	US0104	2324B	208313



## 5. DECISION RULES AND MEASUREMENT UNCERTAINTY

### 5.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

### 5.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

### 5.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	U <sub>Lab</sub>
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.78 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.40 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.87 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	6.01 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.73 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.51 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.29 dB

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

### 5.4. SAMPLE CALCULATION

#### RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

$$36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} = 28.9 \text{ dBuV/m}$$

#### MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:

Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + LISN Insertion Loss.

$$36.5 \text{ dBuV} + 0 \text{ dB} + 10.1 \text{ dB} + 0 \text{ dB} = 46.6 \text{ dBuV}$$

## 6. EQUIPMENT UNDER TEST

### 6.1. EUT DESCRIPTION

The Apple iPhone is a smartphone with multimedia functions (music, application support, and video), cellular GSM, GPRS, EGPRS, UMTS, LTE, 5G, CDMA, IEEE 802.11a/b/g/n/ac/ax, Bluetooth, Ultra-Wideband, GPS and NFC. All models support at least one UICC based SIM. The second SIM is either an UICC based p-SIM (physical SIM) or e-SIM (electronic SIM). The device supports a built-in inductive charging transmitter and receiver. The rechargeable battery is not user accessible.

Testing was performed on the parent model and is used to support the application for the parent and variants identified in this report based on the test plan submitted and approved via KDB inquiry by the FCC and by ISED-Canada.

The Model and FCC/IC ID covered by this report includes:

Parent Model: A2483, FCC ID: BCG-E4000A, IC ID: 579C-E4000A

Variant Models: A2640; FCC ID: BCG-E4034A, IC ID: 579C-E4034A  
 A2636; FCC ID: BCG-E4002A, IC ID: 579C-E4002A  
 A2638; FCC ID: BCG-E4033A, IC ID: 579C-E4033A  
 A2639; FCC ID: BCG-E4034A, IC ID: 579C-E4034A

### 6.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

Antenna	Config	Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
ANT 4	High Power	2402 - 2480	Basic GFSK	20.38	109.14
		2402 - 2480	QPSK	18.85	76.74
		2402 - 2480	Enhanced 8PSK	18.87	77.09
	Low Power	2402 - 2480	Basic GFSK	11.56	14.32
		2402 - 2480	QPSK	10.82	12.08
		2402 - 2480	Enhanced 8PSK	10.85	12.16
ANT 3	High Power	2402 - 2480	Basic GFSK	20.26	106.17
		2402 - 2480	QPSK	18.80	75.86
		2402 - 2480	Enhanced 8PSK	18.85	76.74
	Low Power	2402 - 2480	Basic GFSK	11.28	13.43
		2402 - 2480	QPSK	10.83	12.11
		2402 - 2480	Enhanced 8PSK	10.85	12.16
BF, Ant 4 + Ant 3	High Power	2402 - 2480	Basic GFSK TxBF	20.16	103.75
		2402 - 2480	QPSK TxBF	18.62	72.78
		2402 - 2480	Enhanced 8PSK TxBF	18.69	73.96
	Low Power	2402 - 2480	Basic GFSK TxBF	14.28	26.79
		2402 - 2480	QPSK TxBF	13.68	23.33
		2402 - 2480	Enhanced 8PSK TxBF	13.73	23.60

Note: GFSK, DQPSK, 8PSK average Power are all investigated, The GFSK & 8PSK Power are the worst case. Testing is based on these modes to showing compliance. For average power data please refer to section 9.7.

**6.3. DESCRIPTION OF AVAILABLE ANTENNAS**

The antennas gain and IFA Type as provided by the manufacturer' are as follows:

Frequency Range (GHz)	ANT 4 (dBi)	ANT 3 (dBi)
2.4	-0.2	-0.2

**6.4. SOFTWARE AND FIRMWARE**

The EUT firmware installed during testing was FW Version: 19.1.309.2612

## **6.5. WORST-CASE CONFIGURATION AND MODE**

The EUT was investigated in three orthogonal orientations X, Y and Z on ANT 4, ANT 3 and 2TX beamforming. It was determined that Y (Landscape) was the worst-case orientation for ANT 4 and X (Flatbed) orientation was the worst case for both ANT 3 and 2TX beamforming.

Radiated band edge, harmonic, and spurious emissions from 1GHz to 18GHz were performed with the EUT was set to transmit at highest power on Low/Middle/High channels.

Radiated emissions below 1GHz, 18-26GHz and power line conducted emissions were performed with the EUT transmits at the channel with the highest output power as worst-case scenario. There were no emissions found below 30MHz within 20dB of the limit.

For below 1GHz tests EUT was connected to AC power adapter as the worst case; and for above 1GHz, the worst-case configuration reported was tested with EUT only. For AC line conducted emission, test was investigated with AC power adapter and with laptop.

For simultaneous transmission of multiple channels in the 2.4GHz BT and 5GHz bands, No noticeable emission was found.

GFSK, DQPSK, 8PSK average power are all investigated, The GFSK & 8PSK power are the worst case. For average power data please refer to section 9.7.

Worst-case data rates as provided by the client were:

GFSK mode: DH5

8PSK mode: 3-DH5

Beamforming: GFSK, DH5, 8PSK, 3-DH5

For radiated harmonic spurious emissions test, high power beamforming GFSK mode is set to maximum power per chain to cover both SISO and MIMO modes to complies with radiated spurious emissions limits in the restricted bands between 1GHz and 18GHz low/mid/high channel.

For Radiated band edge, GFSK, 8PSK and TXBF modulations were all investigated on low and high power setting.

There are two vendors of the WiFi/Bluetooth radio modules: variant 1 and variant 2. The Wi-Fi/Bluetooth radio modules have the same mechanical outline (e.g., the same package dimension and pin-out layout), use the same on-board antenna matching circuit, have an identical antenna structure, and are built and tested to conform to the same specifications and to operate within the same tolerances.

Baseline testing was performed on the two variants to determine the worst case on all conducted power and radiated emissions.

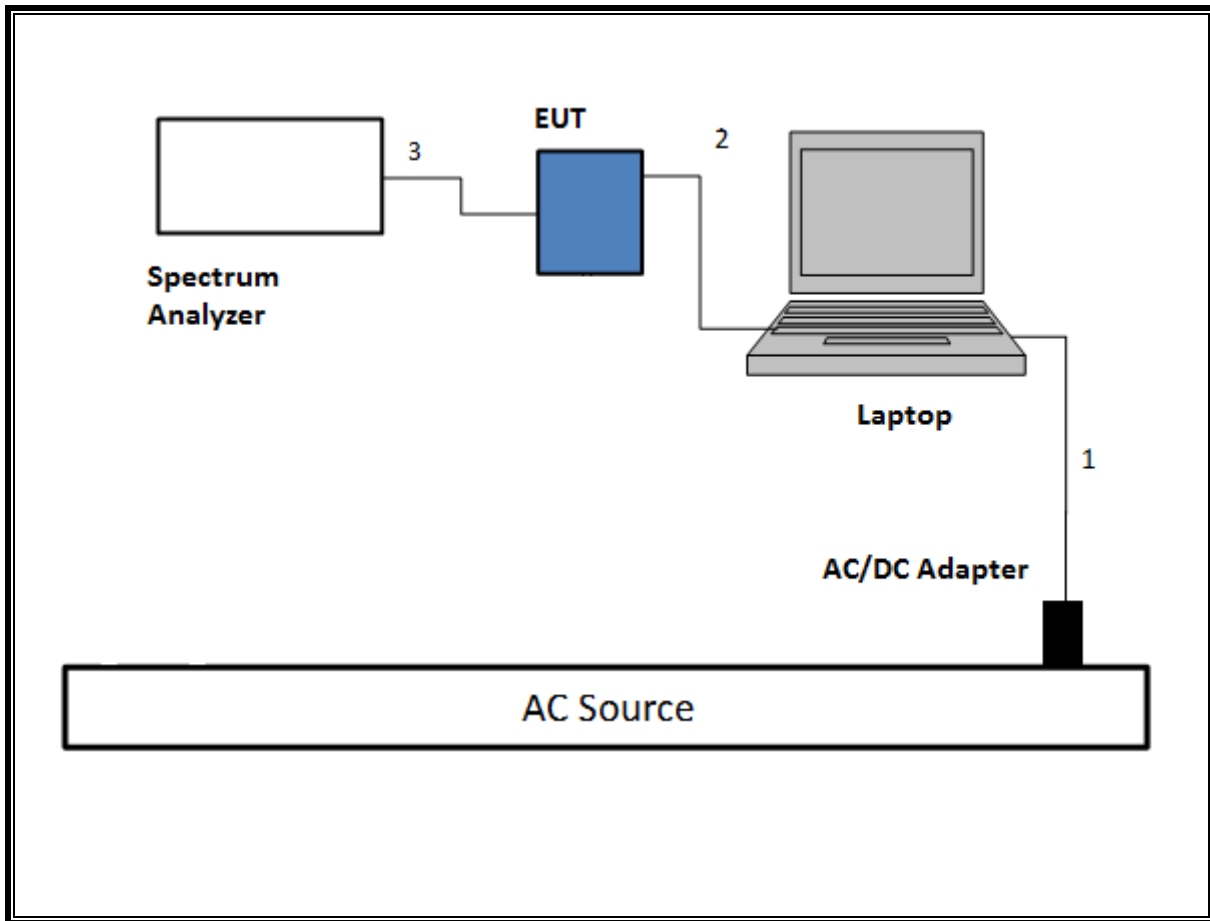
**6.6. DESCRIPTION OF TEST SETUP**

SUPPORT TEST EQUIPMENT						
Description	Manufacturer	Model	Serial Number	FCC ID/ DoC		
Laptop	Apple	Macbook Pro	C02YL3ZMJHC8	BCGA1989		
Laptop AC/DC adapter	Apple	A1424	NSW25679	DoC		
EUT AC/DC adapter	Apple	A1720	C3D8417A7R93KVPA8	DoC		
I/O CABLES (RF CONDUCTED TEST)						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	AC	Un-shielded	2	N/A
2	USB	1	USB	Shielded	1.0	N/A
3	Antenna	1	SMA	Un-shielded	0.2	To spectrum Analyzer
I/O CABLES (RF RADIATED TEST)						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	AC	Un-shielded	2	N/A
2	USB	1	USB	Un-shielded	1	N/A

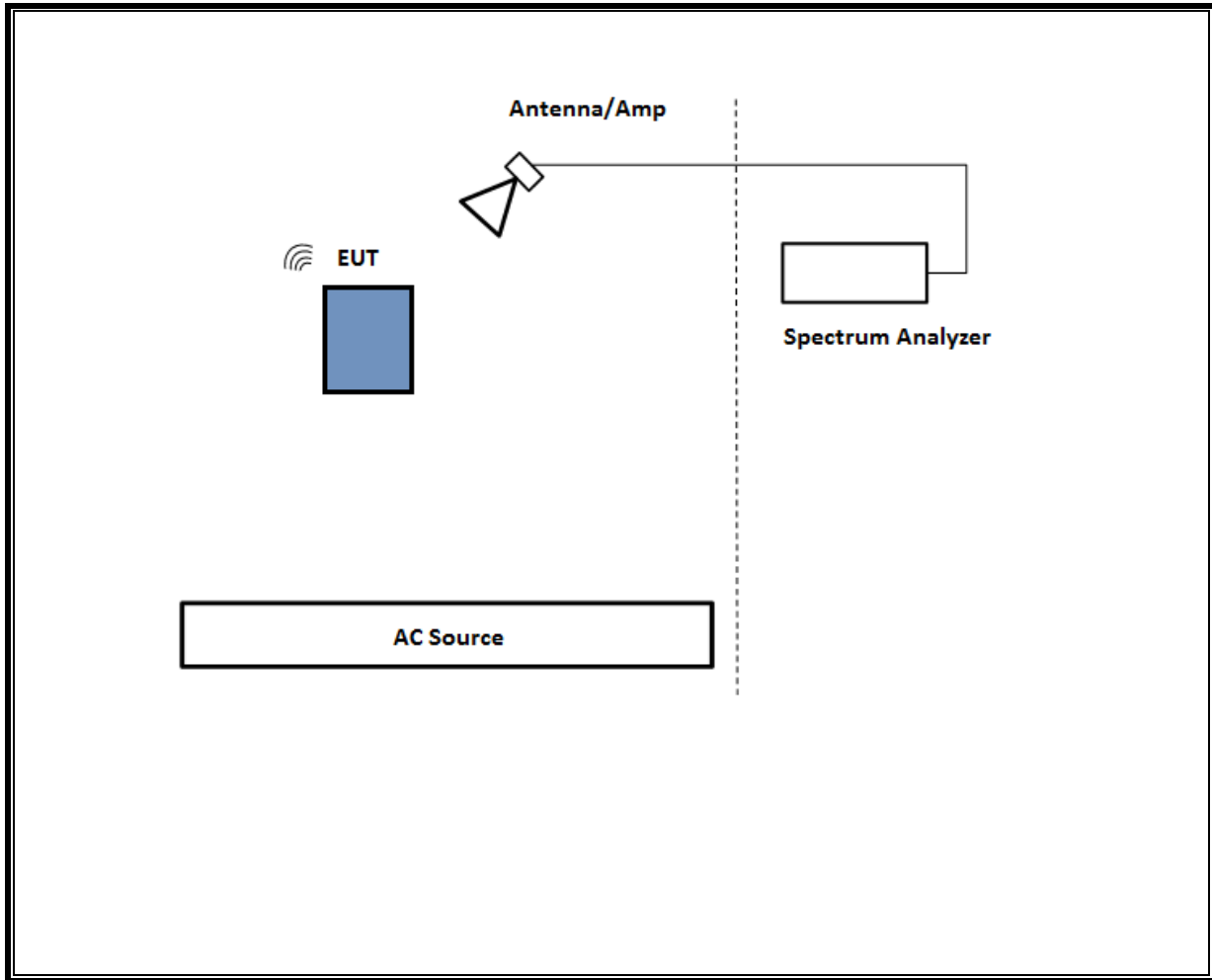
**TEST SETUP**

The EUT is connected to a test laptop during the tests. Test software exercised the radio card.

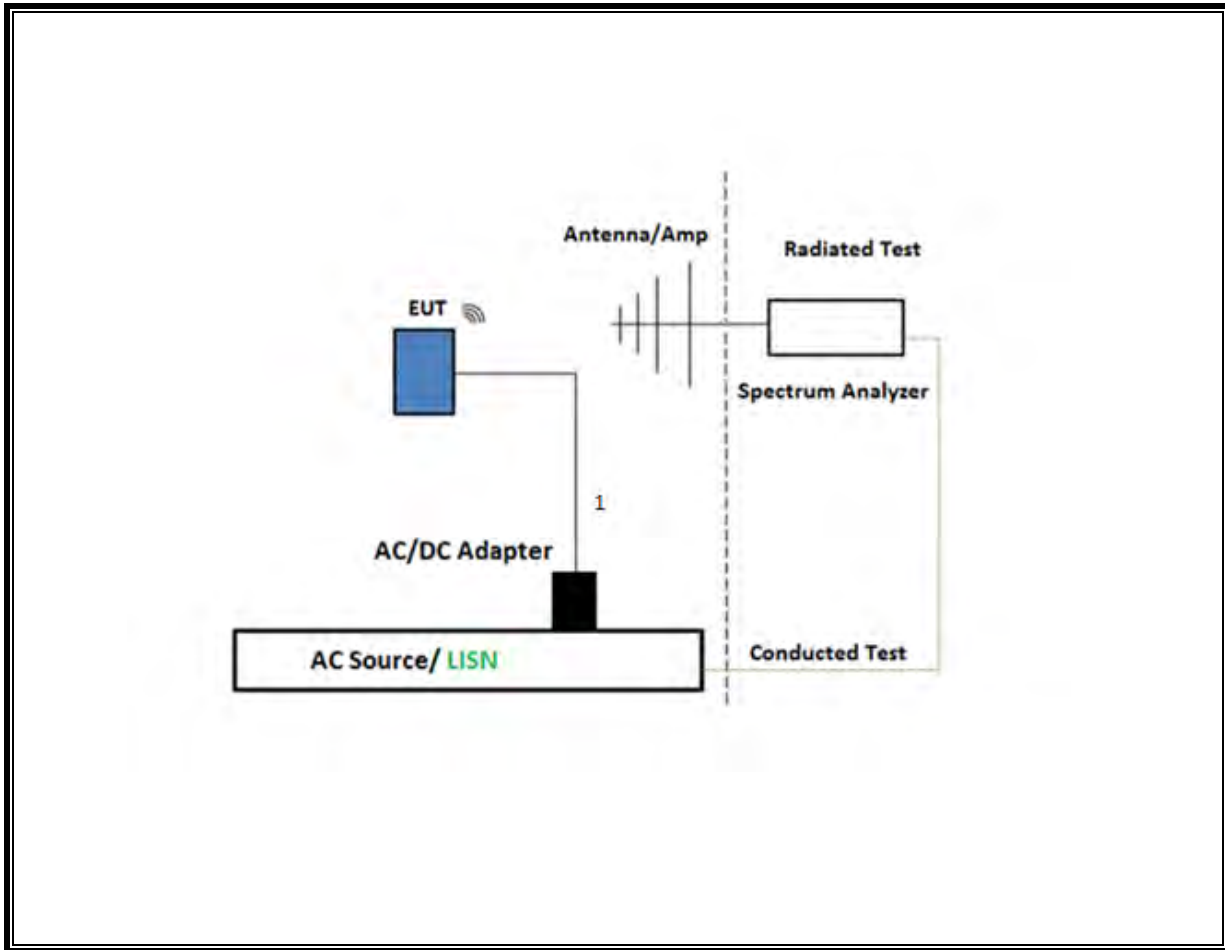
**SETUP DIAGRAM FOR CONDUCTED TESTS**



**SETUP DIAGRAM FOR RADIATED TESTS Above 1 GHz**

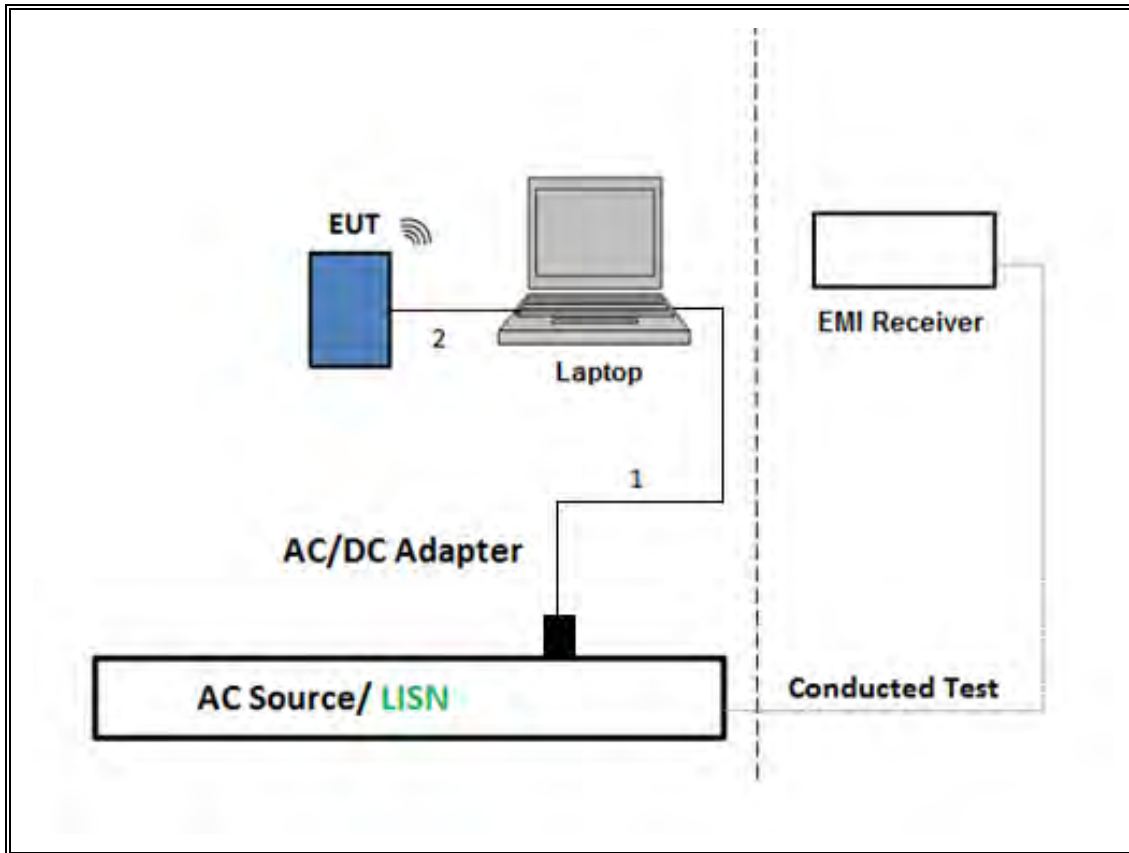


**SETUP DIAGRAM FOR Below 1GHz and AC LINE CONDUCTED TEST**





**TEST SETUP- AC LINE CONDUCTED: LAPTOP CONFIGURATION**



## 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	ID Num	Cal Due	Last Cal
Antenna, Horn 1-18GHz	ETS Lindgren	3117	T862	08/19/2021	08/19/2020
RF Amplifier, 1-18GHz	MITEQ	AFS42-00101800-25-S-42	171460	09/29/2021	09/29/2020
Spectrum Analyzer, PXA 3Hz to 44GHz	Keysight	N9030A	T1466	01/25/2022	01/25/2021
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	PRE0100034	09/15/2021	09/15/2020
Amplifier, 1 to 18GHz, 35dB	AMPLICAL	AMP1G18-35	T1569	03/31/2022	03/31/2021
Antenna, Horn 1-18GHz	ETS Lindgren	3117	PRE0078107	03/01/2022	03/01/2021
Amplifier, 1 to 18GHz	Ampical	AMP1G18-35	138301	03/30/2022	03/30/2021
Antenna, BroadBand Hybrid, 30MHz to 3GHz	Sunol Sciences Corp.	JB3	PRE0184052	11/12/2021	11/12/2020
Amplifier, 9KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310	PRE0180174	12/29/2021	12/29/2020
EMI Test Receiver	Rohde & Schwarz	ESW44	201500	11/19/2021	11/19/2020
Antenna, Horn 1-18GHz	A.H. Systems, Inc.	3117	PRE0213833	09/25/2021	09/25/2020
Amplifier, 1 to 18GHz	Ampical	AMP0.1G18-47-20	206055	03/10/2022	03/10/2021
Power Meter, P-series single channel	Keysight	N1912A	T1244	01/25/2022	01/25/2021
Power Sensor	Keysight	N1921A	T1224	01/25/2022	01/25/2021
Antenna, Active Loop 9KHz to 30MHz	EMCO	6502	T35	11/23/2021	11/23/2020
*Antenna Horn, 18 to 26GHz	ARA	SWH-28	T125	04/17/2021	04/17/2020
*Pre-Amp 18-26GHz	Agilent Technology	8449B	T404	04/08/2021	04/08/2020
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1454	01/27/2022	01/27/2021
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T906	07/20/2021	07/20/2020
EMI Receiver	Rohde & Schwarz	ESW44	201501	09/23/2021	09/23/2020
EMI Receiver	Rohde & Schwarz	ESW44	201502	09/17/2021	09/17/2020

AC Line Conducted					
Description	Manufacturer	Model	ID Num	Cal Due	Last Cal
EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESR	T1436	02/19/2022	02/19/2021
Power Cable, Line Conducted Emissions	UL	PR1	T861	10/27/2021	10/27/2020
LISN for Conducted Emissions CISPR-16	FISCHER CUSTOM COMMUNICATIONS	FCC-LISN-50/250-25-2-01	PRE0186446	01/20/2022	01/20/2021
UL AUTOMATION SOFTWARE					
Radiated Software	UL	UL EMC	Ver 9.5, Mar 6, 2020		
Conducted Software	UL	UL EMC	2020.2.26		
AC Line Conducted Software	UL	UL EMC	Ver 9.5, February 21, 2020		

Note: \*Testing is completed before equipment expiration date.

## **8. MEASUREMENT METHODS**

On Time and Duty Cycle: ANSI C63.10-2013 Section 11.6

Occupied BW (20dB): ANSI C63.10-2013 Section 6.9.2

Occupied BW (99%): ANSI C63.10-2013 Section 6.9.3

Carrier Frequency Separation: ANSI C63.10-2013 Section 7.8.2

Number of Hopping Frequencies: ANSI C63.10-2013 Section 7.8.3

Time of Occupancy (Dwell Time): ANSI C63.10-2013 Section 7.8.4

Peak Output Power: ANSI C63.10-2013 Section 7.8.5

Conducted Spurious Emissions: ANSI C63.10-2013 Section 7.8.8

Conducted Band-Edge: ANSI C63.10-2013 Section 6.10.4

Radiated Spurious Emissions Below 30MHz: ANSI C63.10-2013 Section 6.4

Radiated Spurious Emissions 30-1000MHz: ANSI C63.10-2013 Section 6.3 and 6.5

Radiated Spurious Emissions above 1GHz: ANSI C63.10-2013 Section 6.3 and 6.6

Radiated Band-edge: ANSI C63.10-2013 Section 6.10.5

AC Power-line conducted emissions: ANSI C63.10-2013, Section 6.2.

## 9. ANTENNA PORT TEST RESULTS

### 9.1. ON TIME AND DUTY CYCLE

#### LIMITS

None; for reporting purposes only.

#### PROCEDURE

ANSI C63.10, Section 11.6 : Zero-Span Spectrum Analyzer Method.

#### ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)
Bluetooth GFSK	1.00	1.00	1.000	100.0%	0.00	0.010
Bluetooth 8PSK	1.00	1.00	1.000	100.0%	0.00	0.010
Bluetooth GFSK TxBF	1.00	1.00	1.000	100.0%	0.00	0.010
Bluetooth 8PSK TxBF	1.00	1.00	1.000	100.0%	0.00	0.010



**GFSK**



**8PSK**



**GFSK TxBF**



**8PSK TxBF**

---

**9.2. 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 3x RBW. The sweep time is coupled.

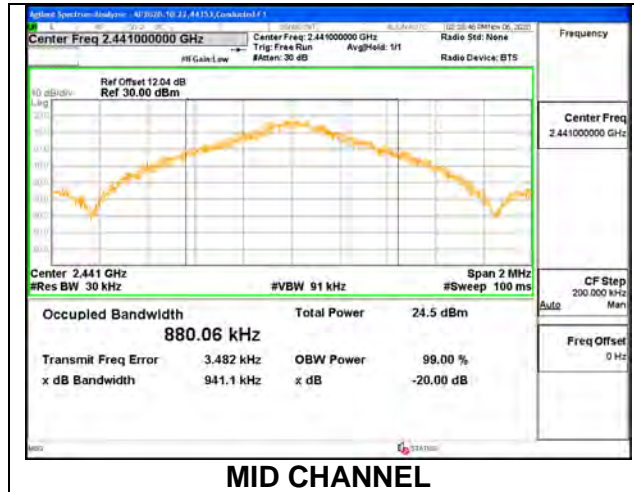
**RESULTS**

Only High Power modes result is reported, it covers all Low Power modes. Only Mid channel plot is reported to show setting parameter complies with testing method/procedure.

**9.2.1. HIGH POWER BASIC DATA RATE GFSK MODULATION**

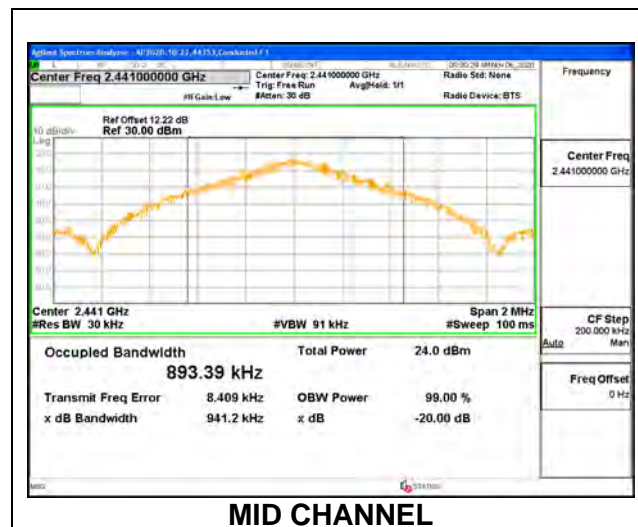
**ANT 4**

Channel	Frequency (MHz)	20dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2402	0.941	0.884
Mid	2441	0.941	0.880
High	2480	0.941	0.894



**ANT 3**

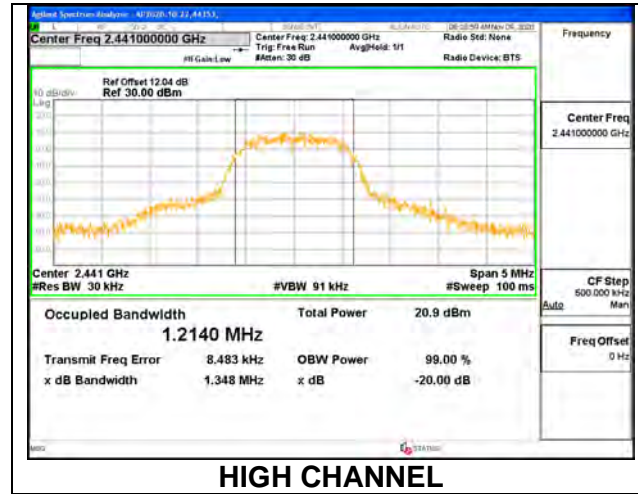
Channel	Frequency (MHz)	20dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2402	0.943	0.888
Mid	2441	0.941	0.893
High	2480	0.941	0.878



## 9.2.2. HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

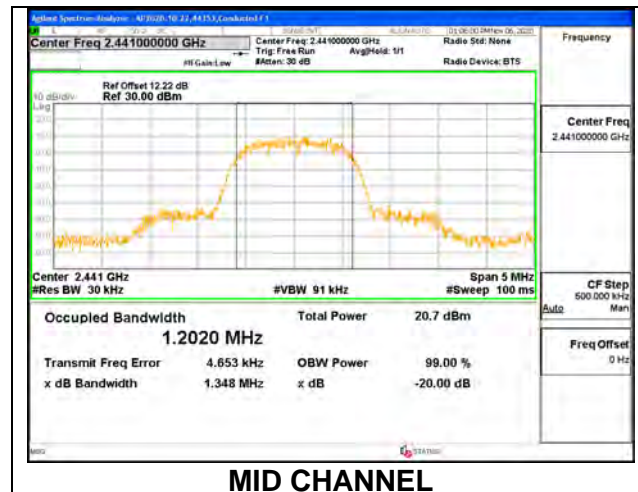
### ANT 4

Channel	Frequency (MHz)	20dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2402	1.348	1.199
Mid	2441	1.348	1.214
High	2480	1.351	1.210



### ANT 3

Channel	Frequency (MHz)	20dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2402	1.334	1.205
Mid	2441	1.348	1.202
High	2480	1.351	1.206

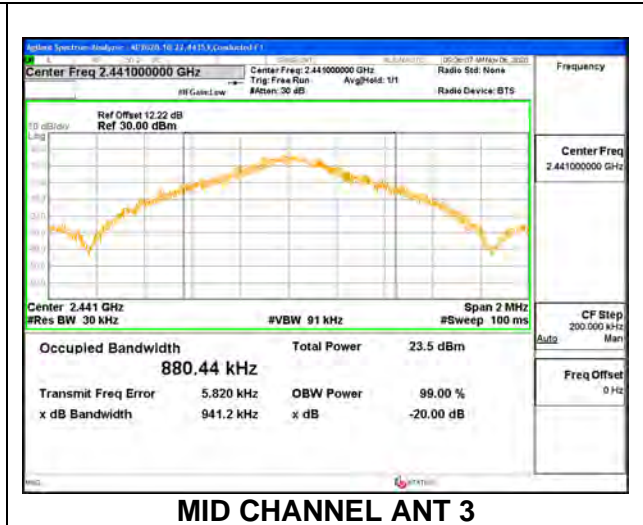
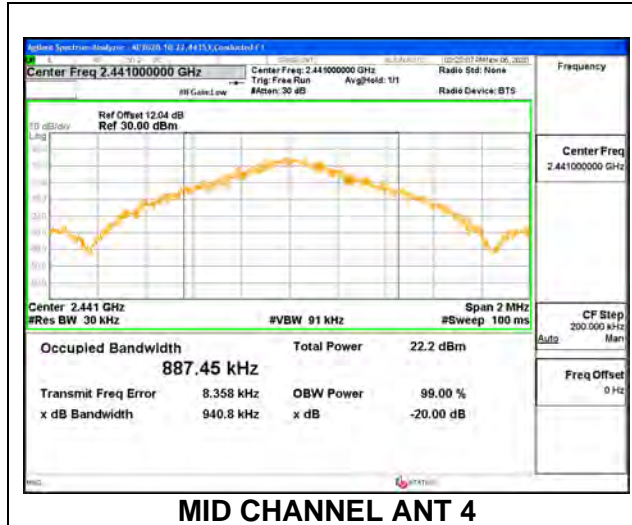




### 9.2.3. HIGH POWER BASIC DATA RATE TXBF GFSK MODULATION

**2TX ANT 4 + ANT 3 TxBF MODE**

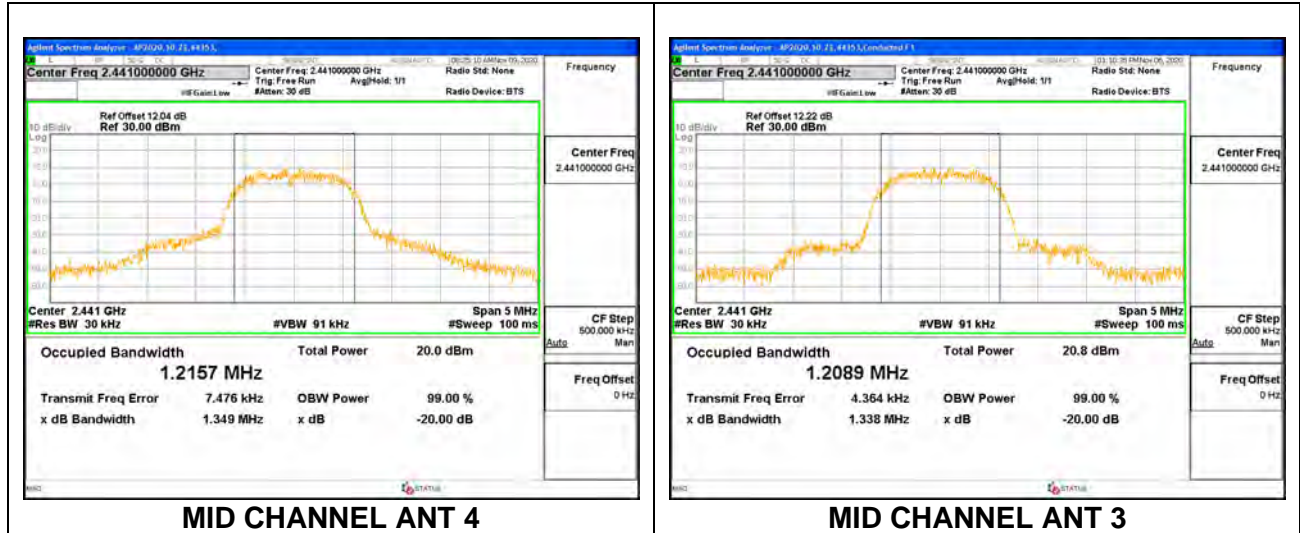
Channel	Frequency (MHz)	20dB Bandwidth ANT 4 (MHz)	99% Bandwidth ANT 4 (MHz)	20dB Bandwidth ANT 3 (MHz)	99% Bandwidth ANT 3 (MHz)
Low	2402	0.951	0.891	0.941	0.887
Mid	2441	0.941	0.887	0.941	0.880
High	2480	0.942	0.883	0.942	0.883



## 9.2.4. HIGH POWER ENHANCED DATA RATE TXBF 8PSK MODULATION

### 2TX ANT 4 + ANT 3 TxBF MODE

Channel	Frequency (MHz)	20dB Bandwidth	99% Bandwidth	20dB Bandwidth	99% Bandwidth
		ANT 4 (MHz)	ANT 4 (MHz)	ANT 3 (MHz)	ANT 3 (MHz)
Low	2402	1.347	1.203	1.347	1.204
Mid	2441	1.349	1.216	1.338	1.209
High	2480	1.339	1.206	1.338	1.210



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**9.3. HOPPING FREQUENCY SEPARATION****LIMITS**

FCC §15.247 (a) (1)

RSS-247 (5.1) (b)

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**

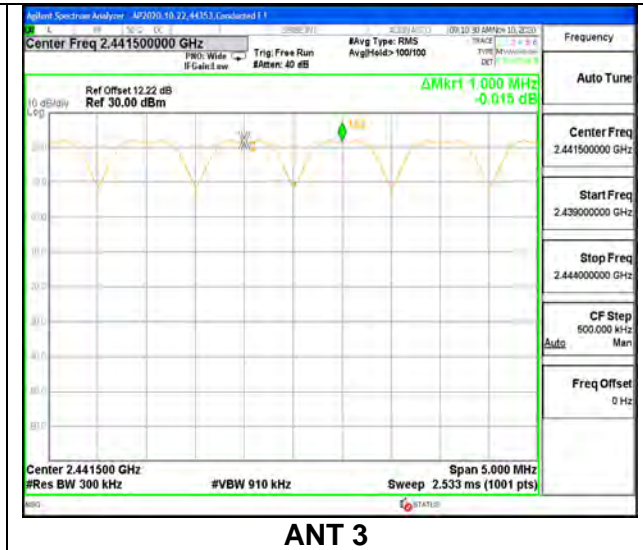
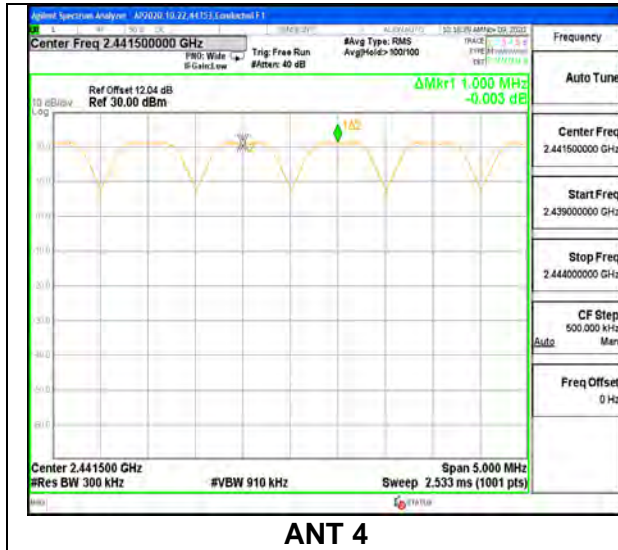
The transmitter output is connected to a spectrum analyzer. The RBW is set to 300 kHz and the VBW is set to  $VBW \geq RBW$ . The sweep time is coupled.

**RESULTS**

Only High Power GFSK mode result is reported since EDR (QPSK/8PSK) has exact same channel plan.

### 9.3.1. HIGH POWER BASIC DATA RATE GFSK MODULATION

#### HOPPING FREQUENCY SEPARATION



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**9.4. NUMBER OF HOPPING CHANNELS****LIMITS**

FCC §15.247 (a) (1) (iii)

RSS-247 (5.1) (d)

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**

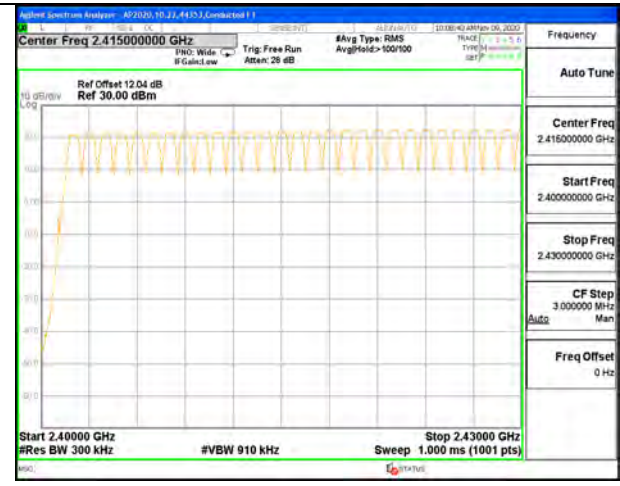
Normal Mode: 79 Channels Observed. Only High Power GFSK mode result is reported since EDR (QPSK/8PSK) has exact same channel plan.

### 9.4.1. HIGH POWER BASIC DATA RATE GFSK MODULATION

#### ANT 4



100MHz SPAN



30MHz SPAN, SEGMENT 1 OF 3

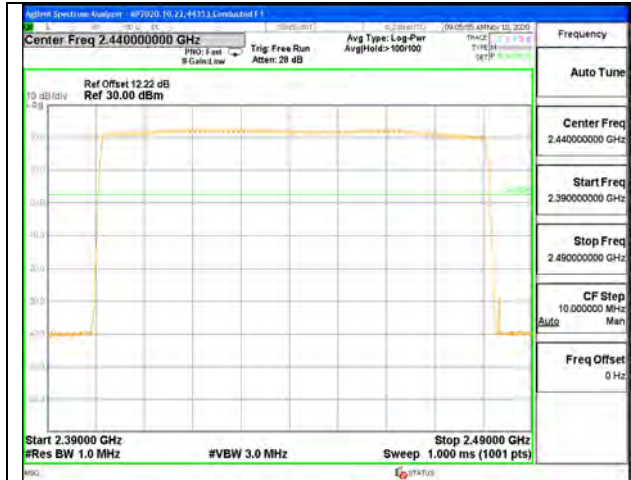


30MHz SPAN, SEGMENT 2 OF 3

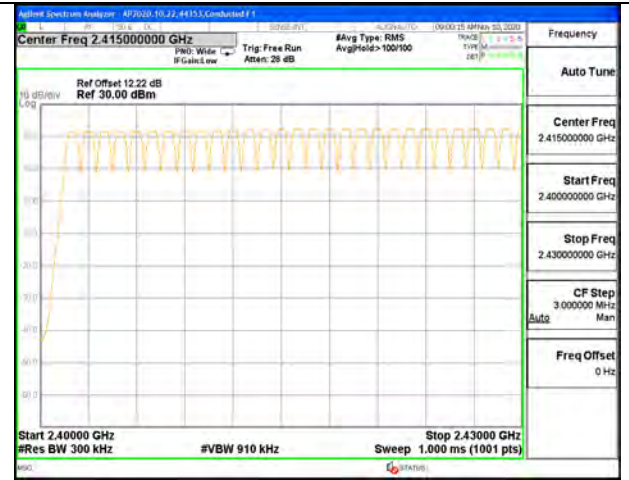


30MHz SPAN, SEGMENT 3 OF 3

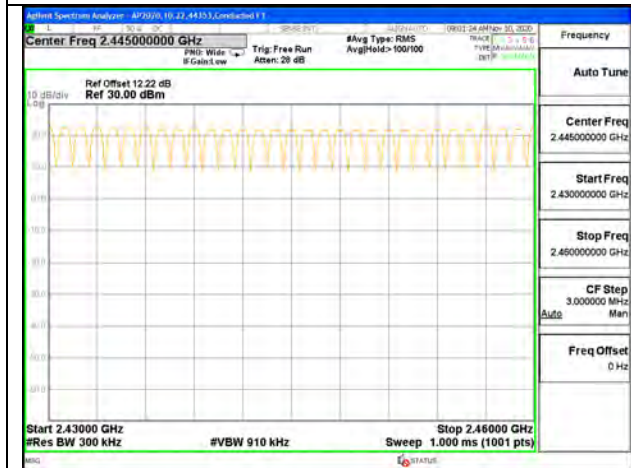
ANT 3



100MHz SPAN



30MHz SPAN, SEGMENT 1 OF 3



30MHz SPAN, SEGMENT 2 OF 3



30MHz SPAN, SEGMENT 3 OF 3

---

**9.5. AVERAGE TIME OF OCCUPANCY****LIMITS**

FCC §15.247 (a) (1) (iii)

RSS-247 (5.1) (d)

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 3.16 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**

Only High Power GFSK mode result is reported since EDR (QPSK/8PSK) has exact same timing.

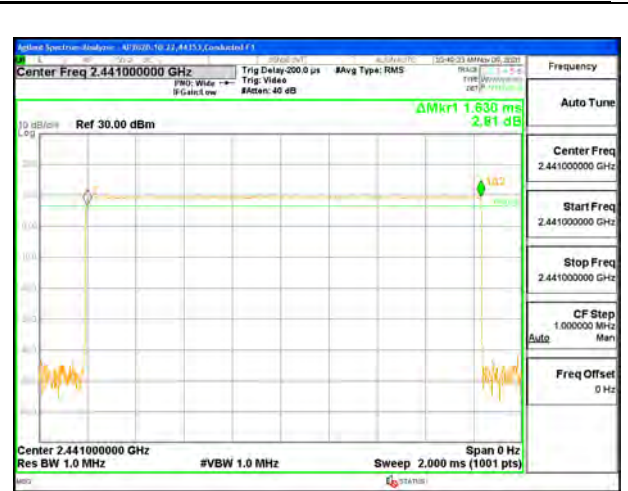


**9.5.1. HIGH POWER BASIC DATA RATE GFSK MODULATION****ANT 4**

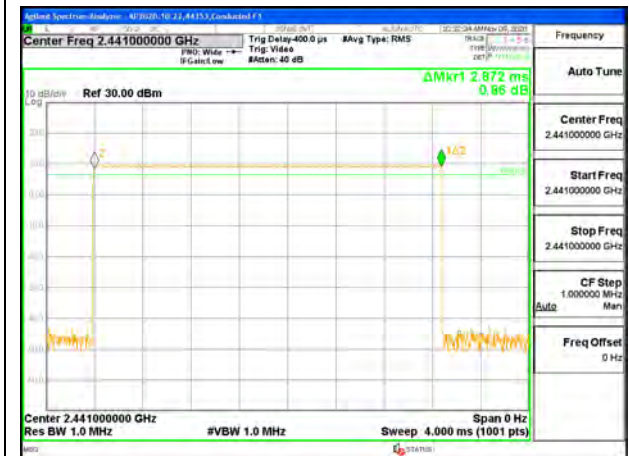
DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
GFSK Normal Mode					
DH1	0.376	32	0.1203	0.4	-0.2797
DH3	1.63	16	0.2608	0.4	-0.1392
DH5	2.872	11	0.3159	0.4	-0.0841
DH Packet	Pulse Width (sec)	Number of Pulses in 0.8 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
GFSK AFH Mode					
DH1	0.376	8	0.03008	0.4	-0.3699
DH3	1.63	4	0.06520	0.4	-0.3348
DH5	2.872	2.75	0.07898	0.4	-0.3210



PULSE WIDTH – DH1



PULSE WIDTH – DH3



PULSE WIDTH – DH5



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH1



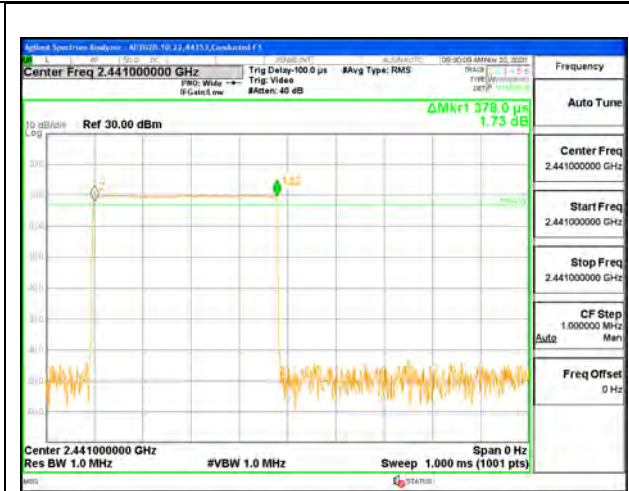
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH3



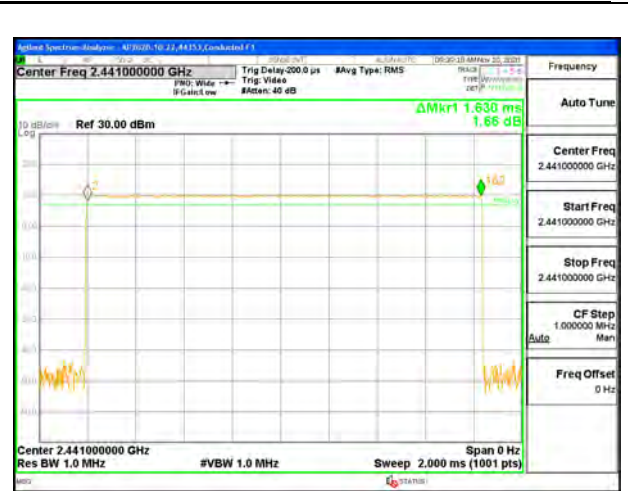
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH5

**ANT 3**

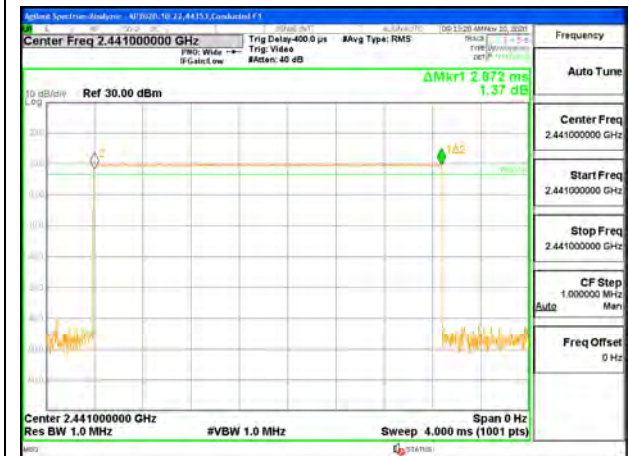
DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
GFSK Normal Mode					
DH1	0.378	31	0.1172	0.4	-0.2828
DH3	1.630	16	0.2608	0.4	-0.1392
DH5	2.872	11	0.3159	0.4	-0.0841
DH Packet	Pulse Width (sec)	Number of Pulses in 0.8 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
GFSK AFH Mode					
DH1	0.378	7.75	0.02930	0.4	-0.3707
DH3	1.63	4	0.06520	0.4	-0.3348
DH5	2.872	2.75	0.07898	0.4	-0.3210



PULSE WIDTH – DH1



PULSE WIDTH – DH3



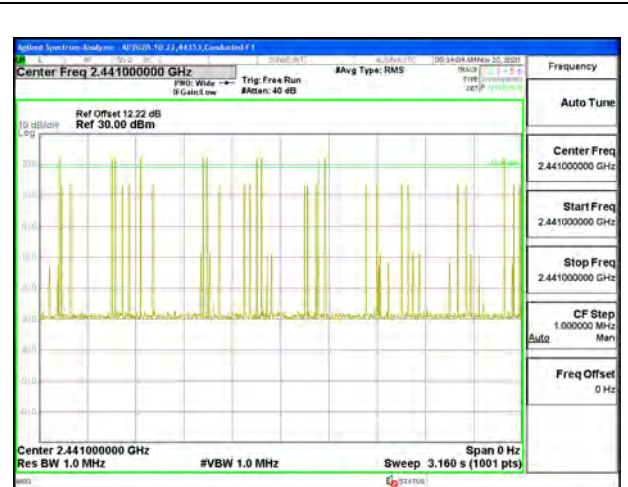
PULSE WIDTH – DH5



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH1



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH3



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH5

**9.6. OUTPUT POWER****LIMITS**

§15.247 (b) (1)

RSS-247 (5.4) (b)

The maximum antenna gain is less than 6 dBi, therefore the limit is 30 dBm. 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.

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts

**TEST PROCEDURE**

Measurements was perform using a power meter with wideband peak power sensor.

**DIRECTIONAL ANTENNA GAIN**

For 1 TX:

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

For 2 TX:

Tx chains are correlated for power due to the device supporting beamforming. The directional gains are as follows:

<b>Band (GHz)</b>	<b>ANT 4 Gain (dBi)</b>	<b>ANT 3 Gain (dBi)</b>	<b>Uncorrelated Chains Directional Gain (dBi)</b>	<b>Correlated Chains Directional Gain (dBi)</b>
2.4	-0.20	-0.20	-0.20	2.81

**RESULTS**

**9.6.1. HIGH POWER BASIC DATA RATE GFSK MODULATION****ANT 4**

Tested By:	44353
Date:	6/2/2021

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	20.30	21	-0.7
Middle	2441	20.38	21	-0.62
High	2480	20.31	21	-0.69

**ANT 3**

Tested By:	44353
Date:	6/2/2021

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	20.23	21	-0.77
Middle	2441	20.26	21	-0.74
High	2480	20.18	21	-0.82

## 9.6.2. HIGH POWER ENHANCED DATA RATE DQPSK MODULATION

### ANT 4

Tested By:	44353
Date:	6/18/2021

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	18.72	21	-2.28
Middle	2441	18.85	21	-2.15
High	2480	18.80	21	-2.2

### ANT 3

Tested By:	44353
Date:	6/18/2021

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	18.72	21	-2.28
Middle	2441	18.80	21	-2.2
High	2480	18.78	21	-2.22

### 9.6.3. HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

#### ANT 4

Tested By:	44353
Date:	6/18/2021

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	18.75	21	-2.25
Middle	2441	18.87	21	-2.13
High	2480	18.83	21	-2.17

#### ANT 3

Tested By:	44353
Date:	6/18/2021

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	18.73	21	-2.27
Middle	2441	18.85	21	-2.15
High	2480	18.79	21	-2.21



**9.6.4. LOW POWER BASIC DATA RATE GFSK MODULATION****ANT 4**

Tested By:	44353
Date:	7/15/2021

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	11.22	21	-9.78
Middle	2441	11.56	21	-9.44
High	2480	11.11	21	-9.89

**ANT 3**

Tested By:	44353
Date:	7/15/2021

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	11.22	21	-9.78
Middle	2441	11.28	21	-9.72
High	2480	11.12	21	-9.88

### 9.6.5. LOW POWER ENHANCED DATA RATE DQPSK MODULATION

**ANT 4**

Tested By:	44353
Date:	6/18/2021

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.71	21	-10.29
Middle	2441	10.82	21	-10.18
High	2480	10.74	21	-10.26

**ANT 3**

Tested By:	44353
Date:	6/18/2021

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.72	21	-10.28
Middle	2441	10.83	21	-10.17
High	2480	10.77	21	-10.23

### 9.6.6. LOW POWER ENHANCED DATA RATE 8PSK MODULATION

#### ANT 4

Tested By:	44353
Date:	6/18/2021

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.73	21	-10.27
Middle	2441	10.85	21	-10.15
High	2480	10.76	21	-10.24

#### ANT 3

Tested By:	44353
Date:	6/1/2021

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.74	21	-10.26
Middle	2441	10.85	21	-10.15
High	2480	10.78	21	-10.22

### 9.6.7. HIGH POWER BASIC DATA RATE TXBF GFSK MODULATION

#### ANT 4 + ANT 3

Tested By:	44353
Date:	6/2/2021

Channel	Frequency (MHz)	Output Power ANT 4 (dBm)	Output Power ANT 3 (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	17.04	17.06	20.06	21	-0.94
Middle	2441	17.15	17.14	20.16	21	-0.84
High	2480	17.05	17.07	20.07	21	-0.93

### 9.6.8. HIGH POWER ENHANCED DATA RATE TXBF DQPSK MODULATION

#### ANT 4 + ANT 3

Tested By:	44353
Date:	6/2/2021

Channel	Frequency (MHz)	Output Power ANT 4 (dBm)	Output Power ANT 3 (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	15.55	15.56	18.57	21	-2.43
Middle	2441	15.62	15.60	18.62	21	-2.38
High	2480	15.60	15.53	18.58	21	-2.42

### 9.6.9. HIGH POWER ENHANCED DATA RATE TXBF 8PSK MODULATION

#### ANT 4 + ANT 3

Tested By:	44353
Date:	6/2/2021

Channel	Frequency (MHz)	Output Power ANT 4 (dBm)	Output Power ANT 3 (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	15.57	15.59	18.59	21	-2.41
Middle	2441	15.70	15.66	18.69	21	-2.31
High	2480	15.62	15.53	18.59	21	-2.41

### 9.6.10. LOW POWER BASIC DATA RATE TXBF GFSK MODULATION

#### ANT 4 + ANT 3

Tested By:	44353
Date:	7/15/2021

Channel	Frequency (MHz)	Output Power ANT 4 (dBm)	Output Power ANT 3 (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	11.12	11.25	14.20	21	-6.80
Middle	2441	11.19	11.31	14.26	21	-6.74
High	2480	11.27	11.26	14.28	21	-6.72

### 9.6.11. LOW POWER ENHANCED DATA RATE TXBF DQPSK MODULATION

#### ANT 4 + ANT 3

Tested By:	44353
Date:	6/18/2021

Channel	Frequency (MHz)	Output Power ANT 4 (dBm)	Output Power ANT 3 (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.53	10.55	13.55	21	-7.45
Middle	2441	10.67	10.66	13.68	21	-7.32
High	2480	10.57	10.57	13.58	21	-7.42

### 9.6.12. LOW POWER ENHANCED DATA RATE TXBF 8PSK MODULATION

#### ANT 4 + ANT 3

Tested By:	44353
Date:	6/18/2021

Channel	Frequency (MHz)	Output Power ANT 4 (dBm)	Output Power ANT 3 (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.57	10.56	13.58	21	-7.42
Middle	2441	10.73	10.70	13.73	21	-7.27
High	2480	10.62	10.65	13.65	21	-7.35

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**9.7. AVERAGE POWER****LIMITS**

None; for reporting purposes only

**TEST PROCEDURE**

Measurements was performed using a power meter with wideband average power sensor.

**RESULTS**

**9.7.1. HIGH POWER BASIC DATA RATE GFSK MODULATION****ANT 4**

Tested By:	44353
Date	6/2/2021

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	19.83
Middle	2441	19.91
High	2480	19.86

**ANT 3**

Tested By:	44353
Date	6/2/2021

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	19.78
Middle	2441	19.81
High	2480	19.73

## 9.7.2. HIGH POWER ENHANCED DATA RATE DQPSK MODULATION

### ANT 4

Tested By:	44353
Date	6/18/2021

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	16.28
Middle	2441	16.37
High	2480	16.33

### ANT 3

Tested By:	44353
Date	6/18/2021

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	16.25
Middle	2441	16.35
High	2480	16.33



### 9.7.3. HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

#### ANT 4

Tested By:	44353
Date	6/18/2021

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	16.35
Middle	2441	16.44
High	2480	16.36

#### ANT 3

Tested By:	44353
Date	6/18/2021

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	16.32
Middle	2441	16.41
High	2480	16.34

**9.7.4. LOW POWER BASIC DATA RATE GFSK MODULATION****ANT 4**

Tested By:	44353
Date	7/16/2021

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	10.92
Middle	2441	10.95
High	2480	10.79

**ANT 3**

Tested By:	44353
Date	7/15/2021

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	10.91
Middle	2441	10.96
High	2480	10.84

### 9.7.5. LOW POWER ENHANCED DATA RATE DQPSK MODULATION

#### ANT 4

Tested By:	44353
Date	6/18/2021

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	8.22
Middle	2441	8.31
High	2480	8.24

#### ANT 3

Tested By:	44353
Date	6/18/2021

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	8.20
Middle	2441	8.29
High	2480	8.23

### 9.7.6. LOW POWER ENHANCED DATA RATE 8PSK MODULATION

#### ANT 4

Tested By:	44353
Date	6/18/2021

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	8.24
Middle	2441	8.38
High	2480	8.37

#### ANT 3

Tested By:	44353
Date	6/18/2021

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	8.33
Middle	2441	8.41
High	2480	8.40

### 9.7.7. HIGH POWER BASIC DATA RATE TXBF GFSK MODULATION

#### ANT 4 + ANT 3

Tested By:	44353
Date	6/2/2021

Channel	Frequency (MHz)	Average Power ANT 4 (dBm)	Average Power ANT 3 (dBm)	Total Average Power (dBm)
Low	2402	16.69	16.71	19.71
Middle	2441	16.81	16.84	19.84
High	2480	16.71	16.73	19.73

### 9.7.8. HIGH POWER ENHANCED DATA RATE TXBF DQPSK MODULATION

#### ANT 4 + ANT 3

Tested By:	44353
Date	6/2/2021

Channel	Frequency (MHz)	Average Power ANT 4 (dBm)	Average Power ANT 3 (dBm)	Total Average Power (dBm)
Low	2402	13.20	13.22	16.22
Middle	2441	13.35	13.30	16.34
High	2480	13.26	13.19	16.24

### 9.7.9. HIGH POWER ENHANCED DATA TXBF RATE 8PSK MODULATION

#### ANT 4 + ANT 3

Tested By:	44353
Date	6/2/2021

Channel	Frequency (MHz)	Average Power ANT 4 (dBm)	Average Power ANT 3 (dBm)	Total Average Power (dBm)
Low	2402	13.23	13.28	16.27
Middle	2441	13.38	13.39	16.40
High	2480	13.29	13.24	16.28

### 9.7.10. LOW POWER BASIC DATA RATE TXBF GFSK MODULATION

#### ANT 4 + ANT 3

Tested By:	44353
Date	7/15/2021

Channel	Frequency (MHz)	Average Power ANT 4 (dBm)	Average Power ANT 3 (dBm)	Total Average Power (dBm)
Low	2402	10.80	10.83	13.83
Middle	2441	10.87	10.38	13.64
High	2480	10.85	10.31	13.60

### 9.7.11. LOW POWER ENHANCED DATA RATE TXBF DQPSK MODULATION

#### ANT 4 + ANT 3

Tested By:	44353
Date	6/18/2021

Channel	Frequency (MHz)	Average Power ANT 4 (dBm)	Average Power ANT 3 (dBm)	Total Average Power (dBm)
Low	2402	8.21	8.22	11.23
Middle	2441	8.32	8.30	11.32
High	2480	8.25	8.23	11.25

### 9.7.12. LOW POWER ENHANCED DATA RATE TXBF 8PSK MODULATION

#### ANT 4 + ANT 3

Tested By:	44353
Date	6/18/2021

Channel	Frequency (MHz)	Average Power ANT 4 (dBm)	Average Power ANT 3 (dBm)	Total Average Power (dBm)
Low	2402	8.26	8.25	11.27
Middle	2441	8.45	8.41	11.44
High	2480	8.31	8.36	11.35

---

**9.8. CONDUCTED SPURIOUS EMISSIONS****LIMITS**

FCC §15.247 (d)

RSS-247 5.5

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.

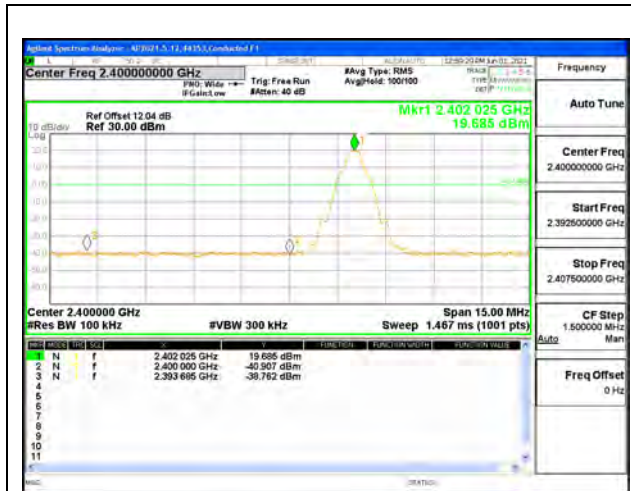
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

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

**RESULTS**

### 9.8.1. HIGH POWER BASIC DATA RATE GFSK MODULATION

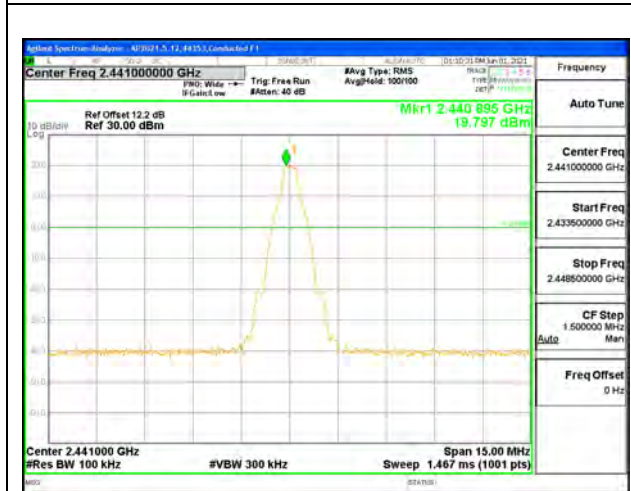
#### ANT 4 SPURIOUS EMISSIONS, NON-HOPPING



LOW CHANNEL BANDEDGE



OUT-OF-BAND LOW CHANNEL

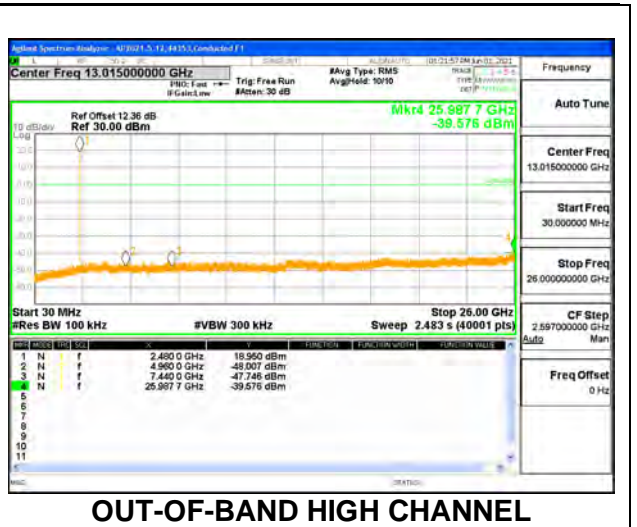
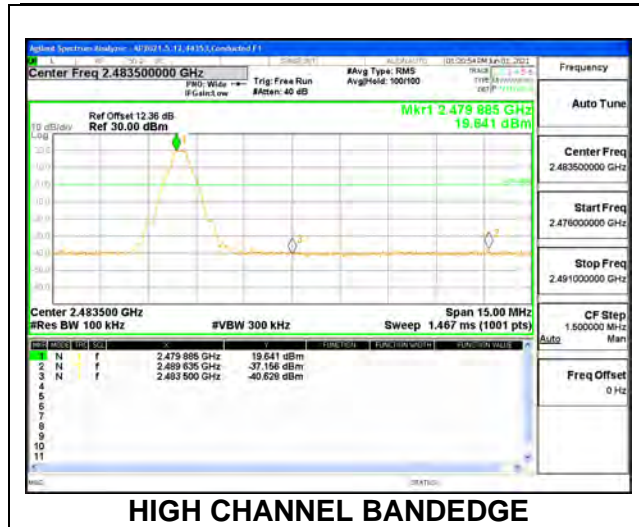


MID CHANNEL BANDEDGE

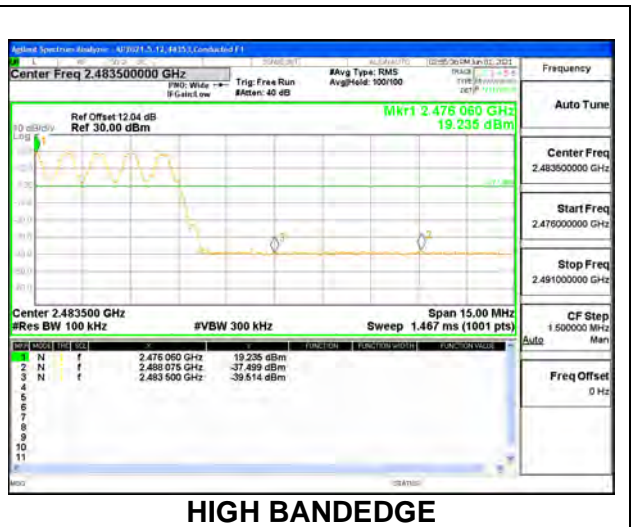
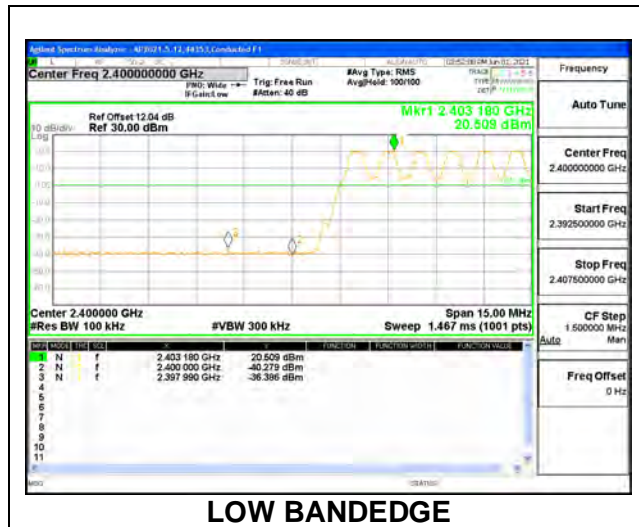


OUT-OF-BAND MID CHANNEL





**ANT 4 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**



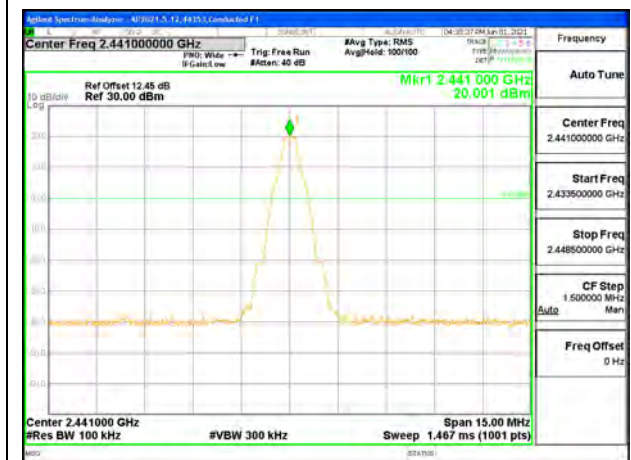
ANT 3 SPURIOUS EMISSIONS, NON-HOPPING



LOW CHANNEL BANDEDGE



OUT-OF-BAND LOW CHANNEL



MID CHANNEL BANDEDGE



OUT-OF-BAND MID CHANNEL

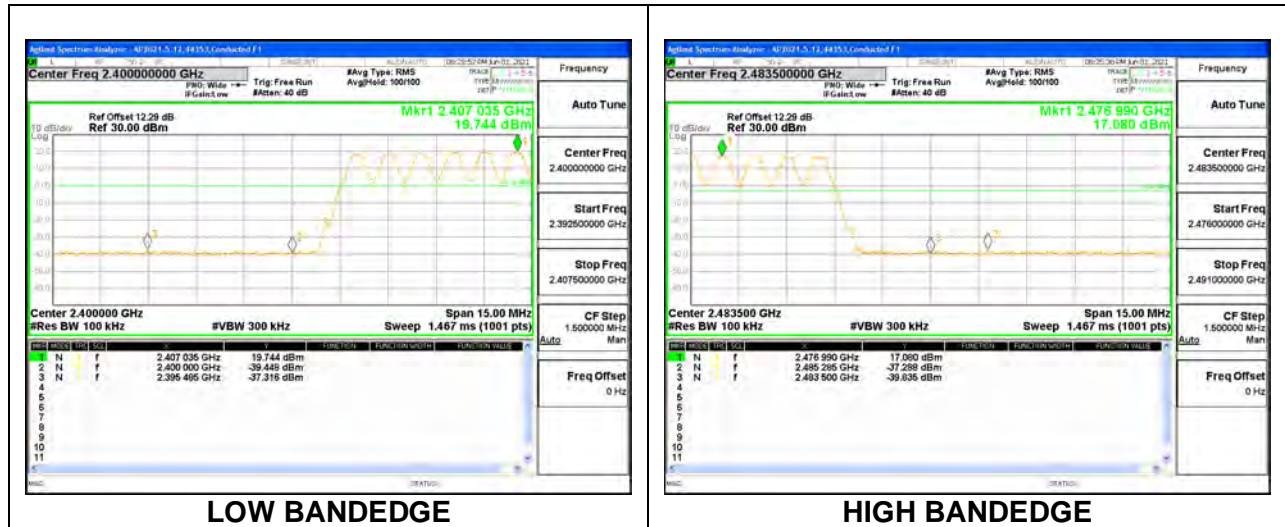


HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

**ANT 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**



## 9.8.2. HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

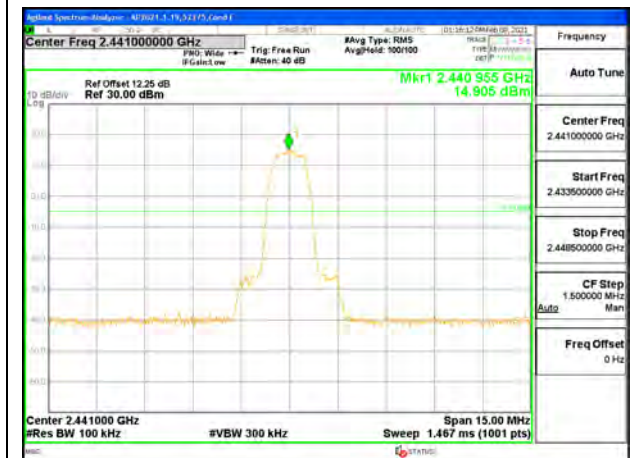
### ANT 4 SPURIOUS EMISSIONS, NON-HOPPING



**LOW CHANNEL BANDEDGE**



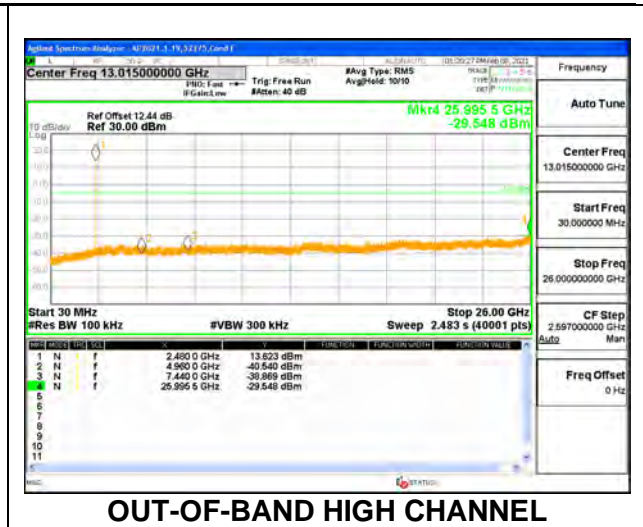
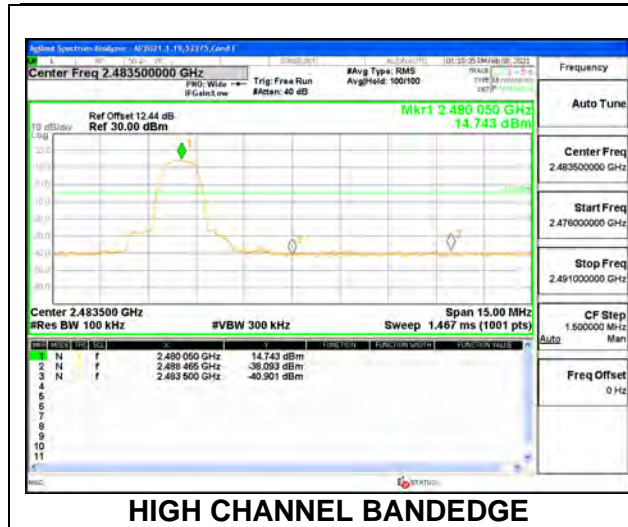
**OUT-OF-BAND LOW CHANNEL**



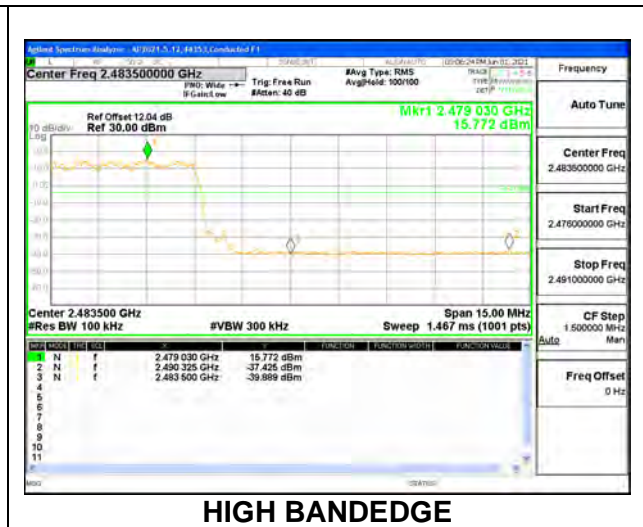
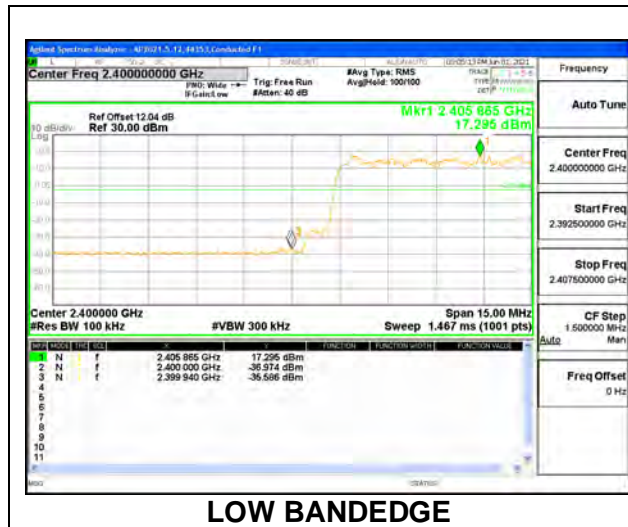
**MID CHANNEL BANDEDGE**



**OUT-OF-BAND MID CHANNEL**



**ANT 4 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**



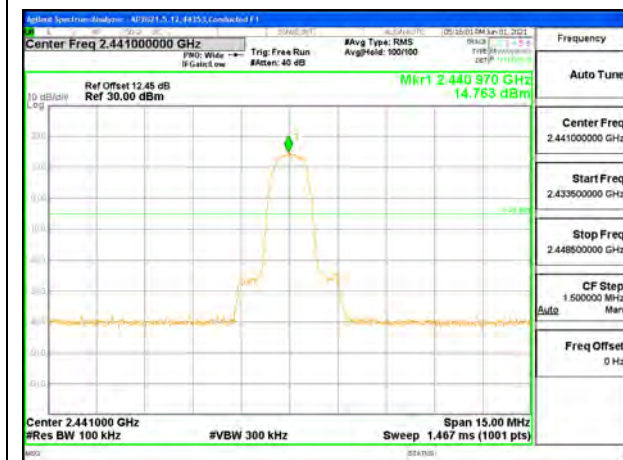
ANT 3 SPURIOUS EMISSIONS, NON-HOPPING



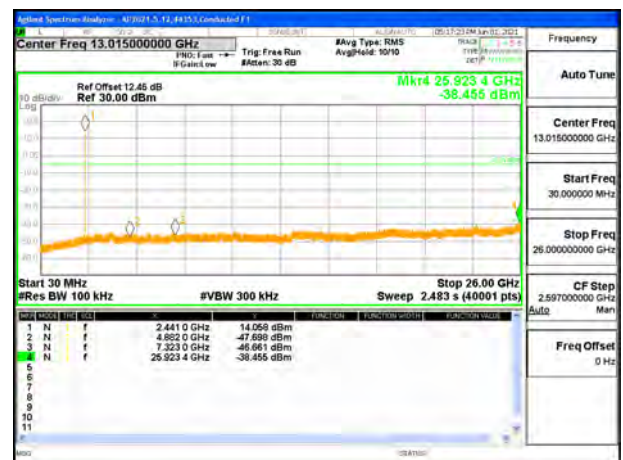
LOW CHANNEL BANDEDGE



OUT-OF-BAND LOW CHANNEL



MID CHANNEL BANDEDGE



OUT-OF-BAND MID CHANNEL

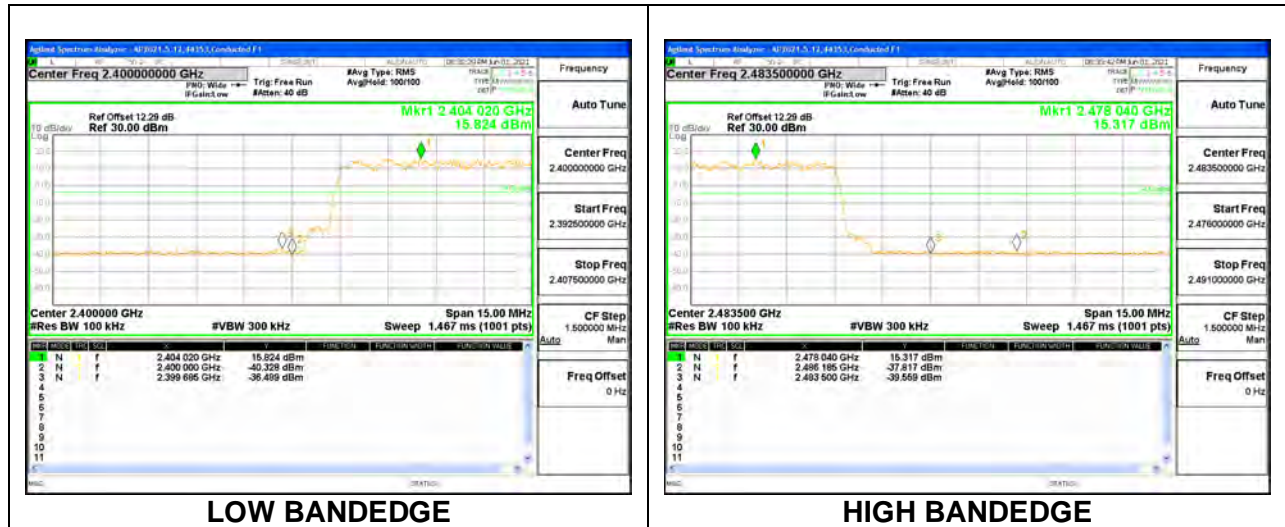


HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

**ANT 3 SPURIOUS BANDEGE EMISSIONS WITH HOPPING ON**



### 9.8.3. LOW POWER BASIC DATA RATE GFSK MODULATION

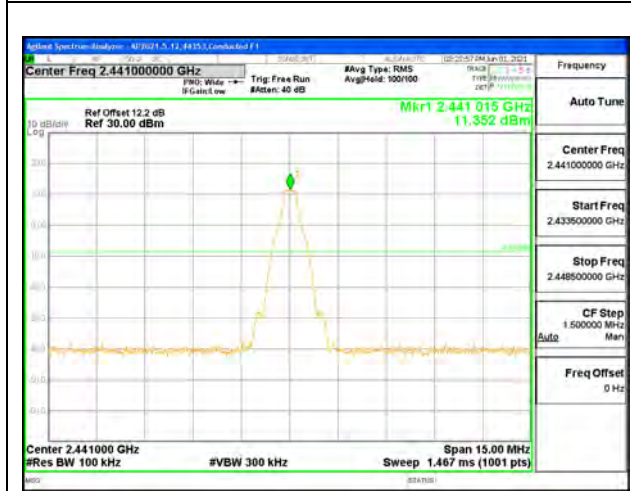
#### ANT 4 SPURIOUS EMISSIONS, NON-HOPPING



LOW CHANNEL BANDEDGE



OUT-OF-BAND LOW CHANNEL

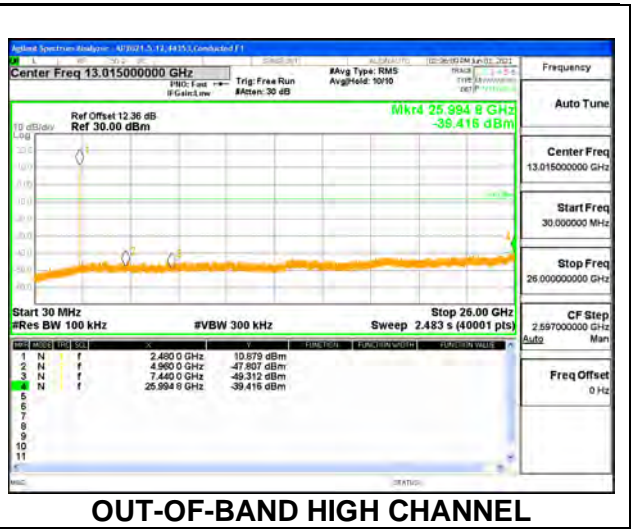
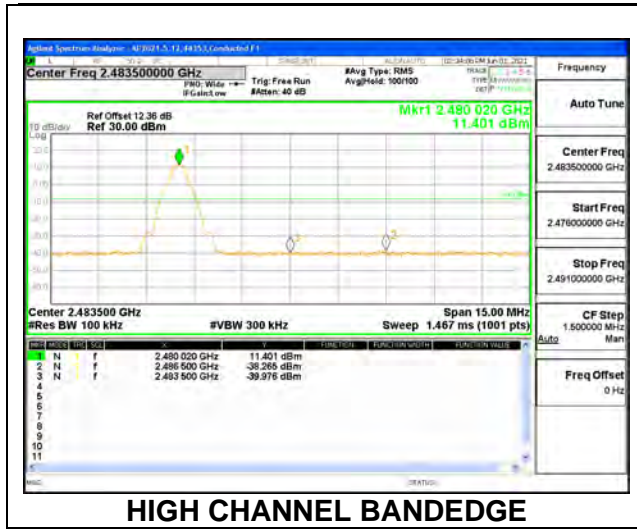


MID CHANNEL BANDEDGE

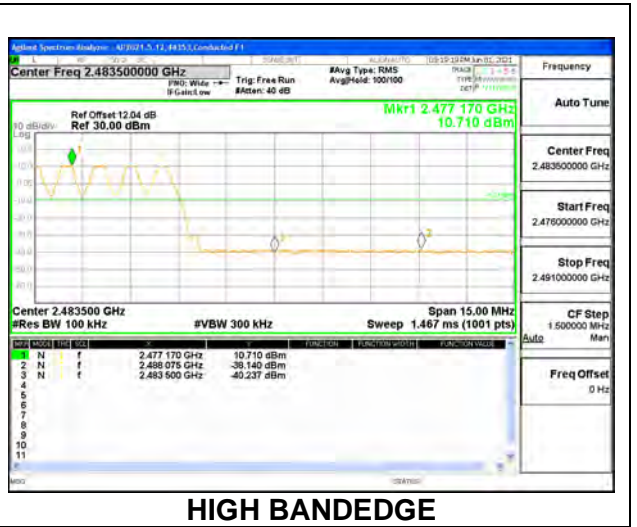
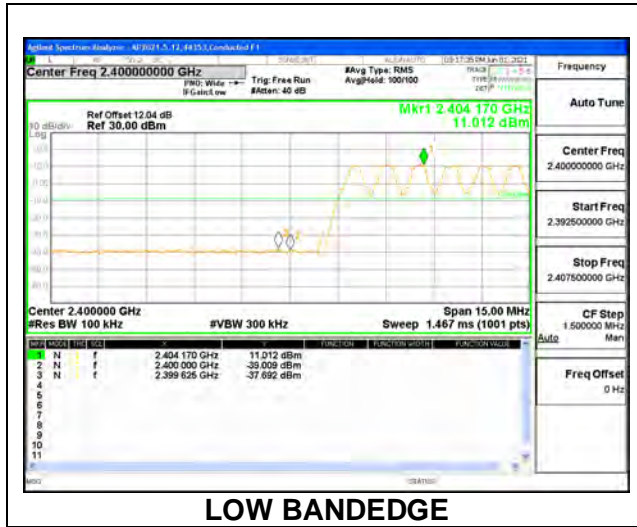


OUT-OF-BAND MID CHANNEL





**ANT 4 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**



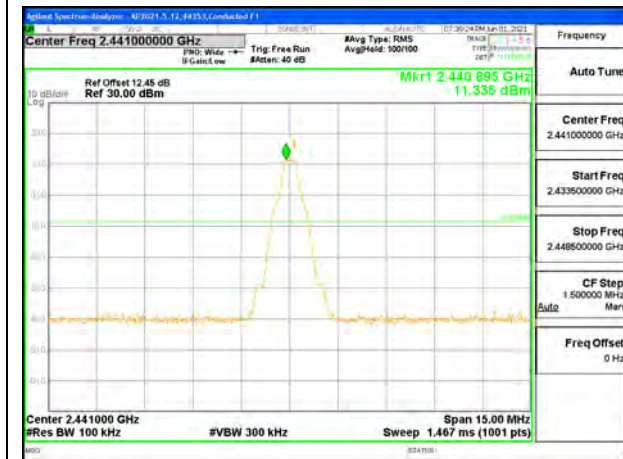
ANT 3 SPURIOUS EMISSIONS, NON-HOPPING



LOW CHANNEL BANDEDGE



OUT-OF-BAND LOW CHANNEL



MID CHANNEL BANDEDGE



OUT-OF-BAND MID CHANNEL

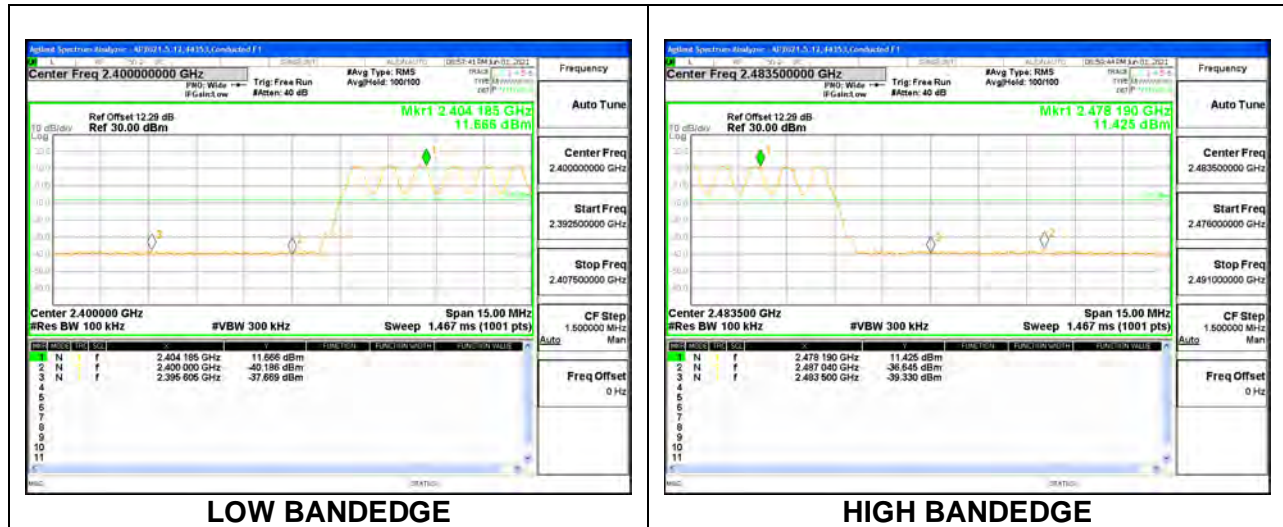


HIGH CHANNEL BANDEDGE



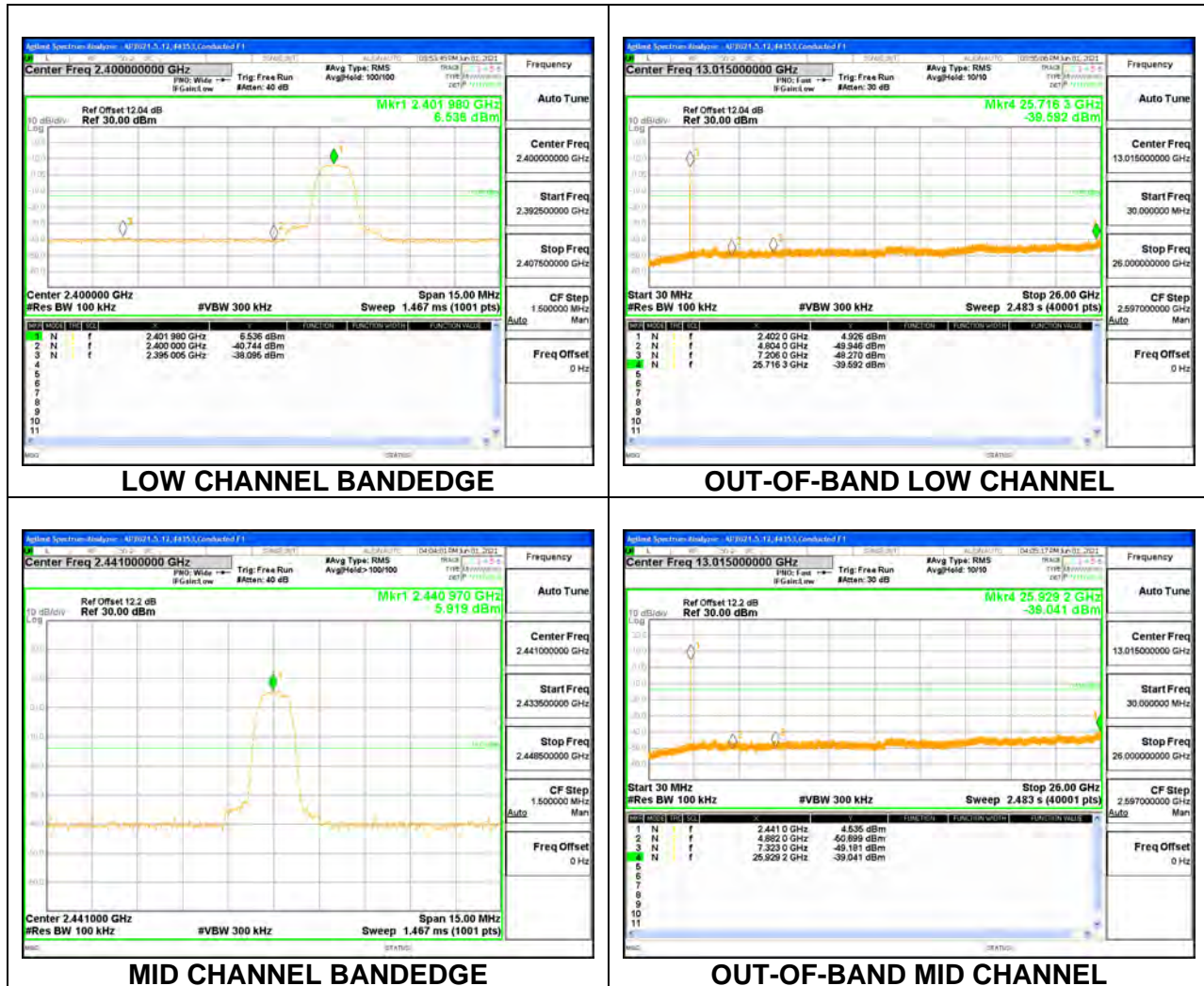
OUT-OF-BAND HIGH CHANNEL

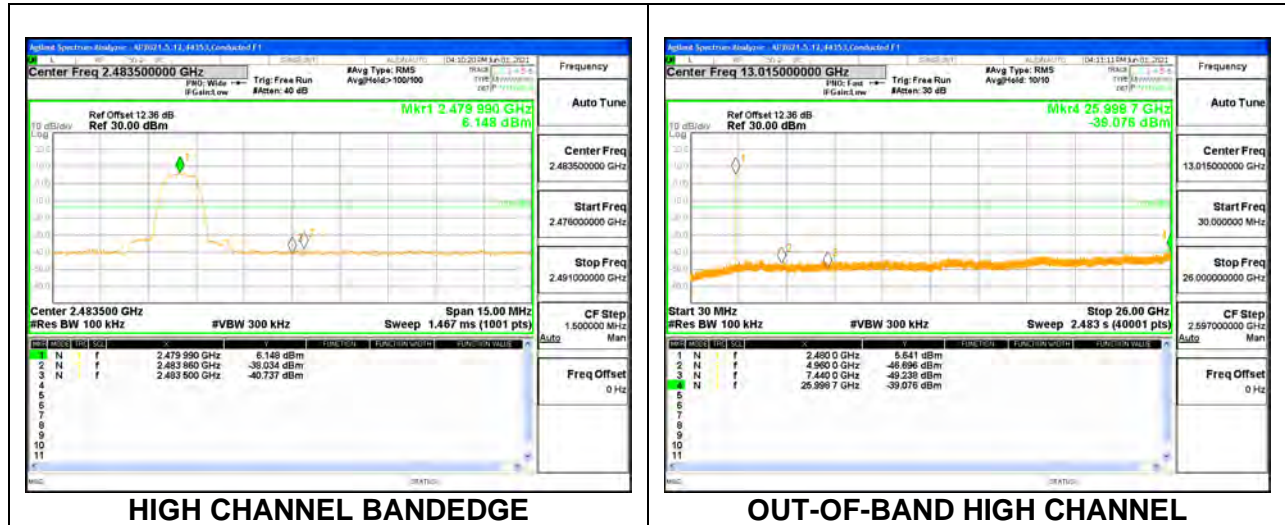
**ANT 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**



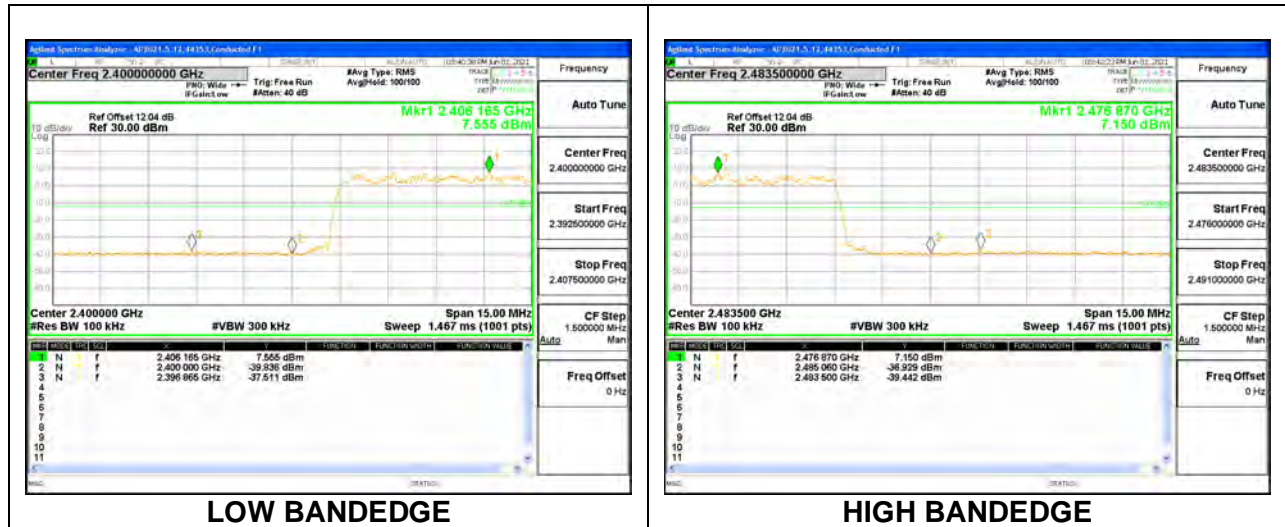
### 9.8.4. LOW POWER ENHANCED DATA RATE 8PSK MODULATION

#### ANT 4 SPURIOUS EMISSIONS, NON-HOPPING





**ANT 4 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**



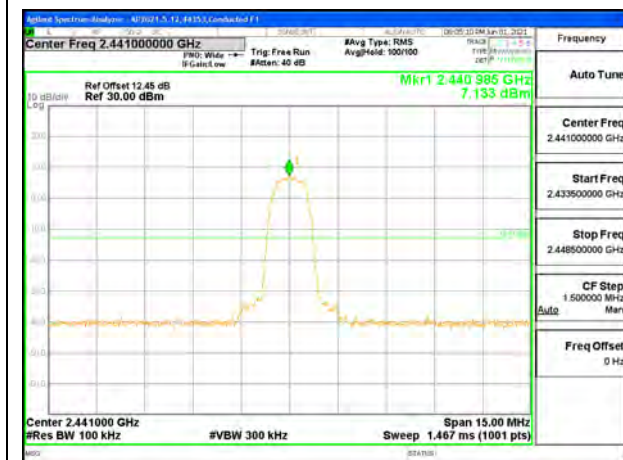
ANT 3 SPURIOUS EMISSIONS, NON-HOPPING



LOW CHANNEL BANDEDGE



OUT-OF-BAND LOW CHANNEL



MID CHANNEL BANDEDGE



OUT-OF-BAND MID CHANNEL

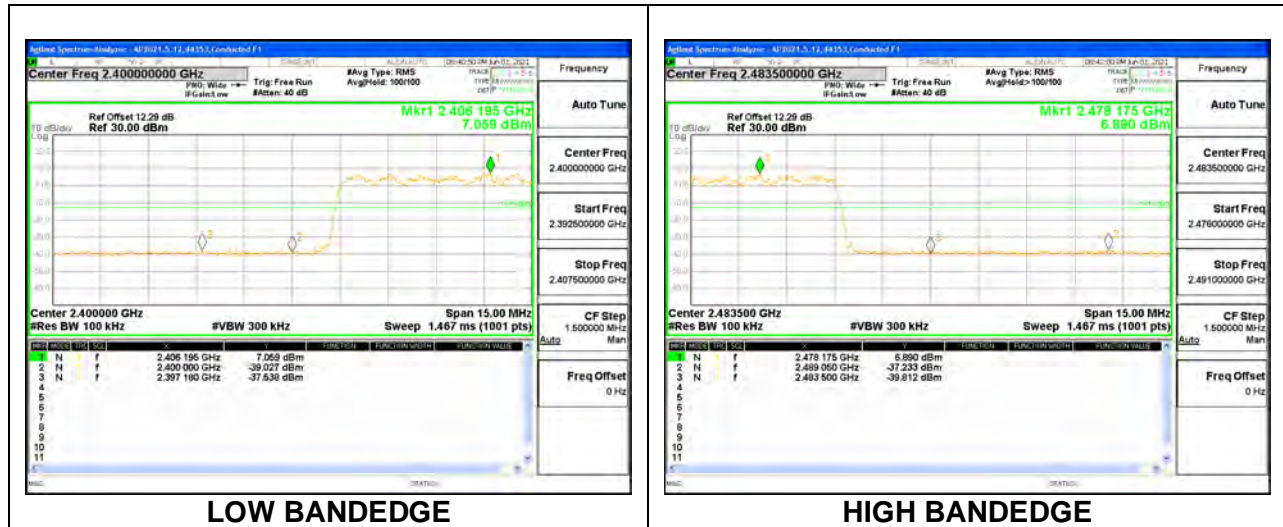


HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

**ANT 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**



## 9.8.5. HIGH POWER BASIC DATA RATE TXBF GFSK MODULATION

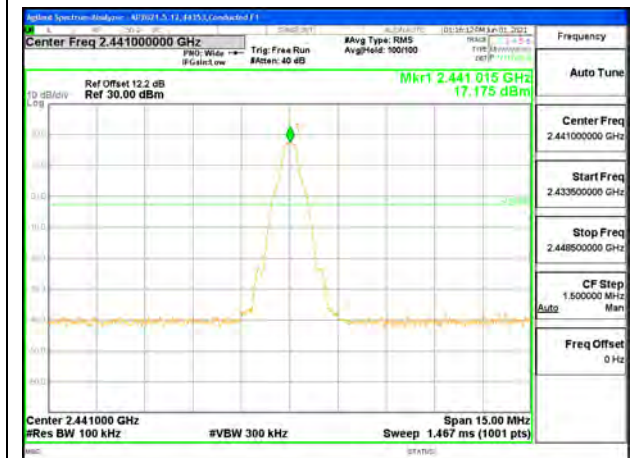
### ANT 4 SPURIOUS EMISSIONS, NON-HOPPING



**LOW CHANNEL BANDEDGE**



**OUT-OF-BAND LOW CHANNEL**

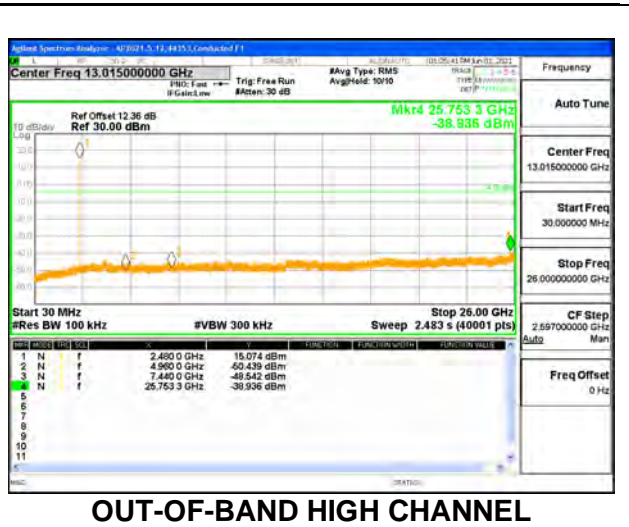
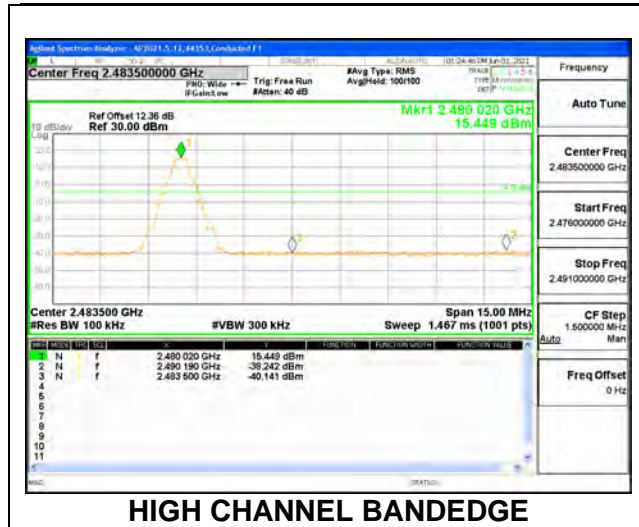


**MID CHANNEL BANDEDGE**

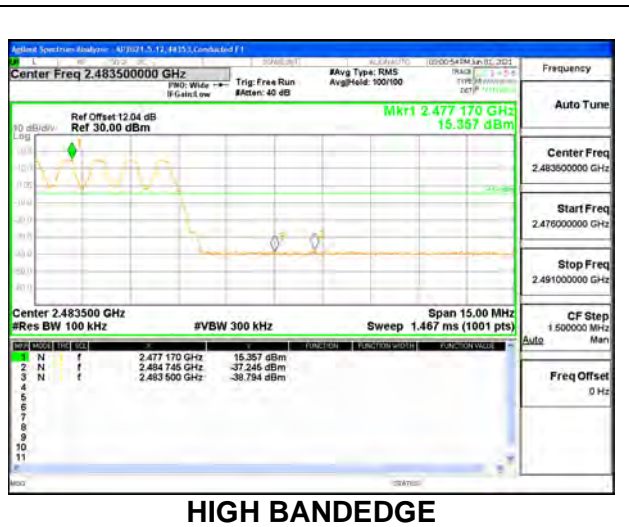
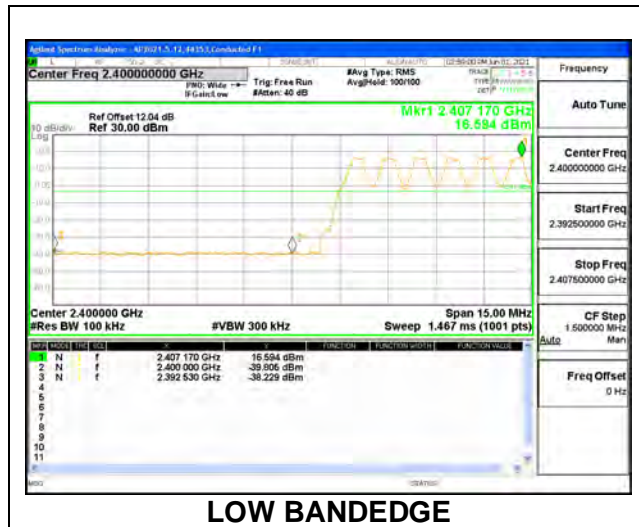


**OUT-OF-BAND MID CHANNEL**





**ANT 4 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**



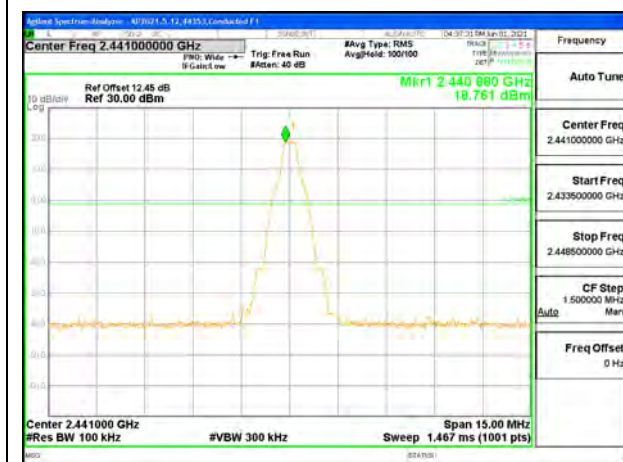
ANT 3 SPURIOUS EMISSIONS, NON-HOPPING



LOW CHANNEL BANDEDGE



OUT-OF-BAND LOW CHANNEL



MID CHANNEL BANDEDGE



OUT-OF-BAND MID CHANNEL

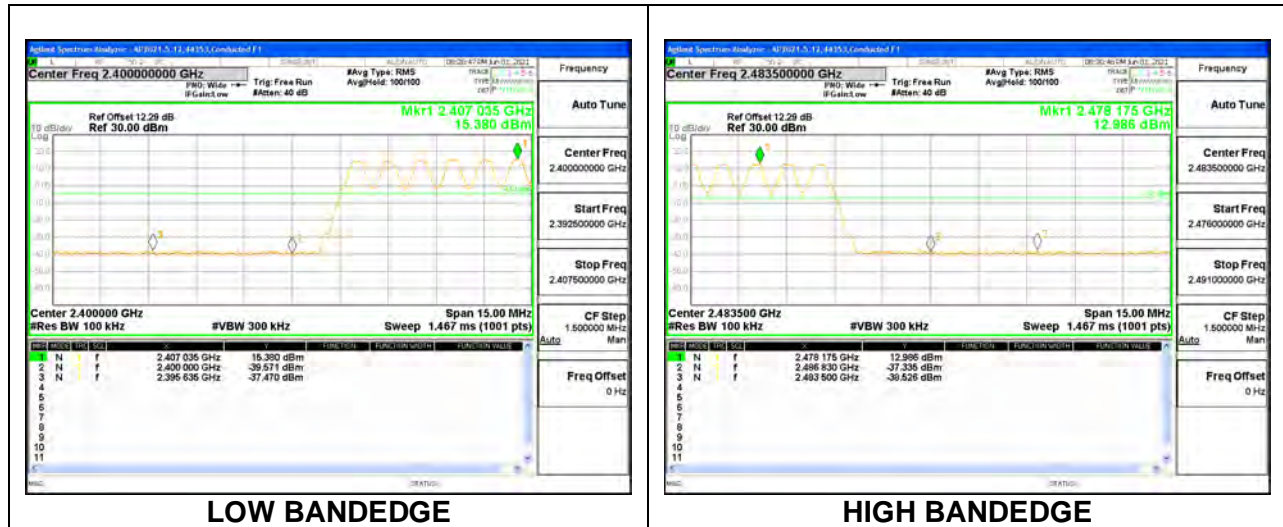


HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

**ANT 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**

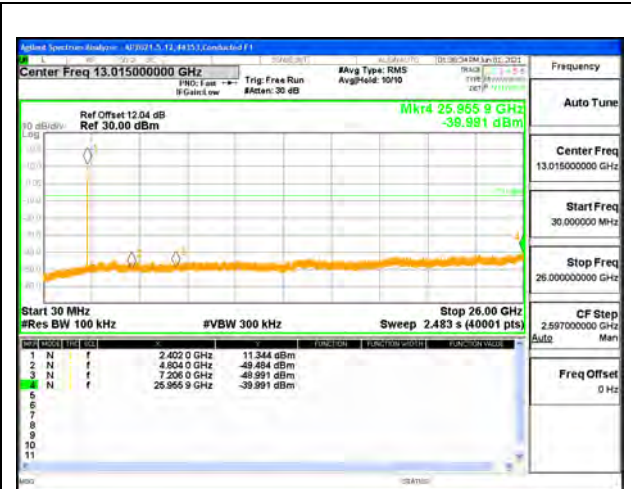


## 9.8.6. HIGH POWER ENHANCED DATA RATE TXBF 8PSK MODULATION

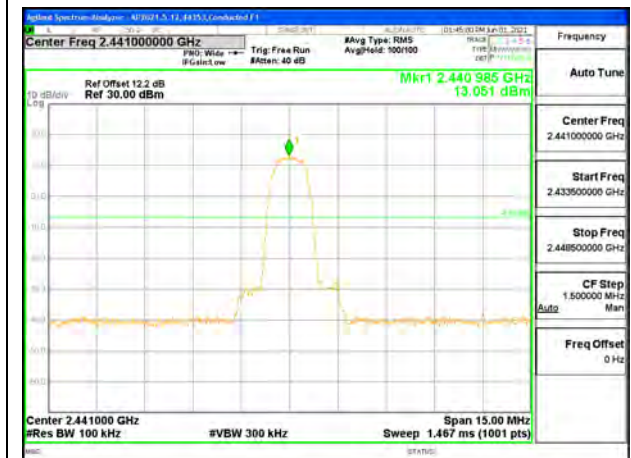
### ANT 4 SPURIOUS EMISSIONS, NON-HOPPING



**LOW CHANNEL BANDEDGE**



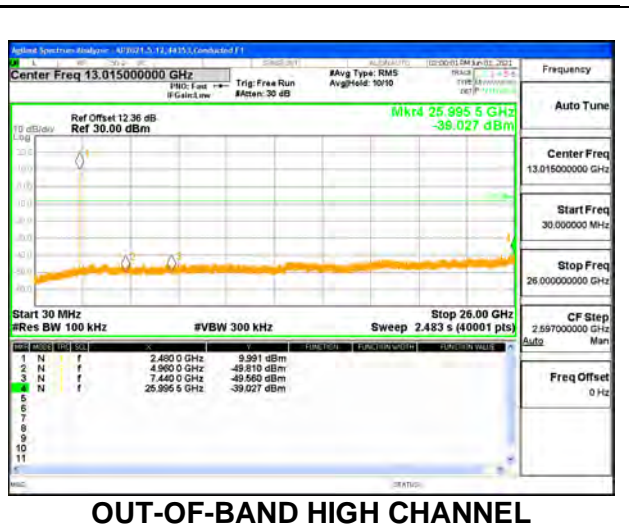
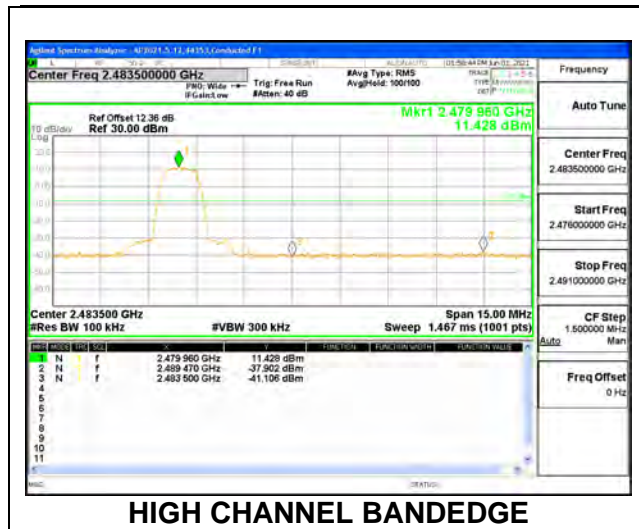
**OUT-OF-BAND LOW CHANNEL**



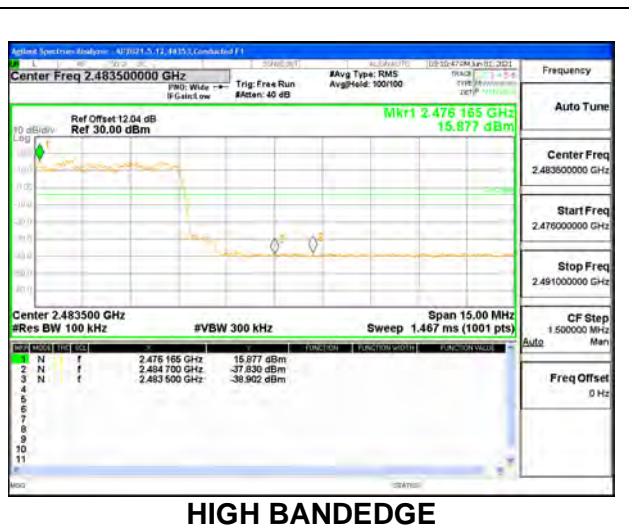
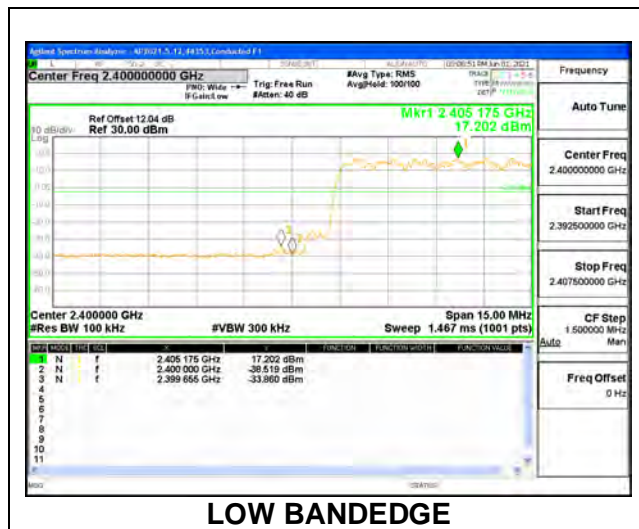
**MID CHANNEL BANDEDGE**



**OUT-OF-BAND MID CHANNEL**



**ANT 4 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**



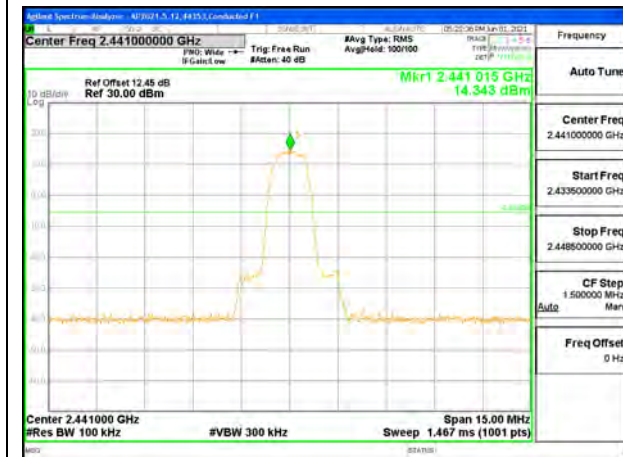
ANT 3 SPURIOUS EMISSIONS, NON-HOPPING



LOW CHANNEL BANDEDGE



OUT-OF-BAND LOW CHANNEL



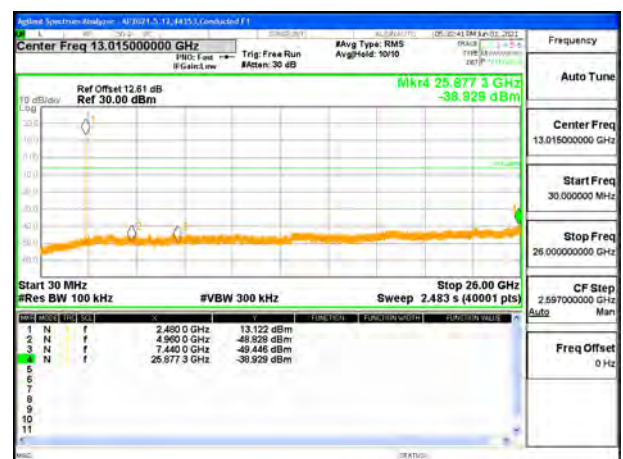
MID CHANNEL BANDEDGE



OUT-OF-BAND MID CHANNEL

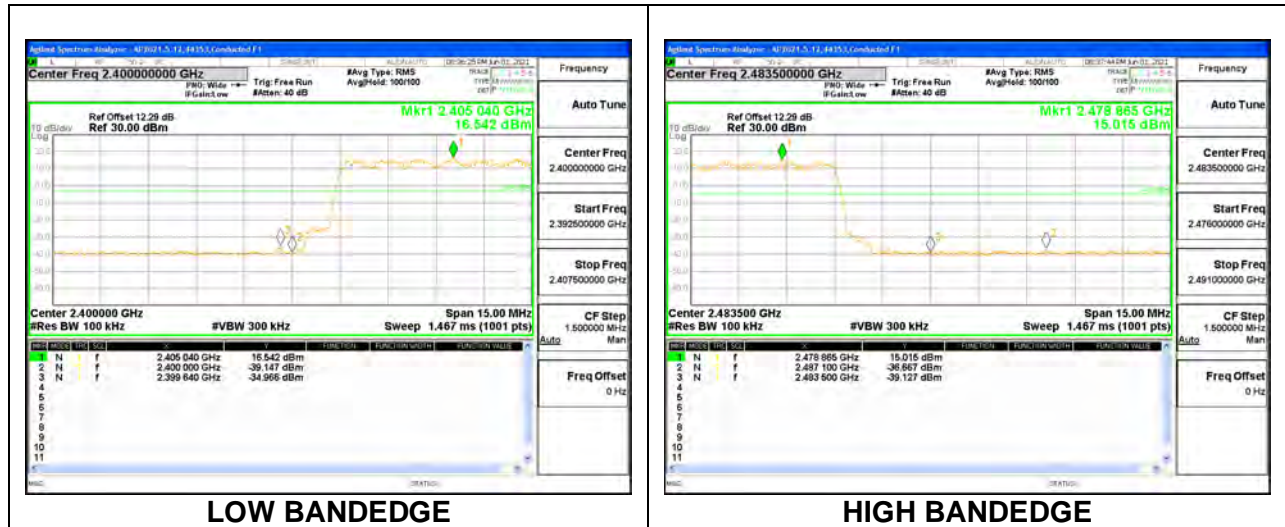


HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

**ANT 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**



### 9.8.7. LOW POWER BASIC DATA RATE TXBF GFSK MODULATION

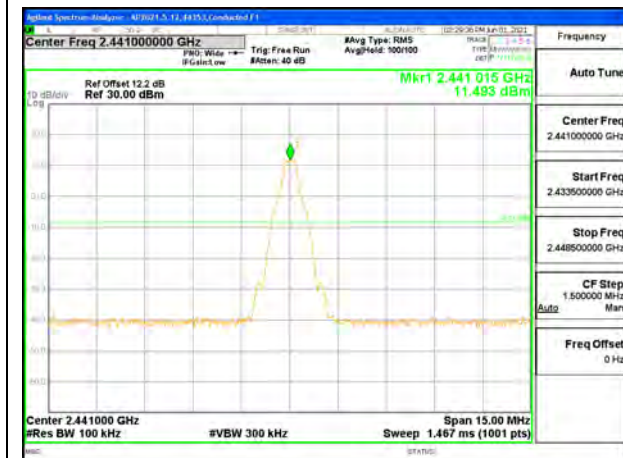
#### ANT 4 SPURIOUS EMISSIONS, NON-HOPPING



LOW CHANNEL BANDEDGE



OUT-OF-BAND LOW CHANNEL

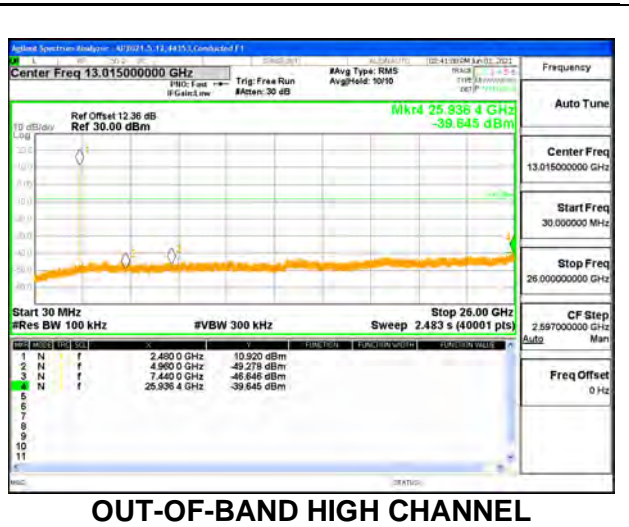
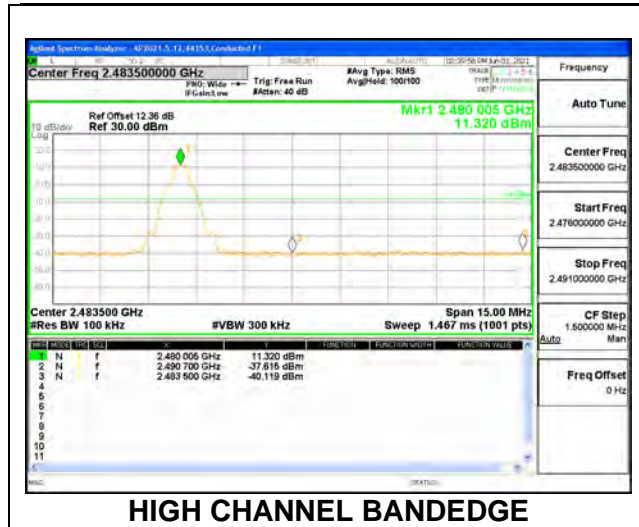


MID CHANNEL BANDEDGE

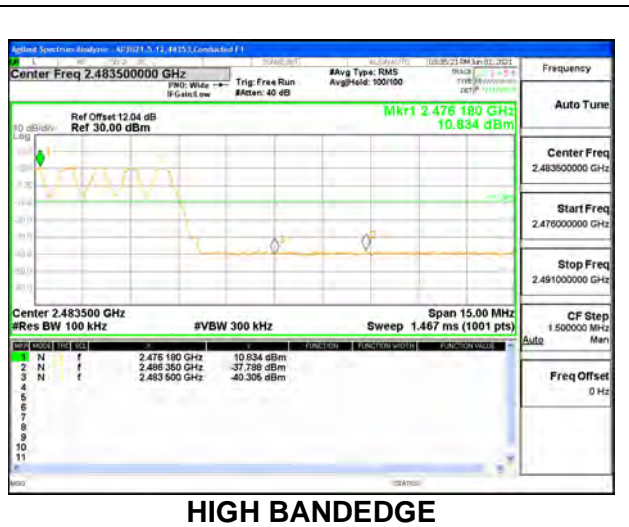
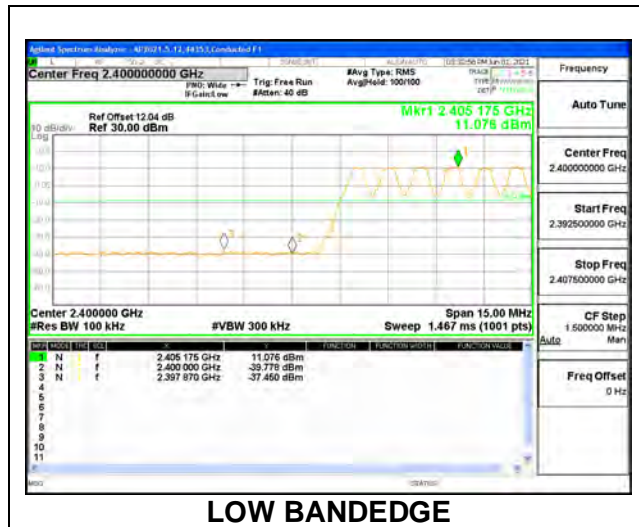


OUT-OF-BAND MID CHANNEL





**ANT 4 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**



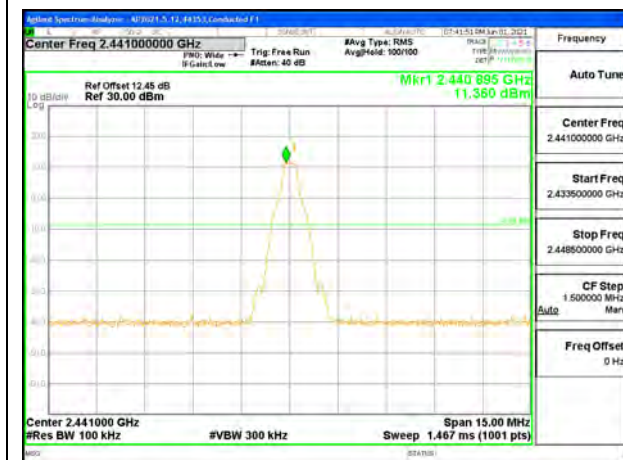
ANT 3 SPURIOUS EMISSIONS, NON-HOPPING



LOW CHANNEL BANDEDGE



OUT-OF-BAND LOW CHANNEL



MID CHANNEL BANDEDGE



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

**ANT 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**



### 9.8.8. LOW POWER ENHANCED DATA RATE TXBF 8PSK MODULATION

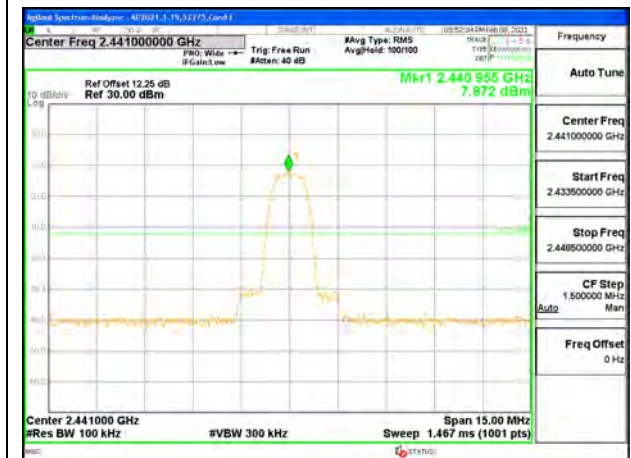
#### ANT 4 SPURIOUS EMISSIONS, NON-HOPPING



LOW CHANNEL BANDEDGE



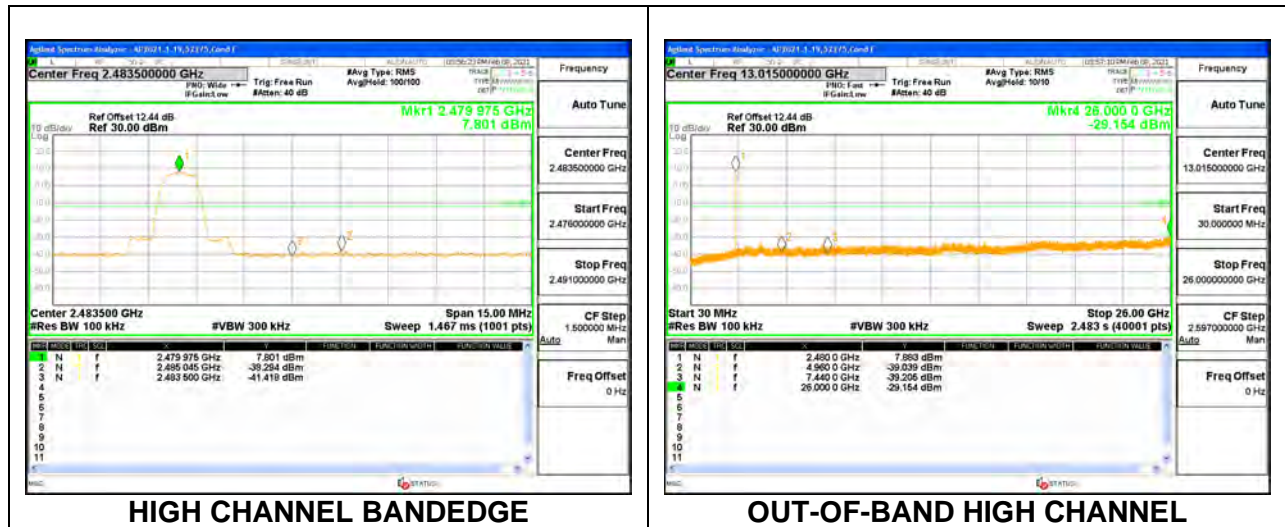
OUT-OF-BAND LOW CHANNEL



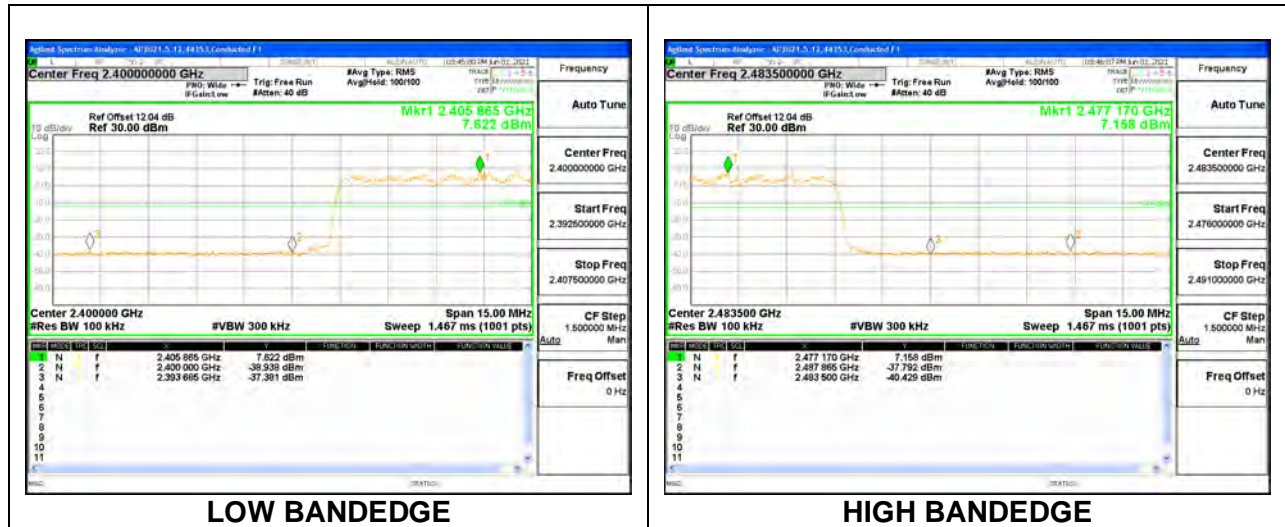
MID CHANNEL BANDEDGE



OUT-OF-BAND MID CHANNEL



**ANT 4 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**



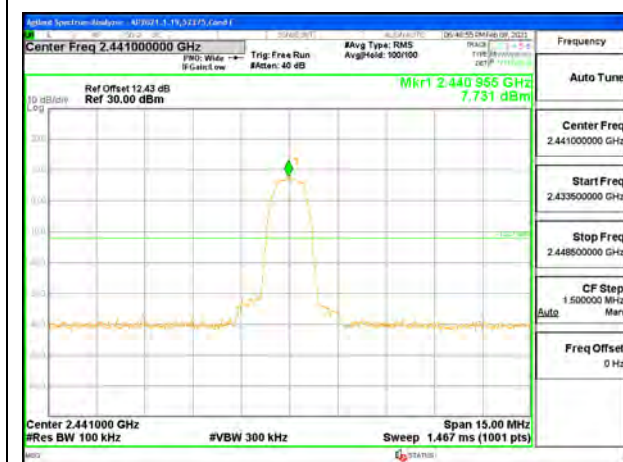
**ANT 3 SPURIOUS EMISSIONS, NON-HOPPING**



**LOW CHANNEL BANDEDGE**



**OUT-OF-BAND LOW CHANNEL**



**MID CHANNEL BANDEDGE**



**OUT-OF-BAND MID CHANNEL**

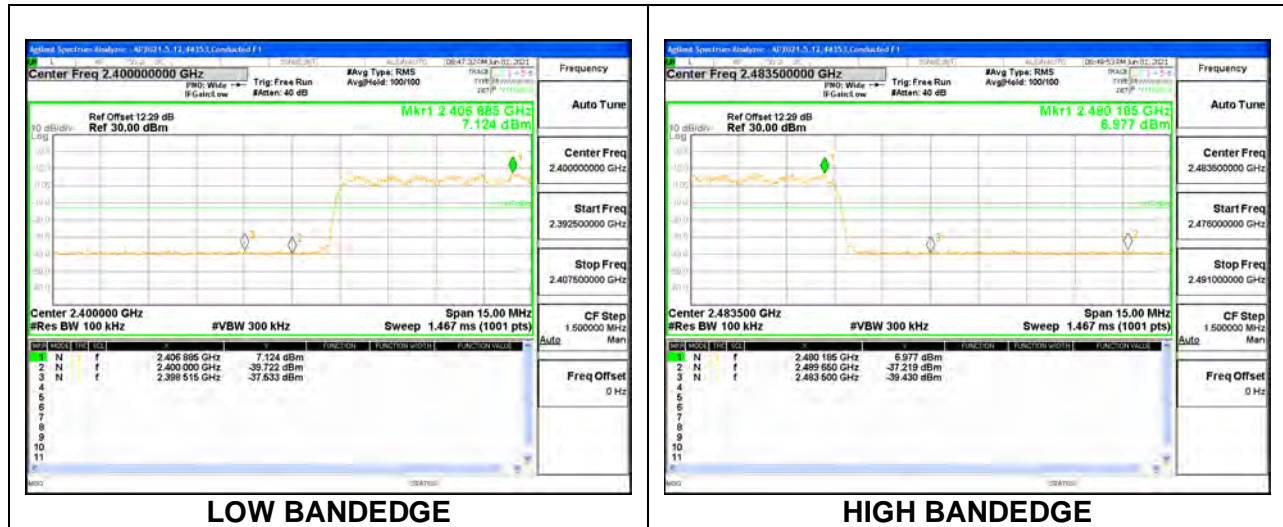


**HIGH CHANNEL BANDEDGE**



**OUT-OF-BAND HIGH CHANNEL**

**ANT 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**



## 10. RADIATED TEST RESULTS

### LIMITS

FCC §15.205 and §15.209

RSS-GEN, Section 8.9 and 8.10.

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
0.009-0.490	2400/F(kHz) @ 300 m	-
0.490-1.705	24000/F(kHz) @ 30 m	-
1.705 - 30	30 @ 30m	-
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

### TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

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

For pre-scans above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 KHz for peak measurements.

For final measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector for average measurements.

The spectrum from 1 GHz to 18 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band. Below 1GHz and above 18GHz emissions, the channel with the highest output power was tested.

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.



**KDB 414788 Open Field Site(OFS) and Chamber Correlation Justification**

Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

**KDB 558074 D01 15.247 Meas Guidance v05r02**

Use of a duty cycle correction factor (DCCF) is permitted for calculating average radiated field strength emission levels for an FHSS device in 15.247. This DCCF can be applied when the field strength limit (e.g., within a Government Restricted band) and the conditions specified in Section 15.35(c) can be satisfied. The average radiated field strength is calculated by subtracting the DCCF from the maximum radiated field strength level as determined through measurement. The maximum radiated field strength level represents the worst-case (maximum amplitude) RMS measurement of the emission(s) during continuous transmission (i.e., not including any time intervals during which the transmitter is off or is transmitting at a reduced power level). It is also acceptable to apply the DCCF to a measurement performed with a peak detector instead of the specified RMS power averaging detector. Note that Section 15.35(c) specifies that the DCCF shall represent the worst-case (greatest duty cycle) over any 100 msec transmission period.

**Results**

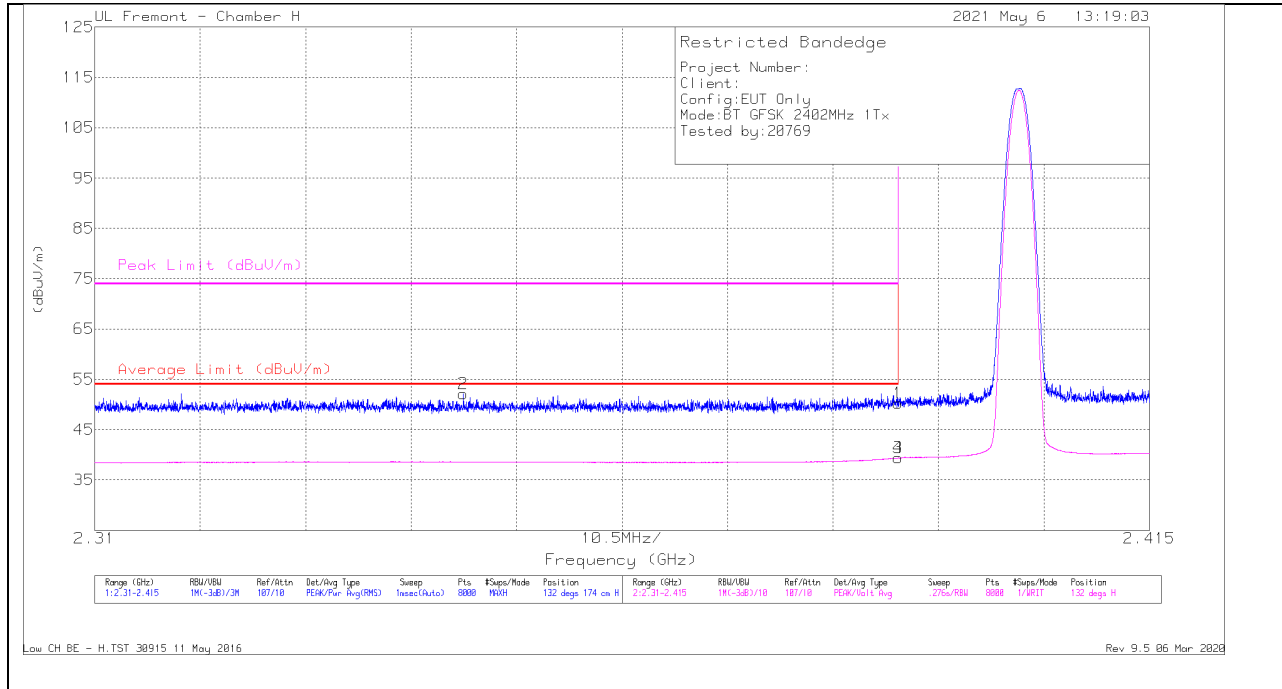
# 10.1. TRANSMITTER ABOVE 1 GHz

## 10.1.1. HIGH POWER BASIC DATA RATE GFSK MODULATION

ANT 4

BANDEDGE (LOW CHANNEL)

### HORIZONTAL RESULT

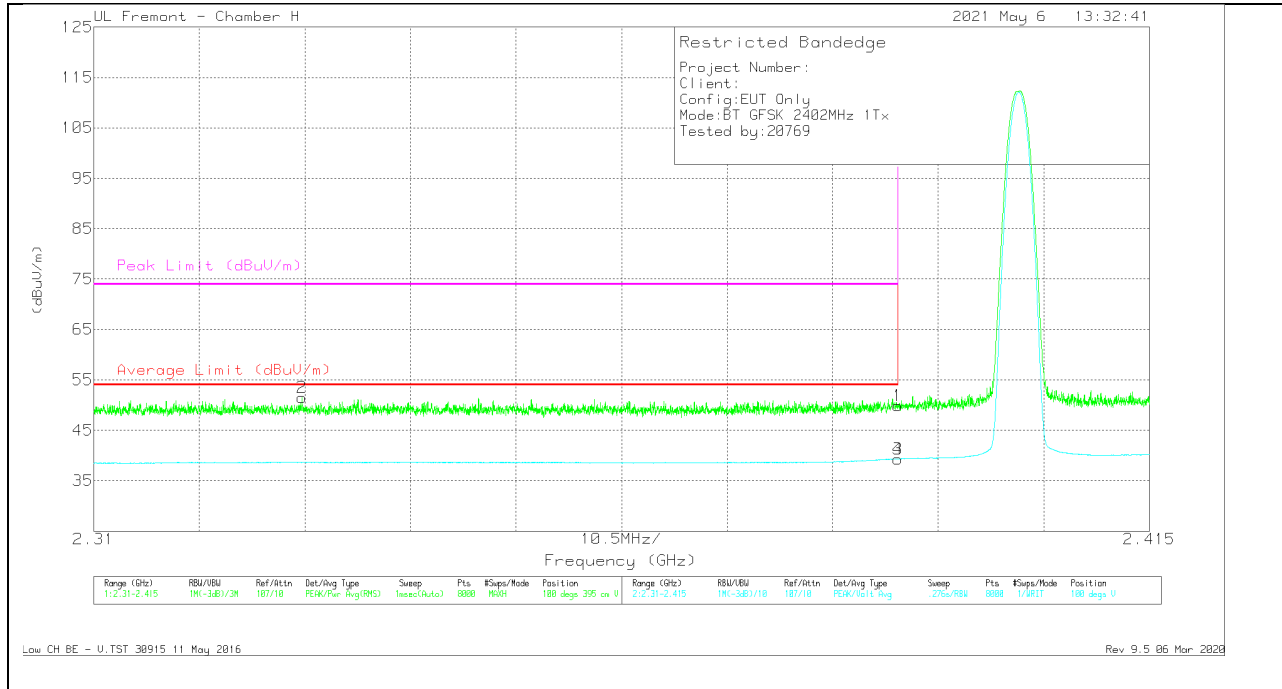


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl /Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	46.16	Pk	31.8	-27.7	50.26	-	-	74	-23.74	132	174	H
2	* 2.34668	47.86	Pk	31.9	-27.6	52.16	-	-	74	-21.84	132	174	H
3	* 2.39	35.26	VA1T	31.8	-27.7	39.36	54	-14.64	-	-	132	174	H
4	* 2.38998	35.27	VA1T	31.8	-27.7	39.37	54	-14.63	-	-	132	174	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

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### VERTICAL RESULT



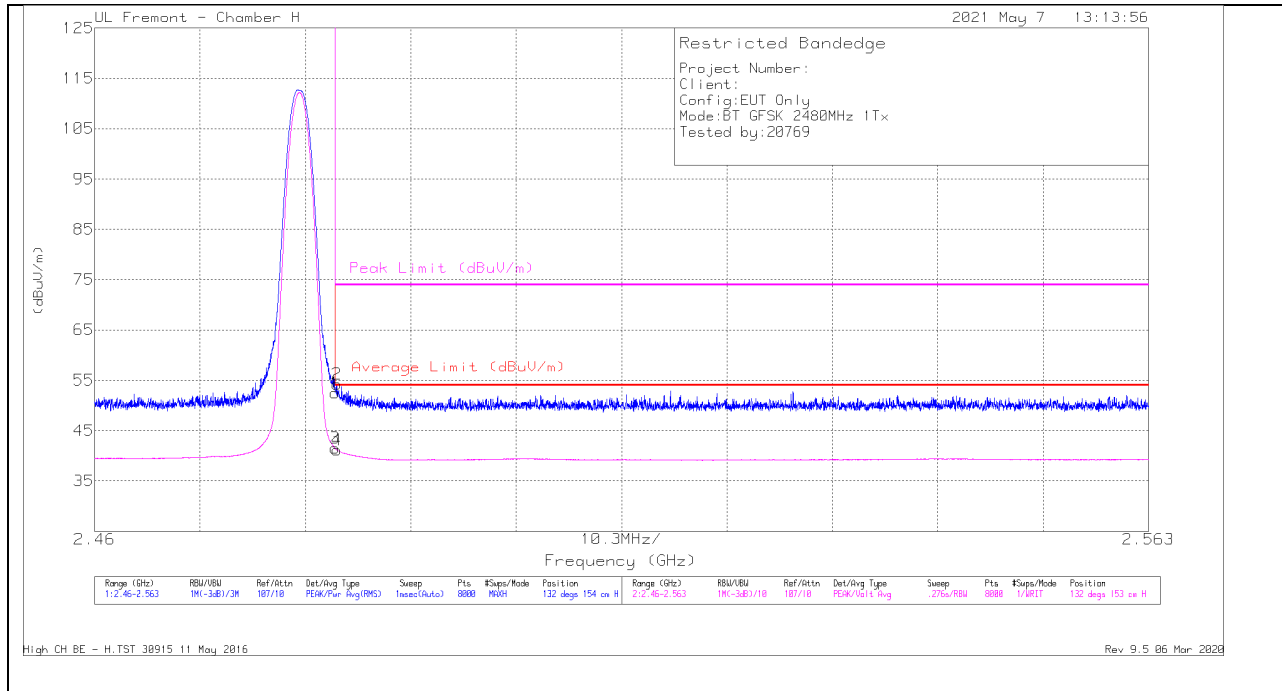
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AFT862 (dB/m)	Amp/Cbl /Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	45.75	Pk	31.8	-27.7	49.85	-	-	74	-24.15	100	395	V
2	* 2.3307	47.35	Pk	31.8	-27.6	51.55	-	-	74	-22.45	100	395	V
3	* 2.39	35.21	VA1T	31.8	-27.7	39.31	54	-14.69	-	-	100	395	V
4	* 2.38998	35.22	VA1T	31.8	-27.7	39.32	54	-14.68	-	-	100	395	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

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**BANDEGE (HIGH CHANNEL)**

**HORIZONTAL RESULT**

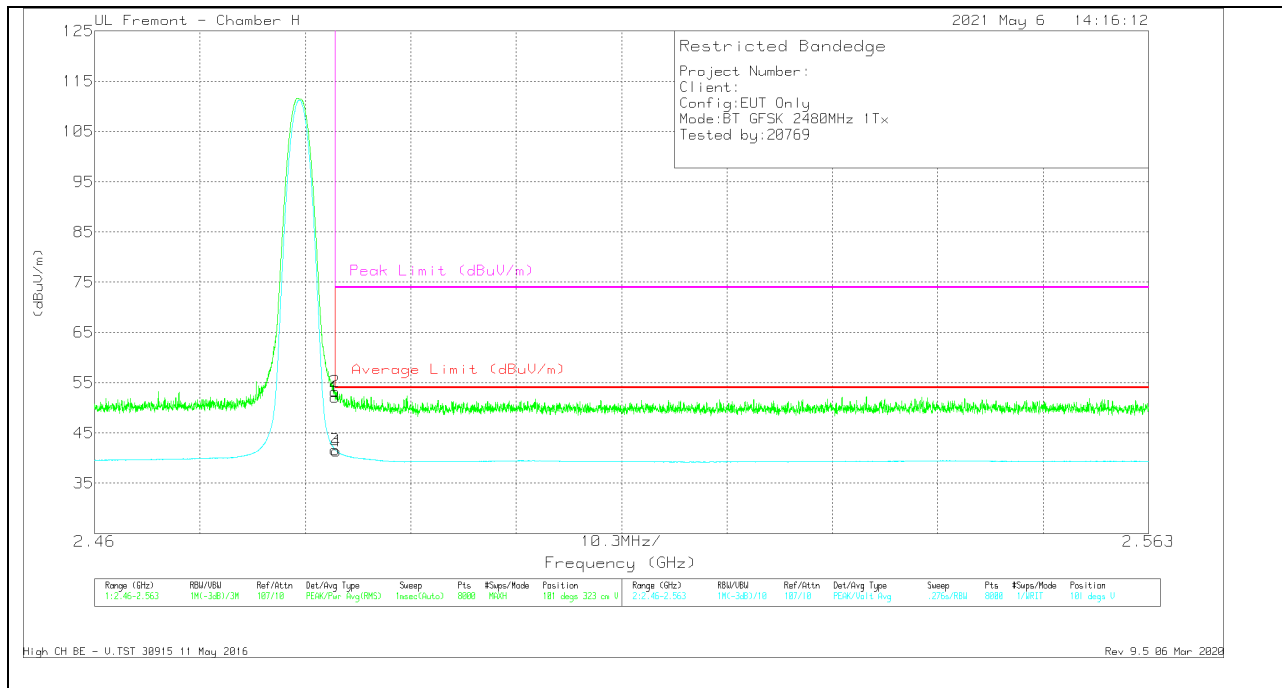


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl /Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	48.01	Pk	32.3	-27.8	52.51	-	-	74	-21.49	132	154	H
2	* 2.48366	49.79	Pk	32.3	-27.8	54.29	-	-	74	-19.71	132	154	H
3	* 2.4835	36.98	VA1T	32.3	-27.8	41.48	54	-12.52	-	-	132	153	H
4	* 2.48368	36.67	VA1T	32.3	-27.8	41.17	54	-12.83	-	-	132	153	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

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**VERTICAL RESULT**



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl /Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	47.64	Pk	32.3	-27.8	52.14	-	-	74	-21.86	101	323	V
2	* 2.48351	48.71	Pk	32.3	-27.8	53.21	-	-	74	-20.79	101	323	V
3	* 2.4835	37.13	VA1T	32.3	-27.8	41.63	54	-12.37	-	-	101	323	V
4	* 2.48363	36.87	VA1T	32.3	-27.8	41.37	54	-12.63	-	-	101	323	V

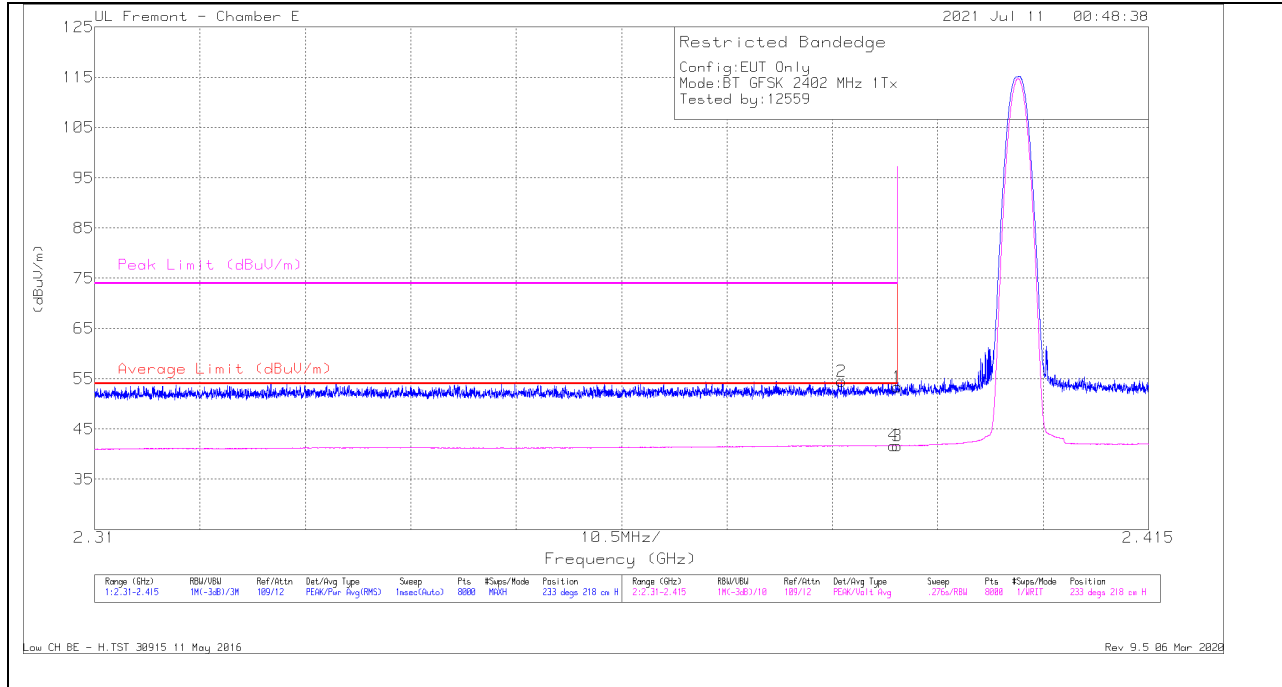
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
Pk - Peak detector  
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

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**ANT 3**

**BANDEGE (LOW CHANNEL)**

**HORIZONTAL RESULT**

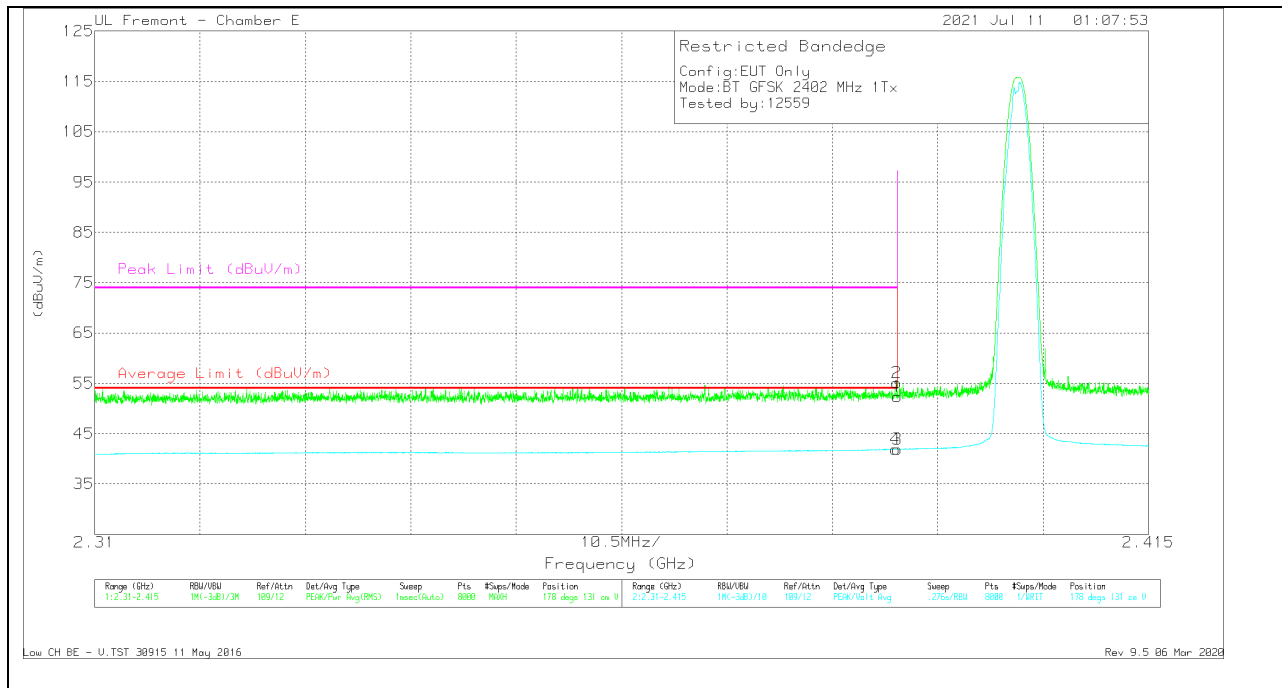


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (dB/m)	Amp/Cb/Filtr/Pa d (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	38.74	Pk	32.2	-17.6	53.34	-	-	74	-20.66	233	218	H
2	* 2.3844	39.88	Pk	32.2	-17.6	54.48	-	-	74	-19.52	233	218	H
3	* 2.39	27.09	VA1T	32.2	-17.6	41.69	54	-12.31	-	-	233	218	H
4	* 2.38959	27.12	VA1T	32.2	-17.6	41.72	54	-12.28	-	-	233	218	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

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**VERTICAL RESULT**



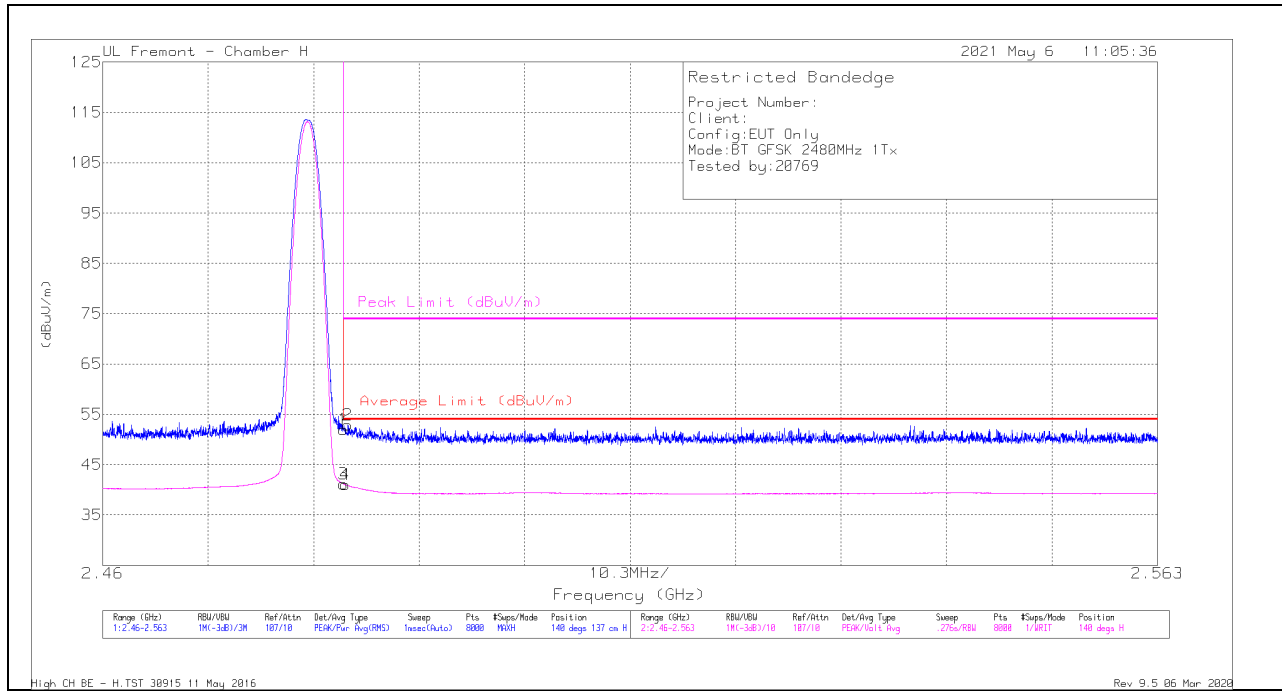
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (dB/m)	Amp/Cb/Filtr/Psd (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 2.38981	27.33	VA1T	32.2	-17.6	41.93	54	-12.07	-	-	178	131	V
2	* 2.38993	40.47	Pk	32.2	-17.6	55.07	-	-	74	-18.93	178	131	V
1	* 2.39	37.77	Pk	32.2	-17.6	52.37	-	-	74	-21.63	178	131	V
3	* 2.39	27.32	VA1T	32.2	-17.6	41.92	54	-12.08	-	-	178	131	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

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**BANDEDGE (HIGH CHANNEL)**

**HORIZONTAL RESULT**



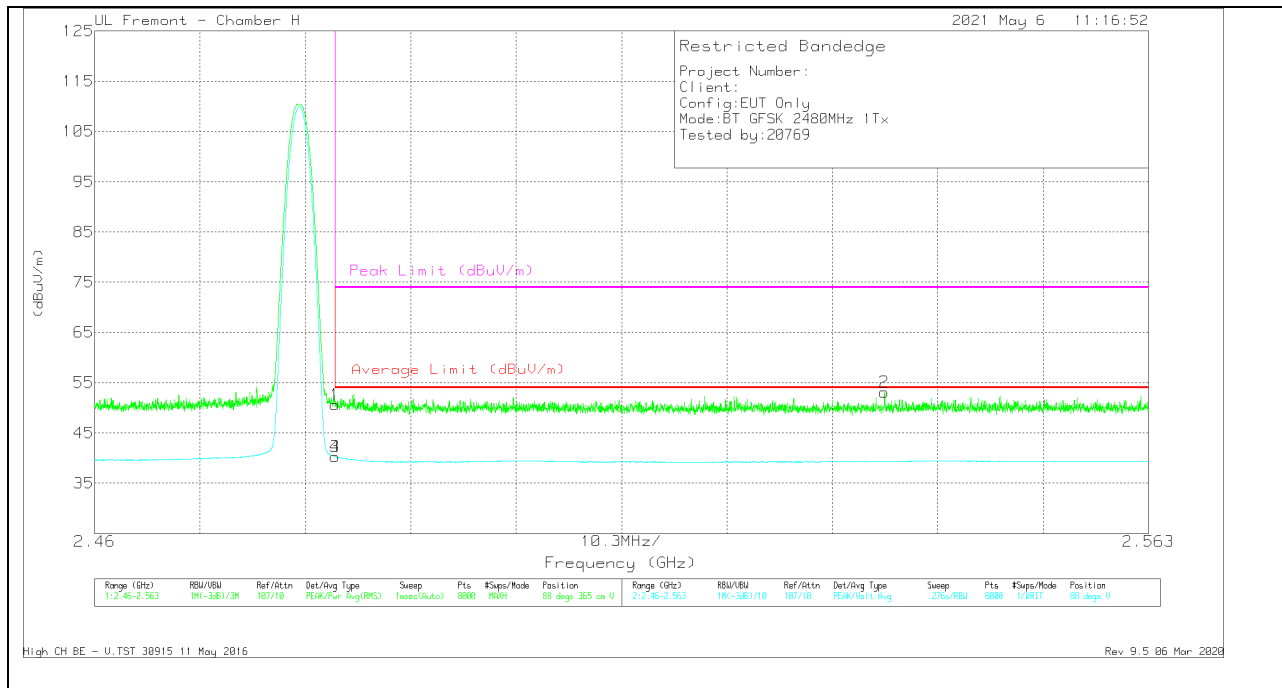
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl /Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	47.45	Pk	32.3	-27.8	51.95	-	-	74	-22.05	140	137	H
2	* 2.48395	48.33	Pk	32.3	-27.8	52.83	-	-	74	-21.17	140	137	H
3	* 2.4835	36.7	VA1T	32.3	-27.8	41.2	54	-12.8	-	-	140	136	H
4	* 2.48367	36.51	VA1T	32.3	-27.8	41.01	54	-12.99	-	-	140	136	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

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**VERTICAL RESULT**



Marker	Frequen- cy (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl /Ftr/Pad (dB)	Correcte d Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	46.1	Pk	32.3	-27.8	50.6	-	-	74	-23.4	88	365	V
3	* 2.4835	35.81	VA1T	32.3	-27.8	40.31	54	-13.69	-	-	88	365	V
4	* 2.48351	35.81	VA1T	32.3	-27.8	40.31	54	-13.69	-	-	88	365	V
2	2.5372	48.49	Pk	32.4	-27.8	53.09	-	-	74	-20.91	88	365	V

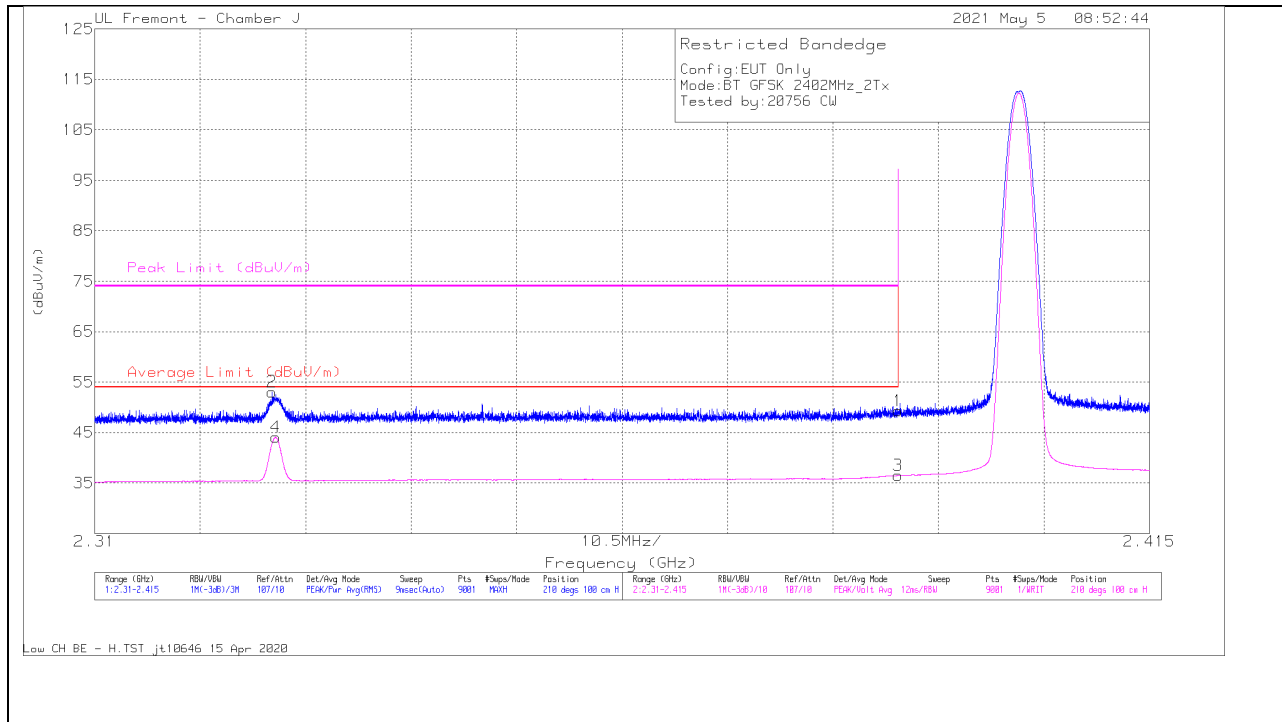
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
Pk - Peak detector  
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

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## 10.1.2. HIGH POWER BASIC DATA RATE TX BF GFSK MODULATION

### BANDEDGE (LOW CHANNEL)

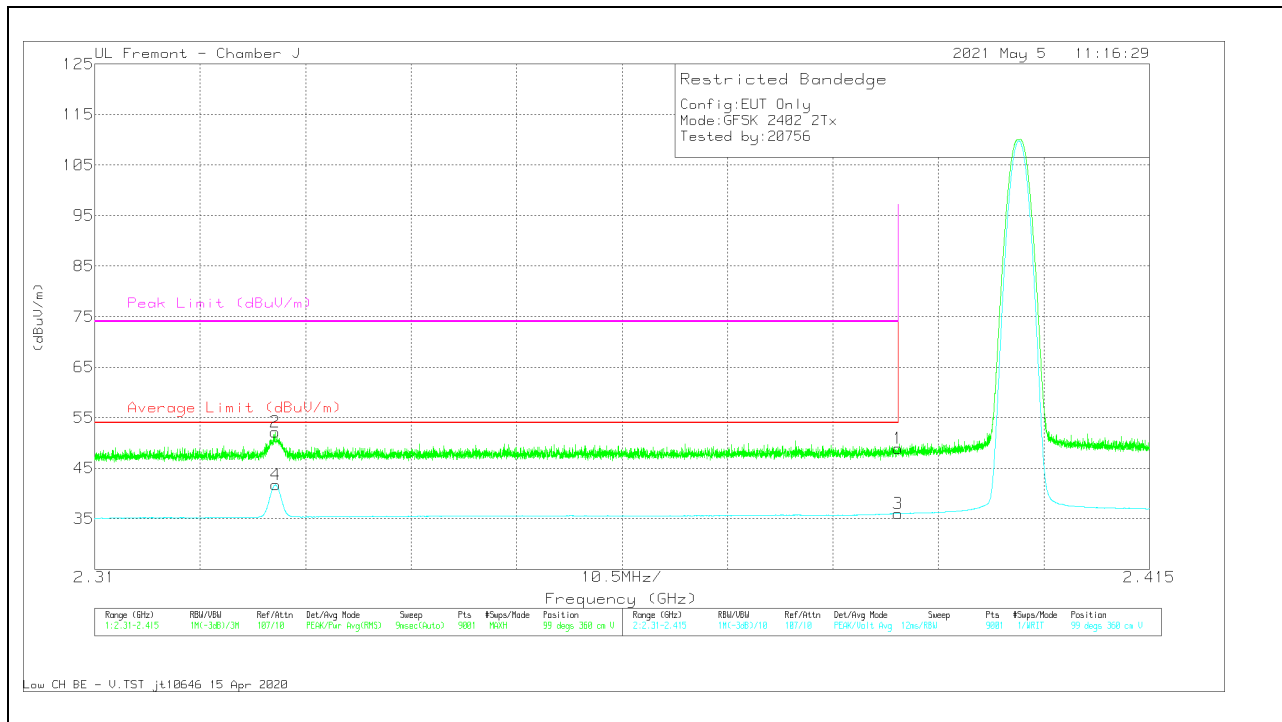
### HORIZONTAL RESULT



Marker	Frequen- cy (GHz)	Meter Reading (dBuV)	Det	AF PRE0100 034 (dB/m)	Amp/Cbl /Filtr/Pad (dB)	Correcte d Reading (dBuV/m )	Average Limit (dBuV/m )	Margin (dB)	Peak Limit (dBuV/m )	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.38999	42.41	Pk	32.1	-25.2	49.31	-	-	74	-24.69	210	100	H
2	* 2.32764	46.58	Pk	31.8	-25.3	53.08	-	-	74	-20.92	210	100	H
3	* 2.38999	29.57	VA1T	32.1	-25.2	36.47	54	-17.53	-	-	210	100	H
4	* 2.32804	37.53	VA1T	31.8	-25.3	44.03	54	-9.97	-	-	210	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 RESULT**

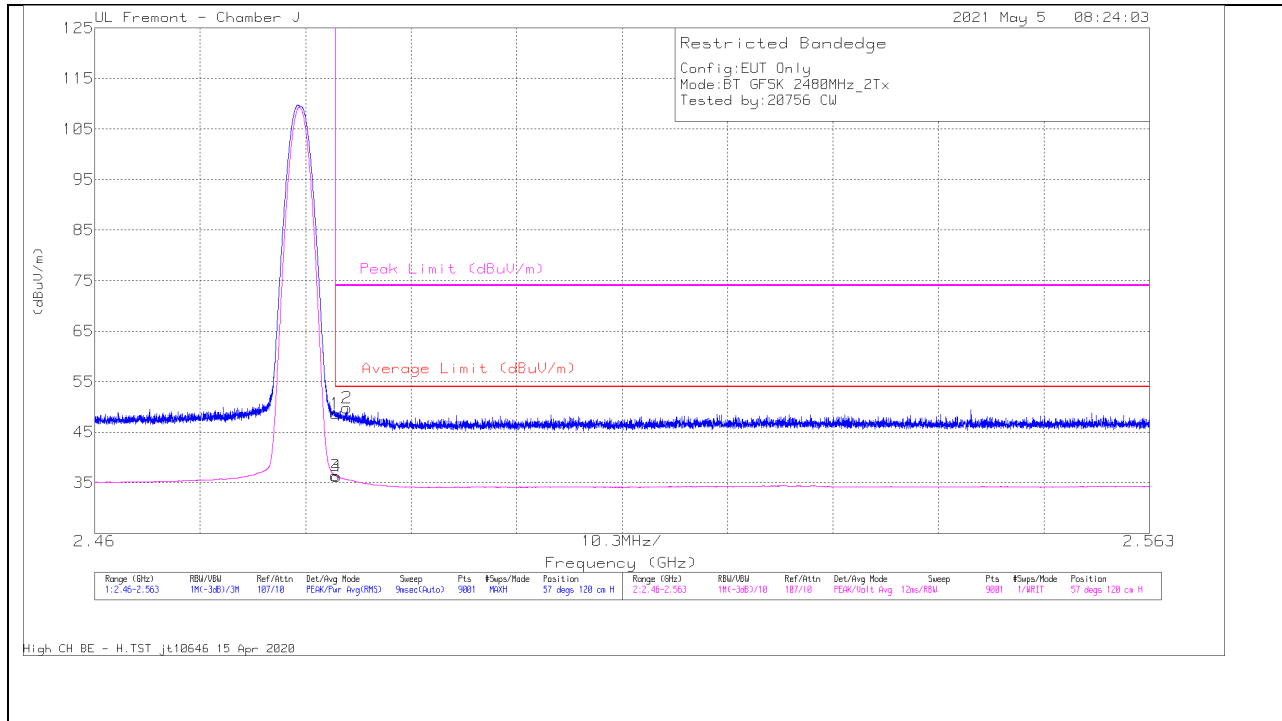


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0100 034 (dB/m)	Amp/Cbl /Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.38999	41.98	Pk	32.1	-25.2	48.88	-	-	74	-25.12	99	360	V
2	* 2.32798	45.6	Pk	31.8	-25.3	52.1	-	-	74	-21.9	99	360	V
3	* 2.38999	29.09	VA1T	32.1	-25.2	35.99	54	-18.01	-	-	99	360	V
4	* 2.328	35.19	VA1T	31.8	-25.3	41.69	54	-12.31	-	-	99	360	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

**BANDEDGE (HIGH CHANNEL)**

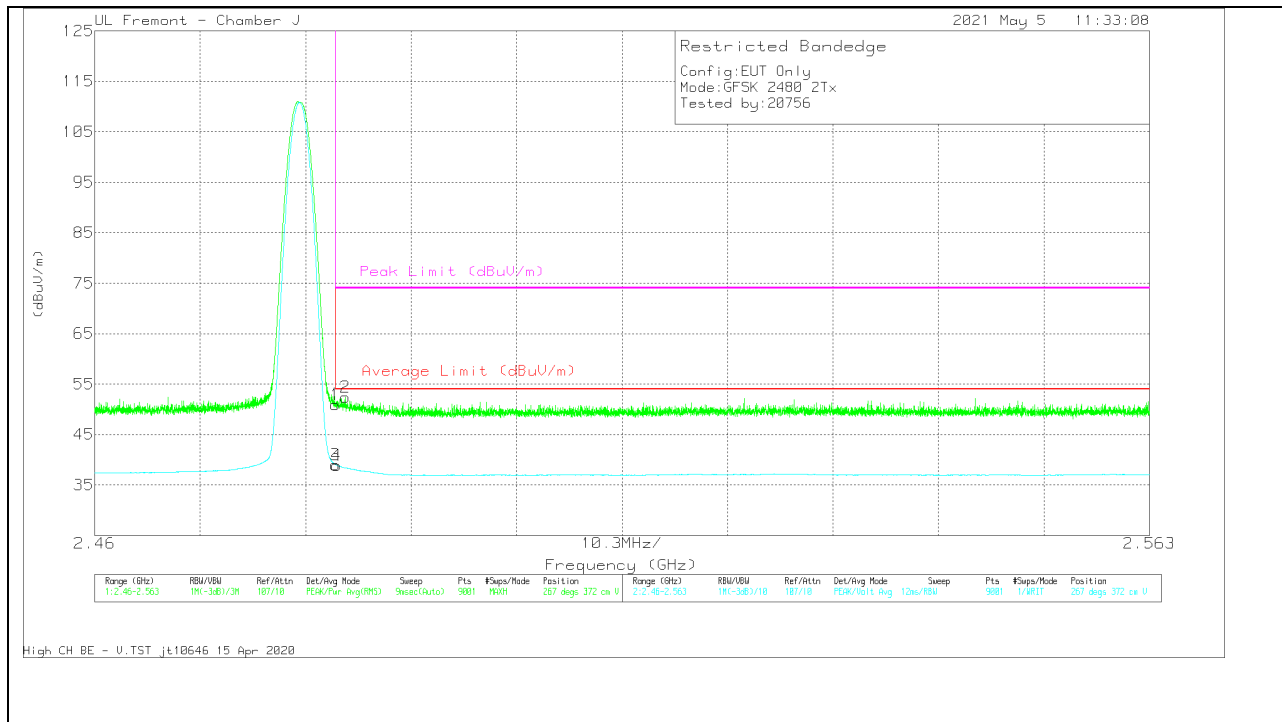
**HORIZONTAL RESULT**



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0100 034 (dB/m)	Amp/Cbl /Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	41.33	Pk	32.5	-25.2	48.63	-	-	74	-25.37	57	120	H
2	* 2.48463	42.48	Pk	32.5	-25.2	49.78	-	-	74	-24.22	57	120	H
3	* 2.48351	29.06	VA1T	32.5	-25.2	36.36	54	-17.64	-	-	57	120	H
4	* 2.48362	28.94	VA1T	32.5	-25.2	36.24	54	-17.76	-	-	57	120	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 RESULT**



Marker	Frequen cy (GHz)	Meter Reading (dBuV)	Det	AF PRE0100 034 (dB/m)	Amp/Cbl /Ftr/Pad (dB)	Correcte d Reading (dBuV/m )	Average Limit (dBuV/m )	Margin (dB)	Peak Limit (dBuV/m )	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	43.67	Pk	32.5	-25.2	50.97	-	-	74	-23.03	267	372	V
2	* 2.48447	45.05	Pk	32.5	-25.2	52.35	-	-	74	-21.65	267	372	V
3	* 2.48351	31.74	VA1T	32.5	-25.2	39.04	54	-14.96	-	-	267	372	V
4	* 2.48362	31.61	VA1T	32.5	-25.2	38.91	54	-15.09	-	-	267	372	V

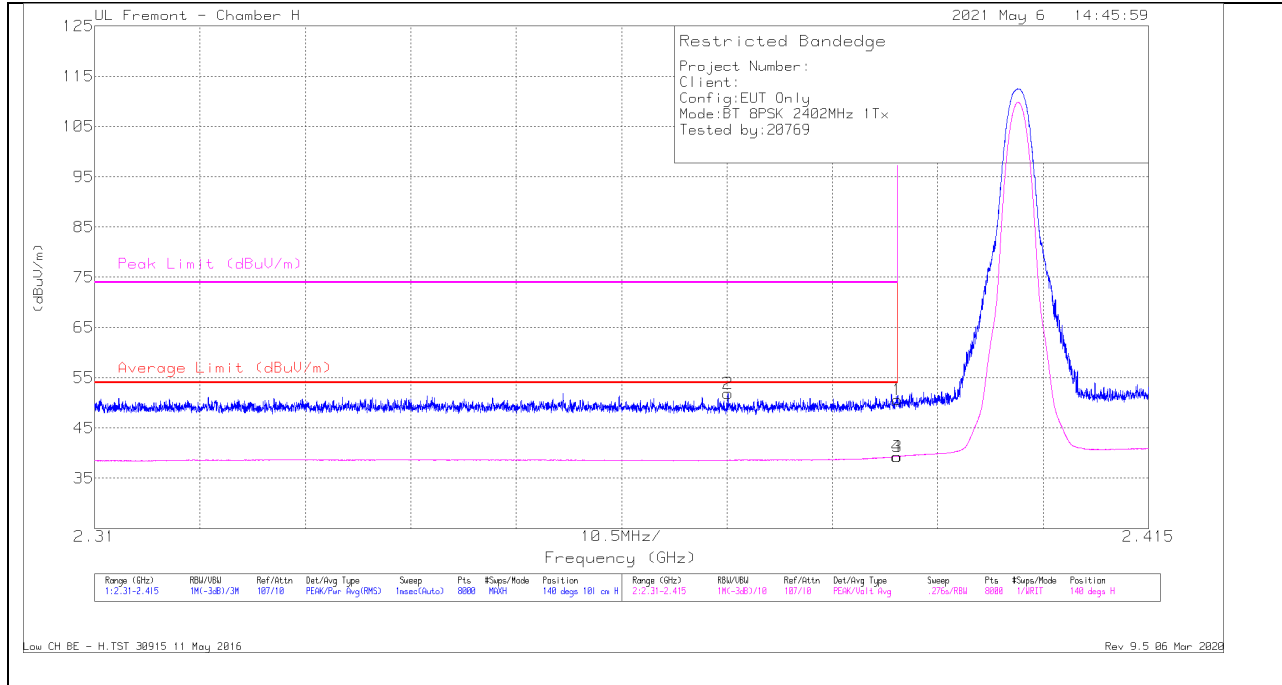
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
Pk - Peak detector  
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

### 10.1.3. HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

**ANT 4**

**BANDEDGE (LOW CHANNEL)**

**HORIZONTAL RESULT**

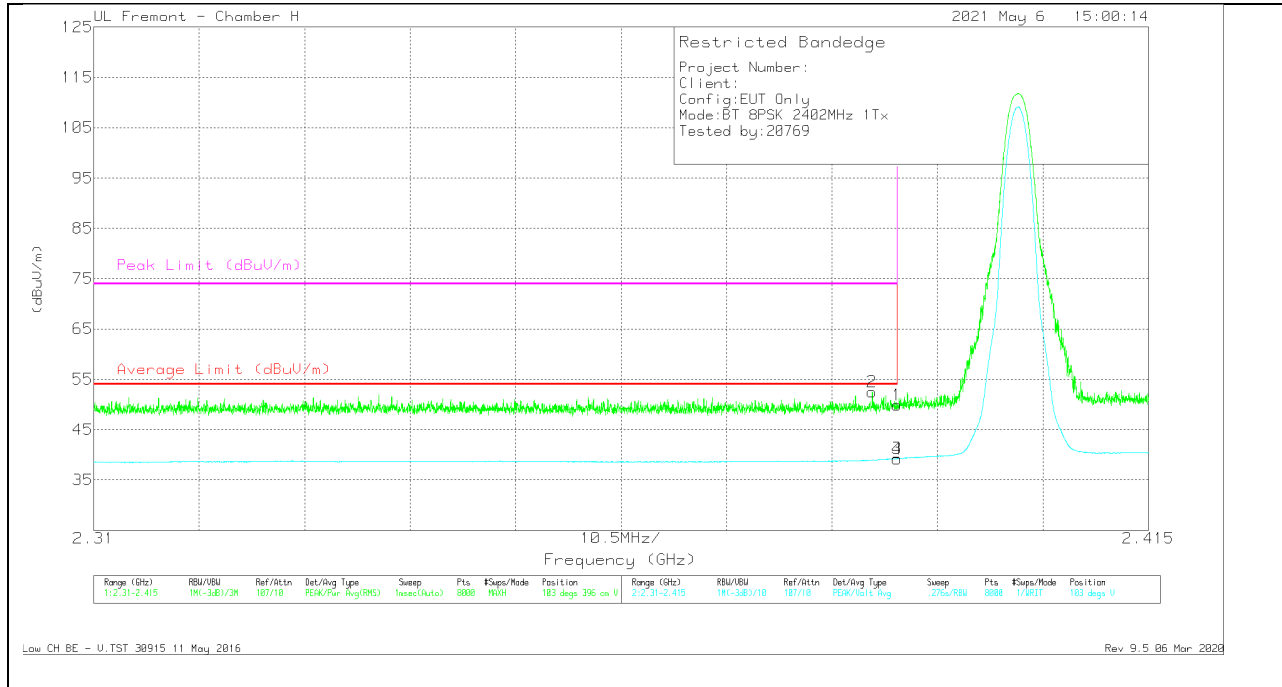


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AFT862 (dB/m)	Amp/Cbl /Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	46.58	Pk	31.8	-27.7	50.68	-	-	74	-23.32	140	101	H
2	* 2.3731	47.77	Pk	31.8	-27.7	51.87	-	-	74	-22.13	140	101	H
3	* 2.39	35.21	VA1T	31.8	-27.7	39.31	54	-14.69	-	-	140	101	H
4	* 2.3899	35.22	VA1T	31.8	-27.7	39.32	54	-14.68	-	-	140	101	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

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### VERTICAL RESULT



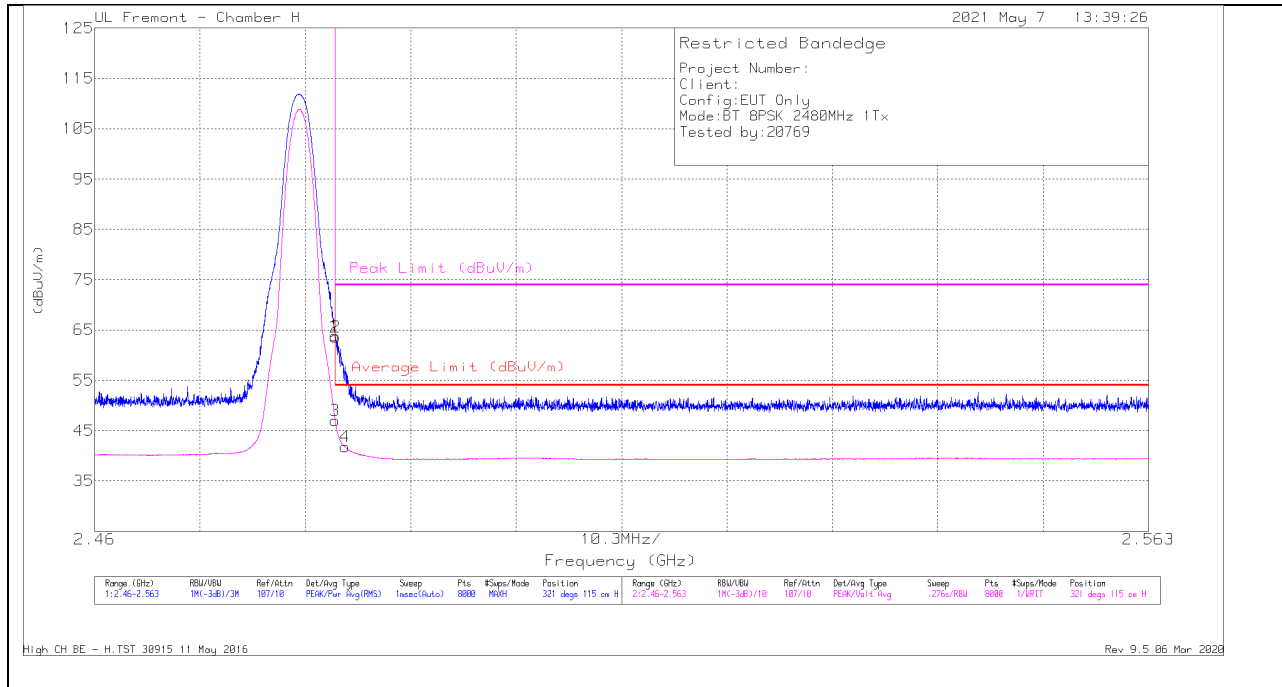
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl /Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	45.76	Pk	31.8	-27.7	49.86	-	-	74	-24.14	103	396	V
2	* 2.3875	48.41	Pk	31.8	-27.7	52.51	-	-	74	-21.49	103	396	V
3	* 2.39	35.13	VA1T	31.8	-27.7	39.23	54	-14.77	-	-	103	396	V
4	* 2.38996	35.12	VA1T	31.8	-27.7	39.22	54	-14.78	-	-	103	396	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

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**BANEDGE (HIGH CHANNEL)**

**HORIZONTAL RESULT**



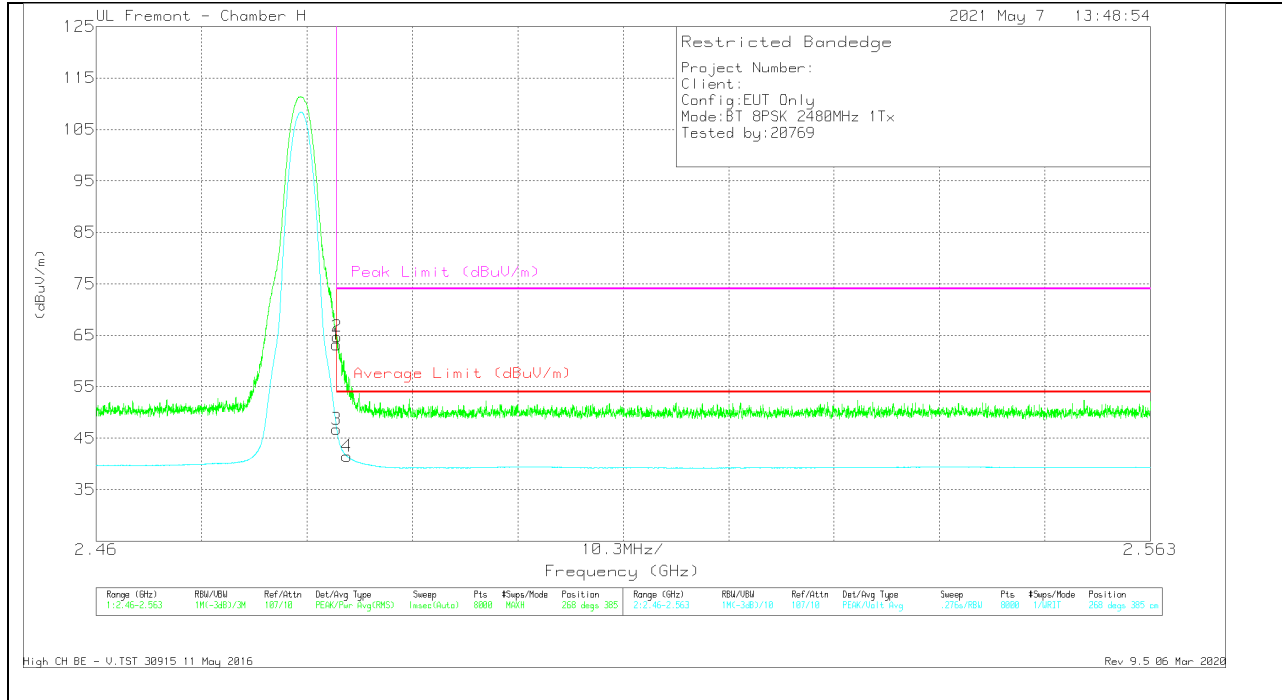
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl /Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	59.32	Pk	32.3	-27.8	63.82	-	-	74	-10.18	321	115	H
2	* 2.48353	59.06	Pk	32.3	-27.8	63.56	-	-	74	-10.44	321	115	H
3	* 2.4835	42.56	VA1T	32.3	-27.8	47.06	54	-6.94	-	-	321	115	H
4	* 2.48447	37.27	VA1T	32.3	-27.8	41.77	54	-12.23	-	-	321	115	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

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### VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/Filtr/Pa d (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	58.7	Pk	32.3	-27.8	63.2	-	-	74	-10.8	268	385	V
2	* 2.48356	60.27	Pk	32.3	-27.8	64.77	-	-	74	-9.23	268	385	V
3	* 2.4835	42.25	VA1T	32.3	-27.8	46.75	54	-7.25	-	-	268	385	V
4	* 2.4845	37	VA1T	32.3	-27.8	41.5	54	-12.5	-	-	268	385	V

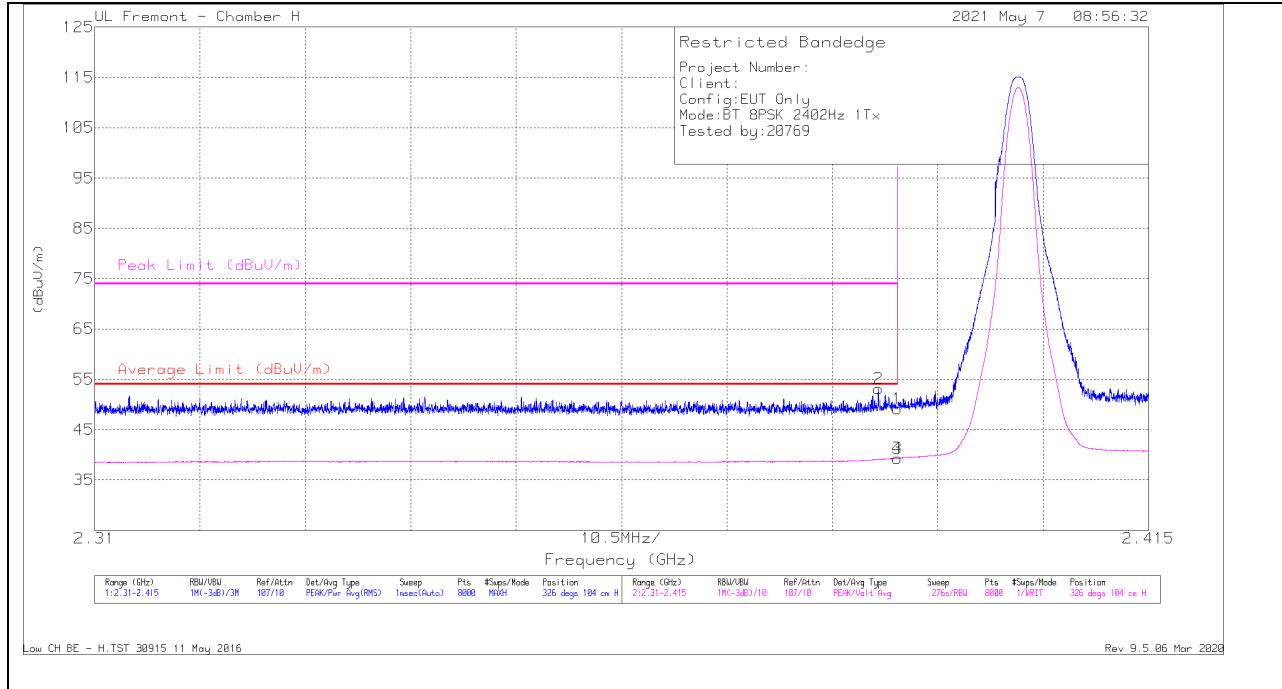
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 Pk - Peak detector  
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

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**ANT 3**

**BANDEDGE (LOW CHANNEL)**

**HORIZONTAL RESULT**

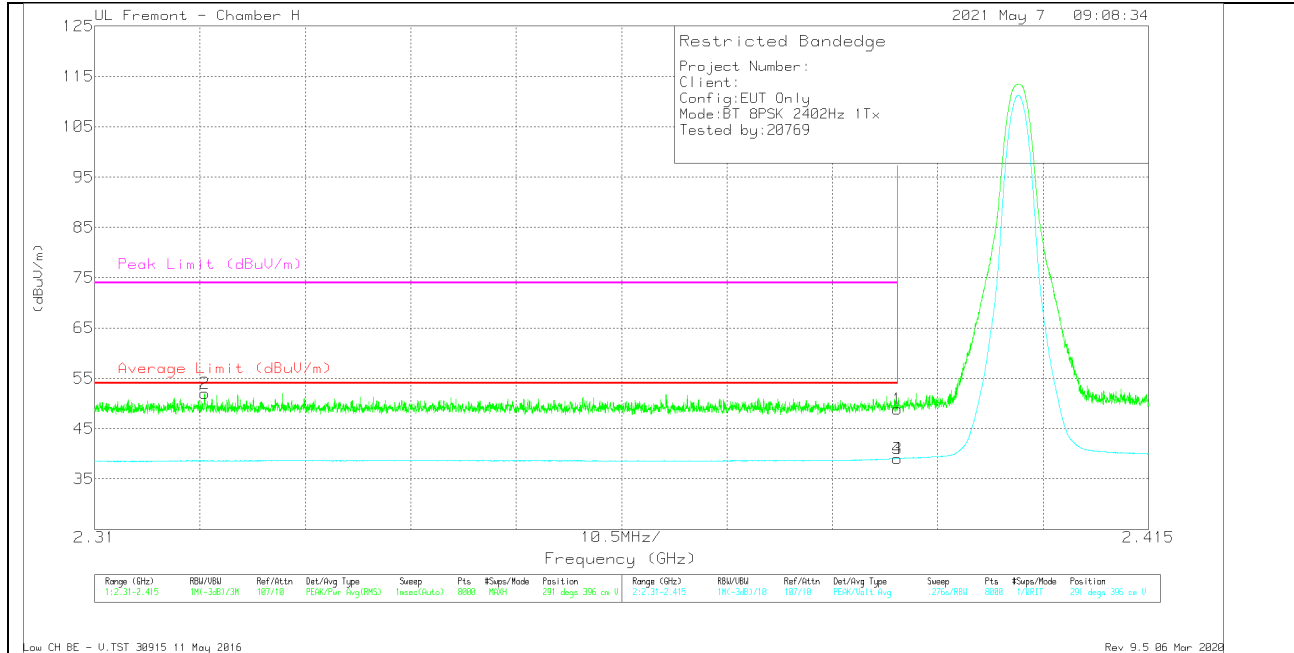


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AFT862 (dB/m)	Amp/Cbl /Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	44.98	Pk	31.8	-27.7	49.08	-	-	74	-24.92	326	104	H
2	* 2.38809	49.06	Pk	31.8	-27.7	53.16	-	-	74	-20.84	326	104	H
3	* 2.39	35.21	VA1T	31.8	-27.7	39.31	54	-14.69	-	-	326	104	H
4	* 2.38997	35.22	VA1T	31.8	-27.7	39.32	54	-14.68	-	-	326	104	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

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### VERTICAL RESULT



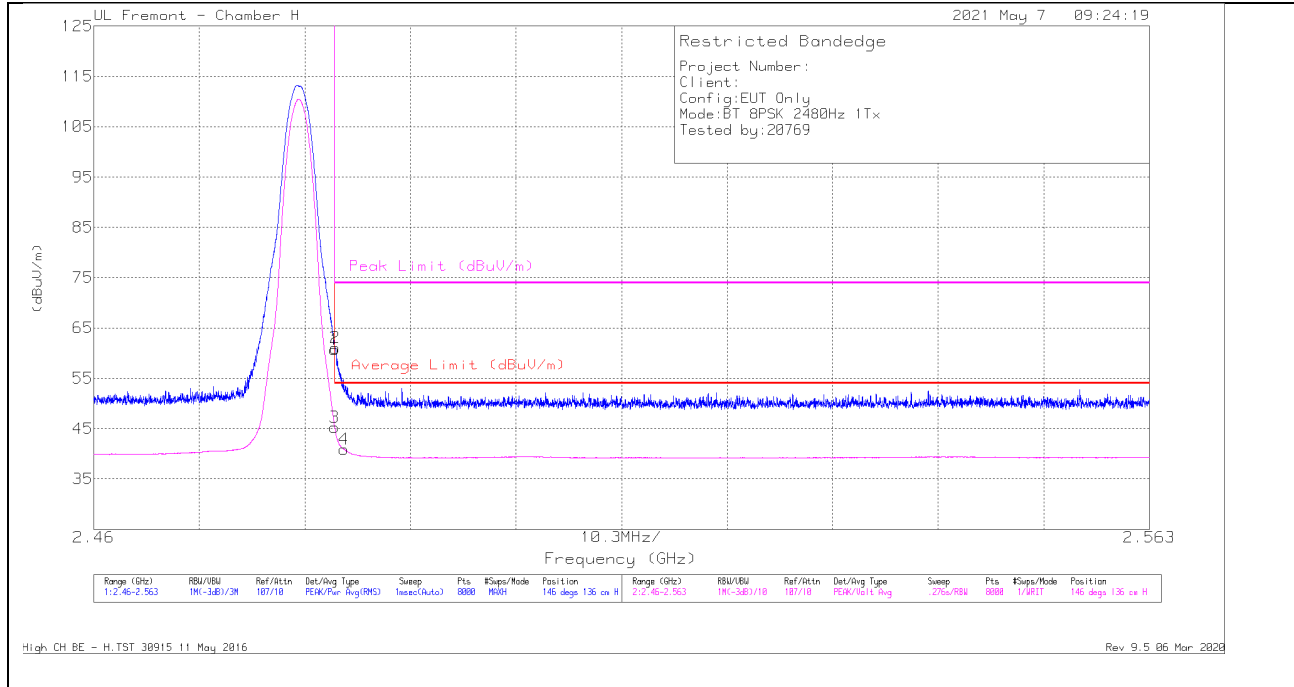
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/Fitr/Pa d (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	44.77	Pk	31.8	-27.7	48.67	-	-	74	-25.13	291	396	V
2	* 2.32096	47.88	Pk	31.8	-27.7	51.98	-	-	74	-22.02	291	396	V
3	* 2.39	34.95	VA1T	31.8	-27.7	39.05	54	-14.95	-	-	291	396	V
4	* 2.38997	34.96	VA1T	31.8	-27.7	39.06	54	-14.94	-	-	291	396	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

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**BANDEDGE (HIGH CHANNEL)**

**HORIZONTAL RESULT**

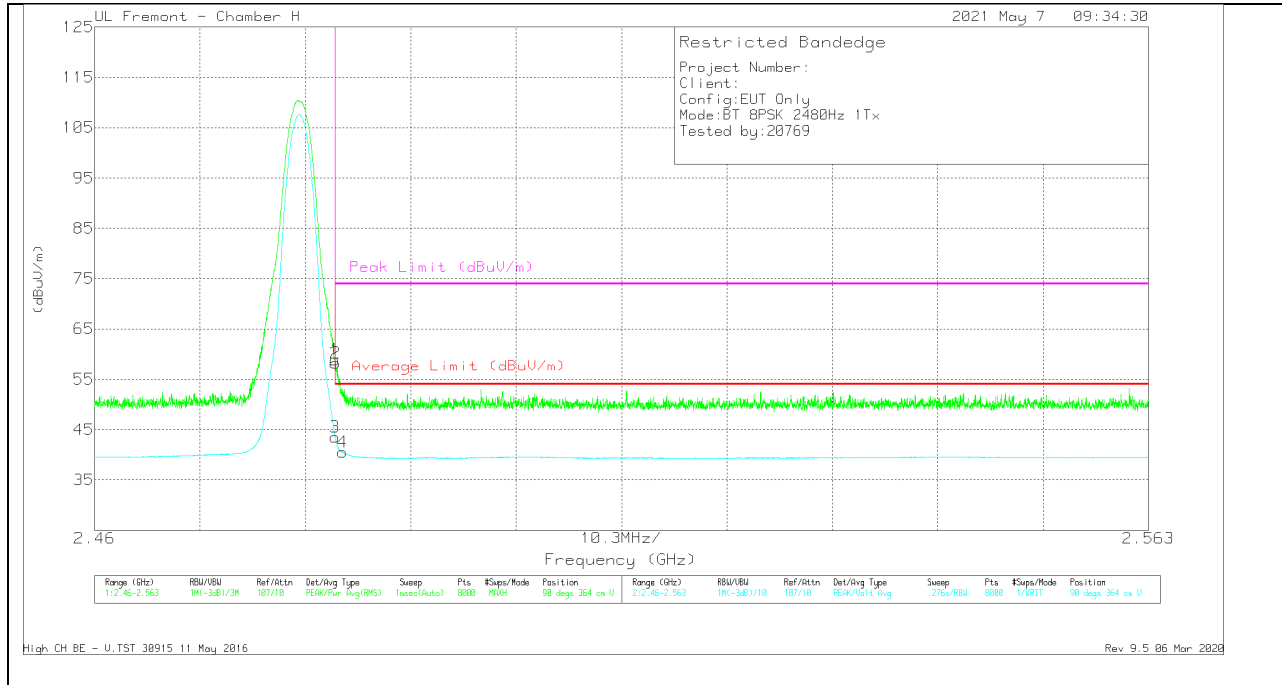


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/Fitr/Paid (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	56.21	Pk	32.3	-27.8	60.71	-	-	74	-13.29	146	136	H
2	* 2.48358	56.54	Pk	32.3	-27.8	61.04	-	-	74	-12.96	146	136	H
3	* 2.4835	40.79	VA1T	32.3	-27.8	45.29	54	-8.71	-	-	146	136	H
4	* 2.48443	36.38	VA1T	32.3	-27.8	40.88	54	-13.12	-	-	146	136	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

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### VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fitr/Paid (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	54.42	Pk	32.3	-27.8	58.92	-	-	74	-15.08	90	364	V
2	* 2.48353	53.7	Pk	32.3	-27.8	58.2	-	-	74	-15.8	90	364	V
3	* 2.4835	38.99	VA1T	32.3	-27.8	43.49	54	-10.51	-	-	90	364	V
4	* 2.48422	36	VA1T	32.3	-27.8	40.5	54	-13.5	-	-	90	364	V

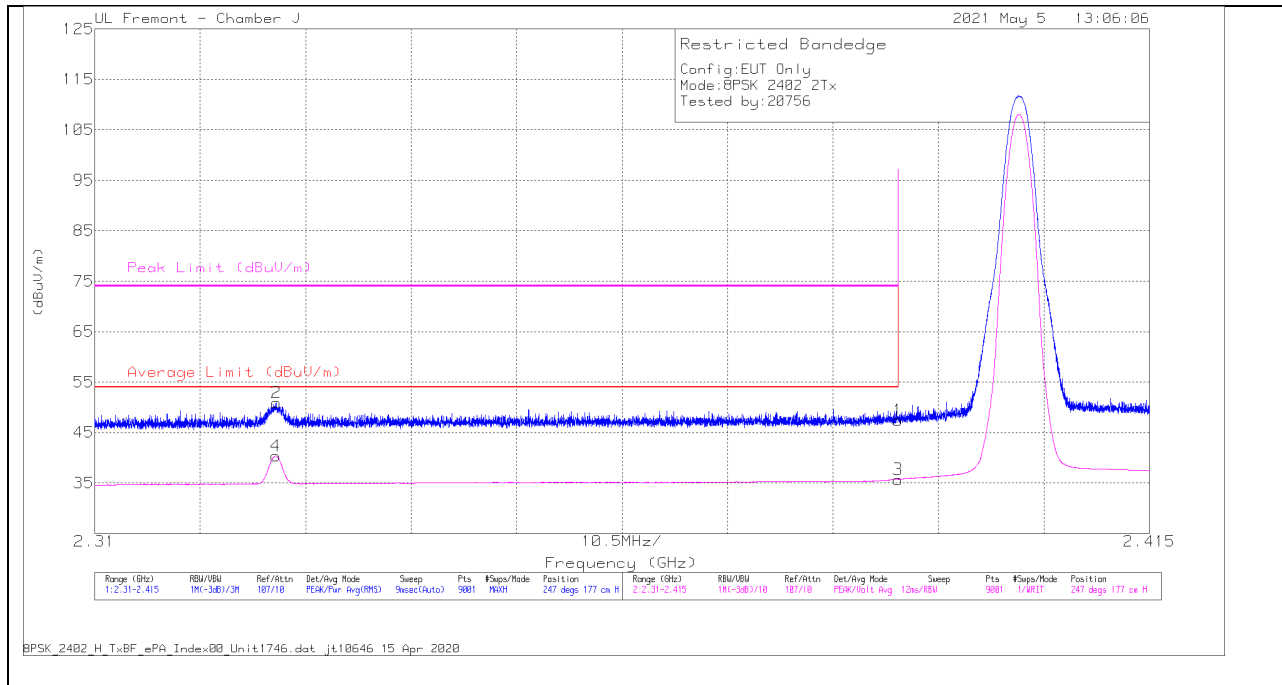
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
Pk - Peak detector  
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

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### 10.1.4. HIGH POWER ENHANCED DATA RATE TXBF 8PSK MODULATION

#### BANDEDGE (LOW CHANNEL)

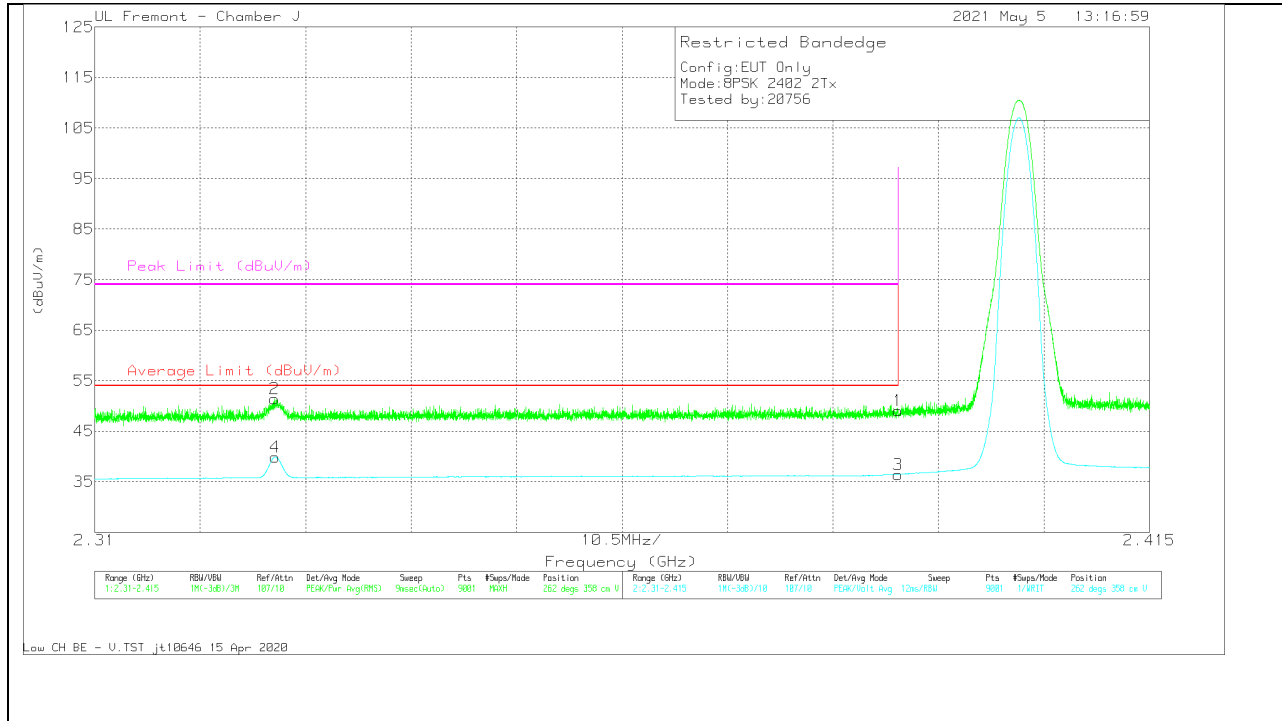
#### HORIZONTAL RESULT



Marker	Frequen cy (GHz)	Meter Reading (dBuV)	Det	AF PRE0100 034 (dB/m)	Amp/Cbl /Ftr/Pad (dB)	Correcte d Reading (dBuV/m )	Average Limit (dBuV/m )	Margin (dB)	Peak Limit (dBuV/m )	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.38999	40.52	Pk	32.1	-25.2	47.42	-	-	74	-26.58	247	177	H
2	* 2.32808	44.43	Pk	31.8	-25.3	50.93	-	-	74	-23.07	247	177	H
3	* 2.38999	26.8	VA1T	32.1	-25.2	35.7	54	-18.3	-	-	247	177	H
4	* 2.32803	33.82	VA1T	31.8	-25.3	40.32	54	-13.68	-	-	247	177	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 RESULT

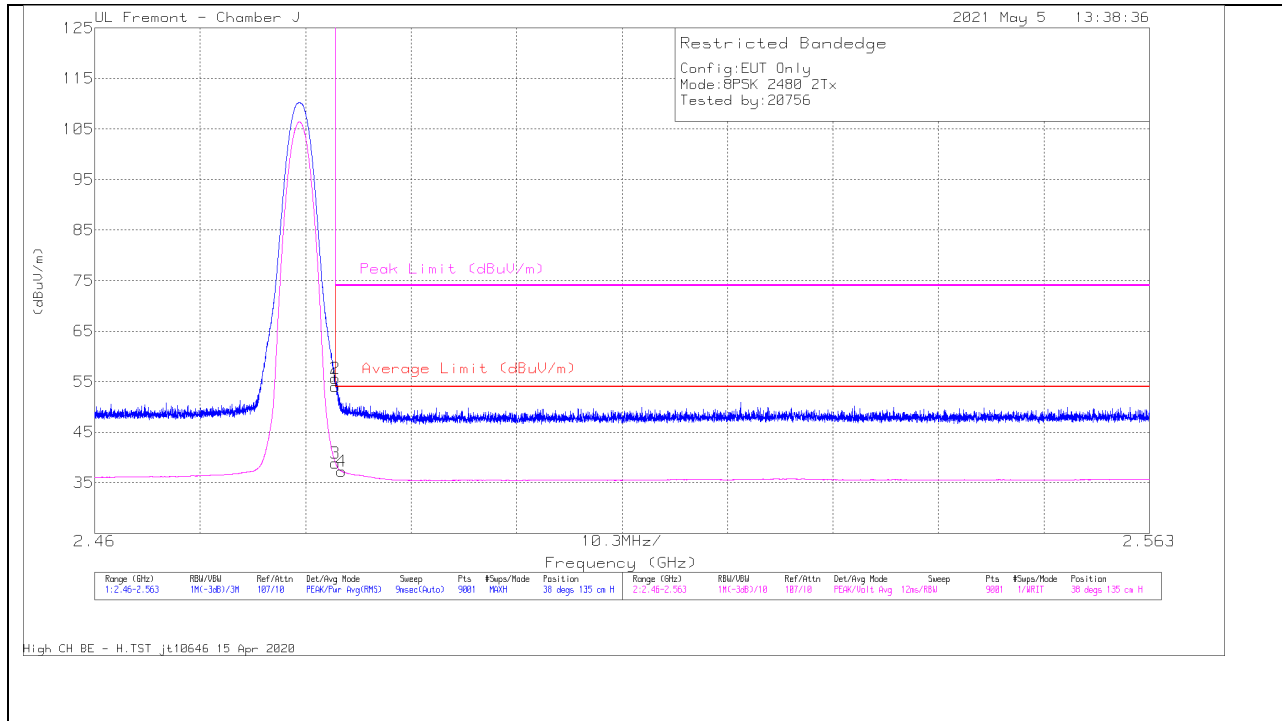


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0100 034 (dB/m)	Amp/Cbl /Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.38999	42.11	Pk	32.1	-25.2	49.01	-	-	74	-24.99	262	358	V
2	* 2.3279	44.92	Pk	31.8	-25.3	51.42	-	-	74	-22.58	262	358	V
3	* 2.38999	29.53	VA1T	32.1	-25.2	36.43	54	-17.57	-	-	262	358	V
4	* 2.32799	33.37	VA1T	31.8	-25.3	39.87	54	-14.13	-	-	262	358	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

**BANEDGE (HIGH CHANNEL)**

**HORIZONTAL RESULT**

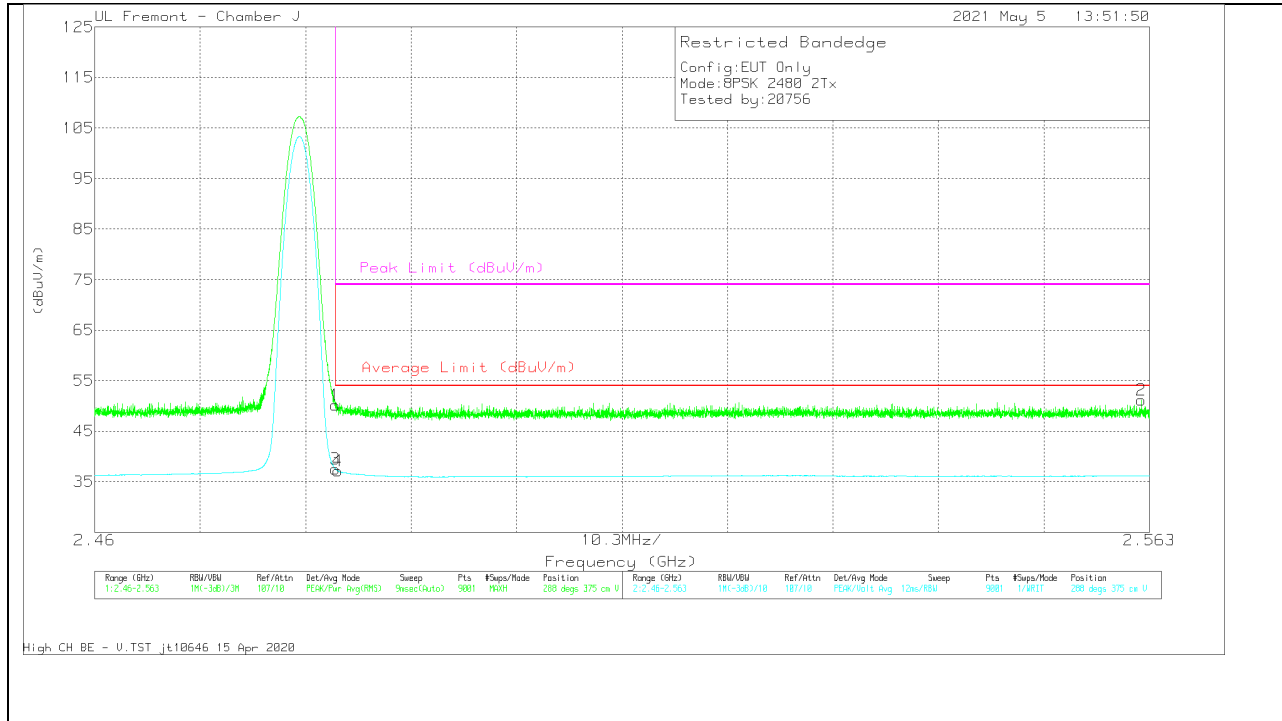


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0100 034 (dB/m)	Amp/Cbl /Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	46.68	Pk	32.5	-25.2	53.98	-	-	74	-20.02	38	135	H
2	* 2.48352	48.37	Pk	32.5	-25.2	55.67	-	-	74	-18.33	38	135	H
3	* 2.48351	31.59	VA1T	32.5	-25.2	38.89	54	-15.11	-	-	38	135	H
4	* 2.48411	29.94	VA1T	32.5	-25.2	37.24	54	-16.76	-	-	38	135	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 RESULT



Marker	Frequen- cy (GHz)	Meter Reading (dBuV)	Det	AF PRE0100 034 (dB/m)	Amp/Cbl /Ftr/Pad (dB)	Correcte d Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	42.82	Pk	32.5	-25.2	50.12	-	-	74	-23.88	288	375	V
2	2.56221	43.62	Pk	32.6	-25.1	51.12	-	-	74	-22.88	288	375	V
3	* 2.48351	30.2	VA1T	32.5	-25.2	37.5	54	-16.5	-	-	288	375	V
4	* 2.48373	29.83	VA1T	32.5	-25.2	37.13	54	-16.87	-	-	288	375	V

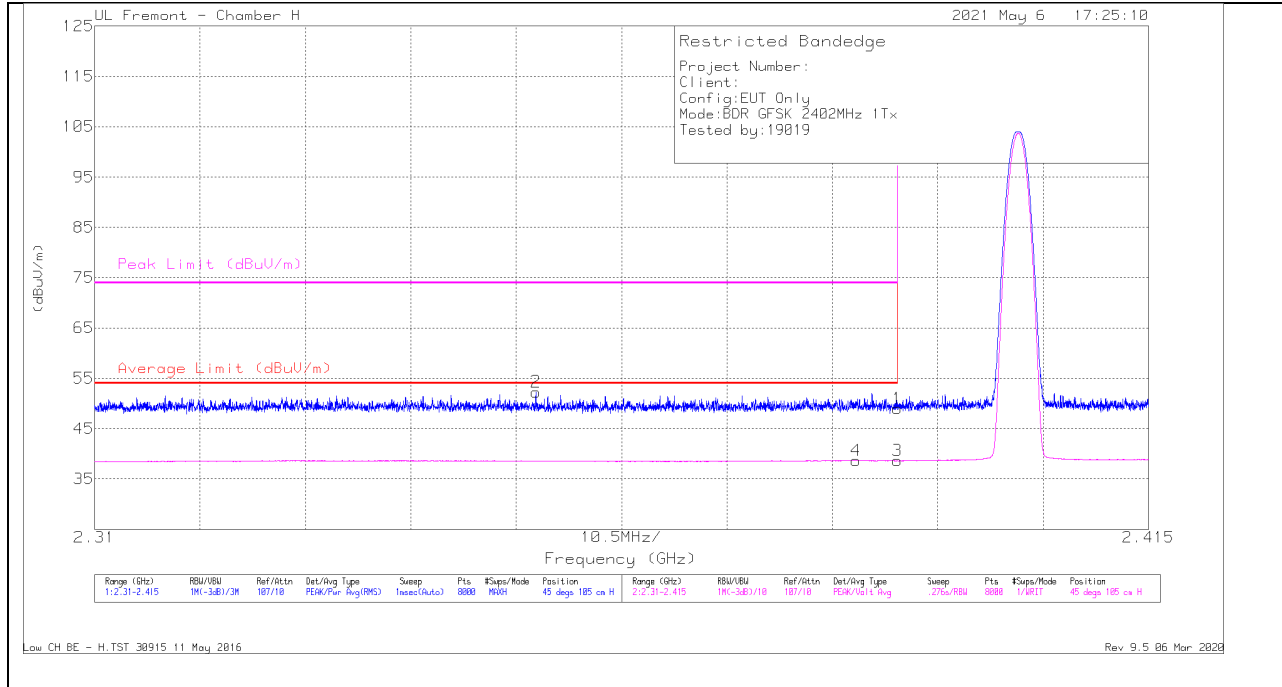
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 Pk - Peak detector  
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

### 10.1.5. LOW POWER BASIC DATA RATE GFSK MODULATION

**ANT 4**

**BANDEDGE (LOW CHANNEL)**

**HORIZONTAL RESULT**

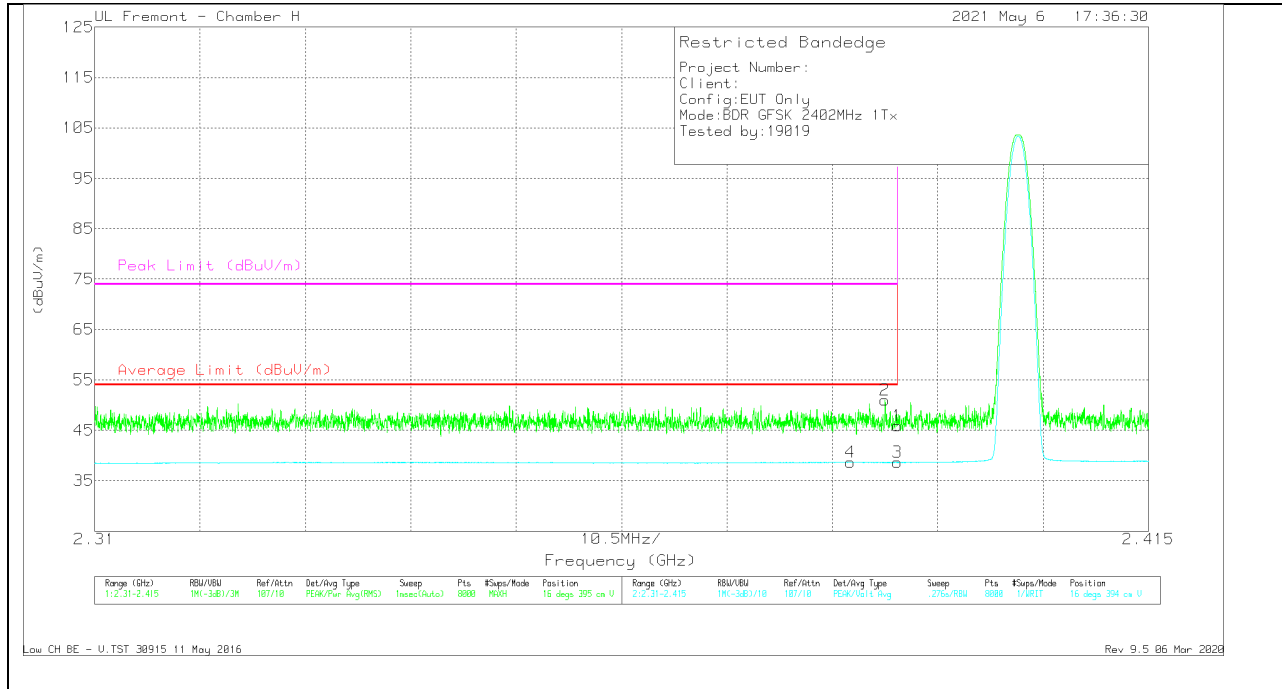


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/Ftr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	44.96	Pk	31.8	-27.7	49.06	-	-	74	-24.94	45	105	H
2	* 2.35396	48.21	Pk	31.8	-27.7	52.31	-	-	74	-21.69	45	105	H
3	* 2.39	34.51	VA1T	31.8	-27.7	38.61	54	-15.39	-	-	45	105	H
4	* 2.38589	34.6	VA1T	31.8	-27.7	38.7	54	-15.3	-	-	45	105	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

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### VERTICAL RESULT



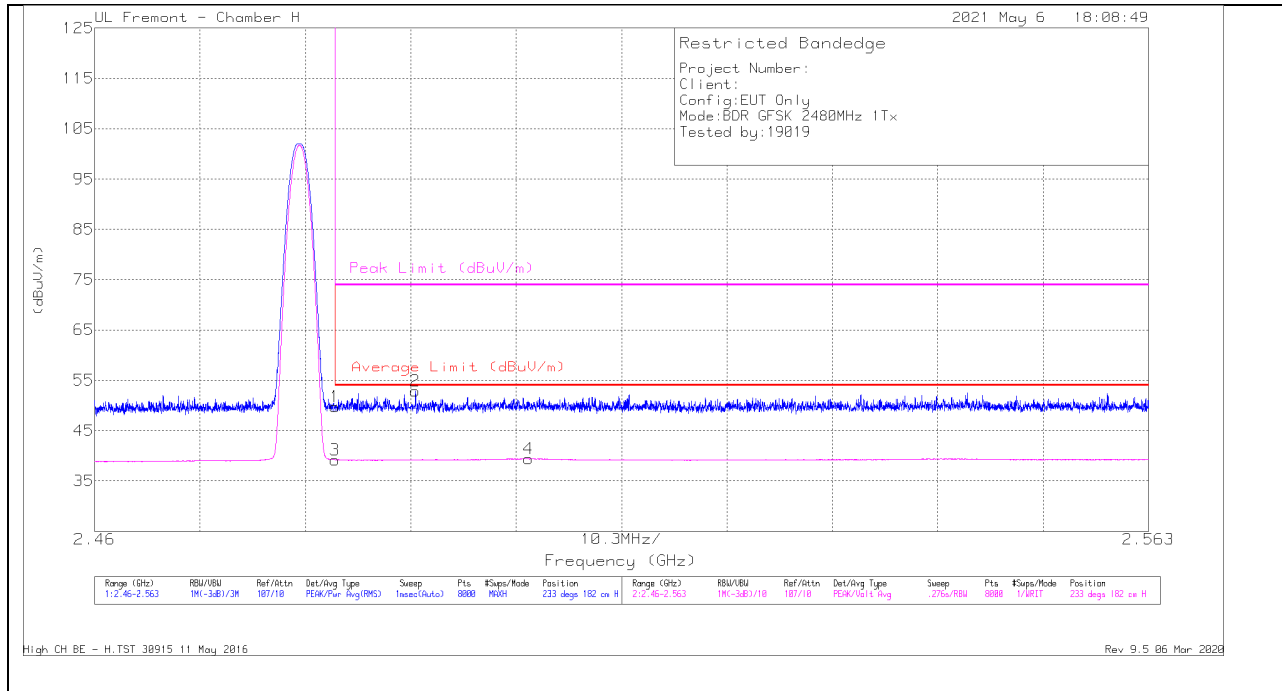
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/Fitr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polariz y
1	* 2.39	41.75	Pk	31.8	-27.7	45.85	-	-	74	-28.15	16	395	V
2	* 2.38874	46.87	Pk	31.8	-27.7	50.97	-	-	74	-23.03	16	395	V
3	* 2.39	34.51	VA1T	31.8	-27.7	38.61	54	-15.39	-	-	16	394	V
4	* 2.38532	34.59	VA1T	31.8	-27.7	38.69	54	-15.31	-	-	16	394	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

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**BANDEGE (HIGH CHANNEL)**

**HORIZONTAL RESULT**

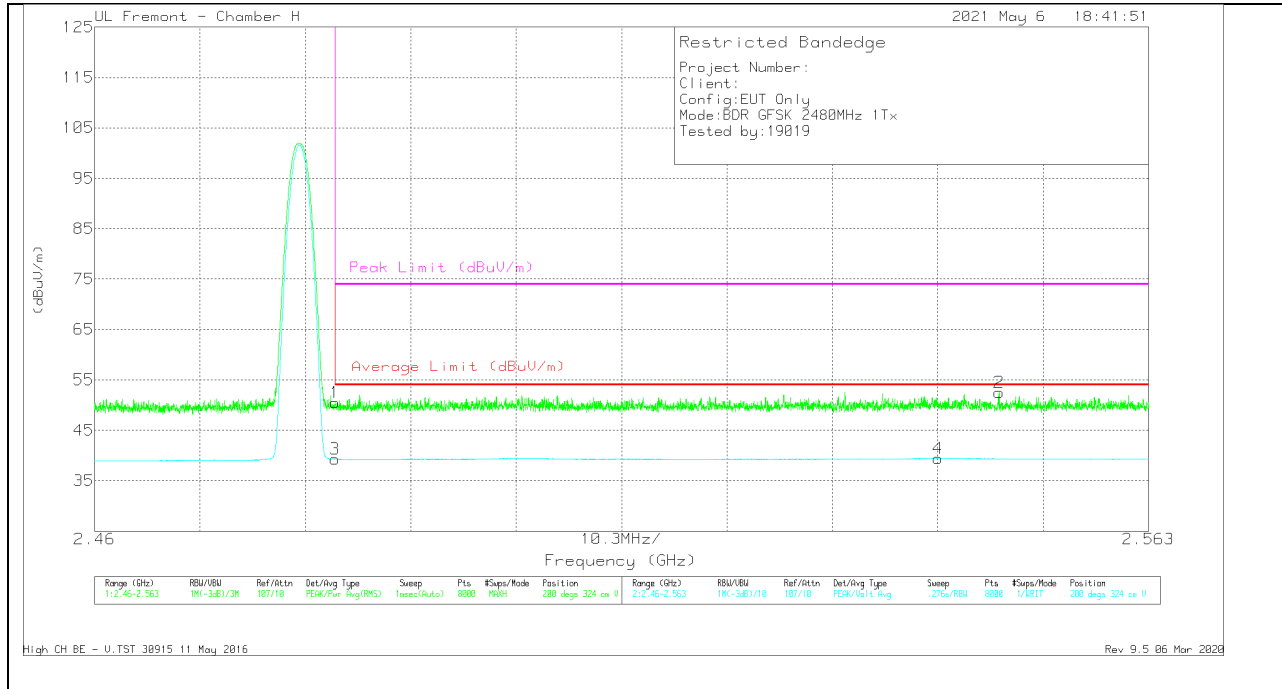


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/Ftr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	45.25	Pk	32.3	-27.8	49.75	-	-	74	-24.25	233	182	H
2	* 2.49134	48.28	Pk	32.4	-27.8	52.88	-	-	74	-21.12	233	182	H
3	* 2.4835	34.72	VA1T	32.3	-27.8	39.22	54	-14.78	-	-	233	182	H
4	2.5024	34.72	VA1T	32.4	-27.7	39.42	54	-14.58	-	-	233	182	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

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### VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	45.97	Pk	32.3	-27.8	50.47	-	-	74	-23.53	200	324	V
3	* 2.4835	34.74	VA1T	32.3	-27.8	39.24	54	-14.76	-	-	200	324	V
4	2.54245	34.74	VA1T	32.4	-27.7	39.44	54	-14.56	-	-	200	324	V
2	2.5484	47.87	Pk	32.4	-27.8	52.47	-	-	74	-21.53	200	324	V

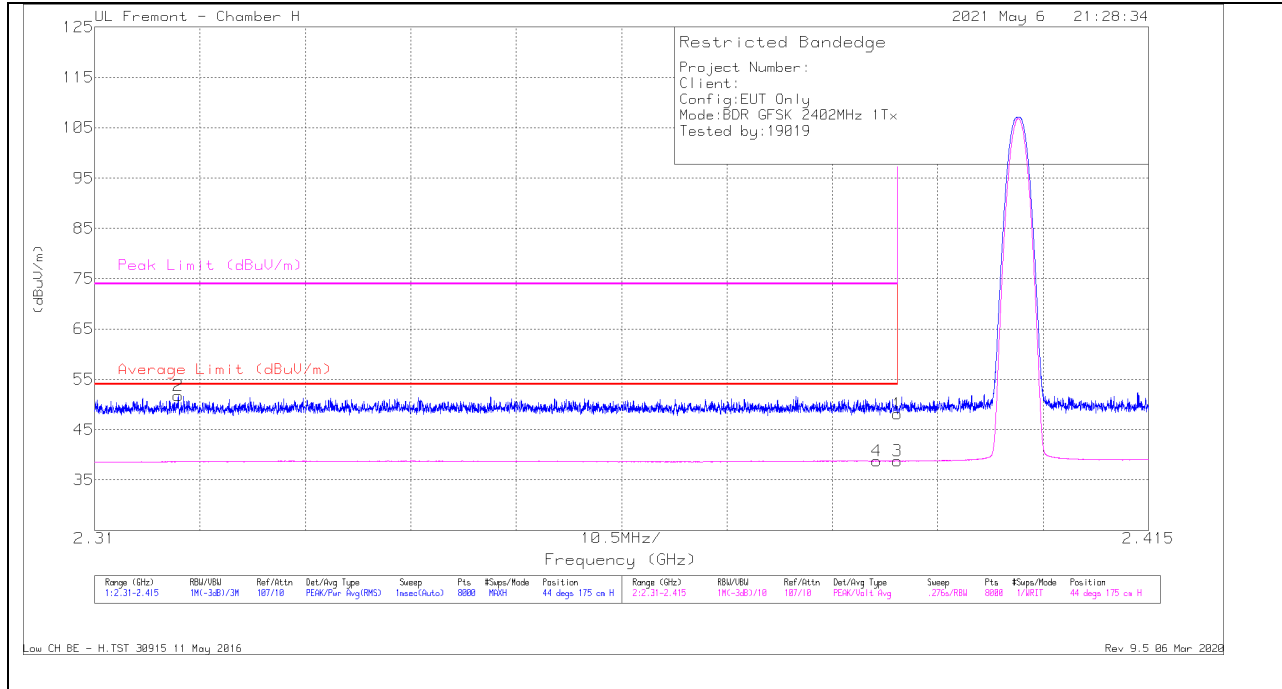
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
Pk - Peak detector  
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

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**ANT 3**

**BANEDGE (LOW CHANNEL)**

**HORIZONTAL RESULT**

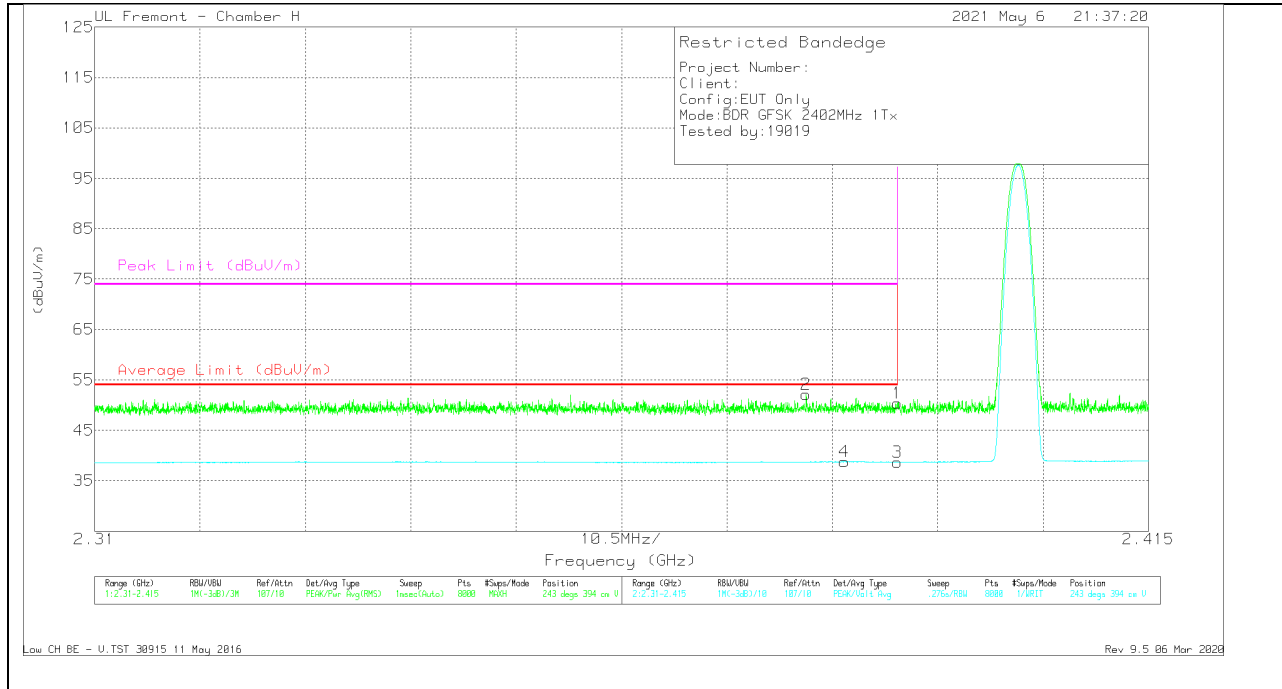


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/Ftr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	44.09	Pk	31.8	-27.7	48.19	-	-	74	-25.81	44	175	H
2	* 2.31832	47.51	Pk	31.8	-27.6	51.71	-	-	74	-22.29	44	175	H
3	* 2.39	34.66	VA1T	31.8	-27.7	38.76	54	-15.24	-	-	44	175	H
4	* 2.38794	34.69	VA1T	31.8	-27.7	38.79	54	-15.21	-	-	44	175	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

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### VERTICAL RESULT



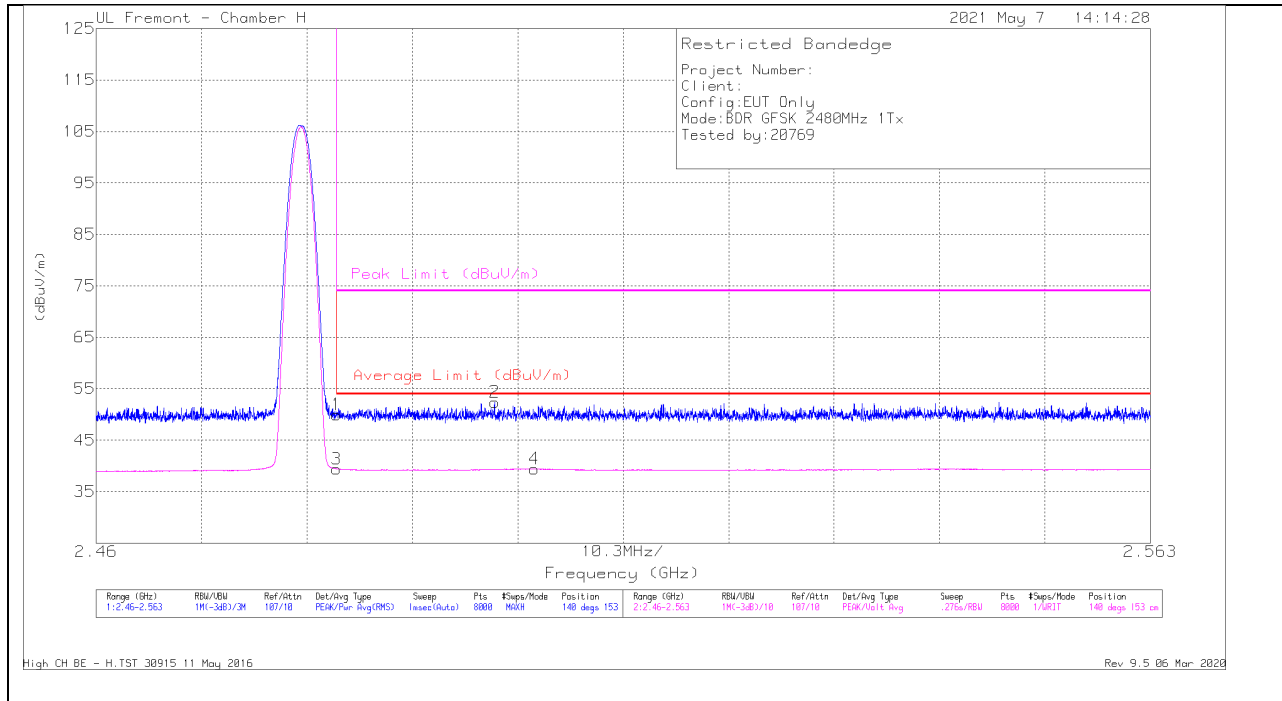
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/Fitr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	46.27	Pk	31.8	-27.7	50.37	-	-	74	-23.63	243	394	V
2	* 2.38089	48.14	Pk	31.8	-27.8	52.14	-	-	74	-21.86	243	394	V
3	* 2.39	34.57	VA1T	31.8	-27.7	38.67	54	-15.33	-	-	243	394	V
4	* 2.38471	34.7	VA1T	31.8	-27.7	38.8	54	-15.2	-	-	243	394	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

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**BANDEDGE (HIGH CHANNEL)**

**HORIZONTAL RESULT**



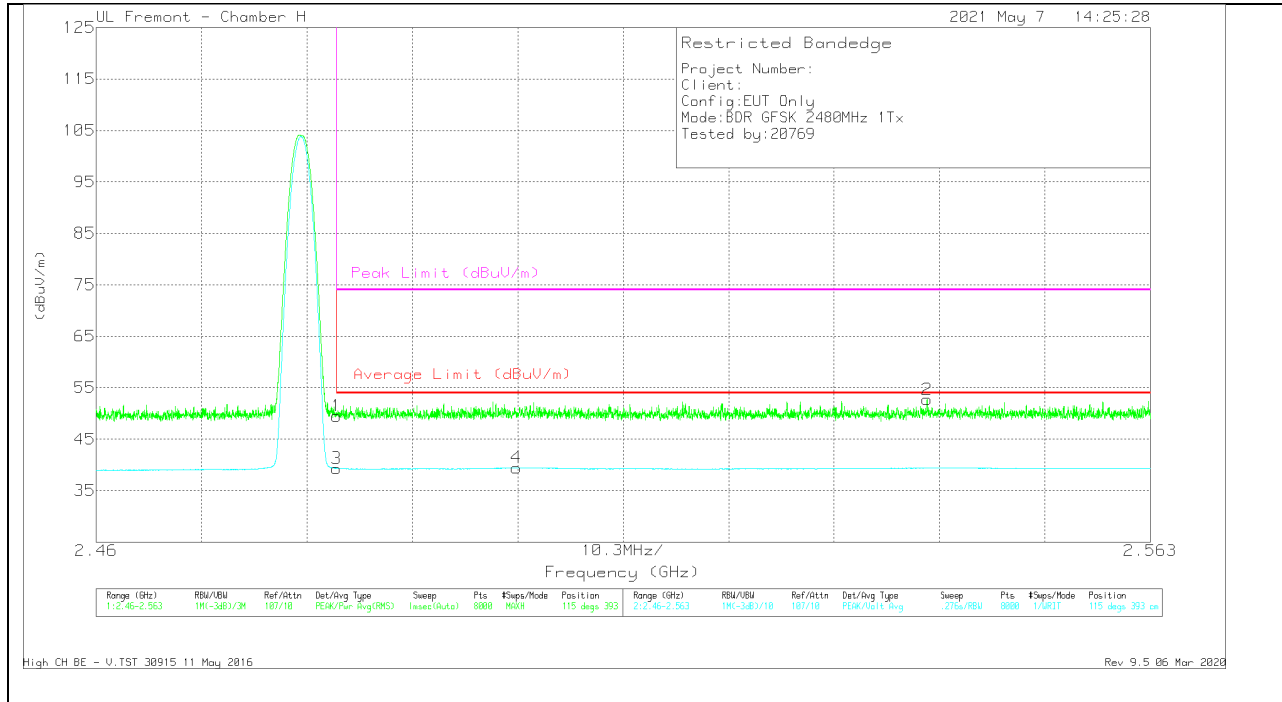
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl /Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	45.45	Pk	32.3	-27.8	49.95	-	-	74	-24.05	140	153	H
2	* 2.49893	47.79	Pk	32.4	-27.8	52.39	-	-	74	-21.61	140	153	H
3	* 2.4835	34.9	VA1T	32.3	-27.8	39.4	54	-14.6	-	-	140	153	H
4	2.50282	34.63	VA1T	32.5	-27.7	39.43	54	-14.57	-	-	140	153	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

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### VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl /Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*2.4835	45	Pk	32.3	-27.8	49.5	-	-	74	-24.5	115	393	V
3	*2.4835	34.79	VA1T	32.3	-27.8	39.29	54	-14.71	-	-	115	393	V
4	2.50106	34.76	VA1T	32.4	-27.7	39.46	54	-14.54	-	-	115	393	V
2	2.54119	48.02	Pk	32.4	-27.7	52.72	-	-	74	-21.28	115	393	V

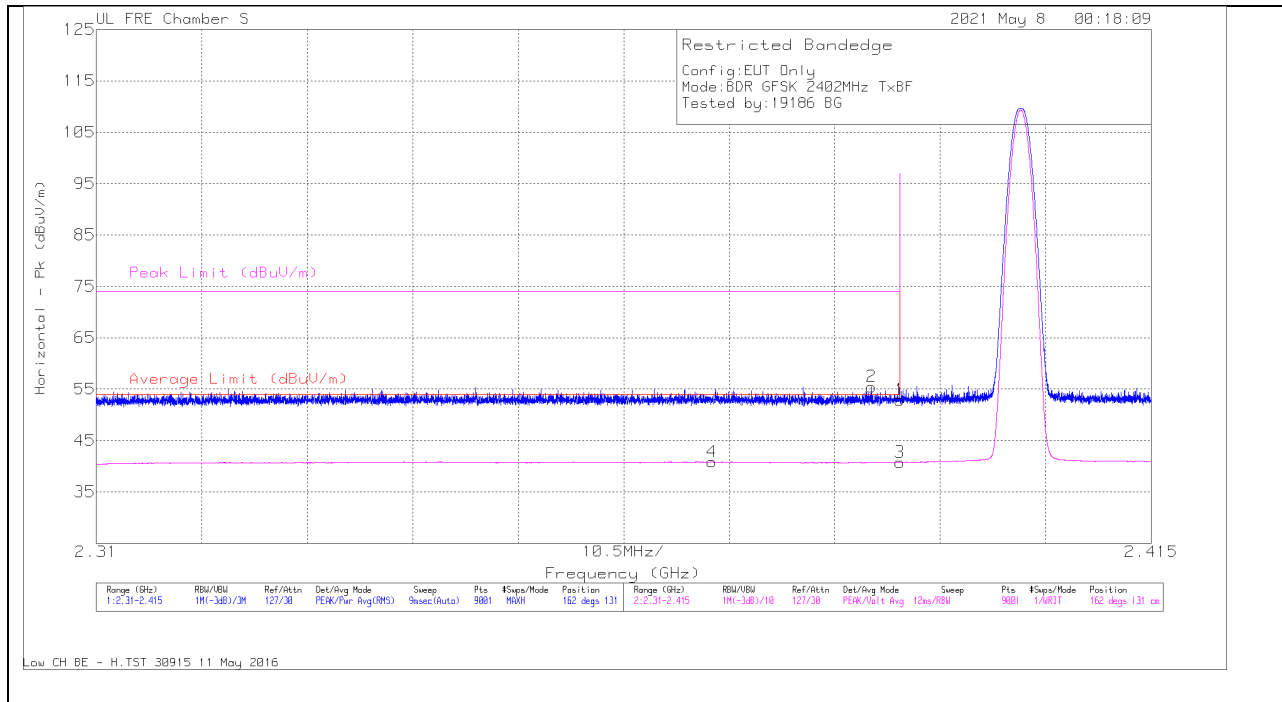
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 Pk - Peak detector  
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

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### 10.1.6. LOW POWER BASIC DATA RATE TXBF GFSK MODULATION

#### BANDEDGE (LOW CHANNEL)

#### HORIZONTAL RESULT

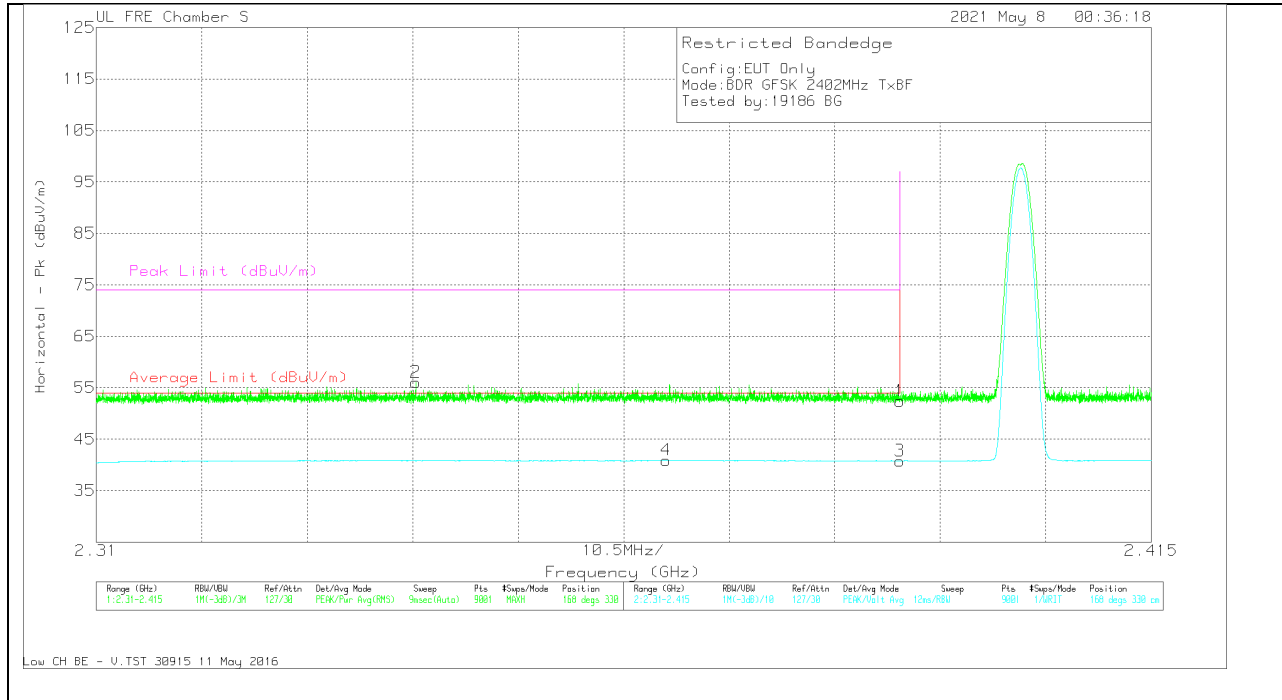


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE021383 3 (dB/m)	Amp/Cb/Filtr/ Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	2.37129	43.55	VA1T	32.4	-35.1	40.85	54	-13.15	-	-	162	131	H
2	2.38717	58.28	PK	32.3	-35.1	55.48	-	-	74	-18.52	162	131	H
1	2.38999	55.74	PK	32.3	-35.1	52.94	-	-	74	-21.06	162	131	H
3	2.38999	43.56	VA1T	32.3	-35.1	40.76	54	-13.24	-	-	162	131	H

Pk - Peak detector

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

### VERTICAL RESULT

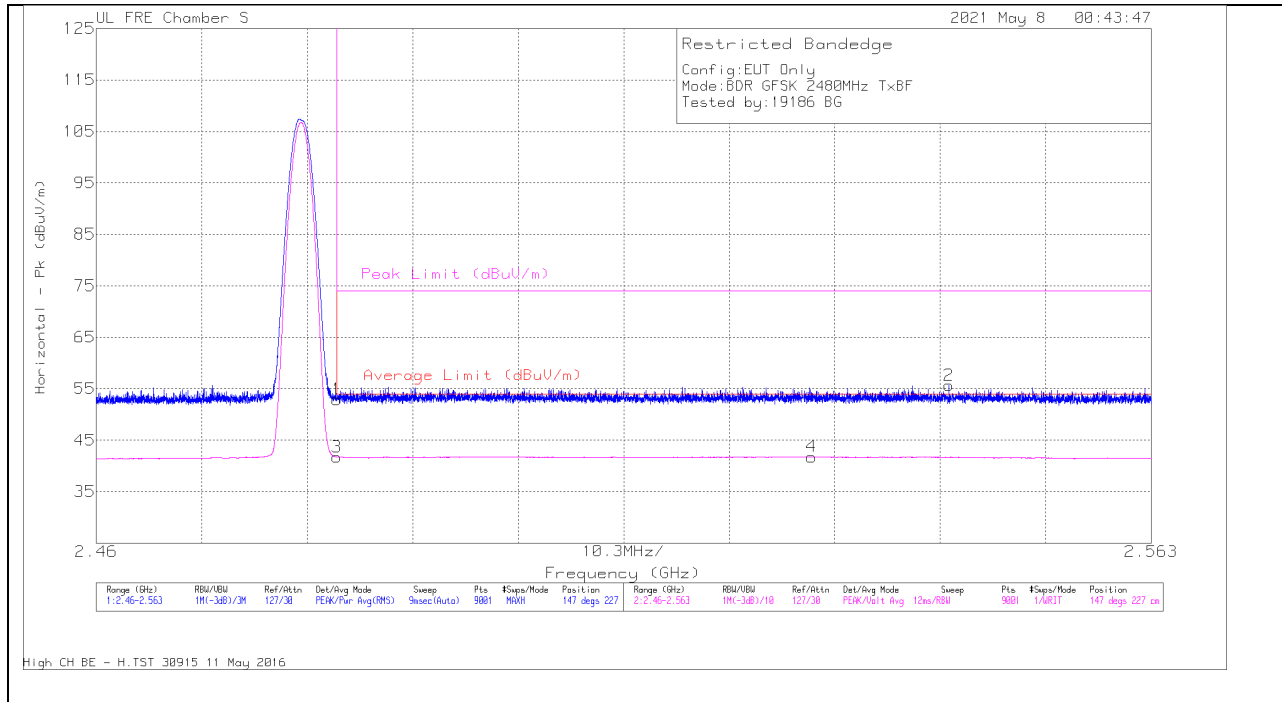


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE021383 3 (dB/m)	Amp/Cbl/Fitr/ Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	2.34179	58.75	Pk	32.4	-35.1	56.05	-	-	74	-17.95	168	330	V
4	2.36673	43.72	VA1T	32.3	-35.1	40.92	54	-13.08	-	-	168	330	V
1	2.38999	55.24	Pk	32.3	-35.1	52.44	-	-	74	-21.56	168	330	V
3	2.38999	43.59	VA1T	32.3	-35.1	40.79	54	-13.21	-	-	168	330	V

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

**BANDEDGE (HIGH CHANNEL)**

**HORIZONTAL RESULT**

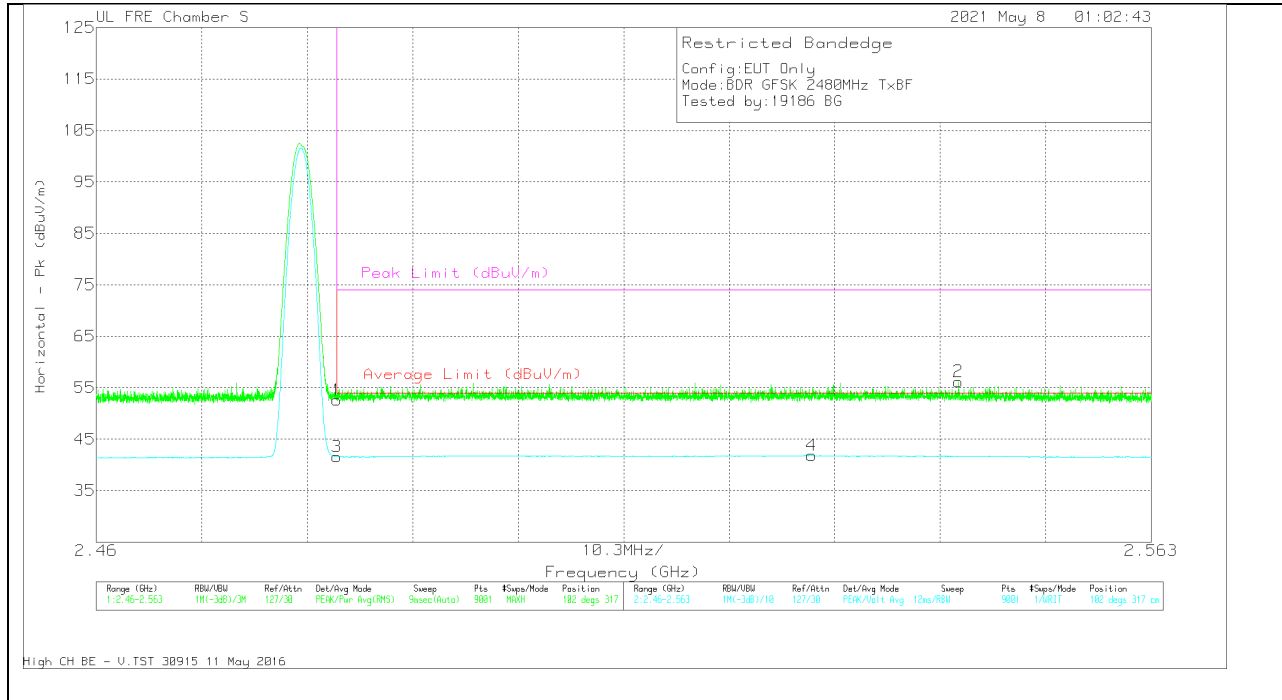


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE021383 3 (dB/m)	Amp/Cb/Filtr/ Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.48351	55.62	PK	32.2	-34.9	52.92	-	-	74	-21.08	147	227	H
3	2.48351	44.42	VA1T	32.2	-34.9	41.72	54	-12.28	-	-	147	227	H
4	2.52983	44.19	VA1T	32.3	-34.7	41.79	54	-12.21	-	-	147	227	H
2	2.54322	58.15	PK	32.2	-34.7	55.65	-	-	74	-18.35	147	227	H

PK - Peak detector

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

### VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE021383 3 (dB/m)	Amp/Cbl/Fitr/ Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.48351	55.3	Pk	32.2	-34.9	52.6	-	-	74	-21.4	102	317	V
3	2.48351	44.29	VA1T	32.2	-34.9	41.59	54	-12.41	-	-	102	317	V
4	2.52984	44.24	VA1T	32.3	-34.7	41.84	54	-12.16	-	-	102	317	V
2	2.54415	58.7	Pk	32.2	-34.7	56.2	-	-	74	-17.8	102	317	V

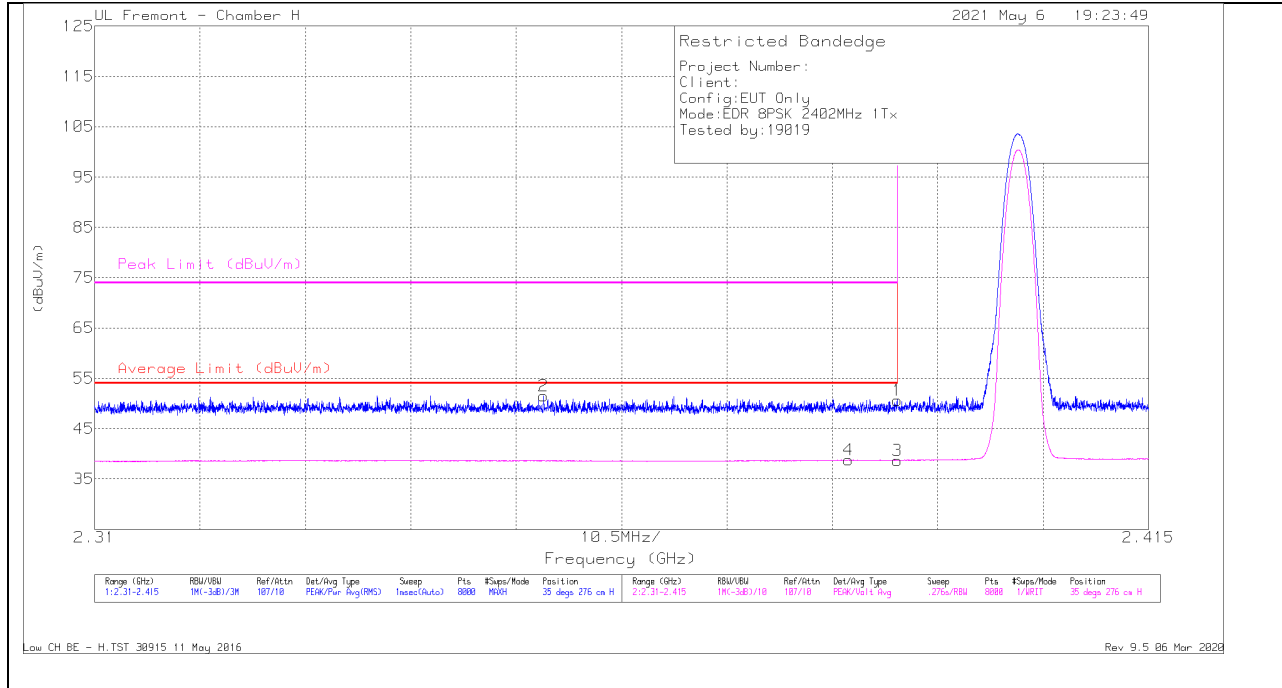
Pk - Peak detector  
 VA1T - FHSS: Linear Voltage Average  $V_B=1/T_{on}$  where:  $T_{on}$  is transmit duration

# 10.1.7. LOW POWER ENHANCED DATA RATE 8PSK MODULATION

## ANT 4

### BANDEDGE (LOW CHANNEL)

#### HORIZONTAL RESULT

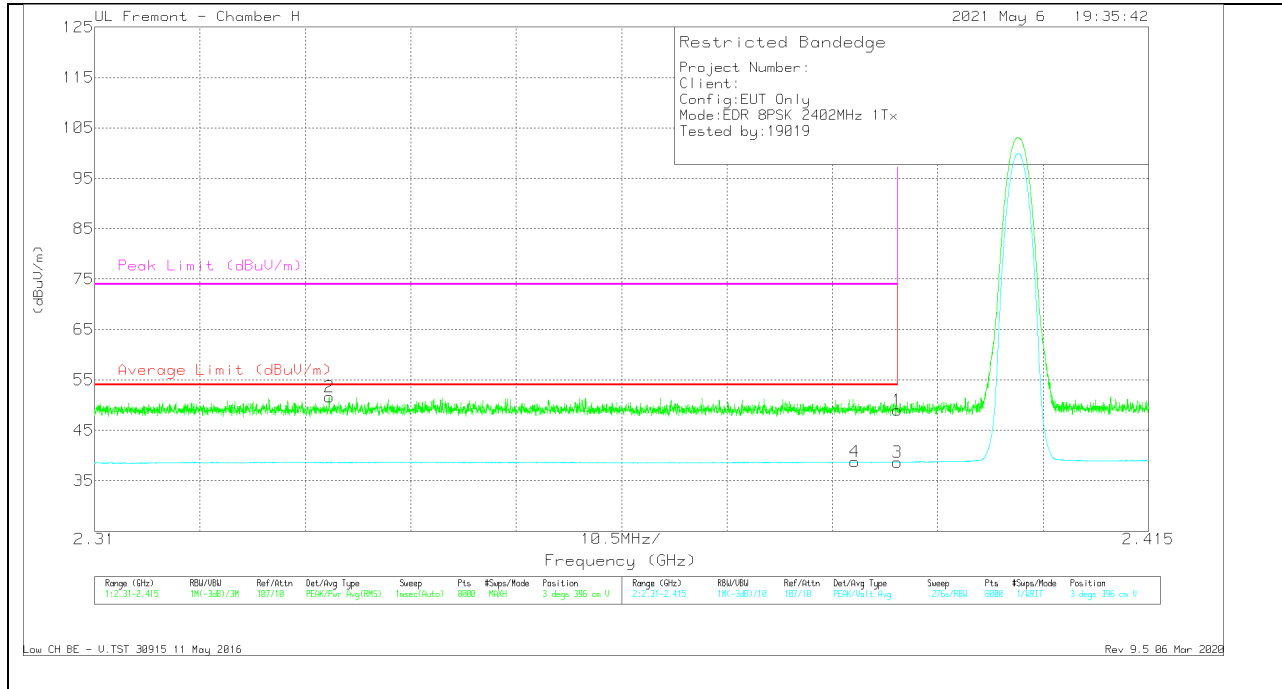


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl /Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	46.55	Pk	31.8	-27.7	50.65	-	-	74	-23.35	35	276	H
2	* 2.35472	47.43	Pk	31.8	-27.7	51.53	-	-	74	-22.47	35	276	H
3	* 2.39	34.56	VA1T	31.8	-27.7	38.66	54	-15.34	-	-	35	276	H
4	* 2.38513	34.68	VA1T	31.8	-27.7	38.78	54	-15.22	-	-	35	276	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

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### VERTICAL RESULT



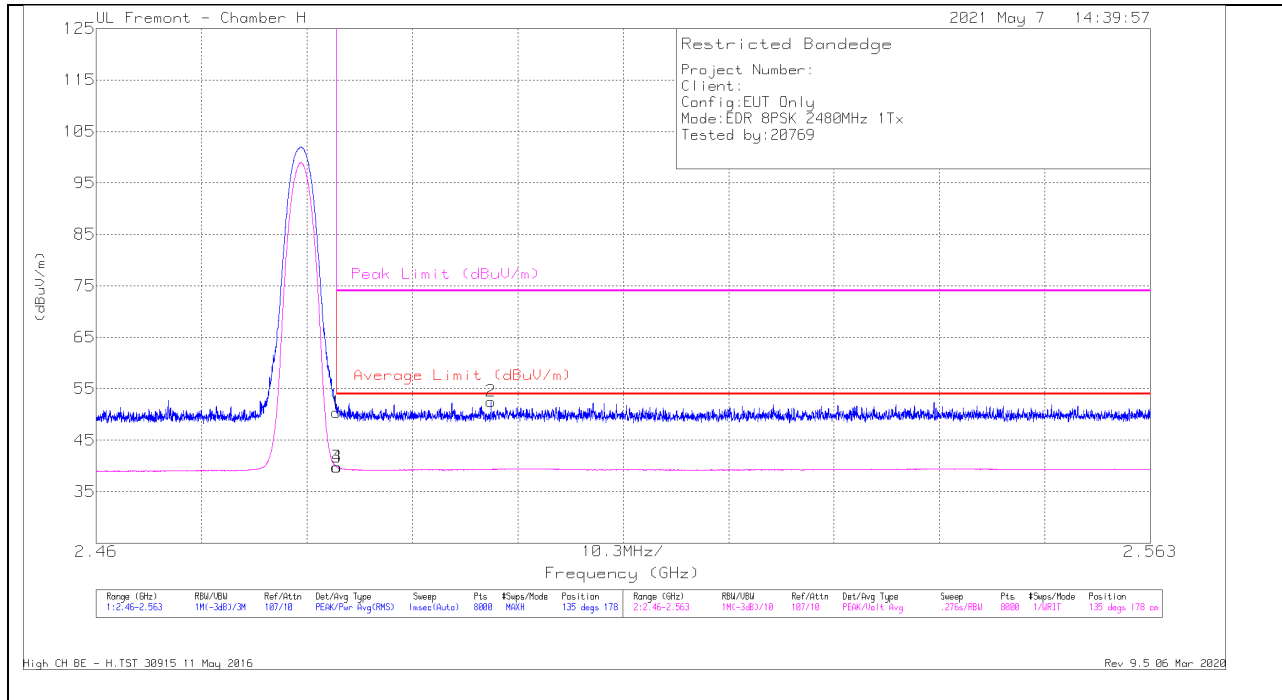
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/Fitr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	44.92	Pk	31.8	-27.7	49.02	-	-	74	-24.98	3	396	V
2	* 2.33337	47.44	Pk	31.8	-27.6	51.64	-	-	74	-22.36	3	396	V
3	* 2.39	34.55	VA1T	31.8	-27.7	38.65	54	-15.35	-	-	3	396	V
4	* 2.38574	34.64	VA1T	31.8	-27.7	38.74	54	-15.26	-	-	3	396	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

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**BANDEGE (HIGH CHANNEL)**

**HORIZONTAL RESULT**



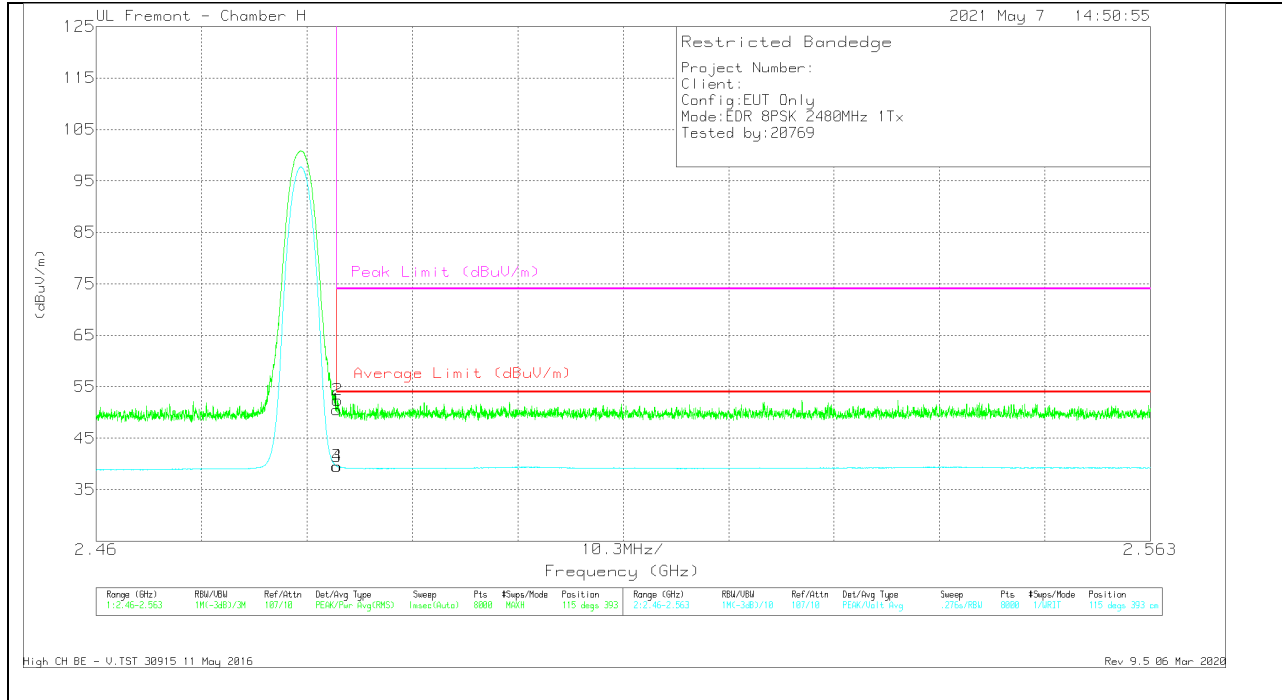
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/Ftr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	45.93	Pk	32.3	-27.8	50.43	-	-	74	-23.57	135	178	H
2	* 2.49858	47.94	Pk	32.4	-27.8	52.54	-	-	74	-21.46	135	178	H
3	* 2.4835	35.3	VA1T	32.3	-27.8	39.8	54	-14.2	-	-	135	178	H
4	* 2.48353	35.28	VA1T	32.3	-27.8	39.78	54	-14.22	-	-	135	178	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

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### VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AFT862 (dB/m)	Amp/Cb/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	46.02	Pk	32.3	-27.8	50.52	-	-	74	-23.48	115	393	V
2	* 2.48358	47.92	Pk	32.3	-27.8	52.42	-	-	74	-21.58	115	393	V
3	* 2.4835	35.06	VA1T	32.3	-27.8	39.56	54	-14.44	-	-	115	393	V
4	* 2.48353	35.05	VA1T	32.3	-27.8	39.55	54	-14.45	-	-	115	393	V

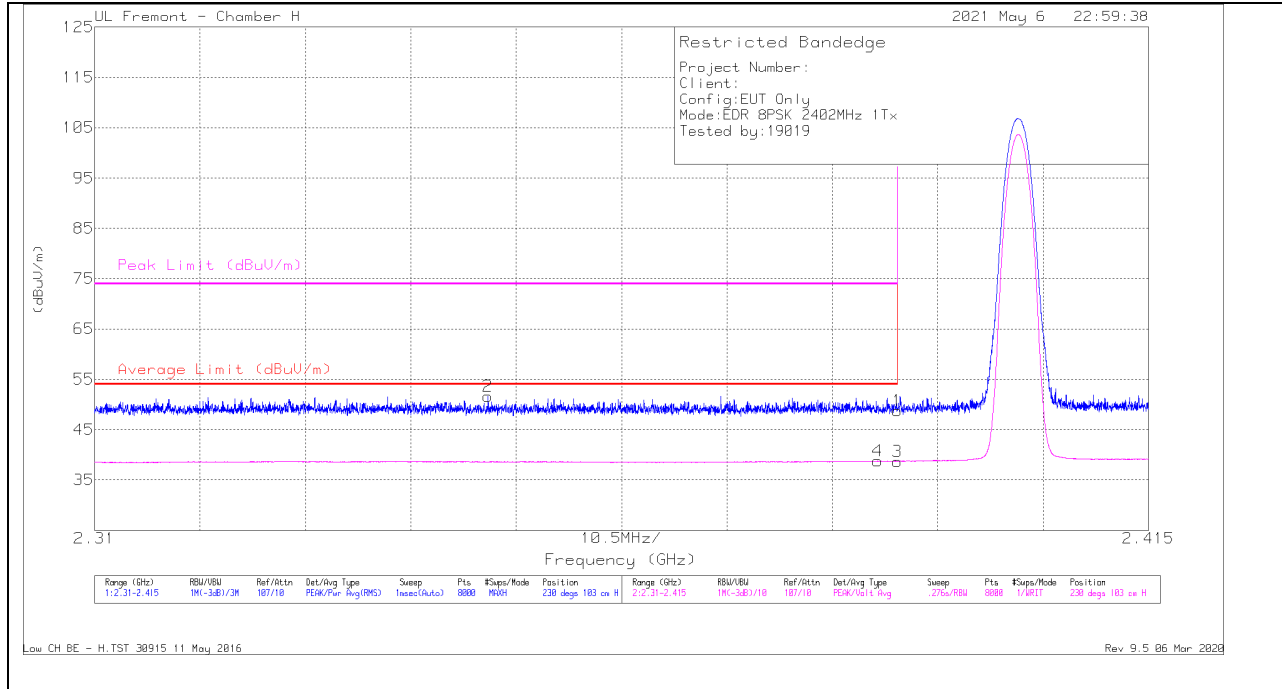
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 Pk - Peak detector  
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

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**ANT 3**

**BANDEDGE (LOW CHANNEL)**

**HORIZONTAL RESULT**

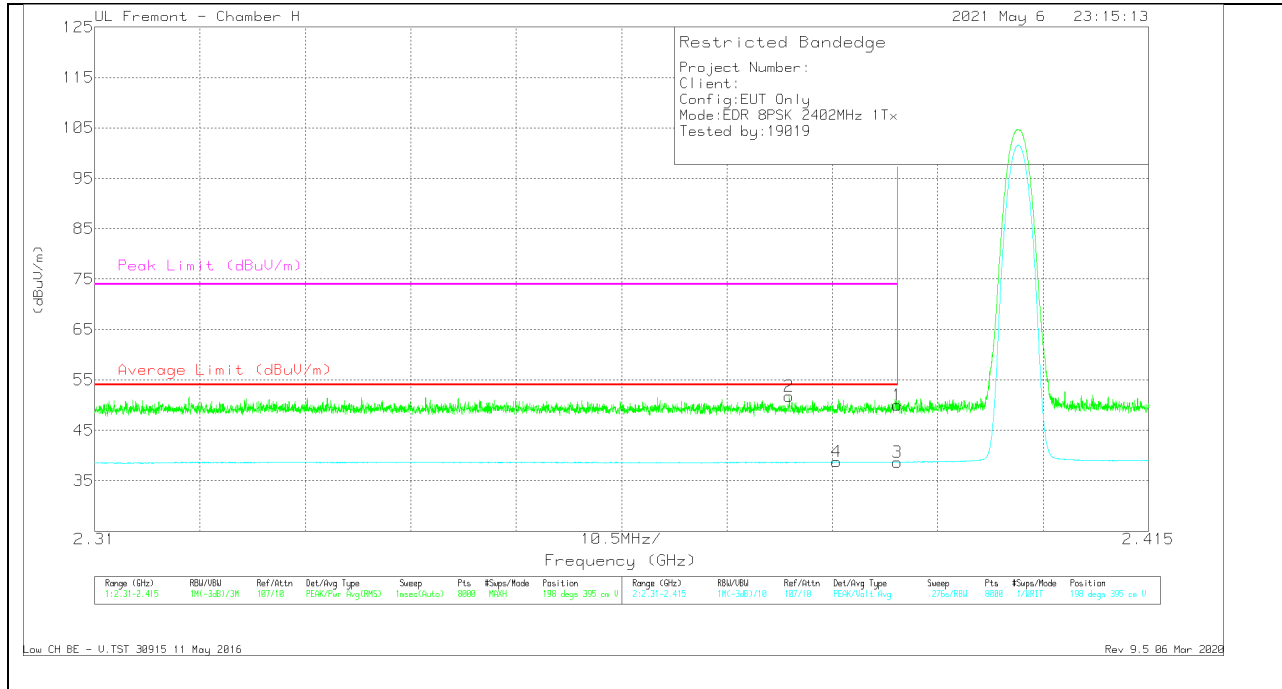


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/Ftr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	44.7	Pk	31.8	-27.7	48.8	-	-	74	-25.2	230	103	H
2	* 2.34918	47.52	Pk	31.8	-27.7	51.62	-	-	74	-22.38	230	103	H
3	* 2.39	34.58	VA1T	31.8	-27.7	38.68	54	-15.32	-	-	230	103	H
4	* 2.38801	34.66	VA1T	31.8	-27.7	38.76	54	-15.24	-	-	230	103	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

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### VERTICAL RESULT



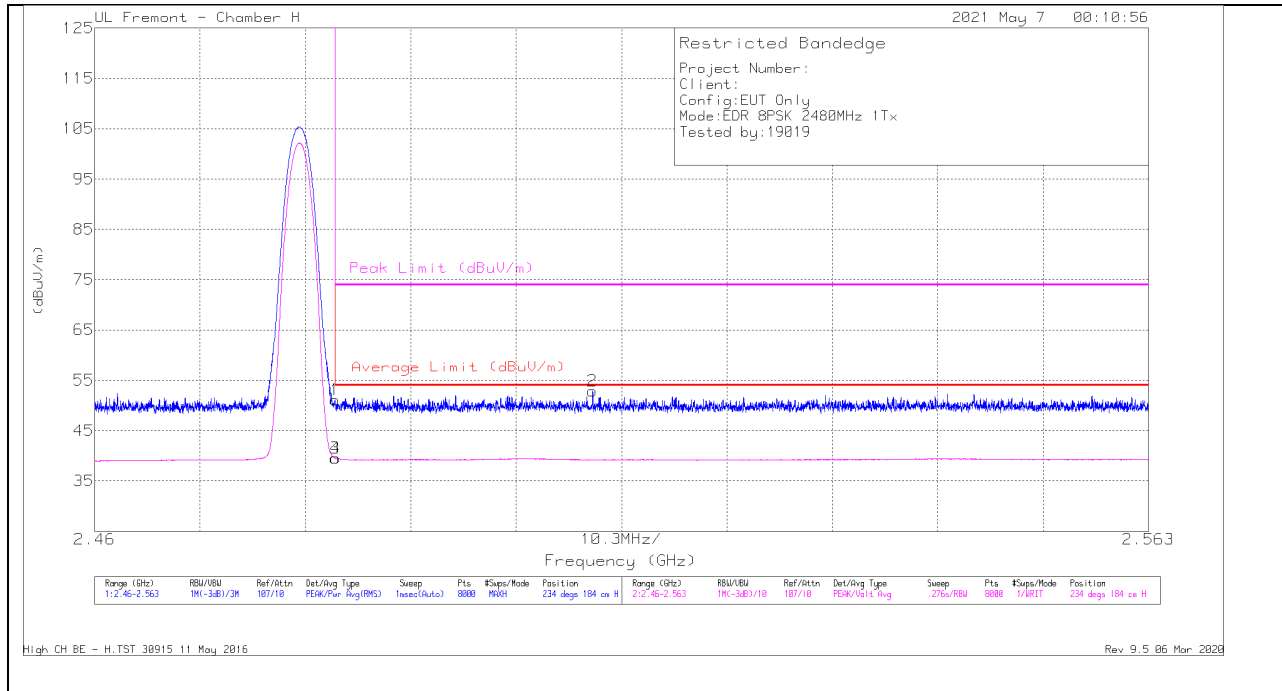
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/Fitr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	45.93	Pk	31.8	-27.7	50.03	-	-	74	-23.97	198	395	V
2	* 2.37919	47.74	Pk	31.8	-27.8	51.74	-	-	74	-22.26	198	395	V
3	* 2.39	34.56	VA1T	31.8	-27.7	38.66	54	-15.34	-	-	198	395	V
4	* 2.38394	34.64	VA1T	31.8	-27.7	38.74	54	-15.26	-	-	198	395	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

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**BANDEGE (HIGH CHANNEL)**

**HORIZONTAL RESULT**

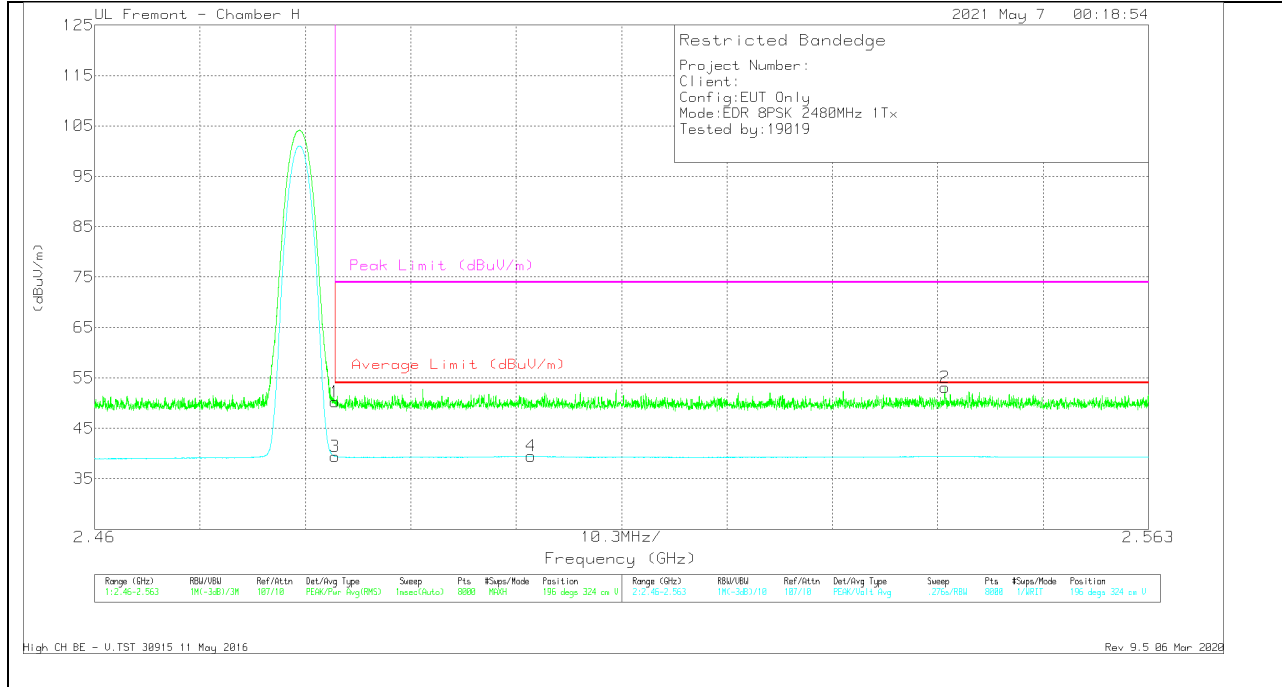


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/Ftr /Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*2.4835	46.6	Pk	32.3	-27.8	51.1	-	-	74	-22.9	234	184	H
3	*2.4835	35.03	VA1T	32.3	-27.8	39.53	54	-14.47	-	-	234	184	H
4	*2.48356	34.99	VA1T	32.3	-27.8	39.49	54	-14.51	-	-	234	184	H
2	2.50868	48.32	Pk	32.4	-27.8	52.92	-	-	74	-21.08	234	184	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

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### VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*2.4835	45.76	Pk	32.3	-27.8	50.26	-	-	74	-23.74	196	324	V
3	*2.4835	34.95	VA1T	32.3	-27.8	39.45	54	-14.55	-	-	196	324	V
4	2.50262	34.78	VA1T	32.4	-27.7	39.48	54	-14.52	-	-	196	324	V
2	2.5431	48.38	Pk	32.4	-27.7	53.08	-	-	74	-20.92	196	324	V

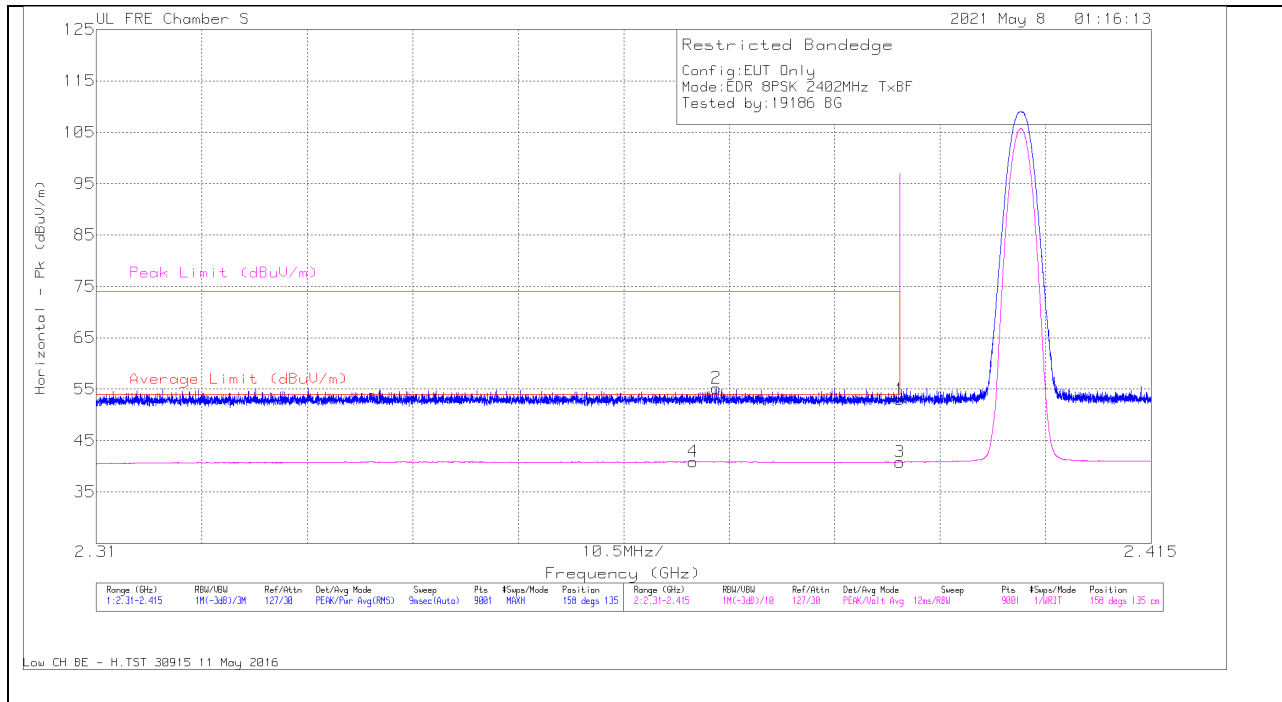
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 Pk - Peak detector  
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

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# 10.1.8. LOW POWER ENHANCED DATA RATE TXBF 8PSK MODULATION

## BANDEDGE (LOW CHANNEL)

### HORIZONTAL RESULT

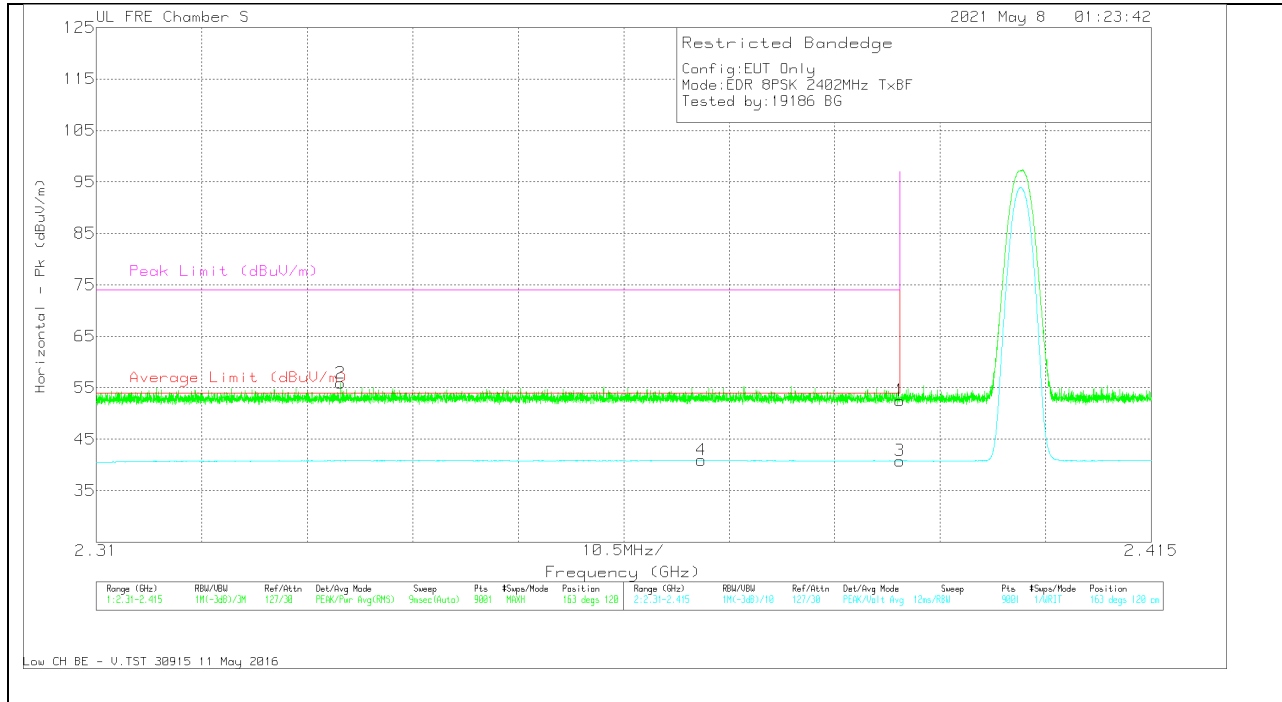


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE021383 3 (dB/m)	Amp/Cb/Filtr/ Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	2.36939	43.61	VA1T	32.4	-35.1	40.91	54	-13.09	-	-	158	135	H
2	2.37171	57.91	PK	32.4	-35.1	55.21	-	-	74	-18.79	158	135	H
1	2.38999	55.78	PK	32.3	-35.1	52.98	-	-	74	-21.02	158	135	H
3	2.38999	43.62	VA1T	32.3	-35.1	40.82	54	-13.18	-	-	158	135	H

Pk - Peak detector

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

### VERTICAL RESULT

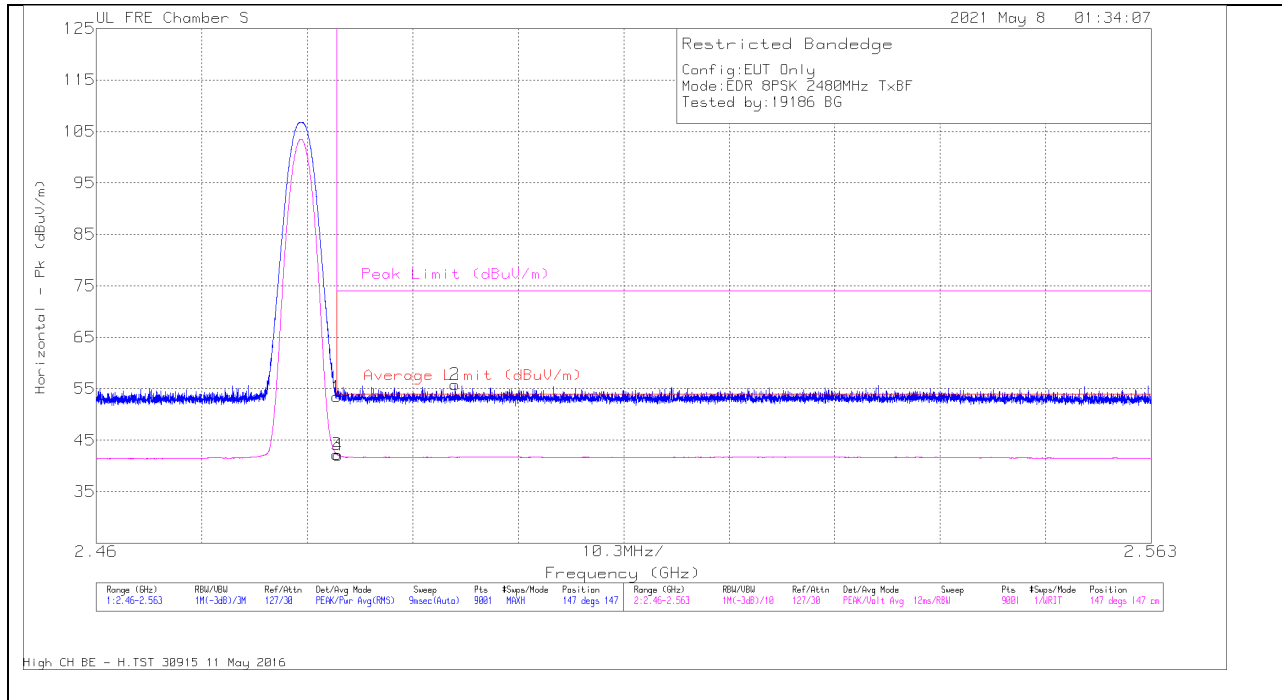


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE021383 3 (dB/m)	Amp/Cbl/Fitr/ Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	2.33431	58.59	Pk	32.4	-35.1	55.89	-	-	74	-18.11	163	120	V
4	2.37023	43.64	VA1T	32.4	-35.1	40.94	54	-13.06	-	-	163	120	V
1	2.38999	55.31	PK	32.3	-35.1	52.51	-	-	74	-21.49	163	120	V
3	2.38999	43.6	VA1T	32.3	-35.1	40.8	54	-13.2	-	-	163	120	V

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

**BANDEGE (HIGH CHANNEL)**

**HORIZONTAL RESULT**



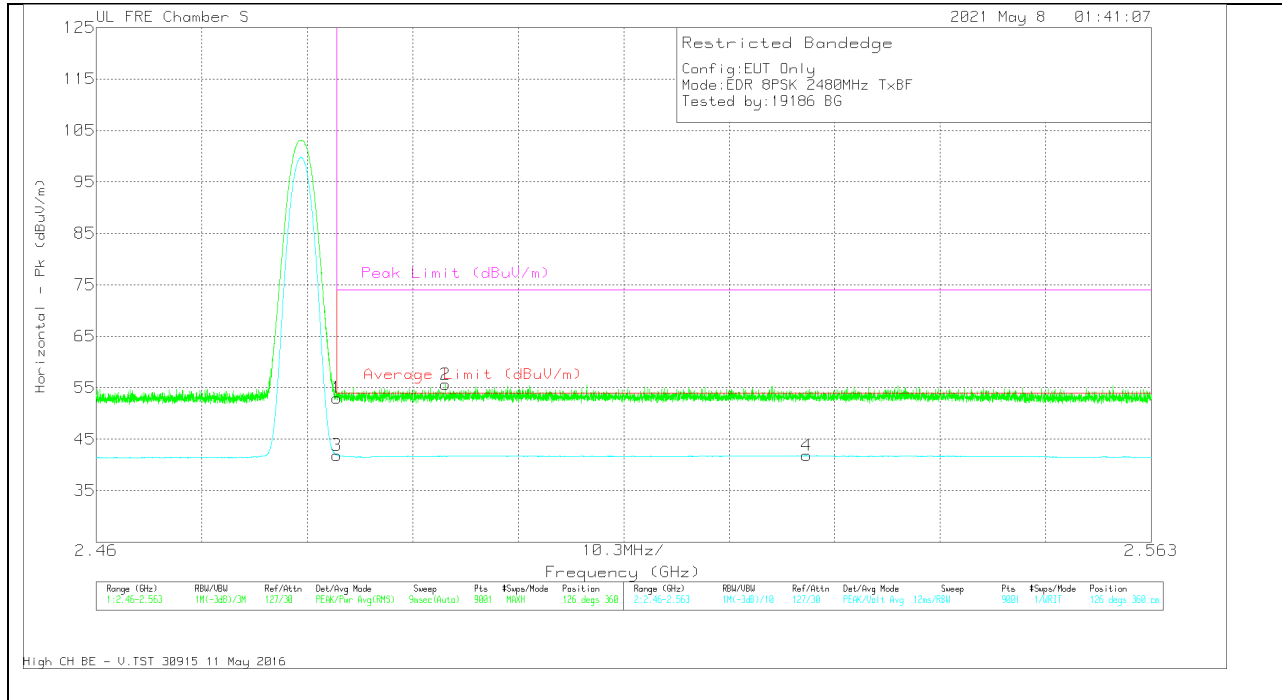
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE021383 3 (dB/m)	Amp/Cb/Filtr/ Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.48351	56.15	Pk	32.2	-34.9	53.45	-	-	74	-20.55	147	147	H
3	2.48351	44.94	VA1T	32.2	-34.9	42.24	54	-11.76	-	-	147	147	H
4	2.4836	44.81	VA1T	32.2	-34.9	42.11	54	-11.89	-	-	147	147	H
2	2.49501	58.31	Pk	32.3	-34.8	55.81	-	-	74	-18.19	147	147	H

Pk - Peak detector

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



### VERTICAL RESULT

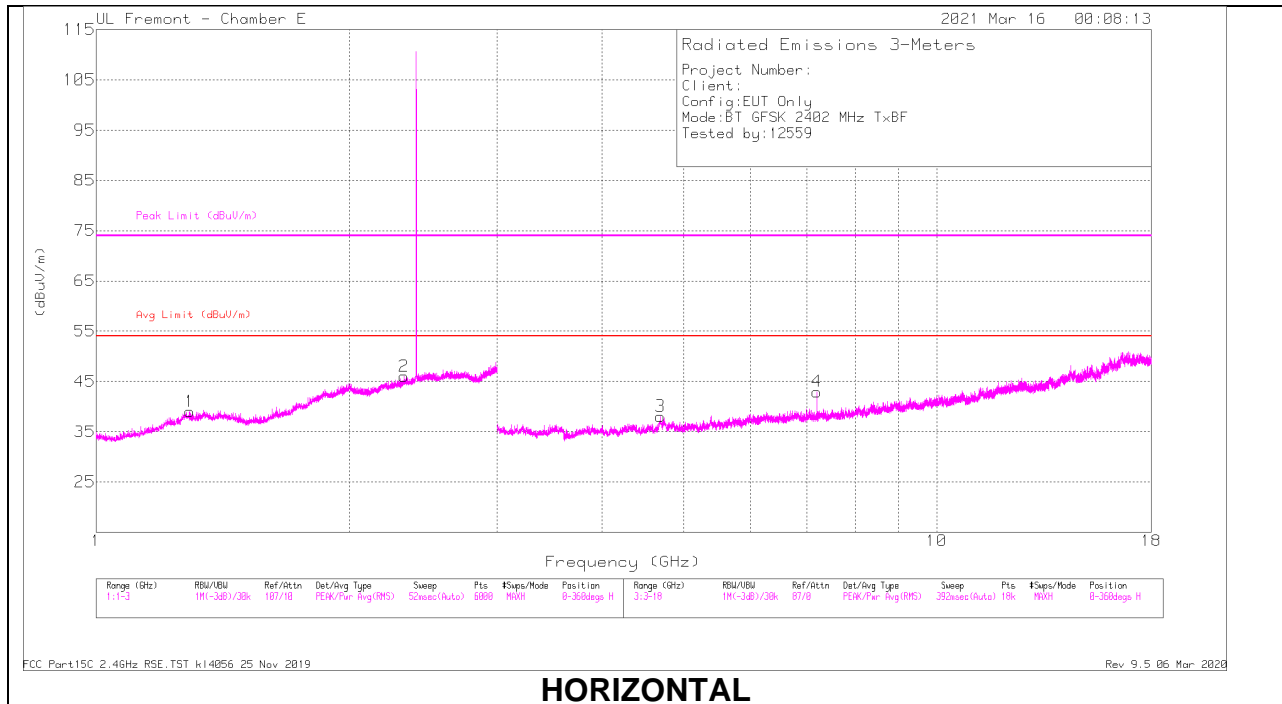


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE021383 3 (dB/m)	Amp/Cbl/Fitr/ Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.48351	55.73	Pk	32.2	-34.9	53.03	-	-	74	-20.97	126	360	V
3	2.48351	44.57	VA1T	32.2	-34.9	41.87	54	-12.13	-	-	126	360	V
2	2.49411	58.14	Pk	32.3	-34.8	55.64	-	-	74	-18.36	126	360	V
4	2.52935	44.23	VA1T	32.3	-34.7	41.83	54	-12.17	-	-	126	360	V

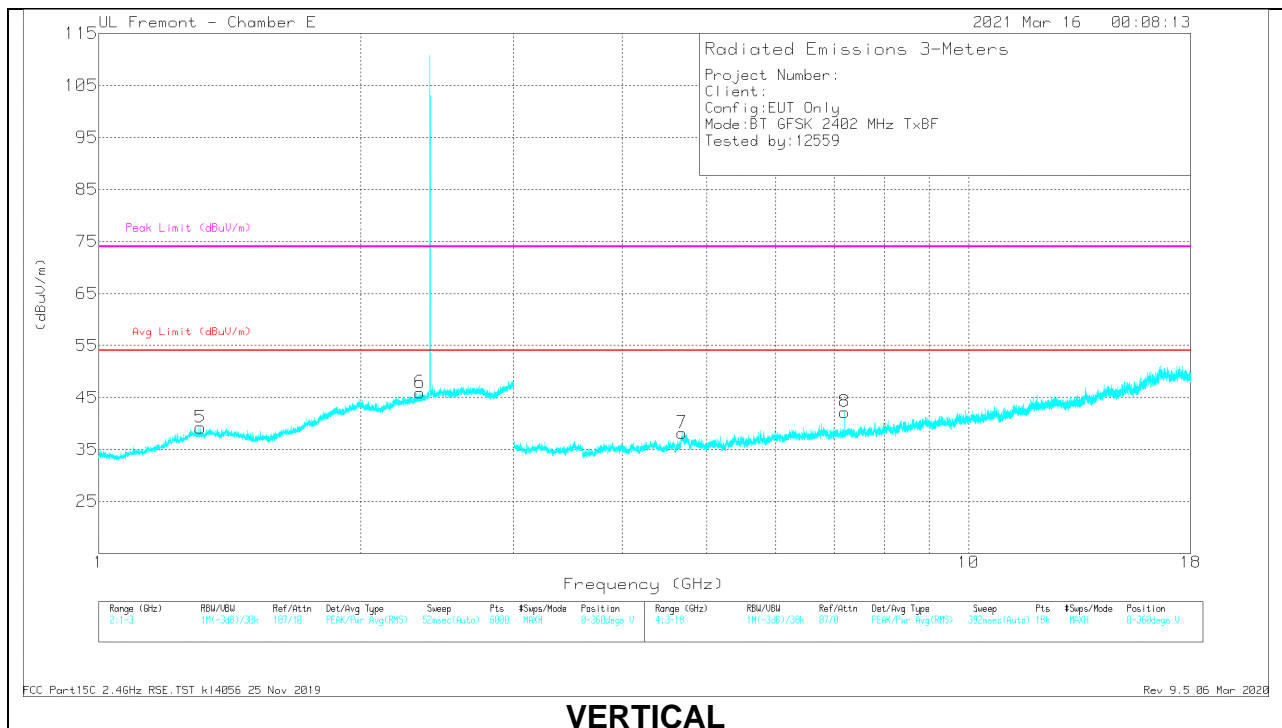
Pk - Peak detector  
 VA1T - FHSS: Linear Voltage Average  $V_B=1/T_{on}$  where:  $T_{on}$  is transmit duration

# 10.1.9. HIGH POWER TXBF HARMONICS AND SPURIOUS EMISSIONS

## LOW CHANNEL RESULTS



**HORIZONTAL**



**VERTICAL**

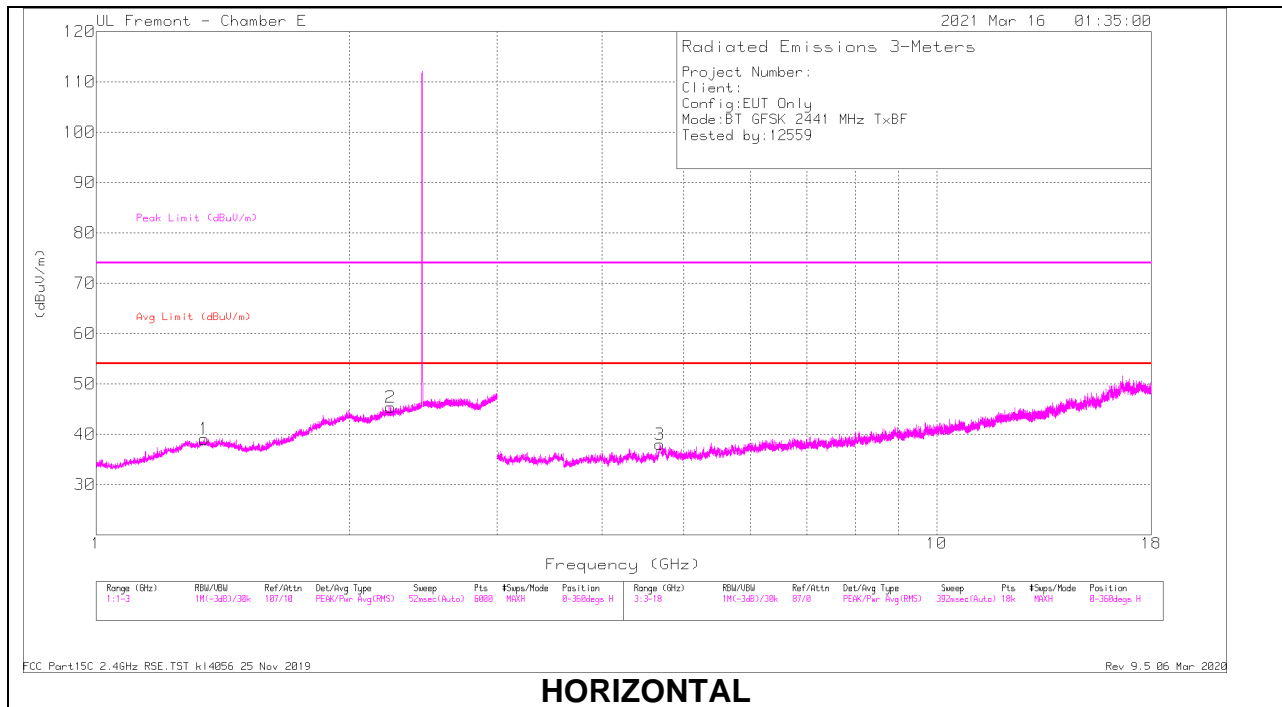
**RADIATED EMISSIONS**

Marker	Frequency(GHz)	MeterReading(dBuV)	Det	AF PRE0078107 (dB/m)	Amp/Cbl/Fitter/Pad (dB)	CorrectedReading(dBuV/m)	Avg Limit (dBuV/m)	Margin(dB)	Peak Limit (dBuV/m)	PK Margin(dB)	Azimuth(Degs)	Height(cm)	Polarity
1	* 1.28984	35.47	PKFH	29.8	-20.8	44.47	-	-	74	-29.53	360	200	H
	* 1.29011	23.33	VA1T	29.8	-20.8	32.33	54	-21.67	-	-	360	200	H
2	* 2.32496	37.19	PKFH	31.9	-18.3	50.79	-	-	74	-23.21	325	101	H
	* 2.32527	24.84	VA1T	32	-18.3	38.54	54	-15.46	-	-	325	101	H
5	* 1.31009	35.87	PKFH	29.5	-20.6	44.77	-	-	74	-29.23	310	200	V
	* 1.30768	23.17	VA1T	29.6	-20.7	32.07	54	-21.93	-	-	310	200	V
6	* 2.34091	36.84	PKFH	32	-18.3	50.54	-	-	74	-23.46	275	175	V
	* 2.34065	24.88	VA1T	32	-18.3	38.58	54	-15.42	-	-	275	175	V
3	* 4.69159	39.4	PKFH	34.4	-32	41.8	-	-	74	-32.2	360	200	H
	* 4.69176	27.96	VA1T	34.4	-32	30.36	54	-23.64	-	-	250	200	H
7	* 4.68429	40.65	PKFH	34.4	-31.9	43.15	-	-	74	-30.85	250	150	V
	* 4.68588	28.3	VA1T	34.4	-31.9	30.8	54	-23.2	-	-	360	150	V
4	7.20328	25.47	VA1T	35.7	-28.4	32.77	-	-	-	-	330	125	H
	7.20331	37.07	PKFH	35.7	-28.4	44.37	-	-	-	-	330	125	H
8	7.20336	37.17	PKFH	35.7	-28.4	44.47	-	-	-	-	360	101	V
	7.20346	26.58	VA1T	35.7	-28.4	33.88	-	-	-	-	360	101	V

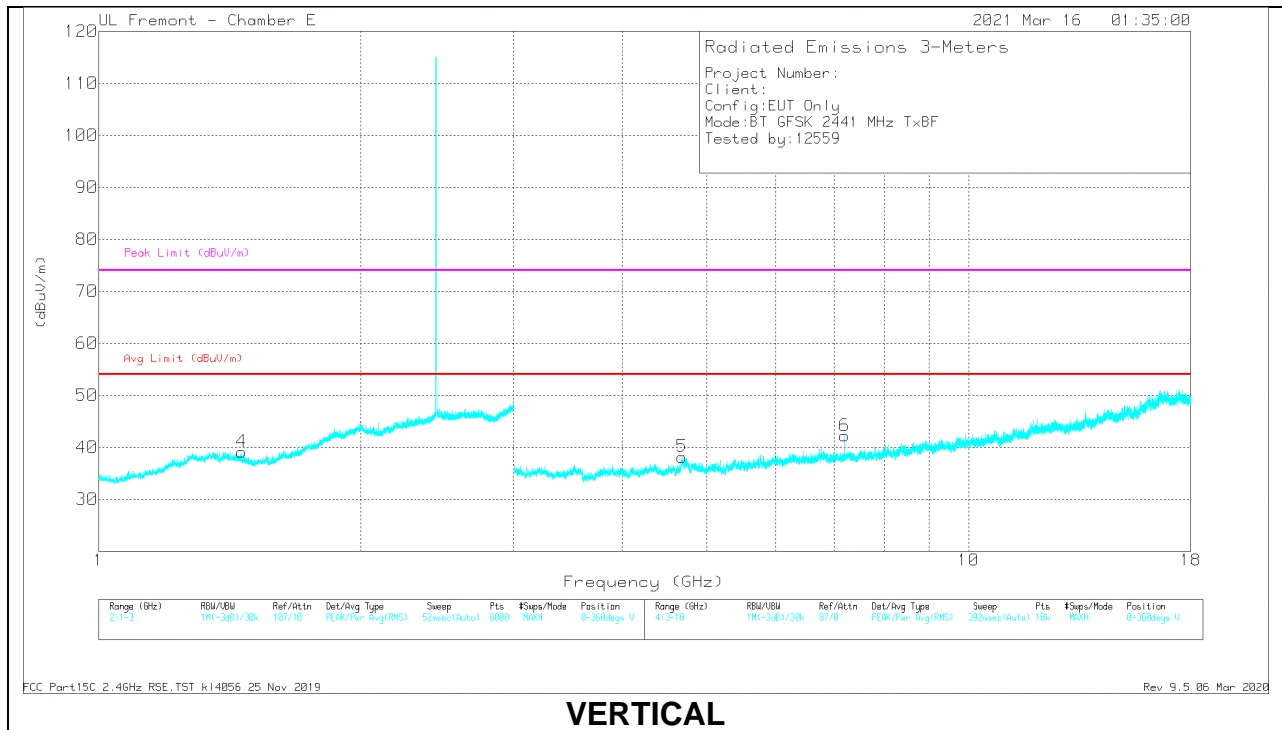
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 PKFH FHSS/BT RB=100k for Frequencies<1GHz / RB=1MHz for Frequencies>1GHz, VB=3 x RB, Peak  
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

FCC Part15C 2.4GHz RSE.TST kl4056 25 Nov 2019  
 Rev 9.5 06 Mar 2020

### MID CHANNEL RESULTS



### HORIZONTAL



### VERTICAL

## RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (dB/m)	Amp/Cb/Fitr/Prod (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.34386	36.57	PKFH	29.6	-20.6	45.57	-	-	74	-28.43	230	199	H
	* 1.34376	23.75	VA1T	29.6	-20.6	32.75	54	-21.25	-	-	230	199	H
2	* 2.2394	36.38	PKFH	31.8	-18.5	49.68	-	-	74	-24.32	360	101	H
	* 2.24111	24.5	VA1T	31.8	-18.4	37.9	54	-16.1	-	-	360	101	H
4	* 1.4608	35.27	PKFH	28.5	-20.2	43.57	-	-	74	-30.43	125	150	V
	* 1.46137	23.72	VA1T	28.5	-20.1	32.12	54	-21.88	-	-	125	150	V
3	* 4.68067	40.72	PKFH	34.4	-31.8	43.32	-	-	74	-30.68	322	205	H
	* 4.68292	28.44	VA1T	34.4	-31.9	30.94	54	-23.06	-	-	322	205	H
5	* 4.68769	40.3	PKFH	34.4	-32	42.7	-	-	74	-31.3	360	200	V
	* 4.68793	28.21	VA1T	34.4	-32	30.61	54	-23.39	-	-	360	200	V
6	7.20327	24.87	VA1T	35.7	-28.4	32.17	-	-	-	-	250	101	V
	7.20574	37.05	PKFH	35.7	-28.4	44.35	-	-	-	-	250	101	V

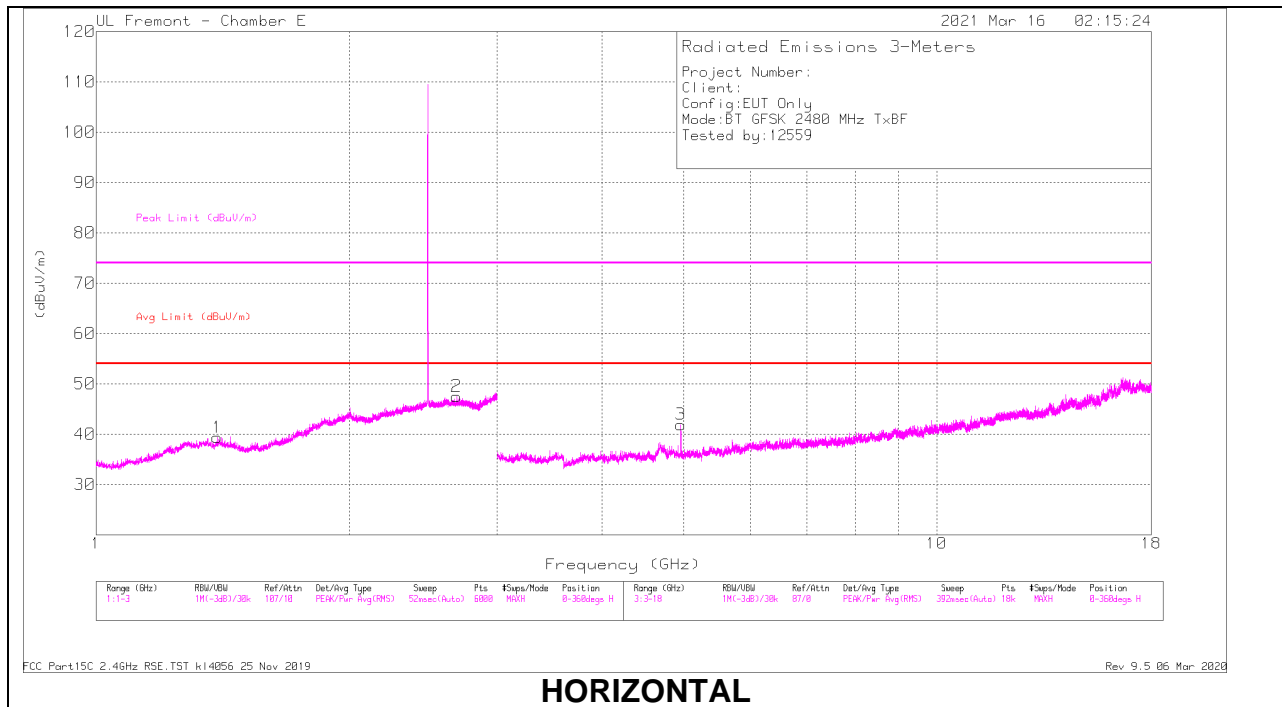
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PKFH FHSS/BT RB=100k for Frequencies<1GHz / RB=1MHz for Frequencies>1GHz, VB=3 x RB, Peak  
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

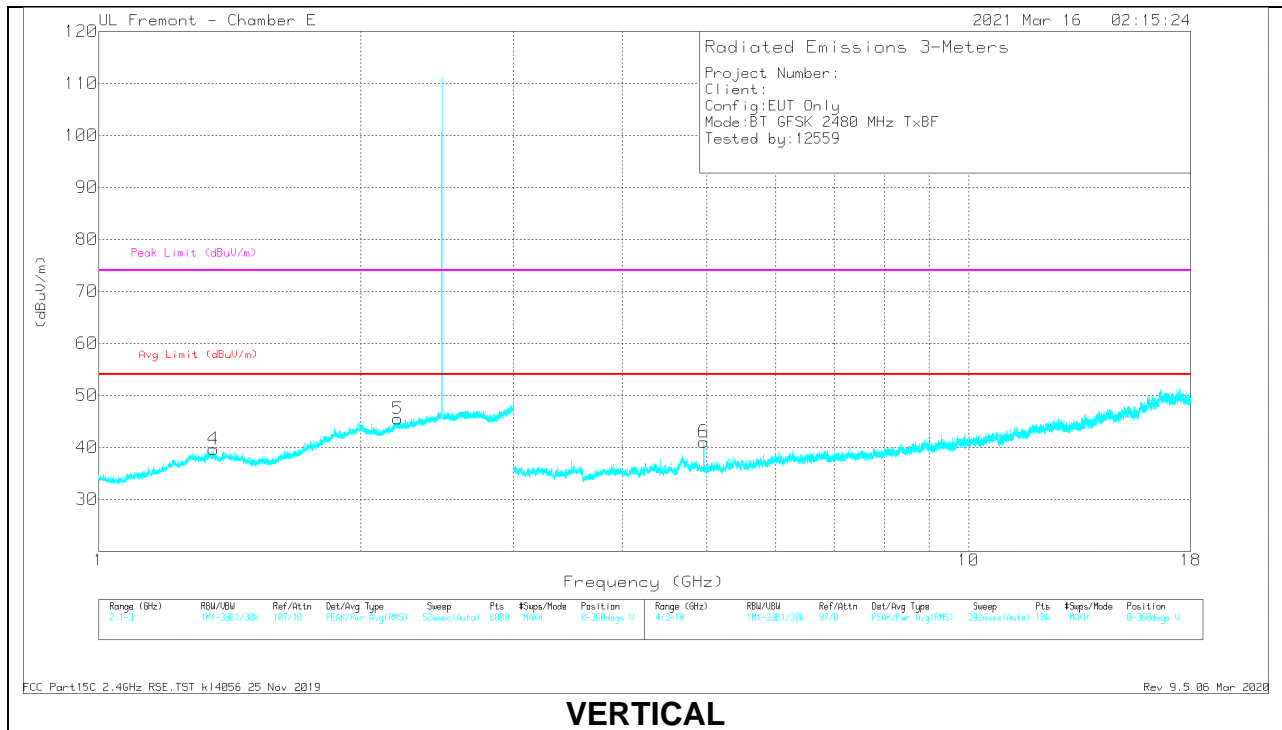
FCC Part15C 2.4GHz RSE.TST kl4056 25 Nov 2019

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### HIGH CHANNEL RESULTS



**HORIZONTAL**



**VERTICAL**

## RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (dB/m)	Amp/Cb/Filtr/P ad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.39318	36.38	PKFH	29.3	-20.3	45.38	-	-	74	-28.62	325	200	H
	* 1.39331	23.52	VA1T	29.3	-20.3	32.52	54	-21.48	-	-	325	200	H
2	* 2.68175	36.63	PKFH	32.6	-18.2	51.03	-	-	74	-22.97	85	101	H
	* 2.68214	25.23	VA1T	32.6	-18.2	39.63	54	-14.37	-	-	85	101	H
4	* 1.35371	35.98	PKFH	29.7	-20.5	45.18	-	-	74	-28.82	257	145	V
	* 1.3529	23.51	VA1T	29.7	-20.5	32.71	54	-21.29	-	-	257	145	V
5	* 2.20674	36.44	PKFH	31.7	-18.5	49.64	-	-	74	-24.36	155	200	V
	* 2.2043	24.55	VA1T	31.7	-18.5	37.75	54	-16.25	-	-	155	200	V
3	* 4.96086	39.87	PKFH	34.2	-31.5	42.57	-	-	74	-31.43	250	150	H
	* 4.96011	27.61	VA1T	34.2	-31.5	30.31	54	-23.69	-	-	250	150	H
6	* 4.96162	39.7	PKFH	34.2	-31.5	42.4	-	-	74	-31.6	360	200	V
	* 4.96011	27.59	VA1T	34.2	-31.5	30.29	54	-23.71	-	-	360	200	V

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

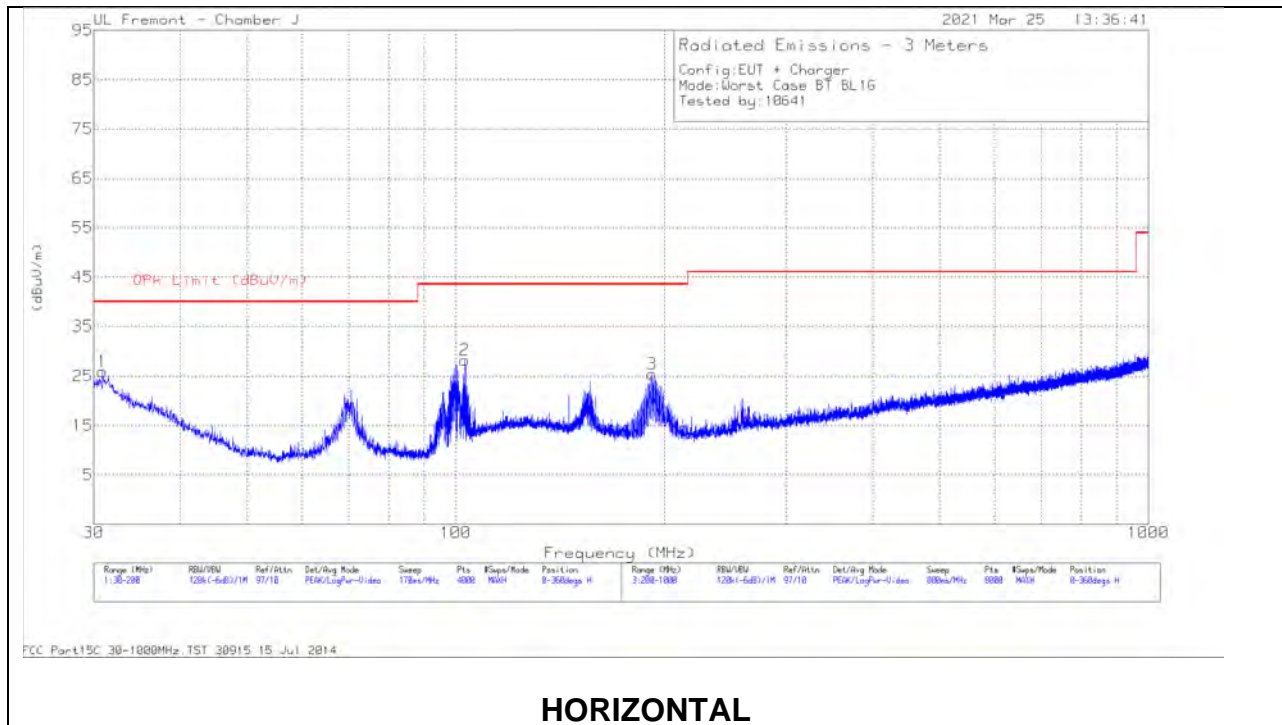
PKFH FHSS/BT RB=100k for Frequencies<1GHz / RB=1MHz for Frequencies>1GHz, VB=3 x RB, Peak  
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

FCC Part15C 2.4GHz RSE.TST kl4056 25 Nov 2019

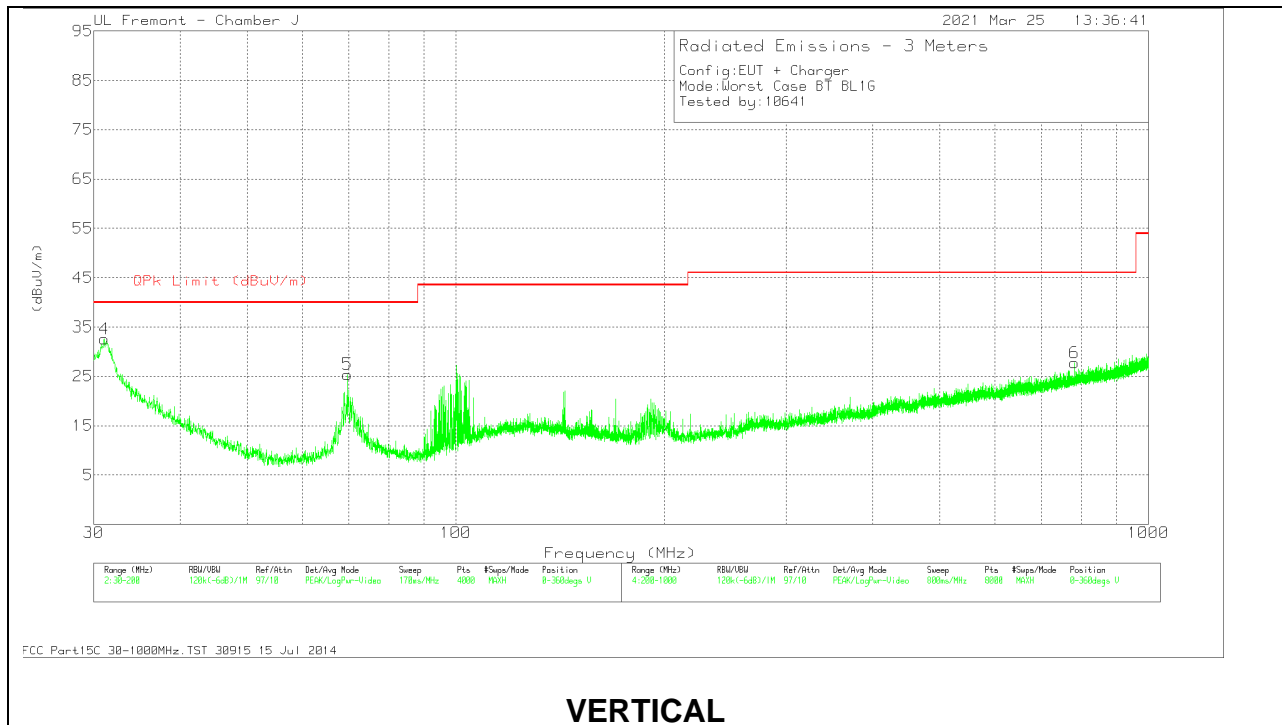
Rev 9.5 06 Mar 2020

## 10.2. WORST CASE BELOW 1 GHZ

### SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION)



**HORIZONTAL**



**VERTICAL**



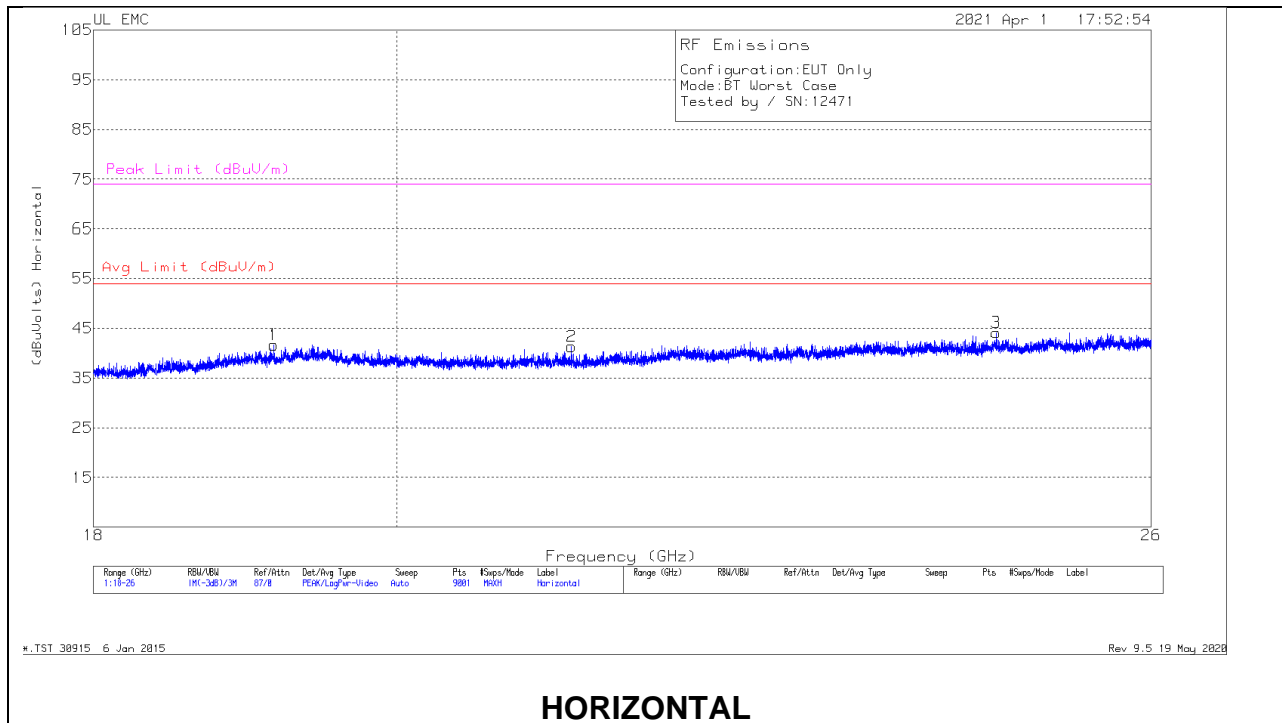
**Below 1GHz Data**

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF PRE0184052 (dB/m)	Amp Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	30.8927	30.29	Pk	27.3	-31.6	25.99	40	-14.01	0-360	293	H
2	102.9914	42.2	Pk	17	-30.9	28.3	43.52	-15.22	0-360	293	H
3	192.137	38.15	Pk	17.7	-30.4	25.45	43.52	-18.07	0-360	100	H
4	31.0628	36.93	Pk	27.2	-31.6	32.53	40	-7.47	0-360	100	V
5	69.7053	42.41	Pk	14.2	-31.2	25.41	40	-14.59	0-360	100	V
6	781.4756	28.43	Pk	27.4	-28.1	27.73	46.02	-18.29	0-360	199	V

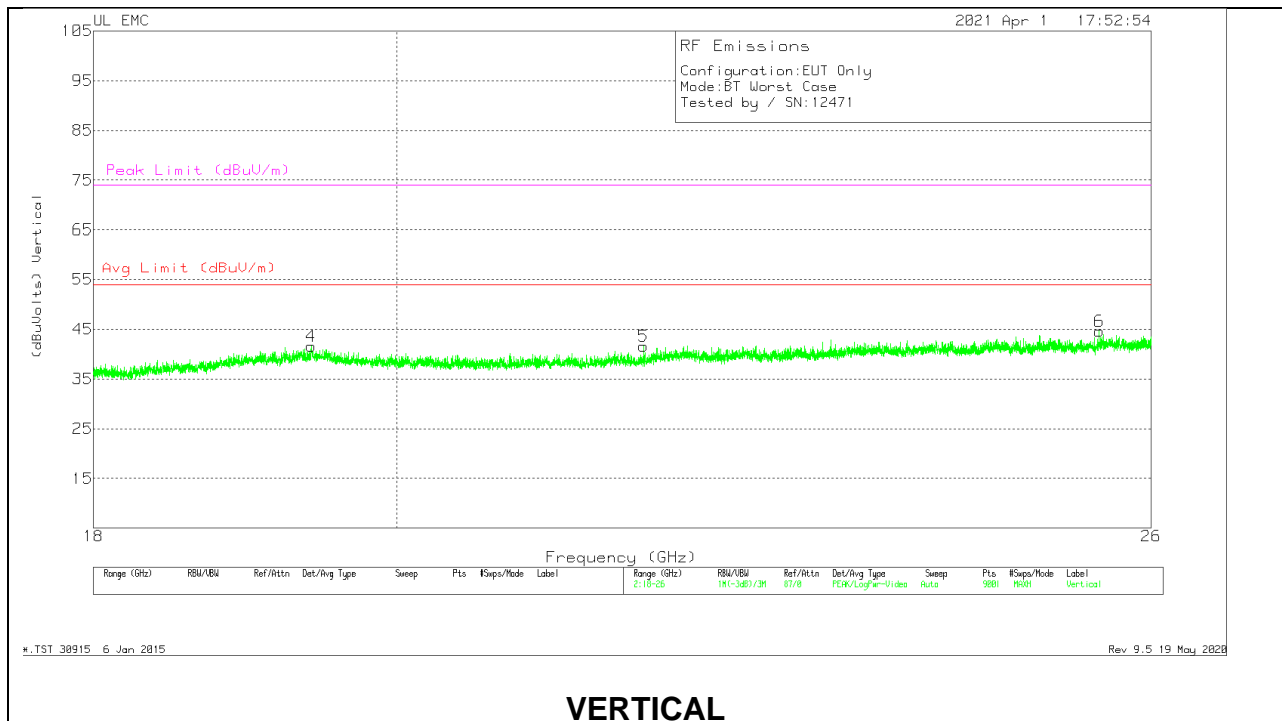
Pk - Peak detector

### 10.3. WORST CASE 18-26 GHZ

#### SPURIOUS EMISSIONS 18-26 GHz (WORST-CASE CONFIGURATION)



**HORIZONTAL**



**VERTICAL**

**18 – 26GHz DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	T125 AF (dB/m)	Amp/Cbl (dB)	Dist Corr (dB)	Corrected Reading (dBuVolts)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)
1	19.16444	38.15	Pk	32.7	-19.7	-9.5	41.65	54	-12.35	74	-32.35
2	21.25333	38.93	Pk	32.9	-21	-9.5	41.33	54	-12.67	74	-32.67
3	24.63556	38.24	Pk	34.1	-18.7	-9.5	44.14	54	-9.86	74	-29.86
4	19.41511	37.21	Pk	32.6	-18.7	-9.5	41.61	54	-12.39	74	-32.39
5	21.792	38.81	Pk	33.2	-20.9	-9.5	41.61	54	-12.39	74	-32.39
6	25.53245	39.42	Pk	34.1	-19.4	-9.5	44.62	54	-9.38	74	-29.38

Pk - Peak detector

\*.TST 30915 6 Jan 2015

Rev 9.5 19 May 2020

Note: 18-26GHz tested at 1m distance.

**11. AC POWER LINE CONDUCTED EMISSIONS****LIMITS**

FCC §15.207 (a)

RSS-Gen 8.8

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.

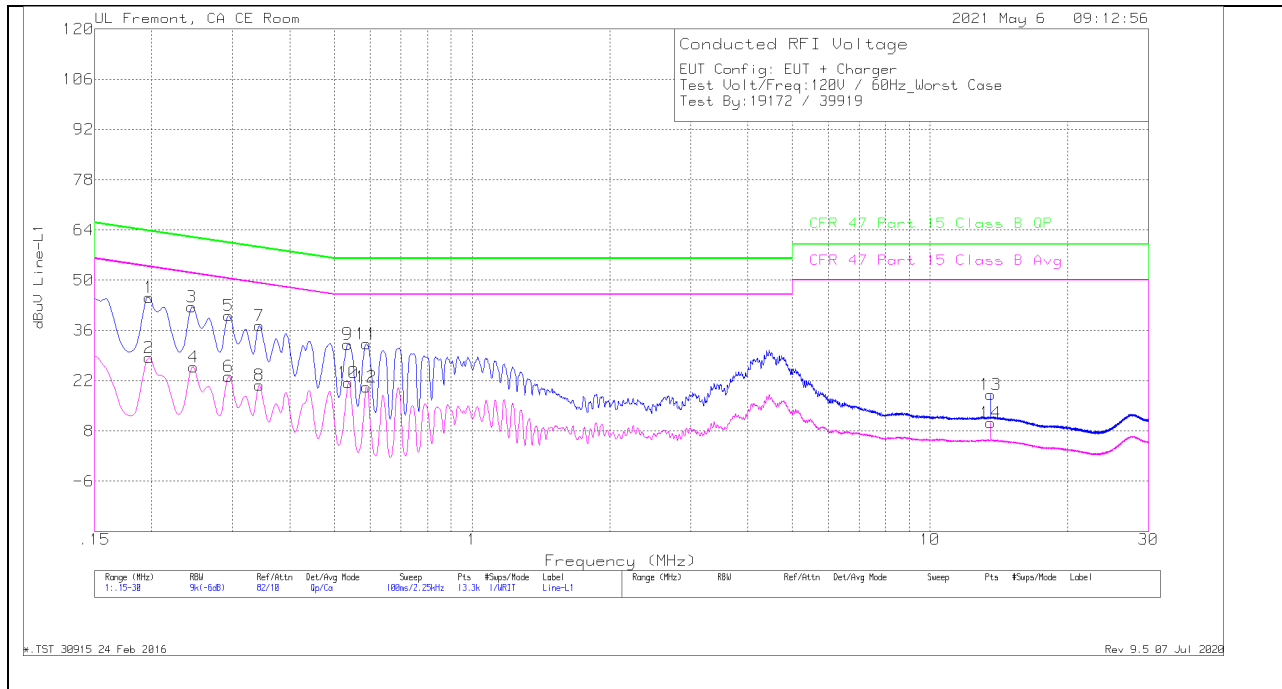
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

**RESULTS**

# 11.1. AC POWER LINE WITH AC/DC ADAPTER

## LINE 1 RESULTS



Range 1: Line-L1 .15 - 30MHz

Marker	Frequency(MHz)	MeterReading(dBuV)	Det	PRE018644 6 L1	LC Cables C1&C3 dB	Limiter	CorrectedReadingdBuV	CFR 47 Part 15 Class B QP	QP Margin(dB)	CFR 47 Part 15 Class B Avg	Av(CISPR) Margin(dB)
1	.19725	35.11	Qp	0	0	10.1	45.21	63.73	-18.52	-	-
2	.19725	18.39	Ca	0	0	10.1	28.49	-	-	53.73	-25.24
3	.2445	32.42	Qp	0	0	10.1	42.52	61.94	-19.42	-	-
4	.24675	15.77	Ca	0	0	10.1	25.87	-	-	51.87	-26
5	.294	30.09	Qp	0	0	10.1	40.19	60.41	-20.22	-	-
6	.294	13.17	Ca	0	0	10.1	23.27	-	-	50.41	-27.14
7	.3435	27.22	Qp	0	0	10.1	37.32	59.12	-21.8	-	-
8	.3435	10.66	Ca	0	0	10.1	20.76	-	-	49.12	-28.36
9	.53475	22.09	Qp	0	0	10.1	32.19	56	-23.81	-	-
10	.537	11.32	Ca	0	0	10.1	21.42	-	-	46	-24.58
11	.58875	22.11	Qp	0	0	10.1	32.21	56	-23.79	-	-
12	.58875	10.2	Ca	0	0	10.1	20.3	-	-	46	-25.7
*13	13.56	7.57	Qp	.1	.2	10.2	18.07	60	-41.93	-	-
*14	13.56	-2	Ca	.1	.2	10.2	10.3	-	-	50	-39.7

Qp - Quasi-Peak detector

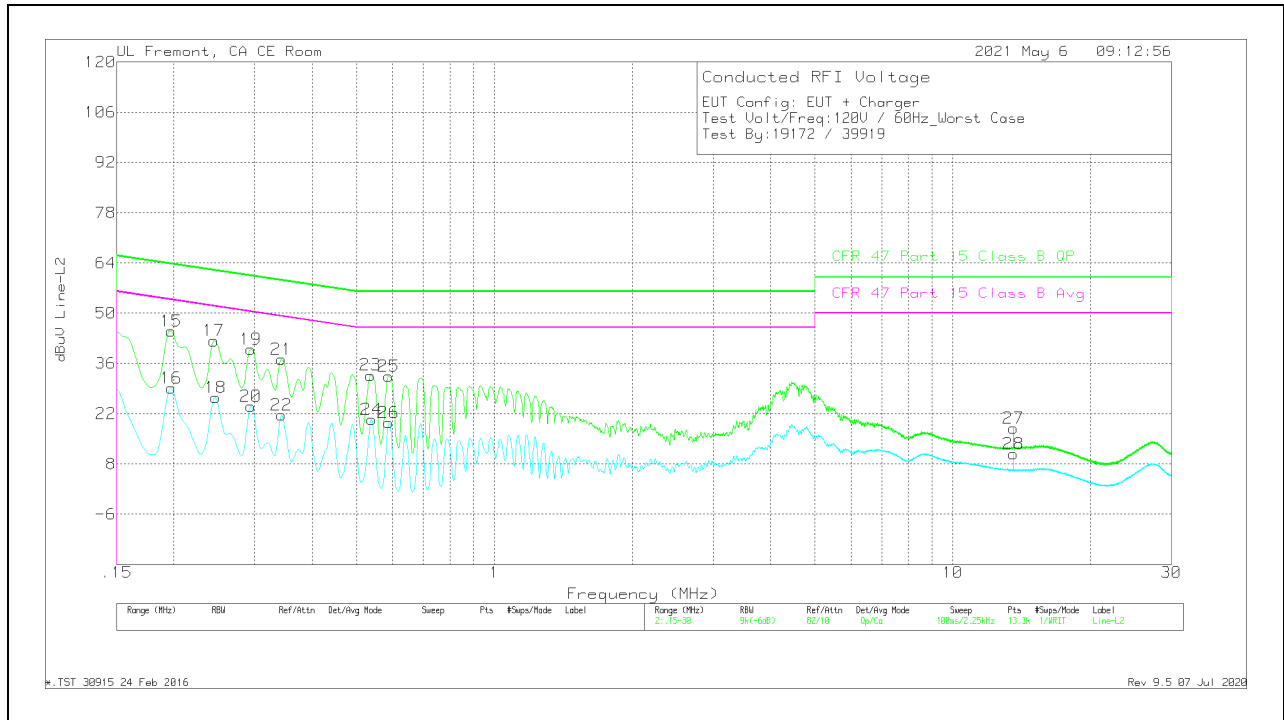
Ca - CISPR average detection

\*Indicates UL RFID Signal. Not from device.

\*.TST 30915 24 Feb 2016

Rev 9.5 07 Jul 2020

LINE 2 RESULTS



Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE018644 6 L2	LC Cables C2&C3 dB	Limiter	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR) Margin (dB)
15	.19725	34.88	Qp	0	0	10.1	44.98	63.73	-18.75	-	-
16	.19725	19.04	Ca	0	0	10.1	29.14	-	-	53.73	-24.59
17	.2445	32.22	Qp	0	0	10.1	42.32	61.94	-19.62	-	-
18	.24675	16.42	Ca	0	0	10.1	26.52	-	-	51.87	-25.35
19	.294	29.93	Qp	0	0	10.1	40.03	60.41	-20.38	-	-
20	.294	13.92	Ca	0	0	10.1	24.02	-	-	50.41	-26.39
21	.3435	27.08	Qp	0	0	10.1	37.18	59.12	-21.94	-	-
22	.3435	11.47	Ca	0	0	10.1	21.57	-	-	49.12	-27.55
23	.537	22.62	Qp	0	0	10.1	32.72	56	-23.28	-	-
24	.53925	10.31	Ca	0	0	10.1	20.41	-	-	46	-25.59
25	.58875	22.32	Qp	0	0	10.1	32.42	56	-23.58	-	-
26	.58875	9.46	Ca	0	0	10.1	19.56	-	-	46	-26.44
*27	13.56	7.52	Qp	.1	.2	10.2	18.02	60	-41.98	-	-
*28	13.56	.38	Ca	.1	.2	10.2	10.88	-	-	50	-39.12

Qp - Quasi-Peak detector

Ca - CISPR average detection

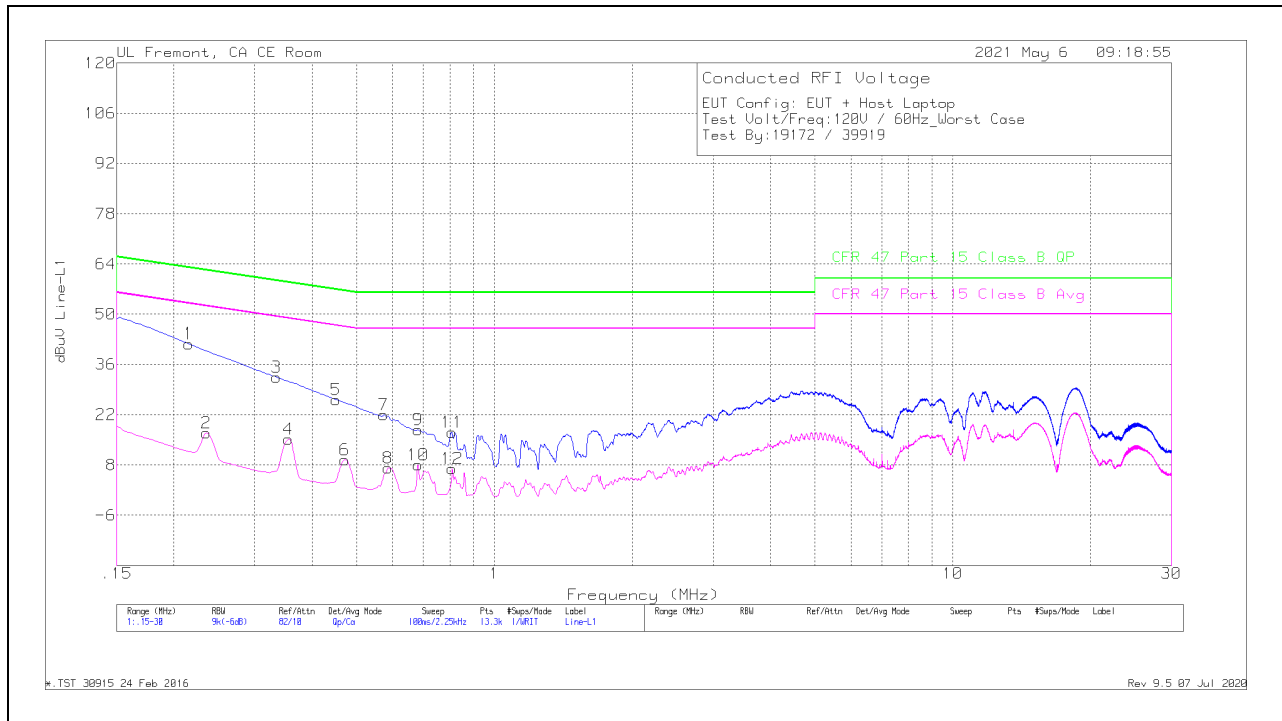
\*Indicates UL RFID Signal. Not from device.

\*.TST 30915 24 Feb 2016

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**11.2. AC POWER LINE WITH LAPTOP**

**LINE 1 RESULTS**



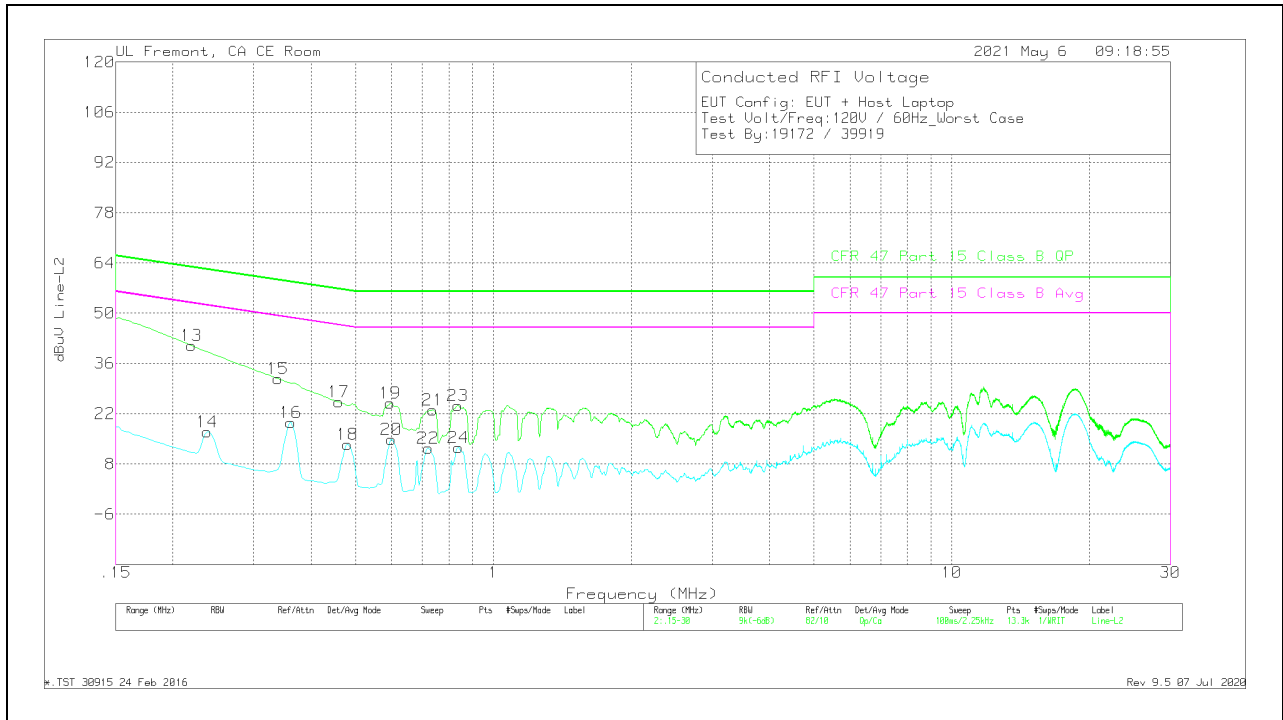
Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE0186446 L1	LC Cables C1&C3 dB	Limiter	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR)M argin (dB)
1	.21525	31.69	Qp	0	0	10.1	41.79	63	-21.21	-	-
2	.2355	6.9	Ca	0	0	10.1	17	-	-	52.25	-35.25
3	.3345	22.35	Qp	0	0	10.1	32.45	59.34	-26.89	-	-
4	.35475	5.11	Ca	0	0	10.1	15.21	-	-	48.85	-33.64
5	.4515	16.08	Qp	0	0	10.1	26.18	56.85	-30.67	-	-
6	.47175	-63	Ca	0	0	10.1	9.47	-	-	46.48	-37.01
7	.57413	11.88	Qp	0	0	10.1	21.98	56	-34.02	-	-
8	.5865	-2.89	Ca	0	0	10.1	7.21	-	-	46	-38.79
9	.681	7.73	Qp	0	0	10.1	17.83	56	-38.17	-	-
10	.681	-2.07	Ca	0	0	10.1	8.03	-	-	46	-37.97
11	.80925	6.93	Qp	0	.1	10.1	17.13	56	-38.87	-	-
12	.80925	-3.15	Ca	0	.1	10.1	7.05	-	-	46	-38.95

Qp - Quasi-Peak detector  
Ca - CISPR average detection

\*.TST 30915 24 Feb 2016  
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LINE 2 RESULTS



Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE0186446 L2	LC Cables C2&C3 dB	Limiter	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR)M argin (dB)
13	.21975	30.87	Qp	0	0	10.1	40.97	62.83	-21.86	-	-
14	.23775	6.8	Ca	0	0	10.1	16.9	-	-	52.17	-35.27
15	.339	21.66	Qp	0	0	10.1	31.76	59.23	-27.47	-	-
16	.3615	9.43	Ca	0	0	10.1	19.53	-	-	48.69	-29.16
17	.4605	15.16	Qp	0	0	10.1	25.26	56.68	-31.42	-	-
18	.48075	3.38	Ca	0	0	10.1	13.48	-	-	46.33	-32.85
19	.5955	14.8	Qp	0	0	10.1	24.9	56	-31.1	-	-
20	.6	4.73	Ca	0	0	10.1	14.83	-	-	46	-31.17
21	.73725	12.94	Qp	0	0	10.1	23.04	56	-32.96	-	-
22	.72038	2.22	Ca	0	0	10.1	12.32	-	-	46	-33.68
23	.83625	14.11	Qp	0	.1	10.1	24.31	56	-31.69	-	-
24	.8385	2.35	Ca	0	.1	10.1	12.55	-	-	46	-33.45

Qp - Quasi-Peak detector  
 Ca - CISPR average detection

\*.TST 30915 24 Feb 2016  
 Rev 9.5 07 Jul 2020



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## **12. SETUP PHOTOS**

Please refer to 13571601-EP1V1 for setup photos

# **END OF TEST REPORT**