TEST REPORT

Report Number: 13571607-E1V2

Applicant	:	APPLE, INC. 1 APPLE PARK WAY CUPERTINO, CA 95014, U.S.A.
Model	:	A2482 (Parent Model, Full Test) A2635, A2631, A2633, A2634 (Variant Models)
FCC ID	:	BCG-E3997A (Parent Model) BCG-E4032A, BCG-E3999A, BCG-E4031A (Variant Models)
IC	:	579C-E3997A (Parent Model) 579C-E4032A, 579C-E3999A, 579C-E4031A (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 18, 2021

Prepared by:
UL Verification Services Inc.
47173 Benicia Street
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ACCREDITED
CERT #0751.05

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	6/30/2021	Initial Issue	Frank Ibrahim
V2	7/18/2021	Address TCB's Question on page 61, 63 & 77	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:	A2482 (Parent Model) A2635, A2631, A2633, A2634 (Variant Models)
BRAND:	APPLE
FCC ID:	BCG-E3997A (Parent Model) BCG-E4032A, BCG-E3999A, BCG-E4031A (Variant Models)
IC ID:	579C-E3997A (Parent Model) 579C-E4032A, 579C-E3999A, 579C-E4031A (Variant Models
SERIAL NUMBER:	G6TDQ0AG0XGQ; F4TVFCF6KN; CQF9R4NQNJ
SAMPLE RECEIPT DATE:	01/28/2021; 05/25/2021; 01/13/2021
DATE TESTED:	FEBRUARY 09, 2021 – JULY 17, 2021

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
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.

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Approved & Released For
UL Verification Services Inc. By:

Frank Ibrahim
Staff Engineer
Consumer Technology Division
UL Verification Services Inc.

Prepared By:

Francisco Guarnero
Test Engineer
Consumer Technology Division
UL Verification Services Inc.

2. TEST 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 and 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
- FCC KDB 662911 D01 v02r01
- KDB 558074 D01 15.247 Meas Guidance v05r02
- ANSI C63.10-2013
- RSS-GEN Issue 5 + A1 + A2
- RSS-247 Issue 2
- KDB 414788 D01 Radiated Test Site v01r01

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
☐	Building 1: 47173 Benicia Street, Fremont, CA 94538, USA	US0104	2324A	208313
☒	Building 2: 47266 Benicia Street, Fremont, CA 94538, USA	US0104	22541	208313
☒	Building 4: 47658 Kato Rd, Fremont, CA 94538, USA	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_{Lab}
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

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

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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 and IC ID covered by this report includes:

Parent Model: A2482; FCC ID: BCG-E3997A; IC ID: 579C-E3997A

Variant Models: A2635; FCC ID: BCG-E4032A; IC ID: 579C-E4032A
A2631; FCC ID: BCG-E3999A; IC ID: 579C-E3999A
A2633; FCC ID: BCG-E4031A; IC ID: 579C-E4031A
A2634; FCC ID: BCG-E4032A; IC ID: 579C-E4032A

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6.2. MAXIMUM PEAK 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	20.58	114.29
		2402 - 2480	DQPSK	18.82	76.21
		2402 - 2480	Enhanced 8PSK	18.95	78.52
	Low Power	2402 - 2480	Basic GFSK	11.41	13.84
		2402 - 2480	DQPSK	10.96	12.47
		2402 - 2480	Enhanced 8PSK	11.01	12.62
ANT 3	High Power	2402 - 2480	Basic GFSK	19.91	97.95
		2402 - 2480	DQPSK	18.78	75.51
		2402 - 2480	Enhanced 8PSK	18.94	78.34
	Low Power	2402 - 2480	Basic GFSK	11.31	13.52
		2402 - 2480	DQPSK	9.81	9.57
		2402 - 2480	Enhanced 8PSK	9.90	9.77
BF, ANT 4 + ANT 3	High Power	2402 - 2480	Basic GFSK TxBF	20.55	113.50
		2402 - 2480	DQPSK TxBF	18.88	77.27
		2402 - 2480	Enhanced 8PSK TxBF	19.04	80.17
	Low Power	2402 - 2480	Basic GFSK TxBF	14.53	28.38
		2402 - 2480	DQPSK TxBF	13.37	21.73
		2402 - 2480	Enhanced 8PSK TxBF	13.49	22.34

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

Antenna Type is IFA.
The antennas' gains, as provided by the manufacturer, are as follows:

Frequency Range (GHz)	ANT 4 (dBi)	ANT 3 (dBi)
2.4	-2.9	0.3

6.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was 19.1.309.2612

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6.5. WORST-CASE CONFIGURATION AND MODE

The EUT was investigated in three orthogonal orientations X, Y and Z on ANT 4 (Core 0) and ANT 3 (Core 1). It was determined that Y (Landscape) orientation was the worst-case orientation for ANT 4 and X (Flatbed) was the worst case for ANT 3 and 2TX TxBF.

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.

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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.

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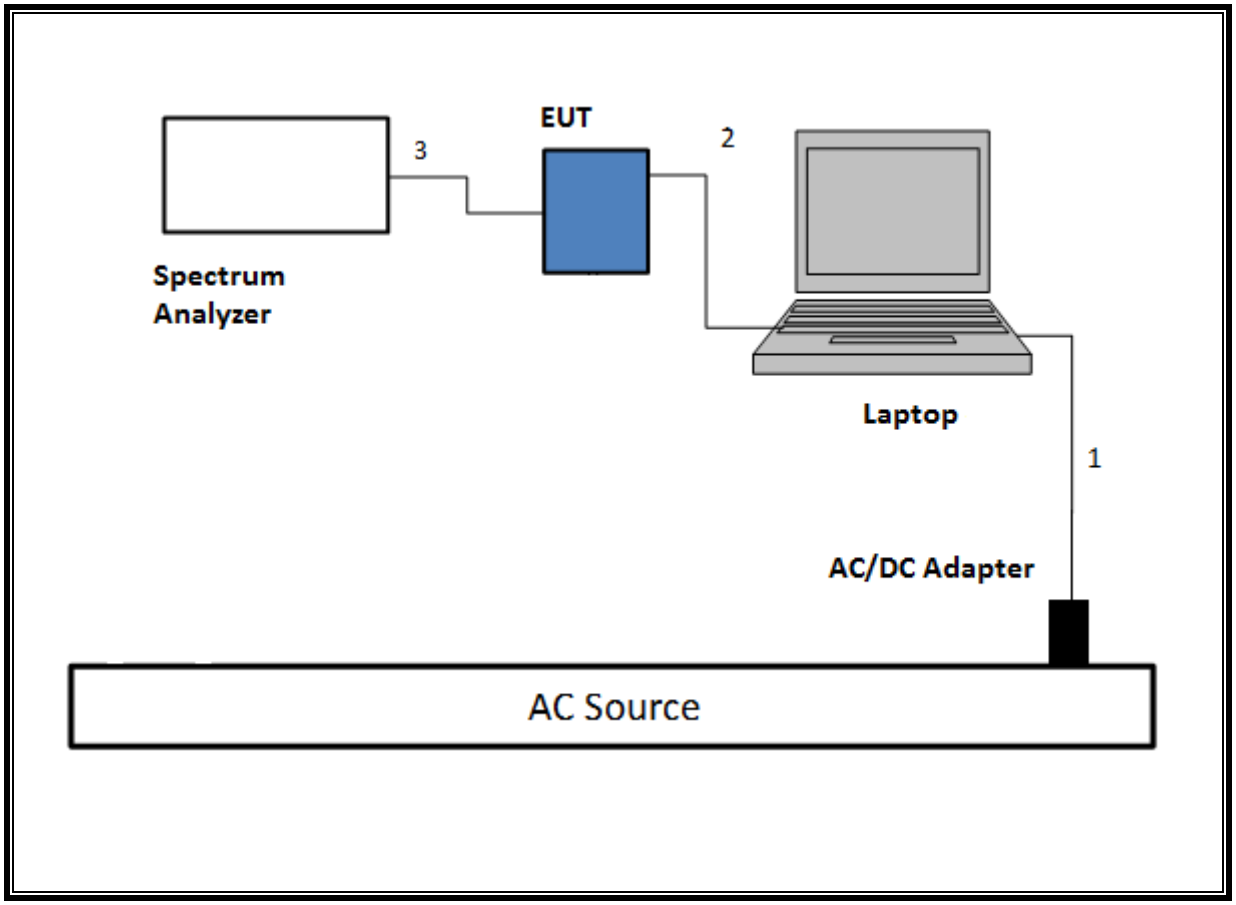
SETUP DIAGRAM FOR CONDUCTED TESTS



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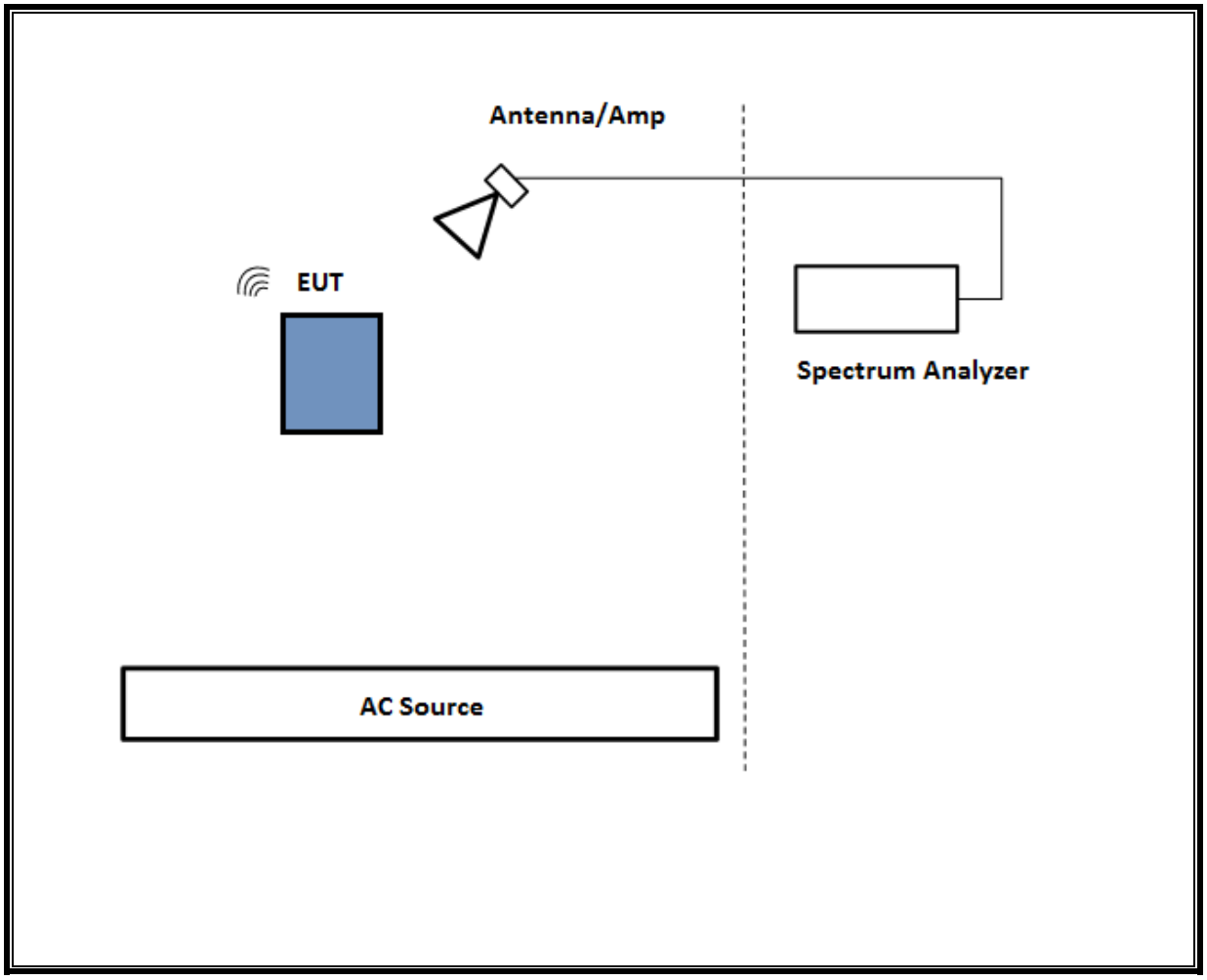
SETUP DIAGRAM FOR RADIATED TESTS Above 1GHz



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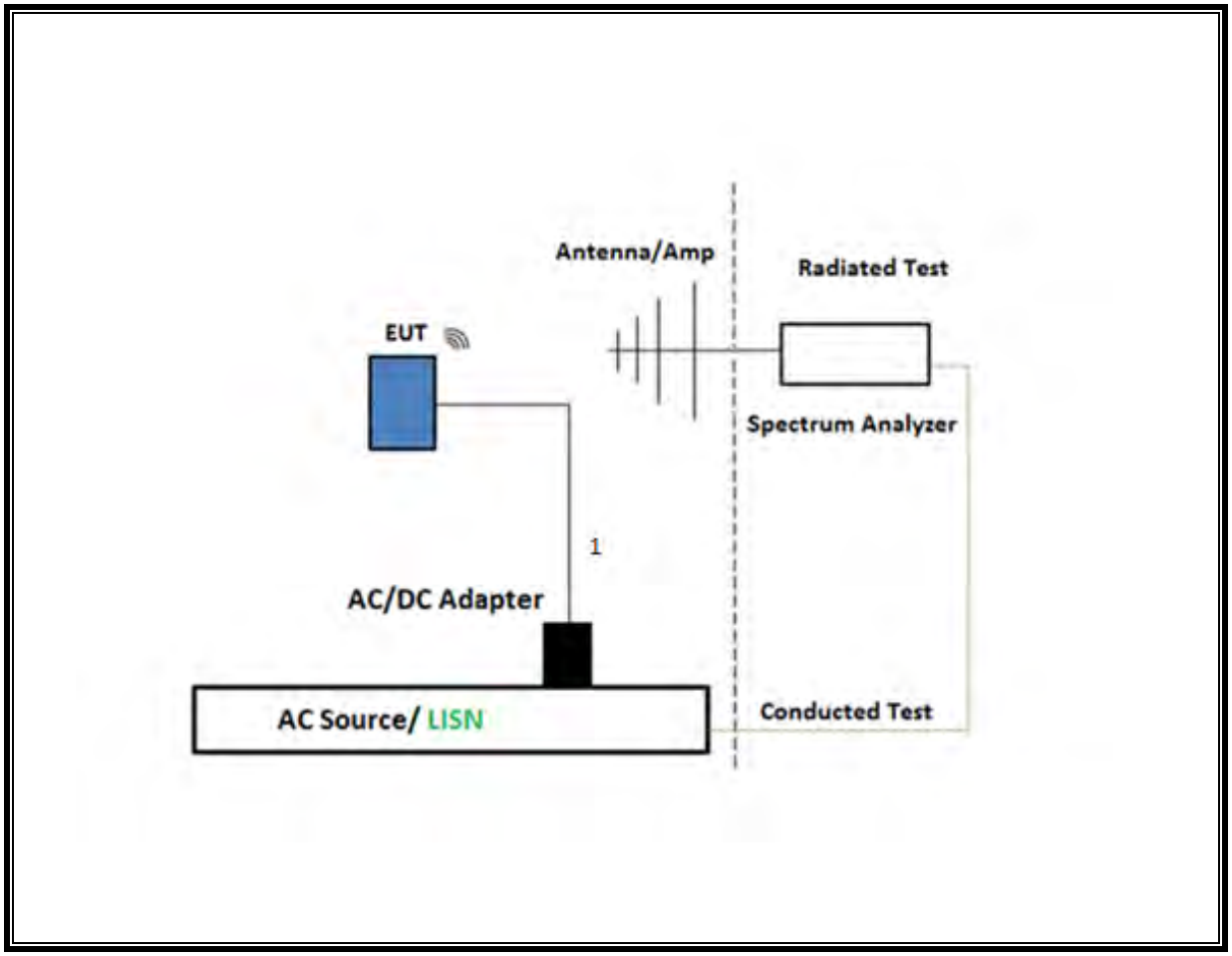
SETUP DIAGRAM FOR Below 1GHz and AC LINE CONDUCTED TEST



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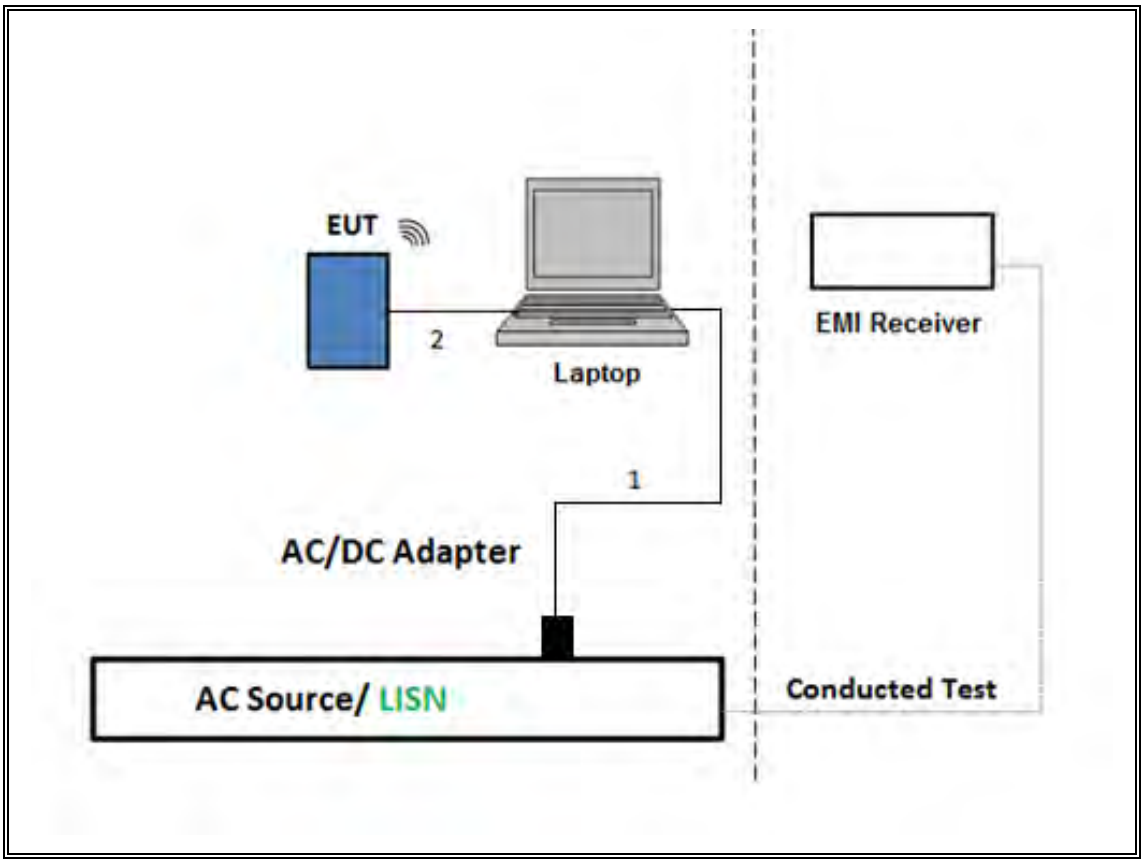
TEST SETUP- AC LINE CONDUCTED: LAPTOP CONFIGURATION



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7. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST					
Description	**Manufacturer**	**Model**	**ID Num**	**Cal Due**	**Last Cal**
Spectrum Analyzer, PXA 3Hz to 44GHz	Keysight	N9030A	T341	01/28/2022	01/28/2021
Power Meter, P-series single channel	Keysight	N1912A	T1244	01/25/2022	01/25/2021
Power Sensor	Keysight	N19**2**1A	T1224	01/25/2022	01/25/2021
Antenna, Horn 1-18GHz	ETS Lindgren	3117	EMC4294	09/15/2021	09/15/2020
RF Amplifier, 1-18GHz	AMPLICAL	AMP1G18-35	T1571	08/20/2021	09/20/2020
EMI Receiver	Rohde & Schwarz	ESW44	PRE0179522	02/19/2022	02/19/2021
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	PRE0213971	09/25/2021	09/25/2020
Amplifier, 100MHz to 18GHz	AMPLICAL	AMP0.1G18-47-20	190323	12/03/2021	12/03/2020
EMI Receiver	Rohde & Schwarz	ESW44	201502	02/24/2022	02/24/2021
Antenna, Horn 1-18GHz	ETS Lindgren	3117	200785	09/25/2021	09/25/2020
Rf Amplifier 1-18GHz, 45dB Min	Amplical	AMP0.1G18-47-20	172124	12/09/2021	12/09/2020
Filter, HPF 3.0 GHz	MICRO-TRONICS	HPM17543	202845	12/09/2021	12/09/2020
EMI Test Receiver	Rohde & Schwarz	ESW44	201501	02/23/2022	02/23/2021
Antenna, BroadBand Hybrid, 30MHz to 3GHz	Sunol Sciences Corp.	JB3	202329	10/27/2021	10/27/2020
Amplifier, 9KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310	202992	11/22/2021	11/22/2020
Antenna, Active Loop 9KHz to 30MHz	EMCO	6502	T35	11/23/2021	11/23/2020
Spectrum Analyzer, PXA, 3Hz to 50GHz w/Ext. Mixer	Keysight Technologies Inc	N9030A	T342	01/25/2022	02/25/2021
*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

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.

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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 & 13

Radiated Spurious Emissions 30-1000MHz: ANSI C63.10-2013 Section 6.3, 6.5 & 13

Radiated Spurious Emissions above 1GHz: ANSI C63.10-2013 Section 6.3, 6.6 & 13

Radiated Band-edge: ANSI C63.10-2013 Section 6.10.5 & 13

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

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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

Note: Low power duty cycle is same as high

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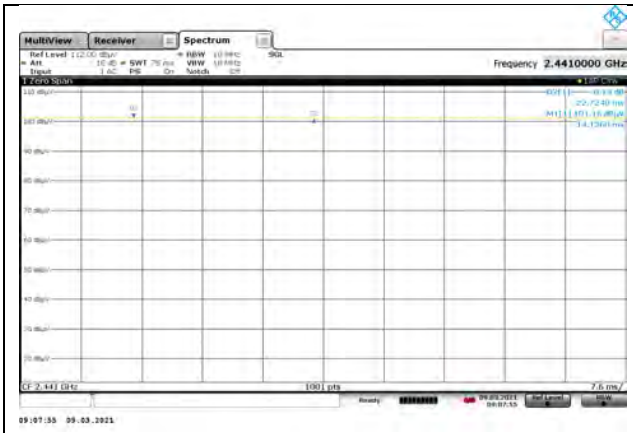
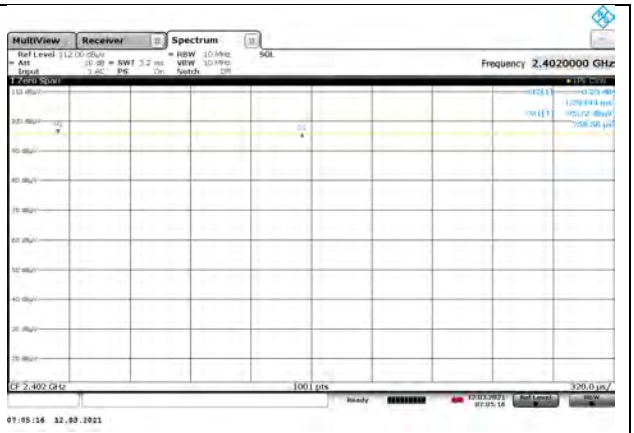
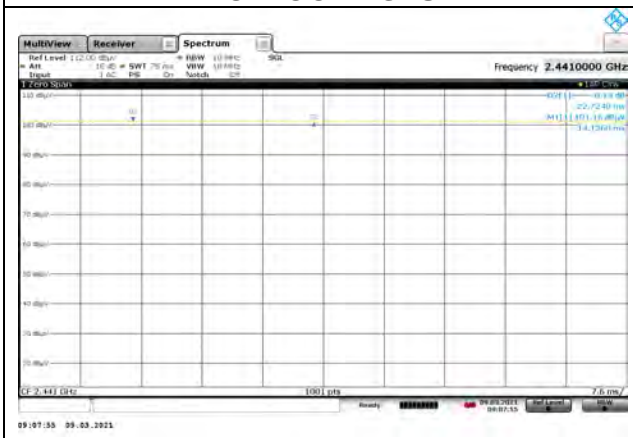
DUTY CYCLE PLOTS



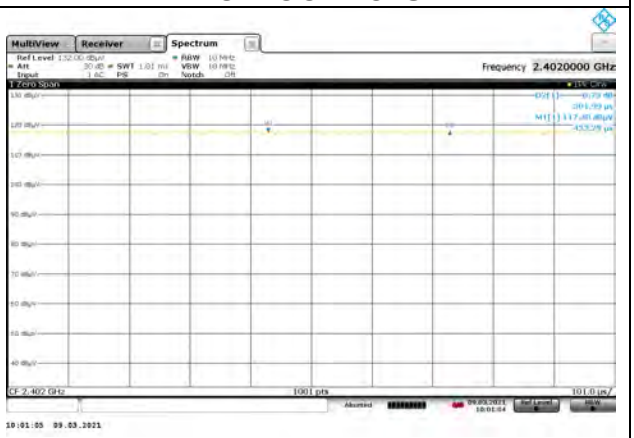
BLUETOOTH GFSK



BLUETOOTH 8PSK



BLUETOOTH TxBF GFSK



BLUETOOTH TxBF 8PSK

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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 ≥ 1% of the 20 dB bandwidth. The VBW is set to ≥ 3xRBW. 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 analyzer settings.

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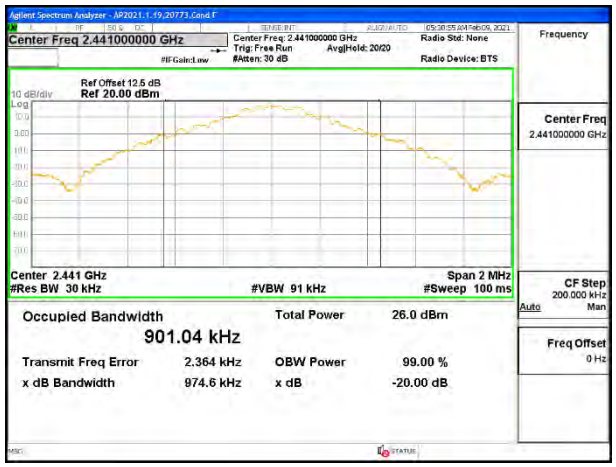
9.2.1. HIGH POWER BASIC DATA RATE GFSK MODULATION

ANT 4

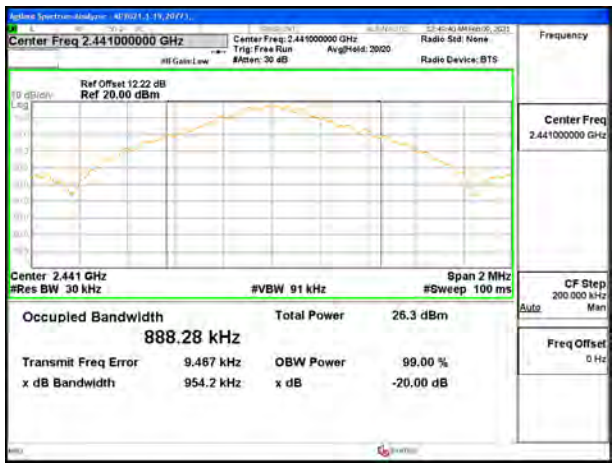
Channel	Frequency (MHz)	20dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2402	0.9532	0.89043
Mid	2441	0.9746	0.90104
High	2480	0.9554	0.89985



MID CHANNEL

ANT 3

Channel	Frequency (MHz)	20dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2402	0.9540	0.88808
Mid	2441	0.9542	0.88828
High	2480	0.9541	0.88333

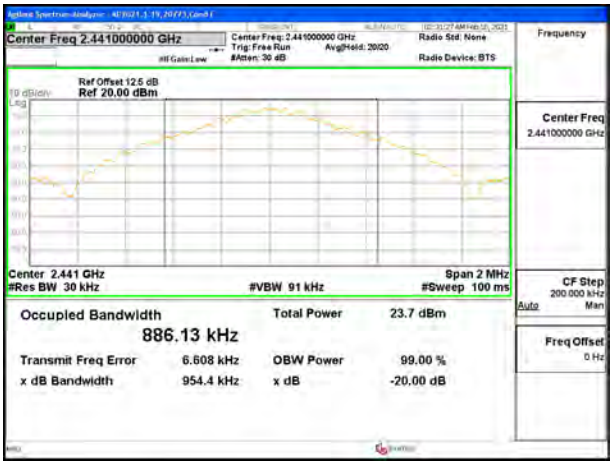


MID CHANNEL

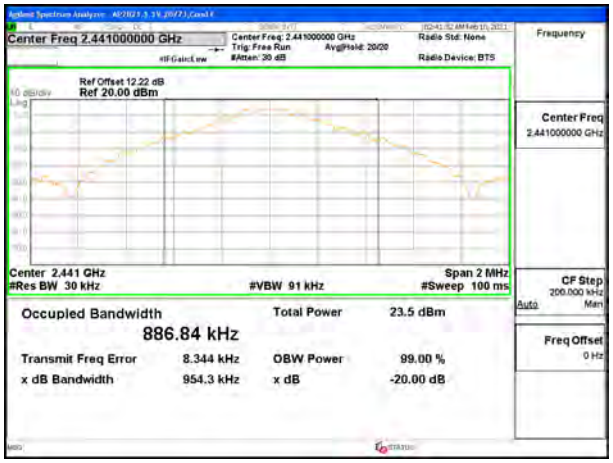
9.2.2. HIGH POWER BASIC DATA RATE TXBF GFSK MODULATION

Channel	Frequency (MHz)	20dB Bandwidth ANT 4 (MHz)	20dB Bandwidth ANT 3 (MHz)	99% Bandwidth ANT 4 (MHz)	99% Bandwidth ANT 3 (MHz)
Low	2402	0.9539	0.9533	0.88649	0.88675
Mid	2441	0.9544	0.9543	0.88613	0.88684
High	2480	0.9544	0.9535	0.88499	0.88984

Note: Test procedures and setting on beamforming mode are same as BT BDR and EDR mode



MID CHANNEL ANT 4

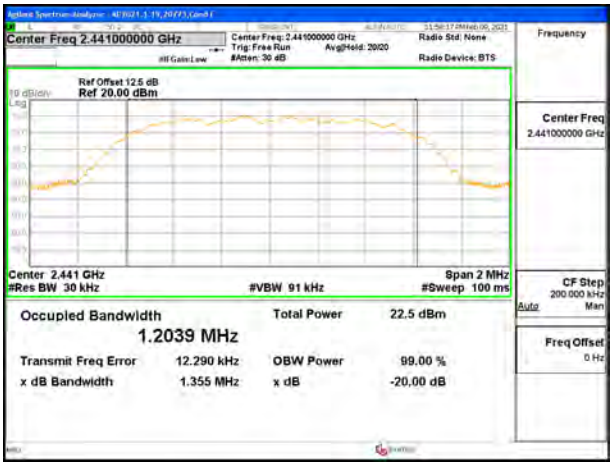


MID CHANNEL ANT 3

9.2.3. HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

ANT 4

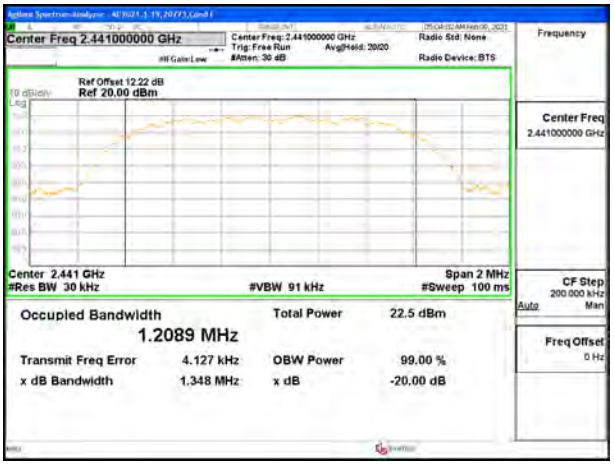
Channel	Frequency (MHz)	20dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2402	1.354	1.2076
Mid	2441	1.355	1.2039
High	2480	1.368	1.2181



MID CHANNEL

ANT 3

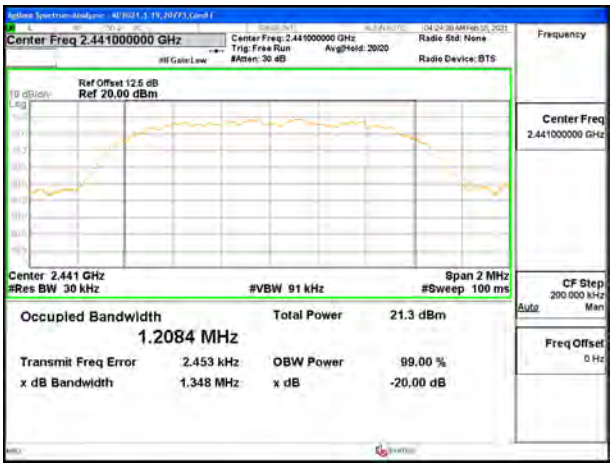
Channel	Frequency (MHz)	20dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2402	1.348	1.2082
Mid	2441	1.348	1.2089
High	2480	1.349	1.2095



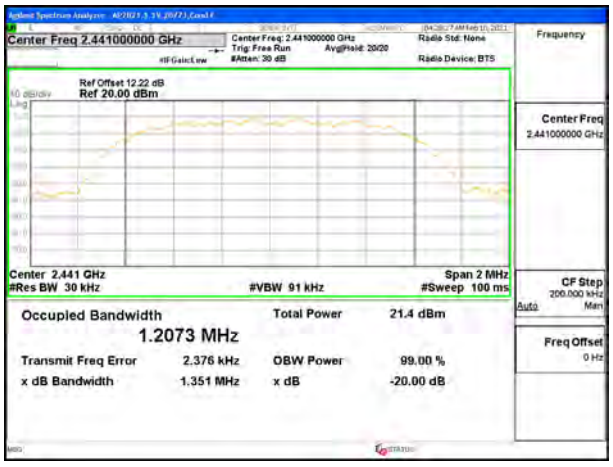
MID CHANNEL

9.2.4. HIGH POWER ENHANCED DATA RATE TXBF 8PSK MODULATION

Channel	Frequency (MHz)	20dB Bandwidth ANT 4 (MHz)	20dB Bandwidth ANT 3 (MHz)	99% Bandwidth ANT 4 (MHz)	99% Bandwidth ANT 3 (MHz)
Low	2402	1.349	1.349	1.2049	1.2077
Mid	2441	1.348	1.351	1.2084	1.2073
High	2480	1.347	1.354	1.2099	1.2106



MID CHANNEL ANT 4



MID CHANNEL ANT 3

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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 hoping 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 >= 3xRBW. The sweep time is coupled.

RESULTS

Only High Power GFSK mode result is reported since EDR (QPSK/8PSK) has exact same channel plan.
Only Mid channel plot is reported to show analyzer's settings.

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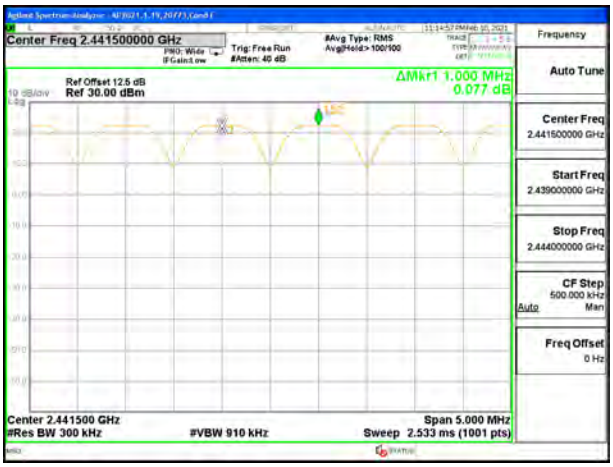
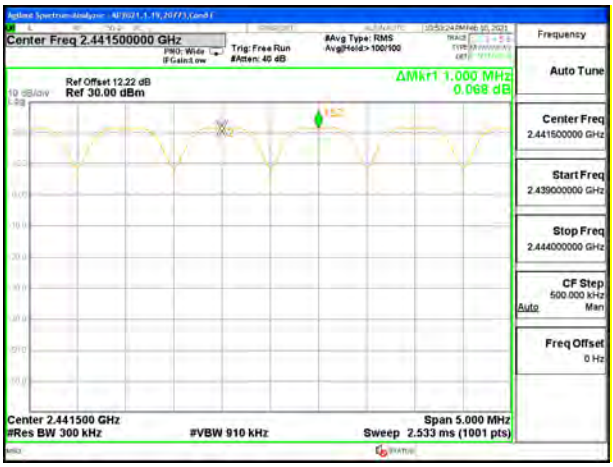
9.3.1. HIGH POWER BASIC DATA RATE GFSK MODULATION

HOPPING FREQUENCY SEPARATION



ANT 4



ANT 3

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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.

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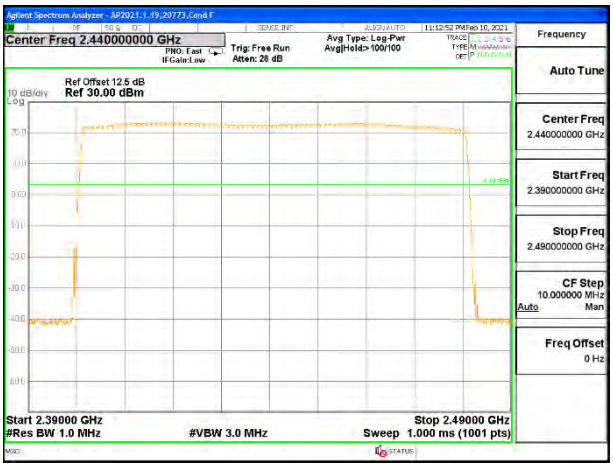
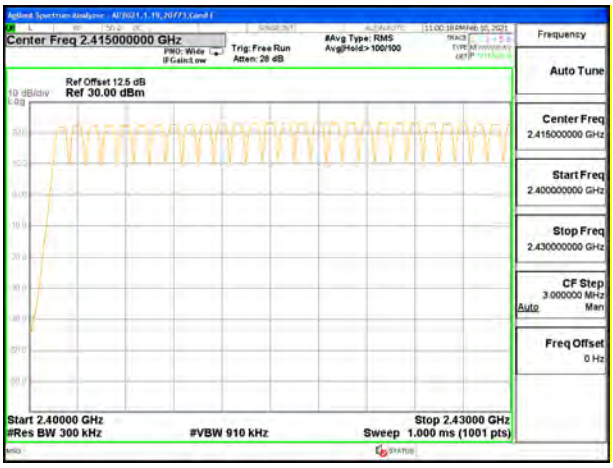
9.4.1. HIGH POWER BASIC DATA RATE GFSK MODULATION

ANT 4

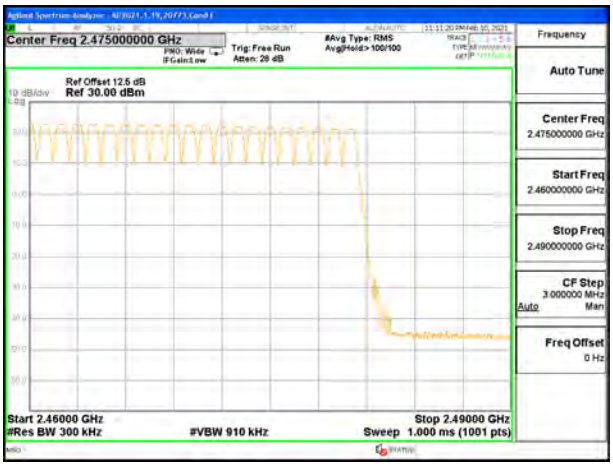


100MHz SPAN



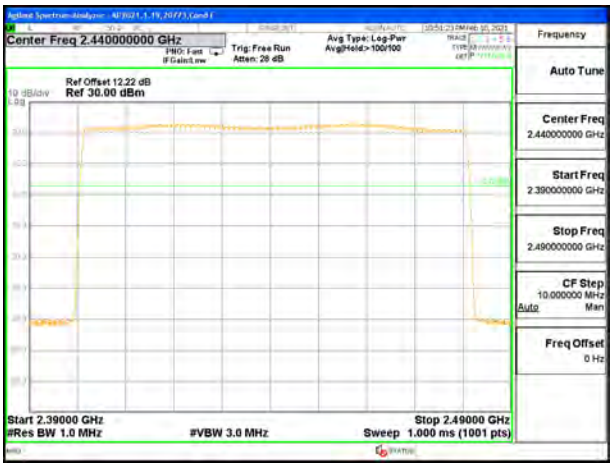
30MHz SPAN, SEGMENT 1 OF 3

30MHz SPAN, SEGMENT 2 OF 3



30MHz SPAN, SEGMENT 3 OF 3

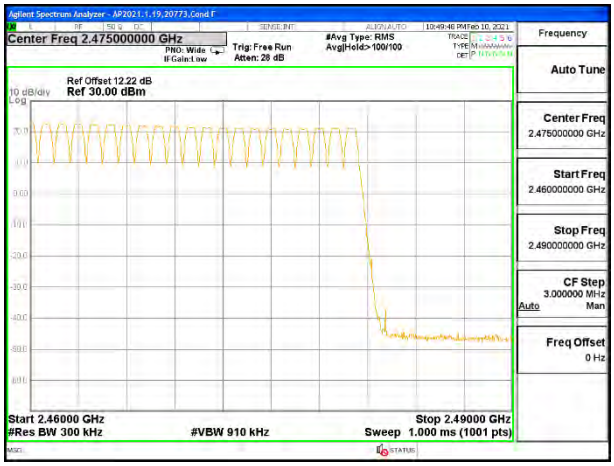
ANT 3



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 * (# of pulses in 3.16 s) * 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 * (# of pulses in 0.8 s) * pulse width.

RESULTS

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

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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	0.377	31	0.117	0.4	-0.283
DH3	1.622	18	0.292	0.4	-0.108
DH5	2.872	12	0.345	0.4	-0.055

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	0.377	7.75	0.029	0.4	-0.371
DH3	1.622	4.5	0.073	0.4	-0.327
DH5	2.872	3	0.086	0.4	-0.314

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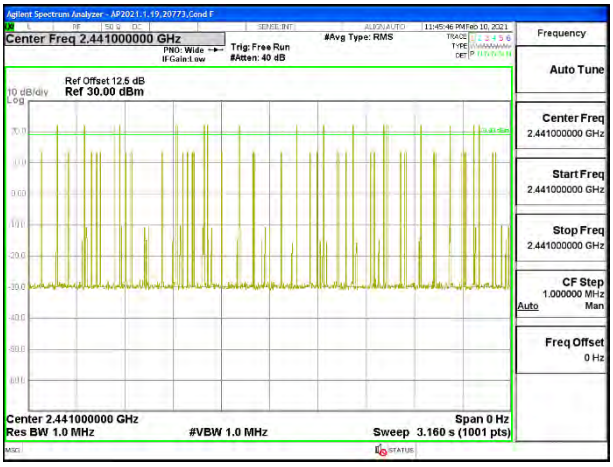
PULSE WIDTH – DH1

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

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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	0.368	31	0.114	0.4	-0.286
DH3	1.622	17	0.276	0.4	-0.124
DH5	2.864	11	0.315	0.4	-0.085

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	0.368	7.75	0.029	0.4	-0.371
DH3	1.622	4.25	0.069	0.4	-0.331
DH5	2.864	2.75	0.079	0.4	-0.321

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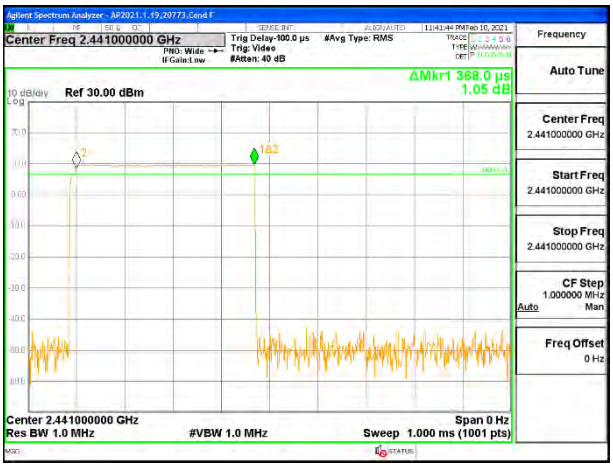
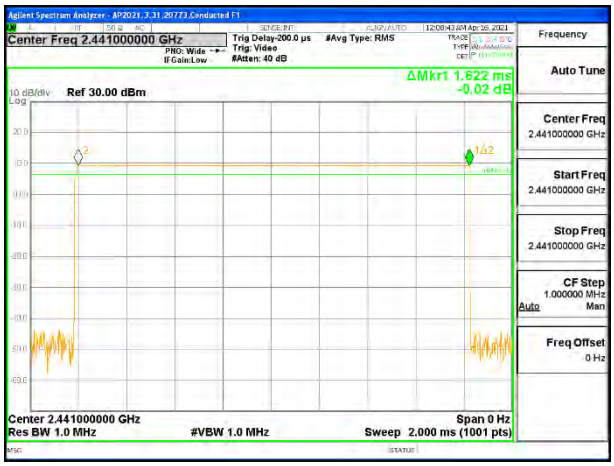


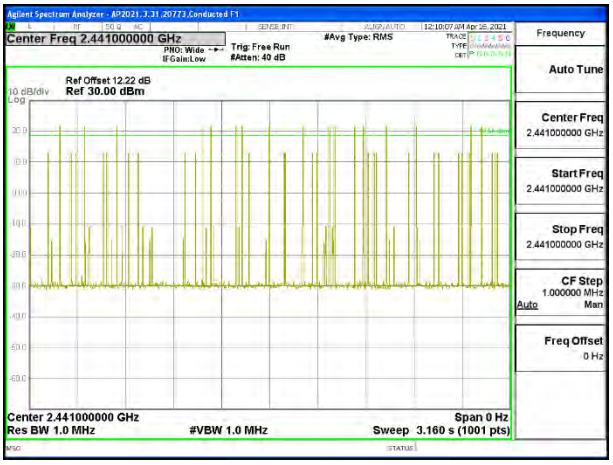
PULSE WIDTH – DH1



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

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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

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:

Band (GHz)	ANT 4 Antenna Gain (dBi)	ANT 3 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)	Correlated Chains Directional Gain (dBi)
2.4	-2.9	0.3	-1.01	1.86

RESULTS

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9.6.1. HIGH POWER BASIC DATA RATE GFSK MODULATION

ANT 4

Tested By:	19232
Date:	6/3/2021

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	20.51	21	-0.49
Middle	2441	20.24	21	-0.76
High	2480	20.58	21	-0.42

ANT 3

Tested By:	19232
Date:	6/3/2021

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	19.91	21	-1.09
Middle	2441	19.62	21	-1.38
High	2480	19.85	21	-1.15

9.6.2. HIGH POWER BASIC DATA RATE TXBF GFSK MODULATION

ANT 4 + ANT 3

Tested By:	19232
Date:	6/3/2021

Channel	Frequency (MHz)	Output Power ANT 4 (dBm)	Output Power ANT 3 (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	17.33	17.41	20.38	21	-0.62
Middle	2441	17.49	17.58	20.55	21	-0.45
High	2480	17.62	17.24	20.44	21	-0.56

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9.6.3. HIGH POWER ENHANCED DATA RATE QPSK MODULATION

ANT 4

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	18.77	21	-2.23
Middle	2441	18.81	21	-2.19
High	2480	18.82	21	-2.18

ANT 3

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	18.71	21	-2.29
Middle	2441	18.69	21	-2.31
High	2480	18.78	21	-2.22

9.6.4. HIGH POWER ENHANCED DATA RATE TXBF QPSK MODULATION

ANT 4 + ANT 3

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	Output Power ANT 4 (dBm)	Output Power ANT 3 (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	15.79	15.93	18.87	21	-2.13
Middle	2441	15.84	15.90	18.88	21	-2.12
High	2480	15.77	15.92	18.86	21	-2.14

9.6.5. HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

ANT 4

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	18.83	21	-2.17
Middle	2441	18.95	21	-2.05
High	2480	18.88	21	-2.12

ANT 3

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	18.94	21	-2.06
Middle	2441	18.81	21	-2.19
High	2480	18.84	21	-2.16

9.6.6. HIGH POWER ENHANCED DATA RATE TXBF 8PSK MODULATION

ANT 4 + ANT 3

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	Output Power ANT 4 (dBm)	Output Power ANT 3 (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	16.06	15.99	19.04	21	-1.96
Middle	2441	16.02	16.03	19.04	21	-1.96
High	2480	15.82	15.94	18.89	21	-2.11

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9.6.7. LOW POWER BASIC DATA RATE GFSK MODULATION

ANT 4

Tested By:	19232
Date:	6/3/2021

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	11.41	21	-9.59
Middle	2441	11.32	21	-9.68
High	2480	11.18	21	-9.82

ANT 3

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	11.26	21	-9.74
Middle	2441	11.31	21	-9.69
High	2480	11.15	21	-9.85

9.6.8. LOW POWER BASIC DATA RATE TXBF GFSK MODULATION

ANT 4 + ANT 3

Tested By:	19232
Date:	6/3/2021

Channel	Frequency (MHz)	Output Power ANT 4 (dBm)	Output Power ANT 3 (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	11.34	11.51	14.44	21	-6.56
Middle	2441	11.22	11.39	14.32	21	-6.68
High	2480	11.49	11.54	14.53	21	-6.47

9.6.9. LOW POWER ENHANCED DATA RATE QPSK MODULATION

ANT 4

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.90	21	-10.1
Middle	2441	10.89	21	-10.11
High	2480	10.96	21	-10.04

ANT 3

Tested By:	19232
Date:	6/3/2021

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	9.77	21	-11.23
Middle	2441	9.81	21	-11.19
High	2480	9.72	21	-11.28

9.6.10. LOW POWER ENHANCED DATA RATE TXBF QPSK MODULATION

ANT 4 + ANT 3

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	Output Power ANT 4 (dBm)	Output Power ANT 3 (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.68	9.79	13.27	21	-7.73
Middle	2441	10.79	9.81	13.34	21	-7.66
High	2480	10.88	9.76	13.37	21	-7.63

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9.6.11. LOW POWER ENHANCED DATA RATE 8PSK MODULATION

ANT 4

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.98	21	-10.02
Middle	2441	10.94	21	-10.06
High	2480	11.01	21	-9.99

ANT 3

Tested By:	19232
Date:	6/3/2021

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	9.82	21	-11.18
Middle	2441	9.90	21	-11.1
High	2480	9.81	21	-11.19

9.6.12. LOW POWER ENHANCED DATA RATE TXBF 8PSK MODULATION

ANT 4 + ANT 3

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	Output Power ANT 4 (dBm)	Output Power ANT 3 (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.93	9.88	13.45	21	-7.55
Middle	2441	10.91	10.01	13.49	21	-7.51
High	2480	10.88	9.83	13.40	21	-7.60

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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

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9.7.1. HIGH POWER BASIC DATA RATE GFSK MODULATION

ANT 4

Tested By:	19232
Date	6/3/2021

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	19.94
Middle	2441	19.88
High	2480	19.99

ANT 3

Tested By:	19232
Date	6/3/2021

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	19.47
Middle	2441	19.17
High	2480	19.33

9.7.2. HIGH POWER BASIC DATA RATE TXBF GFSK MODULATION

ANT 4 + ANT 3

Tested By:	19232
Date:	6/3/2021

Channel	Frequency (MHz)	Average Power ANT 4 (dBm)	Average Power ANT 3 (dBm)	Total Power (dBm)
Low	2402	16.79	16.97	19.89
Middle	2441	16.82	16.90	19.87
High	2480	16.99	16.70	19.86

9.7.3. HIGH POWER ENHANCED DATA RATE QPSK MODULATION

ANT 4

Tested By:	19232
Date	6/17/2021

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	16.19
Middle	2441	16.31
High	2480	16.30

ANT 3

Tested By:	19232
Date	6/17/2021

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	16.22
Middle	2441	16.16
High	2480	16.29

9.7.4. HIGH POWER ENHANCED DATA RATE TXBF QPSK MODULATION

ANT 4 + ANT 3

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	Average Power ANT 4 (dBm)	Average Power ANT 3 (dBm)	Total Power (dBm)
Low	2402	13.29	13.43	16.37
Middle	2441	13.20	13.29	16.26
High	2480	13.21	13.37	16.30

9.7.5. HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

ANT 4

Tested By:	19232
Date	6/17/2021

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	16.32
Middle	2441	16.40
High	2480	16.35

ANT 3

Tested By:	19232
Date	6/17/2021

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	16.41
Middle	2441	16.29
High	2480	16.32

9.7.6. HIGH POWER BASIC DATA RATE TXBF 8PSK MODULATION

ANT 4 + ANT 3

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	Average Power ANT 4 (dBm)	Average Power ANT 3 (dBm)	Total Power (dBm)
Low	2402	13.49	13.47	16.49
Middle	2441	13.44	13.50	16.48
High	2480	13.30	13.45	16.39

9.7.7. LOW POWER BASIC DATA RATE GFSK MODULATION

ANT 4

Tested By:	19232
Date	6/3/2021

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	10.87
Middle	2441	10.70
High	2480	10.66

ANT 3

Tested By:	19232
Date	6/17/2021

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	10.74
Middle	2441	10.85
High	2480	10.62

9.7.8. LOW POWER BASIC DATA RATE TXBF GFSK MODULATION

ANT 4 + ANT 3

Tested By:	19232
Date:	6/3/2021

Channel	Frequency (MHz)	Average Power ANT 4 (dBm)	Average Power ANT 3 (dBm)	Total Power (dBm)
Low	2402	10.79	10.96	13.89
Middle	2441	10.89	10.87	13.89
High	2480	10.91	10.99	13.96

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9.7.9. LOW POWER ENHANCED DATA RATE QPSK MODULATION

ANT 4

Tested By:	19232
Date	6/17/2021

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	8.34
Middle	2441	8.19
High	2480	8.24

ANT 3

Tested By:	19232
Date	6/3/2021

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	7.19
Middle	2441	7.33
High	2480	7.25

9.7.10. LOW POWER ENHANCED DATA RATE TXBF QPSK MODULATION

ANT 4 + ANT 3

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	Average Power ANT 4 (dBm)	Average Power ANT 3 (dBm)	Total Power (dBm)
Low	2402	8.10	7.21	10.69
Middle	2441	8.31	7.32	10.85
High	2480	8.32	7.39	10.89

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9.7.11. LOW POWER ENHANCED DATA RATE 8PSK MODULATION

ANT 4

Tested By:	19232
Date	6/3/2021

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	8.48
Middle	2441	8.48
High	2480	8.49

ANT 3

Tested By:	19232
Date	6/3/2021

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	7.31
Middle	2441	7.43
High	2480	7.37

9.7.12. LOW POWER ENHANCED DATA RATE TXBF 8PSK MODULATION

ANT 4 + ANT 3

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	Average Power ANT 4 (dBm)	Average Power ANT 3 (dBm)	Total Power (dBm)
Low	2402	8.37	7.41	10.93
Middle	2441	8.40	7.44	10.96
High	2480	8.39	7.42	10.94

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

RESULTS

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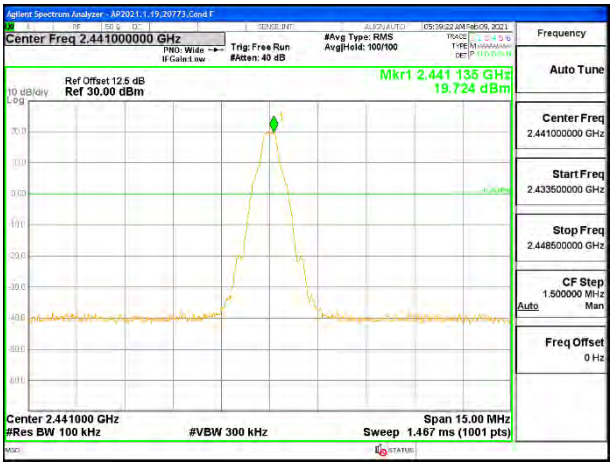
9.8.1. HIGH POWER BASIC DATA RATE GFSK MODULATION

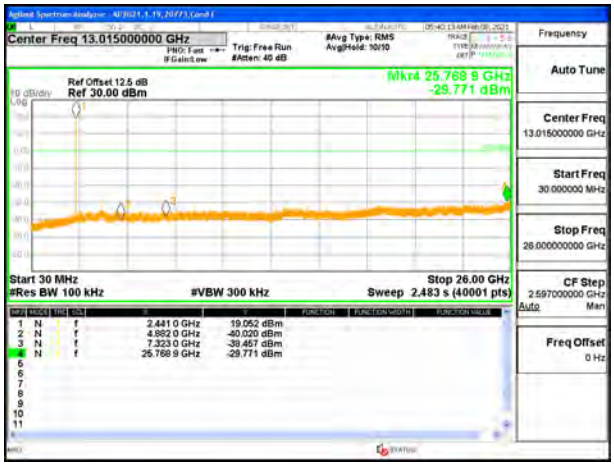
ANT 4 SPURIOUS EMISSIONS, NON-HOPPING

LOW CHANNEL BANDEDGE

LOW CHANNEL OUT-OF-BAND



IN-BAND REFERENCE LEVEL



MID CHANNEL OUT-OF-BAND

HIGH CHANNEL BANDEDGE

HIGH CHANNEL OUT-OF-BAND

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ANT 4 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON

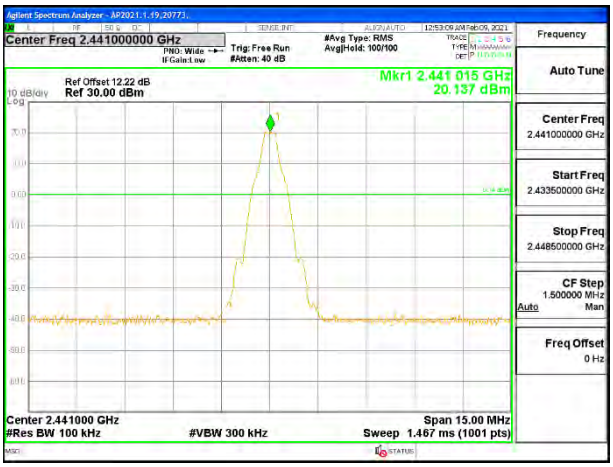
LOW BANDEDGE

HIGH BANDEDGE

ANT 3 SPURIOUS EMISSIONS, NON-HOPPING

LOW CHANNEL BANDEDGE

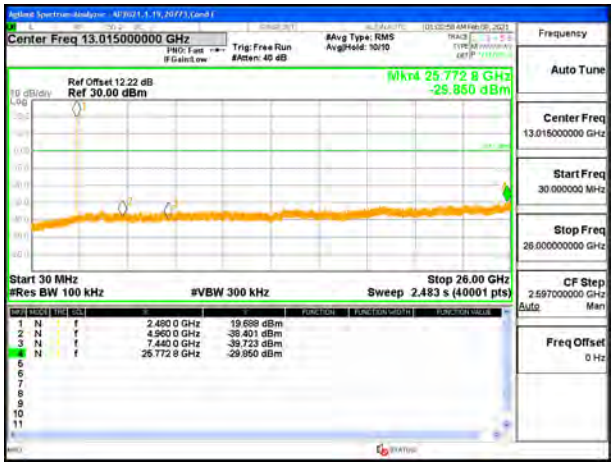
LOW CHANNEL OUT-OF-BAND



IN-BAND REFERENCE LEVEL

MID CHANNEL OUT-OF-BAND

HIGH CHANNEL BANDEDGE



HIGH CHANNEL OUT-OF-BAND

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ANT 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON

LOW BANDEDGE

HIGH BANDEDGE

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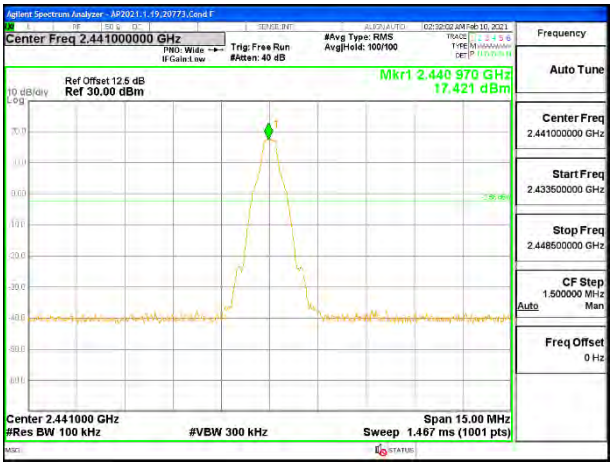
9.8.2. HIGH POWER BASIC DATA RATE TXBF GFSK MODULATION

Note: Test procedure on beamforming mode is same as BT BDR and EDR mode

ANT 4

LOW CHANNEL BANDEDGE ANT 4

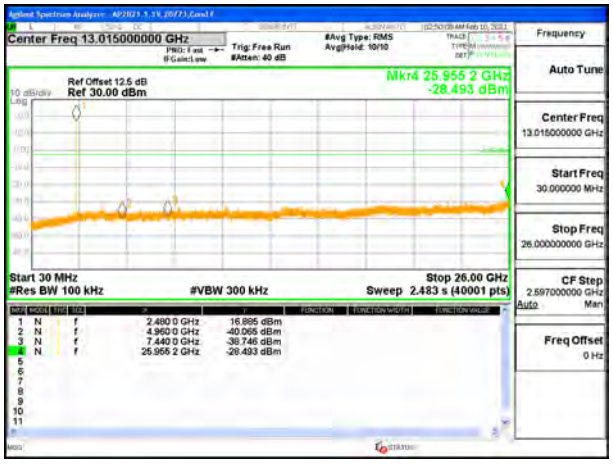
LOW CHANNEL OUT-OF-BAND ANT 4



MID CHANNEL REFERENCE ANT 4

MID CHANNEL OUT-OF-BAND ANT 4

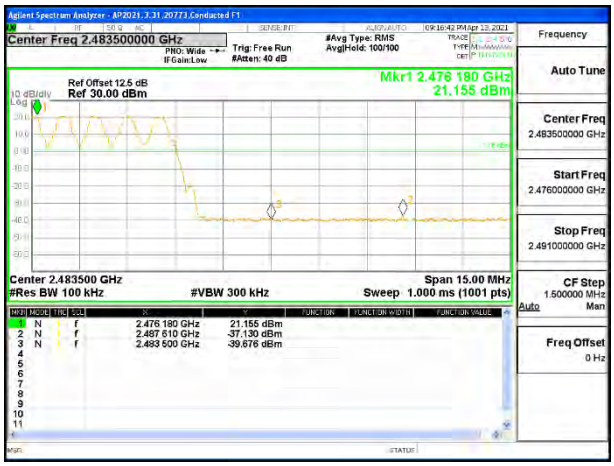
HIGH CHANNEL BANDEDGE ANT 4



HIGH CHANNEL OUT-OF-BAND ANT 4

ANT 4 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON

LOW BANDEDGE



HIGH BANDEDGE

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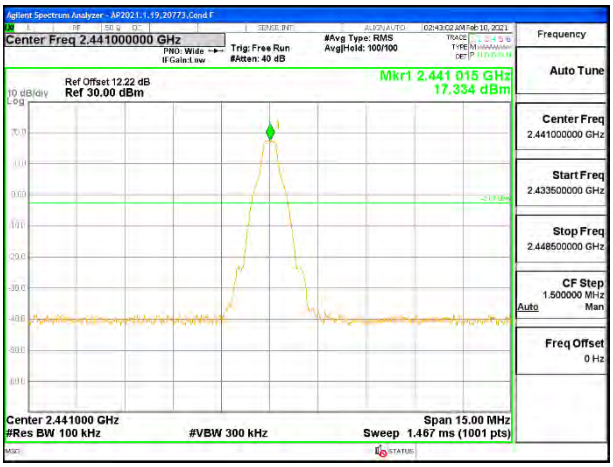
ANT 3

LOW CHANNEL BANDEDGE ANT 3

LOW CHANNEL OUT-OF-BAND ANT 3



MID CHANNEL REFERENCE ANT 3

MID CHANNEL OUT-OF-BAND ANT 3

HIGH CHANNEL BANDEDGE ANT 3

HIGH CHANNEL OUT-OF-BAND ANT 3

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ANT 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON

LOW BANDEDGE

HIGH BANDEDGE

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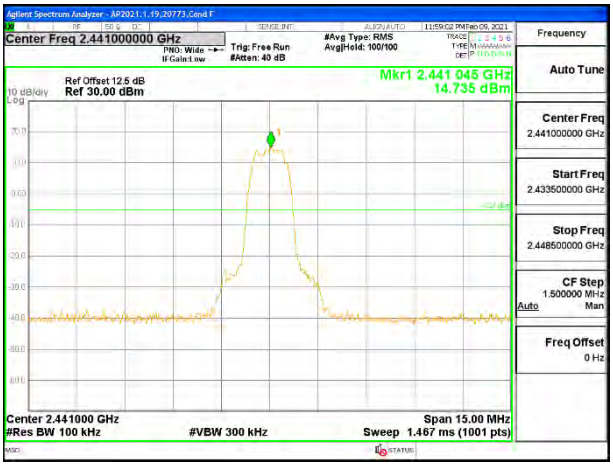
9.8.3. HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

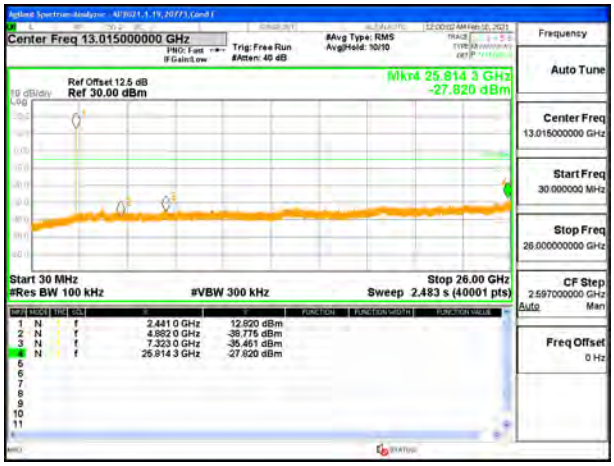
ANT 4 SPURIOUS EMISSIONS, NON-HOPPING

LOW CHANNEL BANDEDGE

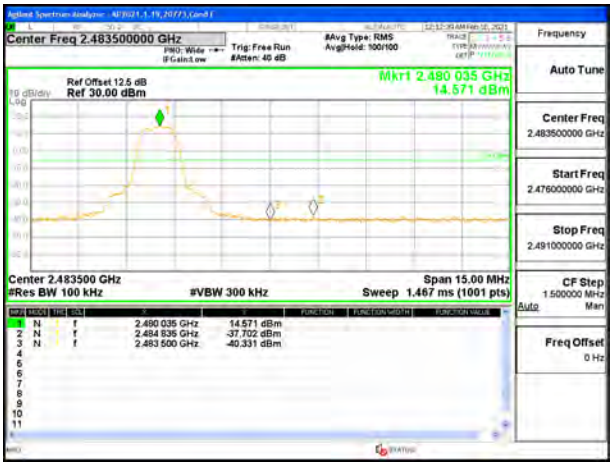
LOW CHANNEL OUT-OF-BAND



IN-BAND REFERENCE LEVEL



MID CHANNEL OUT-OF-BAND



HIGH CHANNEL BANDEDGE

HIGH CHANNEL OUT-OF-BAND

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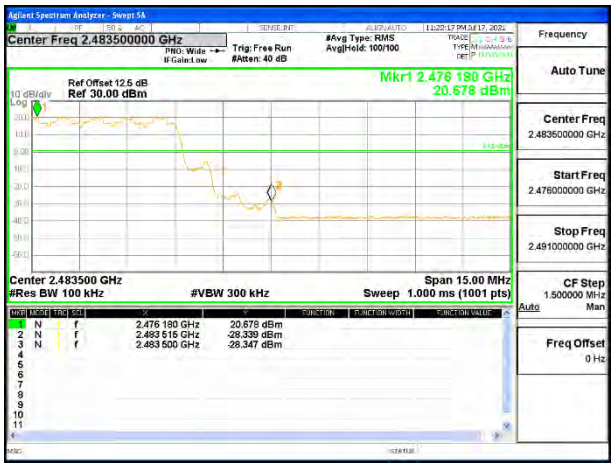
ANT 4 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON

LOW BANDEDGE



HIGH BANDEDGE

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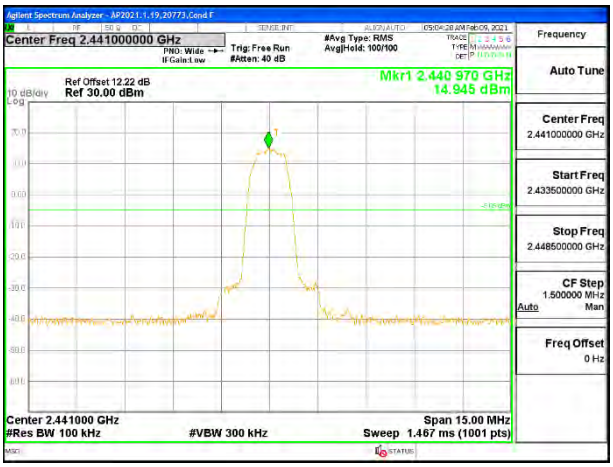
ANT 3 SPURIOUS EMISSIONS, NON-HOPPING

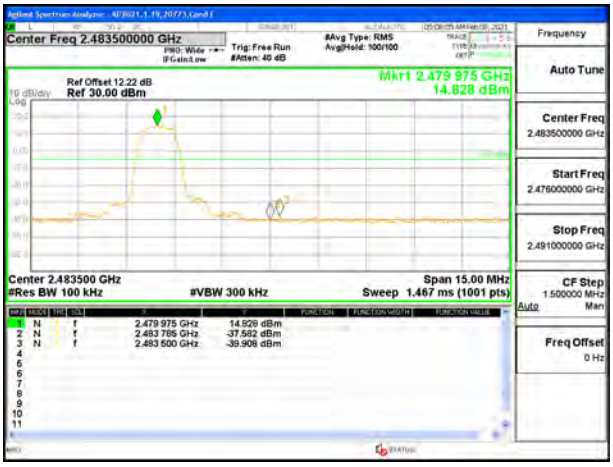
LOW CHANNEL BANDEDGE

LOW CHANNEL OUT-OF-BAND

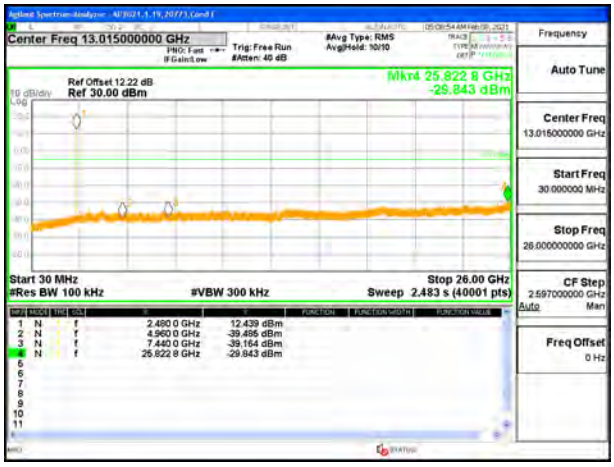


IN-BAND REFERENCE LEVEL

MID CHANNEL OUT-OF-BAND



HIGH CHANNEL BANDEDGE



HIGH CHANNEL OUT-OF-BAND

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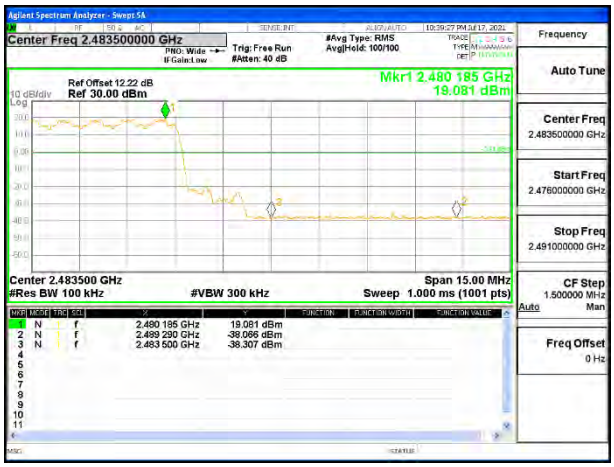
ANT 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON

LOW BANDEDGE



HIGH BANDEDGE

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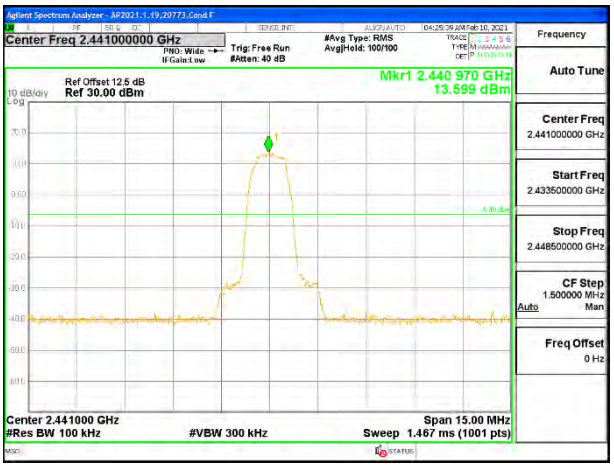
9.8.4. HIGH POWER ENHANCED DATA RATE TXBF 8PSK MODULATION

Note: Test procedure on beamforming mode is same as BT basic and EDR mode

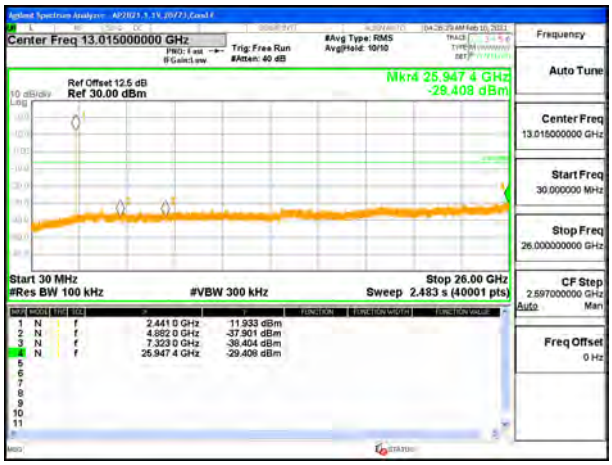
ANT 4

LOW CHANNEL BANDEDGE ANT 4

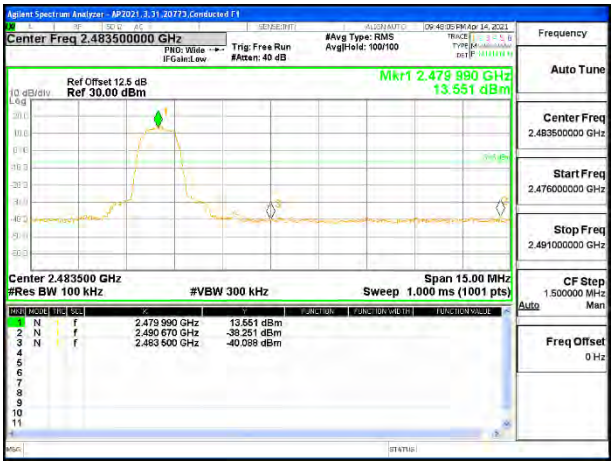
LOW CHANNEL OUT-OF-BAND ANT 4



MID CHANNEL REFERENCE ANT 4



MID CHANNEL OUT-OF-BAND ANT 4



HIGH CHANNEL BANDEDGE ANT 4

HIGH CHANNEL OUT-OF-BAND ANT 4

ANT 4 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON

LOW BANDEDGE

HIGH BANDEDGE

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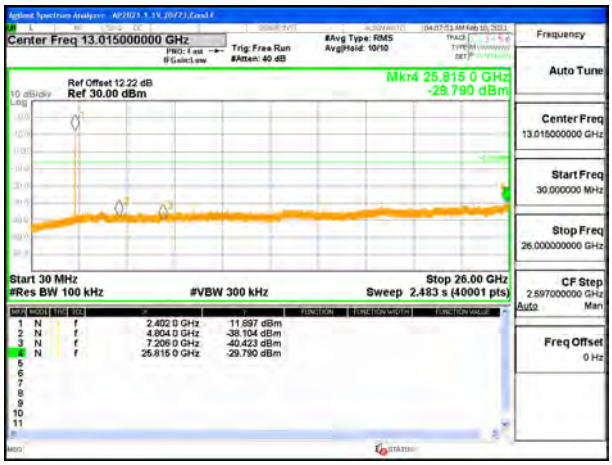
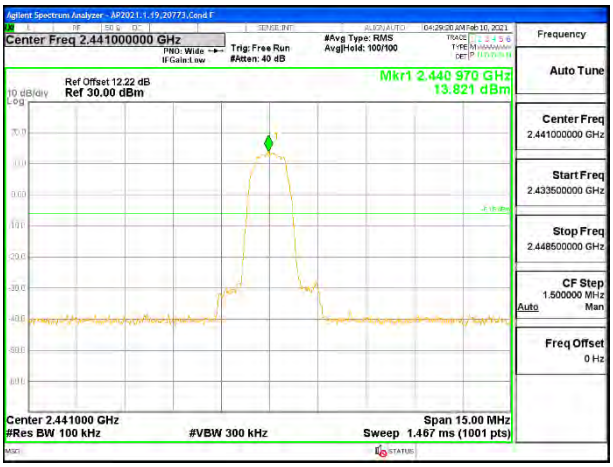
ANT 3

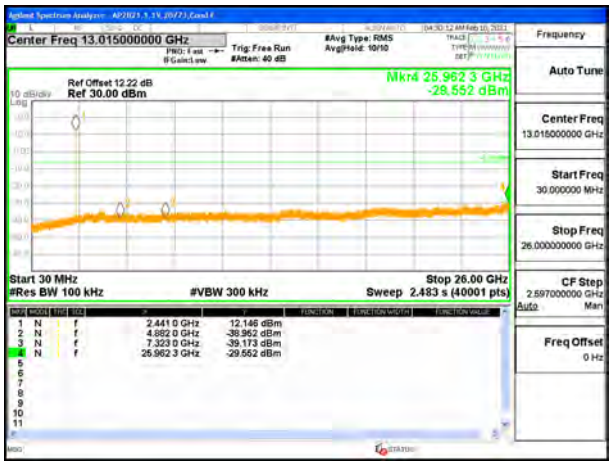
LOW CHANNEL BANDEDGE ANT 3



LOW CHANNEL OUT-OF-BAND ANT 3

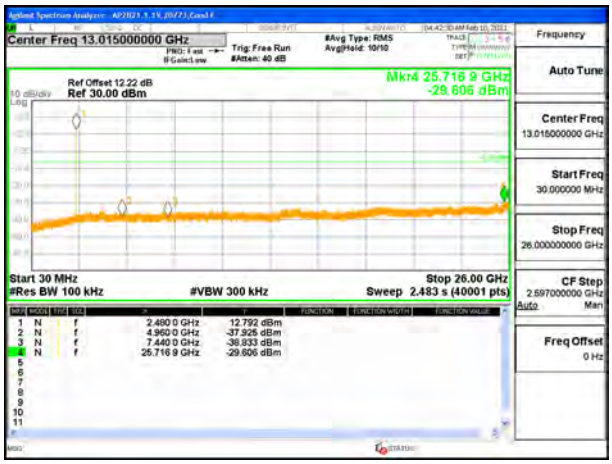


MID CHANNEL REFERENCE ANT 3



MID CHANNEL OUT-OF-BAND ANT 3

HIGH CHANNEL BANDEDGE ANT 3



HIGH CHANNEL OUT-OF-BAND ANT 3

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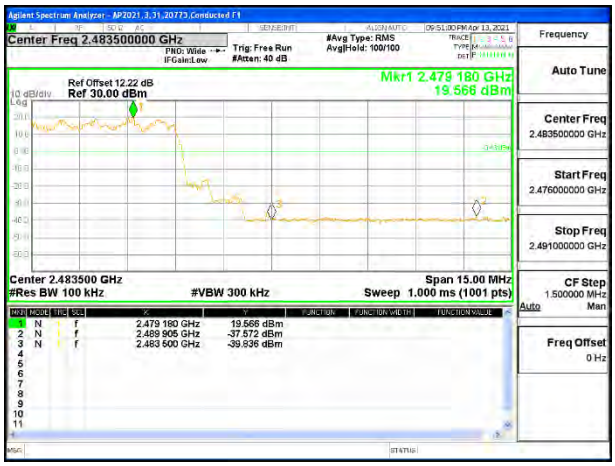
ANT 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON

LOW BANDEDGE



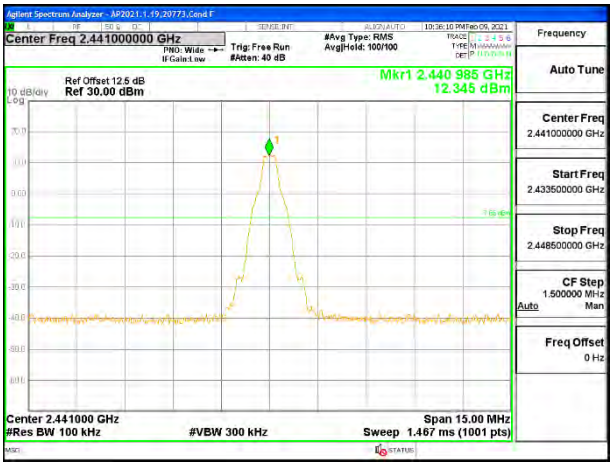
HIGH BANDEDGE

9.8.5. LOW POWER BASIC DATA RATE GFSK MODULATION

ANT 4 SPURIOUS EMISSIONS, NON-HOPPING

LOW CHANNEL BANDEDGE

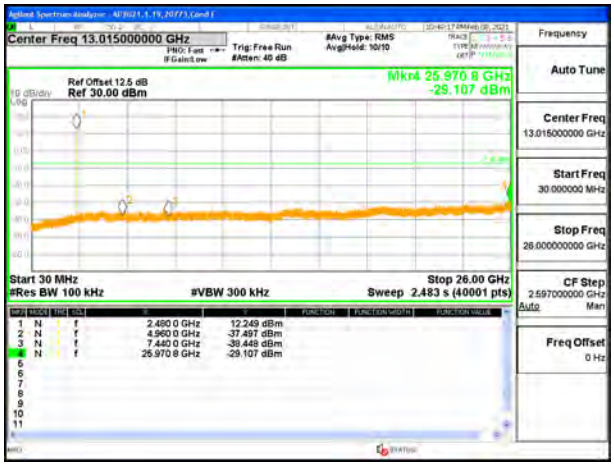
LOW CHANNEL OUT-OF-BAND



IN-BAND REFERENCE LEVEL

MID CHANNEL OUT-OF-BAND

HIGH CHANNEL BANDEDGE



HIGH CHANNEL OUT-OF-BAND

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ANT 4 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON

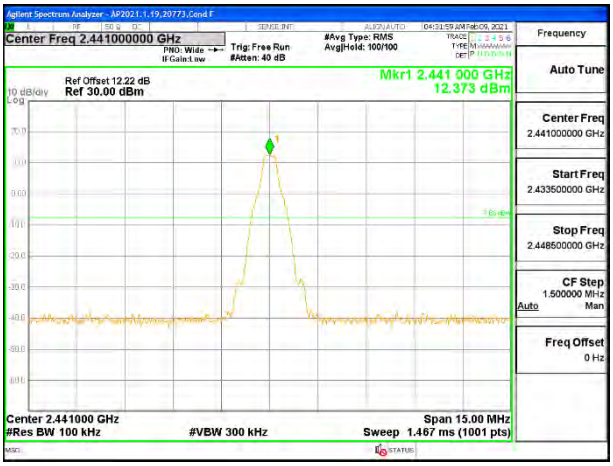
LOW BANDEDGE

HIGH BANDEDGE

ANT 3 SPURIOUS EMISSIONS, NON-HOPPING

LOW CHANNEL BANDEDGE

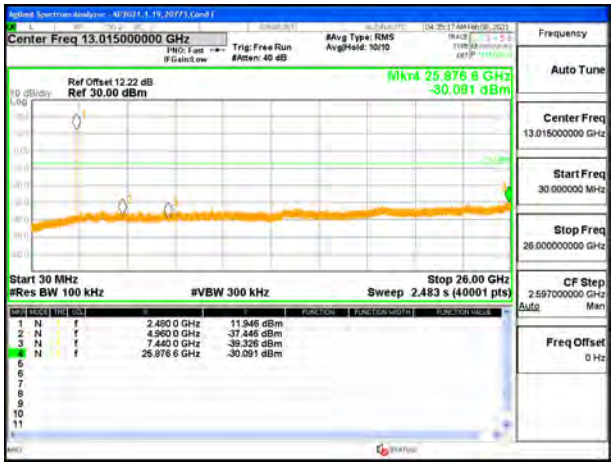
OUT-OF-BAND LOW CHANNEL



IN-BAND REFERENCE LEVEL

OUT-OF-BAND MID CHANNEL

HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

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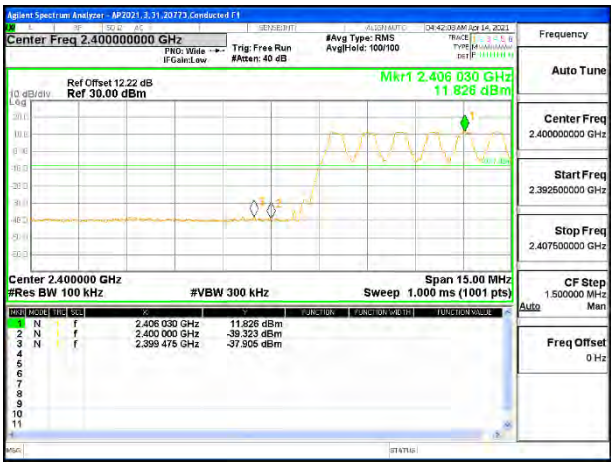
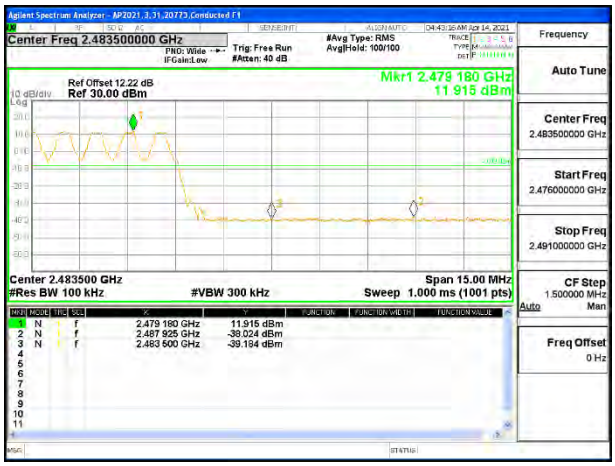
ANT 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON



LOW BANDEDGE



HIGH BANDEDGE

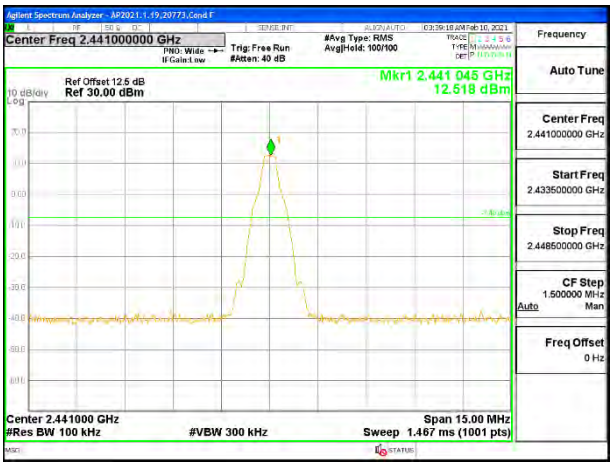
9.8.6. LOW POWER BASIC DATA RATE TXBF GFSK MODULATION

Note: Test procedure on beamforming mode is same as BT basic and EDR mode

ANT 4

LOW CHANNEL BANDEDGE ANT 4

LOW CHANNEL OUT-OF-BAND ANT 4



MID CHANNEL REFERENCE ANT 4

MID CHANNEL OUT-OF-BAND ANT 4

HIGH CHANNEL BANDEDGE ANT 4

HIGH CHANNEL OUT-OF-BAND ANT 4

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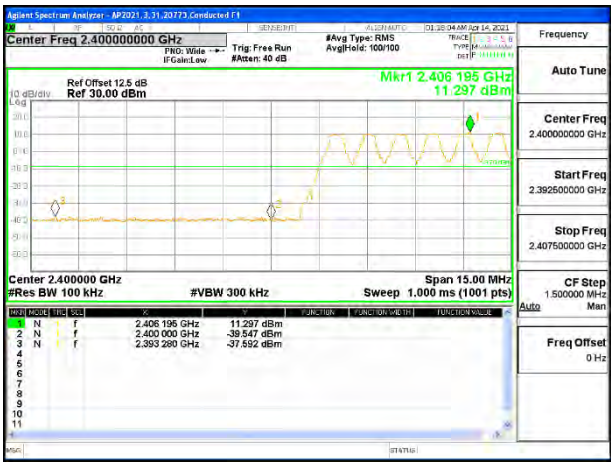
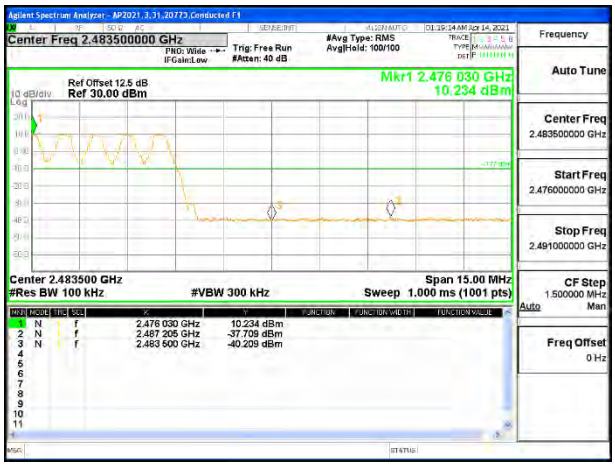
ANT 4 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON



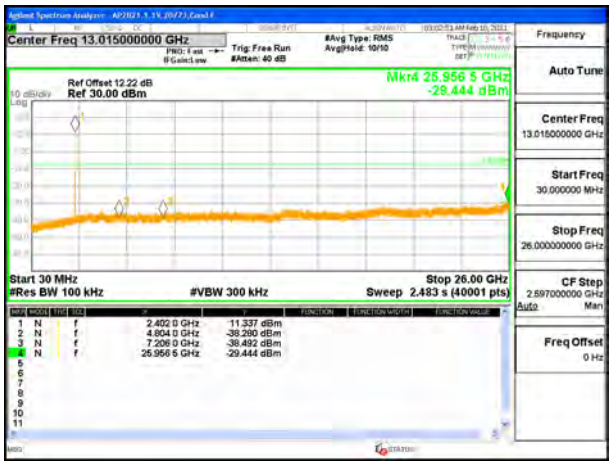
LOW BANDEDGE



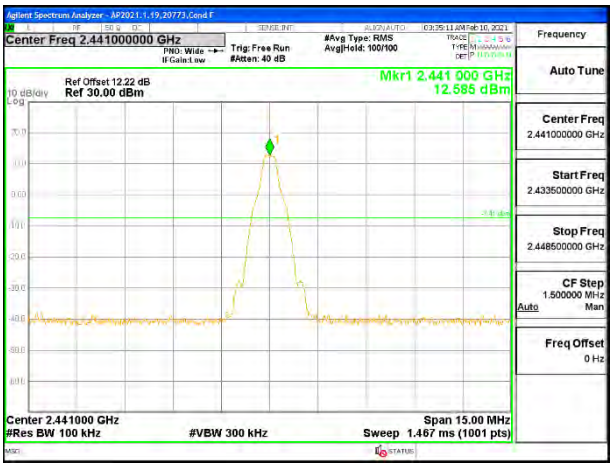
HIGH BANDEDGE

ANT 3

LOW CHANNEL BANDEDGE ANT 3



LOW CHANNEL OUT-OF-BAND ANT 3



MID CHANNEL REFERENCE ANT 3

MID CHANNEL OUT-OF-BAND ANT 3

HIGH CHANNEL BANDEDGE ANT 3

HIGH CHANNEL OUT-OF-BAND ANT 3

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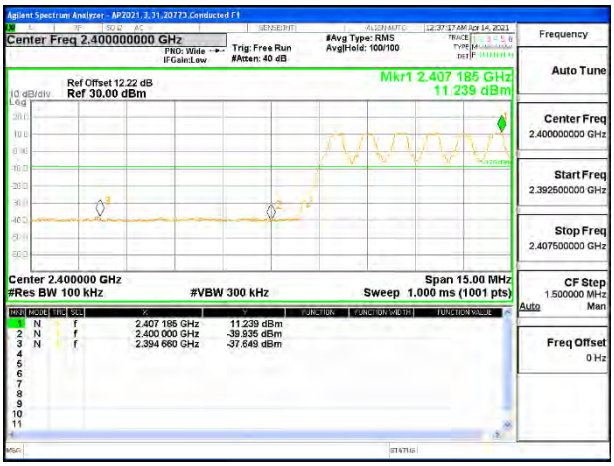
ANT 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON



LOW BANDEDGE

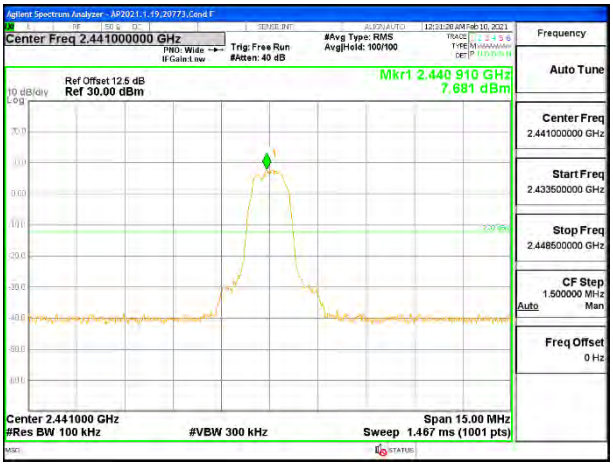
HIGH BANDEDGE

9.8.7. LOW POWER ENHANCED DATA RATE 8PSK MODULATION

ANT 4 SPURIOUS EMISSIONS, NON-HOPPING

LOW CHANNEL BANDEDGE

OUT-OF-BAND LOW CHANNEL



IN-BAND REFERENCE LEVEL

OUT-OF-BAND MID CHANNEL

HIGH CHANNEL BANDEDGE

OUT-OF-BAND HIGH CHANNEL

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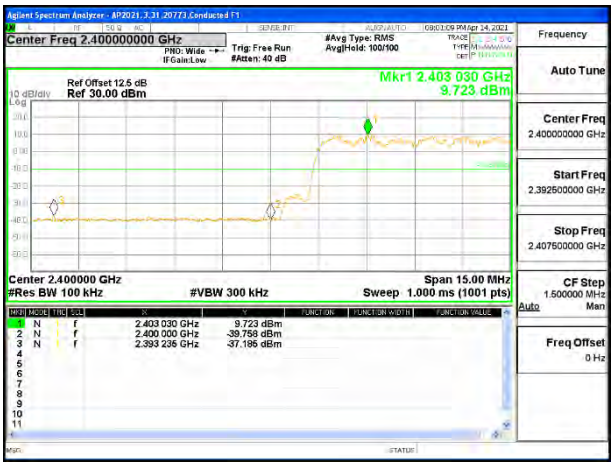
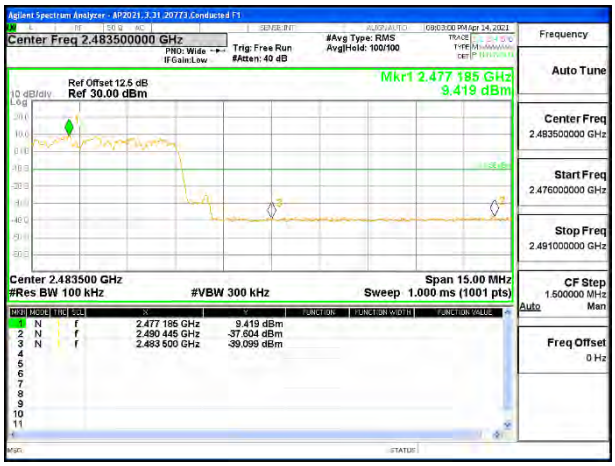
ANT 4 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON



LOW BANDEDGE



HIGH BANDEDGE

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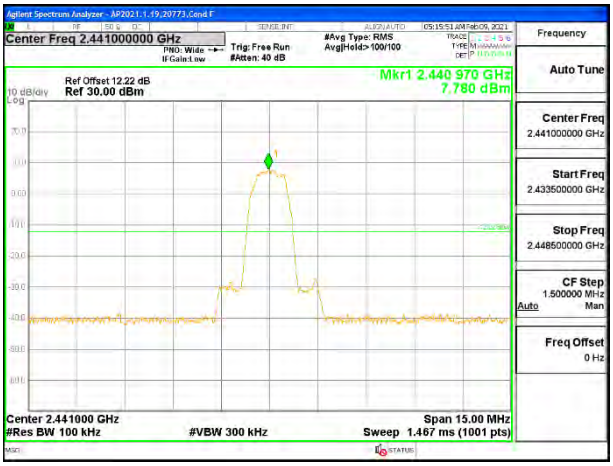
ANT 3 SPURIOUS EMISSIONS, NON-HOPPING

LOW CHANNEL BANDEDGE

OUT-OF-BAND LOW CHANNEL



IN-BAND REFERENCE LEVEL

OUT-OF-BAND MID CHANNEL

HIGH CHANNEL BANDEDGE

OUT-OF-BAND HIGH CHANNEL

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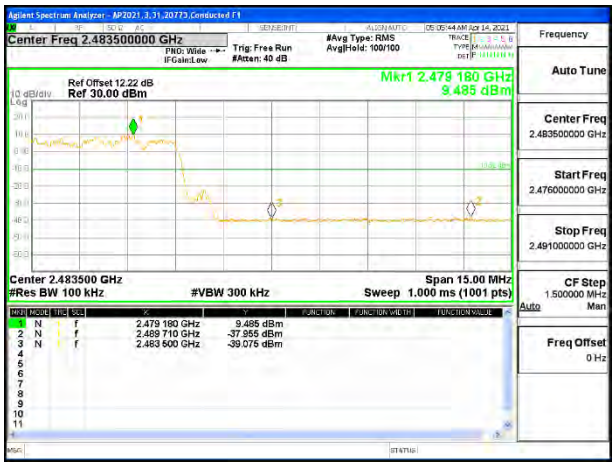
ANT 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON

LOW BANDEDGE



HIGH BANDEDGE

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9.8.8. LOW POWER ENHANCED DATA RATE TXBF 8PSK MODULATION

Note: Test procedure on beamforming mode is same as BT basic and EDR mode

ANT 4

LOW CHANNEL BANDEDGE ANT 4

LOW CHANNEL OUT-OF-BAND ANT 4

MID CHANNEL REFERENCE ANT 4

MID CHANNEL OUT-OF-BAND ANT 4

HIGH CHANNEL BANDEDGE ANT 4

HIGH CHANNEL OUT-OF-BAND ANT 4

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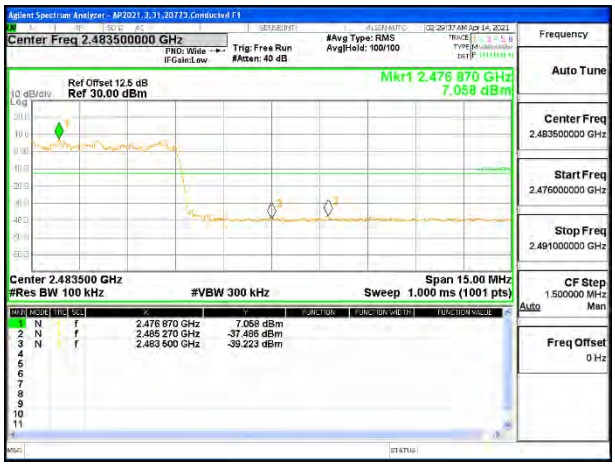
ANT 4 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON

LOW BANDEDGE

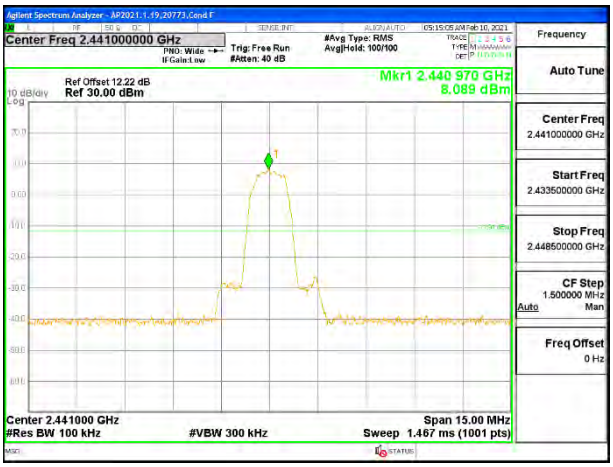


HIGH BANDEDGE

ANT 3

LOW CHANNEL BANDEDGE ANT 3

LOW CHANNEL OUT-OF-BAND ANT 3



MID CHANNEL REFERENCE ANT 3

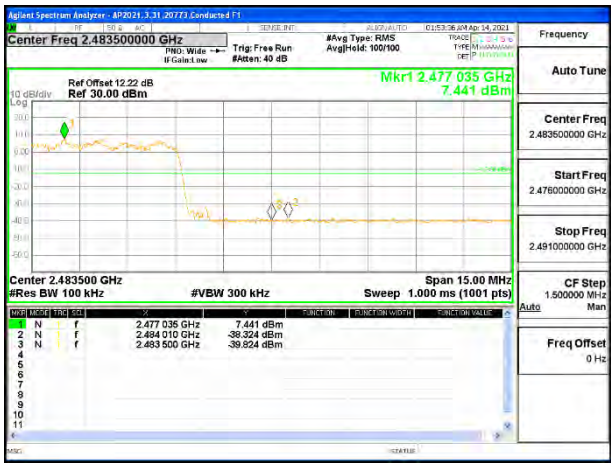
MID CHANNEL OUT-OF-BAND ANT 3

HIGH CHANNEL BANDEDGE ANT 3

HIGH CHANNEL OUT-OF-BAND ANT 3

ANT 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON

LOW BANDEDGE



HIGH BANDEDGE

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 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.

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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

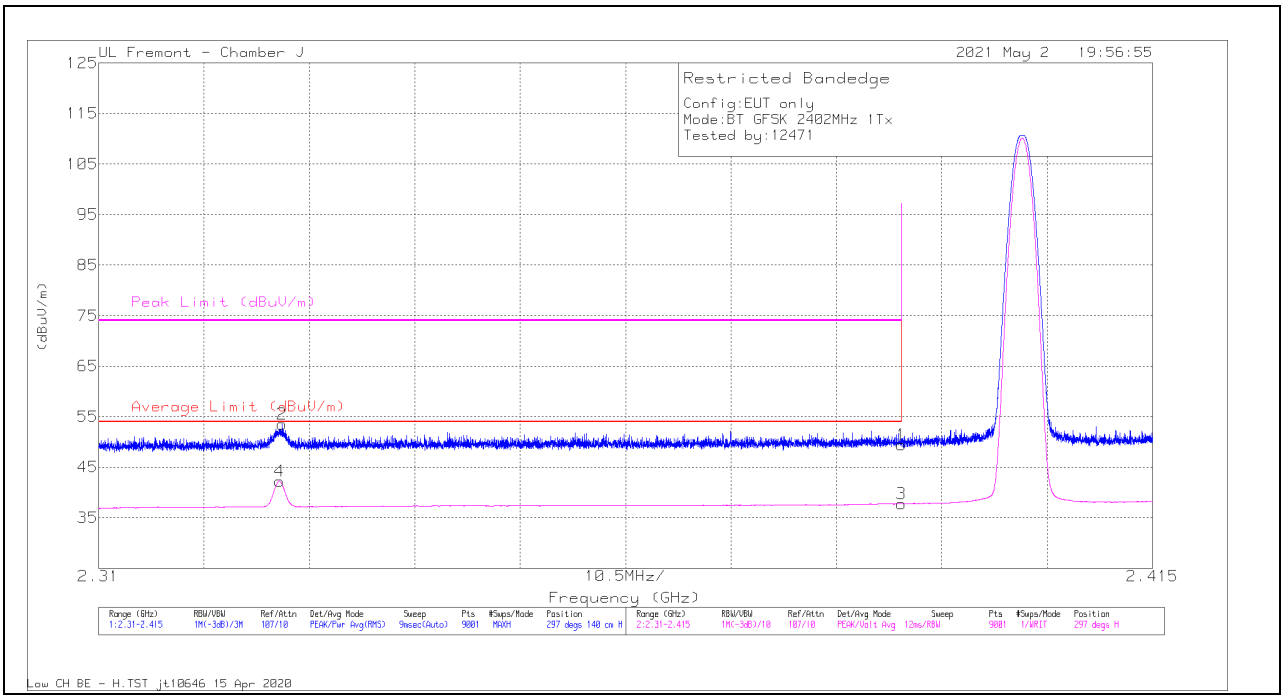
10.1. TRANSMITTER ABOVE 1 GHz

10.1.1. HIGH POWER BASIC DATA RATE GFSK MODULATION

ANT 4

BANDEDGE (LOW CHANNEL)

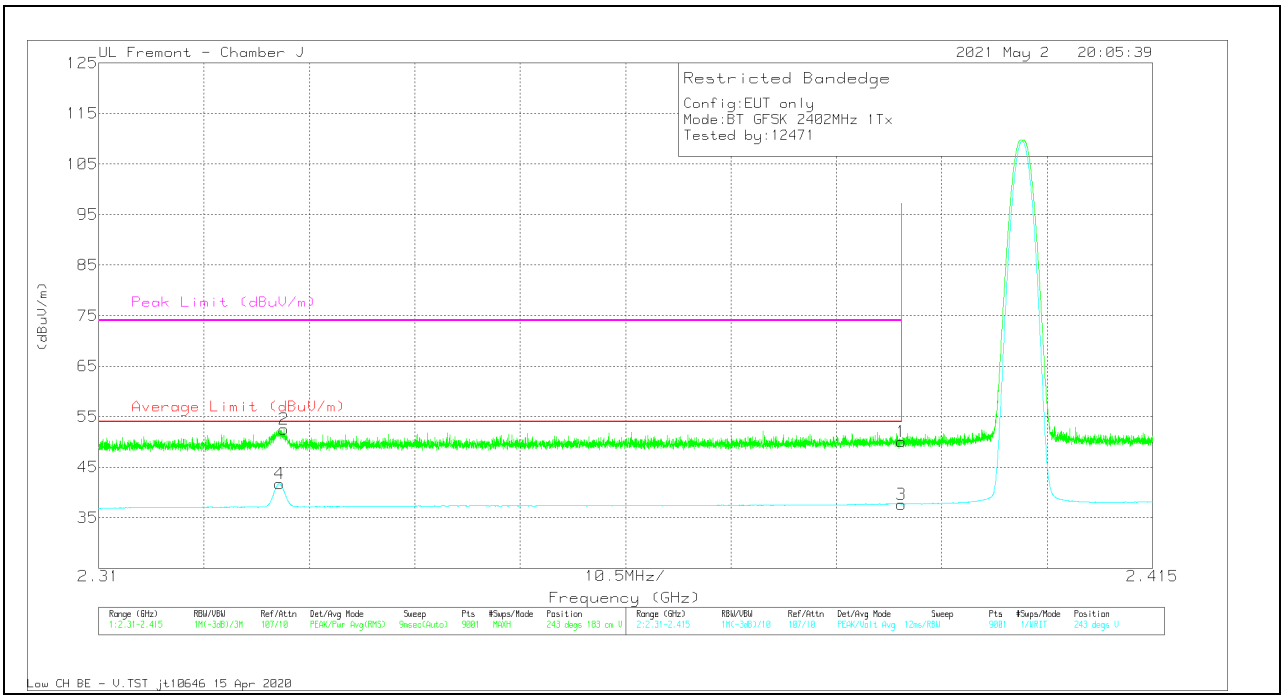
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0100034 (dB/m)	Amp/Cbl/Fltr/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	42.48	Pk	32.1	-25.2	49.38	-	-	74	-24.62	297	140	H
2	* 2.32829	47.04	Pk	31.8	-25.3	53.54	-	-	74	-20.46	297	140	H
3	* 2.38999	30.89	VA1T	32.1	-25.2	37.79	54	-16.21	-	-	297	140	H
4	* 2.32803	35.71	VA1T	31.8	-25.3	42.21	54	-11.79	-	-	297	140	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 PRE0100034 (dB/m)	Amp/Cbl/Fltr/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	43.17	Pk	32.1	-25.2	50.07	-	-	74	-23.93	243	183	V
2	* 2.32845	45.97	Pk	31.8	-25.3	52.47	-	-	74	-21.53	243	183	V
3	* 2.38999	30.78	VA1T	32.1	-25.2	37.68	54	-16.32	-	-	243	183	V
4	* 2.328	35.25	VA1T	31.8	-25.3	41.75	54	-12.25	-	-	243	183	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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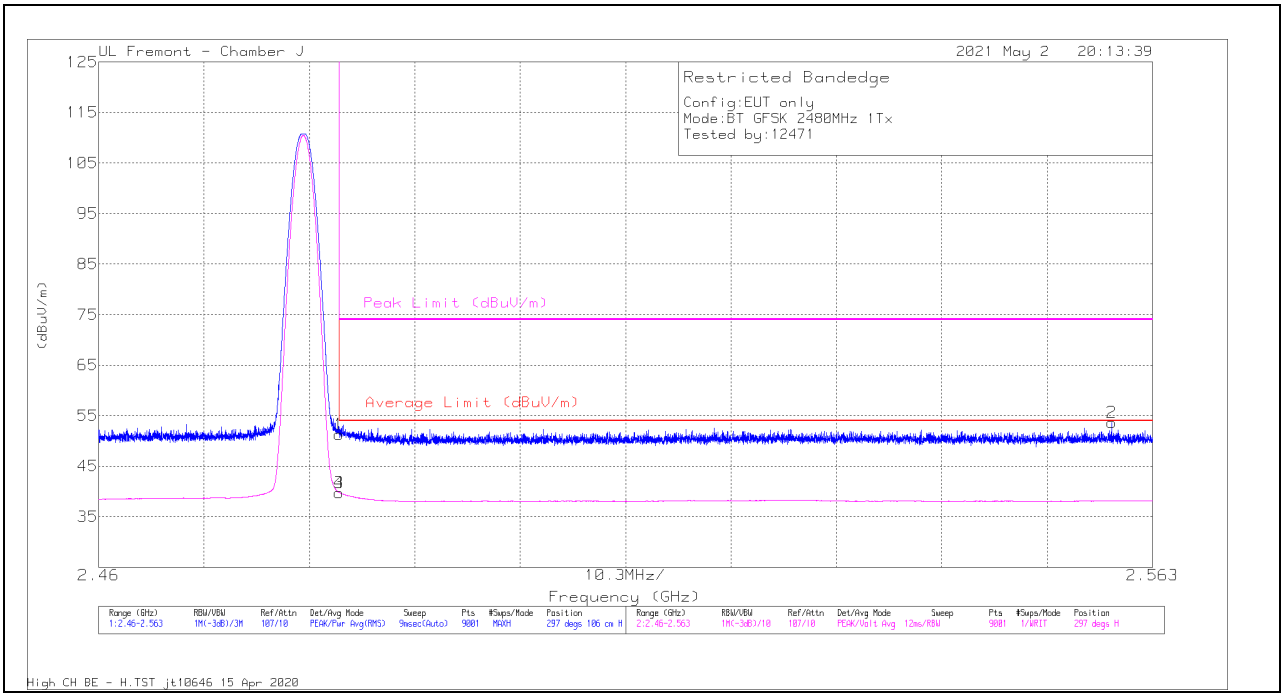
BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0100034 (dB/m)	Amp/Cbl/Fltr/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	44.04	Pk	32.5	-25.2	51.34	-	-	74	-22.66	297	106	H
2	2.55901	45.99	Pk	32.6	-25	53.59	-	-	74	-20.41	297	106	H
3	* 2.48351	32.49	VA1T	32.5	-25.2	39.79	54	-14.21	-	-	297	106	H
4	* 2.48352	32.49	VA1T	32.5	-25.2	39.79	54	-14.21	-	-	297	106	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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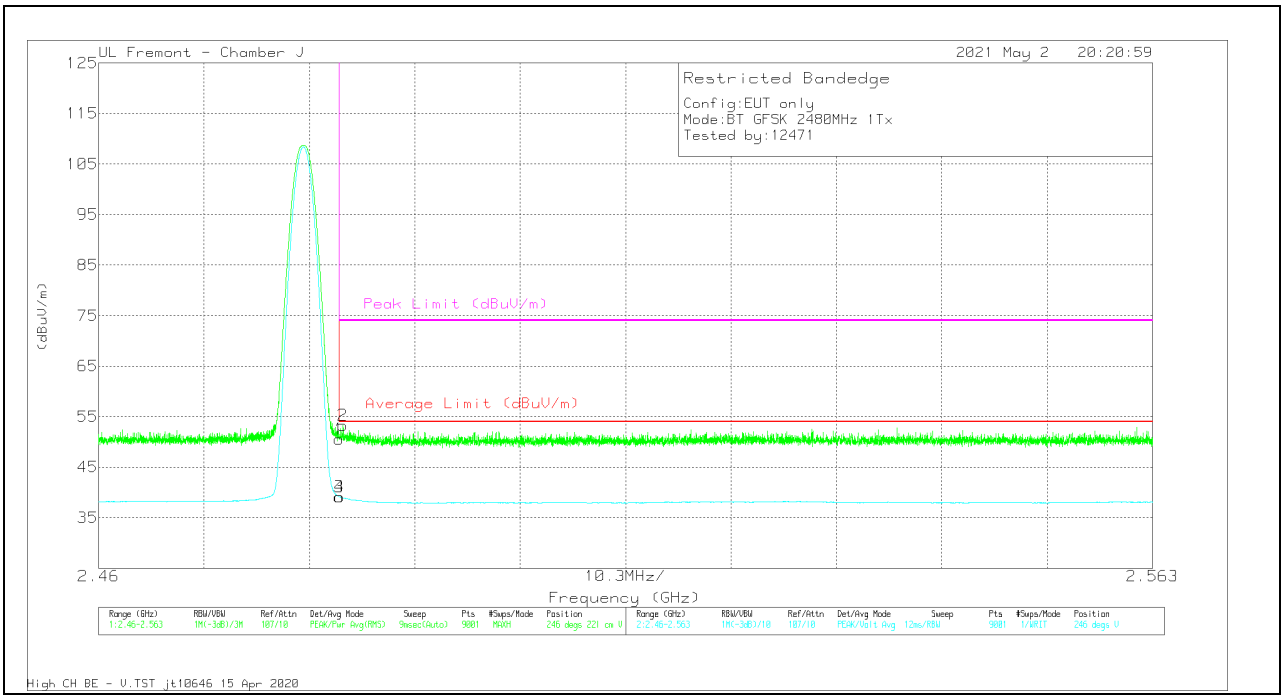
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0100034 (dB/m)	Amp/Cbl/Fltr/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	43.26	Pk	32.5	-25.2	50.56	-	-	74	-23.44	246	221	V
2	* 2.48388	45.92	Pk	32.5	-25.2	53.22	-	-	74	-20.78	246	221	V
3	* 2.48351	31.85	VA1T	32.5	-25.2	39.15	54	-14.85	-	-	246	221	V
4	* 2.48353	31.84	VA1T	32.5	-25.2	39.14	54	-14.86	-	-	246	221	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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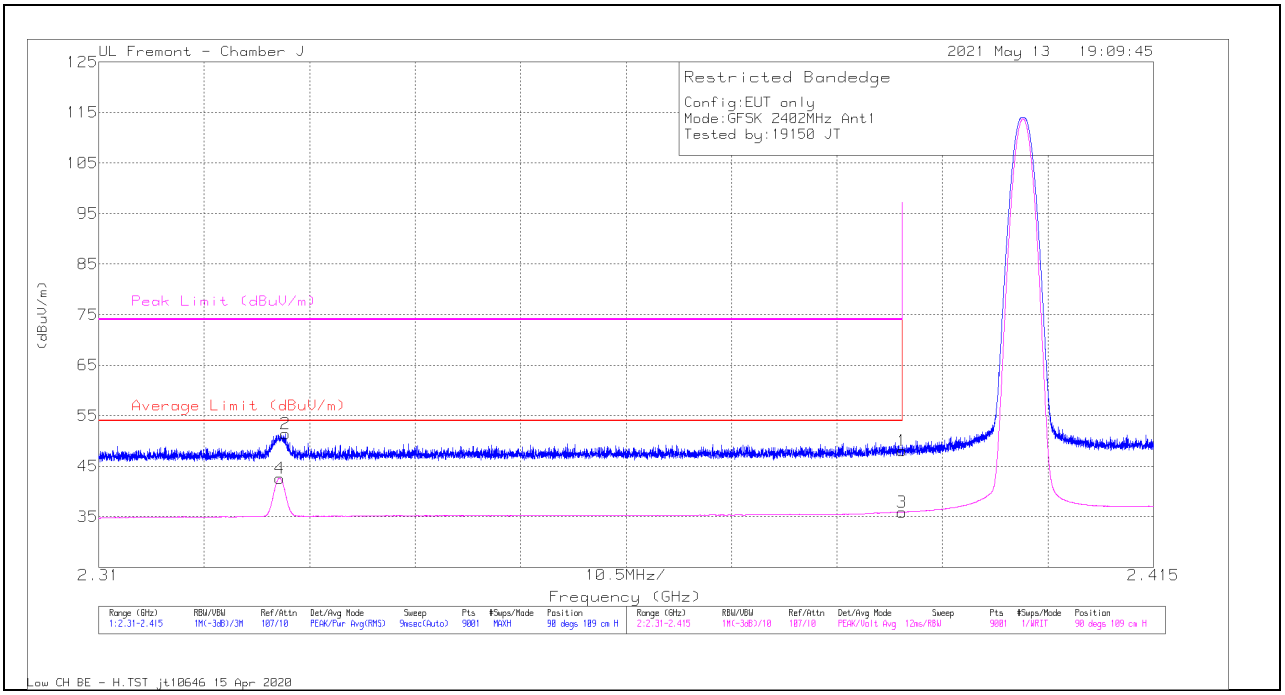
ANT 3

BANDEDGE (LOW CHANNEL)

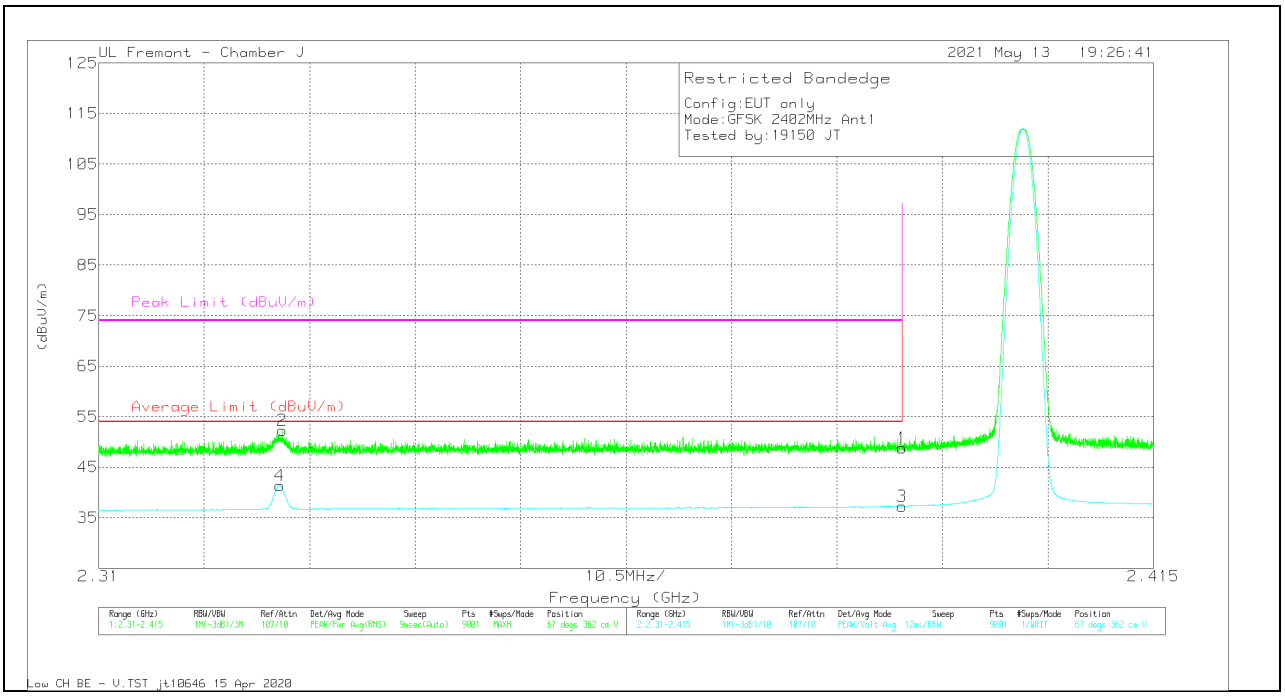
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0100034 (dB/m)	Amp/Cbl/Fltr/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	41.13	Pk	32.1	-25.2	48.03	-	-	74	-25.97	90	109	H
2	* 2.3286	44.91	Pk	31.8	-25.3	51.41	-	-	74	-22.59	90	109	H
3	* 2.38999	29.03	VA1T	32.1	-25.2	35.93	54	-18.07	-	-	90	109	H
4	* 2.32803	36.13	VA1T	31.8	-25.3	42.63	54	-11.37	-	-	90	109	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 PRE0100034 (dB/m)	Amp/Cbl/Fltr/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	41.88	Pk	32.1	-25.2	48.78	-	-	74	-25.22	67	362	V
2	* 2.32826	45.82	Pk	31.8	-25.3	52.32	-	-	74	-21.68	67	362	V
3	* 2.38999	30.37	VA1T	32.1	-25.2	37.27	54	-16.73	-	-	67	362	V
4	* 2.328	34.84	VA1T	31.8	-25.3	41.34	54	-12.66	-	-	67	362	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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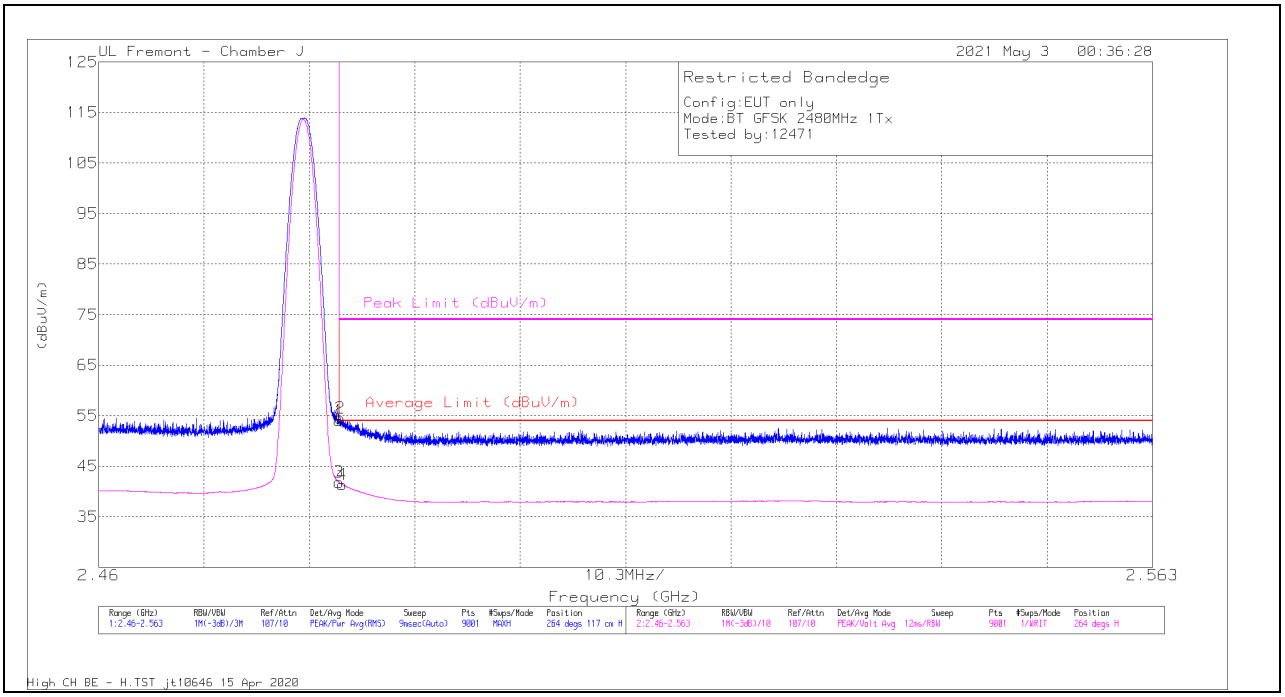
BANDEDGE (HIGH CHANNEL)

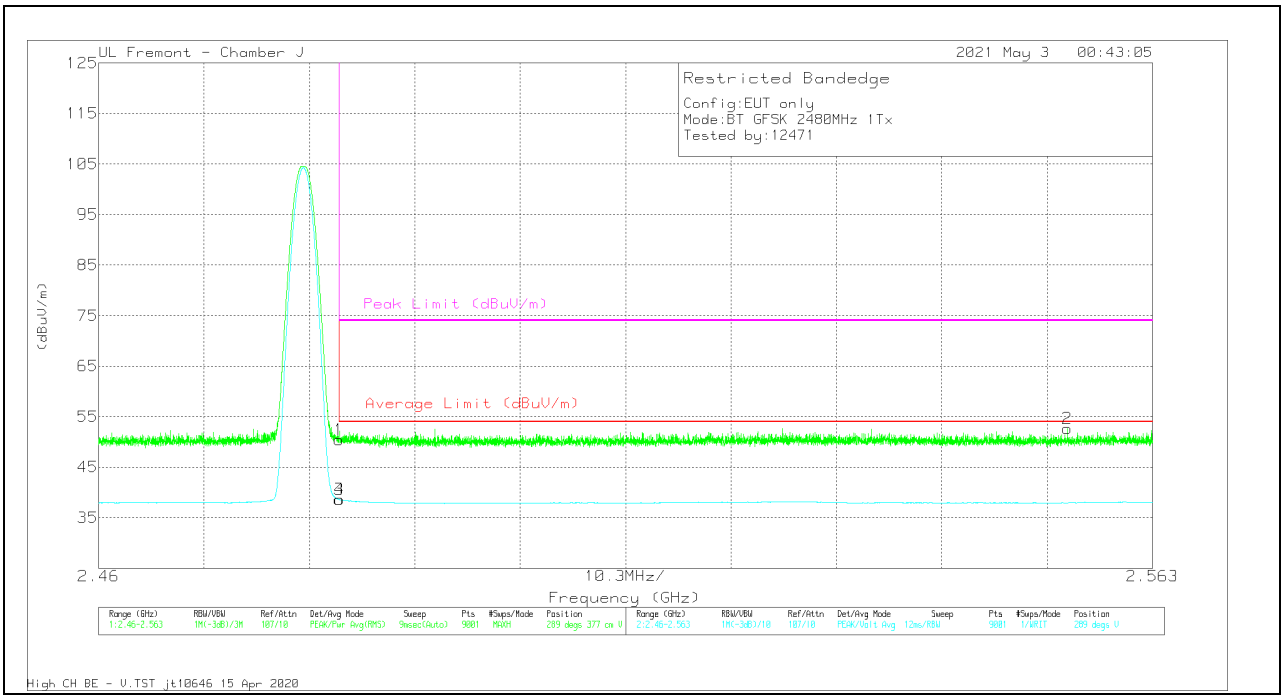
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0100034 (dB/m)	Amp/Cbl/Fltr/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	46.67	Pk	32.5	-25.2	53.97	-	-	74	-20.03	264	117	H
2	* 2.4836	47.16	Pk	32.5	-25.2	54.46	-	-	74	-19.54	264	117	H
3	* 2.48351	34.49	VA1T	32.5	-25.2	41.79	54	-12.21	-	-	264	117	H
4	* 2.48378	34.07	VA1T	32.5	-25.2	41.37	54	-12.63	-	-	264	117	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 PRE0100034 (dB/m)	Amp/Cbl/Fltr/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	43.14	Pk	32.5	-25.2	50.44	-	-	74	-23.56	289	377	V
2	2.55466	45.19	Pk	32.6	-25.1	52.69	-	-	74	-21.31	289	377	V
3	* 2.48351	31.3	VA1T	32.5	-25.2	38.6	54	-15.4	-	-	289	377	V
4	* 2.48353	31.29	VA1T	32.5	-25.2	38.59	54	-15.41	-	-	289	377	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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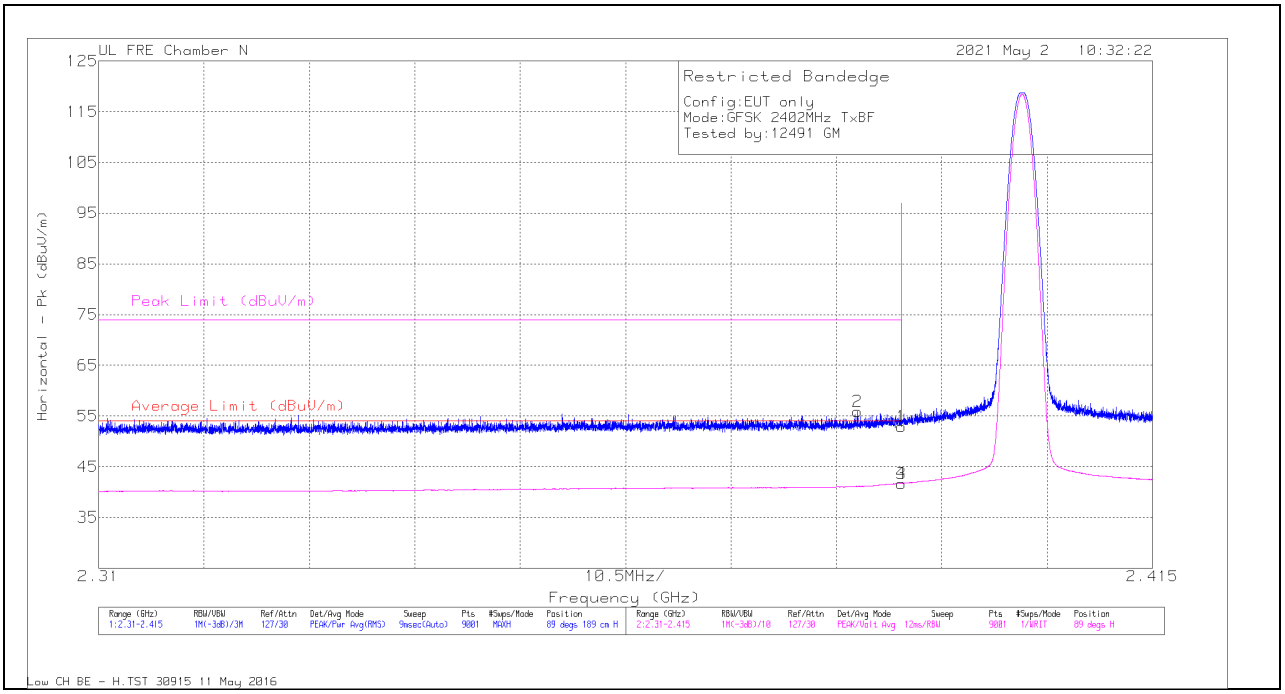
10.1.2. HIGH POWER BASIC DATA RATE TXBF GFSK MODULATION

BANDEDGE (LOW CHANNEL)

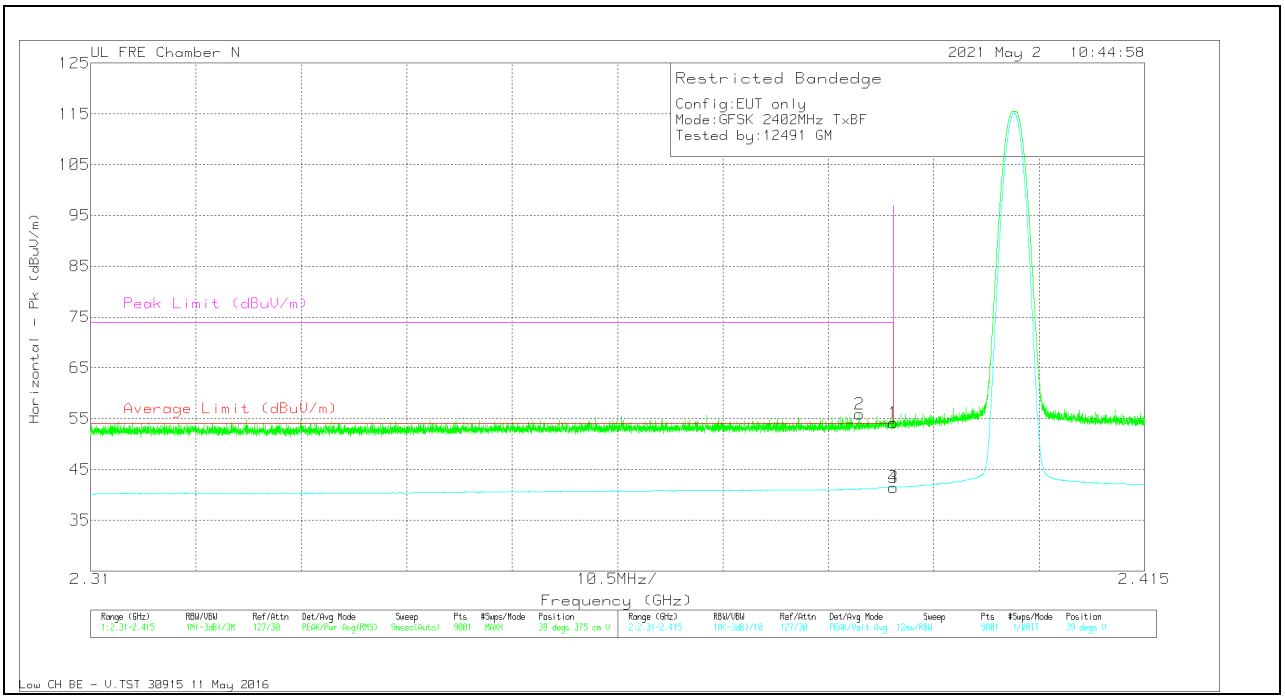
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213971 (dB/m)	Amp/Cbl/Fltr/ 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	56.77	Pk	32.4	-36.2	52.97	-	-	74	-21.03	89	189	H
2	2.3856	59.72	Pk	32.4	-36.2	55.92	-	-	74	-18.08	89	189	H
3	2.38999	45.52	VA1T	32.4	-36.2	41.72	54	-12.28	-	-	89	189	H
4	2.38997	45.53	VA1T	32.4	-36.2	41.73	54	-12.27	-	-	89	189	H

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

VERTICAL RESULT

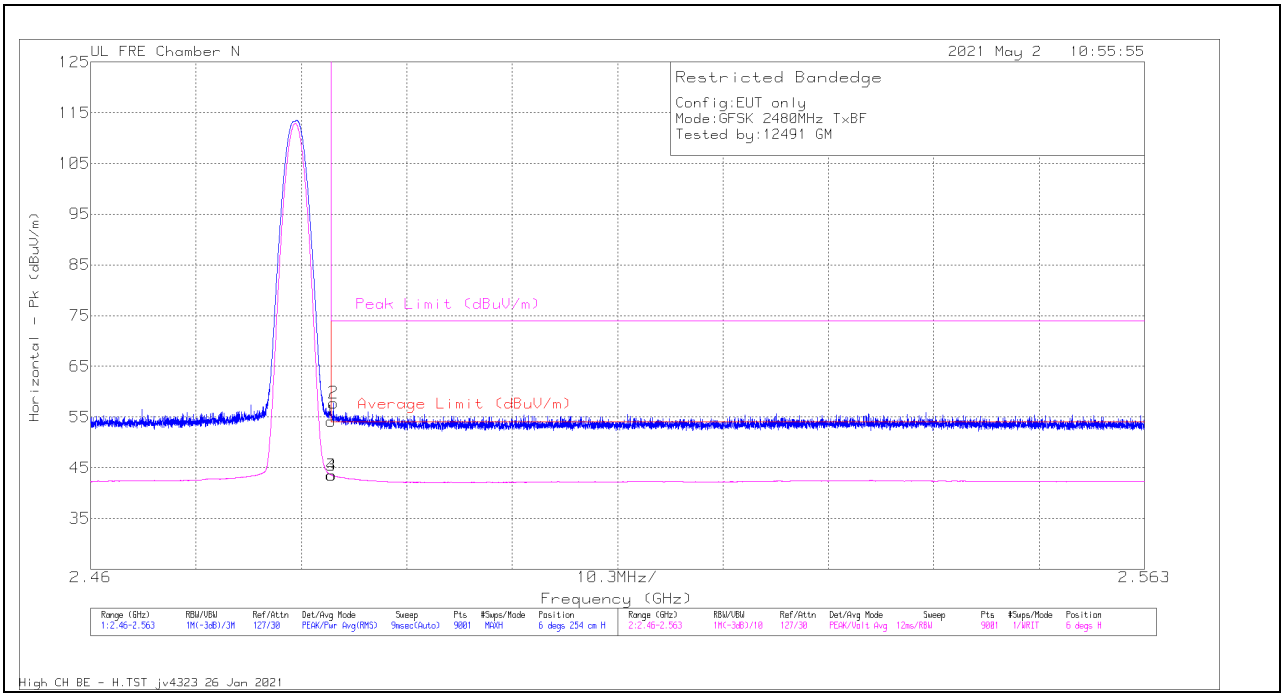


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213971 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.38999	57.92	Pk	32.4	-36.2	54.12	-	-	74	-19.88	39	375	V
2	2.38661	59.71	Pk	32.4	-36.2	55.91	-	-	74	-18.09	39	375	V
3	2.38999	45.28	VA1T	32.4	-36.2	41.48	54	-12.52	-	-	39	375	V
4	2.38998	45.28	VA1T	32.4	-36.2	41.48	54	-12.52	-	-	39	375	V

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 PRE0213971 (dB/m)	Amp/Cbl/Fltr/ 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	57.71	Pk	32.5	-36	54.21	-	-	74	-19.79	6	254	H
2	2.48371	61.31	Pk	32.5	-36	57.81	-	-	74	-16.19	6	254	H
3	2.48351	47.04	VA1T	32.5	-36	43.54	54	-10.46	-	-	6	254	H
4	2.48353	47.03	VA1T	32.5	-36	43.53	54	-10.47	-	-	6	254	H

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

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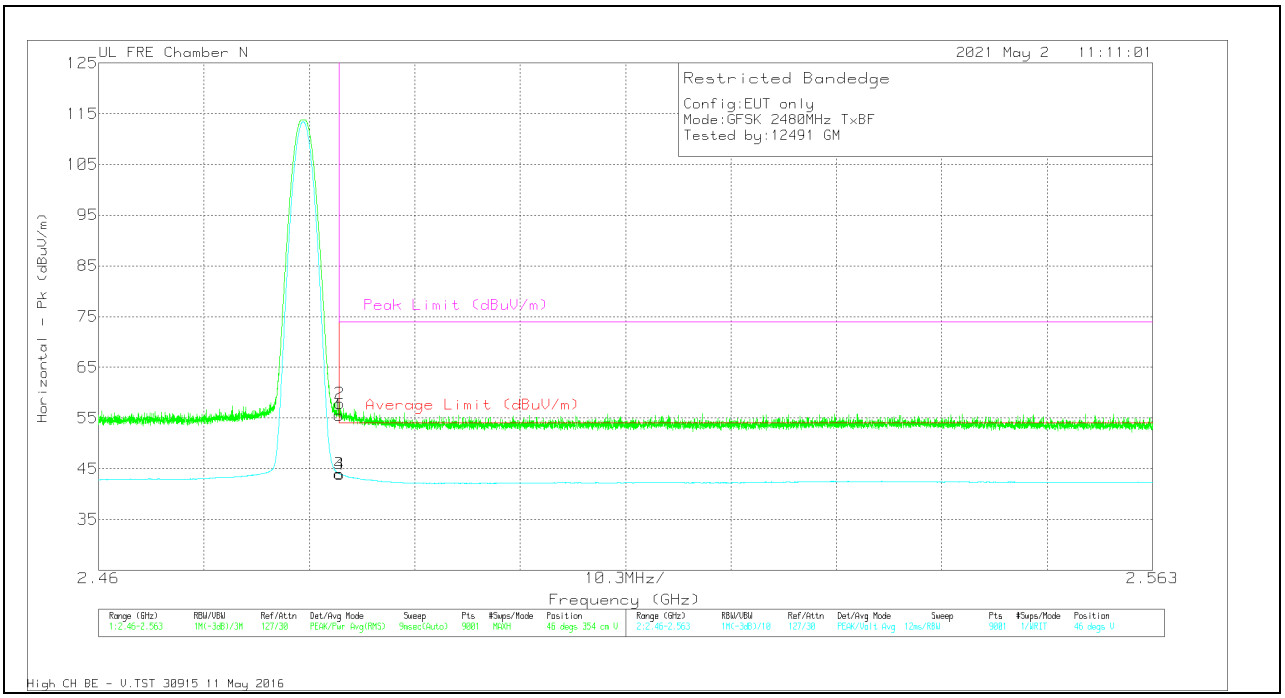
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213971 (dB/m)	Amp/Cbl/Fltr/ 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	58.99	Pk	32.5	-36	55.49	-	-	74	-18.51	46	354	V
2	2.48354	61.38	Pk	32.5	-36	57.88	-	-	74	-16.12	46	354	V
3	2.48351	47.49	VA1T	32.5	-36	43.99	54	-10.01	-	-	46	354	V
4	2.48357	47.43	VA1T	32.5	-36	43.93	54	-10.07	-	-	46	354	V

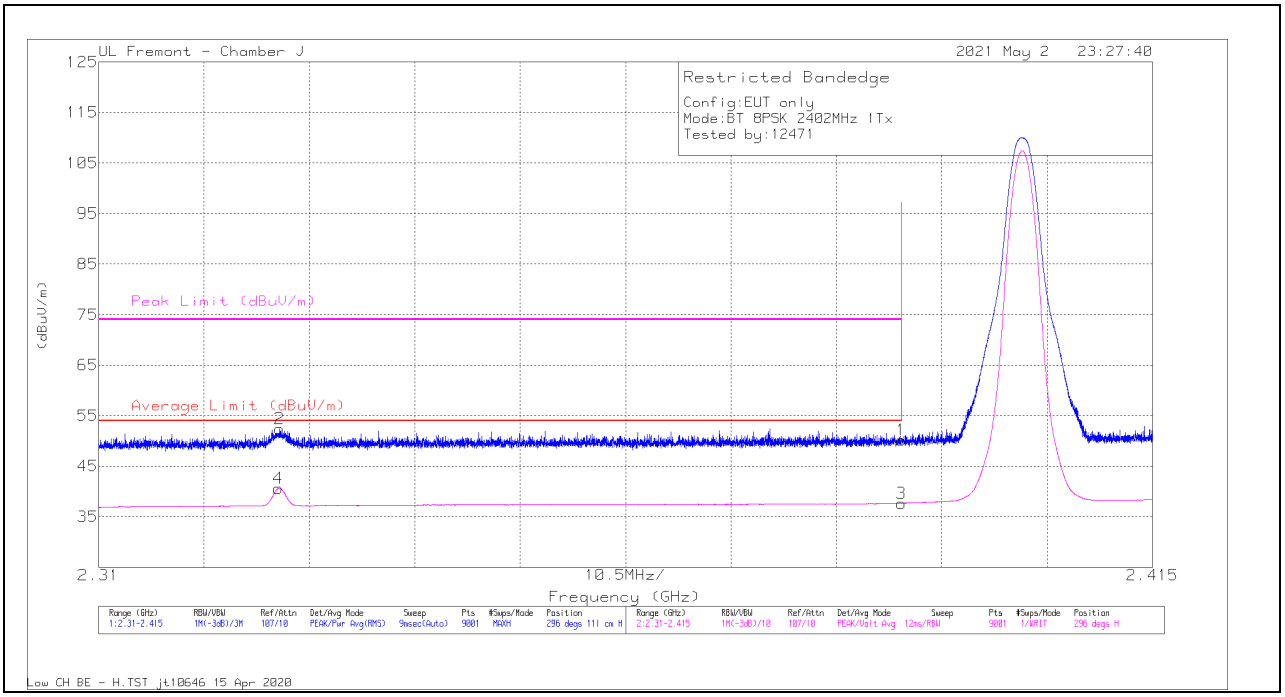
Pk - Peak detector
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

10.1.3. HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

ANT 4

BANDEDGE (LOW CHANNEL)

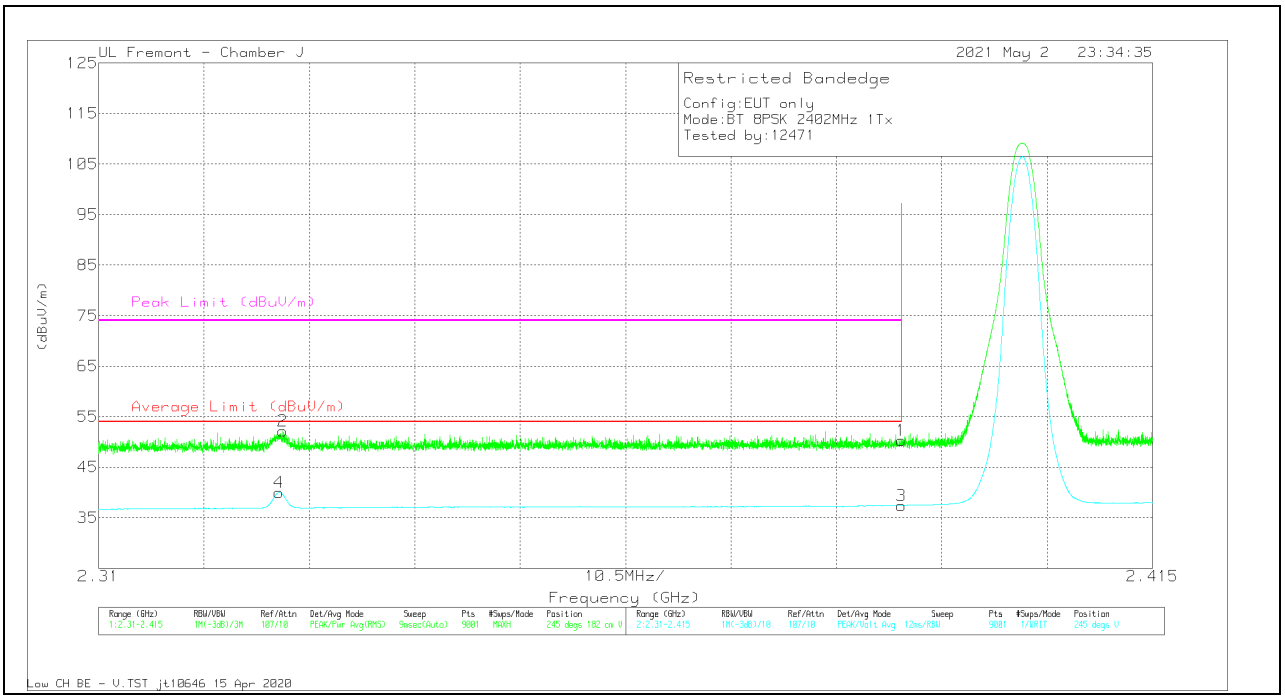
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0100034 (dB/m)	Amp/Cbl/Fltr/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	43.23	Pk	32.1	-25.2	50.13	-	-	74	-23.87	296	111	H
2	* 2.32801	45.89	Pk	31.8	-25.3	52.39	-	-	74	-21.61	296	111	H
3	* 2.38999	30.77	VA1T	32.1	-25.2	37.67	54	-16.33	-	-	296	111	H
4	* 2.32792	34.14	VA1T	31.8	-25.3	40.64	54	-13.36	-	-	296	111	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 PRE0100034 (dB/m)	Amp/Cbl/Fltr/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	43.38	Pk	32.1	-25.2	50.28	-	-	74	-23.72	245	182	V
2	* 2.32833	45.71	Pk	31.8	-25.3	52.21	-	-	74	-21.79	245	182	V
3	* 2.38999	30.52	VA1T	32.1	-25.2	37.42	54	-16.58	-	-	245	182	V
4	* 2.32797	33.51	VA1T	31.8	-25.3	40.01	54	-13.99	-	-	245	182	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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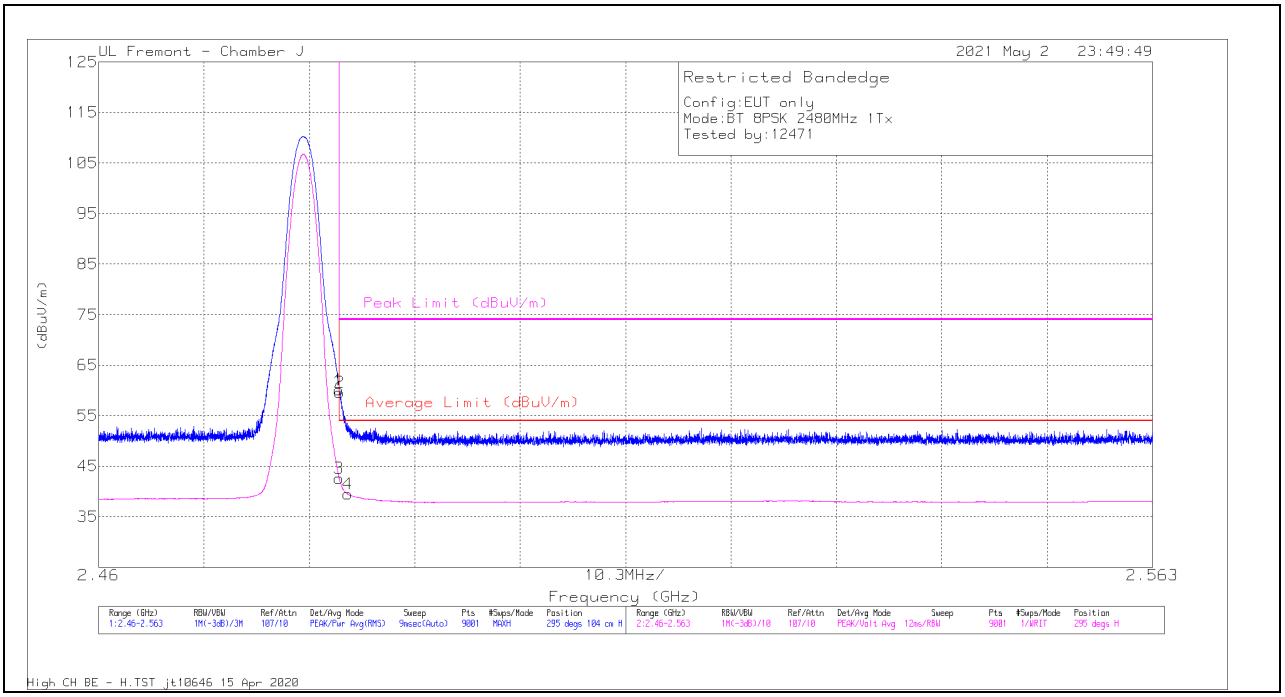
BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0100034 (dB/m)	Amp/Cbl/Fltr/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	52.81	Pk	32.5	-25.2	60.11	-	-	74	-13.89	295	104	H
2	* 2.48355	52.36	Pk	32.5	-25.2	59.66	-	-	74	-14.34	295	104	H
3	* 2.48351	35.26	VA1T	32.5	-25.2	42.56	54	-11.44	-	-	295	104	H
4	* 2.48433	32.18	VA1T	32.5	-25.2	39.48	54	-14.52	-	-	295	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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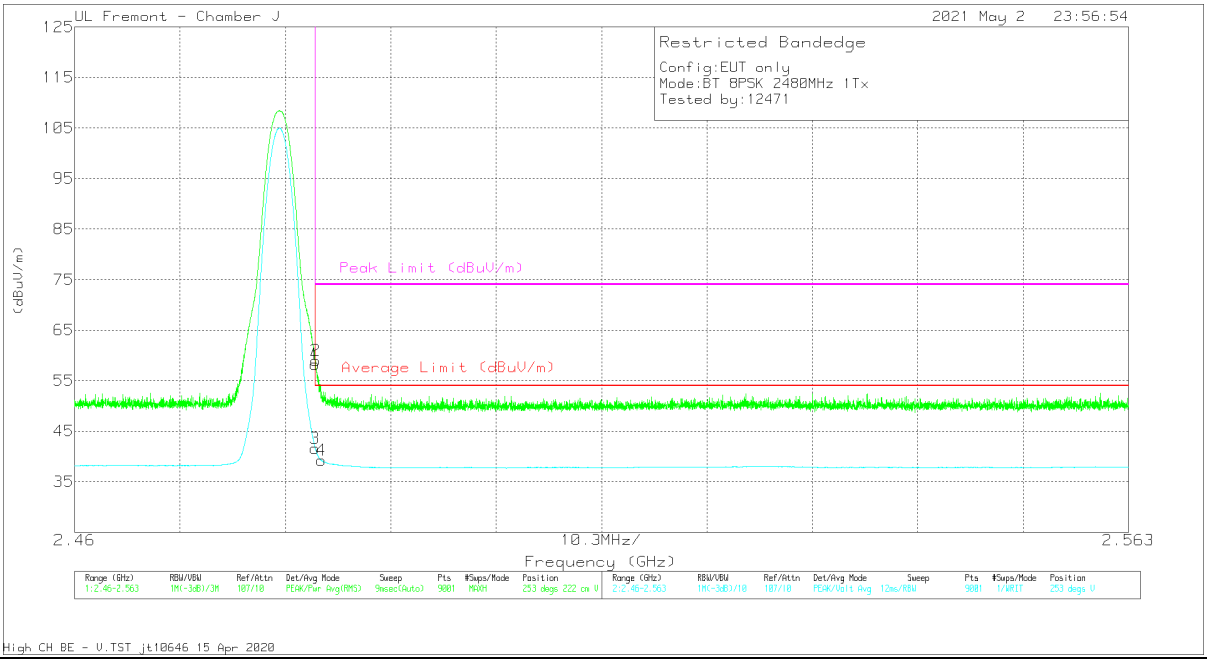
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0100034 (dB/m)	Amp/Cbl/Fltr/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	50.9	Pk	32.5	-25.2	58.2	-	-	74	-15.8	253	222	V
2	* 2.48353	51.64	Pk	32.5	-25.2	58.94	-	-	74	-15.06	253	222	V
3	* 2.48351	34.28	VA1T	32.5	-25.2	41.58	54	-12.42	-	-	253	222	V
4	* 2.4841	31.91	VA1T	32.5	-25.2	39.21	54	-14.79	-	-	253	222	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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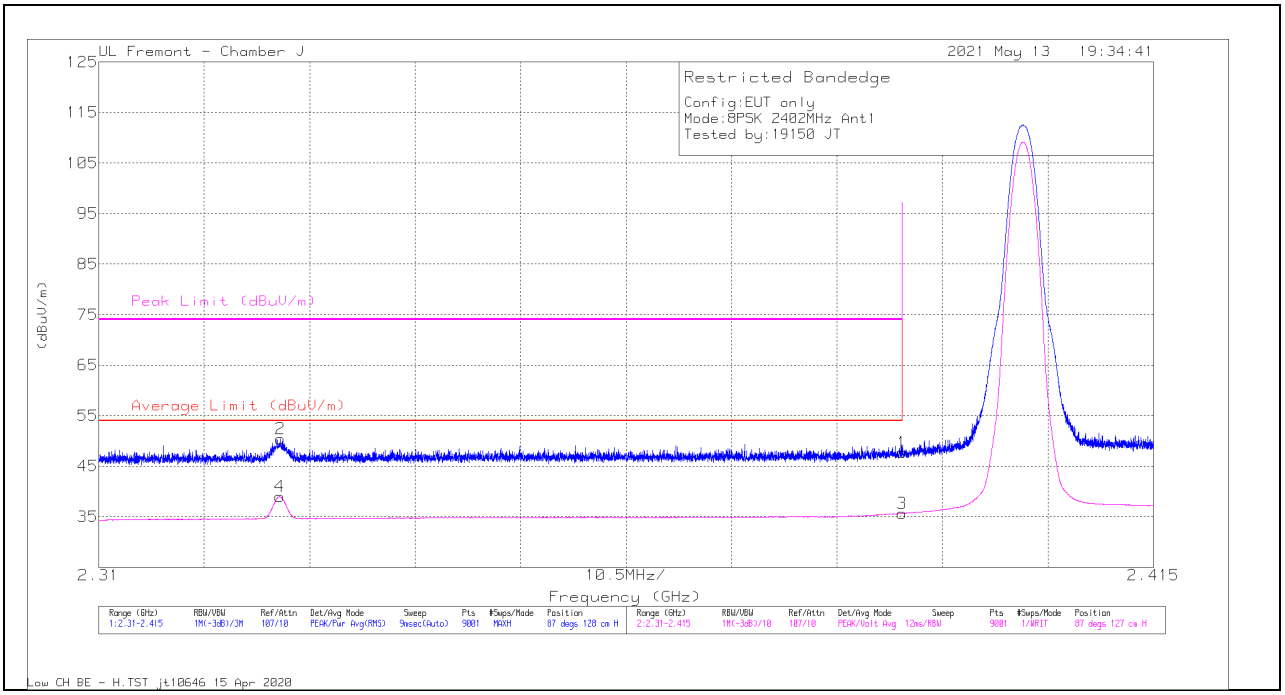
ANT 3

BANDEDGE (LOW CHANNEL)

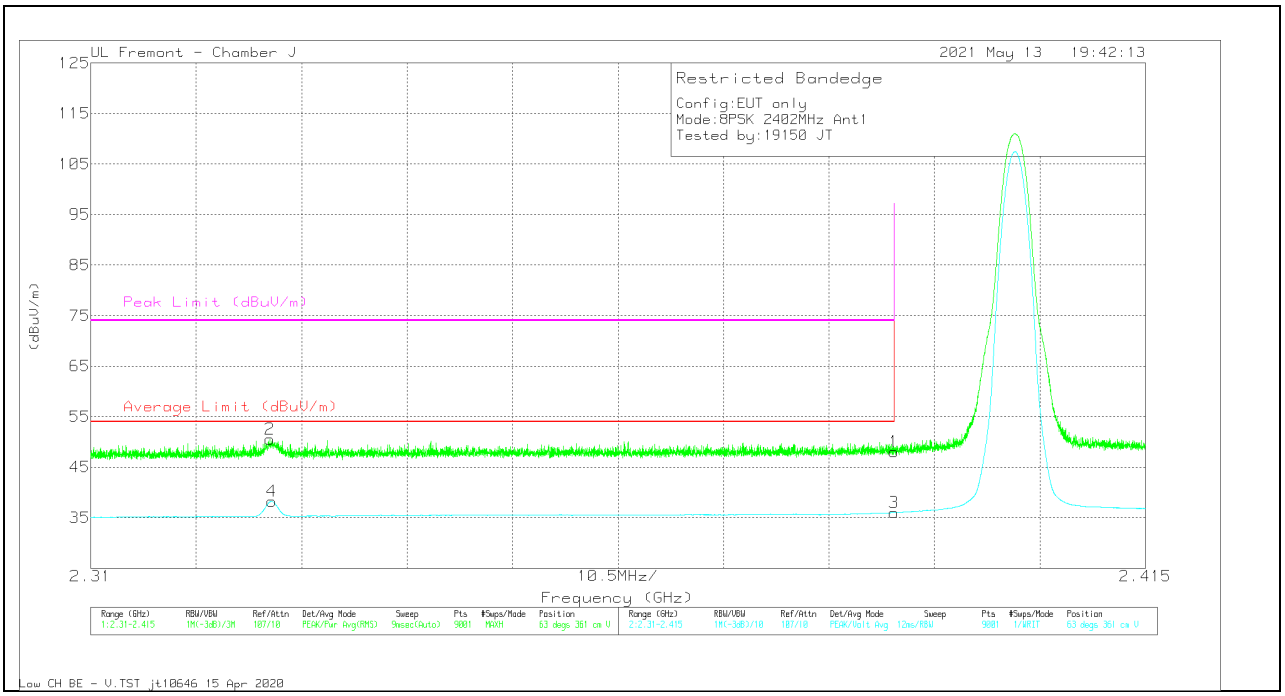
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0100034 (dB/m)	Amp/Cbl/Fltr/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	40.82	Pk	32.1	-25.2	47.72	-	-	74	-26.28	87	128	H
2	* 2.32807	43.92	Pk	31.8	-25.3	50.42	-	-	74	-23.58	87	128	H
3	* 2.38999	28.73	VA1T	32.1	-25.2	35.63	54	-18.37	-	-	87	127	H
4	* 2.32804	32.46	VA1T	31.8	-25.3	38.96	54	-15.04	-	-	87	127	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 PRE0100034 (dB/m)	Amp/Cbl/Fltr/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	41.17	Pk	32.1	-25.2	48.07	-	-	74	-25.93	63	361	V
2	* 2.32783	44	Pk	31.8	-25.3	50.5	-	-	74	-23.5	63	361	V
3	* 2.38999	29.09	VA1T	32.1	-25.2	35.99	54	-18.01	-	-	63	361	V
4	* 2.32803	31.74	VA1T	31.8	-25.3	38.24	54	-15.76	-	-	63	361	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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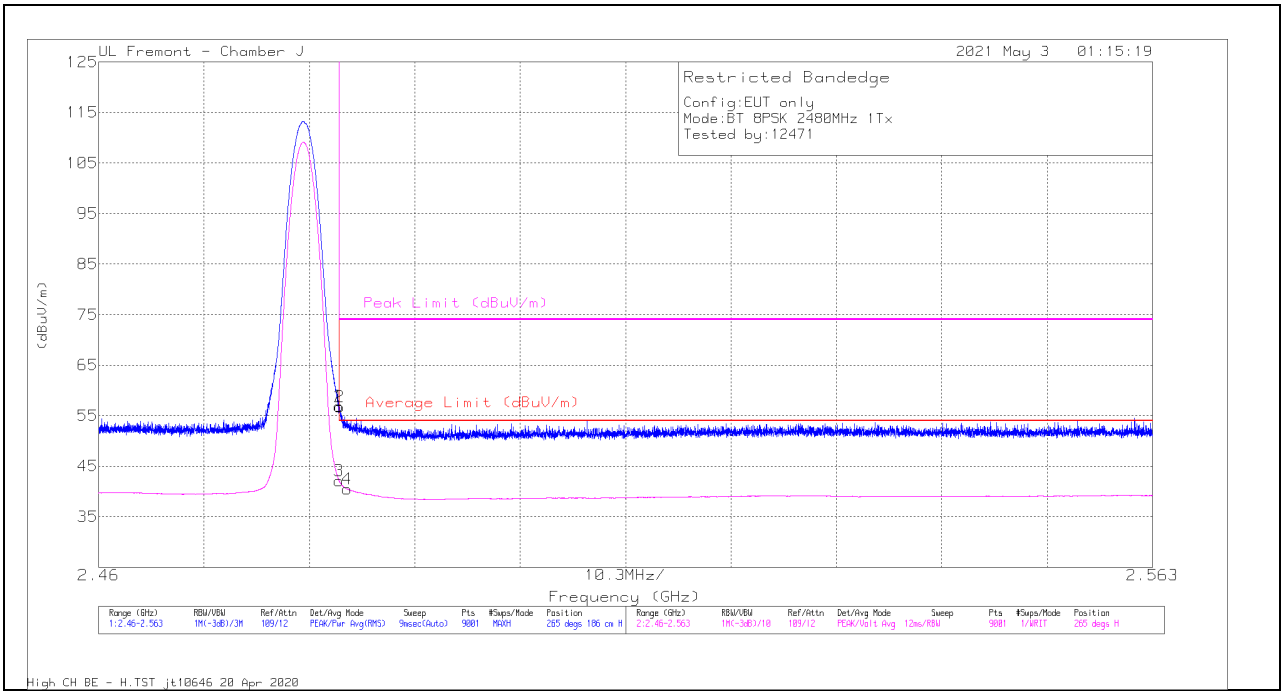
BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0100034 (dB/m)	Amp/Cbl/Fltr/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	38.58	Pk	32.5	-14.2	56.88	-	-	74	-17.12	265	186	H
2	* 2.48353	38.4	Pk	32.5	-14.2	56.7	-	-	74	-17.3	265	186	H
3	* 2.48351	23.75	VA1T	32.5	-14.2	42.05	54	-11.95	-	-	265	186	H
4	* 2.48427	22.17	VA1T	32.5	-14.2	40.47	54	-13.53	-	-	265	186	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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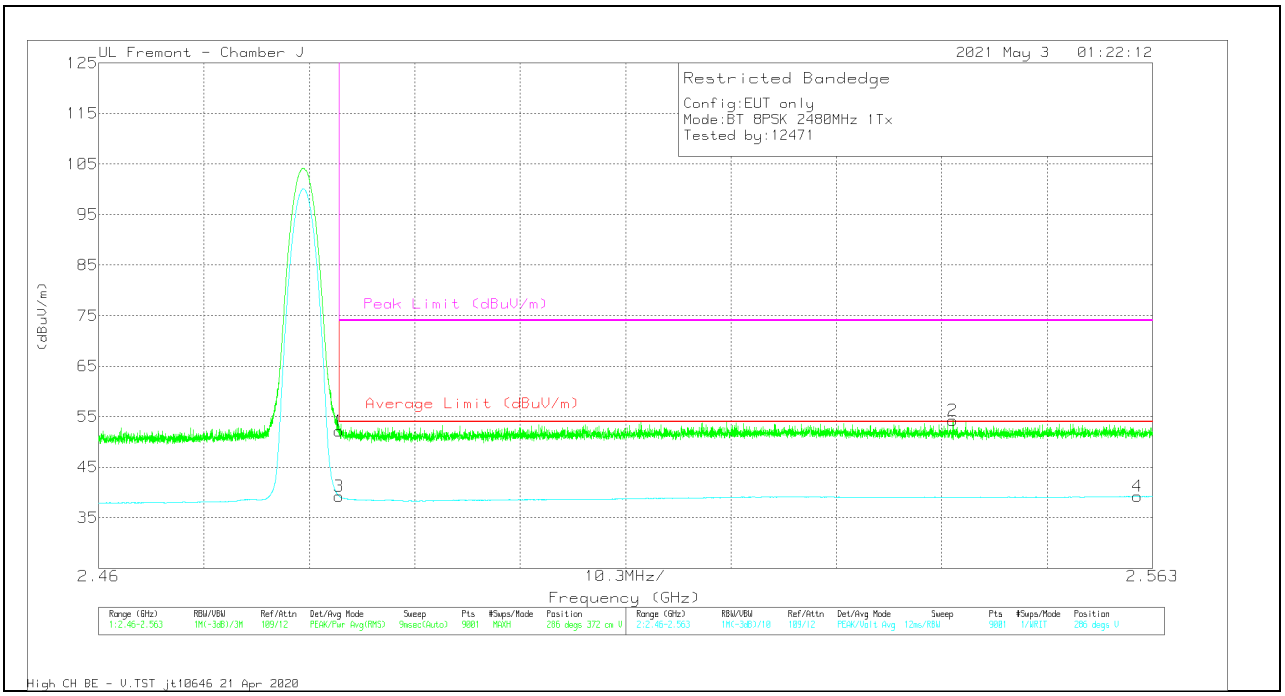
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0100034 (dB/m)	Amp/Cbl/Fltr/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	33.9	Pk	32.5	-14.2	52.2	-	-	74	-21.8	286	372	V
2	2.5435	35.57	Pk	32.7	-14	54.27	-	-	74	-19.73	286	372	V
3	* 2.48351	20.95	VA1T	32.5	-14.2	39.25	54	-14.75	-	-	286	372	V
4	2.56153	20.54	VA1T	32.6	-13.9	39.24	54	-14.76	-	-	286	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

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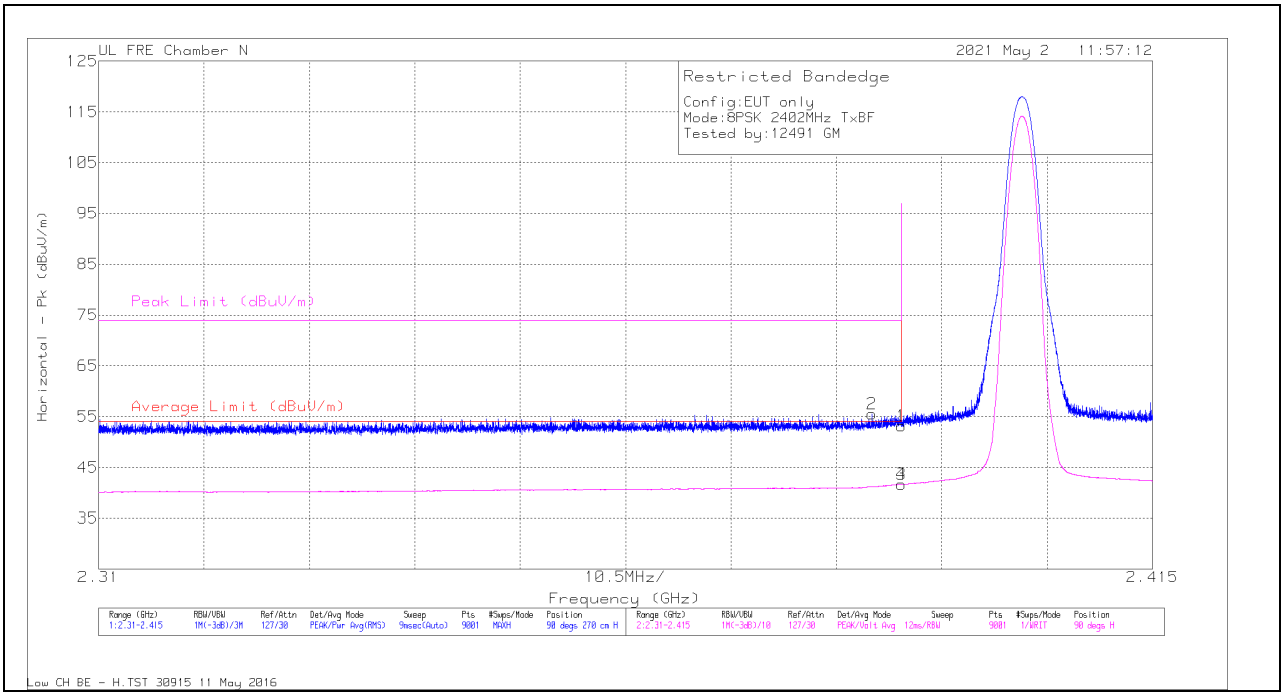
10.1.4. HIGH POWER ENHANCED DATA RATE TXBF 8PSK MODULATION

BANDEDGE (LOW CHANNEL)

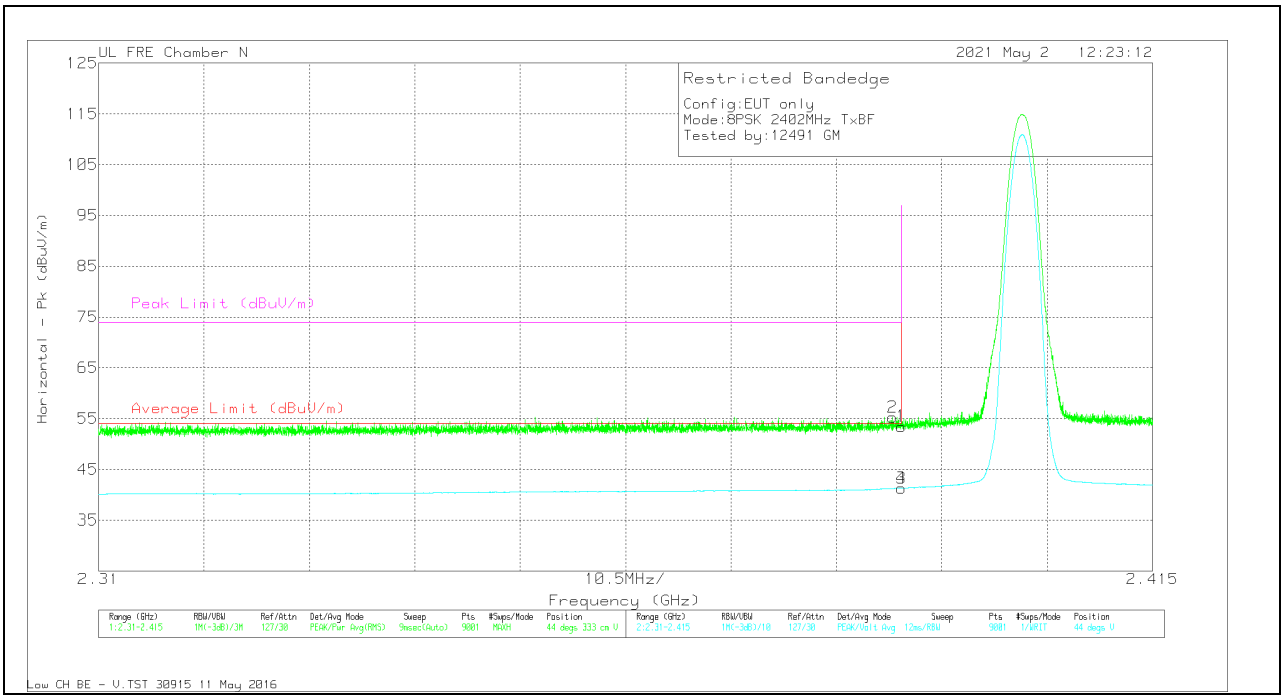
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213971 (dB/m)	Amp/Cbl/Fltr/ 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	56.97	Pk	32.4	-36.2	53.17	-	-	74	-20.83	90	270	H
2	2.38704	59.37	Pk	32.4	-36.2	55.57	-	-	74	-18.43	90	270	H
3	2.38999	45.46	VA1T	32.4	-36.2	41.66	54	-12.34	-	-	90	270	H
4	2.38998	45.46	VA1T	32.4	-36.2	41.66	54	-12.34	-	-	90	270	H

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 PRE0213971 (dB/m)	Amp/Cbl/Fltr/ 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	57.28	Pk	32.4	-36.2	53.48	-	-	74	-20.52	44	333	V
2	2.38911	59.12	Pk	32.4	-36.2	55.32	-	-	74	-18.68	44	333	V
3	2.38999	45.11	VA1T	32.4	-36.2	41.31	54	-12.69	-	-	44	333	V
4	2.38998	45.11	VA1T	32.4	-36.2	41.31	54	-12.69	-	-	44	333	V

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

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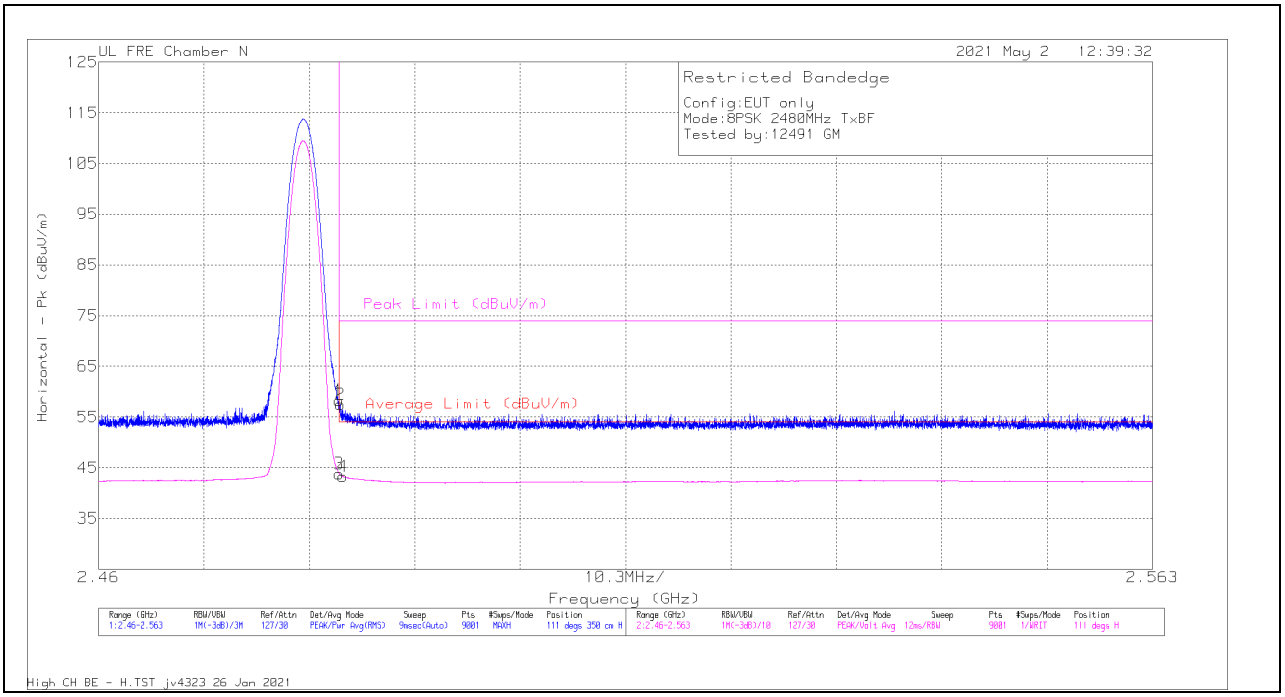
BANDEDGE (HIGH CHANNEL)

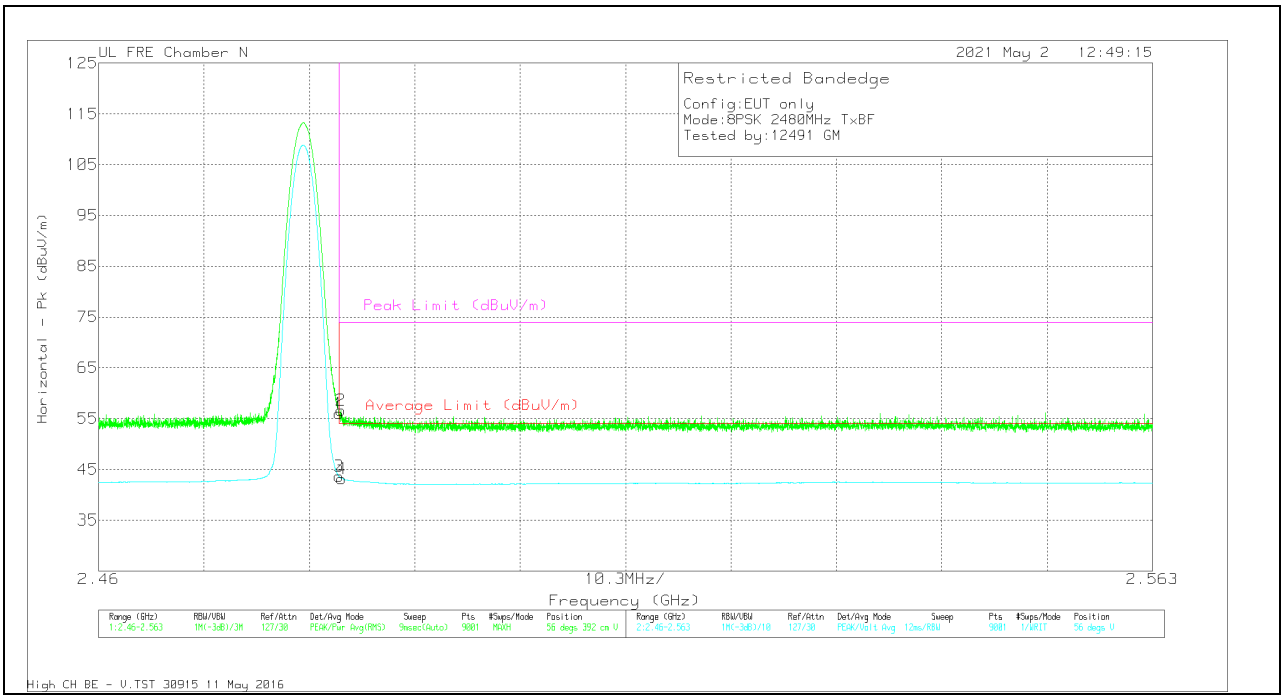
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213971 (dB/m)	Amp/Cbl/Fltr/ 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	61.8	Pk	32.5	-36	58.3	-	-	74	-15.7	111	350	H
2	2.4836	61.03	Pk	32.5	-36	57.53	-	-	74	-16.47	111	350	H
3	2.48351	47.33	VA1T	32.5	-36	43.83	54	-10.17	-	-	111	350	H
4	2.48385	46.78	VA1T	32.5	-36	43.28	54	-10.72	-	-	111	350	H

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 PRE0213971 (dB/m)	Amp/Cbl/Fltr/ 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	59.49	Pk	32.5	-36	55.99	-	-	74	-18.01	56	392	V
2	2.48367	60.11	Pk	32.5	-36	56.61	-	-	74	-17.39	56	392	V
3	2.48351	47.1	VA1T	32.5	-36	43.6	54	-10.4	-	-	56	392	V
4	2.48377	46.69	VA1T	32.5	-36	43.19	54	-10.81	-	-	56	392	V

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

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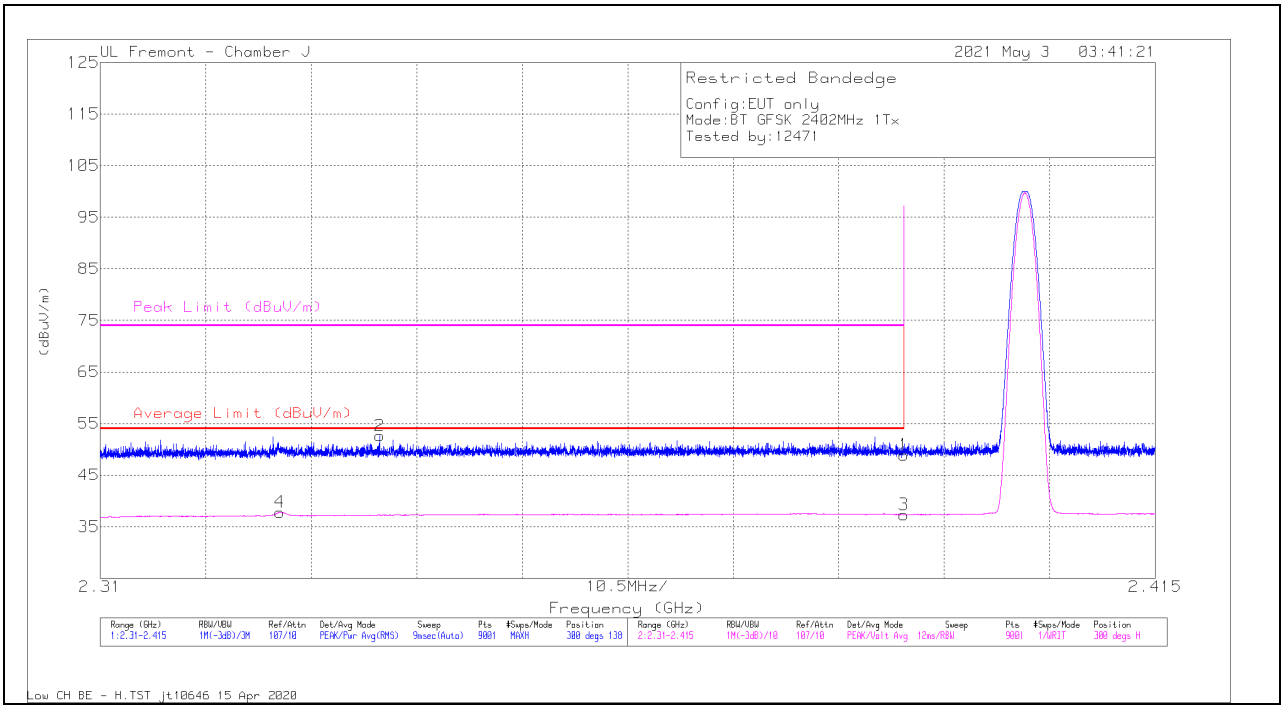
10.1.5. LOW POWER BASIC DATA RATE GFSK MODULATION

ANT 4

BANDEDGE (LOW CHANNEL)

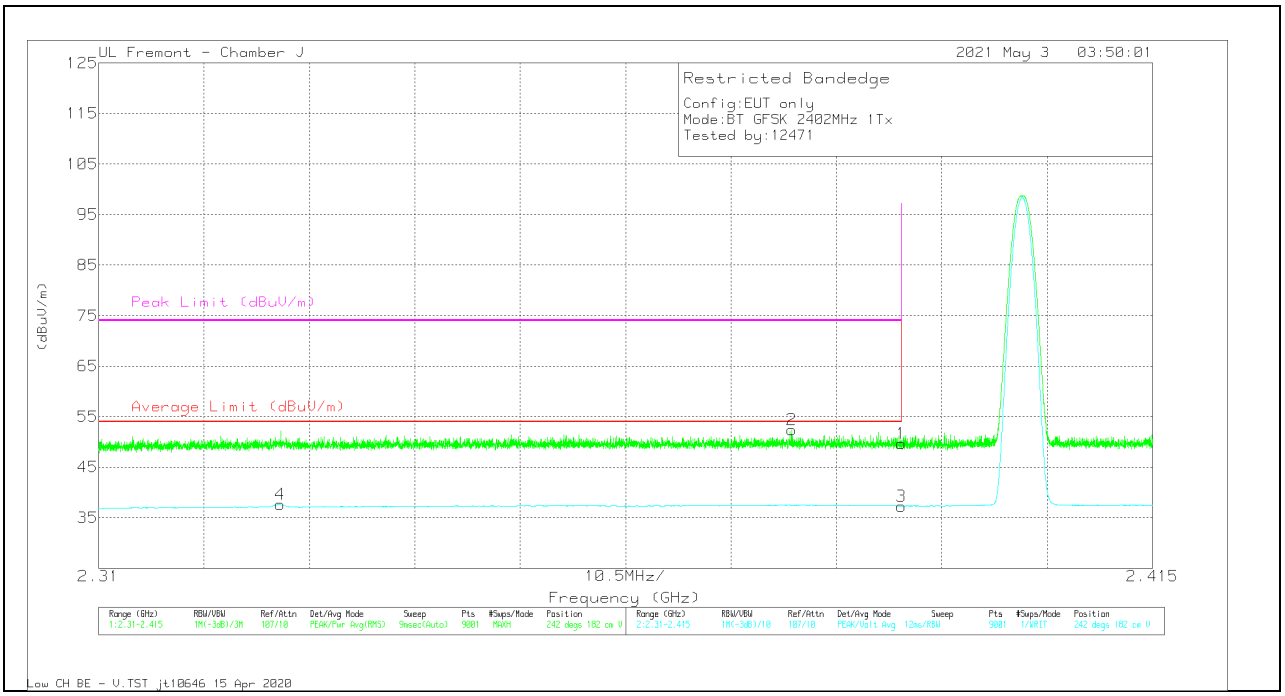
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0100034 (dB/m)	Amp/Cbl/Fltr/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	Pk	32.1	-25.2	48.9	-	-	74	-25.1	300	138	H
2	* 2.33783	46.01	Pk	31.9	-25.3	52.61	-	-	74	-21.39	300	138	H
3	* 2.38999	30.41	VA1T	32.1	-25.2	37.31	54	-16.69	-	-	300	138	H
4	* 2.32789	31.31	VA1T	31.8	-25.3	37.81	54	-16.19	-	-	300	138	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



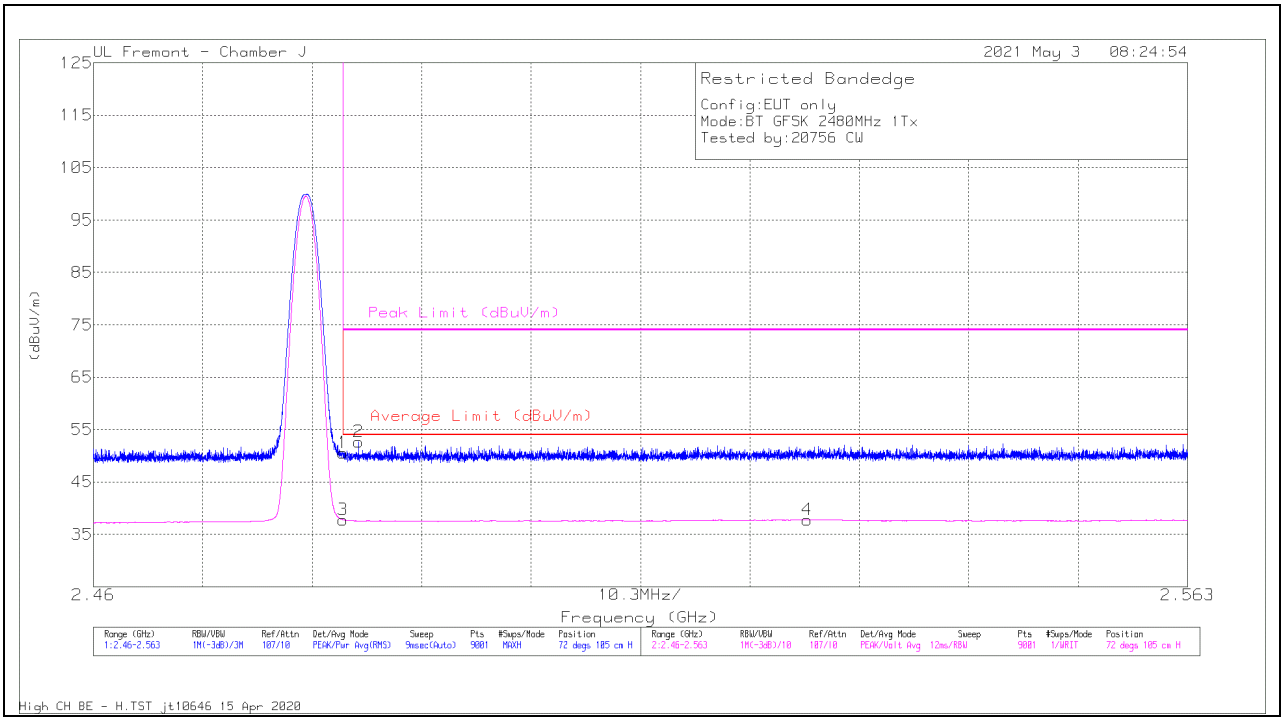
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0100034 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.38999	42.76	Pk	32.1	-25.2	49.66	-	-	74	-24.34	242	182	V
2	* 2.37908	45.5	Pk	32.1	-25.2	52.4	-	-	74	-21.6	242	182	V
3	* 2.38999	30.4	VA1T	32.1	-25.2	37.3	54	-16.7	-	-	242	182	V
4	* 2.32806	31.11	VA1T	31.8	-25.3	37.61	54	-16.39	-	-	242	182	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

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT

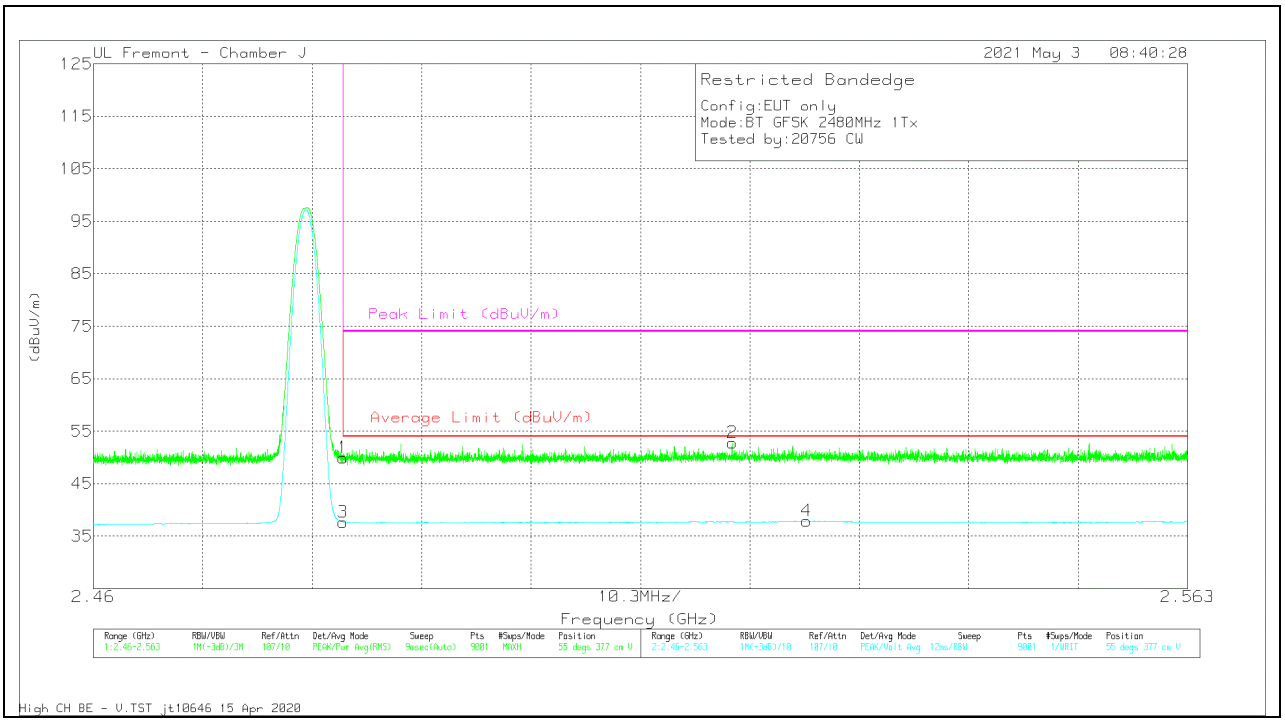


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0100034 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	43.25	Pk	32.5	-25.2	50.55	-	-	74	-23.45	72	105	H
2	* 2.48498	45.38	Pk	32.5	-25.2	52.68	-	-	74	-21.32	72	105	H
3	* 2.48351	30.44	VA1T	32.5	-25.2	37.74	54	-16.26	-	-	72	105	H
4	2.52722	30.09	VA1T	32.8	-25.1	37.79	54	-16.21	-	-	72	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

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0100034 (dB/m)	Amp/Cbl/Fltr/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	42.62	Pk	32.5	-25.2	49.92	-	-	74	-24.08	55	377	V
2	2.52016	45.13	Pk	32.7	-25.1	52.73	-	-	74	-21.27	55	377	V
3	* 2.48351	30.38	VA1T	32.5	-25.2	37.68	54	-16.32	-	-	55	377	V
4	2.52714	30.15	VA1T	32.8	-25.1	37.85	54	-16.15	-	-	55	377	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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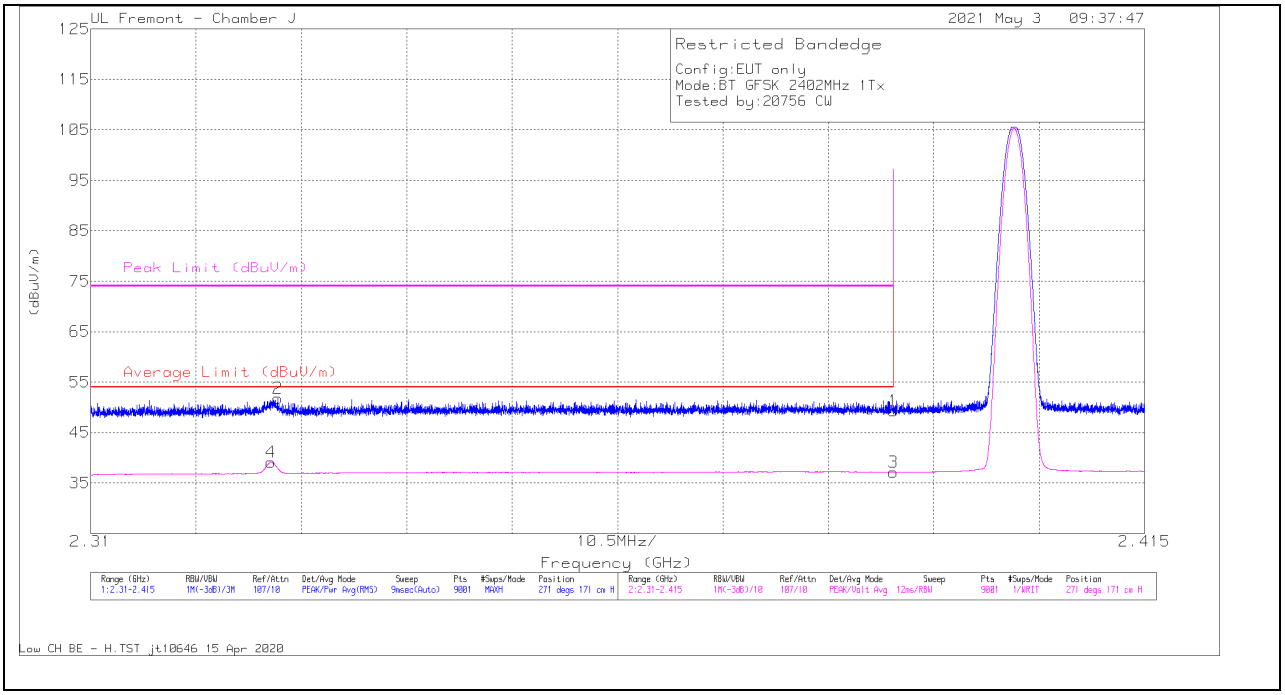
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

ANT 3

BANDEDGE (LOW CHANNEL)

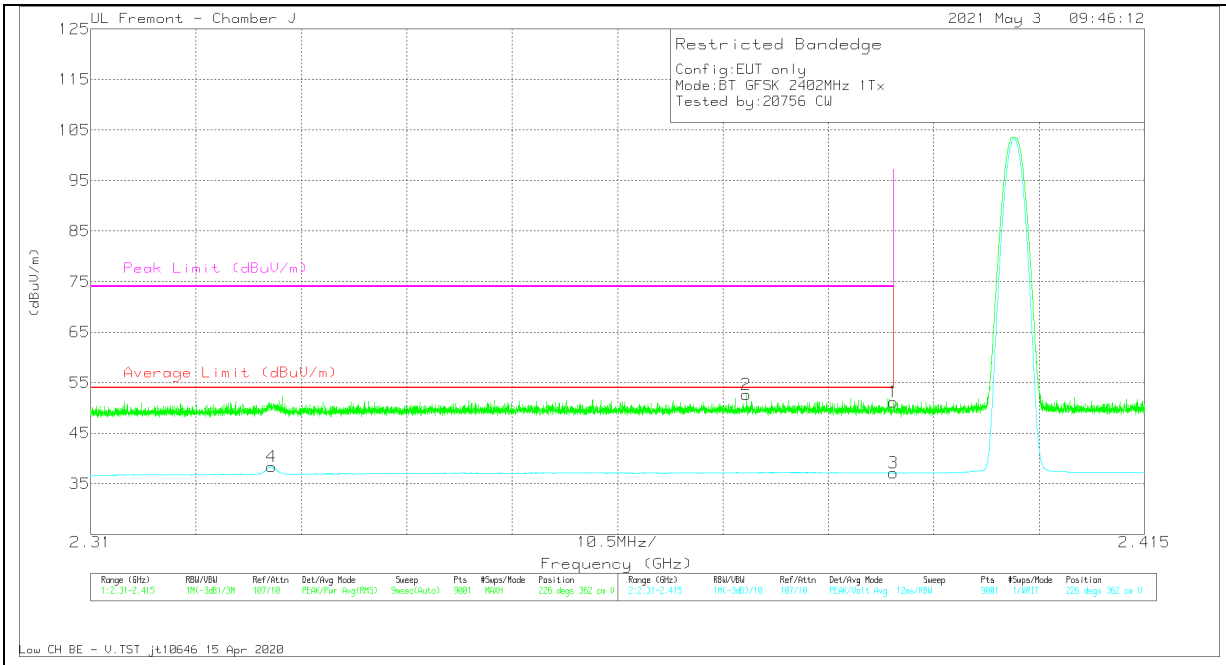
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE010003 4 (dB/m)	Amp/Cbl/Fltr/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	42.38	Pk	32.1	-25.2	49.28	-	-	74	-24.72	271	171	H
2	* 2.32862	45.26	Pk	31.8	-25.3	51.76	-	-	74	-22.24	271	171	H
3	* 2.38999	30.21	VA1T	32.1	-25.2	37.11	54	-16.89	-	-	271	171	H
4	* 2.32796	32.64	VA1T	31.8	-25.3	39.14	54	-14.86	-	-	271	171	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/ Fltr/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	32.64	Pk	32.1	-14.2	50.54	-	-	74	-23.46	145	347	V
2	* 2.379	35.11	Pk	32.1	-14.2	53.01	-	-	74	-20.99	145	347	V
3	* 2.38999	20.26	VA1T	32.1	-14.2	38.16	54	-15.84	-	-	145	347	V
4	* 2.37954	20.39	VA1T	32.1	-14.2	38.29	54	-15.71	-	-	145	347	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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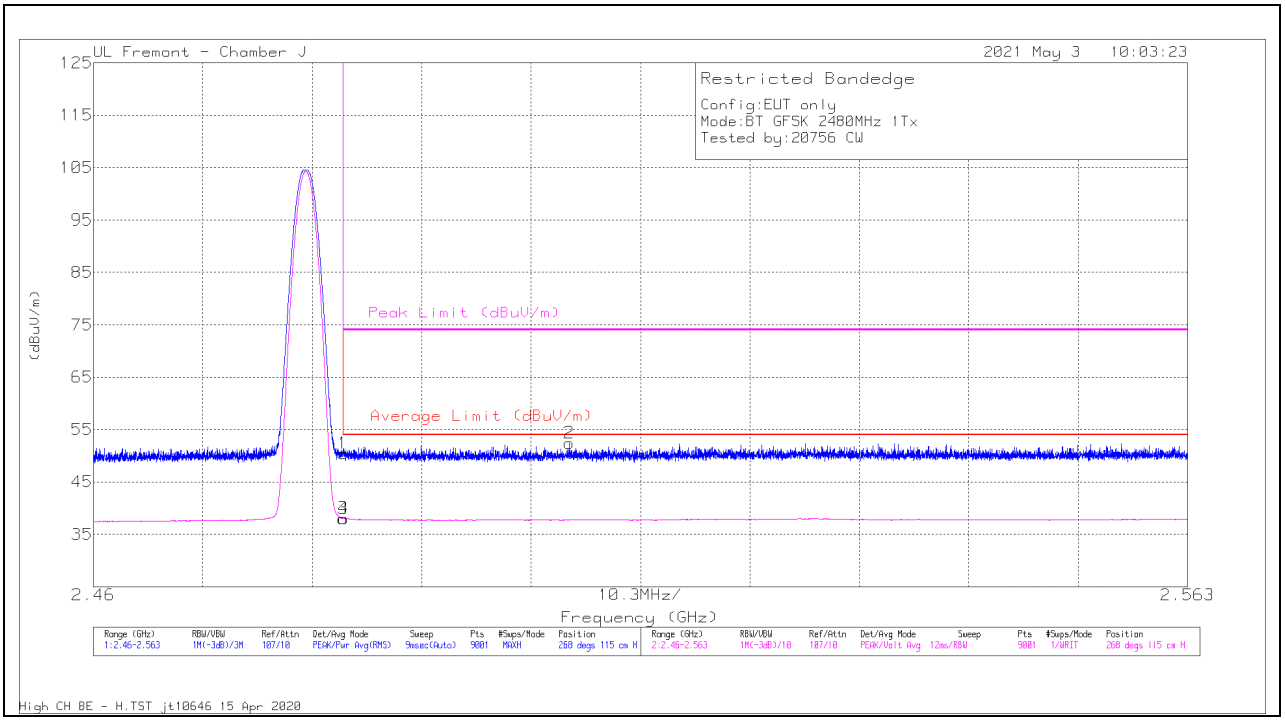
BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0100034 (dB/m)	Amp/Cbl/Fltr/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	43.13	Pk	32.5	-25.2	50.43	-	-	74	-23.57	268	115	H
2	2.50479	44.96	Pk	32.6	-25.2	52.36	-	-	74	-21.64	268	115	H
3	* 2.48351	30.71	VA1T	32.5	-25.2	38.01	54	-15.99	-	-	268	115	H
4	* 2.48354	30.72	VA1T	32.5	-25.2	38.02	54	-15.98	-	-	268	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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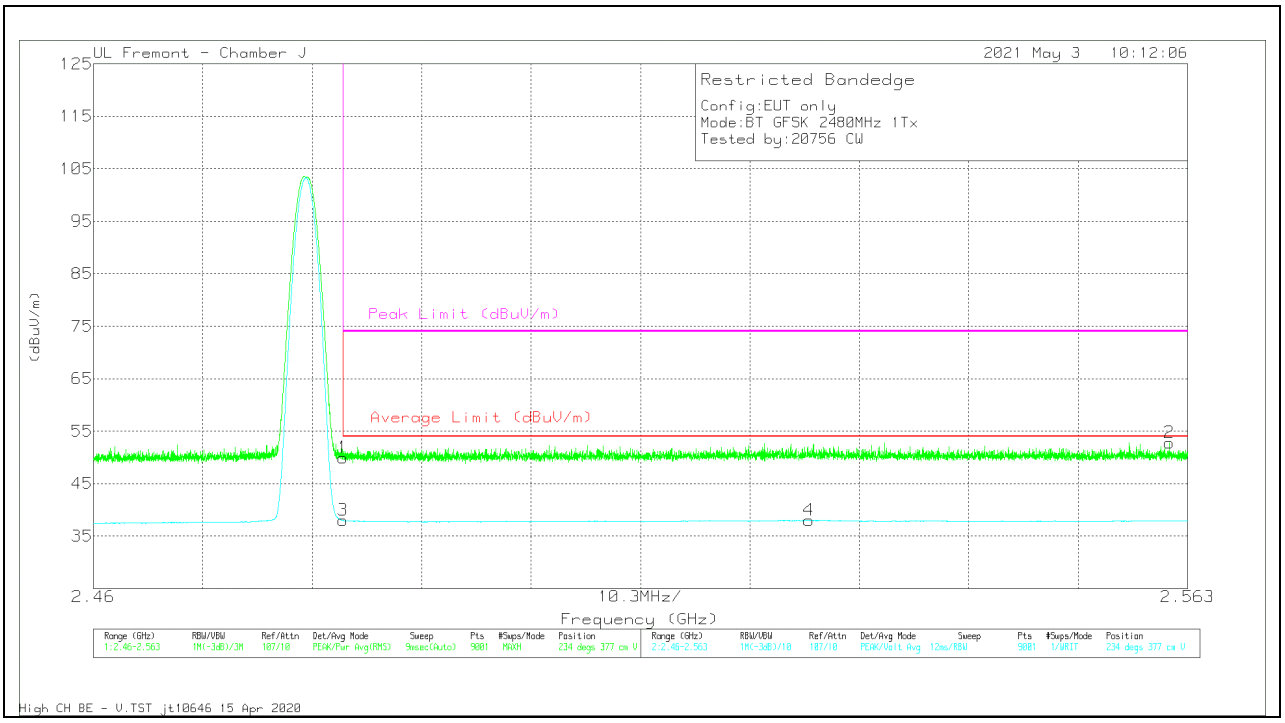
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0100034 (dB/m)	Amp/Cbl/Fltr/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	42.6	Pk	32.5	-25.2	49.9	-	-	74	-24.1	234	377	V
2	2.56129	45.31	Pk	32.6	-25.1	52.81	-	-	74	-21.19	234	377	V
3	* 2.48351	30.66	VA1T	32.5	-25.2	37.96	54	-16.04	-	-	234	377	V
4	2.52735	30.3	VA1T	32.8	-25.1	38	54	-16	-	-	234	377	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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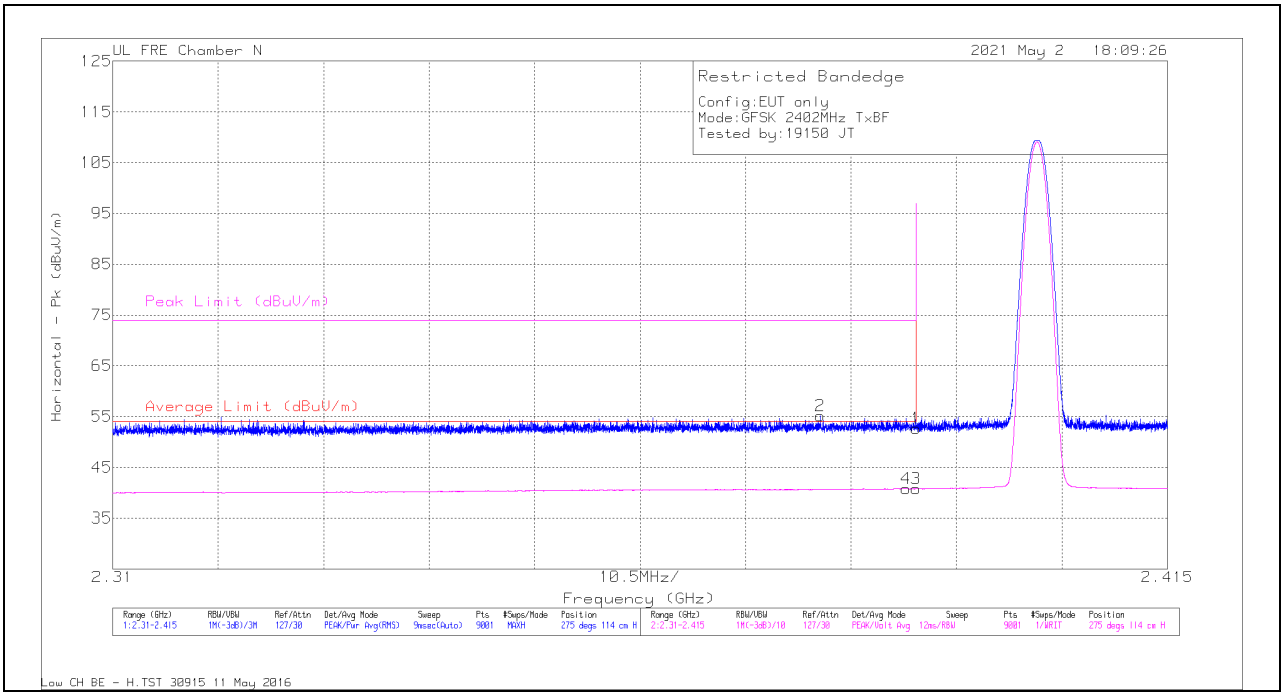
10.1.6. LOW POWER BASIC DATA RATE TXBF GFSK MODULATION

BANDEDGE (LOW CHANNEL)

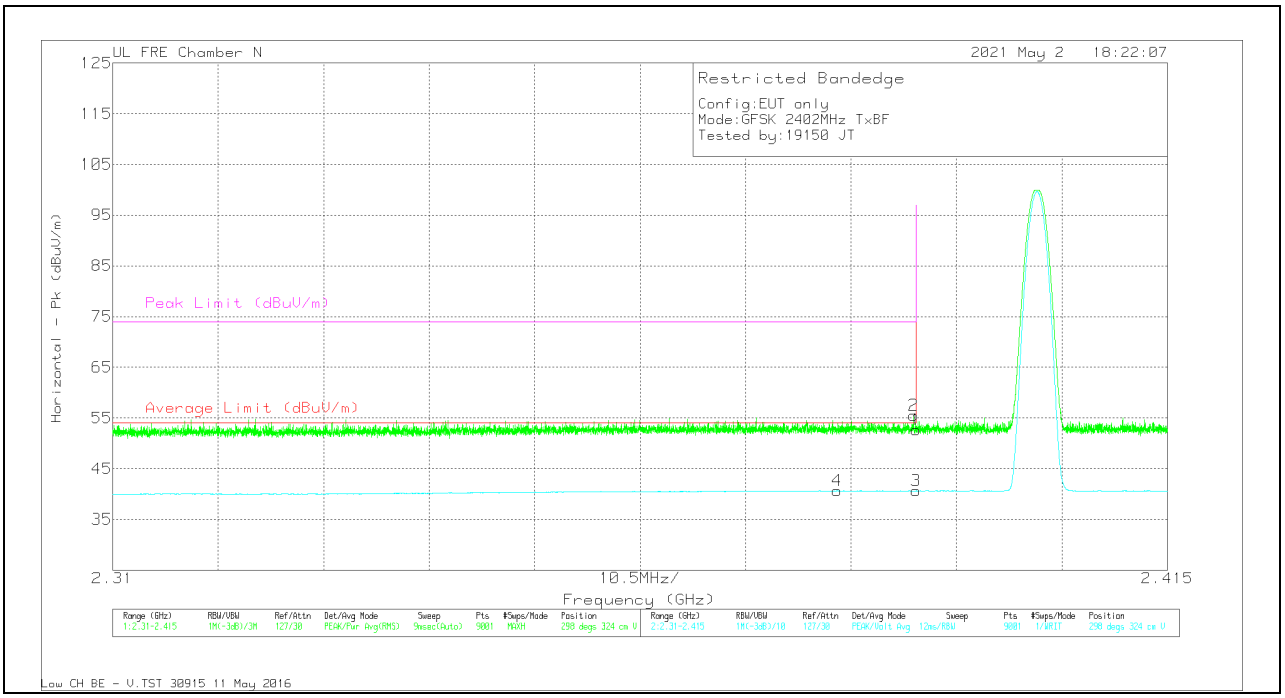
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213971 (dB/m)	Amp/Cbl/Fltr/ 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	56.45	Pk	32.4	-36.2	52.65	-	-	74	-21.35	275	114	H
2	2.38043	58.95	Pk	32.4	-36.2	55.15	-	-	74	-18.85	275	114	H
3	2.38999	44.58	VA1T	32.4	-36.2	40.78	54	-13.22	-	-	275	114	H
4	2.38895	44.6	VA1T	32.4	-36.2	40.8	54	-13.2	-	-	275	114	H

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 PRE0213971 (dB/m)	Amp/Cbl/Fltr/ 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	56.53	Pk	32.4	-36.2	52.73	-	-	74	-21.27	298	324	V
2	2.38974	59.29	Pk	32.4	-36.2	55.49	-	-	74	-18.51	298	324	V
3	2.38999	44.43	VA1T	32.4	-36.2	40.63	54	-13.37	-	-	298	324	V
4	2.38213	44.45	VA1T	32.4	-36.2	40.65	54	-13.35	-	-	298	324	V

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

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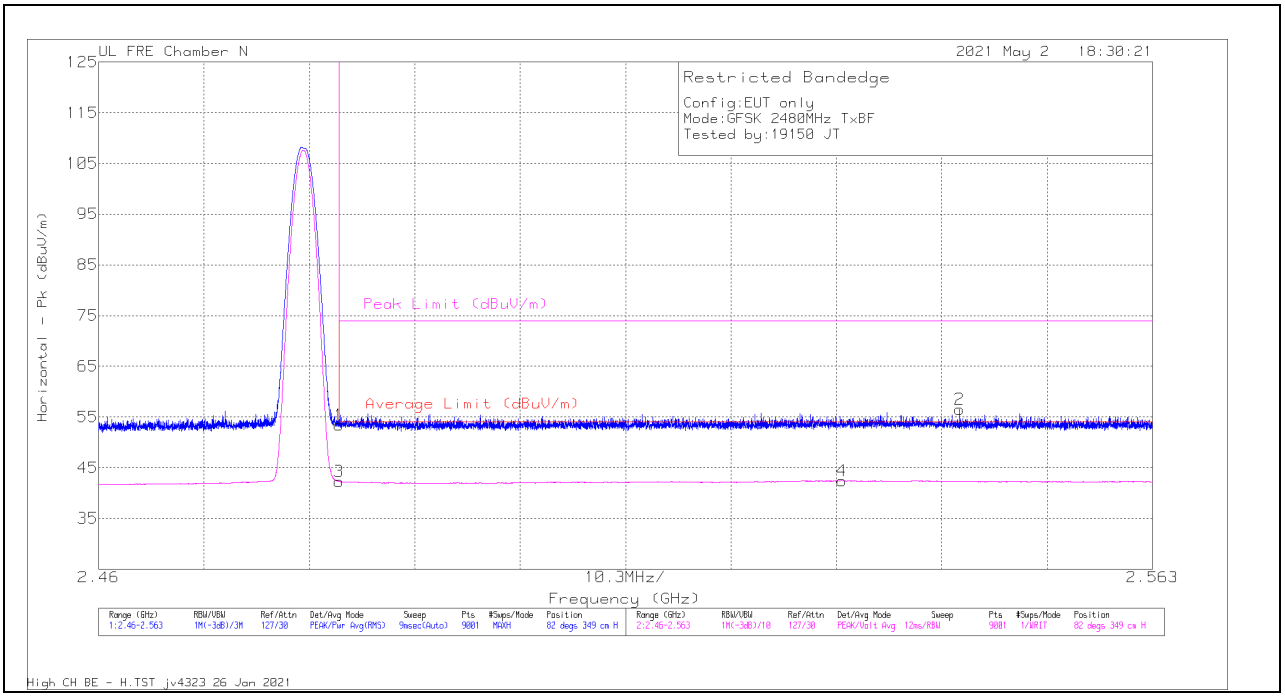
BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213971 (dB/m)	Amp/Cbl/Fltr/ 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	56.92	Pk	32.5	-36	53.42	-	-	74	-20.58	82	349	H
2	2.54417	59.56	Pk	32.6	-35.7	56.46	-	-	74	-17.54	82	349	H
3	2.48351	45.79	VA1T	32.5	-36	42.29	54	-11.71	-	-	82	349	H
4	2.53262	45.54	VA1T	32.7	-35.8	42.44	54	-11.56	-	-	82	349	H

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

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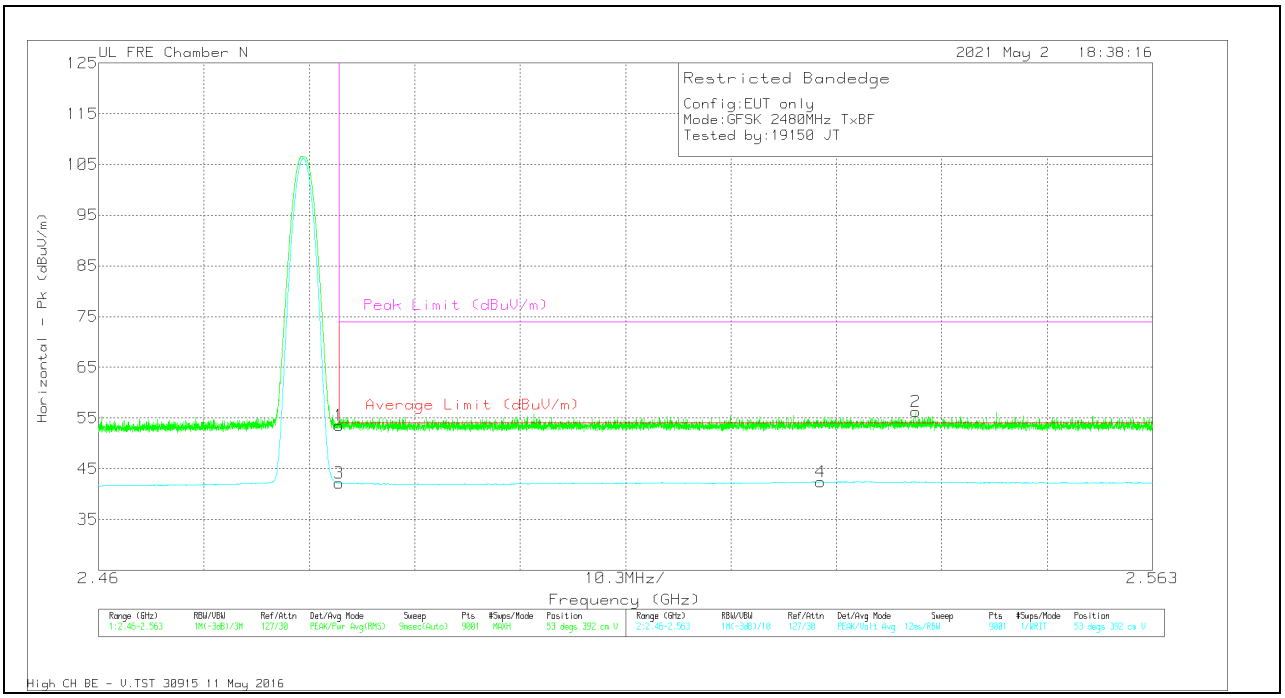
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213971 (dB/m)	Amp/Cbl/Fltr/ 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	57.01	Pk	32.5	-36	53.51	-	-	74	-20.49	53	392	V
2	2.53988	59.33	Pk	32.6	-35.7	56.23	-	-	74	-17.77	53	392	V
3	2.48351	45.65	VA1T	32.5	-36	42.15	54	-11.85	-	-	53	392	V
4	2.53056	45.5	VA1T	32.7	-35.8	42.4	54	-11.6	-	-	53	392	V

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

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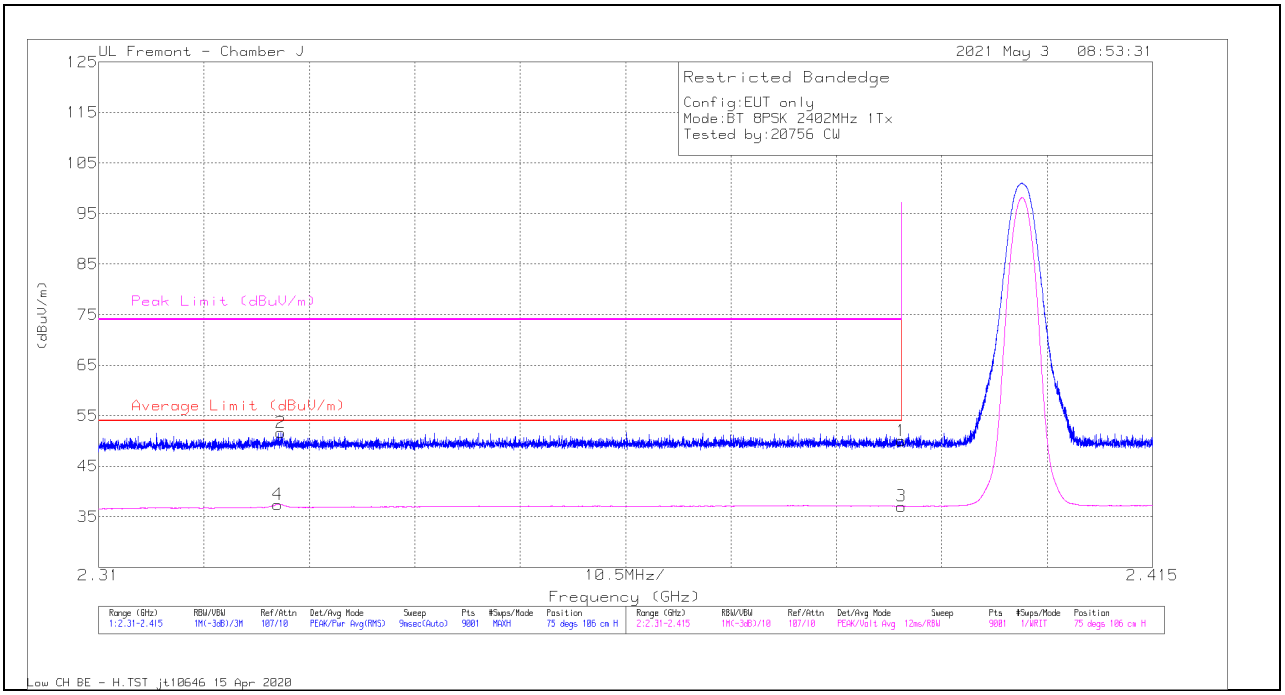
10.1.7. LOW POWER ENHANCED DATA RATE 8PSK MODULATION

ANT 4

BANDEDGE (LOW CHANNEL)

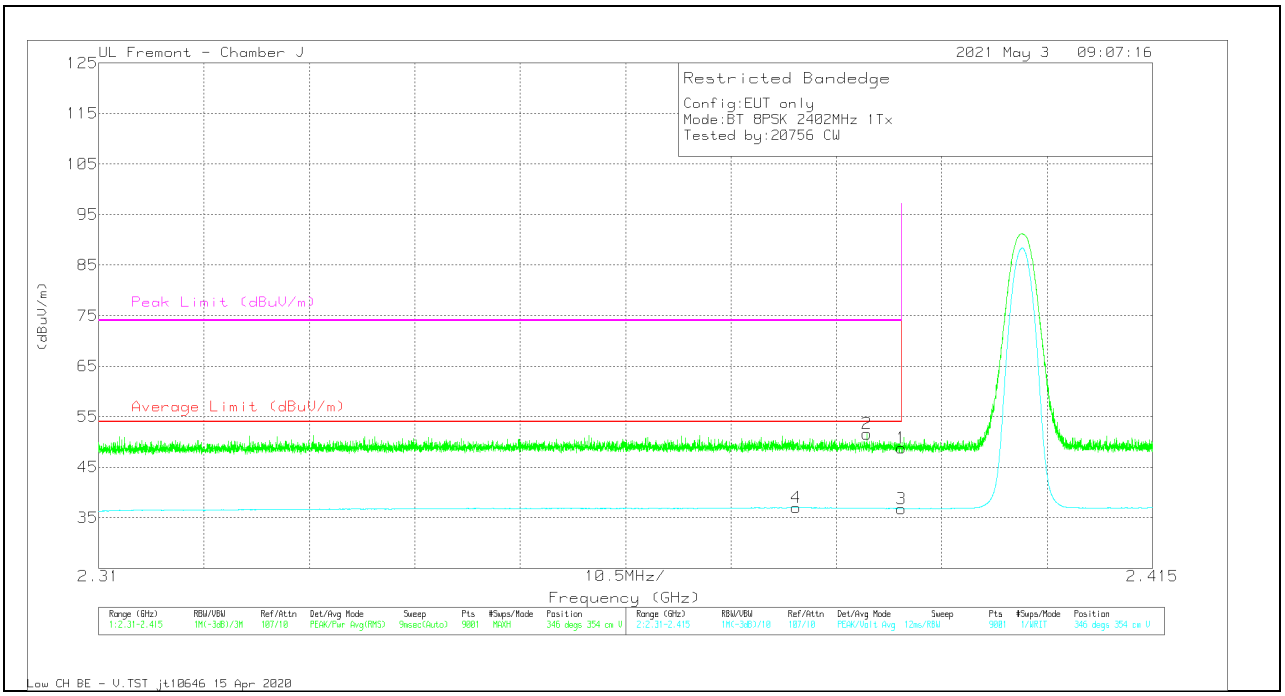
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0100034 (dB/m)	Amp/Cbl/Fltr/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	43.17	Pk	32.1	-25.2	50.07	-	-	74	-23.93	75	106	H
2	* 2.32813	45.16	Pk	31.8	-25.3	51.66	-	-	74	-22.34	75	106	H
3	* 2.38999	30.17	VA1T	32.1	-25.2	37.07	54	-16.93	-	-	75	106	H
4	* 2.32785	30.94	VA1T	31.8	-25.3	37.44	54	-16.56	-	-	75	106	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 PRE0100034 (dB/m)	Amp/Cbl/Fltr/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	41.94	Pk	32.1	-25.2	48.84	-	-	74	-25.16	346	354	V
2	* 2.38654	44.7	Pk	32.1	-25.2	51.6	-	-	74	-22.4	346	354	V
3	* 2.38999	29.85	VA1T	32.1	-25.2	36.75	54	-17.25	-	-	346	354	V
4	* 2.37948	30.16	VA1T	32.1	-25.2	37.06	54	-16.94	-	-	346	354	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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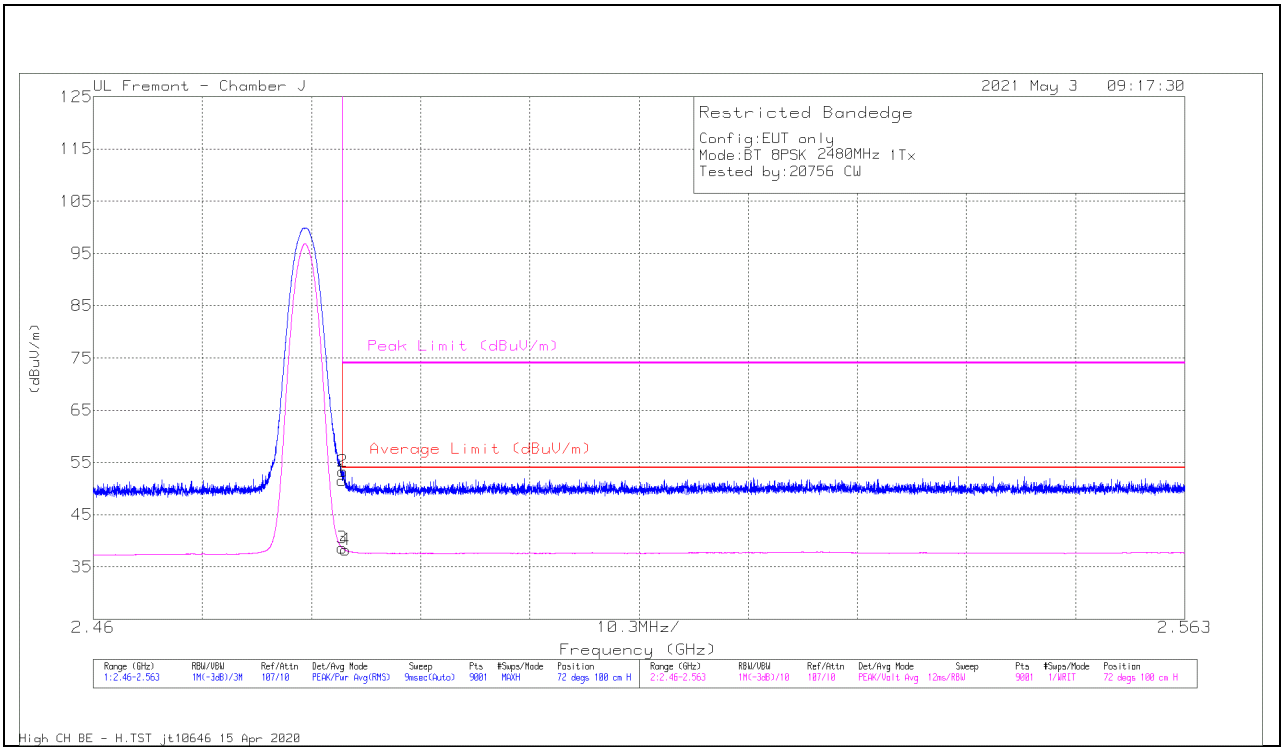
BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0100034 (dB/m)	Amp/Cbl/Fltr/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	44.27	Pk	32.5	-25.2	51.57	-	-	74	-22.43	72	100	H
2	* 2.48354	45.96	Pk	32.5	-25.2	53.26	-	-	74	-20.74	72	100	H
3	* 2.48351	31.3	VA1T	32.5	-25.2	38.6	54	-15.4	-	-	72	100	H
4	* 2.48379	30.91	VA1T	32.5	-25.2	38.21	54	-15.79	-	-	72	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

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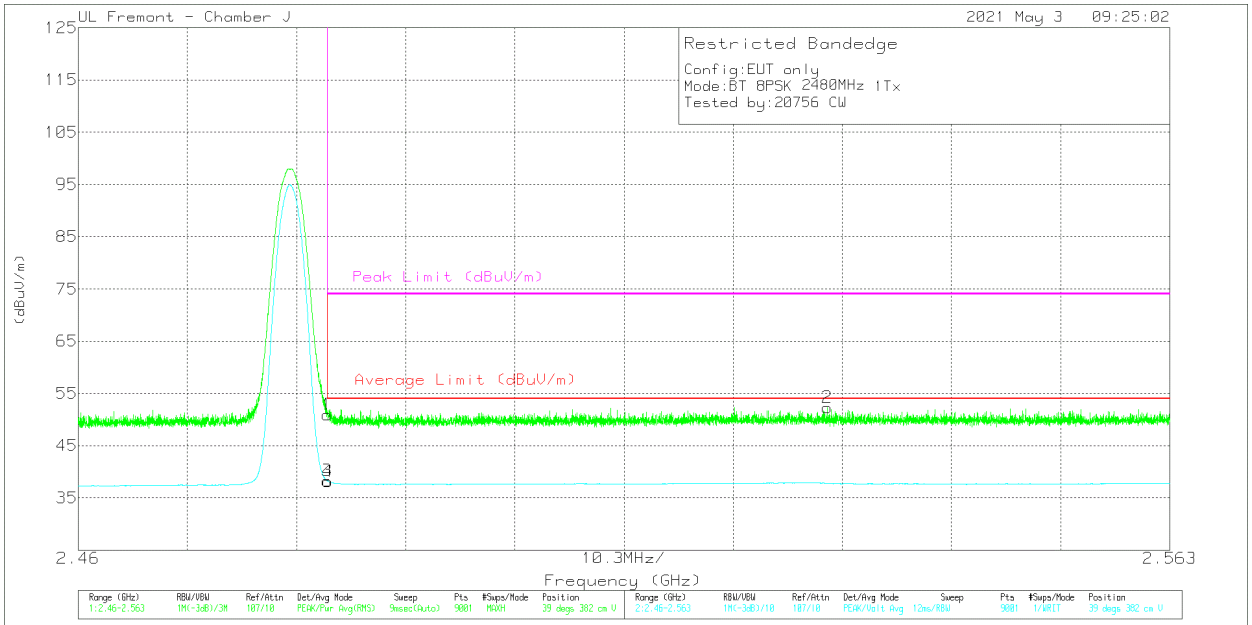
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0100034 (dB/m)	Amp/Cbl/Fltr/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	43.63	Pk	32.5	-25.2	50.93	-	-	74	-23.07	39	382	V
2	2.53069	44.73	Pk	32.7	-25.1	52.33	-	-	74	-21.67	39	382	V
3	* 2.48351	30.94	VA1T	32.5	-25.2	38.24	54	-15.76	-	-	39	382	V
4	* 2.48356	30.88	VA1T	32.5	-25.2	38.18	54	-15.82	-	-	39	382	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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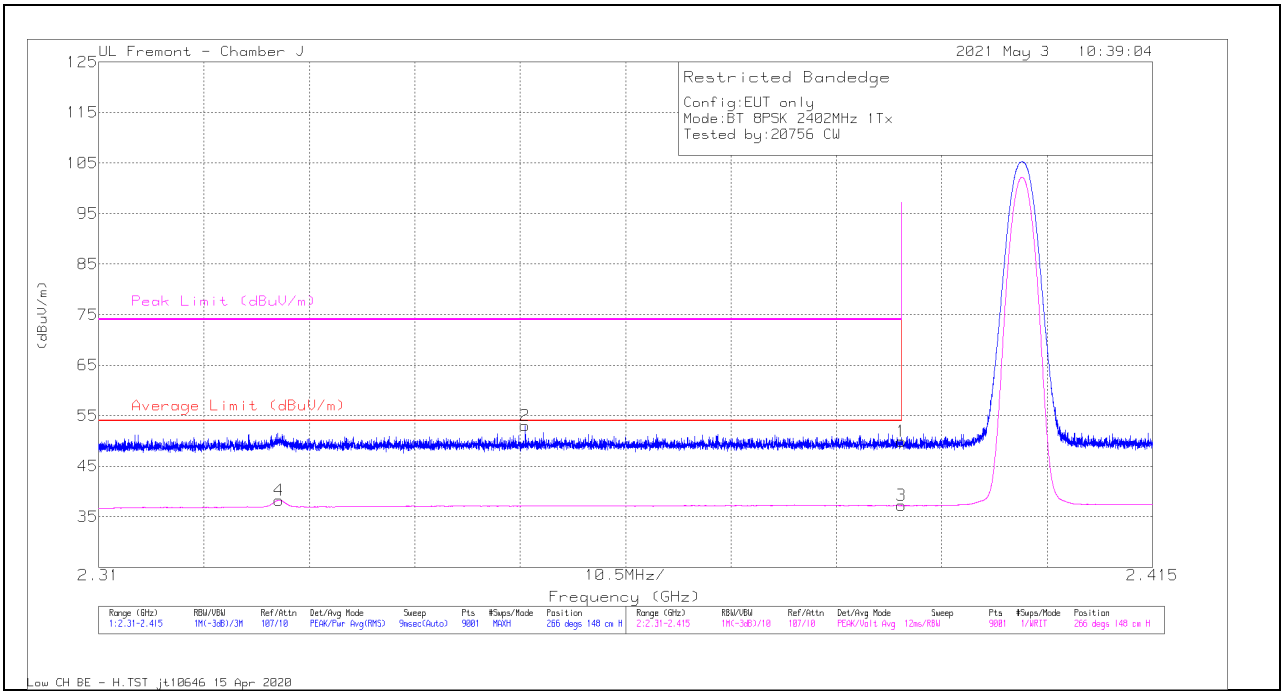
ANT 3

BANDEDGE (LOW CHANNEL)

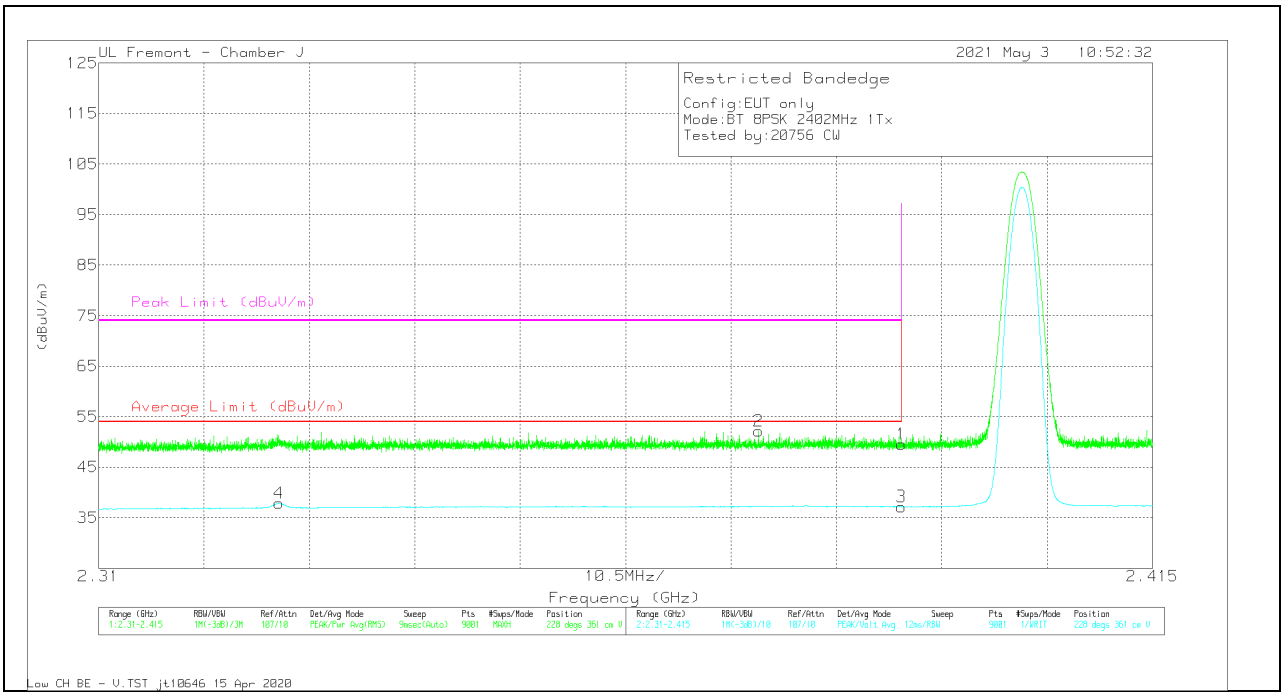
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0100034 (dB/m)	Amp/Cbl/Fltr/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	43.03	Pk	32.1	-25.2	49.93	-	-	74	-24.07	266	148	H
2	* 2.3525	46.23	Pk	32	-25.2	53.03	-	-	74	-20.97	266	148	H
3	* 2.38999	30.3	VA1T	32.1	-25.2	37.2	54	-16.8	-	-	266	148	H
4	* 2.32799	31.78	VA1T	31.8	-25.3	38.28	54	-15.72	-	-	266	148	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 PRE0100034 (dB/m)	Amp/Cbl/Fltr/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	42.59	Pk	32.1	-25.2	49.49	-	-	74	-24.51	228	361	V
2	* 2.37577	45.27	Pk	32.1	-25.2	52.17	-	-	74	-21.83	228	361	V
3	* 2.38999	30.29	VA1T	32.1	-25.2	37.19	54	-16.81	-	-	228	361	V
4	* 2.32799	31.32	VA1T	31.8	-25.3	37.82	54	-16.18	-	-	228	361	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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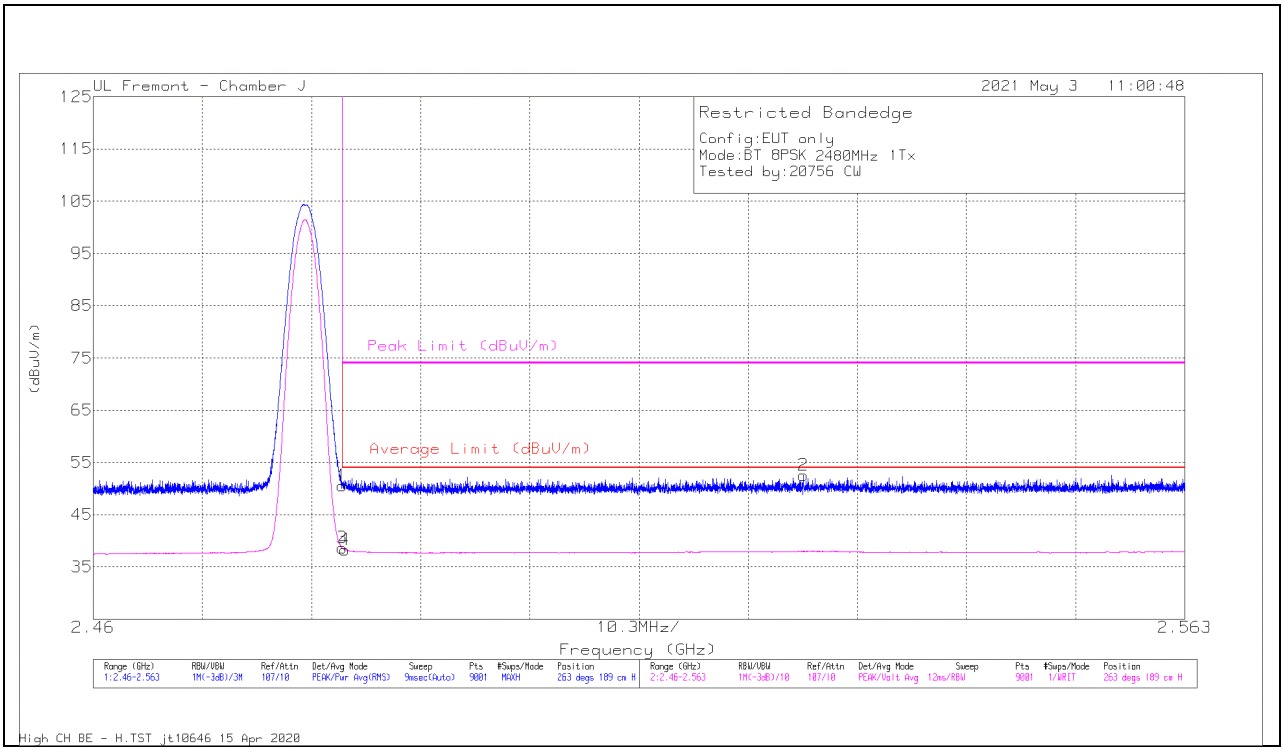
BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0100034 (dB/m)	Amp/Cbl/Fltr/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	43.27	Pk	32.5	-25.2	50.57	-	-	74	-23.43	263	189	H
2	2.52702	44.88	Pk	32.8	-25.1	52.58	-	-	74	-21.42	263	189	H
3	* 2.48351	31.28	VA1T	32.5	-25.2	38.58	54	-15.42	-	-	263	189	H
4	* 2.48371	30.99	VA1T	32.5	-25.2	38.29	54	-15.71	-	-	263	189	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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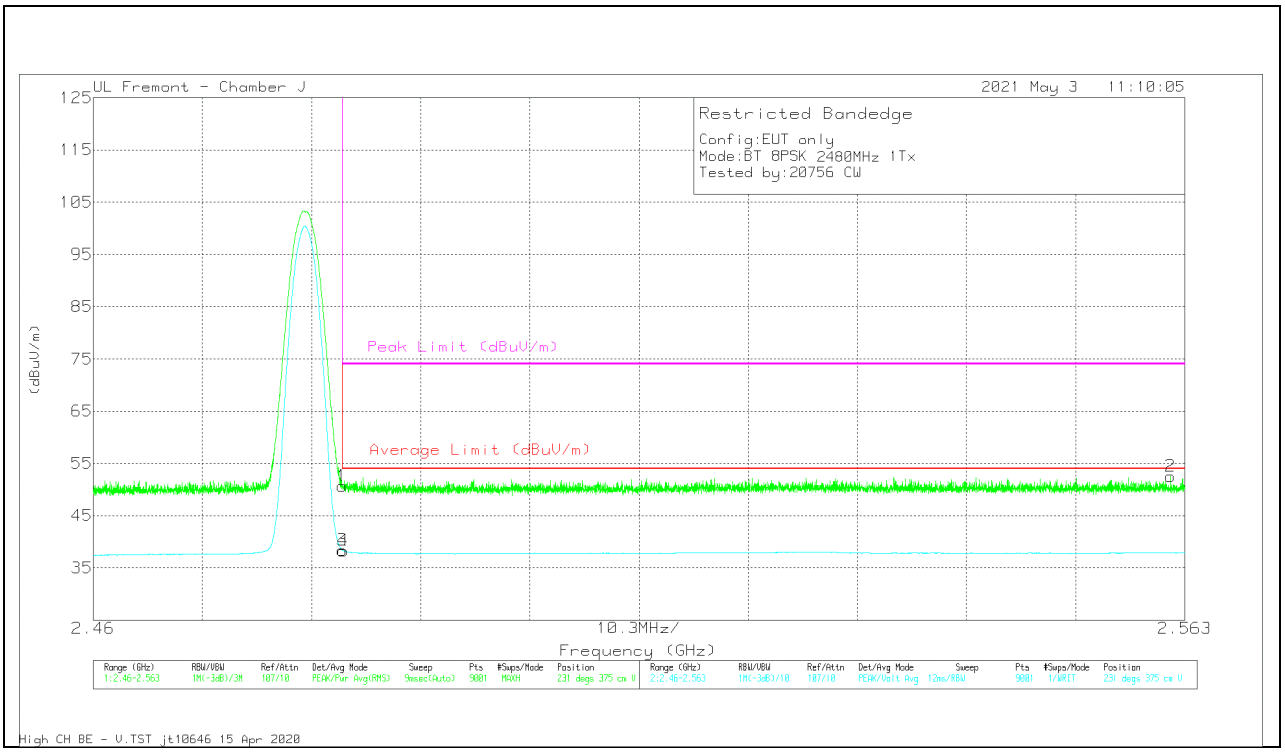
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0100034 (dB/m)	Amp/Cbl/Fltr/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	43.38	Pk	32.5	-25.2	50.68	-	-	74	-23.32	231	375	V
2	2.56163	45	Pk	32.6	-25.1	52.5	-	-	74	-21.5	231	375	V
3	* 2.48351	31.11	VA1T	32.5	-25.2	38.41	54	-15.59	-	-	231	375	V
4	* 2.48359	31	VA1T	32.5	-25.2	38.3	54	-15.7	-	-	231	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

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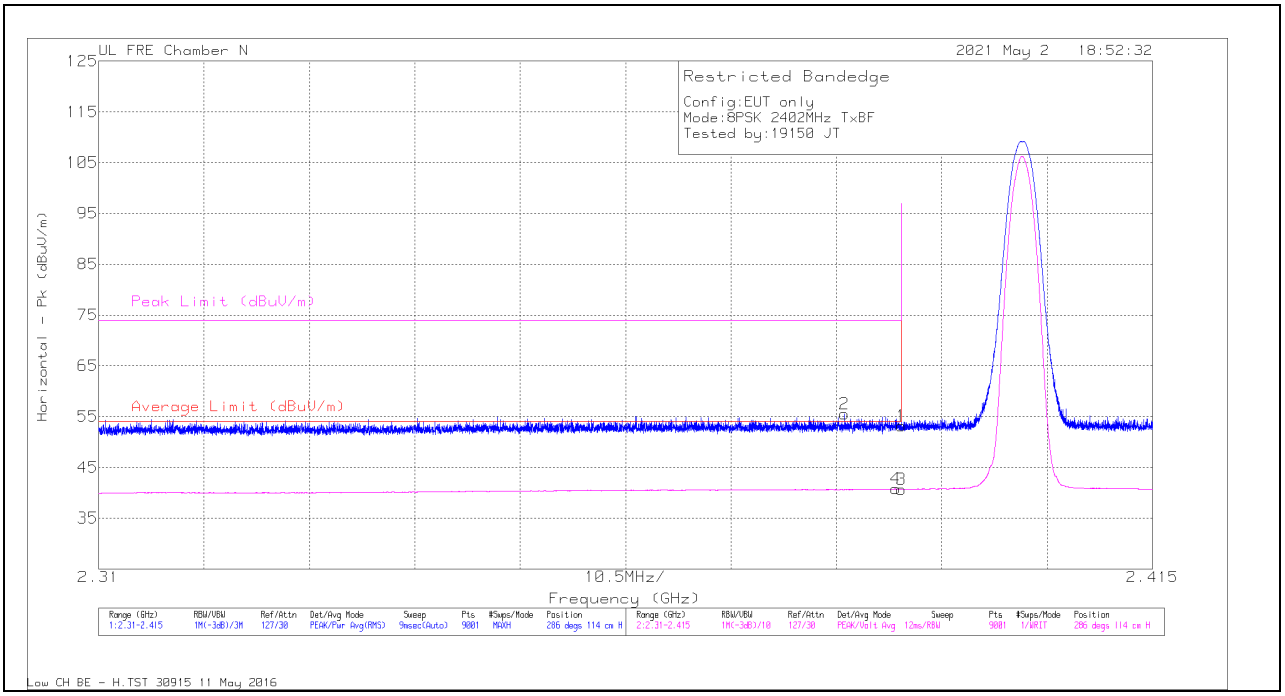
10.1.8. LOW POWER ENHANCED DATA RATE TXBF 8PSK MODULATION

BANDEDGE (LOW CHANNEL)

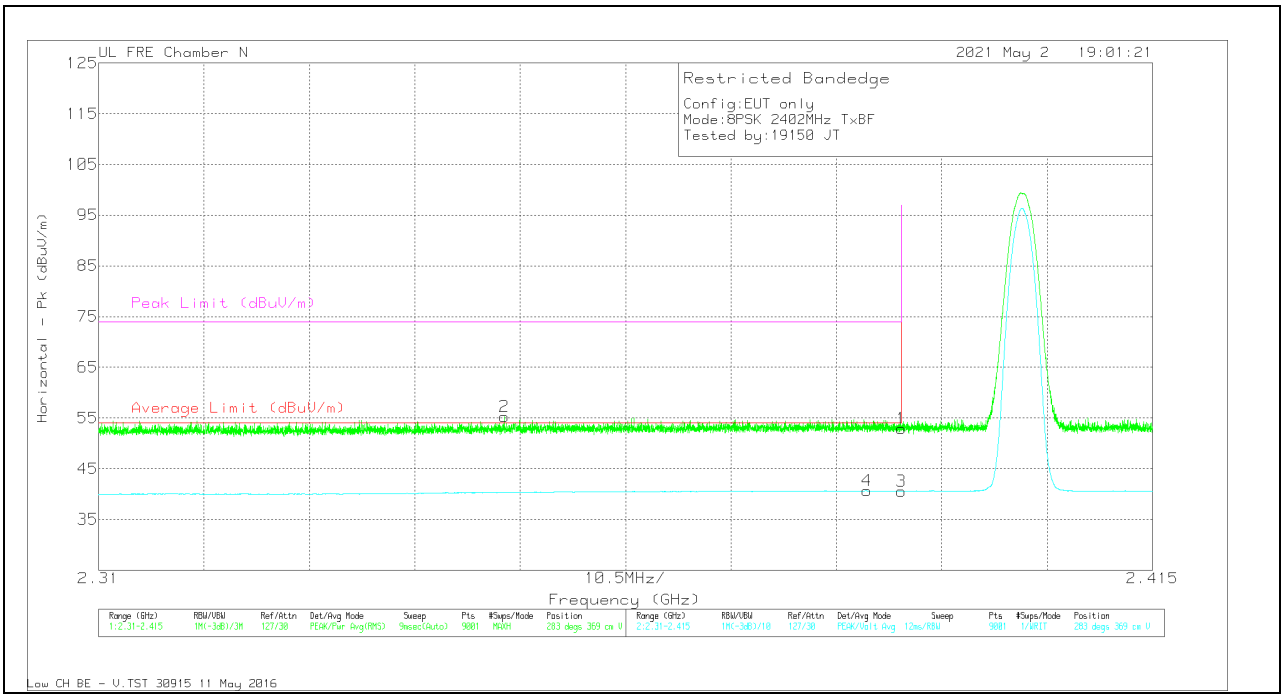
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213971 (dB/m)	Amp/Cbl/Fltr/ 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	57	Pk	32.4	-36.2	53.2	-	-	74	-20.8	286	114	H
2	2.38431	59.29	Pk	32.4	-36.2	55.49	-	-	74	-18.51	286	114	H
3	2.38999	44.52	VA1T	32.4	-36.2	40.72	54	-13.28	-	-	286	114	H
4	2.38939	44.55	VA1T	32.4	-36.2	40.75	54	-13.25	-	-	286	114	H

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 PRE0213971 (dB/m)	Amp/Cbl/Fltr/ 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	56.67	Pk	32.4	-36.2	52.87	-	-	74	-21.13	283	369	V
2	2.3504	59.44	Pk	32.2	-36.4	55.24	-	-	74	-18.76	283	369	V
3	2.38999	44.38	VA1T	32.4	-36.2	40.58	54	-13.42	-	-	283	369	V
4	2.38652	44.45	VA1T	32.4	-36.2	40.65	54	-13.35	-	-	283	369	V

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

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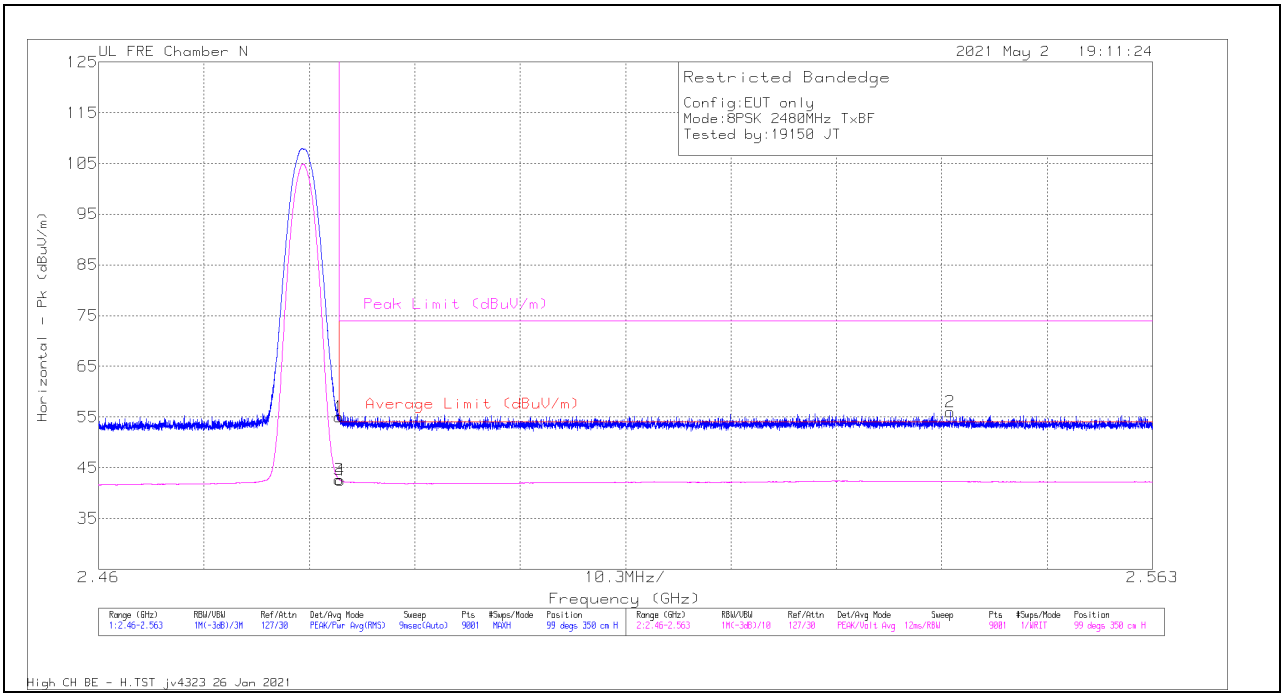
BANDEDGE (HIGH CHANNEL)

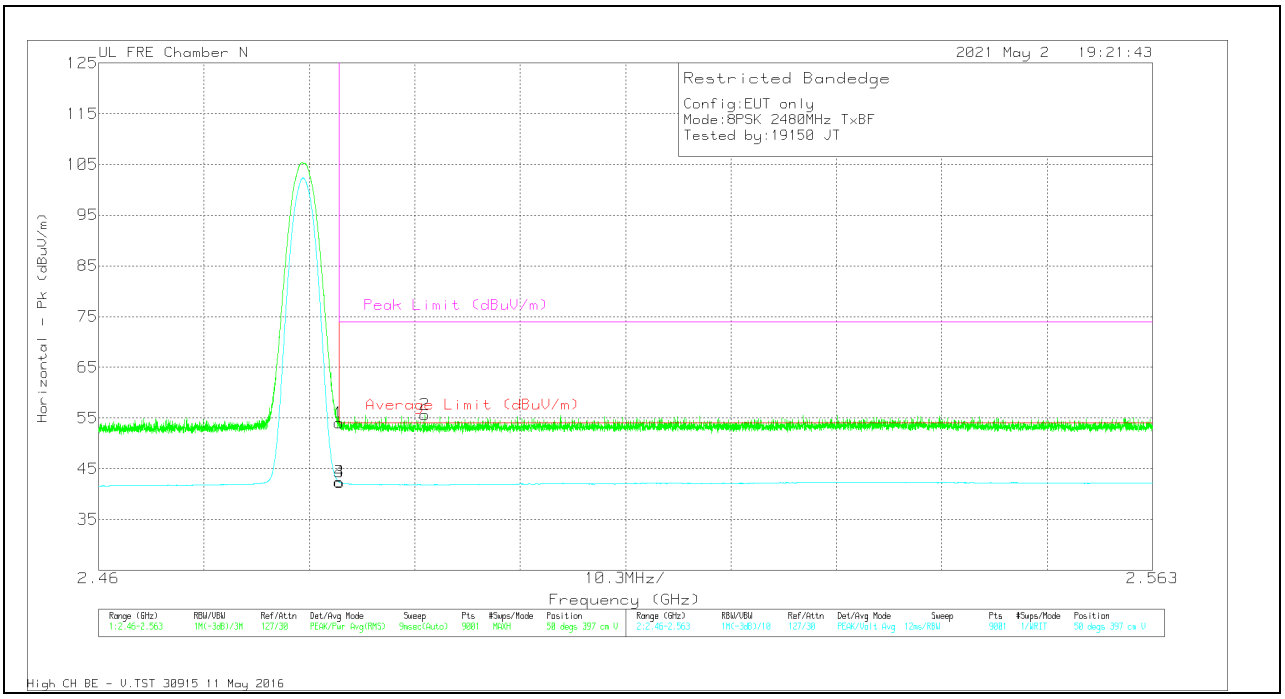
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213971 (dB/m)	Amp/Cbl/Fltr/ 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	58.48	Pk	32.5	-36	54.98	-	-	74	-19.02	99	350	H
2	2.54322	59.1	Pk	32.6	-35.7	56	-	-	74	-18	99	350	H
3	2.48351	46.16	VA1T	32.5	-36	42.66	54	-11.34	-	-	99	350	H
4	2.48363	46.03	VA1T	32.5	-36	42.53	54	-11.47	-	-	99	350	H

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

VERTICAL RESULT

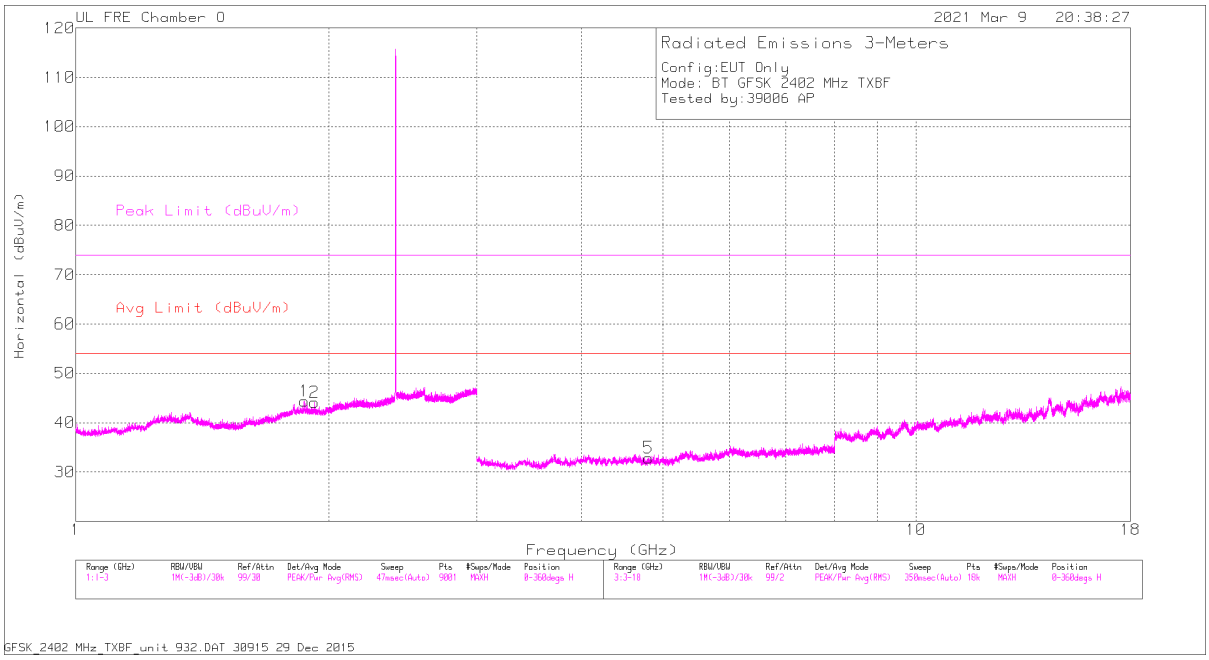


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213971 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.48351	57.56	Pk	32.5	-36	54.06	-	-	74	-19.94	50	397	V
2	2.49189	59.13	Pk	32.5	-36	55.63	-	-	74	-18.37	50	397	V
3	2.48351	45.86	VA1T	32.5	-36	42.36	54	-11.64	-	-	50	397	V
4	2.48353	45.85	VA1T	32.5	-36	42.35	54	-11.65	-	-	50	397	V

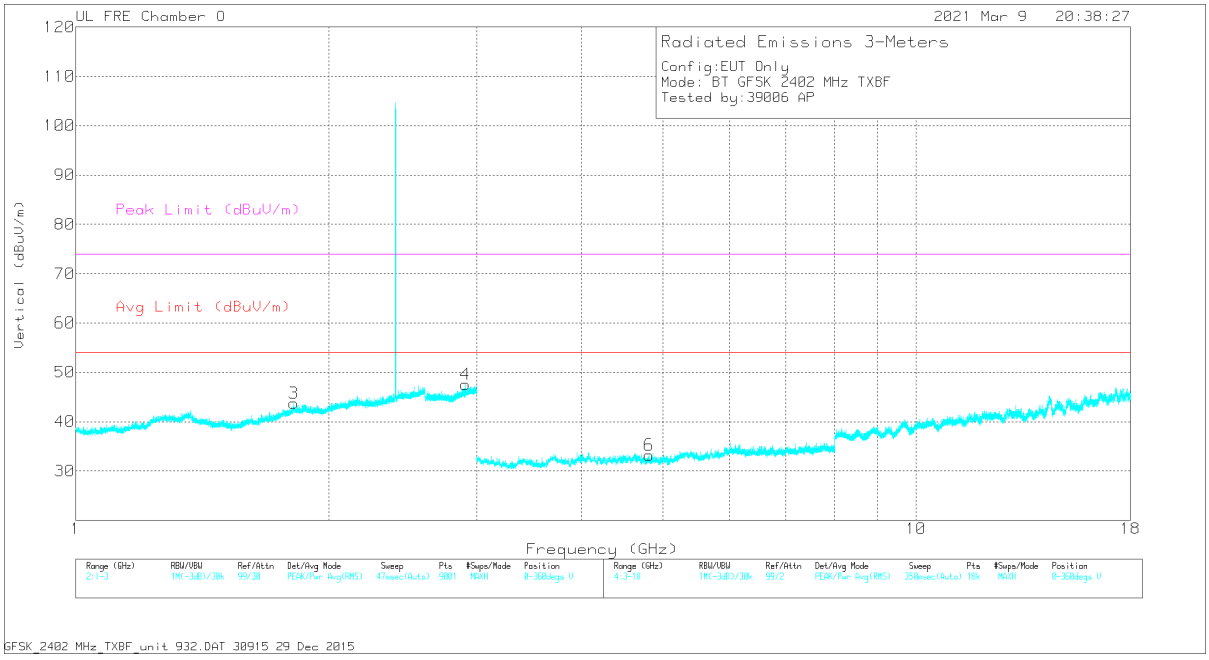
Pk - Peak detector
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

10.1.9. HIGH POWER HARMONICS AND SPURIOUS EMISSIONS TXBF

LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Range 1: Horizontal 1000 - 3000MHz

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213832	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.8757	55.56	PKFH	30.8	-35.8	50.56	-	-	-	-	260	213	H
2	1.9255	54.5	PKFH	30.6	-35.8	49.3	-	-	-	-	239	191	H

Range 2: Vertical 1000 - 3000MHz

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213832	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	1.81503	54.72	PKFH	30.6	-36	49.32	-	-	-	-	358	172	V
4	2.91198	56.92	PKFH	32.5	-34.7	54.72	-	-	-	-	111	198	V

Range 3: Horizontal 3000 - 18000MHz

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213832	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	* 4.8038	51.48	PKFH	34.2	-42.5	43.18	-	-	74	-30.82	269	198	H
	* 4.80525	38.11	VA1T	34.2	-42.5	29.81	54	-24.19	-	-	269	198	H

Range 4: Vertical 3000 - 18000MHz

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213832	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
6	* 4.80743	52.43	PKFH	34.1	-42.5	44.03	-	-	74	-29.97	338	159	V
	* 4.80773	37.92	VA1T	34.1	-42.5	29.52	54	-24.48	-	-	338	199	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

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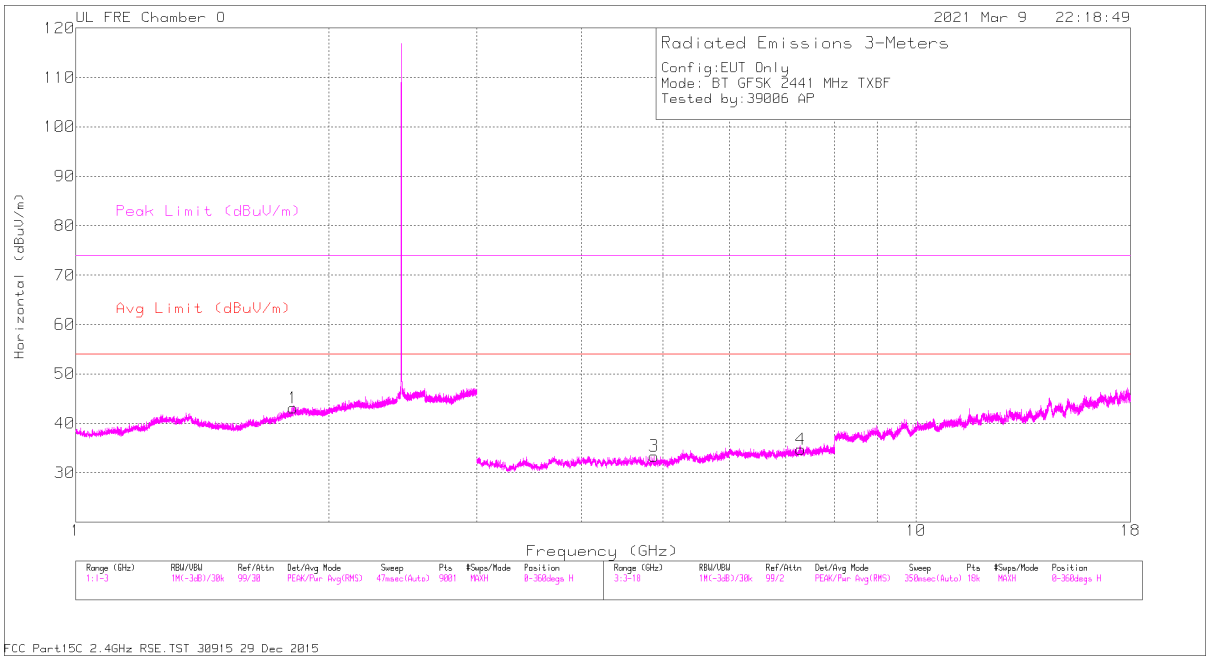
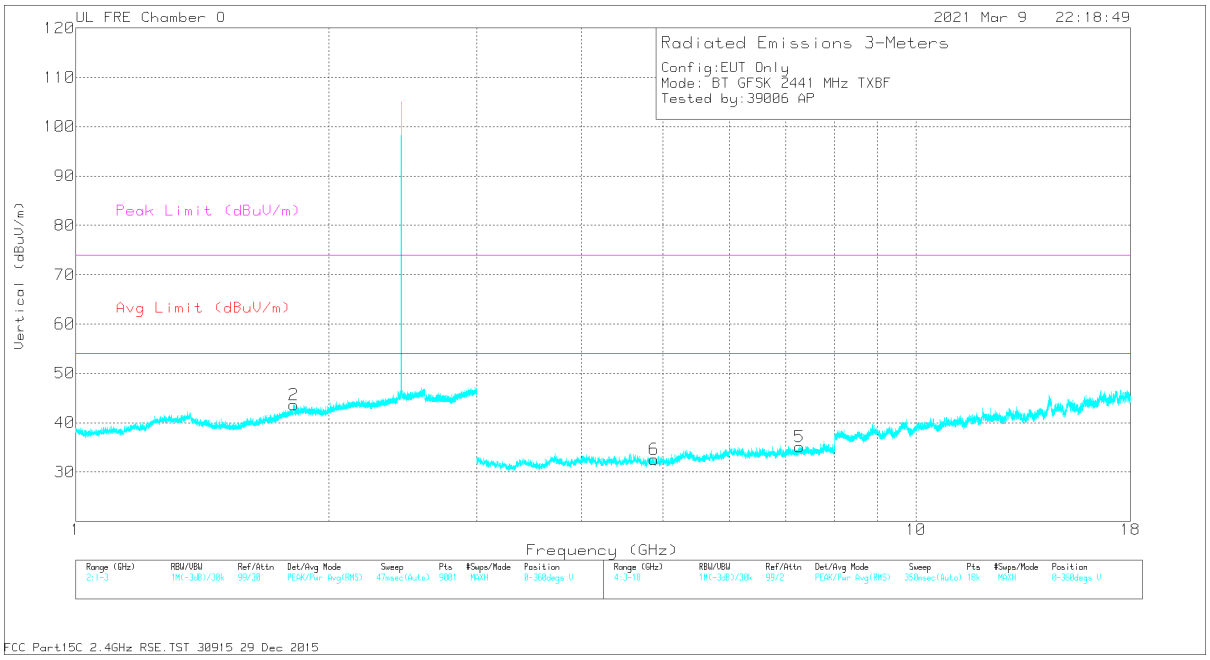
MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Range 1: Horizontal 1000 - 3000MHz

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213832	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.81068	56.85	PKFH	30.5	-35.9	51.45	-	-	-	-	270	143	H
	1.81932	43.84	VA1T	30.7	-35.9	38.64	-	-	-	-	270	143	H

Range 2: Vertical 1000 - 3000MHz

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213832	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	1.81355	56.82	PKFH	30.6	-36	51.42	-	-	-	-	76	168	V
	1.81599	43.84	VA1T	30.6	-36	38.44	-	-	-	-	76	168	V

Range 3: Horizontal 3000 - 18000MHz

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213832	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 4.87979	51.15	PKFH	34.1	-42.4	42.85	-	-	74	-31.15	70	231	H
	* 4.87759	37.74	VA1T	34.1	-42.4	29.44	54	-24.56	-	-	70	231	H
4	* 7.29881	48.24	PKFH	35.7	-39.1	44.84	-	-	74	-29.16	73	241	H
	* 7.29596	34.92	VA1T	35.7	-39.2	31.42	54	-22.58	-	-	73	241	H

Range 4: Vertical 3000 - 18000MHz

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213832	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	* 7.26661	48.43	PKFH	35.8	-39.1	45.13	-	-	74	-28.87	156	321	V
	* 7.26632	35.08	VA1T	35.8	-39.1	31.78	54	-22.22	-	-	156	321	V
6	* 4.88037	51.17	PKFH	34.1	-42.4	42.87	-	-	74	-31.13	241	130	V
	* 4.8785	37.72	VA1T	34.1	-42.4	29.42	54	-24.58	-	-	241	130	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

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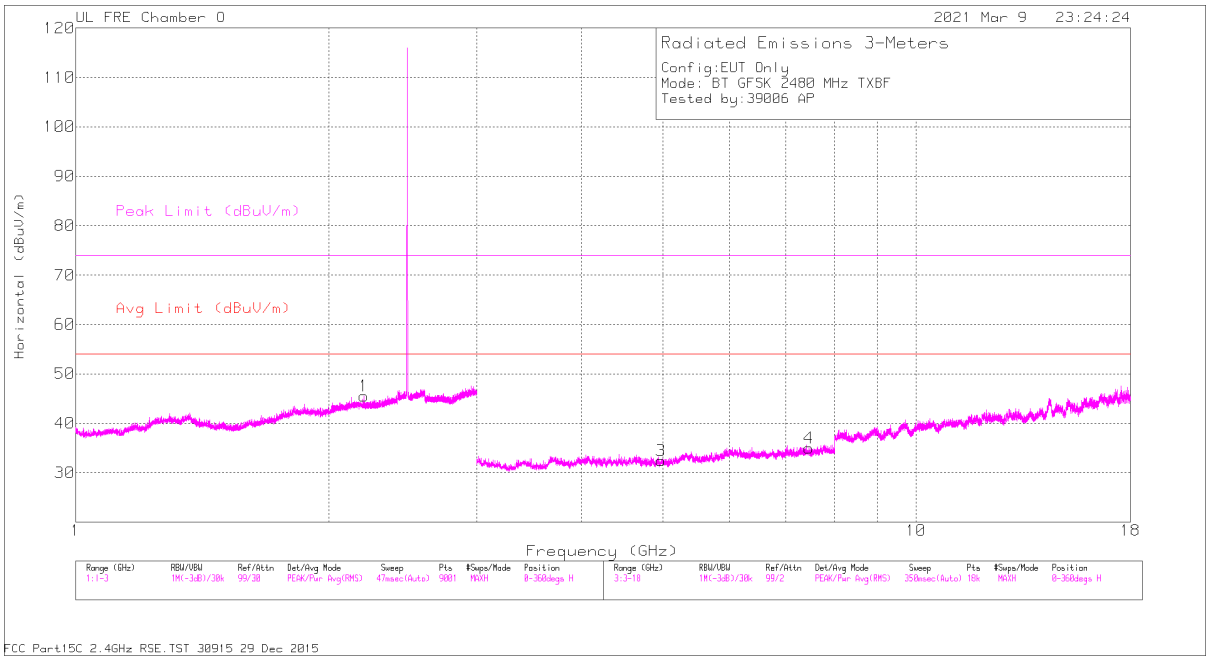
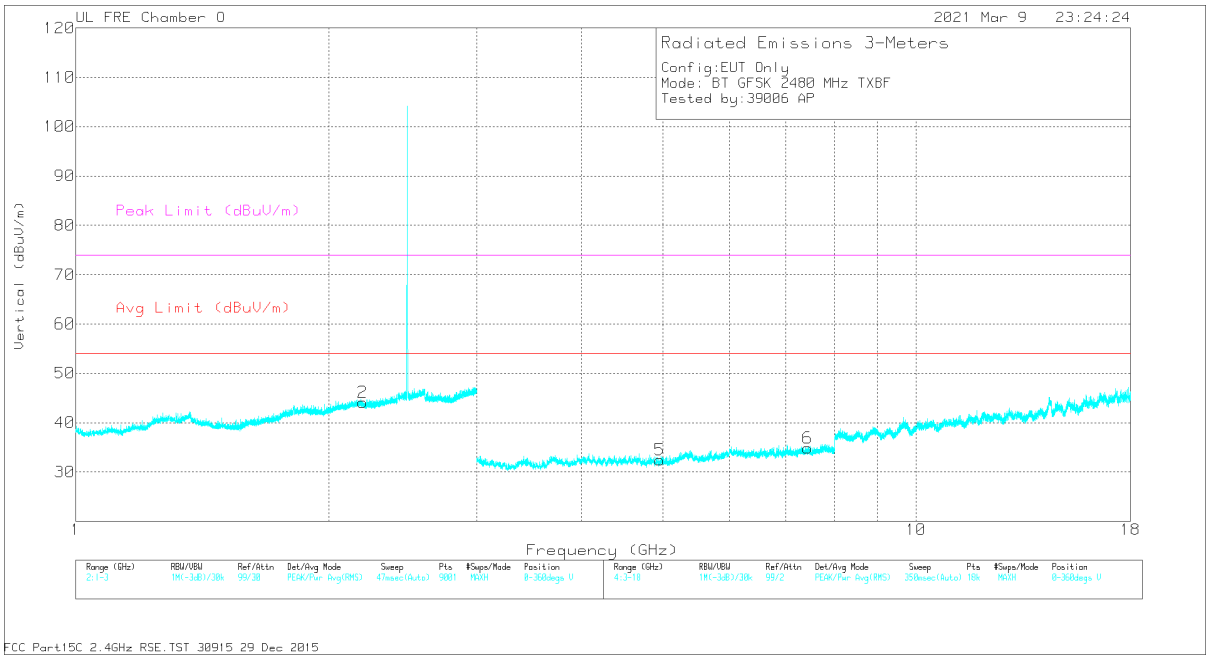
HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Range 1: Horizontal 1000 - 3000MHz

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213832	Amp/Cbl/Fltr/ Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.20334	56.33	PKFH	31.6	-35.6	52.33	-	-	74	-21.67	123	144	H
	* 2.20288	43.05	VA1T	31.6	-35.6	39.05	54	-14.95	-	-	123	144	H

Range 2: Vertical 1000 - 3000MHz

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213832	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	2.19432	56.21	PKFH	31.7	-35.6	52.31	-	-	-	-	234	169	V

Range 3: Horizontal 3000 - 18000MHz

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213832	Amp/Cbl/Fltr/ Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 4.97261	51.7	PKFH	34.1	-42.2	43.6	-	-	74	-30.4	210	199	H
	* 4.97248	37.62	VA1T	34.1	-42.1	29.62	54	-24.38	-	-	210	199	H
4	* 7.45838	47.63	PKFH	35.8	-38.4	45.03	-	-	74	-28.97	143	261	H
	* 7.45912	34.31	VA1T	35.8	-38.4	31.71	54	-22.29	-	-	143	261	H

Range 4: Vertical 3000 - 18000MHz

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213832	Amp/Cbl/Fltr/ Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	* 4.95045	50.55	PKFH	34	-42.2	42.35	-	-	74	-31.65	120	129	V
	* 4.95104	37.32	VA1T	34	-42.2	29.12	54	-24.88	-	-	120	129	V
6	* 7.43467	49.27	PKFH	35.8	-38.6	46.47	-	-	74	-27.53	202	129	V
	* 7.43514	34.69	VA1T	35.8	-38.6	31.89	54	-22.11	-	-	202	129	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

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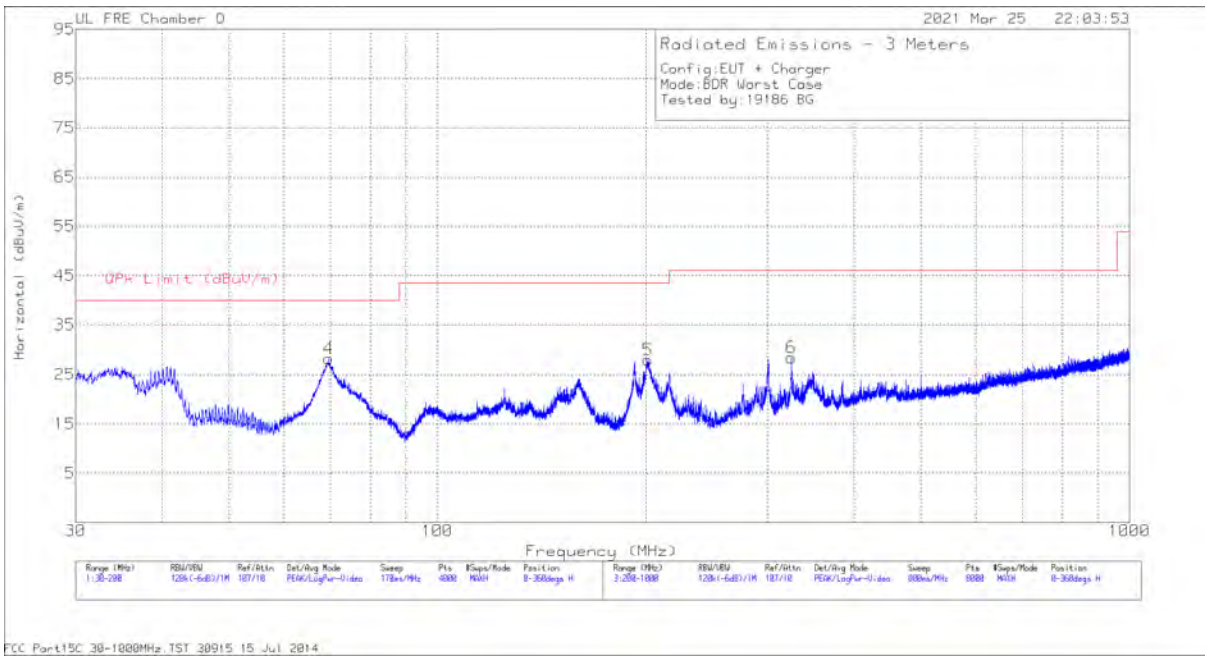
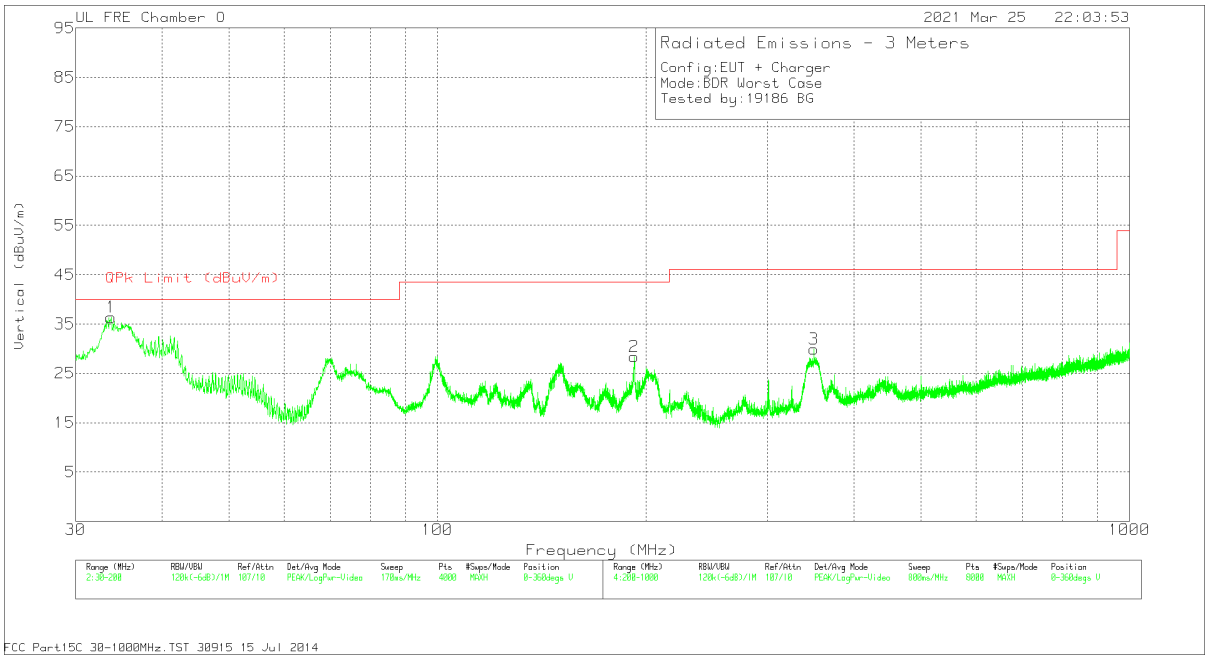
10.2. WORST CASE BELOW 1 GHZ

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



HORIZONTAL



VERTICAL

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Below 1GHz Data

Range 1: Horizontal 30 - 200MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF 202329 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	69.6203	46.42	Pk	14	-32.2	28.22	40	-11.78	0-360	201	H

Range 2: Vertical 30 - 200MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF 202329 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	33.9577	39.28	Qp	24.2	-32.5	30.98	40	-9.02	102	113	V
2	192.5196	42.67	Pk	17.2	-31.5	28.37	43.52	-15.15	0-360	100	V

Range 3: Horizontal 200 - 1000MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF 202329 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	201.3002	41.21	Pk	18.2	-31.4	28.01	43.52	-15.51	0-360	100	H
6	* 324.6162	39.66	Pk	19.8	-31	28.46	46.02	-17.56	0-360	100	H

Range 4: Vertical 200 - 1000MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF 202329 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	350.0195	40.69	Pk	20.1	-30.9	29.89	46.02	-16.13	0-360	99	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
Qp – Quasi Peak Detector

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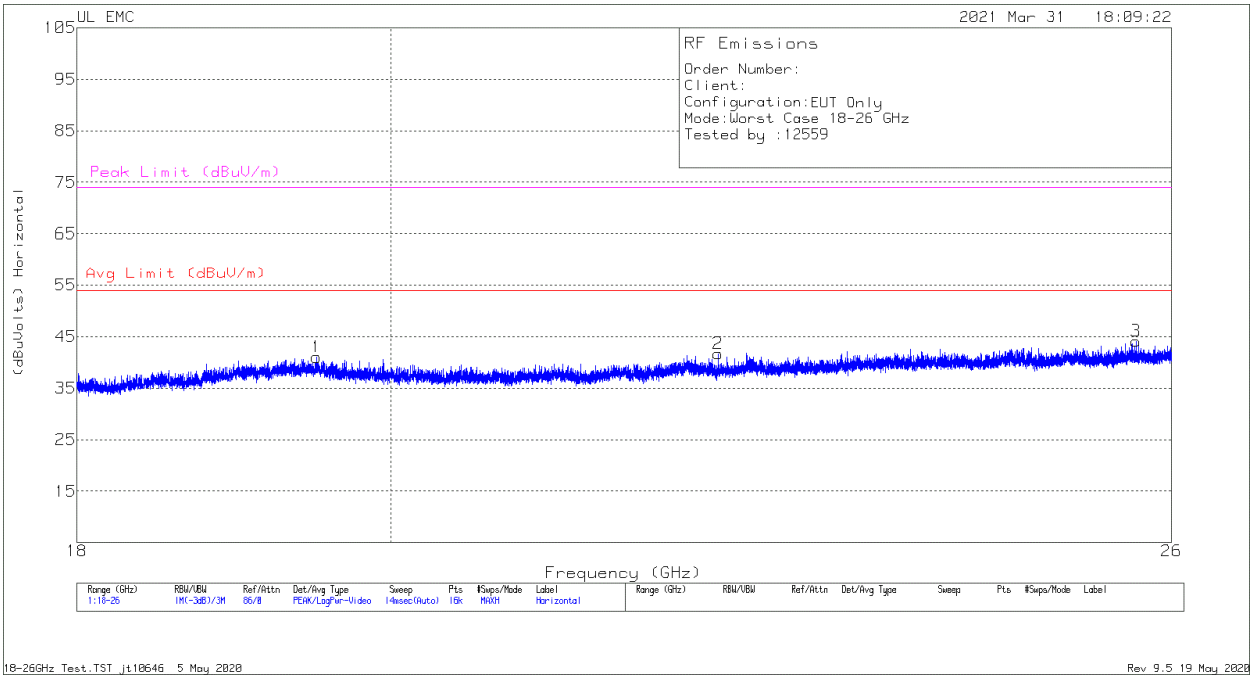
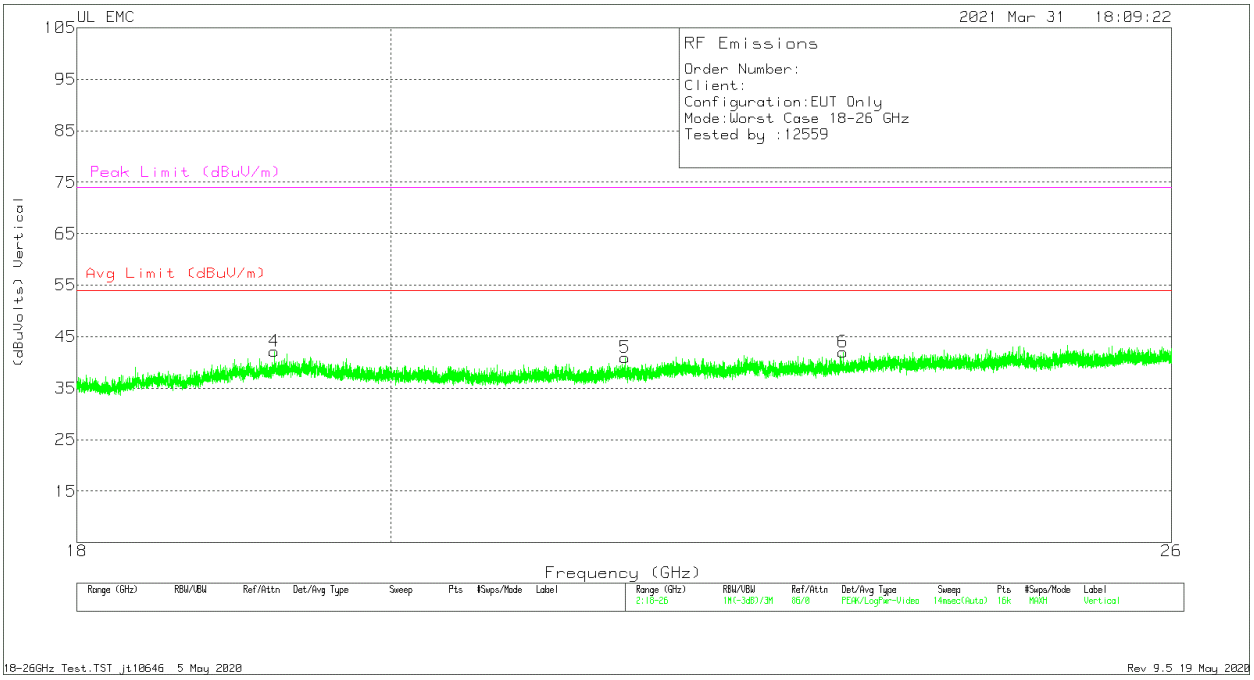
10.3. WORST CASE 18-26 GHZ

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	19.50841	36.82	Pk	32.8	-19.1	-9.5	41.02	54	-12.98	74	-32.98
2	22.32573	38.09	Pk	33.4	-20.3	-9.5	41.69	54	-12.31	74	-32.31
3	25.68952	39.5	Pk	34.1	-20	-9.5	44.1	54	-9.9	74	-29.9
4	19.23342	37.92	Pk	32.8	-19.1	-9.5	42.12	54	-11.88	74	-31.88
5	21.63877	37.94	Pk	33.2	-20.7	-9.5	40.94	54	-13.06	74	-33.06
6	23.28217	37.91	Pk	33.8	-20.2	-9.5	42.01	54	-11.99	74	-31.99

Pk - Peak detector

Note: measurement distance was 1m.

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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

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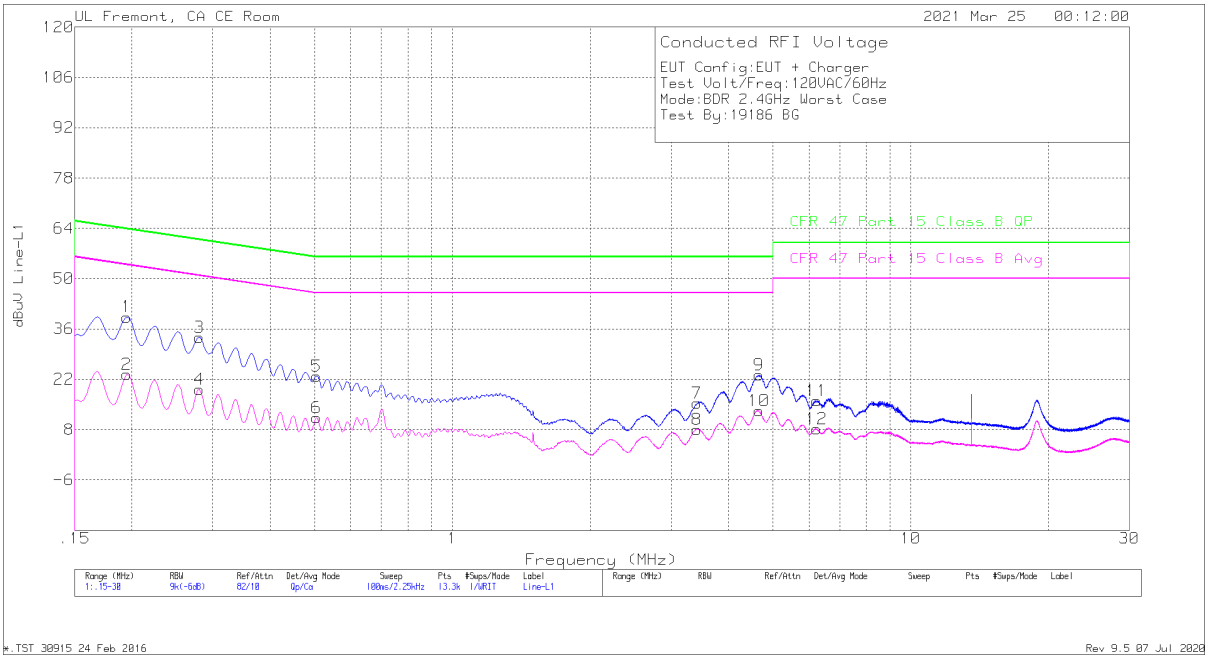
11.1. AC Power Line With AC/DC ADAPTER

LINE 1 RESULTS



Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE018644 6 L1	LC Cables C1&C3 dB	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR)Margin (dB)
1	.195	29.25	Qp	0	0	10.1	39.35	63.82	-24.47	-	-
2	.195	13.34	Ca	0	0	10.1	23.44	-	-	53.82	-30.38
3	.2805	23.63	Qp	0	0	10.1	33.73	60.8	-27.07	-	-
4	.2805	9.1	Ca	0	0	10.1	19.2	-	-	50.8	-31.6
5	.5055	12.84	Qp	0	0	10.1	22.94	56	-33.06	-	-
6	.5055	1.3	Ca	0	0	10.1	11.4	-	-	46	-34.6
7	3.41588	5.04	Qp	0	.1	10.2	15.34	56	-40.66	-	-
8	3.41925	-2.2	Ca	0	.1	10.2	8.1	-	-	46	-37.9
9	4.6635	12.88	Qp	0	.1	10.2	23.18	56	-32.82	-	-
10	4.66125	3	Ca	0	.1	10.2	13.3	-	-	46	-32.7
11	6.23175	5.8	Qp	0	.1	10.2	16.1	60	-43.9	-	-
12	6.23513	-2.03	Ca	0	.1	10.2	8.27	-	-	50	-41.73

Qp - Quasi-Peak detector
Ca - CISPR average detection

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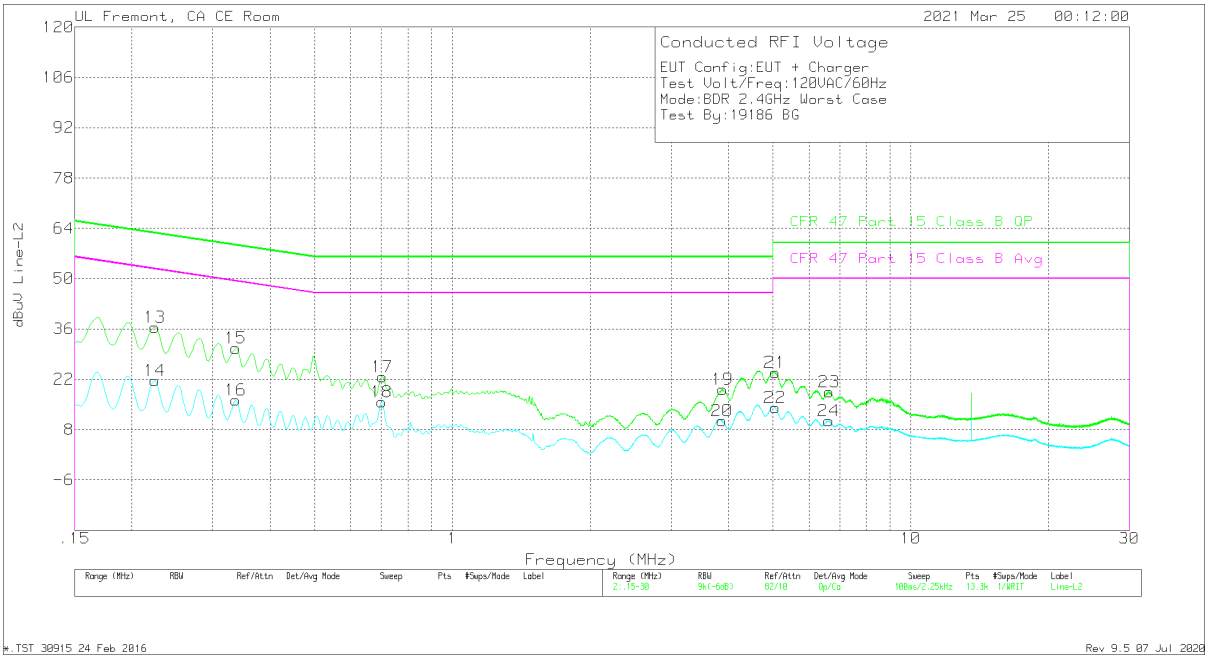
LINE 2 RESULTS



Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE018644 6 L2	LC Cables C2&C3 dB	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR)Margin (dB)
13	.22425	26.42	Qp	0	0	10.1	36.52	62.66	-26.14	-	-
14	.22425	11.56	Ca	0	0	10.1	21.66	-	-	52.66	-31
15	.33675	20.53	Qp	0	0	10.1	30.63	59.28	-28.65	-	-
16	.33675	6.19	Ca	0	0	10.1	16.29	-	-	49.28	-32.99
17	.7035	12.65	Qp	0	0	10.1	22.75	56	-33.25	-	-
18	.70125	5.61	Ca	0	0	10.1	15.71	-	-	46	-30.29
19	3.885	8.97	Qp	0	.1	10.2	19.27	56	-36.73	-	-
20	3.8805	.18	Ca	0	.1	10.2	10.48	-	-	46	-35.52
21	5.05725	13.57	Qp	0	.1	10.2	23.87	60	-36.13	-	-
22	5.05725	3.83	Ca	0	.1	10.2	14.13	-	-	50	-35.87
23	6.64125	8.24	Qp	0	.1	10.2	18.54	60	-41.46	-	-
24	6.62888	.18	Ca	0	.1	10.2	10.48	-	-	50	-39.52

Qp - Quasi-Peak detector
Ca - CISPR average detection

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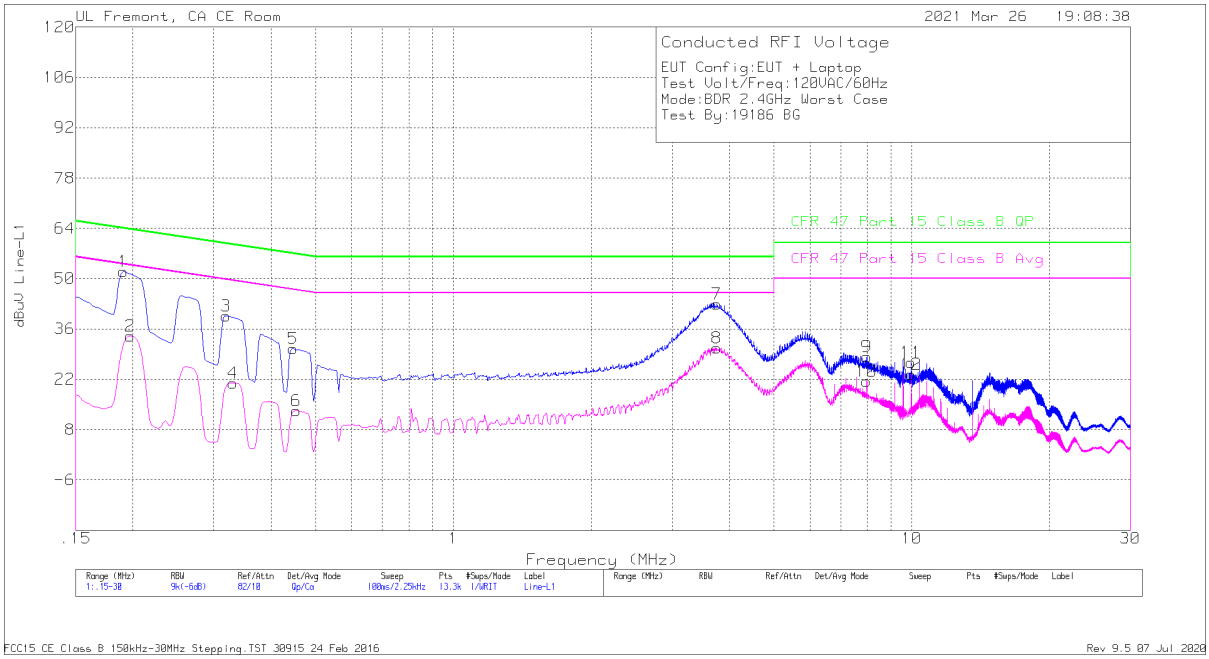
11.2. AC Power Line With Laptop

LINE 1 RESULTS

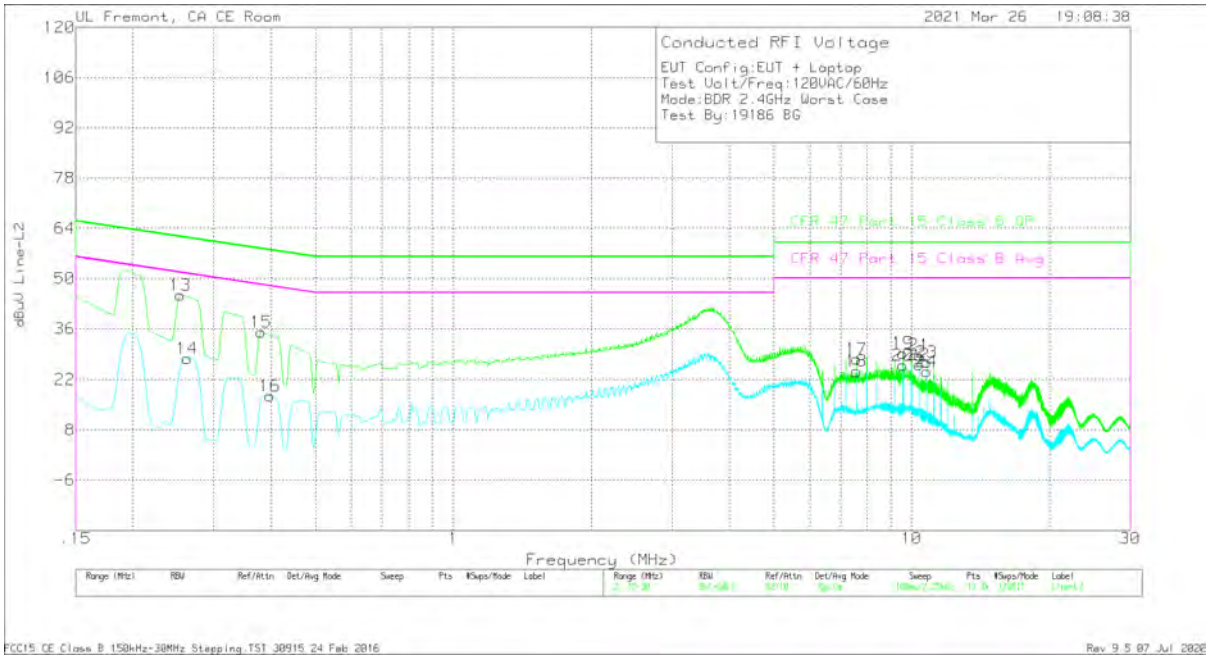


Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE018644 6 L1	LC Cables C1&C3 dB	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR)Margin (dB)
1	.1905	41.92	Qp	0	0	10.1	52.02	64.01	-11.99	-	-
2	.19725	23.99	Ca	0	0	10.1	34.09	-	-	53.73	-19.64
3	.31875	29.58	Qp	0	0	10.1	39.68	59.74	-20.06	-	-
4	.33	10.9	Ca	0	0	10.1	21	-	-	49.45	-28.45
5	.447	20.44	Qp	0	0	10.1	30.54	56.93	-26.39	-	-
6	.45375	3.13	Ca	0	0	10.1	13.23	-	-	46.81	-33.58
7	3.759	32.62	Qp	0	.1	10.2	42.92	56	-13.08	-	-
8	3.75675	20.48	Ca	0	.1	10.2	30.78	-	-	46	-15.22
9	7.98225	17.92	Qp	0	.1	10.2	28.22	60	-31.78	-	-
10	7.98	11.2	Ca	0	.1	10.2	21.5	-	-	50	-28.5
11	9.97575	16.22	Qp	0	.2	10.2	26.62	60	-33.38	-	-
12	9.97575	12.94	Ca	0	.2	10.2	23.34	-	-	50	-26.66

Qp - Quasi-Peak detector
Ca - CISPR average detection

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 (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR)Margin (dB)
13	.2535	35.3	Qp	0	0	10.1	45.4	61.64	-16.24	-	-
14	.2625	17.8	Ca	0	0	10.1	27.9	-	-	51.35	-23.45
15	.38063	25.02	Qp	0	0	10.1	35.12	58.27	-23.15	-	-
16	.3975	7.41	Ca	0	0	10.1	17.51	-	-	47.91	-30.4
17	7.58175	17.37	Qp	0	.1	10.2	27.67	60	-32.33	-	-
18	7.58175	14.05	Ca	0	.1	10.2	24.35	-	-	50	-25.65
19	9.5775	18.88	Qp	0	.2	10.2	29.28	60	-30.72	-	-
20	9.5775	15.57	Ca	0	.2	10.2	25.97	-	-	50	-24.03
21	10.37625	18.34	Qp	0	.2	10.2	28.74	60	-31.26	-	-
22	10.37625	15.72	Ca	0	.2	10.2	26.12	-	-	50	-23.88
23	10.7745	16.47	Qp	0	.2	10.2	26.87	60	-33.13	-	-
24	10.7745	13.81	Ca	0	.2	10.2	24.21	-	-	50	-25.79

Qp - Quasi-Peak detector
Ca - CISPR average detection

12. SETUP PHOTOS

Please refer to 13571607-EP1V1 for setup photos

END OF TEST REPORT

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