TEST REPORT

Report Number: 13571607-E2V2

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 15, 2021

Prepared by:
UL Verification Services Inc.
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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	7/15/2021	Address TCB's Questions	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; 04/16/2021
DATE TESTED:	FEBRUARY 22, 2021 – JUNE 18, 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
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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	ANSI C63.10 Section 11.6.
N/A	RSS-GEN 6.7	99% OBW	Reporting purposes only	ANSI C63.10 Section 6.9.3.
15.247 (a) (2)	RSS-247 5.2 (a)	6dB BW	Complies	None.
15.247 (b) (3)	RSS-247 5.4 (d)	Output Power	Complies	None.
See Comment		Average power	Reporting purposes only	Per ANSI C63.10, Section 11.9.2.3.2.
15.247 (e)	RSS-247 5.2 (b)	PSD	Complies	None.
15.247 (d)	RSS-247 5.5	Conducted Spurious Emissions	Complies	None.
15.209, 15.205	RSS-GEN 8.9, 8.10	Radiated Emissions	Complies	None.
15.207	RSS-Gen 8.8	AC Mains Conducted Emissions	Complies	None.

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with:

- FCC CFR 47 Part 2
- FCC CFR 47 Part 15
- ANSI C63.10-2013
- KDB 558074 D01 15.247 Meas Guidance v05r02
- KDB 414788 D01 Radiated Test Site v01r01
- FCC KDB 662911 D01 v02r01
- RSS-GEN Issue 5 + A1 + A2
- RSS-247 Issue 2

4. FACILITIES AND ACCREDITATION

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

	Address	ISED CABID	ISED Company Number	FCC Registration
☐	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

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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

6.2. MAXIMUM OUTPUT POWER

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

Antenna	Configuration	Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
ANT 4	High Power	2402 - 2480	BLE 1M	20.51	112.46
	Low Power			11.53	14.22
	High Power	2404 - 2478	BLE 2M	20.54	113.24
	Low Power			11.41	13.84
ANT 3	High Power	2402 - 2480	BLE 1M	20.06	101.39
	Low Power			11.59	14.42
	High Power	2404 - 2478	BLE 2M	20.07	101.62
	Low Power			11.44	13.93
BF, ANT 4 + ANT 3	High Power	2402 - 2480	BLE 1M	20.50	112.20
	Low Power			14.34	27.16
	High Power	2404 - 2478	BLE 2M	20.52	112.72
	Low Power			14.34	27.16

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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

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

High Power Beamforming BLE 1Mbps 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 (except the band edge).

Radiated emissions below 1GHz, 18-26GHz and AC power line conducted emissions were performed with the EUT transmitting 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 were performed with EUT connected to AC power adapter as the worst case and for above 1GHz, tests were performed with EUT only. For AC power line conducted emission, tests were investigated with AC power adapter and with laptop.

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

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	Liteon Technology	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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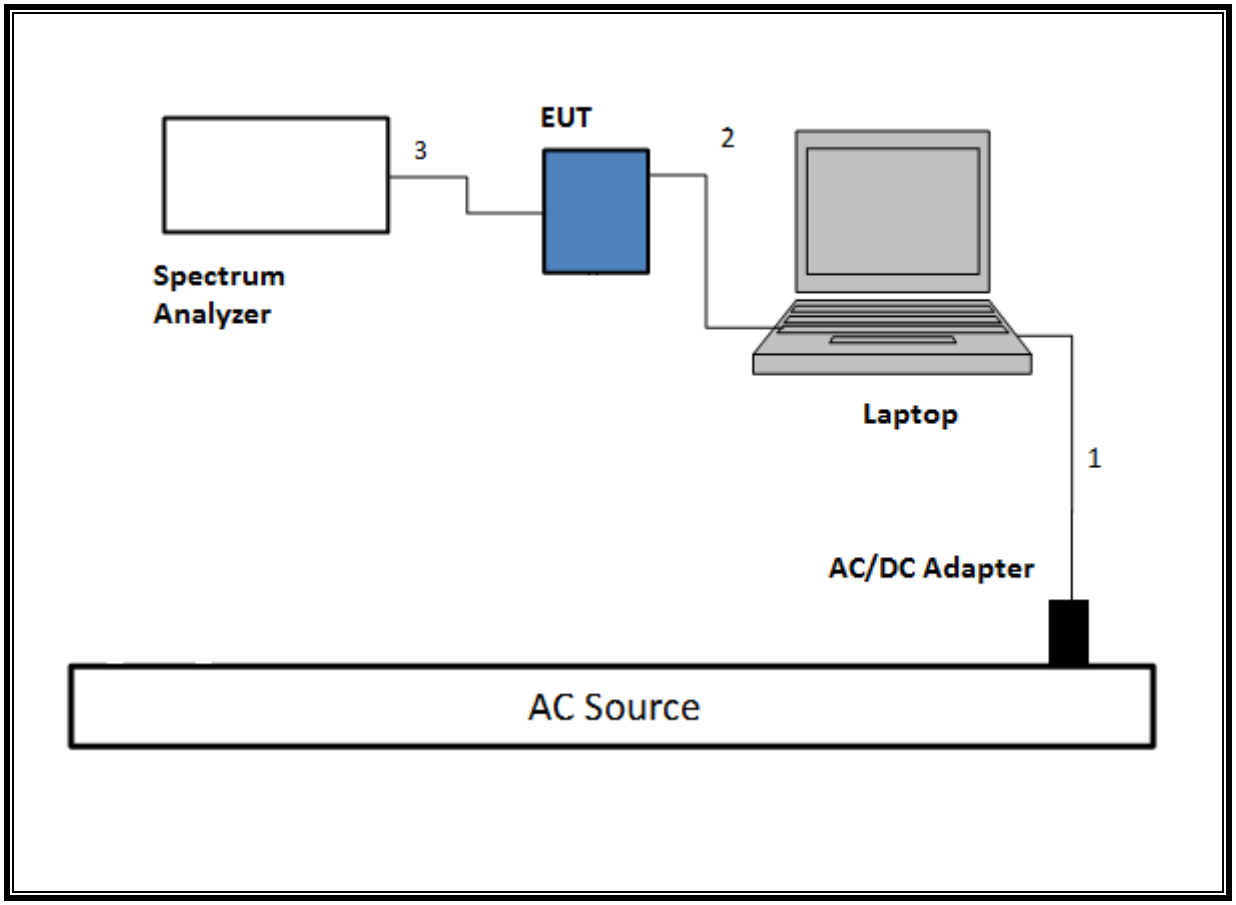
SETUP DIAGRAM FOR CONDUCTED TESTS



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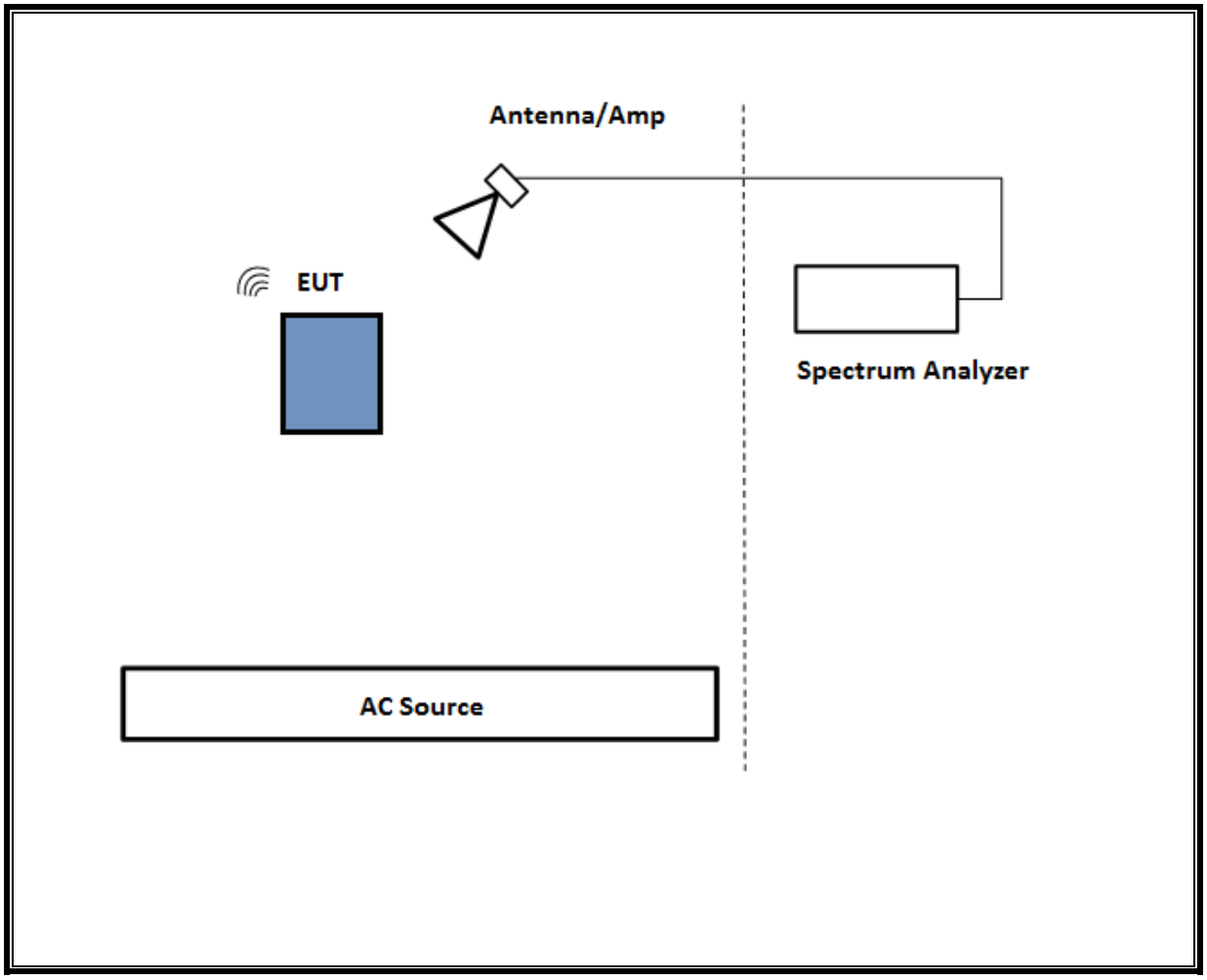
SETUP DIAGRAM FOR RADIATED TESTS Above 1GHz



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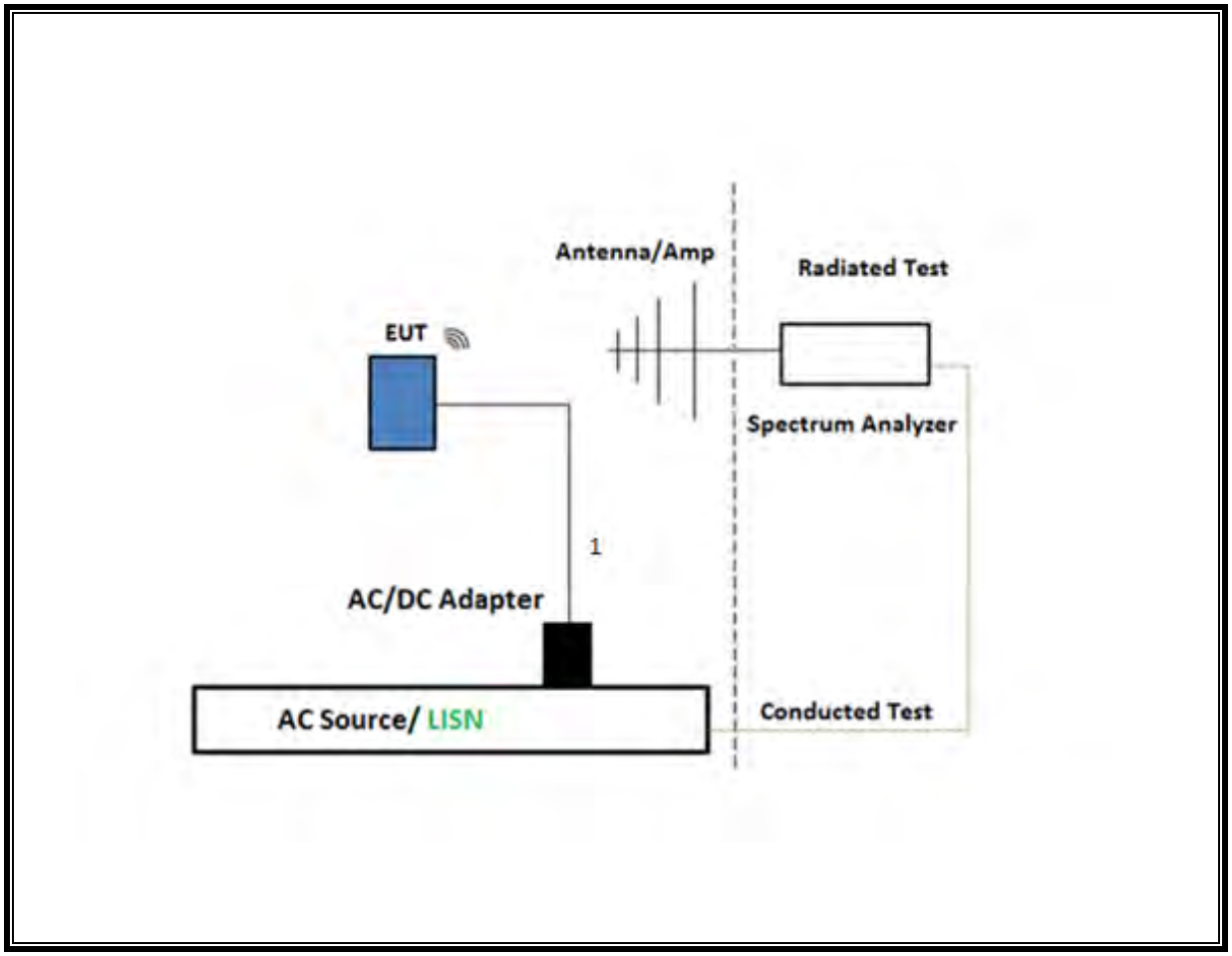
SETUP DIAGRAM FOR Below 1GHz and AC LINE CONDUCTED TEST



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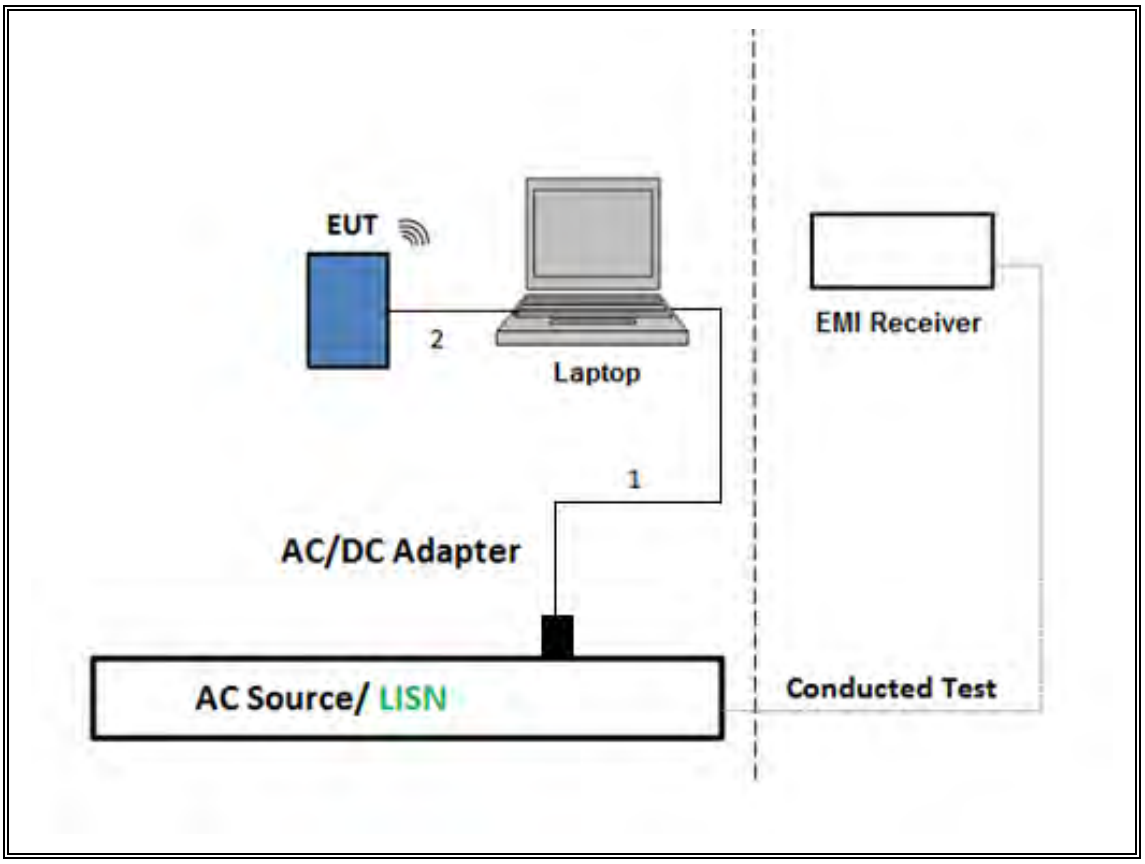
TEST SETUP- AC LINE CONDUCTED: LAPTOP CONFIGURATION



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7. MEASUREMENT METHOD

On Time and Duty Cycle: KDB 558074 D01 v05r02, Section 6.

6 dB BW: ANSI C63.10 Subclause -11.8.1 RBW ≥ DTS BW

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

Output Power: ANSI C63.10 Subclause -11.9.1.3 Method PKPM1 Peak-reading power meter

Output Power: ANSI C63.10 Subclause -11.9.2.3.2 Measurement using gated average power meter.

PSD: ANSI C63.10 Subclause -11.10.2 Method PKPSD (peak PSD)

Radiated emissions restricted frequency bands: ANSI C63.10 Subclause -11.12.1 & Clause 13

Conducted emissions in restricted frequency bands: ANSI C63.10 Subclause -11.12.2

Band-edge: ANSI C63.10 Subclause -11.13.3.2 & Clause 13: Integration method -Peak detection

Band-edge: ANSI C63.10 Subclause -11.13.3.3 & Clause 13: Integration method -Trace averaging with continuous transmission at full power

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

Radiated emissions non-restricted frequency bands ANSI C63.10 Subclause -11.11 & Clause 13

Radiated Spurious Emissions Below 30MHz: ANSI C63.10-2013 Section 6.4 & 13

NOTE: All conducted antenna port tests for Beamforming applied the same test procedures as BLE 1Mbps and BLE 2Mbps normal modes.

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8. 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	01/25/2022
*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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9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 558074 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/B Minimum VBW (kHz)
2.4GHz Band						
BLE, 1Mbps	1.00	1.00	1.000	100.00%	0.00	0.010
BLE, 2Mbps	1.00	1.00	1.000	100.00%	0.00	0.010
BLE, TXBF, 1Mbps	1.00	1.00	1.000	100.00%	0.00	0.010
BLE, TXBF, 2Mbps	1.00	1.00	1.000	100.00%	0.00	0.010

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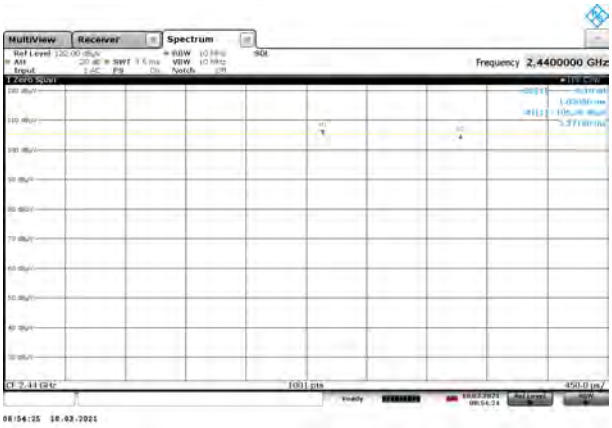
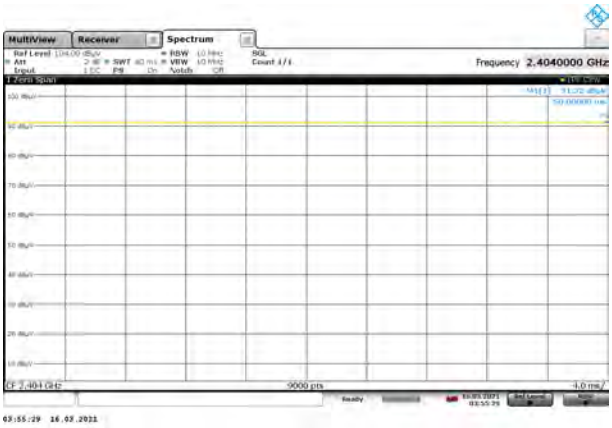
DUTY CYCLE PLOTS

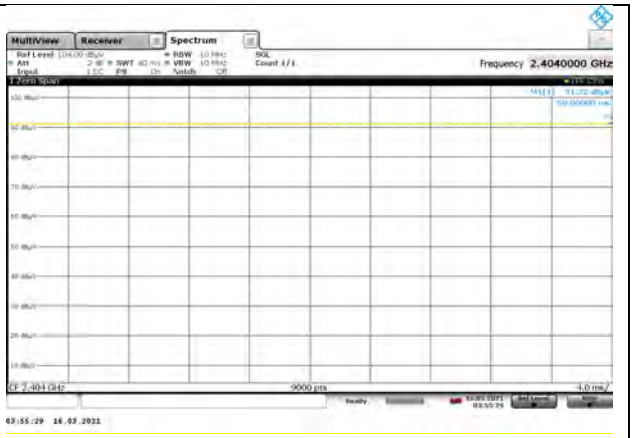


BLE 1Mbps



BLE 2Mbps

BLE TXBF 1Mbps



BLE TXBF 2Mbps

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9.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Only High-Power modes results are reported, they cover all Low Power modes. Only Mid channel plot is reported to show analyzer settings.

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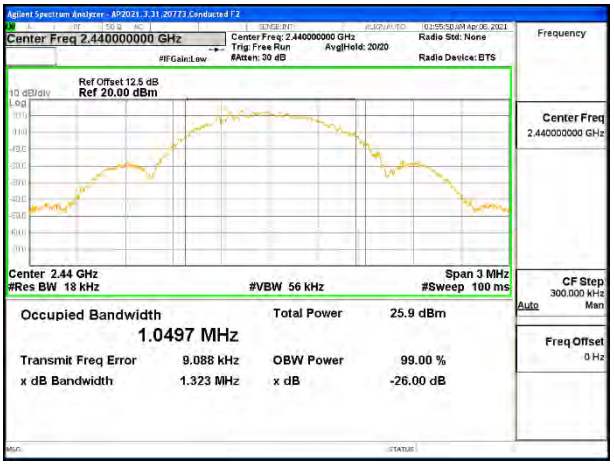
9.2.1. **HIGH POWER BLE (1Mbps)**

ANT 4

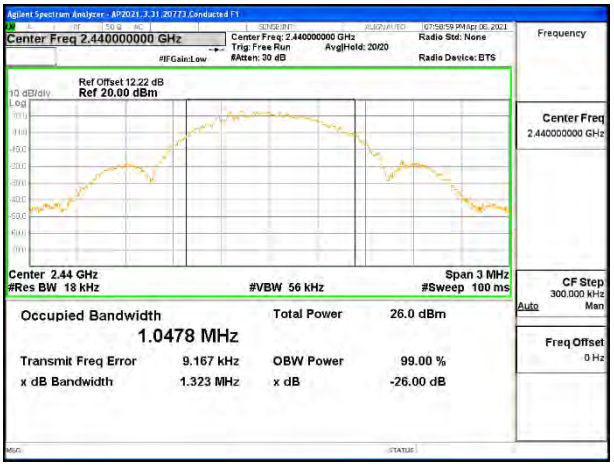
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.0510
Middle	2440	1.0497
High	2480	1.0498



MID CHANNEL

ANT 3

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.0485
Middle	2440	1.0478
High	2480	1.0456

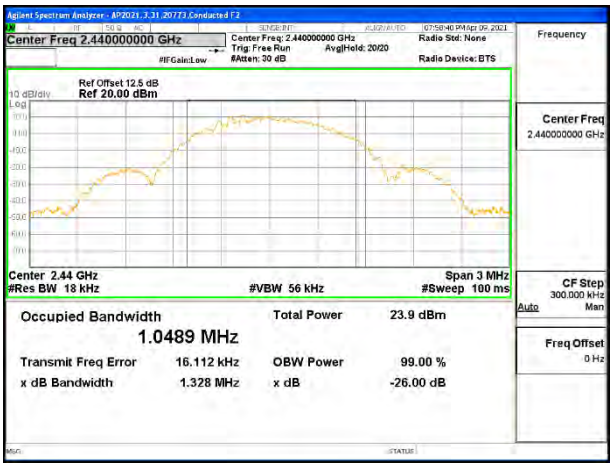


MID CHANNEL

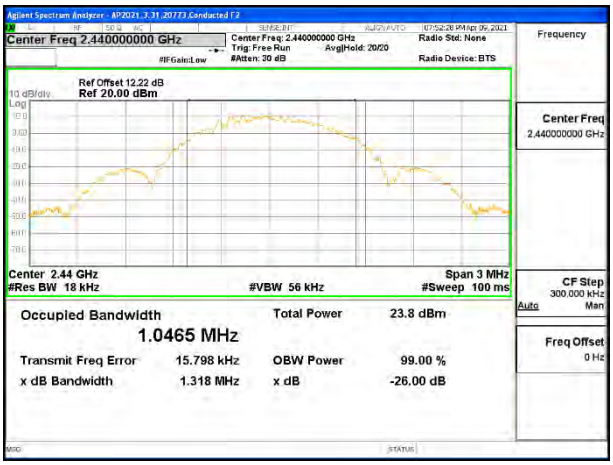
9.2.2. **HIGH POWER BLE TXBF (1Mbps)**

Channel	Frequency (MHz)	99% Bandwidth ANT 4 (MHz)	99% Bandwidth ANT 3 (MHz)
Low	2402	1.0478	1.0469
Mid	2440	1.0489	1.0465
High	2480	1.0464	1.0489

Note: Test procedures and setting are same as BLE normal mode.



MID CHANNEL ANT 4



MID CHANNEL ANT 3

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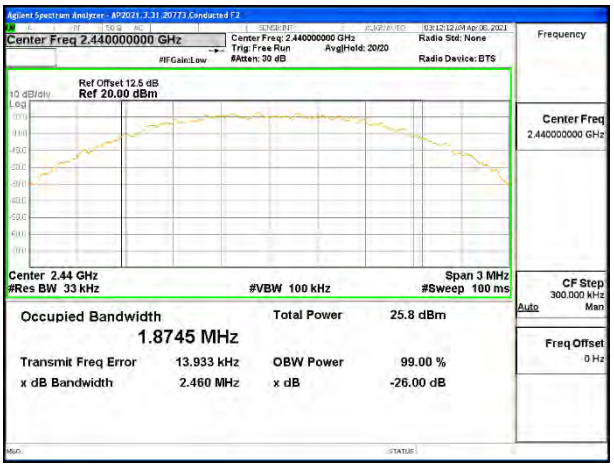
9.2.3. **HIGH POWER BLE (2Mbps)**

ANT 4

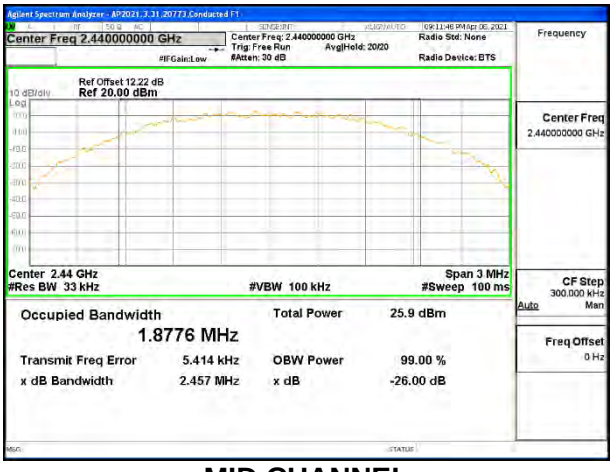
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2404	1.8762
Middle	2440	1.8745
High	2478	1.8759



MID CHANNEL

ANT 3

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2404	1.8849
Middle	2440	1.8776
High	2478	1.8750

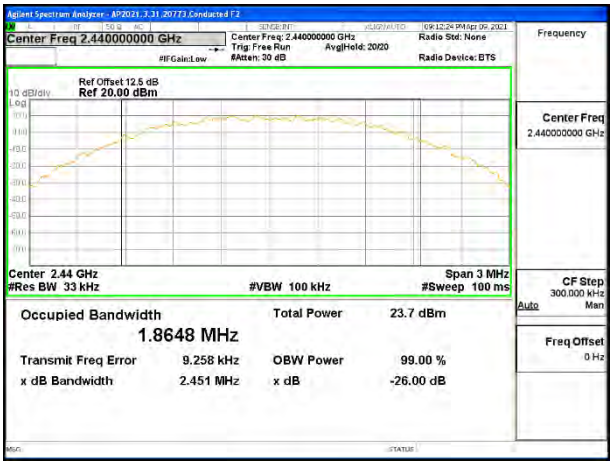


MID CHANNEL

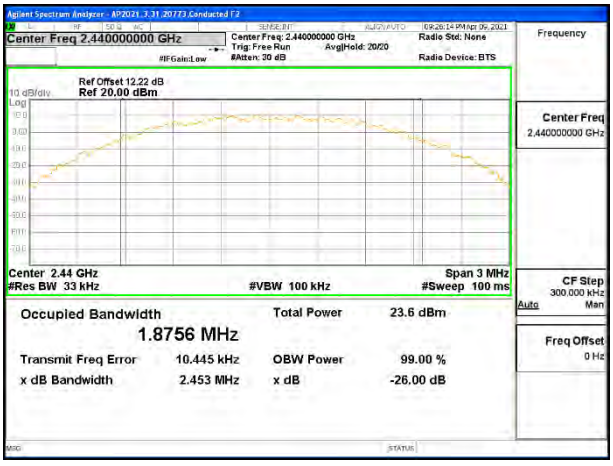
9.2.4. **HIGH POWER BLE TXBF (2Mbps)**

Channel	Frequency (MHz)	99% Bandwidth ANT 4 (MHz)	99% Bandwidth ANT 3 (MHz)
Low	2404	1.8686	1.8679
Mid	2440	1.8648	1.8756
High	2478	1.8680	1.8727

Note: Test procedures and setting are same as BLE normal mode.



MID CHANNEL ANT 4



MID CHANNEL ANT 3

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9.3. 6 dB BANDWIDTH

LIMITS

FCC §15.407 (e)

RSS-247 5.2 (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

The 6dB bandwidth was measured for the narrowest bandwidth mode, High Power 1Mbps, to demonstrate compliance with the minimum required bandwidth of 500 kHz. Other modes were not tested as their bandwidth is greater than the High Power 1Mbps mode, as demonstrated by the 99% bandwidth measurements performed on all modes.

Only Mid channel plot is reported to show setting parameter complies with testing method/procedure.

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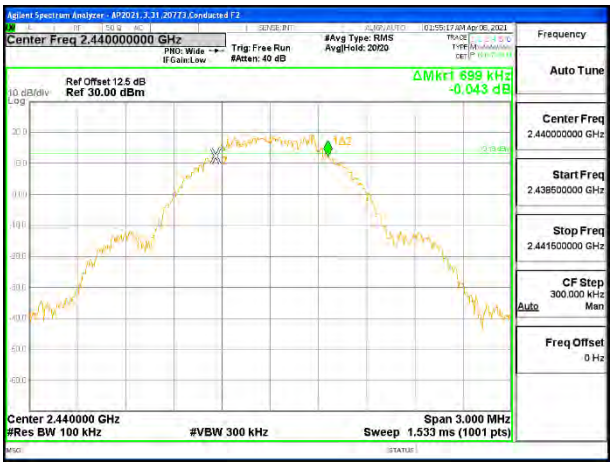
9.3.1. **HIGH POWER BLE (1Mbps)**

ANT 4

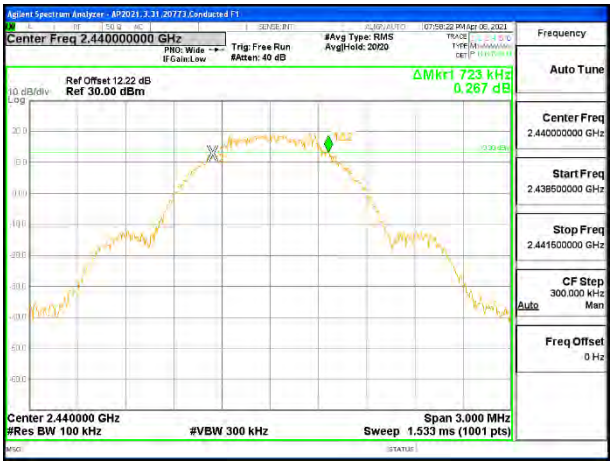
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.669	0.5
Middle	2440	0.699	0.5
High	2480	0.735	0.5



MID CHANNEL

ANT 3

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.669	0.5
Middle	2440	0.723	0.5
High	2480	0.678	0.5



MID CHANNEL

9.4. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)

RSS-247 5.4 (d)

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

TEST PROCEDURE

The power output was measured on the EUT antenna port using SMA cable with 10dB attenuator connected to a power meter via wideband peak power sensor. Peak output power was read directly from power meter

DIRECTIONAL ANTENNA GAIN

For 1 TX:
There is only one transmitter output therefore the directional gain is equal to the antenna gain.

For 2TX:
Tx chains are correlated for power and PSD due to the device supporting Beamforming mode. 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	-2.90	0.30	-1.01	1.86

RESULTS

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9.4.1. **HIGH POWER BLE (1Mbps)**

ANT 4

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	20.32	30	-9.68
Middle	2440	20.51	30	-9.49
High	2480	20.48	30	-9.52

ANT 3

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	19.85	30	-10.15
Middle	2440	19.99	30	-10.01
High	2480	20.06	30	-9.94

9.4.2. **HIGH POWER BLE TXBF (1Mbps)**

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	17.44	17.39	20.43	30	-9.57
Middle	2440	17.51	17.46	20.50	30	-9.50
High	2480	17.48	17.41	20.46	30	-9.54

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9.4.3. **HIGH POWER BLE (2Mbps)**

ANT 4

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	20.32	30	-9.68
Middle	2440	20.54	30	-9.46
High	2478	20.44	30	-9.56

ANT 3

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	19.82	30	-10.18
Middle	2440	20.07	30	-9.93
High	2478	20.04	30	-9.96

9.4.4. **HIGH POWER BLE TXBF (2Mbps)**

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	2404	17.44	17.58	20.52	30	-9.48
Middle	2440	17.40	17.52	20.47	30	-9.53
High	2478	17.43	17.43	20.44	30	-9.56

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9.4.5. LOW POWER BLE (1Mbps)

ANT 4

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	11.20	30	-18.80
Middle	2440	11.53	30	-18.47
High	2480	11.11	30	-18.89

ANT 3

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	11.12	30	-18.88
Middle	2440	11.59	30	-18.41
High	2480	11.25	30	-18.75

9.4.6. LOW POWER BLE TXBF (1Mbps)

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	11.19	11.24	14.23	30	-15.77
Middle	2440	11.29	11.36	14.34	30	-15.66
High	2480	11.14	11.21	14.19	30	-15.81

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9.4.7. **LOW POWER BLE (2Mbps)**

ANT 4

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	11.23	30	-18.77
Middle	2440	11.41	30	-18.59
High	2478	11.10	30	-18.90

ANT 3

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	11.23	30	-18.77
Middle	2440	11.44	30	-18.56
High	2478	11.08	30	-18.92

9.4.8. **LOW POWER BLE TXBF (2Mbps)**

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	2404	11.28	11.20	14.25	30	-15.75
Middle	2440	11.29	11.37	14.34	30	-15.66
High	2478	11.31	11.35	14.34	30	-15.66

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9.5. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The power output was measured on the EUT antenna port using SMA cable with 10dB attenuator connected to a power meter via wideband average power sensor. Gated average output power was read directly from power meter.

RESULTS

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9.5.1. HIGH POWER BLE (1Mbps)

ANT 4

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	19.79
Middle	2440	19.99
High	2480	19.93

ANT 3

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	19.30
Middle	2440	19.48
High	2480	19.47

9.5.2. HIGH POWER BLE TXBF (1Mbps)

ANT 4 + ANT 3

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	Average Power ANT 3 (dBm)	Average Power ANT 4 (dBm)	Total Power (dBm)
Low	2402	16.91	16.89	19.91
Middle	2440	16.94	16.99	19.98
High	2480	16.92	16.90	19.92

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9.5.3. **HIGH POWER BLE (2Mbps)**

ANT 4

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	19.89
Middle	2440	19.98
High	2478	19.95

ANT 3

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	19.25
Middle	2440	19.49
High	2478	19.47

9.5.4. **HIGH POWER BLE TXBF (2Mbps)**

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	2404	16.93	16.99	19.97
Middle	2440	16.89	16.90	19.91
High	2478	16.90	16.91	19.92

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9.5.5. **LOW POWER BLE (1Mbps)**

ANT 4

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	10.73
Middle	2440	10.97
High	2480	10.63

ANT 3

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	10.65
Middle	2440	10.99
High	2480	10.69

9.5.6. **LOW POWER BLE TXBF (1Mbps)**

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	10.74	10.77	13.77
Middle	2440	10.73	10.94	13.85
High	2480	10.62	10.72	13.68

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9.5.7. **LOW POWER BLE (2Mbps)**

ANT 4

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	10.79
Middle	2440	10.98
High	2478	10.68

ANT 3

Tested By:	19232
Date:	6/17/2021

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	10.69
Middle	2440	10.95
High	2478	10.72

9.5.8. **LOW POWER BLE TXBF (2Mbps)**

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	2404	10.78	10.69	13.75
Middle	2440	10.81	10.81	13.82
High	2478	10.79	10.83	13.82

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9.6. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

RSS-247 (5.2) (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

RESULTS

Only Mid channel plot is reported to show setting parameter complies with testing method/procedure.

Only High-Power modes result is reported, it covers all Low Power modes

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9.6.1. HIGH POWER BLE (1Mbps)

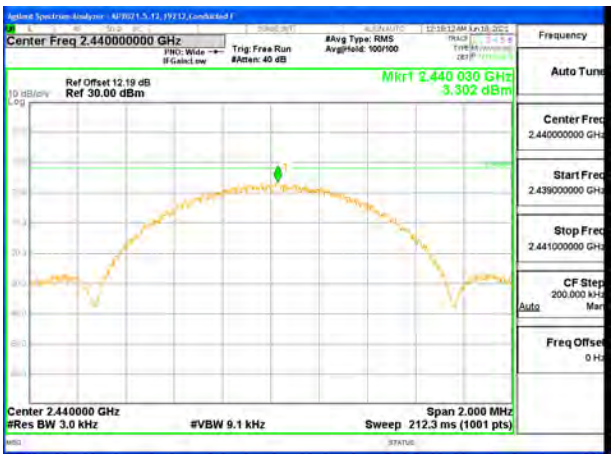
ANT 4

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	3.364	8	-4.64
Middle	2440	3.252	8	-4.75
High	2480	3.039	8	-4.96

MID CHANNEL

ANT 3

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	3.615	8	-4.39
Middle	2440	3.302	8	-4.70
High	2480	3.500	8	-4.50



MID CHANNEL

9.6.2. HIGH POWER BLE TXBF (1Mbps)

PSD Results

Channel	Frequency (MHz)	ANT 4 Meas (dBm/ 3kHz)	ANT 3 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low	2402	0.508	0.667	3.60	8.0	-4.4
Mid	2440	0.610	0.477	3.55	8.0	-4.4
Hjigh	2480	0.645	0.677	3.67	8.0	-4.3

Note: Test procedures and setting are same as BLE normal mode.

MID CHANNEL ANT 4

MID CHANNEL ANT 3

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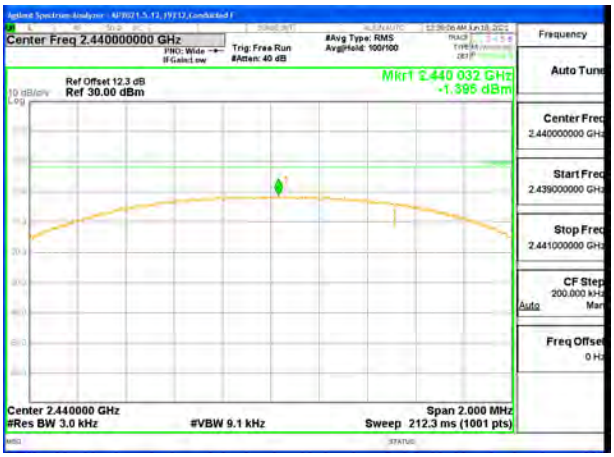
9.6.3. HIGH POWER BLE (2Mbps)

ANT 4

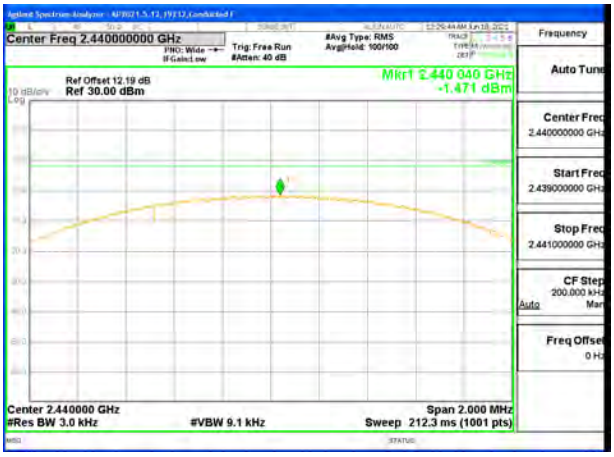
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2404	-1.413	8	-9.41
Middle	2440	-1.395	8	-9.40
High	2478	-1.457	8	-9.46



MID CHANNEL

ANT 3

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2404	-1.715	8	-9.72
Middle	2440	-1.471	8	-9.47
High	2478	-2.571	8	-10.57



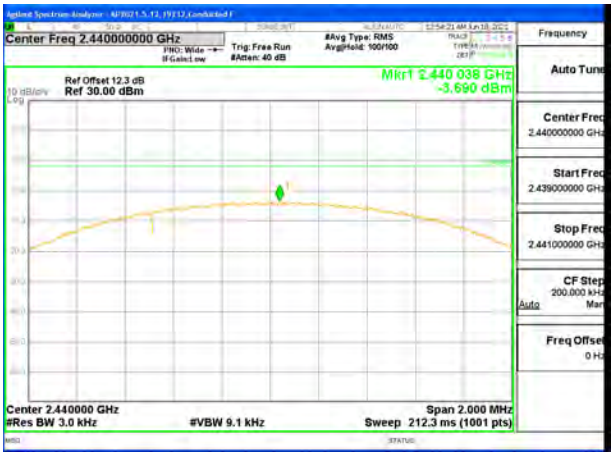
MID CHANNEL

9.6.4. HIGH POWER BLE TXBF (2Mbps)

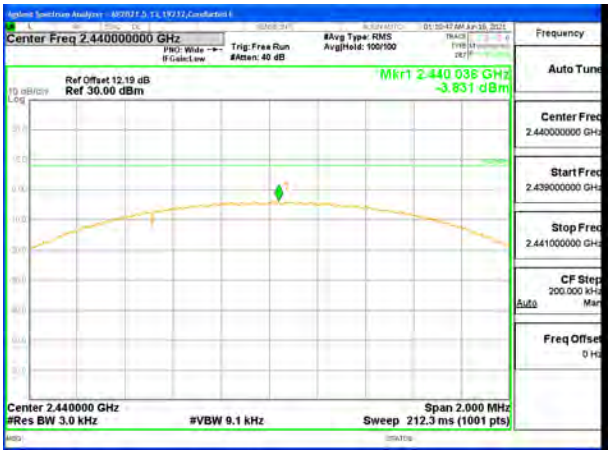
PSD Results

Channel	Frequency (MHz)	ANT 4 Meas (dBm/ 3kHz)	ANT 3 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low	2404	-3.791	-3.502	-0.63	8.0	-8.6
Mid	2440	-3.690	-3.831	-0.75	8.0	-8.7
Hjigh	2478	-3.762	-3.485	-0.61	8.0	-8.6

Note: Test procedures and setting are same as BLE normal mode.



MID CHANNEL ANT 4



MID CHANNEL ANT 3

UL VERIFICATION SERVICES INC.
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9.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

RSS-247 5.5

Output power was measured based on the use of a peak measurement. Therefore, the required attenuation is 20 dB.

RESULTS

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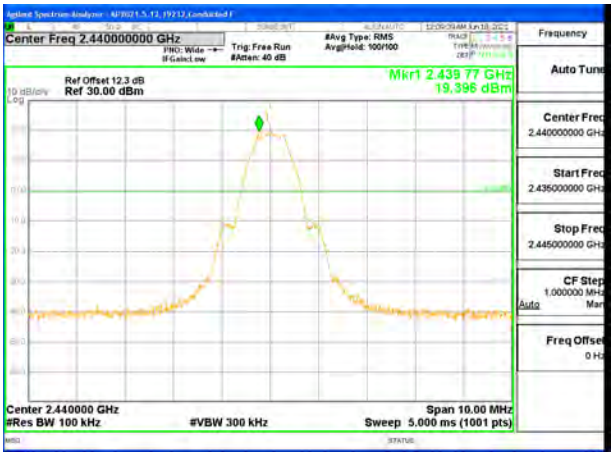
9.7.1. **HIGH POWER BLE (1Mbps)**

ANT 4

LOW CHANNEL BANDEDGE

OUT-OF-BAND LOW CHANNEL



IN-BAND REFERENCE LEVEL

OUT-OF-BAND MID CHANNEL

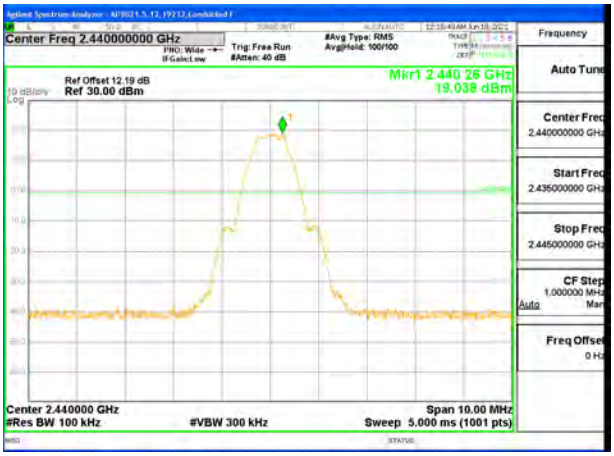
HIGH CHANNEL BANDEDGE

OUT-OF-BAND HIGH CHANNEL

ANT 3

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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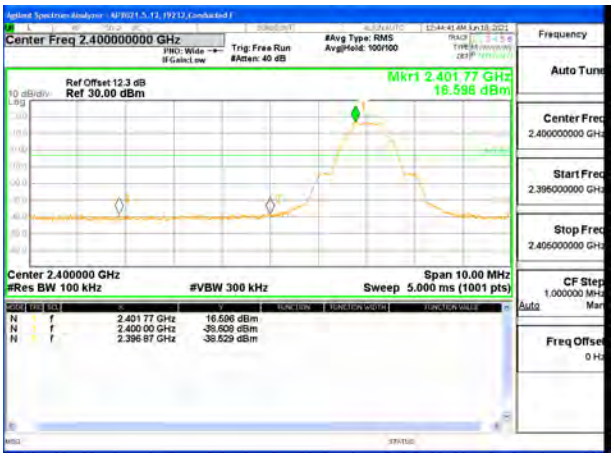
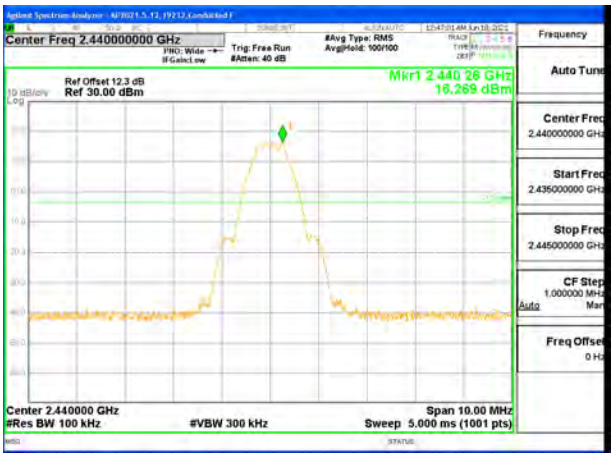
9.7.2. **HIGH POWER BLE TXBF (1Mbps)**

Note: Test procedures and setting are same as BLE normal mode.



LOW CHANNEL, BANDEDGE ANT 4

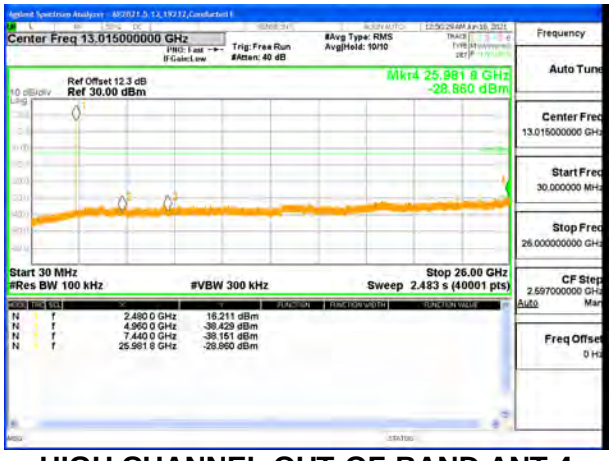
LOW CHANNEL OUT-OF-BAND ANT 4



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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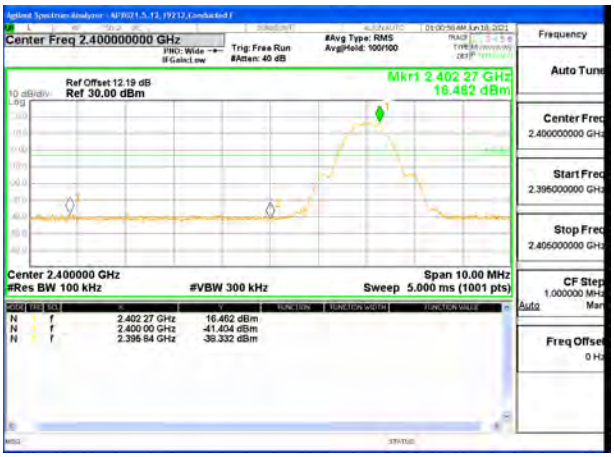
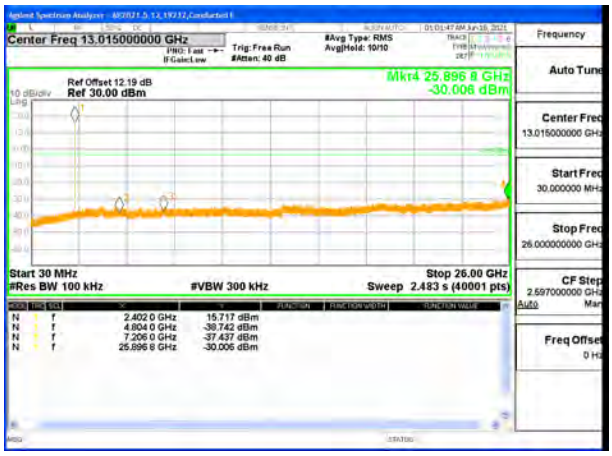
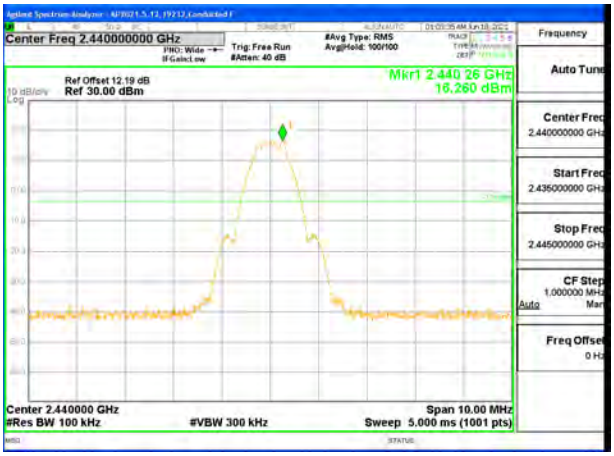


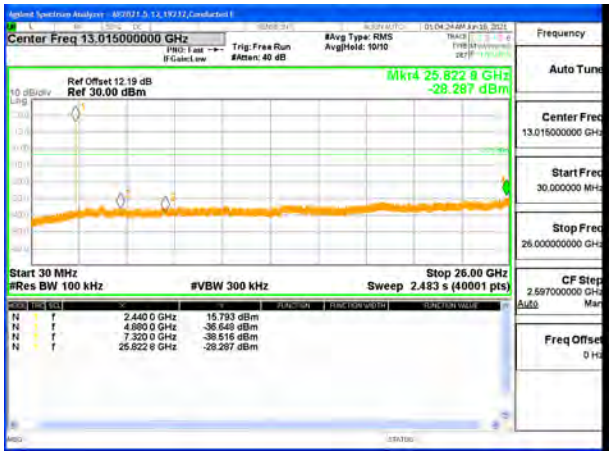
LOW CHANNEL, BANDEDGE ANT 3



LOW CHANNEL OUT-OF-BAND ANT 3

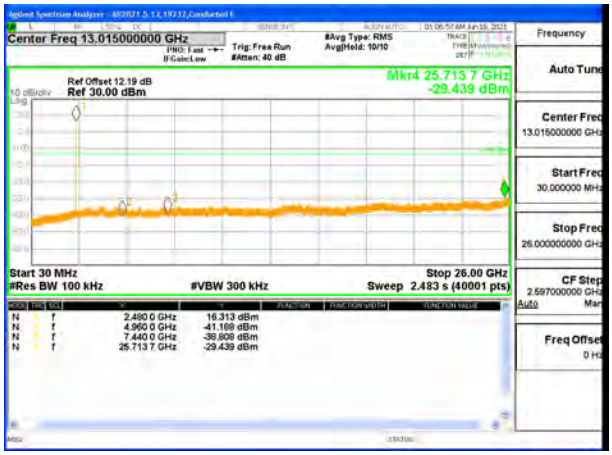


MID CHANNEL REFERENCE ANT 3



MID CHANNEL OUT-OF-BAND ANT 3

HIGH CHANNEL REFERENCE ANT 3



HIGH CHANNEL OUT-OF-BAND ANT 3

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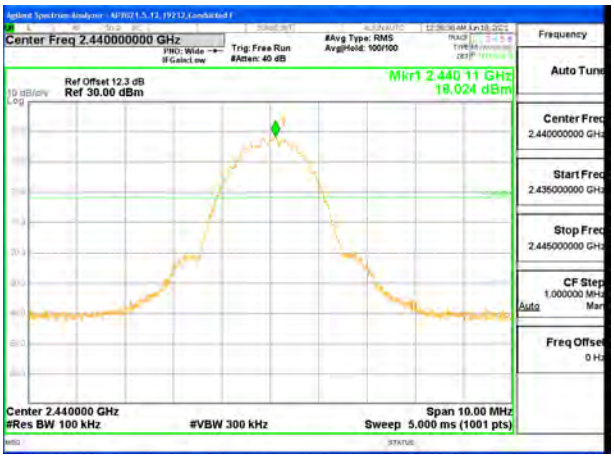
9.7.3. **HIGH POWER BLE (2Mbps)**

ANT 4

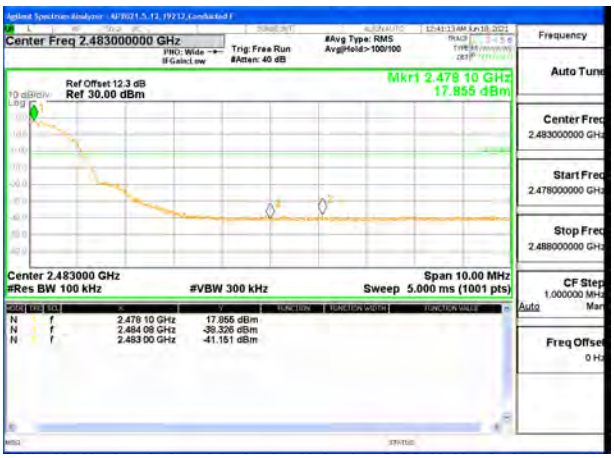
LOW CHANNEL BANDEDGE

OUT-OF-BAND LOW CHANNEL



IN-BAND REFERENCE LEVEL

OUT-OF-BAND MID CHANNEL

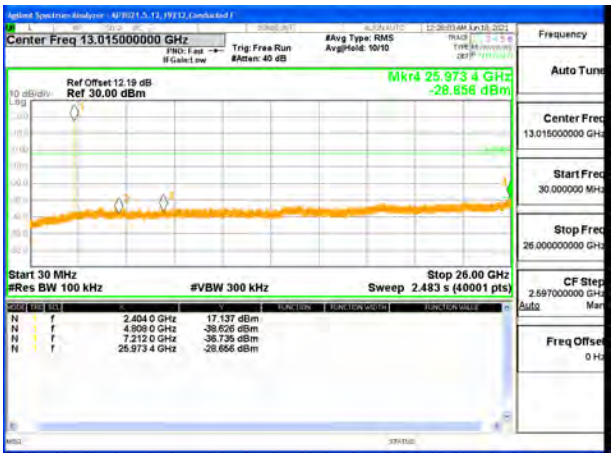


HIGH CHANNEL BANDEDGE

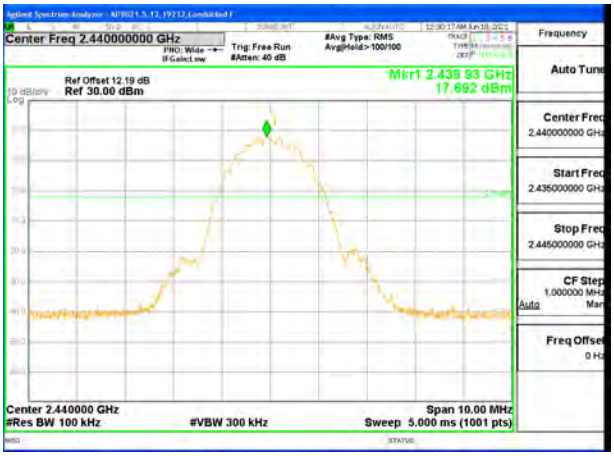
OUT-OF-BAND HIGH CHANNEL

ANT 3

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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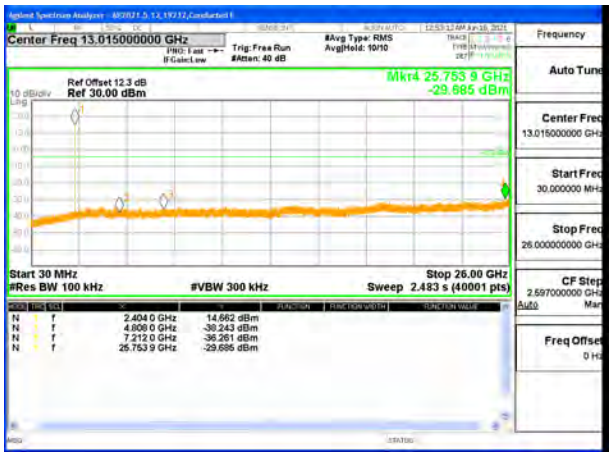
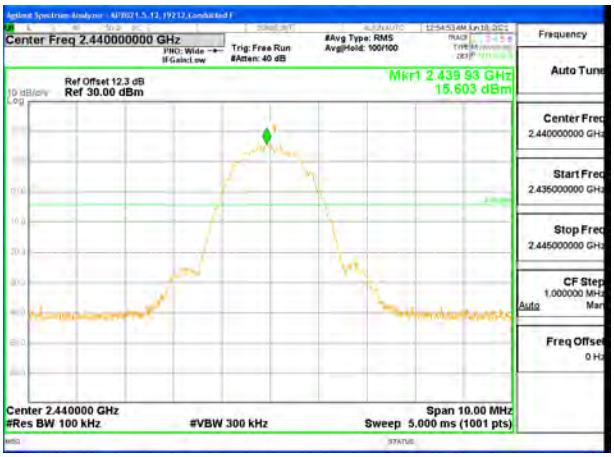
9.7.4. HIGH POWER BLE TXBF (2Mbps)

Note: Test procedures and setting are same as BLE normal mode.

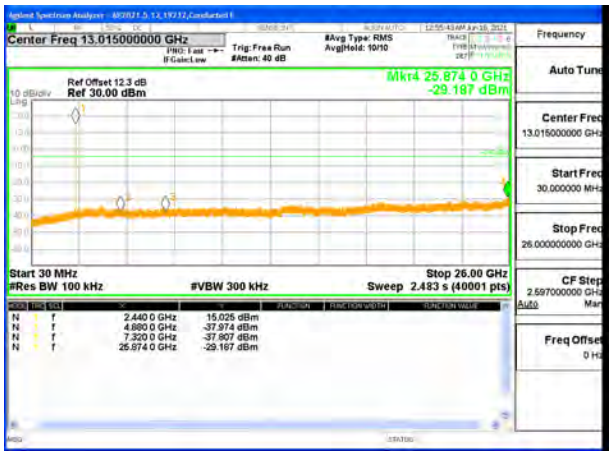
LOW CHANNEL, BANDEDGE ANT 4



LOW CHANNEL OUT-OF-BAND ANT 4

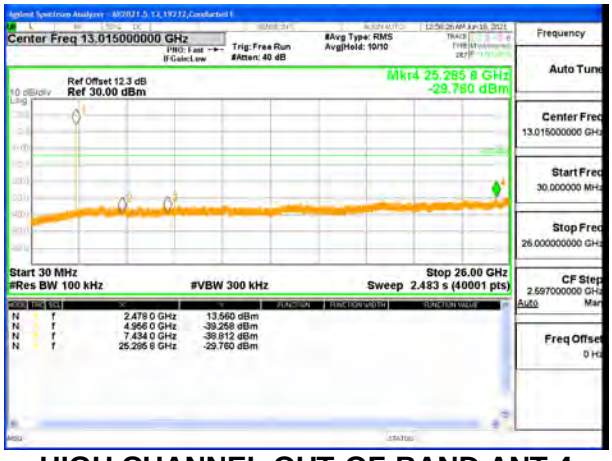


MID CHANNEL REFERENCE ANT 4



MID CHANNEL OUT-OF-BAND ANT 4

HIGH CHANNEL BANDEDGE ANT 4



HIGH CHANNEL OUT-OF-BAND ANT 4

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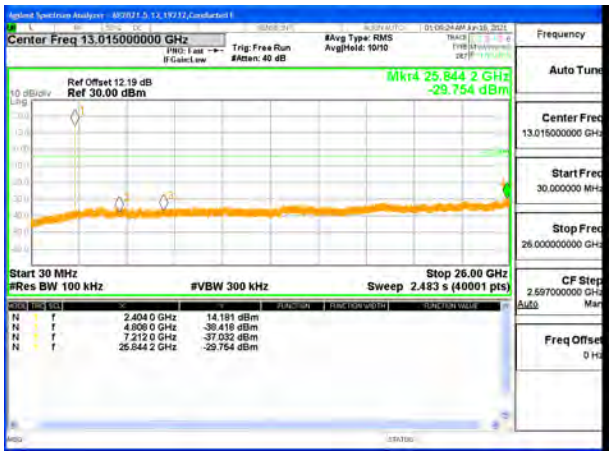
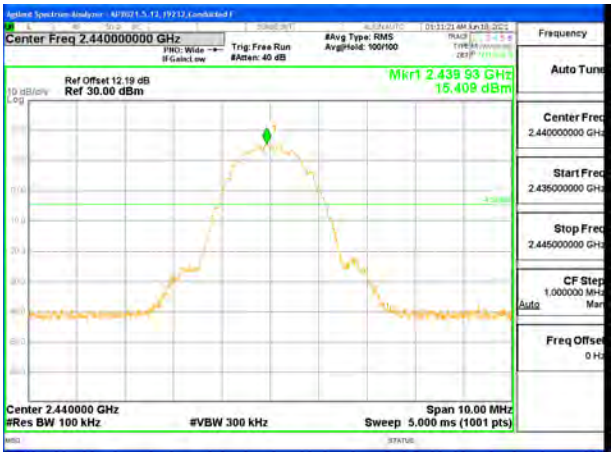
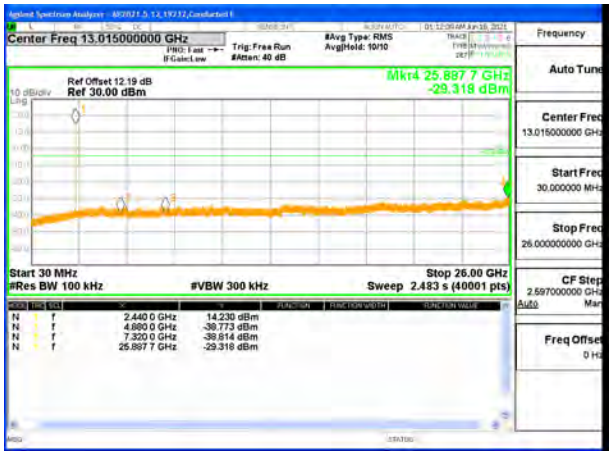
LOW CHANNEL, BANDEDGE ANT 3



LOW CHANNEL OUT-OF-BAND ANT 3

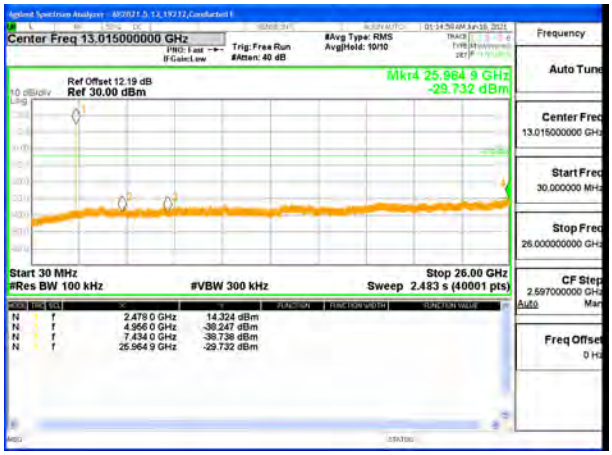


MID CHANNEL REFERENCE ANT 3



MID CHANNEL OUT-OF-BAND ANT 3

HIGH CHANNEL REFERENCE ANT 3



HIGH CHANNEL OUT-OF-BAND ANT 3

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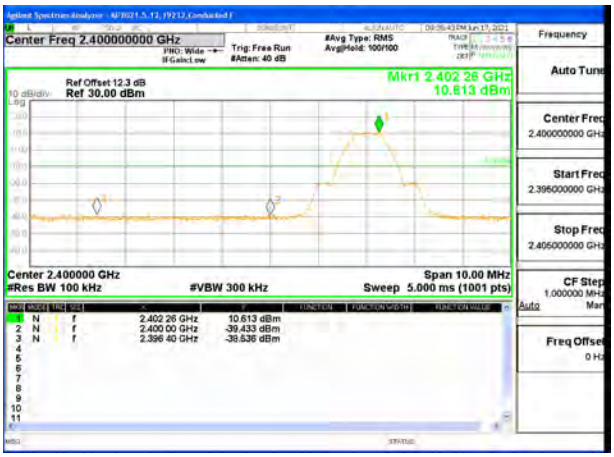
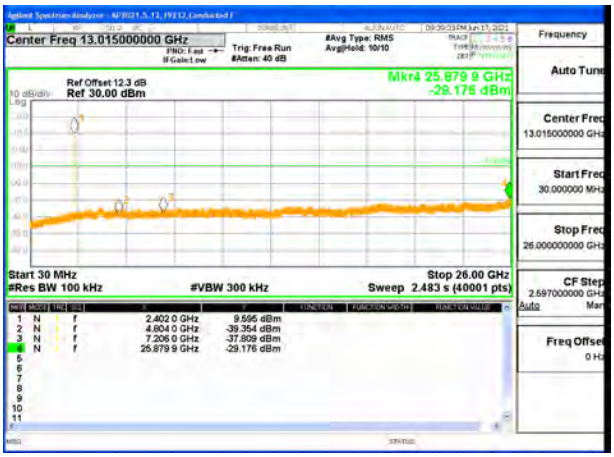
9.7.5. **LOW POWER BLE (1Mbps)**

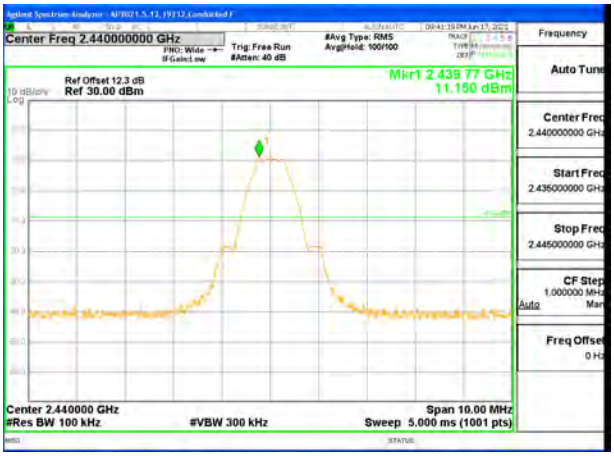
ANT 4



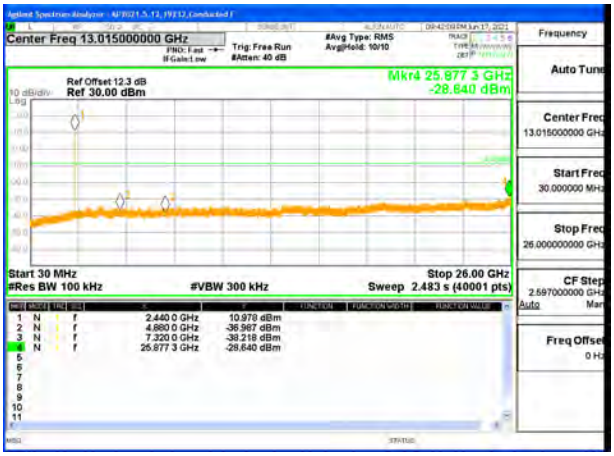
LOW CHANNEL BANDEDGE



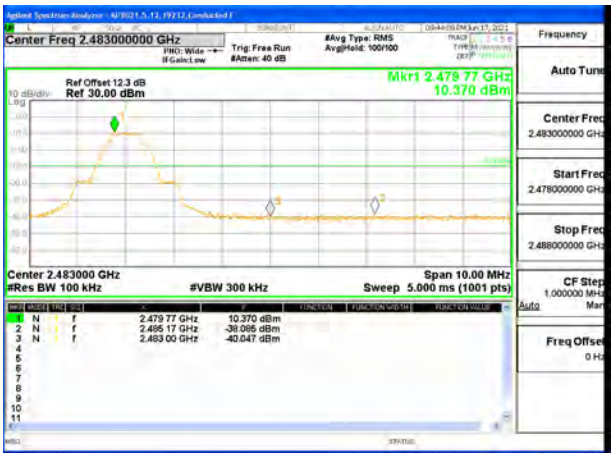
OUT-OF-BAND LOW CHANNEL



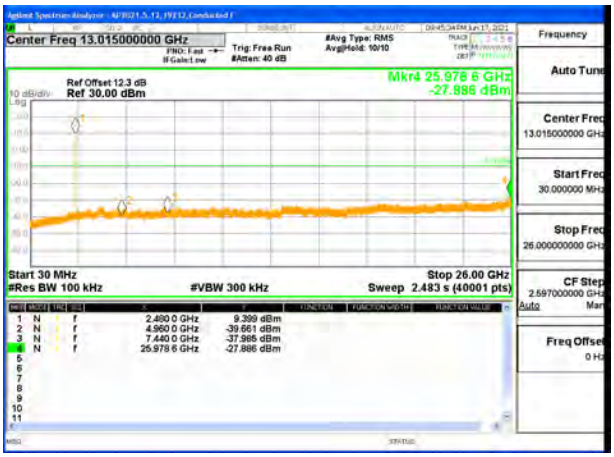
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

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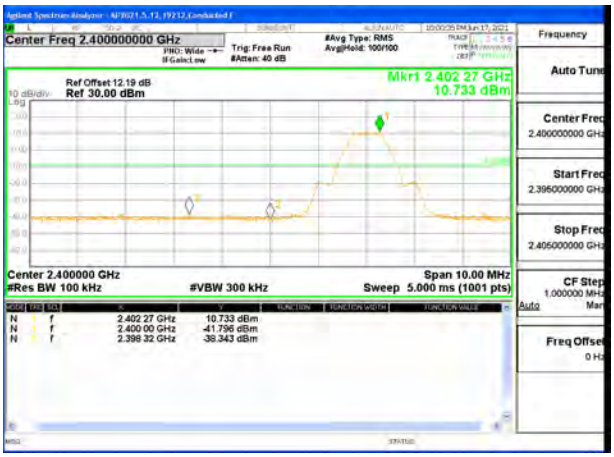
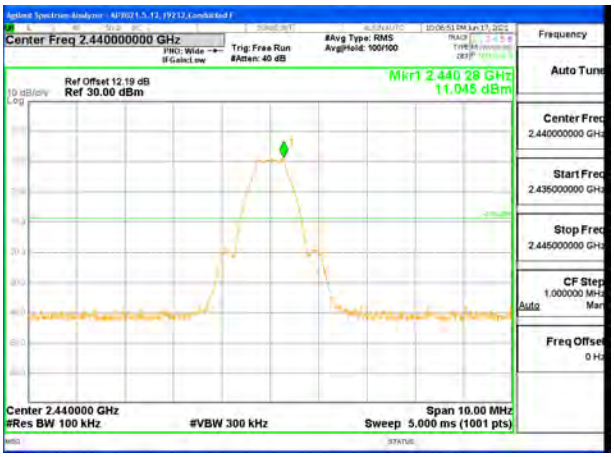
ANT 3

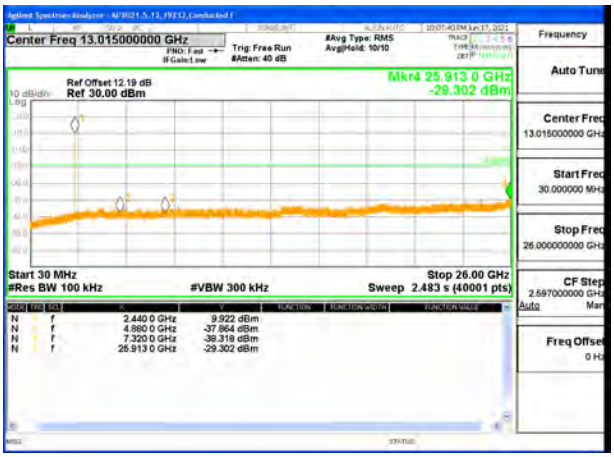


LOW CHANNEL BANDEDGE

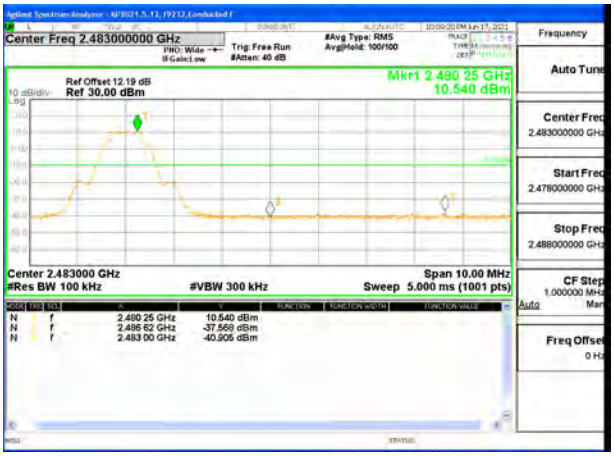
OUT-OF-BAND LOW CHANNEL



IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL

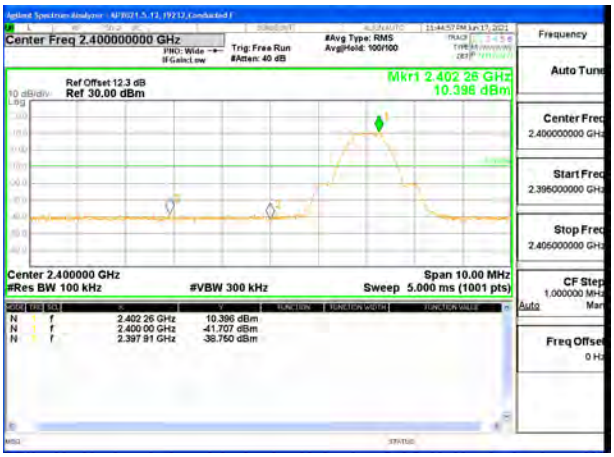


HIGH CHANNEL BANDEDGE

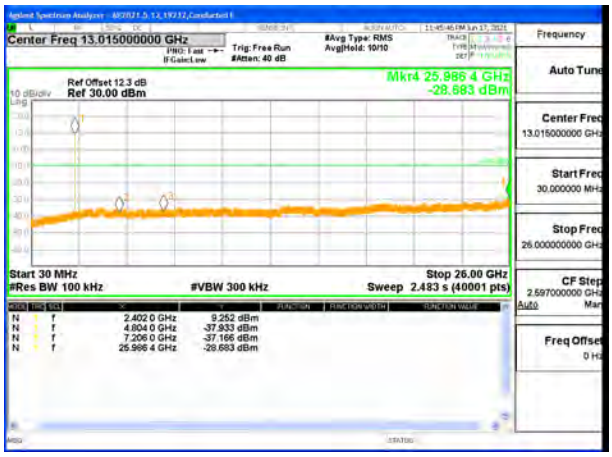
OUT-OF-BAND HIGH CHANNEL

9.7.6. **LOW POWER BLE TXBF (1Mbps)**

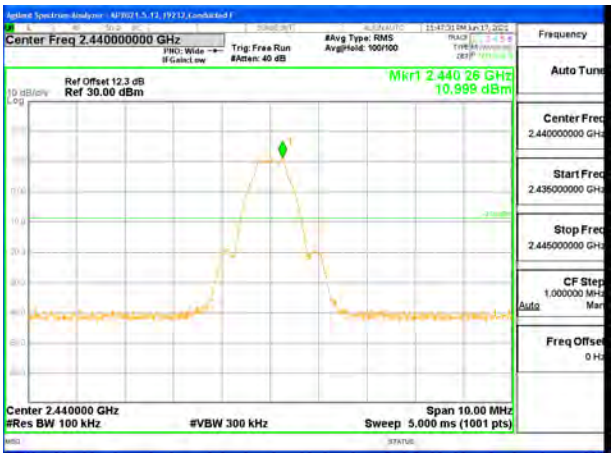
Note: Test procedures and setting are same as BLE normal mode.



LOW CHANNEL, BANDEDGE ANT 4

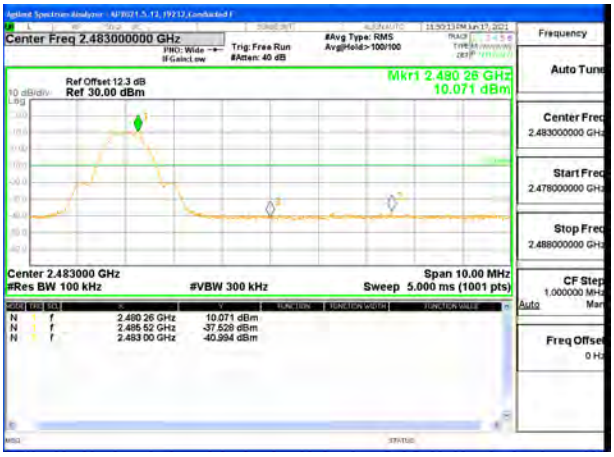


LOW CHANNEL OUT-OF-BAND ANT 4

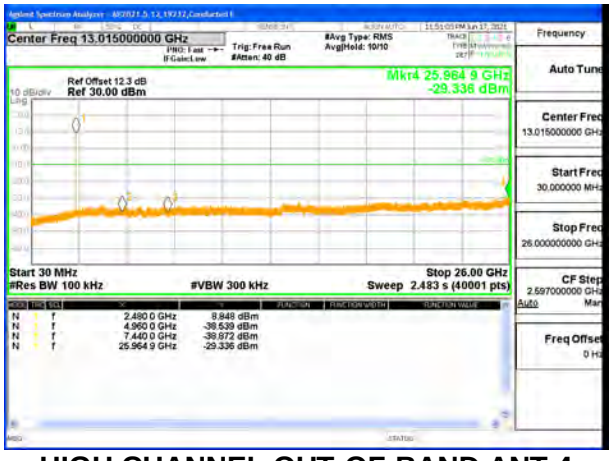


MID CHANNEL REFERENCE ANT 4

MID CHANNEL OUT-OF-BAND ANT 4



HIGH CHANNEL BANDEDGE ANT 4



HIGH CHANNEL OUT-OF-BAND ANT 4

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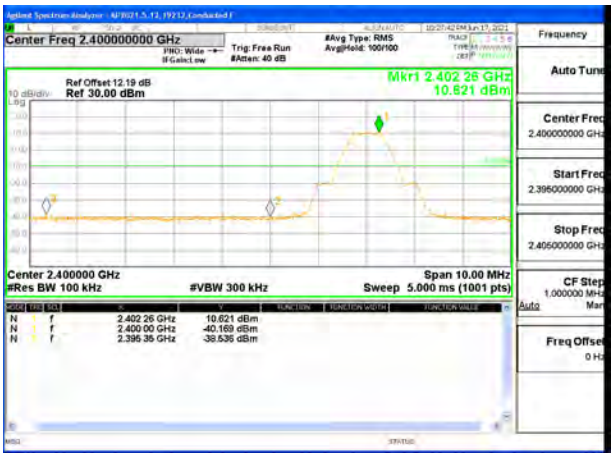
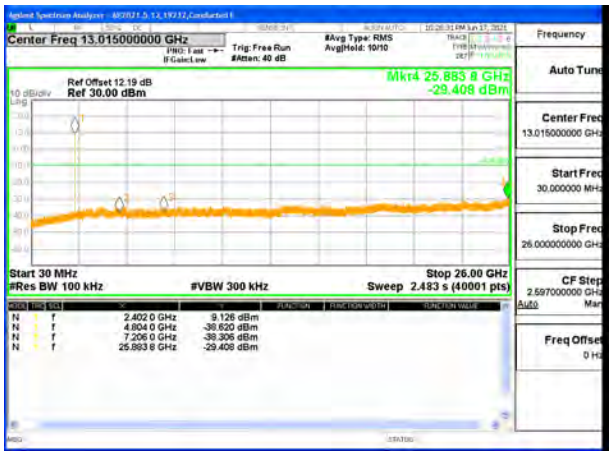
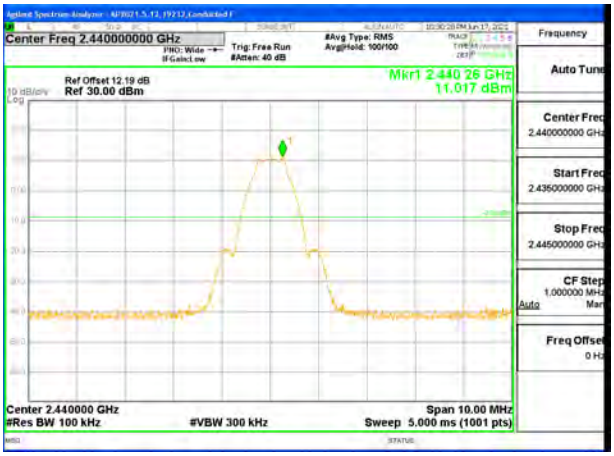


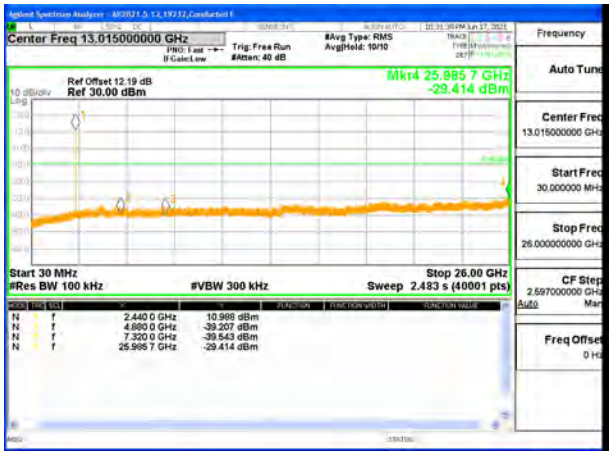
LOW CHANNEL, BANDEDGE ANT 3



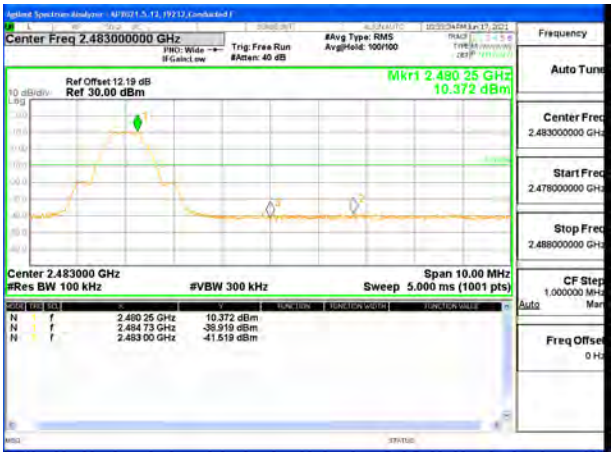
LOW CHANNEL OUT-OF-BAND ANT 3



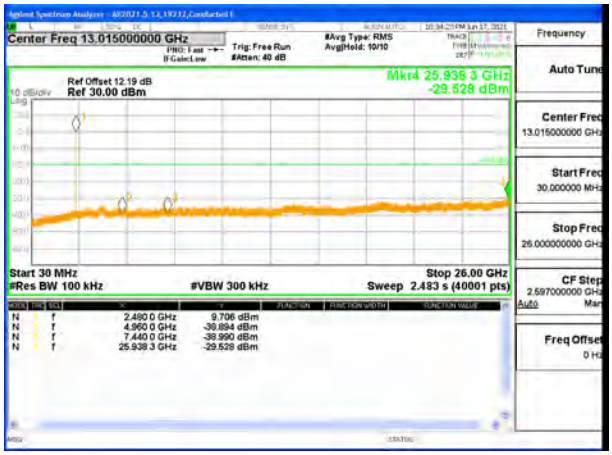
MID CHANNEL REFERENCE ANT 3



MID CHANNEL OUT-OF-BAND ANT 3



HIGH CHANNEL REFERENCE ANT 3



HIGH CHANNEL OUT-OF-BAND ANT 3

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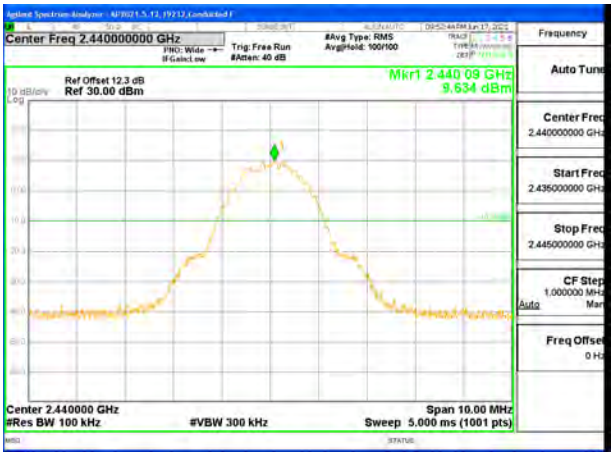
9.7.7. **LOW POWER BLE (2Mbps)**

ANT 4

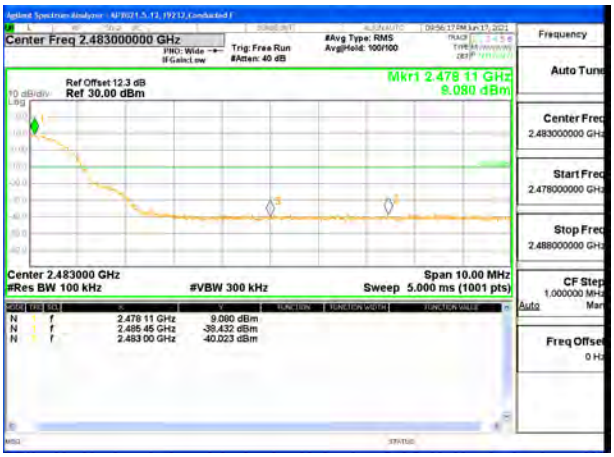
LOW CHANNEL BANDEDGE

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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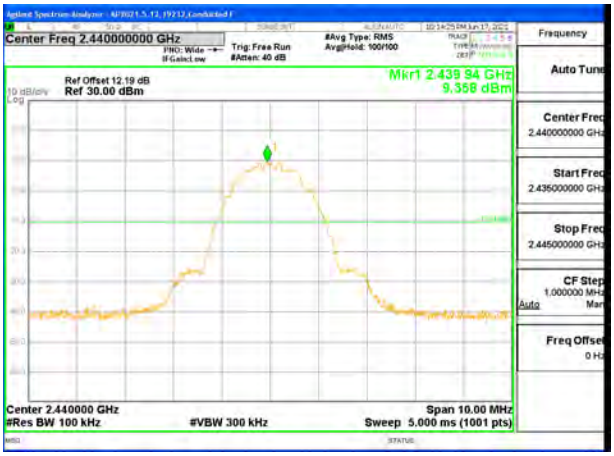
ANT 3

LOW CHANNEL BANDEDGE

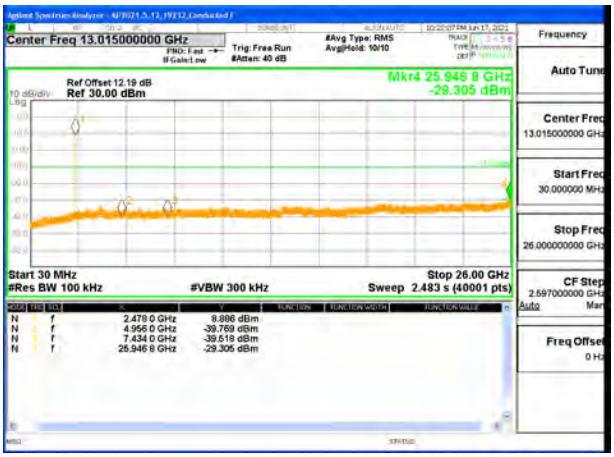
OUT-OF-BAND LOW CHANNEL



IN-BAND REFERENCE LEVEL

OUT-OF-BAND MID CHANNEL

HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

UL VERIFICATION SERVICES INC.
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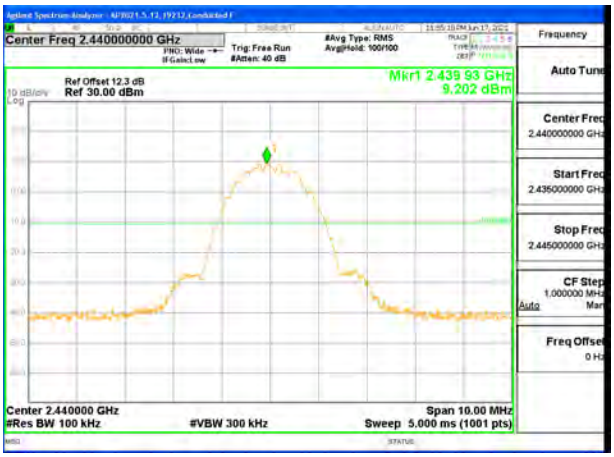
9.7.8. LOW POWER BLE TXBF (2Mbps)

Note: Test procedures and setting are same as BLE normal mode.

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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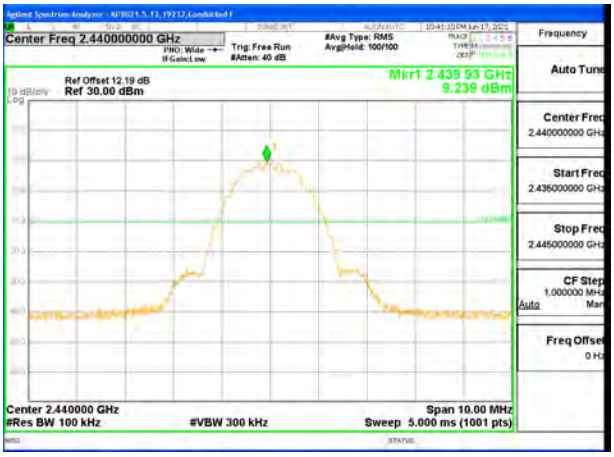
LOW CHANNEL, BANDEDGE ANT 3

LOW CHANNEL OUT-OF-BAND ANT 3



MID CHANNEL REFERENCE ANT 3

MID CHANNEL OUT-OF-BAND ANT 3

HIGH CHANNEL REFERENCE ANT 3

HIGH CHANNEL OUT-OF-BAND ANT 3

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10. RADIATED TEST RESULTS

10.1. LIMITS AND PROCEDURE

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 as applicable 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.

Results

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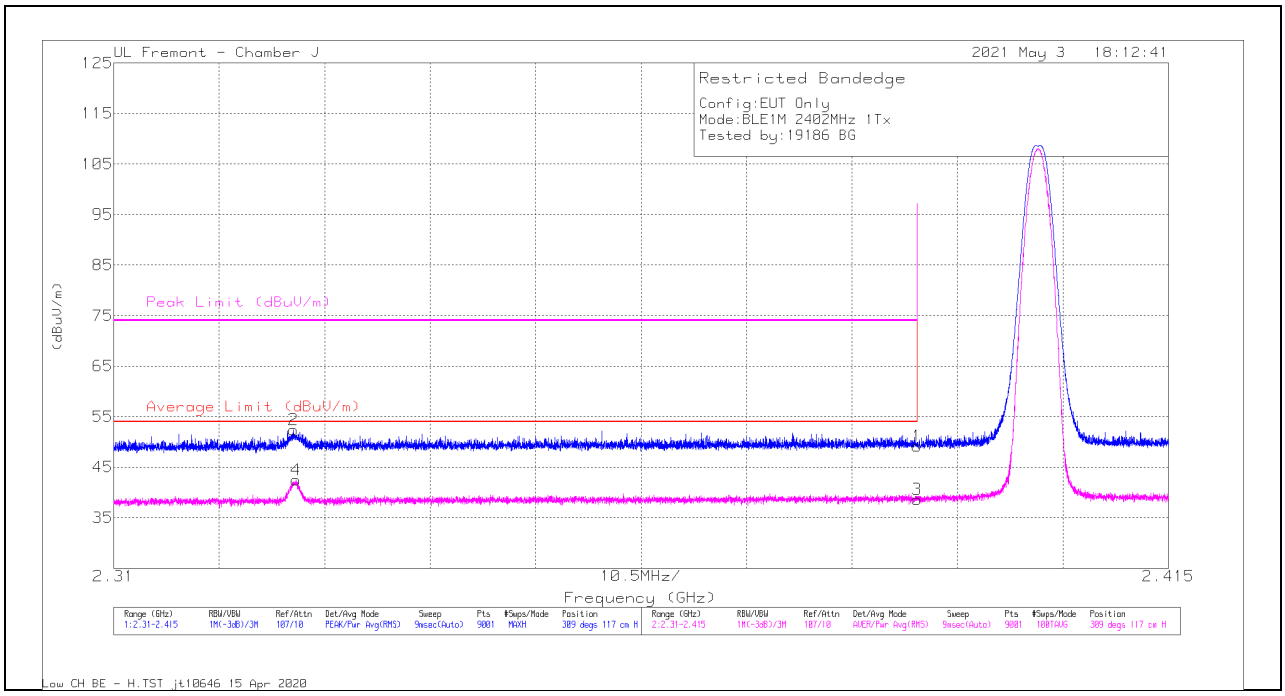
10.2. TRANSMITTER ABOVE 1 GHz

10.2.1. HIGH POWER BLE (1Mbps)

ANT 4

BANDEDGE (LOW CHANNEL)

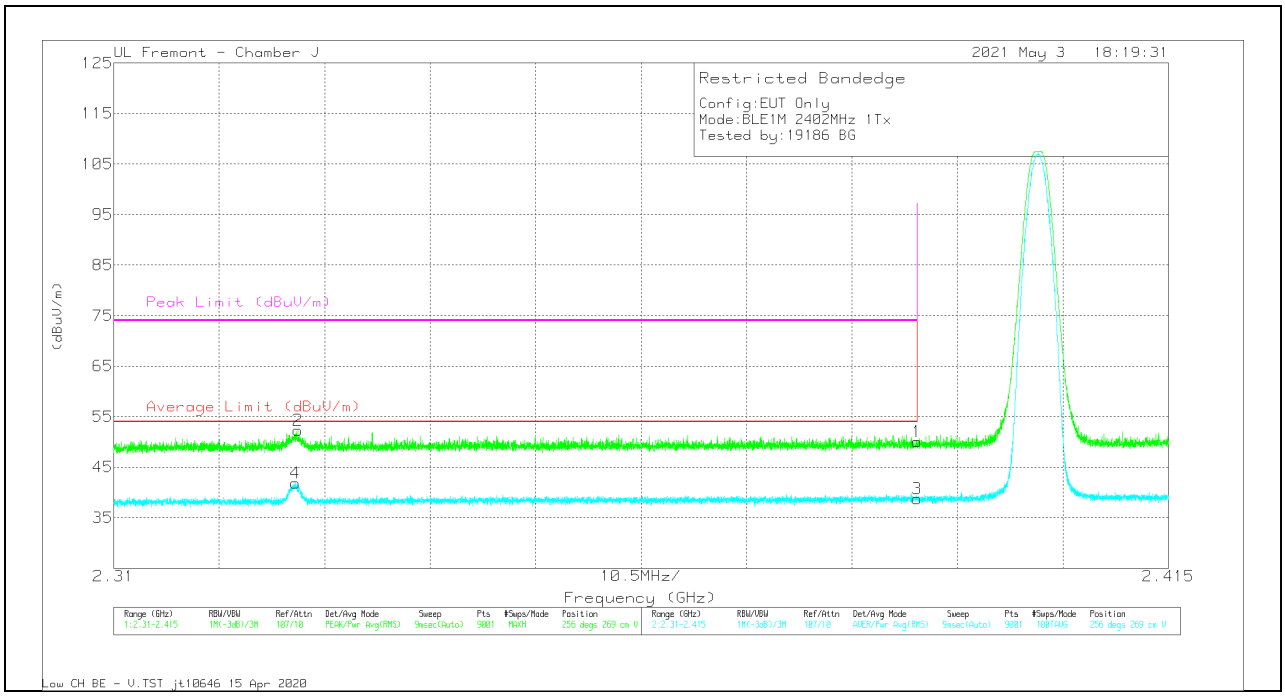
HORIZONTAL RESULT



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	42.25	Pk	32.1	-25.2	49.15	-	-	74	-24.85	309	117	H
2	* 2.3279	45.87	Pk	31.8	-25.3	52.37	-	-	74	-21.63	309	117	H
3	* 2.38999	31.7	RMS	32.1	-25.2	38.6	54	-15.4	-	-	309	117	H
4	* 2.32812	35.93	RMS	31.8	-25.3	42.43	54	-11.57	-	-	309	117	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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	43.15	Pk	32.1	-25.2	50.05	-	-	74	-23.95	256	269	V
2	* 2.32835	45.81	Pk	31.8	-25.3	52.31	-	-	74	-21.69	256	269	V
3	* 2.38999	31.88	RMS	32.1	-25.2	38.78	54	-15.22	-	-	256	269	V
4	* 2.3281	35.3	RMS	31.8	-25.3	41.8	54	-12.2	-	-	256	269	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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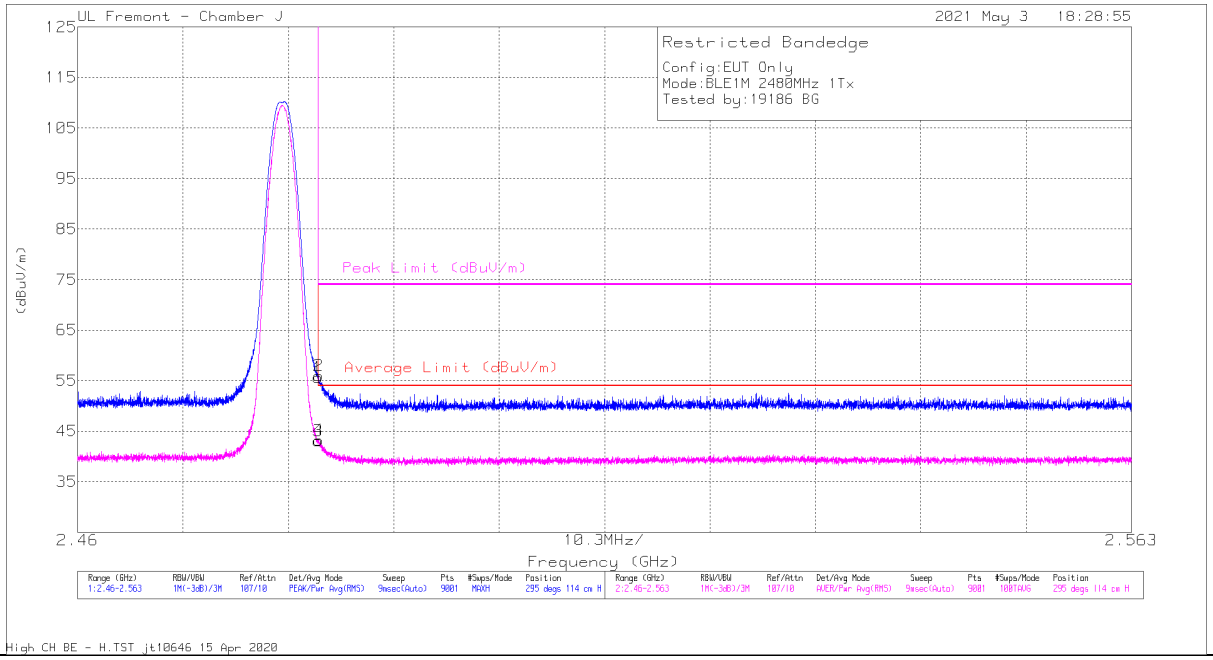
BANDEDGE (HIGH CHANNEL)

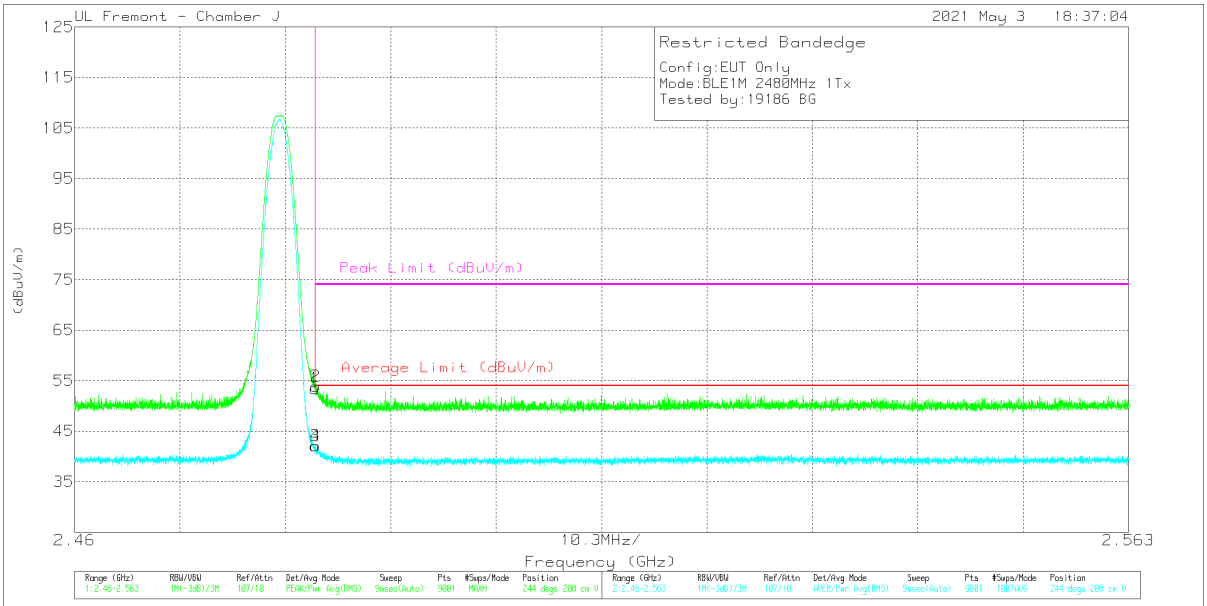
HORIZONTAL RESULT



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	48.34	Pk	32.5	-25.2	55.64	-	-	74	-18.36	295	114	H
2	* 2.48355	48.7	Pk	32.5	-25.2	56	-	-	74	-18	295	114	H
3	* 2.48351	35.84	RMS	32.5	-25.2	43.14	54	-10.86	-	-	295	114	H
4	* 2.48353	35.87	RMS	32.5	-25.2	43.17	54	-10.83	-	-	295	114	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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	46.16	Pk	32.5	-25.2	53.46	-	-	74	-20.54	244	208	V
2	* 2.48354	46.54	Pk	32.5	-25.2	53.84	-	-	74	-20.16	244	208	V
3	* 2.48351	34.78	RMS	32.5	-25.2	42.08	54	-11.92	-	-	244	208	V
4	* 2.48356	34.83	RMS	32.5	-25.2	42.13	54	-11.87	-	-	244	208	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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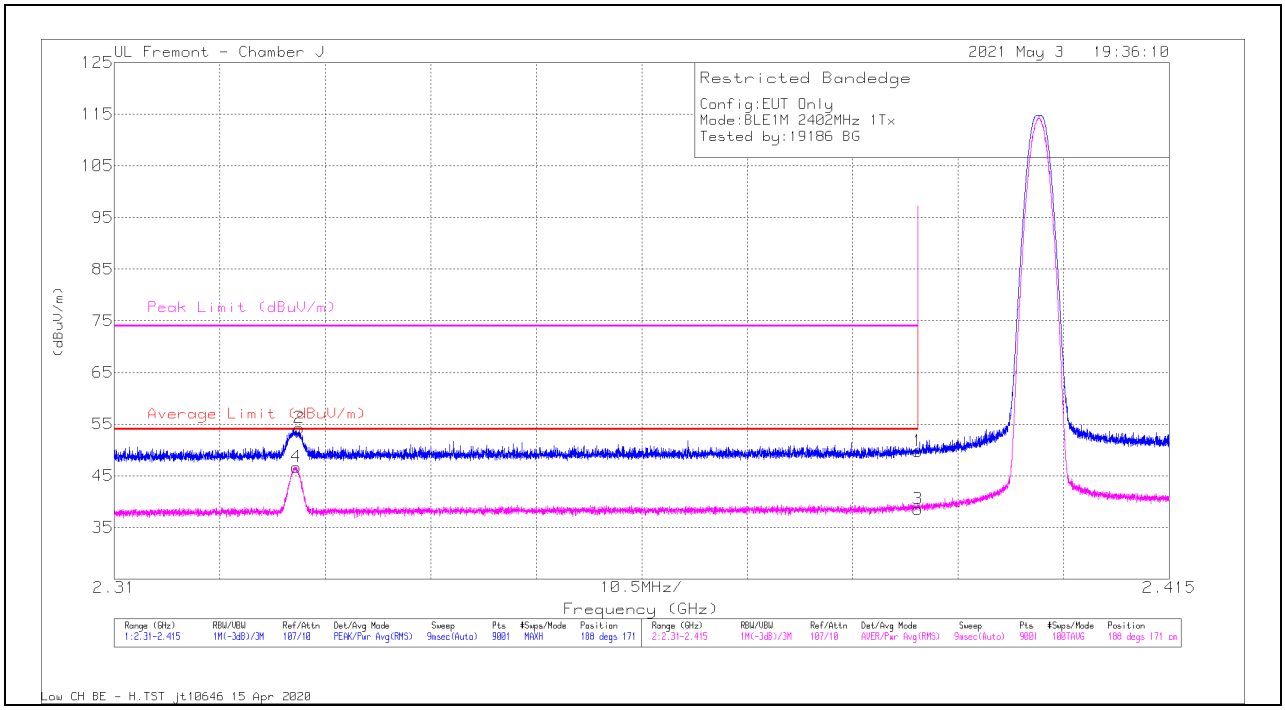
ANT 3

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	42.86	Pk	32.1	-25.2	49.76	-	-	74	-24.24	188	171	H
2	* 2.32841	47.77	Pk	31.8	-25.3	54.27	-	-	74	-19.73	188	171	H
3	* 2.38999	31.67	RMS	32.1	-25.2	38.57	54	-15.43	-	-	188	171	H
4	* 2.32811	40.22	RMS	31.8	-25.3	46.72	54	-7.28	-	-	188	171	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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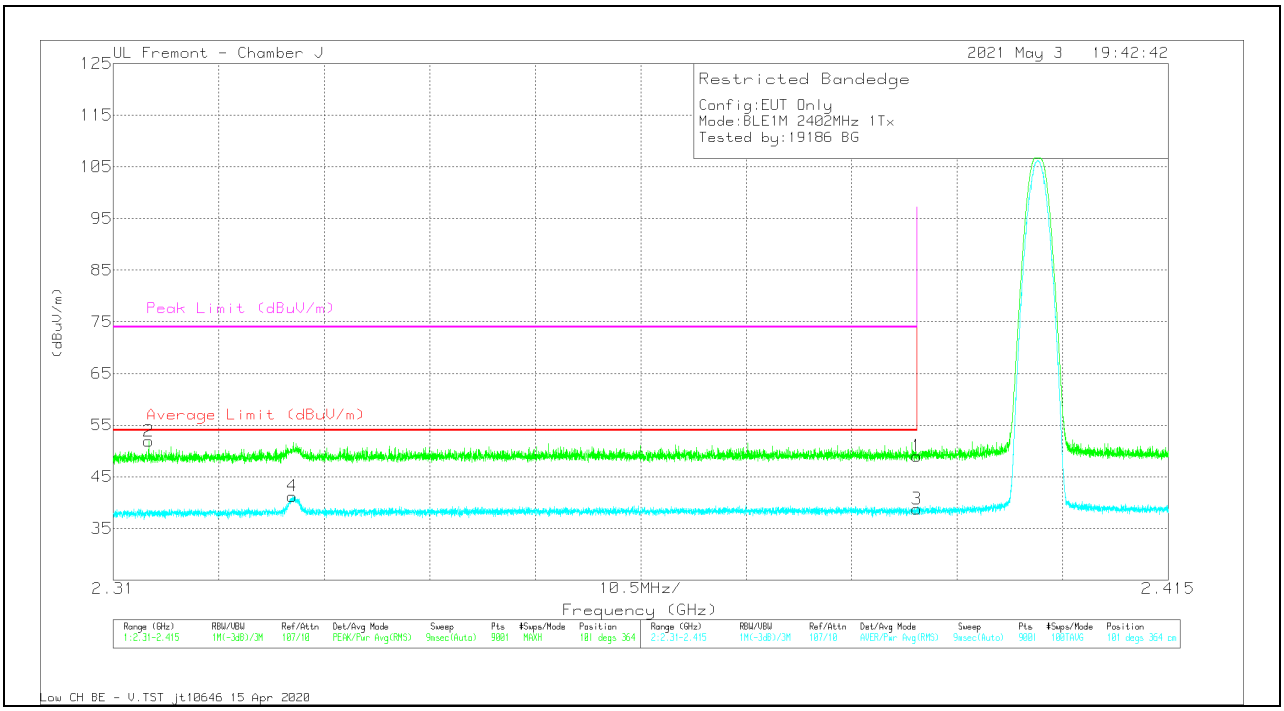
VERTICAL RESULT



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	* 2.38999	42.14	Pk	32.1	-25.2	49.04	-	-	74	-24.96	101	364	V
2	* 2.31352	45.48	Pk	31.7	-25.3	51.88	-	-	74	-22.12	101	364	V
3	* 2.38999	31.87	RMS	32.1	-25.2	38.77	54	-15.23	-	-	101	364	V
4	* 2.3278	34.74	RMS	31.8	-25.3	41.24	54	-12.76	-	-	101	364	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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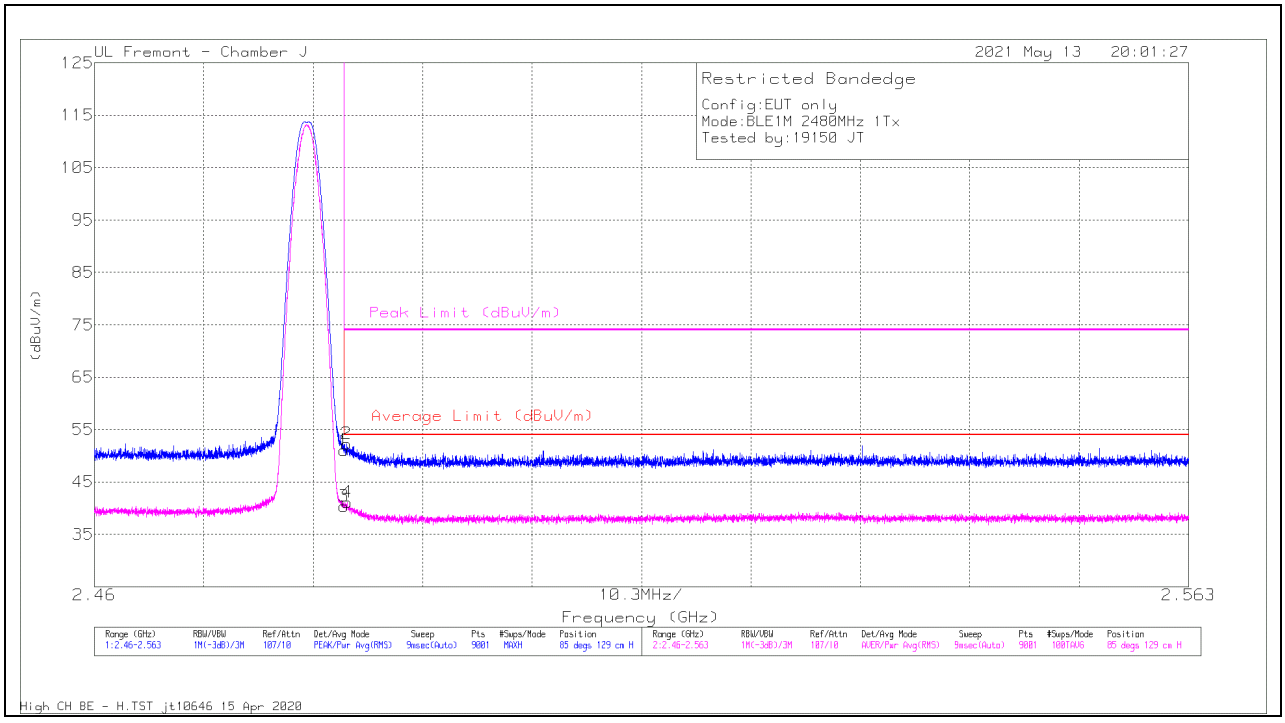
BANDEDGE (HIGH CHANNEL)

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	43.72	Pk	32.5	-25.2	51.02	-	-	74	-22.98	85	129	H
2	* 2.48372	44.94	Pk	32.5	-25.2	52.24	-	-	74	-21.76	85	129	H
3	* 2.48351	33.09	RMS	32.5	-25.2	40.39	54	-13.61	-	-	85	129	H
4	* 2.48378	33.79	RMS	32.5	-25.2	41.09	54	-12.91	-	-	85	129	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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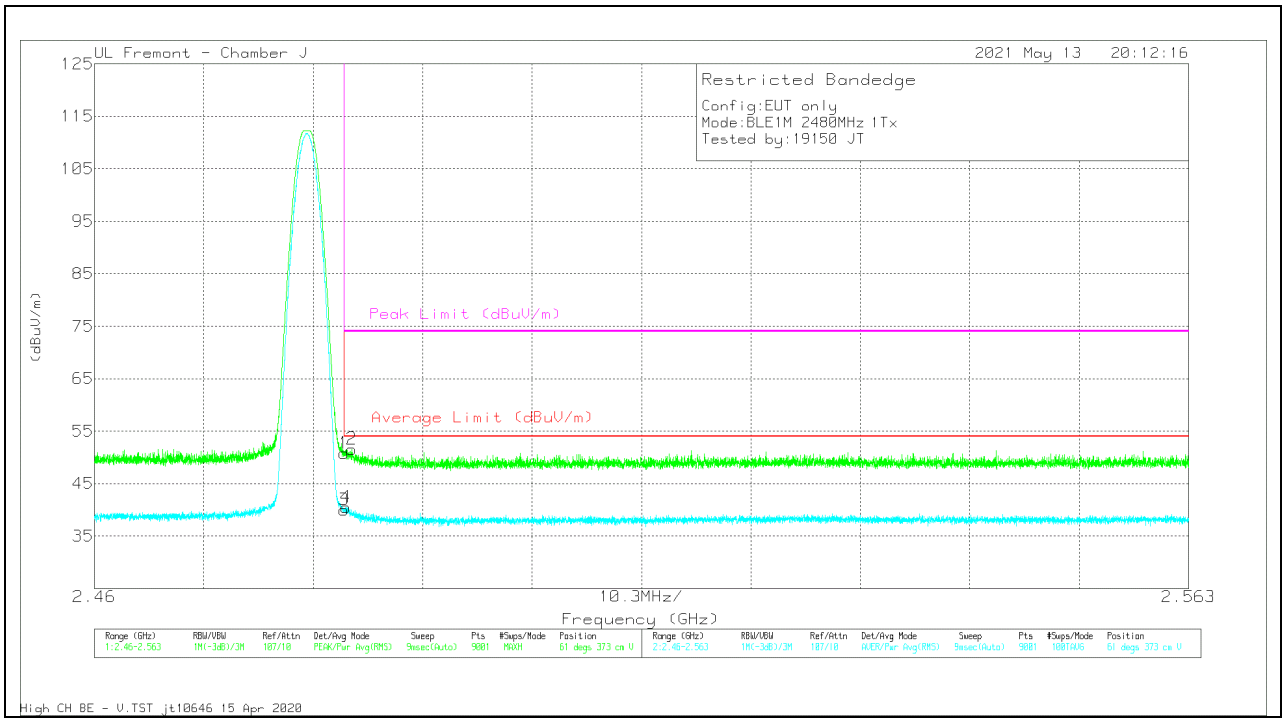
VERTICAL RESULT



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	43.54	Pk	32.5	-25.2	50.84	-	-	74	-23.16	61	373	V
2	* 2.4842	44.29	Pk	32.5	-25.2	51.59	-	-	74	-22.41	61	373	V
3	* 2.48351	32.72	RMS	32.5	-25.2	40.02	54	-13.98	-	-	61	373	V
4	* 2.48368	33.17	RMS	32.5	-25.2	40.47	54	-13.53	-	-	61	373	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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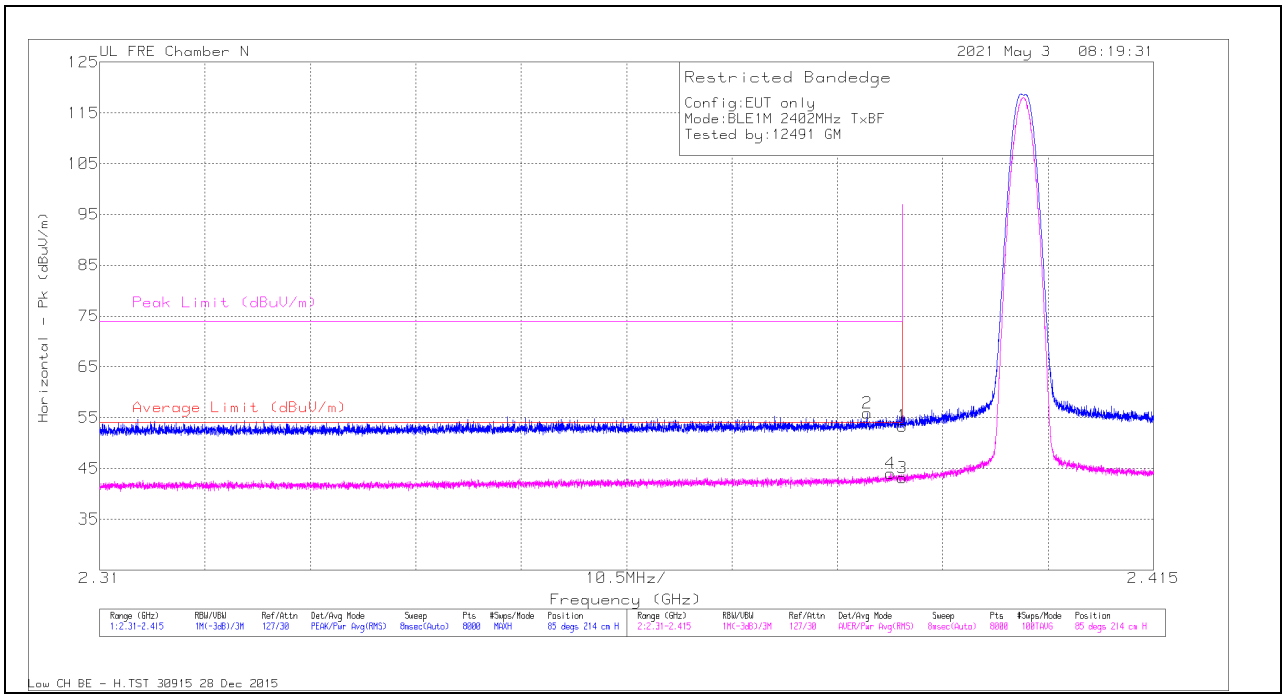
10.2.2. HIGH POWER BLE TXBF (1Mbps)

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	2.39	57.16	Pk	32.4	-36.2	53.36	-	-	74	-20.64	85	214	H
2	2.38648	59.72	Pk	32.4	-36.2	55.92	-	-	74	-18.08	85	214	H
3	2.39	46.95	RMS	32.4	-36.2	43.15	54	-10.85	-	-	85	214	H
4	2.38881	47.77	RMS	32.4	-36.2	43.97	54	-10.03	-	-	85	214	H

Pk - Peak detector
RMS - RMS detection

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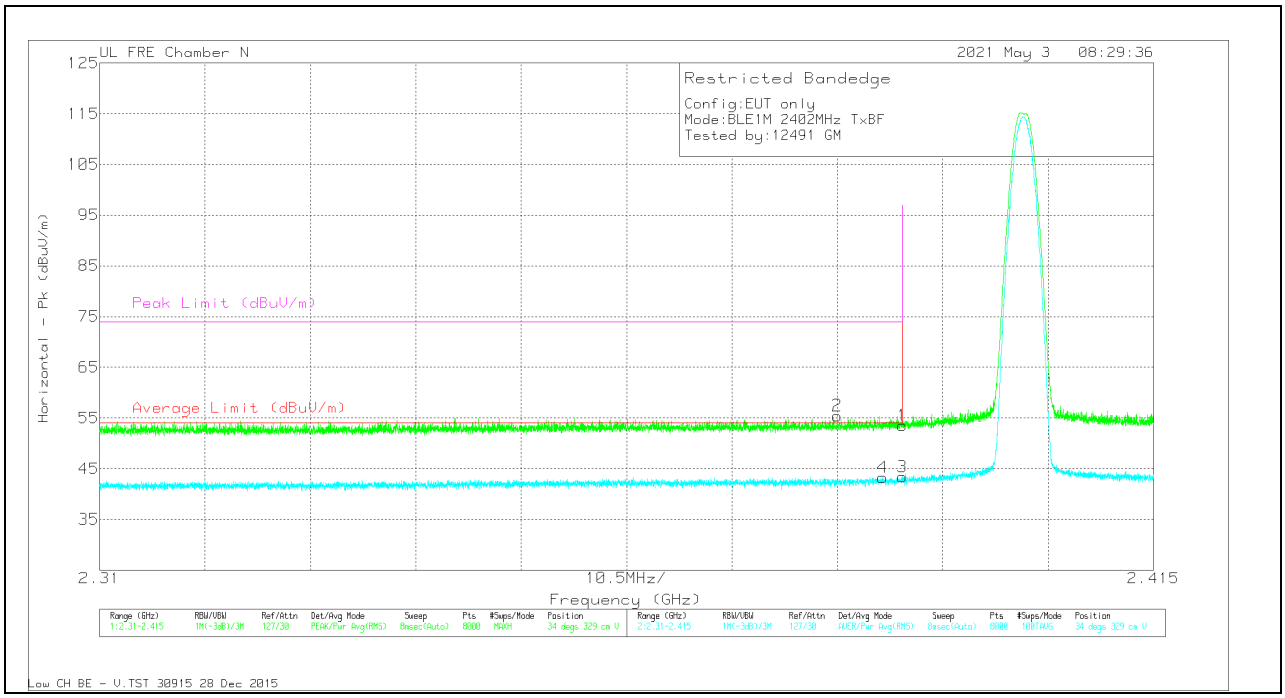
VERTICAL RESULT



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	2.39	57.37	Pk	32.4	-36.2	53.57	-	-	74	-20.43	34	329	V
2	2.38348	59.26	Pk	32.4	-36.2	55.46	-	-	74	-18.54	34	329	V
3	2.39	47.22	RMS	32.4	-36.2	43.42	54	-10.58	-	-	34	329	V
4	2.38801	47.12	RMS	32.4	-36.2	43.32	54	-10.68	-	-	34	329	V

Pk - Peak detector
RMS - RMS detection

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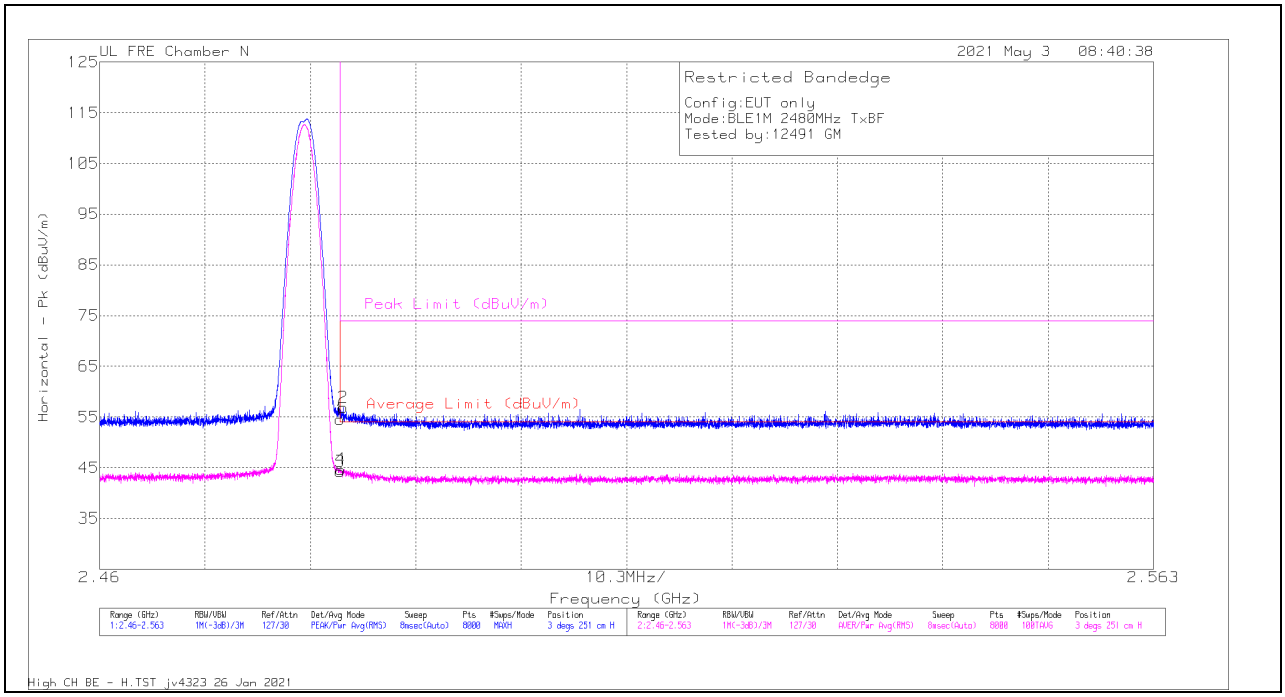
BANDEDGE (HIGH CHANNEL)

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	2.4835	58.07	Pk	32.5	-36	54.57	-	-	74	-19.43	3	251	H
2	2.48378	60.39	Pk	32.5	-36	56.89	-	-	74	-17.11	3	251	H
3	2.4835	47.79	RMS	32.5	-36	44.29	54	-9.71	-	-	3	251	H
4	2.48354	48.2	RMS	32.5	-36	44.7	54	-9.3	-	-	3	251	H

Pk - Peak detector
RMS - RMS detection

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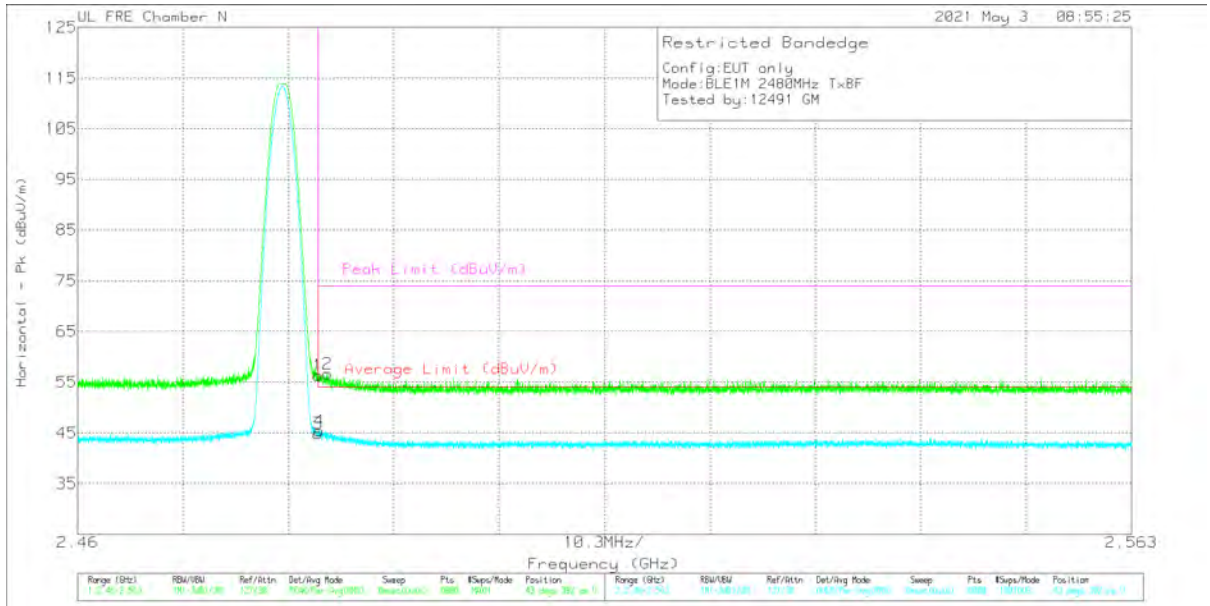
VERTICAL RESULT



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	2.4835	59.89	Pk	32.5	-36	56.39	-	-	74	-17.61	43	392	V
2	2.48439	60.1	Pk	32.5	-36	56.6	-	-	74	-17.4	43	392	V
3	2.4835	48.33	RMS	32.5	-36	44.83	54	-9.17	-	-	43	392	V
4	2.48363	48.89	RMS	32.5	-36	45.39	54	-8.61	-	-	43	392	V

Pk - Peak detector
RMS - RMS detection

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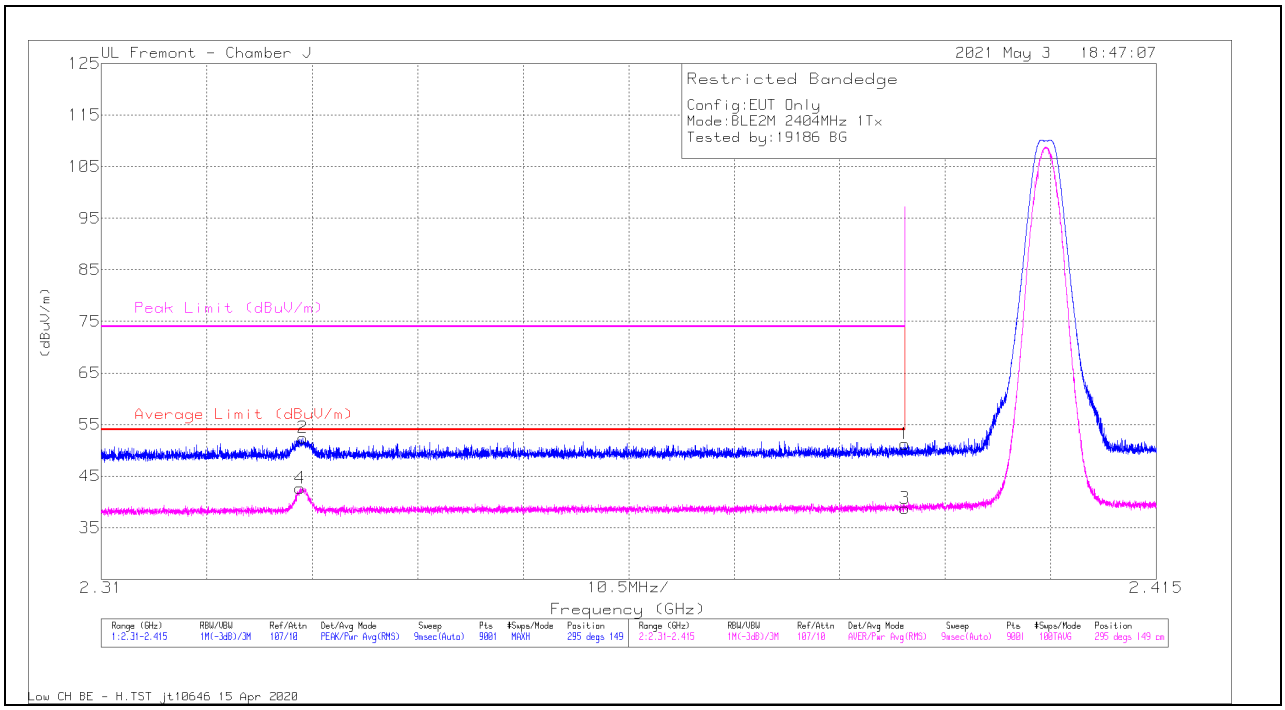
10.2.3. HIGH POWER BLE (2Mbps)

ANT 4

BANDEDGE (LOW CHANNEL)

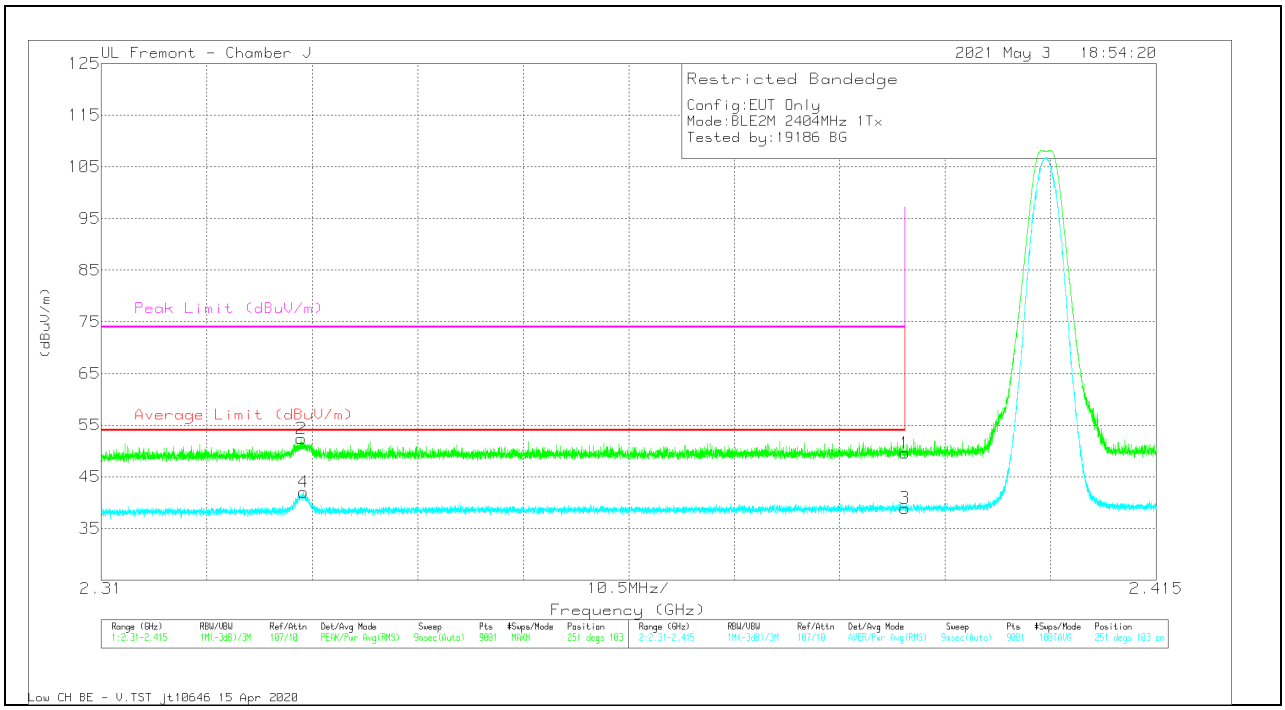
HORIZONTAL RESULT



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	44.35	Pk	32.1	-25.2	51.25	-	-	74	-22.75	295	149	H
2	* 2.33006	45.94	Pk	31.8	-25.3	52.44	-	-	74	-21.56	295	149	H
3	* 2.38999	31.88	RMS	32.1	-25.2	38.78	54	-15.22	-	-	295	149	H
4	* 2.32979	36.16	RMS	31.8	-25.3	42.66	54	-11.34	-	-	295	149	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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	42.69	Pk	32.1	-25.2	49.59	-	-	74	-24.41	251	103	V
2	* 2.3299	45.89	Pk	31.8	-25.3	52.39	-	-	74	-21.61	251	103	V
3	* 2.38999	32.01	RMS	32.1	-25.2	38.91	54	-15.09	-	-	251	103	V
4	* 2.33011	35.5	RMS	31.8	-25.3	42	54	-12	-	-	251	103	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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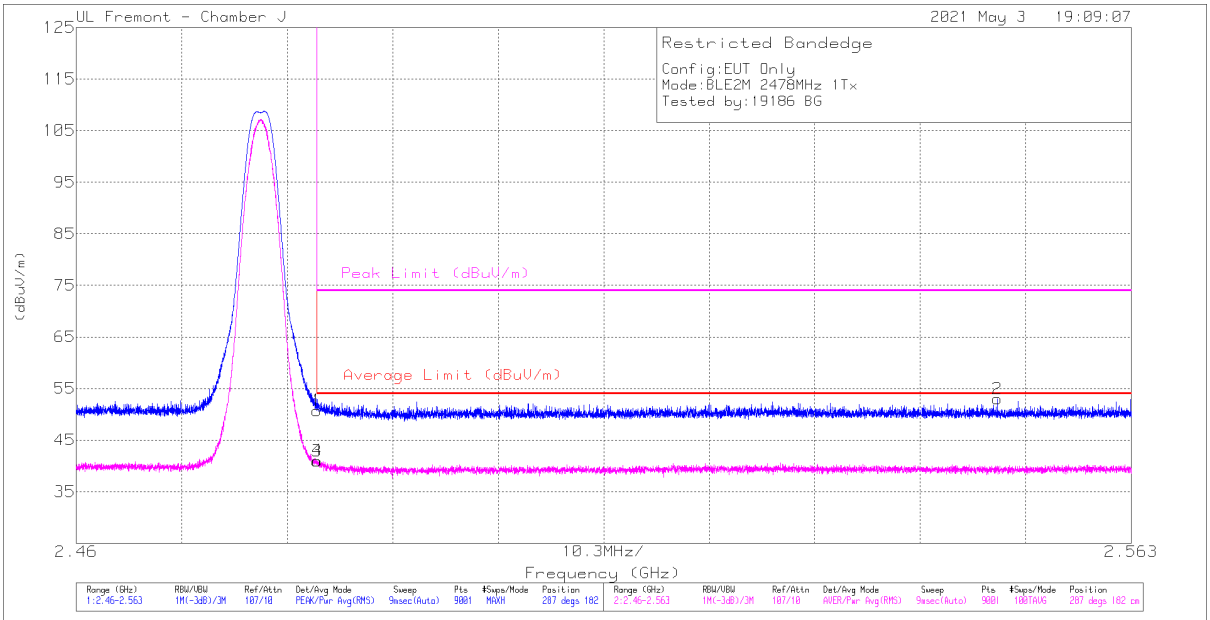
BANDEDGE (HIGH CHANNEL)

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	43.43	Pk	32.5	-25.2	50.73	-	-	74	-23.27	287	182	H
2	2.54994	45.49	Pk	32.6	-25.1	52.99	-	-	74	-21.01	287	182	H
3	* 2.48351	33.61	RMS	32.5	-25.2	40.91	54	-13.09	-	-	287	182	H
4	* 2.48353	33.69	RMS	32.5	-25.2	40.99	54	-13.01	-	-	287	182	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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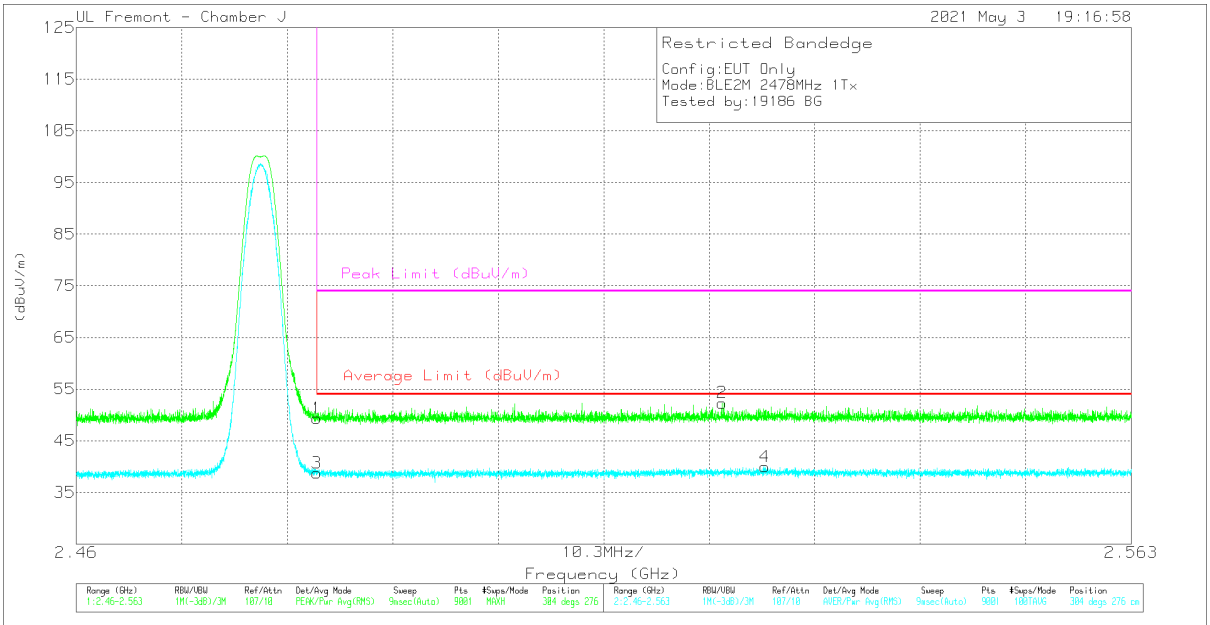
VERTICAL RESULT



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	42.03	Pk	32.5	-25.2	49.33	-	-	74	-24.67	304	276	V
2	2.52303	44.73	Pk	32.8	-25.2	52.33	-	-	74	-21.67	304	276	V
3	* 2.48351	31.43	RMS	32.5	-25.2	38.73	54	-15.27	-	-	304	276	V
4	2.52722	32.24	RMS	32.8	-25.1	39.94	54	-14.06	-	-	304	276	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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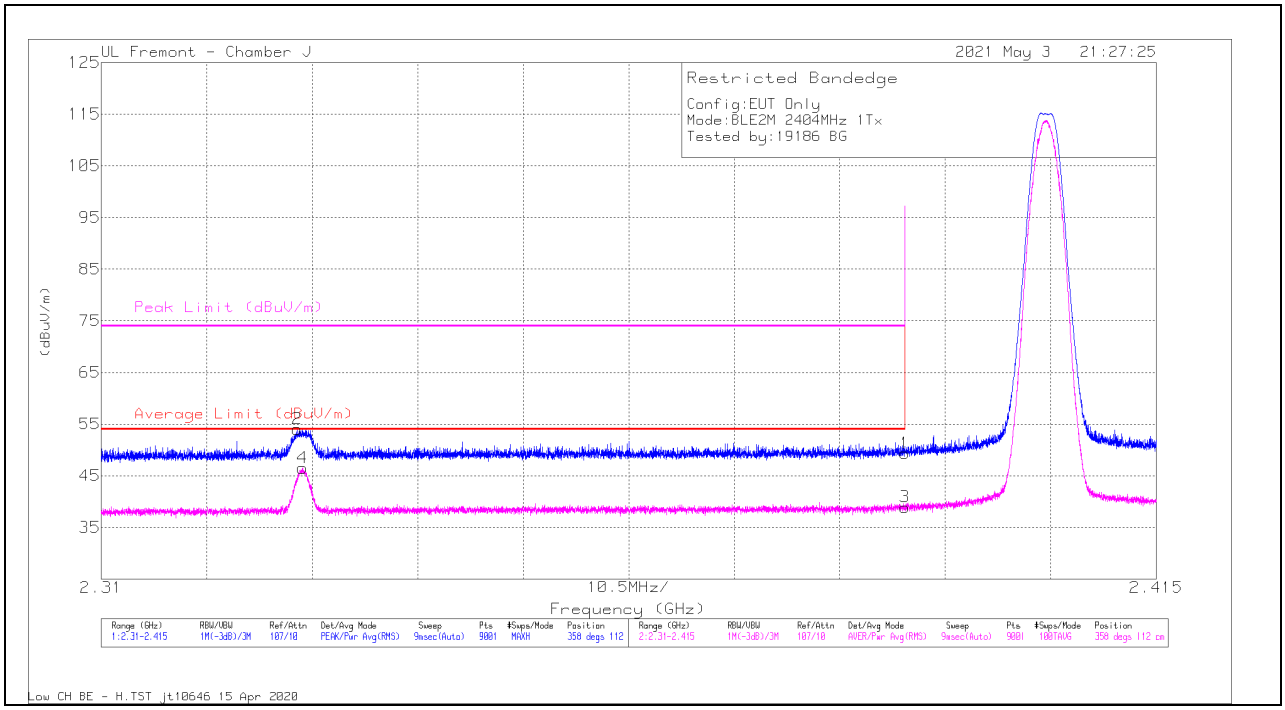
ANT 3

BANDEDGE (LOW CHANNEL)

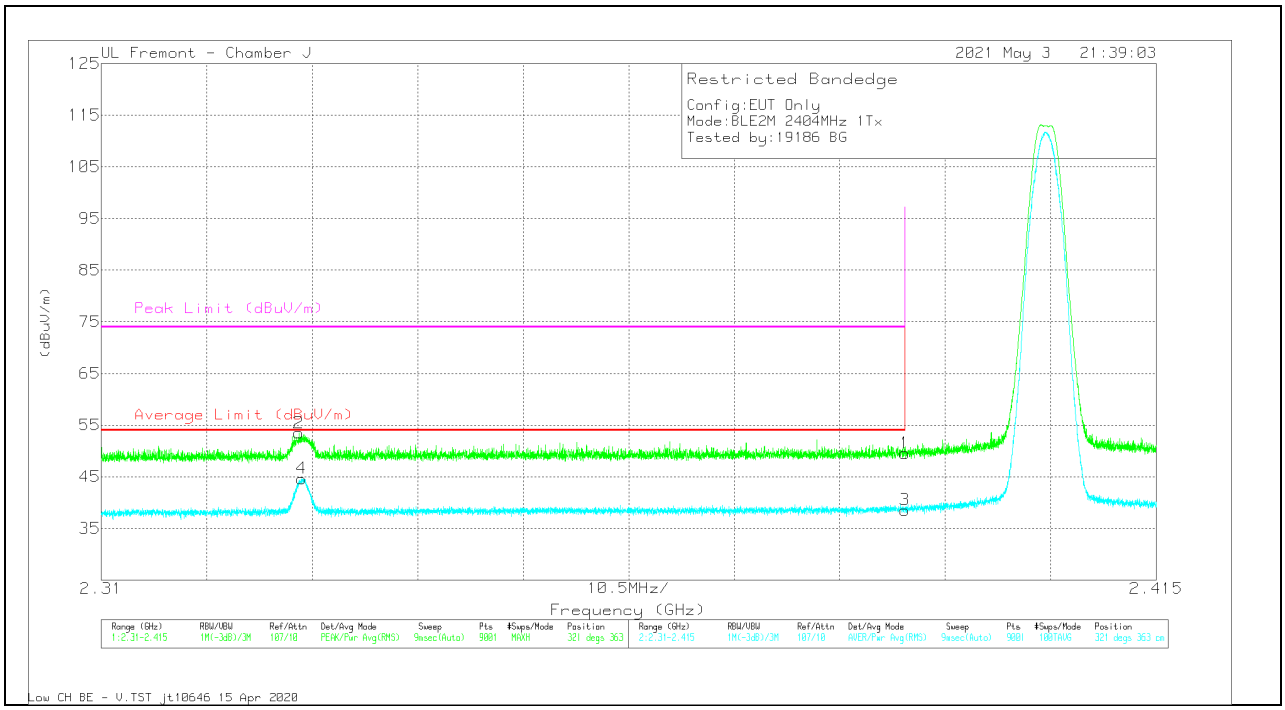
HORIZONTAL RESULT



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	42.44	Pk	32.1	-25.2	49.34	-	-	74	-24.66	358	112	H
2	* 2.3295	47.55	Pk	31.8	-25.3	54.05	-	-	74	-19.95	358	112	H
3	* 2.38999	32.02	RMS	32.1	-25.2	38.92	54	-15.08	-	-	358	112	H
4	* 2.33003	40.01	RMS	31.8	-25.3	46.51	54	-7.49	-	-	358	112	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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	42.65	Pk	32.1	-25.2	49.55	-	-	74	-24.45	321	363	V
2	* 2.32966	46.98	Pk	31.8	-25.3	53.48	-	-	74	-20.52	321	363	V
3	* 2.38999	31.66	RMS	32.1	-25.2	38.56	54	-15.44	-	-	321	363	V
4	* 2.32996	38.15	RMS	31.8	-25.3	44.65	54	-9.35	-	-	321	363	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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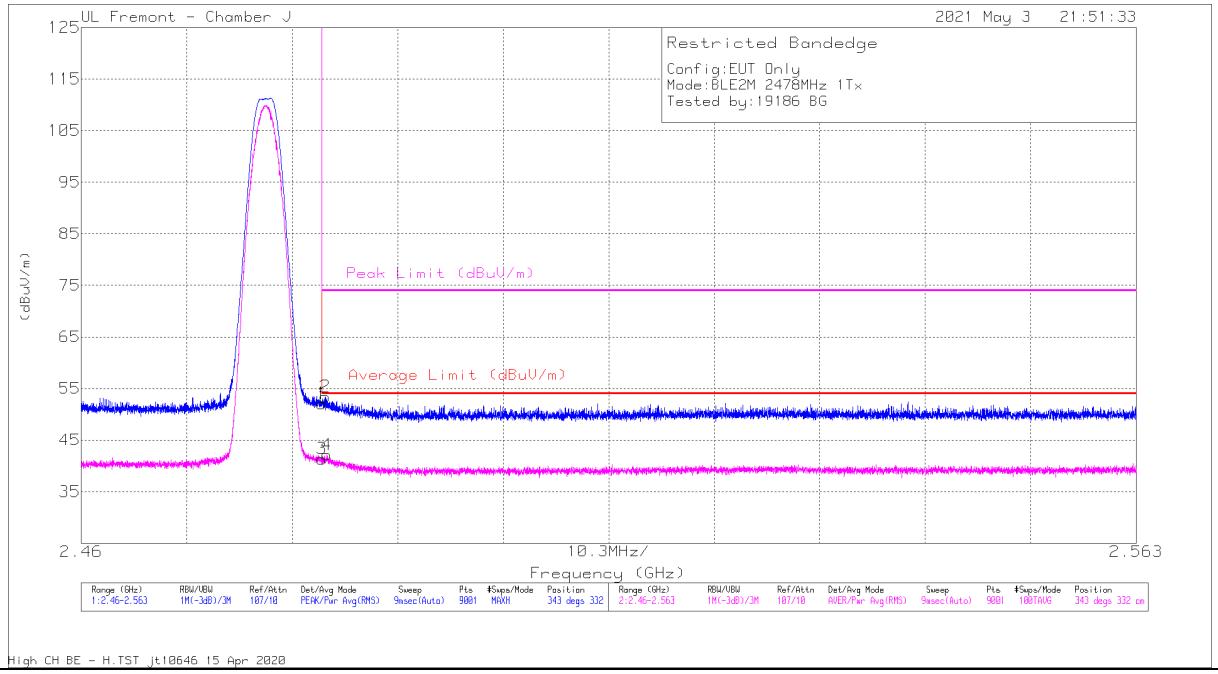
BANDEDGE (HIGH CHANNEL)

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	44.77	Pk	32.5	-25.2	52.07	-	-	74	-21.93	343	332	H
2	* 2.48383	46.09	Pk	32.5	-25.2	53.39	-	-	74	-20.61	343	332	H
3	* 2.48351	34.06	RMS	32.5	-25.2	41.36	54	-12.64	-	-	343	332	H
4	* 2.48398	34.83	RMS	32.5	-25.2	42.13	54	-11.87	-	-	343	332	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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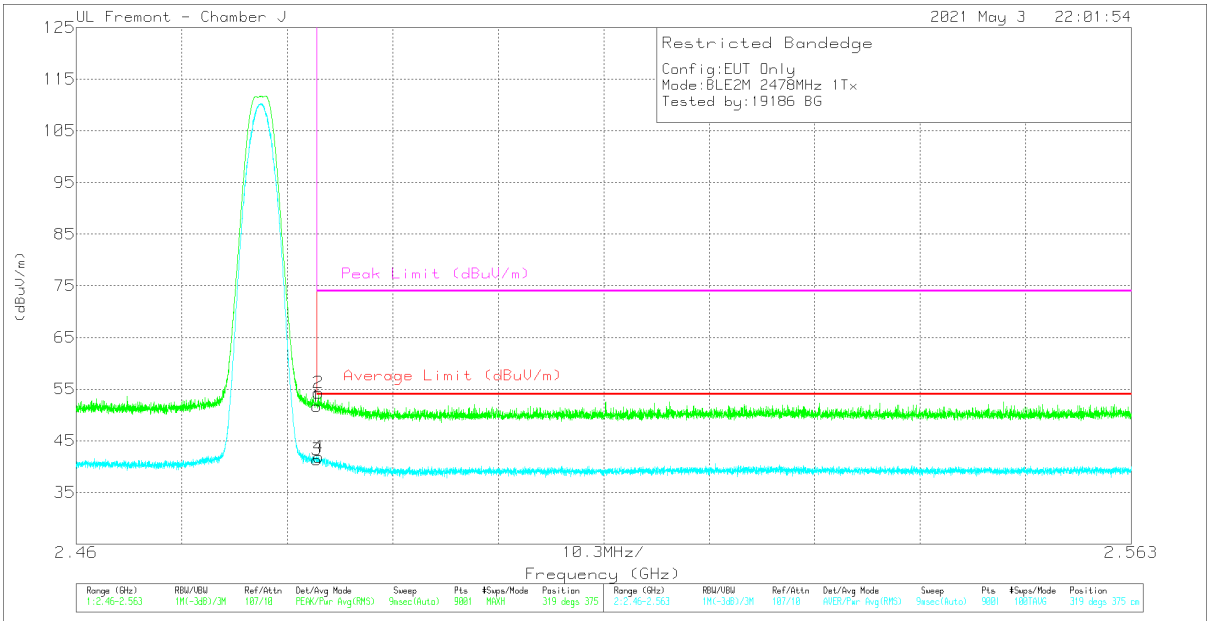
VERTICAL RESULT



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	44.33	Pk	32.5	-25.2	51.63	-	-	74	-22.37	319	375	V
2	* 2.48364	47	Pk	32.5	-25.2	54.3	-	-	74	-19.7	319	375	V
3	* 2.48351	34.05	RMS	32.5	-25.2	41.35	54	-12.65	-	-	319	375	V
4	* 2.48367	34.58	RMS	32.5	-25.2	41.88	54	-12.12	-	-	319	375	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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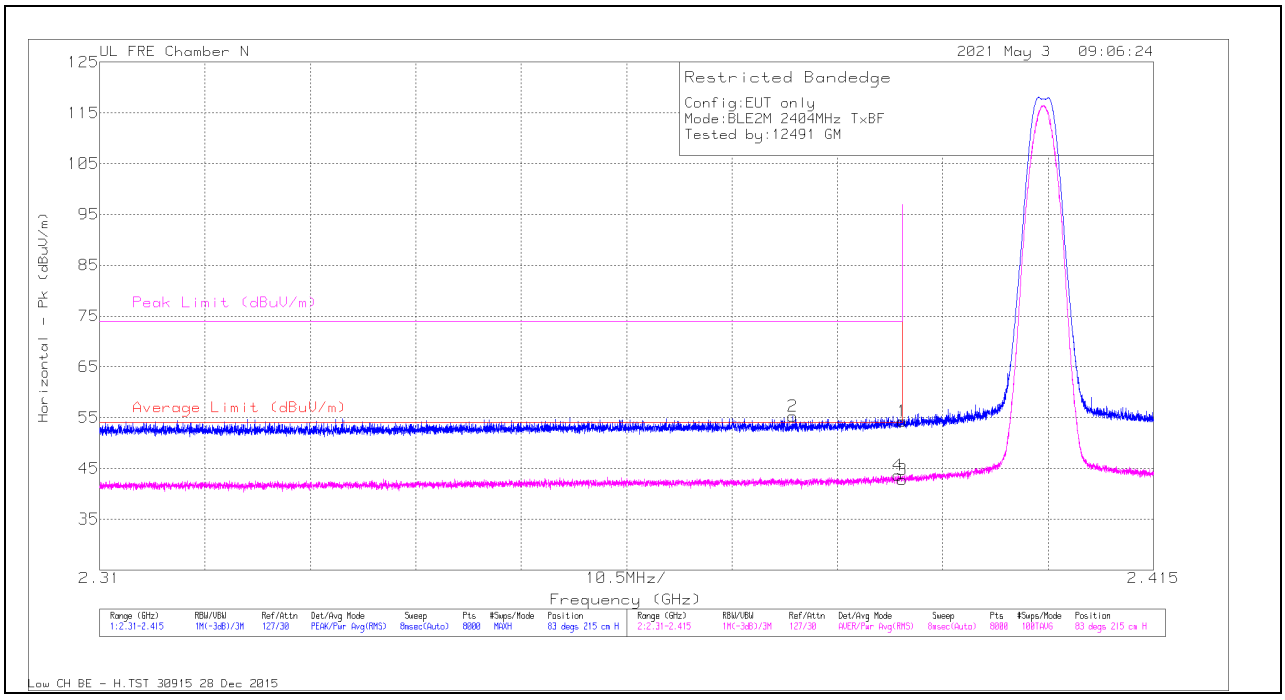
10.2.4. HIGH POWER BLE TXBF (2Mbps)

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213971 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.39	58.12	Pk	32.4	-36.2	54.32	-	-	74	-19.68	83	215	H
2	2.37906	59.06	Pk	32.4	-36.2	55.26	-	-	74	-18.74	83	215	H
3	2.39	46.55	RMS	32.4	-36.2	42.75	54	-11.25	-	-	83	215	H
4	2.38956	47.48	RMS	32.4	-36.2	43.68	54	-10.32	-	-	83	215	H

Pk - Peak detector
RMS - RMS detection

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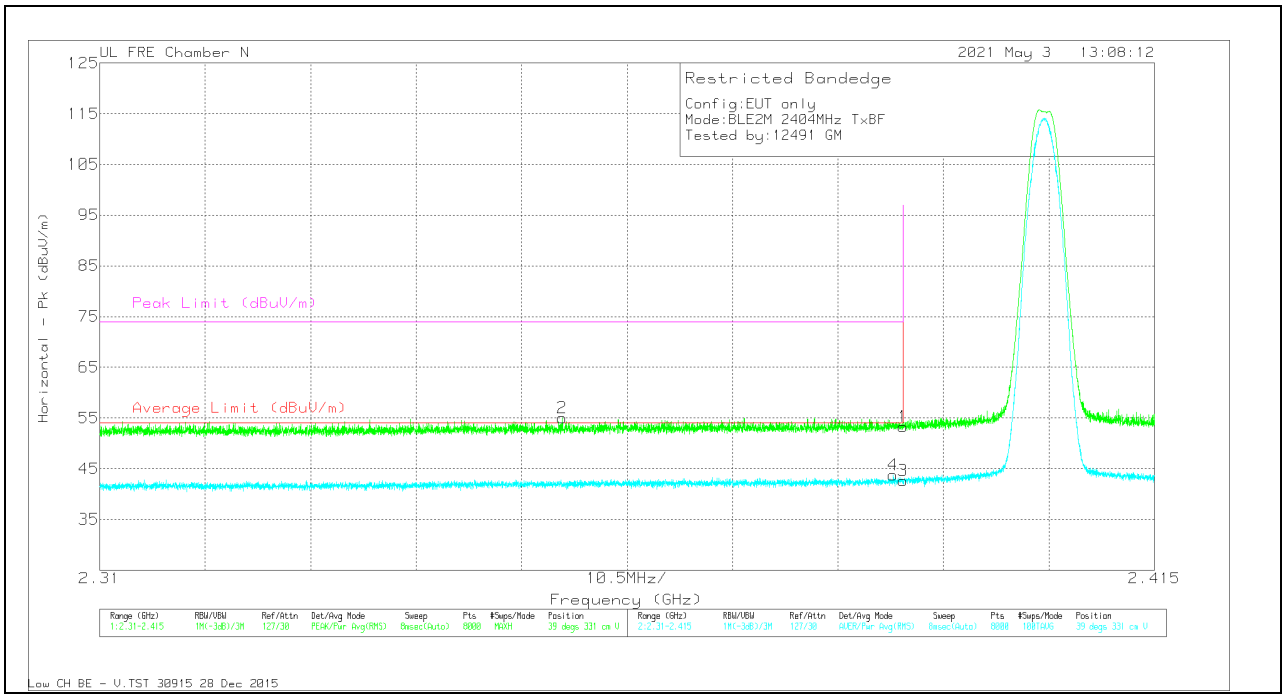
VERTICAL RESULT



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	2.39	57.04	Pk	32.4	-36.2	53.24	-	-	74	-20.76	39	331	V
2	2.35601	59.01	Pk	32.3	-36.3	55.01	-	-	74	-18.99	39	331	V
3	2.39	46.42	RMS	32.4	-36.2	42.62	54	-11.38	-	-	39	331	V
4	2.389	47.59	RMS	32.4	-36.2	43.79	54	-10.21	-	-	39	331	V

Pk - Peak detector
RMS - RMS detection

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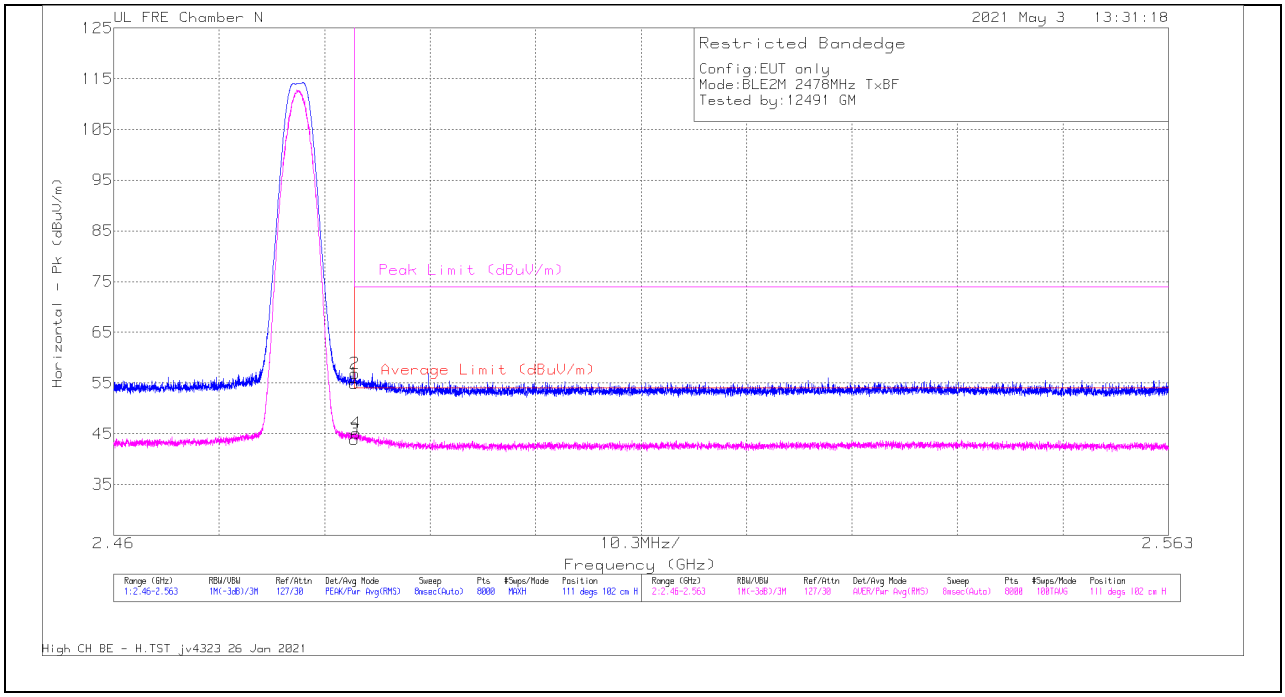
BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE02139 71 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.4835	58.35	Pk	32.5	-36	54.85	-	-	74	-19.15	111	102	H
3	2.4835	47.34	RMS	32.5	-36	43.84	54	-10.16	-	-	111	102	H
2	2.48356	60.39	Pk	32.5	-36	56.89	-	-	74	-17.11	111	102	H
4	2.48366	48.66	RMS	32.5	-36	45.16	54	-8.84	-	-	111	102	H

Pk - Peak detector
RMS - RMS detection

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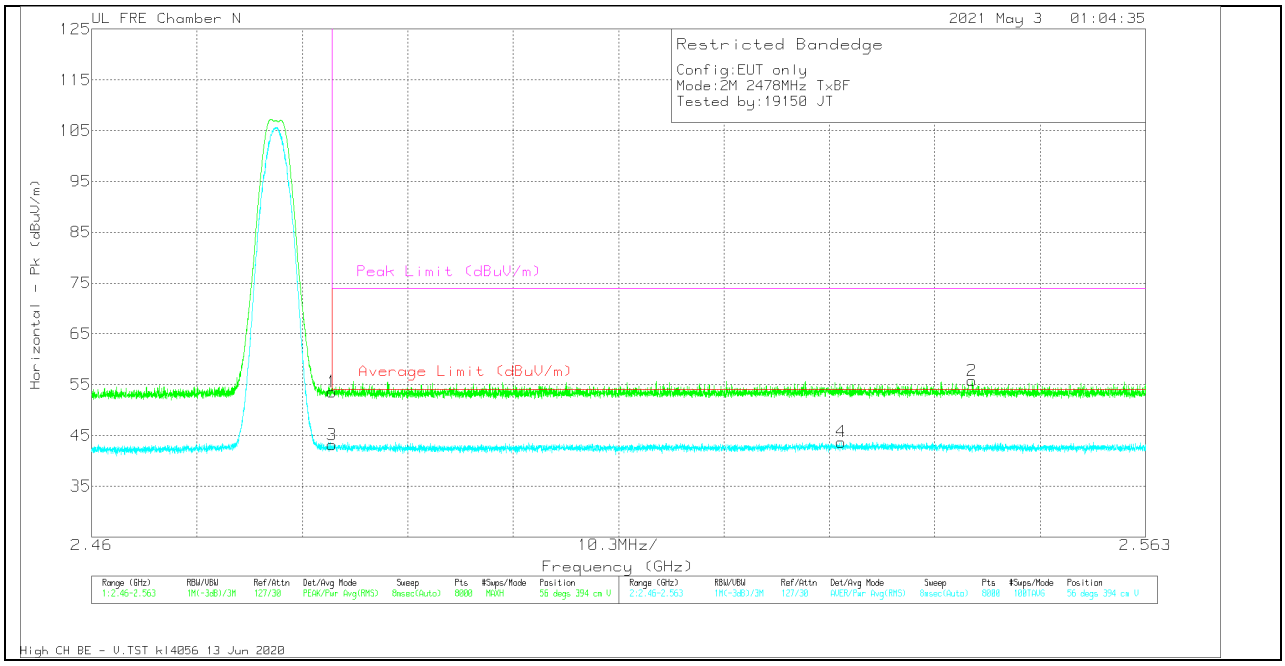
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE02139 71 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.4835	57.1	Pk	32.5	-36	53.6	-	-	74	-20.4	56	394	V
3	2.4835	46.68	RMS	32.5	-36	43.18	54	-10.82	-	-	56	394	V
4	2.53327	46.71	RMS	32.7	-35.7	43.71	54	-10.29	-	-	56	394	V
2	2.54606	59.02	Pk	32.5	-35.7	55.82	-	-	74	-18.18	56	394	V

Pk - Peak detector
RMS - RMS detection

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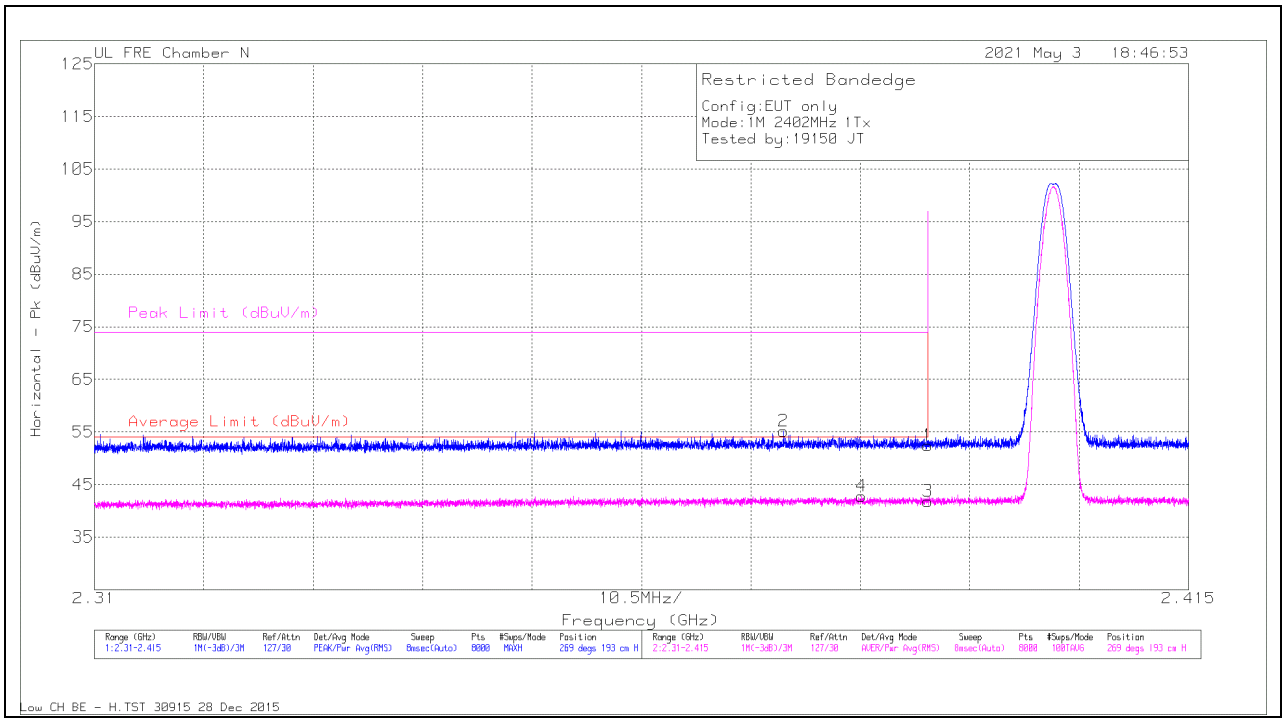
10.2.5. LOW POWER BLE (1Mbps)

ANT 4

BANDEDGE (LOW CHANNEL)

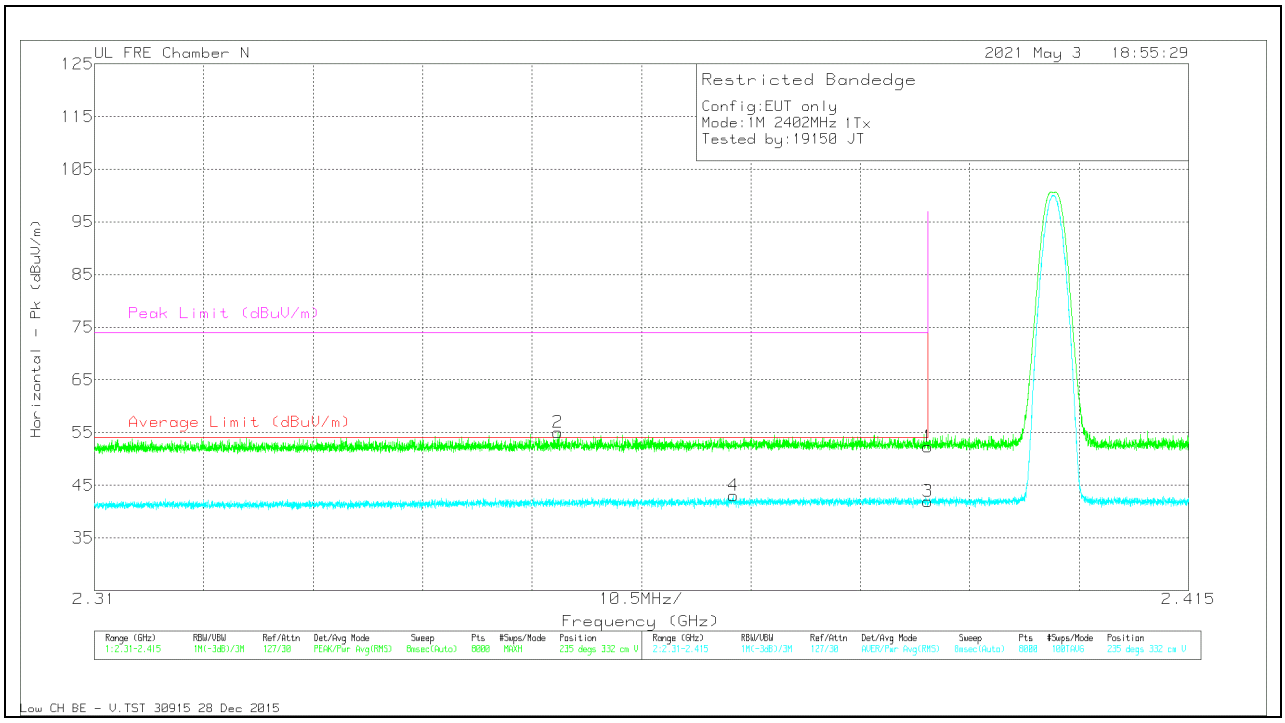
HORIZONTAL RESULT



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	2.39	56.24	Pk	32.4	-36.2	52.44	-	-	74	-21.56	269	193	H
2	2.37615	59.03	Pk	32.4	-36.3	55.13	-	-	74	-18.87	269	193	H
3	2.39	45.62	RMS	32.4	-36.2	41.82	54	-12.18	-	-	269	193	H
4	2.3836	46.62	RMS	32.4	-36.2	42.82	54	-11.18	-	-	269	193	H

Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT

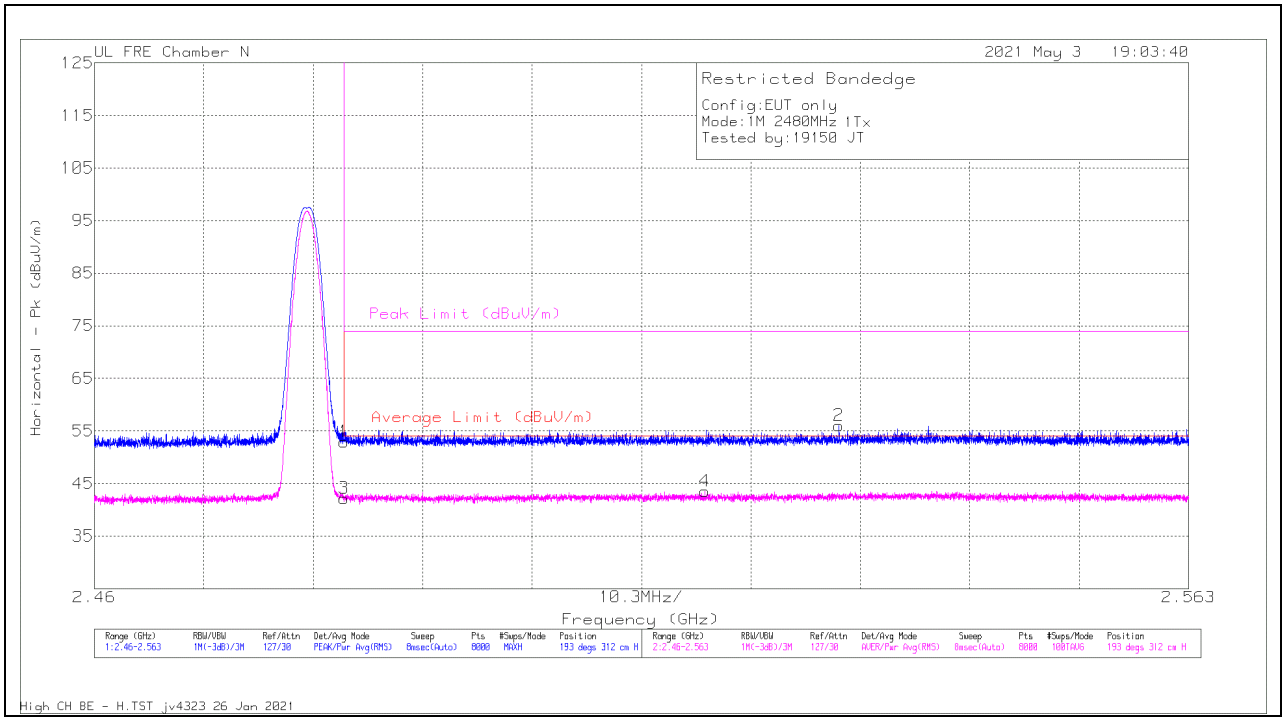


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213971 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.39	56.07	Pk	32.4	-36.2	52.27	-	-	74	-21.73	235	332	V
2	2.3545	59.14	Pk	32.2	-36.3	55.04	-	-	74	-18.96	235	332	V
3	2.39	45.69	RMS	32.4	-36.2	41.89	54	-12.11	-	-	235	332	V
4	2.3713	46.96	RMS	32.4	-36.3	43.06	54	-10.94	-	-	235	332	V

Pk - Peak detector
RMS - RMS detection

BANDEDGE (HIGH CHANNEL)

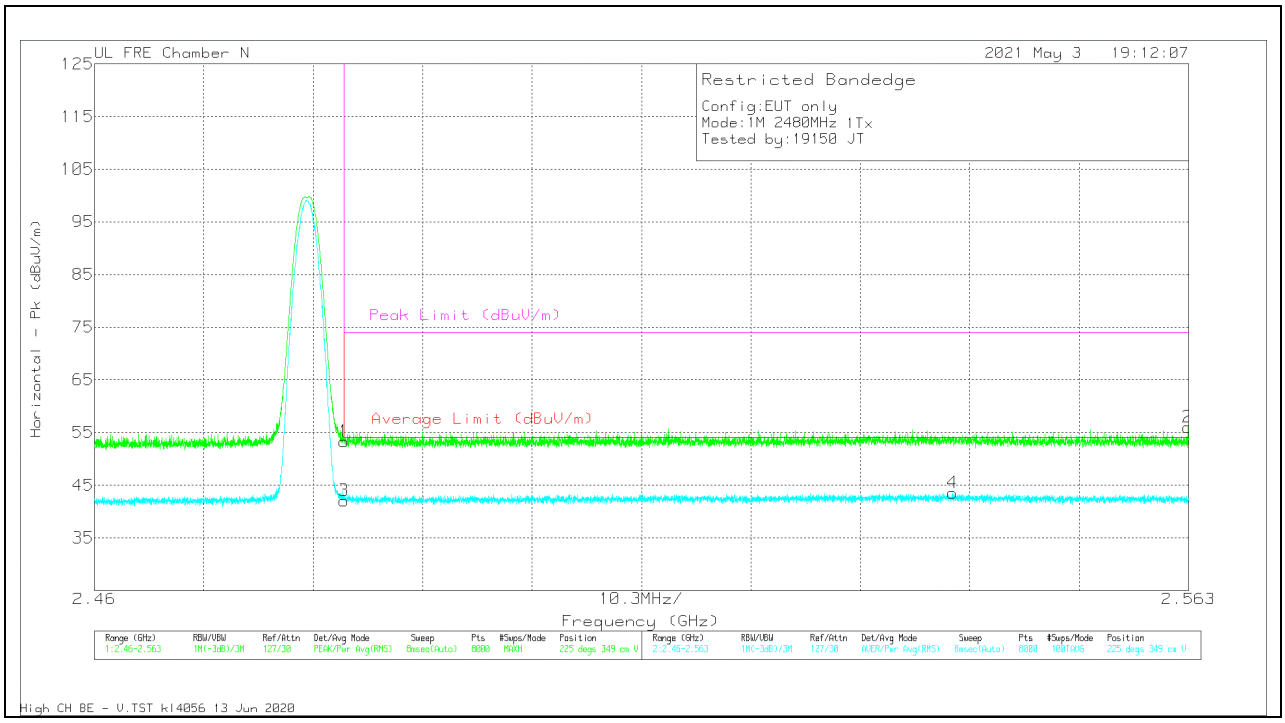
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE02139 71 (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	2.4835	56.37	Pk	32.5	-36	52.87	-	-	74	-21.13	193	312	H
2	2.53008	59.11	Pk	32.7	-35.8	56.01	-	-	74	-17.99	193	312	H
3	2.4835	45.66	RMS	32.5	-36	42.16	54	-11.84	-	-	193	312	H
4	2.51747	46.87	RMS	32.6	-35.9	43.57	54	-10.43	-	-	193	312	H

Pk - Peak detector
RMS - RMS detection

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	2.4835	56.75	Pk	32.5	-36	53.25	-	-	74	-20.75	225	349	V
2	2.56295	59.23	Pk	32.5	-35.7	56.03	-	-	74	-17.97	225	349	V
3	2.4835	45.49	RMS	32.5	-36	41.99	54	-12.01	-	-	225	349	V
4	2.54079	46.63	RMS	32.6	-35.7	43.53	54	-10.47	-	-	225	349	V

Pk - Peak detector
RMS - RMS detection

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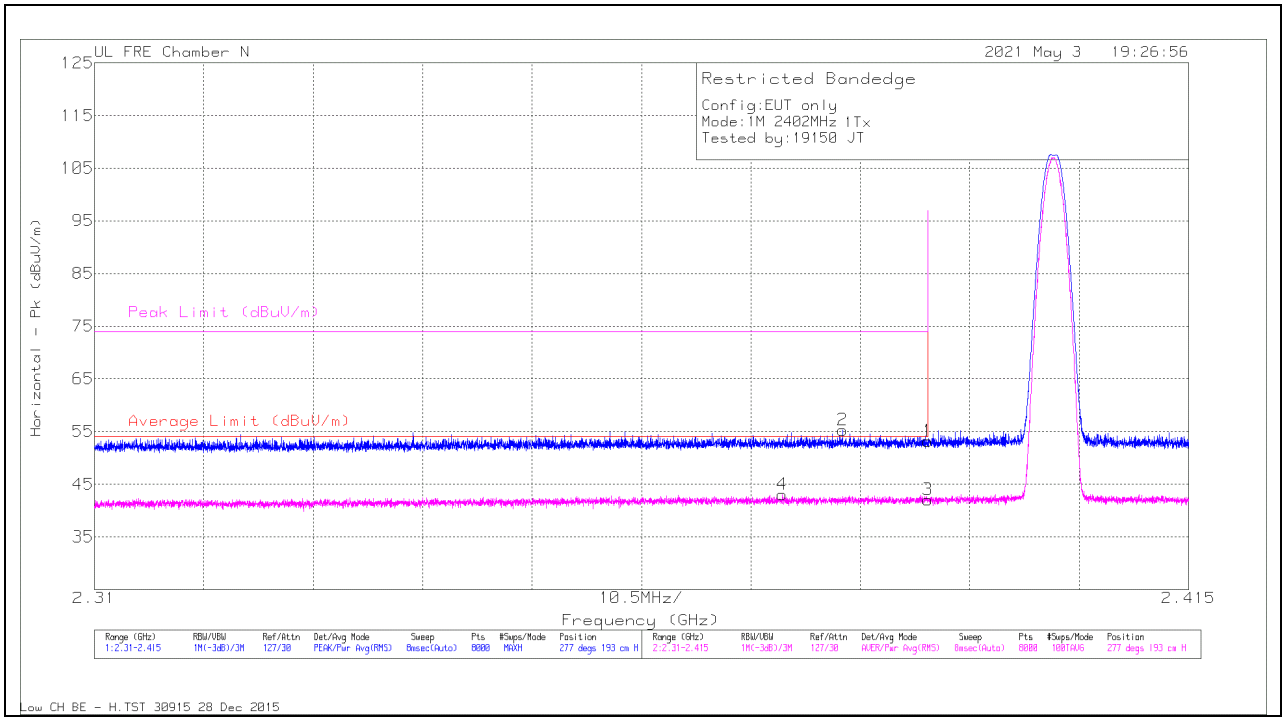
ANT 3

BANDEDGE (LOW CHANNEL)

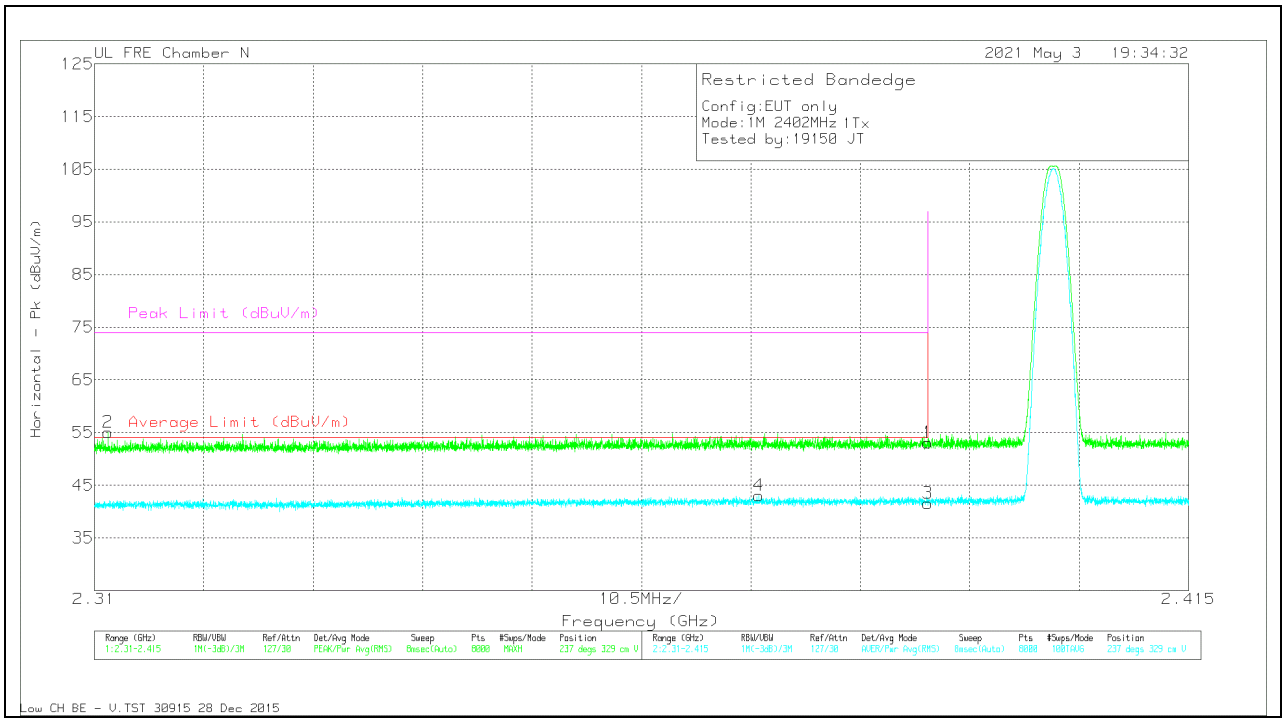
HORIZONTAL RESULT



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
4	2.37603	46.89	RMS	32.4	-36.3	42.99	54	-11.01	-	-	277	193	H
2	2.38179	59.05	Pk	32.4	-36.2	55.25	-	-	74	-18.75	277	193	H
1	2.39	56.95	Pk	32.4	-36.2	53.15	-	-	74	-20.85	277	193	H
3	2.39	45.83	RMS	32.4	-36.2	42.03	54	-11.97	-	-	277	193	H

Pk - Peak detector
RMS - RMS detection

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	2.39	56.9	Pk	32.4	-36.2	53.1	-	-	74	-20.9	237	329	V
2	2.3113	59.55	Pk	31.9	-36.4	55.05	-	-	74	-18.95	237	329	V
3	2.39	45.34	RMS	32.4	-36.2	41.54	54	-12.46	-	-	237	329	V
4	2.37376	46.97	RMS	32.4	-36.3	43.07	54	-10.93	-	-	237	329	V

Pk - Peak detector
RMS - RMS detection

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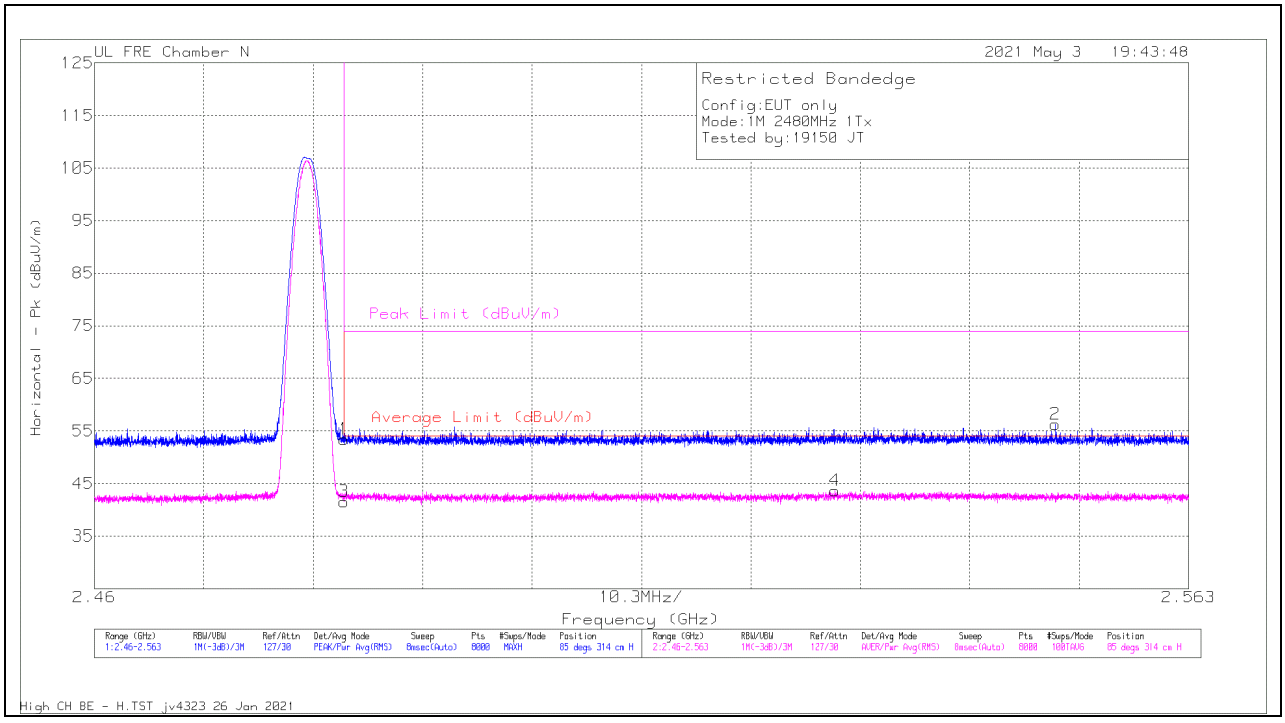
BANDEDGE (HIGH CHANNEL)

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	2.4835	56.87	Pk	32.5	-36	53.37	-	-	74	-20.63	85	314	H
2	2.55047	59.48	Pk	32.5	-35.7	56.28	-	-	74	-17.72	85	314	H
3	2.4835	45.1	RMS	32.5	-36	41.6	54	-12.4	-	-	85	314	H
4	2.52973	46.76	RMS	32.7	-35.8	43.66	54	-10.34	-	-	85	314	H

Pk - Peak detector
RMS - RMS detection

UL VERIFICATION SERVICES INC.
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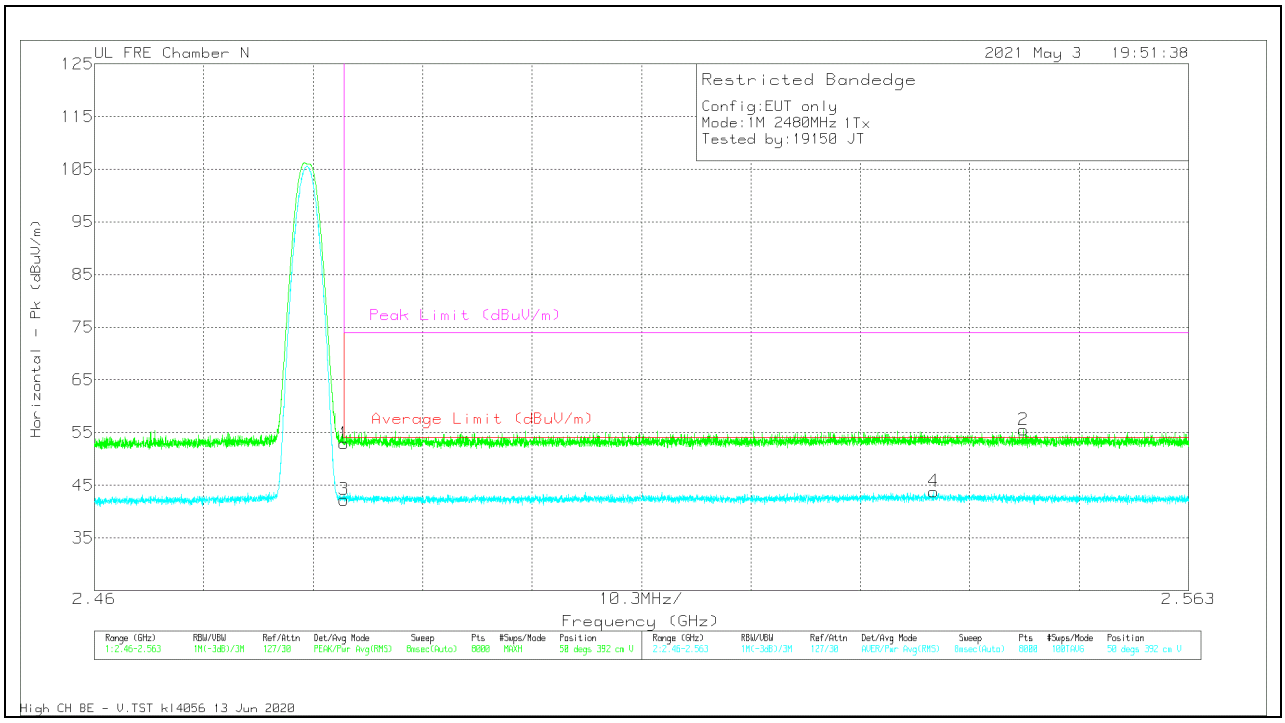
VERTICAL RESULT



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	2.4835	56.42	Pk	32.5	-36	52.92	-	-	74	-21.08	50	392	V
2	2.54743	58.68	Pk	32.5	-35.7	55.48	-	-	74	-18.52	50	392	V
3	2.4835	45.73	RMS	32.5	-36	42.23	54	-11.77	-	-	50	392	V
4	2.539	46.93	RMS	32.6	-35.7	43.83	54	-10.17	-	-	50	392	V

Pk - Peak detector
RMS - RMS detection

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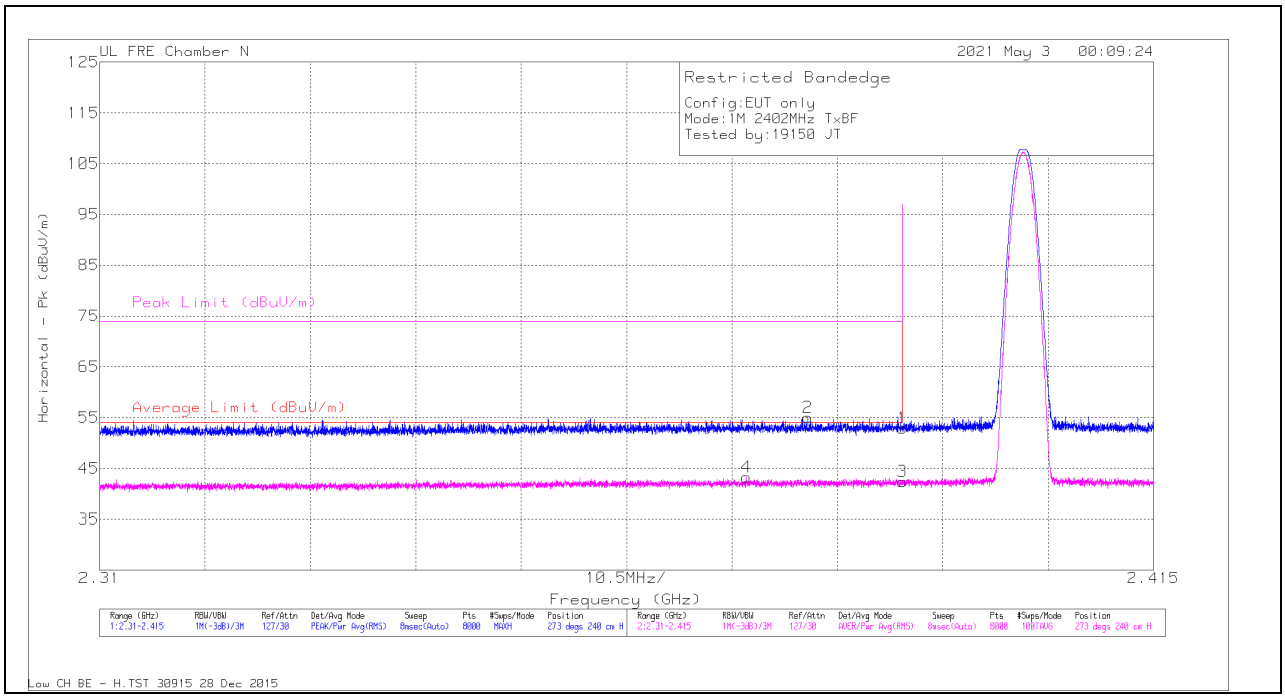
10.2.6. LOW POWER BLE TXBF (1Mbps)

BANDEDGE (LOW CHANNEL)

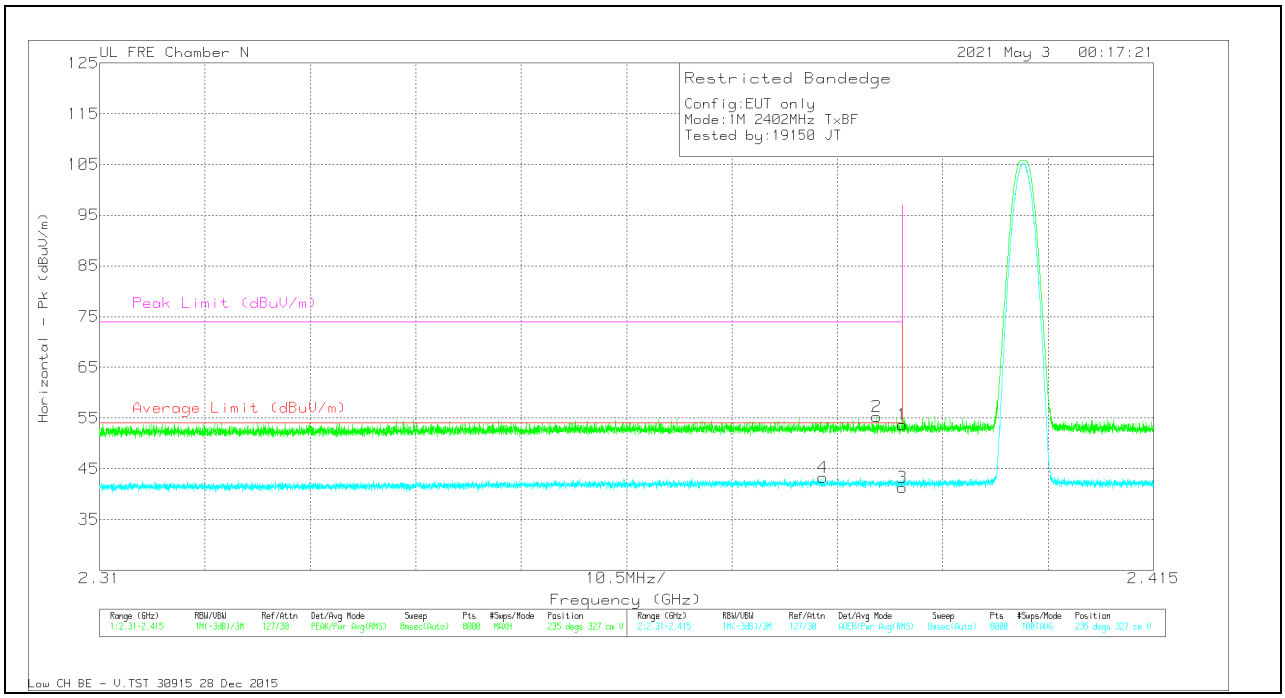
HORIZONTAL RESULT



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	2.39	56.7	Pk	32.4	-36.2	52.9	-	-	74	-21.1	273	240	H
2	2.38056	58.87	Pk	32.4	-36.2	55.07	-	-	74	-18.93	273	240	H
3	2.39	46.24	RMS	32.4	-36.2	42.44	54	-11.56	-	-	273	240	H
4	2.37447	47.13	RMS	32.4	-36.3	43.23	54	-10.77	-	-	273	240	H

Pk - Peak detector
RMS - RMS detection

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	2.39	57.49	Pk	32.4	-36.2	53.69	-	-	74	-20.31	235	327	V
2	2.38741	59.11	Pk	32.4	-36.2	55.31	-	-	74	-18.69	235	327	V
3	2.39	45.11	RMS	32.4	-36.2	41.31	54	-12.69	-	-	235	327	V
4	2.38207	47.08	RMS	32.4	-36.2	43.28	54	-10.72	-	-	235	327	V

Pk - Peak detector
RMS - RMS detection

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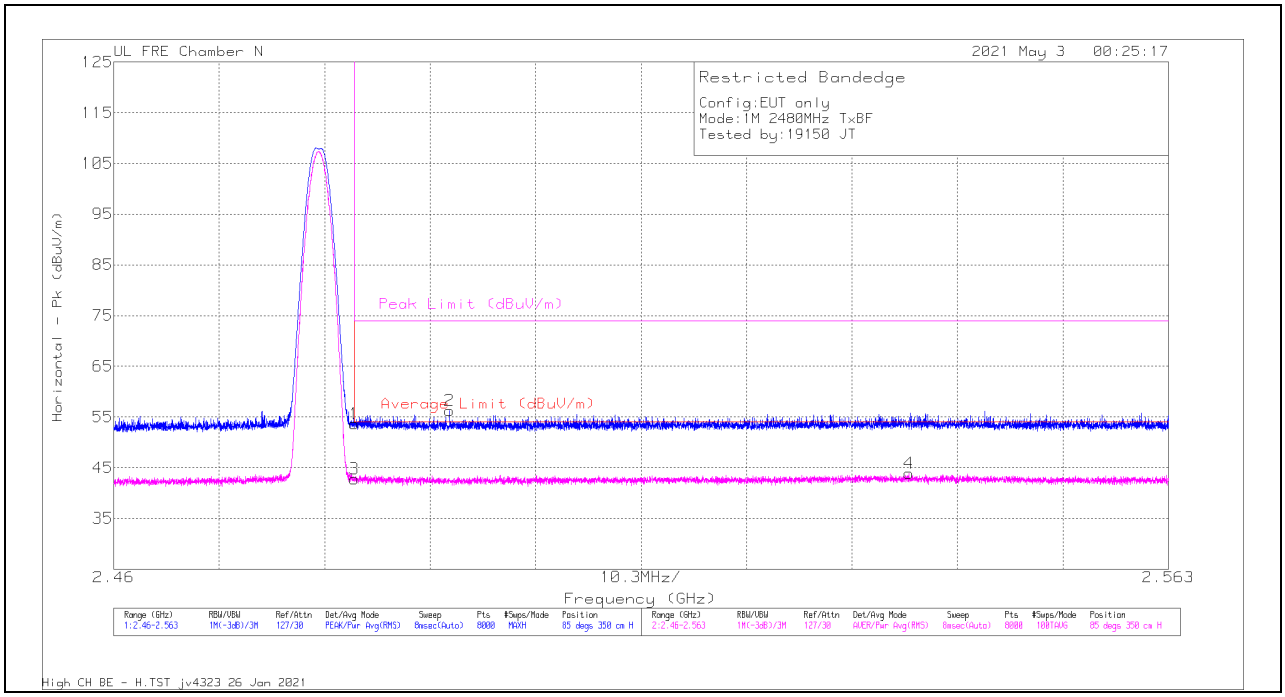
BANDEDGE (HIGH CHANNEL)

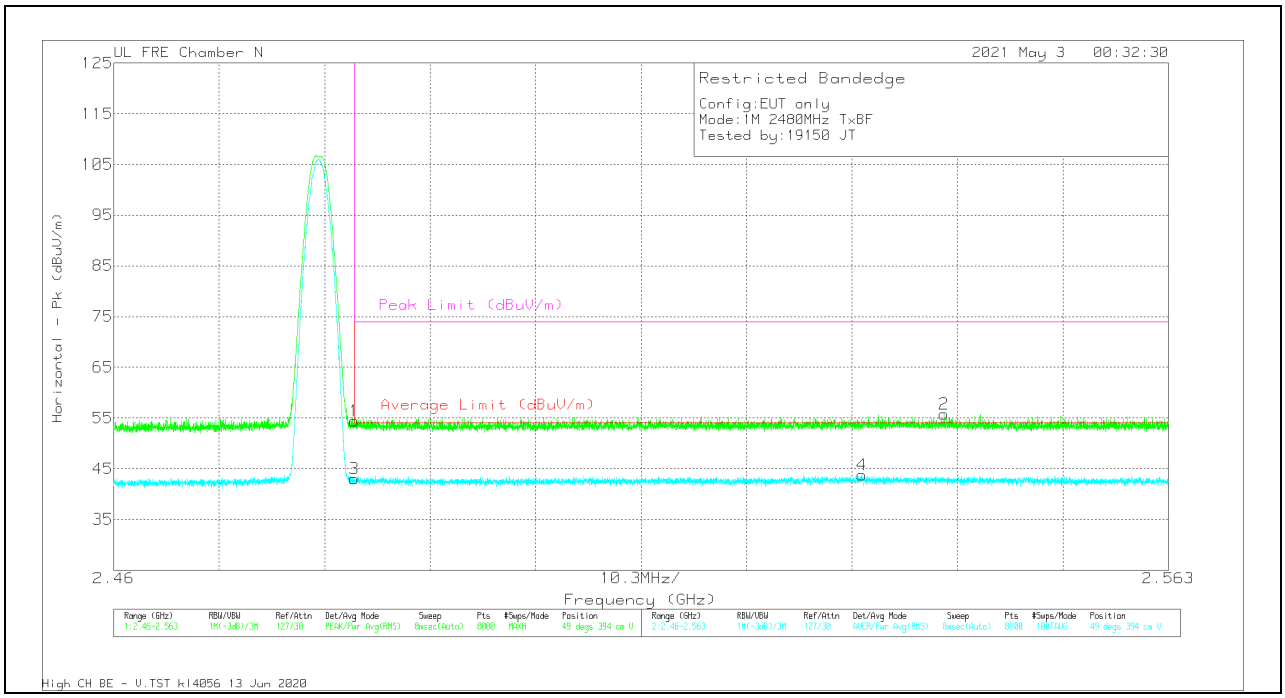
HORIZONTAL RESULT



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	2.4835	57.2	Pk	32.5	-36	53.7	-	-	74	-20.3	85	350	H
3	2.4835	46.29	RMS	32.5	-36	42.79	54	-11.21	-	-	85	350	H
2	2.49281	59.76	Pk	32.5	-36	56.26	-	-	74	-17.74	85	350	H
4	2.53764	47.04	RMS	32.6	-35.7	43.94	54	-10.06	-	-	85	350	H

Pk - Peak detector
RMS - RMS detection

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	2.4835	57.91	Pk	32.5	-36	54.41	-	-	74	-19.59	49	394	V
2	2.54111	58.87	Pk	32.6	-35.7	55.77	-	-	74	-18.23	49	394	V
3	2.4835	46.54	RMS	32.5	-36	43.04	54	-10.96	-	-	49	394	V
4	2.53308	46.77	RMS	32.7	-35.7	43.77	54	-10.23	-	-	49	394	V

Pk - Peak detector
RMS - RMS detection

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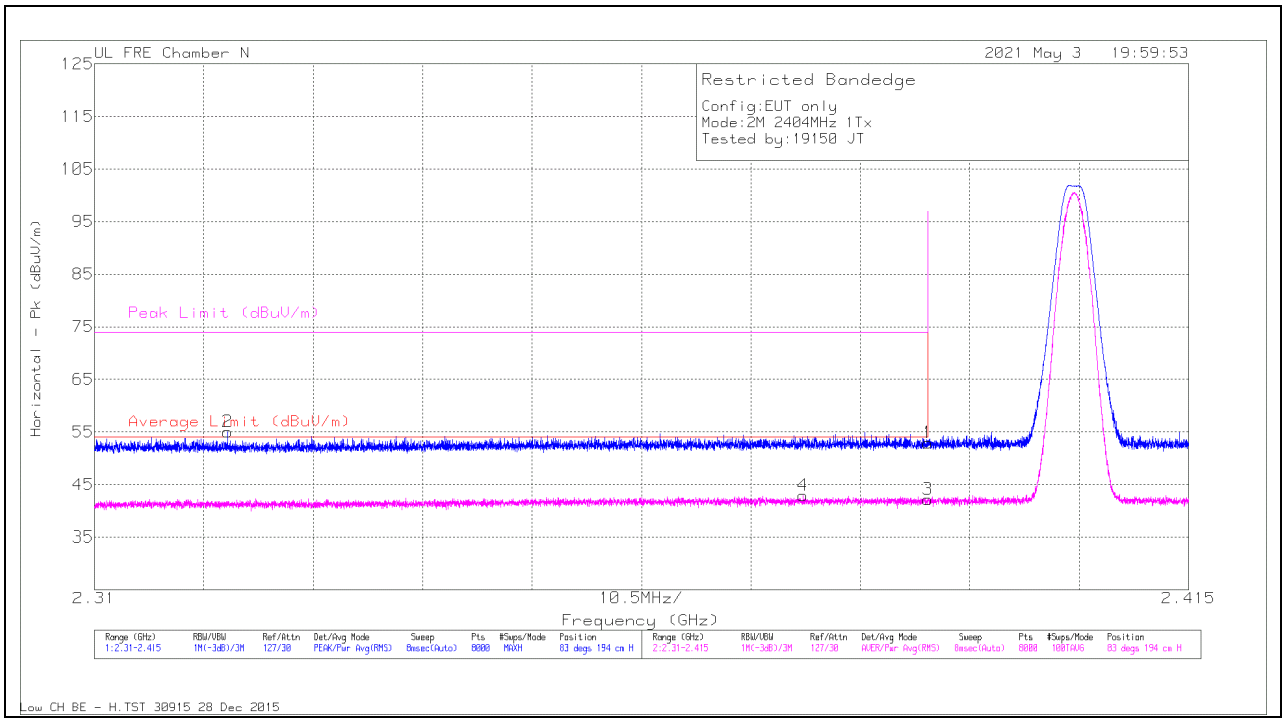
10.2.7. LOW POWER BLE (2Mbps)

ANT 4

BANDEDGE (LOW CHANNEL)

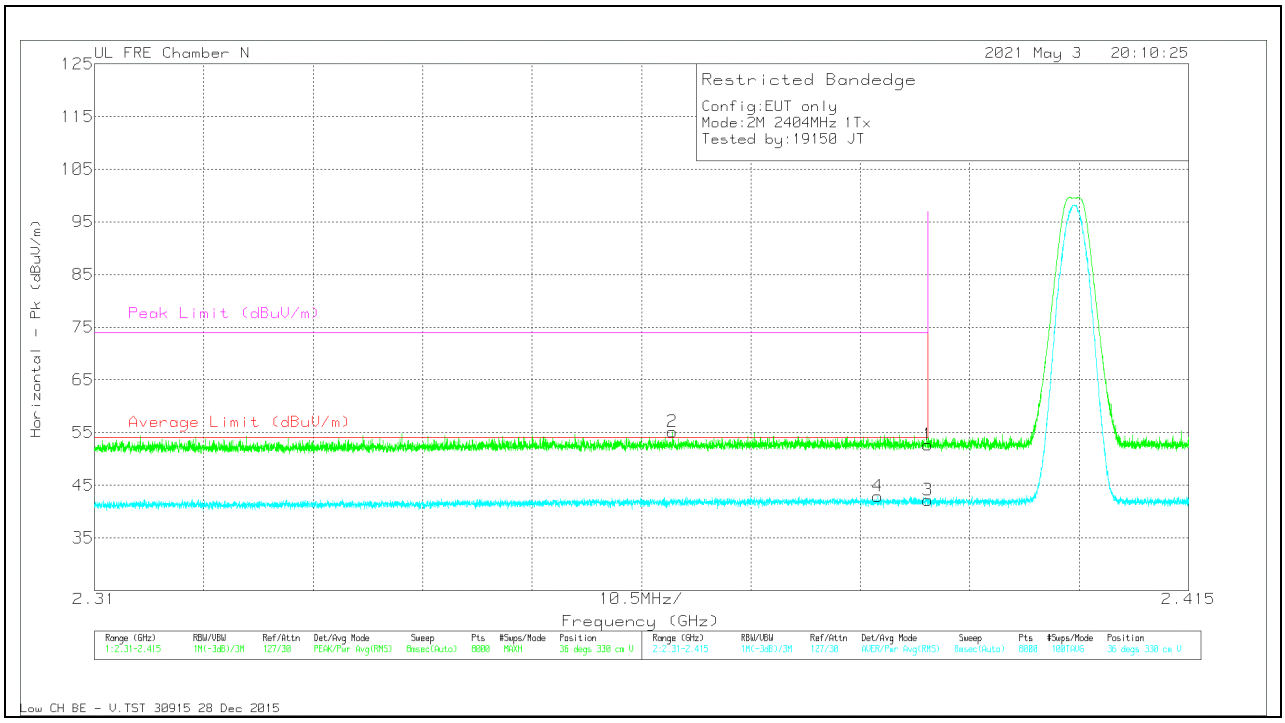
HORIZONTAL RESULT



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	2.39	56.71	Pk	32.4	-36.2	52.91	-	-	74	-21.09	83	194	H
2	2.32277	59.57	Pk	31.9	-36.4	55.07	-	-	74	-18.93	83	194	H
3	2.39	46.01	RMS	32.4	-36.2	42.21	54	-11.79	-	-	83	194	H
4	2.37801	46.8	RMS	32.4	-36.3	42.9	54	-11.1	-	-	83	194	H

Pk - Peak detector
RMS - RMS detection

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	2.39	56.45	Pk	32.4	-36.2	52.65	-	-	74	-21.35	36	330	V
2	2.36545	59.17	Pk	32.3	-36.3	55.17	-	-	74	-18.83	36	330	V
3	2.39	45.95	RMS	32.4	-36.2	42.15	54	-11.85	-	-	36	330	V
4	2.38518	46.69	RMS	32.4	-36.2	42.89	54	-11.11	-	-	36	330	V

Pk - Peak detector
RMS - RMS detection

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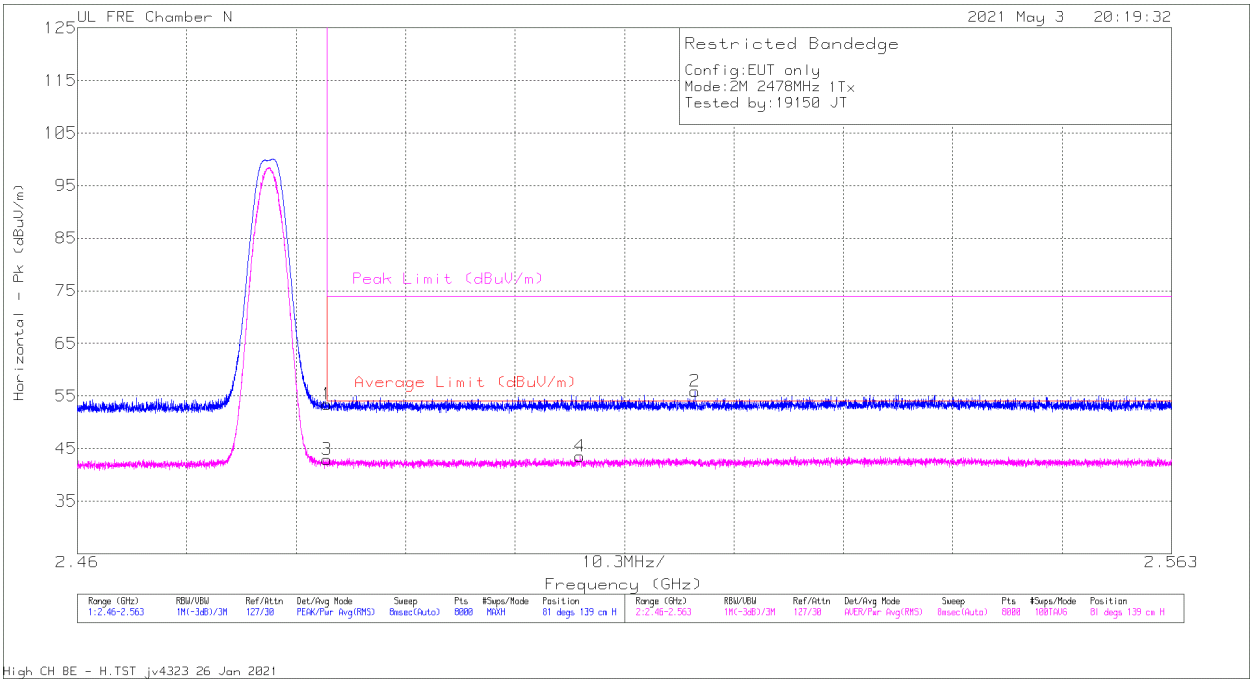
BANDEDGE (HIGH CHANNEL)

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	2.4835	56.95	Pk	32.5	-36	53.45	-	-	74	-20.55	81	139	H
2	2.51815	59.14	Pk	32.6	-35.9	55.84	-	-	74	-18.16	81	139	H
3	2.4835	46.45	RMS	32.5	-36	42.95	54	-11.05	-	-	81	139	H
4	2.50732	46.85	RMS	32.6	-35.9	43.55	54	-10.45	-	-	81	139	H

Pk - Peak detector
RMS - RMS detection

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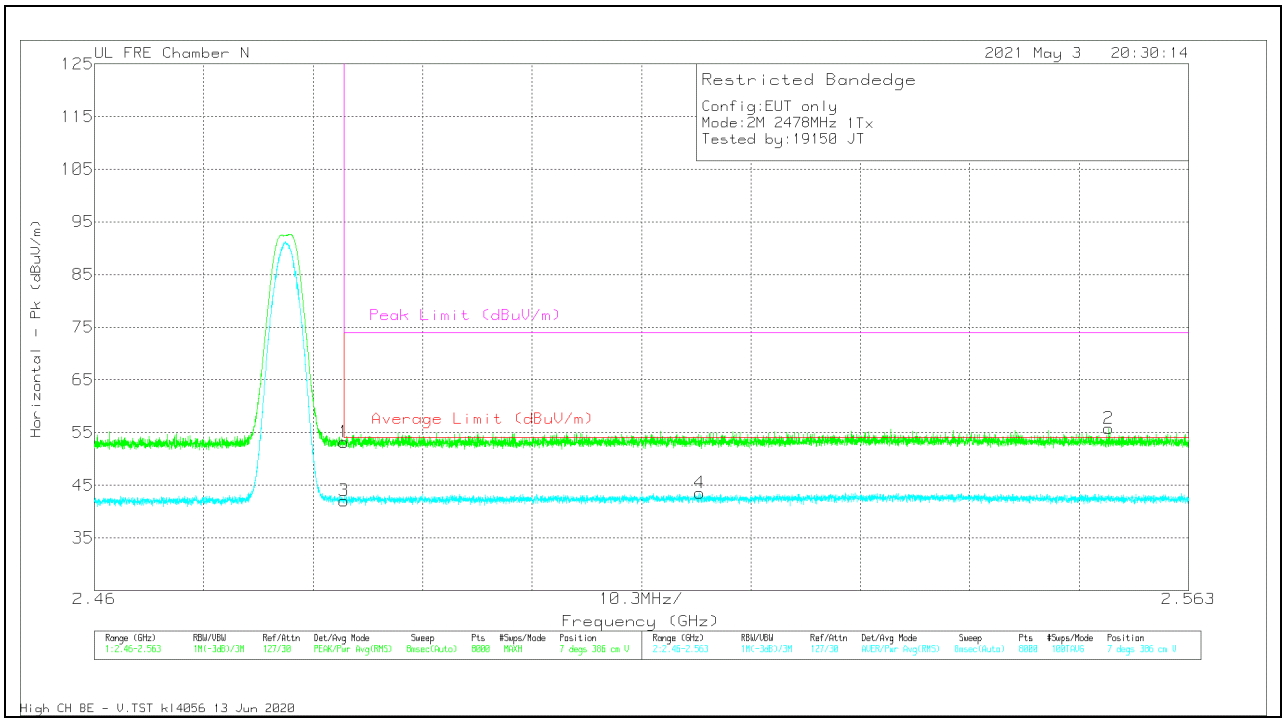
VERTICAL RESULT



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	2.4835	56.7	Pk	32.5	-36	53.2	-	-	74	-20.8	7	386	V
2	2.55548	59.14	Pk	32.4	-35.8	55.74	-	-	74	-18.26	7	386	V
3	2.4835	45.56	RMS	32.5	-36	42.06	54	-11.94	-	-	7	386	V
4	2.51697	46.78	RMS	32.6	-35.8	43.58	54	-10.42	-	-	7	386	V

Pk - Peak detector
RMS - RMS detection

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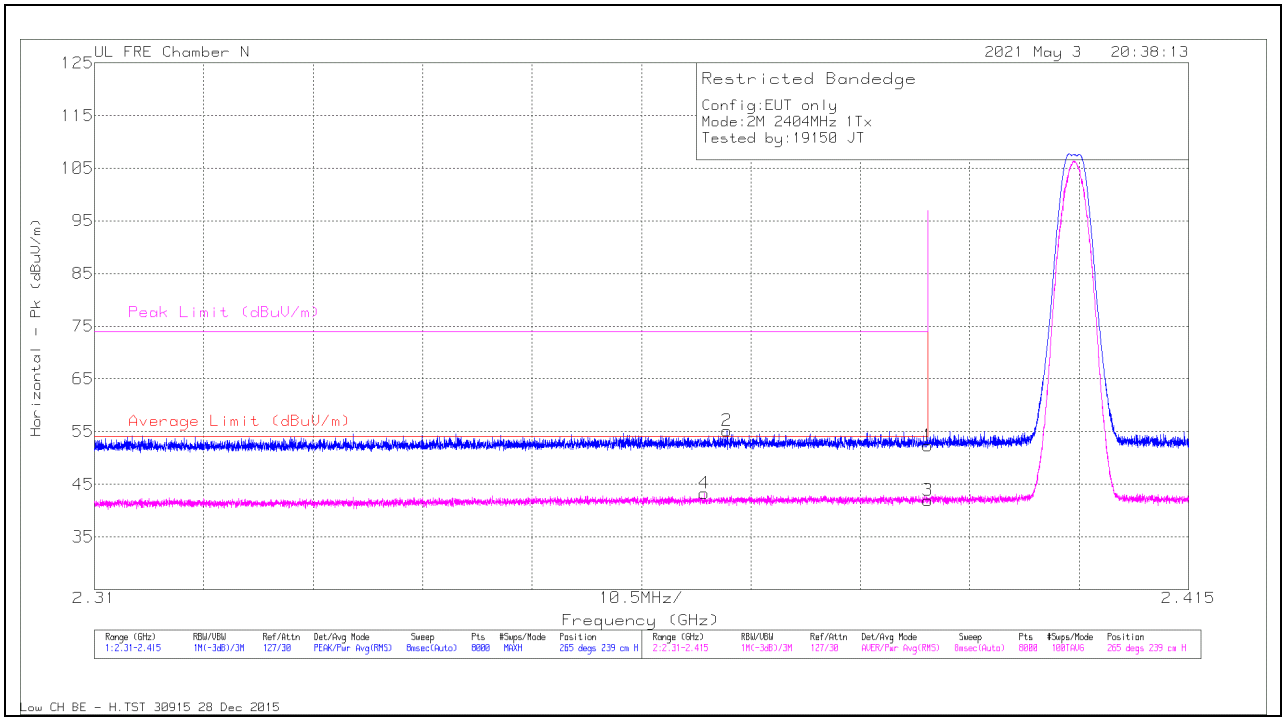
ANT 3

BANDEDGE (LOW CHANNEL)

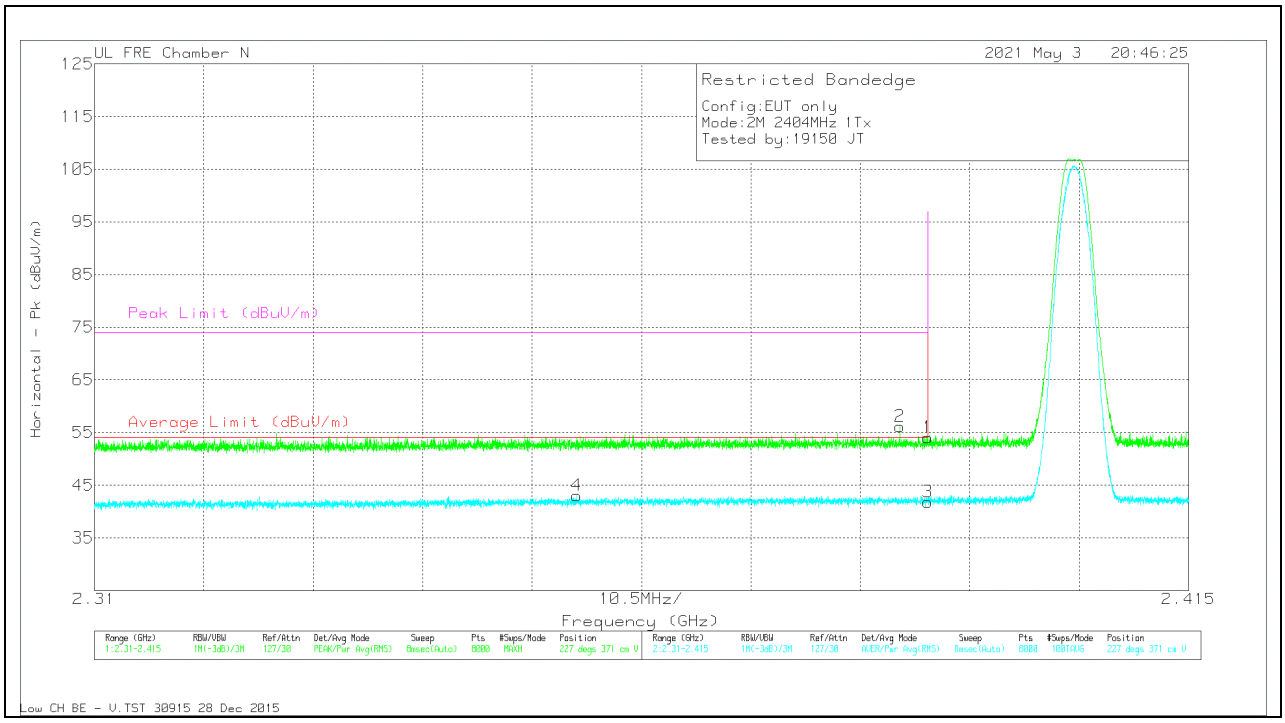
HORIZONTAL RESULT



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	2.39	56.08	Pk	32.4	-36.2	52.28	-	-	74	-21.72	265	239	H
2	2.37071	59.06	Pk	32.4	-36.3	55.16	-	-	74	-18.84	265	239	H
3	2.39	45.71	RMS	32.4	-36.2	41.91	54	-12.09	-	-	265	239	H
4	2.36851	47.14	RMS	32.4	-36.3	43.24	54	-10.76	-	-	265	239	H

Pk - Peak detector
RMS - RMS detection

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	2.39	57.82	Pk	32.4	-36.2	54.02	-	-	74	-19.98	227	371	V
2	2.3873	59.95	Pk	32.4	-36.2	56.15	-	-	74	-17.85	227	371	V
3	2.39	45.55	RMS	32.4	-36.2	41.75	54	-12.25	-	-	227	371	V
4	2.35626	47.03	RMS	32.3	-36.3	43.03	54	-10.97	-	-	227	371	V

Pk - Peak detector
RMS - RMS detection

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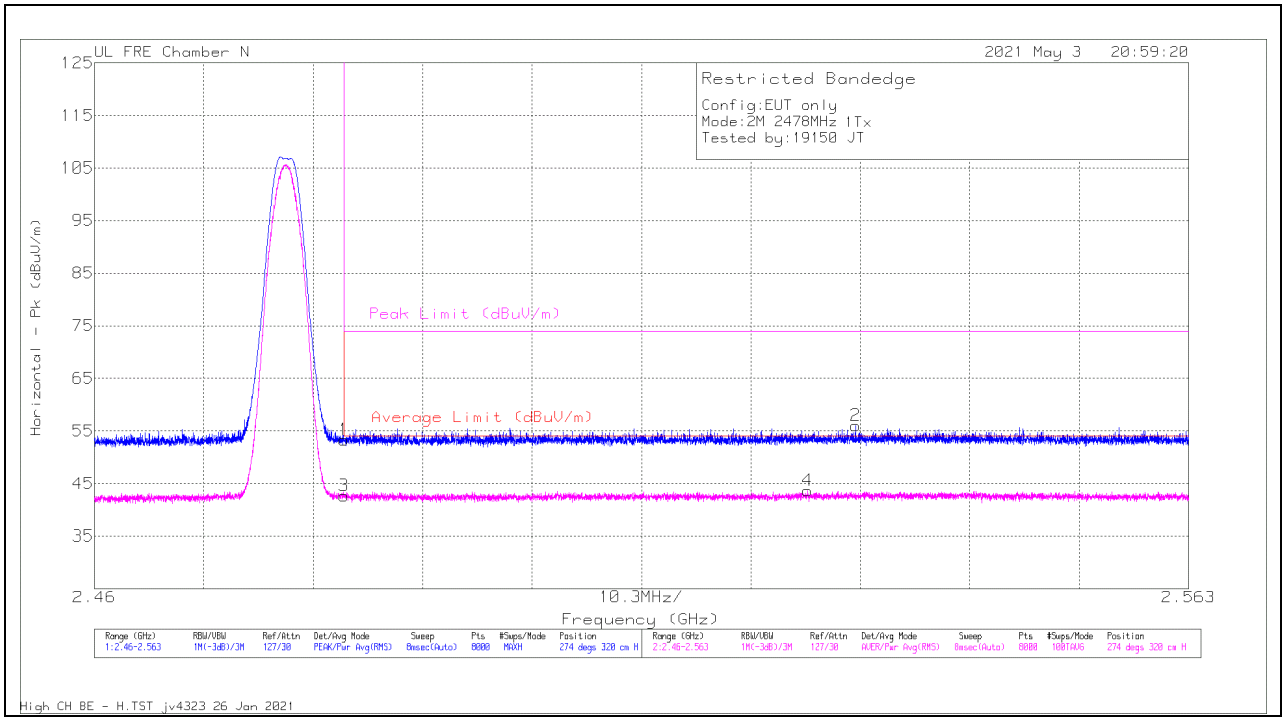
BANDEDGE (HIGH CHANNEL)

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	2.4835	56.78	Pk	32.5	-36	53.28	-	-	74	-20.72	274	320	H
2	2.53167	59.09	Pk	32.7	-35.8	55.99	-	-	74	-18.01	274	320	H
3	2.4835	46.19	RMS	32.5	-36	42.69	54	-11.31	-	-	274	320	H
4	2.52713	46.8	RMS	32.7	-35.9	43.6	54	-10.4	-	-	274	320	H

Pk - Peak detector
RMS - RMS detection

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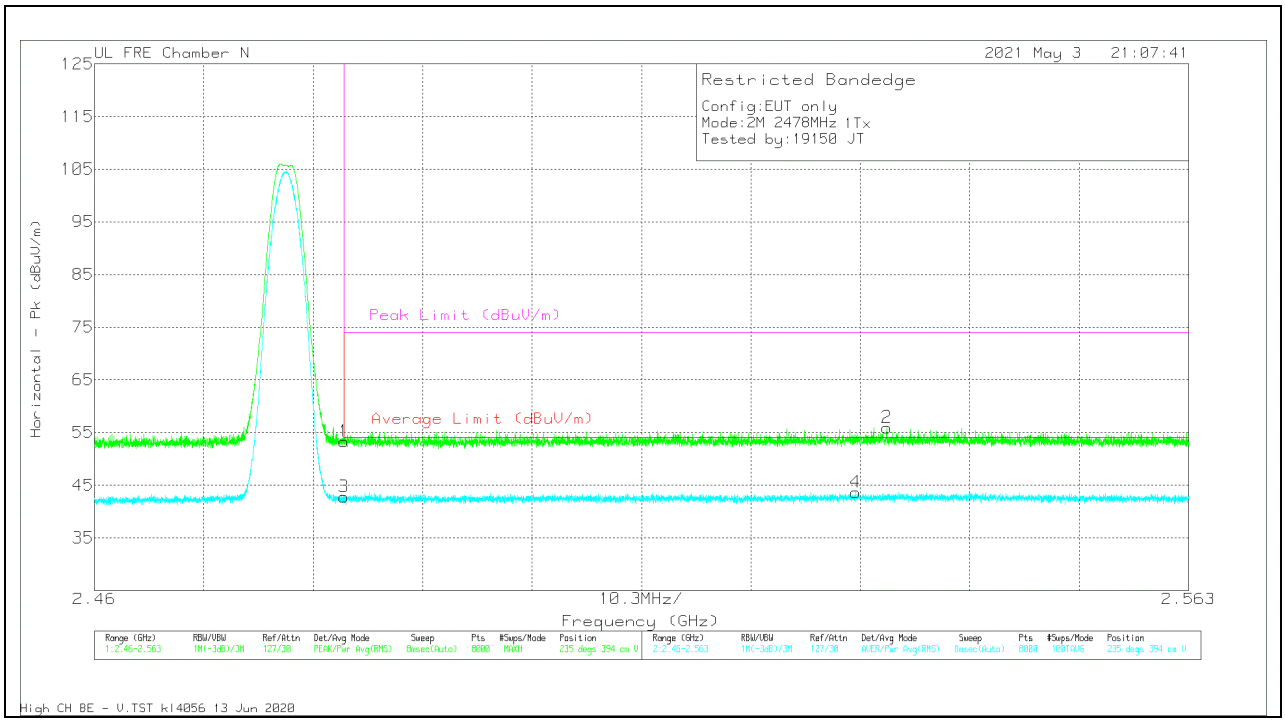
VERTICAL RESULT



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	2.4835	56.81	Pk	32.5	-36	53.31	-	-	74	-20.69	235	394	V
2	2.53457	59.05	Pk	32.6	-35.7	55.95	-	-	74	-18.05	235	394	V
3	2.4835	46.3	RMS	32.5	-36	42.8	54	-11.2	-	-	235	394	V
4	2.53166	46.77	RMS	32.7	-35.8	43.67	54	-10.33	-	-	235	394	V

Pk - Peak detector
RMS - RMS detection

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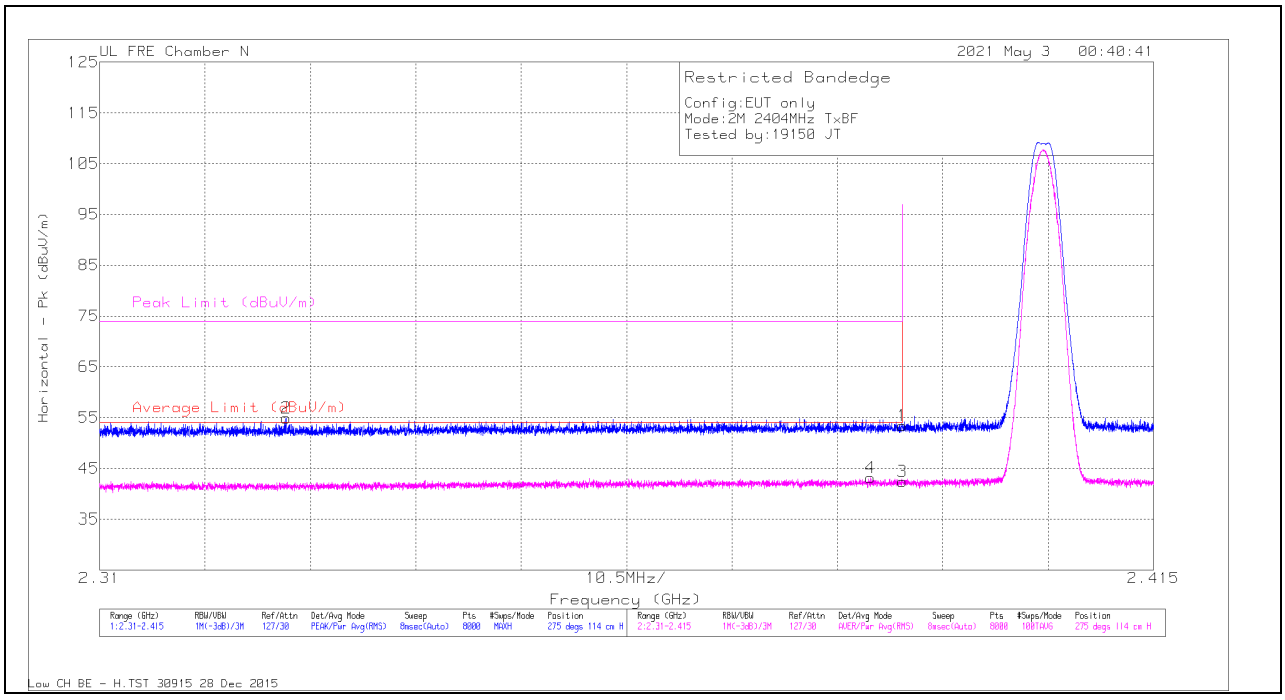
10.2.8. LOW POWER BLE TXBF (2Mbps)

BANDEDGE (LOW CHANNEL)

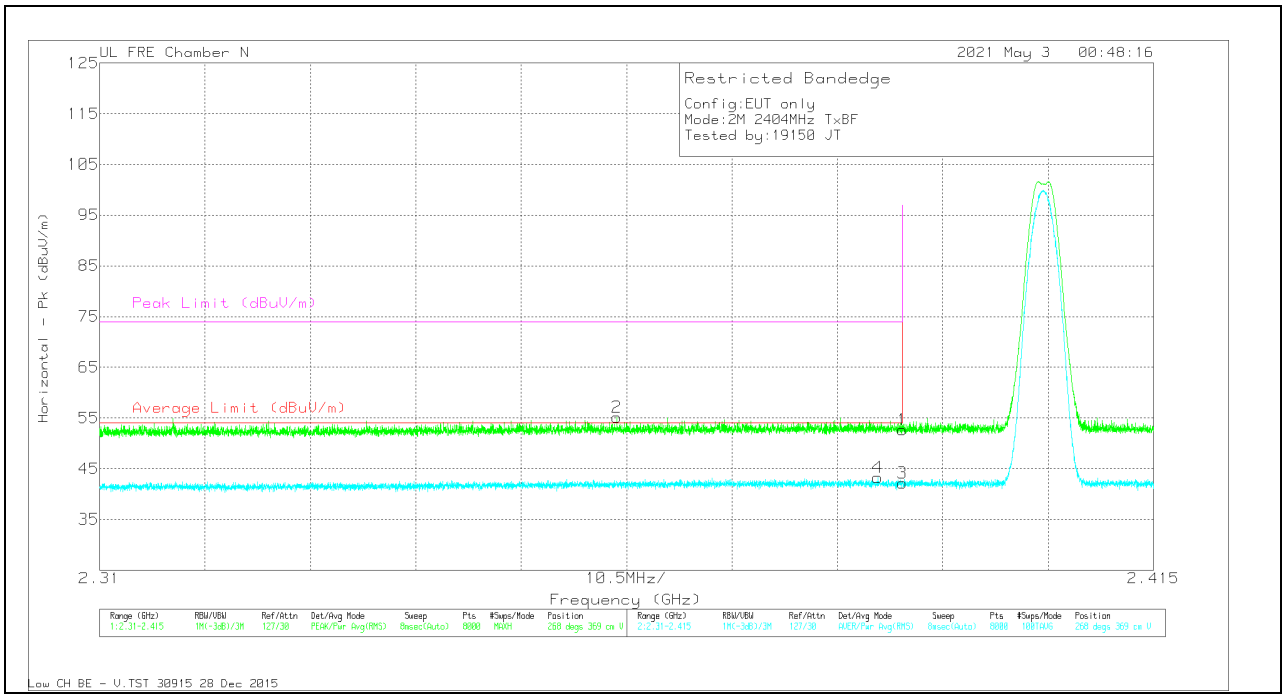
HORIZONTAL RESULT



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	2.39	57.19	Pk	32.4	-36.2	53.39	-	-	74	-20.61	275	114	H
2	2.32856	59.35	Pk	32	-36.4	54.95	-	-	74	-19.05	275	114	H
3	2.39	46.2	RMS	32.4	-36.2	42.4	54	-11.6	-	-	275	114	H
4	2.38681	46.98	RMS	32.4	-36.2	43.18	54	-10.82	-	-	275	114	H

Pk - Peak detector
RMS - RMS detection

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	2.39	56.43	Pk	32.4	-36.2	52.63	-	-	74	-21.37	268	369	V
2	2.36152	59.15	Pk	32.3	-36.3	55.15	-	-	74	-18.85	268	369	V
3	2.39	45.91	RMS	32.4	-36.2	42.11	54	-11.89	-	-	268	369	V
4	2.38751	47.06	RMS	32.4	-36.2	43.26	54	-10.74	-	-	268	369	V

Pk - Peak detector
RMS - RMS detection

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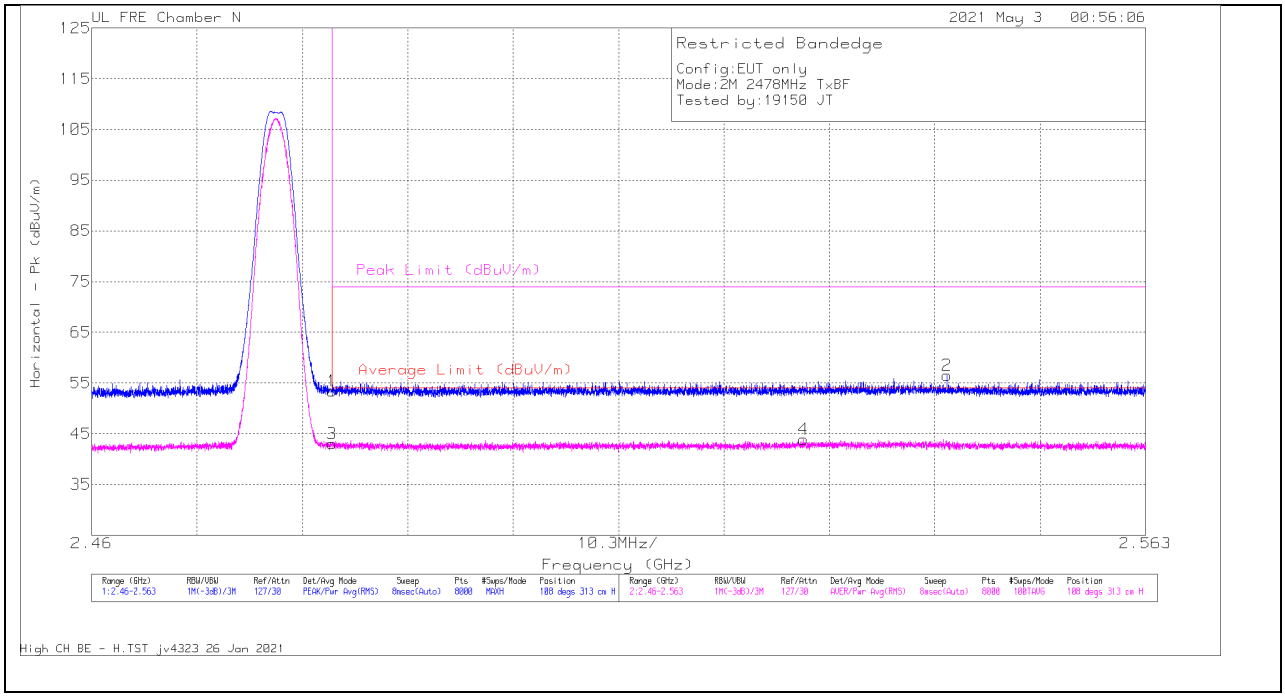
BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE02139 71 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.4835	56.9	Pk	32.5	-36	53.4	-	-	74	-20.6	108	313	H
3	2.4835	46.5	RMS	32.5	-36	43	54	-11	-	-	108	313	H
4	2.52959	46.95	RMS	32.7	-35.8	43.85	54	-10.15	-	-	108	313	H
2	2.5436	59.61	Pk	32.6	-35.7	56.51	-	-	74	-17.49	108	313	H

Pk - Peak detector
RMS - RMS detection

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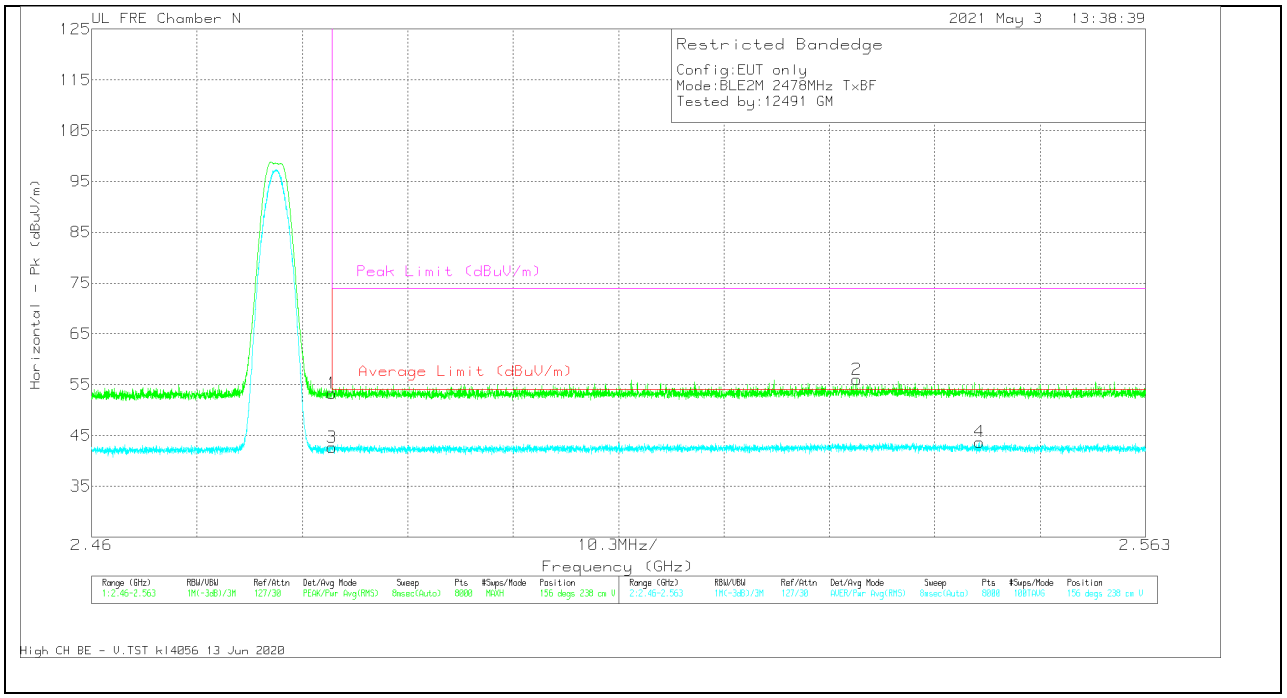
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE02139 71 (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	2.4835	56.74	Pk	32.5	-36	53.24	-	-	74	-20.76	156	238	V
3	2.4835	46.18	RMS	32.5	-36	42.68	54	-11.32	-	-	156	238	V
2	2.53479	59.1	Pk	32.6	-35.7	56	-	-	74	-18	156	238	V
4	2.54679	46.91	RMS	32.5	-35.7	43.71	54	-10.29	-	-	156	238	V

Pk - Peak detector
RMS - RMS detection

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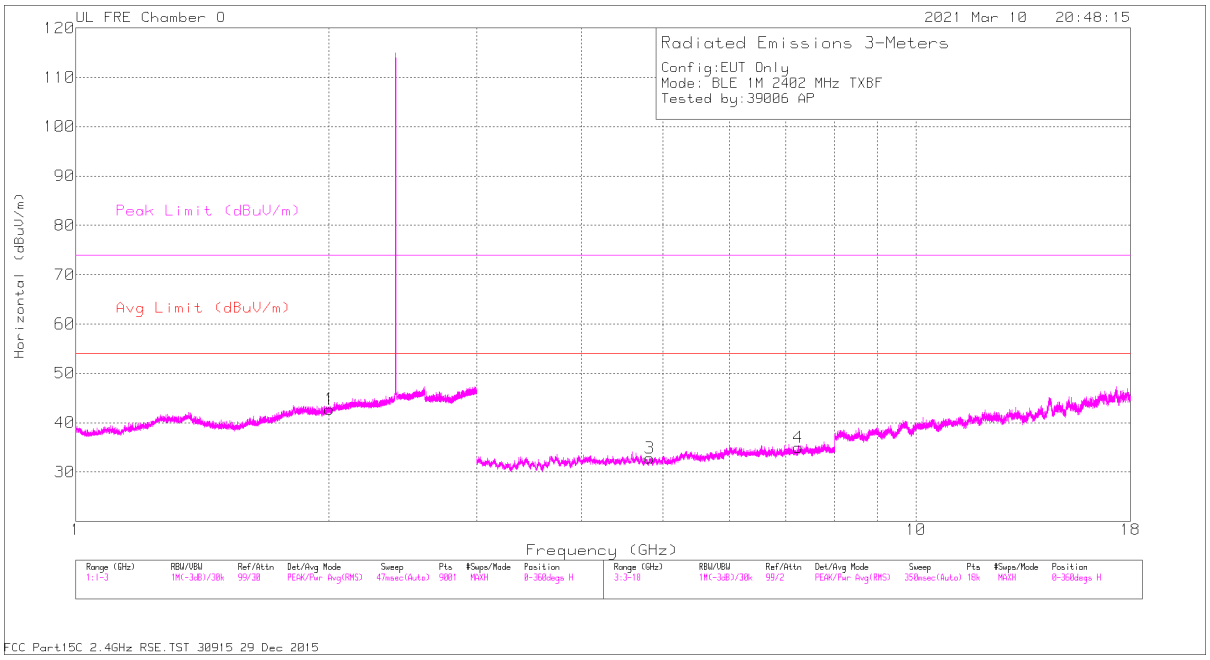
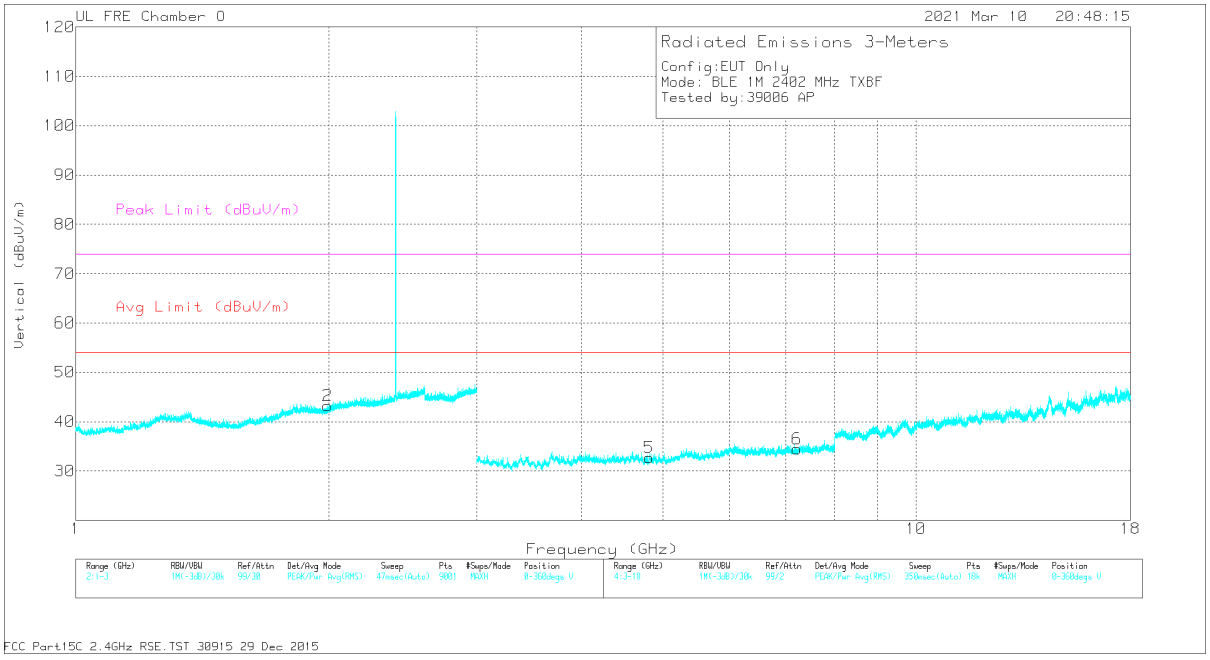
10.2.9. HIGH POWER HARMONICS & SPURIOUS EMISSIONS TXBF (1Mbps)

LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Range 1: Horizontal 1000 - 3000MHz

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE02138 32	Amp/Cbl/Flt r/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	2.00872	53.08	PK2	30.8	-35.7	48.18	-	-	-	-	104	151	H

Range 2: Vertical 1000 - 3000MHz

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE02138 32	Amp/Cbl/Flt r/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	1.99236	57.94	PK2	30.6	-35.7	52.84	-	-	-	-	149	185	V

Range 3: Horizontal 3000 - 18000MHz

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE02138 32	Amp/Cbl/Flt r/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	*4.82248	53.24	PK2	34.1	-42.5	44.84	-	-	74	-29.16	149	185	H
	*4.82052	41.69	MAv1	34.2	-42.5	33.39	54	-20.61	-	-	149	185	H
4	7.24514	49.68	PK2	35.7	-39.1	46.28	-	-	-	-	22	133	H

Range 4: Vertical 3000 - 18000MHz

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE02138 32	Amp/Cbl/Flt r/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	*4.81174	52.48	PK2	34.1	-42.5	44.08	-	-	74	-29.92	243	251	V
	*4.81002	41.16	MAv1	34.1	-42.5	32.76	54	-21.24	-	-	243	251	V
6	7.21681	50.26	PK2	35.7	-39.2	46.76	-	-	-	-	69	327	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

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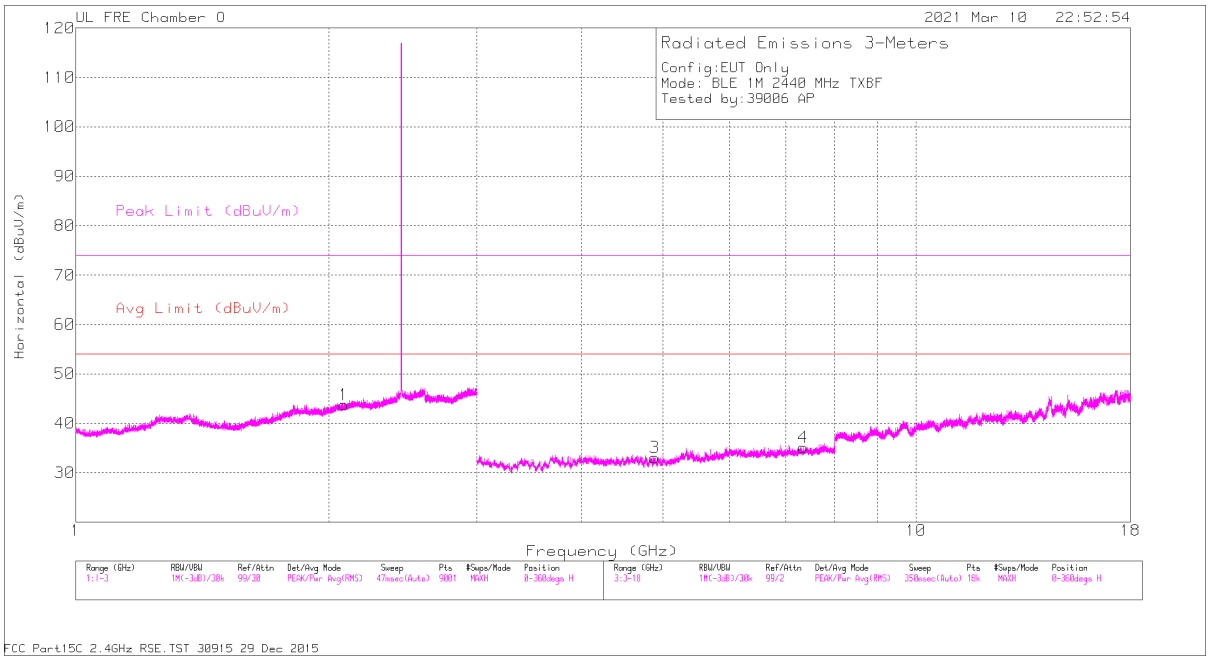
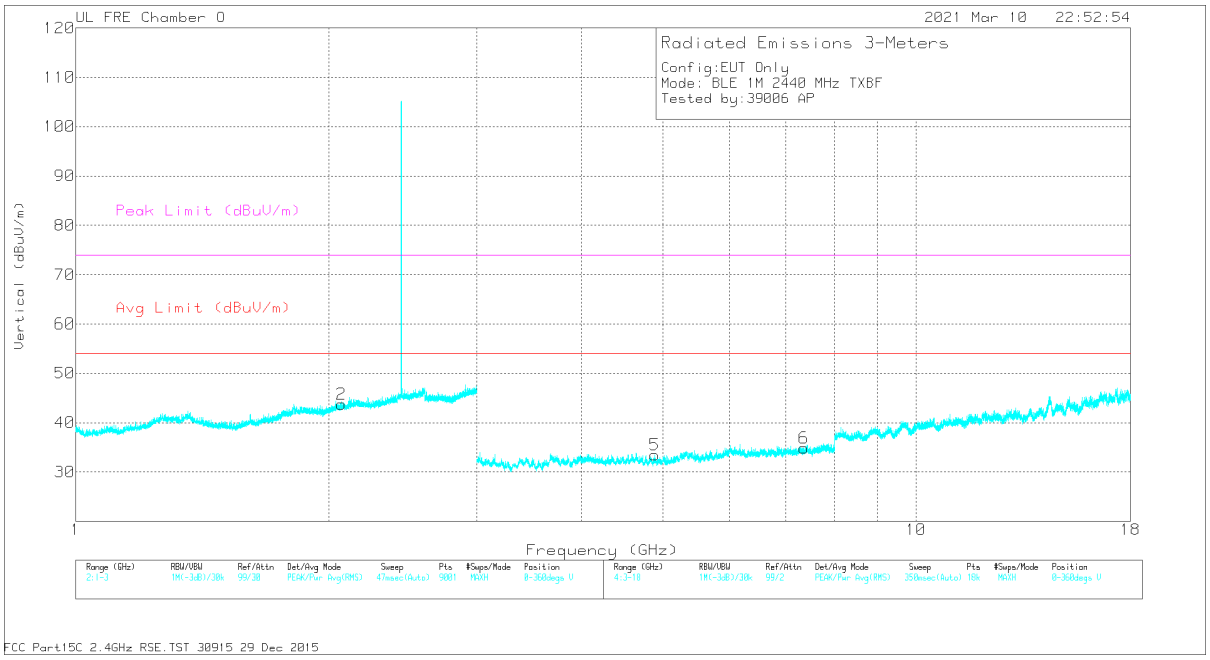
MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Range 1: Horizontal 1000 - 3000MHz

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE02138 32	Amp/Cbl/Flt r/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	2.08353	57.9	PK2	31.4	-35.7	53.6	-	-	-	-	32	143	H

Range 2: Vertical 1000 - 3000MHz

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE02138 32	Amp/Cbl/Flt r/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	2.07248	57.89	PK2	31.3	-35.6	53.59	-	-	-	-	42	169	V

Range 3: Horizontal 3000 - 18000MHz

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE02138 32	Amp/Cbl/Flt r/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	*4.88831	53.27	PK2	34	-42.4	44.87	-	-	74	-29.13	64	251	H
	*4.88925	41.61	MAv1	34	-42.4	33.21	54	-20.79	-	-	64	251	H
4	*7.34001	50.42	PK2	35.7	-39	47.12	-	-	74	-26.88	94	161	H
	*7.33888	38.38	MAv1	35.6	-39	34.98	54	-19.02	-	-	94	161	H

Range 4: Vertical 3000 - 18000MHz

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE02138 32	Amp/Cbl/Flt r/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	*4.88515	53.61	PK2	34	-42.4	45.21	-	-	74	-28.79	135	194	V
	*4.88447	41.63	MAv1	34	-42.4	33.23	54	-20.77	-	-	135	194	V
6	*7.36015	49.73	PK2	35.7	-38.9	46.53	-	-	74	-27.47	215	276	V
	*7.35898	38.23	MAv1	35.7	-38.9	35.03	54	-18.97	-	-	215	276	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

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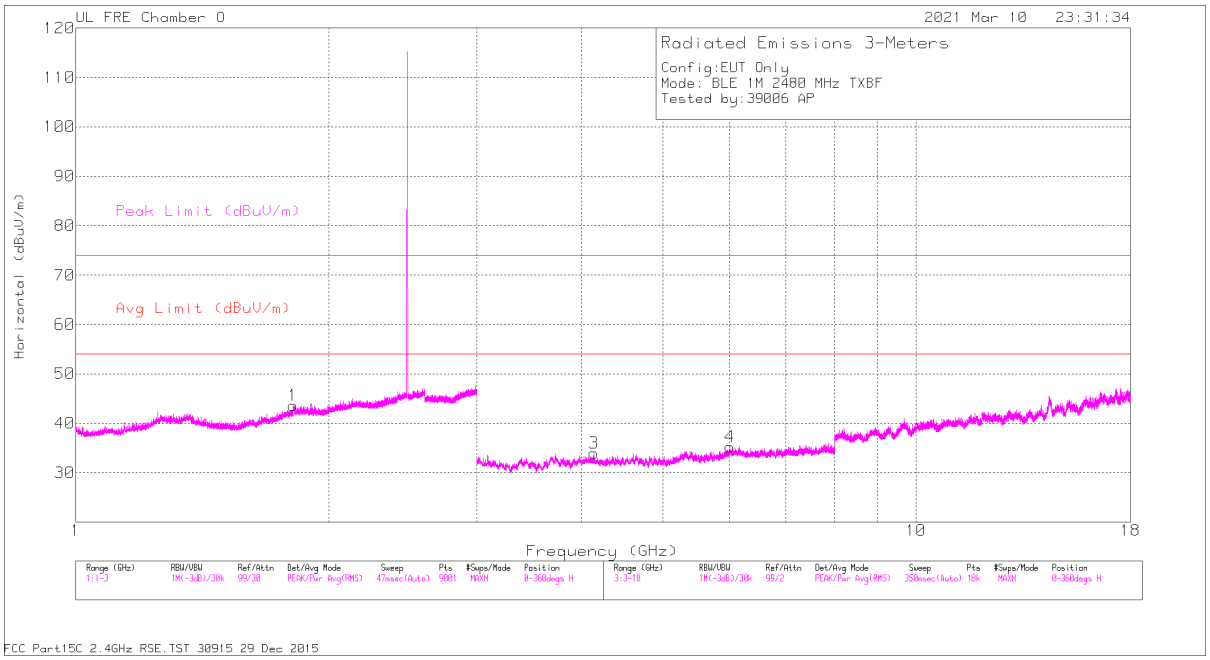
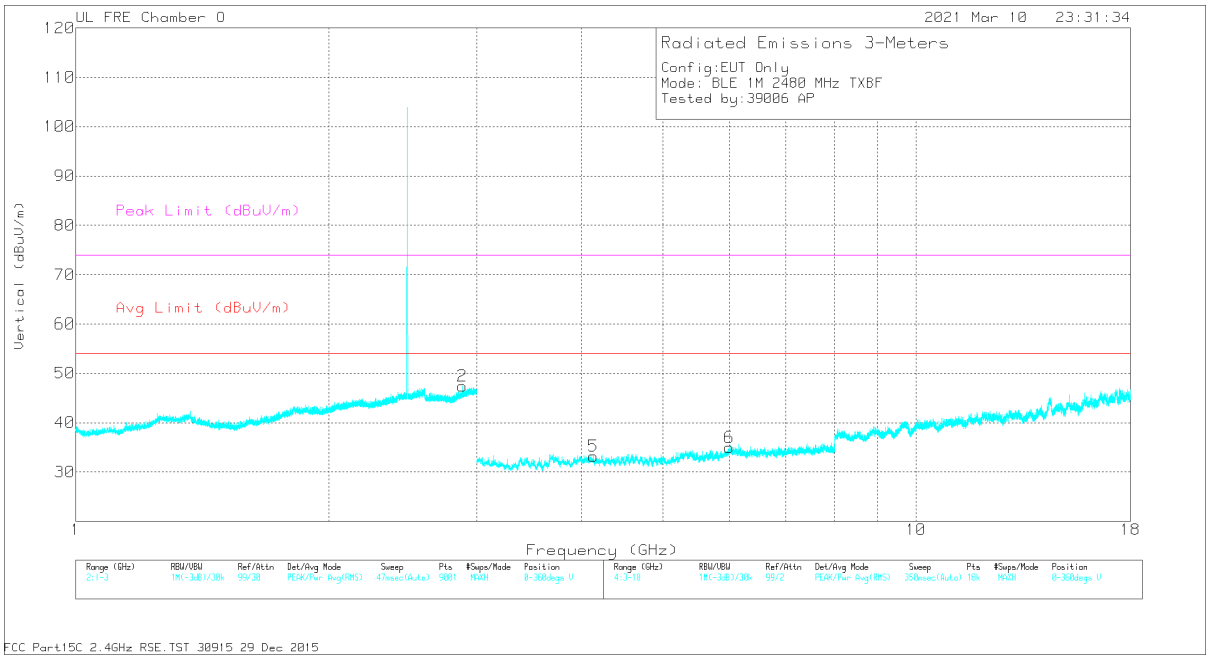
HIGH CHANNEL RESULTS



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	1.81402	57.99	PK2	30.6	-36	52.59	-	-	-	-	280	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	* 2.88229	58.79	PK2	32.5	-34.9	56.39	-	-	74	-17.61	217	199	V
	* 2.88518	46.91	MAv1	32.5	-34.9	44.51	54	-9.49	-	-	217	199	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	* 4.1389	52.77	PK2	34.2	-42.1	44.87	-	-	74	-29.13	165	242	H
	* 4.13664	41.1	MAv1	34.2	-42.1	33.2	54	-20.8	-	-	165	242	H
4	6.00821	50.18	PK2	35.3	-38.8	46.68	-	-	-	-	120	141	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	* 4.13328	52.51	PK2	34.2	-42.1	44.61	-	-	74	-29.39	196	157	V
	* 4.12975	41.03	MAv1	34.2	-42.1	33.13	54	-20.87	-	-	196	157	V
6	5.99226	50.39	PK2	35.3	-38.9	46.79	-	-	-	-	238	174	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

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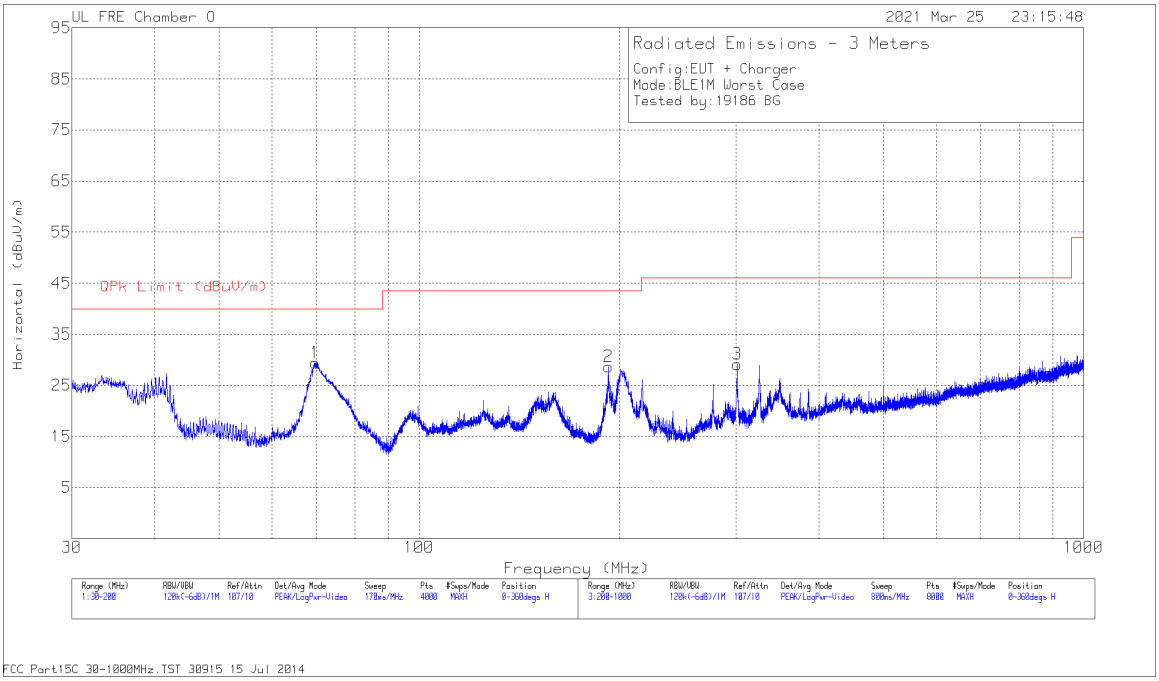
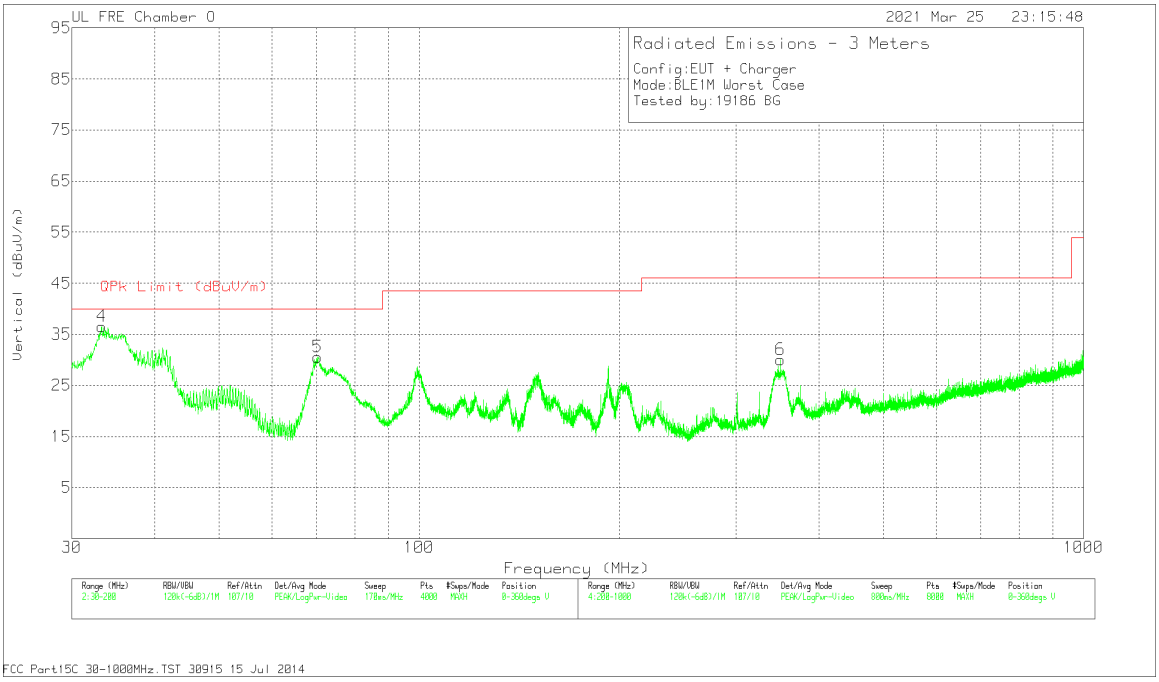
10.3. WORST CASE BELOW 1 GHZ

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



HORIZONTAL



VERTICAL

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
1	69.7053	47.63	Pk	14	-32.2	29.43	40	-10.57	0-360	99	H
2	192.7746	42.9	Pk	17.2	-31.5	28.6	43.52	-14.92	0-360	99	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
4	33.4104	39.51	Qp	24.7	-32.5	31.71	40	-8.29	112	107	V
5	70.3855	48.78	Pk	14	-32.2	30.58	40	-9.42	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
3	301.1131	40.92	Pk	19.2	-31	29.12	46.02	-16.9	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
6	350.0195	40.81	Pk	20.1	-30.9	30.01	46.02	-16.01	0-360	99	V

Pk - Peak detector
Qp - Quasi-Peak detector

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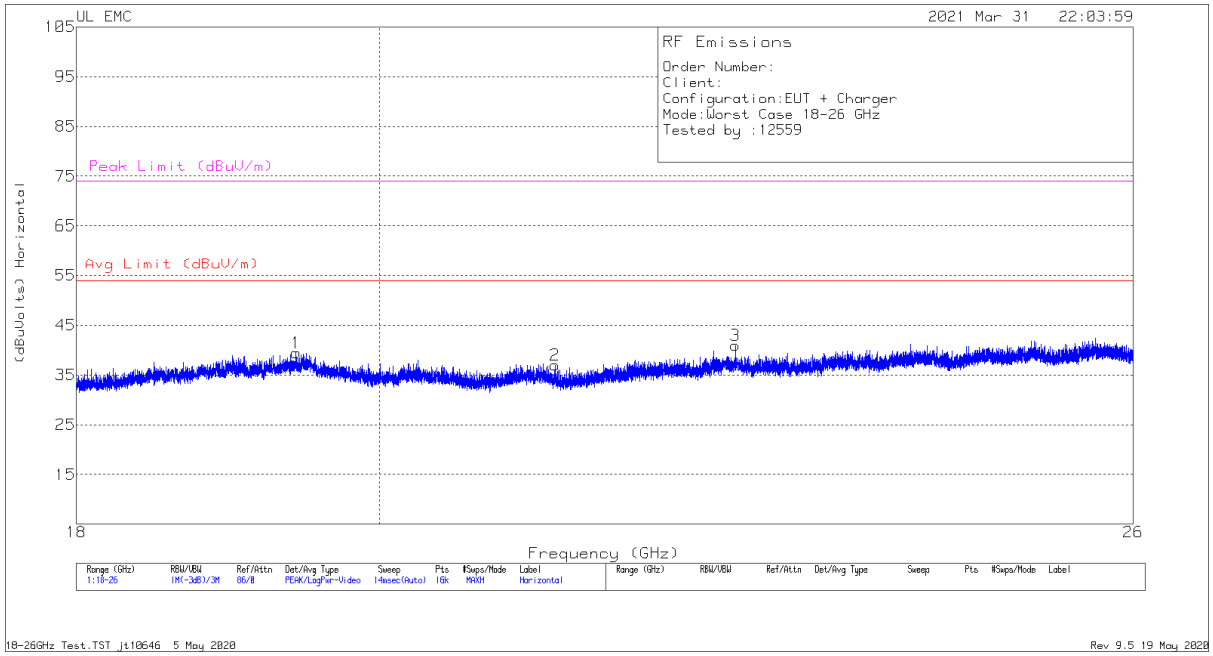
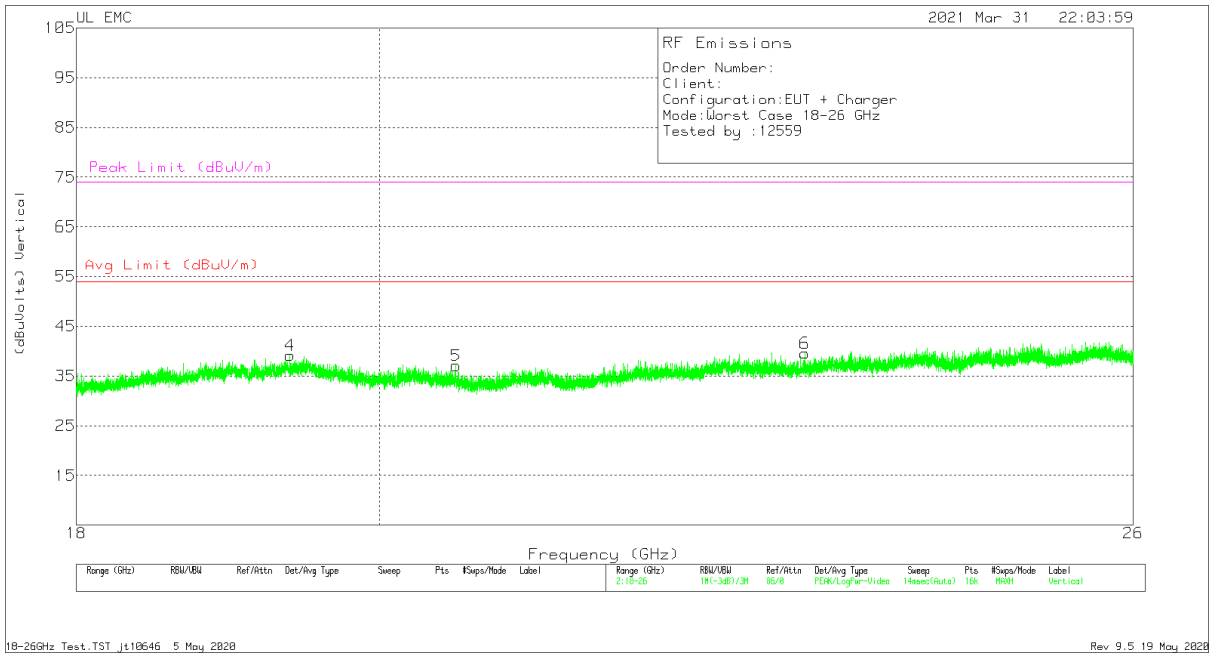
10.4. WORST CASE 18-26 GHz

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



HORIZONTAL



VERTICAL

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	19.42841	34.85	Pk	32.7	-18.6	-9.5	39.45	54	-14.55	74	-34.55
2	21.2608	34.69	Pk	32.9	-21.1	-9.5	36.99	54	-17.01	74	-37.01
3	22.63721	37.06	Pk	33.4	-20	-9.5	40.96	54	-13.04	74	-33.04
4	19.38841	35.06	Pk	32.6	-19	-9.5	39.16	54	-14.84	74	-34.84
5	20.54034	34.77	Pk	33.1	-21.3	-9.5	37.07	54	-16.93	74	-36.93
6	23.19268	35.54	Pk	33.7	-20.2	-9.5	39.54	54	-14.46	74	-34.46

Pk - Peak detector

Note: test 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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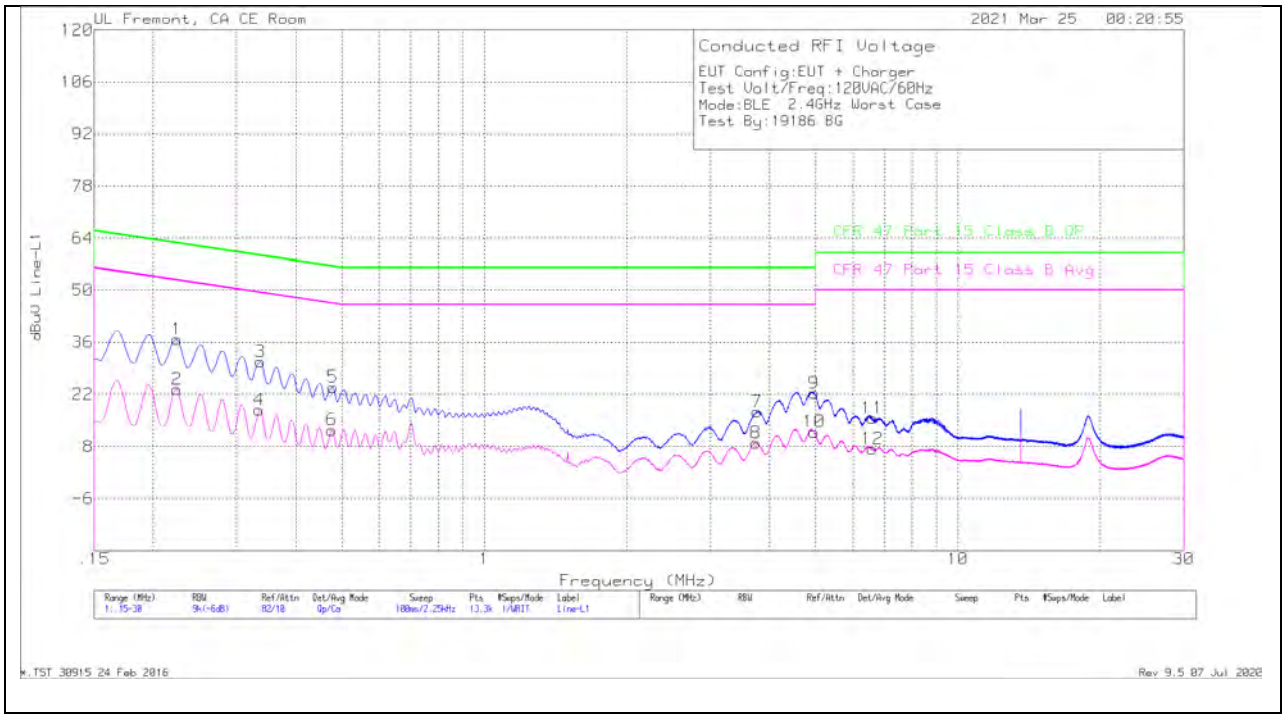
11.1. AC Power Line With AC/DC ADAPTER

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)M argin (dB)
1	.22425	26.73	Qp	0	0	10.1	36.83	62.66	-25.83	-	-
2	.22425	13.21	Ca	0	0	10.1	23.31	-	-	52.66	-29.35
3	.33675	20.64	Qp	0	0	10.1	30.74	59.28	-28.54	-	-
4	.3345	7.64	Ca	0	0	10.1	17.74	-	-	49.34	-31.6
5	.4785	13.85	Qp	0	0	10.1	23.95	56.37	-32.42	-	-
6	.47625	2.29	Ca	0	0	10.1	12.39	-	-	46.4	-34.01
7	3.76575	7	Qp	0	.1	10.2	17.3	56	-38.7	-	-
8	3.74213	-1.32	Ca	0	.1	10.2	8.98	-	-	46	-37.02
9	4.97175	11.99	Qp	0	.1	10.2	22.29	56	-33.71	-	-
10	4.96275	1.62	Ca	0	.1	10.2	11.92	-	-	46	-34.08
11	6.5985	5.18	Qp	0	.1	10.2	15.48	60	-44.52	-	-
12	6.603	-3.02	Ca	0	.1	10.2	7.28	-	-	50	-42.72

Qp - Quasi-Peak detector
Ca - CISPR average detection

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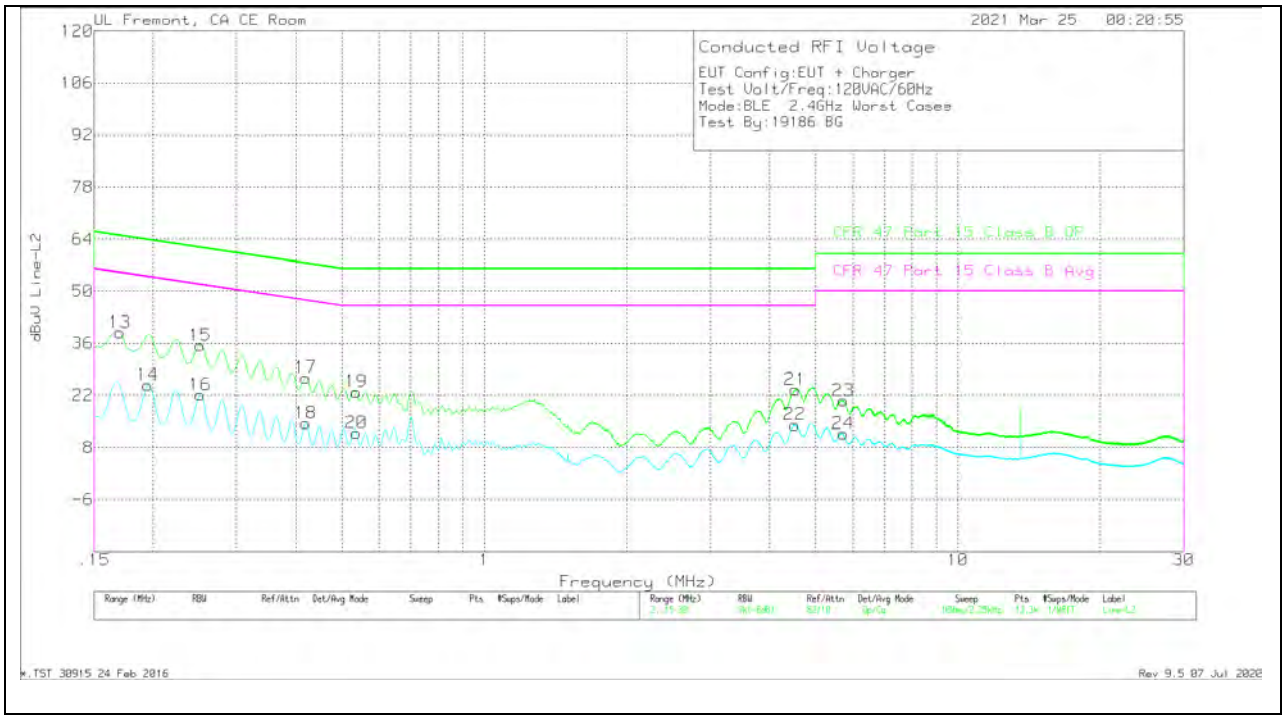
LINE 2 RESULTS



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)M argin (dB)
13	.17025	28.88	Qp	0	0	10.1	38.98	64.95	-25.97	-	-
14	.195	14.67	Ca	0	0	10.1	24.77	-	-	53.82	-29.05
15	.25125	25.37	Qp	0	0	10.1	35.47	61.72	-26.25	-	-
16	.25125	12.05	Ca	0	0	10.1	22.15	-	-	51.72	-29.57
17	.42	16.68	Qp	0	0	10.1	26.78	57.45	-30.67	-	-
18	.42	4.43	Ca	0	0	10.1	14.53	-	-	47.45	-32.92
19	.537	12.85	Qp	0	0	10.1	22.95	56	-33.05	-	-
20	.537	1.83	Ca	0	0	10.1	11.93	-	-	46	-34.07
21	4.53975	13.29	Qp	0	.1	10.2	23.59	56	-32.41	-	-
22	4.524	3.75	Ca	0	.1	10.2	14.05	-	-	46	-31.95
23	5.721	10.22	Qp	0	.1	10.2	20.52	60	-39.48	-	-
24	5.721	1.32	Ca	0	.1	10.2	11.62	-	-	50	-38.38

Qp - Quasi-Peak detector
Ca - CISPR average detection

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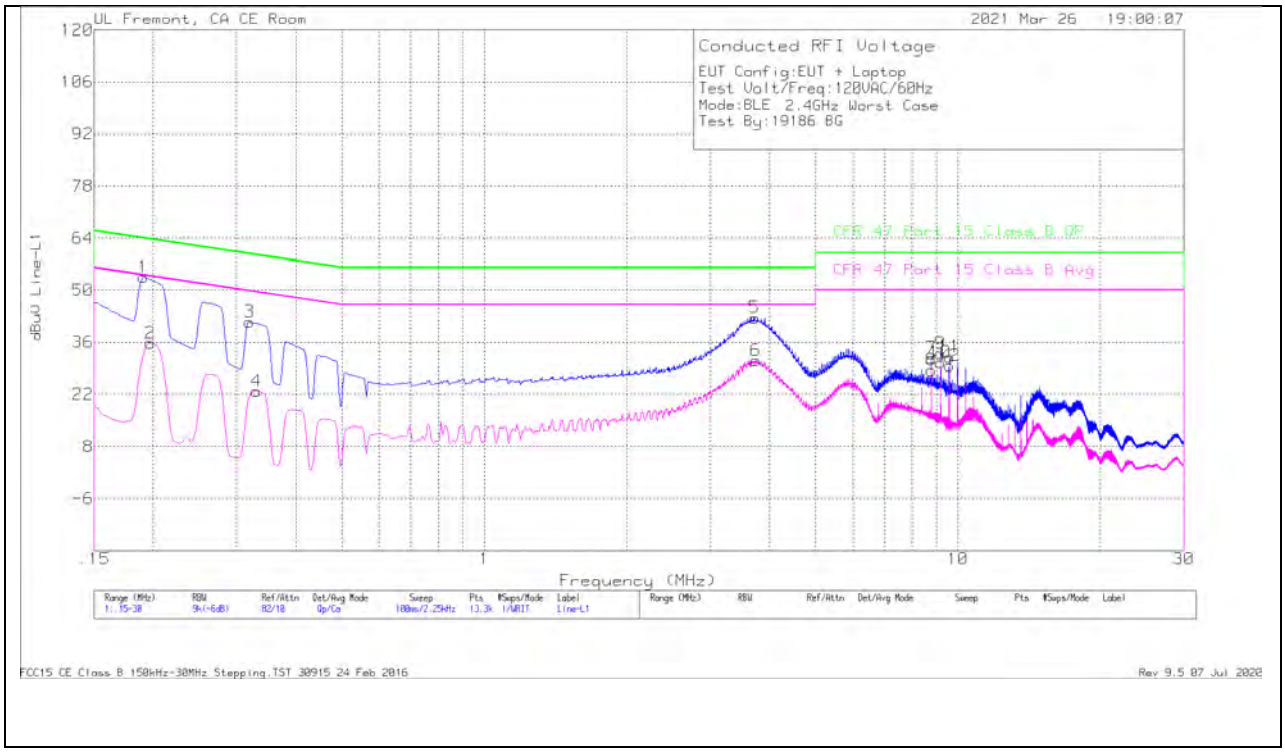
11.2. AC Power Line WITH LAPTOP

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	43.44	Qp	0	0	10.1	53.54	64.01	-10.47	-	-
2	.19725	25.68	Ca	0	0	10.1	35.78	-	-	53.73	-17.95
3	.31875	31.37	Qp	0	0	10.1	41.47	59.74	-18.27	-	-
4	.33	12.73	Ca	0	0	10.1	22.83	-	-	49.45	-26.62
5	3.7185	32.23	Qp	0	.1	10.2	42.53	56	-13.47	-	-
6	3.741	20.71	Ca	0	.1	10.2	31.01	-	-	46	-14.99
7	8.78775	21.28	Qp	0	.2	10.2	31.68	60	-28.32	-	-
8	8.78775	18.11	Ca	0	.2	10.2	28.51	-	-	50	-21.49
9	9.18825	22.58	Qp	0	.2	10.2	32.98	60	-27.02	-	-
10	9.18825	20.07	Ca	0	.2	10.2	30.47	-	-	50	-19.53
11	9.58875	21.62	Qp	0	.2	10.2	32.02	60	-27.98	-	-
12	9.5865	19.27	Ca	0	.2	10.2	29.67	-	-	50	-20.33

Qp - Quasi-Peak detector
Ca - CISPR average detection

FCC15 CE Class B 150kHz-30MHz Stepping.TST 30915 24 Feb 2016
Rev 9.5 07 Jul 2020

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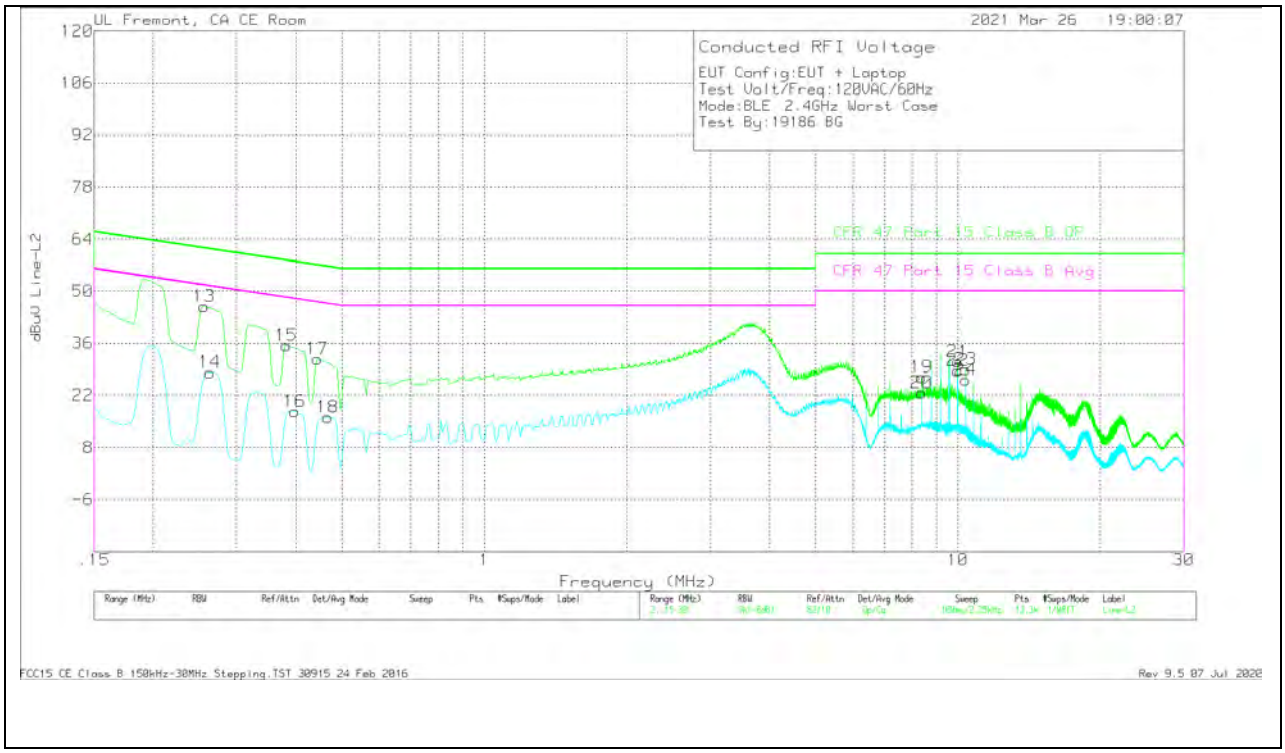
LINE 2 RESULTS



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	.25575	35.75	Qp	0	0	10.1	45.85	61.57	-15.72	-	-
14	.26363	18.08	Ca	0	0	10.1	28.18	-	-	51.32	-23.14
15	.38175	25.34	Qp	0	0	10.1	35.44	58.24	-22.8	-	-
16	.3975	7.53	Ca	0	0	10.1	17.63	-	-	47.91	-30.28
17	.44475	21.64	Qp	0	0	10.1	31.74	56.97	-25.23	-	-
18	.46725	5.89	Ca	0	0	10.1	15.99	-	-	46.56	-30.57
19	8.38725	16.52	Qp	0	.2	10.2	26.92	60	-33.08	-	-
20	8.38725	12.28	Ca	0	.2	10.2	22.68	-	-	50	-27.32
21	9.98475	20.71	Qp	0	.2	10.2	31.11	60	-28.89	-	-
22	9.98475	18.28	Ca	0	.2	10.2	28.68	-	-	50	-21.32
23	10.383	18.55	Qp	0	.2	10.2	28.95	60	-31.05	-	-
24	10.383	15.83	Ca	0	.2	10.2	26.23	-	-	50	-23.77

Qp - Quasi-Peak detector
Ca - CISPR average detection

FCC15 CE Class B 150kHz-30MHz Stepping.TST 30915 24 Feb 2016
Rev 9.5 07 Jul 2020

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12. SETUP PHOTOS

Please refer to 13571607-EP1V1 for setup photos

END OF REPORT

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