TEST REPORT

Report Number : 13571601-E2V2

Applicant : APPLE, INC.
1 APPLE PARK WAY
CUPERTINO, CA 95014, U.S.A

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

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

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

EUT Description : SMARTPHONE

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

Date Of Issue:
July 16, 2021

Prepared by:
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ACCREDITED
CERT #0751.05

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	6/30/2021	Initial Issue	Chin Pang
V2	7/16/2021	Address TCB's Question section 6.2	Chin Pang

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	APPLE INC. 1 APPLE PARK WAY CUPERTINO, CA 95014, U.S.A
EUT DESCRIPTION:	SMARTPHONE
MODEL:	A2483 (PARENT MODEL) A2640, A2636, A2638, A2639 (VARIANT MODELS)
BRAND:	APPLE
FCC ID:	BCG-E4000A (PARENT MODEL) BCG-E4034A, BCG-E4002A, BCG-E4033A (VARIANT MODELS)
IC ID:	579C-E4000A (PRIMARY MODEL) 579C-E4034A, 579C-E4002A, 579C-E4033A (VARIANT MODELS)
SERIAL NUMBER:	G6TD800R0GLG; HXKPFXHXK2
SAMPLE RECEIPT DATE:	10/23/2020, 06/11/2021
DATE TESTED:	NOVEMBER 11, 2020 – JULY 09, 2021

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

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

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

This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, any agency of the Federal Government, or any agency of the U.S. government.

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Approved & Released For
UL Verification Services Inc. By:

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Consumer Technology Division
UL Verification Services Inc.

Prepared By:

Tony Li
Test Engineer
Consumer Technology Division
UL Verification Services Inc.

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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.
-	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, KDB 662911, RSS-GEN Issue 5 + A1 + A2, and RSS-247 Issue 2.

4. FACILITIES AND ACCREDITATION

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

	Address	ISED CABID	ISED Company Number	FCC Registration
☐	Building 1: 47173 Benicia Street, Fremont, CA 94538	US0104	2324A	208313
☒	Building 2: 47266 Benicia Street, Fremont, CA 94538	US0104	22541	208313
☒	Building 4: 47658 Kato Rd, Fremont, CA 94538	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
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.29 dB

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

5.4. SAMPLE CALCULATION

RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:
Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:
Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + LISN Insertion Loss.
36.5 dBuV + 0 dB +10.1 dB+ 0 dB = 46.6 dBuV

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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/IC ID covered by this report includes:

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

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

6.2. MAXIMUM OUTPUT POWER

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

Antenna	Configuration	Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
ANT 4	High Power	2402 - 2480	BLE 1M	20.21	104.95
	Low Power			11.12	12.94
	High Power	2404 - 2478	BLE 2M	20.20	104.71
	Low Power			11.18	13.12
ANT 3	High Power	2402 - 2480	BLE 1M	20.22	105.20
	Low Power			11.19	13.15
	High Power	2404 - 2478	BLE 2M	20.18	104.23
	Low Power			11.20	13.18
BF, ANT 4 + ANT 3	High Power	2402 - 2480	BLE 1M	20.21	104.95
	Low Power			14.17	26.12
	High Power	2404 - 2478	BLE 2M	20.17	103.99
	Low Power			14.2	26.30

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6.3. DESCRIPTION OF AVAILABLE ANTENNAS

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

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

6.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was 19.1.309.2612

6.5. WORST-CASE CONFIGURATION AND MODE

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

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

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

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

For simultaneous transmission of multiple channels in the 2.4GHz 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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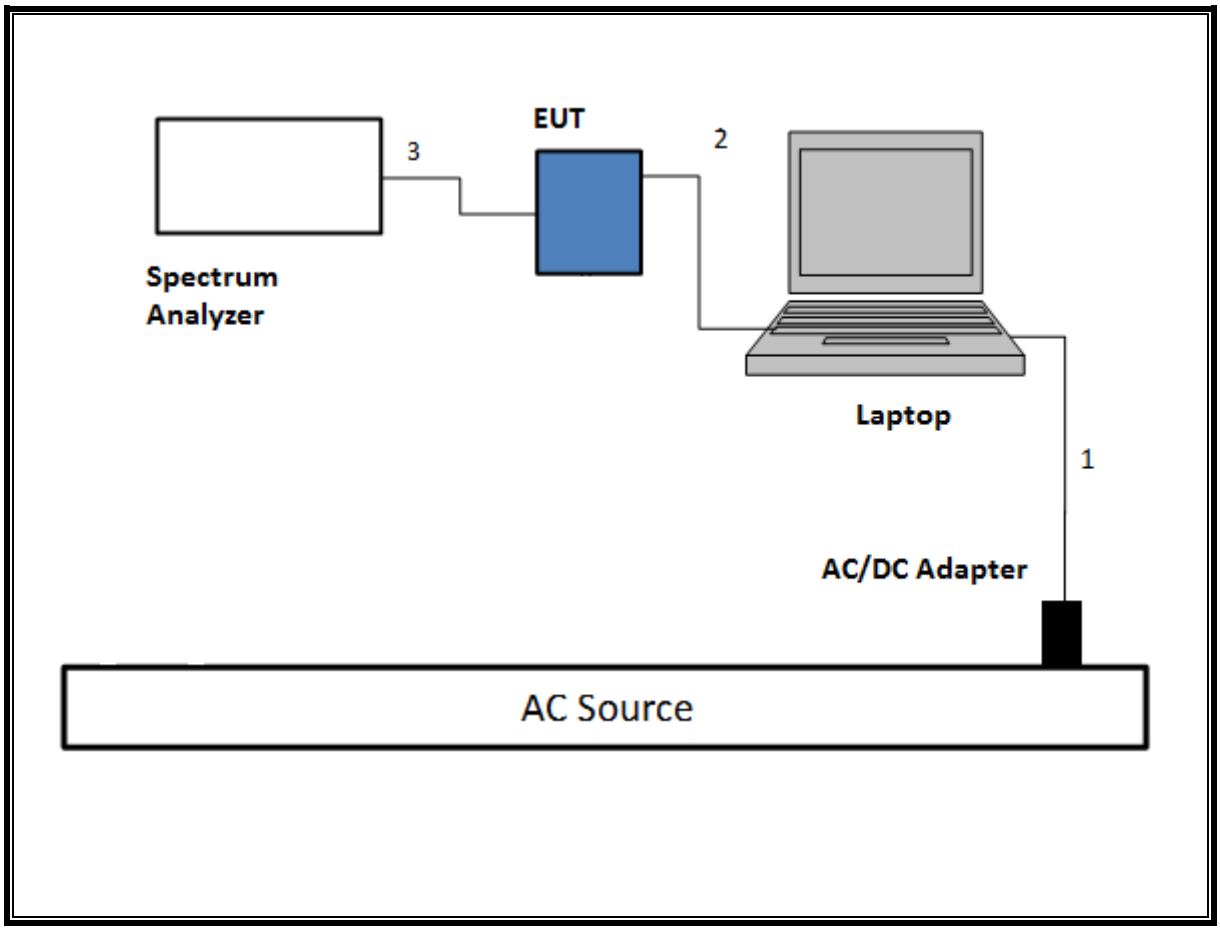
SETUP DIAGRAM FOR CONDUCTED TESTS



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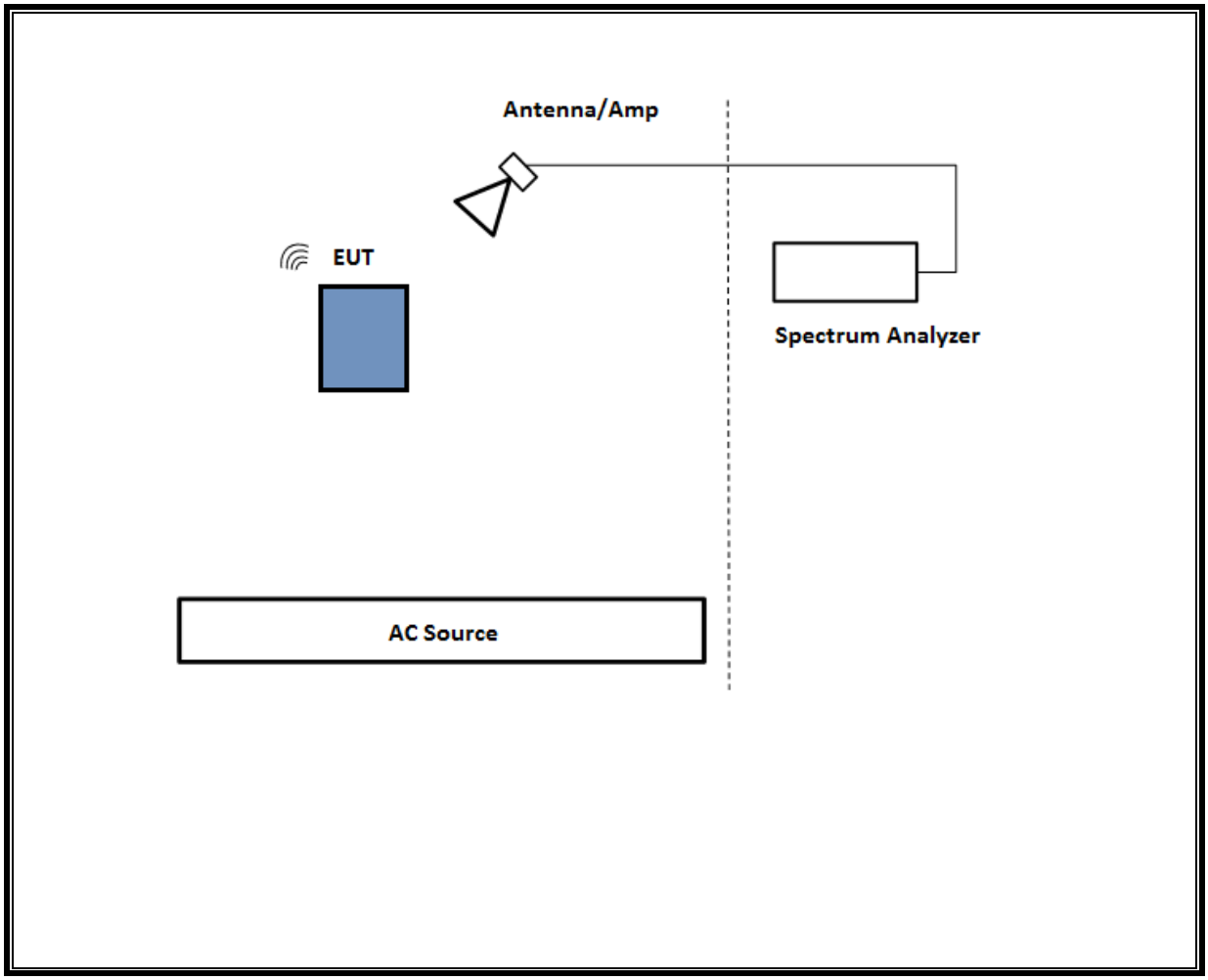
SETUP DIAGRAM FOR RADIATED TESTS Above 1 GHz



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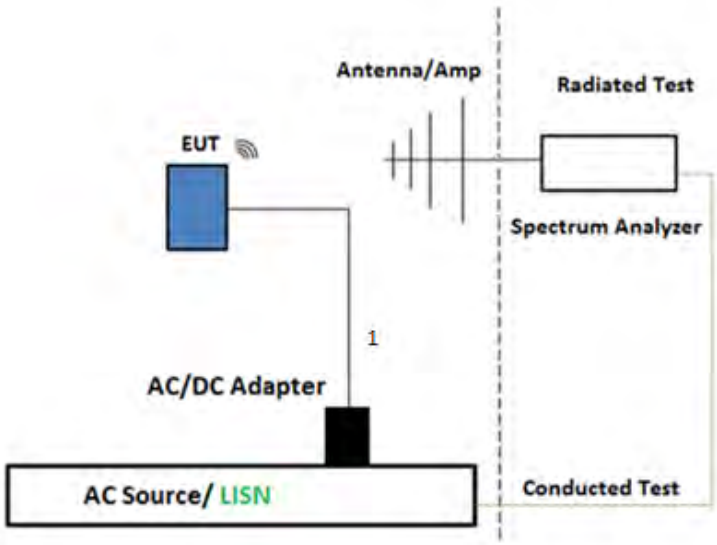
SETUP DIAGRAM FOR Below 1GHz and AC LINE CONDUCTED TEST



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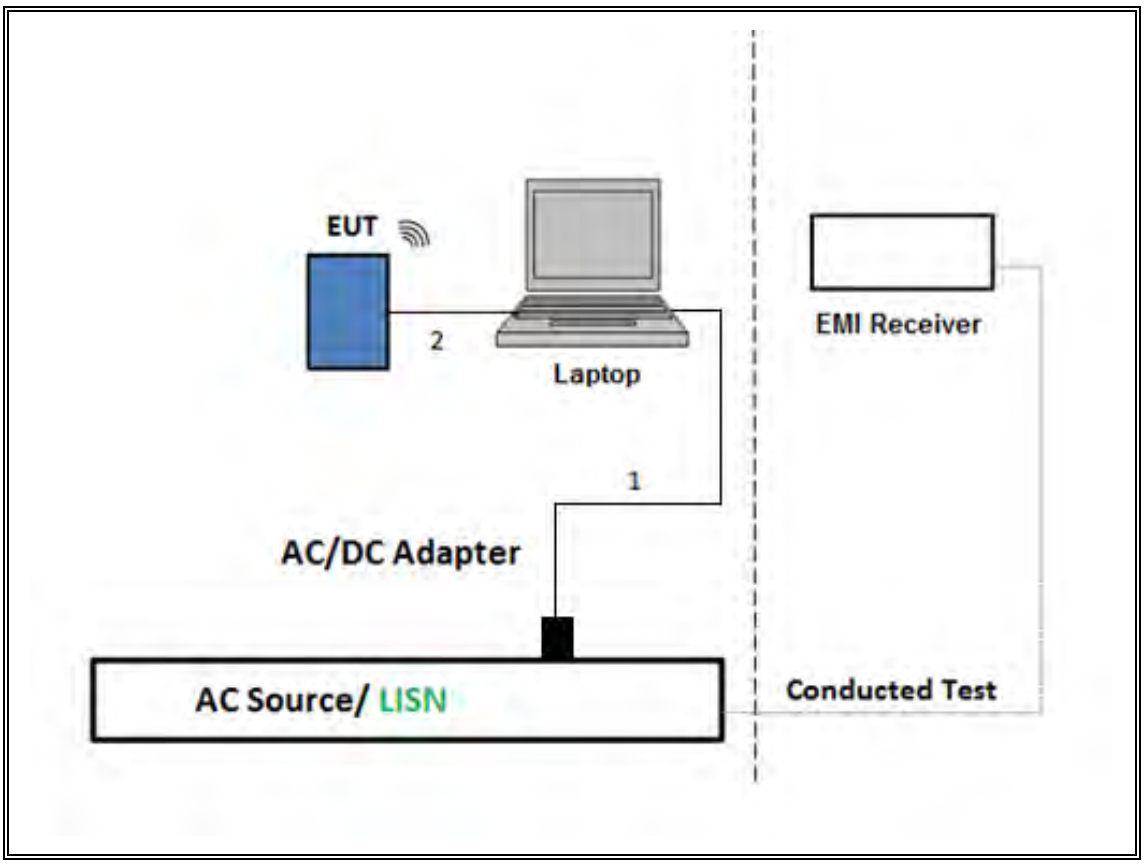
TEST SETUP- AC LINE CONDUCTED: LAPTOP CONFIGURATION



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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 was utilized for the tests documented in this report:

TEST EQUIPMENT LIST					
Description	**Manufacturer**	**Model**	**ID Num**	**Cal Due**	**Last Cal**
Antenna, Horn 1-18GHz	ETS Lindgren	3117	T862	08/19/2021	08/19/2020
RF Amplifier, 1-18GHz	MITEQ	AFS42-00101800-25-S-42	171460	09/29/2021	09/29/2020
Spectrum Analyzer, PXA 3Hz to 44GHz	Keysight	N9030A	T1466	01/25/2022	01/25/2021
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	PRE0100034	09/15/2021	09/15/2020
Amplifier, 1 to 18GHz, 35dB	AMPLICAL	AMP1G18-35	T1569	03/31/2022	03/31/2021
Antenna, Horn 1-18GHz	ETS Lindgren	3117	PRE0078107	03/01/2022	03/01/2021
Amplifier, 1 to 18GHz	Amplical	AMP1G18-35	138301	03/30/2022	03/30/2021
Antenna, BroadBand Hybrid, 30MHz to 3GHz	Sunol Sciences Corp.	JB3	PRE0184052	11/12/2021	11/12/2020
Amplifier, 9KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310	PRE0180174	12/29/2021	12/29/2020
EMI Test Receiver	Rohde & Schwarz	ESW44	201500	11/19/2021	11/19/2020
Antenna, Horn 1-18GHz	ETS Lindgren	3117	PRE0213973	08/20/2021	08/20/2020
RF Amplifier, 1-18GHz	AMPLICAL	AMP1G7-24-27	205876	03/14/2022	03/14/2021
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, Active Loop 9KHz to 30MHz	EMCO	6502	T35	11/23/2021	11/23/2020
*Antenna Horn, 18 to 26GHz	ARA	SWH-28	T125	04/17/2021	04/17/2020
*Pre-Amp 18-26GHz	Agilent Technology	8449B	T404	04/08/2021	04/08/2020
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1454	01/27/2022	01/27/2021
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T906	07/20/2021	07/20/2020
Antenna, Active Loop 9KHz to 30MHz	EMCO	6502	T35	11/23/2021	11/23/2021
EMI Test Receiver	Rohde & Schwarz	ESW44	201499	11/19/2021	11/19/2020
EMI Receiver	Rohde & Schwarz	ESW44	201502	09/17/2021	09/17/2020

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

Note: *Testing is completed before equipment expiration date.

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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	0.72	0.72	1.000	100.00%	0.00	0.010
BLE, 2Mbps	0.61	0.61	1.000	100.00%	0.00	0.010
BLE, TXBF, 1Mbps	0.68	0.68	1.000	100.00%	0.00	0.010
BLE, TXBF, 2Mbps	0.76	0.76	1.000	100.00%	0.00	0.010

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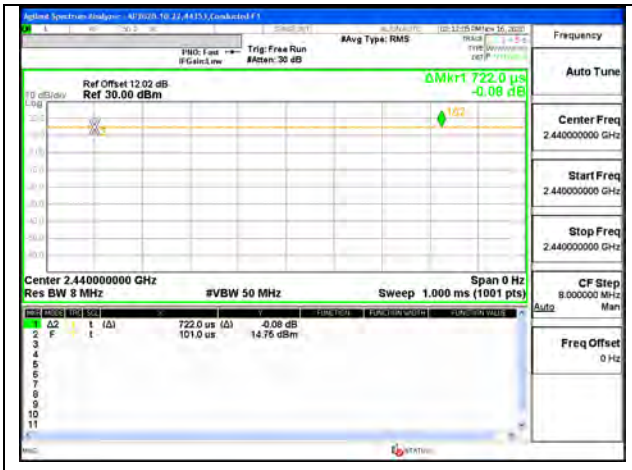
DUTY CYCLE PLOTS



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

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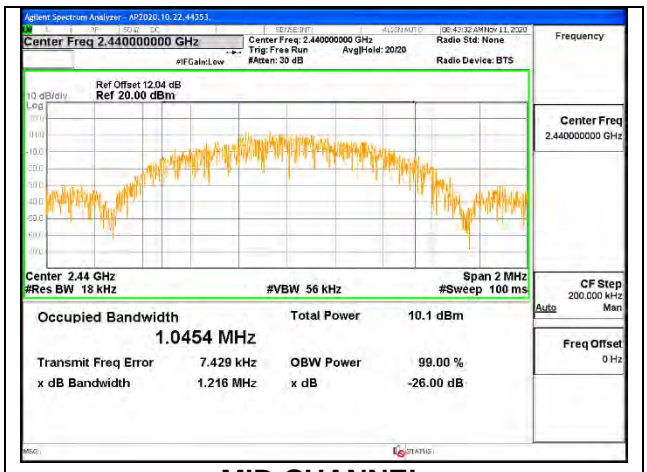
9.2.1. **HIGH POWER BLE (1Mbps)**

ANT 4

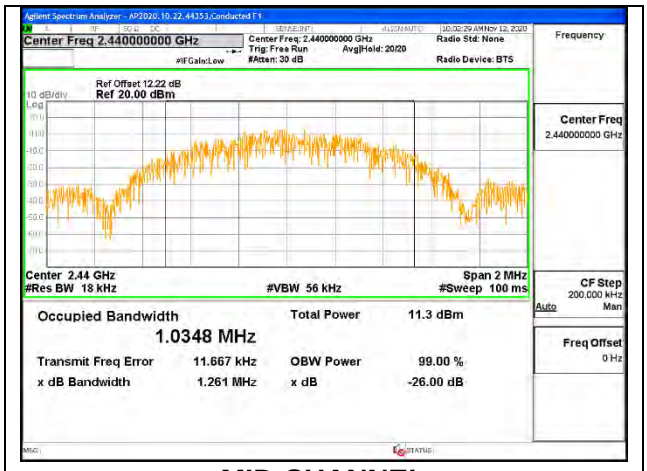
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.030
Middle	2440	1.045
High	2480	1.052



MID CHANNEL

ANT 3

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.049
Middle	2440	1.035
High	2480	1.038



MID CHANNEL

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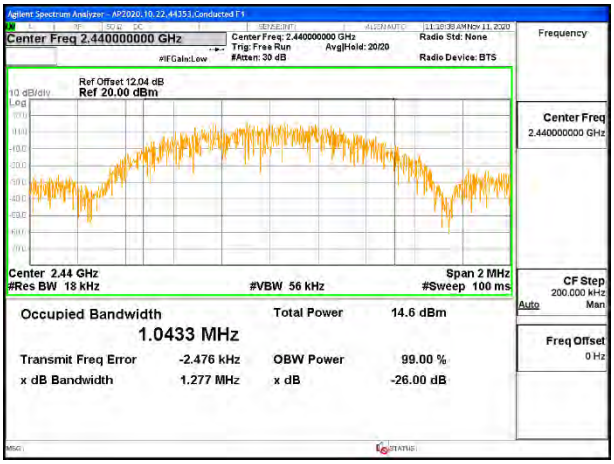
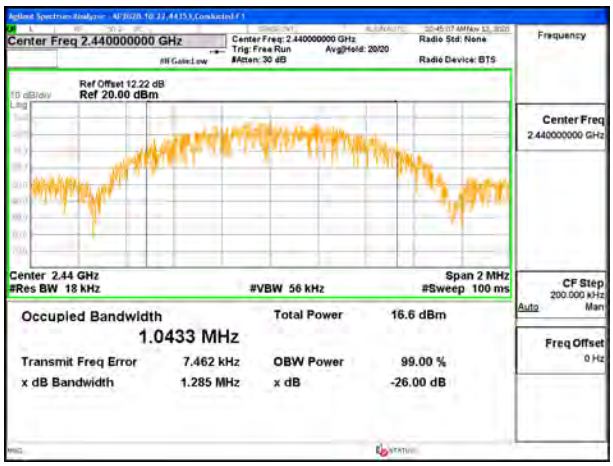
9.2.2. **HIGH POWER BLE TXBF (1Mbps)**

Channel	Frequency (MHz)	99% Bandwidth ANT 4 (MHz)	99% Bandwidth ANT 3 (MHz)
Low	2402	1.050	1.043
Mid	2440	1.043	1.043
High	2480	1.040	1.045

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



MID CHANNEL ANT 4



MID CHANNEL ANT 3

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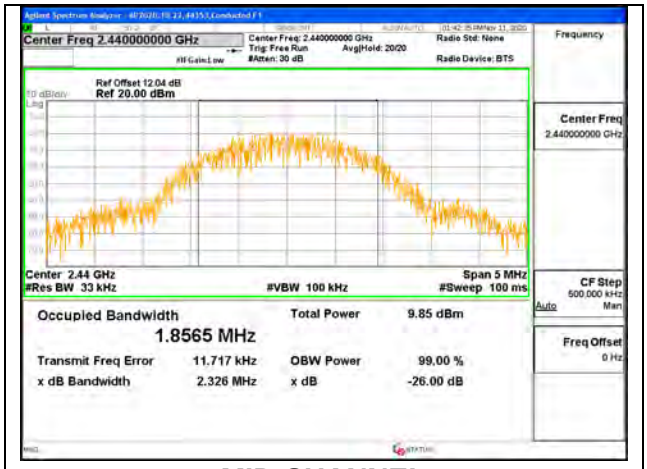
9.2.3. **HIGH POWER BLE (2Mbps)**

ANT 4

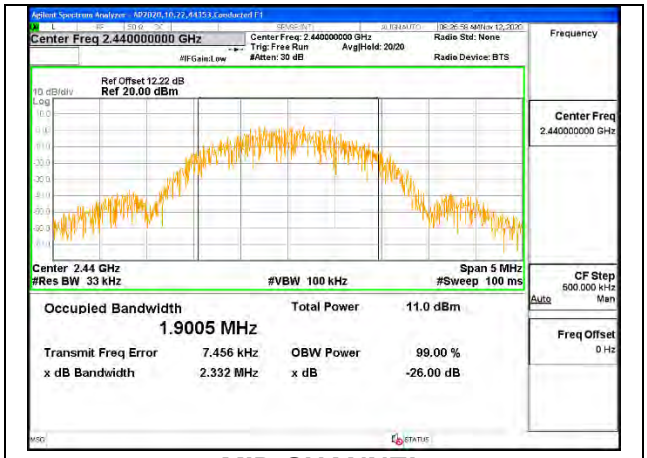
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2404	1.901
Middle	2440	1.857
High	2478	1.874



MID CHANNEL

ANT 3

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2404	1.895
Middle	2440	1.901
High	2478	1.880



MID CHANNEL

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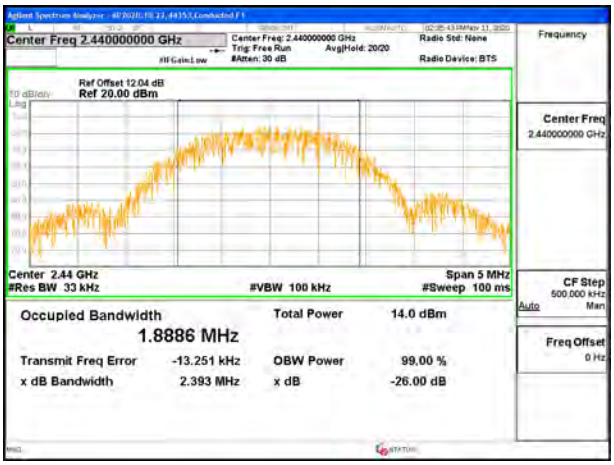
9.2.4. **HIGH POWER BLE TXBF (2Mbps)**

Channel	Frequency (MHz)	99% Bandwidth ANT 4 (MHz)	99% Bandwidth ANT 3 (MHz)
Low	2404	1.885	1.904
Mid	2440	1.889	1.895
High	2478	1.865	1.896

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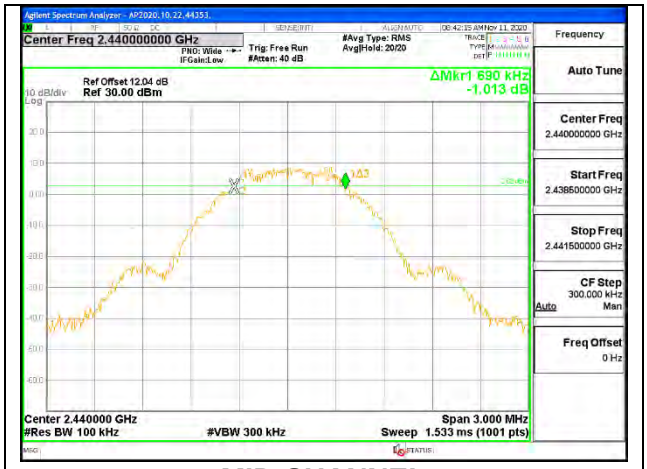
9.3.1. **HIGH POWER BLE (1Mbps)**

ANT 4

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.732	0.5
Middle	2440	0.690	0.5
High	2480	0.699	0.5



MID CHANNEL

ANT 3

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.699	0.5
Middle	2440	0.720	0.5
High	2480	0.751	0.5

MID CHANNEL

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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

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

DIRECTIONAL ANTENNA GAIN

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

For 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 Gain (dBi)	ANT 3 Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)	Correlated Chains Directional Gain (dBi)
2.4	-0.20	-0.20	-0.20	2.81

RESULTS

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9.4.1. HIGH POWER BLE (1Mbps)

ANT 4

Tested By:	44353
Date:	6/3/2021

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	20.14	30	-9.86
Middle	2440	20.21	30	-9.79
High	2480	20.19	30	-9.81

ANT 3

Tested By:	44353
Date:	6/3/2021

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	20.22	30	-9.78
Middle	2440	20.15	30	-9.85
High	2480	20.15	30	-9.85

9.4.2. HIGH POWER BLE TXBF (1Mbps)

ANT 4 + ANT 3

Tested By:	44353
Date:	6/3/2021

Channel	Frequency (MHz)	Output Power ANT 4 (dBm)	Output Power ANT 3 (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	17.11	17.25	20.19	30	-9.81
Middle	2440	17.15	17.24	20.21	30	-9.79
High	2480	17.16	17.04	20.11	30	-9.89

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9.4.3. HIGH POWER BLE (2Mbps)

ANT 4

Tested By:	44353
Date:	6/3/2021

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	20.20	30	-9.80
Middle	2440	20.16	30	-9.84
High	2478	20.11	30	-9.89

ANT 3

Tested By:	44353
Date:	6/3/2021

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	20.15	30	-9.85
Middle	2440	20.18	30	-9.82
High	2478	20.08	30	-9.92

9.4.4. HIGH POWER BLE TXBF (2Mbps)

ANT 4 + ANT 3

Tested By:	44353
Date:	6/3/2021

Channel	Frequency (MHz)	Output Power ANT 4 (dBm)	Output Power ANT 3 (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	2404	17.12	17.20	20.17	30	-9.83
Middle	2440	17.07	17.22	20.16	30	-9.84
High	2478	17.18	17.08	20.14	30	-9.86

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9.4.5. LOW POWER BLE (1Mbps)

ANT 4

Tested By:	44353
Date:	7/15/2021

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	11.02	30	-18.98
Middle	2440	11.12	30	-18.88
High	2480	10.96	30	-19.04

ANT 3

Tested By:	44353
Date:	7/15/2021

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	11.05	30	-18.95
Middle	2440	11.19	30	-18.81
High	2480	11.08	30	-18.92

9.4.6. LOW POWER BLE TXBF (1Mbps)

ANT 4 + ANT 3

Tested By:	44353
Date:	7/15/2021

Channel	Frequency (MHz)	Output Power ANT 4 (dBm)	Output Power ANT 3 (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.99	11.04	14.03	30	-15.97
Middle	2440	11.20	11.12	14.17	30	-15.83
High	2480	11.12	11.14	14.14	30	-15.86

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9.4.7. LOW POWER BLE (2Mbps)

ANT 4

Tested By:	44353
Date:	7/15/2021

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	11.04	30	-18.96
Middle	2440	11.18	30	-18.82
High	2478	11.09	30	-18.91

ANT 3

Tested By:	44353
Date:	7/15/2021

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	11.05	30	-18.95
Middle	2440	11.20	30	-18.80
High	2478	11.04	30	-18.96

9.4.8. LOW POWER BLE TXBF (2Mbps)

ANT 4 + ANT 3

Tested By:	44353
Date:	7/15/2021

Channel	Frequency (MHz)	Output Power ANT 4 (dBm)	Output Power ANT 3 (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	2404	10.97	11.04	14.02	30	-15.98
Middle	2440	11.20	11.18	14.20	30	-15.80
High	2478	11.13	11.06	14.11	30	-15.89

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9.5. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

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

RESULTS

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9.5.1. HIGH POWER BLE (1Mbps)

ANT 4

Tested By:	44353
Date:	6/3/2021

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	19.85
Middle	2440	19.93
High	2480	19.90

ANT 3

Tested By:	44353
Date:	6/3/2021

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	19.92
Middle	2440	19.84
High	2480	19.85

9.5.2. HIGH POWER BLE TXBF (1Mbps)

ANT 4 + ANT 3

Tested By:	44353
Date:	6/3/2021

Channel	Frequency (MHz)	Average Power ANT 4 (dBm)	Average Power ANT 3 (dBm)	Total Power (dBm)
Low	2402	16.83	16.96	19.91
Middle	2440	16.86	16.94	19.91
High	2480	16.88	16.70	19.80

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9.5.3. HIGH POWER BLE (2Mbps)

ANT 4

Tested By:	44353
Date:	6/3/2021

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	19.92
Middle	2440	19.89
High	2478	19.83

ANT 3

Tested By:	44353
Date:	6/3/2021

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	19.86
Middle	2440	19.90
High	2478	19.75

9.5.4. HIGH POWER BLE TXBF (2Mbps)

ANT 4 + ANT 3

Tested By:	44353
Date:	6/3/2021

Channel	Frequency (MHz)	Average Power ANT 4 (dBm)	Average Power ANT 3 (dBm)	Total Power (dBm)
Low	2404	16.84	16.93	19.90
Middle	2440	16.78	16.94	19.87
High	2478	16.89	16.80	19.86

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9.5.5. LOW POWER BLE (1Mbps)

ANT 4

Tested By:	44353
Date:	7/15/2021

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	10.73
Middle	2440	10.85
High	2480	10.68

ANT 3

Tested By:	44353
Date:	7/15/2021

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	10.78
Middle	2440	10.90
High	2480	10.80

9.5.6. LOW POWER BLE TXBF (1Mbps)

ANT 4 + ANT 3

Tested By:	44353
Date:	7/15/2021

Channel	Frequency (MHz)	Average Power ANT 4 (dBm)	Average Power ANT 3 (dBm)	Total Power (dBm)
Low	2402	10.72	10.75	13.75
Middle	2440	10.94	10.83	13.90
High	2480	10.82	10.87	13.86

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9.5.7. LOW POWER BLE (2Mbps)

ANT 4

Tested By:	44353
Date:	7/15/2021

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	10.76
Middle	2440	10.91
High	2478	10.84

ANT 3

Tested By:	44353
Date:	7/15/2021

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	10.78
Middle	2440	10.94
High	2478	10.79

9.5.8. LOW POWER BLE TXBF (2Mbps)

ANT 4 + ANT 3

Tested By:	44353
Date:	7/15/2021

Channel	Frequency (MHz)	Average Power ANT 4 (dBm)	Average Power ANT 3 (dBm)	Total Power (dBm)
Low	2404	10.70	10.76	13.74
Middle	2440	10.98	10.86	13.93
High	2478	10.84	10.77	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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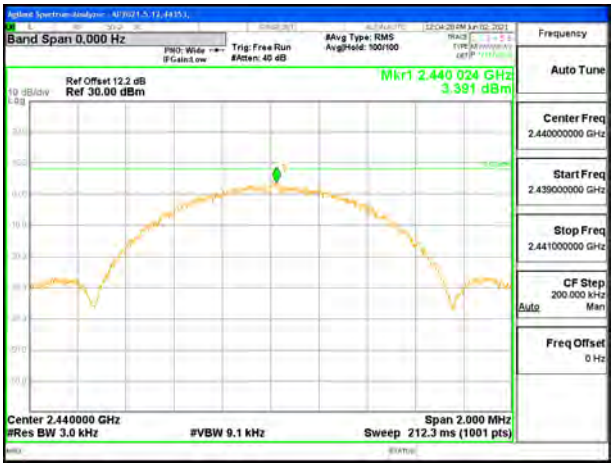
9.6.1. **HIGH POWER BLE (1Mbps)**

ANT 4

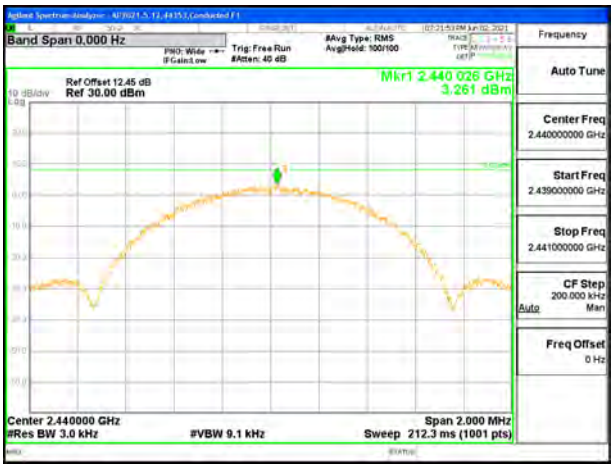
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	3.247	8	-4.75
Middle	2440	3.391	8	-4.61
High	2480	3.355	8	-4.65



MID CHANNEL

ANT 3

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	3.359	8	-4.64
Middle	2440	3.261	8	-4.74
High	2480	3.266	8	-4.73



MID CHANNEL

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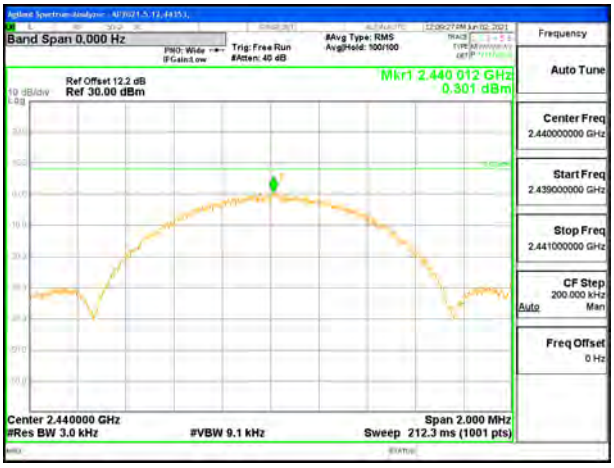
9.6.2. HIGH POWER BLE TXBF (1Mbps)

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

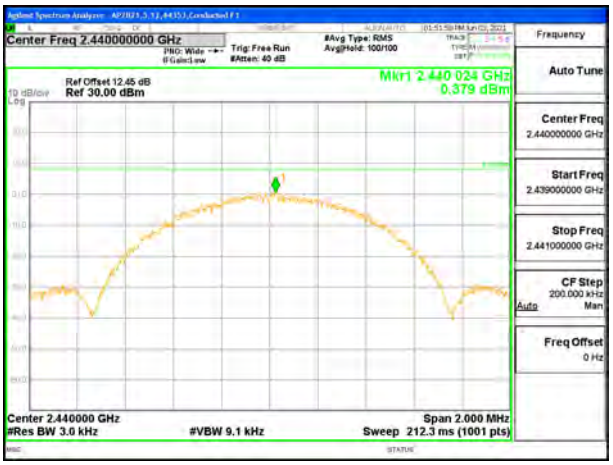
PSD Results

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	0.291	0.380	3.35	8.0	-4.7
Mid	2440	0.301	0.379	3.35	8.0	-4.6
Hjigh	2480	0.314	0.083	3.21	8.0	-4.8

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



MID CHANNEL ANT 4



MID CHANNEL ANT 3

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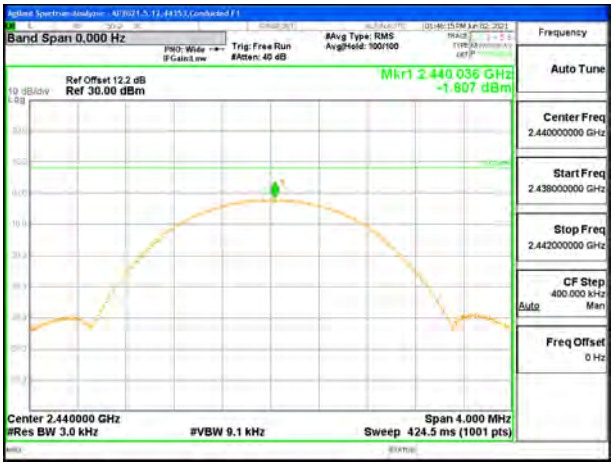
9.6.3. **HIGH POWER BLE (2Mbps)**

ANT 4

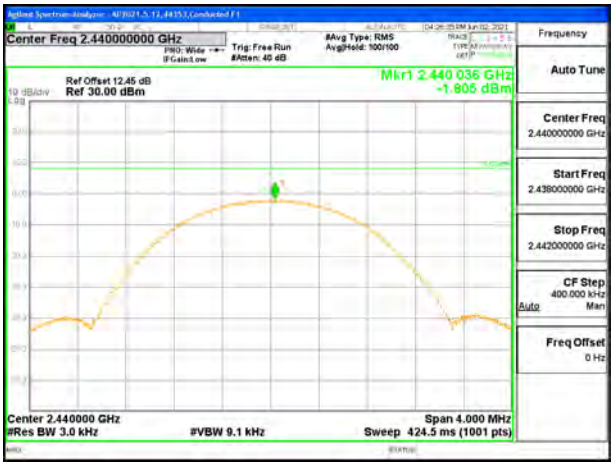
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2404	-1.793	8	-9.79
Middle	2440	-1.807	8	-9.81
High	2478	-1.859	8	-9.86



MID CHANNEL

ANT 3

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2404	-1.843	8	-9.84
Middle	2440	-1.805	8	-9.81
High	2478	-2.127	8	-10.13



MID CHANNEL

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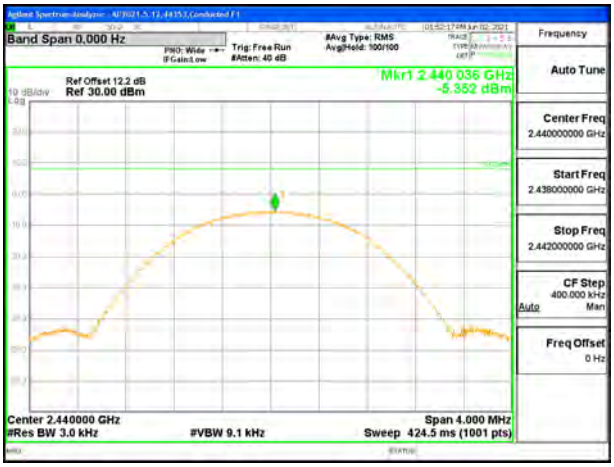
9.6.4. HIGH POWER BLE TXBF (2Mbps)

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

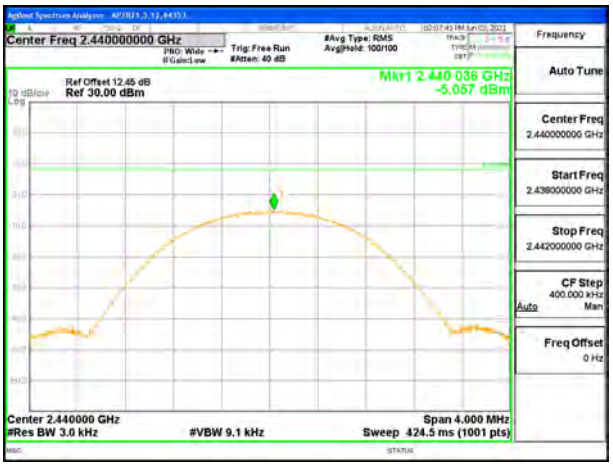
PSD Results

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	-5.289	-5.069	-2.17	8.0	-10.2
Mid	2440	-5.352	-5.057	-2.19	8.0	-10.2
Hjigh	2478	-5.130	-5.290	-2.20	8.0	-10.2

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



MID CHANNEL ANT 4



MID CHANNEL ANT 3

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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.

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

RESULTS

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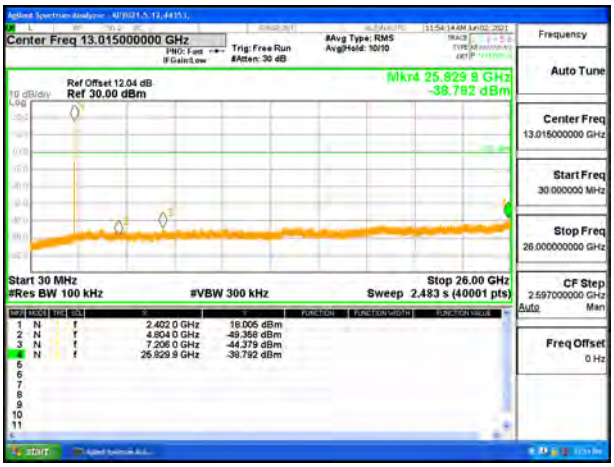
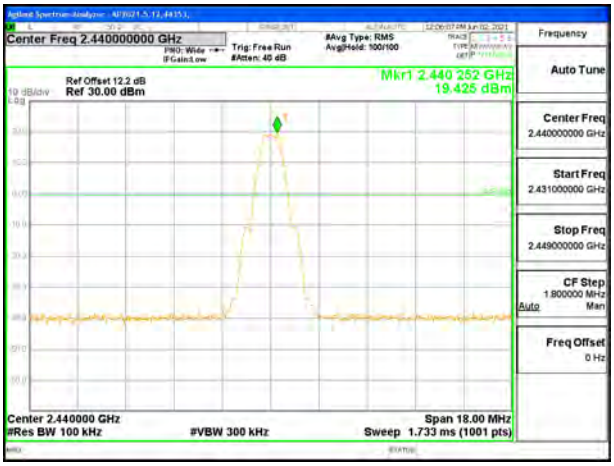
9.7.1. **HIGH POWER BLE (1Mbps)**

ANT 4

LOW CHANNEL BANDEDGE



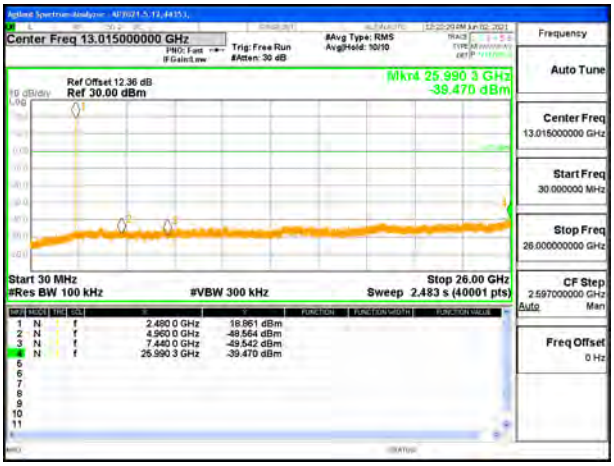
OUT-OF-BAND LOW CHANNEL



IN-BAND REFERENCE LEVEL

OUT-OF-BAND MID CHANNEL

HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

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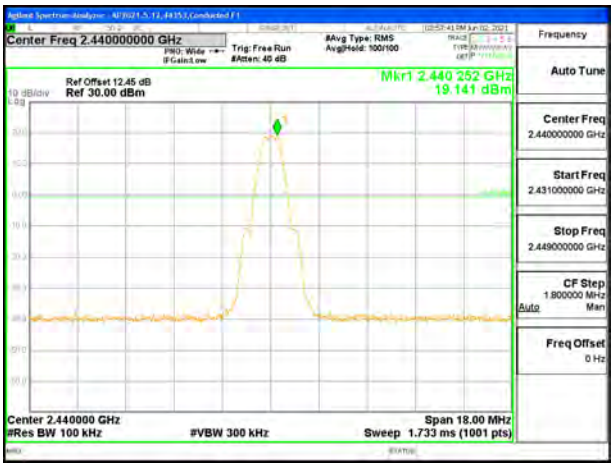
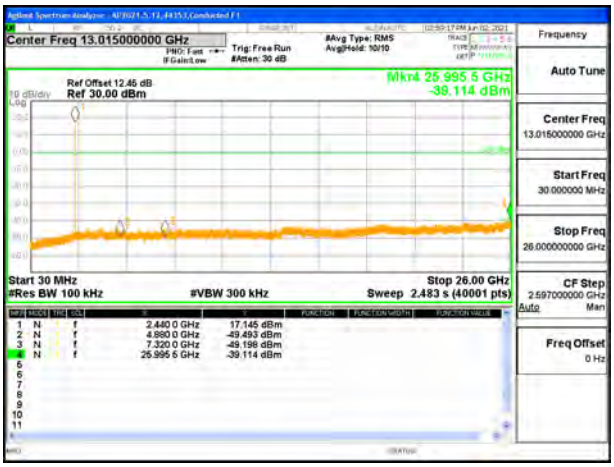
ANT 3

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

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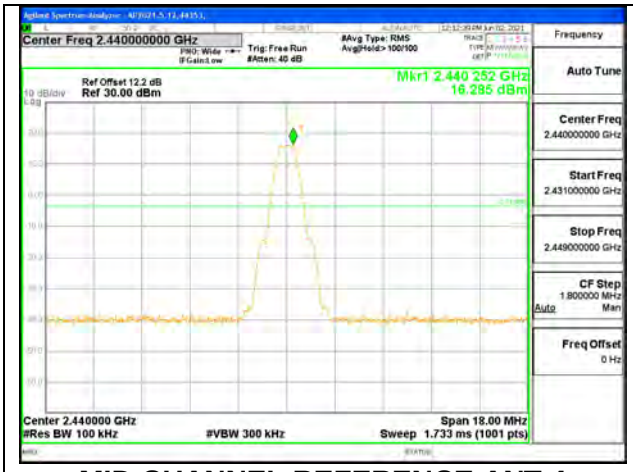
9.7.2. HIGH POWER BLE TXBF (1Mbps)

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

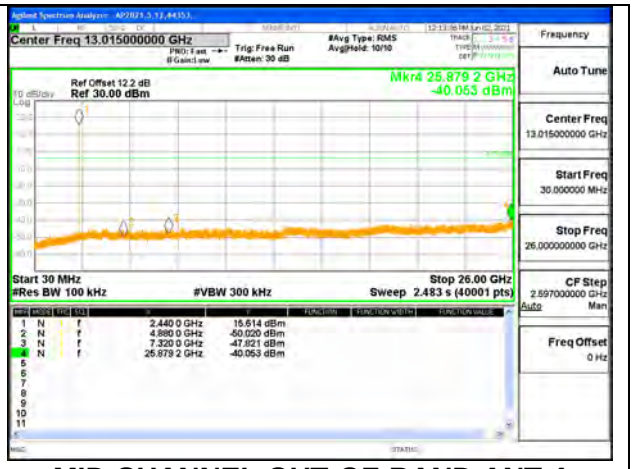
ANT 4 (1Mbps)

LOW CHANNEL , BANDEDGE ANT 4

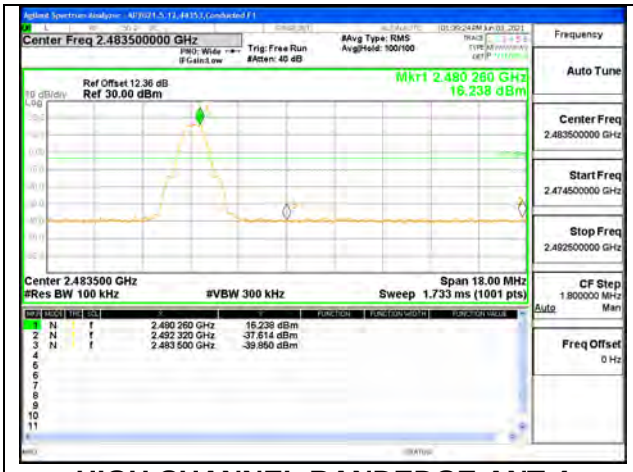
LOW CHANNEL OUT-OF-BAND ANT 4



MID CHANNEL REFERENCE ANT 4



MID CHANNEL OUT-OF-BAND ANT 4



HIGH CHANNEL BANDEDGE ANT 4

HIGH CHANNEL OUT-OF-BAND ANT 4

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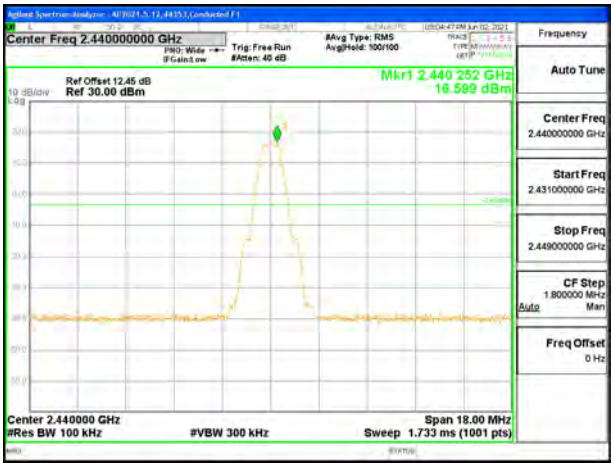
ANT 3 (1Mbps)

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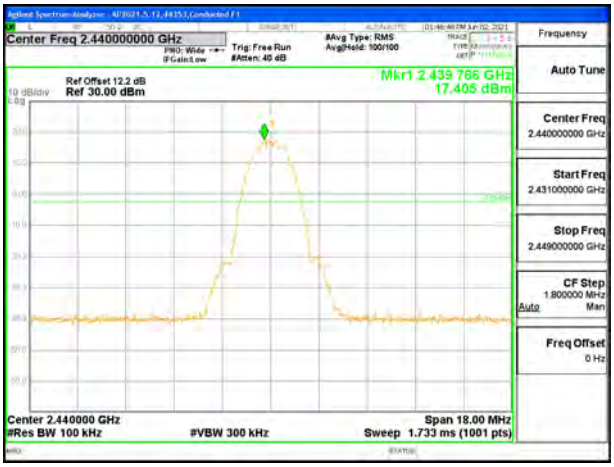
9.7.3. **HIGH POWER BLE (2Mbps)**

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

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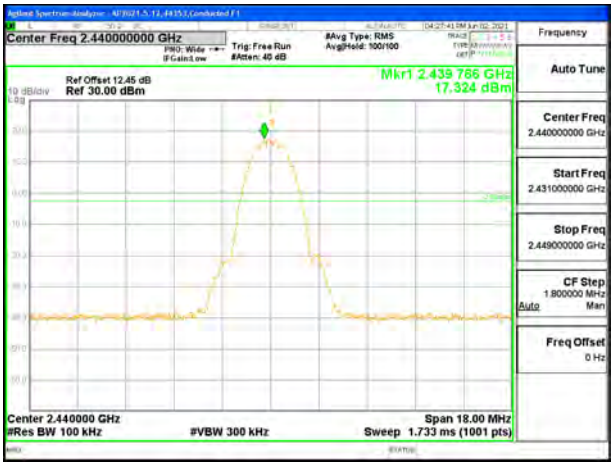
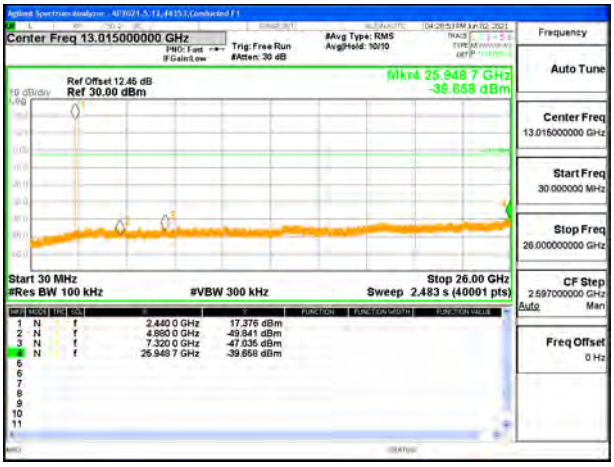
ANT 3

LOW CHANNEL BANDEDGE

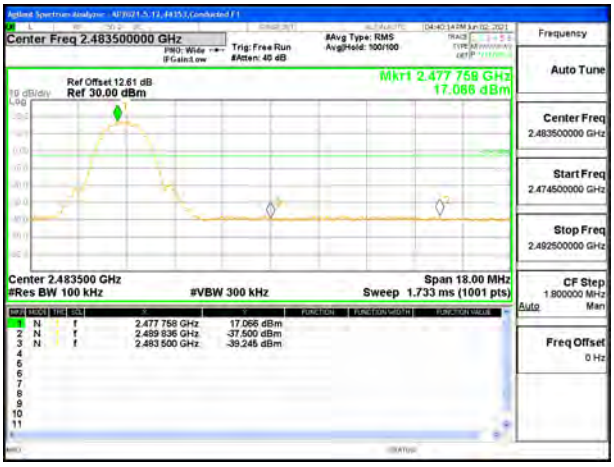
OUT-OF-BAND LOW CHANNEL



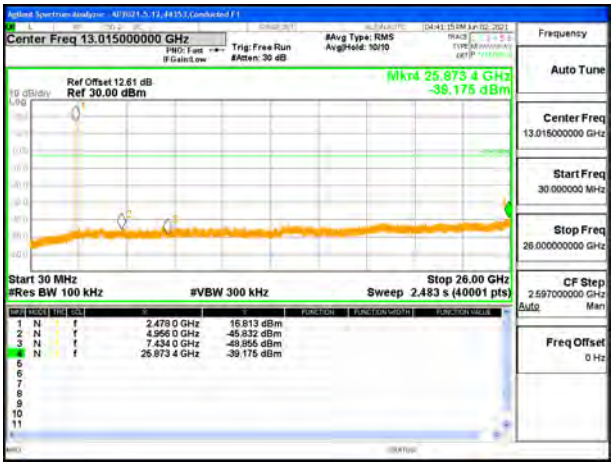
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

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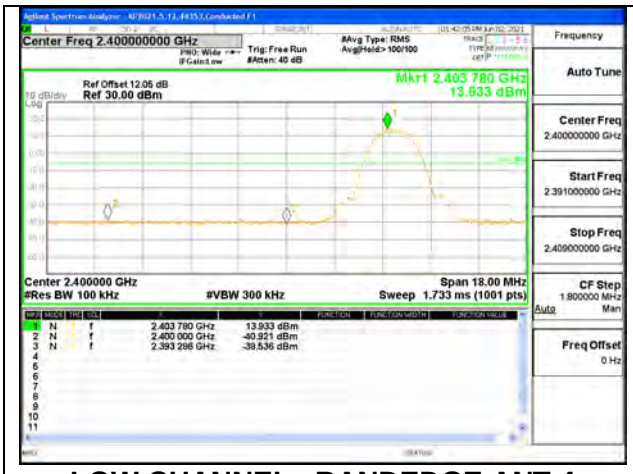
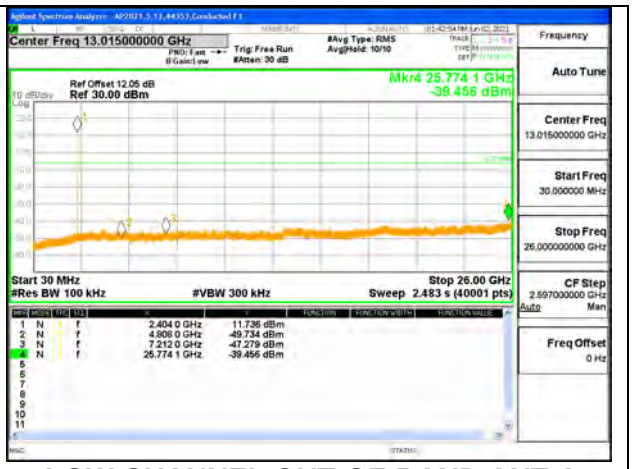
9.7.4. **HIGH POWER BLE TXBF (2Mbps)**

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

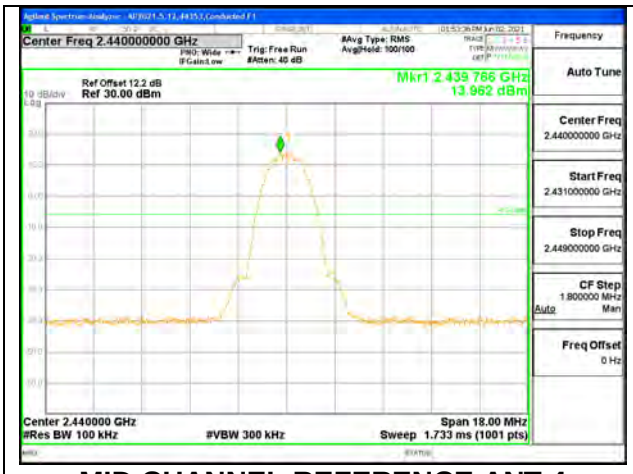
ANT 4



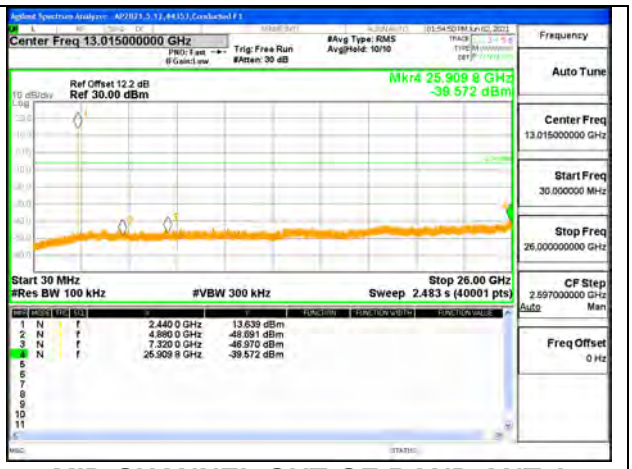
LOW CHANNEL , BANDEDGE ANT 4



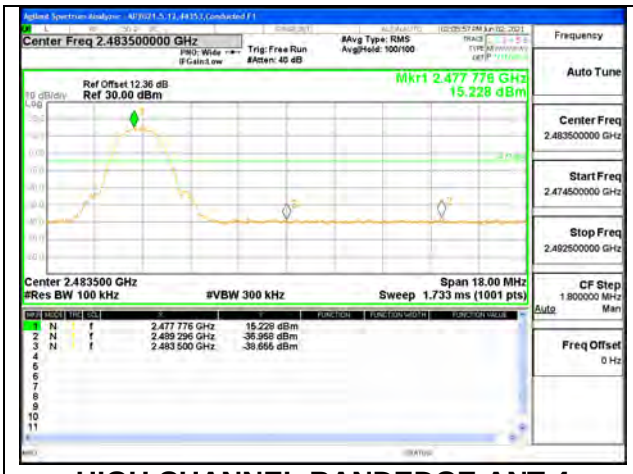
LOW CHANNEL OUT-OF-BAND ANT 4



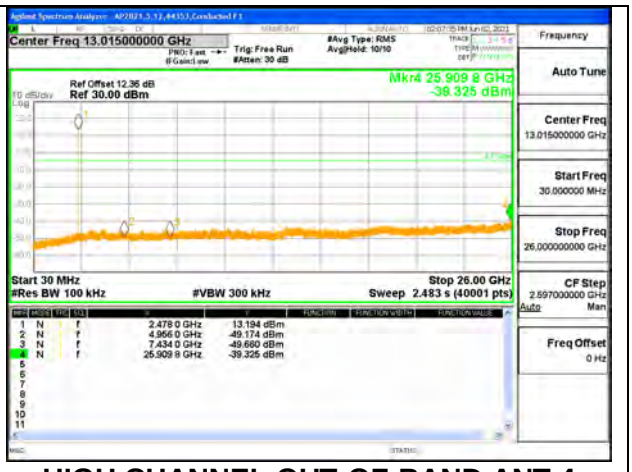
MID CHANNEL REFERENCE ANT 4



MID CHANNEL OUT-OF-BAND ANT 4



HIGH CHANNEL BANDEDGE ANT 4



HIGH CHANNEL OUT-OF-BAND ANT 4

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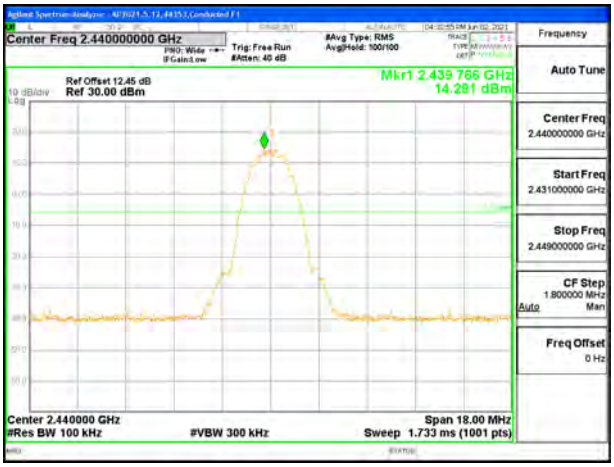
ANT 3 (2Mbps)

LOW CHANNEL , BANDEDGE ANT 3

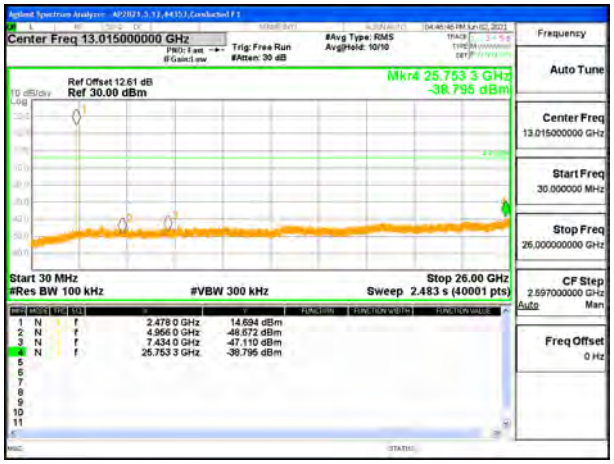
LOW CHANNEL OUT-OF-BAND ANT 3



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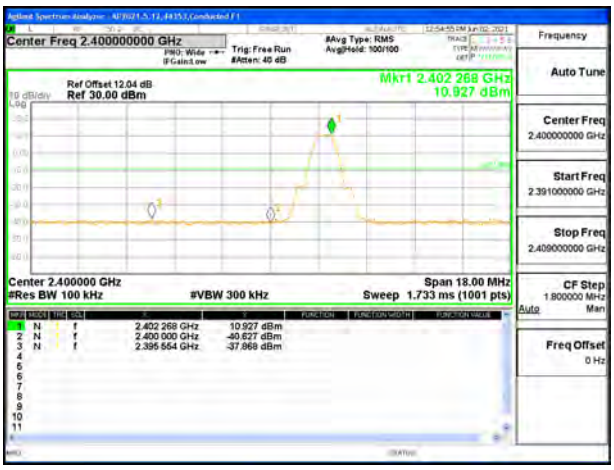
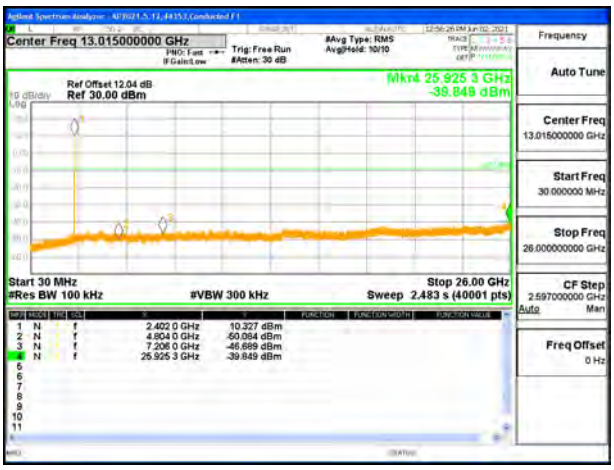
9.7.5. **LOW POWER BLE (1Mbps)**

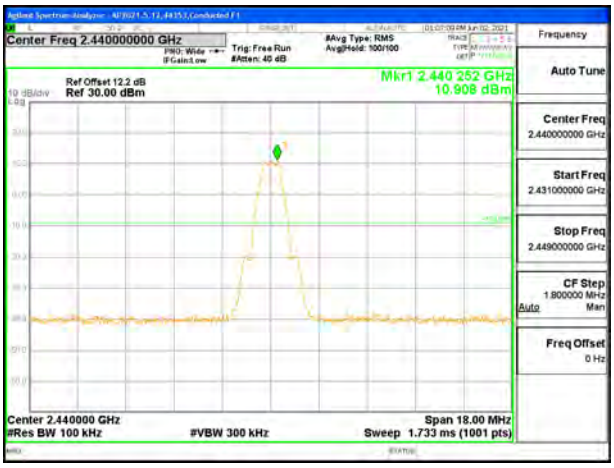
ANT 4



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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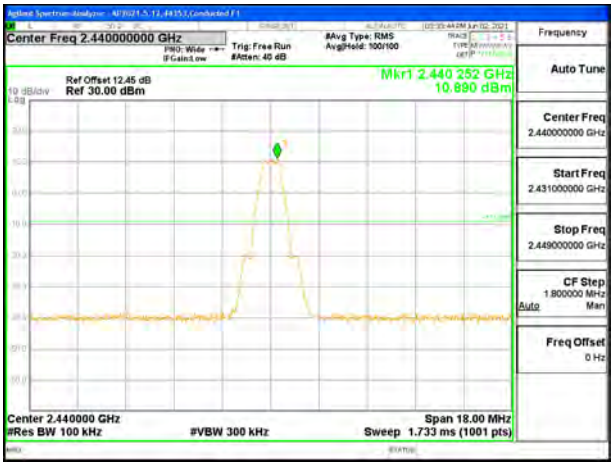
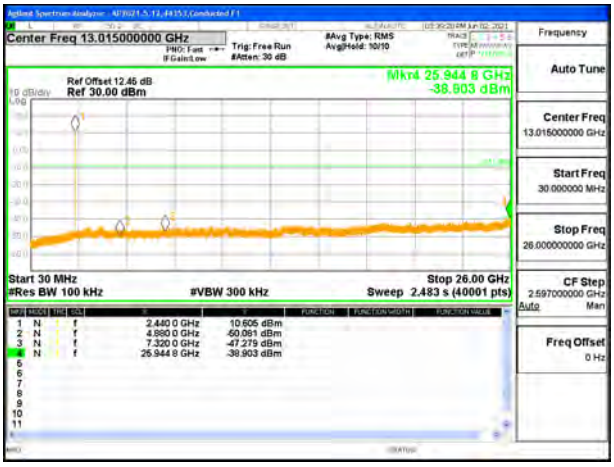
ANT 3

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

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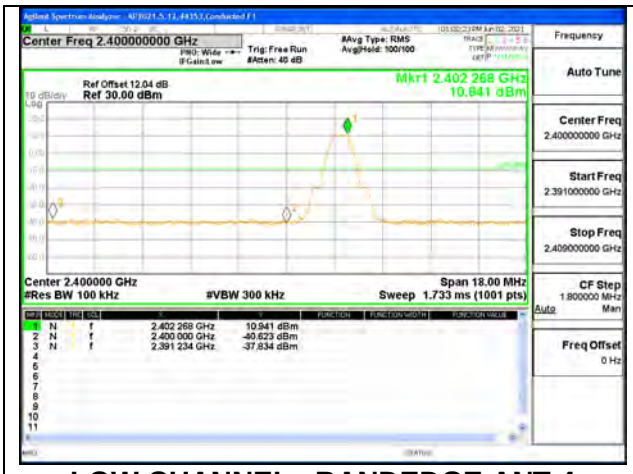
9.7.6. LOW POWER BLE TXBF (1Mbps)

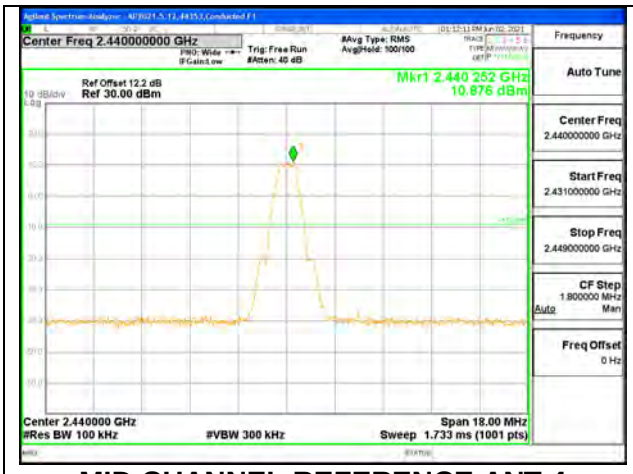
Note: Test procedures and setting are same as BLE normal mode.

ANT 4

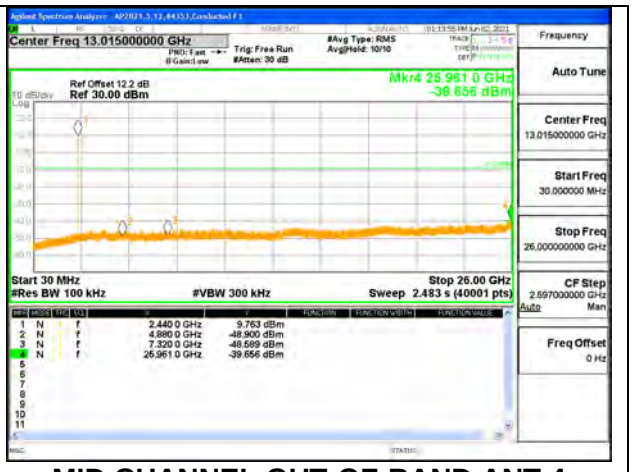


LOW CHANNEL , BANDEDGE ANT 4

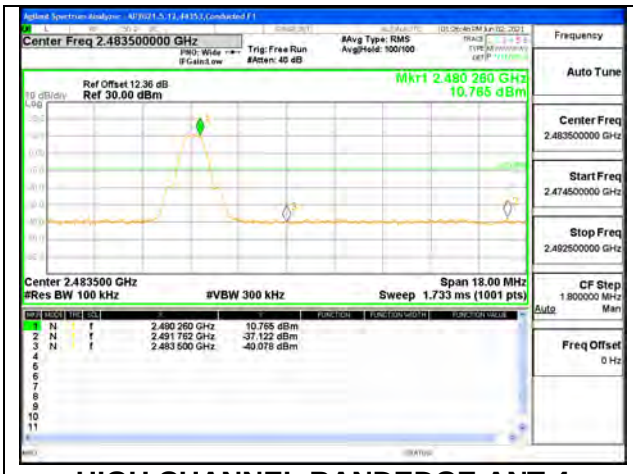
LOW CHANNEL OUT-OF-BAND ANT 4



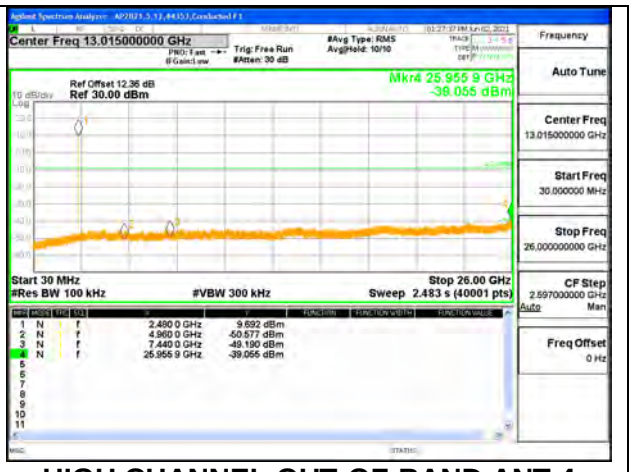
MID CHANNEL REFERENCE ANT 4



MID CHANNEL OUT-OF-BAND ANT 4



HIGH CHANNEL BANDEDGE ANT 4



HIGH CHANNEL OUT-OF-BAND ANT 4

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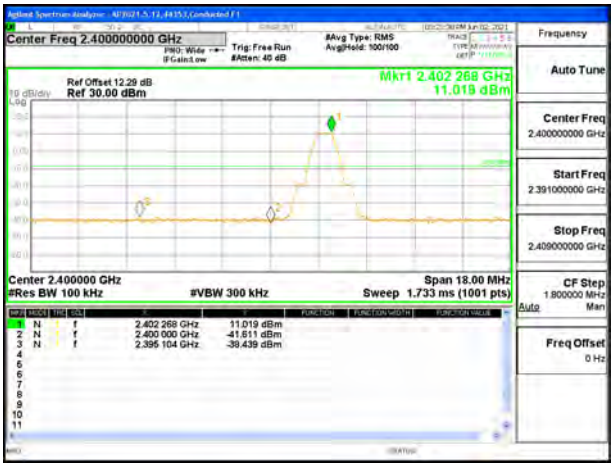
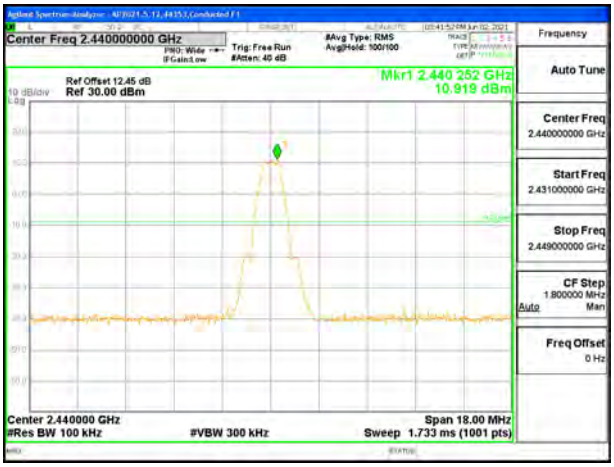
ANT 3 (1Mbps)



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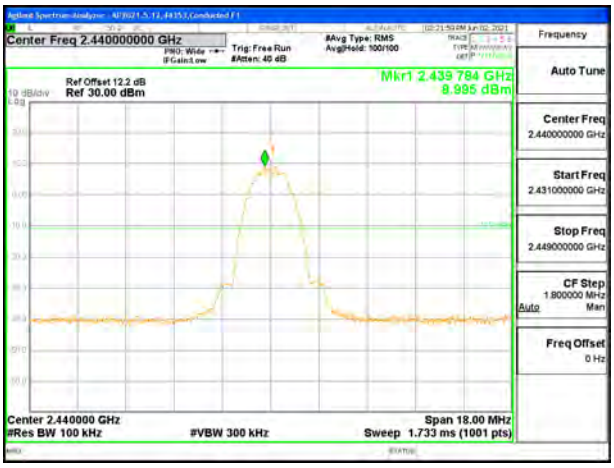
9.7.7. **LOW POWER BLE (2Mbps)**

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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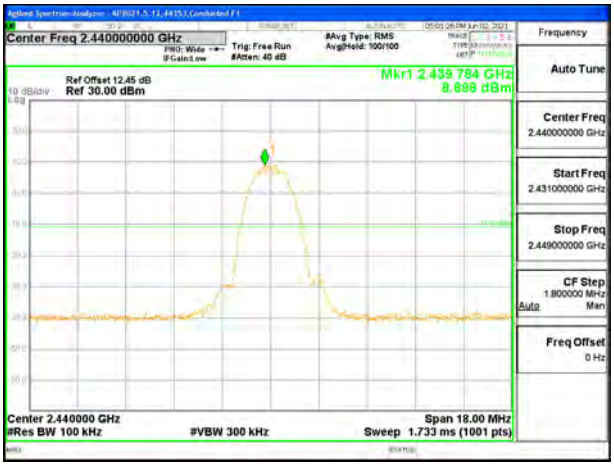
ANT 3

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

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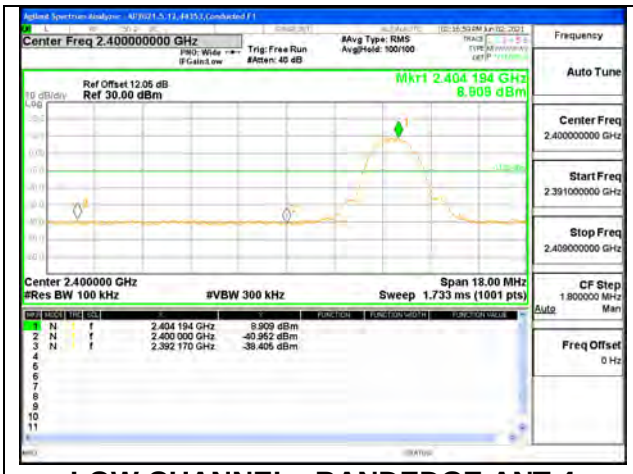
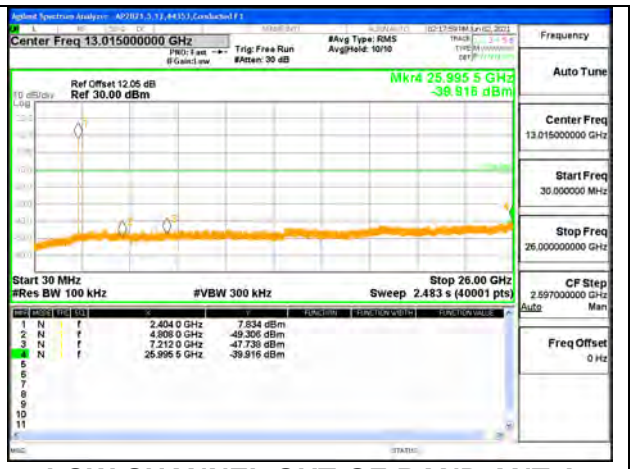
9.7.8. LOW POWER BLE TXBF (2Mbps)

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

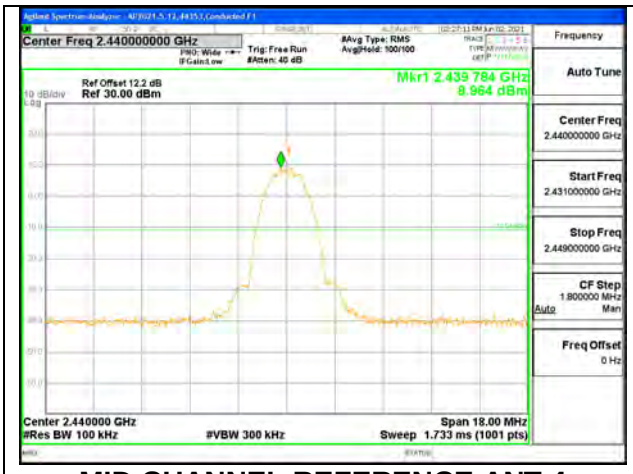
ANT 4



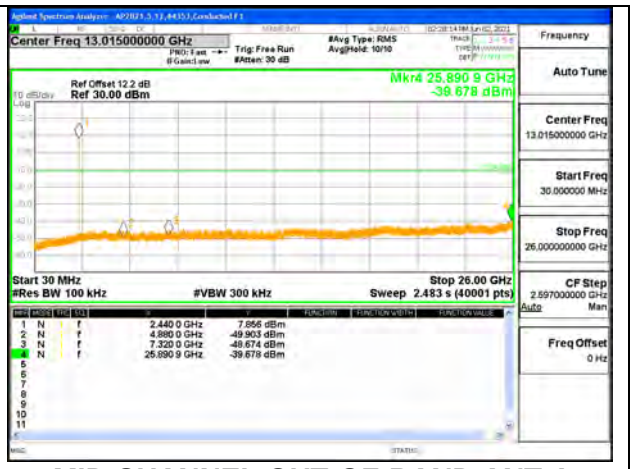
LOW CHANNEL , BANDEDGE ANT 4



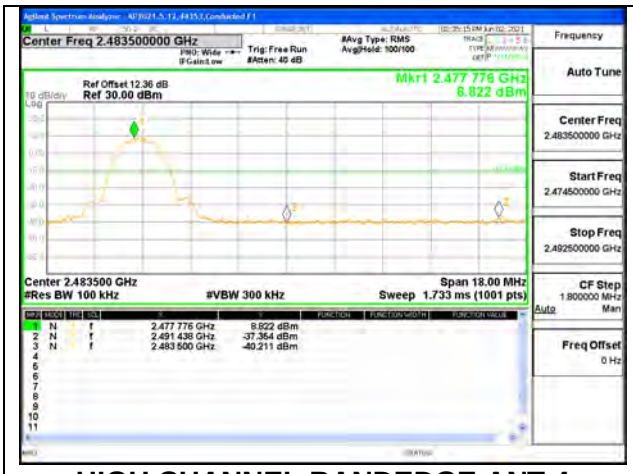
LOW CHANNEL OUT-OF-BAND ANT 4



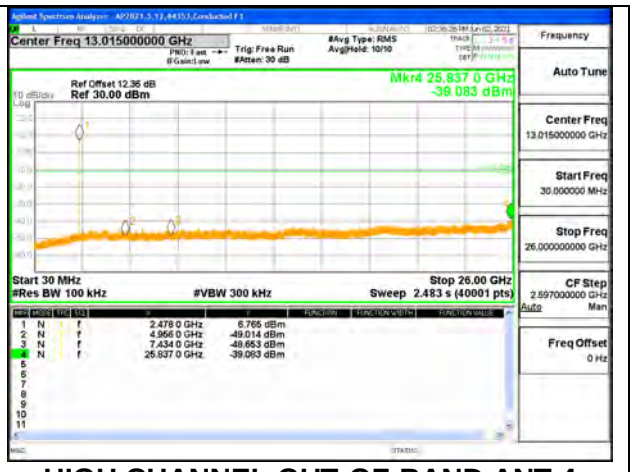
MID CHANNEL REFERENCE ANT 4



MID CHANNEL OUT-OF-BAND ANT 4



HIGH CHANNEL BANDEDGE ANT 4



HIGH CHANNEL OUT-OF-BAND ANT 4

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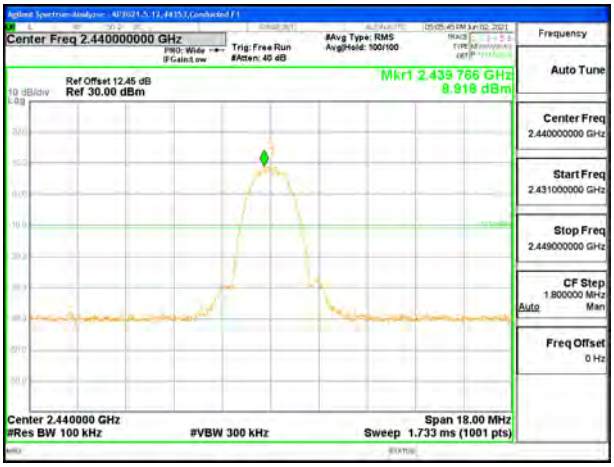
ANT 3 (2Mbps)

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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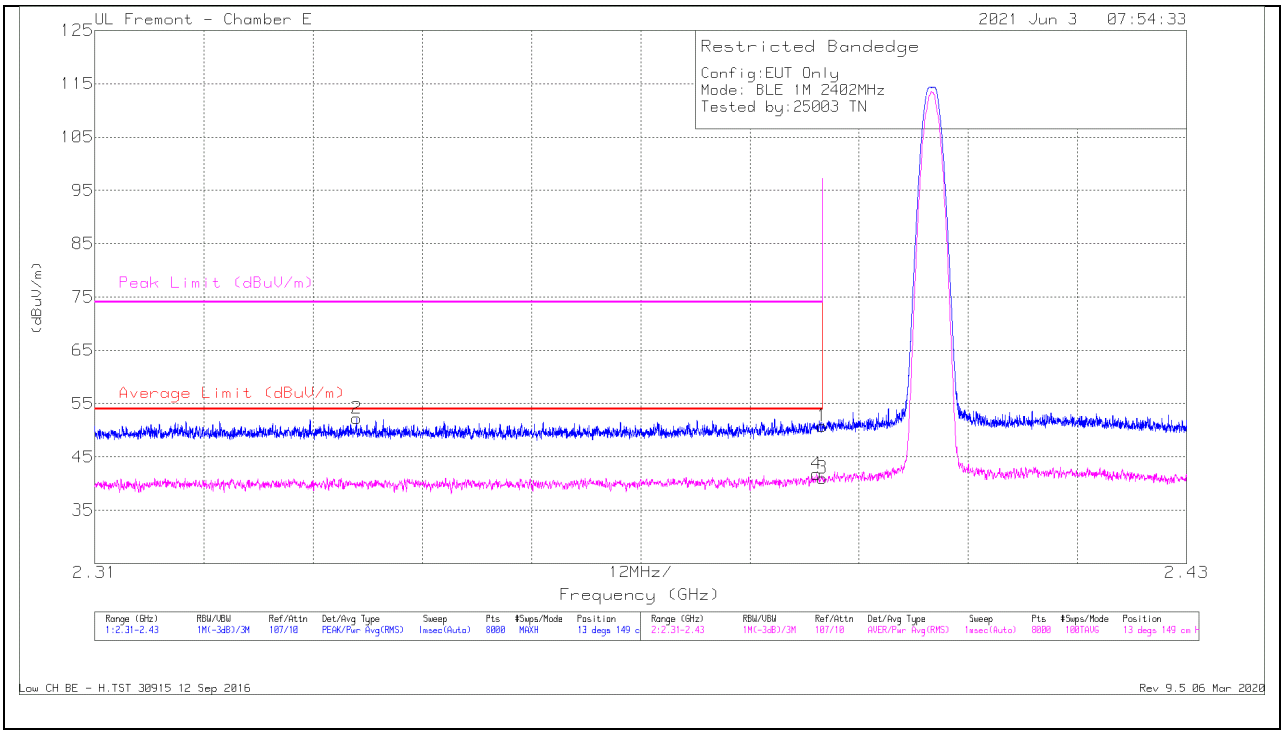
10.2. TRANSMITTER ABOVE 1 GHz

10.2.1. HIGH POWER BLE (1Mbps)

ANT 4

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (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
2	* 2.33879	45.51	Pk	32.1	-25.4	52.21	-	-	74	-21.79	13	149	H
4	* 2.38932	35.01	RMS	32.2	-25.4	41.81	54	-12.19	-	-	13	149	H
1	* 2.38999	44.02	Pk	32.2	-25.4	50.82	-	-	74	-23.18	13	149	H
3	* 2.38999	34.22	RMS	32.2	-25.4	41.02	54	-12.98	-	-	13	149	H

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

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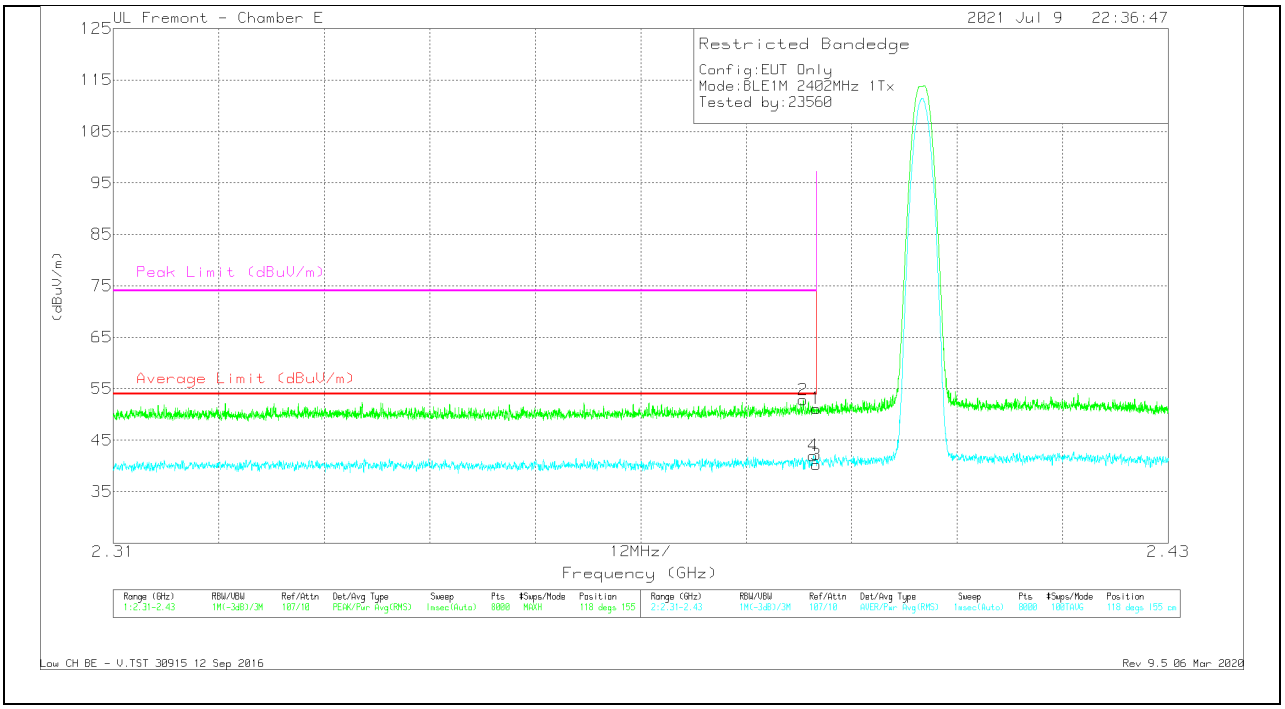
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (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	44.37	Pk	32.2	-25.4	51.17	-	-	74	-22.83	118	155	V
2	* 2.38849	46.03	Pk	32.2	-25.4	52.83	-	-	74	-21.17	118	155	V
3	* 2.38999	33.43	RMS	32.2	-25.4	40.23	54	-13.77	-	-	118	155	V
4	* 2.38963	35.18	RMS	32.2	-25.4	41.98	54	-12.02	-	-	118	155	V

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

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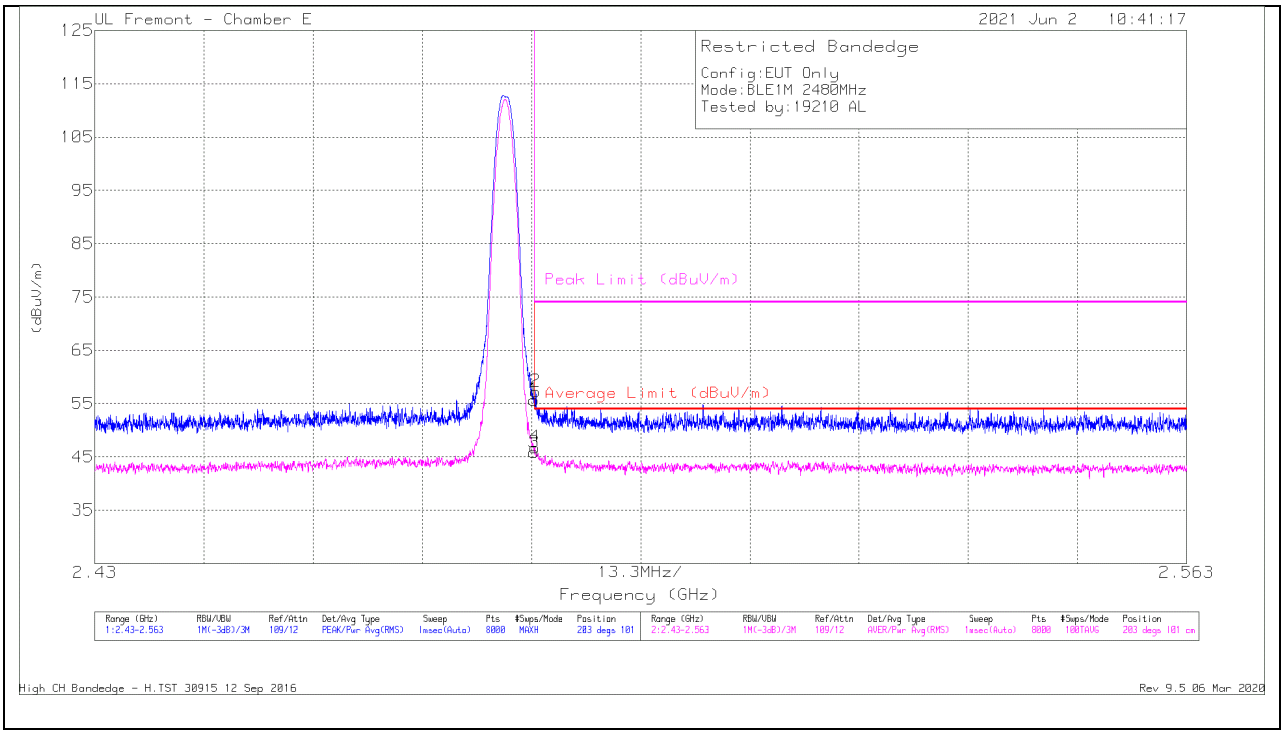
BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE007810 7 (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	* 2.48351	40.79	Pk	32.6	-17.7	55.69	-	-	74	-18.31	203	101	H
2	* 2.48372	42.4	Pk	32.6	-17.7	57.3	-	-	74	-16.7	203	101	H
3	* 2.48351	30.98	RMS	32.6	-17.7	45.88	54	-8.12	-	-	203	101	H
4	* 2.48359	31.9	RMS	32.6	-17.7	46.80	54	-7.2	-	-	203	101	H

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

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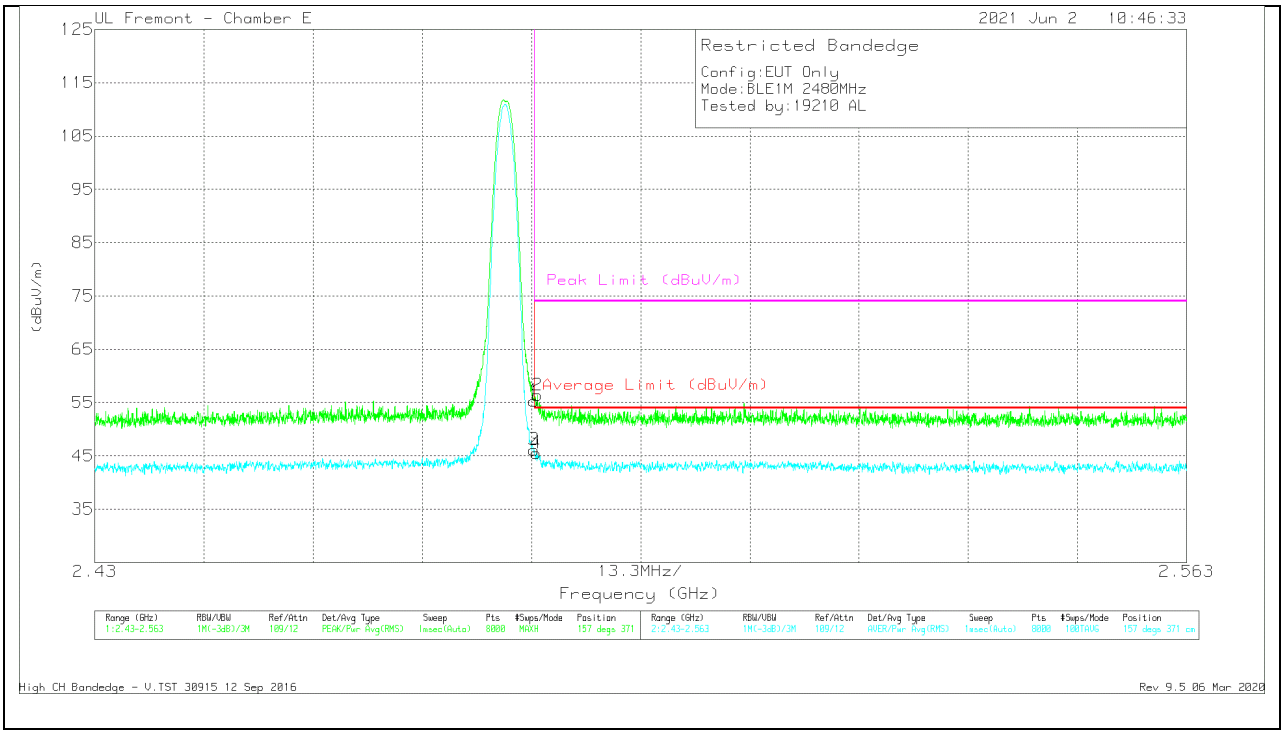
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (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	40.42	Pk	32.6	-17.7	55.32	-	-	74	-18.68	157	371	V
3	* 2.48351	31.25	RMS	32.6	-17.7	46.15	54	-7.85	-	-	157	371	V
4	* 2.48379	30.62	RMS	32.6	-17.7	45.52	54	-8.48	-	-	157	371	V
2	* 2.48392	41.49	Pk	32.6	-17.7	56.39	-	-	74	-17.61	157	371	V

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

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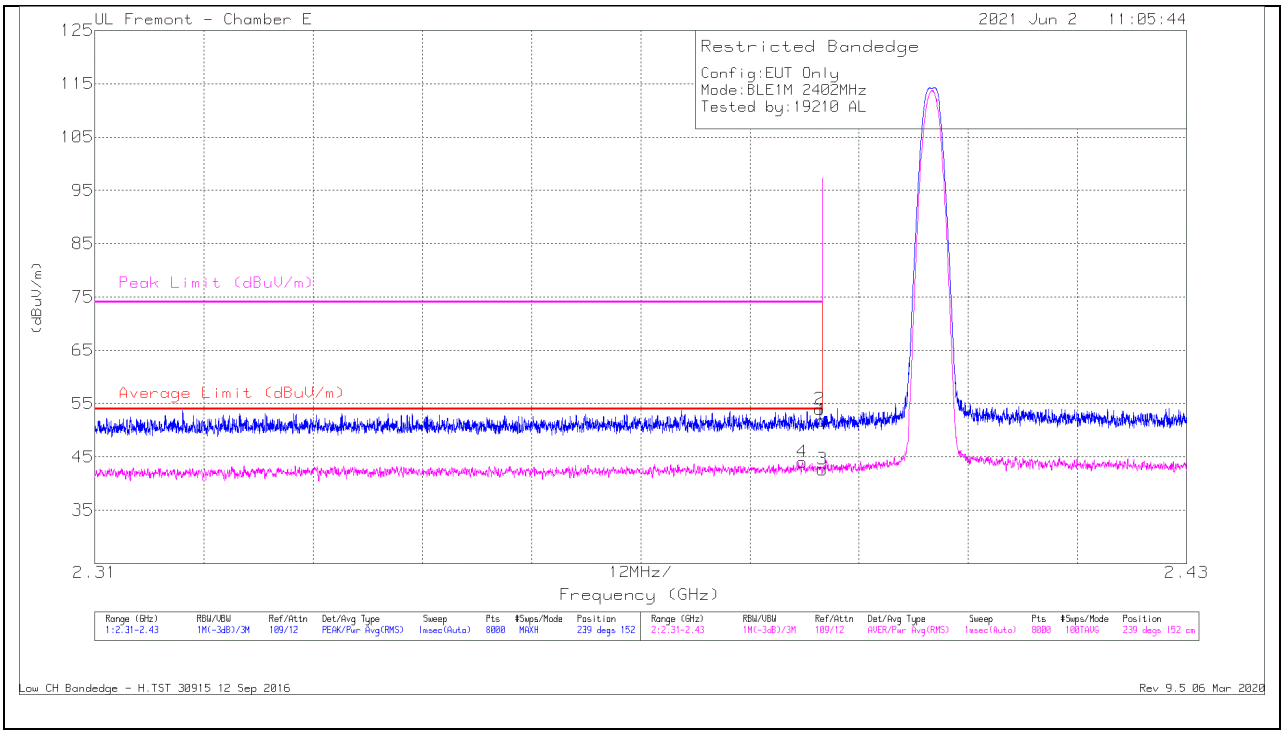
ANT 3

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (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	* 2.38777	29.42	RMS	32.2	-17.6	44.02	54	-9.98	-	-	239	152	H
2	* 2.38968	39.34	Pk	32.2	-17.6	53.94	-	-	74	-20.06	239	152	H
1	* 2.38999	37.24	Pk	32.2	-17.6	51.84	-	-	74	-22.16	239	152	H
3	* 2.38999	28.05	RMS	32.2	-17.6	42.65	54	-11.35	-	-	239	152	H

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

Pk - Peak detector
RMS - RMS detection

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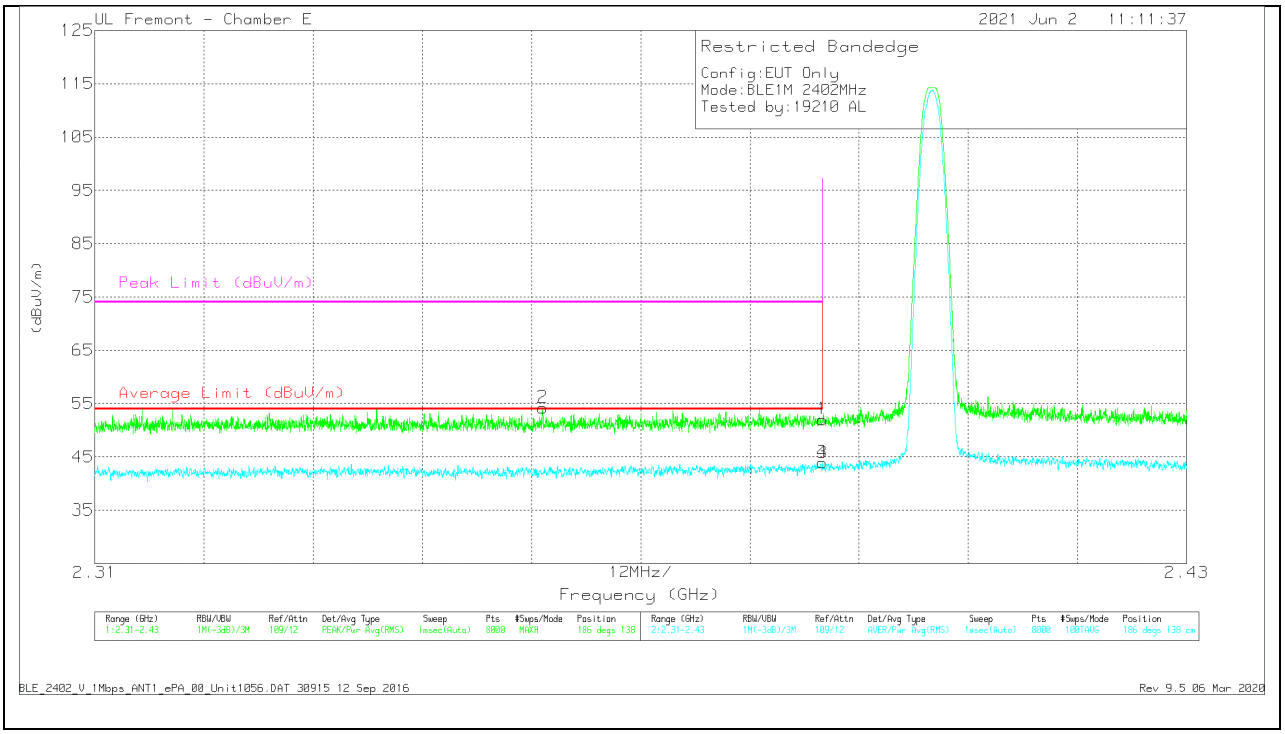
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (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	37.45	Pk	32.2	-17.6	52.05	-	-	74	-21.95	186	138	V
2	* 2.35922	39.93	Pk	32	-17.7	54.23	-	-	74	-19.77	186	138	V
3	* 2.38999	29.32	RMS	32.2	-17.6	43.92	54	-10.08	-	-	186	138	V
4	* 2.38998	29.32	RMS	32.2	-17.6	43.92	54	-10.08	-	-	186	138	V

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

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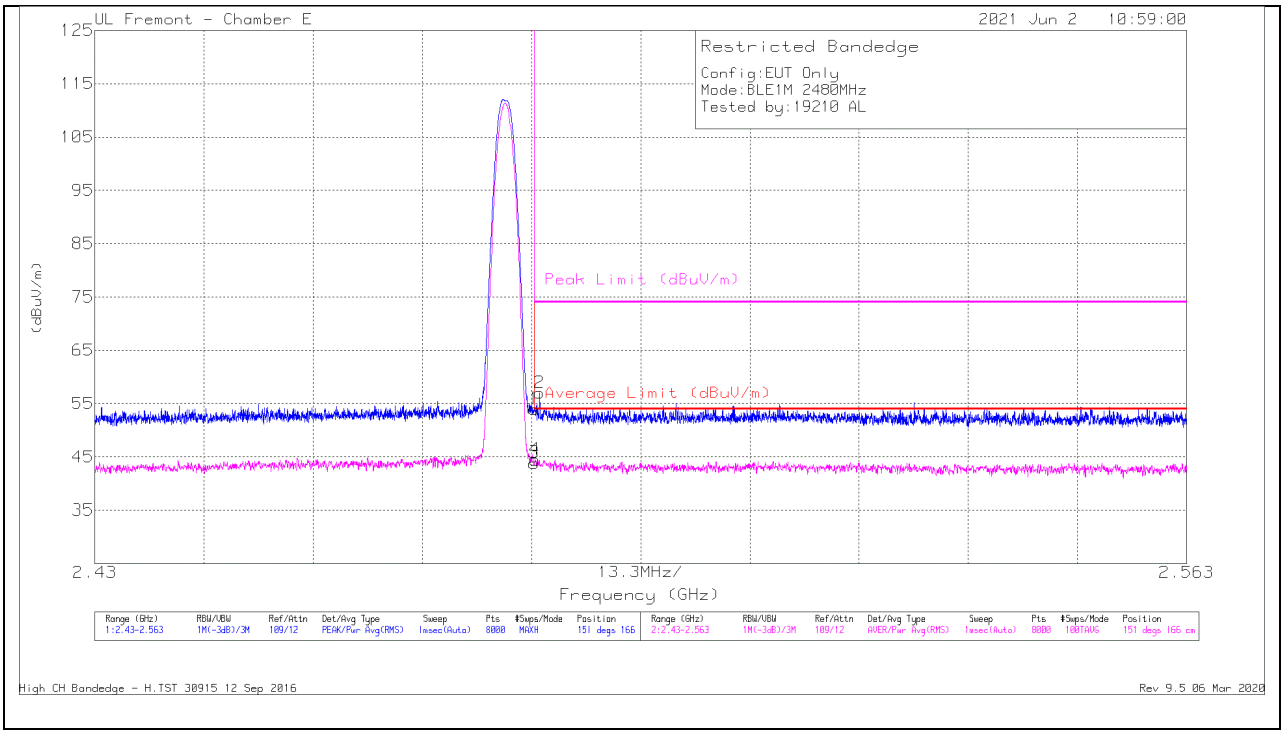
BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (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	39.06	Pk	32.6	-17.7	53.96	-	-	74	-20.04	151	166	H
3	* 2.48351	28.96	RMS	32.6	-17.7	43.86	54	-10.14	-	-	151	166	H
4	* 2.48361	29.6	RMS	32.6	-17.7	44.5	54	-9.5	-	-	151	166	H
2	* 2.48419	42.08	Pk	32.6	-17.7	56.98	-	-	74	-17.02	151	166	H

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

Pk - Peak detector
RMS - RMS detection

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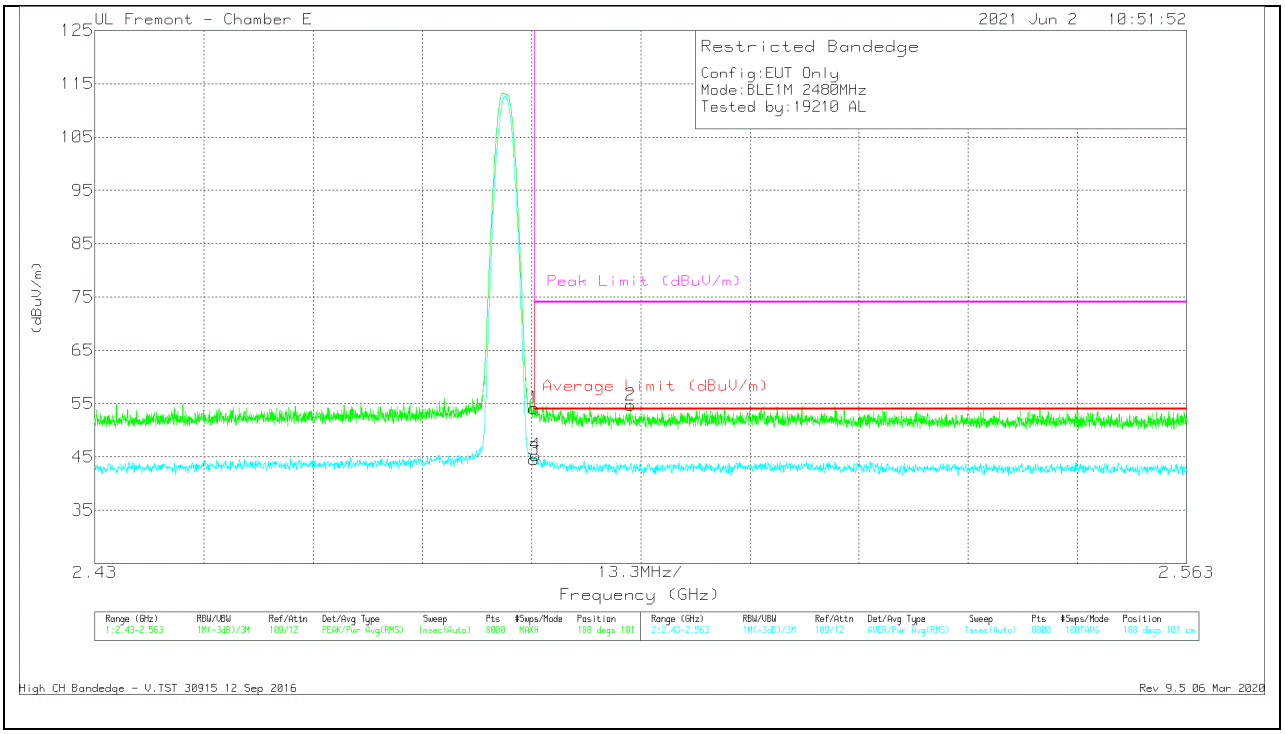
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (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	39.24	Pk	32.6	-17.7	54.14	-	-	74	-19.86	188	101	V
2	* 2.49526	39.79	Pk	32.7	-17.8	54.69	-	-	74	-19.31	188	101	V
3	* 2.48351	29.66	RMS	32.6	-17.7	44.56	54	-9.44	-	-	188	101	V
4	* 2.48371	30.42	RMS	32.6	-17.7	45.32	54	-8.68	-	-	188	101	V

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

Pk - Peak detector
RMS - RMS detection

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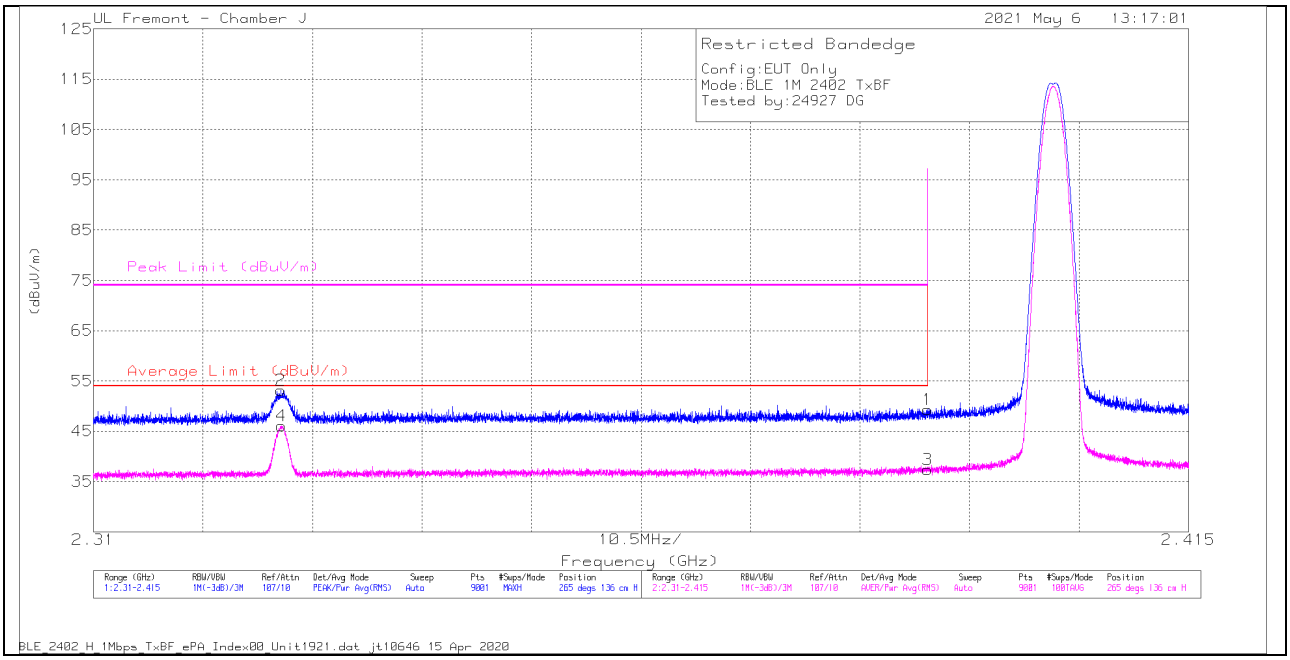
10.2.2. HIGH POWER BLE TXBF (1Mbps)

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE010003 4 (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	* 2.38999	42.38	Pk	32.1	-25.2	49.28	-	-	74	-24.72	265	136	H
2	* 2.32796	46.63	Pk	31.8	-25.3	53.13	-	-	74	-20.87	265	136	H
3	* 2.38999	30.51	RMS	32.1	-25.2	37.41	54	-16.59	-	-	265	136	H
4	* 2.328	39.61	RMS	31.8	-25.3	46.11	54	-7.89	-	-	265	136	H

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

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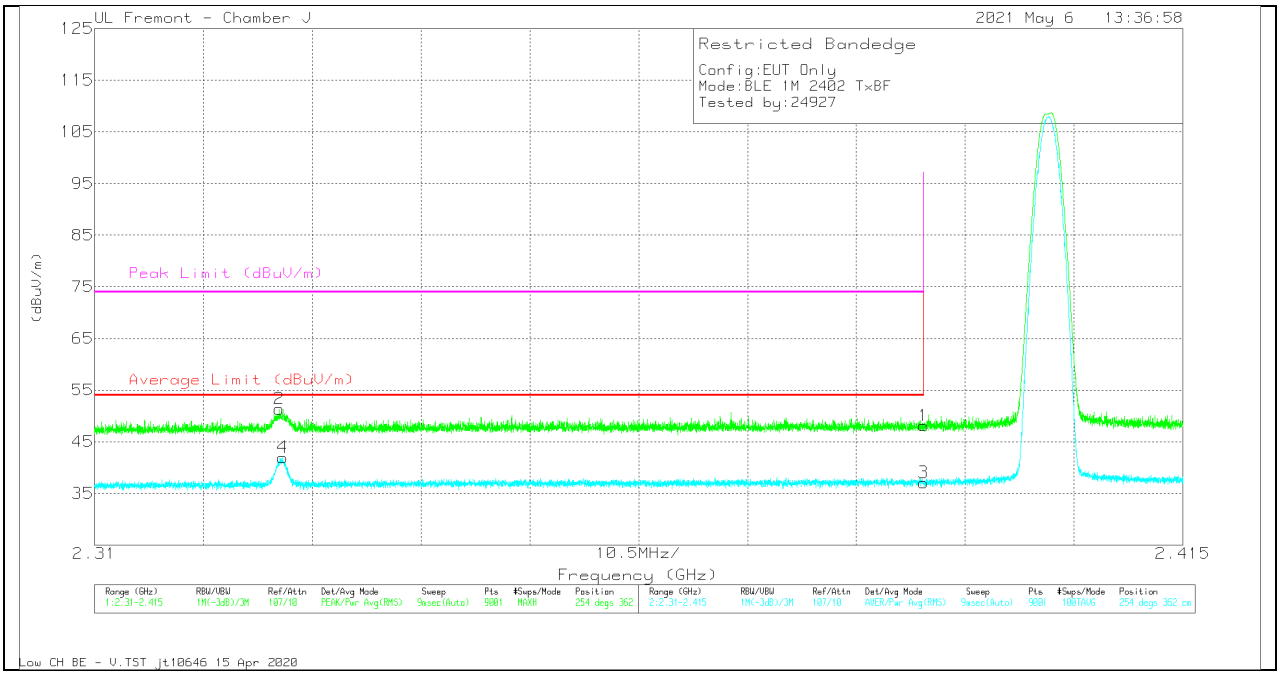
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE010003 4 (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	* 2.38999	41.2	Pk	32.1	-25.2	48.1	-	-	74	-25.9	254	362	V
2	* 2.32783	44.86	Pk	31.8	-25.3	51.36	-	-	74	-22.64	254	362	V
3	* 2.38999	30.18	RMS	32.1	-25.2	37.08	54	-16.92	-	-	254	362	V
4	* 2.32815	35.46	RMS	31.8	-25.3	41.96	54	-12.04	-	-	254	362	V

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

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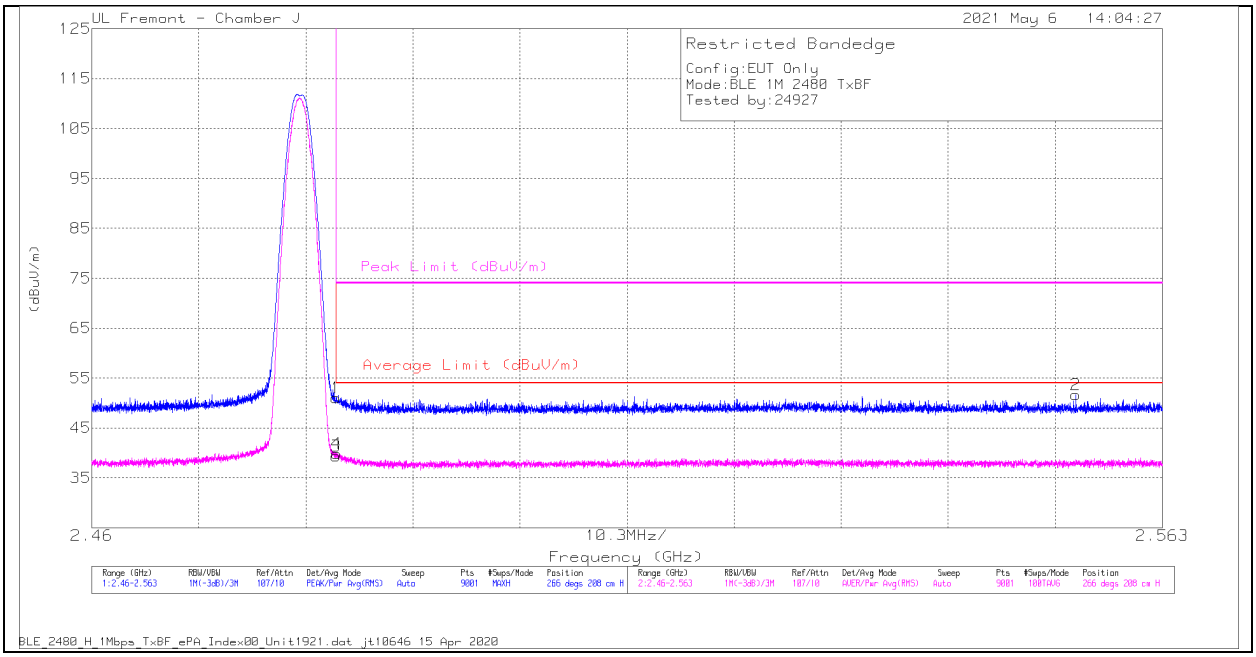
BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE010003 4 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	43.7	Pk	32.5	-25.2	51	-	-	74	-23	266	208	H
2	2.55466	44.14	Pk	32.6	-25.1	51.64	-	-	74	-22.36	266	208	H
3	* 2.48351	32.07	RMS	32.5	-25.2	39.37	54	-14.63	-	-	266	208	H
4	* 2.48357	32.59	RMS	32.5	-25.2	39.89	54	-14.11	-	-	266	208	H

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

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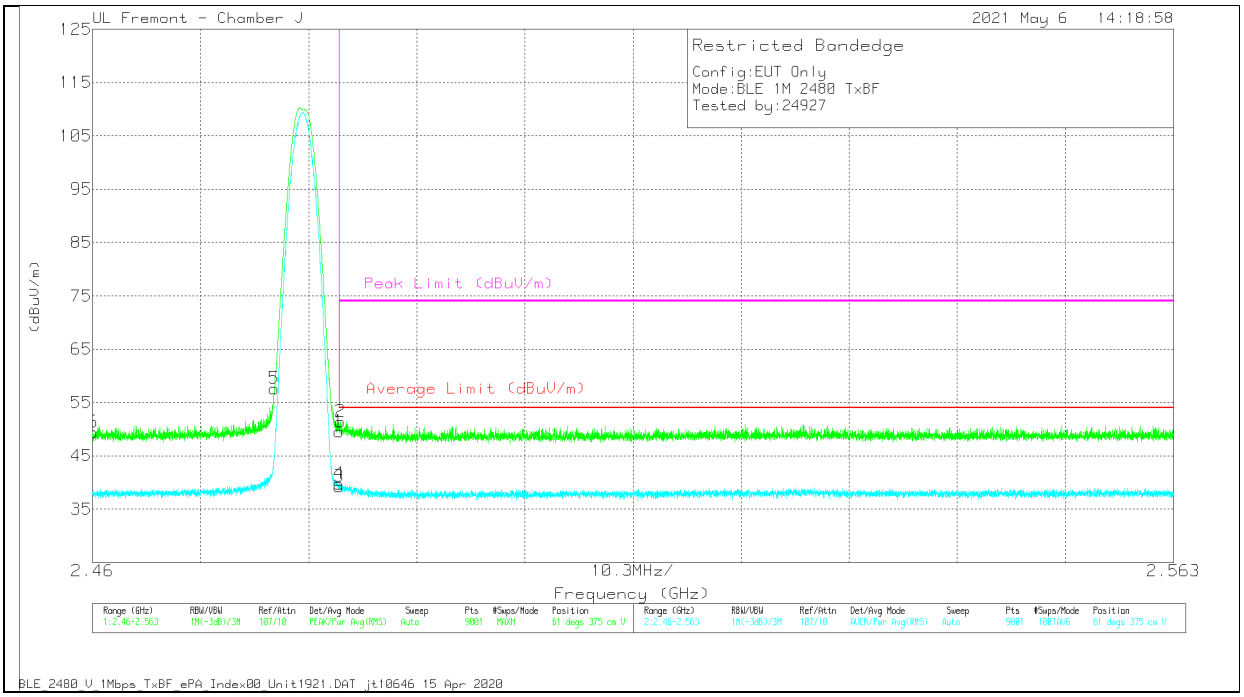
VERTICAL RESULT



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	42.28	Pk	32.5	-25.2	49.58	-	-	74	-24.42	61	375	V
2	* 2.48363	44.07	Pk	32.5	-25.2	51.37	-	-	74	-22.63	61	375	V
5	2.47734	50.41	Pk	32.4	-25.2	57.61	-	-	-	-	61	375	V
6	2.46002	42.41	Pk	32.2	-25.2	49.41	-	-	-	-	61	375	V
3	* 2.48351	31.9	RMS	32.5	-25.2	39.2	54	-14.8	-	-	61	375	V
4	* 2.48352	32.46	RMS	32.5	-25.2	39.76	54	-14.24	-	-	61	375	V

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

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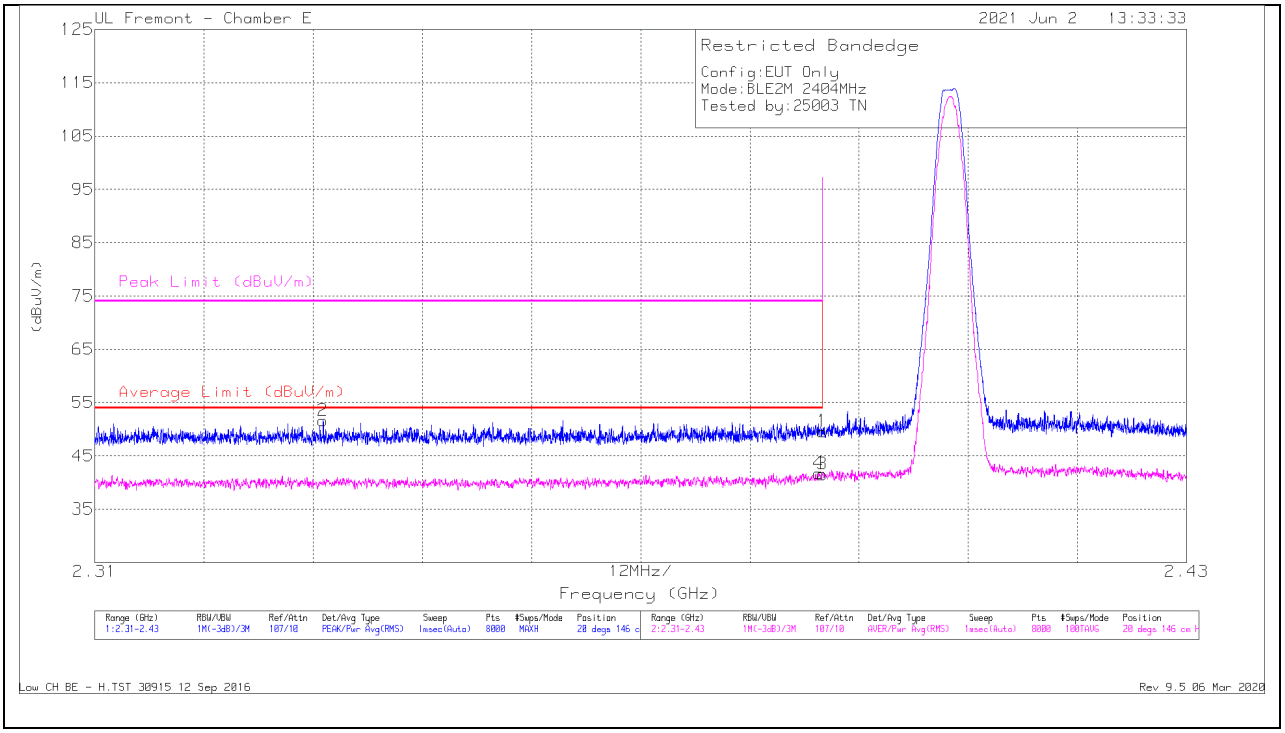
10.2.3. HIGH POWER BLE (2Mbps)

ANT 4

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (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
2	* 2.3351	45.01	Pk	32.1	-25.5	51.61	-	-	74	-22.39	20	146	H
4	* 2.38957	34.94	RMS	32.2	-25.4	41.74	54	-12.26	-	-	20	146	H
1	* 2.38999	42.79	Pk	32.2	-25.4	49.59	-	-	74	-24.41	20	146	H
3	* 2.38999	34.75	RMS	32.2	-25.4	41.55	54	-12.45	-	-	20	146	H

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

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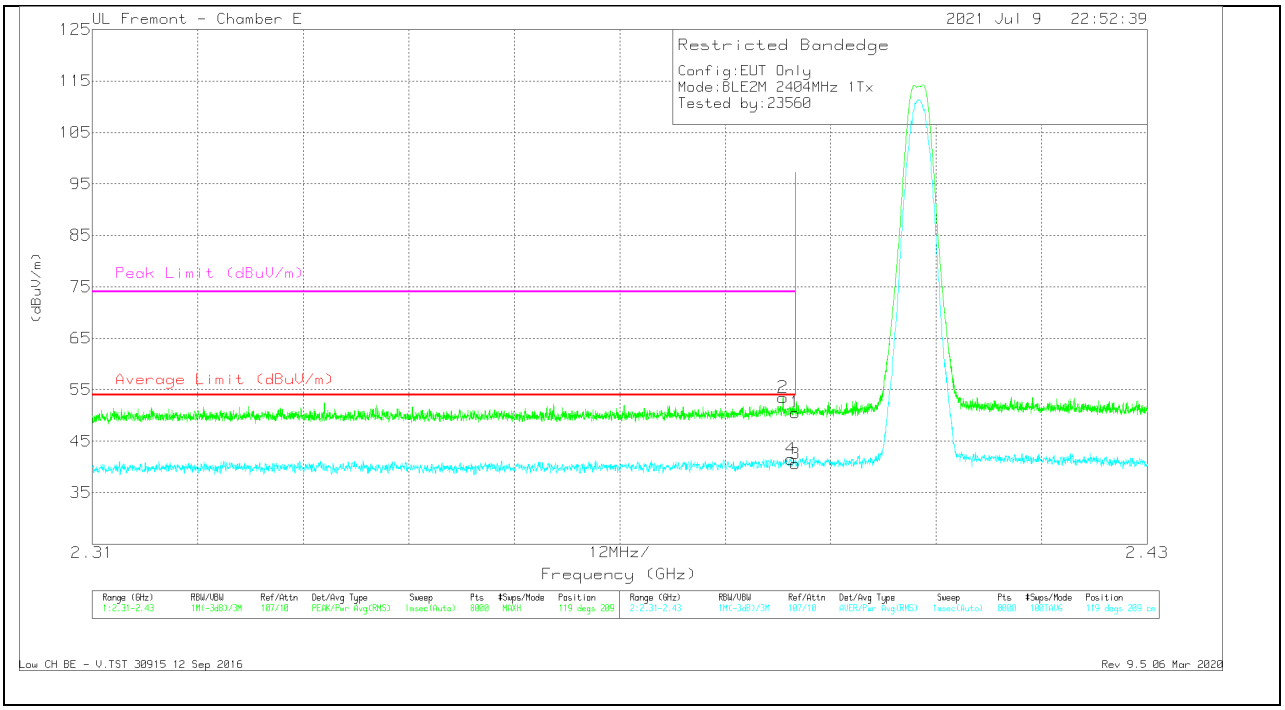
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (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
2	* 2.38857	46.71	Pk	32.2	-25.4	53.51	-	-	74	-20.49	119	209	V
4	* 2.38945	34.76	RMS	32.2	-25.4	41.56	54	-12.44	-	-	119	209	V
1	* 2.38999	43.78	Pk	32.2	-25.4	50.58	-	-	74	-23.42	119	209	V
3	* 2.38999	33.8	RMS	32.2	-25.4	40.6	54	-13.4	-	-	119	209	V

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

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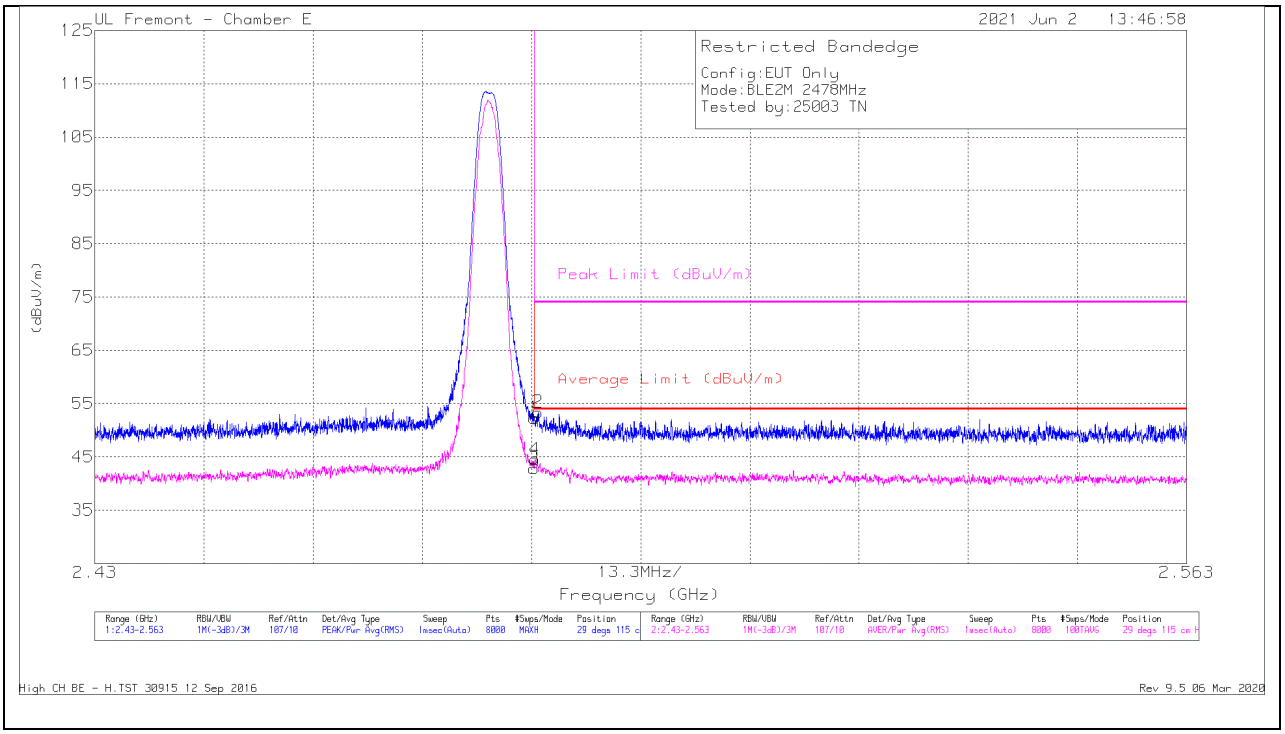
BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (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	45.13	Pk	32.6	-25.4	52.33	-	-	74	-21.67	29	115	H
3	* 2.48351	35.61	RMS	32.6	-25.4	42.81	54	-11.19	-	-	29	115	H
4	* 2.48364	37.32	RMS	32.6	-25.4	44.52	54	-9.48	-	-	29	115	H
2	* 2.48397	46.15	Pk	32.6	-25.4	53.35	-	-	74	-20.65	29	115	H

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

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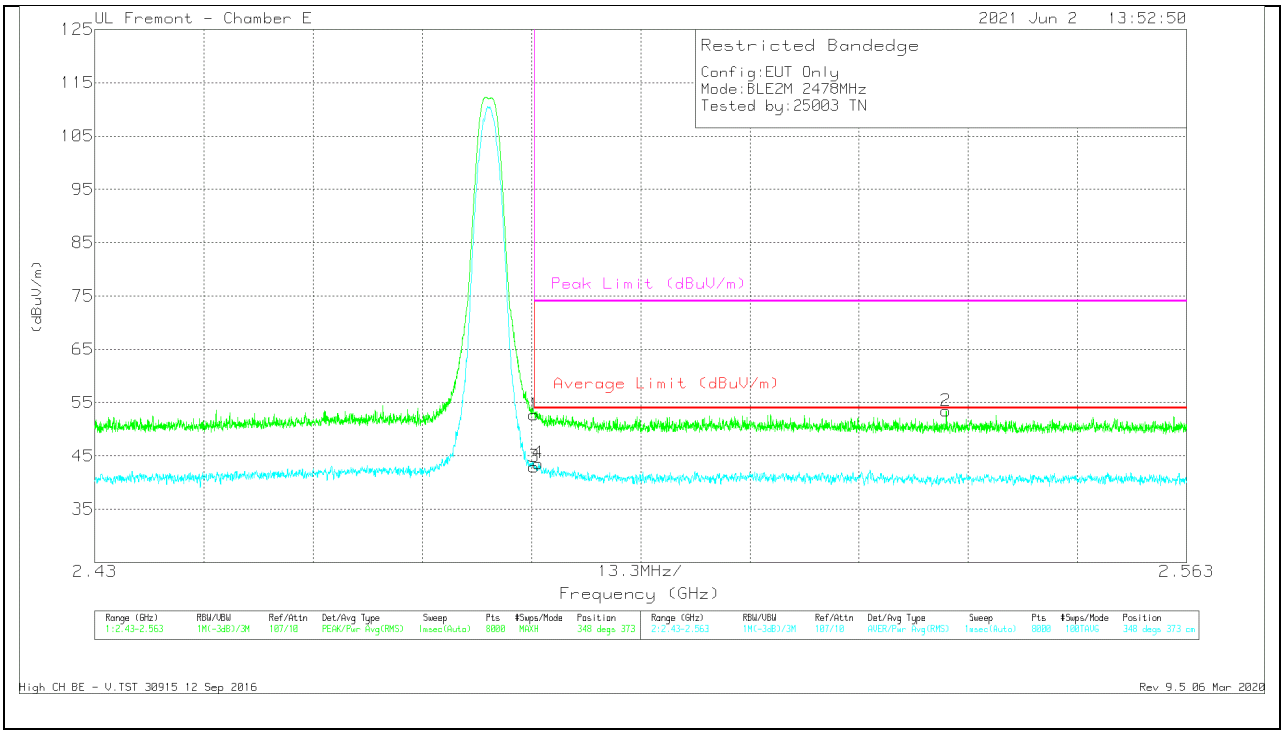
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (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	45.53	Pk	32.6	-25.4	52.73	-	-	74	-21.27	348	373	V
3	* 2.48351	35.77	RMS	32.6	-25.4	42.97	54	-11.03	-	-	348	373	V
4	* 2.484	36.42	RMS	32.6	-25.4	43.62	54	-10.38	-	-	348	373	V
2	2.5337	46.45	Pk	32.5	-25.5	53.45	-	-	74	-20.55	348	373	V

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

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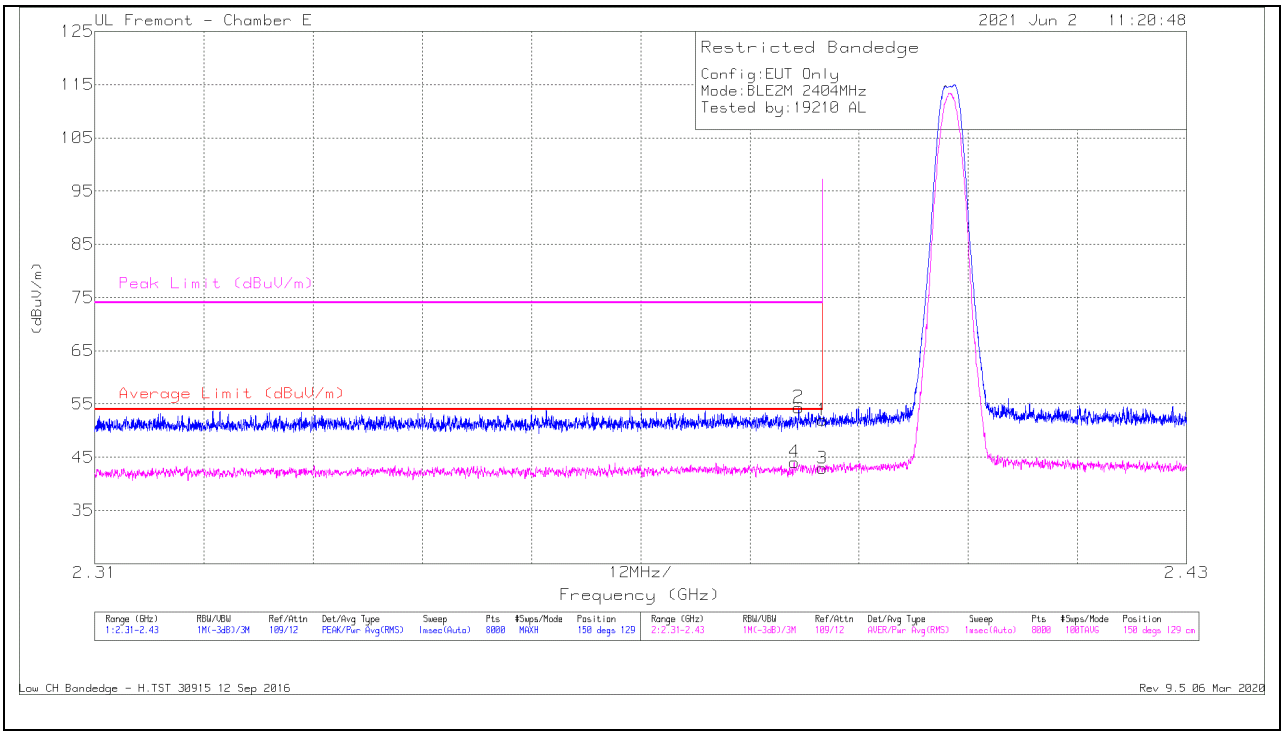
ANT 3

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (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	37.37	Pk	32.2	-17.6	51.97	-	-	74	-22.03	150	129	H
2	* 2.38735	39.76	Pk	32.2	-17.6	54.36	-	-	74	-19.64	150	129	H
3	* 2.38999	28.35	RMS	32.2	-17.6	42.95	54	-11.05	-	-	150	129	H
4	* 2.38687	29.46	RMS	32.2	-17.6	44.06	54	-9.94	-	-	150	129	H

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

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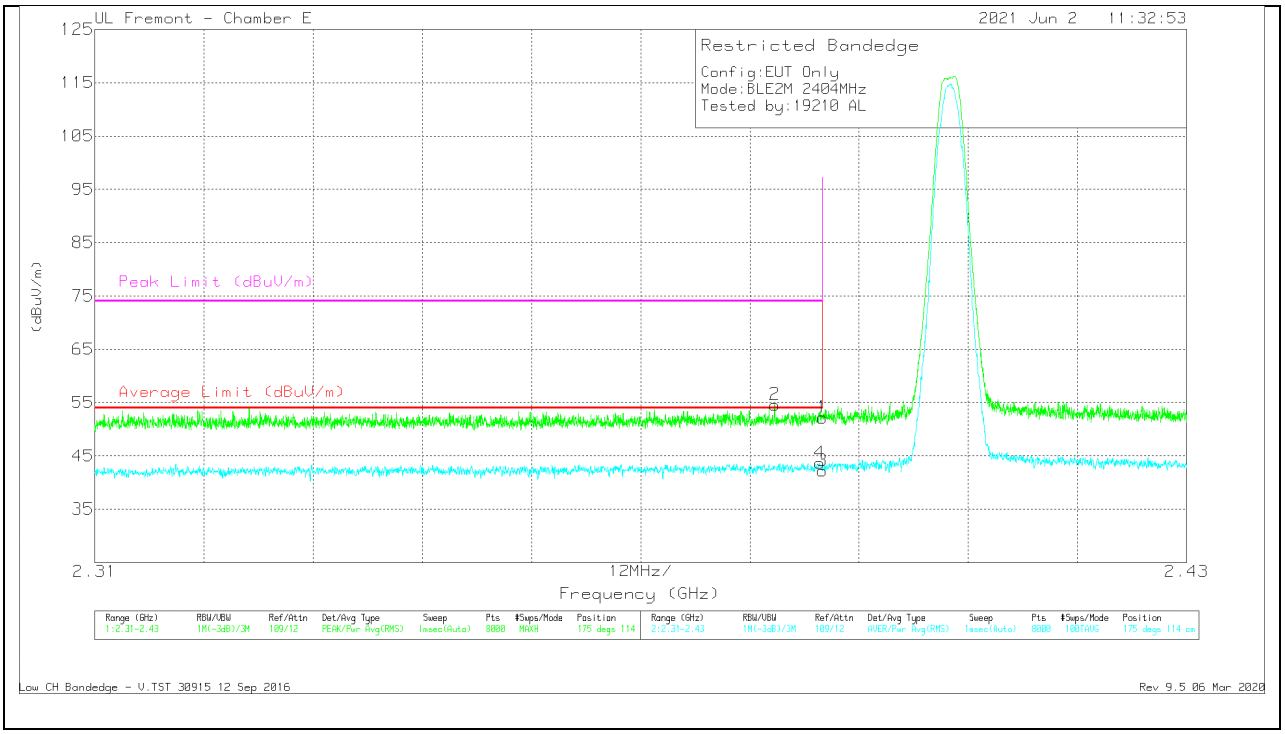
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (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	37.59	Pk	32.2	-17.6	52.19	-	-	74	-21.81	175	114	V
2	* 2.38473	40.01	Pk	32.2	-17.6	54.61	-	-	74	-19.39	175	114	V
3	* 2.38999	27.61	RMS	32.2	-17.6	42.21	54	-11.79	-	-	175	114	V
4	* 2.38968	29.07	RMS	32.2	-17.6	43.67	54	-10.33	-	-	175	114	V

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

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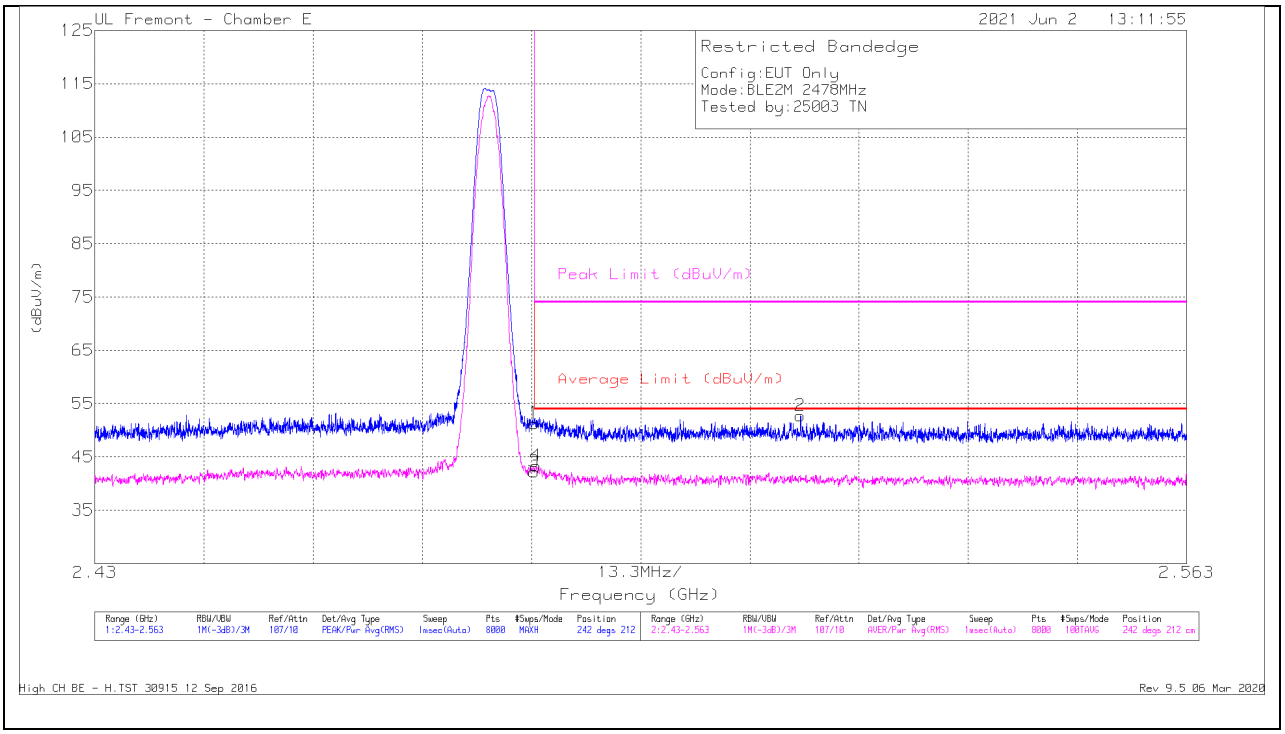
BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (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	44.08	Pk	32.6	-25.4	51.28	-	-	74	-22.72	242	212	H
3	* 2.48351	34.99	RMS	32.6	-25.4	42.19	54	-11.81	-	-	242	212	H
4	* 2.48374	36.09	RMS	32.6	-25.4	43.29	54	-10.71	-	-	242	212	H
2	2.51596	45.31	Pk	32.7	-25.3	52.71	-	-	74	-21.29	242	212	H

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

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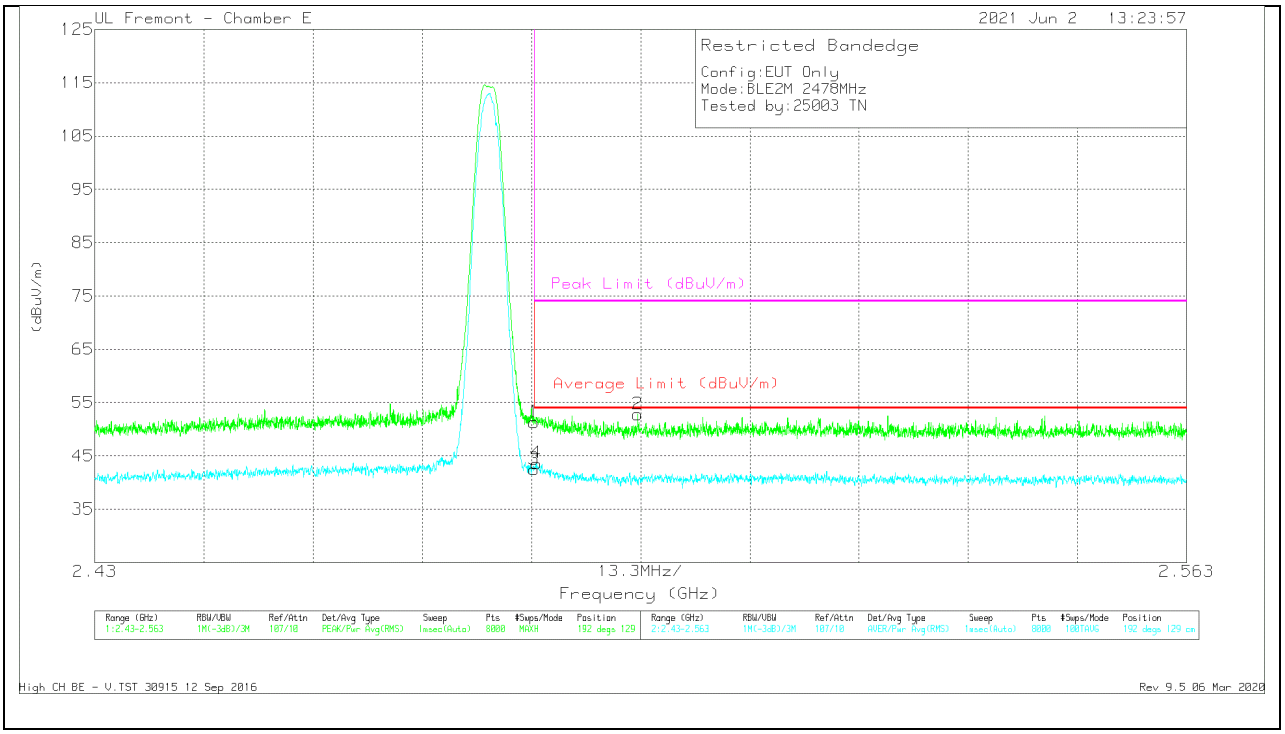
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (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	44.13	Pk	32.6	-25.4	51.33	-	-	74	-22.67	192	129	V
3	* 2.48351	35.27	RMS	32.6	-25.4	42.47	54	-11.53	-	-	192	129	V
4	* 2.48381	36.42	RMS	32.6	-25.4	43.62	54	-10.38	-	-	192	129	V
2	* 2.49613	45.61	Pk	32.7	-25.5	52.81	-	-	74	-21.19	192	129	V

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

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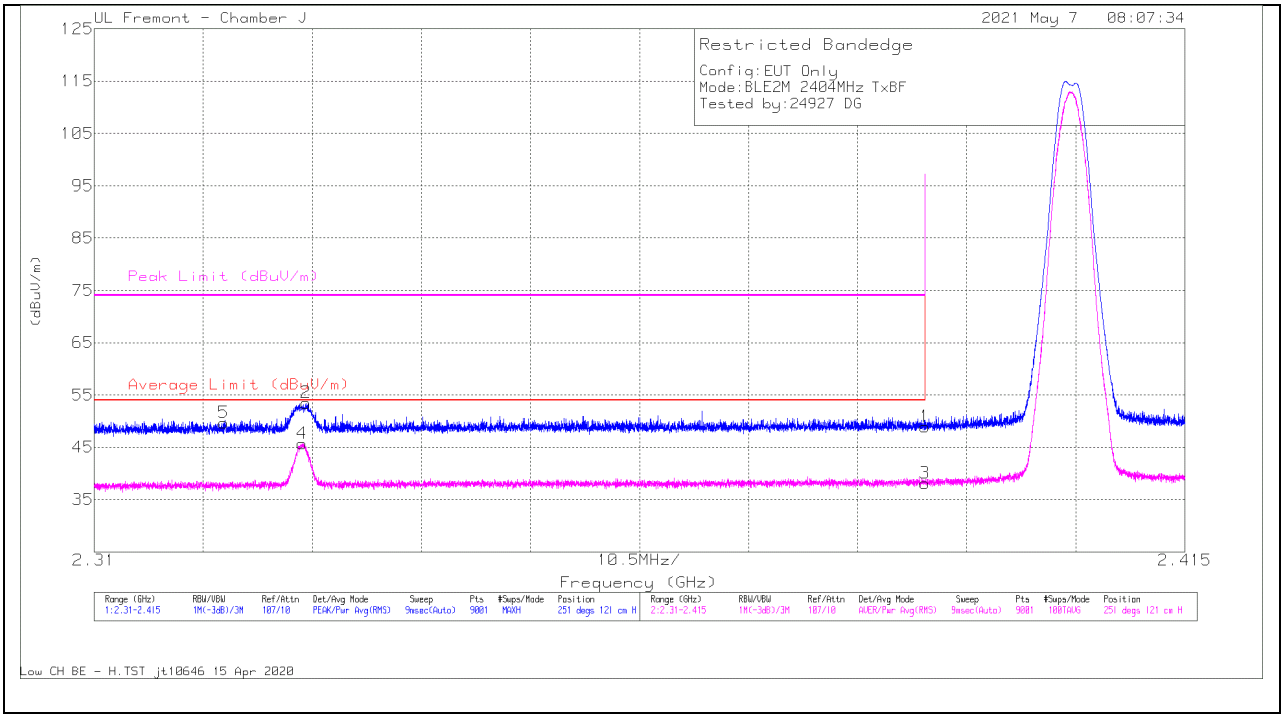
10.2.4. HIGH POWER BLE TXBF (2Mbps)

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0100034 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.38999	41.98	Pk	32.1	-25.2	48.88	-	-	74	-25.12	251	121	H
2	* 2.33041	46.96	Pk	31.8	-25.3	53.46	-	-	74	-20.54	251	121	H
5	* 2.32245	43.12	Pk	31.7	-25.2	49.62	-	-	74	-24.38	251	121	H
3	* 2.38999	31.19	RMS	32.1	-25.2	38.09	54	-15.91	-	-	251	121	H
4	* 2.33001	39.21	RMS	31.8	-25.3	45.71	54	-8.29	-	-	251	121	H

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

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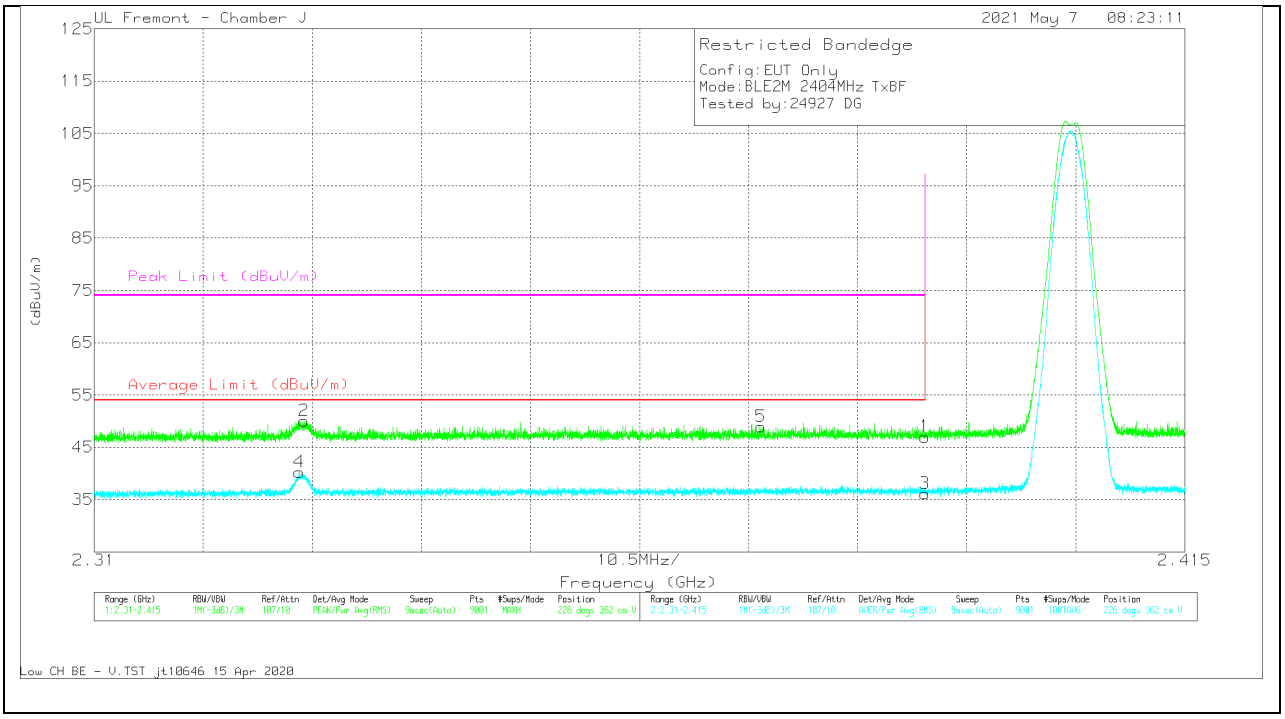
VERTICAL RESULT



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	40.1	Pk	32.1	-25.2	47	-	-	74	-27	226	362	V
2	* 2.33023	43.54	Pk	31.8	-25.3	50.04	-	-	74	-23.96	226	362	V
5	* 2.37419	42.03	Pk	32.1	-25.2	48.93	-	-	74	-25.07	226	362	V
3	* 2.38999	29.25	RMS	32.1	-25.2	36.15	54	-17.85	-	-	226	362	V
4	* 2.32974	33.75	RMS	31.8	-25.3	40.25	54	-13.75	-	-	226	362	V

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

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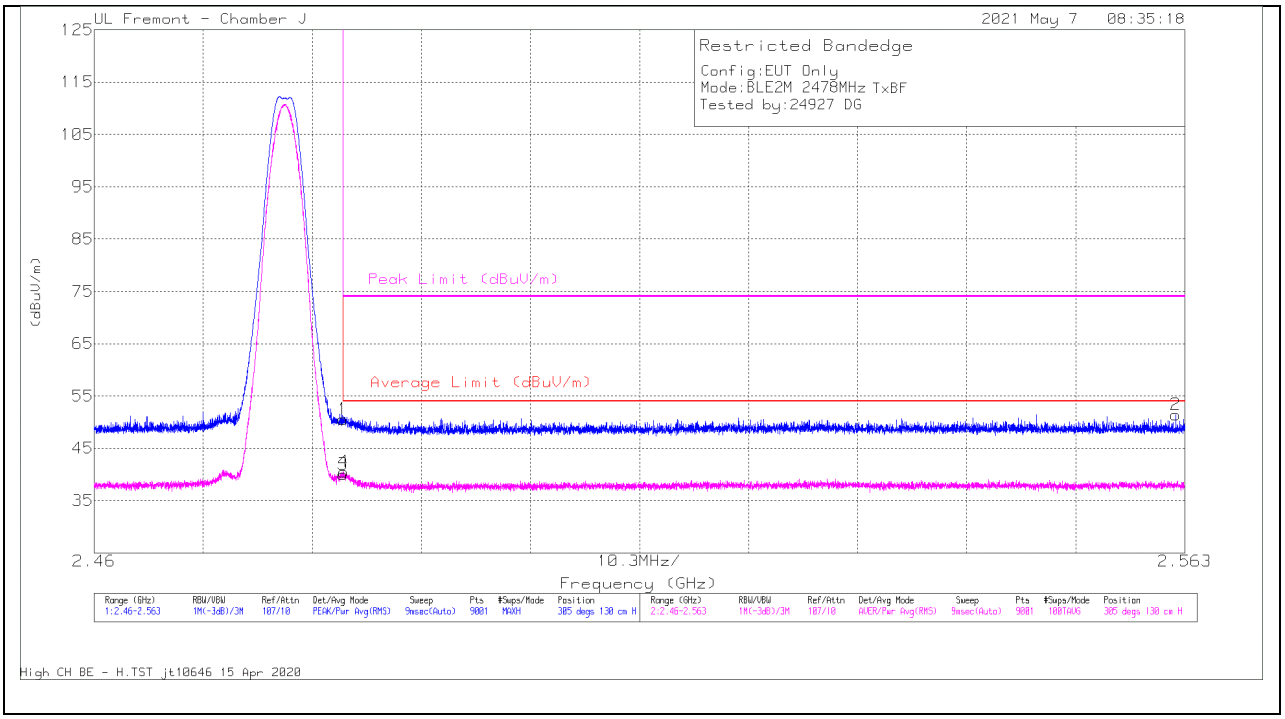
BANDEDGE (HIGH CHANNEL)

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	43.19	Pk	32.5	-25.2	50.49	-	-	74	-23.51	305	130	H
2	2.56214	43.94	Pk	32.6	-25.1	51.44	-	-	74	-22.56	305	130	H
3	* 2.48351	32.74	RMS	32.5	-25.2	40.04	54	-13.96	-	-	305	130	H
4	* 2.48355	33.19	RMS	32.5	-25.2	40.49	54	-13.51	-	-	305	130	H

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

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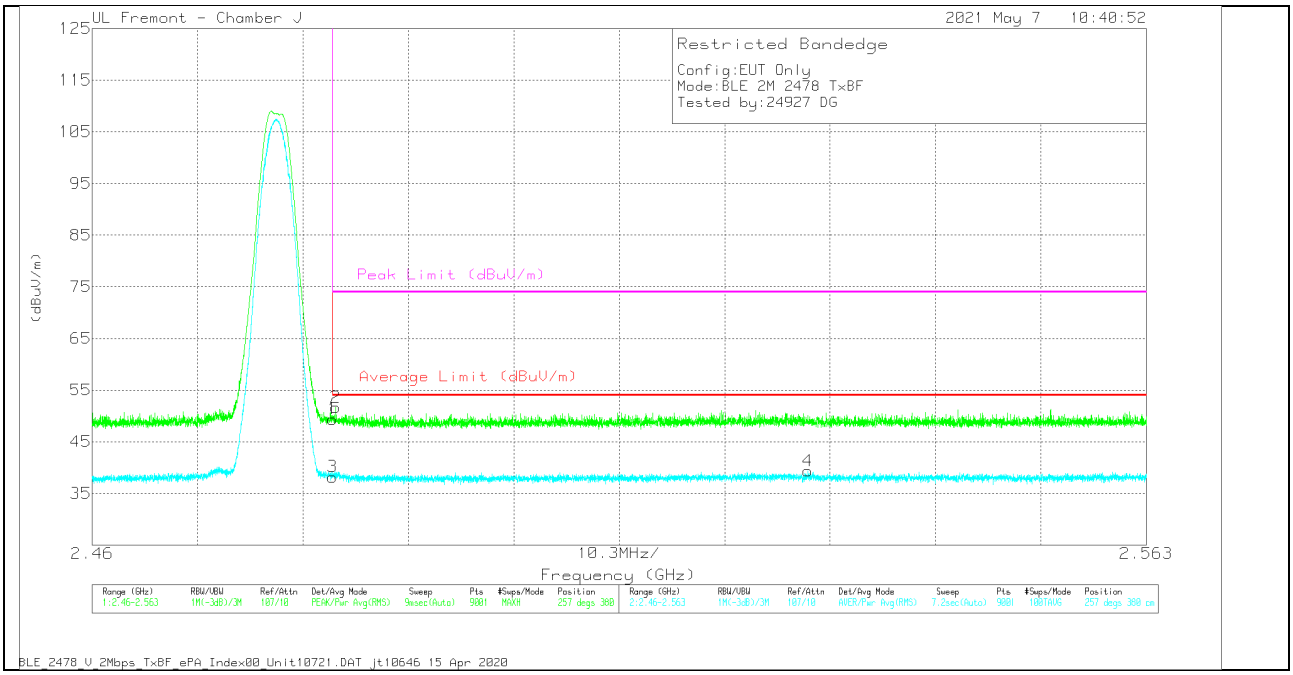
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0100034 (dB/m)	Amp/Cbl/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	* 2.48351	42.1	Pk	32.5	-25.2	49.4	-	-	74	-24.6	257	380	V
2	* 2.48382	44.36	Pk	32.5	-25.2	51.66	-	-	74	-22.34	257	380	V
3	* 2.48351	30.9	RMS	32.5	-25.2	38.2	54	-15.8	-	-	257	380	V
4	2.52992	31.65	RMS	32.8	-25.1	39.35	54	-14.65	-	-	257	380	V

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

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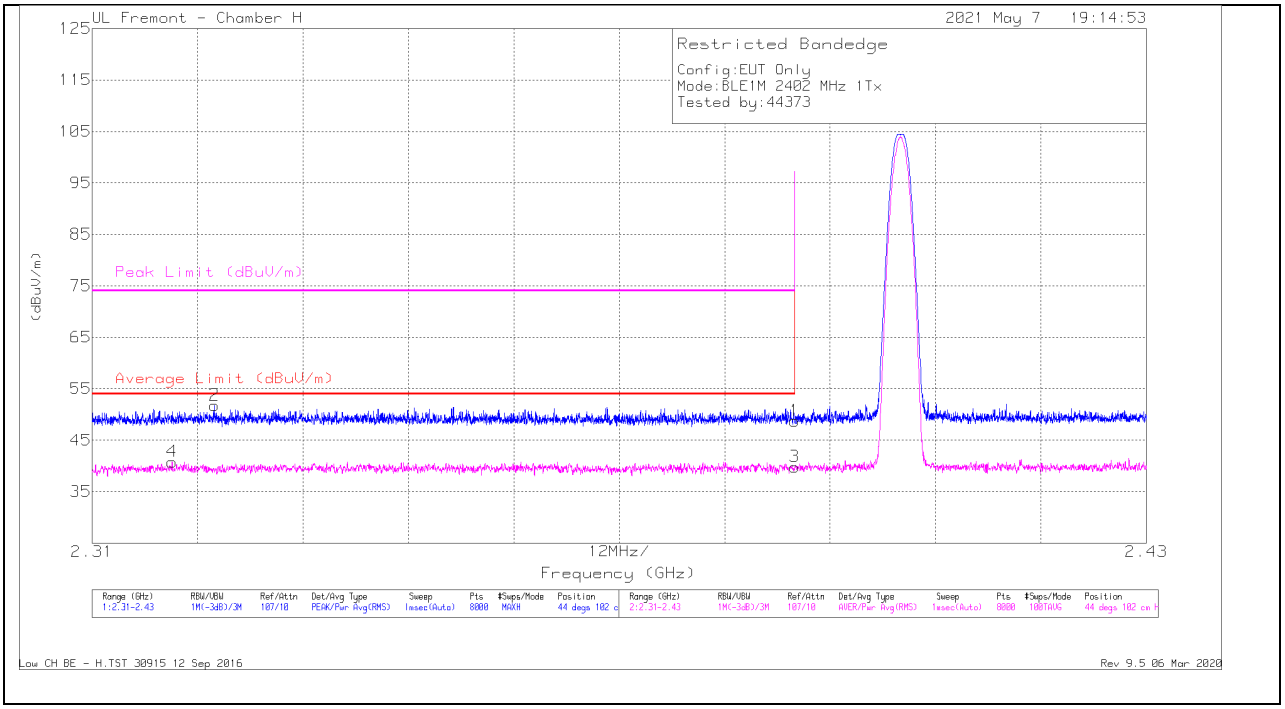
10.2.5. LOW POWER BLE (1Mbps)

ANT 4

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (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	* 2.38999	44.66	Pk	31.8	-27.7	48.76	-	-	74	-25.24	44	102	H
2	* 2.32392	47.68	Pk	31.8	-27.7	51.78	-	-	74	-22.22	44	102	H
3	* 2.38999	35.72	RMS	31.8	-27.7	39.82	54	-14.18	-	-	44	102	H
4	* 2.31911	36.61	RMS	31.8	-27.6	40.81	54	-13.19	-	-	44	102	H

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

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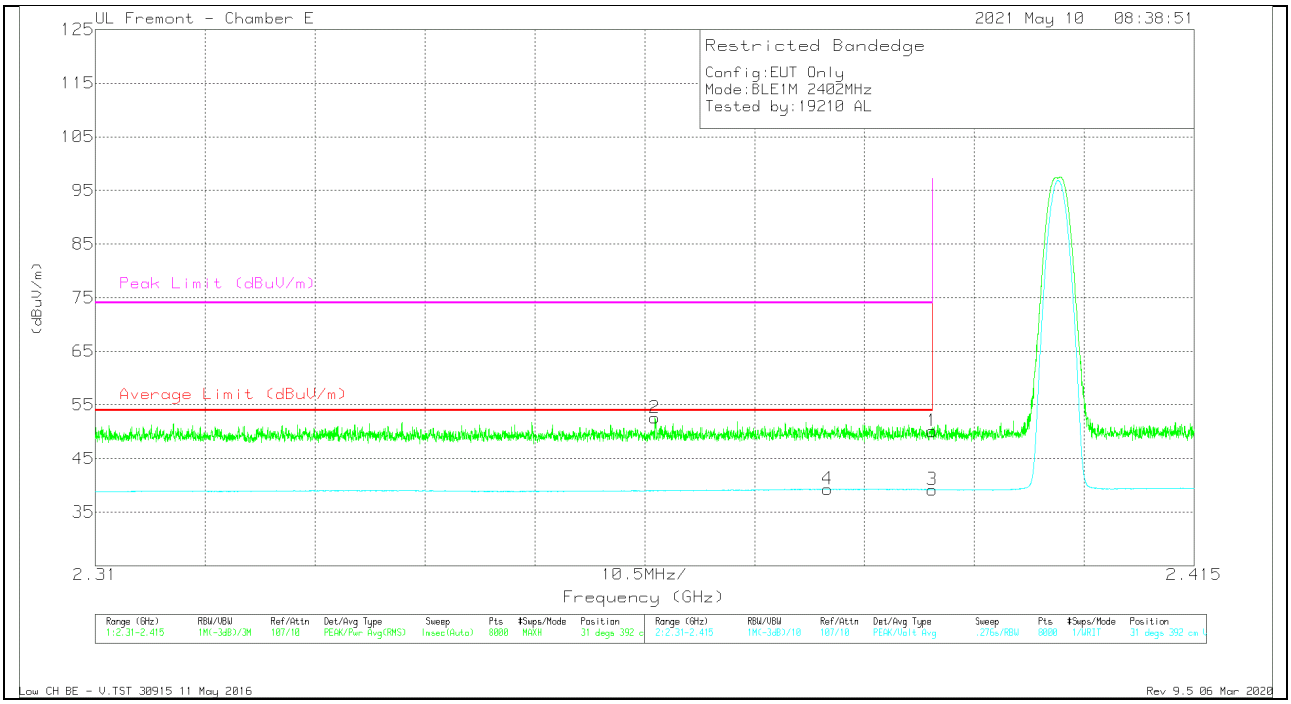
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (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
2	* 2.36348	46.01	Pk	32	-25.4	52.61	-	-	74	-21.39	31	392	V
4	* 2.37997	32.51	RMS	32.2	-25.4	39.31	54	-14.69	-	-	31	392	V
1	* 2.39	43.31	Pk	32.2	-25.4	50.11	-	-	74	-23.89	31	392	V
3	* 2.39	32.38	RMS	32.2	-25.4	39.18	54	-14.82	-	-	31	392	V

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

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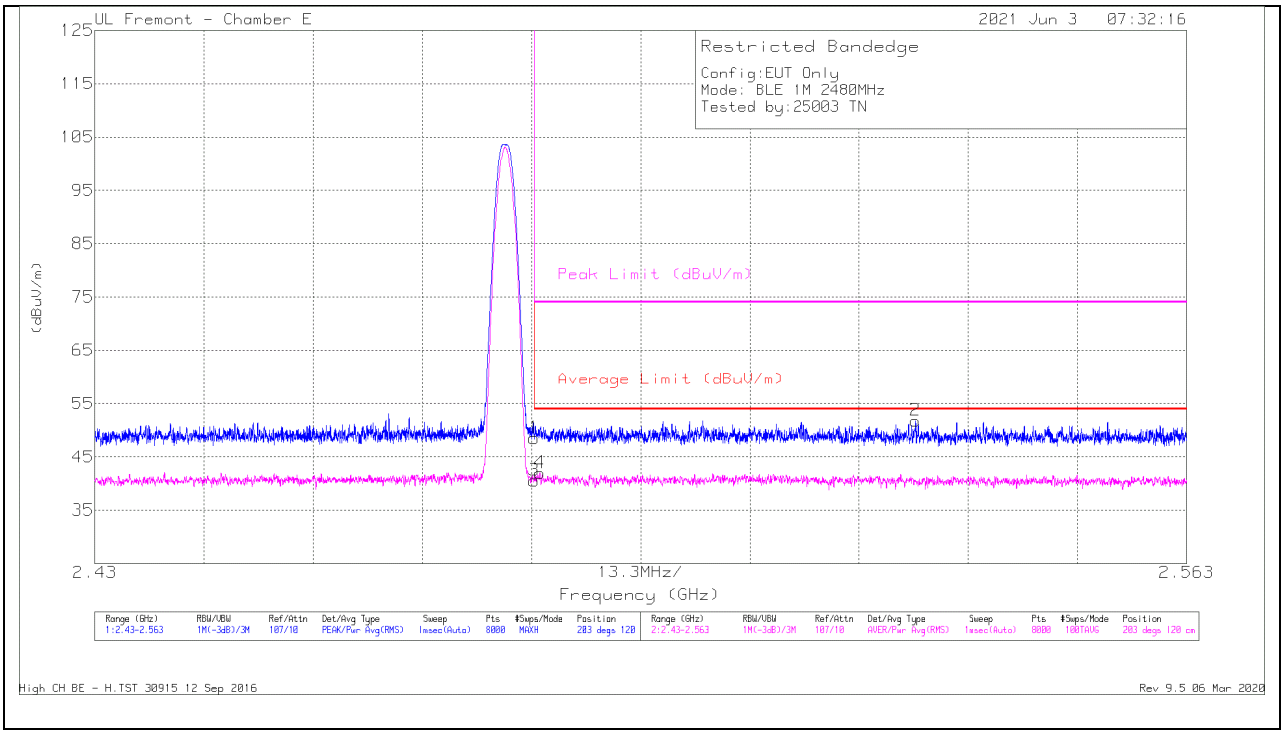
BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE007810 7 (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	* 2.48351	41.33	Pk	32.6	-25.4	48.53	-	-	74	-25.47	203	120	H
3	* 2.48351	33.37	RMS	32.6	-25.4	40.57	54	-13.43	-	-	203	120	H
4	* 2.48422	34.79	RMS	32.6	-25.4	41.99	54	-12.01	-	-	203	120	H
2	2.52998	44.71	Pk	32.5	-25.4	51.81	-	-	74	-22.19	203	120	H

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

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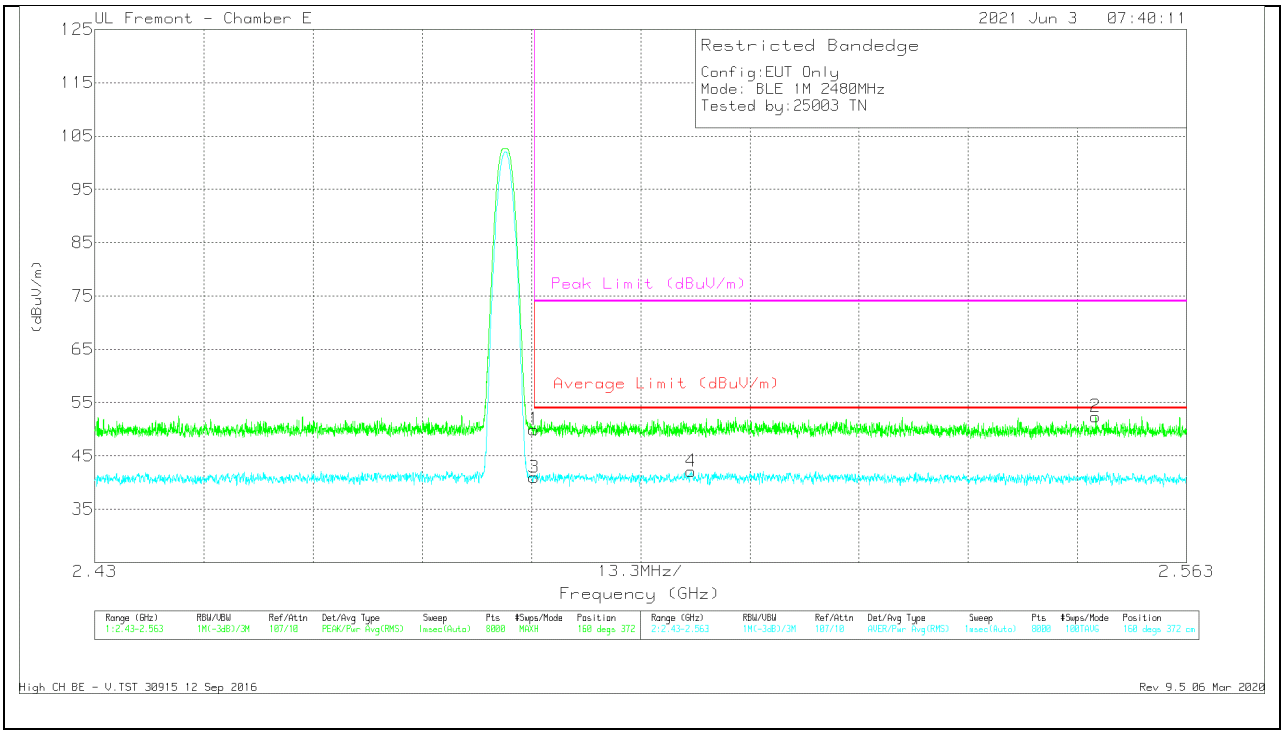
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (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	42.75	Pk	32.6	-25.4	49.95	-	-	74	-24.05	160	372	V
3	* 2.48351	33.79	RMS	32.6	-25.4	40.99	54	-13.01	-	-	160	372	V
4	2.50264	34.91	RMS	32.7	-25.5	42.11	54	-11.89	-	-	160	372	V
2	2.55193	45.31	Pk	32.5	-25.4	52.41	-	-	74	-21.59	160	372	V

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

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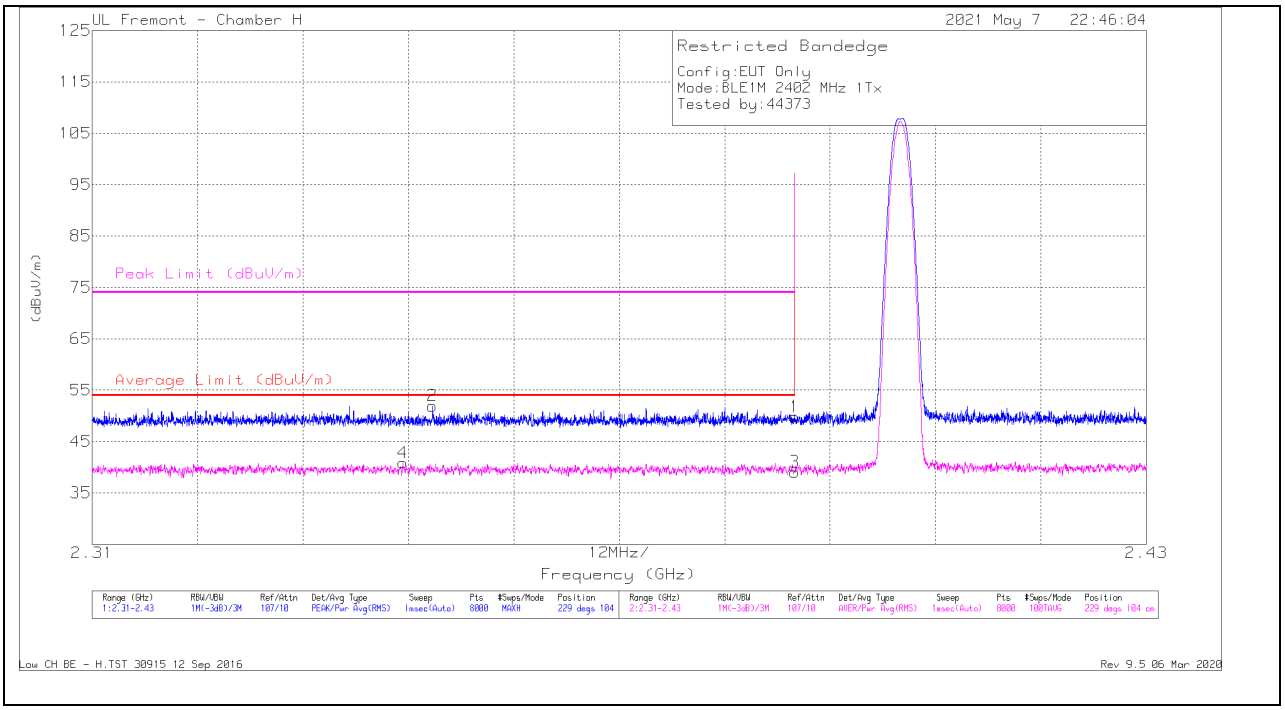
ANT 3

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (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	45.7	Pk	31.8	-27.7	49.8	-	-	74	-24.2	229	104	H
2	* 2.34874	47.84	Pk	31.8	-27.7	51.94	-	-	74	-22.06	229	104	H
3	* 2.38999	34.96	RMS	31.8	-27.7	39.06	54	-14.94	-	-	229	104	H
4	* 2.34536	36.54	RMS	31.9	-27.6	40.84	54	-13.16	-	-	229	104	H

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

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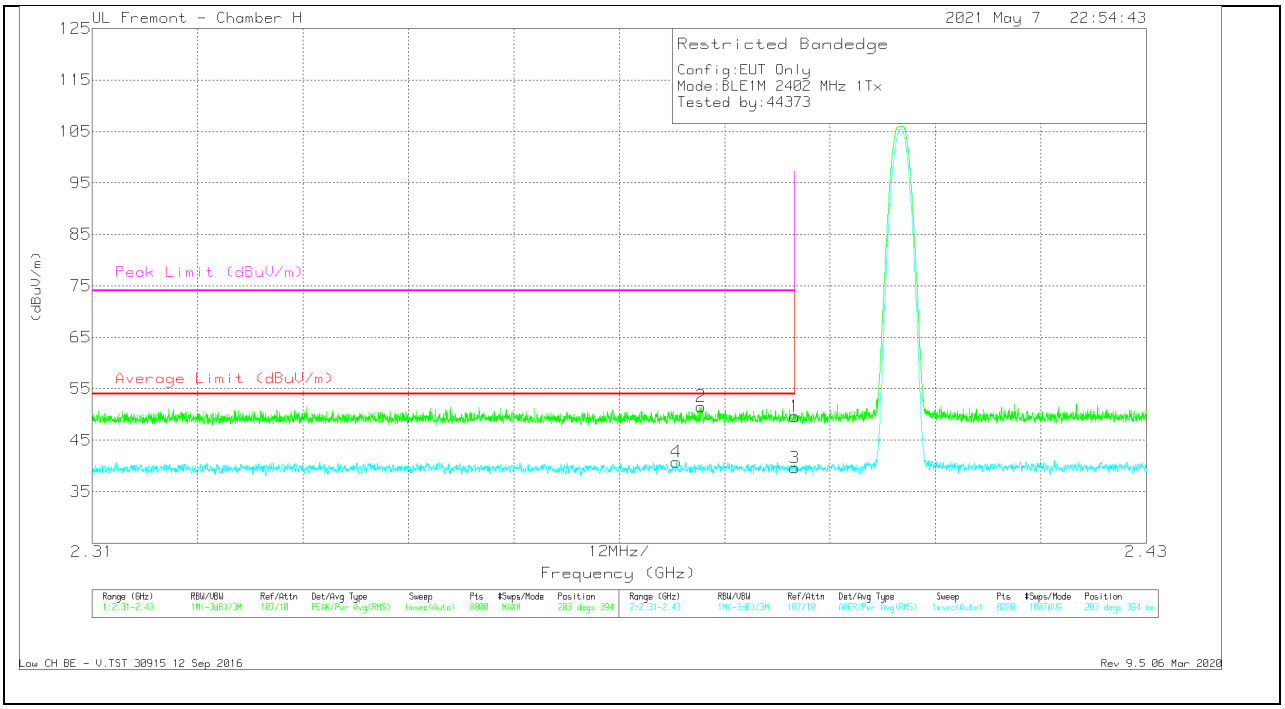
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (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	45.52	Pk	31.8	-27.7	49.62	-	-	74	-24.38	203	394	V
2	* 2.37931	47.52	Pk	31.8	-27.8	51.52	-	-	74	-22.48	203	394	V
3	* 2.38999	35.52	RMS	31.8	-27.7	39.62	54	-14.38	-	-	203	394	V
4	* 2.37649	36.68	RMS	31.8	-27.7	40.78	54	-13.22	-	-	203	394	V

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

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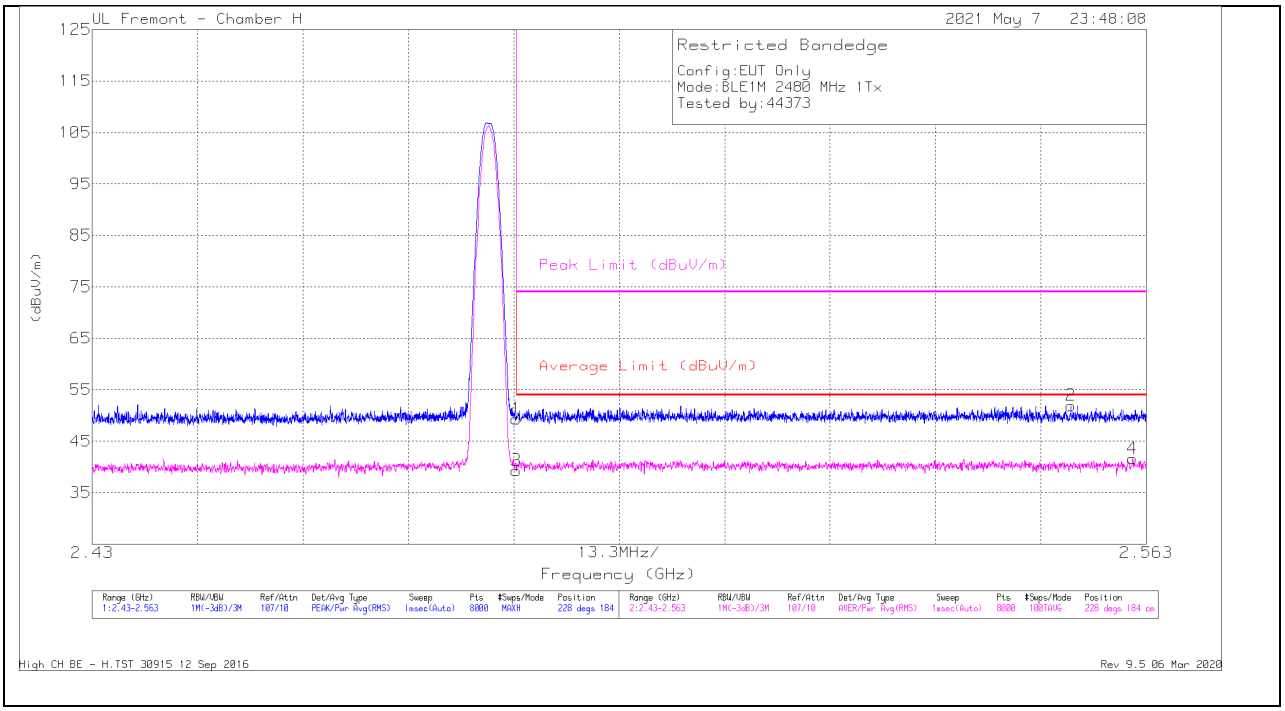
BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (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	* 2.48351	44.87	Pk	32.3	-27.8	49.37	-	-	74	-24.63	228	184	H
3	* 2.48351	34.79	RMS	32.3	-27.8	39.29	54	-14.71	-	-	228	184	H
2	2.55349	47.33	Pk	32.4	-27.8	51.93	-	-	74	-22.07	228	184	H
4	2.56127	37.01	RMS	32.4	-27.8	41.61	54	-12.39	-	-	228	184	H

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

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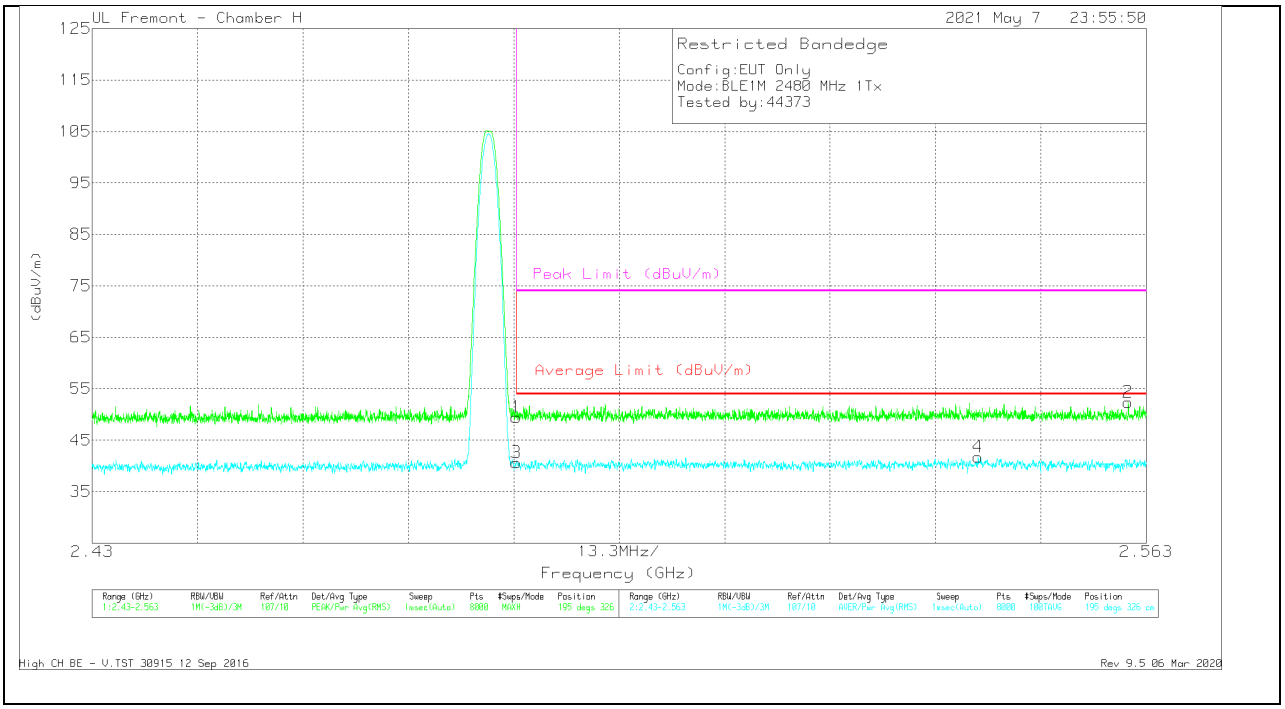
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (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	44.97	Pk	32.3	-27.8	49.47	-	-	74	-24.53	195	326	V
3	* 2.48351	36.13	RMS	32.3	-27.8	40.63	54	-13.37	-	-	195	326	V
4	2.54177	37.06	RMS	32.4	-27.7	41.76	54	-12.24	-	-	195	326	V
2	2.5607	47.8	Pk	32.4	-27.8	52.4	-	-	74	-21.6	195	326	V

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

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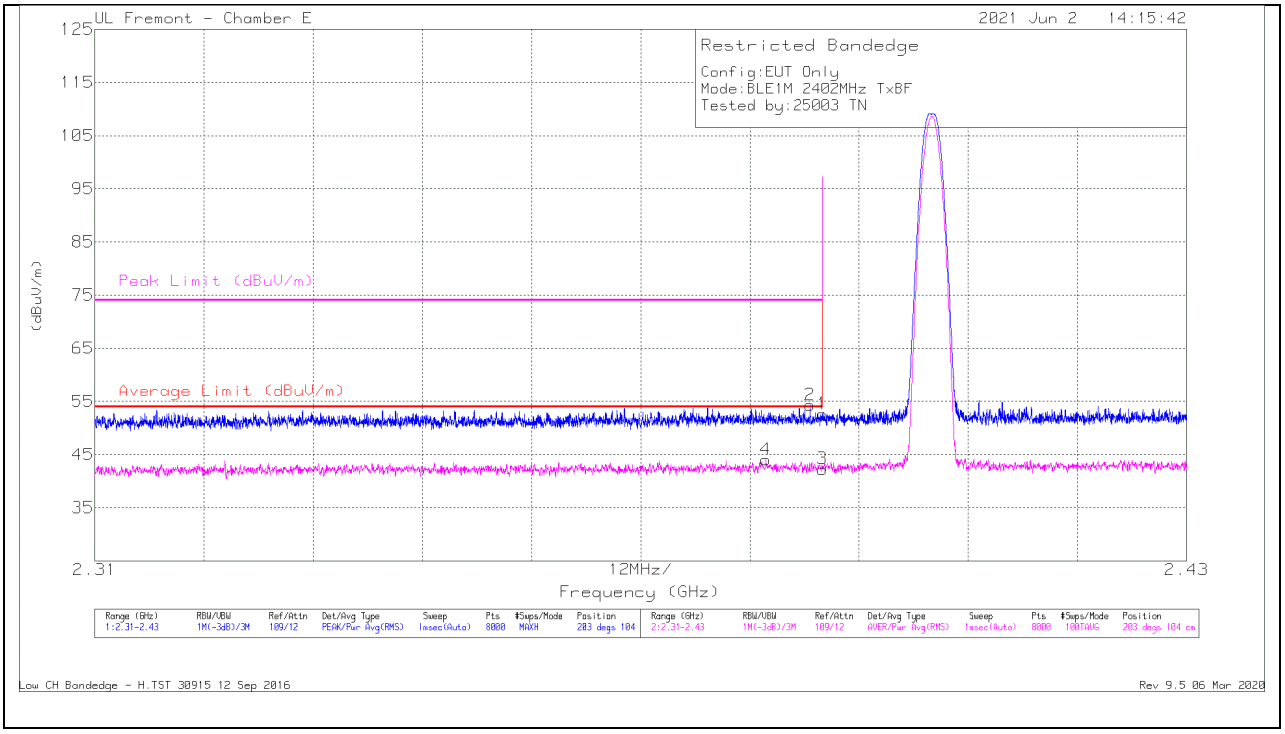
10.2.6. LOW POWER BLE TXBF (1Mbps)

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (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	* 2.38375	29.43	RMS	32.2	-17.6	44.03	54	-9.97	-	-	203	104	H
2	* 2.38861	39.7	Pk	32.2	-17.6	54.3	-	-	74	-19.7	203	104	H
1	* 2.38999	38.02	Pk	32.2	-17.6	52.62	-	-	74	-21.38	203	104	H
3	* 2.38999	27.67	RMS	32.2	-17.6	42.27	54	-11.73	-	-	203	104	H

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

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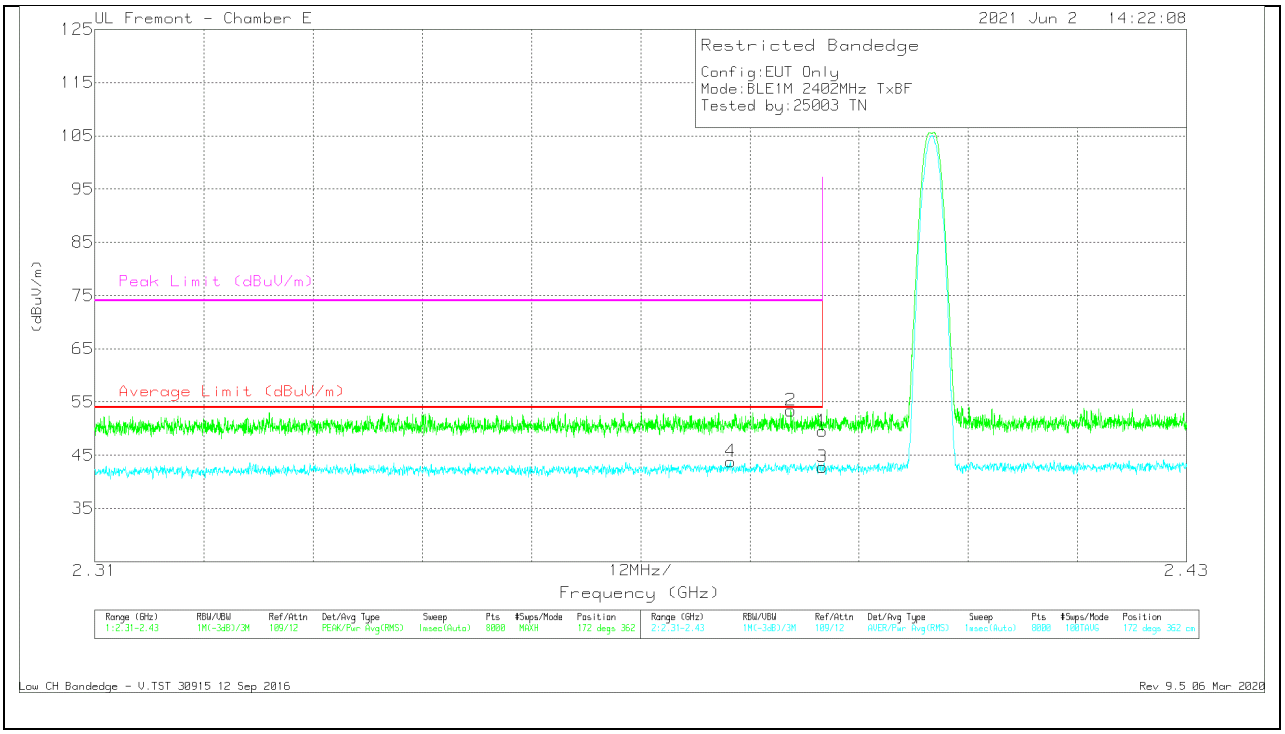
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (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	* 2.37988	29.21	RMS	32.2	-17.6	43.81	54	-10.19	-	-	172	362	V
2	* 2.3865	38.83	Pk	32.2	-17.6	53.43	-	-	74	-20.57	172	362	V
1	* 2.38999	34.94	Pk	32.2	-17.6	49.54	-	-	74	-24.46	172	362	V
3	* 2.38999	28.19	RMS	32.2	-17.6	42.79	54	-11.21	-	-	172	362	V

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

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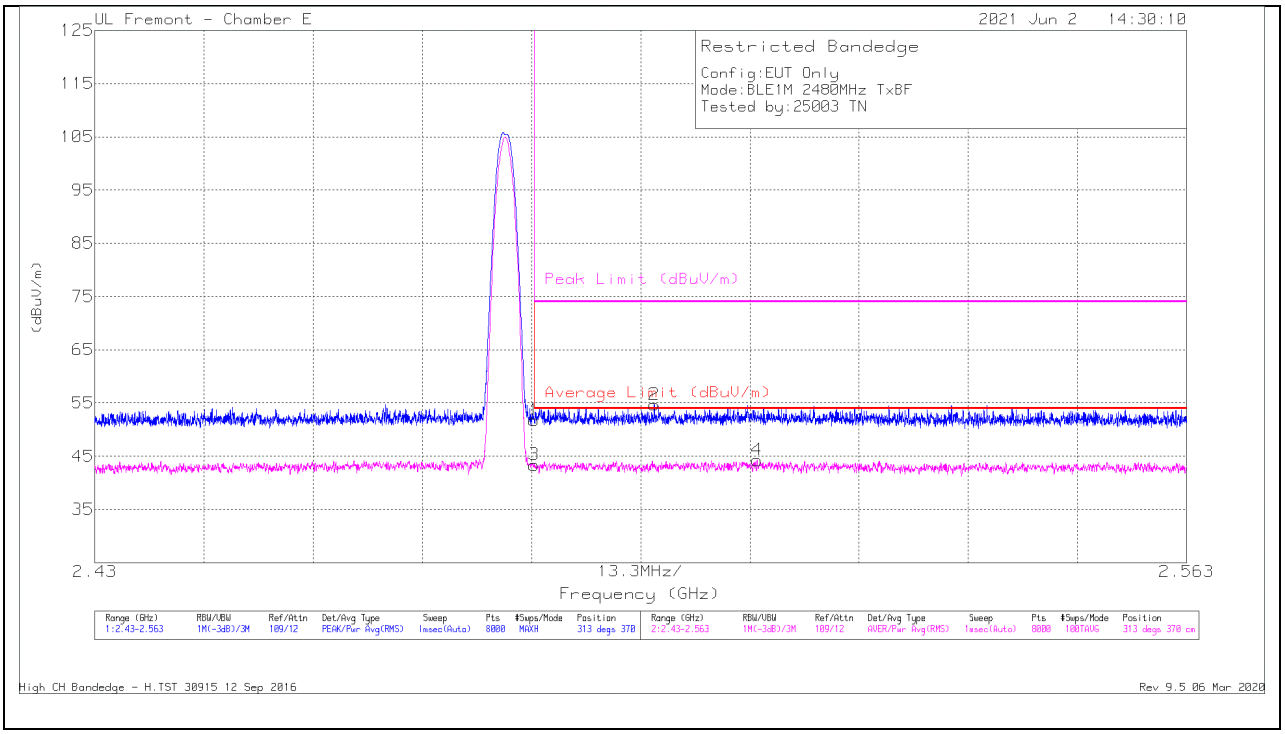
BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (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	36.86	Pk	32.6	-17.7	51.76	-	-	74	-22.24	313	370	H
2	* 2.49815	39.77	Pk	32.7	-17.8	54.67	-	-	74	-19.33	313	370	H
3	* 2.48351	28.48	RMS	32.6	-17.7	43.38	54	-10.62	-	-	313	370	H
4	2.51067	29.16	RMS	32.7	-17.6	44.26	54	-9.74	-	-	313	370	H

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

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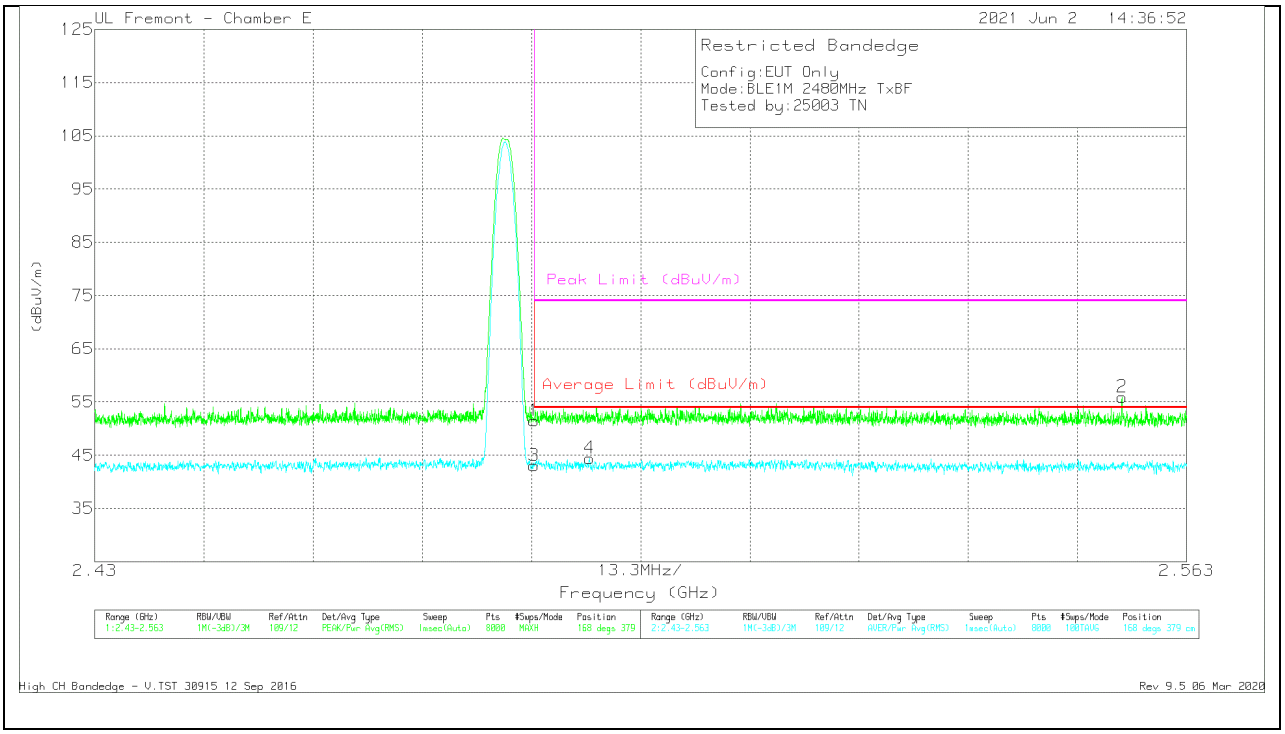
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (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	36.58	Pk	32.6	-17.7	51.48	-	-	74	-22.52	168	379	V
3	* 2.48351	28.15	RMS	32.6	-17.7	43.05	54	-10.95	-	-	168	379	V
4	* 2.49027	29.54	RMS	32.7	-17.8	44.44	54	-9.56	-	-	168	379	V
2	2.55513	41.23	Pk	32.4	-17.7	55.93	-	-	74	-18.07	168	379	V

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

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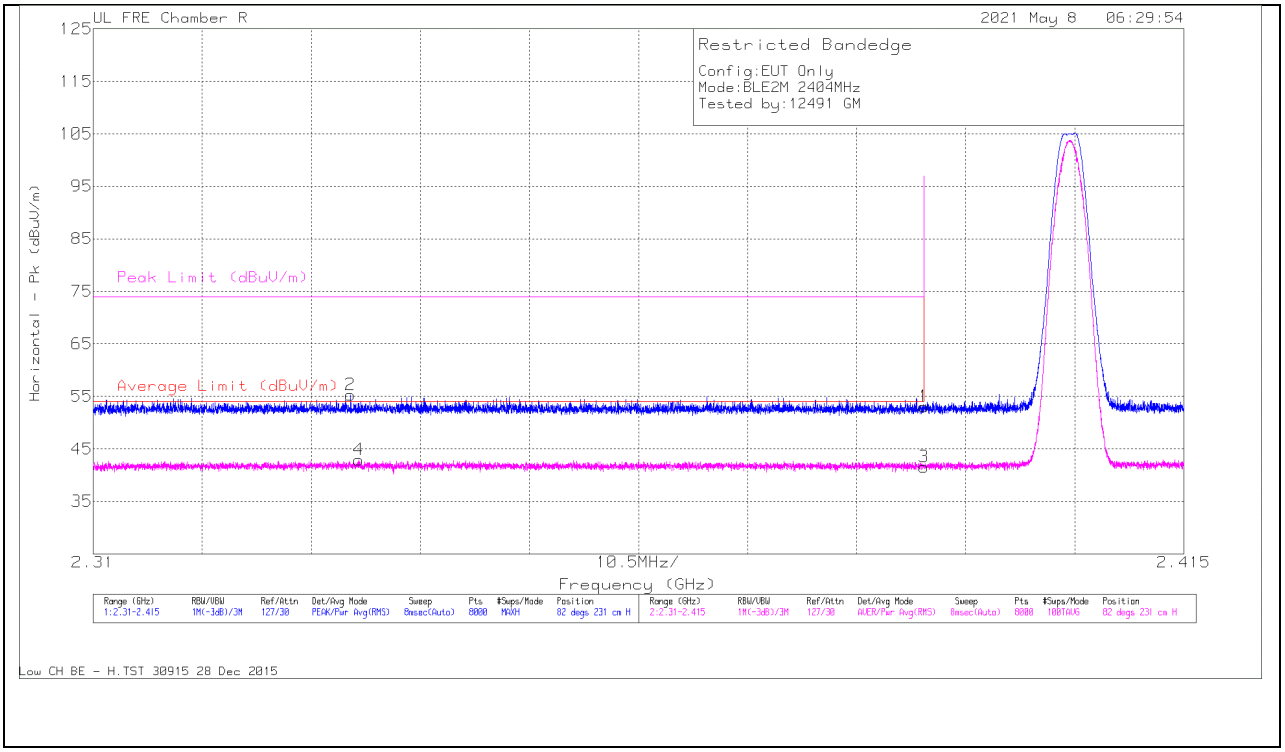
10.2.7. LOW POWER BLE (2Mbps)

ANT 4

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213973 (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
2	2.33478	58.57	Pk	32.3	-35.6	55.27	-	-	74	-18.73	82	231	H
4	2.33556	46.16	RMS	32.3	-35.6	42.86	54	-11.14	-	-	82	231	H
1	2.39	56.44	Pk	32.1	-35.5	53.04	-	-	74	-20.96	82	231	H
3	2.39	44.98	RMS	32.1	-35.5	41.58	54	-12.42	-	-	82	231	H

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

Pk - Peak detector
RMS - RMS detection

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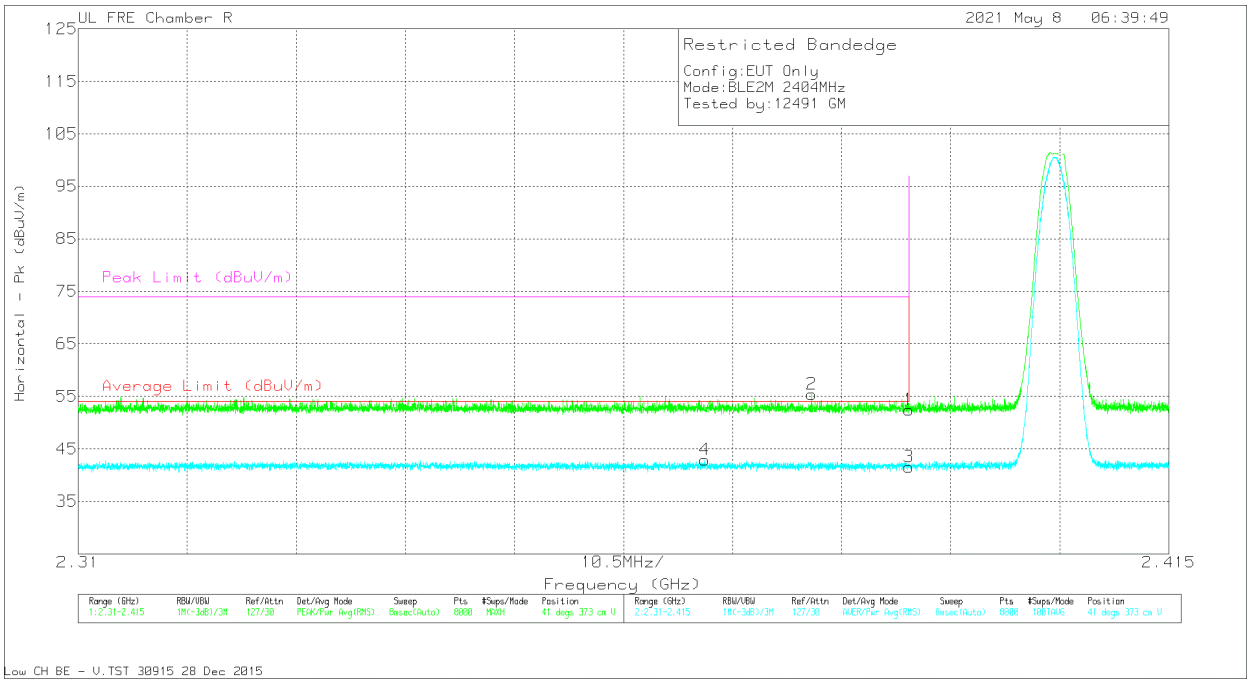
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213973 (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
4	2.37033	46.28	RMS	32.1	-35.5	42.88	54	-11.12	-	-	41	373	V
2	2.38061	58.79	Pk	32.1	-35.5	55.39	-	-	74	-18.61	41	373	V
1	2.39	55.8	Pk	32.1	-35.5	52.4	-	-	74	-21.6	41	373	V
3	2.39	44.99	RMS	32.1	-35.5	41.59	54	-12.41	-	-	41	373	V

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

Pk - Peak detector
RMS - RMS detection

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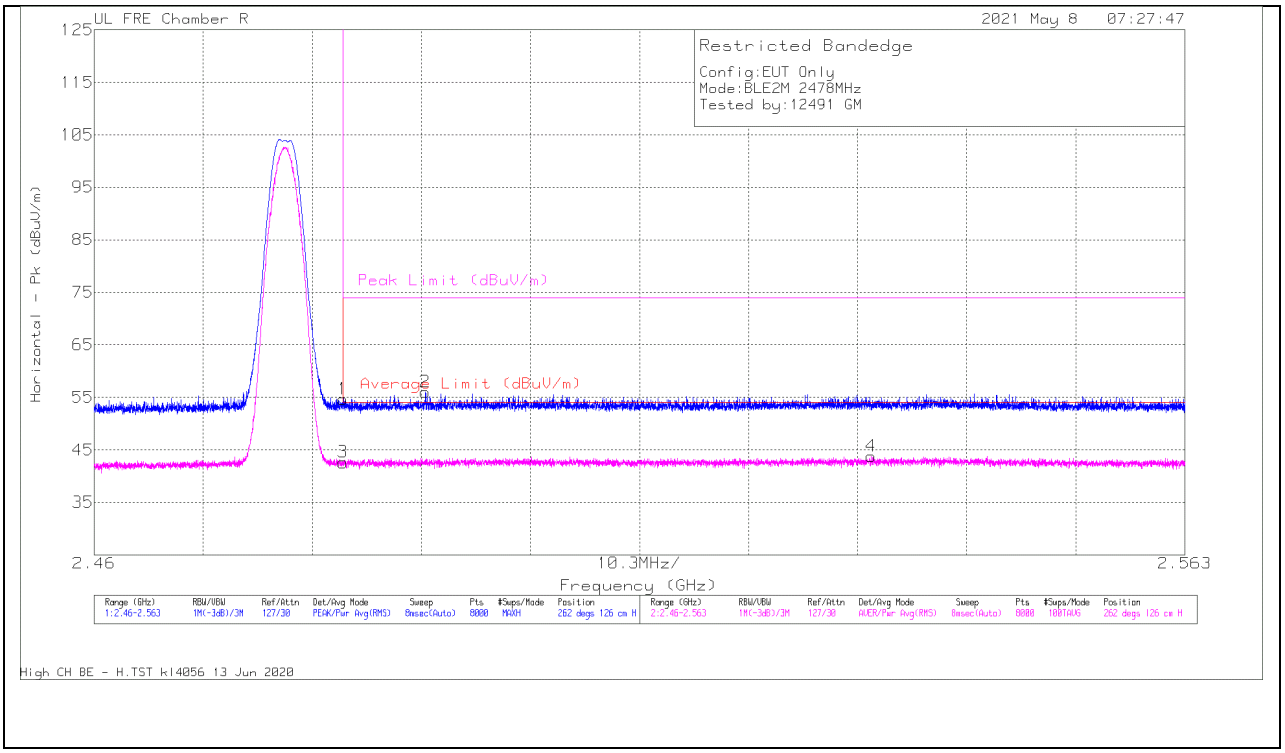
BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213973 (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	2.4835	57.45	Pk	32.5	-35.3	54.65	-	-	74	-19.35	262	126	H
3	2.4835	45.4	RMS	32.5	-35.3	42.6	54	-11.4	-	-	262	126	H
2	2.49129	58.56	Pk	32.6	-35.2	55.96	-	-	74	-18.04	262	126	H
4	2.53337	46.21	RMS	32.6	-35	43.81	54	-10.19	-	-	262	126	H

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

Pk - Peak detector
RMS - RMS detection

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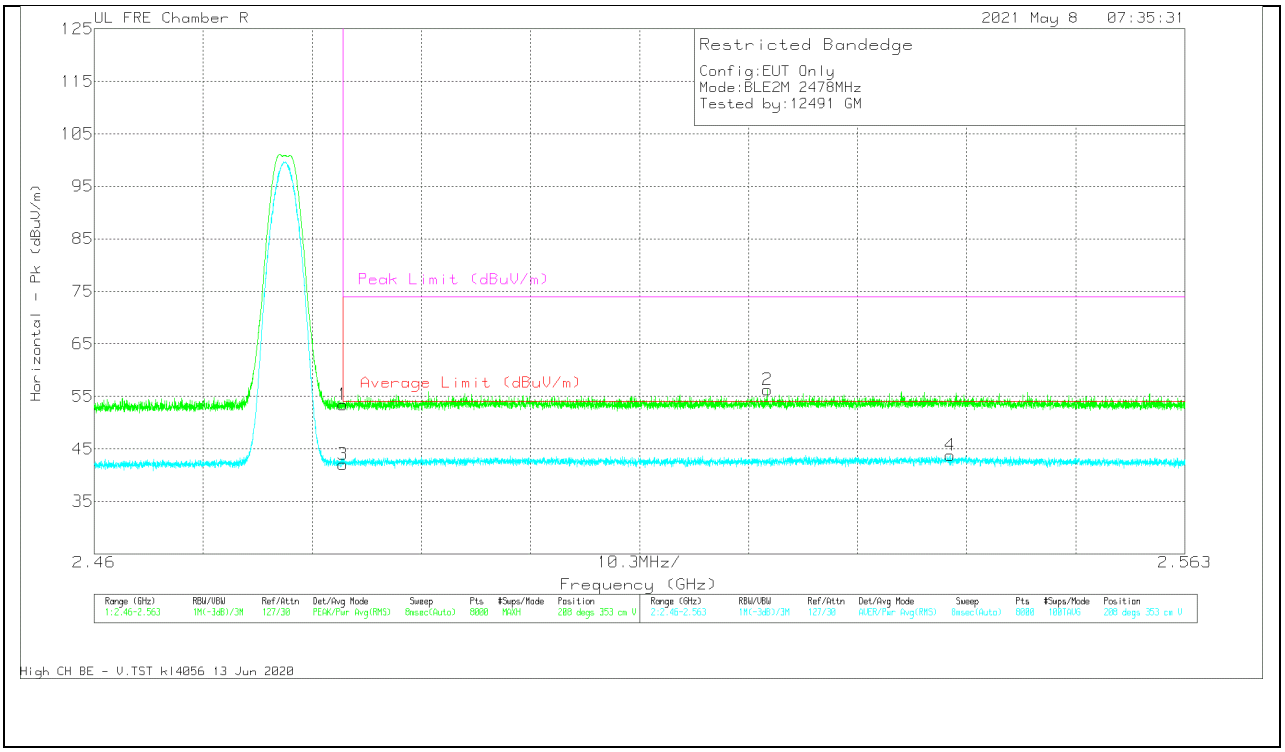
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213973 (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	2.4835	56.19	Pk	32.5	-35.3	53.39	-	-	74	-20.61	208	353	V
3	2.4835	44.85	RMS	32.5	-35.3	42.05	54	-11.95	-	-	208	353	V
2	2.52357	58.77	Pk	32.7	-35.2	56.27	-	-	74	-17.73	208	353	V
4	2.54082	46.18	RMS	32.6	-35	43.78	54	-10.22	-	-	208	353	V

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

Pk - Peak detector
RMS - RMS detection

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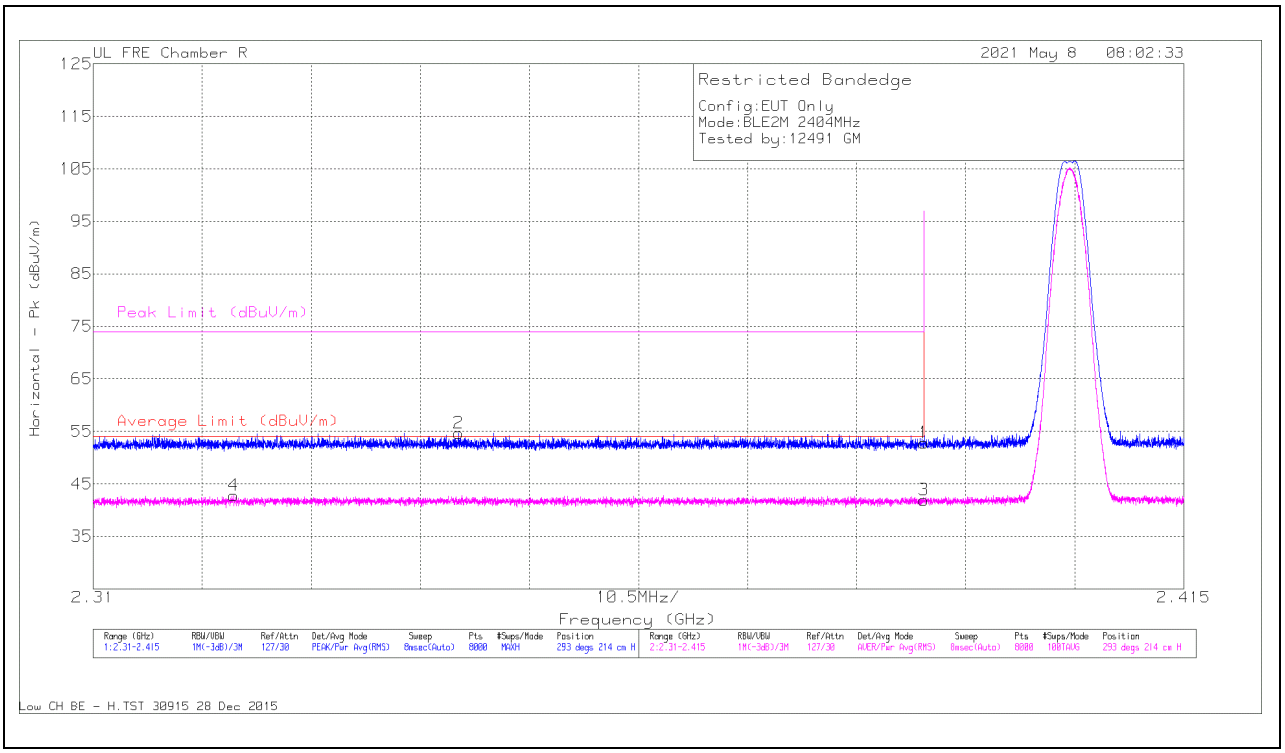
ANT 3

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213973 (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
4	2.32353	46.19	RMS	32.2	-35.6	42.79	54	-11.21	-	-	293	214	H
2	2.34518	58.1	Pk	32.2	-35.6	54.7	-	-	74	-19.3	293	214	H
1	2.39	56.21	Pk	32.1	-35.5	52.81	-	-	74	-21.19	293	214	H
3	2.39	45.35	RMS	32.1	-35.5	41.95	54	-12.05	-	-	293	214	H

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

Pk - Peak detector
RMS - RMS detection

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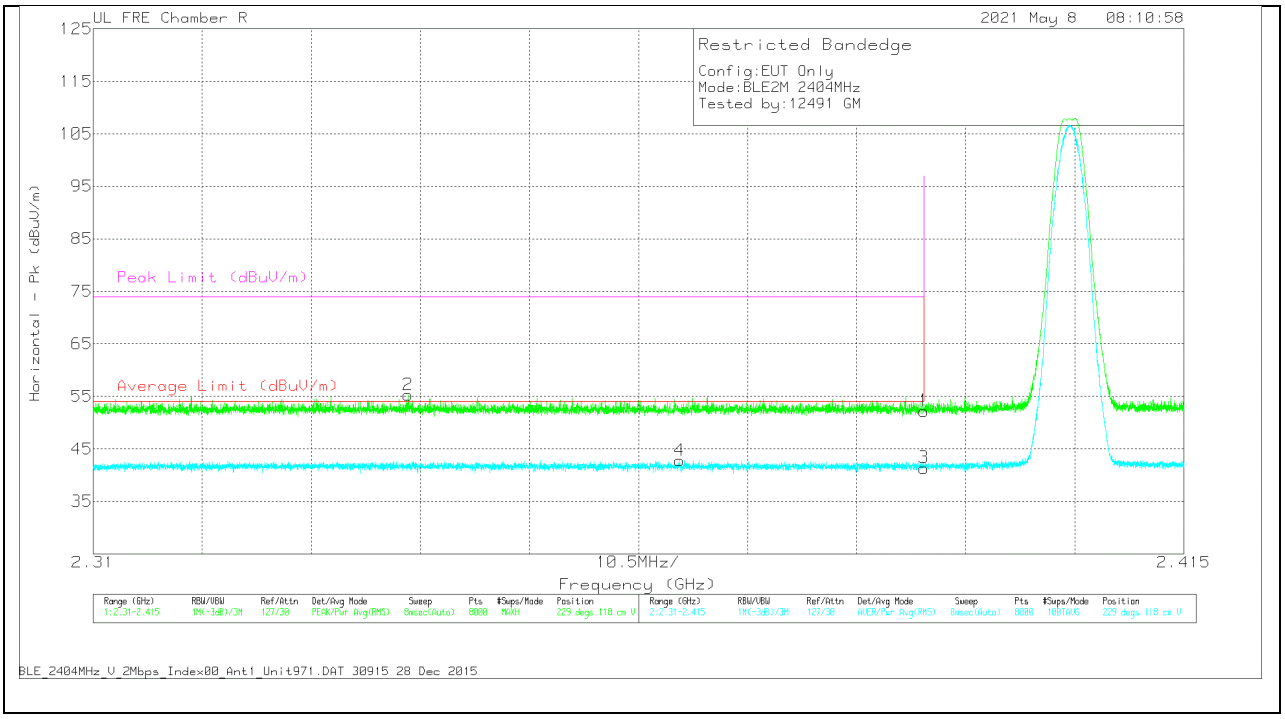
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213973 (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
2	2.3403	58.66	Pk	32.2	-35.6	55.26	-	-	74	-18.74	229	118	V
4	2.36645	46.29	RMS	32.1	-35.6	42.79	54	-11.21	-	-	229	118	V
1	2.39	55.64	Pk	32.1	-35.5	52.24	-	-	74	-21.76	229	118	V
3	2.39	44.76	RMS	32.1	-35.5	41.36	54	-12.64	-	-	229	118	V

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

Pk - Peak detector
RMS - RMS detection

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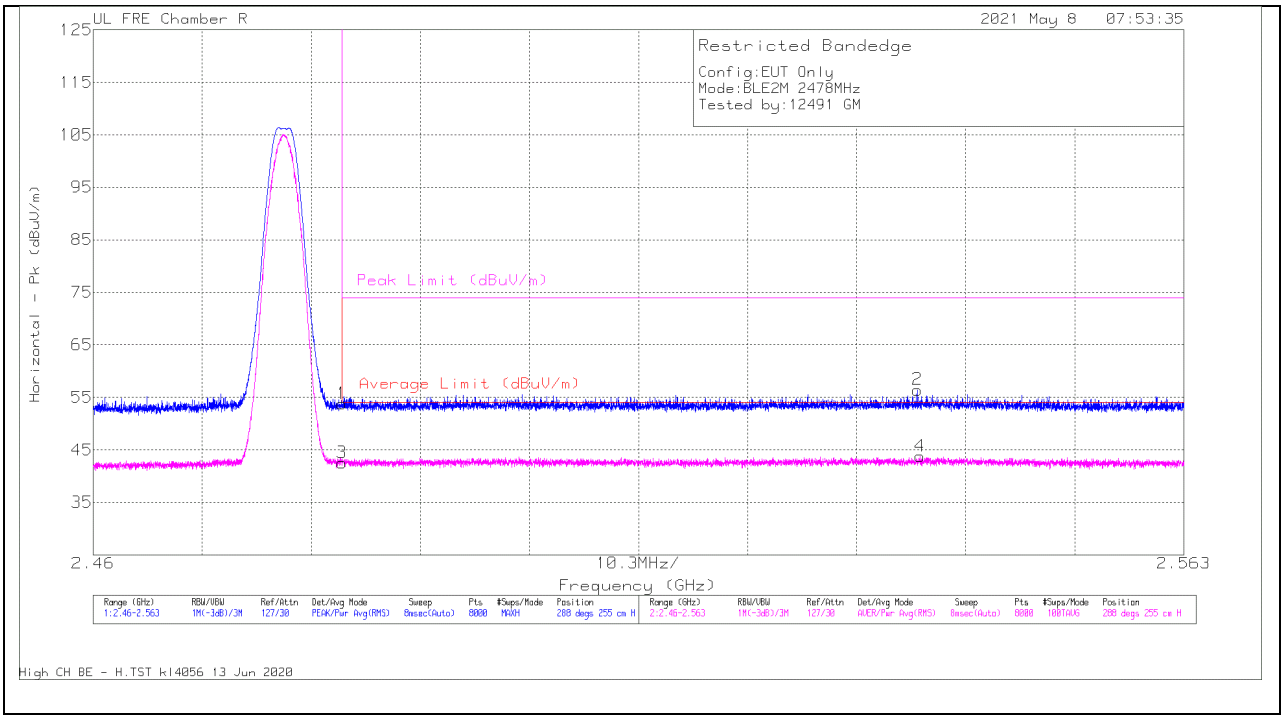
BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213973 (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	2.4835	56.56	Pk	32.5	-35.3	53.76	-	-	74	-20.24	288	255	H
3	2.4835	45.39	RMS	32.5	-35.3	42.59	54	-11.41	-	-	288	255	H
2	2.53787	58.85	Pk	32.6	-35	56.45	-	-	74	-17.55	288	255	H
4	2.53811	46.14	RMS	32.6	-35	43.74	54	-10.26	-	-	288	255	H

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

Pk - Peak detector
RMS - RMS detection

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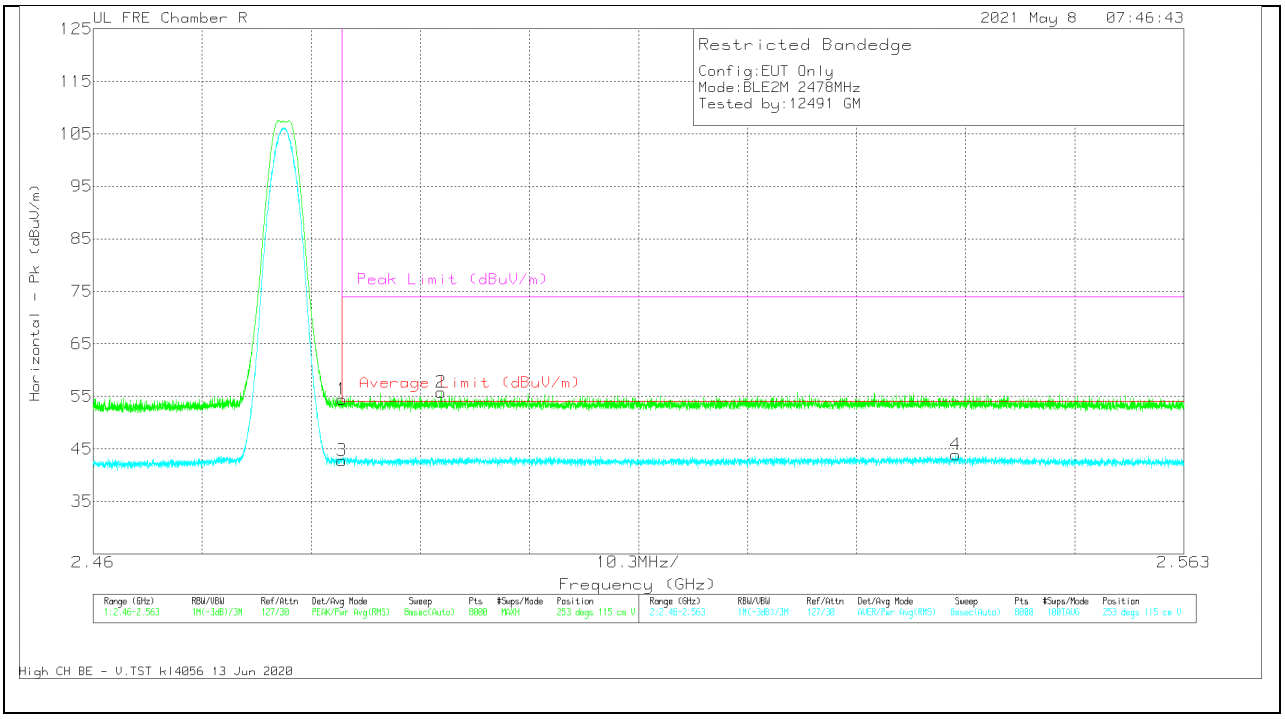
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0213973 (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	2.4835	57.23	Pk	32.5	-35.3	54.43	-	-	74	-19.57	253	115	V
3	2.4835	45.58	RMS	32.5	-35.3	42.78	54	-11.22	-	-	253	115	V
2	2.49284	58.42	Pk	32.6	-35.2	55.82	-	-	74	-18.18	253	115	V
4	2.54145	46.33	RMS	32.6	-35	43.93	54	-10.07	-	-	253	115	V

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

Pk - Peak detector
RMS - RMS detection

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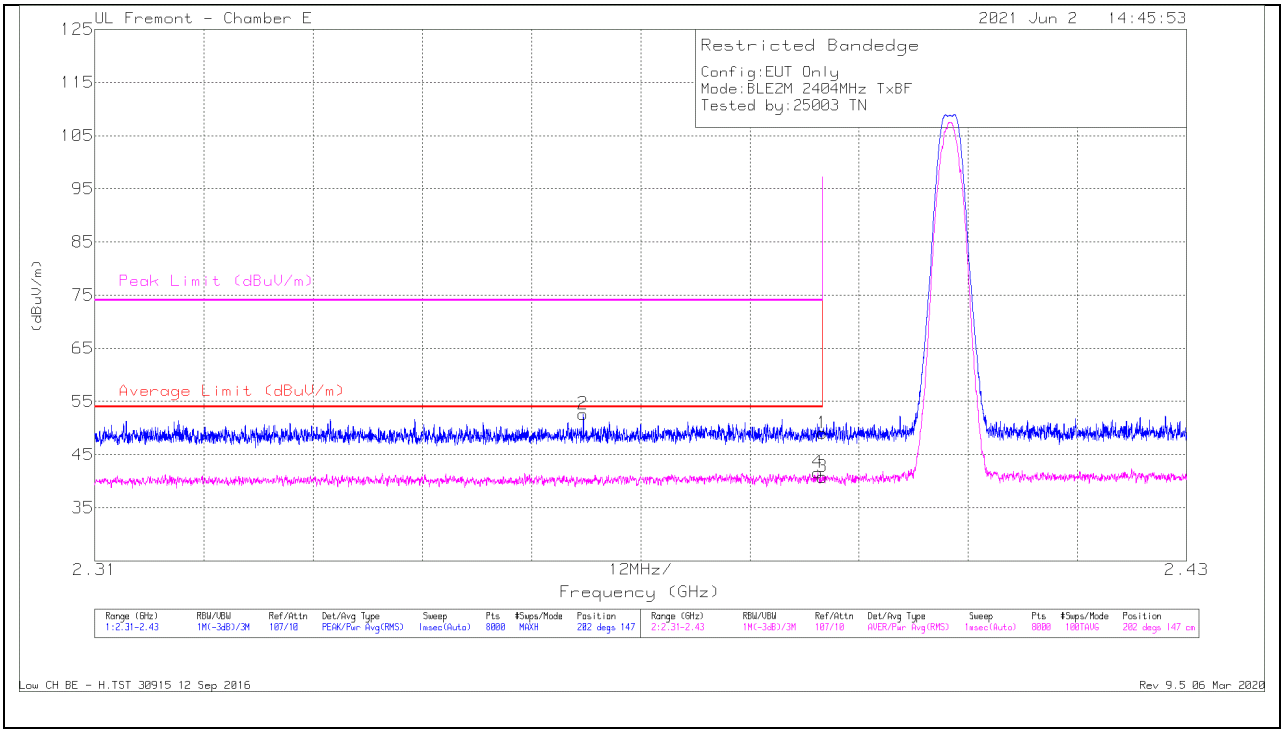
10.2.8. LOW POWER BLE TXBF (2Mbps)

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (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	42.23	Pk	32.2	-25.4	49.03	-	-	74	-24.97	202	147	H
2	* 2.36368	46.05	Pk	32	-25.4	52.65	-	-	74	-21.35	202	147	H
3	* 2.38999	34.03	RMS	32.2	-25.4	40.83	54	-13.17	-	-	202	147	H
4	* 2.38945	34.84	RMS	32.2	-25.4	41.64	54	-12.36	-	-	202	147	H

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

Pk - Peak detector
RMS - RMS detection

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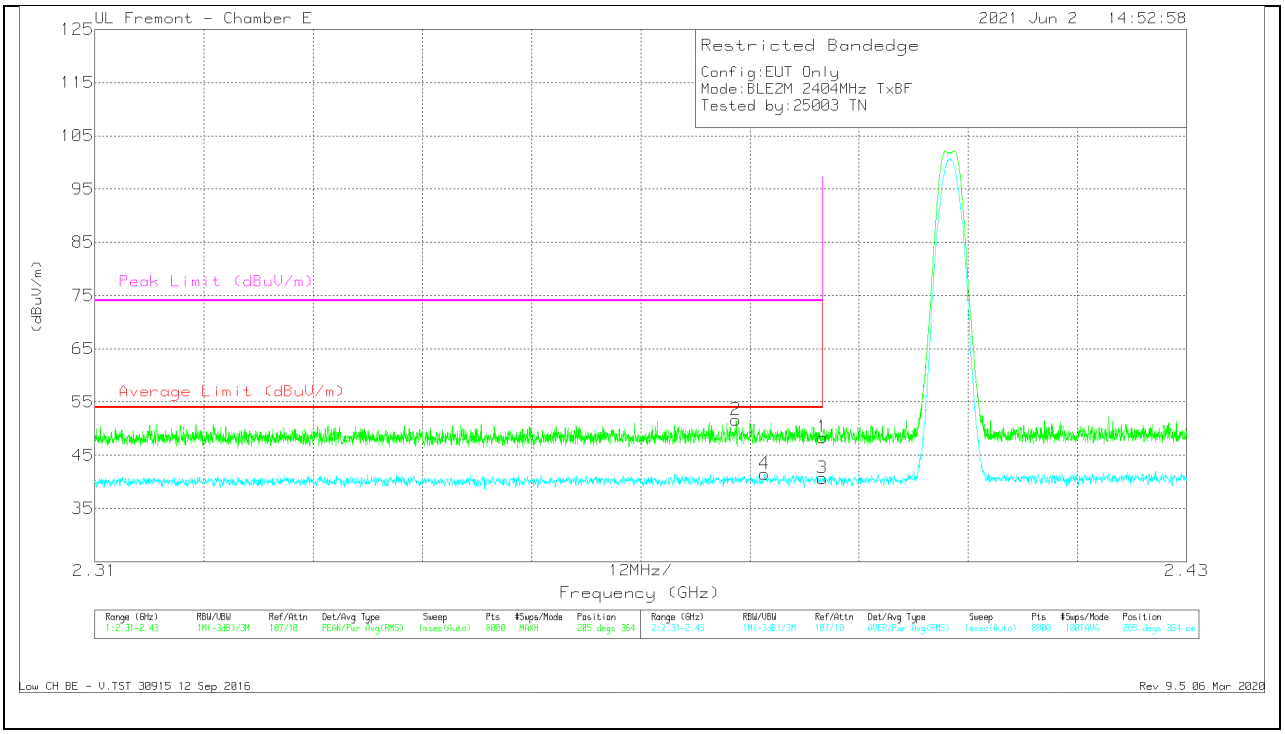
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.38999	41.59	Pk	32.2	-25.4	48.39	-	-	74	-25.61	205	364	V
2	* 2.38048	44.84	Pk	32.2	-25.4	51.64	-	-	74	-22.36	205	364	V
3	* 2.38999	33.9	RMS	32.2	-25.4	40.7	54	-13.3	-	-	205	364	V
4	* 2.38363	34.79	RMS	32.2	-25.5	41.49	54	-12.51	-	-	205	364	V

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

Pk - Peak detector
RMS - RMS detection

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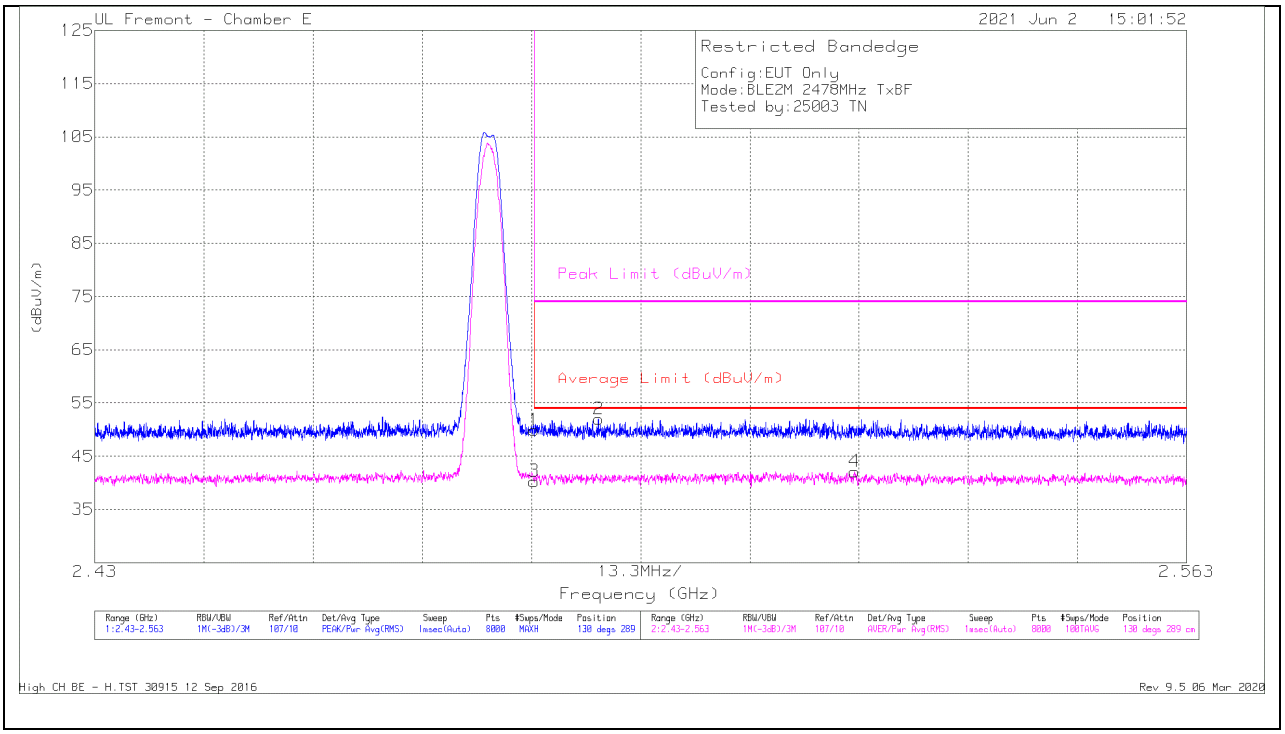
BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (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	42.69	Pk	32.6	-25.4	49.89	-	-	74	-24.11	130	289	H
2	* 2.49135	44.79	Pk	32.7	-25.5	51.99	-	-	74	-22.01	130	289	H
3	* 2.48351	33.1	RMS	32.6	-25.4	40.3	54	-13.7	-	-	130	289	H
4	2.52255	34.9	RMS	32.6	-25.4	42.1	54	-11.9	-	-	130	289	H

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

Pk - Peak detector
RMS - RMS detection

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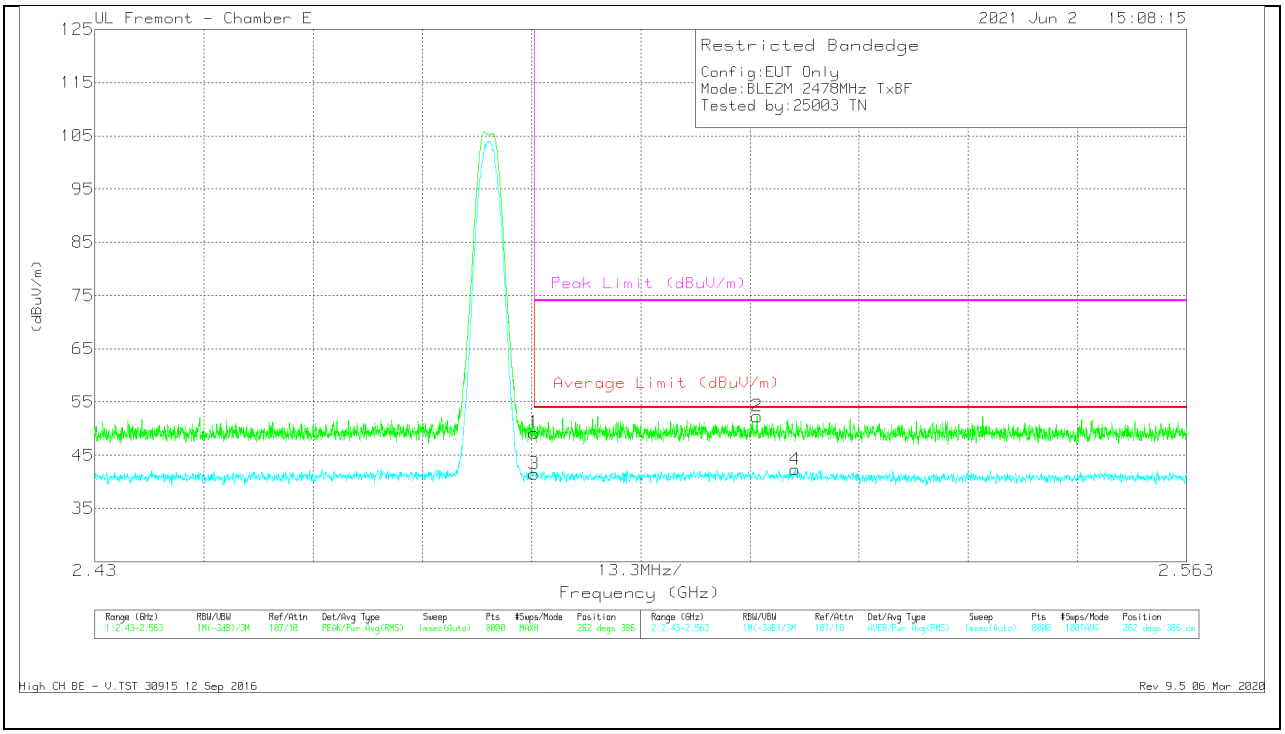
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (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	Pk	32.6	-25.4	49.2	-	-	74	-24.8	262	386	V
3	* 2.48351	34.3	RMS	32.6	-25.4	41.5	54	-12.5	-	-	262	386	V
2	2.51067	45.02	Pk	32.7	-25.4	52.32	-	-	74	-21.68	262	386	V
4	2.51531	34.94	RMS	32.7	-25.3	42.34	54	-11.66	-	-	262	386	V

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

Pk - Peak detector
RMS - RMS detection

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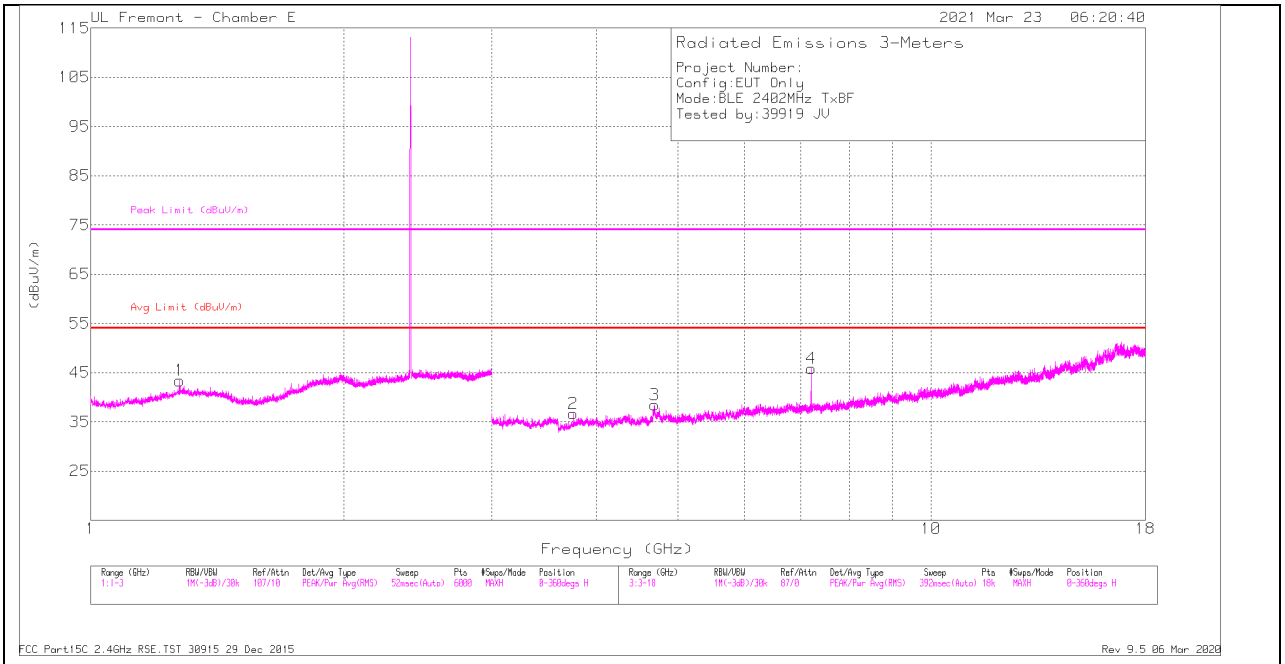
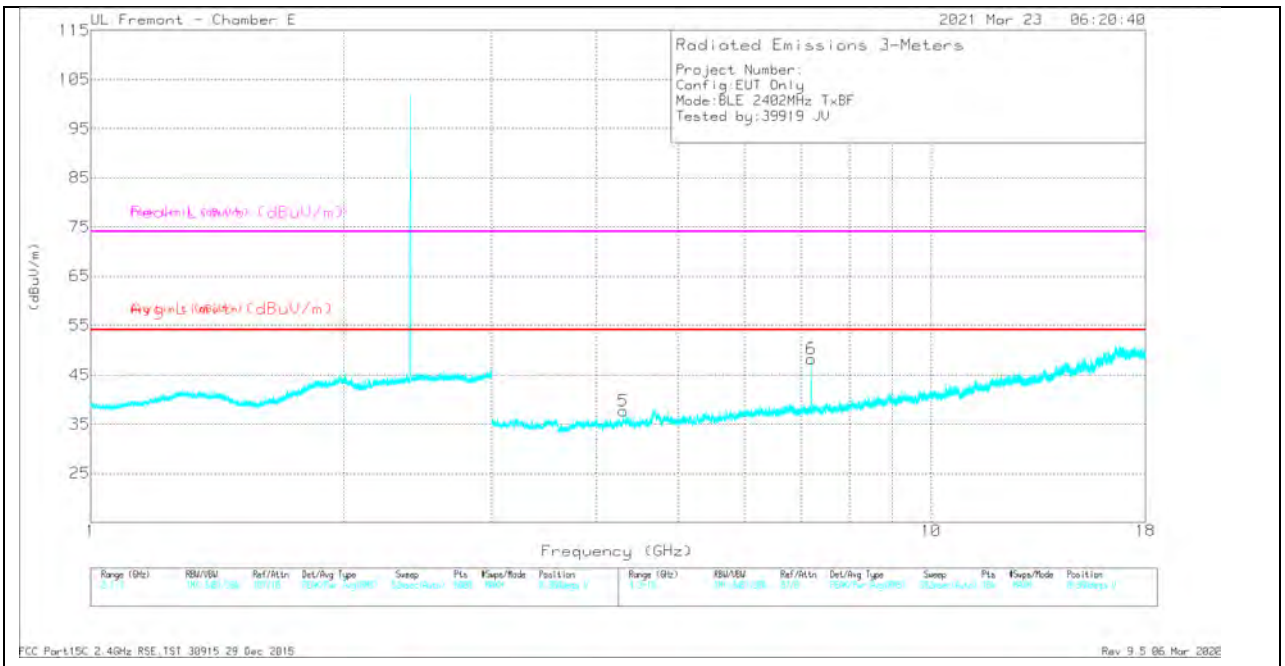
10.2.9. HIGH POWER TXBF 1Mbps HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (dB/m)	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	* 1.27625	45.14	PK2	29.8	-26.3	48.64	-	-	74	-25.36	175	351	H
	* 1.27586	33.39	MAv1	29.8	-26.3	36.89	54	-17.11	-	-	175	351	H
2	* 3.75275	42.79	PK2	33.3	-33.6	42.49	-	-	74	-31.51	80	185	H
	* 3.75622	30.79	MAv1	33.3	-33.6	30.49	54	-23.51	-	-	80	185	H
3	* 4.69246	40.1	PK2	34.4	-32	42.5	-	-	74	-31.5	326	101	H
	* 4.68575	28.73	MAv1	34.4	-31.9	31.23	54	-22.77	-	-	326	101	H
5	* 4.30353	40.72	PK2	33.9	-32	42.62	-	-	74	-31.38	17	127	V
	* 4.30851	28.96	MAv1	34	-31.9	31.06	54	-22.94	-	-	17	127	V
6	7.20212	43.74	PK2	35.7	-28.4	51.04	-	-	-	-	230	105	V
4	7.20275	41.65	PK2	35.7	-28.4	48.95	-	-	-	-	301	101	H

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

FCC Part15C 2.4GHz RSE.TST 30915 29 Dec 2015
Rev 9.5 06 Mar 2020

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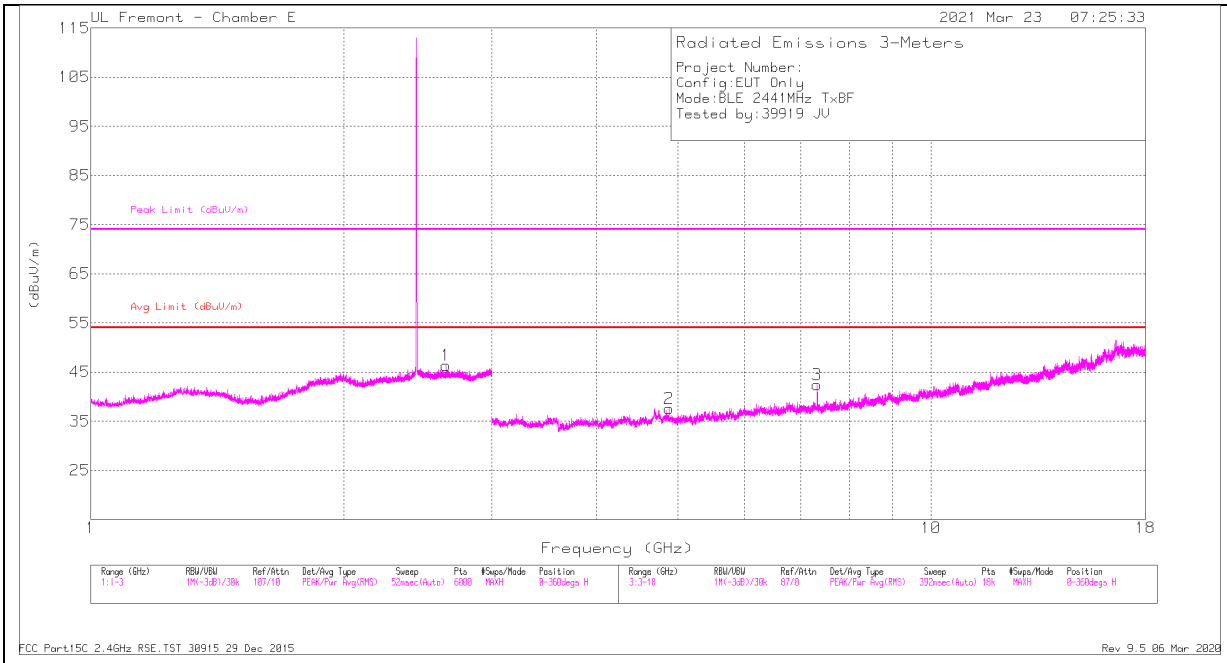
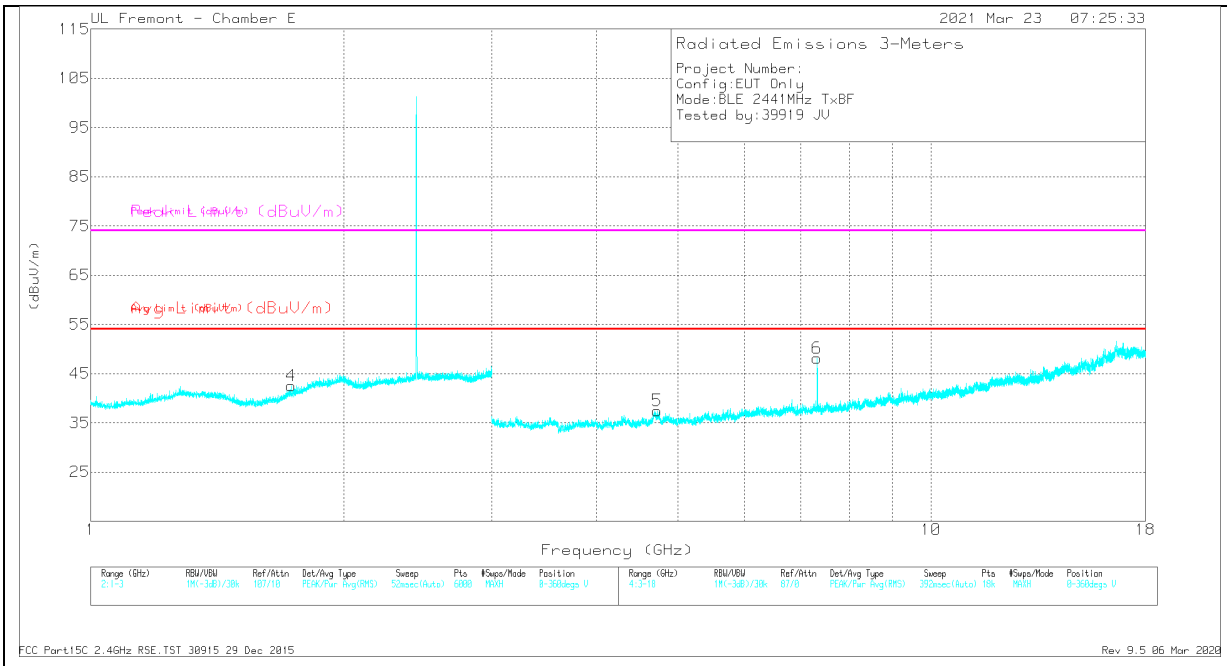
MID CHANNEL RESULTS



HORIZONTAL



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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (dB/m)	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	* 4.88178	40.51	PK2	34.3	-31.2	43.61	-	-	74	-30.39	144	114	H
	* 4.88189	31.17	MAv1	34.3	-31.2	34.27	54	-19.73	-	-	144	114	H
3	* 7.32394	39.8	PK2	35.8	-28.2	47.4	-	-	74	-26.6	295	101	H
	* 7.32361	31.5	MAv1	35.8	-28.2	39.1	54	-14.9	-	-	295	101	H
5	* 4.7267	39.58	PK2	34.5	-32.3	41.78	-	-	74	-32.22	80	308	V
	* 4.7291	27.57	MAv1	34.5	-32.2	29.87	54	-24.13	-	-	80	308	V
6	* 7.32356	43.38	PK2	35.8	-28.2	50.98	-	-	74	-23.02	11	101	V
	* 7.32352	36.72	MAv1	35.8	-28.2	44.32	54	-9.68	-	-	11	101	V
4	1.72992	45.59	PK2	29.6	-26.4	48.79	-	-	-	-	119	167	V
1	2.64579	45.4	PK2	32.6	-26.4	51.6	-	-	-	-	274	200	H

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

FCC Part15C 2.4GHz RSE.TST 30915 29 Dec 2015
Rev 9.5 06 Mar 2020

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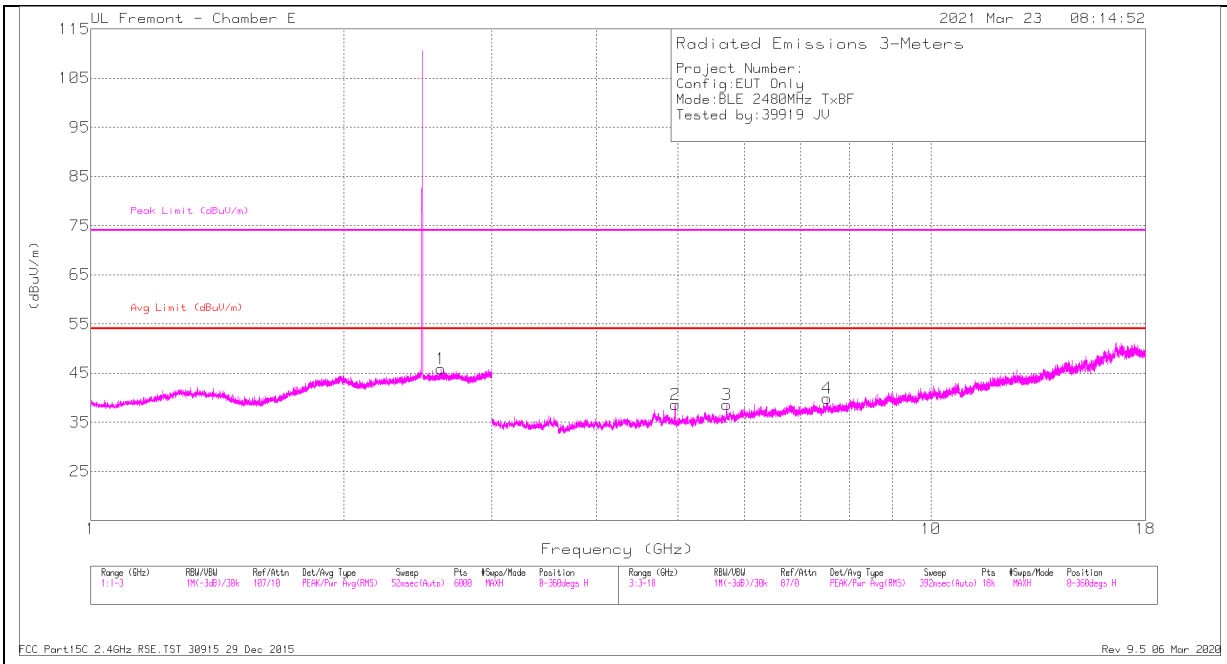
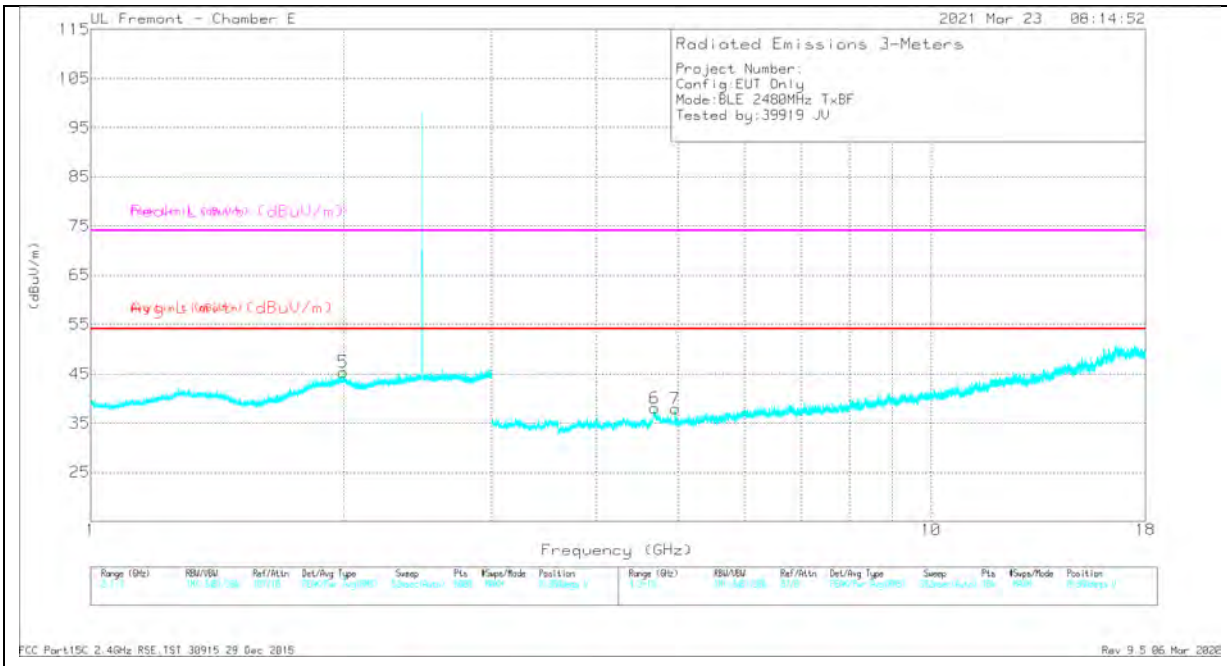
HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF PRE0078107 (dB/m)	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	* 4.95934	41.49	PK2	34.2	-31.5	44.19	-	-	74	-29.81	107	118	H
	* 4.95998	32.67	MAv1	34.2	-31.5	35.37	54	-18.63	-	-	107	118	H
4	* 7.51418	36.88	PK2	35.8	-27.4	45.28	-	-	74	-28.72	38	322	H
	* 7.51747	25.28	MAv1	35.8	-27.4	33.68	54	-20.32	-	-	38	322	H
6	* 4.68765	39.35	PK2	34.4	-32	41.75	-	-	74	-32.25	85	200	V
	* 4.68679	28.05	MAv1	34.4	-32	30.45	54	-23.55	-	-	85	200	V
7	* 4.96042	41.62	PK2	34.2	-31.5	44.32	-	-	74	-29.68	219	116	V
	* 4.96012	31.72	MAv1	34.2	-31.5	34.42	54	-19.58	-	-	219	116	V
5	1.99967	45.61	PK2	32.4	-26.5	51.51	-	-	-	-	211	137	V
1	2.60908	45.94	PK2	32.5	-26.4	52.04	-	-	-	-	315	198	H
3	5.71256	39.26	PK2	34.9	-30.2	43.96	-	-	-	-	110	101	H

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

FCC Part15C 2.4GHz RSE.TST 30915 29 Dec 2015
Rev 9.5 06 Mar 2020

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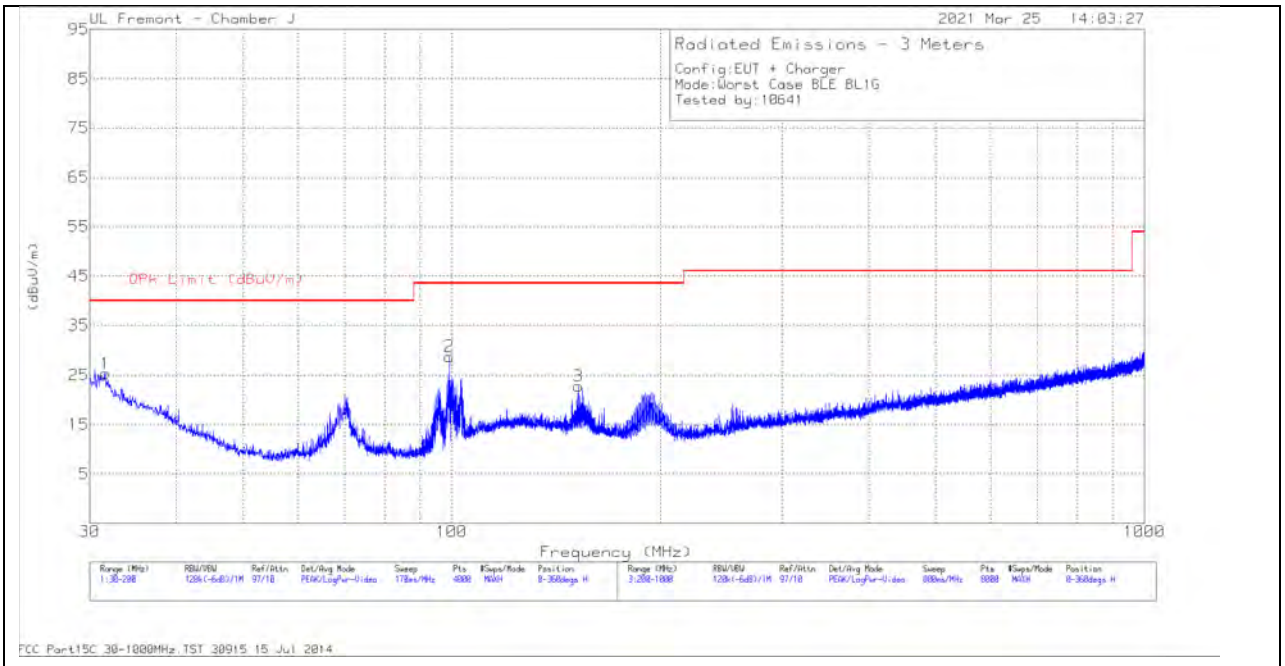
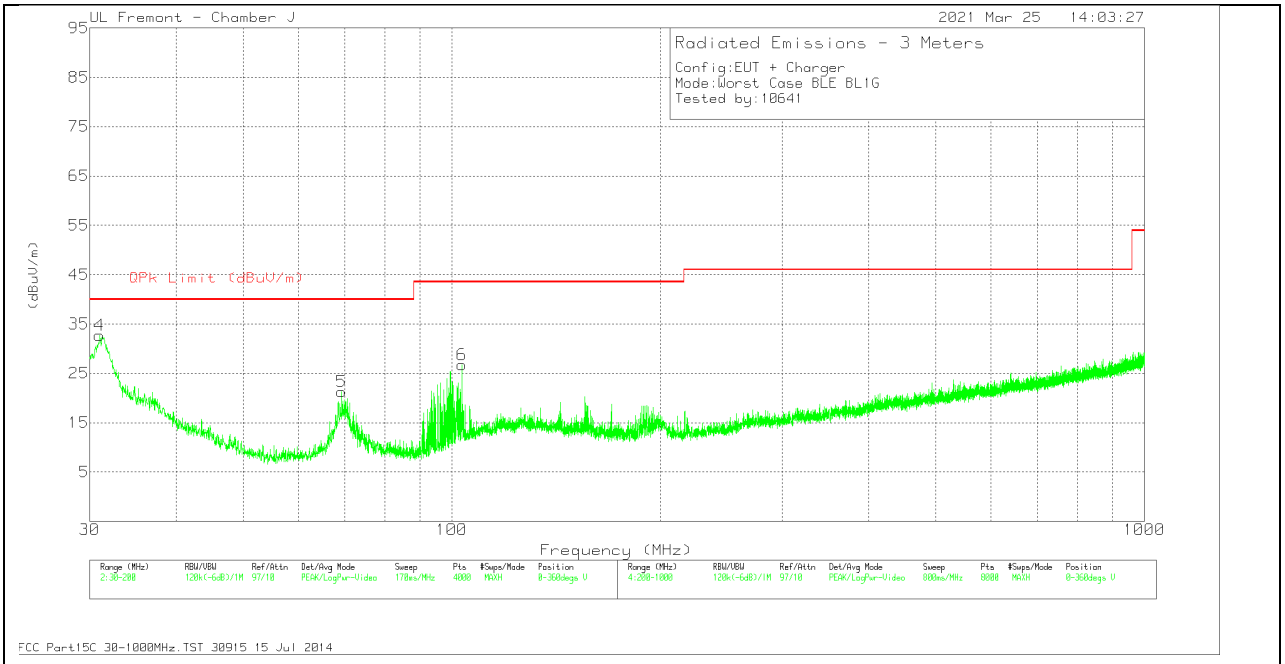
10.3. WORST CASE BELOW 1 GHZ

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



HORIZONTAL



VERTICAL

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DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF PRE0184052 (dB/m)	Amp Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	31.5729	30.18	Pk	26.8	-31.6	25.38	40	-14.62	0-360	196	H
2	99.2504	43.82	Pk	15.9	-31	28.72	43.52	-14.8	0-360	389	H
3	152.4317	34.84	Pk	18.6	-30.6	22.84	43.52	-20.68	0-360	196	H
4	30.9778	37.14	Pk	27.2	-31.6	32.74	40	-7.26	0-360	100	V
5	69.3652	38.24	Pk	14.2	-31.2	21.24	40	-18.76	0-360	100	V
6	103.459	40.57	Pk	17.1	-30.9	26.77	43.52	-16.75	0-360	100	V

Pk - Peak detector

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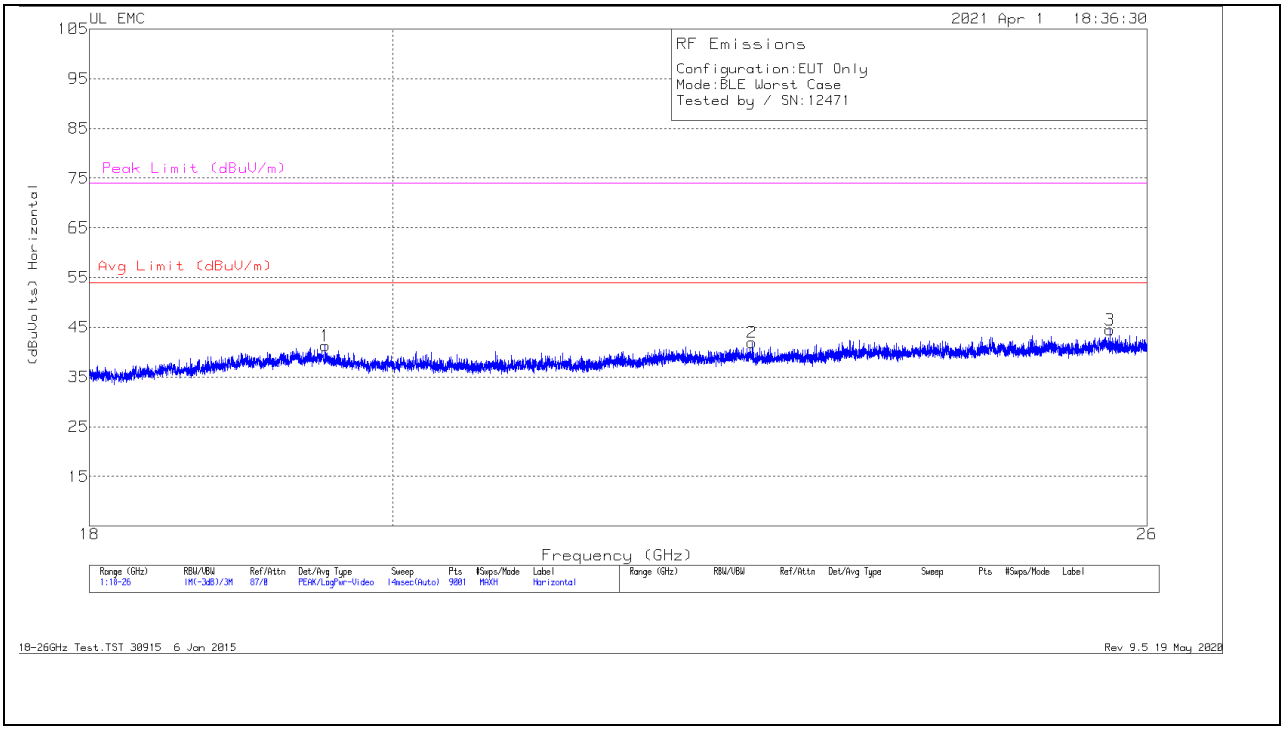
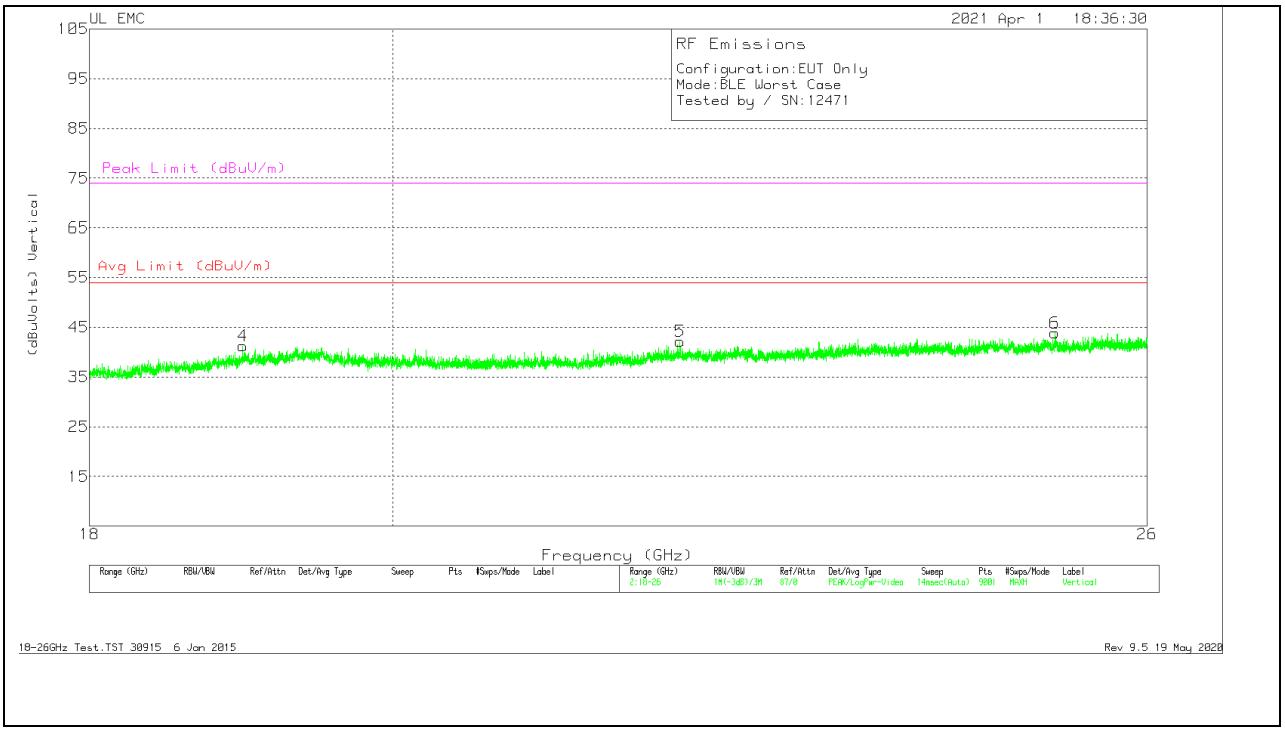
10.4. WORST CASE 18-26 GHz

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

HORIZONTAL



VERTICAL



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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	19.53689	37.47	Pk	32.7	-19.4	-9.5	41.27	54	-12.73	74	-32.73
2	22.66133	38.13	Pk	33.4	-20.1	-9.5	41.93	54	-12.07	74	-32.07
3	25.66489	39.69	Pk	34.2	-19.9	-9.5	44.49	54	-9.51	74	-29.51
4	18.98489	37.72	Pk	32.7	-19.7	-9.5	41.22	54	-12.78	74	-32.78
5	22.10133	38.24	Pk	33.4	-20	-9.5	42.14	54	-11.86	74	-31.86
6	25.17778	38.38	Pk	34.2	-19.2	-9.5	43.88	54	-10.12	74	-30.12

Pk - Peak detector

18-26GHz Test.TST 30915 6 Jan 2015
Rev 9.5 19 May 2020

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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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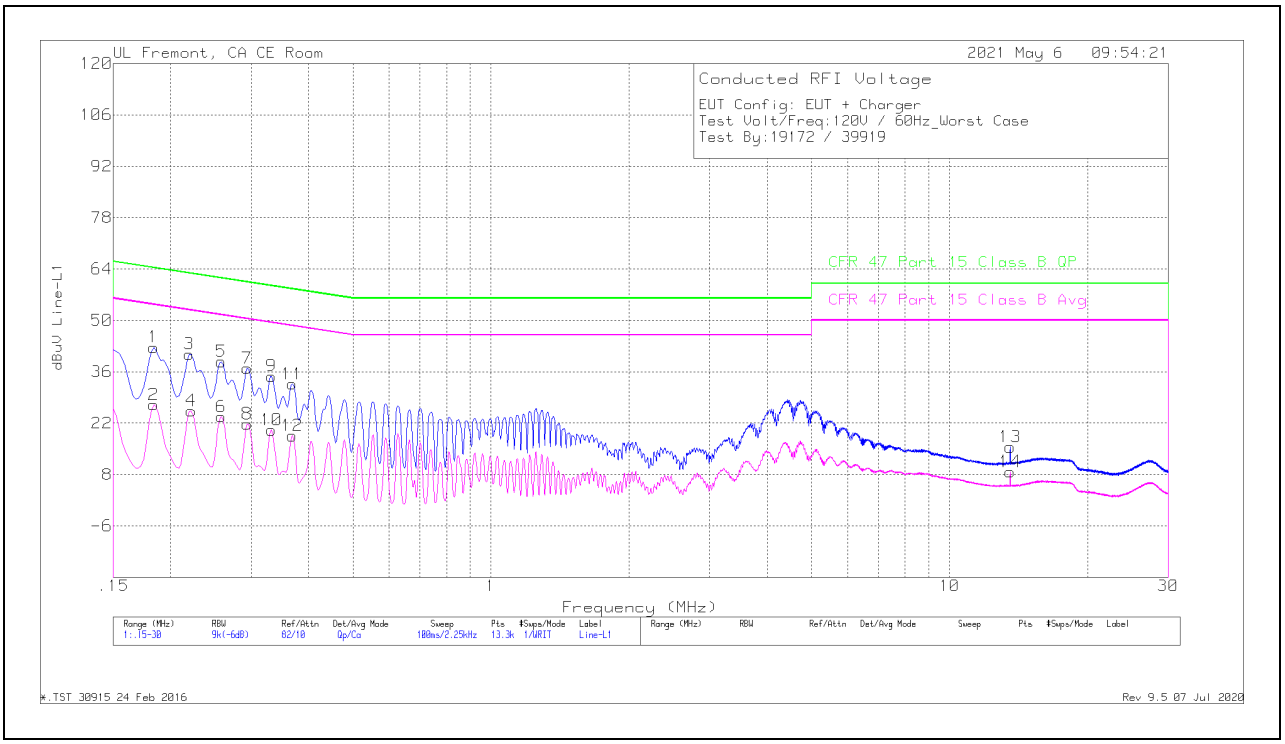
11.1.1. AC POWER LINE WITH AC/DC ADAPTER

LINE 1 RESULTS



Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE0186446 L1	LC Cables C1&C3 dB	Limiter	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR)Margin (dB)
1	.18375	32.59	Qp	0	0	10.1	42.69	64.31	-21.62	-	-
2	.18375	16.94	Ca	0	0	10.1	27.04	-	-	54.31	-27.27
3	.21975	30.72	Qp	0	0	10.1	40.82	62.83	-22.01	-	-
4	.222	15.28	Ca	0	0	10.1	25.38	-	-	52.74	-27.36
5	.258	28.67	Qp	0	0	10.1	38.77	61.5	-22.73	-	-
6	.258	13.67	Ca	0	0	10.1	23.77	-	-	51.5	-27.73
7	.294	26.85	Qp	0	0	10.1	36.95	60.41	-23.46	-	-
8	.294	11.67	Ca	0	0	10.1	21.77	-	-	50.41	-28.64
9	.33225	24.71	Qp	0	0	10.1	34.81	59.39	-24.58	-	-
10	.33225	10.04	Ca	0	0	10.1	20.14	-	-	49.39	-29.25
11	.36825	22.59	Qp	0	0	10.1	32.69	58.54	-25.85	-	-
12	.36825	8.5	Ca	0	0	10.1	18.6	-	-	48.54	-29.94
*13	13.56	5.01	Qp	.1	.2	10.2	15.51	60	-44.49	-	-
*14	13.56	-1.77	Ca	.1	.2	10.2	8.73	-	-	50	-41.27

Qp - Quasi-Peak detector
Ca - CISPR average detection
*Indicates UL RFID Signal. Not from device.

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

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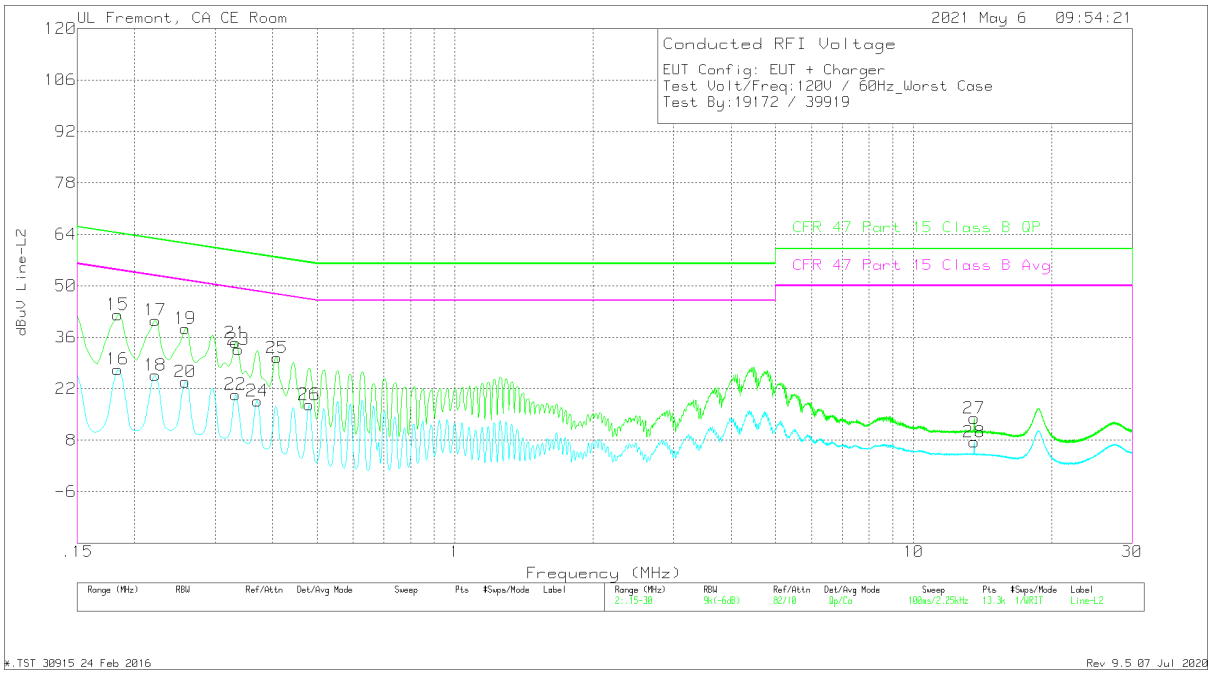
LINE 2 RESULTS



Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE0186446 L2	LC Cables C2&C3 dB	Limiter	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR)Margin (dB)
15	.18375	32.06	Qp	0	0	10.1	42.16	64.31	-22.15	-	-
16	.18375	17.19	Ca	0	0	10.1	27.29	-	-	54.31	-27.02
17	.222	30.55	Qp	0	0	10.1	40.65	62.74	-22.09	-	-
18	.222	15.58	Ca	0	0	10.1	25.68	-	-	52.74	-27.06
19	.258	28.26	Qp	0	0	10.1	38.36	61.5	-23.14	-	-
20	.258	13.81	Ca	0	0	10.1	23.91	-	-	51.5	-27.59
21	.33225	24.44	Qp	0	0	10.1	34.54	59.39	-24.85	-	-
22	.33225	10.32	Ca	0	0	10.1	20.42	-	-	49.39	-28.97
23	.33675	22.62	Qp	0	0	10.1	32.72	59.28	-26.56	-	-
24	.3705	8.56	Ca	0	0	10.1	18.66	-	-	48.49	-29.83
25	.40875	20.34	Qp	0	0	10.1	30.44	57.67	-27.23	-	-
26	.48075	7.57	Ca	0	0	10.1	17.67	-	-	46.33	-28.66
*27	13.56	3.48	Qp	.1	.2	10.2	13.98	60	-46.02	-	-
*28	13.56	-2.99	Ca	.1	.2	10.2	7.51	-	-	50	-42.49

Qp - Quasi-Peak detector
Ca - CISPR average detection
*Indicates UL RFID Signal. Not from device.

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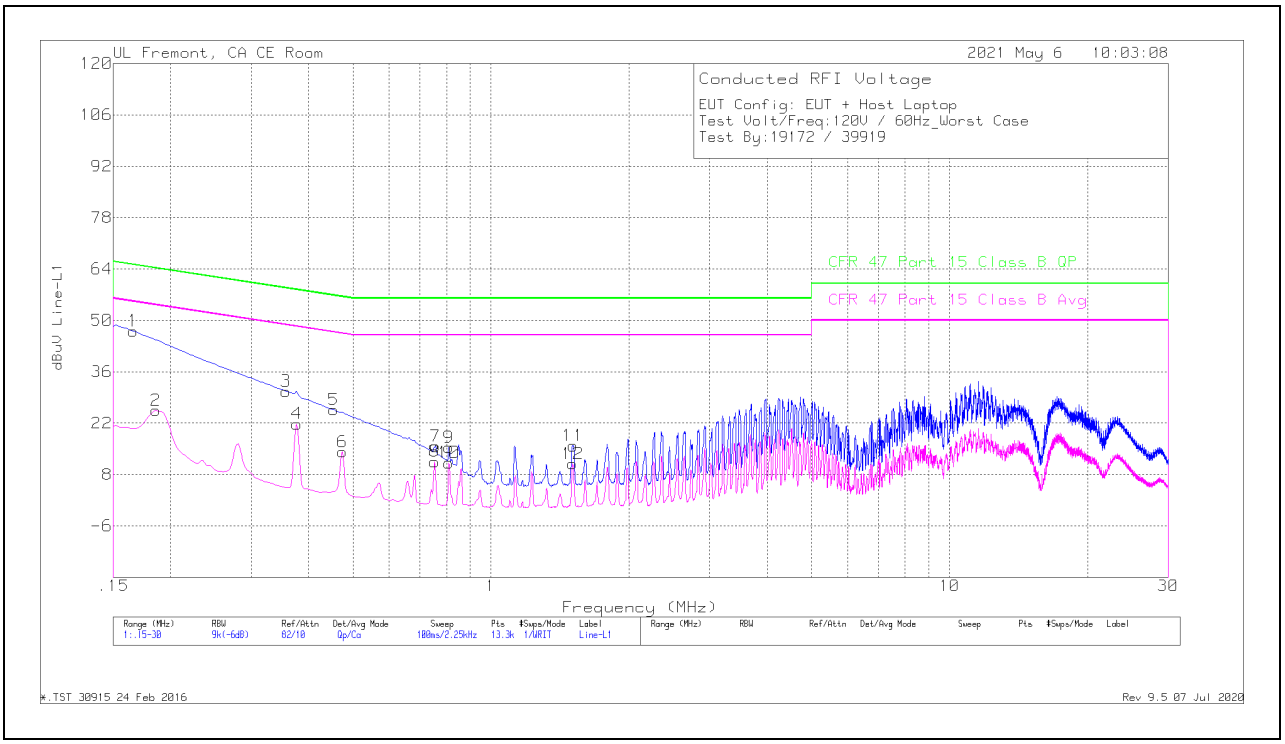
11.1.2. AC POWER LINE WITH LAPTOP

LINE 1 RESULTS



Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE0186446 L1	LC Cables C1&C3 dB	Limiter	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR)Margin (dB)
1	.16575	37.01	Qp	0	0	10.1	47.11	65.17	-18.06	-	-
2	.186	15.39	Ca	0	0	10.1	25.49	-	-	54.21	-28.72
3	.357	20.59	Qp	0	0	10.1	30.69	58.8	-28.11	-	-
4	.37725	11.71	Ca	0	0	10.1	21.81	-	-	48.34	-26.53
5	.45375	15.56	Qp	0	0	10.1	25.66	56.81	-31.15	-	-
6	.474	4.06	Ca	0	0	10.1	14.16	-	-	46.44	-32.28
7	.7575	5.49	Qp	0	.1	10.1	15.69	56	-40.31	-	-
8	.753	1.35	Ca	0	.1	10.1	11.55	-	-	46	-34.45
9	.80925	5.16	Qp	0	.1	10.1	15.36	56	-40.64	-	-
10	.80925	1.01	Ca	0	.1	10.1	11.21	-	-	46	-34.79
11	1.509	5.66	Qp	0	.1	10.1	15.86	56	-40.14	-	-
12	1.50675	.73	Ca	0	.1	10.1	10.93	-	-	46	-35.07

Qp - Quasi-Peak detector
Ca - CISPR average detection

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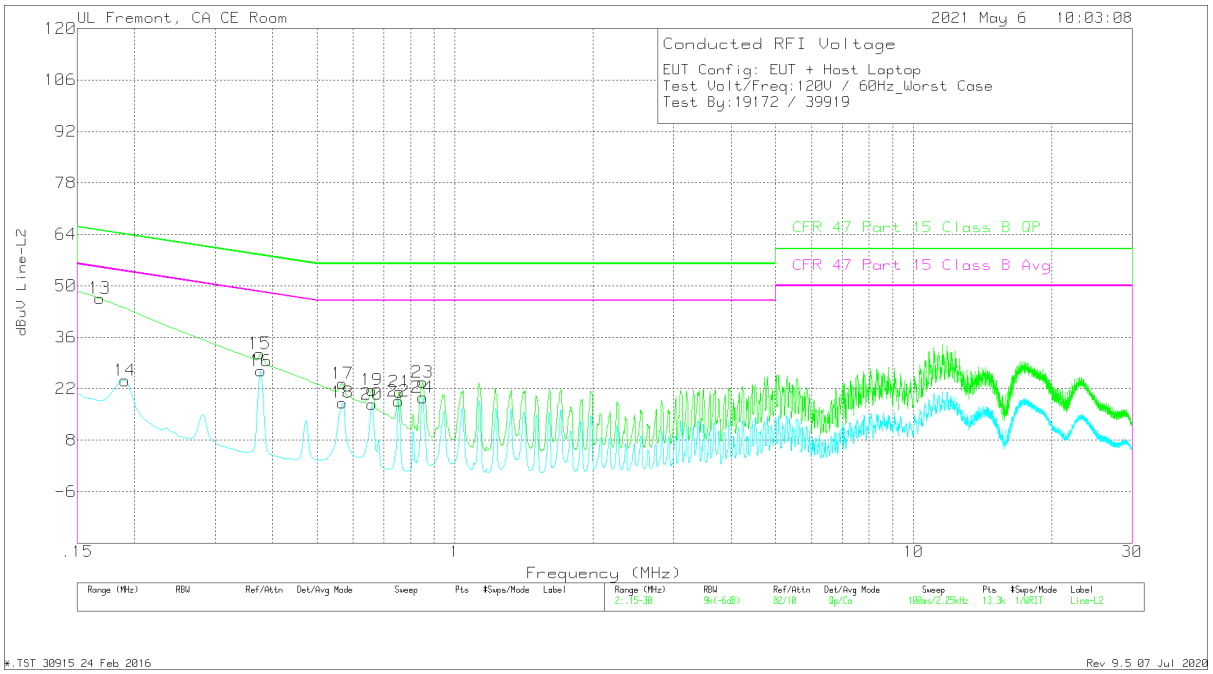
LINE 2 RESULTS



Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE0186446 L2	LC Cables C2&C3 dB	Limiter	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR)Margin (dB)
13	.168	36.51	Qp	0	0	10.1	46.61	65.06	-18.45	-	-
14	.1905	14.14	Ca	0	0	10.1	24.24	-	-	54.01	-29.77
15	.375	21.43	Qp	0	0	10.1	31.53	58.39	-26.86	-	-
16	.37725	16.73	Ca	0	0	10.1	26.83	-	-	48.34	-21.51
17	.5685	13.33	Qp	0	0	10.1	23.43	56	-32.57	-	-
18	.5685	8.12	Ca	0	0	10.1	18.22	-	-	46	-27.78
19	.6585	11.58	Qp	0	0	10.1	21.68	56	-34.32	-	-
20	.6585	7.66	Ca	0	0	10.1	17.76	-	-	46	-28.24
21	.7575	11.06	Qp	0	0	10.1	21.16	56	-34.84	-	-
22	.753	8.54	Ca	0	0	10.1	18.64	-	-	46	-27.36
23	.84975	13.55	Qp	0	.1	10.1	23.75	56	-32.25	-	-
24	.84975	9.41	Ca	0	.1	10.1	19.61	-	-	46	-26.39

Qp - Quasi-Peak detector
Ca - CISPR average detection

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12. SETUP PHOTOS

Please refer to 13571601-EP1V1 for setup photos

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