TEST REPORT

Report Number. : 13757234-E9V2

Applicant	:	Magic Leap Inc. 7500 West Sunrise Blvd Plantation, FL, 33322, US
Model	:	M1003000, M1004000, M1005000 M1103000, M1104000, M1105000
Brand	:	Magic Leap Inc.
FCC ID	:	2AM5N-ML2M1
IC	:	23045-ML2M1
EUT Description	:	Magic Leap 2 Compute Pack and Headset
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:
June 13, 2022

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

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	5/18/2022	Initial Issue	--
V2	6/13/2022	Section 6.3 updated	Henry Lau

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	Magic Leap Inc 7500 West Sunrise Blvd Plantation, FL, 33322, US
EUT DESCRIPTION:	Magic Leap 2 Compute Pack and Headset
BRAND:	Magic Leap Inc.
MODEL:	M1003000, M1004000, M1005000 M1103000, M1104000, M1105000
MODEL TESTED:	M1003000
SERIAL NUMBER:	P552X8E0001R (Conducted), P552X8E0001Q(Radiated)
SAMPLE RECEIPT DATE:	AUGUST 10, 2021
DATE TESTED:	AUGUST 10, 2021 - FEBRUARY 2, 2022

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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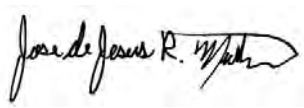
Approved & Released For
UL Verification Services Inc. By:

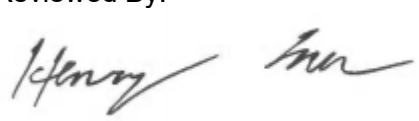
Francisco De Anda
Staff Engineer
Consumer Technology Division
UL Verification Services Inc.

Prepared By:



Jose Martinez
Test Engineer
Consumer Technology Division
UL Verification Services Inc.

Reviewed By:



Henry Lau
Project Engineer
Consumer Technology Division
UL Verification Services Inc.

2. TEST RESULTS SUMMARY

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

FCC Clause	ISED Clause	Requirement	Result	Comment
See Comment		Duty Cycle	Reporting purposes only	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.
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.

For Colocation Test results, please refer to UL Verification Services Inc report number 13757234-E13V1.

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, and KDB 558074 D01 15.247 Meas Guidance v05r02, KDB 414788 D01 Radiated Test Site v01r01, RSS-GEN Issue 5 + A1 + A2, and RSS-247 Issue 2.

The scope of this report covers the 802.11ax modes in the 2.4GHz band of Models M1003000, M1004000, M1005000, M1103000, M1104000, M1105000.

4. FACILITIES AND ACCREDITATION

UL Verification Services Inc. is accredited by A2LA, Certificate Number #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, U.S.A	US0104	2324A	550739
☐	Building 2: 47266 Benicia Street Fremont, CA 94538, U.S.A	US0104	22541	550739
☒	Building 4: 47658 Kato Rd Fremont, CA 94538, U.S.A	US0104	2324B	550739

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	2.84 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	3.78 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

EUT is a spatial AR computing device consists of compute pack and headset. The compute pack includes BT, BLE, 802.11 a/b/g/n/ac/ax radio transceivers.

6.2. MODEL DIFFERENCES

Models M1003000, M1004000, M1005000, M1103000, M1104000, and M1105000 are electronically identical. The model numbers are to differentiate the markets and regions of sale.

6.3. MAXIMUM OUTPUT POWER

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

2.4GHz BAND 802.11 ax MODE 1TX

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
1TX			
2412 - 2462	802.11ax HE20 SU OFDM	16.29	42.56
2412 - 2462	802.11ax HE20 OFDMA	Covered by 802.11ax HE20 OFDMA 2Tx	

2.4GHz BAND 802.11 ax MODE 2TX

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2TX			
2412 - 2462	802.11ax HE20 SU OFDM CDD	Covered by 802.11ax HE20 OFDMA 2Tx	
2412 - 2462	802.11ax HE20 RU size 106T OFDMA CDD	16.78	47.64

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6.4. TEST REDUCTIONS CASES

OFDMA HE20 2Tx was tested to cover OFDM HE20 SU Mode 2Tx & cover OFDMA HE20 1Tx mode as worst case due to being same output power.
All RU Index within a tone are the same power.

99% bandwidth:

- The narrowest (26T) and widest (242T) tones were tested for 2TX OFDMA Mode.
- For HE20 26T, each Low, Mid, High RU allocation is tested to their respective Low, Mid and High channel.

6dB bandwidth:

- For OFDMA, the narrowest (26T) tone was tested as worst case.
- For HE20 26T, each Low, Mid, High RU allocation is tested to their respective Low, Mid and High channel.

Power spectral density:

- For OFDMA, the narrowest (26T) and widest (242T) was tested to cover all other tones as worst case due to being same power.
- For HE20 26T, each Low, Mid, High RU allocation is tested to their respective Low, Mid and High channel.

Conducted spurious emissions

- For conducted Spurious emissions, the narrowest (26T) and widest (242T) was tested to cover all other tones as worst case due to being same power.
- For HE20 26T, each Low, Mid, High RU allocation is tested to their respective Low, Mid and High channel.

Radiated and conducted band edge:

- All tones and bandwdiths were tested.
- The RU allocations closest to the band edge was tested to cover all other RU allocations.

Radiated spurious emissions

- The narrowest (26T) and widest (242T) tones were tested for OFDMA mode
- The narrowest (26T) was tested to cover all other tones as worst case due to being same power as the wider tones.
- For HE20 26T, each Low, Mid, High RU allocation is tested to their respective Low, Mid and High channel.

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6.5. DESCRIPTION OF AVAILABLE ANTENNAS

The antenna(s) gain and type, as provided by the manufacturer' are as follows:

The radio utilizes two Dual Band PCB Printed antennas, with a maximum gain of:

Frequency Band (GHz)	Antenna 1	Antenna 2
	Antenna Gain (dBi)	Antenna Gain (dBi)
2412-2472	2	1.5

6.6. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was version PEQ3B.

For OFDM Mode
The test utility software used during testing was ML Connectivity Test Tool v012 & v005.

For OFDMA Mode
The test utility software used during testing was Qualcomm Radio Control Toolkit V4.0, Version: 4.0.00194.0.

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6.7. WORST-CASE CONFIGURATION AND MODE

WORST-CASE CONFIGURATION AND MODE FOR FINAL TEST

Radiated emissions below 1GHz, above 18GHz, and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

Band edge and radiated emissions between 1GHz and 18GHz were performed with the EUT set to transmit at the highest power on low, middle and high channels.

For SISO (Antenna 1), the fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that **X** orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

For SISO (Antenna 2), the fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that **Y** orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Y orientation.

For MIMO, the fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that **Z** orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Z orientation.

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

802.11ax HE20 mode: MCS0

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6.8. DESCRIPTION OF TEST SETUP

SUPPORT TEST EQUIPMENT				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID/ DoC**
Laptop (Radiated)	HP	EliteBook 840 G3	5CG6253DNC	DoC
Laptop AC Adapter (Radiated)	HP	740015-002	WDUVA0E3G53WR9	DoC
Charger	Magic Leap	M3013	E135498	DoC
Laptop (Conducted)	HP	EliteBook 840 G4	5CG7515YRN	DoC
Laptop AC Adapter (Conducted)	HP	709986-003	3CB52700Q4	DoC

I/O CABLES (CONDUCTED TEST)						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	AC Power	1	AC (3-prong)	Un-shielded	1.25	AC Mains to DC Power Adapter
2	DC	1	3-pin	Un-shielded	1	Power adapter to laptop
3	USB-C	1	USB Type C	Shielded	0.9	USB-C to EUT USB-C
4	Antenna	1	SMA	Un-shielded	.5	Antenna to Analyzer
5	A/V, Data	1	Permanent	Shielded	1.25	EUT to headset

I/O CABLES (RADIATED TEST)						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	AC Power	1	AC (2-prong)	Un-shielded	1.25	AC Mains to Power Adapter
2	USB-C	1	USB Type C	Shielded	0.9	Power Adapter to EUT
3	A/V Data	1	Permanent	Shielded	1.25	EUT to headset

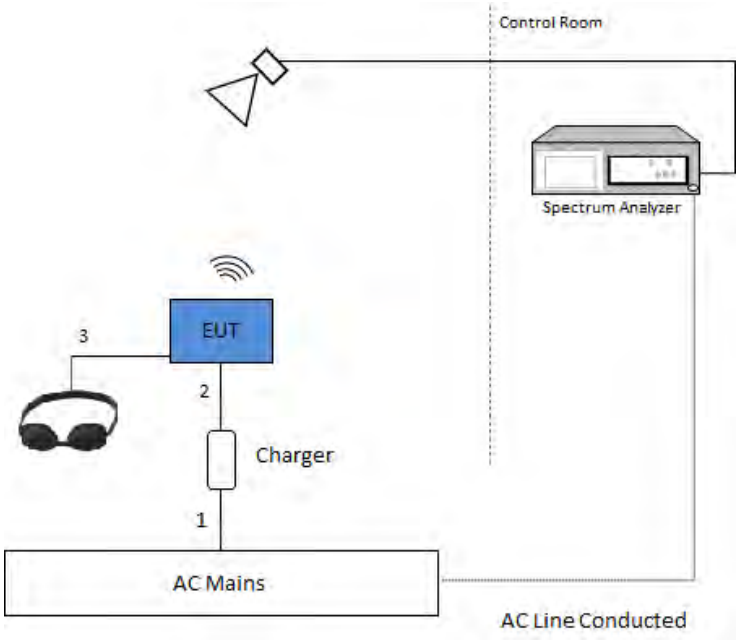
TEST SETUP

A test laptop is used to program the EUT and then removed during radiated tests. Test software exercised the radio card. For radiated emissions, EUT was powered by AC/DC adapter and for conducted tests the EUT was connected to laptop via USB.

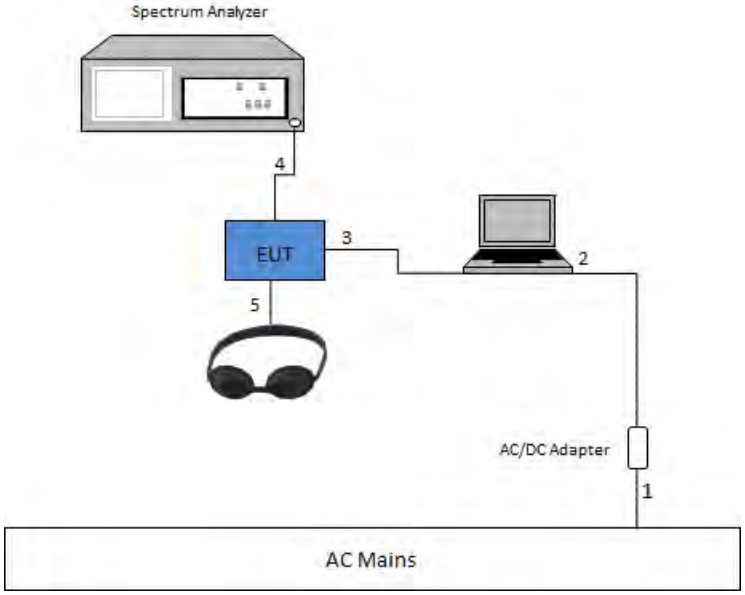
The computer pack and headset are permanently connected.

SETUP DIAGRAMS

Radiated Configuration



Conducted Configuration



7. MEASUREMENT METHOD

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

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

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

Output Power: ANSI C63.10 Subclause -11.9.2.3.2 Method AVGPM-G (Measurement using a gated RF average-reading power meter)

PSD: ANSI C63.10 Subclause -11.10.3 Method AVGPSD-1

Radiated emissions non-restricted frequency bands: ANSI C63.10 Subclause -11.11

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

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

Band-edge: ANSI C63.10 Section 6.10

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

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

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8. TEST AND MEASUREMENT EQUIPMENT

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

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, Broadband Hybrid, 30MHz to 3GHz	Sunol Sciences Corp.	JB3	174373	12/02/2021*	12/02/2020
Amplifier, 10KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310N	T300	04/09/2022	04/09/2021
Antenna, Horn 1-18GHz	ETS-Lindgren (Cedar Park, Texas)	3117	T119	05/07/2022	05/07/2021
Amplifier, 1 - 18GHz	MITEQ	AFS42-00101800-25-S-42	T1568	04/09/2022	04/09/2021
EMI TEST RECEIVER, with B8 option	Rohde & Schwarz	ESW44	PRE0179377	02/23/2022	02/23/2021
Antenna, Horn 18 to 26.5GHz	ARA	MWH-1826/B	81139	05/25/2022	05/25/2021
Rf Amplifier, 18-26.5GHz, 60dB gain	AMPLICAL	AMP18G26.5-60	171590	05/21/2022	05/21/2021
Antenna, Passive Loop 30Hz - 1MHz	ELECTRO METRICS	EM-6871	PRE0179465	07/29/2022	07/29/2021
Antenna, Passive Loop 100KHz - 30MHz	ELECTRO METRICS	EM-6872	PRE0179467	07/29/2022	07/29/2021
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight Technologies Inc	N9030A	80398	01/28/2022*	01/28/2021
Power Meter, P-series single channel	Keysight Technologies Inc	N1911A	82174	01/25/2022*	01/25/2021
Power Sensor, P - series, 50MHz to 18GHz, Wideband	Keysight Technologies Inc	N1921A	T1223	06/17/2022	06/17/2021
AC Line Conducted					
LISN	Fischer Custom Communications, Inc	FCC-LISN-50/250-25-2-01-480V	PRE0186446	01/20/2022	01/20/2021
EMI TEST RECEIVER	Rohde & Schwarz	ESR	T1436	02/19/2022	02/19/2021
Transient Limiter	TE	TBFL1	207996	06/01/2022	06/01/2021
UL TEST SOFTWARE LIST					
Radiated Software	UL	UL EMC	Rev 9.5, Jan 3, 2020		
Antenna Port Software	UL	UL RF	Ver 2021.10.8		
AC Line Conducted Software	UL	UL EMC	Rev 9.5, 07 Jul 2020		

*Testing was performed in cal.

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9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

PROCEDURE

ANSI C63.10 Section 11.6 b 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)
2.4GHz Band					
802.11ax HE20 SU OFDM	5.444	5.462	0.997	99.67%	0.00
802.11ax HE20 OFDMA, RU Index 242T	2.756	2.778	0.992	99.21%	0.00

DUTY CYCLE PLOTS

802.11ax HE20 OFDM, SU MODE

802.11ax HE20 OFDMA, RU index 242T MODE

9.2. 99% BANDWIDTH

LIMITS

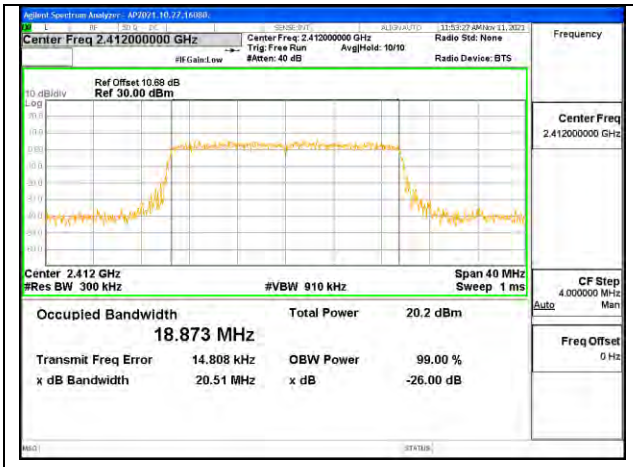
None; for reporting purposes only.

RESULTS

9.2.1. 802.11ax HE20 MODE 1TX

1TX Antenna 1 OFDM MODE: SU, Single User

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	18.873
Mid 6	2437	18.864
High 11	2462	18.886



LOW CHANNEL 1

MID CHANNEL 6

HIGH CHANNEL 11

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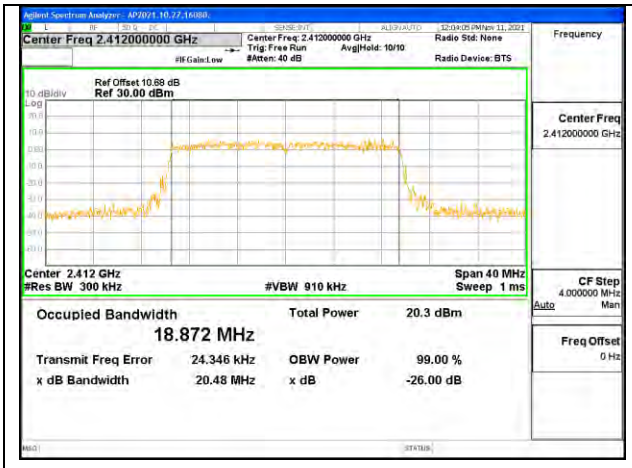
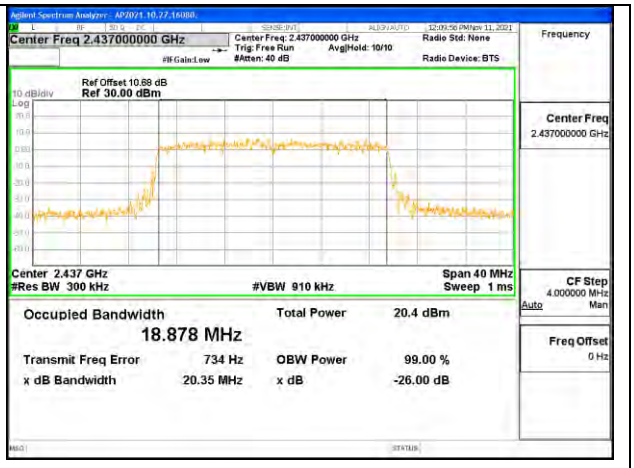
1TX Antenna 2 OFDM MODE: SU, Single User

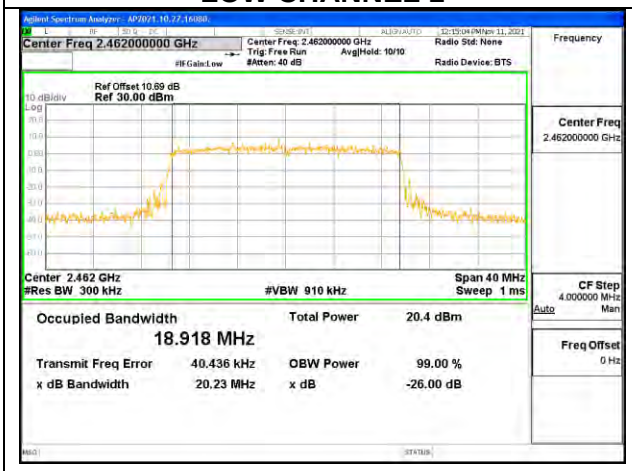
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	18.872
Mid 6	2437	18.878
High 11	2462	18.918



LOW CHANNEL 1



MID CHANNEL 6



HIGH CHANNEL 11

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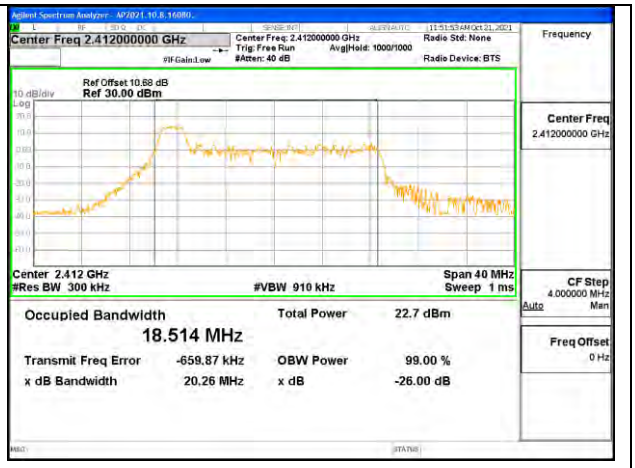
9.2.2. 802.11ax HE20 MODE 2TX

2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 26-Tones, RU Index 0

Channel	Frequency (MHz)	99% Bandwidth Antenna 0 (MHz)	99% Bandwidth Antenna 1 (MHz)
Low 1	2412	18.576	18.514

LOW CHANNEL 1

LOW CHANNEL 1 Antenna 1



LOW CHANNEL 1 Antenna 2

2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 26-Tones, RU Index 4

Channel	Frequency (MHz)	99% Bandwidth Antenna 1 (MHz)	99% Bandwidth Antenna 2 (MHz)
Mid 6	2437	17.064	16.580

MID CHANNEL 6

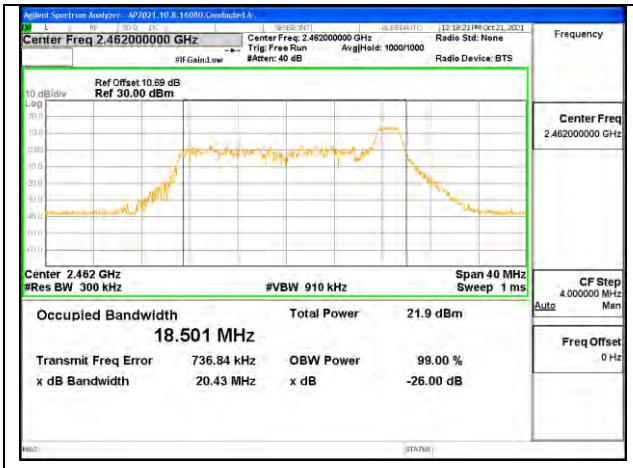
MID CHANNEL 6 Antenna 1

MID CHANNEL 6 Antenna 2

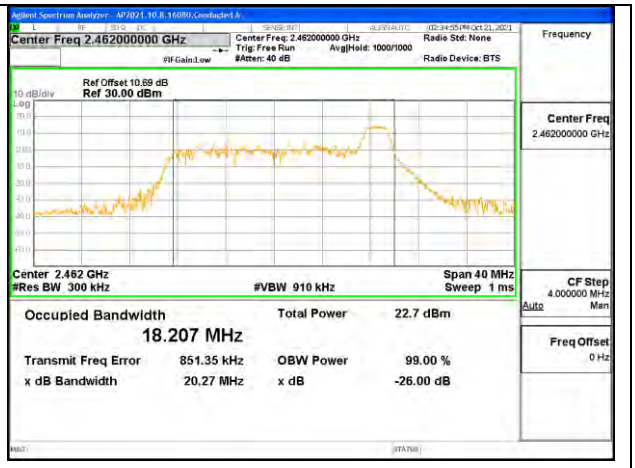
2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 26-Tones, RU Index 8

Channel	Frequency (MHz)	99% Bandwidth Antenna 1 (MHz)	99% Bandwidth Antenna 2 (MHz)
High 11	2462	18.501	18.207

HIGH CHANNEL 11



HIGH CHANNEL 11 Antenna 1

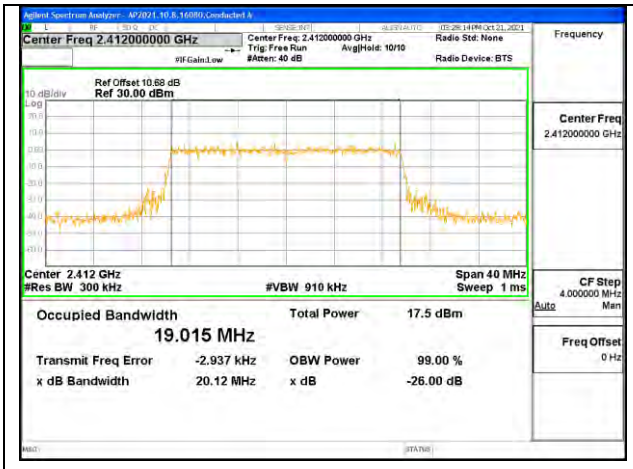


HIGH CHANNEL 11 Antenna 2

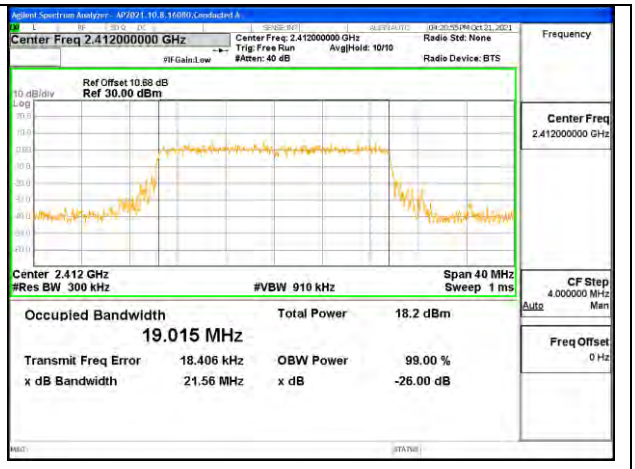
2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 242-Tones, RU Index 61

Channel	Frequency (MHz)	99% Bandwidth Antenna 1 (MHz)	99% Bandwidth Antenna 2 (MHz)
Low 1	2412	19.015	19.015
Mid 6	2437	18.982	19.033
High 11	2462	18.958	18.983

LOW CHANNEL 1



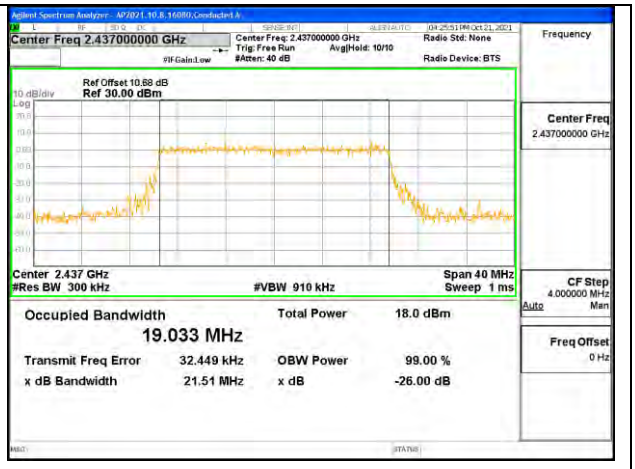
LOW CHANNEL 1 Antenna 1



LOW CHANNEL 1 Antenna 2

MID CHANNEL 6

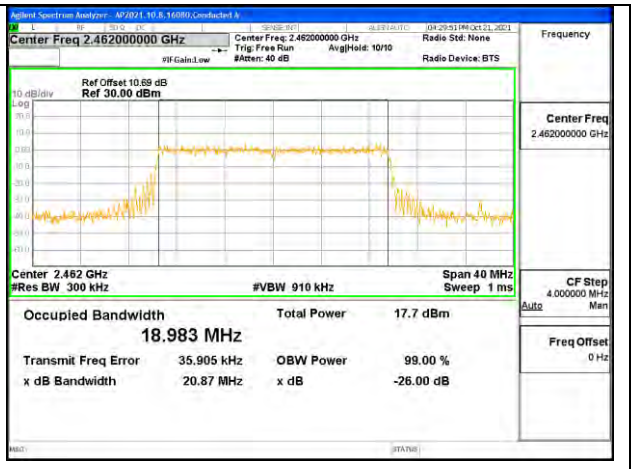
MID CHANNEL 6 Antenna 1



MID CHANNEL 6 Antenna 2

HIGH CHANNEL 11

HIGH CHANNEL 11 Antenna 1



HIGH CHANNEL 11 Antenna 2

9.3. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

ISED RSS-247 Clause 5.2 (a)

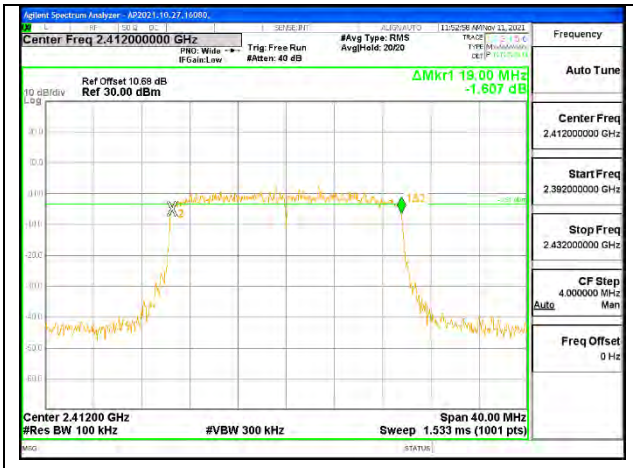
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

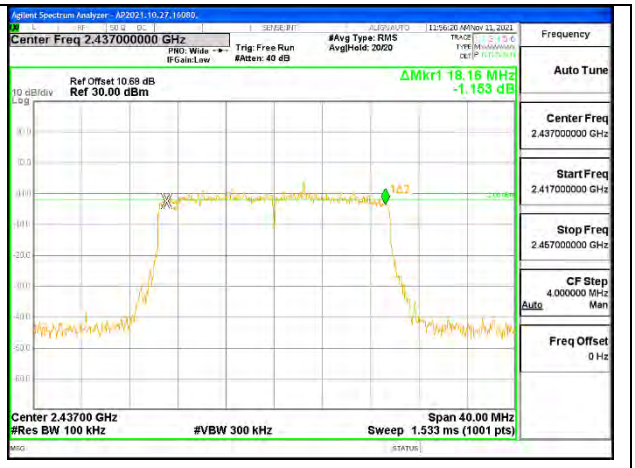
9.3.1. 802.11ax HE20 MODE 1TX

1TX Antenna 1 OFDM MODE: SU, Single User

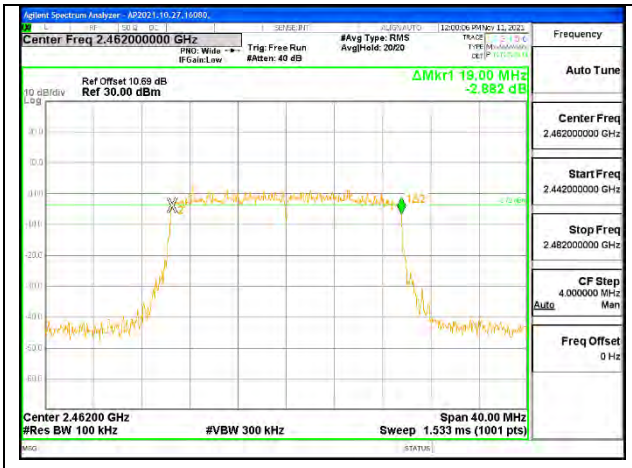
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	19.00	0.5
Mid 6	2437	18.16	0.5
High 11	2462	19.00	0.5



LOW CHANNEL 1



MID CHANNEL 6



HIGH CHANNEL 11

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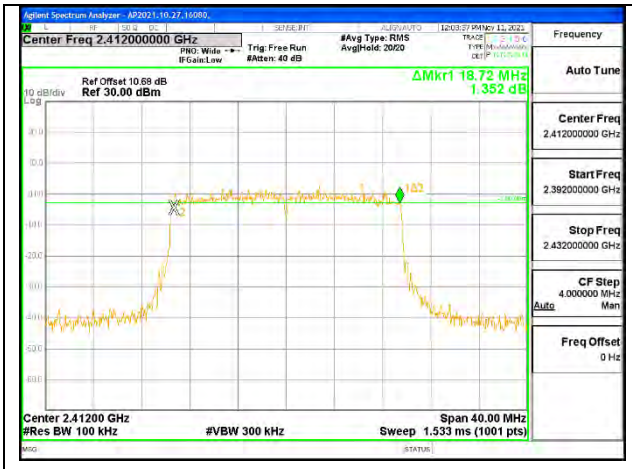
1TX Antenna 2 OFDM MODE: SU, Single User

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	18.72	0.5
Mid 6	2437	19.08	0.5
High 11	2462	19.12	0.5



LOW CHANNEL 1

MID CHANNEL 6

HIGH CHANNEL 11

Intentionally left blank

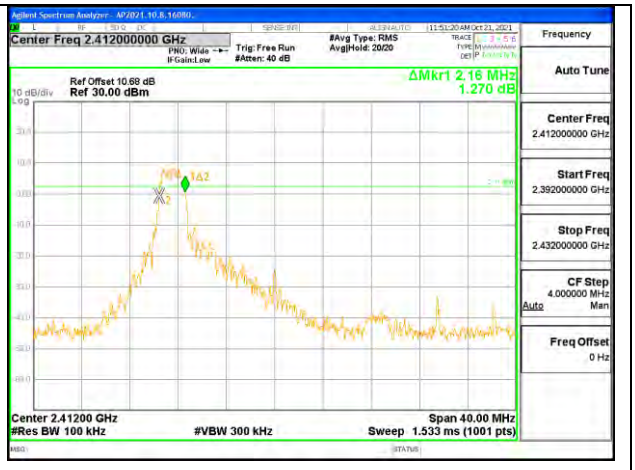
9.3.2. 802.11ax HE20 MODE 2TX

2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 26-Tones, RU Index 0

Channel	Frequency (MHz)	6 dB BW Antenna 1 (MHz)	6 dB BW Antenna 2 (MHz)	Minimum Limit (MHz)
Low 1	2412	2.12	2.16	0.5

LOW CHANNEL 1

LOW CHANNEL 1 Antenna 1

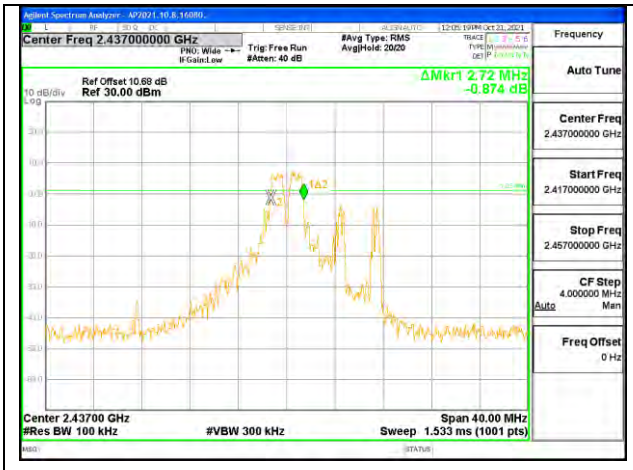


LOW CHANNEL 1 Antenna 2

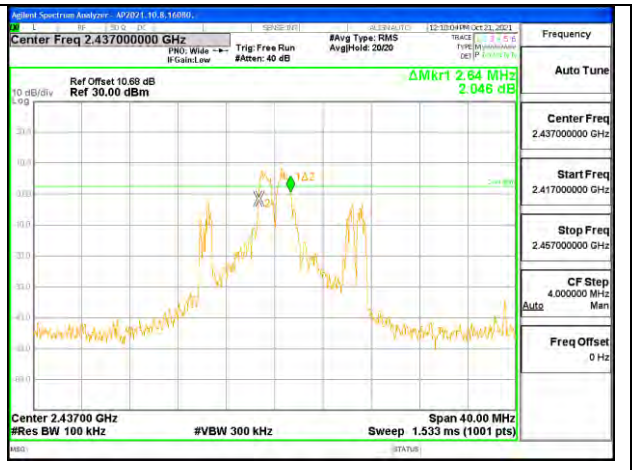
2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 26-Tones, RU Index 4

Channel	Frequency (MHz)	6 dB BW Antenna 1 (MHz)	6 dB BW Antenna 2 (MHz)	Minimum Limit (MHz)
Mid 6	2437	2.72	2.64	0.5

MID CHANNEL 6



MID CHANNEL 6 Antenna 1

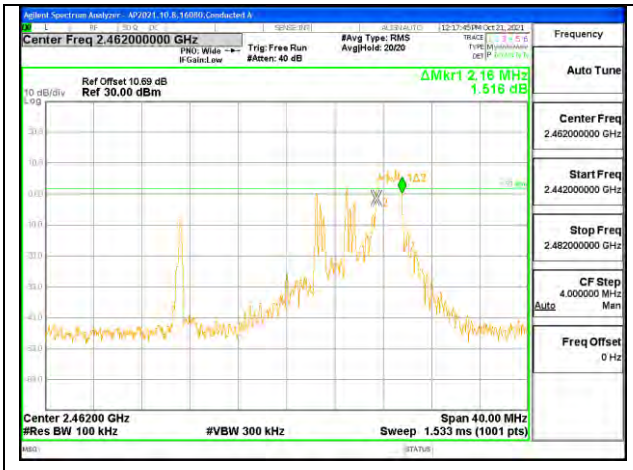


MID CHANNEL 6 Antenna 2

2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 26-Tones, RU Index 8

Channel	Frequency (MHz)	6 dB BW Antenna 1 (MHz)	6 dB BW Antenna 2 (MHz)	Minimum Limit (MHz)
High 11	2462	2.16	2.16	0.5

HIGH CHANNEL 11



HIGH CHANNEL 11 Antenna 1

HIGH CHANNEL 11 Antenna 2

9.4. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)

RSS-247 5.4 (d)

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The transmitter output is connected to a power meter. The cable assembly insertion loss was entered as an offset in the power meter to allow for a peak reading of power.

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

DIRECTIONAL ANTENNA GAIN

1 TX

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

2 TX

Tx chains are uncorrelated for power and correlated for PSD due to the device supporting CDD in all MIMO modes.

The directional gains are as follows:

Band (GHz)	Antenna 1 Antenna Gain (dBi)	Antenna 2 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)	Correlated Chains Directional Gain (dBi)
2.4	2.00	1.50	1.76	4.76

RESULT

9.4.1. 802.11ax HE20 MODE 1TX

1TX Antenna 1 OFDM MODE: SU, Single User

Test Engineer:	16080 ZS
Test Date:	11/11/2021

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	2.00	30.00	30	36	30.00
Mid 6	2437	2.00	30.00	30	36	30.00
High 11	2462	2.00	30.00	30	36	30.00

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

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	16.29	16.29	30.00	-13.71
Mid 6	2437	16.14	16.14	30.00	-13.86
High 11	2462	15.95	15.95	30.00	-14.05

UL VERIFICATION SERVICES
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1TX Antenna 2 OFDM MODE: SU, Single User

Test Engineer:	16080 ZS
Test Date:	11/11/2021

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	1.50	30.00	30	36	30.00
Mid 6	2437	1.50	30.00	30	36	30.00
High 11	2462	1.50	30.00	30	36	30.00

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

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	16.29	16.29	30.00	-13.71
Mid 6	2437	16.15	16.15	30.00	-13.85
High 11	2462	16.28	16.28	30.00	-13.72

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9.4.2. 802.11ax HE20 MODE 2TX

2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 26-Tones, RU Index 0

Test Engineer:	16080 SZ
Test Date:	10/2/21

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	1.76	30.00	36	30.00

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

Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Antenna 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	13.40	13.89	16.66	30.00	-13.34

2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 26-Tones, RU Index 4

Test Engineer:	16080 SZ
Test Date:	10/2/2021

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Mid 6	2437	1.76	30.00	36	30.00

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

Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Antenna 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Mid 6	2437	13.60	13.66	16.64	30.00	-13.36

2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 26-Tones, RU Index 8

Test Engineer:	X16080 SZ
Test Date:	10/2/2021

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
High 11	2462	1.76	30.00	36	30.00

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

Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Antenna 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
High 11	2462	13.24	13.78	16.53	30.00	-13.47

2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 52-Tones, RU Index 37

Test Engineer:	16080 SZ
Test Date:	10/2/2021

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	1.76	30.00	36	30.00

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

Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Antenna 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	13.30	13.72	16.53	30.00	-13.47

2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 52-Tones, RU Index 38

Test Engineer:	16080 ZS
Test Date:	10/2/2021

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Mid 6	2437	1.76	30.00	36	30.00

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

Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Antenna 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Mid 6	2437	13.39	13.82	16.62	30.00	-13.38

2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 52-Tones, RU Index 40

Test Engineer:	16080 ZS
Test Date:	10/2/2021

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
High 11	2462	1.76	30.00	36	30.00

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

Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Antenna 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
High 11	2462	13.30	13.84	16.59	30.00	-13.41

2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 106-Tones, RU Index 53

Test Engineer:	16080 SZ
Test Date:	10/2/2021

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	1.76	30.00	36	30.00
Mid 6	2437	1.76	30.00	36	30.00

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

Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Antenna 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	13.56	13.96	16.77	30.00	-13.23
Mid 6	2437	13.60	13.94	16.78	30.00	-13.22

2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 106-Tones, RU Index 54

Test Engineer:	16080 SZ
Test Date:	10/2/2021

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
High 11	2462	1.76	30.00	36	30.00

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

Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Antenna 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
High 11	2462	13.42	13.90	16.68	30.00	-13.32

2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 242-Tones, RU Index 61

Test Engineer:	16080 SZ
Test Date:	10/2/2021

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	1.76	30.00	36	30.00
Mid 6	2437	1.76	30.00	36	30.00
High 11	2462	1.76	30.00	36	30.00

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

Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Antenna 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	13.40	13.70	16.56	30.00	-13.44
Mid 6	2437	13.58	13.92	16.76	30.00	-13.24
High 11	2462	13.45	13.90	16.69	30.00	-13.31

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9.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.407 (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

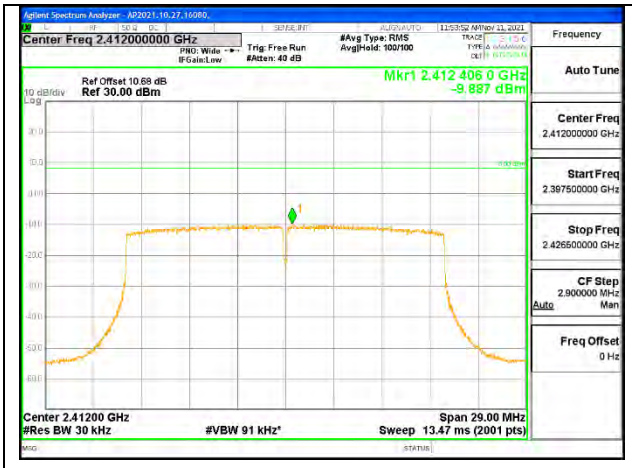
9.5.1. 802.11ax HE20 MODE 1TX

1TX Antenna 1 OFDM MODE: SU, Single User

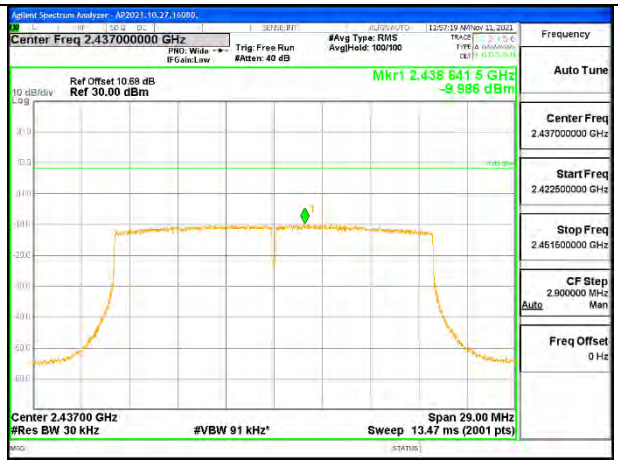
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

PSD Results

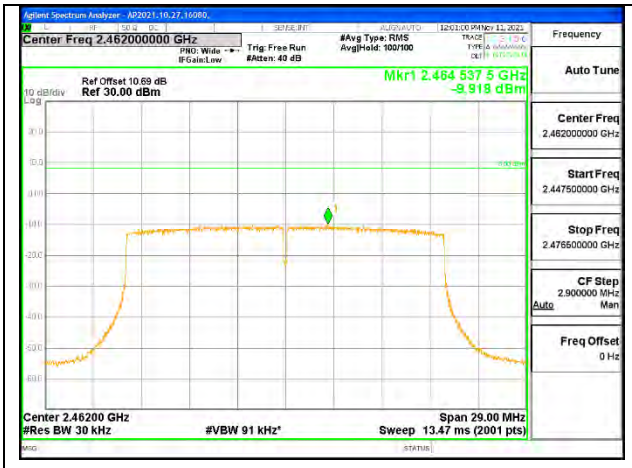
Channel	Frequency (MHz)	Antenna 1 Meas (dBm/ 30kHz)	Total Corr'd PSD (dBm/ 30kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-9.89	-9.89	8.0	-17.9
Mid 6	2437	-9.99	-9.99	8.0	-18.0
High 11	2462	-9.92	-9.92	8.0	-17.9



LOW CHANNEL 1



MID CHANNEL 6



HIGH CHANNEL 11

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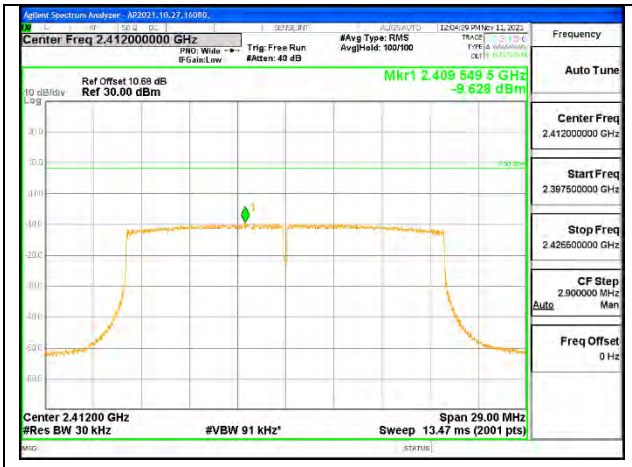
1TX Antenna 2 OFDM MODE: SU, Single User

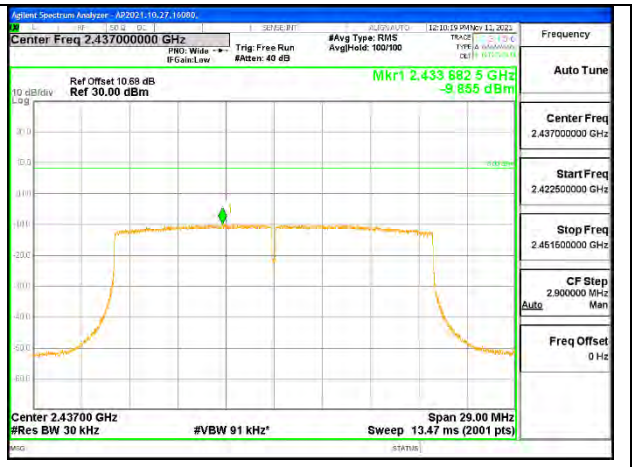
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

PSD Results

Channel	Frequency (MHz)	Antenna 2 Meas (dBm/ 30kHz)	Total Corr'd PSD (dBm/ 30kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-9.63	-9.63	8.0	-17.6
Mid 6	2437	-9.86	-9.86	8.0	-17.9
High 11	2462	-9.65	-9.65	8.0	-17.7



LOW CHANNEL 1



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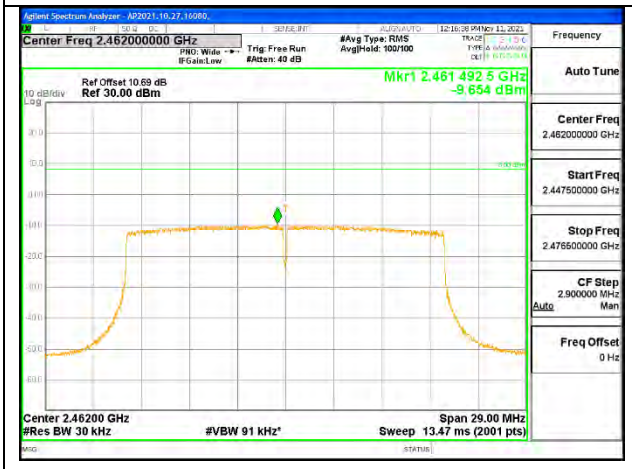

HIGH CHANNEL 11

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9.5.2. 802.11ax HE20 MODE 2TX

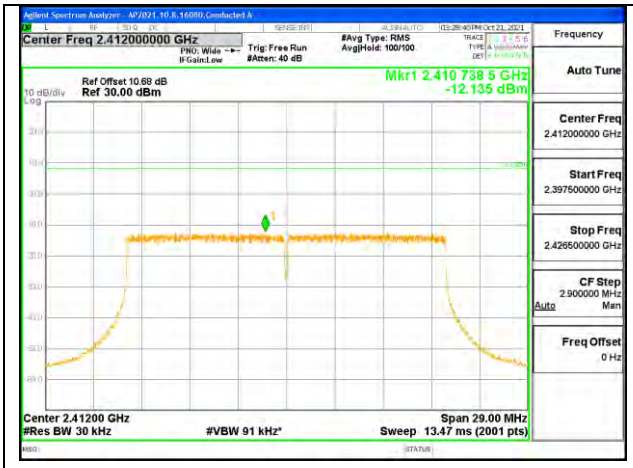
2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 242-Tones, RU Index 61

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

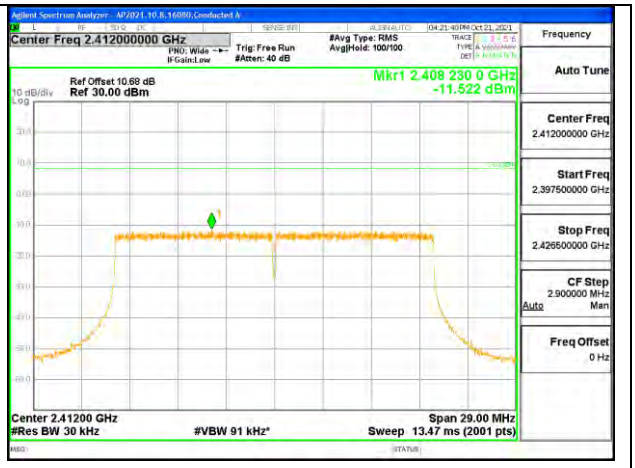
PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas (dBm/ 30kHz)	Antenna 2 Meas (dBm/ 30kHz)	Total Corr'd PSD (dBm/ 30kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-12.14	-11.52	-8.81	8.0	-16.8
Mid 6	2437	-12.33	-11.83	-9.06	8.0	-17.1
High 11	2462	-12.30	-11.78	-9.02	8.0	-17.0

LOW CHANNEL 1

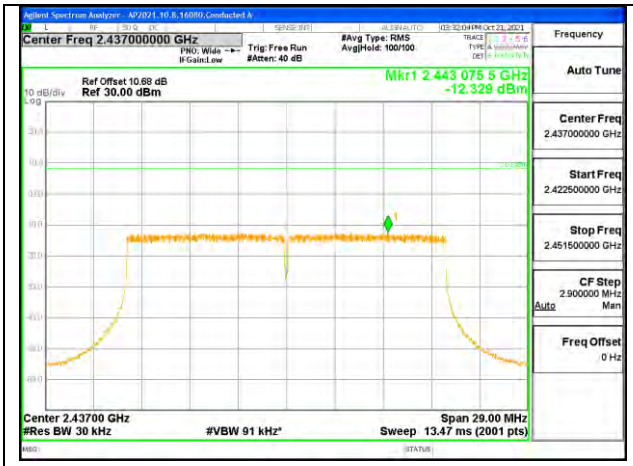


LOW CHANNEL 1 Antenna 1

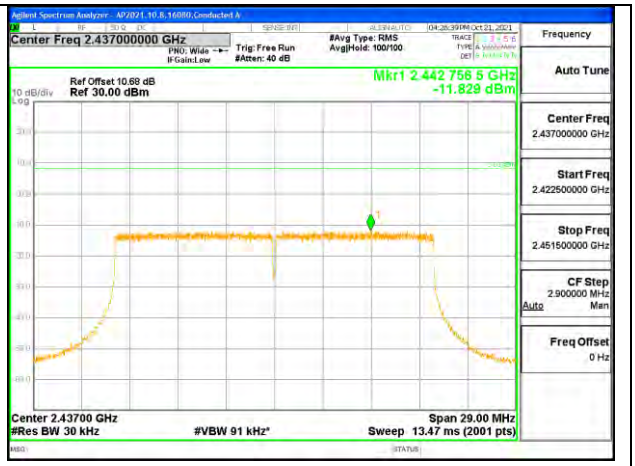


LOW CHANNEL 1 Antenna 2

MID CHANNEL 6

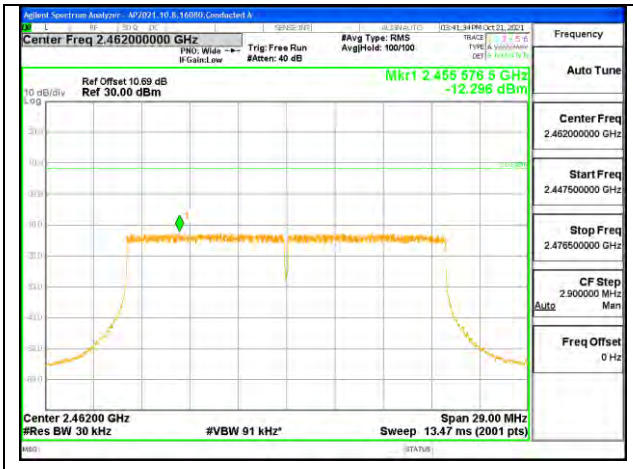


MID CHANNEL 6 Antenna 1

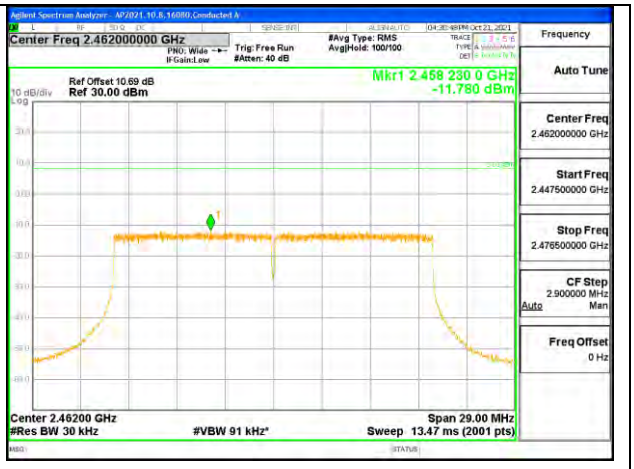


MID CHANNEL 6 Antenna 2

HIGH CHANNEL 11



HIGH CHANNEL 11 Antenna 1



HIGH CHANNEL 11 Antenna 2

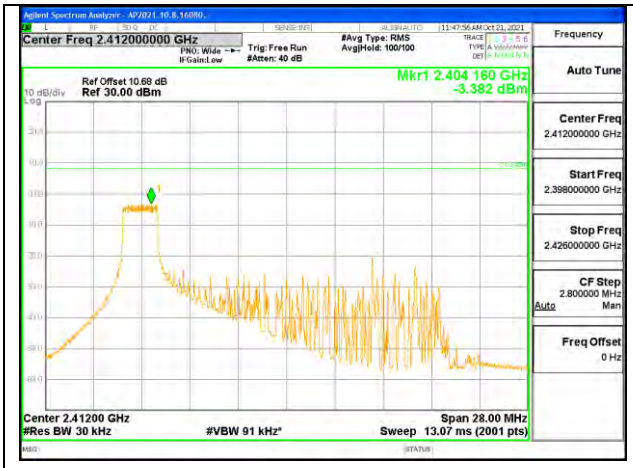
2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 26-Tones, RU Index 0

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

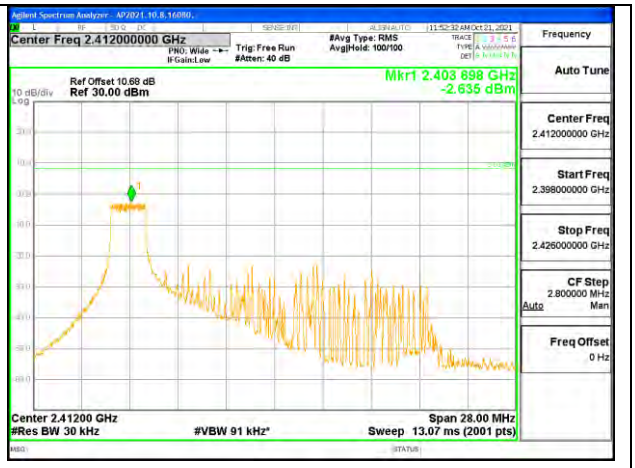
PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas (dBm/ 30kHz)	Antenna 2 Meas (dBm/ 30kHz)	Total Corr'd PSD (dBm/ 30kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-3.382	-2.635	0.02	8.0	-8.0

LOW CHANNEL 1



LOW CHANNEL 1 Antenna 1



LOW CHANNEL 1 Antenna 2

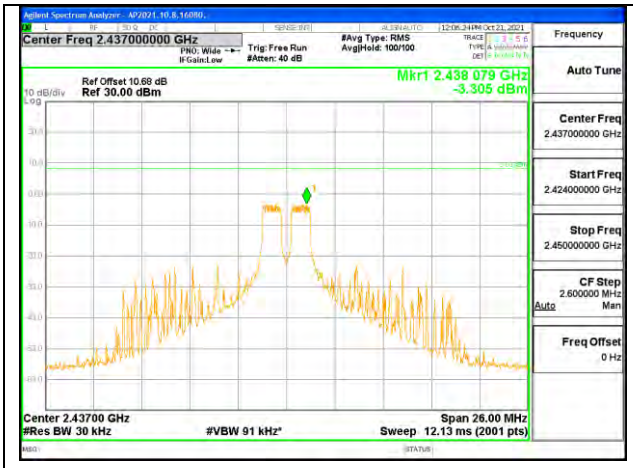
2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 26-Tones, RU Index 4

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

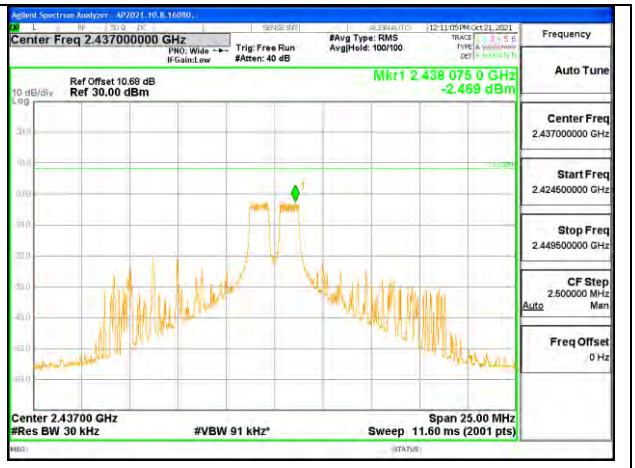
PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas (dBm/ 30kHz)	Antenna 2 Meas (dBm/ 30kHz)	Total Corr'd PSD (dBm/ 30kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Mid 6	2437	-3.31	-2.47	0.14	8.0	-7.9

MID CHANNEL 6



MID CHANNEL 6 Antenna 1



MID CHANNEL 6 Antenna 2

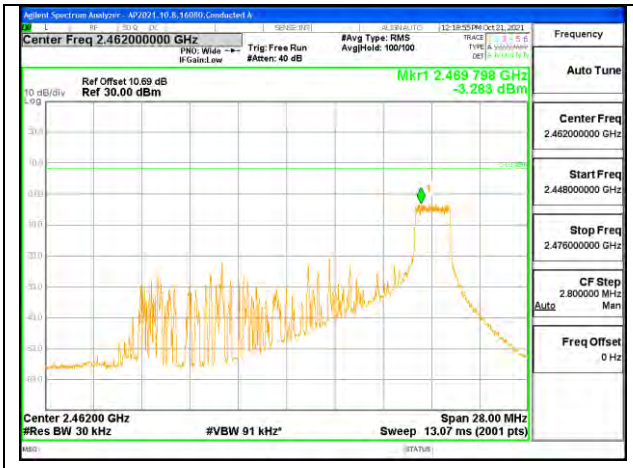
2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 26-Tones, RU Index 8

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

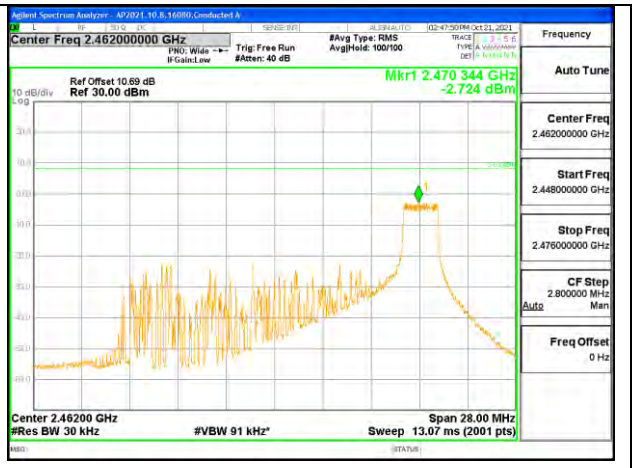
PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas (dBm/ 30kHz)	Antenna 2 Meas (dBm/ 30kHz)	Total Corr'd PSD (dBm/ 30kHz)	Limit (dBm/ 3kHz)	Margin (dB)
High 11	2462	-3.28	-2.72	0.02	8.0	-8.0

HIGH CHANNEL 11



HIGH CHANNEL 11 Antenna 1



HIGH CHANNEL 11 Antenna 2

9.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.407 (d)

RSS-247 5.5

(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

PROCEDURE

Output power was measured based on the use of ave. measurement, therefore the required attenuation is 30 dB.

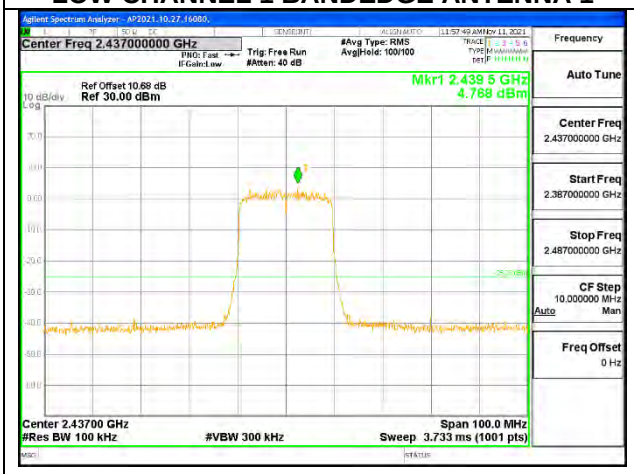
RESULTS

9.6.1. 802.11ax HE20 MODE 1TX

1TX Antenna 1 OFDM MODE: SU, Single User

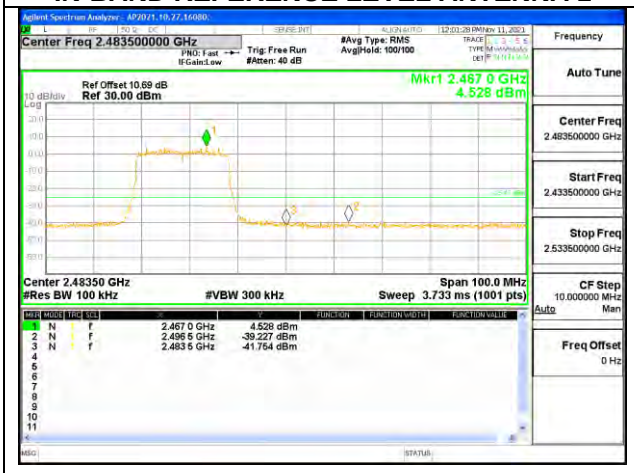
LOW CHANNEL 1 BANDEDGE ANTENNA 1

OUT-OF-BAND LOW CHANNEL 1 ANTENNA 1



IN-BAND REFERENCE LEVEL ANTENNA 1

OUT-OF-BAND MID CHANNEL ANTENNA 1



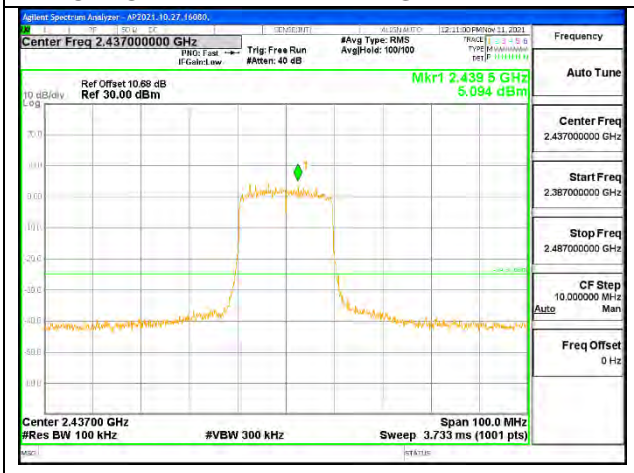
HIGH CHANNEL 11 BANDEDGE ANTENNA 1

OUT-OF-BAND HIGH CHANNEL 11 ANTENNA 1

1TX Antenna 2 OFDM MODE: SU, Single User

LOW CHANNEL 1 BANDEDGE ANTENNA 2

OUT-OF-BAND LOW CHANNEL 1 ANTENNA 2



IN-BAND REFERENCE LEVEL ANTENNA 2

OUT-OF-BAND MID CHANNEL ANTENNA 2

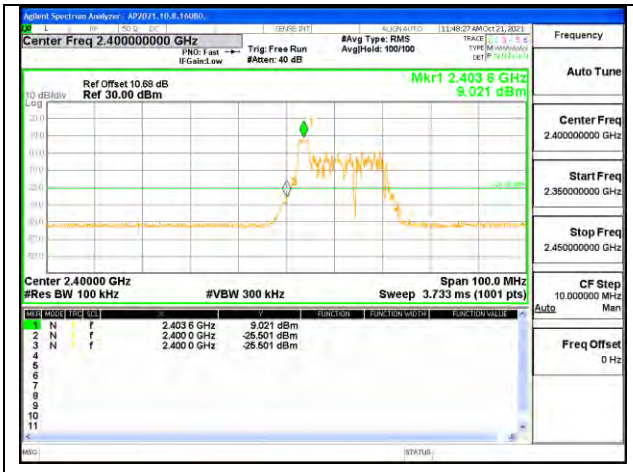
HIGH CHANNEL 11 BANDEDGE ANTENNA 2

OUT-OF-BAND HIGH CHANNEL 11 ANTENNA 2

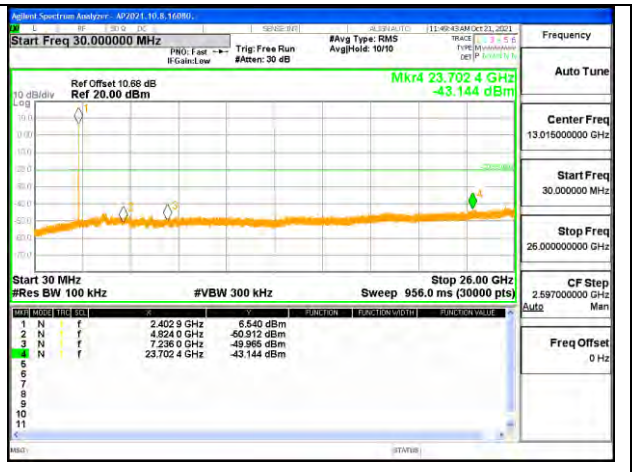
9.6.2. 802.11ax HE20 MODE 2TX

2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 26-Tones, RU Index 0

LOW CHANNEL 1



LOW CHANNEL 1 BANDEDGE ANTENNA 1



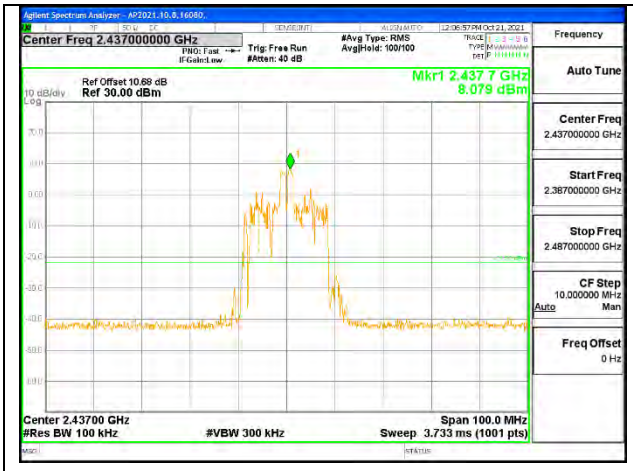
OUT-OF-BAND LOW CHANNEL 1 ANTENNA 1

LOW CHANNEL 1 BANDEDGE ANTENNA 2

OUT-OF-BAND LOW CHANNEL 1 ANTENNA 2

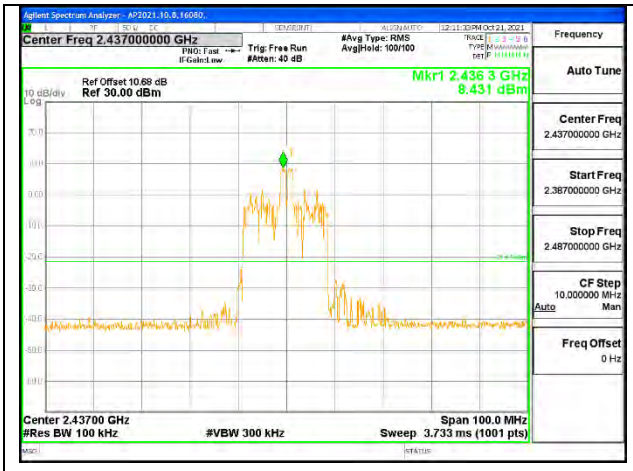
2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 26-Tones, RU Index 4

MID CHANNEL 6



IN-BAND REFERENCE LEVEL ANTENNA 1

OUT-OF-BAND MID CHANNEL ANTENNA 1

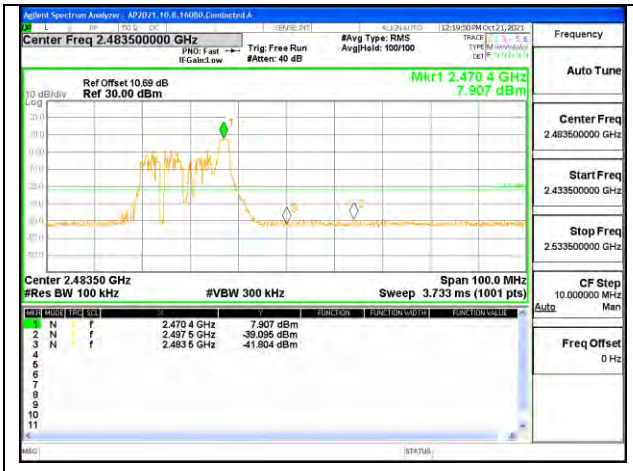


IN-BAND REFERENCE LEVEL ANTENNA 2

OUT-OF-BAND MID CHANNEL ANTENNA 2

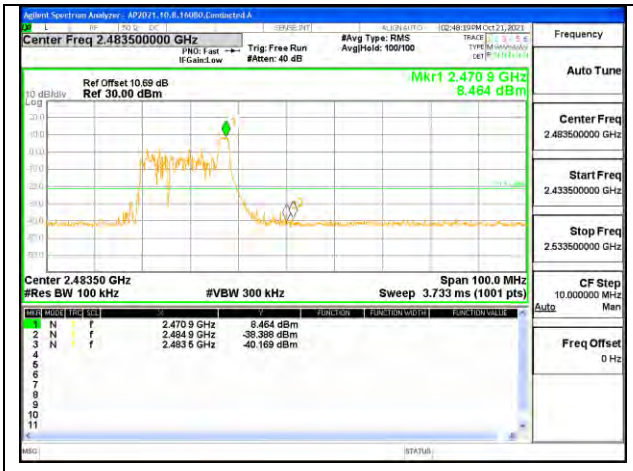
2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 26-Tones, RU Index 8

HIGH CHANNEL 11



HIGH CHANNEL 11 BANDEDGE ANTENNA 1

OUT-OF-BAND HIGH CHANNEL 11 ANTENNA 1



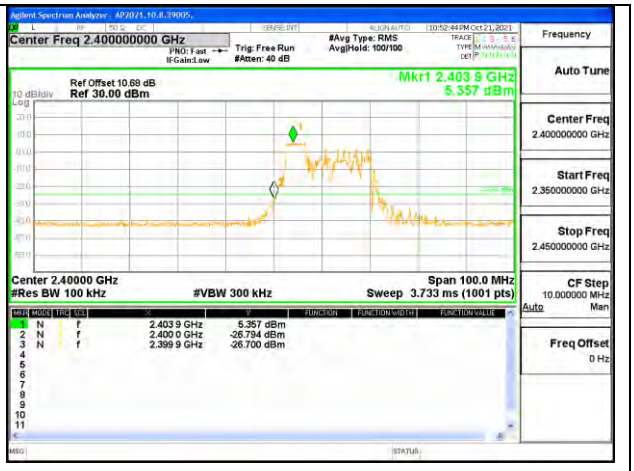
HIGH CHANNEL 11 BANDEDGE ANTENNA 2

OUT-OF-BAND HIGH CHANNEL 11 ANTENNA 2

2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 52-Tones, RU Index 37

LOW CHANNEL 1

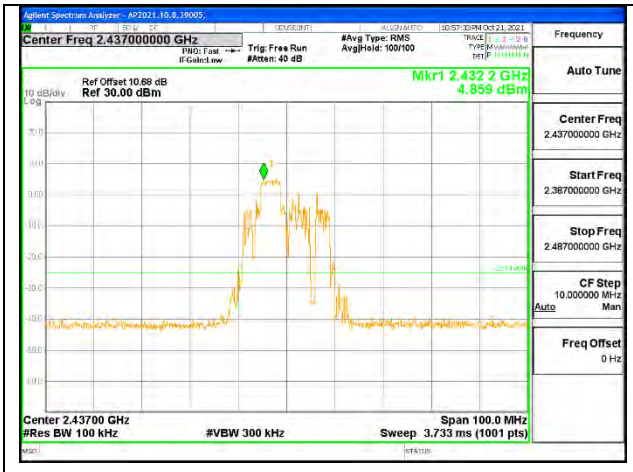
LOW CHANNEL 1 BANDEDGE ANTENNA 1



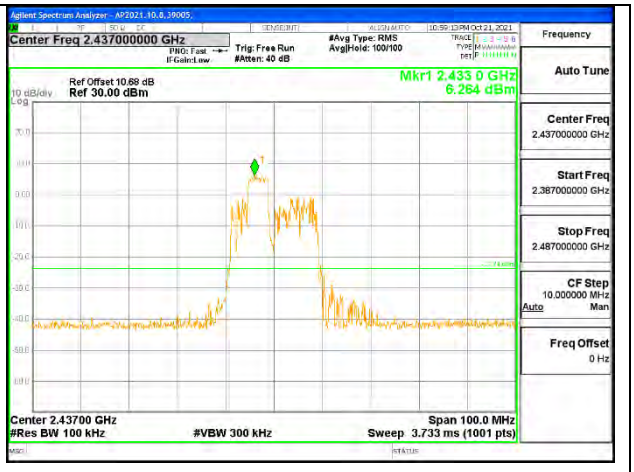
LOW CHANNEL 1 BANDEDGE ANTENNA 2

2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 52-Tones, RU Index 38

MID CHANNEL 6



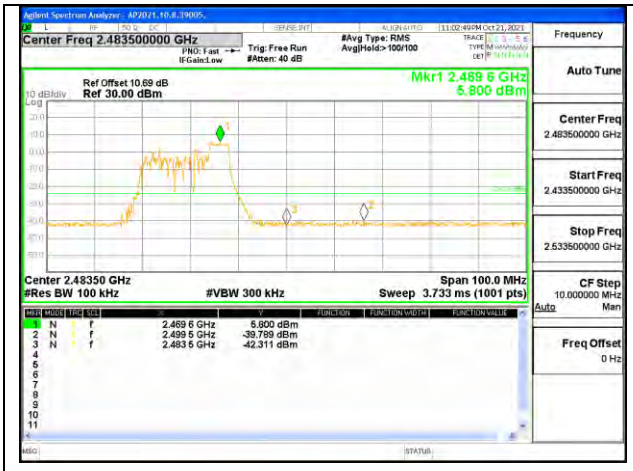
IN-BAND REFERENCE LEVEL ANTENNA 1



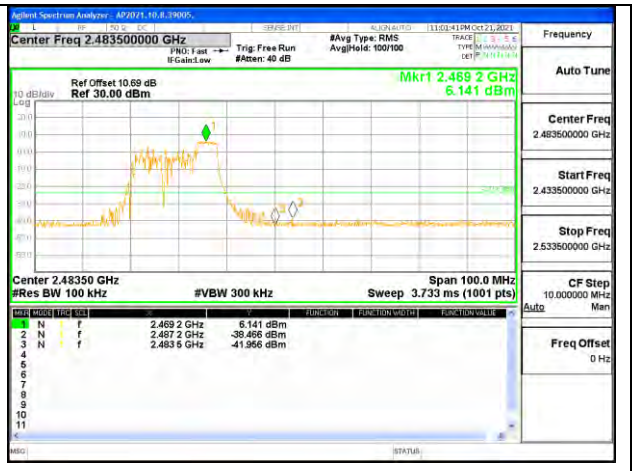
IN-BAND REFERENCE LEVEL ANTENNA 2

2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 52-Tones, RU Index 40

HIGH CHANNEL 11



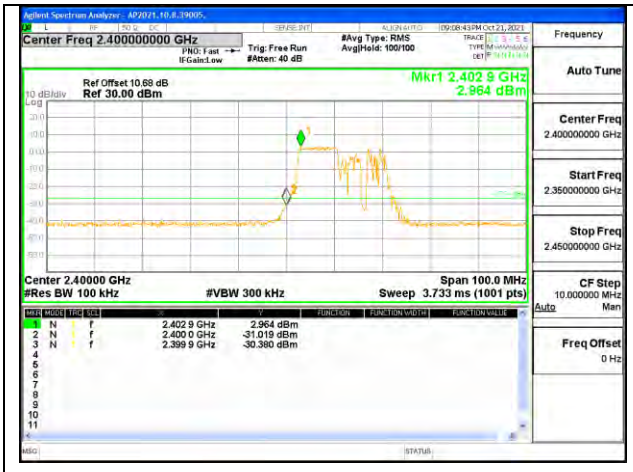
HIGH CHANNEL 11 BANDEDGE ANTENNA 1



HIGH CHANNEL 11 BANDEDGE ANTENNA 1

2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 106-Tones, RU Index 53

LOW CHANNEL 1

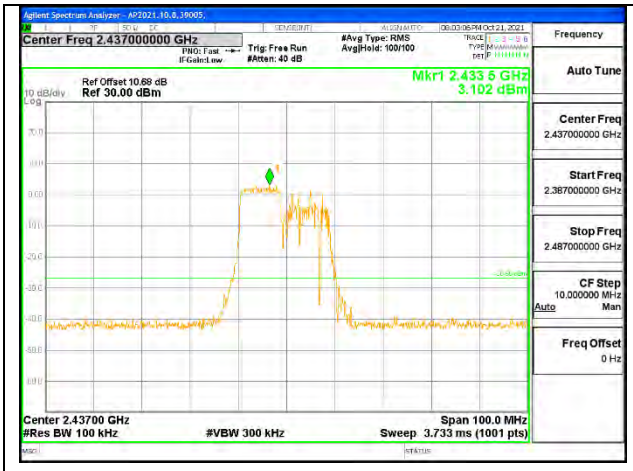


LOW CHANNEL 1 BANDEDGE ANTENNA 1

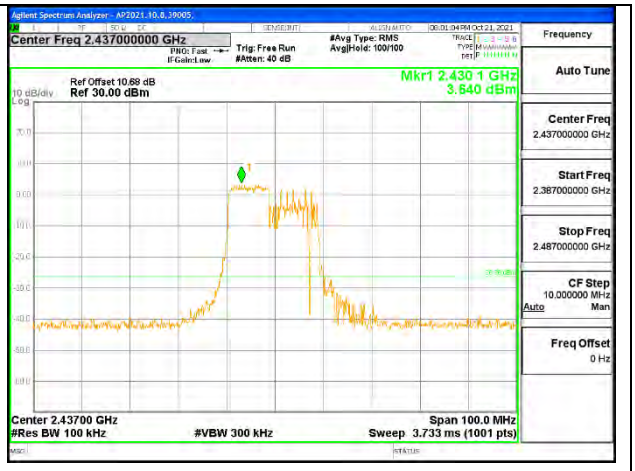
LOW CHANNEL 1 BANDEDGE ANTENNA 2

2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 106-Tones, RU Index 53

MID CHANNEL 6



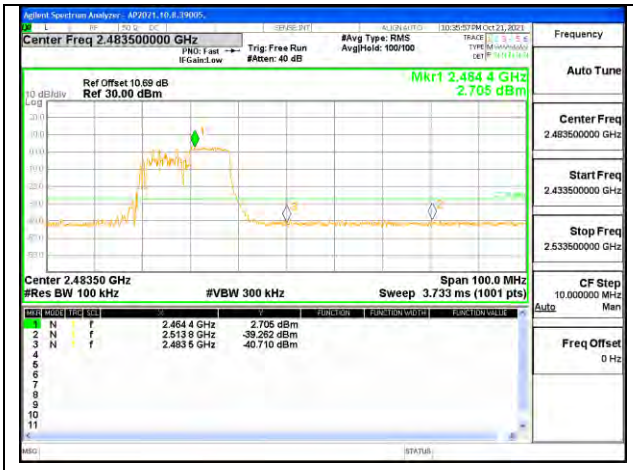
IN-BAND REFERENCE LEVEL ANTENNA 1



IN-BAND REFERENCE LEVEL ANTENNA 2

2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 106-Tones, RU Index 54

HIGH CHANNEL 11



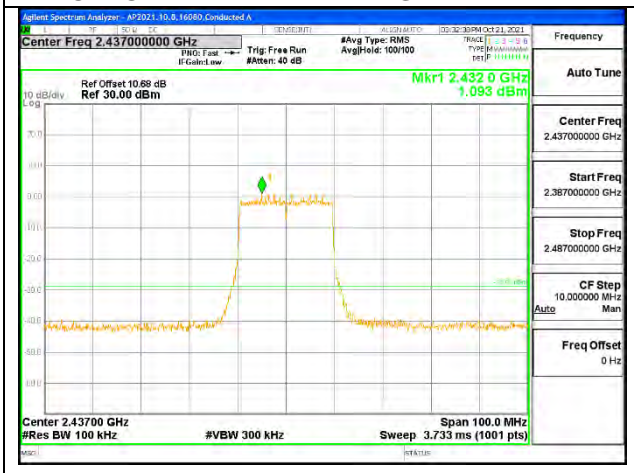
HIGH CHANNEL 11 BANDEDGE ANTENNA 1

HIGH CHANNEL 11 BANDEDGE ANTENNA 1

2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 242-Tones, RU Index 61

LOW CHANNEL 1 BANDEDGE ANTENNA 1

OUT-OF-BAND LOW CHANNEL 1 ANTENNA 1

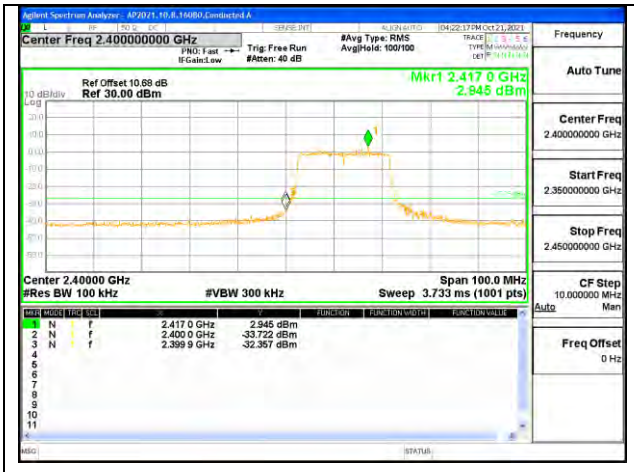


IN-BAND REFERENCE LEVEL ANTENNA 1

OUT-OF-BAND MID CHANNEL ANTENNA 1

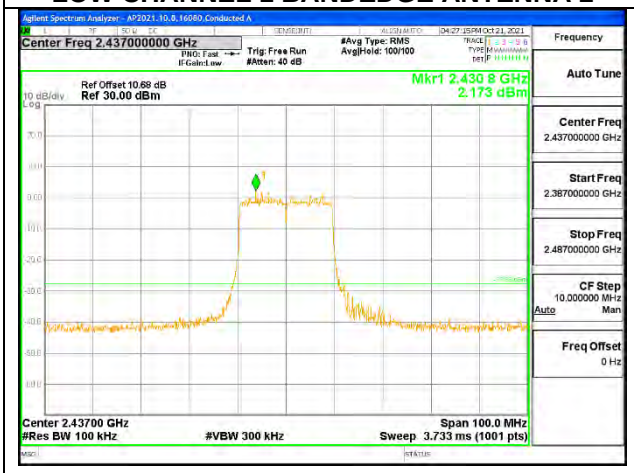
HIGH CHANNEL 11 BANDEDGE ANTENNA 1

OUT-OF-BAND HIGH CHANNEL 11 ANTENNA 1



LOW CHANNEL 1 BANDEDGE ANTENNA 2

OUT-OF-BAND LOW CHANNEL 1 ANTENNA 2



IN-BAND REFERENCE LEVEL ANTENNA 2

OUT-OF-BAND MID CHANNEL ANTENNA 2

HIGH CHANNEL 11 BANDEDGE ANTENNA 2

OUT-OF-BAND HIGH CHANNEL 11 ANTENNA 2

10. RADIATED TEST RESULTS

LIMITS

FCC §15.205 and §15.209

RSS-GEN, Section 8.9 and 8.10

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

TEST PROCEDURE

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

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements in the 30-1000MHz range, 9kHz for peak and/or quasi-peak detection measurements in the 0.15-30MHz range and 200Hz for peak and/or quasi-peak detection measurements in the 9 to 150kHz range. Peak detection is used unless otherwise noted as quasi-peak or average (9-90kHz and 110-490kHz).

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 spectrum from 1 GHz to 18 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band. Below 30MHz, below 1GHz and above 18GHz emissions, the channel with the highest output power was tested.

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

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

2D antenna use - For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel), parallel and perpendicular are the worst orientations, therefore testing was performed on these two orientations only.

Based 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.

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

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

NOTE: The limits in CFR 47, Part 15, Subpart C, paragraph 15.209(a), are identical to those in RSS-Gen section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table), using the free space impedance of 377 Ohms. For example the measurement at frequency X kHz resulted in a level of Y dBuV/m, which is equivalent to Y – 51.5 = Z dBuA/m, which has the same margin, W dB, to the corresponding RSS-Gen Table 6 limit as it has to 15.209(a) limit.

UL VERIFICATION SERVICES
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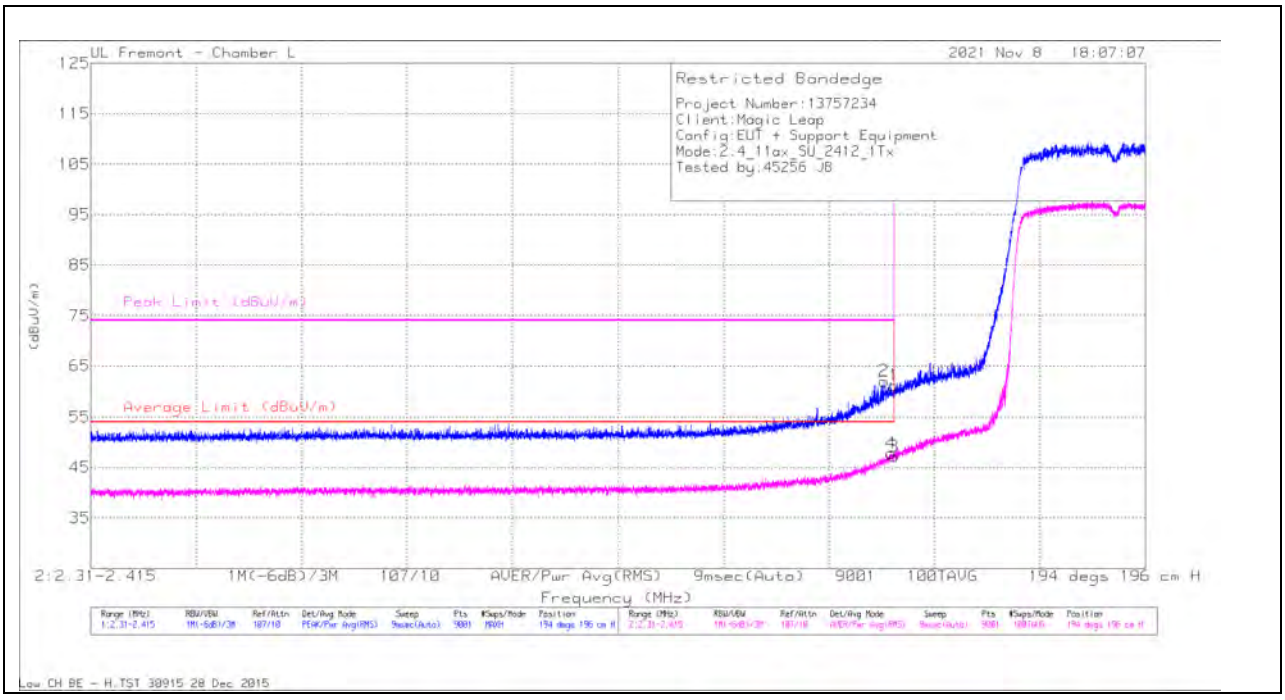
10.1. TRANSMITTER ABOVE 1 GHz

10.1.1. TX ABOVE 1 GHz 802.11ax HE20 MODE IN THE 2.4GHz BAND

1TX Antenna 1 OFDM MODE: SU, Single User

BANDEDGE (LOW CHANNEL 1)

HORIZONTAL RESULT

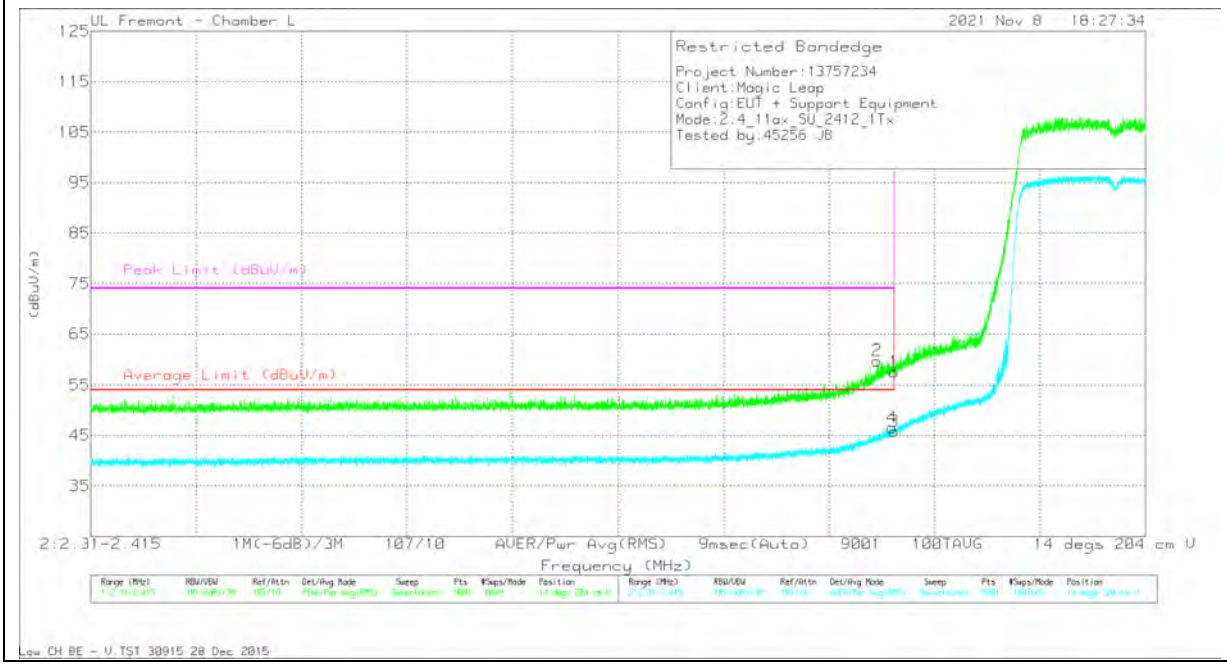


TRACE MARKER

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T119 (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	* 2390	48.47	Pk	32	-19.3	61.17	-	-	74	-12.83	194	196	H
2	* 2388.9739	49.47	Pk	32	-19.4	62.07	-	-	74	-11.93	194	196	H
3	* 2390	34.45	RMS	32	-19.3	47.15	54	-6.85	-	-	194	196	H
4	* 2389.6739	35.16	RMS	32	-19.3	47.86	54	-6.14	-	-	194	196	H

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

VERTICAL RESULT



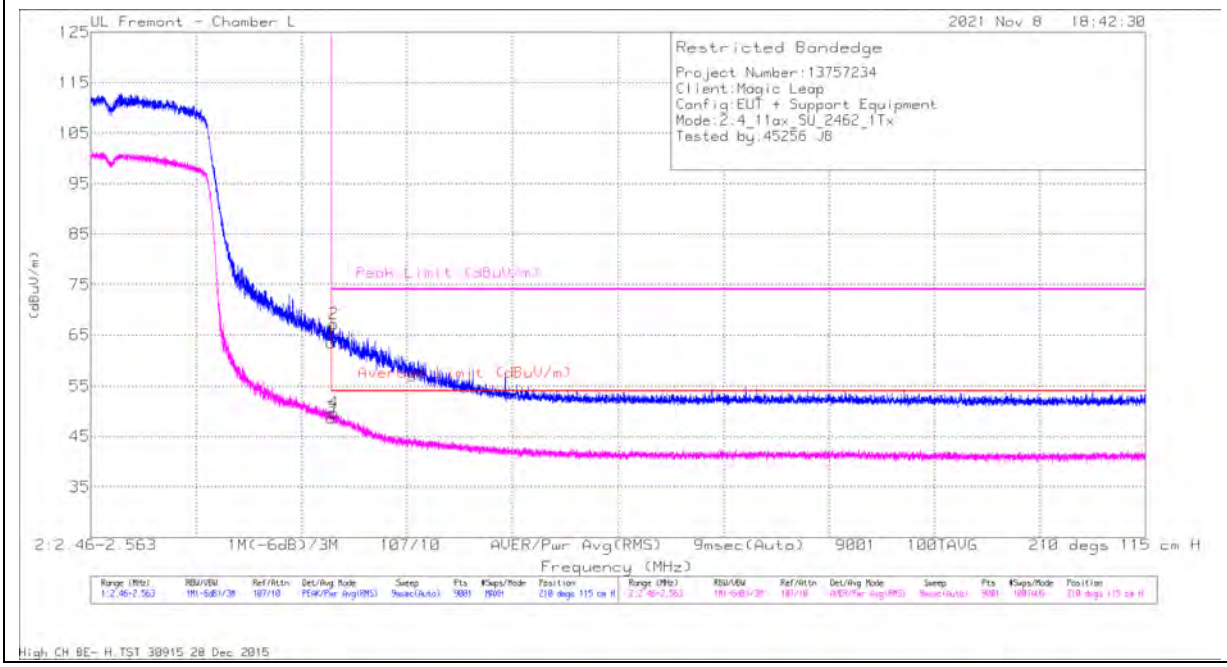
TRACE MARKER

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T119 (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	* 2390	44.96	Pk	32	-19.3	57.66	-	-	74	-16.34	14	204	V
2	* 2388.2856	47.19	Pk	32	-19.4	59.79	-	-	74	-14.21	14	204	V
3	* 2390	33.09	RMS	32	-19.3	45.79	54	-8.21	-	-	14	204	V
4	* 2389.779	33.89	RMS	32	-19.3	46.59	54	-7.41	-	-	14	204	V

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

BANDEDGE (HIGH CHANNEL 11)

HORIZONTAL RESULT

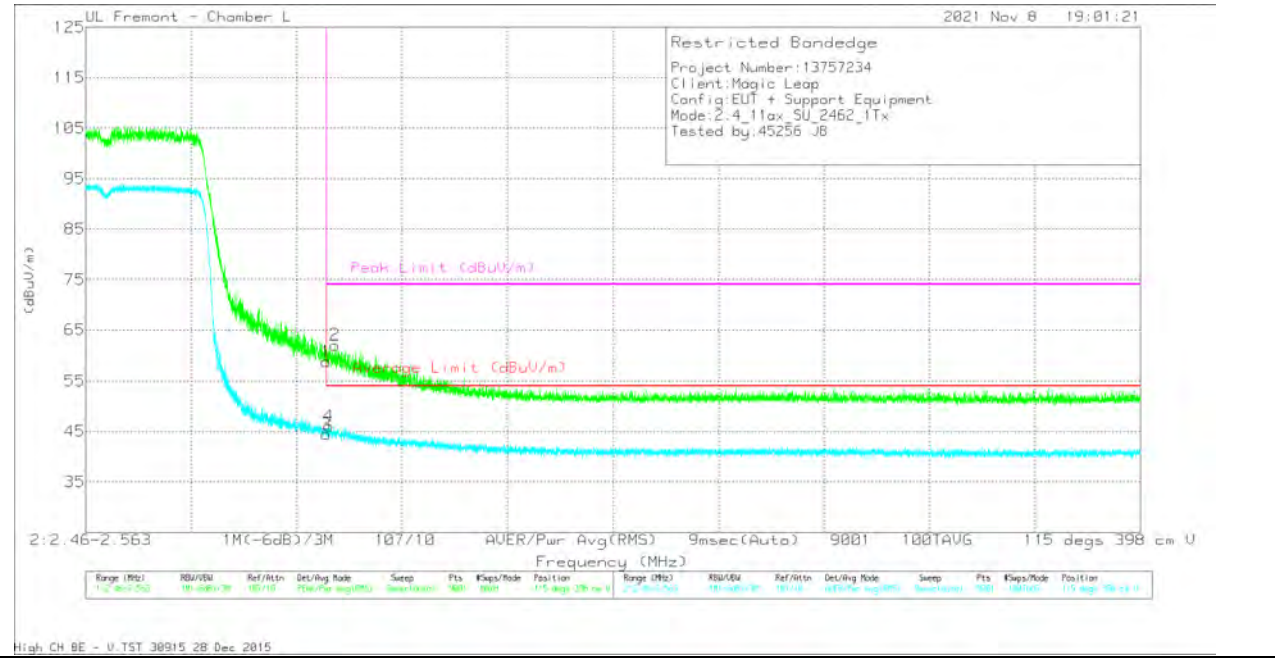


TRACE MARKER

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T119 (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	* 2483.5	50.34	Pk	32.3	-19	63.64	-	-	74	-10.36	210	115	H
2	* 2483.7463	53.88	Pk	32.3	-19	67.18	-	-	74	-6.82	210	115	H
3	* 2483.5	35.37	RMS	32.3	-19	48.67	54	-5.33	-	-	210	115	H
4	* 2483.712	36.37	RMS	32.3	-19	49.67	54	-4.33	-	-	210	115	H

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

VERTICAL RESULT



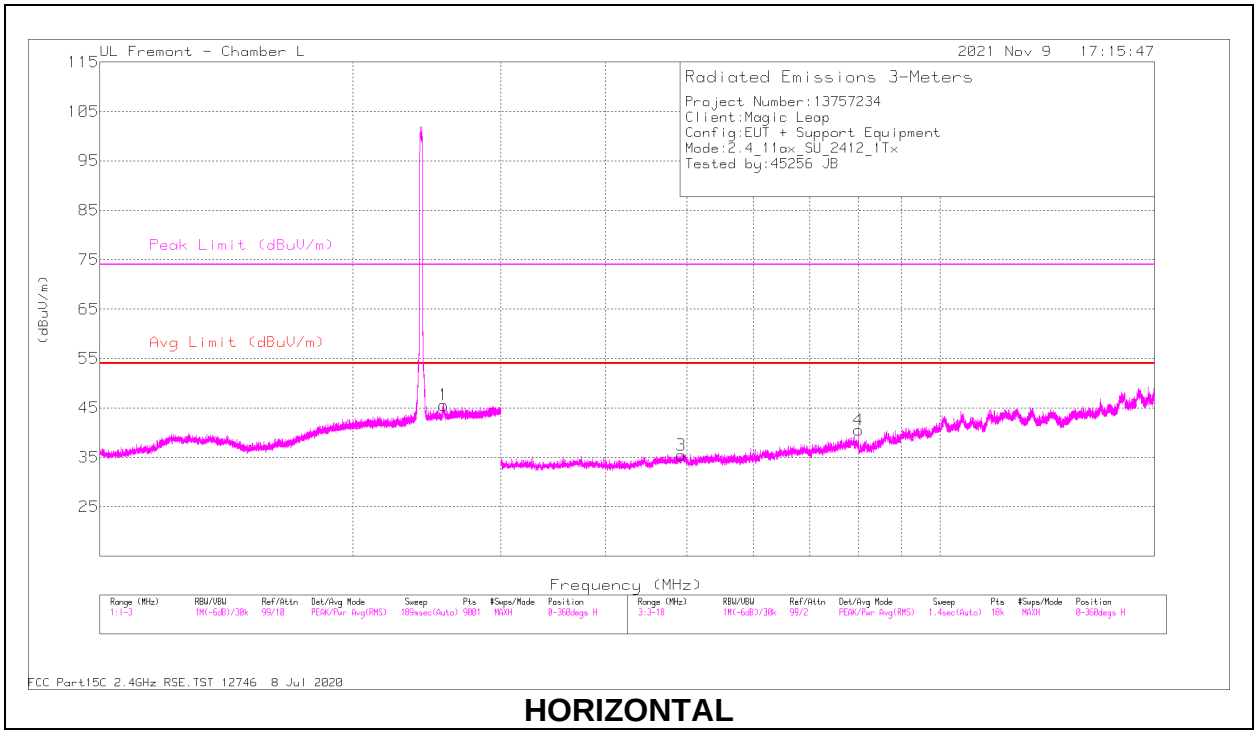
TRACE MARKER

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T119 (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	* 2483.5	45.51	Pk	32.3	-19	58.81	-	-	74	-15.19	115	398	V
2	* 2484.3528	48.81	Pk	32.3	-19	62.11	-	-	74	-11.89	115	398	V
3	* 2483.5	31.19	RMS	32.3	-19	44.49	54	-9.51	-	-	115	398	V
4	* 2483.712	32.75	RMS	32.3	-19	46.05	54	-7.95	-	-	115	398	V

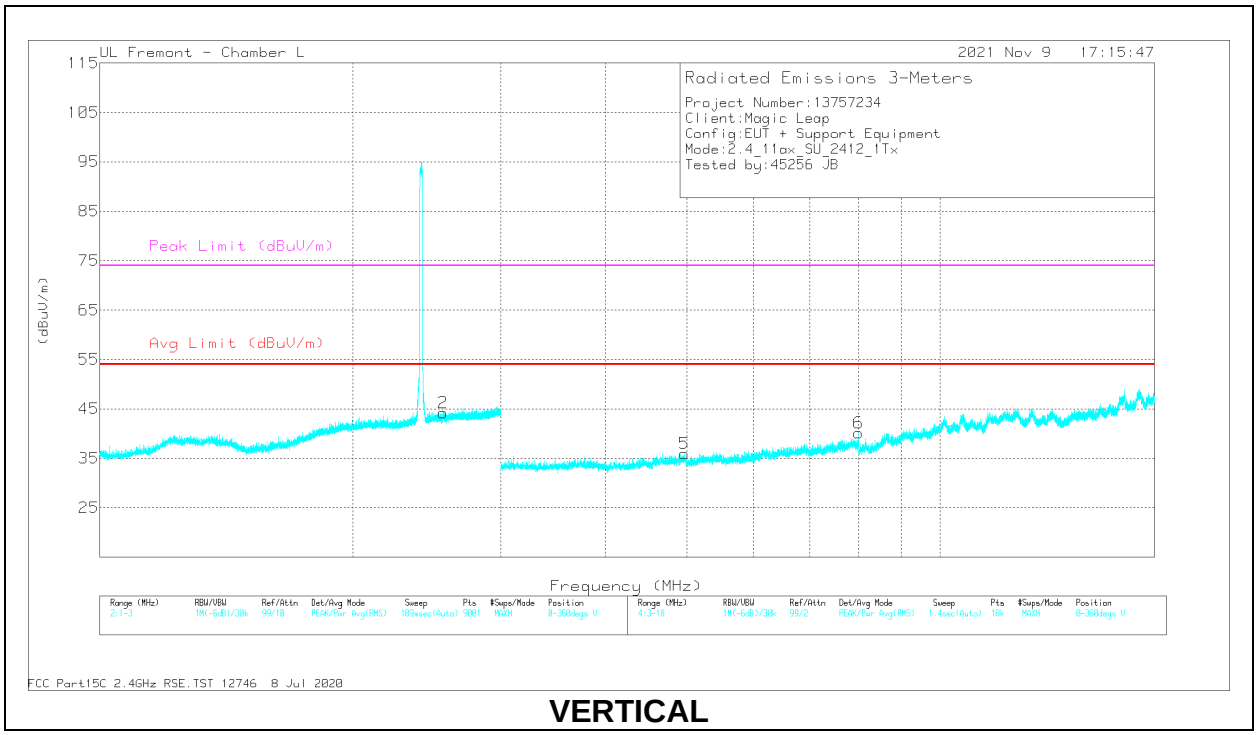
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL 1 RESULTS



HORIZONTAL



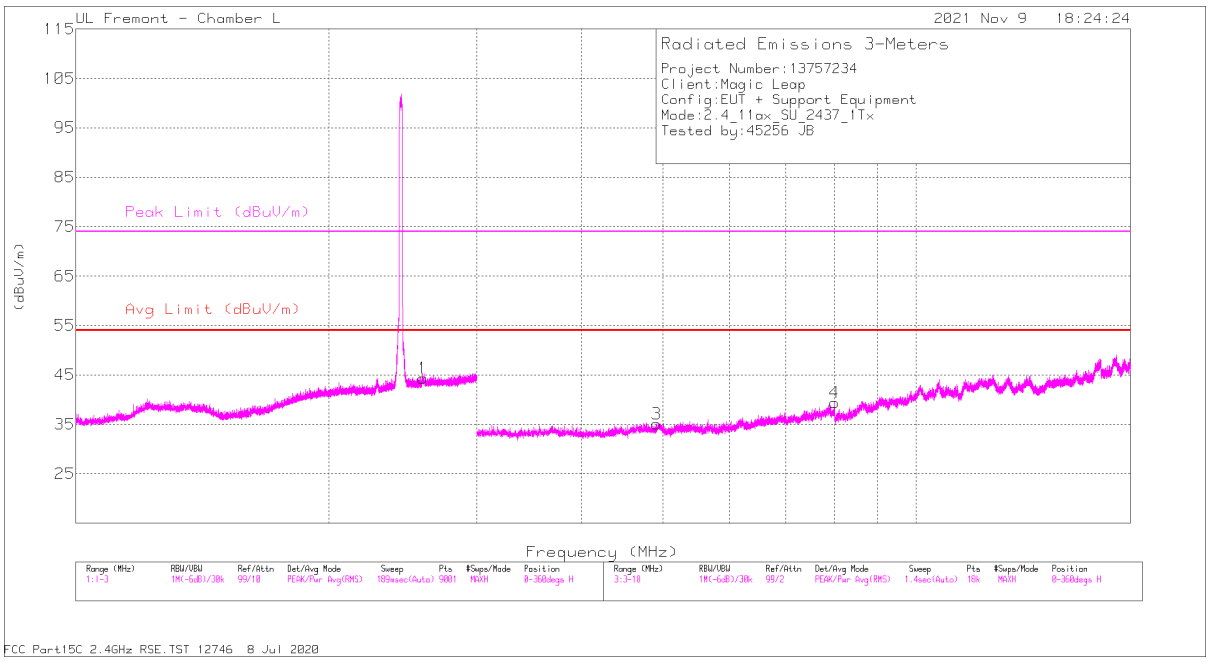
VERTICAL

RADIATED EMISSIONS

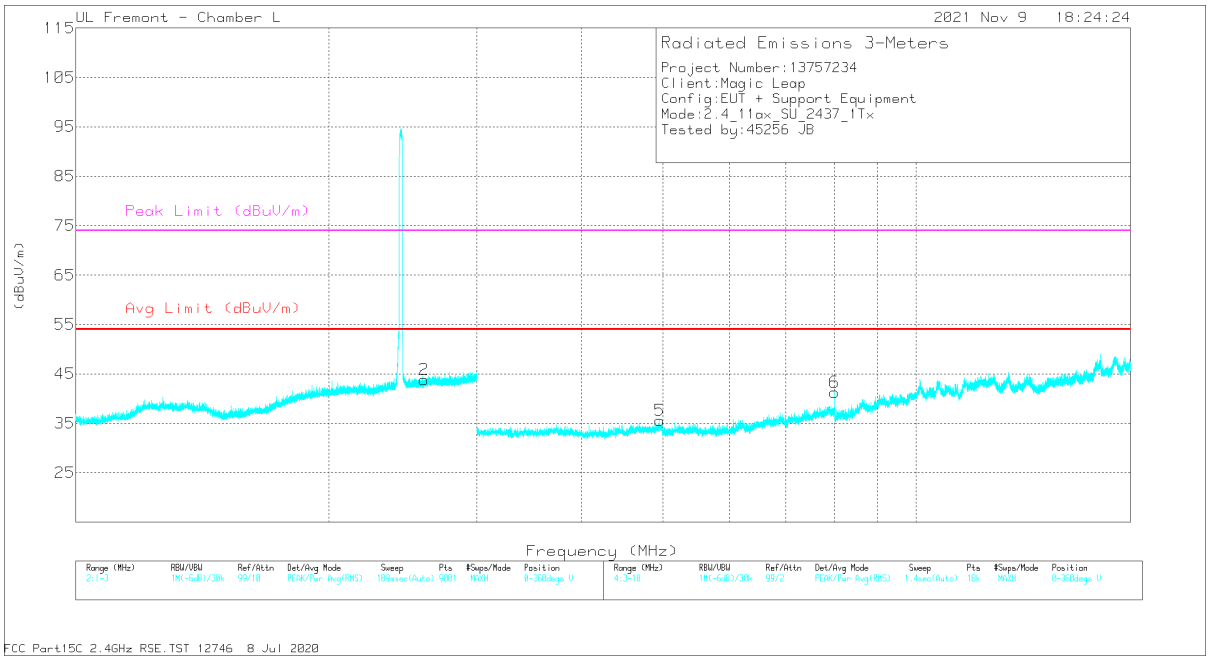
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2566.8873	32.14	Pk	32.3	-18.9	45.54	-	-	-	-	0-360	101	H
2	2561.554	30.94	Pk	32.2	-18.9	44.24	-	-	-	-	0-360	199	V
3	* 4916.1688	35.15	PK2	34.2	-23.8	45.55	-	-	74	-28.45	356	151	H
	* 4919.4775	23.83	MAv1	34.2	-23.7	34.33	54	-19.67	-	-	356	151	H
4	8000.1379	33.02	PK2	35.8	-19.2	49.62	-	-	-	-	278	145	H
5	* 4962.518	34.93	PK2	34.2	-23.3	45.83	-	-	74	-28.17	350	149	V
	* 4963.8926	23.82	MAv1	34.2	-23.4	34.62	54	-19.38	-	-	350	149	V
6	7999.8981	32.39	PK2	35.8	-19.2	48.99	-	-	-	-	273	143	V

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

MID CHANNEL 6 RESULTS



HORIZONTAL



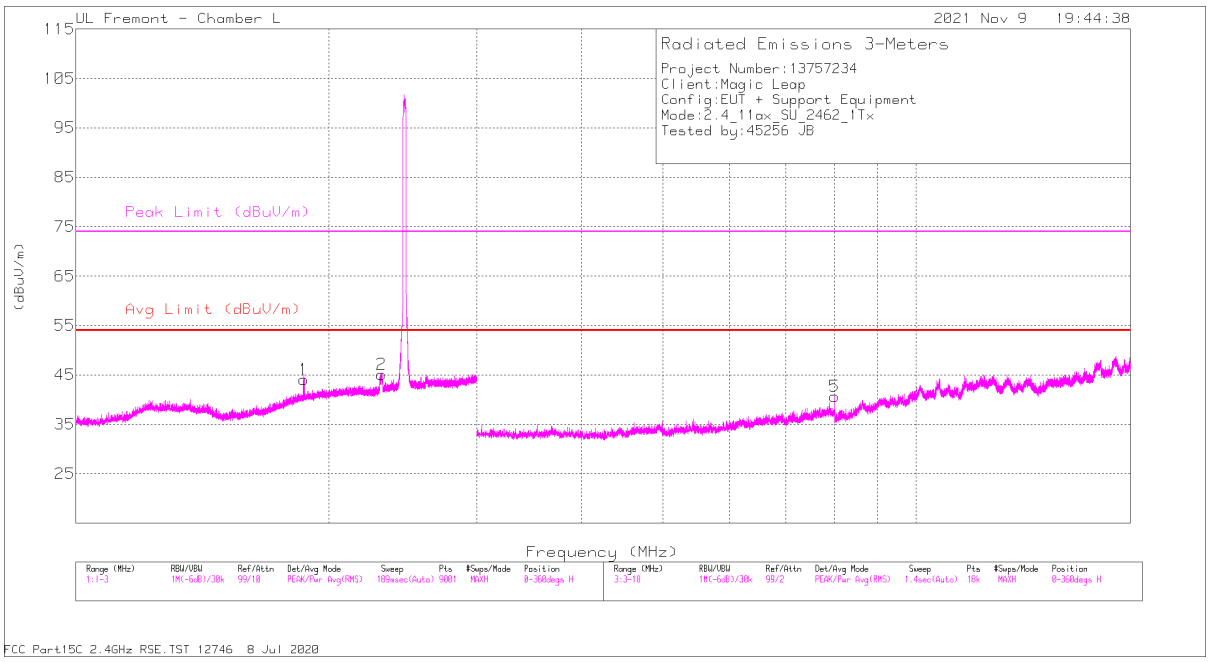
VERTICAL

RADIATED EMISSIONS

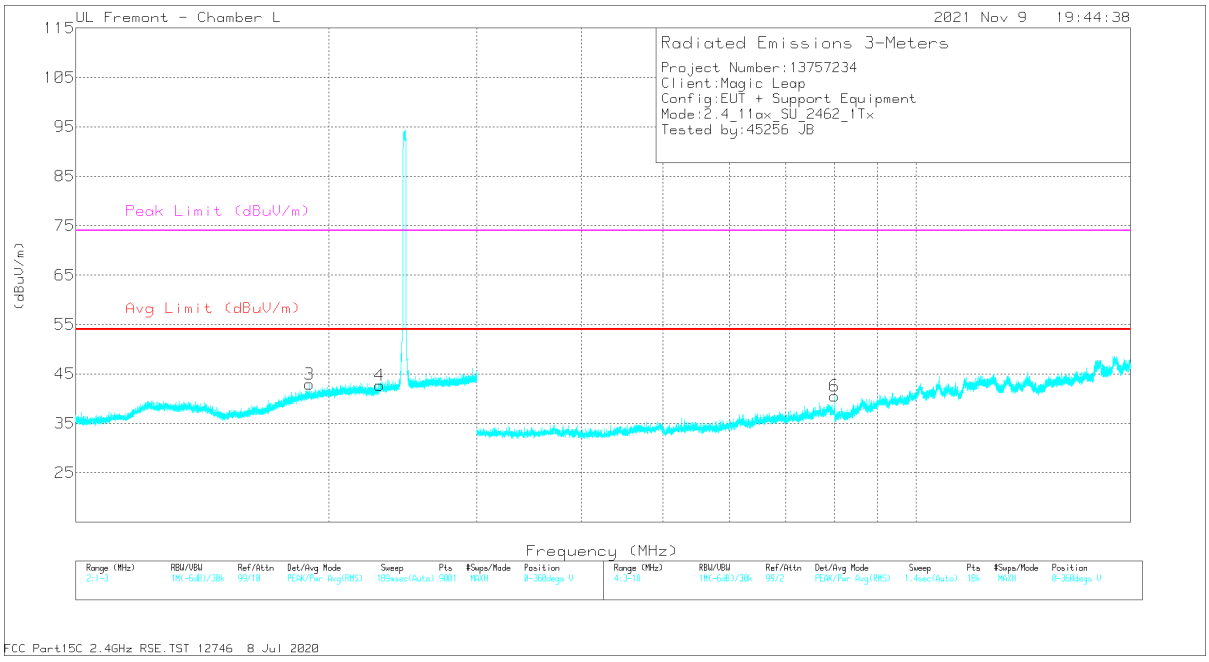
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2588.6651	31	Pk	32.2	-18.9	44.3	-	-	-	-	0-360	199	H
2	2597.3317	30.32	Pk	32.3	-18.8	43.82	-	-	-	-	0-360	200	V
3	* 4917.9448	34.69	PK2	34.2	-23.8	45.09	-	-	74	-28.91	260	145	H
	* 4915.779	23.74	MAv1	34.1	-23.8	34.04	54	-19.96	-	-	260	145	H
4	8000.066	33.24	PK2	35.8	-19.2	49.84	-	-	-	-	272	148	H
5	* 4952.8051	35	PK2	34.2	-23.1	46.1	-	-	74	-27.9	334	387	V
	* 4951.95	23.73	MAv1	34.2	-23.1	34.83	54	-19.17	-	-	334	387	V
6	8000.082	31.46	PK2	35.8	-19.2	48.06	-	-	-	-	343	102	V

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

HIGH CHANNEL 11 RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

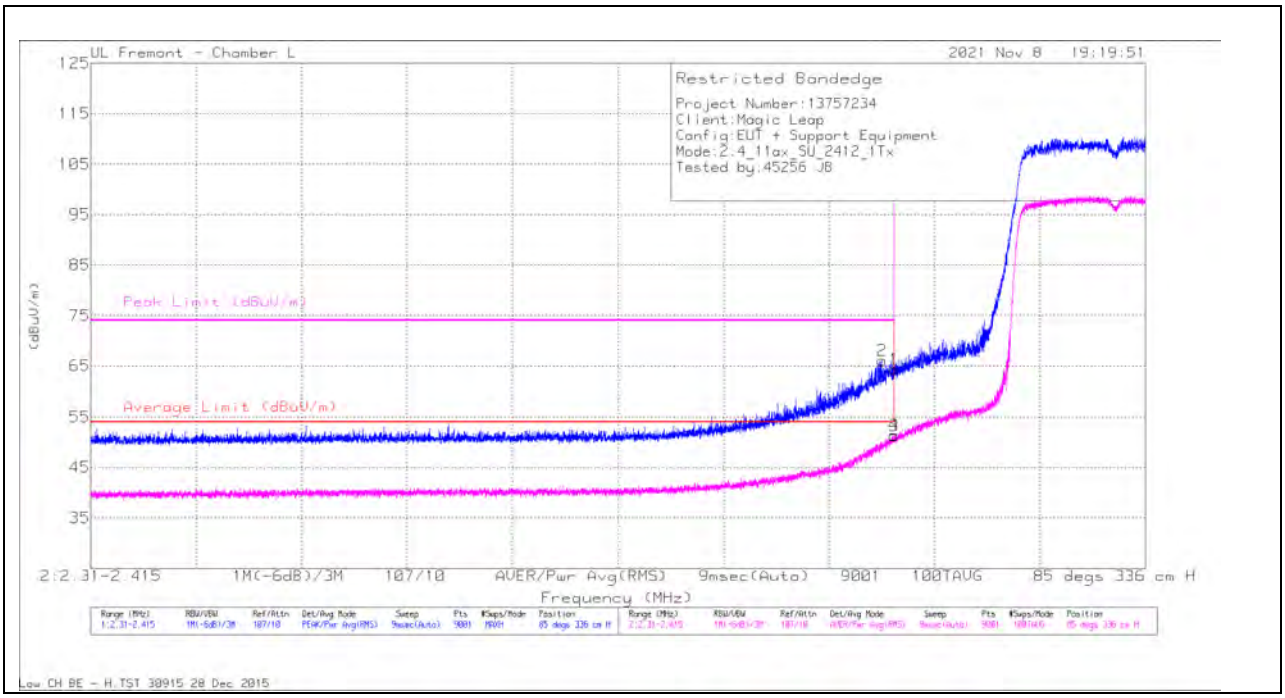
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1865.4638	49.01	PK2	30.9	-20.9	59.01	-	-	-	-	177	139	H
2	* 2314.0855	44.7	PK2	31.7	-19.6	56.8	-	-	74	-17.2	98	205	H
	* 2310.8367	33.43	MAv1	31.6	-19.6	45.43	54	-8.57	-	-	98	205	H
3	1895.8444	40.52	PK2	31.2	-20.8	50.92	-	-	-	-	166	375	V
4	* 2217.13	40.18	PK2	31.5	-19.9	51.78	-	-	74	-22.22	42	179	V
	* 2287.06	28.64	MAv1	31.4	-19.7	40.34	54	-13.66	-	-	42	179	V
5	8000.1579	31.92	PK2	35.8	-19.2	48.52	-	-	-	-	253	102	H
6	7999.9421	30.91	PK2	35.8	-19.2	47.51	-	-	-	-	273	147	V

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

1TX Antenna 2 OFDM MODE: SU, Single User

BANDEDGE (LOW CHANNEL 1)

HORIZONTAL RESULT

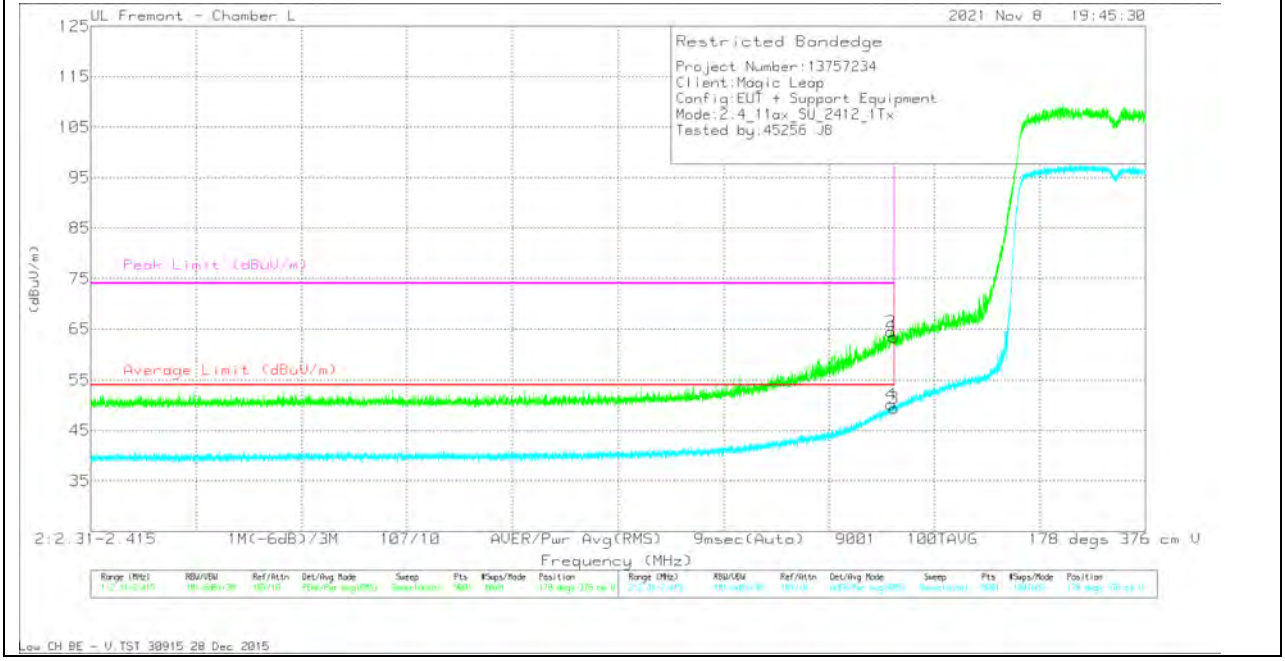


TRACE MARKER

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T119 (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	* 2390	51.61	Pk	32	-19.3	64.31	-	-	74	-9.69	85	336	H
2	* 2388.8106	53.43	Pk	32	-19.4	66.03	-	-	74	-7.97	85	336	H
3	* 2390	38.6	RMS	32	-19.3	51.3	54	-2.7	-	-	85	336	H
4	2390.0006	38.67	RMS	32	-19.3	51.37	54	-2.63	-	-	85	336	H

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

VERTICAL RESULT



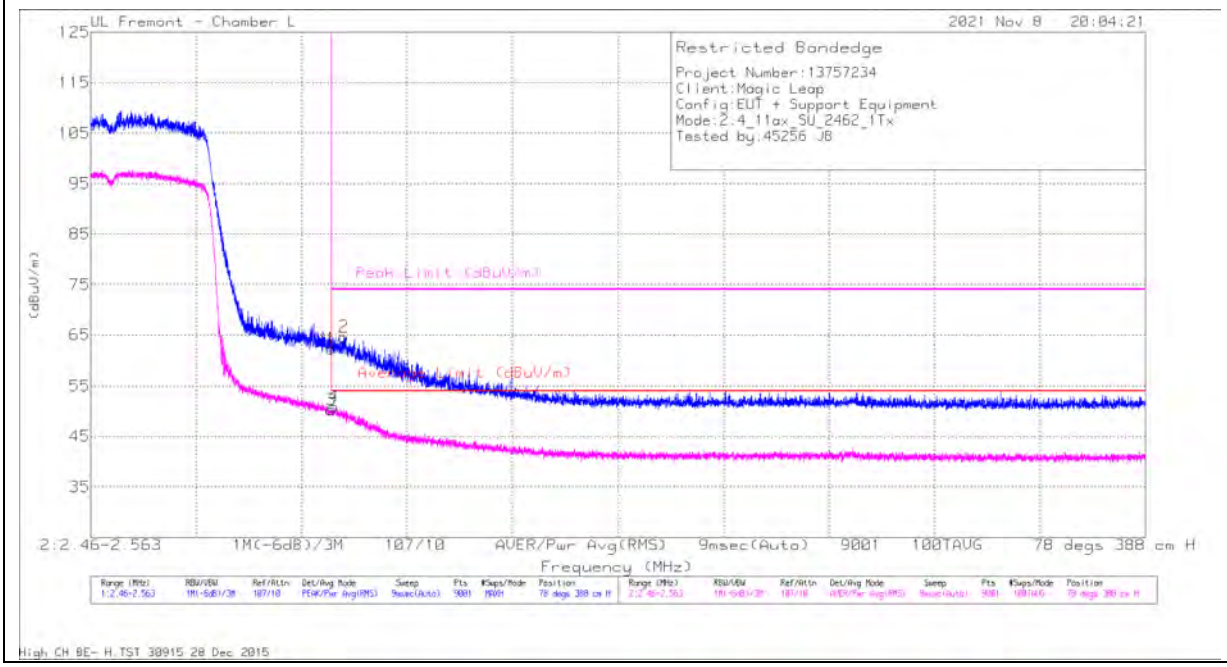
TRACE MARKER

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T119 (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	* 2390	50.78	Pk	32	-19.3	63.48	-	-	74	-10.52	178	376	V
2	* 2389.6739	51.76	Pk	32	-19.3	64.46	-	-	74	-9.54	178	376	V
3	* 2390	36.77	RMS	32	-19.3	49.47	54	-4.53	-	-	178	376	V
4	* 2389.6973	37.42	RMS	32	-19.3	50.12	54	-3.88	-	-	178	376	V

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

BANDEDGE (HIGH CHANNEL 11)

HORIZONTAL RESULT

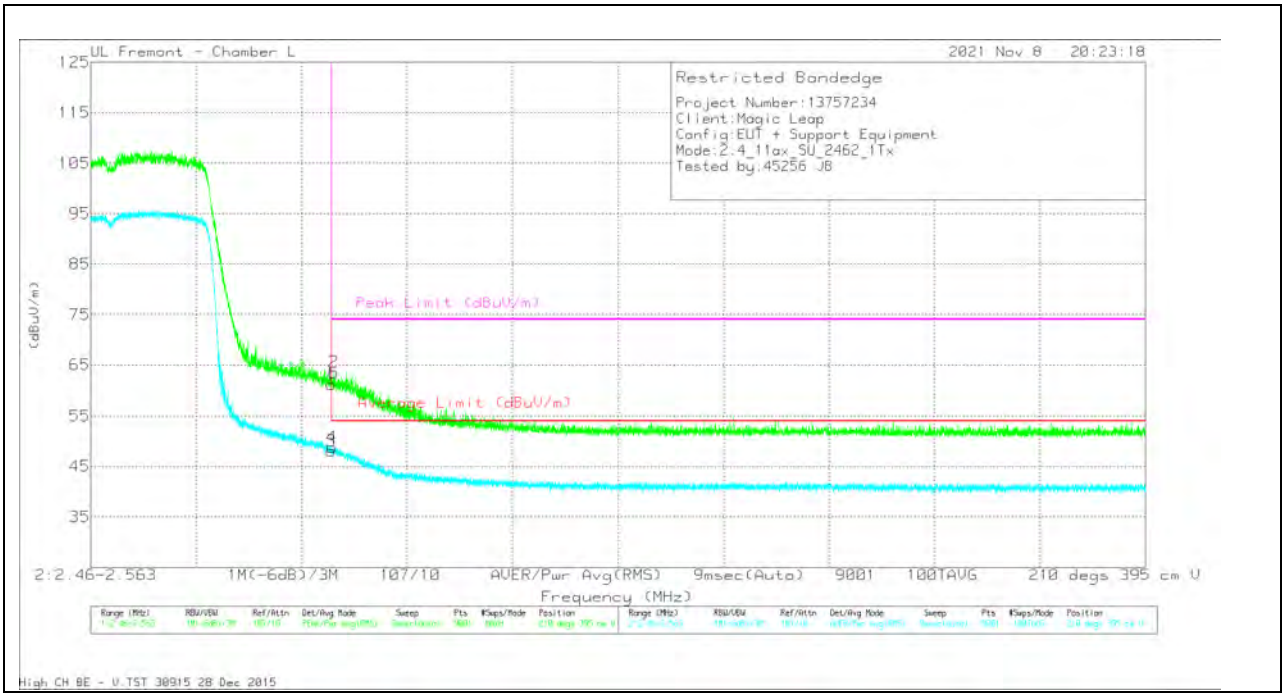


TRACE MARKER

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T119 (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	* 2483.5	49.05	Pk	32.3	-19	62.35	-	-	74	-11.65	78	388	H
2	* 2484.7305	51.33	Pk	32.3	-19	64.63	-	-	74	-9.37	78	388	H
3	* 2483.5	36.94	RMS	32.3	-19	50.24	54	-3.76	-	-	78	388	H
4	* 2483.7577	37.63	RMS	32.3	-19	50.93	54	-3.07	-	-	78	388	H

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

VERTICAL RESULT



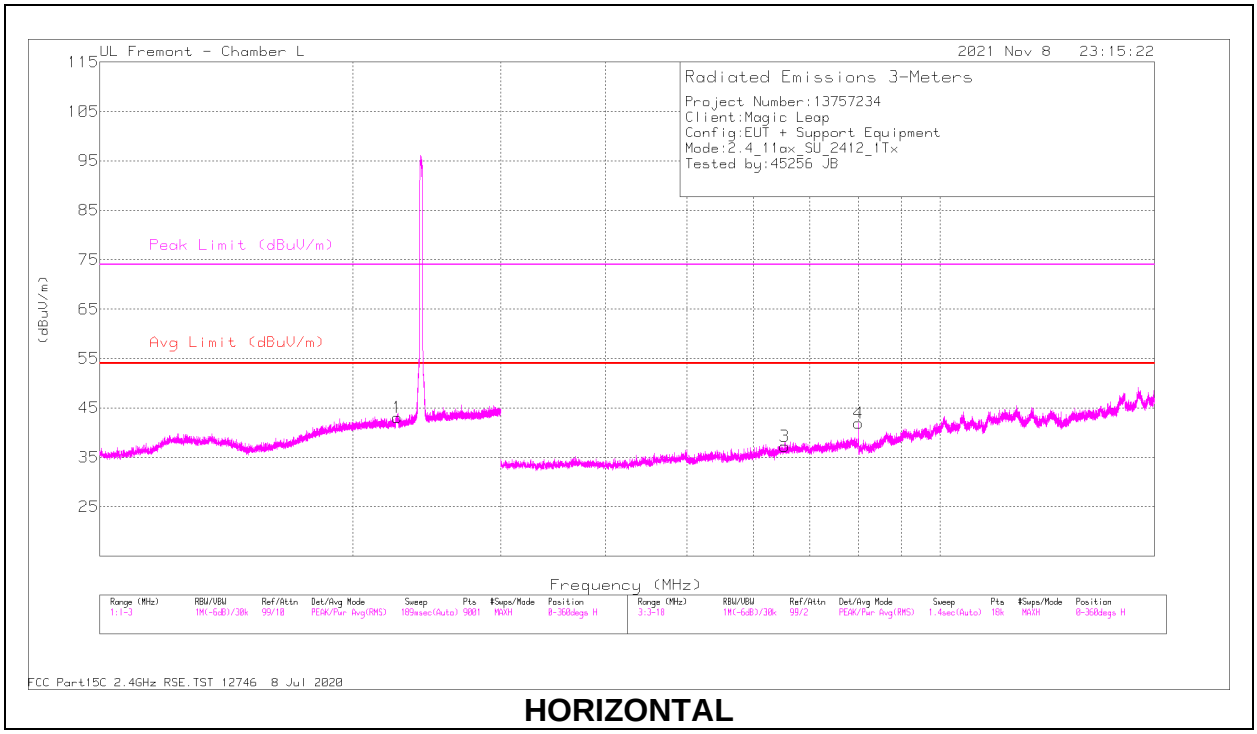
TRACE MARKER

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T119 (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	* 2483.5	47.92	Pk	32.3	-19	61.22	-	-	74	-12.78	210	395	V
2	* 2483.7234	50.32	Pk	32.3	-19	63.62	-	-	74	-10.38	210	395	V
3	* 2483.5	34.73	RMS	32.3	-19	48.03	54	-5.97	-	-	210	395	V
4	* 2483.5632	35.53	RMS	32.3	-19	48.83	54	-5.17	-	-	210	395	V

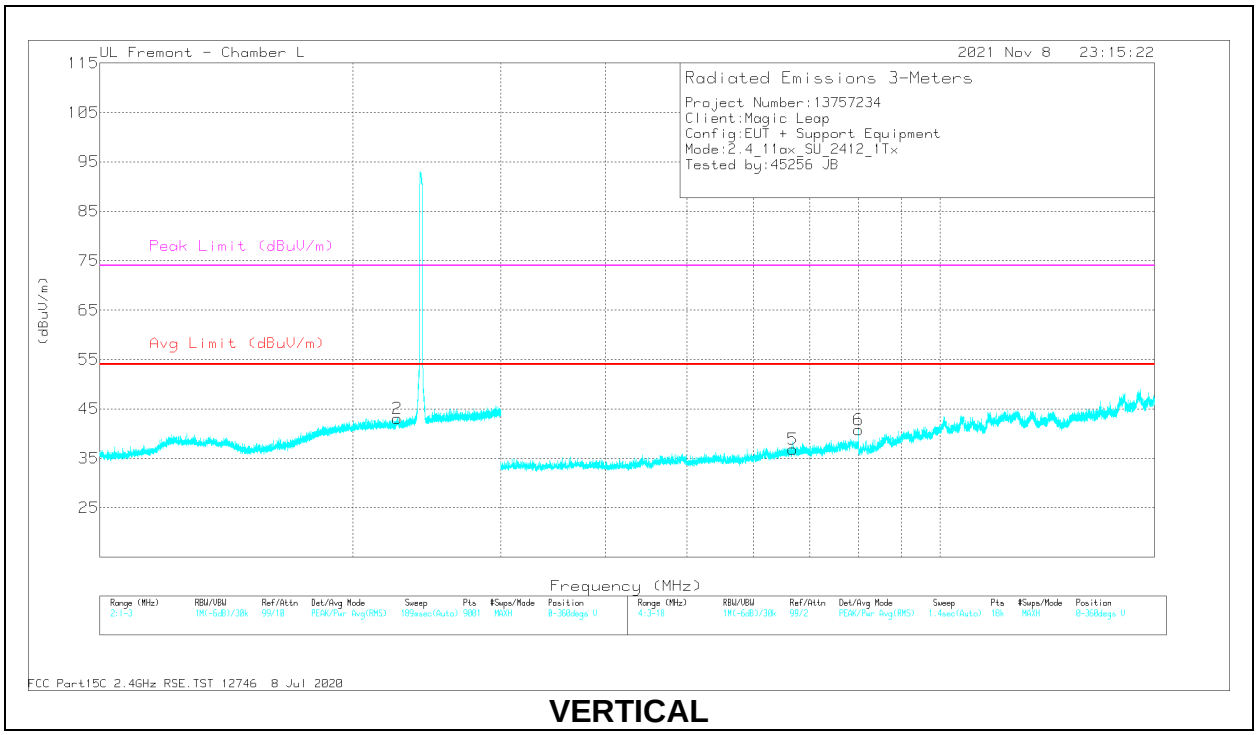
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL 1 RESULTS



HORIZONTAL



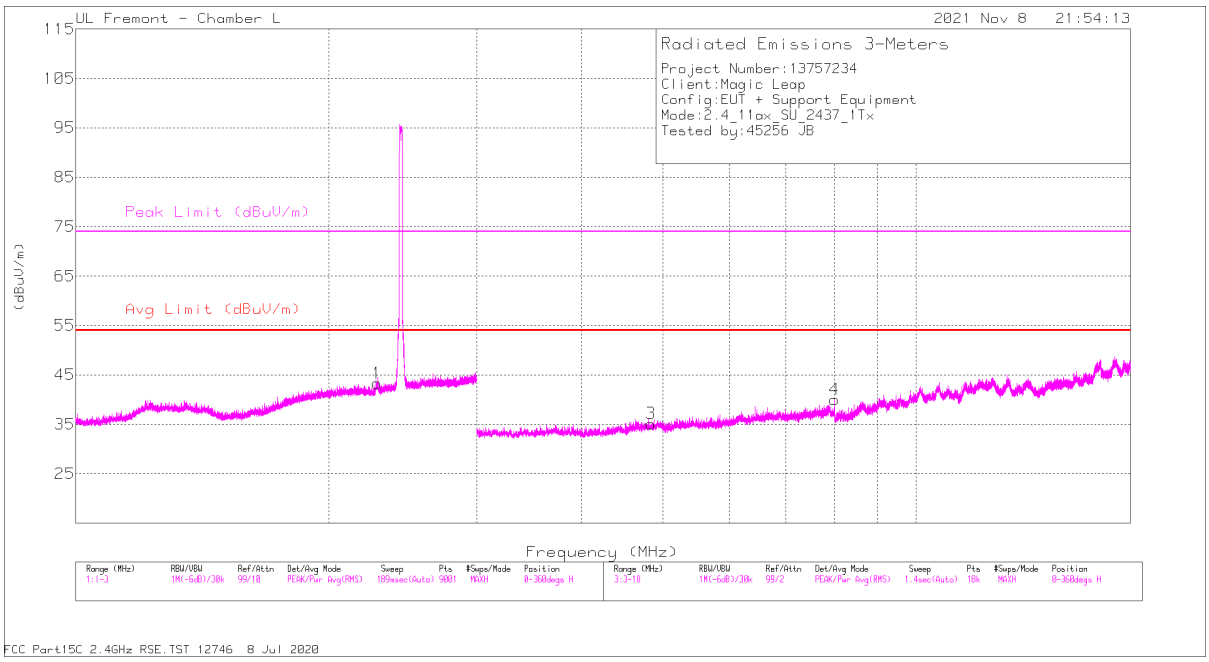
VERTICAL

RADIATED EMISSIONS

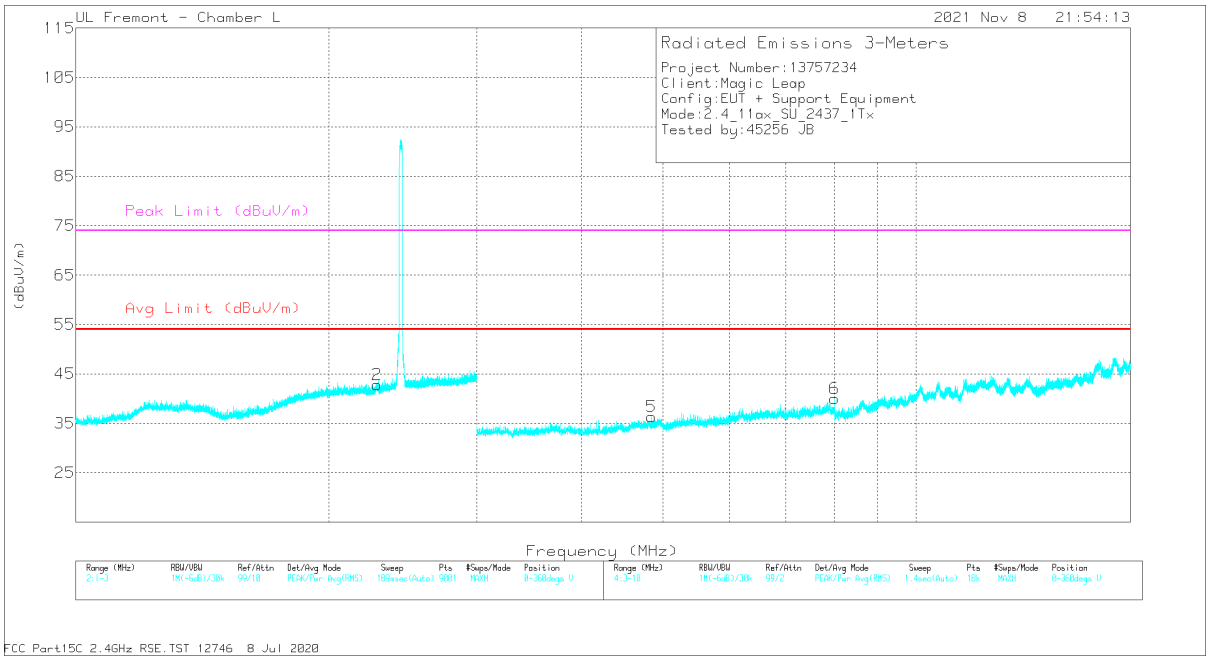
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2259.8103	44.34	PK2	31.2	-19.7	55.84	-	-	74	-18.16	53	229	H
	* 2260.6734	32.07	MAv1	31.2	-19.7	43.57	54	-10.43	-	-	53	229	H
2	* 2260.6512	41.18	PK2	31.2	-19.7	52.68	-	-	74	-21.32	117	164	V
	* 2260.4154	30.15	MAv1	31.2	-19.7	41.65	54	-12.35	-	-	117	164	V
3	6534.3646	23.05	Pk	35.8	-21.6	37.25	-	-	-	-	0-360	101	H
4	8000.074	33.18	PK2	35.8	-19.2	49.78	-	-	-	-	54	141	H
5	6682.7062	21.8	Pk	35.8	-20.7	36.9	-	-	-	-	0-360	200	V
6	8000.026	32.4	PK2	35.8	-19.2	49	-	-	-	-	29	144	V

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

MID CHANNEL 6 RESULTS



HORIZONTAL



VERTICAL

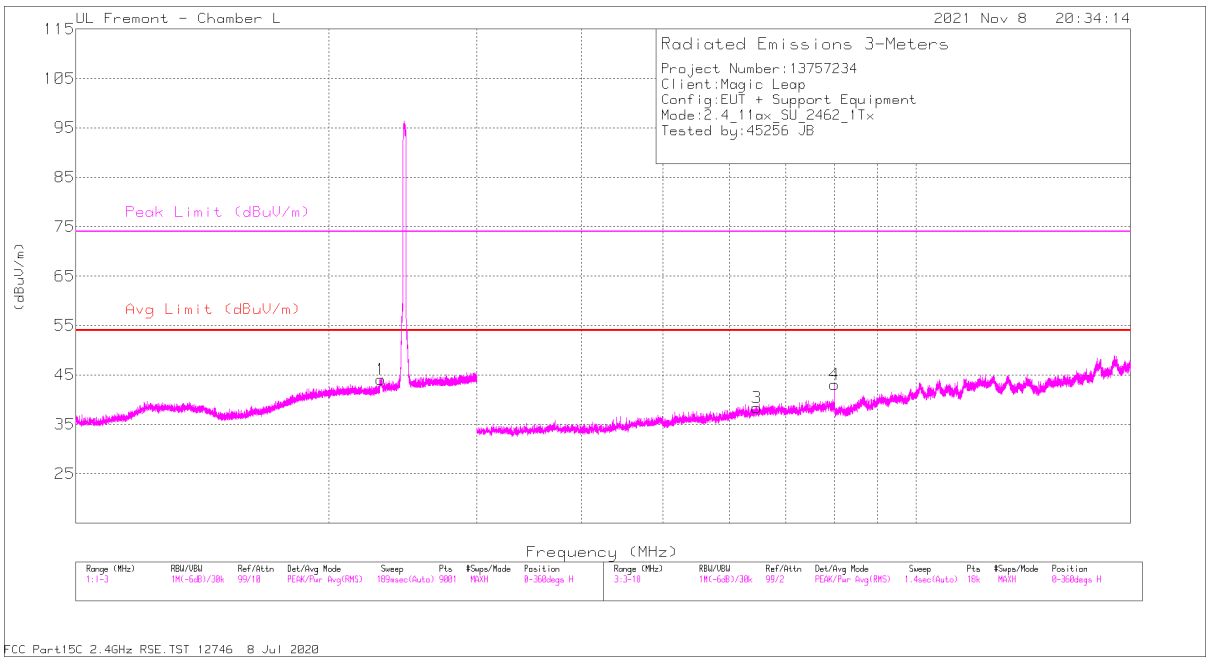
RADIATED EMISSIONS

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T119 (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	* 2281.1214	44.95	PK2	31.4	-19.7	56.65	-	-	74	-17.35	52	290	H
	* 2280.9975	32.8	MAv1	31.4	-19.7	44.5	54	-9.5	-	-	52	290	H
2	* 2285.6428	41.21	PK2	31.4	-19.7	52.91	-	-	74	-21.09	283	145	V
	* 2283.0015	30.01	MAv1	31.4	-19.7	41.71	54	-12.29	-	-	283	145	V
3	* 4837.0936	34.11	PK2	34.2	-24.6	43.71	-	-	74	-30.29	0	166	H
	* 4839.0757	22.44	MAv1	34.2	-24.6	32.04	54	-21.96	-	-	0	166	H
4	8000.1499	33.45	PK2	35.8	-19.2	50.05	-	-	-	-	60	102	H
5	* 4841.5984	36.51	PK2	34.2	-24.6	46.11	-	-	74	-27.89	220	144	V
	* 4844.5555	24.74	MAv1	34.2	-24.6	34.34	54	-19.66	-	-	220	144	V
6	7999.9061	33.96	PK2	35.8	-19.2	50.56	-	-	-	-	33	149	V

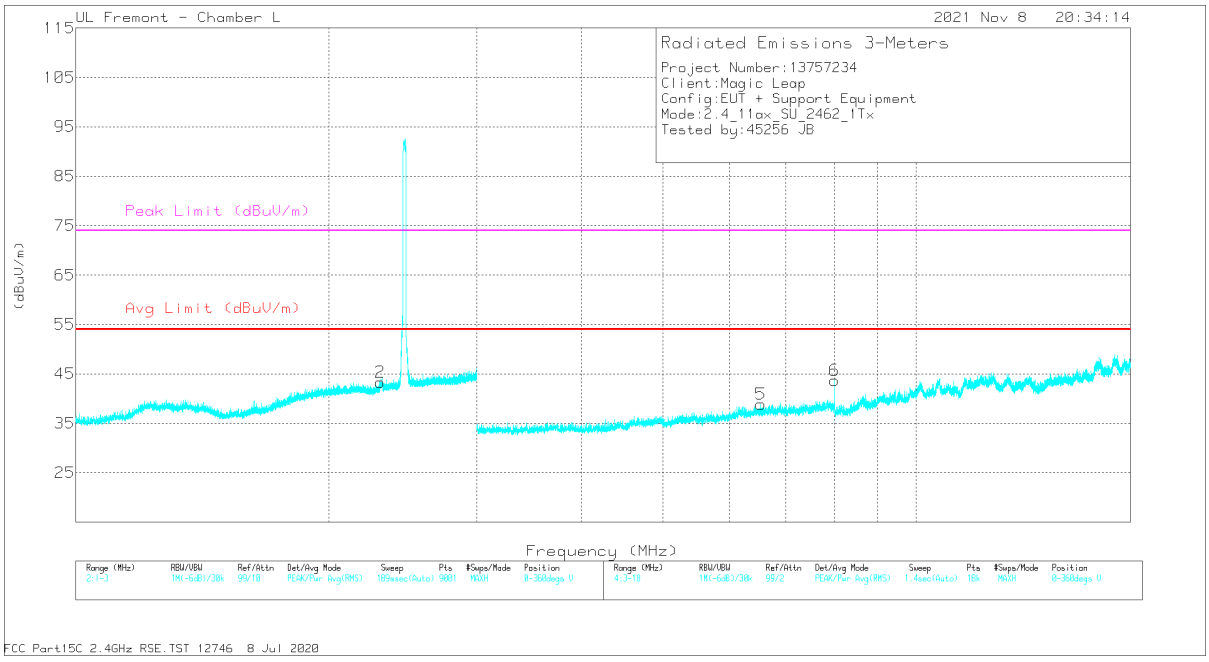
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

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

HIGH CHANNEL 11 RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

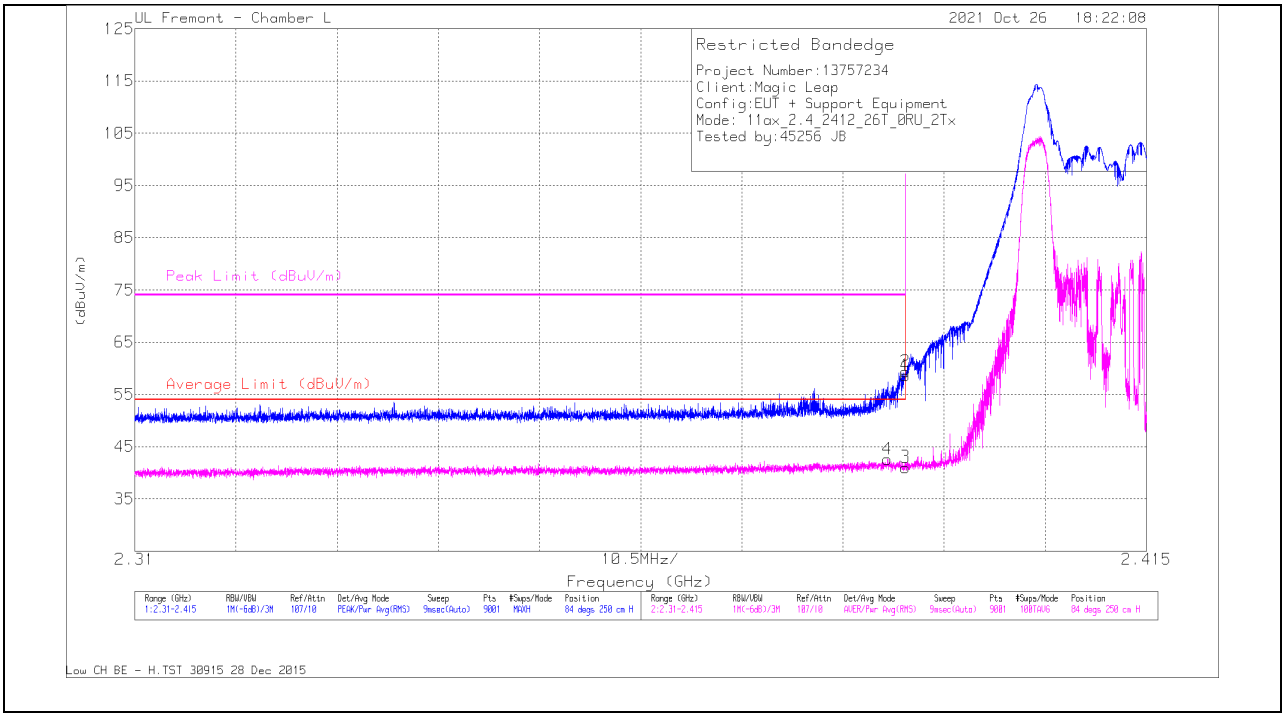
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2307.1329	44.29	PK2	31.6	-19.6	56.29	-	-	-	-	52	366	H
2	2304.9609	40.76	PK2	31.5	-19.7	52.56	-	-	-	-	270	384	V
3	6466.8608	23.94	Pk	35.7	-21.3	38.34	-	-	-	-	0-360	101	H
4	8000.1459	32.7	PK2	35.8	-19.2	49.3	-	-	-	-	253	384	H
5	6539.3649	24.62	Pk	35.8	-21.6	38.82	-	-	-	-	0-360	200	V
6	7999.9501	31.82	PK2	35.8	-19.2	48.42	-	-	-	-	14	125	V

PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average
Pk - Peak detector

2TX Antenna 1 + Antenna 2 OFDMA MODE: 26-Tones, RU Index 0

BANDEDGE (LOW CHANNEL 1)

HORIZONTAL RESULT

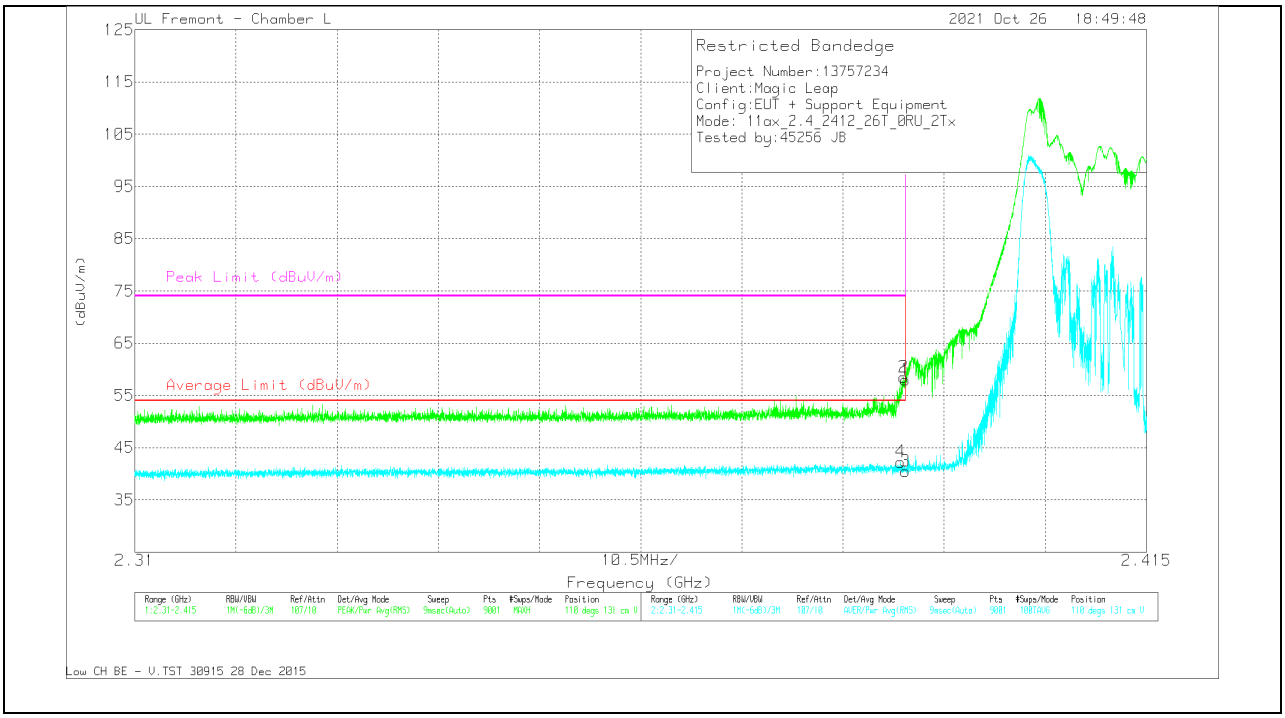


TRACE MARKER

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	45.9	Pk	32	-19.3	58.6	-	-	74	-15.4	84	250	H
2	* 2.38998	46.64	Pk	32	-19.3	59.34	-	-	74	-14.66	84	250	H
3	* 2.38999	28.34	RMS	32	-19.3	41.04	54	-12.96	-	-	84	250	H
4	* 2.38813	30.05	RMS	32	-19.4	42.65	54	-11.35	-	-	84	250	H

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

VERTICAL RESULT



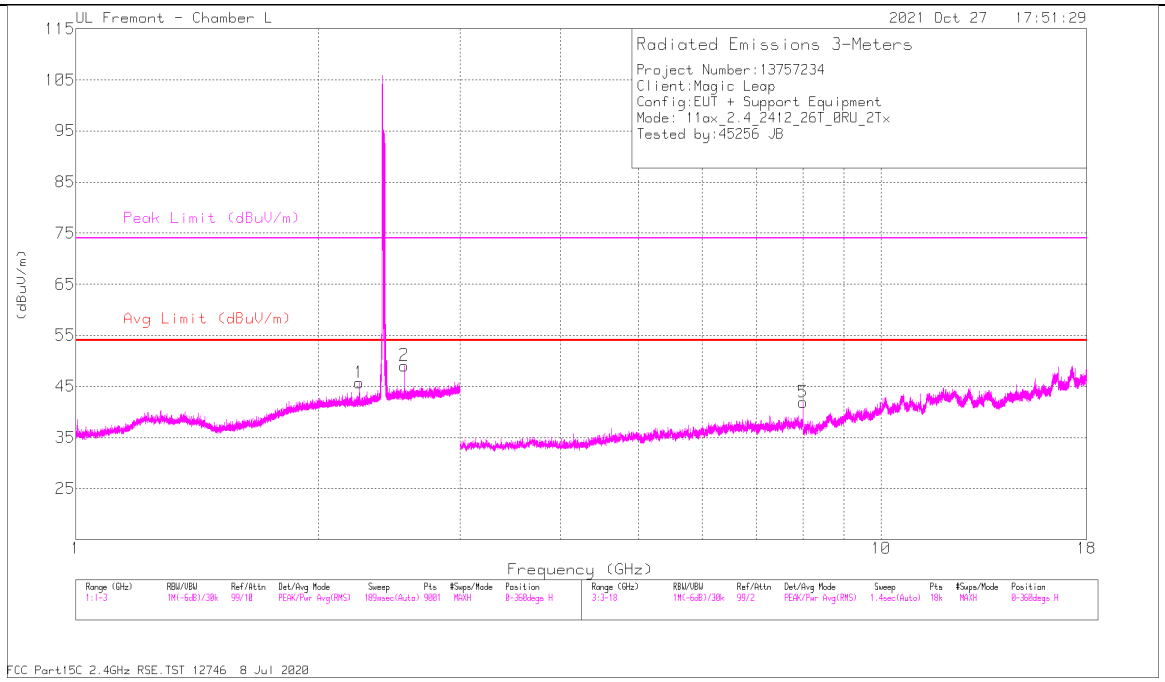
TRACE MARKER

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	45.25	Pk	32	-19.3	57.95	-	-	74	-16.05	110	131	V
2	* 2.38978	45.84	Pk	32	-19.3	58.54	-	-	74	-15.46	110	131	V
3	* 2.38999	27.74	RMS	32	-19.3	40.44	54	-13.56	-	-	110	131	V
4	* 2.38948	29.58	RMS	32	-19.3	42.28	54	-11.72	-	-	110	131	V

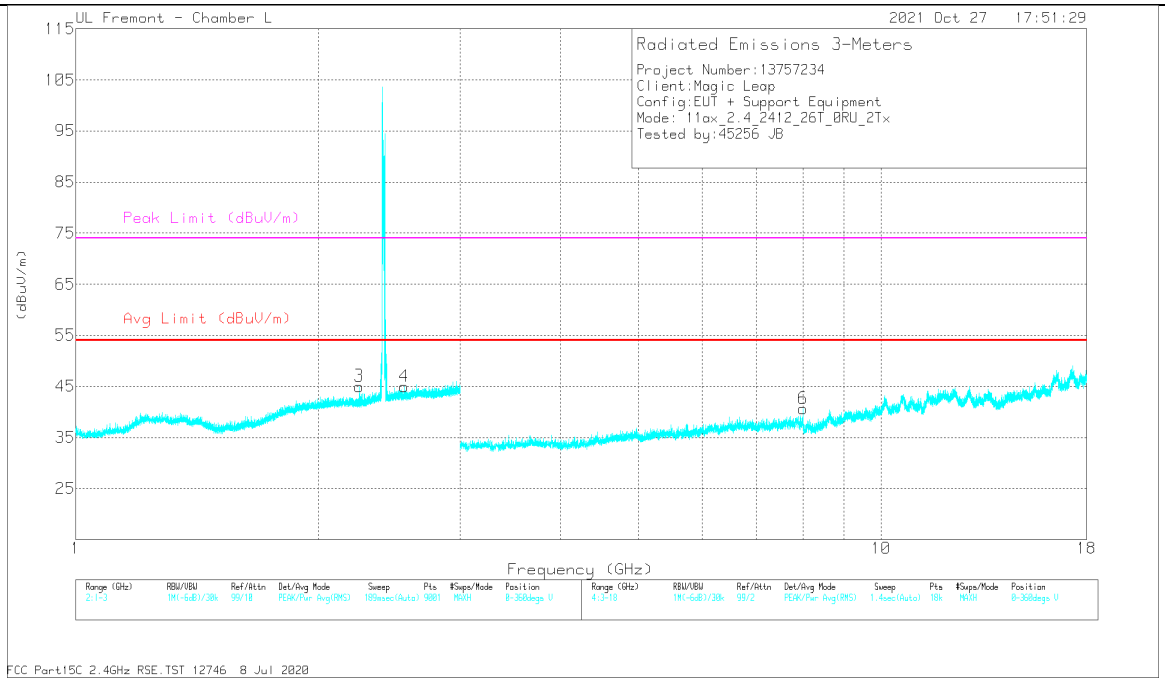
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL 1 RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

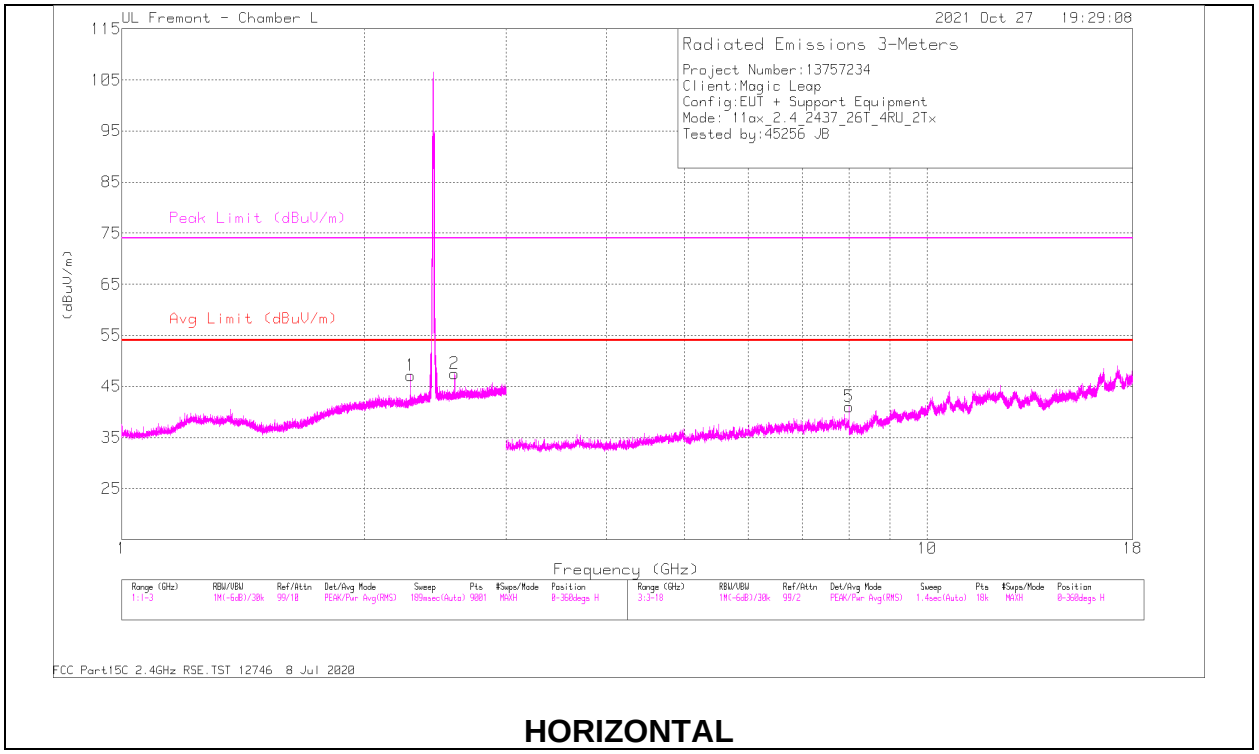
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.24982	45.5	PK2	31.3	-19.8	57	-	-	74	-17	43	272	H
	* 2.24936	35.28	MAv1	31.3	-19.8	46.78	54	-7.22	-	-	43	272	H
2	2.5572	46.23	PK2	32.2	-19	59.43	-	-	-	-	248	380	H
	2.55718	35.47	MAv1	32.2	-19	48.67	-	-	-	-	248	380	H
3	* 2.24989	46.51	PK2	31.3	-19.8	58.01	-	-	74	-15.99	211	393	V
	* 2.25007	35.49	MAv1	31.3	-19.8	46.99	54	-7.01	-	-	211	393	V
4	2.55732	41.61	PK2	32.2	-19	54.81	-	-	-	-	147	198	V
	2.55704	30.24	MAv1	32.2	-19	43.44	-	-	-	-	147	198	V
5	7.99991	32.71	PK2	35.8	-19.2	49.31	-	-	-	-	211	382	H
	8.00026	22.37	MAv1	35.8	-19.2	38.97	-	-	-	-	211	382	H
6	7.99985	32.71	PK2	35.8	-19.2	49.31	-	-	-	-	259	311	V
	7.99999	23.44	MAv1	35.8	-19.2	40.04	-	-	-	-	259	311	V

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

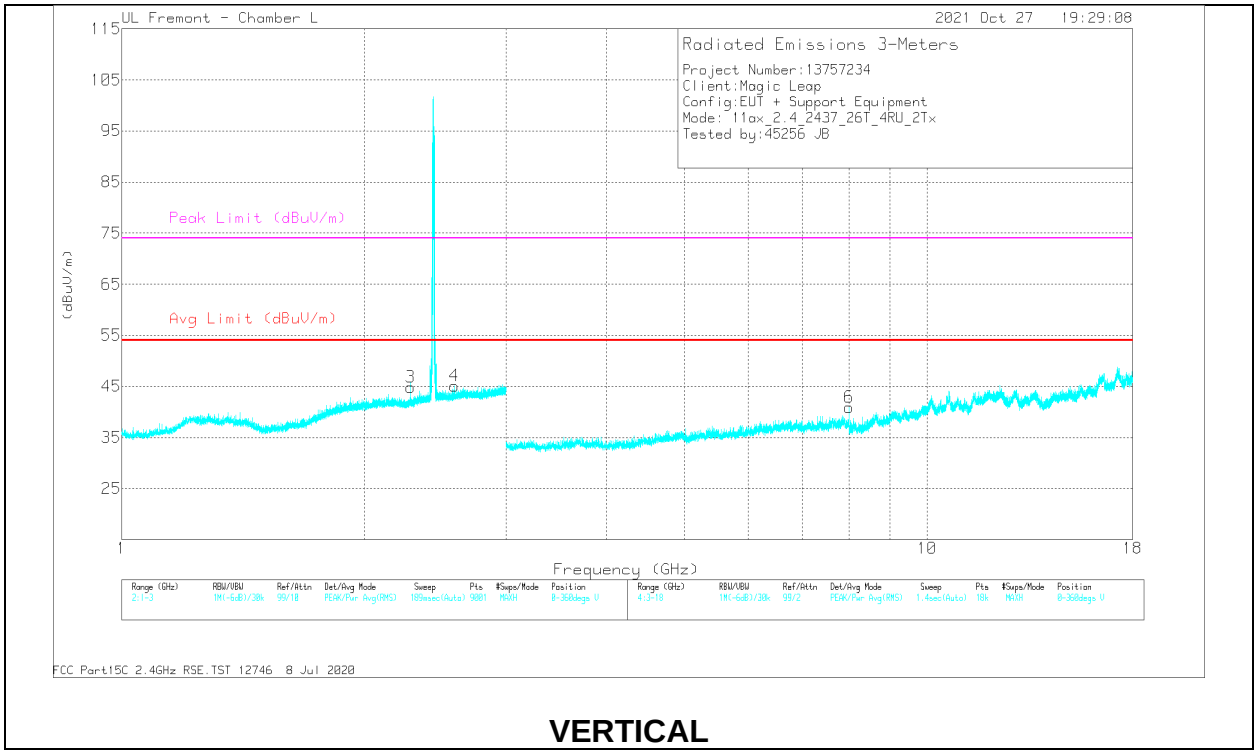
2TX Antenna 1 + Antenna 2 OFDMA MODE: 26-Tones, RU Index 4

HARMONICS AND SPURIOUS EMISSIONS

MID CHANNEL 6 RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

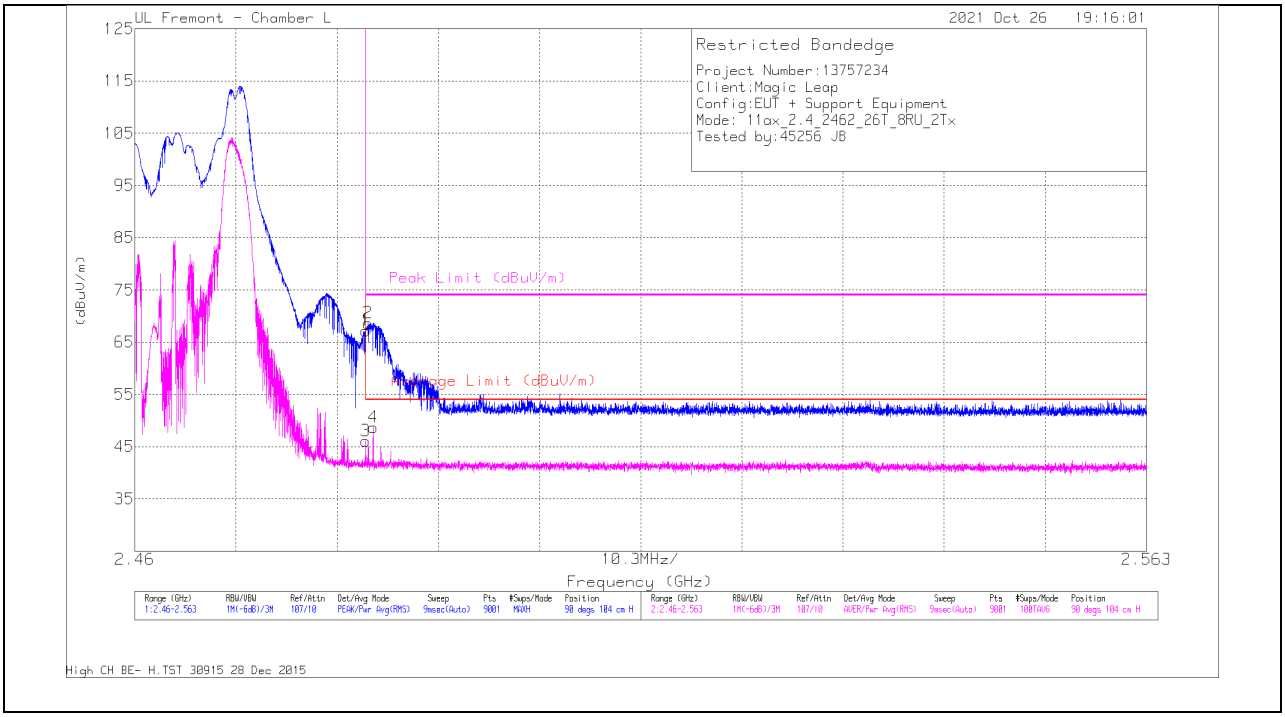
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.28255	46.8	PK2	31.4	-19.7	58.5	-	-	74	-15.5	306	150	H
	* 2.28255	36.13	MAv1	31.4	-19.7	47.83	54	-6.17	-	-	306	150	H
2	2.59123	45.93	PK2	32.2	-18.8	59.33	-	-	-	-	24	259	H
	2.59121	35.53	MAv1	32.2	-18.8	48.93	-	-	-	-	24	259	H
3	* 2.28266	44.47	PK2	31.4	-19.7	56.17	-	-	74	-17.83	75	184	V
	* 2.28261	33.73	MAv1	31.4	-19.7	45.43	54	-8.57	-	-	75	184	V
4	2.58941	42.41	PK2	32.2	-18.8	55.81	-	-	-	-	356	177	V
	2.5898	31.24	MAv1	32.2	-18.8	44.64	-	-	-	-	356	177	V
5	8.00018	34.06	PK2	35.8	-19.2	50.66	-	-	-	-	205	338	H
	7.99997	24.18	MAv1	35.8	-19.2	40.78	-	-	-	-	205	338	H
6	8.00026	32.17	PK2	35.8	-19.2	48.77	-	-	-	-	199	363	V
	8.0002	21.64	MAv1	35.8	-19.2	38.24	-	-	-	-	199	363	V

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

2TX Antenna 1 + Antenna 2 OFDMA MODE: 26-Tones, RU Index 8

BANDEDGE (HIGH CHANNEL 11)

HORIZONTAL RESULT

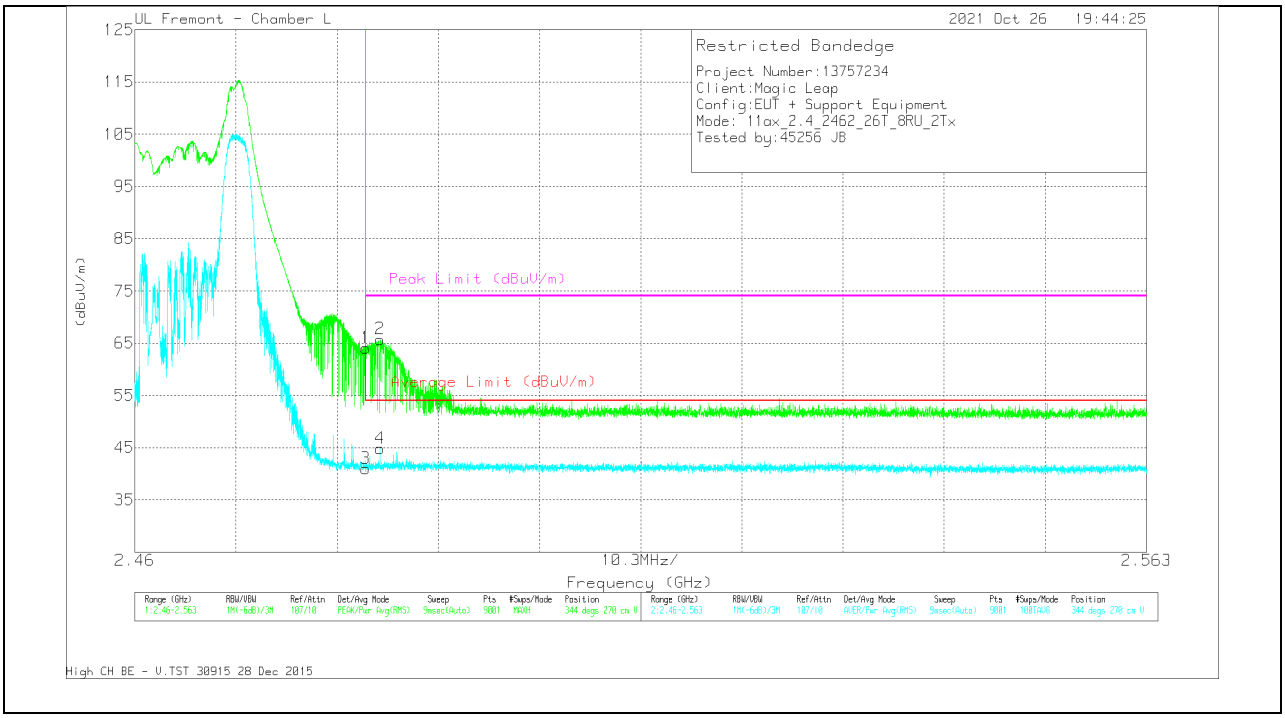


TRACE MARKER

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	53.94	Pk	32.3	-19	67.24	-	-	74	-6.76	90	104	H
2	* 2.48377	55.36	Pk	32.3	-19	68.66	-	-	74	-5.34	90	104	H
3	* 2.48351	32.78	RMS	32.3	-19	46.08	54	-7.92	-	-	90	104	H
4	* 2.48426	35.39	RMS	32.3	-19	48.69	54	-5.31	-	-	90	104	H

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

VERTICAL RESULT



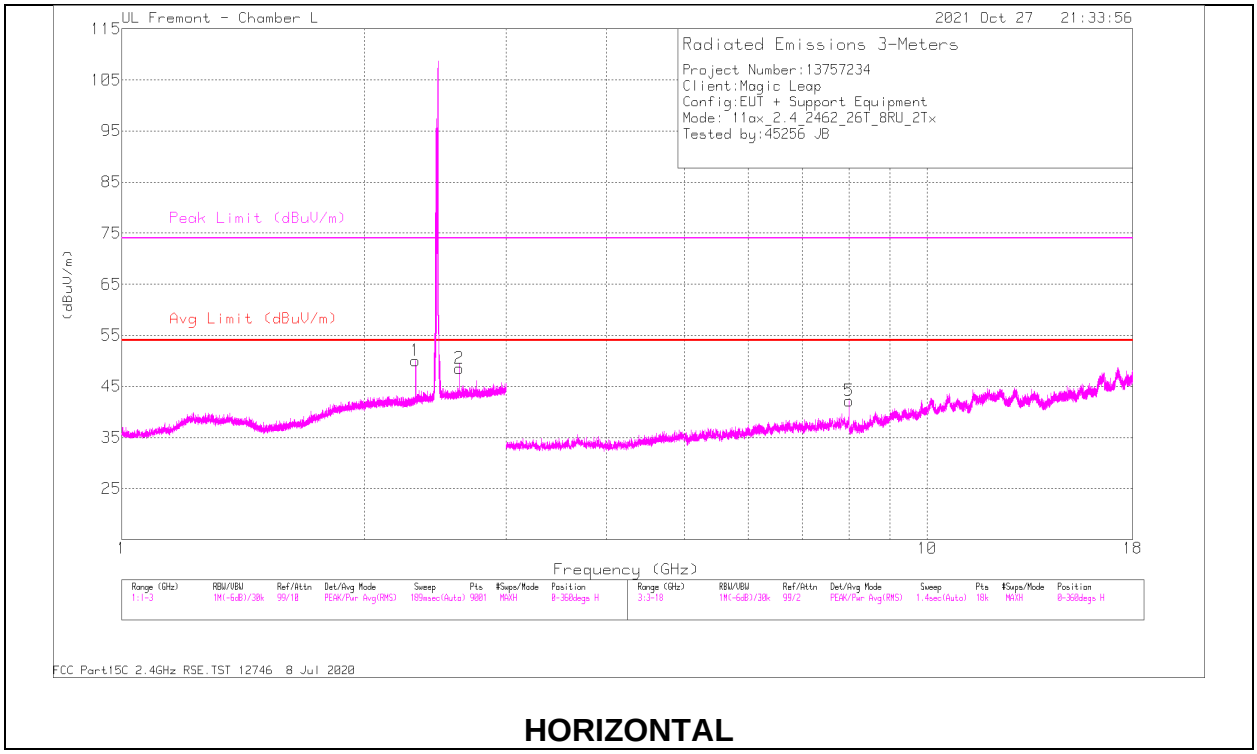
TRACE MARKER

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	50.76	Pk	32.3	-19	64.06	-	-	74	-9.94	344	270	V
2	* 2.48495	52.45	Pk	32.3	-19	65.75	-	-	74	-8.25	344	270	V
3	* 2.48351	27.67	RMS	32.3	-19	40.97	54	-13.03	-	-	344	270	V
4	* 2.48496	31.49	RMS	32.3	-19	44.79	54	-9.21	-	-	344	270	V

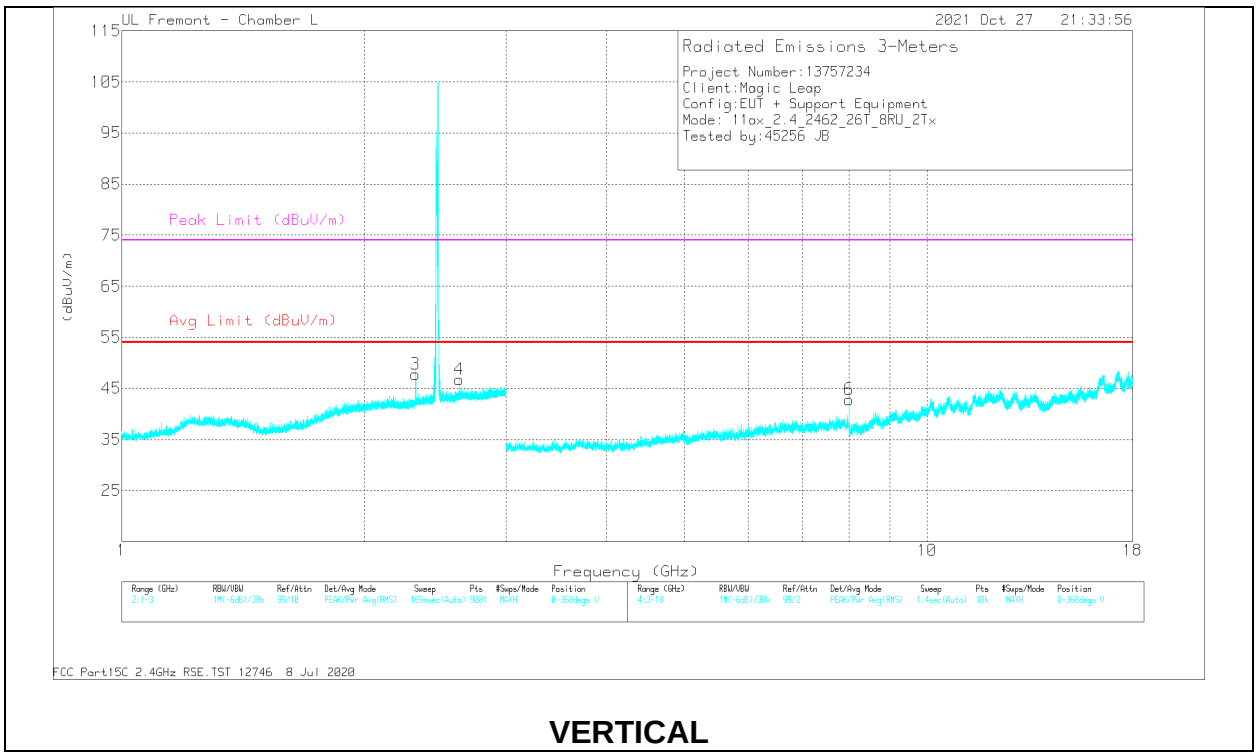
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

HIGH CHANNEL 11 RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	* 2.31632	49.72	PK2	31.7	-19.6	61.82	-	-	74	-12.18	279	148	H
	* 2.31627	39.03	MAv1	31.7	-19.6	51.13	54	-2.87	-	-	279	148	H
2	2.62391	45.62	PK2	32.4	-18.7	59.32	-	-	-	-	228	318	H
	2.62428	35.27	MAv1	32.4	-18.7	48.97	-	-	-	-	228	318	H
3	* 2.31639	48.08	PK2	31.7	-19.6	60.18	-	-	74	-13.82	356	274	V
	* 2.31656	37.47	MAv1	31.7	-19.6	49.57	54	-4.43	-	-	356	274	V
4	2.62371	43.26	PK2	32.4	-18.7	56.96	-	-	-	-	360	198	V
	2.62351	32.59	MAv1	32.4	-18.7	46.29	-	-	-	-	360	198	V
5	7.99988	34.22	PK2	35.8	-19.2	50.82	-	-	-	-	212	324	H
	8.00003	24.49	MAv1	35.8	-19.2	41.09	-	-	-	-	212	324	H
6	7.99823	32.24	PK2	35.8	-19.2	48.84	-	-	-	-	107	390	V
	8.00008	21.79	MAv1	35.8	-19.2	38.39	-	-	-	-	107	390	V

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

UL VERIFICATION SERVICES
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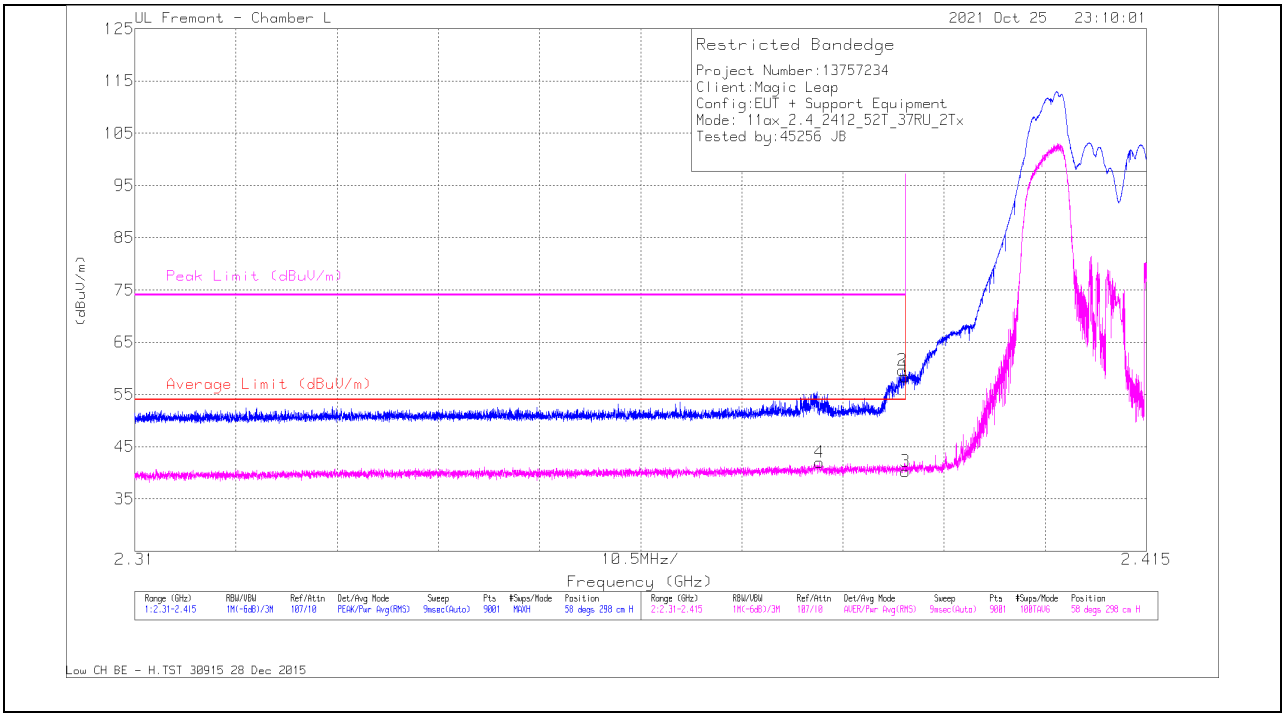
2TX Antenna 1 + Antenna 2 OFDMA MODE: 52-Tones, RU Index 37

BANDEDGE (LOW CHANNEL 1)

HORIZONTAL RESULT

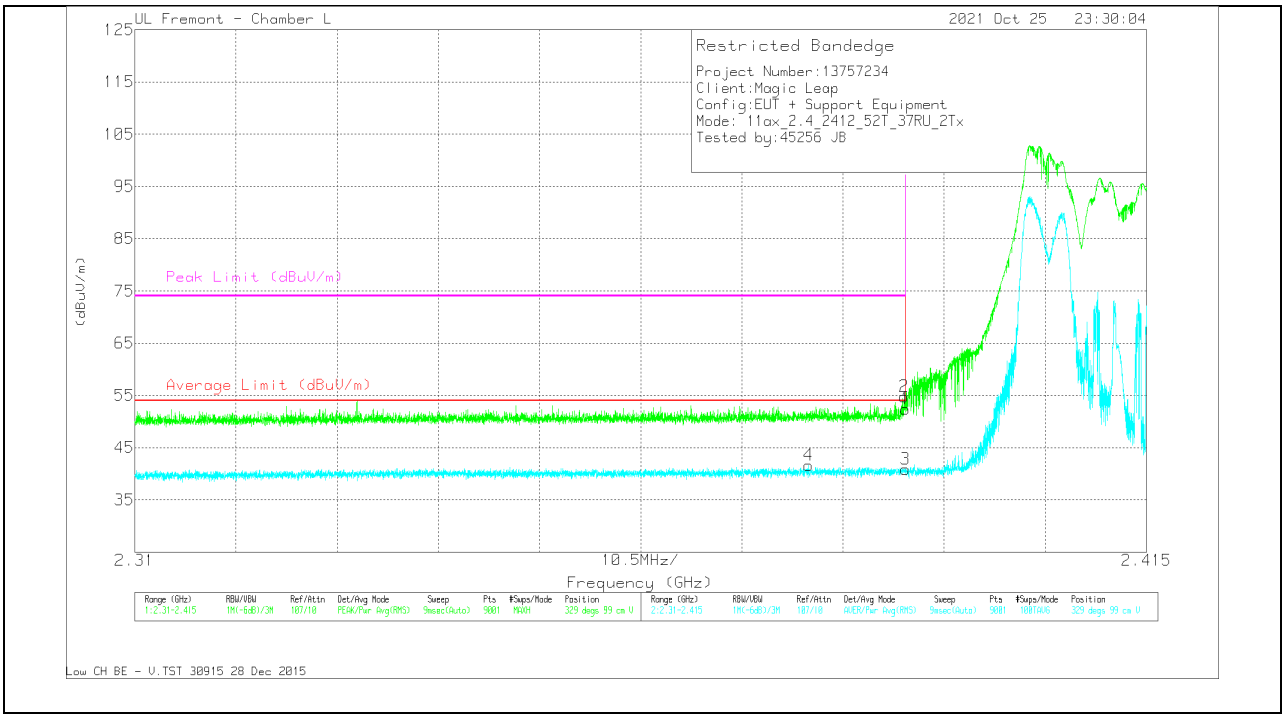


TRACE MARKER

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	45.66	Pk	32	-19.3	58.36	-	-	74	-15.64	58	298	H
2	* 2.38969	46.86	Pk	32	-19.3	59.56	-	-	74	-14.44	58	298	H
3	* 2.38999	27.57	RMS	32	-19.3	40.27	54	-13.73	-	-	58	298	H
4	* 2.38105	29.25	RMS	32.1	-19.4	41.95	54	-12.05	-	-	58	298	H

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

VERTICAL RESULT



TRACE MARKER

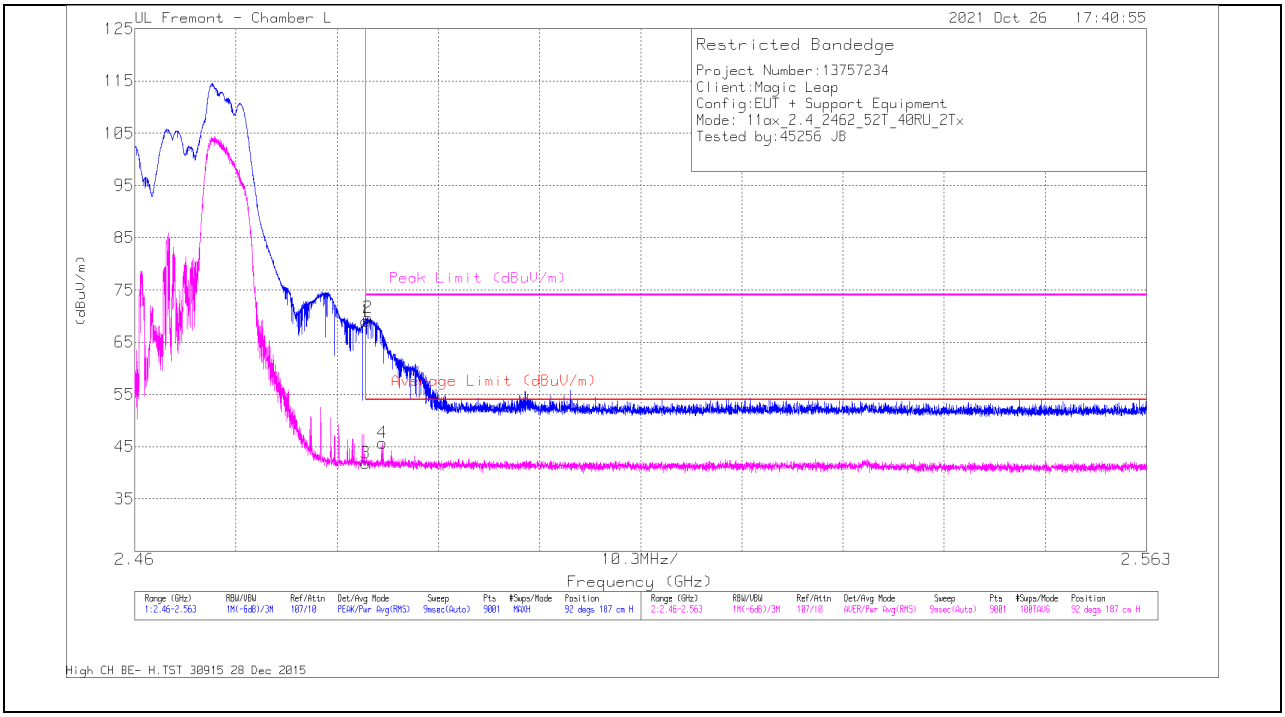
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.38999	39.69	Pk	32	-19.3	52.39	-	-	74	-21.61	329	99	V
2	* 2.38984	42.11	Pk	32	-19.3	54.81	-	-	74	-19.19	329	99	V
3	* 2.38999	28.11	RMS	32	-19.3	40.81	54	-13.19	-	-	329	99	V
4	* 2.37991	28.94	RMS	32.1	-19.4	41.64	54	-12.36	-	-	329	99	V

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

2TX Antenna 1 + Antenna 2 OFDMA MODE: 52-Tones, RU Index 40

BANDEDGE (HIGH CHANNEL 11)

HORIZONTAL RESULT

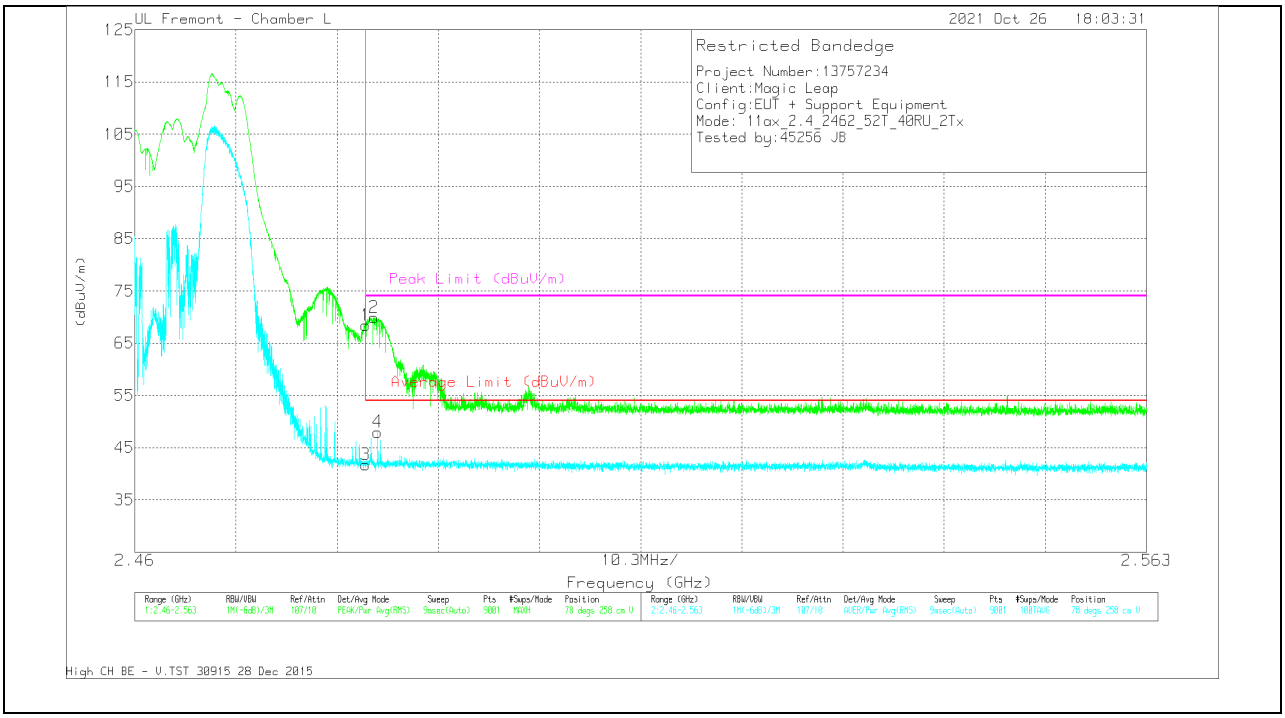


TRACE MARKER

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	55.78	Pk	32.3	-19	69.08	-	-	74	-4.92	92	187	H
2	* 2.48377	56.33	Pk	32.3	-19	69.63	-	-	74	-4.37	92	187	H
3	* 2.48351	28.51	RMS	32.3	-19	41.81	54	-12.19	-	-	92	187	H
4	* 2.48523	32.51	RMS	32.3	-19.1	45.71	54	-8.29	-	-	92	187	H

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

VERTICAL RESULT



TRACE MARKER

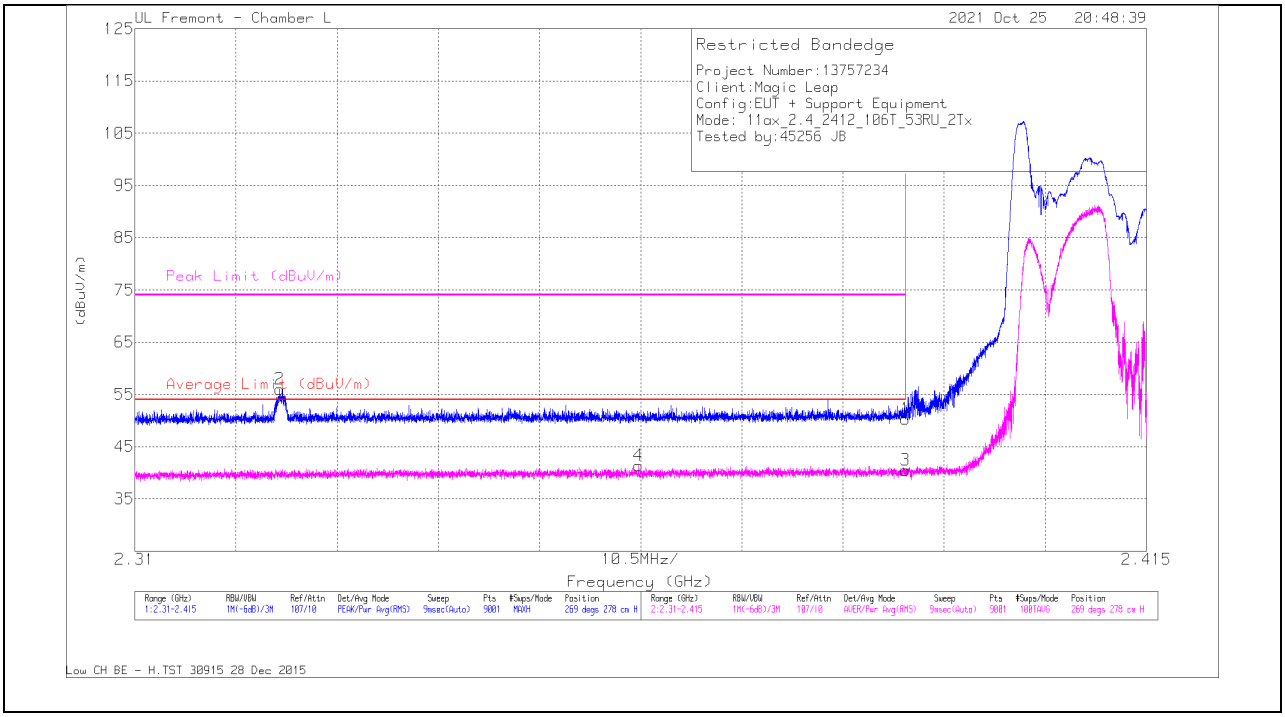
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	55.17	Pk	32.3	-19	68.47	-	-	74	-5.53	78	258	V
2	* 2.48433	56.59	Pk	32.3	-19	69.89	-	-	74	-4.11	78	258	V
3	* 2.48351	28.47	RMS	32.3	-19	41.77	54	-12.23	-	-	78	258	V
4	* 2.48473	34.69	RMS	32.3	-19	47.99	54	-6.01	-	-	78	258	V

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

2TX Antenna 1 + Antenna 2 OFDMA MODE: 106-Tones, RU Index 53

BANDEDGE (LOW CHANNEL 1)

HORIZONTAL RESULT

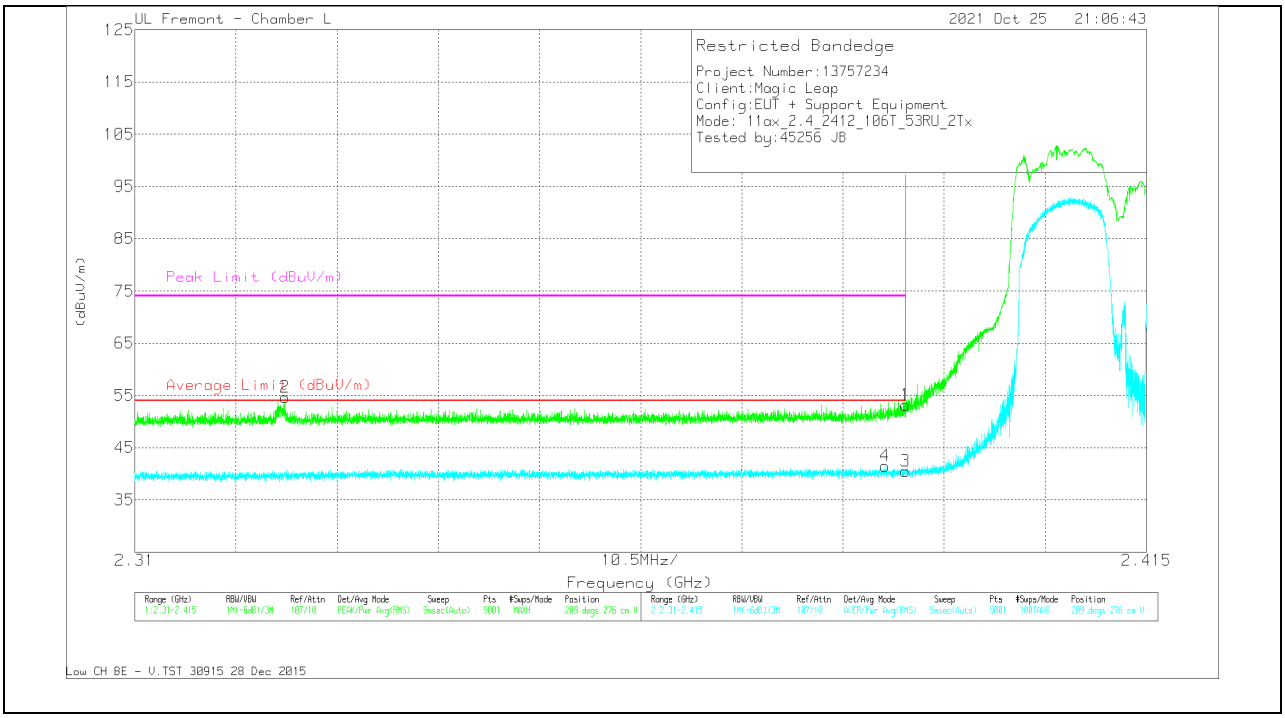


TRACE MARKER

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	37.63	Pk	32	-19.3	50.33	-	-	74	-23.67	269	278	H
2	* 2.32505	43.94	Pk	31.7	-19.6	56.04	-	-	74	-17.96	269	278	H
3	* 2.38999	27.82	RMS	32	-19.3	40.52	54	-13.48	-	-	269	278	H
4	* 2.36226	28.76	RMS	32	-19.4	41.36	54	-12.64	-	-	269	278	H

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

VERTICAL RESULT



TRACE MARKER

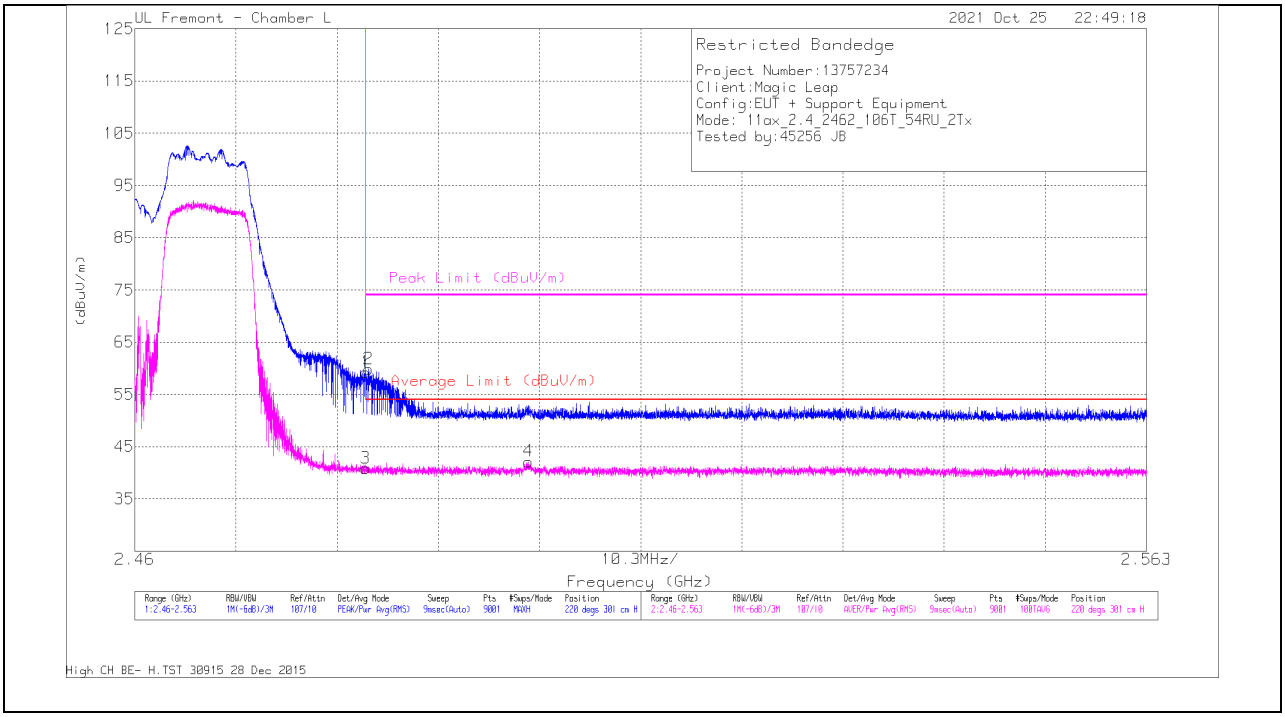
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.38999	40.49	Pk	32	-19.3	53.19	-	-	74	-20.81	209	276	V
2	* 2.3256	42.48	Pk	31.7	-19.6	54.58	-	-	74	-19.42	209	276	V
3	* 2.38999	27.78	RMS	32	-19.3	40.48	54	-13.52	-	-	209	276	V
4	* 2.38785	28.93	RMS	32	-19.4	41.53	54	-12.47	-	-	209	276	V

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

2TX Antenna 1 + Antenna 2 OFDMA MODE: 106-Tones, RU Index 54

BANDEDGE (HIGH CHANNEL 11)

HORIZONTAL RESULT

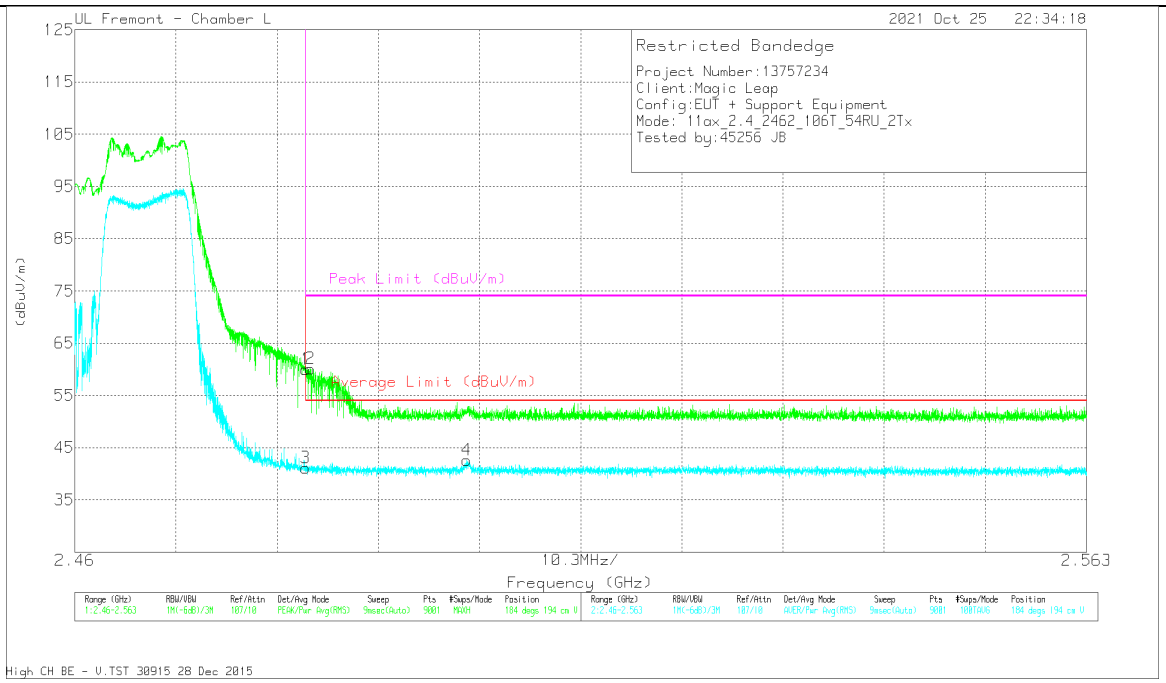


TRACE MARKER

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	45.98	Pk	32.3	-19	59.28	-	-	74	-14.72	220	301	H
2	* 2.48379	46.6	Pk	32.3	-19	59.9	-	-	74	-14.1	220	301	H
3	* 2.48351	27.57	RMS	32.3	-19	40.87	54	-13.13	-	-	220	301	H
4	2.50007	28.86	RMS	32.4	-19.1	42.16	54	-11.84	-	-	220	301	H

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

VERTICAL RESULT



TRACE MARKER

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	46.7	Pk	32.3	-19	60	-	-	74	-14	184	194	V
2	* 2.484	46.8	Pk	32.3	-19	60.1	-	-	74	-13.9	184	194	V
3	* 2.48351	27.83	RMS	32.3	-19	41.13	54	-12.87	-	-	184	194	V
4	* 2.49989	29.33	RMS	32.4	-19.1	42.63	54	-11.37	-	-	184	194	V

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

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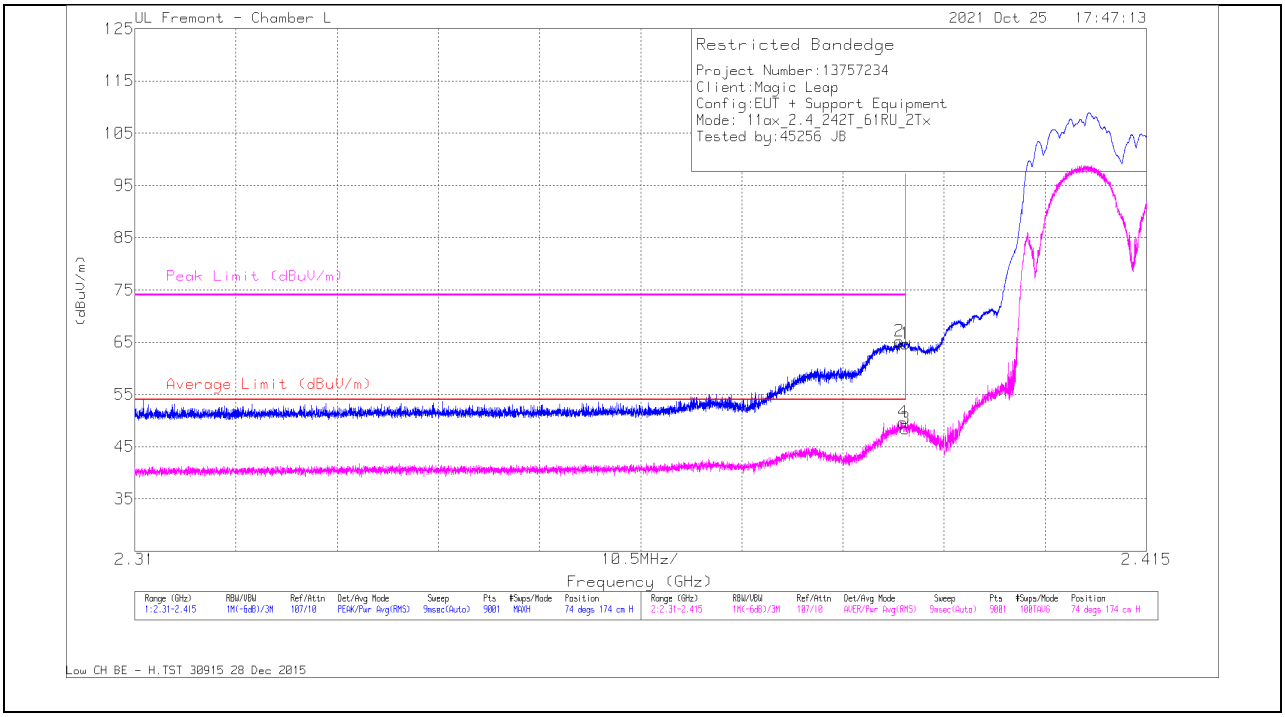
2TX Antenna 1 + Antenna 2 OFDMA MODE: 242-Tones, RU Index 61

BANDEDGE (LOW CHANNEL 1)

HORIZONTAL RESULT

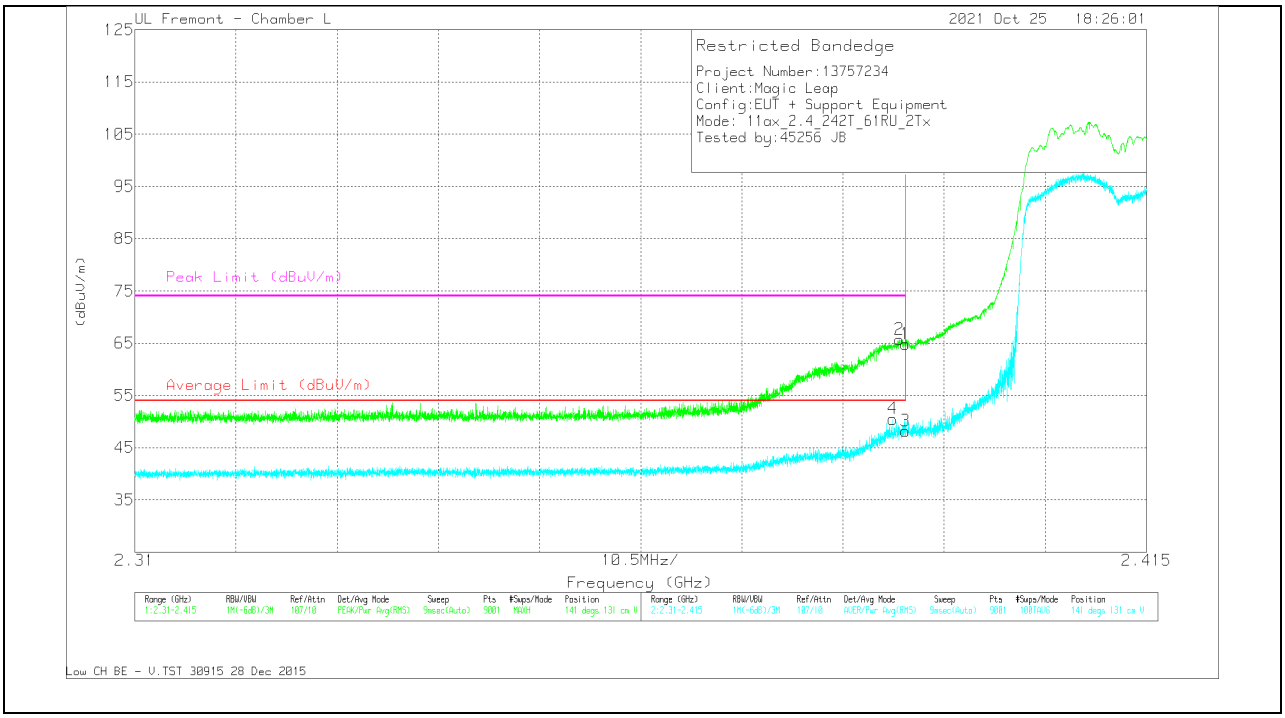


TRACE MARKER

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	52.03	Pk	32	-19.3	64.73	-	-	74	-9.27	74	174	H
2	* 2.38937	52.58	Pk	32	-19.4	65.18	-	-	74	-8.82	74	174	H
3	* 2.38999	35.71	RMS	32	-19.3	48.41	54	-5.59	-	-	74	174	H
4	* 2.38974	36.99	RMS	32	-19.3	49.69	54	-4.31	-	-	74	174	H

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

VERTICAL RESULT



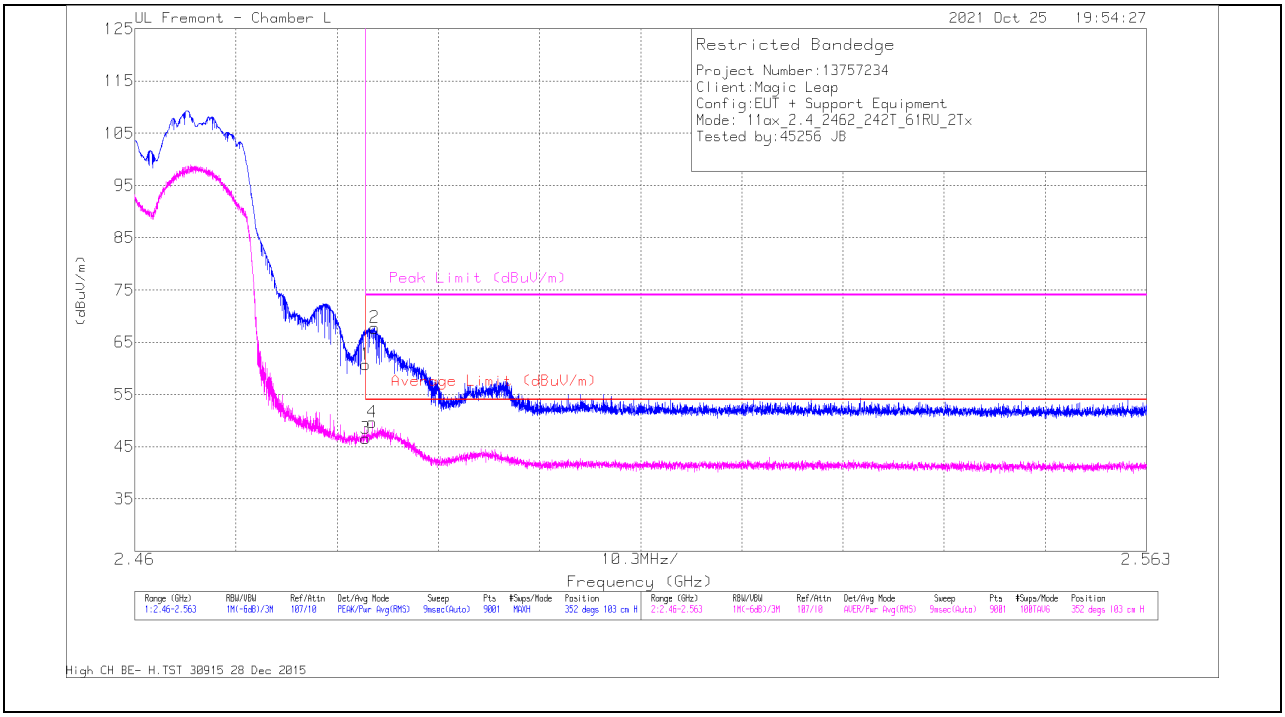
TRACE MARKER

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	52.17	Pk	32	-19.3	64.87	-	-	74	-9.13	141	131	V
2	* 2.38936	53.14	Pk	32	-19.4	65.74	-	-	74	-8.26	141	131	V
3	* 2.38999	35.51	RMS	32	-19.3	48.21	54	-5.79	-	-	141	131	V
4	* 2.38866	37.88	RMS	32	-19.4	50.48	54	-3.52	-	-	141	131	V

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

BANDEDGE (HIGH CHANNEL 11)

HORIZONTAL RESULT

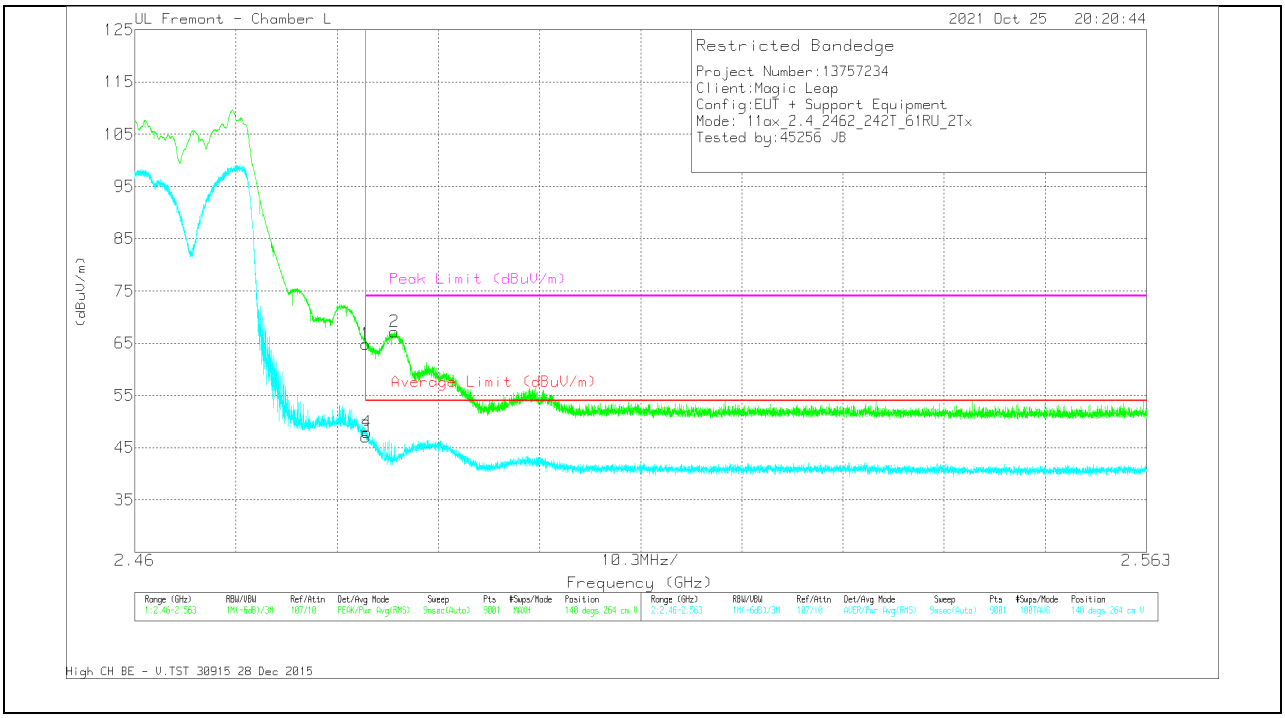


TRACE MARKER

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	47.4	Pk	32.3	-19	60.7	-	-	74	-13.3	352	103	H
2	* 2.48439	54.44	Pk	32.3	-19	67.74	-	-	74	-6.26	352	103	H
3	* 2.48351	33.3	RMS	32.3	-19	46.6	54	-7.4	-	-	352	103	H
4	* 2.48417	36.35	RMS	32.3	-19	49.65	54	-4.35	-	-	352	103	H

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

VERTICAL RESULT



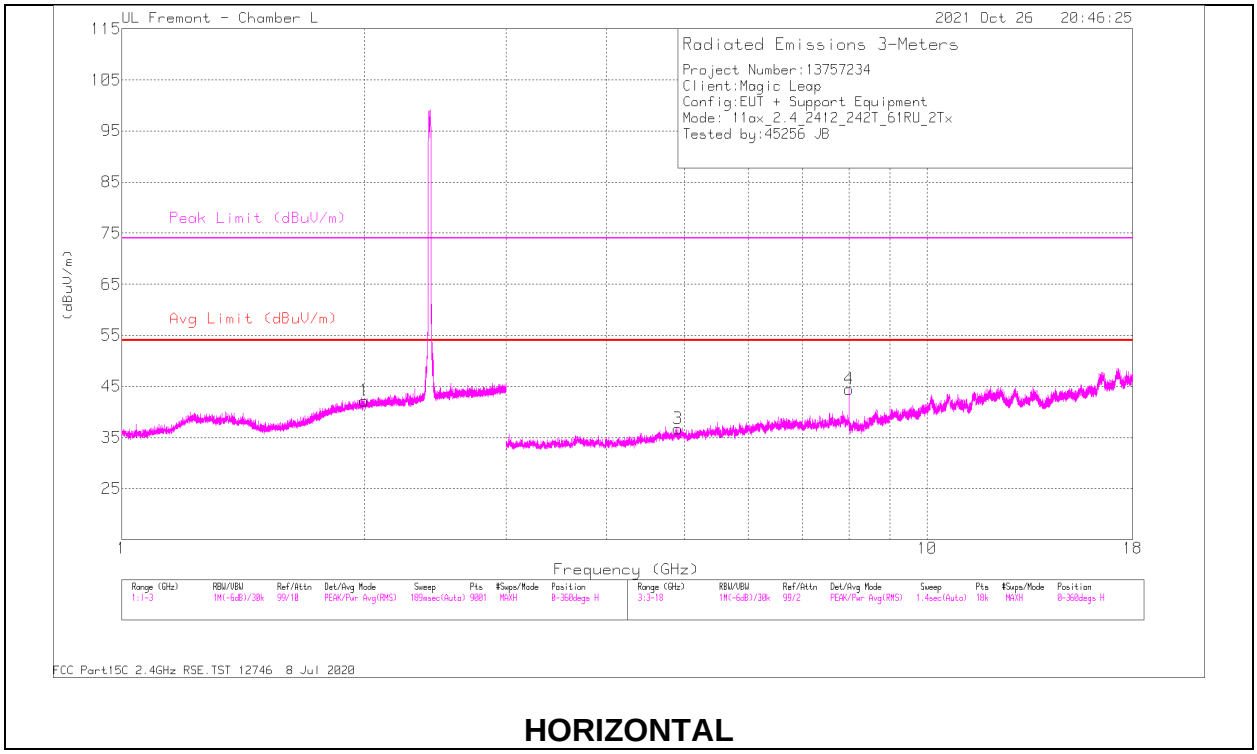
TRACE MARKER

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	51.56	Pk	32.3	-19	64.86	-	-	74	-9.14	140	264	V
2	* 2.48642	54.02	Pk	32.3	-19.1	67.22	-	-	74	-6.78	140	264	V
3	* 2.48351	33.71	RMS	32.3	-19	47.01	54	-6.99	-	-	140	264	V
4	* 2.48361	34.64	RMS	32.3	-19	47.94	54	-6.06	-	-	140	264	V

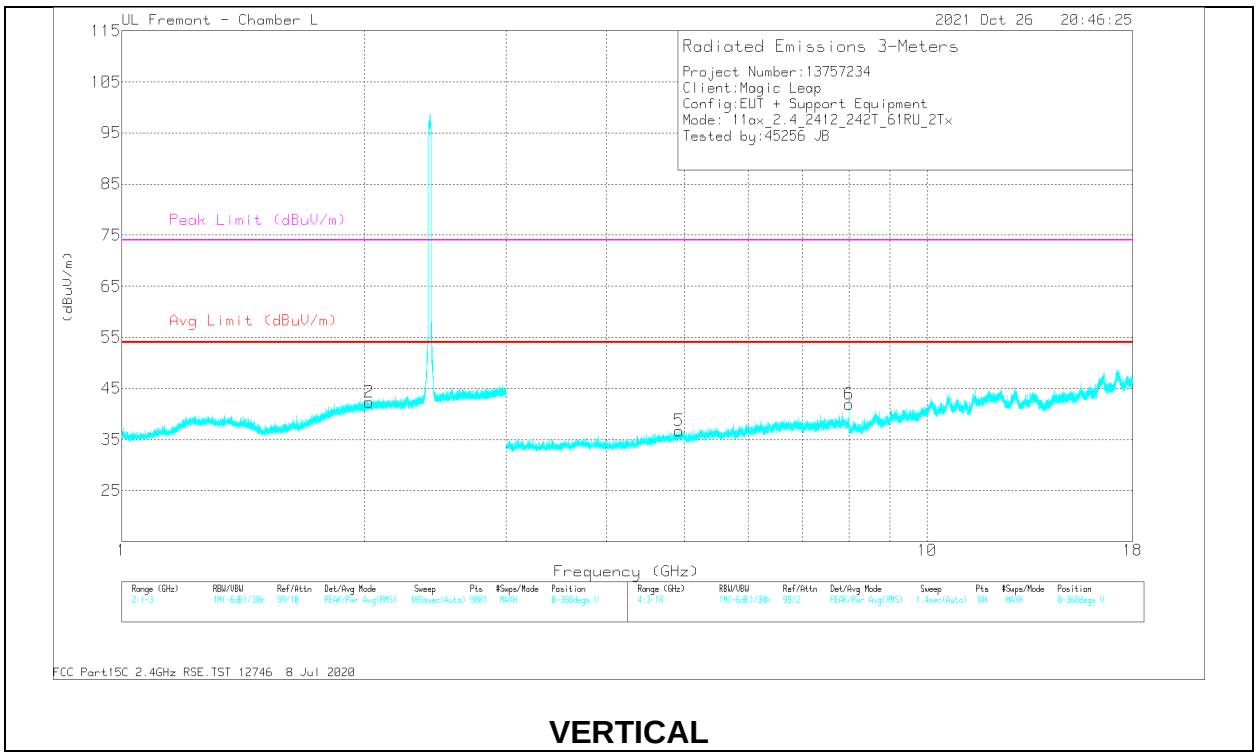
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL 1 RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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
* 4.90207	36.62	PK2	34.1	-24	46.72	-	-	74	-27.28	264	377	H
* 4.90115	24.95	MAv1	34.1	-24	35.05	54	-18.95	-	-	264	377	H
8.0001	34.36	PK2	35.8	-19.2	50.96	-	-	-	-	96	114	H
8.00017	26.51	MAv1	35.8	-19.2	43.11	-	-	-	-	96	114	H
* 4.92288	35.25	PK2	34.2	-23.6	45.85	-	-	74	-28.15	113	104	V
* 4.92592	24.01	MAv1	34.2	-23.5	34.71	54	-19.29	-	-	113	104	V
7.99986	33.91	PK2	35.8	-19.2	50.51	-	-	-	-	81	374	V
8.00014	24.05	MAv1	35.8	-19.2	40.65	-	-	-	-	81	374	V

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

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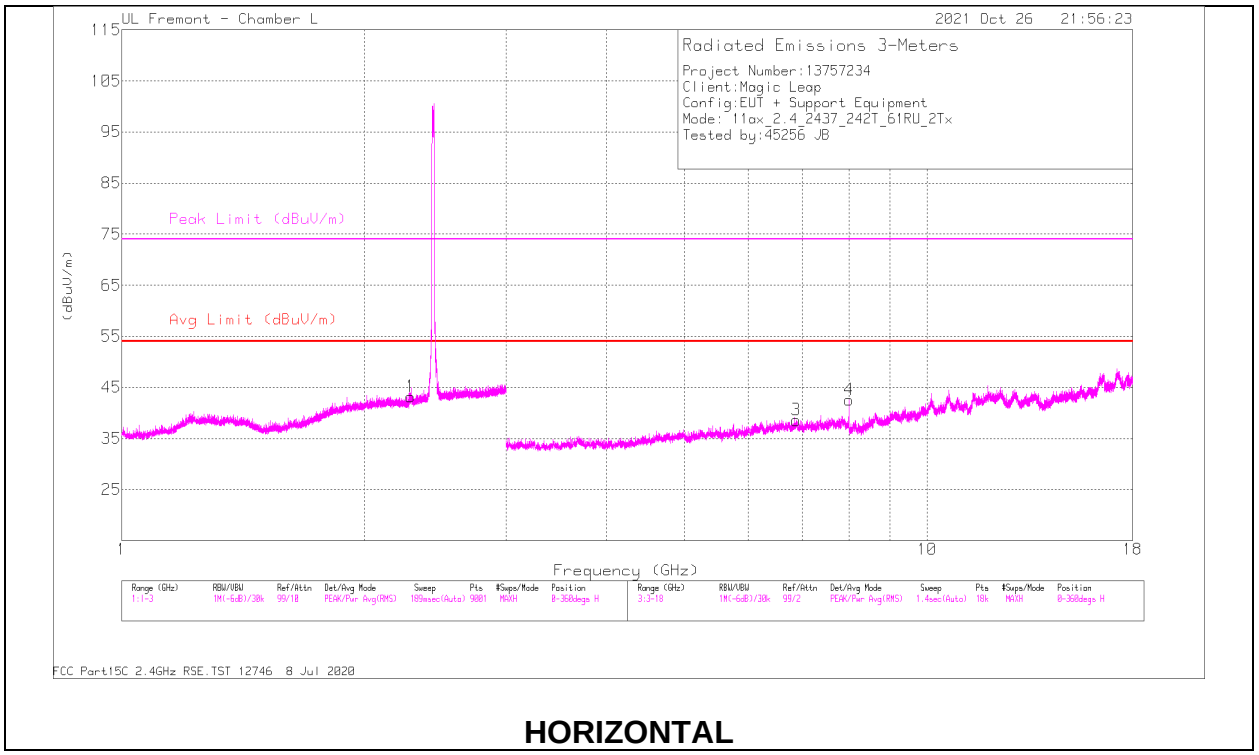
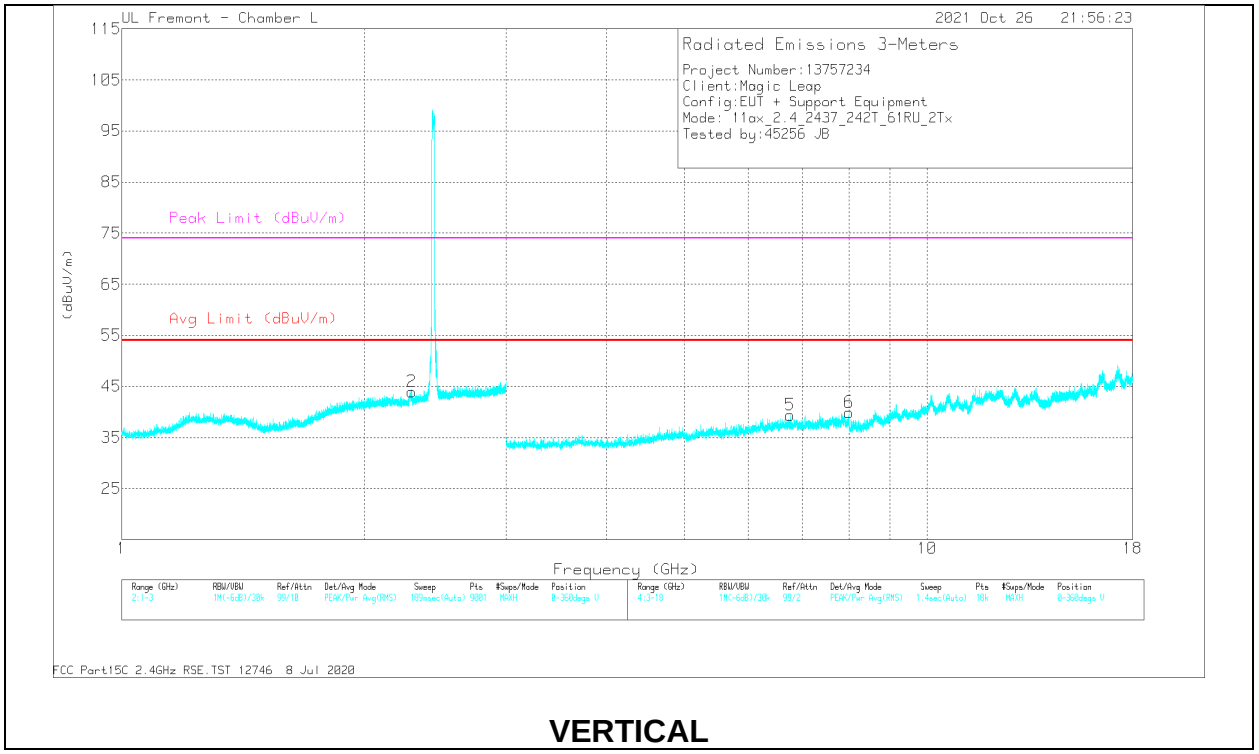
MID CHANNEL 6 RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	* 2.28419	43.83	PK2	31.4	-19.7	55.53	-	-	74	-18.47	96	292	H
	* 2.28555	31.97	MAv1	31.4	-19.7	43.67	54	-10.33	-	-	96	292	H
2	* 2.2917	43.04	PK2	31.4	-19.7	54.74	-	-	74	-19.26	103	120	V
	* 2.29225	31.72	MAv1	31.4	-19.7	43.42	54	-10.58	-	-	103	120	V
4	8.00003	34.45	PK2	35.8	-19.2	51.05	-	-	-	-	98	102	H
	8.00004	26.73	MAv1	35.8	-19.2	43.33	-	-	-	-	98	102	H
6	7.99983	32.69	PK2	35.8	-19.2	49.29	-	-	-	-	184	368	V
	8.00009	22.06	MAv1	35.8	-19.2	38.66	-	-	-	-	184	368	V

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

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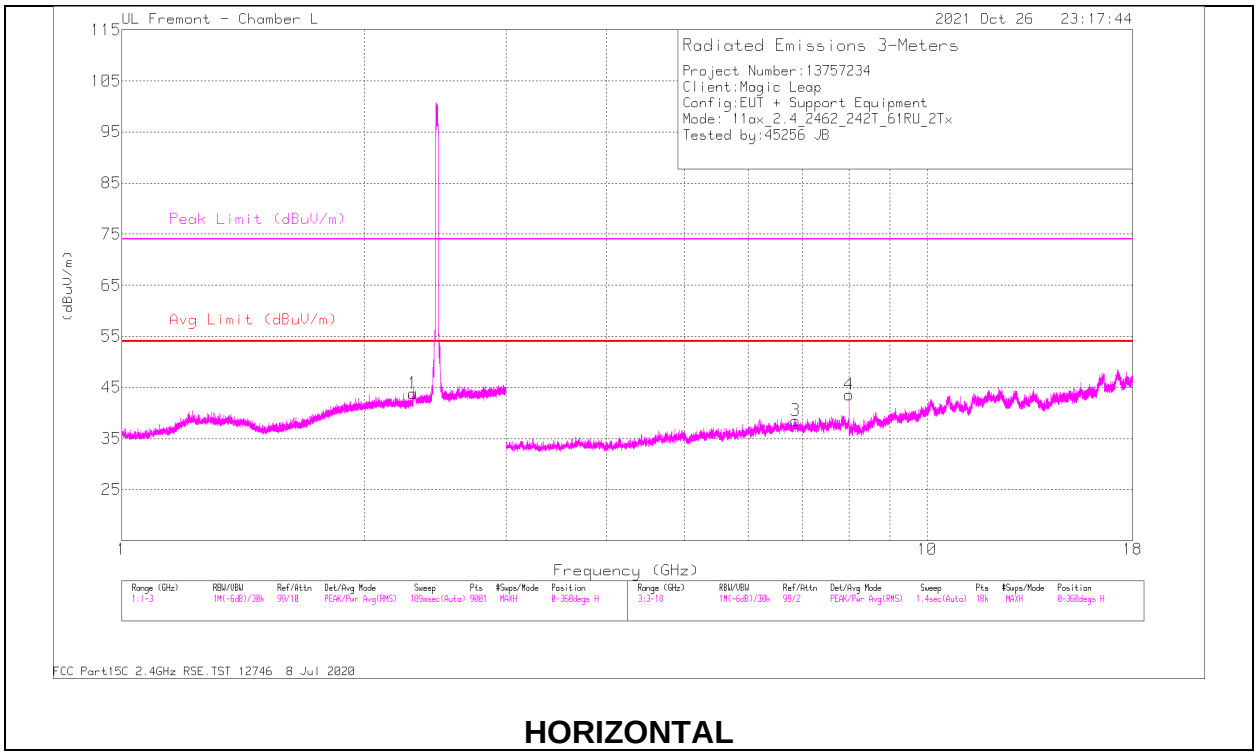
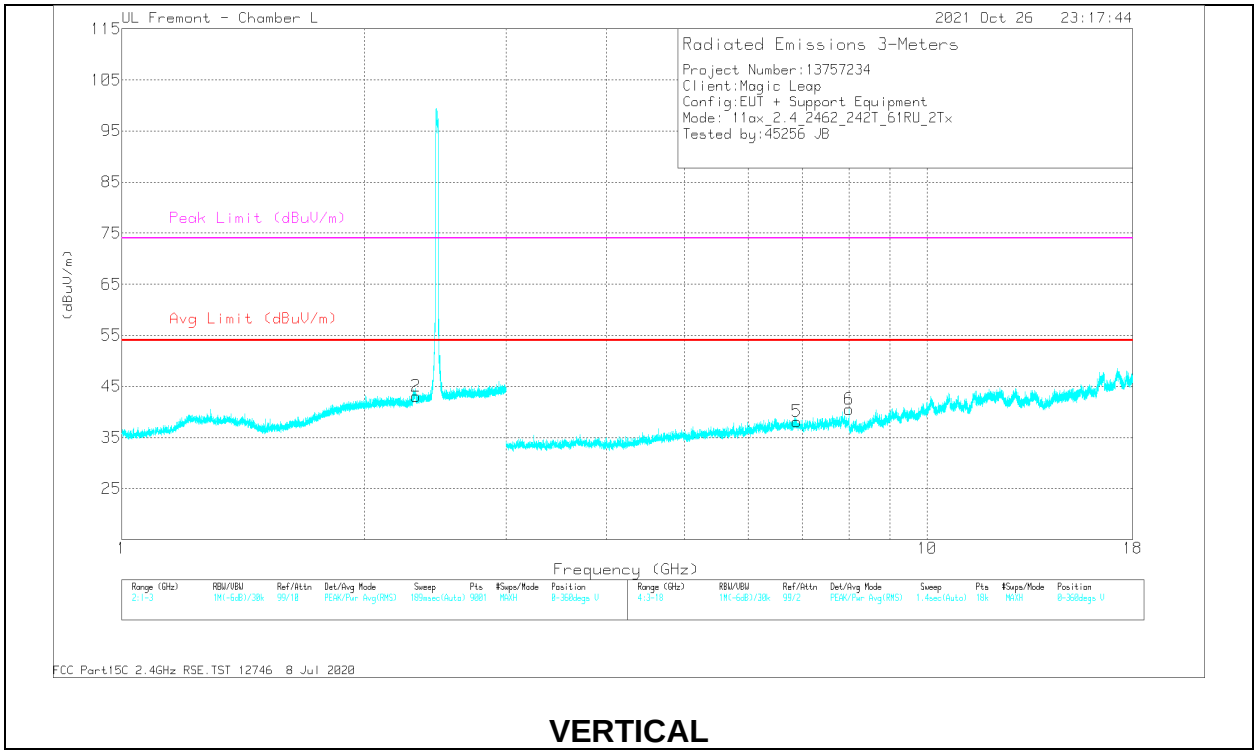
HIGH CHANNEL 11 RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	* 2.29955	42.25	PK2	31.5	-19.6	54.15	-	-	74	-19.85	99	322	H	
	* 2.29985	31.71	MAv1	31.5	-19.6	43.61	54	-10.39	-	-	99	322	H	
2	* 2.31776	41.89	PK2	31.7	-19.6	53.99	-	-	74	-20.01	281	166	V	
	* 2.31708	30.7	MAv1	31.7	-19.6	42.8	54	-11.2	-	-	281	166	V	
4	8.00002	34.74	PK2	35.8	-19.2	51.34	-	-	-	-	132	382	H	
	8.0001	26.11	MAv1	35.8	-19.2	42.71	-	-	-	-	132	382	H	
6	8.00002	33.64	PK2	35.8	-19.2	50.24	-	-	-	-	74	339	V	
	8.00006	25.04	MAv1	35.8	-19.2	41.64	-	-	-	-	74	339	V	

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

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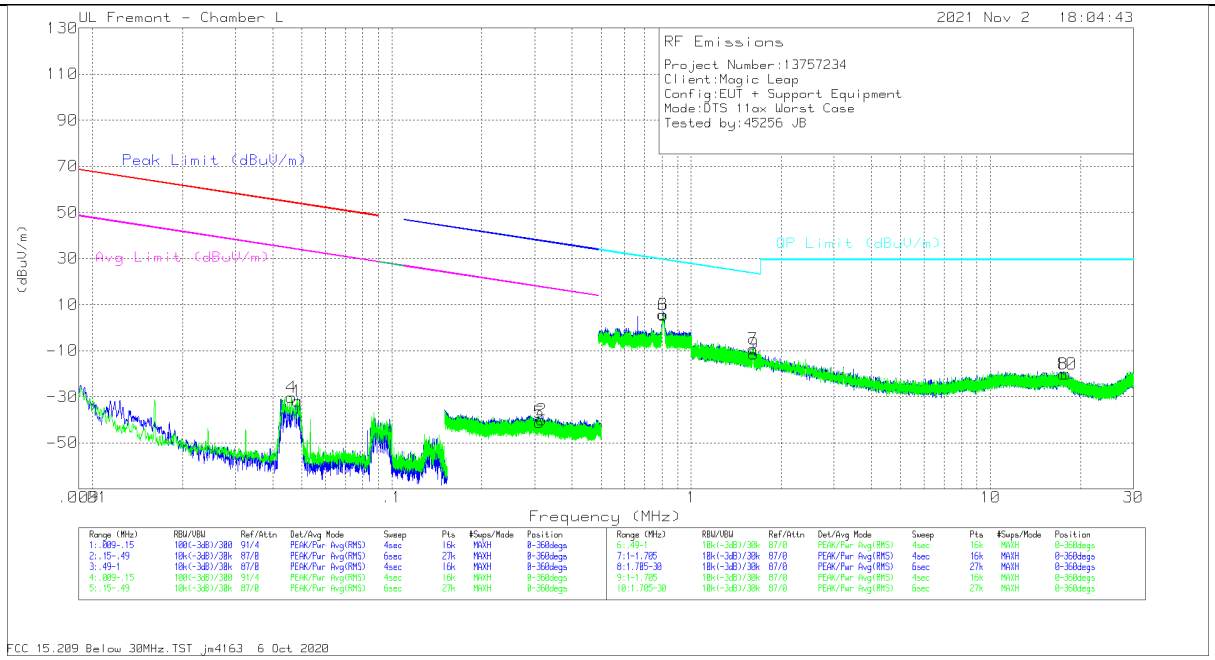
10.2. Worst Case Below 30MHz

SPURIOUS EMISSIONS BELOW 30 MHz (WORST-CASE CONFIGURATION)



ANTENNA- TWO ORIENTATIONS FACE ON/FACE OFF

Below 30MHz Data

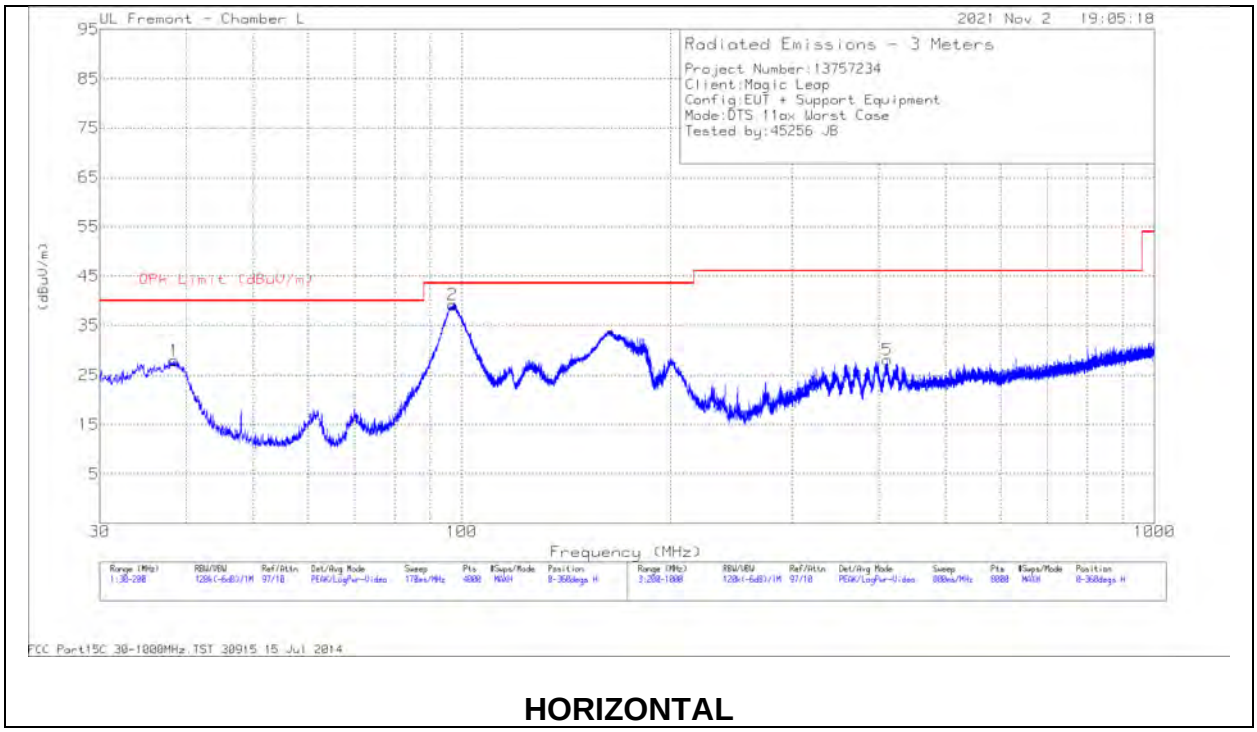
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (ACF)	Amp/Cbl (dB)	Dist Corr 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.0485	23	Pk	57.1	-31.9	-80	-31.8	53.87	-85.67	33.87	-65.67	0-360
2	.3172	15.79	Pk	56.2	-32	-80	-40.01	37.58	-77.59	17.58	-57.59	0-360
4	.0462	24.44	Pk	57.1	-31.8	-80	-30.26	54.29	-84.55	34.29	-64.55	0-360
5	.3106	14.72	Pk	56.2	-32	-80	-41.08	37.77	-78.85	17.77	-58.85	0-360

Pk - Peak detector

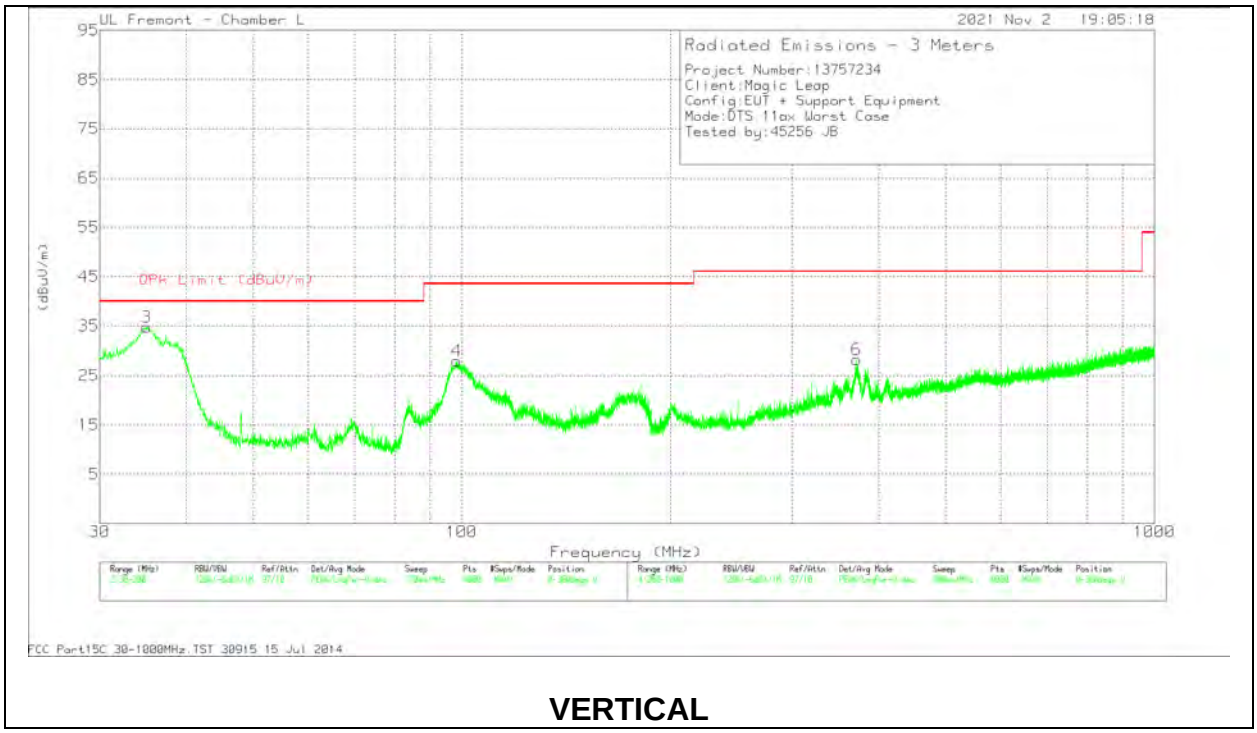
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (ACF)	Amp/Cbl (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
3	.8039	21.52	Pk	56.2	-31.9	-40	5.82	29.51	-23.69	0-360
6	.807	21.28	Pk	56.2	-31.9	-40	5.58	29.48	-23.9	0-360
7	1.6087	18.89	Pk	43.7	-31.9	-40	-9.31	23.5	-32.81	0-360
8	17.4868	16.99	Pk	34.3	-31.5	-40	-20.21	29.5	-49.71	0-360
9	1.6167	16.74	Pk	43.6	-31.9	-40	-11.56	23.46	-35.02	0-360
10	17.927	16.81	Pk	34.4	-31.4	-40	-20.19	29.5	-49.69	0-360

Pk - Peak detector
Note: Blue color trace on plots: Parallel orientation(Face On). Green color trace on plots: Perpendicular orientation(Face Off).

10.3. Worst Case Below 1 GHz



HORIZONTAL



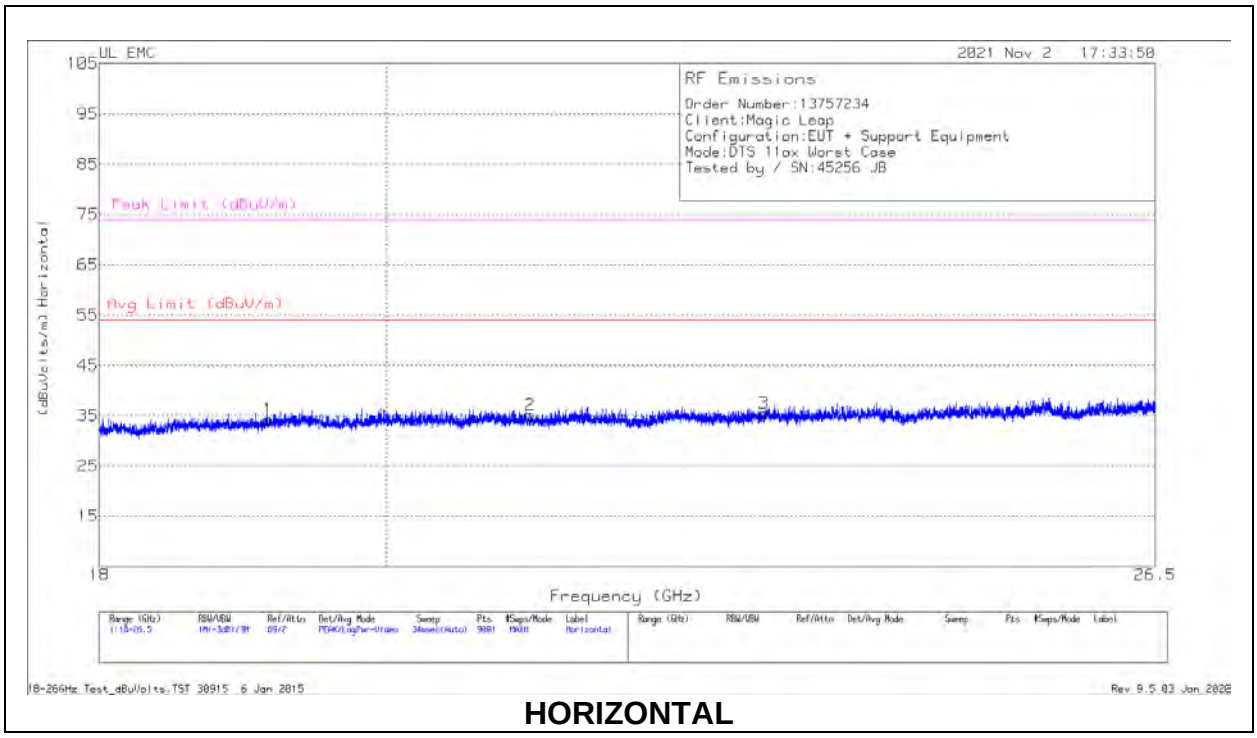
VERTICAL

Below 1GHz Data

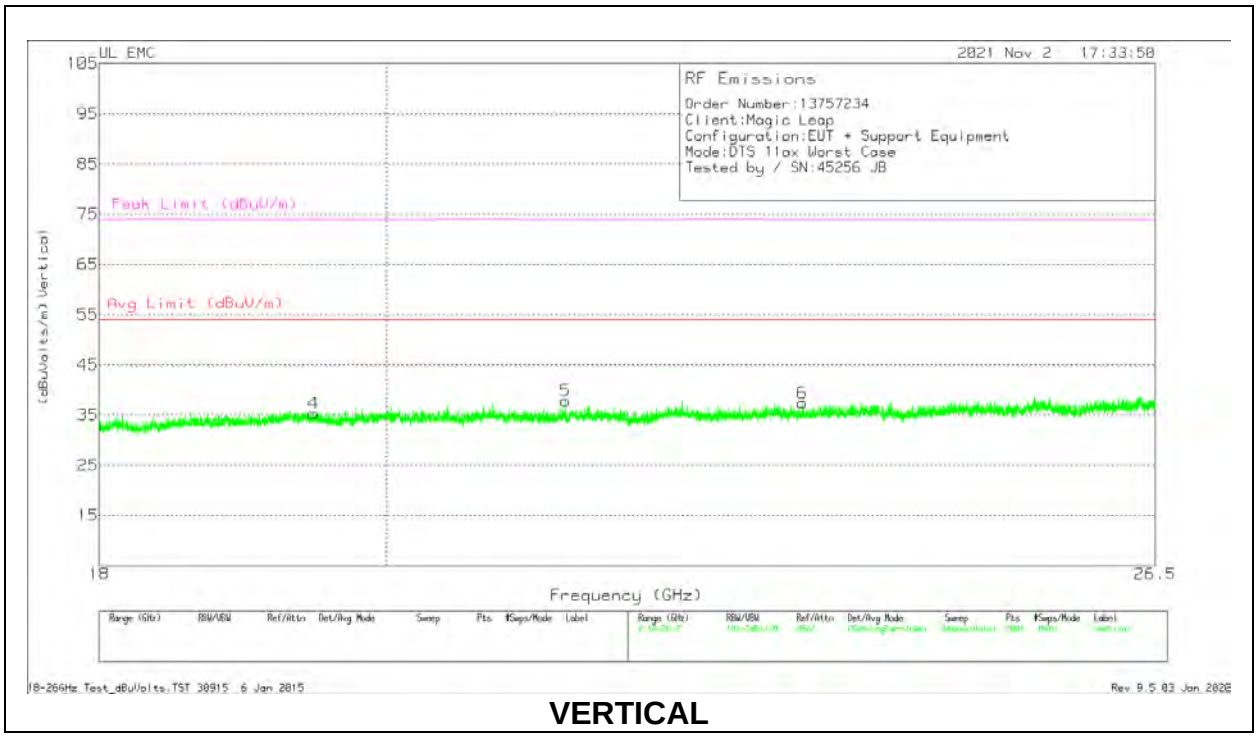
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF 174373 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	38.4172	38.77	Pk	20.5	-31.3	27.97	40	-12.03	0-360	399	H
2	97.1088	56.52	Pk	15.2	-30.7	41.02	43.52	-2.5	85	173	H
	97.1088	52.75	Qp	15.2	-30.7	37.25	43.52	-6.27	85	173	H
3	35.2015	44.21	Pk	23	-31.3	35.91	40	-4.09	342	100	V
	35.2015	41.42	Qp	23	-31.3	33.12	40	-6.88	342	100	V
4	98.2727	43.17	Pk	15.6	-30.7	28.07	43.52	-15.45	0-360	100	V
5	411.7275	35.14	Pk	21.9	-28.9	28.14	46.02	-17.88	0-360	100	H
6	371.4223	36.6	Pk	20.7	-29	28.3	46.02	-17.72	0-360	101	V

Pk - Peak detector
Qp - Quasi-Peak detector

10.4. Worst Case 18-26 GHz



HORIZONTAL



VERTICAL

18 - 26 GHz Data

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF 81139 (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	19.1475	67.9	Pk	33.4	-57.6	-9.5	34.2	54	-19.8	74	-39.8
2	21.07889	67.81	Pk	33.8	-57	-9.5	35.11	54	-18.89	74	-38.89
3	22.95928	68.7	Pk	34	-57.7	-9.5	35.5	54	-18.5	74	-38.5
4	19.47144	68.76	Pk	33.3	-57.2	-9.5	35.36	54	-18.64	74	-38.64
5	21.35183	70.82	Pk	33.8	-57.3	-9.5	37.82	54	-16.18	74	-36.18
6	23.28889	69.62	Pk	34.4	-57.1	-9.5	37.42	54	-16.58	74	-36.58

Pk - Peak detector

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11. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

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

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

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

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

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

RESULTS

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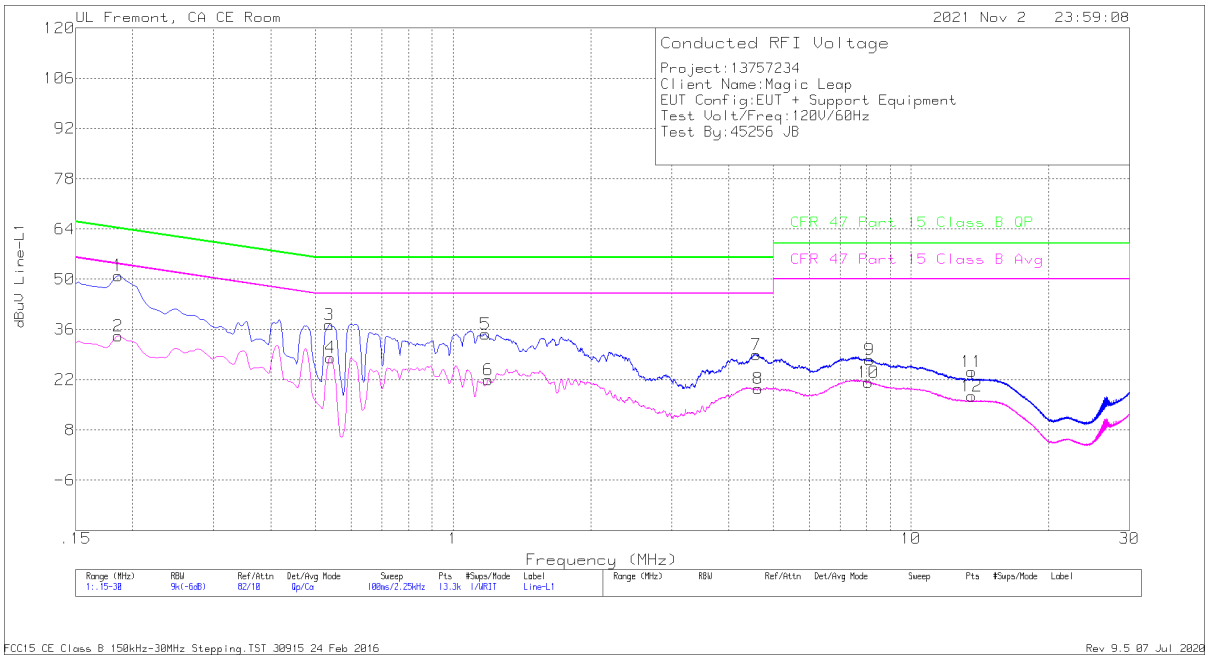
11.1. AC Power Line Norm

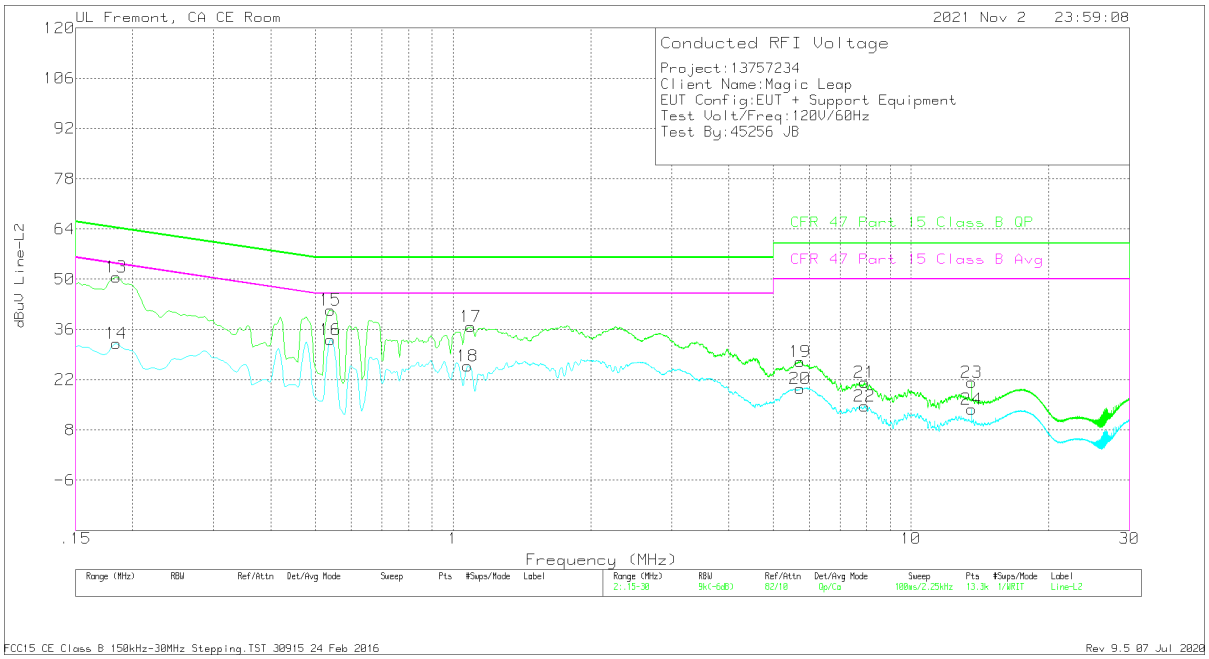
LINE 1



Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE018644 6 L1	C1&C3 cable calibration factor	TekBox Limiter TBFL1 Model 207	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR)Margin (dB)
2	.186	24.81	Ca	0	0	9.4	34.21	-	-	54.21	-20
4	.53925	18.88	Ca	0	0	9.3	28.18	-	-	46	-17.82
6	1.194	12.57	Ca	0	.1	9.3	21.97	-	-	46	-24.03
8	4.632	10.09	Ca	0	.1	9.3	19.49	-	-	46	-26.51
10	8.08125	11.85	Ca	0	.2	9.3	21.35	-	-	50	-28.65
12	13.56	7.93	Ca	.1	.2	9.3	17.53	-	-	50	-32.47
1	.186	41.64	Qp	0	0	9.4	51.04	64.21	-13.17	-	-
3	.537	27.97	Qp	0	0	9.3	37.27	56	-18.73	-	-
5	1.17713	25.28	Qp	0	.1	9.3	34.68	56	-21.32	-	-
7	4.59825	19.64	Qp	0	.1	9.3	29.04	56	-26.96	-	-
9	8.1105	18.01	Qp	0	.2	9.3	27.51	60	-32.49	-	-
11	13.56	14.62	Qp	.1	.2	9.3	24.22	60	-35.78	-	-

Qp - Quasi-Peak detector
Ca - CISPR average detection

LINE 2



Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE018644 6 L2	C2&C3 cable	TekBox Limiter TBFL1 Model 207	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR)Margin (dB)
14	.18375	22.63	Ca	0	0	9.4	32.03	-	-	54.31	-22.28
16	.54038	23.83	Ca	0	0	9.3	33.13	-	-	46	-12.87
18	1.077	16.47	Ca	0	.1	9.3	25.87	-	-	46	-20.13
20	5.73	10.13	Ca	0	.1	9.3	19.53	-	-	50	-30.47
22	7.92825	5.25	Ca	0	.1	9.3	14.65	-	-	50	-35.35
24	13.56	4.24	Ca	.1	.2	9.3	13.84	-	-	50	-36.16
13	.18375	41.14	Qp	0	0	9.4	50.54	64.31	-13.77	-	-
15	.53925	32.14	Qp	0	0	9.3	41.44	56	-14.56	-	-
17	1.09275	27.34	Qp	0	.1	9.3	36.74	56	-19.26	-	-
19	5.73	17.64	Qp	0	.1	9.3	27.04	60	-32.96	-	-
21	7.92825	11.88	Qp	0	.1	9.3	21.28	60	-38.72	-	-
23	13.56	11.66	Qp	.1	.2	9.3	21.26	60	-38.74	-	-

Qp - Quasi-Peak detector
Ca - CISPR average detection

12. SETUP PHOTOS

Please refer to UL Verification Services Report number 13757234-EP2V1.

END OF TEST REPORT

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