

# **TEST REPORT**

**Report Number:** 14523744-E5V4

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

**Model :** A3101 (Full Test Model)  
A3102, A3104 (Variant Models)

**Brand :** APPLE

**FCC ID :** BCG-E8436A (Full Test Model)  
BCG-E8437A, BCG-E8438A (Variant Models)

**IC :** 579C-E8436A (Full Test Model)  
579C-E8437A, 579C-E8438A (Variant Models)

**EUT Description :** SMARTPHONE

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

**Date Of Issue:**  
August 18, 2023

**Prepared by:**  
UL Verification Services Inc.  
47173 Benicia Street  
Fremont, CA 94538 U.S.A.  
TEL: (510) 319-4000  
FAX: (510) 661-0888



---

**REPORT REVISION HISTORY**

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V1	8/3/2023	Initial	Francisco Guarnero
V2	8/8/2023	Address TCB questions on page 9, 62-66, 74-77	Chin Pang
V3	8/15/2023	Removed protocol references	Francisco Guarnero
V4	8/18/2023	Removed additional protocol references	Francisco Guarnero

---

**TABLE OF CONTENTS**

<b>1. ATTESTATION OF TEST RESULTS .....</b>	<b>5</b>
<b>2. TEST SUMMARY .....</b>	<b>7</b>
<b>3. TEST METHODOLOGY .....</b>	<b>7</b>
<b>4. FACILITIES AND ACCREDITATION .....</b>	<b>7</b>
<b>5. DECISION RULES AND MEASUREMENT UNCERTAINTY .....</b>	<b>8</b>
5.1. <i>METROLOGICAL TRACEABILITY .....</i>	<i>8</i>
5.2. <i>DECISION RULES.....</i>	<i>8</i>
5.3. <i>MEASUREMENT UNCERTAINTY.....</i>	<i>8</i>
5.4. <i>SAMPLE CALCULATION .....</i>	<i>9</i>
<b>6. EQUIPMENT UNDER TEST .....</b>	<b>10</b>
6.1. <i>EUT DESCRIPTION .....</i>	<i>10</i>
6.2. <i>MAXIMUM OUTPUT POWER.....</i>	<i>10</i>
6.3. <i>DESCRIPTION OF AVAILABLE ANTENNAS .....</i>	<i>10</i>
6.4. <i>SOFTWARE AND FIRMWARE.....</i>	<i>11</i>
6.5. <i>WORST-CASE CONFIGURATION AND MODE.....</i>	<i>11</i>
6.6. <i>DESCRIPTION OF TEST SETUP.....</i>	<i>12</i>
<b>7. MEASUREMENT METHOD.....</b>	<b>16</b>
<b>8. TEST AND MEASUREMENT EQUIPMENT .....</b>	<b>17</b>
<b>9. ANTENNA PORT TEST RESULTS .....</b>	<b>19</b>
9.1. <i>ON TIME AND DUTY CYCLE.....</i>	<i>19</i>
9.2. <i>99% BANDWIDTH.....</i>	<i>20</i>
9.2.1. <i>HIGH POWER .....</i>	<i>21</i>
9.3. <i>6 dB BANDWIDTH.....</i>	<i>22</i>
9.3.1. <i>HIGH POWER .....</i>	<i>23</i>
9.4. <i>OUTPUT POWER.....</i>	<i>24</i>
9.4.1. <i>HIGH POWER .....</i>	<i>25</i>
9.4.2. <i>LOW POWER .....</i>	<i>26</i>
9.5. <i>AVERAGE POWER.....</i>	<i>27</i>
9.5.1. <i>HIGH POWER .....</i>	<i>28</i>
9.5.2. <i>LOW POWER .....</i>	<i>29</i>
9.6. <i>POWER SPECTRAL DENSITY.....</i>	<i>30</i>
9.6.1. <i>HIGH POWER .....</i>	<i>31</i>
9.7. <i>CONDUCTED SPURIOUS EMISSIONS.....</i>	<i>32</i>

9.7.1. HIGH POWER .....33

9.7.2. LOW POWER.....35

**10. RADIATED TEST RESULTS .....37**

10.1. LIMITS AND PROCEDURE.....37

10.2. TRANSMITTER ABOVE 1 GHz.....39

10.2.1. 802.15.4 HIGH POWER.....39

10.2.2. 802.15.4 LOW POWER.....59

10.3. WORST CASE BELOW 1 GHz .....79

10.4. WORST CASE 18-26 GHz .....81

**11. AC POWER LINE CONDUCTED EMISSIONS .....83**

11.1.1. AC POWER LINE WITH LAPTOP .....84

11.1.2. AC POWER LINE WITH AC/DC ADAPTER .....86

**12. SETUP PHOTOS .....88**

## 1. ATTESTATION OF TEST RESULTS

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

**EUT DESCRIPTION:** SMARTPHONE

**MODEL:** A3101 (Full Test Model)  
A3102, A3104 (Variant Models)

**BRAND:** APPLE

**SERIAL NUMBER:** C07GT40004U00006GU (Conducted)  
CLX2X4640, CY2KJ6YF12 (Radiated)

**SAMPLE RECEIPT DATE:** JANUARY 23, 2023

**DATE TESTED:** MARCH 23, 2023 – AUGUST 8, 2023

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.

Approved & Released For  
UL Verification Services Inc. By:



---

Chin Pang  
Senior Lab Engineer  
Consumer Technology Division  
UL Verification Services Inc.

Prepared By:



---

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

## 2. TEST SUMMARY

FCC Clause	ISED Clause	Requirement	Result	Comment
See Comment		Duty Cycle	Reporting purposes only	ANSI C63.10 Section 11.6.
-	RSS-GEN 6.7	99% OBW	Reporting purposes only	ANSI C63.10 Section 6.9.3.
15.247 (a) (2)	RSS-247 5.2 (a)	6dB BW	Complies	None.
15.247 (b) (3)	RSS-247 5.4 (d)	Output Power	Complies	None.
See Comment		Average power	Reporting purposes only	Per ANSI C63.10, Section 11.9.2.3.2.
15.247 (e)	RSS-247 5.2 (b)	PSD	Complies	None.
15.247 (d)	RSS-247 5.5	Conducted Spurious Emissions	Complies	None.
15.209, 15.205	RSS-GEN 8.9, 8.10	Radiated Emissions	Complies	None.
15.207	RSS-Gen 8.8	AC Mains Conducted Emissions	Complies	None.

## 3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with the following standards/ rules/ KDBs:

FCC CFR 47 Part 2  
 FCC CFR 47 Part 15  
 ANSI C63.10-2013  
 KDB 558074 D01 15.247 Meas Guidance v05r02  
 KDB 414788 D01 Radiated Test Site v01r01  
 KDB 662911 D01 Multiple Transmitter Output v02r01  
 RSS-GEN Issue 5 + A1:2019 + A2:2021  
 RSS-247 Issue 2.

## 4. FACILITIES AND ACCREDITATION

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

	Address	ISED CABID	ISED Company Number	FCC Registration
<input type="checkbox"/>	Building 1: 47173 Benicia Street, Fremont, CA 94538, USA	US0104	2324A	550739
<input type="checkbox"/>	Building 2: 47266 Benicia Street, Fremont, CA 94538, USA			
<input type="checkbox"/>	Building 3: 843 Auburn Court, Fremont, CA 94538 USA			
<input checked="" type="checkbox"/>	Building 4: 47658 Kato Rd, Fremont, CA 94538 USA			
<input checked="" type="checkbox"/>	Building 5: 47670 Kato Rd, Fremont, CA 94538 USA			

## 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	$U_{Lab}$
Conducted Antenna Port Emission Measurement	1.940 dB
Power Spectral Density	2.466 dB
Time Domain Measurements Using SA	3.39 %
RF Power Measurement Direct Method Using Power Meter	0.450 dB (Peak) 1.300 dB (Ave)
Radio Frequency (Spectrum Analyzer)	141.16 Hz
Occupied Bandwidth	1.22%
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.78 db
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.40 db
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.87 db
Worst Case Radiated Disturbance, 30 to 1000 MHz	6.01 db
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.73 db
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.51 db

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



## 5.4. SAMPLE CALCULATION

### RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:

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

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

### MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:

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

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

## 6. EQUIPMENT UNDER TEST

### 6.1. EUT DESCRIPTION

The Apple iPhone is a smartphone with multimedia functions (music, application support, and video), cellular GSM, GPRS, EGPRS, UMTS, LTE, 5G, IEEE 802.11a/b/g/n/ac/ax, Bluetooth, Ultra-Wideband, GPS, NFC, NB UNII, 802.15.4, 802.15.4ab-NB and MSS technologies. The rechargeable battery is not user accessible.

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

Full Test Model: A3101, FCC ID: BCG-E8436A, IC ID: 579C-E8436A

Variant Models: A3102; FCC ID: BCG-E8437A, IC ID: 579C-E8437A  
A3104; FCC ID: BCG-E8438A, IC ID: 579C-E8438A

### 6.2. MAXIMUM OUTPUT POWER

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

Antenna	Configuration	Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
ANT 4	High Power	2405 - 2475	802.15.4	21.93	155.96
	Low Power			11.04	12.71
ANT 3	High Power	2405 - 2475	802.15.4	21.57	143.55
	Low Power			13.49	22.34

### 6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The antenna type is IFA.

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

Cable loss is 2.1 dB.

Frequency Range (GHz)	ANT 4 (dBi)	ANT 3 (dBi)
2.4	-4.0	-1.5

#### **6.4. SOFTWARE AND FIRMWARE**

The EUT firmware installed during testing was 21.1.304.2213

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

The EUT was investigated in three orthogonal orientations X, Y, and Z on ANT 4, ANT 3. It was determined that Y (Landscape) was the worst-case orientation for both ANT 4 and ANT3.

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

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

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

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

Note: In the Radiated Plots and emissions data, ANT0=ANT4 and ANT1=ANT3.

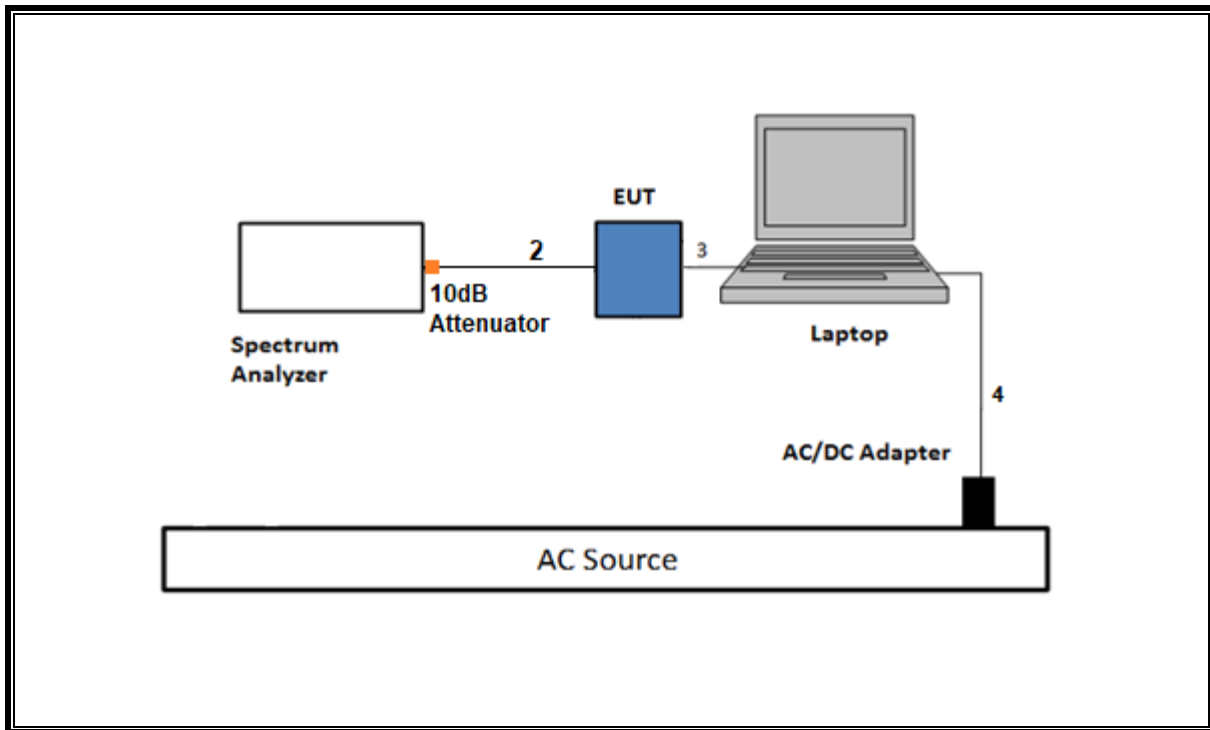
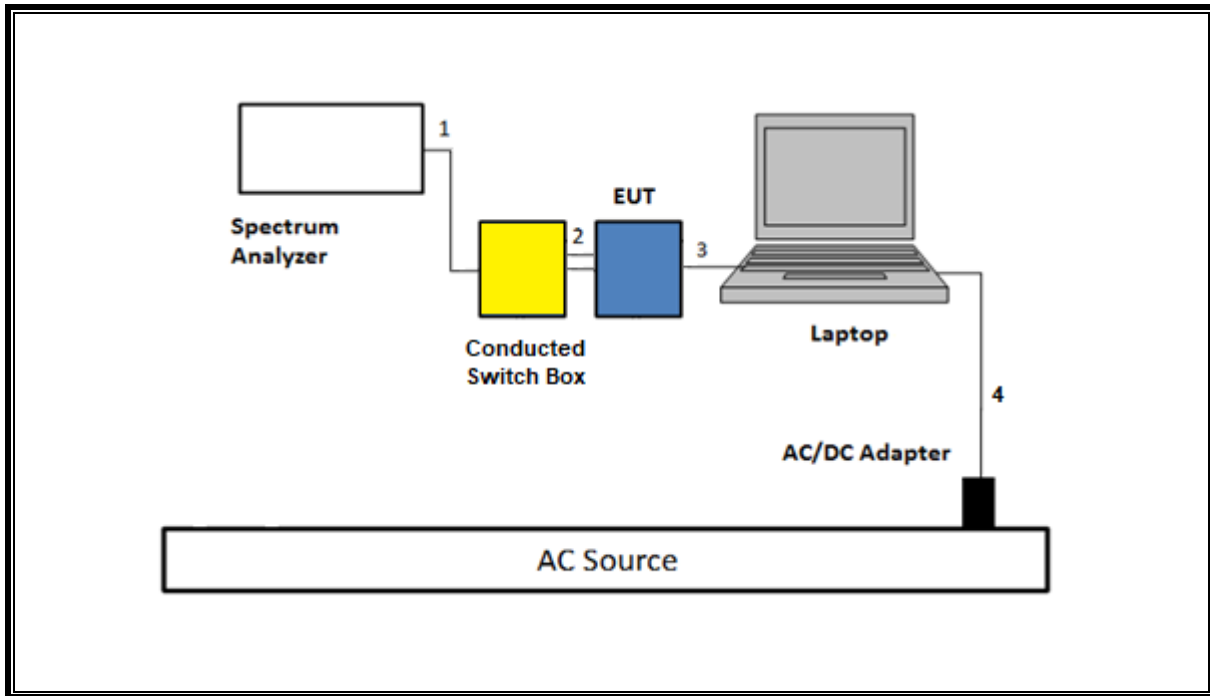
## 6.6. DESCRIPTION OF TEST SETUP

SUPPORT TEST EQUIPMENT						
Description	Manufacturer	Model	Serial Number	FCC ID/ DoC		
Laptop	Apple	Macbook Pro	C02VD7SAHV22	BCGA1708		
Laptop AC/DC adapter	Liteon Technology	A1424	NSW25679	DoC		
EUT AC/DC adapter	Apple	A1720	C3D8417A7R93KVPA8	DoC		
Conducted Switch Box	UL	n/a	208281	N/A		
10dB Fixed Attenuator, 2 Watts Up to 26.5 GHz	Pasternack Enterprises	PE7024-10	236358	N/A		
I/O CABLES (RF CONDUCTED TEST)						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	SMA	1	SMA	Shielded	0.75	To spectrum Analyzer
2	Antenna	2	SMA	Un-shielded	0.2	To Conducted Switch Box
3	USB-C	1	USB-C	Shielded	1.0	N/A
4	AC	1	AC	Un-shielded	2	N/A
I/O CABLES (RF RADIATED AND AC LINE CONDUCTED TEST)						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	AC	Un-shielded	2	N/A
2	USB	1	USB	Shielded	1	N/A

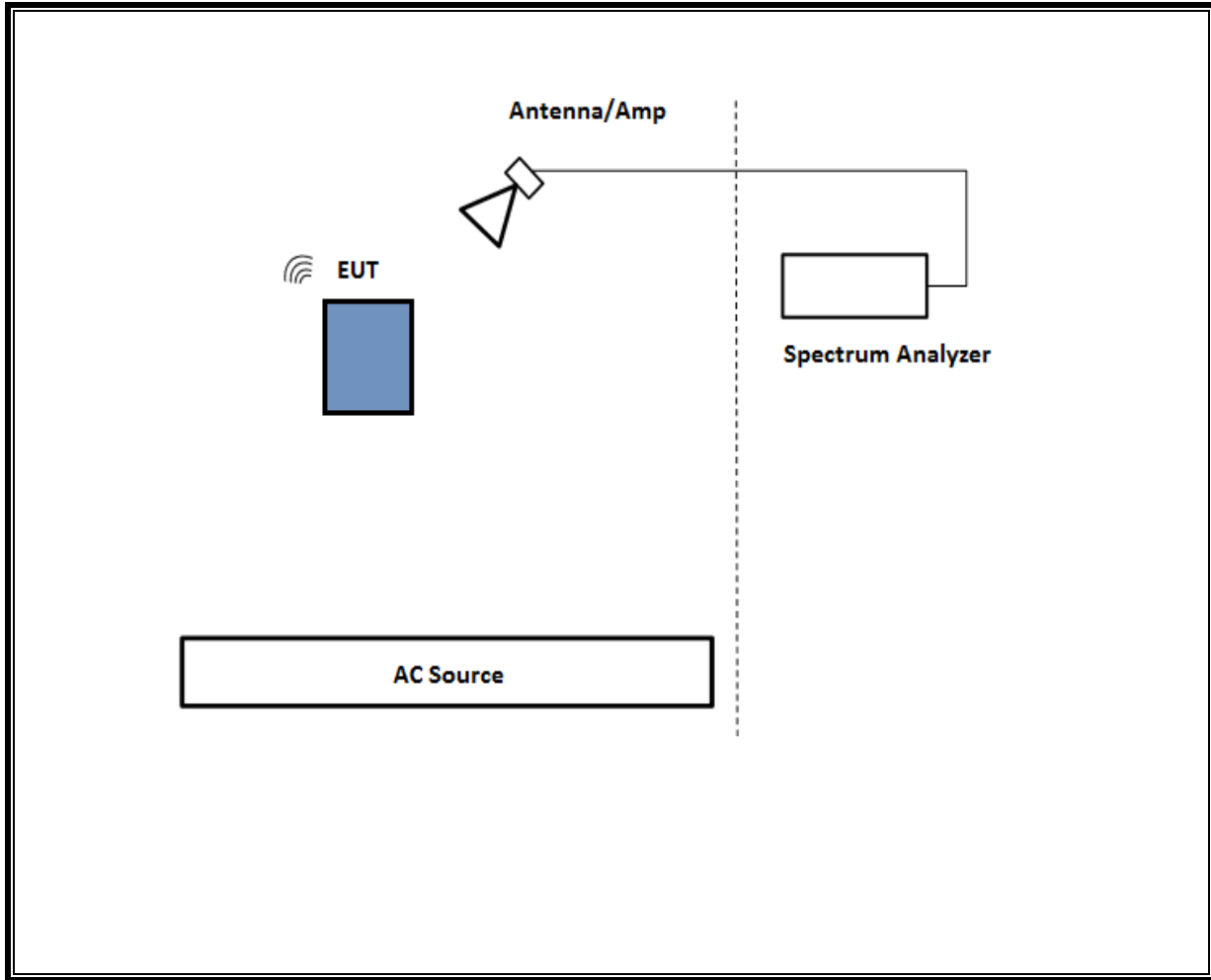
### TEST SETUP

The EUT setup is shown as below. Test software exercised the radio card.

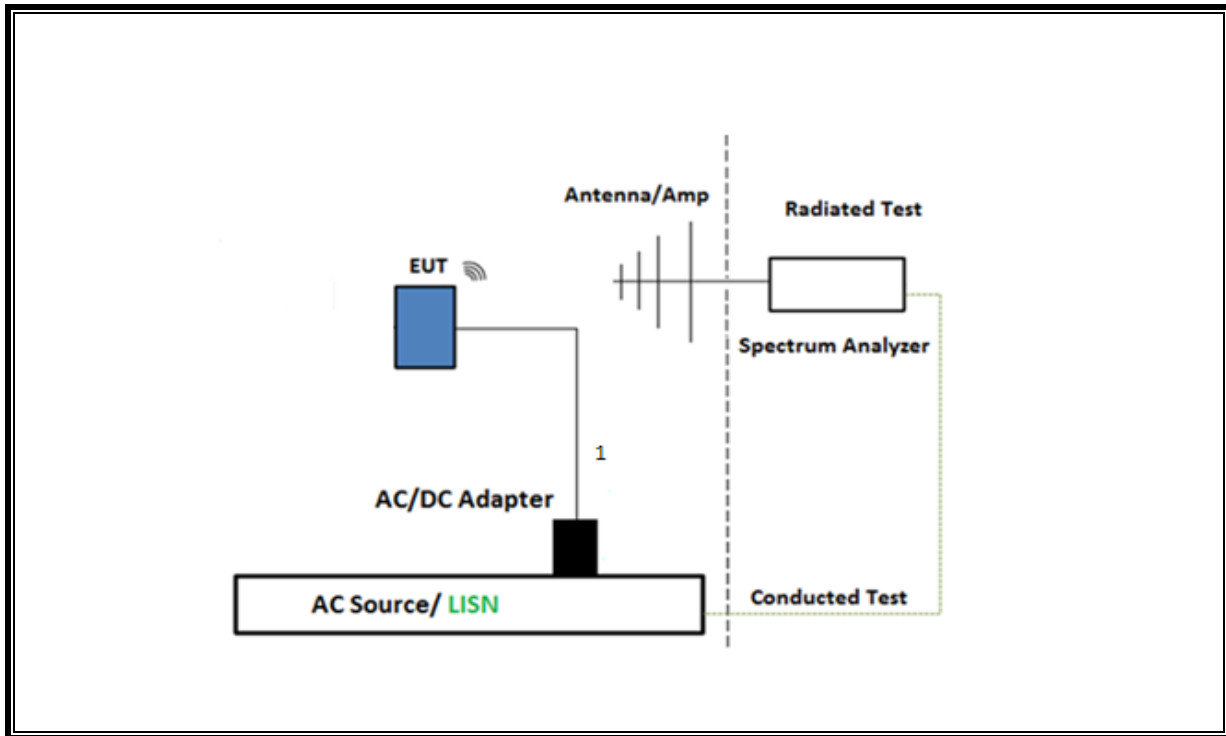
**SETUP DIAGRAM FOR CONDUCTED TESTS**



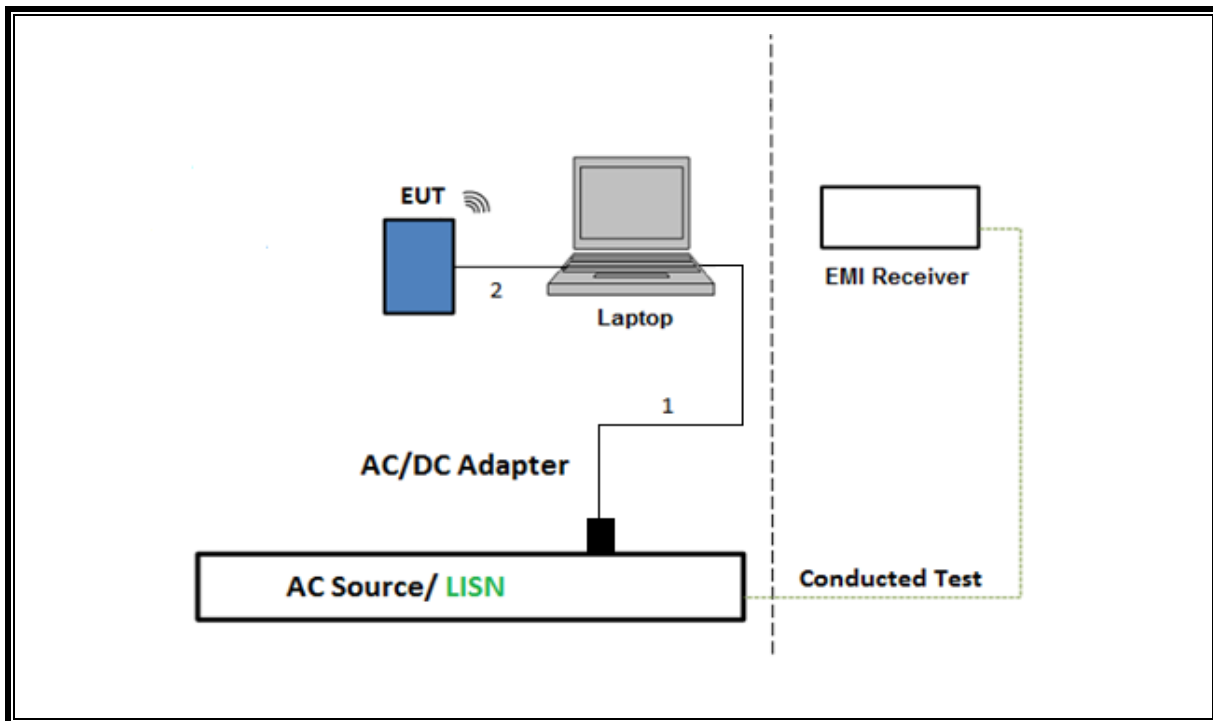
**SETUP DIAGRAM FOR RADIATED TESTS Above 1 GHz**



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



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



## 7. MEASUREMENT METHOD

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

6 dB BW: ANSI C63.10 Subclause 11.8.1

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

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

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

PSD: ANSI C63.10 Subclause 1.10.2  
Method PKPSD (peak PSD)

Radiated emissions restricted frequency bands:  
ANSI C63.10 Subclause 1.12.1 & Clause 13

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

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

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

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

Radiated emissions non-restricted frequency bands ANSI C63.10 Subclause 1.11 & Clause 13

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



## 8. TEST AND MEASUREMENT EQUIPMENT

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

Description	Manufacturer	Model	ID Num	Cal Due	Last Cal
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	226673	01/09/2024	01/09/2023
RF Filter Box, 1-18GHz, 17 Ports	UL-FR1	RATS 2	226781	04/30/2024	04/30/2023
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	169935	02/29/2024	02/29/2023
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	80707	05/31/2024	05/30/2023
RF Filter Box, 1-18GHz, 17 Ports	UL-FR1	RATS 2	225079	10/31/2023	10/31/2022
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	223459	02/29/2024	02/29/2023
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences Corp.	JB3	80714	10/06/2023	10/06/2022
Amplifier, 9KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310	170648	03/03/2024	03/03/2023
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	201497	02/29/2024	02/29/2023
*Antenna, Passive Loop 30Hz to 1MHz	Electro-Metrics	EM-6871	170013	07/28/2023	07/28/2022
*Antenna, Passive Loop 100KHz - 30MHz	ELECTRO-METRICS	EM-6872	170015	07/28/2023	07/28/2022
Antenna, Horn 18 to 26.5GHz	A.R.A.	MWH-1826/B	199658	12/06/2023	12/06/2022
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	201499	02/29/2024	02/29/2023
Power Meter, P-series single channel	Keysight Technologies Inc	N1911A	90756	01/31/2024	01/31/2023
Power Sensor, P - series, 50MHz to 18GHz, Wideband	Keysight Technologies Inc	N1921A	90389	01/31/2024	01/31/2023
*Conducted Switch Box	N/A	CSB	221008	06/21/2023	06/21/2022
10dB Fixed Attenuator, 2 Watts Up to 26.5 GHz	Pasternack Enterprises	PE7024-10	236358	Verified/Characterized before use	
10dB Fixed Attenuator, 2 Watts Up to 26.5 GHz	Pasternack Enterprises	PE7024-10	236355	Verified/Characterized before use	
Spectrum Analyzer, PSA, 3Hz to 26.5GHz	Keysight Technologies Inc	E4440A	81311	02/29/2024	02/29/2023
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight Technologies Inc	N9030A	80397	02/28/2024	02/28/2023
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight Technologies Inc	N9030A	85214	02/28/2024	02/28/2023
Antenna, Horn 1-18GHz	ETS Lindgren	3117	222740	08/31/2023	08/31/2022
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	170063	02/29/2024	02/29/2023
Filter Box, 1-18GHz 12 Port	UL-FR1	Frankenstein	217255	08/23/2023	08/23/2022
Antenna, Horn 1-18GHz	ETS Lindgren	3117	226672	01/09/2024	01/09/2023
RF Filter Box, 1-18GHz, 12 Port	UL-FR1	Frankenstein	216812	09/17/2023	09/17/2022
EMI Receiver	Rohde & Schwarz	ESW44	201502	02/29/2024	02/29/2023

Description	Manufacturer	Model	ID Num	Cal Due	Last Cal
Antenna, Horn 1-18GHz	ETS Lindgren	3117	230300	01/12/2024	01/12/2023
RF Filter Box, 1-18GHz, 12 Port.	UL-FR1	Frankenstein	231874	04/19/2024	04/19/2023
EMI Test Receiver	Rohde & Schwarz	ESW44	191429	02/29/2024	02/29/2023

AC Line Conducted					
Description	Manufacturer	Model	ID Num	Cal Due	Last Cal
EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESR	93091	02/29/2024	02/29/2023
LISN for Conducted Emissions CISPR-16	FISCHER CUSTOM COMMUNICATIONS	FCC-LISN-50/250-25-2-01-480V	175764	01/31/2024	01/31/2023
*Transient Limiter	TE	TBFL1	207996	07/15/2023	07/15/2022
UL AUTOMATION SOFTWARE					
Radiated Software	UL	UL EMC	Ver 9.5, May 1 , 2023		
Conducted Software	UL	UL EMC	2020.8.16		
AC Line Conducted Software	UL	UL EMC	Ver 9.5, Mar 3, 2023		

\*Testing was completed before equipment calibration date

## 9. ANTENNA PORT TEST RESULTS

### 9.1. ON TIME AND DUTY CYCLE

#### LIMITS

None; for reporting purposes only.

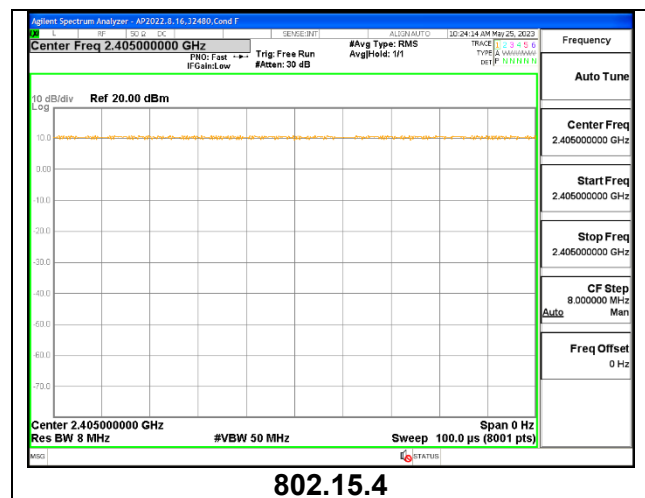
#### PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method.

#### ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
<b>2.4GHz Band</b>						
802.15.4, 2405MHz	100.00	100.00	1.000	100.00%	0.00	0.010

#### DUTY CYCLE PLOTS



## **9.2. 99% BANDWIDTH**

### **LIMITS**

None; for reporting purposes only.

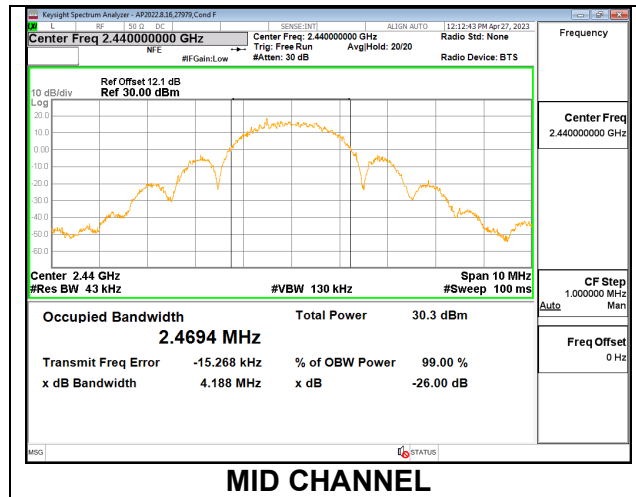
### **RESULTS**

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

9.2.1. HIGH POWER

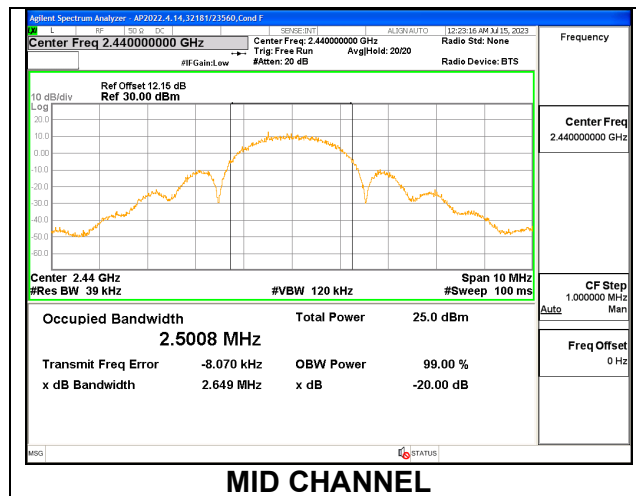
ANT 4

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2405	2.5067
Middle	2440	2.4694
High	2475	2.4959



ANT 3

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2405	2.5244
Middle	2440	2.5008
High	2475	2.5045



### **9.3. 6 dB BANDWIDTH**

#### **LIMITS**

FCC §15.407 (e)

RSS-247 5.2 (a)

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

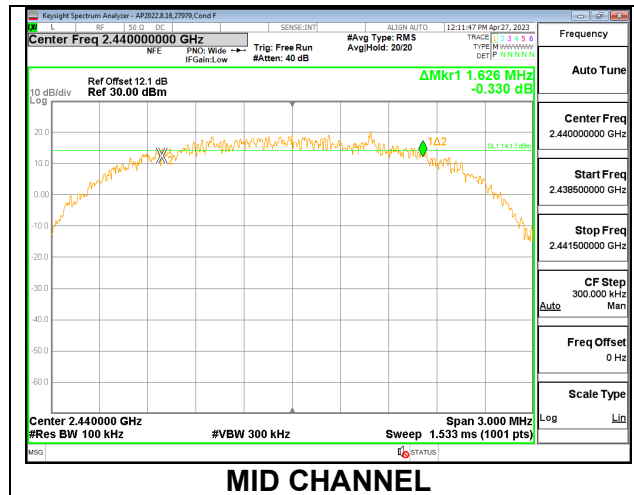
#### **RESULTS**

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

9.3.1. HIGH POWER

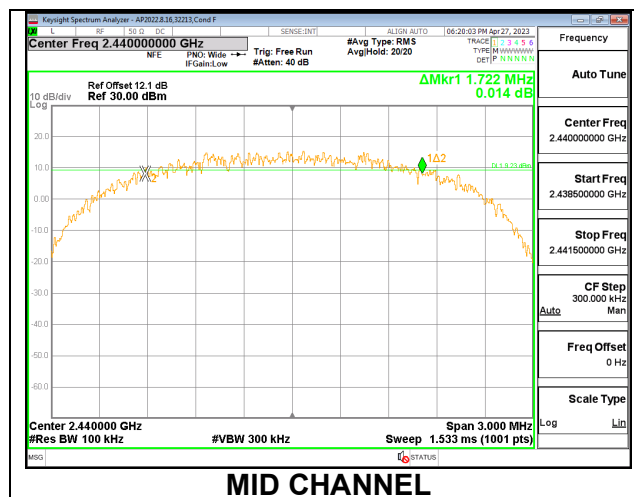
**ANT 4**

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2405	1.670	0.5
Middle	2440	1.626	0.5
High	2475	1.460	0.5



**ANT 3**

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2405	1.590	0.5
Middle	2440	1.722	0.5
High	2475	1.560	0.5



## **9.4. OUTPUT POWER**

### **LIMITS**

FCC §15.247 (b) (3)

RSS-247 5.4 (d)

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

### **TEST PROCEDURE**

Measurements perform using a wideband RF power meter.

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

### **DIRECTIONAL ANTENNA GAIN**

For 1 TX:

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

### **RESULTS**



9.4.1. **HIGH POWER****ANT 4**

<b>Tested By:</b>	32181 / 23560
<b>Date:</b>	7/3/2023

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2405	21.44	30	-8.56
Middle	2440	21.93	30	-8.07
High	2475	21.65	30	-8.35

**ANT 3**

<b>Tested By:</b>	32181 / 23560
<b>Date:</b>	7/3/2023

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2405	21.57	30	-8.43
Middle	2440	21.20	30	-8.80
High	2475	21.48	30	-8.52

9.4.2. **LOW POWER**

**ANT 4**

<b>Tested By:</b>	32181 / 23560
<b>Date:</b>	7/3/2023

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2405	10.62	30	-19.38
Middle	2440	11.04	30	-18.96
High	2475	10.44	30	-19.56

**ANT 3**

<b>Tested By:</b>	32181 / 23560
<b>Date:</b>	7/3/2023

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2405	13.49	30	-16.51
Middle	2440	13.27	30	-16.73
High	2475	13.18	30	-16.82

## **9.5. AVERAGE POWER**

### **LIMITS**

None; for reporting purposes only.

### **TEST PROCEDURE**

Measurements perform using a wideband RF power meter.

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

### **RESULTS**

9.5.1. **HIGH POWER**

**ANT 4**

<b>Tested By:</b>	32181 / 23560
<b>Date:</b>	7/3/2023

<b>Channel</b>	<b>Frequency (MHz)</b>	<b>AV power (dBm)</b>
Low	2405	20.80
Middle	2440	20.99
High	2475	20.90

**ANT 3**

<b>Tested By:</b>	32181 / 23560
<b>Date:</b>	7/3/2023

<b>Channel</b>	<b>Frequency (MHz)</b>	<b>AV power (dBm)</b>
Low	2405	20.70
Middle	2440	20.72
High	2475	20.81

9.5.2. **LOW POWER**

**ANT 4**

<b>Tested By:</b>	32181 / 23560
<b>Date:</b>	7/3/2023

<b>Channel</b>	<b>Frequency (MHz)</b>	<b>AV power (dBm)</b>
Low	2405	10.20
Middle	2440	10.49
High	2475	10.12

**ANT 3**

<b>Tested By:</b>	32181 / 23560
<b>Date:</b>	7/3/2023

<b>Channel</b>	<b>Frequency (MHz)</b>	<b>AV power (dBm)</b>
Low	2405	12.50
Middle	2440	12.27
High	2475	12.18

## **9.6. POWER SPECTRAL DENSITY**

### **LIMITS**

FCC §15.247 (e)

RSS-247 (5.2) (b)

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

### **RESULTS**

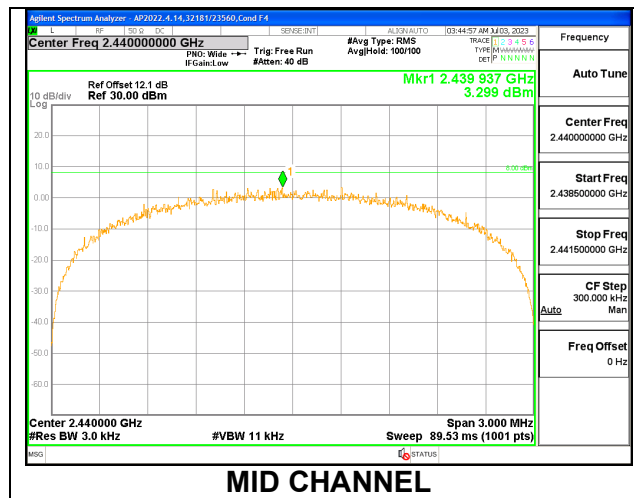
Only Mid channel plot is reported to show setting parameter complies with testing method/procedure.

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

9.6.1. HIGH POWER

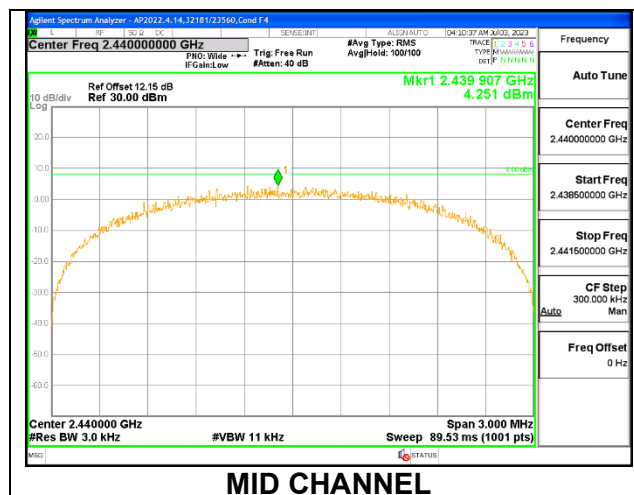
**ANT 4**

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2405	3.617	8	-4.38
Middle	2440	3.299	8	-4.70
High	2475	3.535	8	-4.47



**ANT 3**

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2405	4.378	8	-3.62
Middle	2440	4.251	8	-3.75
High	2475	5.086	8	-2.91



## 9.7. CONDUCTED SPURIOUS EMISSIONS

### LIMITS

FCC §15.247 (d)

RSS-247 5.5

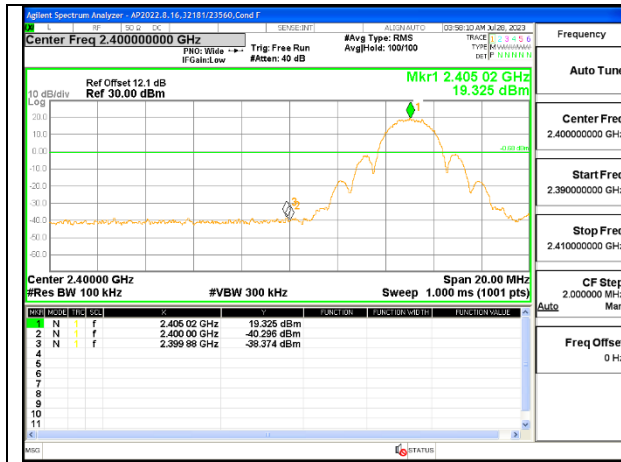
Output power was measured based on the use of a peak measurement; therefore, the required attenuation is 20 dBc.

### RESULTS

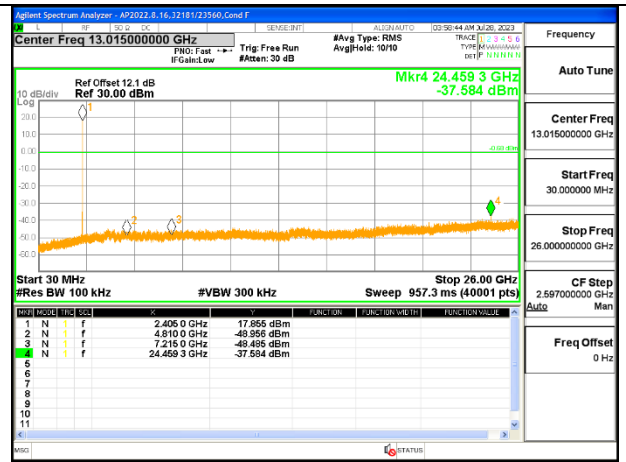


# 9.7.1. HIGH POWER

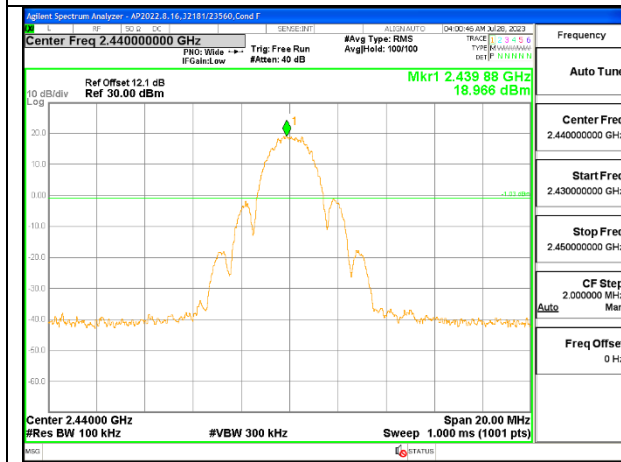
## ANT 4



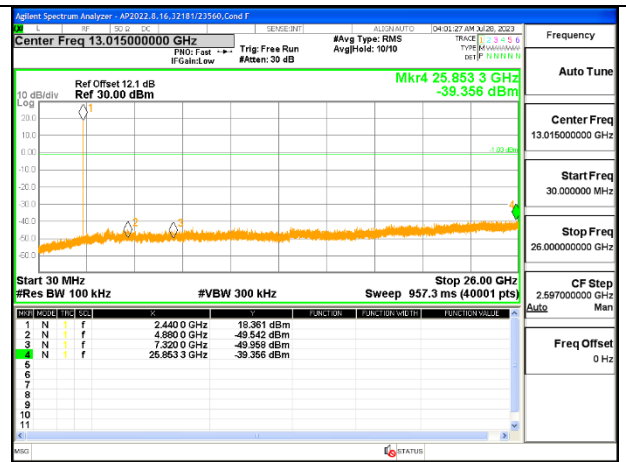
LOW CHANNEL BANDEDGE



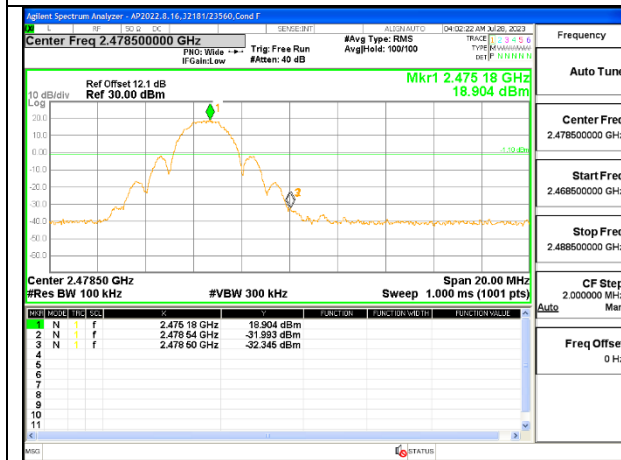
OUT-OF-BAND LOW CHANNEL



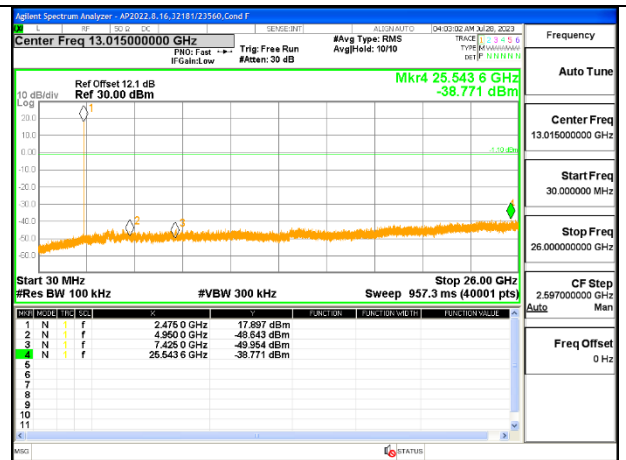
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL

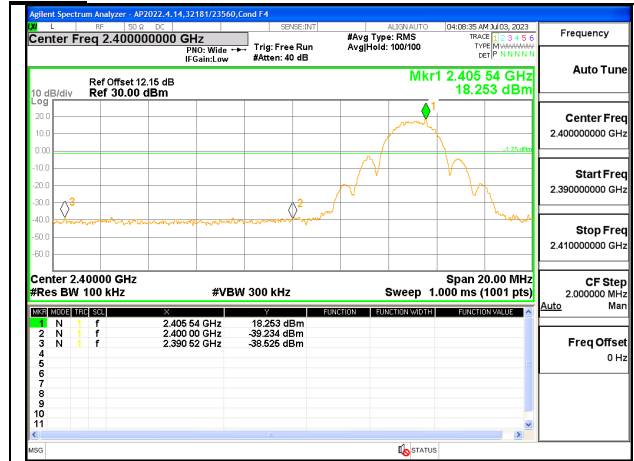


HIGH CHANNEL BANDEDGE

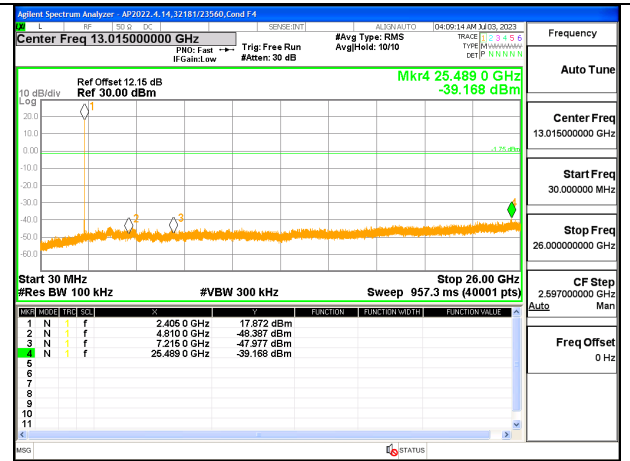


OUT-OF-BAND HIGH CHANNEL

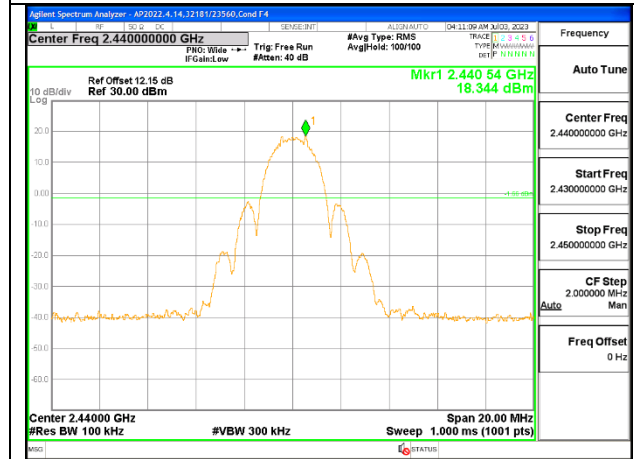
**ANT 3**



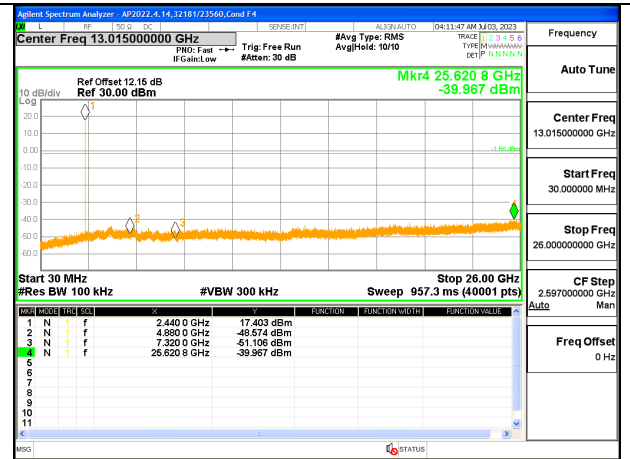
**LOW CHANNEL BANDEDGE**



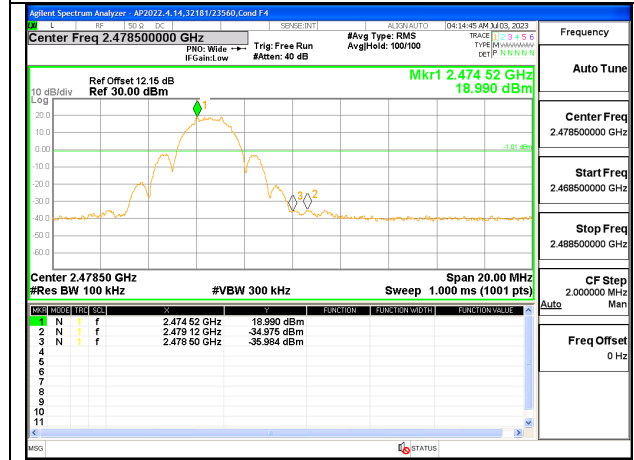
**OUT-OF-BAND LOW CHANNEL**



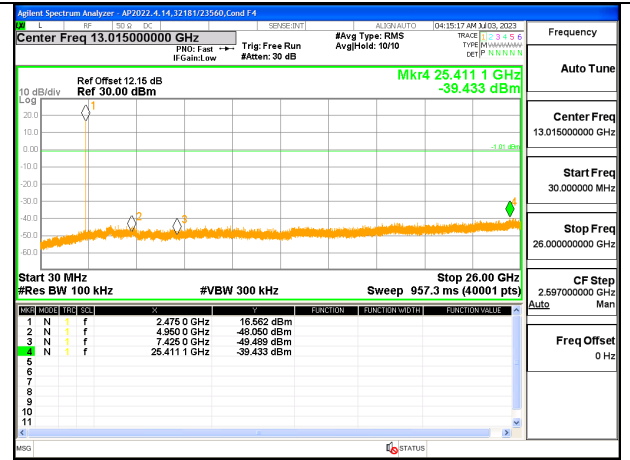
**IN-BAND REFERENCE LEVEL**



**OUT-OF-BAND MID CHANNEL**



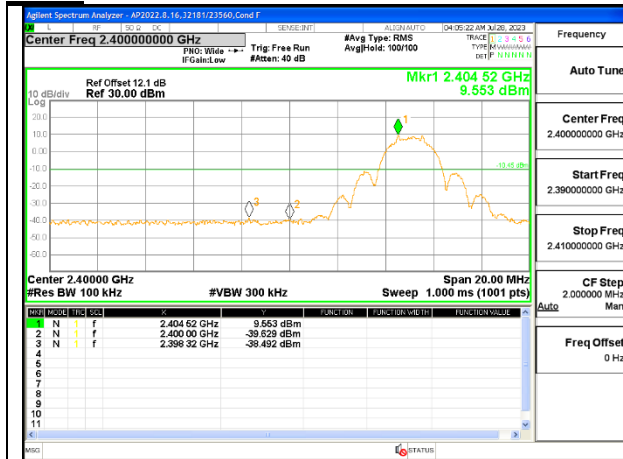
**HIGH CHANNEL BANDEDGE**



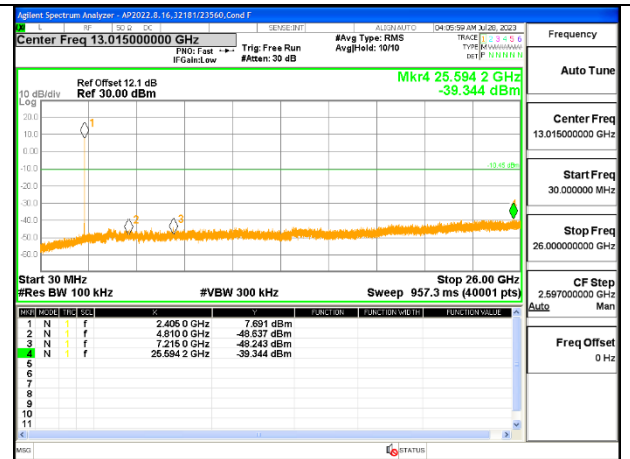
**OUT-OF-BAND HIGH CHANNEL**

### 9.7.2. LOW POWER

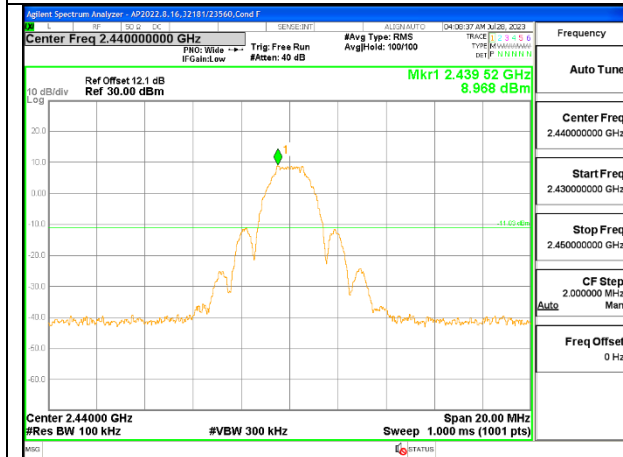
#### ANT 4



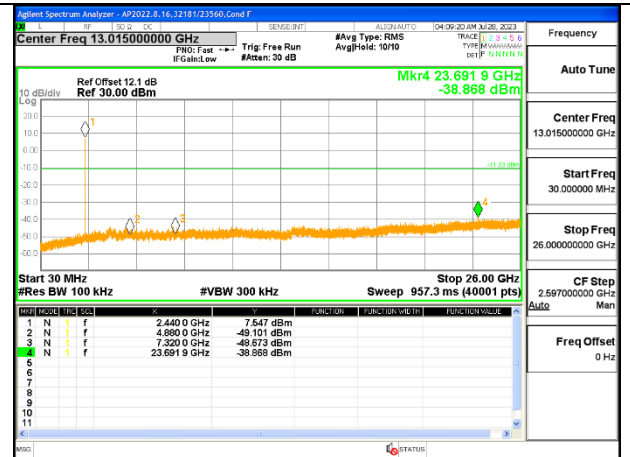
**LOW CHANNEL BANDEDGE**



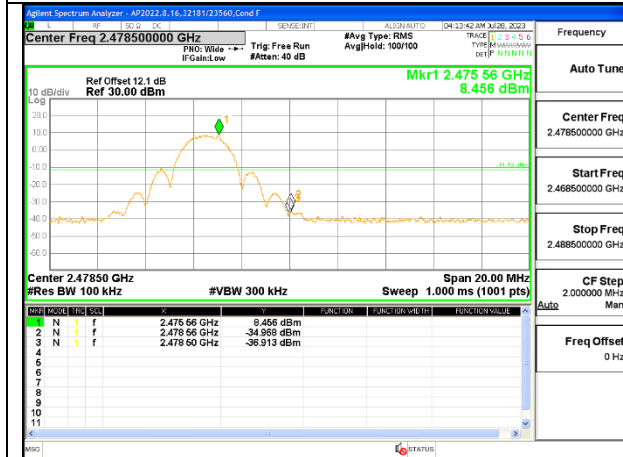
**OUT-OF-BAND LOW CHANNEL**



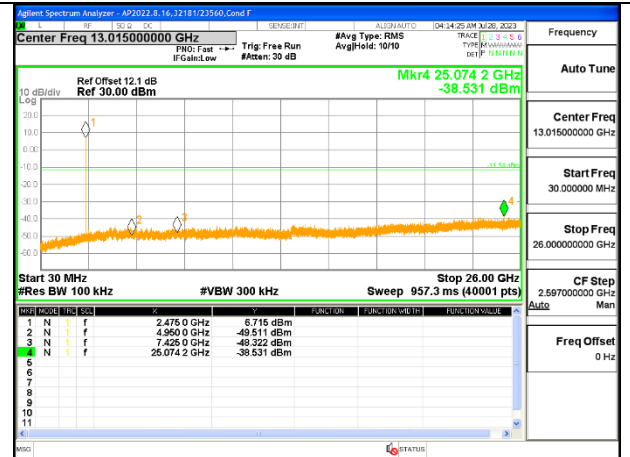
**IN-BAND REFERENCE LEVEL**



**OUT-OF-BAND MID CHANNEL**

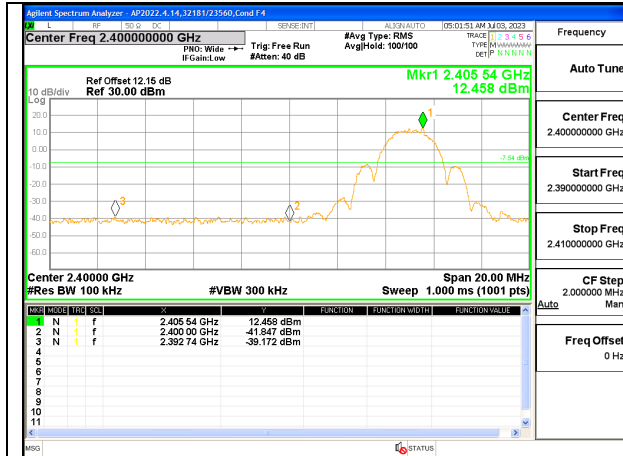


**HIGH CHANNEL BANDEDGE**

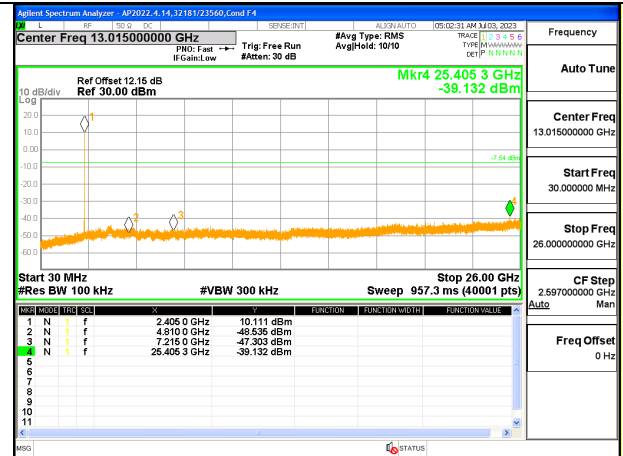


**OUT-OF-BAND HIGH CHANNEL**

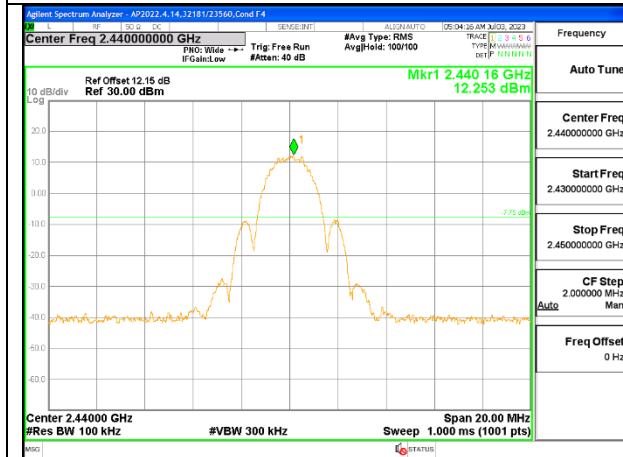
ANT 3



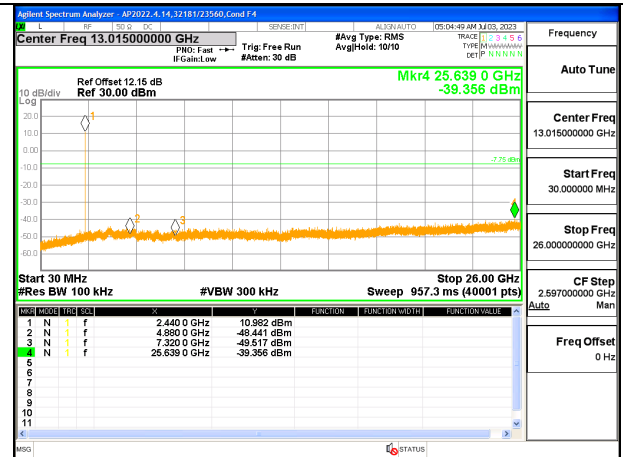
LOW CHANNEL BANDEDGE



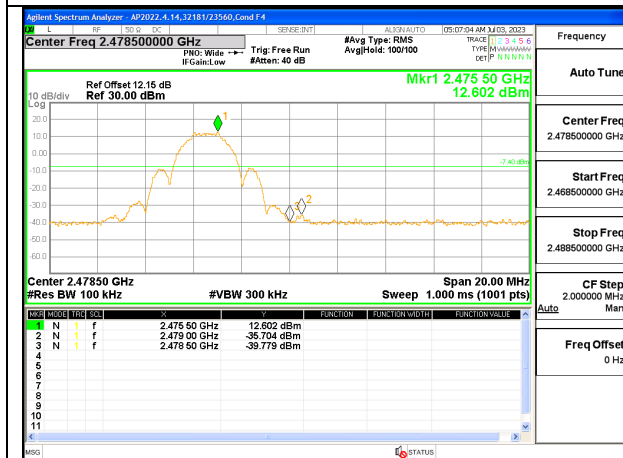
OUT-OF-BAND LOW CHANNEL



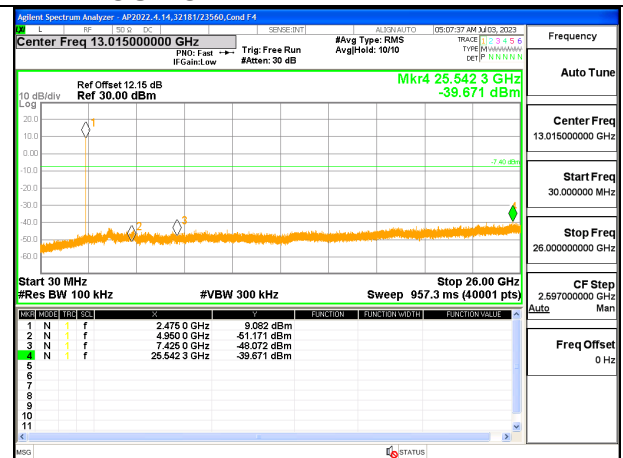
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

## 10. RADIATED TEST RESULTS

### 10.1. LIMITS AND PROCEDURE

#### LIMITS

FCC §15.205 and §15.209

RSS-GEN, Section 8.9 and 8.10.

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

#### TEST PROCEDURE

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

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

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

For final measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and as applicable for average measurements.

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

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

---

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 report in the table) using 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.

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

#### **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.

#### **KDB 558074 D01 15.247 Meas Guidance v05r02**

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

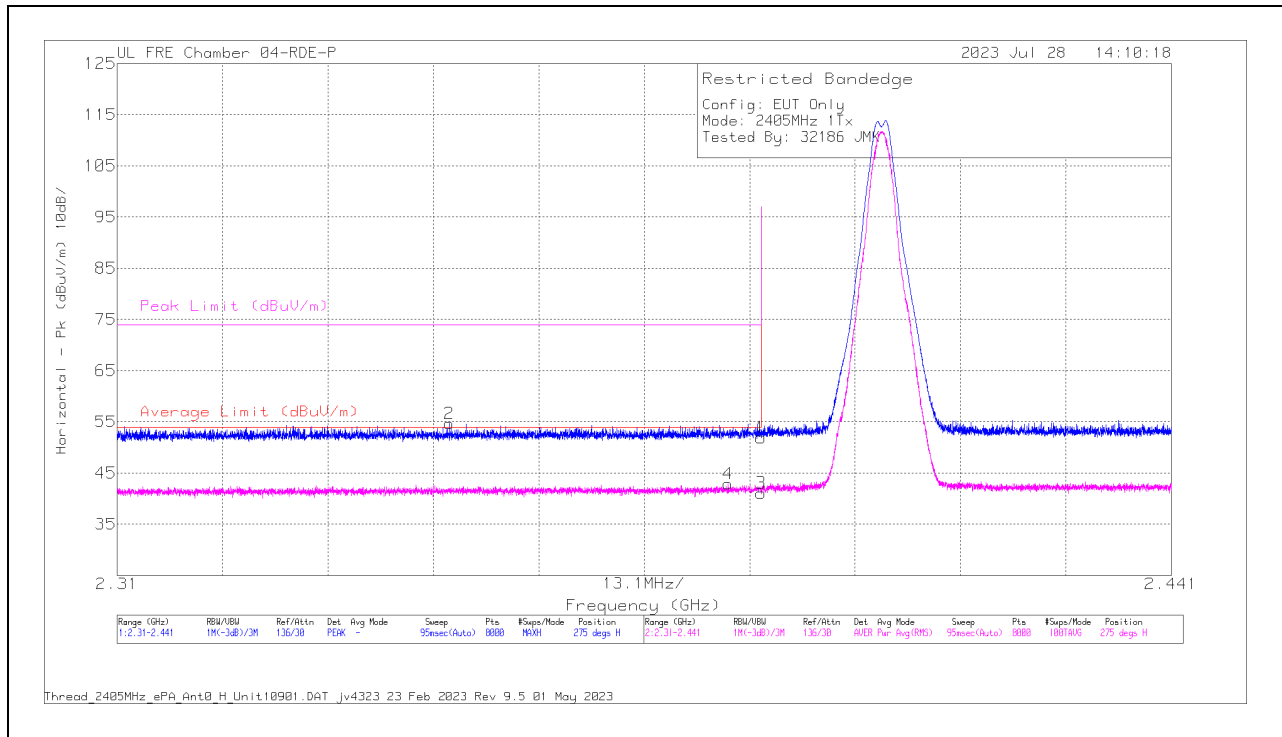
## 10.2. TRANSMITTER ABOVE 1 GHz

### 10.2.1. 802.15.4 HIGH POWER

#### ANT 4

#### BANDEDGE (LOW CHANNEL)

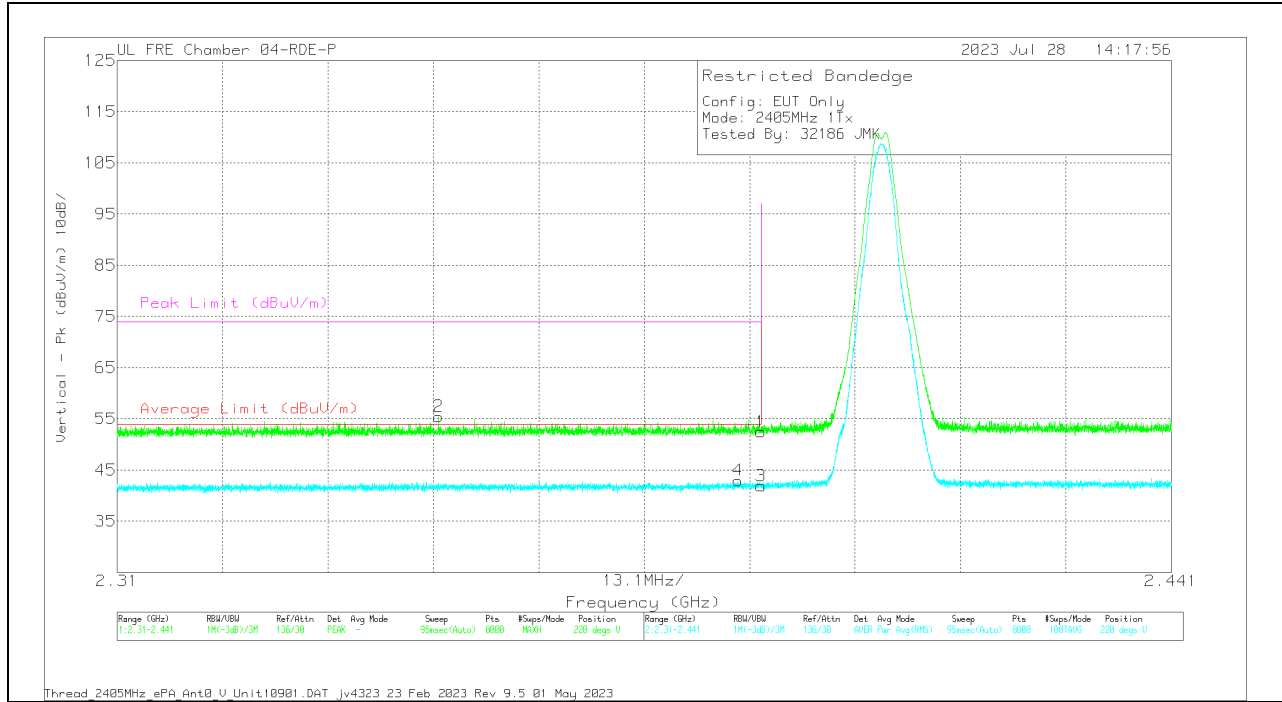
#### HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF(dB) - 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	2.351254	62.97	Pk	31.5	-39.8	54.67	-	-	74	-19.33	275	177	H
4	2.385891	50.93	RMS	31.7	-39.75	42.88	54	-11.12	-	-	275	177	H
1	2.39	60.01	Pk	31.7	-39.79	51.92	-	-	74	-22.08	275	177	H
3	2.39	49.16	RMS	31.7	-39.79	41.07	54	-12.93	-	-	275	177	H

Pk - Peak detector  
 RMS - RMS detection

### VERTICAL RESULT



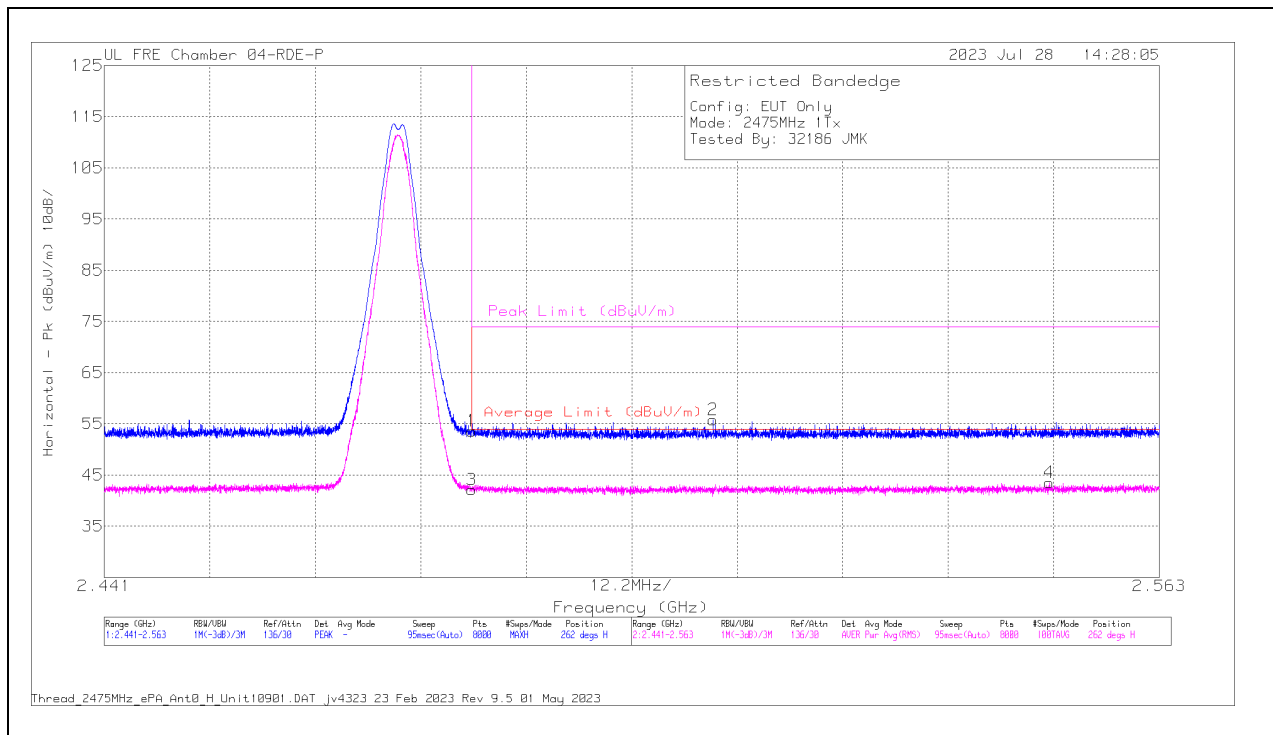
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF(dB) - 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	2.349927	63.76	Pk	31.5	-39.84	55.42	-	-	74	-18.58	220	364	V
4	2.387136	50.98	RMS	31.7	-39.74	42.94	54	-11.06	-	-	220	364	V
1	2.39	60.54	Pk	31.7	-39.79	52.45	-	-	74	-21.55	220	364	V
3	2.39	49.99	RMS	31.7	-39.79	41.9	54	-12.1	-	-	220	364	V

Pk - Peak detector  
RMS - RMS detection



**BANDEDGE (HIGH CHANNEL)**

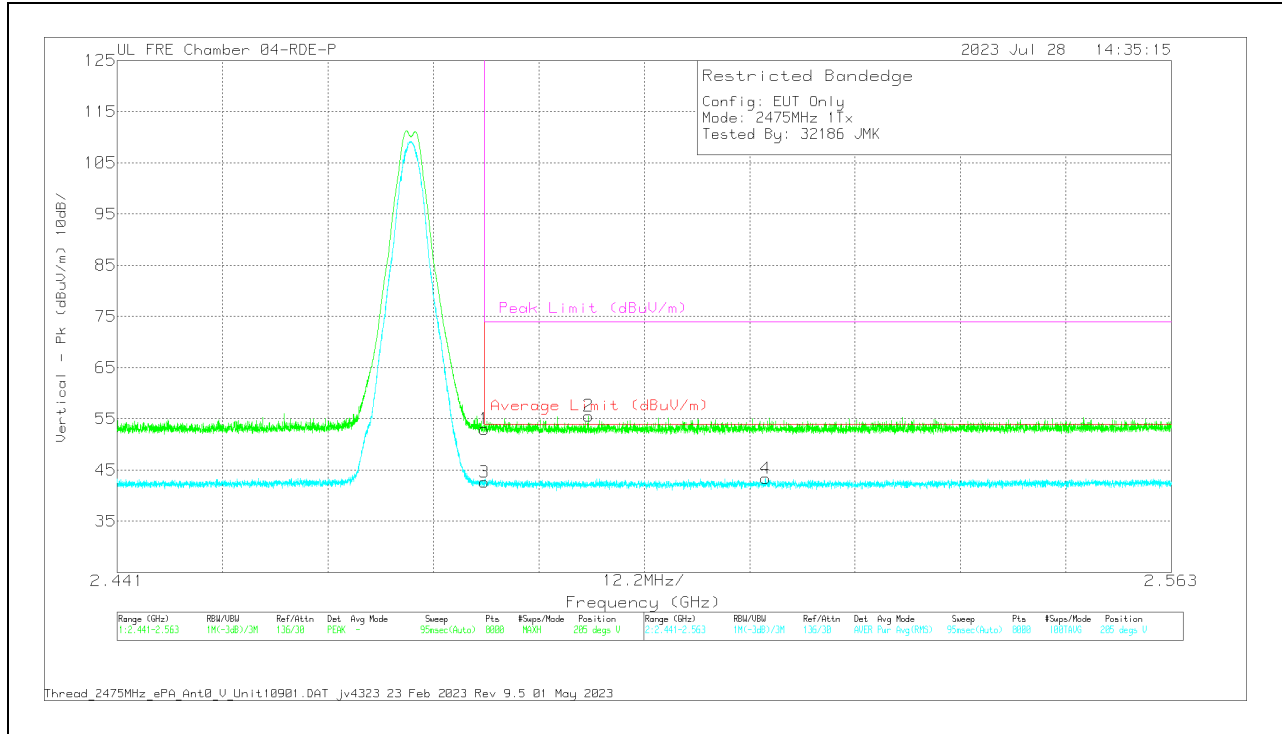
**HORIZONTAL RESULT**



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF(dB) - 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.4835	61.26	Pk	32.1	-39.76	53.6	-	-	74	-20.4	262	119	H
3	2.4835	49.79	RMS	32.1	-39.76	42.13	54	-11.87	-	-	262	119	H
2	2.511388	63.44	Pk	32.1	-39.76	55.78	-	-	74	-18.22	262	119	H
4	2.550296	51.05	RMS	32.2	-39.72	43.53	54	-10.47	-	-	262	119	H

Pk - Peak detector  
RMS - RMS detection

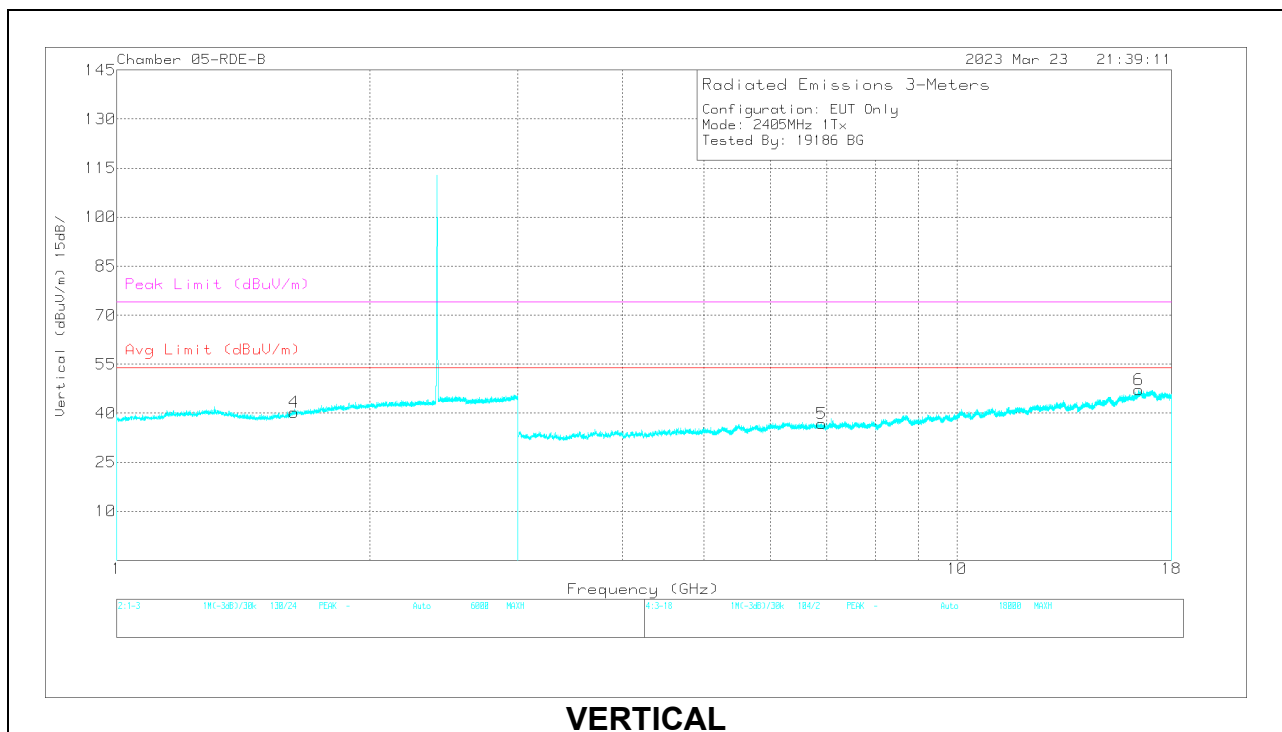
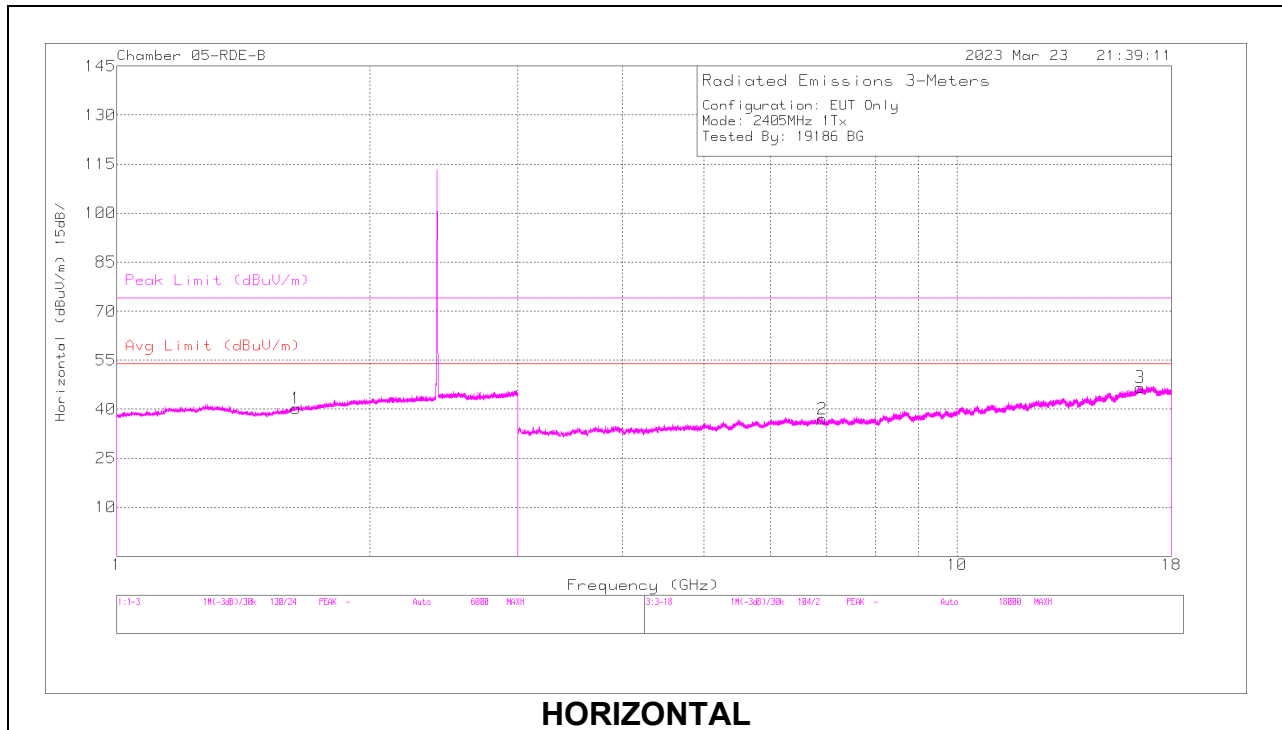
### VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACP(dB) - 3nH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.4835	60.68	Pk	32.1	-39.76	53.02	-	-	74	-20.98	205	383	V
3	2.4835	50.28	RMS	32.1	-39.76	42.62	54	-11.38	-	-	205	383	V
2	2.495541	63.26	Pk	32.1	-39.8	55.56	-	-	74	-18.44	205	383	V
4	2.516025	50.95	RMS	32.1	-39.7	43.35	54	-10.65	-	-	205	383	V

Pk - Peak detector  
 RMS - RMS detection

# HARMONICS AND SPURIOUS EMISSIONS LOW CHANNEL RESULTS

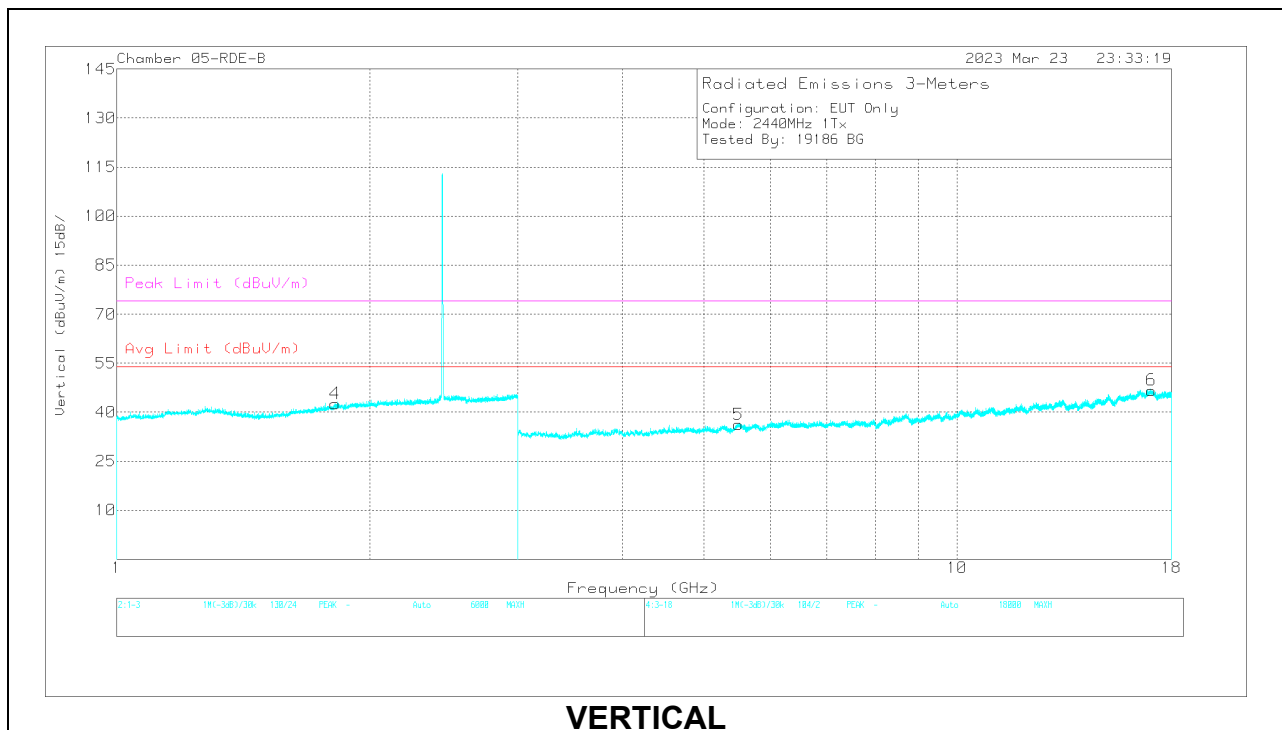
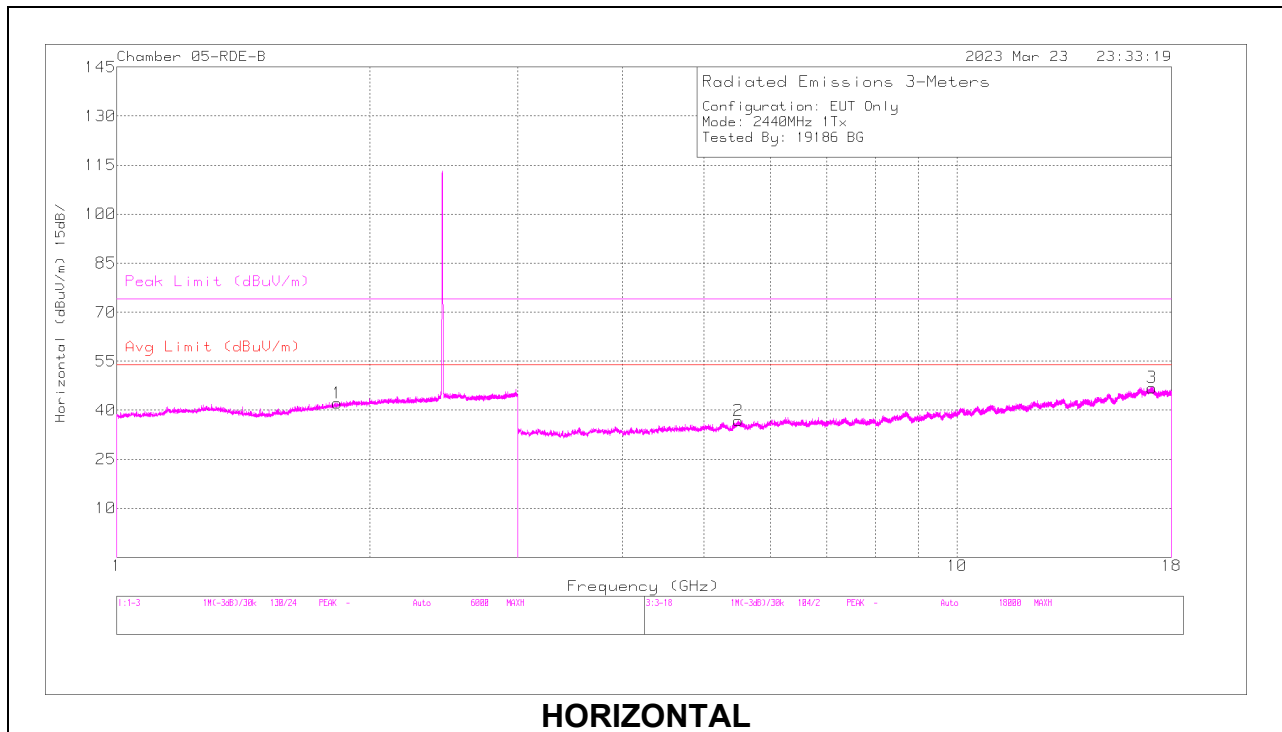


## RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	80707 Horn Antenna ACF(dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.633353	60.72	PK2	29.2	-38.75	51.17	-	-	74	-22.83	0	101	H
	1.634073	48.39	MAv1	29.3	-38.74	38.95	54	-15.05	-	-	0	101	H
2	6.912824	56.4	PK2	36.1	-46.03	46.47	-	-	74	-27.53	0	199	H
	6.910873	44.89	MAv1	36.1	-46.02	34.97	54	-19.03	-	-	0	199	H
3	16.512859	56.06	PK2	41.9	-42.4	55.56	-	-	74	-18.44	0	101	H
	16.511039	45.01	MAv1	41.9	-42.34	44.57	54	-9.43	-	-	0	101	H
4	1.626346	60.2	PK2	29.1	-38.76	50.54	-	-	74	-23.46	0	101	V
	1.624882	48.26	MAv1	29.1	-38.74	38.62	54	-15.38	-	-	0	101	V
5	6.898648	57.16	PK2	36.1	-45.9	47.36	-	-	74	-26.64	0	101	V
	6.89687	44.81	MAv1	36.1	-45.88	35.03	54	-18.97	-	-	0	101	V
6	16.472673	56.65	PK2	41.8	-42.31	56.14	-	-	74	-17.86	0	101	V
	16.473057	45.29	MAv1	41.8	-42.31	44.78	54	-9.22	-	-	0	101	V

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

### MID CHANNEL RESULTS

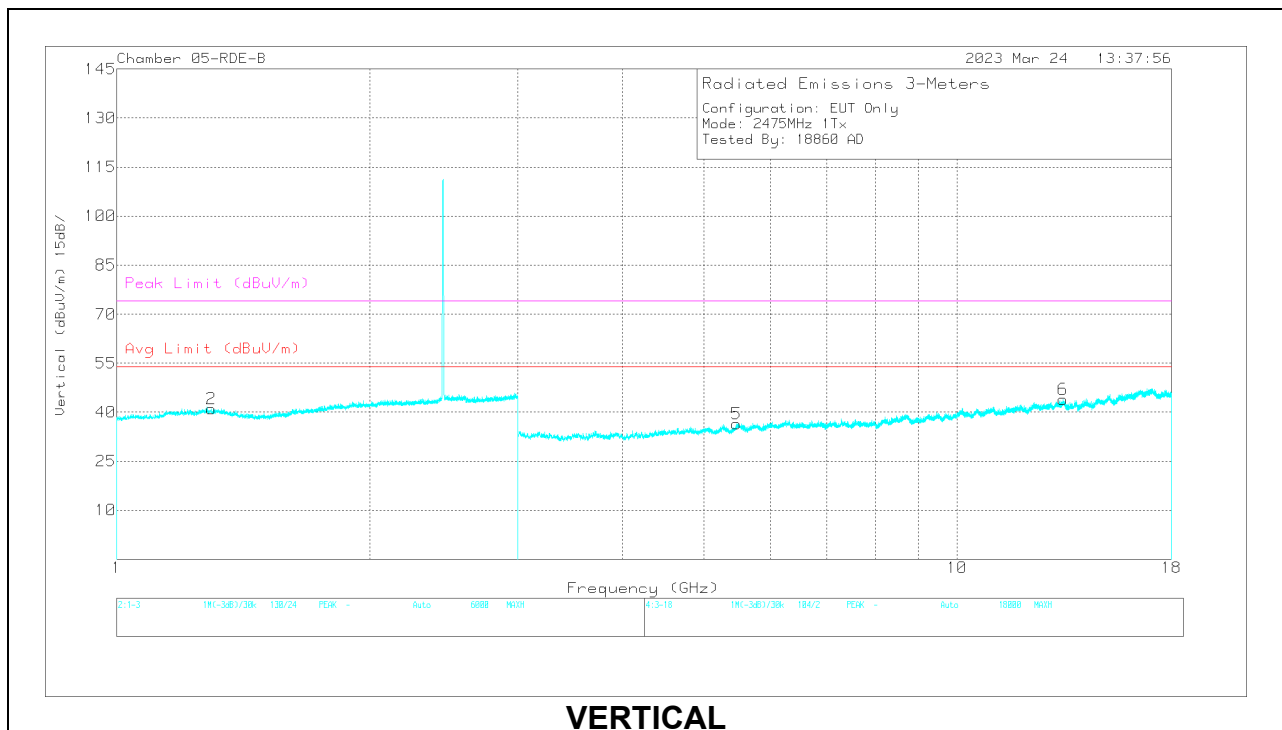
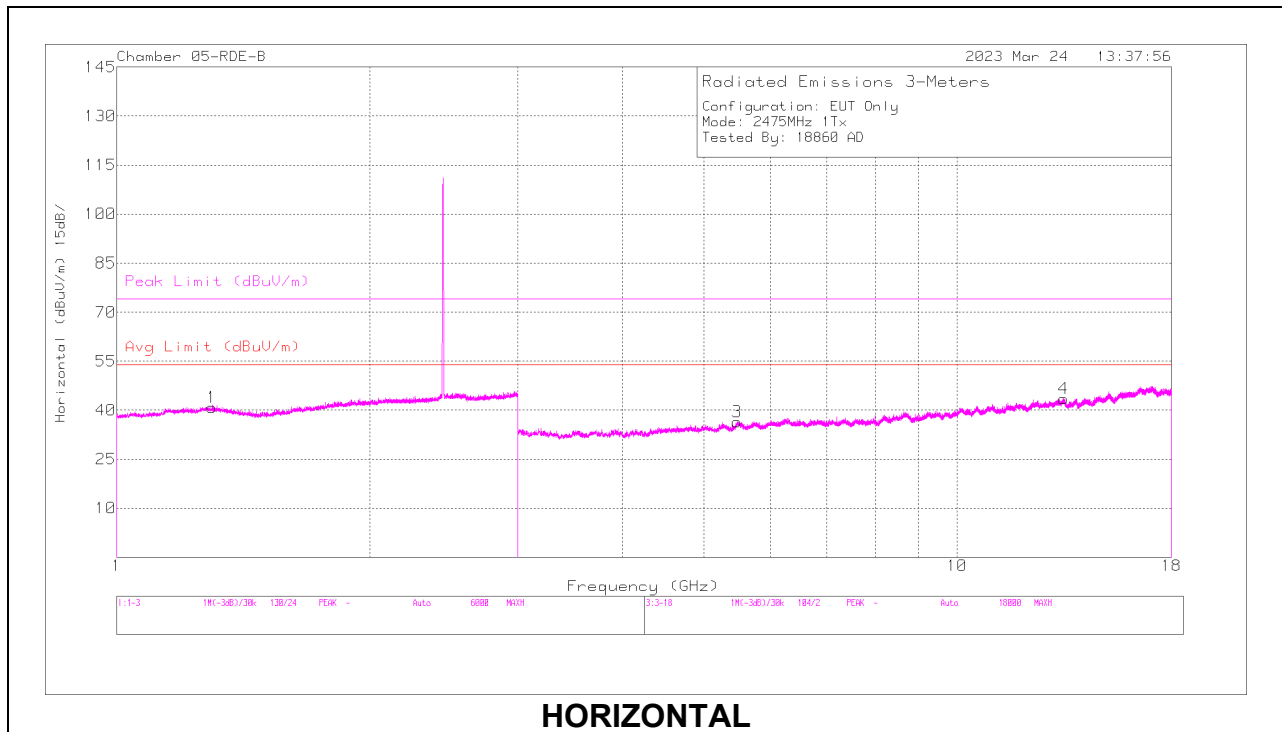


**RADIATED EMISSIONS**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	80707 Horn Antenna ACF(dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.830882	59.92	PK2	30.7	-38.84	51.78	-	-	74	-22.22	360	101	H
	1.830571	48.38	MAv1	30.7	-38.84	40.24	54	-13.76	-	-	360	101	H
2	5.495131	57.33	PK2	35.2	-45.93	46.6	-	-	74	-27.4	360	101	H
	5.493714	45.76	MAv1	35.2	-45.94	35.02	54	-18.98	-	-	360	101	H
3	17.07921	56.8	PK2	41.8	-42.75	55.85	-	-	74	-18.15	360	101	H
	17.079149	45.27	MAv1	41.8	-42.76	44.31	54	-9.69	-	-	360	101	H
4	1.8172	60.14	PK2	30.6	-38.82	51.92	-	-	74	-22.08	360	101	V
	1.820007	48.25	MAv1	30.6	-38.84	40.01	54	-13.99	-	-	360	101	V
5	5.495992	57.02	PK2	35.2	-45.96	46.26	-	-	74	-27.74	360	199	V
	5.495778	45.83	MAv1	35.2	-45.95	35.08	54	-18.92	-	-	360	199	V
6	17.030413	56.23	PK2	42	-42.95	55.28	-	-	74	-18.72	360	101	V
	17.029034	45.2	MAv1	42	-42.96	44.24	54	-9.76	-	-	360	101	V

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

### HIGH CHANNEL RESULTS



**RADIATED EMISSIONS**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	80707 Horn Antenna ACF(dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.296653	59.81	PK2	29.1	-38.72	50.19	-	-	74	-23.81	360	101	H
	1.297439	48.39	MAv1	29.1	-38.72	38.77	54	-15.23	-	-	360	101	H
2	5.471794	56.97	PK2	35.1	-46.15	45.92	-	-	74	-28.08	360	199	H
	5.471814	45.79	MAv1	35.1	-46.15	34.74	54	-19.26	-	-	360	199	H
3	13.403585	58.14	PK2	39.7	-44.46	53.38	-	-	74	-20.62	360	101	H
	13.402688	46.47	MAv1	39.7	-44.47	41.7	54	-12.3	-	-	360	101	H
4	1.297108	60.66	PK2	29.1	-38.72	51.04	-	-	74	-22.96	360	101	V
	1.29545	48.51	MAv1	29.1	-38.71	38.9	54	-15.1	-	-	360	101	V
5	5.465058	57.46	PK2	35.1	-46.25	46.31	-	-	74	-27.69	360	198	V
	5.465212	45.78	MAv1	35.1	-46.25	34.63	54	-19.37	-	-	360	198	V
6	13.363034	58.17	PK2	39.7	-44.63	53.24	-	-	74	-20.76	360	198	V
	13.362071	46.09	MAv1	39.7	-44.62	41.17	54	-12.83	-	-	360	198	V

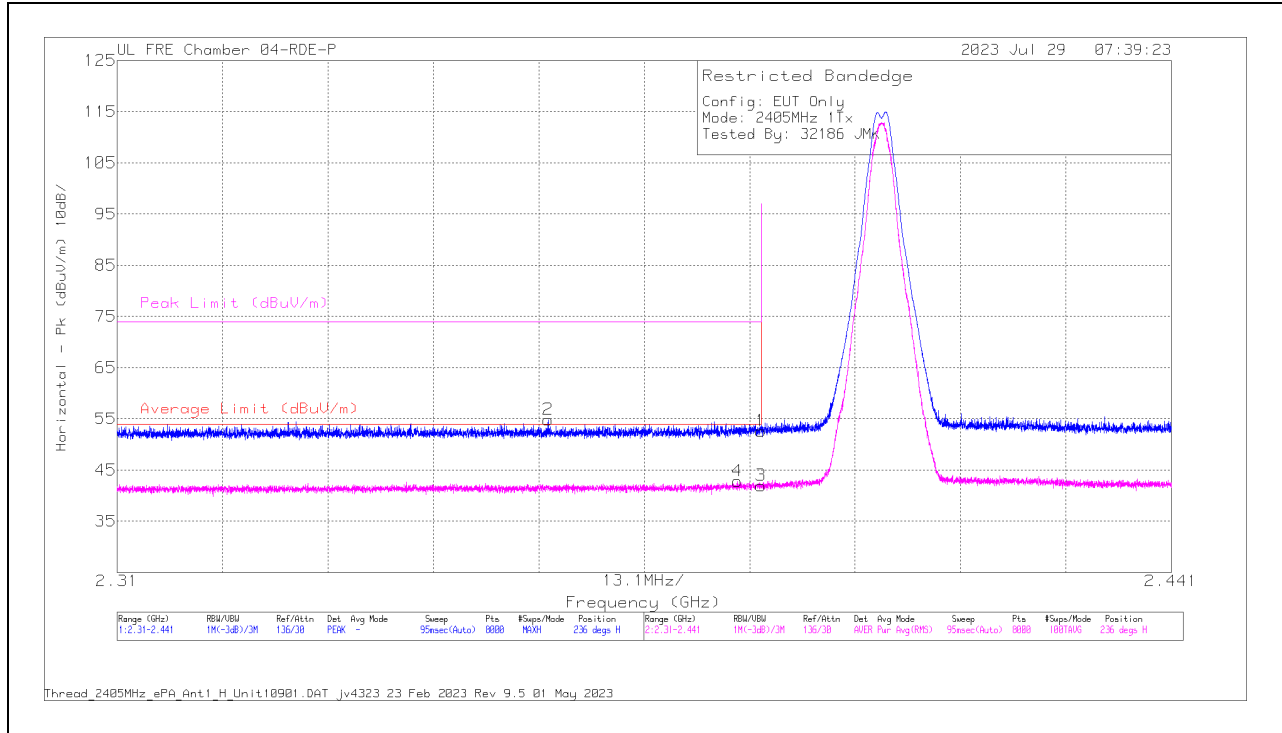
PK2 - KDB558074 Method: Maximum Peak  
 MAv1 - KDB558074 Option 1 Maximum RMS Average



**ANT 3**

**BANDEDGE (LOW CHANNEL)**

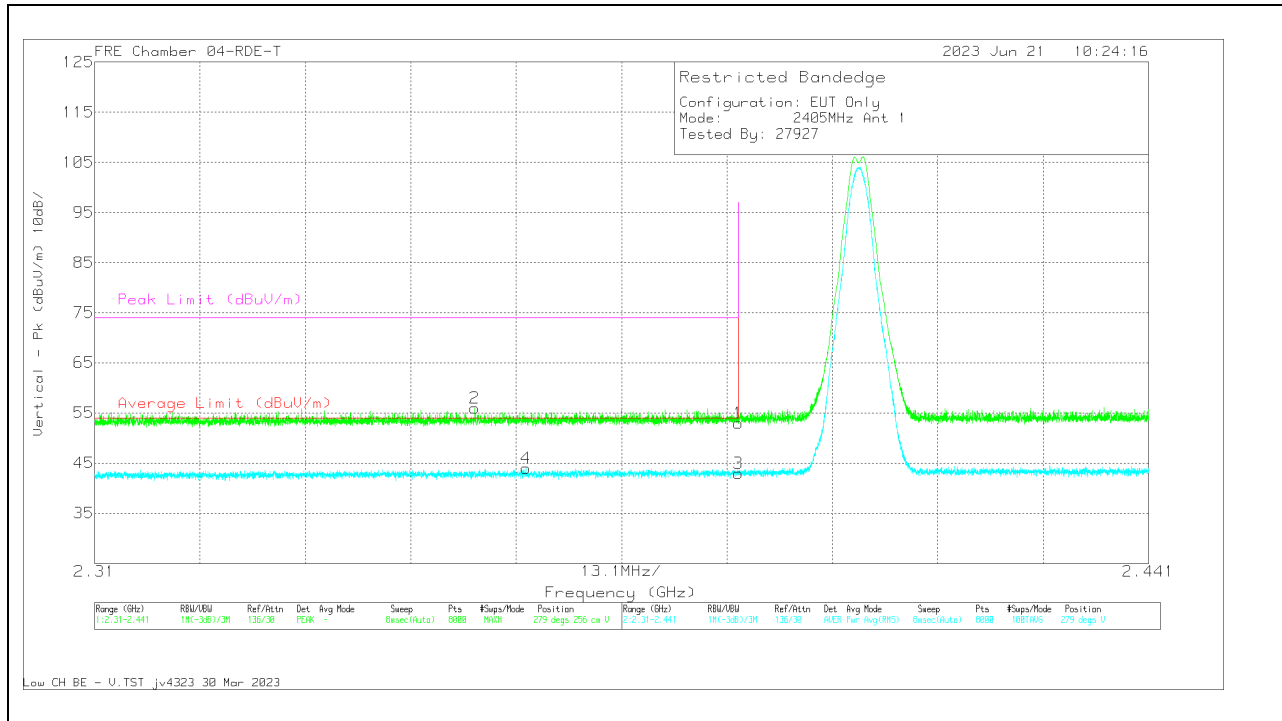
**HORIZONTAL RESULT**



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACP(dB) - 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	2.363553	63.11	Pk	31.5	-39.77	54.84	-	-	74	-19.16	236	160	H
4	2.387054	50.87	RMS	31.7	-39.74	42.83	54	-11.17	-	-	236	160	H
1	2.39	60.74	Pk	31.7	-39.79	52.65	-	-	74	-21.35	236	160	H
3	2.39	50.05	RMS	31.7	-39.79	41.96	54	-12.04	-	-	236	160	H

Pk - Peak detector  
RMS - RMS detection

### VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226673 ACF (dB) 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	58.73	Pk	32.1	-37.89	52.94	-	-	74	-21.06	279	256	V
2	* 2.357264	61.91	Pk	32	-37.9	56.01	-	-	74	-17.99	279	256	V
3	* 2.39	48.73	RMS	32.1	-37.89	42.94	54	-11.06	-	-	279	256	V
4	* 2.363635	49.79	RMS	32	-37.88	43.91	54	-10.09	-	-	279	256	V

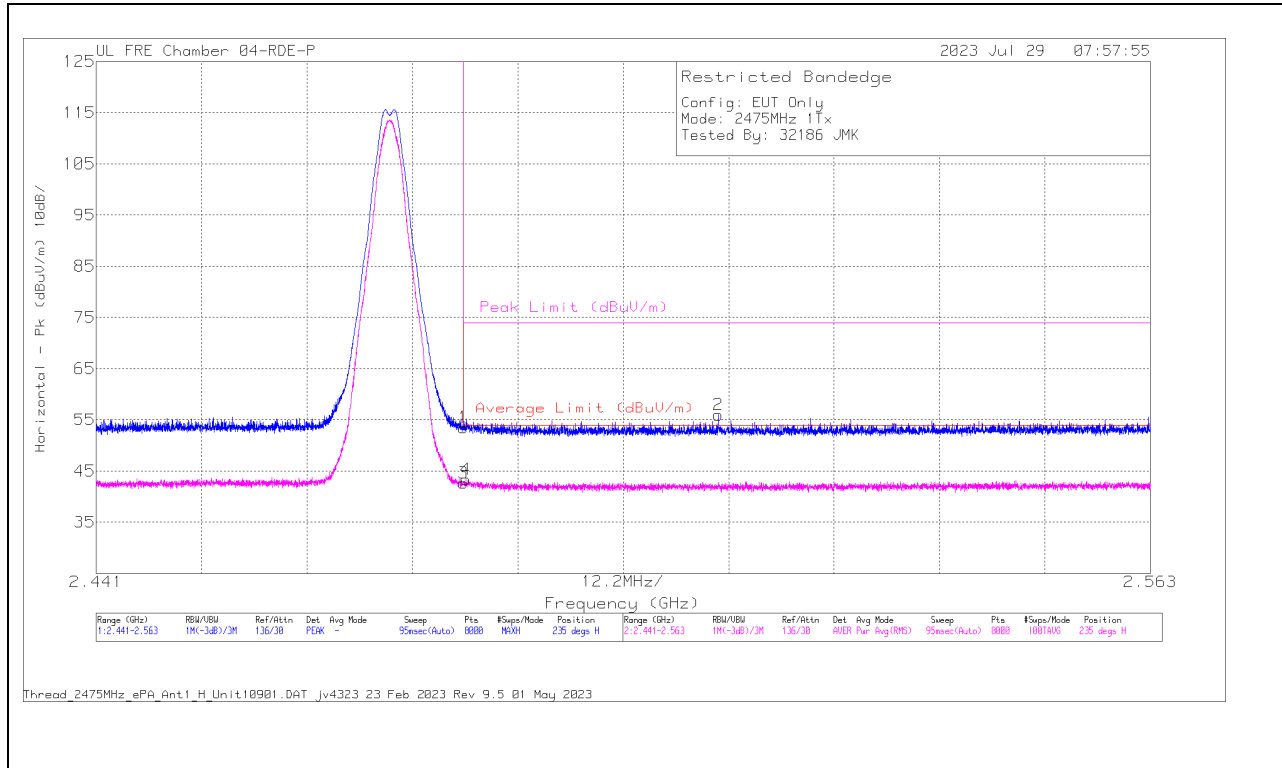
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

**BANDEDGE (HIGH CHANNEL)**

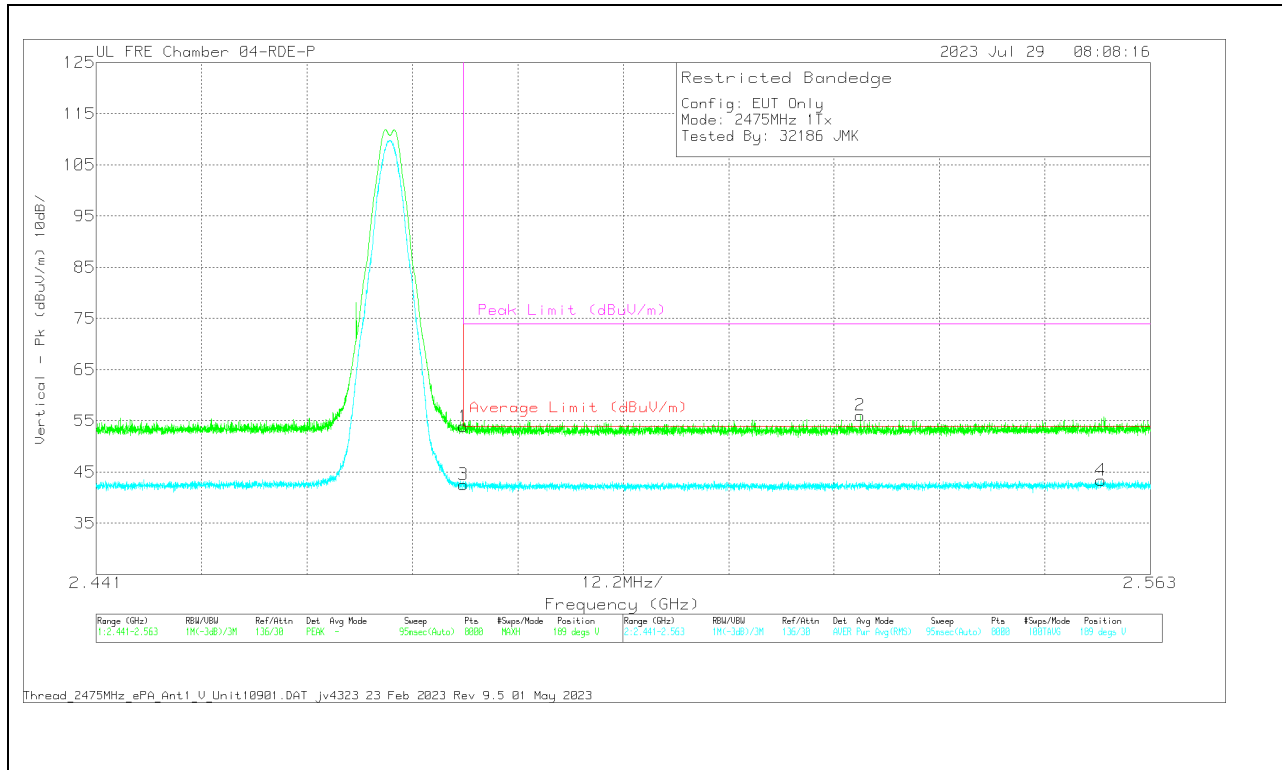
**HORIZONTAL RESULT**



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF(dB) - 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.4835	61.14	Pk	32.1	-39.76	53.48	-	-	74	-20.52	235	118	H
3	2.4835	50.29	RMS	32.1	-39.76	42.63	54	-11.37	-	-	235	118	H
4	2.483782	51.01	RMS	32.1	-39.75	43.36	54	-10.64	-	-	235	118	H
2	2.513005	63.6	Pk	32.1	-39.72	55.98	-	-	74	-18.02	235	118	H

Pk - Peak detector  
 RMS - RMS detection

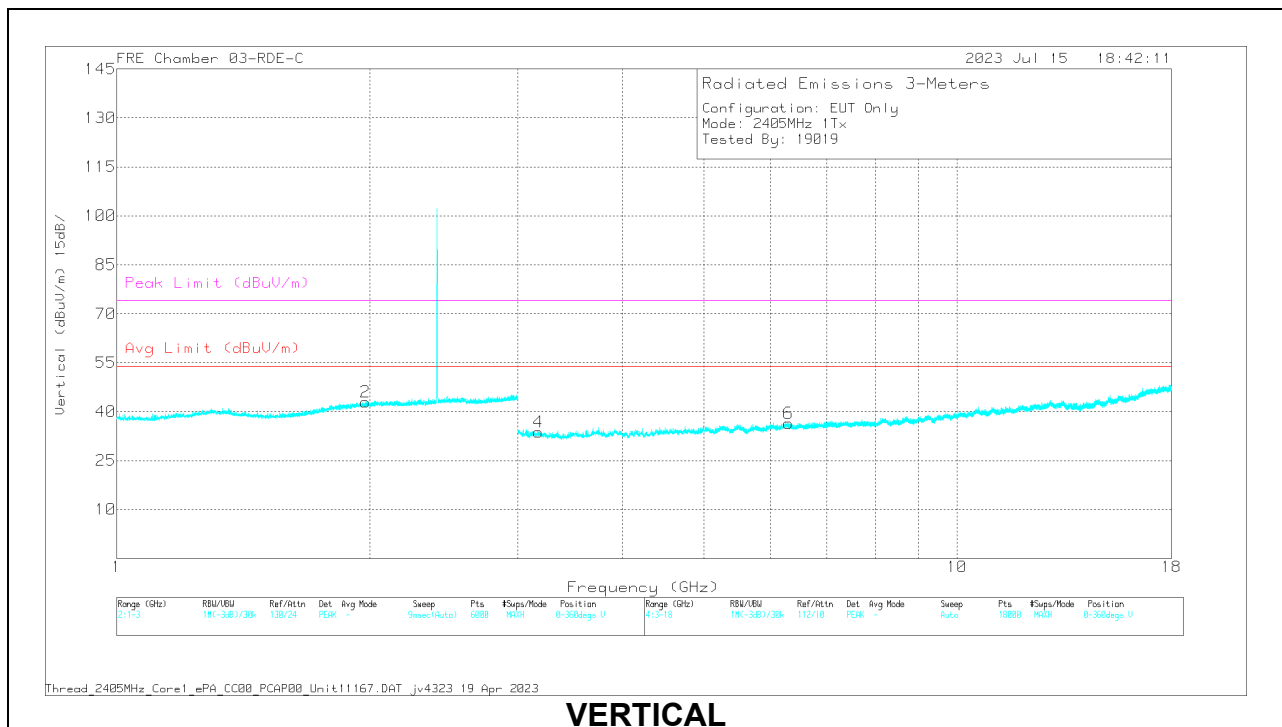
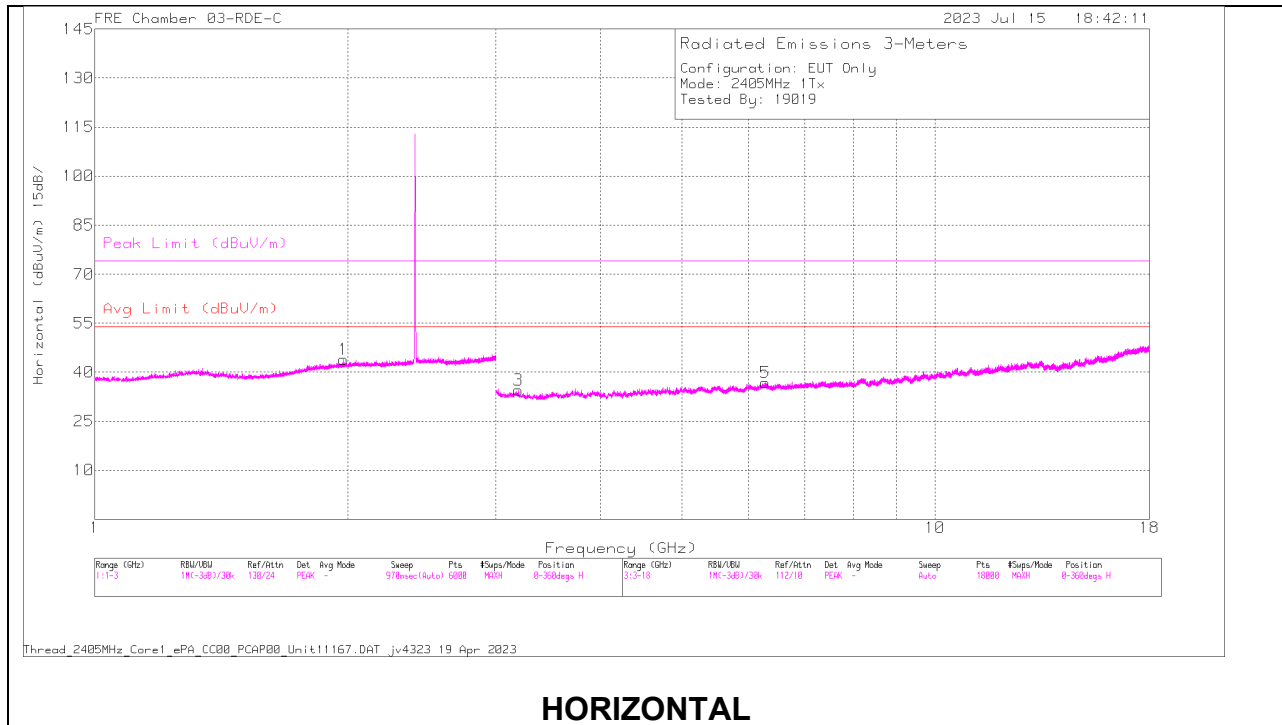
### VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF(dB) - 3nH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.4835	61.57	Pk	32.1	-39.76	53.91	-	-	74	-20.09	189	395	V
3	2.4835	50.22	RMS	32.1	-39.76	42.56	54	-11.44	-	-	189	395	V
2	2.529446	63.61	Pk	32.1	-39.64	56.07	-	-	74	-17.93	189	395	V
4	2.557297	50.86	RMS	32.2	-39.67	43.39	54	-10.61	-	-	189	395	V

Pk - Peak detector  
RMS - RMS detection

# HARMONICS AND SPURIOUS EMISSIONS LOW CHANNEL RESULTS

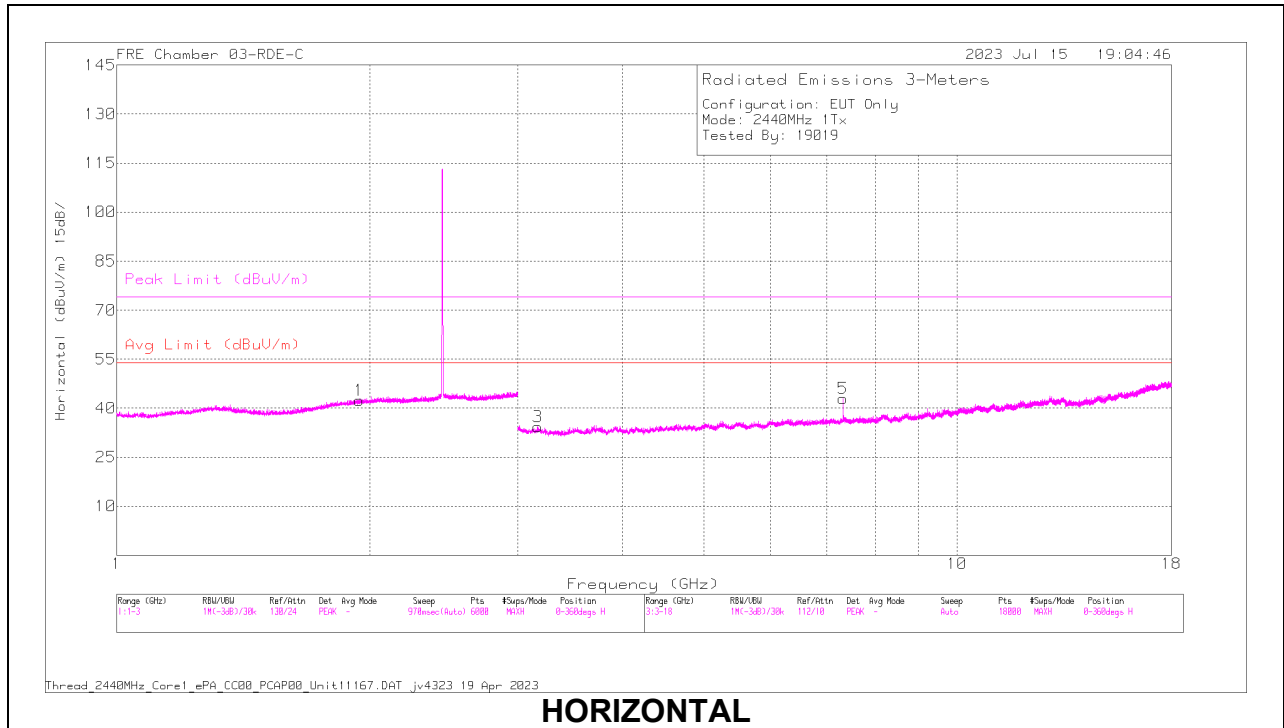


**RADIATED EMISSIONS**

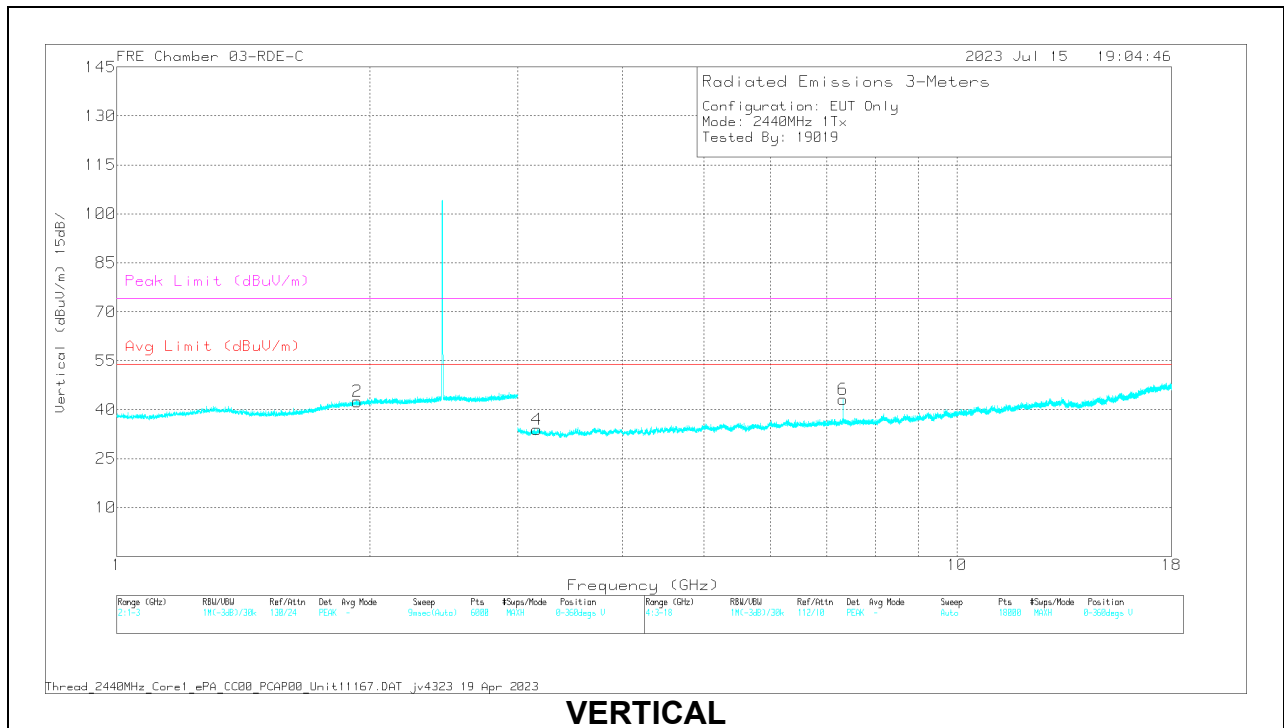
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	22672 ACF (dB) 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	1.975161	60.86	PK2	31.2	-39.5	52.56	74	-21.44	203	174	V
1	1.976658	60.26	PK2	31.2	-39.5	51.96	74	-22.04	276	147	H
4	3.180688	57.89	PK2	32.8	-46.37	44.32	74	-29.68	291	156	V
3	3.193316	57.14	PK2	32.8	-46.2	43.74	74	-30.26	151	138	H
5	6.27731	55.84	PK2	35.4	-45.1	46.14	74	-27.86	82	114	H
6	6.301654	56.01	PK2	35.4	-45.27	46.14	74	-27.86	84	263	V

PK2 - KDB558074 Method: Maximum Peak

### MID CHANNEL RESULTS



### HORIZONTAL



### VERTICAL

**RADIATED EMISSIONS**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226672 ACF (dB) 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	* 7.318358	60.3	PK2	35.7	-45.8	50.2	-	-	74	-23.8	268	103	H
5	* 7.318443	51.27	MAv1	35.7	-45.8	41.17	54	-12.83	-	-	268	103	H
6	* 7.321349	61.44	PK2	35.7	-45.7	51.44	-	-	74	-22.56	333	114	V
6	* 7.321577	53.39	MAv1	35.7	-45.7	43.39	54	-10.61	-	-	333	114	V
2	1.934298	60.65	PK2	31.1	-39.43	52.32	-	-	74	-21.68	145	131	V
1	1.941904	60.1	PK2	31.1	-39.4	51.8	-	-	74	-22.2	67	173	H
4	3.163444	57.51	PK2	32.8	-46.3	44.01	-	-	74	-29.99	156	147	V
3	3.16934	57.8	PK2	32.8	-46.3	44.3	-	-	74	-29.7	177	124	H

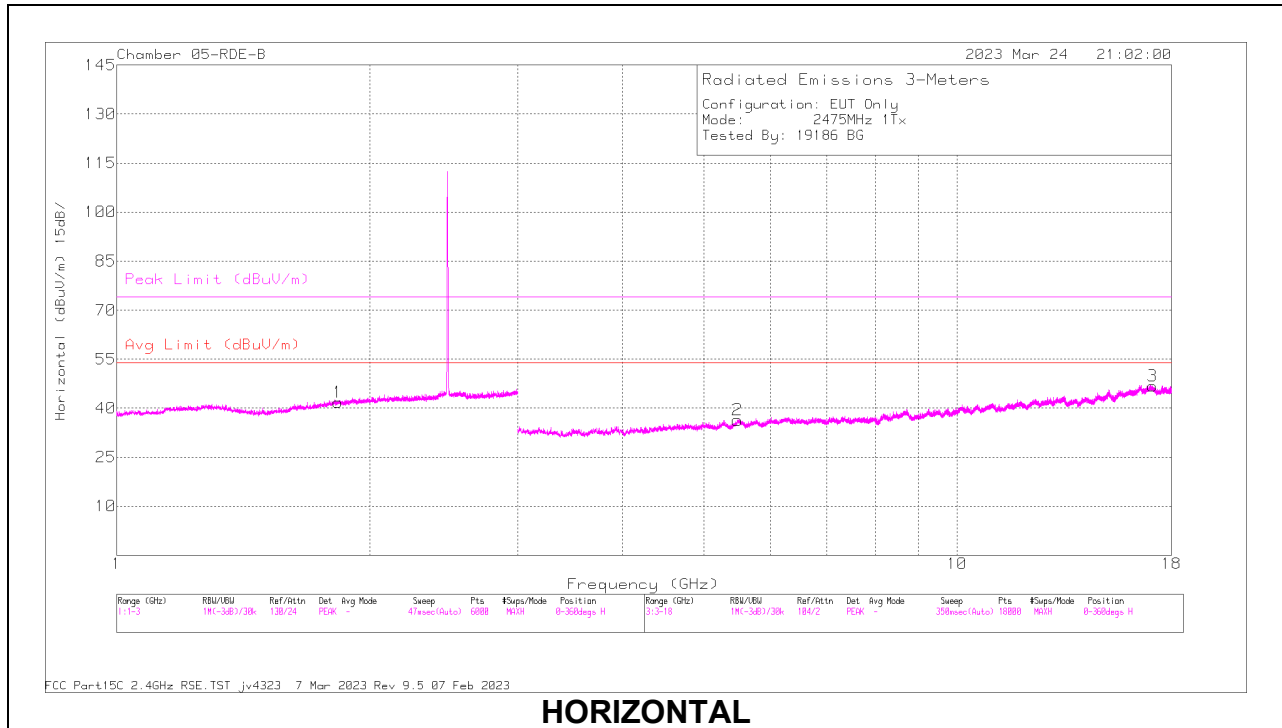
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK2 - KDB558074 Method: Maximum Peak

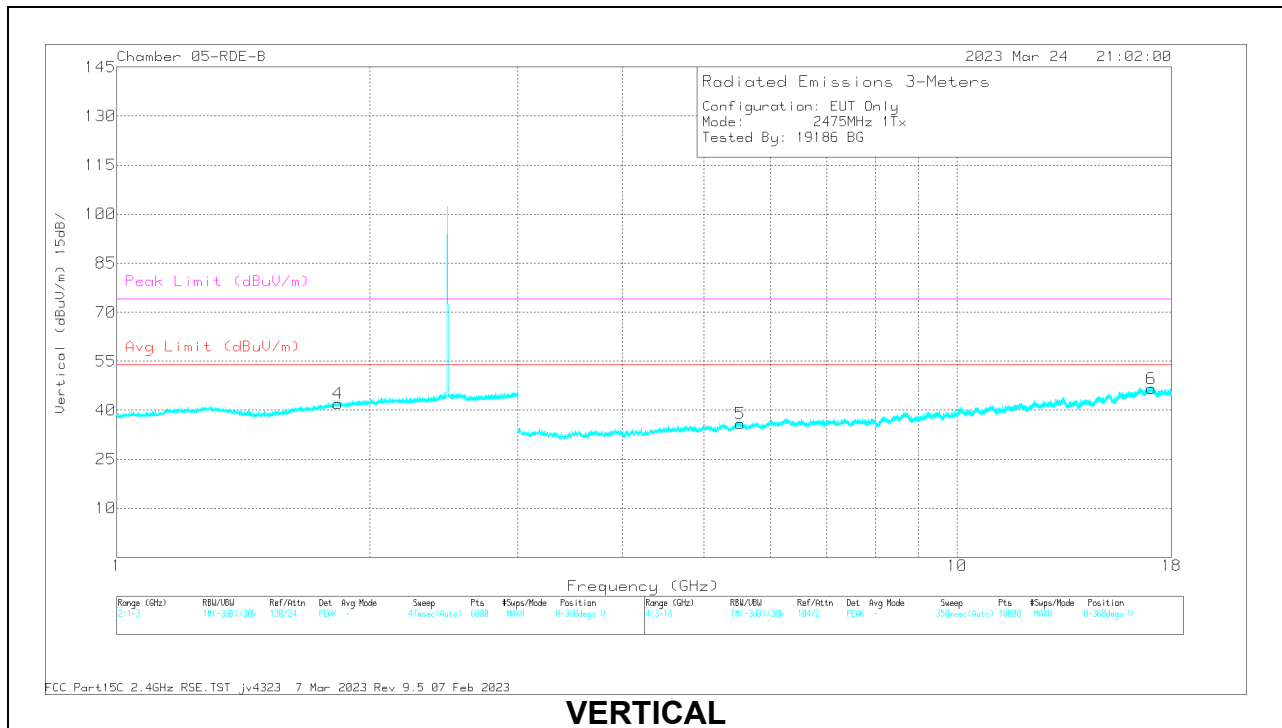
MAv1 - KDB558074 Option 1 Maximum RMS Average



### HIGH CHANNEL RESULTS



**HORIZONTAL**



**VERTICAL**

**RADIATED EMISSIONS**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Horn Antenna ACF(dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.833342	60.63	PK2	30.8	-38.82	52.61	-	-	74	-21.39	1	199	H
	1.831929	48.41	MAv1	30.7	-38.83	40.28	54	-13.72	-	-	1	199	H
2	1.835016	60.35	PK2	30.7	-38.81	52.24	-	-	74	-21.76	1	101	V
	1.833057	48.37	MAv1	30.7	-38.83	40.24	54	-13.76	-	-	1	101	V
3	5.480012	57.37	PK2	35.2	-46.11	46.46	-	-	74	-27.54	1	101	H
	5.480146	45.71	MAv1	35.2	-46.1	34.81	54	-19.19	-	-	1	101	H
4	5.524006	57.26	PK2	35.2	-46.15	46.31	-	-	74	-27.69	1	200	V
	5.525125	45.53	MAv1	35.2	-46.16	34.57	54	-19.43	-	-	1	200	V
5	17.097985	56.49	PK2	41.9	-42.77	55.62	-	-	74	-18.38	1	200	H
	17.101202	45.35	MAv1	41.9	-42.77	44.48	54	-9.52	-	-	1	200	H
6	17.026127	56.85	PK2	42.1	-42.92	56.03	-	-	74	-17.97	1	200	V
	17.027469	45.23	MAv1	42	-42.92	44.31	54	-9.69	-	-	1	200	V

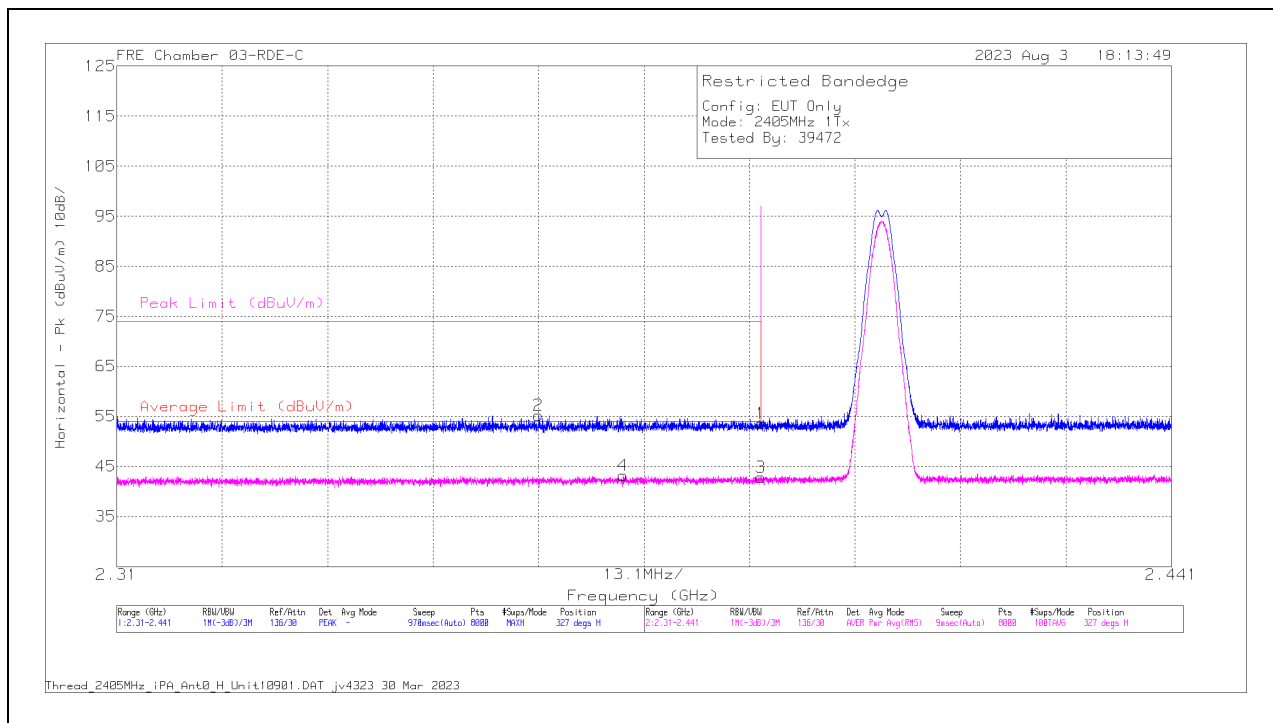
PK2 - KDB558074 Method: Maximum Peak  
 MAv1 - KDB558074 Option 1 Maximum RMS Average

10.2.2. 802.15.4 LOW POWER

ANT 4

BANDEDGE (LOW CHANNEL)

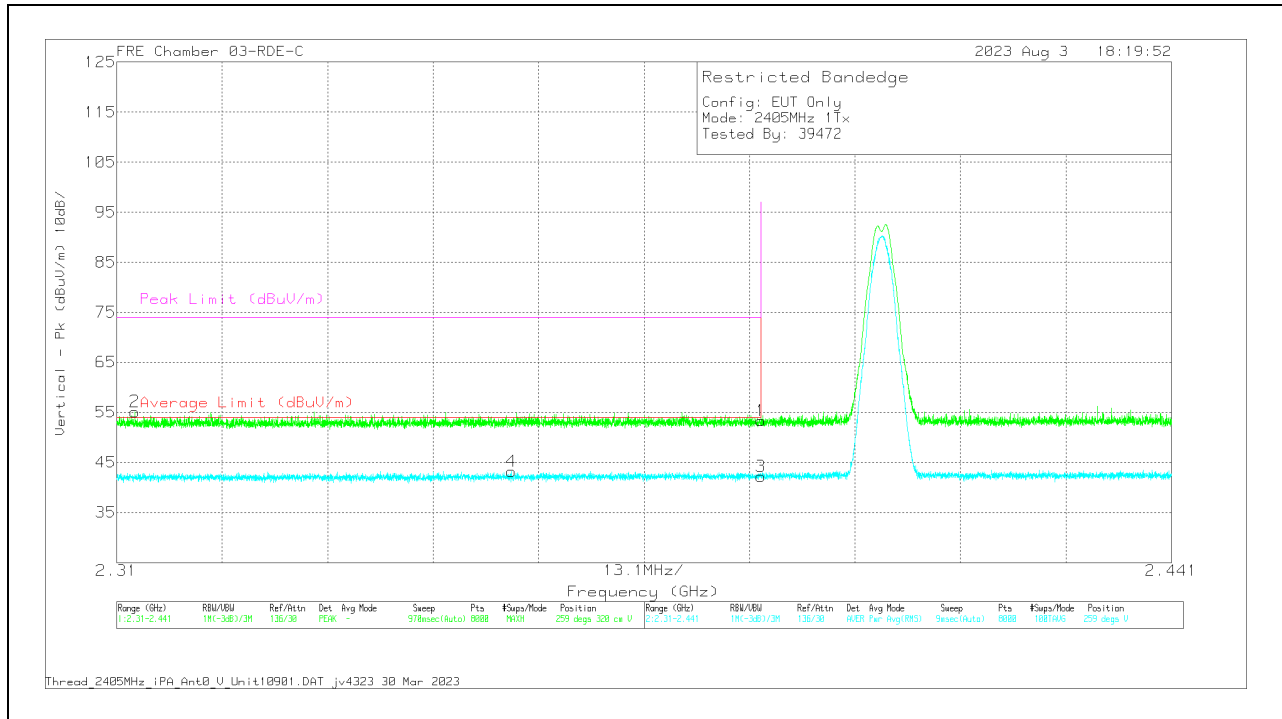
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226672 ACF (dB) 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	61.28	Pk	32.1	-39.8	53.58	-	-	74	-20.42	327	162	H
2	* 2.362374	63.14	Pk	32	-39.9	55.24	-	-	74	-18.76	327	162	H
3	* 2.39	50.53	RMS	32.1	-39.8	42.83	54	-11.17	-	-	327	162	H
4	* 2.372904	51.1	RMS	32	-39.9	43.2	54	-10.8	-	-	327	162	H

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

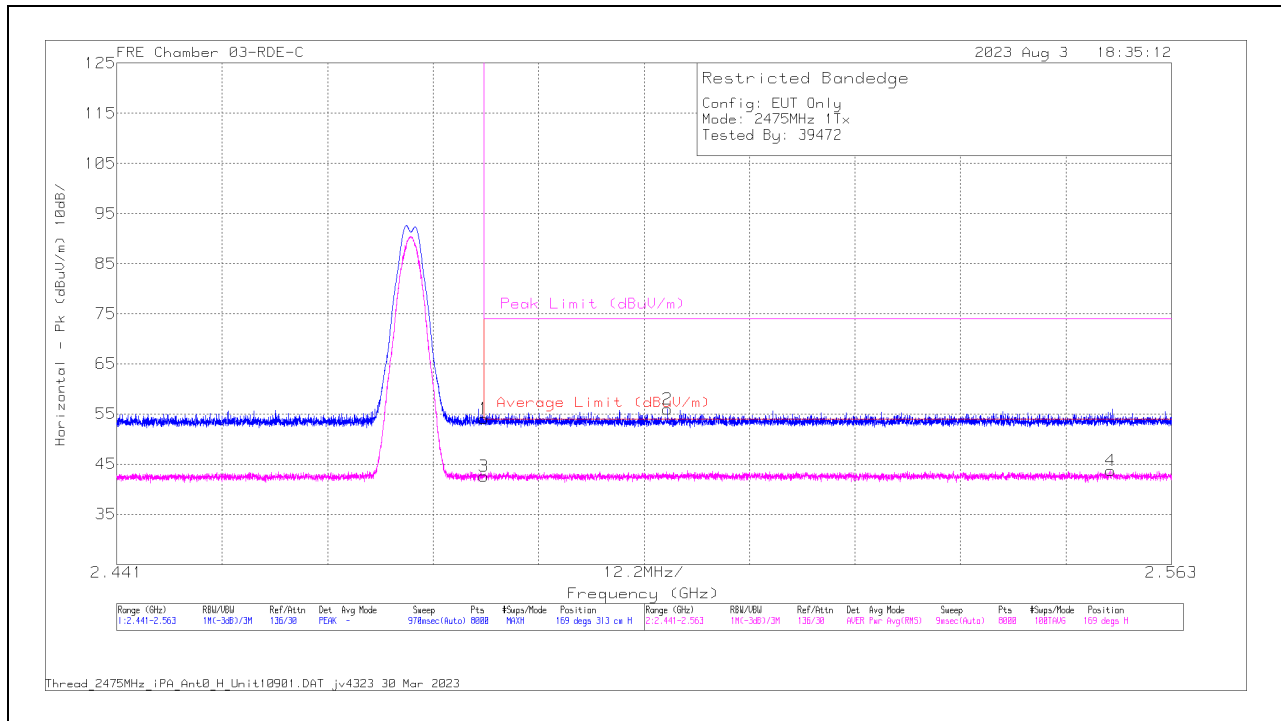
### VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226672 ACF (dB) 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	61.05	Pk	32.1	-39.8	53.35	-	-	74	-20.65	259	320	V
2	* 2.312244	63.36	Pk	31.8	-40	55.16	-	-	74	-18.84	259	320	V
3	* 2.39	49.89	RMS	32.1	-39.8	42.19	54	-11.81	-	-	259	320	V
4	* 2.359	51.22	RMS	32	-40	43.22	54	-10.78	-	-	259	320	V

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

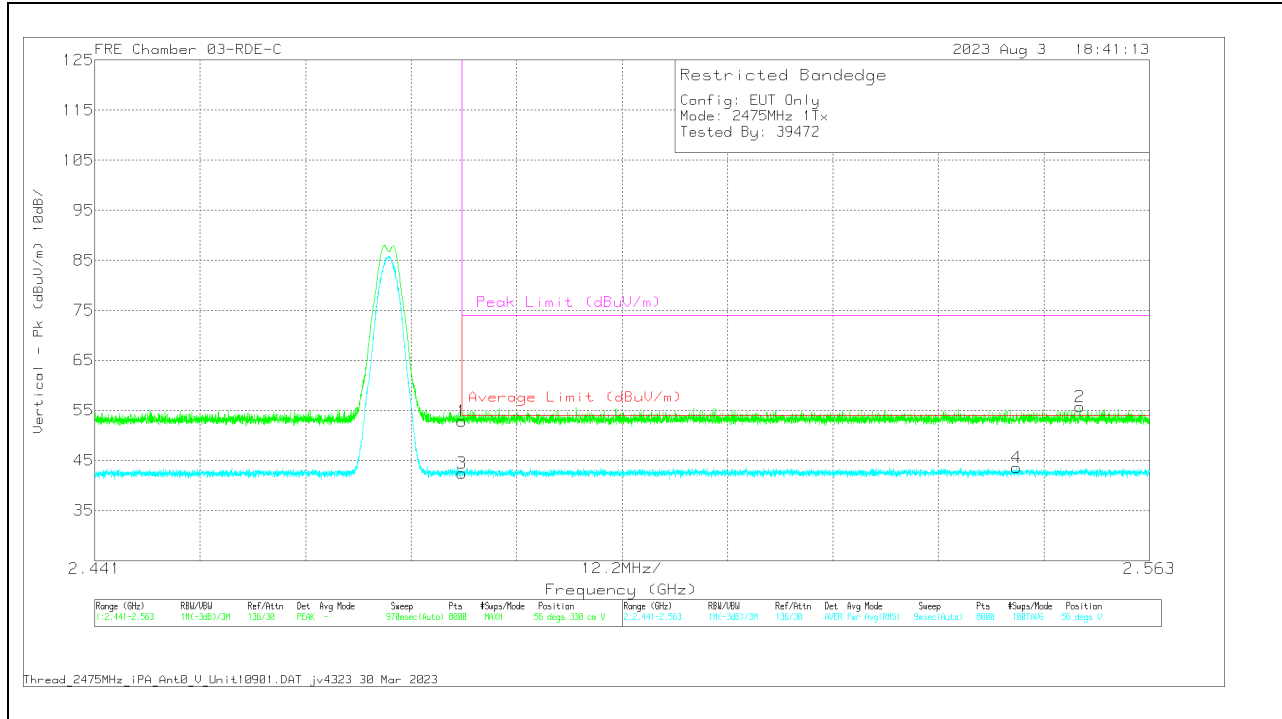
## BANDEDGE (HIGH CHANNEL) HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226672 ACF (dB) 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	61.44	Pk	32.2	-39.6	54.04	-	-	74	-19.96	169	313	H
2	2.504692	63.4	Pk	32.3	-39.67	56.03	-	-	74	-17.97	169	313	H
3	* 2.4835	49.98	RMS	32.2	-39.6	42.58	54	-11.42	-	-	169	313	H
4	2.555985	50.86	RMS	32.3	-39.4	43.76	54	-10.24	-	-	169	313	H

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

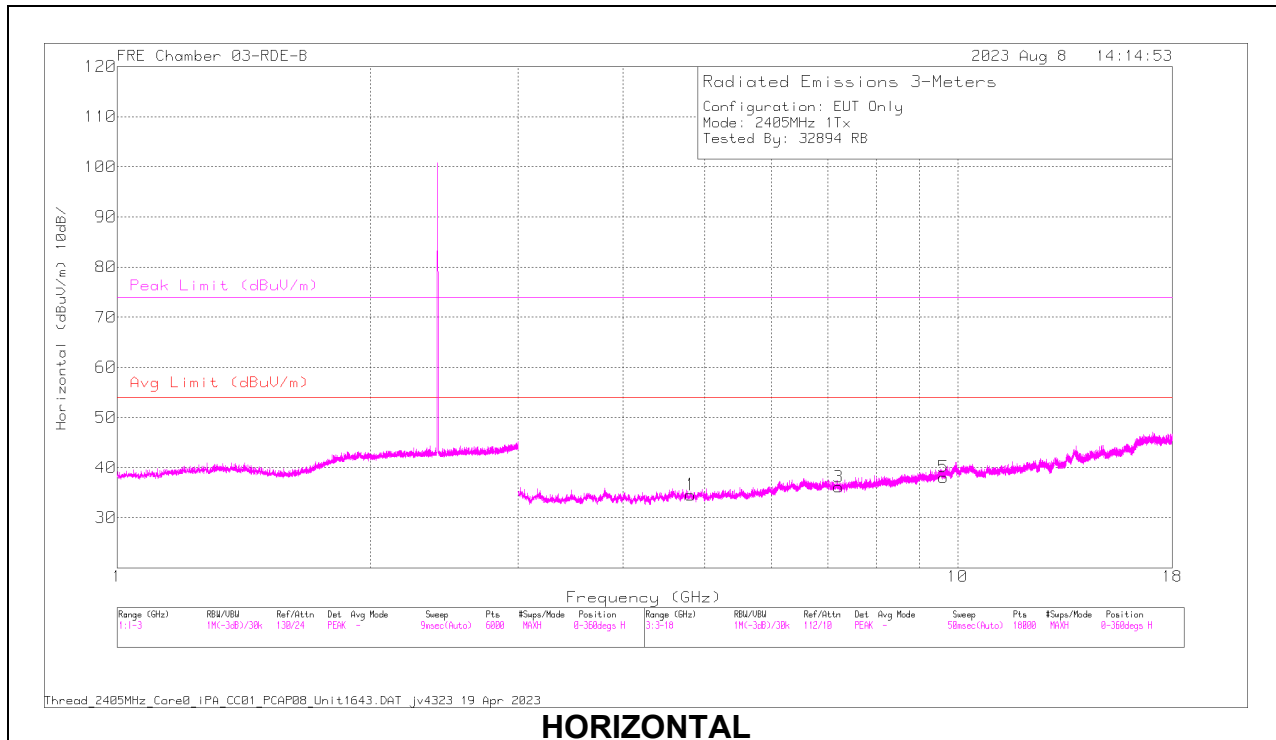
### VERTICAL RESULT



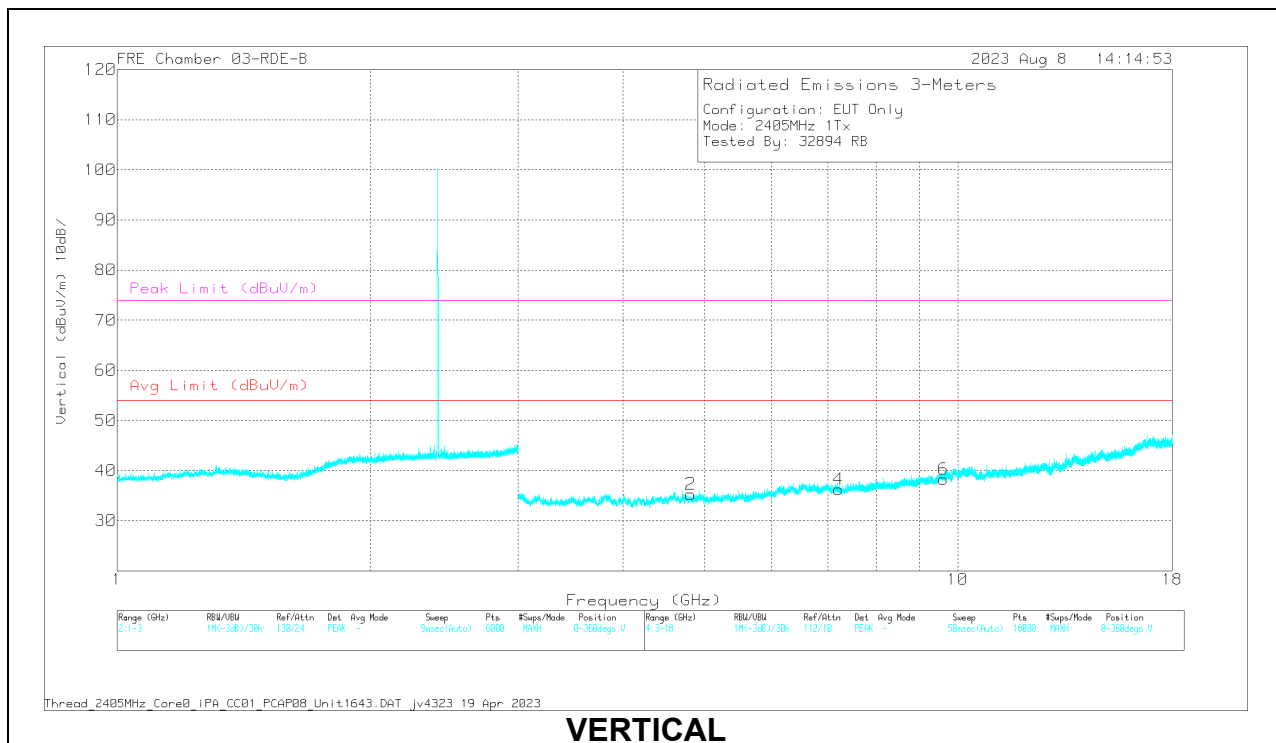
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226672 ACF (dB) 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	60.23	Pk	32.2	-39.6	52.83	-	-	74	-21.17	56	330	V
3	* 2.4835	49.86	RMS	32.2	-39.6	42.46	54	-11.54	-	-	56	330	V
4	2.547657	50.8	RMS	32.3	-39.53	43.57	54	-10.43	-	-	56	330	V
2	2.554978	62.79	Pk	32.3	-39.4	55.69	-	-	74	-18.31	56	330	V

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

# HARMONICS AND SPURIOUS EMISSIONS LOW CHANNEL RESULTS



**HORIZONTAL**



**VERTICAL**

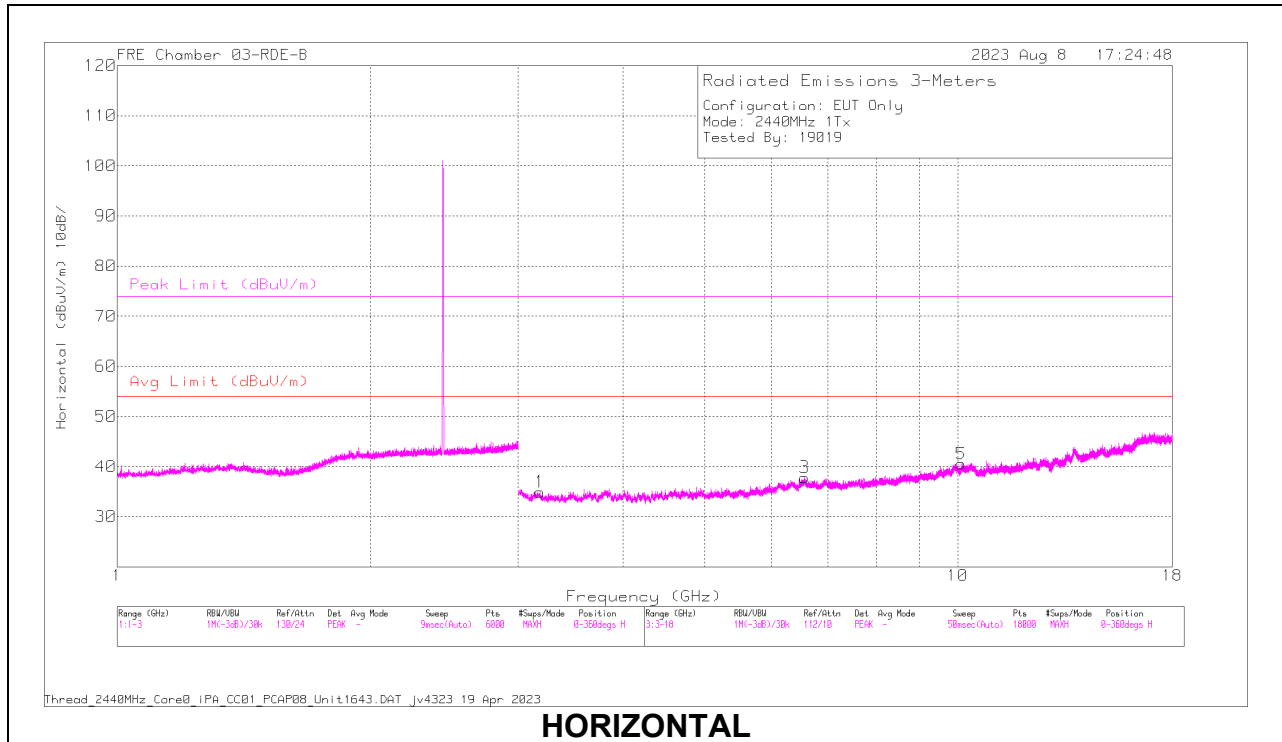
**RADIATED EMISSIONS**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	230300 ACF (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.810453	59.69	PK2	34.2	-49.05	44.84	-	-	74	-29.16	347	367	H
	* 4.807984	48.26	MAv1	34.2	-49	33.46	54	-20.54	-	-	347	367	H
2	* 4.808401	60.59	PK2	34.2	-49	45.79	-	-	74	-28.21	184	224	V
	* 4.807795	48.35	MAv1	34.2	-49	33.55	54	-20.45	-	-	184	224	V
3	7.216417	58.23	PK2	35.8	-47.3	46.73	-	-	74	-27.27	188	380	V
	7.215448	46.49	MAv1	35.8	-47.24	35.05	-	-	-	-	188	380	V
4	7.217013	57.88	PK2	35.8	-47.3	46.38	-	-	74	-27.62	234	167	H
	7.217013	57.88	PK2	35.8	-47.3	46.38	-	-	74	-27.62	234	167	H
5	9.618994	58.65	PK2	37.1	-46.7	49.05	-	-	74	-24.95	42	369	H
	9.6191	46.89	MAv1	37.1	-46.71	37.28	-	-	-	-	42	369	H
6	9.619035	58.55	PK2	37.1	-46.7	48.95	-	-	74	-25.05	206	295	V
	9.620302	46.84	MAv1	37.1	-46.8	37.14	-	-	-	-	206	295	V

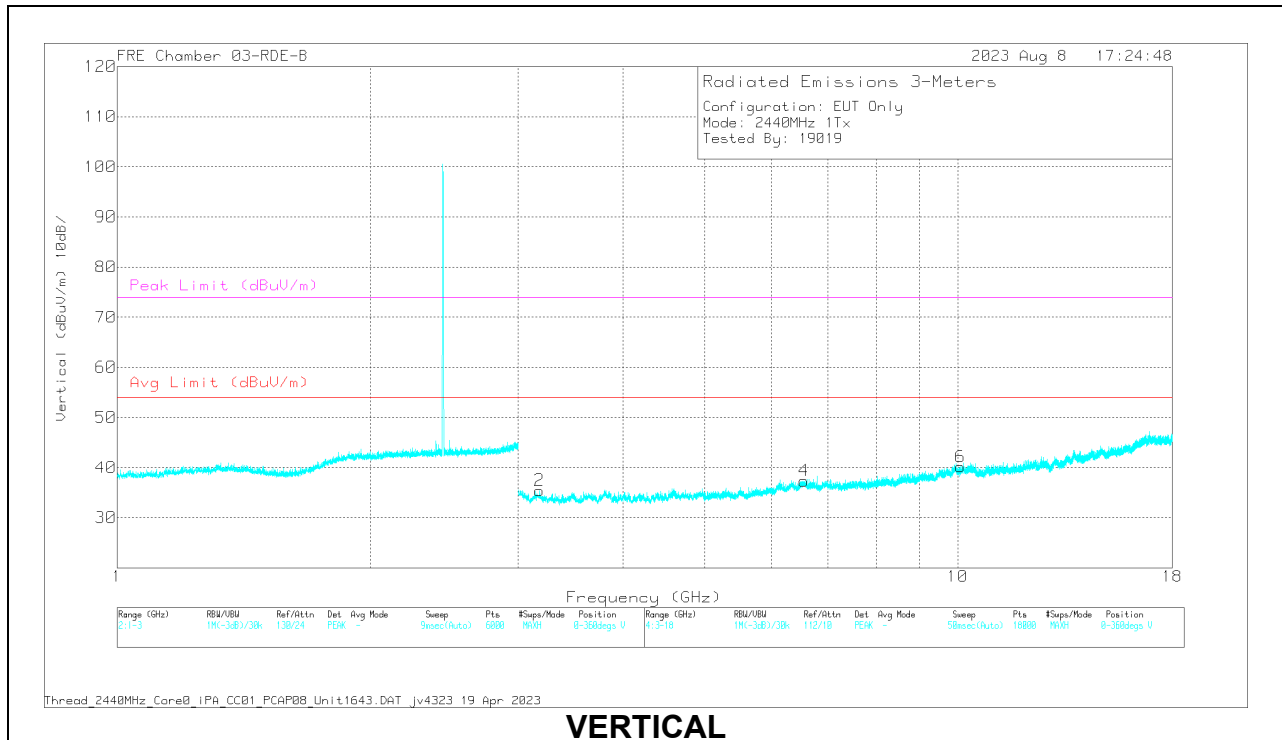
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 PK2 - KDB558074 Method: Maximum Peak  
 MAv1 - KDB558074 Option 1 Maximum RMS Average



### MID CHANNEL RESULTS



**HORIZONTAL**



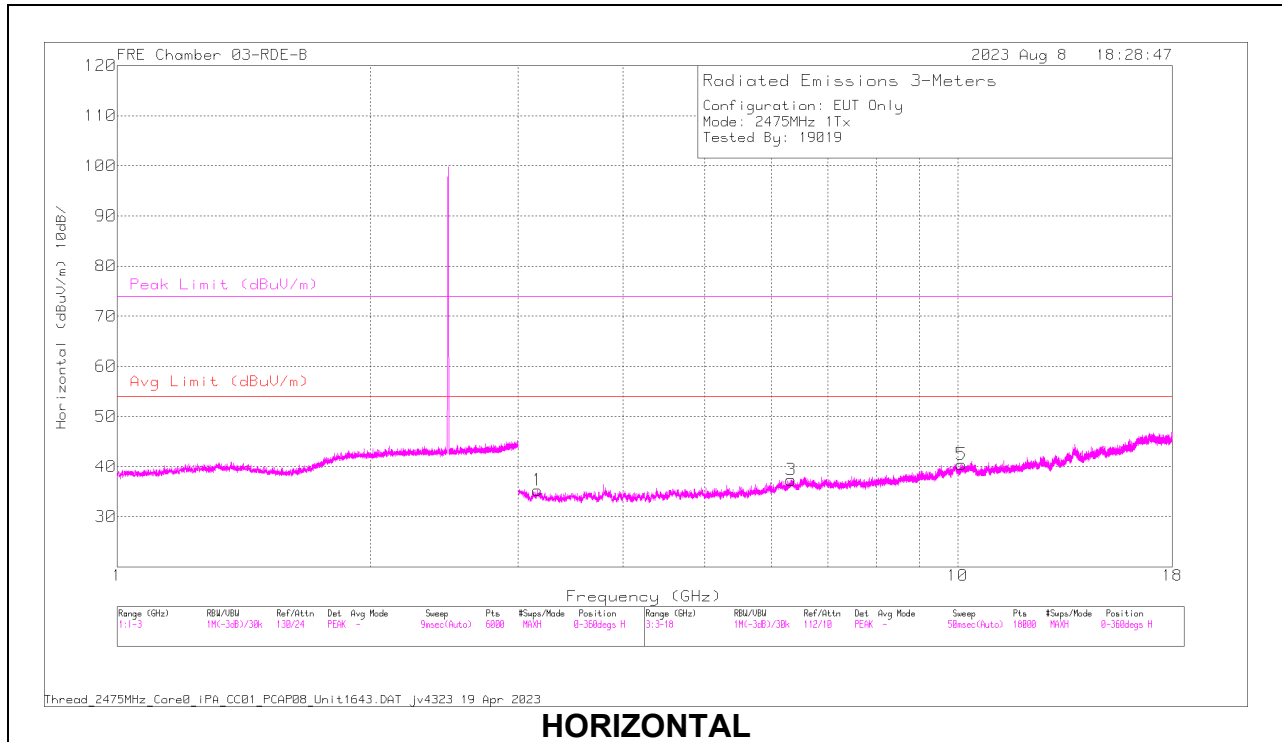
**VERTICAL**

**RADIATED EMISSIONS**

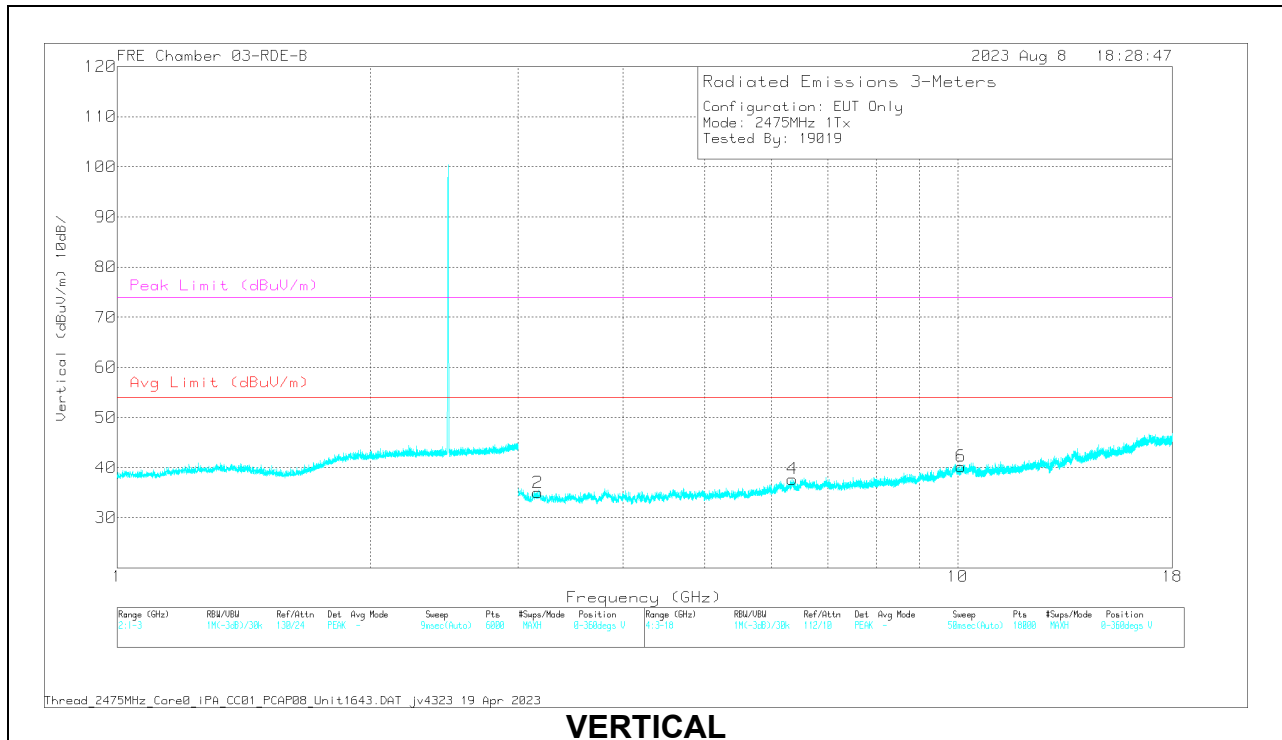
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	230300 ACF (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	3.178178	59.68	PK2	33.1	-47.5	45.28	74	-28.72	148	117	V
1	3.18429	59.47	PK2	33.1	-47.6	44.97	74	-29.03	360	147	H
4	6.560429	57.63	PK2	35.6	-45.8	47.43	74	-26.57	126	115	V
3	6.578425	57.15	PK2	35.6	-45.6	47.15	74	-26.85	228	143	H
6	10.06738	59.49	PK2	37.6	-47.64	49.45	74	-24.55	187	183	V
5	10.097194	59.69	PK2	37.6	-47.88	49.41	74	-24.59	155	202	H

PK2 - KDB558074 Method: Maximum Peak  
 MAV1 - KDB558074 Option 1 Maximum RMS Average

### HIGH CHANNEL RESULTS



**HORIZONTAL**



**VERTICAL**

## RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	230300 ACF (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	3.159014	59.45	PK2	33.1	-47.9	44.65	74	-29.35	278	143	H
2	3.165124	59.42	PK2	33.1	-47.81	44.71	74	-29.29	98	159	V
3	6.336907	57.74	PK2	35.4	-45.9	47.24	74	-26.76	170	190	H
4	6.355046	57.51	PK2	35.4	-45.9	47.01	74	-26.99	178	190	V
6	10.094615	60.47	PK2	37.6	-47.94	50.13	74	-23.87	159	141	V
5	10.101048	59.96	PK2	37.6	-47.8	49.76	74	-24.24	139	198	H

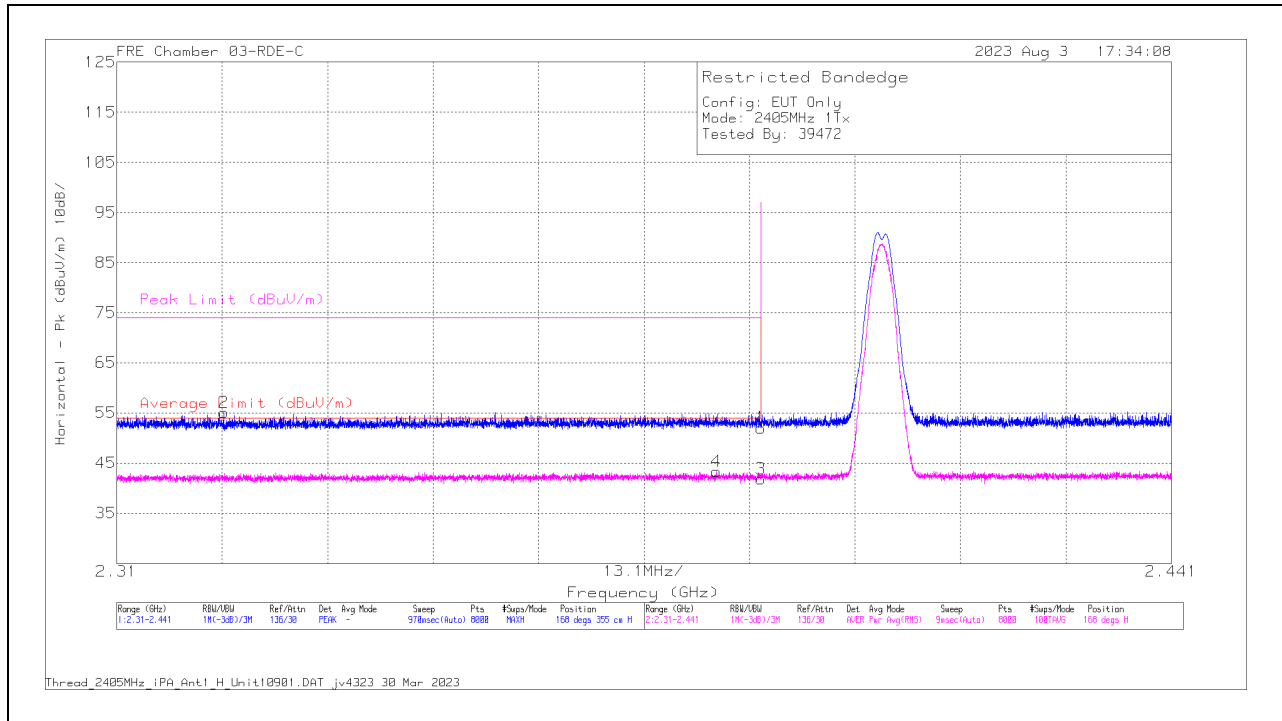
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

**ANT 3**

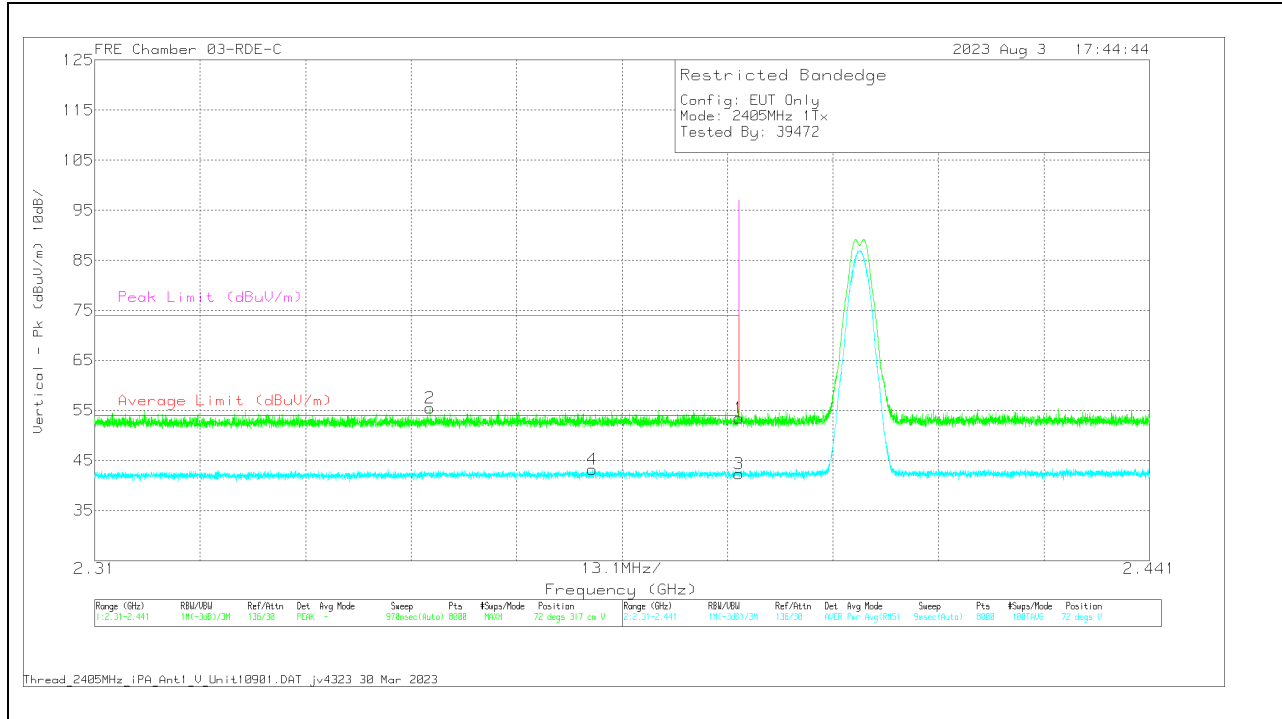
**BANDEDGE (LOW CHANNEL)**

**HORIZONTAL RESULT**



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

### VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226672 ACF (dB) 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	61.17	Pk	32.1	-39.8	53.47	-	-	74	-20.53	72	317	V
2	* 2.351647	63.42	Pk	31.9	-39.9	55.42	-	-	74	-18.58	72	317	V
3	* 2.39	50.07	RMS	32.1	-39.8	42.37	54	-11.63	-	-	72	317	V
4	* 2.371807	51.1	RMS	32	-39.9	43.2	54	-10.8	-	-	72	317	V

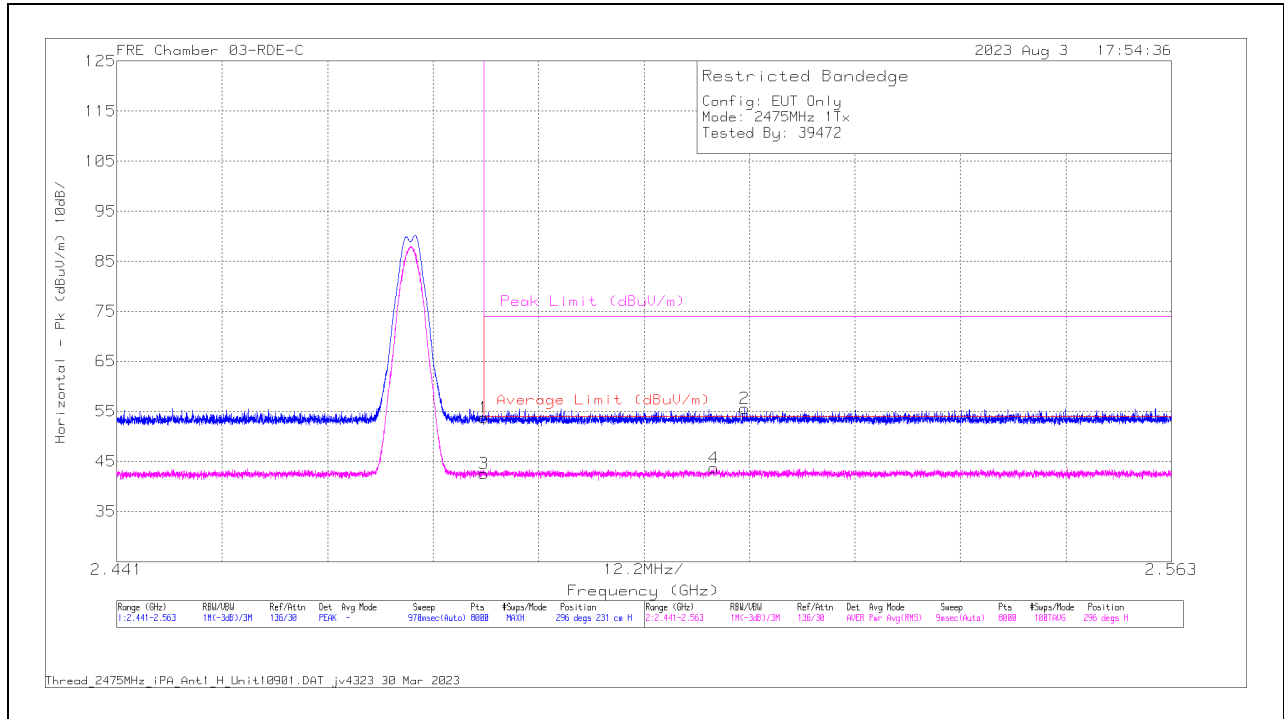
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

**BANDEDGE (HIGH CHANNEL)**

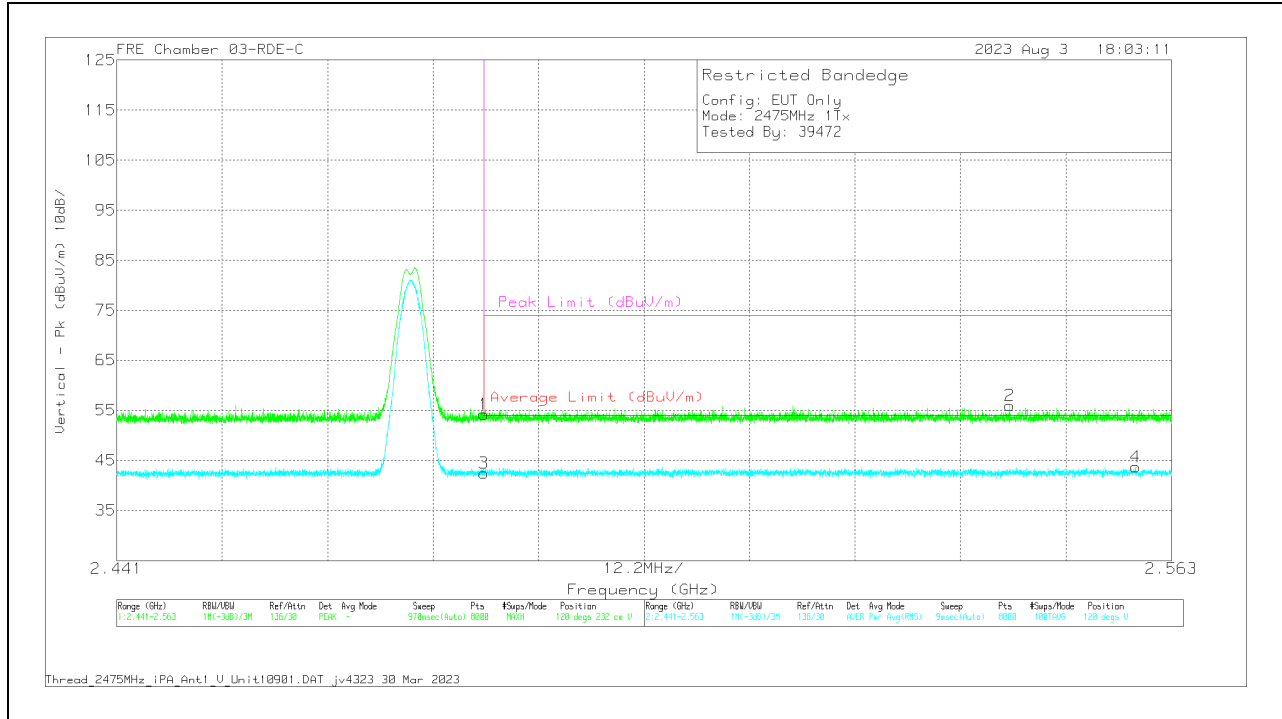
**HORIZONTAL RESULT**



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226672 ACF (dB) 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	61.11	Pk	32.2	-39.6	53.71	-	-	74	-20.29	296	231	H
2	2.513645	62.94	Pk	32.3	-39.6	55.64	-	-	74	-18.36	296	231	H
3	* 2.4835	49.99	RMS	32.2	-39.6	42.59	54	-11.41	-	-	296	231	H
4	2.510046	50.94	RMS	32.3	-39.5	43.74	54	-10.26	-	-	296	231	H

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

### VERTICAL RESULT

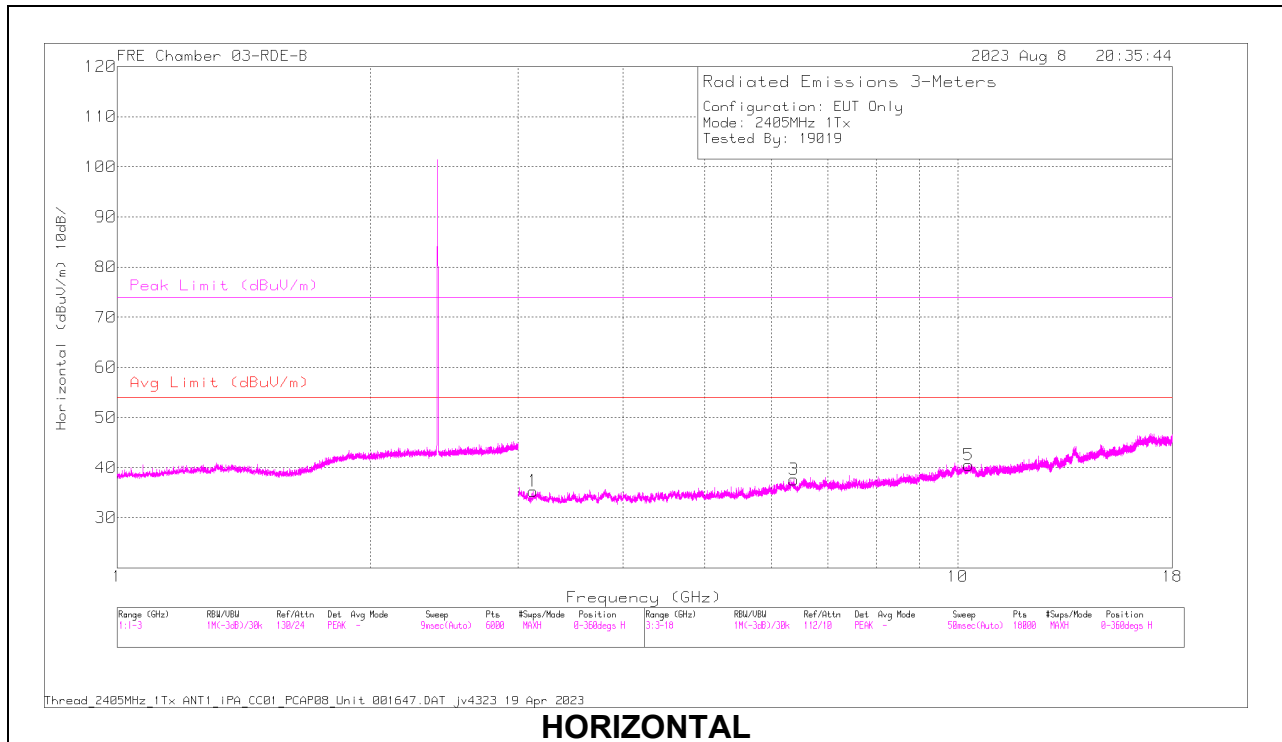


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226672 ACF (dB) 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	61.59	PK	32.2	-39.6	54.19	-	-	74	-19.81	120	232	V
2	2.544271	63.17	PK	32.3	-39.5	55.97	-	-	74	-18.03	120	232	V
3	* 2.4835	49.83	RMS	32.2	-39.6	42.43	54	-11.57	-	-	120	232	V
4	2.558867	50.97	RMS	32.3	-39.5	43.77	54	-10.23	-	-	120	232	V

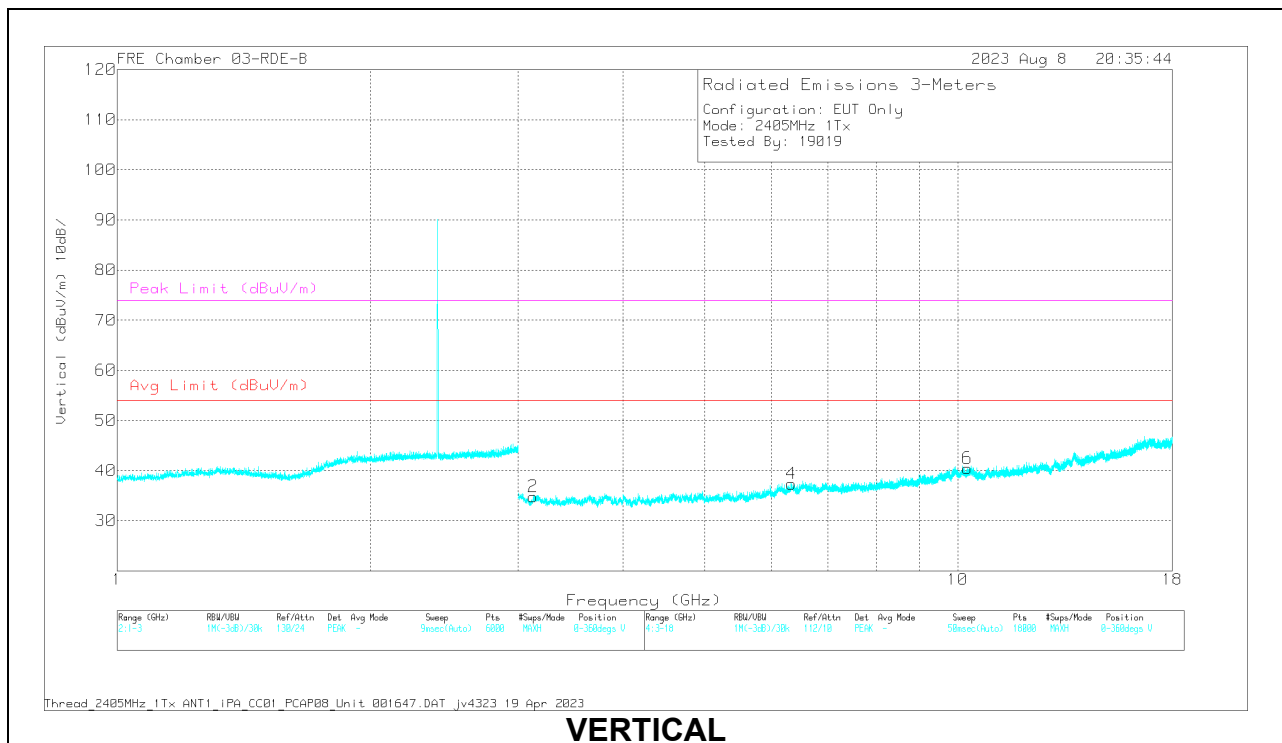
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection



# HARMONICS AND SPURIOUS EMISSIONS LOW CHANNEL RESULTS



**HORIZONTAL**



**VERTICAL**

**RADIATED EMISSIONS**

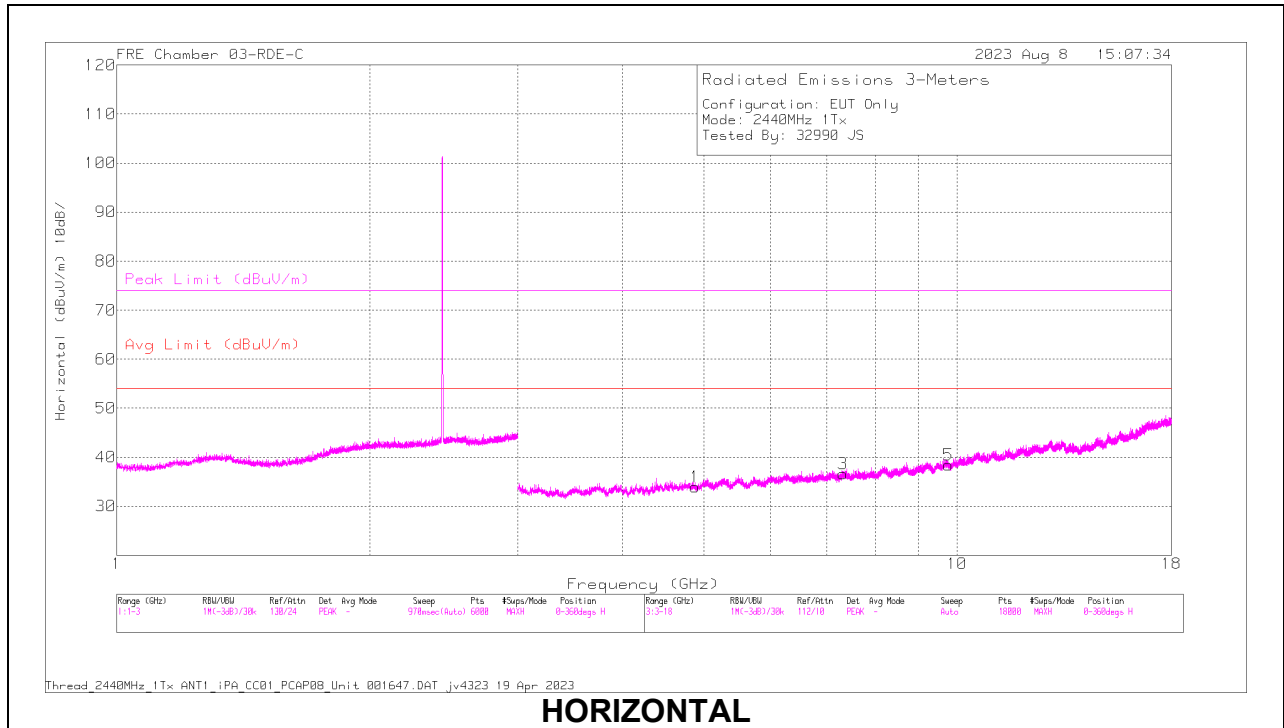
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	230300 ACF (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	3.123523	59.54	PK2	33.1	-47.95	44.69	-	-	-	-	31	135	H
2	6.381617	57.63	PK2	35.4	-46.1	46.93	-	-	-	-	83	120	H
3	10.298908	59.47	PK2	37.8	-47.6	49.67	-	-	-	-	120	191	H
4	3.124001	59.65	PK2	33.1	-47.9	44.85	-	-	-	-	26	136	V
5	6.341646	57.52	PK2	35.4	-45.8	47.12	-	-	-	-	95	120	V
6	10.26842	59.71	PK2	37.7	-47.74	49.67	-	-	-	-	138	101	V

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

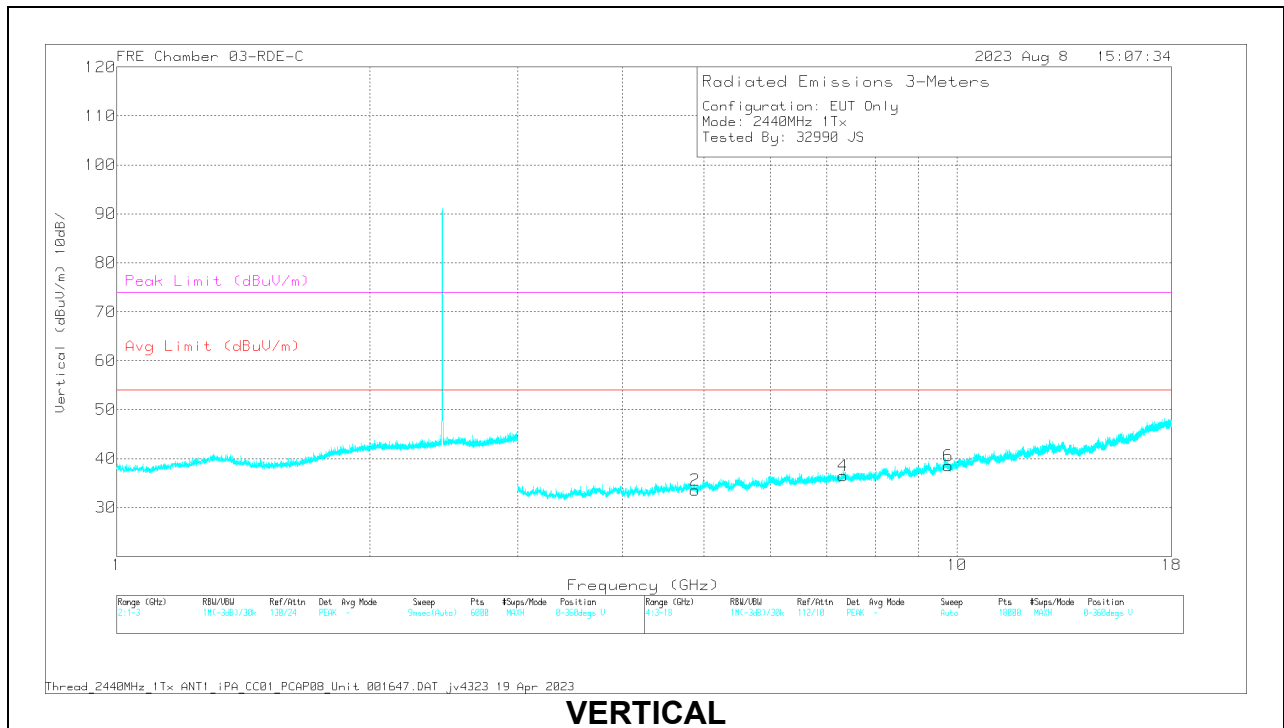
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

### MID CHANNEL RESULTS



### HORIZONTAL



### VERTICAL

**RADIATED EMISSIONS**

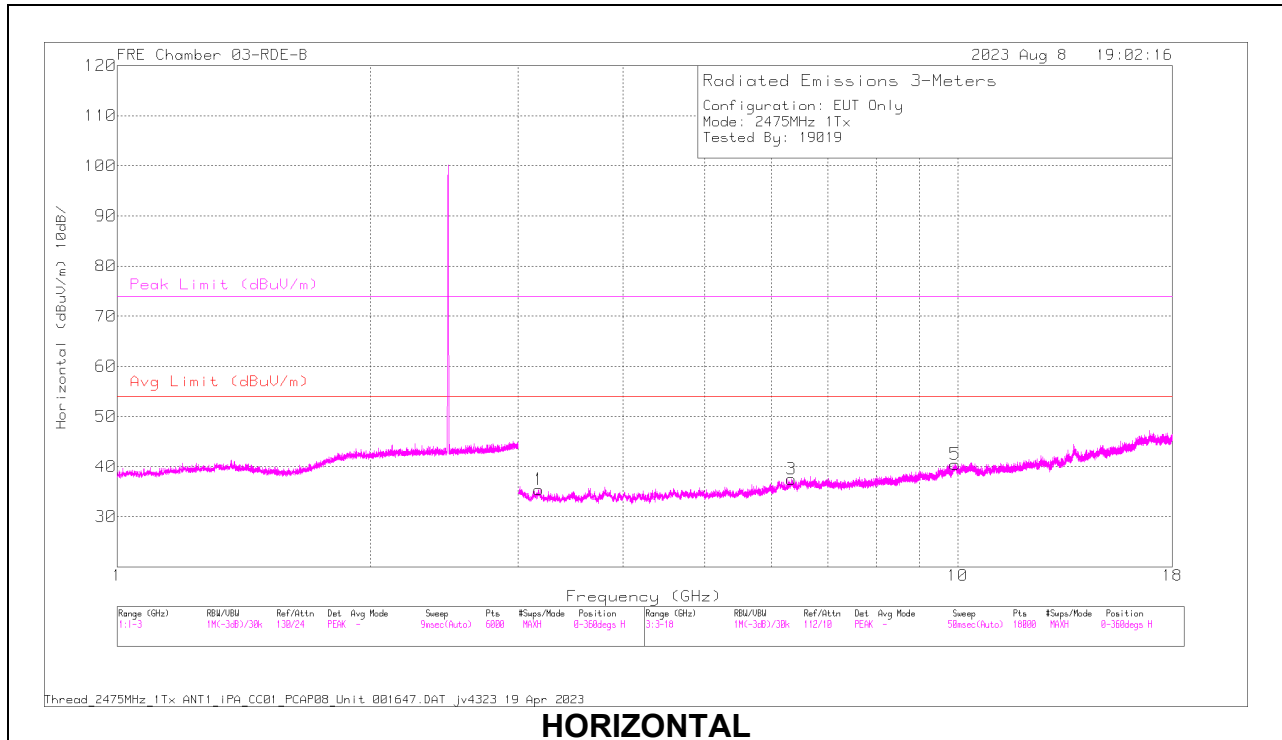
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226672 ACF (dB) 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.878576	57.68	PK2	34	-47.54	44.14	-	-	74	-29.86	54	390	H
	* 4.880154	46.23	MAv1	34	-47.6	32.63	54	-21.37	-	-	54	390	H
3	* 7.322539	57.01	PK2	35.7	-45.7	47.01	-	-	74	-26.99	351	270	H
	* 7.323719	45.48	MAv1	35.7	-45.7	35.48	54	-18.52	-	-	351	270	H
2	* 4.881407	57.72	PK2	34	-47.56	44.16	-	-	74	-29.84	343	222	V
	* 4.879214	46.32	MAv1	34	-47.52	32.8	54	-21.2	-	-	343	222	V
4	* 7.319629	57.15	PK2	35.7	-45.74	47.11	-	-	74	-26.89	144	167	V
	* 7.320203	45.2	MAv1	35.7	-45.7	35.2	54	-18.8	-	-	144	167	V
6	9.755702	58.13	PK2	36.8	-44.97	49.96	-	-	74	-24.04	206	285	V
	9.759358	45.91	MAv1	36.9	-44.96	37.85	-	-	-	-	206	285	V
5	9.757905	46.1	MAv1	36.9	-45	38	-	-	-	-	8	160	H
	9.758672	58.21	PK2	36.9	-45	50.11	-	-	74	-23.89	8	160	H

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

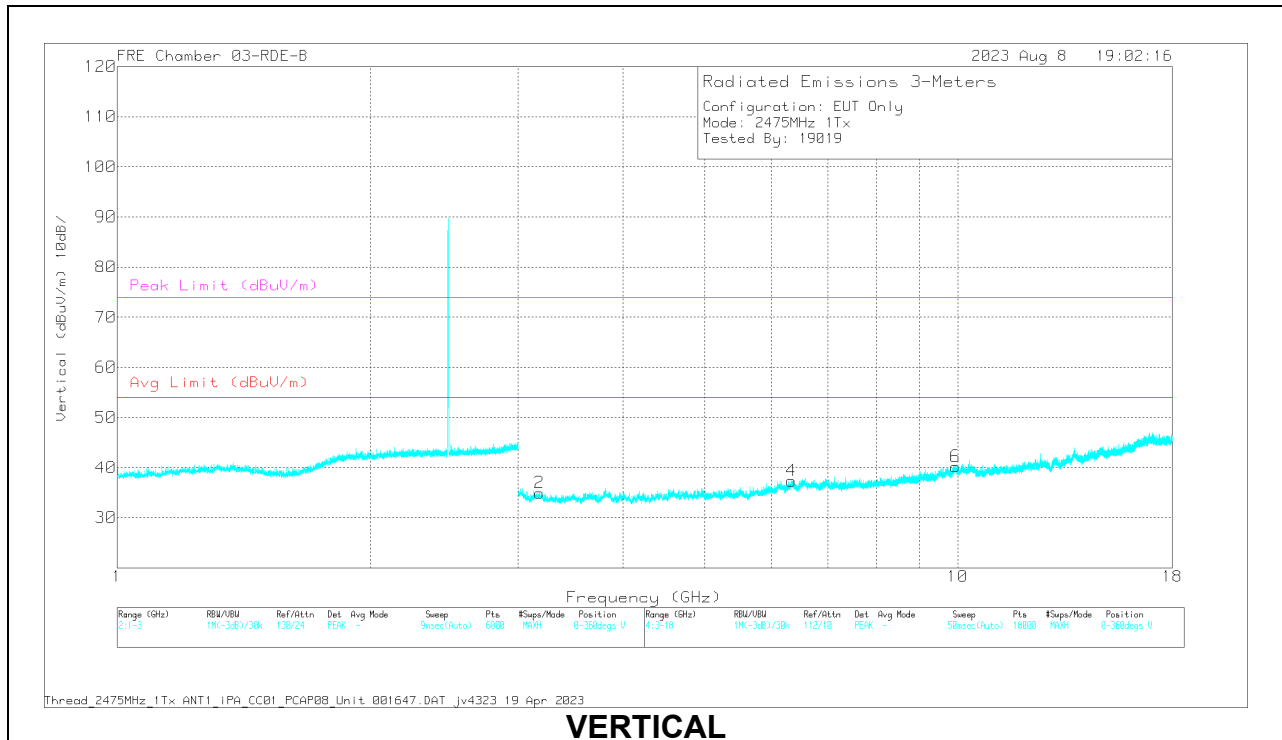
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

### HIGH CHANNEL RESULTS



**HORIZONTAL**



**VERTICAL**

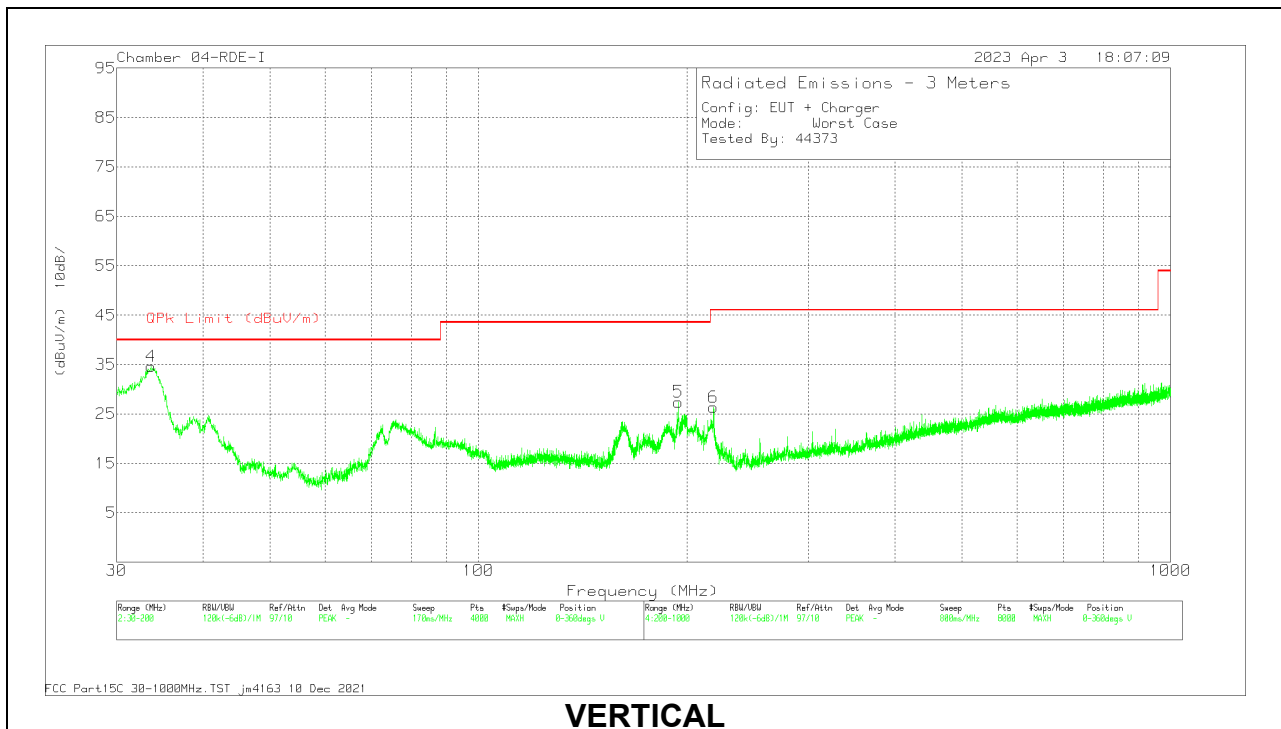
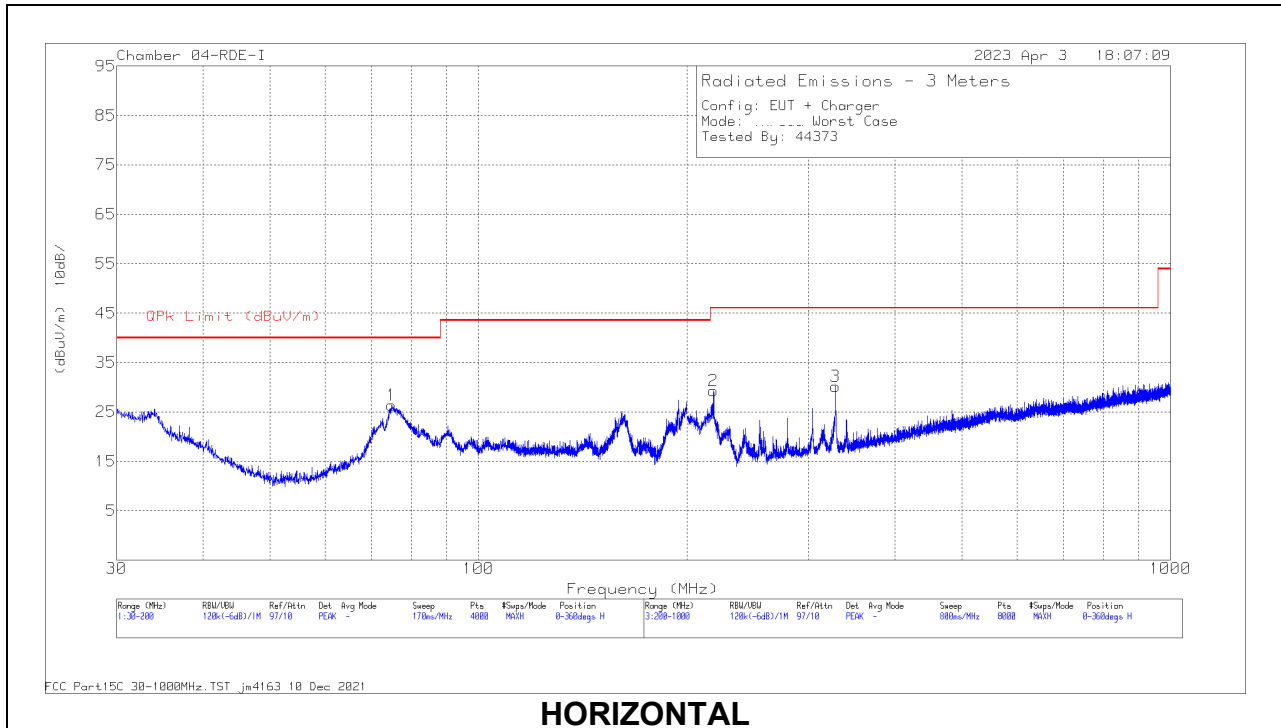
**RADIATED EMISSIONS**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	230300 ACF (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	3.171958	59.74	PK2	33.1	-47.8	45.04	74	-28.96	126	158	H
2	3.176947	59.52	PK2	33.1	-47.61	45.01	74	-28.99	74	182	V
4	6.338635	57.34	PK2	35.4	-45.84	46.9	74	-27.1	130	132	V
3	6.341756	57.42	PK2	35.4	-45.8	47.02	74	-26.98	58	183	H
5	9.929627	59.95	PK2	37.5	-47.4	50.05	74	-23.95	96	156	H
6	9.938544	61.07	PK2	37.5	-47.4	51.17	74	-22.83	58	110	V

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

### 10.3. WORST CASE BELOW 1 GHz

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



**DATA**

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80714 ACF (dB) - 10mH	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 74.8916	42.72	Pk	14.5	-30.9	26.32	40	-13.68	0-360	299	H
2	218.602	43.04	Pk	16.3	-30	29.34	46.02	-16.68	0-360	101	H
3	* 327.817	39.98	Pk	19.7	-29.5	30.18	46.02	-15.84	0-360	101	H
4	33.656	40.61	Pk	25.1	-31.1	34.61	40	-5.39	0-360	101	V
	33.845	37.96	Qp	25	-31.1	31.86	40	-8.14	343	103	V
5	194.39	39.54	Pk	17.9	-30	27.44	43.52	-16.08	0-360	101	V
6	218.602	40.04	Pk	16.3	-30	26.34	46.02	-19.68	0-360	101	V

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

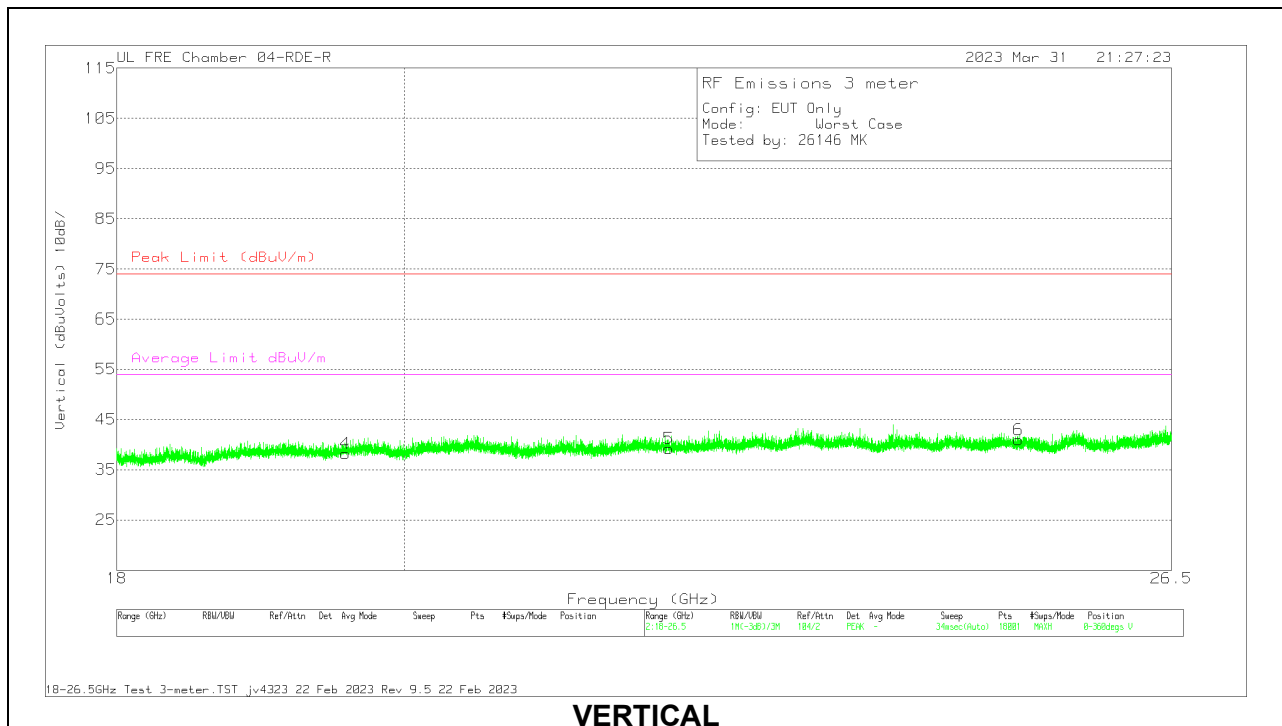
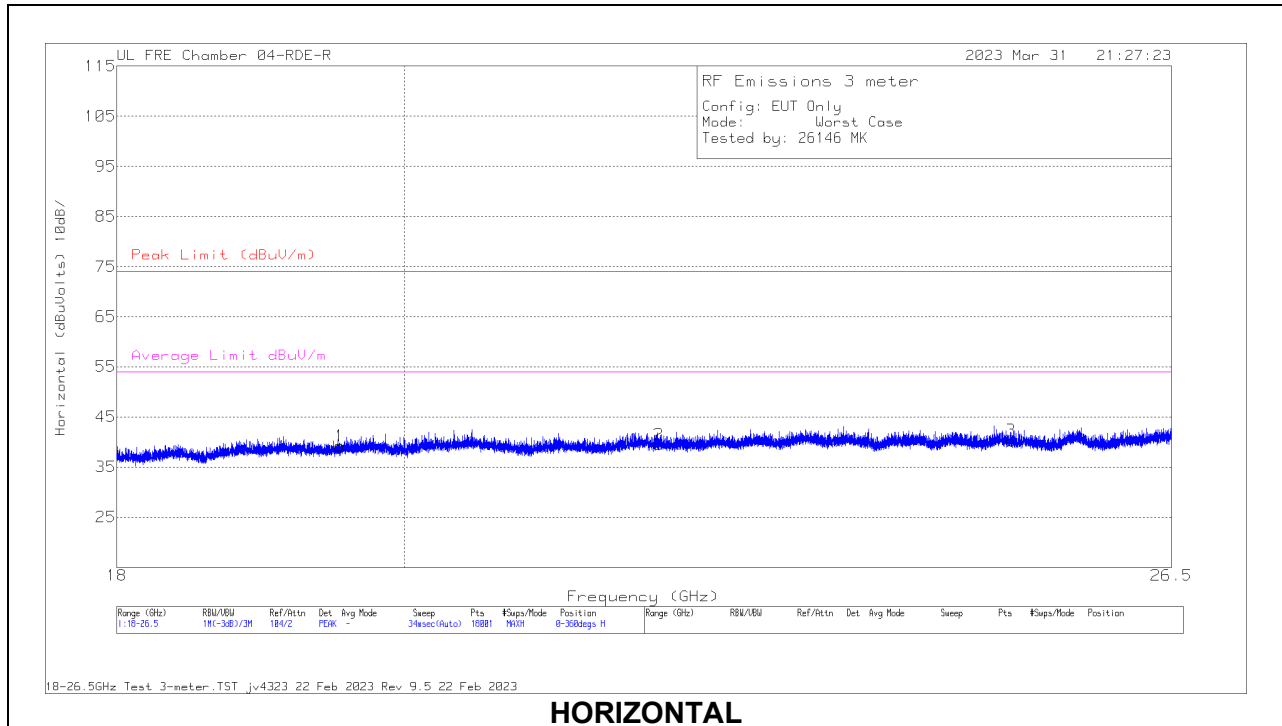
Pk - Peak detector

Qp - Quasi-Peak detector



### 10.4. WORST CASE 18-26 GHz

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



**DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	172353 ACF (dB) - 3mH	171583 Amp Assembly (dB)	Cables (dB)	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	PK Margin (dB)	Average Limit dBuV/m	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 19.534249	55.73	Pk	33	-65.2	15.7	39.23	74	-34.77	-	-	0-360	100	H
4	* 19.57486	54.66	Pk	33	-65.2	15.8	38.26	74	-35.74	-	-	0-360	99	V
5	* 22.039387	54.33	Pk	33.7	-65.4	16.6	39.23	74	-34.77	-	-	0-360	99	V
2	21.958165	54.5	Pk	33.7	-65.3	16.6	39.5	74	-34.5	-	-	0-360	100	H
3	24.98558	52.38	Pk	34.6	-64.4	17.7	40.28	74	-33.72	-	-	0-360	100	H
6	25.054524	52.85	Pk	34.6	-64.2	17.7	40.95	74	-33.05	-	-	0-360	99	V

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

## 11. AC POWER LINE CONDUCTED EMISSIONS

### LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

Frequency of Emission (MHz)	Conducted Limit (dB $\mu$ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

\*Decreases with the logarithm of the frequency.

### TEST PROCEDURE

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

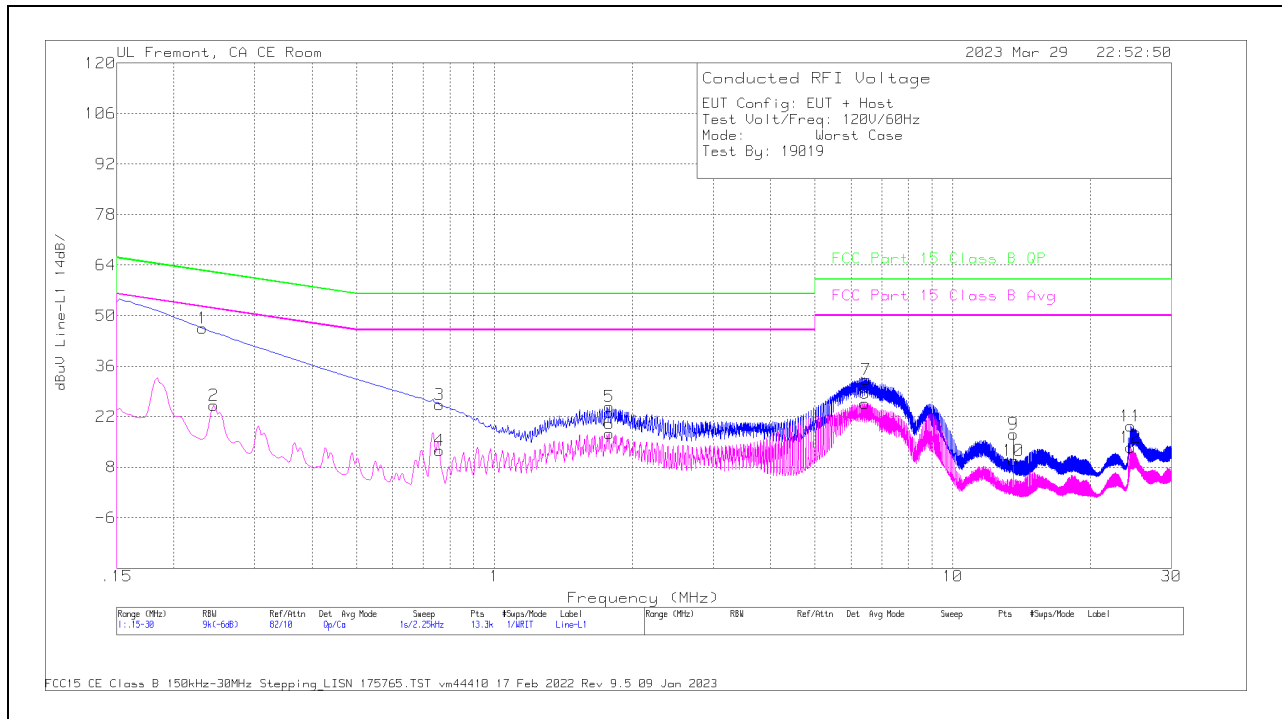
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

### RESULTS

11.1.1. AC POWER LINE WITH LAPTOP

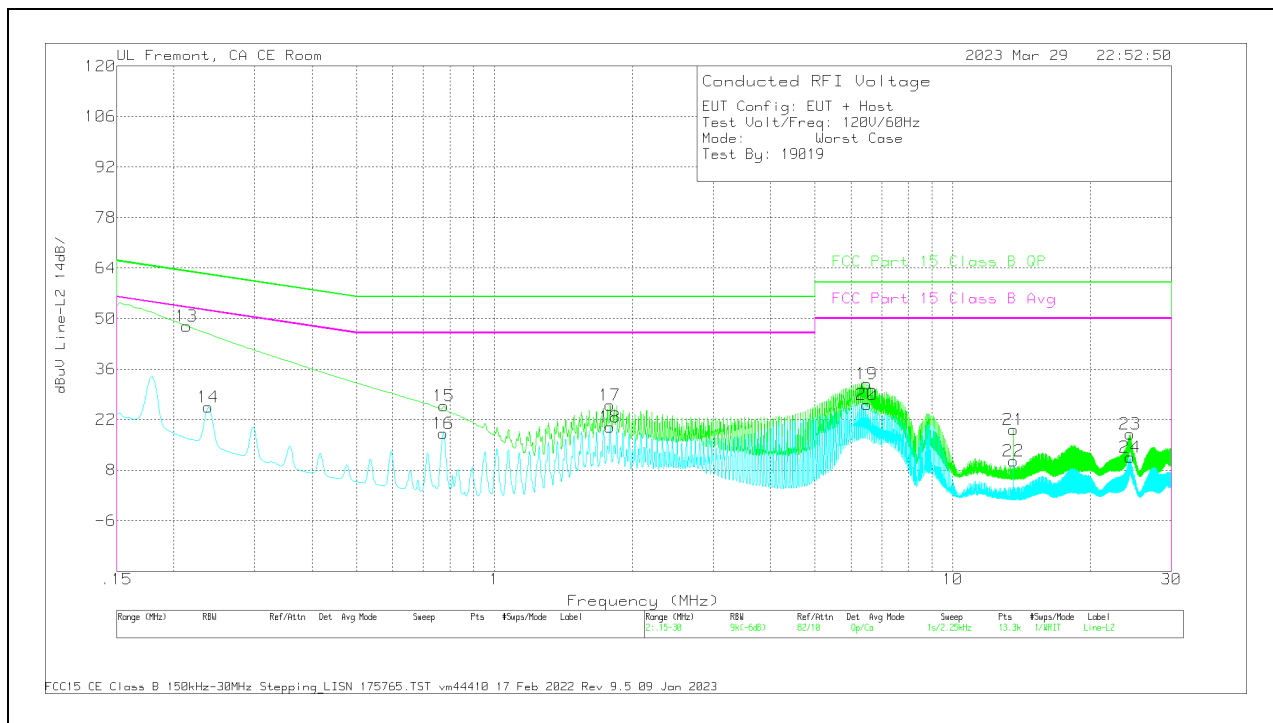
LINE 1 RESULTS



Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L1_LISN.csv dB	C1&C3 cable path loss dB	207996 Limiter with short cabl dB	Corrected Reading dBuV	FCC Part 15 Class B QP dBuV	QP Margin (dB)	FCC Part 15 Class B Avg dBuV	Av(CISPR)M argin (dB)
1	.231	37.21	Qp	0	0	9.3	46.51	62.41	-15.9	-	-
2	.2445	15.85	Ca	0	0	9.3	25.15	-	-	51.94	-26.79
3	.7598	15.87	Qp	0	.1	9.3	25.27	56	-30.73	-	-
4	.7598	3.23	Ca	0	.1	9.3	12.63	-	-	46	-33.37
5	1.779	15.32	Qp	0	.1	9.3	24.72	56	-31.28	-	-
6	1.779	7.86	Ca	0	.1	9.3	17.26	-	-	46	-28.74
7	6.477	22.9	Qp	0	.1	9.3	32.3	60	-27.7	-	-
8	6.441	16.3	Ca	0	.1	9.3	25.7	-	-	50	-24.3
9	13.56	7.63	Qp	.1	.2	9.3	17.23	60	-42.77	-	-
10	13.56	.3	Ca	.1	.2	9.3	9.9	-	-	50	-40.1
11	24.4793	9.58	Qp	.2	.3	9.4	19.48	60	-40.52	-	-
12	24.4793	3.61	Ca	.2	.3	9.4	13.51	-	-	50	-36.49

Qp - Quasi-Peak detector  
 Ca - CISPR average detection

### LINE 2 RESULTS

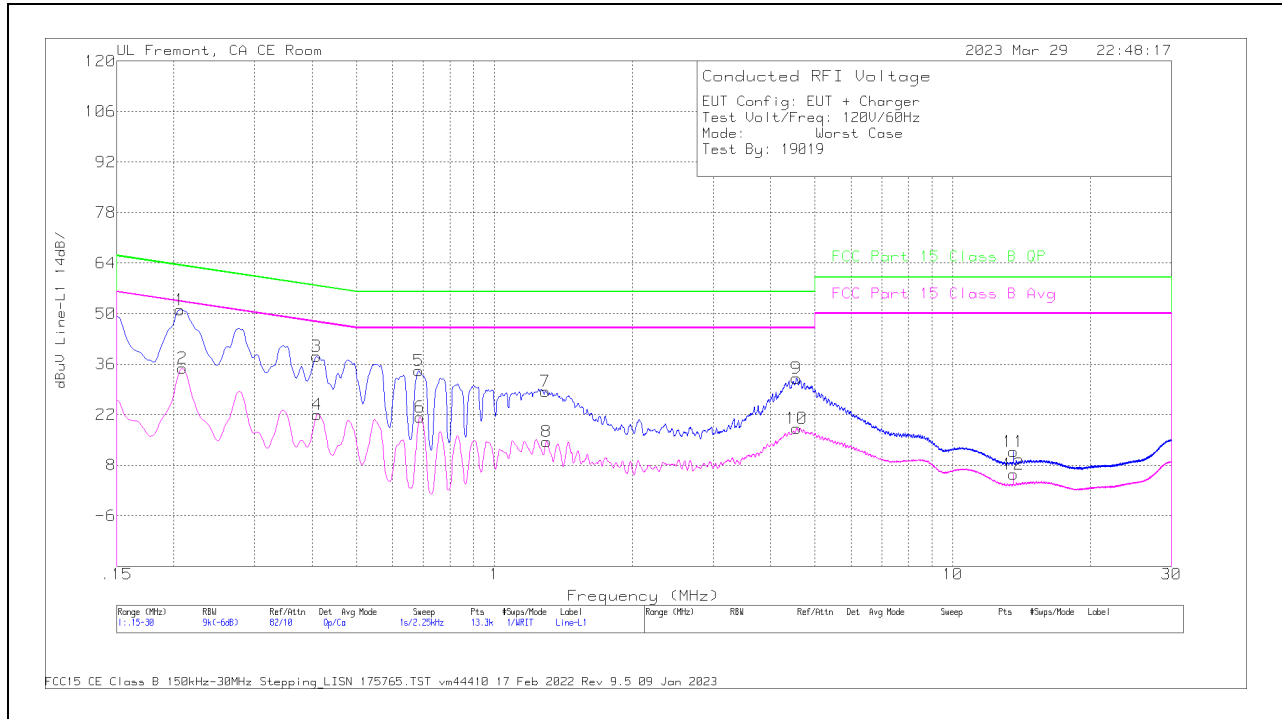


Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L2_LISN dB	L2_LISN.csv dB	C1&C3 cable path loss dB	207996 Limiter with short cabl dB	Corrected Reading dBuV	FCC Part 15 Class B QP dBuV	QP Margin (dB)	FCC Part 15 Class B Avg dBuV
13	.213	38.58	Qp	0	0	9.4	47.98	63.09	-15.11	-	-
14	.2378	16.2	Ca	0	0	9.3	25.5	-	-	52.17	-26.67
15	.7755	16.43	Qp	0	.1	9.3	25.83	56	-30.17	-	-
16	.7733	8.85	Ca	0	.1	9.3	18.25	-	-	46	-27.75
17	1.788	16.57	Qp	0	.1	9.3	25.97	56	-30.03	-	-
18	1.788	10.5	Ca	0	.1	9.3	19.9	-	-	46	-26.1
19	6.4995	22.49	Qp	0	.1	9.3	31.89	60	-28.11	-	-
20	6.4995	16.79	Ca	0	.1	9.3	26.19	-	-	50	-23.81
21	13.56	9.63	Qp	.1	.2	9.3	19.23	60	-40.77	-	-
22	13.56	.9	Ca	.1	.2	9.3	10.5	-	-	50	-39.5
23	24.3915	8.13	Qp	.2	.3	9.4	18.03	60	-41.97	-	-
24	24.3915	1.76	Ca	.2	.3	9.4	11.66	-	-	50	-38.34

Qp - Quasi-Peak detector  
 Ca - CISPR average detection

11.1.2. AC POWER LINE WITH AC/DC ADAPTER

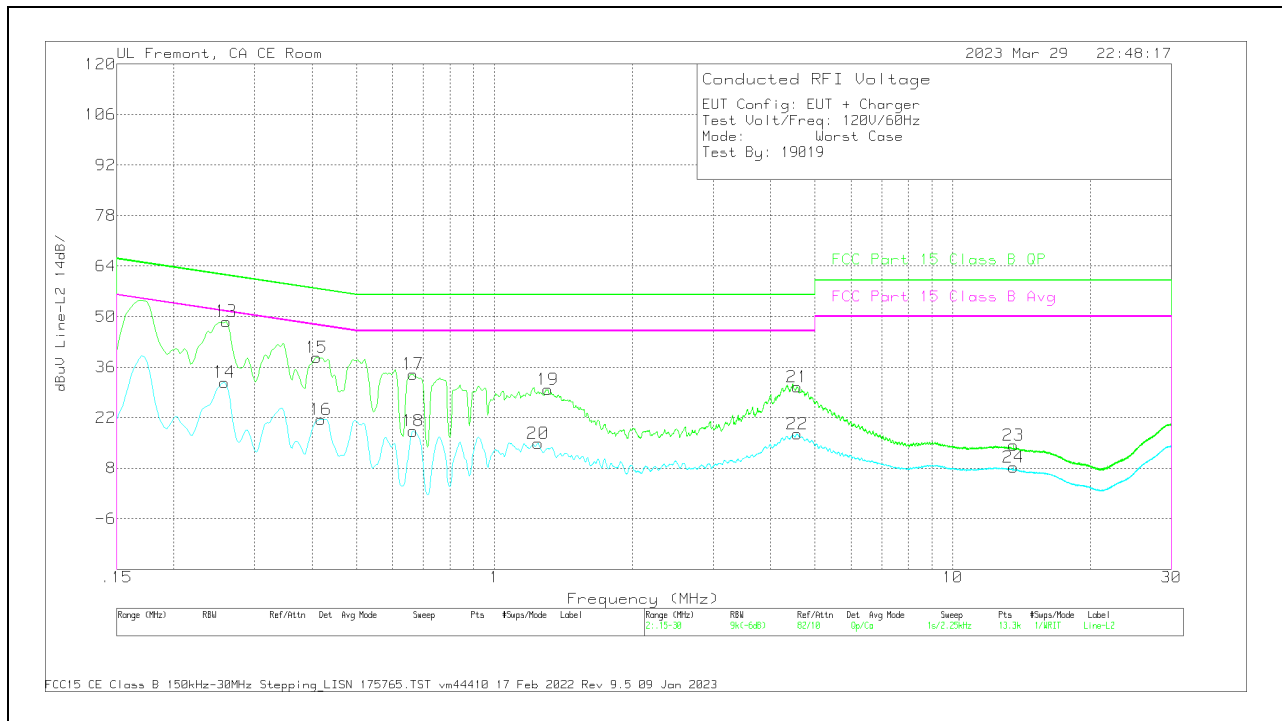
LINE 1 RESULTS



Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L1_LISN.csv dB	C1&C3 cable path loss dB	207996 Limiter with short cabl dB	Corrected Reading dBuV	FCC Part 15 Class B QP dBuV	QP Margin (dB)	FCC Part 15 Class B Avg dBuV	Av(CISPR)M argin (dB)
1	.2063	41.72	Qp	0	0	9.4	51.12	63.35	-12.23	-	-
2	.2085	25.45	Ca	0	0	9.4	34.85	-	-	53.26	-18.41
3	.4088	28.76	Qp	0	.1	9.3	38.16	57.67	-19.51	-	-
4	.411	12.6	Ca	0	.1	9.3	22	-	-	47.63	-25.63
5	.6833	24.71	Qp	0	.1	9.3	34.11	56	-21.89	-	-
6	.6878	11.94	Ca	0	.1	9.3	21.34	-	-	46	-24.66
7	1.293	19.09	Qp	0	.1	9.3	28.49	56	-27.51	-	-
8	1.2998	5.19	Ca	0	.1	9.3	14.59	-	-	46	-31.41
9	4.5578	22.62	Qp	0	.1	9.3	32.02	56	-23.98	-	-
10	4.56	8.72	Ca	0	.1	9.3	18.12	-	-	46	-27.88
11	13.56	2.13	Qp	.1	.2	9.3	11.73	60	-48.27	-	-
12	13.56	-4.05	Ca	.1	.2	9.3	5.55	-	-	50	-44.45

Qp - Quasi-Peak detector  
 Ca - CISPR average detection

### LINE 2 RESULTS



Range 2: Line-L2 .15 - 30MHz												
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L2_LISN dB	C1&C3 cable path loss dB	207996 Limiter with short cabl dB	Corrected Reading dBuV	FCC Part 15 Class B QP dBuV	QP Margin (dB)	FCC Part 15 Class B Avg dBuV	Av(CISPR)M argin (dB)	
13	.2603	39.39	Qp	0	0	9.3	48.69	61.42	-12.73	-	-	
14	.258	22.53	Ca	0	0	9.3	31.83	-	-	51.5	-19.67	
15	.4088	29.37	Qp	0	.1	9.3	38.77	57.67	-18.9	-	-	
16	.4189	12.15	Ca	0	.1	9.3	21.55	-	-	47.47	-25.92	
17	.6653	24.69	Qp	0	.1	9.3	34.09	56	-21.91	-	-	
18	.6653	8.88	Ca	0	.1	9.3	18.28	-	-	46	-27.72	
19	1.3088	20.4	Qp	0	.1	9.3	29.8	56	-26.2	-	-	
20	1.2458	5.43	Ca	0	.1	9.3	14.83	-	-	46	-31.17	
21	4.578	21.21	Qp	0	.1	9.3	30.61	56	-25.39	-	-	
22	4.5758	8.15	Ca	0	.1	9.3	17.55	-	-	46	-28.45	
23	13.56	4.73	Qp	.1	.2	9.3	14.33	60	-45.67	-	-	
24	13.56	-1.33	Ca	.1	.2	9.3	8.27	-	-	50	-41.73	

Qp - Quasi-Peak detector  
 Ca - CISPR average detection

## 12. SETUP PHOTOS

Please refer to 14523744-EP1V1 for setup photos