

TEST REPORT

Report Number: 14523744-E3V2

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 04, 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

Rev.	Issue Date	Revisions	Revised By
V1	8/3/2023	Initial Issue	Chin Pang
V2	8/4/2023	Address Cover page, page 7, section 6.1, page 18, 28, 29, 30, 41, 60, section 6.2	Chin Pang

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	5
2. TEST SUMMARY	7
3. TEST METHODOLOGY	7
4. FACILITIES AND ACCREDITATION	8
5. DECISION RULES AND MEASUREMENT UNCERTAINTY	8
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>9</i>
6. EQUIPMENT UNDER TEST.....	10
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>11</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>
7. MEASUREMENT METHOD.....	16
8. TEST AND MEASUREMENT EQUIPMENT	17
9. ANTENNA PORT TEST RESULTS.....	19
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 HDR (HDR4).....</i>	<i>21</i>
9.2.2. <i>HIGH POWER HDR TXBF (HDR4).....</i>	<i>22</i>
9.2.3. <i>HIGH POWER HDR (HDR8).....</i>	<i>23</i>
9.2.4. <i>HIGH POWER HDR TXBF (HDR8).....</i>	<i>24</i>
9.3. <i>6 dB BANDWIDTH.....</i>	<i>25</i>
9.3.1. <i>HIGH POWER HDR (HDR4).....</i>	<i>26</i>
9.4. <i>OUTPUT POWER.....</i>	<i>27</i>
9.4.1. <i>HIGH POWER HDR (HDR4).....</i>	<i>28</i>
9.4.2. <i>HIGH POWER HDR TXBF (HDR4).....</i>	<i>28</i>
9.4.3. <i>HIGH POWER HDR (HDR8).....</i>	<i>29</i>
9.4.4. <i>HIGH POWER HDR TXBF (HDR8).....</i>	<i>29</i>
9.4.5. <i>LOW POWER HDR (HDR4)</i>	<i>30</i>
9.4.6. <i>LOW POWER HDR TXBF (HDR4)</i>	<i>30</i>
9.4.7. <i>LOW POWER HDR (HDR8)</i>	<i>31</i>
9.4.8. <i>LOW POWER HDR TXBF (HDR8)</i>	<i>31</i>

9.5.	<i>AVERAGE POWER</i>	32
9.5.1.	HIGH POWER HDR (HDR4).....	33
9.5.2.	HIGH POWER HDR TXBF (HDR4).....	33
9.5.3.	HIGH POWER HDR (HDR8).....	34
9.5.4.	HIGH POWER HDR TXBF (HDR8).....	34
9.5.5.	LOW POWER HDR (HDR4)	35
9.5.6.	LOW POWER HDR TXBF (HDR4)	35
9.5.7.	LOW POWER HDR (HDR8)	36
9.5.8.	LOW POWER HDR TXBF (HDR8)	36
9.6.	<i>POWER SPECTRAL DENSITY</i>	37
9.6.1.	HIGH POWER HDR (HDR4).....	38
9.6.2.	HIGH POWER HDR TXBF (HDR4).....	39
9.6.3.	HIGH POWER HDR (HDR8).....	40
9.6.4.	HIGH POWER HDR TXBF (HDR8).....	41
9.7.	<i>CONDUCTED SPURIOUS EMISSIONS</i>	42
9.7.1.	HIGH POWER HDR (HDR4).....	43
9.7.2.	HIGH POWER HDR TXBF (HDR4).....	45
9.7.3.	HIGH POWER HDR (HDR8).....	47
9.7.4.	HIGH POWER HDR TXBF (HDR8).....	49
9.7.5.	LOW POWER HDR (HDR4)	51
9.7.6.	LOW POWER HDR TXBF (HDR4)	53
9.7.7.	LOW POWER HDR (HDR8)	55
9.7.8.	LOW POWER HDR TXBF (HDR8)	57
10.	RADIATED TEST RESULTS	59
10.1.	<i>LIMITS AND PROCEDURE</i>	59
10.2.	<i>TRANSMITTER ABOVE 1 GHz</i>	61
10.2.1.	HIGH POWER HDR (HDR4)	61
10.2.2.	HIGH POWER HDR TXBF (HDR4)	69
10.2.3.	HIGH POWER HDR (HDR8)	73
10.2.4.	HIGH POWER HDR TXBF (HDR8)	81
10.2.5.	LOW POWER HDR (HDR4)	85
10.2.6.	LOW POWER HDR TXBF (HDR4)	93
10.2.7.	LOW POWER HDR (HDR8)	97
10.2.8.	LOW POWER HDR TXBF (HDR8).....	105
10.2.9.	HARMONICS AND SPURIOUS EMISSIONS.....	109
10.3.	<i>WORST CASE BELOW 1 GHz</i>	115
10.4.	<i>WORST CASE 18-26 GHz</i>	117
11.	AC POWER LINE CONDUCTED EMISSIONS	119
11.1.	<i>AC Power Line With AC/DC Adapter</i>	120
11.2.	<i>AC Power Line with Laptop</i>	122
12.	SETUP PHOTOS	124

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: C9N6LY4LQH, WFV6QM1296, CY2KJ6YF12 (Radiated)
C07GV10005V00003PM (Conducted)

SAMPLE RECEIPT DATE: FEBRUARY 27, 2023

DATE TESTED: MARCH 08 - JULY 26, 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:

Prepared By:



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



Tony Li
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 checked="" type="checkbox"/>	Building 1: 47173 Benicia Street, Fremont, CA 94538, USA	US0104	2324A	550739
<input checked="" type="checkbox"/>	Building 2: 47266 Benicia Street, Fremont, CA 94538, USA			
<input checked="" 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 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	1.94 dB
Power Spectral Density	2.466 dB
Time Domain Measurements Using SA	3.39 dB
RF Power Measurement Direct Method Using Power Meter	0.450 dB(Peak), 1.3 dB (Ave)
Radio Frequency (Spectrum Analyzer)	141.16 Hz
Occupied Bandwidth	1.22%
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

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	2404 - 2476	HDR4	15.23	33.34
	Low Power			9.49	8.89
	High Power		HDR8	16.65	46.24
	Low Power			10.65	11.61
ANT 3	High Power	2404 - 2476	HDR4	15.23	33.34
	Low Power			9.48	8.87
	High Power		HDR8	16.62	45.92
	Low Power			10.64	11.59
BF, ANT 4 + ANT 3	High Power	2404 - 2476	HDR4	18.16	65.46
	Low Power			12.47	17.66
	High Power		HDR8	19.63	91.83
	Low Power			13.64	23.12

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The antenna(s) gain and type, 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 and 2TX beamforming. It was determined that Y (Landscape) orientation was the worst-case orientation for ANT 4, ANT 3 and beamforming 2TX.

Radiated band edge, harmonic and spurious emissions from 1GHz to 18GHz were performed with the EUT 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.

High power HDR4 and HDR8 TXBF harmonic spurious 1-18GHz were investigated to determine the worst case and results showed HDR4 was the worst case. Therefore, High Power Beamforming HDR4 mode was set to maximum power based on SISO to cover both SISO and MIMO modes to complies with radiated spurious emissions limits in the restricted bands between 1GHz and 18GHz low/mid/high channel (except the band edge).

99% and 6dB bandwidth measurements were performed only for high power mode to cover low power mode since 99% and 6dB bandwidth results are not different on low power mode. PSD measurements were done only for high power mode to cover low power mode as worst-case scenario.

Note: In the Radiated Plots and emissions data, ANT0=ANT4 and ANT1=ANT 3

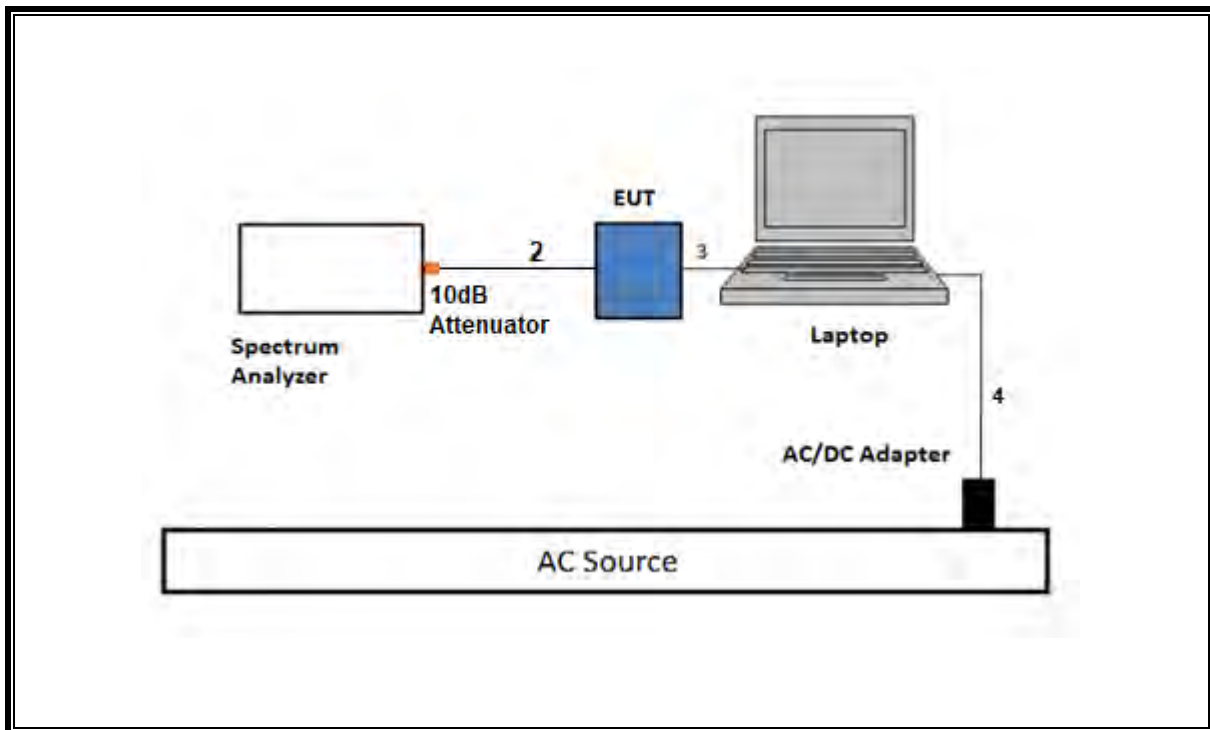
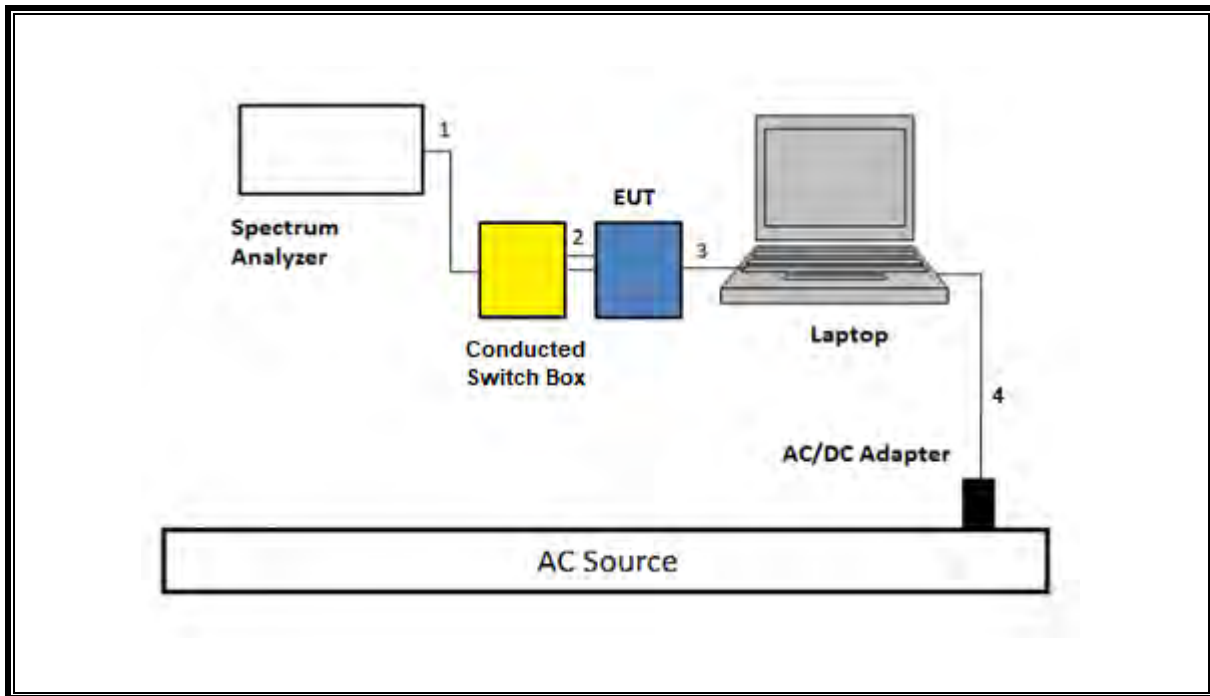
6.6. DESCRIPTION OF TEST SETUP

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

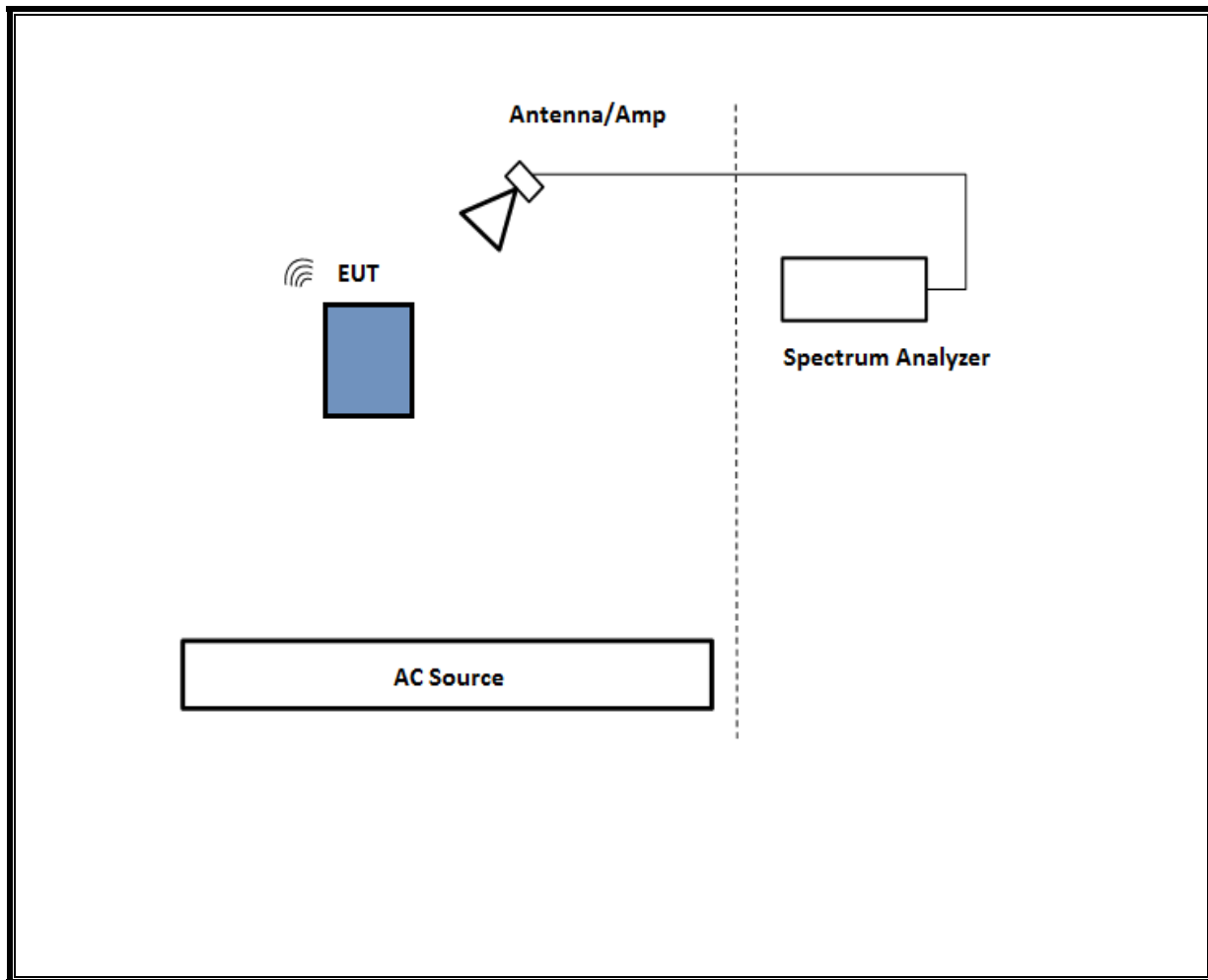
TEST SETUP

The EUT is connected to a test laptop during the tests. Test software exercised the radio card.

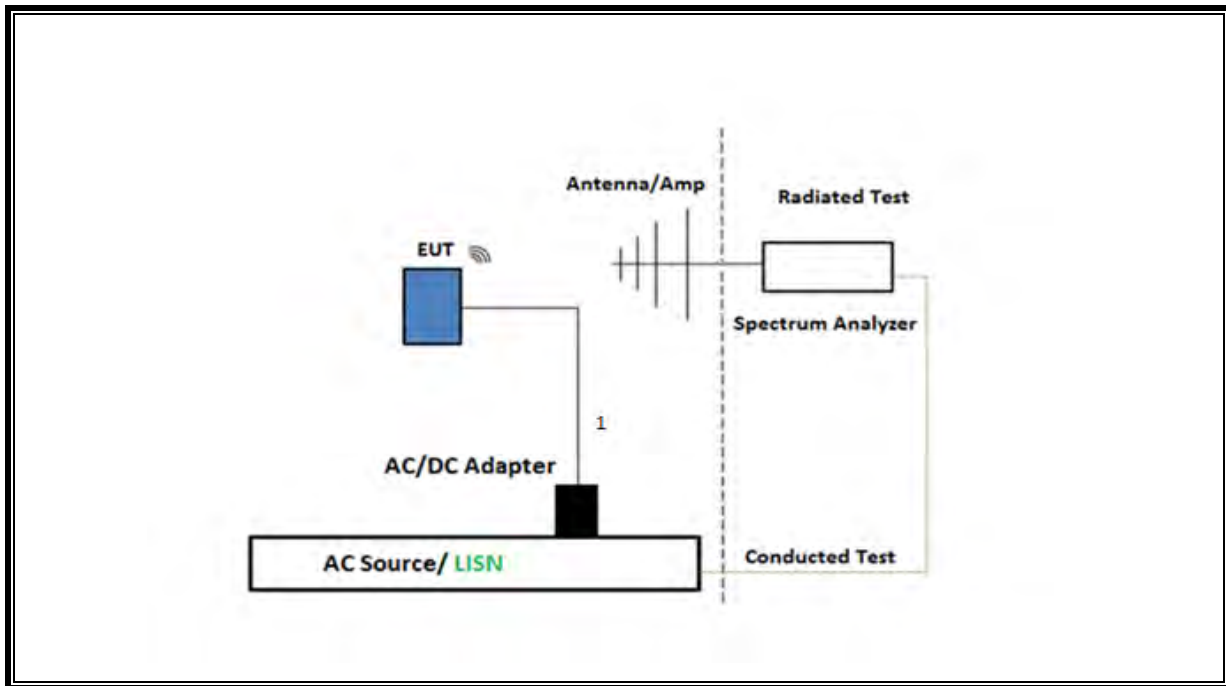
SETUP DIAGRAM FOR CONDUCTED TESTS



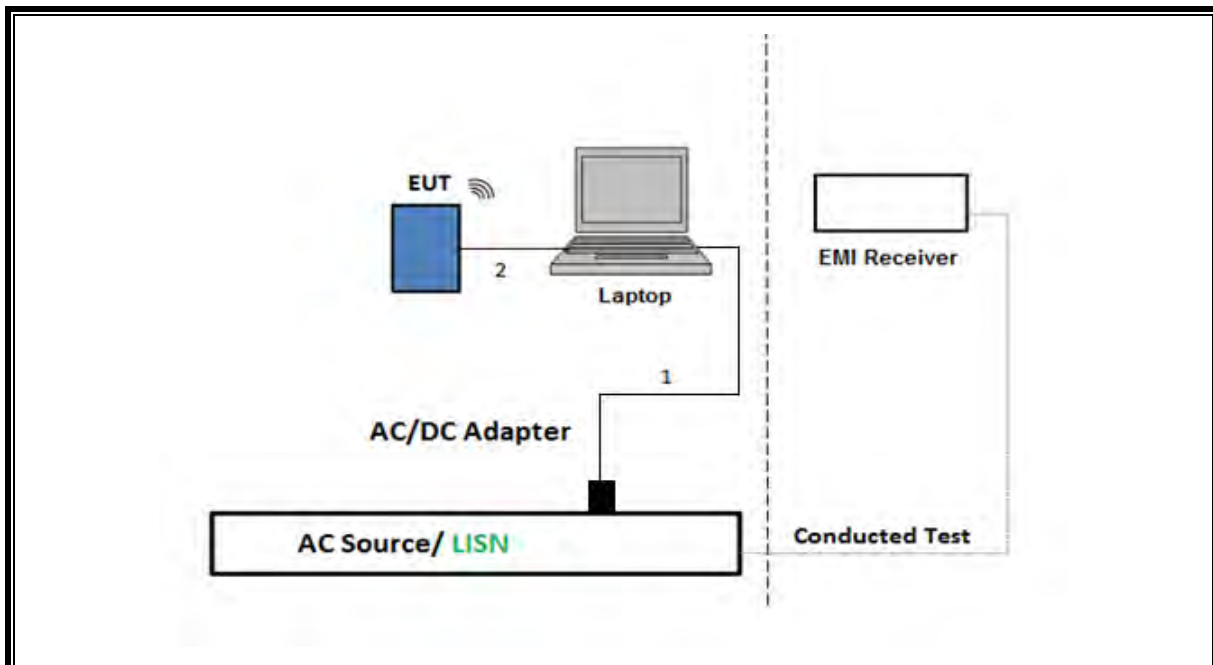
SETUP DIAGRAM FOR RADIATED TESTS Above 1 GHz



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

NOTE: All conducted antenna port tests for Beamforming applied the same test procedures as HDR normal modes.

8. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST					
Description	Manufacturer	Model	ID Num	Cal Due	Last Cal
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	84796	09/19/2023	09/19/2022
RF Filter Box 1-18GHz	UL-FR1	SAC 12 port rf box	217521	10/09/2023	10/09/2022
EMI Receiver	Rohde & Schwarz	ESW44	201498	02/29/2024	02/29/2023
Antenna, Broadband Hybrid, 30MHz to 3GHz	Sunol Sciences Corp	JB3	80714	10/06/2023	10/06/2022
Amplifier, 9KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310	204041	08/24/2023	08/24/2022
EMI Receiver	Rohde & Schwarz	ESW44	201498	02/29/2024	02/29/2023
*Antenna Horn, 18 to 26.5GHz	ARA	MWH-1826/B	172353	06/01/2023	06/01/2022
RF Amplifier Assembly, 18-26.5GHz, 60dB Gain	AMPLICAL	AMP18G26.5-60	171583	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 to 30MHz	ETS-Lindgren	EM-6872	170015	07/28/2023	07/28/2022
Power Meter, P-series single channel	Keysight	N1912A	90630	01/31/2024	01/31/2023
Power Sensor	Keysight	N1921A	90391	01/31/2024	01/31/2023
Antenna, Horn 1-18GHz	ETS Lindgren	3117	230299	01/12/2024	01/12/2023
RF Filter Box, 1-18GHz, 12 Port	UL-FR1	Frankenstein	216812	09/17/2023	09/17/2022
EMI Receiver	Rohde & Schwarz	ESW44	235670	04/30/2024	04/30/2023
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 Receiver	Rohde & Schwarz	ESW44	201502	02/29/2024	02/29/2023
Antenna, Horn 1-18GHz	ETS Lindgren	3117	222740	08/31/2023	08/31/2022
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	169935	02/29/2024	02/29/2023
RF Filter Box, 1-18GHz, 12 Port.	UL-FR1	Frankenstein	231874	04/19/2024	04/19/2023
Antenna, Horn 1-18GHz	ETS Lindgren	3117	230300	01/12/2024	01/12/2023
Filter Box, 1-18GHz 12 Port	UL-FR1	Frankenstein	217255	08/23/2023	08/23/2022
Antenna, Horn 1-18GHz	ETS Lindgren	3117	222740	08/31/2023	08/31/2022
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	169935	02/29/2024	02/29/2023
RF Filter Box 1-18GHz	UL-FR	NA	206359	08/13/2023	08/13/2022
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

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, Mar 6, 2020		
Conducted Software	UL	UL EMC	2020.2.26		
AC Line Conducted Software	UL	UL EMC	Ver 9.5, February 21, 2020		

*Testing is completed before equipment expiration 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)
2.4GHz Band						
HDR4	5.000	5.000	1.000	100.00%	0.00	0.010
HDR8	5.000	5.000	1.000	100.00%	0.00	0.010

Note: Duty Cycle for HDR4 TxBF and HDR8 TxBF are the same as those for HDR4 and HDR8 1TX shown in the table above

DUTY CYCLE PLOTS



9.2. 99% BANDWIDTH**LIMITS**

None; for reporting purposes only.

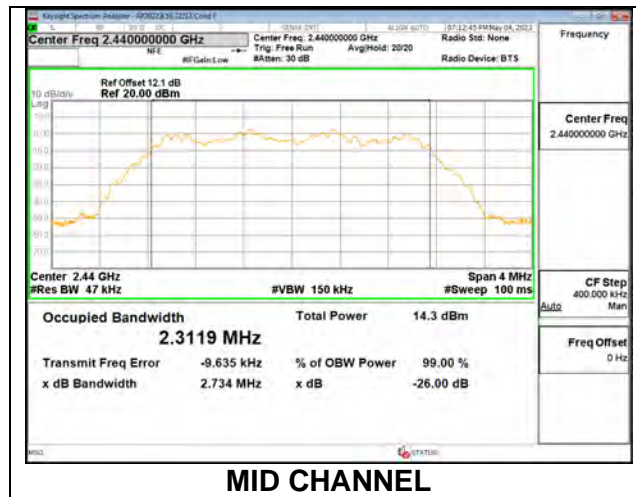
RESULTS

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 HDR (HDR4)

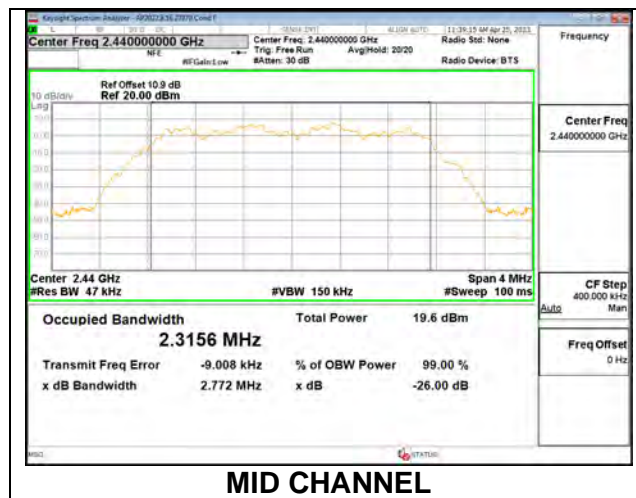
ANT 4

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2404	2.3112
Middle	2440	2.3119
High	2476	2.3146



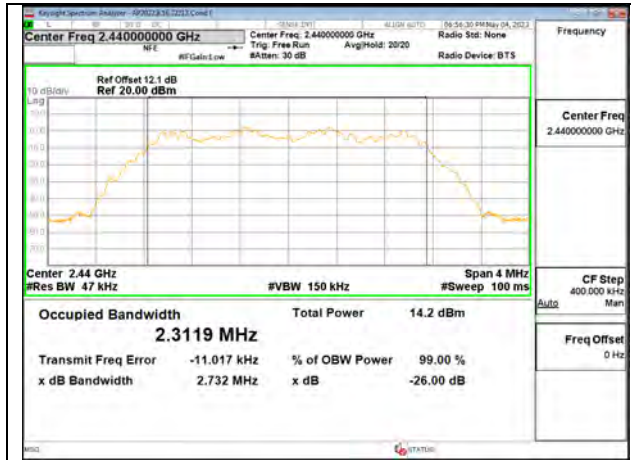
ANT 3

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2404	2.3154
Middle	2440	2.3156
High	2476	2.3145

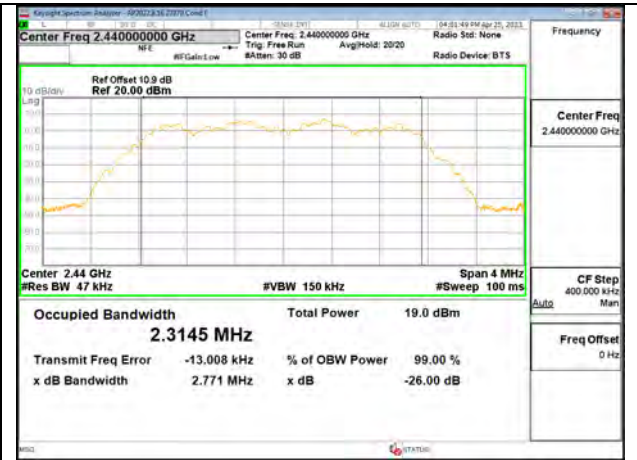


9.2.2. HIGH POWER HDR TXBF (HDR4)

Channel	Frequency (MHz)	99% Bandwidth ANT 4 (MHz)	99% Bandwidth ANT 3 (MHz)
Low	2404	2.3139	2.3151
Middle	2440	2.3119	2.3145
High	2476	2.3111	2.3142



MID CHANNEL ANT 4

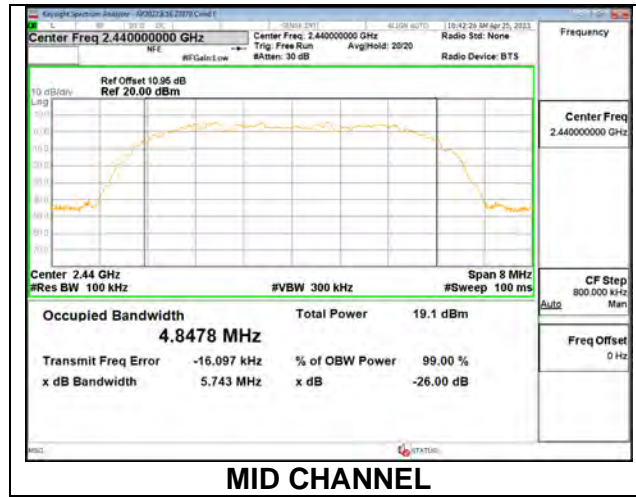


MID CHANNEL ANT 3

9.2.3. HIGH POWER HDR (HDR8)

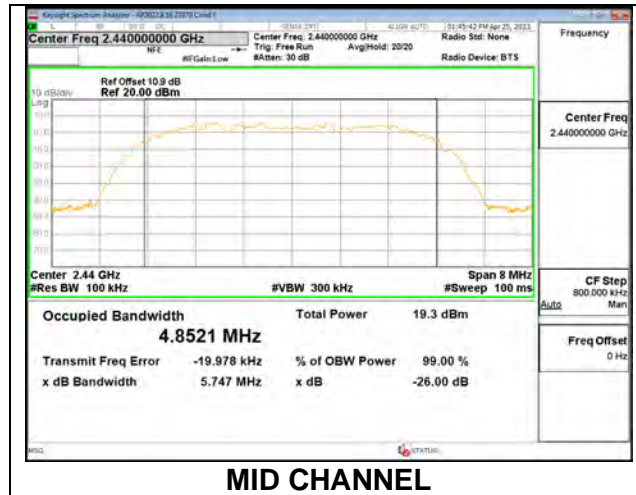
ANT 4

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2404	4.8461
Middle	2440	4.8478
High	2476	4.8472



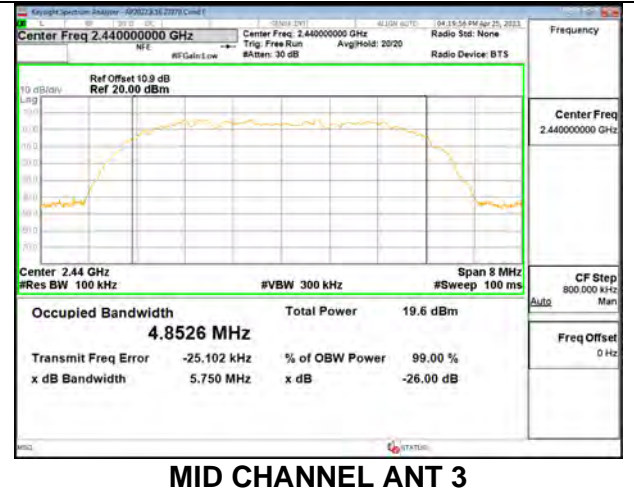
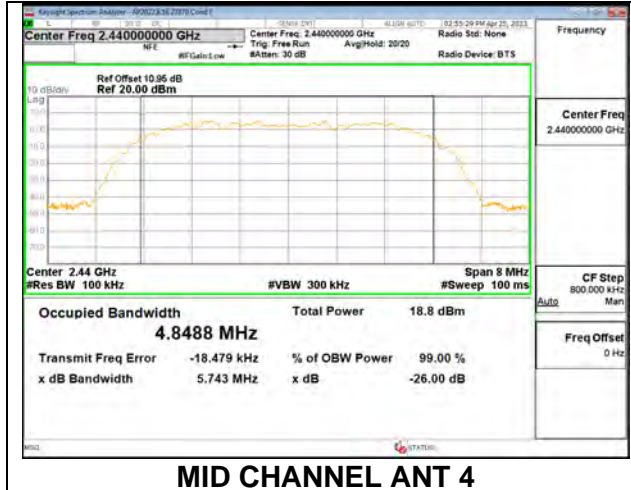
ANT 3

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2404	4.8512
Middle	2440	4.8521
High	2476	4.8506



9.2.4. HIGH POWER HDR TXBF (HDR8)

Channel	Frequency (MHz)	99% Bandwidth ANT 4 (MHz)	99% Bandwidth ANT 3 (MHz)
Low	2404	4.8456	4.8497
Middle	2441	4.8488	4.8526
High	2476	4.8470	4.8515



9.3. 6 dB BANDWIDTH

LIMITS

FCC §15.407 (e)

RSS-247 5.2 (a)

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

RESULTS

The 6dB bandwidth was measured for the narrowest bandwidth mode, HDR4, to demonstrate compliance with the minimum required bandwidth of 500 kHz. Other modes were not tested as their bandwidth is greater than the HDR4 mode, as demonstrated by the 99% bandwidth measurements performed on all modes.

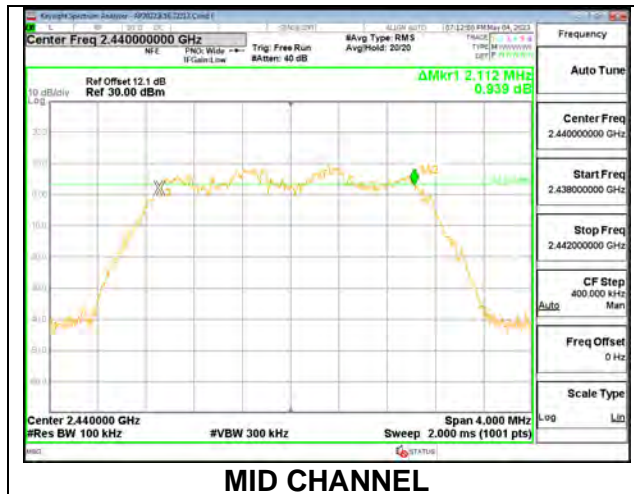
Only Mid channel plot is reported to show setting parameter complies with testing method/procedure.

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

9.3.1. HIGH POWER HDR (HDR4)

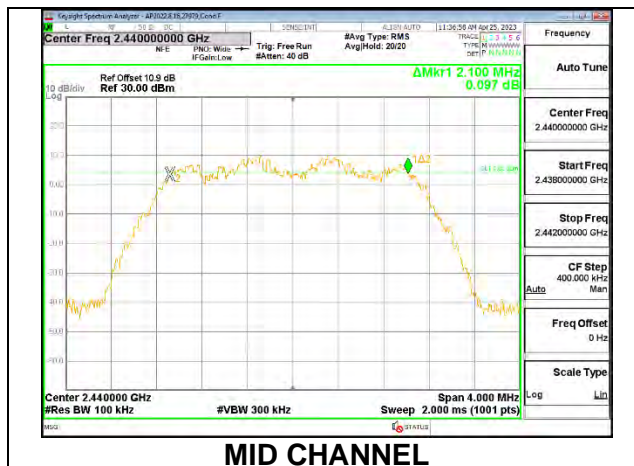
ANT 4

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2404	2.088	0.5
Middle	2440	2.112	0.5
High	2476	2.104	0.5



ANT 3

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2404	2.104	0.5
Middle	2440	2.100	0.5
High	2476	2.096	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.

For 2 TX:

Tx chains are correlated for power and PSD due to the device supporting Beamforming mode. The directional gains are as follows:

Band (GHz)	ANT 4 Antenna Gain (dBi)	ANT 3 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)	Correlated Chains Directional Gain (dBi)
2.4	-4.0	-1.5	-2.57	0.35

Directional Gain Calculation:

ANSI C63.10-2013 section 14.4.3

Uncorrelated directional gain= $10 \cdot \text{LOG}((10^{(\text{Ant1}/10)} + 10^{(\text{Ant2}/10)})/2)$

Correlated directional Gain= $10 \cdot \text{LOG}(((10^{(\text{Ant1}/20)} + 10^{(\text{Ant2}/20)})^2)/2)$

Sample Calculation:

Ant4=-4.0, Ant3=-1.5

Uncorrelated Antenna gain= $10 \log[(10^{(-4/10)} + 10^{(-1.5/10)})/2] = -2.57 \text{ dBi}$

Correlated Antenna gain= $10 \log[(10^{(-4/20)} + 10^{(-1.5/20)})^2/2] = 0.35 \text{ dBi}$

RESULTS

9.4.1. HIGH POWER HDR (HDR4)**ANT 4**

Tested By:	19232
Date:	6/13/2023

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	15.03	30	-14.97
Middle	2440	15.01	30	-14.99
High	2476	15.23	30	-14.77

ANT 3

Tested By:	19232
Date:	6/13/2023

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	15.23	30	-14.77
Middle	2440	15.09	30	-14.91
High	2476	15.05	30	-14.95

9.4.2. HIGH POWER HDR TXBF (HDR4)

Tested By:	19232
Date:	6/13/2023

Channel	Frequency (MHz)	Peak Power Reading ANT 4 (dBm)	Peak Power Reading ANT 3 (dBm)	Total Corr'd Power (dBm)	Limit (dBm)	Margin (dB)
Low	2404	15.12	15.17	18.16	30.00	-11.84
Middle	2440	15.10	15.01	18.07	30.00	-11.93
High	2476	15.24	14.96	18.11	30.00	-11.89

9.4.3. HIGH POWER HDR (HDR8)**ANT 4**

Tested By:	19232
Date:	6/13/2023

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	16.54	30	-13.46
Middle	2440	16.65	30	-13.35
High	2476	16.61	30	-13.39

ANT 3

Tested By:	19232
Date:	6/13/2023

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	16.57	30	-13.43
Middle	2440	16.62	30	-13.38
High	2476	16.59	30	-13.41

9.4.4. HIGH POWER HDR TXBF (HDR8)

Tested By:	19232
Date:	6/13/2023

Channel	Frequency (MHz)	Peak Power Reading ANT 4 (dBm)	Peak Power Reading ANT 3 (dBm)	Total Corr'd Power (dBm)	Limit (dBm)	Margin (dB)
Low	2404	16.56	16.65	19.62	30.00	-10.38
Middle	2440	16.60	16.64	19.63	30.00	-10.37
High	2476	16.55	16.56	19.57	30.00	-10.43

9.4.5. LOW POWER HDR (HDR4)

ANT 4

Tested By:	32181
Date:	6/18/2023

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	9.42	30	-20.58
Middle	2440	9.49	30	-20.51
High	2476	9.29	30	-20.71

ANT 3

Tested By:	32181
Date:	7/13/2023

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	9.42	30	-20.58
Middle	2440	9.40	30	-20.60
High	2476	9.48	30	-20.52

9.4.6. LOW POWER HDR TXBF (HDR4)

Tested By:	32181
Date:	7/17/2023

Channel	Frequency (MHz)	Peak Power Reading ANT 4 (dBm)	Peak Power Reading ANT 3 (dBm)	Total Corr'd Power (dBm)	Limit (dBm)	Margin (dB)
Low	2404	9.46	9.45	12.47	30.00	-17.53
Middle	2440	9.44	9.32	12.39	30.00	-17.61
High	2476	9.26	9.36	12.32	30.00	-17.68

9.4.7. LOW POWER HDR (HDR8)**ANT 4**

Tested By:	32181
Date:	6/18/2023

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	10.65	30	-19.35
Middle	2440	10.59	30	-19.41
High	2476	10.62	30	-19.38

ANT 3

Tested By:	32181
Date:	7/13/2023

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	10.64	30	-19.36
Middle	2440	10.60	30	-19.40
High	2476	10.62	30	-19.38

9.4.8. LOW POWER HDR TXBF (HDR8)

Tested By:	32181
Date:	7/17/2023

Channel	Frequency (MHz)	Peak Power Reading ANT 4 (dBm)	Peak Power Reading ANT 3 (dBm)	Total Corr'd Power (dBm)	Limit (dBm)	Margin (dB)
Low	2404	10.49	10.55	13.53	30.00	-16.47
Middle	2440	10.64	10.58	13.62	30.00	-16.38
High	2476	10.6	10.65	13.64	30.00	-16.36

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 HDR (HDR4)

ANT 4

Tested By:	19232
Date:	6/13/2023

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	12.28
Middle	2440	12.36
High	2476	12.45

ANT 3

Tested By:	19232
Date:	6/13/2023

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	12.47
Middle	2440	12.43
High	2476	12.39

9.5.2. HIGH POWER HDR TXBF (HDR4)

Tested By:	19232
Date:	6/13/2023

Channel	Frequency (MHz)	Average Power ANT 4 (dBm)	Average Power ANT 3 (dBm)	Total Power (dBm)
Low	2404	12.46	12.41	15.45
Middle	2440	12.44	12.40	15.43
High	2476	12.47	12.43	15.46

9.5.3. HIGH POWER HDR (HDR8)**ANT 4**

Tested By:	19232
Date:	6/13/2023

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	13.39
Middle	2440	13.45
High	2476	13.41

ANT 3

Tested By:	19232
Date:	6/13/2023

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	13.37
Middle	2440	13.42
High	2476	13.39

9.5.4. HIGH POWER HDR TXBF (HDR8)

Tested By:	19232
Date:	6/13/2023

Channel	Frequency (MHz)	Average Power ANT 4 (dBm)	Average Power ANT 3 (dBm)	Total Power (dBm)
Low	2404	13.36	13.45	16.42
Middle	2440	13.40	13.44	16.43
High	2476	13.35	13.36	16.37

9.5.5. LOW POWER HDR (HDR4)

ANT 4

Tested By:	32181
Date:	6/18/2023

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	6.88
Middle	2440	6.93
High	2476	6.78

ANT 3

Tested By:	32181
Date:	7/13/2023

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	6.9
Middle	2440	6.88
High	2476	6.95

9.5.6. LOW POWER HDR TXBF (HDR4)

Tested By:	32181
Date:	7/17/2023

Channel	Frequency (MHz)	Average Power ANT 4 (dBm)	Average Power ANT 3 (dBm)	Total Power (dBm)
Low	2404	6.88	6.93	9.92
Middle	2440	6.85	6.78	9.83
High	2476	6.76	6.83	9.81

9.5.7. LOW POWER HDR (HDR8)**ANT 4**

Tested By:	32181
Date:	6/18/2023

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	7.45
Middle	2440	7.39
High	2476	7.41

ANT 3

Tested By:	32181
Date:	7/13/2023

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	7.44
Middle	2440	7.39
High	2476	7.41

9.5.8. LOW POWER HDR TXBF (HDR8)

Tested By:	32181
Date:	7/17/2023

Channel	Frequency (MHz)	Average Power ANT 4 (dBm)	Average Power ANT 3 (dBm)	Total Power (dBm)
Low	2404	7.29	7.35	10.33
Middle	2440	7.44	7.38	10.42
High	2476	7.41	7.45	10.44

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

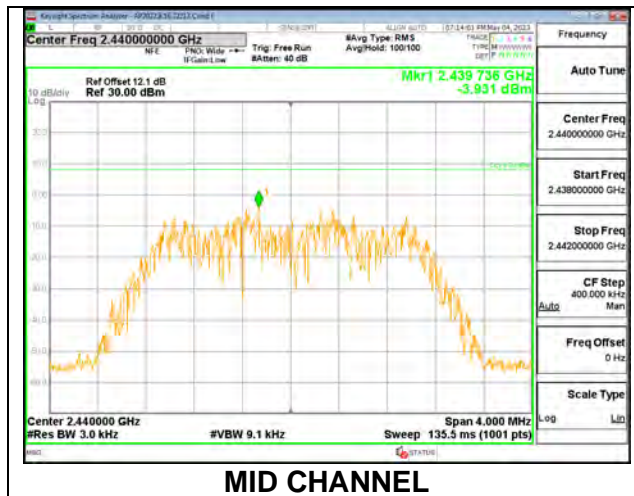
Only High-Power modes result is reported, it covers all Low Power modes.

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

9.6.1. HIGH POWER HDR (HDR4)

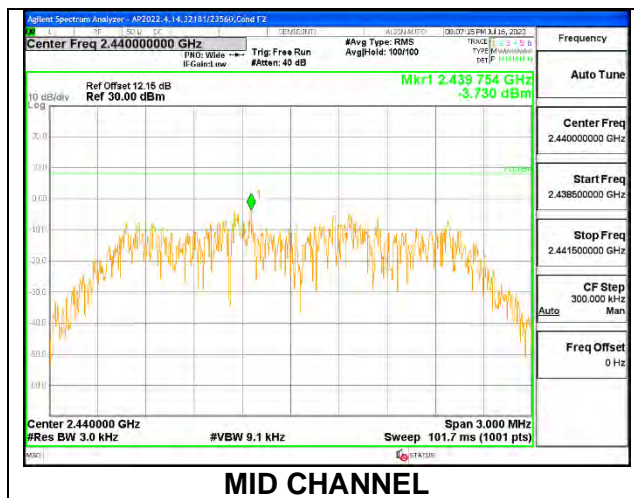
ANT 4

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2404	-4.119	8	-12.12
Middle	2440	-3.931	8	-11.93
High	2476	-4.253	8	-12.25



ANT 3

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2404	-3.928	8	-11.93
Middle	2440	-3.730	8	-11.73
High	2476	-4.022	8	-12.02

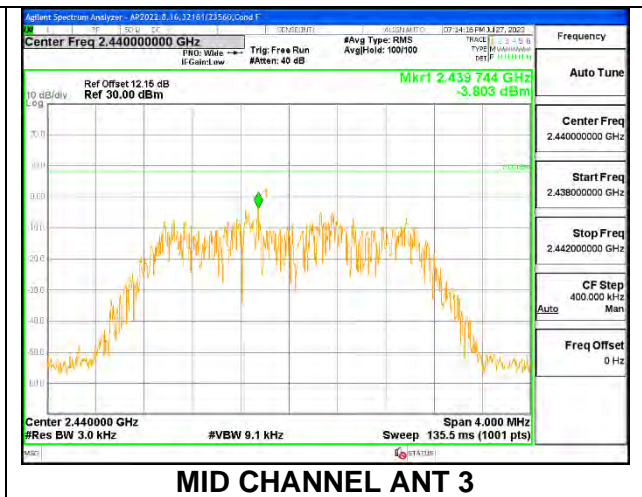
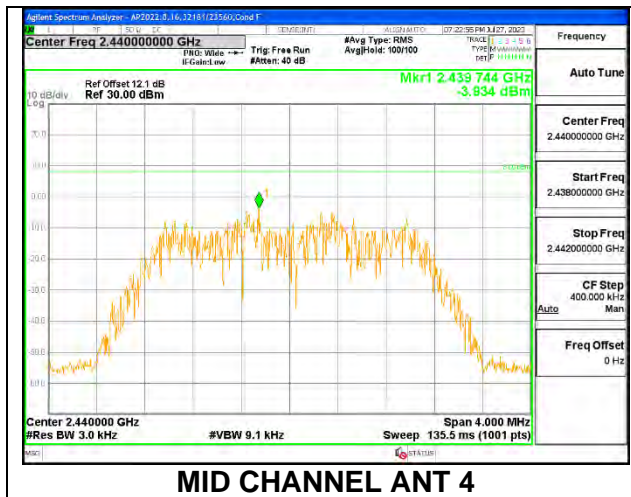


9.6.2. HIGH POWER HDR TXBF (HDR4)

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

PSD Results

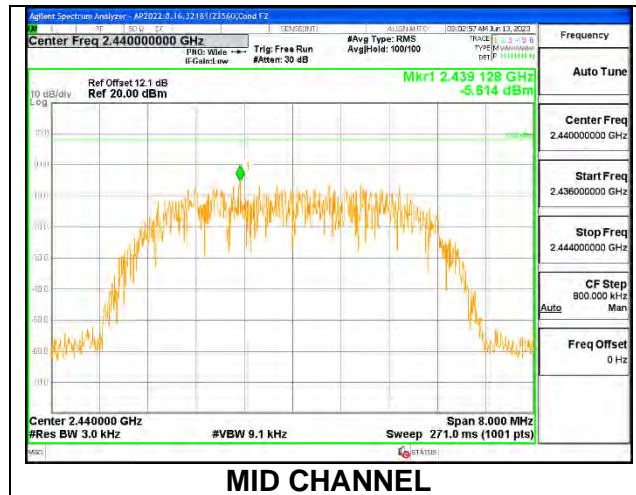
Channel	Frequency (MHz)	ANT 4 Meas (dBm/ 3kHz)	ANT 3 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low	2404	-3.797	-3.618	-0.70	8.0	-8.7
Mid	2440	-3.934	-3.803	-0.86	8.0	-8.9
High	2476	-3.573	-4.018	-0.78	8.0	-8.8



9.6.3. HIGH POWER HDR (HDR8)

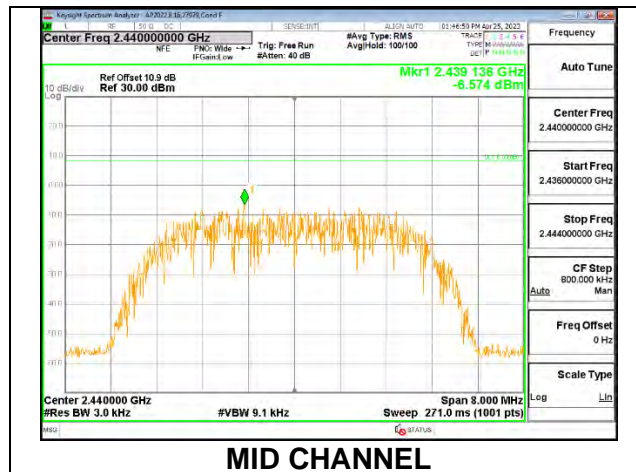
ANT 4

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2404	-5.317	8	-13.32
Middle	2440	-5.614	8	-13.61
High	2476	-5.338	8	-13.34



ANT 3

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2404	-5.879	8	-13.88
Middle	2440	-6.574	8	-14.57
High	2476	-5.428	8	-13.43

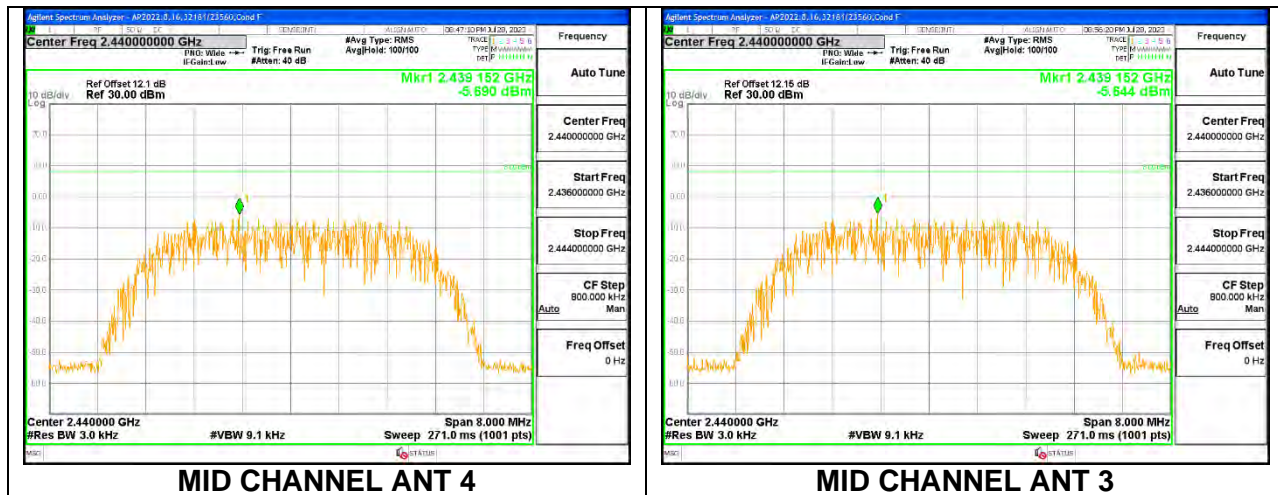


9.6.4. HIGH POWER HDR TXBF (HDR8)

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

PSD Results

Channel	Frequency (MHz)	ANT 4 Meas (dBm/3kHz)	ANT 3 Meas (dBm/3kHz)	Total Corr'd PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2404	-5.820	-5.515	-2.65	8.0	-10.7
Mid	2440	-5.690	-5.644	-2.66	8.0	-10.7
High	2476	-5.415	-5.590	-2.49	8.0	-10.5



9.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

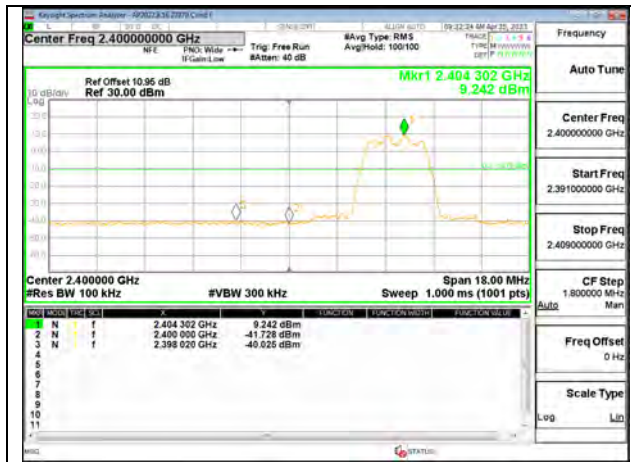
RSS-247 5.5

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

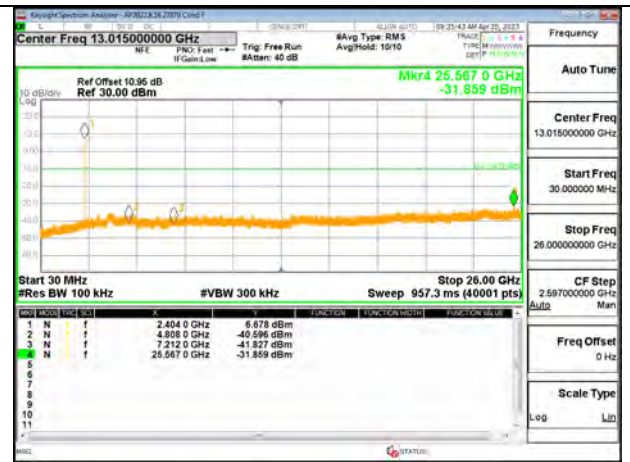
RESULTS

9.7.1. HIGH POWER HDR (HDR4)

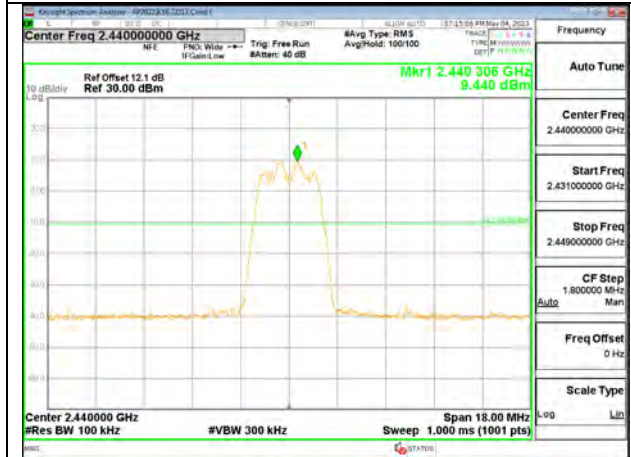
ANT 4



LOW CHANNEL BANDEDGE



OUT-OF-BAND LOW CHANNEL



IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL

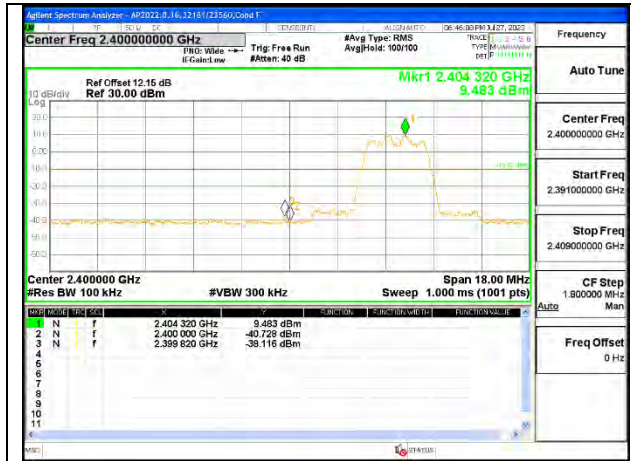


HIGH CHANNEL BANDEDGE

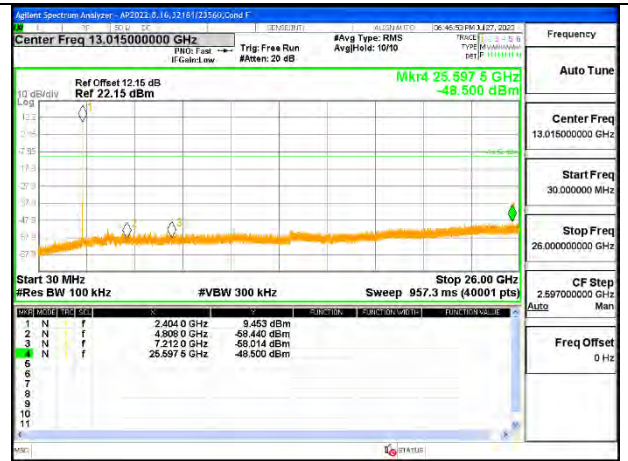


OUT-OF-BAND HIGH CHANNEL

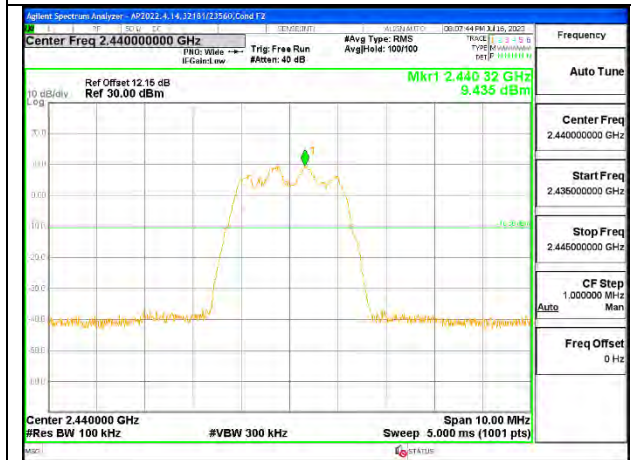
ANT 3



LOW CHANNEL BANDEDGE



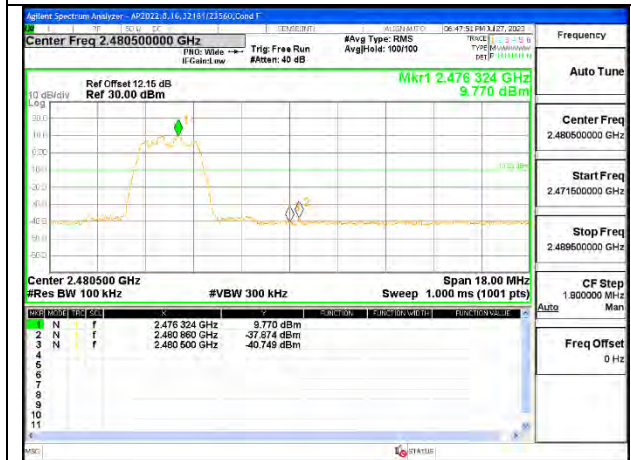
OUT-OF-BAND LOW CHANNEL



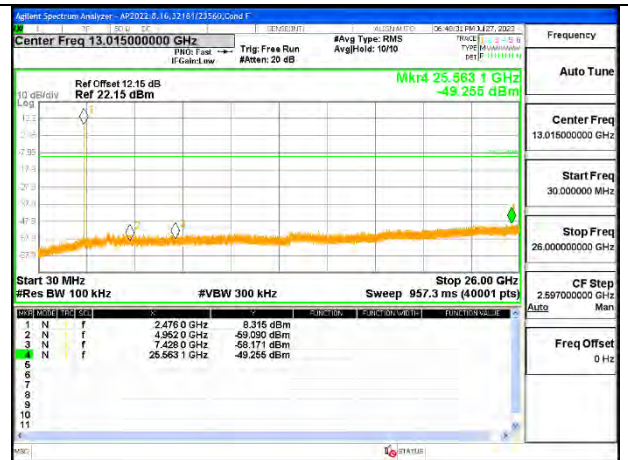
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



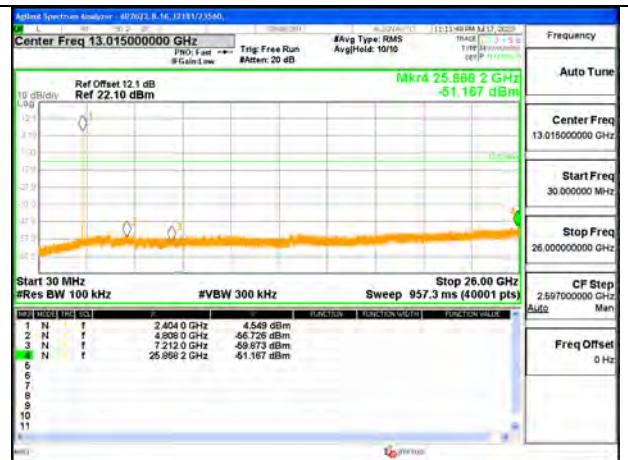
OUT-OF-BAND HIGH CHANNEL

9.7.2. HIGH POWER HDR TXBF (HDR4)

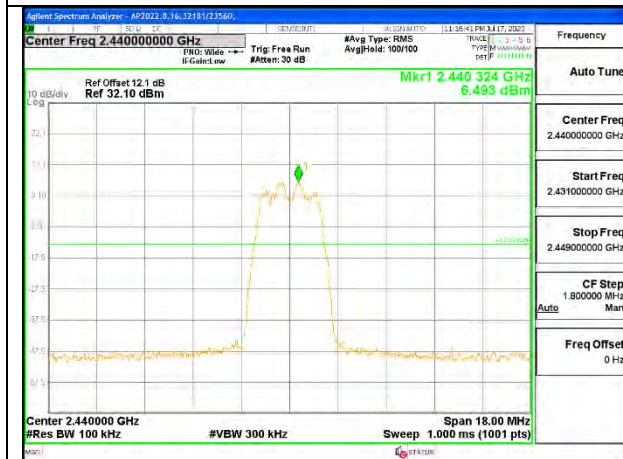
ANT 4



LOW CHANNEL BANDEDGE ANT 4



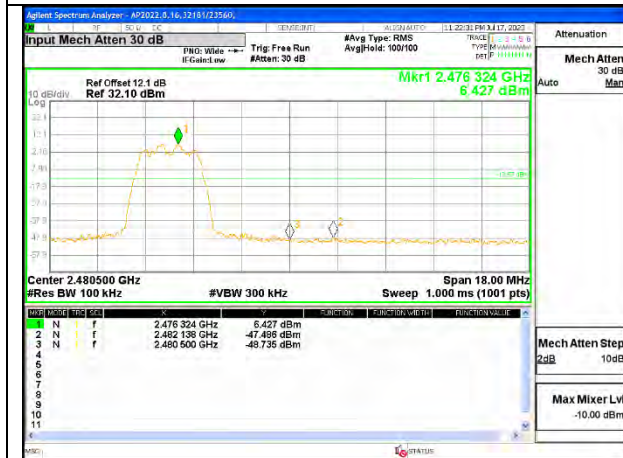
OUT-OF-BAND LOW CHANNEL ANT 4



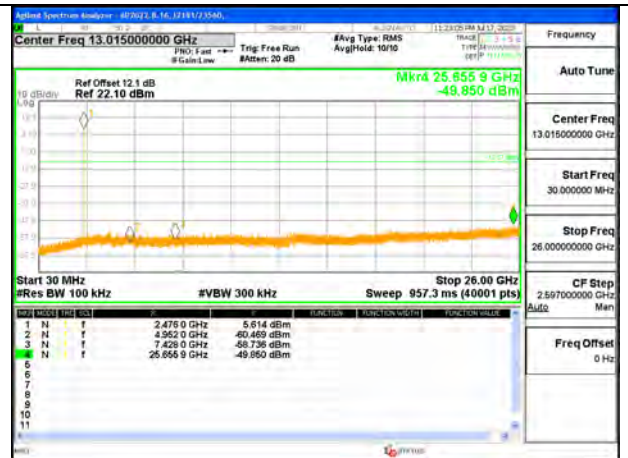
IN-BAND REFERENCE LEVEL ANT 4



OUT-OF-BAND MID CHANNEL ANT 4

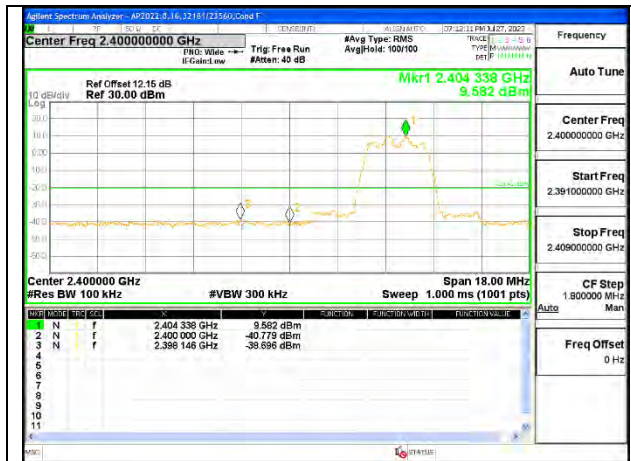


HIGH CHANNEL BANDEDGE ANT 4

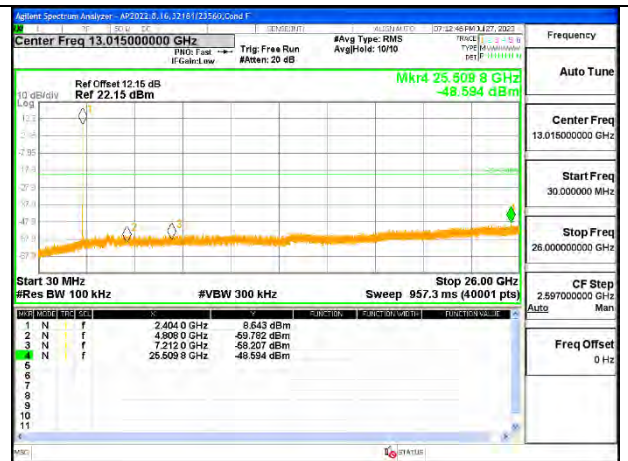


OUT-OF-BAND HIGH CHANNEL ANT 4

ANT 3



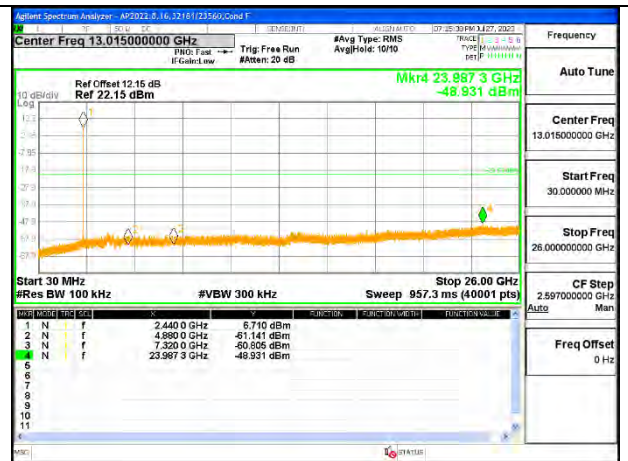
LOW CHANNEL BANDEDGE ANT 3



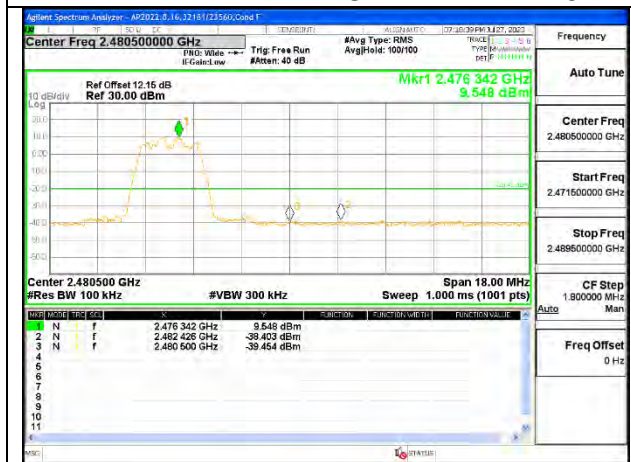
OUT-OF-BAND LOW CHANNEL ANT 3



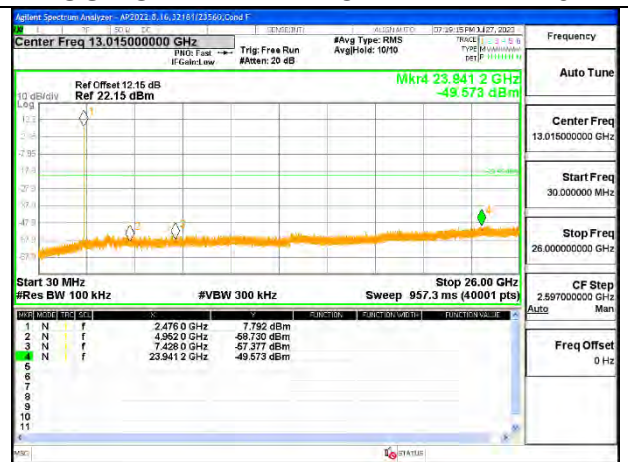
IN-BAND REFERENCE LEVEL ANT 3



OUT-OF-BAND MID CHANNEL ANT 3



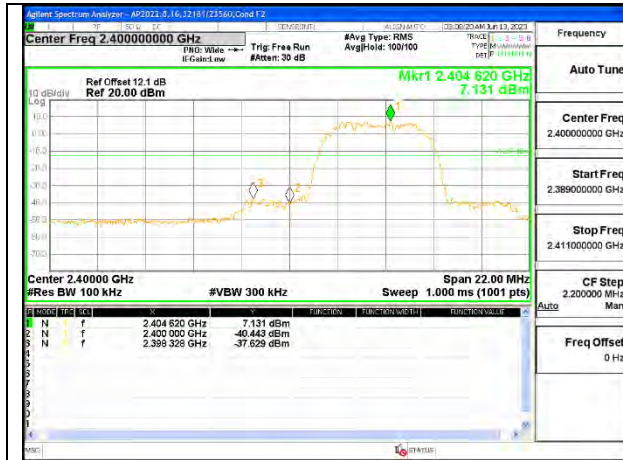
HIGH CHANNEL BANDEDGE ANT 3



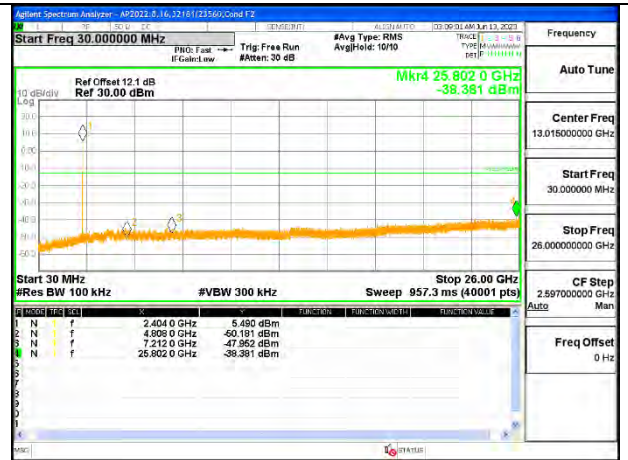
OUT-OF-BAND HIGH CHANNEL ANT 3

9.7.3. HIGH POWER HDR (HDR8)

ANT 4



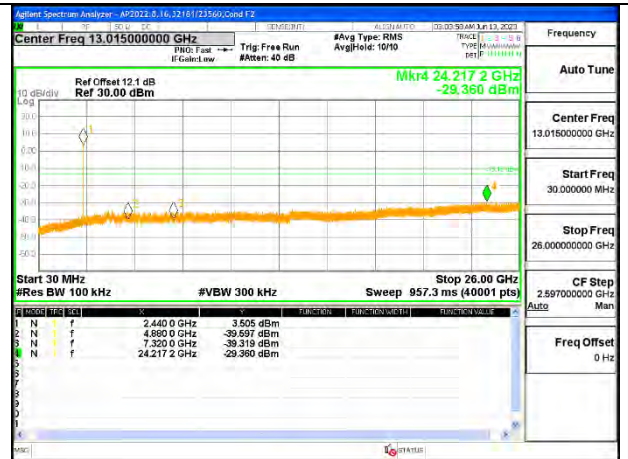
LOW CHANNEL BANDEdge



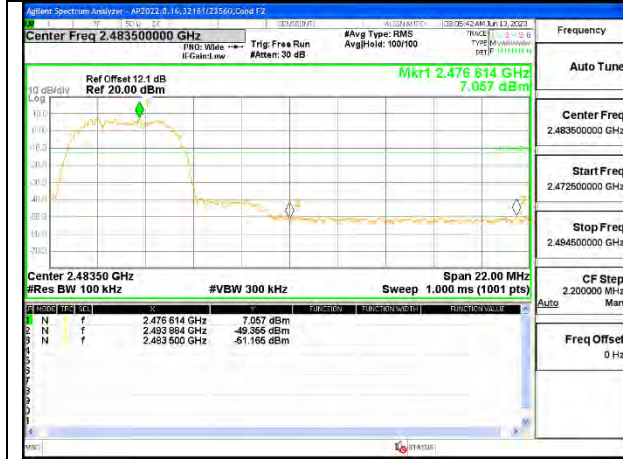
OUT-OF-BAND LOW CHANNEL



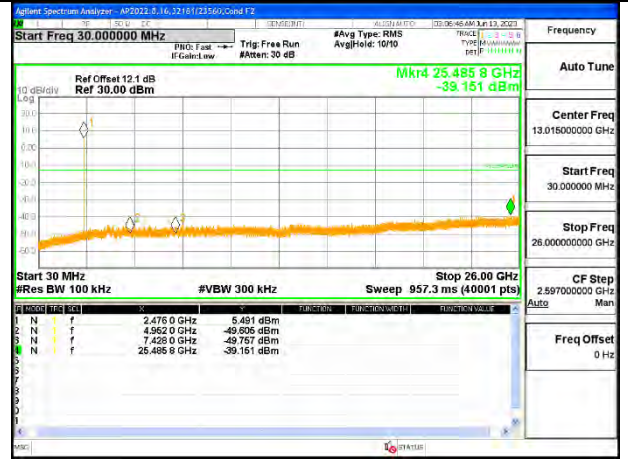
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL

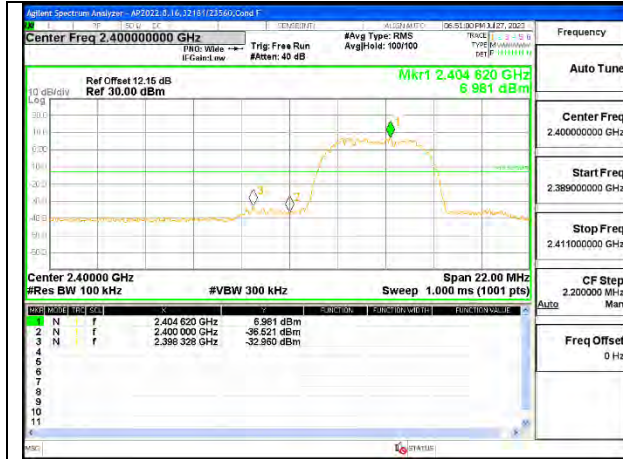


HIGH CHANNEL BANDEdge

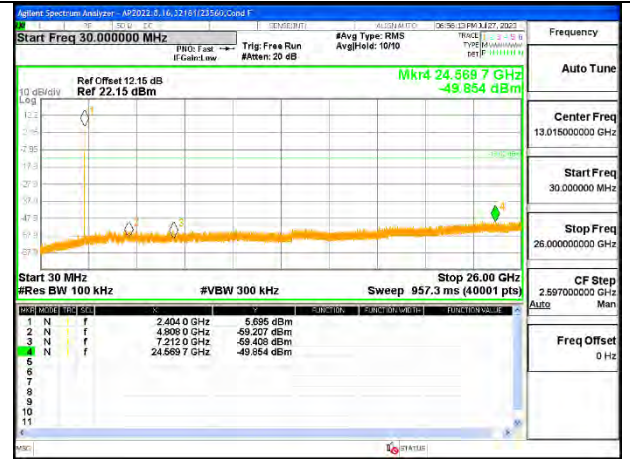


OUT-OF-BAND HIGH CHANNEL

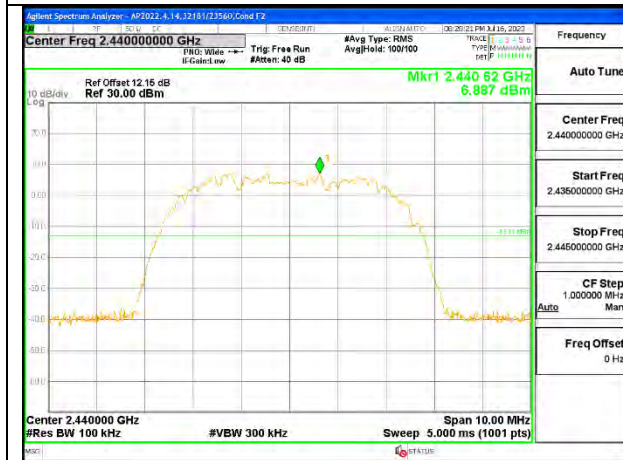
ANT 3



LOW CHANNEL BANDEDGE



OUT-OF-BAND LOW CHANNEL



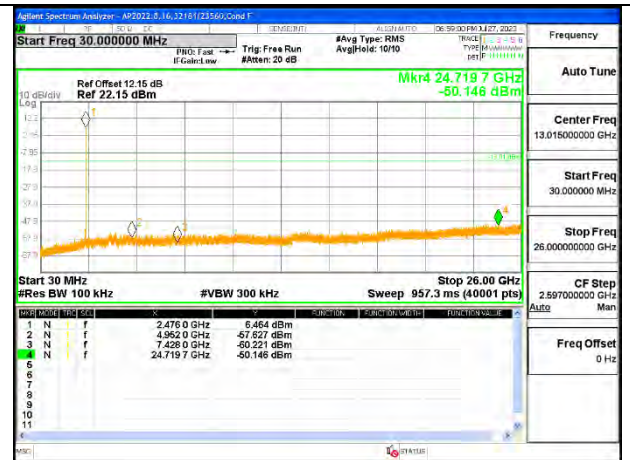
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



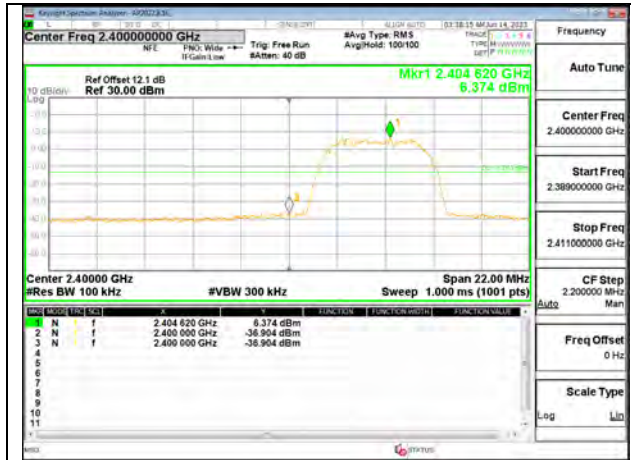
HIGH CHANNEL BANDEDGE



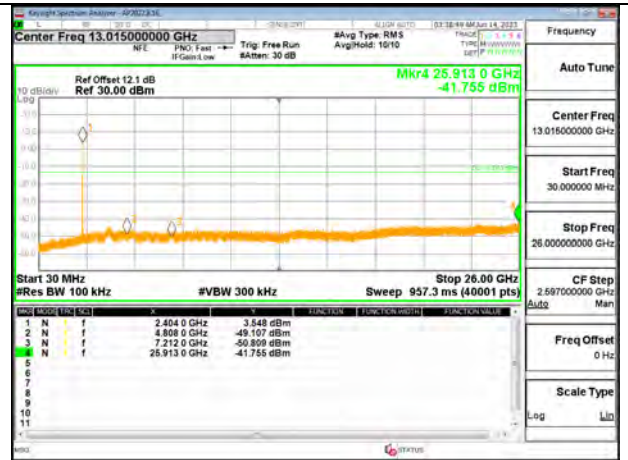
OUT-OF-BAND HIGH CHANNEL

9.7.4. HIGH POWER HDR TXBF (HDR8)

ANT 4



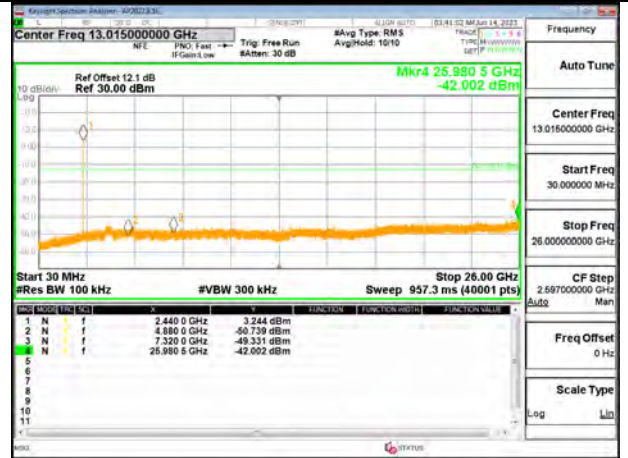
LOW CHANNEL BANDEDGE ANT 4



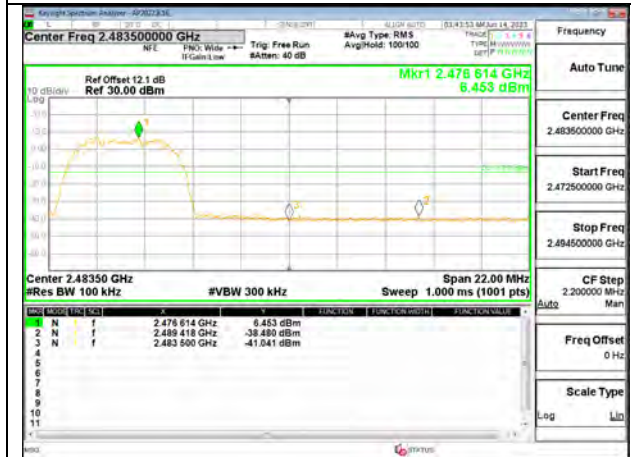
OUT-OF-BAND LOW CHANNEL ANT 4



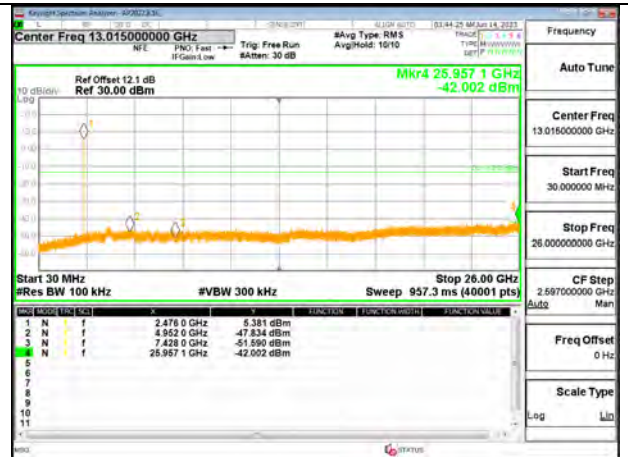
IN-BAND REFERENCE LEVEL ANT 4



OUT-OF-BAND MID CHANNEL ANT 4

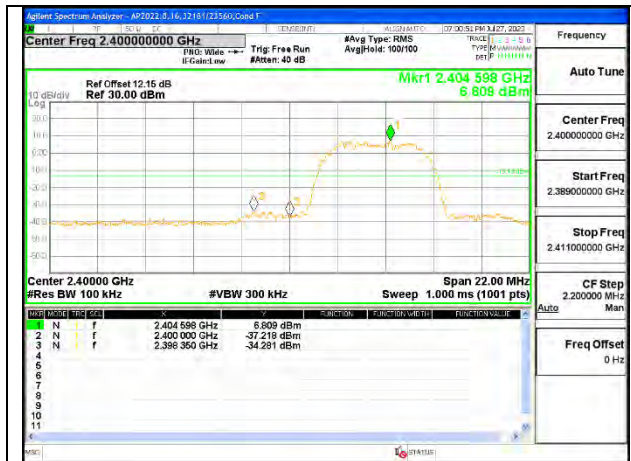


HIGH CHANNEL BANDEDGE ANT 4

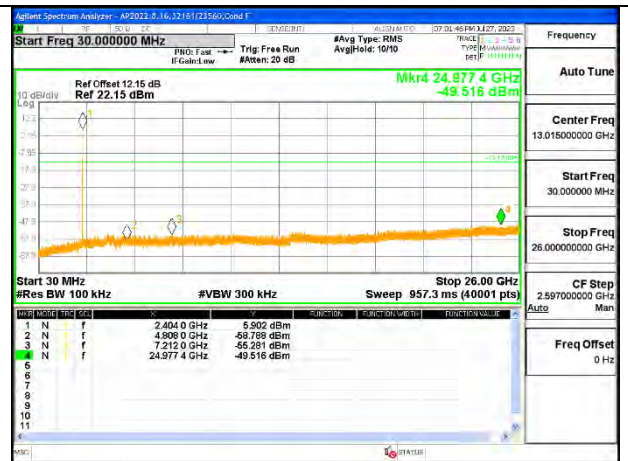


OUT-OF-BAND HIGH CHANNEL ANT 4

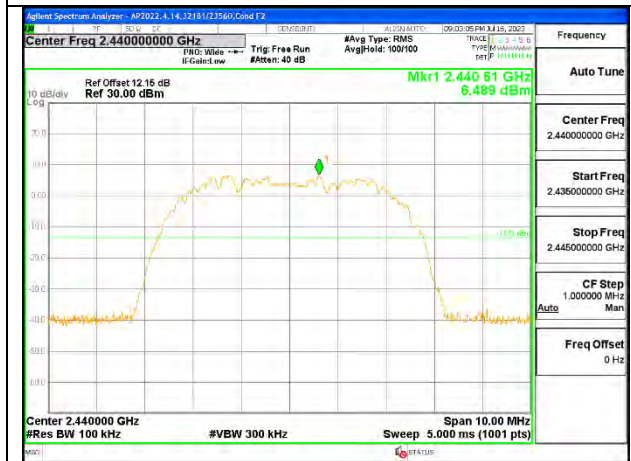
ANT 3



LOW CHANNEL BANDEDGE ANT 3



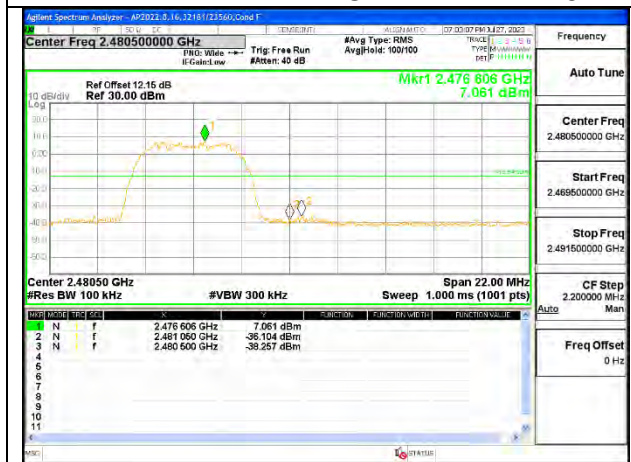
OUT-OF-BAND LOW CHANNEL ANT 3



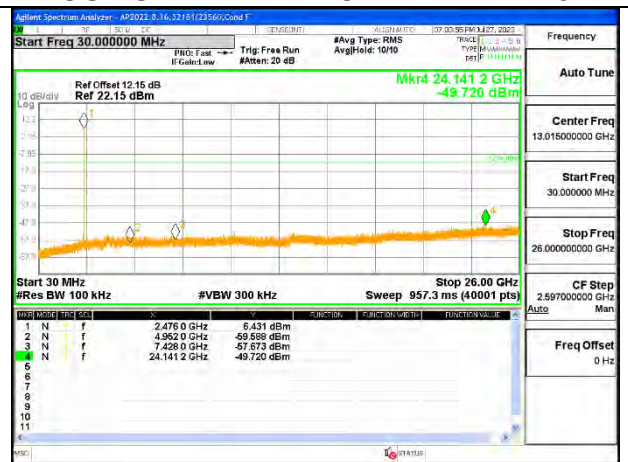
IN-BAND REFERENCE LEVEL ANT 3



OUT-OF-BAND MID CHANNEL ANT 3



HIGH CHANNEL BANDEDGE ANT 3



OUT-OF-BAND HIGH CHANNEL ANT 3

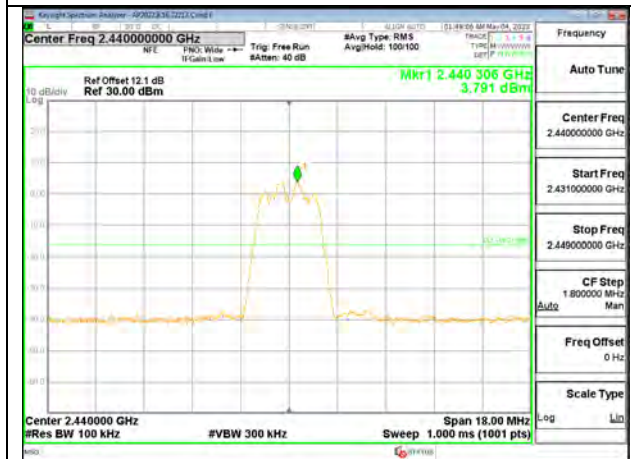
9.7.5. LOW POWER HDR (HDR4) ANT 4



LOW CHANNEL BANDEDGE



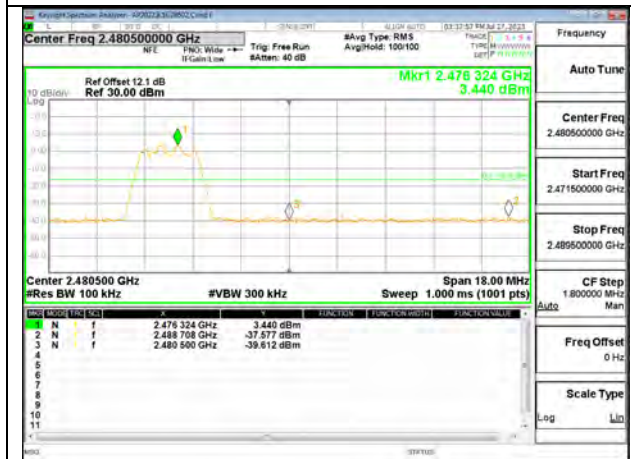
OUT-OF-BAND LOW CHANNEL



IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE

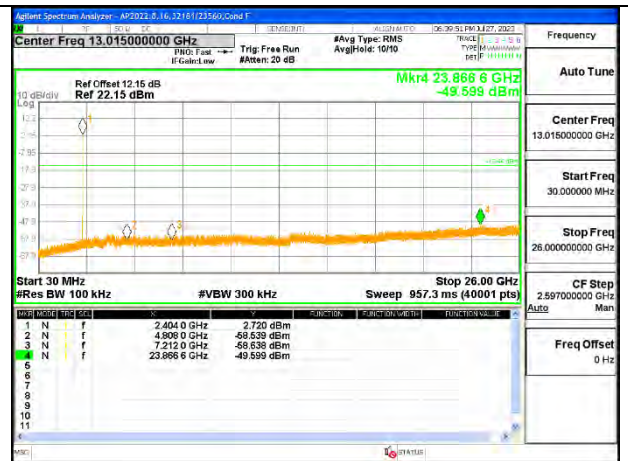


OUT-OF-BAND HIGH CHANNEL

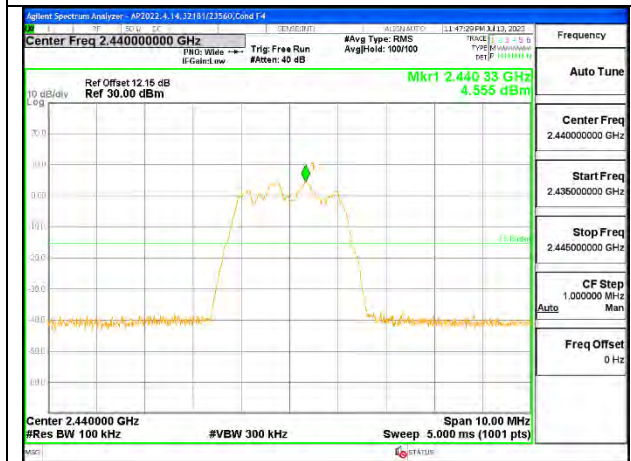
ANT 3



LOW CHANNEL BANDEDGE



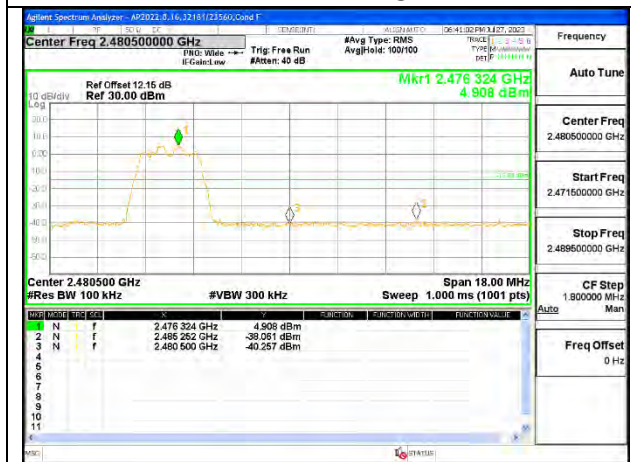
OUT-OF-BAND LOW CHANNEL



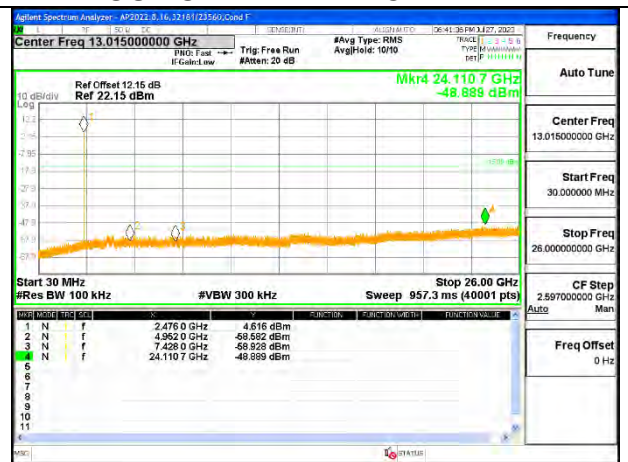
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



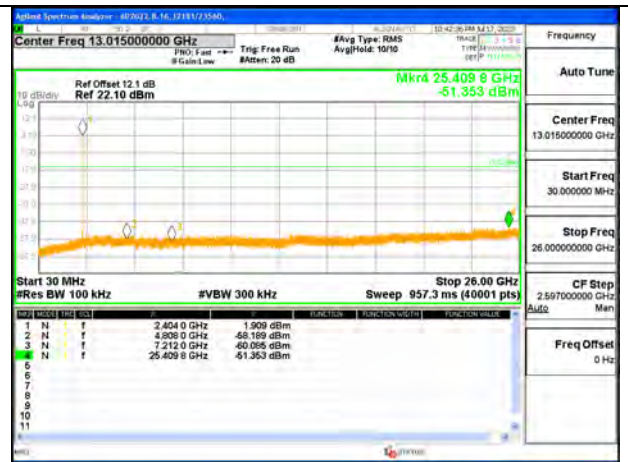
OUT-OF-BAND HIGH CHANNEL

9.7.6. LOW POWER HDR TXBF (HDR4)

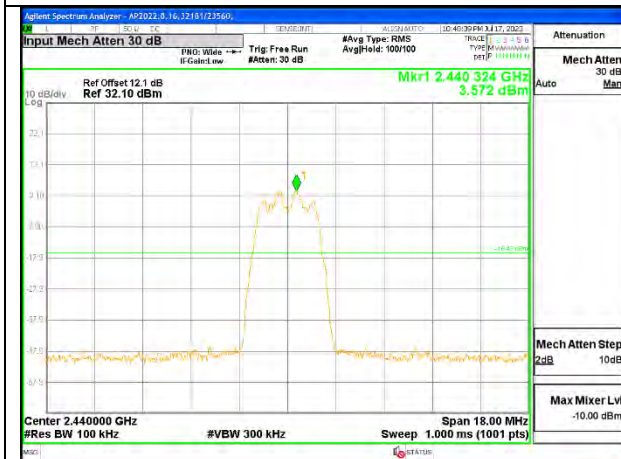
ANT 4



LOW CHANNEL BANDEDGE ANT 4



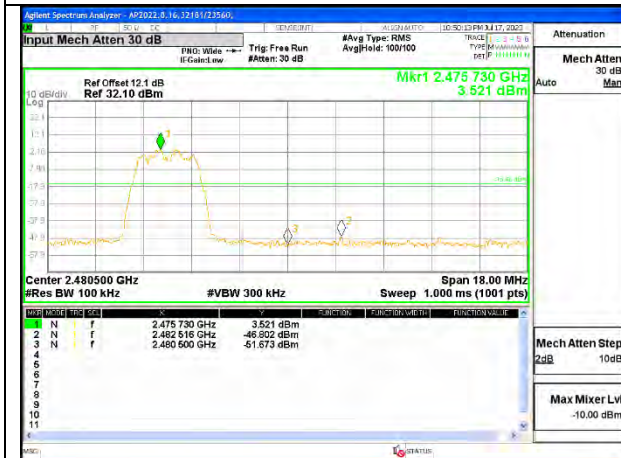
OUT-OF-BAND LOW CHANNEL ANT 4



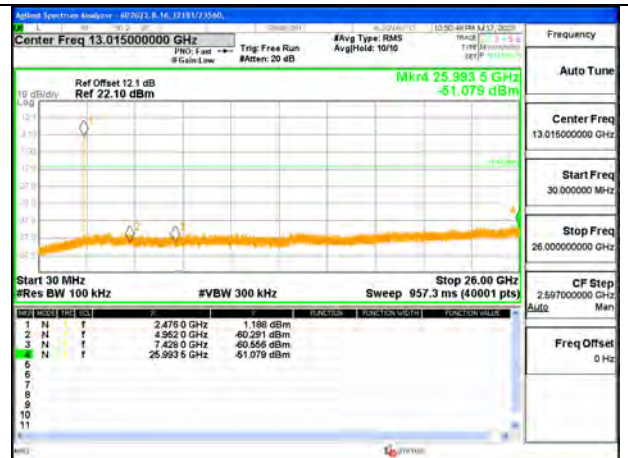
IN-BAND REFERENCE LEVEL ANT 4



OUT-OF-BAND MID CHANNEL ANT 4



HIGH CHANNEL BANDEDGE ANT 4

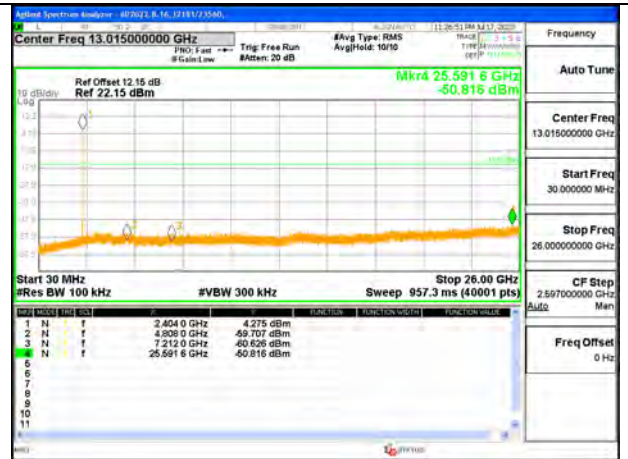


OUT-OF-BAND HIGH CHANNEL ANT 4

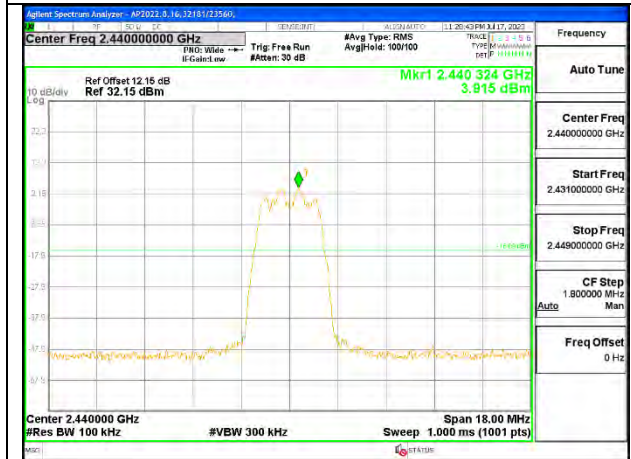
ANT 3



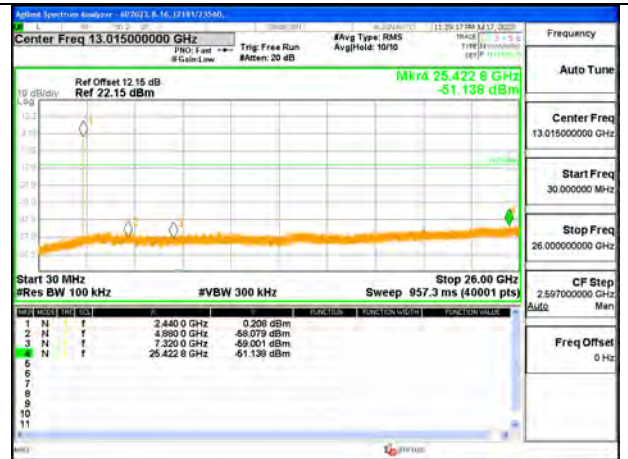
LOW CHANNEL BANDEDGE ANT 3



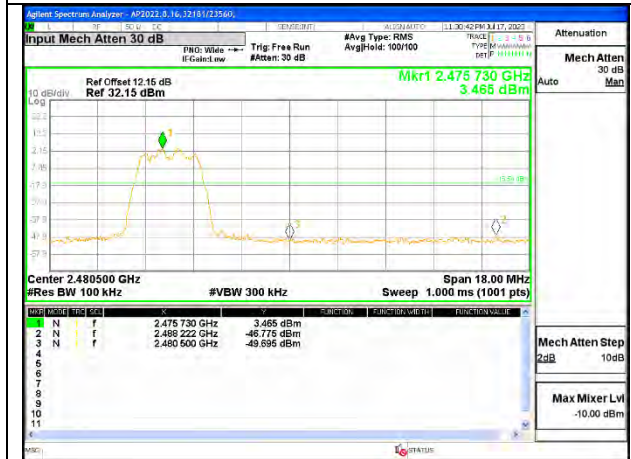
OUT-OF-BAND LOW CHANNEL ANT 3



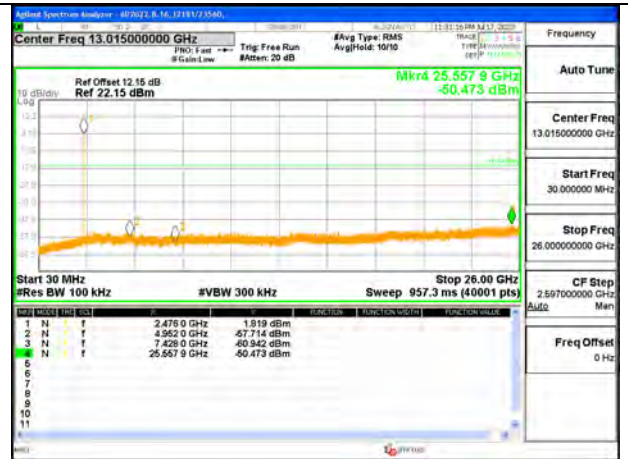
IN-BAND REFERENCE LEVEL ANT 3



OUT-OF-BAND MID CHANNEL ANT 3

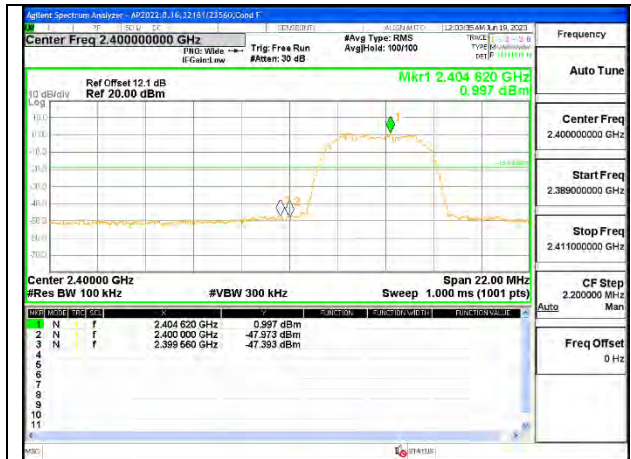


HIGH CHANNEL BANDEDGE ANT 3

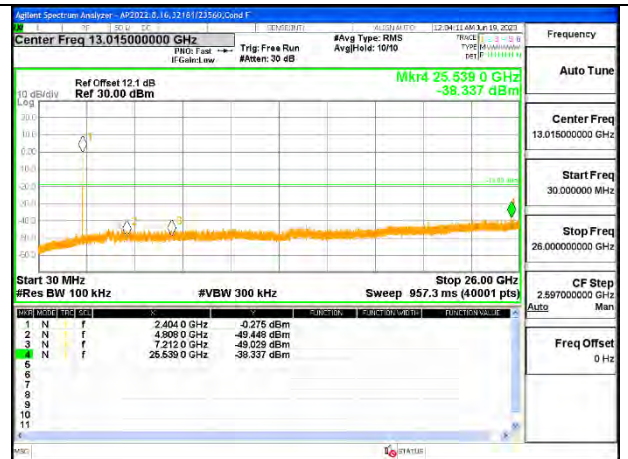


OUT-OF-BAND HIGH CHANNEL ANT 3

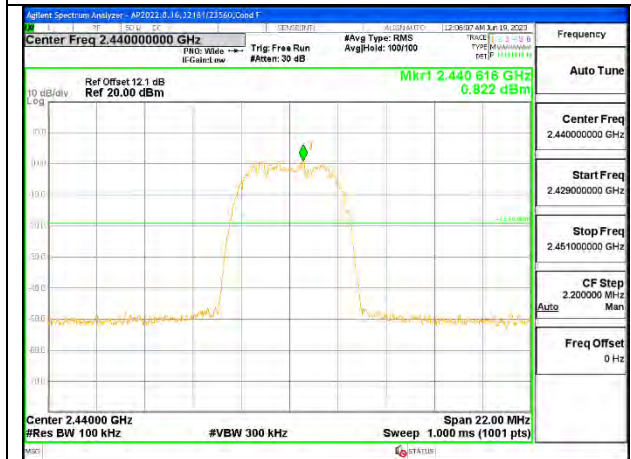
9.7.7. LOW POWER HDR (HDR8) ANT 4



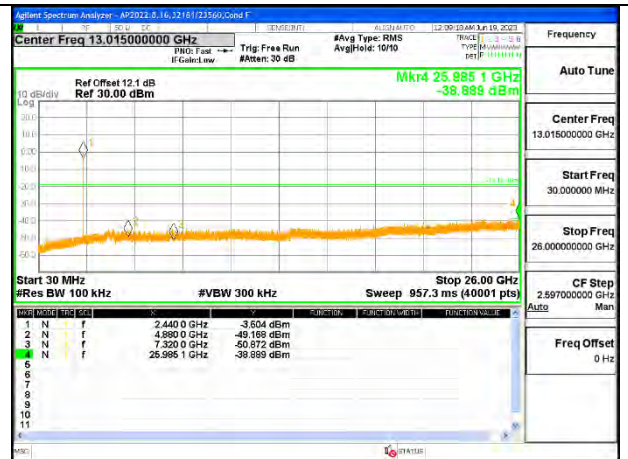
LOW CHANNEL BANDEDGE



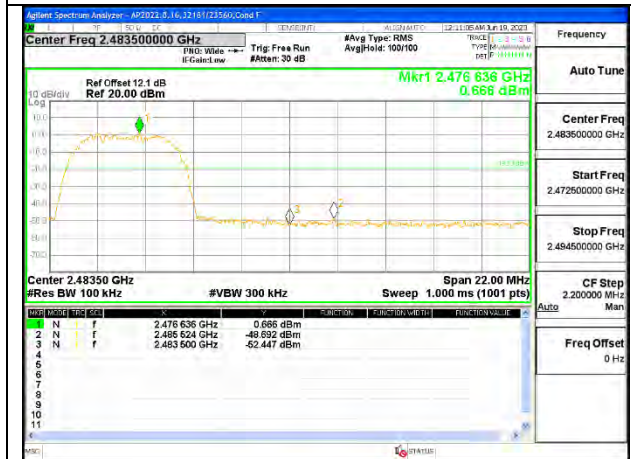
OUT-OF-BAND LOW CHANNEL



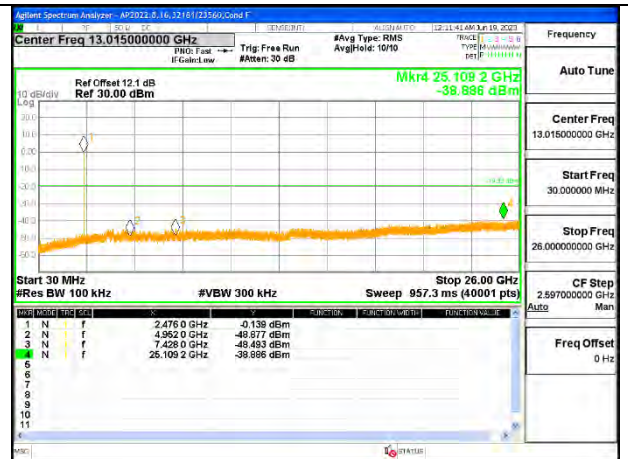
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL

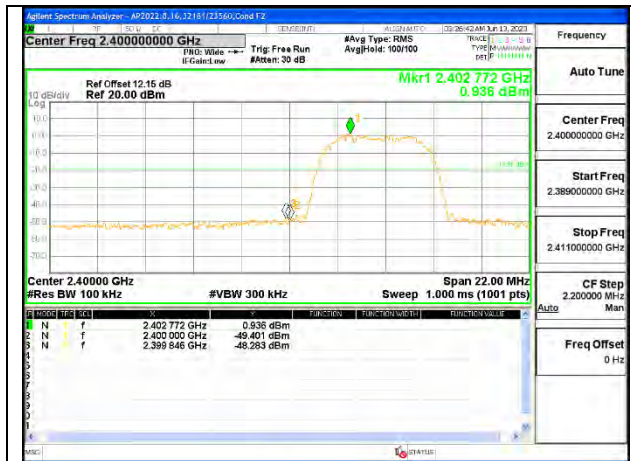


HIGH CHANNEL BANDEDGE

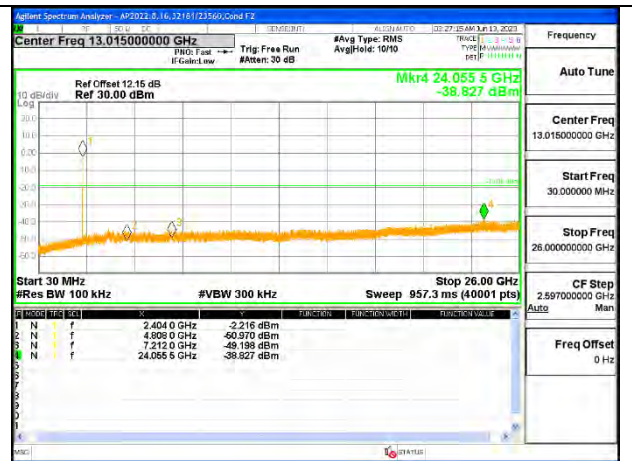


OUT-OF-BAND HIGH CHANNEL

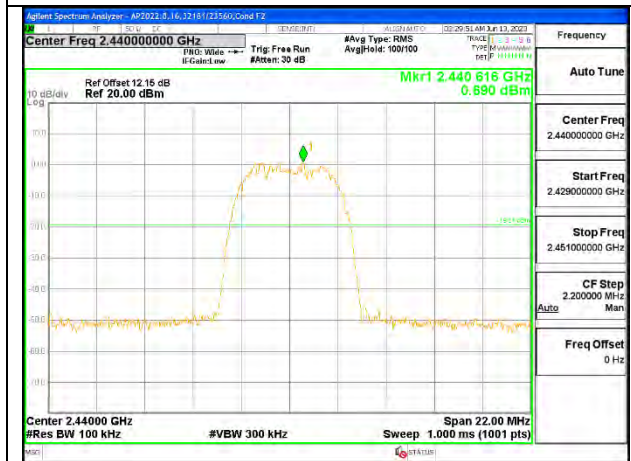
ANT 3



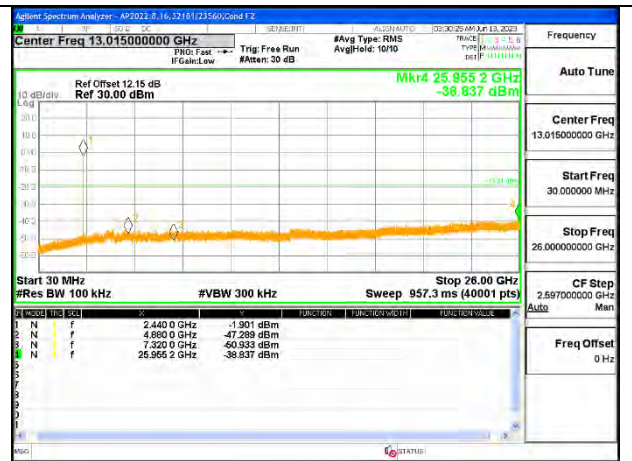
LOW CHANNEL BANDEDGE



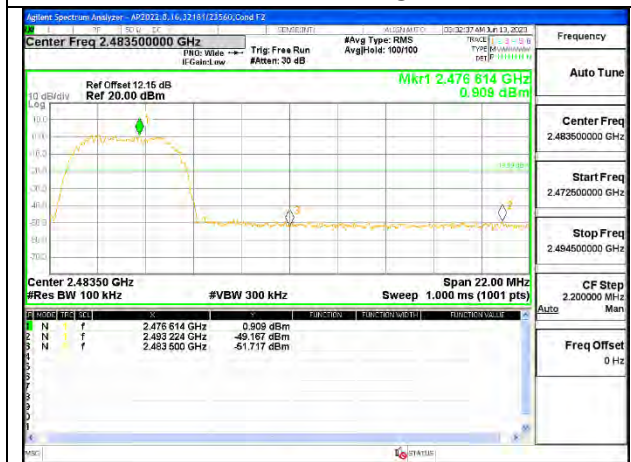
OUT-OF-BAND LOW CHANNEL



IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



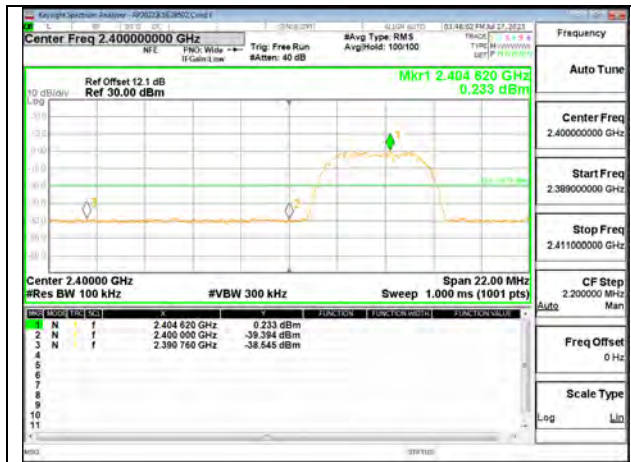
HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

9.7.8. LOW POWER HDR TXBF (HDR8)

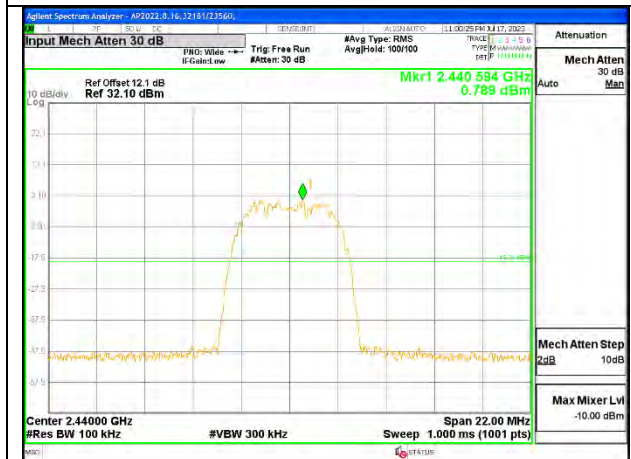
ANT 4



LOW CHANNEL BANDEDGE ANT 4



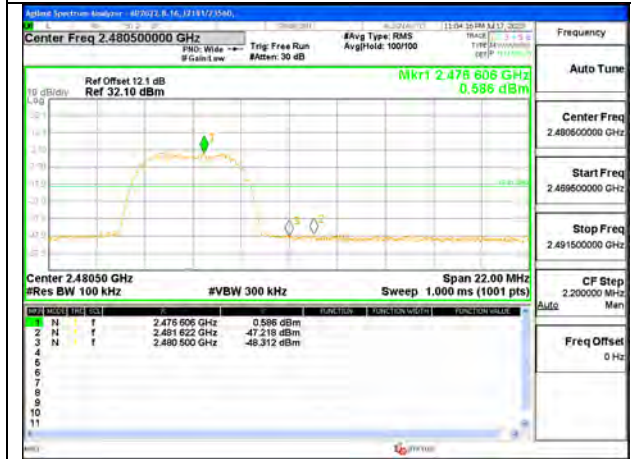
OUT-OF-BAND LOW CHANNEL ANT 4



IN-BAND REFERENCE LEVEL ANT 4



OUT-OF-BAND MID CHANNEL ANT 4



HIGH CHANNEL BANDEDGE ANT 4



OUT-OF-BAND HIGH CHANNEL ANT 4

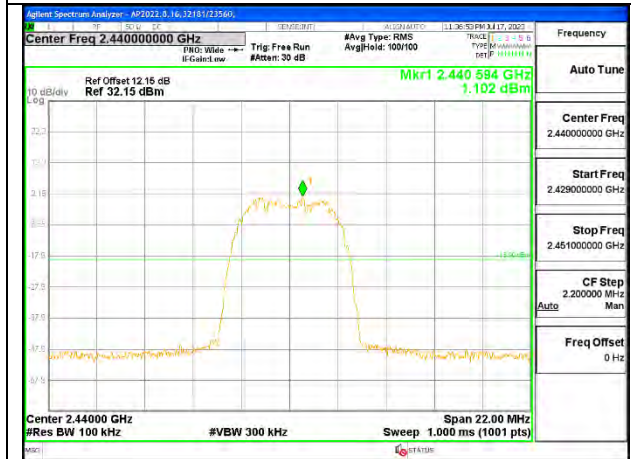
ANT 3



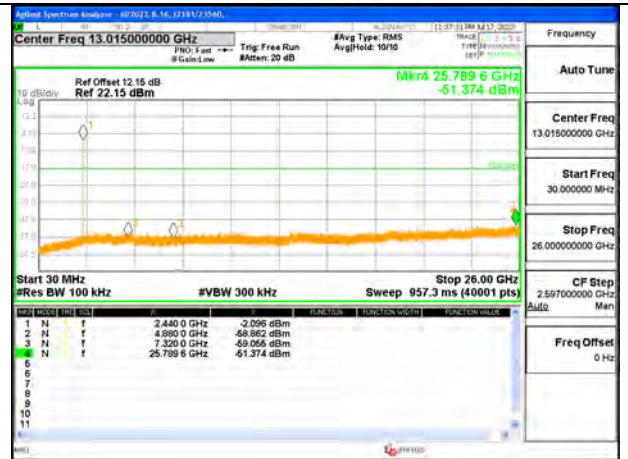
LOW CHANNEL BANDEDGE ANT 3



OUT-OF-BAND LOW CHANNEL ANT 3



IN-BAND REFERENCE LEVEL ANT 3



OUT-OF-BAND MID CHANNEL ANT 3



HIGH CHANNEL BANDEDGE ANT 3



OUT-OF-BAND HIGH CHANNEL ANT 3

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 scans above 1 GHz test, two methods are used: the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T (10 Hz) video bandwidth with peak detector for average measurements; and other method with 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.

In addition:

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

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

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

RESULTS:

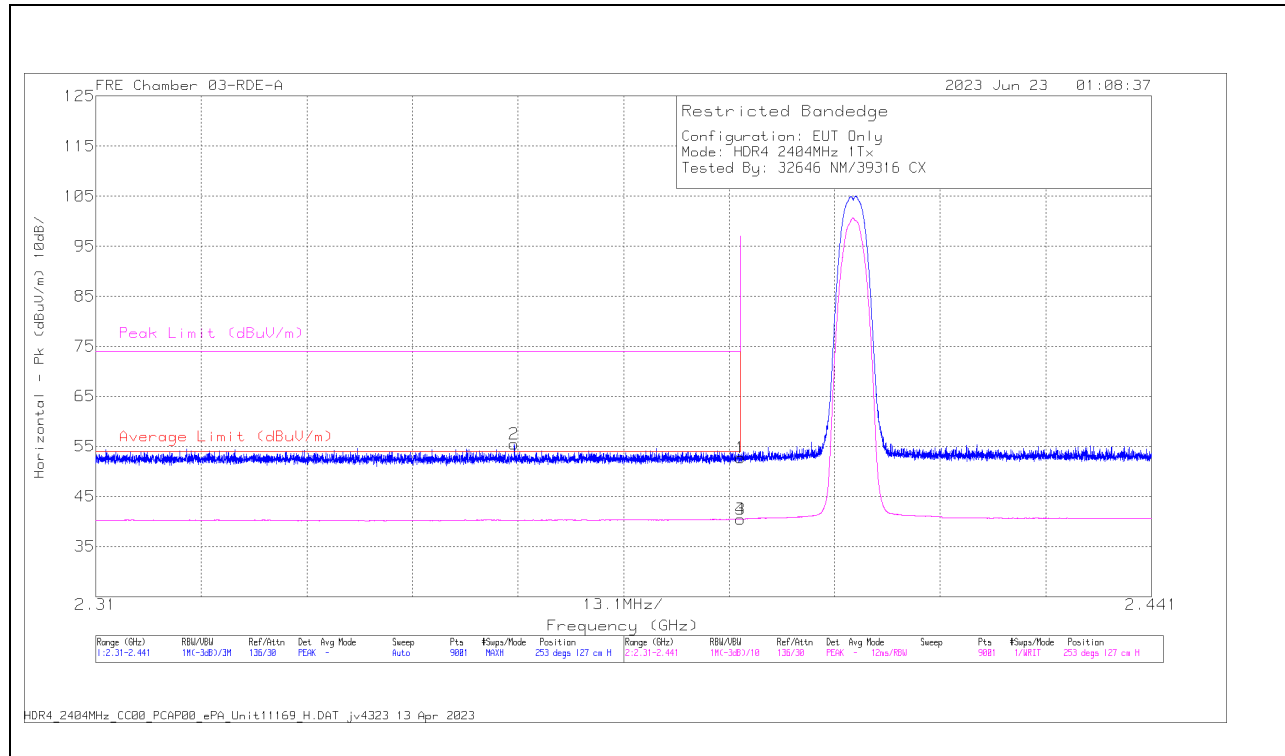
10.2. TRANSMITTER ABOVE 1 GHz

10.2.1. HIGH POWER HDR (HDR4)

ANT 4

BANDEDGE (LOW CHANNEL)

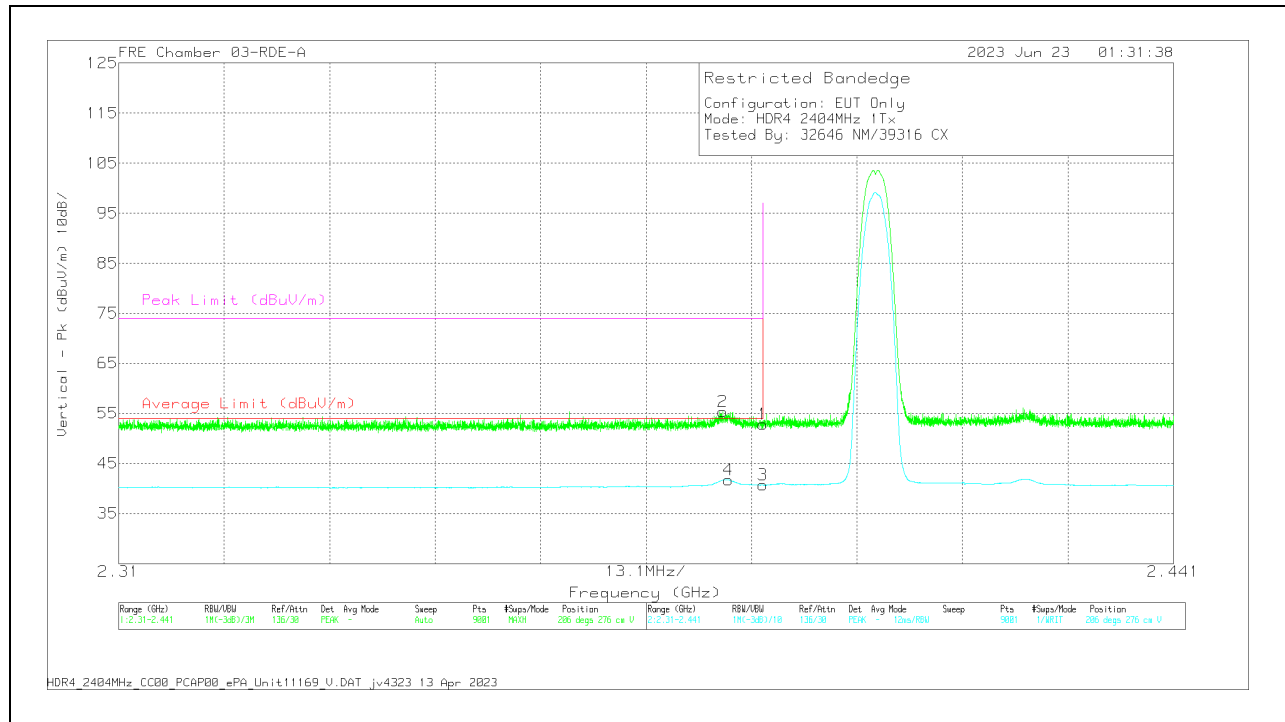
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	230299 ACF (dB/m)	DCCF (dB)	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	60.96	Pk	32.2	0	-40.42	52.74	-	-	74	-21.26	253	127	H
2	* 2.361936	63.86	Pk	32.1	0	-40.46	55.5	-	-	74	-18.5	253	127	H
3	* 2.39	48.69	VA1T	32.2	0	-40.42	40.47	54	-13.53	-	-	253	127	H
4	* 2.389985	48.7	VA1T	32.2	0	-40.42	40.48	54	-13.52	-	-	253	127	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

VERTICAL RESULT

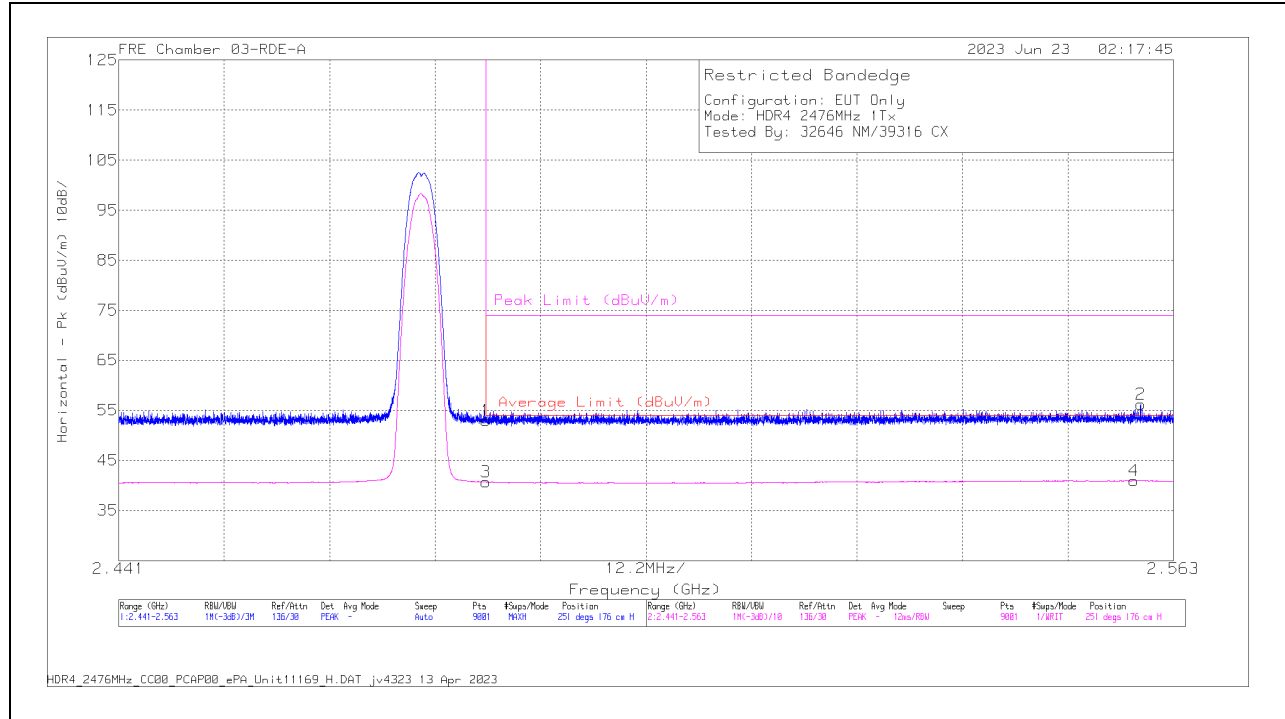


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	230299 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	61.1	Pk	32.2	0	-40.42	52.88	-	-	74	-21.12	206	276	V
2	* 2.385022	63.67	Pk	32.1	0	-40.38	55.39	-	-	74	-18.61	206	276	V
3	* 2.39	48.89	VA1T	32.2	0	-40.42	40.67	54	-13.33	-	-	206	276	V
4	* 2.385706	50.01	VA1T	32.1	0	-40.39	41.72	54	-12.28	-	-	206	276	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 PK - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

BANDEDGE (HIGH CHANNEL)

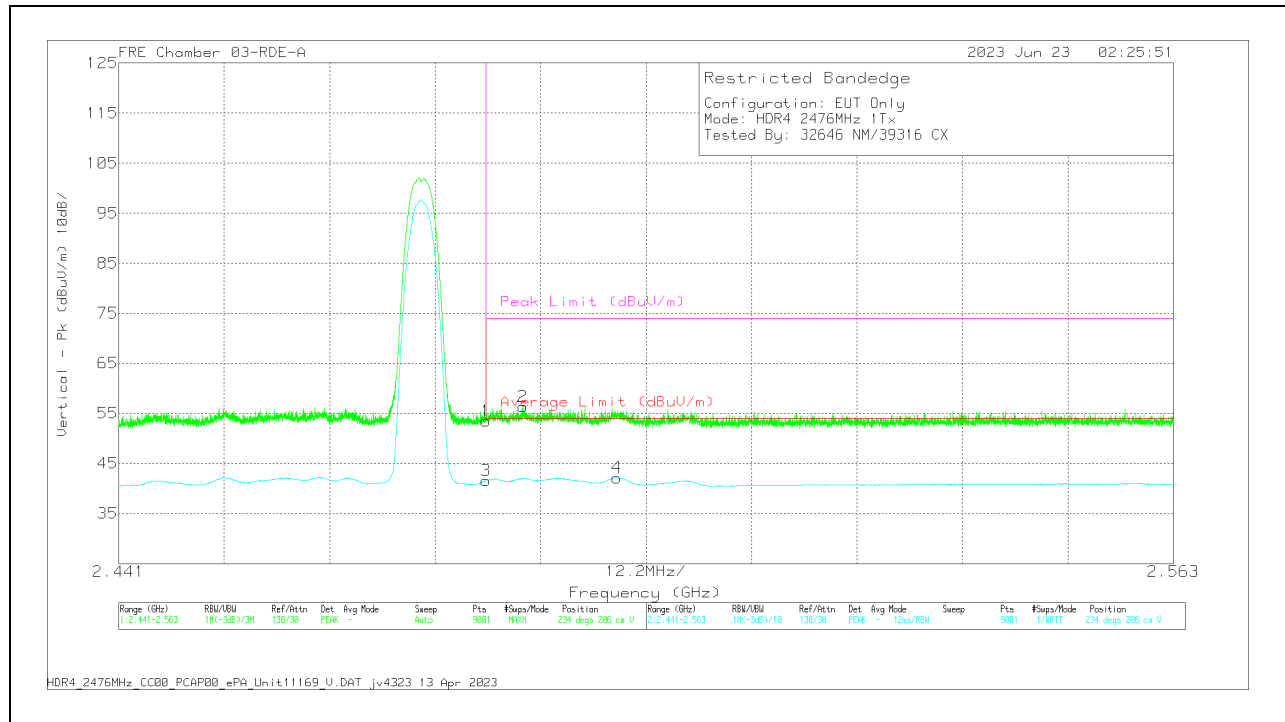
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	230299 ACF (dB/m)	DCCF (dB)	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	60.83	Pk	32.3	0	-40.11	53.02	-	-	74	-20.98	251	176	H
3	* 2.4835	48.48	VA1T	32.3	0	-40.11	40.67	54	-13.33	-	-	251	176	H
4	2.558409	48.39	VA1T	32.5	0	-39.9	40.99	54	-13.01	-	-	251	176	H
2	2.559195	63.65	Pk	32.5	0	-39.89	56.26	-	-	74	-17.74	251	176	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

VERTICAL RESULT



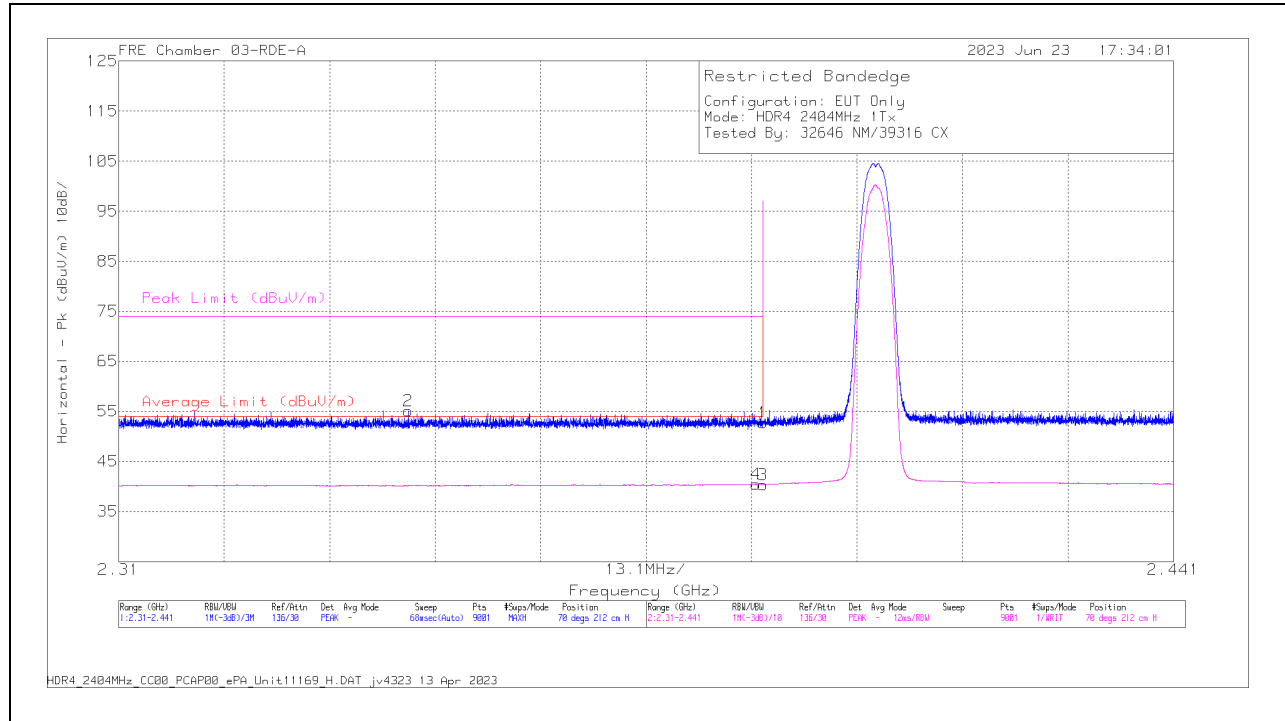
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	230299 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Correct ed Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	61.3	Pk	32.3	0	-40.11	53.49	-	-	74	-20.51	234	206	V
2	* 2.487755	64.08	Pk	32.3	0	-40.06	56.32	-	-	74	-17.68	234	206	V
3	* 2.4835	49.39	VA1T	32.3	0	-40.11	41.58	54	-12.42	-	-	234	206	V
4	* 2.498627	49.78	VA1T	32.4	0	-40.03	42.15	54	-11.85	-	-	234	206	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 PK - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

ANT 3

BANDEDGE (LOW CHANNEL)

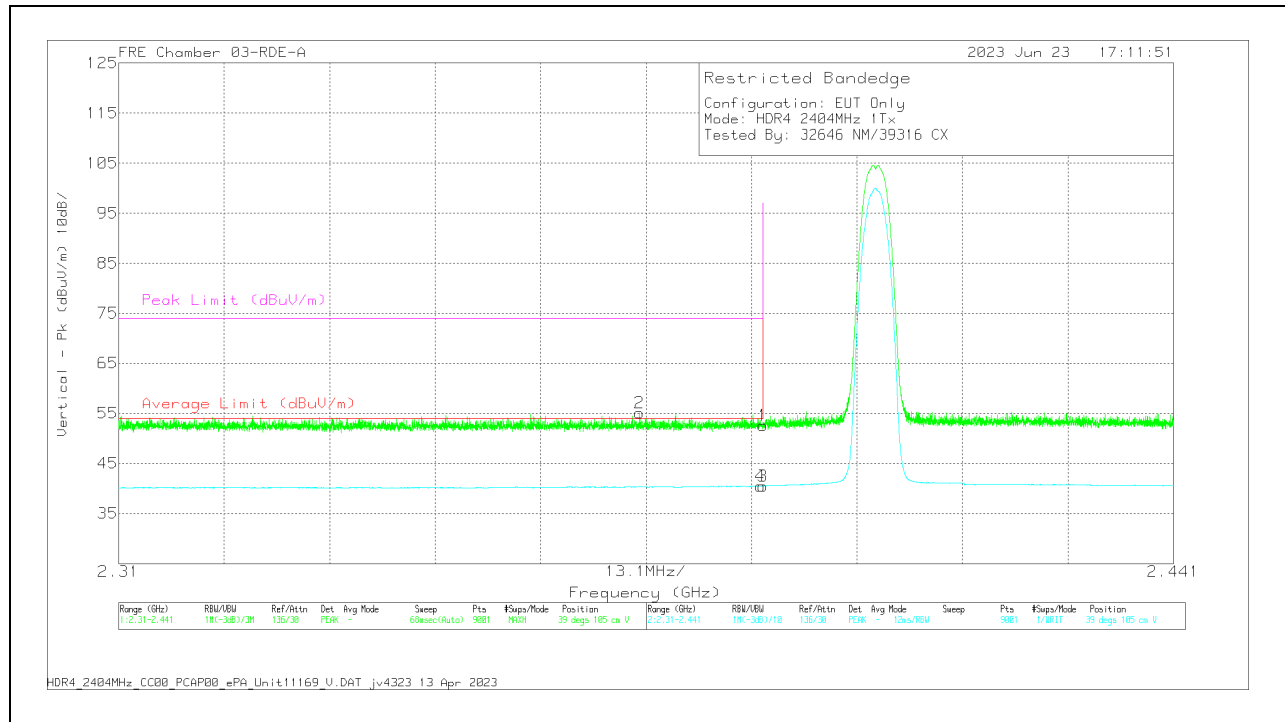
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	230299 ACF (dB/m)	DCCF (dB)	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	60.98	Pk	32.2	0	-40.42	52.76	-	-	74	-21.24	70	212	H
2	* 2.345968	63.52	Pk	32.1	0	-40.49	55.13	-	-	74	-18.87	70	212	H
3	* 2.39	48.61	VA1T	32.2	0	-40.42	40.39	54	-13.61	-	-	70	212	H
4	* 2.38917	48.65	VA1T	32.2	0	-40.42	40.43	54	-13.57	-	-	70	212	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

VERTICAL RESULT

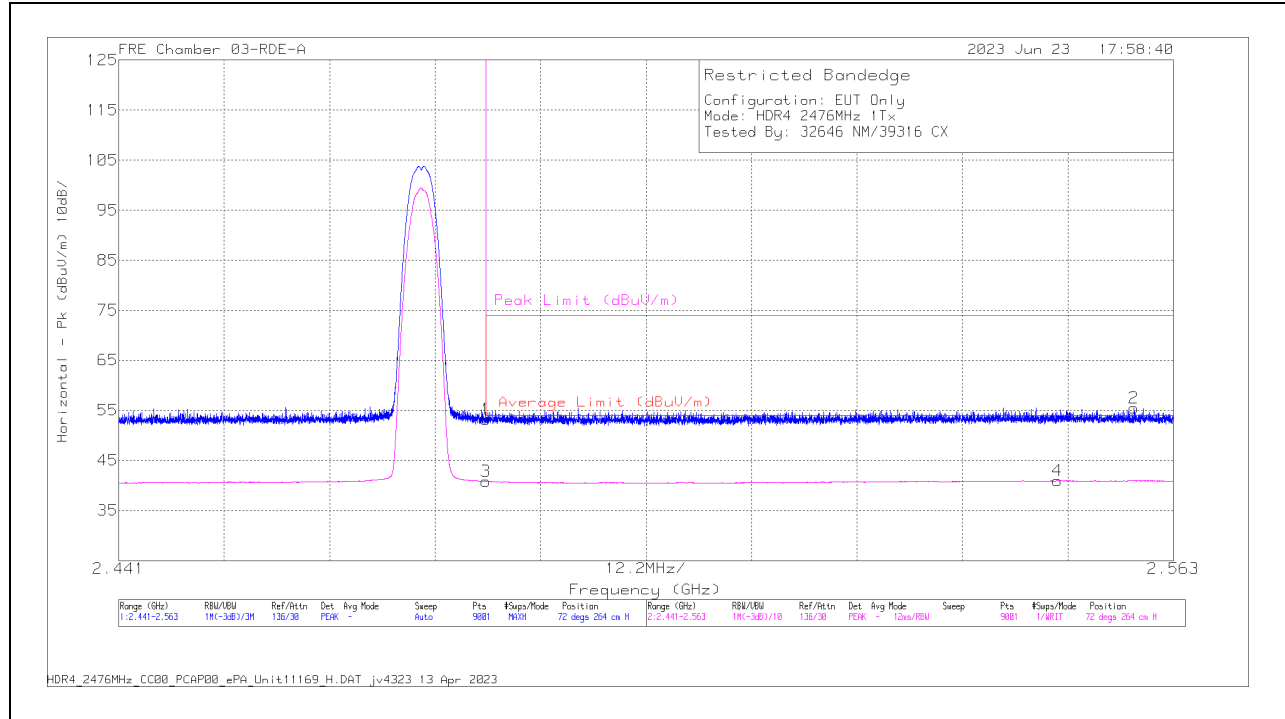


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	230299 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	60.76	Pk	32.2	0	-40.42	52.54	-	-	74	-21.46	39	105	V
2	* 2.374701	63.46	Pk	32.1	0	-40.41	55.15	-	-	74	-18.85	39	105	V
3	* 2.39	48.7	VA1T	32.2	0	-40.42	40.48	54	-13.52	-	-	39	105	V
4	* 2.389694	48.73	VA1T	32.2	0	-40.42	40.51	54	-13.49	-	-	39	105	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 PK - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

BANDEDGE (HIGH CHANNEL)

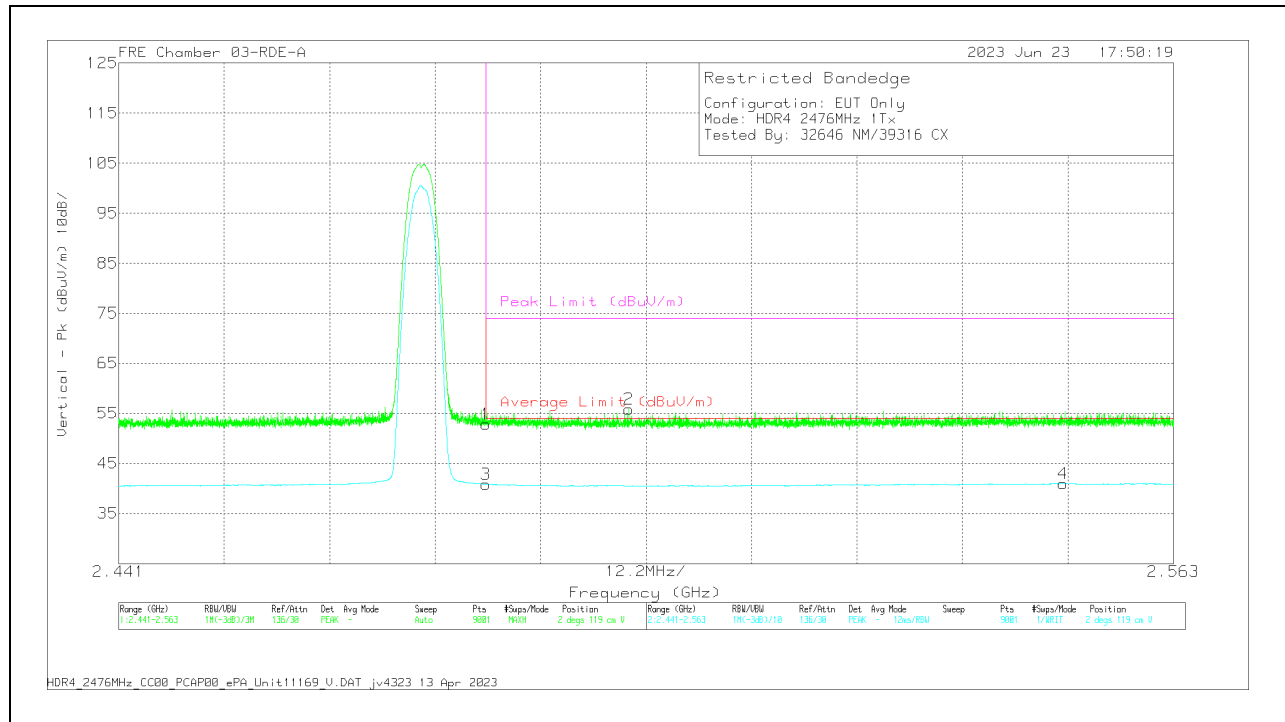
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	230299 ACF (dB/m)	DCCF (dB)	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	60.98	Pk	32.3	0	-40.11	53.17	-	-	74	-20.83	72	264	H
3	* 2.4835	48.65	VA1T	32.3	0	-40.11	40.84	54	-13.16	-	-	72	264	H
4	2.549597	48.39	VA1T	32.5	0	-39.93	40.96	54	-13.04	-	-	72	264	H
2	2.558463	62.92	Pk	32.5	0	-39.9	55.52	-	-	74	-18.48	72	264	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

VERTICAL RESULT



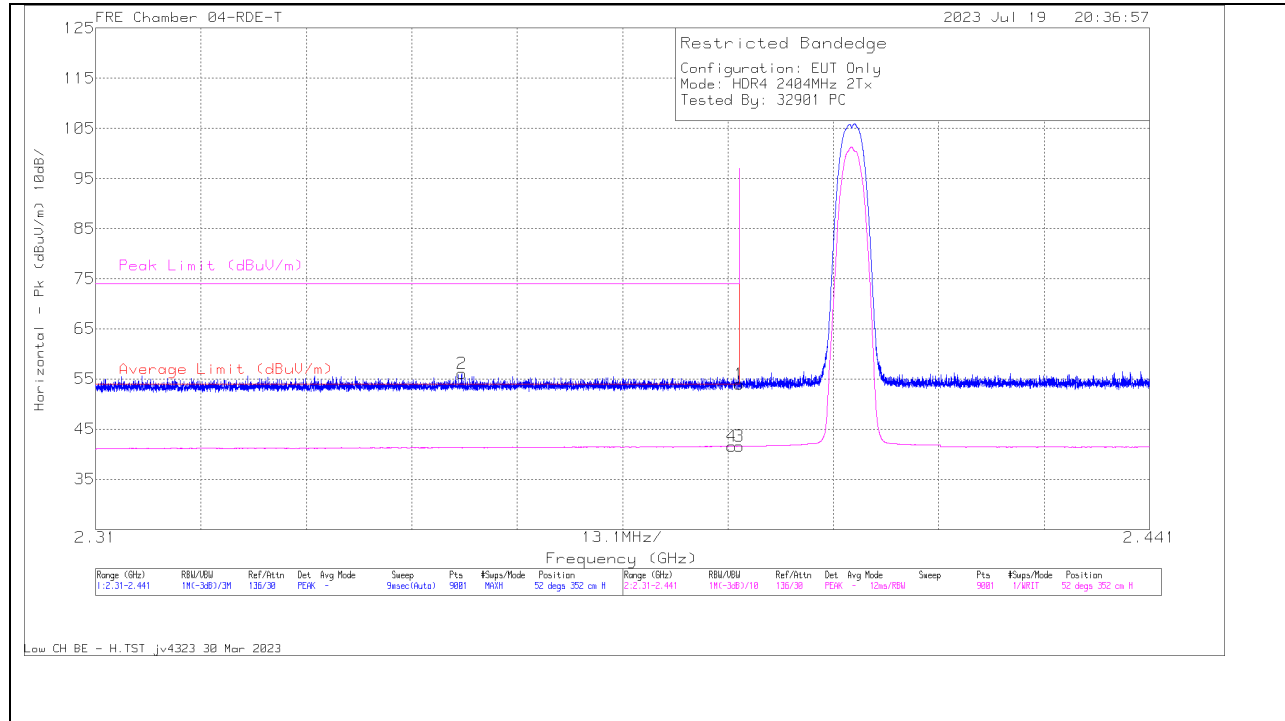
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	230299 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	60.61	Pk	32.3	0	-40.11	52.8	-	-	74	-21.2	2	119	V
3	* 2.4835	48.67	VA1T	32.3	0	-40.11	40.86	54	-13.14	-	-	2	119	V
2	2.50009	63.48	Pk	32.4	0	-40.04	55.84	-	-	74	-18.16	2	119	V
4	2.550234	48.41	VA1T	32.5	0	-39.93	40.98	54	-13.02	-	-	2	119	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 PK - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

10.2.2. HIGH POWER HDR TXBF (HDR4)

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT

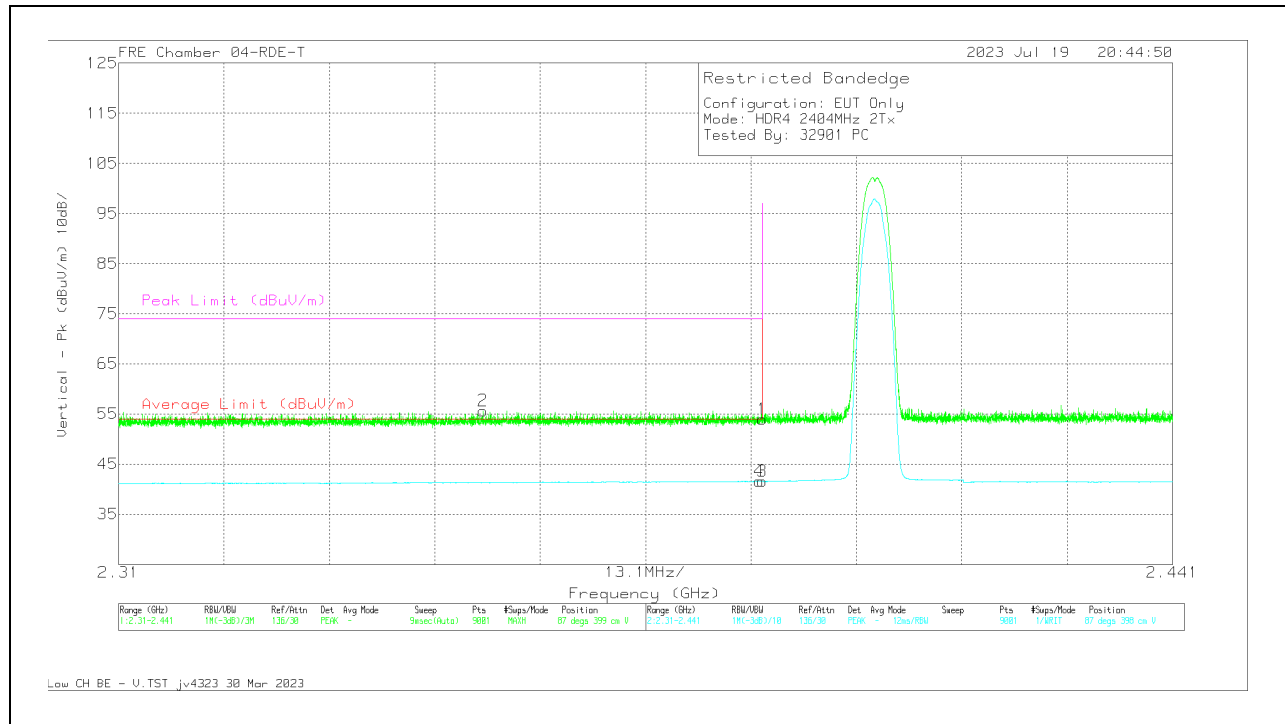


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226673 ACF (dB) 3mH	DCCF (dB)	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	59.71	Pk	32.1	0	-37.89	53.92	-	-	74	-20.08	52	352	H
2	* 2.35502	61.98	Pk	32	0	-37.89	56.09	-	-	74	-17.91	52	352	H
3	* 2.39	47.35	VA1T	32.1	0	-37.89	41.56	54	-12.44	-	-	52	352	H
4	* 2.389083	47.37	VA1T	32.1	0	-37.88	41.59	54	-12.41	-	-	52	352	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 PK - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

VERTICAL RESULT



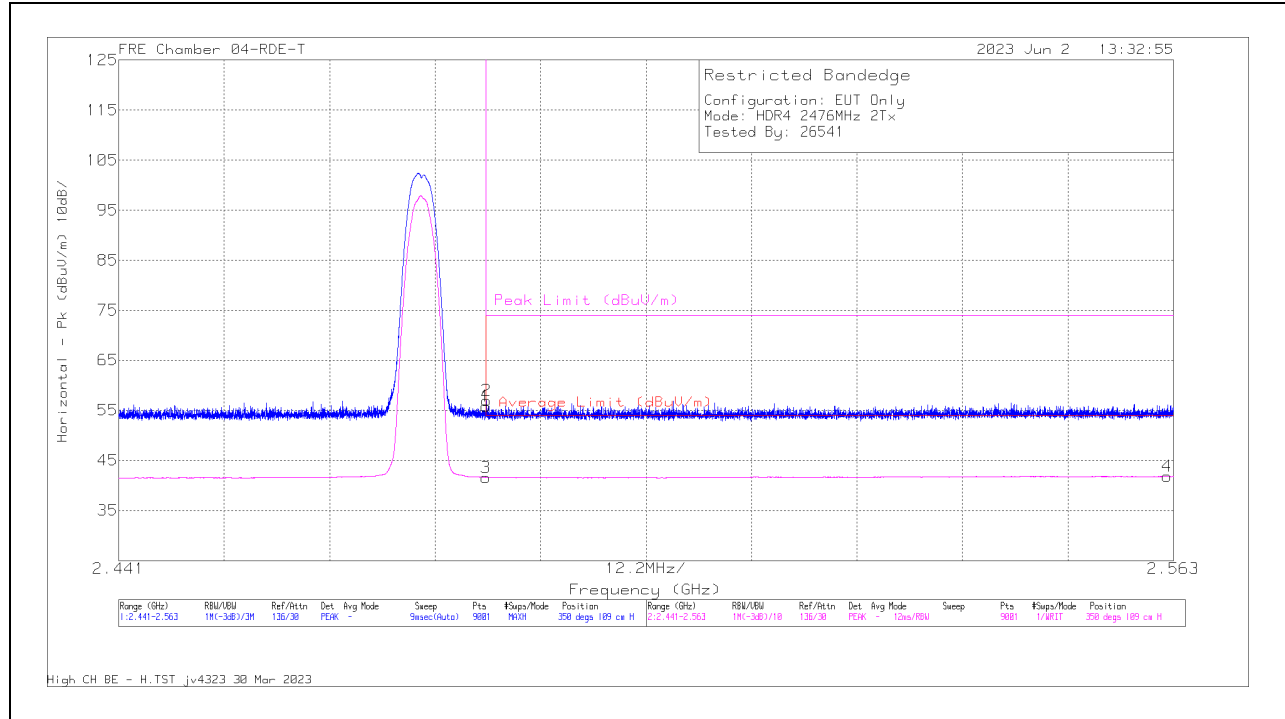
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226673 ACF (dB) 3mH	DCCF (dB)	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	59.77	Pk	32.1	0	-37.89	53.98	-	-	74	-20.02	87	399	V
2	* 2.355298	61.55	Pk	32	0	-37.89	55.66	-	-	74	-18.34	87	399	V
3	* 2.39	47.35	VA1T	32.1	0	-37.89	41.56	54	-12.44	-	-	87	398	V
4	* 2.389607	47.4	VA1T	32.1	0	-37.89	41.61	54	-12.39	-	-	87	398	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

BANDEDGE (HIGH CHANNEL)

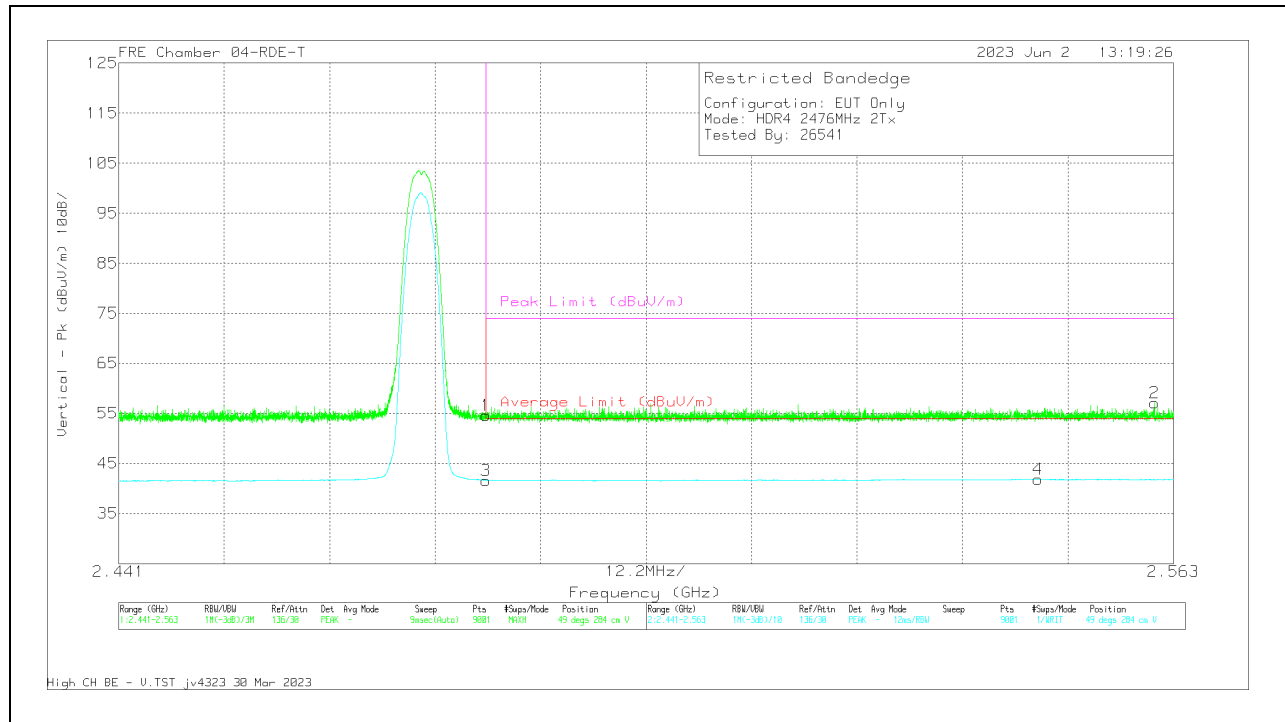
HORIZONTAL RESULT



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	* 2.4835	61.41	PK	32.2	-37.81	55.8	-	-	74	-18.2	350	109	H
2	* 2.483512	62.64	PK	32.2	-37.81	57.03	-	-	74	-16.97	350	109	H
3	* 2.4835	47.25	VA1T	32.2	-37.81	41.64	54	-12.36	-	-	350	109	H
4	2.562272	47.42	VA1T	32.2	-37.76	41.86	54	-12.14	-	-	350	109	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	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	* 2.4835	60.16	Pk	32.2	-37.81	54.55	-	-	74	-19.45	49	284	V
3	* 2.4835	47.25	VA1T	32.2	-37.81	41.64	54	-12.36	-	-	49	284	V
4	2.54732	47.28	VA1T	32.3	-37.73	41.85	54	-12.15	-	-	49	284	V
2	2.560808	62.71	Pk	32.2	-37.78	57.13	-	-	74	-16.87	49	284	V

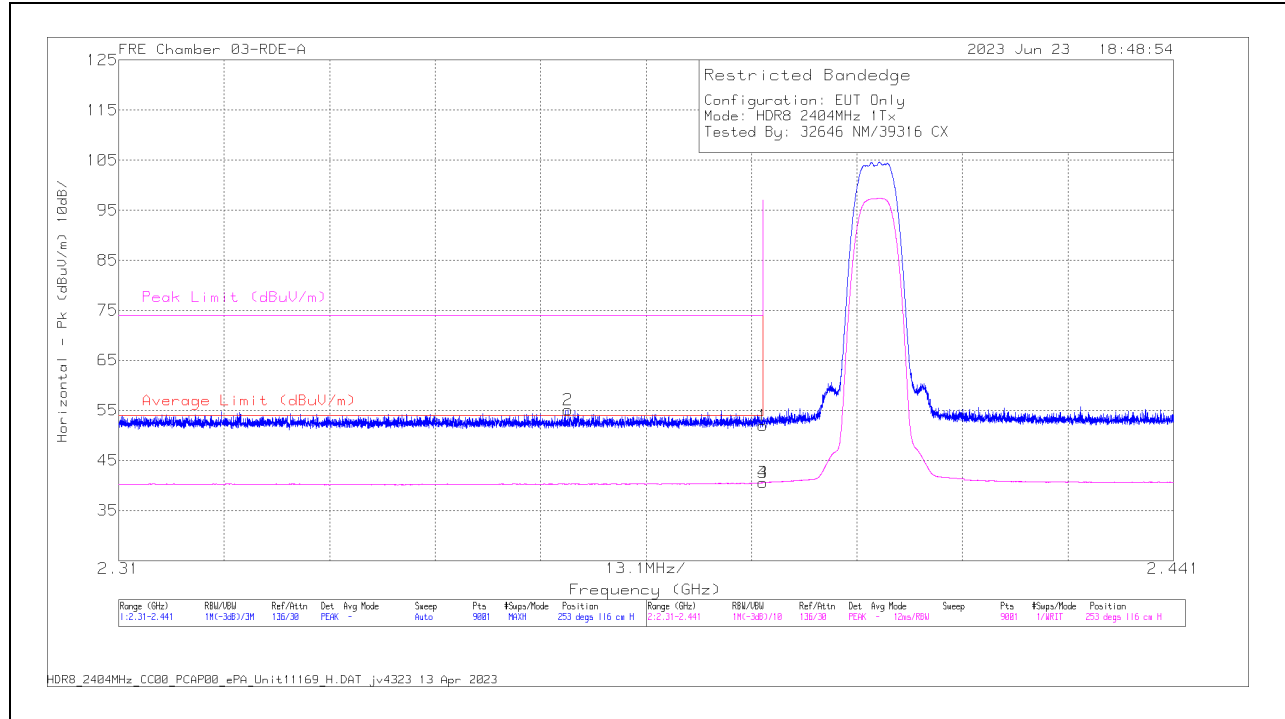
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

10.2.3. HIGH POWER HDR (HDR8)

ANT 4

BANDEDGE (LOW CHANNEL)

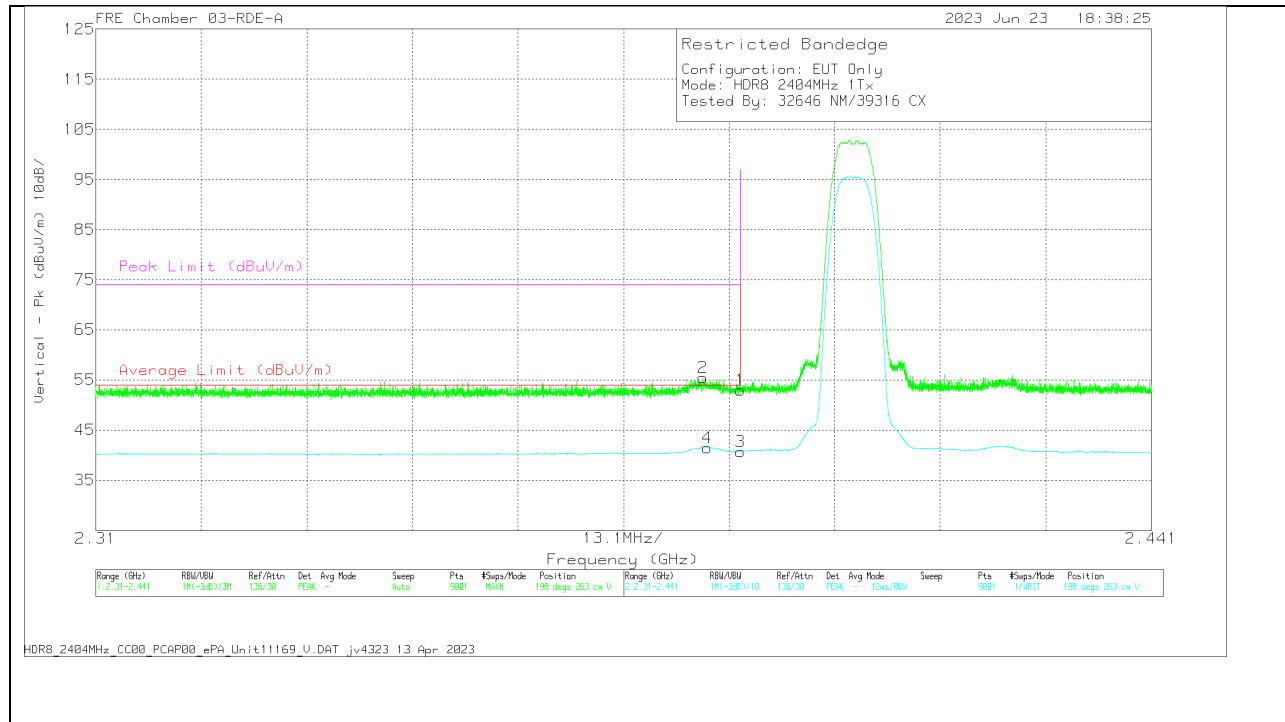
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	230299 ACF (dB/m)	DCCF (dB)	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	60.16	Pk	32.2	0	-40.42	51.94	-	-	74	-22.06	253	116	H
2	* 2.365779	63.38	Pk	32.1	0	-40.41	55.07	-	-	74	-18.93	253	116	H
3	* 2.39	48.76	VA1T	32.2	0	-40.42	40.54	54	-13.46	-	-	253	116	H
4	* 2.39	48.76	VA1T	32.2	0	-40.42	40.54	54	-13.46	-	-	253	116	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

VERTICAL RESULT

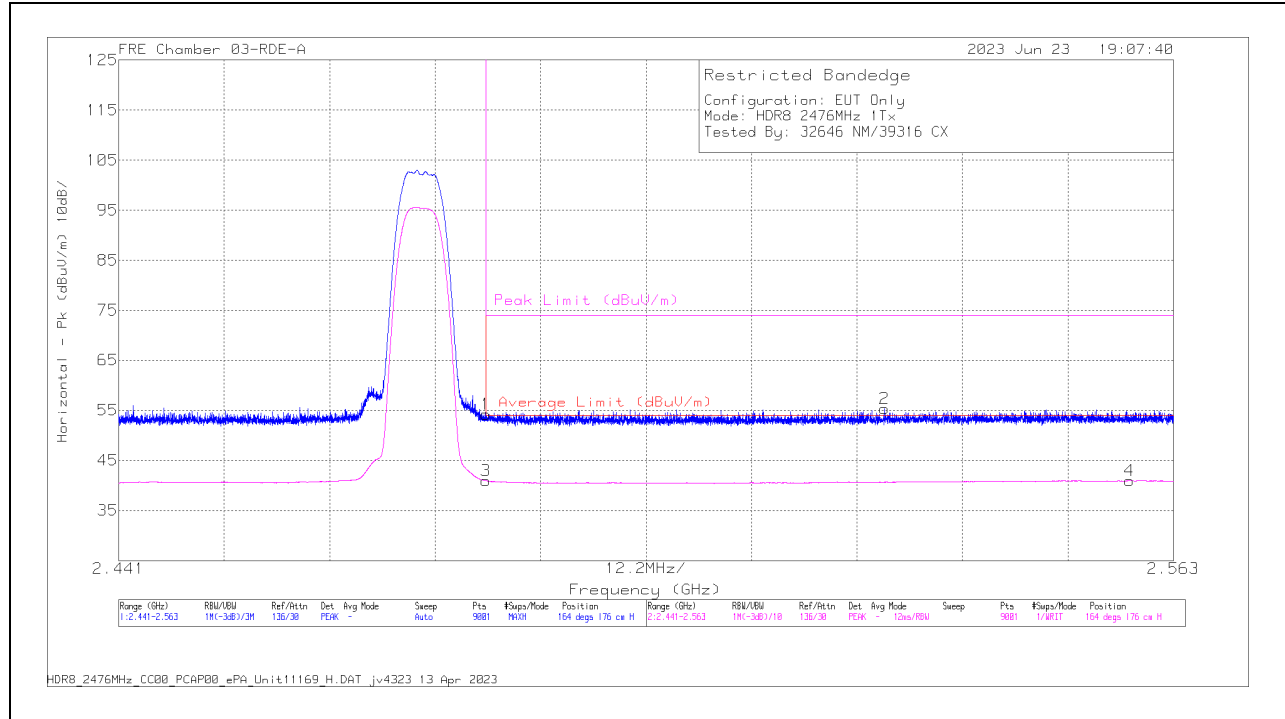


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	230299 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	61.17	Pk	32.2	0	-40.42	52.95	-	-	74	-21.05	198	263	V
2	* 2.385342	63.74	Pk	32.1	0	-40.39	55.45	-	-	74	-18.55	198	263	V
3	* 2.39	48.98	VA1T	32.2	0	-40.42	40.76	54	-13.24	-	-	198	263	V
4	* 2.385866	49.81	VA1T	32.1	0	-40.4	41.51	54	-12.49	-	-	198	263	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 PK - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

BANDEDGE (HIGH CHANNEL)

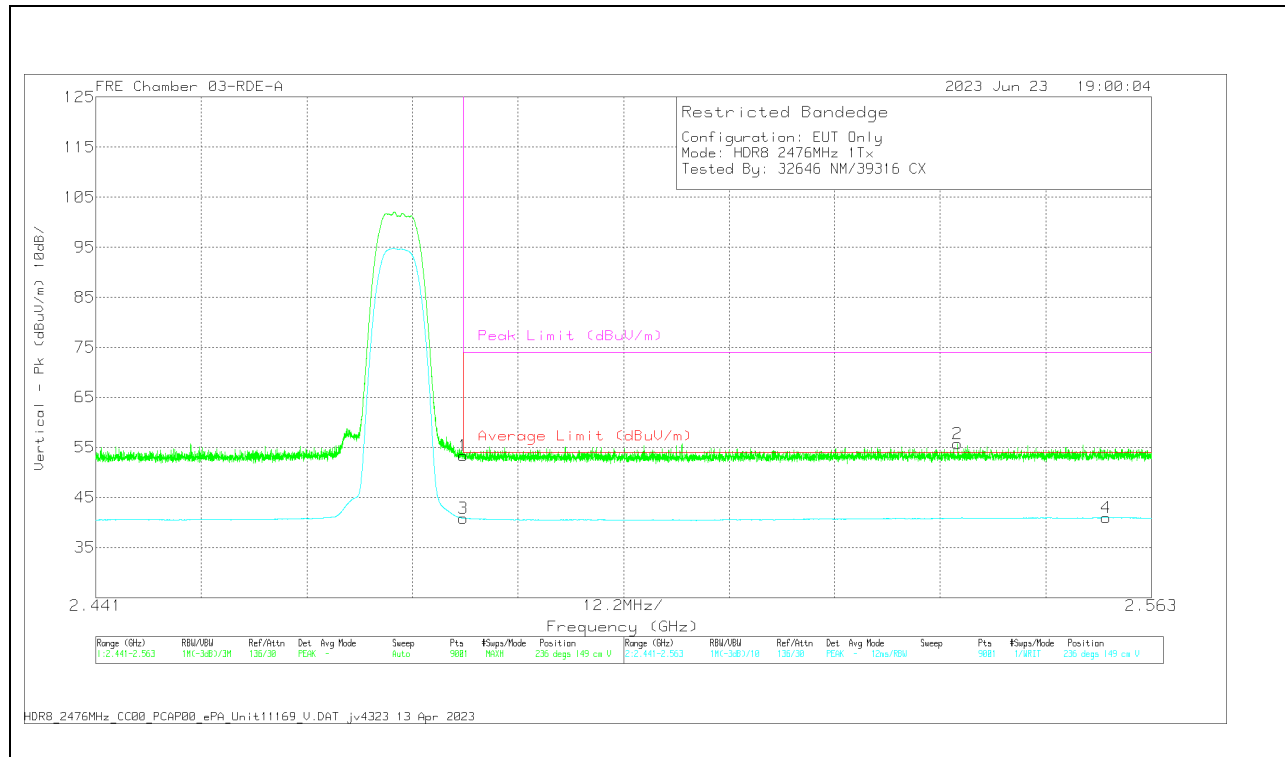
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	230299 ACF (dB/m)	DCCF (dB)	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	62.04	Pk	32.3	0	-40.11	54.23	-	-	74	-19.77	164	176	H
3	* 2.4835	48.78	VA1T	32.3	0	-40.11	40.97	54	-13.03	-	-	164	176	H
2	2.529575	62.89	Pk	32.5	0	-40.03	55.36	-	-	74	-18.64	164	176	H
4	2.557948	48.4	VA1T	32.5	0	-39.91	40.99	54	-13.01	-	-	164	176	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

VERTICAL RESULT



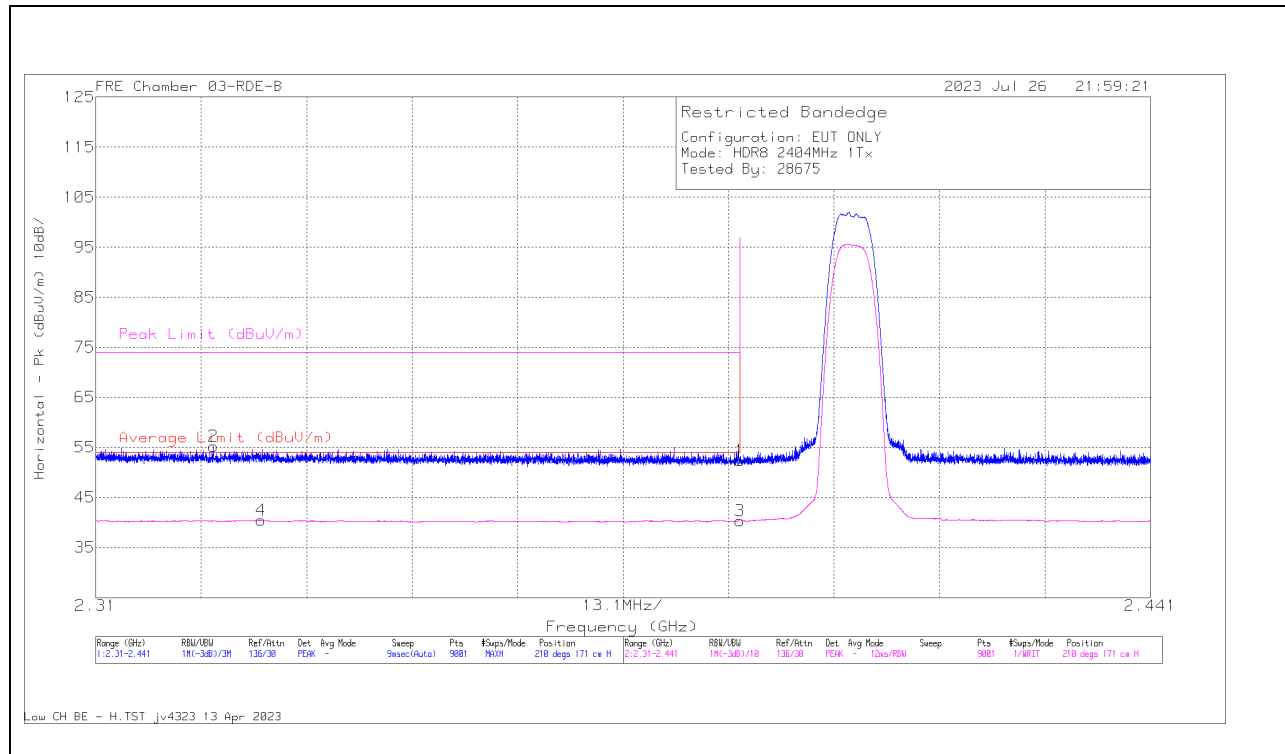
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	230299 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	61.2	Pk	32.3	0	-40.11	53.39	-	-	74	-20.61	236	149	V
3	* 2.4835	48.67	VA1T	32.3	0	-40.11	40.86	54	-13.14	-	-	236	149	V
2	2.540596	63.22	Pk	32.5	0	-39.96	55.76	-	-	74	-18.24	236	149	V
4	2.557758	48.39	VA1T	32.5	0	-39.91	40.98	54	-13.02	-	-	236	149	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

ANT 3

BANDEDGE (LOW CHANNEL)

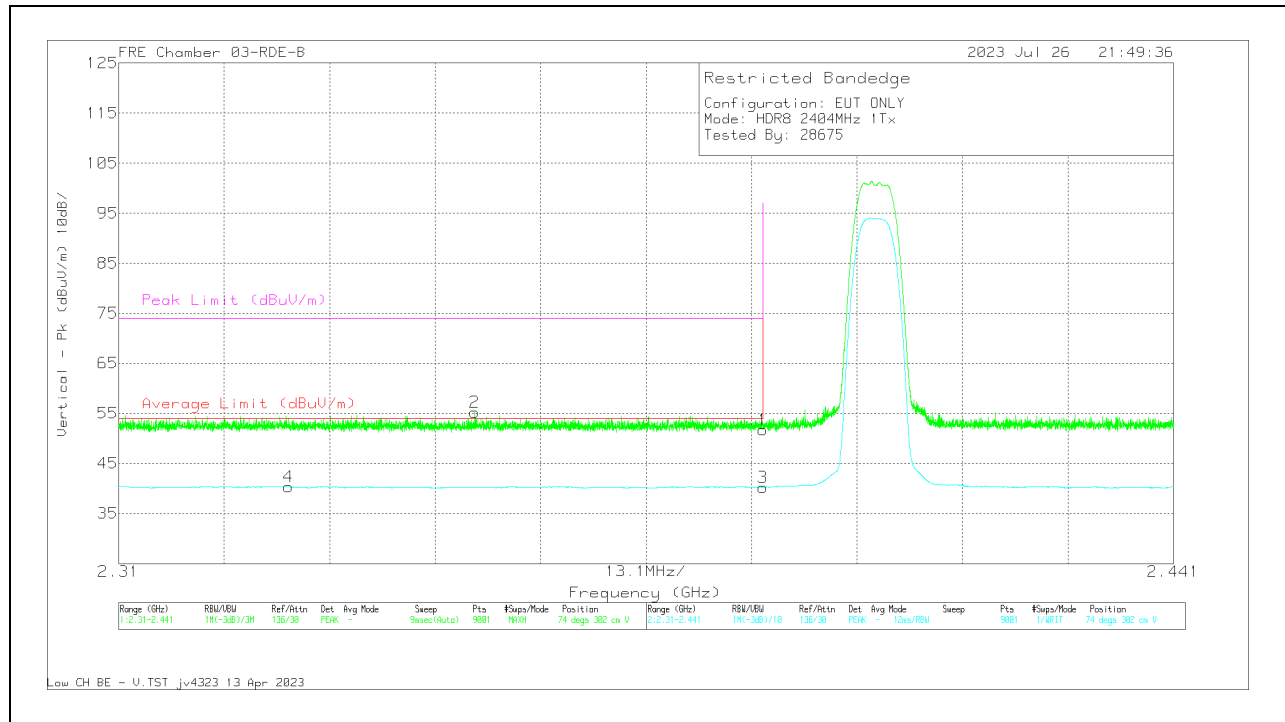
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	230300 ACF (dB/m)	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	61.39	Pk	32.2	-41.2	52.39	-	-	74	-21.61	210	171	H
2	* 2.324643	64.31	Pk	32.1	-41.2	55.21	-	-	74	-18.79	210	171	H
3	* 2.39	49.31	VA1T	32.2	-41.2	40.31	54	-13.69	-	-	210	171	H
4	* 2.330524	49.52	VA1T	32.1	-41.2	40.42	54	-13.58	-	-	210	171	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

VERTICAL RESULT

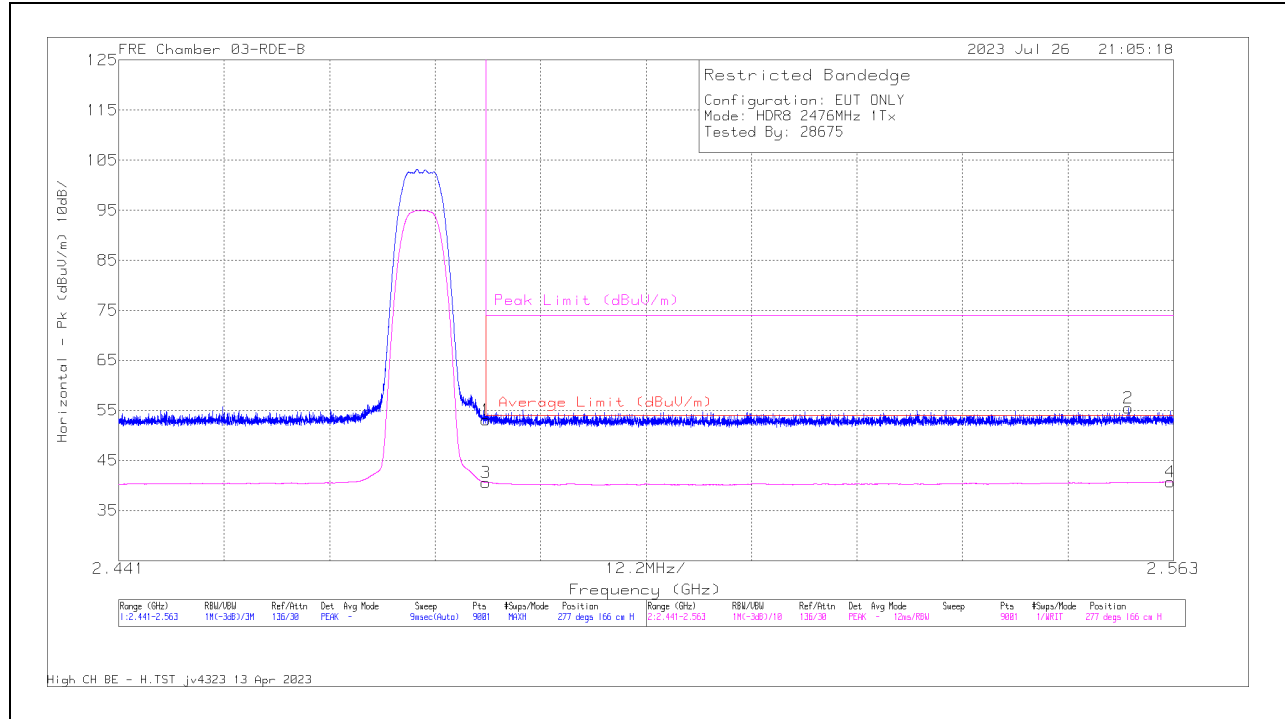


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	230300 ACF (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	60.76	Pk	32.2	-41.2	51.76	-	-	74	-22.24	74	302	V
2	* 2.354236	64.38	Pk	32.1	-41.2	55.28	-	-	74	-18.72	74	302	V
3	* 2.39	49.26	VA1T	32.2	-41.2	40.26	54	-13.74	-	-	74	302	V
4	* 2.331077	49.5	VA1T	32.1	-41.21	40.39	54	-13.61	-	-	74	302	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

BANDEDGE (HIGH CHANNEL)

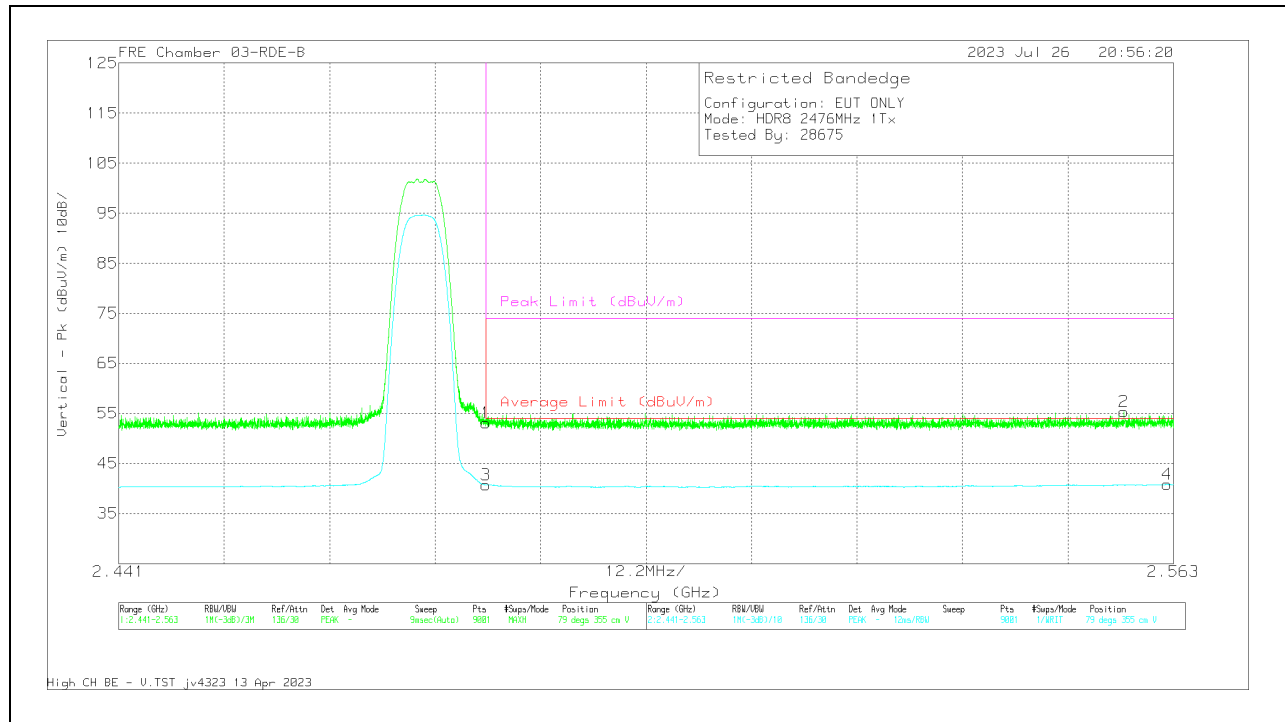
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	230300 ACF (dB/m)	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	62.1	Pk	32.2	-41.15	53.15	-	-	74	-20.85	277	166	H
3	* 2.4835	49.56	VA1T	32.2	-41.15	40.61	54	-13.39	-	-	277	166	H
2	2.557744	64.08	Pk	32.3	-40.9	55.48	-	-	74	-18.52	277	166	H
4	2.562611	49.25	VA1T	32.3	-40.8	40.75	54	-13.25	-	-	277	166	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

VERTICAL RESULT



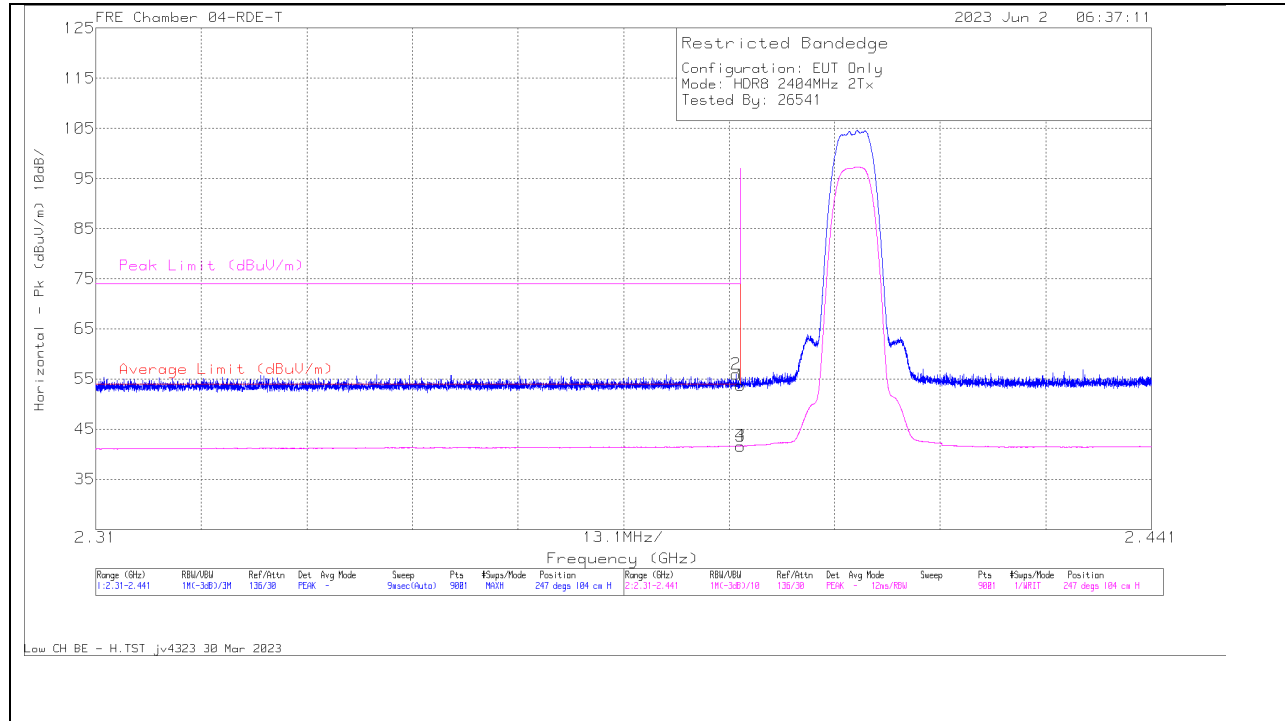
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	230300 ACF (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	62.02	Pk	32.2	-41.15	53.07	-	-	74	-20.93	79	355	V
3	* 2.4835	49.66	VA1T	32.2	-41.15	40.71	54	-13.29	-	-	79	355	V
2	2.557256	63.96	Pk	32.3	-40.9	55.36	-	-	74	-18.64	79	355	V
4	2.562286	49.31	VA1T	32.3	-40.8	40.81	54	-13.19	-	-	79	355	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

10.2.4. HIGH POWER HDR TXBF (HDR8)

BANDEDGE (LOW CHANNEL)

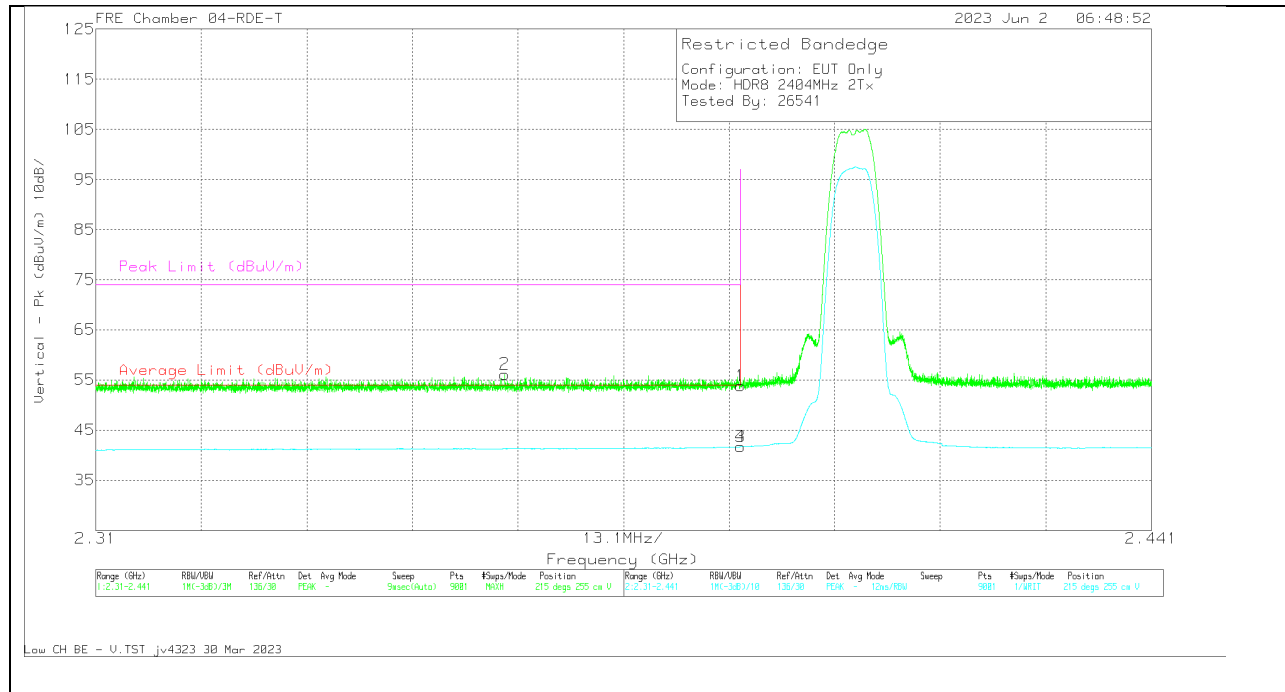
HORIZONTAL RESULT



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	59.55	Pk	32.1	-37.89	53.76	-	-	74	-20.24	247	104	H
2	* 2.389476	61.76	Pk	32.1	-37.88	55.98	-	-	74	-18.02	247	104	H
3	* 2.39	47.44	VA1T	32.1	-37.89	41.65	54	-12.35	-	-	247	104	H
4	* 2.39	47.44	VA1T	32.1	-37.89	41.65	54	-12.35	-	-	247	104	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

VERTICAL RESULT

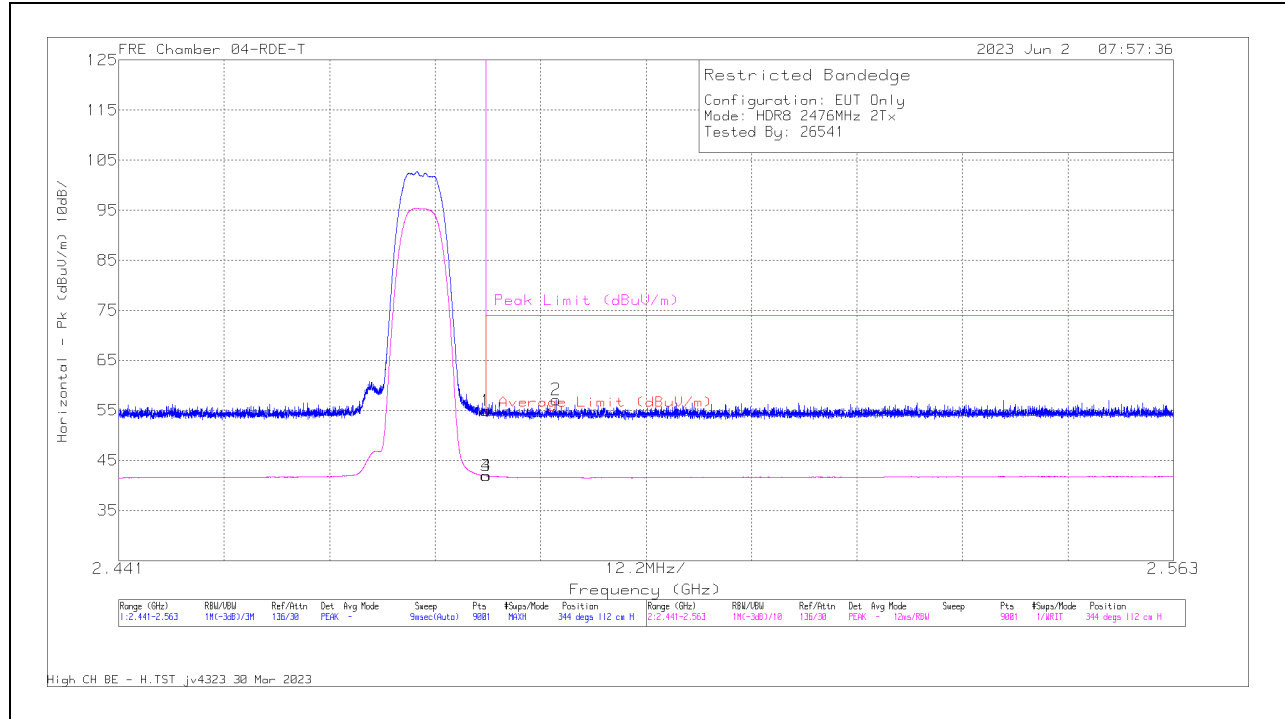


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226673 ACF (dB) 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	59.66	PK	32.1	-37.89	53.87	-	-	74	-20.13	215	255	V
2	* 2.360728	62.06	PK	32	-37.9	56.16	-	-	74	-17.84	215	255	V
3	* 2.39	47.48	VA1T	32.1	-37.89	41.69	54	-12.31	-	-	215	255	V
4	* 2.39	47.48	VA1T	32.1	-37.89	41.69	54	-12.31	-	-	215	255	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 PK - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

BANDEDGE (HIGH CHANNEL)

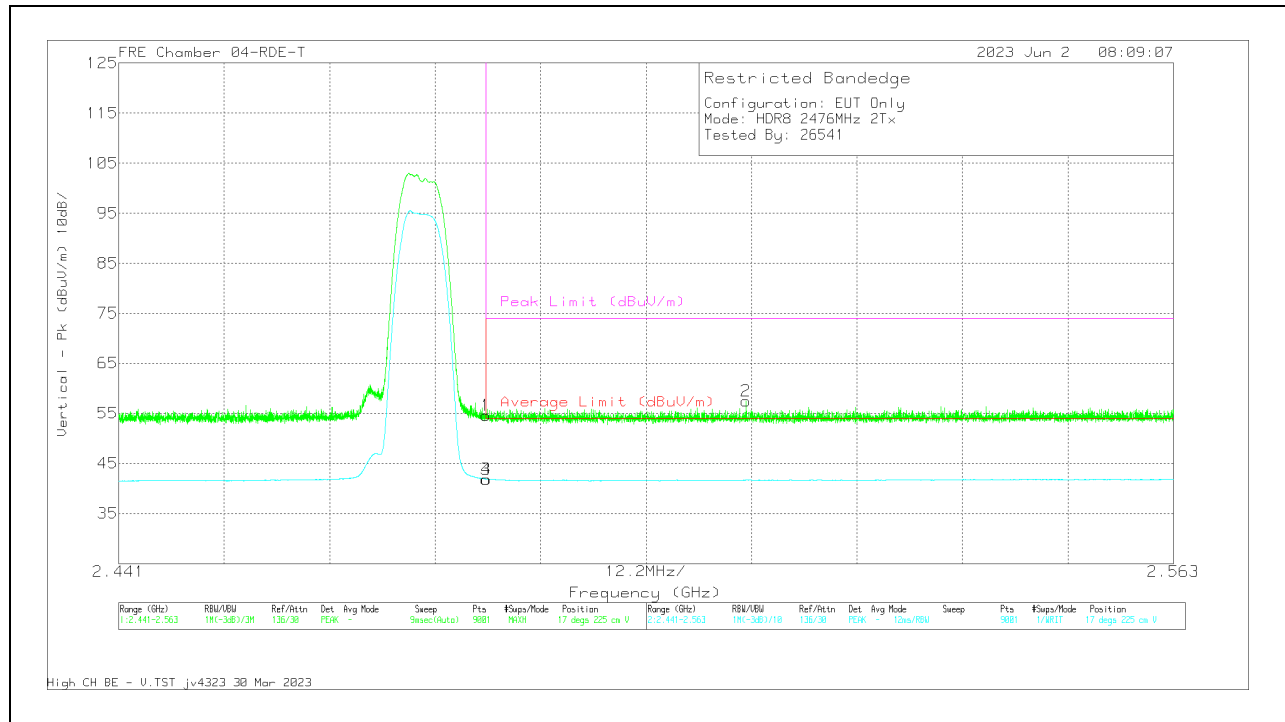
HORIZONTAL RESULT



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	* 2.4835	60.56	Pk	32.2	-37.81	54.95	-	-	74	-19.05	344	112	H
2	* 2.491605	62.66	Pk	32.3	-37.8	57.16	-	-	74	-16.84	344	112	H
3	* 2.4835	47.56	VA1T	32.2	-37.81	41.95	54	-12.05	-	-	344	112	H
4	* 2.483512	47.55	VA1T	32.2	-37.81	41.94	54	-12.06	-	-	344	112	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	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	* 2.4835	60.21	Pk	32.2	-37.81	54.6	-	-	74	-19.4	17	225	V
3	* 2.4835	47.5	VA1T	32.2	-37.81	41.89	54	-12.11	-	-	17	225	V
4	* 2.483512	47.49	VA1T	32.2	-37.81	41.88	54	-12.12	-	-	17	225	V
2	2.513579	63	Pk	32.3	-37.8	57.5	-	-	74	-16.5	17	225	V

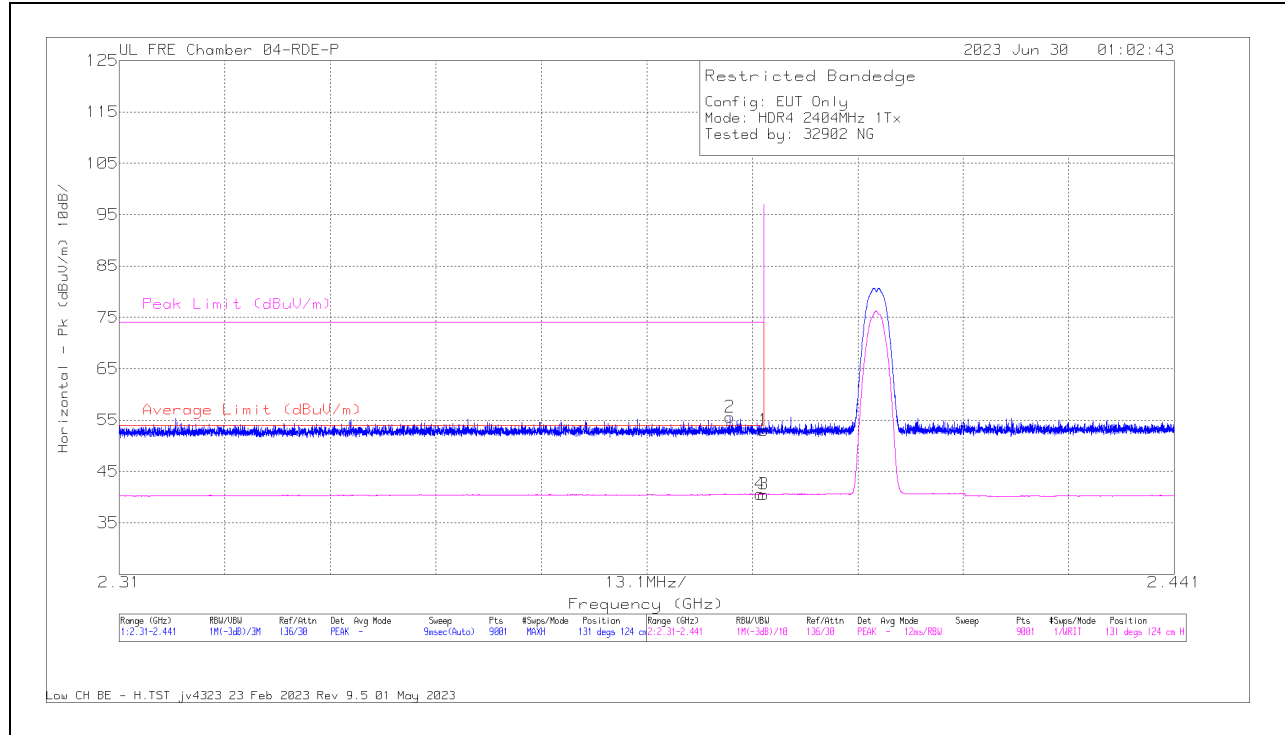
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

10.2.5. LOW POWER HDR (HDR4)

ANT 4

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT

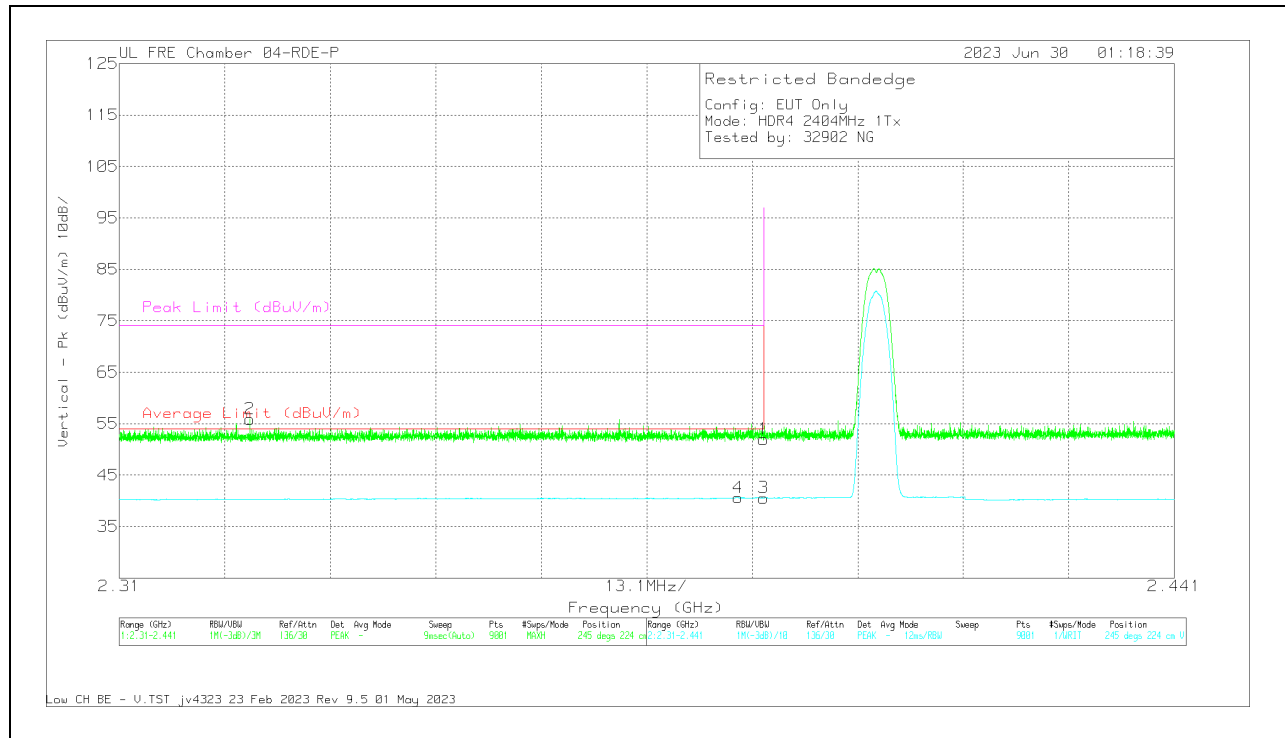


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF(dB) - 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	2.385837	63.62	Pk	31.7	-39.74	55.58	-	-	74	-18.42	131	124	H
4	2.389578	48.65	VA1T	31.7	-39.78	40.57	54	-13.43	-	-	131	124	H
1	2.39	61.11	Pk	31.7	-39.79	53.02	-	-	74	-20.98	131	124	H
3	2.39	48.64	VA1T	31.7	-39.79	40.55	54	-13.45	-	-	131	124	H

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average $V_B=1/T_{on}$ where: T_{on} is transmit duration

VERTICAL RESULT



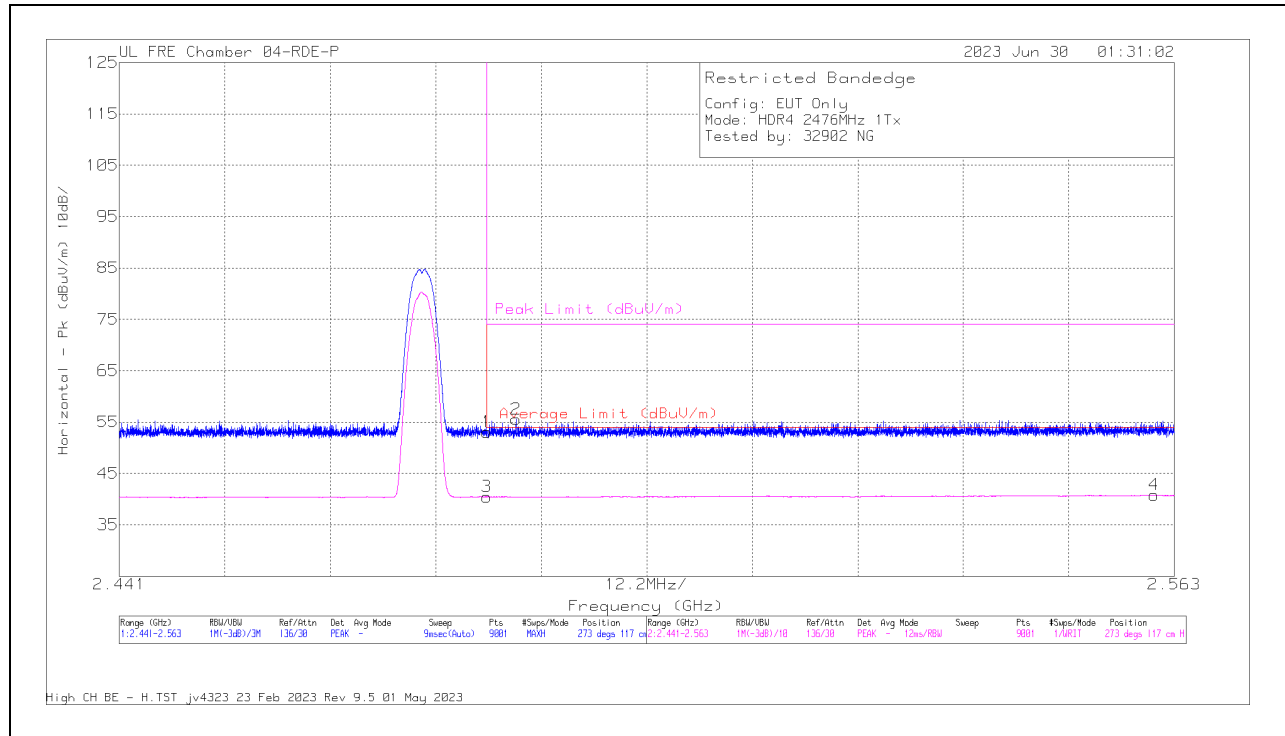
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF(dB) - 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	2.326201	64.41	Pk	31.3	-39.83	55.88	-	-	74	-18.12	245	224	V
4	2.386827	48.64	VA1T	31.7	-39.74	40.6	54	-13.4	-	-	245	224	V
1	2.39	60.03	Pk	31.7	-39.79	51.94	-	-	74	-22.06	245	224	V
3	2.39	48.63	VA1T	31.7	-39.79	40.54	54	-13.46	-	-	245	224	V

Pk - Peak detector

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

BANDEDGE (HIGH CHANNEL)

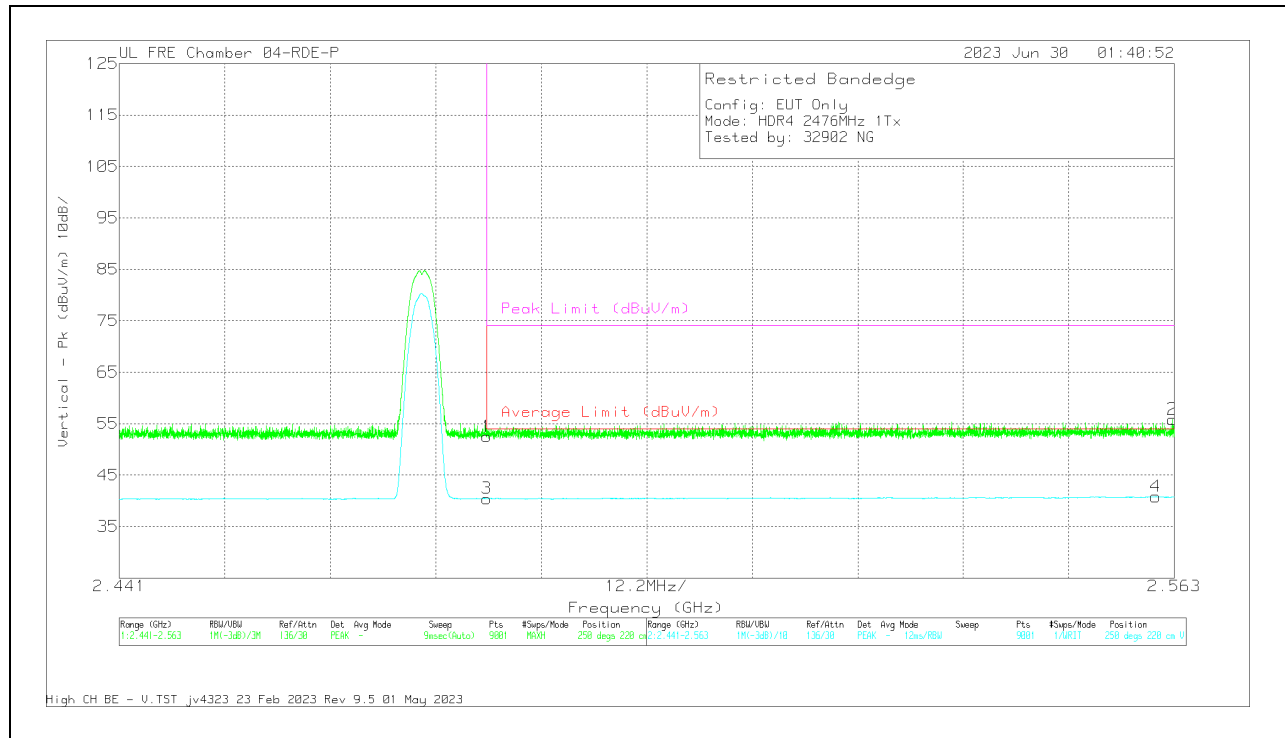
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	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	60.71	Pk	32.1	-39.76	53.05	-	-	74	-20.95	273	117	H
3	2.4835	48.09	VA1T	32.1	-39.76	40.43	54	-13.57	-	-	273	117	H
2	2.486874	63.22	Pk	32.1	-39.78	55.54	-	-	74	-18.46	273	117	H
4	2.560645	48.16	VA1T	32.2	-39.56	40.8	54	-13.2	-	-	273	117	H

Pk - Peak detector
 VA1T - FHSS: Linear Voltage Average $V_B=1/T_{on}$ where: T_{on} is transmit duration

VERTICAL RESULT



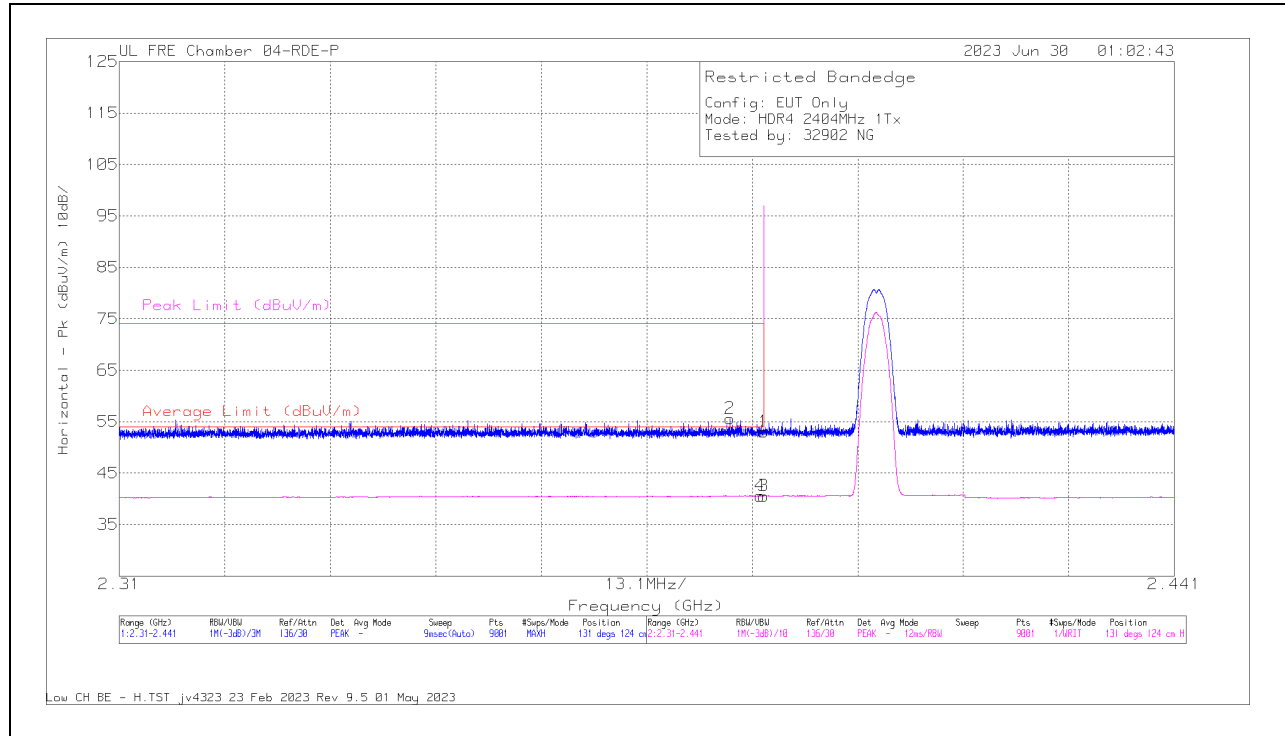
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF(dB) - 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.4835	60.13	Pk	32.1	-39.76	52.47	-	-	74	-21.53	250	220	V
3	2.4835	48.08	VA1T	32.1	-39.76	40.42	54	-13.58	-	-	250	220	V
4	2.560849	48.17	VA1T	32.2	-39.56	40.81	54	-13.19	-	-	250	220	V
2	2.562801	63.23	Pk	32.2	-39.63	55.8	-	-	74	-18.2	250	220	V

Pk - Peak detector
VA1T - FHSS: Linear Voltage Average $V_B=1/T_{on}$ where: T_{on} is transmit duration

ANT 3

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT

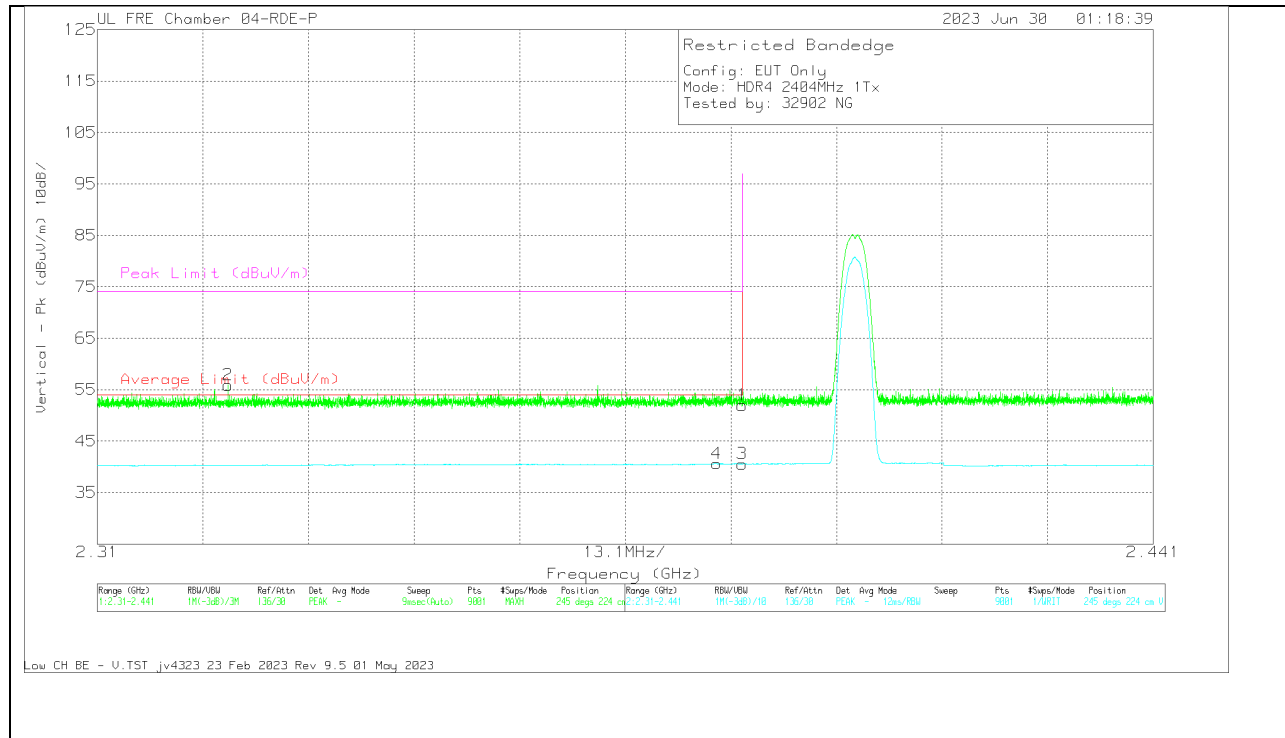


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF(dB) - 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	2.385837	63.62	Pk	31.7	-39.74	55.58	-	-	74	-18.42	131	124	H
4	2.389578	48.65	VA1T	31.7	-39.78	40.57	54	-13.43	-	-	131	124	H
1	2.39	61.11	Pk	31.7	-39.79	53.02	-	-	74	-20.98	131	124	H
3	2.39	48.64	VA1T	31.7	-39.79	40.55	54	-13.45	-	-	131	124	H

Pk - Peak detector

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

VERTICAL RESULT

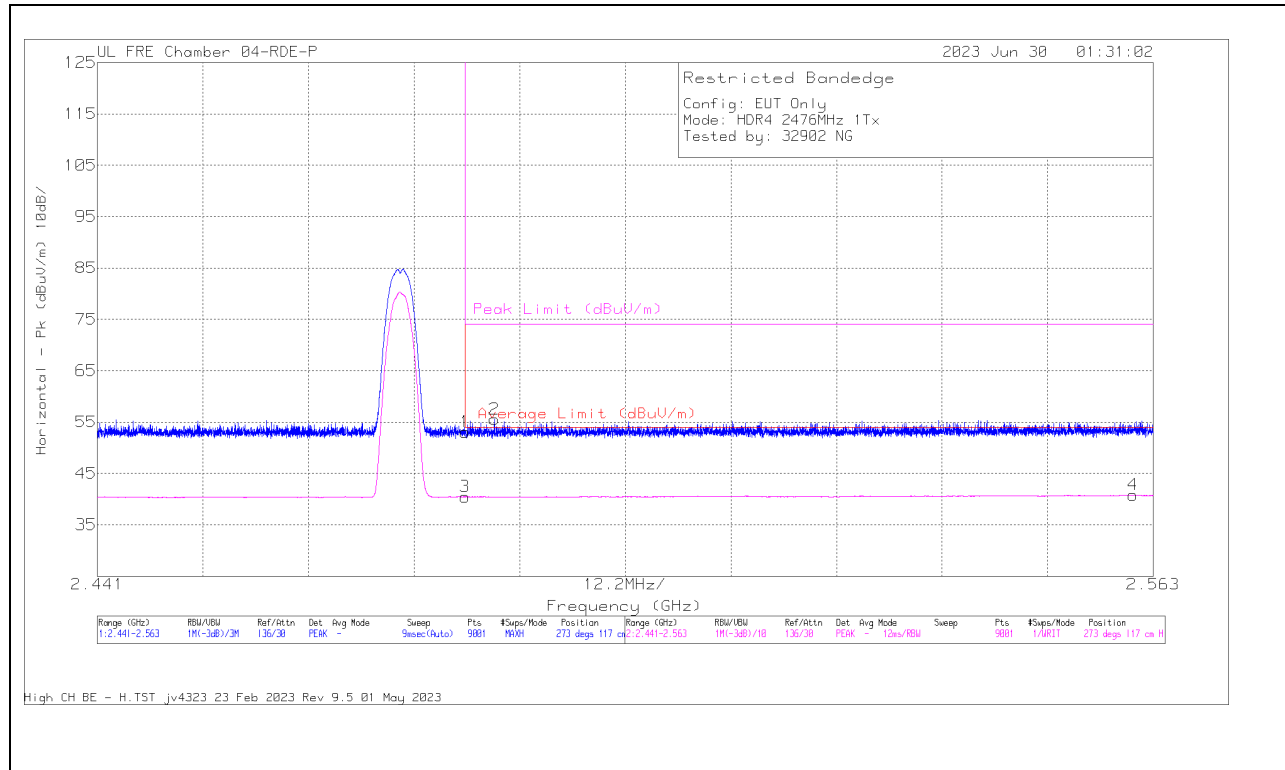


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF(dB) - 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	2.326201	64.41	Pk	31.3	-39.83	55.88	-	-	74	-18.12	245	224	V
4	2.386827	48.64	VA1T	31.7	-39.74	40.6	54	-13.4	-	-	245	224	V
1	2.39	60.03	Pk	31.7	-39.79	51.94	-	-	74	-22.06	245	224	V
3	2.39	48.63	VA1T	31.7	-39.79	40.54	54	-13.46	-	-	245	224	V

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

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT

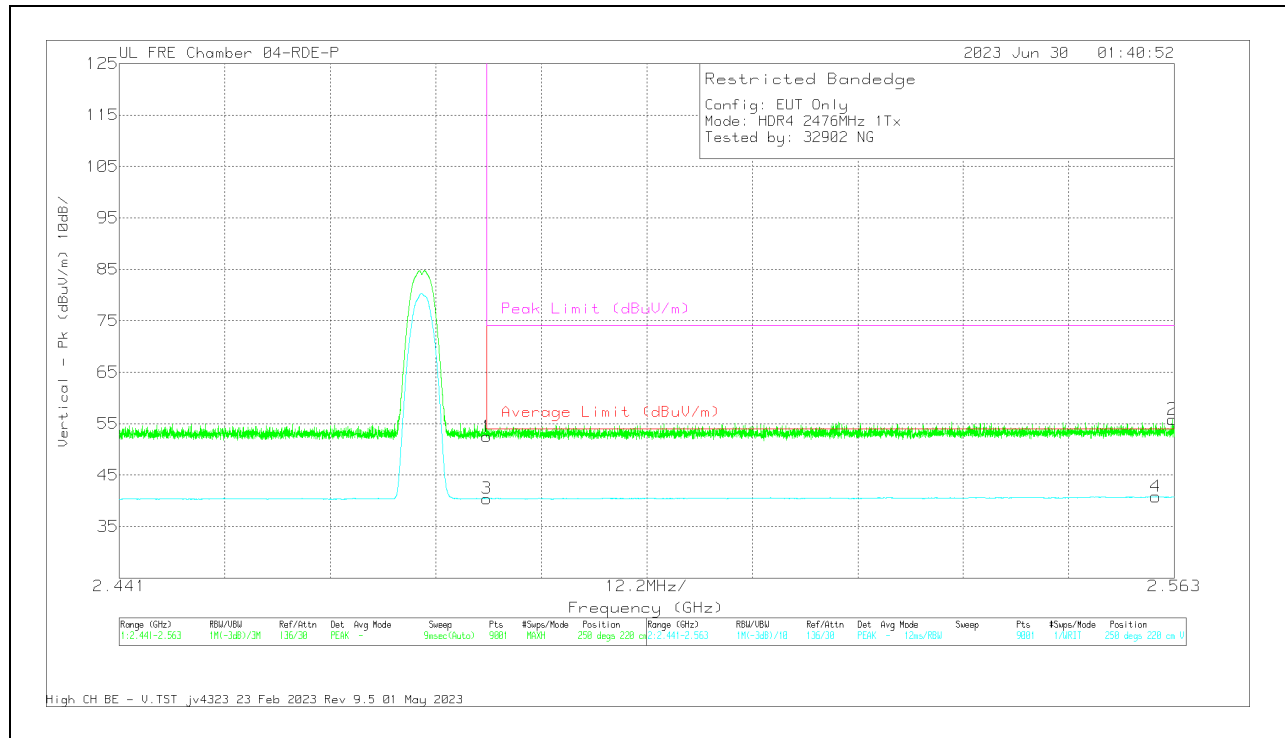


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF(dB) - 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.4835	60.71	Pk	32.1	-39.76	53.05	-	-	74	-20.95	273	117	H
3	2.4835	48.09	VA1T	32.1	-39.76	40.43	54	-13.57	-	-	273	117	H
2	2.486874	63.22	Pk	32.1	-39.78	55.54	-	-	74	-18.46	273	117	H
4	2.580645	48.16	VA1T	32.2	-39.56	40.8	54	-13.2	-	-	273	117	H

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average $V_B=1/T_{on}$ where: T_{on} is transmit duration

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
1	2.4835	60.13	Pk	32.1	-39.76	52.47	-	-	74	-21.53	250	220	V
3	2.4835	48.08	VA1T	32.1	-39.76	40.42	54	-13.58	-	-	250	220	V
4	2.560849	48.17	VA1T	32.2	-39.56	40.81	54	-13.19	-	-	250	220	V
2	2.562801	63.23	Pk	32.2	-39.63	55.8	-	-	74	-18.2	250	220	V

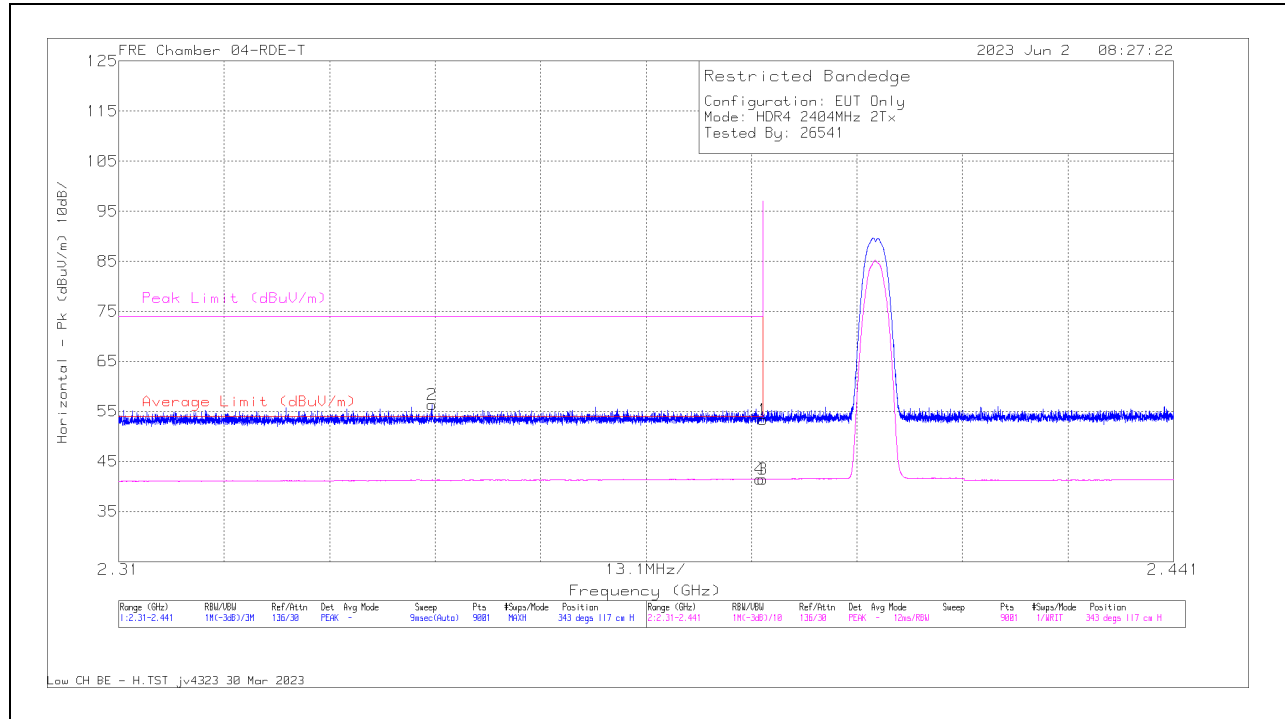
Pk - Peak detector

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

10.2.6. LOW POWER HDR TXBF (HDR4)

BANDEDGE (LOW CHANNEL)

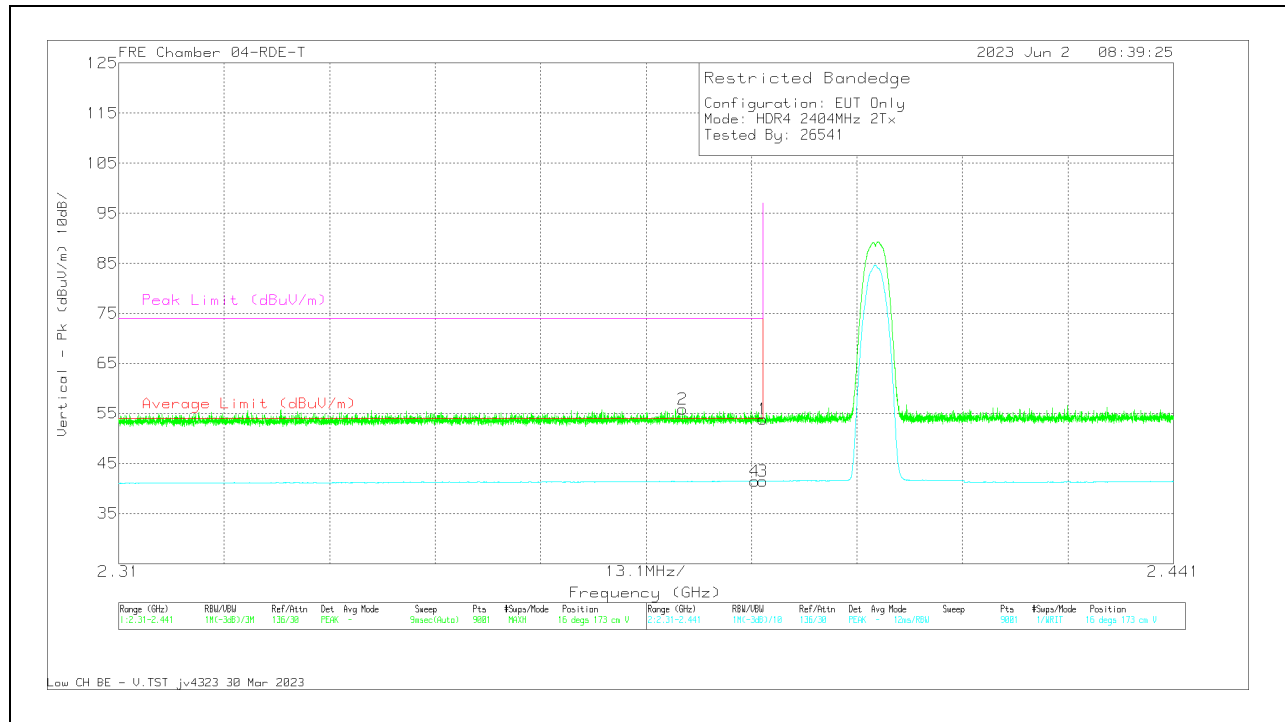
HORIZONTAL RESULT



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	59.08	Pk	32.1	-37.89	53.29	-	-	74	-20.71	343	117	H
2	* 2.348879	62.36	Pk	31.9	-37.89	56.37	-	-	74	-17.63	343	117	H
3	* 2.39	47.24	VA1T	32.1	-37.89	41.45	54	-12.55	-	-	343	117	H
4	* 2.38965	47.29	VA1T	32.1	-37.89	41.5	54	-12.5	-	-	343	117	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 PK - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

VERTICAL RESULT

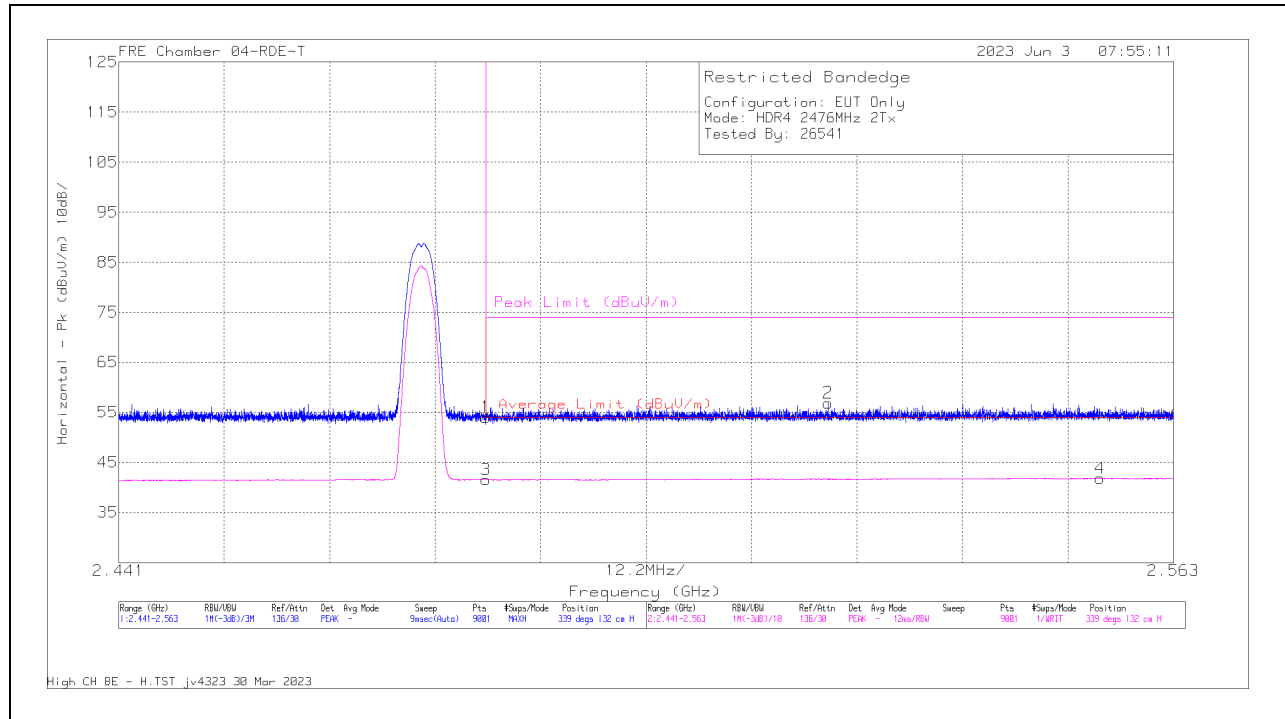


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226673 ACF (dB) 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	59.68	Pk	32.1	-37.89	53.89	-	-	74	-20.11	16	173	V
2	* 2.380014	61.66	Pk	32.1	-37.87	55.89	-	-	74	-18.11	16	173	V
3	* 2.39	47.23	VA1T	32.1	-37.89	41.44	54	-12.56	-	-	16	173	V
4	* 2.38901	47.29	VA1T	32.1	-37.88	41.51	54	-12.49	-	-	16	173	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

BANDEDGE (HIGH CHANNEL)

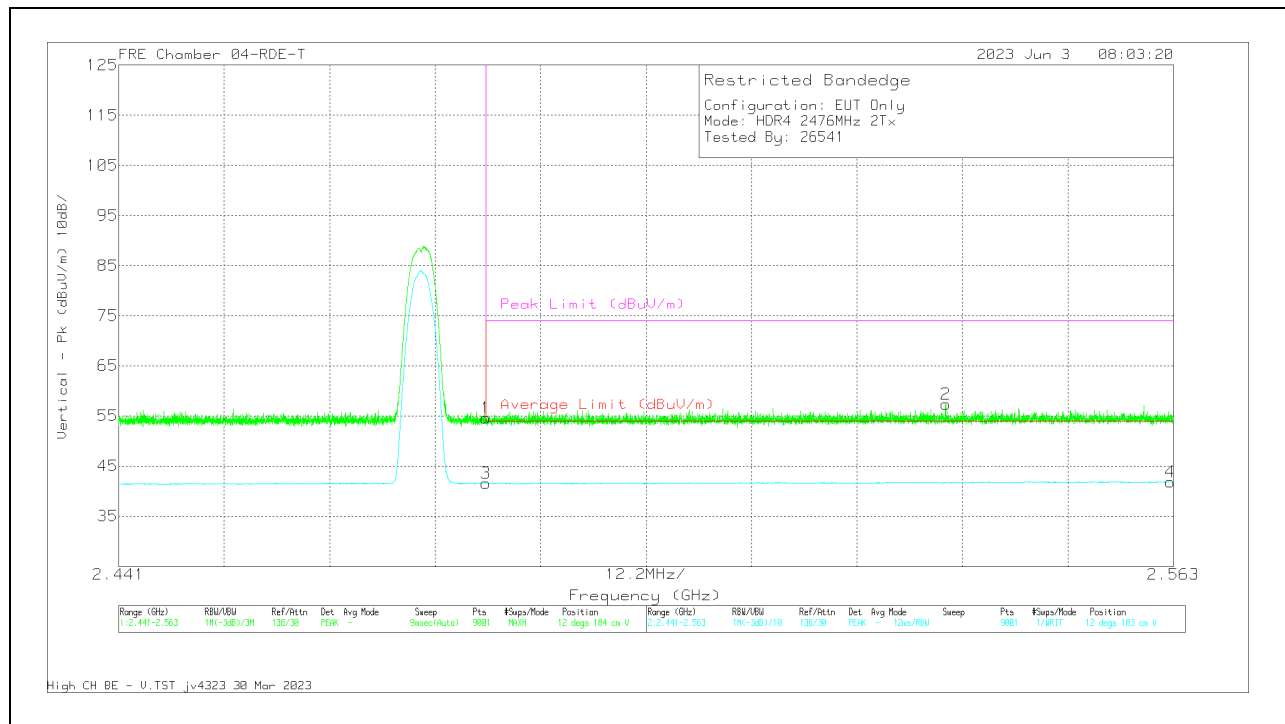
HORIZONTAL RESULT



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	* 2.4835	59.65	Pk	32.2	-37.81	54.04	-	-	74	-19.96	339	132	H
3	* 2.4835	47.21	VA1T	32.2	-37.81	41.6	54	-12.4	-	-	339	132	H
2	2.523068	62.38	Pk	32.3	-37.77	56.91	-	-	74	-17.09	339	132	H
4	2.554504	47.31	VA1T	32.3	-37.75	41.86	54	-12.14	-	-	339	132	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	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	* 2.4835	60.21	Pk	32.2	-37.81	54.6	-	-	74	-19.4	12	184	V
3	* 2.4835	47.17	VA1T	32.2	-37.81	41.56	54	-12.44	-	-	12	183	V
2	2.536651	62.8	Pk	32.3	-37.77	57.33	-	-	74	-16.67	12	184	V
4	2.562624	47.42	VA1T	32.2	-37.75	41.87	54	-12.13	-	-	12	183	V

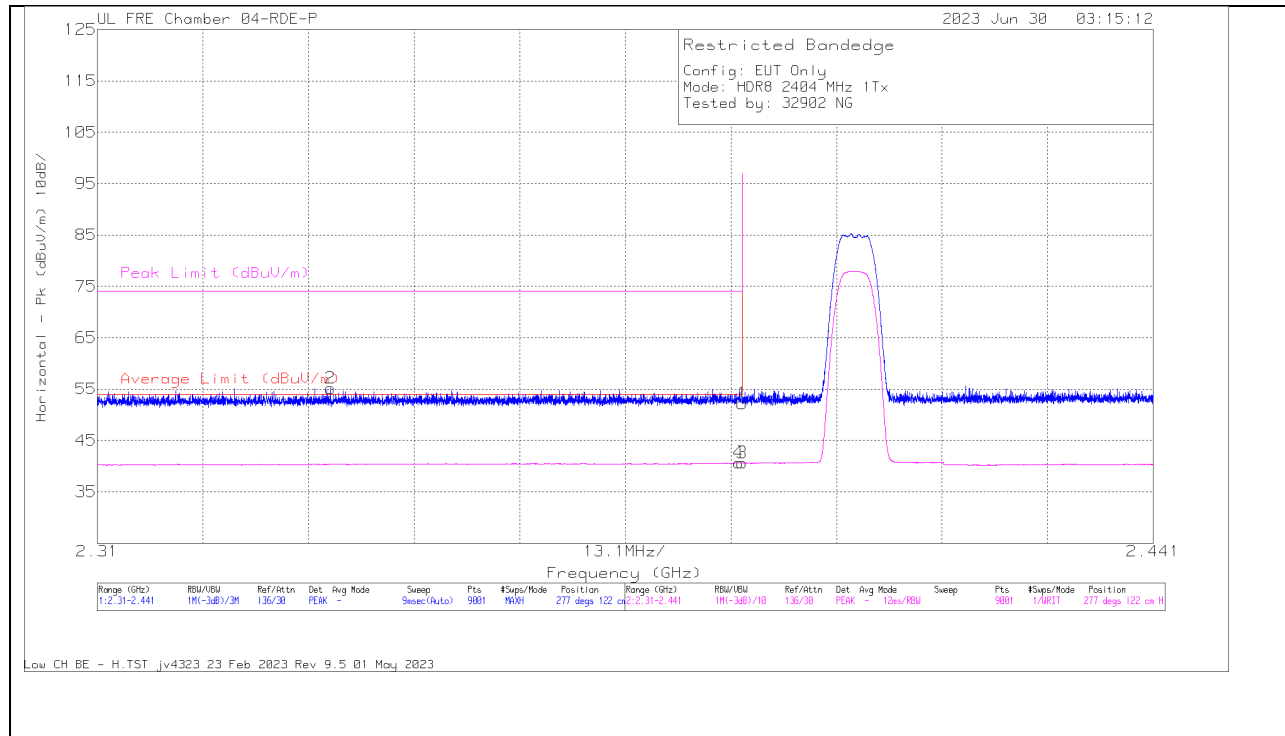
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

10.2.7. LOW POWER HDR (HDR8)

ANT 4

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT

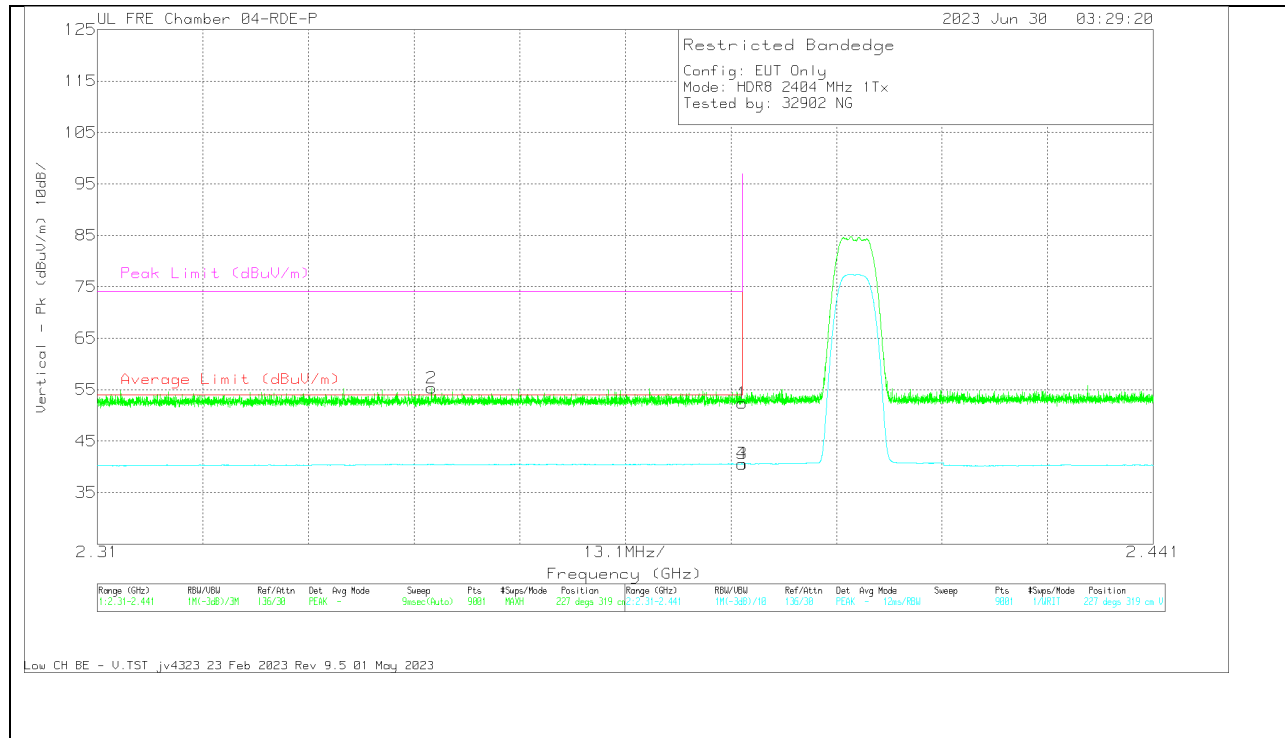


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF(dB) - 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	2.338908	63.55	Pk	31.4	-39.81	55.14	-	-	74	-18.86	277	122	H
4	2.389578	48.72	VA1T	31.7	-39.78	40.64	54	-13.36	-	-	277	122	H
1	2.39	60.29	Pk	31.7	-39.79	52.2	-	-	74	-21.8	277	122	H
3	2.39	48.7	VA1T	31.7	-39.79	40.61	54	-13.39	-	-	277	122	H

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average $V_B=1/T_{on}$ where: T_{on} is transmit duration

VERTICAL RESULT



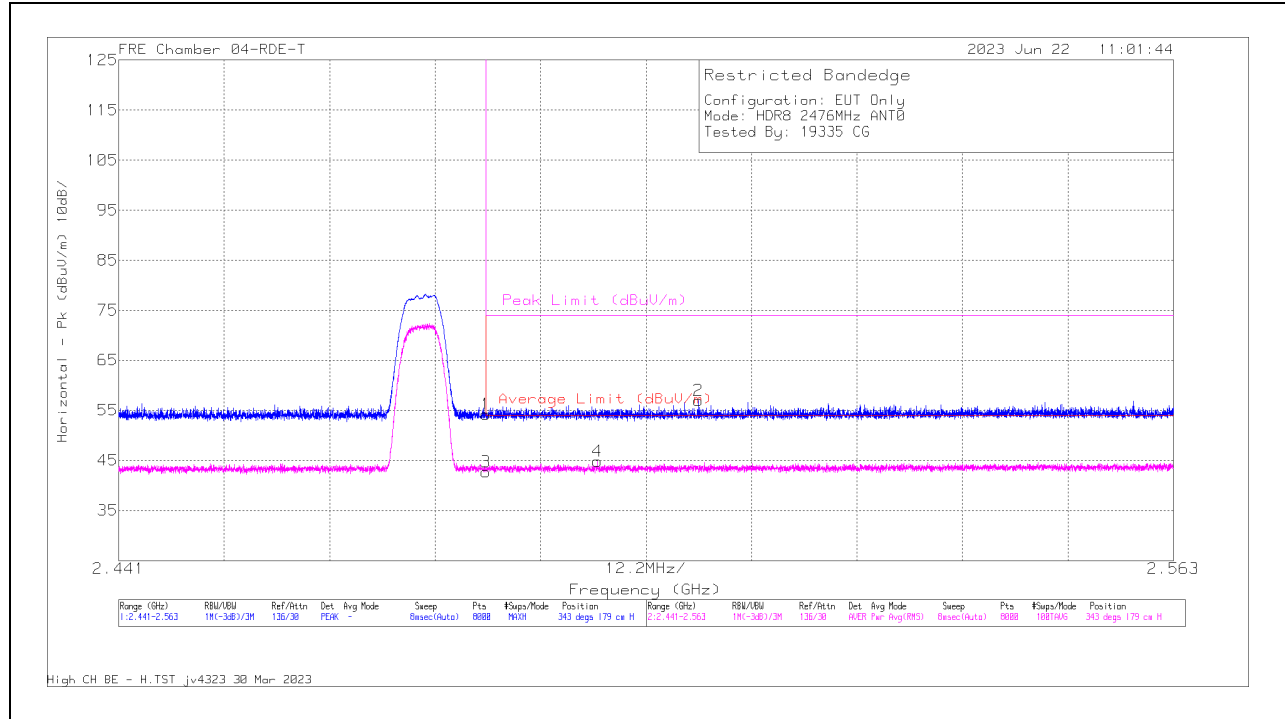
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222740 ACF(dB) - 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	2.351455	63.59	Pk	31.5	-39.8	55.29	-	-	74	-18.71	227	319	V
4	2.389985	48.66	VA1T	31.7	-39.79	40.57	54	-13.43	-	-	227	319	V
1	2.39	60.44	Pk	31.7	-39.79	52.35	-	-	74	-21.65	227	319	V
3	2.39	48.65	VA1T	31.7	-39.79	40.56	54	-13.44	-	-	227	319	V

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average $V_B=1/T_{on}$ where: T_{on} is transmit duration

BANDEDGE (HIGH CHANNEL)

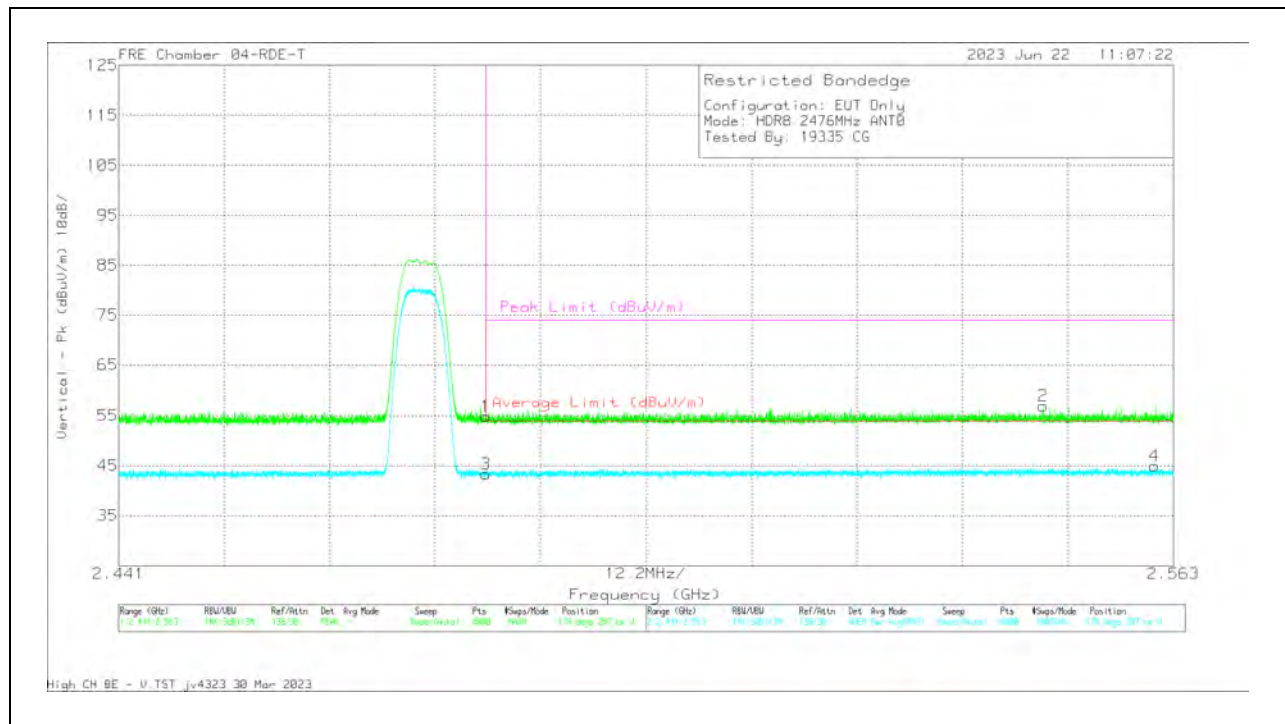
HORIZONTAL RESULT



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	* 2.4835	59.81	Pk	32.2	-37.81	54.2	-	-	74	-19.8	343	179	H
3	* 2.4835	48.37	RMS	32.2	-37.81	42.76	54	-11.24	-	-	343	179	H
4	* 2.49638	50.36	RMS	32.3	-37.84	44.82	54	-9.18	-	-	343	179	H
2	2.508033	62.43	Pk	32.3	-37.81	56.92	-	-	74	-17.08	343	179	H

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

VERTICAL RESULT



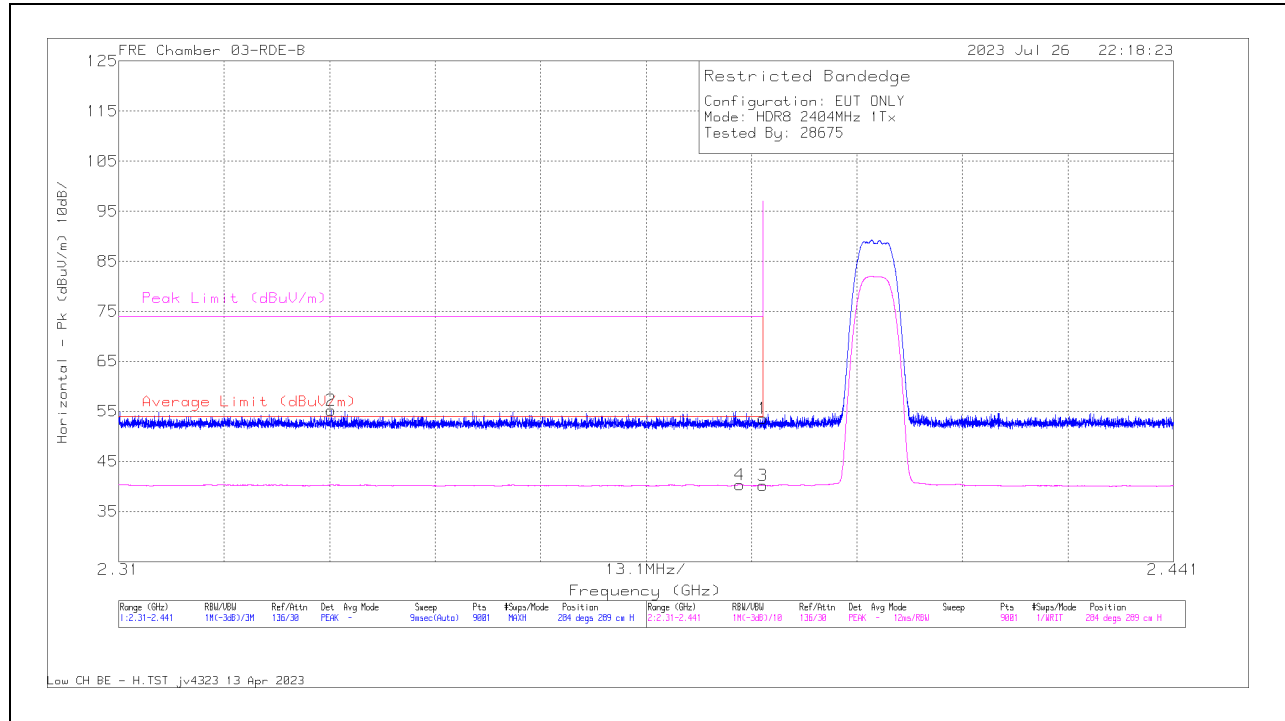
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226673 ACF (dB) 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	60.44	Pk	32.2	-37.81	54.83	-	-	74	-19.17	176	287	V
3	* 2.4835	48.94	RMS	32.2	-37.81	43.33	54	-10.67	-	-	176	287	V
2	2.547886	62.45	Pk	32.3	-37.74	57.01	-	-	74	-16.99	176	287	V
4	2.56082	50.49	RMS	32.2	-37.78	44.91	54	-9.09	-	-	176	287	V

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

ANT 3

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



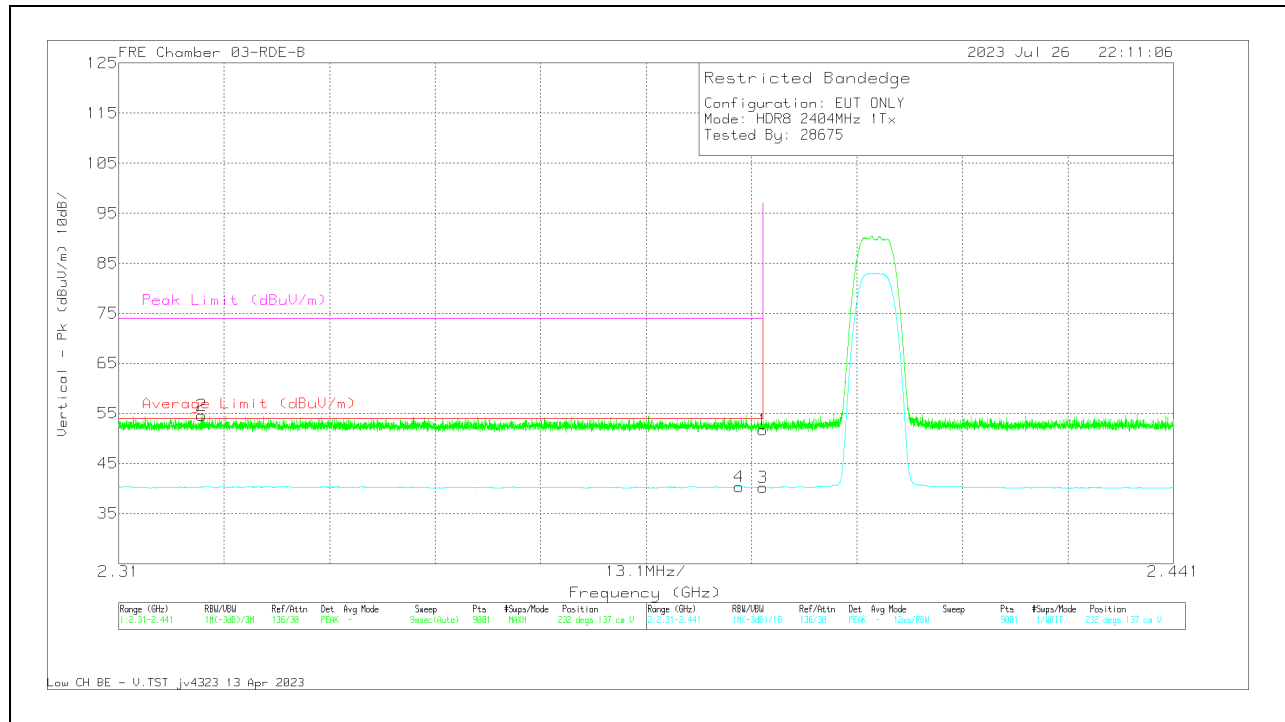
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	230300 ACF (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	62.62	Pk	32.2	-41.2	53.62	-	-	74	-20.38	284	289	H
2	* 2.336405	64.28	Pk	32.1	-41.2	55.18	-	-	74	-18.82	284	289	H
3	* 2.39	49.26	VA1T	32.2	-41.2	40.26	54	-13.74	-	-	284	289	H
4	* 2.387147	49.27	VA1T	32.2	-41.11	40.36	54	-13.64	-	-	284	289	H

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

Pk - Peak detector

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

VERTICAL RESULT

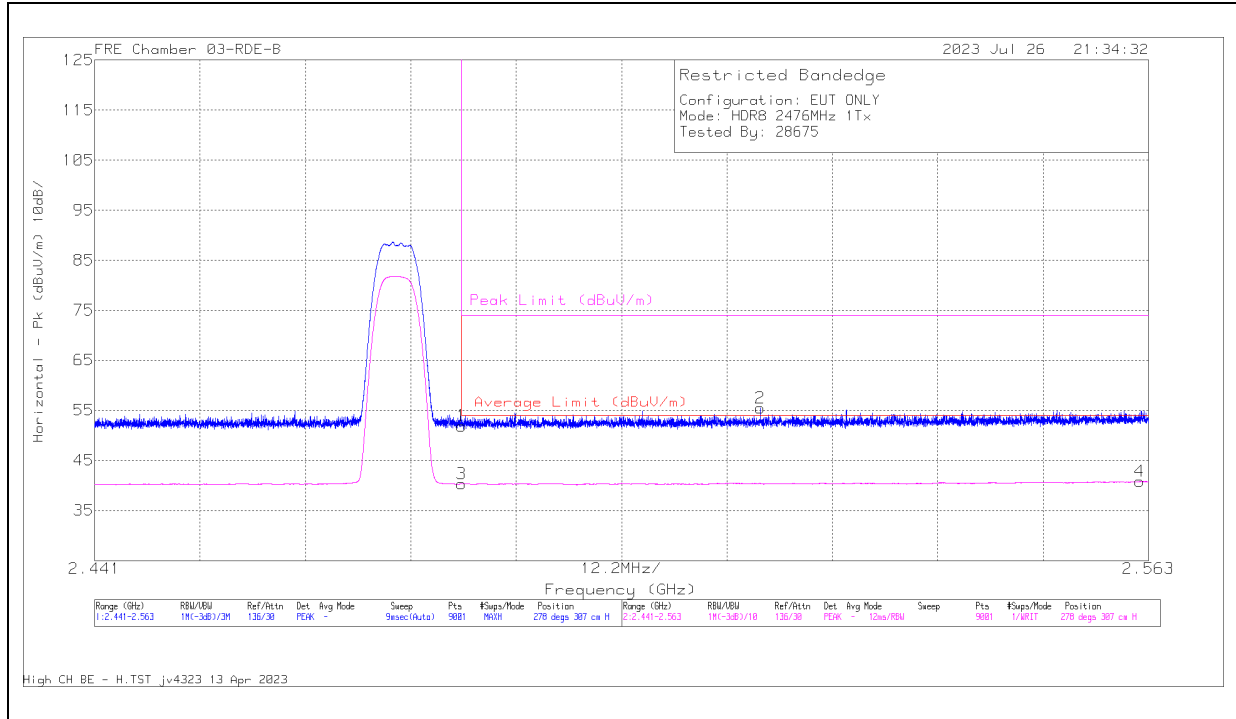


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	230300 ACF (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	60.73	Pk	32.2	-41.2	51.73	-	-	74	-22.27	232	137	V
2	* 2.320306	63.65	Pk	32.1	-41.17	54.58	-	-	74	-19.42	232	137	V
3	* 2.39	49.25	VA1T	32.2	-41.2	40.25	54	-13.75	-	-	232	137	V
4	* 2.387074	49.29	VA1T	32.2	-41.11	40.38	54	-13.62	-	-	232	137	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

BANDEDGE (HIGH CHANNEL)

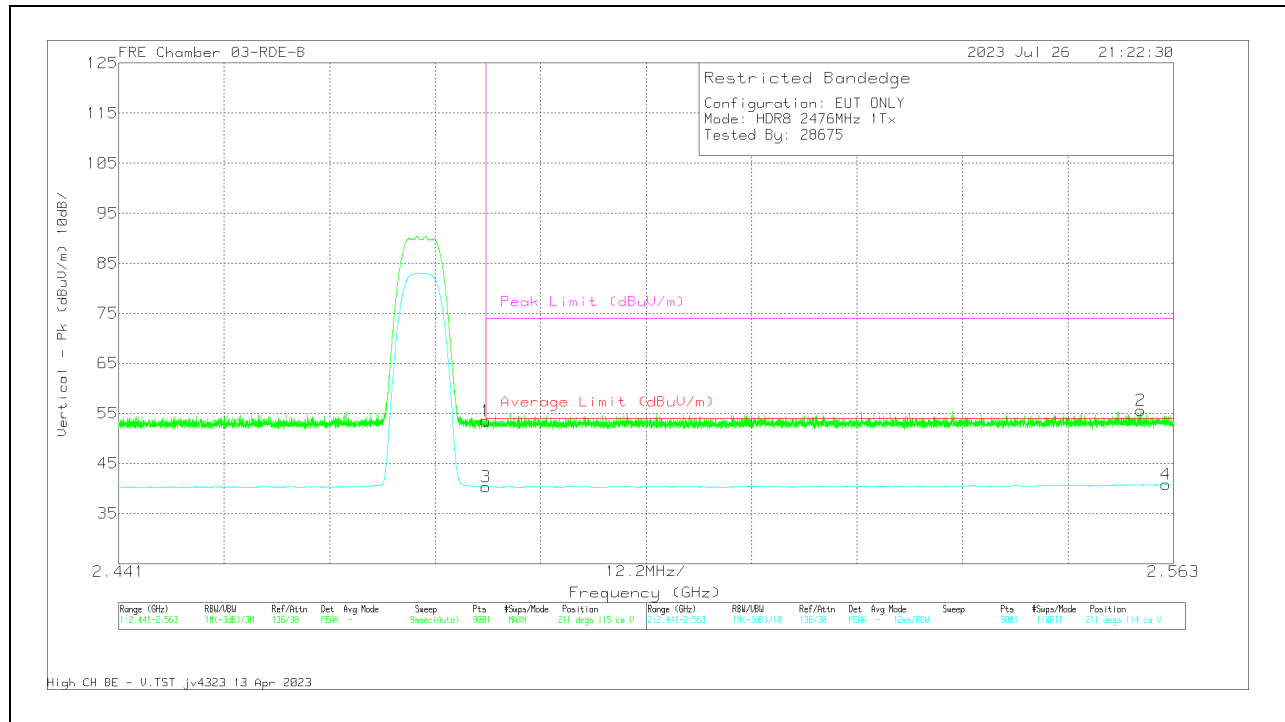
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	230300 ACF (dB/m)	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	60.86	Pk	32.2	-41.15	51.91	-	-	74	-22.09	278	307	H
3	* 2.4835	49.26	VA1T	32.2	-41.15	40.31	54	-13.69	-	-	278	307	H
2	2.518052	64.23	Pk	32.3	-41.01	55.52	-	-	74	-18.48	278	307	H
4	2.561974	49.29	VA1T	32.3	-40.8	40.79	54	-13.21	-	-	278	307	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

VERTICAL RESULT



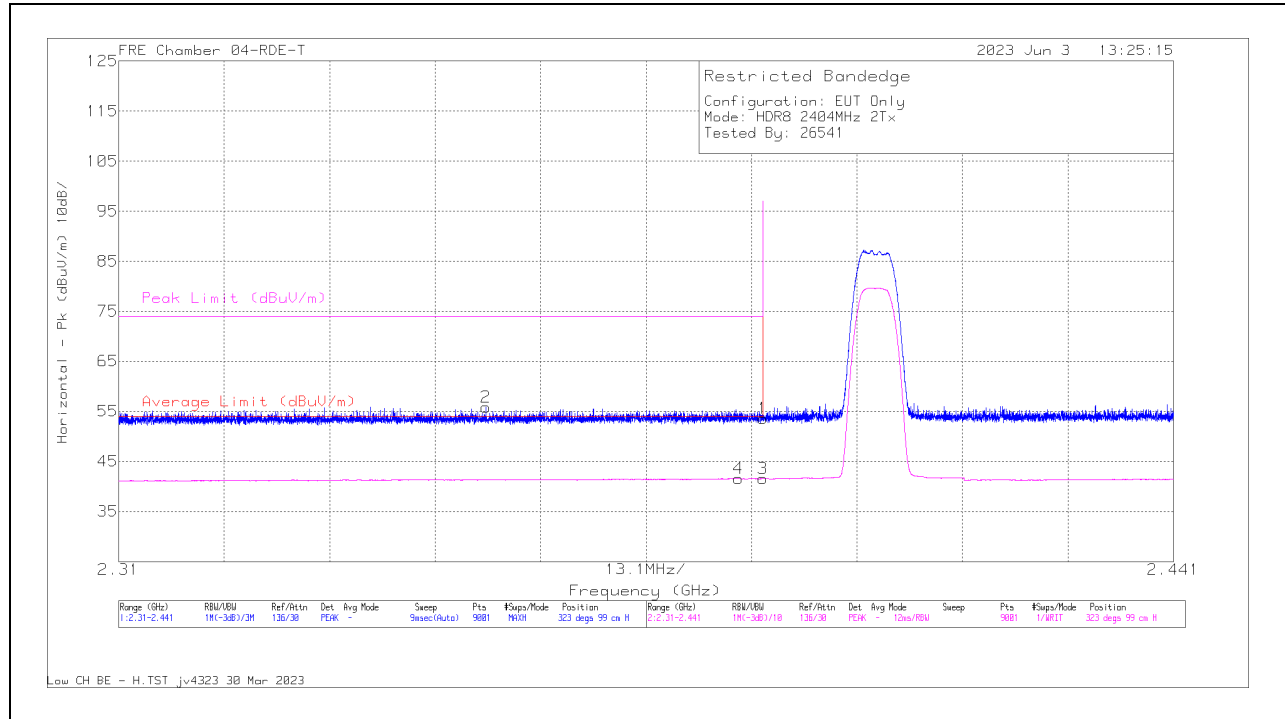
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	230300 ACF (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	62.41	Pk	32.2	-41.15	53.46	-	-	74	-20.54	211	115	V
3	* 2.4835	49.24	VA1T	32.2	-41.15	40.29	54	-13.71	-	-	211	114	V
2	2.559195	64.18	Pk	32.3	-40.9	55.58	-	-	74	-18.42	211	115	V
4	2.562123	49.33	VA1T	32.3	-40.8	40.83	54	-13.17	-	-	211	114	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

10.2.8. LOW POWER HDR TXBF (HDR8)

BANDEDGE (LOW CHANNEL)

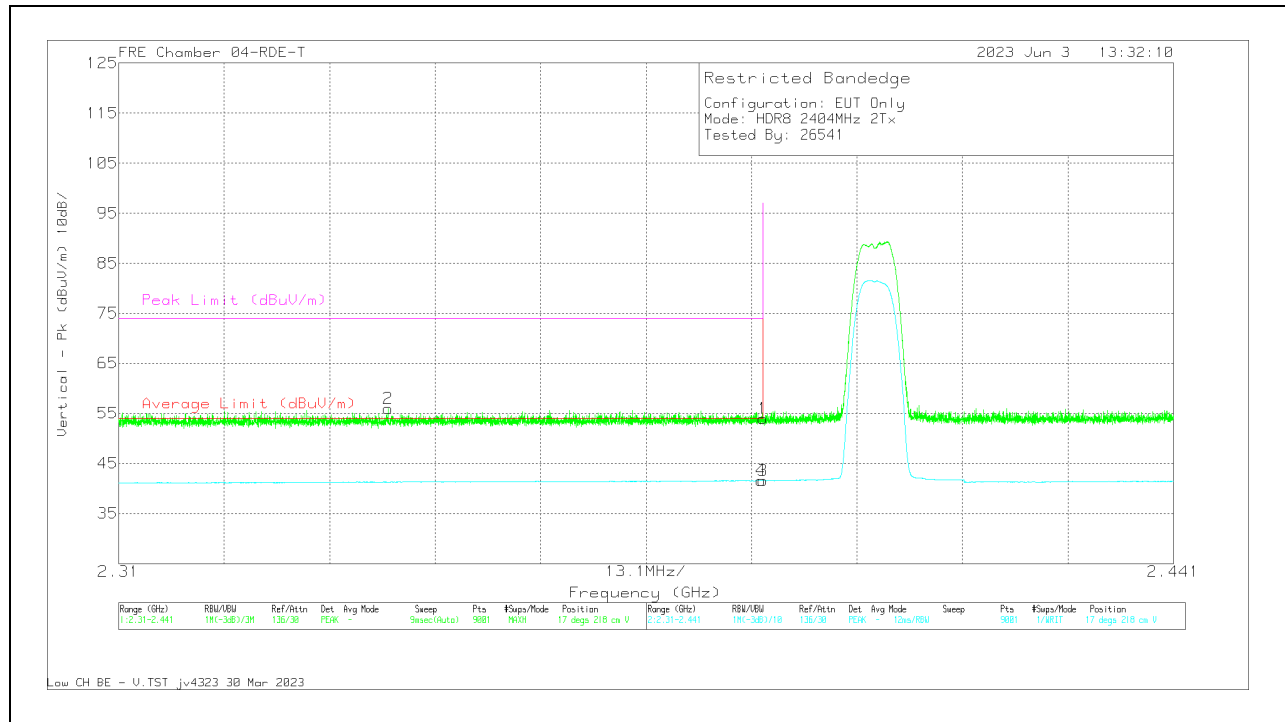
HORIZONTAL RESULT



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	59.37	Pk	32.1	-37.89	53.58	-	-	74	-20.42	323	99	H
2	* 2.355589	61.71	Pk	32	-37.89	55.82	-	-	74	-18.18	323	99	H
3	* 2.39	47.33	VA1T	32.1	-37.89	41.54	54	-12.46	-	-	323	99	H
4	* 2.387001	47.34	VA1T	32.1	-37.86	41.58	54	-12.42	-	-	323	99	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 PK - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

VERTICAL RESULT

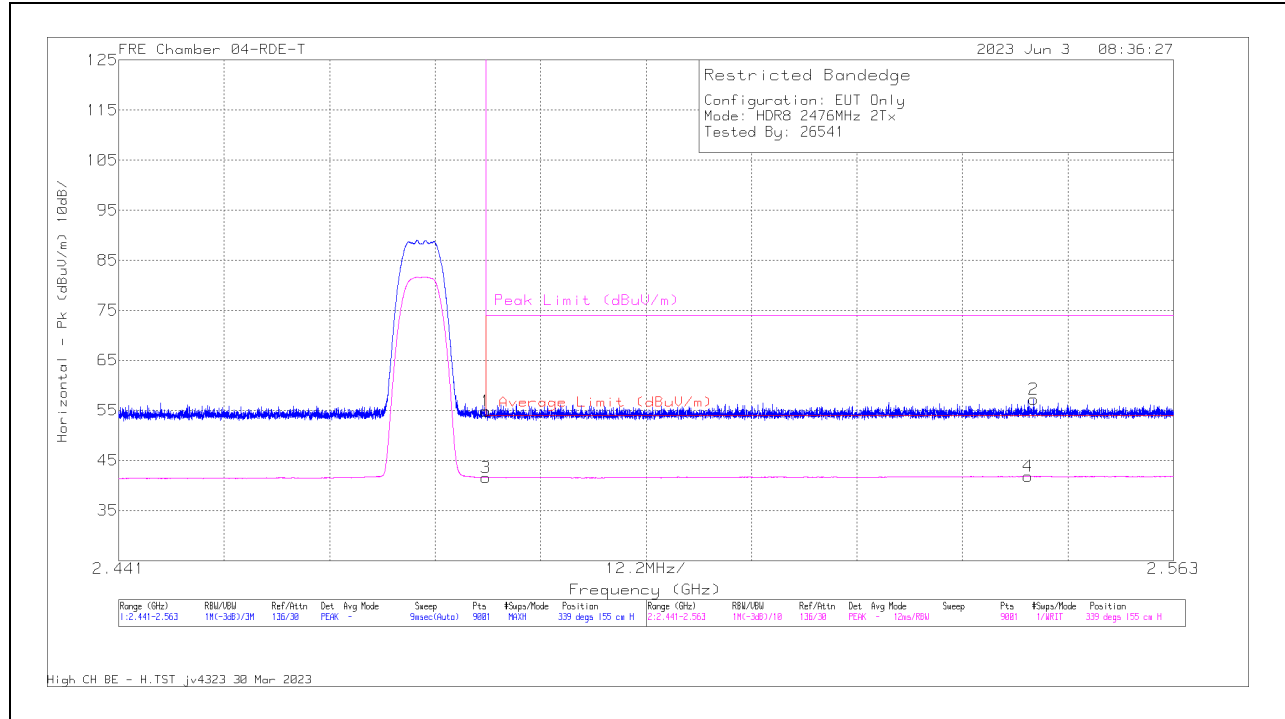


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226673 ACF (dB) 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	59.71	Pk	32.1	-37.89	53.92	-	-	74	-20.08	17	218	V
2	* 2.34345	62.03	Pk	31.9	-37.9	56.03	-	-	74	-17.97	17	218	V
3	* 2.39	47.35	VA1T	32.1	-37.89	41.56	54	-12.44	-	-	17	218	V
4	* 2.389796	47.4	VA1T	32.1	-37.89	41.61	54	-12.39	-	-	17	218	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

BANDEDGE (HIGH CHANNEL)

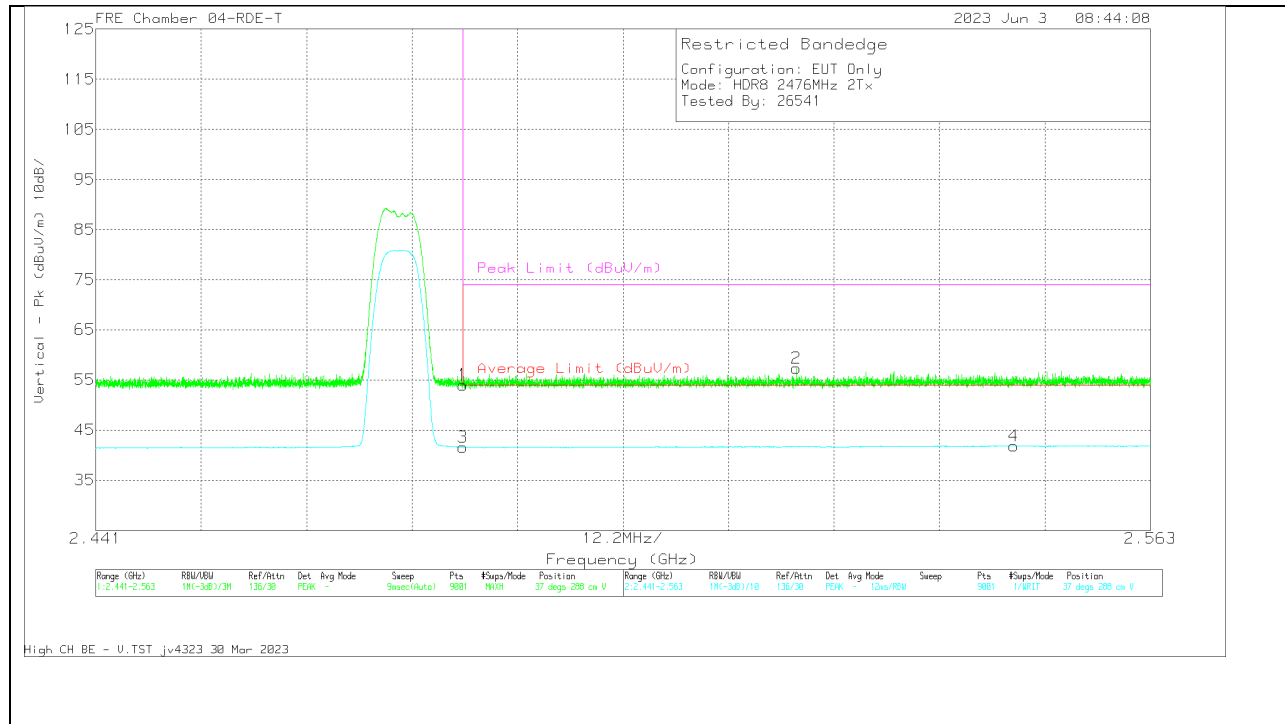
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226673 ACF (dB) 3mH	Gain/Loss (dB)	Corrected Reading (dBu/m)	Average Limit (dBu/m)	Margin (dB)	Peak Limit (dBu/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	60.42	Pk	32.2	-37.81	54.81	-	-	74	-19.19	339	155	H
3	* 2.4835	47.19	VA1T	32.2	-37.81	41.58	54	-12.42	-	-	339	155	H
4	2.546167	47.3	VA1T	32.3	-37.73	41.87	54	-12.13	-	-	339	155	H
2	2.546859	62.7	Pk	32.3	-37.73	57.27	-	-	74	-16.73	339	155	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

VERTICAL RESULT

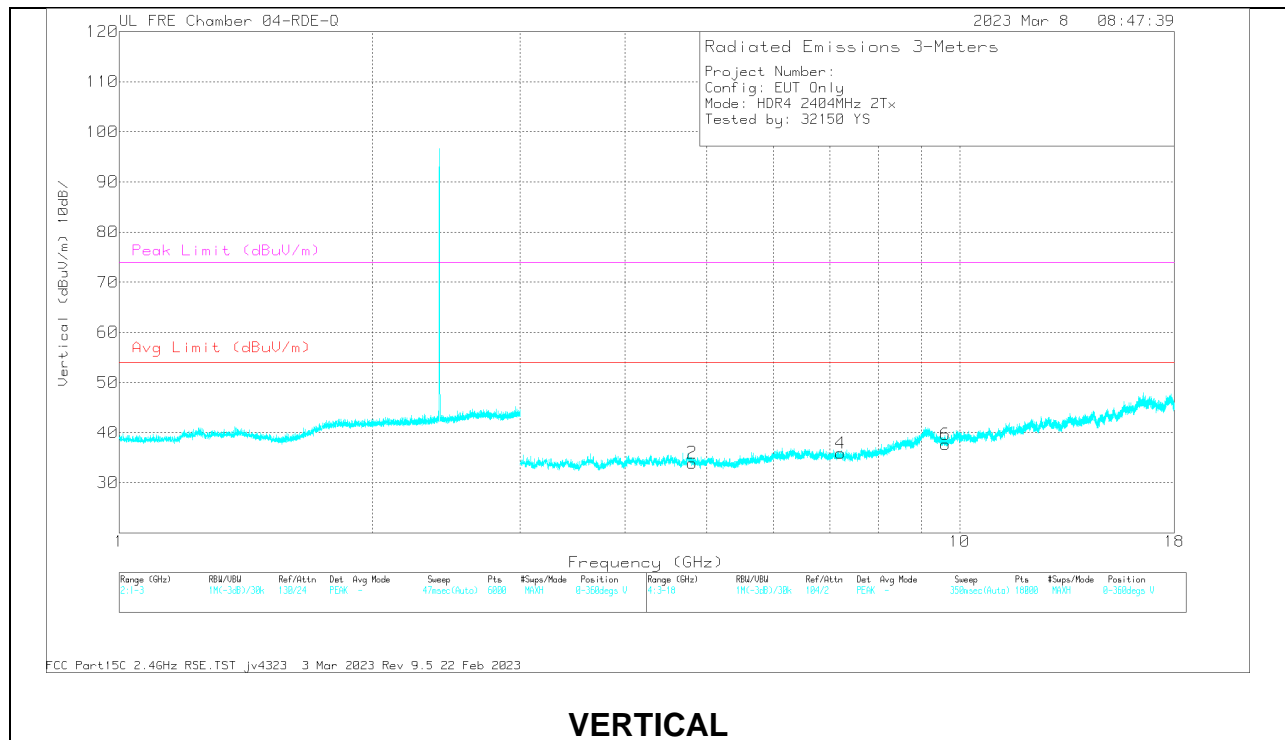
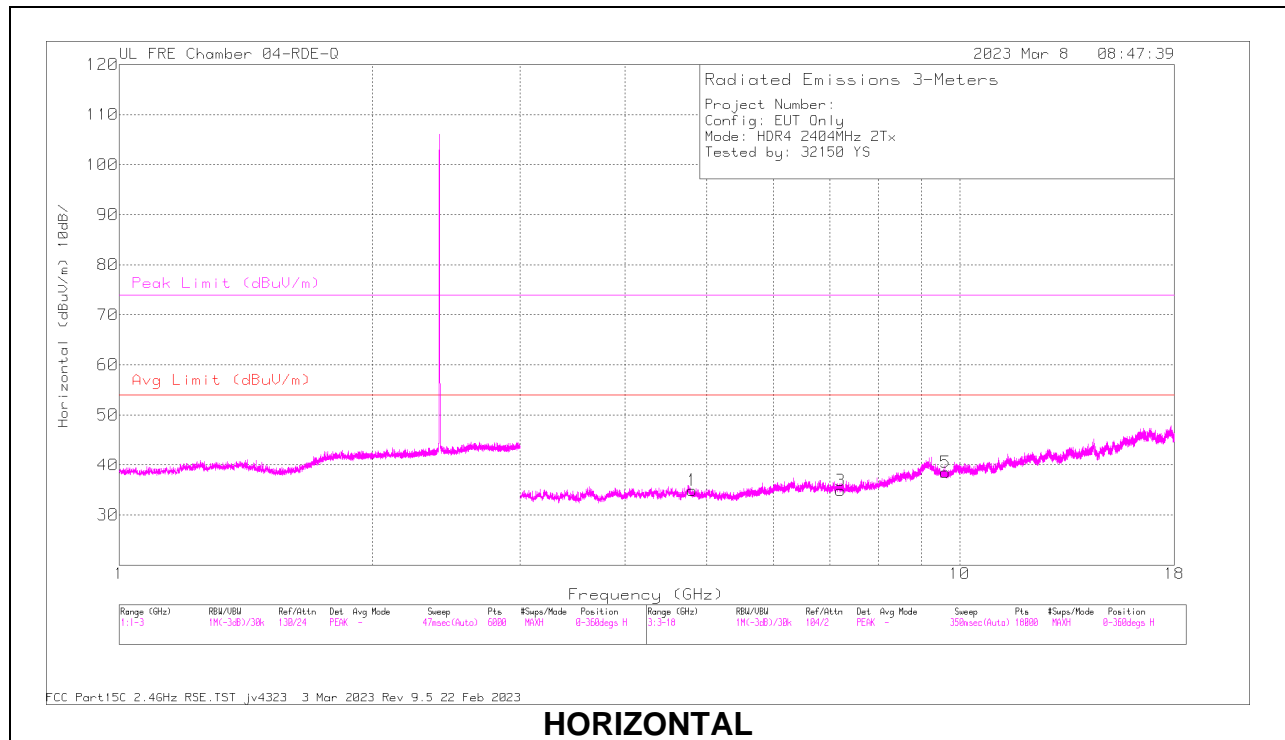


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226673 ACF (dB) 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	59.64	Pk	32.2	-37.81	54.03	-	-	74	-19.97	37	288	V
3	* 2.4835	47.24	VA1T	32.2	-37.81	41.63	54	-12.37	-	-	37	288	V
2	2.522038	62.82	Pk	32.3	-37.77	57.35	-	-	74	-16.65	37	288	V
4	2.547198	47.31	VA1T	32.3	-37.73	41.88	54	-12.12	-	-	37	288	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

10.2.9. HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



RADIATED EMISSIONS

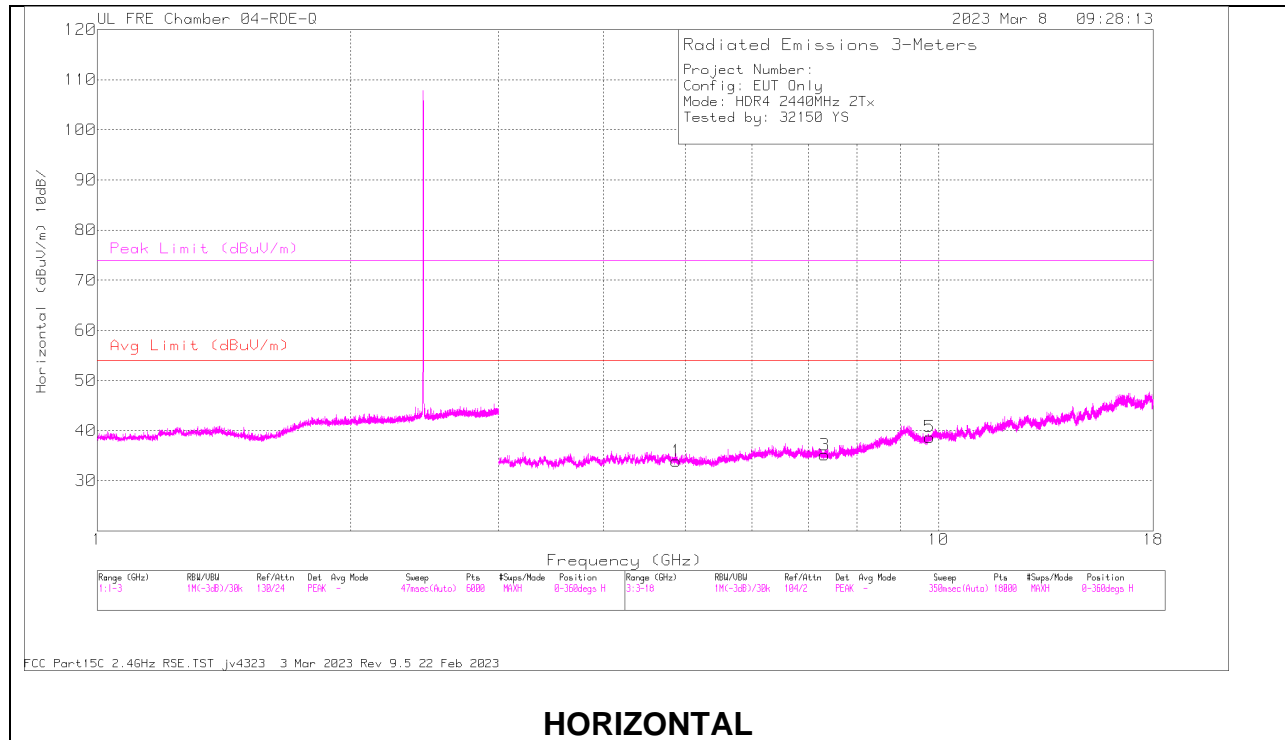
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	84796 ACF (dB) - 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarization
1	* 4.808705	56.44	PK2	34.2	-46.02	44.62	-	-	74	-29.38	182	319	H
1	* 4.808061	44.99	MAv1	34.2	-46.13	33.06	54	-20.94	-	-	182	319	H
2	* 4.810369	56.72	PK2	34.2	-45.87	45.05	-	-	74	-28.95	232	144	V
2	* 4.810167	44.92	MAv1	34.2	-45.87	33.25	54	-20.75	-	-	232	144	V
3	7.210697	54.89	PK2	35.6	-44.65	45.84	-	-	-	-	111	224	H
4	7.213315	55.56	PK2	35.6	-44.59	46.57	-	-	-	-	151	192	V
5	9.614295	55.54	PK2	36.7	-43.3	48.94	-	-	-	-	160	103	H
6	9.615634	55.15	PK2	36.7	-43.31	48.54	-	-	-	-	162	224	V

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

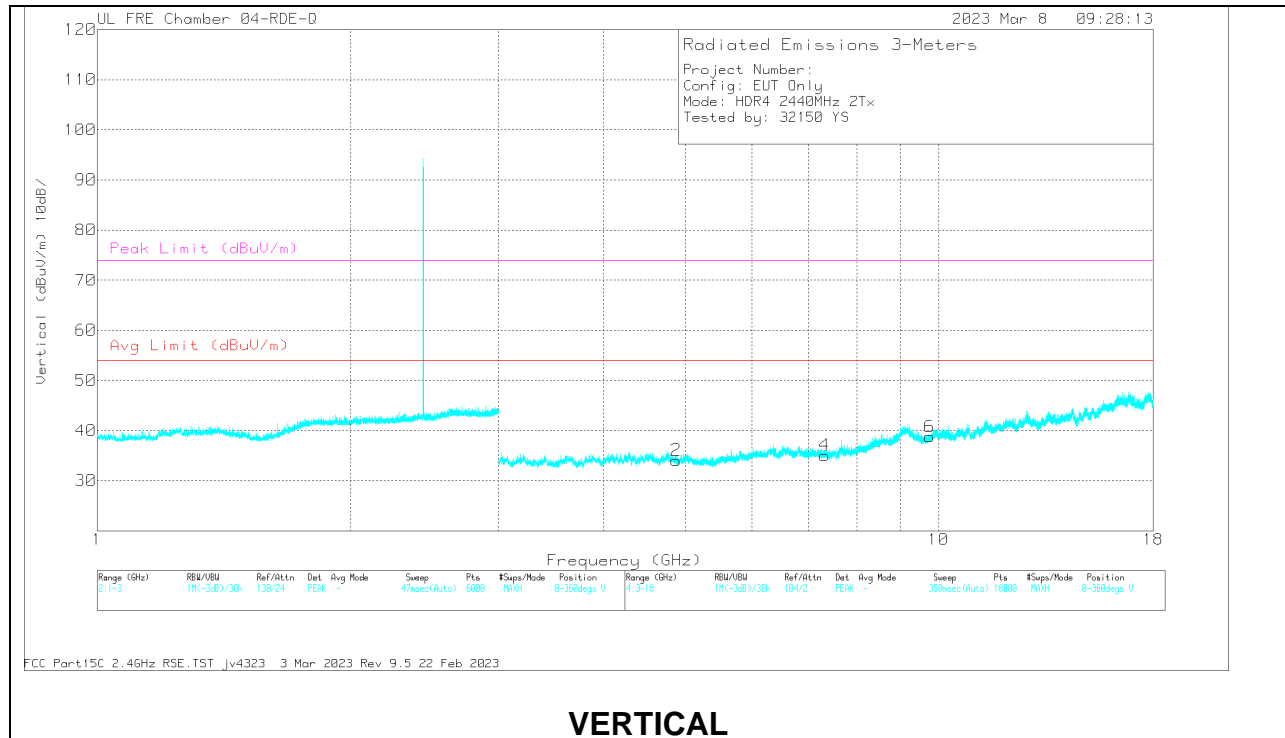
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

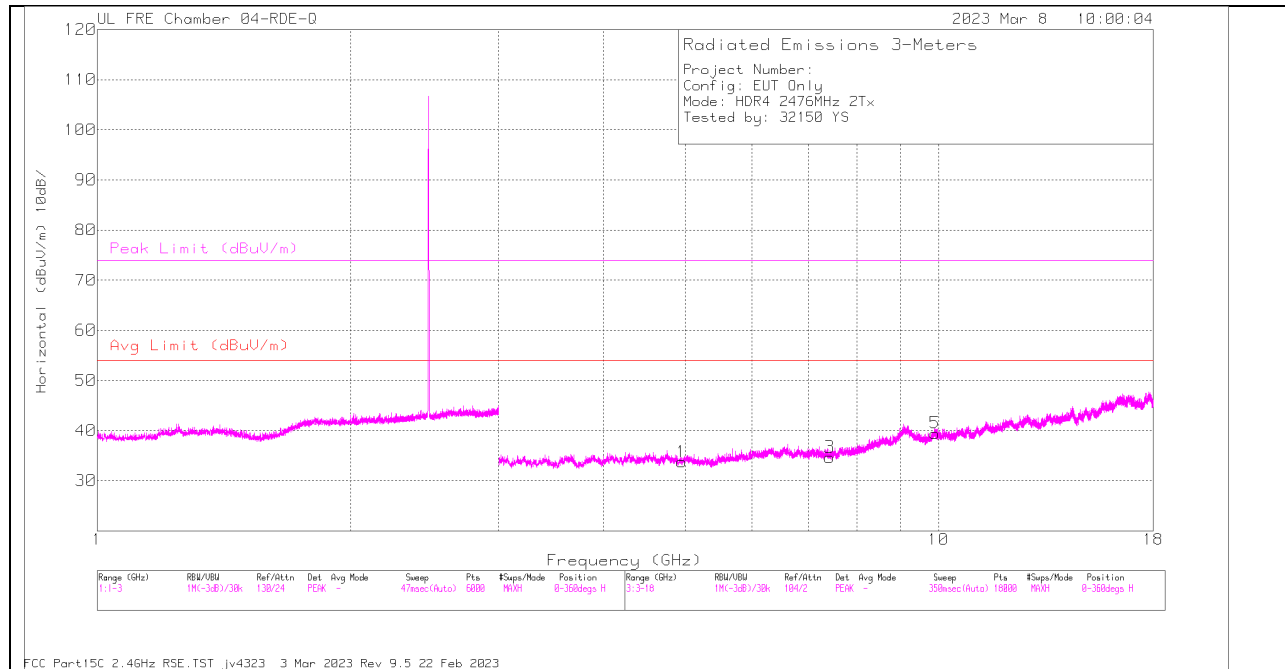
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	84796 ACF (dB) - 3mH	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.877206	56.34	PK2	34.3	-46.05	44.59	-	-	74	-29.41	160	103	H
1	* 4.875665	44.83	MAv1	34.3	-46.01	33.12	54	-20.88	-	-	160	103	H
3	* 7.320008	58.76	PK2	35.5	-44.72	49.54	-	-	74	-24.46	91	162	H
3	* 7.319274	43.5	MAv1	35.5	-44.73	34.27	54	-19.73	-	-	91	162	H
2	* 4.876753	56.53	PK2	34.3	-46.05	44.78	-	-	74	-29.22	126	145	V
2	* 4.877021	44.68	MAv1	34.3	-46.06	32.92	54	-21.08	-	-	126	145	V
4	* 7.322499	55.5	PK2	35.5	-44.74	46.26	-	-	74	-27.74	191	186	V
4	* 7.320827	43.6	MAv1	35.5	-44.74	34.36	54	-19.64	-	-	191	186	V
5	9.757961	56.02	PK2	36.9	-43.44	49.48	-	-	-	-	223	162	H
6	9.760944	55.22	PK2	36.9	-43.5	48.62	-	-	-	-	113	163	V

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

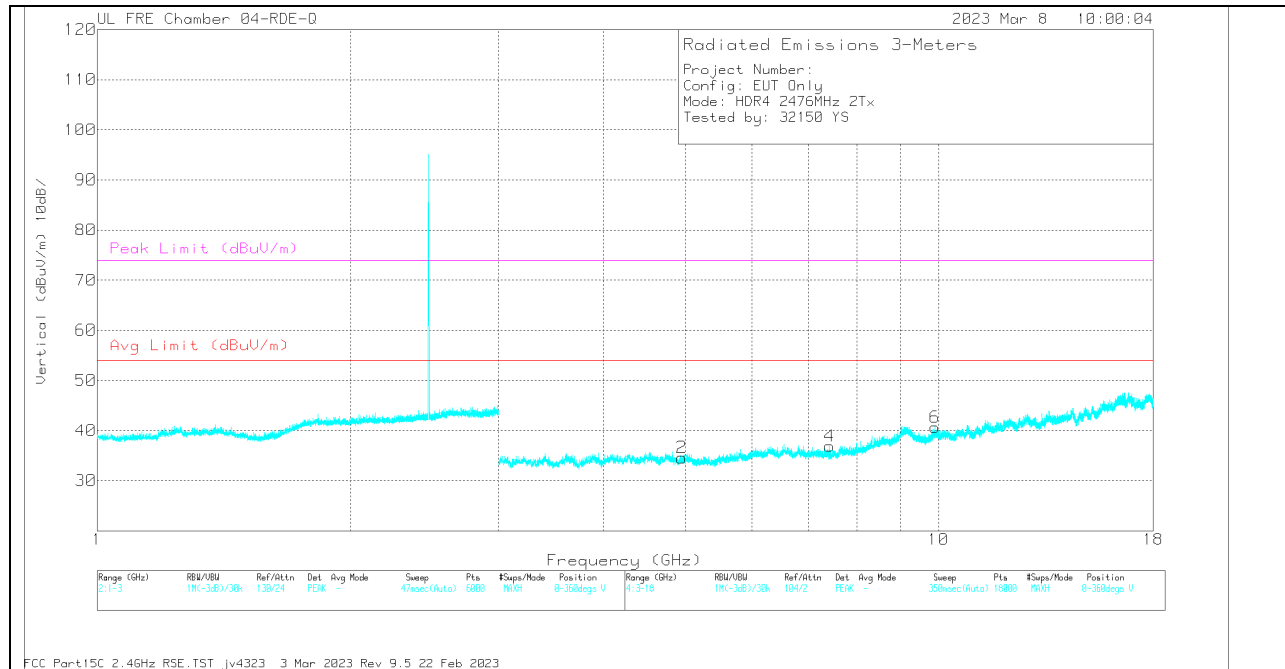
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	84796 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	* 4.953685	56.29	PK2	34.3	-45.83	44.76	-	-	74	-29.24	147	189	H
1	* 4.954004	44.73	MAv1	34.3	-45.82	33.21	54	-20.79	-	-	147	189	H
3	* 7.422989	54.96	PK2	35.4	-44.54	45.82	-	-	74	-28.18	48	225	H
3	* 7.422473	43.23	MAv1	35.4	-44.55	34.08	54	-19.92	-	-	48	225	H
2	* 4.951317	56.58	PK2	34.3	-45.84	45.04	-	-	74	-28.96	188	146	V
2	* 4.953145	44.51	MAv1	34.3	-45.84	32.97	54	-21.03	-	-	188	146	V
4	* 7.419853	55.08	PK2	35.4	-44.73	45.75	-	-	74	-28.25	150	249	V
4	* 7.422612	43.16	MAv1	35.4	-44.55	34.01	54	-19.99	-	-	150	249	V
5	9.901021	57.01	PK2	37	-43.53	50.48	-	-	-	-	48	225	H
6	9.903551	56.98	PK2	37	-43.65	50.33	-	-	-	-	154	274	V

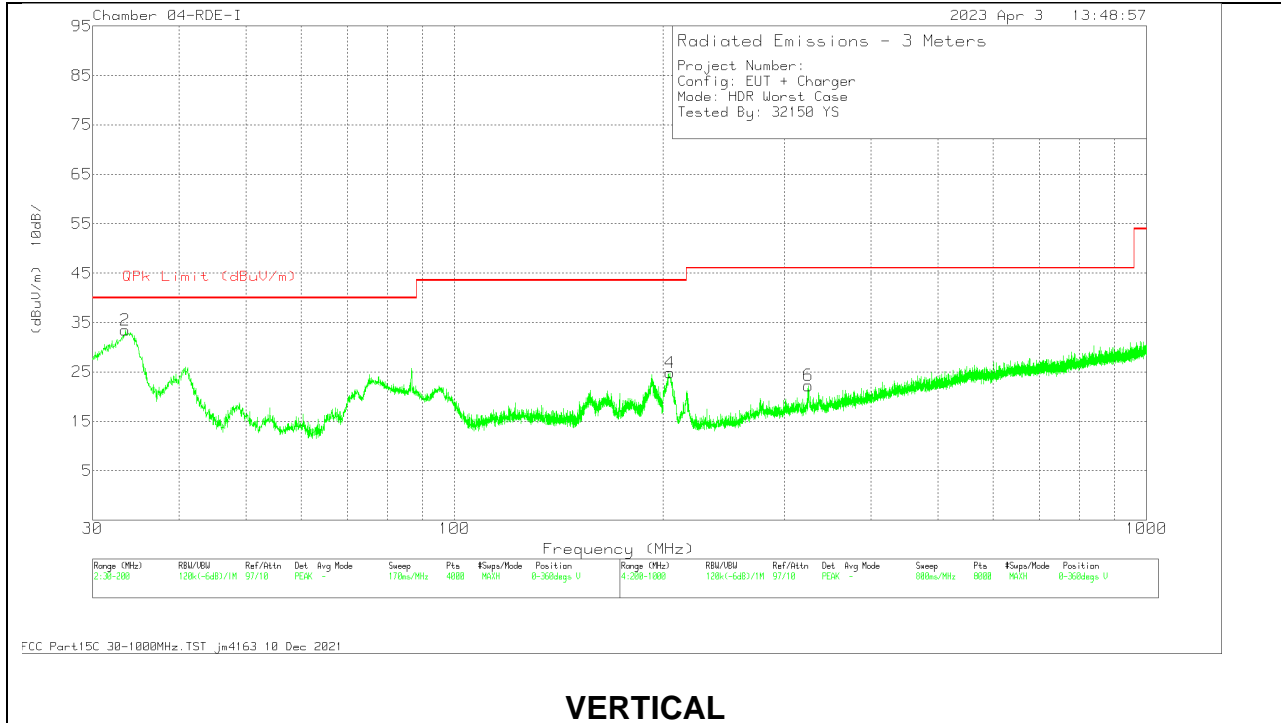
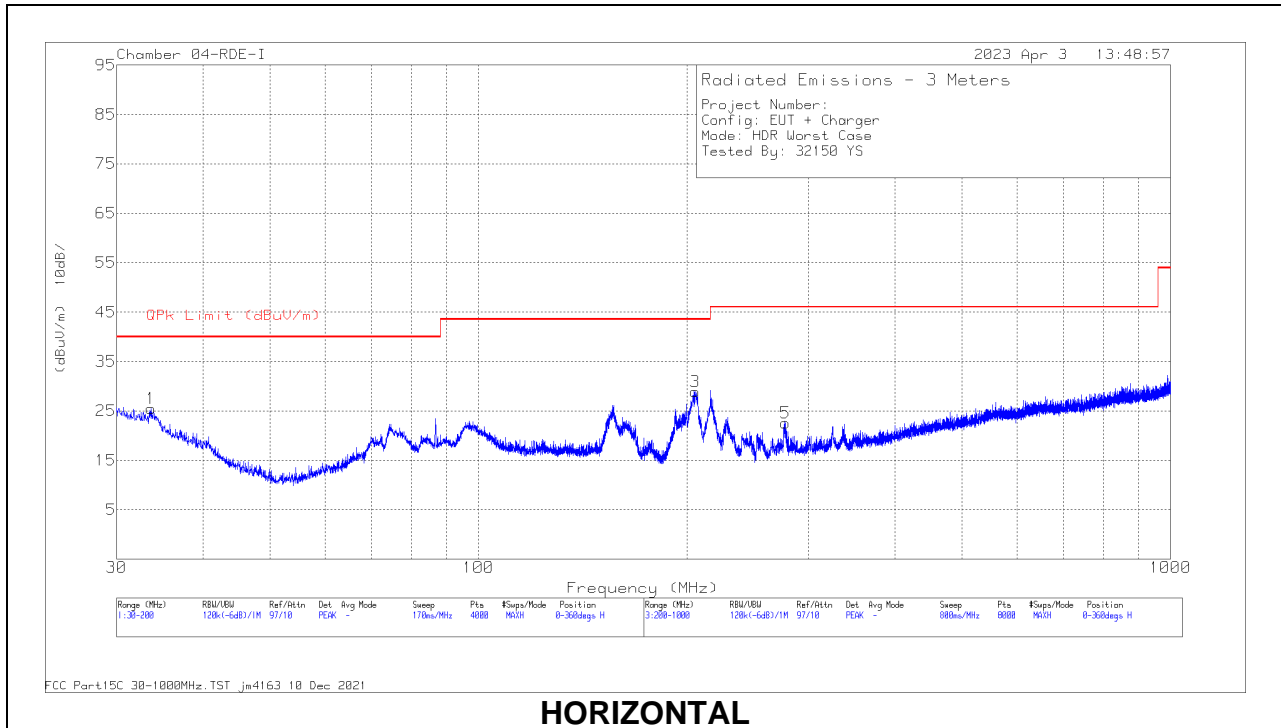
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

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)



Below 1GHz 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	33.656	31.5	Pk	25.1	-31.1	25.5	40	-14.5	0-360	199	H
2	33.4434	39.34	Pk	25.3	-31.2	33.44	40	-6.56	0-360	100	V
	34.0283	35.74	Qp	24.8	-31.1	29.44	40	-10.56	336	145	V
3	205.501	41.96	Pk	17	-30.1	28.86	43.52	-14.66	0-360	101	H
5	* 277.41	33.29	Pk	19	-29.7	22.59	46.02	-23.43	0-360	101	H
4	204.901	37.7	Pk	17.2	-30.1	24.8	43.52	-18.72	0-360	100	V
6	* 324.816	32.04	Pk	19.7	-29.5	22.24	46.02	-23.78	0-360	100	V

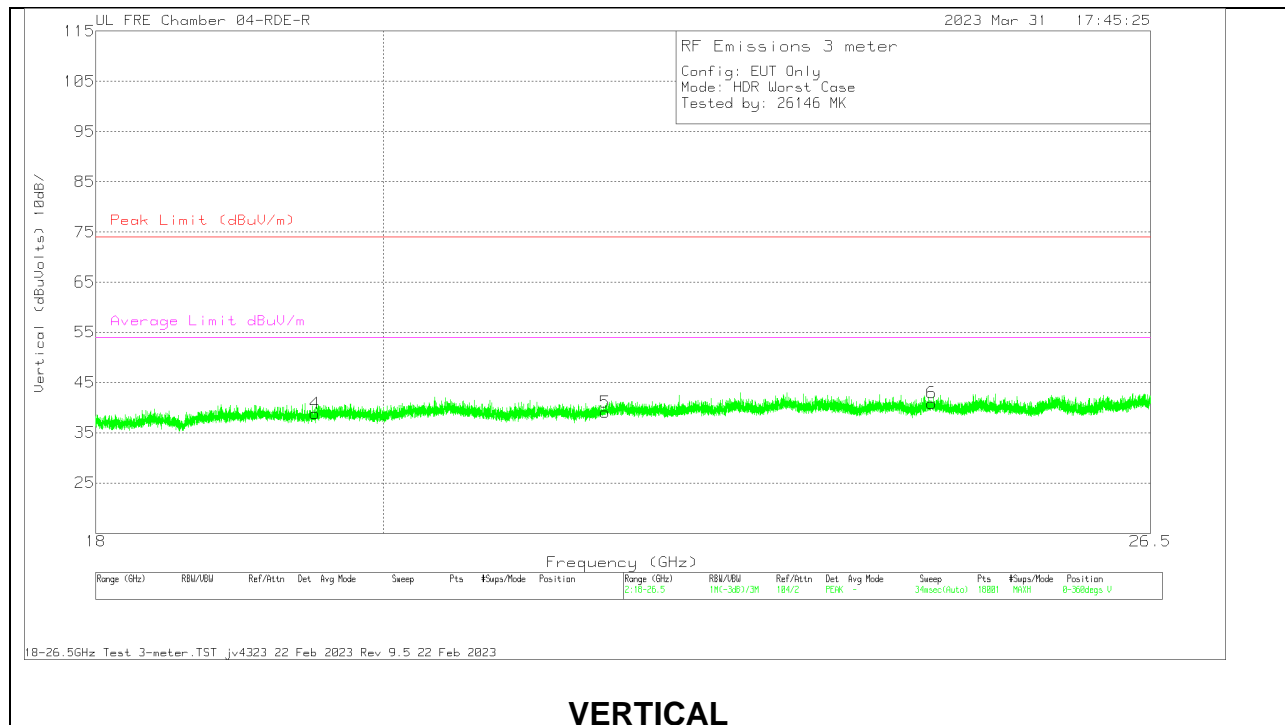
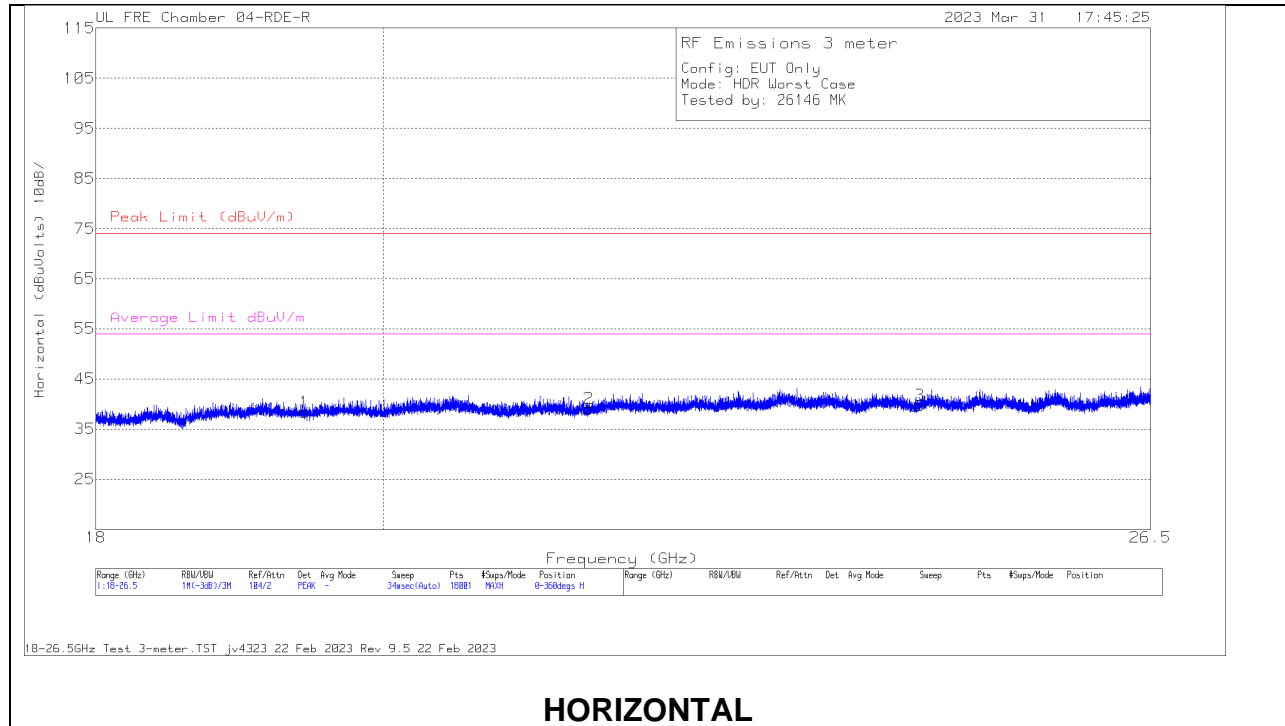
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK - Peak detector

Qp - Quasi-Peak detector

10.4. WORST CASE 18-26 GHz

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



18 – 26GHz DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	172353 ACF (dB) - 3mH	171583 Amp Assembly (dB)	Cables (dB)	Corrected Reading (dBuV/olts)	Peak Limit (dBuV/m)	PK Margin (dB)	Average Limit dBuV/m	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 19.431305	54.91	Pk	33.1	-65.3	15.6	38.31	74	-35.69	54	-15.69	0-360	100	H
4	* 19.507333	55.09	Pk	33.1	-65.1	15.7	38.79	74	-35.21	54	-15.21	0-360	99	V
2	21.568109	53.78	Pk	33.6	-64.8	16.5	39.08	74	-34.92	54	-14.92	0-360	100	H
5	21.697498	54.05	Pk	33.6	-65	16.5	39.15	74	-34.85	54	-14.85	0-360	99	V
3	24.350914	52.66	Pk	34.3	-64.7	17.5	39.76	74	-34.24	54	-14.24	0-360	100	H
6	24.457164	53.61	Pk	34.4	-64.6	17.5	40.91	74	-33.09	54	-13.09	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 μ 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. AC Power Line With AC/DC Adapter

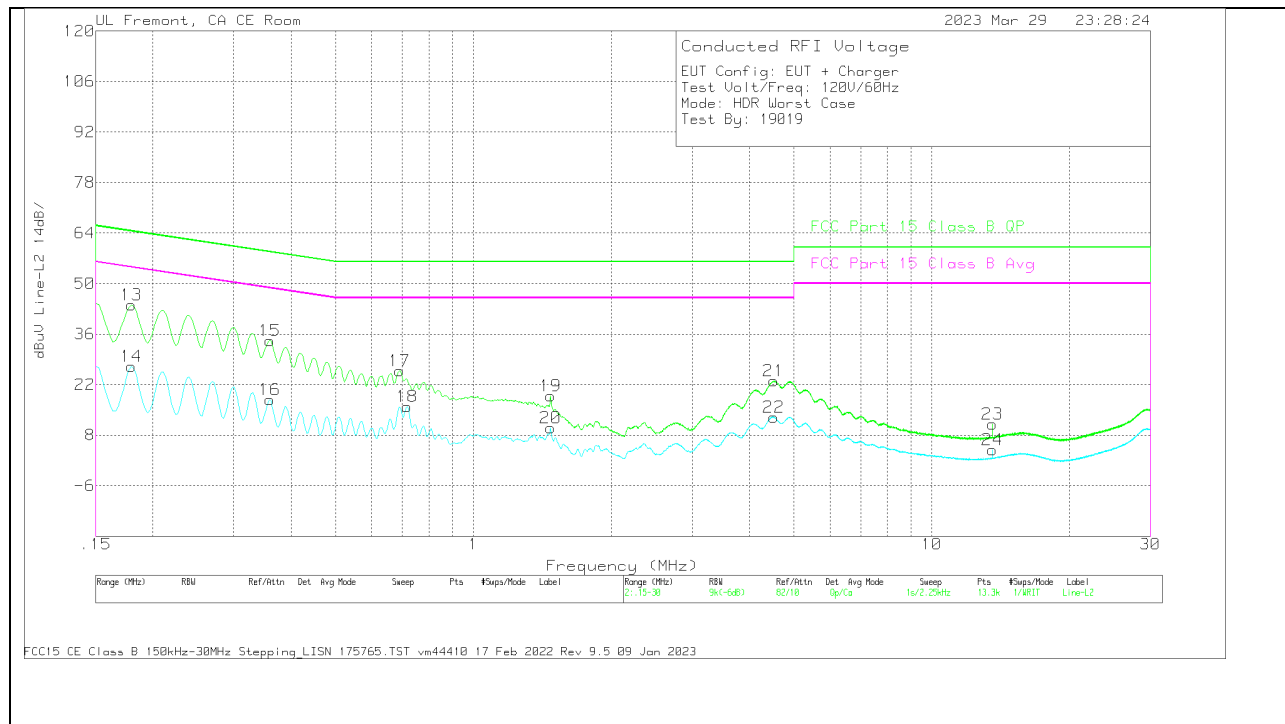
LINE 1 RESULTS



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)
2	.2108	13.69	Ca	0	0	9.4	23.09	-	-	53.18	-30.09
4	.3908	4.98	Ca	0	.1	9.3	14.38	-	-	48.05	-33.67
6	.717	7.96	Ca	0	.1	9.3	17.36	-	-	46	-28.64
8	1.473	-72	Ca	0	.1	9.3	8.68	-	-	46	-37.32
10	4.6084	2.35	Ca	0	.1	9.3	11.75	-	-	46	-34.25
12	13.56	-4.5	Ca	.1	.2	9.3	5.1	-	-	50	-44.9
1	.2108	31.06	Qp	0	0	9.4	40.46	63.18	-22.72	-	-
3	.3885	21.12	Qp	0	.1	9.3	30.52	58.1	-27.58	-	-
5	.7148	13.85	Qp	0	.1	9.3	23.25	56	-32.75	-	-
7	1.473	6.38	Qp	0	.1	9.3	15.78	56	-40.22	-	-
9	4.6028	12.26	Qp	0	.1	9.3	21.66	56	-34.34	-	-
11	13.56	1.64	Qp	.1	.2	9.3	11.24	60	-48.76	-	-

LINE 2 RESULTS

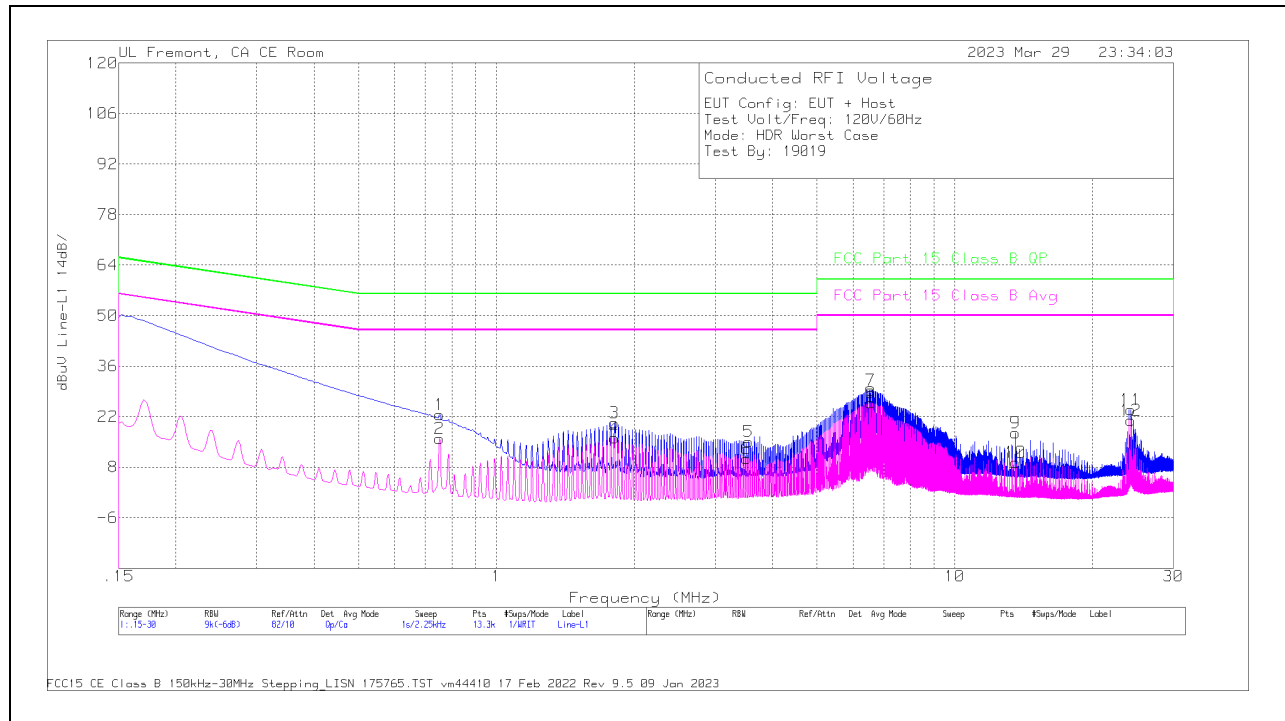


Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L2_LISN dB	C2&C3 cable path loss dB	207996 Limiter with short cabl dB	Corrected Reading dBuV	FCC Part 15 Class B QP dBuV	QP Margin (dB)	FCC Part 15 Class B Avg dBuV	Av(CISPR)M argin (dB)
14	.1793	17.64	Ca	0	0	9.4	27.04	-	-	54.52	-27.48
16	.3593	8.46	Ca	0	.1	9.3	17.86	-	-	48.75	-30.89
18	.717	6.53	Ca	0	.1	9.3	15.93	-	-	46	-30.07
20	1.473	.68	Ca	0	.1	9.3	10.08	-	-	46	-35.92
22	4.524	3.62	Ca	0	.1	9.3	13.02	-	-	46	-32.98
24	13.56	-5.64	Ca	.1	.2	9.3	3.96	-	-	50	-46.04
13	.1793	34.7	Qp	0	0	9.4	44.1	64.52	-20.42	-	-
15	.3593	24.8	Qp	0	.1	9.3	34.2	58.75	-24.55	-	-
17	.6911	16.36	Qp	0	.1	9.3	25.76	56	-30.24	-	-
19	1.473	9.49	Qp	0	.1	9.3	18.89	56	-37.11	-	-
21	4.5285	13.66	Qp	0	.1	9.3	23.06	56	-32.94	-	-
23	13.56	1.51	Qp	.1	.2	9.3	11.11	60	-48.89	-	-

Qp - Quasi-Peak detector
 Ca - CISPR average detection

11.2. AC Power Line with Laptop

LINE 1 RESULTS



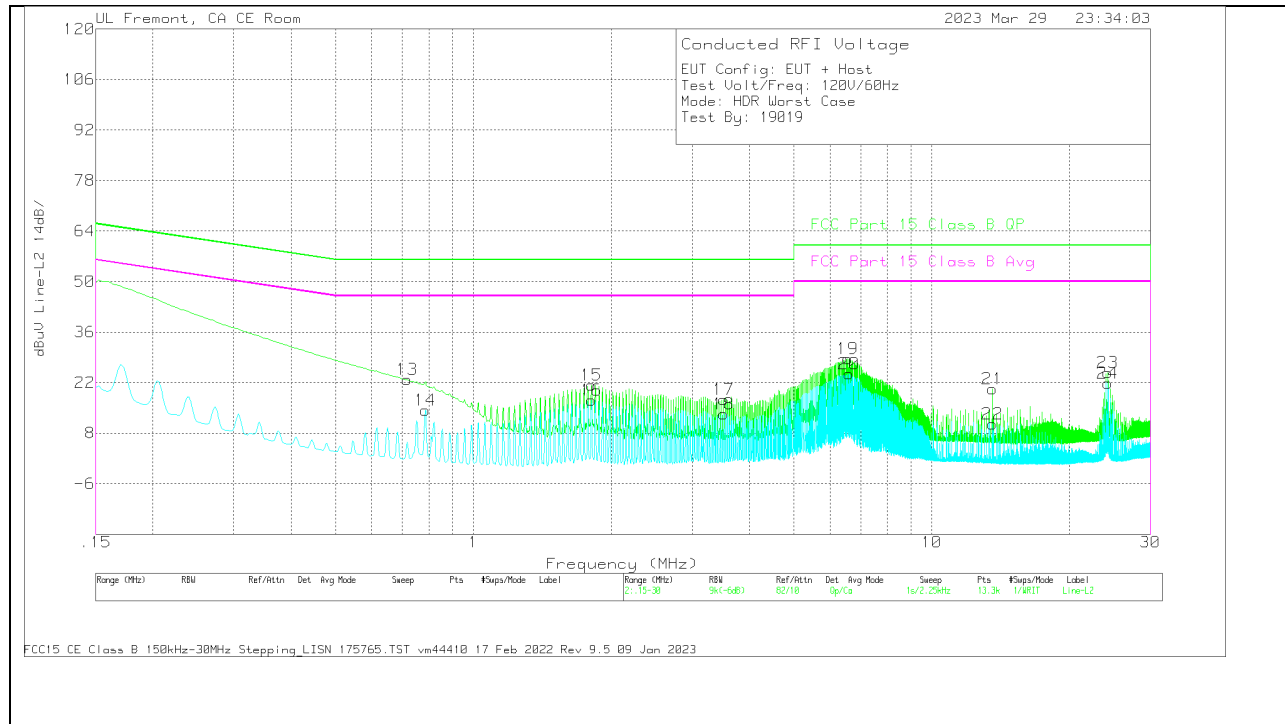
Range 1: Line-L1 .15 - 30MHz

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 dB	QP Margin (dB)	FCC Part 15 Class B Avg dBuV	Av(CISPR)M argin (dB)
2	.7508	6.51	Ca	0	.1	9.3	15.91	-	-	46	-30.09
4	1.8105	6.68	Ca	0	.1	9.3	16.08	-	-	46	-29.92
6	3.5183	.96	Ca	0	.1	9.3	10.36	-	-	46	-35.64
8	6.558	16.36	Ca	0	.1	9.3	25.76	-	-	50	-24.24
10	13.56	-.25	Ca	.1	.2	9.3	9.35	-	-	50	-40.65
12	24.198	11.04	Ca	.2	.3	9.4	20.94	-	-	50	-29.06
1	.7508	13.21	Qp	0	.1	9.3	22.61	56	-33.39	-	-
3	1.8105	10.93	Qp	0	.1	9.3	20.33	56	-35.67	-	-
5	3.552	5.66	Qp	0	.1	9.3	15.06	56	-40.94	-	-
7	6.558	19.92	Qp	0	.1	9.3	29.32	60	-30.68	-	-
9	13.56	7.94	Qp	.1	.2	9.3	17.54	60	-42.46	-	-
11	24.198	14.06	Qp	.2	.3	9.4	23.96	60	-36.04	-	-

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	C2&C3 cable path loss	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)
14	.7845	4.92	Ca	0	.1	9.3	14.32	-	-	46	-31.68
16	1.8105	7.76	Ca	0	.1	9.3	17.16	-	-	46	-28.84
18	3.5183	3.99	Ca	0	.1	9.3	13.39	-	-	46	-32.61
20	6.5918	14.97	Ca	0	.1	9.3	24.37	-	-	50	-25.63
22	13.56	1	Ca	.1	.2	9.3	10.6	-	-	50	-39.4
24	24.198	11.97	Ca	.2	.3	9.4	21.87	-	-	50	-28.13
13	.7159	13.41	Qp	0	.1	9.3	22.81	56	-33.19	-	-
15	1.8105	11.98	Qp	0	.1	9.3	21.38	56	-34.62	-	-
17	3.5183	7.99	Qp	0	.1	9.3	17.39	56	-38.61	-	-
19	6.558	19.14	Qp	0	.1	9.3	28.54	60	-31.46	-	-
21	13.56	10.74	Qp	.1	.2	9.3	20.34	60	-39.66	-	-
23	24.198	14.82	Qp	.2	.3	9.4	24.72	60	-35.28	-	-

Qp - Quasi-Peak detector
 Ca - CISPR average detection

12. SETUP PHOTOS

Please refer to 14523744-EP1V1 setup photos

END OF TEST REPORT