TEST REPORT

Report Number : 15175342-E3V3

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

Model : A3212 (PARENT MODEL)
A3408, A3409, A3410 (VARIANT MODELS)

Brand : APPLE

FCC ID : BCG-E8725A (PARENT MODEL)
BCG-E8726A, BCG-E8727A, BCG-E8728A (VARIANT MODELS)

IC : 579C-E8725A (PARENT MODEL)
579C-E8726A, 579C-E8727A, 579C-E8728A (VARIANT MODELS)

EUT Description : SMARTPHONE

Test Standard(s) : FCC 47 CFR PART 15 SUBPART C
ISED RSS-247 ISSUE 3
ISED RSS-GEN ISSUE 5 + A1 + A2

Date Of Issue:
November 22, 2024

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

ACCREDITED
CERT #0751.05

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	2024/11/08	Initial Issue	Chin Pang
V2	2024/11/13	Address TCB Questions section 9	Chris Xiong
V3	2024/11/22	Fix section 12 Typo	Chin Pang

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

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS 6

2. TEST SUMMARY 8

3. TEST METHODOLOGY 8

4. FACILITIES AND ACCREDITATION 9

5. DECISION RULES AND MEASUREMENT UNCERTAINTY 9

5.1. METROLOGICAL TRACEABILITY 9

5.2. DECISION RULES 9

5.3. MEASUREMENT UNCERTAINTY 10

6. EQUIPMENT UNDER TEST 11

6.1. EUT DESCRIPTION 11

6.2. MAXIMUM OUTPUT POWER 11

6.3. DESCRIPTION OF AVAILABLE ANTENNAS 11

6.4. SOFTWARE AND FIRMWARE 12

6.5. WORST-CASE CONFIGURATION AND MODE 12

6.6. DESCRIPTION OF TEST SETUP 13

7. MEASUREMENT METHOD 16

8. TEST AND MEASUREMENT EQUIPMENT 17

9. ANTENNA PORT TEST RESULTS 18

9.1. ON TIME AND DUTY CYCLE 18

9.2. 99% BANDWIDTH 19

9.2.1. HIGH POWER HDR (HDR4) 20

9.2.2. HIGH POWER HDR TXBF (HDR4) 21

9.2.3. HIGH POWER HDR (HDR8) 22

9.2.4. HIGH POWER HDR TXBF (HDR8) 23

9.3. 6 dB BANDWIDTH 24

9.3.1. HIGH POWER HDR (HDR4) 25

9.3.2. HIGH POWER HDR4 TXBF 26

9.4. OUTPUT POWER 27

9.4.1. HIGH POWER HDR (HDR4) 28

9.4.2. HIGH POWER HDR TXBF (HDR4) 28

9.4.3. HIGH POWER HDR (HDR8) 29

9.4.4. HIGH POWER HDR TXBF (HDR8) 29

9.4.5. LOW POWER HDR (HDR4) 30

9.4.6. LOW POWER HDR TXBF (HDR4) 30

9.4.7. LOW POWER HDR (HDR8) 31

9.4.8. LOW POWER HDR TXBF (HDR8) 31

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

9.5. AVERAGE POWER *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. POWER SPECTRAL DENSITY *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. CONDUCTED SPURIOUS EMISSIONS *42*
9.7.1. HIGH POWER HDR4 SISO MODE 43
9.7.2. HIGH POWER HDR4 TXBF MODE 45
9.7.3. HIGH POWER HDR8 SISO MODE 47
9.7.4. HIGH POWER HDR8 TXBF MODE 49
9.7.5. LOW POWER HDR4 SISO MODE 51
9.7.6. LOW POWER HDR4 TXBF MODE 53
9.7.7. LOW POWER HDR8 SISO MODE 55
9.7.8. LOW POWER HDR8 TXBF MODE 57
10. RADIATED TEST RESULTS 59
10.1. LIMITS AND PROCEDURE *59*
10.2. TRANSMITTER ABOVE 1 GHz *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. WORST CASE HARMONICS AND SPURIOUS EMISSIONS 109
10.3. WORST CASE BELOW 1 GHz *115*
10.4. WORST CASE 18-26 GHz *117*
11. AC POWER LINE CONDUCTED EMISSIONS 119
11.1. AC Power Line with AC/DC Adapter *120*
11.2. AC Power Line with Laptop *122*
12. SPOT CHECK EVALUATION 124
12.1. MODEL DIFFERENCES *124*
12.2. SPOT CHECK VERIFICATION RESULTS SUMMARY FOR A3408 ..... *125*
12.3. SPOT CHECK VERIFICATION RESULTS SUMMARY FOR A3409 ..... *125*

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

12.4. SPOT CHECK VERIFICATION RESULTS SUMMARY FOR A3410 125

13. SETUP PHOTOS 126

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

1. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: SMARTPHONE

MODEL: A3212 (PARENT MODEL)
A3408, A3409, A3410 (VARIANT MODELS)

BRAND: APPLE

SERIAL NUMBER: Parent Model: H56Q0XWR44, KQFN75JXKL (Conducted)
H7035YC39N (Radiated)
Variant Model Conducted**:** J970CHYF9P (A3408), LHXH14D1WF (A3409) KYFJV03QL6 (A3410)
Variant Model Radiated**:** LKQVT2W2YG (A3408), QV6H6WR6YR (A3409), R0QQVMMXH7 (A3410

SAMPLE RECEIPT DATE: 2024/07/26, 2024/11/13

DATE TESTED: 2024/08/27 – 2024/11/19

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	Complies
ISED RSS-247 Issue 3	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.

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

Approved & Released For
UL Verification Inc. By:

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

Prepared By:

Chris Xiong
Senior Test Engineer
Consumer Technology Division
UL Verification Inc.

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

2. TEST SUMMARY

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

Below is a list of the data provided by the customer:

1. Antenna gain and type (see Section 6.3)
2. Cable loss (see Section 6.3)

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		None.
15.247 (b) (3)	RSS-247 5.4 (d)	Output Power		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		None.
15.247 (d)	RSS-247 5.5	Conducted Spurious Emissions		None.
15.209, 15.205	RSS-GEN 8.9, 8.10	Radiated Emissions		None.
15.207	RSS-Gen 8.8	AC Mains Conducted Emissions		None.

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2020, KDB 558074 D01 15.247 Meas Guidance v05r02, KDB 414788 D01 Radiated Test Site v01r01, KDB662911, KDB 484596 D01 V02r03, RSS-GEN Issue 5 +A1 +A2, and RSS-247 Issue 3.

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

4. FACILITIES AND ACCREDITATION

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

	Address	ISED CABID	ISED Company Number	FCC Registration
☐	Building 1: 47173 Benicia Street, Fremont, CA 94538, USA	US0104	2324A	550739
☒	Building 2: 47266 Benicia Street, Fremont, CA 94538, USA			
☒	Building 3: 843 Auburn Court, Fremont, CA 94538, USA			
☒	Building 4: 47658 Kato Rd, Fremont, CA 94538, USA			
☐	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.)

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

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	1.30 (Peak) 0.45 (Average)
Radio Frequency (Spectrum Analyzer)	141.16 Hz
Occupied Bandwidth	1.22 %
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.78 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.40 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.87 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	6.01 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.73 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.51 dB

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

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

6. EQUIPMENT UNDER TEST

6.1. EUT DESCRIPTION

The Apple iPhone is a smartphone with GSM, GPRS, EGPRS, WCDMA, LTE, 5GNR1, IEEE 802.11a/b/g/n/ac/ax, Bluetooth (BT), Global Positioning System (GPS), Near-Field Communication (NFC), and Mobile Satellite Service (MSS) technologies. The rechargeable battery is not user accessible. This device is not user-serviceable and requires special tools to disassemble.

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	15.13	32.58
	Low Power			9.13	8.18
	High Power		HDR8	16.46	44.26
	Low Power			10.51	11.25
ANT 3	High Power	2404 - 2476	HDR4	15.13	32.58
	Low Power			9.16	8.24
	High Power		HDR8	16.51	44.77
	Low Power			10.48	11.17
TxBF ANT 4 + ANT 3	High Power	2404 - 2476	HDR4	18.10	64.57
	Low Power			12.16	16.44
	High Power		HDR8	19.51	89.33
	Low Power			13.51	22.44

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

Antenna Type is IFA. The antennas' gains, as provided by the manufacturer, are as follows:

Frequency Range (GHz)	ANT 4 (dBi)	ANT 3 (dBi)
2.4	-1.9	-1.2

The SMA cable losses provided by client are as follows and were used for RF antenna port tests that had been offset to the test equipment during testing.

ANT 4 = 1.7 dB
ANT 3 = 1.8 dB

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

6.4. SOFTWARE AND FIRMWARE

The EUT firmware is 22.1.74.243.

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 X (Flatbed) orientation was the worst-case orientation for ANT 4 and beamforming 2TX and Z (Portrait) for ANT 3.

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.

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).

Radiated emissions below 30MHz, 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 30MHz, 30-1000MHz emissions spurious tests were performed with EUT connected to AC power adapter and set at X orientation for digital emissions spurious 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.

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

6.6. DESCRIPTION OF TEST SETUP

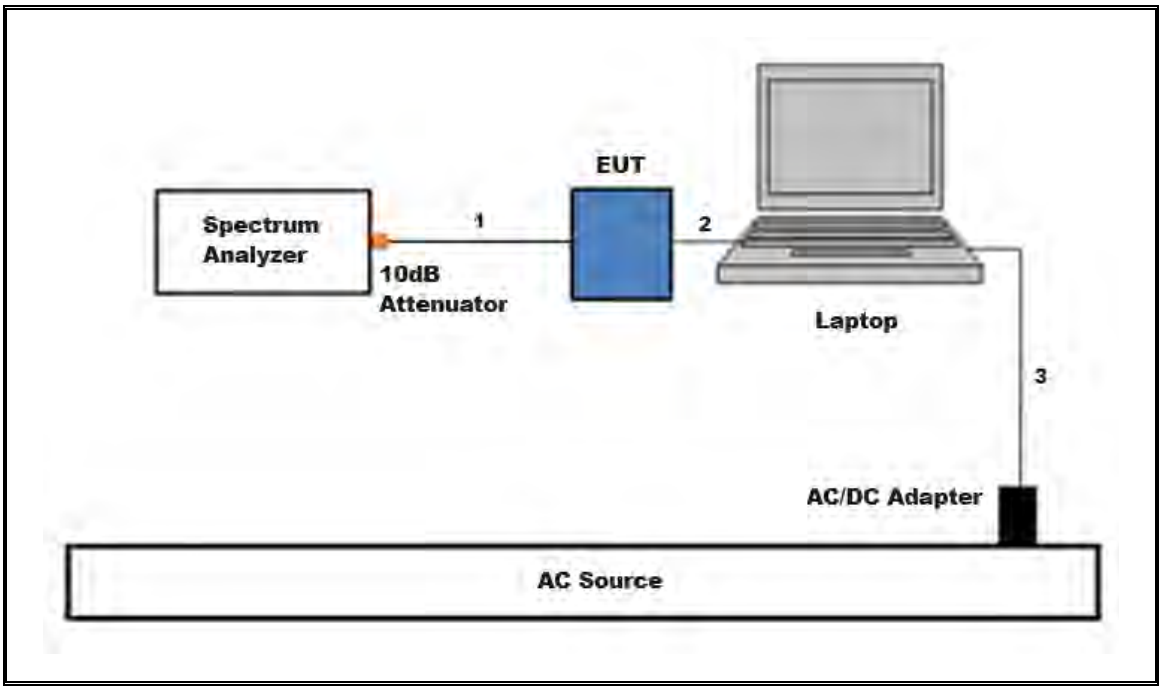
SUPPORT TEST EQUIPMENT						
Description		**Manufacturer**	**Model**	**Serial Number**		**FCC ID/ DoC**
Laptop		Apple	MacBook Pro	C02VD7SAHV22		BCGA1708
Laptop AC/DC adapter		Liteon Technology	A1424	NSW25679		DoC
EUT AC/DC adapter		Apple	A1720	C3D8417A7R93KVPA8		DoC
I/O CABLES (RF CONDUCTED TEST)						
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	USB-C	1	USB-C	Shielded	1.0	N/A
3	AC	1	AC	Un-shielded	2	N/A
I/O CABLES (RF RADIATED AND AC LINE CONDUCTED TEST)						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	AC	1	AC	Un-shielded	2	N/A
2	USB	1	USB	Shielded	1	N/A

TEST SETUP

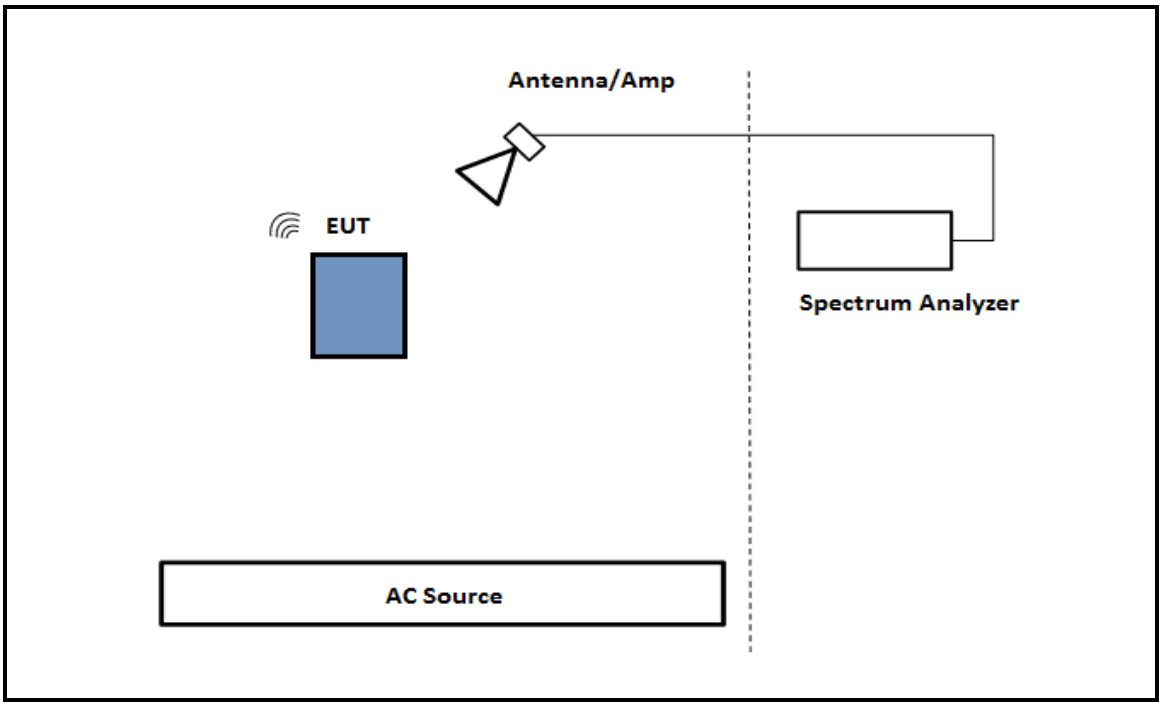
The EUT setup is shown as below. Test software exercised the radio card.

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

SETUP DIAGRAM FOR CONDUCTED TESTS

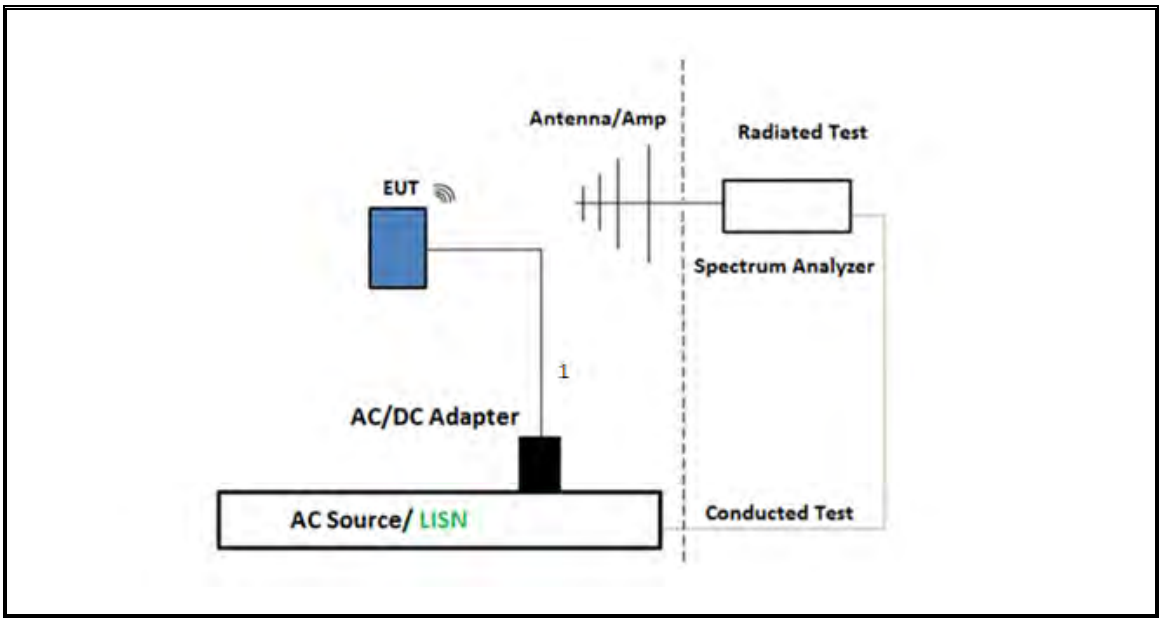


SETUP DIAGRAM FOR RADIATED TESTS ABOVE 1 GHz (1 GHz to 26 GHz)

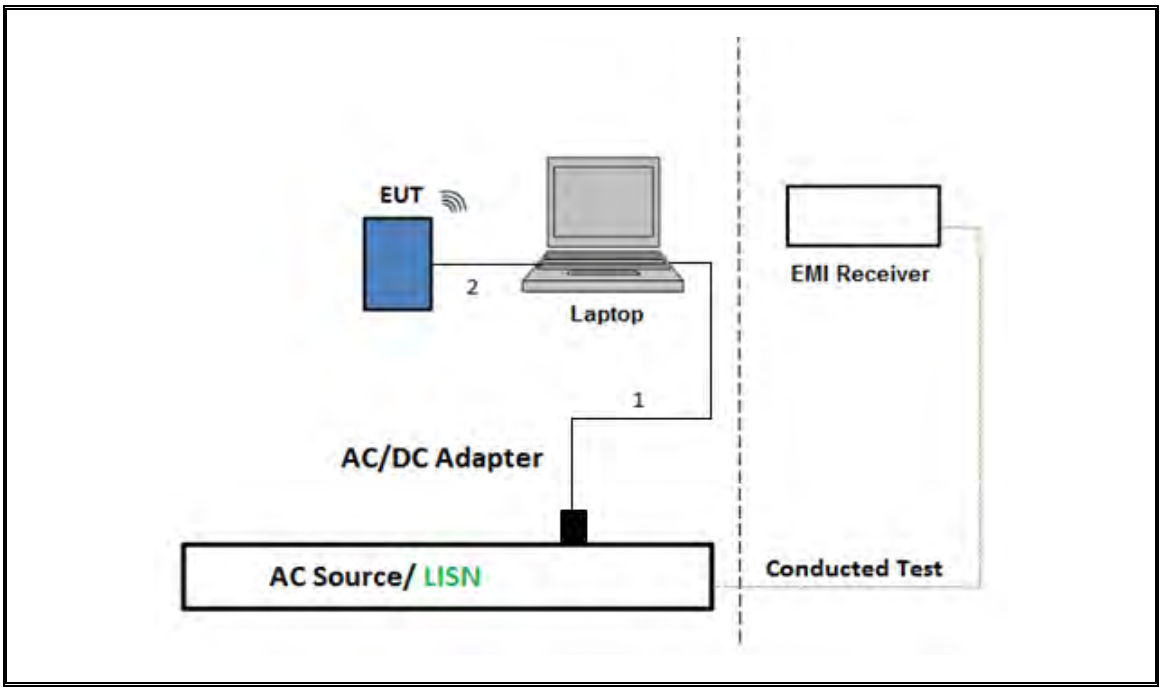


UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

SETUP DIAGRAM FOR 30-1000MHz and AC LINE CONDUCTED TEST



SETUP DIAGRAM FOR AC LINE CONDUCTED: LAPTOP CONFIGURATION



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

7. MEASUREMENT METHOD

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

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

Occupied BW (99%): ANSI C63.10-2020 Section 6.9.3

Output Power: ANSI C63.10 Subclause -11.9.1.2 Method PKPM1 Peak-reading power meter

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

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

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

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

Band-edge: ANSI C63.10 Subclause -11.12.2.4 & Clause 13: Integration method -Peak detection

Band-edge: ANSI C63.10 Subclause -11.12.2.5 & Clause 13: Integration method -Trace averaging with continuous transmission at full power

AC Power Line Conducted Emissions: ANSI C63.10-2020 , Section 6.2.

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

Radiated Spurious Emissions Below 30MHz: ANSI C63.10-2020 Section 6.4 & 13

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

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

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 Number**	**Cal Due**
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight Technologies Inc	N9030A	125178	2025/01/31
10dB Fixed Attenuator	Pasternack Enterprises	PE7087-10	178557	Verified Before Use
Power Meter, P-series single channel	Keysight Technologies Inc	N1911A	82174	2025/01/31
Power Sensor, P-series, 50MHz to 18GHz, Wideband	Keysight Technologies Inc	N1921A	81319	2025/01/31
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	169935	2025/02/28
Horn Antenna 1-18GHz	ETS-Lindgren	3117	79834	2025/07/31
RF Filter Box, 1-18GHz, 17 Ports	UL-FR1	RATS 2	225079	2025/04/30
Link File, @3m, 9kHz-1000MHz Hybrid Path Loss	UL-FR1	Port 0 Factors	216245	2025/03/31
Antenna, Passive Loop 30Hz - 1MHz	ELECTRO-METRICS	EM-6871	170013	2025/07/31
Antenna, Passive Loop 100kHz to 30MHz	ELECTRO-METRICS	EM-6872	170015	2025/07/31
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	169936	2025/02/28
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	200897	2025/04/30
*RF Filter Box, 1-18GHz, 12 Port	UL-FR1	Frankenstein	217255	2024/10/31
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	179372	2025/02/28
Horn Antenna 1-18GHz	ETS-Lindgren	3117	226673	2025/02/28
RF Filter Box, 1-18GHz, 12 Port.	UL-FR1	Frankenstein	231874	2025/07/31
*Antenna, Horn 18 to 26.5GHz	A.R.A.	MWH-1826/B	172354	2024/10/31
Link File, RF Amplifier Assembly, 18-26.5GHz, 60dB Gain	AMPLICAL	AMP18G26.5-60	221832	2025/03/31
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	170063	2024/11/30
Antenna, Broadband Hybrid, 30MHz to 3GHz	Sunol Sciences Corp.	JB3	204045	2025/04/30
Amplifier 9 KHz - 1 GHz	SONOMA INSTRUMENT	310N	230307	2025/05/30
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	235670	2025/02/28
*Antenna, Horn 1-18GHz	ETS-Lindgren	3117	223084	2024/10/31
RF Filter Box, 1-18GHz, 17 Ports	UL-FR1	RATS 2	225079	2025/04/30
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	223461	2025/02/28
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	222741	2025/08/31
RF Filter Box, 1-18GHz, 12 Port	UL-FR1	Frankenstein	217521	2025/08/31
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	169927	2025/02/28
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	223083	2025/08/31
RF Filter Box, 1-18GHz, 7 port Simplified	UL-FR1	F3A, 3Amplifier, Rats3 simplified version	243707	2025/02/22

AC LINE CONDUCTED				
Description	**Manufacturer**	**Model**	**ID Number**	**Cal Due**
EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESR	93091	2025/02/28
LISN for Conducted Emissions CISPR-16	FISCHER CUSTOM COMMUNICATIONS	FCC-LISN-50/250-25-2-01-480V	175765	2025/01/31
*Transient Limiter	TE	TBFL1	207996	2024/08/31
UL AUTOMATION SOFTWARE				
Radiated Software	UL	UL EMC	Ver 9.5, May 1, 2023	
Conducted Software	UL	UL EMC	2024.2.23	
AC Line Conducted Software	UL	UL EMC	Ver 9.5, Mar 3, 2023	

*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	2.370	2.370	1.000	100.00%	0.00	0.010
HDR8	0.985	0.985	1.000	100.00%	0.00	0.010

Note: There is the same DC factor on 1TX and 2TX.

DUTY CYCLE PLOTS

DUTY CYCLE HDR4

DUTY CYCLE HDR8

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

9.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

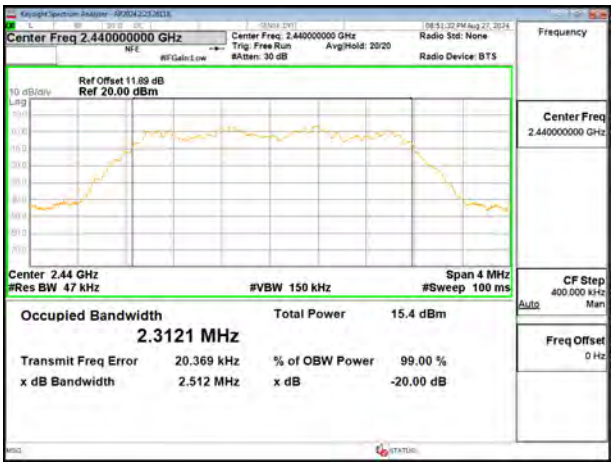
Only High-Power modes result is reported, it covers all Low Power modes. Only Mid channel plot is reported to show setting parameter complies with testing method/procedure.

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

9.2.1. HIGH POWER HDR (HDR4)

ANT 4

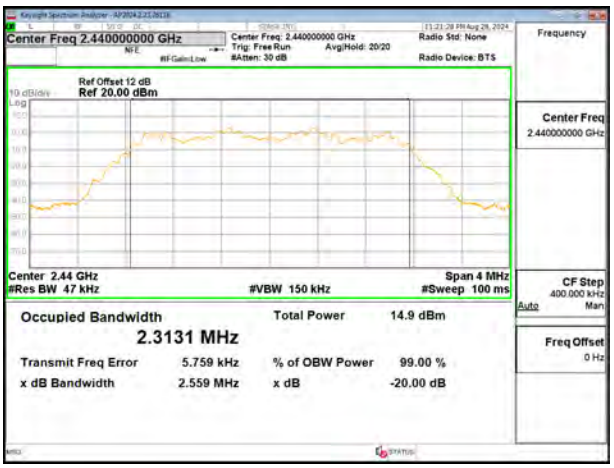
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2404	2.3112
Middle	2440	2.3121
High	2476	2.3121



MID CHANNEL

ANT 3

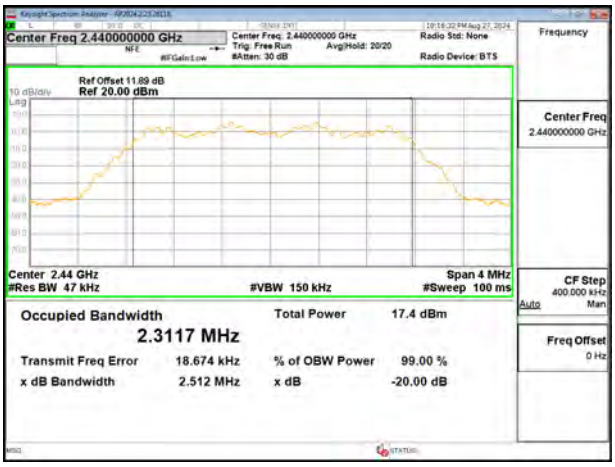
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2404	2.3123
Middle	2440	2.3131
High	2476	2.3137



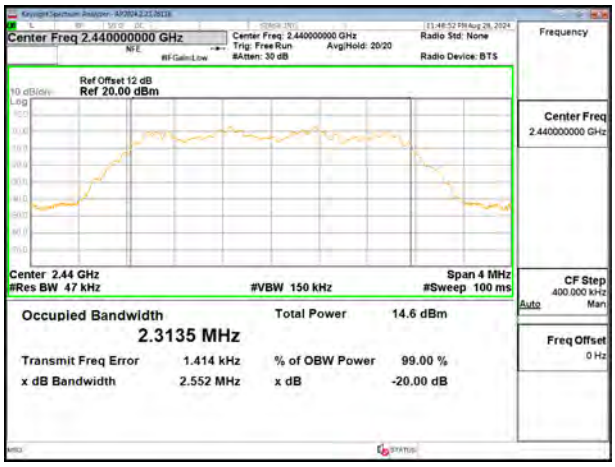
MID CHANNEL

9.2.2. HIGH POWER HDR TXBF (HDR4)

Channel	Frequency (MHz)	99% Bandwidth ANT 4 (MHz)	99% Bandwidth ANT 3 (MHz)
Low	2404	2.3120	2.3118
Middle	2440	2.3117	2.3135
High	2478	2.3120	2.3136



MID CHANNEL ANT 4



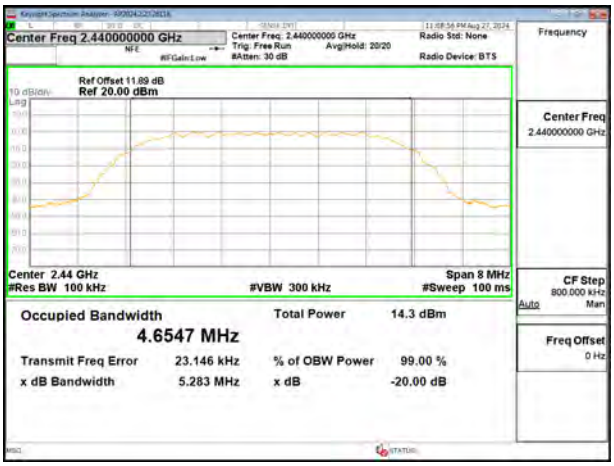
MID CHANNEL ANT 3

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

9.2.3. HIGH POWER HDR (HDR8)

ANT 4

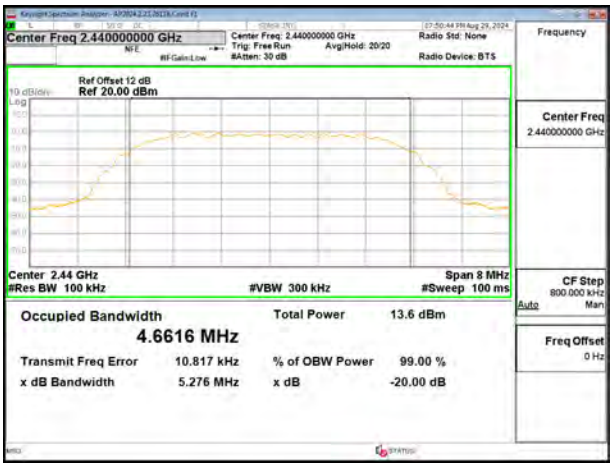
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2404	4.6517
Middle	2440	4.6547
High	2476	4.6584



MID CHANNEL

ANT 3

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2404	4.6600
Middle	2440	4.6616
High	2476	4.6658

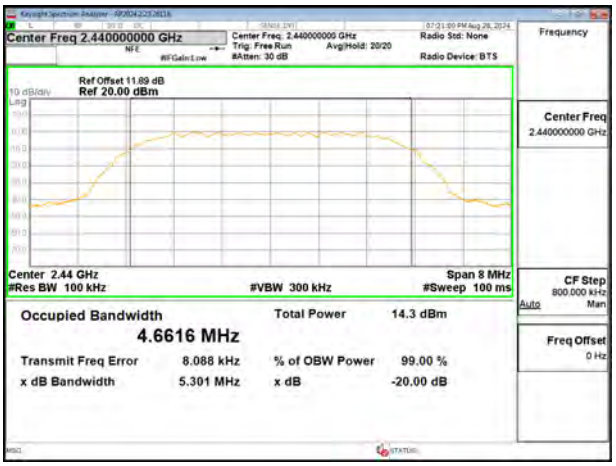


MID CHANNEL

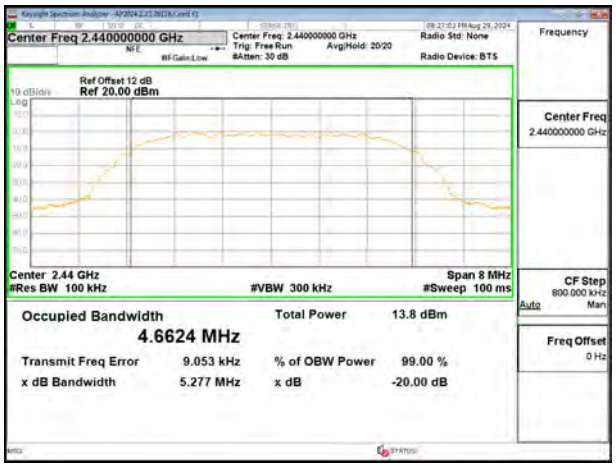
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

9.2.4. HIGH POWER HDR TXBF (HDR8)

Channel	Frequency (MHz)	99% Bandwidth ANT 4 (MHz)	99% Bandwidth ANT 3 (MHz)
Low	2404	4.6562	4.6610
Middle	2440	4.6616	4.6624
High	2476	4.6621	4.6644



MID CHANNEL ANT 4



MID CHANNEL ANT 3

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

9.3. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (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.

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

9.3.1. HIGH POWER HDR (HDR4)

ANT 4

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2404	2.080	0.5
Middle	2440	2.104	0.5
High	2476	2.096	0.5

MID CHANNEL

ANT 3

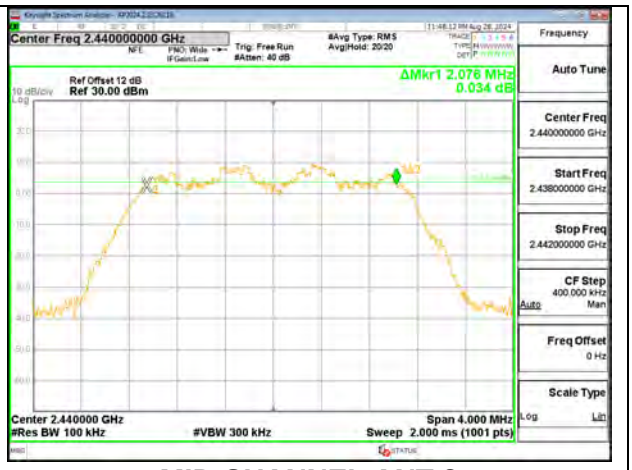
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2404	2.092	0.5
Middle	2440	2.108	0.5
High	2476	2.120	0.5

MID CHANNEL

9.3.2. HIGH POWER HDR4 TXBF

Channel	Frequency (MHz)	6 dB Bandwidth ANT 4 (MHz)	6 dB Bandwidth ANT 3 (MHz)	Minimum Limit (MHz)
Low	2404	2.120	2.068	0.5
Mid	2440	2.080	2.076	0.5
High	2476	2.116	2.080	0.5

MID CHANNEL ANT 4



MID CHANNEL ANT 3

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

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 Gain (dBi)	ANT 3 Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)	Correlated Chains Directional Gain (dBi)
2.4	-1.90	-1.20	-1.54	1.47

Directional Gain Calculation:

ANSI C63.10-2020 Section 14.6.3

Uncorrelated directional gain=10*LOG((10^(Ant4/10)+10^(Ant3/10))/2)
Correlated directional Gain=10*LOG(((10^(Ant4/20)+10^(Ant3/20))^2)/2)

Sample Calculation:

Ant4=-1.9, Ant3=-1.2

Uncorrelated Antenna gain=10log[(10^(-1.9/10)+10^(-1.2/10))/2]=-1.54dBi

Correlated Antenna gain=10log[(10^(-1.9/20)+10^(-1.2/20))^2)/2]=1.47dBi

RESULTS

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

9.4.1. HIGH POWER HDR (HDR4)

ANT 4

Tested By:	26118
Date:	2024-10-11

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	15.09	30	-14.91
Middle	2440	15.04	30	-14.96
High	2476	15.13	30	-14.87

ANT 3

Tested By:	26118
Date:	2024-10-11

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	15.13	30	-14.87
Middle	2440	15.07	30	-14.93
High	2476	15.09	30	-14.91

9.4.2. HIGH POWER HDR TXBF (HDR4)

Tested By:	26118
Date:	2024-10-15

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	15.03	15.07	18.06	30.00	-11.94
Middle	2440	15.04	15.13	18.10	30.00	-11.90
High	2476	15.10	15.03	18.08	30.00	-11.92

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

9.4.3. HIGH POWER HDR (HDR8)

ANT 4

Tested By:	26118
Date:	2024-10-11

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	16.46	30	-13.54
Middle	2440	16.40	30	-13.60
High	2476	16.43	30	-13.57

ANT 3

Tested By:	26118
Date:	2024-10-14

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	16.51	30	-13.49
Middle	2440	16.48	30	-13.52
High	2476	16.40	30	-13.60

9.4.4. HIGH POWER HDR TXBF (HDR8)

Tested By:	26118
Date:	2024-10-15

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	16.39	16.45	19.43	30.00	-10.57
Middle	2440	16.48	16.52	19.51	30.00	-10.49
High	2476	16.51	16.45	19.49	30.00	-10.51

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

9.4.5. LOW POWER HDR (HDR4)

ANT 4

Tested By:	26118
Date:	2024-10-11

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	9.13	30	-20.87
Middle	2440	9.08	30	-20.92
High	2476	9.09	30	-20.91

ANT 3

Tested By:	26118
Date:	2024-10-14

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	9.13	30	-20.87
Middle	2440	9.16	30	-20.84
High	2476	9.06	30	-20.94

9.4.6. LOW POWER HDR TXBF (HDR4)

Tested By:	26118
Date:	2024-10-14

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	9.04	9.11	12.09	30.00	-17.91
Middle	2440	9.09	9.14	12.13	30.00	-17.87
High	2476	9.17	9.13	12.16	30.00	-17.84

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

9.4.7. LOW POWER HDR (HDR8)

ANT 4

Tested By:	26118
Date:	2024-10-11

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	10.51	30	-19.49
Middle	2440	10.45	30	-19.55
High	2476	10.47	30	-19.53

ANT 3

Tested By:	26118
Date:	2024-10-14

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	10.48	30	-19.52
Middle	2440	10.44	30	-19.56
High	2476	10.43	30	-19.57

9.4.8. LOW POWER HDR TXBF (HDR8)

Tested By:	26118
Date:	2024-10-14

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	10.41	10.49	13.46	30.00	-16.54
Middle	2440	10.50	10.45	13.49	30.00	-16.51
High	2476	10.47	10.52	13.51	30.00	-16.49

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

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

9.5.1. HIGH POWER HDR (HDR4)

ANT 4

Tested By:	26118
Date:	2024-10-11

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	12.45
Middle	2440	12.39
High	2476	12.48

ANT 3

Tested By:	26118
Date:	2024-10-14

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	12.48
Middle	2440	12.42
High	2476	12.45

9.5.2. HIGH POWER HDR TXBF (HDR4)

Tested By:	26118
Date:	2024-10-15

Channel	Frequency (MHz)	Average Power ANT 4 (dBm)	Average Power ANT 3 (dBm)	Total Power (dBm)
Low	2404	12.38	12.42	15.41
Middle	2440	12.40	12.48	15.45
High	2476	12.45	12.37	15.42

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

9.5.3. HIGH POWER HDR (HDR8)

ANT 4

Tested By:	26118
Date:	2024-10-11

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	13.44
Middle	2440	13.38
High	2476	13.41

ANT 3

Tested By:	26118
Date:	2024-10-14

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	13.48
Middle	2440	13.45
High	2476	13.37

9.5.4. HIGH POWER HDR TXBF (HDR8)

Tested By:	26118
Date:	2024-10-15

Channel	Frequency (MHz)	Average Power ANT 4 (dBm)	Average Power ANT 3 (dBm)	Total Power (dBm)
Low	2404	13.36	13.41	16.40
Middle	2440	13.45	13.48	16.48
High	2476	13.47	13.42	16.46

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

9.5.5. LOW POWER HDR (HDR4)

ANT 4

Tested By:	26118
Date:	2024-10-11

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	6.48
Middle	2440	6.42
High	2476	6.43

ANT 3

Tested By:	26118
Date:	2024-10-14

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	6.43
Middle	2440	6.48
High	2476	6.38

9.5.6. LOW POWER HDR TXBF (HDR4)

Tested By:	26118
Date:	2024-10-14

Channel	Frequency (MHz)	Average Power ANT 4 (dBm)	Average Power ANT 3 (dBm)	Total Power (dBm)
Low	2404	6.36	6.42	9.40
Middle	2440	6.39	6.45	9.43
High	2476	6.48	6.44	9.47

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

9.5.7. LOW POWER HDR (HDR8)

ANT 4

Tested By:	26118
Date:	2024-10-11

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	7.49
Middle	2440	7.42
High	2476	7.44

ANT 3

Tested By:	26118
Date:	2024-10-14

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	7.45
Middle	2440	7.40
High	2476	7.39

9.5.8. LOW POWER HDR TXBF (HDR8)

Tested By:	26118
Date:	2024-10-14

Channel	Frequency (MHz)	Average Power ANT 4 (dBm)	Average Power ANT 3 (dBm)	Total Power (dBm)
Low	2404	7.37	7.45	10.42
Middle	2440	7.46	7.42	10.45
High	2476	7.43	7.48	10.47

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

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

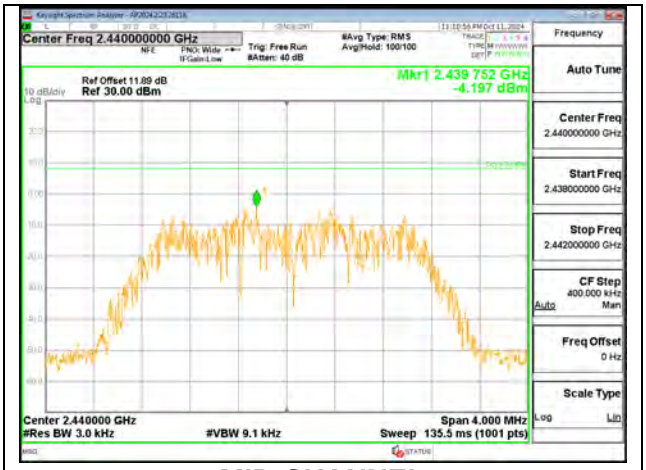
Only High-Power modes result is reported, it covers all Low Power modes.

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

9.6.1. HIGH POWER HDR (HDR4)

ANT 4

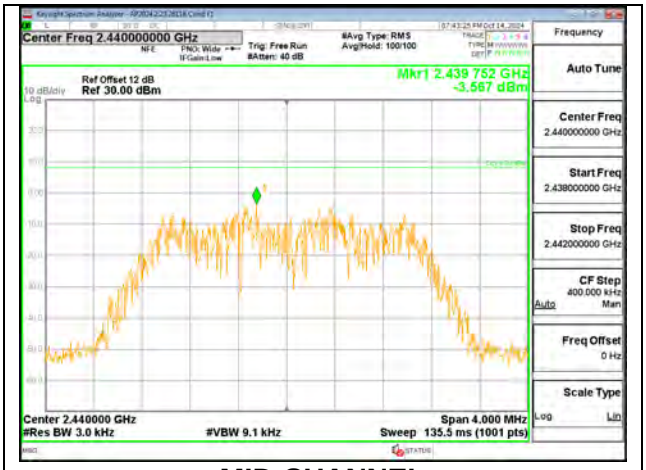
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2404	-4.072	8	-12.07
Middle	2440	-4.197	8	-12.20
High	2476	-3.744	8	-11.74



MID CHANNEL

ANT 3

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2404	-3.277	8	-11.28
Middle	2440	-3.567	8	-11.57
High	2476	-3.407	8	-11.41



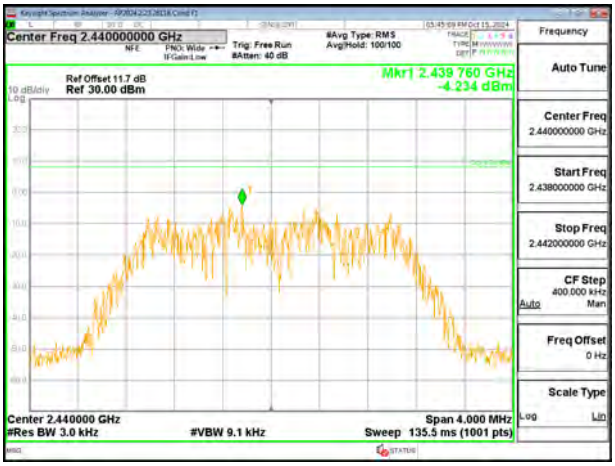
MID CHANNEL

9.6.2. HIGH POWER HDR TXBF (HDR4)

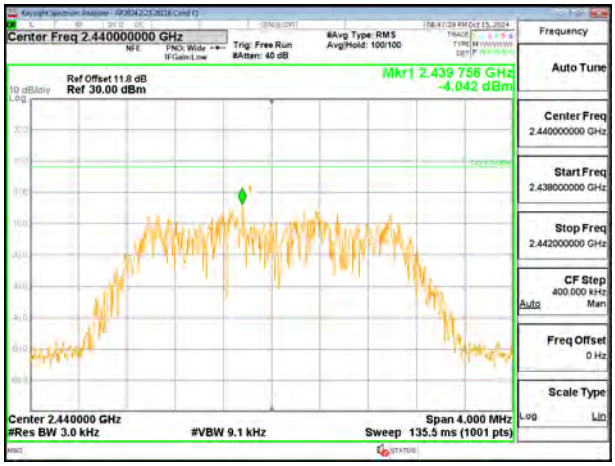
Note: Test procedures and setting are same as HDR normal mode.

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	-3.663	-4.132	-0.88	8.0	-8.9
Mid	2440	-4.234	-4.042	-1.13	8.0	-9.1
High	2476	-4.375	-4.065	-1.21	8.0	-9.2



MID CHANNEL ANT 4

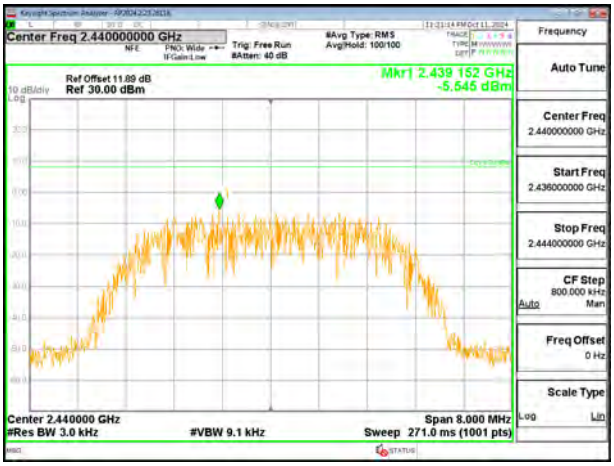


MID CHANNEL ANT 3

9.6.3. HIGH POWER HDR (HDR8)

ANT 4

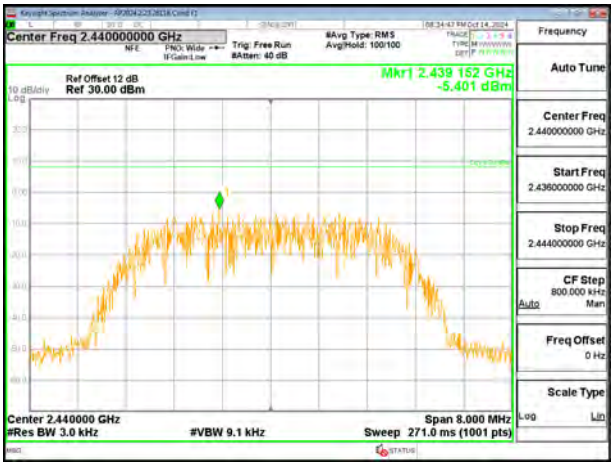
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2404	-5.595	8	-13.60
Middle	2440	-5.545	8	-13.55
High	2476	-5.196	8	-13.20



MID CHANNEL

ANT 3

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2404	-5.282	8	-13.28
Middle	2440	-5.401	8	-13.40
High	2476	-5.235	8	-13.24



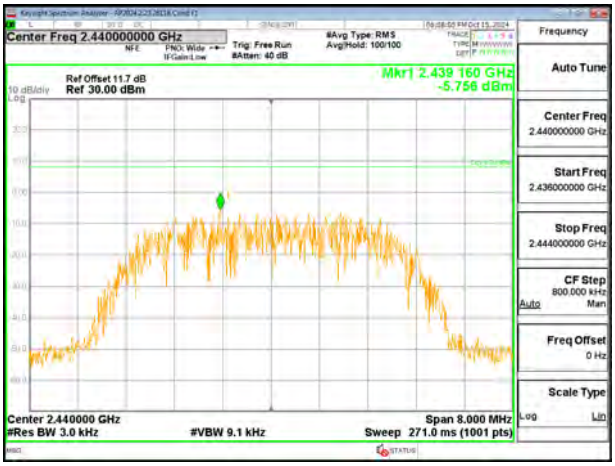
MID CHANNEL

9.6.4. HIGH POWER HDR TXBF (HDR8)

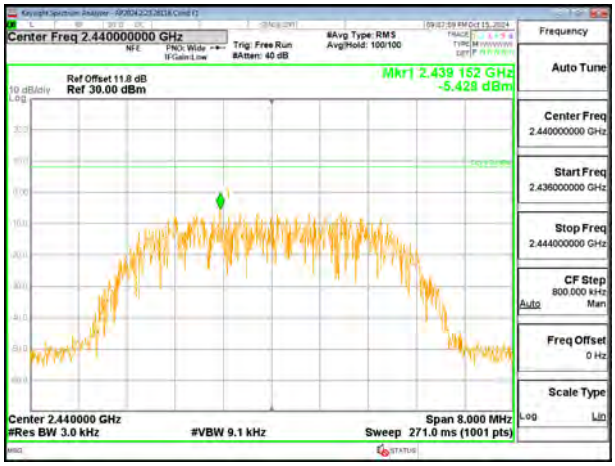
Note: Test procedures and setting are same as HDR normal mode.

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	-6.080	-5.809	-2.93	8.0	-10.9
Mid	2440	-5.756	-5.428	-2.58	8.0	-10.6
High	2476	-5.939	-5.877	-2.90	8.0	-10.9



MID CHANNEL ANT 4



MID CHANNEL ANT 3

9.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

RSS-247 5.5

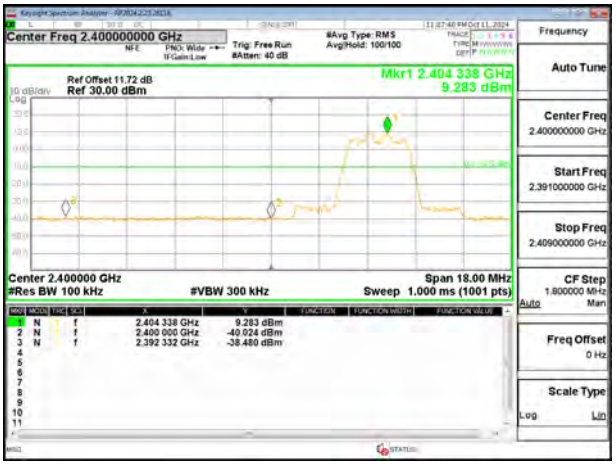
Output power was measured based on the use of a peak measurement; therefore the required attenuation is 20 dBc.

RESULTS

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

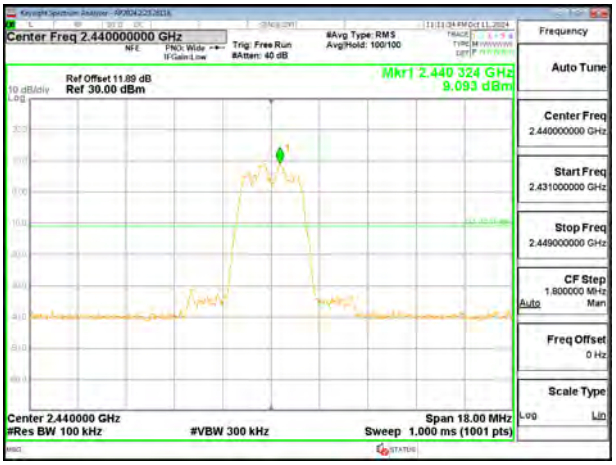
9.7.1. HIGH POWER HDR4 SISO MODE

ANT 4



LOW CHANNEL BANDEDGE

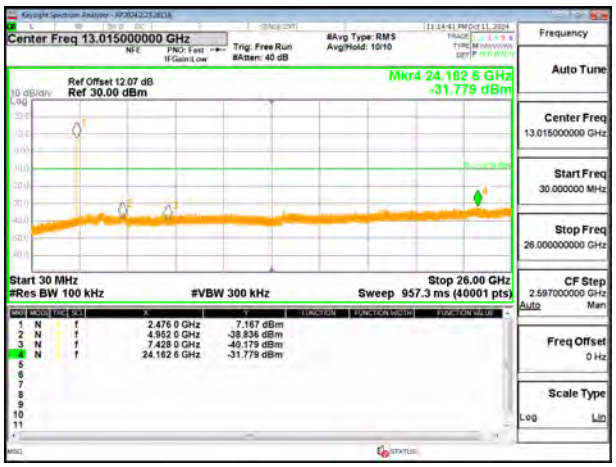
LOW CHANNEL OUT-OF-BAND



IN-BAND REFERENCE LEVEL

MID CHANNEL OUT-OF-BAND

HIGH CHANNEL BANDEDGE



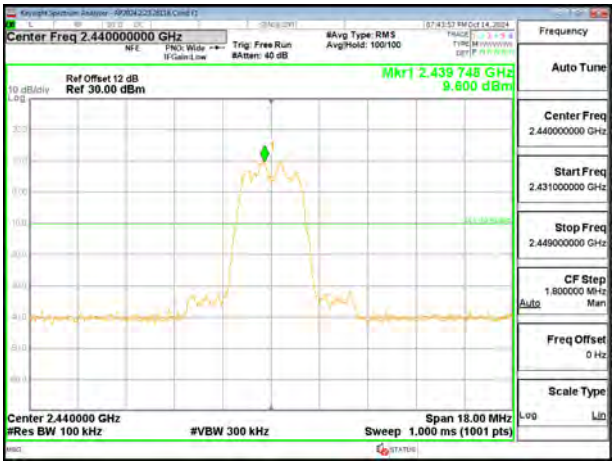
HIGH CHANNEL OUT-OF-BAND

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

ANT 3

LOW CHANNEL BANDEDGE

LOW CHANNEL OUT-OF-BAND



IN-BAND REFERENCE LEVEL

MID CHANNEL OUT-OF-BAND

HIGH CHANNEL BANDEDGE

HIGH CHANNEL OUT-OF-BAND

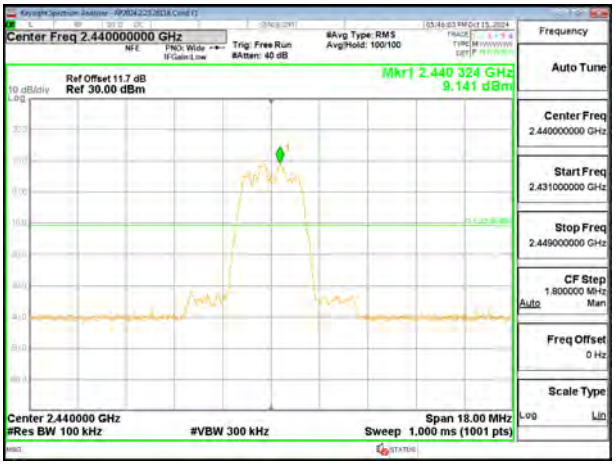
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

9.7.2. HIGH POWER HDR4 TXBF MODE

ANT 4

LOW CHANNEL BANDEDGE

LOW CHANNEL OUT-OF-BAND



IN-BAND REFERENCE LEVEL

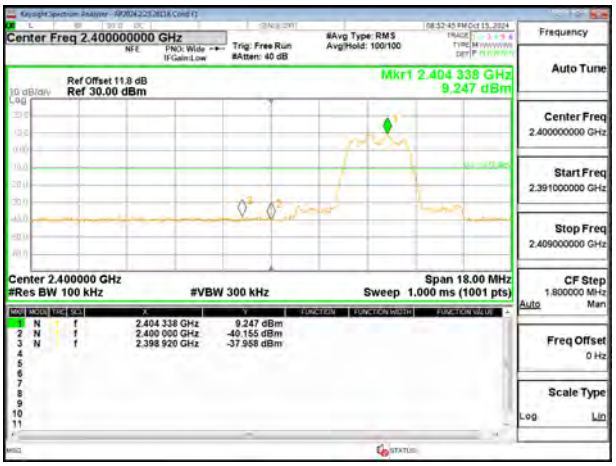
MID CHANNEL OUT-OF-BAND

HIGH CHANNEL BANDEDGE

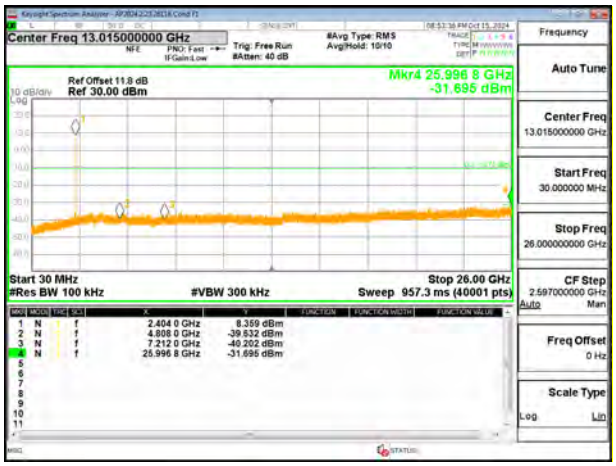
HIGH CHANNEL OUT-OF-BAND

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

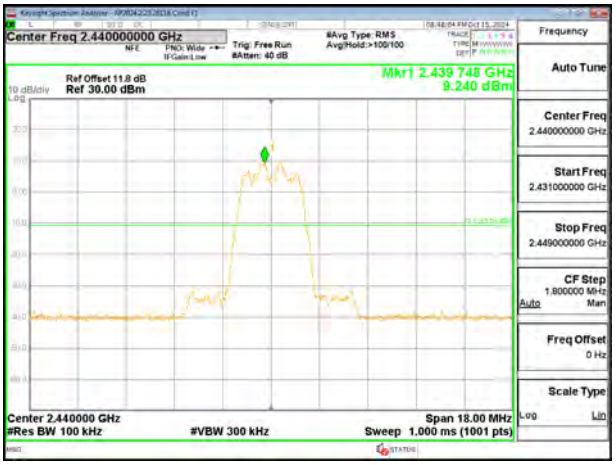
ANT 3



LOW CHANNEL BANDEDGE

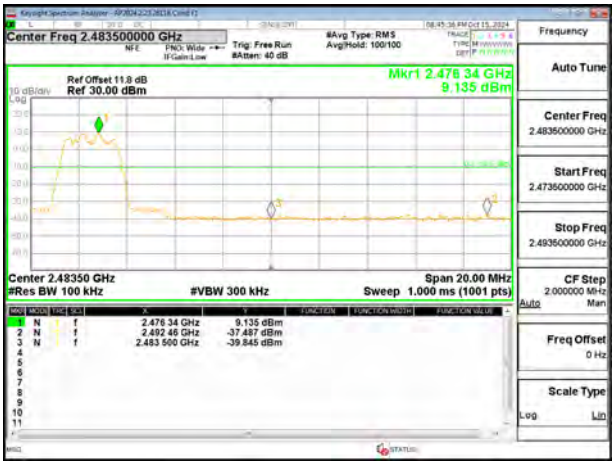


LOW CHANNEL OUT-OF-BAND



IN-BAND REFERENCE LEVEL

MID CHANNEL OUT-OF-BAND



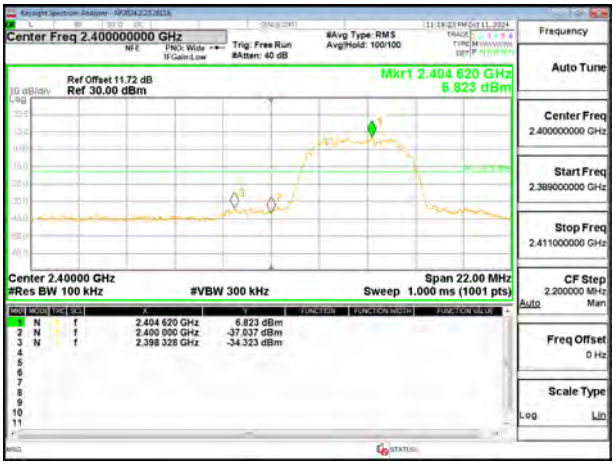
HIGH CHANNEL BANDEDGE

HIGH CHANNEL OUT-OF-BAND

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

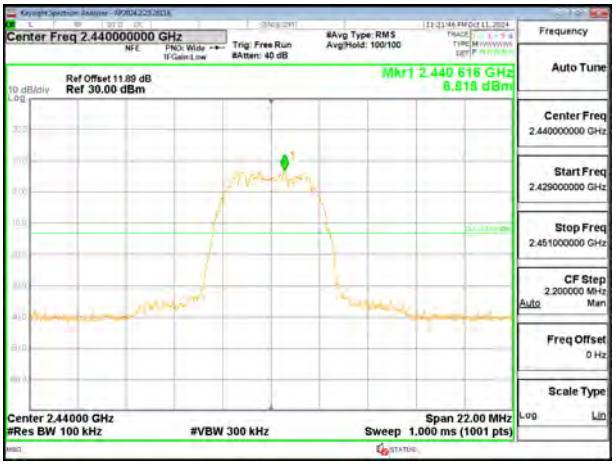
9.7.3. HIGH POWER HDR8 SISO MODE

ANT 4



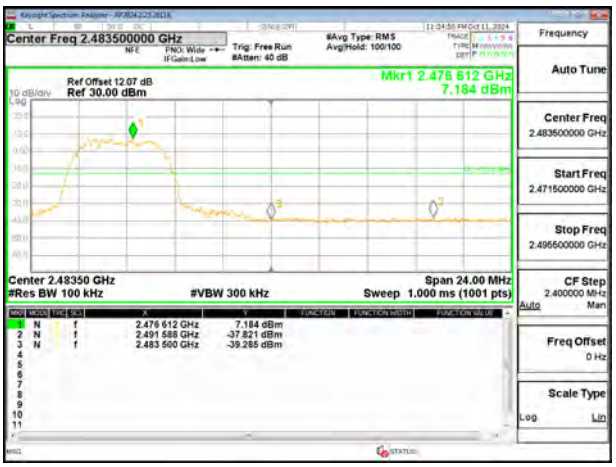
LOW CHANNEL BANDEDGE

LOW CHANNEL OUT-OF-BAND

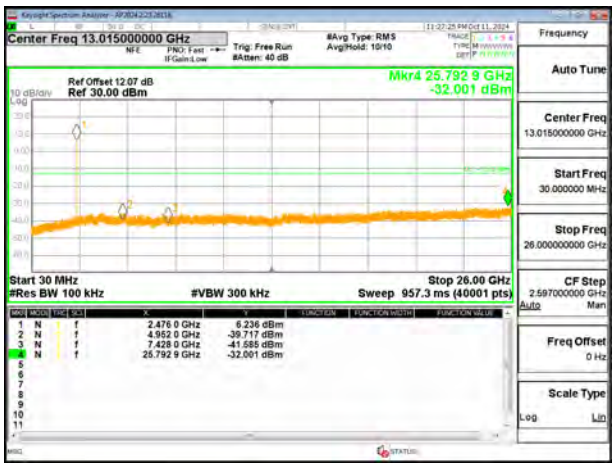


IN-BAND REFERENCE LEVEL

MID CHANNEL OUT-OF-BAND

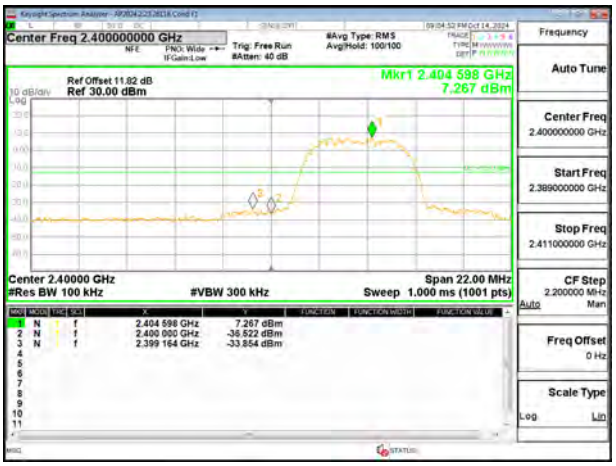


HIGH CHANNEL BANDEDGE



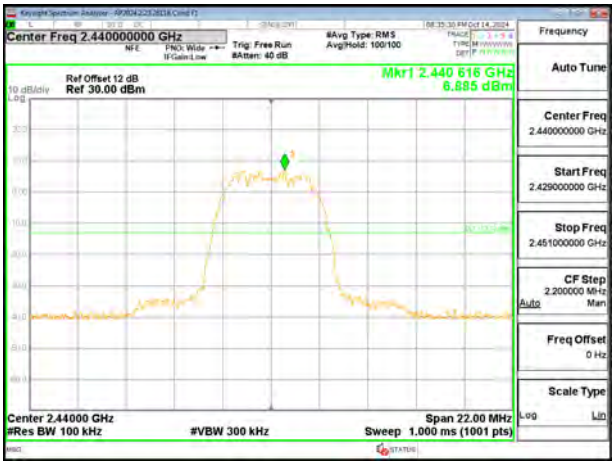
HIGH CHANNEL OUT-OF-BAND

ANT 3



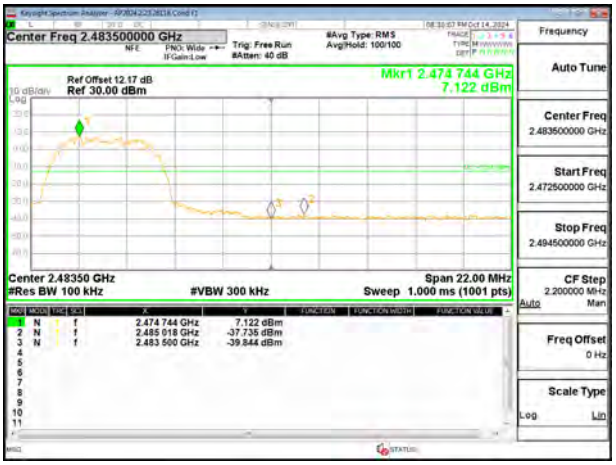
LOW CHANNEL BANDEDGE

LOW CHANNEL OUT-OF-BAND



IN-BAND REFERENCE LEVEL

MID CHANNEL OUT-OF-BAND

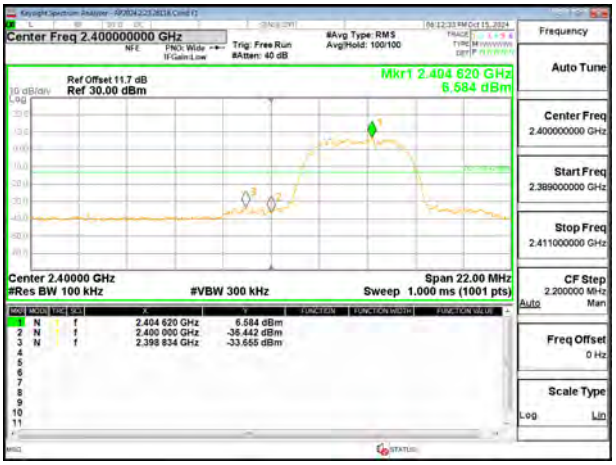


HIGH CHANNEL BANDEDGE

HIGH CHANNEL OUT-OF-BAND

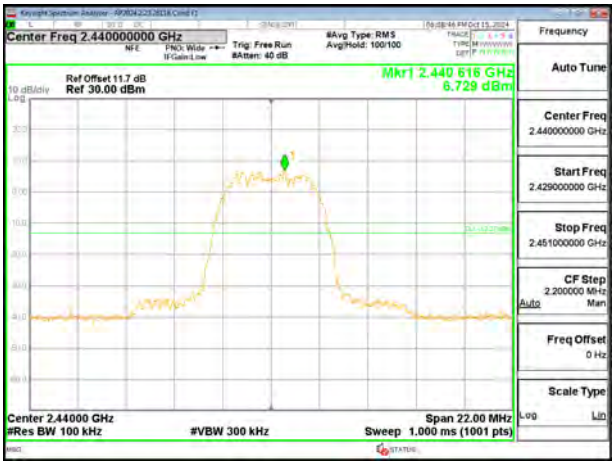
9.7.4. HIGH POWER HDR8 TXBF MODE

ANT 4



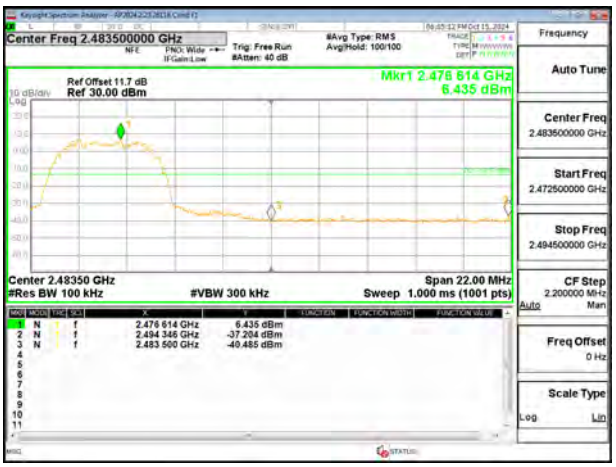
LOW CHANNEL BANDEDGE

LOW CHANNEL OUT-OF-BAND

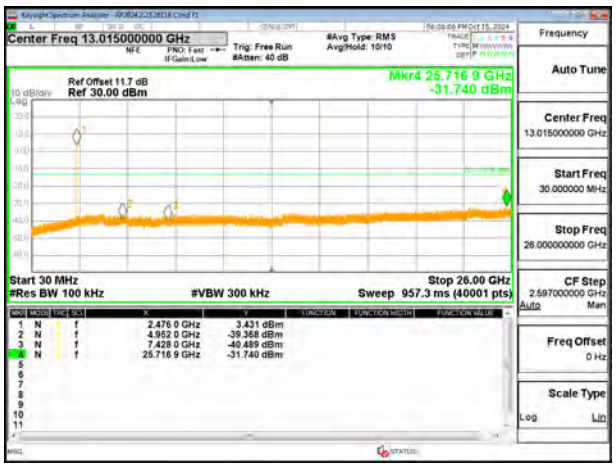


IN-BAND REFERENCE LEVEL

MID CHANNEL OUT-OF-BAND



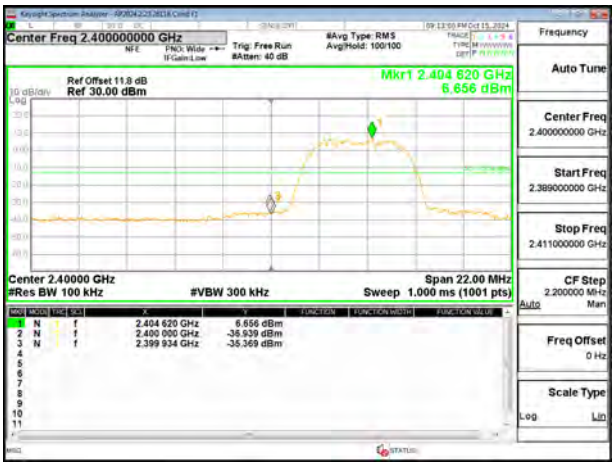
HIGH CHANNEL BANDEDGE



HIGH CHANNEL OUT-OF-BAND

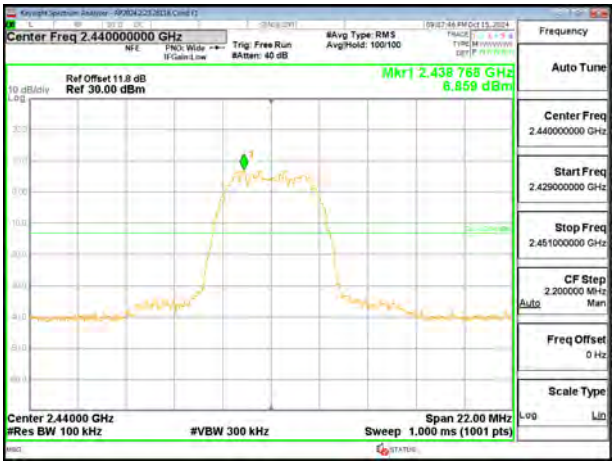
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

ANT 3

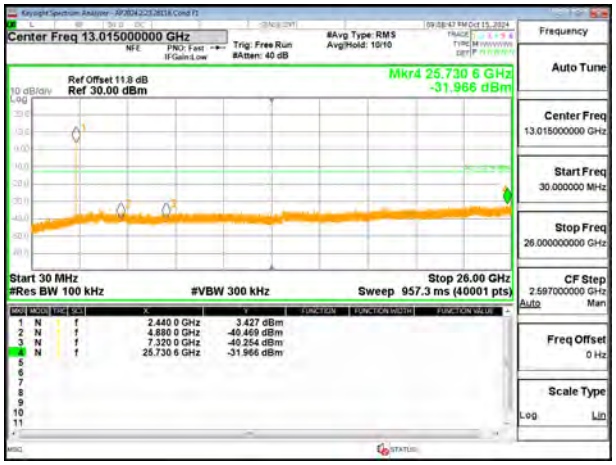


LOW CHANNEL BANDEDGE

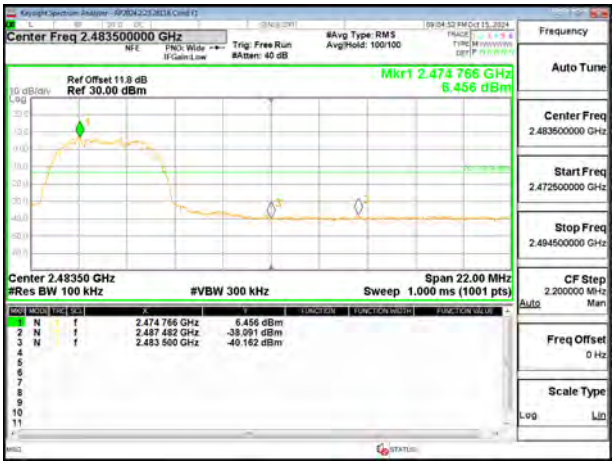
LOW CHANNEL OUT-OF-BAND



IN-BAND REFERENCE LEVEL



MID CHANNEL OUT-OF-BAND



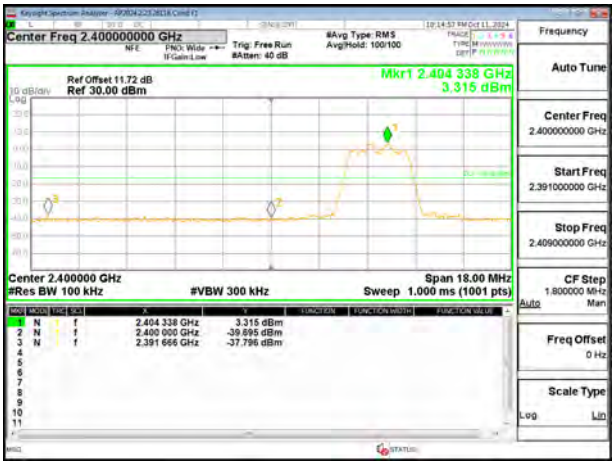
HIGH CHANNEL BANDEDGE

HIGH CHANNEL OUT-OF-BAND

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

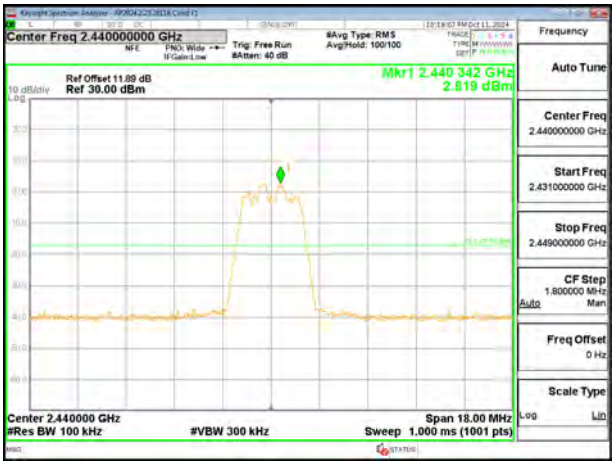
9.7.5. LOW POWER HDR4 SISO MODE

ANT 4



LOW CHANNEL BANDEDGE

LOW CHANNEL OUT-OF-BAND



IN-BAND REFERENCE LEVEL

MID CHANNEL OUT-OF-BAND

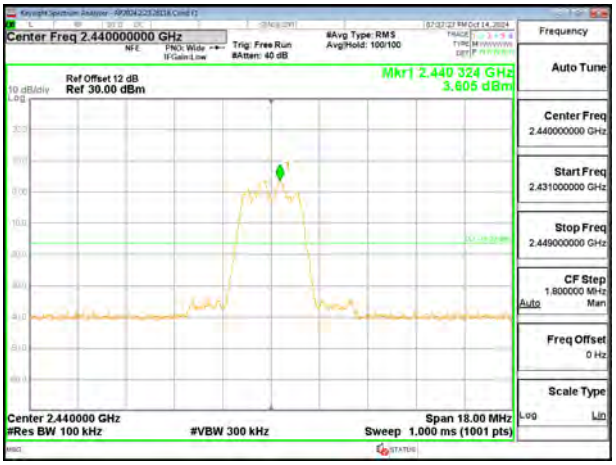
HIGH CHANNEL BANDEDGE

HIGH CHANNEL OUT-OF-BAND

ANT 3

LOW CHANNEL BANDEDGE

LOW CHANNEL OUT-OF-BAND



IN-BAND REFERENCE LEVEL

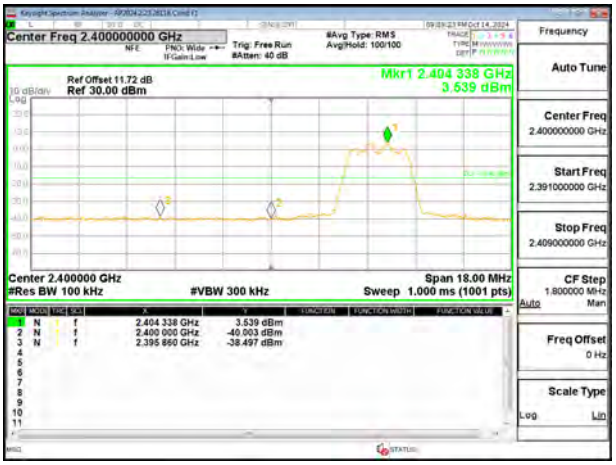
MID CHANNEL OUT-OF-BAND

HIGH CHANNEL BANDEDGE

HIGH CHANNEL OUT-OF-BAND

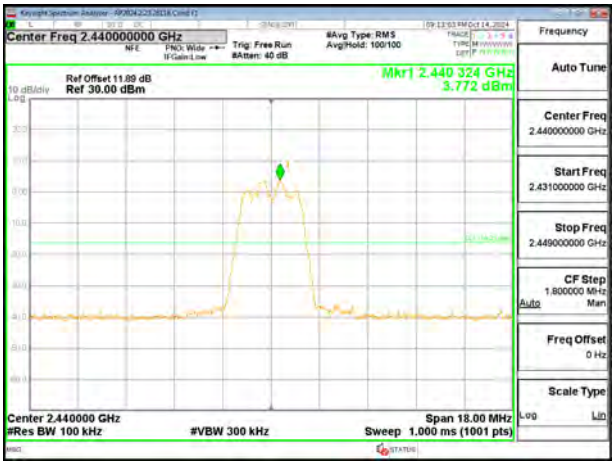
9.7.6. LOW POWER HDR4 TXBF MODE

ANT 4



LOW CHANNEL BANDEDGE

LOW CHANNEL OUT-OF-BAND



IN-BAND REFERENCE LEVEL

MID CHANNEL OUT-OF-BAND

HIGH CHANNEL BANDEDGE

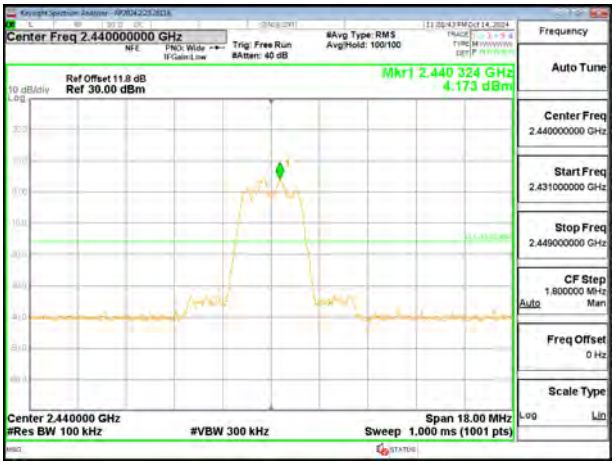
HIGH CHANNEL OUT-OF-BAND

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

ANT 3

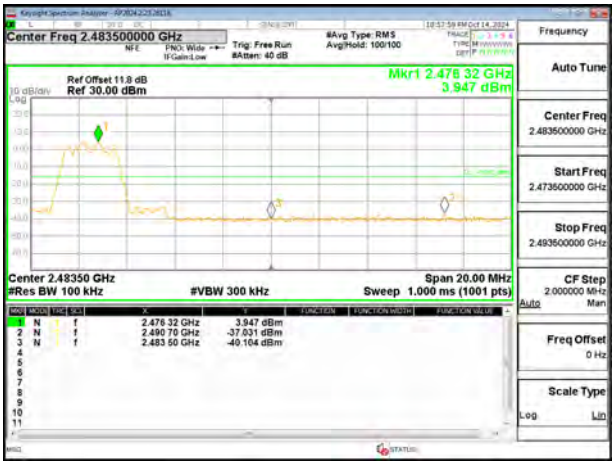
LOW CHANNEL BANDEDGE

LOW CHANNEL OUT-OF-BAND



IN-BAND REFERENCE LEVEL

MID CHANNEL OUT-OF-BAND



HIGH CHANNEL BANDEDGE

HIGH CHANNEL OUT-OF-BAND

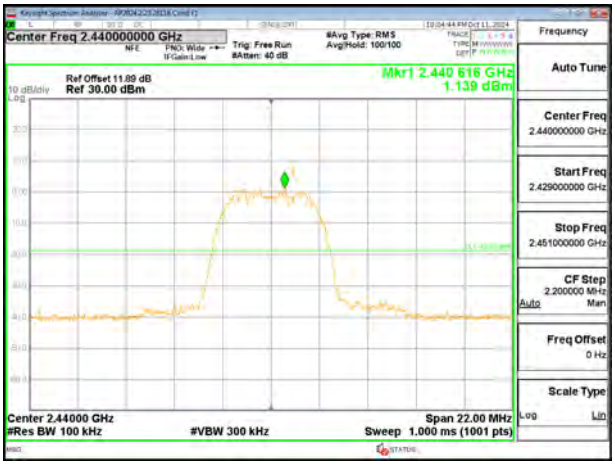
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

9.7.7. LOW POWER HDR8 SISO MODE

ANT 4

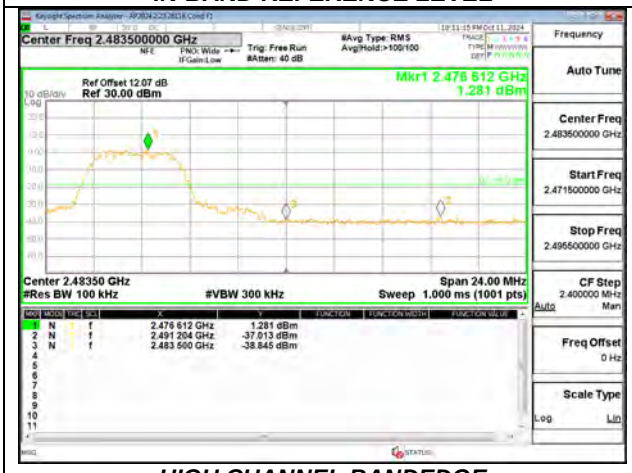
LOW CHANNEL BANDEDGE

LOW CHANNEL OUT-OF-BAND



IN-BAND REFERENCE LEVEL

MID CHANNEL OUT-OF-BAND



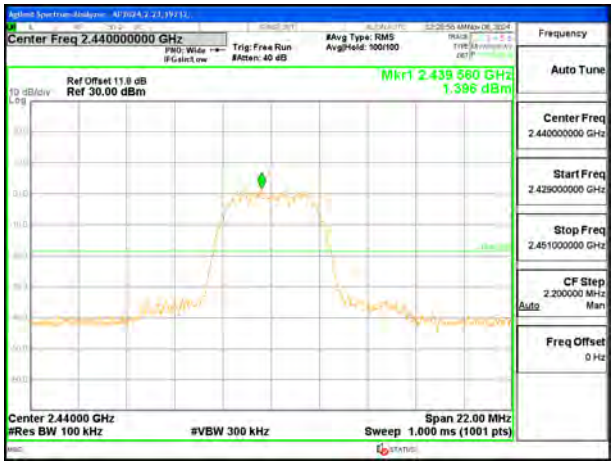
HIGH CHANNEL BANDEDGE

HIGH CHANNEL OUT-OF-BAND

ANT 3

LOW CHANNEL BANDEDGE

LOW CHANNEL OUT-OF-BAND



IN-BAND REFERENCE LEVEL

MID CHANNEL OUT-OF-BAND

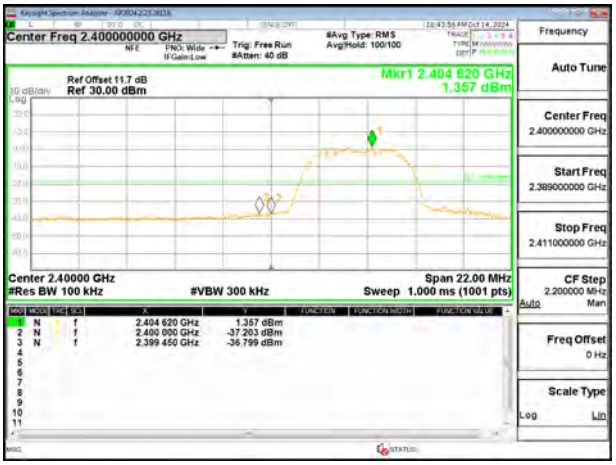
HIGH CHANNEL BANDEDGE

HIGH CHANNEL OUT-OF-BAND

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

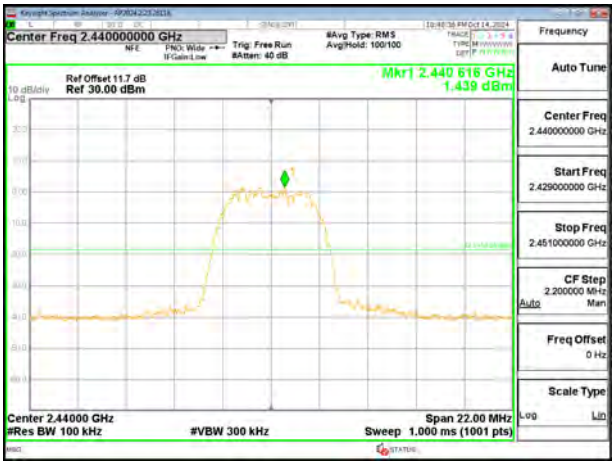
9.7.8. LOW POWER HDR8 TXBF MODE

ANT 4



LOW CHANNEL BANDEDGE

LOW CHANNEL OUT-OF-BAND



IN-BAND REFERENCE LEVEL

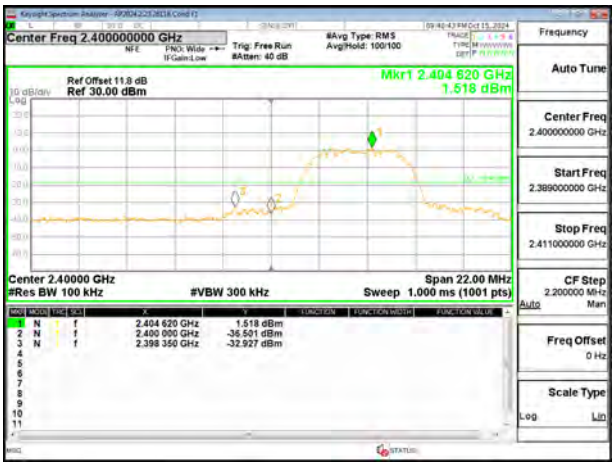
MID CHANNEL OUT-OF-BAND

HIGH CHANNEL BANDEDGE

HIGH CHANNEL OUT-OF-BAND

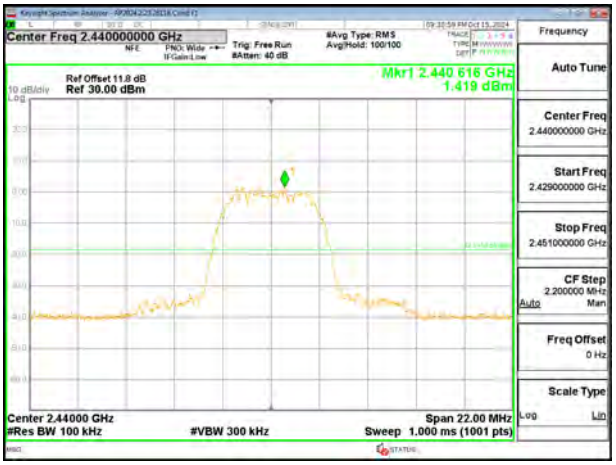
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

ANT 3



LOW CHANNEL BANDEDGE

LOW CHANNEL OUT-OF-BAND



IN-BAND REFERENCE LEVEL

MID CHANNEL OUT-OF-BAND

HIGH CHANNEL BANDEDGE

HIGH CHANNEL OUT-OF-BAND

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

10. RADIATED TEST RESULTS

10.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209
RSS-GEN, Section 8.9 and 8.10.

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

TEST PROCEDURE

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

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

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

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

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

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

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

For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel), parallel and perpendicular are the worst orientations, therefore testing was performed on these two orientations only. Blue color trace on plots: Parallel orientation. Green color trace on plots: Perpendicular orientation.

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

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

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.

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

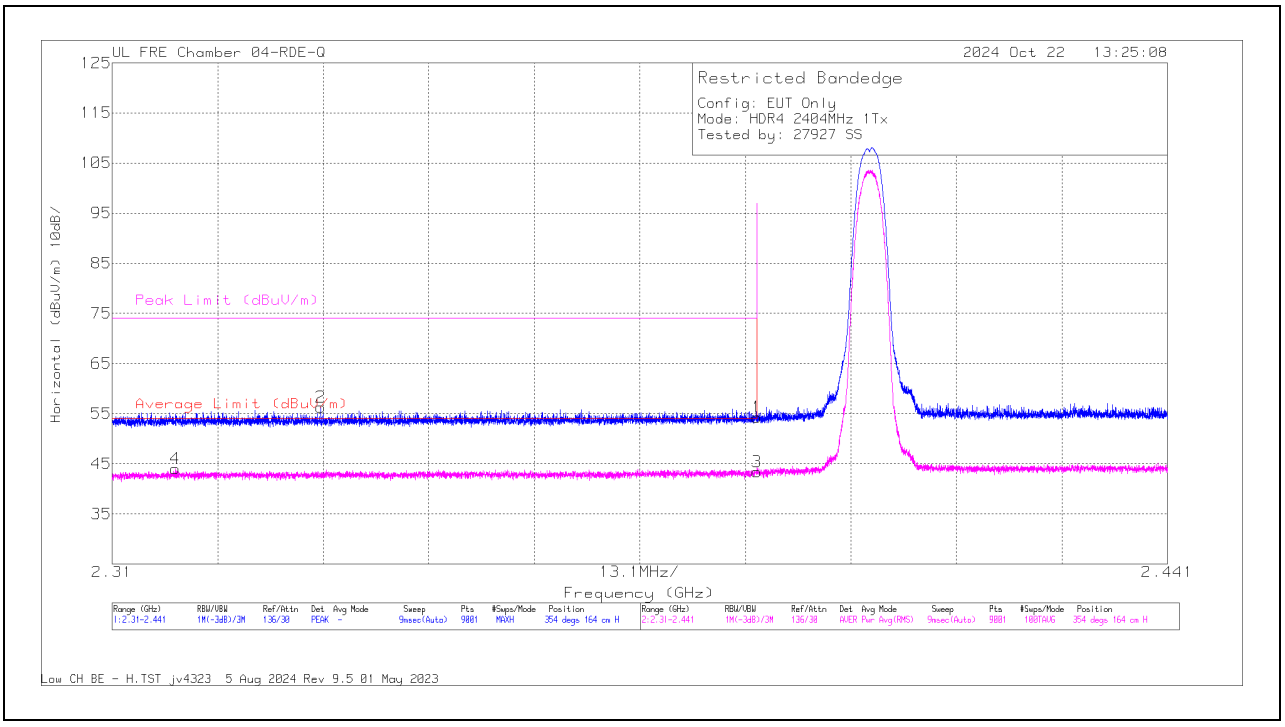
10.2. TRANSMITTER ABOVE 1 GHz

10.2.1. HIGH POWER HDR (HDR4)

ANT 4

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT

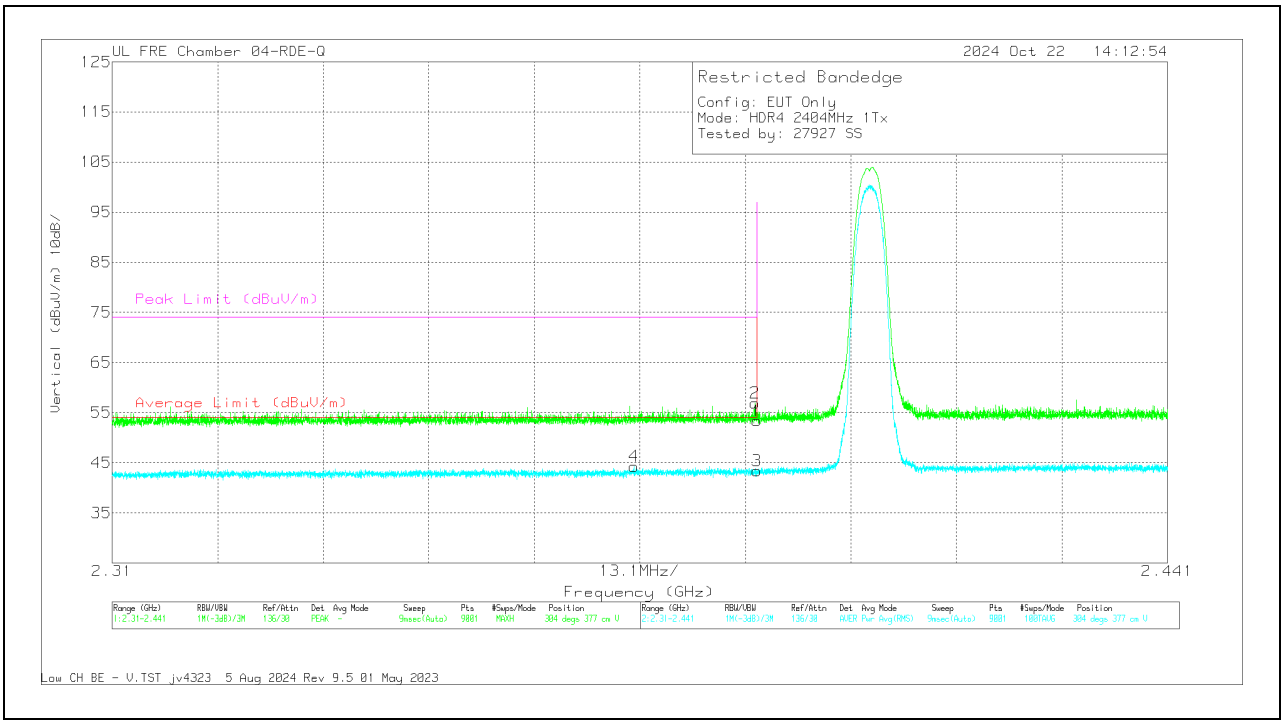


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 2.31786	50.65	RMS	31.8	0	-38.48	43.97	54	-10.03	-	-	354	164	H
2	* 2.33588	62.94	Pk	31.8	0	-38.47	56.27	-	-	74	-17.73	354	164	H
1	* 2.39	60.69	Pk	31.9	0	-38.27	54.32	-	-	74	-19.68	354	164	H
3	* 2.39	49.77	RMS	31.9	0	-38.27	43.4	54	-10.6	-	-	354	164	H

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

VERTICAL RESULT



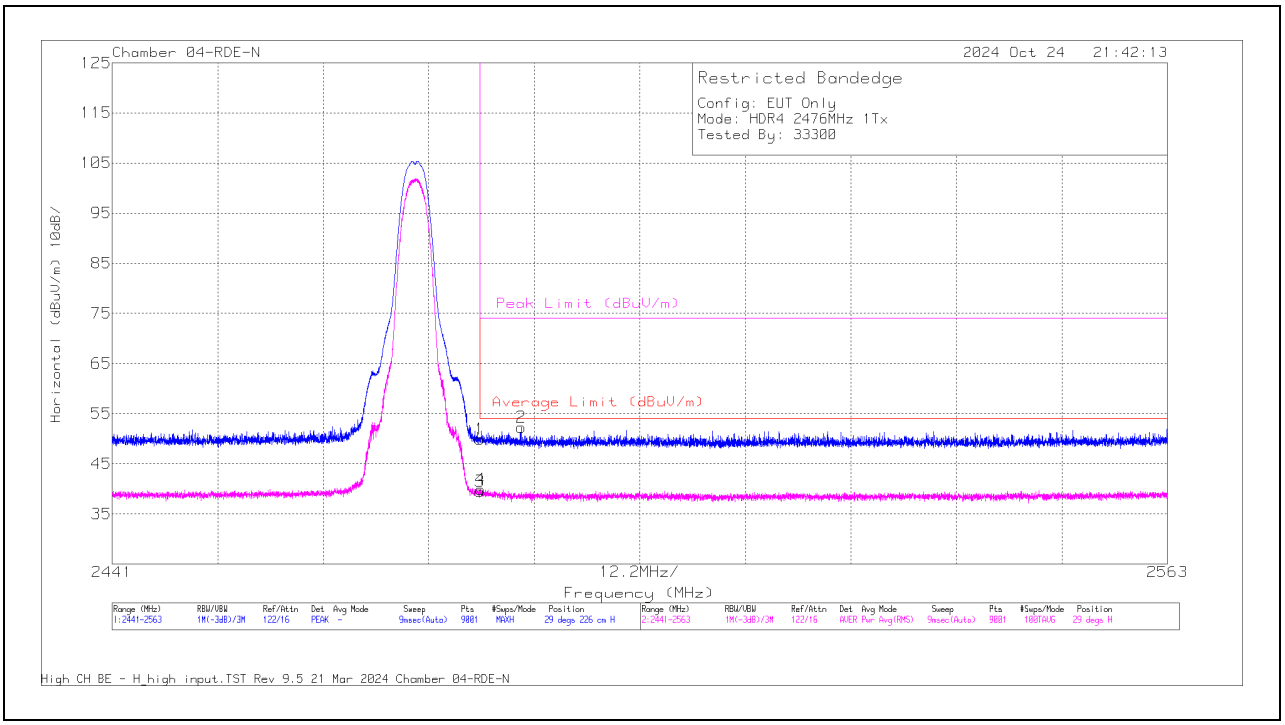
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 2.37478	50.67	RMS	31.9	0	-38.35	44.22	54	-9.78	-	-	304	377	V
2	* 2.38976	63.25	Pk	31.9	0	-38.28	56.87	-	-	74	-17.13	304	377	V
1	* 2.39	59.72	Pk	31.9	0	-38.27	53.35	-	-	74	-20.65	304	377	V
3	* 2.39	49.72	RMS	31.9	0	-38.27	43.35	54	-10.65	-	-	304	377	V

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT

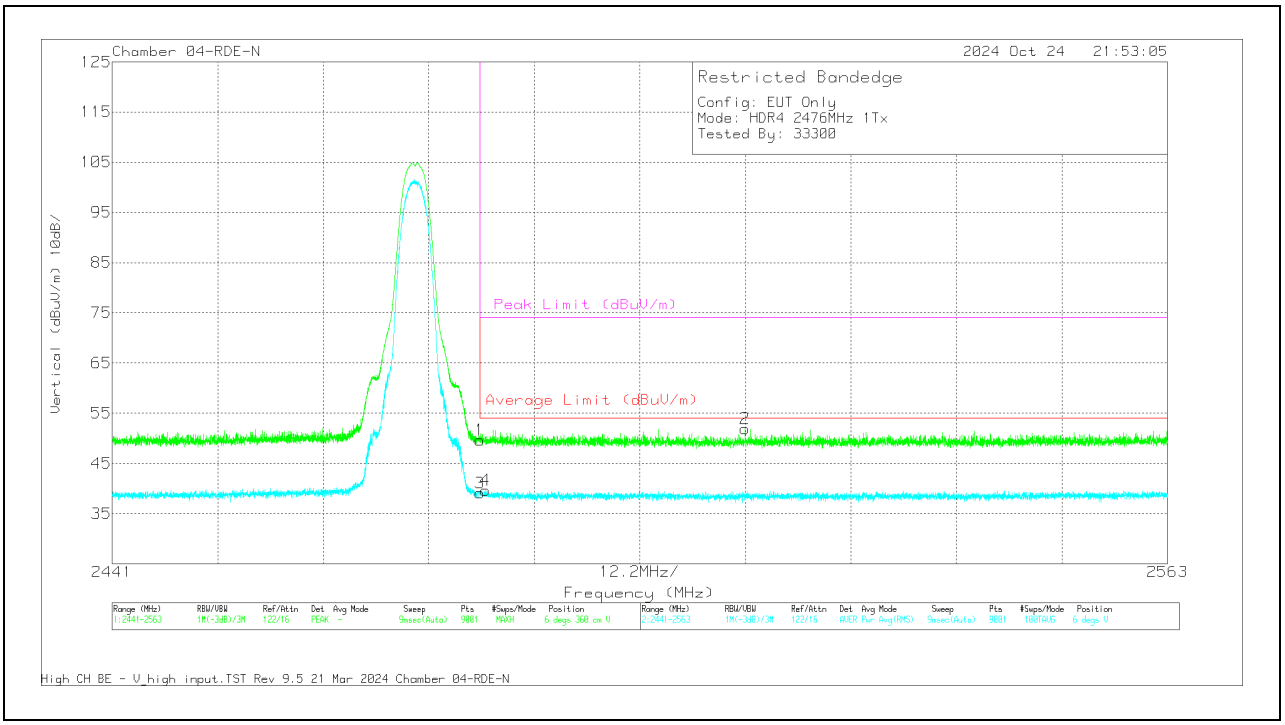


Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	223083 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2483.5	44.74	Pk	32.2	0	-27	49.94	-	-	74	-24.06	29	226	H
3	* 2483.5	34.36	RMS	32.2	0	-27	39.56	54	-14.44	-	-	29	226	H
4	* 2483.593	34.73	RMS	32.4	0	-27	39.93	54	-14.07	-	-	29	226	H
2	* 2488.27	46.96	Pk	32.4	0	-26.91	52.25	-	-	74	-21.75	29	226	H

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

VERTICAL RESULT



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	79834 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2483.5	44.47	Pk	32.2	0	-27	49.67	-	-	74	-24.33	6	360	V
3	* 2483.5	33.88	RMS	32.2	0	-27	39.08	54	-14.92	-	-	6	360	V
4	* 2484.149	34.46	RMS	32.2	0	-26.99	39.67	54	-14.33	-	-	6	360	V
2	2514.189	46.67	Pk	32.2	0	-26.95	51.92	-	-	74	-22.08	6	360	V

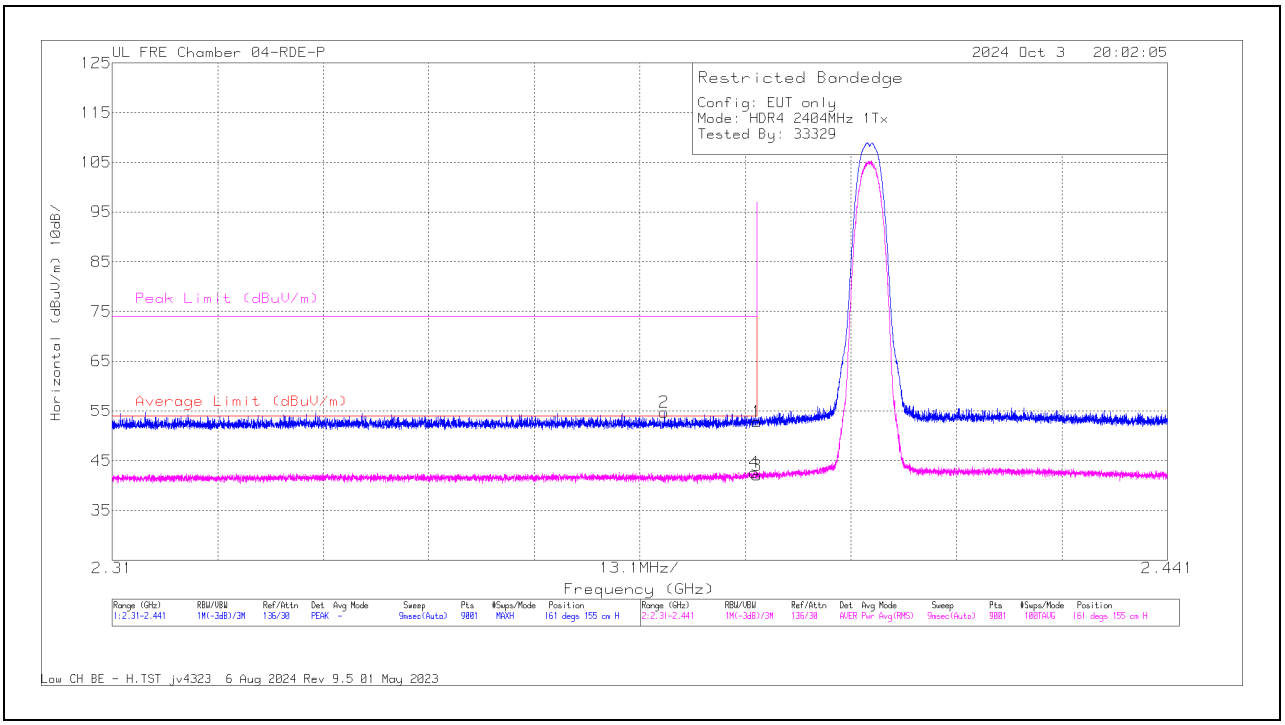
* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

ANT 3

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT

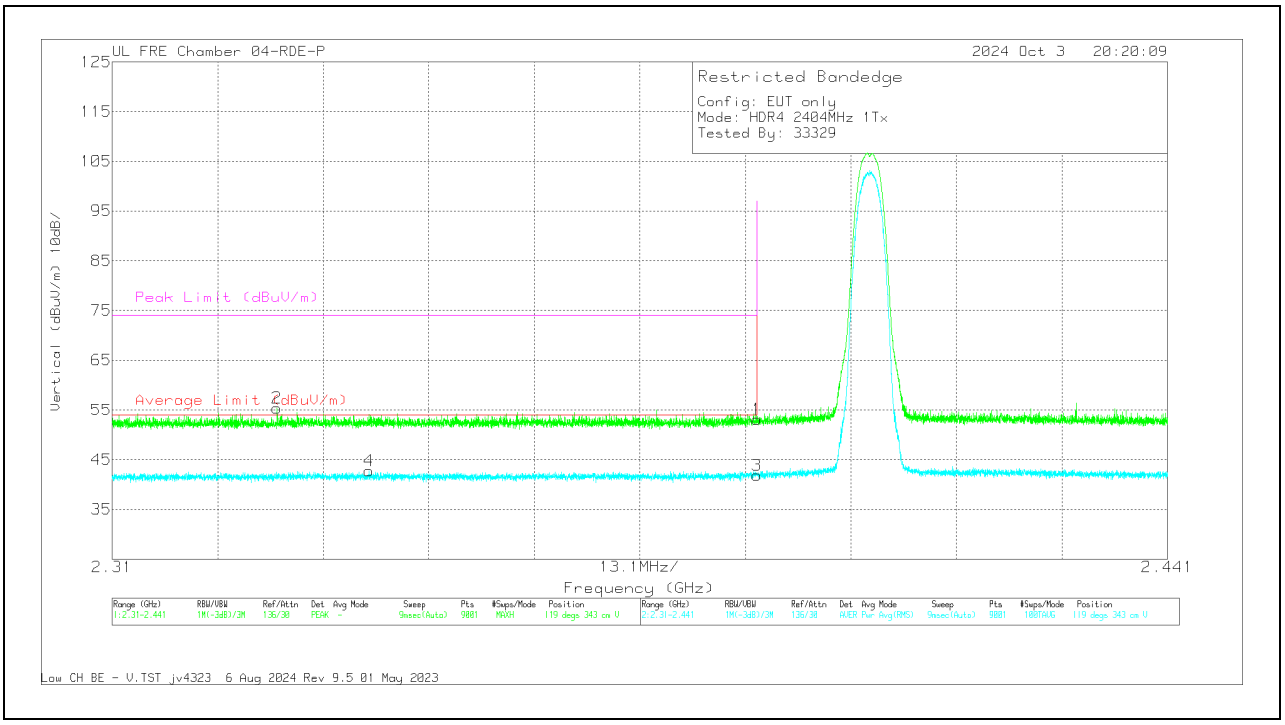


Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	200897 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.378515	63.55	Pk	32	0	-40.79	54.76	-	-	74	-19.24	161	155	H
4	* 2.389694	51.41	RMS	32	0	-40.75	42.66	54	-11.34	-	-	161	155	H
1	* 2.39	61.59	Pk	32	0	-40.75	52.84	-	-	74	-21.16	161	155	H
3	* 2.39	50.81	RMS	32	0	-40.75	42.06	54	-11.94	-	-	161	155	H

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

VERTICAL RESULT



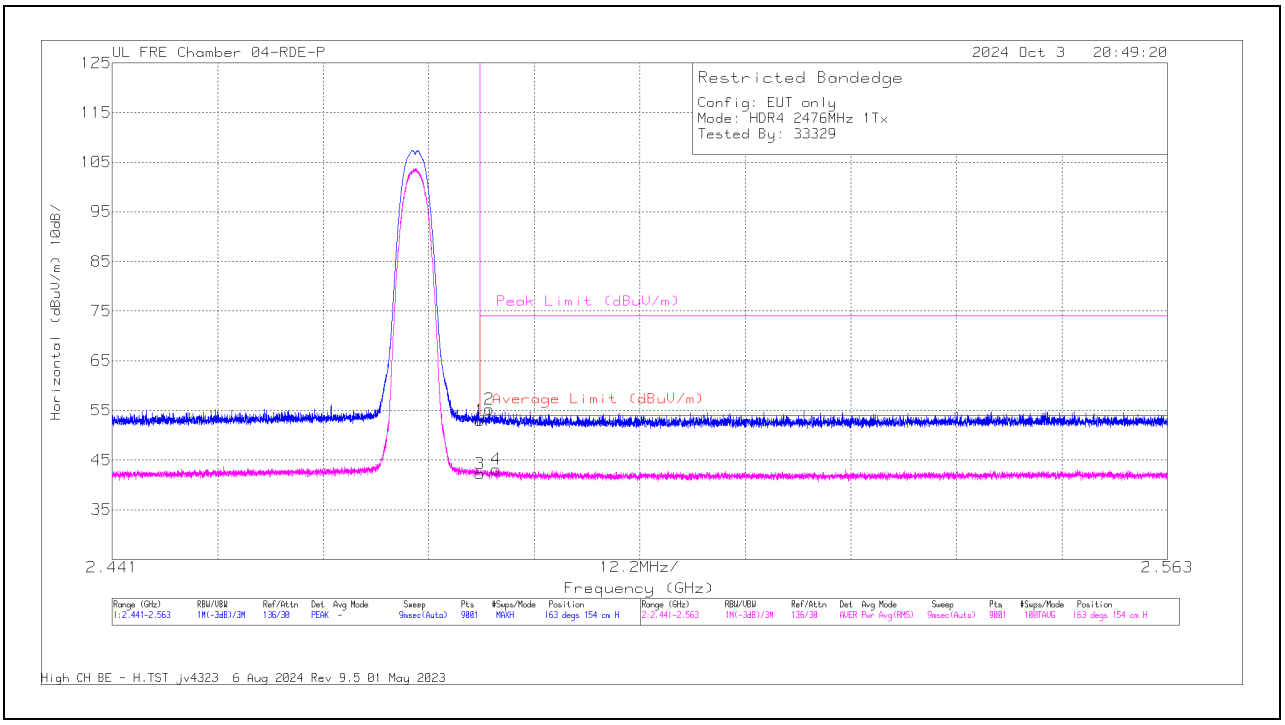
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	200897 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.330466	64.35	Pk	31.8	0	-40.79	55.36	-	-	74	-18.64	119	343	V
4	* 2.341863	51.68	RMS	31.9	0	-40.77	42.81	54	-11.19	-	-	119	343	V
1	* 2.39	61.84	Pk	32	0	-40.75	53.09	-	-	74	-20.91	119	343	V
3	* 2.39	50.58	RMS	32	0	-40.75	41.83	54	-12.17	-	-	119	343	V

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

BANDEDGE (HIGH CHANNEL)

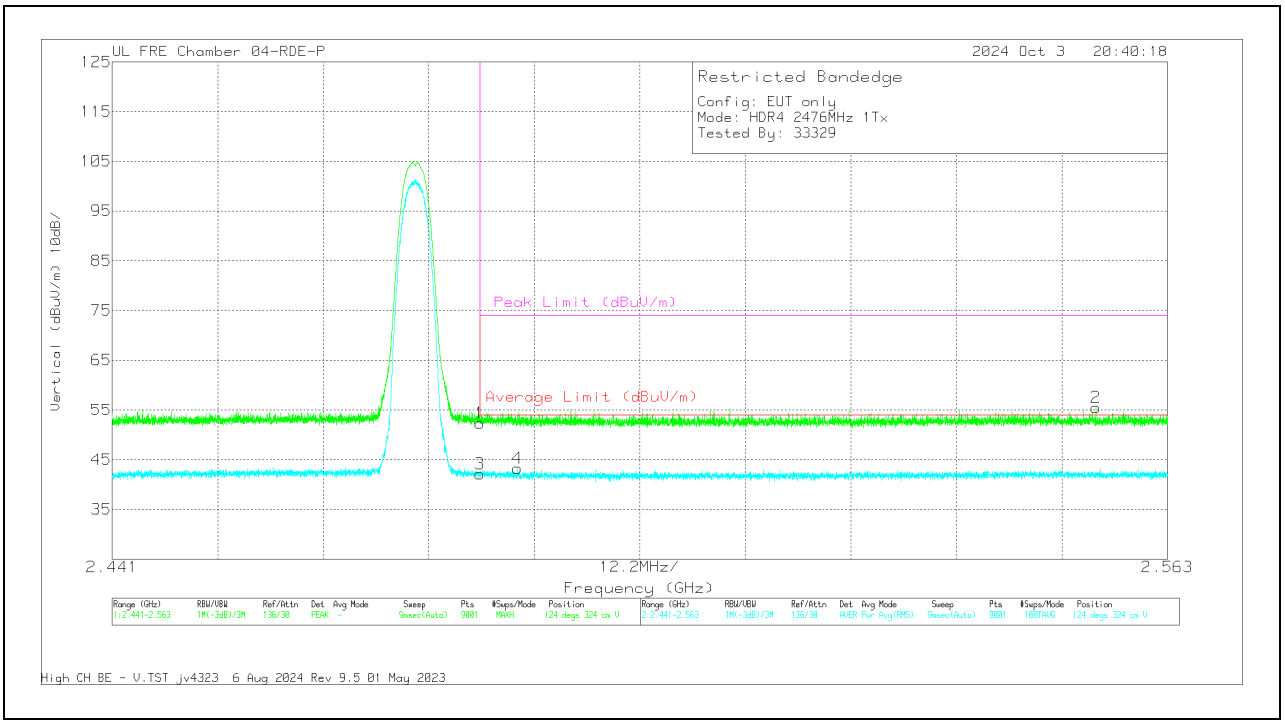
HORIZONTAL RESULT



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	200897 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	61.66	Pk	32.2	0	-40.83	53.03	-	-	74	-20.97	163	154	H
3	* 2.4835	50.91	RMS	32.2	0	-40.83	42.28	54	-11.72	-	-	163	154	H
2	* 2.484596	63.86	Pk	32.2	0	-40.82	55.24	-	-	74	-18.76	163	154	H
4	* 2.485423	51.81	RMS	32.2	0	-40.82	43.19	54	-10.81	-	-	163	154	H

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	200897 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	60.98	Pk	32.2	0	-40.83	52.35	-	-	74	-21.65	124	324	V
3	* 2.4835	50.76	RMS	32.2	0	-40.83	42.13	54	-11.87	-	-	124	324	V
4	* 2.48789	51.87	RMS	32.2	0	-40.83	43.24	54	-10.76	-	-	124	324	V
2	* 2.554708	63.93	Pk	32.2	0	-40.65	55.48	-	-	74	-18.52	124	324	V

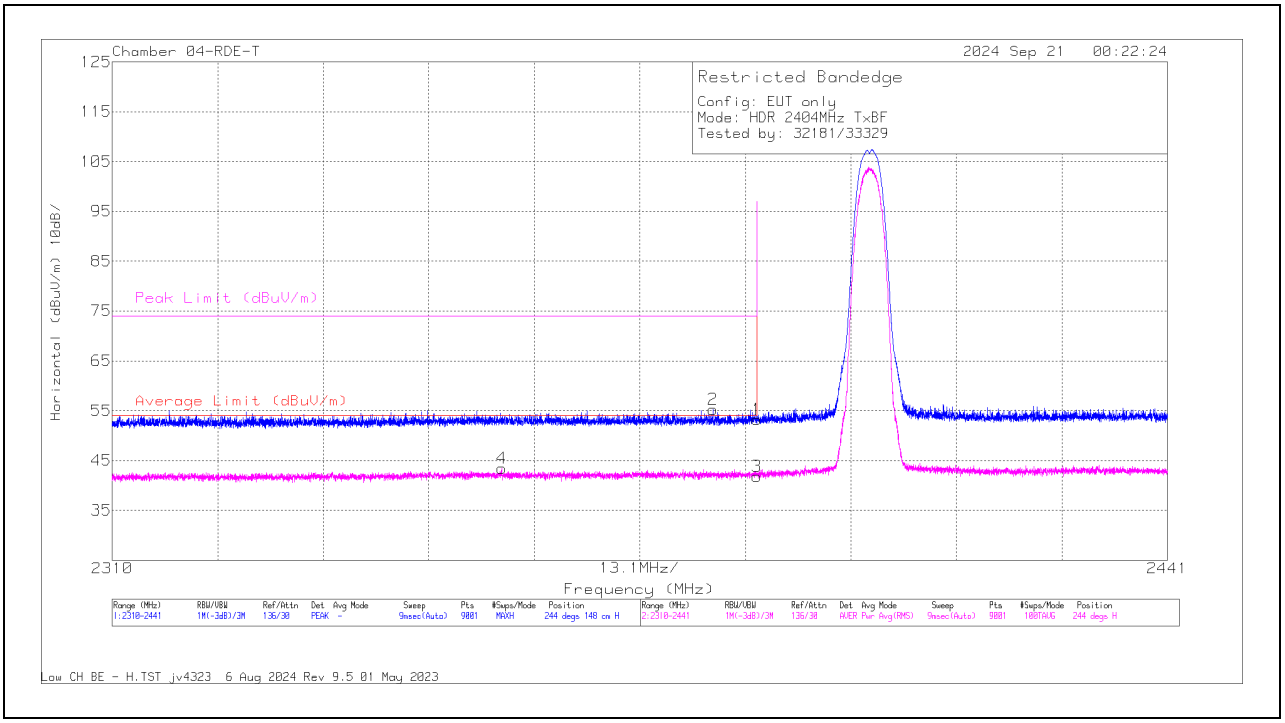
* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

10.2.2. HIGH POWER HDR TXBF (HDR4)

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT

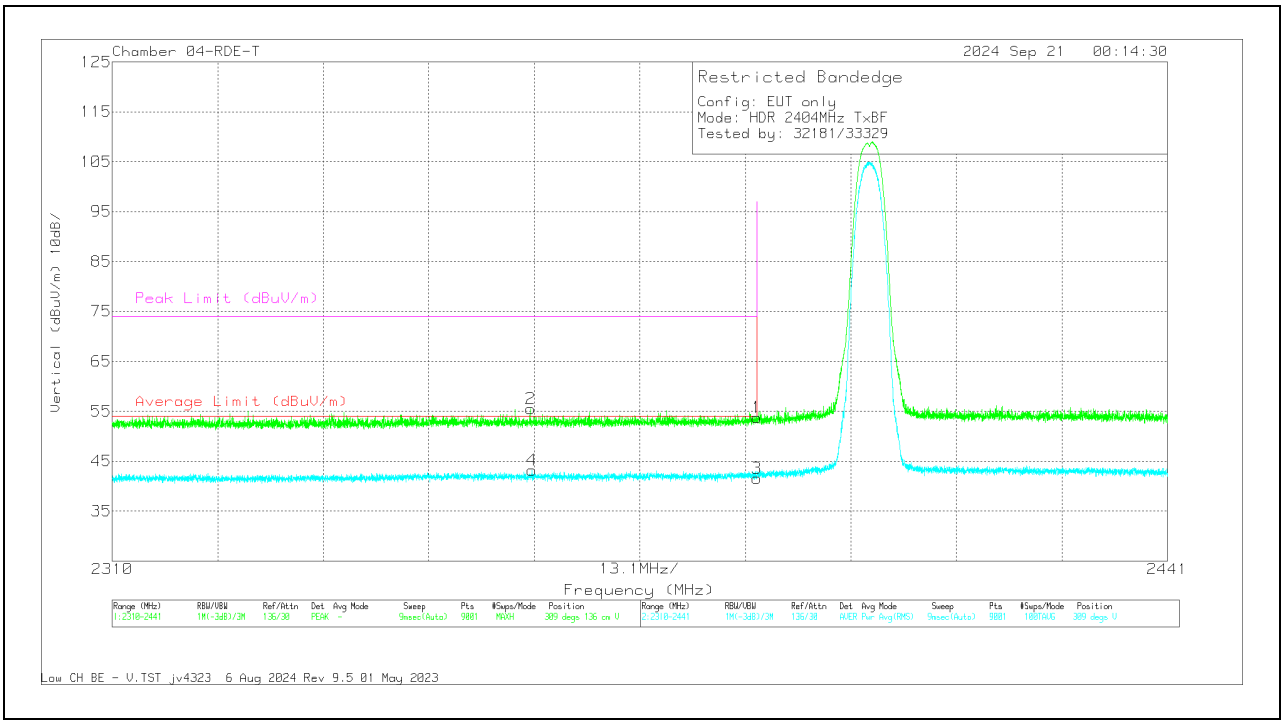


Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	79834 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2390	60.32	Pk	32	0	-39.05	53.27	-	-	74	-20.73	244	148	H
2	* 2384.58	62.23	Pk	32	0	-39.01	55.22	-	-	74	-18.78	244	148	H
3	* 2390	48.85	RMS	32	0	-39.05	41.8	54	-12.2	-	-	244	148	H
4	* 2358.35	50.66	RMS	31.8	0	-39.05	43.41	54	-10.59	-	-	244	148	H

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

VERTICAL RESULT



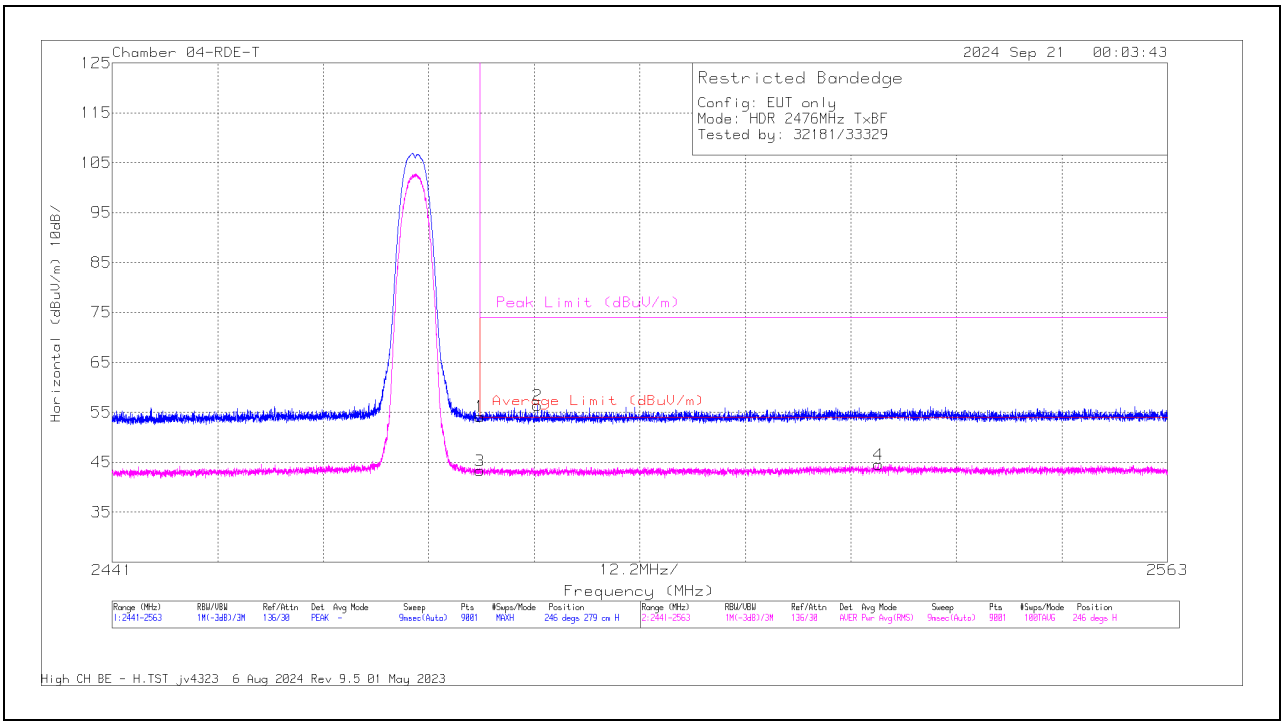
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	79834 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2390	60.85	Pk	32	0	-39.05	53.8	-	-	74	-20.2	309	136	V
2	* 2361.93	62.74	Pk	31.9	0	-39.17	55.47	-	-	74	-18.53	309	136	V
3	* 2390	48.59	RMS	32	0	-39.05	41.54	54	-12.46	-	-	309	136	V
4	* 2362.14	50.49	RMS	31.9	0	-39.17	43.22	54	-10.78	-	-	309	136	V

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT

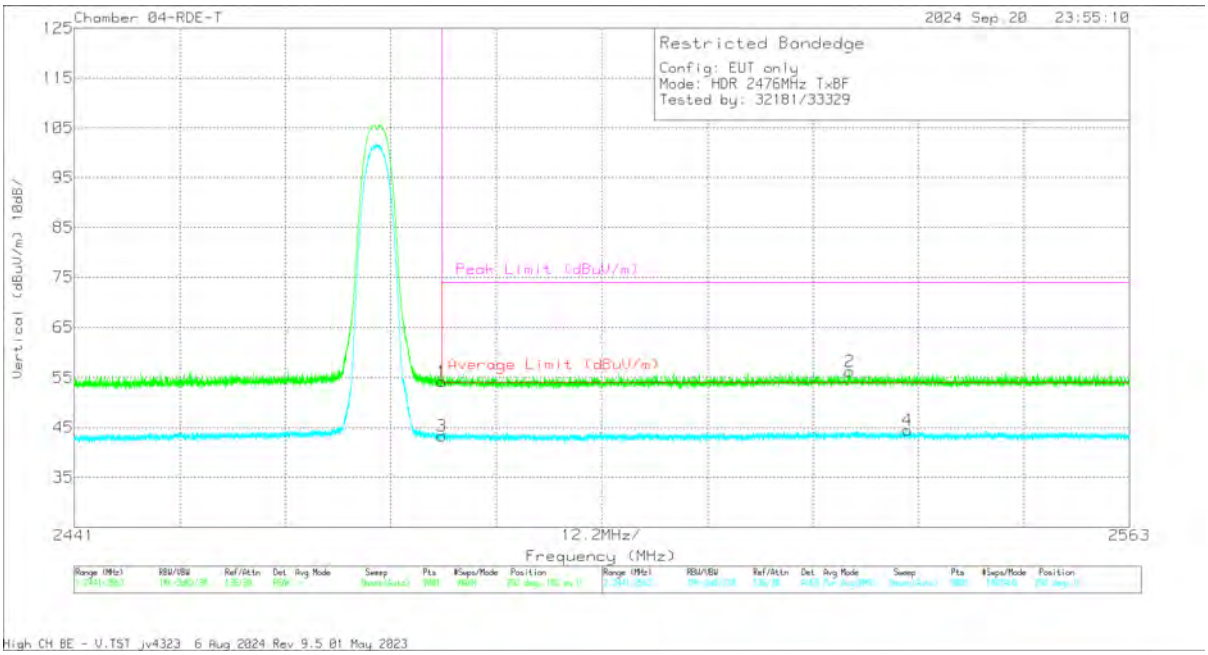


Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	79834 ACF (dmB/)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2483.5	60.81	Pk	32.2	0	-38.87	54.14	-	-	74	-19.86	246	279	H
2	* 2490.18	62.79	Pk	32.3	0	-38.75	56.34	-	-	74	-17.66	246	279	H
3	* 2483.5	49.94	RMS	32.2	0	-38.87	43.27	54	-10.73	-	-	246	279	H
4	2529.616	50.57	RMS	32.4	0	-38.45	44.52	54	-9.48	-	-	246	279	H

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

VERTICAL RESULT



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	79834 ACF (mB/)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2483.5	60.9	Pk	32.2	0	-38.87	54.23	-	-	74	-19.77	292	102	V
3	* 2483.5	50.05	RMS	32.2	0	-38.87	43.38	54	-10.62	-	-	292	102	V
2	2530.687	62.24	Pk	32.4	0	-38.37	56.27	-	-	74	-17.73	292	102	V
4	2537.342	50.57	RMS	32.4	0	-38.49	44.48	54	-9.52	-	-	292	102	V

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

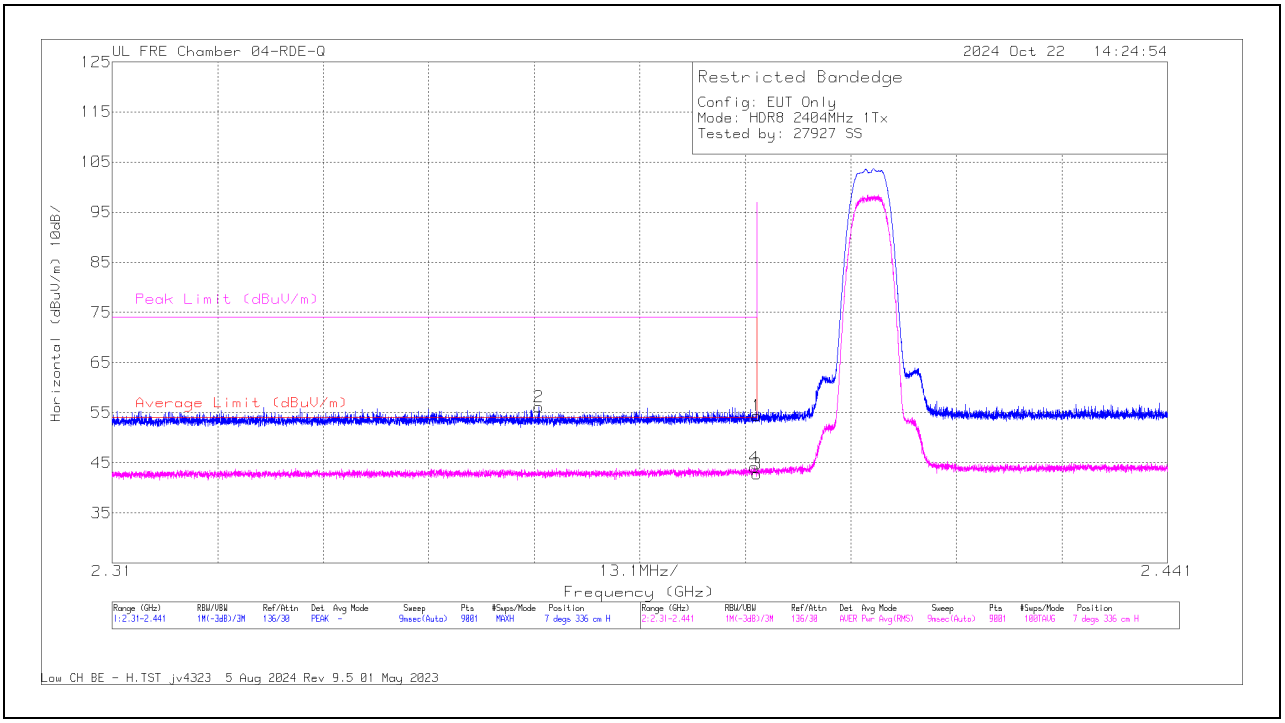
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

10.2.3. HIGH POWER HDR (HDR8)

ANT 4

BANDEDGE (LOW CHANNEL)

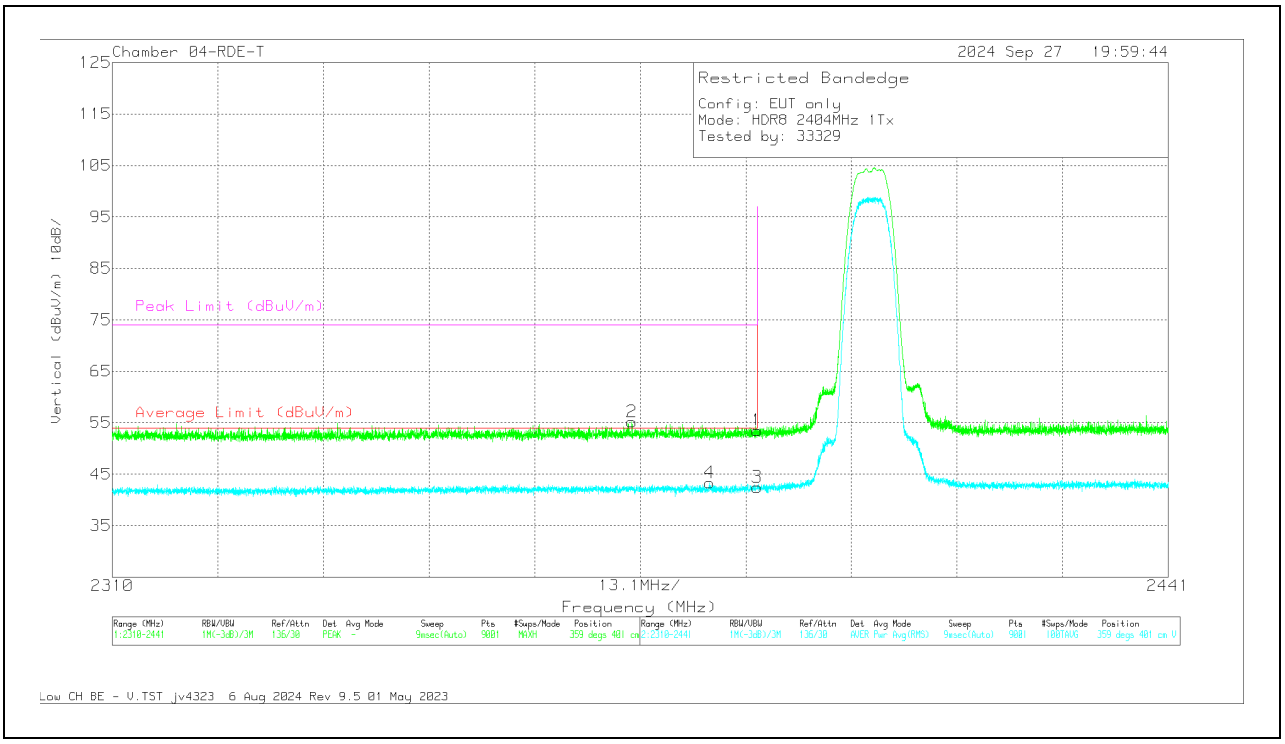
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.362998	62.73	Pk	31.8	0	-38.37	56.16	-	-	74	-17.84	7	336	H
4	* 2.389694	50.46	RMS	31.9	0	-38.28	44.08	54	-9.92	-	-	7	336	H
1	* 2.39	60.8	Pk	31.9	0	-38.27	54.43	-	-	74	-19.57	7	336	H
3	* 2.39	49.16	RMS	31.9	0	-38.27	42.79	54	-11.21	-	-	7	336	H

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT



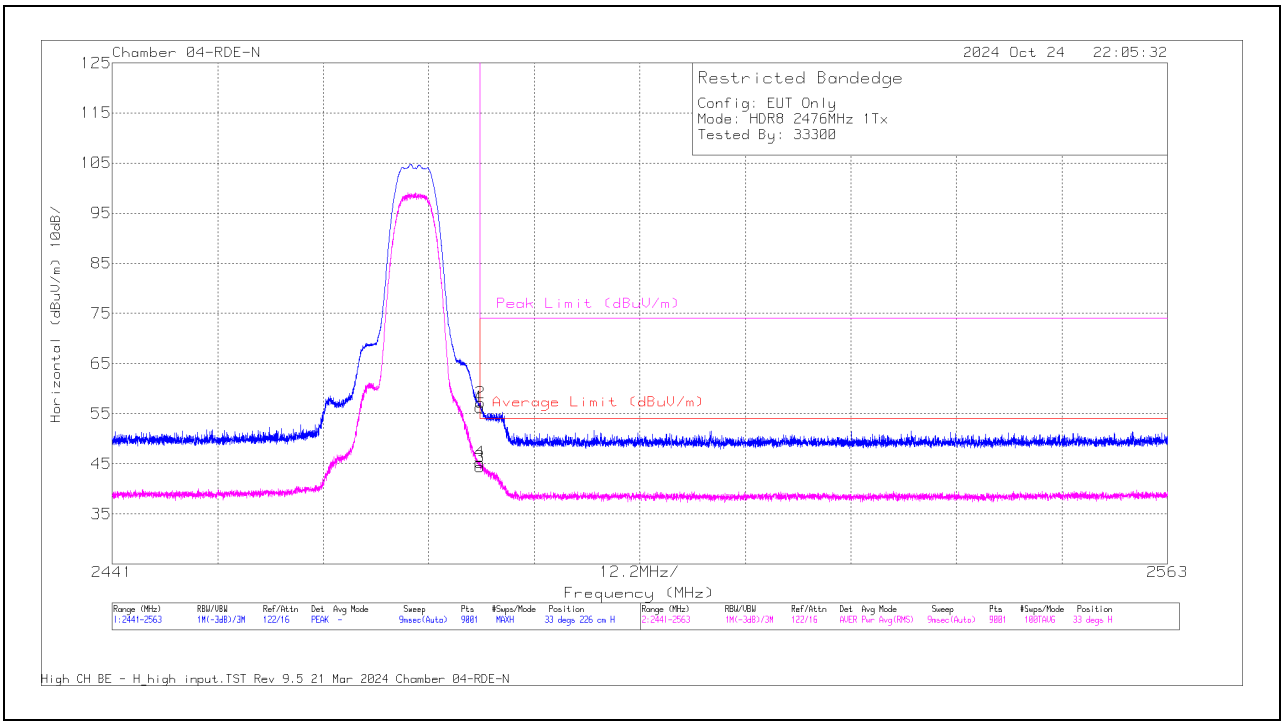
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	79834 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2390	60.57	Pk	32	0	-39.05	53.52	-	-	74	-20.48	359	401	V
2	* 2374.46	62.26	Pk	31.9	0	-38.98	55.18	-	-	74	-18.82	359	401	V
3	* 2390	49.53	RMS	32	0	-39.05	42.48	54	-11.52	-	-	359	401	V
4	* 2384.13	50.35	RMS	32	0	-39	43.35	54	-10.65	-	-	359	401	V

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT

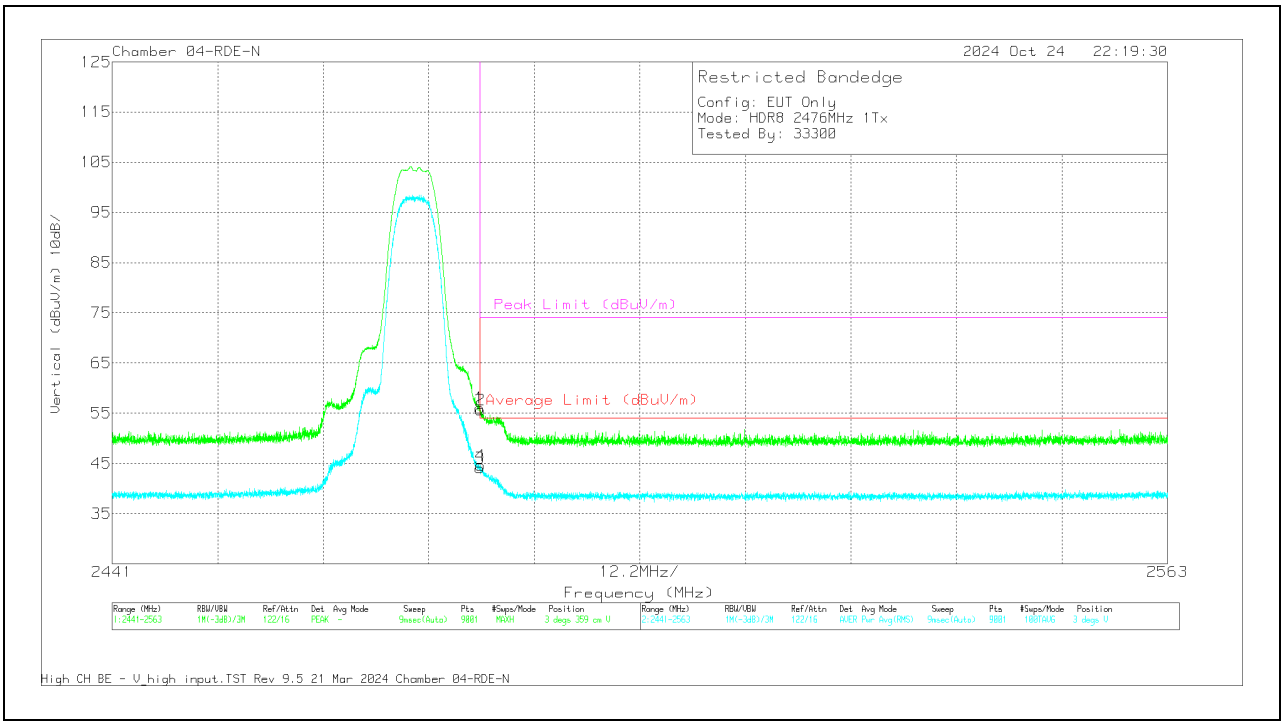


Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	223083 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2483.5	51.04	Pk	32.2	0	-27	56.24	-	-	74	-17.76	33	226	H
3	* 2483.5	39.2	RMS	32.2	0	-27	44.4	54	-9.6	-	-	33	226	H
4	* 2483.51	40.09	RMS	32.2	0	-27	45.29	54	-8.71	-	-	33	226	H
2	* 2483.57	52.02	Pk	32.2	0	-27	57.22	-	-	74	-16.78	33	226	H

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

VERTICAL RESULT



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	223083 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2483.5	50.83	Pk	32.2	0	-27	56.03	-	-	74	-17.97	3	359	V
3	2483.5	38.87	RMS	32.2	0	-27	44.07	54	-9.93	-	-	3	359	V
2	2483.566	50.41	Pk	32.2	0	-27	55.61	-	-	74	-18.39	3	359	V
4	2483.566	39.38	RMS	32.2	0	-27	44.58	54	-9.42	-	-	3	359	V

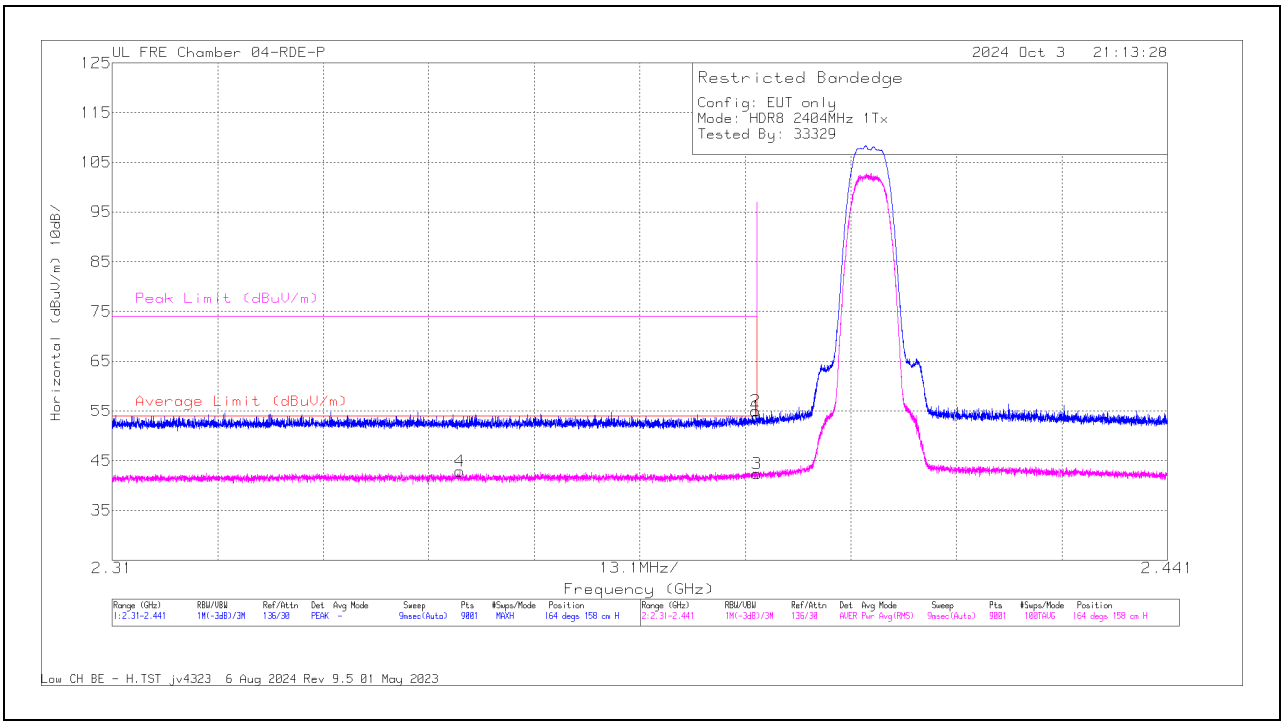
* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

ANT 3

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT

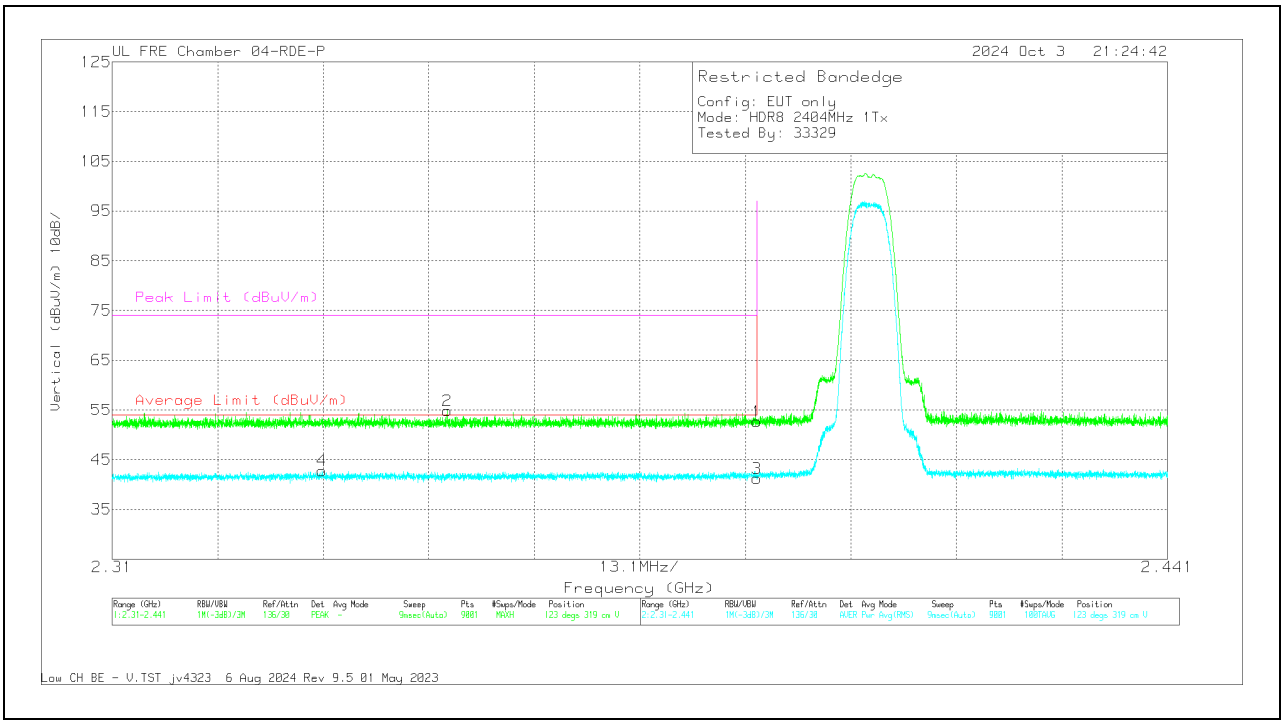


Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	200897 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 2.353173	51.75	RMS	31.9	0	-40.78	42.87	54	-11.13	-	-	164	158	H
2	* 2.389869	63.74	Pk	32	0	-40.75	54.99	-	-	74	-19.01	164	158	H
1	* 2.39	62.62	Pk	32	0	-40.75	53.87	-	-	74	-20.13	164	158	H
3	* 2.39	51.11	RMS	32	0	-40.75	42.36	54	-11.64	-	-	164	158	H

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

VERTICAL RESULT



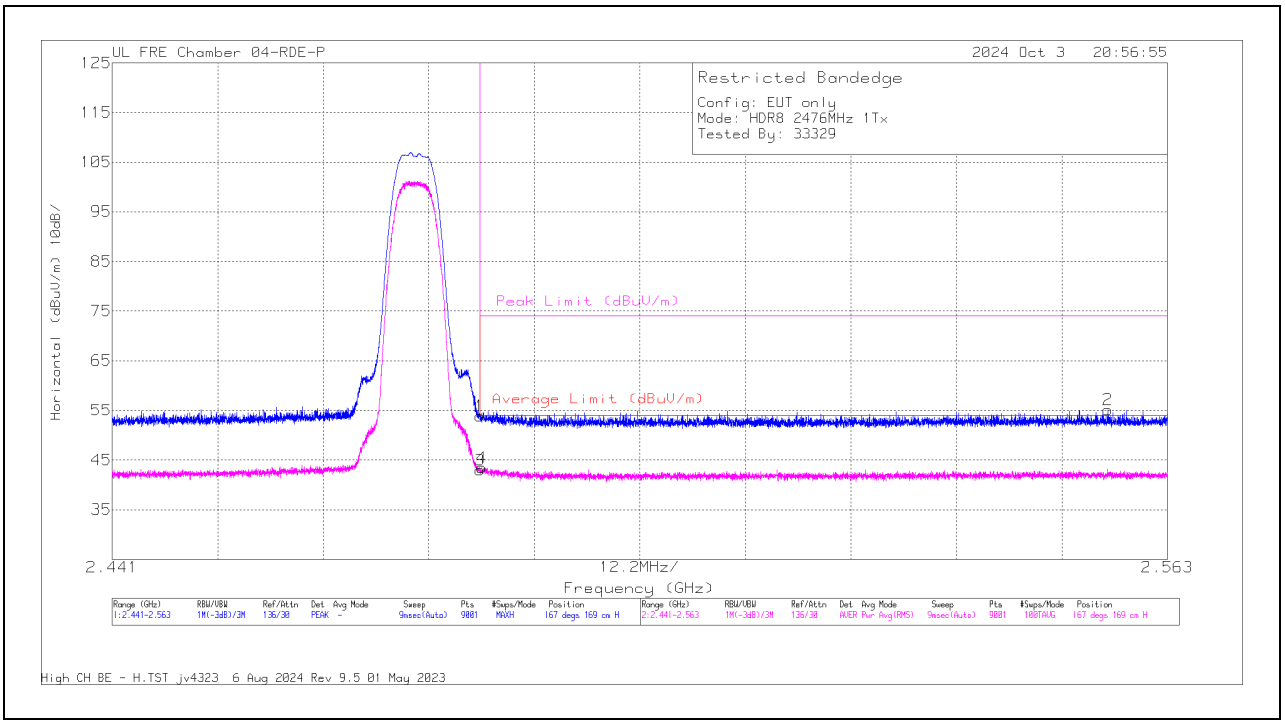
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	200897 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 2.336012	51.68	RMS	31.9	0	-40.8	42.78	54	-11.22	-	-	123	319	V
2	* 2.351601	63.7	Pk	31.9	0	-40.78	54.82	-	-	74	-19.18	123	319	V
1	* 2.39	61.42	Pk	32	0	-40.75	52.67	-	-	74	-21.33	123	319	V
3	* 2.39	49.94	RMS	32	0	-40.75	41.19	54	-12.81	-	-	123	319	V

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT

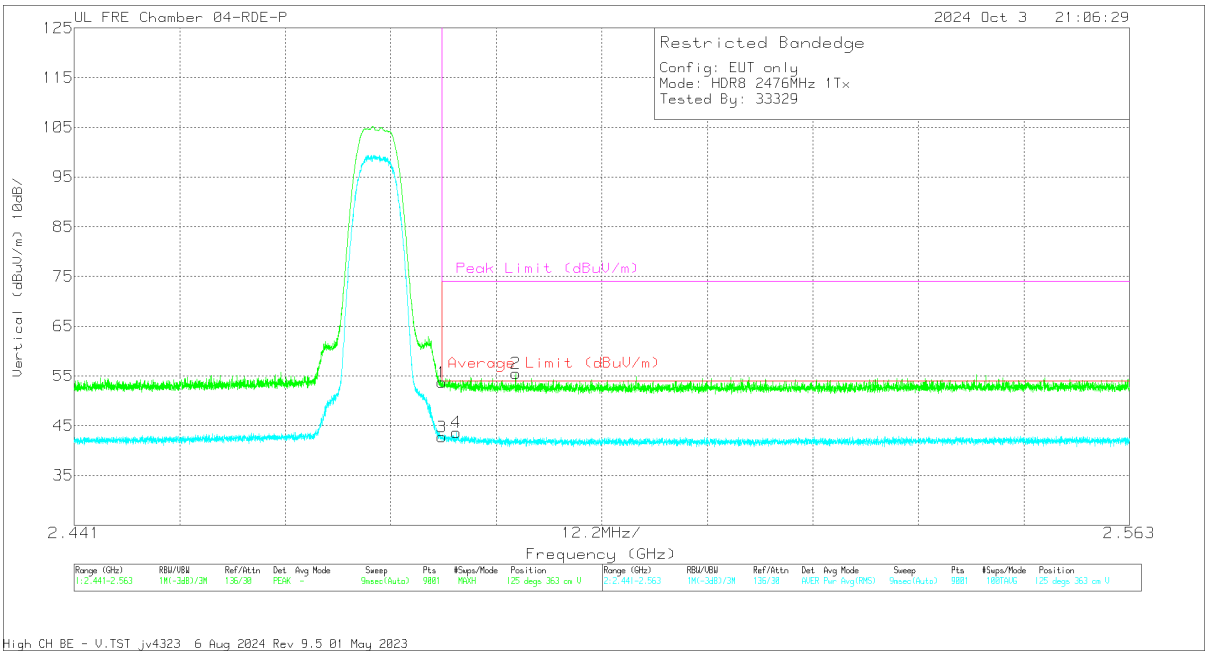


Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	200897 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	62.48	Pk	32.2	0	-40.83	53.85	-	-	74	-20.15	167	169	H
3	* 2.4835	51.59	RMS	32.2	0	-40.83	42.96	54	-11.04	-	-	167	169	H
4	* 2.483742	52.09	RMS	32.2	0	-40.83	43.46	54	-10.54	-	-	167	169	H
2	2.556145	63.55	Pk	32.2	0	-40.65	55.1	-	-	74	-18.9	167	169	H

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

VERTICAL RESULT



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	200897 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	62.31	Pk	32.2	0	-40.83	53.68	-	-	74	-20.32	125	363	V
3	* 2.4835	51.34	RMS	32.2	0	-40.83	42.71	54	-11.29	-	-	125	363	V
4	* 2.485179	52.25	RMS	32.2	0	-40.82	43.63	54	-10.37	-	-	125	363	V
2	* 2.492038	64.13	Pk	32.2	0	-40.82	55.51	-	-	74	-18.49	125	363	V

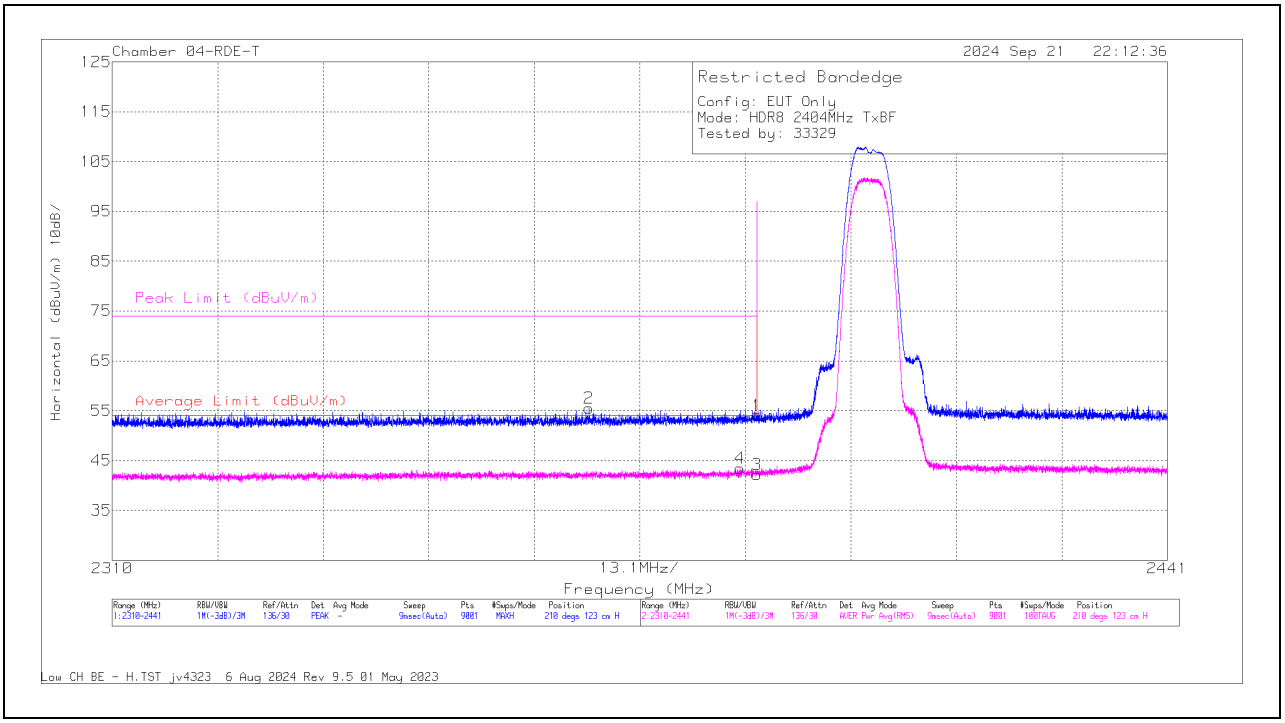
* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

10.2.4. HIGH POWER HDR TXBF (HDR8)

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT

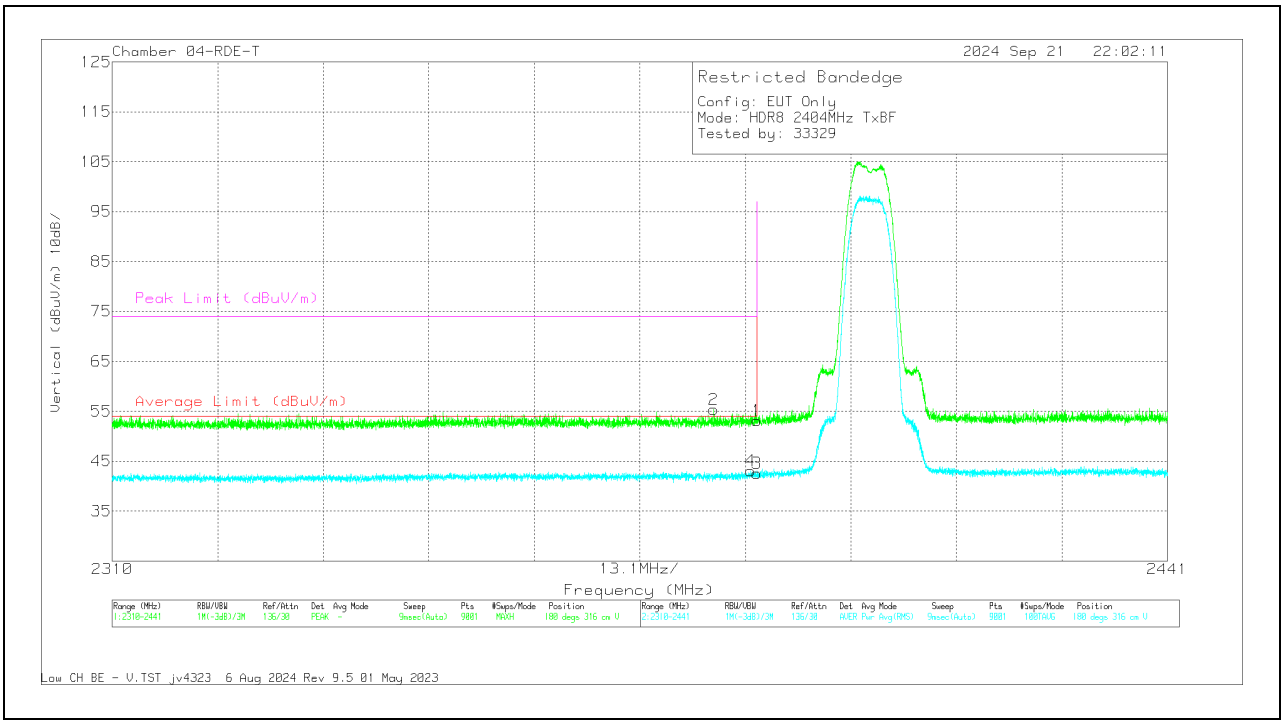


Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	79834 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2390	61.12	Pk	32	0	-39.05	54.07	-	-	74	-19.93	210	123	H
2	* 2369.17	62.73	Pk	31.9	0	-39.1	55.53	-	-	74	-18.47	210	123	H
3	* 2390	49.28	RMS	32	0	-39.05	42.23	54	-11.77	-	-	210	123	H
4	* 2387.90	50.5	RMS	32	0	-39.09	43.41	54	-10.59	-	-	210	123	H

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

VERTICAL RESULT



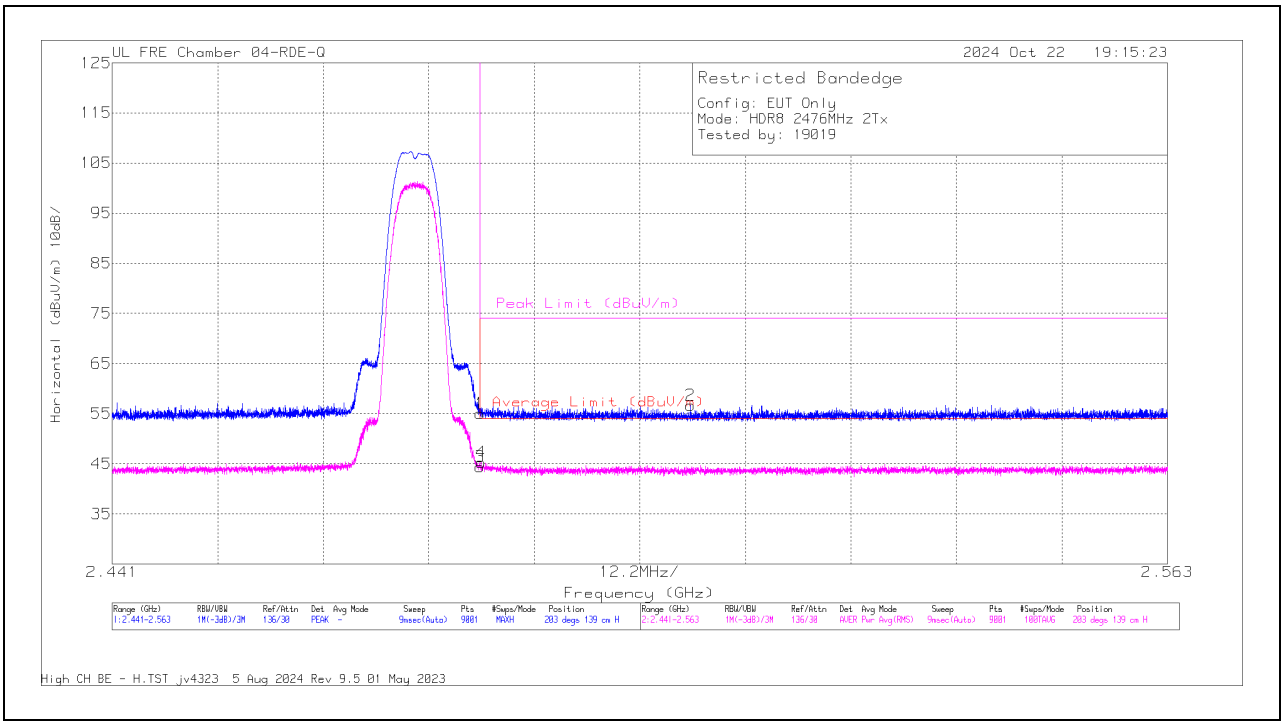
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	79834 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2390	60.22	Pk	32	0	-39.05	53.17	-	-	74	-20.83	180	316	V
2	* 2384.70	62.36	Pk	32	0	-39.02	55.34	-	-	74	-18.66	180	316	V
3	* 2390	49.68	RMS	32	0	-39.05	42.63	54	-11.37	-	-	180	316	V
4	* 2389.25	50.1	RMS	32	0	-39.07	43.03	54	-10.97	-	-	180	316	V

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT

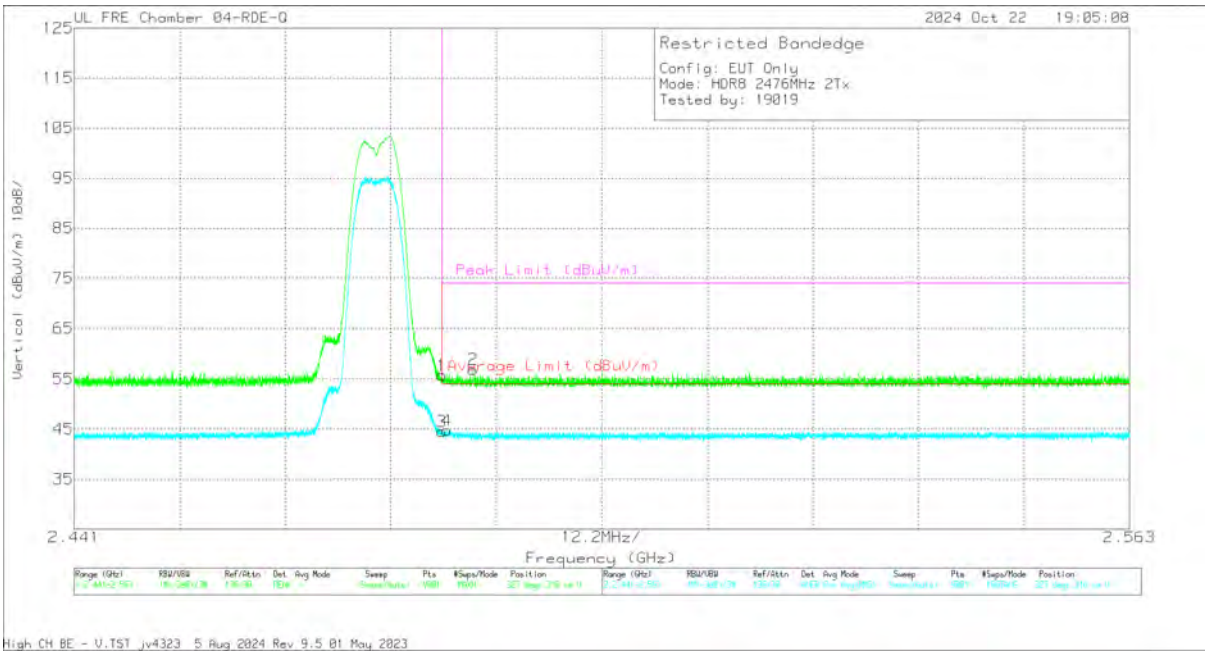


Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	79834 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	60.85	Pk	32.4	0	-38.18	55.07	-	-	74	-18.93	203	139	H
3	* 2.4835	50.19	RMS	32.4	0	-38.18	44.41	54	-9.59	-	-	203	139	H
4	* 2.483634	51.04	RMS	32.4	0	-38.18	45.26	54	-8.74	-	-	203	139	H
2	2.507831	62.45	Pk	32.4	0	-38.17	56.68	-	-	74	-17.32	203	139	H

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

VERTICAL RESULT



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	79834 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	61.5	Pk	32.4	0	-38.18	55.72	-	-	74	-18.28	327	316	V
3	* 2.4835	50.33	RMS	32.4	0	-38.18	44.55	54	-9.45	-	-	327	316	V
4	* 2.484095	50.49	RMS	32.4	0	-38.18	44.71	54	-9.29	-	-	327	316	V
2	* 2.487158	62.7	Pk	32.4	0	-38.19	56.91	-	-	74	-17.09	327	316	V

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

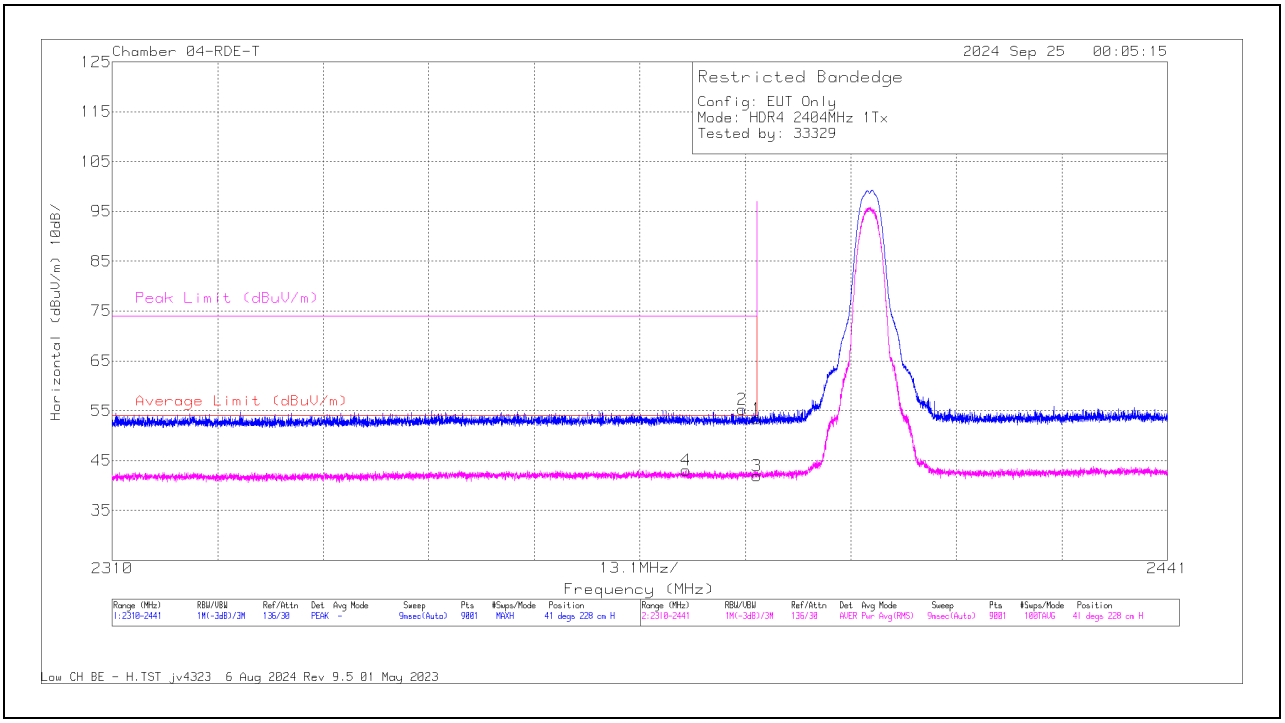
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

10.2.5. LOW POWER HDR (HDR4)

ANT 4

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT

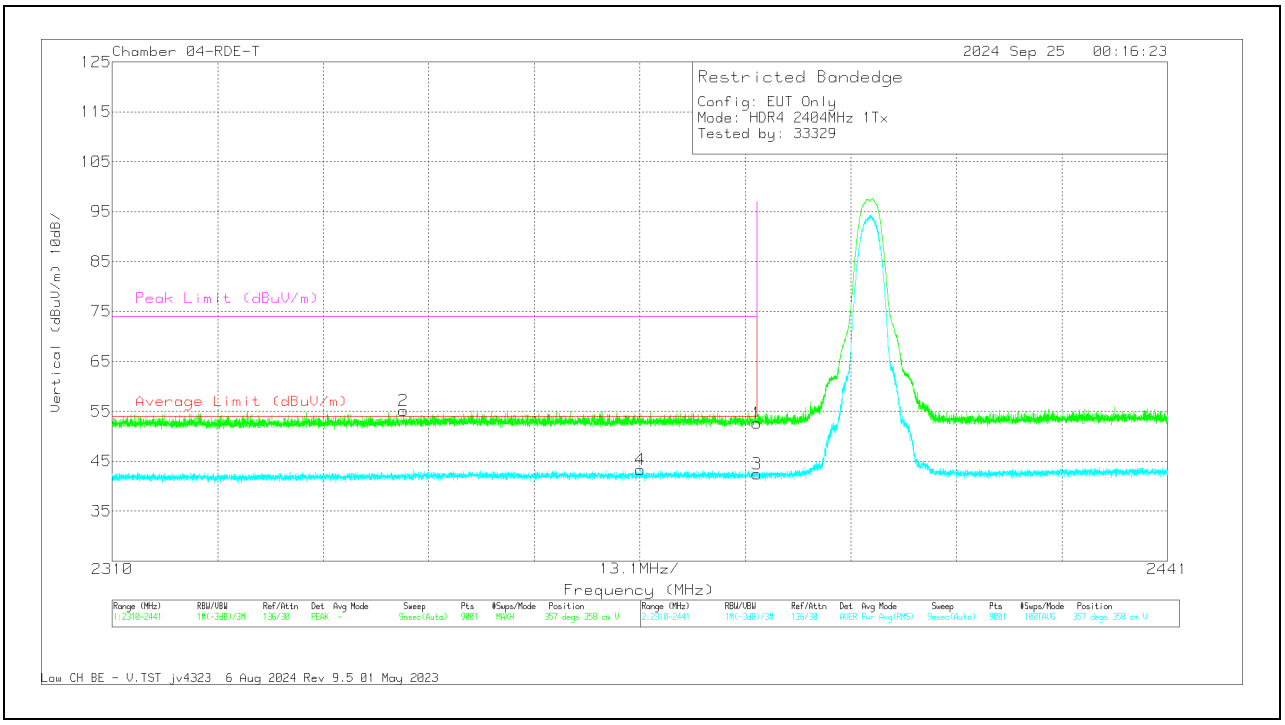


Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	79834 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2390	60.41	Pk	32	0	-39.05	53.36	-	-	74	-20.64	41	228	H
2	* 2388.20	62.32	Pk	32	0	-39.09	55.23	-	-	74	-18.77	41	228	H
3	* 2390	48.96	RMS	32	0	-39.05	41.91	54	-12.09	-	-	41	228	H
4	* 2381.25	50.05	RMS	32	0	-38.97	43.08	54	-10.92	-	-	41	228	H

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

VERTICAL RESULT



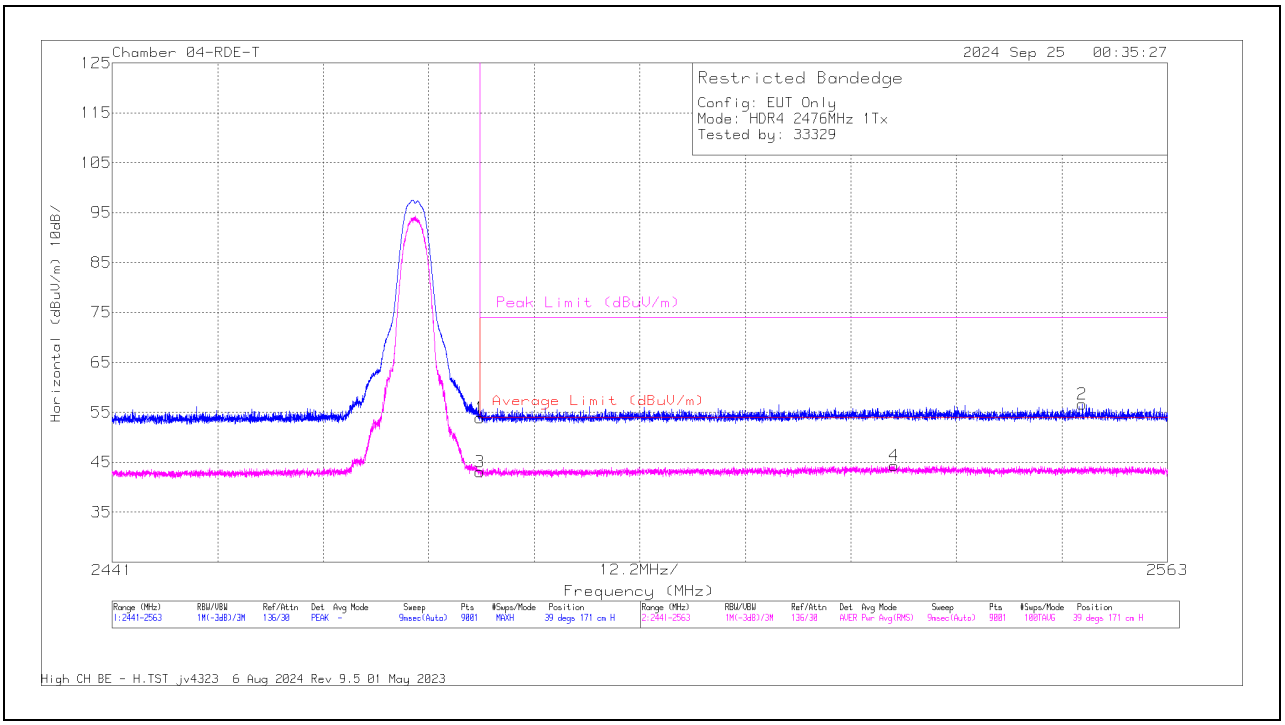
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	79834 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2390	59.68	Pk	32	0	-39.05	52.63	-	-	74	-21.37	357	358	V
2	* 2346.14	62.52	Pk	31.8	0	-39.14	55.18	-	-	74	-18.82	357	358	V
3	* 2390	49.48	RMS	32	0	-39.05	42.43	54	-11.57	-	-	357	358	V
4	* 2375.58	50.4	RMS	32	0	-39.05	43.35	54	-10.65	-	-	357	358	V

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT

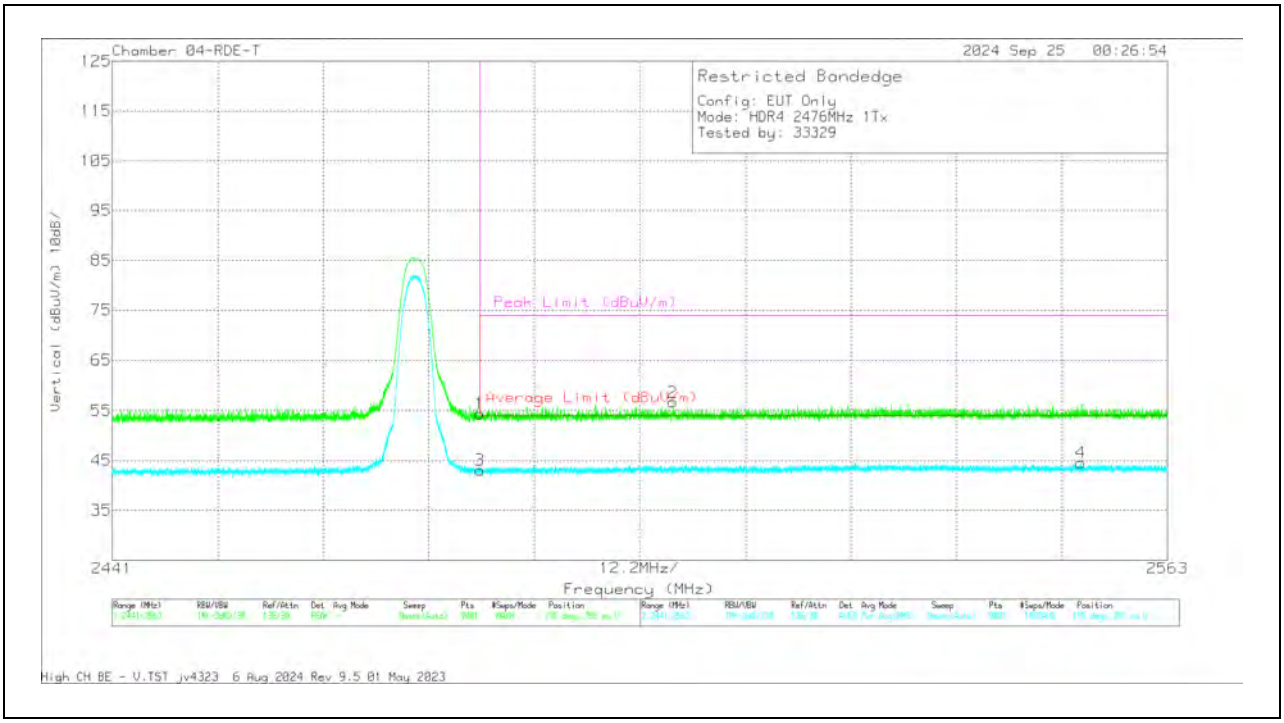


Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	79834 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2390	59.68	Pk	32	0	-39.05	52.63	-	-	74	-21.37	357	358	V
2	* 2346.14	62.52	Pk	31.8	0	-39.14	55.18	-	-	74	-18.82	357	358	V
3	* 2390	49.48	RMS	32	0	-39.05	42.43	54	-11.57	-	-	357	358	V
4	* 2375.58	50.4	RMS	32	0	-39.05	43.35	54	-10.65	-	-	357	358	V

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

VERTICAL RESULT



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	79834 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2483.5	61.1	Pk	32.2	0	-38.87	54.43	-	-	74	-19.57	155	355	V
3	* 2483.5	49.71	RMS	32.2	0	-38.87	43.04	54	-10.96	-	-	155	355	V
2	2505.825	63	Pk	32.4	0	-38.69	56.71	-	-	74	-17.29	155	355	V
4	2552.973	50.68	RMS	32.4	0	-38.44	44.64	54	-9.36	-	-	155	355	V

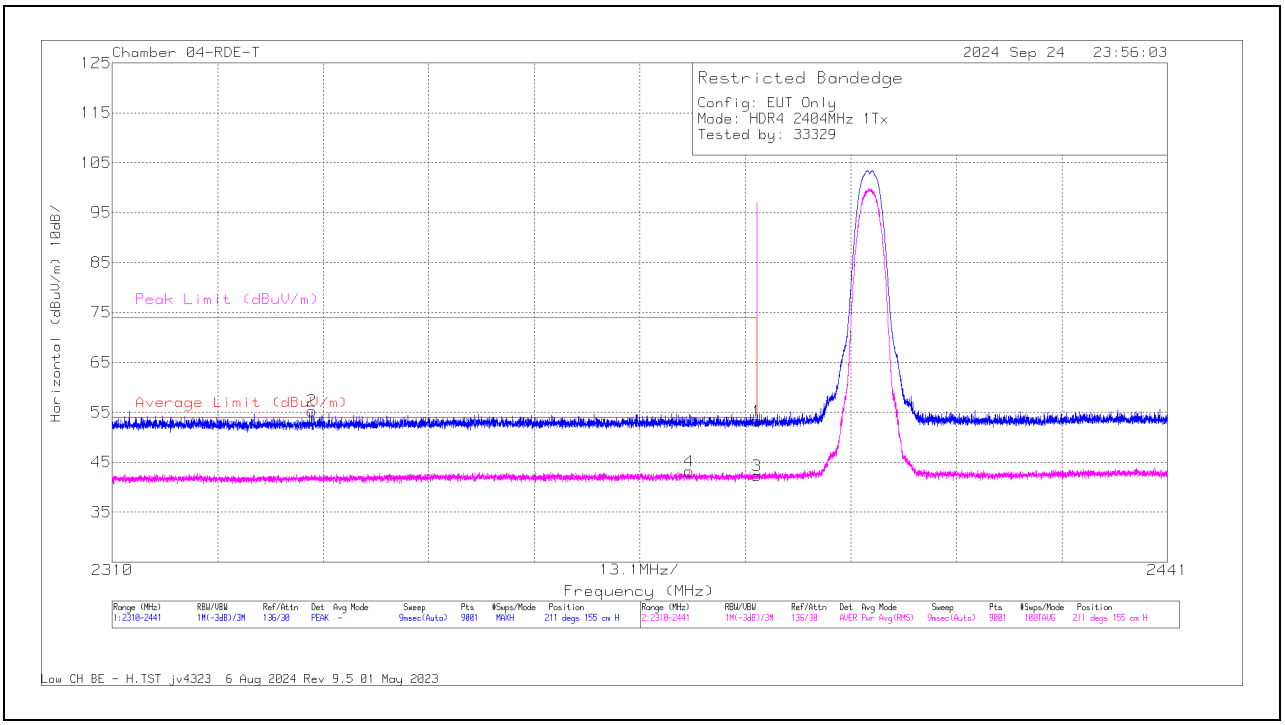
* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

ANT 3

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT

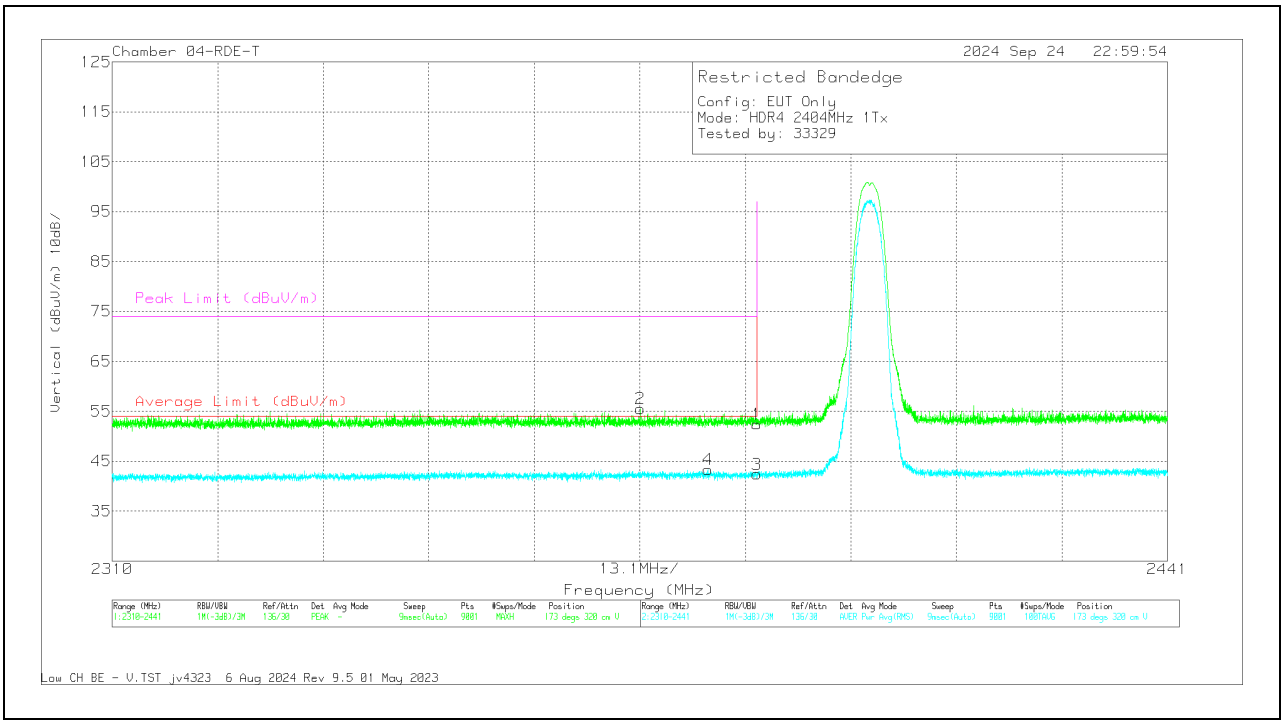


Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	79834 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2390	60.25	Pk	32	0	-39.05	53.2	-	-	74	-20.8	211	155	H
2	* 2334.78	62.49	Pk	31.7	0	-38.97	55.22	-	-	74	-18.78	211	155	H
3	* 2390	49.31	RMS	32	0	-39.05	42.26	54	-11.74	-	-	211	155	H
4	* 2381.60	50.14	RMS	32	0	-38.99	43.15	54	-10.85	-	-	211	155	H

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

VERTICAL RESULT



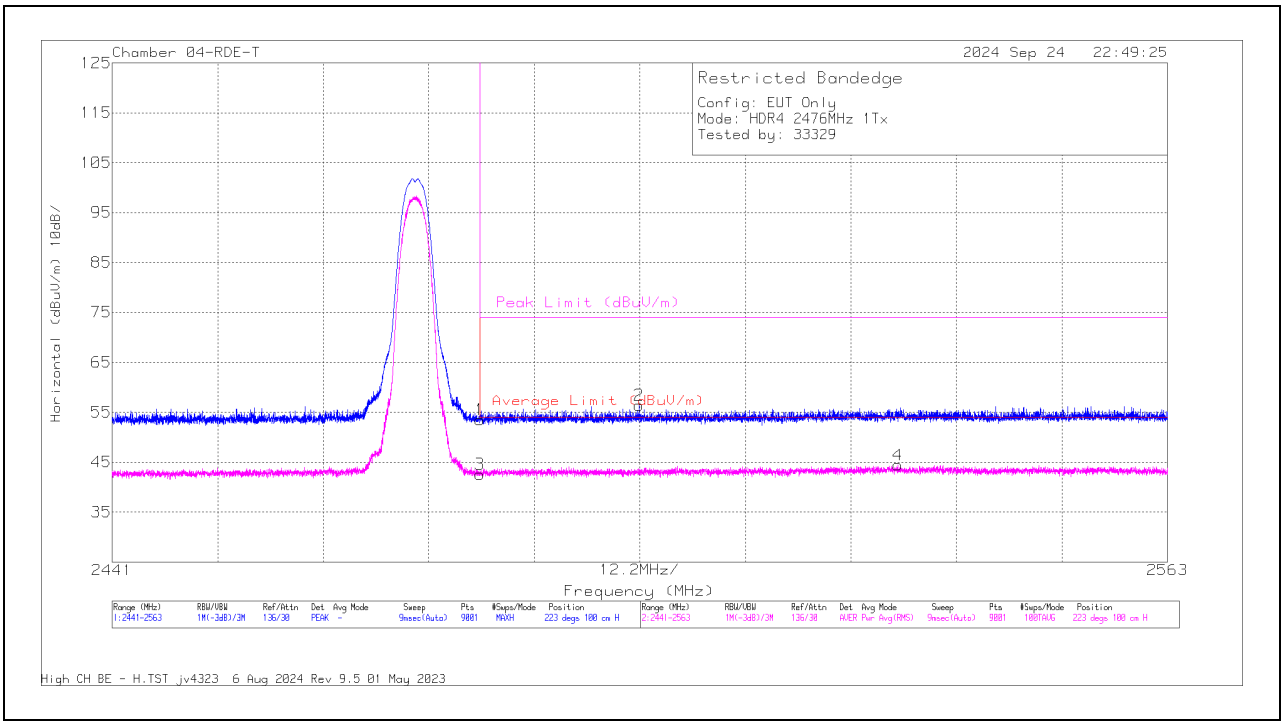
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	79834 ACF (dB/)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2390	59.48	Pk	32	0	-39.05	52.43	-	-	74	-21.57	173	320	V
2	* 2375.56	62.61	Pk	32	0	-39.05	55.56	-	-	74	-18.44	173	320	V
3	* 2390	49.44	RMS	32	0	-39.05	42.39	54	-11.61	-	-	173	320	V
4	* 2383.98	50.29	RMS	32	0	-38.99	43.3	54	-10.7	-	-	173	320	V

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT

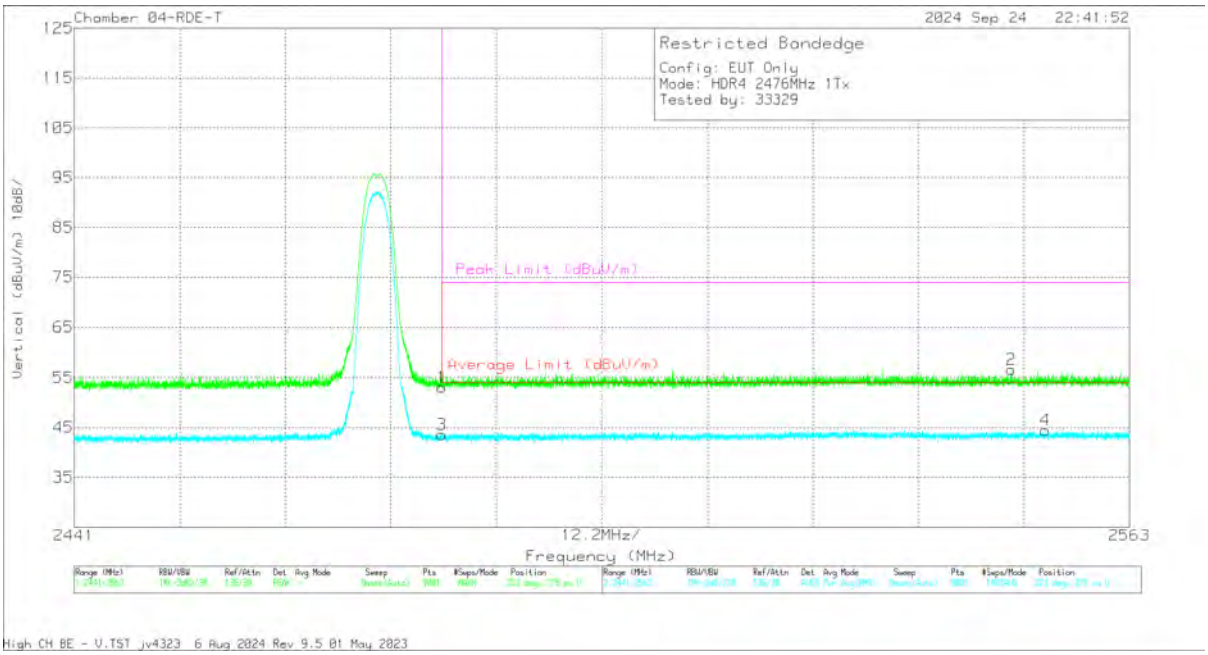


Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	79834 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2483.5	60.14	Pk	32.2	0	-38.87	53.47	-	-	74	-20.53	223	100	H
3	* 2483.5	49.25	RMS	32.2	0	-38.87	42.58	54	-11.42	-	-	223	100	H
2	2501.921	62.63	Pk	32.4	0	-38.68	56.35	-	-	74	-17.65	223	100	H
4	2531.812	50.39	RMS	32.4	0	-38.38	44.41	54	-9.59	-	-	223	100	H

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

VERTICAL RESULT



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	79834 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2483.5	59.75	Pk	32.2	0	-38.87	53.08	-	-	74	-20.92	223	375	V
3	* 2483.5	50.28	RMS	32.2	0	-38.87	43.61	54	-10.39	-	-	223	375	V
2	2549.34	62.82	Pk	32.4	0	-38.56	56.66	-	-	74	-17.34	223	375	V
4	2553.284	50.49	RMS	32.4	0	-38.44	44.45	54	-9.55	-	-	223	375	V

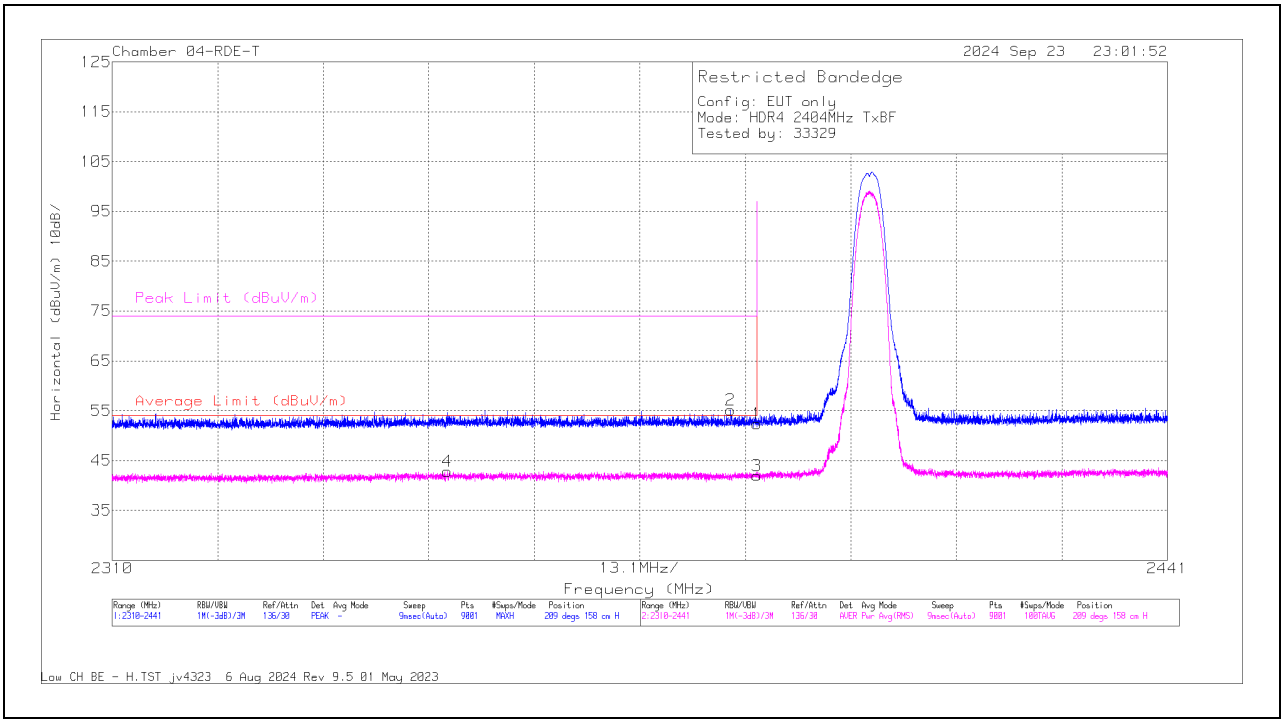
* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

10.2.6. LOW POWER HDR TXBF (HDR4)

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT

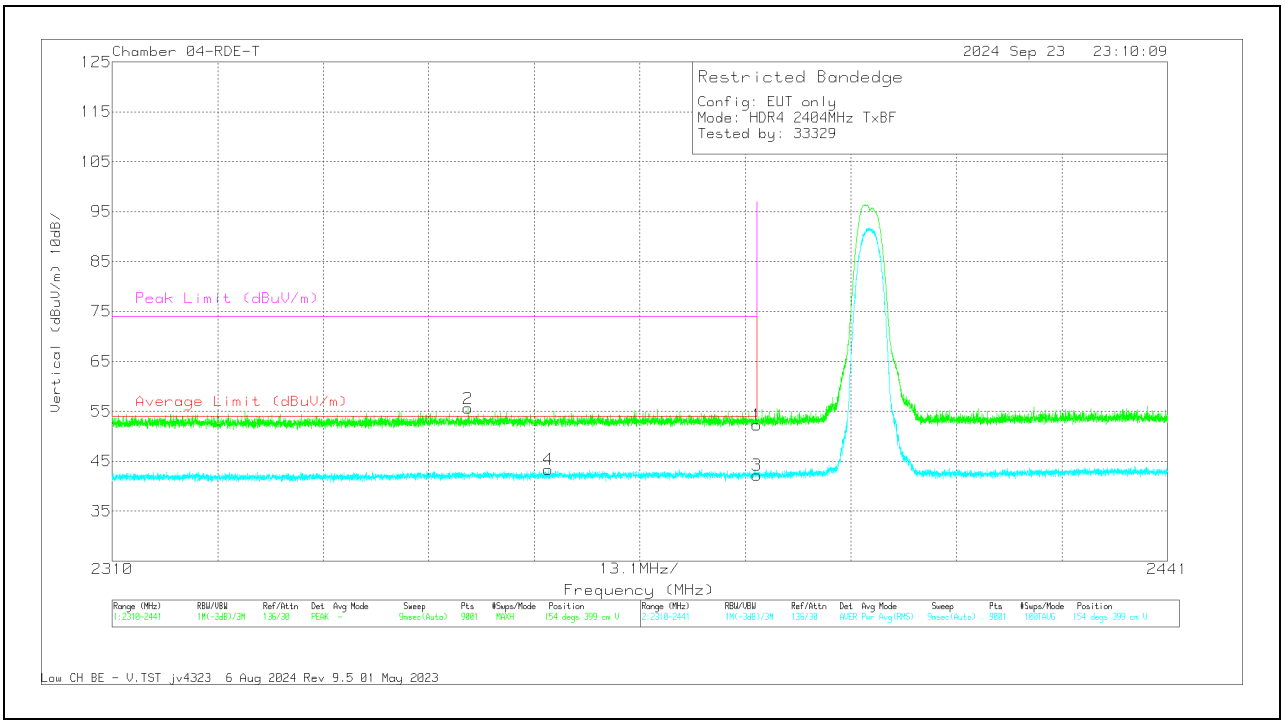


Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	79834 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2390	59.38	Pk	32	0	-39.05	52.33	-	-	74	-21.67	209	158	H
2	* 2386.76	62.3	Pk	32	0	-39.11	55.19	-	-	74	-18.81	209	158	H
3	* 2390	49.05	RMS	32	0	-39.05	42	54	-12	-	-	209	158	H
4	* 2351.63	50.17	RMS	31.8	0	-39.09	42.88	54	-11.12	-	-	209	158	H

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

VERTICAL RESULT



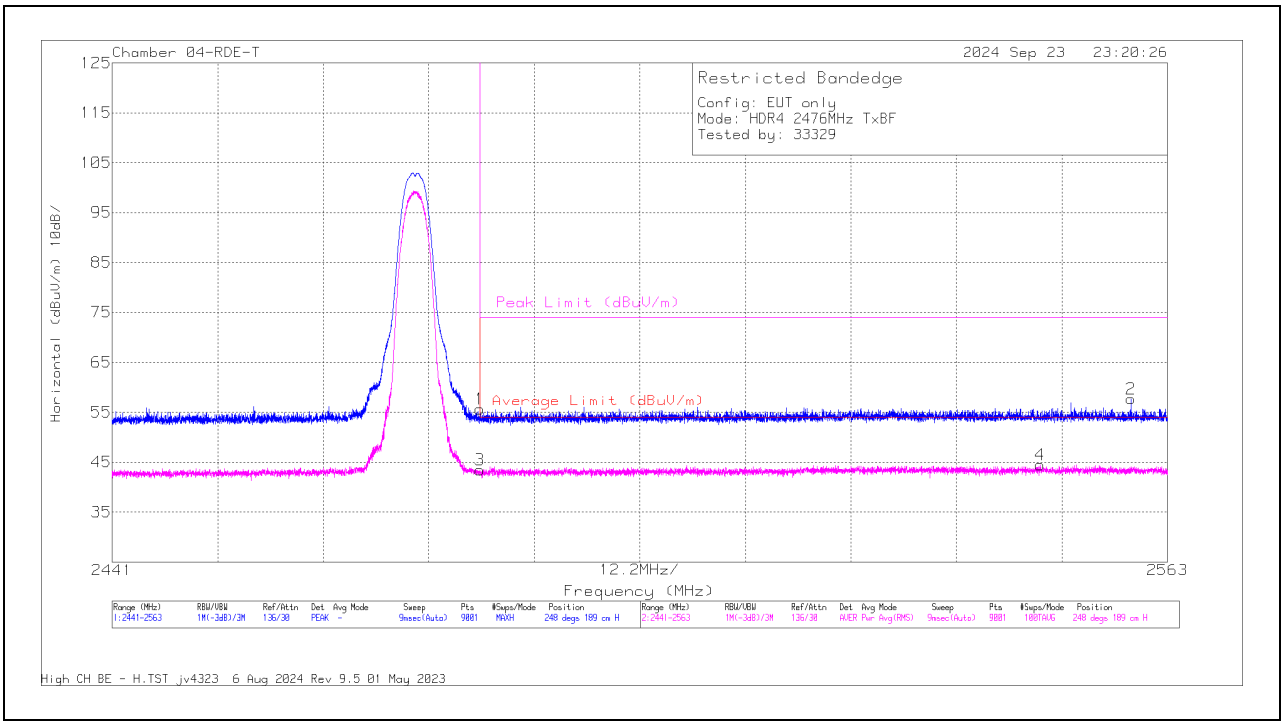
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	79834 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2390	59.28	Pk	32	0	-39.05	52.23	-	-	74	-21.77	154	399	V
2	* 2354.19	62.9	Pk	31.8	0	-39.12	55.58	-	-	74	-18.42	154	399	V
3	* 2390	49.28	RMS	32	0	-39.05	42.23	54	-11.77	-	-	154	399	V
4	* 2364.16	50.58	RMS	31.9	0	-39.13	43.35	54	-10.65	-	-	154	399	V

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT

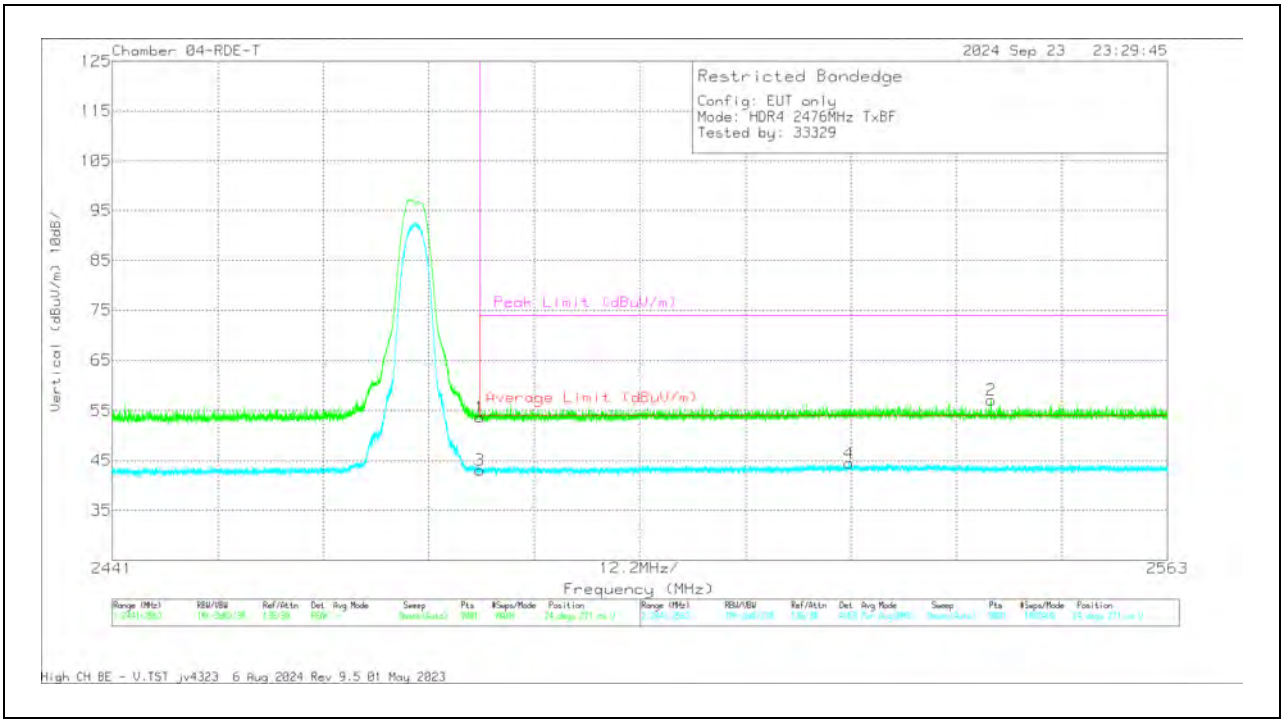


Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	79834 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2483.5	62.27	Pk	32.2	0	-38.87	55.6	-	-	74	-18.4	248	189	H
3	* 2483.5	50.1	RMS	32.2	0	-38.87	43.43	54	-10.57	-	-	248	189	H
4	2548.296	50.56	RMS	32.4	0	-38.52	44.44	54	-9.56	-	-	248	189	H
2	2558.761	63.7	Pk	32.4	0	-38.39	57.71	-	-	74	-16.29	248	189	H

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

VERTICAL RESULT



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	79834 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2483.5	60.36	Pk	32.2	0	-38.87	53.69	-	-	74	-20.31	24	271	V
3	* 2483.5	49.75	RMS	32.2	0	-38.87	43.08	54	-10.92	-	-	24	271	V
4	2526.172	50.51	RMS	32.4	0	-38.5	44.41	54	-9.59	-	-	24	271	V
2	2542.602	63.45	Pk	32.4	0	-38.69	57.16	-	-	74	-16.84	24	271	V

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

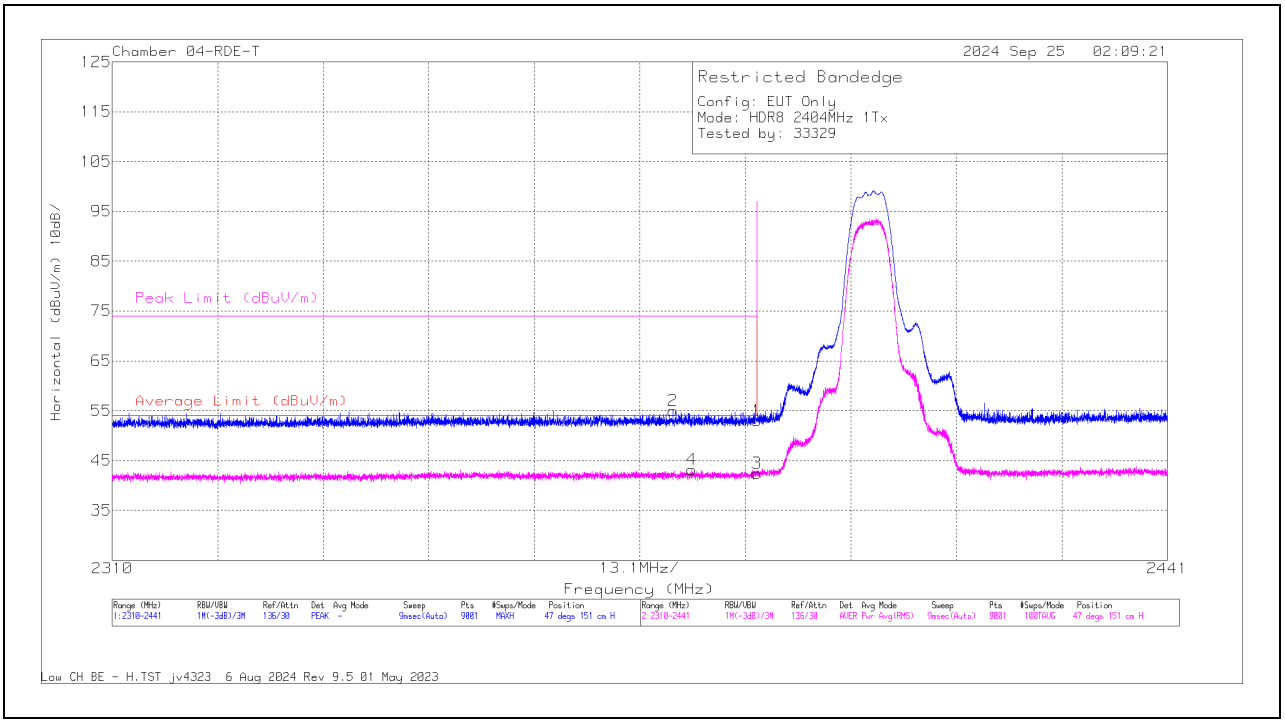
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

10.2.7. LOW POWER HDR (HDR8)

ANT 4

BANDEDGE (LOW CHANNEL)

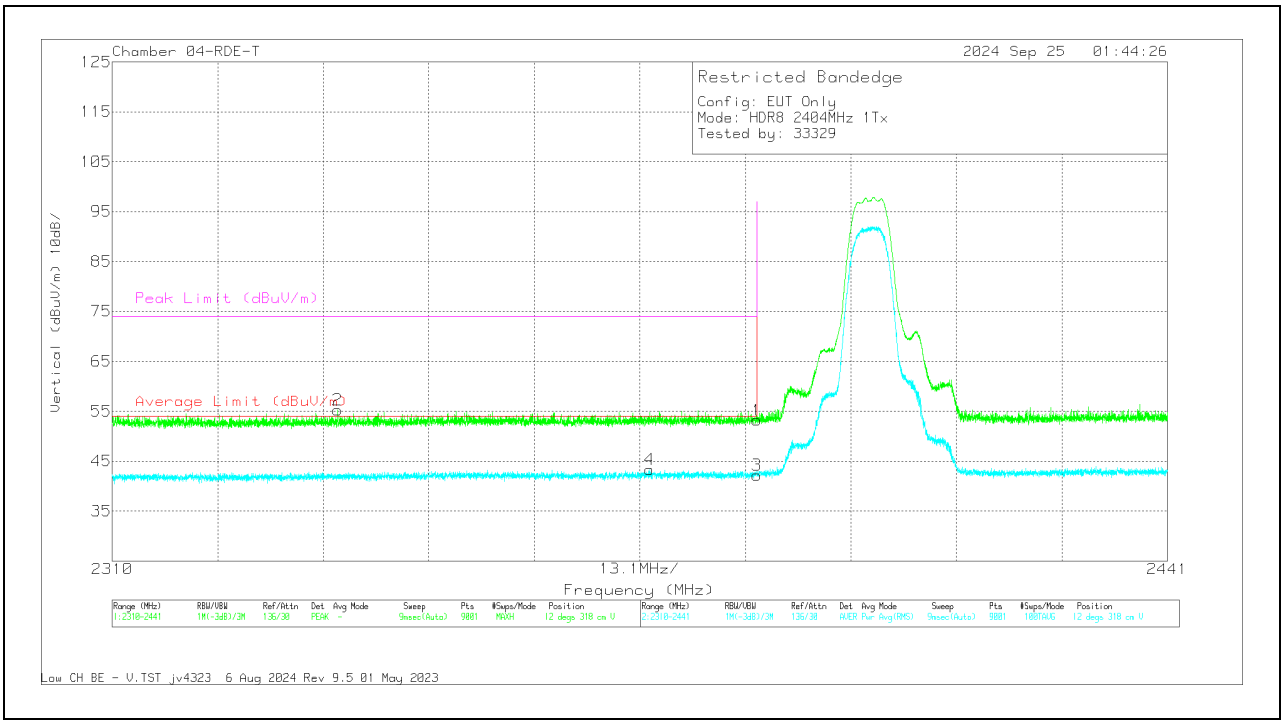
HORIZONTAL RESULT



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	79834 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2390	60.09	Pk	32	0	-39.05	53.04	-	-	74	-20.96	47	151	H
2	* 2379.62	61.99	Pk	32	0	-38.99	55	-	-	74	-19	47	151	H
3	* 2390	49.46	RMS	32	0	-39.05	42.41	54	-11.59	-	-	47	151	H
4	* 2381.97	50.21	RMS	32	0	-39.01	43.2	54	-10.8	-	-	47	151	H

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT



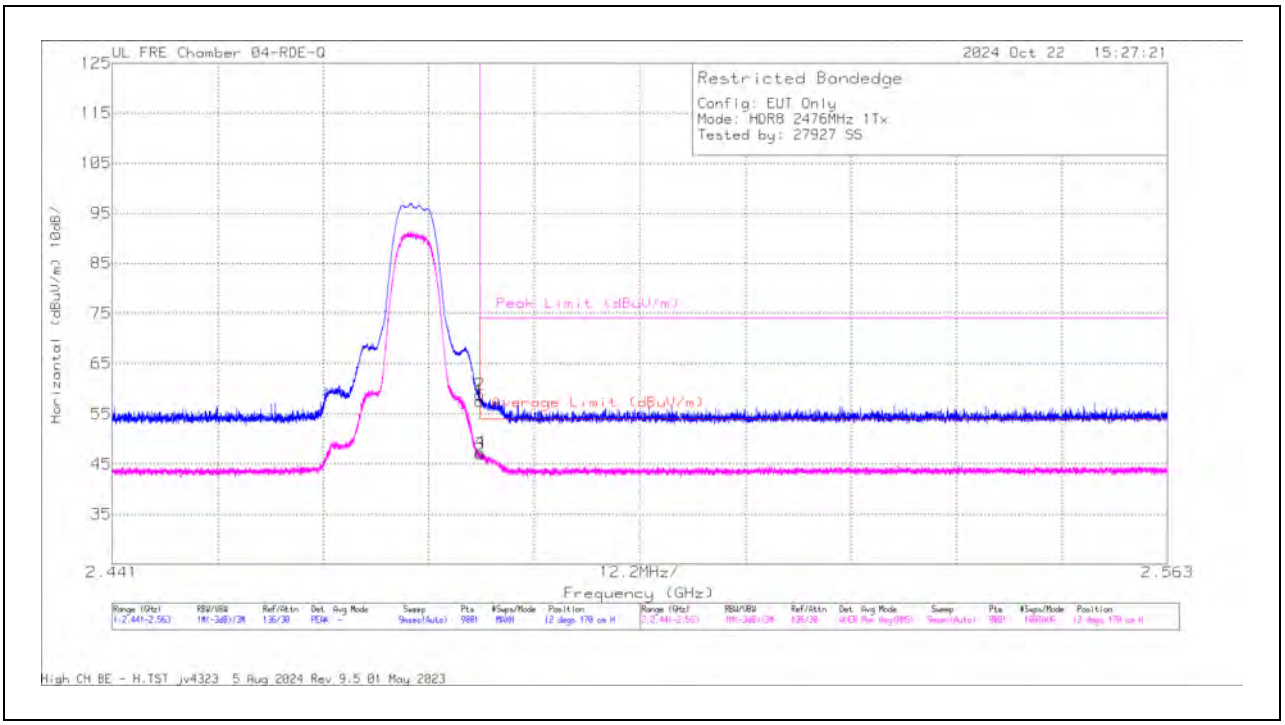
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	79834 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2390	60.25	Pk	32	0	-39.05	53.2	-	-	74	-20.8	12	318	V
2	* 2337.99	62.54	Pk	31.8	0	-39.12	55.22	-	-	74	-18.78	12	318	V
3	* 2390	49.21	RMS	32	0	-39.05	42.16	54	-11.84	-	-	12	318	V
4	* 2376.69	50.4	RMS	32	0	-39.05	43.35	54	-10.65	-	-	12	318	V

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT

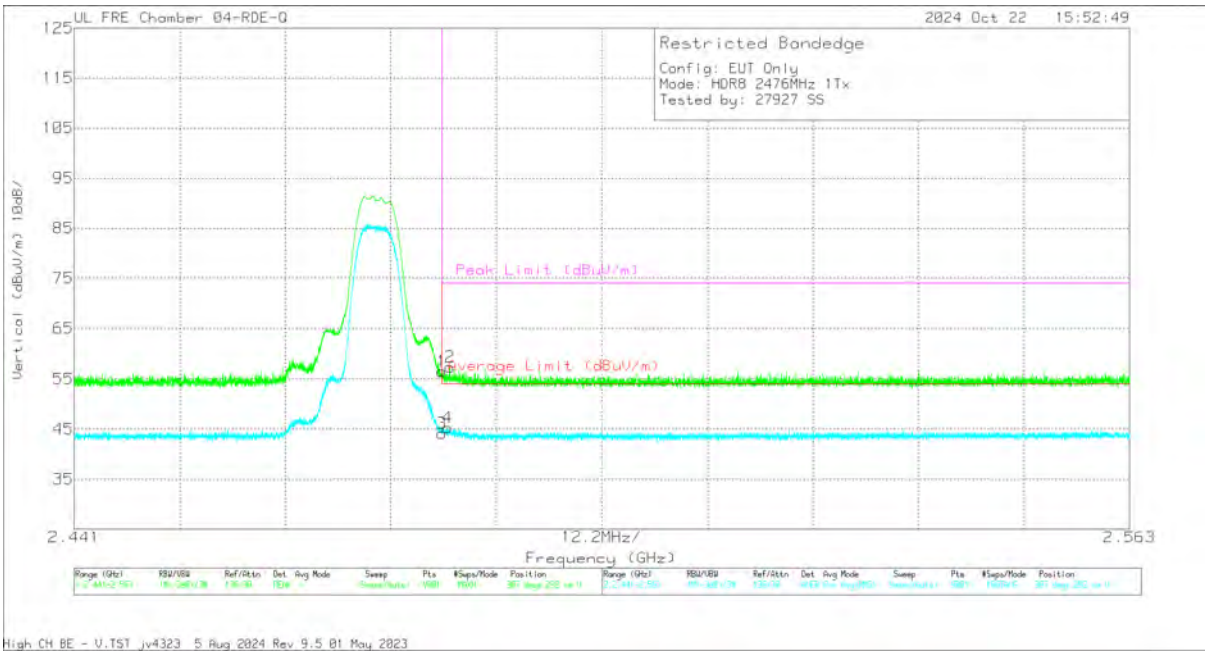


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	63.35	Pk	32.4	0	-38.18	57.57	-	-	74	-16.43	12	170	H
3	* 2.4835	52.79	RMS	32.4	0	-38.18	47.01	54	-6.99	-	-	12	170	H
2	* 2.483512	64.7	Pk	32.4	0	-38.18	58.92	-	-	74	-15.08	12	170	H
4	* 2.483579	53.13	RMS	32.4	0	-38.18	47.35	54	-6.65	-	-	12	170	H

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.4835	62.28	Pk	32.4	0	-38.18	56.5	-	-	74	-17.5	307	292	V
3	2.4835	49.91	RMS	32.4	0	-38.18	44.13	54	-9.87	-	-	307	292	V
4	2.484189	51.03	RMS	32.4	0	-38.17	45.26	54	-8.74	-	-	307	292	V
2	2.484433	63.14	Pk	32.4	0	-38.17	57.37	-	-	74	-16.63	307	292	V

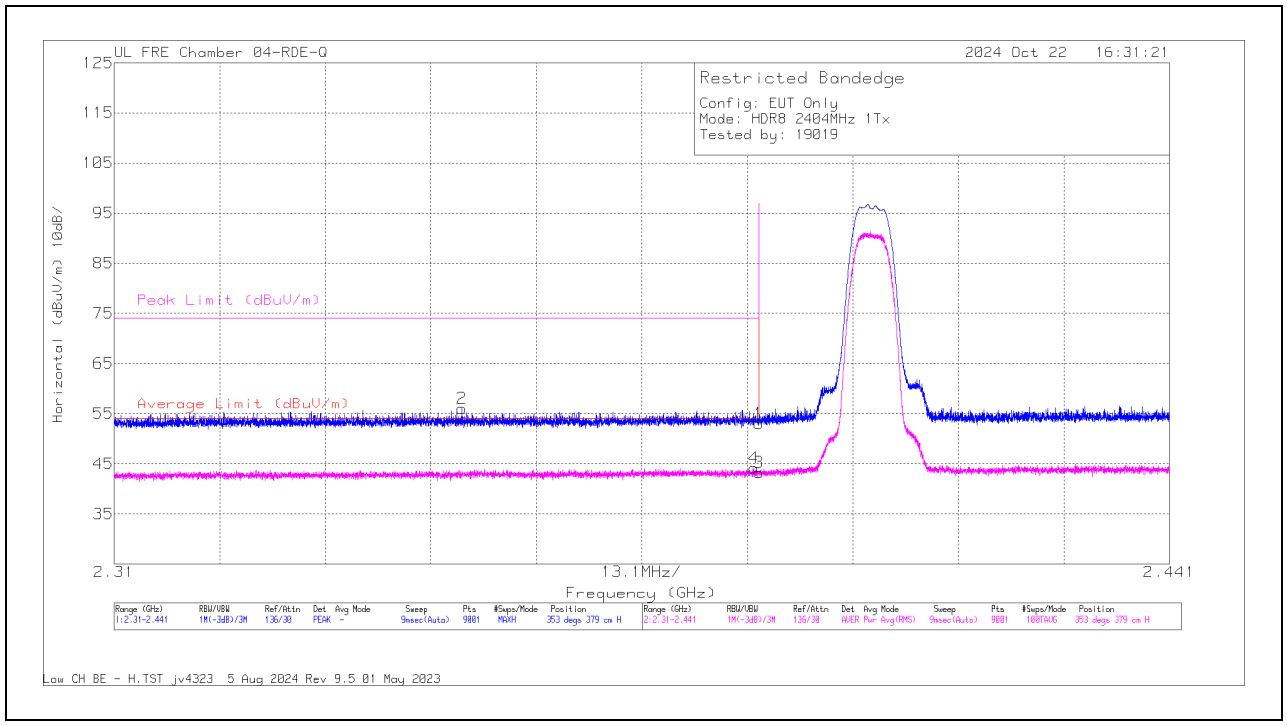
* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

ANT 3

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT

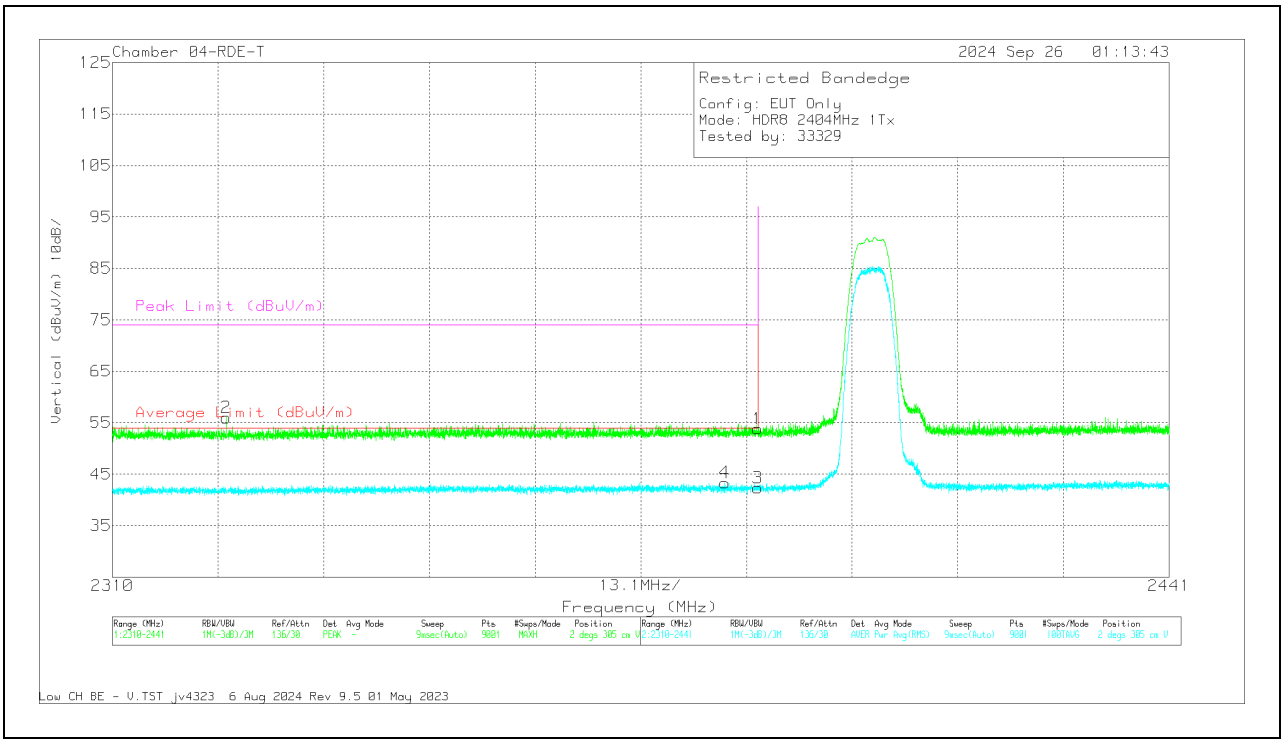


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	2.353159	62.58	Pk	31.9	0	-38.42	56.06	-	-	74	-17.94	353	379	H
4	2.389418	50.49	RMS	31.9	0	-38.29	44.1	54	-9.9	-	-	353	379	H
1	2.39	59.42	Pk	31.9	0	-38.27	53.05	-	-	74	-20.95	353	379	H
3	2.39	49.63	RMS	31.9	0	-38.27	43.26	54	-10.74	-	-	353	379	H

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

VERTICAL RESULT



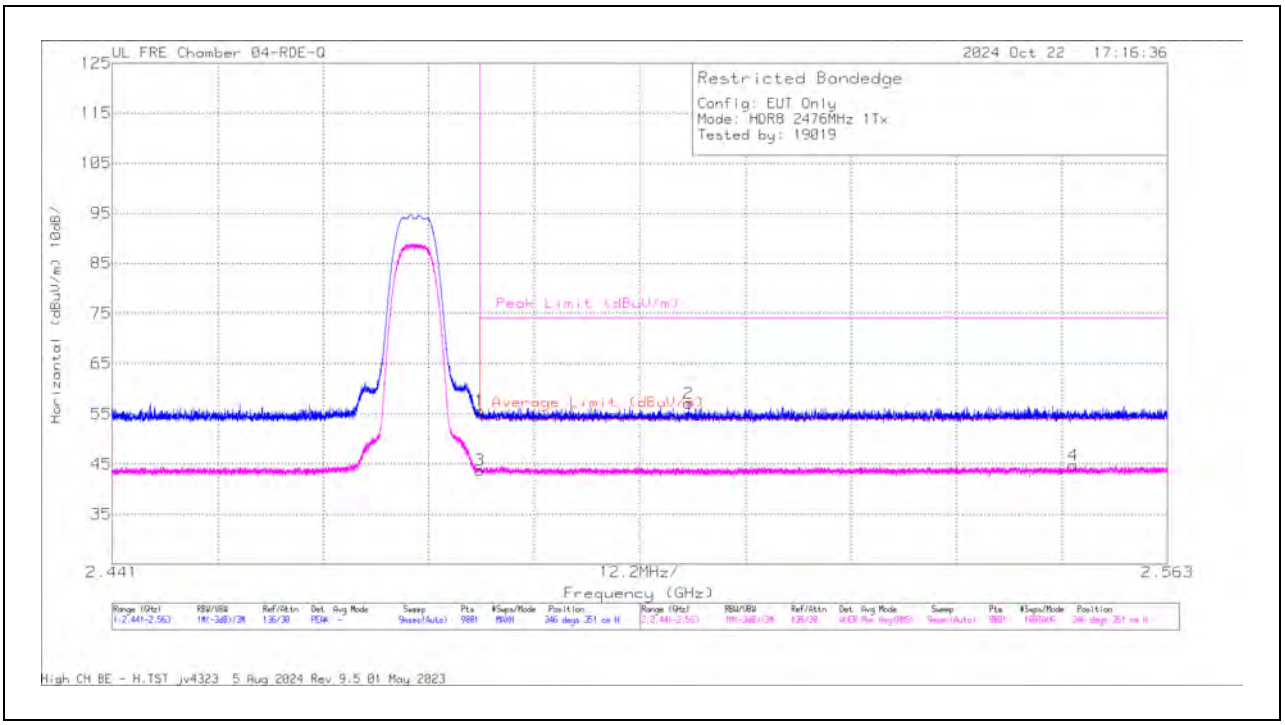
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	79834 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2390	60.86	Pk	32	0	-39.05	53.81	-	-	74	-20.19	2	305	V
2	* 2324.09	63.44	Pk	31.7	0	-39.16	55.98	-	-	74	-18.02	2	305	V
3	* 2390	49.37	RMS	32	0	-39.05	42.32	54	-11.68	-	-	2	305	V
4	* 2385.93	50.46	RMS	32	0	-39.11	43.35	54	-10.65	-	-	2	305	V

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT

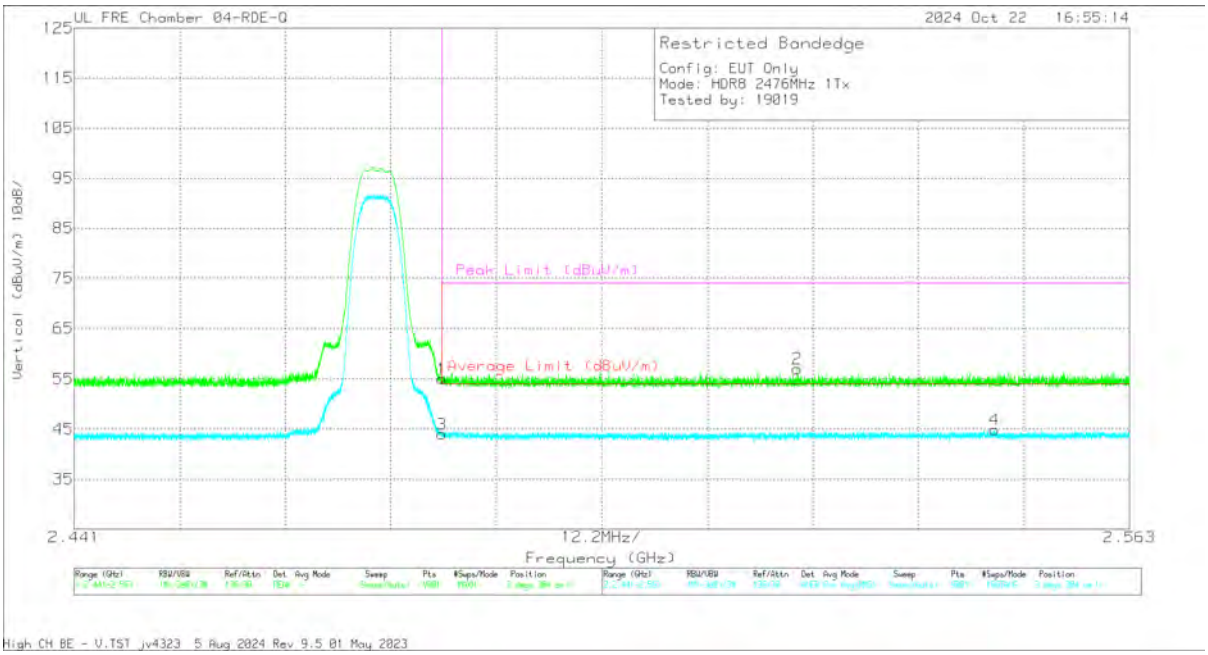


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.4835	61.47	Pk	32.4	0	-38.18	55.69	-	-	74	-18.31	346	351	H
3	2.4835	49.59	RMS	32.4	0	-38.18	43.81	54	-10.19	-	-	346	351	H
2	2.507655	62.88	Pk	32.4	0	-38.17	57.11	-	-	74	-16.89	346	351	H
4	2.552159	50.34	RMS	32.5	0	-38.12	44.72	54	-9.28	-	-	346	351	H

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.4835	60.87	Pk	32.4	0	-38.18	55.09	-	-	74	-18.91	3	384	V
3	2.4835	49.74	RMS	32.4	0	-38.18	43.96	54	-10.04	-	-	3	384	V
2	2.524627	62.66	Pk	32.5	0	-38.16	57	-	-	74	-17	3	384	V
4	2.547387	50.46	RMS	32.5	0	-38.12	44.84	54	-9.16	-	-	3	384	V

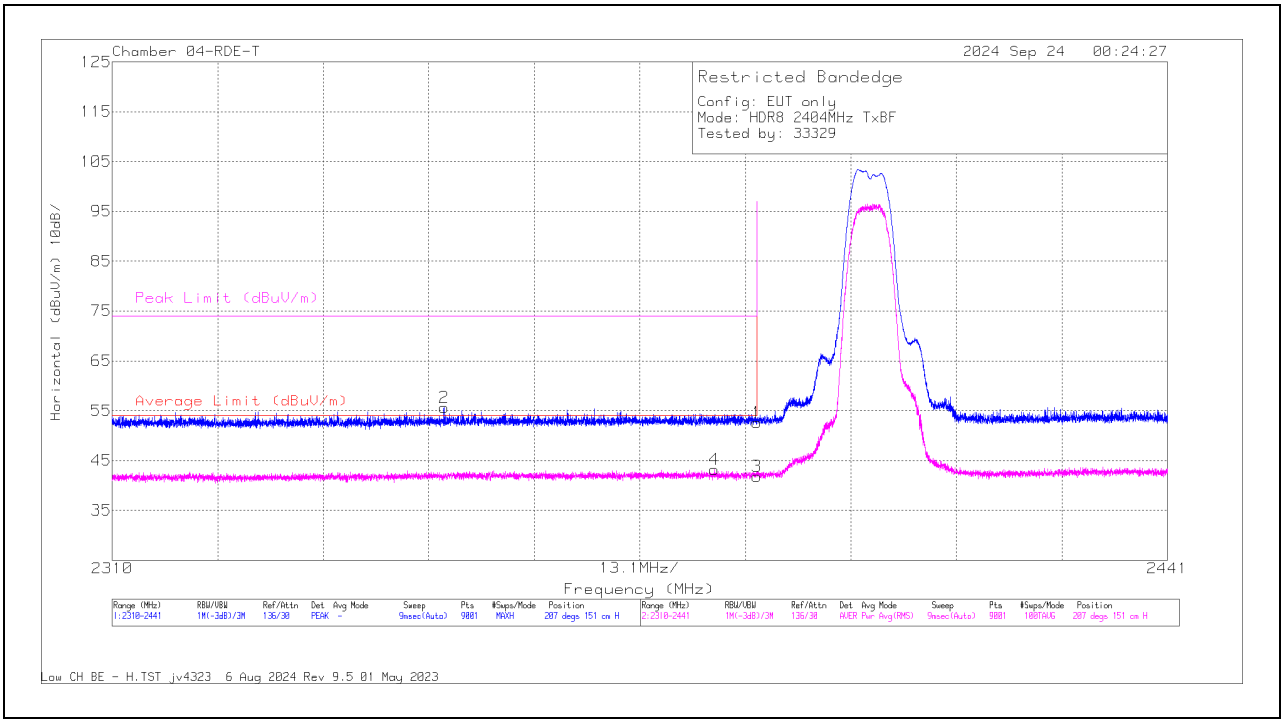
* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

10.2.8. LOW POWER HDR TXBF (HDR8)

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT

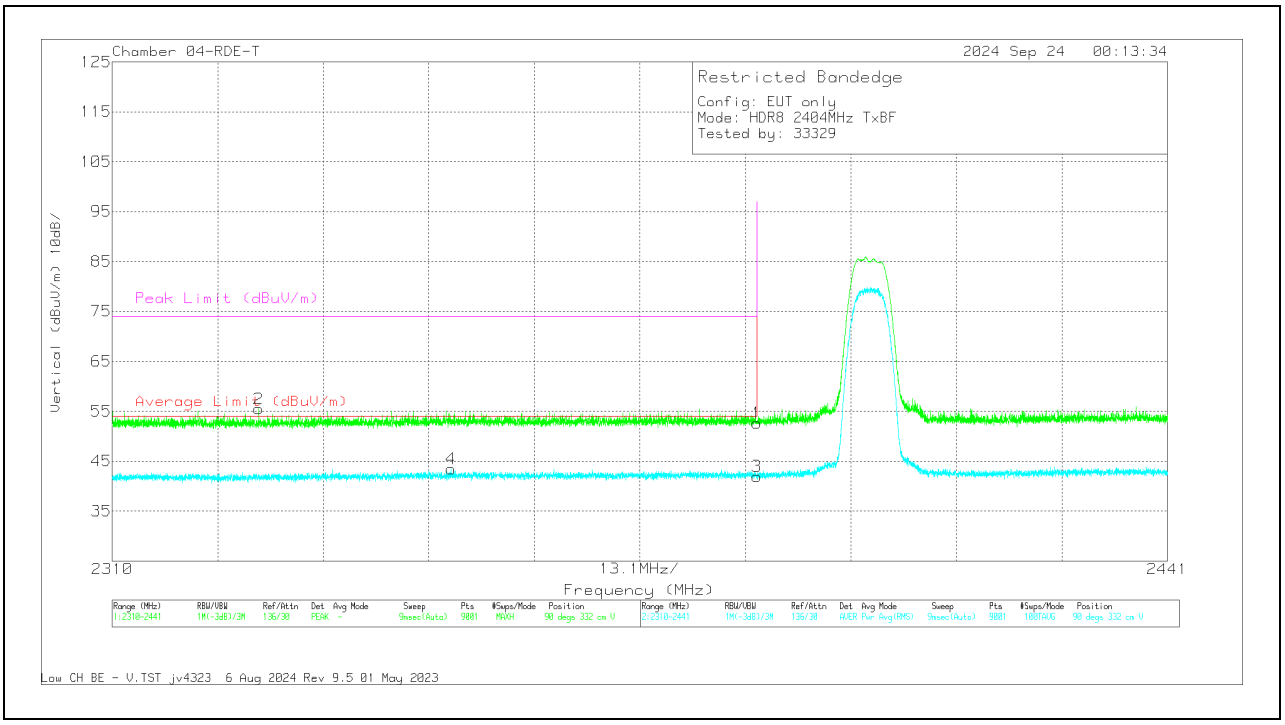


Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	79834 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2390	59.73	Pk	32	0	-39.05	52.68	-	-	74	-21.32	207	151	H
2	* 2351.17	62.99	Pk	31.8	0	-39.14	55.65	-	-	74	-18.35	207	151	H
3	* 2390	48.88	RMS	32	0	-39.05	41.83	54	-12.17	-	-	207	151	H
4	* 2384.76	50.24	RMS	32	0	-39.02	43.22	54	-10.78	-	-	207	151	H

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

VERTICAL RESULT



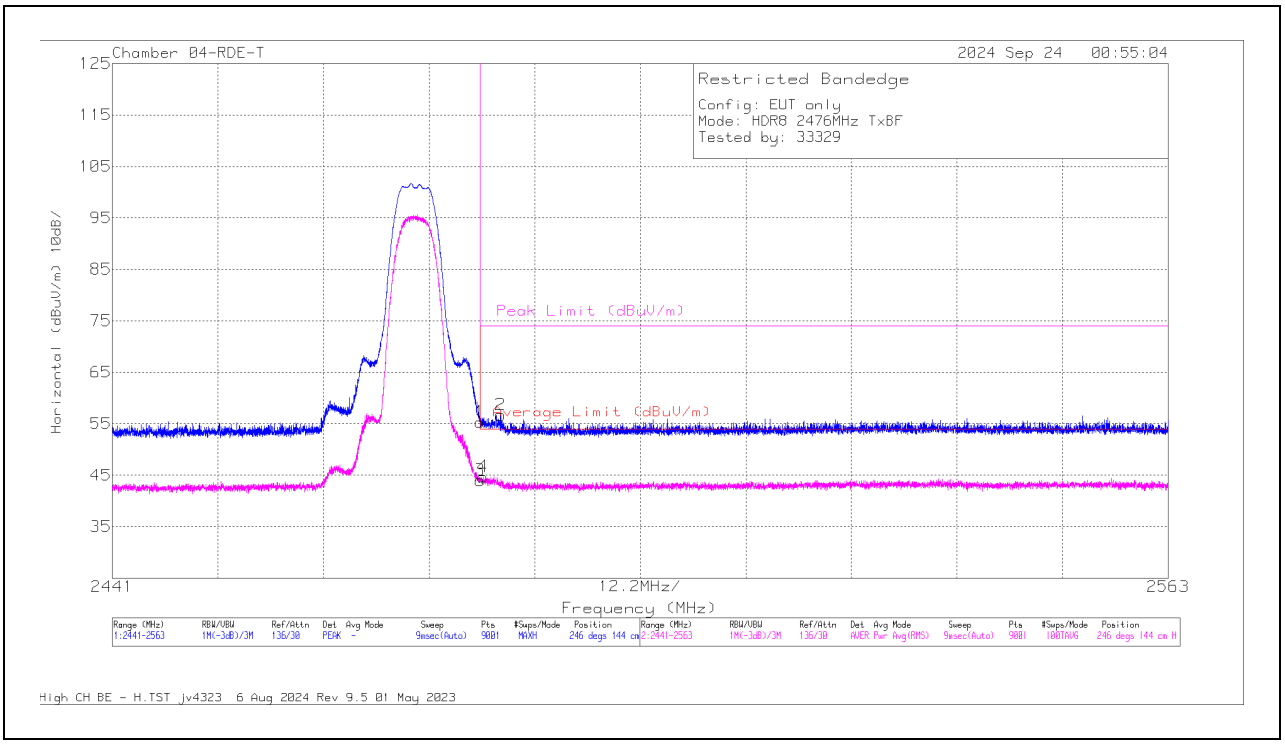
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	79834 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2390	59.66	Pk	32	0	-39.05	52.61	-	-	74	-21.39	90	332	V
2	* 2328.18	62.89	Pk	31.7	0	-39.13	55.46	-	-	74	-18.54	90	332	V
3	* 2390	49.01	RMS	32	0	-39.05	41.96	54	-12.04	-	-	90	332	V
4	* 2352.09	50.66	RMS	31.8	0	-39.05	43.41	54	-10.59	-	-	90	332	V

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT

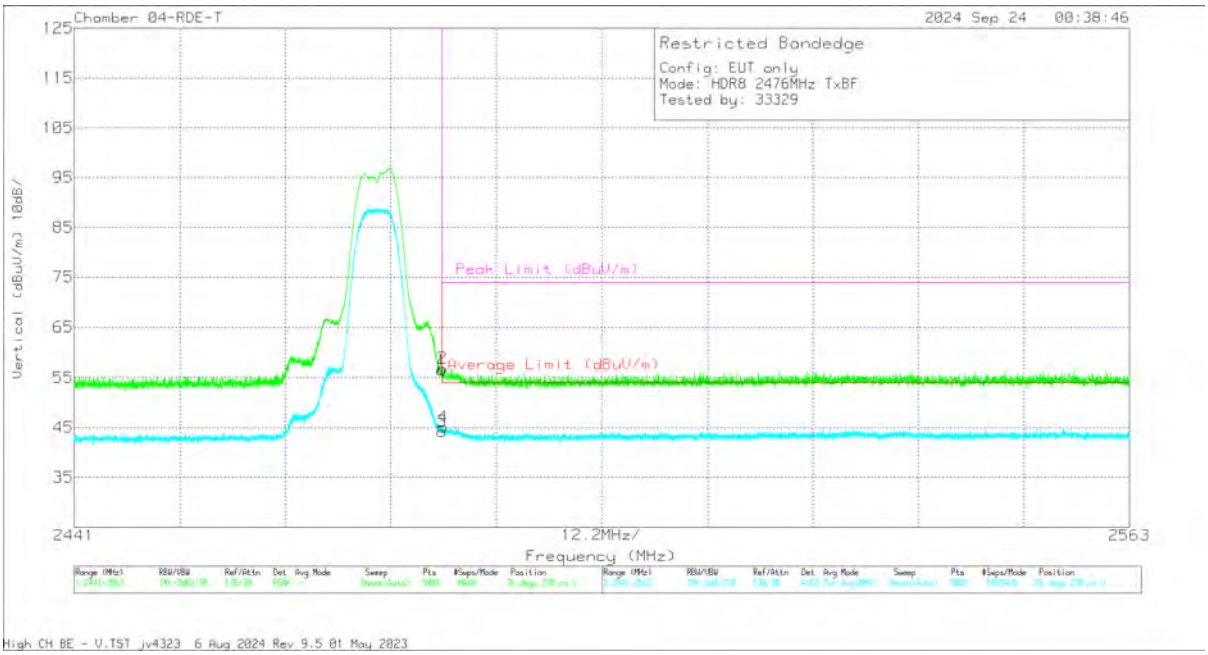


Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	79834 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2483.5	61.99	Pk	32.2	0	-38.87	55.32	-	-	74	-18.68	246	144	H
2	* 2485.85	63.22	Pk	32.3	0	-38.8	56.72	-	-	74	-17.28	246	144	H
3	* 2483.5	50.68	RMS	32.2	0	-38.87	44.01	54	-9.99	-	-	246	144	H
4	* 2483.82	51.36	RMS	32.2	0	-38.89	44.67	54	-9.33	-	-	246	144	H

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

VERTICAL RESULT

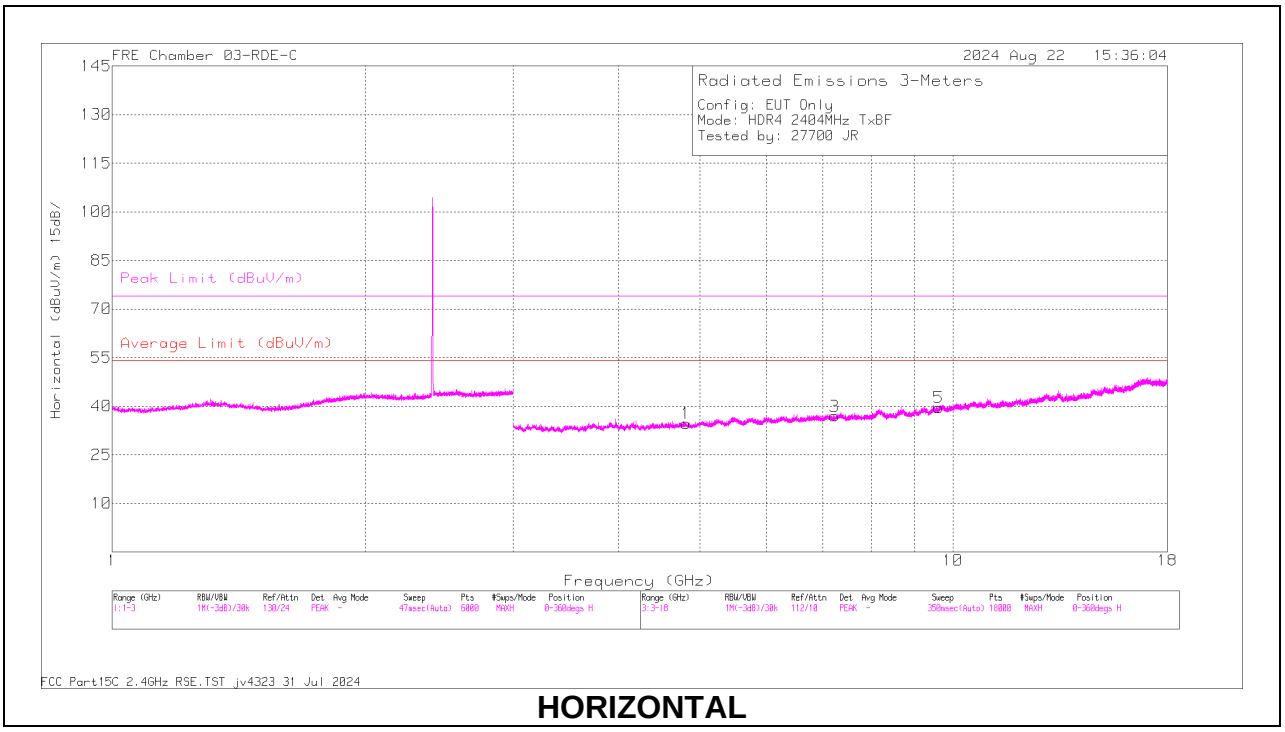


Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	79834 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2483.5	63.13	Pk	32.2	0	-38.87	56.46	-	-	74	-17.54	26	270	V
2	* 2483.56	63.58	Pk	32.2	0	-38.87	56.91	-	-	74	-17.09	26	270	V
3	* 2483.5	50.91	RMS	32.2	0	-38.87	44.24	54	-9.76	-	-	26	270	V
4	* 2483.68	51.79	RMS	32.2	0	-38.88	45.11	54	-8.89	-	-	26	270	V

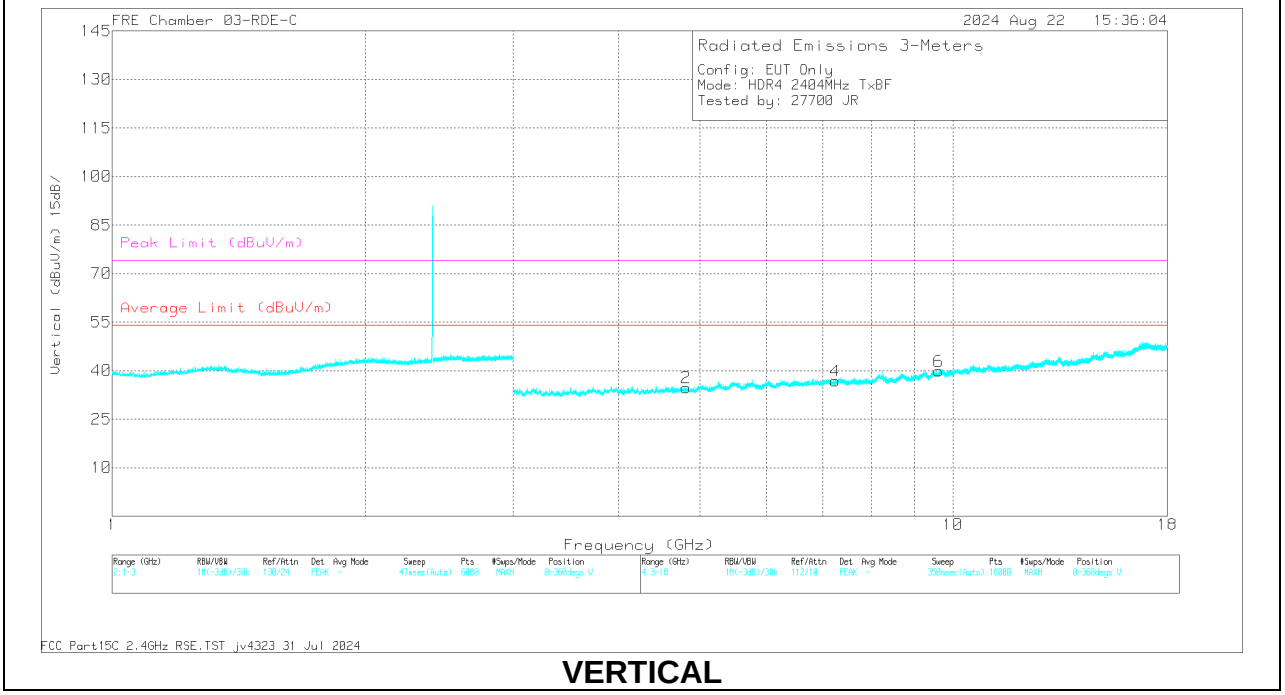
* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

10.2.9. WORST CASE HARMONICS AND SPURIOUS EMISSIONS
LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

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

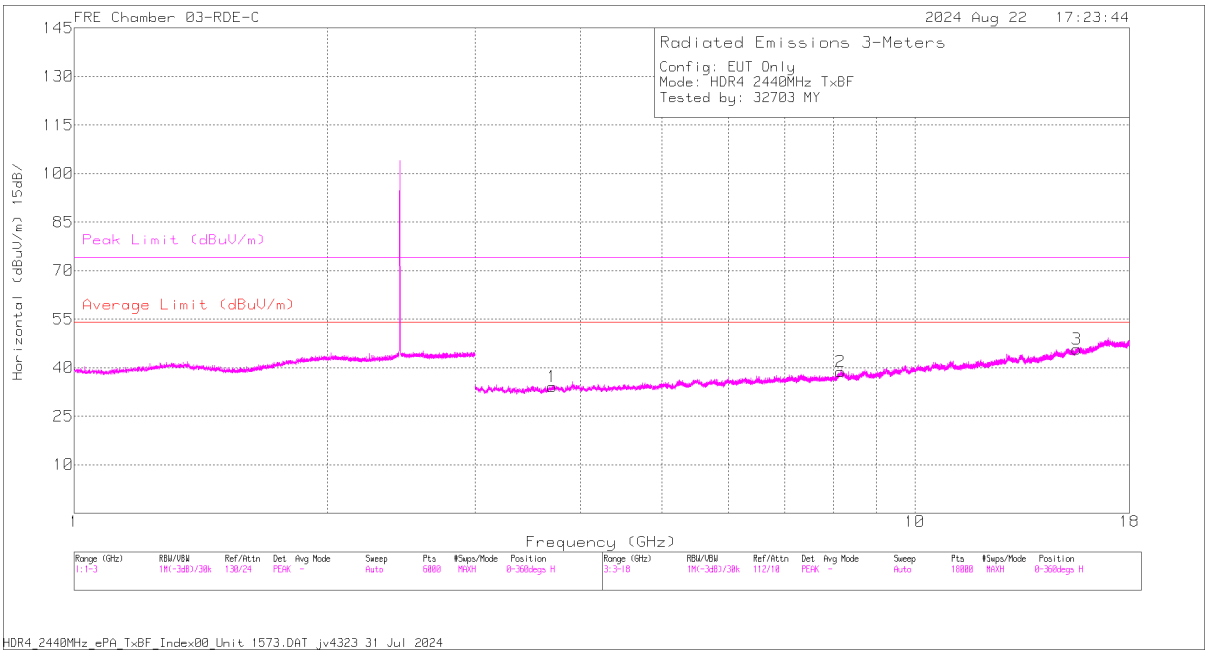
RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	223084 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.817616	58.28	PK2	33.7	0	-47.06	44.92	-	-	74	-29.08	0	197	H
	* 4.816238	46.32	MAv1	33.7	0	-47	33.02	54	-20.98	-	-	0	197	H
2	* 4.816101	58.01	PK2	33.7	0	-47	44.71	-	-	74	-29.29	0	200	V
	* 4.813959	46.48	MAv1	33.7	0	-47	33.18	54	-20.82	-	-	0	200	V
3	7.238726	56.73	PK2	35.7	0	-45.63	46.8	-	-	-	-	0	101	H
4	7.240714	56.94	PK2	35.7	0	-45.7	46.94	-	-	-	-	0	101	V
5	9.619142	57.58	PK2	36.7	0	-45.2	49.08	-	-	-	-	0	200	H
6	9.621381	58.34	PK2	36.7	0	-45.26	49.78	-	-	-	-	0	200	V

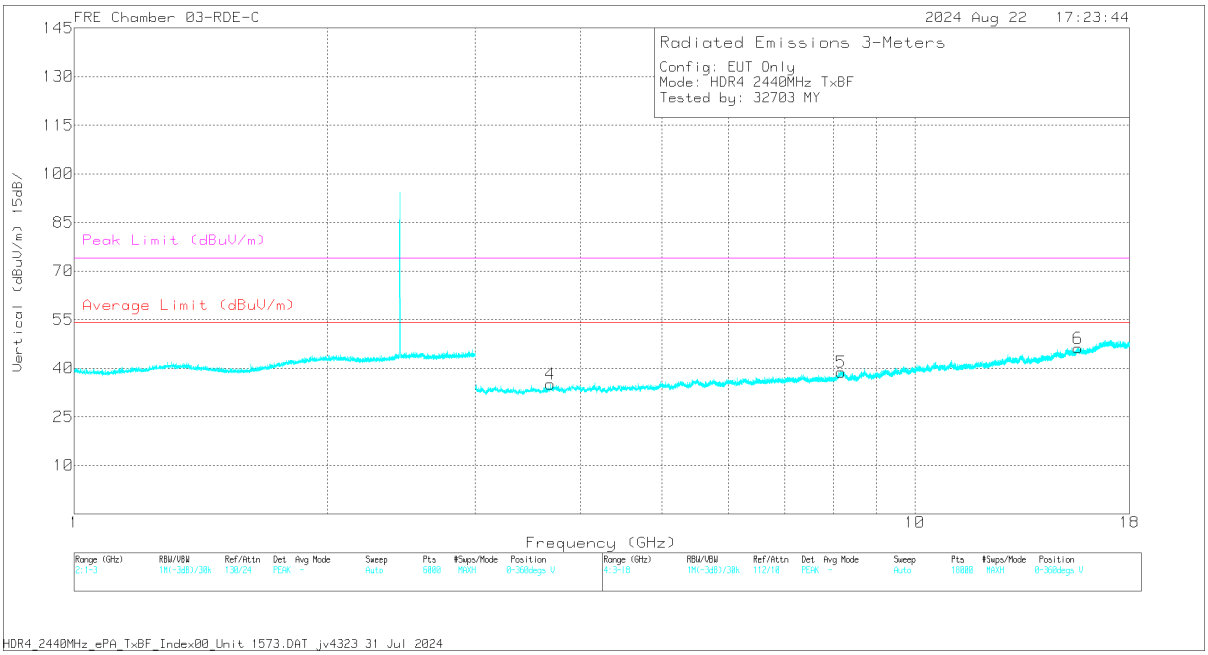
* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

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

MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

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

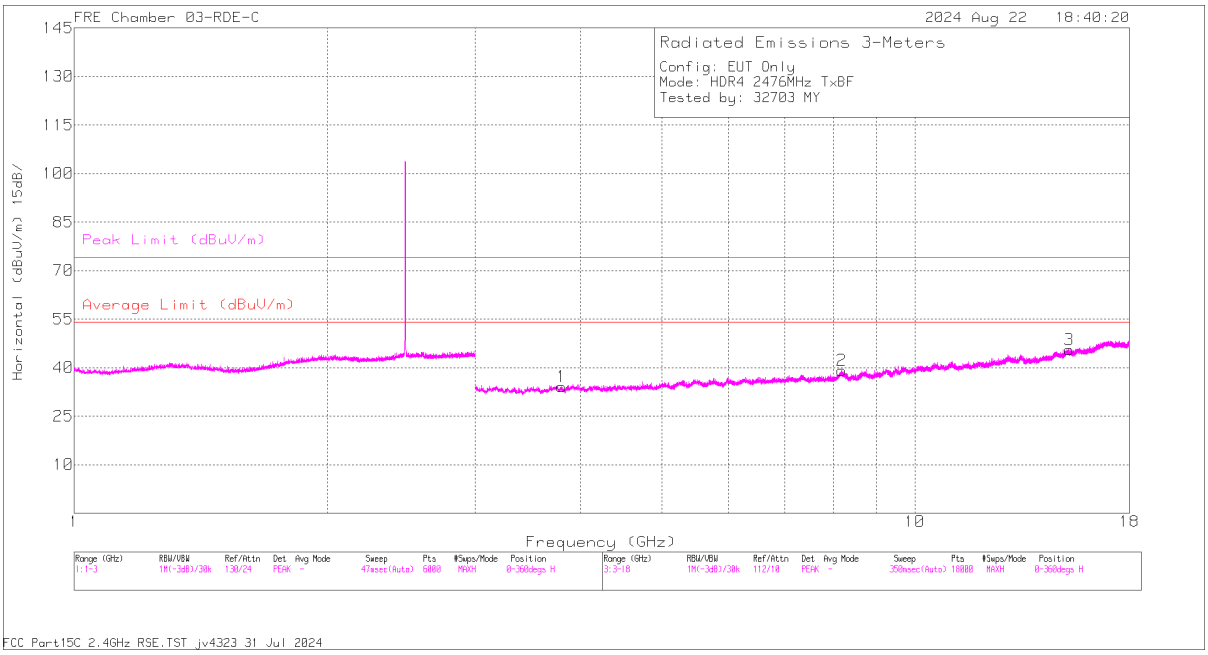
RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	223084 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.915674	57.15	PK2	33.5	0	-45.7	44.95			74	-29.05	1	200	H
	* 3.915024	45.54	MAv1	33.5	0	-45.7	33.34	54	-20.66	-	-	1	200	H
2	* 8.175736	56	PK2	35.9	0	-43.37	48.53			74	-25.47	1	200	H
	* 8.173783	44.56	MAv1	35.9	0	-43.3	37.16	54	-16.84	-	-	1	200	H
4	* 3.688091	56.69	PK2	33	0	-45.6	44.09			74	-29.91	1	101	V
	* 3.684918	45.26	MAv1	33	0	-45.6	32.66	54	-21.34	-	-	1	101	V
5	* 8.167847	56.05	PK2	35.9	0	-43.3	48.65			74	-25.35	1	101	V
	* 8.169486	44.61	MAv1	35.9	0	-43.3	37.21	54	-16.79	-	-	1	101	V
6	* 15.62335	57.78	PK2	40.2	0	-42.94	55.04			74	-18.96	1	200	V
	* 15.62329	46.18	MAv1	40.2	0	-42.93	43.45	54	-10.55	-	-	1	200	V
3	15.112492	57.53	PK2	40	0	-43.15	54.38	-	-	-	-	1	101	H

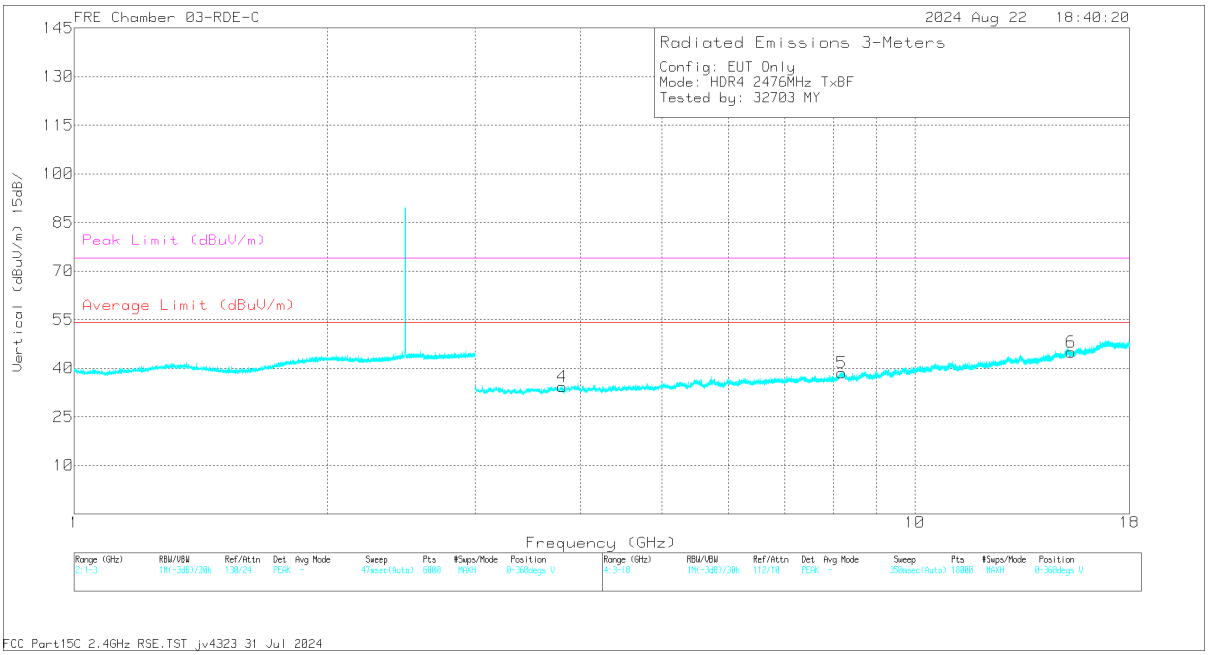
* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

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

HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

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

RADIATED EMISSIONS

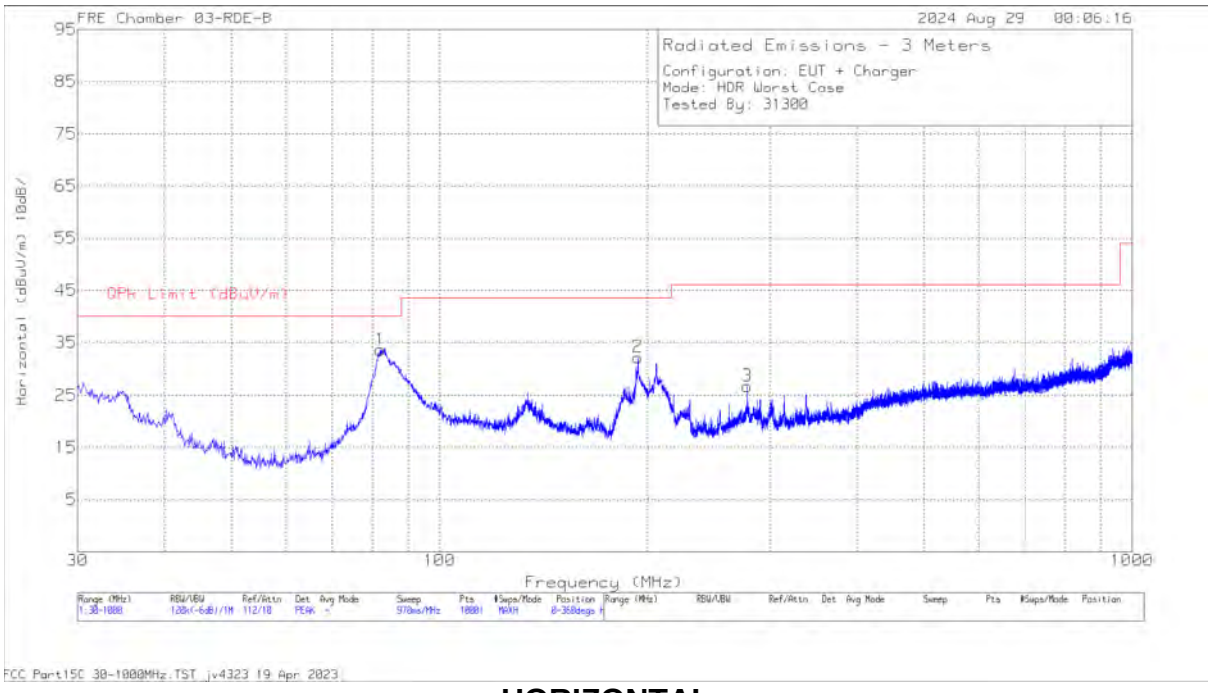
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	223084 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.800509	55.61	PK2	33.3	0	-45.1	43.81	-	-	74	-30.19	0	200	H
	* 3.799057	44.35	MAv1	33.3	0	-45.1	32.55	54	-21.45	-	-	0	200	H
2	* 8.18431	56.17	PK2	35.9	0	-43.4	48.67	-	-	74	-25.33	0	200	H
	* 8.183195	44.66	MAv1	35.9	0	-43.32	37.24	54	-17.76	-	-	0	200	H
4	* 3.804861	55.85	PK2	33.4	0	-45.3	43.95	-	-	74	-30.05	0	200	V
	* 3.803952	44.47	MAv1	33.4	0	-45.3	32.57	54	-21.43	-	-	0	200	V
5	* 8.190178	55.94	PK2	35.9	0	-43.5	48.34	-	-	74	-25.66	0	200	V
	* 8.18923	44.66	MAv1	35.9	0	-43.5	37.06	54	-16.94	-	-	0	200	V
6	* 15.74693	58.77	PK2	40.3	0	-43.4	55.67	-	-	74	-18.33	0	200	V
	* 15.73643	47.16	MAv1	40.3	0	-43.34	44.12	54	-9.88	-	-	0	200	V
3	15.268456	58.13	PK2	40.1	0	-43.75	54.48	-	-	-	-	0	101	H

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

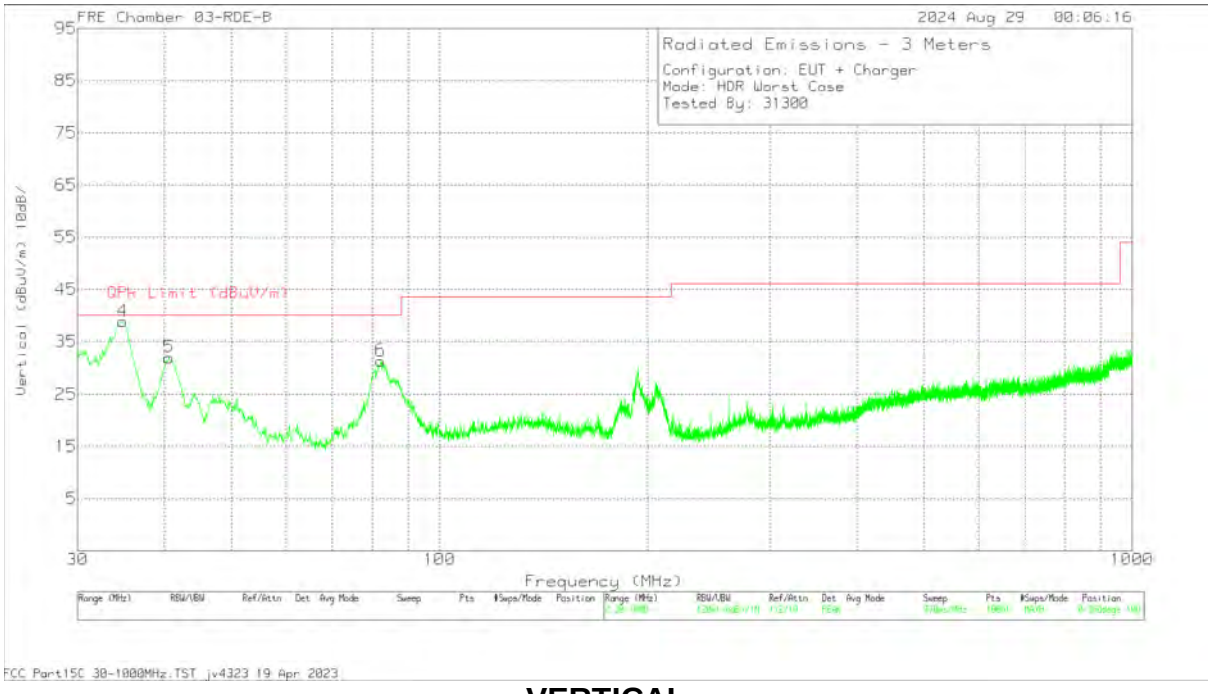
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

10.3. WORST CASE BELOW 1 GHz

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



HORIZONTAL



VERTICAL

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

Below 1GHz Data

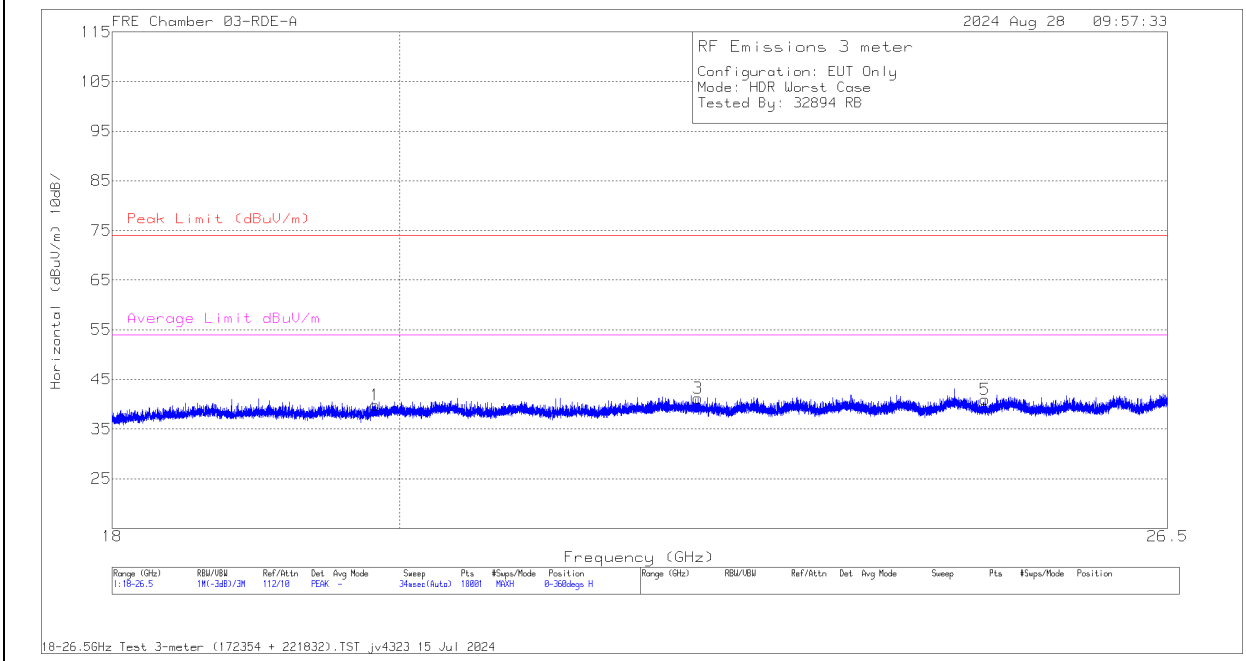
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	204045 ACF (dB/m)	CBL AMP (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 278.207	36.13	Qp	19.2	-28.9	26.43	46.02	-19.59	319	100	H
4	34.5601	43.95	Qp	23.4	-31	36.35	40	-3.65	312	105	V
5	40.9618	40.49	Qp	18.8	-30.9	28.39	40	-11.61	243	107	V
1	82.1938	43.44	Qp	13.4	-30.6	26.24	40	-13.76	289	116	V
6	82.2447	47.88	Qp	13.4	-30.6	30.68	40	-9.32	349	224	H
2	193.528	42.43	Qp	17.8	-29.5	30.73	43.52	-12.79	287	104	H

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Qp - Quasi-Peak detector

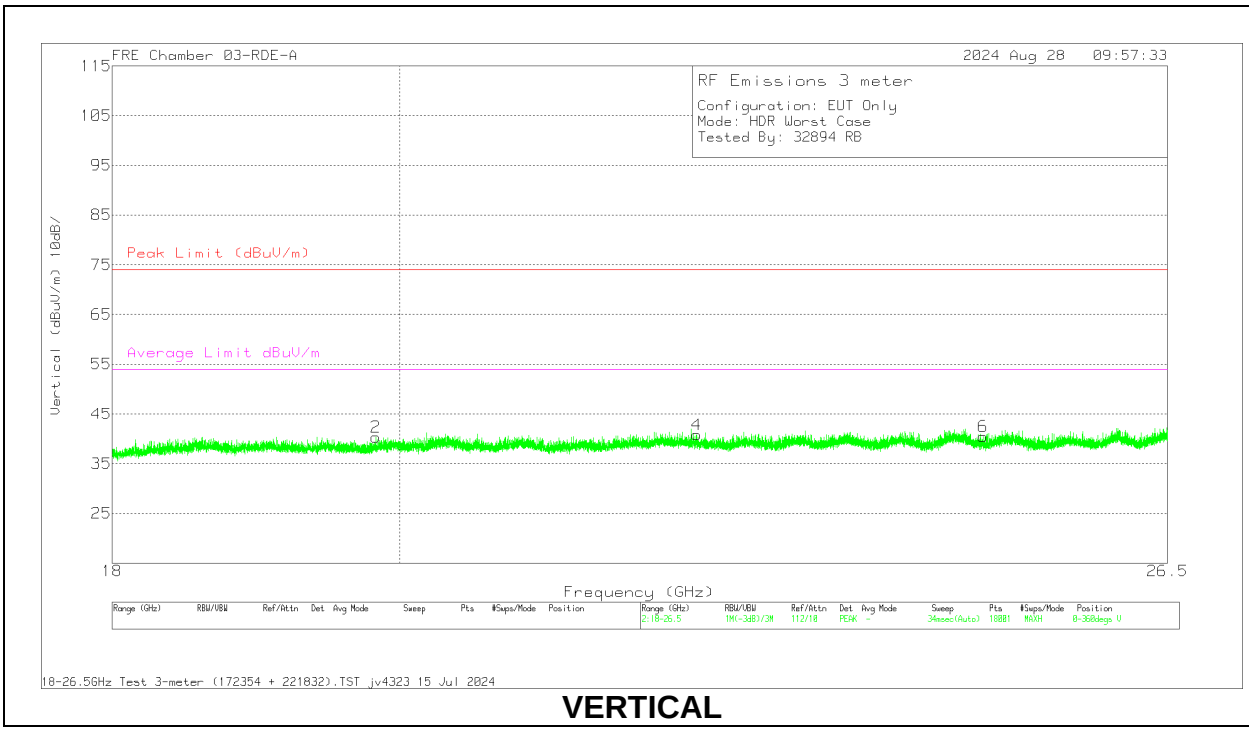
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

10.4. WORST CASE 18-26 GHz

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



HORIZONTAL



VERTICAL

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

18 – 26GHz DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	172354 3m AF (dB/m)	221832 Amp (dB)	Cbl/Switch (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	PK Margin (dB)	Average Limit dBuV/m	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 19.81994	55.88	Pk	32.4	-62.5	14.1	39.88	74	-34.12	54	-14.12	0-360	199	H
3	* 22.30997	55.55	Pk	33.1	-62.1	14.7	41.25	74	-32.75	54	-12.75	0-360	199	H
2	* 19.82513	56.26	Pk	32.5	-62.5	14.1	40.36	74	-33.64	54	-13.64	0-360	199	V
4	* 22.30099	55.08	Pk	33.1	-62.1	14.7	40.78	74	-33.22	54	-13.22	0-360	199	V
6	24.766469	53.26	Pk	33.8	-62.1	15.5	40.46	74	-33.54	54	-13.54	0-360	199	V
5	24.783941	53.8	Pk	33.8	-62.1	15.5	41	74	-33.0	54	-13.0	0-360	199	H

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
Pk - Peak detector

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

11. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

Frequency of Emission (MHz)	Conducted Limit (dBµV)	
	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.

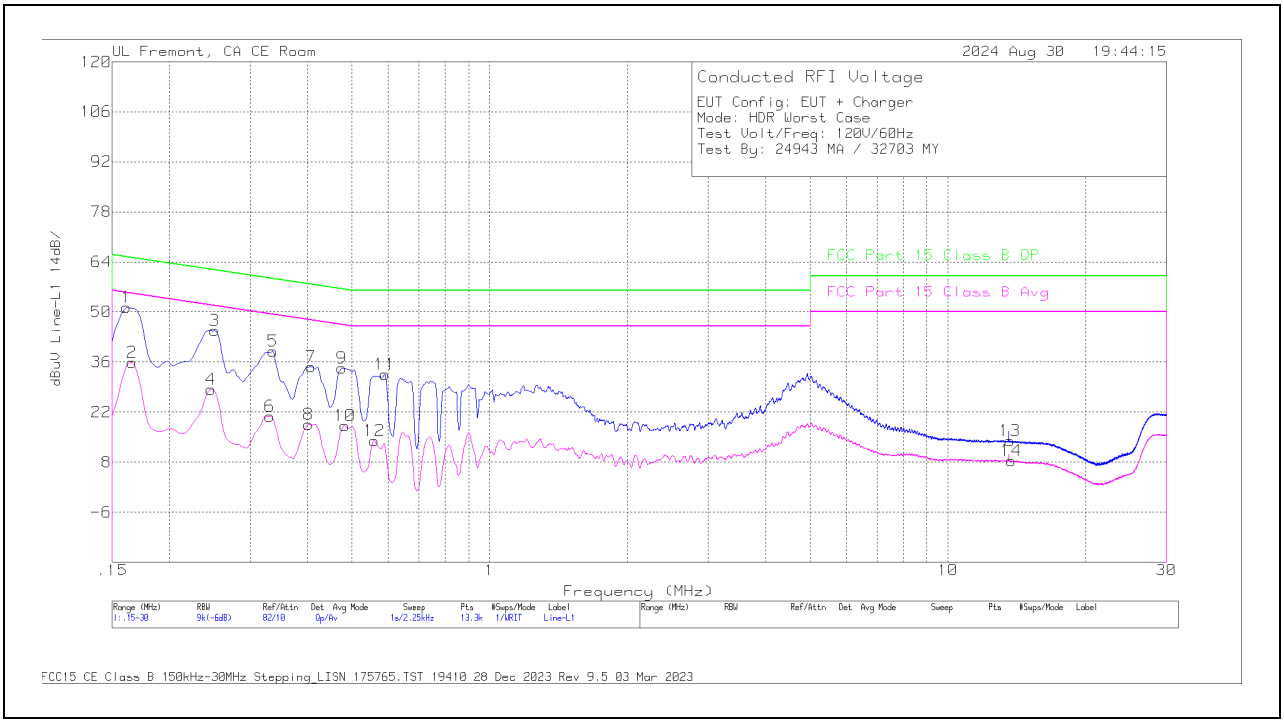
Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

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

11.1. AC Power Line with AC/DC Adapter

LINE 1 RESULTS

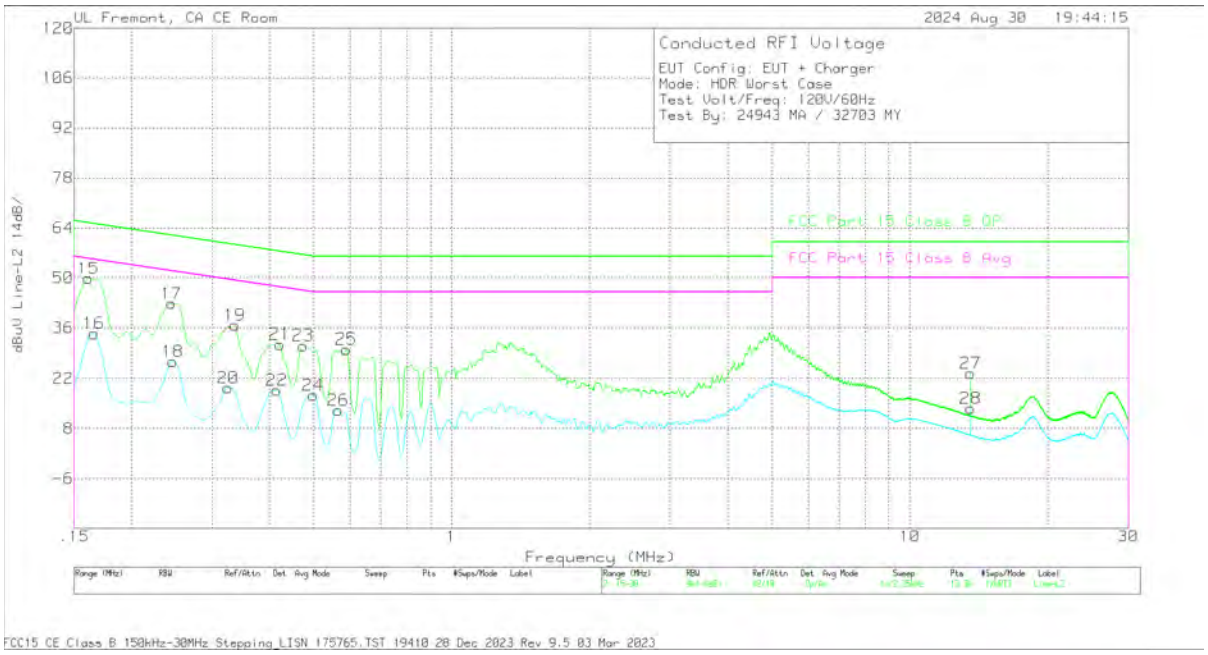


Range 1: Line-L1 .15 - 30MHz											
Marker	**Frequency (MHz)**	**Meter Reading (dBuV)**	**Det**	**LISN (dB)**	**Cbl (dB)**	**Trns Limiter (dB)**	**Corrected Reading (dBuV)**	**FCC Part 15 Class B QP (dBuV)**	**QP Margin (dB)**	**FCC Part 15 Class B Avg (dBuV)**	**Av Margin (dB)**
2	.1658	26.36	Av	.1	0	9.5	35.96	-	-	55.17	-19.21
4	.2468	18.99	Av	0	0	9.4	28.39	-	-	51.87	-23.48
6	.3311	11.46	Av	0	0	9.4	20.86	-	-	49.42	-28.56
8	.402	9.2	Av	0	0	9.4	18.6	-	-	47.81	-29.21
10	.483	8.88	Av	0	0	9.3	18.18	-	-	46.29	-28.11
12	.5595	4.58	Av	0	.1	9.3	13.98	-	-	46	-32.02
14	13.7434	-1.36	Av	.1	.2	9.4	8.34	-	-	50	-41.66
1	.1613	41.71	Qp	.1	0	9.5	51.31	65.4	-14.09	-	-
3	.2513	35.5	Qp	0	0	9.4	44.9	61.72	-16.82	-	-
5	.3368	29.63	Qp	0	0	9.4	39.03	59.28	-20.25	-	-
7	.4076	25.24	Qp	0	0	9.4	34.64	57.7	-23.06	-	-
9	.4763	24.95	Qp	0	0	9.3	34.25	56.4	-22.15	-	-
11	.591	23.21	Qp	0	0	9.4	32.61	56	-23.39	-	-
13	13.6635	4.29	Qp	.1	.2	9.4	13.99	60	-46.01	-	-

Qp - Quasi-Peak detector
Av - Average detection

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

LINE 2 RESULTS



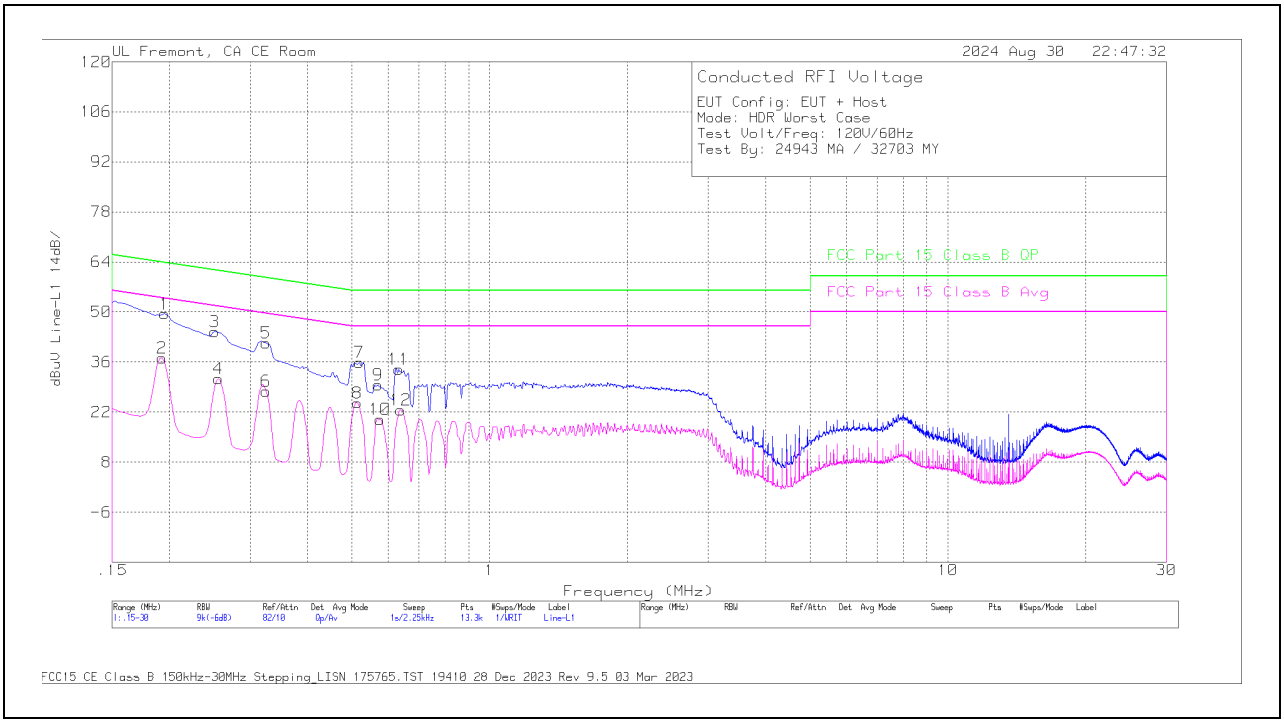
Range 2: Line-L2 .15 - 30MHz											
Marker	**Frequency (MHz)**	**Meter Reading (dBuV)**	**Det**	**LISN (dB)**	**Cbl (dB)**	**Trns Limiter (dB)**	**Corrected Reading (dBuV)**	**FCC Part 15 Class B QP (dBuV)**	**QP Margin (dB)**	**FCC Part 15 Class B Avg (dBuV)**	**Av Margin (dB)**
16	.1658	24.85	Av	.1	0	9.5	34.45	-	-	55.17	-20.72
18	.2468	17.35	Av	0	0	9.4	26.75	-	-	51.87	-25.12
20	.3255	9.96	Av	0	.1	9.4	19.46	-	-	49.57	-30.11
22	.4155	9.18	Av	0	.1	9.4	18.68	-	-	47.54	-28.86
24	.4988	8.04	Av	0	0	9.3	17.34	-	-	46.02	-28.68
26	.5663	3.84	Av	0	0	9.3	13.14	-	-	46	-32.86
28	13.56	3.8	Av	.1	.2	9.5	13.6	-	-	50	-36.4
15	.1613	40.24	Qp	.1	0	9.5	49.84	65.4	-15.56	-	-
17	.2445	33.43	Qp	0	0	9.4	42.83	61.94	-19.11	-	-
19	.3368	27.33	Qp	0	.1	9.4	36.83	59.28	-22.45	-	-
21	.4223	22.04	Qp	0	.1	9.4	31.54	57.4	-25.86	-	-
23	.474	21.89	Qp	0	0	9.3	31.19	56.44	-25.25	-	-
25	.5888	20.58	Qp	0	.1	9.4	30.08	56	-25.92	-	-
27	13.56	13.65	Qp	.1	.2	9.5	23.45	60	-36.55	-	-

Qp - Quasi-Peak detector
Av - Average detection

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

11.2. AC Power Line with Laptop

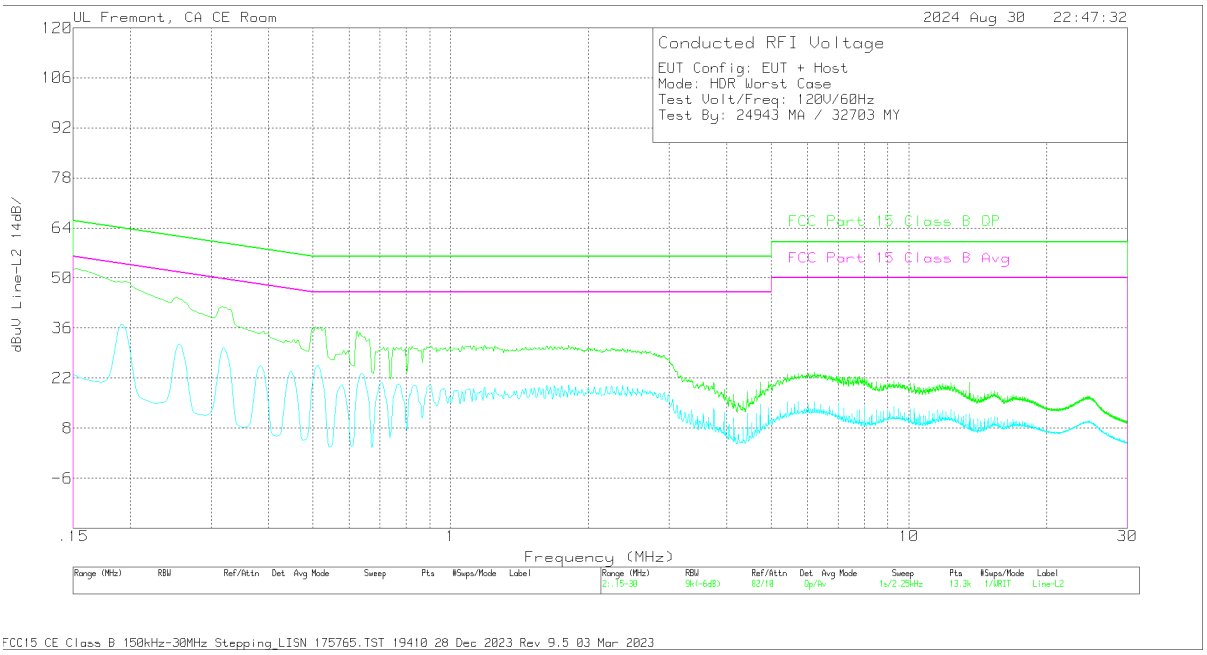
LINE 1 RESULTS



Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN (dB)	Cbl (dB)	Trns Limiter (dB)	Corrected Reading (dBuV)	FCC Part 15 Class B QP (dBuV)	QP Margin (dB)	FCC Part 15 Class B Avg (dBuV)	Av Margin (dB)
2	.1928	27.5	Av	.1	.1	9.4	37.1	-	-	53.92	-16.82
4	.2558	21.88	Av	0	0	9.4	31.28	-	-	51.57	-20.29
6	.3255	18.44	Av	0	0	9.4	27.84	-	-	49.57	-21.73
8	.5145	15.28	Av	0	0	9.3	24.58	-	-	46	-21.42
10	.5764	10.55	Av	0	0	9.4	19.95	-	-	46	-26.05
12	.6394	13.03	Av	0	.1	9.4	22.53	-	-	46	-23.47
1	.195	39.87	Qp	.1	.1	9.4	49.47	63.82	-14.35	-	-
3	.2513	35.07	Qp	0	0	9.4	44.47	61.72	-17.25	-	-
5	.3255	31.96	Qp	0	0	9.4	41.36	59.57	-18.21	-	-
7	.519	26.61	Qp	0	0	9.3	35.91	56	-20.09	-	-
9	.5708	20.14	Qp	0	.1	9.3	29.54	56	-26.46	-	-
11	.6338	24.5	Qp	0	.1	9.4	34	56	-22	-	-

Qp - Quasi-Peak detector
Av - Average detection

LINE 2 RESULTS



Range 2: Line-L2 .15 - 30MHz											
Marker	**Frequency (MHz)**	**Meter Reading (dBuV)**	**Det**	**LISN (dB)**	**Cbl (dB)**	**Trns Limiter (dB)**	**Corrected Reading (dBuV)**	**FCC Part 15 Class B QP (dBuV)**	**QP Margin (dB)**	**FCC Part 15 Class B Avg (dBuV)**	**Av Margin (dB)**
14	.1928	27.52	Av	0	.1	9.4	37.02	-	-	53.92	-16.9
16	.2558	22.19	Av	0	0	9.4	31.59	-	-	51.57	-19.98
18	.3188	20.87	Av	0	.1	9.4	30.37	-	-	49.74	-19.37
20	.5123	16.18	Av	0	0	9.3	25.48	-	-	46	-20.52
22	.5798	10.59	Av	0	.1	9.4	20.09	-	-	46	-25.91
24	.6383	13.74	Av	0	.1	9.4	23.24	-	-	46	-22.76
13	.195	39.46	Qp	0	.1	9.4	48.96	63.82	-14.86	-	-
15	.2513	35.05	Qp	0	0	9.4	44.45	61.72	-17.27	-	-
17	.3165	32.56	Qp	0	.1	9.4	42.06	59.8	-17.74	-	-
19	.5078	27.02	Qp	0	0	9.3	36.32	56	-19.68	-	-
21	.5843	20.22	Qp	0	.1	9.4	29.72	56	-26.28	-	-
23	.6248	25.71	Qp	0	.1	9.4	35.21	56	-20.79	-	-

Qp - Quasi-Peak detector
Av - Average detection

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

12. SPOT CHECK EVALUATION

12.1. MODEL DIFFERENCES

The manufacturer hereby declares the following for models A3212, A3408, A3409 and A3410.

A3212, A3408, A3409 and A3410 are highly similar, with the only difference being the supported cellular bands.

Model	FCC ID	IC ID	B14/29/71	MCC B53/n53	Sim Support	Reference Model
A3212	BCG-E8725A	579C-E8725A	Yes	Yes	eSIM	-
A3408	BCG-E8726A	579C-E8726A	Yes	Yes	eSIM+pSIM	A3212
A3409	BCG-E8727A	579C-E8727A	No	Yes	eSIM+pSIM	
A3410	BCG-E8728A	579C-E8728A	No	No	pSIM+pSIM	

Note:

_ All models have the same PCB layout, circuit design, common components, antennas and antenna locations across their respective reference model table above. The cellular modem, Wi-Fi, BT, NFC and MSS transmitters are identical.

_Remove of LTE/NR (B14/29/53/71) and MSS bands is done by de-population of directly related components.

The spot check plan, approved by the FCC inquiry, allows for data reuse from the reference model where the variant model data meets the limits and has not changed by more than the criteria from KDB 484596 D01 v02r03 equation (2).

$$d_{dB} = |V_{dB} - R_{dB}| \le (3 + M_{dB}/20)\ dB \quad , \text{for } 0 \le M_{dB} \le 60\ dB$$
$$d_{dB} = |V_{dB} - R_{dB}| = 6\ dB \quad , \text{for } M_{dB} > 60\ dB \qquad (2)$$

Where: d_{dB} deviation from Reference data, V_{dB} variant spot check level, and R_{dB} measurement level

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

12.2. SPOT CHECK VERIFICATION RESULTS SUMMARY FOR A3408

A3408 SPOT CHECK RESULTS											
Equipment Class	Frequency (GHz)	MIMO TXBF Mode	Data Rate	Test Item	Channel	Measured Frequency (GHz)	Original Model: A3212 FCC ID : BCG-E8725A IC : 579C-E8725A	Sub Model: A3408 FCC ID : BCG-E8726A IC : 579C-E8726A	Delta (dB)	Margin	Remarks
DTS	2.4	HDR	8Mbps	Avg Power (dBm)	Mid	Fundamental	16.48	16.34	-0.14	-13.52	Note 1
			8Mbps	Radiated Bandedge (dBuV/m)	High	Horizontal High Bandedge	45.29	45.34	0.05	-8.71	Note 1
			4Mbps	RSE (dBuV/m)	Mid	1 to 18	44.12	40.96	-3.16	-9.88	Note 1

Note 1: Deviation from reference to variant within the value allowed by equation (2) in KDB 484596. Additional tests not required.
Note 2: Deviation from reference to variant exceeds the value allowed by equation (2) in KDB 484596. Additional tests performed on second channel.

12.3. SPOT CHECK VERIFICATION RESULTS SUMMARY FOR A3409

A3409 SPOT CHECK RESULTS											
Equipment Class	Frequency (GHz)	MIMO TXBF Mode	Data Rate	Test Item	Channel	Measured Frequency (GHz)	Original Model: A3212 FCC ID : BCG-E8725A IC : 579C-E8725A	Sub Model: A3409 FCC ID : BCG-E8727A IC : 579C-E8727A	Delta (dB)	Margin	Remarks
DTS	2.4	HDR	8Mbps	Avg Power (dBm)	Mid	Fundamental	16.48	16.25	-0.23	-13.52	Note 1
			8Mbps	Radiated Bandedge (dBuV/m)	High	Horizontal High Bandedge	45.29	45.24	-0.05	-8.71	Note 1
			4Mbps	RSE (dBuV/m)	Mid	1 to 18	44.12	41.15	-2.97	-9.88	Note 1

Note 1: Deviation from reference to variant within the value allowed by equation (2) in KDB 484596. Additional tests not required.
Note 2: Deviation from reference to variant exceeds the value allowed by equation (2) in KDB 484596. Additional tests performed on second channel.

12.4. SPOT CHECK VERIFICATION RESULTS SUMMARY FOR A3410

A3410 SPOT CHECK RESULTS											
Equipment Class	Frequency (GHz)	MIMO TXBF Mode	Data Rate	Test Item	Channel	Measured Frequency (GHz)	Original Model: A3212 FCC ID : BCG-E8725A IC : 579C-E8725A	Sub Model: A3410 FCC ID : BCG-E8728A IC : 579C-E8728A	Delta (dB)	Margin	Remarks
DTS	2.4	HDR	8Mbps	Avg Power (dBm)	Mid	Fundamental	16.48	16.41	-0.07	-13.52	Note 1
			8Mbps	Radiated Bandedge (dBuV/m)	High	Horizontal High Bandedge	45.29	45.70	0.41	-8.71	Note 1
			4Mbps	RSE (dBuV/m)	Mid	1 to 18	44.12	41.12	-3.00	-9.88	Note 1

Note 1: Deviation from reference to variant within the value allowed by equation (2) in KDB 484596. Additional tests not required.
Note 2: Deviation from reference to variant exceeds the value allowed by equation (2) in KDB 484596. Additional tests performed on second channel.

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

13. SETUP PHOTOS

Please refer to 15175342-EP1V1 for setup photos

END OF TEST REPORT

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