TEST REPORT

Report Number: 15496249-E3V2

Applicant	:	APPLE INC. 1 APPLE PARK WAY CUPERTINO, CA 95014, U.S.A
Model	:	A3257 (Parent) A3525, A3526, A3527 (Variants)
Brand	:	APPLE
FCC ID	:	BCG-E8950A (Parent) BCG-E8960A, BCG-E8961A, BCG-E8962A (Variants)
IC	:	579C-E8950A (Parent) 579C-E8960A, 579C-E8961A, 579C-E8962A (Variants)
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:
2025-08-11

Prepared by:
UL Verification Services Inc.
47173 Benicia Street
Fremont, CA 94538 U.S.A.
TEL: (510) 319-4000
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CERT #0751.05

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	2025-07-31	Initial Issue	Michael Kennedy
V2	2025-08-11	Updated section 6,9,10, and 12	Gerardo Abrego

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1. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: SMARTPHONE

MODEL: A3257 (Parent)
A3525, A3526, A3527 (Variants)

BRAND: APPLE

SERIAL NUMBER: HVHHCY0001P0000YEE, HVHHHD0004U0000YE8 (Conducted)
DHVYMJ7FMF (Radiated)

SAMPLE RECEIPT DATE: 2025-03-07

DATE TESTED: 2025-03-28 to 2025-08-11

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.

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Approved & Released For
UL Verification Services Inc. By:

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2. TEST SUMMARY

This report contains data provided by the customer which can impact the validity of results. UL Verification Services Inc. is only responsible for correctly integrating customer-provided data with measurements performed by UL Verification Services Inc.

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

1. Antenna gain and type (see section 6.4)
2. Cable loss (see section 6.4)

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

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with:

- FCC 47 CFR Part 2
- FCC 47 CFR Part 15C
- *ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024
- KDB 558074 D01 15.247 Meas Guidance
- KDB 414788 D01 Radiated Test Site
- KDB 662911 D01 Multiple Transmitter Output
- KDB 484596 D01 Referencing Test Data
- RSS-GEN Issue 5 + A1 + A2
- RSS-247 Issue 3

*Note: The use of ANSI C63.10-2020 + Cor. 1-2023 + C63.10a-2024 does not deviate from the testing procedures of ANSI C63.10-2020

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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			

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5. DECISION RULES AND MEASUREMENT UNCERTAINTY

5.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

5.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not considered when stating conformity with a specified requirement.)

5.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	U_{LAB}
Conducted Antenna Port Emission Measurement	1.94 dB
Power Spectral Density	2.466 dB
Time Domain Measurements Using SA	3.39 %
RF Power Measurement Direct Method Using Power Meter	1.3 dB (Pk), 0.45 dB (Ave)
Radio Frequency (Spectrum Analyzer)	141.16 Hz
Occupied Bandwidth	1.22 %
Worst Case Conducted Disturbance, 9kHz to 0.15 MHz	3.78 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.40 dB
Worst Case Radiated Disturbance, 9kHz to 30 MHz	2.87 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	6.01 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.73 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.51 dB

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

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6. EQUIPMENT UNDER TEST

6.1. EUT DESCRIPTION

The Apple iPhone is a smartphone with cellular GSM, GPRS, EGPRS, WCDMA, LTE, 5GNR1, 5GNR2, IEEE 802.11a/b/g/n/ac/ax/be, Bluetooth (BT), Ultra-Wideband (UWB), Global Positioning System (GPS), Near-Field Communication (NFC), Narrow-Band (NB) UNII, 802.15.4, 802.15.4ab-Narrow Band (NB), Wireless Power Transfer (WPT) and Mobile Satellite Service (MSS) technologies. The rechargeable battery is not user accessible.

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 2	High Power	2404 - 2476	HDR4	16.04	40.18
	Low Power			7.35	5.43
	High Power		HDR8	16.05	40.27
	Low Power			7.31	5.38
ANT 1	High Power	2404 - 2476	HDR4	16.51	44.77
	Low Power			8.95	7.85
	High Power		HDR8	16.60	45.71
	Low Power			8.88	7.73
BF, ANT 2 + ANT 1	High Power	2404 - 2476	HDR4	19.27	84.53
	Low Power			10.89	12.27
	High Power		HDR8	19.29	84.92
	Low Power			11.09	12.85

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6.3. DESCRIPTION OF AVAILABLE ANTENNAS AND CABLE LOSS

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

Frequency Band (GHz)	Antenna Type	Antenna Peak Gain ANT 2 (dBi)	Antenna Peak Gain ANT 1 (dBi)	Cable Loss ANT 2 (dB)	Cables Loss ANT 1 (dB)
2.4	IFA	-1.1	-3.1	2.1	1.9

The cables were used for RF antenna port tests that had been offset to the test equipment during testing.

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6.4. SOFTWARE AND FIRMWARE

The EUT firmware is 23A258.

6.5. WORST-CASE CONFIGURATION AND MODE

The EUT was investigated in three orthogonal orientations X, Y and Z on both ANT 2, ANT 1 and 2TX, it was determined that X(Flatbed) orientation was the worst-case orientation for ANT 2, ANT 1 and 2TX.

Radiated band edge, harmonic, and spurious emissions from 1GHz to 18GHz were performed with the EUT set to transmit at highest power on Low/Middle/High channels.
There were no emissions found below 30 MHz within 20dB of the limit

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.

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

During investigation, it was observed that in scenarios where HDR4 and HDR8 represented the worst-case condition for 2.5MHz & 5MHz BW. As a result, only HDR4 and HDR8 were tested.

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2G					
Mode	**BW (MHz)**	**Modulation**	**Frequency Range (MHz)**	**Worst Case Tone**	
				Power	**PSD**
HDR	2.5MHz	HDR4	2404-2476	X	X
		HDRPS2			
		XHDRPS2			
	5MHz	HDR8	2404-2476	X	X
		HDRPM4			
		HDRPM6			
		HDRPM8			
		XHDRPM4			
		XHDRPM6			
		XHDRPM8			
		HDRPM12			
		HDRPM16			
		XHDRPM12			
		XHDRPM16			

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6.6. DESCRIPTION OF TEST SETUP

SUPPORT TEST EQUIPMENT						
Description		**Manufacturer**	**Model**	**Serial Number**		**FCC ID/ DoC**
Laptop		Apple	Macbook Pro	C02VD7SAHV22		BCGA1708
Laptop AC/DC adapter		Liteon Technology	A1424	NSW25679		DoC
EUT AC/DC adapter		Apple	A1720	C3D8417A7R93KVPA8		DoC
Conducted Switch Box		UL	n/a	208281		N/A
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	0.2	To spectrum Analyzer
2	Antenna	1	SMA	Shielded	0.2	EUT to Switchbox
3	USB	1	USB-C	Shield	1.0	N/A
4	DC	1	DC	Shield	2.0	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	DC	1	DC	Shielded	2	N/A
2	USB	1	USB-C	Shielded	1	N/A

TEST SETUP

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

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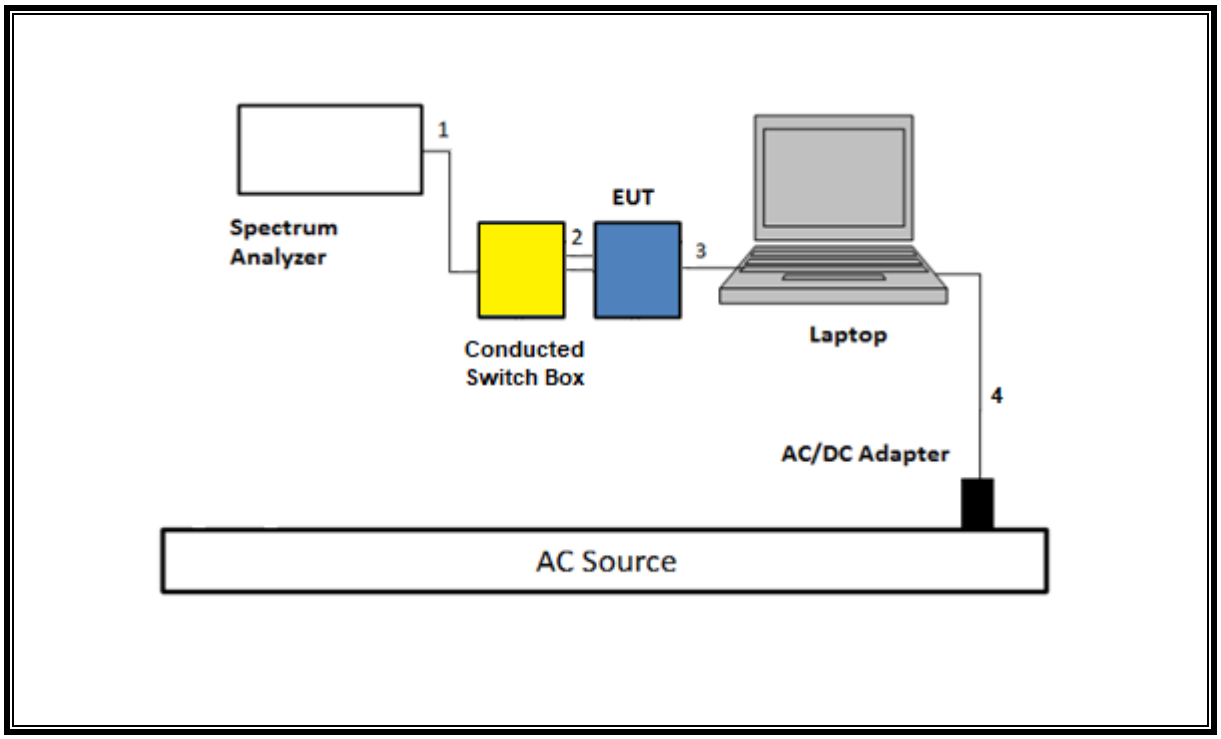
SETUP DIAGRAM FOR CONDUCTED TESTS



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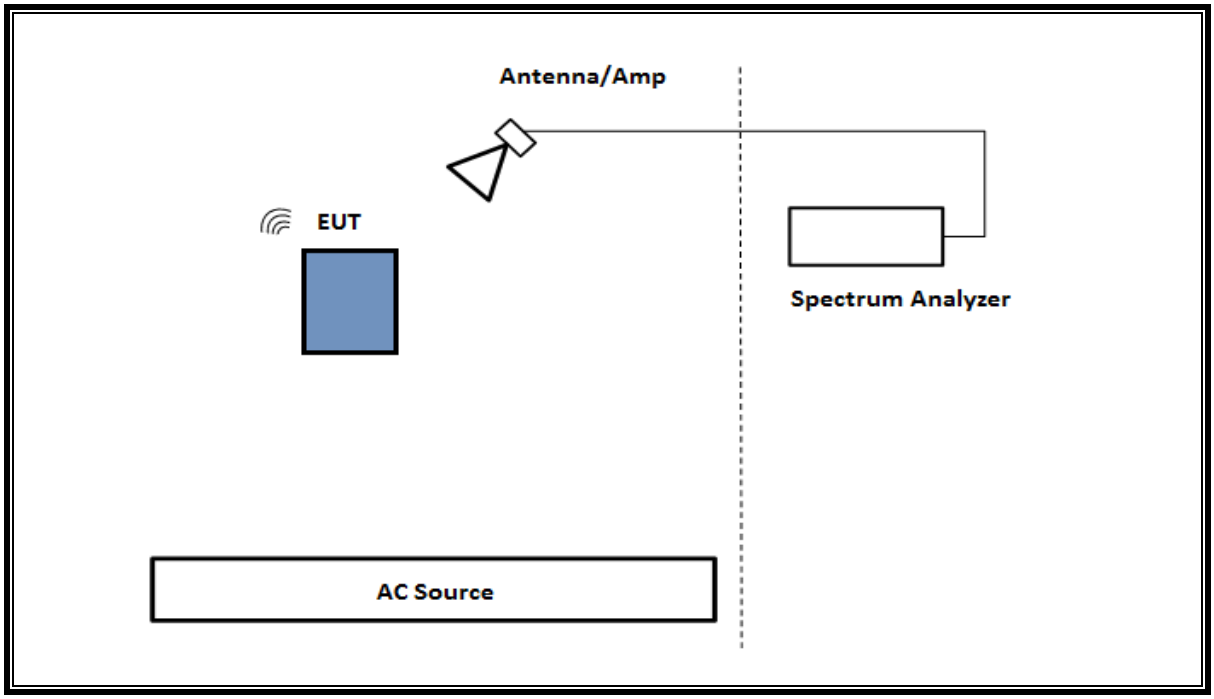
SETUP DIAGRAM FOR RADIATED TESTS Above 1 GHz



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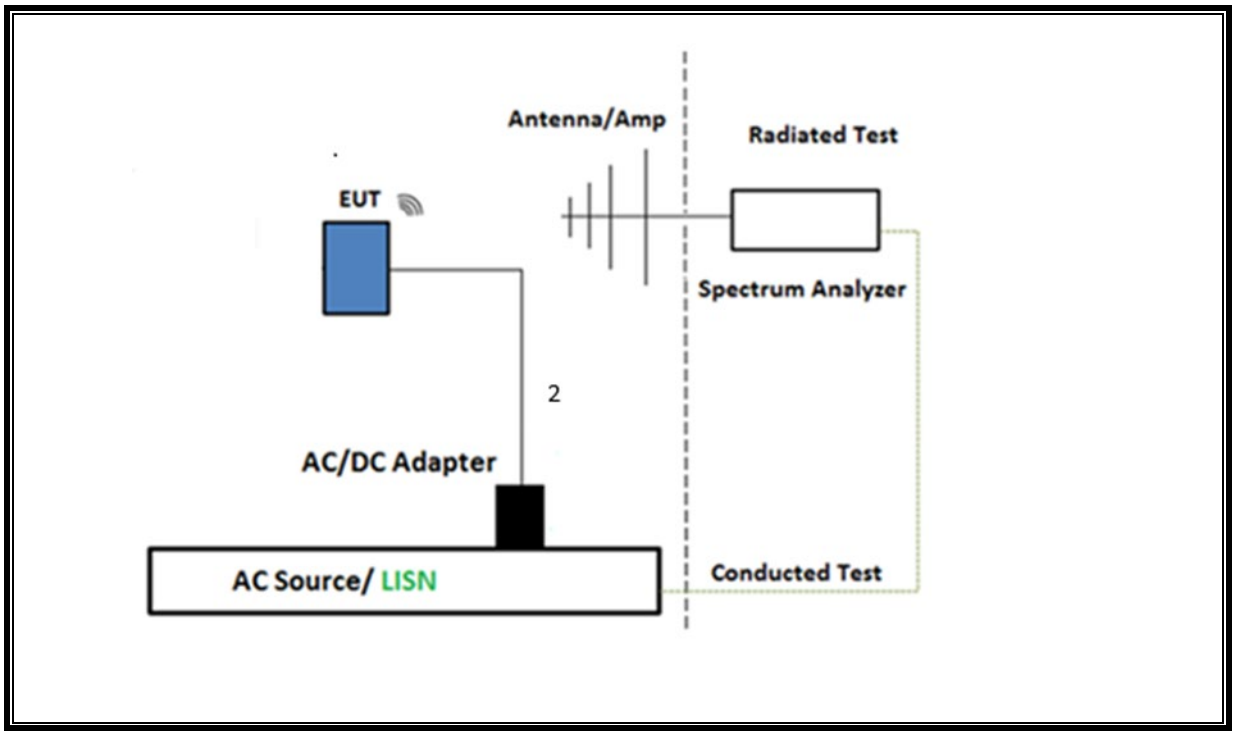
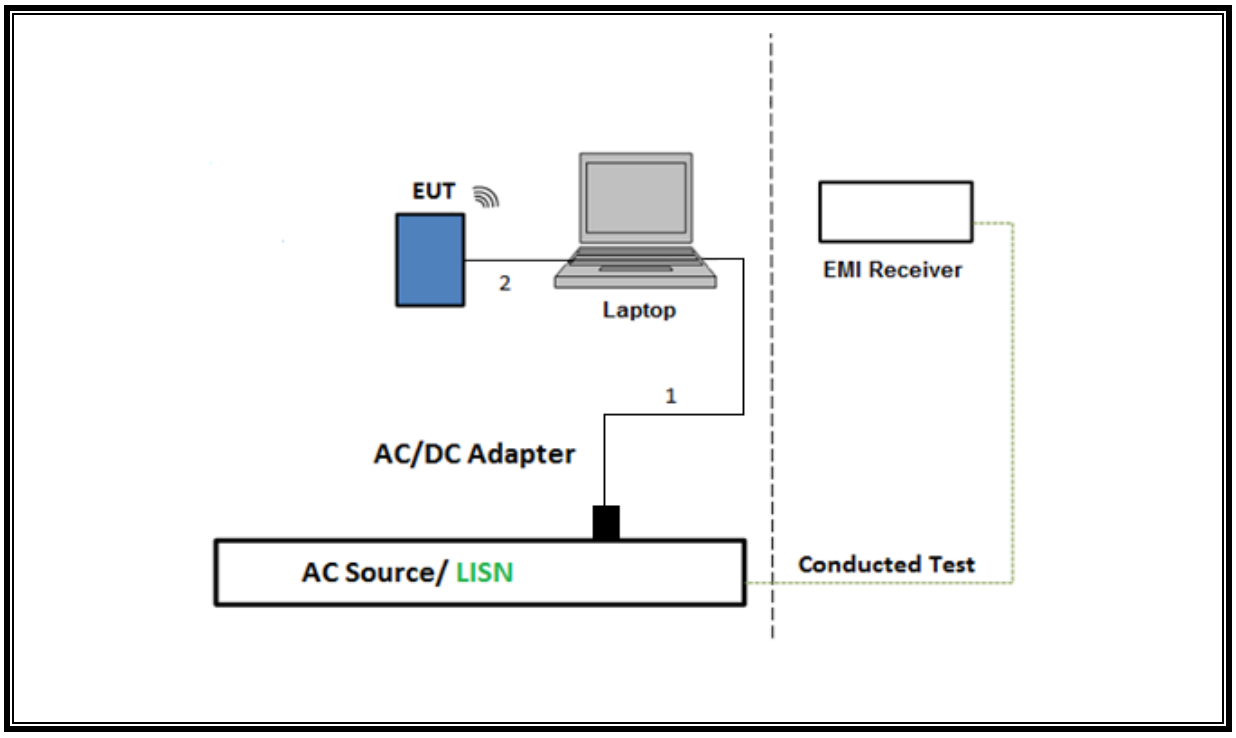
SETUP DIAGRAM FOR Below 1GHz and AC LINE CONDUCTED TEST



TEST SETUP- AC LINE CONDUCTED: LAPTOP CONFIGURATION



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7. MEASUREMENT METHOD

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

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

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

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

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

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

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

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

Band-edge: ANSI C63.10 Section 11.12.2.4 & Clause 13: Peak Measurement

Band-edge: ANSI C63.10 Section 11.12.2.5 & Clause 13: Average Measurement

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

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

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

NOTE: For all conducted antenna port tests for Beamforming, same test procedures from HDR normal modes were applied.

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8. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**ID Num**	**Cal Due**
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	200784	2027-03-31
RF Filter Box, 1-18GHz	UL-FR1	RATS 1.0	168534	2026-02-28
EMI Test Receiver	Rohde & Schwarz	ESW44	223462	2026-02-28
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	226672	2026-02-28
RF Filter Box, 1-18GHz	UL-FR1	Frankenstein	231876	2026-04-30
EMI Test Receiver	Rohde & Schwarz	ESW44	223459	2026-02-27
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	200784	2026-07-27
RF Filter Box, 1-18GHz	UL-FR1	Frankenstein	168534	2026-02-28
EMI Test Receiver	Rohde & Schwarz	ESW44	223462	2026-02-28
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	222740	2026-09-29
RF Filter Box, 1-18GHz	UL-FR1	Frankenstein	171389	2026-03-30
EMI Test Receiver	Rohde & Schwarz	ESW44	201497	2026-02-28
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	222741	2026-09-30
RF Filter Box, 1-18GHz	UL-FR1	Frankenstein	217521	2025-08-31
EMI Test Receiver	Rohde & Schwarz	ESW44	223461	2026-02-16
Antenna, Broadband Hybrid, 3m & 10m	Sunol Sciences Corp.	JB3	85150	2025-12-30
Link File, Port 0, 9KHz-1GHz path loss	UL-FR1	Port 0 Factors	208807	2026-01-31
Antenna, Horn 18 to 26.5GHz	A.R.A.	MWH-1826/B	172353	2026-08-31
Antenna, Passive Loop 100KHz - 30MHz	ELECTRO-METRICS	EM-6872	170015	2026-09-30
Antenna, Passive Loop 30Hz - 1MHz	ELECTRO-METRICS	EM-6871	170013	2026-09-30
Spectrum Analyzer, PXA, 3Hz to 44GHz	N9030A	Keysight Technologies Inc	80397	2026-01-31
Spectrum Analyzer, PXA, 3Hz to 44GHz	N9030A	Keysight Technologies Inc	125179	2026-02-28
Conducted Switch Box	UL-FR1	CSB	245782	2025-07-31*
Conducted Switch Box	UL-FR1	CSB	245781	2026-04-30
Power Meter, P-series single channel	Keysight Technologies Inc	N1911A	90715	2026-01-31
Power Sensor, P - series, 50MHz to 18GHz, Wideband	Keysight Technologies Inc	N1921A	81319	2026-01-31
Power Meter, P-series single channel	Keysight Technologies Inc	N1911A	90718	2026-01-31
Power Sensor, P - series, 50MHz to 18GHz, Wideband	Keysight Technologies Inc	N1921A	90419	2026-01-31

AC Line Conducted				
Description	**Manufacturer**	**Model**	**ID Num**	**Cal Due**
EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESR	171646	2026-02-28
LISN for Conducted Emissions CISPR-16	FISCHER CUSTOM COMMUNICATIONS	FCC-LISN-50/250-25-2-01-480V	175765	2026-01-31
Transient Limiter	TE	TBFL1	207996	2026-09-30

UL AUTOMATION SOFTWARE			
Radiated Software	UL	UL EMC	May 1, 2023, Ver 9.5, August 31 2024 Ver 9.5
Conducted Software	UL	UL EMC	Ver 9.5 Jan 09, 2023
AC Line Conducted Software	UL	UL EMC	Ver 9.5, Mar 3, 2023

*Testing is completed before equipment calibration due date.

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9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

PROCEDURE

ANSI C63.10, Section 11.6: Zero-Span Spectrum Analyzer Method.

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time T (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)
2.4GHz Band						
HDR4	2.790	3.750	0.744	74.40	1.28	0.358
HDR8	2.790	3.750	0.744	74.40	1.28	0.358

Note: DCCF is the same for both 1TX and 2TX.

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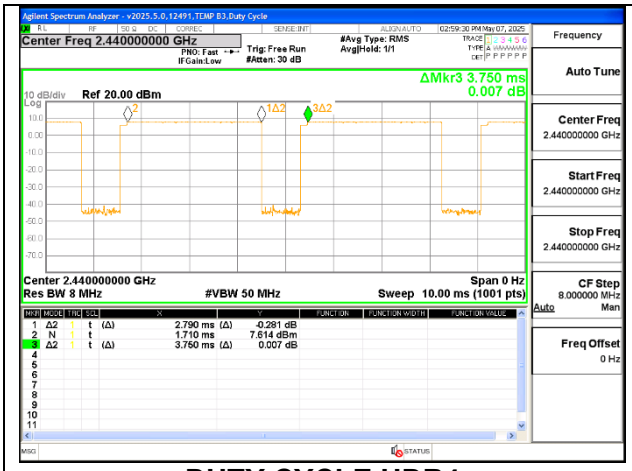
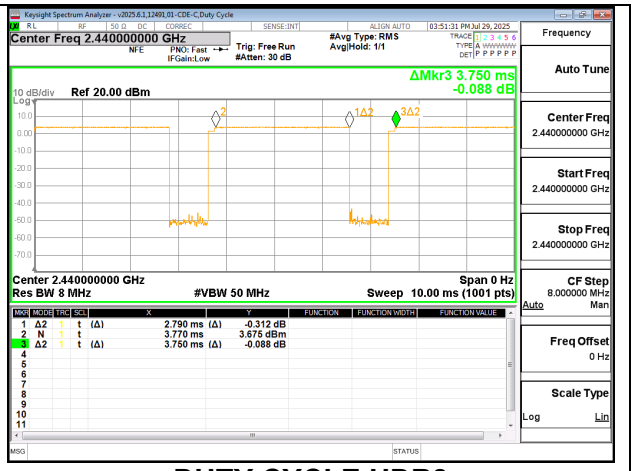
DUTY CYCLE PLOTS



DUTY CYCLE HDR4



DUTY CYCLE HDR8

9.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Only High-Power modes results are reported; it covers all Low Power modes. Only Mid channel plot is reported to show the analyzer's settings.

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9.2.1. HIGH POWER HDR (HDR4)

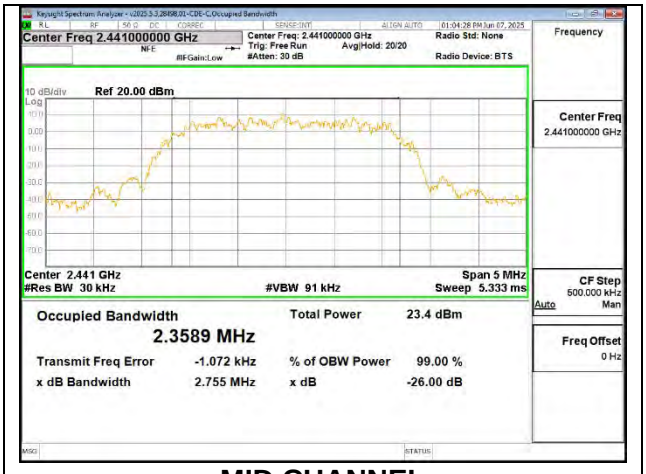
ANT 2

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2404	2.3843
Middle	2441	2.3457
High	2476	2.3858

MID CHANNEL

ANT 1

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2404	2.3507
Middle	2441	2.3589
High	2476	2.3739



MID CHANNEL

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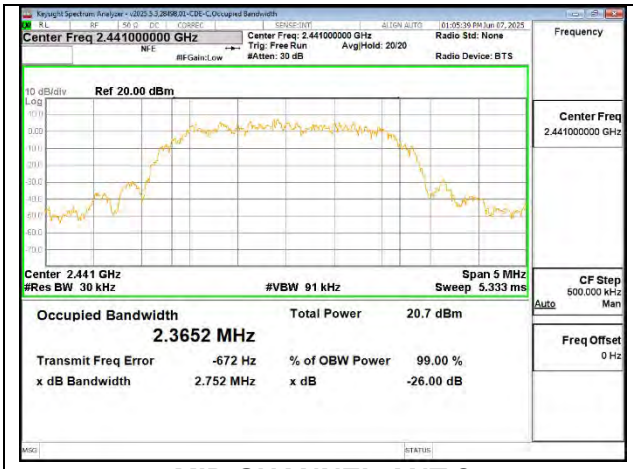
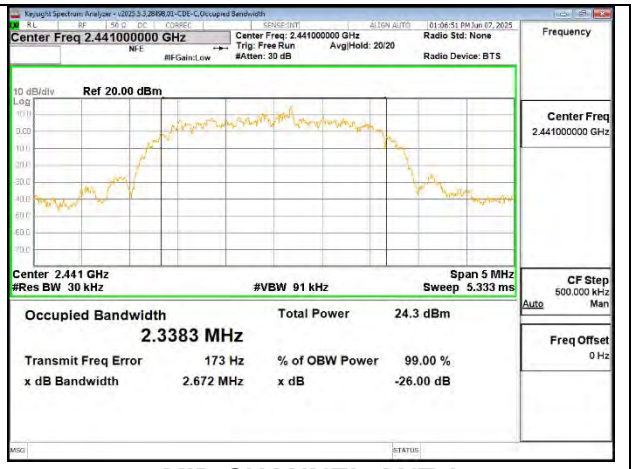
9.2.2. HIGH POWER HDR TXBF (HDR4)

Channel	Frequency (MHz)	99% Bandwidth ANT 2 (MHz)	99% Bandwidth ANT 1 (MHz)
Low	2404	2.3556	2.3434
Middle	2441	2.3652	2.3383
High	2476	2.3777	2.3613



MID CHANNEL ANT 2



MID CHANNEL ANT 1

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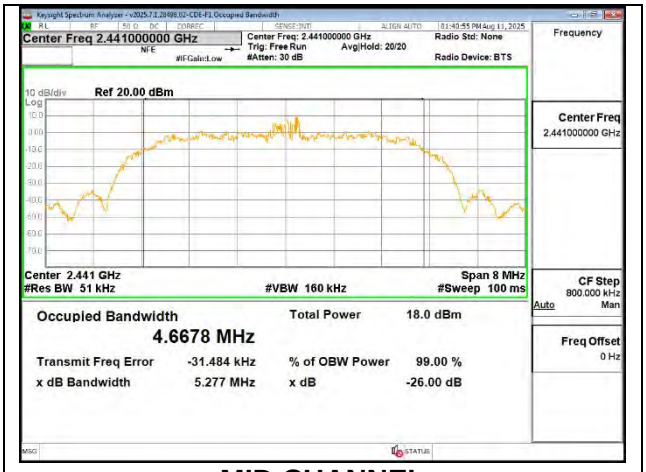
9.2.3. HIGH POWER HDR (HDR8)

ANT 2

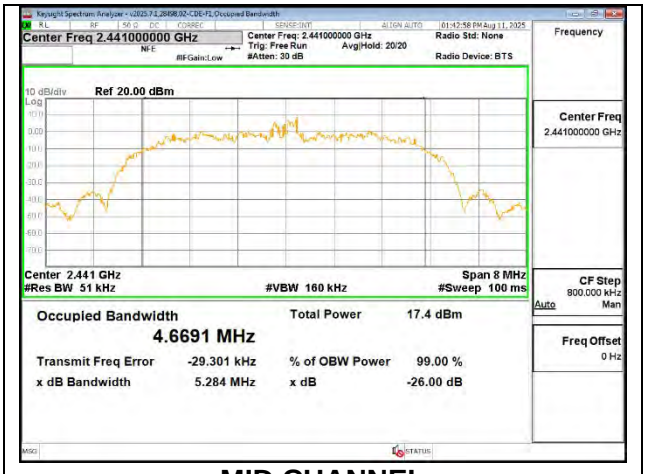
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2404	4.6638
Middle	2441	4.6678
High	2476	4.6667



MID CHANNEL

ANT 1

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2404	4.6524
Middle	2441	4.6691
High	2476	4.6488



MID CHANNEL

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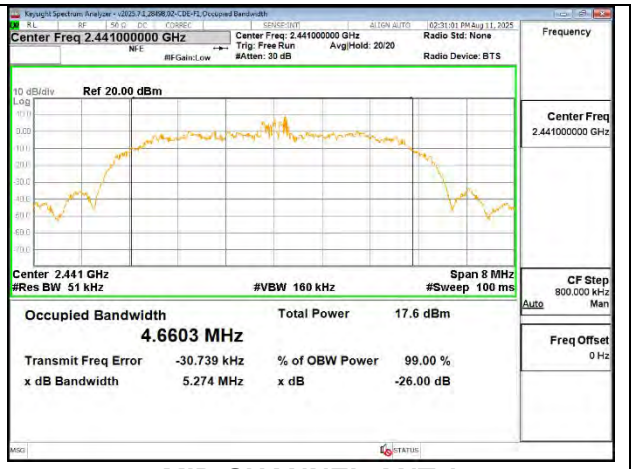
9.2.4. HIGH POWER HDR TXBF (HDR8)

Channel	Frequency (MHz)	99% Bandwidth ANT 2 (MHz)	99% Bandwidth ANT 1 (MHz)
Low	2404	4.6732	4.6561
Middle	2441	4.6643	4.6603
High	2476	4.6732	4.6701

MID CHANNEL ANT 2



MID CHANNEL ANT 1

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9.3. 6 dB BANDWIDTH

LIMITS

FCC §15.407 (e)

RSS-247 5.2 (a)

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

RESULTS

The 6dB bandwidth was measured for the narrowest bandwidth mode, 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 the analyzer's settings.

Only High-Power modes results are reported; it covers all Low Power modes.

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9.3.1. HIGH POWER HDR (HDR4)

ANT 2

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2404	1.845	0.5
Middle	2441	2.170	0.5
High	2476	1.655	0.5

MID CHANNEL

ANT 1

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2404	2.130	0.5
Middle	2441	1.625	0.5
High	2476	1.465	0.5

MID CHANNEL

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9.4. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)

RSS-247 5.4 (d)

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

TEST PROCEDURE

Measurements were performed 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 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 2 Gain (dBi)	ANT 1 Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)	Correlated Chains Directional Gain (dBi)
2.4	-1.10	-3.10	-1.99	0.97

Directional Gain Calculation:

ANSI C63.10-2020 section 14.6.3

Uncorrelated directional gain=10*LOG((10^(Ant2/10) +10^(Ant1/10))/2)
Correlated directional Gain=10*LOG(((10^(Ant2/20) +10^(Ant1/20)) ^2)/2)

Sample Calculation:

ANT 2=-1.10, ANT 1=-3.10

Uncorrelated Antenna gain=10log [(10^(-1.10/10)+10^(-3.10/10))/2]= -1.99 dBi

Correlated Antenna gain=10log [(10^(-1.10/20)+10^(-3.10/20))^2)/2]= .97dBi

RESULTS

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9.4.1. HIGH POWER HDR (HDR4)

ANT 2

Tested By:	BY 32480
Date:	2025-07-18

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	16.02	30	-13.98
Middle	2441	16.04	30	-13.96
High	2476	16.02	30	-13.98

ANT 1

Tested By:	BY 32480
Date:	2025-07-18

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	16.47	30	-13.53
Middle	2441	16.47	30	-13.53
High	2476	16.51	30	-13.49

9.4.2. HIGH POWER HDR TXBF (HDR4)

Tested By:	BY 32480
Date:	2025-07-18

Channel	Frequency (MHz)	Peak Power Reading ANT 2 (dBm)	Peak Power Reading ANT 1 (dBm)	Total Corr'd Power (dBm)	Limit (dBm)	Margin (dB)
Low	2404	16	16.48	19.26	30.00	-10.74
Middle	2441	16	16.51	19.27	30.00	-10.73
High	2476	16.02	16.48	19.27	30.00	-10.73

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9.4.3. HIGH POWER HDR (HDR8)

ANT 2

Tested By:	BY 32480
Date:	2025-07-18

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	16.05	30	-13.95
Middle	2441	16.00	30	-14.00
High	2476	15.97	30	-14.03

ANT 1

Tested By:	BY 32480
Date:	2025-07-18

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	16.53	30	-13.47
Middle	2441	16.60	30	-13.40
High	2476	16.60	30	-13.40

9.4.4. HIGH POWER HDR TXBF (HDR8)

Tested By:	BY 32480
Date:	2025-06-05

Channel	Frequency (MHz)	Peak Power Reading ANT 2 (dBm)	Peak Power Reading ANT 1 (dBm)	Total Corr'd Power (dBm)	Limit (dBm)	Margin (dB)
Low	2404	16.03	16.52	19.29	30.00	-10.71
Middle	2441	15.95	16.56	19.28	30.00	-10.72
High	2476	16.05	16.46	19.27	30.00	-10.73

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9.4.5. LOW POWER HDR (HDR4)

ANT 2

Tested By:	BY 32480
Date:	2025-07-18

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	7.29	30	-22.71
Middle	2441	7.35	30	-22.65
High	2476	7.30	30	-22.70

ANT 1

Tested By:	BY 32480
Date:	2025-07-18

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	8.95	30	-21.05
Middle	2441	8.61	30	-21.39
High	2476	8.76	30	-21.24

9.4.6. LOW POWER HDR TXBF (HDR4)

Tested By:	BY 32480
Date:	2025-08-13

Channel	Frequency (MHz)	Peak Power Reading ANT 2 (dBm)	Peak Power Reading ANT 1 (dBm)	Total Corr'd Power (dBm)	Limit (dBm)	Margin (dB)
Low	2404	7.27	8.28	10.81	30.00	-19.19
Middle	2441	7.33	8.36	10.89	30.00	-19.11
High	2476	7.26	8.22	10.78	30.00	-19.22

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9.4.7. LOW POWER HDR (HDR8)

ANT 2

Tested By:	BY 32480
Date:	2025-07-18

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	7.24	30	-22.76
Middle	2441	7.31	30	-22.69
High	2476	7.25	30	-22.75

ANT 1

Tested By:	BY 32480
Date:	2025-07-18

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	8.62	30	-21.38
Middle	2441	8.75	30	-21.25
High	2476	8.88	30	-21.12

9.4.8. LOW POWER HDR TXBF (HDR8)

Tested By:	BY 32480
Date:	2025-07-18

Channel	Frequency (MHz)	Peak Power Reading ANT 2 (dBm)	Peak Power Reading ANT 1 (dBm)	Total Corr'd Power (dBm)	Limit (dBm)	Margin (dB)
Low	2404	7.17	8.83	11.09	30.00	-18.91
Middle	2441	7.28	8.52	10.95	30.00	-19.05
High	2476	7.24	8.77	11.08	30.00	-18.92

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9.5. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

Measurements were performed 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

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9.5.1. HIGH POWER HDR (HDR4)

ANT 2

Tested By:	BY 32480
Date:	2025-07-18

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	13.25
Middle	2441	13.22
High	2476	13.24

ANT 1

Tested By:	BY 32480
Date:	2025-07-18

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	13.73
Middle	2441	13.73
High	2476	13.75

9.5.2. HIGH POWER HDR TXBF (HDR4)

Tested By:	BY 32480
Date:	2025-07-18

Channel	Frequency (MHz)	Average Power ANT 2 (dBm)	Average Power ANT 1 (dBm)	Total Power (dBm)
Low	2404	13.24	13.75	16.51
Middle	2441	13.23	13.73	16.50
High	2476	13.25	13.74	16.51

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9.5.3. HIGH POWER HDR (HDR8)

ANT 2

Tested By:	BY 32480
Date:	2025-07-18

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	13.24
Middle	2441	13.25
High	2476	13.22

ANT 1

Tested By:	BY 32480
Date:	2025-07-18

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	13.71
Middle	2441	13.72
High	2476	13.75

9.5.4. HIGH POWER HDR TXBF (HDR8)

Tested By:	BY 32480
Date:	2025-07-18

Channel	Frequency (MHz)	Average Power ANT 2 (dBm)	Average Power ANT 1 (dBm)	Total Power (dBm)
Low	2404	13.25	13.72	16.50
Middle	2441	13.22	13.71	16.48
High	2476	13.23	13.72	16.49

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9.5.6. LOW POWER HDR (HDR4)

ANT 2

Tested By:	BY 32480
Date:	2025-07-18

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	4.45
Middle	2441	4.46
High	2476	4.48

ANT 1

Tested By:	BY 32480
Date:	2025-07-18

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	5.49
Middle	2441	5.5
High	2476	5.47

9.5.7. LOW POWER HDR TXBF (HDR4)

Tested By:	BY 32480
Date:	2025-08-13

Channel	Frequency (MHz)	Average Power ANT 2 (dBm)	Average Power ANT 1 (dBm)	Total Power (dBm)
Low	2404	4.46	5.42	7.98
Middle	2441	4.45	5.48	8.01
High	2476	4.50	5.39	7.98

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9.5.8. LOW POWER HDR (HDR8)

ANT 2

Tested By:	BY 32480
Date:	2025-07-18

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	4.49
Middle	2441	4.5
High	2476	4.48

ANT 1

Tested By:	BY 32480
Date:	2025-07-18

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	5.48
Middle	2441	5.5
High	2476	5.49

9.5.9. LOW POWER HDR TXBF (HDR8)

Tested By:	BY 32480
Date:	7/18/2025

Channel	Frequency (MHz)	Average Power ANT 2 (dBm)	Average Power ANT 1 (dBm)	Total Power (dBm)
Low	2404	4.49	5.46	8.01
Middle	2441	4.50	5.46	8.02
High	2476	4.50	5.48	8.03

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9.6. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

RSS-247 (5.2) (b)

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

RESULTS

Only High-Power modes results are reported; it covers all Low Power modes.

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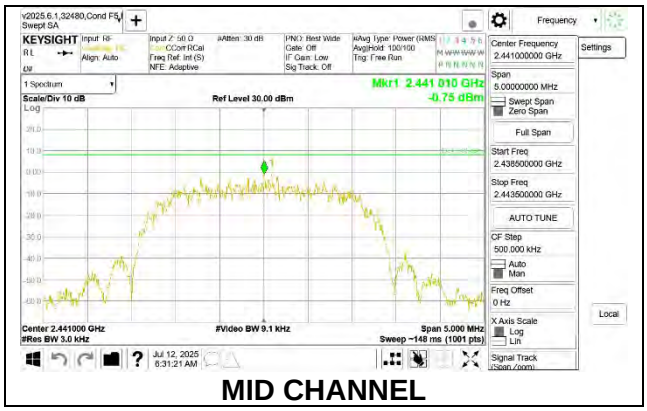
9.6.1. HIGH POWER HDR (HDR4)

ANT 2

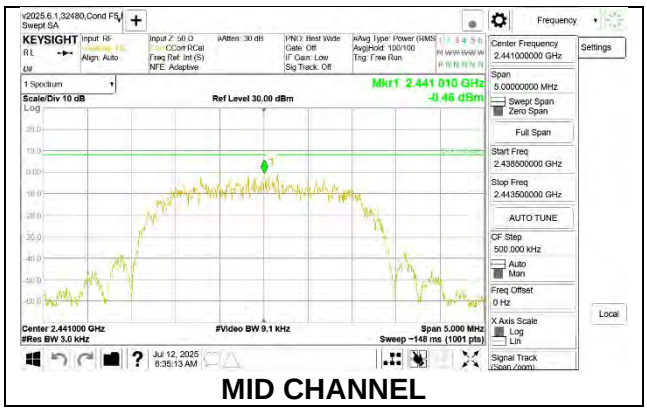
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2404	-1.050	8	-9.05
Middle	2441	-0.750	8	-8.75
High	2476	-0.970	8	-8.97



MID CHANNEL

ANT 1

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2404	-0.720	8	-8.72
Middle	2441	-0.460	8	-8.46
High	2478	-0.450	8	-8.45



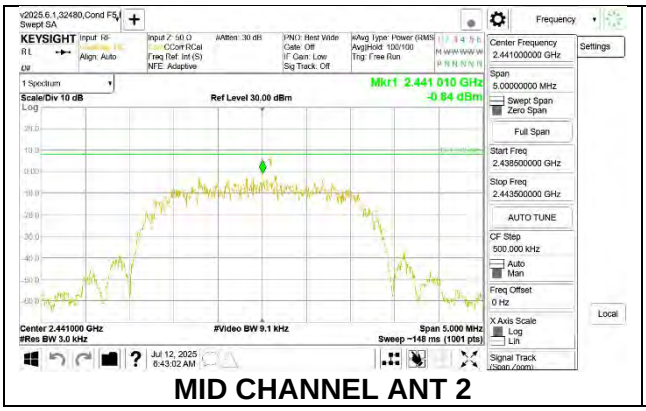
MID CHANNEL

9.6.2. HIGH POWER HDR TXBF (HDR4)

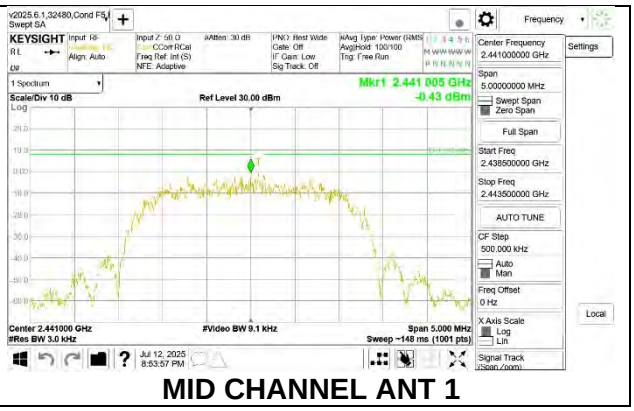
Note: Test procedures and setting are the same as HDR normal mode.

PSD Results

Channel	Frequency (MHz)	ANT 2 Meas (dBm/ 3kHz)	ANT 1 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low	2404	-0.950	-0.460	2.31	8.0	-5.7
Mid	2441	-0.840	-0.430	2.38	8.0	-5.6
High	2476	-0.960	-0.890	2.09	8.0	-5.9



MID CHANNEL ANT 2

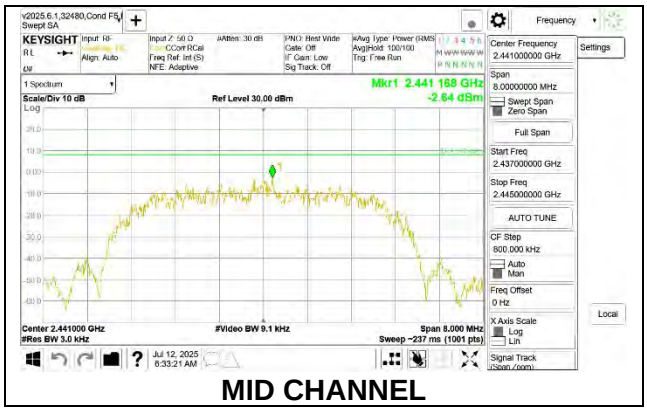


MID CHANNEL ANT 1

9.6.3. HIGH POWER HDR (HDR8)

ANT 2

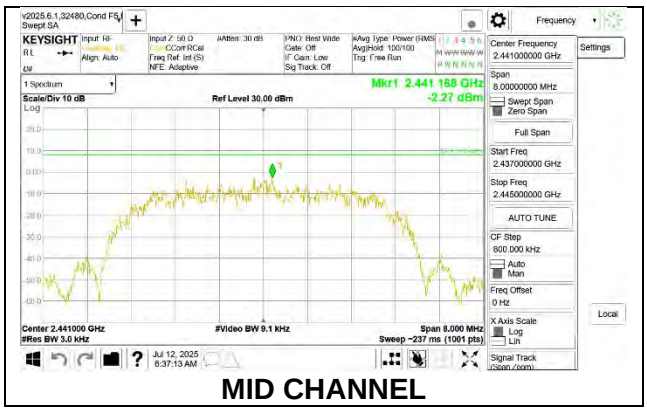
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2404	-2.690	8	-10.69
Middle	2441	-2.640	8	-10.64
High	2476	-2.590	8	-10.59



MID CHANNEL

ANT 1

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2404	-2.420	8	-10.42
Middle	2441	-2.270	8	-10.27
High	2476	-2.350	8	-10.35



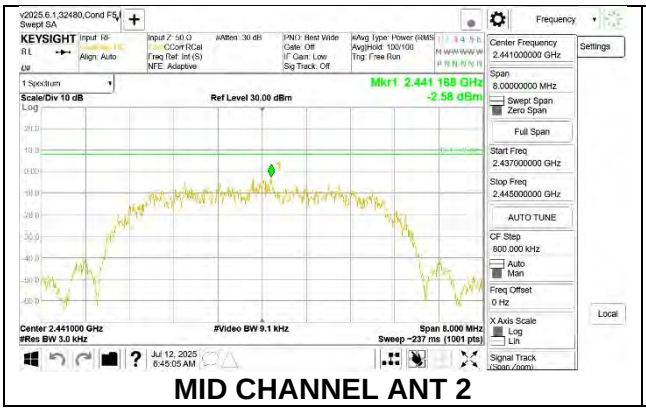
MID CHANNEL

9.6.4. HIGH POWER HDR TXBF (HDR8)

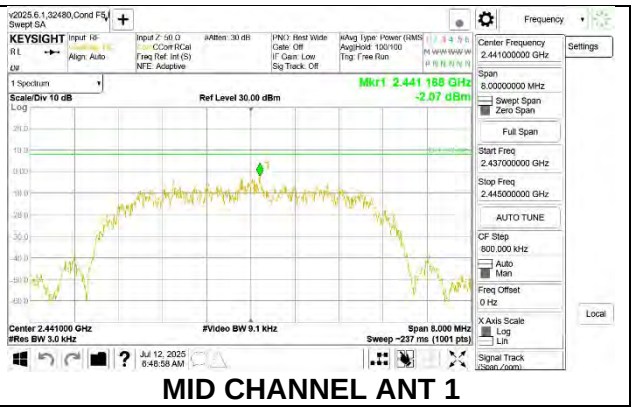
Note: Test procedures and setting are the same as HDR normal mode.

PSD Results

Channel	Frequency (MHz)	ANT 2 Meas (dBm/ 3kHz)	ANT 1 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low	2404	-2.070	-2.160	0.90	8.0	-7.1
Mid	2441	-2.580	-2.070	0.69	8.0	-7.3
High	2476	-2.600	-2.160	0.64	8.0	-7.4



MID CHANNEL ANT 2



MID CHANNEL ANT 1

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

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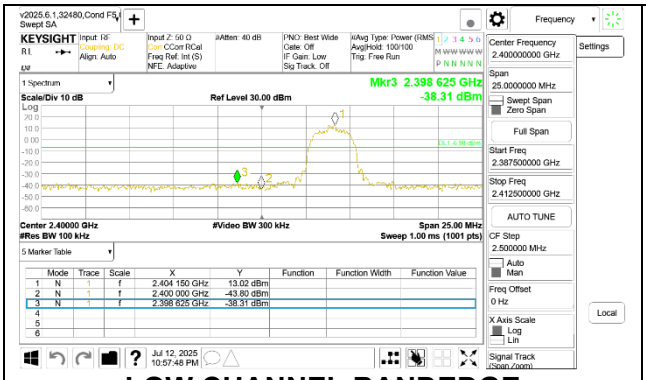
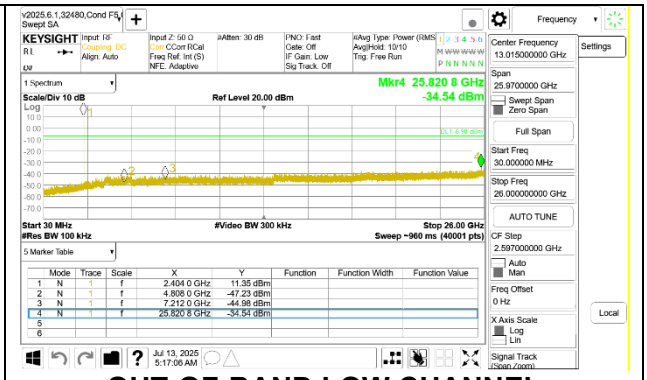
9.7.1. HIGH POWER HDR (HDR4)

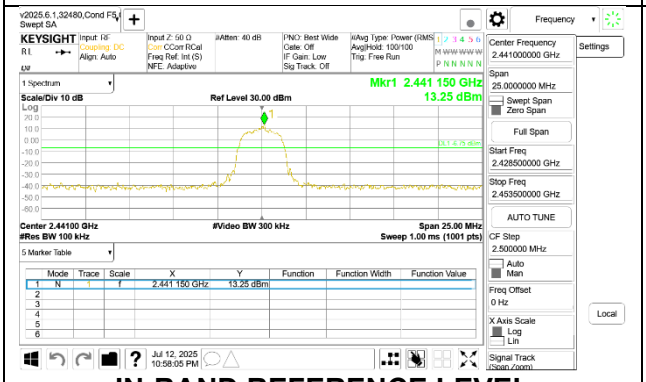
ANT 2



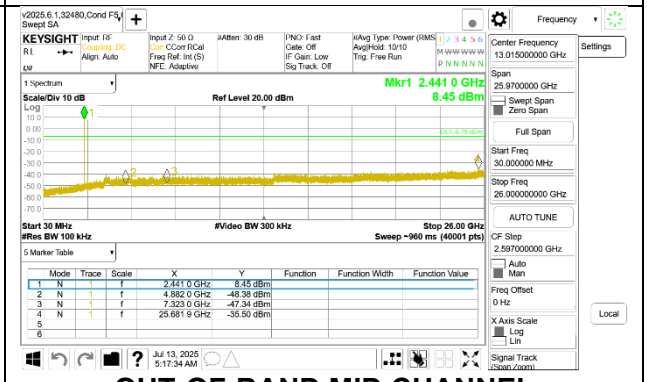
LOW CHANNEL BANDEDGE



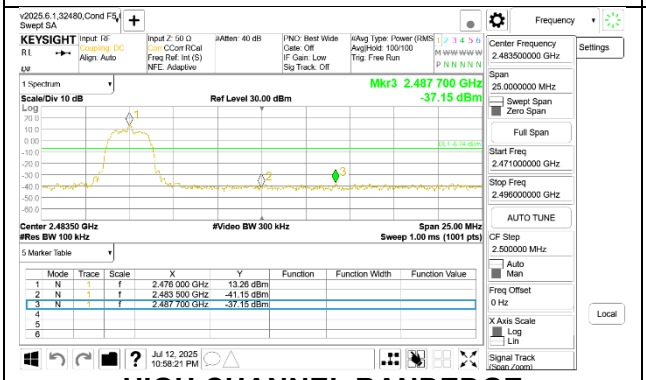
OUT-OF-BAND LOW CHANNEL



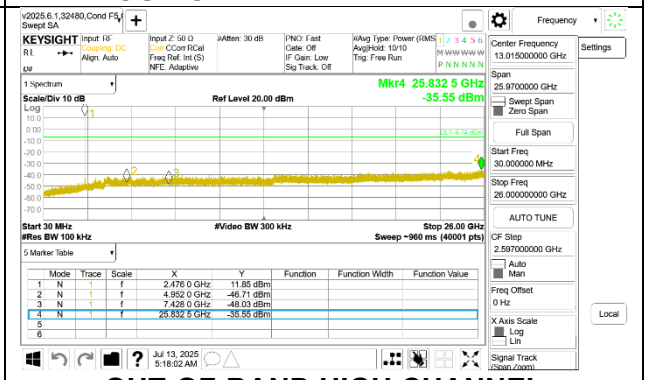
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

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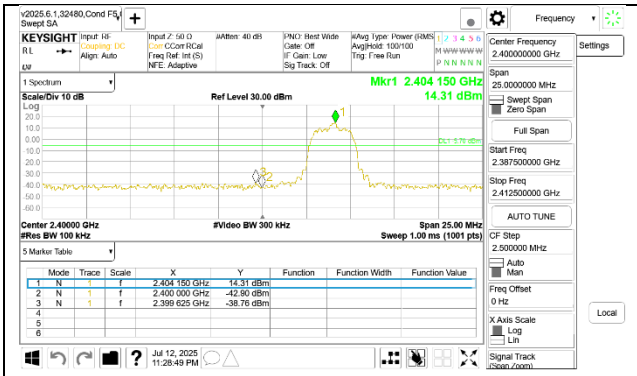
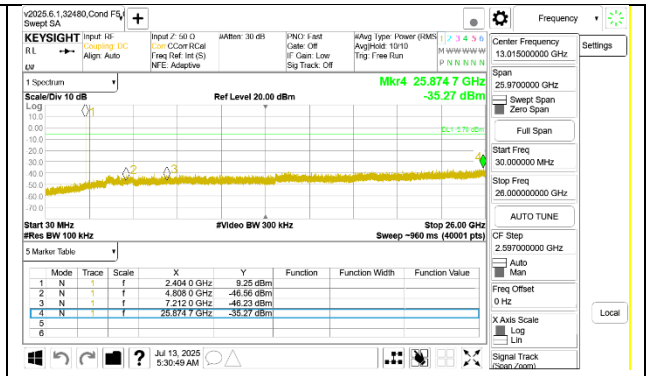
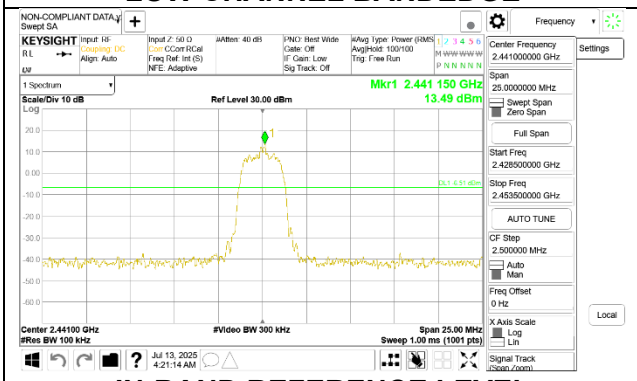
ANT 1



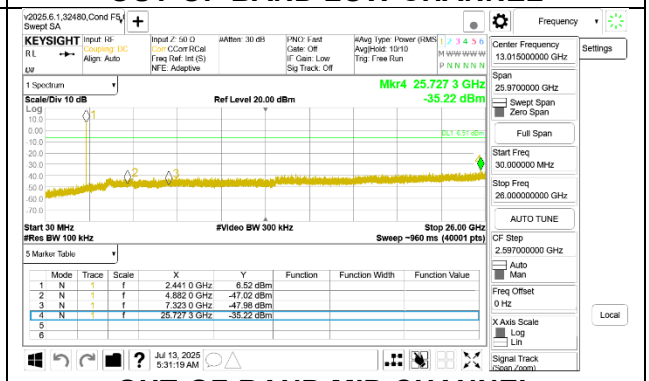
LOW CHANNEL BANDEDGE



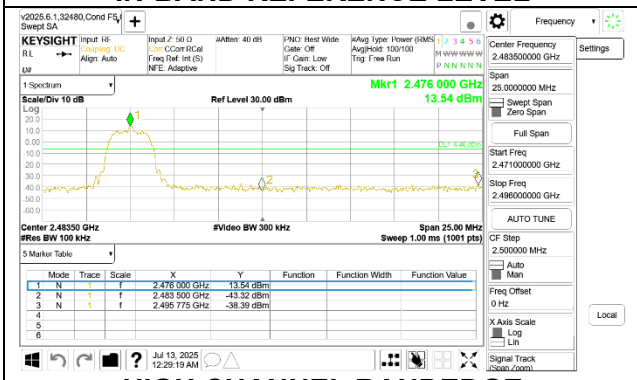
OUT-OF-BAND LOW CHANNEL



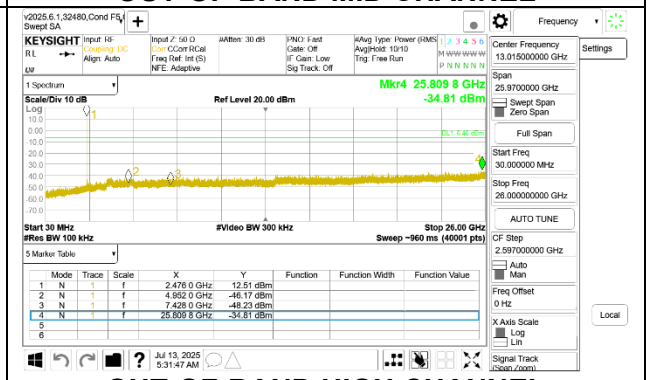
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE

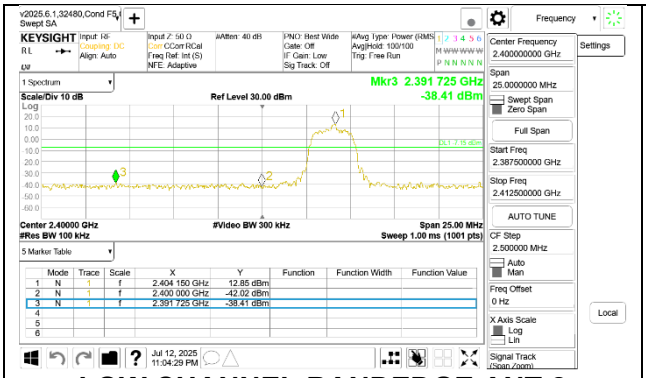


OUT-OF-BAND HIGH CHANNEL

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

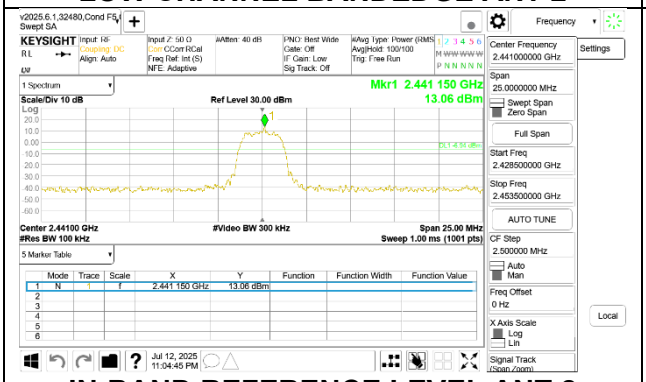
9.7.2. HIGH POWER HDR TXBF (HDR4)

ANT 2



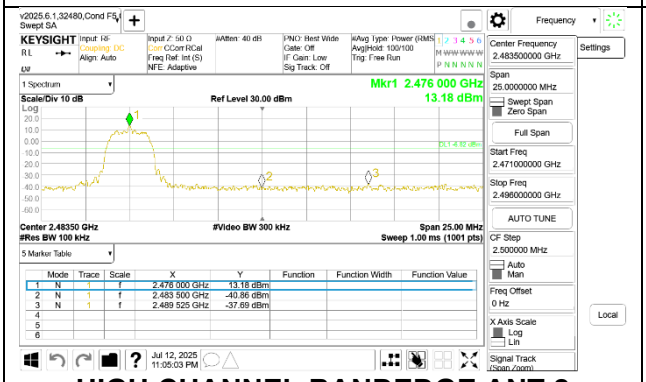
LOW CHANNEL BANDEDGE ANT 2

OUT-OF-BAND LOW CHANNEL ANT 2

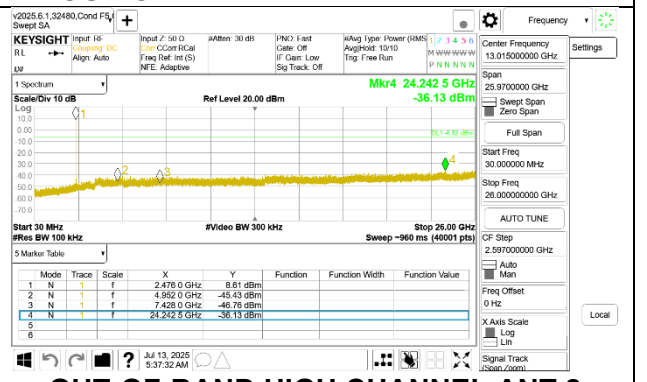


IN-BAND REFERENCE LEVEL ANT 2

OUT-OF-BAND MID CHANNEL ANT 2



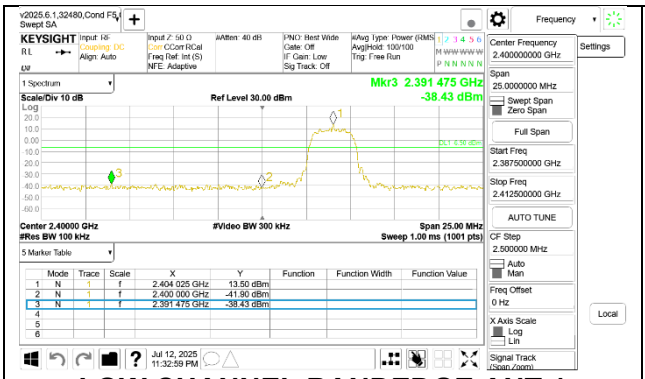
HIGH CHANNEL BANDEDGE ANT 2



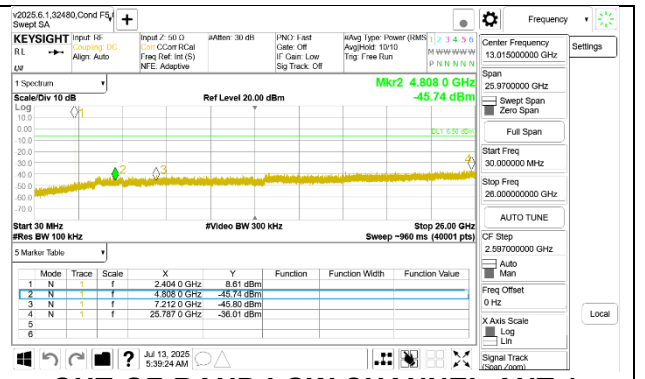
OUT-OF-BAND HIGH CHANNEL ANT 2

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

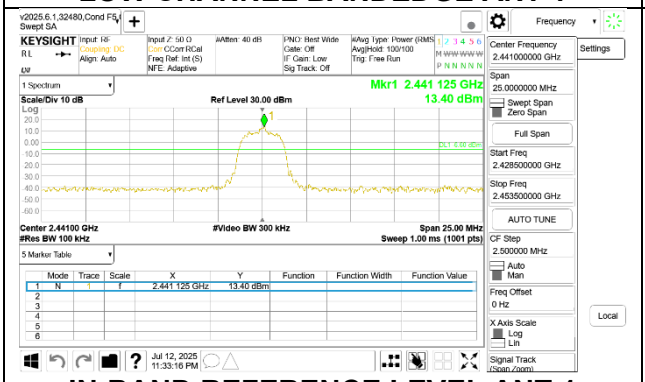
ANT 1



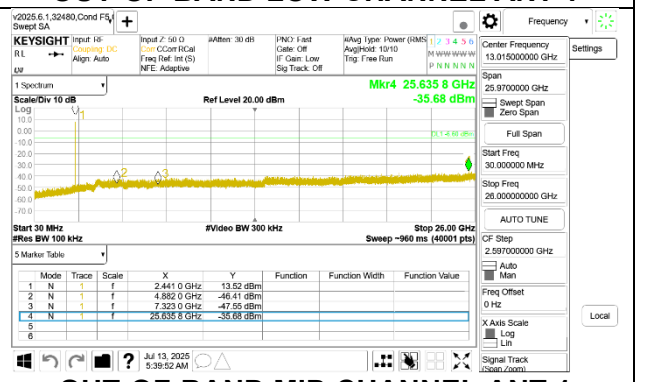
LOW CHANNEL BANDEDGE ANT 1



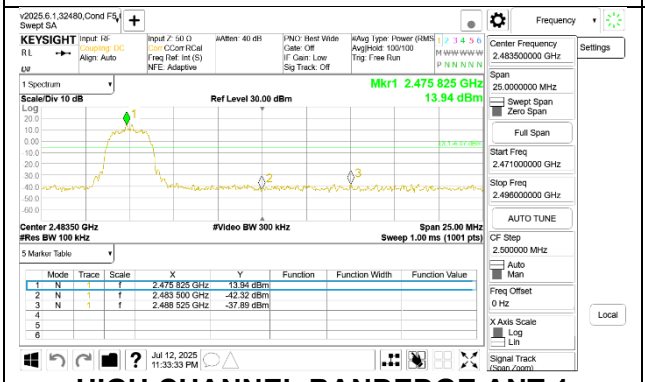
OUT-OF-BAND LOW CHANNEL ANT 1



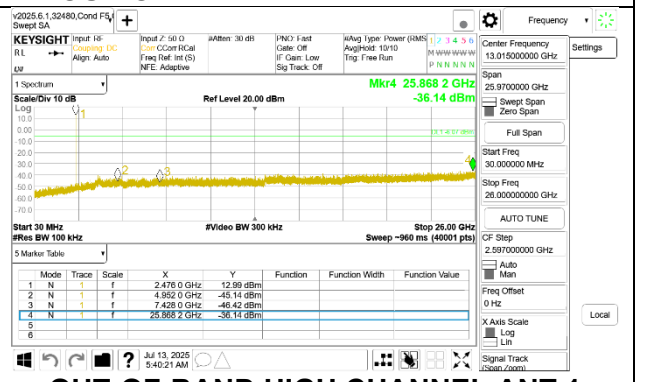
IN-BAND REFERENCE LEVEL ANT 1



OUT-OF-BAND MID CHANNEL ANT 1



HIGH CHANNEL BANDEDGE ANT 1



OUT-OF-BAND HIGH CHANNEL ANT 1

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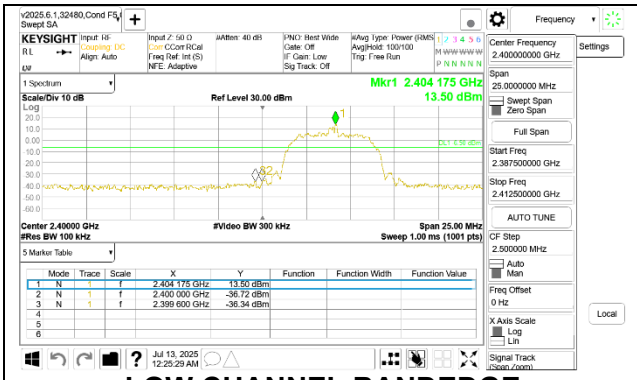
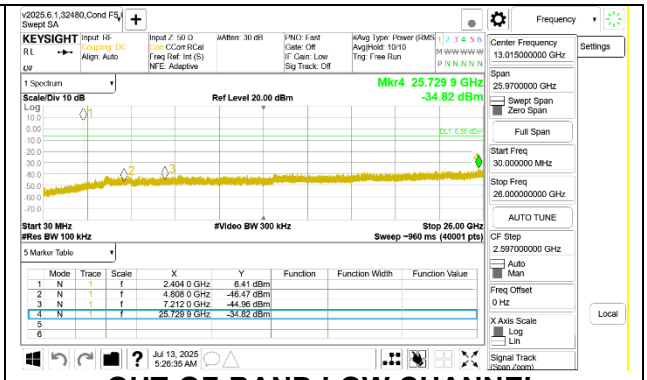
47173 Benicia Street, Fremont, CA 94538, USA TEL:(510) 319-4000 FAX:(510) 661-0888

9.7.3. HIGH POWER HDR (HDR8)

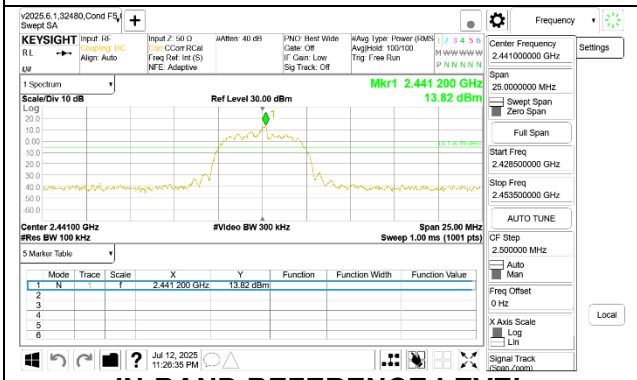
ANT 2



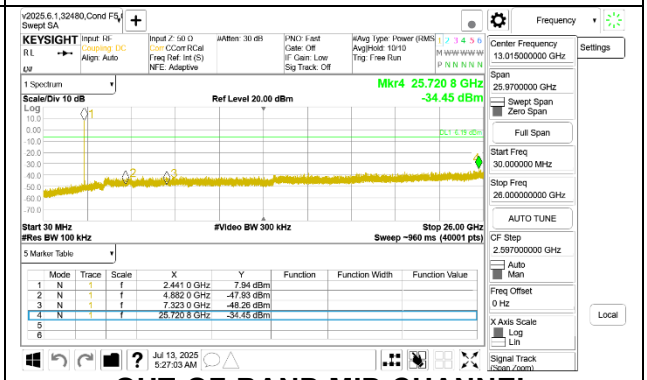
LOW CHANNEL BANDEDGE



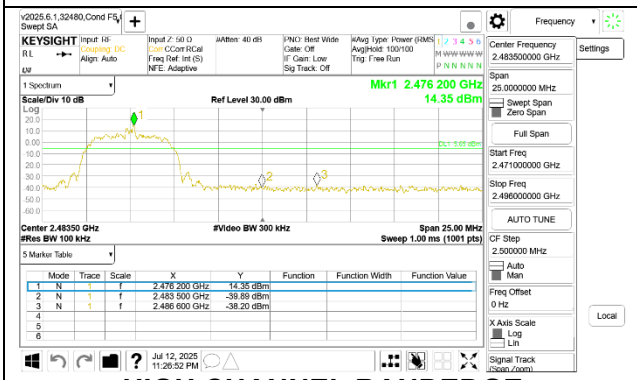
OUT-OF-BAND LOW CHANNEL



IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL

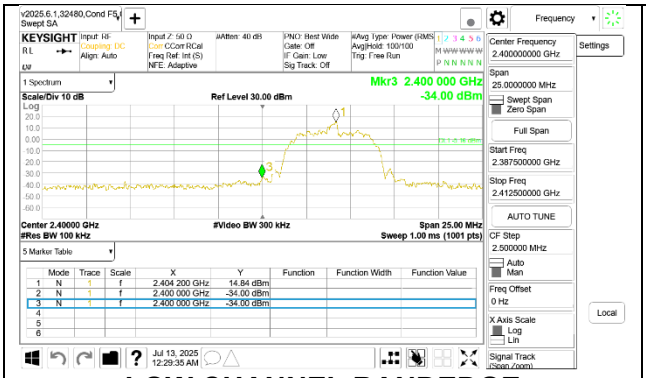


HIGH CHANNEL BANDEDGE

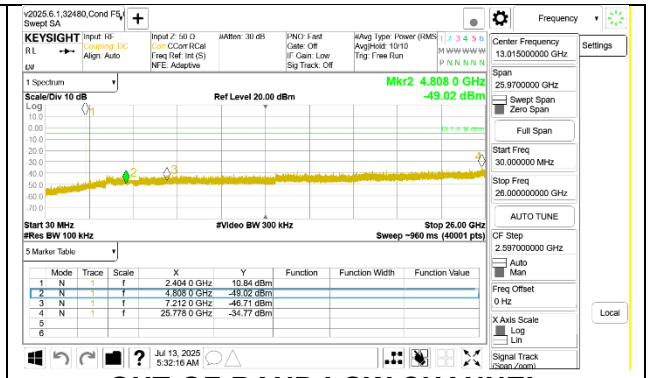
OUT-OF-BAND HIGH CHANNEL

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

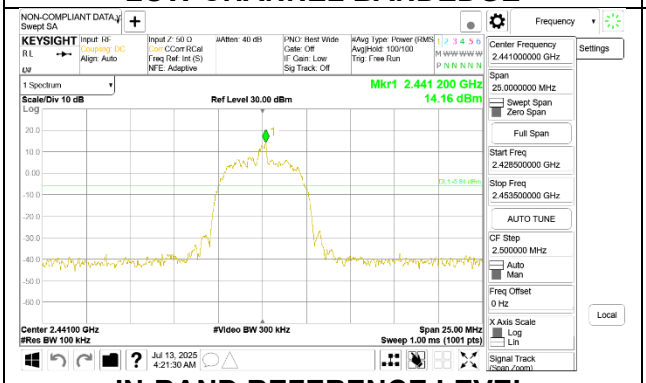
ANT 1



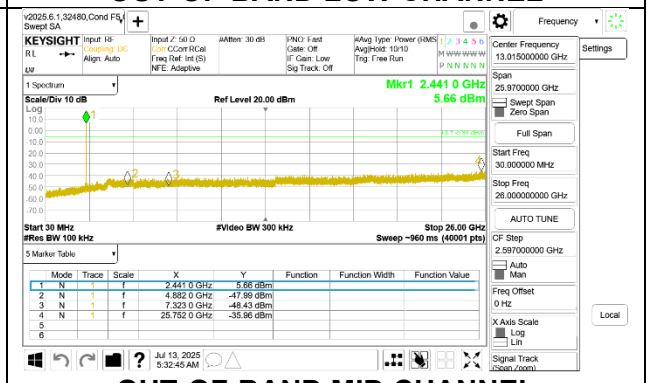
LOW CHANNEL BANDEDGE



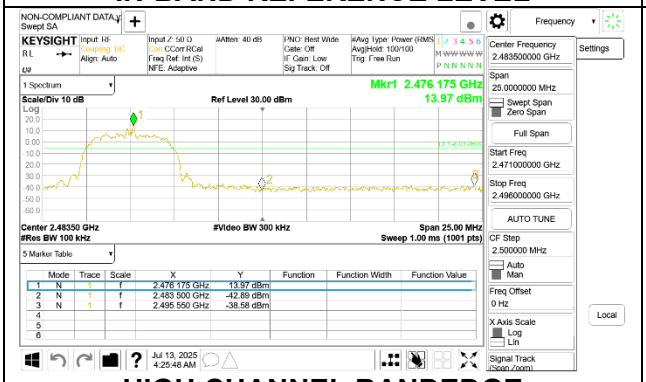
OUT-OF-BAND LOW CHANNEL



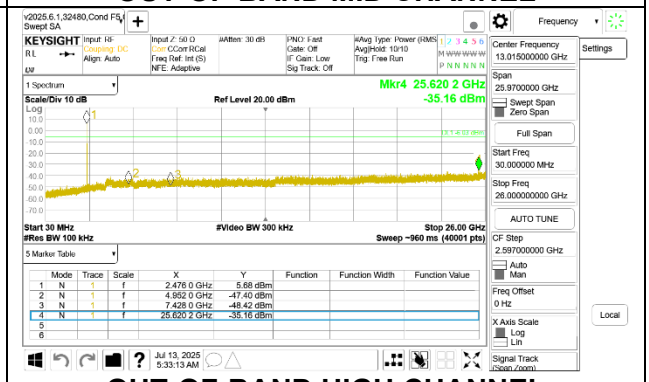
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

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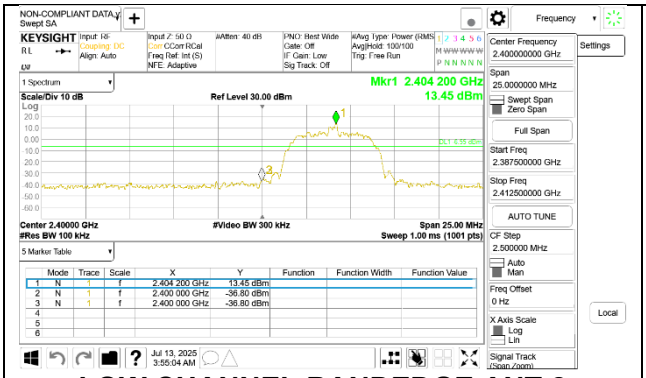
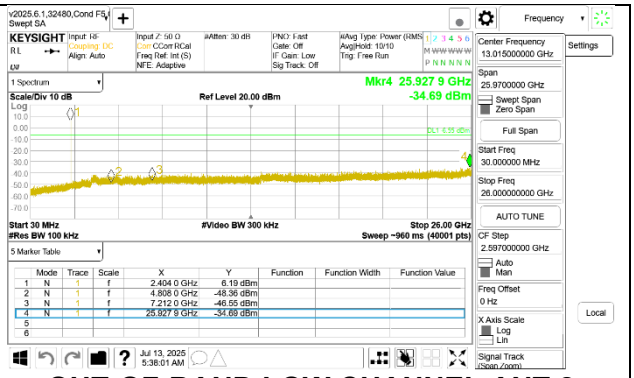
9.7.4. HIGH POWER HDR TXBF (HDR8)

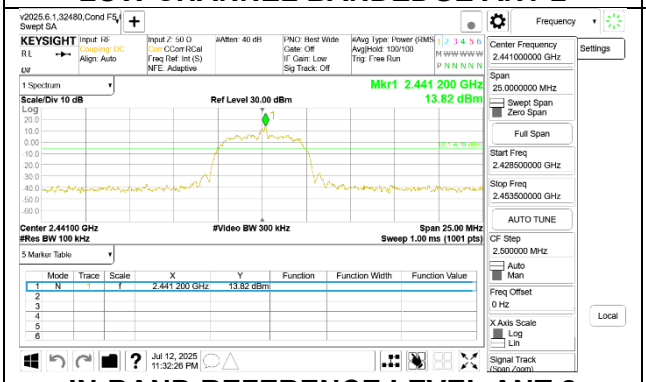
ANT 2



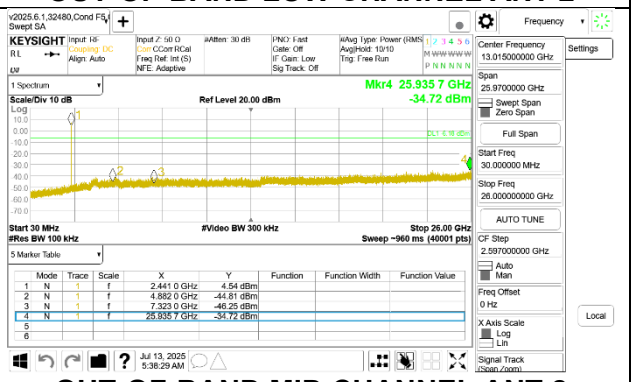
LOW CHANNEL BANDEDGE ANT 2



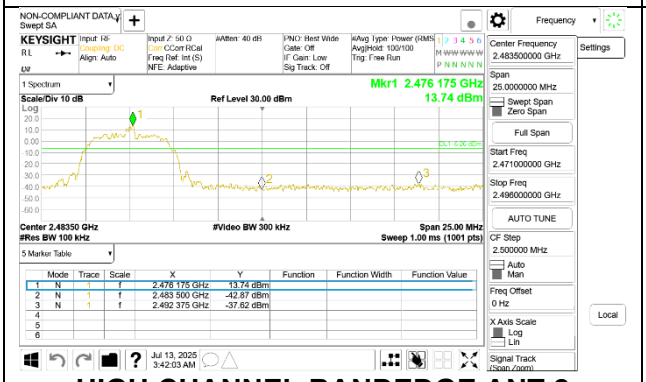
OUT-OF-BAND LOW CHANNEL ANT 2



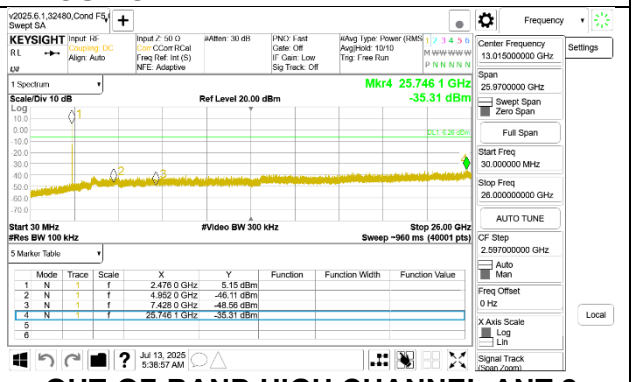
IN-BAND REFERENCE LEVEL ANT 2



OUT-OF-BAND MID CHANNEL ANT 2



HIGH CHANNEL BANDEDGE ANT 2



OUT-OF-BAND HIGH CHANNEL ANT 2

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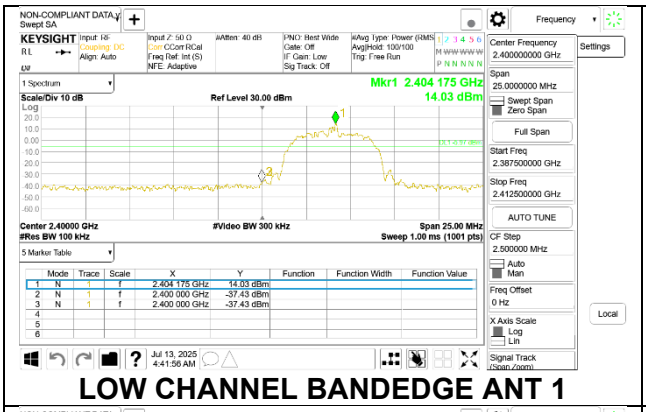
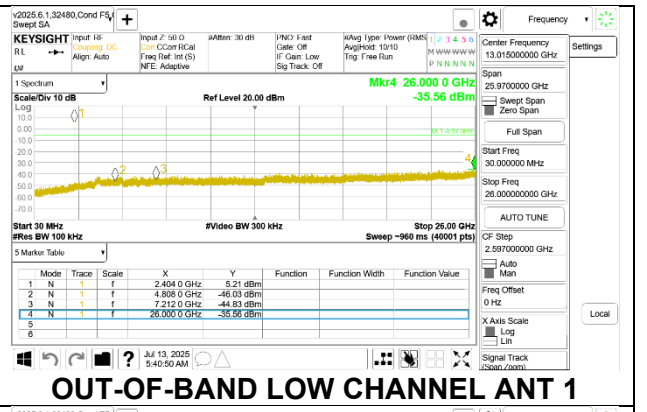
47173 Benicia Street, Fremont, CA 94538, USA TEL:(510) 319-4000 FAX:(510) 661-0888

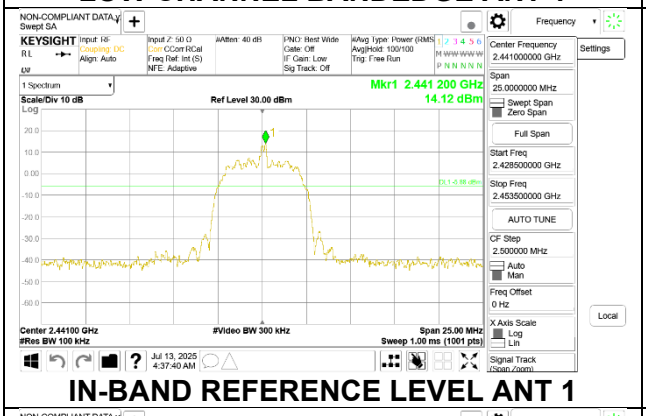
ANT 1



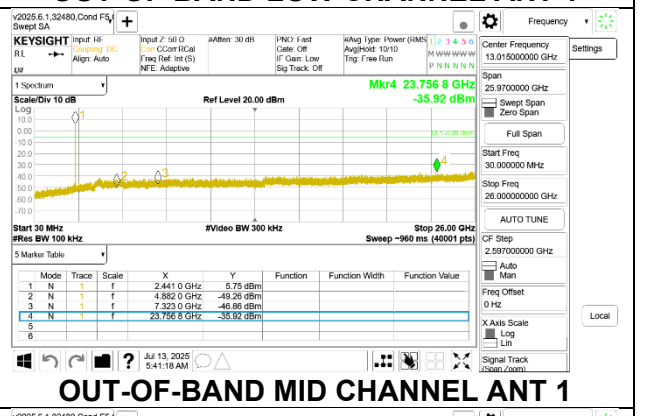
LOW CHANNEL BANDEDGE ANT 1



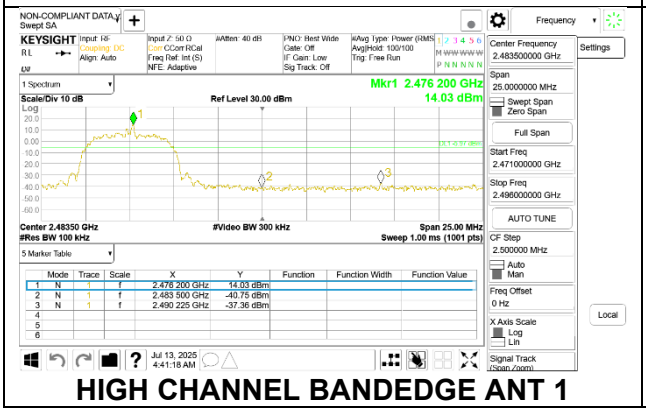
OUT-OF-BAND LOW CHANNEL ANT 1



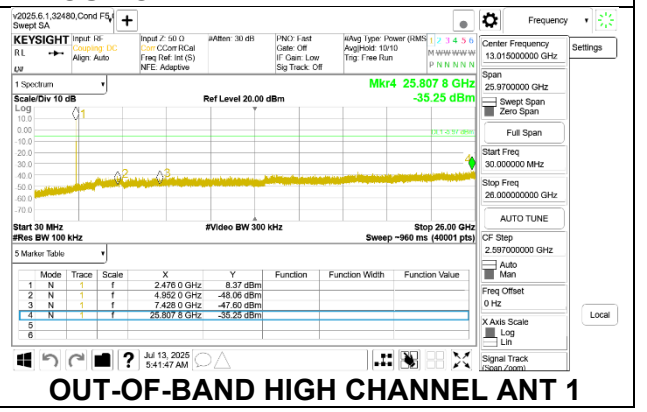
IN-BAND REFERENCE LEVEL ANT 1



OUT-OF-BAND MID CHANNEL ANT 1



HIGH CHANNEL BANDEDGE ANT 1



OUT-OF-BAND HIGH CHANNEL ANT 1

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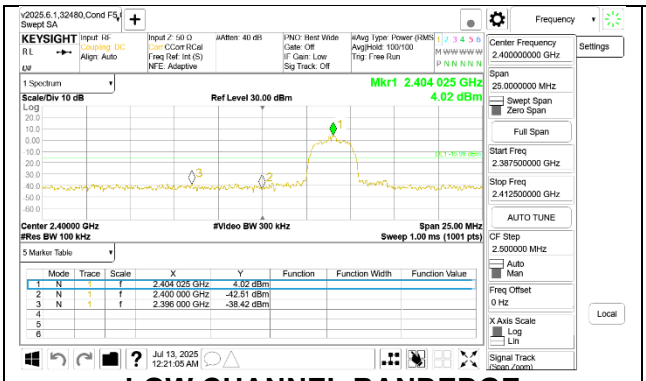
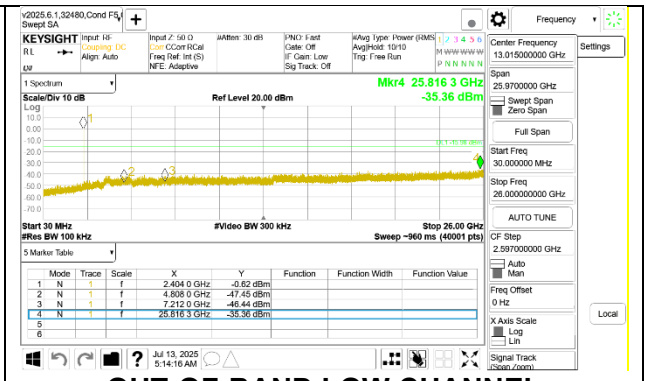
9.7.6. LOW POWER HDR (HDR4)

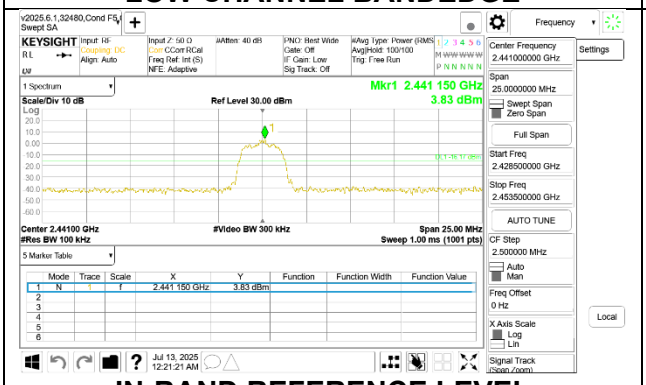
ANT 2



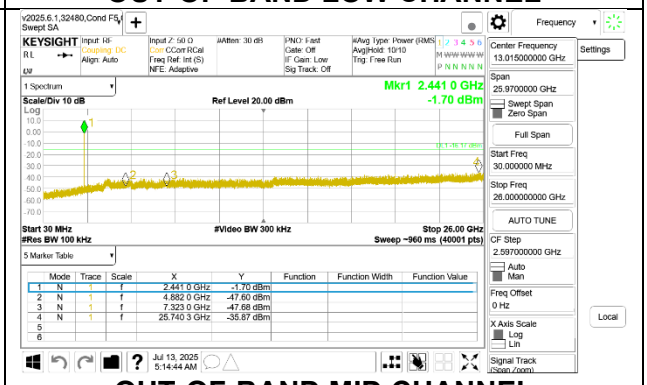
LOW CHANNEL BANDEDGE



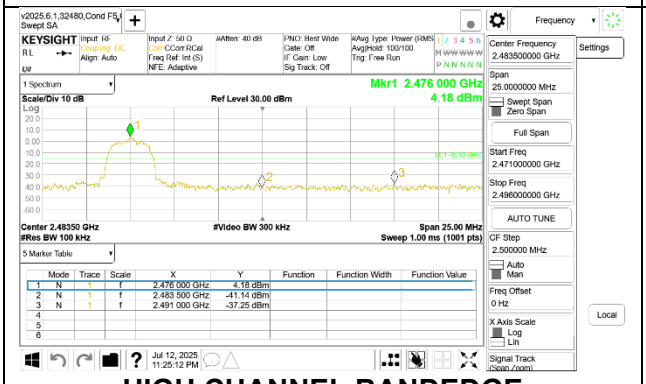
OUT-OF-BAND LOW CHANNEL



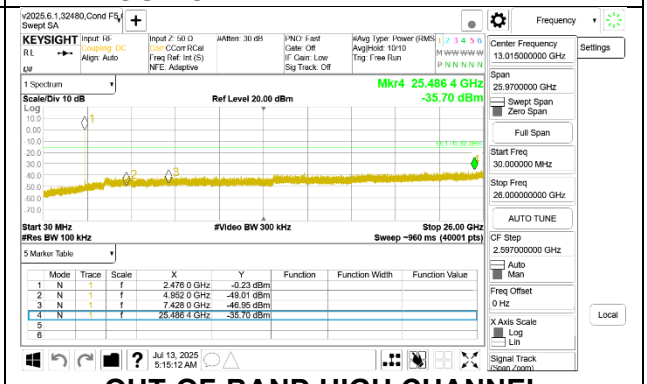
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

UL VERIFICATION SERVICES INC.
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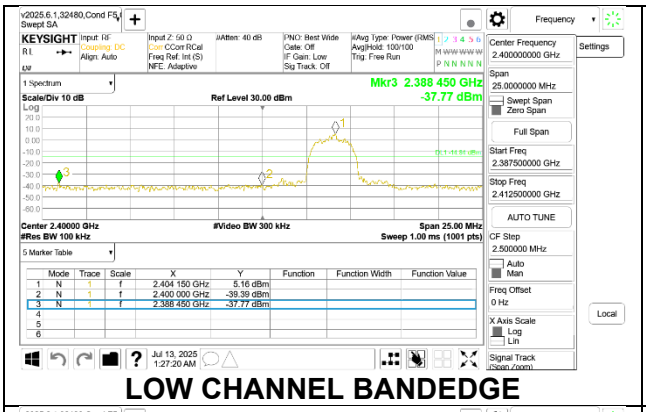
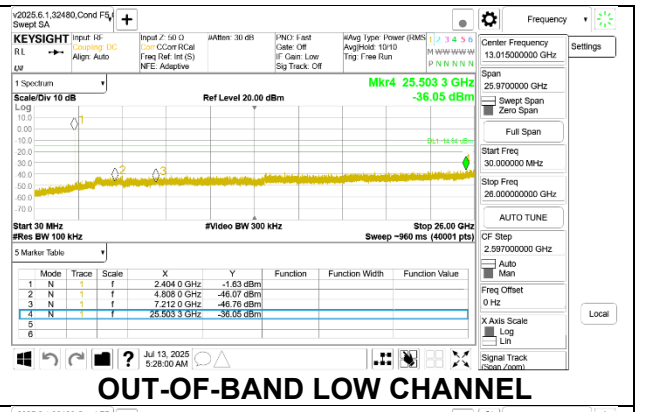
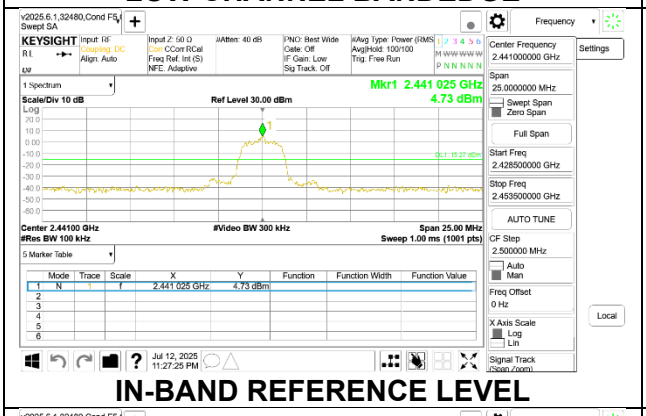
ANT 1



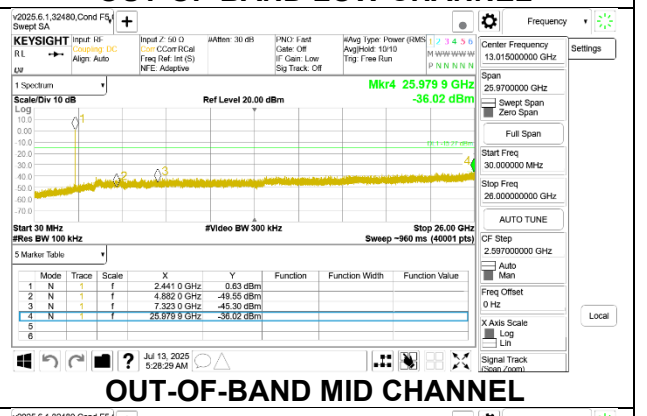
LOW CHANNEL BANDEDGE



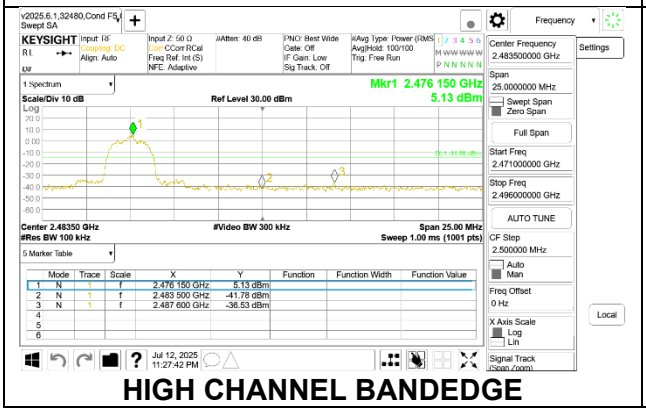
OUT-OF-BAND LOW CHANNEL



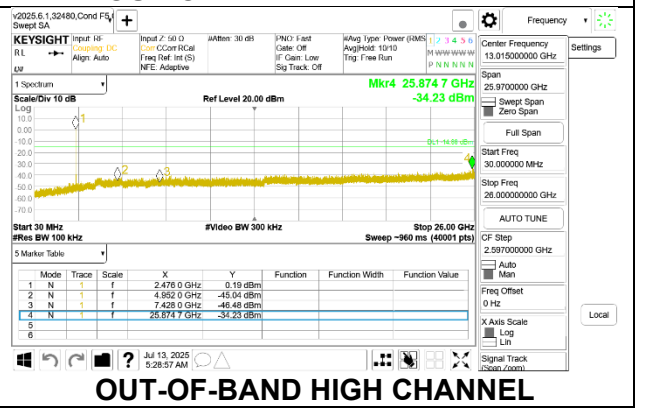
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

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