TEST REPORT

Report Number: 15605547-E4V2

Applicant	:	SAMSUNG ELECTRONICS CO., LTD. 129 SAMSUNG-RO, YEONGTONG-GU SUWON-SI, GYEONGGI-DO, 16677, KOREA
Model	:	SM-X620
FCC ID	:	A3LSMX620
IC	:	649E-SMX620
EUT Description	:	BT/BLE Tablet + DTS/UNII a/b/g/n/ac/ax and Digitizer
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:
2025-03-03

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

REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	2025-02-25	Initial Issue	--
V2	2025-03-03	Cover Page, Section 1, and 10.4 updated	Henry Lau

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

TABLE OF CONTENTS

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: SAMSUNG ELECTRONICS CO., LTD.
129 SAMSUNG-RO, YEONGTONG-GU
SUWON-SI, GYEONGGI-DO, 16677, KOREA

EUT DESCRIPTION: BT/BLE Tablet + DTS/UNII a/b/g/n/ac/ax and Digitizer

MODEL: SM-X620

SERIAL NUMBER: Conducted: R32XC0045HM;
Radiated: R32XC0045X8

SAMPLE RECEIPT DATE: 2024-12-13

DATE TESTED: 2024-12-19 TO 2025-02-21

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

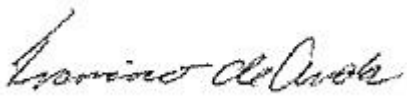
UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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.

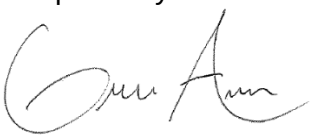
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538, USA TEL:(510) 319-4000 FAX:(510) 661-0888

Approved & Released For
UL Verification Services Inc. By:



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

Prepared By:



Gerardo Abrego
Senior Test Engineer
Consumer Technology Division
UL Verification Services Inc.

Reviewed By:

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

2. TEST RESULTS SUMMARY

This report contains data provided by the customer which can impact the validity of results. UL Verification Services Inc. is only responsible for 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	Compliant	None.
15.247 (b) (3)	RSS-247 5.4 (d)	Output Power	Compliant	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	Compliant	None.
15.247 (d)	RSS-247 5.5	Conducted Spurious Emissions	Compliant	None.
15.209, 15.205	RSS-GEN 8.9, 8.10	Radiated Emissions	Compliant	None.
15.207	RSS-Gen 8.8	AC Mains Conducted Emissions	Compliant	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
- KDB 662911 Measurement of Transmitters with Multiple Output, MIMO
- KDB 414788 D01 Radiated Test Site
- RSS-GEN Issue 5 + A1 + A2
- RSS-247 Issue 3

4. FACILITIES AND ACCREDITATION

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

	Address	ISED CABID	ISED Company Number	FCC Registration
☒	Building 1: 47173 Benicia Street, Fremont, CA 94538, 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			

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

5. DECISION RULES AND MEASUREMENT UNCERTAINTY

5.1. METROLOGICAL TRACEABILITY

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

5.2. DECISION RULES

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

5.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	U_{Lab}
Radio Frequency (Spectrum Analyzer)	141.16 Hz
Occupied Bandwidth	1.22%
Power Spectral Density	2.47 dB
RF Power Measurement Direct Method Using Power Meter	1.3 dB (PK) / 0.45 dB (AV)
Unwanted Emissions, Conducted	1.94 dB
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
Time Domain Measurements	3.39%
Temperature	0.57˚C
Relative Humidity	3.39%
DC Supply Voltages	0.57%

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

5.4. SAMPLE CALCULATION

RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:
Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:
Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + LISN Insertion Loss.
36.5 dBuV + 0 dB +10.1 dB+ 0 dB = 46.6 dBuV

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 EUT is a BT/BLE Tablet, DTS/UNII a/b/g/n/ac/ax and Digitizer.

This test report addresses the DTS operational 802.11ax modes.

6.2. MAXIMUM OUTPUT POWER

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

2.4GHz BAND 802.11 ax MODE 2TX

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2TX CDD			
2412 - 2472	802.11ax HE20 EHT20 SU	19.34	85.90
	802.11ax HE20 EHT20 RU size 242T	13.78	23.88
	802.11ax HE20 EHT20 RU size 106T	13.68	23.33
	802.11ax HE20 EHT20 RU size 52T	13.82	24.10
	802.11ax HE20 EHT20 RU size 26T	12.98	19.86

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

6.3. TEST REDUCTIONS CASES

6dB Bandwidth:

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

Radiated Spurious Emissions

- The narrowest (26T) and SU mode were tested to cover HE20 52T, 106T, 242T due to worst-case PSD and worst-case Power cases.

6.4. DESCRIPTION OF AVAILABLE ANTENNAS AND CABLE LOSS

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

Frequency Band (GHz)	Antenna Type	Antenna 1	Antenna 2
		Antenna Gain (dBi)	Antenna Gain (dBi)
2412-2472	Internal	-3.7	-3.5

Cable loss: 0.7dB.

6.5. WORST-CASE CONFIGURATION AND MODE

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

For all modes, tests were performed with the EUT set at the 2Tx MIMO mode with power setting equal to SISO modes as the worst-case scenario thus MIMO is representative of SISO.

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

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

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

802.11ax HE20 mode: MCS0

Plots included in the report are representative of the method and settings parameters used for the test.

6.6. DESCRIPTION OF TEST SETUP

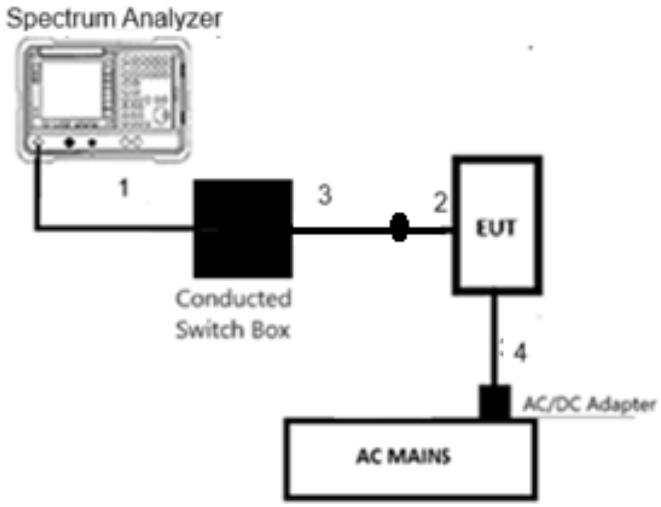
SUPPORT TEST EQUIPMENT						
Description		**Manufacturer**	**Model**	**Serial Number**		**FCC ID/ DoC**
AC Adapter		Samsung	EP-TA800	R37WBAA004BDKA		N/A
S-Pen		Samsung	N/A	N/A		N/A
Keyboard		Samsung	DX625	N/A		N/A
I/O CABLES (RF CONDUCTED TEST)						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	SMA Cable	1	SMA	Shielded	1.0	Conducted Switch Box to Spectrum Analyzer
2	Antenna	2	RF	Un-Shielded	0.2	EUT to Coax cable
3	SMA Cable	2	SMA	Shielded	1.0	Coax Cable to Conducted Switch Box
4	USB-C	1	USB-C	Shielded	1	EUT to AC/DC Adapter
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	USB-C	1	USB-C	Shielded	1	N/A

TEST SETUP

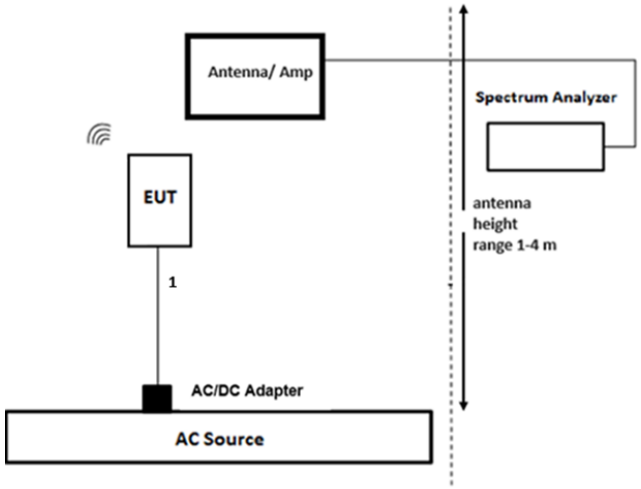
The EUT is a stand-alone device configured and tested in a worst-case setup.
Worst case is using Y orientation with AC charger, keyboard and pen attached to the EUT.
Test software exercised the radio card.

SETUP DIAGRAM

Conducted Configuration



Radiated Configuration/AC Line



7. MEASUREMENT METHOD

Test Item	Test Method
On Time and Duty Cycle	ANSI C63.10 Section 11.6
6 dB BW	ANSI C63.10 Subclause -11.8.1 RBW ≥ DTS BW
Output Power	ANSI C63.10 Subclause -11.9.2.3.2 Method AVGPM-G (Measurement using a gated RF average-reading power meter)
PSD	ANSI C63.10 Subclause -11.10.5 Method AVGPSD-2
Radiated emissions non-restricted frequency bands	ANSI C63.10 Subclause -11.11
Radiated emissions restricted frequency bands	ANSI C63.10 Subclause -11.12.1
Conducted emissions in restricted frequency bands	ANSI C63.10 Subclause -11.12.2
Band-edge	ANSI C63.10 Subclause -11.12.2.4 Peak Detection, Subclause 11.12.2.5.2 Trace averaging across ON and OFF times DC correction
Radiated Spurious Emissions Below 30MHz	ANSI C63.10 Subclause 6.4
AC Power Line Conducted Emissions	ANSI C63.10, Subclause 6.2

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 Num**	**Cal Due**	**Last Cal**
Antenna, Passive Loop 30Hz - 1MHz	ELECTRO METRICS	EM-6871	219908	2025-05-31	2023-05-31
Antenna, Passive Loop 100KHz - 30MHz	ELECTRO METRICS	EM-6872	219910	2025-05-31	2023-05-31
Antenna, Broadband Hybrid, 30MHz to 1000MHz	Sunol Sciences Corp.	JB1	80293	2025-04-30	2023-04-11
Amplifier,9KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310	170647	2025-03-31	2024-03-25
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	79834	2026-07-31	2024-07-09
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	222740	2026-09-03	2024-09-23
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	206808	2026-04-30	2024-04-23
RF Filter Box, 1-18GHz	UL-FR1	n/a	171389	2025-03-31	2024-03-15
RF Filter Box, 1-18GHz	UL-FR1	SAC 8 port rf box 1	237579	2025-10-31	2024-10-03
RF Filter Box, 1-18GHz	UL-FR1	SAC 8 port rf box 1	197920	2025-03-31	2024-03-30
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	169935	2025-02-28	2024-02-11
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	225688	2025-02-28	2024-02-11
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	201497	2025-02-28	2024-02-11
Antenna, Horn 18 to 26.5GHz	A.R.A.	MWH-1826/B	199658	2025-02-28	2024-02-02
Amplifier 18-26.5GHz, +5Vdc, -54dBm P1dB	AMPLICAL	AMP18G26.5-60	234683	2025-05-31	2024-05-13
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight Technologies Inc	N9030A	80396	2025-02-28	2024-02-21
Conducted Switch Box	N/A	CSB	245774	2025-05-31	2024-05-16
Power Meter, P-series single channel	Keysight Technologies Inc	N1921A	90391	2025-06-30	2024-06-17
Power Sensor, P - series, 50MHz to 18GHz, Wideband	Keysight Technologies Inc	N1911A	90754	2025-01-31*	2024-01-25
AC Line Conducted					
LISN	Fischer Custom Communications, Inc	FCC-LISN-50/250-25-2-01-480V	175765	2026-01-31	2025-01-28
EMI TEST RECEIVER	Rohde & Schwarz	ESR	171646	2025-02-28	2024-02-27
Transient Limiter	TE	TBFL1	207996	2025-09-30	2024-09-24
UL TEST SOFTWARE LIST					
Radiated Software	UL	UL EMC	Ver 2024-08-15, 2023-03, 2023-05-01		
Antenna Port Software	UL	UL RF	Ver 2022-08-16		
AC Line Conducted Software	UL	UL EMC	Rev 9.5, 2023-03		

*Tests performed within cal date.

9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

LIMITS

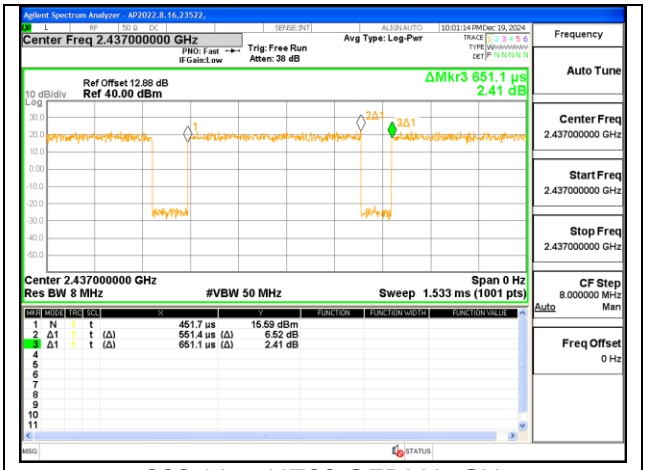
None; for reporting purposes only.

PROCEDURE

KDB 558074 D01 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						
802.11ax HE20 SU	0.551	0.651	0.847	84.69	0.72	1.814
802.11ax HE20 242T	0.591	0.690	0.857	85.67	0.67	1.692
802.11ax HE20 106T	1.26457	1.3658	0.926	92.59	0.33	0.791
802.11ax HE20 52T	2.619	2.748	0.953	95.28	0.21	0.382
802.11ax HE20 26T	5.136	5.290	0.971	97.08	0.13	0.195



802.11ax HE20 OFDMA, SU

9.2. 6dB BANDWIDTH

LIMITS

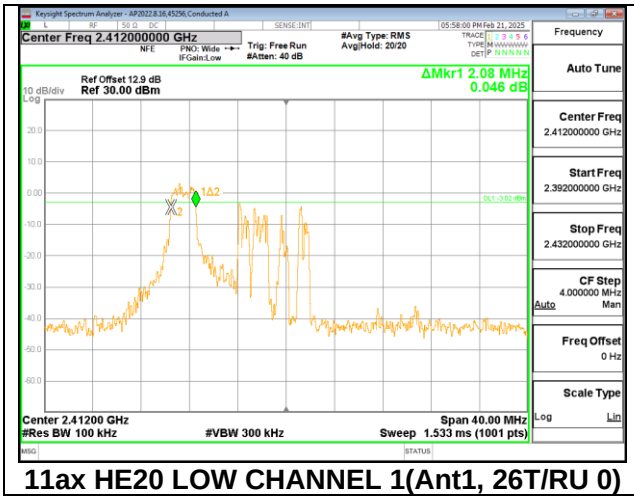
FCC §15.247 (a) (2)

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

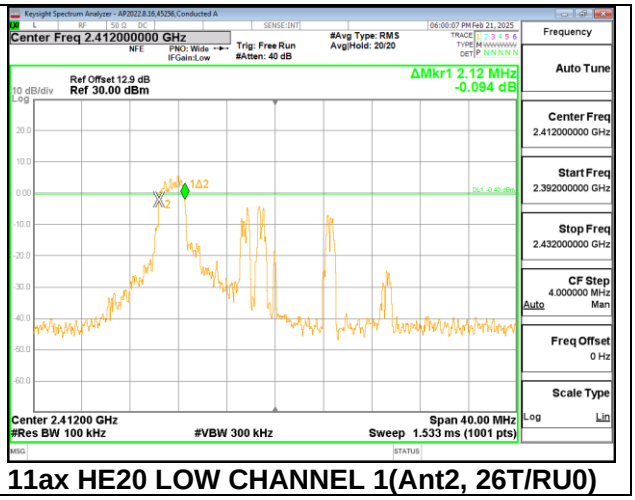
RESULTS

The 6dB bandwidth was measured for the the narrowest bandwidth mode, 26-Tones in ax mode as worst case to demonstrate compliance with the minimum required bandwidth of 500 kHz to cover all OFDMA modes.

Mode	No. of Tx	Channel	Freq (MHz)	Tones	RU Index	6dB Bandwidth (MHz)		6dB Minimum Limit (MHz)
						Ant1	Ant2	
HE20	2	1	2412	26T	0	2.08	2.12	0.5
		6	2437		4	2.68	2.68	0.5
		11	2462		8	2.08	2.12	0.5
		12	2467			2.16	2.12	0.5
		13	2472			2.04	2.08	0.5



11ax HE20 LOW CHANNEL 1(Ant1, 26T/RU 0)



11ax HE20 LOW CHANNEL 1(Ant2, 26T/RU0)

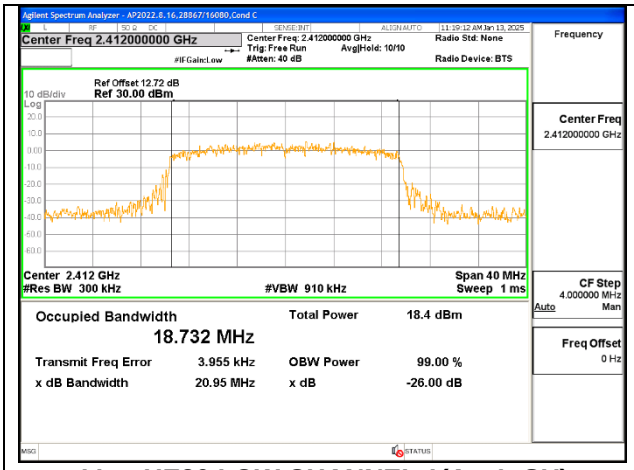
9.3. 99% BANDWIDTH

LIMITS

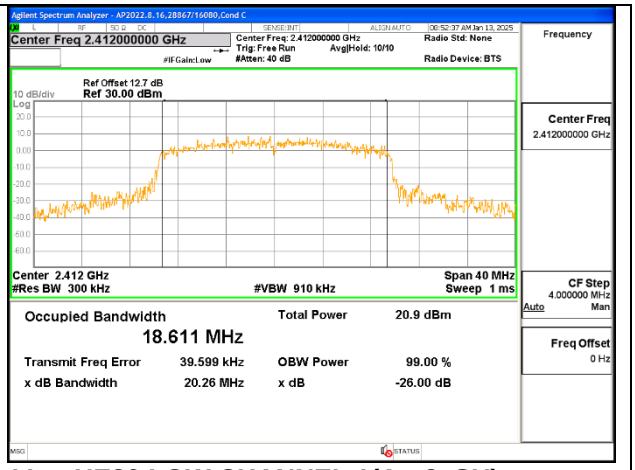
None; for reporting purposes only.

RESULTS

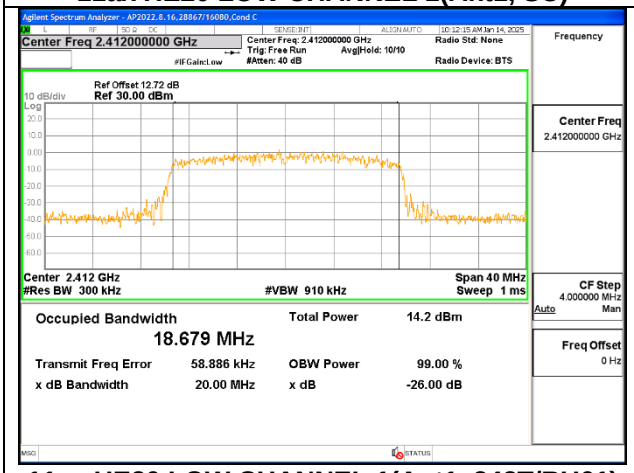
Mode	No. of Tx	Channel	Freq (MHz)	Tones	RU Index	99% Bandwidth (MHz)	
						Ant1	Ant2
HE20	2	1	2412	SU		18.732	18.611
		6	2437			19.084	19.126
		10	2457			18.944	18.887
		11	2462			18.761	18.623
		12	2467			18.791	18.778
		13	2472			18.233	18.582
		1	2412	242	61	18.679	18.643
		6	2437			19.366	19.313
		11	2462			18.826	18.680
		12	2467			18.883	18.807
		13	2472			18.309	18.801
		1	2412	106	53	17.771	17.658
		6	2437			18.554	18.452
		11	2462		54	17.969	17.661
		12	2467			18.061	17.892
		13	2472			17.223	17.766
		1	2412	52T	37	17.948	17.821
		6	2437		38	17.065	17.160
		11	2462		40	18.016	17.837
		12	2467			18.103	18.088
		13	2472			17.497	17.693
		1	2412	26T	0	18.194	18.074
		6	2437		4	16.893	17.014
		11	2462		8	18.326	17.893
		12	2467			18.375	18.308
		13	2472			17.921	18.573



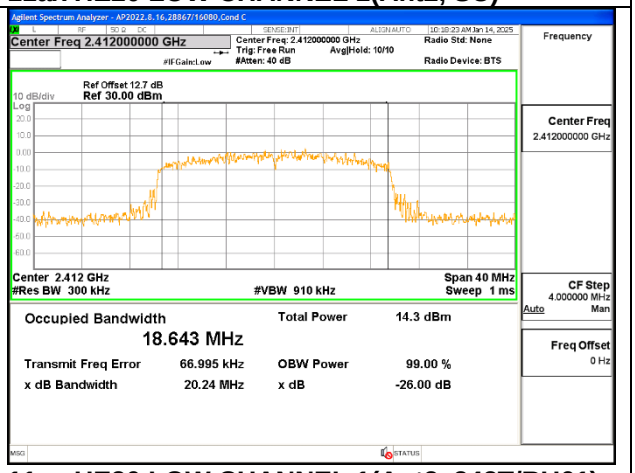
11ax HE20 LOW CHANNEL 1(Ant1, SU)



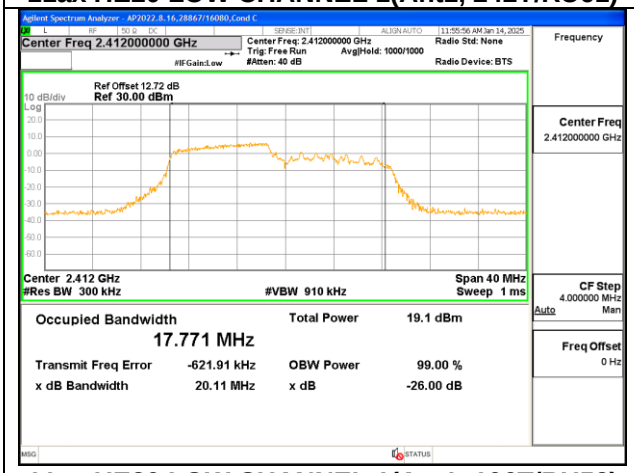
11ax HE20 LOW CHANNEL 1(Ant2, SU)



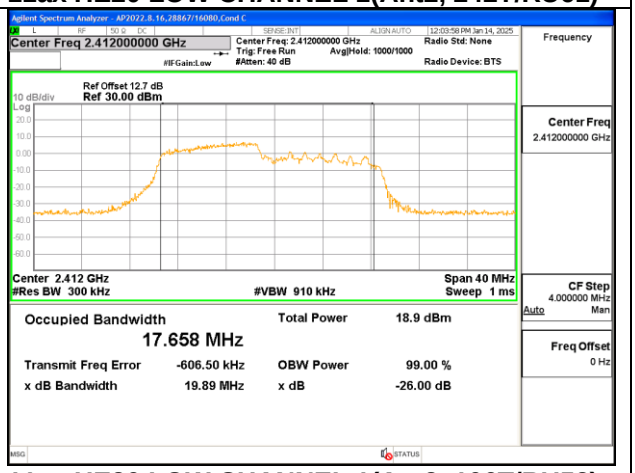
11ax HE20 LOW CHANNEL 1(Ant1, 242T/RU61)



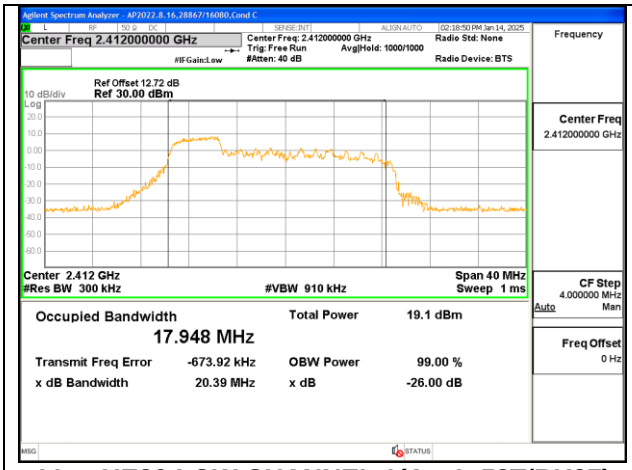
11ax HE20 LOW CHANNEL 1(Ant2, 242T/RU61)



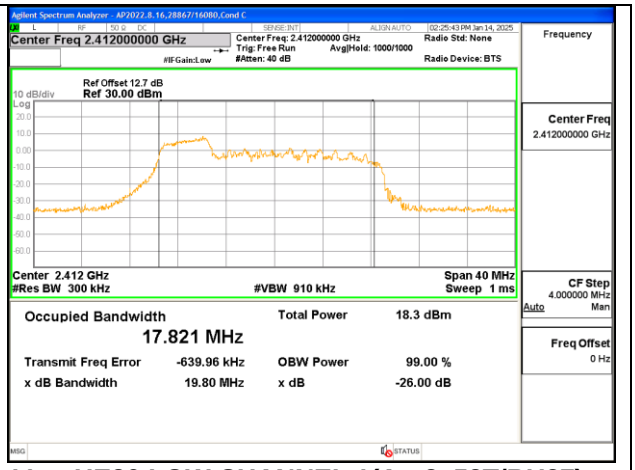
11ax HE20 LOW CHANNEL 1(Ant1, 106T/RU53)



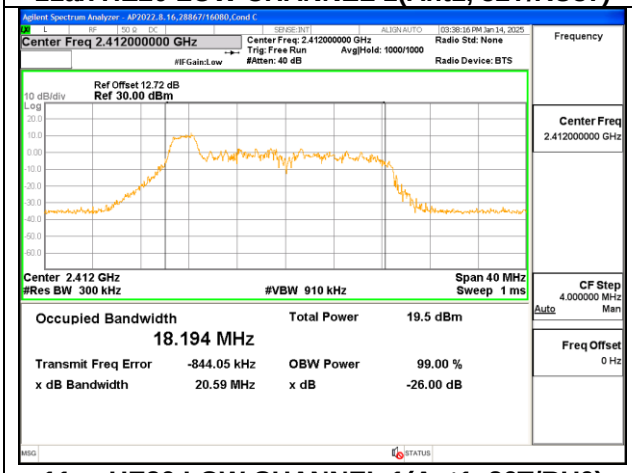
11ax HE20 LOW CHANNEL 1(Ant2, 106T/RU53)



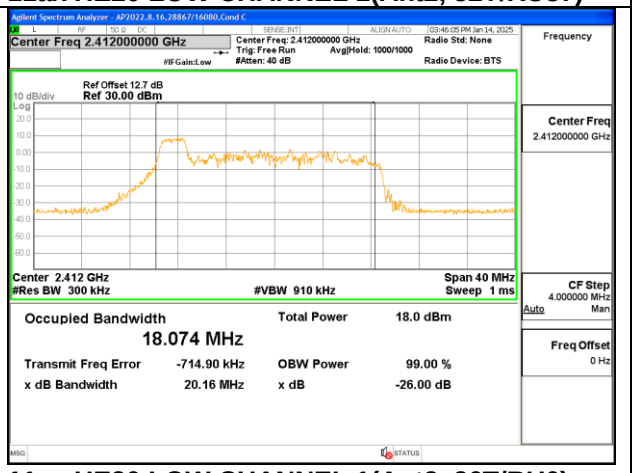
11ax HE20 LOW CHANNEL 1(Ant1, 52T/RU37)



11ax HE20 LOW CHANNEL 1(Ant2, 52T/RU37)



11ax HE20 LOW CHANNEL 1(Ant1, 26T/RU0)



11ax HE20 LOW CHANNEL 1(Ant2, 26T/RU0)

9.4. OUTPUT POWER & POWER SPECTRAL DENSITY

OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)

RSS-247 5.4 (d)

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

TEST PROCEDURE

The transmitter output is connected to a power meter.

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

POWER 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.

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

DIRECTIONAL ANTENNA GAIN

For 2 TX
Tx chains are uncorrelated for power and correlated for PSD due to the device supporting CDD in all MIMO modes. The directional gains are as follows:

Band (GHz)	Tx0 Gain (dBi)	Tx1 Gain (dBi)	Uncorrelated Directional Gain (dBi)	Correlated Directional Gain (dBi)	Power Limit (dBm)	Power Limit (dBm)	PSD Limit (dBm/3kHz)
2.4 WLAN	-3.70	-3.50	-3.6	-0.59	30.00	30.00	8.00

DIRECTIONAL ANTENNA GAIN CALCULATION

ANSI C63.10 section 14.6.3

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

Sample Calculation:

Tx0= -3.7dBi,Tx1= -3.5dBi

Uncorrelated Directional Gain dBi = 10log[(10^(-3.7/10) + 10^(-3.5/10))/2]=-3.6dBi

Correlated Antenna gain = 10log[((10^(-3.7/20) + 10^(-3.5/20))^2)/2]=-0.59dBi

POWER CALCULATION:
P= measured conducted Avg Power (including cable loss + 10dB attenuator)
2Tx Total MIMO Measured conducted Avg Power (dBm)=10log[10^((P1)/10) + 10^((P2)/10)]

Sample Calculation HE20 mode, SU, Low channel MIMO:
2Tx Total MIMO Measured conducted Avg Power (dBm)=
10log[10^((16.46)/10) + 10^((16.20)/10)] = 19.34dBm

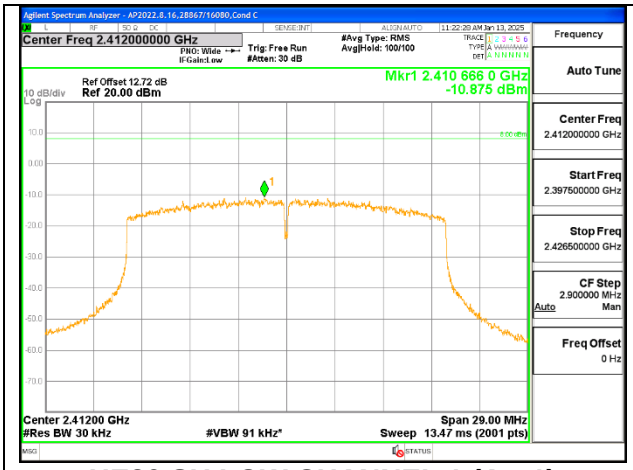
PSD CALCULATION:
PSD= measured PSD (including cable loss + 10dB attenuator)
DCCF= duty cycle correction factor in dB
2Tx Corrected PSD with DCCF (dBm/30kHz) = 10log[10^((PSD1+DCCF)/10) + 10^((PSD2+DCCF)/10)]

Sample Calculation HE20 mode, SU, Low channel MIMO:
2Tx Corrected PSD with DCCF (dBm/30kHz) =
10log [10^((-10.875+0.72)/10) + 10^((-9.202+0.72)/10)] = -6.23dBm/30kHz

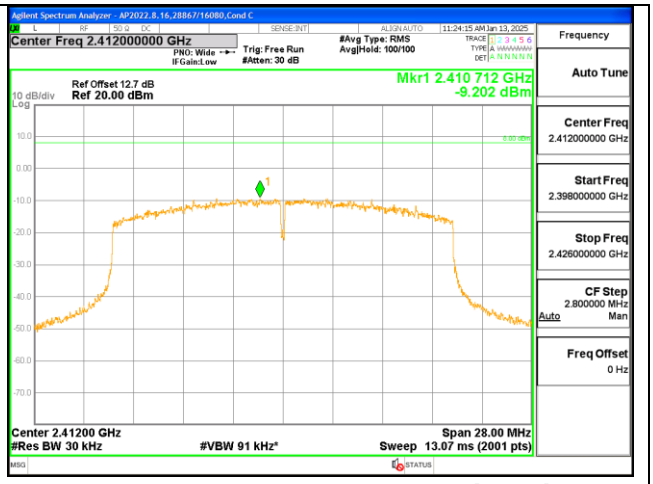
RESULT

Test Engineer ID:	16080	Test Date:	2025-01-13

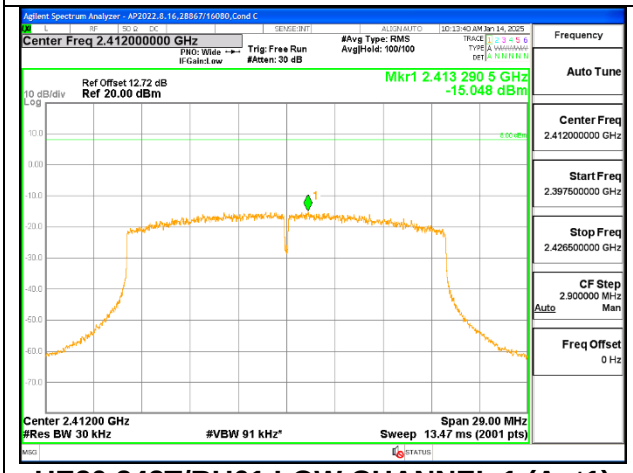
Mode	No. of Tx	Channel	Freq (MHz)	Tones	RU Index	Measured Conducted Avg Power (dBm) Ant 1	Measured Conducted Avg Power (dBm) Ant 2	Total MIMO Measured Conducted Avg Power(dBm)	Power Limit (dBm)	Power Margin (dB)	Measured PSD (dBm/30kHz) Ant 1	Measured PSD (dBm/30kHz) Ant 2	Corrected PSD with DCCF (dBm/30kHz)	PSD Limit (dBm/3kHz)	PSD Margin (dB)
HE20	2	1	2412	SU		16.46	16.20	**19.34**	30.00	-10.66	-10.875	-9.202	-6.23	8	-14.23
		6	2437			16.49	16.06	19.29	30.00	-10.71	-10.879	-9.834	-6.59	8	-14.59
		10	2457			15.46	14.87	18.19	30.00	-11.81	-13.073	-9.463	-7.17	8	-15.17
		11	2462			14.11	13.66	16.90	30.00	-13.10	-9.971	-9.160	-5.81	8	-13.81
		12	2467			3.65	2.89	6.30	30.00	-23.70	-20.778	-20.076	-16.68	8	-24.68
		13	2472			-1.26	-3.44	0.80	30.00	-29.20	-25.011	-27.425	-22.32	8	-30.32
		1	2412	242T	61	10.55	10.68	13.63	30.00	-16.37	-15.048	-14.898	-11.29	8	-19.29
		6	2437			10.82	10.72	**13.78**	30.00	-16.22	-15.065	-15.279	-11.49	8	-19.49
		11	2462			10.44	9.76	13.12	30.00	-16.88	-15.018	-15.247	-11.45	8	-19.45
		12	2467			4.39	5.39	7.93	30.00	-22.07	-20.459	-20.343	-16.72	8	-24.72
		13	2472			-1.55	-2.85	0.86	30.00	-29.14	-25.65	-28.544	-23.18	8	-31.18
		1	2412	106T	53	10.59	10.74	**13.68**	30.00	-16.32	-11.532	-11.064	-7.95	8	-15.95
		6	2437			10.52	10.31	13.43	30.00	-16.57	-11.81	-11.671	-8.40	8	-16.40
		11	2462		54	10.61	10.25	13.44	30.00	-16.56	-11.207	-11.714	-8.11	8	-16.11
		12	2467			4.82	4.73	7.79	30.00	-22.21	-17.567	-17.326	-14.10	8	-22.10
		13	2472			-1.13	-3.22	0.96	30.00	-29.04	-22.011	-24.614	-19.78	8	-27.78
		1	2412	52T	37	11.13	10.34	13.76	30.00	-16.24	-9.175	-9.221	-8.82	8	-16.82
		6	2437		38	10.85	10.77	**13.82**	30.00	-16.18	-9.161	-9.261	-7.78	8	-15.78
		11	2462		40	10.29	9.82	13.07	30.00	-16.93	-10.127	-10.497	-16.92	8	-24.92
		12	2467			3.38	2.74	6.08	30.00	-23.92	-16.594	-16.834	-21.57	8	-29.57
		13	2472			-1.01	-3.39	0.97	30.00	-29.03	-21.369	-20.003	-17.41	8	-25.41
		1	2412	26T	0	10.07	8.96	12.56	30.00	-17.44	-7.503	-8.44	-4.81	8	-12.81
		6	2437		4	10.35	9.55	**12.98**	30.00	-17.02	-6.293	-6.359	-3.19	8	-11.19
		11	2462		8	9.55	8.43	12.04	30.00	-17.96	-8.59	-8.666	-5.49	8	-13.49
		12	2467			3.17	1.37	5.37	30.00	-24.63	-14.375	-14.131	-11.11	8	-19.11
		13	2472			-4.85	-7.15	-2.84	30.00	-32.84	-20.388	-23.429	-18.51	8	-26.51



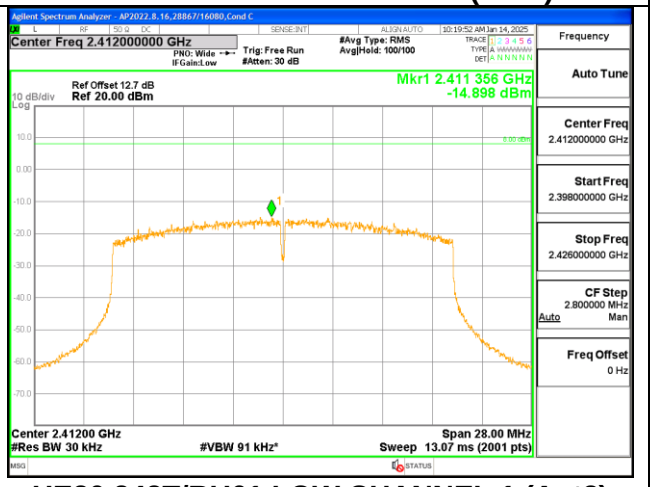
HE20 SU LOW CHANNEL 1 (Ant1)



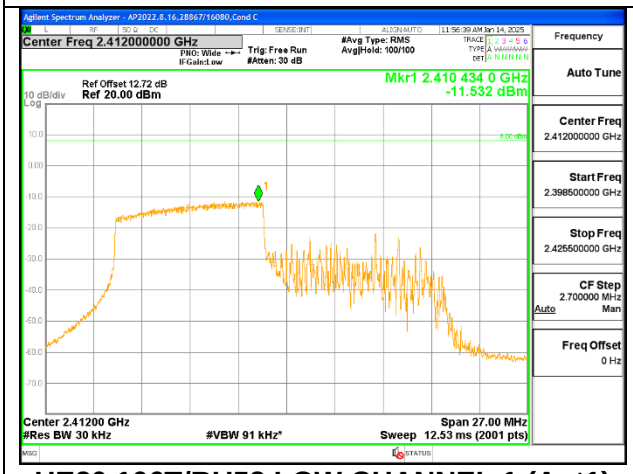
HE20 SU LOW CHANNEL 1 (Ant2)



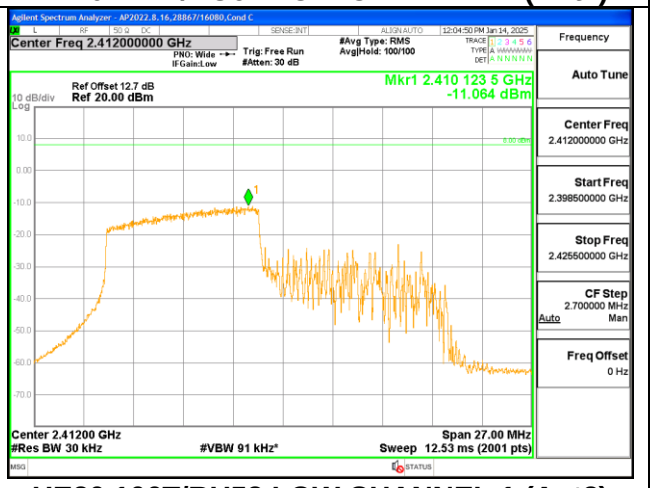
HE20 242T/RU61 LOW CHANNEL 1 (Ant1)



HE20 242T/RU61 LOW CHANNEL 1 (Ant2)

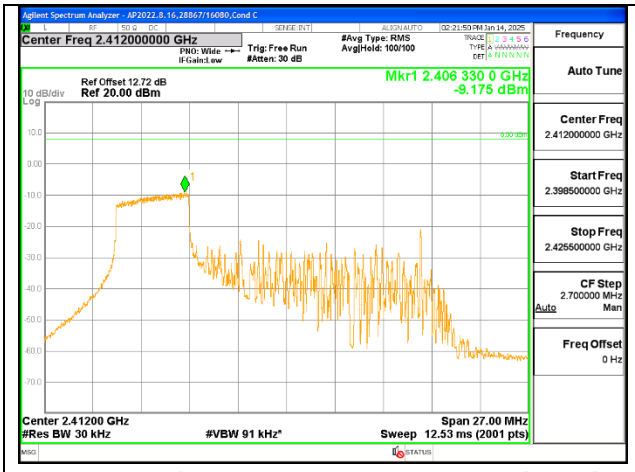


HE20 106T/RU53 LOW CHANNEL 1 (Ant1)

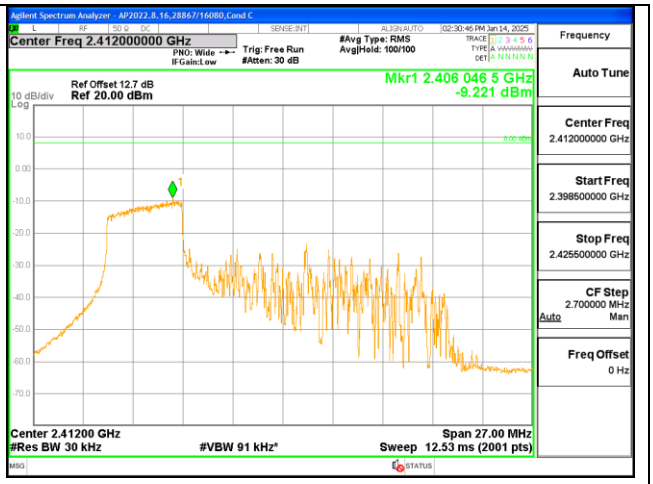


HE20 106T/RU53 LOW CHANNEL 1 (Ant2)

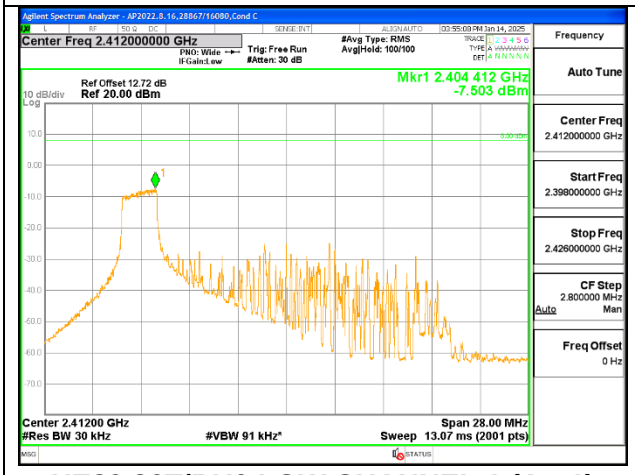
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538, USA TEL:(510) 319-4000 FAX:(510) 661-0888



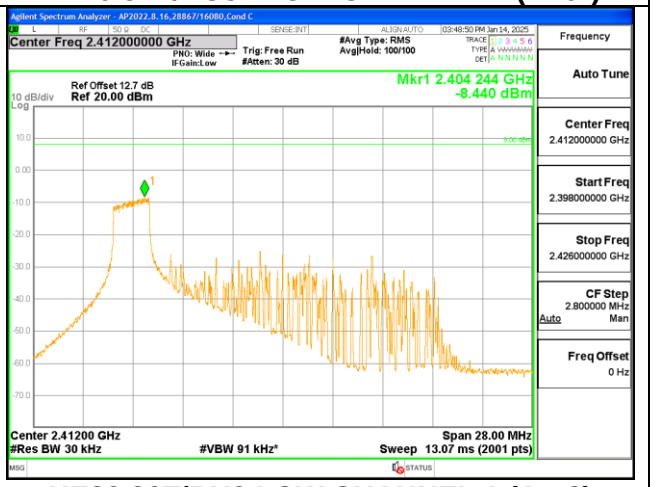
HE20 52T/RU37 LOW CHANNEL 1 (Ant1)



HE20 52T/RU37 LOW CHANNEL 1 (Ant2)



HE20 26T/RU0 LOW CHANNEL 1 (Ant1)



HE20 26T/RU0 LOW CHANNEL 1 (Ant2)

9.5. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.407 (d)

RSS-247 5.5

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

PROCEDURE

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

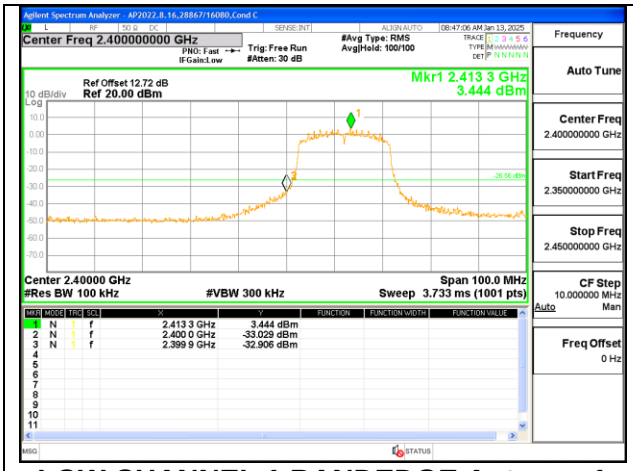
RESULTS

SU and 26 tones conducted spurious emissions were tested as worst-case.

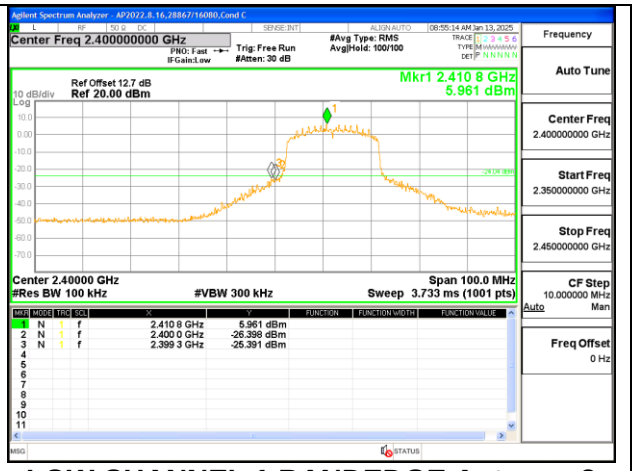
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538, USA TEL:(510) 319-4000 FAX:(510) 661-0888

9.5.1. 802.11ax HE20 MODE 2TX

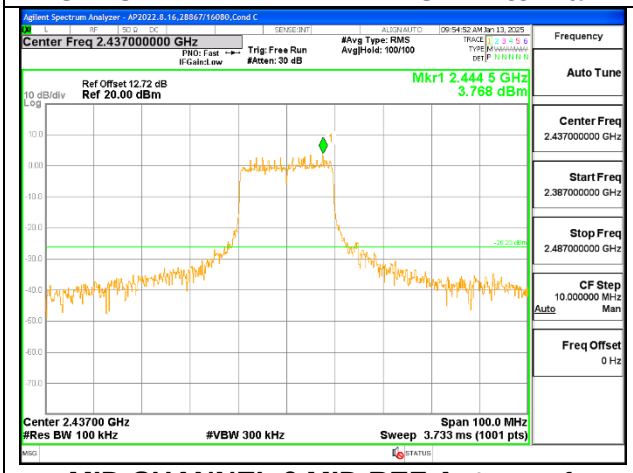
2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: SU, Single User



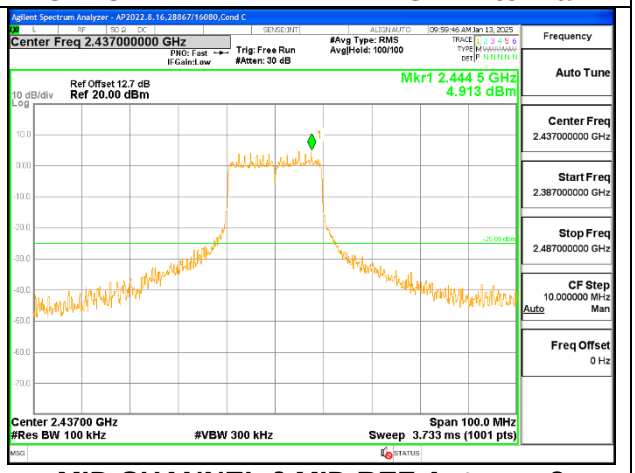
LOW CHANNEL 1 BANDEDGE Antenna 1



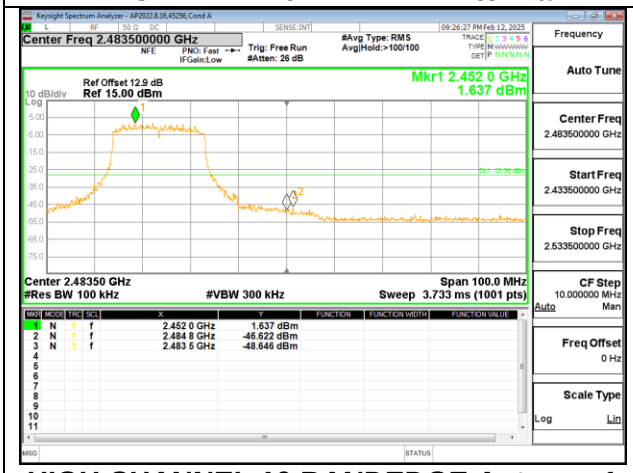
LOW CHANNEL 1 BANDEDGE Antenna 2



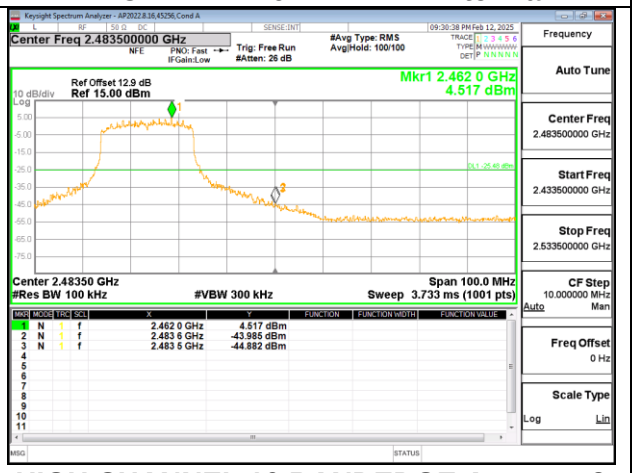
MID CHANNEL 6 MID REF Antenna 1



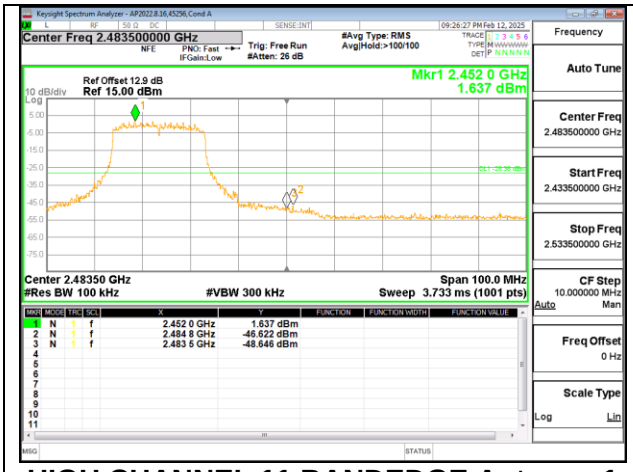
MID CHANNEL 6 MID REF Antenna 2



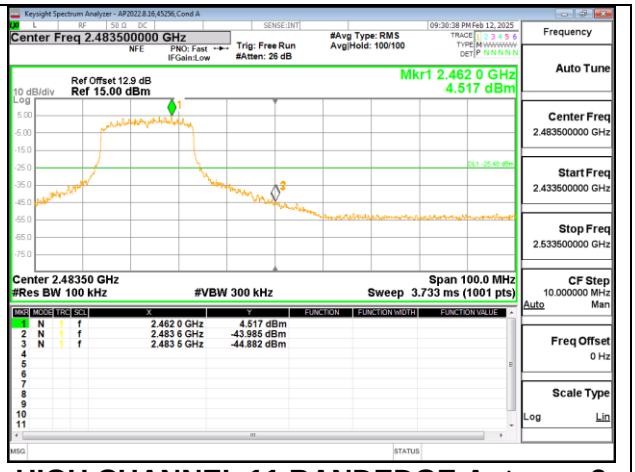
HIGH CHANNEL 10 BANDEDGE Antenna 1



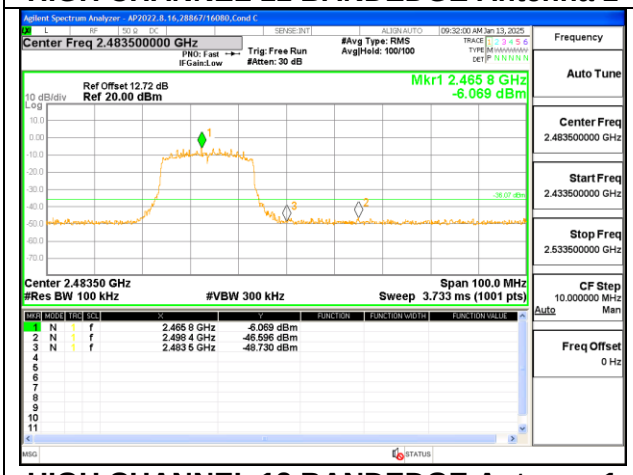
HIGH CHANNEL 10 BANDEDGE Antenna 2



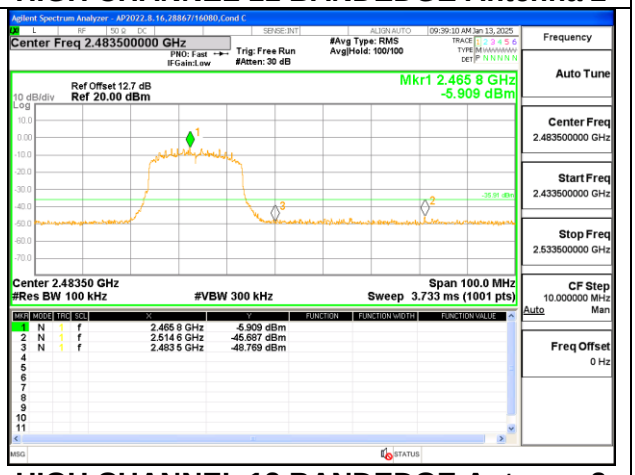
HIGH CHANNEL 11 BANDEDGE Antenna 1



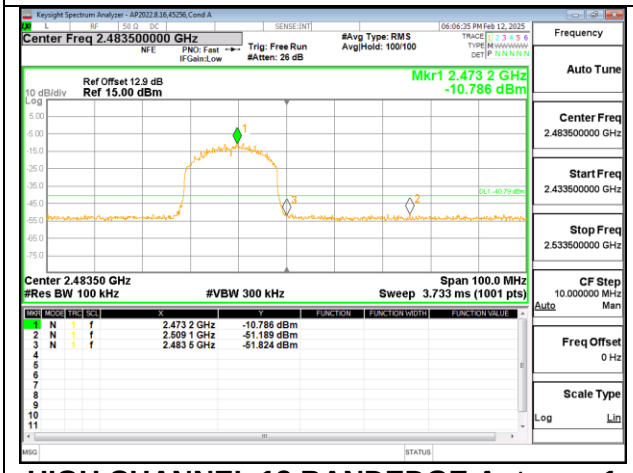
HIGH CHANNEL 11 BANDEDGE Antenna 2



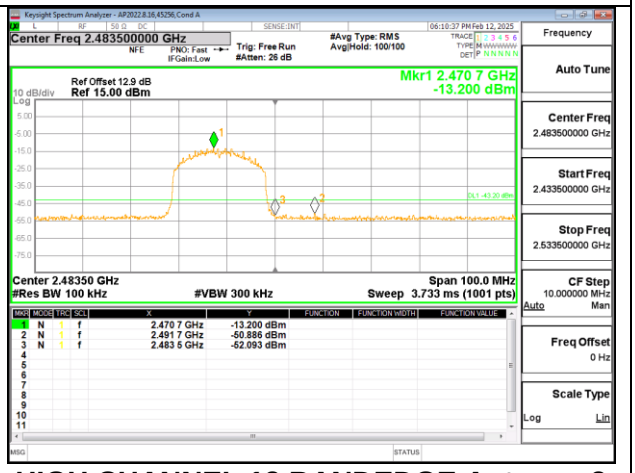
HIGH CHANNEL 12 BANDEDGE Antenna 1



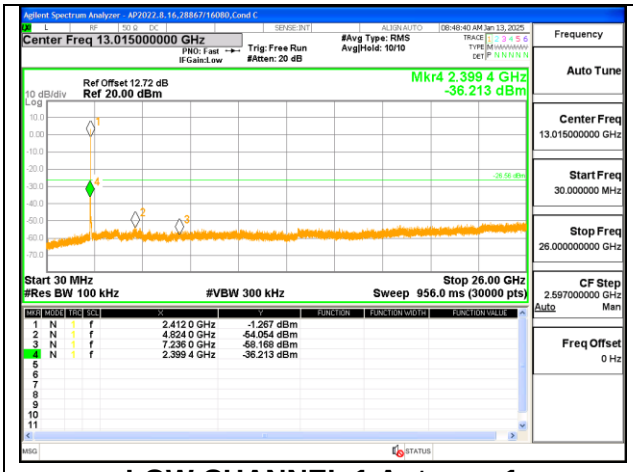
HIGH CHANNEL 12 BANDEDGE Antenna 2



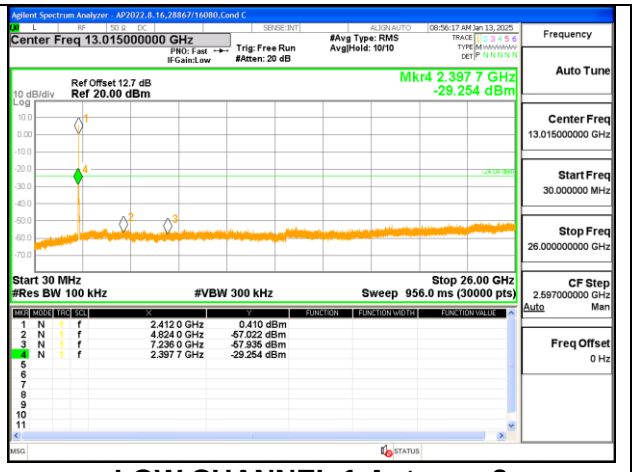
HIGH CHANNEL 13 BANDEDGE Antenna 1



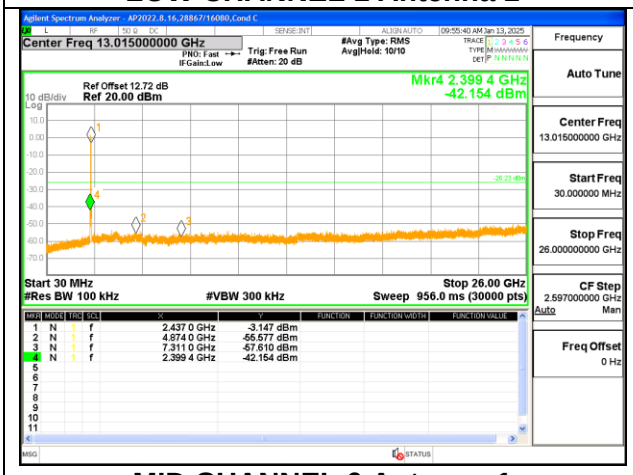
HIGH CHANNEL 13 BANDEDGE Antenna 2



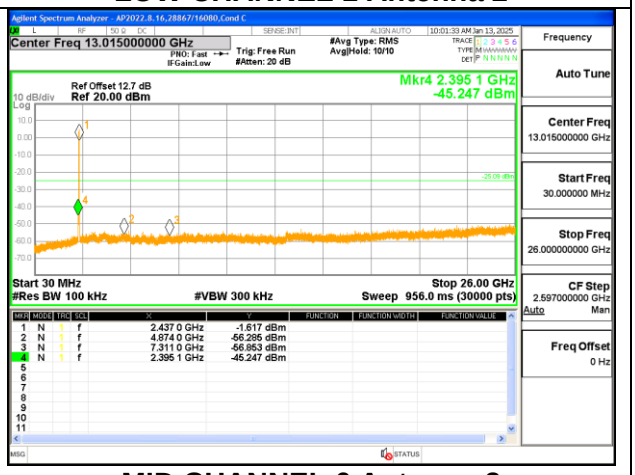
LOW CHANNEL 1 Antenna 1



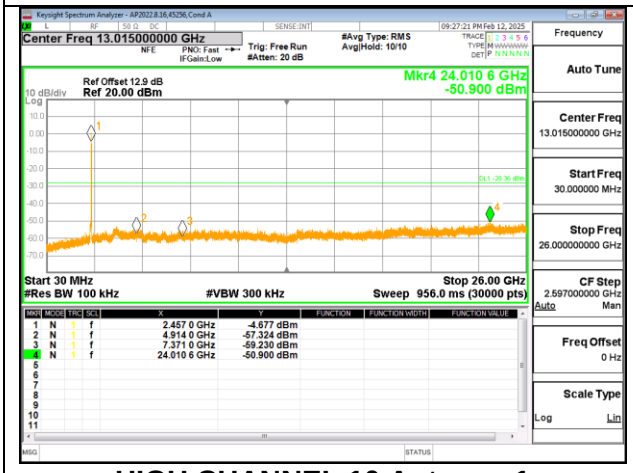
LOW CHANNEL 1 Antenna 2



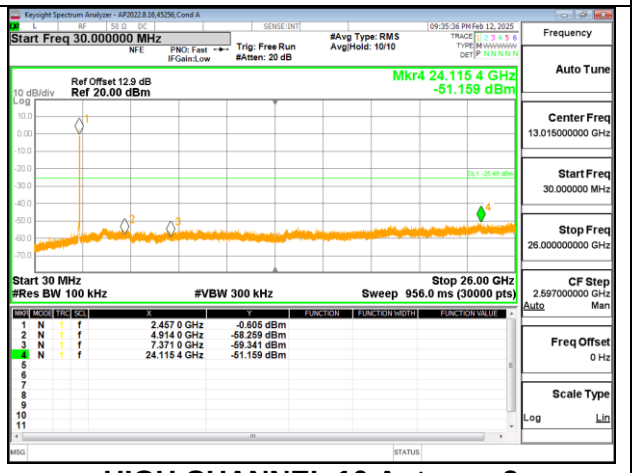
MID CHANNEL 6 Antenna 1



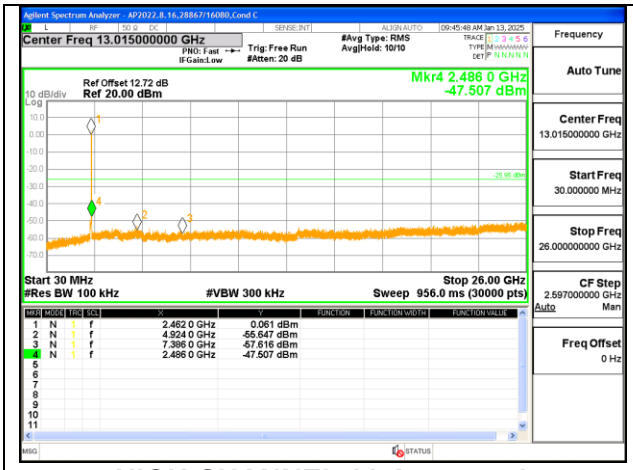
MID CHANNEL 6 Antenna 2



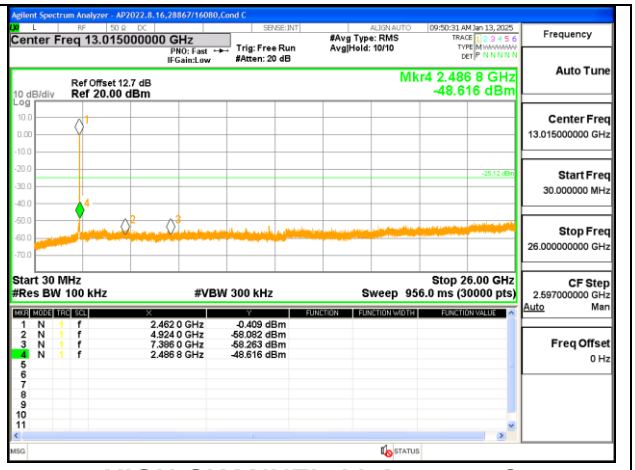
HIGH CHANNEL 10 Antenna 1



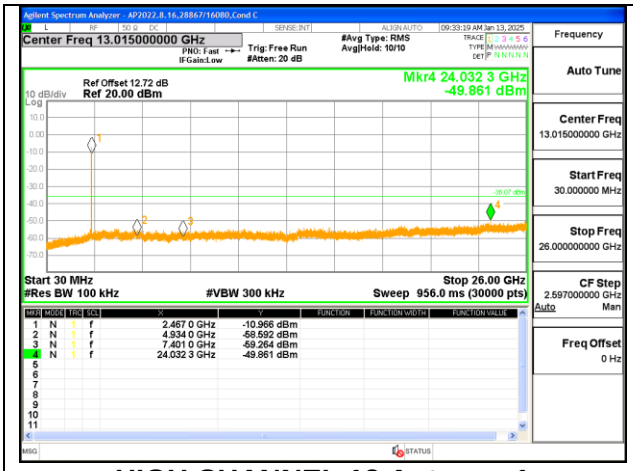
HIGH CHANNEL 10 Antenna 2



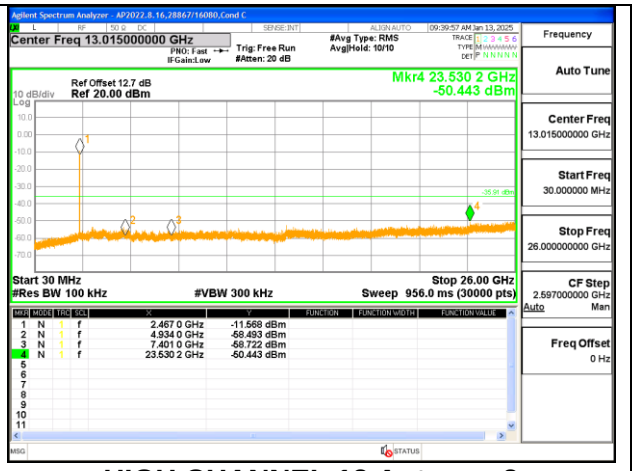
HIGH CHANNEL 11 Antenna 1



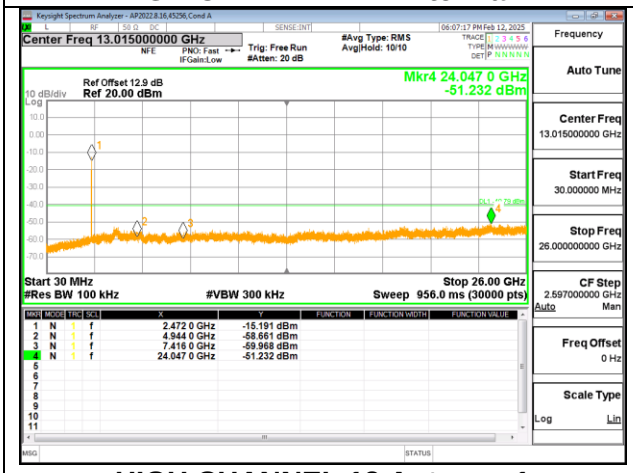
HIGH CHANNEL 11 Antenna 2



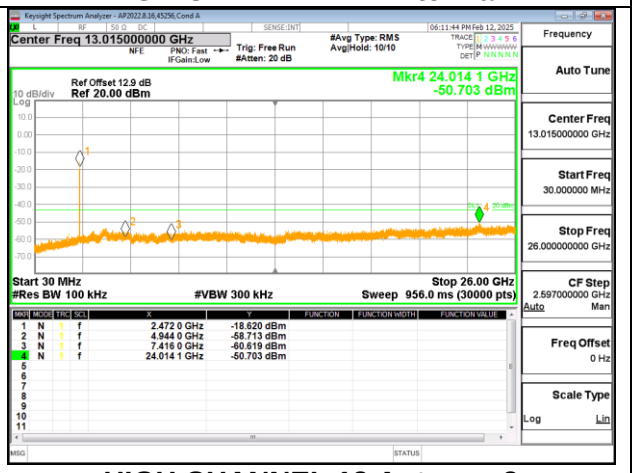
HIGH CHANNEL 12 Antenna 1



HIGH CHANNEL 12 Antenna 2

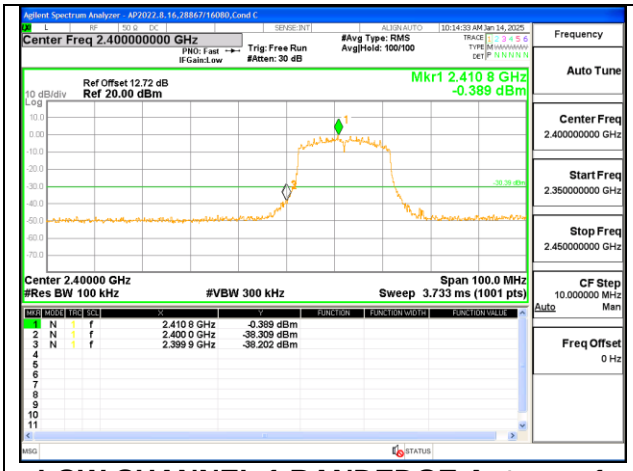


HIGH CHANNEL 13 Antenna 1

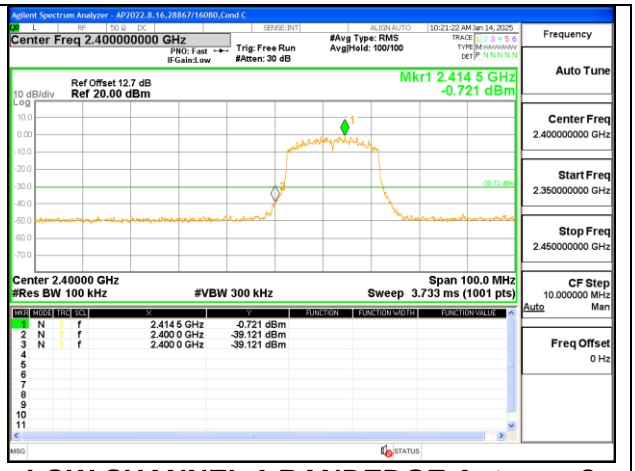


HIGH CHANNEL 13 Antenna 2

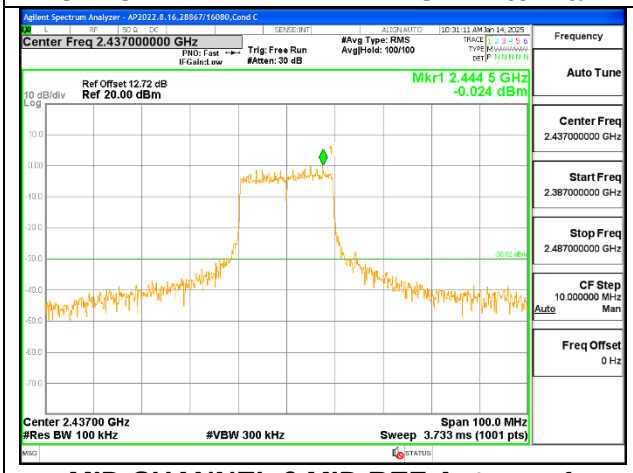
2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 242-Tones, RU Index 61



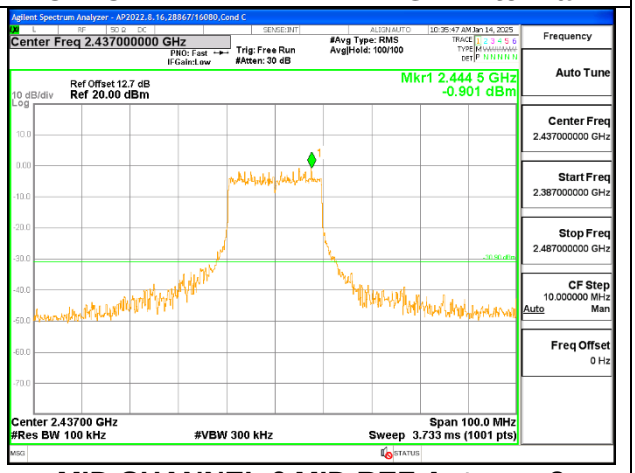
LOW CHANNEL 1 BANDEDGE Antenna 1



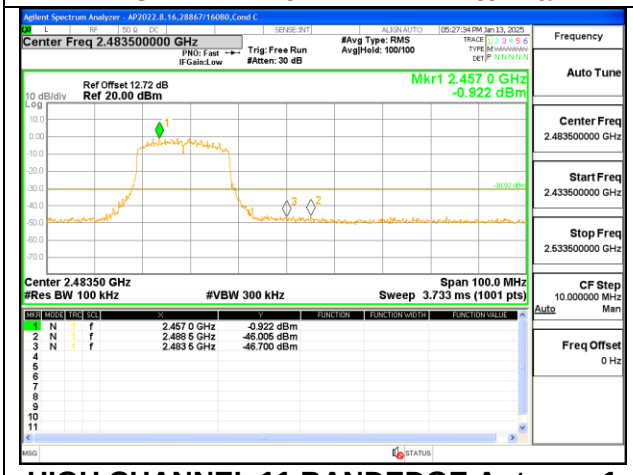
LOW CHANNEL 1 BANDEDGE Antenna 2



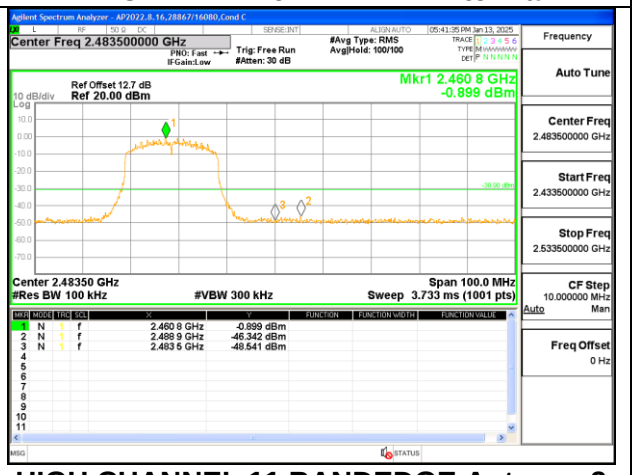
MID CHANNEL 6 MID REF Antenna 1



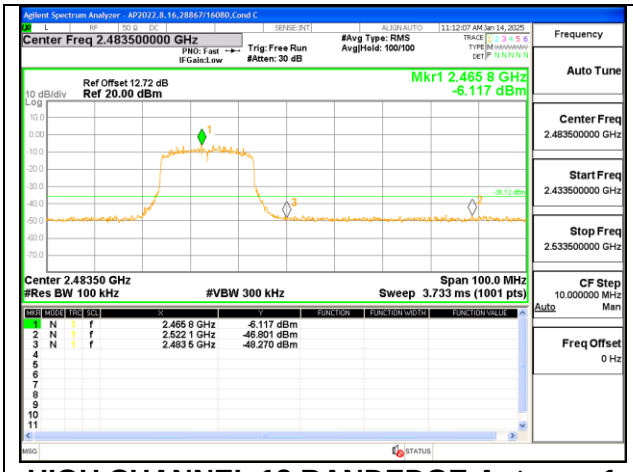
MID CHANNEL 6 MID REF Antenna 2



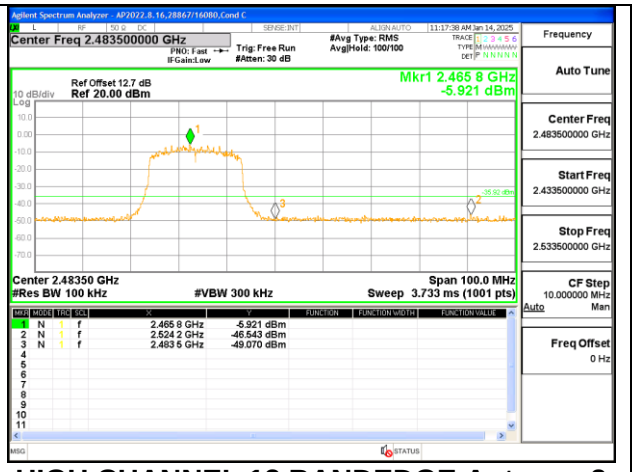
HIGH CHANNEL 11 BANDEDGE Antenna 1



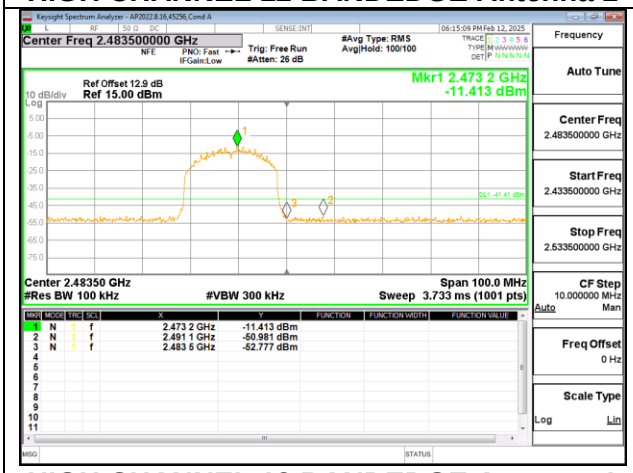
HIGH CHANNEL 11 BANDEDGE Antenna 2



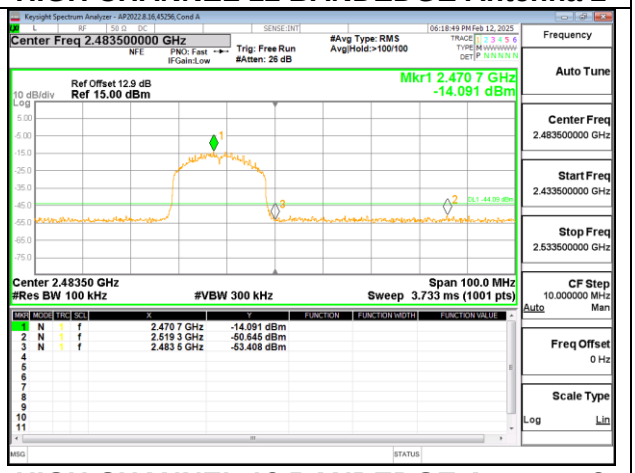
HIGH CHANNEL 12 BANDEDGE Antenna 1



HIGH CHANNEL 12 BANDEDGE Antenna 2

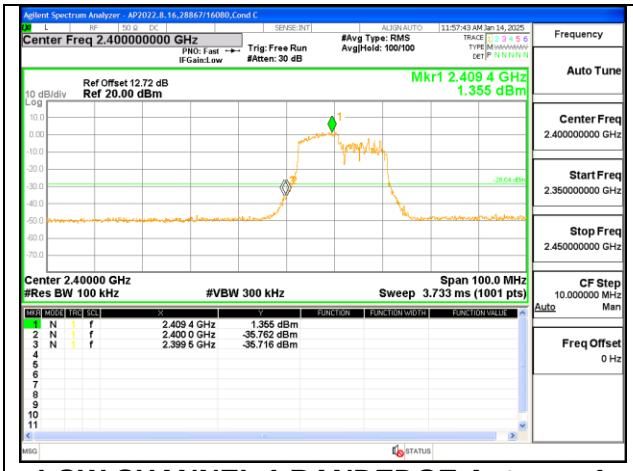


HIGH CHANNEL 13 BANDEDGE Antenna 1

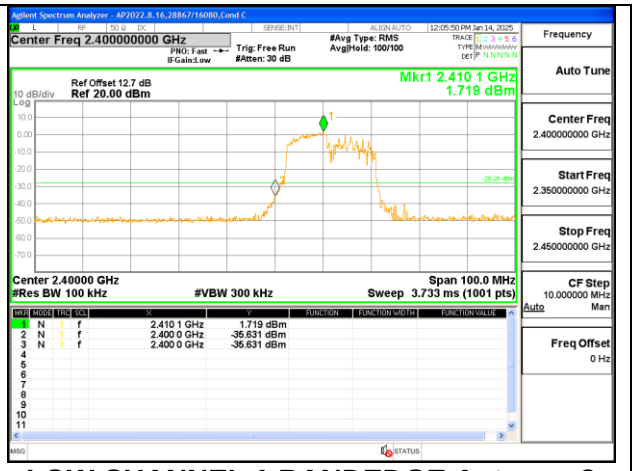


HIGH CHANNEL 13 BANDEDGE Antenna 2

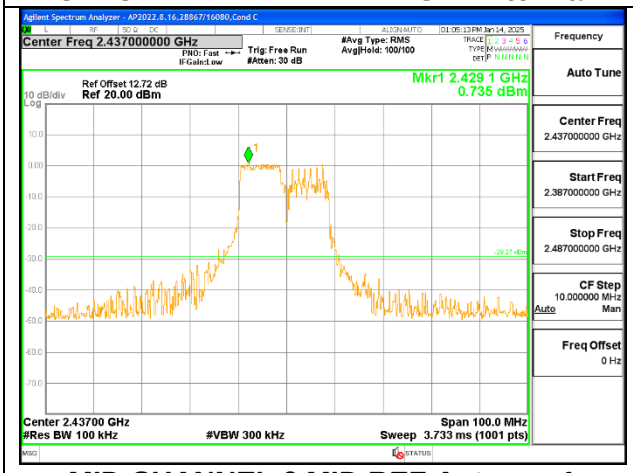
2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 106-Tones, RU Index 53



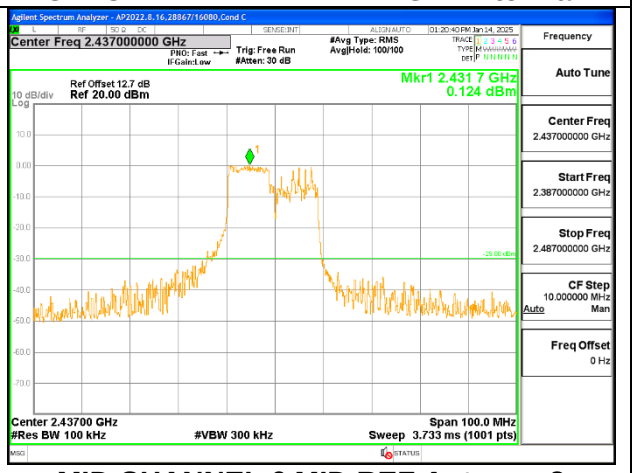
LOW CHANNEL 1 BANDEDGE Antenna 1



LOW CHANNEL 1 BANDEDGE Antenna 2



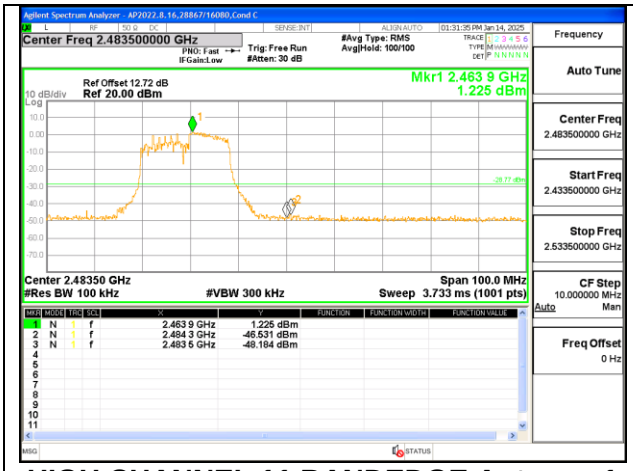
MID CHANNEL 6 MID REF Antenna 1



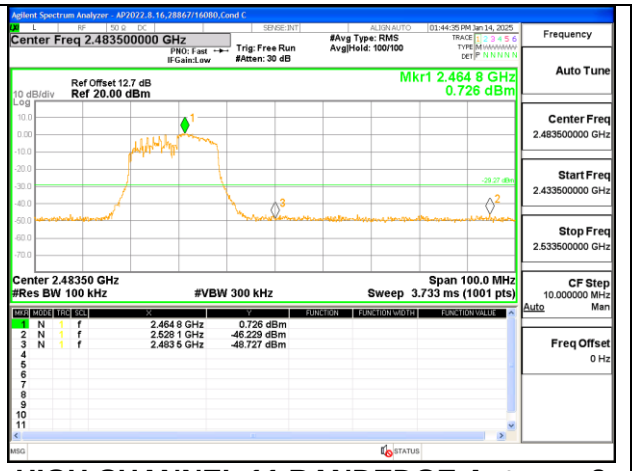
MID CHANNEL 6 MID REF Antenna 2

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

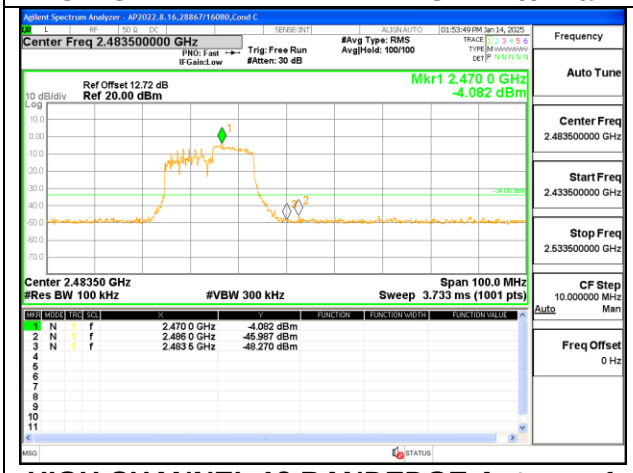
2TX Antenna 1 + Antenna 2 CDD OFDMA MODE: 106-Tones, RU Index 54



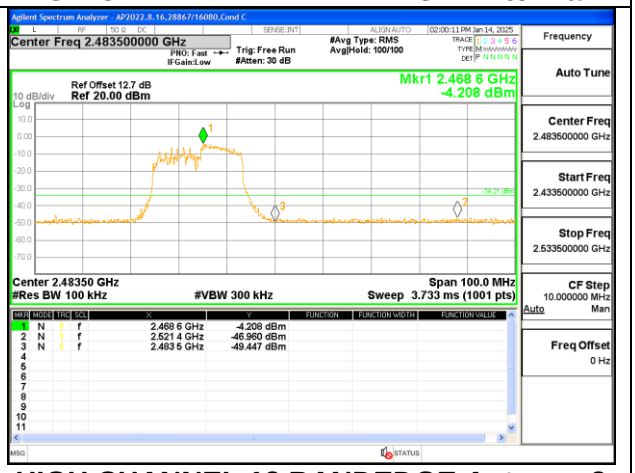
HIGH CHANNEL 11 BANDEDGE Antenna 1



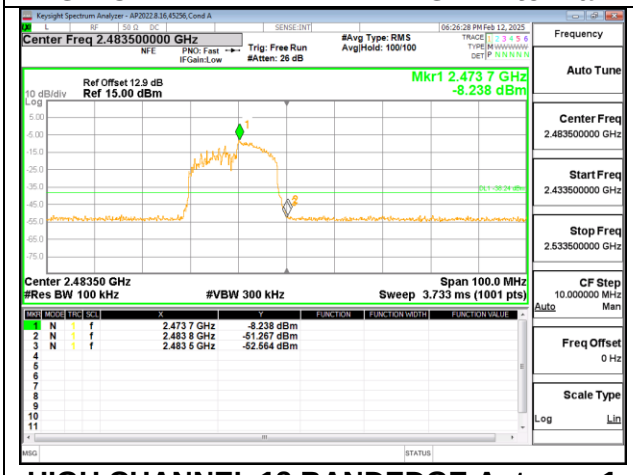
HIGH CHANNEL 11 BANDEDGE Antenna 2



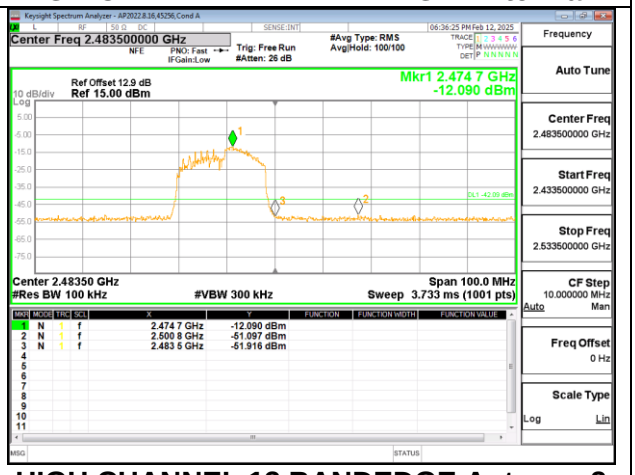
HIGH CHANNEL 12 BANDEDGE Antenna 1



HIGH CHANNEL 12 BANDEDGE Antenna 2



HIGH CHANNEL 13 BANDEDGE Antenna 1



HIGH CHANNEL 13 BANDEDGE Antenna 2