TEST REPORT

Report Number: R15374786-E1

Applicant	:	Microsoft Corporation 1 Microsoft Way Redmond, WA 98052-8300, USA
Model	:	HWB-Q93
FCC ID	:	C3K00002101
IC	:	3048A-00002101
EUT Description	:	Wireless Module
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART C: 2024 ISED RSS-247 ISSUE 3: 2023 ISED RSS-GEN ISSUE 5 + A1 + A2: 2021

Date Of Issue:
2025-01-10

Prepared by:
UL LLC
12 Laboratory Dr.
Research Triangle Park, NC 27709 U.S.A.
TEL: (919) 549-1400

CERT #0751.06

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	2024-11-27	Initial Issue	Charles Moody
V2	2024-12-31	Included Correlated and Uncorrelated Gain Calculation to Section 6.3.	Charles Moody
V3	2025-01-10	Revised Antenna Gain Statement in Section 6.3 and Added Note Regarding Equipment Calibration	Charles Moody

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Microsoft Corporation
1 Microsoft Way
Redmond, WA 98052-8300, USA

EUT DESCRIPTION: Wireless Module

MODEL: HWB-Q93

SERIAL NUMBER: 6-19, 6-25, 6-28

SAMPLE RECEIPT DATE: 2024-06-20 TO 2024-10-10

DATE TESTED: 2024-07-02 TO 2024-11-27

APPLICABLE STANDARDS

STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C: 2024	Refer to Section 2
ISED RSS-247 Issue 3: 2023	Refer to Section 2
ISED RSS-GEN Issue 5 + A1 + A2: 2021	Refer to Section 2

UL LLC 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 LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC will constitute fraud and shall nullify the document.

Approved & Released For
UL LLC By:

Brian Kiewra
Project Engineer
Consumer, Medical and IT Segment
UL LLC

Prepared By:

Charles Moody
Senior Project Engineer
Consumer, Medical and IT Segment
UL LLC

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2. TEST RESULTS SUMMARY

This report contains data provided by the customer which can impact the validity of results. UL LLC 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)

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		
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		
15.209, 15.205	RSS-GEN 8.9, 8.10	Radiated Emissions		
15.207	RSS-Gen 8.8	AC Mains Conducted Emissions	Not Performed	See Note 1

NOTE 1: AC Mains emissions testing was not performed since the EUT is a radio module that is powered through a DC internal power supply.

3. TEST METHODOLOGY

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

4. FACILITIES AND ACCREDITATION

UL LLC is accredited A2LA, certification # 0751.06, 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: 12 Laboratory Dr RTP, NC 27709, U.S.A	US0067	2180C	825374
☒	Building: 2800 Perimeter Park Dr. Suite B Morrisville, NC 27560, U.S.A		27265	

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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 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	UNCERTAINTY
Radio Frequency (Spectrum Analyzer)	141.2 Hz
Occupied Channel Bandwidth	1.22%
RF output power, conducted	1.3 dB (PK) 0.45 dB (AV)
Power Spectral Density, conducted	2.47 dB
Unwanted Emissions, conducted	1.94 dB
All emissions, radiated	6.01 dB
Conducted Emissions (0.150-30MHz) - LISN	3.40 dB
Temperature	0.57°C
Humidity	3.39%
DC Supply voltages	1.70%
Time	3.39%

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

5.4. SAMPLE CALCULATION

RADIATED EMISSIONS

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

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6. EQUIPMENT UNDER TEST

6.1. EUT DESCRIPTION

The EUT is a Wireless Module. This report covers the full emissions testing of the 2.4 WLAN radio.

6.2. MAXIMUM OUTPUT POWER

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

2.4GHz BAND – Chain 0 + Chain 1 (Low Gain)

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2Tx			
2412 - 2472	802.11b	27.95	623.73
2412 - 2472	802.11g	28.64	731.14
2412 - 2472	802.11n HT20	27.28	534.56
2422 - 2462	802.11n HT40	26.93	493.17
2412 - 2472	802.11be EHT20 26T	29.46	883.08
2412 - 2472	802.11be EHT20 52T	29.23	837.53
2412 - 2472	802.11be EHT20 52T + 26T	29.29	849.18
2412 - 2472	802.11be EHT20 106T	29.41	872.97
2412 - 2472	802.11be EHT20 106T + 26T	29.44	879.02
2412 - 2472	802.11be EHT20 242T	29.29	849.18
2422 - 2462	802.11be EHT40 484T	26.2	416.87

2.4GHz BAND – Chain 0 + Chain 1 (Mid Gain)

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2Tx			
2412 - 2472	802.11b	26.05	402.72
2412 - 2472	802.11g	27.89	615.18
2412 - 2472	802.11n HT20	27.34	542.00
2422 - 2462	802.11n HT40	25.85	384.59
2412 - 2472	802.11be EHT20 26T	27.67	584.79
2412 - 2472	802.11be EHT20 52T	28.17	656.15
2412 - 2472	802.11be EHT20 52T + 26T	28.47	703.07
2412 - 2472	802.11be EHT20 106T	29.1	812.83
2412 - 2472	802.11be EHT20 106T + 26T	29.3	851.14
2412 - 2472	802.11be EHT20 242T	27.01	502.34
2422 - 2462	802.11be EHT40 484T	26.24	420.73

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2.4GHz BAND – Chain 0 + Chain 1 (High Gain)

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2Tx			
2412 - 2472	802.11b	25.1	323.59
2412 - 2472	802.11g	26.97	497.74
2412 - 2472	802.11n HT20	26.09	406.44
2422 - 2462	802.11n HT40	23.09	203.70
2412 - 2472	802.11be EHT20 26T	29.26	843.33
2412 - 2472	802.11be EHT20 52T	29.36	862.98
2412 - 2472	802.11be EHT20 52T + 26T	29.03	799.83
2412 - 2472	802.11be EHT20 106T	29.38	866.96
2412 - 2472	802.11be EHT20 106T + 26T	29.05	803.53
2412 - 2472	802.11be EHT20 242T	28.26	669.88
2422 - 2462	802.11be EHT40 484T	24.22	264.24

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

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

Low Gain Antenna:

Chain	Frequency (MHz)	Gain (dBi)	Type
0	2400-2483.5	3.6	PIFA
1	2400-2483.5	3.6	
(Uncorrelated)	2400-2483.5	3.6	
(Correlated)	2400-2483.5	6.61	

Mid Gain Antenna:

Chain	Frequency (MHz)	Gain (dBi)	Type
0	2400-2483.5	4.4	PIFA
1	2400-2483.5	4.4	
(Uncorrelated)	2400-2483.5	4.4	
(Correlated)	2400-2483.5	7.41	

High Gain Antenna:

Chain	Frequency (MHz)	Gain (dBi)	Type
0	2400-2483.5	6.1	PIFA
1	2400-2483.5	6.1	
(Uncorrelated)	2400-2483.5	6.1	
(Correlated)	2400-2483.5	9.11	

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Antenna gains for MIMO operations are calculated using the formulae from KDB 662911 D01 Multiple Transmitter Output v02r01 section F. As the two antennas have the same gain equations 2)a)(i) and 2)a)(ii) for correlated and uncorrelated transmissions respectively are used.

Correlated directional gain = G_{ANT} + 10 log(N_{ANT}) dBi, where N_{ANT} = 2 for a 2x2 MIMO device

Uncorrelated directional gain = G_{ANT}

6.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was 10.0.22621.1.

The test utility software used during testing was Qualcomm Radio Control Toolkit Version 4.0.118.1.

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 average output power as worst-case scenario.

Band edge was performed with the EUT set to transmit at the highest power on low, high and all power stepped channels. Testing was performed using a conducted restricted band edge setup. First, a restricted bandedge scan (C63.10 Section 11.12.2.5.2.1) was ran on chain 0 and chain 1. The data was then summed together accounting for antenna gain and duty cycle correction. Next, an integration measurement (C63.10 Section 11.12.3.2.3) was performed on each chain at the band edge. Again, duty cycle correction and antenna gain were accounted for in the summing of the integration data. An example bandedge scan and integration plot has been included for each mode for reference. Summed bandedge and summed integration data has been reported for each bandedge scan.

All radiated harmoincs and spurious emissions testing was performed using low gain's mid channel power setting (as a worst-case power setting) and on the high gain antenna boards, in order to yield worst case over the air results. Therefore, the radiated spurious emissions testing remains representative of the low and mid gain antennas as the chosen configuration represents worst case data.

Radiated spurious emissions between 1GHz and 18GHz were performed with he EUT set to transmit on low, mid and high channels at the worst-case modes based on average power and PSD. This was found to be 11b for the CCK modulation scheme and 11be EHT20 26T for the OFDMA modulation scheme.

All conducted testing, excluding output power, was performed with the EUT operating on all channels at the low gains maximum, mid channel power. Therefore, only low, mid and high channels were necessary to test for OBW, 6dB, PSD, and Conducted Spurious/Bandedge emissions and the low gain conducted testing can cover both mid and high gains which both have a lower power setting. Additionally, limits for PSD have been adjusted to account for the correlated gains of the high gain antenna. This serves as a worst case limit for PSD.

The EUT was investigated with the 2Tx antennas transmitting in all three orthogonal orientations. Through pretesting, it was determined that the Z orientation was worst case. Therefore, all final radiated emissions testing was performed with the EUT's antennas set to the Z orientation.

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

802.11b mode were made at 1 Mb/s.
802.11g mode were made at 6 Mb/s.
802.11n HT20 mode were made at MCS0 (Nss=1).
802.11n HT40 mode were made at MCS0 (Nss=1).
802.11be EHT20 mode were made at MCS0 (Nss=1).
802.11be EHT40 mode were made at MCS0 (Nss=1).

Only the worst-case plot per mode was included within this report as an example plot for OBW, 6dB, and PSD data. All tabular data has been included for each mode.

For PSD testing, PSD was performed 802.11b as it was the highest power mode. Additionally, PSD was performed on 802.11be EHT20 26T as it was the highest power and narrowest bandwidth mode out of all of the other modulation modes. Therefore these two modes were determined to be worst case PSD modes.

Note: All testing performed in 2Tx mode, where power per chain is equivalent to the 1Tx power on each chain. This allows 2Tx to cover all 1Tx testing.

Based on pretesting, full tone was worst-case over SU mode and 11be was worst-case over 11ax.

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6.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
NUC	Intel	NuC	BTAN3160022Z/ BTAN322009FE/ BTAN331003QS/ BTAN331002VK	N/A
Intel NUC Charger	Chicony Power Technology	A17-120P2A	0432-05LT1002333012523	N/A

I/O CABLES

I/O Cable List						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	Ribbon	1	Ribbon	Unshielded	3>	Connects EUT to NUC
2	DC Mains	1	Barrel	Unshielded	3>	Connects NUC to DC Adaptor

TEST SETUP

Test software exercised the radio card.

SETUP DIAGRAM

Please refer to R15374786-EP2 for setup diagrams

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7. MEASUREMENT METHOD

On Time and Duty Cycle: ANSI C63.10, Section 11.6: Zero-Span Spectrum Analyzer Method.

6 dB BW: ANSI C63.10 Subclause -11.8.1

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

Output Power: ANSI C63.10 Subclause -11.9.2.3.1 Method PKPM1 Peak-reading power meter
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 -11.10.2 Method PKPSD (peak PSD)

Emissions non-restricted frequency bands: ANSI C63.10 Subclause -11.11 and 6.10.4

Radiated emissions restricted frequency bands: ANSI C63.10 Subclause -11.12.1 and 6.10.5

Radiated Spurious Emissions: ANSI C63.10-2020 Section 6.3 to 6.6

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

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8. TEST AND MEASUREMENT EQUIPMENT

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

Test Equipment Used - Wireless Conducted Measurement Equipment

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
	Common Equipment				
	Conducted Room 1				
90416	Spectrum Analyzer	Keysight Technologies	N9030A	2024-09-23	2025-09-23
90411	Spectrum Analyzer	Keysight Technologies	N9030A	2024-08-01	2025-08-01
179892	Environmental Meter	Fisher Scientific	15-077-963	2024-08-12	2025-08-12
SOFTEMI	Antenna Port Software	UL	Version 2024.2.23	NA	NA
Power Software	Boonton Power Analyzer	Boonton	Version 3.0.13.0	NA	NA
	Conducted Room 2				
90410	Spectrum Analyzer	Keysight Technologies	N9030A	2024-06-14	2025-06-14
248881	Environmental Meter	Control Company	06-662-4	2024-04-10	2026-04-10
214284	Spectrum Analyzer	Rohde & Schwarz	FSW	2024-02-04	2025-02-04
SOFTEMI	Antenna Port Software	UL	Version 2024.2.23	NA	NA
Power Software	Boonton Power Analyzer	Boonton	Version 3.0.13.0	NA	NA
	Additional Equipment used				
211056	Real-Time Peak Power Sensor 50MHz to 8GHz	Boonton	RTP5000	2024-08-01	2025-08-01
211055	Real-Time Peak Power Sensor 50MHz to 8GHz	Boonton	RTP5000	2024-07-31	2025-07-31
211057	Real-Time Peak Power Sensor 50MHz to 8GHz	Boonton	RTP5000	2024-08-01	2025-08-01
245262	Conducted Switch Box	UL	CSB	2024-02-20	2025-02-20

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Test Equipment Used - Wireless Conducted Attenuators, Cables, and Couplers

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
	Attenuators				
226552	SMA Coaxial 20dB Attenuator 25MHz-18GHz	CentricRF	C18S2-20	2024-04-04	2025-04-04
226559	SMA Coaxial 10dB Attenuator 25MHz-18GHz	CentricRF	C18S2-10	2024-02-29	2025-02-28
226561	SMA Coaxial 10dB Attenuator 25MHz-18GHz	CentricRF	C18S2-10	2024-02-29	2025-02-28
226562	SMA Coaxial 10dB Attenuator 25MHz-18GHz	CentricRF	C18S2-10	2024-04-11	2025-04-11
226563	SMA Coaxial 10dB Attenuator 25MHz-18GHz	CentricRF	C18S2-10	2024-02-29	2025-02-28
226564	SMA Coaxial 10dB Attenuator 25MHz-18GHz	CentricRF	C18S2-10	2024-04-04	2025-04-04
226565	SMA Coaxial 10dB Attenuator 25MHz-18GHz	CentricRF	C18S2-10	2024-04-04	2025-04-04
	Cables				
CBL012	Micro-Coax UTiFLEX Cable Assembly, Low Loss	Carlisle Interconnect Technologies	UFB293C-0-2400-300300	2024-02-29	2025-02-28
188125 (CBL099)	Micro-Coax UTiFLEX Cable Assembly, Low Loss,40Ghz, 39.3", Connectors 2	Carlisle Interconnect Technologies	UFA147A-0-0180-200200	2024-04-11	2025-04-11
CBL105	Micro-Coax UTiFLEX Cable Assembly, Low Loss	Carlisle Interconnect Technologies	UFB-197C-0-0160-300300	2024-03-01	2025-03-01
CBL091	Micro-Coax UTiFLEX Cable Assembly, Low Loss,40Ghz	Carlisle Interconnect Technologies	UFA147A-2-0360-200200	2024-03-01	2025-03-01
CBL092	Micro-Coax UTiFLEX Cable Assembly, Low Loss,40Ghz	Carlisle Interconnect Technologies	UFA147A-2-0360-200200	2024-03-01	2025-03-01
CBL093	Micro-Coax UTiFLEX Cable Assembly, Low Loss,40Ghz	Carlisle Interconnect Technologies	UFA147A-2-0360-200200	2024-03-01	2025-03-01
179404 (CBL094)	SMA Cable	Micro-coax	UFB293C-2-0360-300300	2024-04-04	2025-04-04
CBL028	SMA Cable	Sucoflex	104PEA	2024-02-16	2025-02-16
CBL029	SMA Cable	Sucoflex	104PEA	2024-02-16	2025-02-16
89245 (CBL013)	SMA Cable	Micro-coax	UFB293C-0-1440-300300	2024-03-21	2025-03-21
80865	SMA Cable	Huber + Suhner	104PEA	2024-04-04	2025-04-04
80868	SMA Cable	Huber + Suhner	104PEA	2024-04-04	2025-04-04
80873	SMA Cable	Huber + Suhner	104PEA	2024-03-26	2025-03-26
247384	SMA Cable	Huber + Suhner	104PEA	2024-04-11	2025-04-11

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Test Equipment Used - Radiated Disturbance Emissions Test Equipment (Morrisville – Chamber 4)

Equip. ID	Description	Manufacturer/Brand	Model Number	Last Cal.	Next Cal.
	0.009-30MHz				
135144	Active Loop Antenna	ETS-Lindgren	6502	2024-01-24	2025-01-24
	30-1000 MHz				
90628	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB3	2024-01-02	2026-01-02
	18-40 GHz				
204704	Horn Antenna, 18-26.5GHz	Com-Power	AH-826	2023-07-20	2025-07-20
	Gain-Loss Chains				
207638	Gain-loss string: 0.009-30MHz	Various	Various	2024-05-22	2025-05-22
207639	Gain-loss string: 25-1000MHz	Various	Various	2024-05-22	2025-05-22
225795	Gain-loss string: 18-40GHz	Various	Various	2024-05-22	2025-05-22
	Receiver & Software				
197955	Spectrum Analyzer	Rohde & Schwarz	ESW44	2024-04-16	2025-04-16
**81018	Spectrum Analyzer	Agilent	E4446A	2023-07-31	2024-07-31
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
	Additional Equipment used				
241204	Environmental Meter	Fisher Scientific	15-077-963	2023-09-05	2025-09-05

**NOTE: Testing on this equipment was performed while the equipment was still in calibration.

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Test Equipment Used - Radiated Disturbance Emissions Test Equipment (Morrisville – Chamber 1)

Equip. ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
	1-18 GHz				
135143	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2024-02-07	2026-02-07
	Gain-Loss Chains				
91979	Gain-loss string: 1-18GHz	Various	Various	2024-05-08	2025-05-08
	Receiver & Software				
**81018	Spectrum Analyzer	Agilent	E4446A	2023-07-31	2024-07-31
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
	Additional Equipment used				
241205	Environmental Meter	Fisher Scientific	15-077-963	2023-09-05	2025-09-05
**170112	10dB Pad, DC-18GHz, 5W	Mini-Circuits	BW-N10W5+	2023-11-09	2024-11-09

**NOTE: Testing on this equipment was performed while the equipment was still in calibration.

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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 (%)	DC Correction Factor (RMS) (dB)	DC Correction Factor (ADV) (dB)	1/B Minimum VBW (kHz)
2.4GHz Band							
802.11b 2TX	0.664	0.683	0.972	97.22	0.12	0.25	1.506
802.11g 2TX	2.096	2.115	0.991	99.10	0.04	0.00	0.010
802.11n HT20 2TX	5.328	5.348	0.996	99.63	0.02	0.00	0.010
802.11n HT40 2TX	2.011	2.029	0.991	99.11	0.04	0.00	0.010
802.11be EHT20 26T 2TX	5.087	5.112	0.995	99.51	0.02	0.00	0.010
802.11be EHT20 52T 2TX	5.077	5.102	0.995	99.51	0.02	0.00	0.010
802.11be EHT20 52T + 26T 2TX	5.059	5.084	0.995	99.51	0.02	0.00	0.010
802.11be EHT20 106T 2TX	4.768	4.793	0.995	99.48	0.02	0.00	0.010
802.11be EHT20 106T + 26T 2TX	4.816	4.841	0.995	99.48	0.02	0.00	0.010
802.11be EHT20 242T 2TX	4.669	4.694	0.995	99.47	0.02	0.00	0.010
802.11be EHT40 484T 2TX	1.261	1.286	0.981	98.06	0.09	0.00	0.010

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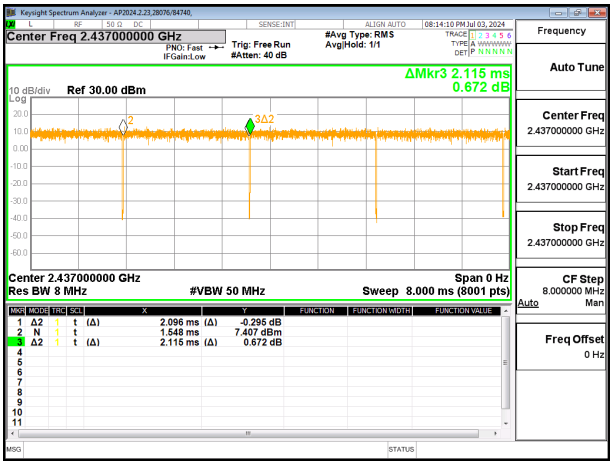
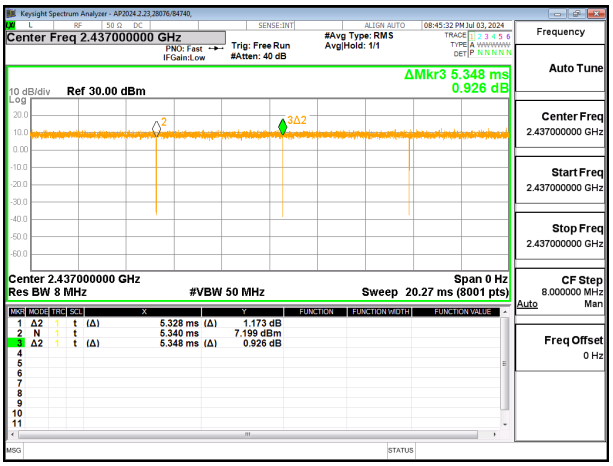
DUTY CYCLE PLOTS

DUTY CYCLE 802.11b MODE, 2TX



DUTY CYCLE 802.11g MODE, 2TX



DUTY CYCLE 802.11n HT20 MODE, 2TX

DUTY CYCLE 802.11n HT40 MODE, 2TX

DUTY CYCLE 802.11be EHT20 26T MODE, 2TX

DUTY CYCLE 802.11be EHT20 52T MODE, 2TX

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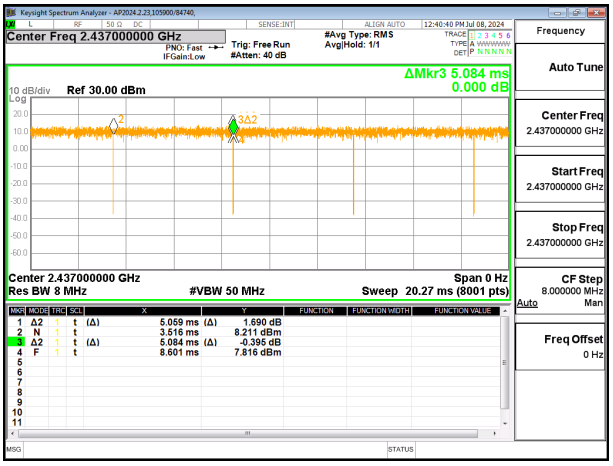
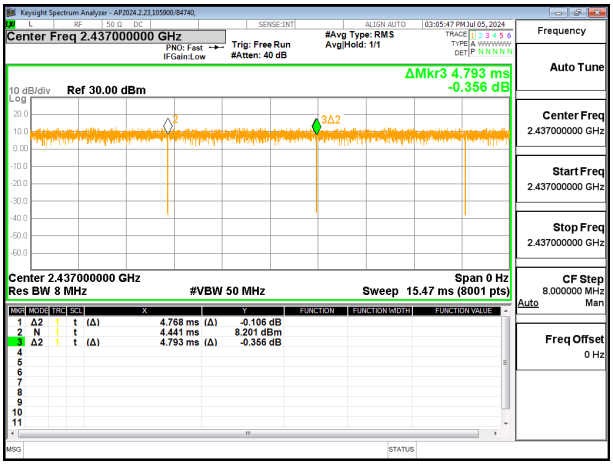
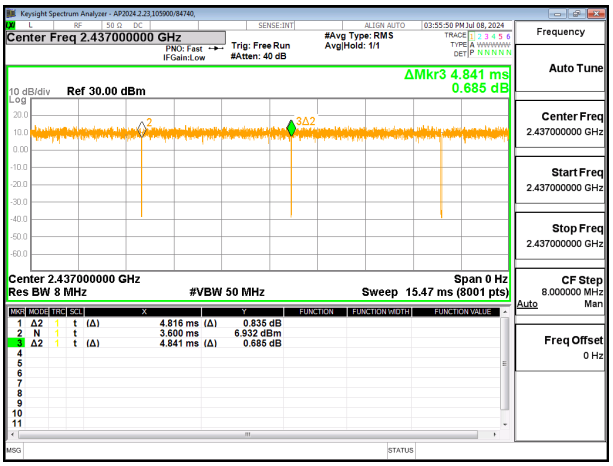


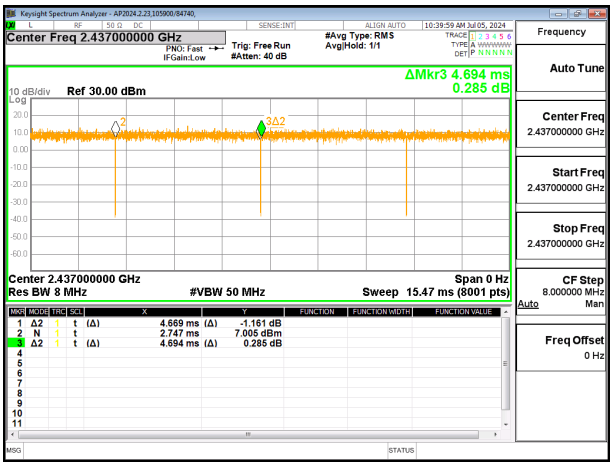
DUTY CYCLE 802.11be EHT20 52T + 26T MODE, 2TX



DUTY CYCLE 802.11be EHT20 106T MODE, 2TX



DUTY CYCLE 802.11be EHT20 106T + 26T MODE, 2TX



DUTY CYCLE 802.11be EHT20 242T MODE, 2TX

DUTY CYCLE 802.11be EHT40 484T MODE, 2TX

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9.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

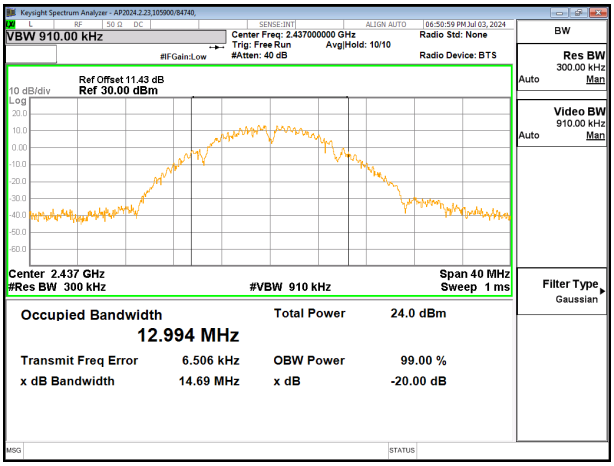
RESULTS

9.2.1. 802.11b MODE

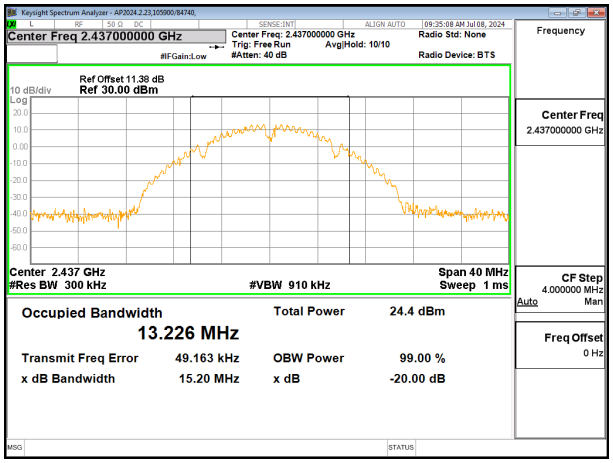
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 1	2412	13.115	12.997
Mid 6	2437	12.994	13.226
High 13	2472	13.001	13.132

MID CHANNEL 6



MID CHANNEL 6 CHAIN 0



MID CHANNEL 6 CHAIN 1

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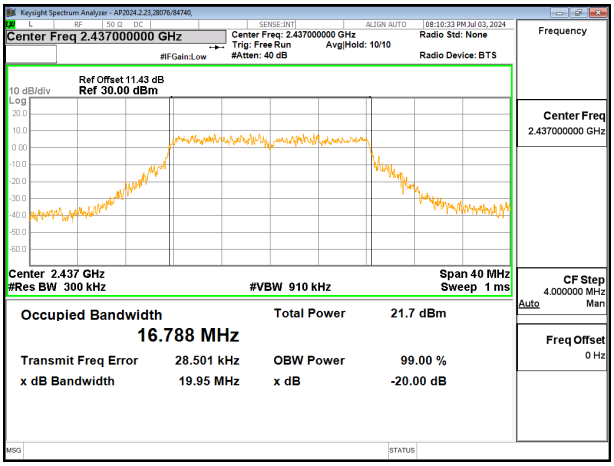
9.2.2. 802.11g MODE

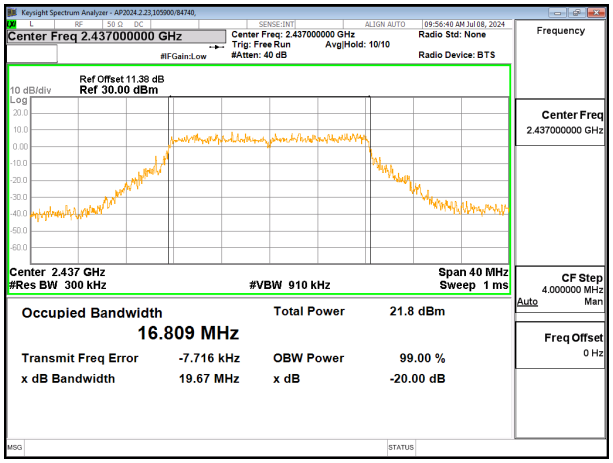
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 1	2412	16.810	16.692
Mid 6	2437	16.788	16.809
High 13	2472	16.758	16.736

MID CHANNEL 6



MID CHANNEL 6 CHAIN 0



MID CHANNEL 6 CHAIN 1

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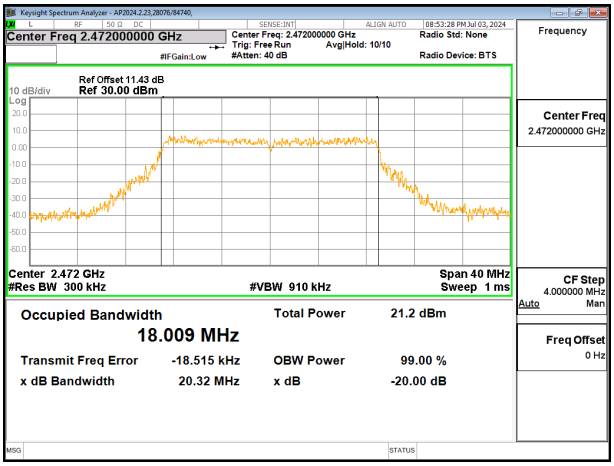
9.2.3. 802.11n HT20 MODE

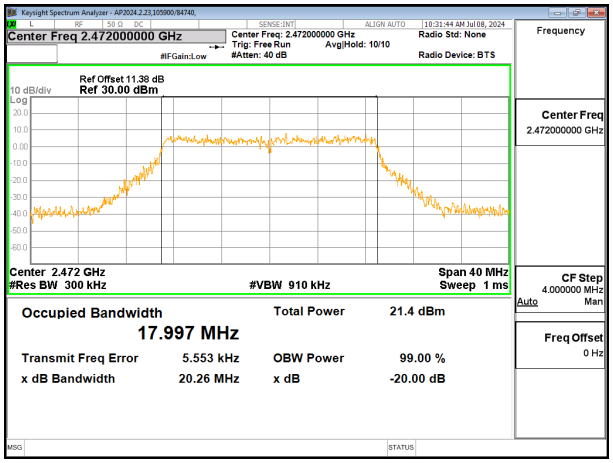
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 1	2412	17.877	17.839
Mid 6	2437	17.854	17.882
High 13	2472	18.009	17.997

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

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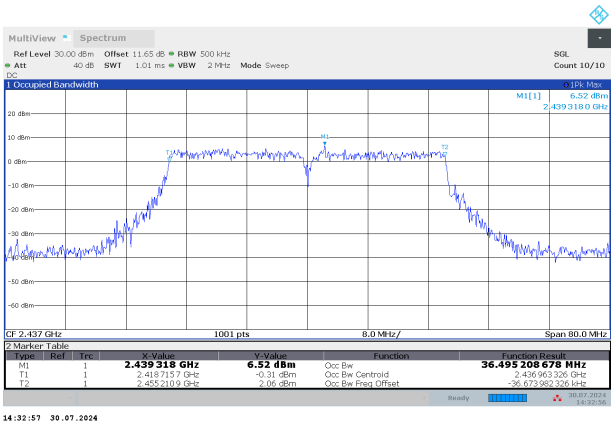
9.2.4. 802.11n HT40 MODE

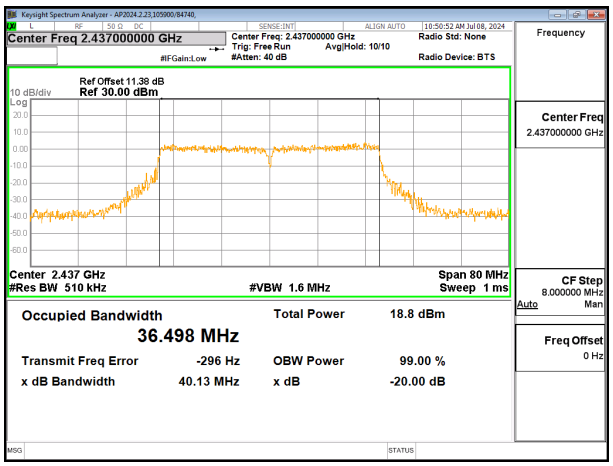
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 3	2422	36.390	36.438
Mid 6	2437	36.495	36.498
High 11	2462	36.391	36.449

MID CHANNEL 6



MID CHANNEL 6 CHAIN 0



MID CHANNEL 6 CHAIN 1

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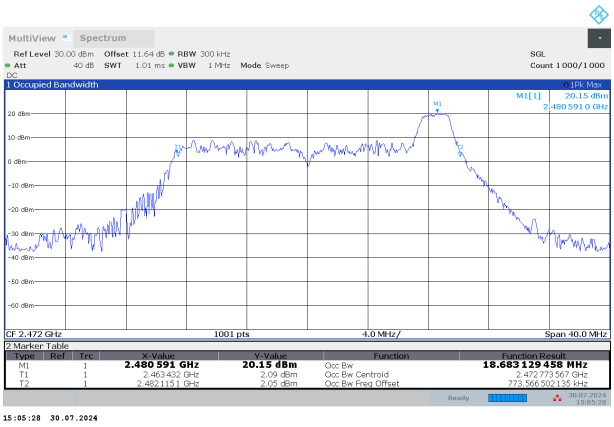
9.2.5. 802.11be EHT20 26T MODE

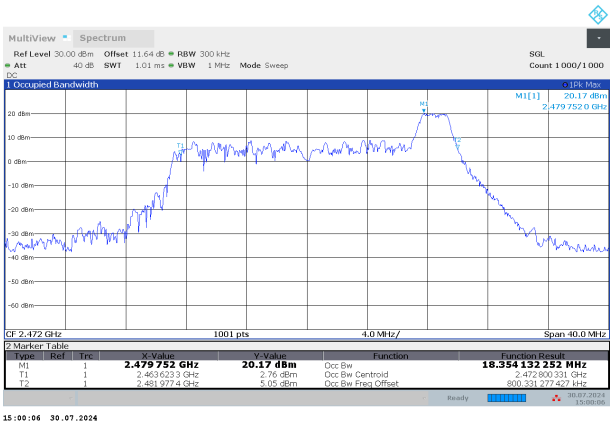
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 1	2412	18.648	18.622
Mid 6	2437	17.157	17.113
High 13	2472	18.683	18.354

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

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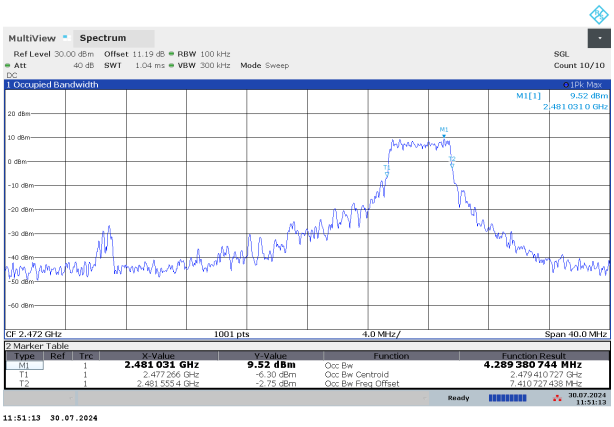
9.2.6. 802.11be EHT20 52T MODE

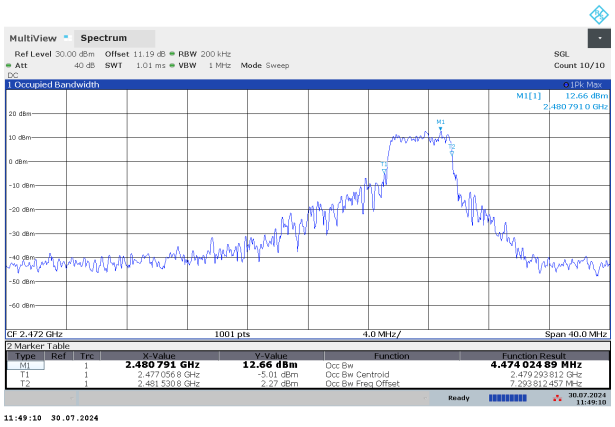
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 1	2412	4.1584	4.4396
Mid 6	2437	4.2734	4.1137
High 13	2472	4.2894	4.4740

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

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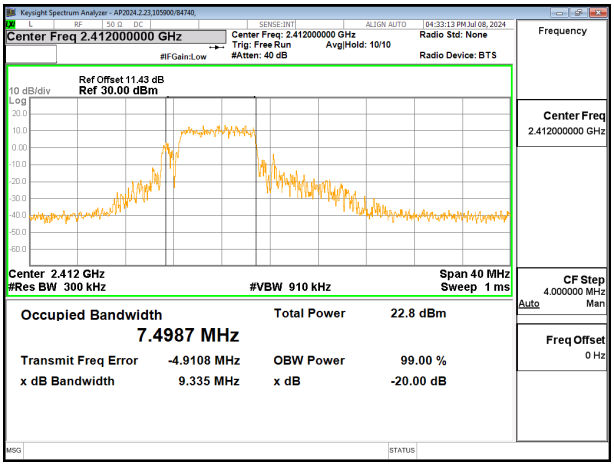
9.2.7. 802.11be EHT20 52T + 26T MODE

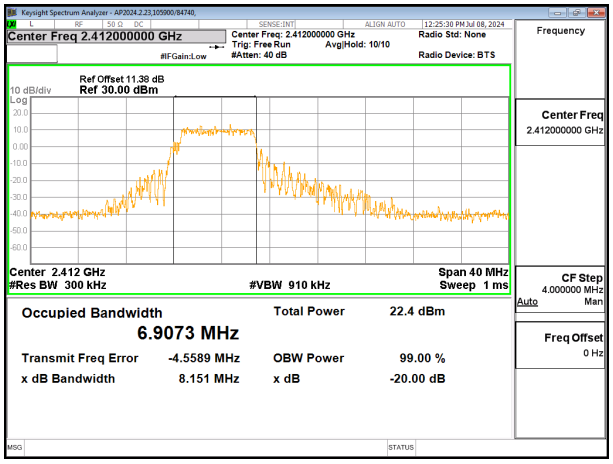
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 1	2412	7.4987	6.9073
Mid 6	2437	6.4580	6.7477
High 13	2472	6.3314	6.4135

LOW CHANNEL 1



LOW CHANNEL 1 CHAIN 0



LOW CHANNEL 1 CHAIN 1

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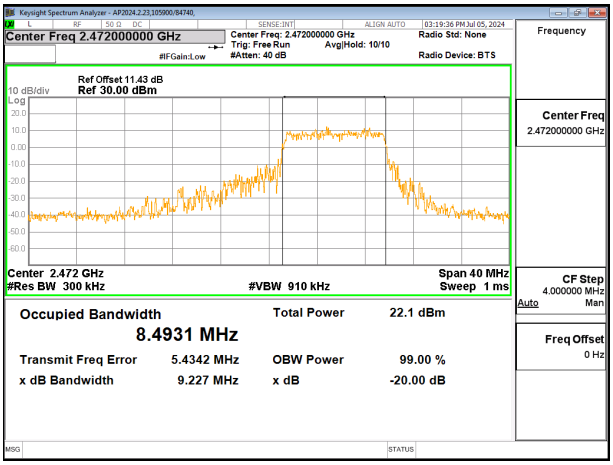
9.2.8. 802.11be EHT20 106T MODE

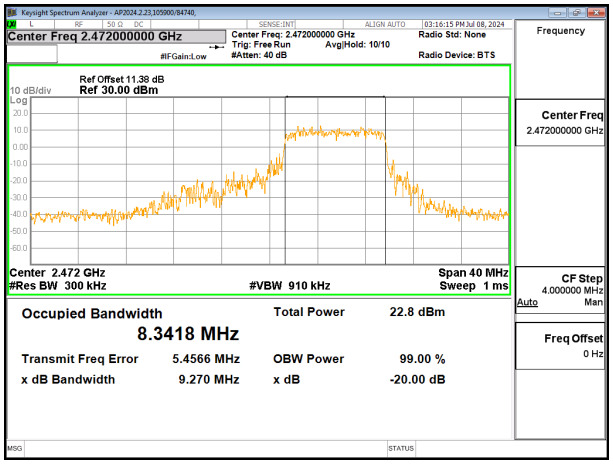
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 1	2412	8.4247	8.3688
Mid 6	2437	8.4466	8.4097
High 13	2472	8.4931	8.3418

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

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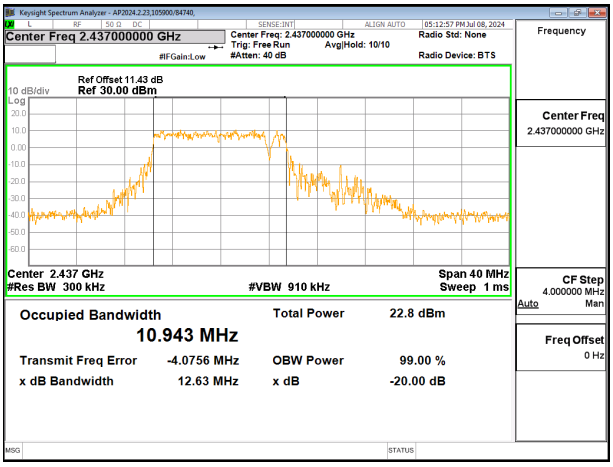
9.2.9. 802.11be EHT20 106T + 26T MODE

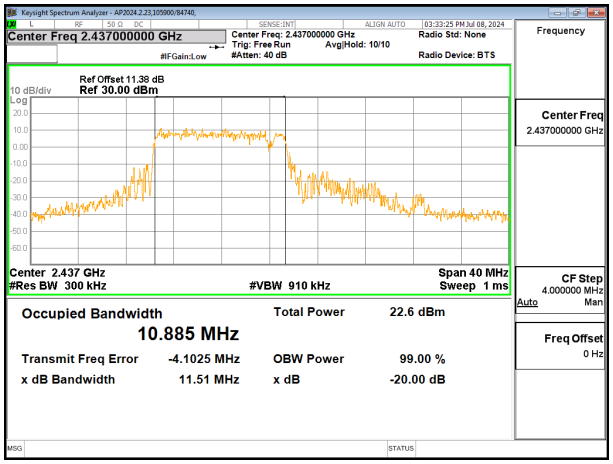
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 1	2412	10.922	10.915
Mid 6	2437	10.943	10.885
High 13	2472	10.854	10.899

MID CHANNEL 6



MID CHANNEL 6 CHAIN 0



MID CHANNEL 6 CHAIN 1

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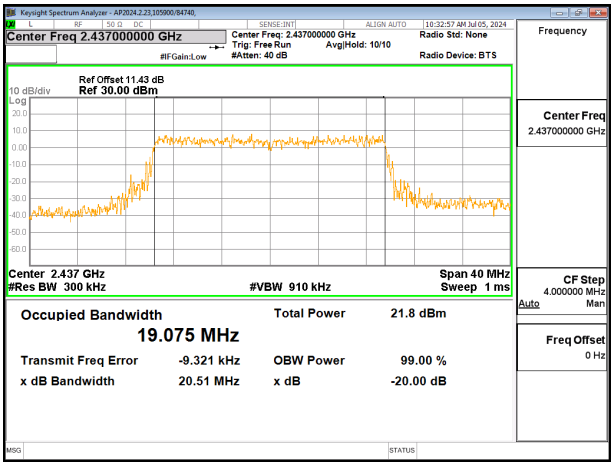
9.2.10. 802.11be EHT20 242T MODE

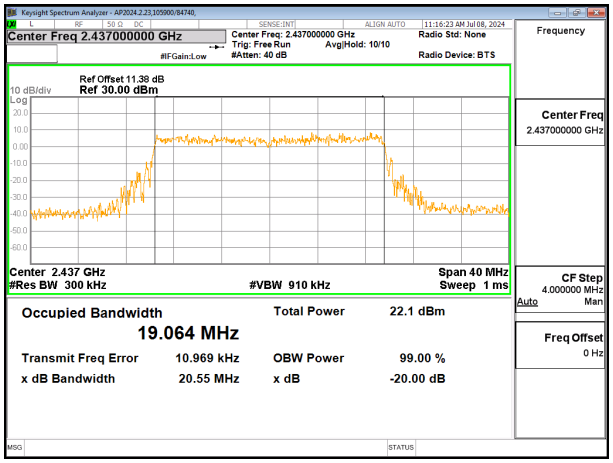
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 1	2412	19.029	19.048
Mid 6	2437	19.075	19.064
High 13	2472	19.048	19.067

MID CHANNEL 6



MID CHANNEL 6 CHAIN 0



MID CHANNEL 6 CHAIN 1

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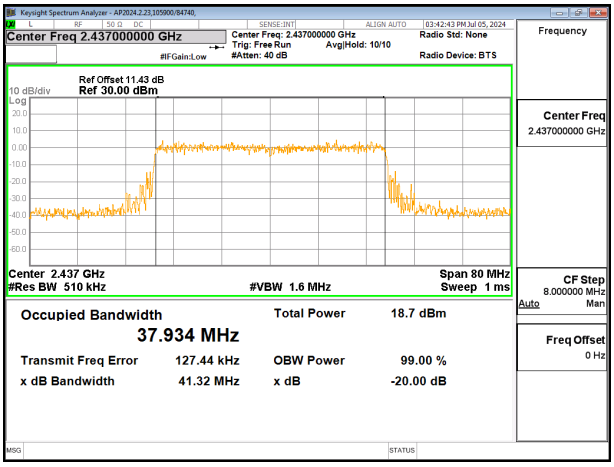
9.2.11. 802.11be EHT40 484T MODE

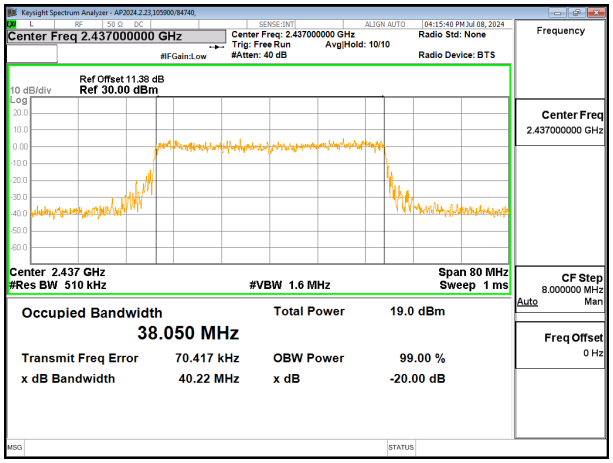
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 3	2422	37.924	37.963
Mid 6	2437	37.934	38.050
High 11	2462	37.938	37.970

MID CHANNEL 6



MID CHANNEL 6 CHAIN 0



MID CHANNEL 6 CHAIN 1

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9.3. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)
RSS-247 5.2 (a)

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

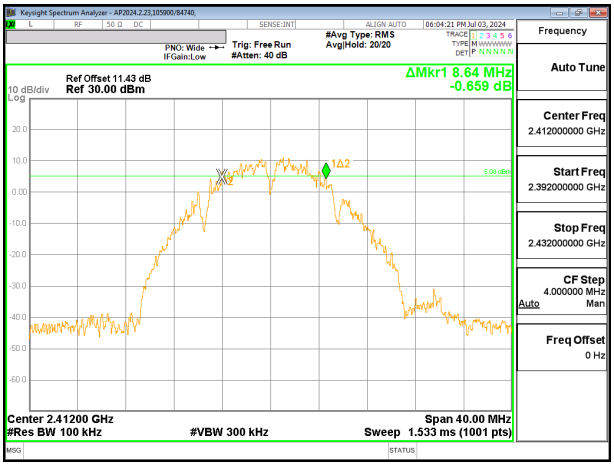
RESULTS

9.3.1. 802.11b MODE

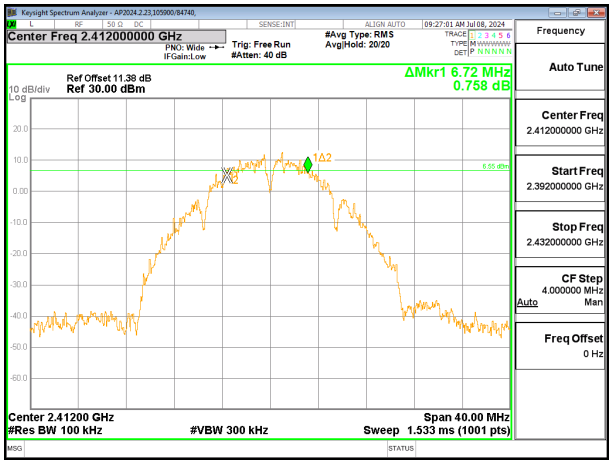
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	8.64	6.72	0.5
Mid 6	2437	7.24	7.12	0.5
High 13	2472	7.16	7.64	0.5

LOW CHANNEL 1



LOW CHANNEL 1 CHAIN 0



LOW CHANNEL 1 CHAIN 1

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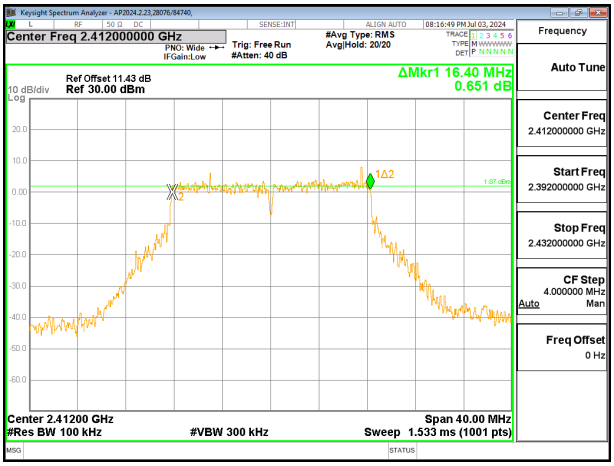
9.3.2. 802.11g MODE

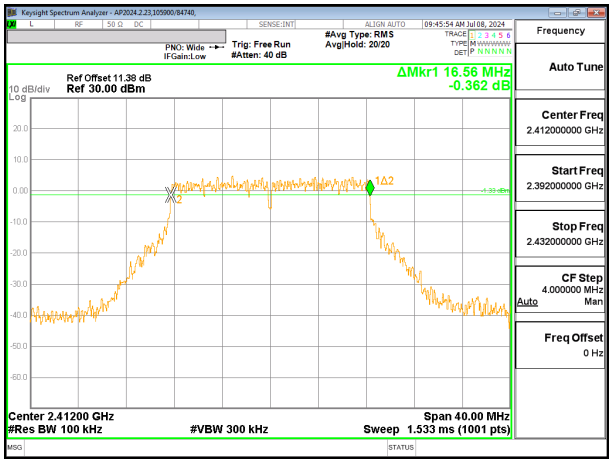
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	16.40	16.56	0.5
Mid 6	2437	16.48	16.48	0.5
High 13	2472	16.56	16.56	0.5

LOW CHANNEL 1



LOW CHANNEL 1 CHAIN 0



LOW CHANNEL 1 CHAIN 1

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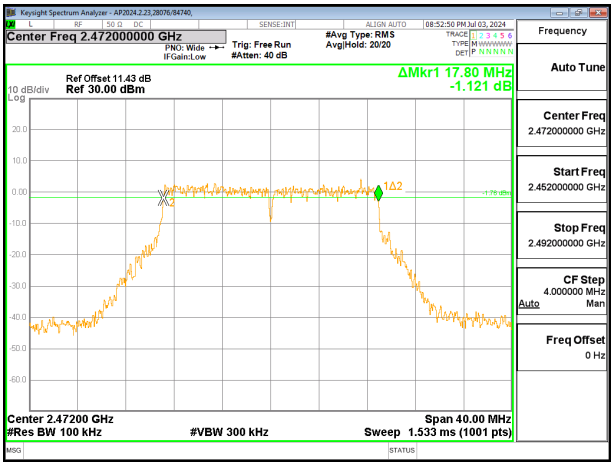
9.3.3. 802.11n HT20 MODE

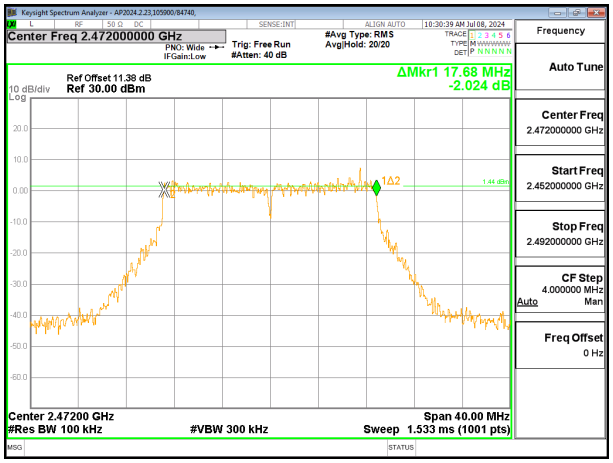
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	17.84	17.84	0.5
Mid 6	2437	17.68	17.84	0.5
High 13	2472	17.80	17.68	0.5

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

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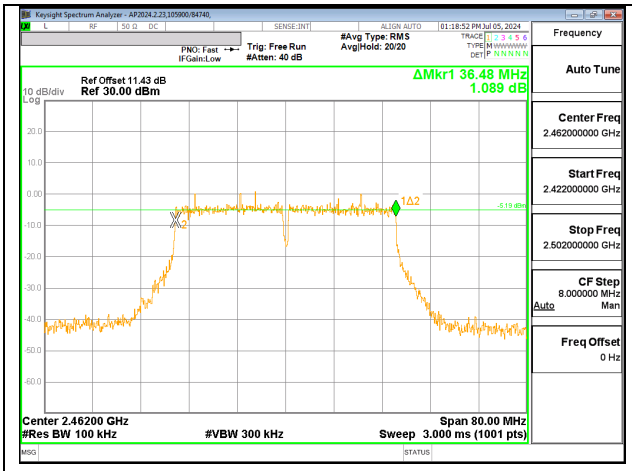
9.3.4. 802.11n HT40 MODE

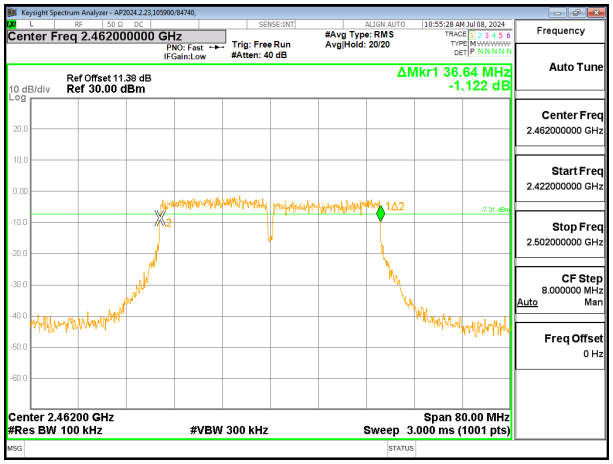
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 3	2422	36.64	36.64	0.5
Mid 6	2437	36.56	36.64	0.5
High 11	2462	36.48	36.64	0.5

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

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9.3.5. 802.11be EHT20 26T MODE

2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	2.12	2.12	0.5
Mid 6	2437	2.64	2.68	0.5
High 13	2472	2.08	2.04	0.5

HIGH CHANNEL 13

HIGH CHANNEL 13 CHAIN 0

HIGH CHANNEL 13 CHAIN 1

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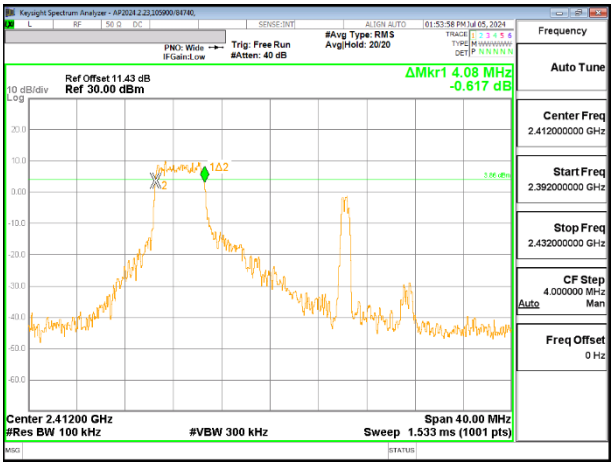
9.3.6. 802.11be EHT20 52T MODE

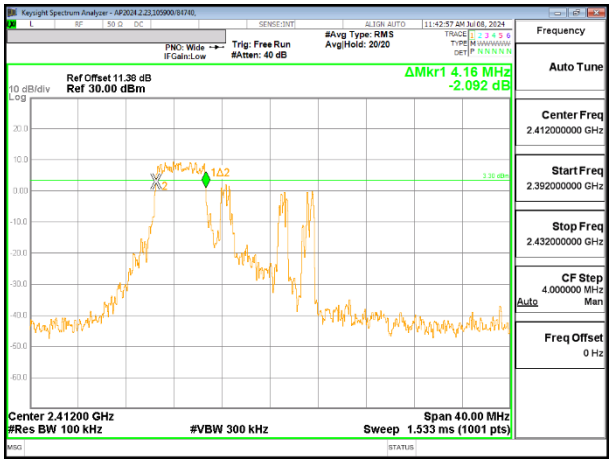
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	4.08	4.16	0.5
Mid 6	2437	4.12	4.12	0.5
High 13	2472	4.12	4.12	0.5

LOW CHANNEL 1



LOW CHANNEL 1 CHAIN 0



LOW CHANNEL 1 CHAIN 1

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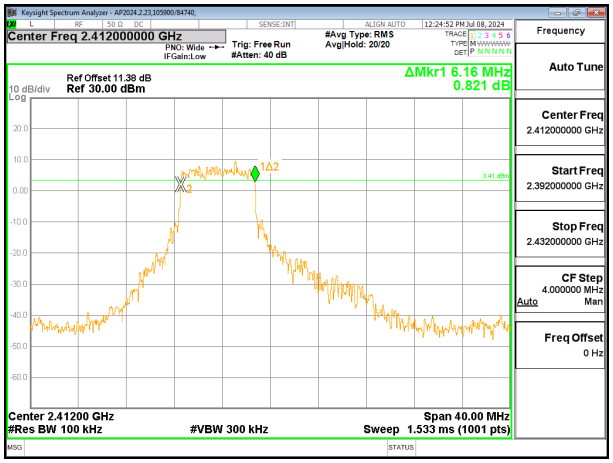
9.3.7. 802.11be EHT20 52T + 26T MODE

2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	6.24	6.16	0.5
Mid 6	2437	6.20	6.24	0.5
High 13	2472	6.28	6.20	0.5

LOW CHANNEL 1

LOW CHANNEL 1 CHAIN 0



LOW CHANNEL 1 CHAIN 1

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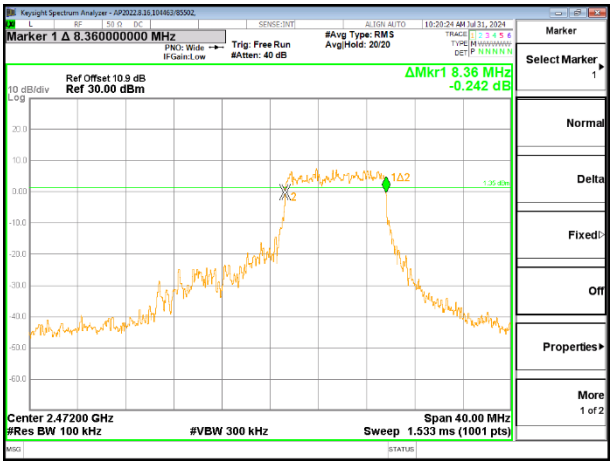
9.3.8. 802.11be EHT20 106T MODE

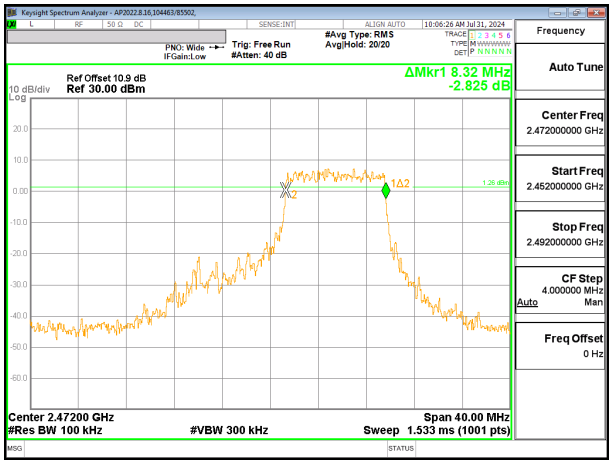
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	8.36	8.37	0.5
Mid 6	2437	8.45	8.32	0.5
High 13	2472	8.36	8.32	0.5

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

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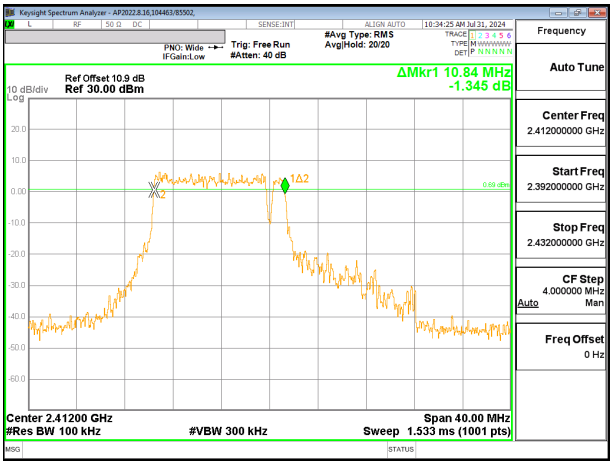
9.3.9. 802.11be EHT20 106T + 26T MODE

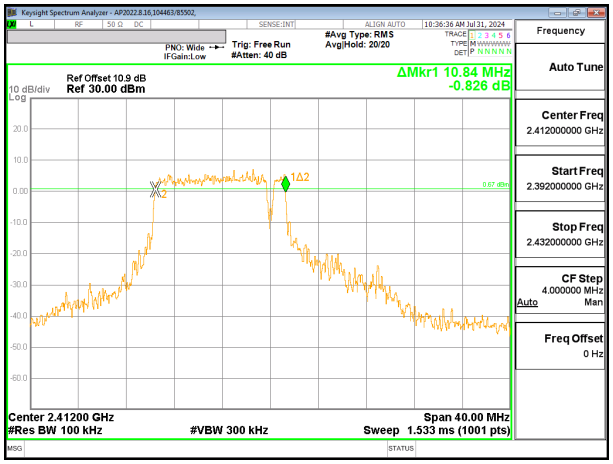
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	10.84	10.84	0.5
Mid 6	2437	10.92	10.88	0.5
High 13	2472	10.84	10.92	0.5

LOW CHANNEL 1



LOW CHANNEL1 CHAIN 0



LOW CHANNEL 1 CHAIN 1

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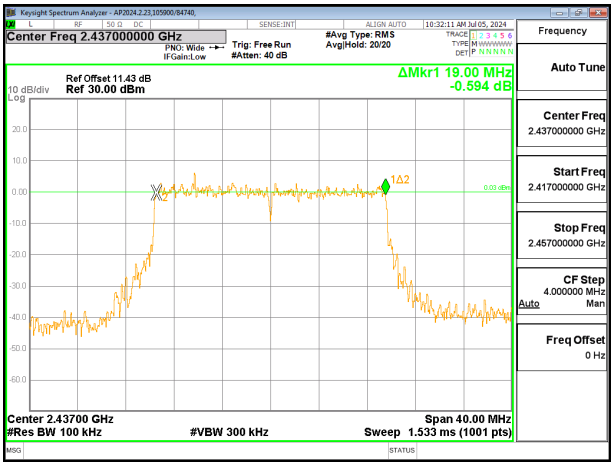
9.3.10. 802.11be EHT20 242T MODE

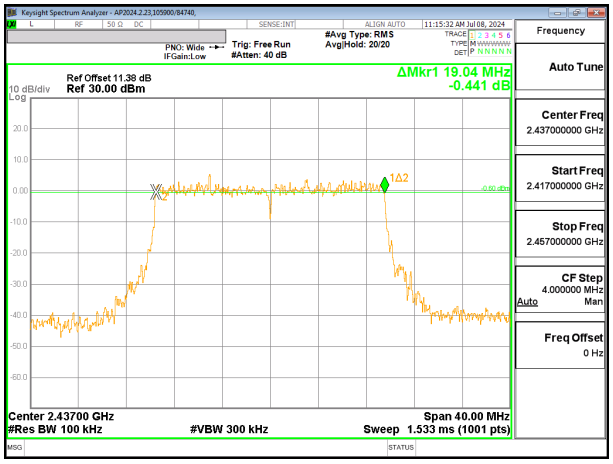
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	19.20	19.20	0.5
Mid 6	2437	19.00	19.04	0.5
High 13	2472	19.20	19.24	0.5

MID CHANNEL 6



MID CHANNEL 6 CHAIN 0



MID CHANNEL 6 CHAIN 1

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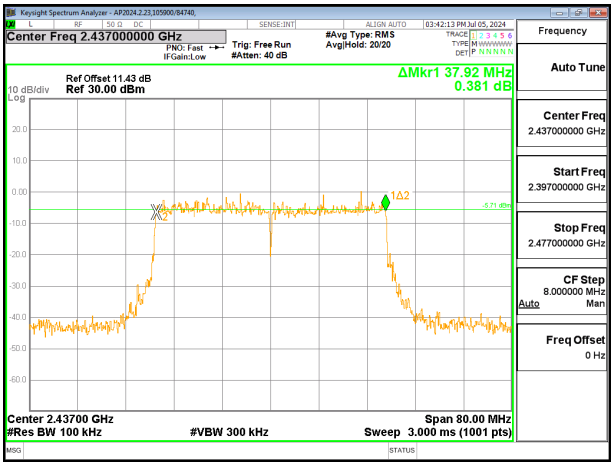
9.3.11. 802.11be EHT20 484T MODE

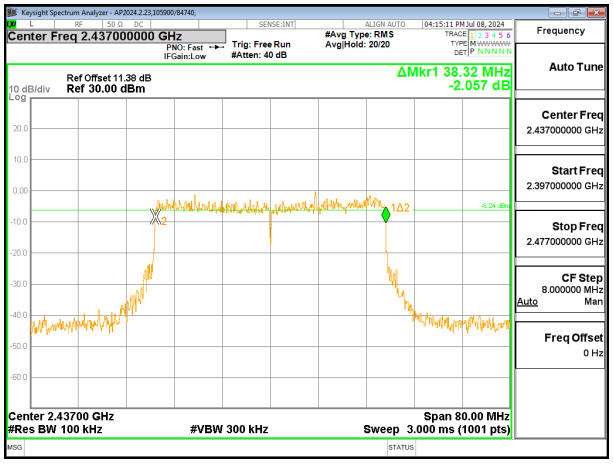
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 3	2422	38.16	38.00	0.5
Mid 6	2437	37.92	38.32	0.5
High 11	2462	38.16	38.16	0.5

MID CHANNEL 6



MID CHANNEL 6 CHAIN 0



MID CHANNEL 6 CHAIN 1

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9.4. 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 cable assembly insertion loss of 11.03 (including 9.71 dB pad and a 1.32 dB EUT cable) was entered as an offset for chain 0 and 11.01 dB (9.69 dB pad and 1.32 dB EUT cable) was entered as an offset for chain 1, in the power meter.

DIRECTIONAL ANTENNA GAIN

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:

Antenna	Band (GHz)	Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)	Correlated Chains Directional Gain (dBi)
Low	2.4	3.60	3.60	3.60	6.61
Mid	2.4	4.40	4.40	4.40	7.41
High	2.4	6.10	6.10	6.10	9.11

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RESULTS

9.4.1. 802.11b MODE

2TX Chain 0 + Chain 1 MODE (Low Gain)

Test Engineer:	33499/84740, 84740
Test Date:	2024-09-26, 2024-10-28, 2024-11-26

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	3.60	30.00	36	30.00
Mid 6	2437	3.60	30.00	36	30.00
High 11	2462	3.60	30.00	36	30.00
High 12	2467	3.60	30.00	36	30.00
High 13	2472	3.60	30.00	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	25.20	24.68	27.96	30.00	-2.04
Mid 6	2437	25.25	24.21	27.77	30.00	-2.23
High 11	2462	25.32	25.18	28.26	30.00	-1.74
High 12	2467	17.50	18.57	21.08	30.00	-8.92
High 13	2472	10.18	10.03	13.12	30.00	-16.88

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2TX Chain 0 + Chain 1 MODE (Mid Gain)

Test Engineer	33499/84740
Test Date:	2024-07-12, 2024-09-30, 2024-10-28

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	4.40	30.00	36	30.00
Low 2	2417	4.40	30.00	36	30.00
Mid 6	2437	4.40	30.00	36	30.00
High 12	2467	4.40	30.00	36	30.00
High 13	2472	4.40	30.00	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	21.69	21.13	24.43	30.00	-5.57
Low 2	2417	23.26	22.80	26.05	30.00	-3.95
Mid 6	2437	23.14	22.42	25.81	30.00	-4.19
High 12	2467	17.63	17.10	20.38	30.00	-9.62
High 13	2472	9.18	8.48	11.85	30.00	-18.15

Channel 12 passed at mid channel power. However, this was reduced per customer request.

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2TX Chain 0 + Chain 1 MODE (High Gain)

Test Engineer:	105900/84740, 33499/84740
Test Date:	2024-07-03, 2024-10-01, 2024-10-29

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	6.10	29.90	36	29.90
Low 3	2422	6.10	29.90	36	29.90
Mid 6	2437	6.10	29.90	36	29.90
High 9	2452	6.10	29.90	36	29.90
High 12	2467	6.10	29.90	36	29.90
High 13	2472	6.10	29.90	36	29.90

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	20.44	20.13	23.30	29.90	-6.60
Low 3	2422	22.09	22.09	25.10	29.90	-4.80
Mid 6	2437	21.87	21.99	24.94	29.90	-4.96
High 9	2452	21.89	22.12	25.02	29.90	-4.88
High 12	2467	16.92	16.79	19.87	29.90	-10.03
High 13	2472	7.11	7.08	10.11	29.90	-19.79

Channel 12 passed at the same power setting as channels 10 and 11. Therefore it represents the outermost worst-case channel. Customer lowered power setting of channel 12 to be lower than the setting used to achieved passing data.

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9.4.2. 802.11g MODE

2TX Chain 0 + Chain 1 MODE (Low Gain)

Test Engineer:	105900/84740, 33499/84740, 84740
Test Date:	2024-07-03, 2024-09-26, 2024-10-28, 2024-11-26

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	3.60	30.00	36	30.00
Low 2	2417	3.60	30.00	36	30.00
Low 3	2422	3.60	30.00	36	30.00
Low 4	2427	3.60	30.00	36	30.00
Mid 6	2437	3.60	30.00	36	30.00
High 10	2457	3.60	30.00	36	30.00
High 11	2462	3.60	30.00	36	30.00
High 12	2467	3.60	30.00	36	30.00
High 13	2472	3.60	30.00	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	21.00	20.77	23.90	30.00	-6.10
Low 2	2417	23.85	23.15	26.52	30.00	-3.48
Low 3	2422	24.54	23.97	27.27	30.00	-2.73
Low 4	2427	26.04	25.72	28.89	30.00	-1.11
Mid 6	2437	25.72	25.53	28.64	30.00	-1.36
High 10	2457	25.90	25.08	28.52	30.00	-1.48
High 11	2462	22.88	22.57	25.74	30.00	-4.26
High 12	2467	17.21	18.15	20.72	30.00	-9.28
High 13	2472	-1.74	0.11	2.29	30.00	-27.71

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2TX Chain 0 + Chain 1 MODE (Mid Gain)

33499/847400	33499/84740
Test Date:	2024-07-12, 2024-09-30, 2024-10-28

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	4.40	30.00	36	30.00
Low 2	2417	4.40	30.00	36	30.00
Low 3	2422	4.40	30.00	36	30.00
Low 4	2427	4.40	30.00	36	30.00
Mid 6	2437	4.40	30.00	36	30.00
High 9	2452	4.40	30.00	36	30.00
High 10	2457	4.40	30.00	36	30.00
High 11	2462	4.40	30.00	36	30.00
High 12	2467	4.40	30.00	36	30.00
High 13	2472	4.40	30.00	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	20.50	19.84	23.19	30.00	-6.81
Low 2	2417	22.88	22.10	25.52	30.00	-4.48
Low 3	2422	24.33	23.51	26.95	30.00	-3.05
Low 4	2427	25.07	24.00	27.58	30.00	-2.42
Mid 6	2437	25.13	24.28	27.74	30.00	-2.26
High 9	2452	25.01	24.74	27.89	30.00	-2.11
High 10	2457	24.65	23.56	27.15	30.00	-2.85
High 11	2462	20.73	20.75	23.75	30.00	-6.25
High 12	2467	17.85	17.09	20.50	30.00	-9.50
High 13	2472	-1.61	-1.20	1.61	30.00	-28.39

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2TX Chain 0 + Chain 1 MODE (High Gain)

33499/847400	105900/84740, 33499/84740
Test Date:	2024-07-03, 2024-10-01

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	6.10	29.90	36	29.90
Low 2	2417	6.10	29.90	36	29.90
Low 3	2422	6.10	29.90	36	29.90
Mid 6	2437	6.10	29.90	36	29.90
High 10	2457	6.10	29.90	36	29.90
High 11	2462	6.10	29.90	36	29.90
High 12	2467	6.10	29.90	36	29.90
High 13	2472	6.10	29.90	36	29.90

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	19.41	19.48	22.46	29.90	-7.44
Low 2	2417	22.66	22.39	25.54	29.90	-4.36
Low 3	2422	24.31	23.57	26.97	29.90	-2.93
Mid 6	2437	23.70	23.70	26.71	29.90	-3.19
High 10	2457	24.27	23.37	26.85	29.90	-3.05
High 11	2462	19.96	20.46	23.23	29.90	-6.67
High 12	2467	15.13	15.03	18.09	29.90	-11.81
High 13	2472	-5.87	-5.62	-2.73	29.90	-32.63

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9.4.3. 802.11n HT20 MODE

2TX Chain 0 + Chain 1 MODE (Low Gain)

Test Engineer:	105900/84740, 33499/84740
Test Date:	2024-07-03, 2024-09-26, 2024-10-28, 2024-11-27

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	3.60	30.00	36	30.00
Low 2	2417	3.60	30.00	36	30.00
Low 3	2422	3.60	30.00	36	30.00
Low 4	2427	3.60	30.00	36	30.00
Mid 6	2437	3.60	30.00	36	30.00
High 9	2452	3.60	30.00	36	30.00
High 10	2457	3.60	30.00	36	30.00
High 11	2462	3.60	30.00	36	30.00
High 12	2467	3.60	30.00	36	30.00
High 13	2472	3.60	30.00	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	21.64	21.31	24.49	30.00	-5.51
Low 2	2417	22.70	22.20	25.47	30.00	-4.53
Low 3	2422	24.39	24.85	27.64	30.00	-2.36
Low 4	2427	24.99	25.39	28.20	30.00	-1.80
Mid 6	2437	24.73	23.76	27.28	30.00	-2.72
High 9	2452	24.93	25.50	28.23	30.00	-1.77
High 10	2457	24.16	23.82	27.00	30.00	-3.00
High 11	2462	19.06	19.74	22.42	30.00	-7.58
High 12	2467	17.46	18.23	20.87	30.00	-9.13
High 13	2472	-2.55	-4.02	-0.21	30.00	-30.21

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2TX Chain 0 + Chain 1 MODE (Mid Gain)

33499/847400	33499/84740
Test Date:	2024-07-12, 2024-09-30, 2024-10-28

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	4.40	30.00	36	30.00
Low 2	2417	4.40	30.00	36	30.00
Low 3	2422	4.40	30.00	36	30.00
Mid 6	2437	4.40	30.00	36	30.00
High 9	2452	4.40	30.00	36	30.00
High 10	2457	4.40	30.00	36	30.00
High 11	2462	4.40	30.00	36	30.00
High 12	2467	4.40	30.00	36	30.00
High 13	2472	4.40	30.00	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	21.32	20.70	24.03	30.00	-5.97
Low 2	2417	22.60	22.18	25.41	30.00	-4.59
Low 3	2422	24.57	23.81	27.22	30.00	-2.78
Mid 6	2437	24.68	23.95	27.34	30.00	-2.66
High 9	2452	24.43	23.80	27.14	30.00	-2.86
High 10	2457	22.52	23.03	25.79	30.00	-4.21
High 11	2462	19.70	18.61	22.20	30.00	-7.80
High 12	2467	17.60	16.75	20.21	30.00	-9.79
High 13	2472	-3.01	-2.60	0.21	30.00	-29.79

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2TX Chain 0 + Chain 1 MODE (High Gain)

33499/847400	105900/84740, 33499/84740
Test Date:	2024-07-03, 2024-10-01, 2024-10-29

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	6.10	29.90	36	29.90
Low 2	2417	6.10	29.90	36	29.90
Low 4	2427	6.10	29.90	36	29.90
Mid 6	2437	6.10	29.90	36	29.90
High 9	2452	6.10	29.90	36	29.90
High 10	2457	6.10	29.90	36	29.90
High 12	2467	6.10	29.90	36	29.90
High 13	2472	6.10	29.90	36	29.90

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	19.17	18.20	21.72	29.90	-8.18
Low 2	2417	21.25	21.22	24.25	29.90	-5.65
Low 4	2427	23.20	22.96	26.09	29.90	-3.81
Mid 6	2437	22.73	22.91	25.83	29.90	-4.07
High 9	2452	22.91	22.92	25.93	29.90	-3.97
High 10	2457	20.70	20.96	23.84	29.90	-6.06
High 12	2467	15.36	14.61	18.01	29.90	-11.89
High 13	2472	-7.14	-5.25	-3.08	29.90	-32.98

Channel 12 passed at the same setting as channel 11 and therefore was reported as a worst-case outermose channel. Customer later lowered power setting on this channel to the power reported here.

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9.4.4. 802.11n HT40 MODE

2TX Chain 0 + Chain 1 MODE (Low Gain)

Test Engineer:	33499/84740, 84740
Test Date:	2024-09-30, 2024-10-28, 2024-11-27

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 3	2422	3.60	30.00	36	30.00
Low 4	2427	3.60	30.00	36	30.00
Low 5	2432	3.60	30.00	36	30.00
Mid 6	2437	3.60	30.00	36	30.00
High 7	2442	3.60	30.00	36	30.00
High 8	2447	3.60	30.00	36	30.00
High 9	2452	3.60	30.00	36	30.00
High 10	2457	3.60	30.00	36	30.00
High 11	2462	3.60	30.00	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 3	2422	19.46	18.87	22.19	30.00	-7.81
Low 4	2427	20.83	21.33	24.10	30.00	-5.90
Low 5	2432	21.44	22.16	24.83	30.00	-5.17
Mid 6	2437	22.18	21.84	25.02	30.00	-4.98
High 7	2442	21.92	22.38	25.17	30.00	-4.83
High 8	2447	19.96	20.32	23.15	30.00	-6.85
High 9	2452	18.69	19.78	22.28	30.00	-7.72
High 10	2457	14.61	14.06	17.35	30.00	-12.65
High 11	2462	-3.22	-3.84	-0.51	30.00	-30.51

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2TX Chain 0 + Chain 1 MODE (Mid Gain)

33499/847400	33499/84740
Test Date:	2024-07-12, 2024-09-30

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 3	2422	4.40	30.00	36	30.00
Low 4	2427	4.40	30.00	36	30.00
Low 5	2432	4.40	30.00	36	30.00
Mid 6	2437	4.40	30.00	36	30.00
High 7	2442	4.40	30.00	36	30.00
High 9	2452	4.40	30.00	36	30.00
High 10	2457	4.40	30.00	36	30.00
High 11	2462	4.40	30.00	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 3	2422	19.42	19.33	22.39	30.00	-7.61
Low 4	2427	20.02	19.25	22.66	30.00	-7.34
Low 5	2432	22.75	22.19	25.49	30.00	-4.51
Mid 6	2437	23.04	22.62	25.85	30.00	-4.15
High 7	2442	20.59	20.31	23.46	30.00	-6.54
High 9	2452	18.75	18.38	21.58	30.00	-8.42
High 10	2457	11.36	10.97	14.18	30.00	-15.82
High 11	2462	-4.09	-2.35	-0.12	30.00	-30.12

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2TX Chain 0 + Chain 1 MODE (High Gain)

33499/847400	105900/84740, 33499/84740
Test Date:	2024-07-03, 2024-10-01, 2024-10-28

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 3	2422	6.10	29.90	36	29.90
Low 4	2427	6.10	29.90	36	29.90
Mid 6	2437	6.10	29.90	36	29.90
High 7	2442	6.10	29.90	36	29.90
High 8	2447	6.10	29.90	36	29.90
High 9	2452	6.10	29.90	36	29.90
High 10	2457	6.10	29.90	36	29.90
High 11	2462	6.10	29.90	36	29.90

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 3	2422	18.18	18.01	21.11	29.90	-8.79
Low 4	2427	19.98	19.33	22.68	29.90	-7.22
Mid 6	2437	20.34	19.50	22.95	29.90	-6.95
High 7	2442	20.37	19.77	23.09	29.90	-6.81
High 8	2447	19.10	19.21	22.17	29.90	-7.73
High 9	2452	19.14	18.63	21.90	29.90	-8.00
High 10	2457	10.14	10.31	13.24	29.90	-16.66
High 11	2462	-4.39	-2.73	-0.47	29.90	-30.37

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9.4.5. 802.11be EHT20 26T MODE

2TX Chain 0 + Chain 1 MODE (Low Gain)

Test Engineer:	105900/84740
Test Date:	2024-07-03

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	3.60	30.00	36	30.00
Low 2	2417	3.60	30.00	36	30.00
Mid 6	2437	3.60	30.00	36	30.00
High 10	2457	3.60	30.00	36	30.00
High 11	2462	3.60	30.00	36	30.00
High 12	2467	3.60	30.00	36	30.00
High 13	2472	3.60	30.00	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	25.63	25.63	28.64	30.00	-1.36
Low 2	2417	26.31	26.40	29.37	30.00	-0.63
Mid 6	2437	26.35	26.54	29.46	30.00	-0.54
High 10	2457	26.00	25.81	28.92	30.00	-1.08
High 11	2462	25.49	24.86	28.20	30.00	-1.80
High 12	2467	22.87	23.19	26.04	30.00	-3.96
High 13	2472	-9.01	-7.29	-5.06	30.00	-35.06

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2TX Chain 0 + Chain 1 MODE (Mid Gain)

33499/847400	33499/84740
Test Date:	2024-07-12

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	4.40	30.00	36	30.00
Mid 6	2437	4.40	30.00	36	30.00
High 10	2457	4.40	30.00	36	30.00
High 11	2462	4.40	30.00	36	30.00
High 12	2467	4.40	30.00	36	30.00
High 13	2472	4.40	30.00	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	24.89	24.37	27.65	30.00	-2.35
Mid 6	2437	24.98	24.31	27.67	30.00	-2.33
High 10	2457	24.98	24.32	27.67	30.00	-2.33
High 11	2462	22.67	22.38	25.54	30.00	-4.46
High 12	2467	19.90	19.89	22.91	30.00	-7.09
High 13	2472	-9.29	-8.77	-6.01	30.00	-36.01

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2TX Chain 0 + Chain 1 MODE (High Gain)

33499/847400	105900/84740, 33499/84740
Test Date:	2024-07-03, 2024-10-01, 2024-10-28

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	6.10	29.90	36	29.90
Low 2	2417	6.10	29.90	36	29.90
Mid 6	2437	6.10	29.90	36	29.90
High 10	2457	6.10	29.90	36	29.90
High 11	2462	6.10	29.90	36	29.90
High 12	2467	6.10	29.90	36	29.90
High 13	2472	6.10	29.90	36	29.90

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	23.41	22.97	26.21	29.90	-3.69
Low 2	2417	25.86	26.11	29.00	29.90	-0.90
Mid 6	2437	26.21	26.29	29.26	29.90	-0.64
High 10	2457	26.17	25.62	28.91	29.90	-0.99
High 11	2462	23.08	23.25	26.18	29.90	-3.72
High 12	2467	13.81	13.31	16.58	29.90	-13.32
High 13	2472	-11.10	-9.52	-7.23	29.90	-37.13

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9.4.6. 802.11be EHT20 52T MODE

2TX Chain 0 + Chain 1 MODE (Low Gain)

Test Engineer:	105900/84740
Test Date:	2024-07-03

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	3.60	30.00	36	30.00
Low 2	2417	3.60	30.00	36	30.00
Mid 6	2437	3.60	30.00	36	30.00
High 11	2462	3.60	30.00	36	30.00
High 12	2467	3.60	30.00	36	30.00
High 13	2472	3.60	30.00	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	25.76	25.44	28.61	30.00	-1.39
Low 2	2417	26.08	26.21	29.16	30.00	-0.84
Mid 6	2437	26.27	26.16	29.23	30.00	-0.77
High 11	2462	25.85	26.08	28.98	30.00	-1.02
High 12	2467	22.89	22.93	25.92	30.00	-4.08
High 13	2472	-8.55	-6.96	-4.67	30.00	-34.67

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2TX Chain 0 + Chain 1 MODE (Mid Gain)

33499/847400	33499/84740
Test Date:	2024-07-12, 2024-09-30

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	4.40	30.00	36	30.00
Mid 6	2437	4.40	30.00	36	30.00
High 10	2457	4.40	30.00	36	30.00
High 11	2462	4.40	30.00	36	30.00
High 12	2467	4.40	30.00	36	30.00
High 13	2472	4.40	30.00	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	25.38	24.93	28.17	30.00	-1.83
Mid 6	2437	24.76	24.30	27.55	30.00	-2.45
High 10	2457	25.01	24.42	27.74	30.00	-2.26
High 11	2462	24.11	24.36	27.25	30.00	-2.75
High 12	2467	21.10	20.77	23.95	30.00	-6.05
High 13	2472	-6.68	-7.17	-3.91	30.00	-33.91

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2TX Chain 0 + Chain 1 MODE (High Gain)

33499/847400	105900/84740, 33499/84740
Test Date:	2024-07-03, 2024-10-28

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	6.10	29.90	36	29.90
Low 2	2417	6.10	29.90	36	29.90
Mid 6	2437	6.10	29.90	36	29.90
High 10	2457	6.10	29.90	36	29.90
High 11	2462	6.10	29.90	36	29.90
High 12	2467	6.10	29.90	36	29.90
High 13	2472	6.10	29.90	36	29.90

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	25.30	24.84	28.09	29.90	-1.81
Low 2	2417	26.36	26.34	29.36	29.90	-0.54
Mid 6	2437	26.20	26.04	29.13	29.90	-0.77
High 10	2457	25.90	25.86	28.89	29.90	-1.01
High 11	2462	24.24	23.76	27.02	29.90	-2.88
High 12	2467	13.18	13.69	16.45	29.90	-13.45
High 13	2472	-9.68	-8.81	-6.21	29.90	-36.11

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9.4.7. 802.11be EHT20 52T + 26T MODE

2TX Chain 0 + Chain 1 MODE (Low Gain)

Test Engineer:	105900/84740
Test Date:	2024-07-03

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	3.60	30.00	36	30.00
Low 2	2417	3.60	30.00	36	30.00
Mid 6	2437	3.60	30.00	36	30.00
High 11	2462	3.60	30.00	36	30.00
High 12	2467	3.60	30.00	36	30.00
High 13	2472	3.60	30.00	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	25.51	25.46	28.50	30.00	-1.50
Low 2	2417	26.17	26.38	29.29	30.00	-0.71
Mid 6	2437	26.23	26.24	29.25	30.00	-0.75
High 11	2462	25.62	26.06	28.86	30.00	-1.14
High 12	2467	22.60	22.56	25.59	30.00	-4.41
High 13	2472	-10.15	-7.43	-5.57	30.00	-35.57

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2TX Chain 0 + Chain 1 MODE (Mid Gain)

33499/847400	33499/84740
Test Date:	2024-07-12

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	4.40	30.00	36	30.00
Mid 6	2437	4.40	30.00	36	30.00
High 10	2457	4.40	30.00	36	30.00
High 11	2462	4.40	30.00	36	30.00
High 12	2467	4.40	30.00	36	30.00
High 13	2472	4.40	30.00	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	25.35	25.57	28.47	30.00	-1.53
Mid 6	2437	25.16	24.38	27.80	30.00	-2.20
High 10	2457	24.84	24.60	27.73	30.00	-2.27
High 11	2462	23.47	23.76	26.63	30.00	-3.37
High 12	2467	21.33	21.45	24.40	30.00	-5.60
High 13	2472	-7.01	-7.33	-4.16	30.00	-34.16

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2TX Chain 0 + Chain 1 MODE (High Gain)

33499/847400	105900/84740, 33499/84740
Test Date:	2024-07-03, 2024-10-28

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	6.10	29.90	36	29.90
Low 2	2417	6.10	29.90	36	29.90
Mid 6	2437	6.10	29.90	36	29.90
High 10	2457	6.10	29.90	36	29.90
High 11	2462	6.10	29.90	36	29.90
High 12	2467	6.10	29.90	36	29.90
High 13	2472	6.10	29.90	36	29.90

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	25.23	24.27	27.79	29.90	-2.11
Low 2	2417	25.90	26.13	29.03	29.90	-0.87
Mid 6	2437	26.06	25.94	29.01	29.90	-0.89
High 10	2457	25.93	25.90	28.93	29.90	-0.97
High 11	2462	23.92	23.45	26.70	29.90	-3.20
High 12	2467	13.32	13.42	16.38	29.90	-13.52
High 13	2472	-9.37	-8.31	-5.80	29.90	-35.70

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9.4.8. 802.11be EHT20 106T MODE

2TX Chain 0 + Chain 1 MODE (Low Gain)

Test Engineer:	105900/84740, 33499/84740
Test Date:	2024-07-03, 2024-10-28

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	3.60	30.00	36	30.00
Low 2	2417	3.60	30.00	36	30.00
Low 3	2422	3.60	30.00	36	30.00
Mid 6	2437	3.60	30.00	36	30.00
High 8	2447	3.60	30.00	36	30.00
High 9	2452	3.60	30.00	36	30.00
High 10	2457	3.60	30.00	36	30.00
High 11	2462	3.60	30.00	36	30.00
High 12	2467	3.60	30.00	36	30.00
High 13	2472	3.60	30.00	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	23.08	22.94	26.02	30.00	-3.98
Low 2	2417	23.94	25.30	27.68	30.00	-2.32
Low 3	2422	26.19	26.54	29.38	30.00	-0.62
Mid 6	2437	26.59	26.19	29.40	30.00	-0.60
High 8	2447	26.47	26.32	29.41	30.00	-0.59
High 9	2452	25.23	24.97	28.11	30.00	-1.89
High 10	2457	25.15	24.68	27.93	30.00	-2.07
High 11	2462	23.99	24.05	27.03	30.00	-2.97
High 12	2467	19.98	20.50	23.26	30.00	-6.74
High 13	2472	-7.88	-4.98	-3.18	30.00	-33.18

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2TX Chain 0 + Chain 1 MODE (Mid Gain)

33499/847400	33499/84740
Test Date:	2024-07-12, 2024-09-30, 2024-10-28

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	4.40	30.00	36	30.00
Low 2	2417	4.40	30.00	36	30.00
Mid 6	2437	4.40	30.00	36	30.00
High 10	2457	4.40	30.00	36	30.00
High 11	2462	4.40	30.00	36	30.00
High 12	2467	4.40	30.00	36	30.00
High 13	2472	4.40	30.00	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	24.46	23.79	27.15	30.00	-2.85
Low 2	2417	25.90	26.27	29.10	30.00	-0.90
Mid 6	2437	25.11	24.67	27.91	30.00	-2.09
High 10	2457	24.68	24.26	27.49	30.00	-2.51
High 11	2462	24.03	24.17	27.11	30.00	-2.89
High 12	2467	19.19	18.53	21.88	30.00	-8.12
High 13	2472	-4.07	-4.49	-1.26	30.00	-31.26

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2TX Chain 0 + Chain 1 MODE (High Gain)

33499/847400	105900/84740, 33499/84740
Test Date:	2024-07-03, 2024-10-28

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	6.10	29.90	36	29.90
Low 2	2417	6.10	29.90	36	29.90
Mid 6	2437	6.10	29.90	36	29.90
High 9	2452	6.10	29.90	36	29.90
High 10	2457	6.10	29.90	36	29.90
High 11	2462	6.10	29.90	36	29.90
High 12	2467	6.10	29.90	36	29.90
High 13	2472	6.10	29.90	36	29.90

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	23.97	23.42	26.71	29.90	-3.19
Low 2	2417	26.23	26.51	29.38	29.90	-0.52
Mid 6	2437	26.26	26.41	29.35	29.90	-0.55
High 9	2452	26.20	25.75	28.99	29.90	-0.91
High 10	2457	25.89	25.63	28.77	29.90	-1.13
High 11	2462	22.80	22.72	25.77	29.90	-4.13
High 12	2467	14.25	14.38	17.33	29.90	-12.57
High 13	2472	-6.98	-4.89	-2.80	29.90	-32.70

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9.4.9. 802.11be EHT20 106T + 26T MODE

2TX Chain 0 + Chain 1 MODE (Low Gain)

Test Engineer:	105900/84740, 33499/84740
Test Date:	2024-07-03, 2024-10-28

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	3.60	30.00	36	30.00
Low 2	2417	3.60	30.00	36	30.00
Low 3	2422	3.60	30.00	36	30.00
Mid 6	2437	3.60	30.00	36	30.00
High 8	2447	3.60	30.00	36	30.00
High 9	2452	3.60	30.00	36	30.00
High 10	2457	3.60	30.00	36	30.00
High 11	2462	3.60	30.00	36	30.00
High 12	2467	3.60	30.00	36	30.00
High 13	2472	3.60	30.00	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	23.19	23.06	26.14	30.00	-3.86
Low 2	2417	23.10	24.00	26.58	30.00	-3.42
Low 3	2422	25.83	26.09	28.97	30.00	-1.03
Mid 6	2437	26.42	26.44	29.44	30.00	-0.56
High 8	2447	26.32	26.50	29.42	30.00	-0.58
High 9	2452	25.39	25.01	28.21	30.00	-1.79
High 10	2457	25.19	24.95	28.08	30.00	-1.92
High 11	2462	24.09	24.06	27.09	30.00	-2.91
High 12	2467	20.26	20.62	23.45	30.00	-6.55
High 13	2472	-7.54	-5.05	-3.11	30.00	-33.11

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2TX Chain 0 + Chain 1 MODE (Mid Gain)

33499/847400	33499/84740
Test Date:	2024-07-12, 2024-09-30, 2024-10-28

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	4.40	30.00	36	30.00
Low 2	2417	4.40	30.00	36	30.00
Mid 6	2437	4.40	30.00	36	30.00
High 10	2457	4.40	30.00	36	30.00
High 11	2462	4.40	30.00	36	30.00
High 12	2467	4.40	30.00	36	30.00
High 13	2472	4.40	30.00	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	24.78	24.14	27.48	30.00	-2.52
Low 2	2417	25.96	26.59	29.30	30.00	-0.70
Mid 6	2437	24.94	24.39	27.68	30.00	-2.32
High 10	2457	24.97	24.36	27.69	30.00	-2.31
High 11	2462	24.44	24.33	27.40	30.00	-2.60
High 12	2467	19.45	18.60	22.06	30.00	-7.94
High 13	2472	-4.18	-4.52	-1.34	30.00	-31.34

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2TX Chain 0 + Chain 1 MODE (High Gain)

33499/847400	105900/84740, 33499/84740
Test Date:	2024-07-03, 2024-10-28

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	6.10	29.90	36	29.90
Low 2	2417	6.10	29.90	36	29.90
Mid 6	2437	6.10	29.90	36	29.90
High 9	2452	6.10	29.90	36	29.90
High 10	2457	6.10	29.90	36	29.90
High 11	2462	6.10	29.90	36	29.90
High 12	2467	6.10	29.90	36	29.90
High 13	2472	6.10	29.90	36	29.90

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	24.25	23.65	26.97	29.90	-2.93
Low 2	2417	25.67	25.69	28.69	29.90	-1.21
Mid 6	2437	26.26	25.59	28.95	29.90	-0.95
High 9	2452	26.20	25.87	29.05	29.90	-0.85
High 10	2457	25.93	25.15	28.57	29.90	-1.33
High 11	2462	23.25	23.05	26.16	29.90	-3.74
High 12	2467	14.66	14.66	17.67	29.90	-12.23
High 13	2472	-5.53	-4.85	-2.17	29.90	-32.07

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9.4.10. 802.11be EHT20 242T MODE

2TX Chain 0 + Chain 1 MODE (Low Gain)

Test Engineer:	105900/84740
Test Date:	2024-07-03

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	3.60	30.00	36	30.00
Low 2	2417	3.60	30.00	36	30.00
Low 3	2422	3.60	30.00	36	30.00
Low 4	2427	3.60	30.00	36	30.00
Mid 6	2437	3.60	30.00	36	30.00
High 9	2452	3.60	30.00	36	30.00
High 10	2457	3.60	30.00	36	30.00
High 11	2462	3.60	30.00	36	30.00
High 12	2467	3.60	30.00	36	30.00
High 13	2472	3.60	30.00	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	21.25	21.06	24.17	30.00	-5.83
Low 2	2417	23.21	22.88	26.06	30.00	-3.94
Low 3	2422	24.66	24.40	27.54	30.00	-2.46
Low 4	2427	26.29	26.26	29.29	30.00	-0.71
Mid 6	2437	26.05	26.21	29.14	30.00	-0.86
High 9	2452	25.53	25.32	28.44	30.00	-1.56
High 10	2457	22.74	22.50	25.63	30.00	-4.37
High 11	2462	20.48	20.60	23.55	30.00	-6.45
High 12	2467	19.86	20.40	23.15	30.00	-6.85
High 13	2472	-0.60	1.53	3.60	30.00	-26.40

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2TX Chain 0 + Chain 1 MODE (Mid Gain)

33499/847400	33499/84740
Test Date:	2024-07-12, 2024-09-30

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	4.40	30.00	36	30.00
Low 2	2417	4.40	30.00	36	30.00
Low 3	2422	4.40	30.00	36	30.00
Mid 6	2437	4.40	30.00	36	30.00
High 9	2452	4.40	30.00	36	30.00
High 10	2457	4.40	30.00	36	30.00
High 11	2462	4.40	30.00	36	30.00
High 12	2467	4.40	30.00	36	30.00
High 13	2472	4.40	30.00	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	21.73	20.88	24.34	30.00	-5.66
Low 2	2417	23.24	23.05	26.16	30.00	-3.84
Low 3	2422	24.08	23.80	26.95	30.00	-3.05
Mid 6	2437	24.21	23.78	27.01	30.00	-2.99
High 9	2452	23.97	23.29	26.65	30.00	-3.35
High 10	2457	22.62	21.78	25.23	30.00	-4.77
High 11	2462	20.57	19.90	23.26	30.00	-6.74
High 12	2467	18.37	18.34	21.37	30.00	-8.63
High 13	2472	-0.12	-0.60	2.66	30.00	-27.34

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2TX Chain 0 + Chain 1 MODE (High Gain)

33499/847400	105900/84740, 33499/84740
Test Date:	2024-07-03, 2024-10-28

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	6.10	29.90	36	29.90
Low 2	2417	6.10	29.90	36	29.90
Low 3	2422	6.10	29.90	36	29.90
Low 4	2427	6.10	29.90	36	29.90
Mid 6	2437	6.10	29.90	36	29.90
High 9	2452	6.10	29.90	36	29.90
High 10	2457	6.10	29.90	36	29.90
High 11	2462	6.10	29.90	36	29.90
High 12	2467	6.10	29.90	36	29.90
High 13	2472	6.10	29.90	36	29.90

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	19.67	19.90	22.80	29.90	-7.10
Low 2	2417	23.45	23.54	26.51	29.90	-3.39
Low 3	2422	24.38	24.62	27.51	29.90	-2.39
Low 4	2427	25.20	25.30	28.26	29.90	-1.64
Mid 6	2437	25.15	25.24	28.21	29.90	-1.69
High 9	2452	25.24	25.02	28.14	29.90	-1.76
High 10	2457	23.01	22.45	25.75	29.90	-4.15
High 11	2462	20.91	21.19	24.06	29.90	-5.84
High 12	2467	14.83	15.10	17.98	29.90	-11.92
High 13	2472	-1.57	-2.90	0.83	29.90	-29.07

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9.4.11. 802.11be EHT40 484T MODE

2TX Chain 0 + Chain 1 MODE (Low Gain)

Test Engineer:	105900/84740, 33499/84740
Test Date:	2024-07-03, 2024-09-30, 2024-10-28

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 3	2422	3.60	29.90	36	30.00
Low 4	2427	3.60	29.90	36	30.00
Mid 6	2437	3.60	29.90	36	30.00
High 8	2447	3.60	29.90	36	30.00
High 9	2452	3.60	29.90	36	30.00
High 10	2457	3.60	29.90	36	30.00
High 11	2462	3.60	29.90	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 3	2422	21.88	21.67	24.79	30.00	-5.21
Low 4	2427	21.49	20.65	24.10	30.00	-5.90
Mid 6	2437	23.26	23.11	26.20	30.00	-3.80
High 8	2447	21.73	21.13	24.45	30.00	-5.55
High 9	2452	20.30	20.97	23.66	30.00	-6.34
High 10	2457	18.65	18.64	21.66	30.00	-8.34
High 11	2462	-0.59	1.50	3.59	30.00	-26.41

2TX Chain 0 + Chain 1 MODE (Mid Gain)

33499/847400	33499/84740
Test Date:	2024-07-12

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Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 3	2422	4.40	30.00	36	30.00
Low 4	2427	4.40	30.00	36	30.00
Mid 6	2437	4.40	30.00	36	30.00
High 7	2442	4.40	30.00	36	30.00
High 9	2452	4.40	30.00	36	30.00
High 10	2457	4.40	30.00	36	30.00
High 11	2462	4.40	30.00	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 3	2422	20.67	20.70	23.70	30.00	-6.30
Low 4	2427	21.92	22.12	25.03	30.00	-4.97
Mid 6	2437	23.11	23.34	26.24	30.00	-3.76
High 7	2442	22.10	22.22	25.17	30.00	-4.83
High 9	2452	20.43	20.33	23.39	30.00	-6.61
High 10	2457	17.50	17.14	20.33	30.00	-9.67
High 11	2462	-0.56	-1.22	2.13	30.00	-27.87

Testing was performed at channel 9 was at the same reported setting as channel 8. Client later reduced the setting on channel 8; however, channel 9 testing at channel 8 power setting can be considered worst case.

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2TX Chain 0 + Chain 1 MODE (High Gain)

33499/847400	105900/84740, 33499/84740
Test Date:	2024-07-03, 2024-10-28

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 3	2422	6.10	29.90	36	29.90
Low 4	2427	6.10	29.90	36	29.90
Low 5	2432	6.10	29.90	36	29.90
Mid 6	2437	6.10	29.90	36	29.90
High 8	2447	6.10	29.90	36	29.90
High 9	2452	6.10	29.90	36	29.90
High 10	2457	6.10	29.90	36	29.90
High 11	2462	6.10	29.90	36	29.90

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 3	2422	20.09	19.78	22.95	29.90	-6.95
Low 4	2427	20.71	20.73	23.73	29.90	-6.17
Low 5	2432	21.06	21.36	24.22	29.90	-5.68
Mid 6	2437	20.74	21.55	24.17	29.90	-5.73
High 8	2447	20.94	21.38	24.18	29.90	-5.72
High 9	2452	19.70	18.88	22.32	29.90	-7.58
High 10	2457	14.67	14.71	17.70	29.90	-12.20
High 11	2462	-1.76	-1.47	1.40	29.90	-28.50

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9.5. AVERAGE POWER

LIMITS

None; for reporting purposes only

TEST PROCEDURE

The transmitter output is connected to a gated average power meter.

The cable assembly insertion loss of 11.03 (including 9.71 dB pad and a 1.32 dB EUT cable) was entered as an offset for chain 0 and 11.01 dB (9.69 dB pad and 1.32 dB EUT cable) was entered as an offset for chain 1, in the power meter.

RESULTS

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9.5.1. 802.11b MODE

2TX Chain 0 + Chain 1 MODE (Low Gain)

Test Engineer:	33499/84740, 84740
Test Date:	2024-09-26, 2024-10-28, 2024-11-26

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	22.42	21.82	25.14
Mid 6	2437	22.64	22.29	25.48
High 11	2462	22.53	22.36	25.46
High 12	2467	14.79	15.75	18.31
High 13	2472	8.52	7.36	10.99

2TX Chain 0 + Chain 1 MODE (Mid Gain)

Test Engineer:	33499/84740
Test Date:	2024-07-12, 2024-09-30, 2024-10-28

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	19.41	18.75	22.10
Low 2	2417	20.38	19.91	23.16
Mid 6	2437	20.34	19.62	23.01
High 12	2467	14.74	14.15	17.47
High 13	2472	6.90	6.36	9.65

Channel 12 passed at mid channel power. However, the power was reduced per customer request.

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2TX Chain 0 + Chain 1 MODE (High Gain)

Test Engineer:	105900/84740, 33499/84740
Test Date:	2024-07-03, 2024-10-01, 2024-10-29

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	17.64	17.44	20.55
Low 3	2422	19.28	19.27	22.29
Mid 6	2437	19.04	19.15	22.11
High 9	2452	19.03	19.28	22.17
High 12	2467	14.17	13.99	17.09
High 13	2472	4.29	4.31	7.31

Channel 12 passed at the same power setting as channels 10 and 11. Therefore it represents the outermost worst-case channel. Customer lowered power setting of channel 12 to be lower than the setting used to achieved passing data.

9.5.2. 802.11g MODE

2TX Chain 0 + Chain 1 MODE (Low Gain)

Test Engineer:	105900/84740, 33499/84740, 84740
Test Date:	2024-07-02, 2024-09-26, 2024-10-28, 2024-11-26

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	15.16	14.99	18.09
Low 2	2417	17.77	17.23	20.52
Low 3	2422	18.59	18.12	21.37
Low 4	2427	20.10	19.87	23.00
Mid 6	2437	20.37	19.97	23.18
High 10	2457	20.35	20.32	23.35
High 11	2462	14.72	14.51	17.63
High 12	2467	11.42	12.27	14.88
High 13	2472	-9.87	-8.31	-6.01

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2TX Chain 0 + Chain 1 MODE (Mid Gain)

Test Engineer:	33499/84740
Test Date:	2024-07-12, 2024-09-30, 2024-10-28

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	14.37	14.02	17.21
Low 2	2417	16.51	15.99	19.27
Low 3	2422	18.85	18.46	21.67
Low 4	2427	19.21	19.06	22.15
Mid 6	2437	19.38	18.87	22.14
High 9	2452	19.32	18.76	22.06
High 10	2457	18.85	18.41	21.65
High 11	2462	14.78	14.91	17.86
High 12	2467	11.88	11.16	14.55
High 13	2472	-7.53	-7.35	-4.43

2TX Chain 0 + Chain 1 MODE (High Gain)

Test Engineer:	105900/84740, 33499/84740
Test Date:	2024-07-03, 2024-10-01

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	13.20	13.33	16.28
Low 2	2417	16.28	16.24	19.27
Low 3	2422	18.40	17.68	21.07
Mid 6	2437	17.79	17.79	20.80
High 10	2457	18.47	17.68	21.10
High 11	2462	13.97	14.29	17.14
High 12	2467	8.99	8.98	12.00
High 13	2472	-11.68	-11.88	-8.77

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9.5.3. 802.11n HT20 MODE

2TX Chain 0 + Chain 1 MODE (Low Gain)

Test Engineer:	105900/84740, 33499/84740, 84740
Test Date:	2024-07-02, 2024-09-26, 2024-10-28, 2024-11-27

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	15.48	15.11	18.31
Low 2	2417	16.63	16.11	19.39
Low 3	2422	18.26	18.89	21.60
Low 4	2427	19.00	19.37	22.20
Mid 6	2437	18.76	18.46	21.62
High 9	2452	18.82	19.30	22.08
High 10	2457	18.12	17.83	20.99
High 11	2462	13.09	13.59	16.36
High 12	2467	11.49	12.19	14.86
High 13	2472	-9.84	-11.03	-7.38

2TX Chain 0 + Chain 1 MODE (Mid Gain)

Test Engineer:	33499/84740
Test Date:	2024-07-12, 2024-09-30, 2024-10-28

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	15.09	14.33	17.74
Low 2	2417	16.48	15.93	19.22
Low 3	2422	18.87	18.46	21.68
Mid 6	2437	18.76	18.46	21.62
High 9	2452	18.91	18.33	21.64
High 10	2457	15.87	15.46	18.68
High 11	2462	13.56	12.67	16.15
High 12	2467	11.53	10.64	14.12
High 13	2472	-9.19	-9.24	-6.20

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2TX Chain 0 + Chain 1 MODE (High Gain)

Test Engineer:	105900/84740, 33499/84740
Test Date:	2024-07-03, 2024-10-01, 2024-10-29

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	13.02	12.18	15.63
Low 2	2417	15.13	15.22	18.19
Low 4	2427	16.77	16.82	19.81
Mid 6	2437	16.73	16.69	19.72
High 9	2452	16.62	16.76	19.70
High 10	2457	14.58	14.80	17.70
High 12	2467	8.84	8.40	11.64
High 13	2472	-13.31	-11.73	-9.44

9.5.4. 802.11n HT40 MODE

2TX Chain 0 + Chain 1 MODE (Low Gain)

Test Engineer:	105900/84740, 33499/84740, 84740
Test Date:	2024-07-02, 2024-09-30, 2024-10-28, 2024-11-27

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 3	2422	12.51	12.02	15.28
Low 4	2427	14.21	14.57	17.40
Low 5	2432	15.22	15.77	18.51
Mid 6	2437	15.71	15.39	18.56
High 7	2442	15.34	15.86	18.62
High 8	2447	13.31	13.71	16.52
High 9	2452	12.40	13.37	15.92
High 10	2457	8.81	8.07	11.47
High 11	2462	-10.40	-8.69	-6.45

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2TX Chain 0 + Chain 1 MODE (Mid Gain)

Test Engineer:	33499/84740
Test Date:	2024-07-12, 2024-09-30

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 3	2422	12.80	12.51	15.67
Low 4	2427	14.28	13.70	17.01
Low 5	2432	17.12	16.53	19.85
Mid 6	2437	17.22	16.46	19.87
High 7	2442	13.89	13.58	16.75
High 9	2452	12.45	12.29	15.38
High 10	2457	5.09	4.75	7.93
High 11	2462	-10.72	-9.39	-6.99

2TX Chain 0 + Chain 1 MODE (High Gain)

Test Engineer:	105900/84740, 33499/84740
Test Date:	2024-07-03, 2024-10-01, 2024-10-28

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 3	2422	11.77	11.59	14.69
Low 4	2427	13.65	13.11	16.40
Mid 6	2437	13.87	13.13	16.53
High 7	2442	13.92	13.21	16.59
High 8	2447	12.55	12.74	15.66
High 9	2452	12.05	11.50	14.79
High 10	2457	3.74	4.11	6.94
High 11	2462	-10.92	-9.40	-7.08

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9.5.5. 802.11be EHT20 26T MODE

2TX Chain 0 + Chain 1 MODE (Low Gain)

Test Engineer:	105900/84740
Test Date:	2024-07-02

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	18.00	17.72	20.87
Low 2	2417	18.15	18.50	21.34
Mid 6	2437	18.03	17.98	21.02
High 10	2457	18.41	17.93	21.19
High 11	2462	17.32	17.32	20.33
High 12	2467	14.95	15.44	18.21
High 13	2472	-16.67	-14.76	-12.60

2TX Chain 0 + Chain 1 MODE (Mid Gain)

Test Engineer:	33499/84740
Test Date:	2024-07-12

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	18.29	17.80	21.06
Mid 6	2437	18.35	17.83	21.11
High 10	2457	18.15	17.88	21.03
High 11	2462	14.82	15.04	17.94
High 12	2467	13.22	13.35	16.30
High 13	2472	-15.82	-15.48	-12.64

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2TX Chain 0 + Chain 1 MODE (High Gain)

Test Engineer:	105900/84740, 33499/84740
Test Date:	2024-07-03, 2024-10-01, 2024-10-28

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	16.98	16.61	19.81
Low 2	2417	18.10	18.45	21.29
Mid 6	2437	18.08	18.11	21.11
High 10	2457	18.46	17.96	21.23
High 11	2462	15.19	15.47	18.34
High 12	2467	5.95	5.40	8.69
High 13	2472	-19.12	-17.19	-15.04

9.5.6. 802.11be EHT20 52T MODE

2TX Chain 0 + Chain 1 MODE (Low Gain)

Test Engineer:	105900/84740
Test Date:	2024-07-02

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	17.78	17.43	20.62
Low 2	2417	18.08	18.39	21.25
Mid 6	2437	18.38	18.17	21.29
High 11	2462	18.07	18.28	21.19
High 12	2467	14.82	15.35	18.10
High 13	2472	-16.55	-14.66	-12.49

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2TX Chain 0 + Chain 1 MODE (Mid Gain)

Test Engineer:	33499/84740
Test Date:	2024-07-12, 2024-09-30

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	17.41	17.31	20.37
Mid 6	2437	18.30	17.77	21.05
High 10	2457	18.14	17.78	20.97
High 11	2462	15.99	16.60	19.32
High 12	2467	14.08	13.74	16.92
High 13	2472	-15.12	-13.44	-11.19

2TX Chain 0 + Chain 1 MODE (High Gain)

Test Engineer:	105900/84740, 33499/84740
Test Date:	2024-07-03, 2024-10-28

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	17.73	16.69	20.25
Low 2	2417	18.21	18.50	21.37
Mid 6	2437	18.42	18.21	21.33
High 10	2457	18.39	18.06	21.24
High 11	2462	16.12	15.87	19.01
High 12	2467	5.65	5.98	8.83
High 13	2472	-17.30	-16.57	-13.91

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9.5.7. 802.11be EHT20 52T + 26T MODE

2TX Chain 0 + Chain 1 MODE (Low Gain)

Test Engineer:	105900/84740
Test Date:	2024-07-02

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	17.88	17.87	20.89
Low 2	2417	18.16	18.40	21.29
Mid 6	2437	18.42	18.34	21.39
High 11	2462	18.06	18.23	21.16
High 12	2467	14.75	14.75	17.76
High 13	2472	-17.75	-15.10	-13.22

2TX Chain 0 + Chain 1 MODE (Mid Gain)

Test Engineer:	33499/84740
Test Date:	2024-07-12, 2024-09-30

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	17.61	17.84	20.74
Mid 6	2437	18.37	17.85	21.13
High 10	2457	18.19	17.70	20.96
High 11	2462	16.00	16.38	19.20
High 12	2467	13.47	13.82	16.66
High 13	2472	-15.41	-13.79	-11.51

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2TX Chain 0 + Chain 1 MODE (High Gain)

Test Engineer:	105900/84740, 33499/84740
Test Date:	2024-07-03, 2024-10-28

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	17.16	16.67	19.93
Low 2	2417	18.24	18.55	21.41
Mid 6	2437	18.41	18.32	21.38
High 10	2457	18.41	18.16	21.30
High 11	2462	16.38	15.71	19.07
High 12	2467	5.73	5.67	8.71
High 13	2472	-17.04	-15.97	-13.46

9.5.8. 802.11be EHT20 106T MODE

2TX Chain 0 + Chain 1 MODE (Low Gain)

Test Engineer:	105900/84740, 33499/84740
Test Date:	2024-07-02, 2024-10-28

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	15.17	15.11	18.15
Low 2	2417	16.10	17.29	19.75
Low 3	2422	18.24	18.65	21.46
Mid 6	2437	18.52	18.29	21.42
High 8	2447	18.51	18.88	21.71
High 9	2452	17.48	17.31	20.41
High 10	2457	17.44	16.90	20.19
High 11	2462	16.05	16.61	19.35
High 12	2467	12.05	12.44	15.26
High 13	2472	-15.73	-13.02	-11.16

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2TX Chain 0 + Chain 1 MODE (Mid Gain)

Test Engineer:	33499/84740
Test Date:	2024-07-12, 2024-09-30, 2024-10-28

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	17.39	16.46	19.96
Low 2	2417	17.93	18.56	21.27
Mid 6	2437	18.36	17.87	21.13
High 10	2457	18.13	17.75	20.95
High 11	2462	16.28	16.14	19.22
High 12	2467	11.29	10.40	13.88
High 13	2472	-12.73	-11.16	-8.86

2TX Chain 0 + Chain 1 MODE (High Gain)

Test Engineer:	105900/84740, 33499/84740
Test Date:	2024-07-03, 2024-10-28

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	16.13	15.54	18.86
Low 2	2417	17.85	18.61	21.26
Mid 6	2437	18.57	18.45	21.52
High 9	2452	18.47	17.86	21.19
High 10	2457	17.85	17.65	20.76
High 11	2462	15.02	14.74	17.89
High 12	2467	6.20	6.37	9.30
High 13	2472	-14.78	-12.87	-10.71

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9.5.9. 802.11be EHT20 106T + 26T MODE

2TX Chain 0 + Chain 1 MODE (Low Gain)

Test Engineer:	105900/84740, 33499/84740
Test Date:	2024-07-02, 2024-10-28

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	15.06	15.13	18.11
Low 2	2417	16.72	17.69	20.24
Low 3	2422	17.78	18.15	20.98
Mid 6	2437	18.47	18.37	21.43
High 8	2447	18.43	18.89	21.68
High 9	2452	17.49	17.26	20.39
High 10	2457	17.41	16.97	20.21
High 11	2462	16.20	15.93	19.08
High 12	2467	12.21	12.39	15.31
High 13	2472	-15.62	-13.19	-11.23

2TX Chain 0 + Chain 1 MODE (Mid Gain)

Test Engineer:	33499/84740
Test Date:	2024-07-12, 2024-10-28

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	17.46	16.51	20.02
Low 2	2417	17.81	18.56	21.21
Mid 6	2437	18.25	17.77	21.03
High 10	2457	18.25	17.78	21.03
High 11	2462	16.43	16.15	19.30
High 12	2467	11.23	10.55	13.91
High 13	2472	-12.89	-11.32	-9.02

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2TX Chain 0 + Chain 1 MODE (High Gain)

Test Engineer:	105900/84740, 33499/84740
Test Date:	2024-07-03, 2024-10-28

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	16.19	15.59	18.91
Low 2	2417	17.57	17.62	20.61
Mid 6	2437	18.24	17.75	21.01
High 9	2452	18.47	18.30	21.40
High 10	2457	17.61	16.89	20.28
High 11	2462	15.19	14.66	17.94
High 12	2467	6.44	6.46	9.46
High 13	2472	-13.67	-13.12	-10.38

9.5.10. 802.11be EHT20 242T MODE

2TX Chain 0 + Chain 1 MODE (Low Gain)

Test Engineer:	105900/84740
Test Date:	2024-07-02

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	12.58	12.74	15.67
Low 2	2417	14.76	14.64	17.71
Low 3	2422	16.28	16.11	19.21
Low 4	2427	17.86	17.78	20.83
Mid 6	2437	17.72	17.82	20.78
High 9	2452	17.12	17.13	20.14
High 10	2457	14.15	14.17	17.17
High 11	2462	12.18	11.97	15.09
High 12	2467	11.42	11.67	14.56
High 13	2472	-9.07	-6.98	-4.89

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2TX Chain 0 + Chain 1 MODE (Mid Gain)

Test Engineer:	33499/84740
Test Date:	2024-07-12, 2024-09-30

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	14.14	13.74	16.95
Low 2	2417	14.54	14.74	17.65
Low 3	2422	17.30	16.79	20.06
Mid 6	2437	17.30	16.67	20.01
High 9	2452	17.11	16.58	19.86
High 10	2457	14.64	14.09	17.38
High 11	2462	13.88	13.59	16.75
High 12	2467	11.44	11.20	14.33
High 13	2472	-9.17	-7.55	-5.27

2TX Chain 0 + Chain 1 MODE (High Gain)

Test Engineer:	105900/84740, 33499/84740
Test Date:	2024-07-03, 2024-10-28

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	11.31	11.40	14.37
Low 2	2417	15.02	15.16	18.10
Low 3	2422	16.07	16.13	19.11
Low 4	2427	16.66	16.56	19.62
Mid 6	2437	16.57	16.60	19.60
High 9	2452	16.62	16.52	19.58
High 10	2457	14.37	14.10	17.25
High 11	2462	12.31	12.47	15.40
High 12	2467	6.37	6.52	9.46
High 13	2472	-10.22	-11.47	-7.79

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9.5.11. 802.11be EHT40 484T MODE

2TX Chain 0 + Chain 1 MODE (Low Gain)

Test Engineer:	105900/84740, 33499/84740
Test Date:	2024-07-02, 2024-09-30, 2024-10-28

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 3	2422	13.44	13.27	16.37
Low 4	2427	15.44	14.93	18.20
Mid 6	2437	14.87	14.81	17.85
High 8	2447	15.63	15.15	18.41
High 9	2452	11.67	12.57	15.15
High 10	2457	10.35	10.44	13.41
High 11	2462	-9.05	-6.99	-4.89

2TX Chain 0 + Chain 1 MODE (Mid Gain)

Test Engineer:	33499/84740
Test Date:	2024-07-12, 2024-09-30

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 3	2422	12.51	12.60	15.57
Low 4	2427	13.54	13.82	16.69
Mid 6	2437	14.63	14.82	17.74
High 7	2442	13.73	13.76	16.76
High 9	2452	13.04	12.31	15.70
High 10	2457	9.91	9.14	12.55
High 11	2462	-9.35	-7.65	-5.41

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2TX Chain 0 + Chain 1 MODE (High Gain)

Test Engineer:	105900/84740, 33499/84740
Test Date:	2024-07-03, 2024-10-28

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 3	2422	11.87	11.80	14.85
Low 4	2427	12.21	12.41	15.32
Low 5	2432	12.88	12.94	15.92
Mid 6	2437	12.74	12.90	15.83
High 8	2447	12.72	12.84	15.79
High 9	2452	11.35	10.70	14.05
High 10	2457	6.48	6.43	9.47
High 11	2462	-9.95	-10.02	-6.97

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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

Note: PSD limit is reduced by 3.11 dBm since the correlated gain (9.11 dBi) is 3.11 dBi greater than the 6 dBi maximum. This limit reduction occurs in the tabular section of data.

RESULTS

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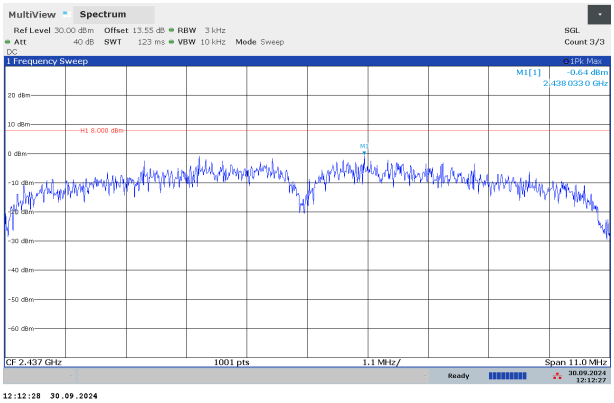
9.6.1. 802.11b MODE

2TX CHAIN 0 + CHAIN 1 MODE

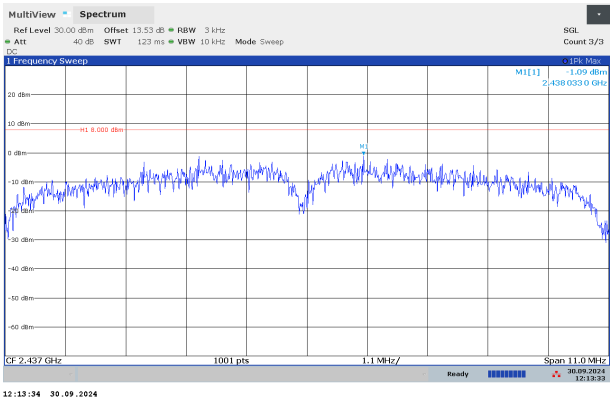
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 3kHz)	Chain 1 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-0.770	-1.650	1.823	4.89	-3.07
Mid 6	2437	-0.640	-1.090	2.151	4.89	-2.74
High 13	2472	-0.200	-1.870	2.055	4.89	-2.83

MID CHANNEL 6



MID CHANNEL 6 CHAIN 0



MID CHANNEL 6 CHAIN 1

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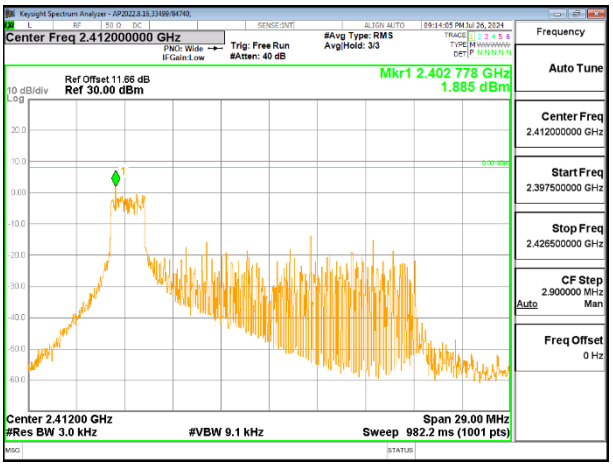
9.6.2. 802.11be EHT20 26T MODE

2TX CHAIN 0 + CHAIN 1 MODE

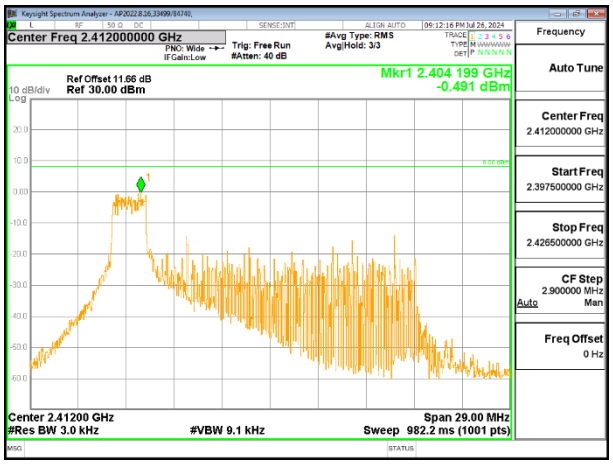
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 3kHz)	Chain 1 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	1.885	-0.491	3.868	4.89	-1.02
Mid 6	2437	0.234	1.207	3.758	4.89	-1.13
High 13	2472	-0.330	0.350	3.034	4.89	-1.86

LOW CHANNEL 1



LOW CHANNEL 1 CHAIN 0



LOW CHANNEL 1 CHAIN 1

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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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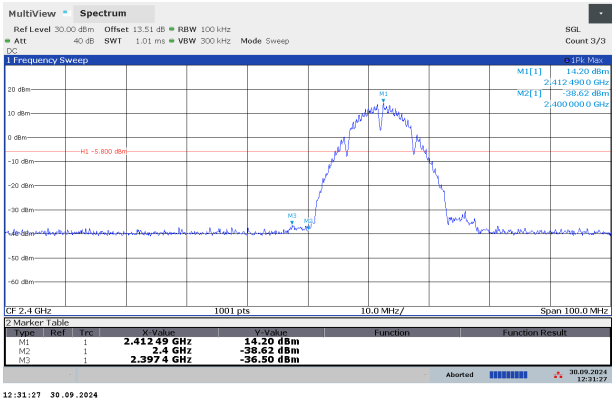
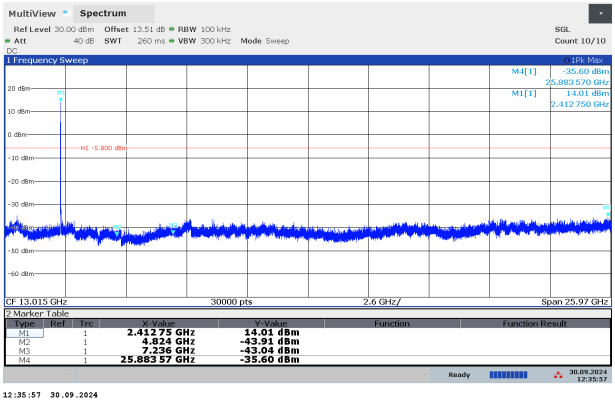
9.7.1. 802.11b MODE

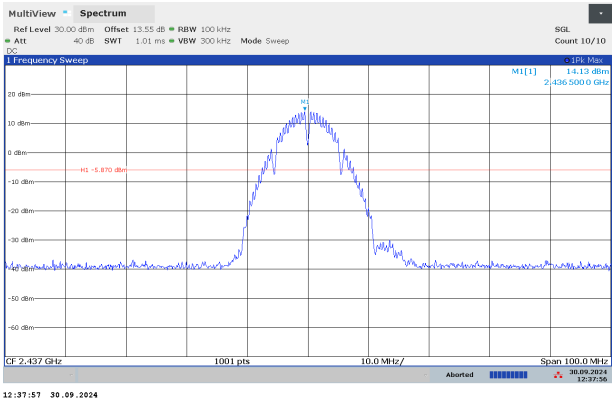
2TX CHAIN 0 + CHAIN 1 MODE



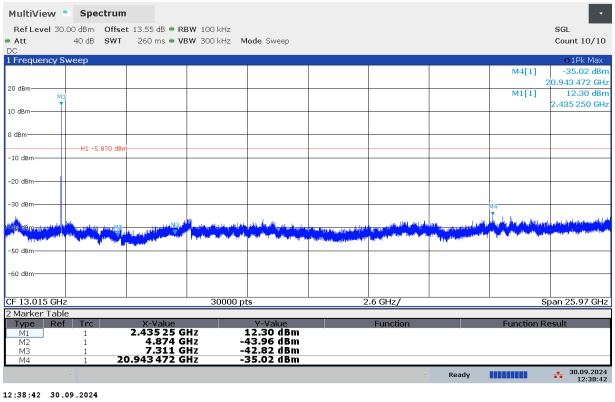
LOW CHANNEL 1 BANDEDGE CHAIN 0



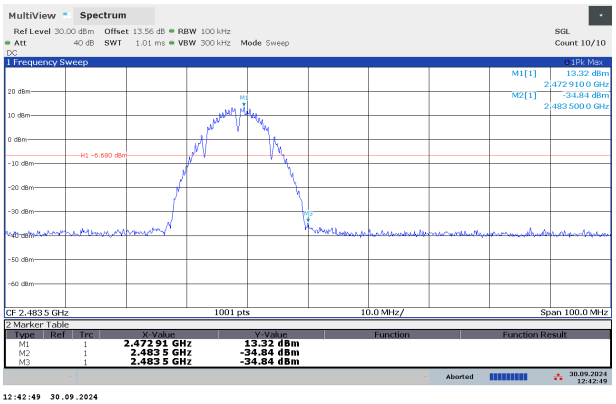
OUT-OF-BAND LOW CHANNEL 1 CHAIN 0



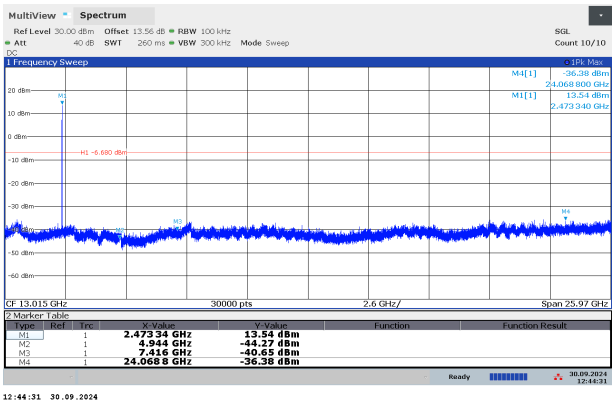
IN-BAND REFERENCE LEVEL CHAIN 0



OUT-OF-BAND MID CHANNEL CHAIN 0



HIGH CHANNEL 13 BANDEDGE CHAIN 0



OUT-OF-BAND HIGH CHANNEL 13 CHAIN 0

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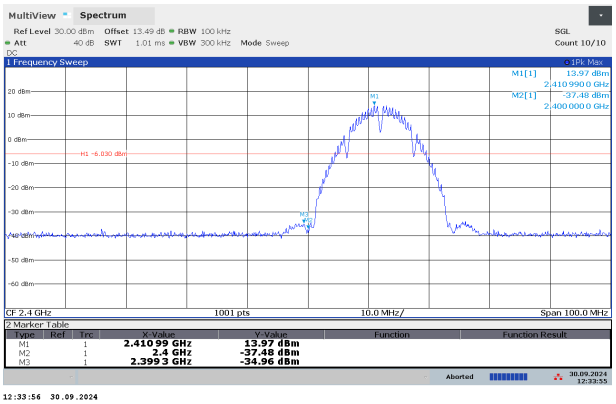

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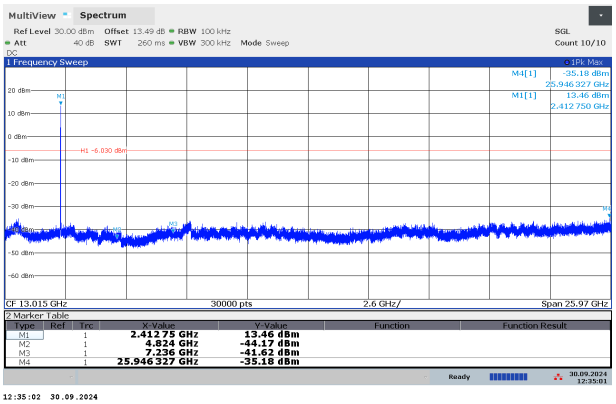
LOW CHANNEL 1 BANDEDGE CHAIN 1



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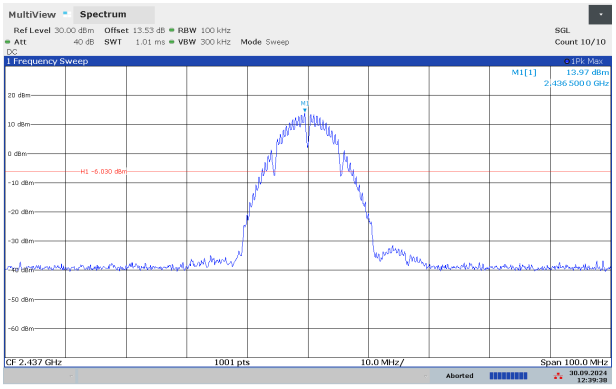
OUT-OF-BAND LOW CHANNEL 1 CHAIN 1



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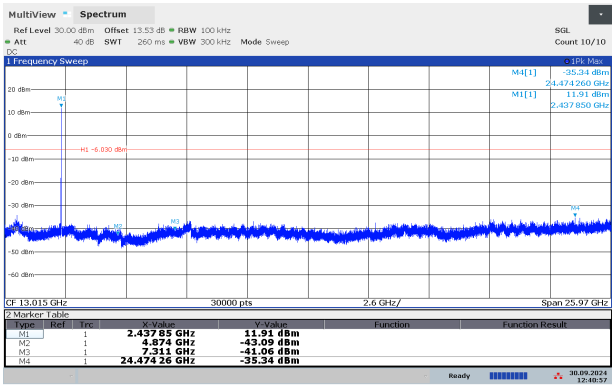
IN-BAND REFERENCE LEVEL CHAIN 1



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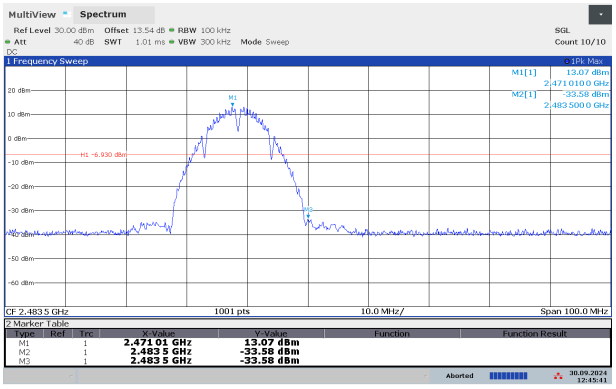
OUT-OF-BAND MID CHANNEL CHAIN 1



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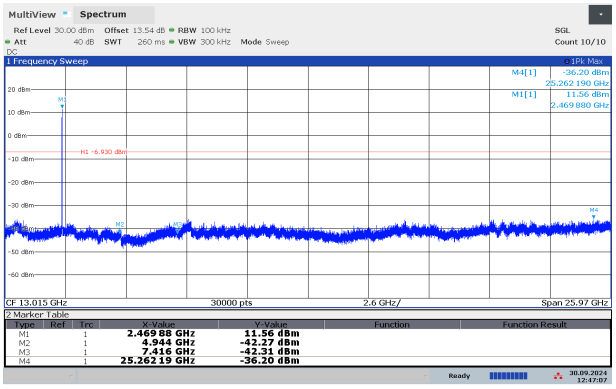
HIGH CHANNEL 13 BANDEDGE CHAIN 1



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OUT-OF-BAND HIGH CHANNEL 13 CHAIN 1

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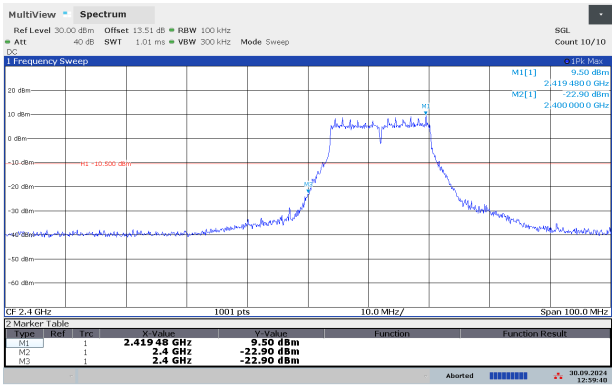
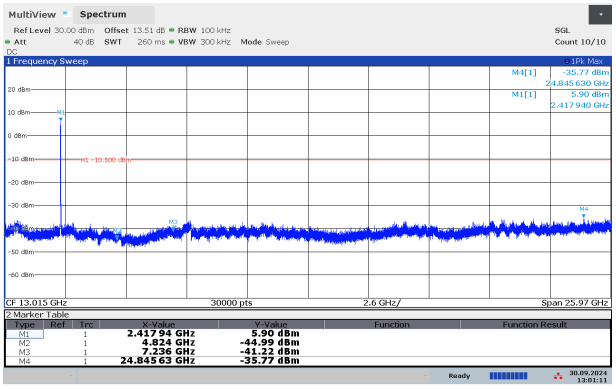
9.7.2. 802.11g MODE

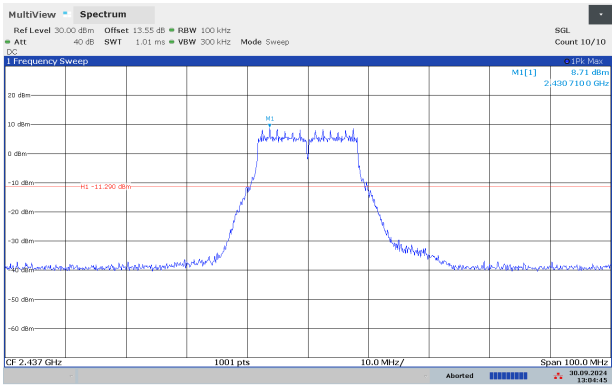
2TX CHAIN 0 + CHAIN 1 MODE



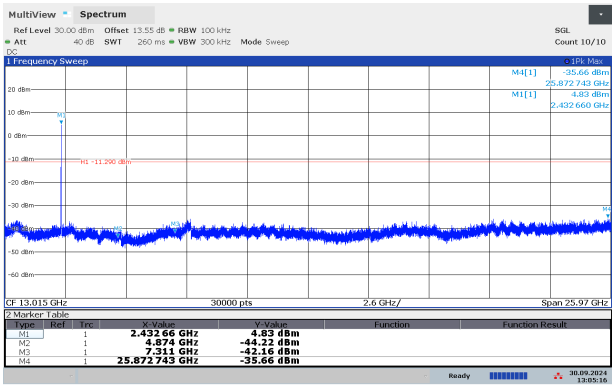
LOW CHANNEL 1 BANDEDGE CHAIN 0



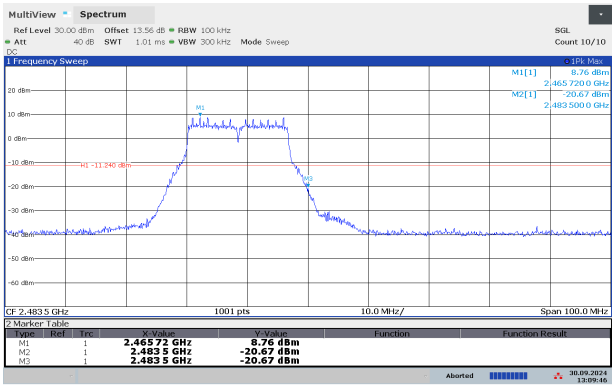
OUT-OF-BAND LOW CHANNEL 1 CHAIN 0



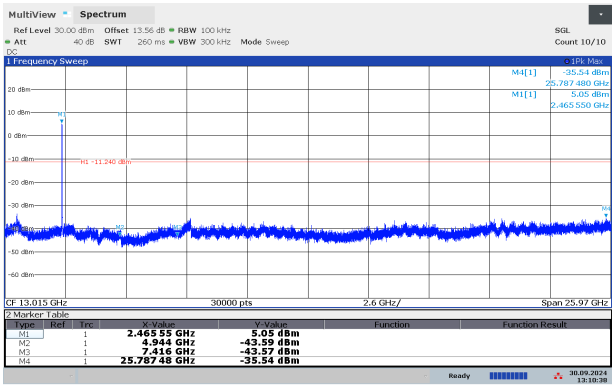
IN-BAND REFERENCE LEVEL CHAIN 0



OUT-OF-BAND MID CHANNEL CHAIN 0



HIGH CHANNEL 13 BANDEDGE CHAIN 0



OUT-OF-BAND HIGH CHANNEL 13 CHAIN 0

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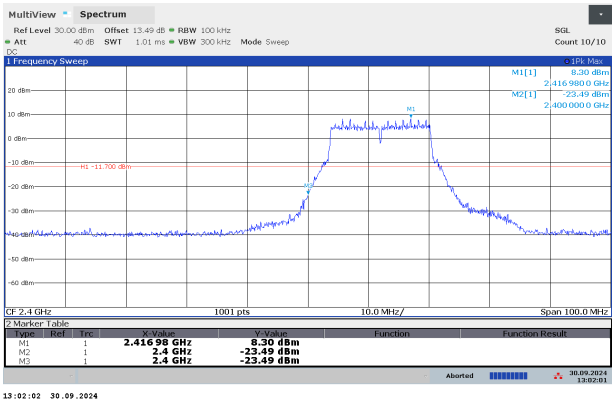
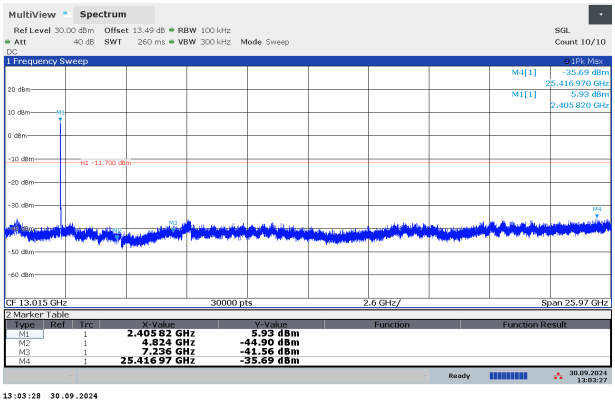
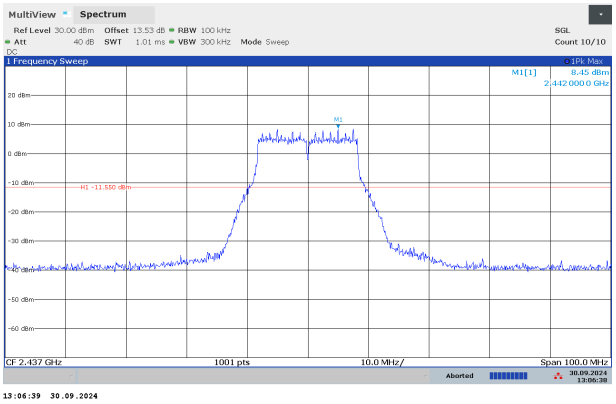


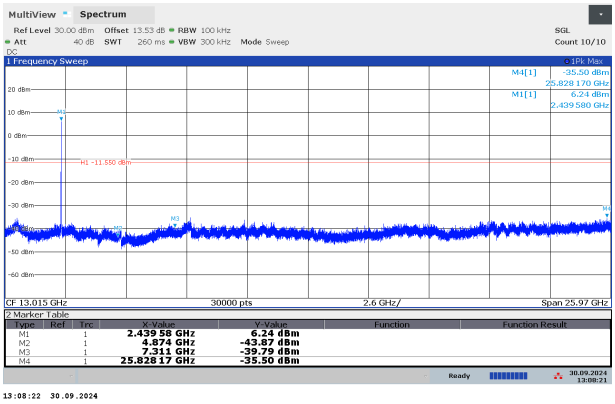
LOW CHANNEL 1 BANDEDGE CHAIN 1



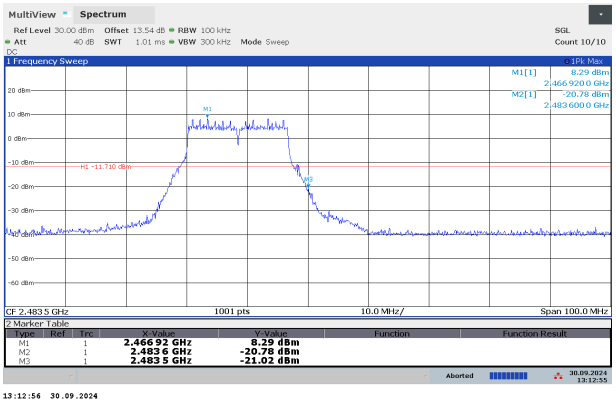
OUT-OF-BAND LOW CHANNEL 1 CHAIN 1



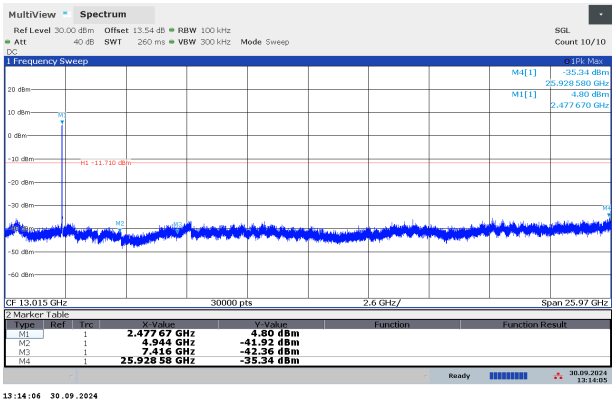
IN-BAND REFERENCE LEVEL CHAIN 1



OUT-OF-BAND MID CHANNEL CHAIN 1



HIGH CHANNEL 13 BANDEDGE CHAIN 1



OUT-OF-BAND HIGH CHANNEL 13 CHAIN 1

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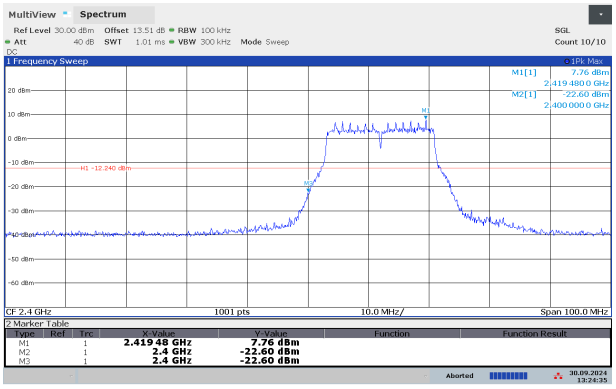
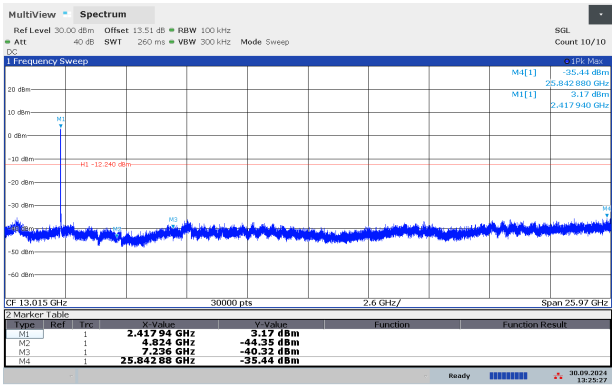
9.7.3. 802.11n HT20 MODE

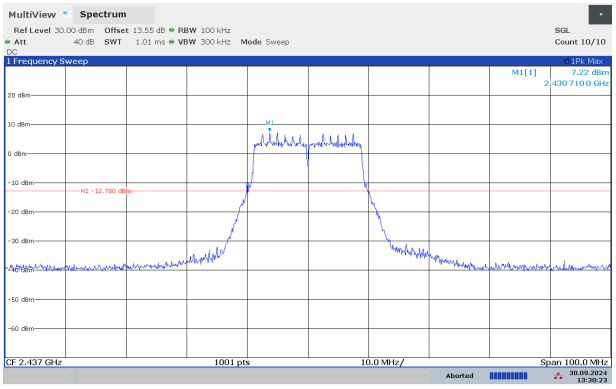
2TX CHAIN 0 + CHAIN 1 MODE



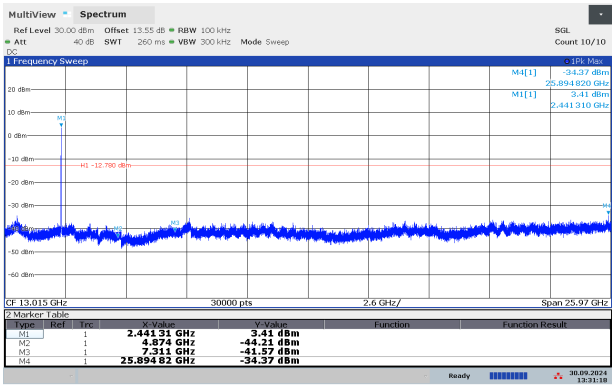
LOW CHANNEL 1 BANDEDGE CHAIN 0



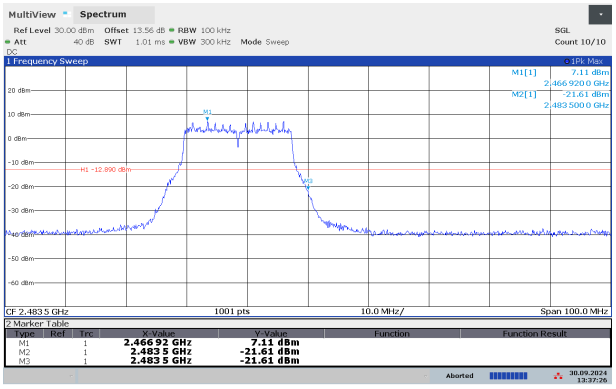
OUT-OF-BAND LOW CHANNEL 1 CHAIN 0



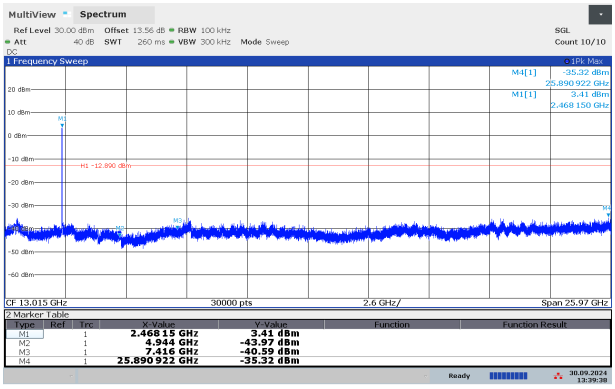
IN-BAND REFERENCE LEVEL CHAIN 0



OUT-OF-BAND MID CHANNEL CHAIN 0



HIGH CHANNEL 13 BANDEDGE CHAIN 0



OUT-OF-BAND HIGH CHANNEL 13 CHAIN 0

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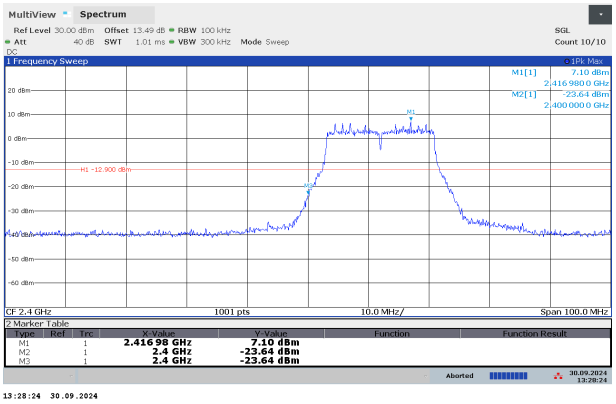
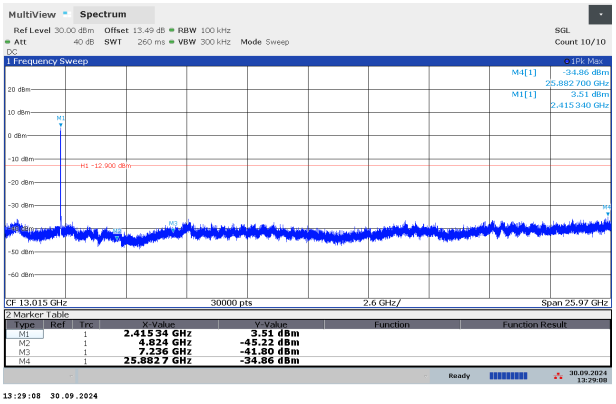
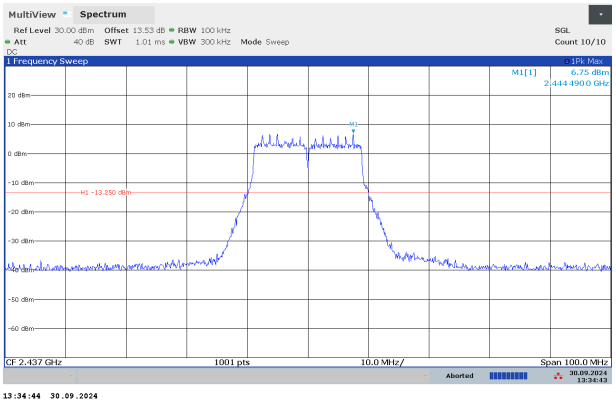


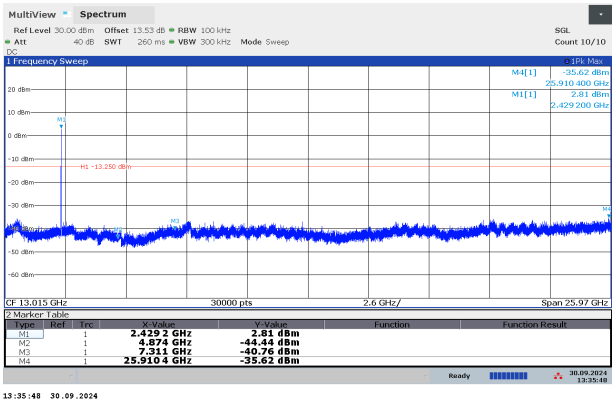
LOW CHANNEL 1 BANDEDGE CHAIN 1



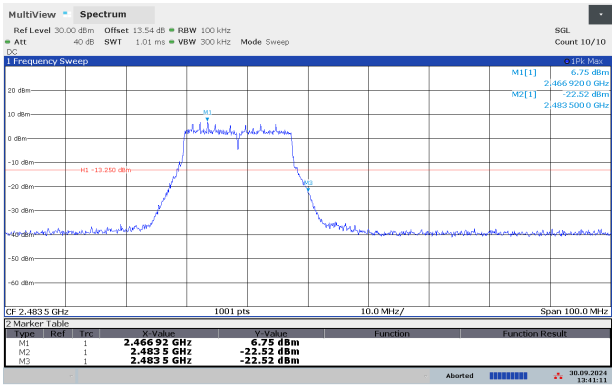
OUT-OF-BAND LOW CHANNEL 1 CHAIN 1



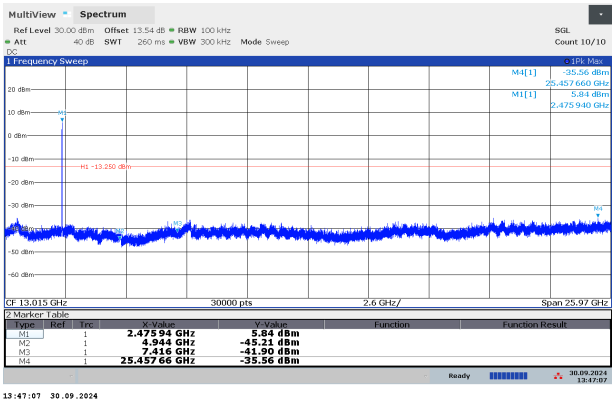
IN-BAND REFERENCE LEVEL CHAIN 1



OUT-OF-BAND MID CHANNEL CHAIN 1



HIGH CHANNEL 13 BANDEDGE CHAIN 1



OUT-OF-BAND HIGH CHANNEL 13 CHAIN 1

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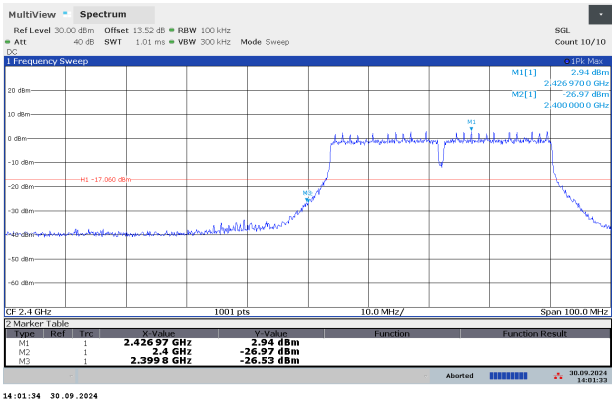
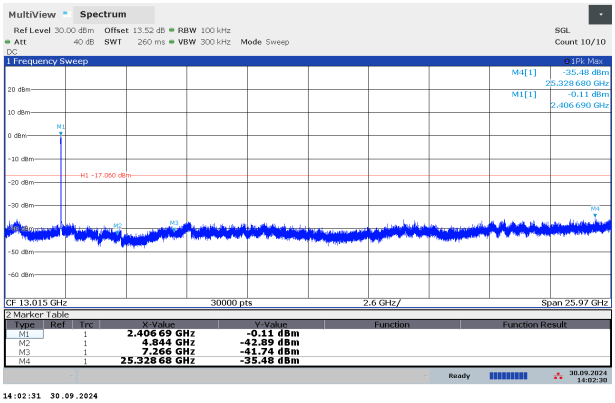
9.7.4. 802.11n HT40 MODE

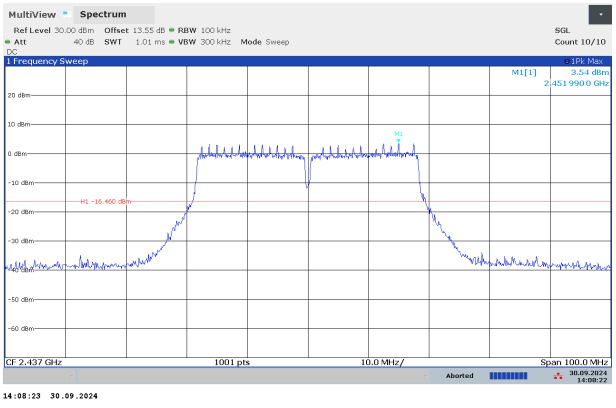
2TX CHAIN 0 + CHAIN 1 MODE



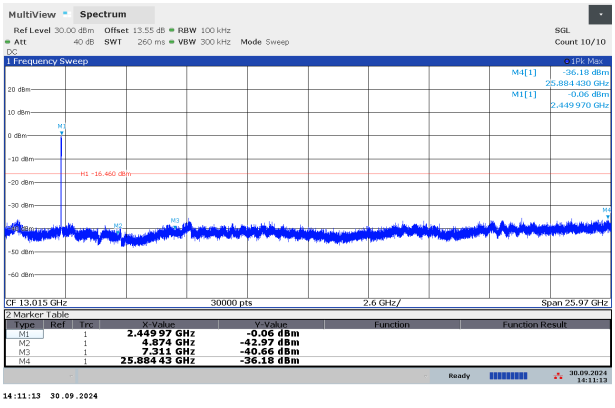
LOW CHANNEL 3 BANDEDGE CHAIN 0



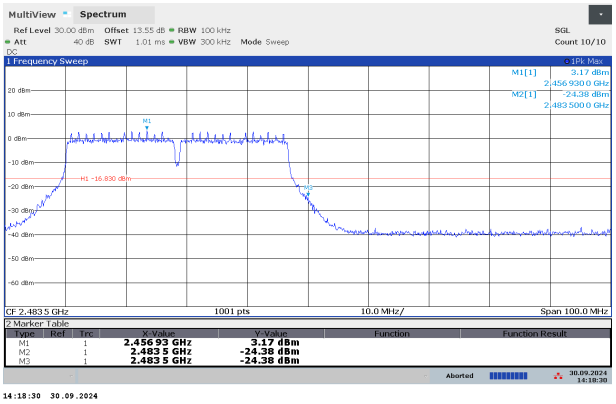
OUT-OF-BAND LOW CHANNEL 3 CHAIN 0



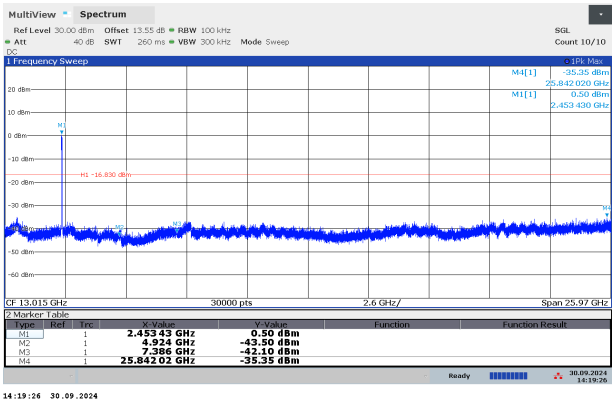
IN-BAND REFERENCE LEVEL CHAIN 0



OUT-OF-BAND MID CHANNEL CHAIN 0



HIGH CHANNEL 11 BANDEDGE CHAIN 0



OUT-OF-BAND HIGH CHANNEL 11 CHAIN 0

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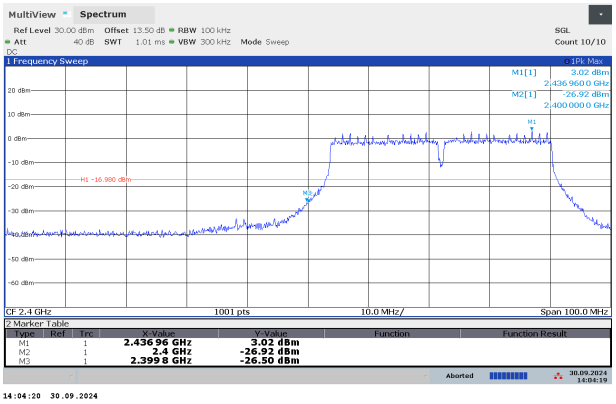
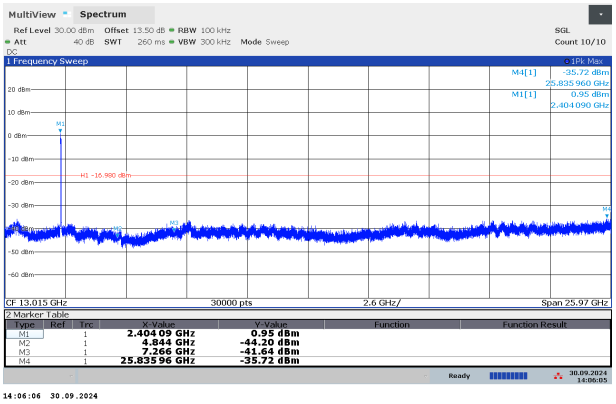
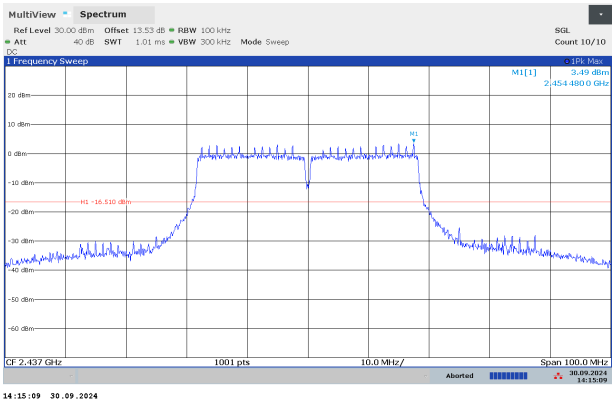


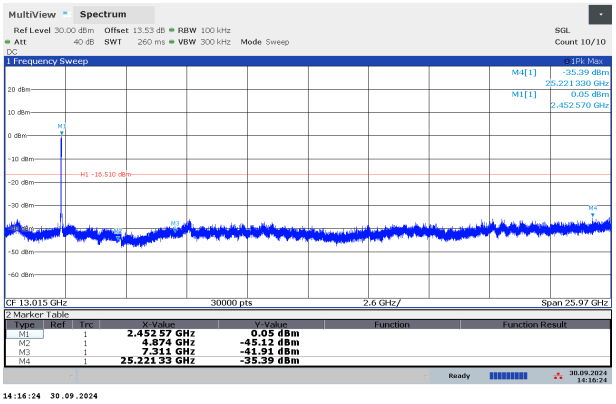
LOW CHANNEL 3 BANDEDGE CHAIN 1



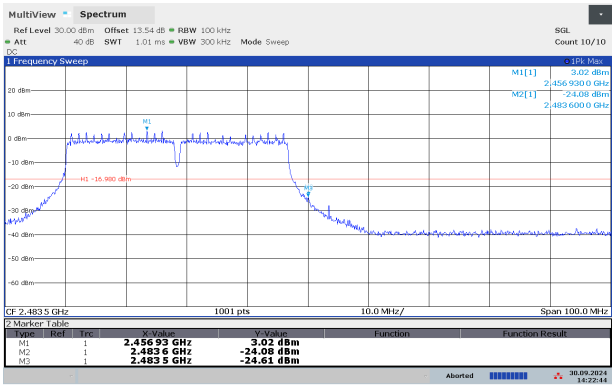
OUT-OF-BAND LOW CHANNEL 3 CHAIN 1



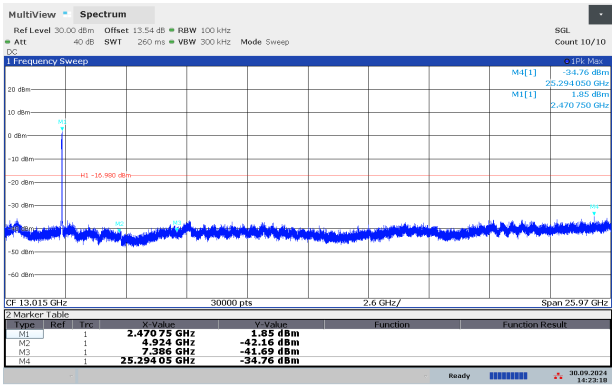
IN-BAND REFERENCE LEVEL CHAIN 1



OUT-OF-BAND MID CHANNEL CHAIN 1



HIGH CHANNEL 11 BANDEDGE CHAIN 1



OUT-OF-BAND HIGH CHANNEL 11 CHAIN 1

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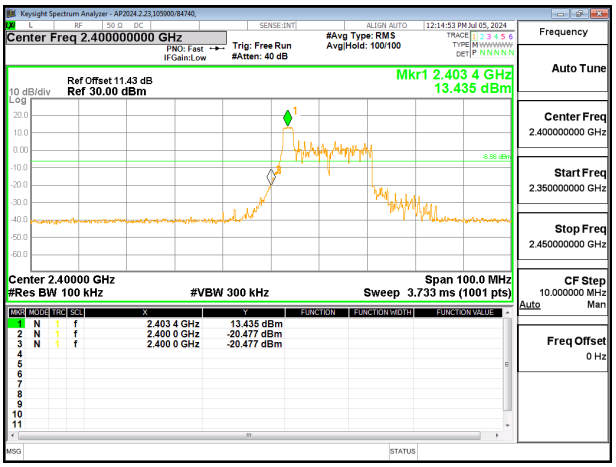
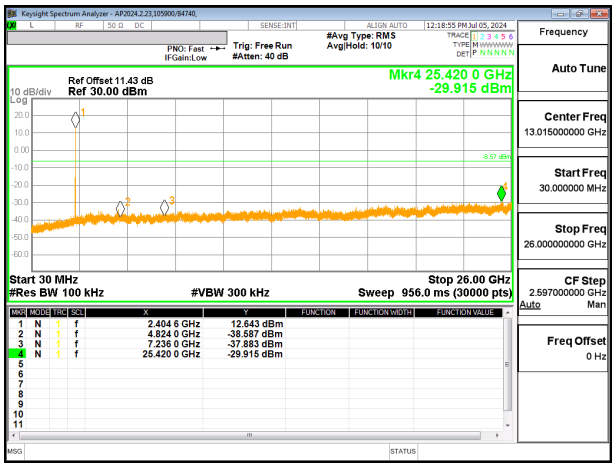
9.7.5. 802.11be EHT20 26T MODE

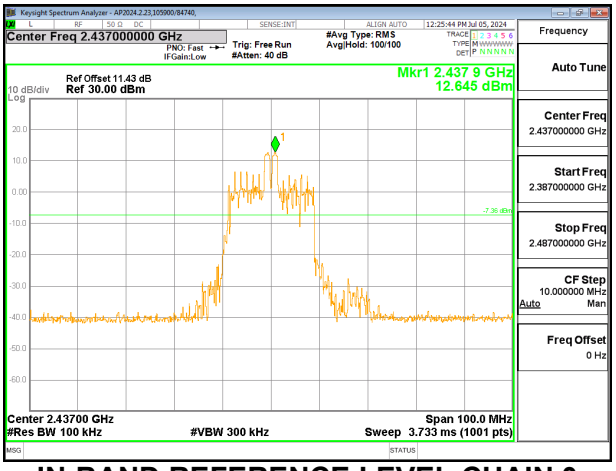
2TX CHAIN 0 + CHAIN 1 MODE



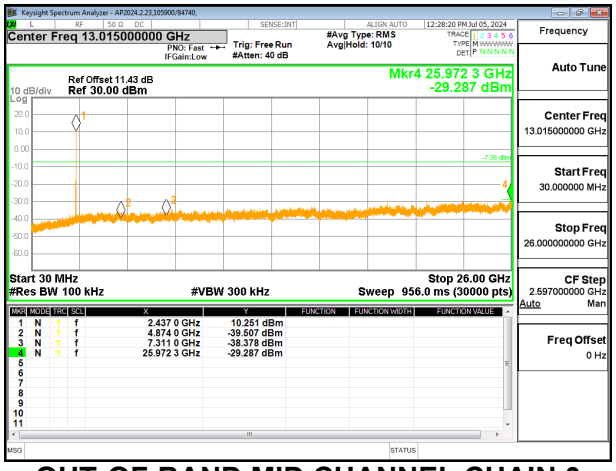
LOW CHANNEL 1 BANDEDGE CHAIN 0



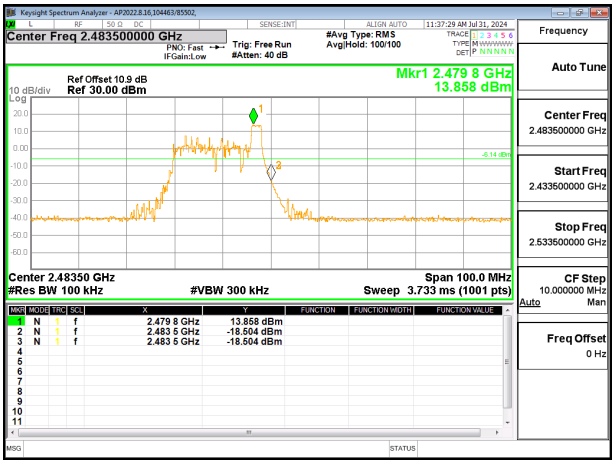
OUT-OF-BAND LOW CHANNEL 1 CHAIN 0



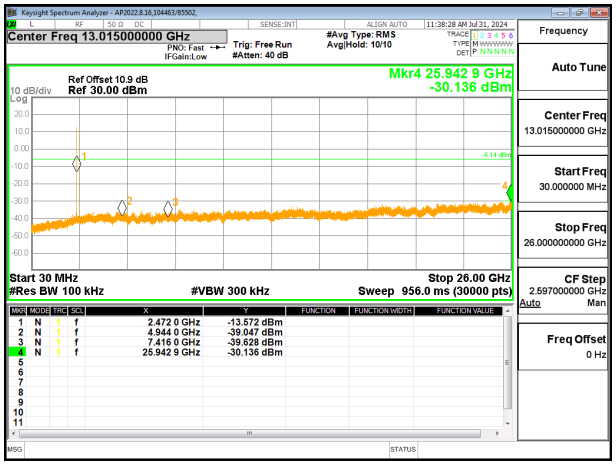
IN-BAND REFERENCE LEVEL CHAIN 0



OUT-OF-BAND MID CHANNEL CHAIN 0



HIGH CHANNEL 13 BANDEDGE CHAIN 0



OUT-OF-BAND HIGH CHANNEL 13 CHAIN 0

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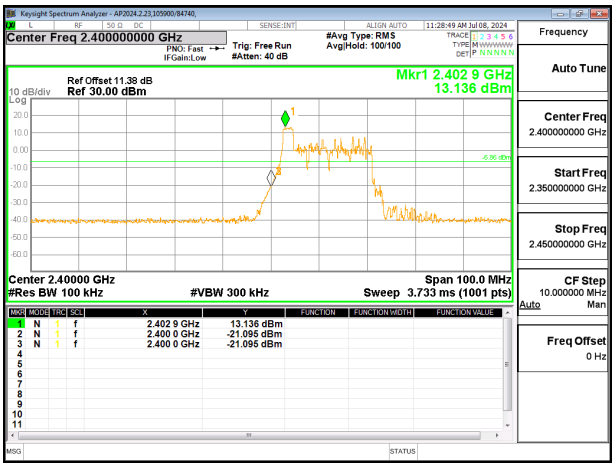
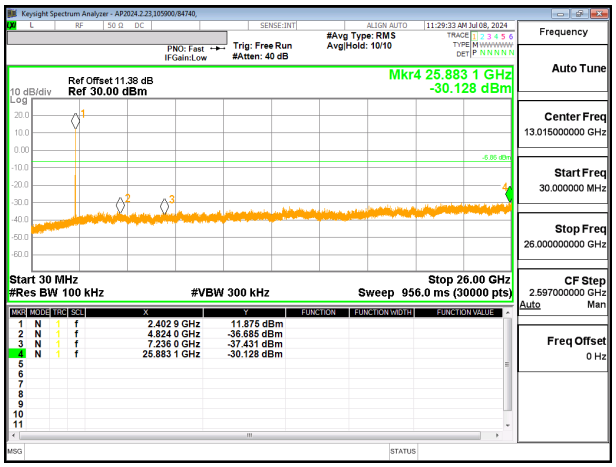
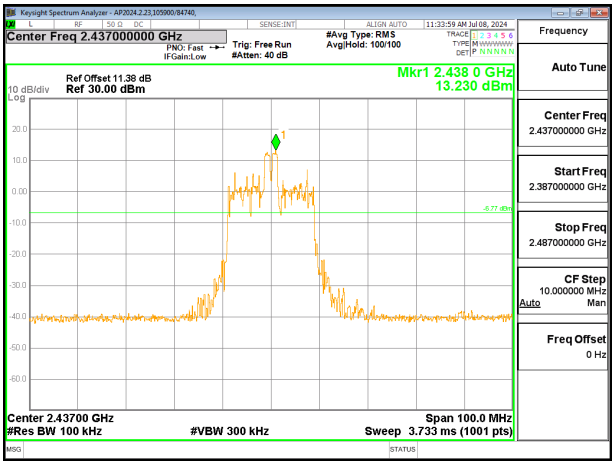


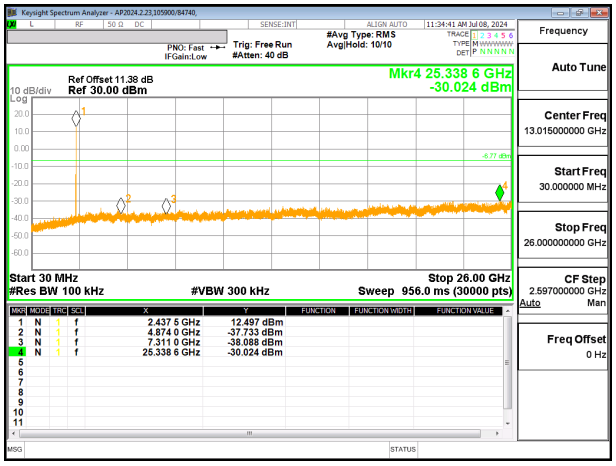
LOW CHANNEL 1 BANDEDGE CHAIN 1



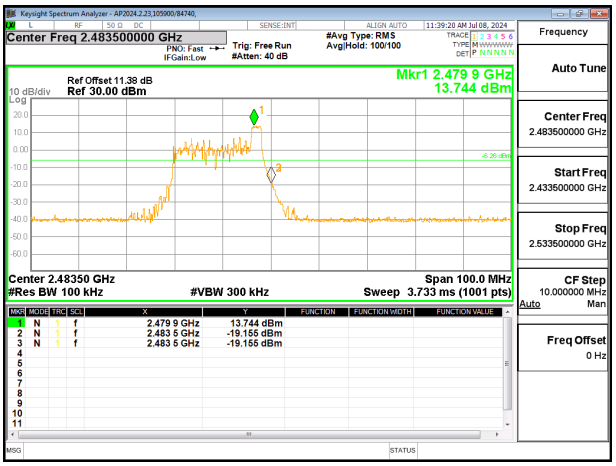
OUT-OF-BAND LOW CHANNEL 1 CHAIN 1



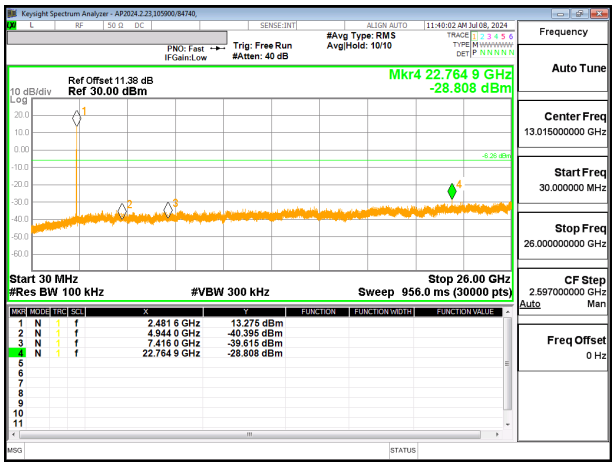
IN-BAND REFERENCE LEVEL CHAIN 1



OUT-OF-BAND MID CHANNEL CHAIN 1



HIGH CHANNEL 13 BANDEDGE CHAIN 1



OUT-OF-BAND HIGH CHANNEL 13 CHAIN 1

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