TEST REPORT

Report Number : R14932101-E6a

Applicant	:	Microsoft Corporation 1 Microsoft Way Redmond, WA 98052-8300, USA
Model	:	2036
FCC ID	:	C3K2036
IC	:	3048A-2036
EUT Description	:	Portable Computing Device
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:
2024-03-29

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

ACCREDITED
CERT #0751.06

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	2024-03-15	Initial Issue	Charles Moody
V2	2024-03-29	Updated Output Power Measurements and Test Methodology	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: Portable Computing Device

MODEL: 2036

SERIAL NUMBER: 0F3BV4623383HH, 0F3BV3V23383HH, 0F00GQG23383HH, A81245020002335A, 2399649100000116, 0F3BV3V23383HH, A81235010007335S, 0FSBV4923383HH

SAMPLE RECEIPT DATE: 2023-10-10 TO 2024-01-24

DATE TESTED: 2023-10-23 TO 2024-03-28

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.

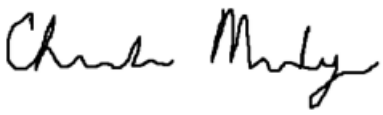
The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. 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:

Michael Antola
Staff Engineer
Consumer, Medical and IT Segment
UL LLC

Prepared By:



Charles Moody
Electrical Engineer
Consumer, Medical and IT Segment
UL LLC

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		

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 C63.10-2013, 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	

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

MAINS CONDUCTED EMISSIONS

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

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6. EQUIPMENT UNDER TEST

6.1. EUT DESCRIPTION

The EUT is a Portable Computing Device.

6.2. MAXIMUM OUTPUT POWER

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

2.4GHz BAND – Chain 0 + Chain 1

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2Tx			
2412 - 2472	802.11b	28.47	703.07
2412 - 2472	802.11g	29.38	866.96
2412 - 2472	802.11n HT20	27.21	526.02
2422 - 2462	802.11n HT40	25.39	345.94
2412 - 2472	802.11be EHT20 26T	29.33	857.04
2412 - 2472	802.11be EHT20 52T	29.27	845.28
2412 - 2472	802.11be EHT20 52T + 26T	29.32	855.07
2412 - 2472	802.11be EHT20 106T	29.39	868.96
2412 - 2472	802.11be EHT20 106T + 26T	29.47	885.12
2412 - 2472	802.11be EHT20 242T	29.41	872.97
2422 - 2462	802.11be EHT40 484T	28.57	719.45

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

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

Chain	Frequency (MHz)	Gain (dBi)	Type
0	2400-2483.5	4.92	PIFA
1	2400-2483.5	4.68	
MIMO (Uncorrelated)	2400-2483.5	3.84	
MIMO (Correlated)	2400-2483.5	6.85	

6.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was 1.0.3808.9500.

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6.5. WORST-CASE CONFIGURATION AND MODE

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

Band edge was performed with the EUT set to transmit at the highest power on low, high and all power stepped channels. 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 11g and 11be EHT20 26T for the OFDMA modulation scheme. Additionally multiple RU's (i.e. 11be EHT20 52T + 26T) were also investigated to ensure that any additional spurious emissions were not present in the multiple RU configuration. Individual RUs were found to be worst case.

All conducted testing, excluding power, was performed with the EUT operating on all channels at maximum, mid channel power. Therefore, only low, mid and high channels were necessary to test for OBW, 6dB, PSD, and Conducted Spurious/Bandedge emissions.

The EUT is intended to operate in only one orientation; therefore, all final radiated testing was performed with the EUT in this intended orientation of operation.

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 in the place of 802.11g and 802.11n HT20/40 as the highest power and narrowest bandwidth of these other modes, making it a worst-case mode. Additionally, PSD was performed on all 802.11be 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.

EUT has option of 2 displays, based on premeasurements, Display 1 was tested as worst-case.

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6.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Power Supply	Microsoft	PN: M1140030-007	0C130Z08EV337	NA
USB Drive	PNY	16GB	NA	NA
Headphones	Sony	NA	NA	NA
USB C to Ethernet	Tp-link	UE300C	2234082002838	NA
Switch	Linksys	EFAH05WVER.3	RA13048005308 EH1040 MA	NA

I/O CABLES

I/O Cable List						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	USB-C	2	USB-C	Shielded	>3m	EUT to Power Supply
2	Aux	1	Aux	Shielded	<3m	Headphones
3	USB-A	1	USB-A	Shielded	<3m	EUT to USB Drive
4	USB-C	2	USB-C	Shielded	>3m	USB to Ethernet adapter Ethernet is unshielded

TEST SETUP

Test software exercised the radio card.

SETUP DIAGRAM

Please refer to R14932101-EP1a for setup diagrams

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 C63.10-2013 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 C63.10-2013 Section 6.3 to 6.6

AC Power Line Conducted Emissions: ANSI C63.10-2013, 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				
**90418	Peak and Avg Power Sensor, 50MHz to 18GHz	Keysight Technologies	N1921A	2023-02-02	2024-02-02
90411	Spectrum Analyzer	Keysight Technologies	N9030A	2023-08-02	2024-08-02
90416	Spectrum Analyzer	Keysight Technologies	N9030A	2023-06-09	2024-06-30
179892	Environmental Meter	Fisher Scientific	15-077-963	2023-07-26	2024-07-31
135121	RF Power Meter	Keysight Technologies	N1911A	2023-07-12	2024-07-31
135125	Peak and Avg Power Sensor, 50MHz to 18GHz	Keysight Technologies	N1921A	2023-08-21	2024-08-21
90418	Peak and Avg Power Sensor, 50MHz to 18GHz	Keysight Technologies	N1921A	2023-08-21	2024-08-21
134477	RF Power Meter	Keysight Technologies	N1912A	2023-08-04	2024-08-04
SOFTEMI	Antenna Port Software	UL	Version 2022.8.16	NA	NA
**207726	Temp/Humid Chamber	Thermotron	SM-32-8200	2023-01-20	2024-01-20
	Additional Equipment used				
**226563	SMA Coaxial 10dB Attenuator 25MHz-18GHz	CentricRF	C18S2-10	2023-02-16	2024-02-16
**226552	SMA Coaxial 20dB Attenuator 25MHz-18GHz	CentricRF	C18S2-20	2023-02-16	2024-02-16
**226551	SMA Coaxial 20dB Attenuator 25MHz-18GHz	CentricRF	C18S2-20	2023-02-16	2024-02-16
**Pad A	SMA Coaxial 20dB Attenuator 25MHz-18GHz	CentricRF		2023-02-16	2024-02-29
**Pad B	SMA Coaxial 20dB Attenuator 25MHz-18GHz	CentricRF		2023-02-16	2024-02-29
CBL105	Micro-Coax UTiFLEX Cable Assembly, Low Loss	Carlisle Interconnect Technologies	UFB-197C-0-0160-300300	2023-02-17	2024-02-17
CBL031	SMA Male to SMA Male Cable Using PE-P141 Coax - 12"	Pasternack	Sucoflex 104PEA	2023-06-27	2024-06-27
CBL030	SMA Male to SMA Male Cable Using PE-P141 Coax - 12"	Pasternack	Sucoflex 104PEA	2023-06-27	2024-06-27
**CBL012	Micro-Coax UTiFLEX Cable Assembly, Low Loss	Carlisle Interconnect Technologies	UFB293C-0-2400-300300	2023-01-05	2024-01-05
**CBL091	Micro-Coax UTiFLEX Cable Assembly, Low Loss,40Ghz	Carlisle Interconnect Technologies	UFA147A-2-0360-200200	2023-02-17	2024-02-17

**Note: Testing on this equipment was performed prior to the equipment's calibration date. Therefore, at the time of testing, all equipment was in calibration.

Test Equipment Used - Line-Conducted Emissions – Voltage (Morrisville – Conducted 1)

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
CBL087	Coax cable, RG223, N-male to BNC-male, 20-ft.	Pasternack	PE3W06143-240	2023-04-04	2024-04-04
179892	Environmental Meter	Fisher Scientific	15-077-963	2023-07-26	2024-06-31
80391	LISN, 50-ohm/50-uH, 250uH 2-conductor, 25A	Fischer Custom Com.	FCC-LISN-50/250-25-2-01	2023-07-31	2024-07-31
75141	EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESCI 7	2023-08-01	2024-08-01
52859	Transient Limiter, 0.009-100MHz	Electro-Metrics	EM-7600	2023-04-04	2024-04-04
PS214	AC Power Source	Elgar	CW2501M	NA	NA
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
91432	LISN, 50-ohm/50-uH, 2-conductor, 25A (For support gear only.)	Solar Electronics	8012-50-R-24-BNC	NA	NA

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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				
206211	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2023-04-06	2024-04-06
	Gain-Loss Chains				
91979	Gain-loss string: 1-18GHz	Various	Various	2023-05-16	2024-05-16
	Receiver & Software				
**206496	Spectrum Analyzer	Rohde & Schwarz	ESW44	2023-03-24	2024-03-24
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 prior to the equipment's calibration date. Therefore, at the time of testing, all equipment was in calibration.

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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.
	1-18 GHz				
89509	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2023-05-23	2025-05-23
	18-40 GHz				
204704	Horn Antenna, 18-26.5GHz	Com-Power	AH-826	2023-07-20	2025-07-20
	Gain-Loss Chains				
207640	Gain-loss string: 1-18GHz	Various	Various	2023-05-17	2024-05-17
225795	Gain-loss string: 18-40GHz	Various	Various	2023-05-17	2024-05-17
	Receiver & Software				
197955	Spectrum Analyzer	Rohde & Schwarz	ESW44	2023-04-10	2024-04-10
90416	Spectrum Analyzer	Keysight	N9030A	2023-06-09	2024-06-30
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

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Test Equipment Used - Radiated Disturbance Emissions Test Equipment (Morrisville – Chamber 2)

Equip. ID	Description	Manufacturer/Brand	Model Number	Last Cal.	Next Cal.
	0.009-30MHz				
**135144	Active Loop Antenna	ETS-Lindgren	6502	2023-01-17	2024-01-17
	30-1000 MHz				
**85717	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB1	2023-03-13	2024-03-13
	Gain-Loss Chains				
91975	Gain-loss string: 0.009-30MHz	Various	Various	2023-06-06	2024-06-06
91978	Gain-loss string: 25-1000MHz	Various	Various	2023-06-06	2024-06-06
	Receiver & Software				
**197954	Spectrum Analyzer	Rohde & Schwarz	ESW44	2023-02-02	2024-02-02
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
	Additional Equipment used				
200540	Environmental Meter	Fisher Scientific	15-077-963	2023-07-19	2025-07-19

**Note: Testing on this equipment was performed prior to the equipment's calibration date. Therefore, at the time of testing, all equipment was in calibration.

9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method.

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
2.4GHz Band						
802.11b 2TX	0.655	0.669	0.979	97.94	0.18	1.526
802.11g 2TX	2.095	2.115	0.991	99.05	0.00	0.010
802.11n HT20 2TX	5.328	5.348	0.996	99.63	0.00	0.010
802.11n HT40 2TX	5.366	5.404	0.993	99.30	0.00	0.010
802.11be EHT20 26T 2TX	5.087	5.112	0.995	99.51	0.00	0.010
802.11be EHT20 52T 2TX	5.069	5.100	0.994	99.39	0.00	0.010
802.11be EHT20 52T + 26T 2TX	5.059	5.084	0.995	99.51	0.00	0.010
802.11be EHT20 106T 2TX	4.766	4.793	0.994	99.44	0.00	0.010
802.11be EHT20 106T + 26T 2TX	4.816	4.841	0.995	99.48	0.00	0.010
802.11be EHT20 242T 2TX	4.667	4.692	0.995	99.47	0.00	0.010
802.11be EHT40 484T 2TX	1.261	1.285	0.981	98.13	0.00	0.010

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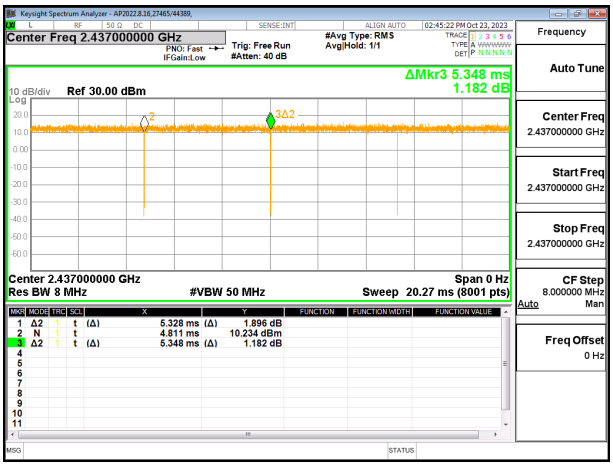
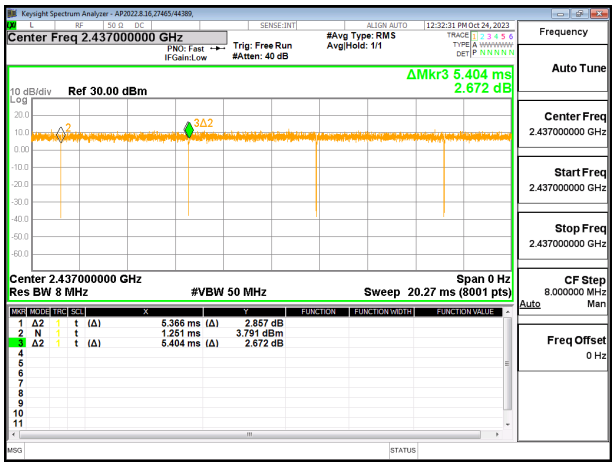
DUTY CYCLE PLOTS

DUTY CYCLE 802.11b MODE, 2TX

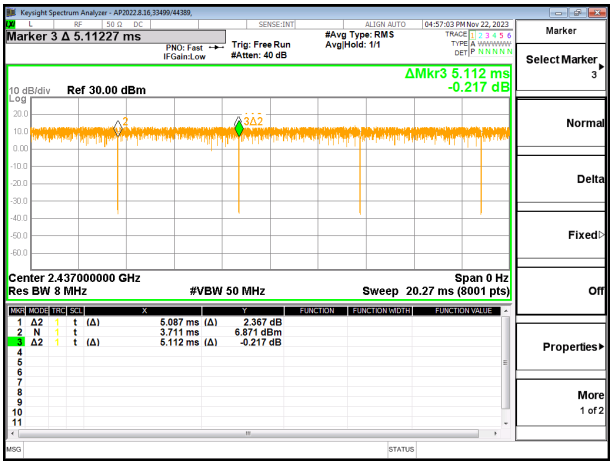
DUTY CYCLE 802.11g MODE, 2TX



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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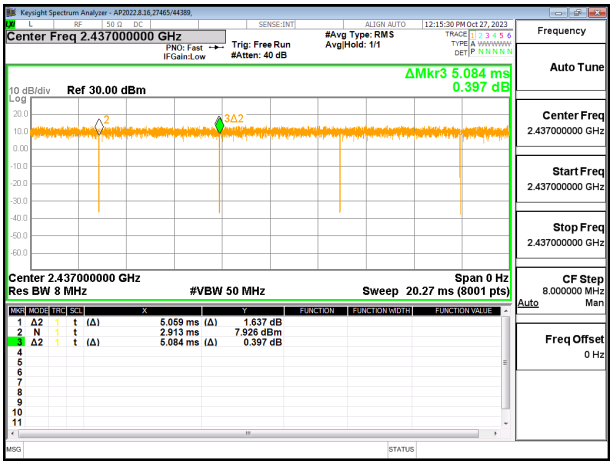
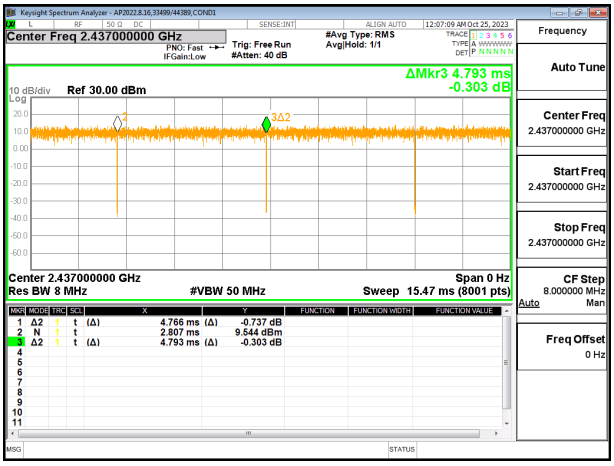


DUTY CYCLE 802.11be EHT20 52T + 26T MODE, 2TX



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.

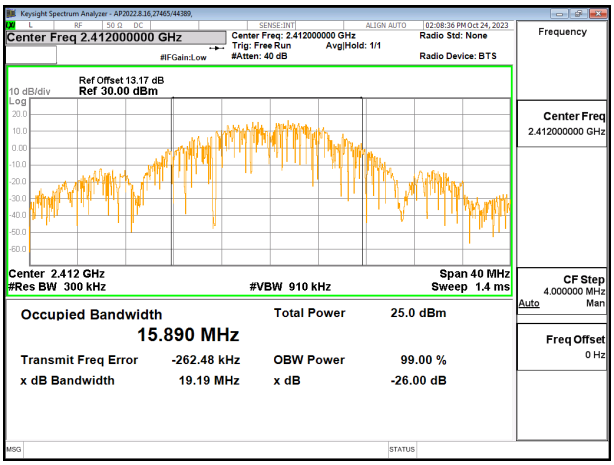
RESULTS

9.2.1. 802.11b MODE

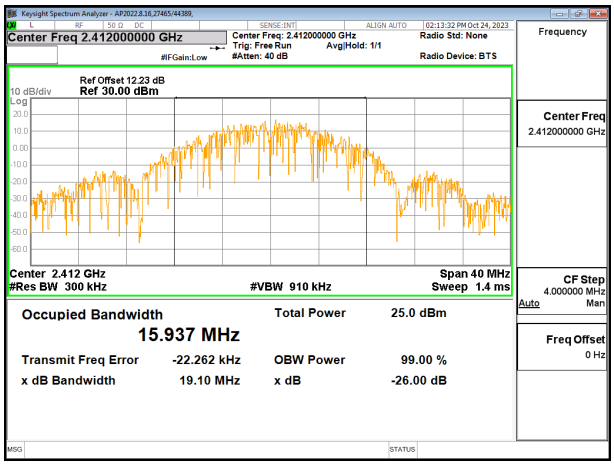
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 1	2412	15.890	15.937
Mid 6	2437	14.554	15.019
High 13	2472	15.532	15.121

LOW CHANNEL 1



LOW CHANNEL 1 CHAIN 0



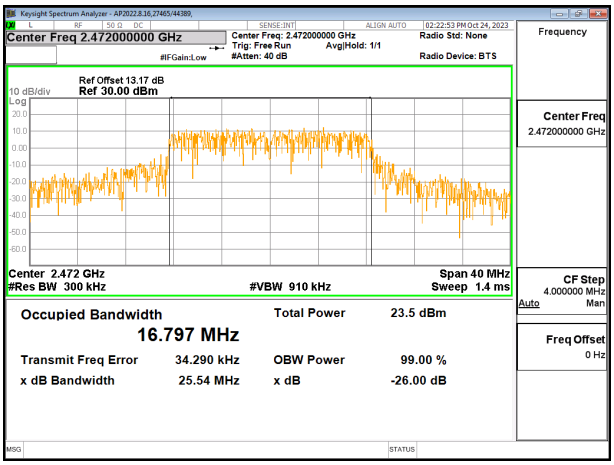
LOW CHANNEL 1 CHAIN 1

9.2.2. 802.11g MODE

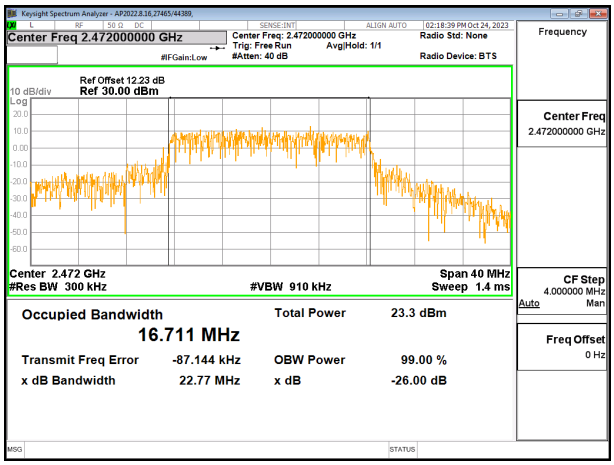
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 1	2412	16.632	16.675
Mid 6	2437	16.658	16.770
High 13	2472	16.797	16.711

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



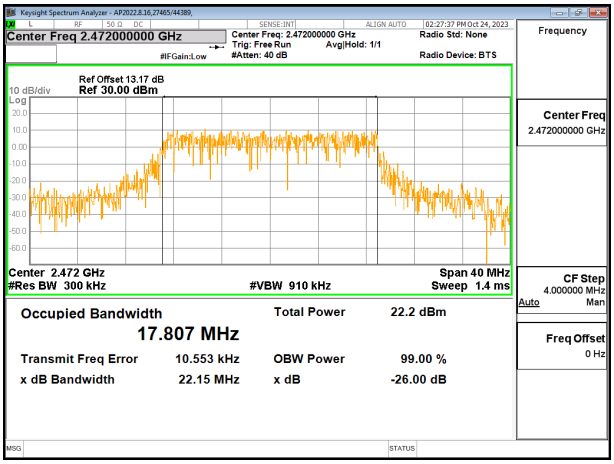
HIGH CHANNEL 13 CHAIN 1

9.2.3. 802.11n HT20 MODE

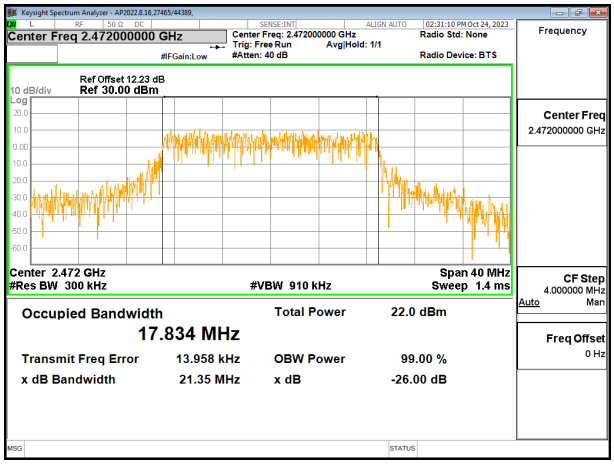
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 1	2412	17.718	17.773
Mid 6	2437	17.702	17.796
High 13	2472	17.807	17.834

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



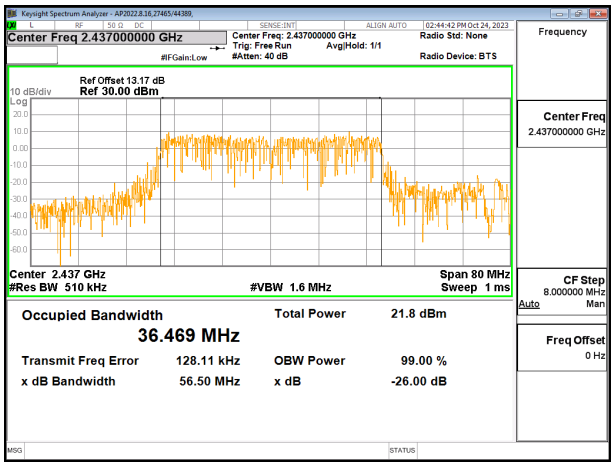
HIGH CHANNEL 13 CHAIN 1

9.2.4. 802.11n HT40 MODE

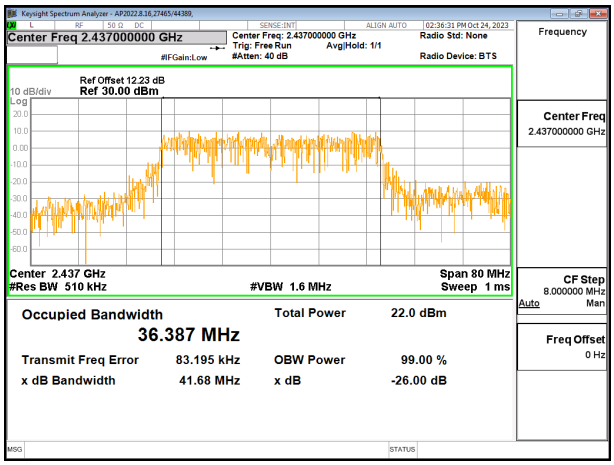
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 3	2422	36.419	36.376
Mid 6	2437	36.469	36.387
High 11	2462	36.397	36.290

MID CHANNEL 6



MID CHANNEL 6 CHAIN 0



MID CHANNEL 6 CHAIN 1

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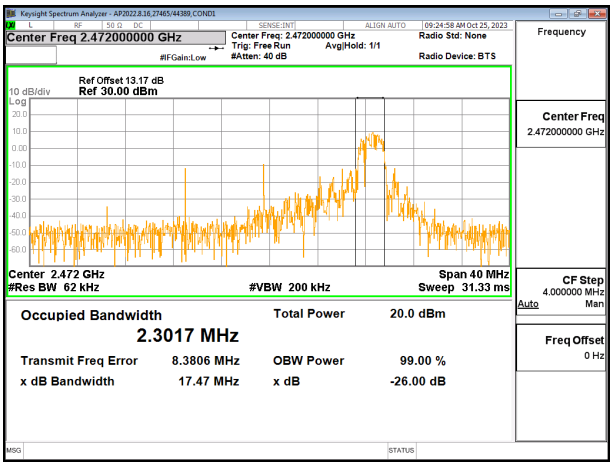
9.2.5. 802.11be EHT20 26T MODE

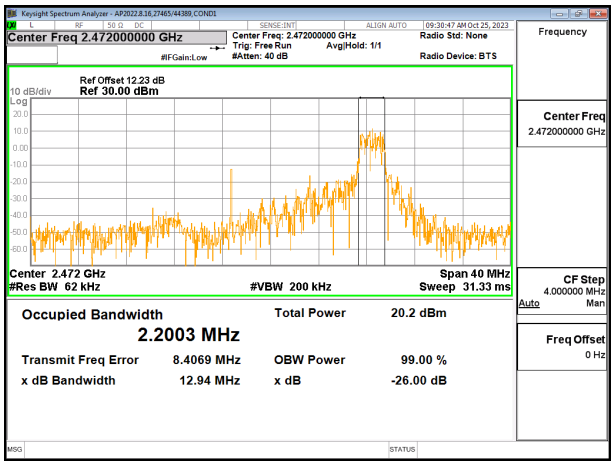
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 1	2412	2.2277	2.2192
Mid 6	2437	2.1529	2.1721
High 13	2472	2.3017	2.2003

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



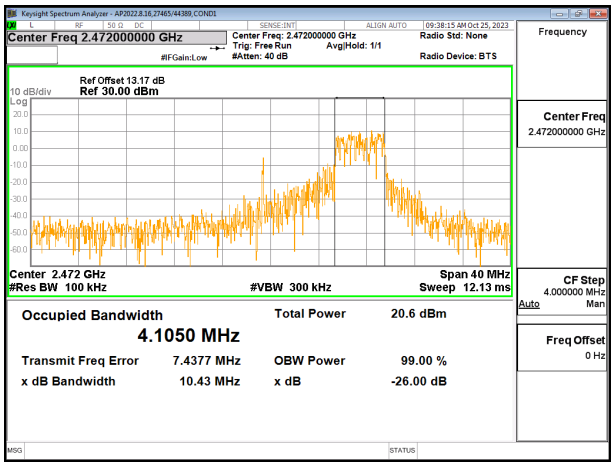
HIGH CHANNEL 13 CHAIN 1

9.2.6. 802.11be EHT20 52T MODE

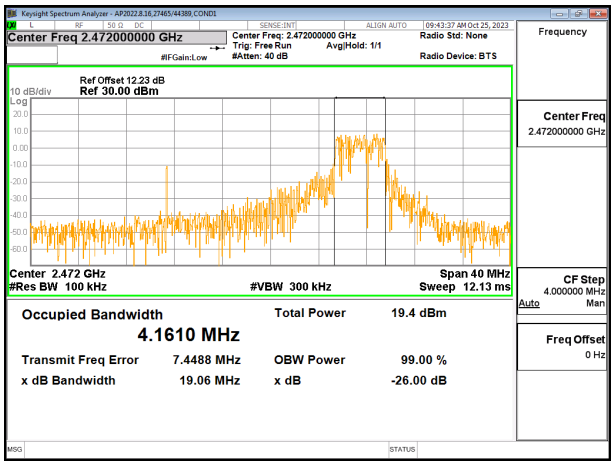
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 1	2412	4.1326	4.0682
Mid 6	2437	4.1593	4.1000
High 13	2472	4.1050	4.1610

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



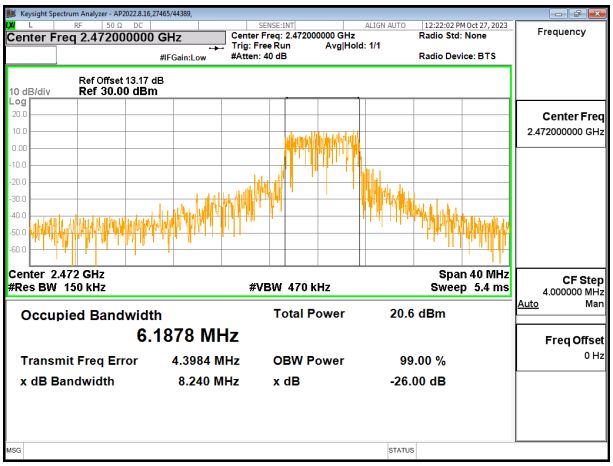
HIGH CHANNEL 13 CHAIN 1

9.2.7. 802.11be EHT20 52T + 26T MODE

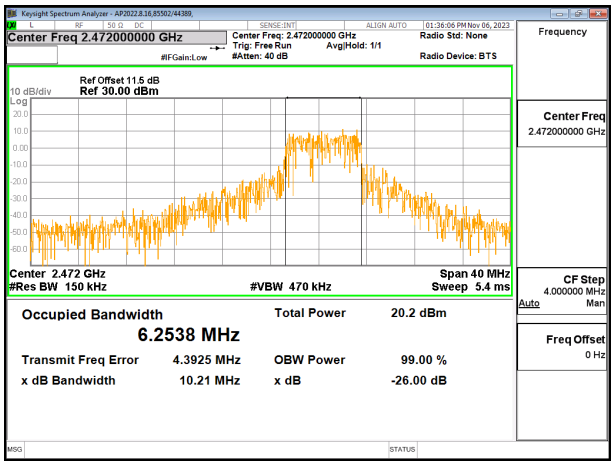
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 1	2412	6.1886	6.1976
Mid 6	2437	6.2256	6.1570
High 13	2472	6.1878	6.2538

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

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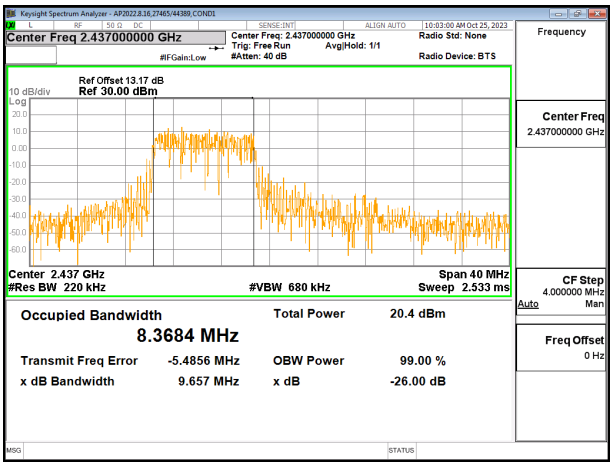
9.2.8. 802.11be EHT20 106T MODE

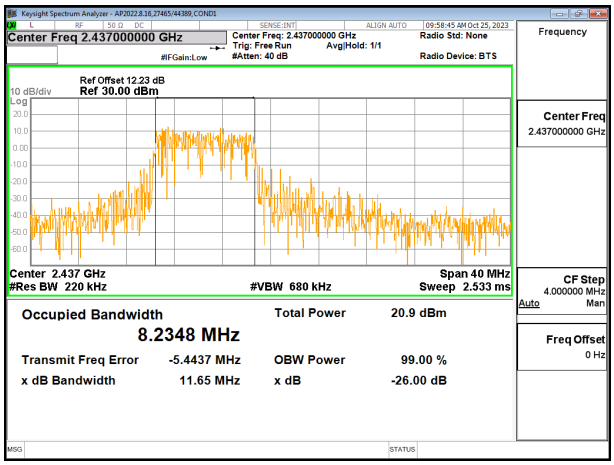
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 1	2412	8.2392	8.3052
Mid 6	2437	8.3684	8.2348
High 13	2472	8.2944	8.3530

MID CHANNEL 6



MID CHANNEL 6 CHAIN 0



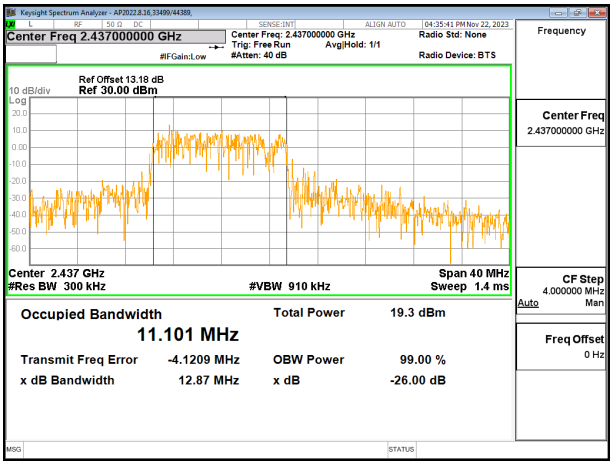
MID CHANNEL 6 CHAIN 1

9.2.9. 802.11be EHT20 106T + 26T MODE

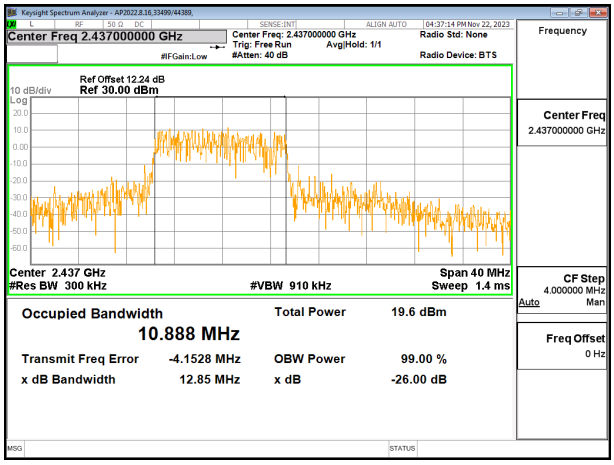
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 1	2412	10.838	10.895
Mid 6	2437	11.101	10.888
High 13	2472	10.926	10.937

MID CHANNEL 6



MID CHANNEL 6 CHAIN 0



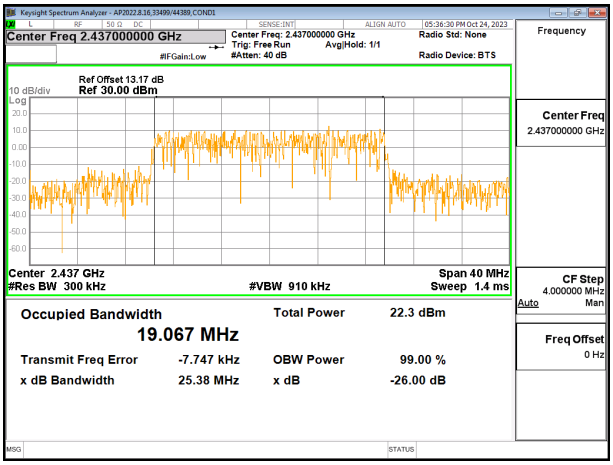
MID CHANNEL 6 CHAIN 1

9.2.10. 802.11be EHT20 242T MODE

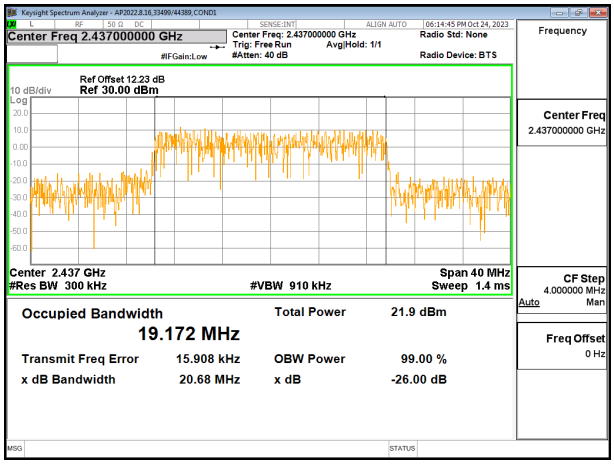
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 1	2412	19.001	18.903
Mid 6	2437	19.067	19.172
High 13	2472	19.125	19.155

MID CHANNEL 6



MID CHANNEL 6 CHAIN 0



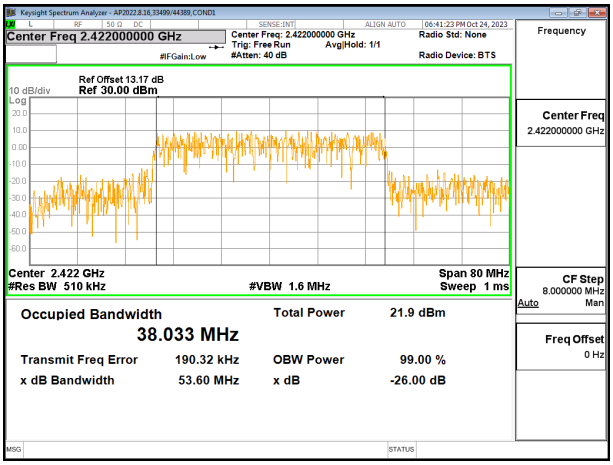
MID CHANNEL 6 CHAIN 1

9.2.11. 802.11be EHT40 484T MODE

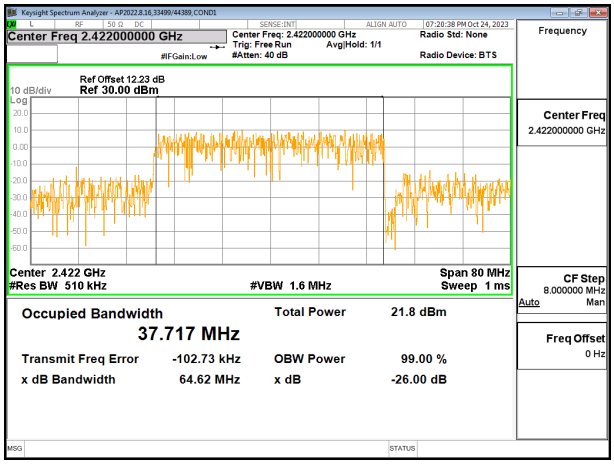
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 3	2422	38.033	37.717
Mid 6	2437	38.018	37.968
High 11	2462	37.835	37.906

LOW CHANNEL 3



LOW CHANNEL 3 CHAIN 0



LOW CHANNEL 3 CHAIN 1

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.

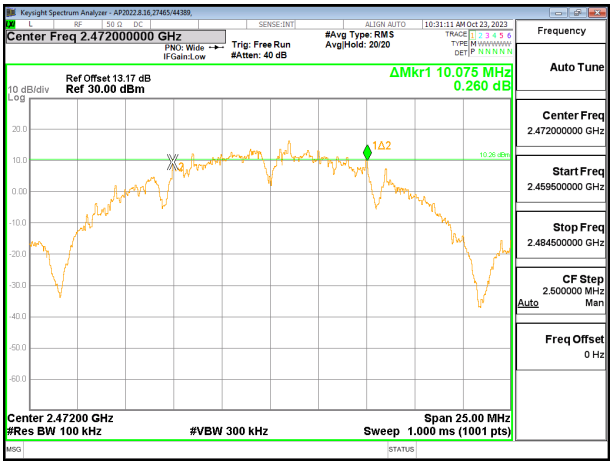
RESULTS

9.3.1. 802.11b MODE

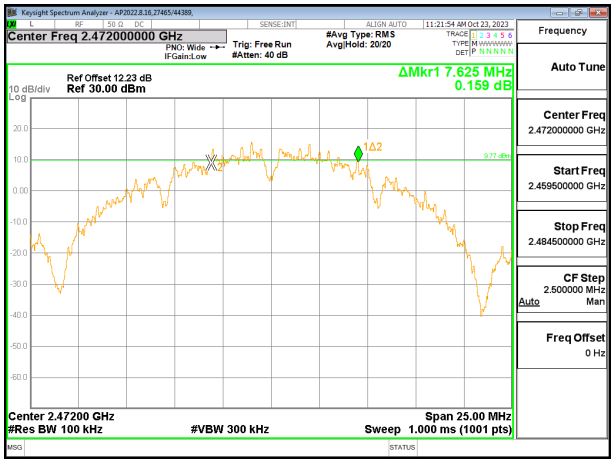
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	9.600	8.050	0.5
Mid 6	2437	9.075	9.125	0.5
High 13	2472	10.075	7.625	0.5

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

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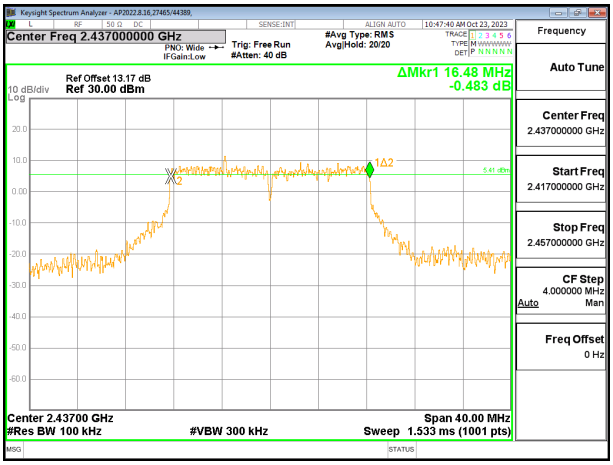
9.3.2. 802.11g MODE

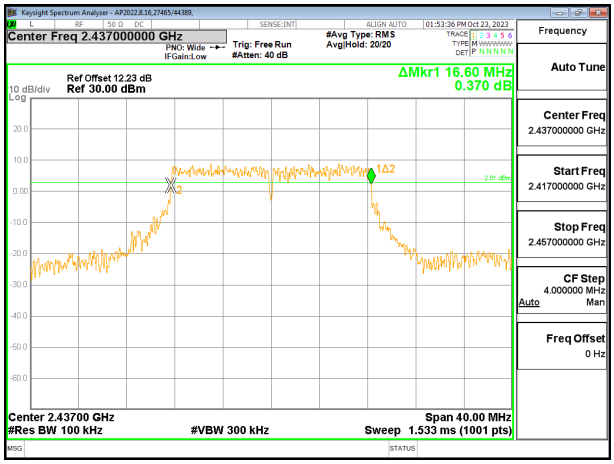
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	16.44	16.44	0.5
Mid 6	2437	16.48	16.60	0.5
High 13	2472	16.40	16.48	0.5

MID CHANNEL 6



MID CHANNEL 6 CHAIN 0



MID CHANNEL 6 CHAIN 1

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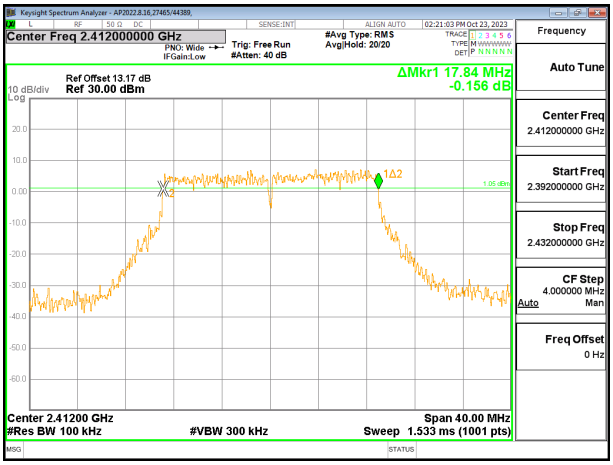
9.3.3. 802.11n HT20 MODE

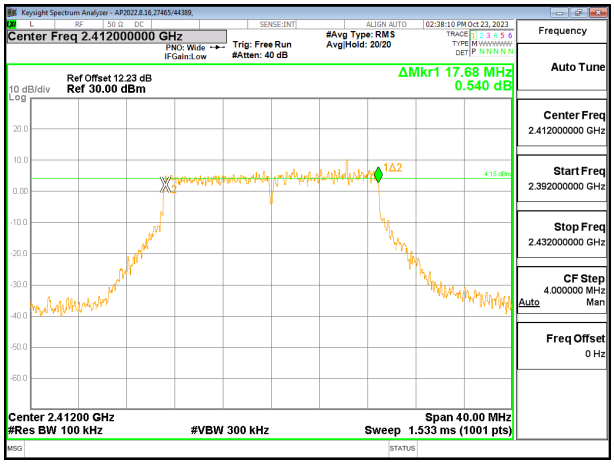
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	17.84	17.68	0.5
Mid 6	2437	17.64	17.64	0.5
High 13	2472	17.84	17.68	0.5

LOW CHANNEL 1



LOW CHANNEL 1 CHAIN 0



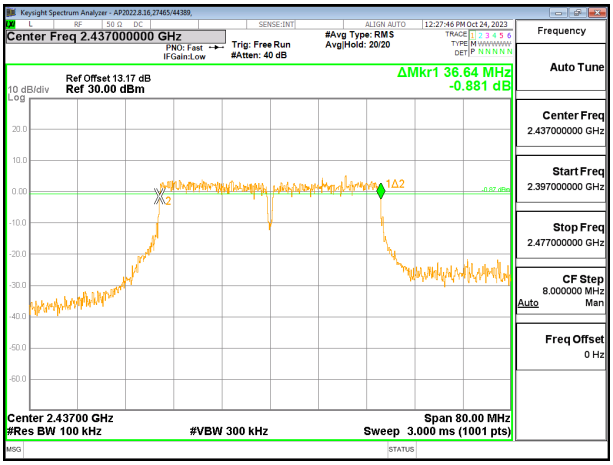
LOW CHANNEL 1 CHAIN 1

9.3.4. 802.11n HT40 MODE

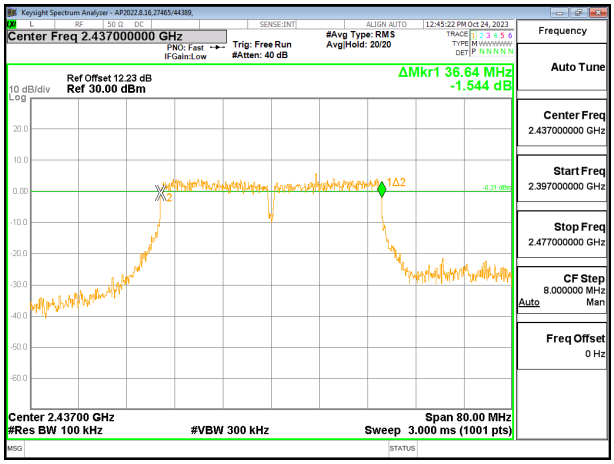
2TX CHAIN 0 + CHAIN 1 MODE

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

MID CHANNEL 6



MID CHANNEL 6 CHAIN 0



MID CHANNEL 6 CHAIN 1

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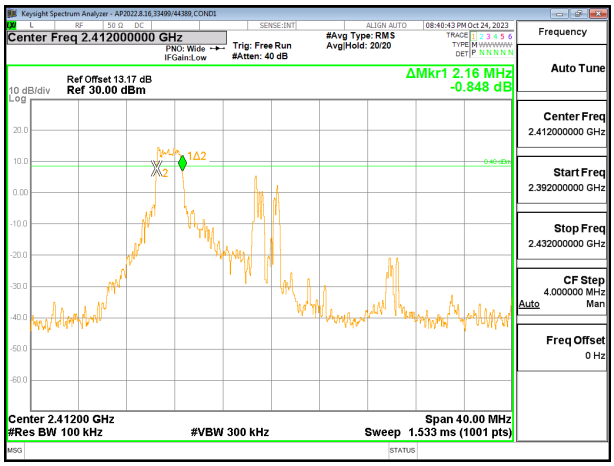
9.3.5. 802.11be EHT20 26T MODE

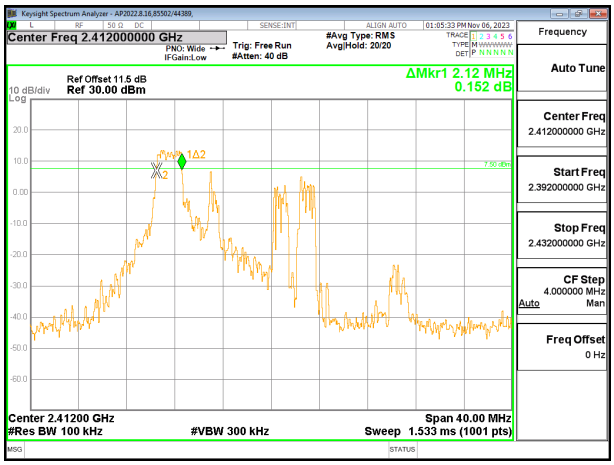
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	2.16	2.12	0.5
Mid 6	2437	2.04	2.04	0.5
High 13	2472	2.08	2.12	0.5

LOW CHANNEL 1



LOW CHANNEL 1 CHAIN 0



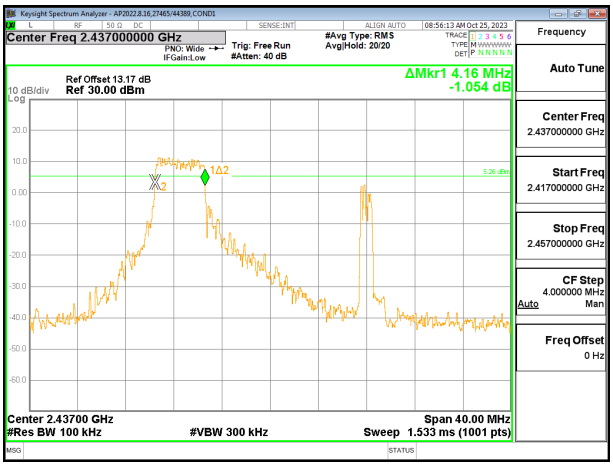
LOW CHANNEL 1 CHAIN 1

9.3.6. 802.11be EHT20 52T MODE

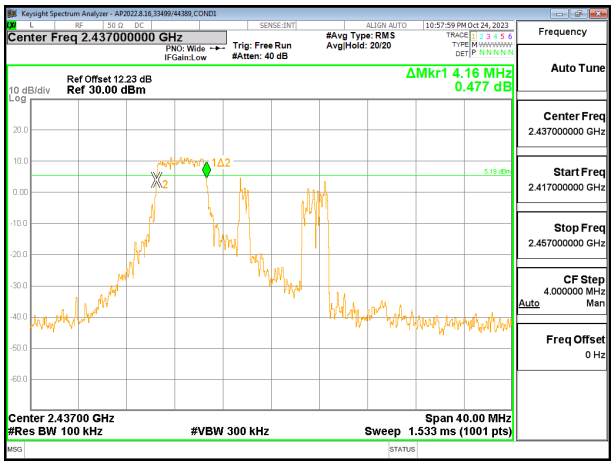
2TX CHAIN 0 + CHAIN 1 MODE

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

MID CHANNEL 6



MID CHANNEL 6 CHAIN 0



MID CHANNEL 6 CHAIN 1

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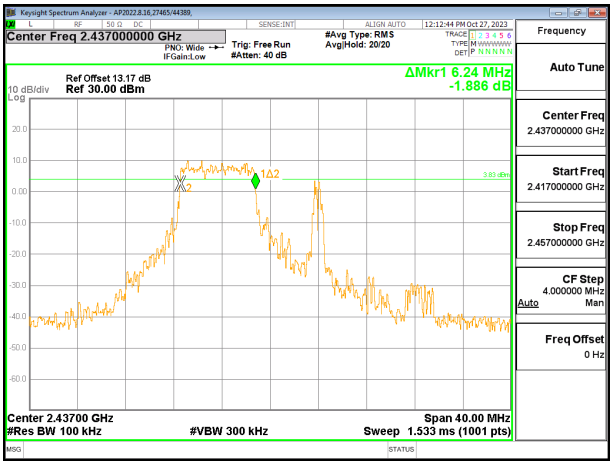
9.3.7. 802.11be EHT20 52T + 26T MODE

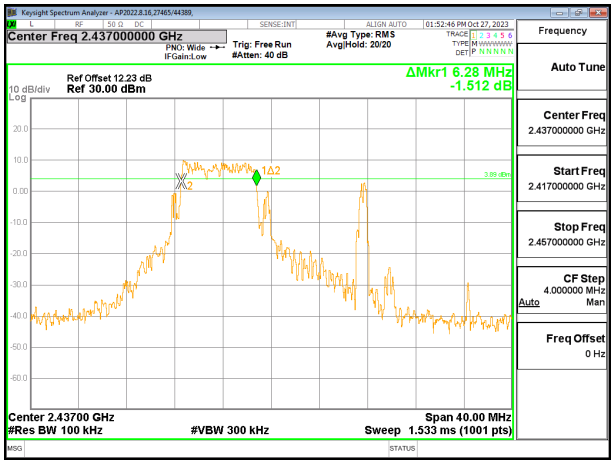
2TX CHAIN 0 + CHAIN 1 MODE

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

MID CHANNEL 6



MID CHANNEL 6 CHAIN 0



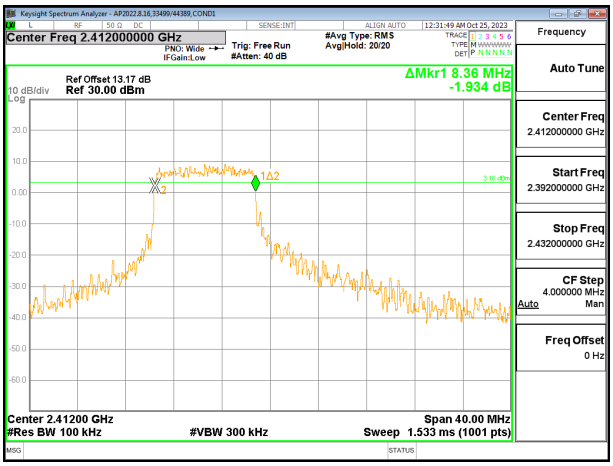
MID CHANNEL 6 CHAIN 1

9.3.8. 802.11be EHT20 106T MODE

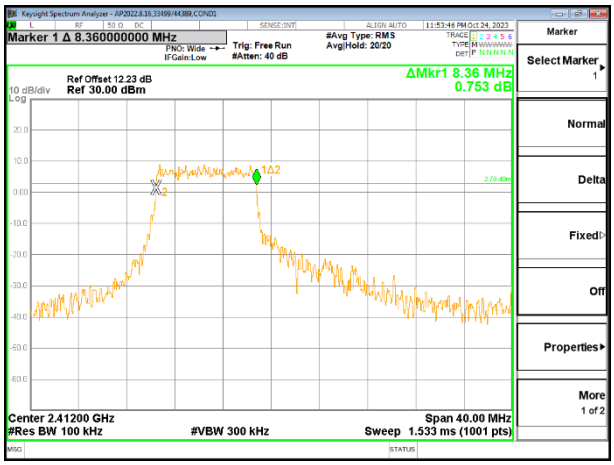
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	8.36	8.36	0.5
Mid 6	2437	8.32	8.36	0.5
High 13	2472	8.28	8.36	0.5

LOW CHANNEL 1



LOW CHANNEL 1 CHAIN 0



LOW CHANNEL 1 CHAIN 1

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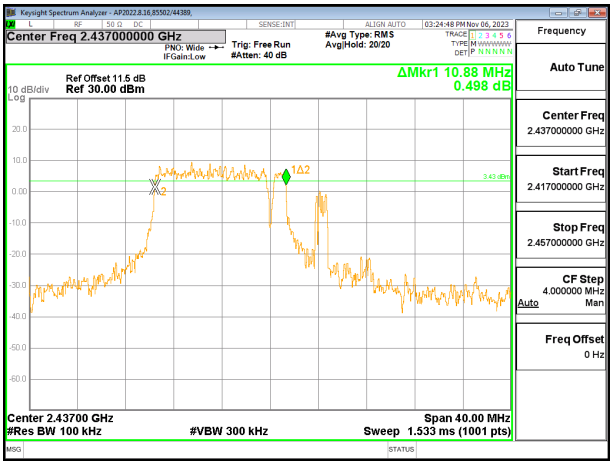
9.3.9. 802.11be EHT20 106T + 26T MODE

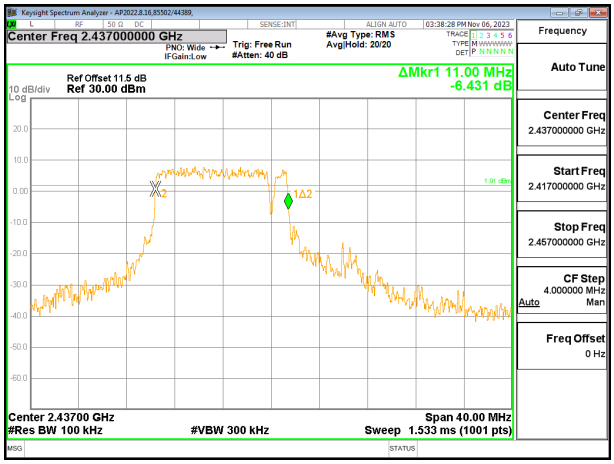
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	10.92	10.96	0.5
Mid 6	2437	10.88	11.00	0.5
High 13	2472	10.96	10.92	0.5

MID CHANNEL 6



MID CHANNEL 6 CHAIN 0



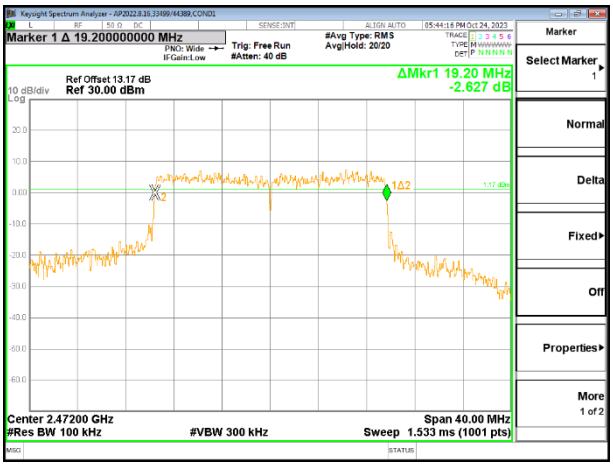
MID CHANNEL 6 CHAIN 1

9.3.10. 802.11be EHT20 242T MODE

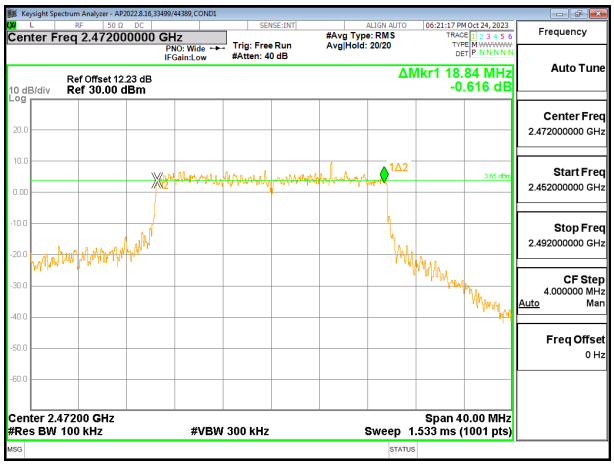
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	19.00	19.16	0.5
Mid 6	2437	19.08	18.96	0.5
High 13	2472	19.20	18.84	0.5

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



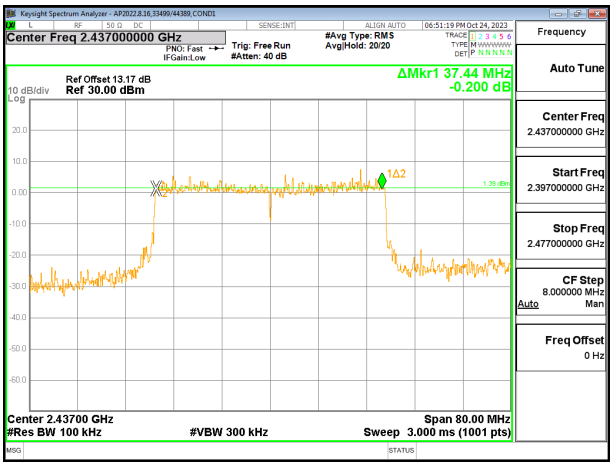
HIGH CHANNEL 13 CHAIN 1

9.3.11. 802.11be EHT20 484T MODE

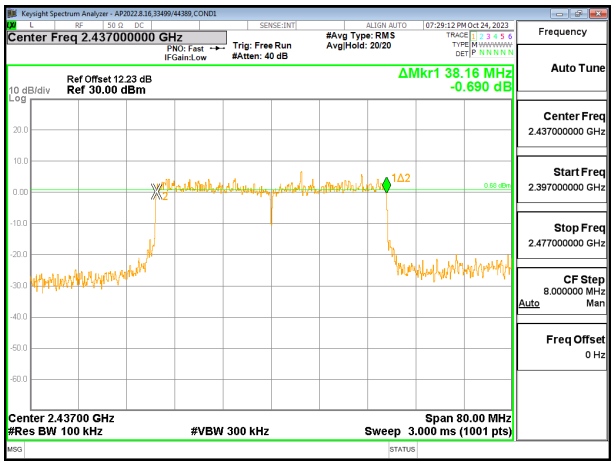
2TX CHAIN 0 + CHAIN 1 MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 3	2422	37.20	38.08	0.5
Mid 6	2437	37.44	38.16	0.5
High 11	2462	37.20	38.16	0.5

MID CHANNEL 6



MID CHANNEL 6 CHAIN 0



MID CHANNEL 6 CHAIN 1

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 23.51dB (including 20.04 dB pad, 1.32 dB EUT cable and 2.15 dB test cable) was entered as an offset for chain 0 and 22.45dB (19.89 dB pad, 1.32 dB EUT cable, and 1.24 dB test cable) was entered as an offset for chain 1, in the power meter to allow for a peak reading of power.

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:

Band (GHz)	Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)	Correlated Chains Directional Gain (dBi)
2.4	4.92	4.68	3.84	6.85

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RESULTS

9.4.1. 802.11b MODE

2TX Chain 0 + Chain 1 MODE

Test Engineer:	27669
Test Date:	2023-11-21, 2024-01-29

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	3.84	30.00	36	30.00
Low 2	2417	3.84	30.00	36	30.00
Low 3	2422	3.84	30.00	36	30.00
Mid 6	2437	3.84	30.00	36	30.00
High 9	2452	3.84	30.00	36	30.00
High 10	2457	3.84	30.00	36	30.00
High 11	2462	3.84	30.00	36	30.00
High 12	2467	3.84	30.00	36	30.00
High 13	2472	3.84	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	21.22	21.29	24.27	30.00	-5.73
Low 2	2417	23.25	23.46	26.37	30.00	-3.63
Low 3	2422	25.40	25.52	28.47	30.00	-1.53
Mid 6	2437	25.23	25.32	28.29	30.00	-1.71
High 9	2452	25.23	25.41	28.33	30.00	-1.67
High 10	2457	22.22	22.69	25.47	30.00	-4.53
High 11	2462	22.22	22.73	25.49	30.00	-4.51
High 12	2467	14.52	15.12	17.84	30.00	-12.16
High 13	2472	11.22	11.60	14.42	30.00	-15.58

9.4.2. 802.11g MODE

2TX Chain 0 + Chain 1 MODE

Test Engineer:	27669
Test Date:	2023-11-21, 2024-01-30

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	3.84	30.00	36	30.00
Low 2	2417	3.84	30.00	36	30.00
Low 3	2422	3.84	30.00	36	30.00
Mid 6	2437	3.84	30.00	36	30.00
High 9	2452	3.84	30.00	36	30.00
High 10	2457	3.84	30.00	36	30.00
High 11	2462	3.84	30.00	36	30.00
High 12	2467	3.84	30.00	36	30.00
High 13	2472	3.84	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	21.20	21.18	24.20	30.00	-5.80
Low 2	2417	25.15	25.32	28.25	30.00	-1.75
Low 3	2422	26.33	26.41	29.38	30.00	-0.62
Mid 6	2437	26.11	26.01	29.07	30.00	-0.93
High 9	2452	26.21	26.14	29.19	30.00	-0.81
High 10	2457	24.32	24.96	27.66	30.00	-2.34
High 11	2462	19.36	20.36	22.89	30.00	-7.11
High 12	2467	18.03	19.20	21.66	30.00	-8.34
High 13	2472	1.50	2.93	5.29	30.00	-24.71

9.4.3. 802.11n HT20 MODE

2TX Chain 0 + Chain 1 MODE

Test Engineer:	27669
Test Date:	2023-11-21, 2024-01-29

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	3.84	30.00	36	30.00
Low 2	2417	3.84	30.00	36	30.00
Low 3	2422	3.84	30.00	36	30.00
Mid 6	2437	3.84	30.00	36	30.00
High 9	2452	3.84	30.00	36	30.00
High 10	2457	3.84	30.00	36	30.00
High 11	2462	3.84	30.00	36	30.00
High 12	2467	3.84	30.00	36	30.00
High 13	2472	3.84	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	20.14	20.52	23.34	30.00	-6.66
Low 2	2417	21.02	21.23	24.14	30.00	-5.86
Low 3	2422	24.08	24.31	27.21	30.00	-2.79
Mid 6	2437	23.66	24.40	27.06	30.00	-2.94
High 9	2452	24.05	24.29	27.18	30.00	-2.82
High 10	2457	22.65	23.83	26.29	30.00	-3.71
High 11	2462	18.36	19.51	21.99	30.00	-8.01
High 12	2467	18.20	19.06	21.66	30.00	-8.34
High 13	2472	1.70	2.43	5.09	30.00	-24.91

9.4.4. 802.11n HT40 MODE

2TX Chain 0 + Chain 1 MODE

Test Engineer:	27669
Test Date:	2024-01-29

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 3	2422	3.84	30.00	36	30.00
Mid 6	2437	3.84	30.00	36	30.00
High 8	2447	3.84	30.00	36	30.00
High 9	2452	3.84	30.00	36	30.00
High 10	2457	3.84	30.00	36	30.00
High 11	2462	3.84	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	21.78	22.91	25.39	30.00	-4.61
Mid 6	2437	21.74	22.36	25.07	30.00	-4.93
High 8	2447	20.35	20.83	23.61	30.00	-6.39
High 9	2452	19.04	20.30	22.73	30.00	-7.27
High 10	2457	15.53	16.53	19.07	30.00	-10.93
High 11	2462	4.97	5.93	8.49	30.00	-21.51

9.4.5. 802.11be EHT20 26T MODE

2TX Chain 0 + Chain 1 MODE

Test Engineer:	27669, 33499/84740
Test Date:	2023-11-21, 2024-01-29, 2024-02-06

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	3.84	30.00	36	30.00
Mid 6	2437	3.84	30.00	36	30.00
High 11	2462	3.84	30.00	36	30.00
High 12	2467	3.84	30.00	36	30.00
High 13	2472	3.84	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	25.85	25.76	28.82	30.00	-1.18
Mid 6	2437	25.95	26.06	29.01	30.00	-0.99
High 11	2462	26.23	26.41	29.33	30.00	-0.67
High 12	2467	24.48	25.02	27.77	30.00	-2.23
High 13	2472	-2.27	-2.33	0.71	30.00	-29.29

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9.4.6. 802.11be EHT20 52T MODE

2TX Chain 0 + Chain 1 MODE

Test Engineer:	27669, 33499/84740
Test Date:	2023-11-21, 2024-01-29, 2024-02-06

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	3.84	30.00	36	30.00
Mid 6	2437	3.84	30.00	36	30.00
High 10	2457	3.84	30.00	36	30.00
High 11	2462	3.84	30.00	36	30.00
High 12	2467	3.84	30.00	36	30.00
High 13	2472	3.84	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	26.30	25.37	28.87	30.00	-1.13
Mid 6	2437	26.65	25.73	29.23	30.00	-0.77
High 10	2457	26.03	26.48	29.27	30.00	-0.73
High 11	2462	25.95	26.00	28.98	30.00	-1.02
High 12	2467	23.78	24.45	27.13	30.00	-2.87
High 13	2472	-1.50	-1.27	1.63	30.00	-28.37

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9.4.7. 802.11be EHT20 52T + 26T MODE

2TX Chain 0 + Chain 1 MODE

Test Engineer:	27669, 33499/84740
Test Date:	2023-11-21, 2024-01-29, 2024-02-06

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	3.84	30.00	36	30.00
Mid 6	2437	3.84	30.00	36	30.00
High 10	2457	3.84	30.00	36	30.00
High 11	2462	3.84	30.00	36	30.00
High 12	2467	3.84	30.00	36	30.00
High 13	2472	3.84	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	26.26	25.45	28.89	30.00	-1.11
Mid 6	2437	26.50	25.65	29.11	30.00	-0.89
High 10	2457	26.09	26.52	29.32	30.00	-0.68
High 11	2462	25.37	26.02	28.72	30.00	-1.28
High 12	2467	24.17	24.45	27.32	30.00	-2.68
High 13	2472	-2.01	-1.54	1.24	30.00	-28.76

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9.4.8. 802.11be EHT20 106T MODE

2TX Chain 0 + Chain 1 MODE

Test Engineer:	27669, 33499/84740
Test Date:	2023-11-21, 2024-01-29, 2024-02-06

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	3.84	30.00	36	30.00
Mid 6	2437	3.84	30.00	36	30.00
High 10	2457	3.84	30.00	36	30.00
High 11	2462	3.84	30.00	36	30.00
High 12	2467	3.84	30.00	36	30.00
High 13	2472	3.84	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	26.37	25.48	28.96	30.00	-1.04
Mid 6	2437	26.72	26.01	29.39	30.00	-0.61
High 10	2457	26.15	25.61	28.90	30.00	-1.10
High 11	2462	25.22	25.77	28.51	30.00	-1.49
High 12	2467	21.40	21.96	24.70	30.00	-5.30
High 13	2472	2.92	6.52	8.09	30.00	-21.91

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9.4.9. 802.11be EHT20 106T + 26T MODE

2TX Chain 0 + Chain 1 MODE

Test Engineer:	27669, 33499/84740
Test Date:	2023-11-21, 2024-01-29, 2024-02-06

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	3.84	30.00	36	30.00
Mid 6	2437	3.84	30.00	36	30.00
High 10	2457	3.84	30.00	36	30.00
High 11	2462	3.84	30.00	36	30.00
High 12	2467	3.84	30.00	36	30.00
High 13	2472	3.84	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	26.72	25.97	29.37	30.00	-0.63
Mid 6	2437	26.85	26.03	29.47	30.00	-0.53
High 10	2457	26.41	25.44	28.96	30.00	-1.04
High 11	2462	25.53	25.85	28.70	30.00	-1.30
High 12	2467	21.53	22.04	24.80	30.00	-5.20
High 13	2472	2.81	3.40	6.13	30.00	-23.87

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9.4.10. 802.11be EHT20 242T MODE

2TX Chain 0 + Chain 1 MODE

Test Engineer:	27669
Test Date:	2023-11-21, 2024-01-29

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	3.84	30.00	36	30.00
Low 2	2417	3.84	30.00	36	30.00
Low 3	2422	3.84	30.00	36	30.00
Mid 6	2437	3.84	30.00	36	30.00
High 10	2457	3.84	30.00	36	30.00
High 11	2462	3.84	30.00	36	30.00
High 12	2467	3.84	30.00	36	30.00
High 13	2472	3.84	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	22.51	22.72	25.63	30.00	-4.37
Low 2	2417	23.65	23.87	26.77	30.00	-3.23
Low 3	2422	26.18	26.62	29.41	30.00	-0.59
Mid 6	2437	26.09	26.20	29.16	30.00	-0.84
High 10	2457	25.11	25.74	28.45	30.00	-1.55
High 11	2462	20.96	22.57	24.85	30.00	-5.15
High 12	2467	20.47	21.80	24.19	30.00	-5.81
High 13	2472	3.14	3.35	6.26	30.00	-23.74

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9.4.11. 802.11be EHT40 484T MODE

2TX Chain 0 + Chain 1 MODE

Test Engineer:	27669
Test Date:	2024-01-29

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 3	2422	3.84	30.00	36	30.00
Mid 6	2437	3.84	30.00	36	30.00
High 8	2447	3.84	30.00	36	30.00
High 9	2452	3.84	30.00	36	30.00
High 10	2457	3.84	30.00	36	30.00
High 11	2462	3.84	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	23.96	24.29	27.14	30.00	-2.86
Mid 6	2437	24.31	26.54	28.57	30.00	-1.43
High 8	2447	22.40	22.73	25.58	30.00	-4.42
High 9	2452	21.63	22.10	24.89	30.00	-5.11
High 10	2457	17.56	18.53	21.08	30.00	-8.92
High 11	2462	6.52	7.35	9.96	30.00	-20.04

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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 23.51dB (including 20.04 dB pad, 1.32 dB EUT cable and 2.15 dB test cable) was entered as an offset for chain 0 and 22.45dB (19.89 dB pad, 1.32 dB EUT cable, and 1.24 dB test cable) was entered as an offset for chain 1, in the power meter to allow for a gated average reading of power.

RESULTS

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9.5.1. 802.11b MODE

2TX Chain 0 + Chain 1 MODE

Test Engineer:	27669
Test Date:	2023-11-21, 2024-01-29

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	18.26	18.22	21.25
Low 2	2417	20.41	20.42	23.43
Low 3	2422	22.69	22.77	25.74
Mid 6	2437	22.61	22.68	25.66
High 9	2452	22.56	22.86	25.72
High 10	2457	19.25	19.54	22.41
High 11	2462	19.26	19.61	22.45
High 12	2467	11.55	11.96	14.77
High 13	2472	8.33	8.66	11.51

9.5.2. 802.11g MODE

2TX Chain 0 + Chain 1 MODE

Test Engineer:	27669
Test Date:	2023-11-21, 2024-01-30

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	15.30	18.25
Low 2	2417	19.40	19.43	22.43
Low 3	2422	20.27	20.31	23.30
Mid 6	2437	20.19	20.22	23.22
High 9	2452	20.23	20.40	23.33
High 10	2457	18.43	18.63	21.54
High 11	2462	13.60	13.94	16.78
High 12	2467	12.14	12.47	15.32
High 13	2472	-4.49	-4.06	-1.26

9.5.3. 802.11n HT20 MODE

2TX Chain 0 + Chain 1 MODE

Test Engineer:	27669
Test Date:	2023-11-21, 2024-01-29

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	14.28	14.31	17.31
Low 2	2417	15.38	15.28	18.34
Low 3	2422	17.69	18.14	20.93
Mid 6	2437	17.60	18.16	20.90
High 9	2452	17.65	18.23	20.96
High 10	2457	16.65	16.94	19.81
High 11	2462	12.52	12.65	15.59
High 12	2467	12.20	12.48	15.35
High 13	2472	-4.55	-4.11	-1.31

9.5.4. 802.11n HT40 MODE

2TX Chain 0 + Chain 1 MODE

Test Engineer:	27669, 85502
Test Date:	2024-01-29, 2024-03-28

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 3	2422	14.17	14.27	17.23
Mid 6	2437	15.28	15.27	18.29
High 8	2447	13.76	13.91	16.84
High 9	2452	12.62	13.09	15.87
High 10	2457	9.20	9.58	12.40
High 11	2462	-1.57	-1.58	1.43

9.5.5. 802.11be EHT20 26T MODE

2TX Chain 0 + Chain 1 MODE

Test Engineer:	27669, 33499/84740
Test Date:	2023-11-21, 2024-01-29, 2024-02-06

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	18.15	18.16	21.17
Mid 6	2437	19.18	18.36	21.80
High 11	2462	17.63	17.91	20.78
High 12	2467	16.67	16.76	19.73
High 13	2472	-10.03	-10.11	-7.06

9.5.6. 802.11be EHT20 52T MODE

2TX Chain 0 + Chain 1 MODE

Test Engineer:	27669, 33499/84740
Test Date:	2023-11-21, 2024-01-29, 2024-02-06

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	18.67	17.65	21.20
Mid 6	2437	19.25	18.25	21.79
High 10	2457	18.35	18.61	21.49
High 11	2462	17.49	17.88	20.70
High 12	2467	16.10	16.41	19.27
High 13	2472	-9.24	-9.23	-6.23

9.5.7. 802.11be EHT20 52T + 26T MODE

2TX Chain 0 + Chain 1 MODE

Test Engineer:	27669, 33499/84740
Test Date:	2023-11-21, 2024-01-29, 2024-02-06

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	18.64	17.77	21.24
Mid 6	2437	18.97	17.94	21.49
High 10	2457	18.38	18.68	21.55
High 11	2462	17.59	17.96	20.79
High 12	2467	16.08	16.33	19.22
High 13	2472	-9.65	-9.40	-6.51

9.5.8. 802.11be EHT20 106T MODE

2TX Chain 0 + Chain 1 MODE

Test Engineer:	27669, 33499/84740
Test Date:	2023-11-21, 2024-01-29, 2024-02-06

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	18.51	17.73	21.14
Mid 6	2437	18.95	18.05	21.53
High 10	2457	18.23	17.44	20.86
High 11	2462	17.01	17.35	20.20
High 12	2467	14.00	13.65	16.84
High 13	2472	-5.10	-4.96	-2.02

9.5.9. 802.11be EHT20 106T + 26T MODE

2TX Chain 0 + Chain 1 MODE

Test Engineer:	27669
Test Date:	2023-11-21, 2024-01-29

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	18.54	17.82	21.21
Mid 6	2437	18.89	18.00	21.48
High 10	2457	18.15	17.51	20.86
High 11	2462	17.05	17.39	20.23
High 12	2467	13.36	13.74	16.57
High 13	2472	-5.23	-4.98	-2.09

9.5.10. 802.11be EHT20 242T MODE

2TX Chain 0 + Chain 1 MODE

Test Engineer:	27669
Test Date:	2023-11-21, 2024-01-29

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 1	2412	14.15	14.31	17.24
Low 2	2417	15.14	15.39	18.28
Low 3	2422	17.57	17.97	20.78
Mid 6	2437	17.69	17.79	20.75
High 10	2457	16.59	16.96	19.79
High 11	2462	12.47	12.65	15.57
High 12	2467	12.03	12.39	15.22
High 13	2472	-5.78	-5.57	-2.66

9.5.11. 802.11be EHT40 484T MODE

2TX Chain 0 + Chain 1 MODE

Test Engineer:	27669, 85502
Test Date:	2024-01-29, 2024-03-28

Channel	Frequency (MHz)	Chain 0 Meas Avg Power (dBm)	Chain 1 Meas Avg Power (dBm)	Total Corr'd Power (dBm)
Low 3	2422	14.30	14.43	17.38
Mid 6	2437	15.45	15.62	18.55
High 8	2447	13.88	13.99	16.95
High 9	2452	12.88	13.18	16.04
High 10	2457	9.31	9.69	12.52
High 11	2462	-1.67	-1.65	1.35

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9.6. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)
RSS-247 (5.2) (b)

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

RESULTS

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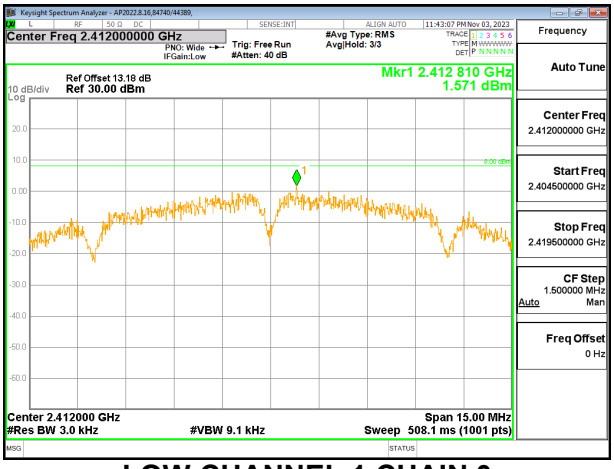
9.6.1. 802.11b MODE

2TX CHAIN 0 + CHAIN 1 MODE

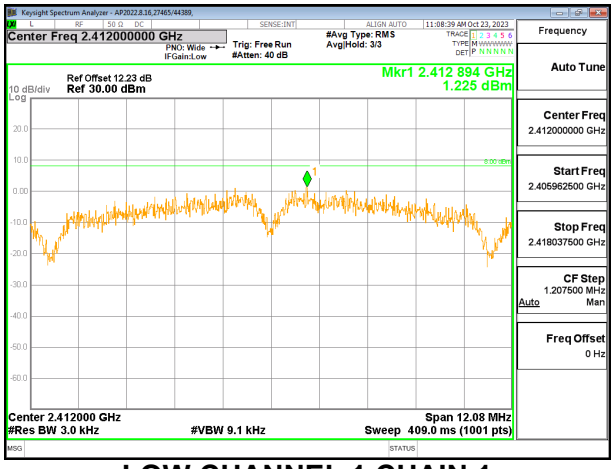
PSD Results

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	1.571	1.225	4.412	8.0	-3.6
Mid 6	2437	0.422	1.112	3.791	8.0	-4.2
High 13	2472	0.333	0.679	3.520	8.0	-4.5

LOW CHANNEL 1



LOW CHANNEL 1 CHAIN 0



LOW CHANNEL 1 CHAIN 1

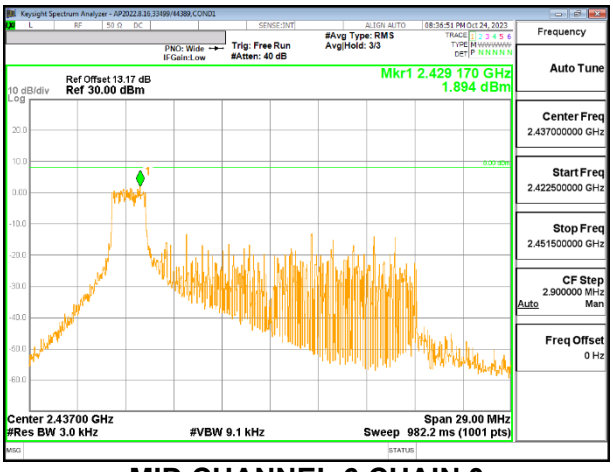
9.6.2. 802.11be EHT20 26T MODE

2TX CHAIN 0 + CHAIN 1 MODE

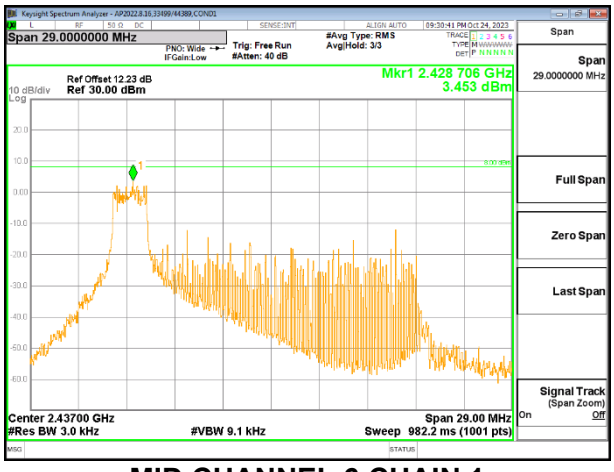
PSD Results

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	2.955	2.456	5.723	8.0	-2.3
Mid 6	2437	1.894	3.453	5.753	8.0	-2.2
High 13	2472	1.335	1.541	4.450	8.0	-3.6

MID CHANNEL 6



MID CHANNEL 6 CHAIN 0



MID CHANNEL 6 CHAIN 1

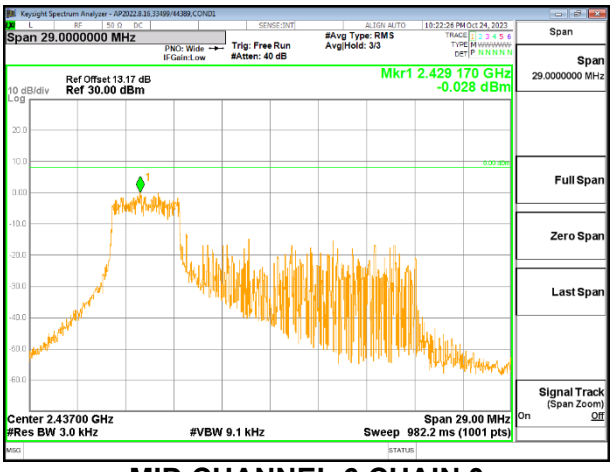
9.6.3. 802.11be EHT20 52T MODE

2TX CHAIN 0 + CHAIN 1 MODE

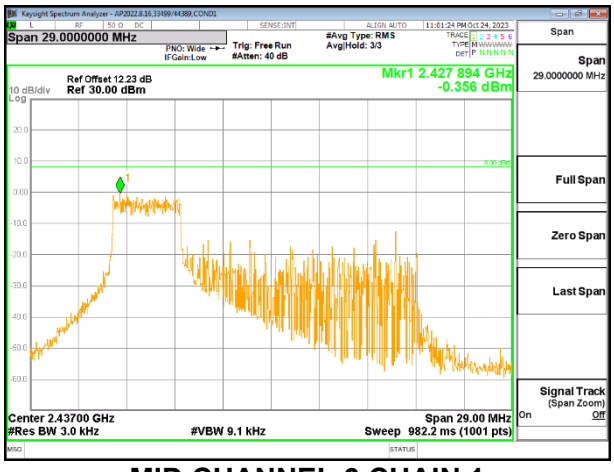
PSD Results

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	-0.663	-0.994	2.185	8.0	-5.8
Mid 6	2437	-0.028	-0.356	2.821	8.0	-5.2
High 13	2472	-0.775	-1.659	1.816	8.0	-6.2

MID CHANNEL 6



MID CHANNEL 6 CHAIN 0



MID CHANNEL 6 CHAIN 1

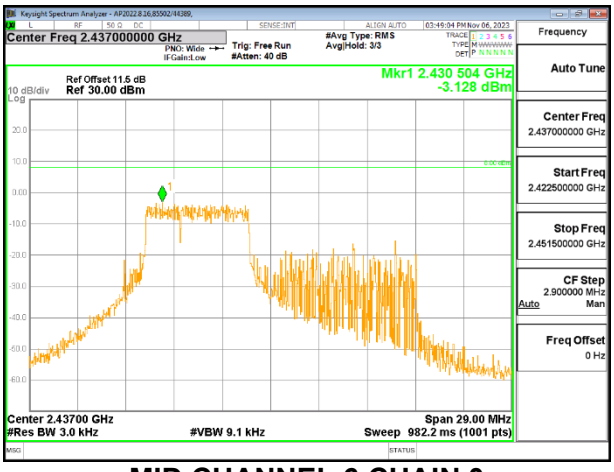
9.6.4. 802.11be EHT20 52T + 26T MODE

2TX CHAIN 0 + CHAIN 1 MODE

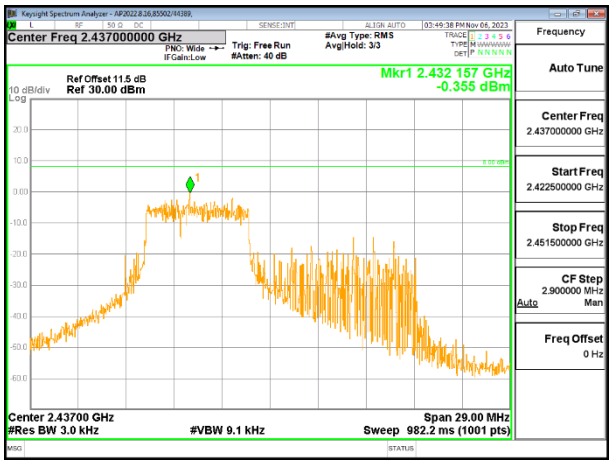
PSD Results

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	-1.984	-1.801	1.119	8.0	-6.9
Mid 6	2437	-3.128	-0.355	1.486	8.0	-6.5
High 13	2472	-2.350	-2.165	0.754	8.0	-7.2

MID CHANNEL 6



MID CHANNEL 6 CHAIN 0



MID CHANNEL 6 CHAIN 1

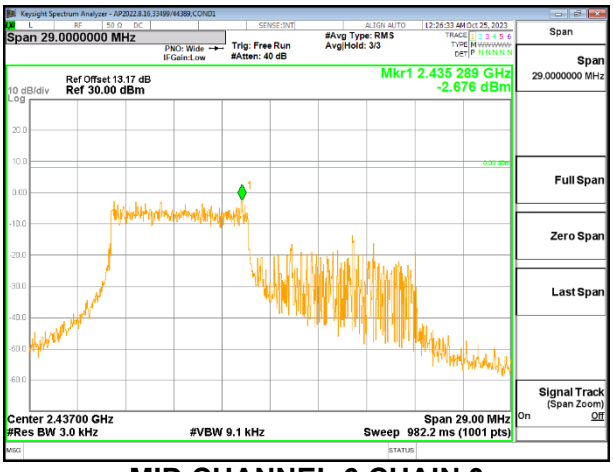
9.6.5. 802.11be EHT20 106T MODE

2TX CHAIN 0 + CHAIN 1 MODE

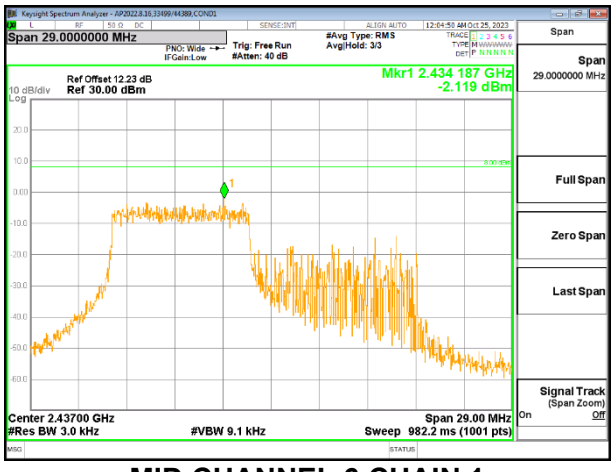
PSD Results

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	-2.528	-5.982	-0.910	8.0	-8.9
Mid 6	2437	-2.676	-2.119	0.622	8.0	-7.4
High 13	2472	-3.120	-3.715	-0.397	8.0	-8.4

MID CHANNEL 6



MID CHANNEL 6 CHAIN 0



MID CHANNEL 6 CHAIN 1

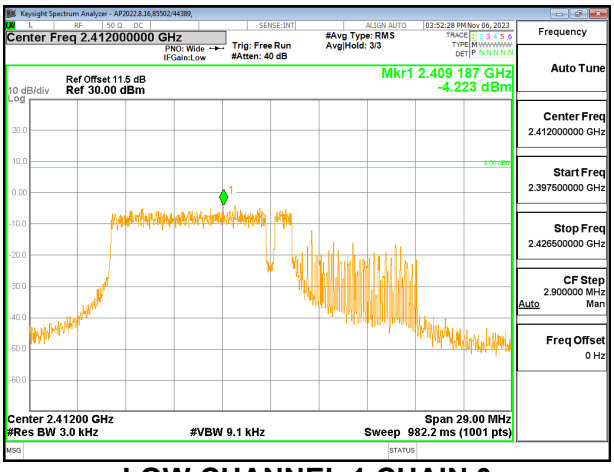
9.6.6. 802.11be EHT20 106T + 26T MODE

2TX CHAIN 0 + CHAIN 1 MODE

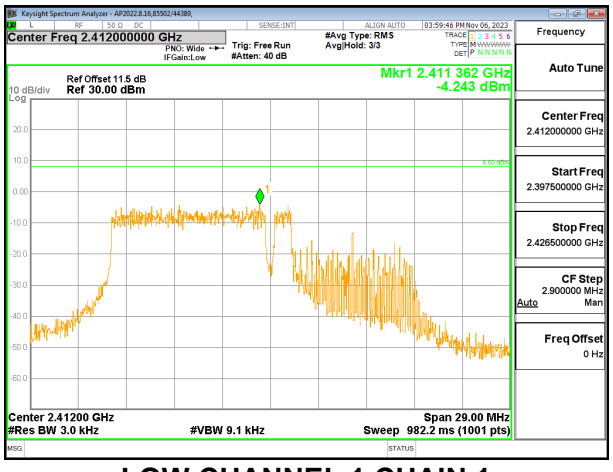
PSD Results

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	-4.223	-4.243	-1.223	8.0	-9.2
Mid 6	2437	-4.000	-4.716	-1.333	8.0	-9.3
High 13	2472	-4.622	-4.260	-1.427	8.0	-9.4

LOW CHANNEL 1



LOW CHANNEL 1 CHAIN 0



LOW CHANNEL 1 CHAIN 1

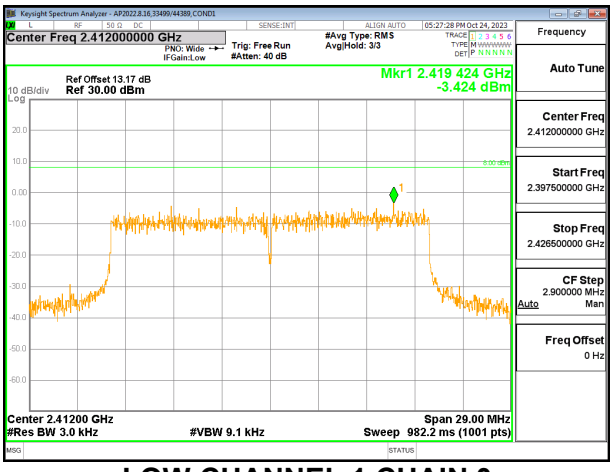
9.6.7. 802.11be EHT20 242T MODE

2TX CHAIN 0 + CHAIN 1 MODE

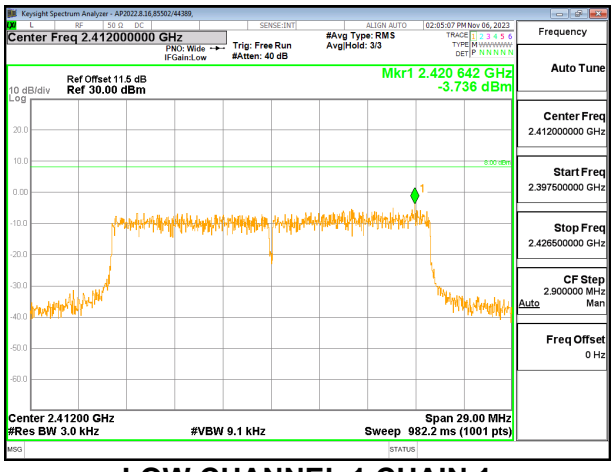
PSD Results

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	-3.424	-3.736	-0.567	8.0	-8.6
Mid 6	2437	-4.386	-4.405	-1.385	8.0	-9.4
High 13	2472	-4.776	-5.433	-2.082	8.0	-10.1

LOW CHANNEL 1



LOW CHANNEL 1 CHAIN 0



LOW CHANNEL 1 CHAIN 1

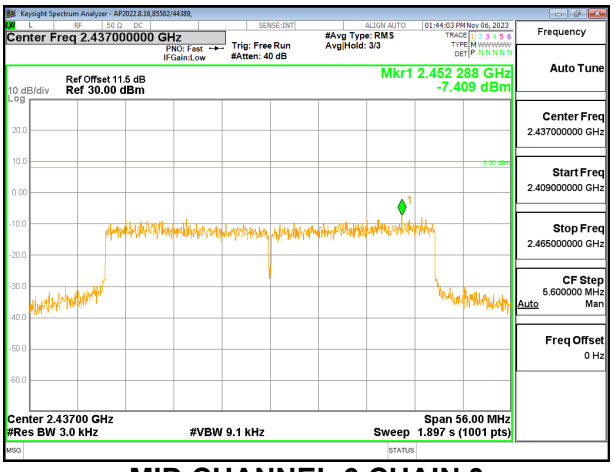
9.6.8. 802.11be EHT40 484T MODE

2TX CHAIN 0 + CHAIN 1 MODE

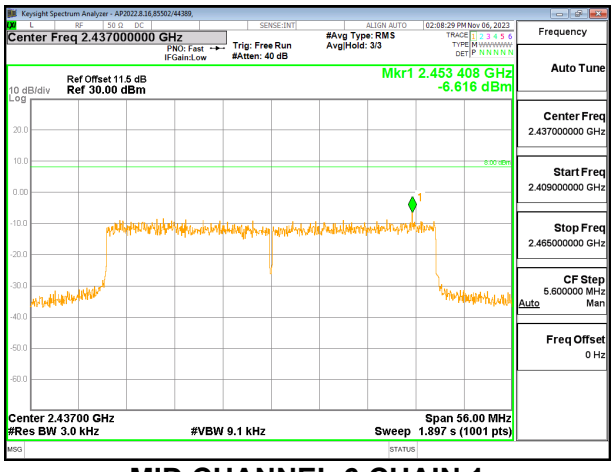
PSD Results

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 3	2422	-7.677	-8.171	-4.907	8.0	-12.9
Mid 6	2437	-7.409	-6.616	-3.984	8.0	-12.0
High 11	2462	-7.972	-8.005	-4.978	8.0	-13.0

MID CHANNEL 6



MID CHANNEL 6 CHAIN 0



MID CHANNEL 6 CHAIN 1

9.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)
RSS-247 5.5

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

RESULTS

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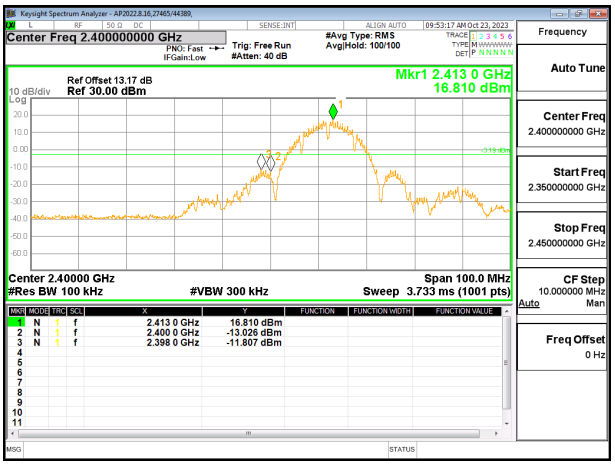
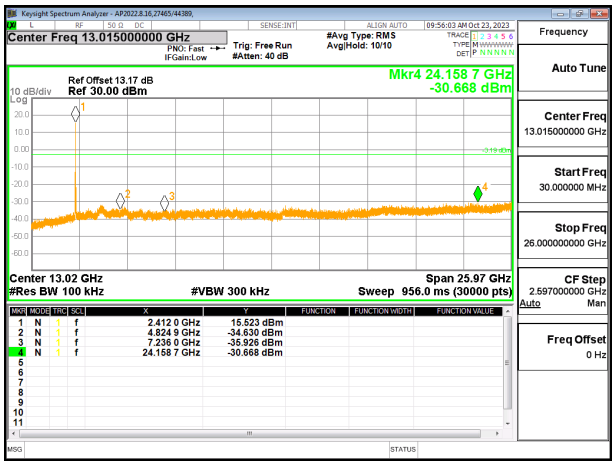
9.7.1. 802.11b MODE

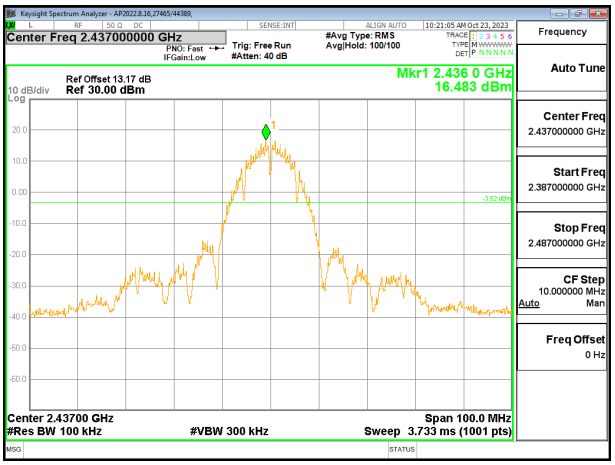
2TX CHAIN 0 + CHAIN 1 MODE



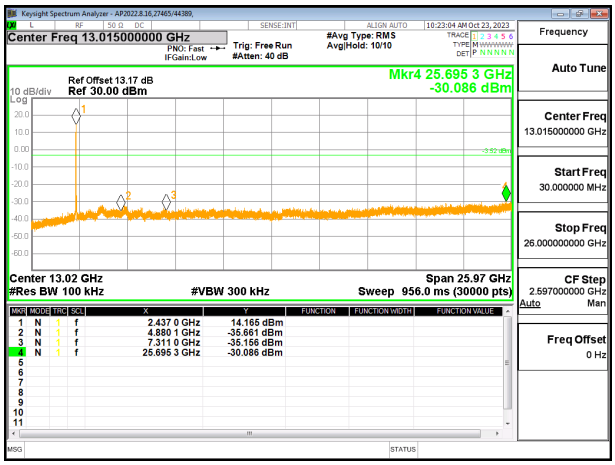
LOW CHANNEL 1 BANDEDGE CHAIN 0



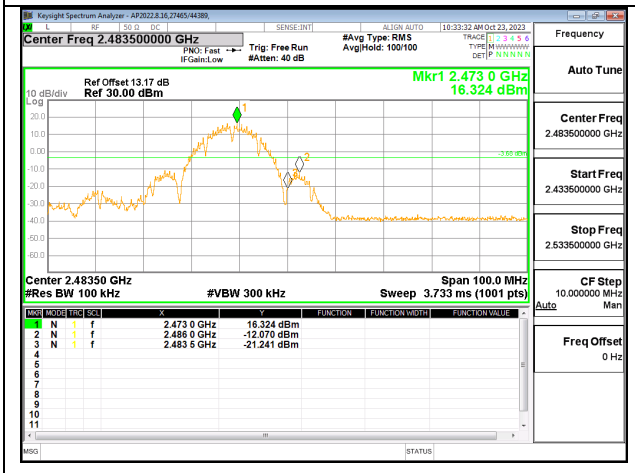
OUT-OF-BAND LOW CHANNEL 1 CHAIN 0



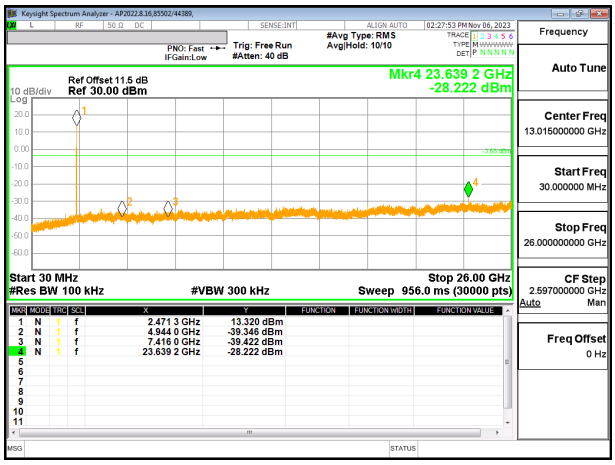
IN-BAND REFERENCE LEVEL CHAIN 0



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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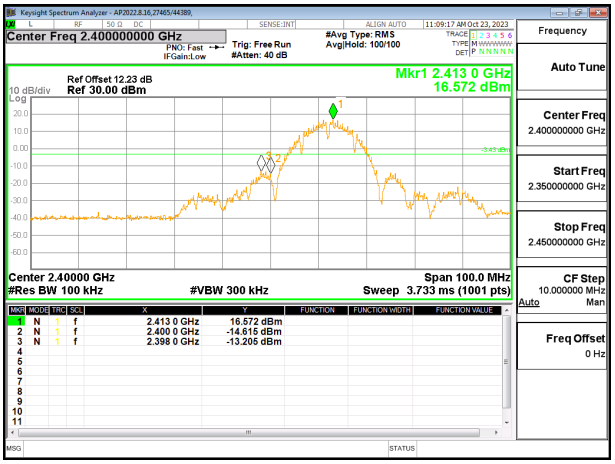
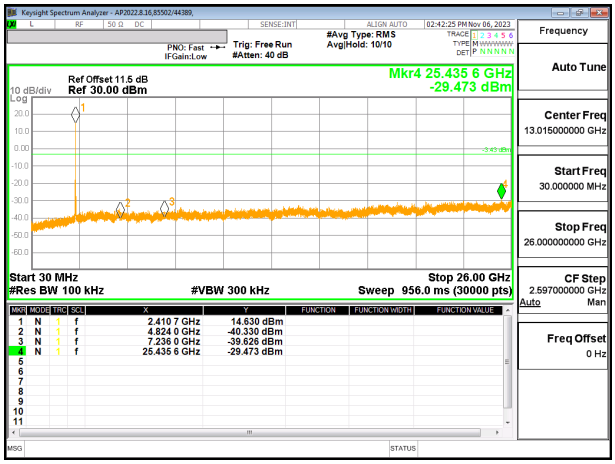
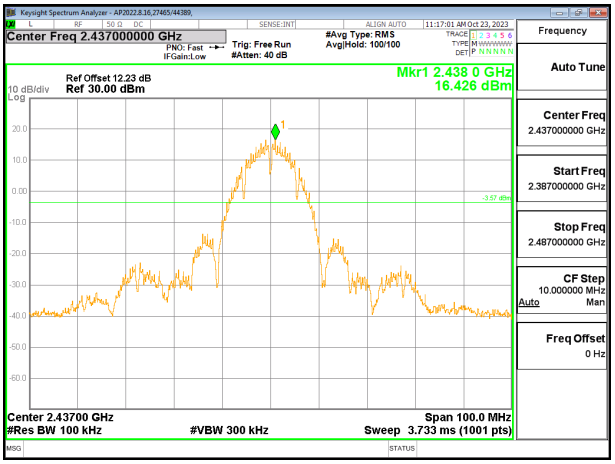


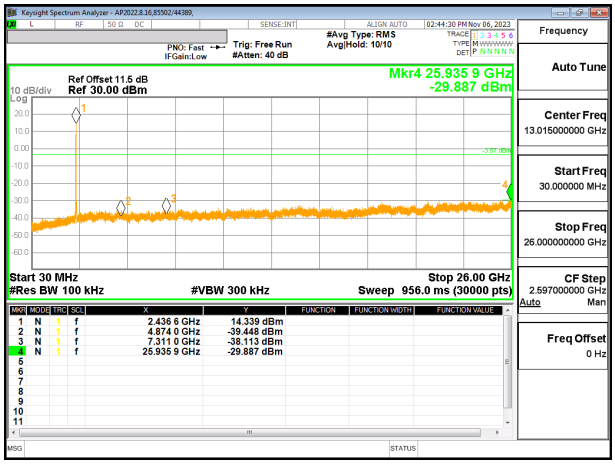
LOW CHANNEL 1 BANDEDGE CHAIN 1



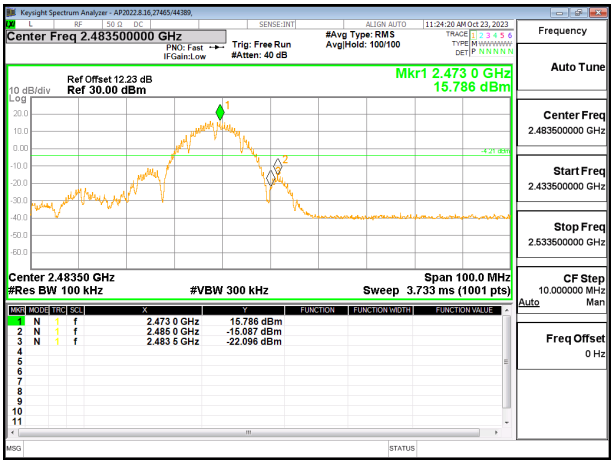
OUT-OF-BAND LOW CHANNEL 1 CHAIN 1



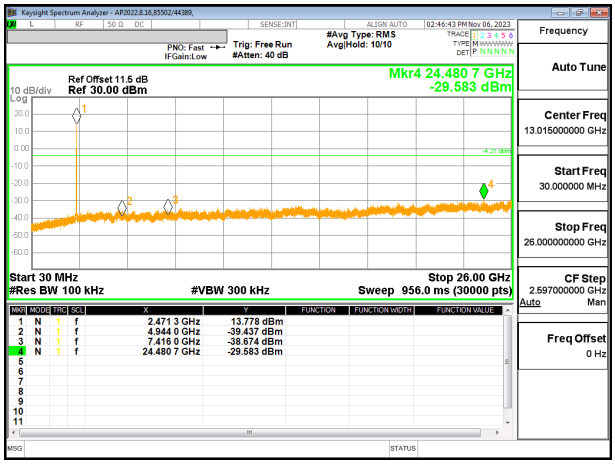
IN-BAND REFERENCE LEVEL CHAIN 1



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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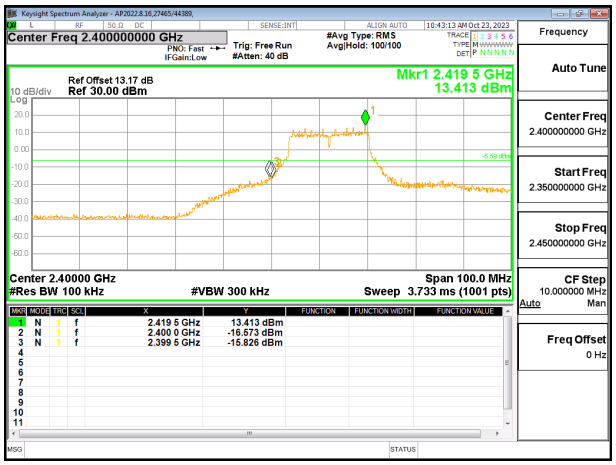
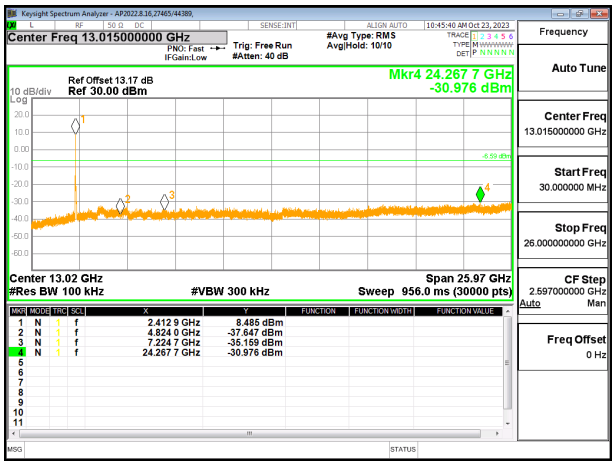
9.7.2. 802.11g MODE

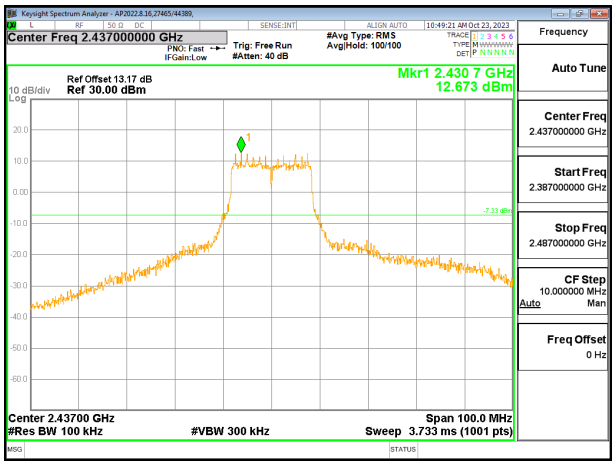
2TX CHAIN 0 + CHAIN 1 MODE



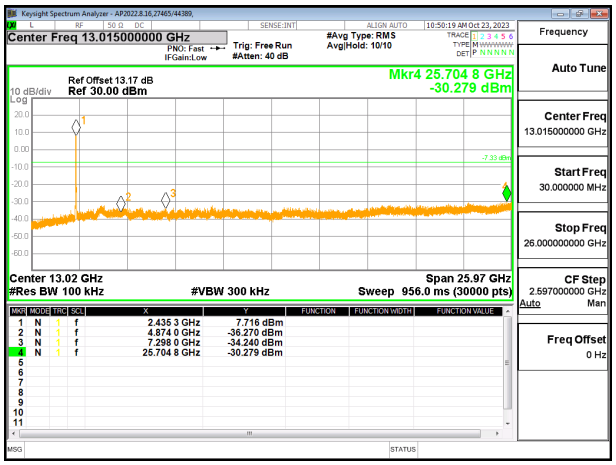
LOW CHANNEL 1 BANDEDGE CHAIN 0



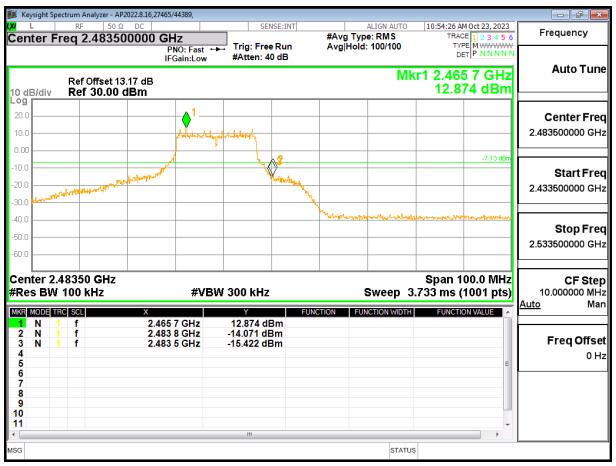
OUT-OF-BAND LOW CHANNEL 1 CHAIN 0



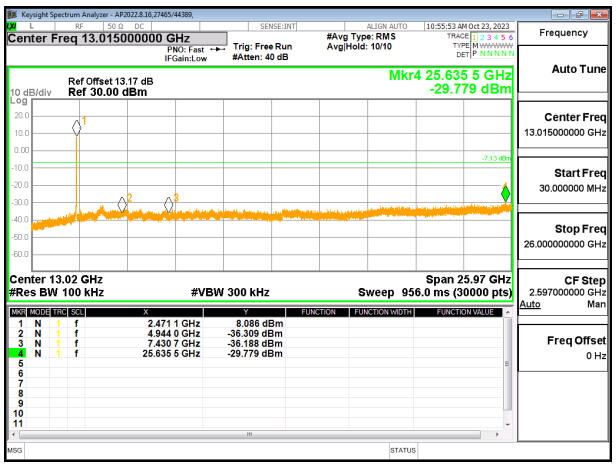
IN-BAND REFERENCE LEVEL CHAIN 0



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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