TEST REPORT

Report Number : R15374786-E5

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 E: 2024 ISED RSS-247 Issue 3:2023 ISED RSS-GEN Issue 5 +A1+A2:2021

Date Of Issue:
2025-01-13

Prepared by:
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CERT #0751.06

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	2024-11-27	Initial Issue	Charles Moody
V2	2025-01-02	Updated to include antenna gain calculations, revised maximum output power table, Updated 5.2 GHz IC power table to reference EIRP readings and limits	Charles Moody
V3	2025-01-13	Revised antenna gain statement in Section 6.3 and 6dB BW measurements in 5.9 GHz band	Charles Moody

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TX ABOVE 1 GHz 802.11be EHT160 484T+242T+996T (N) PUNCTURED MODE 0x04 IN THE 5.8/5.9 GHz BAND....1595
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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: 2024-07-01 TO 2024-11-27, 2025-01-13 (Conducted)

APPLICABLE STANDARDS

STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart E: 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
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Consumer, Medical and IT Segment
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Prepared By:

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2. TEST RESULT SUMMARY

This report contains data/info 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/info provided by the customer:
1) Antenna gain and type (see section 6.3)
2) Worst-case data rates (see section 6.5)

FCC Clause	ISED Clause	Requirement	Result	Comment
See Comment		Duty Cycle	Reporting purposes only	Per ANSI C63.10, Section 12.2.
See Comment	RSS-GEN 6.7	26dB BW/99% OBW	Reporting purposes only	Per ANSI C63.10 Sections 6.9.2 and 6.9.3
15.407 (e)	RSS-247 6.2.4.1	6 dB BW	Compliant	None
15.407 (a) (1-3), (h) (1)	RSS-247 6.2	Output Power		
15.407 (a) (1-3)	RSS-247 6.2	PSD		
15.209, 15.205, 15.407 (b)	RSS-GEN 8.9, 8.10, RSS-247 6.2	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,
- FCC KDB 662911 D01 v02r01,
- FCC KDB 789033 D02 v02r01,
- FCC KDB 414788 D01 Radiated Test Site v01r01
- FCC KDB 291074 D02 EMC Measurement V01
- ANSI C63.10-2020

4. FACILITIES AND ACCREDITATION

UL LLC is accredited by 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	U_{Lab}
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
Mains Conducted Emissions (0.150-30MHz) - LISN	3.40 dB
Temperature	0.57°C
Humidity	3.39%
DC Supply voltages	1.70%

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

RESTRICTED BANDEDGE CALCULATION
Where relevant, the following sample calculation is provided:
Summed EIRP (dBm) = 10Log(10^[(Chain 0 reading)/10]+10^[(Chain 1 reading)/10]) + Correlated Gain
Field Strength (dBuV/m) = Summed EIRP (dBm) – 20Log(measurement distance)+104.8 where measurement distance is 3 meters
Ex: C0 = -46.63 dBm, C1 - -50.04 dBm Gain = 8.21 dBi
10Log(10^(-46.63/10)+10^(-50.04/10)) + 8.21 – 20log(3) + 104.8 = 58.47 dBuV/m

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6. EQUIPMENT UNDER TEST

6.1. EUT DESCRIPTION

The EUT is a Wireless Module. This report covers the emissions testing of the 5 WLAN radio.

6.2. MAXIMUM OUTPUT POWER

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

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5GHz BAND (Low Gain)

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5.2GHz Band, 2Tx, Low Gain			
5180-5240	802.11a	19.20	83.18
5180-5240	802.11n HT20	19.17	82.60
5190-5230	802.11n HT40	19.38	86.70
5210	802.11ac VHT80	16.49	44.57
5250	802.11ac VHT160	14.81	30.27
5180-5240	802.11be EHT20	19.95	98.86
5190-5230	802.11be EHT40	19.55	90.16
5210	802.11be EHT80	15.58	36.14
5250	802.11be EHT160	15.95	39.36
5.3GHz Band, 2Tx, Low Gain			
5260-5320	802.11a	19.71	93.54
5260-5320	802.11n HT20	19.45	88.10
5270-5310	802.11n HT40	19.48	88.72
5290	802.11ac VHT80	17.66	58.34
5260-5320	802.11be EHT20	18.42	69.50
5270-5310	802.11be EHT40	17.60	57.54
5290	802.11be EHT80	17.76	59.70
5.6GHz Band, 2Tx, Low Gain			
5500-5720	802.11a	19.76	94.62
5500-5720	802.11n HT20	19.78	95.06
5510-5710	802.11n HT40	20.37	108.89
5530-5690	802.11ac VHT80	20.77	119.40
5570	802.11ac VHT160	12.34	17.14
5500-5720	802.11be EHT20	19.91	97.95
5510-5710	802.11be EHT40	20.96	124.74
5530-5690	802.11be EHT80	21.10	128.82
5570	802.11be EHT160	14.15	26.00
5.8GHz Band, 2Tx, Low Gain			
5745-5825	802.11a	23.63	230.67
5745-5825	802.11n HT20	23.52	224.91
5755-5795	802.11n HT40	21.19	131.52
5775	802.11ac VHT80	21.25	133.35
5815	802.11ac VHT160	19.97	99.31
5745-5825	802.11be EHT20	23.10	204.17
5755-5795	802.11be EHT40	21.01	126.18
5775	802.11be EHT80	18.95	78.52
5815	802.11be EHT160	22.52	178.65
5.9GHz Band, 2Tx, Low Gain			
5845-5885	802.11a	22.95	197.24
5845-5885	802.11n HT20	23.00	199.53
5835-5875	802.11n HT40	26.46	442.59
5855	802.11ac VHT80	26.32	428.55
5845-5885	802.11be EHT20	23.47	222.33
5835-5875	802.11be EHT40	26.48	444.63
5855	802.11be EHT80	26.48	444.63

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5GHz BAND (Mid Gain)

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5.2GHz Band, 2Tx, Mid Gain			
5180-5240	802.11a	17.11	51.40
5180-5240	802.11n HT20	17.07	50.93
5190-5230	802.11n HT40	18.63	72.95
5210	802.11ac VHT80	14.52	28.31
5250	802.11ac VHT160	14.07	25.53
5180-5240	802.11be EHT20	18.49	70.63
5190-5230	802.11be EHT40	18.18	65.77
5210	802.11be EHT80	15.74	37.50
5250	802.11be EHT160	14.25	26.61
5.3GHz Band, 2Tx, Mid Gain			
5260-5320	802.11a	17.46	55.72
5260-5320	802.11n HT20	17.53	56.62
5270-5310	802.11n HT40	18.44	69.82
5290	802.11ac VHT80	15.85	38.46
5260-5320	802.11be EHT20	17.00	50.12
5270-5310	802.11be EHT40	16.45	44.16
5290	802.11be EHT80	16.48	44.46
5.6GHz Band, 2Tx, Mid Gain			
5500-5720	802.11a	18.65	73.28
5500-5720	802.11n HT20	18.66	73.45
5510-5710	802.11n HT40	18.85	76.74
5530-5690	802.11ac VHT80	18.95	78.52
5570	802.11ac VHT160	9.65	9.23
5500-5720	802.11be EHT20	18.72	74.47
5510-5710	802.11be EHT40	19.01	79.62
5530-5690	802.11be EHT80	19.09	81.10
5570	802.11be EHT160	11.91	15.52
5.8GHz Band, 2Tx, Mid Gain			
5745-5825	802.11a	23.63	230.67
5745-5825	802.11n HT20	23.52	224.91
5755-5795	802.11n HT40	21.03	126.77
5775	802.11ac VHT80	19.59	90.99
5815	802.11ac VHT160	21.56	143.22
5745-5825	802.11be EHT20	23.10	204.17
5755-5795	802.11be EHT40	21.01	126.18
5775	802.11be EHT80	18.53	71.29
5815	802.11be EHT160	24.62	289.73
5.9GHz Band, 2Tx, Mid Gain			
5845-5885	802.11a	23.56	226.99
5845-5885	802.11n HT20	23.54	225.94
5835-5875	802.11n HT40	26.82	480.84
5855	802.11ac VHT80	27.11	514.04
5845-5885	802.11be EHT20	24.47	279.90
5835-5875	802.11be EHT40	27.25	530.88
5855	802.11be EHT80	28.14	651.63

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5GHz BAND (High Gain)

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5.2GHz Band, 2Tx, High Gain			
5180-5240	802.11a	16.64	46.13
5180-5240	802.11n HT20	16.71	46.88
5190-5230	802.11n HT40	19.00	79.43
5210	802.11ac VHT80	14.43	27.73
5250	802.11ac VHT160	10.34	10.81
5180-5240	802.11be EHT20	16.79	47.75
5190-5230	802.11be EHT40	17.29	53.58
5210	802.11be EHT80	15.11	32.43
5250	802.11be EHT160	14.01	25.18
5.3GHz Band, 2Tx, High Gain			
5260-5320	802.11a	16.66	46.34
5260-5320	802.11n HT20	16.50	44.67
5270-5310	802.11n HT40	16.54	45.08
5290	802.11ac VHT80	13.96	24.89
5260-5320	802.11be EHT20	16.38	43.45
5270-5310	802.11be EHT40	16.46	44.26
5290	802.11be EHT80	16.22	41.88
5.6GHz Band, 2Tx, High Gain			
5500-5720	802.11a	16.77	47.53
5500-5720	802.11n HT20	16.78	47.64
5510-5710	802.11n HT40	17.27	53.33
5530-5690	802.11ac VHT80	16.95	49.55
5570	802.11ac VHT160	9.65	9.23
5500-5720	802.11be EHT20	16.89	48.87
5510-5710	802.11be EHT40	17.32	53.95
5530-5690	802.11be EHT80	17.13	51.64
5570	802.11be EHT160	10.05	10.12
5.8GHz Band, 2Tx, High Gain			
5745-5825	802.11a	23.63	230.67
5745-5825	802.11n HT20	23.52	224.91
5755-5795	802.11n HT40	20.43	110.41
5775	802.11ac VHT80	19.59	90.99
5815	802.11ac VHT160	19.69	93.11
5745-5825	802.11be EHT20	23.10	204.17
5755-5795	802.11be EHT40	20.35	108.39
5775	802.11be EHT80	18.51	70.96
5815	802.11be EHT160	25.98	396.28
5.9GHz Band, 2Tx, High Gain			
5845-5885	802.11a	23.41	219.28
5845-5885	802.11n HT20	23.40	218.78
5835-5875	802.11n HT40	26.55	451.86
5855	802.11ac VHT80	26.37	433.51
5845-5885	802.11be EHT20	23.79	239.33
5835-5875	802.11be EHT40	26.55	451.86
5855	802.11be EHT80	26.42	438.53

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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	5150-5895	5.2	PIFA
1	5150-5895	5.2	
(Uncorrelated)	5150-5895	5.2	
(Correlated)	5150-5895	8.21	

Mid Gain Antenna:

Chain	Frequency (MHz)	Gain (dBi)	Type
0	5150-5895	7.3	PIFA
1	5150-5895	7.3	
(Uncorrelated)	5150-5895	7.3	
(Correlated)	5150-5895	10.31	

High Gain Antenna:

Chain	Frequency (MHz)	Gain (dBi)	Type
0	5150-5895	8.66	PIFA
1	5150-5895	8.66	
(Uncorrelated)	5150-5895	8.66	
(Correlated)	5150-5895	11.67	

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.

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6.5. WORST-CASE CONFIGURATION AND MODE

All conducted and radiated emissions, except for PSD and output power, was performed at the low antenna gain power settings as a worst-case mode. PSD and output power was measured at three power levels using three different antenna gain values.

PSD was performed per band at the narrowest bandwidth modes that had the highest power settings to cover the higher bandwidth modes with equal or lower power.

Where appropriate, only representative plots are included to reduce report size.

Note: Based on power testing as reported, channel puncturing configurations measured lower power than the corresponding MRU modes. Therefore, MRU modes were tested as the worst-case modes. Additionally, 802.11be modes were found to be worst case over 802.11ax and therefore were tested as the worst-case between the two.

All testing performed in 2Tx mode (NSS=1), where power per chain is equivalent to the 1Tx power on each chain. Based on preliminary testing, this allows 2Tx testing to cover all 1Tx testing.

The fundamental of the EUT was investigated in all three orthogonal orientaions X, Y and Z. Through pre-testing, it was determined that the Y-orientation was worst-case. Therefore, all final radiated emissions testing was performed with the EUT set in the Y-orienation.

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

Radiated emissions between 1GHz and 18GHz were performed with the EUT set to transmit at the highest power on low, middle and high channels on modes with worst-case power/PSD per band for harmonics and spurious.

Bandedge testing was performed on all low, high and power stepped channels. All restricted bandedge testing was performed using a conducted setup. For all bandedge testing a restricted traditional bandedge scan (C63.10 Section 12.7.7.) was ran on chain 0 and chain 1, each operating in MIMO mode. The peak and average data (peak only for 5.6 upper and 5.8 bandedge) was then summed together accounting for antenna gain and duty cycle correction factor. For the 5.9 bandedge, when the summed average measurements appeared to exceed the limit, a supplemental integration measurement (C63.10 Section 12.7.4.4.1) 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. Lastly for 5.2, 5.3 and 5.6 Lower bandedge on 80 and 160 MHz signals, a slow sweep method scan (C63.10 Section 12.7.7.3) was performed in addition to the traditional restricted band edge method described above.

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

802.11a mode: 6 Mbps
802.11n HT20mode: MCS0
802.11n HT40mode: MCS0
802.11ac VHT80 mode: MCS0
802.11ac VHT160 mode: MCS0
802.11be EHT20mode: MCS0 (Nss = 1)
802.11be EHT40mode: MCS0 (Nss = 1)
802.11be EHT80mode: MCS0 (Nss = 1)
802.11be EHT160mode: MCS0 (Nss = 1)

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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 DIAGRAMS

Please refer to R15374786-EP2 for setup diagrams

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7. MEASUREMENT METHOD

On Time and Duty Cycle: KDB 789033 D02 v02r01, Section B.

6 dB Emission BW: KDB 789033 D02 v02r01, Section C.2

26 dB Emission BW: KDB 789033 D02 v02r01, Section C.1

Conducted Output Power: KDB 789033 D02 v02r01, Section E.3.b (Method PM-G)

Power Spectral Density: KDB 789033 D02 v02r01, Section F

Unwanted emissions in restricted bands: KDB 789033 D02 v02r01, Sections G.3, G.4, G.5, and G.6.

Unwanted emissions in non-restricted bands: KDB 789033 D02 v02r01, Sections G.3, G.4, and G.5.

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

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

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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 2022.8.16	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
214284	Spectrum Analyzer	Rohde & Schwarz	FSW	2024-02-04	2025-02-04
** 206459	Spectrum Analyzer	Rohde & Schwarz	FSW	2023-11-15	2024-11-15
**76023	Temp/Humid Chamber	Cincinnati Sub-Zero	ZPH-8-3.5-SCT/AC	2024-01-12	2025-01-12
248881	Environmental Meter	Control Company	06-662-4	2024-04-10	2026-04-10
SOFTEMI	Antenna Port Software	UL	Version 2022.8.16	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
250458	Average Power Sensor, 10MHz to 18GHz	Boonton	RTP4018-S/1	2024-06-27	2025-06-27
250459	Average Power Sensor, 10MHz to 18GHz	Boonton	RTP4018-S/1	2024-06-27	2025-06-27
250460	Average Power Sensor, 10MHz to 18GHz	Boonton	RTP4018-S/1	2024-06-27	2025-06-27
250462	Average Power Sensor, 10MHz to 18GHz	Boonton	RTP4018-S/1	2024-06-27	2025-06-27
245262	Conducted Switch Box	UL	CSB	2024-02-20	2025-02-20

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

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

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
	Attenuators				
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
	Cables				
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

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				
197954	Spectrum Analyzer	Rohde & Schwarz	ESW44	2024-03-05	2025-03-05
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 all equipment was still 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.
	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
	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
204705	Horn Antenna, 26-40GHz	Com-Power	AH-640	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
207640	Gain-loss string: 1-18GHz	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	2024-07-31	2025-07-31
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
**241848	10dB Pad, DC-18GHz, 5W	Mini-Circuits	BW-N10W5+	2023-11-09	2024-11-09

**NOTE: Testing on thi equipment was performed prior to calibration going out.

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9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 789033 D01 Zero-Span Spectrum Analyzer Method.

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	RMS Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
802.11a CDD	2.096	2.115	0.991	99.10	0.00	0.010
802.11n HT20 CDD	5.327	5.348	0.996	99.61	0.00	0.010
802.11n HT40 CDD	5.365	5.385	0.996	99.63	0.00	0.010
802.11ac VHT80 CDD	2.699	2.719	0.993	99.26	0.00	0.010
802.11ac VHT160 CDD	1.579	1.597	0.989	98.87	0.00	0.010
802.11be EHT20 26T	5.087	5.108	0.996	99.59	0.00	0.010
802.11be EHT20 52T	5.075	5.095	0.996	99.61	0.00	0.010
802.11be EHT20 52T+26T	5.060	5.080	0.996	99.61	0.00	0.010
802.11be EHT20 106T	4.768	4.787	0.996	99.60	0.00	0.010
802.11be EHT20 106T+26T	4.815	4.836	0.996	99.57	0.00	0.010
802.11be EHT20 242T	4.667	4.685	0.996	99.62	0.00	0.010
802.11be EHT40 484T	1.2610	1.2790	0.986	98.59	0.00	0.010
802.11be EHT80 484T+242T	1.2350	1.2540	0.985	98.48	0.00	0.010
802.11be EHT80 996T	0.9070	0.9260	0.979	97.95	0.09	1.103
802.11be EHT160 996T+484T	0.927	0.946	0.980	97.99	0.09	1.079
802.11be EHT160 996T+484T+242T	4.5410	4.5610	0.996	99.56	0.00	0.010
802.11be EHT160 2x996T	1.2440	1.2620	0.986	98.57	0.00	0.010

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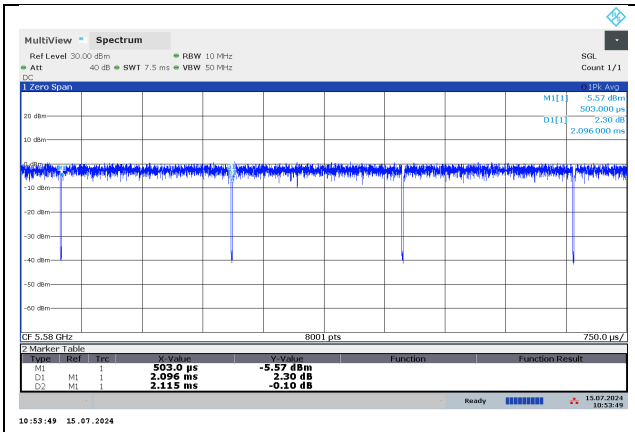
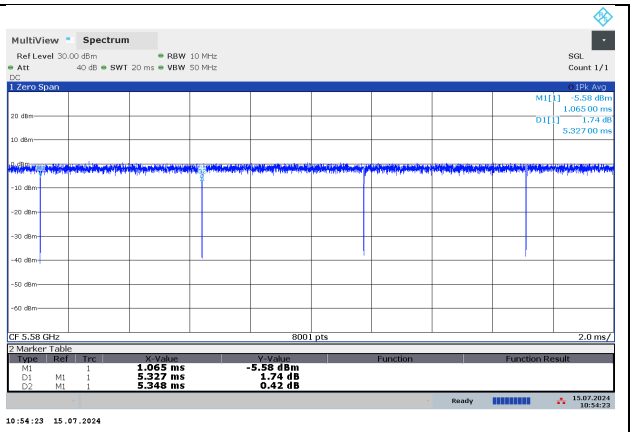
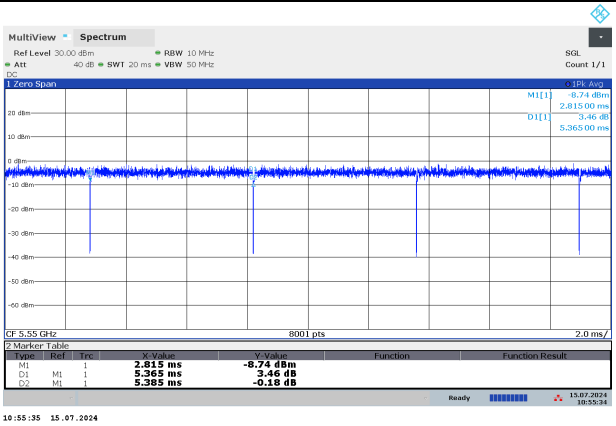


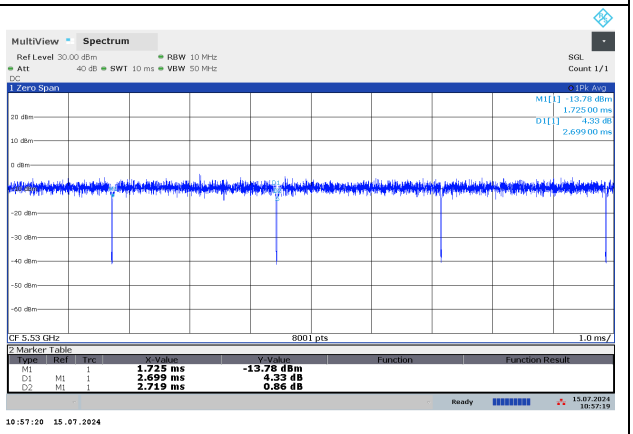
DUTY CYCLE 802.11a MODE



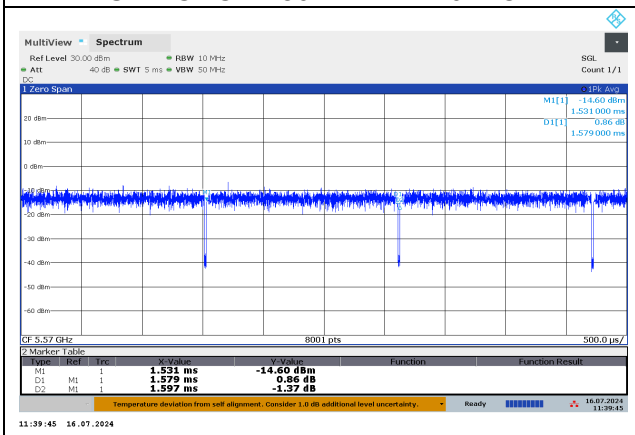
DUTY CYCLE 802.11n HT20 MODE



DUTY CYCLE 802.11n HT40 MODE



DUTY CYCLE 802.11ac VHT80 MODE



DUTY CYCLE 802.11ac VHT160 MODE

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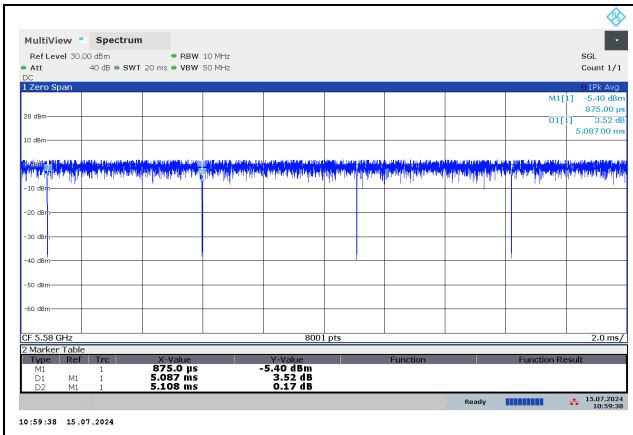
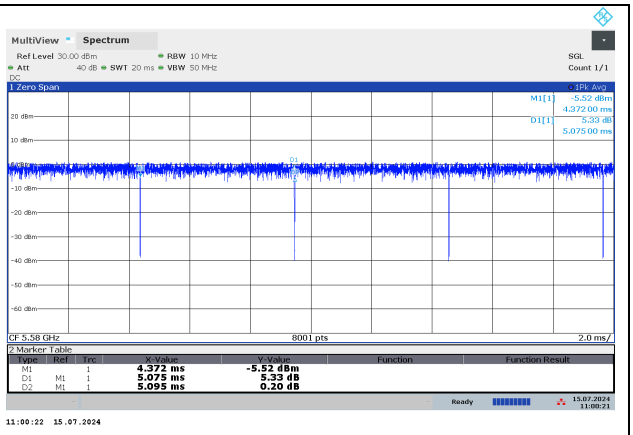
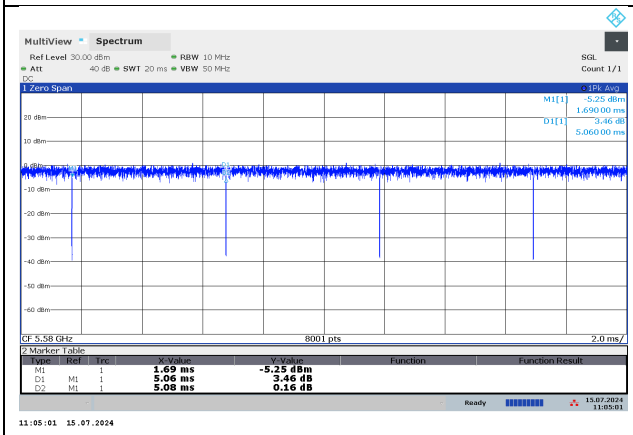


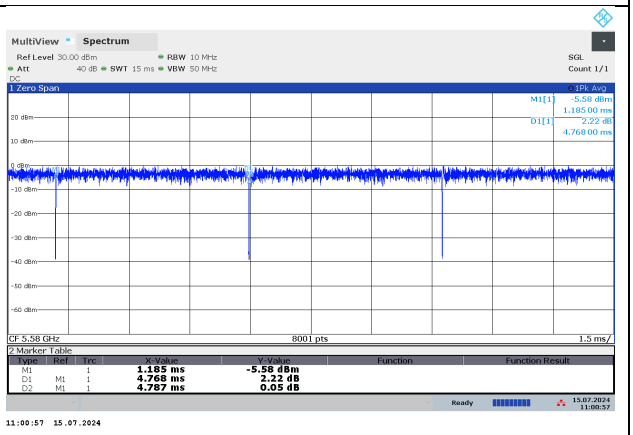
DUTY CYCLE 802.11be EHT20 26T MODE



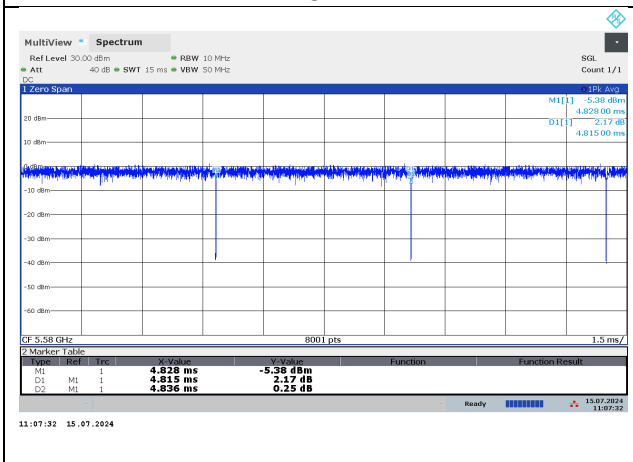
DUTY CYCLE 802.11be EHT20 52T MODE



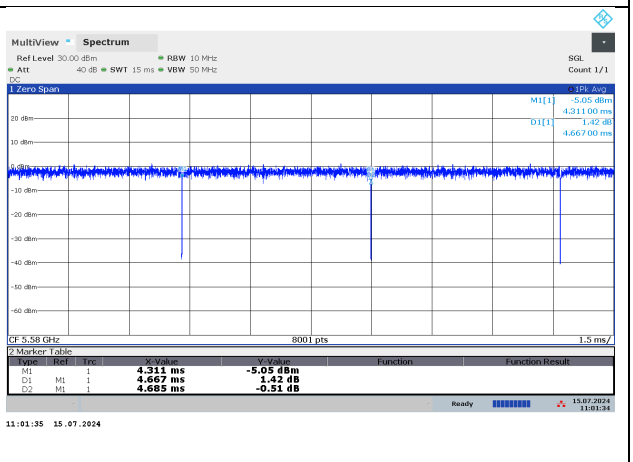
DUTY CYCLE 802.11be EHT20 52T+26T MODE



DUTY CYCLE 802.11be EHT20 106T MODE



DUTY CYCLE 802.11be EHT20 106T+26T MODE



DUTY CYCLE 802.11be EHT20 242T MODE

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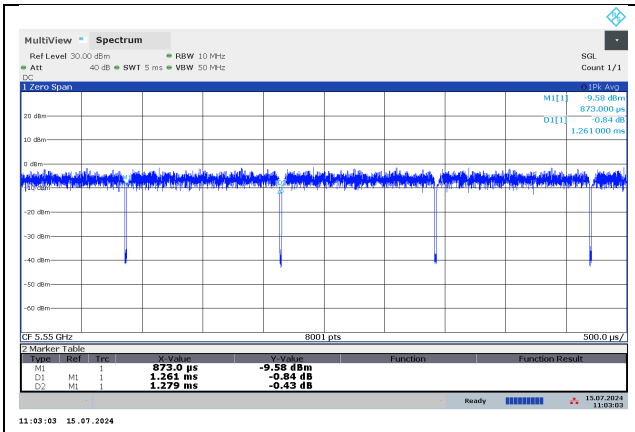
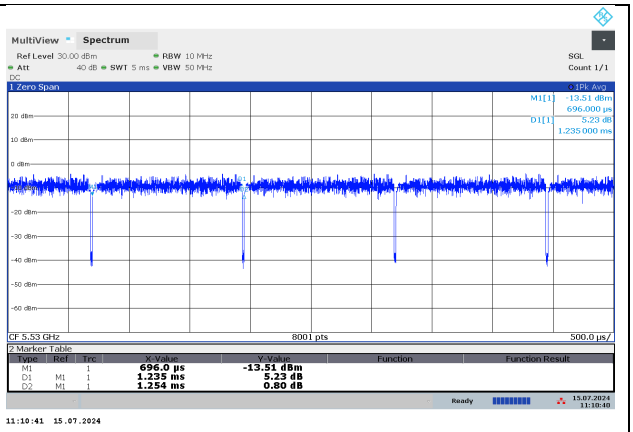
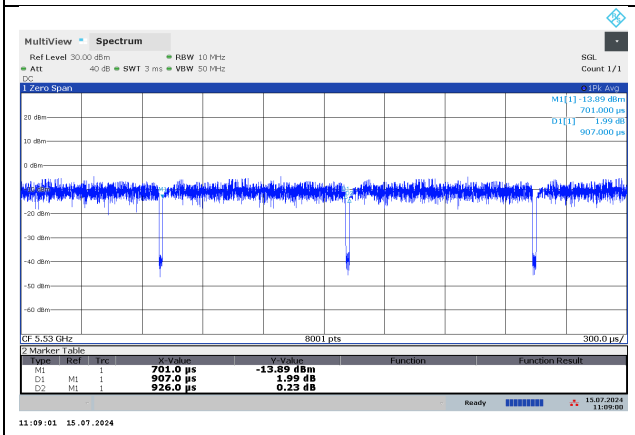


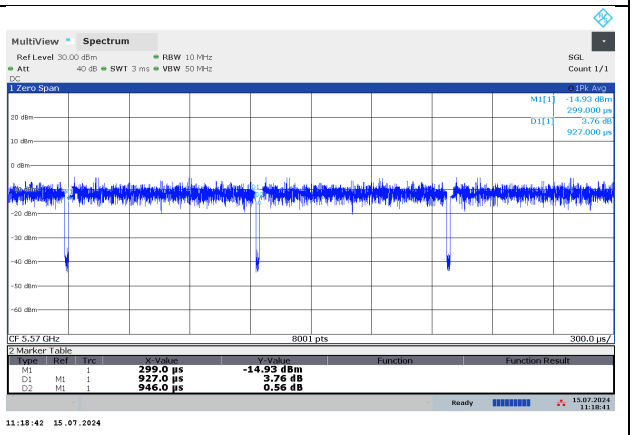
DUTY CYCLE 802.11be EHT40 484T MODE



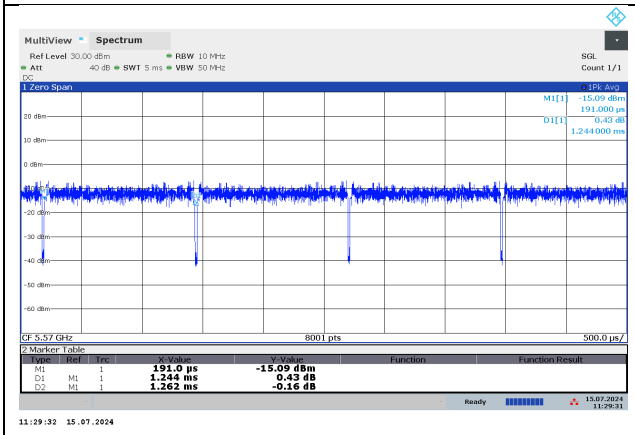
DUTY CYCLE 802.11be EHT80 484T+242T MODE



DUTY CYCLE 802.11be EHT80 996T MODE



DUTY CYCLE 802.11be EHT160 996T+484T MODE



DUTY CYCLE 802.11be EHT160 2*996T MODE

DUTY CYCLE 802.11be EHT160 996T+484T+242T MODE

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9.2. 26 dB BANDWIDTH

LIMITS

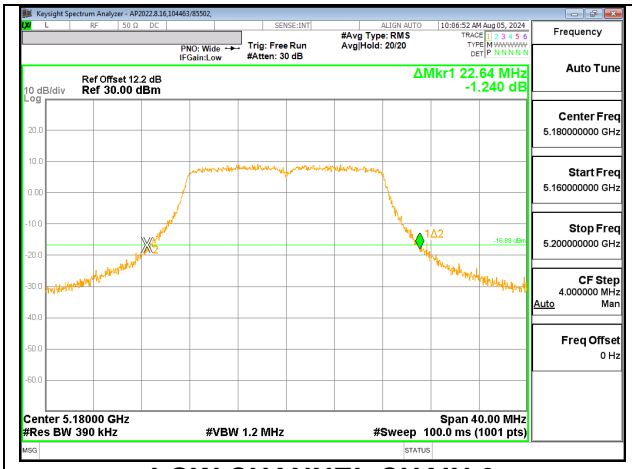
None; for reporting purposes only.

RESULTS

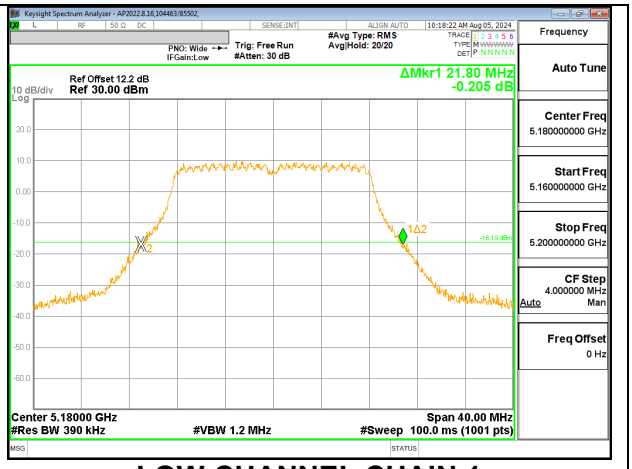
9.2.1. 802.11a MODE IN THE 5.2 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5180	22.64	21.80
Mid	5200	22.16	21.56
High	5240	22.20	21.40



LOW CHANNEL CHAIN 0



LOW CHANNEL CHAIN 1

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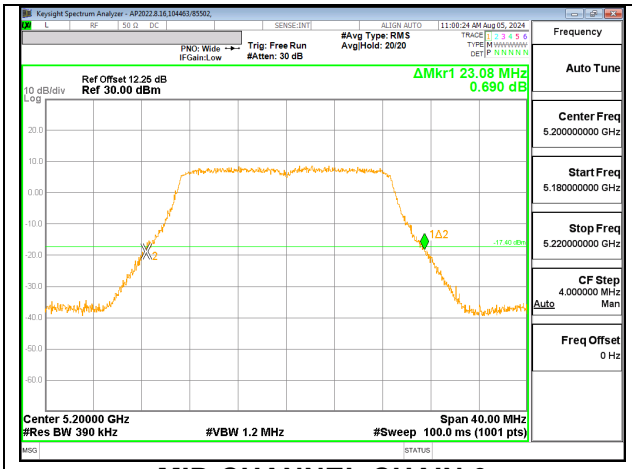
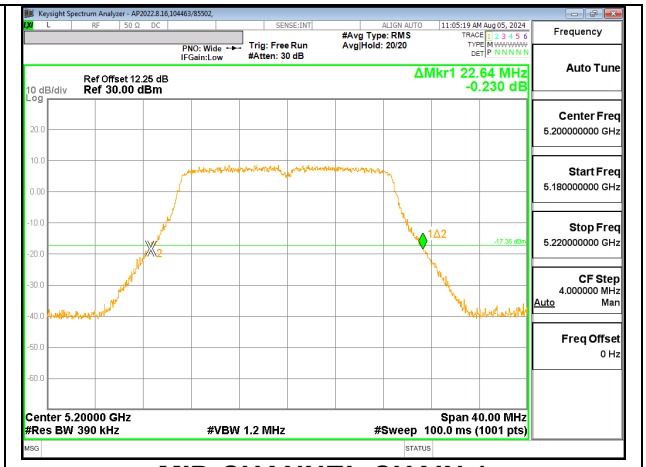
9.2.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5180	23.04	22.92
Mid	5200	23.08	22.64
High	5240	22.80	22.72



MID CHANNEL CHAIN 0

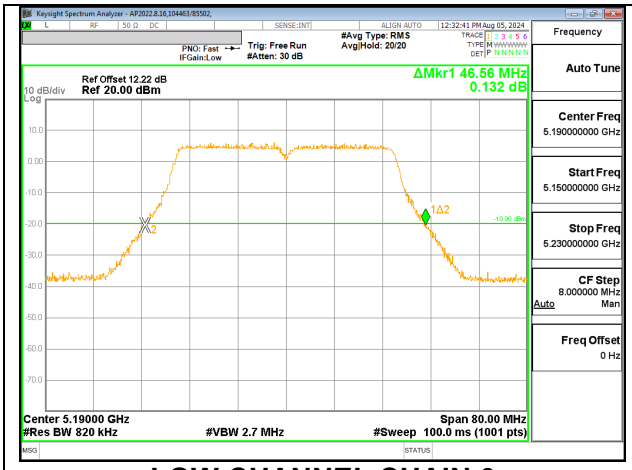


MID CHANNEL CHAIN 1

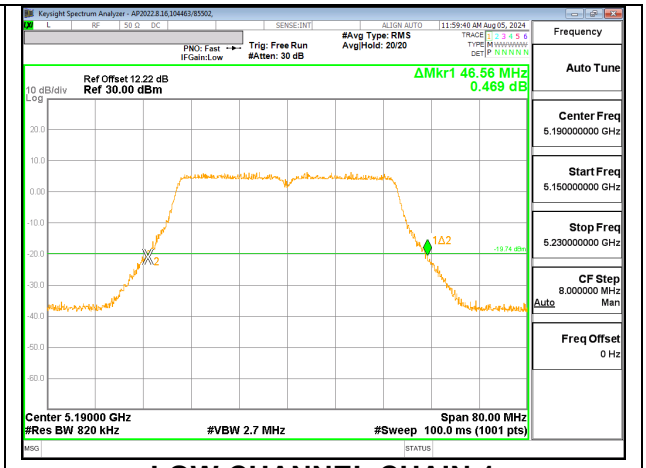
9.2.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5190	46.56	46.56
High	5230	46.16	46.40



LOW CHANNEL CHAIN 0



LOW CHANNEL CHAIN 1

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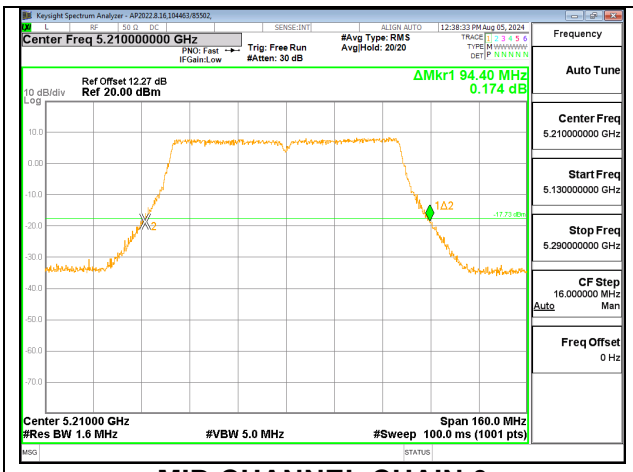
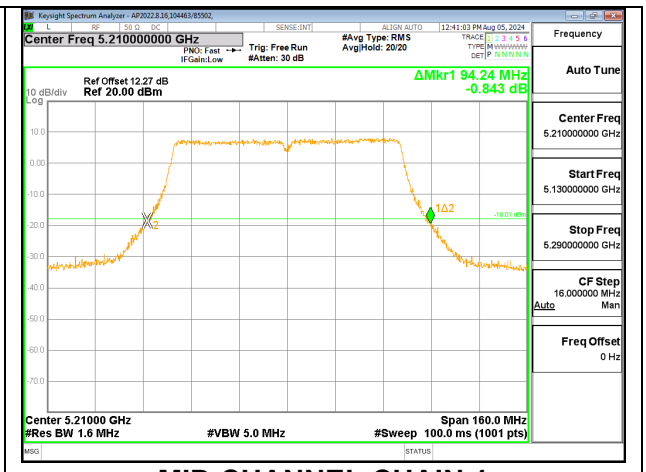
9.2.4. 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5210	94.40	94.24



MID CHANNEL CHAIN 0

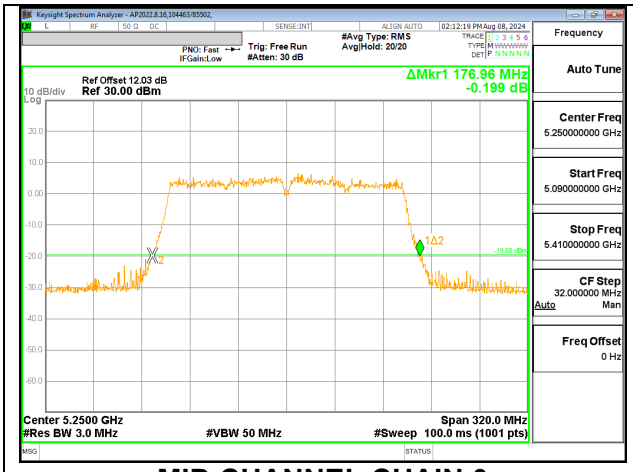


MID CHANNEL CHAIN 1

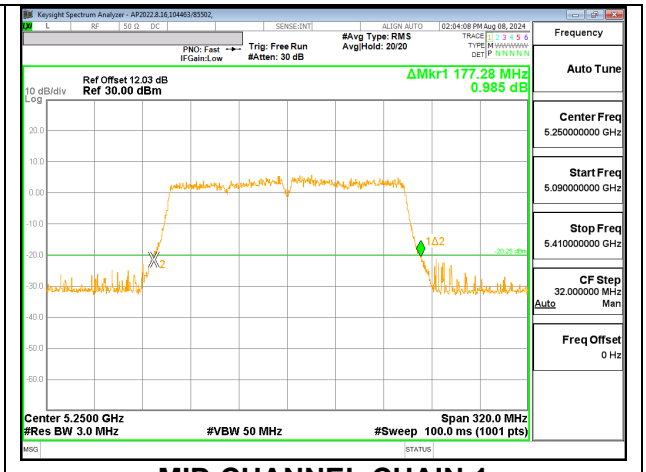
9.2.5. 802.11ac VHT160 MODE IN THE 5.2/5.3 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5210	176.96	177.28



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

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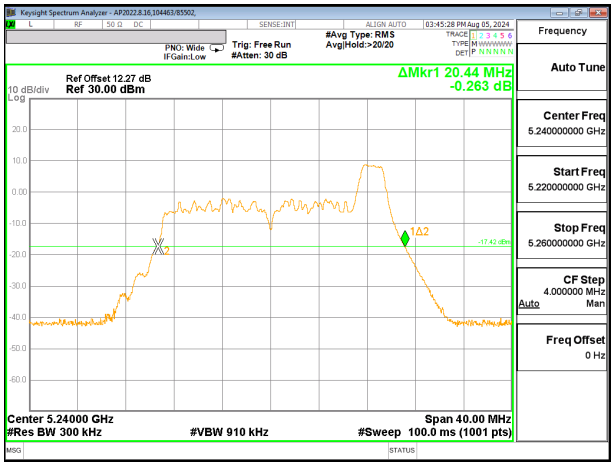
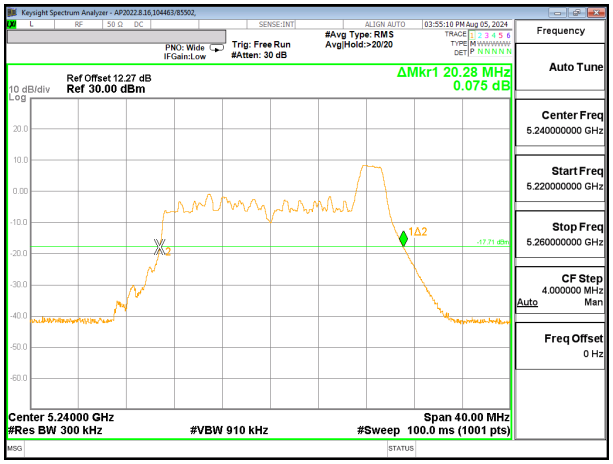
9.2.6. 802.11be EHT20 MODE IN THE 5.2 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE : 26T

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5180	20.40	20.24
Mid	5200	18.52	18.28
High	5240	20.44	20.28



HIGH CHANNEL CHAIN 0

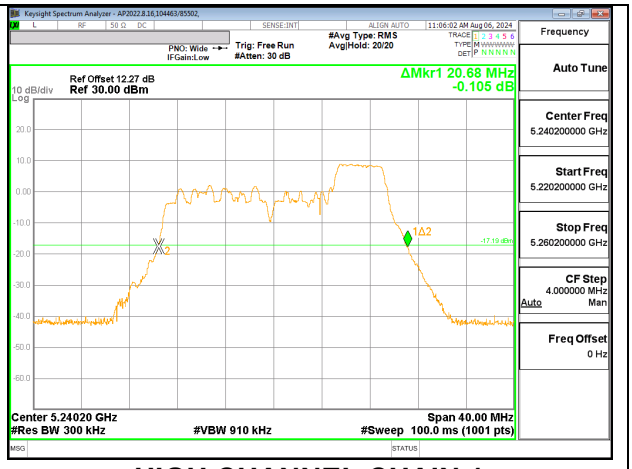


HIGH CHANNEL CHAIN 1

2TX Chain 0 + Chain 1 CDD MODE : 52T

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5180	20.52	20.60
Mid	5200	18.96	18.64
High	5240	21.16	20.68

HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

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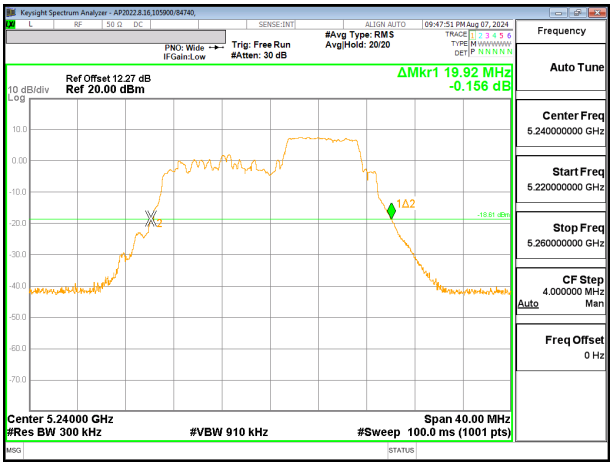
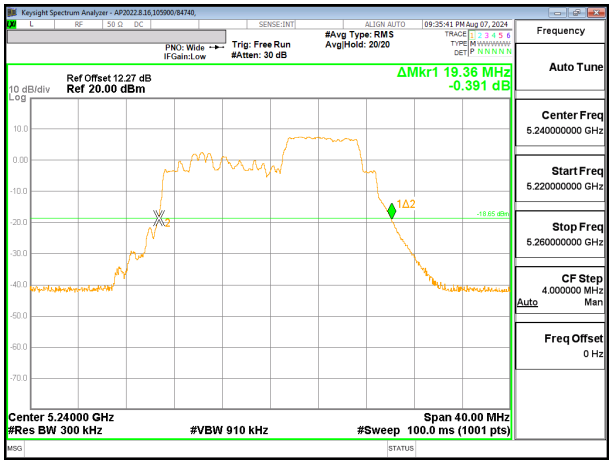
2TX Chain 0 + Chain 1 CDD MODE : 52T+26T

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5180	19.16	19.16
Mid	5200	19.20	19.20
High	5240	19.92	19.36



HIGH CHANNEL CHAIN 0

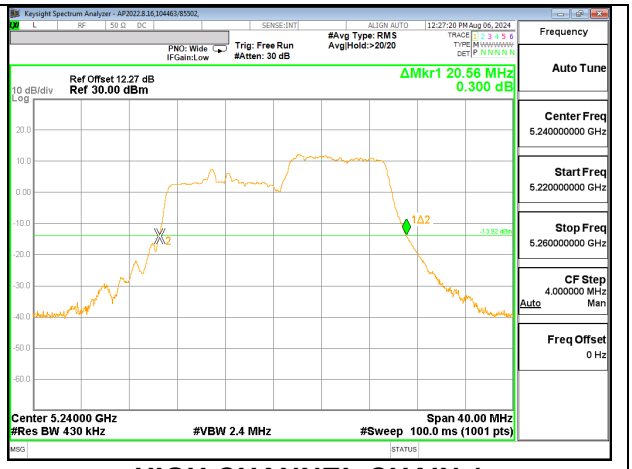


HIGH CHANNEL CHAIN 1

2TX Chain 0 + Chain 1 CDD MODE : 106T

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5180	20.88	21.36
Mid	5200	21.05	21.16
High	5240	21.28	20.56

HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

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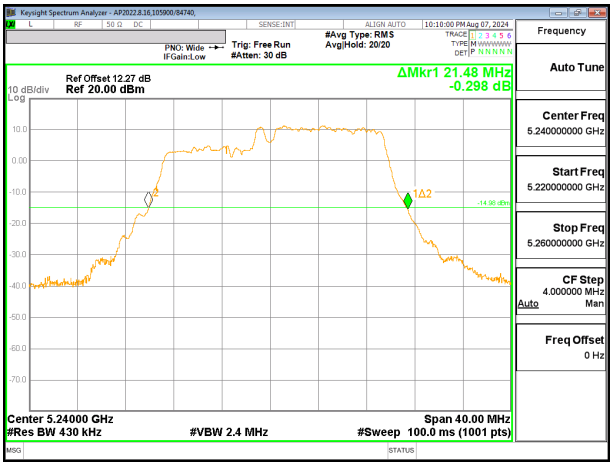
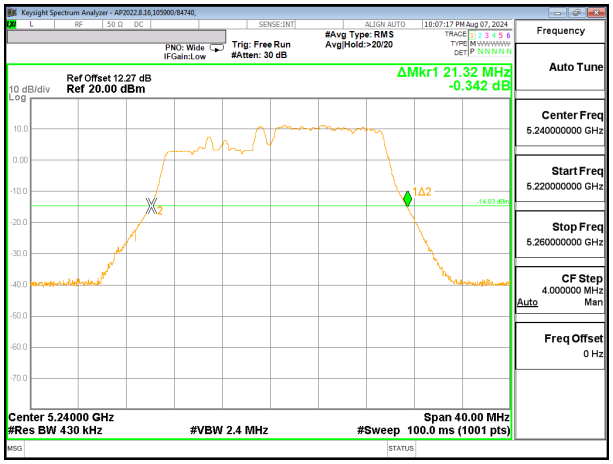
2TX Chain 0 + Chain 1 CDD MODE : 106T+26T

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5180	21.04	21.24
Mid	5200	20.96	21.20
High	5240	21.48	21.32



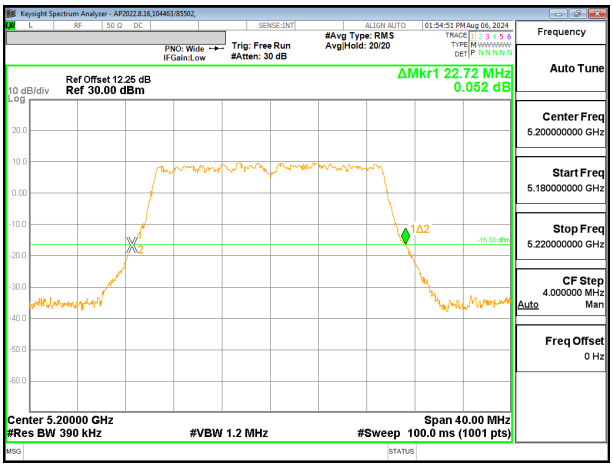
HIGH CHANNEL CHAIN 0



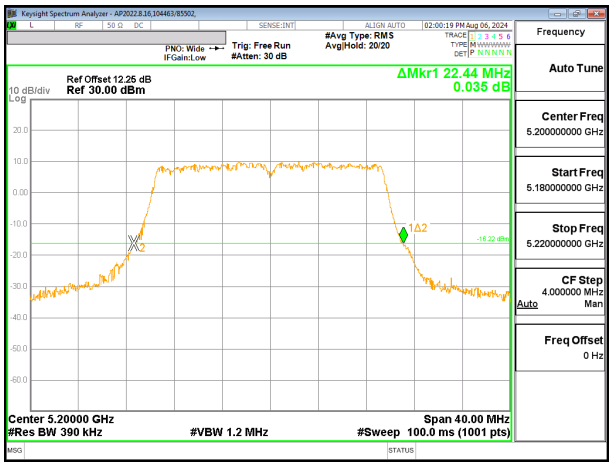
HIGH CHANNEL CHAIN 1

2TX Chain 0 + Chain 1 CDD MODE : 242T

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5180	22.52	22.16
Mid	5200	22.72	22.44
High	5240	22.68	22.44



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

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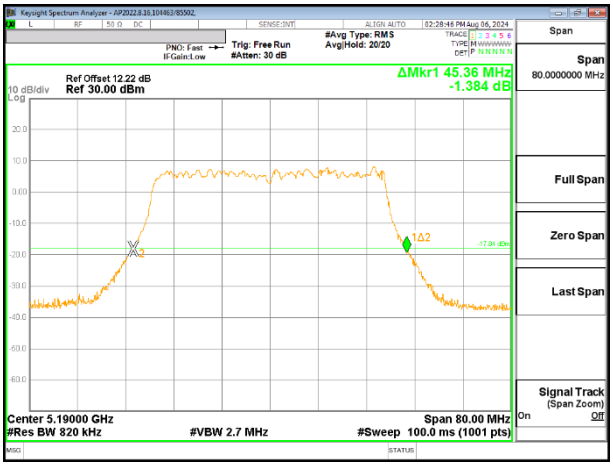
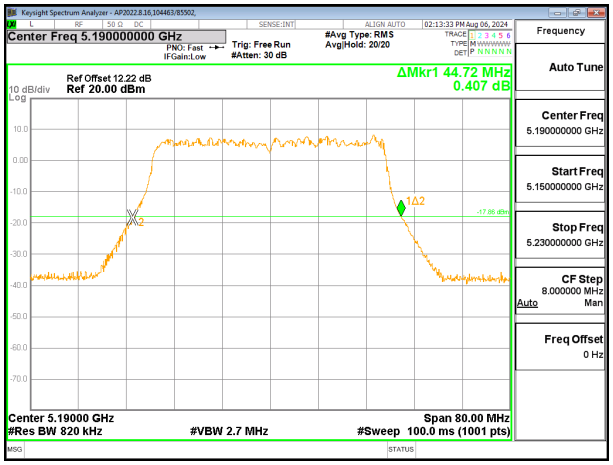
9.2.7. 802.11be EHT40 MODE IN THE 5.2 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE : 484T

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5190	45.36	44.72
High	5230	44.88	44.96



LOW CHANNEL CHAIN 0



LOW CHANNEL CHAIN 1

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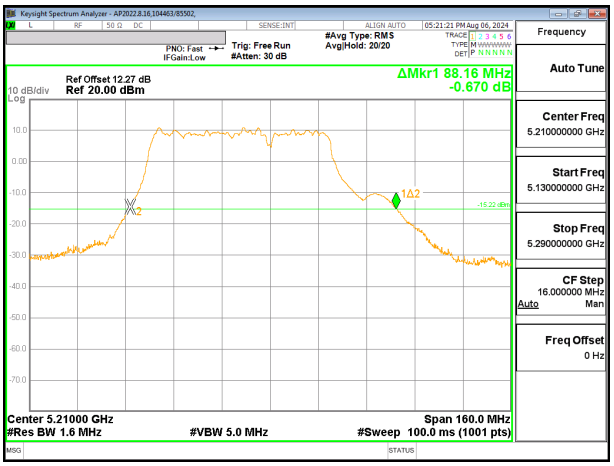
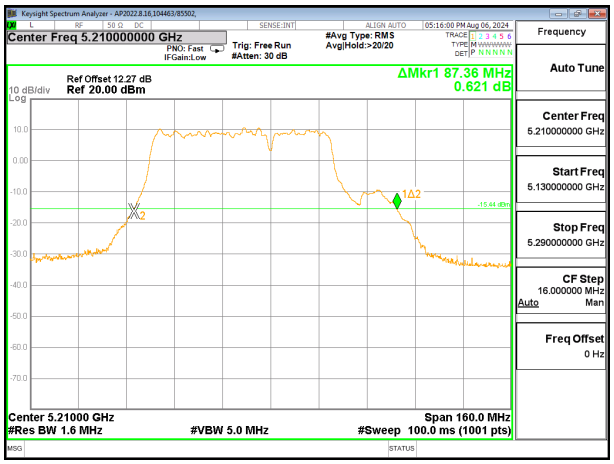
9.2.8. 802.11be EHT80 MODE IN THE 5.2 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE : 484T+242T (C)

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5210	88.16	87.36



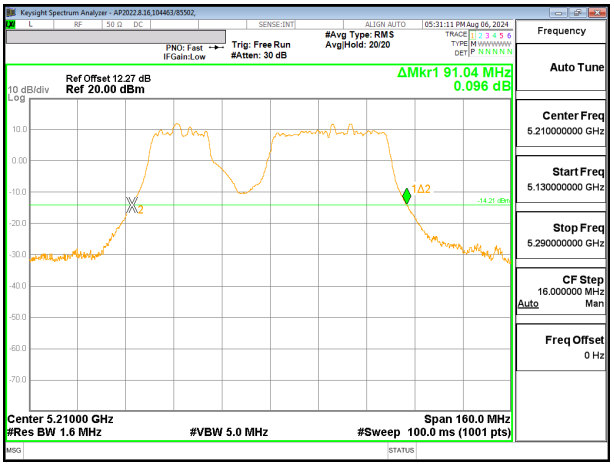
MID CHANNEL CHAIN 0



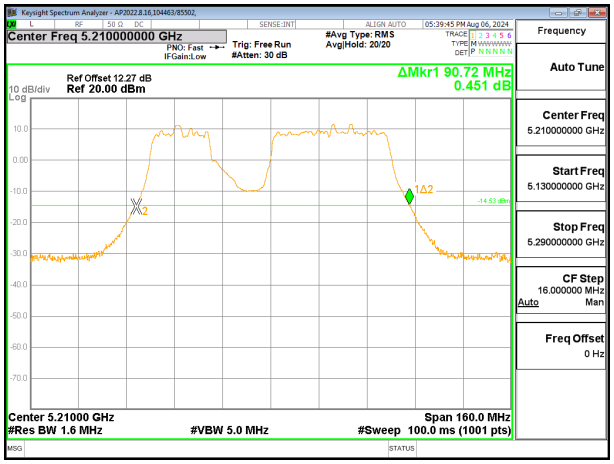
MID CHANNEL CHAIN 1

2TX Chain 0 + Chain 1 CDD MODE : 242T+484T (N)

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5210	91.04	90.72



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

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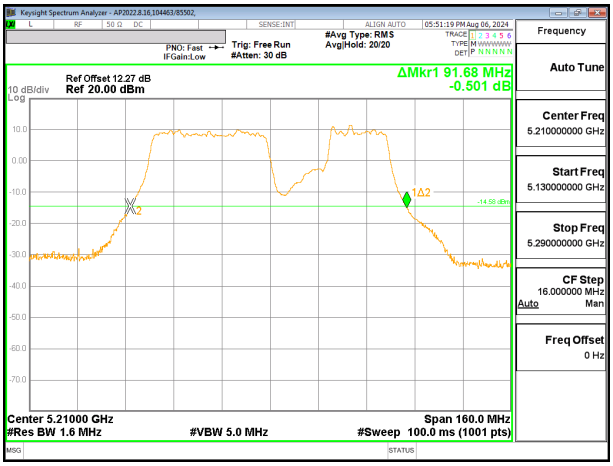
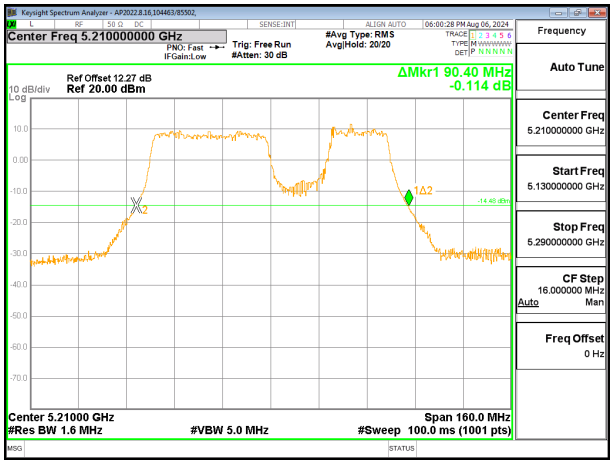
2TX Chain 0 + Chain 1 CDD MODE : 484T+242T (N)

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5210	91.68	90.40



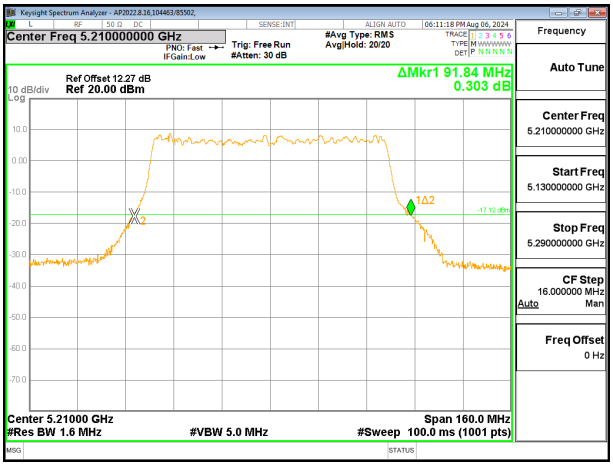
MID CHANNEL CHAIN 0



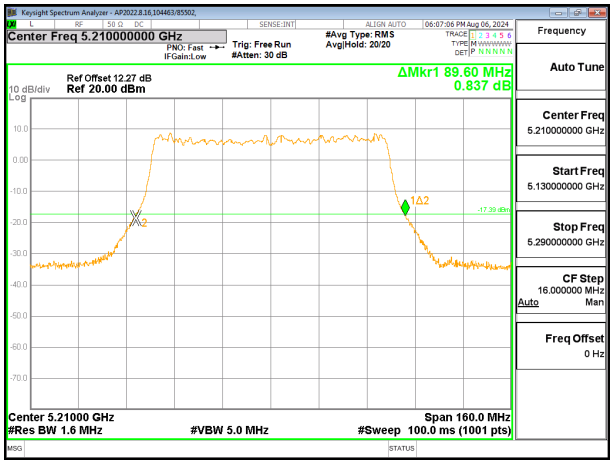
MID CHANNEL CHAIN 1

2TX Chain 0 + Chain 1 CDD MODE : 996T

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5210	91.84	89.60



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

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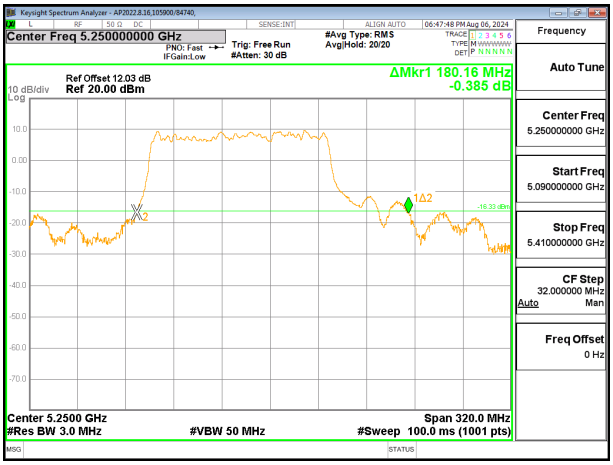
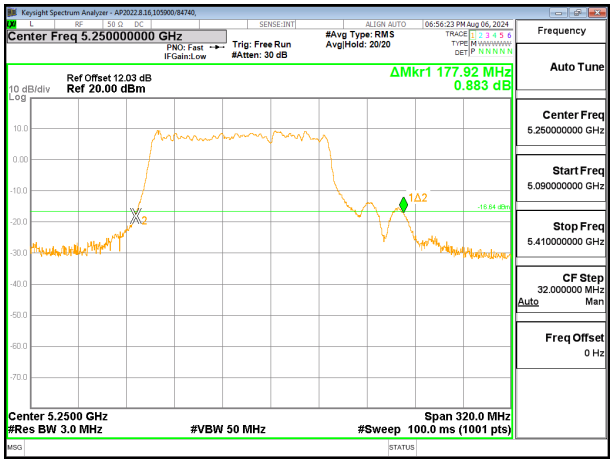
9.2.9. 802.11be EHT160 MODE IN THE 5.2/5.3 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE : 996T+484T (C)

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5250	180.16	177.92



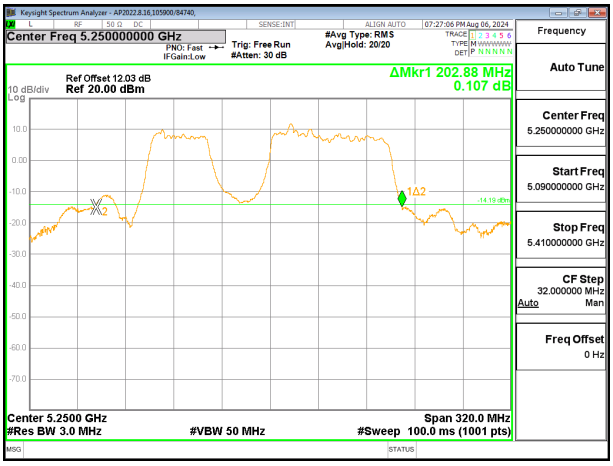
MID CHANNEL CHAIN 0



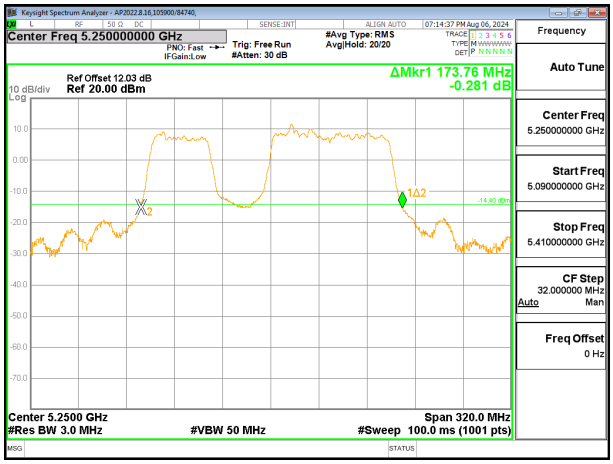
MID CHANNEL CHAIN 1

2TX Chain 0 + Chain 1 CDD MODE : 484T+996T (N)

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5250	202.88	173.76



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

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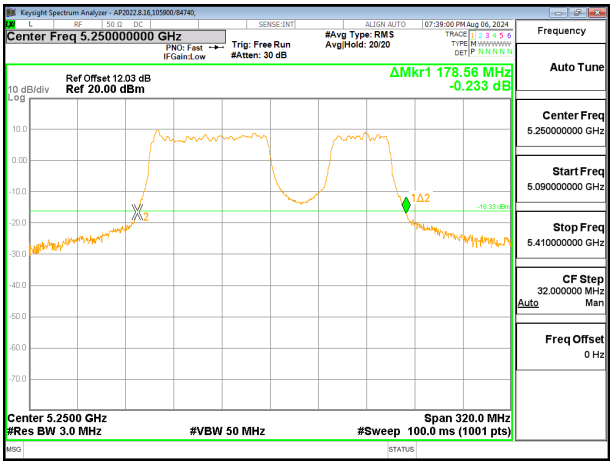
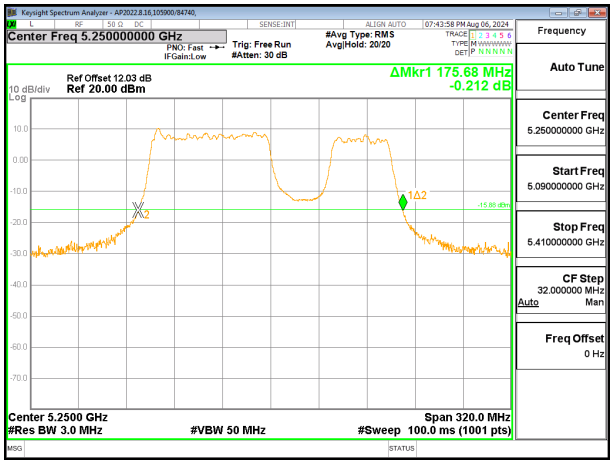
2TX Chain 0 + Chain 1 CDD MODE : 996T+484T (N)

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5250	178.56	175.68



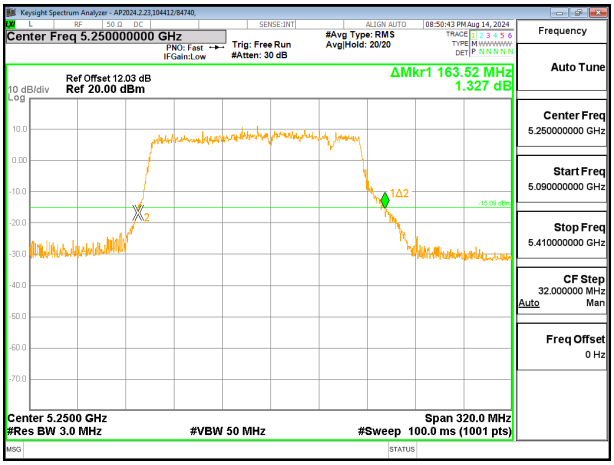
MID CHANNEL CHAIN 0



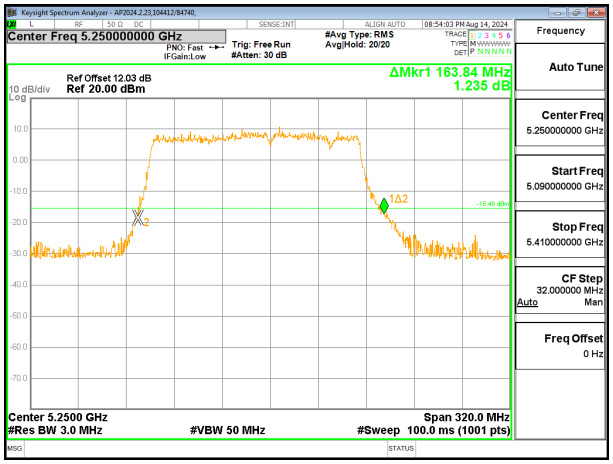
MID CHANNEL CHAIN 1

2TX Chain 0 + Chain 1 CDD MODE : 996T+484T+242T (C) Punctured 0x80

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5250	163.52	163.84



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

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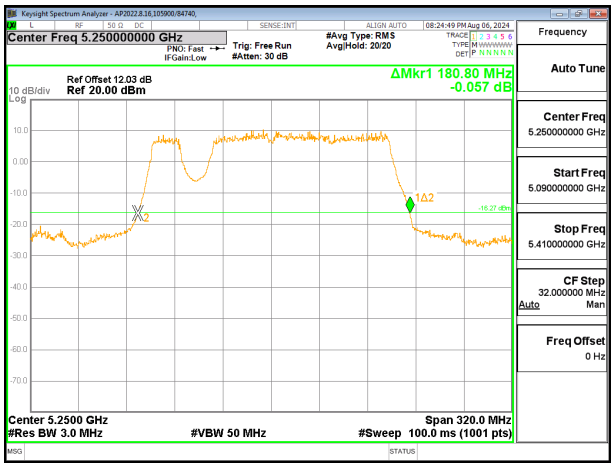
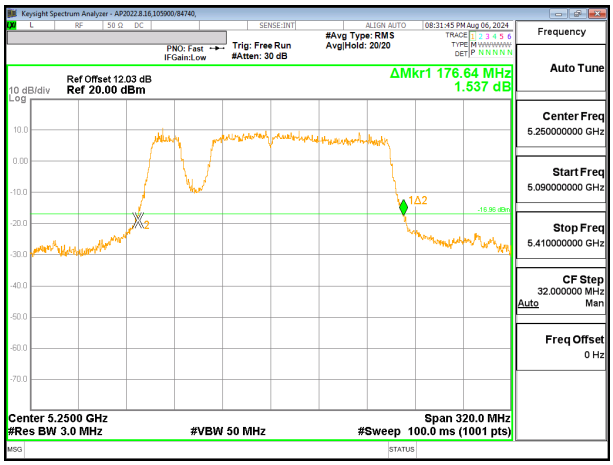
2TX Chain 0 + Chain 1 CDD MODE : 242T+484T+996T (N) Punctured 0x02

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5250	180.80	176.64



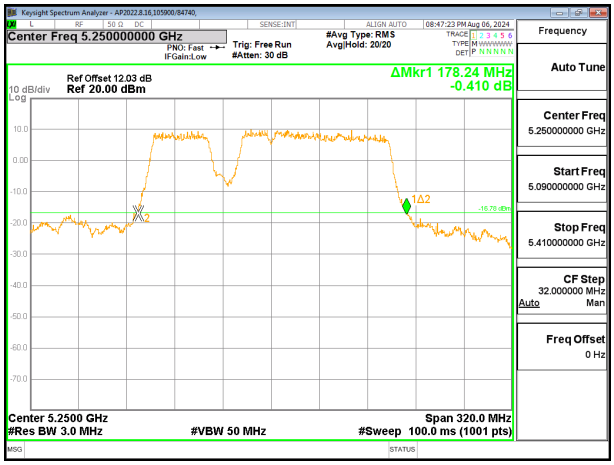
MID CHANNEL CHAIN 0



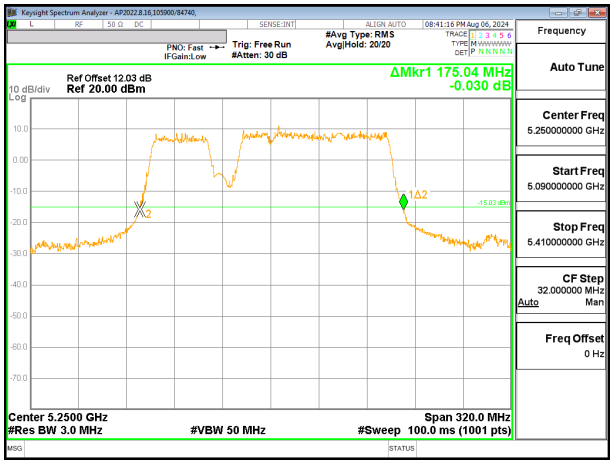
MID CHANNEL CHAIN 1

2TX Chain 0 + Chain 1 CDD MODE : 484T+242T+996T (N) Punctured 0x04

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5250	178.24	175.04



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

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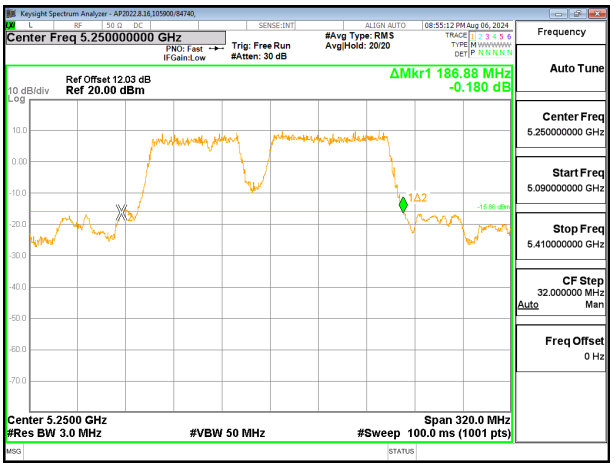
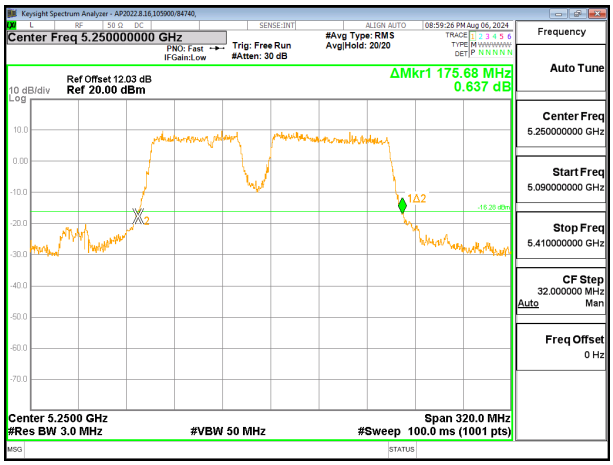
2TX Chain 0 + Chain 1 CDD MODE : 484T+242T+996T (N) Punctured 0x08

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5250	186.88	175.68



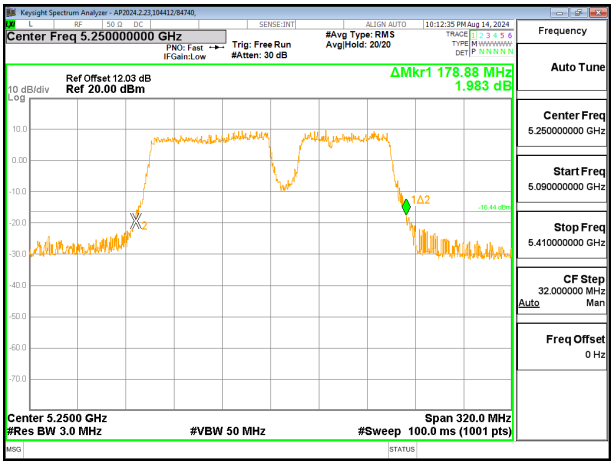
MID CHANNEL CHAIN 0



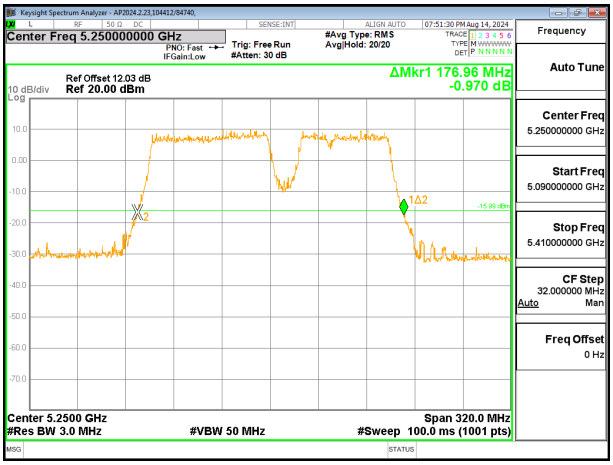
MID CHANNEL CHAIN 1

2TX Chain 0 + Chain 1 CDD MODE : 996T+242T+484T (N) Punctured 0x10

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5250	178.88	176.96



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

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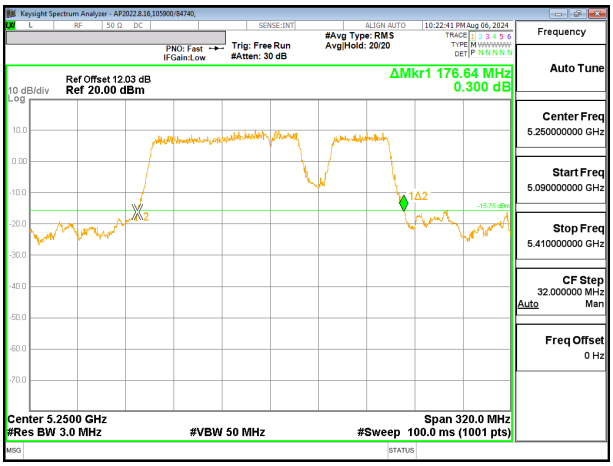
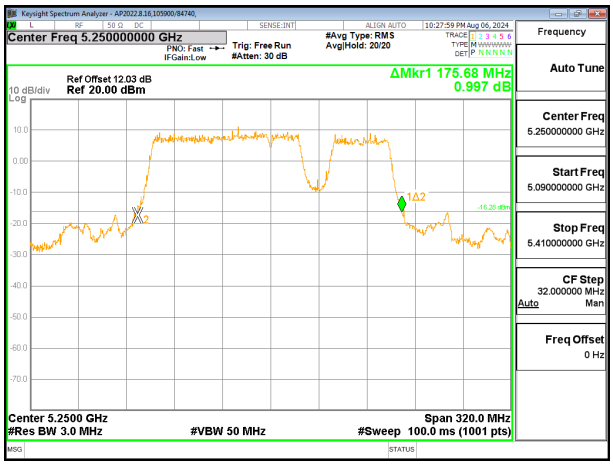
2TX Chain 0 + Chain 1 CDD MODE : 996T+242T+484T (N) Punctured 0x20

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5250	176.64	175.68



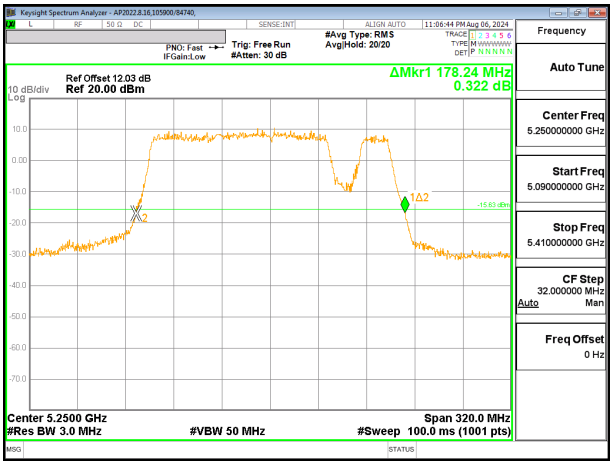
MID CHANNEL CHAIN 0



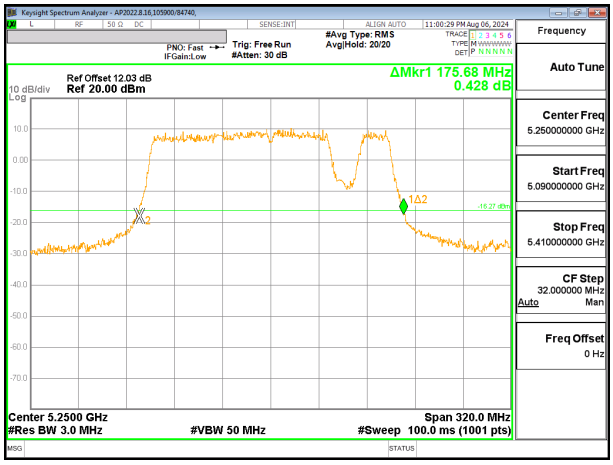
MID CHANNEL CHAIN 1

2TX Chain 0 + Chain 1 CDD MODE : 996T+484T+242T (N) Punctured 0x40

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5250	178.24	175.68



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

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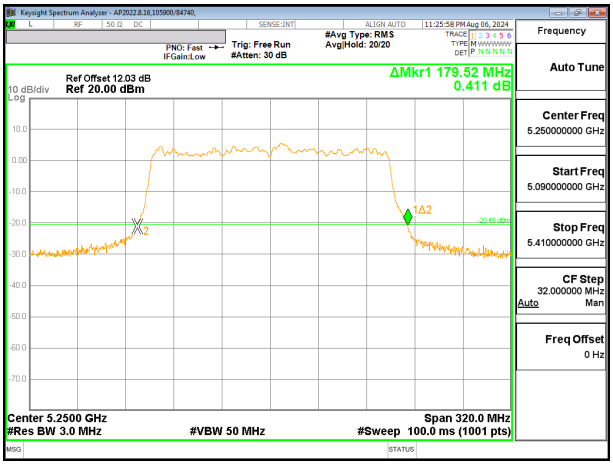
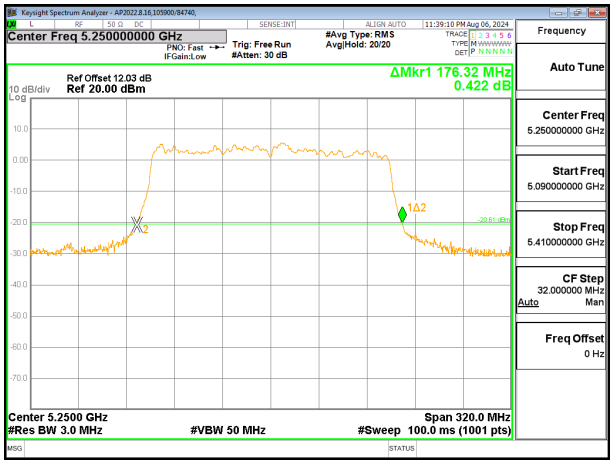
2TX Chain 0 + Chain 1 CDD MODE : 2x996T

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5250	179.52	176.32



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

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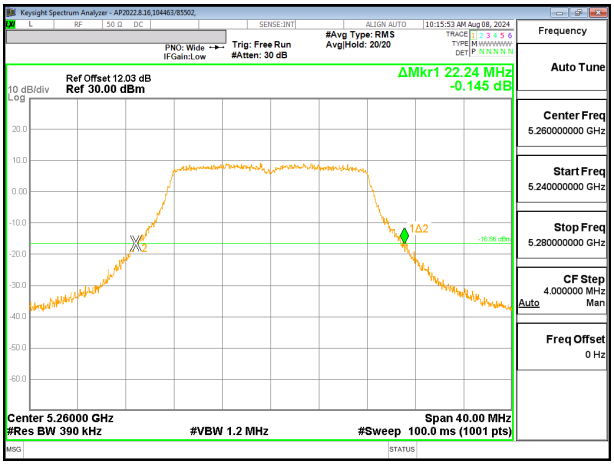
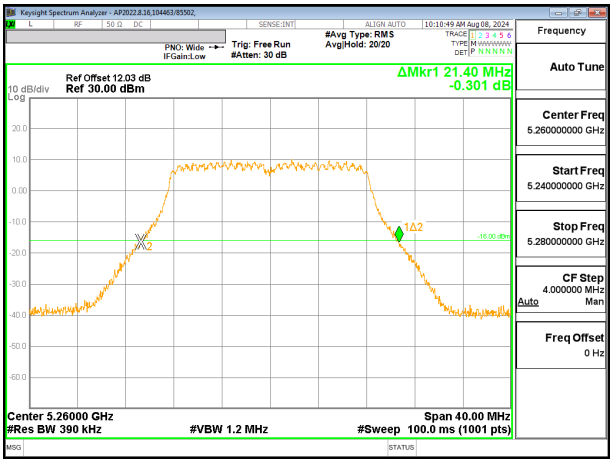
9.2.10. 802.11a MODE IN THE 5.3 GHz BAND

2TX CHAIN 0 + CHAIN 1 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth CHAIN 0 (MHz)	26 dB Bandwidth CHAIN 1 (MHz)
Low	5260	22.24	21.40
Mid	5300	22.16	21.32
High	5320	22.32	21.40



LOW CHANNEL CHAIN 0



LOW CHANNEL CHAIN 1

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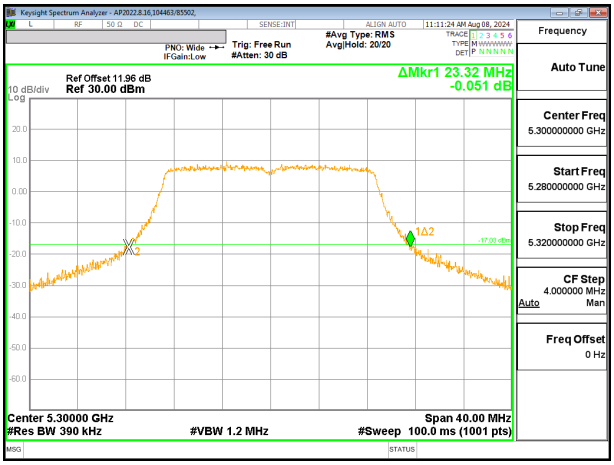
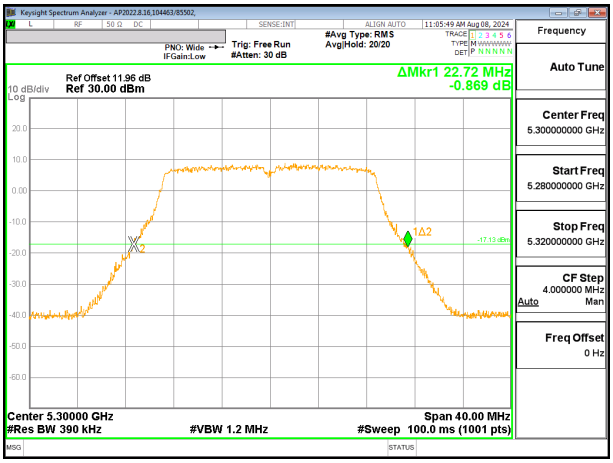
9.2.11. 802.11n HT20 MODE IN THE 5.3 GHz BAND

2TX CHAIN 0 + CHAIN 1 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth CHAIN 0 (MHz)	26 dB Bandwidth CHAIN 1 (MHz)
Low	5260	22.72	22.68
Mid	5300	23.32	22.72
High	5320	22.84	22.44



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

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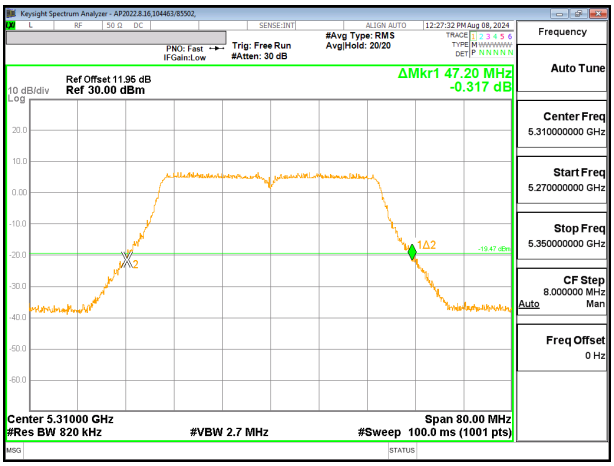
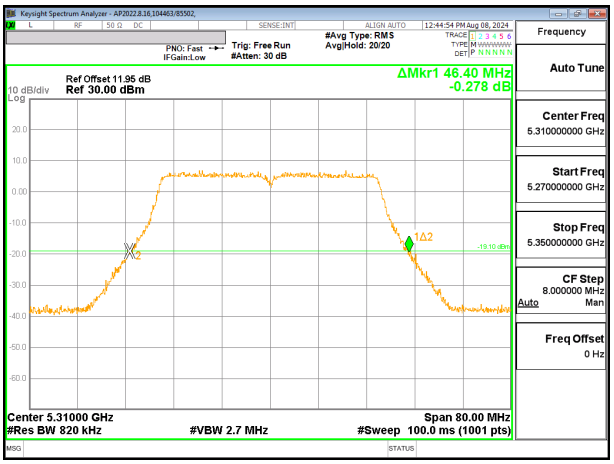
9.2.12. 802.11n HT40 MODE IN THE 5.3 GHz BAND

2TX CHAIN 0 + CHAIN 1 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth CHAIN 0 (MHz)	26 dB Bandwidth CHAIN 1 (MHz)
Low	5270	46.48	45.76
High	5310	47.20	46.40



HIGH CHANNEL CHAIN 0

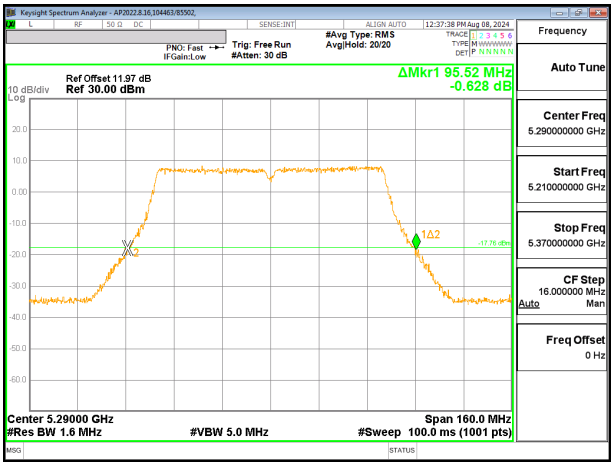


HIGH CHANNEL CHAIN 1

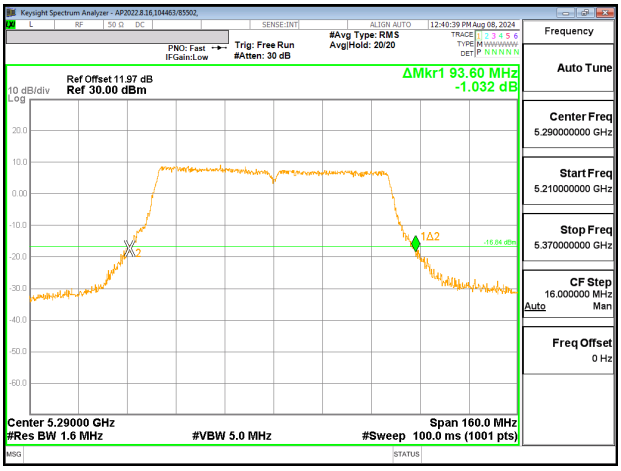
9.2.13. 802.11ac VHT80 MODE IN THE 5.3 GHz BAND

2TX CHAIN 0 + CHAIN 1 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth CHAIN 0 (MHz)	26 dB Bandwidth CHAIN 1 (MHz)
Mid	5290	95.52	93.60



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

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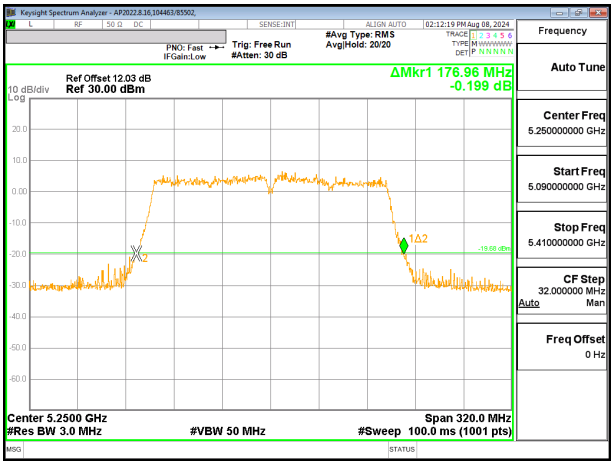
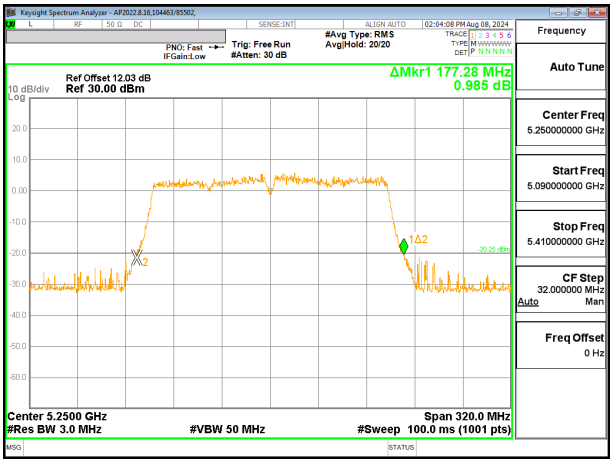
9.2.14. 802.11ac VHT160 MODE 2TX IN THE 5.2GHz & 5.3GHz BAND

2TX CHAIN 0 + CHAIN 1 CDD MODE:

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5250	176.96	177.28



MID CHANNEL CHAIN 0

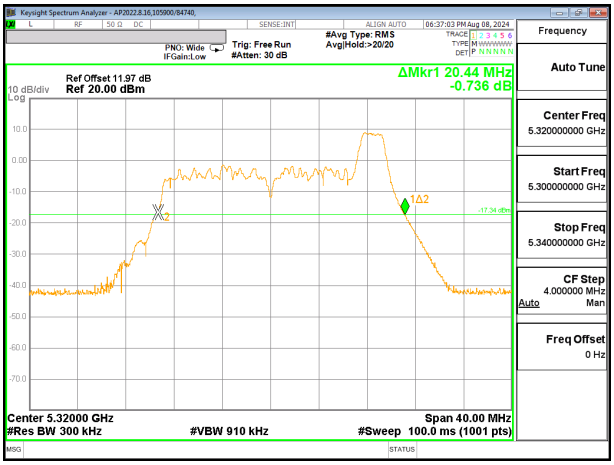


MID CHANNEL CHAIN 1

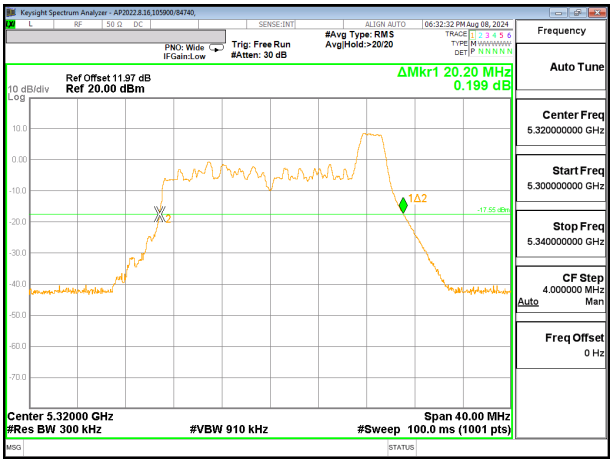
9.2.15. 802.11be EHT20 MODE 2TX IN THE 5.3GHz BAND

2TX CHAIN 0 + CHAIN 1 CDD MODE: 26T

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5260	20.32	20.32
Mid	5300	18.44	18.24
High	5320	20.44	20.20



HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

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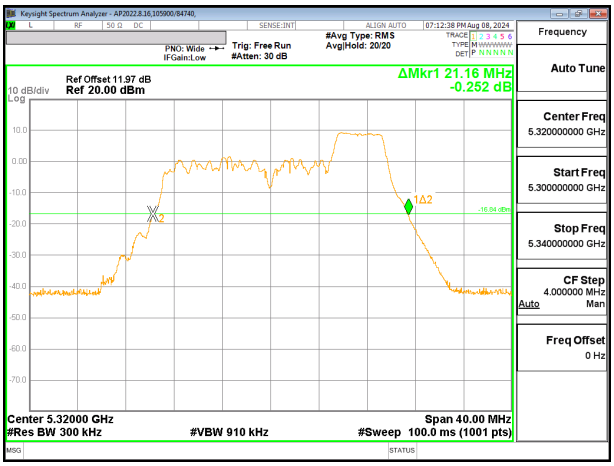
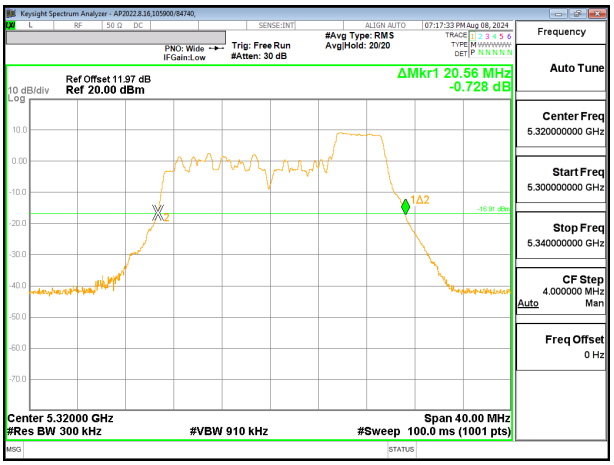
2TX CHAIN 0 + CHAIN 1 CDD MODE: 52T

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5260	20.44	20.60
Mid	5300	18.96	18.44
High	5320	21.16	20.56



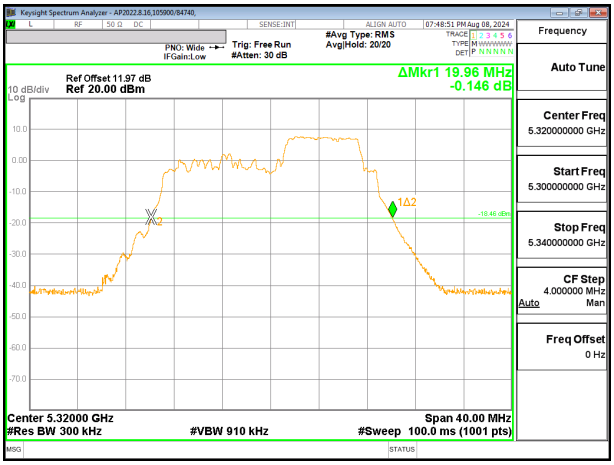
HIGH CHANNEL CHAIN 0



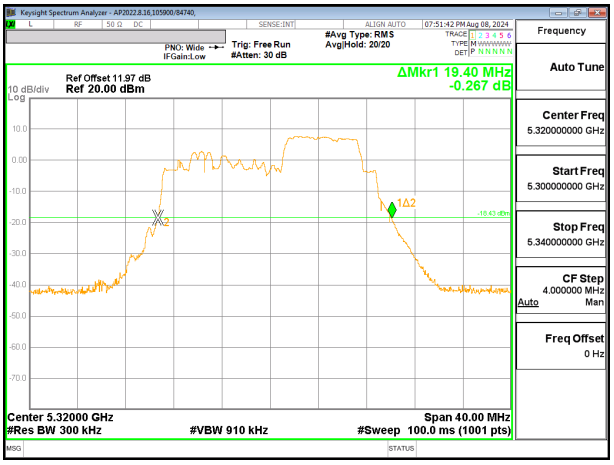
HIGH CHANNEL CHAIN 1

2TX CHAIN 0 + CHAIN 1 CDD MODE: 52T+26T

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5260	19.12	19.92
Mid	5300	19.16	19.20
High	5320	19.96	19.40



HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

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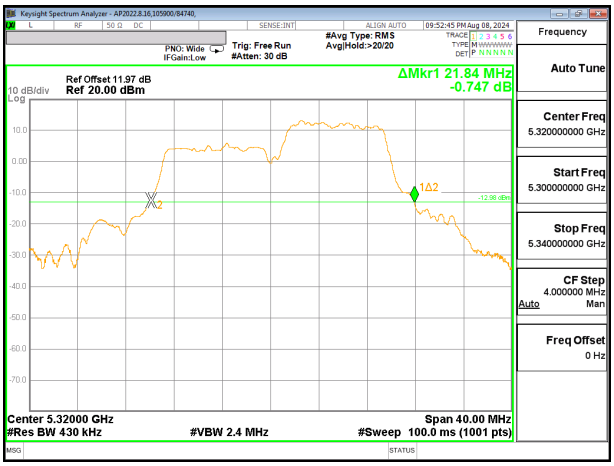
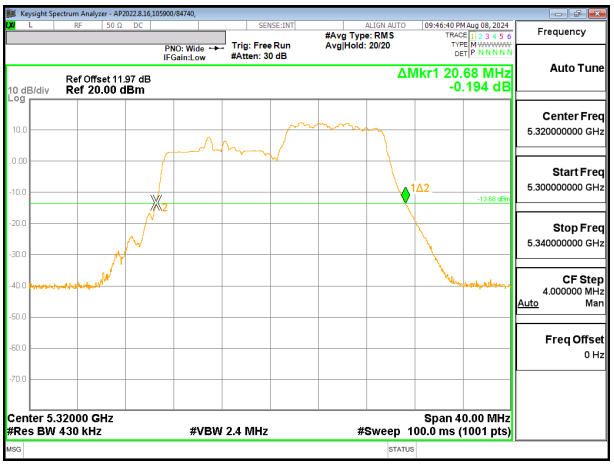
2TX CHAIN 0 + CHAIN 1 CDD MODE: 106T

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5260	20.76	21.08
Mid	5300	20.80	21.24
High	5320	21.84	20.68



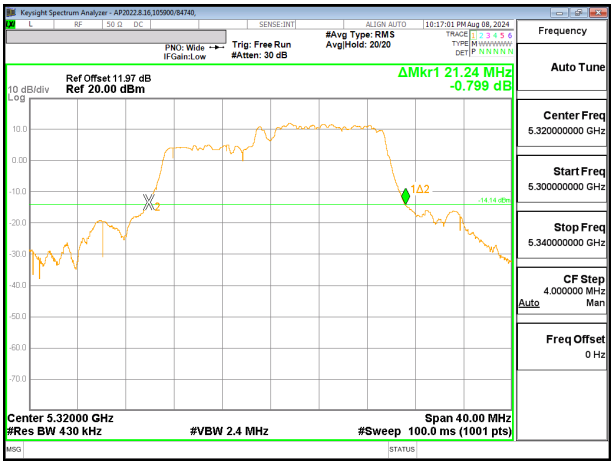
HIGH CHANNEL CHAIN 0



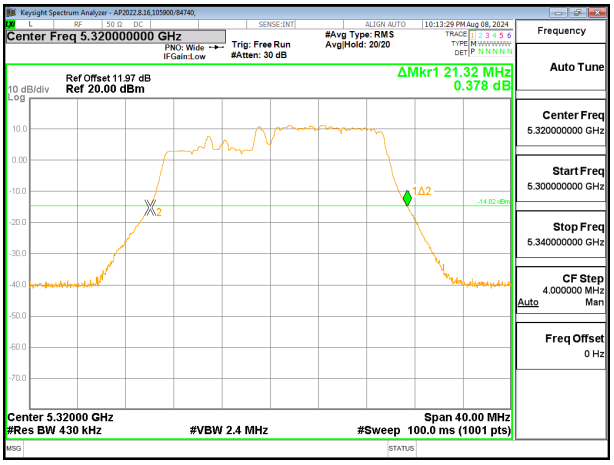
HIGH CHANNEL CHAIN 1

2TX CHAIN 0 + CHAIN 1 CDD MODE: 106T+26T

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5260	21.00	21.16
Mid	5300	21.00	21.24
High	5320	21.24	21.32



HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

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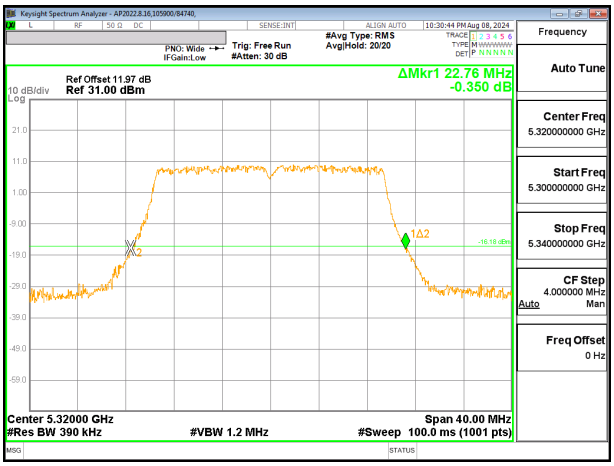
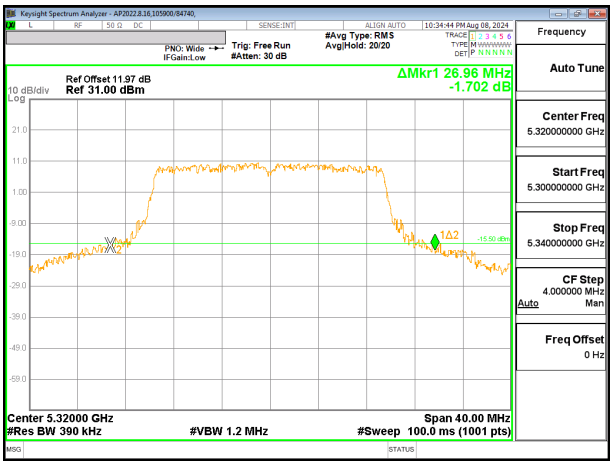
2TX CHAIN 0 + CHAIN 1 CDD MODE: 242T

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5260	22.52	22.40
Mid	5300	22.64	22.40
High	5320	22.76	26.96



HIGH CHANNEL CHAIN 0

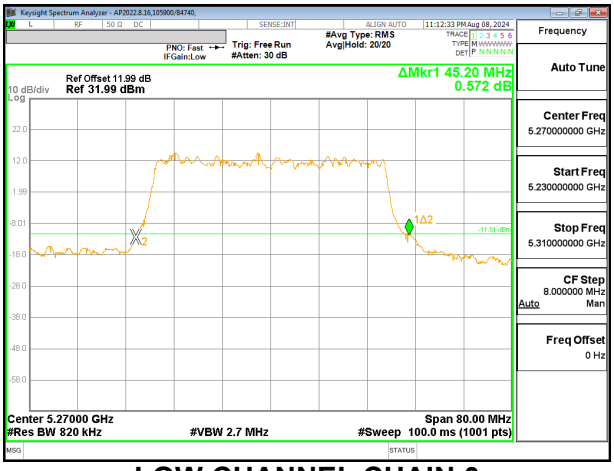


HIGH CHANNEL CHAIN 1

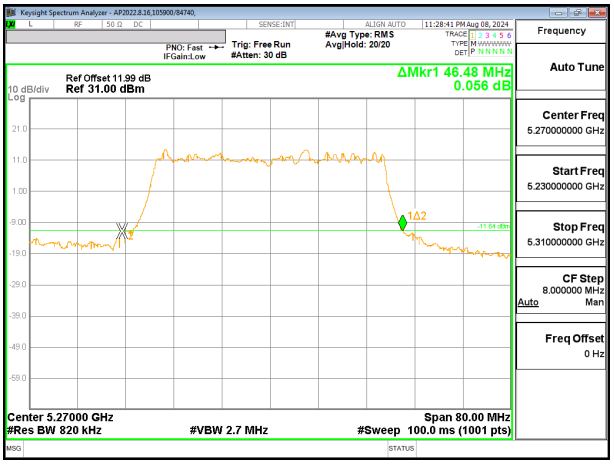
9.2.16. 802.11be EHT40 MODE 2TX IN THE 5.3GHz BAND

2TX CHAIN 0 + CHAIN 1 CDD OFDMA MODE: 484T

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5270	45.20	46.48
High	5310	45.20	45.36



LOW CHANNEL CHAIN 0



LOW CHANNEL CHAIN 1

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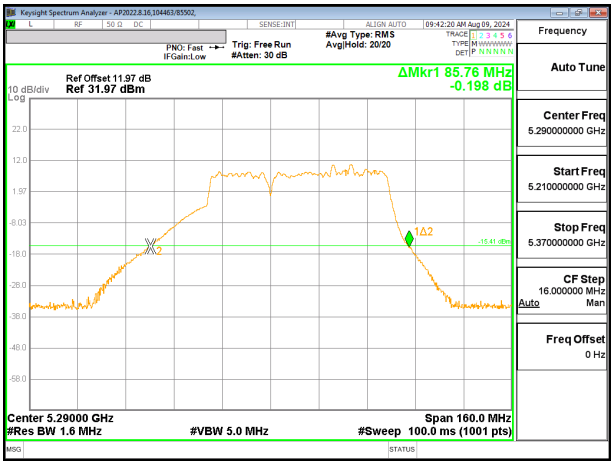
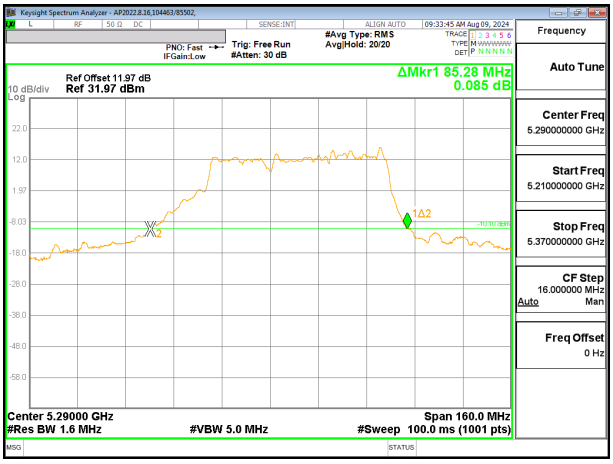
9.2.17. 802.11be EHT80 MODE 2TX IN THE 5.3GHz BAND

2TX CHAIN 0 + CHAIN 1 CDD OFDMA MODE: 484T+242T (C) MRU HIGH

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5290	85.76	85.28



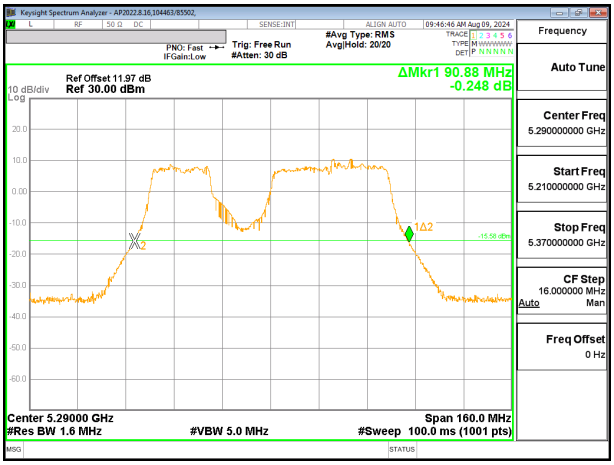
MID CHANNEL CHAIN 0



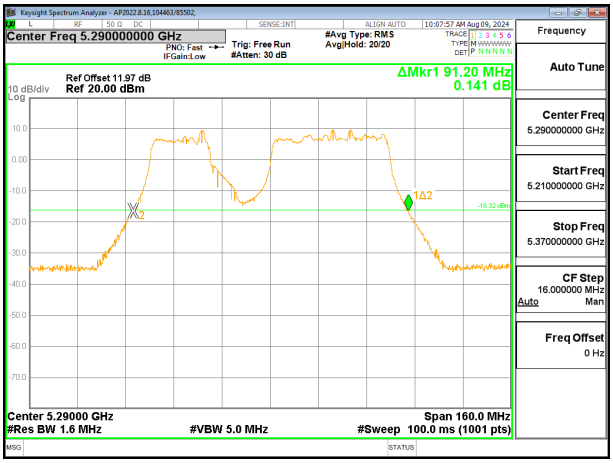
MID CHANNEL CHAIN 1

2TX CHAIN 0 + CHAIN 1 CDD OFDMA MODE: 242T+484T (N) MRU2

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5290	90.88	91.20



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

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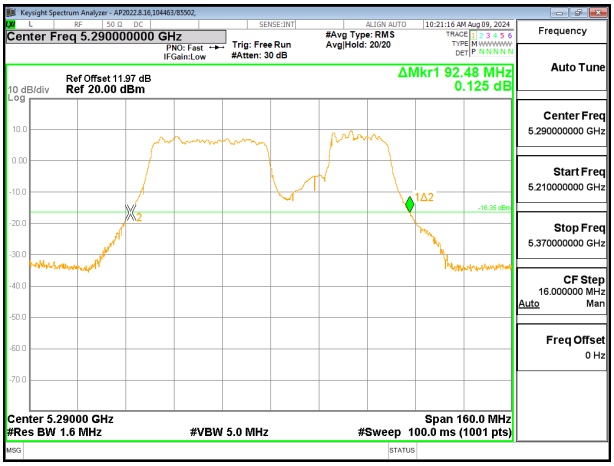
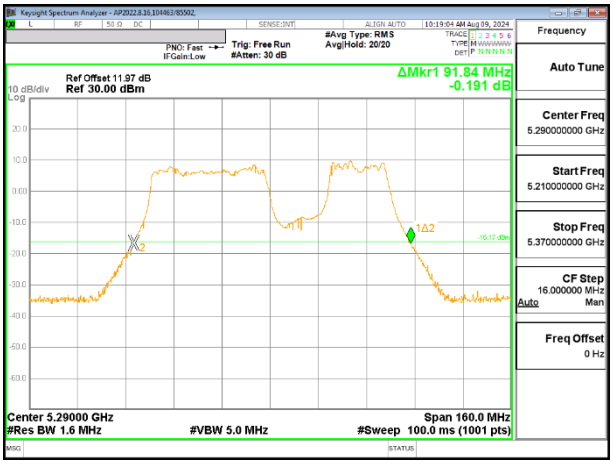
2TX CHAIN 0 + CHAIN 1 CDD OFDMA MODE: 484T+242T (N) MRU3

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5290	92.48	91.84



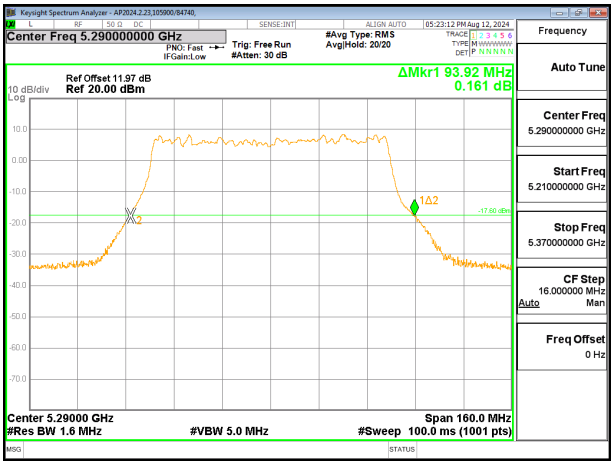
MID CHANNEL CHAIN 0



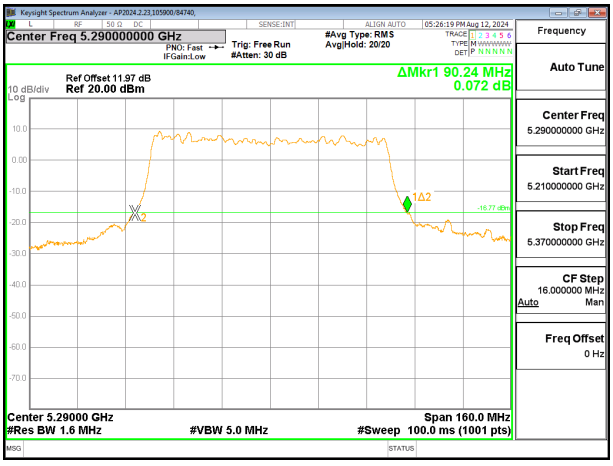
MID CHANNEL CHAIN 1

2TX CHAIN 0 + CHAIN 1 CDD OFDMA MODE: 996T

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5290	93.92	90.24



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

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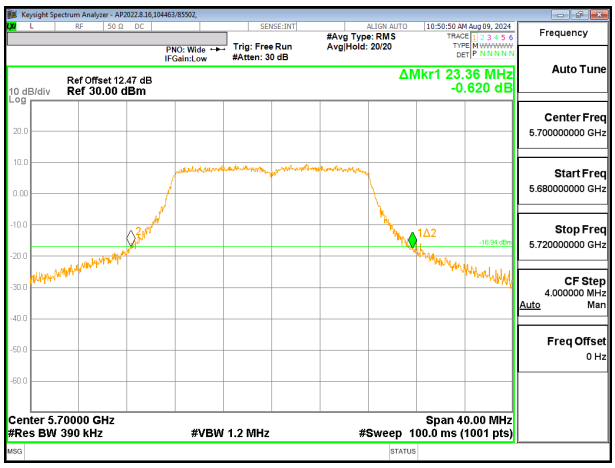
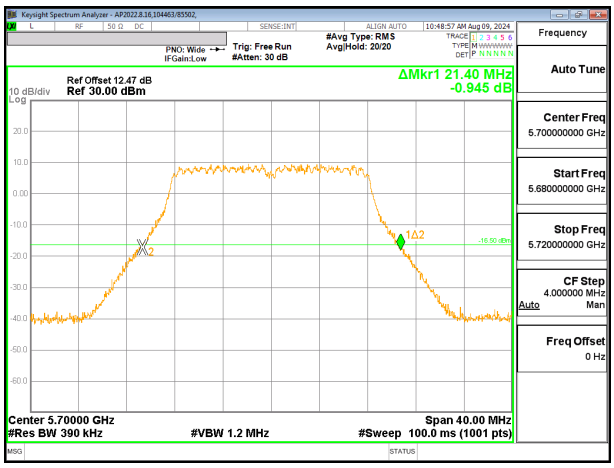
9.2.18. 802.11a MODE IN THE 5.6 GHz BAND

2TX CHAIN 0 + CHAIN 1 CDD MODE

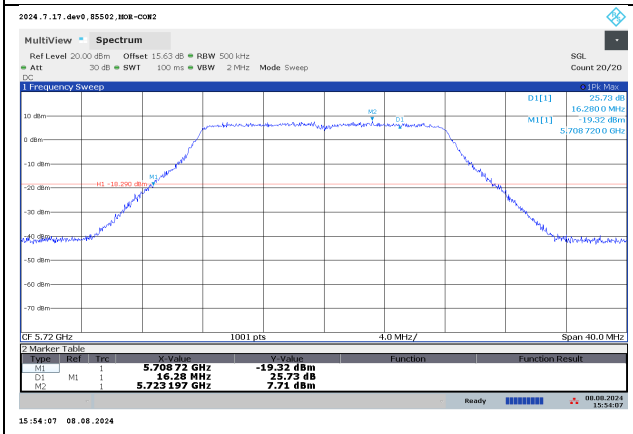
Channel	Frequency (MHz)	26 dB Bandwidth CHAIN 0 (MHz)	26 dB Bandwidth CHAIN 1 (MHz)
Low	5500	22.24	21.36
Mid	5580	22.20	21.56
High	5700	23.36	21.40
144	5720	16.28	16.40



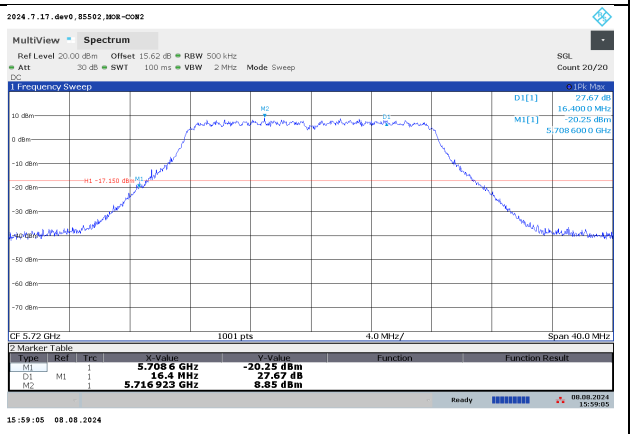
HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1



STRADDLE CHANNEL 144



STRADDLE CHANNEL 144

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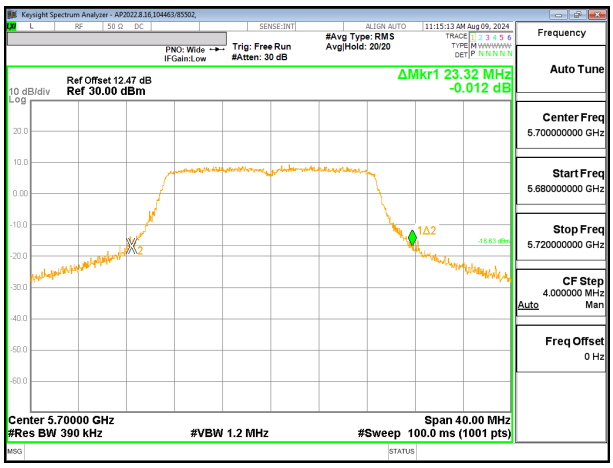
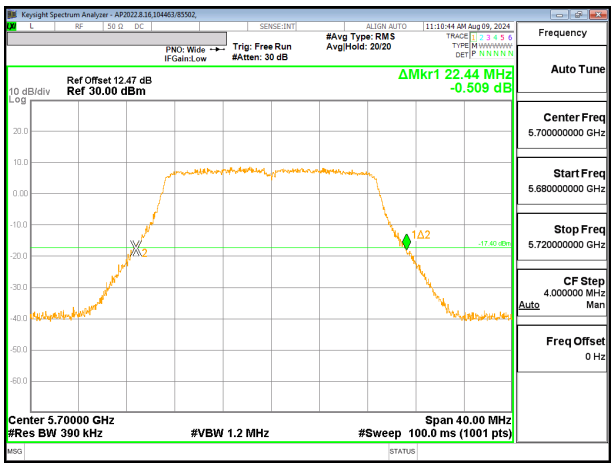
9.2.19. 802.11n HT20 MODE IN THE 5.6 GHz BAND

2TX CHAIN 0 + CHAIN 1 CDD MODE

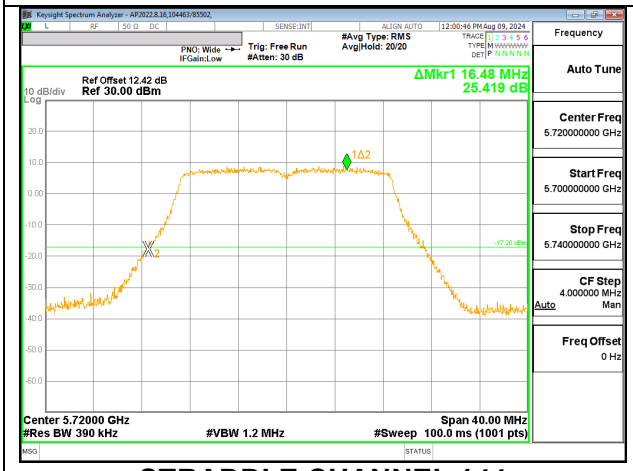
Channel	Frequency (MHz)	26 dB Bandwidth CHAIN 0 (MHz)	26 dB Bandwidth CHAIN 1 (MHz)
Low	5500	23.20	22.60
Mid	5580	22.76	22.68
High	5700	23.32	22.44
144	5720	16.48	16.44



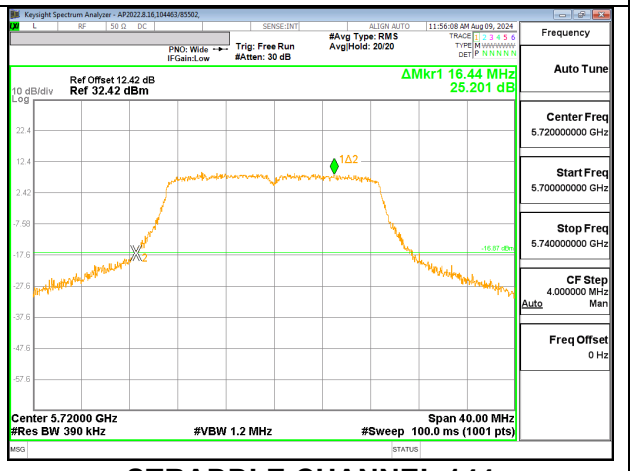
HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1



STRADDLE CHANNEL 144



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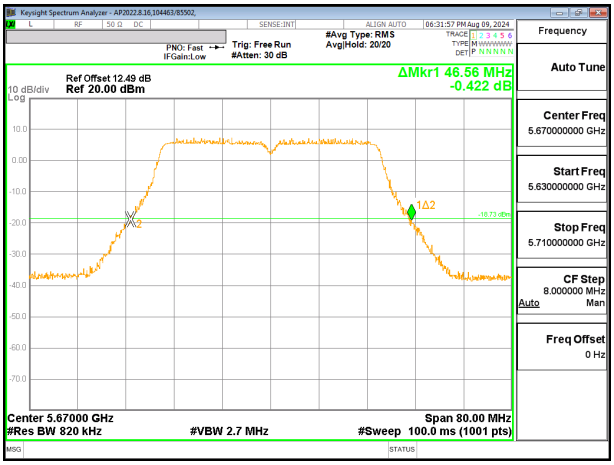
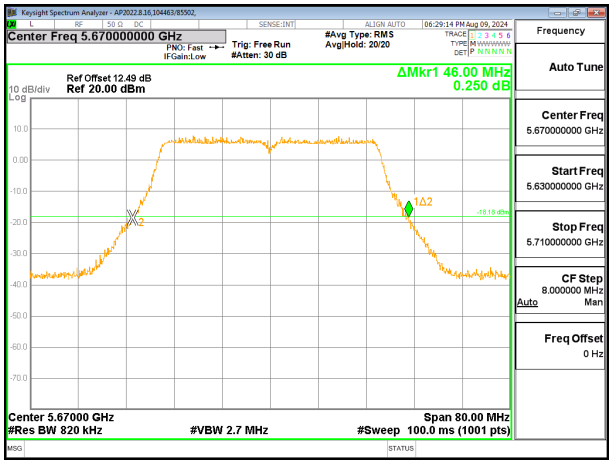
9.2.20. 802.11n HT40 MODE IN THE 5.6 GHz BAND

2TX CHAIN 0 + CHAIN 1 CDD MODE

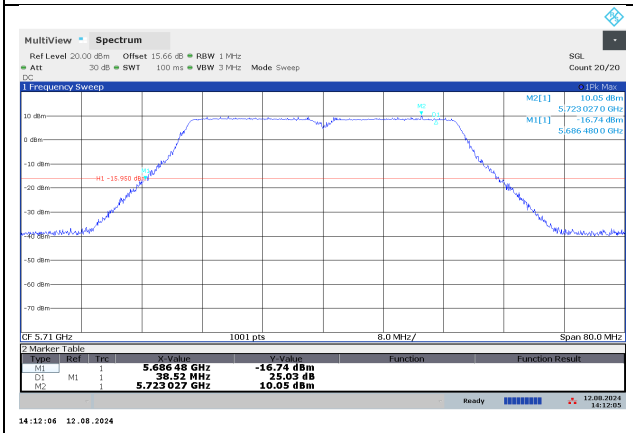
Channel	Frequency (MHz)	26 dB Bandwidth CHAIN 0 (MHz)	26 dB Bandwidth CHAIN 1 (MHz)
Low	5510	46.32	46.24
Mid	5550	46.56	45.76
High	5670	46.56	46.00
142	5710	38.52	38.20



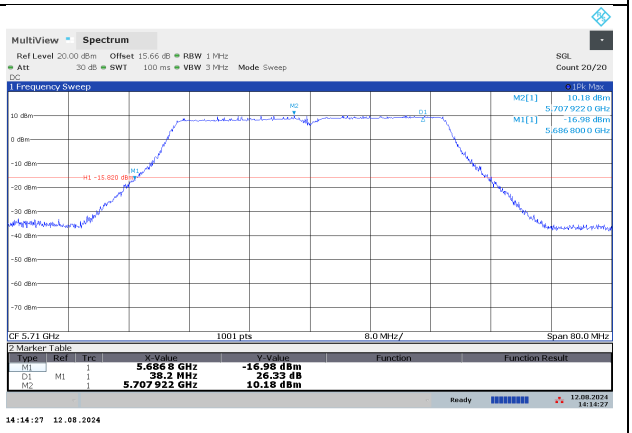
HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1



STRADDLE CHANNEL 142



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