TEST REPORT

Report Number. : 14516849-E8V4

Applicant	:	SONOS INC. 614 CHAPALA ST. SANTA BARBARA, CA, 93101, U.S.A.
Model	:	S44
Brand	:	SONOS
FCC ID	:	SBVRM044
IC	:	5373A-RM044
EUT Description	:	802.11 a/b/g/n/ac/ax 2x2 Client Device with BT and BLE
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART E ISED RSS-248 ISSUE 2 ISED RSS-GEN ISSUE 5 + A1 +A2

Date Of Issue:
2023-05-25

Prepared by:
UL Verification Services Inc.
47173 Benicia Street
Fremont, CA 94538 U.S.A.
TEL: (510) 319-4000
FAX: (510) 661-0888

ACCREDITED
CERT #0751.05

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	2023-04-18	Initial Issue	---
V2	2023-05-05	Updated Cover page, Section 1, 3, 6.7, 10 and 10. 2	Kiya Kedida
V3	2023-05-17	Updated Section 6.7	Kiya Kedida
V4	2023-05-25	Section 6.7 updated the setup diagram and the description of test setup cable #3	Glenn Escano

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SONOS INC.
614 Chapala St.
Santa Barbara, CA, 93101, U.S.A.

EUT DESCRIPTION: 802.11 a/b/g/n/ac/ax 2x2 Client Device with BT and BLE

MODEL: S44

BRAND: SONOS

SERIAL NUMBER: Radiated Sample: A100 2301WC C4-38-75-00-0F-40-9 and A100 2301WC C4-38-75-00-0E-E0-F
Conducted Sample: A100 2301WC C4-38-75-00-0E-7C-0

SAMPLE RECEIPT DATE: 2023-02-20

DATE TESTED: 2023-02-28 to 2023-04-05

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC 47 CFR Part 15 Subpart E	Complies
ISED RSS-248 Issue 2	Complies
ISED RSS-GEN Issue 5 + A1 + A2	Complies

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

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, any agency of the Federal Government, or any agency of the U.S. government.

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Approved & Released For
UL Verification Services Inc. By:

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

Prepared By:

Glenn Escano
Senior Test Engineer
Consumer Technology Division
UL Verification Services Inc.

1st Reviewed By:

Vien Tran
Senior Laboratory Engineer
Consumer Technology Division
UL Verification Services Inc.

2nd Reviewed By:

Kiya Kedida
Senior Project Engineer
Consumer Technology Division
UL Verification Services Inc.

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2. TEST RESULT SUMMARY

This report contains data provided by the customer which can impact the validity of results. UL Verification Services Inc. is only responsible for the validity of results after the integration of the data provided by the customer.

FCC Clause	ISED Clause	Requirement	Result	Comment
See Comment		Duty Cycle	Reporting purposes only	ANSI C63.10 Section 12.2 ...
See Comment	RSS-GEN 6.7	99% BW	Reporting purposes only	ANSI C63.10 Section 6.9.3
§15.407 (a) (10)	---	26dB BW	Compliant	None.
§15.407 (a) (8)	RSS-248 4.6.3	Output Power e.i.r.p.	Compliant	Indoor Client.
§15.407 (a) (8)	RSS-248 4.6.3	PSD e.i.r.p	Compliant	Indoor Client.
§15.407 (b) (6)	RSS-248 4.7.2(a)	Emissions outside 5.925-7.125 GHz band	Compliant	None
§15.407 (b) (7)	RSS-248 4.7.2(b)	Emissions within 5.925-7.125 GHz Band(Emissions Mask)	Compliant	None
§15.205	RSS-GEN 8.10	Unwanted emissions in restricted bands	Compliant	None
§15.209	RSS-GEN 8.9	Radiated Spurious Emissions	Compliant	None
§15.207	RSS-GEN 8.8	AC Mains Conducted Emissions	Compliant	None

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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 D01 v01r03
- FCC KDB 789033 D02 v02r01
- FCC KDB 987594 D01 General Requirements v01r03
- FCC KDB 987594 D02 EMC Measurement v01r01
- ANSI C63.10-2013
- RSS-GEN Issue 5 + A1 + A2
- RSS-248 Issue 2

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4. FACILITIES AND ACCREDITATION

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

	Address	ISED CABID	ISED Company Number	FCC Registration
☒	Building 1: 47173 Benicia Street Fremont, CA 94538, U.S.A	US0104	2324A	550739
☐	Building 2: 47266 Benicia Street Fremont, CA 94538, U.S.A	US0104	22541	550739
☒	Building 4: 47658 Kato Rd Fremont, CA 94538, U.S.A	US0104	2324B	550739

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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 Frequnecy (Spectrum Analyzer)	141.16 Hz
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	1.22%
Power Spectral Density	2.47 dB
RF Power Measurement Direct Method Using Power Meter	1.3 dB (PK) / 0.45 dB (AV)
Unwanted Emissions, Conducted	1.94dB
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.78 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.40 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.87 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	6.01 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.73 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.51 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.29 dB
Time Domain Measurements	3.39%
Temperature	0.57
Humidity	3.39%
DC Supply Voltages	0.57%

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

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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 an 802.11 a/b/g/n/ac/ax 2x2 Client Device with BT and BLE.

This report covers ax 6E Wifi radio.

6.2. EUT DEVICE CLASS

EUT is of the following device class:

	U-NII Bands of Operation			
	5	6	7	8
Indoor Client (6XD)	☒	☒	☒	☒

6.3. MAXIMUM OUTPUT POWER

The transmitter has a maximum average e.i.r.p. output power as follows:

UNII-5 BAND 802.11 ax MODE 2TX

Frequency Range (MHz)	Mode	e.i.r.p. Power (dBm)	Output Power (mW)
2TX CDD -UNII-5 band			
5955-6415	802.11ax HE20 SU	11.04	12.71
	802.11ax HE20 OFDMA, 242-Tones	12.88	19.41
	802.11ax HE20 OFDMA, 26-Tones	4.24	2.65
5965-6405	802.11ax HE40 SU	13.46	22.18
	802.11ax HE40 OFDMA, 484-Tones	14.01	25.18
	802.11ax HE40 OFDMA, 26-Tones	3.85	2.43
5985-6385	802.11ax HE80 SU	16.02	39.99
	802.11ax HE80 OFDMA, 996-Tones	17.59	57.41
	802.11ax HE80 OFDMA, 26-Tones	4.72	2.96

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UNII-6 BAND 802.11 ax MODE 2TX

Frequency Range (MHz)	Mode	e.i.r.p. Power (dBm)	Output Power (mW)
2TX CDD -UNII-6 band			
6435-6515	802.11ax HE20 SU	9.19	8.30
	802.11ax HE20 OFDMA, 242-Tones	10.95	12.45
	802.11ax HE20 OFDMA, 26-Tones	4.24	2.65
6445-6485	802.11ax HE40 SU	13.47	22.23
	802.11ax HE40 OFDMA, 484-Tones	13.91	24.60
	802.11ax HE40 OFDMA, 26-Tones	5.40	3.47
6525 (Straddle)	802.11ax HE40 SU	12.66	18.45
	802.11ax HE40 OFDMA, 484-Tones	12.92	19.59
	802.11ax HE40 OFDMA, 26-Tones	5.44	3.50
6465	802.11ax HE80 SU	16.72	46.99
	802.11ax HE80 OFDMA, 996-Tones	18.15	65.31
	802.11ax HE80 OFDMA, 26-Tones	4.52	2.83
6545 (Straddle)	802.11ax HE80 SU	16.19	41.59
	802.11ax HE80 OFDMA, 996-Tones	17.05	50.70
	802.11ax HE80 OFDMA, 26-Tones	5.45	3.51

UNII-7 BAND 802.11 ax MODE 2TX

Frequency Range (MHz)	Mode	e.i.r.p. Power (dBm)	Output Power (mW)
2TX CDD -UNII-7 Band			
6535-6855	802.11ax HE20 SU	9.61	9.14
	802.11ax HE20 OFDMA, 242-Tones	11.92	15.56
	802.11ax HE20 OFDMA, 26-Tones	4.22	2.64
6875 (Straddle)	802.11ax HE20 SU	8.13	6.50
	802.11ax HE20 OFDMA, 242-Tones	10.29	10.69
	802.11ax HE20 OFDMA, 26-Tones	3.73	2.36
6525-6845	802.11ax HE40 SU	12.63	18.32
	802.11ax HE40 OFDMA, 484-Tones	13.76	23.77
	802.11ax HE40 OFDMA, 26-Tones	3.07	2.03
6885(Straddle)	802.11ax HE40 SU	10.90	12.30
	802.11ax HE40 OFDMA, 484-Tones	12.12	16.29
	802.11ax HE40 OFDMA, 26-Tones	2.24	1.67
6545-6785	802.11ax HE80 SU	15.23	33.34
	802.11ax HE80 OFDMA, 996-Tones	15.57	36.06
	802.11ax HE80 OFDMA, 26-Tones	3.70	2.34
6865 (Straddle)	802.11ax HE80 SU	14.88	30.76
	802.11ax HE80 OFDMA, 996-Tones	15.98	39.63
	802.11ax HE80 OFDMA, 26-Tones	2.10	1.62

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UNII-8 BAND 802.11 ax MODE 2TX

Frequency Range (MHz)	Mode	e.i.r.p. Power (dBm)	Output Power (mW)
2TX CDD -UNII-8 Band			
6895-7115	802.11ax HE20 SU	9.00	7.94
	802.11ax HE20 OFDMA, 242-Tones	10.75	11.89
	802.11ax HE20 OFDMA, 26-Tones	4.23	2.65
6925-7085	802.11ax HE40 SU	11.56	14.32
	802.11ax HE40 OFDMA, 484-Tones	12.64	18.37
	802.11ax HE40 OFDMA, 26-Tones	4.00	2.51
6945-7025	802.11ax HE80 SU	15.19	33.04
	802.11ax HE80 OFDMA, 996-Tones	15.82	38.19
	802.11ax HE80 OFDMA, 26-Tones	2.99	1.99

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6.4. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a Monopole antenna, with a maximum gain as follows.

Frequency Range (MHz)	Peak Antenna Gain (dBi)			
	CHAIN 0		CHAIN 1	
	ANT1 (dBi)	ANT3 (dBi)	ANT2 (dBi)	ANT4 (dBi)
5925 – 6425	4.6	3.9	3.3	4.1
6425 – 6525	3.3	4.2	2.4	3.5
6525 – 6875	3.5	5.5	2.4	3.8
6875 – 7125	3.9	5.3	1.8	3.2

6.5. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was 74.0-39150-1-41.
The test utility software installed during testing was PrimaComplianceGUIInstaller _TESTBUILD3_17Nov22.

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6.6. 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.

The EUT can only be setup in desktop orientation; therefore, all radiated testing was performed with the EUT in desktop orientation.

The fundamental of the EUT was investigated in the antenna combinations, it was determined that:
ANT1 and ANT4 was the worst case in the UNII-5 bands.
ANT3 and ANT4 was the worst case in the UNII-6, UNII-7, and UNII-8 band.
Therefore, all final testing was performed with ANT1 and ANT4 and ANT3 and ANT4 as stated above.

Worst-case data rates as provided by the manufacturer were:
802.11ax HE20mode: MCS0
802.11ax HE40mode: MCS0
802.11ax HE80mode: MCS0

Preliminary Investigation were performed for 802.11ax modes were determined by the following:

- Testing was performed on 802.11ax HE20 26T (Lowest Tones) and 242T (Full Tone) to cover HE20 52T,106T.

- Testing was performed on 802.11ax HE40 26T (Lowest Tones) and 484T (Full Tone) to cover HE40 52T,106T and 242T.

- Testing was performed on 802.11ax HE80 26T (Lowest Tones) and 996T (Full Tone) to cover HE80 52T, 106T, 242T and 484T.

According to Preliminary Investigation, conducted power was performed to compare Full RU Tone modes and SU (Single User) Tone modes. It was determined that Full RU Tone modes were worst case over Single User modes in every instance. Therefore, only full tone modes were tested, and they represent SU modes as the worst-case scenario

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6.7. DESCRIPTION OF TEST SETUP

SUPPORT TEST EQUIPMENT				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID/ DoC**
Laptop	Lenovo	T460s	PC0JMBF8	Doc
Laptop AC/DC Adapter	Lenovo	ADLX90NLC2A	11S45N0247Z1ZSHH448JEY	Doc
AC Power	Sonos	CPS045180250U	N/A	Doc
Power Supply	Sonos	EC2Y5EB	N/A	Doc
USB-A to Ethernet Adapter	Plugable	USB2-E100	8CAE4CE46AFA	Doc
USB-C to USB-A Female Adapter	Amazon Basics	L6LUC160-CS-R	N/A	Doc

I/O CABLES (CONDUCTED TEST)						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	AC	3	AC	Un-shielded	1.25	AC Mains to Spectrum Analyzer/AC/DC Adapter
2	DC	1	DC	Un-shielded	1.0	AC/DC Adapter to Laptop
3	USB-C	1	USB-C	Un-shielded	1.5	EUT to AC Power
4	Ethernet	1	RJ45	Un-shielded	1.5	Laptop to USB Ethernet Adapter
5	USB-A	1	USB-A	Shielded	0.05	USB Ethernet Adapter to USB
6	USB-C	1	USB-C	Shielded	0.05	EUT to USB-C/USB-A Female Adapter
7	SMA Cable	1	SMA	Un-Shielded	1.0	EUT to Spectrum Analyzer

I/O CABLES (RADIATED TEST)						
Cable No.	**Port**	**# Of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	AC	3	AC	Un-shielded	1.25	AC Mains to Spectrum Analyzer/AC/DC Adapter
2	DC	1	DC	Un-shielded	1.0	AC/DC Adapter to Laptop
3	USB-C	1	USB-C	Un-shielded	1.5	EUT to AC Power
4	Ethernet	1	RJ45	Un-shielded	10	Laptop to USB Ethernet Adapter
5	USB-A	1	USB-A	Shielded	0.05	USB Ethernet Adapter to USB
6	USB-C	1	USB-C	Shielded	0.05	EUT to USB-C/USB-A Female Adapter
7	SMA Cable	1	SMA	Un-Shielded	10	EUT to Horn Antenna

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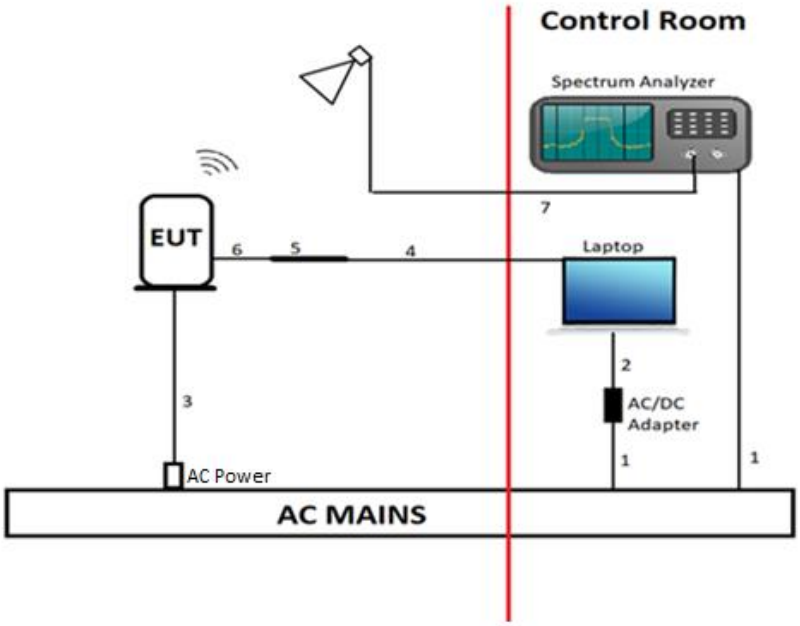
TEST SETUP

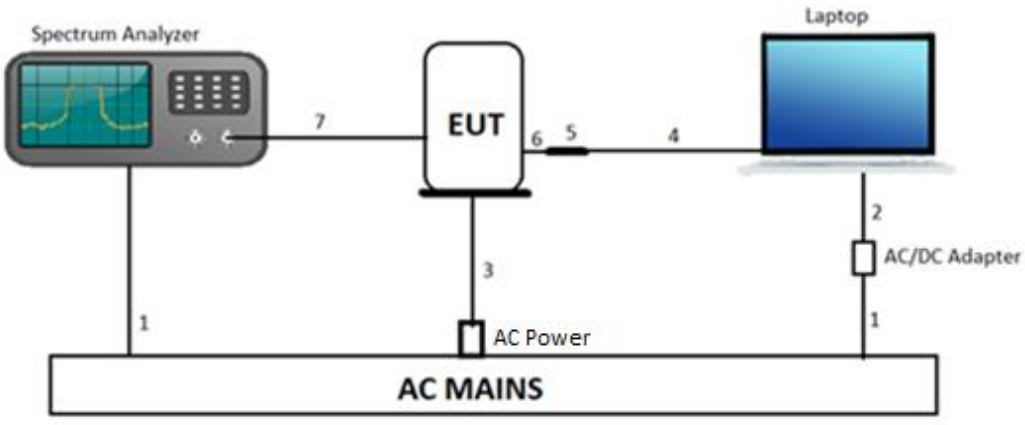
The EUT is a stand-alone unit, and the radio is exercised remotely by Sonos Compliance GUI test utility software via ethernet.

SETUP DIAGRAM

Radiated Configuration



Conducted Configuration



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7. MEASUREMENT METHOD

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

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

Conducted Output Power: KDB 789033 D02 v02r01, Section II E.2.d (Method SA-2).

Conducted Output Power: KDB 789033 D02 v02r01, Section II E.2.d (Method SA-2).
(Output Power (e.i.r.p): Radiated EIRP + DCCF = EIRP)
Radiated method made in lieu of conducted measurements

Power Spectral Density(PSD): KDB 789033 D02 v02r01, Section F
Radiated method made in lieu of conducted measurements

Spurious emissions within 5.925-7.125 GHz Band(Emissions Mask): KDB 987594 D02 EMC Measurement Section II-J

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 C63.10-2013, Section 6.2.

Radiated Spurious Emissions Below 30MHz: ANSI C63.10-2013 Section 6.4

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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 LIST					
Description	**Manufacturer**	**Model**	**ID Num**	**Cal Due**	**Last Cal**
Antenna, Broadband Hybrid, 30MHz to 2GHz	Sunol Sciences Corp.	JB1	80293	2023-09-08	2022-09-08
Amplifier, 10KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310N	29654	2023-04-24	2022-04-24
Antenna, Horn 1-18GHz	ETS-Lindgren (Cedar Park, Texas)	3117	223083	2023-10-25	2022-10-25
RF Filter Box, 1-18GHz	UL-FR1 (CTECH)	SAC 8 port rf box 1	197920	2023-04-19	2022-04-19
EMI TEST RECEIVER, with B8 option	Rohde & Schwarz	ESW44	191429	2024-02-29	2023-02-15
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	225688	2024-02-29	2023-02-14
Antenna, Horn 18 to 26.5GHz	ARA	MWH-1826/B	199659	2023-06-12	2022-06-12
Amplifier 18-26.5GHz, +5Vdc, -54dBm P1dB	AMPLICAL	AMP18G26.5-60	234683	2024-03-29	2023-03-18
Antenna, Horn 26 to 40GHz	ARA	MWH-2640/B	199661	2023-06-12	2022-06-12
Amplifier 26-40GHz +5Vdc, -62dBm P1dB	AMPLICAL	AMP26G40-65	234684	2024-03-29	2023-03-18
Antenna, Passive Loop 30Hz - 1MHz	ELECTRO METRICS	EM-6871	170014	2023-07-19	2022-07-19
Antenna, Passive Loop 100KHz - 30MHz	ELECTRO METRICS	EM-6872	170016	2023-07-19	2022-07-19
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent Technologies	N9030A	80396	2024-01-31	2023-01-27
Power Meter, P-series single channel	Keysight Technologies Inc	N1911A	90719	2024-01-31	2023-01-26
Power Sensor, P - series, 50MHz to 18GHz, Wideband	Keysight Technologies Inc	N1921A	81319	2024-01-31	2023-01-25
10dB Fixed Attenuator	Pasternack Enterprises	PE7087-10	N/A	Verified	Verified
AC Line Conducted					
LISN	Fischer Custom Communications, Inc	FCC-LISN-50/250-25-2-01-480V	175765	2024-01-31	2023-01-27
EMI TEST RECEIVER	Rohde & Schwarz	ESR	175765	2024-02-29	2023-02-20
Transient Limiter	Com-Power	LIT-930	207996	2023-07-15	2022-07-15
UL TEST SOFTWARE LIST					
Radiated Software	UL	UL EMC	Ver 2023-01-18, 2016-08-23		
Antenna Port Software	UL	UL RF	Ver 2022-08-16		
AC Line Conducted Software	UL	UL EMC	Rev 9.5, 2022-02-17		

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9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

KDB 789033 Zero-Span Spectrum Analyzer Method.

Test Engineer:	JB45256 and JM28199
Test Date:	2023-02-28 to 2023-03-09

RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
802.11ax HE20 OFDMA, SU	1.073	1.713	0.626	62.64%	2.03	0.932
802.11ax HE20 OFDMA, RU size 242T	0.375	0.980	0.383	38.27%	4.17	2.667
802.11ax HE20 OFDMA, RU size 26T	0.580	1.193	0.486	48.64%	3.13	1.724
802.11ax HE40 OFDMA, SU	0.565	1.197	0.472	47.20%	3.26	1.770
802.11ax HE40 OFDMA, RU size 484T	0.368	0.978	0.376	37.63%	4.24	2.717
802.11ax HE40 OFDMA, RU size 26T	0.580	1.182	0.491	49.07%	3.09	1.724
802.11ax HE80 OFDMA, SU	0.304	0.924	0.329	32.90%	4.83	3.289
802.11ax HE80 OFDMA, RU size 996T	0.343	0.973	0.352	35.22%	4.53	2.920
802.11ax HE80 OFDMA, RU size 26T	0.582	1.194	0.487	48.74%	3.12	1.718

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DUTY CYCLE PLOTS

802.11ax HE20 OFDMA, SU

802.11ax HE20 OFDMA, RU size 242T MODE

802.11ax HE20 OFDMA, RU size 26T MODE

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802.11ax HE40 OFDMA, SU

802.11ax HE40 OFDMA, RU size 484T MODE

802.11ax HE40 OFDMA, RU size 26T MODE

802.11ax HE80 OFDMA, SU

802.11ax HE80 OFDMA, RU size 996T MODE

802.11ax HE80 OFDMA, RU size 26T MODE

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9.2. 26 dB BANDWIDTH

LIMITS

§15.407 (a) (10)

The maximum transmitter channel bandwidth for U-NII devices in the 5.925-7.125 GHz band is 320 megahertz.

RESULTS

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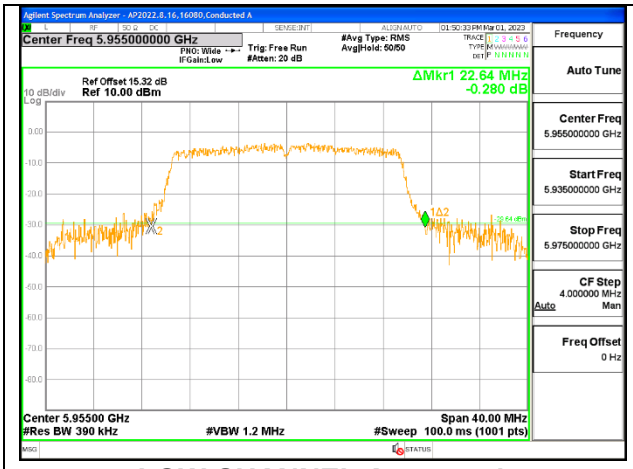
9.2.1. 802.11ax HE20 MODE 2TX IN THE UNII-5 BAND

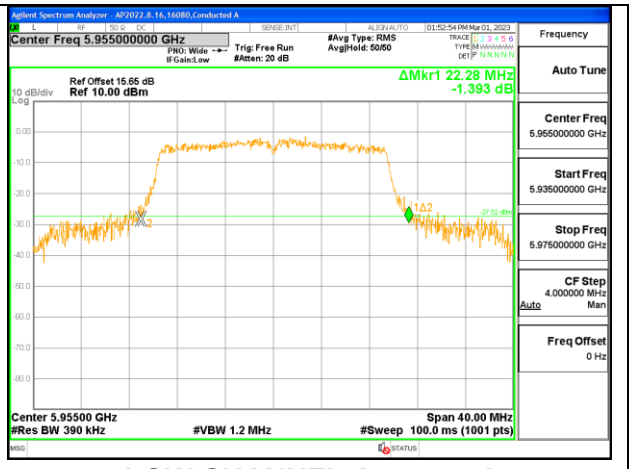
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 242-Tones, RU Index 61

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 1 (MHz)	26 dB Bandwidth Antenna 4 (MHz)
Low	5955	22.64	22.28
Mid	6175	22.40	22.40
High	6415	22.64	22.44

LOW CHANNEL



LOW CHANNEL Antenna 1



LOW CHANNEL Antenna 4

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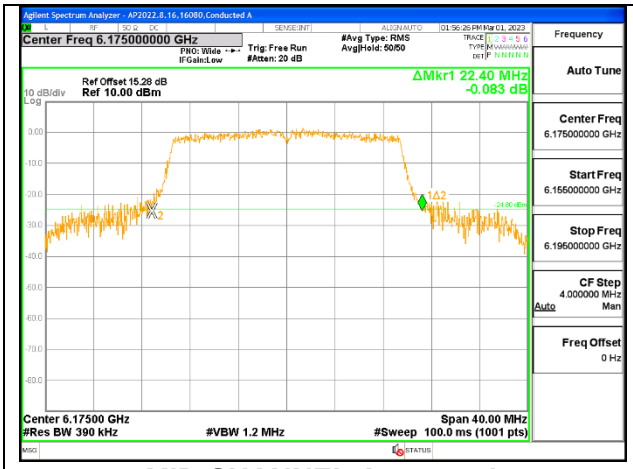
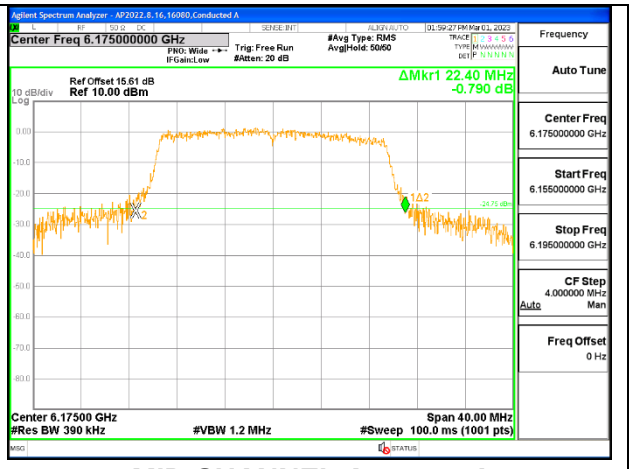
MID CHANNEL

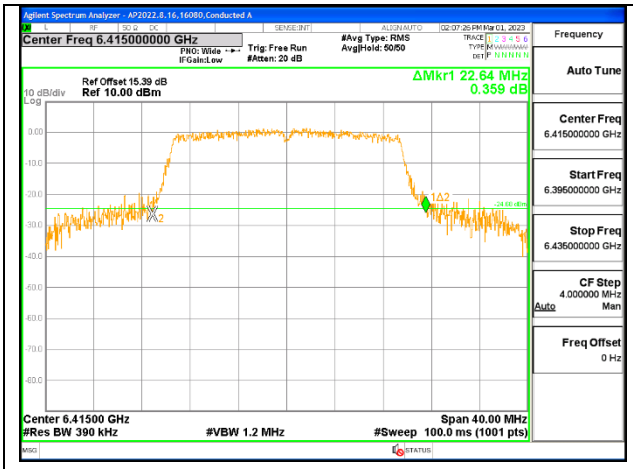


MID CHANNEL Antenna 1

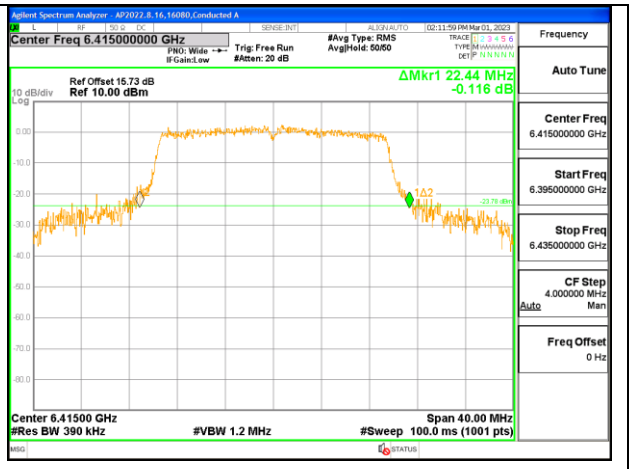


MID CHANNEL Antenna 4

HIGH CHANNEL



HIGH CHANNEL Antenna 1



HIGH CHANNEL Antenna 4

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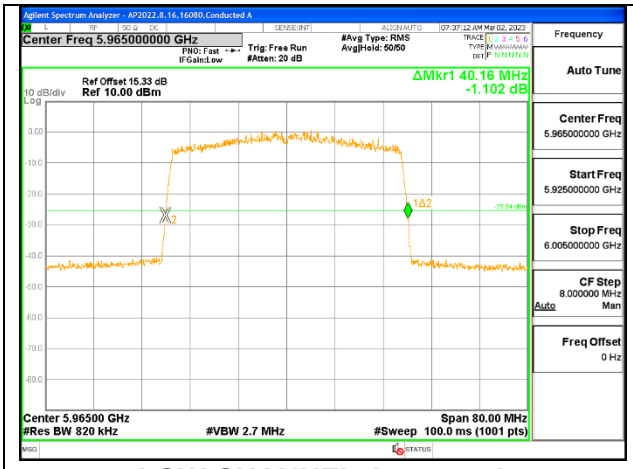
9.2.2. 802.11ax HE40 MODE 2TX IN THE UNII-5 BAND

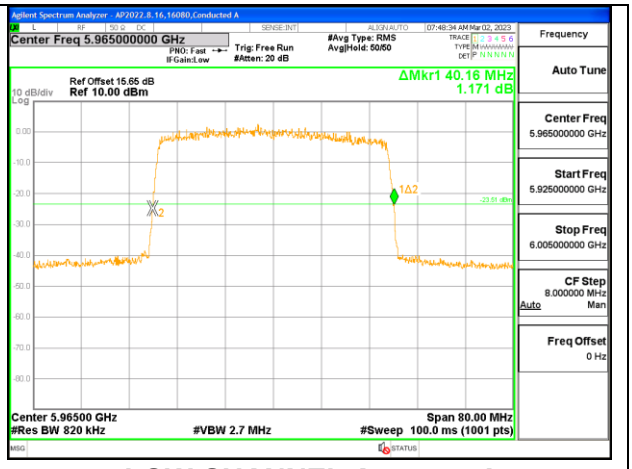
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 484-Tones, RU Index 65

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 1 (MHz)	26 dB Bandwidth Antenna 4 (MHz)
Low	5965	40.16	40.16
Mid	6165	40.08	40.24
High	6405	40.08	40.00

LOW CHANNEL



LOW CHANNEL Antenna 1



LOW CHANNEL Antenna 4

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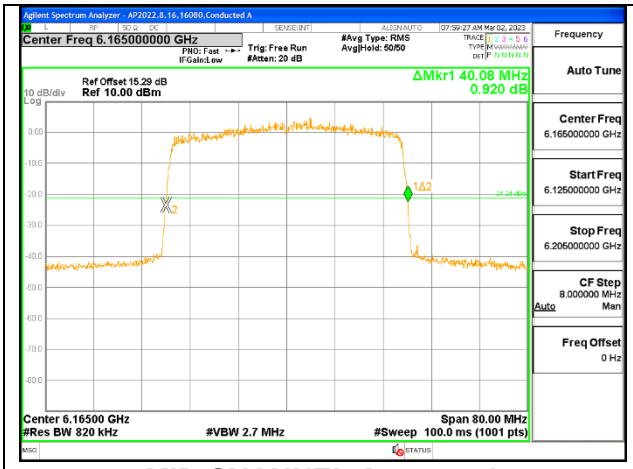
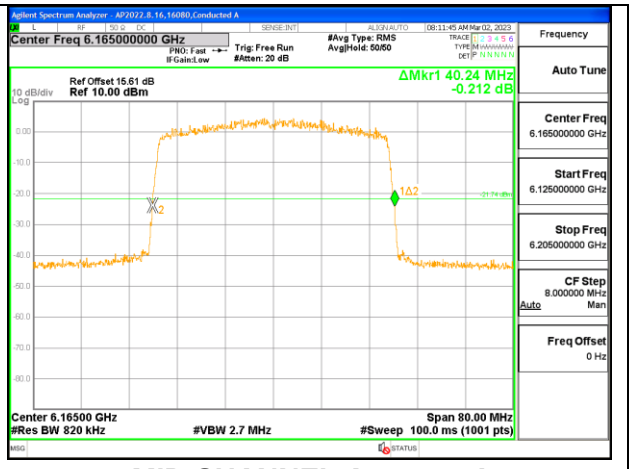
MID CHANNEL

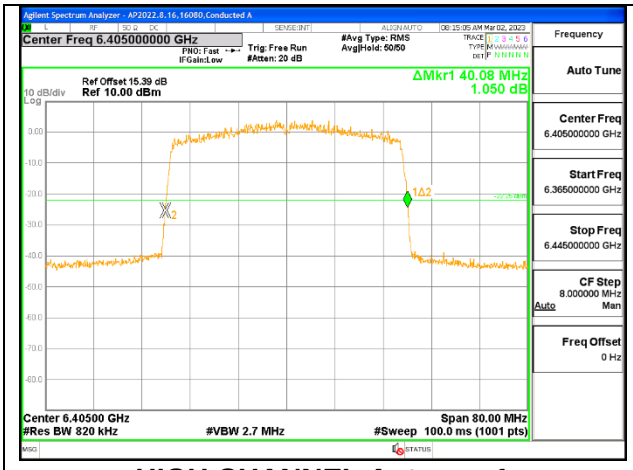


MID CHANNEL Antenna 1

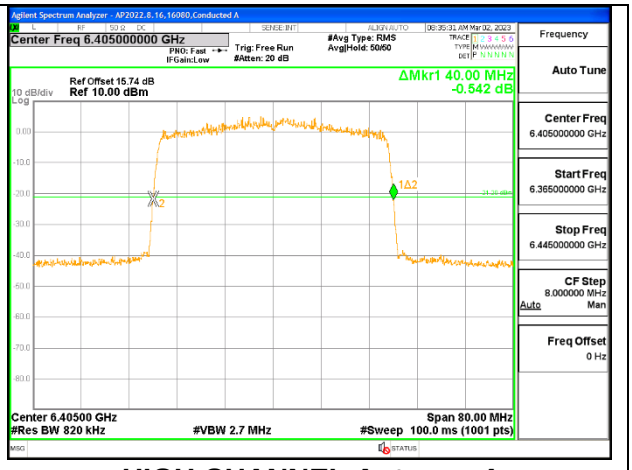


MID CHANNEL Antenna 4

HIGH CHANNEL



HIGH CHANNEL Antenna 1



HIGH CHANNEL Antenna 4

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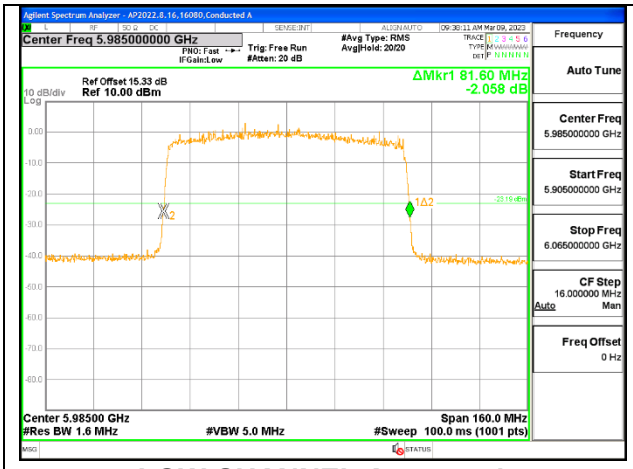
9.2.3. 802.11ax HE80 MODE 2TX IN THE UNII-5 BAND

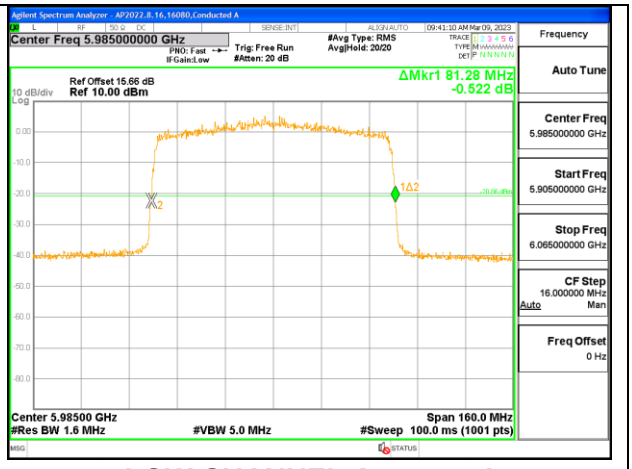
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 996-Tones, RU Index 67

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 1 (MHz)	26 dB Bandwidth Antenna 4 (MHz)
Low	5985	81.60	81.28
Mid	6145	81.60	81.44
High	6385	81.60	81.12

LOW CHANNEL



LOW CHANNEL Antenna 1



LOW CHANNEL Antenna 4

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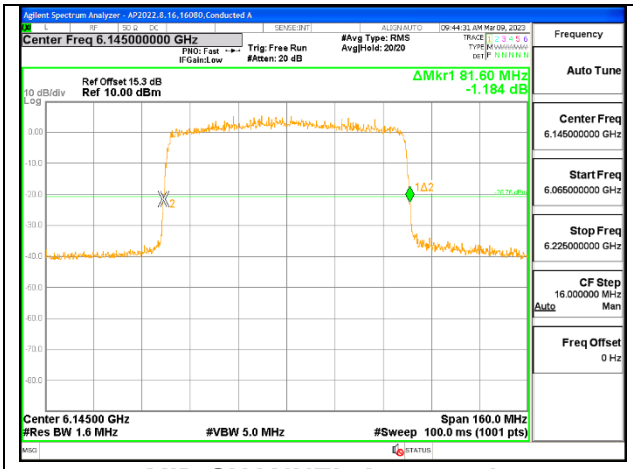
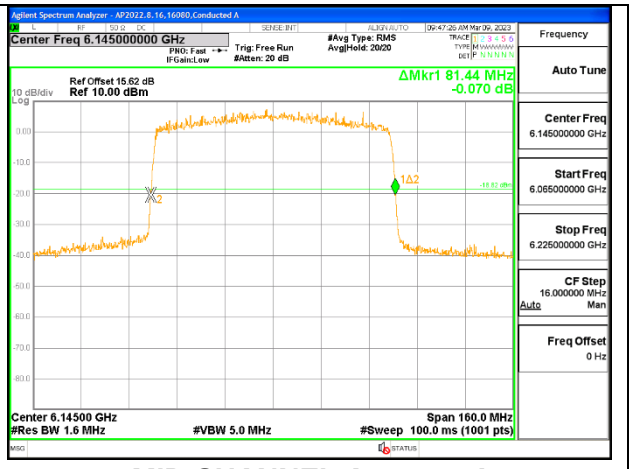
MID CHANNEL

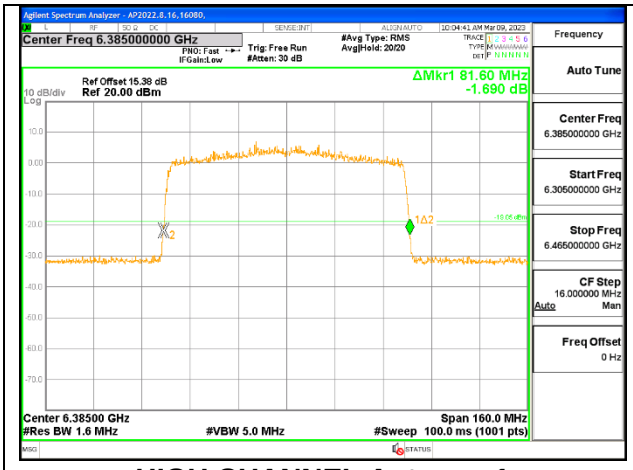


MID CHANNEL Antenna 1

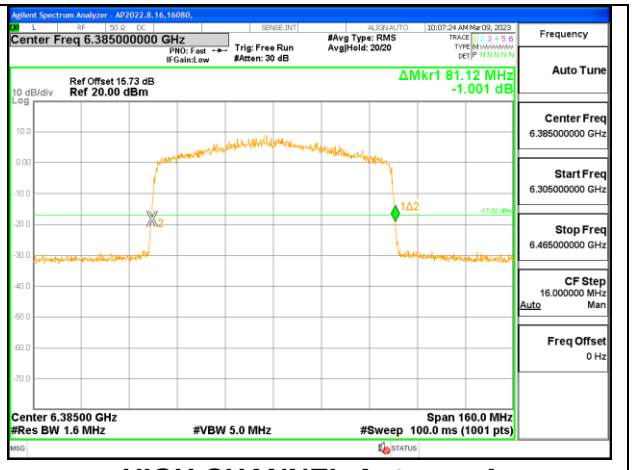


MID CHANNEL Antenna 4

HIGH CHANNEL



HIGH CHANNEL Antenna 1



HIGH CHANNEL Antenna 4

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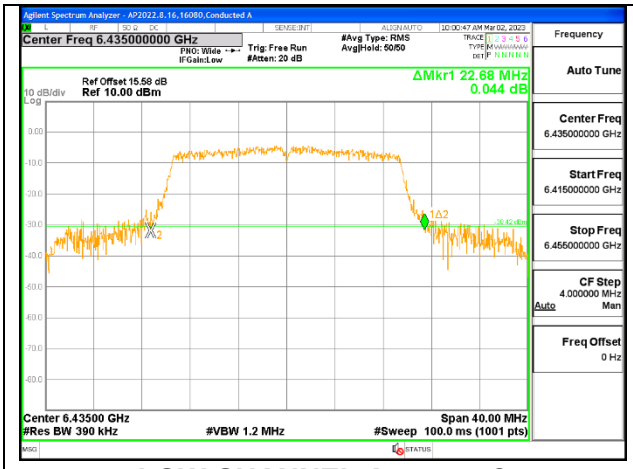
9.2.4. 802.11ax HE20 MODE 2TX IN THE UNII-6 BAND

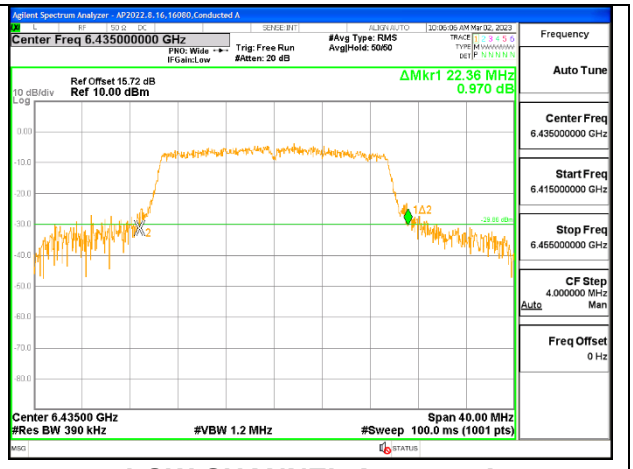
2TX Antenna 3 + Antenna 4 CDD OFDMA MODE: 242-Tones, RU Index 61

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 3 (MHz)	26 dB Bandwidth Antenna 4 (MHz)
Low	6435	22.68	22.36
Mid	6475	22.64	22.48
High	6515	22.40	22.56

LOW CHANNEL



LOW CHANNEL Antenna 3



LOW CHANNEL Antenna 4

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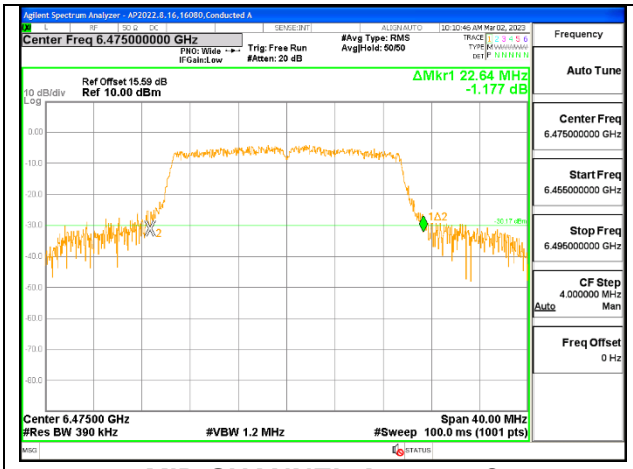
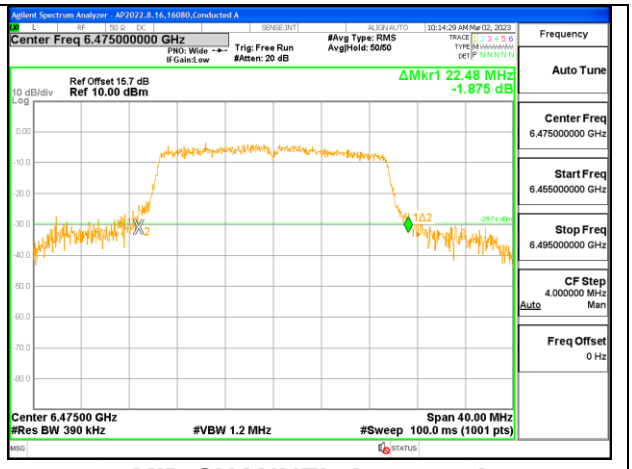
MID CHANNEL

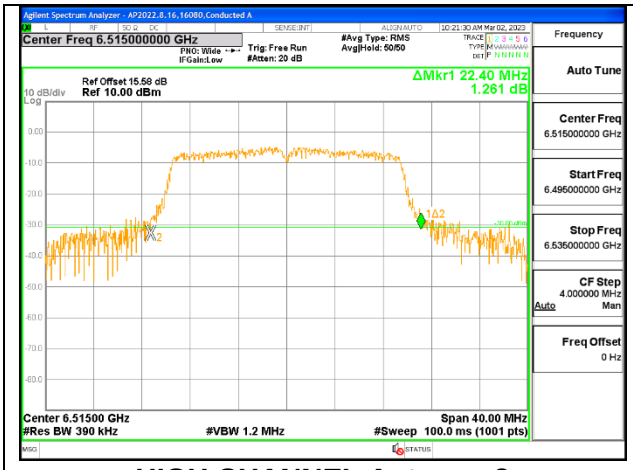


MID CHANNEL Antenna 3

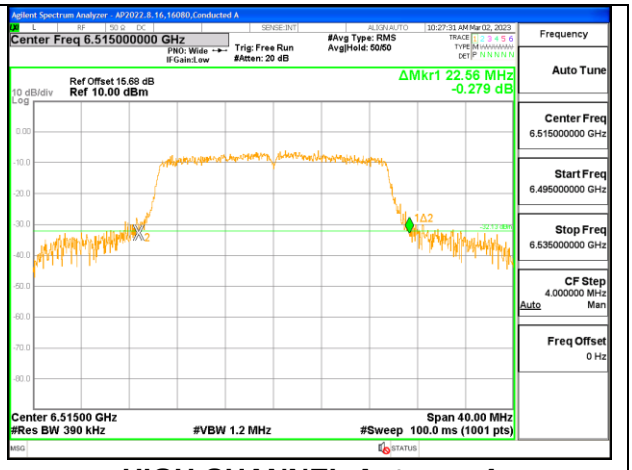


MID CHANNEL Antenna 4

HIGH CHANNEL



HIGH CHANNEL Antenna 3



HIGH CHANNEL Antenna 4

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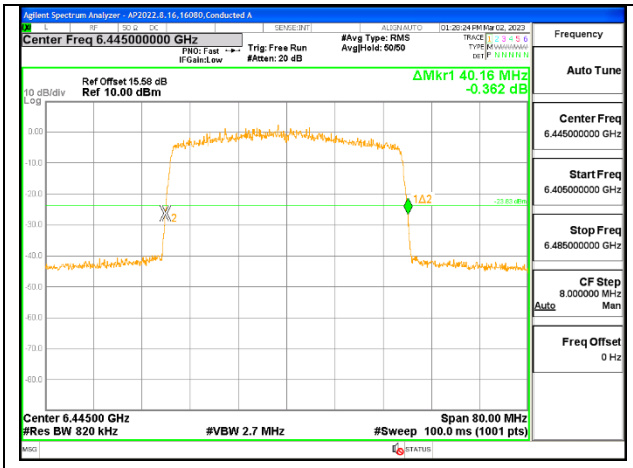
9.2.5. 802.11ax HE40 MODE 2TX IN THE UNII-6 BAND

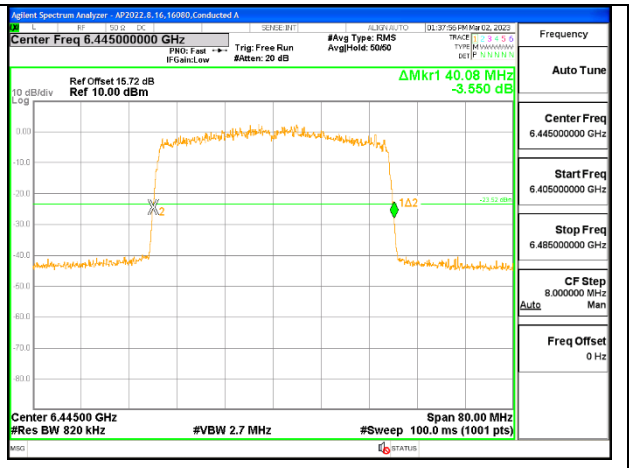
2TX Antenna 3 + Antenna 4 CDD OFDMA MODE: 484-Tones, RU Index 65

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 3 (MHz)	26 dB Bandwidth Antenna 4 (MHz)
Low	6445	40.16	40.08
High	6485	40.08	40.16
Straddle	6525	40.08	40.08

LOW CHANNEL

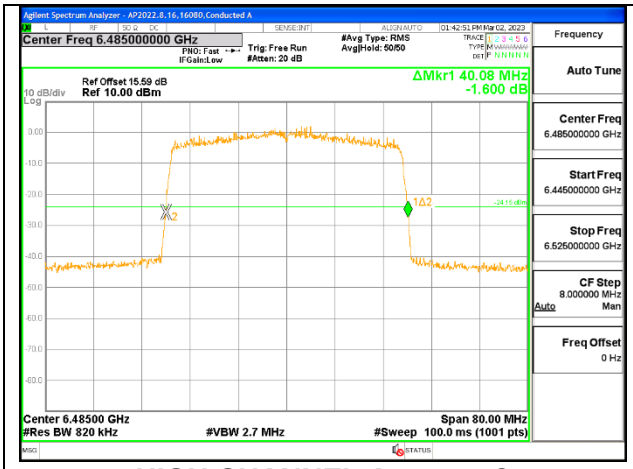


LOW CHANNEL Antenna 3

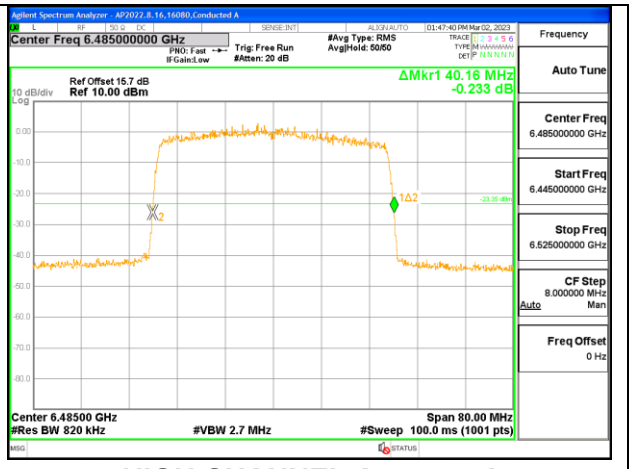


LOW CHANNEL Antenna 4

HIGH CHANNEL



HIGH CHANNEL Antenna 3



HIGH CHANNEL Antenna 4

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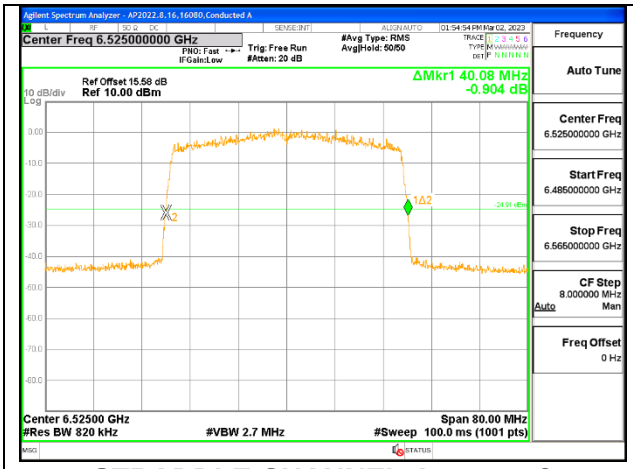
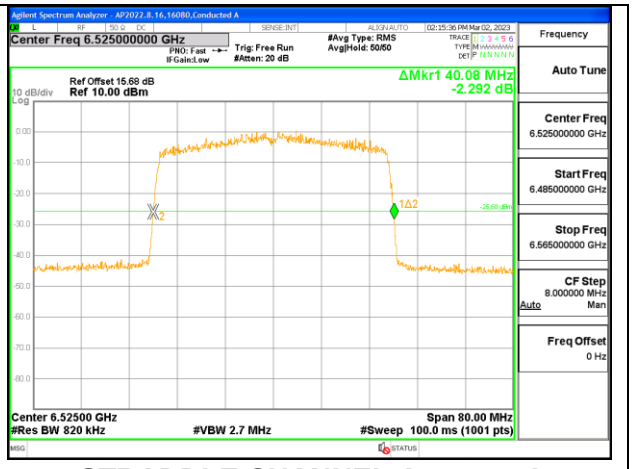
STRADDLE CHANNEL



STRADDLE CHANNEL Antenna 3



STRADDLE CHANNEL Antenna 4

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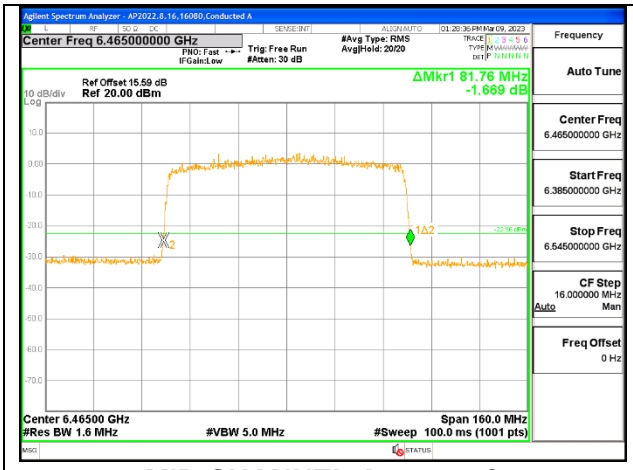
9.2.6. 802.11ax HE80 MODE 2TX IN THE UNII-6 BAND

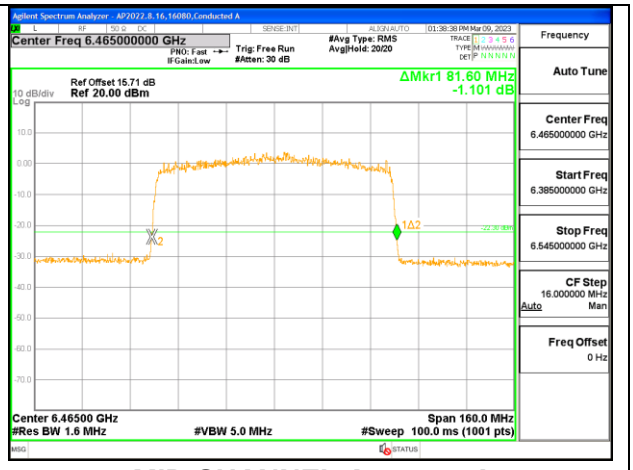
2TX Antenna 3 + Antenna 4 CDD OFDMA MODE: 996-Tones, RU Index 67

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 3 (MHz)	26 dB Bandwidth Antenna 4 (MHz)
Mid	6465	81.76	81.60
Straddle	6545	81.60	81.60

MID CHANNEL

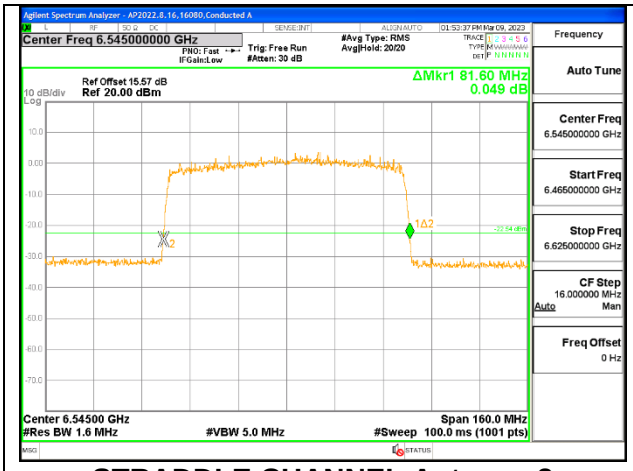


MID CHANNEL Antenna 3

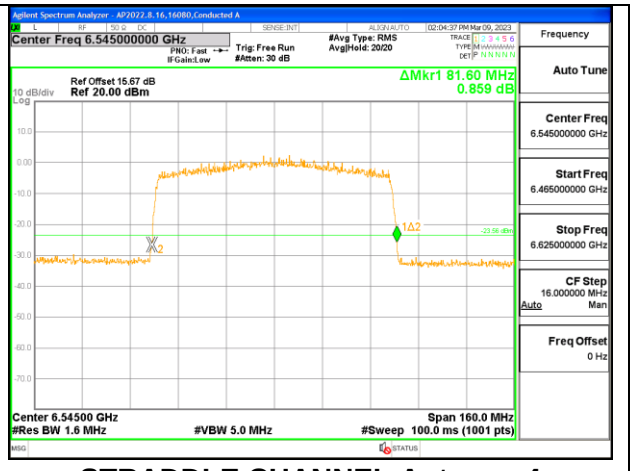


MID CHANNEL Antenna 4

STRADDLE CHANNEL



STRADDLE CHANNEL Antenna 3



STRADDLE CHANNEL Antenna 4

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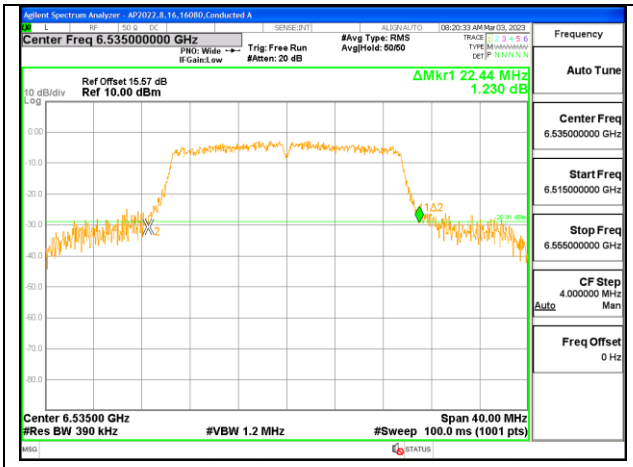
9.2.7. 802.11ax HE20 MODE 2TX IN THE UNII-7 BAND

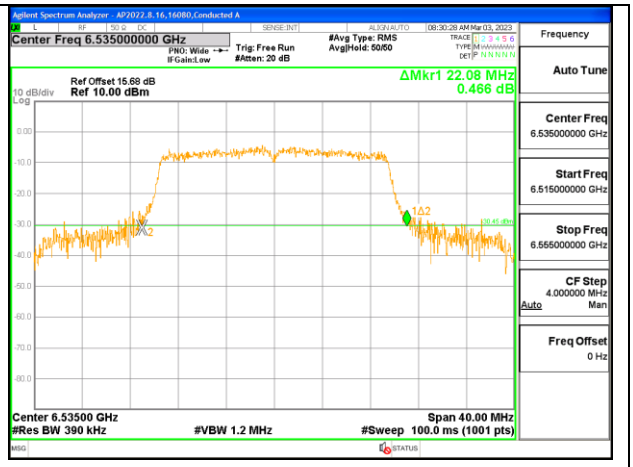
2TX Antenna 3 + Antenna 4 CDD OFDMA MODE: 242-Tones, RU Index 61

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 3 (MHz)	26 dB Bandwidth Antenna 4 (MHz)
Low	6535	22.44	22.08
Mid	6715	22.64	22.20
High	6855	22.92	22.96
Straddle	6875	23.80	23.32

LOW CHANNEL

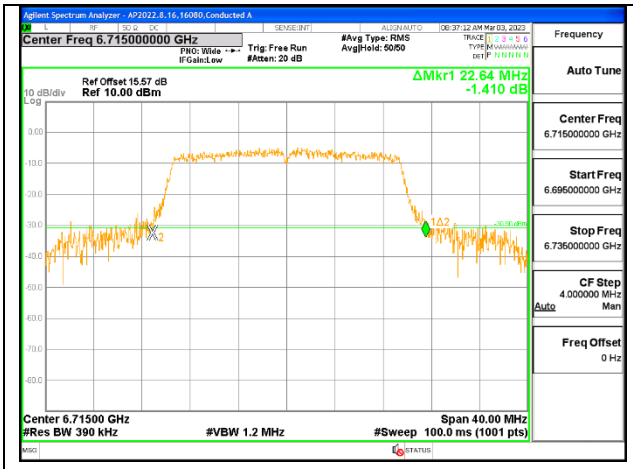


LOW CHANNEL Antenna 3

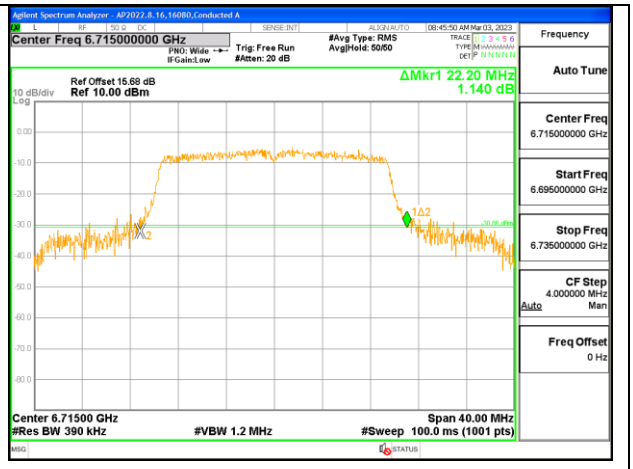


LOW CHANNEL Antenna 4

MID CHANNEL



MID CHANNEL Antenna 3



MID CHANNEL Antenna 4

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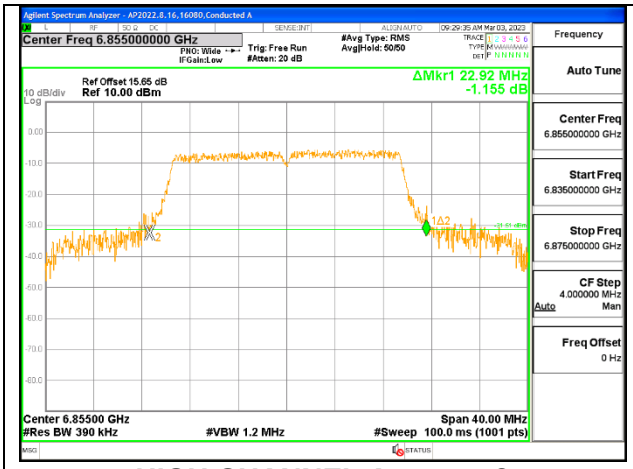
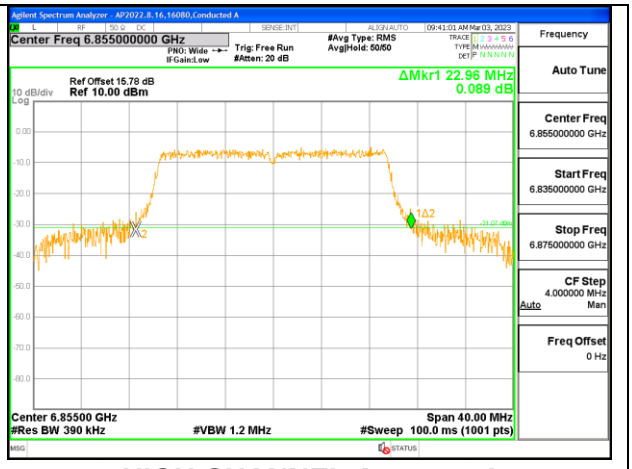
HIGH CHANNEL

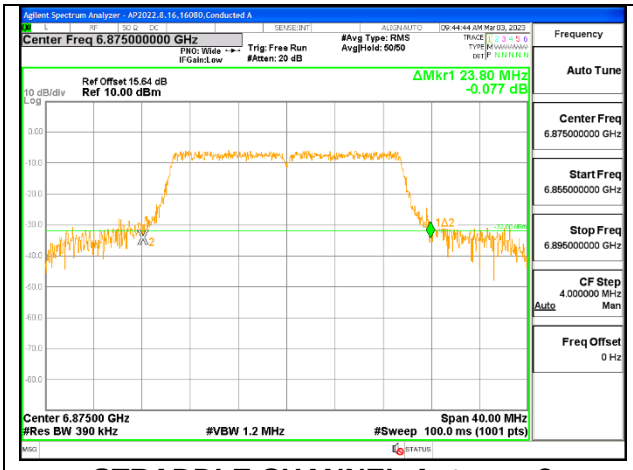


HIGH CHANNEL Antenna 3

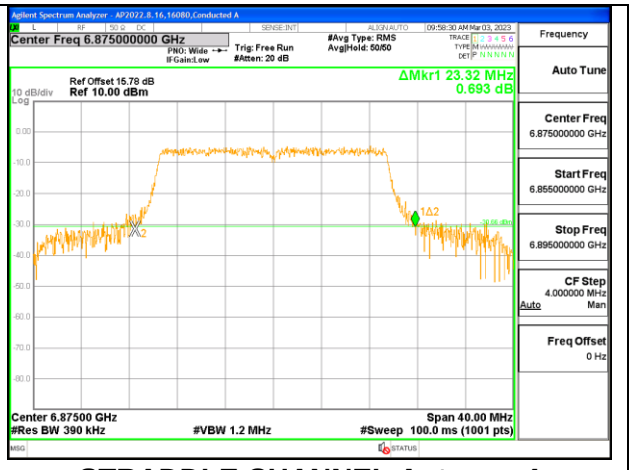


HIGH CHANNEL Antenna 4

STRADDLE CHANNEL



STRADDLE CHANNEL Antenna 3



STRADDLE CHANNEL Antenna 4

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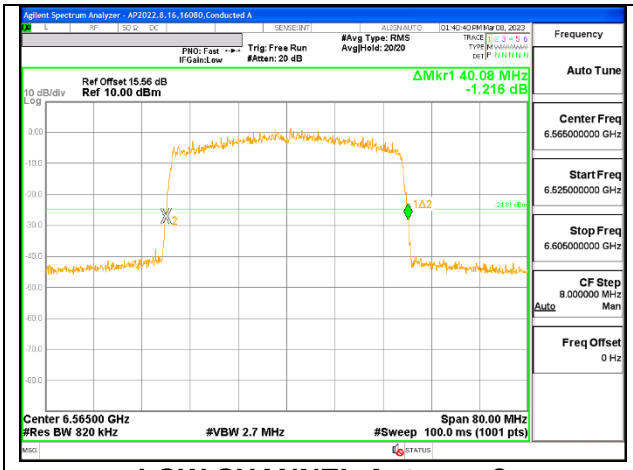
9.2.8. 802.11ax HE40 MODE 2TX IN THE UNII-7 BAND

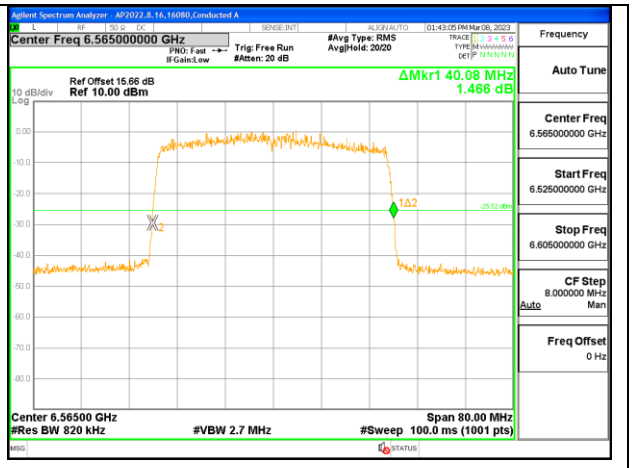
2TX Antenna 3 + Antenna 4 CDD OFDMA MODE: 484-Tones, RU Index 65

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 3 (MHz)	26 dB Bandwidth Antenna 4 (MHz)
Low	6565	40.08	40.08
Mid	6685	40.08	40.00
High	6845	40.16	40.16
Straddle	6885	40.08	40.00

LOW CHANNEL

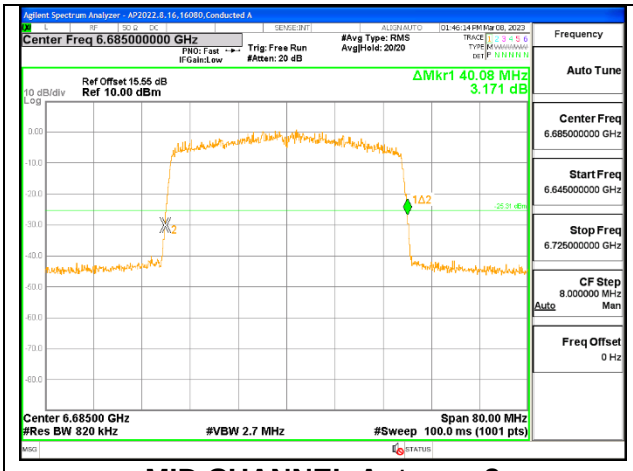


LOW CHANNEL Antenna 3

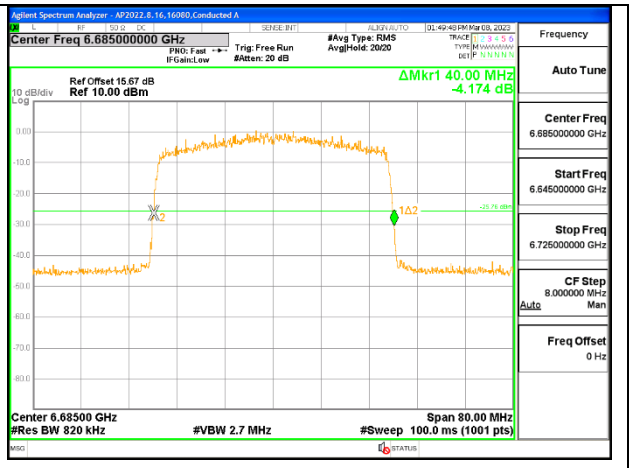


LOW CHANNEL Antenna 4

MID CHANNEL



MID CHANNEL Antenna 3



MID CHANNEL Antenna 4

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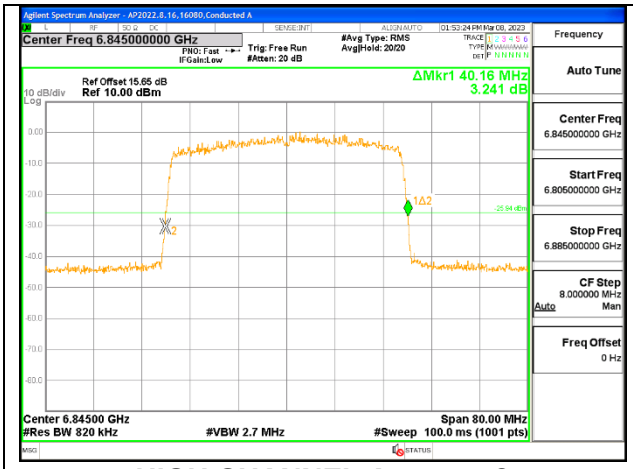
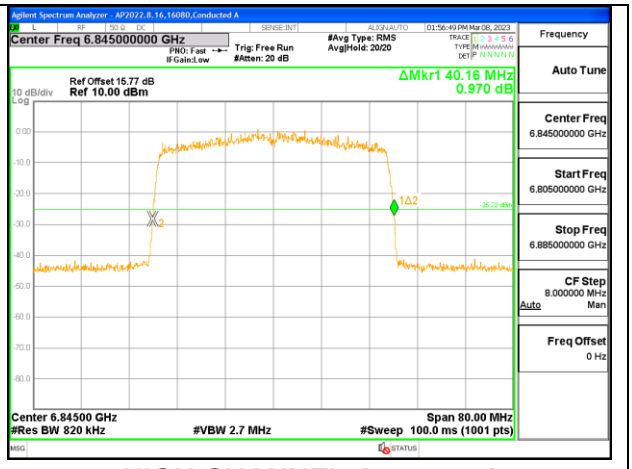
HIGH CHANNEL

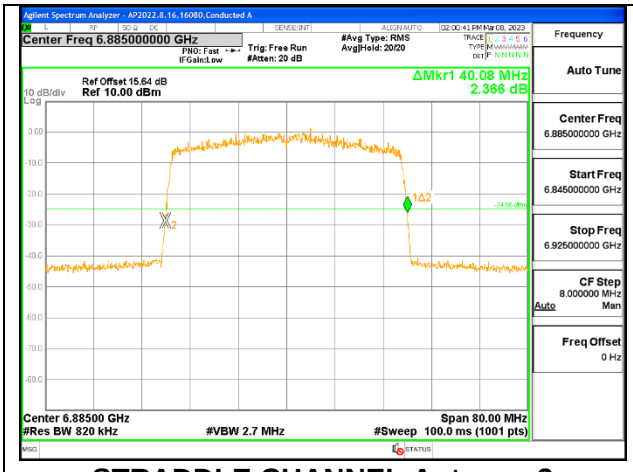


HIGH CHANNEL Antenna 3

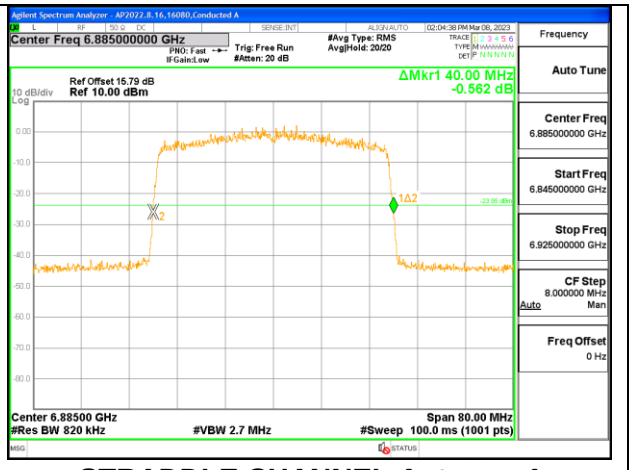


HIGH CHANNEL Antenna 4

STRADDLE CHANNEL



STRADDLE CHANNEL Antenna 3



STRADDLE CHANNEL Antenna 4

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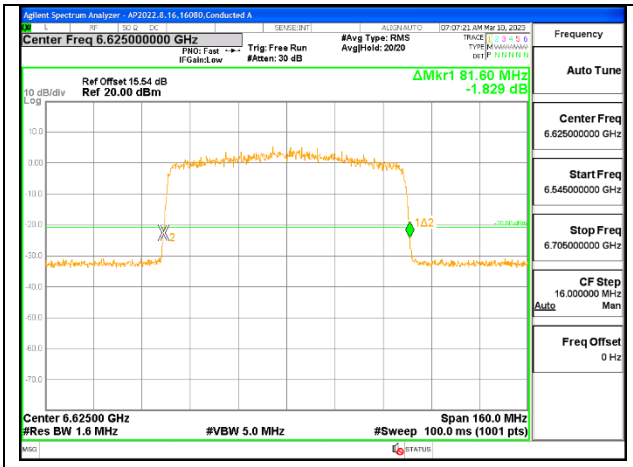
9.2.9. 802.11ax HE80 MODE 2TX IN THE UNII-7 BAND

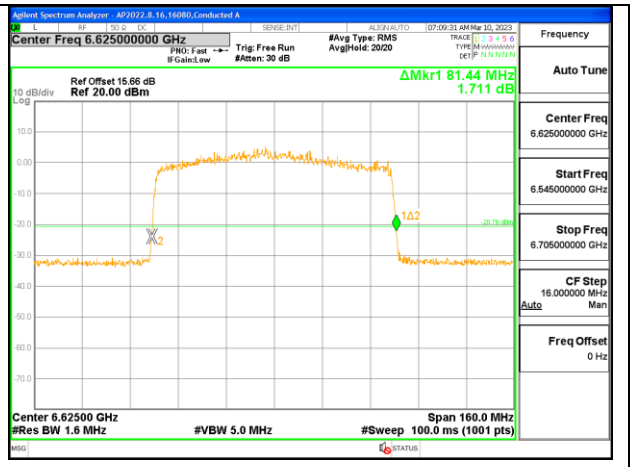
2TX Antenna 3 + Antenna 4 CDD OFDMA MODE: 996-Tones, RU Index 67

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 3 (MHz)	26 dB Bandwidth Antenna 4 (MHz)
Low	6625	81.60	81.44
Mid	6705	81.44	81.60
High	6785	81.60	81.60
Straddle	6865	81.60	81.76

LOW CHANNEL

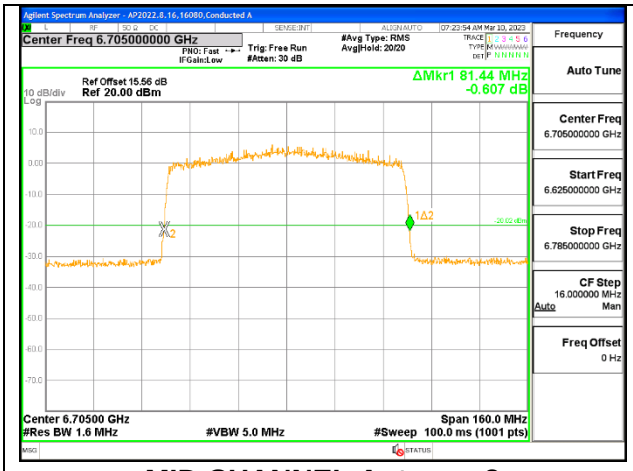


LOW CHANNEL Antenna 3

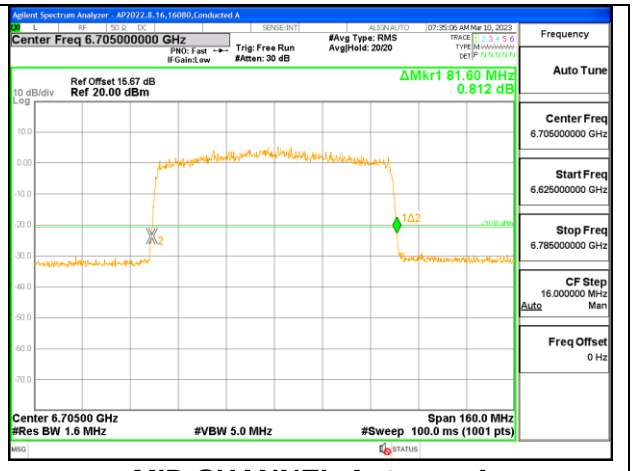


LOW CHANNEL Antenna 4

MID CHANNEL



MID CHANNEL Antenna 3



MID CHANNEL Antenna 4

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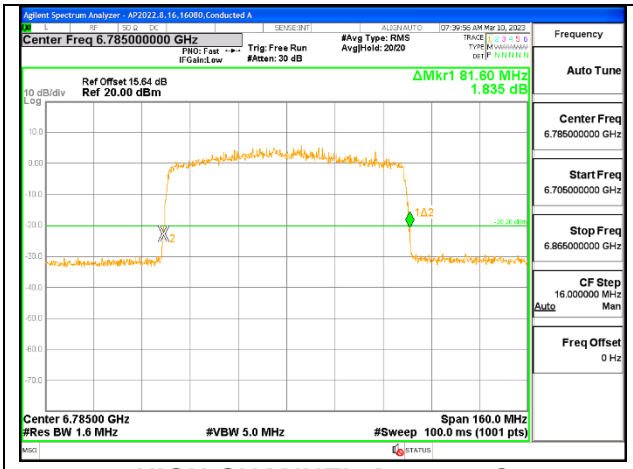
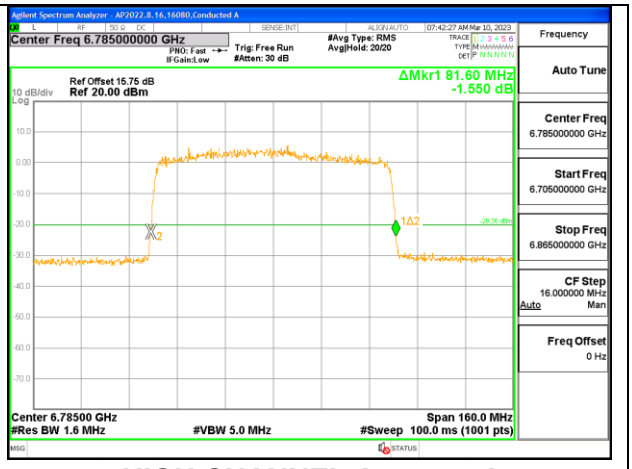
HIGH CHANNEL

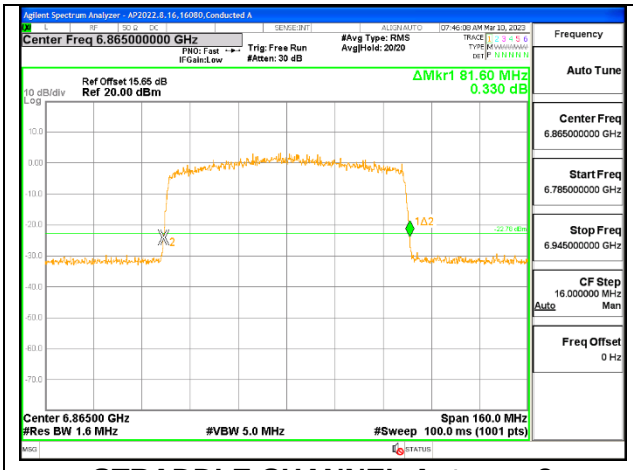


HIGH CHANNEL Antenna 3

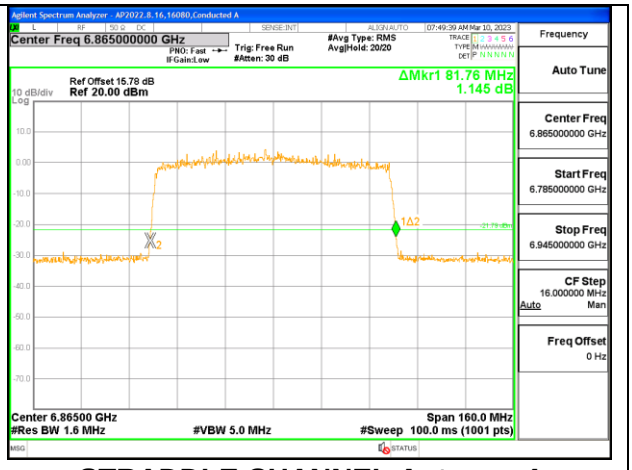


HIGH CHANNEL Antenna 4

STRADDLE CHANNEL



STRADDLE CHANNEL Antenna 3



STRADDLE CHANNEL Antenna 4

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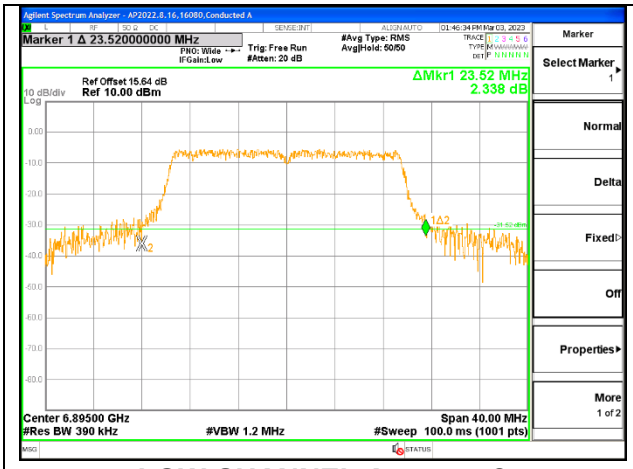
9.2.10. 802.11ax HE20 MODE 2TX IN THE UNII-8 BAND

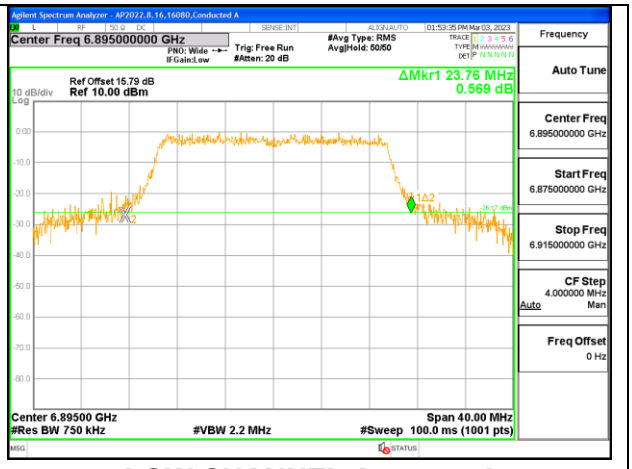
2TX Antenna 3 + Antenna 4 CDD OFDMA MODE: 242-Tones, RU Index 61

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 3 (MHz)	26 dB Bandwidth Antenna 4 (MHz)
Low	6895	23.52	23.76
Mid	6995	23.92	22.80
High	7115	23.76	23.00

LOW CHANNEL



LOW CHANNEL Antenna 3



LOW CHANNEL Antenna 4

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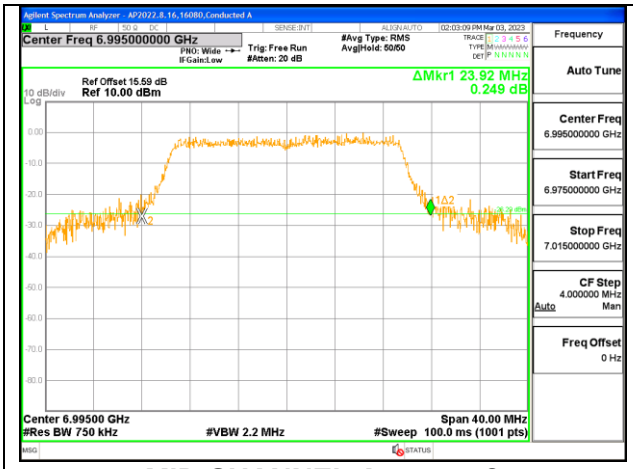
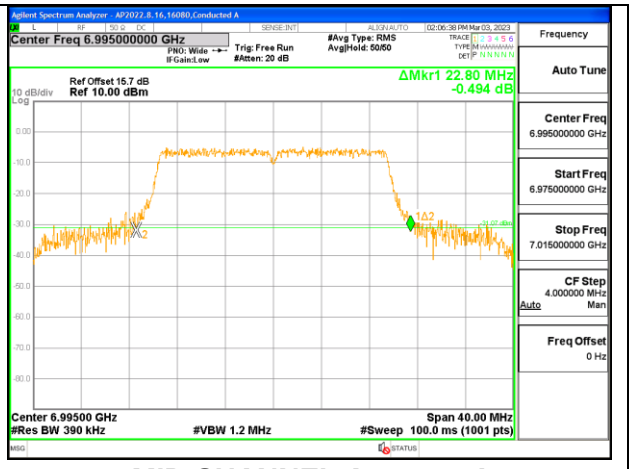
MID CHANNEL

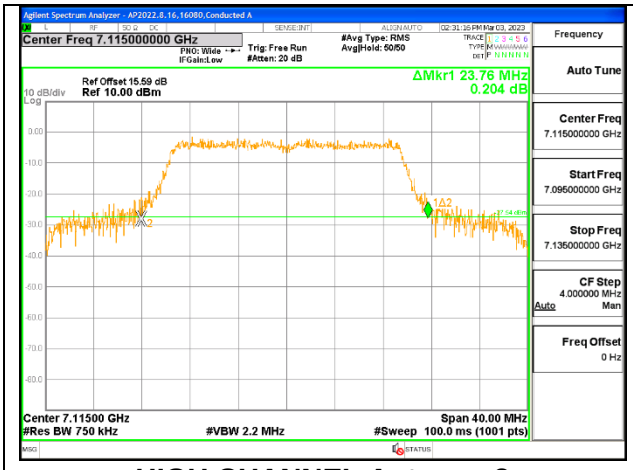


MID CHANNEL Antenna 3

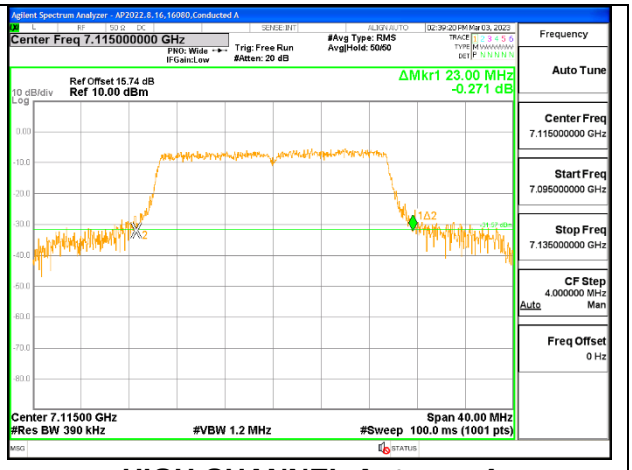


MID CHANNEL Antenna 4

HIGH CHANNEL



HIGH CHANNEL Antenna 3



HIGH CHANNEL Antenna 4

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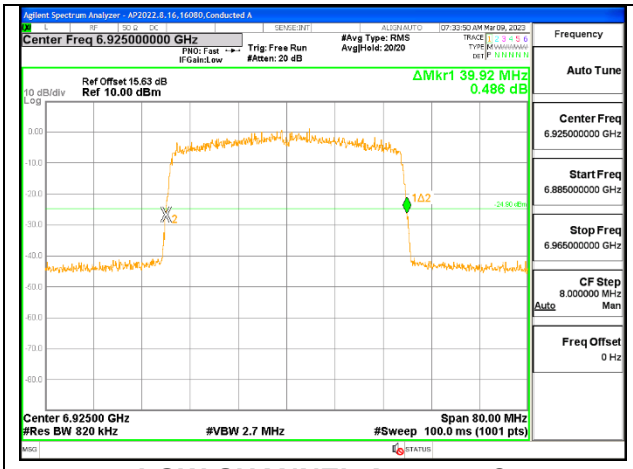
9.2.11. 802.11ax HE40 MODE 2TX IN THE UNII-8 BAND

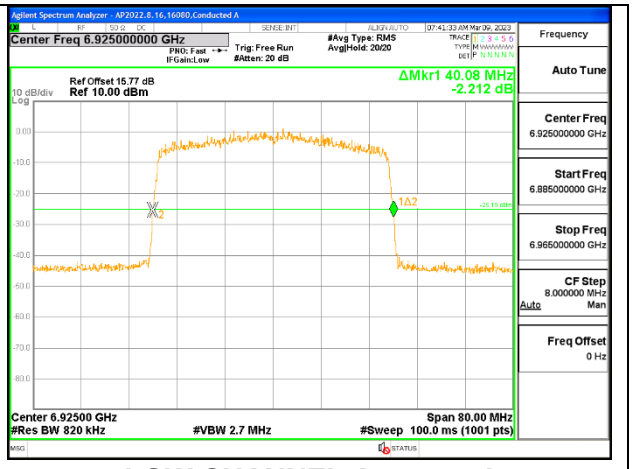
2TX Antenna 3 + Antenna 4 CDD OFDMA MODE: 484-Tones, RU Index 65

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 3 (MHz)	26 dB Bandwidth Antenna 4 (MHz)
Low	6925	39.92	40.08
Mid	6965	40.16	40.16
High	7085	40.16	40.08

LOW CHANNEL



LOW CHANNEL Antenna 3



LOW CHANNEL Antenna 4

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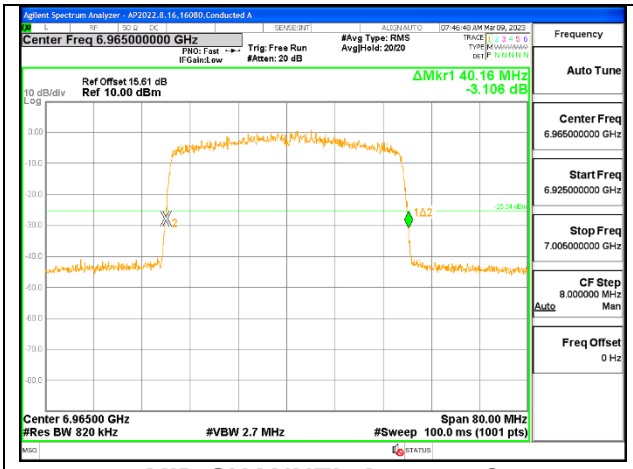
MID CHANNEL



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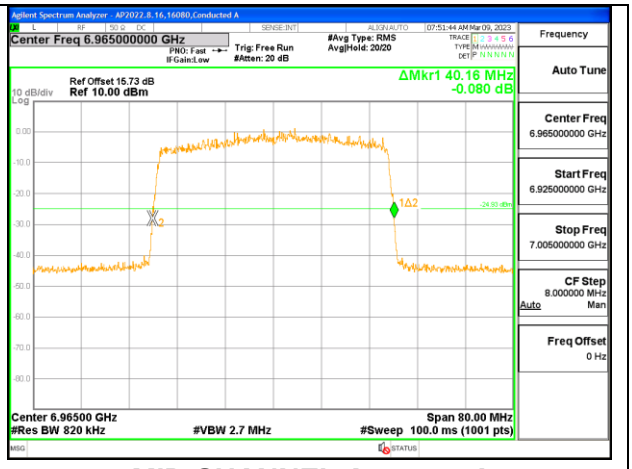
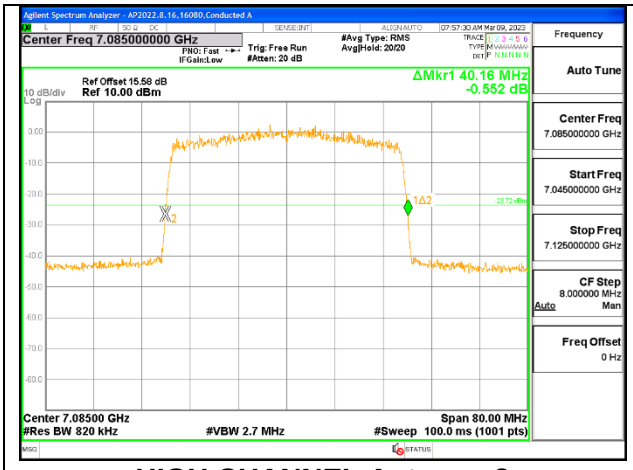
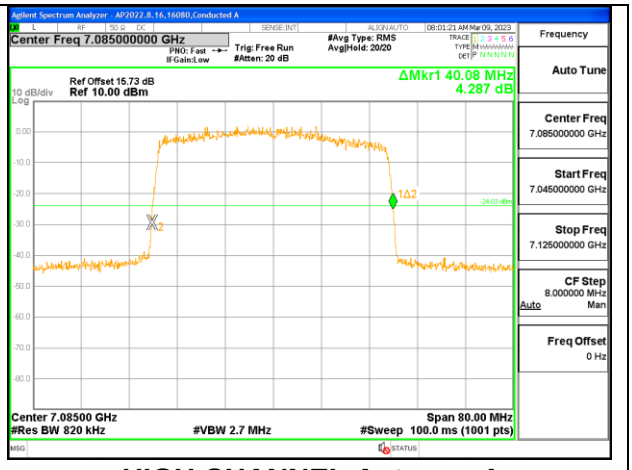


MID CHANNEL Antenna 4

HIGH CHANNEL



HIGH CHANNEL Antenna 3



HIGH CHANNEL Antenna 4

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