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**MEASUREMENT REPORT**  
**FCC PART 15.407 802.11be (OFDM)**

**Applicant Name:**  
 Samsung Electronics Co., Ltd.  
 129, Samsung-ro,  
 Yeongtong-gu, Suwon-si  
 Gyeonggi-do, 16677, Korea

**Date of Testing:**  
 12/15/2023 – 1/11/2024  
**Test Report Issue Date:**  
 1/18/2024  
**Test Site/Location:**  
 Element lab., Gyeonggi-do, South Korea  
**Test Report Serial No.:**  
 1M2312180128-04.A3L

<b>FCC ID:</b>	<b>A3LSMX910</b>
<b>IC:</b>	<b>649E-SMX910</b>
<b>APPLICANT:</b>	<b>Samsung Electronics Co., Ltd.</b>

**Application Type:** Class II Permissive Change  
**Original Grant Date:** 06/08/2023  
**Model:** SM-X910  
**EUT Type:** Portable Tablet  
**Frequency Range:** 5180 – 5885MHz  
**Modulation Type:** OFDM  
**FCC Equipment Class:** Unlicensed National Information Infrastructure TX (NII)  
**FCC Rule Part(s):** Part 15 Subpart E (15.407)  
**ISED Specification:** RSS-247 Issue 3  
**Test Procedure(s):** ANSI C63.10-2013  
**Class II Permissive Change:** Enabling WiFi 7 functionality via software

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10-2013. Test results reported herein relate only to the item(s) tested.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Prepared by		Reviewed by	
<b>FCC ID:</b> A3LSMX910 <b>IC :</b> 649E-SMX910	<b>Class II Permissive Change Report</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2312180128-04.A3L	<b>Test Dates:</b> 12/15/2023 – 1/11/2024	<b>EUT Type:</b> <b>Portable Tablet</b>	Page 1 of 83

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## MEASUREMENT REPORT

Channel Bandwidth [MHz]	IEEE Mode	UNII Band	Tx Frequency [MHz]	MIMO	
				Max. Power [mW]	Max. Power [dBm]
20	802.11be	1	5180 - 5240	109.14	20.38
	802.11be	2A	5260 - 5320	110.92	20.45
	802.11be	2C	5500 - 5720	117.16	20.69
	802.11be	3	5745 - 5825	116.51	20.66
	802.11be	4	5845 - 5885	52.79	17.23
40	802.11be	1	5190 - 5230	77.27	18.88
	802.11be	2A	5270 - 5310	76.56	18.84
	802.11be	2C	5510 - 5710	92.47	19.66
	802.11be	3	5755 - 5795	91.20	19.60
	802.11be	4	5835 - 5875	37.31	15.72
80	802.11be	1	5210	67.30	18.28
	802.11be	2A	5290	67.09	18.27
	802.11be	2C	5530 - 5690	68.87	18.38
	802.11be	3	5775	75.34	18.77
	802.11be	4	5855	33.50	15.25
160	802.11be	1/2A	5250	54.70	17.38
	802.11be	2C	5570	57.81	17.62
	802.11be	3/4	5815	27.00	14.31

### EUT Overview

**Note:** The UNII Band 4 max power values shown in the above table are e.i.r.p values.

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## 1.0 INTRODUCTION

### 1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Innovation, Science and Economic Development Canada.

### 1.2 Element Test Location

These measurement tests were conducted at the Element Suwon Laboratory located at 13, Heungdeok 1-ro, Giheung-gu, Yongin-si, Gyeonggi-do, 16954, South Korea. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014.

### 1.3 Test Facility / Accreditations

**Measurements were performed at Element Materials Technology Suwon, Ltd. located in Yongin-si, Gyeonggi-do, 16954, South Korea.**

- Element Materials Technology Suwon, Ltd. is an ISO 17025-2017 accredited test facility under the American Association for Laboratory Accreditation(A2LA) with Certificate number 2041.04 for Specific Absorption Rate (SAR), and Electromagnetic Compatibility (EMC) & Telecommunications testing for FCC and Innovation, Science, and Economic Development Canada rules.
- Element Materials Technology Suwon, Ltd. facility is accredited, designated, and recognized in accordance with the provision of Radio Wave Act and International Standard ISO/IEC 17025:2017 under the National Radio Research Agency.
  - Designation Number / CABID: KR0169
  - Test Firm Registration Number of FCC: 417945
  - Test Firm Registration Number of ISED: 26168

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## 2.0 PRODUCT INFORMATION

### 2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Tablet FCC ID: A3LSMX910, IC: 649E-SMX910**. The test data contained in this report pertains only to the emissions due to the EUT's UNII transmitter.

**Test Device Serial No.:** 0150M, 4628G, 3657M

### 2.2 Device Capabilities

This device contains the following capabilities:

802.11b/g/n/ax/be WLAN, 802.11a/n/ac/ax/be UNII (5 and 6 GHz), Bluetooth (1x, EDR, LE), Wireless Power Transfer.

Band 1		Band 2A		Band 2C		Band 3		Band 3/4	
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
36	5180	52	5260	100	5500	149	5745	169	5845
:	:	:	:	:	:	:	:	:	:
40	5200	56	5280	120	5600	157	5785	173	5865
:	:	:	:	:	:	:	:	:	:
48	5240	64	5320	144	5720	165	5825	177	5885

Table 2-1. 802.11a/n/ac/ax/be (20MHz) Frequency / Channel Operations

Band 1		Band 2A		Band 2C		Band 3		Band 3/4	
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
38	5190	54	5270	102	5510	151	5755	167	5835
:	:	:	:	:	:	:	:	:	:
46	5230	62	5310	118	5590	159	5795	175	5875
				:	:				
				142	5710				

Table 2-2. 802.11n/ac/ax/be (40MHz BW) Frequency / Channel Operations

Band 1		Band 2A		Band 2C		Band 3		Band 3/4	
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
42	5210	58	5290	106	5530	155	5775	167	5835
				:	:				
				122	5610				
				:	:				
				138	5690				

Table 2-3. 802.11ac/ax/be (80MHz BW) Frequency / Channel Operations

Band 1/2A		Band 2C		Band 3/4	
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
50	5250	114	5570	163	5815

Table 2-4. 802.11ac/ax/be (160MHz BW) Frequency / Channel Operations

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**Notes:**

1. 5GHz NII operation is possible in 20MHz, 40MHz, 80MHz, and 160MHz channel bandwidths. The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz, and detector = peak per the guidance of Section B)2)b) of ANSI C63.10-2013. The RBW and VBW were both greater than 50/T, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles are as follows:

802.11 Mode/Band		MIMO (1+2)	
		Duty Cycle [%]	Radiated DCCF [dB]
5GHz	be (EHT20)	99.54	N/A
	be (EHT40)	99.34	N/A
	be (EHT80)	98.94	N/A
	be (EHT160)	99.71	N/A

**Table 2-5. Measured Duty Cycles**

2. The device employs MIMO technology. Below are the possible configurations.

WiFi Configurations		SISO		SDM		CDD	
		ANT1	ANT2	ANT1	ANT2	ANT1	ANT2
5GHz	11a	✗	✗	✓	✓	✓	✓
	11n	✗	✗	✓	✓	✓	✓
	11ac	✗	✗	✓	✓	✓	✓
	11ax	✗	✗	✓	✓	✓	✓
	11be	✗	✗	✓	✓	✓	✓

**Table 2-6. Antenna / Technology Configuration**

✓ = Support ; ✗ = NOT Support

**SISO** = Single Input Single Output

**SDM** = Spatial Diversity Multiplexing – MIMO function

**CDD** = Cyclic Delay Diversity – 2Tx Function

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3. The device supports the following data rates (shown in Mbps):

802.11a		MCS Index				Spatial Stream	OFDM (802.11n/802.11ac)				OFDM (802.11ac)				OFDM (802.11ax/be)																			
20MHz		HT	VHT	HE	EHT		20MHz		40MHz		80MHz		160MHz		20MHz			40MHz			80MHz			160MHz										
6	9						0.8µs GI	0.4µs GI	0.8µs GI	0.4µs GI	0.8µs GI	0.4µs GI	0.8µs GI	1.6µs GI	3.2µs GI	0.8µs GI	1.6µs GI	3.2µs GI	0.8µs GI	1.6µs GI	3.2µs GI	0.8µs GI	1.6µs GI	3.2µs GI	0.8µs GI	1.6µs GI	3.2µs GI							
							6	9	6.5	7.2	13.5	15	29.3	32.5	58.5	65	117	130	234	260	8.6	8.1	7.3	17.2	16.3	14.6	34.4	32.5	29.3	72.1	68.1	61.3	144.1	136.1
12	18	19.5	21.7	40.5	45	87.8	97.5	175.5	195	390	516	936	1040	17.2	16.3	14.6	34.4	32.5	29.3	72.1	68.1	61.3	144.1	136.1	122.5	288.2	272.2	245	576.5	544.4	490			
54	7	7	7	7	7	1	65	72.2	135	150	292.5	325	585	650	86	81.3	73.1	172.1	162.5	146.3	360.3	340.3	306.3	720.6	680.6	612.5	1441.2	1361.1	1225	2882.4	2722.2	2450		

Table 2-7. Supported Data Rates

### 2.3 Antenna Description

The following antenna gains were used for the testing.

Frequency [MHz]	Antenna 1 Gain (dBi)	Antenna 2 Gain (dBi)	Directional Gain (dBi)
5200	-5.65	-6.89	-3.24
5300	-5.26	-6.16	-2.69
5500	-5.35	-5.80	-2.56
5800	-5.86	-6.92	-3.36
5850	-5.91	-7.06	-3.46

Table 2-8. Antenna Peak Gain per Frequency

### 2.4 Test Configuration

ANSI C63.10-2013 was used to reference the appropriate EUT setup for radiated spurious emissions testing. See Sections 7.6 for radiated emissions test setups, and 7.2, 7.3, 7.4 and 7.5 for antenna port conducted emissions test setups.

### 2.5 Software and Firmware

The test was conducted with software/firmware version X910XXU1BWL3 installed on the EUT.

### 2.6 EMI Suppression Device(s) / Modifications

No EMI suppression device(s) were added and/or no modifications were made during testing.

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## 3.0 DESCRIPTION OF TESTS

### 3.1 Evaluation Procedure

The measurement procedures described in the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices (ANSI C63.10-2013) was used in the measurement of the EUT.

**Deviation from measurement procedure.....None**

### 3.2 Radiated Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. The test site inside the chamber is a 6m x 5.2m elliptical, obstruction-free area in accordance with Figure 5.7 of Clause 5 in ANSI C63.4-2014. Absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections for measurements above 1GHz. An 80cm tall test table made of Styrodur is placed on top of the turn table. For measurements above 1GHz, an additional Styrodur pedestal is placed on top of the test table to bring the total table height to 1.5m.

For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to the upper frequency shown in 15.33 depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up was placed on top of the 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, mode of operation, turntable azimuth, and receive antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive antenna, whichever produced the worst-case emissions.

All radiated measurements are performed in a chamber that meets the site requirements per ANSI C63.4-2014. Additionally, radiated emissions below 30MHz are also validated on an Open Area Test Site to assert correlation with the chamber measurements per the requirements of KDB 414788 D01 v01r01.

### 3.3 Environmental Conditions

The temperature is controlled within range of 15°C to 35°C. The relative humidity is controlled within range of 10% to 75%. The atmospheric pressure is monitored within the range 86-106kPa (860-1060mbar).

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## 4.0 ANTENNA REQUIREMENTS

**Excerpt from §15.203 of the FCC Rules/Regulations:**

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.”

- The antennas of the EUT are **permanently attached**.
- There are no provisions for connection to an external antenna.

**Conclusion:**

The EUT complies with the requirement of §15.203.

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## 5.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013. All measurement uncertainty values are shown with a coverage factor of  $k = 2$  to indicate a 95% level of confidence. The measurement uncertainty shown below meets or exceeds the  $U_{\text{CISPR}}$  measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Contribution	Expanded Uncertainty ( $\pm$ dB)
Conducted Bench Top Measurements	1.95
Line Conducted Disturbance	3.09
Radiated Disturbance (<1GHz)	4.10
Radiated Disturbance (>1GHz)	4.82
Radiated Disturbance (>18GHz)	4.96

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## 6.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST). Measurements antennas used during testing were calibrated in accordance to the requirements of ANSI C63.5-2017.

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	N9030A	PXA Signal Analyzer	7/6/2023	Annual	7/3/2024	MY49432391
Anritsu	S820E	Cable and Antenna Analyzer	7/4/2023	Annual	7/3/2024	1839097
Anritsu	TOSLKF50A-40	Calibration Kit	N/A	-	N/A	1825024
Com-Power	AL-130R	Active Loop Antenna	10/21/2022	Biennial	10/20/2024	10160045
Fairview Microwave	FM2CP1122-10	Coupler	7/4/2023	Annual	7/3/2024	1946
Keysight Technologies	N9030B	PXA Signal Analyzer	4/6/2023	Annual	4/5/2024	MY57142018
Mini-Circuits	BW-N10W5+	Attenuator	4/6/2023	Annual	4/5/2024	TEMPNO.01-151
Rohde & Schwarz	TS-PR1840	Preamplifier	7/6/2023	Annual	7/5/2024	100049
Rohde & Schwarz	ESW	EMI TEST Receiver	7/5/2023	Annual	7/4/2024	101761
Rohde & Schwarz	FSW43	Signal & Spectrum Analyzer	4/6/2023	Annual	4/5/2024	101250
Rohde & Schwarz	TS-SFUNIT-Rx	Shielded Filter Unit	1/13/2023	Annual	1/12/2024	102151
Schwarzbeck	VULB9162	Broadband TRILOG Antenna	6/1/2023	Biennial	5/31/2025	9162-217
Sunol Sciences	DRH-118	Horn Antenna	1/26/2023	Biennial	1/25/2025	A102416-1
Anritsu	MA24106A	Power Sensor	7/4/2023	Annual	7/3/2024	1244512

**Table 6-1. Annual Test Equipment Calibration Schedule**

**Note:**

1. For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.
2. Equipment with a calibration date of "N/A" shown in this list was not used to make direct calibrated measurements.

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## 7.0 TEST RESULTS

### 7.1 Summary

Company Name: Samsung Electronics Co., Ltd.  
 FCC ID: A3LSMX910  
 IC: 649E-SMX910  
 FCC Classification: Unlicensed National Information Infrastructure (UNII)

FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
N/A	RSS-Gen [6.6]	26dB Bandwidth	N/A	CONDUCTED	PASS	Section 7.2
15.407(e)	RSS-Gen [6.6]	6dB Bandwidth	>500kHz(5725-5850MHz and 5850 – 5895MHz)		PASS	Section 7.3
15.407 (a)(1)(iv), (a)(2), (a)(3)	RSS-247 [6.2]	Maximum Conducted Output Power	Maximum conducted powers must meet the limits detailed in 15.407 (a) (RSS-247 [6.2])		PASS	Section 7.4
15.407 (a)(1)(iv), (a)(2), (a)(3)	RSS-247 [6.2]	Maximum Power Spectral Density	Maximum power spectral density must meet the limits detailed in 15.407 (a) (RSS-247 [6.2])		PASS	Section 7.5
15.407(h)	RSS-247 [6.3]	Dynamic Frequency Selection	See DFS Test Report		PASS	See DFS Test Report
15.407(b)(1), (b)(2), (b)(3), (b)(4)	RSS-247 [6.2]	Undesirable Emissions	Undesirable emissions must meet the limits detailed in 15.407(b) (RSS-247 [6.2])	RADIATED	PASS	Section 7.6
15.205, 15.407(b)(1), (b)(4), (b)(5), (b)(6)	RSS-Gen [8.9]	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in restricted bands must meet the radiated limits detailed in 15.209 (RSS-Gen [8.9])		PASS	Section 7.6

**Table 7-1. Summary of Test Results**

**Notes:**

- 1) All channels, modes, and modulations/data rates were investigated among all UNII bands. The test results shown in the following sections represent the worst-case emissions.
- 2) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
- 3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables and attenuators.
- 4) For conducted spurious emissions, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is Element “UNII Automation,” Version 4.7.
- 5) For radiated band edge, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is Element “Chamber Automation,” Version 1.6.4.

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 12 of 83

## 7.2 26dB Bandwidth Measurement

### Test Overview and Limit

The bandwidth at 26dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013, and at the appropriate frequencies. The spectrum analyzer's bandwidth measurement function is configured to measure the 26dB bandwidth.

***The 26dB bandwidth is used to determine the conducted power limits.***

### Test Procedure Used

ANSI C63.10-2013 – Section 12.4

### Test Settings

1. The signal analyzers' automatic bandwidth measurement capability was used to perform the 26dB bandwidth measurement. The "X" dB bandwidth parameter was set to X = 26. The automatic bandwidth measurement function also has the capability of simultaneously measuring the 99% occupied bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = approximately 1% of the emission bandwidth
3. VBW  $\geq$  3 x RBW
4. Detector = Peak
5. Trace mode = max hold

### Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



**Figure 7-1. Test Instrument & Measurement Setup**

### Test Notes

All cases were investigated; a subset of the taken plots were included to represent relevant settings and measurements.

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 13 of 83



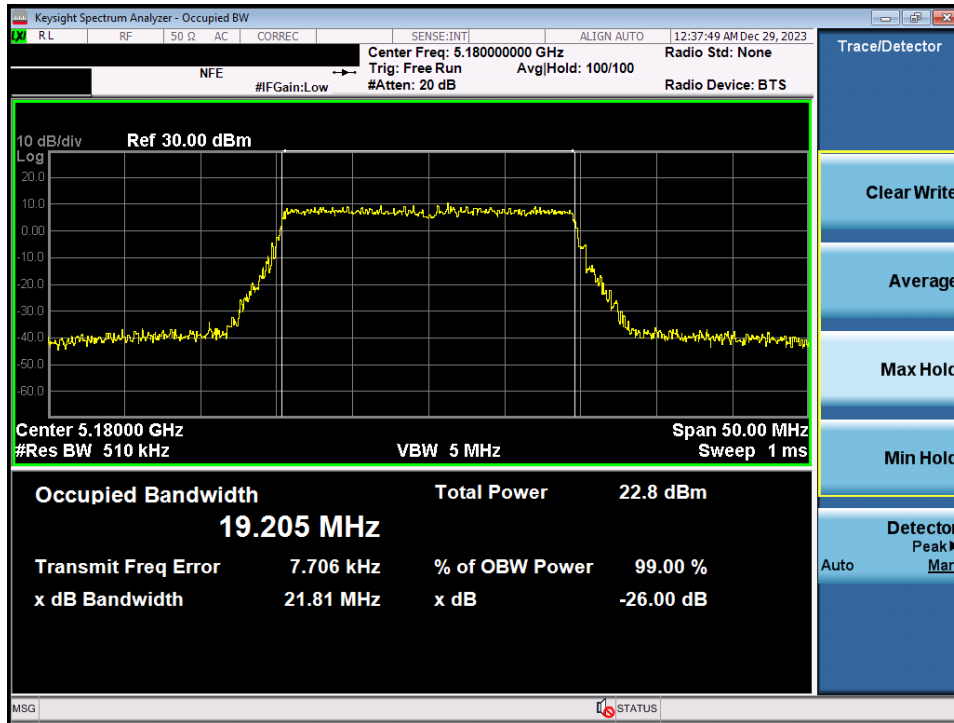
## MIMO 26dB Bandwidth Measurements

	Frequency [MHz]	Channel	802.11 MODE	Antenna-1 26dB Bandwidth [MHz]	Antenna-2 26dB Bandwidth [MHz]
Band 1	5180	36	be SU	21.81	21.65
	5200	40	be SU	21.18	22.05
	5240	48	be SU	21.38	21.13
	5190	38	be SU	41.86	42.33
	5230	46	be SU	41.57	42.75
	5210	42	be SU	86.67	87.14
Band 1/2A	5250	50	be SU	168.30	168.20
Band 2A	5260	52	be SU	21.20	21.68
	5280	56	be SU	21.25	20.96
	5320	64	be SU	21.11	21.17
	5270	54	be SU	41.73	41.56
	5310	62	be SU	41.42	41.95
	5290	58	be SU	87.28	84.11
Band 2C	5500	100	be SU	21.85	21.06
	5600	120	be SU	21.40	21.24
	5720	144	be SU	21.38	20.95
	5510	102	be SU	41.09	41.24
	5590	118	be SU	41.65	41.19
	5710	142	be SU	41.73	41.39
	5530	106	be SU	84.73	86.59
	5610	122	be SU	87.21	86.89
	5690	138	be SU	89.01	84.08
	5570	114	be SU	170.10	169.40

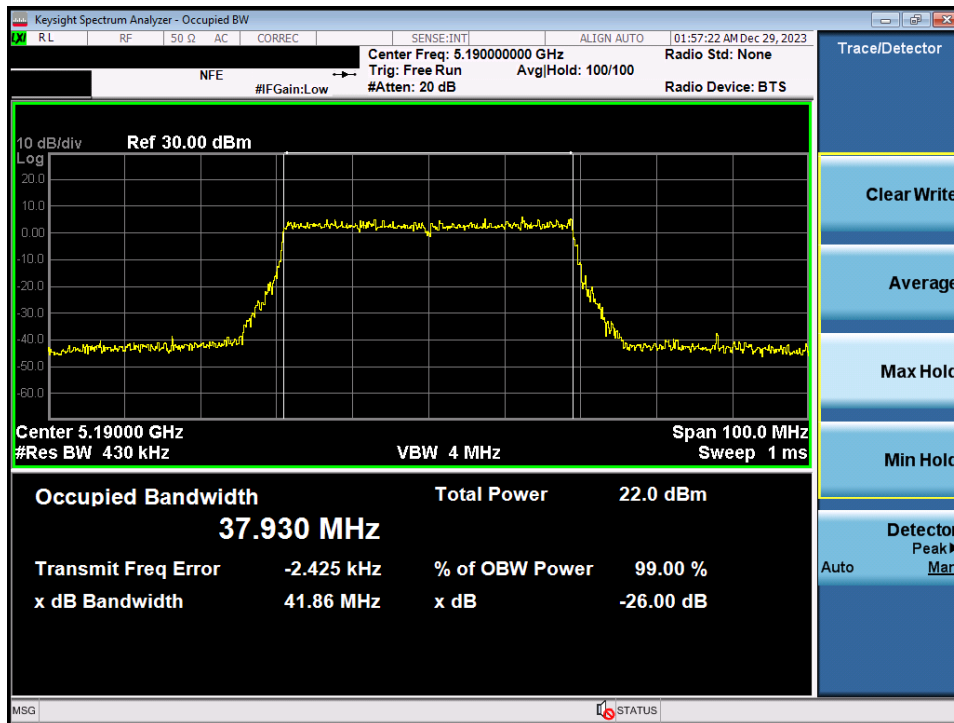
**Table 7-2. Bands 1, 2A, 2C Conducted 26dB Bandwidth Measurements MIMO**

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 14 of 83

## 7.2.1 MIMO Antenna-1 26dB Bandwidth Measurements

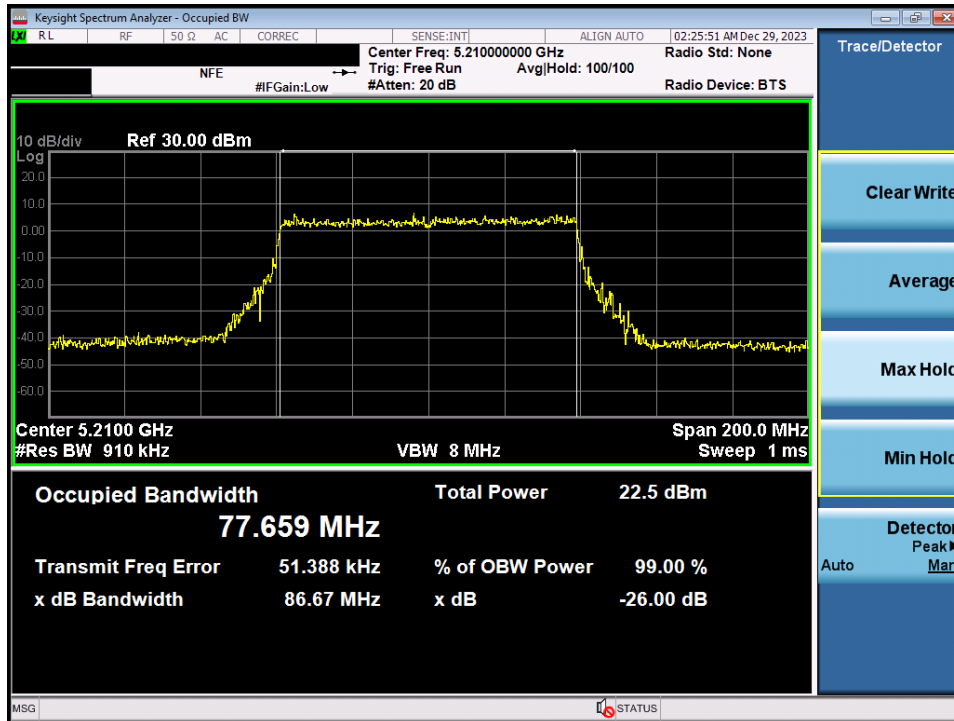


Plot 7-1. 26dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11be (UNII Band 1) – Ch. 36)

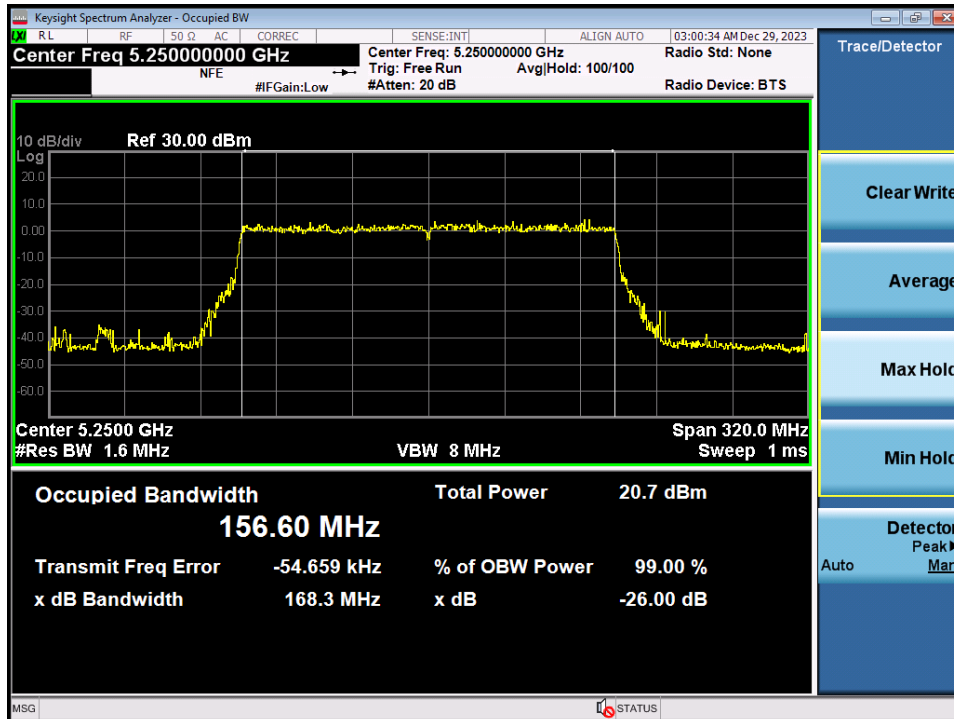


Plot 7-2. 26dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11be (UNII Band 1) – Ch. 38)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 15 of 83



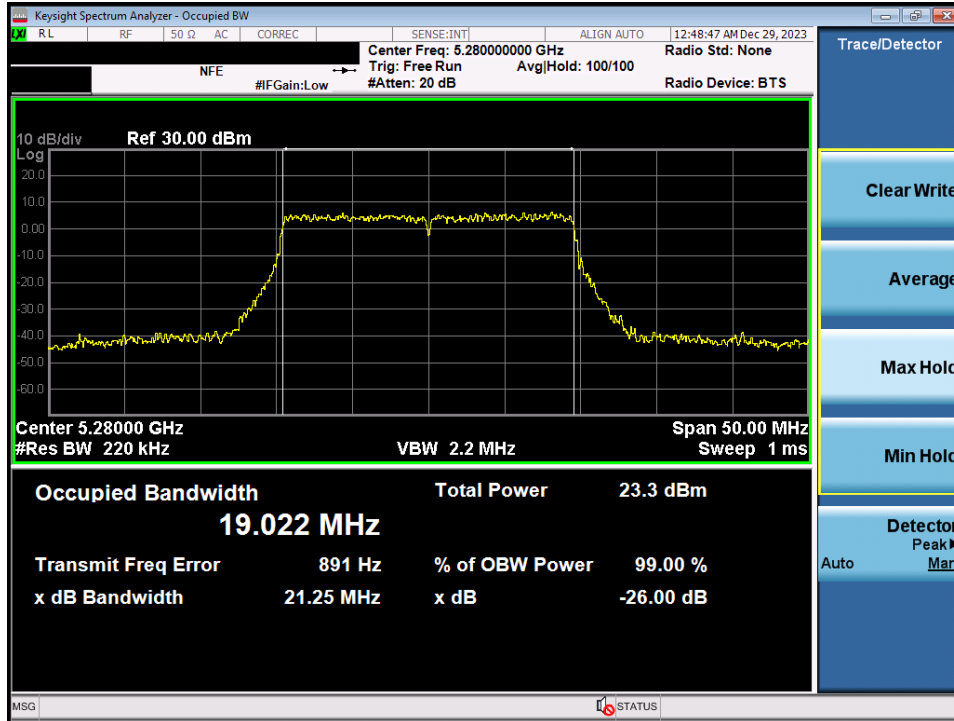
Plot 7-3. 26dB Bandwidth Plot MIMO ANT1 (80MHz BW 802. 11be (UNII Band 1) – Ch. 42)



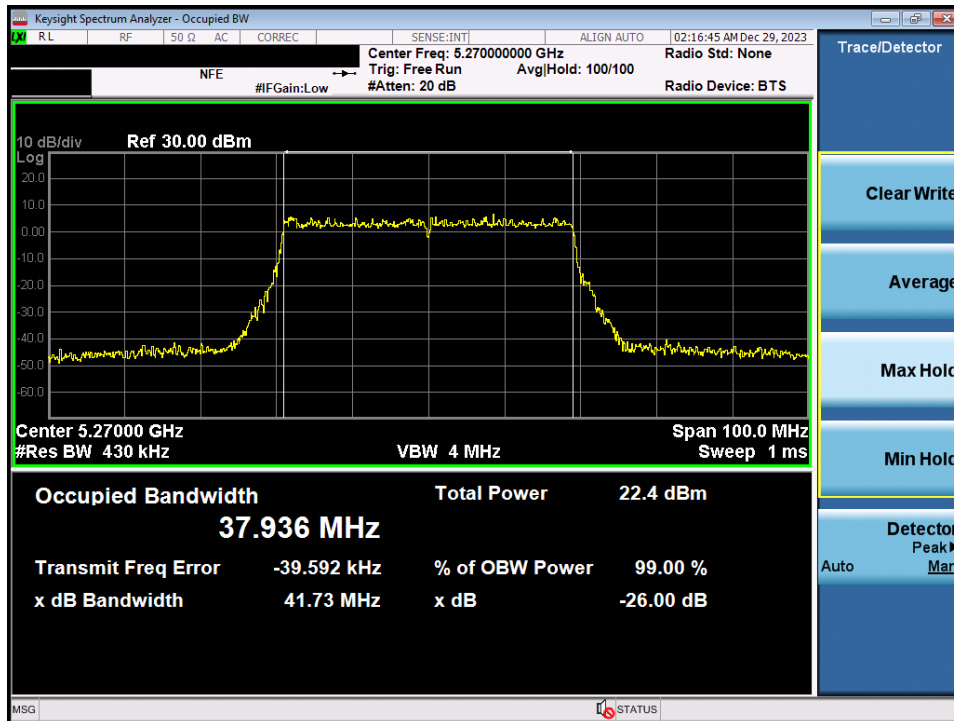
Plot 7-4. 26dB Bandwidth Plot MIMO ANT1 (160MHz BW 802. 11be (UNII Band 1/2A) – Ch. 50)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 16 of 83



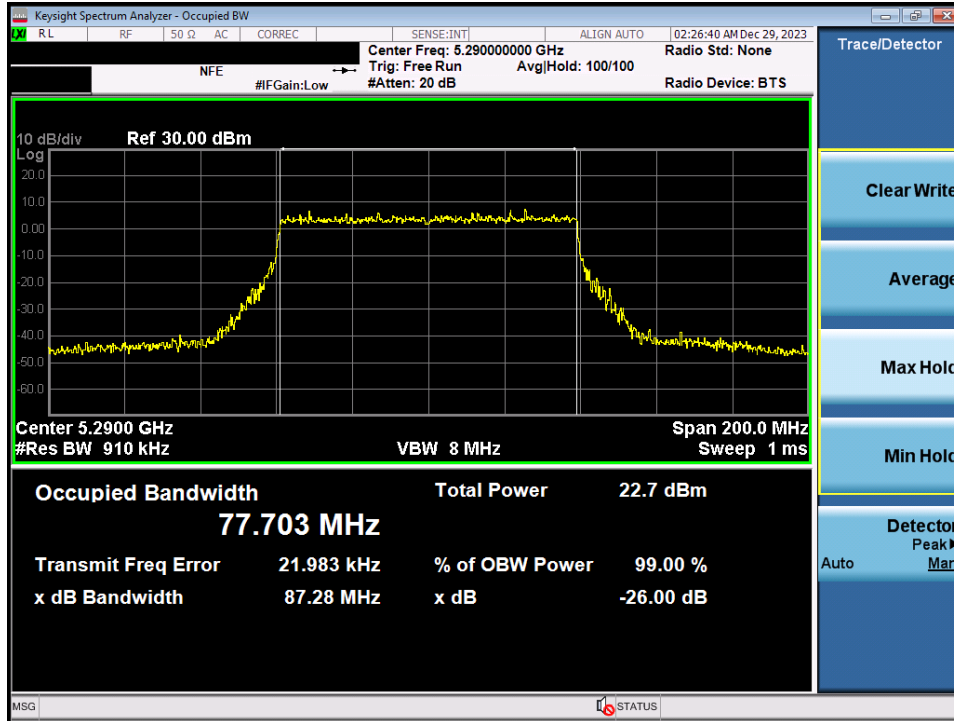


Plot 7-5. 26dB Bandwidth Plot MIMO ANT1 (20MHz BW 802. 11be (UNII Band 2A) – Ch. 56)

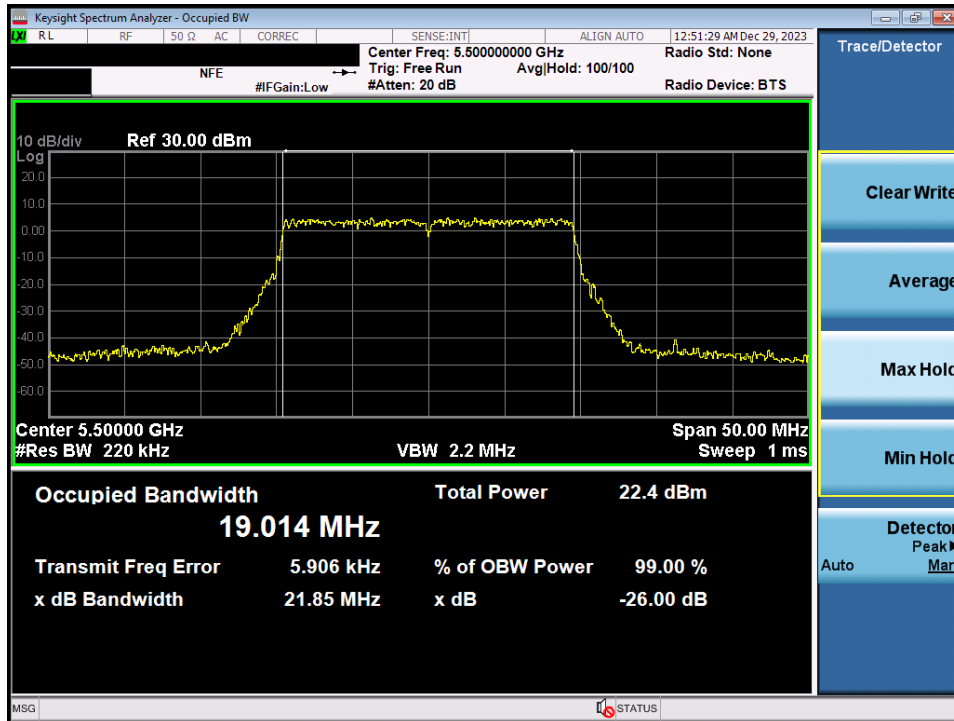


Plot 7-6. 26dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11be (UNII Band 2A) – Ch. 56)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 17 of 83

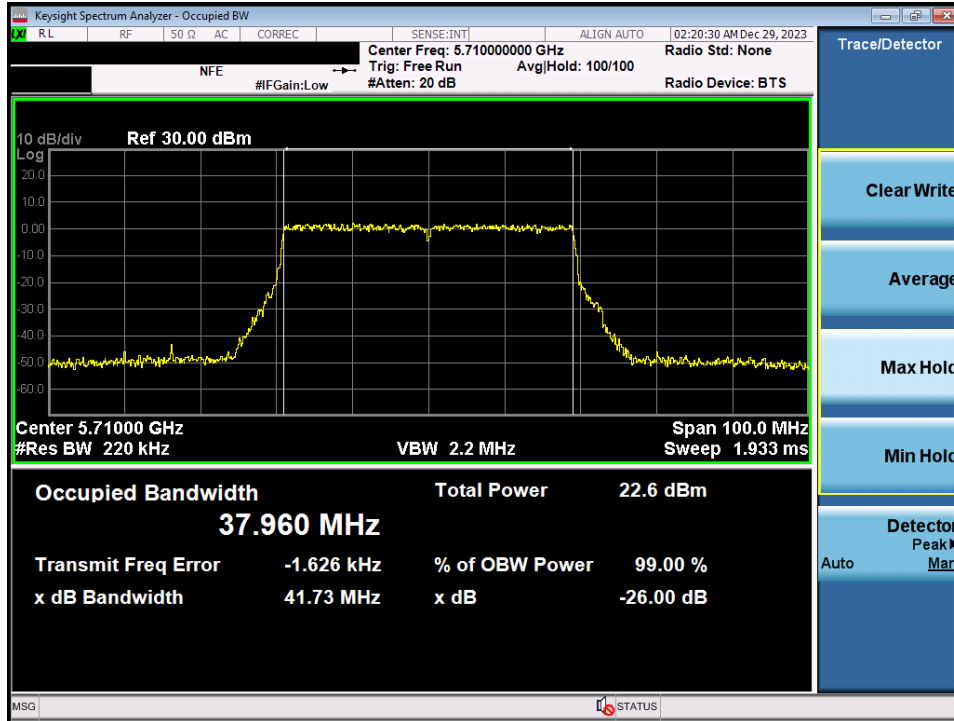


Plot 7-7. 26dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11be (UNII Band 2A) – Ch. 58)



Plot 7-8. 26dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11be (UNII Band 2C) – Ch. 100)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 18 of 83

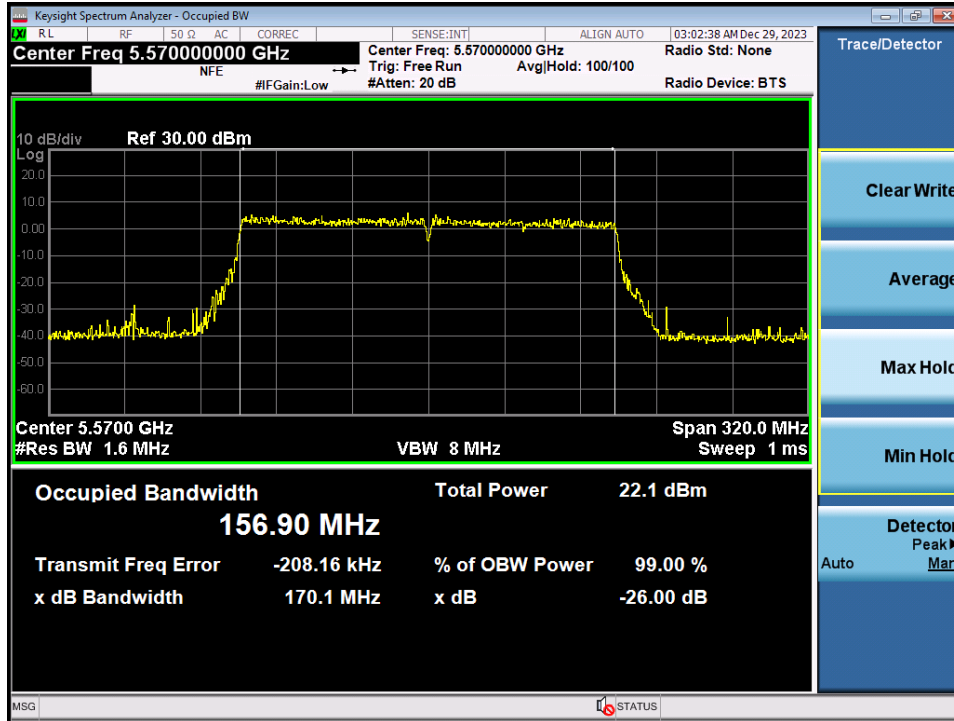


Plot 7-9. 26dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11be (UNII Band 2C) – Ch. 142)



Plot 7-10. 26dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11be (UNII Band 2C) – Ch. 138)

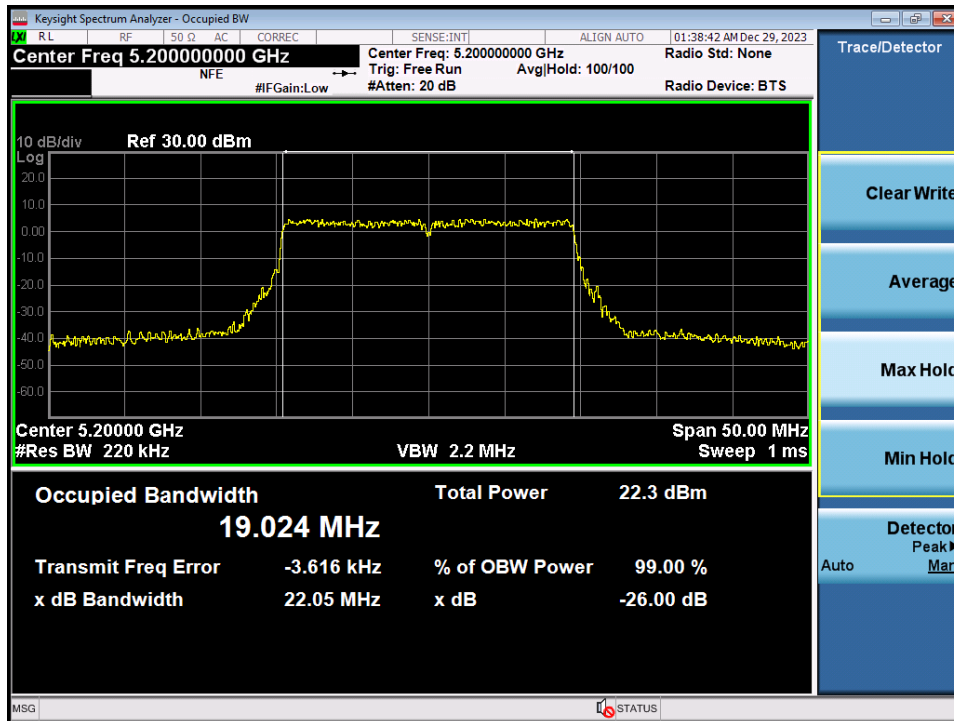
FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 19 of 83



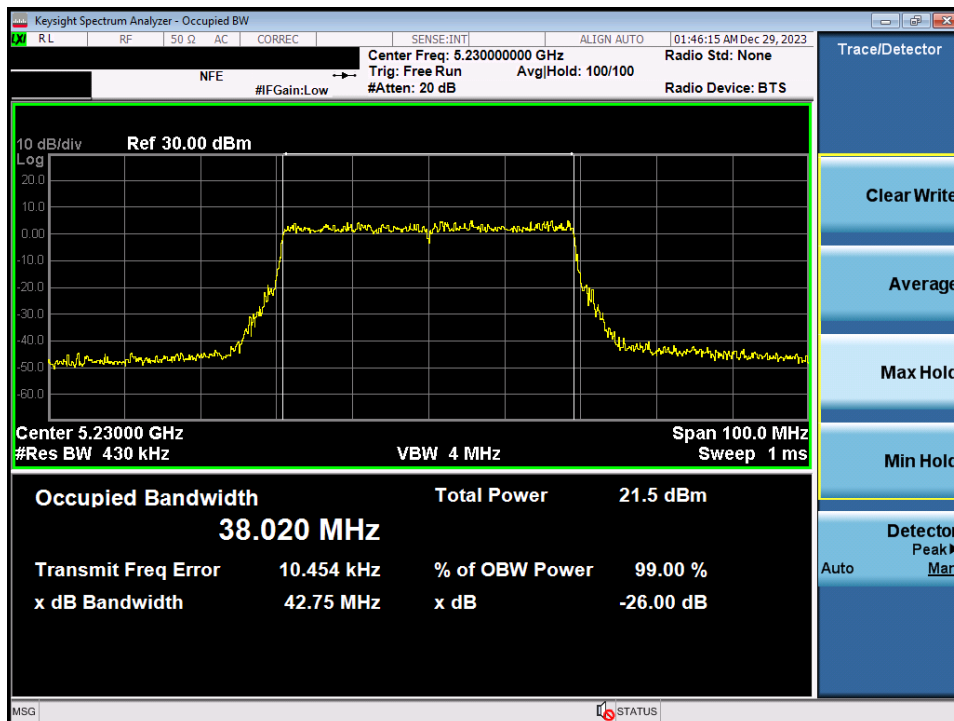
Plot 7-11. 26dB Bandwidth Plot MIMO ANT1 (160MHz BW 802.11be (UNII Band 2C) – Ch. 114)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 20 of 83

## 7.2.2 MIMO Antenna-2 26dB Bandwidth Measurements

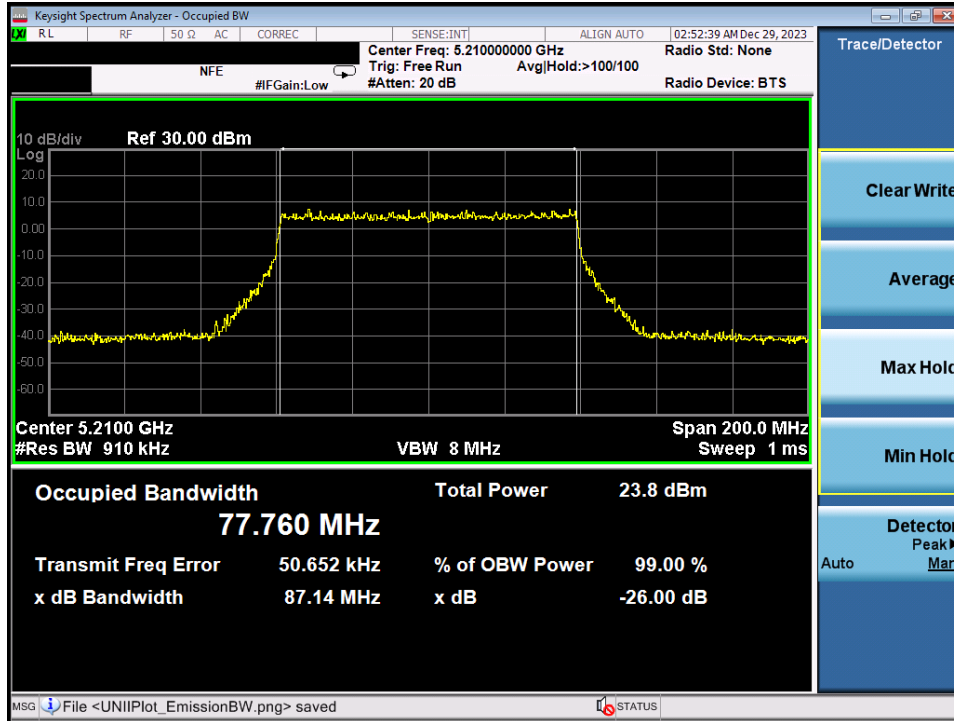


Plot 7-12. 26dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11be (UNII Band 1) – Ch. 40)

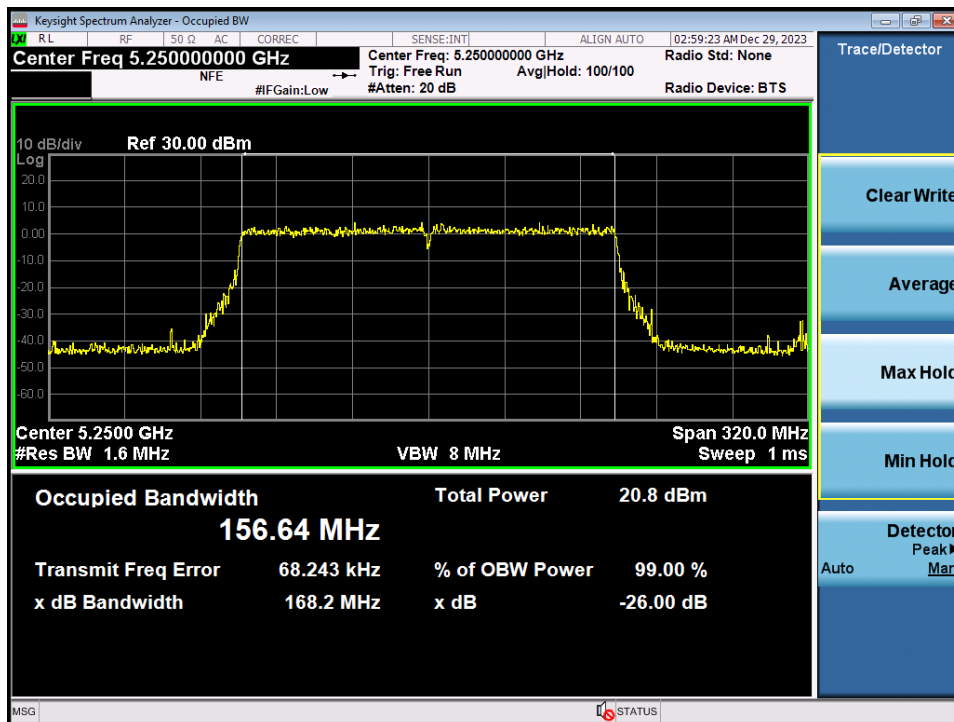


Plot 7-13. 26dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11be (UNII Band 1) – Ch. 46)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 21 of 83

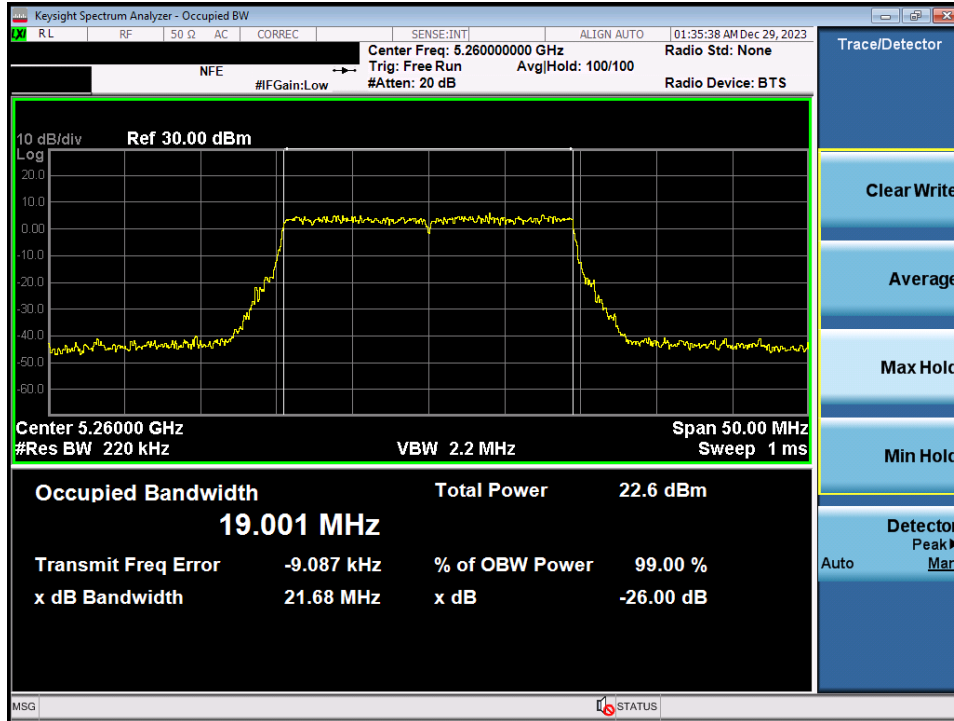


Plot 7-14. 26dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11be (UNII Band 1) – Ch. 42)

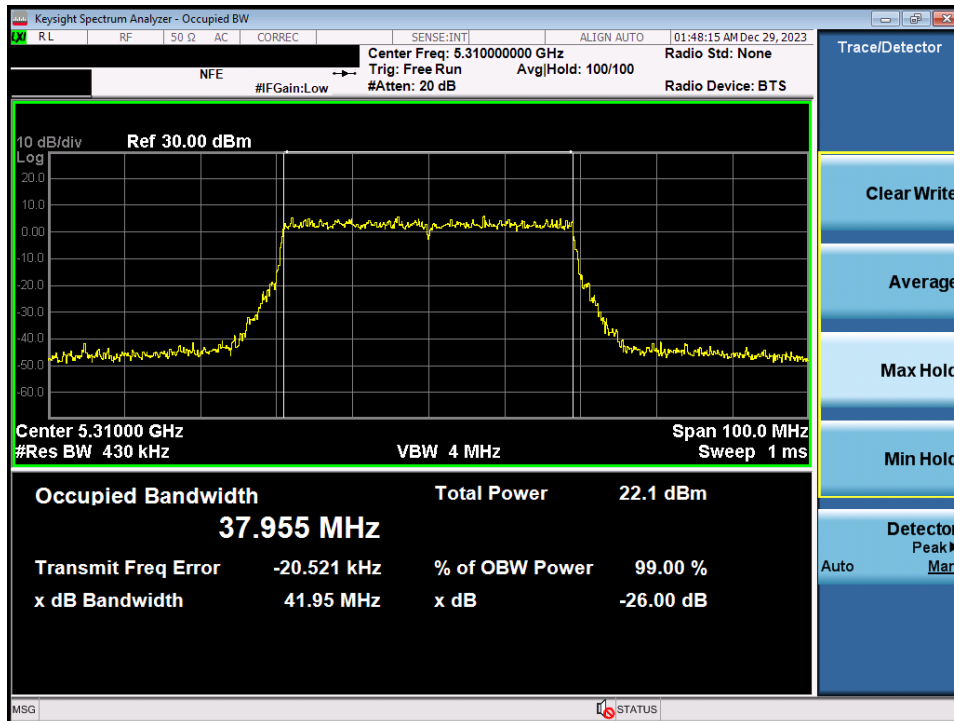


Plot 7-15. 26dB Bandwidth Plot MIMO ANT2 (160MHz BW 802.11be (UNII Band 1/2A) – Ch. 50)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 22 of 83

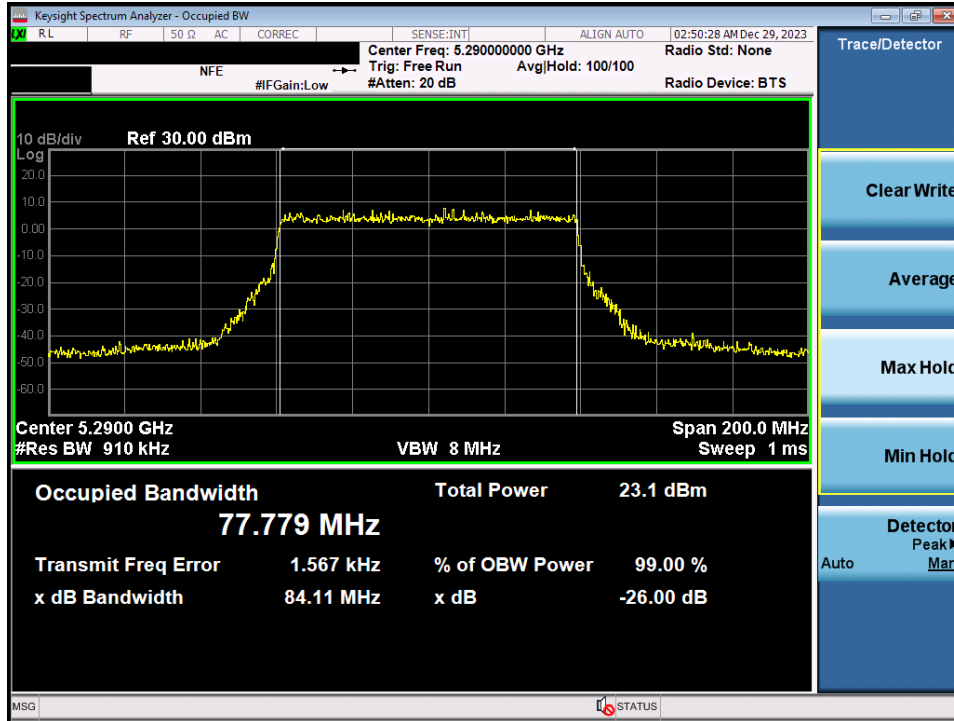


Plot 7-16. 26dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11be (UNII Band 2A) – Ch. 52)

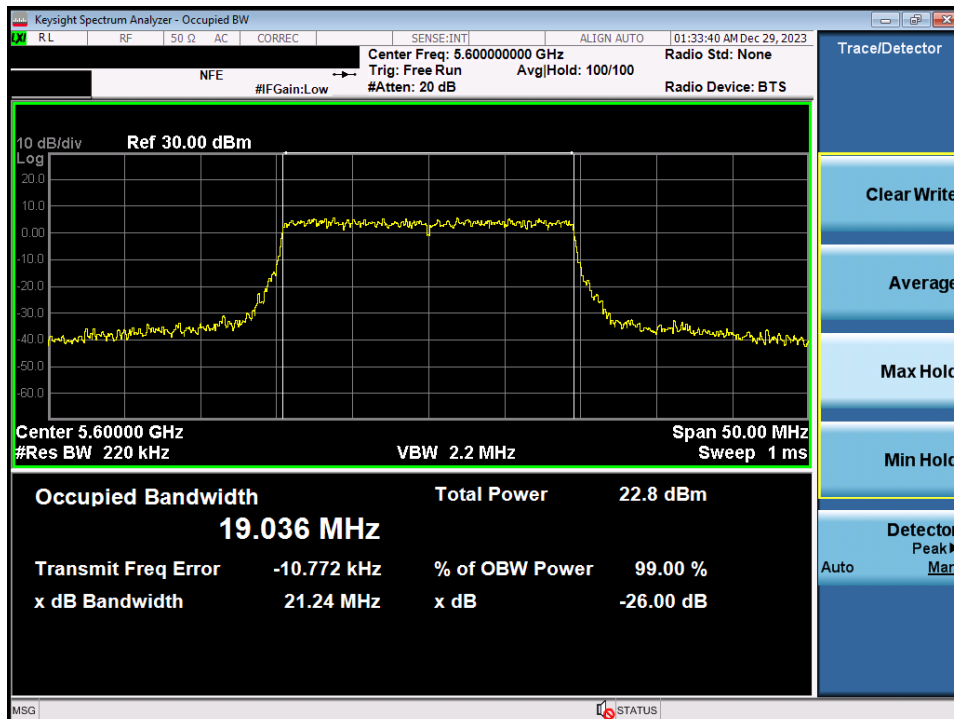


Plot 7-17. 26dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11be (UNII Band 2A) – Ch. 62)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 23 of 83



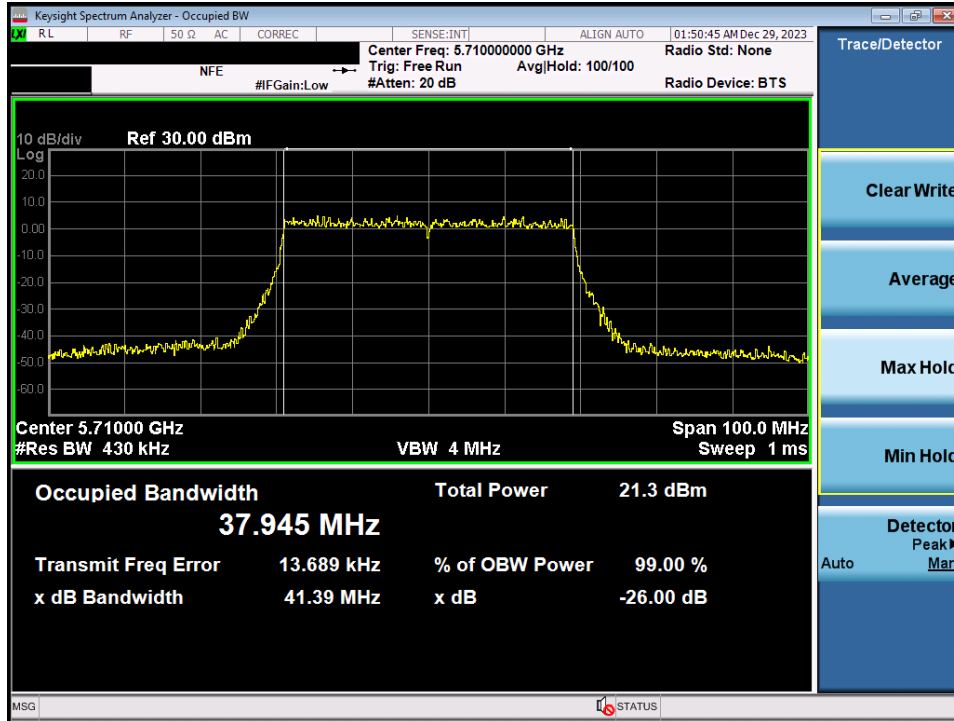
Plot 7-18. 26dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11be (UNII Band 2A) – Ch. 58)



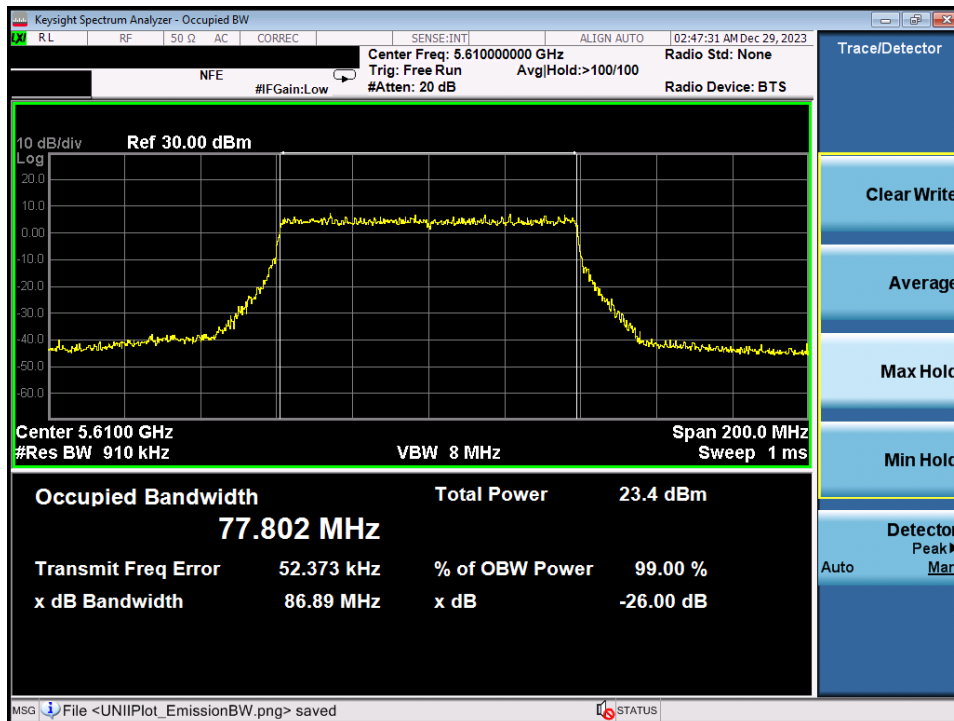
Plot 7-19. 26dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11be (UNII Band 2C) – Ch. 120)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 24 of 83



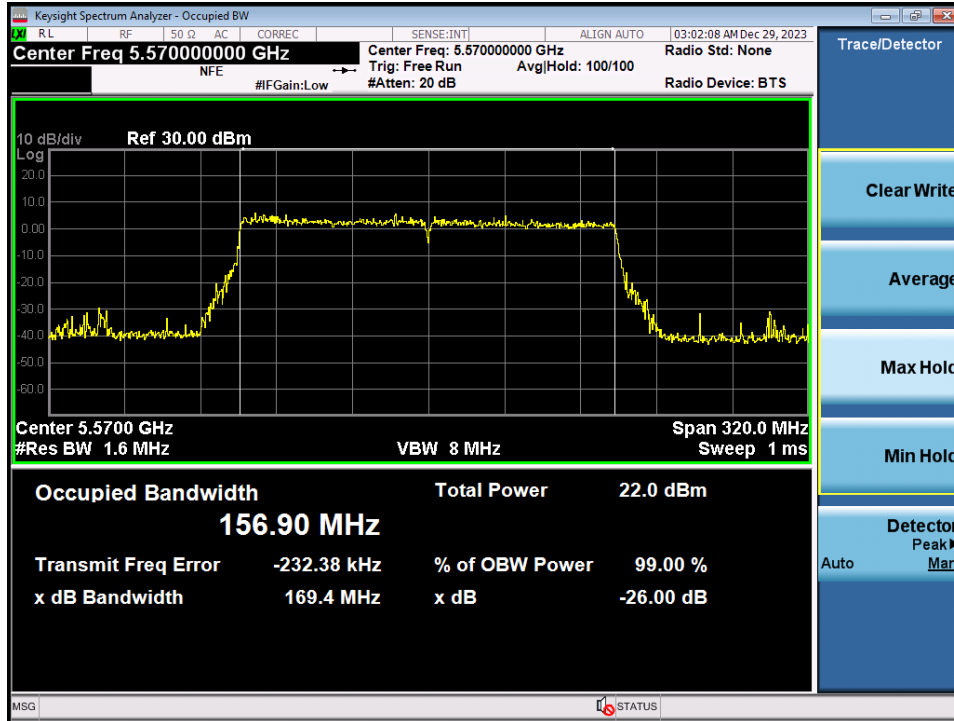


Plot 7-20. 26dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11be (UNII Band 2C) – Ch. 142)



Plot 7-21. 26dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11be (UNII Band 2C) – Ch. 122)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 25 of 83



Plot 7-22. 26dB Bandwidth Plot MIMO ANT2 (160MHz BW 802.11be (UNII Band 2C) – Ch. 114)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 26 of 83

### 7.3 6dB Bandwidth Measurement

#### Test Overview and Limit

The bandwidth at 6dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013, and at the appropriate frequencies. The spectrum analyzer's bandwidth measurement function is configured to measure the 6dB bandwidth.

***In the 5.725 – 5.850GHz band and 5.850 – 5.895GHz band, the 6dB bandwidth must be  $\geq$  500 kHz.***

#### Test Procedure Used

ANSI C63.10-2013 – Section 6.9.2

#### Test Settings

1. The signal analyzers' automatic bandwidth measurement capability was used to perform the 6dB bandwidth measurement. The "X" dB bandwidth parameter was set to  $X = 6$ . The automatic bandwidth measurement function also has the capability of simultaneously measuring the 99% occupied bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 100 kHz
3. VBW  $\geq$  3 x RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple

#### Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



**Figure 7-2. Test Instrument & Measurement Setup**

#### Test Notes

All cases were investigated; a subset of the taken plots were included to represent relevant settings and measurements.

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 27 of 83



## MIMO 6dB Bandwidth Measurements

	Frequency [MHz]	Channel	802.11 MODE	Antenna-1 6dB Bandwidth [MHz]	Antenna-2 6dB Bandwidth [MHz]
<b>Band 3</b>	5745	149	be SU	18.97	18.96
	5785	157	be SU	19.02	19.11
	5825	165	be SU	19.10	18.99
	5755	151	be SU	38.06	38.18
	5795	159	be SU	38.04	38.19
	5775	155	be SU	78.07	78.24

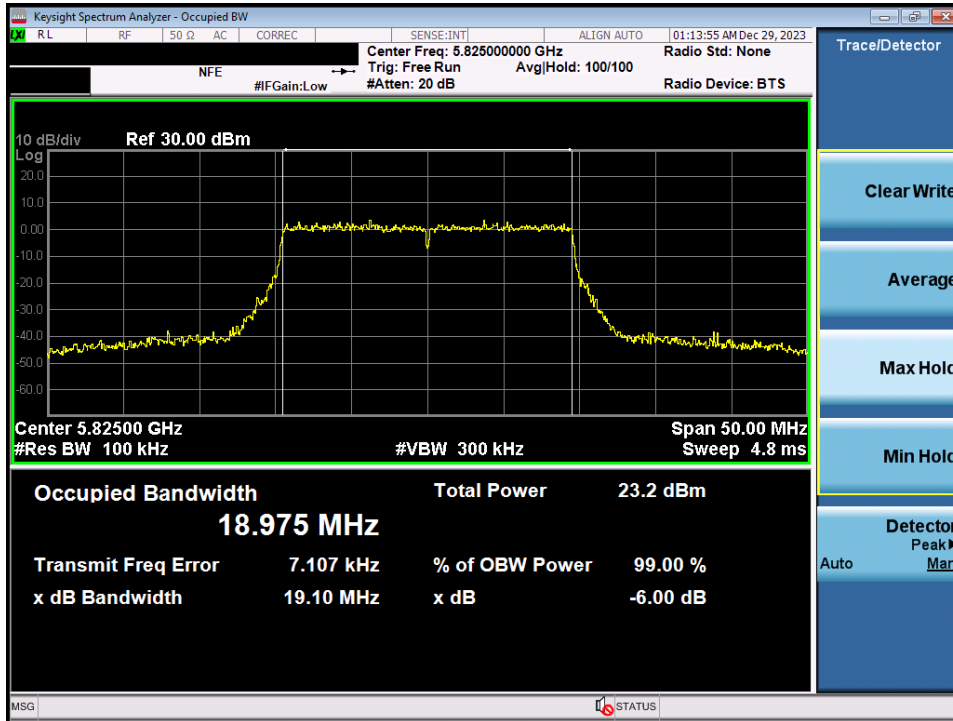
**Table 7-3. Band 3 Conducted 6dB Bandwidth Measurements MIMO**

	Frequency [MHz]	Channel	802.11 MODE	Antenna-1 6dB Bandwidth [MHz]	Antenna-2 6dB Bandwidth [MHz]
<b>Band 3/4</b>	5845	169	be SU	18.96	19.04
<b>Band 4</b>	5865	173	be SU	19.03	19.06
	5885	177	be SU	19.09	18.87
<b>Band 3/4</b>	5835	167	be SU	38.14	38.21
<b>Band 4</b>	5875	175	be SU	38.10	38.15
<b>Band 3/4</b>	5855	171	be SU	78.09	78.10
	5815	163	be SU	158.30	158.20

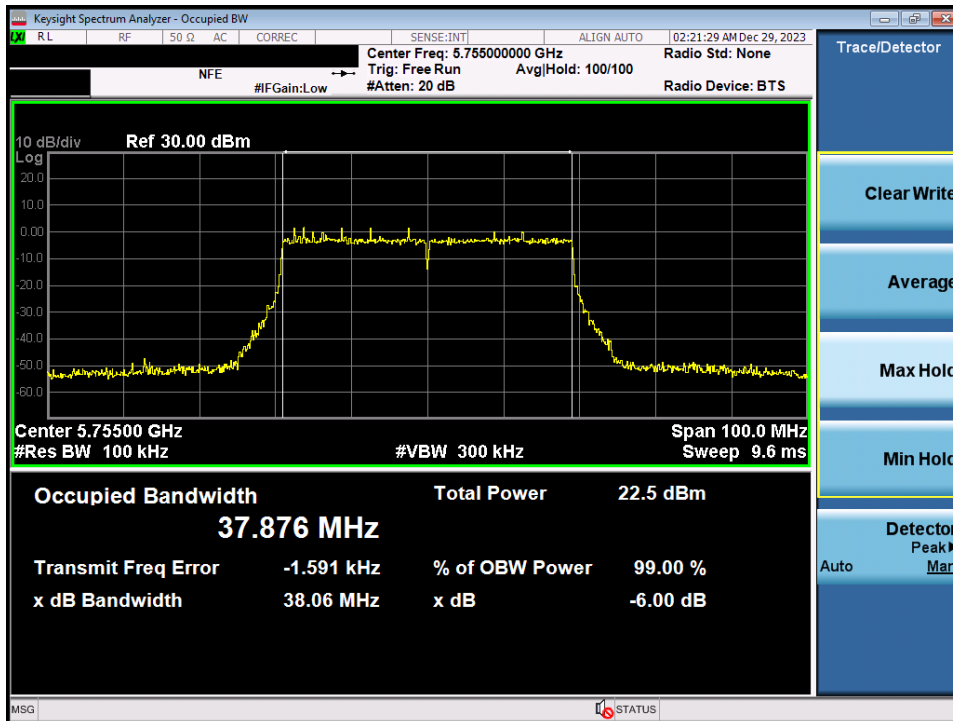
**Table 7-4. Bands 3/4 Conducted 6dB Bandwidth Measurements MIMO**

FCC ID: A3LSMX910 IC : 649E-SMX910	<b>Class II Permissive Change Report</b>		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: <b>Portable Tablet</b>	Page 28 of 83

### 7.3.1 MIMO Antenna-1 6dB Bandwidth Measurements



Plot 7-23. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11be (UNII Band 3) – Ch. 165)

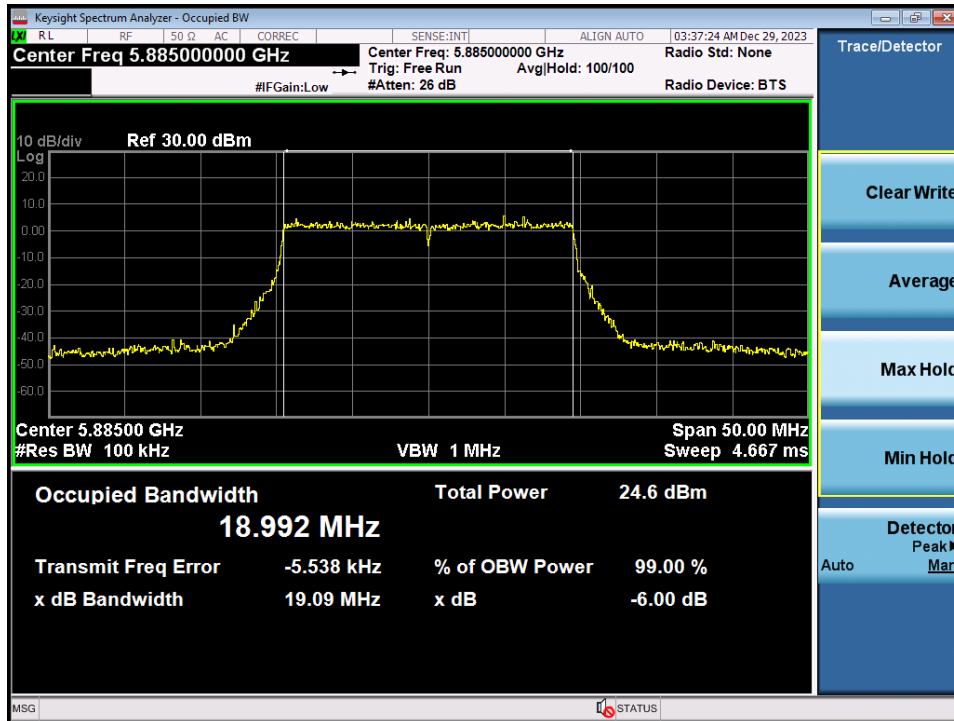


Plot 7-24. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11be (UNII Band 3) – Ch. 151)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 29 of 83

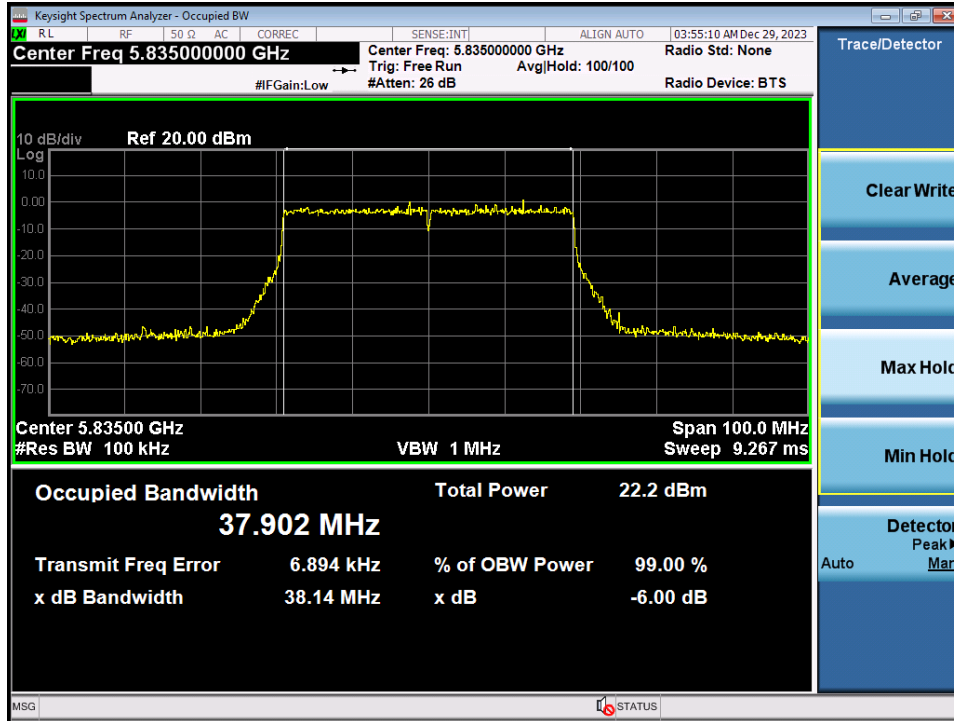


Plot 7-25. 6dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11be (UNII Band 3) – Ch. 155)

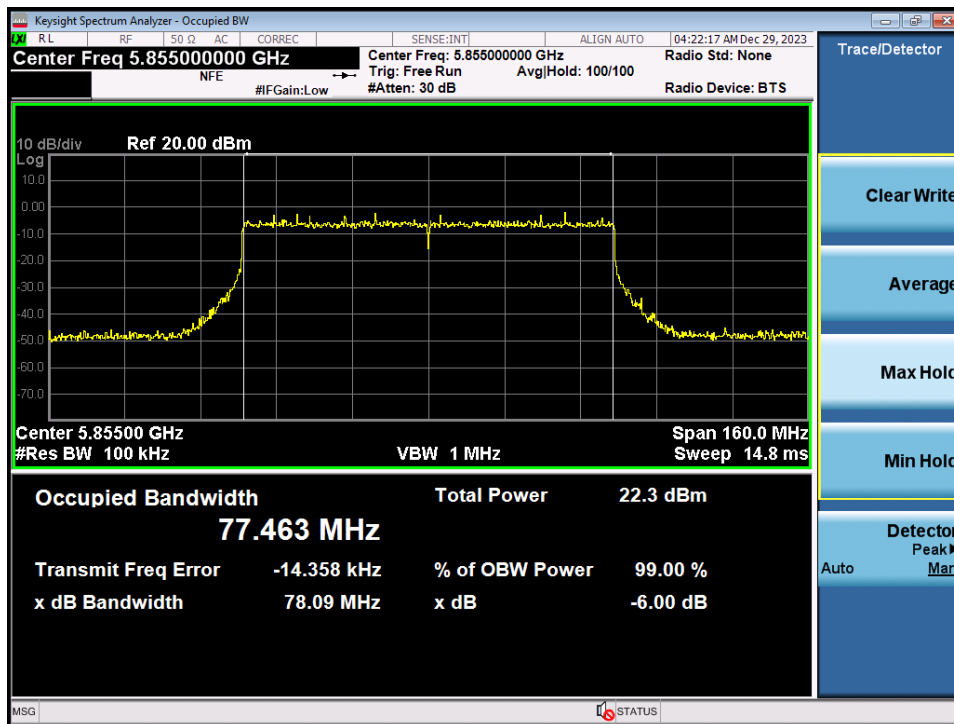


Plot 7-26. 6dB Bandwidth Plot MIMO ANT1 (20MHz BW 802.11be (UNII Band 4) – Ch. 177)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 30 of 83

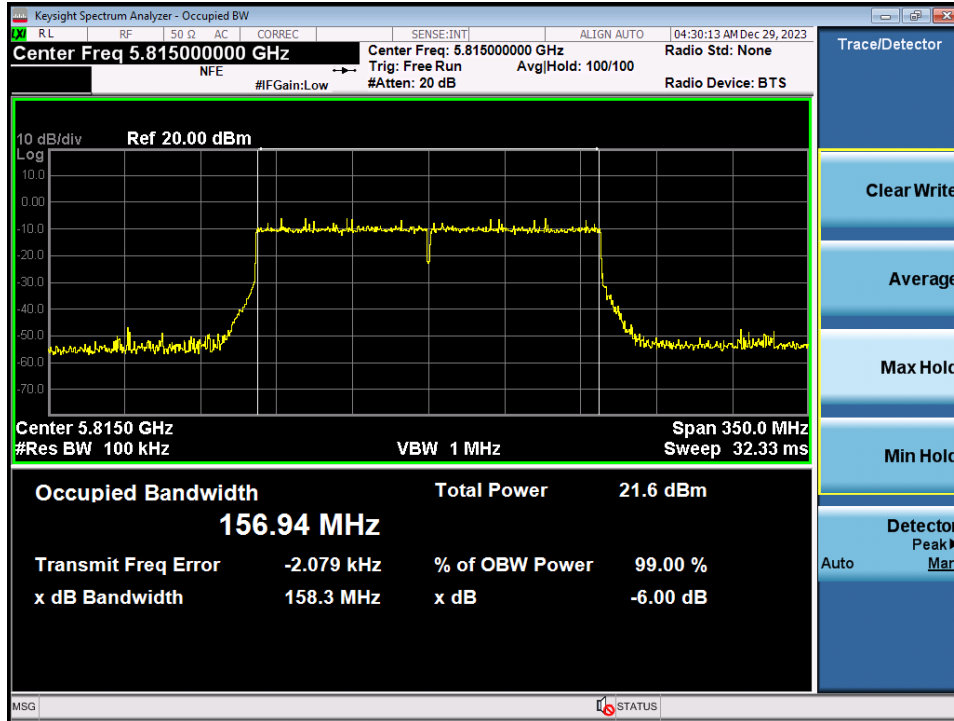


Plot 7-27. 6dB Bandwidth Plot MIMO ANT1 (40MHz BW 802.11be (UNII Band 3/4) – Ch. 167)



Plot 7-28. 6dB Bandwidth Plot MIMO ANT1 (80MHz BW 802.11be (UNII Band 3/4) – Ch. 171)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 31 of 83

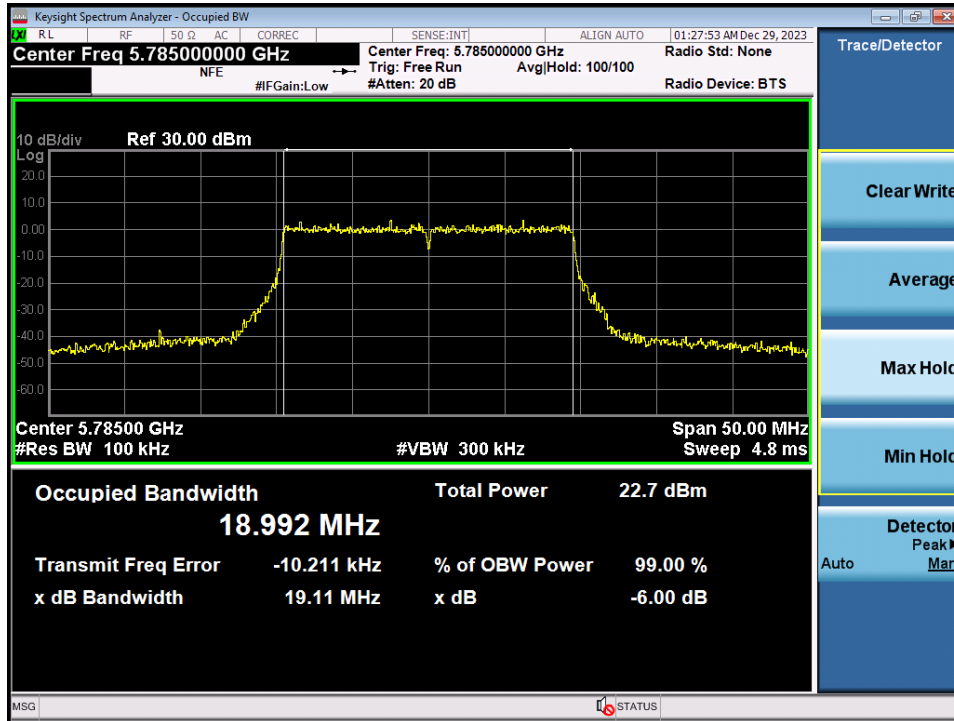


Plot 7-29. 6dB Bandwidth Plot MIMO ANT1 (160MHz BW 802.11be (UNII Band 3/4) – Ch. 163)

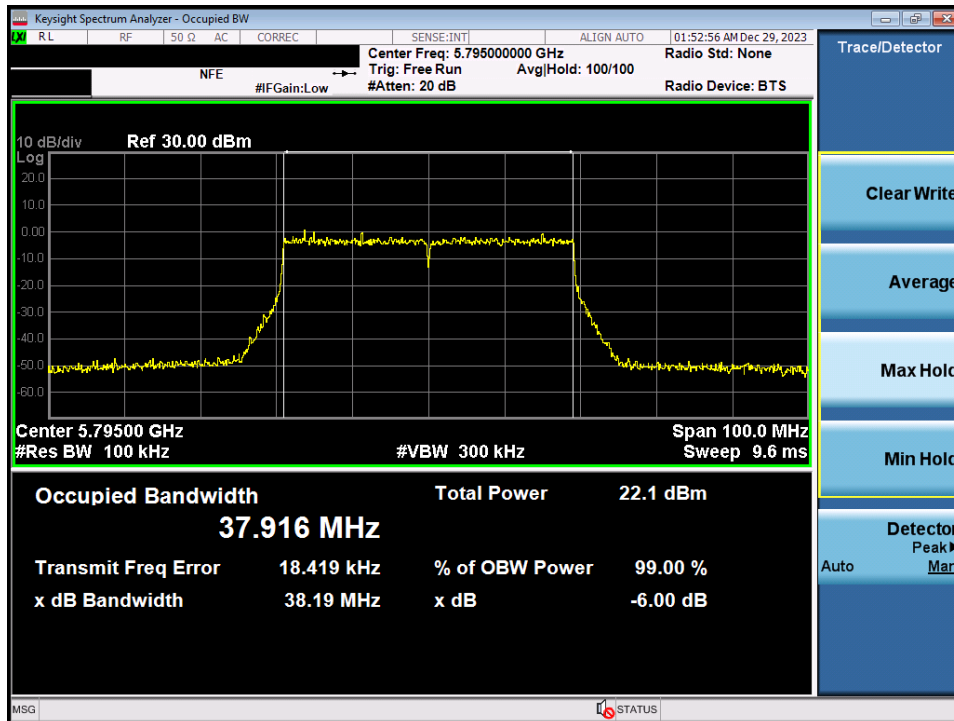
FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 32 of 83



### 7.3.2 MIMO Antenna-2 6dB Bandwidth Measurements

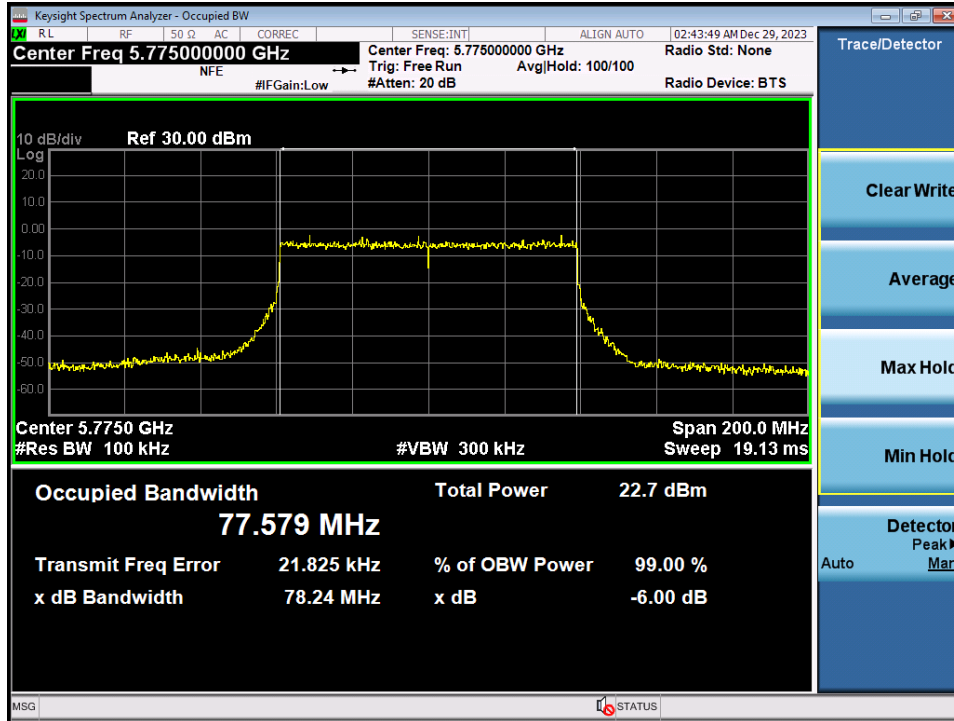


Plot 7-30. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11be (UNII Band 3) – Ch. 157)

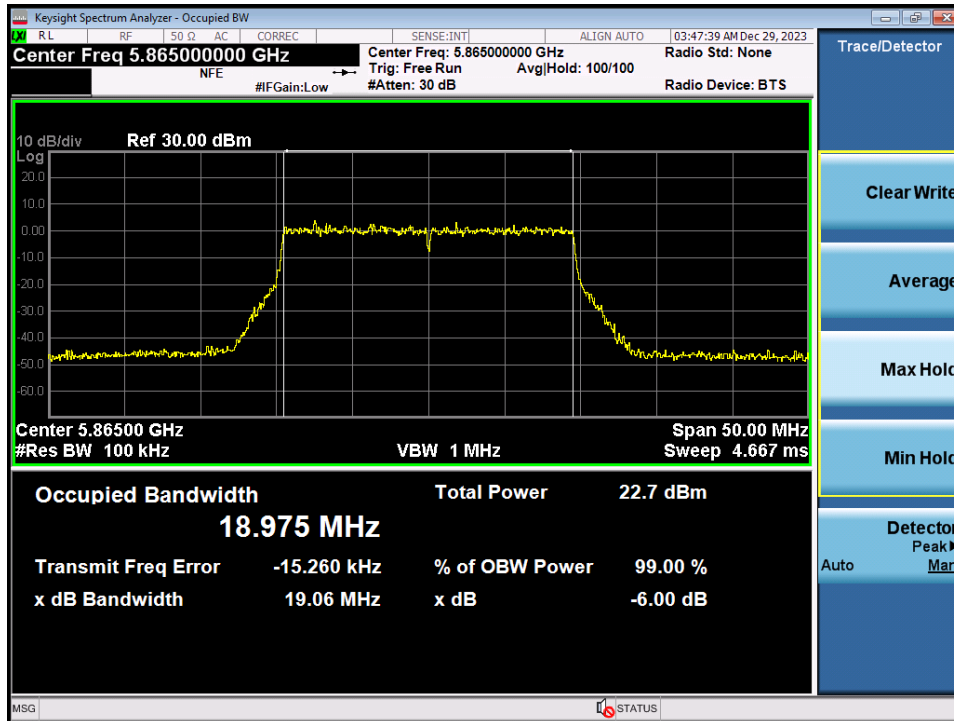


Plot 7-31. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11be (UNII Band 3) – Ch. 159)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 33 of 83

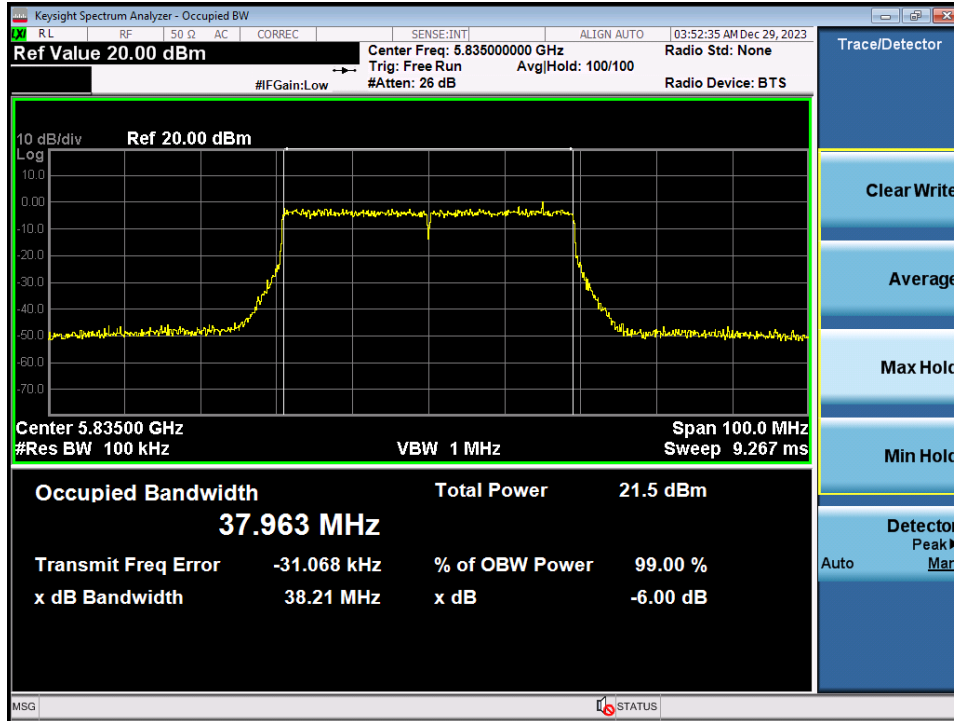


Plot 7-32. 6dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11be (UNII Band 3) – Ch. 155)

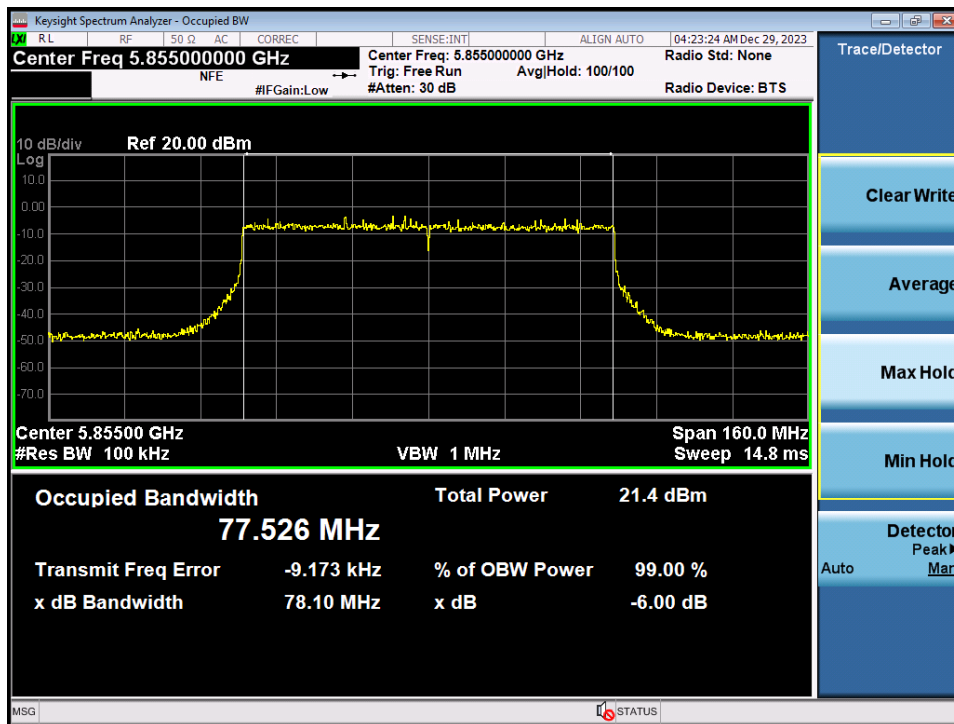


Plot 7-33. 6dB Bandwidth Plot MIMO ANT2 (20MHz BW 802.11be (UNII Band 4) – Ch. 173)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 34 of 83

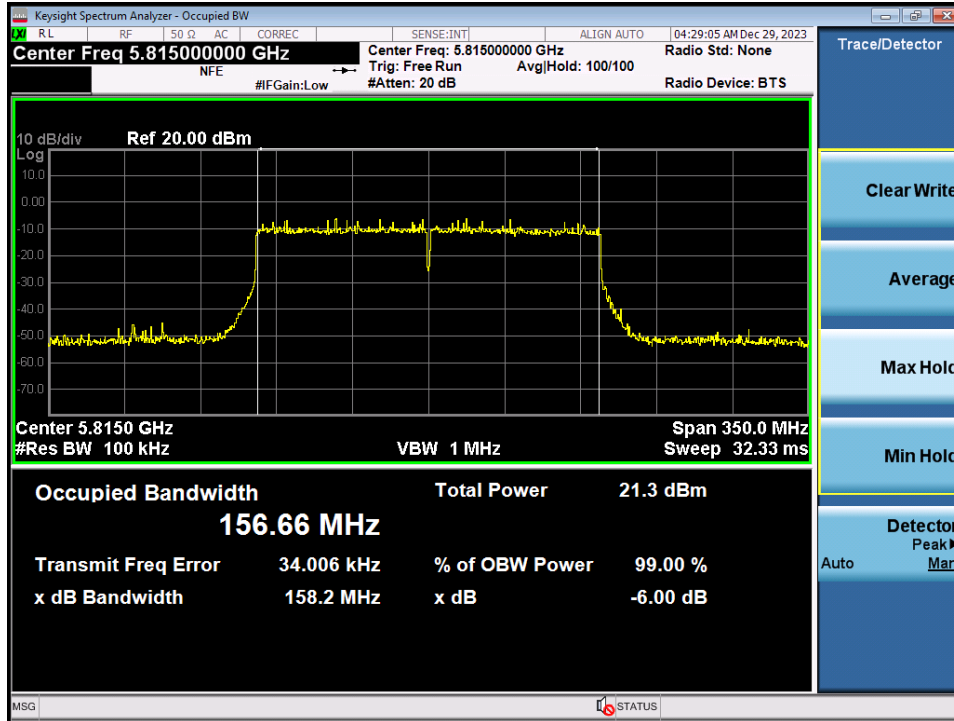


Plot 7-34. 6dB Bandwidth Plot MIMO ANT2 (40MHz BW 802.11be (UNII Band 3/4) – Ch. 167)



Plot 7-35. 6dB Bandwidth Plot MIMO ANT2 (80MHz BW 802.11be (UNII Band 4) – Ch. 171)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 35 of 83



Plot 7-36. 6dB Bandwidth Plot MIMO ANT2 (160MHz BW 802.11be (UNII Band 3/4) – Ch. 163)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 36 of 83

## 7.4 UNII Output Power Measurement

### Test Overview and Limits

A transmitter antenna terminal of the EUT is connected to the input of an RF pulse power sensor. Measurement is made using a broadband average power meter while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013, and at the appropriate frequencies.

**The output power limits are as specified in the tables below.**

UNII Band	Frequency Range	Maximum Conducted Power Limit		Maximum e.i.r.p	
		FCC	ISED	FCC	ISED
UNII 1	5.15 – 5.25GHz	23.98dBm (250mW)	N/A	N/A	The lesser of 23.01dBm (200mW) <b>or</b> 10dBm + 10log <sub>10</sub> B
UNII 2A	5.25 – 5.35GHz	The lesser of 23.98dBm (250mW) <b>or</b> 11dBm + 10log <sub>10</sub> B		N/A	The lesser of 30dBm (1W) <b>or</b> 17dBm + 10log <sub>10</sub> B
UNII 2C	5.47 – 5.725GHz				
UNII 3	5.725 – 5.850GHz	30dBm (1W)		N/A	N/A
UNII 4	5.850 – 5.895GHz	N/A		30dBm (1W)	N/A

### Test Procedure Used

ANSI C63.10-2013 – Section 12.3.3.2 Method PM-G

ANSI C63.10-2013 – Section 14.2 Measure-and-Sum Technique

### Test Settings

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter. The trace was averaged over 100 traces to obtain the final measured average power.

### Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



**Figure 7-3. Test Instrument & Measurement Setup**

### Test Notes

None.

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 37 of 83



80MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)									Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Dir. Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					Puncture Case														
					93			92			90								
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO						
1	5210	42	484+242T	15.11	14.90	18.02	15.09	14.91	18.01	15.16	14.90	18.04	23.98	-5.94	-3.24	14.80	30.0	-15.20	
2A	5290	58	484+242T	15.35	15.16	18.27	15.34	15.05	18.21	15.38	14.97	18.19	23.98	-5.71	-2.69	15.58	30.0	-14.42	
	5530	106	484+242T	15.15	14.86	18.02	15.12	15.03	18.09	15.13	15.07	18.11	23.98	-5.87	-2.56	15.55	30.0	-14.45	
2C	5610	122	484+242T	15.09	14.91	18.01	15.16	14.98	18.08	15.27	14.88	18.09	23.98	-5.89	-2.56	15.53	30.0	-14.47	
	5690	138	484+242T	15.54	15.03	18.30	15.44	15.21	18.34	15.55	15.08	18.33	23.98	-5.64	-2.56	15.78	30.0	-14.22	
3	5775	155	484+242T	15.53	15.31	18.43	15.57	15.63	18.61	15.66	15.62	18.65	30	-11.35	-3.38	15.27	36.0	-20.73	
4	5855	171	484+242T	15.11	14.95	18.04	15.09	14.89	18.00	15.06	14.99	18.04	-	-	-3.46	14.59	30.0	-15.41	

Table 7-9. MIMO 80MHz BW 802.11be (UNII) Maximum Conducted Output Power - Punctured

160MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)									Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Dir. Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					Puncture Case														
					1095			1094			94								
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO						
1/2A	5250	50	996+484T	14.04	14.02	17.04	14.08	14.15	17.13	14.14	14.03	17.10	23.98	-6.85	-3.24	13.89	30.0	-16.11	
2C	5570	114	996+484T	13.98	14.14	17.07	14.08	14.01	17.06	14.06	14.02	17.05	23.98	-6.91	-2.56	14.51	30.0	-15.49	
3/4	5815	163	996+484T	14.97	14.26	17.64	14.85	14.19	17.54	14.89	14.13	17.54	-	-	-3.46	14.18	30.0	-15.82	

Table 7-10. MIMO 160MHz BW 802.11be (UNII) Maximum Conducted Output Power - Punctured

160MHz BW	Band	Freq [MHz]	Channel	Tones	Average Conducted Power (dBm)									Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Dir. Ant. Gain [dBi]	Max e.i.r.p [dBm]	e.i.r.p Limit [dBm]	e.i.r.p Margin [dB]
					Puncture Case														
					1099			1096			96								
					ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO						
1/2A	5250	50	996+484+242T	14.15	13.97	17.07	14.11	14.06	17.10	14.13	14.09	17.12	23.98	-6.86	-3.24	13.88	30.0	-16.12	
2C	5570	114	996+484+242T	14.02	14.15	17.10	14.05	14.08	17.08	14.11	14.05	17.09	23.98	-6.88	-2.56	14.53	30.0	-15.47	
3/4	5815	163	996+484+242T	14.93	14.40	17.68	14.97	14.31	17.66	14.93	14.58	17.77	-	-	-3.46	14.31	30.0	-15.69	

Table 7-11. MIMO 160MHz BW 802.11be (UNII) Maximum Conducted Output Power - Punctured

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 39 of 83



**Note:**

Per ANSI C63.10-2013, the conducted powers at Antenna 1 and Antenna 2 were first measured separately during MIMO transmission as shown in the section above. The measured values were then summed in linear power units then converted back to dBm.

Per ANSI C63.10-2013 Section 14.4.3, the directional gain is calculated using the following formula, where  $G_N$  is the gain of the nth antenna and  $N_{ANT}$ , the total number of antennas used.

$$\text{Directional gain} = 10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2 / N_{ANT}] \text{ dBi}$$

**Sample MIMO Calculation:**

At 5180MHz in 802.11be (20MHz BW) mode, the average conducted output power was measured to be 17.15 dBm for Antenna 1 and 17.13 dBm for Antenna 2.

Antenna 1 + Antenna 2 = MIMO

$$(17.15 \text{ dBm} + 17.13 \text{ dBm}) = (51.88 \text{ mW} + 51.64 \text{ mW}) = 103.52 \text{ mW} = 20.15 \text{ dBm}$$

**Sample e.i.r.p Calculation:**

At 5180MHz in 802.11be (20MHz BW) mode, the average MIMO conducted power was calculated to be 20.15 dBm with directional gain of -3.24 dBi.

$$\text{e.i.r.p. (dBm)} = \text{Conducted Power (dBm)} + \text{Ant gain (dBi)}$$

$$20.15 \text{ dBm} + (-3.24 \text{ dBi}) = 16.91 \text{ dBm}$$

<b>FCC ID:</b> A3LSMX910 <b>IC :</b> 649E-SMX910	<b>Class II Permissive Change Report</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2312180128-04.A3L	<b>Test Dates:</b> 12/15/2023 – 1/11/2024	<b>EUT Type:</b> <b>Portable Tablet</b>	Page 40 of 83



## 7.5 Maximum Power Spectral Density

### Test Overview and Limit

The spectrum analyzer was connected to the antenna terminal while the EUT was operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013, and at the appropriate frequencies. Method SA-1, as defined in ANSI C63.10-2013, was used to measure the power spectral density.

**The output power density limits are as specified in the tables below.**

UNII Band	Frequency Range	Maximum Power Spectral Density	
		FCC	ISED
UNII 1	5.15 – 5.25GHz	11dBm/MHz	10dBm/MHz e.i.r.p
UNII 2A	5.25 – 5.35GHz	11dBm/MHz	
UNII 2C	5.47 – 5.725GHz		
UNII 3	5.725 – 5.850GHz	30dBm/500kHz	
UNII 4	5.850 – 5.895GHz	14dBm/MHz e.i.r.p	N/A

### Test Procedure Used

ANSI C63.10-2013 – Section 12.3.2.3 (Method SA-2)

ANSI C63.10-2013 – Section 14.3.2.2 Measure-and-Sum Technique

### Test Settings

1. Analyzer was set to the center frequency of the UNII channel under investigation
2. Span was set to encompass the entire emission bandwidth of the signal
3. RBW = 1MHz
4. VBW = 3MHz
5. Number of sweep points  $\geq 2 \times$  (span/RBW)
6. Sweep time = auto
7. Detector = power averaging (RMS)
8. Trigger was set to free run for all modes
9. Trace was averaged over 100 sweeps
10. The peak search function of the spectrum analyzer was used to find the peak of the spectrum.

### Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



**Figure 7-4. Test Instrument & Measurement Setup**

### Test Notes

All cases were investigated; a subset of the taken plots were included to represent relevant settings and measurements.

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
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## Summed MIMO Power Spectral Density Measurements

	Frequency [MHz]	Channel	802.11 MODE	Antenna 1 PSD [dBm]	Antenna 2 PSD [dBm]	DCCF [dB]	MIMO Summed PSD [dBm]	Max PSD [dBm]	Margin [dB]
Band 1	5180	36	be SU	3.73	3.68	0.00	6.72	11.00	-4.28
	5200	40	be SU	4.24	4.42	0.00	7.34	11.00	-3.66
	5240	48	be SU	4.81	4.05	0.00	7.46	11.00	-3.54
	5190	38	be SU	0.22	-0.46	0.00	2.90	11.00	-8.10
	5230	46	be SU	0.40	-0.33	0.00	3.06	11.00	-7.94
Band 1/2A	5210	42	be SU	-2.82	-2.95	0.00	0.13	11.00	-10.87
Band 2A	5250	50	be SU	-7.05	-7.85	0.00	-4.42	11.00	-15.42
	5260	52	be SU	4.97	4.16	0.00	7.59	11.00	-3.41
	5280	56	be SU	5.48	4.24	0.00	7.91	11.00	-3.09
	5320	64	be SU	5.27	4.85	0.00	8.08	11.00	-2.92
	5270	54	be SU	0.76	0.06	0.00	3.43	11.00	-7.57
Band 2C	5310	62	be SU	1.05	-0.03	0.00	3.55	11.00	-7.45
	5290	58	be SU	-2.58	-3.73	0.00	-0.11	11.00	-11.11
	5500	100	be SU	4.04	4.08	0.00	7.07	11.00	-3.93
	5600	120	be SU	5.30	4.49	0.00	7.92	11.00	-3.08
	5720	144	be SU	5.68	4.44	0.00	8.11	11.00	-2.89
	5510	102	be SU	0.64	0.35	0.00	3.51	11.00	-7.49
	5590	118	be SU	0.73	0.99	0.00	3.87	11.00	-7.13
	5710	142	be SU	1.69	-0.16	0.00	3.87	11.00	-7.13
	5530	106	be SU	-3.68	-2.28	0.00	0.09	11.00	-10.91
	5610	122	be SU	-3.58	-2.98	0.00	-0.26	11.00	-11.26
5690	138	be SU	-4.94	-5.46	0.00	-2.18	11.00	-13.18	
	5570	114	be SU	-7.23	-6.84	0.00	-4.02	11.00	-15.02

Table 7-12. Bands 1, 2A, 2C MIMO Conducted Power Spectral Density Measurements

	Frequency [MHz]	Channel	802.11 MODE	Antenna 1 PSD [dBm]	Antenna 2 PSD [dBm]	DCCF [dB]	MIMO Summed PSD [dBm]	Max PSD [dBm]	Margin [dB]
Band 3	5745	149	be SU	3.10	2.00	0.00	5.60	11.00	-5.40
	5785	157	be SU	2.44	1.57	0.00	5.04	11.00	-5.96
	5825	165	be SU	2.56	1.97	0.00	5.29	11.00	-5.71
	5755	151	be SU	-1.55	-2.79	0.00	0.88	11.00	-10.12
	5795	159	be SU	-1.74	-2.00	0.00	1.14	11.00	-9.86
	5775	155	be SU	-2.37	-2.26	0.00	0.70	11.00	-10.30

Table 7-13. Band 3 MIMO Conducted Power Spectral Density Measurements

	Frequency [MHz]	Channel	802.11 MODE	Antenna 1 PSD [dBm]	Antenna 2 PSD [dBm]	MIMO Summed PSD [dBm]	Directional Antenna Gain [dBi]	EIRP PSD [dBm]	Max EIRP PSD [dBm]	Margin [dB]
Band 3/4	5845	169	be SU	6.57	5.39	9.03	-3.46	5.57	14.00	-8.43
Band 4	5865	173	be SU	6.53	5.17	8.91	-3.46	5.45	14.00	-8.55
	5885	177	be SU	6.45	5.35	8.95	-3.46	5.49	14.00	-8.51
Band 3/4	5835	167	be SU	1.88	1.05	4.49	-3.46	1.03	14.00	-12.97
Band 4	5875	175	be SU	2.16	0.78	4.54	-3.46	1.08	14.00	-12.92
Band 3/4	5855	171	be SU	-1.79	-2.44	0.91	-3.46	-2.55	14.00	-16.55
	5815	163	be SU	-6.32	-6.95	-3.61	-3.36	-6.97	14.00	-20.97

Table 7-14. Bands 3/4 MIMO Conducted Power Spectral Density Measurements

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 42 of 83

	Frequency [MHz]	Channel	802.11 MODE	RU Index	Punctured Cases	Antenna 1 PSD [dBm]	Antenna 2 PSD [dBm]	DCCF [dB]	MIMO Summed PSD [dBm]	Max PSD [dBm]	Margin [dB]
Band 1	5210	42	be (80MHz)	90	484+242T	-1.39	-2.26	0.00	1.21	11.00	-9.79
	5210	42	be (80MHz)	92	484+242T	-1.57	-2.38	0.00	1.06	11.00	-9.94
	5210	42	be (80MHz)	93	484+242T	-1.69	-2.40	0.00	0.98	11.00	-10.02
Band 1/2A	5250	50	be (160MHz)	94	996+484T	-4.68	-6.44	0.00	-2.46	11.00	-13.46
	5250	50	be (160MHz)	96	996+484+242T	-5.57	-7.00	0.00	-3.22	11.00	-14.22
	5250	50	be (160MHz)	1094	996+484T	-4.92	-6.27	0.00	-2.53	11.00	-13.53
	5250	50	be (160MHz)	1095	996+484T	-4.99	-6.51	0.00	-2.67	11.00	-13.67
	5250	50	be (160MHz)	1096	996+484+242T	-5.58	-6.95	0.00	-3.20	11.00	-14.20
Band 2A	5290	58	be SU	90	484+242T	-1.03	-1.65	0.00	1.68	11.00	-9.32
	5290	58	be SU	92	484+242T	-0.74	-2.00	0.00	1.69	11.00	-9.31
	5290	58	be SU	93	484+242T	-0.89	-2.08	0.00	1.57	11.00	-9.43
Band 2C	5530	106	be (80MHz)	90	484+242T	-0.98	-1.51	0.00	1.77	11.00	-9.23
	5610	122	be (80MHz)	90	484+242T	-0.73	-2.20	0.00	1.61	11.00	-9.39
	5690	138	be (80MHz)	90	484+242T	-0.49	-2.95	0.00	1.46	11.00	-9.54
	5530	106	be (80MHz)	92	484+242T	-1.00	-1.32	0.00	1.86	11.00	-9.14
	5610	122	be (80MHz)	92	484+242T	-1.06	-2.38	0.00	1.34	11.00	-9.66
	5690	138	be (80MHz)	92	484+242T	-0.42	-3.14	0.00	1.44	11.00	-9.56
	5530	106	be (80MHz)	93	484+242T	-0.90	-1.27	0.00	1.93	11.00	-9.07
	5610	122	be (80MHz)	93	484+242T	-0.96	-2.65	0.00	1.29	11.00	-9.71
	5690	138	be (80MHz)	93	484+242T	-0.50	-2.91	0.00	1.47	11.00	-9.53
	5570	114	be (160MHz)	94	996+484T	-4.96	-5.22	0.00	-2.08	11.00	-13.08
	5570	114	be (160MHz)	96	996+484+242T	-5.23	-5.79	0.00	-2.49	11.00	-13.49
	5570	114	be (160MHz)	1094	996+484T	-4.73	-5.05	0.00	-1.88	11.00	-12.88
	5570	114	be (160MHz)	1095	996+484T	-5.06	-5.13	0.00	-2.08	11.00	-13.08
5570	114	be (160MHz)	1096	996+484+242T	-5.53	-5.49	0.00	-2.50	11.00	-13.50	
5570	114	be (160MHz)	1099	996+484+242T	-5.29	-5.49	0.00	-2.38	11.00	-13.38	

Table 7-15. Bands 1, 2A, 2C MIMO Conducted Power Spectral Density Measurements - Punctured

	Frequency [MHz]	Channel	802.11 MODE	RU Index	Punctured Cases	Antenna 1 PSD [dBm]	Antenna 2 PSD [dBm]	DCCF [dB]	MIMO Summed PSD [dBm]	Max PSD [dBm]	Margin [dB]
Band 3	5775	155	be (80MHz)	90	484+242T	-0.23	-1.99	0.00	1.99	11.00	-9.01
	5775	155	be (80MHz)	92	484+242T	-0.25	-2.47	0.00	1.79	11.00	-9.21
	5775	155	be (80MHz)	93	484+242T	-0.47	-2.10	0.00	1.80	11.00	-9.20

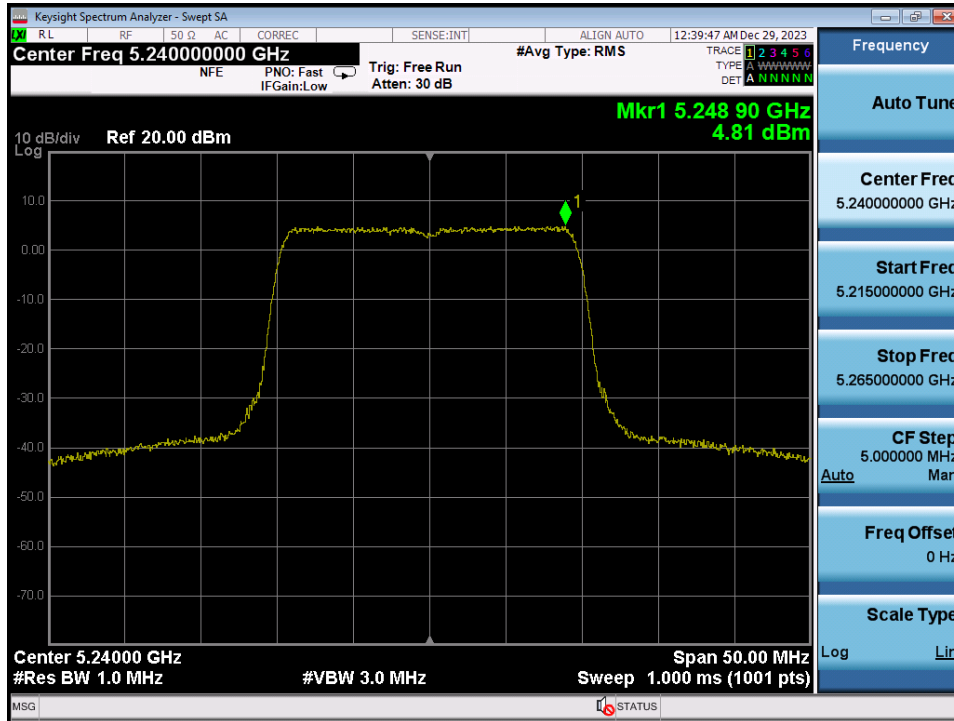
Table 7-16. Band 3 MIMO Conducted Power Spectral Density Measurements - Punctured

	Frequency [MHz]	Channel	802.11 MODE	RU Index	Punctured Cases	Antenna 1 PSD [dBm]	Antenna 2 PSD [dBm]	MIMO Summed PSD [dBm]	Directional Antenna Gain [dBi]	DCCF [dB]	EIRP PSD [dBm]	Max EIRP PSD [dBm]	Margin [dB]
Band 3/4	5855	171	be (80MHz)	90	484+242T	-0.64	-2.47	1.56	-3.46	0.00	-1.90	14.00	-15.90
	5855	171	be (80MHz)	92	484+242T	-1.11	-2.96	1.08	-3.46	0.00	-2.38	14.00	-16.38
	5855	171	be (80MHz)	93	484+242T	-0.81	-2.77	1.33	-3.46	0.00	-2.13	14.00	-16.13
	5815	163	be (160MHz)	94	996+484T	-3.83	-4.87	-1.31	-3.36	0.00	-4.67	14.00	-18.67
	5815	163	be (160MHz)	96	996+484+242T	-4.44	-6.02	-2.15	-3.36	0.00	-5.51	14.00	-19.51
	5815	163	be (160MHz)	1094	996+484T	-3.79	-5.25	-1.45	-3.36	0.00	-4.81	14.00	-18.81
	5815	163	be (160MHz)	1095	996+484T	-4.07	-5.05	-1.52	-3.36	0.00	-4.88	14.00	-18.88
	5815	163	be (160MHz)	1096	996+484+242T	-4.17	-5.99	-1.97	-3.36	0.00	-5.33	14.00	-19.33
	5815	163	be (160MHz)	1099	996+484+242T	-4.36	-5.65	-1.94	-3.36	0.00	-5.30	14.00	-19.30

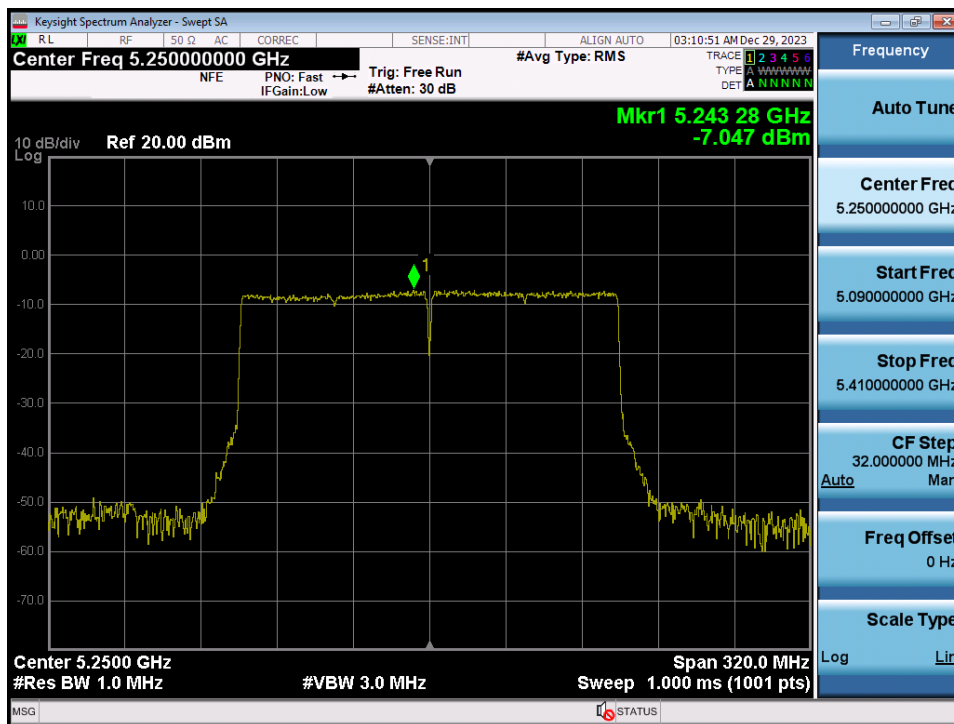
Table 7-17. Bands 3/4 MIMO Conducted Power Spectral Density Measurements - Punctured

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 43 of 83

## 7.5.1 MIMO Antenna-1 Power Spectral Density Measurements

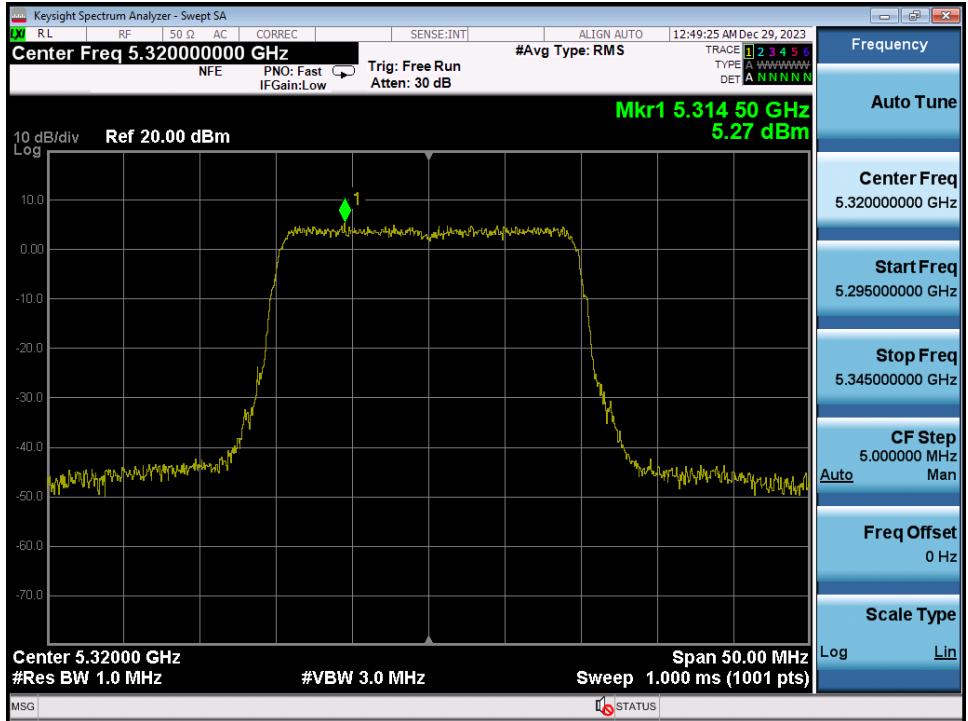


Plot 7-37. Power Spectral Density Plot MIMO ANT1 (20MHz 802.11be (UNII Band 1) – Ch. 48)

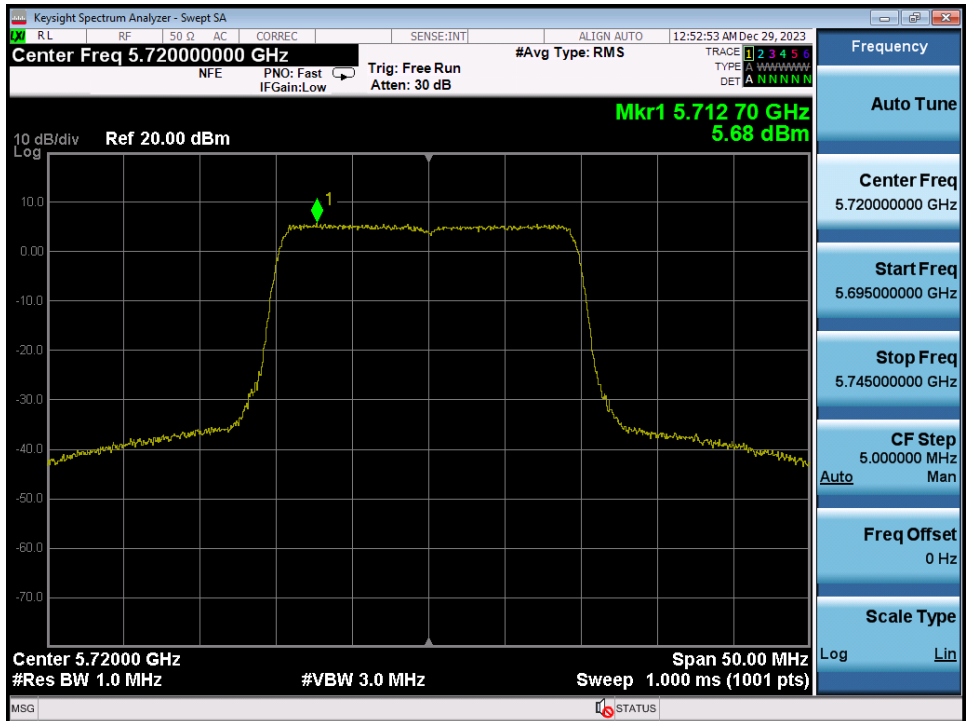


Plot 7-38. Power Spectral Density Plot MIMO ANT1 (160MHz BW 802.11be (UNII Band 1/2A) – Ch. 50)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
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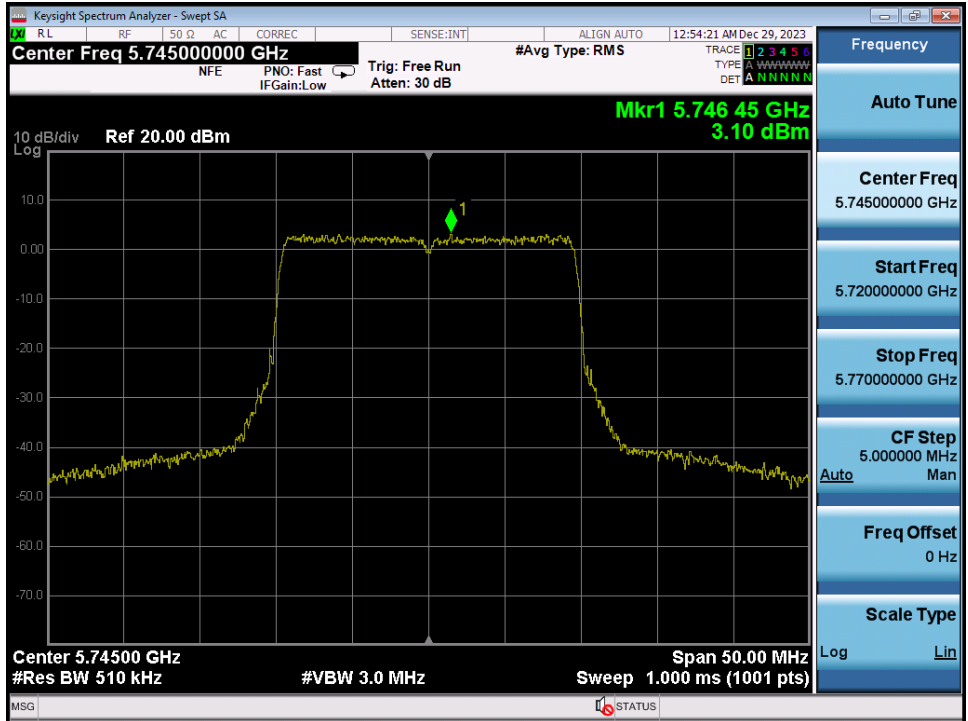


Plot 7-39. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11be (UNII Band 2A) – Ch. 64)

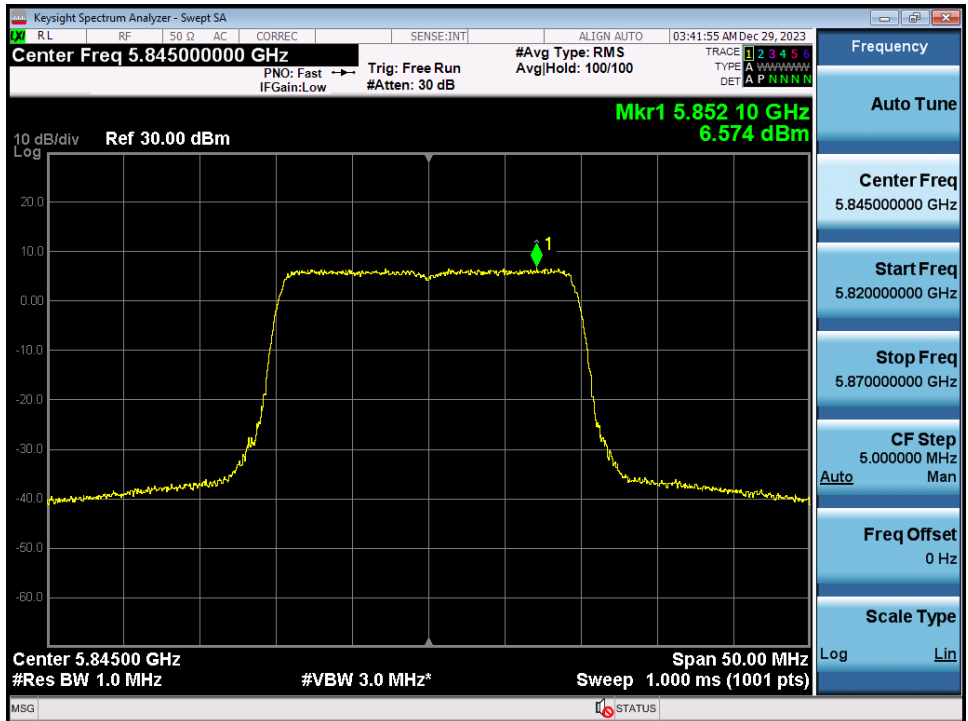


Plot 7-40. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11be (UNII Band 2C) – Ch. 144)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
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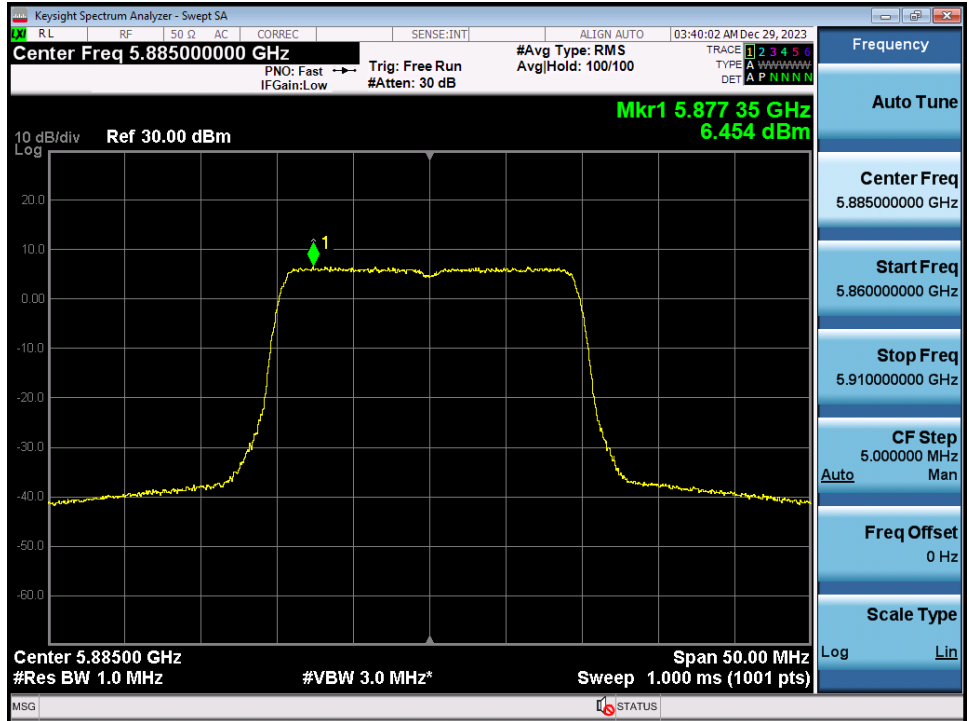


Plot 7-41. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11be (UNII Band 3) – Ch. 149)



Plot 7-42. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11be (UNII Band 3/4) – Ch. 169)

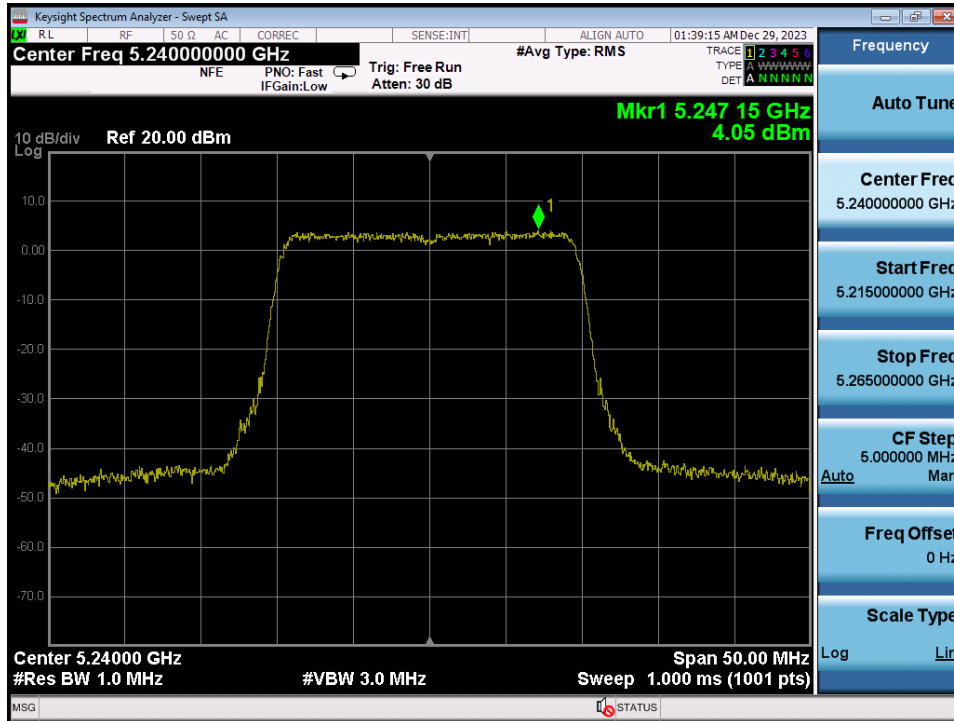
FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 46 of 83



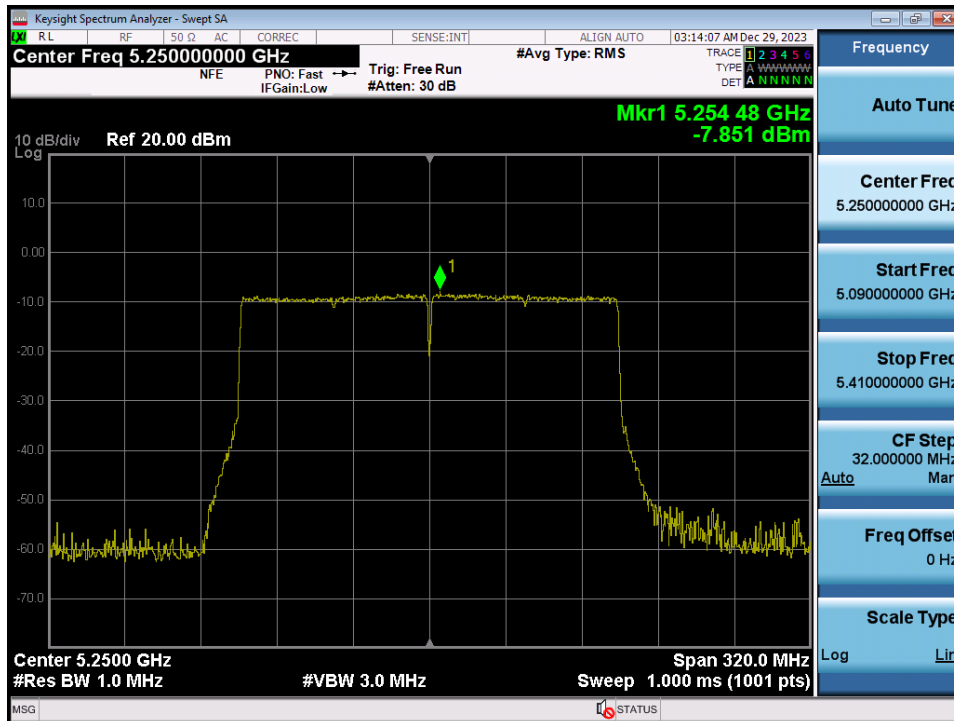
Plot 7-43. Power Spectral Density Plot MIMO ANT1 (20MHz BW 802.11be (UNII Band 4) – Ch. 177)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
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## 7.5.2 MIMO Antenna-2 Power Spectral Density Measurements



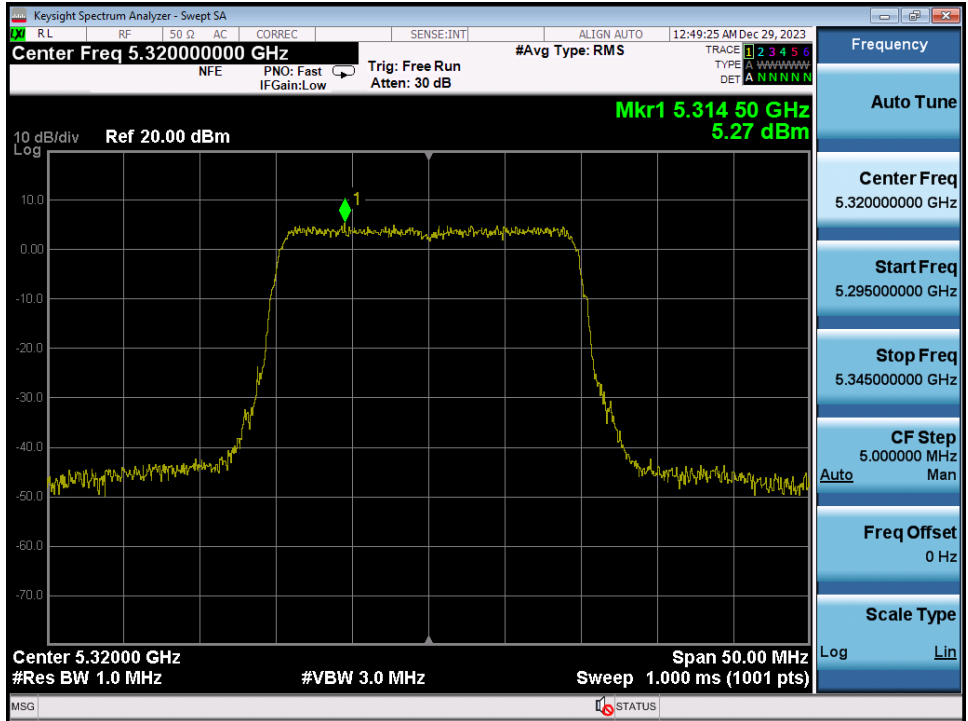
Plot 7-44. Power Spectral Density Plot MIMO ANT2 (20MHz 802.11be (UNII Band 1) – Ch. 48)



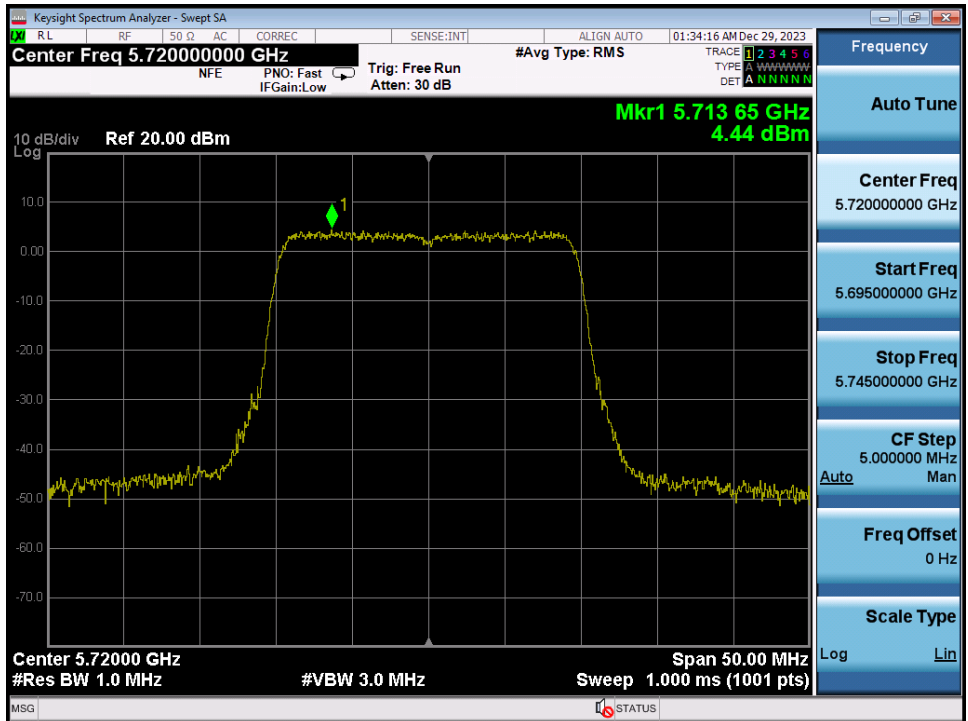
Plot 7-45. Power Spectral Density Plot MIMO ANT2 (160MHz BW 802.11be (UNII Band 1/2A) – Ch. 50)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 48 of 83



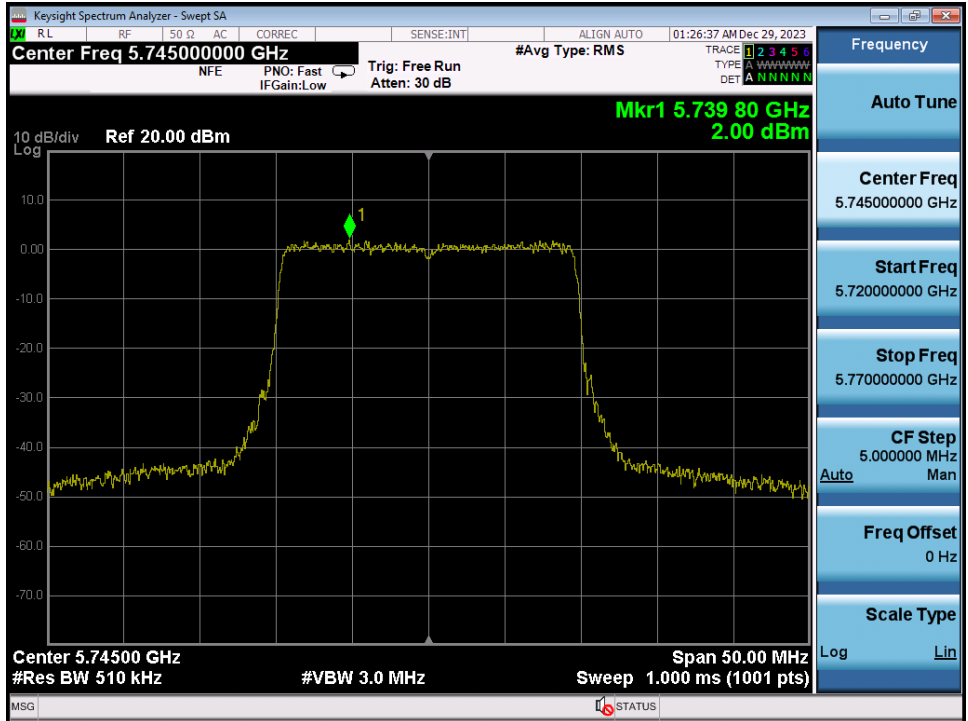


Plot 7-46. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11be (UNII Band 2A) – Ch. 64)

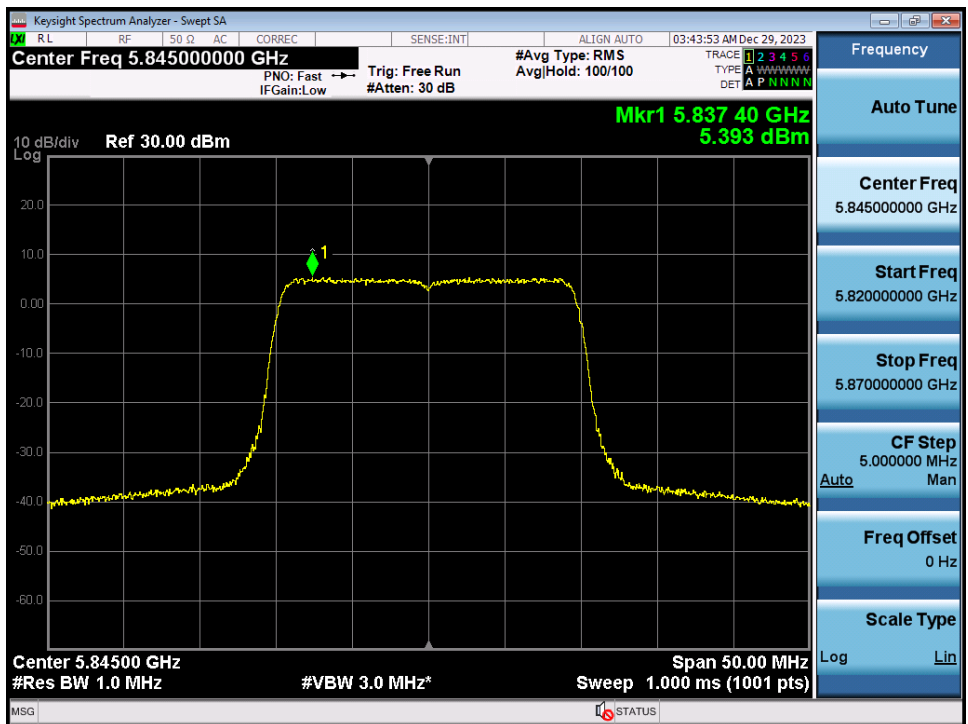


Plot 7-47. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11be (UNII Band 2C) – Ch. 144)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 49 of 83

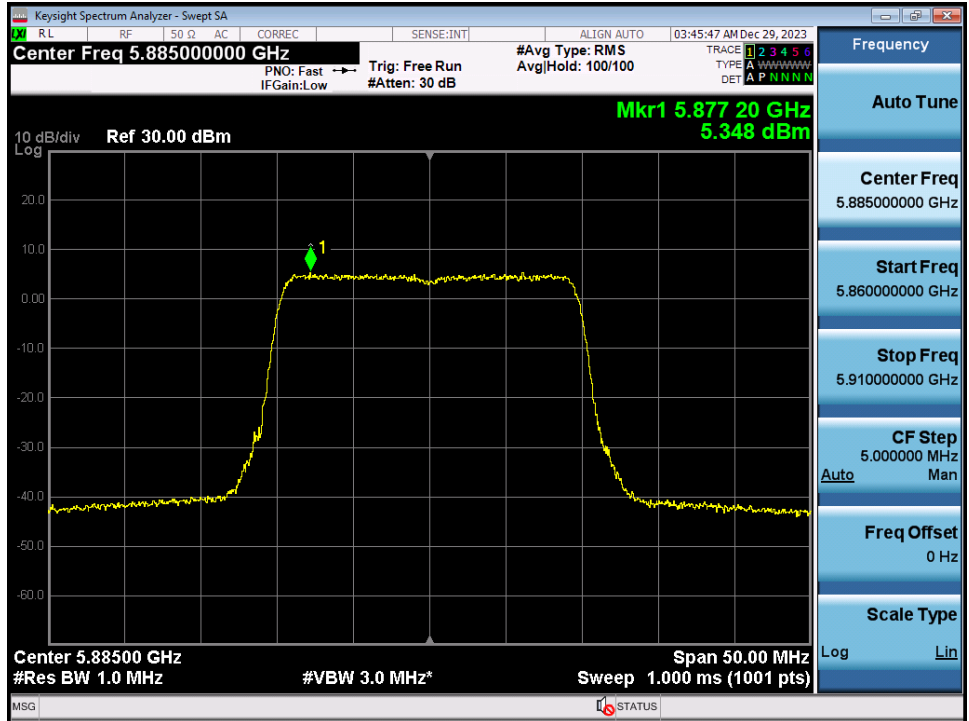


Plot 7-48. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11be (UNII Band 3) – Ch. 149)



Plot 7-49. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11be (UNII Band 3/4) – Ch. 169)

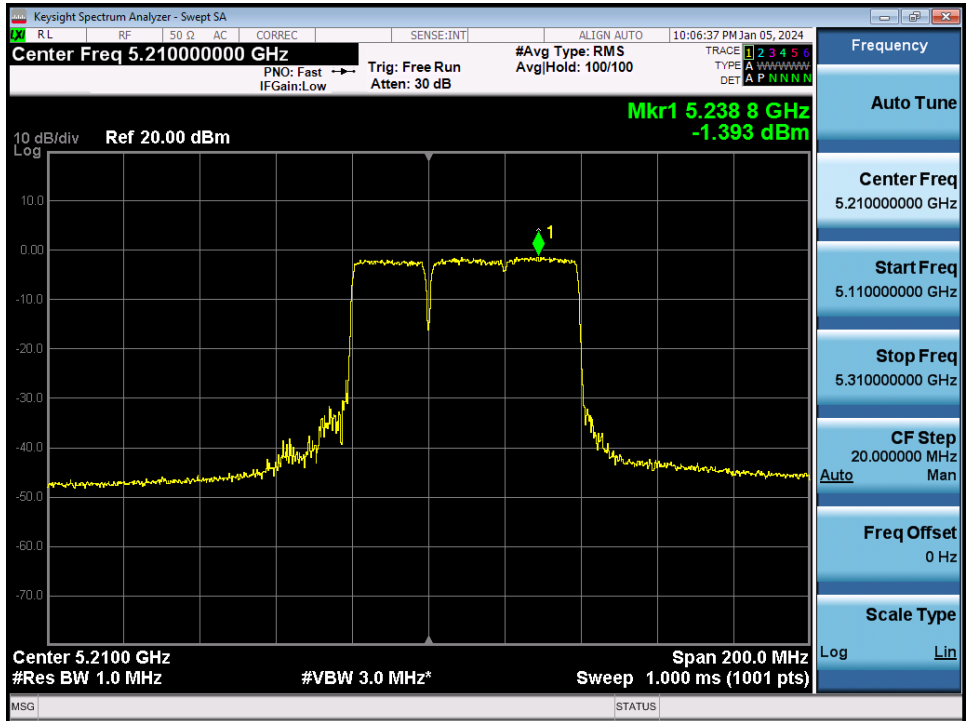
FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 50 of 83



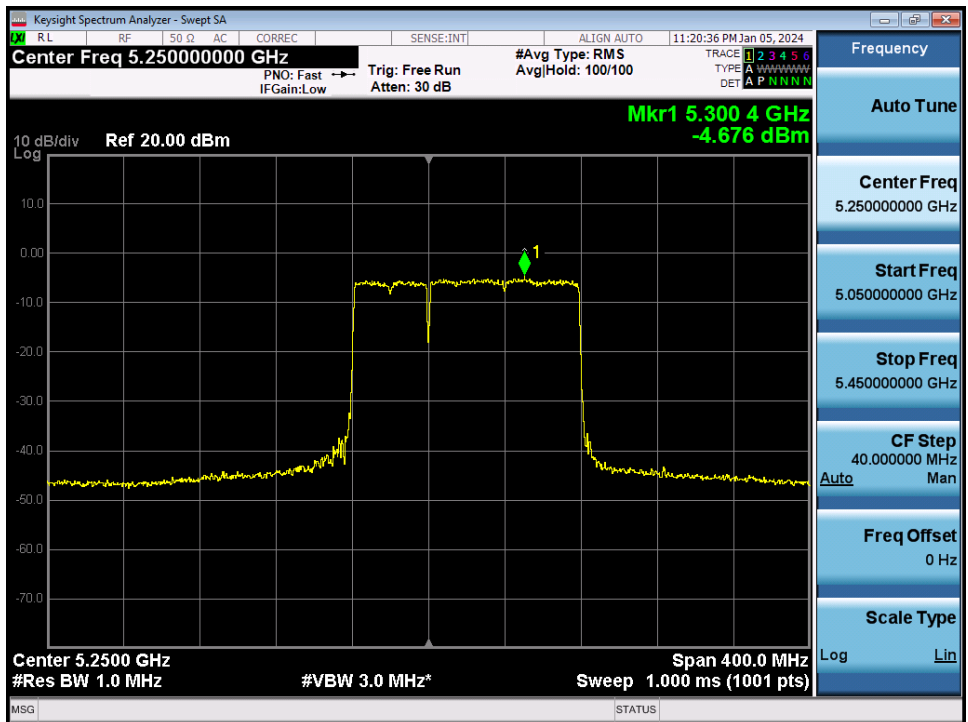
Plot 7-50. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11be (UNII Band 4) – Ch. 177)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 51 of 83

### 7.5.3 MIMO Antenna-1 Power Spectral Density Measurements - Punctured

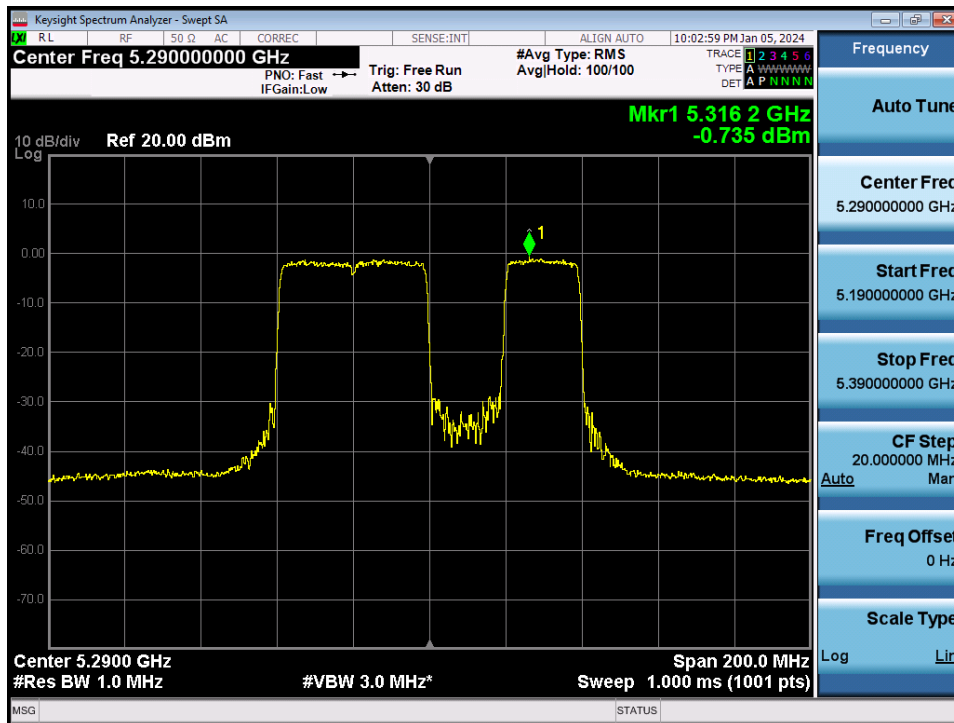


Plot 7-51. Power Spectral Density MIMO ANT1 (80MHz 802.11be (UNII Band 1) 484+242 Tones – RU Index 90 – Ch. 42)

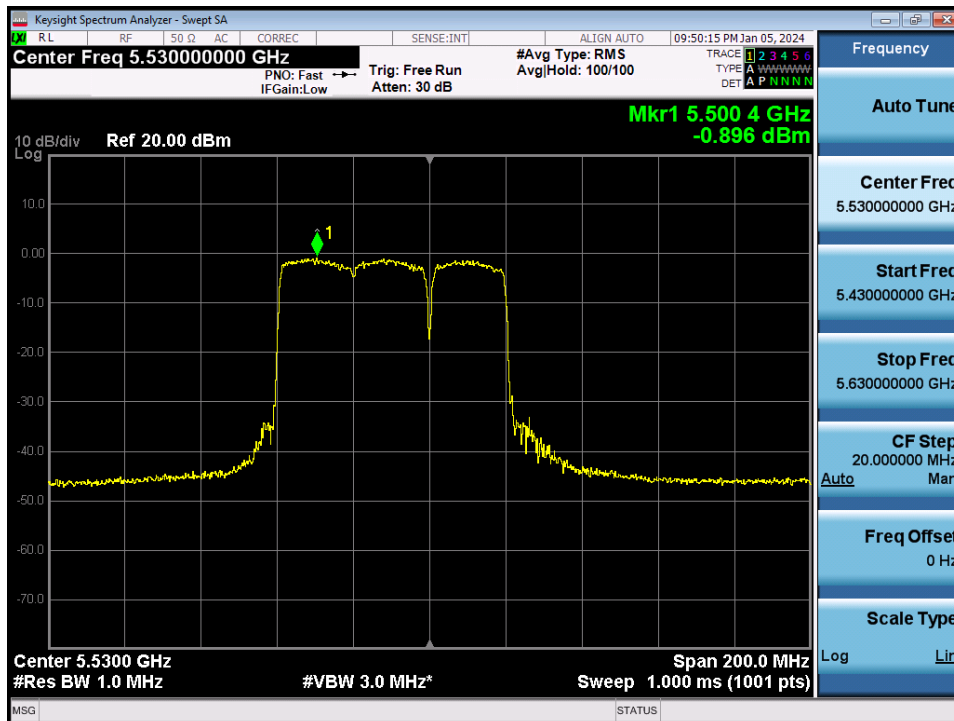


Plot 7-52. Power Spectral Density MIMO ANT1 (160MHz 802.11be (UNII Band 1/2A) 996+484 Tones – RU Index 94 – Ch. 50)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 52 of 83

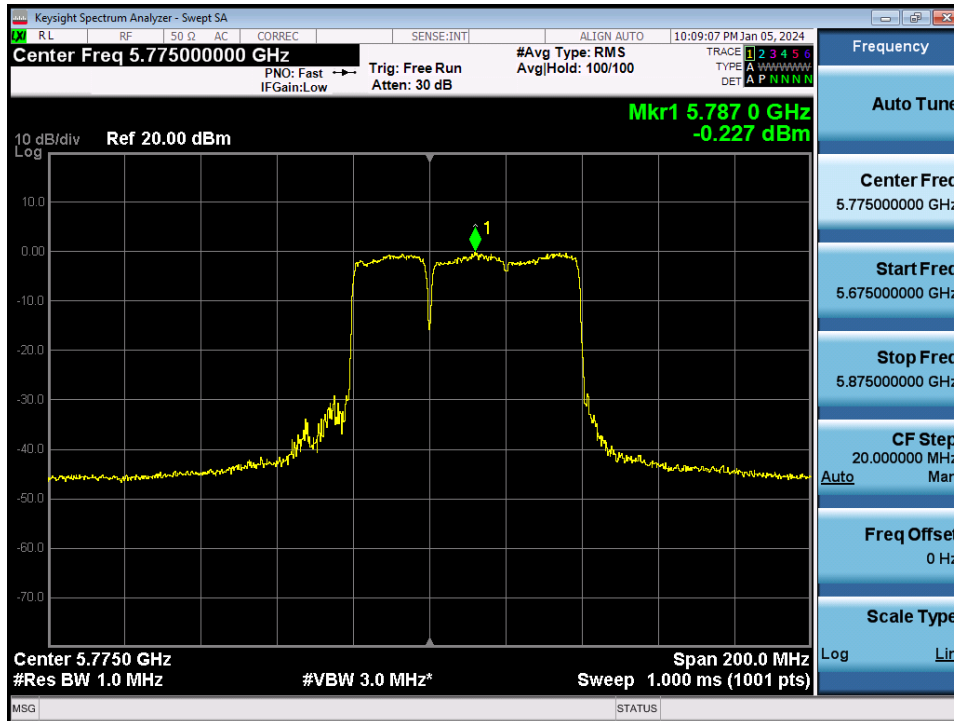


Plot 7-53. Power Spectral Density MIMO ANT1 (80MHz 802.11be (UNII Band 2A) 484+242 Tones – RU Index 92 – Ch. 58)

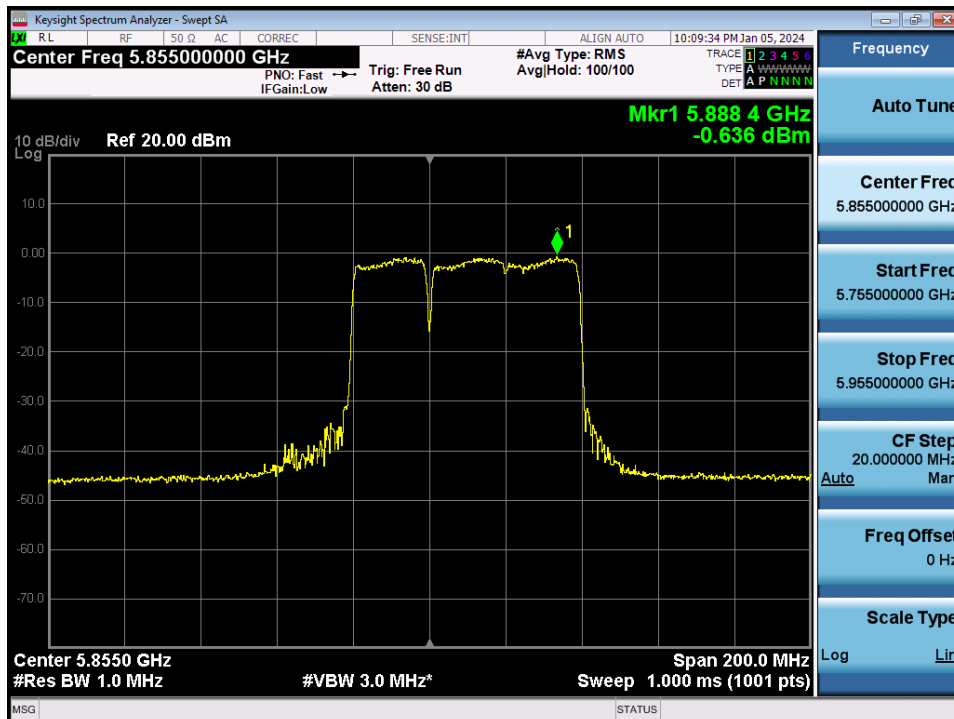


Plot 7-54. Power Spectral Density MIMO ANT1 (80MHz 802.11be (UNII Band 2C) 484+242 Tones – RU Index 93 – Ch. 106)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 53 of 83



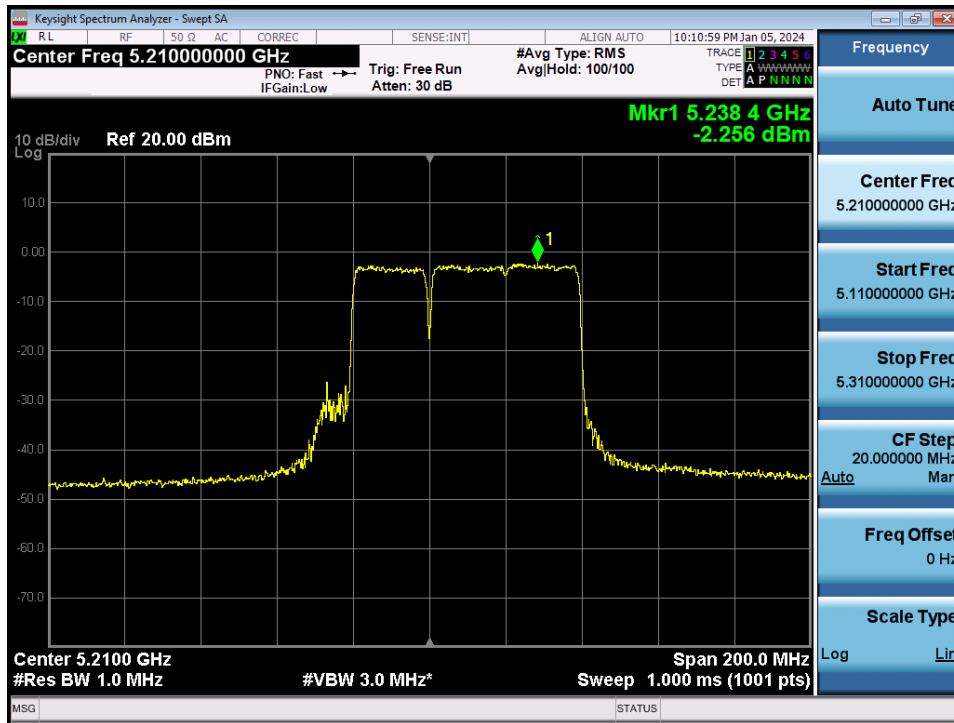
Plot 7-55. Power Spectral Density MIMO ANT1 (80MHz 802.11be (UNII Band 3) 484+242 Tones – RU Index 90 – Ch. 155)



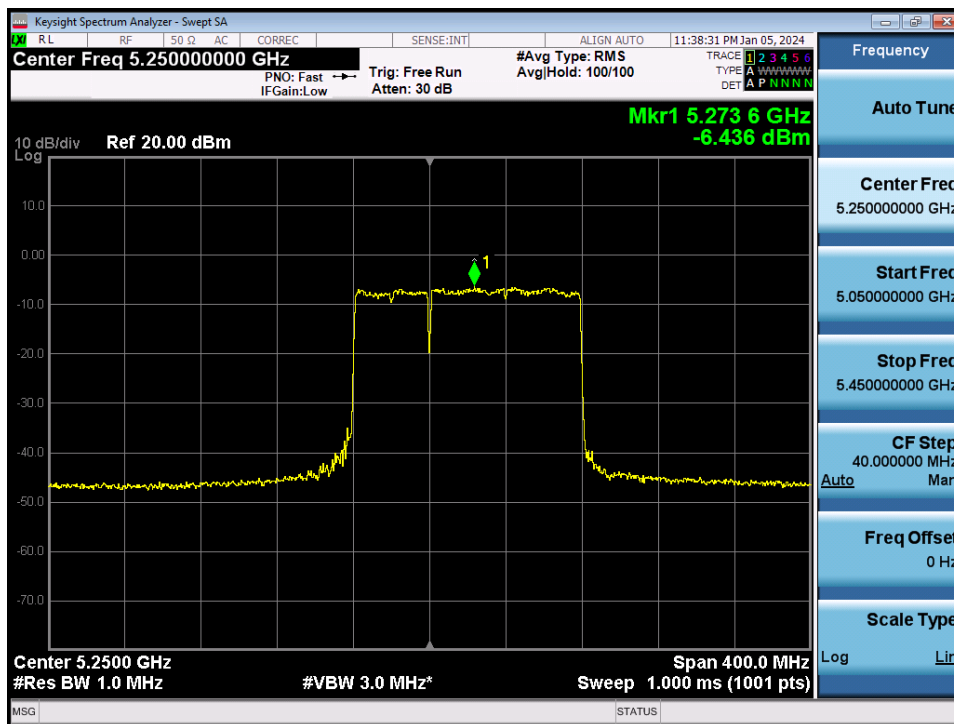
Plot 7-56. Power Spectral Density MIMO ANT1 (80MHz 802.11be (UNII Band 3/4) 484+242 Tones – RU Index 90 – Ch. 171)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
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### 7.5.4 MIMO Antenna-2 Power Spectral Density Measurements - Punctured

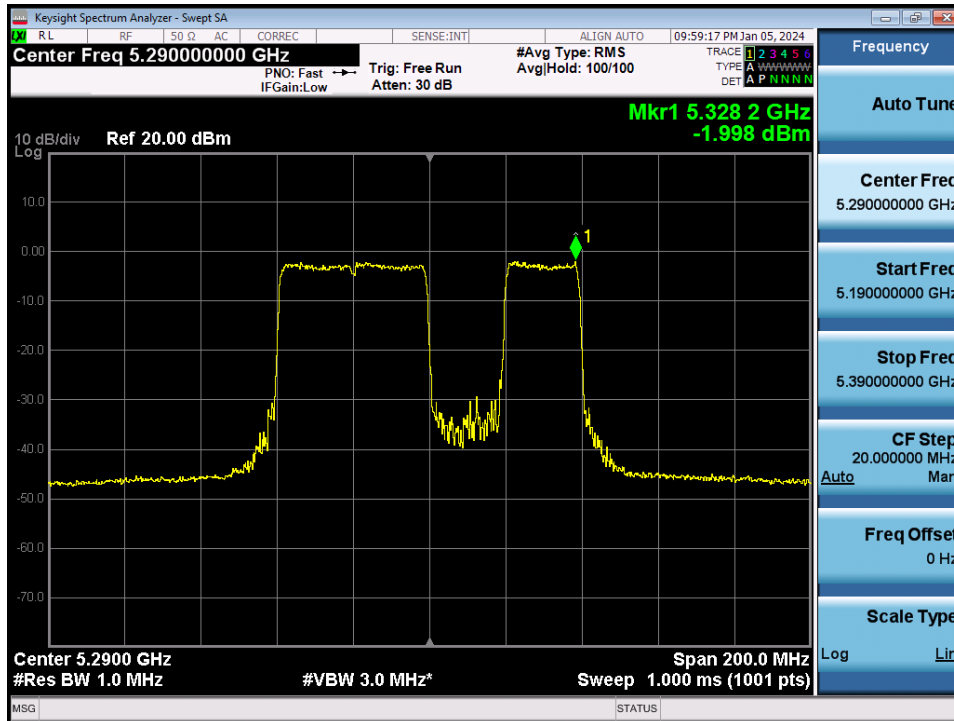


Plot 7-57. Power Spectral Density MIMO ANT2 (80MHz 802.11be (UNII Band 1) 484+242 Tones – RU Index 90 – Ch. 42)

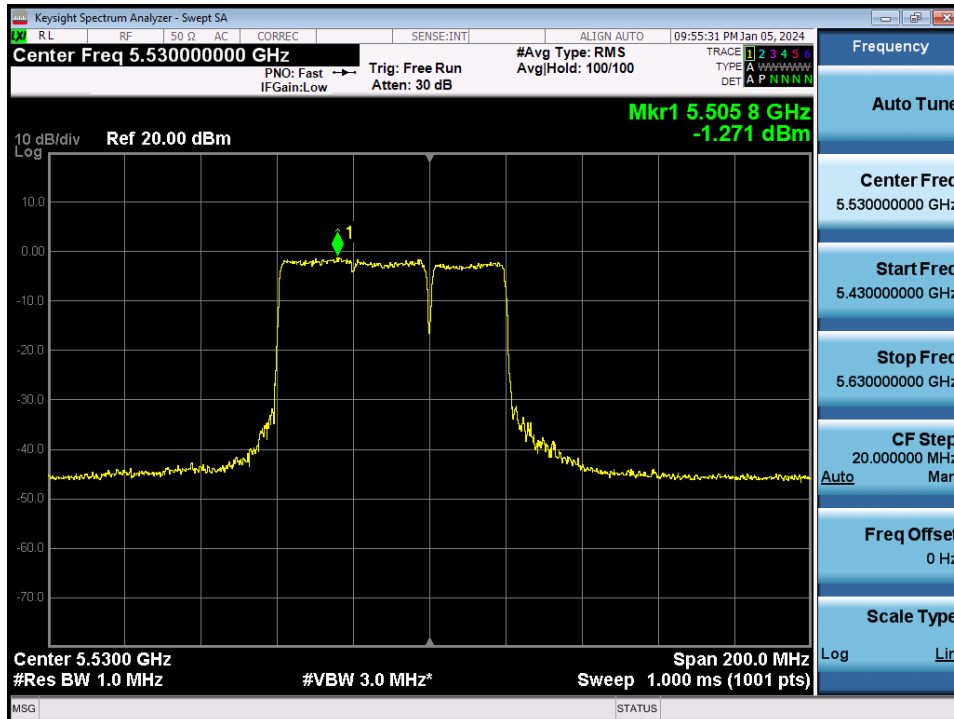


Plot 7-58. Power Spectral Density MIMO ANT2 (160MHz 802.11be (UNII Band 1/2A) 996+484 Tones – RU Index 94 – Ch. 50)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
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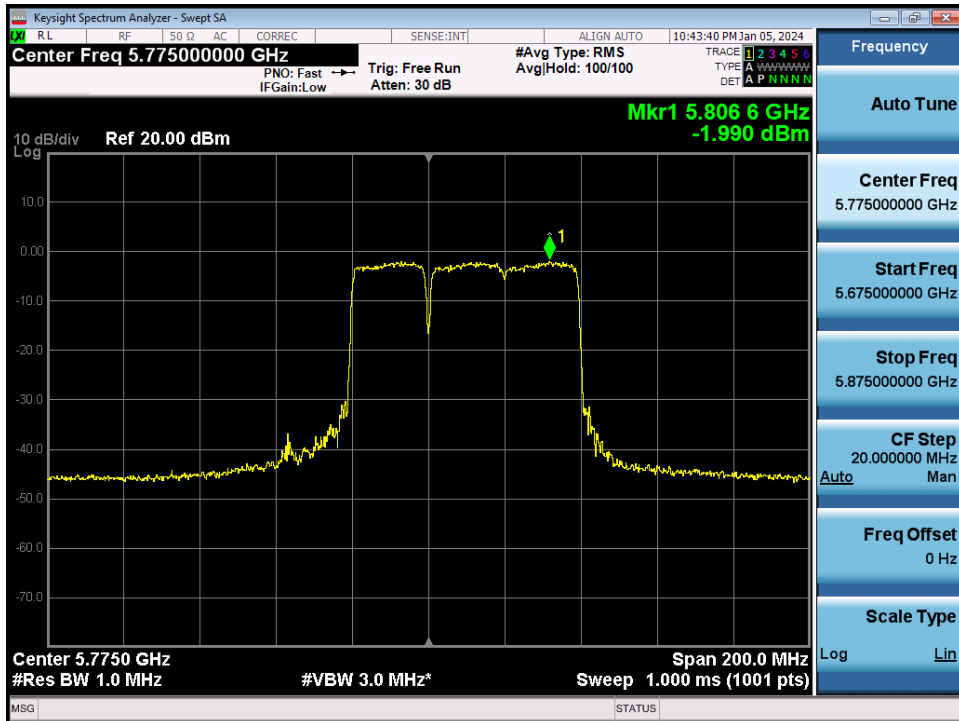
Plot 7-59. Power Spectral Density MIMO ANT2 (80MHz 802.11be (UNII Band 2A) 484+242 Tones – RU Index 92 – Ch. 58)



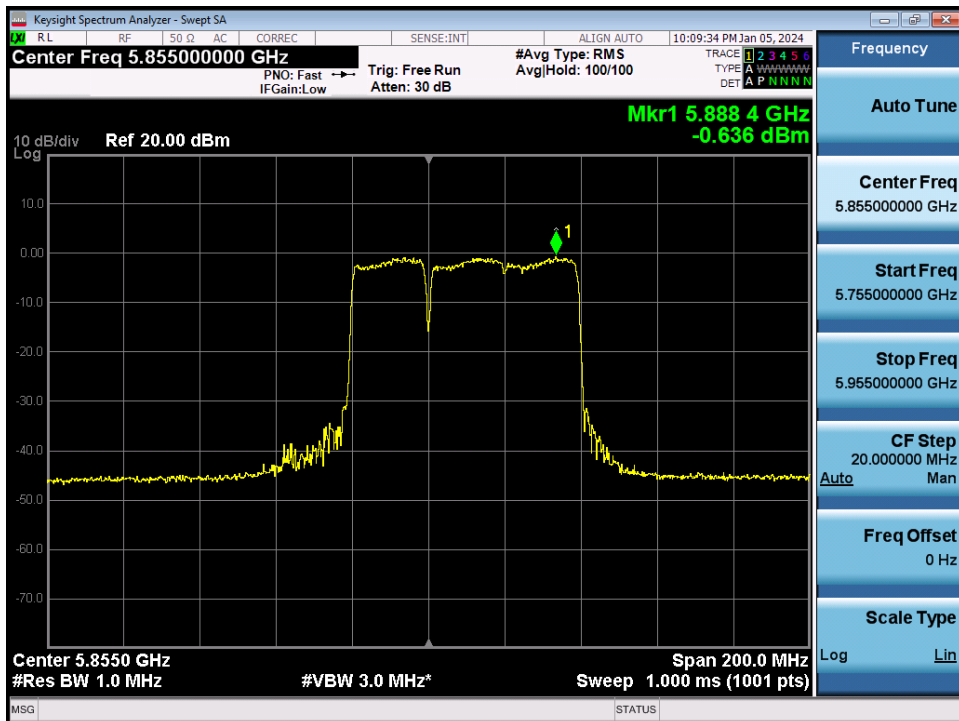
Plot 7-60. Power Spectral Density MIMO ANT2 (80MHz 802.11be (UNII Band 2C) 484+242 Tones – RU Index 93 – Ch. 106)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
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Plot 7-61. Power Spectral Density MIMO ANT2 (80MHz 802.11be (UNII Band 3) 484+242 Tones – RU Index 90 – Ch. 155)



Plot 7-62. Power Spectral Density MIMO ANT2 (80MHz 802.11be (UNII Band 3/4) 484+242 Tones – RU Index 90 – Ch. 171)

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
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**Note:**

Per ANSI C63.10-2013 Section 14.3.2.2 the power spectral density at Antenna-1 and Antenna-2 were first measured separately as shown in the section above. The measured values were then summed in linear power units then converted back to dBm.

**Sample MIMO Calculation:**

At 5845MHz in 802.11be (20MHz BW) mode, the average conducted power spectral density was measured to be 6.57dBm for Antenna 1 and 5.39dBm for Antenna 2.

$$\text{Antenna 1} + \text{Antenna 2} = \text{MIMO}$$

$$(6.57 \text{ dBm} + 5.39\text{dBm}) = (4.54\text{mW} + 3.46 \text{ mW}) = 8.00\text{mW} = 9.03 \text{ dBm}$$

**Sample e.i.r.p Power Spectral Density Calculation:**

At 5845MHz in 802.11be (20MHz BW) mode, the average MIMO power density was calculated to be 9.03 dBm with directional gain of -3.46 dBi.

$$\text{e.i.r.p. Power Spectral Density(dBm)} = \text{Power Spectral Density (dBm)} + \text{Ant gain (dBi)}$$

$$9.03 \text{ dBm} + ( - 3.46 \text{ dBi} ) = 5.57 \text{ dBm}$$

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## 7.6 Radiated Emission Measurements

### Test Overview and Limit

All out of band radiated spurious emissions are measured with a spectrum analyzer connected to a receive antenna while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013, and at the appropriate frequencies. All channels, modes, and modulations/data rates were investigated among all UNII bands. Only the radiated emissions of the configuration that produced the worst-case emissions are reported in this section.

**For transmitters operating in the 5.15-5.25 GHz and 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.**

**For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz.**

**For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.**

**For transmitters operating in the 5.850 – 5.895 GHz band: all emissions at or above 5.895GHz shall not exceed an e.i.r.p. of -5dBm/MHz and shall decrease linearly up to an e.i.r.p. of -27dBm/MHz at or above 5.925GHz, and all emissions below 5.725 GHz shall not exceed an e.i.r.p. of -27dBm/MHz at 5.65 GHz increasing linearly to 10dBm/MHz at 5.7GHz and from 5.7GHz increasing linearly to a level of 15.6dBm/MHz at 5.72GHz, and from 5.72GHz increasing linearly to a level of 27dBm/MHz at 5.725GHz.**

**All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR and Table 6 of RSS-Gen (8.10) must not exceed the limits shown in the table below per FCC §15.209 and RSS-Gen (8.9).**

Frequency	Field Strength [ $\mu$ V/m]	Measured Distance [Meters]
0.009 – 0.490 MHz	2400\F (kHz)	300
0.490 – 1.705 MHz	24000\F (kHz)	30
1.705 – 30.00 MHz	30	30
30.00 – 88.00 MHz	100	3
88.00 – 216.0 MHz	150	3
216.0 – 960.0 MHz	200	3
Above 960.0 MHz	500	3

**Table 7-18. Radiated Limits**

### Test Procedures Used

ANSI C63.10-2013 – Sections 12.7.7.2, 12.7.6, 12.7.5 (Radiated Spurious Emissions)

ANSI C63.10-2013 – Section 12.7.4.4 (Band Edge Measurements)

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**Test Settings – Above 1GHz**

**Average Field Strength Measurements (Method AD – Average Detection)**

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest.
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = power average (RMS)
5. Number of measurement points = 1001 (Number of points must be  $\geq 2 \times \text{span} \backslash \backslash \text{RBW}$ )
6. Sweep time = auto
7. Trace (RMS) averaging was performed over at least 100 traces.

**Peak Field Strength Measurements**

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest.
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize.

**Test Settings – Below 1GHz**

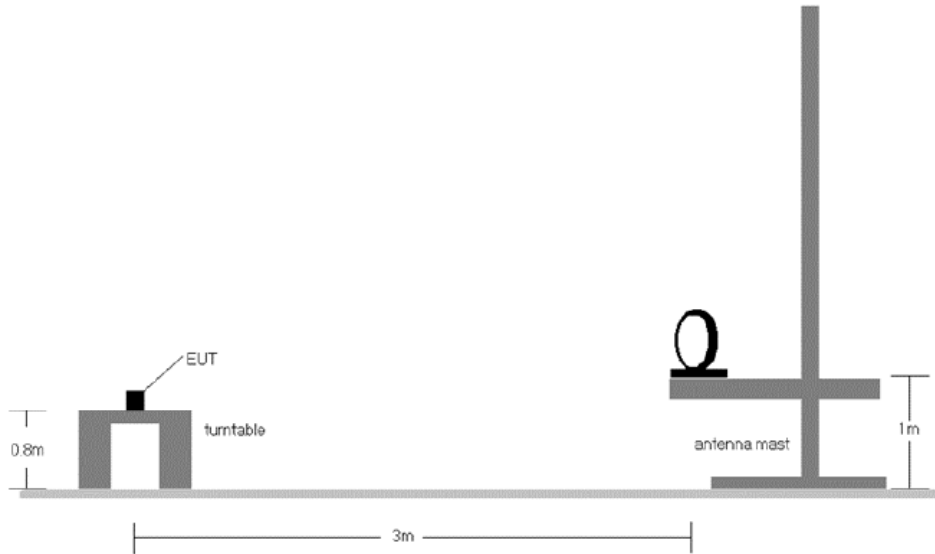
**Quasi-Peak Field Strength Measurements**

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest.
2. RBW = 120kHz (for emissions from 30MHz – 1GHz)
3. Detector = quasi-peak
4. Sweep time = auto couple
5. Trace mode = max hold
6. Trace was allowed to stabilize.

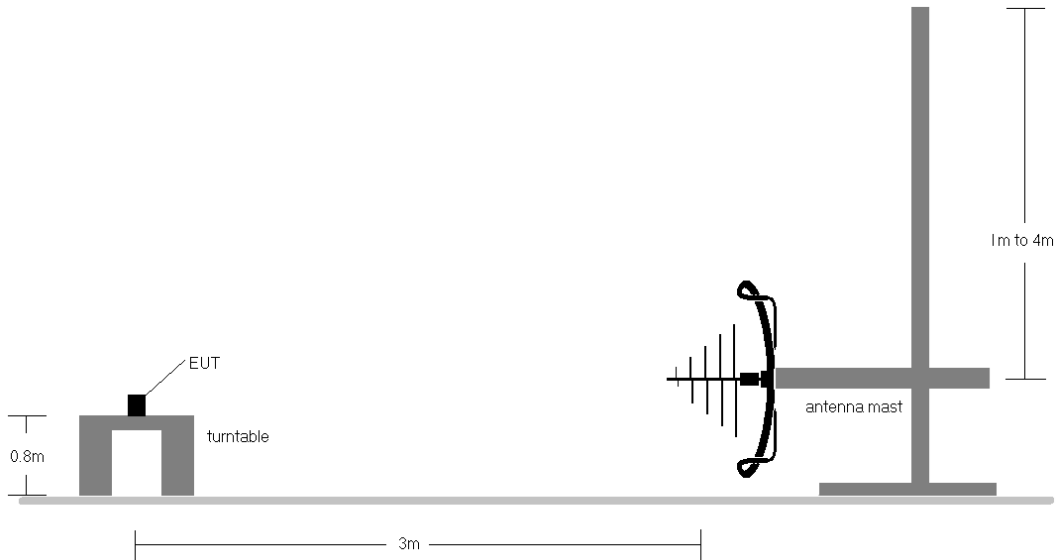
**Test Setup**

The EUT and measurement equipment were set up as shown in the diagram below.

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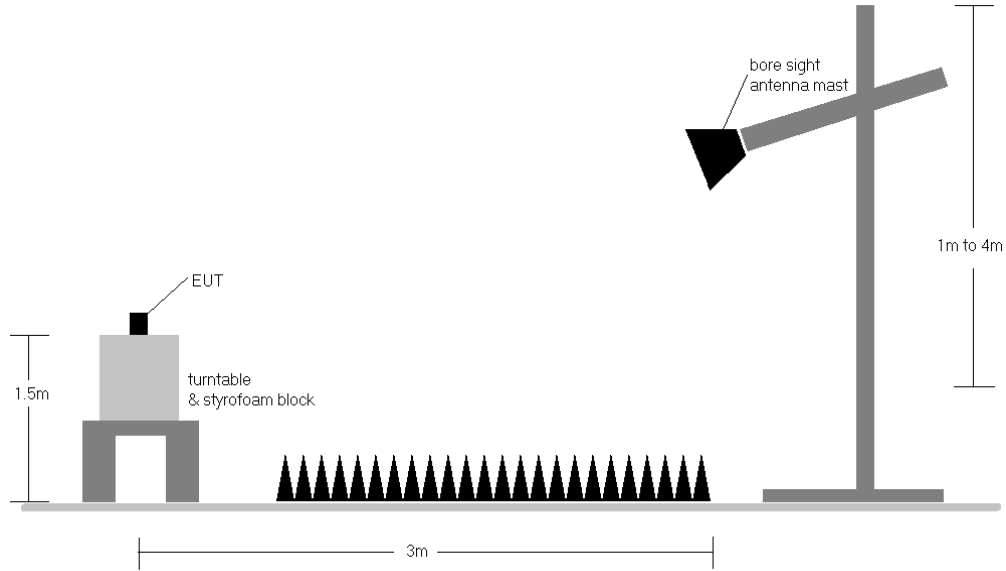


**Figure 7-5. Radiated Test Setup < 30MHz**



**Figure 7-6. Radiated Test Setup < 1GHz**

<b>FCC ID:</b> A3LSMX910 <b>IC :</b> 649E-SMX910	<b>Class II Permissive Change Report</b>		<b>Approved by:</b> Technical Manager
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**Figure 7-7. Radiated Test Setup > 1GHz**

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<b>Test Report S/N:</b> 1M2312180128-04.A3L	<b>Test Dates:</b> 12/15/2023 – 1/11/2024	<b>EUT Type:</b> <b>Portable Tablet</b>	Page 62 of 83

**Test Notes**

1. All spurious emissions lying in restricted bands specified in §15.205 are below the limits shown in §15.209. All spurious emissions that do not lie in a restricted band are subject to an average limit of -27dBm/MHz. At 3 meters, the field strength limit in dB $\mu$ V/m can be determined by adding a “conversion” factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions of 68.2dB $\mu$ V/m.
2. All spurious emissions that do not lie in a restricted band are subject to a peak limit not to exceed 20dB of the average limit [68.2dB $\mu$ V/m]. If a peak measurement passes the average limit, it was determined no further investigation is necessary.
3. The antenna is manipulated through typical positions, polarity, and length during the tests. The EUT is manipulated through three orthogonal planes.
4. This unit was tested with its standard battery.
5. The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter using CISPR quasi peak detector below 1GHz. Above 1 GHz, average and peak measurements were taken using linearly polarized horn antennas. The worst-case emissions are reported, however emissions whose levels were not within 20dB of the respective limits were not reported.
6. Emissions below 18GHz were measured at a 3-meter test distance while emissions above 18GHz were measured at a 1-meter test distance with the application of a distance correction factor.
7. The wide spectrum spurious emissions plots shown on the following pages are used only for the purpose of emission identification. Any emissions found to be within 20dB of the limit are fully investigated and the results are shown in this section.
8. The "-" shown in the following RSE tables are used to denote a noise floor measurement.
9. In the case where a peak-detector measurement passed the given RMS limit it was determined sufficient to demonstrate compliance.
10. The results recorded using the broadband antenna are known to correlate with the results obtained by using a tuned dipole with an acceptable degree of accuracy. The VSWR for the measurement antenna was found to be less than 2:1.

**Sample Calculations**

**Determining Spurious Emissions Levels**

- Field Strength Level [dB $\mu$ V/m] = Analyzer Level [dBm] + 107 + AFCL [dB/m]
- AFCL [dB/m] = Antenna Factor [dB/m] + Cable Loss [dB]
- Margin [dB] = Field Strength Level [dB $\mu$ V/m] – Limit [dB $\mu$ V/m]

**Radiated Band Edge Measurement Offset**

- The amplitude offset shown in the radiated restricted band edge plots was calculated using the formula:  
Offset (dB) = (Antenna Factor + Cable Loss + Attenuator) – Pre-amplifier Gain

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## 7.6.1 MIMO Radiated Spurious Emission Measurements

### MIMO Radiated Spurious Emission Measurements – UNII Band 2A

Worst Case Mode:	<u>802.11be</u>
Worst Case Transfer Rate:	<u>MCS0</u>
Distance of Measurements:	<u>1 &amp; 3 Meters</u>
Operating Frequency	<u>5320 MHz</u>
Channel	<u>64</u>

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10640.00	Average	H	162	284	-74.14	10.52	0.00	43.38	53.98	-10.60
10640.00	Peak	H	162	284	-64.28	10.52	0.00	53.24	73.98	-20.74
15960.00	Average	H	147	228	-76.63	13.01	0.00	43.38	53.98	-10.60
15960.00	Peak	H	147	228	-65.53	13.01	0.00	54.48	73.98	-19.50
21280.00	Average	V	-	-	-63.37	-3.34	-9.54	30.75	53.98	-23.23
21280.00	Peak	V	-	-	-52.96	-3.34	-9.54	41.16	73.98	-32.82
26600.00	Peak	V	-	-	-51.65	-2.27	-9.54	43.54	68.20	-24.66

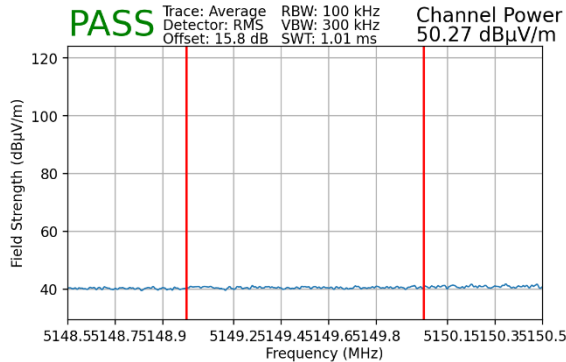
Table 7-19. Radiated Measurements MIMO

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 64 of 83

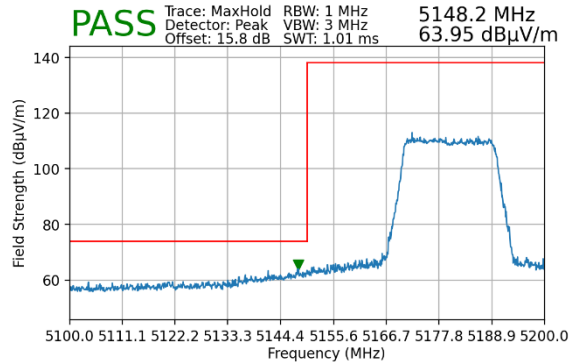


## 7.6.2 MIMO Radiated Band Edge Measurements (20MHz BW)

Worst Case Mode:	802.11be
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5180MHz
Channel:	36

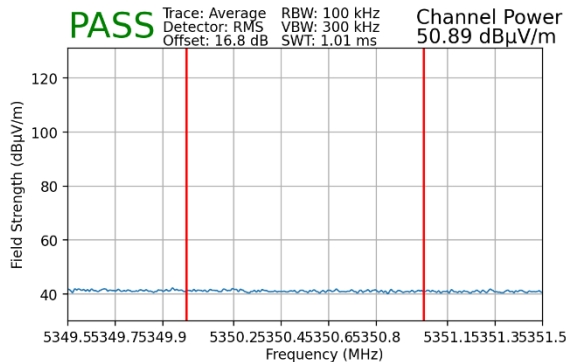


**Plot 7-63. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 1)**

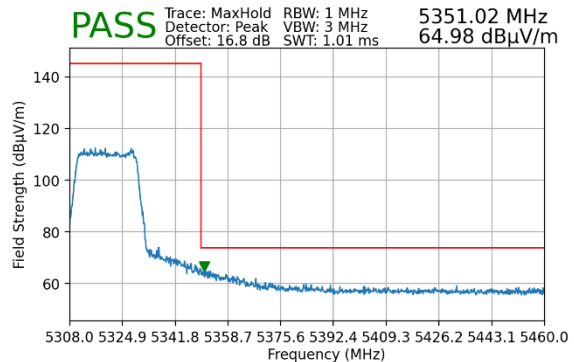


**Plot 7-64. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 1)**

Worst Case Mode:	802.11be
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5320MHz
Channel:	64



**Plot 7-65. Radiated Upper Band Edge Plot MIMO (Average – UNII Band 2A)**

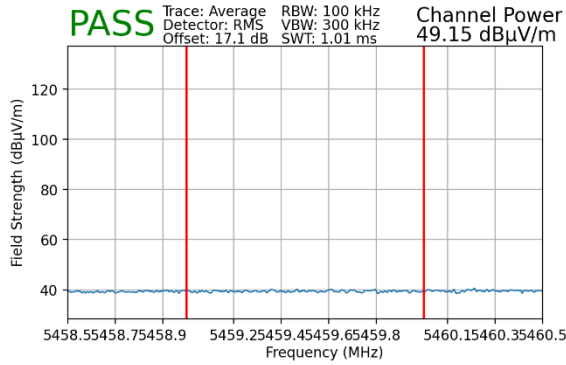


**Plot 7-66. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 2A)**

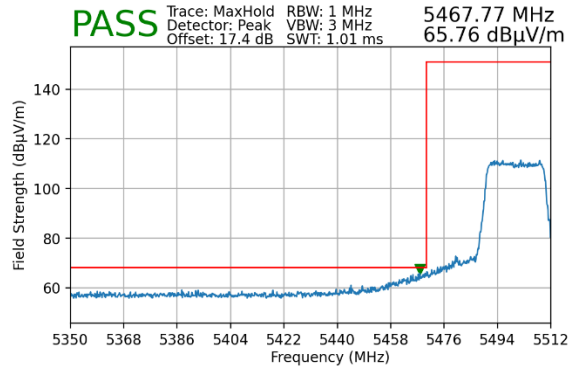
FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 65 of 83



Worst Case Mode: 802.11be  
 Worst Case Transfer Rate: MCS0  
 Distance of Measurements: 3 Meters  
 Operating Frequency: 5500MHz  
 Channel: 100

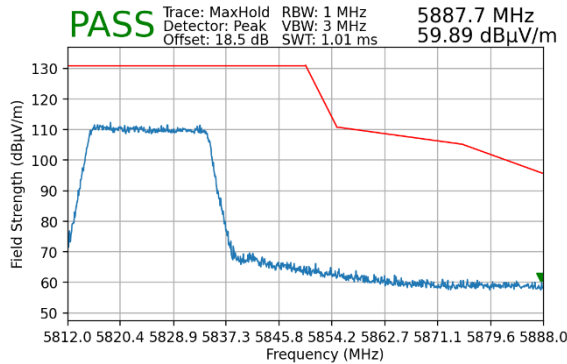


**Plot 7-67. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 2C)**



**Plot 7-68. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 2C)**

Worst Case Mode: 802.11be  
 Worst Case Transfer Rate: MCS0  
 Distance of Measurements: 3 Meters  
 Operating Frequency: 5825MHz  
 Channel: 165

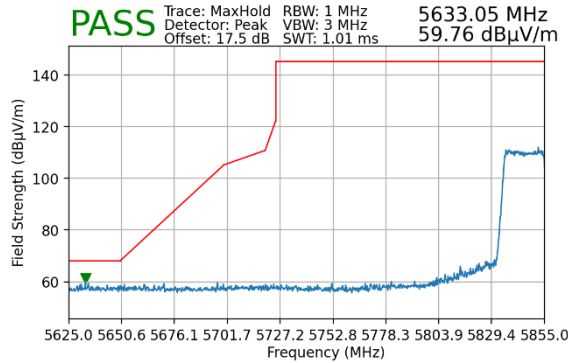


**Plot 7-69. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 3)**

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 66 of 83

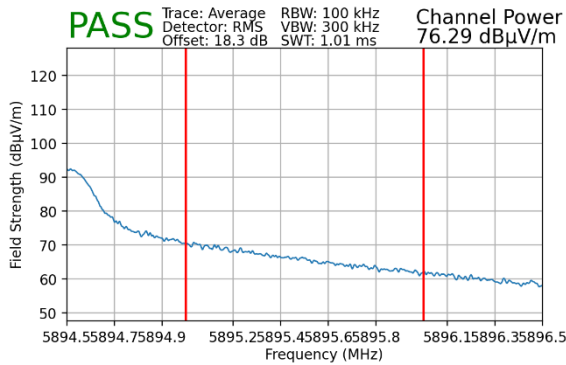


Worst Case Mode: 802.11be  
 Worst Case Transfer Rate: MCS0  
 Distance of Measurements: 3 Meters  
 Operating Frequency: 5845MHz  
 Channel: 169

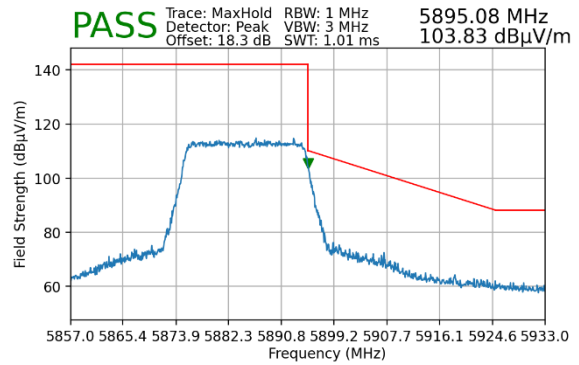


**Plot 7-70. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 4)**

Worst Case Mode: 802.11be  
 Worst Case Transfer Rate: MCS0  
 Distance of Measurements: 3 Meters  
 Operating Frequency: 5885MHz  
 Channel: 177



**Plot 7-71. Radiated Upper Band Edge Plot MIMO (Average – UNII Band 4)**

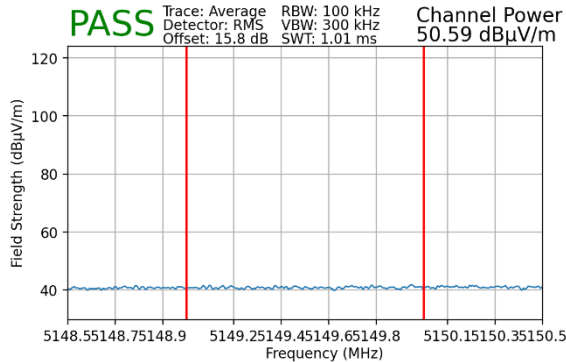


**Plot 7-72. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 4)**

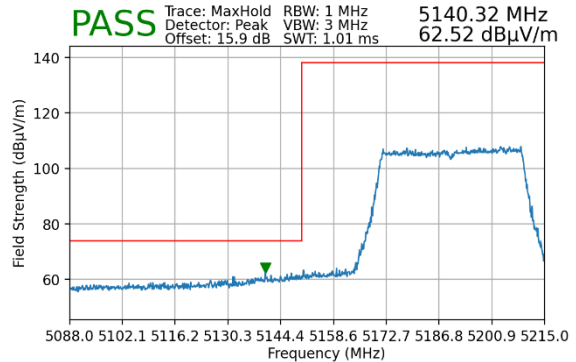
FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 67 of 83

### 7.6.3 MIMO Radiated Band Edge Measurements (40MHz BW)

Worst Case Mode:	802.11be
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5190MHz
Channel:	38

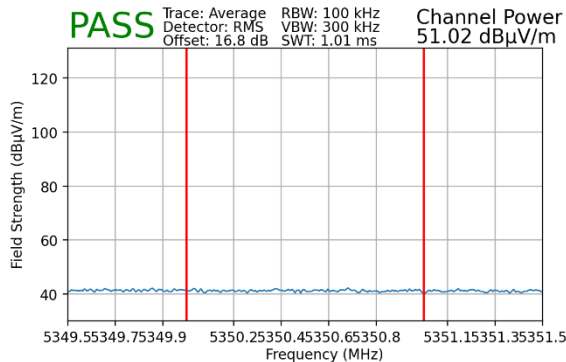


**Plot 7-73. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 1)**

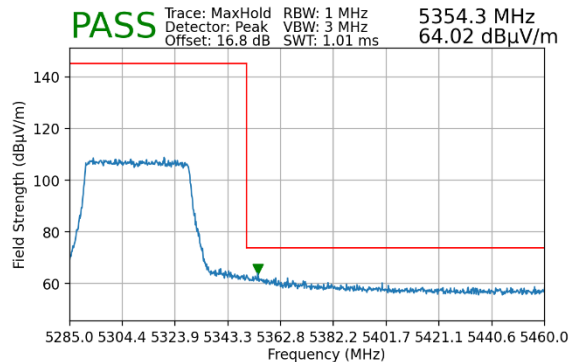


**Plot 7-74. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 1)**

Worst Case Mode:	802.11be
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5310MHz
Channel:	62



**Plot 7-75. Radiated Upper Band Edge Plot MIMO (Average – UNII Band 2A)**

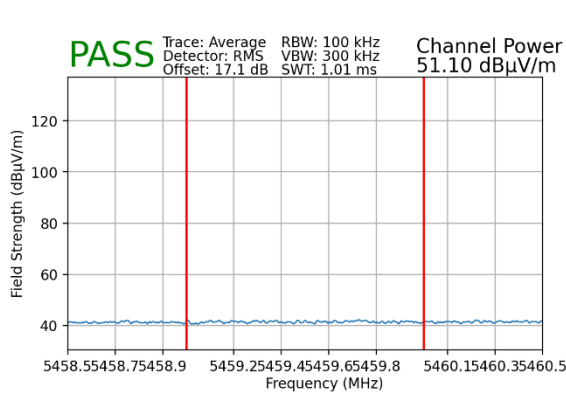


**Plot 7-76. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 2A)**

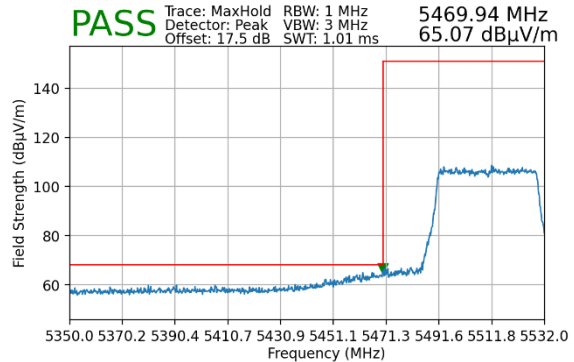
FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 68 of 83



Worst Case Mode: 802.11be  
 Worst Case Transfer Rate: MCS0  
 Distance of Measurements: 3 Meters  
 Operating Frequency: 5510MHz  
 Channel: 102

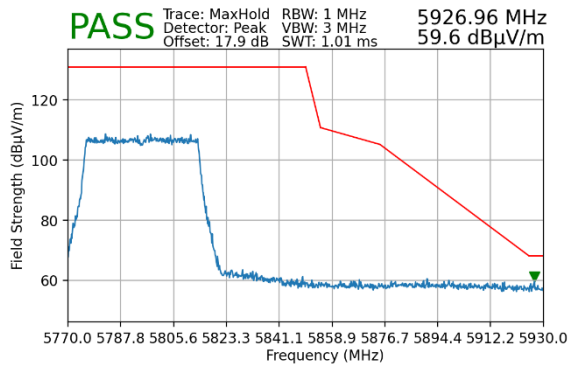


**Plot 7-77. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 2C)**



**Plot 7-78. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 2C)**

Worst Case Mode: 802.11be  
 Worst Case Transfer Rate: MCS0  
 Distance of Measurements: 3 Meters  
 Operating Frequency: 5795MHz  
 Channel: 159



**Plot 7-79. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 3)**

FCC ID: A3LSMX910 IC : 649E-SMX910	Class II Permissive Change Report		Approved by: Technical Manager
Test Report S/N: 1M2312180128-04.A3L	Test Dates: 12/15/2023 – 1/11/2024	EUT Type: Portable Tablet	Page 69 of 83