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MEASUREMENT REPORT FCC PART 15.247 WLAN OFDMA

Applicant Name:

Samsung Electronics Co., Ltd. 129, Samsung-ro, Yeongtong-gu, Suwon-si Gyeonggi-do, 16677, Korea Date of Testing: 04/03/2023 - 05/18/2023 Test Report Issue Date: 05/19/2023 Test Site/Location: Element Lab. Yongin-Si, Gyeonggi-do, South Korea Test Report Serial No.: 1M2303200036-05.A3L

A3LSMX910

649E-SMX910

APPLICANT:

FCC ID:

IC:

Samsung Electronics Co., Ltd.

Application Type:	Certification		
Model/HVIN:	SM-X910		
EUT Type:	Portable Tablet		
Frequency Range:	2412 – 2472MHz		
Modulation Type:	OFDMA		
FCC Classification:	Digital Transmission System (DTS)		
FCC Rule Part(s):	Part 15 Subpart C (15.247)		
ISED Specification:	RSS-247 Issue 2		
Test Procedure(s):	ANSI C63.10-2013, KDB 558074 D01 v05r02, KDB 662911 D01 v02r01		

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

N

Reviewed by

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT			
Test Report S/N:	Test Dates:	Test Dates: EUT Type:			
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	04/03/2023 - 05/18/2023 Portable Tablet			
© 2023 ELEMENT			V9.0 02/01/2019		



TABLE OF CONTENTS

1.0	INTR	ODUC	TION	5
	1.1	Scop	э	5
	1.1	Elem	ent Test Location	5
	1.2	Test I	Facility / Accreditations	5
2.0	PRO	DUCT	NFORMATION	6
	2.1	Equip	ment Description	6
	2.2	Devic	e Capabilities	6
	2.3	Test (Configuration	7
	2.4	Anter	na Description	7
	2.5	Softw	are and Firmware	8
	2.6	EMI S	Suppression Device(s)/Modifications	8
3.0	DESC	RIPTI	ON OF TESTS	9
	3.1	Evalu	ation Procedure	9
	3.2	Radia	ted Emissions	9
	3.3		onmental Conditions	
4.0	ANTE	INNA F	REQUIREMENTS	.10
5.0				
6.0			PMENT CALIBRATION DATA	
7.0				
7.0	7.1		nary	
	7.2		Bandwidth Measurement	
	1.2	7.2.1	SISO Antenna-2 6 dB Bandwidth Measurements	
		7.2.2	MIMO 6 dB Bandwidth Measurements - ANT1	
		7.2.3	MIMO 6 dB Bandwidth Measurements – ANT2	
	7.3	Outpu	It Power Measurement	. 28
	7.4	Powe	r Spectral Density	. 35
		7.4.1	SISO Antenna-2 Power Spectral Density Measurements	. 36
		7.4.2	MIMO Power Spectral Density Measurements	. 40
	7.5	Cond	ucted Band Edge Emissions	. 47
		7.5.1	SISO Antenna-2 Conducted Emissions at the Band Edge	. 48
		7.5.2	MIMO Conducted Band Edge Emissions – ANT 1	. 54
		7.5.3	MIMO Conducted Band Edge Emissions – ANT 2	. 60
	7.6	Cond	ucted Spurious Emissions	. 66
		7.6.1	SISO Antenna-2 Conducted Spurious Emissions	. 68
		7.6.2	MIMO Conducted Spurious Emissions – ANT1	.74
		7.6.3	MIMO Conducted Spurious Emissions – ANT2	. 80

FCC ID: A3LSMX910 IC: 649E-SMX910	MEASUREMENT REPORT		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:		
1M2303200036-05.A3L	04/03/2023 - 05/18/2023 Portable Tablet		Page 2 of 114	
© 2023 ELEMENT V9.0 02/01/201				



	7.7	Radia	ted Emission Measurements	. 86
		7.7.1	SISO Antenna-2 Radiated Spurious Emission Measurements	. 90
		7.7.2	MIMO Radiated Spurious Emission Measurements	. 96
		7.7.3	SISO Antenna-2 Radiated Restricted Band Edge Measurements	102
		7.7.4	MIMO Radiated Restricted Band Edge Measurements	108
8.0	CON	CLUSI	DN1	14

FCC ID: A3LSMX910 IC: 649E-SMX910	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 2 of 114
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 3 of 114
© 2023 ELEMENT			V9.0 02/01/2019



MEASUREMENT REPORT

			ANT2			MIMO				
		T. F	Avg Conducted		Peak Conducted		Avg Conducted		Peak Conducted	
Mode	Tones	Tx Frequency [MHz]	Max. Power (mW)	Max. Power (dBm)						
802.11ax OFDMA	26T	2412 - 2472	9.750	9.89	34.995	15.44	19.891	12.99	89.834	19.53
802.11ax OFDMA	52T	2412 - 2472	19.815	12.97	75.858	18.80	39.527	15.97	171.179	22.33
802.11ax OFDMA	106T	2412 - 2472	30.620	14.86	109.144	20.38	62.907	17.99	263.037	24.20
802.11ax OFDMA	242T	2412 - 2472	59.704	17.76	262.422	24.19	116.973	20.68	394.971	25.97

FCC ID: A3LSMX910 IC: 649E-SMX910	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates: EUT Type:		
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 4 of 114
© 2023 ELEMENT			V9.0 02/01/2019



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.

1.1 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.

1.2 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

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	Dage E of 114
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 5 of 114
© 2023 ELEMENT			V9.0 02/01/2019



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 WLAN (DTS) transmitter.

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

2.2 Device Capabilities

This device contains the following capabilities:

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

Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
1	2412	8	2447
2	2417	9	2452
3	2422	10	2457
4	2427	11	2462
5	2432	12	2467
6	2437	13	2472
7	2442		

Table 2-1.	Frequency	/ Channel (Operations
------------	-----------	-------------	------------

Notes:

 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 6.0 b) of ANSI C63.10-2013 and KDB 558074 D01 v05r02. 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:

Mode	Antenna	Tone	Duty Cycle
		26T	99.6
802.11ax	2	52T	99.5
DTS RU	2	106T	98.9
		242T	98.0
		26T	99.1
802.11ax	MIMO CDD	52T	99.1
DTS RU		106T	98.3
		242T	96.8

 Table 2-2. Measured Duty Cycles

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	Daga C of 114
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 6 of 114
© 2023 ELEMENT			V9.0.02/01/2019



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

WiFi Configurations		SISO		SDM		CDD	
WIFI CON	WiFi Configurations		ANT2	ANT1	ANT2	ANT1	ANT2
2.4GHz	11ax	×	✓	✓	✓	✓	✓
	Τ.		1	Consections.			

Table 2-3. Antenna Configuration

✓ = Support ; × = NOT Support
 SISO = Single Input Single Output
 SDM = Spatial Diversity Multiplexing – MIMO function
 CDD = Cyclic Delay Diversity - 2Tx Function

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

MCS Index	Spatial		OFDMA (802.11ax)										
macx	Stream		26T			52T			106T			242T	
HE		0.8µs GI	1.6µs GI	3.2µs GI	0.8µs GI	1.6µs GI	3.2µs Gl	0.8µs GI	1.6µs GI	3.2µs GI	0.8µs GI	1.6µs GI	3.2µs GI
0	1	0.9	0.8	0.8	1.8	1.7	1.5	3.8	3.5	3.2	8.6	8.1	7.3
1	1	1.8	1.7	1.5	3.5	3.3	3	7.5	7.1	6.4	17.2	16.3	14.6
2	1	2.6	2.5	2.3	5.3	5	4.5	11.3	10.6	9.6	25.8	24.4	21.9
3	1	3.5	3.3	3	7.1	6.7	6	15	14.2	12.8	34.4	32.5	29.3
4	1	5.3	5	4.5	10.6	10	9	22.5	21.3	19.1	51.6	48.8	43.9
5	1	7.1	6.7	6	14.1	13.3	12	30	28.3	25.5	68.8	65	58.5
6	1	7.9	7.5	6.8	15.9	15	13.5	33.8	31.9	28.7	77.4	73.1	65.8
7	1	8.8	8.3	7.5	17.6	16.7	15	37.5	35.4	31.9	86	81.3	73.1
8	1	10.6	10	9	21.2	20	18	45	42.5	38.3	103.2	97.5	87.8
9	1	11.8	11.1	10	23.5	22.2	20	50	47.2	42.5	114.7	108.3	97.5
10	1	13.2	12.5	11.3	26.5	25	22.5	56.3	53.1	47.8	129	121.9	109.7
11	1	14.7	13.9	12.5	29.4	27.8	25	62.5	59	53.1	143.4	135.4	121.9
0	2	1.8	1.7	1.5	3.5	3.3	3	7.5	7.1	6.4	17.2	16.3	14.6
1	2	3.5	3.3	3	7.1	6.7	6	15	14.2	12.8	34.4	32.5	29.3
2	2	5.3	5	4.5	10.6	10	9	22.5	21.3	19.1	51.6	48.8	43.9
3	2	7.1	6.7	6	14.1	13.3	12	30	28.3	25.5	68.8	65	58.5
4	2	10.6	10	9	21.2	20	18	45	42.5	38.3	103.2	97.5	87.8
5	2	14.1	13.3	12	28.2	26.7	24	60	56.7	51	137.6	130	117
6	2	15.9	15	13.5	31.8	30	27	67.5	63.8	57.4	154.9	146.3	131.6
7	2	17.6	16.7	15	35.3	33.3	30	75	70.8	63.8	172.1	162.5	146.3
8	2	21.2	20	18	42.4	40	36	90	85	76.5	206.5	195	175.5
9	2	23.5	22.2	20	47.1	44.4	40	100	94.4	85	229.4	216.7	195
10	2	26.5	25	22.5	52.9	50	45	112.5	106.3	95.6	258.1	243.8	219.4
11	2	29.4	27.8	25	58.8	55.6	50	125	118.1	106.3	286.8	270.8	243.8

Table 2-4. Supported Data Rates

2.3 Test Configuration

ANSI C63.10-2013 was used to reference the appropriate EUT setup for radiated spurious emissions testing. See Sections 7.7 for radiated emissions test setups, and 7.2, 7.3, 0, 7.5, and 7.6 for antenna port conducted emissions test setups.

2.4 Antenna Description

The following antenna gains were used for the testing.

Frequency [MHz]	Antenna-1 Gain [dBi]	Antenna-2 Gain [dBi]	Directional Gain [dBi]
2400	-5.39	-5.83	-2.60
2451	-5.01	-6.21	-2.57
2473	-5.42	-6.74	-3.04
2480	-5.59	-6.45	-3.00

Table	2-5.	Antenna	Peak	Gain
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FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 7 of 114
© 2023 ELEMENT	V9.0 02/01/2019		



2.5 Software and Firmware

The test was conducted with software/firmware version X910XXU0AWD5 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.

FCC ID: A3LSMX910 IC: 649E-SMX910		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 0 of 114
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 8 of 114
© 2023 ELEMENT			V9.0 02/01/2019



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).

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	Dage 0 of 114
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 9 of 114
© 2023 ELEMENT			V9.0 02/01/2019



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 connections to an external antenna.

Conclusion:

The EUT unit complies with the requirement of §15.203.

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT		
Test Report S/N:	Test Dates:	EUT Type:	Dogo 10 of 111	
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 10 of 114	
© 2023 ELEMENT	V9.0 02/01/2019			



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_{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 (±dB)
Conducted Bench Top Measurements	1.37
Conducted Disturbance	3.09
Radiated Disturbance (<1GHz)	3.94
Radiated Disturbance (>1GHz)	4.75
Radiated Disturbance (>18GHz)	4.84

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	Dage 11 of 111
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 11 of 114
© 2023 ELEMENT	·		V9.0 02/01/2019



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	Dual Directional Coupler	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	N9030A	PXA Signal Analyzer(3Hz-26.5GHz)	7/4/2022	Annual	7/3/2023	MY49432391
Anritsu	S820E	Cable and Antenna Analyzer	7/6/2022	Annual	7/5/2023	1839097
Anritsu	TOSLKF50A-40	Calibration Kit	N/A	-	N/A	1825024
COM-Power Corporatior	AL-130R	Active Loop Antenna	10/21/2022	Biennial	10/20/2024	10160045
MINI-CIRCUITS	BW-N10W5+	ATTENUATOR(DC-18GHz)	4/6/2023	Annual	4/5/2024	2106
NARDA	180-442A-KF	Horn Antenna(18GHz-40GHz)	11/23/2022	Biennial	11/22/2024	T058701-03
PASTER NACK	PE2209-6	Dual Directional Coupler	7/5/2022	Annual	7/4/2023	N/A
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	8/26/2022	Annual	8/25/2023	166818
Rohde & Schwarz	ENV216	Two-Line V-Network	4/7/2023	Annual	4/6/2024	101319
Rohde & Schwarz	ESW	EMI Test Receiver(2Hz-44GHz)	7/4/2022	Annual	7/3/2023	101761
Rohde & Schwarz	FSW43	Signal and Spectrum Analyzer(2Hz-43.5GHz)	1/13/2023	Annual	1/12/2024	101955
Rohde & Schwarz	TS-PR1840	Preamplifier(18GHz-40GHz)	7/6/2022	Annual	7/5/2023	100049
Rohde & Schwarz	TS-SFUNIT-Rx	Shielded Filter Unit	1/13/2023	Annual	1/12/2024	102131
Schwarzbeck	VULB9162	Broadband TRILOG Antenna(30MHz-1GHz)	7/13/2021	Biennial	7/12/2023	9162-217
Sunol Sciences	DRH-118	Horn Antenna(1GHz-18GHz)	1/26/2023	Biennial	1/25/2025	A102416-1
TESTEK	-	LISN Extension Cord	4/7/2023	Annual	4/6/2024	N/A

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.

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	Dage 12 of 114
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 12 of 114
© 2023 ELEMENT	-		V9.0 02/01/2019



7.0 TEST RESULTS

7.1 Summary

Company Name:	Samsung Electronics Co., Ltd.
FCC ID:	<u>A3LSMX910</u>
IC:	<u>649E-SMX910</u>
FCC Classification:	Digital Transmission System (DTS)

FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.247(a)(2)	RSS-247 [5.2(a)]	6dB Bandwidth	The minimum 6 dB bandwidth shall be at least 500 kHz.		PASS	Section 7.2
15.247(b)(3)	RSS-247 [5.4(b)]	Transmitter Output Power shall not exceed 1 W			PASS	Section 7.3
N/A	RSS-247 [5.4(b)]	e.i.r.p	Shall not exceed 4 W	CONDUCTED	PASS	Section 7.3
15.247(e)	RSS-247 [5.2(b)]	Transmitter Power Spectral Density	shall not be greater than 8 dBm in any 3 kHz band		PASS	Section 0
15.247(d)	RSS-247 [5.5]	Band Edge / Out-of-Band Emissions	≥ 20dBc		PASS	Sections 7.5, 7.6
15.205 15.209	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])	RADIATED	PASS	Section 7.7

Table 7-1. Summary of Test Results

Notes:

- 1) All modes of operation and data rates were investigated. 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 "WLAN Automation," Version 3.5.
- 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 1.3.1.

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 12 of 114
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 13 of 114
© 2023 ELEMENT	·	·	V9.0 02/01/2019

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6) 802.11ax OFDMA testing was performed for all signal tone configurations as specified by the 802.11ax standard. Worst case results are determined and reported per the guidance provided at the October 2018 TCB Workshop.

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 14 of 114
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 14 of 114
© 2023 ELEMENT		·	V9.0 02/01/2019



7.2 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 transmitter antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated and the worst-case configuration results are reported in this section.

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

Test Procedure Used

ANSI C63.10-2013 - Section 11.8.2 Option 2

Test Settings

- The signal analyzer's automatic bandwidth measurement capability was used to perform the 6dB bandwidth measurement. The "X" dB bandwidth parameter was set to X = 6. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
- 2. RBW = 100kHz
- 3. VBW \geq 3 x RBW
- 4. Detector = Peak
- 5. Trace mode = max hold
- 6. Sweep = auto couple
- 7. The trace was allowed to stabilize

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

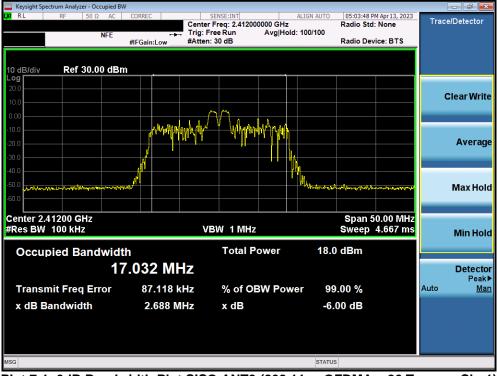
- 1. Based on preliminary measurements, it was determined that, of all the tone configurations, the 26T configuration produced the worst case 6dB Bandwidth measurement. Only the worst-case data is included in this section.
- 2. The 6dB bandwidth for each channel was measured with the RU index showing the highest conducted power.

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates: EUT Type:		Dogo 15 of 114
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 15 of 114
© 2023 ELEMENT		•	V9.0 02/01/2019



Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]
2412	1	ax	26T	MCS0	2.688	0.500
2437	6	ax	26T	MCS0	2.672	0.500
2462	11	ax	26T	MCS0	2.693	0.500
2412	1	ax	242T	MCS0	19.04	0.500
2437	6	ax	242T	MCS0	18.99	0.500
2462	11	ax	242T	MCS0	19.02	0.500

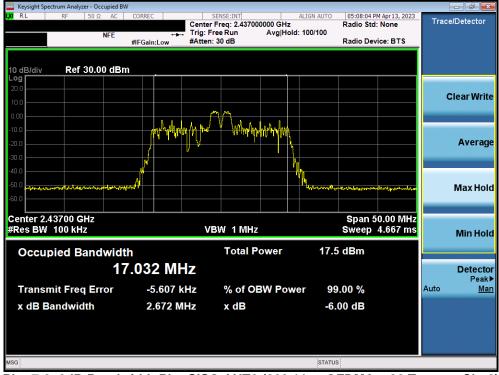
7.2.1 SISO Antenna-2 6 dB Bandwidth Measurements



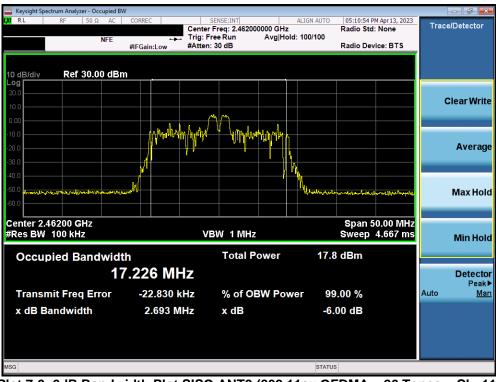
Plot 7-1. 6dB Bandwidth Plot SISO ANT2 (802.11ax OFDMA – 26 Tones – Ch. 1)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 16 of 114	
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 16 of 114	
© 2023 ELEMENT			V9.0 02/01/2019	





Plot 7-2. 6dB Bandwidth Plot SISO ANT2 (802.11ax OFDMA – 26 Tones – Ch. 6)



Plot 7-3. 6dB Bandwidth Plot SISO ANT2 (802.11ax OFDMA – 26 Tones – Ch. 11)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT		
Test Report S/N:	Test Dates:	EUT Type:	Dawa 47 at 444	
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 17 of 114	
© 2023 ELEMENT			V9.0 02/01/2019	





Plot 7-4. 6dB Bandwidth Plot SISO ANT2 (802.11ax OFDMA – 242 Tones – Ch. 1)



Plot 7-5. 6dB Bandwidth Plot SISO ANT2 (802.11ax OFDMA – 242 Tones – Ch. 6)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	Dama 40 of 444
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 18 of 114
© 2023 ELEMENT			V9.0 02/01/2019



Keysight Spectrum Analyzer - Occupied BW							
LX/RL RF 50Ω AC CC		SENSE:INT Freq: 2.462000000 GHz		Radio Std	M Apr 13, 2023 : None	Tracel	Detector
NFE #I		Free Run Avg Ho I:30 dB	ld: 100/100	Radio Dev	vice: BTS		
10 dB/div Ref 30.00 dBm			•				
20.0							
10.0						CI	ear Write
0.00		hy markentententen	^				
-10.0			<u> </u>				
-20.0							Average
-30.0			1				
-40.0			W we want	whenter	monde		
-60.0							Max Hold
Center 2.46200 GHz #Res BW 100 kHz	v	BW 1 MHz			0.00 MHz 4.667 ms		Min Hold
		Tetel Denne	25.0	, dDee			MITHOL
Occupied Bandwidth		Total Power	25.0) dBm			
18.8	933 MHz						Detector Peak
Transmit Freq Error	-9.332 kHz	% of OBW Pov	ver 99	.00 %		Auto	Mar
x dB Bandwidth	19.02 MHz	x dB	-6.	00 dB			
MSG		ANTO (000 4	STATUS	3			01.4

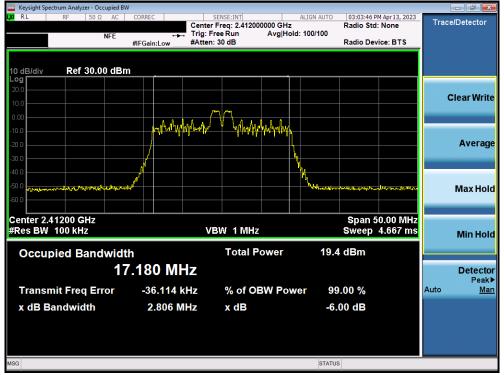
Plot 7-6. 6dB Bandwidth Plot SISO ANT2 (802.11ax OFDMA – 242 Tones – Ch. 11)

FCC ID: A3LSMX910 IC: 649E-SMX910	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 10 of 114
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 19 of 114
© 2023 ELEMENT		·	V9.0 02/01/2019



7.2.2 MIMO 6 dB Bandwidth Measurements - ANT1

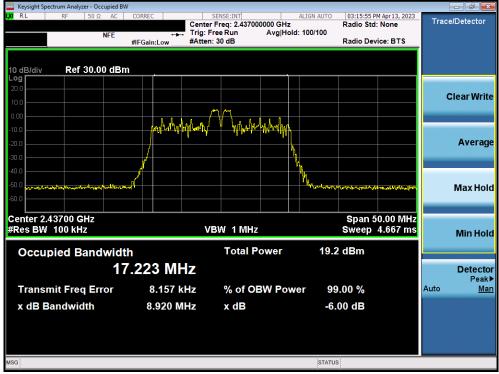
Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]
2412	1	ax	26T	MCS0	2.806	0.500
2437	6	ax	26T	MCS0	8.920	0.500
2462	11	ax	26T	MCS0	2.756	0.500
2412	1	ax	242T	MCS0	18.88	0.500
2437	6	ax	242T	MCS0	19.03	0.500
2462	11	ax	242T	MCS0	18.86	0.500



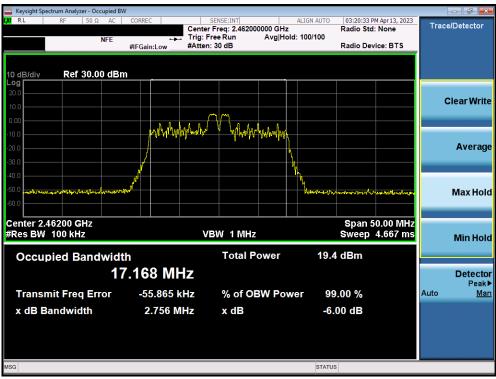
Plot 7-7. 6dB Bandwidth Plot MIMO ANT1 (802.11ax OFDMA - 26 Tones - Ch. 1)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	Dage 20 of 111
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 20 of 114
© 2023 ELEMENT		·	V9.0 02/01/2019





Plot 7-8. 6dB Bandwidth Plot MIMO ANT1 (802.11ax OFDMA - 26 Tones - Ch. 6)



Plot 7-9. 6dB Bandwidth Plot MIMO ANT1 (802.11ax OFDMA – 26 Tones – Ch. 11)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 21 of 111
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 21 of 114
© 2023 ELEMENT	·		V9.0 02/01/2019



Keysight Spectrum Analyzer - Occupied BW							
NFE	Center		ALIGN AUTO Iz Iold: 100/100	03:28:25 P Radio Std		Trace	/Detector
10 dB/div Ref 30.00 dBm	Gain:Low #Atten	30 08		Radio Dev			
Log 20.0 10.0	pmm. a. Marchard	100 million and a straight a straig	m			c	lear Write
-10.0 -20.0 -30.0							Average
-40.0 -50.0 -60.0			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Markand	MANI AN		Max Hold
Center 2.41200 GHz #Res BW 100 kHz	VI	3W 1 MHz		Sweep	0.00 MHz 4.667 ms		Min Hold
	27 MHz	Total Power		dBm			Detector Peak►
Transmit Freq Error x dB Bandwidth	-1.983 kHz 18.88 MHz	% of OBW Po x dB		.00 % 00 dB		Auto	<u>Man</u>
MSG			STATUS				

Plot 7-10. 6dB Bandwidth Plot MIMO ANT1 (802.11ax OFDMA – 242 Tones – Ch. 1)



Plot 7-11. 6dB Bandwidth Plot MIMO ANT1 (802.11ax OFDMA – 242 Tones – Ch. 6)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	Dama 00 -6444
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 22 of 114
© 2023 ELEMENT	·		V9.0 02/01/2019



Keysight Spectrum Analyzer - Occupied BW	CORREC	SENSE:INT	ALIGN AUTO	02:22:24 0	M Apr 13, 2023		
RE RE SUSZ AC	Cente	r Freq: 2.462000000 GHz		Radio Std:		Trace/D	etector
NFE		Free Run Avg Hol n: 30 dB	d: 100/100	Radio Dev	ice: BTS		
0 dB/div Ref 30.00 dBm							
. og 20.0							
0.0						Cle	ar Wri
	marlingtanterdershow	by whatehally hallow					
.00							
0.0						,	vera
							wera
- m A Am A	W ²		wwww	MAR. A.			
0.0 http://www.analyten.anal				* **	MAR MAR		
60.0						м	ax Ho
							_
enter 2.46200 GHz					0.00 MHz		
Res BW 100 kHz	V	BW 1 MHz		Sweep	4.667 ms	N	lin Ho
Occupied Bandwidth		Total Power	25.7	dBm			
	901 MHz					-	
10						L	etect Pea
Transmit Freq Error	-20.403 kHz	% of OBW Pow	ver 99.	00 %		Auto	M
x dB Bandwidth	18.86 MHz	x dB	-6.0	0 dB			
G			STATUS				
7.40.010.0		0 ANITA (000			040 T		01

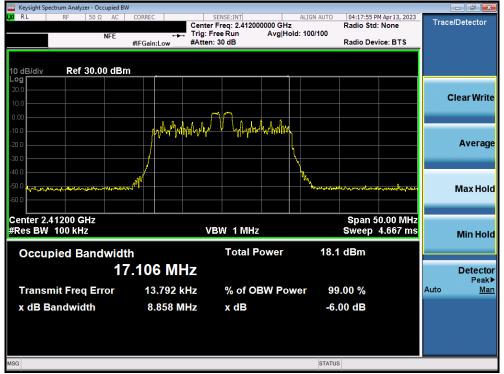
Plot 7-12. 6dB Bandwidth Plot MIMO ANT1 (802.11ax OFDMA – 242 Tones – Ch. 11)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	Daga 22 of 114
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 23 of 114
© 2023 ELEMENT	· · ·		V9.0 02/01/2019



7.2.3 MIMO 6 dB Bandwidth Measurements – ANT2

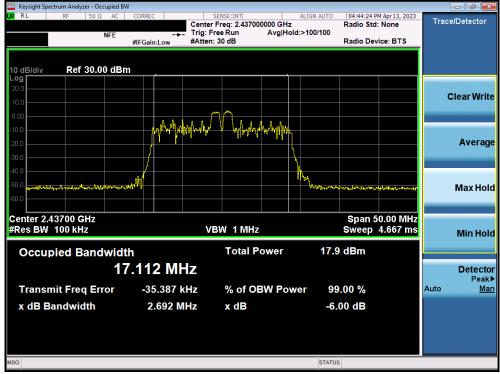
Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]
2412	1	ax	26T	MCS0	8.858	0.500
2437	6	ax	26T	MCS0	2.692	0.500
2462	11	ax	26T	MCS0	2.699	0.500
2412	1	ax	242T	MCS0	19.11	0.500
2437	6	ax	242T	MCS0	19.10	0.500
2462	11	ax	242T	MCS0	19.12	0.500



Plot 7-13. 6dB Bandwidth Plot MIMO ANT2 (802.11ax OFDMA – 26 Tones – Ch. 1)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 24 of 114
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 24 of 114
© 2023 ELEMENT	<u>.</u>		V9.0 02/01/2019





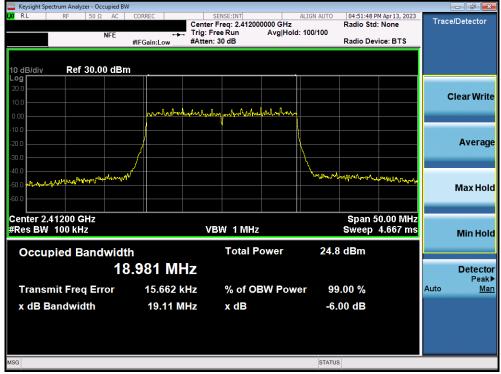
Plot 7-14. 6dB Bandwidth Plot MIMO ANT2 (802.11ax OFDMA – 26 Tones – Ch. 6)



Plot 7-15. 6dB Bandwidth Plot MIMO ANT2 (802.11ax OFDMA – 26 Tones – Ch. 11)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	Dage 25 of 114
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 25 of 114
© 2023 ELEMENT	·		V9.0 02/01/2019





Plot 7-16. 6dB Bandwidth Plot MIMO ANT2 (802.11ax OFDMA – 242 Tones – Ch. 1)



Plot 7-17. 6dB Bandwidth Plot MIMO ANT2 (802.11ax OFDMA – 242 Tones – Ch. 6)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 26 of 114
© 2023 ELEMENT			V9.0 02/01/2019



Keysight Spectrum Analyzer - Occupied BW	CORREC	SENSE:INT	ALIGN AUTO 04:55:57	PM Apr 13, 2023	
10 0010 110	Cente	r Freq: 2.462000000 GHz	Radio St		Trace/Detector
NFE		Free Run Avg Hold n: 30 dB		vice: BTS	
0 dB/div Ref 30.00 dBm	1				
og					
0.0					Clear Wri
	monta that also to	le montestration			
.00					
0.0					Avera
0.0					Avera
			A		
0.0 monoral and a monoral and	ſ		mannontalliman	How May Lake	
					Max Ho
0.0					
enter 2.46200 GHz				50.00 MHz	
Res BW 100 kHz	V	'BW 1 MHz	Sweep	4.667 ms	Min Ho
Occupied Bandwidt	h	Total Power	25.0 dBm		
	972 MHz				Deter
IC					Detect Pea
Transmit Freq Error	-3.795 kHz	% of OBW Pow	er 99.00 %		Auto <u>M</u>
x dB Bandwidth	19.12 MHz	x dB	-6.00 dB		
G			STATUS		
7 40 0 10 0		0 ANITO (000 4		040 T	<u> </u>

Plot 7-18. 6dB Bandwidth Plot MIMO ANT2 (802.11ax OFDMA – 242 Tones – Ch. 11)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT					
Test Report S/N:	Test Dates:	EUT Type:	Page 27 of 114				
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	04/03/2023 - 05/18/2023 Portable Tablet					
© 2023 ELEMENT	V9.0 02/01/2019						



7.3 Output Power Measurement

Test Overview and Limits

A transmitter antenna terminal of EUT is connected to the input of an RF power sensor. Measurement is made using a broadband power meter capable of making peak and average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

The maximum permissible conducted output power is 1 Watt per 15.247 and RSS-247.

The e.i.r.p. shall not exceed 4 W per RSS-247.

Test Procedure Used

ANSI C63.10-2013 – Section 11.9.1.3 PKPM1 Peak Power Method ANSI C63.10-2013 – Section 11.9.2.3.2 Method AVGPM-G ANSI C63.10-2013 – Section 14.2 Measure-and-Sum Technique

Test Settings

Method PKPM1 (Peak Power Measurement)

Peak 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 pulse sensor employs a VBW = 50MHz so this method was only used for signals whose DTS bandwidth was less than or equal to 50MHz.

Method AVGPM-G (Average Power Measurement)

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 diagrams below.



Figure 7-2. Test Instrument & Measurement Setup for Power Meter Measurements

Test Notes

None.

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT					
Test Report S/N:	Test Dates:	EUT Type:	Dogo 20 of 111				
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 28 of 114				
© 2023 ELEMENT			V9.0 02/01/2019				



	Freq [MHz]	Channel	Tones	RU Index	Detector	Conducted Powers (dBm)	Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
				0	AVG	9.89	30.00	-20.11	-5.83	4.06	36.02	-31.96
					PEAK	15.27	30.00	-14.73	-5.83	9.44	36.02	-26.58
	2412	1	26T	4	AVG	9.77	30.00	-20.23	-5.83	3.94	36.02	-32.08
					PEAK	15.11	30.00	-14.89	-5.83	9.28	36.02	-26.74
				8	AVG	9.02	30.00	-20.98	-5.83	3.19	36.02	-32.83
				Ŭ	PEAK	15.12	30.00	-14.88	-5.83	9.29	36.02	-26.73
		6	26T	0	AVG	9.85	30.00	-20.15	-5.83	4.02	36.02	-32.00
					PEAK	14.73	30.00	-15.27	-5.83	8.90	36.02	-27.12
	2437			4	AVG	9.89	30.00	-20.11	-5.83	4.06	36.02	-31.96
	2.01				PEAK	14.81	30.00	-15.19	-5.83	8.98	36.02	-27.04
N				8	AVG	9.01	30.00	-20.99	-5.83	3.18	36.02	-32.84
Î				Ŭ	PEAK	14.90	30.00	-15.10	-5.83	9.07	36.02	-26.95
2.4GHz	2462			0	AVG	9.79	30.00	-20.21	-5.83	3.96	36.02	-32.06
4					PEAK	15.00	30.00	-15.00	-5.83	9.17	36.02	-26.85
N		11	26T	4	AVG	9.65	30.00	-20.35	-5.83	3.82	36.02	-32.20
	2402				PEAK	15.44	30.00	-14.56	-5.83	9.61	36.02	-26.41
				8	AVG	9.17	30.00	-20.83	-5.83	3.34	36.02	-32.68
				0	PEAK	15.20	30.00	-14.80	-5.83	9.37	36.02	-26.65
				0	AVG	8.42	30.00	-21.58	-5.83	2.59	36.02	-33.43
				0	PEAK	14.54	30.00	-15.46	-5.83	8.71	36.02	-27.31
	2467	12	26T	4	AVG	8.75	30.00	-21.25	-5.83	2.92	36.02	-33.10
	2407	12	201	4	PEAK	14.94	30.00	-15.06	-5.83	9.11	36.02	-26.91
				8	AVG	8.03	30.00	-21.97	-5.83	2.20	36.02	-33.82
				0	PEAK	13.72	30.00	-16.28	-5.83	7.89	36.02	-28.13
				0	AVG	2.73	30.00	-27.27	-5.83	-3.10	36.02	-39.12
				0	PEAK	8.74	30.00	-21.26	-5.83	2.91	36.02	-33.11
	2472	13	26T	4	AVG	2.62	30.00	-27.38	-5.83	-3.21	36.02	-39.23
	2412	15	201	4	PEAK	8.52	30.00	-21.48	-5.83	2.69	36.02	-33.33
				8 -	AVG	2.01	30.00	-27.99	-5.83	-3.82	36.02	-39.84
				0	PEAK	7.21	30.00	-22.79	-5.83	1.38	36.02	-34.64

Table 7-2. Conducted Output Power Measurements SISO ANT2 (26 Tones)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT					
Test Report S/N:	Test Dates:	EUT Type:	Dogo 20 of 114				
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 29 of 114				
© 2023 ELEMENT	V9.0 02/01/2019						



	Freq [MHz]	Channel	Tones	RU Index	Detector	Conducted Powers (dBm)	Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
				37	AVG	12.91	30.00	-17.09	-5.83	7.08	36.02	-28.94
				37	PEAK	17.77	30.00	-12.23	-5.83	11.94	36.02	-24.08
	2412	1	52T	38	AVG	12.94	30.00	-17.06	-5.83	7.11	36.02	-28.91
	2412	1	521	30	PEAK	18.09	30.00	-11.91	-5.83	12.26	36.02	-23.76
				40	AVG	12.64	30.00	-17.36	-5.83	6.81	36.02	-29.21
				40	PEAK	18.40	30.00	-11.60	-5.83	12.57	36.02	-23.45
				37 38	AVG	12.92	30.00	-17.08	-5.83	7.09	36.02	-28.93
					PEAK	18.13	30.00	-11.87	-5.83	12.30	36.02	-23.72
	2437	6	52T		AVG	12.97	30.00	-17.03	-5.83	7.14	36.02	-28.88
	2437	б	521		PEAK	18.15	30.00	-11.85	-5.83	12.32	36.02	-23.70
				40	AVG	12.57	30.00	-17.43	-5.83	6.74	36.02	-29.28
N				40	PEAK	18.51	30.00	-11.49	-5.83	12.68	36.02	-23.34
2.4GHz	2462			37	AVG	12.90	30.00	-17.10	-5.83	7.07	36.02	-28.95
Ģ				01	PEAK	18.80	30.00	-11.20	-5.83	12.97	36.02	-23.05
ন্		11	52T	38	AVG	12.77	30.00	-17.23	-5.83	6.94	36.02	-29.08
2					PEAK	18.44	30.00	-11.56	-5.83	12.61	36.02	-23.41
				40	AVG	12.35	30.00	-17.65	-5.83	6.52	36.02	-29.50
					PEAK	18.47	30.00	-11.53	-5.83	12.64	36.02	-23.38
				37	AVG	8.65	30.00	-21.35	-5.83	2.82	36.02	-33.20
				57	PEAK	15.24	30.00	-14.76	-5.83	9.41	36.02	-26.61
	2467	12	52T	38	AVG	8.79	30.00	-21.21	-5.83	2.96	36.02	-33.06
	2407	12	521	50	PEAK	14.96	30.00	-15.04	-5.83	9.13	36.02	-26.89
				40	AVG	8.05	30.00	-21.95	-5.83	2.22	36.02	-33.80
				-10	PEAK	14.08	30.00	-15.92	-5.83	8.25	36.02	-27.77
				37	AVG	2.74	30.00	-27.26	-5.83	-3.09	36.02	-39.11
				01	PEAK	9.32	30.00	-20.68	-5.83	3.49	36.02	-32.53
	2472	13	52T	38	AVG	2.83	30.00	-27.17	-5.83	-3.00	36.02	-39.02
	2412	15	521	30	PEAK	9.33	30.00	-20.67	-5.83	3.50	36.02	-32.52
				40	AVG	2.03	30.00	-27.97	-5.83	-3.80	36.02	-39.82
				40	PEAK	8.52	30.00	-21.48	-5.83	2.69	36.02	-33.33

Table 7-3. Conducted Output Power Measurements SISO ANT2 (52 Tones)

	Freq [MHz]	Channel	Tones	RU Index	Detector	Conducted Powers (dBm)	Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
				53	AVG	14.58	30.00	-15.42	-5.83	8.75	36.02	-27.27
	2412	1	106T	- 55	PEAK	19.97	30.00	-10.03	-5.83	14.14	36.02	-21.88
	2412		1001	54	AVG	14.66	30.00	-15.34	-5.83	8.83	36.02	-27.19
			54	PEAK	20.26	30.00	-9.74	-5.83	14.43	36.02	-21.59	
				53	AVG	14.61	30.00	-15.39	-5.83	8.78	36.02	-27.24
	2437	6	106T		PEAK	20.38	30.00	-9.62	-5.83	14.55	36.02	-21.47
N	2437	0	1001	54	AVG	14.67	30.00	-15.33	-5.83	8.84	36.02	-27.18
I					PEAK	20.01	30.00	-9.99	-5.83	14.18	36.02	-21.84
.4G	2462	11	106T	53	AVG	14.86	30.00	-15.14	-5.83	9.03	36.02	-26.99
<u> </u>					PEAK	19.34	30.00	-10.66	-5.83	13.51	36.02	-22.51
N	2402			54	AVG	14.61	30.00	-15.39	-5.83	8.78	36.02	-27.24
				54	PEAK	20.06	30.00	-9.94	-5.83	14.23	36.02	-21.79
				53	AVG	8.76	30.00	-21.24	-5.83	2.93	36.02	-33.09
	2467	12	106T		PEAK	14.83	30.00	-15.17	-5.83	9.00	36.02	-27.02
	2407	12	1001	54	AVG	8.25	30.00	-21.75	-5.83	2.42	36.02	-33.60
				34	PEAK	14.31	30.00	-15.69	-5.83	8.48	36.02	-27.54
				53	AVG	2.87	30.00	-27.13	-5.83	-2.96	36.02	-38.98
	2472	13	106T	53	PEAK	9.09	30.00	-20.91	-5.83	3.26	36.02	-32.76
	2412	10	1061	54	AVG	2.13	30.00	-27.87	-5.83	-3.70	36.02	-39.72
				54	PEAK	8.08	30.00	-21.92	-5.83	2.25	36.02	-33.77

Table 7-4. Conducted Output Power Measurements SISO ANT2 (106 Tones)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT					
Test Report S/N:	Test Dates:	EUT Type:					
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 30 of 114				
© 2023 ELEMENT	•	V9.0 02/01/2019					



	Freq [MHz]	Channel	Tones	RU Index	Detector	Conducted Powers (dBm)	Conducted Power Limit [dBm]	Conducted Power Margin [dB]	Ant. Gain [dBi]	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
	2412	1	242T	61	AVG	16.45	30.00	-13.55	-5.83	10.62	36.02	-25.40
	2412		2421	01	PEAK	21.67	30.00	-8.33	-5.83	15.84	36.02	-20.18
	2417	2	242T	61	AVG	16.99	30.00	-13.01	-5.83	11.16	36.02	-24.86
	2417	2	2421	01	PEAK	21.97	30.00	-8.03	-5.83	16.14	36.02	-19.88
	2422	3	242T	61	AVG	17.43	30.00	-12.57	-5.83	11.60	36.02	-24.42
N	2422	5	2421	01	PEAK	23.61	30.00	-6.39	-5.83	17.78	36.02	-18.24
I	2437	6	242T	61	AVG	17.25	30.00	-12.75	-5.83	11.42	36.02	-24.60
Ģ	2437	0	2421	01	PEAK	22.61	30.00	-7.39	-5.83	16.78	36.02	-19.24
4	2452	9	242T	61	AVG	17.76	30.00	-12.24	-5.83	11.93	36.02	-24.09
2	2432	9	2421	01	PEAK	24.19	30.00	-5.81	-5.83	18.36	36.02	-17.66
	2457	10	242T	61	AVG	16.84	30.00	-13.16	-5.83	11.01	36.02	-25.01
	2437	10	2421	01	PEAK	21.84	30.00	-8.16	-5.83	16.01	36.02	-20.01
	2462	11	242T	61	AVG	15.65	30.00	-14.35	-5.83	9.82	36.02	-26.20
	2402	11	2421	01	PEAK	19.84	30.00	-10.16	-5.83	14.01	36.02	-22.01
	2467	12	242T	61	AVG	8.57	30.00	-21.43	-5.83	2.74	36.02	-33.28
	2407	12	2421	01	PEAK	14.57	30.00	-15.43	-5.83	8.74	36.02	-27.28
	2472	13	242T	61	AVG	2.53	30.00	-27.47	-5.83	-3.30	36.02	-39.32
	2472	13	2421	01	PEAK	8.66	30.00	-21.34	-5.83	2.83	36.02	-33.19

Table 7-5. Conducted Output Power Measurements SISO ANT2 (242 Tones)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT					
Test Report S/N:	Test Dates: EUT Type:		Dogo 21 of 114				
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 31 of 114				
© 2023 ELEMENT	V9.0 02/01/2019						



	Freq [MHz] Channe		Tones	RU Index	Detector	Conc	lucted Power [dBm]	Conducted Power Limit	Power	Directional Ant. Gain	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]					
						ANT1	ANT2	MIMO	[dBm]	Margin [dB]	[dBi]								
				0	AVG	10.48	9.02	12.82	30.00	-17.18	-2.86	9.96	36.02	-26.06					
				0	PEAK	16.07	14.72	18.46	30.00	-11.54	-2.86	15.60	36.02	-20.42					
	2412	1	26T	4	AVG	10.62	9.22	12.99	30.00	-17.01	-2.86	10.13	36.02	-25.89					
	2412	1	201	4	PEAK	15.77	15.47	18.63	30.00	-11.37	-2.86	15.77	36.02	-20.25					
				8	AVG	10.74	8.43	12.75	30.00	-17.25	-2.86	9.89	36.02	-26.13					
				0	PEAK	15.21	15.58	18.41	30.00	-11.59	-2.86	15.55	36.02	-20.47					
				0	AVG	10.47	8.89	12.76	30.00	-17.24	-2.86	9.90	36.02	-26.12					
				0	PEAK	16.35	14.99	18.73	30.00	-11.27	-2.86	15.87	36.02	-20.15					
	2437	6	26T	4	AVG	10.49	9.38	12.98	30.00	-17.02	-2.86	10.12	36.02	-25.90					
	2437	0	201	4	PEAK	16.52	15.08	18.87	30.00	-11.13	-2.86	16.01	36.02	-20.01					
N				8	AVG	11.11	8.19	12.90	30.00	-17.10	-2.86	10.04	36.02	-25.98					
ЧZ				0	PEAK	16.94	14.56	18.92	30.00	-11.08	-2.86	16.06	36.02	-19.96					
()	2462			0	AVG	10.04	9.39	12.74	30.00	-17.26	-2.86	9.88	36.02	-26.14					
2.4GI					PEAK	16.36	14.89	18.70	30.00	-11.30	-2.86	15.84	36.02	-20.18					
N		11	26T	4	AVG	10.10	9.09	12.63	30.00	-17.37	-2.86	9.77	36.02	-26.25					
	2402			-	PEAK	17.10	15.86	19.53	30.00	-10.47	-2.86	16.67	36.02	-19.35					
				8	AVG	10.07	8.17	12.23	30.00	-17.77	-2.86	9.37	36.02	-26.65					
				Ŭ	PEAK	15.68	15.00	18.36	30.00	-11.64	-2.86	15.50	36.02	-20.52					
				0	AVG	5.89	5.11	8.53	30.00	-21.47	-2.86	5.67	36.02	-30.35					
					PEAK	11.90	11.47	14.70	30.00	-15.30	-2.86	11.84	36.02	-24.18					
	2467	12	26T	4	AVG	5.65	5.16	8.42	30.00	-21.58	-2.86	5.56	36.02	-30.46					
	2407	12	201	-	PEAK	12.12	11.28	14.73	30.00	-15.27	-2.86	11.87	36.02	-24.15					
				8	AVG	5.28	5.03	8.17	30.00	-21.83	-2.86	5.31	36.02	-30.71					
									Ŭ	PEAK	5.58	10.67	11.84	30.00	-18.16	-2.86	8.98	36.02	-27.04
				0	AVG	0.16	-0.26	2.97	30.00	-27.03	-2.86	0.11	36.02	-35.92					
					PEAK	6.77	6.35	9.58	30.00	-20.42	-2.86	6.72	36.02	-29.31					
	2472	13	26T	4	AVG	0.05	-0.22	2.93	30.00	-27.07	-2.86	0.07	36.02	-35.95					
	2-112	15	201		PEAK	6.95	6.47	9.73	30.00	-20.27	-2.86	6.87	36.02	-29.15					
						8	AVG	-0.89	-1.01	2.06	30.00	-27.94	-2.86	-0.80	36.02	-36.82			
				0	PEAK	5.54	4.96	8.27	30.00	-21.73	-2.86	5.41	36.02	-30.61					

Table 7-6. Conducted Output Power Measurements MIMO (26 Tones)

	Freq [MHz]	Channel	Tones	RU Index	Detector	Cond	lucted Power [dBm]	Conducted Power Limit	Conducted Power	Directional Ant. Gain	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
						ANT1	ANT2	MIMO	[dBm]	Margin [dB]	[dBi]	[автіј	сили (автиј	wargin [ub]
				37	AVG	13.52	12.01	15.84	30.00	-14.16	-2.86	12.98	36.02	-23.04
				37	PEAK	19.45	18.11	21.84	30.00	-8.16	-2.86	18.98	36.02	-17.04
	2412	1	52T	38	AVG	13.41	12.11	15.82	30.00	-14.18	-2.86	12.96	36.02	-23.06
	2412	1	521	30	PEAK	19.22	18.39	21.84	30.00	-8.16	-2.86	18.98	36.02	-17.05
				40	AVG	13.29	12.60	15.97	30.00	-14.03	-2.86	13.11	36.02	-22.91
				40	PEAK	18.65	18.94	21.81	30.00	-8.19	-2.86	18.95	36.02	-17.07
				37	AVG	12.92	12.02	15.50	30.00	-14.50	-2.86	12.64	36.02	-23.38
				57	PEAK	19.40	18.58	22.02	30.00	-7.98	-2.86	19.16	36.02	-16.86
	2437	6	52T	38	AVG	12.82	12.58	15.71	30.00	-14.29	-2.86	12.85	36.02	-23.17
	2437		521	30	PEAK	19.80	18.22	22.09	30.00	-7.91	-2.86	19.23	36.02	-16.79
				40	AVG	13.50	12.34	15.97	30.00	-14.03	-2.86	13.11	36.02	-22.91
N				40	PEAK	20.10	18.03	22.20	30.00	-7.80	-2.86	19.34	36.02	-16.68
I	2462			37	AVG	13.23	12.58	15.93	30.00	-14.07	-2.86	13.07	36.02	-22.95
4G				- 57	PEAK	19.46	18.42	21.98	30.00	-8.02	-2.86	19.12	36.02	-16.90
		11	52T	38	AVG	12.91	12.31	15.63	30.00	-14.37	-2.86	12.77	36.02	-23.25
N	2402				PEAK	19.93	18.62	22.33	30.00	-7.67	-2.86	19.47	36.02	-16.55
				40	AVG	12.90	12.51	15.72	30.00	-14.28	-2.86	12.86	36.02	-23.16
				40	PEAK	18.84	19.05	21.96	30.00	-8.04	-2.86	19.10	36.02	-16.92
				37	AVG	5.87	5.43	8.67	30.00	-21.33	-2.86	5.81	36.02	-30.21
				57	PEAK	12.58	11.47	15.07	30.00	-14.93	-2.86	12.21	36.02	-23.81
	2467	12	52T	38	AVG	5.88	5.31	8.61	30.00	-21.39	-2.86	5.75	36.02	-30.27
	2407	12	521	50	PEAK	12.55	11.55	15.09	30.00	-14.91	-2.86	12.23	36.02	-23.79
				40	AVG	5.33	4.98	8.17	30.00	-21.83	-2.86	5.31	36.02	-30.71
				40	PEAK	11.51	11.29	14.41	30.00	-15.59	-2.86	11.55	36.02	-24.47
				37	AVG	-0.17	0.09	2.97	30.00	-27.03	-2.86	0.11	36.02	-35.91
				57	PEAK	6.65	6.47	9.57	30.00	-20.43	-2.86	6.71	36.02	-29.31
	2472	13	52T	38	AVG	-0.21	0.02	2.92	30.00	-27.08	-2.86	0.06	36.02	-35.96
	2-112	15	021	50	PEAK	6.40	6.45	9.44	30.00	-20.56	-2.86	6.58	36.02	-29.45
				40	AVG	-0.84	-0.52	2.33	30.00	-27.67	-2.86	-0.53	36.02	-36.55
				40	PEAK	6.14	6.07	9.12	30.00	-20.88	-2.86	6.26	36.02	-29.77

Table 7-7. Conducted Output Power Measurements MIMO (52 Tones)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT			
Test Report S/N:	Test Dates:	EUT Type:	Dara 00 4444		
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 32 of 114		
© 2023 ELEMENT	-		V9.0 02/01/2019		



	Freq [MHz]	Channel	Tones	RU Index	Detector	Conducted Power [dBm]			Conducted Power Limit	Conducted Power	Directional Ant. Gain	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p.												
						ANT1	ANT2	MIMO	[dBm]	Margin [dB]	[dBi]	Lapuil		Margin [dB]												
				53	AVG	15.74	14.05	17.99	30.00	-12.01	-2.86	15.13	36.02	-20.89												
	2412	1	106T	- 55	PEAK	21.37	19.15	23.41	30.00	-6.59	-2.86	20.55	36.02	-15.47												
	2412	'	1001	54	AVG	14.79	14.61	17.71	30.00	-12.29	-2.86	14.85	36.02	-21.17												
				54	PEAK	21.29	20.36	23.86	30.00	-6.14	-2.86	21.00	36.02	-15.02												
		2437 6 106T		53	AVG	15.38	14.32	17.89	30.00	-12.11	-2.86	15.03	36.02	-20.99												
	2/37		106T	- 55	PEAK	21.67	20.65	24.20	30.00	-5.80	-2.86	21.34	36.02	-14.68												
N	2457			0 1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1061	54	AVG	14.99	14.37	17.70	30.00	-12.30	-2.86	14.84	36.02	-21.18
I																										
4G			11 106T	106T				53	AVG	15.25	14.26	17.79	30.00	-12.21	-2.86	14.93	36.02	-21.09								
	2462	2462 11 10				PEAK	21.37	20.16	23.82	30.00	-6.18	-2.86	20.96	36.02	-15.06											
2	2402				1001	1001	1001	54	AVG	14.64	14.37	17.52	30.00	-12.48	-2.86	14.66	36.02	-21.36								
													34	PEAK	20.41	20.05	23.24	30.00	-6.76	-2.86	20.38	36.02	-15.64			
				53	AVG	5.98	5.42	8.72	30.00	-21.28	-2.86	5.86	36.02	-30.16												
	2467	12 106	12	67 12 106T PEAK 12.05 11.89 14.98	14.98	30.00	-15.02	-2.86	12.12	36.02	-23.90															
	2407	12 1001			2 1001	1001	1001	1001	1001	1001	1001	1001	1001	54	AVG	5.23	5.11	8.18	30.00	-21.82	-2.86	5.32	36.02	-30.70		
						34	PEAK	11.94	11.21	14.60	30.00	-15.40	-2.86	11.74	36.02	-24.28										
			13 106T	53	AVG	-0.21	0.15	2.98	30.00	-27.02	-2.86	0.12	36.02	-35.90												
	2472	13			PEAK	6.48	6.56	9.53	30.00	-20.47	-2.86	6.67	36.02	-29.35												
	2-472	.5	1001	54	AVG	-0.94	-0.52	2.29	30.00	-27.71	-2.86	-0.57	36.02	-36.60												
										54	PEAK	6.06	4.52	8.37	30.00	-21.63	-2.86	5.51	36.02	-30.51						

 Table 7-8. Conducted Output Power Measurements MIMO (106 Tones)

	Freq [MHz] Channel	I Tones	RU Index	Detector	Conducted Power [dBm]			Conducted Power Limit	Conducted Power	Directional Ant. Gain	Max e.i.r.p.	Max e.i.r.p.	e.i.r.p. Margin [dB]			
						ANT1	ANT2	MIMO	[dBm]	Margin [dB]	[dBi]	Lapuil	Ennix [GBIII]	Margin [ub]		
	2412 1	1	242T	61	AVG	16.99	15.60	19.36	30.00	-10.64	-2.86	16.50	36.02	-19.52		
		1	2421	01	PEAK	22.01	21.03	24.56	30.00	-5.44	-2.86	Max e.i.r.p. [dBm] Max e.i.r.p. Limit [dBm] Max 16.50 36.02 Max 21.70 36.02 Max 17.30 36.02 Max 17.49 36.02 Max 22.94 36.02 Max 17.49 36.02 Max 22.97 36.02 Max 17.80 36.02 Max 17.81 36.02 Max 23.11 36.02 Max 17.51 36.02 Max 17.51 36.02 Max 17.51 36.02 Max 15.99 36.02 Max 21.33 36.02 Max 10.19 36.02 Max	-14.32			
	2417	2	242T	61	AVG	17.63	16.61	20.16	30.00	-9.84	-2.86	17.30	36.02	-18.72		
	2417		2421	01	PEAK	23.31	22.20	25.80	30.00	-4.20	-2.86	22.94	36.02	-13.08		
	2422	2	3	3 242T	61	AVG	17.23	17.44	20.35	30.00	-9.65	-2.86	17.49	36.02	-18.53	
N	2422 3 2421	01	PEAK	22.07	22.53	25.32	30.00	-4.68	-2.86	22.46	36.02	-13.56				
I	2437	6	242T	61	AVG	18.01	17.26	20.66	30.00	-9.34	-2.86	17.80	36.02	-18.22		
Ģ	9 2437	0			PEAK	23.48	22.05	25.83	30.00	-4.17	-2.86	22.97	36.02	-13.05		
-	2452	2452 9 242T	242T	61	AVG	17.60	17.74	20.68	30.00	-9.32	-2.86	17.82	36.02	-18.20		
2	2432		2721	2421	2721	01	PEAK	23.01	22.90	25.97	30.00	-4.03	-2.86	23.11	36.02	-12.91
	2457	10 2421	242T	61	AVG	17.89	16.75	20.37	30.00	-9.63	-2.86	17.51	36.02	-18.51		
	2437		10	2421	01	PEAK	23.04	21.47	25.34	30.00	-4.66	-2.86	22.48	36.02	-13.54	
	2462	11	0407	0407	242T	61	AVG	16.36	15.24	18.85	30.00	-11.15	-2.86	15.99	36.02	-20.03
	2402		2421	01	PEAK	21.89	20.32	24.19	30.00	-5.81	-2.86	21.33	36.02	-14.69		
	2467	12	242T	61	AVG	5.68	5.31	8.51	30.00	-21.49	-2.86	5.65	36.02	-30.37		
	2407	12	2421	01	PEAK	10.59	9.41	13.05	30.00	-16.95	-2.86	10.19	36.02	-25.83		
	2472	13	242T	61	AVG	0.17	-0.33	2.94	30.00	-27.06	-2.86	0.08	36.02	-35.94		
	2472	13	2421	01	PEAK	5.32	4.49	7.94	30.00	-22.06	-2.86	5.08	36.02	-30.95		

Table 7-9. Conducted Output Power Measurements MIMO (242 Tones)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT			
Test Report S/N:	Test Dates:	EUT Type:	Dogo 22 of 114		
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 33 of 114		
© 2023 ELEMENT			V9.0 02/01/2019		



Note:

Per ANSI C63.10-2013 Section 14.2, 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.

Sample MIMO Calculation:

At 2437MHz the average conducted output power was measured to be 18.01 dBm for Antenna 1 and 17.26 dBm for Antenna 2.

Antenna 1 + Antenna 2 = MIMO

(18.01 dBm + 17.26 dBm) = (63.241 mW + 53.211 mW) = 116.452 mW = 20.66 dBm

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT			
Test Report S/N:	Test Dates:	EUT Type:	Dage 24 of 114		
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 34 of 114		
© 2023 ELEMENT	•		V9.0 02/01/2019		



7.4 Power Spectral Density

Test Overview and Limit

The peak power density is measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates, tones configurations, and RU indices were investigated and the worst-case configuration results are reported in this section.

The maximum permissible power spectral density shall not be greater than 8 dBm in any 3 kHz band.

Test Procedure Used

ANSI C63.10-2013 – Section 11.10.2 Method PKPSD ANSI C63.10-2013 – Section 14.3.1 Measure-and-Sum Technique

Test Settings

- 1. Analyzer was set to the center frequency of the DTS channel under investigation
- 2. Span = 1.5 times the DTS channel bandwidth
- 3. RBW = 3kHz
- 4. VBW = 1MHz
- 5. Detector = peak
- 6. Sweep time = auto couple
- 7. Trace mode = max hold
- 8. Trace was allowed to stabilize

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

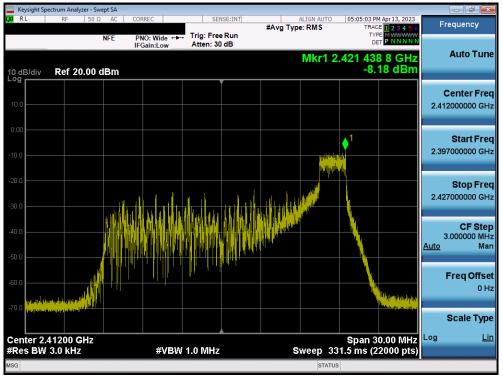
- 1. Based on preliminary measurements, it was determined that, of all of the tone configurations, the 26T configuration produced the worst case power spectral density measurement for partial loaded case. Therefore, only the 26 Tone configuration and 242 Tone data is included in this section.
- 2. The power spectral density for each channel was measured with the RU index showing the highest conducted power.

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT			
Test Report S/N:	Test Dates:	EUT Type:			
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 35 of 114		
© 2023 ELEMENT	·		V9.0 02/01/2019		



7.4.1 SISO Antenna-2 Power Spectral Density Measurements

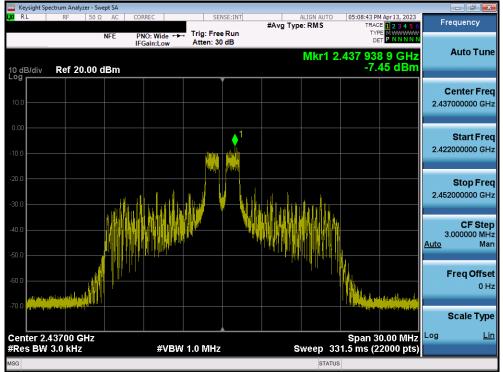
Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured Power Spectral Density [dBm]	Maximum Permissible Power Density [dBm / 3kHz]	Margin [dB]	Pass / Fail
2412	1	ax	26T	MCS0	-8.18	8.00	-16.18	Pass
2437	6	ax	26T	MCS0	-7.45	8.00	-15.45	Pass
2462	11	ax	26T	MCS0	-8.67	8.00	-16.67	Pass
2412	1	ax	242T	MCS0	-7.89	8.00	-15.89	Pass
2437	6	ax	242T	MCS0	-8.28	8.00	-16.28	Pass
2462	11	ax	242T	MCS0	-7.76	8.00	-15.76	Pass



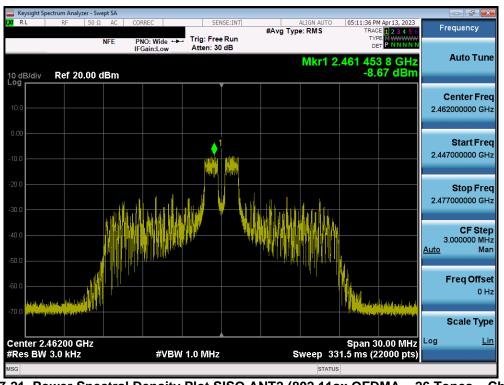
Plot 7-19. Power Spectral Density Plot SISO ANT2 (802.11ax OFDMA – 26 Tones – Ch. 1)

FCC ID: A3LSMX910 IC: 649E-SMX910		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 26 of 114
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 36 of 114
© 2023 ELEMENT	•	·	V9.0 02/01/2019





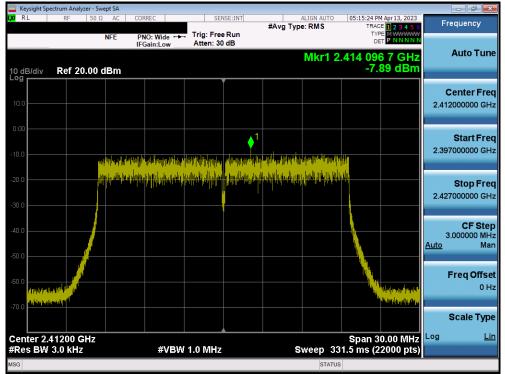
Plot 7-20. Power Spectral Density Plot SISO ANT2 (802.11ax OFDMA – 26 Tones – Ch. 6)



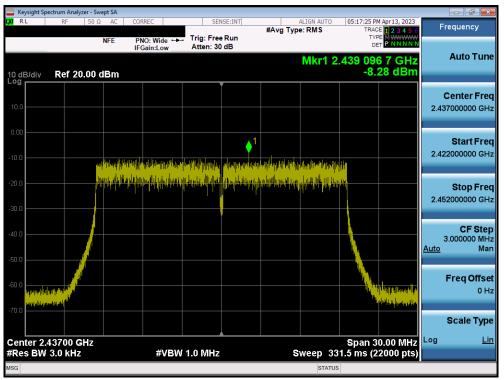
Plot 7-21. Power Spectral Density Plot SISO ANT2 (802.11ax OFDMA - 26 Tones - Ch. 11)

FCC ID: A3LSMX910 IC: 649E-SMX910	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates: EUT Type:		Dogo 27 of 114
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 37 of 114
© 2023 ELEMENT	•		V9.0 02/01/2019





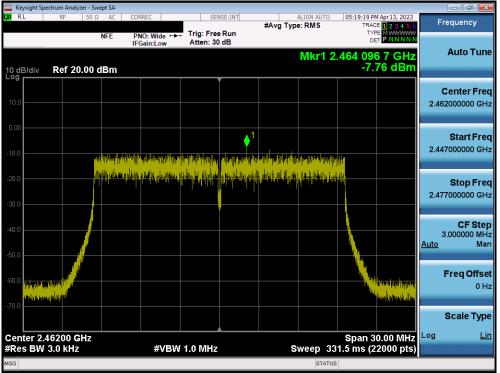
Plot 7-22. Power Spectral Density Plot SISO ANT2 (802.11ax OFDMA - 242 Tones - Ch. 1)



Plot 7-23. Power Spectral Density Plot SISO ANT2 (802.11ax OFDMA - 242 Tones - Ch. 6)

FCC ID: A3LSMX910 IC: 649E-SMX910	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	Test Dates: EUT Type:	
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 38 of 114
© 2023 ELEMENT			V9.0 02/01/2019





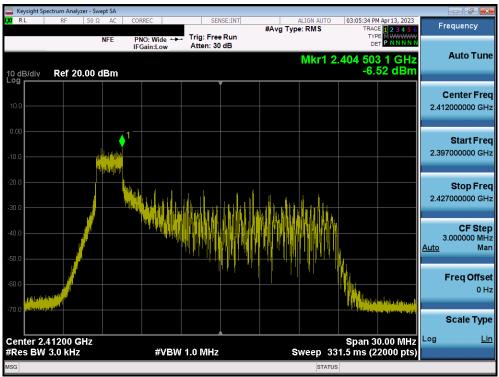
Plot 7-24. Power Spectral Density Plot SISO ANT2 (802.11ax OFDMA - 242 Tones - Ch. 11)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	Test Dates: EUT Type:	
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 39 of 114
© 2023 ELEMENT	•	·	V9.0 02/01/2019



7.4.2 MIMO Power Spectral Density Measurements

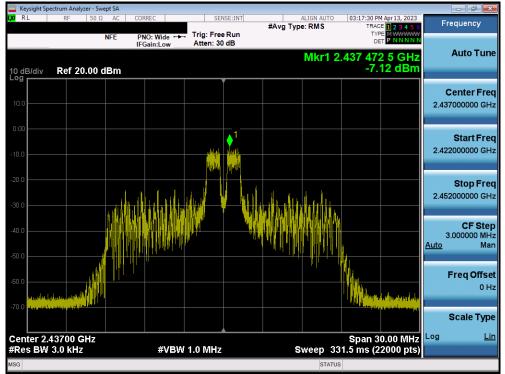
Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	ANT 1 Power Spectral Density [dBm]	ANT 2 Power Spectral Density [dBm]	Summed MIMO Power Spectral Density [dBm]	Maximum Permissible Power Density [dBm / 3kHz]	Margin [dB]	Pass / Fail
2412	1	ax	26T	MCS0	-6.52	-8.57	-4.41	8.00	-12.41	Pass
2437	6	ax	26T	MCS0	-7.12	-8.50	-4.75	8.00	-12.75	Pass
2462	11	ax	26T	MCS0	-8.06	-8.17	-5.11	8.00	-13.11	Pass
2412	1	ax	242T	MCS0	-8.42	-8.56	-5.48	8.00	-13.48	Pass
2437	6	ax	242T	MCS0	-8.09	-8.48	-5.27	8.00	-13.27	Pass
2462	11	ax	242T	MCS0	-7.92	-8.24	-5.07	8.00	-13.07	Pass



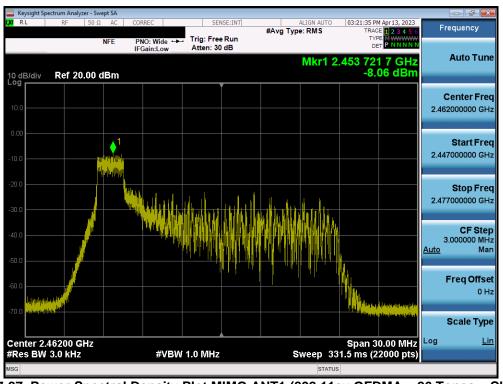
Plot 7-25. Power Spectral Density Plot MIMO ANT1 (802.11ax OFDMA – 26 Tones – Ch. 1)

FCC ID: A3LSMX910 IC: 649E-SMX910	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	Test Dates: EUT Type:	
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 40 of 114
© 2023 ELEMENT	•		V9.0 02/01/2019





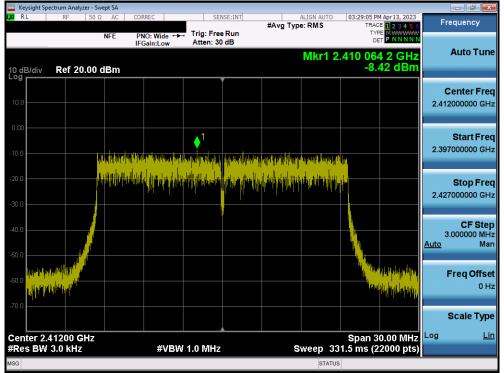
Plot 7-26. Power Spectral Density Plot MIMO ANT1 (802.11ax OFDMA - 26 Tones - Ch. 6)



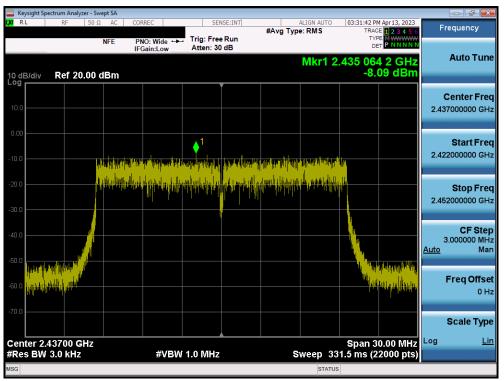
Plot 7-27. Power Spectral Density Plot MIMO ANT1 (802.11ax OFDMA - 26 Tones - Ch. 11)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	st Dates: EUT Type:	
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 41 of 114
© 2023 ELEMENT			V9.0 02/01/2019





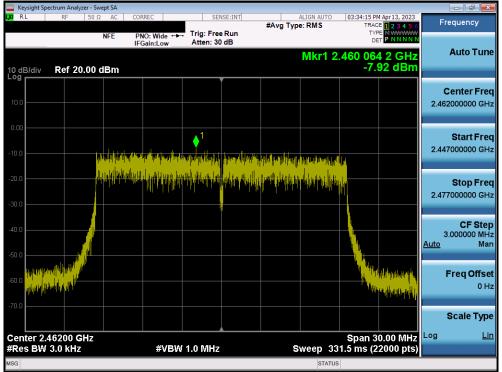
Plot 7-28. Power Spectral Density Plot MIMO ANT1 (802.11ax OFDMA – 242 Tones – Ch. 1)



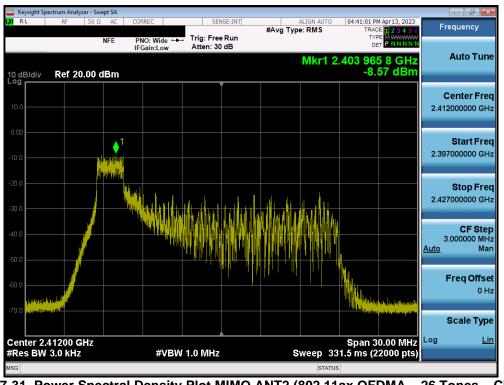
Plot 7-29. Power Spectral Density Plot MIMO ANT1 (802.11ax OFDMA - 242 Tones - Ch. 6)

FCC ID: A3LSMX910 IC: 649E-SMX910	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	Test Dates: EUT Type:	
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 42 of 114
© 2023 ELEMENT			V9.0 02/01/2019





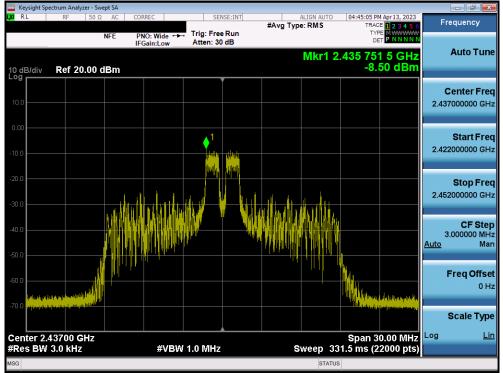
Plot 7-30. Power Spectral Density Plot MIMO ANT1 (802.11ax OFDMA – 242 Tones – Ch. 11)



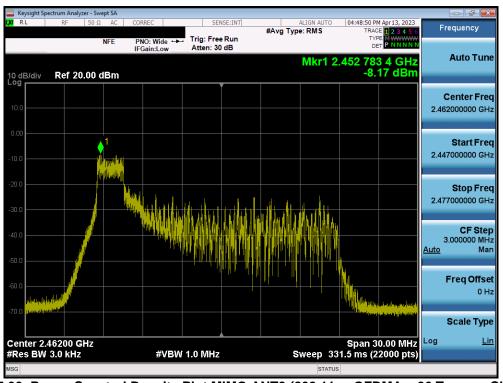
Plot 7-31. Power Spectral Density Plot MIMO ANT2 (802.11ax OFDMA - 26 Tones - Ch. 1)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates: EUT Type:		Dogo 42 of 114
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 43 of 114
© 2023 ELEMENT		·	V9.0 02/01/2019





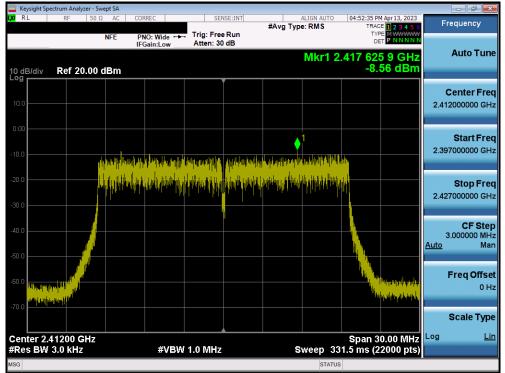
Plot 7-32. Power Spectral Density Plot MIMO ANT2 (802.11ax OFDMA - 26 Tones - Ch. 6)



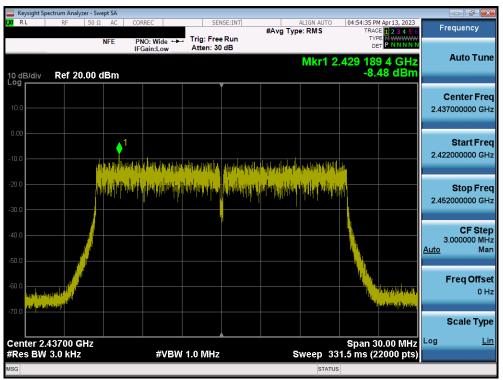
Plot 7-33. Power Spectral Density Plot MIMO ANT2 (802.11ax OFDMA - 26 Tones - Ch. 11)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	st Dates: EUT Type:	
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 44 of 114
© 2023 ELEMENT			V9.0 02/01/2019





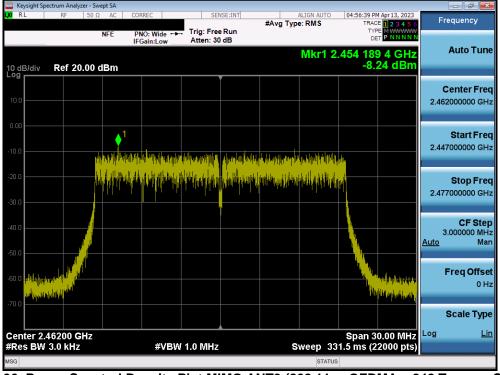
Plot 7-34. Power Spectral Density Plot MIMO ANT2 (802.11ax OFDMA – 242 Tones – Ch. 1)



Plot 7-35. Power Spectral Density Plot MIMO ANT2 (802.11ax OFDMA - 242 Tones - Ch. 6)

FCC ID: A3LSMX910 IC: 649E-SMX910	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	Test Dates: EUT Type:	
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 45 of 114
© 2023 ELEMENT			V9.0 02/01/2019





Plot 7-36. Power Spectral Density Plot MIMO ANT2 (802.11ax OFDMA – 242 Tones – Ch. 11)

Note:

Per ANSI C63.10-2013 Section 14.3.1, 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 2412MHz the average conducted power spectral density was measured to be -6.52 dBm for Antenna 1 and -8.57 dBm for Antenna 2.

Antenna 1 + Antenna 2 = MIMO

(-6.52 dBm + -8.57 dBm) = (0.223 mW + 0.139 mW) = 0.362 mW = -4.41 dBm

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	Test Dates: EUT Type: 04/03/2023 - 05/18/2023 Portable Tablet	
1M2303200036-05.A3L	04/03/2023 - 05/18/2023		
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7.5 Conducted Band Edge Emissions

Test Overview and Limit

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates, tone configurations, and RU indices were investigated to determine the worst-case configuration. For the following out of band conducted emissions plots at the band edge, the EUT was set to a data rate of MCS0 in 802.11ax mode as this setting produced the worst-case emissions.

The limit for out-of-band spurious emissions at the band edge is 30dB below the fundamental emission level, as determined from the in-band power measurement of the DTS channel performed in a 100kHz bandwidth per the PSD procedure (Section 7.4).

Test Procedure Used

ANSI C63.10-2013 - Section 11.11.3

Test Settings

- 1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
- 2. Span was set large enough so as to capture all out of band emissions near the band edge
- 3. RBW = 100kHz
- 4. VBW = 1MHz
- 5. Detector = Peak
- 6. Number of sweep points $\geq 2 \times \text{Span/RBW}$
- 7. Trace mode = max hold
- 8. Sweep time = auto couple
- 9. The trace was allowed to stabilize

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

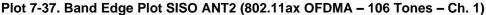
None.

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:		
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 47 of 114
© 2023 ELEMENT	·	·	V9.0 02/01/2019



7.5.1 SISO Antenna-2 Conducted Emissions at the Band Edge







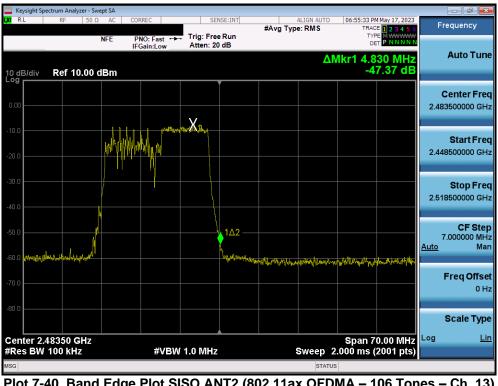
Plot 7-38. Band Edge Plot SISO ANT2 (802.11ax OFDMA - 106 Tones - Ch. 11)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT		
Test Report S/N:	Test Dates:	EUT Type:	Dama 40 af 444	
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 48 of 114	
© 2023 ELEMENT			V9.0 02/01/2019	



	ectrum Analyz				_							_	
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		N	FE	PNO: Fa	ist ↔→ ow	Trig: Free Atten: 20		"a)r		т			
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-30.0												2.51	Stop Fre 8500000 GH
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-80.0													Scale Typ
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ISG									STAT				

Plot 7-39. Band Edge Plot SISO ANT2 (802.11ax OFDMA – 106 Tones – Ch. 12)



Plot 7-40. Dana Eage Plot SISO ANTZ (ouz. 11ax OFDIVIA = 100 10 nes = Cn. 13)

FCC ID: A3LSMX910 IC: 649E-SMX910		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 40 of 111
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 49 of 114
© 2023 ELEMENT			V9.0 02/01/2019



	ectrum Analyzer - Sv									_	
🚺 RL 🔤	req 2.4000		CORREC GHZ	SEN	SE:INT	#Avg Typ	ALIGN AUTO e: RMS		Apr 13, 2023	F	requency
10 dB/div	Ref 20.00	NFE	PNO: Fast ↔ IFGain:Low	Trig: Free Atten: 30			ΔΜΙ	or 1 21.2	10 MHz 1.34 dB		Auto Tune
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-20.0					}					2.43	Stop Freq 5000000 GHz
-40.0				the production of the second				- Lusher	hale for the second	<u>Auto</u>	CF Step 7.000000 MHz Man
-60.0	ultinnunden	hathy when the	(Nephy April 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1								Freq Offset 0 Hz
	40000 GHz		#\/D14/	4.0.000			Euroon - 2	Span 7	0.00 MHz	Log	Scale Type Lin
#Res BW	ts changed; all	traces cl		1.0 MHz			Sweep 2		2001 pts)		
	to onungeu, an	10000 01	54.54				0				

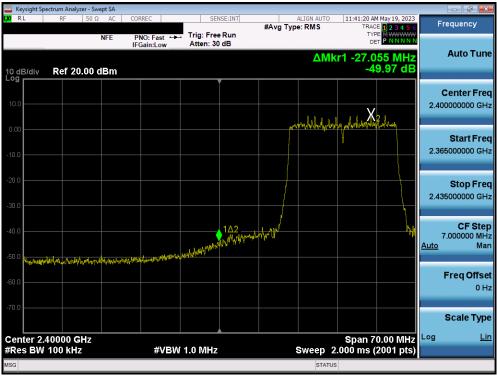
Plot 7-41. Band Edge Plot SISO ANT2 (802.11ax OFDMA – 242 Tones – Ch. 1)

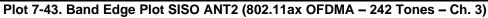


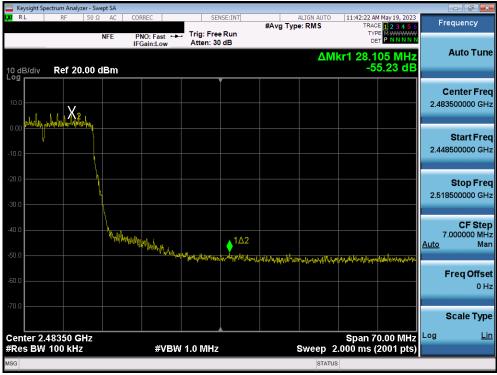
Plot 7-42. Band Edge Plot SISO ANT2 (802.11ax OFDMA – 242 Tones – Ch. 2)

FCC ID: A3LSMX910 IC: 649E-SMX910		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dago 50 of 111
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 50 of 114
© 2023 ELEMENT	•		V9.0 02/01/2019









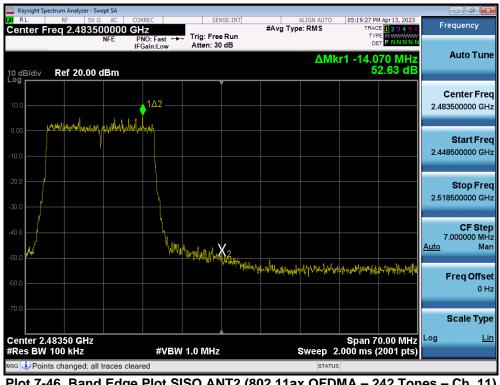
Plot 7-44. Band Edge Plot SISO ANT2 (802.11ax OFDMA - 242 Tones - Ch. 9)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	Dogo E1 of 114
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 51 of 114
© 2023 ELEMENT	· ·		V9.0 02/01/2019





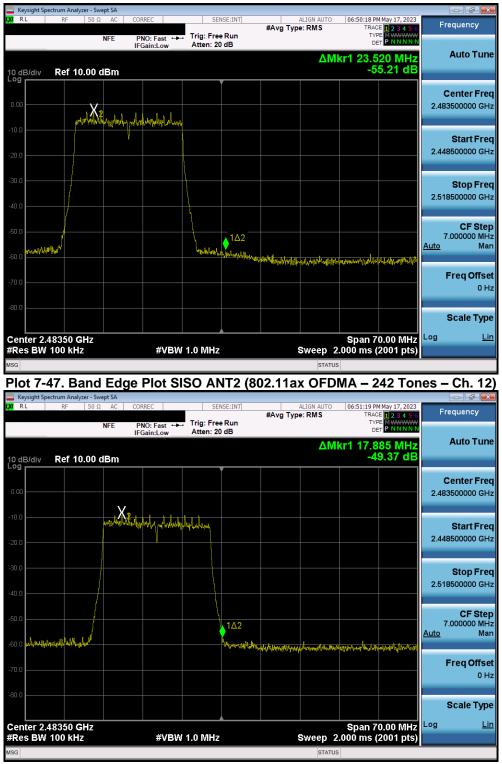
Plot 7-45. Band Edge Plot SISO ANT2 (802.11ax OFDMA – 242 Tones – Ch. 10)



Plot 7-46. Band Edge Plot SISO ANT2 (802.11ax OFDMA - 242 Tones - Ch. 11)

FCC ID: A3LSMX910 IC: 649E-SMX910	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 52 of 114
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 52 of 114
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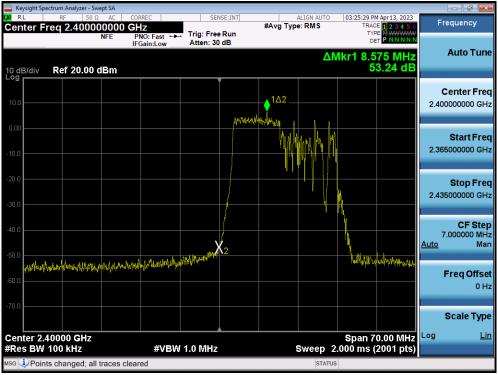


Plot 7-48. Band Edge Plot SISO ANT2 (802.11ax OFDMA – 242 Tones – Ch. 13)

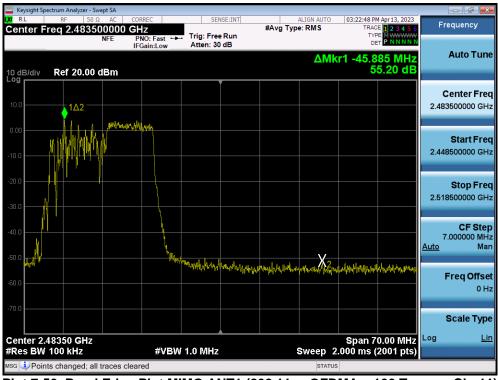
FCC ID: A3LSMX910 IC: 649E-SMX910	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 52 of 111
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 53 of 114
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7.5.2 MIMO Conducted Band Edge Emissions – ANT 1



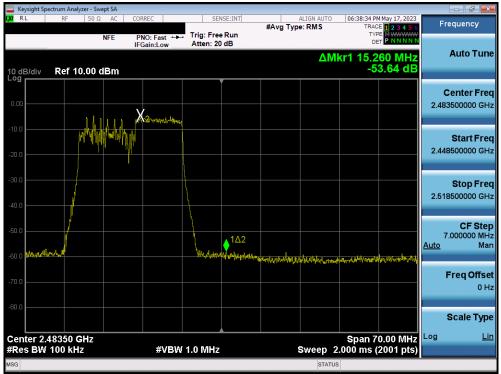
Plot 7-49. Band Edge Plot MIMO ANT1 (802.11ax OFDMA - 106 Tones - Ch. 1)



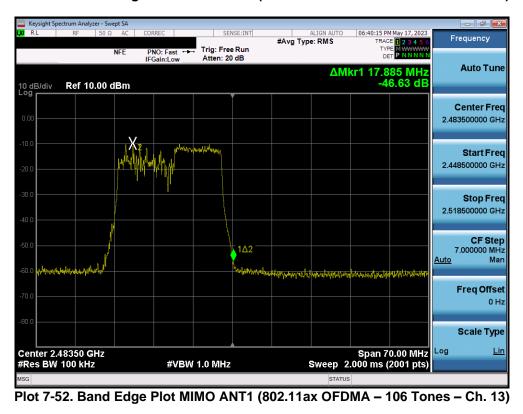
Plot 7-50. Band Edge Plot MIMO ANT1 (802.11ax OFDMA – 106 Tones – Ch. 11)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT		
Test Report S/N:	Test Dates:	EUT Type:	Dage 54 of 114	
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 54 of 114	
© 2023 ELEMENT	·		V9.0 02/01/2019	



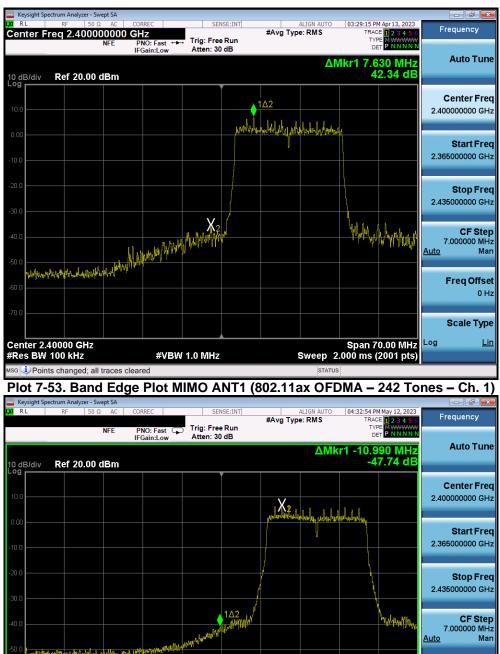


Plot 7-51. Band Edge Plot MIMO ANT1 (802.11ax OFDMA – 106 Tones – Ch. 12)



FCC ID: A3LSMX910 IC: 649E-SMX910	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage FE of 111
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 55 of 114
© 2023 ELEMENT			V9.0 02/01/2019







Plot 7-54. Band Edge Plot MIMO ANT1 (802.11ax OFDMA – 242 Tones – Ch. 2)

FCC ID: A3LSMX910 IC: 649E-SMX910		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo EC of 114
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 56 of 114
© 2023 ELEMENT	<u>.</u>		V9.0 02/01/2019



Center 2.40000 GHz Wei 1.0 MHz Span 70.00 MHz 200 2.45.86 dB Center Freq 2.40000000 GHz 2.000 100 100 100 2.000 100 100 100 2.000 100 100 100 100 2.000 100 100 100 100 100 2.000 100 100 100 100 100 100 2.000 10		ectrum Analyzer - Swep										- d <u>- x</u>
NFE PRO: Fast	LXI RL	RF 50 Ω	AC CO	RREC	SEN	ISE:INT					F	requency
Log Center Freq 2.40000000 GHz 100 X2 100 X3 100 X3 100 X3 100 <			ĬĒ						TYF DE (r1 -15.8			Auto Tune
Start Free Start Free 100 Start Free 200 Start Free 200 Start Free 300 1Δ2 100 CF Step 400 1Δ2 100 Freq Offset 700 Scale Type Center 2.40000 GHz #VBW 1.0 MHz Sweep 2.000 ms (2001 pts)		Rei 20.00 di	Bm		`			X211				
300 102 1								արտեն կերգրություններություններություններություններություններություններություններություններություններություններ Դուստեստեստեստեստեստեստեստեստեստեստեստեստես	hilo, philophilo V		2.36	Start Freq 5000000 GHz
						102	wandlight				2.43	Stop Freq 5000000 GHz
-60.0 -60.0 -70.0	50.0	لەرمەر ئەر بالەر	that almost	al and the second	at the fall of the fall		L di salere e					CF Step 7.000000 MHz Man
Center 2.40000 GHz Span 70.00 MHz Res BW 100 kHz #VBW 1.0 MHz Sweep 2.000 ms (2001 pts)	-60.0	ny=yarsusususus	INTATION AND AND AND AND AND AND AND AND AND AN									Freq Offset 0 Hz
#Res BW 100 kHz		40000 GHz							Span 7	0.00 MHz	Log	Scale Type <u>Lin</u>
	#Res BW	100 kHz		#VBW	1.0 MHz			Sweep 2	2.000 ms (2001 pts)		

Plot 7-55. Band Edge Plot MIMO ANT1 (802.11ax OFDMA – 242 Tones – Ch. 3)



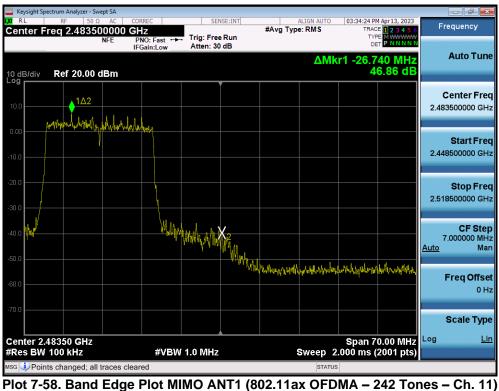
Plot 7-56. Band Edge Plot MIMO ANT1 (802.11ax OFDMA – 242 Tones – Ch. 9)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	Dogo EZ of 114
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 57 of 114
© 2023 ELEMENT		•	V9.0 02/01/2019





Plot 7-57. Band Edge Plot MIMO ANT1 (802.11ax OFDMA - 242 Tones - Ch. 10)



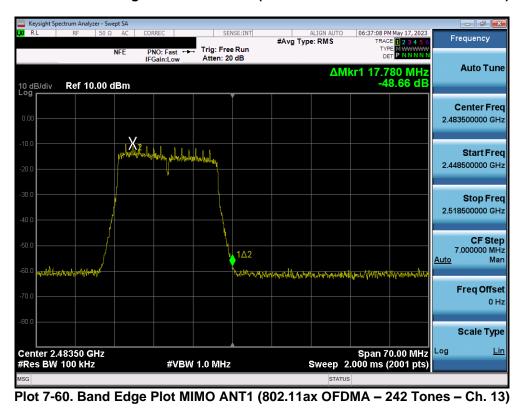
FIGU 7-36. Ballu Euge FIGU MINIO ANTI (602.11ax OFDINA = 242 TOHES = CH. 11)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 50 of 111
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 58 of 114
© 2023 ELEMENT			V9.0 02/01/2019



#Avg Type: RMS Trequency NFE PNO: Fast Trig: Free Run Atten: 20 dB Odl/Add Colspan="2">Trig: Free Run Atten: 20 dB Colspan="2">Trig: Free Run Atten: 20 dB Odl/Add Colspan="2">Odl/Add Colspan="2">Auto Tune Odl/Add Colspan="2">Center Frequency Odl/Add Colspan="2">Auto Tune Odl/Add Colspan="2">Center Frequency Odl/Add Colspan="2">Auto Tune Odl/Add Colspan="2">Center Frequency Auto Tune Odl/Add Colspan="2">Auto Tune Odl/Add Colspan="2">Center Frequency Auto Tune Odl/Add Colspan="2">Center Frequency Auto Tune Odl/Add Colspan="2">Auto Tune Auto Tune Center Frequency Auto Tune Center Frequency Start Frequency Center Frequency Auto Tune Center Frequency Auto Tune Auto Tune Center Frequency		ectrum Analyzer	- Swept SA									
NFE PNO: Fast Trig: Free Run Atten: 20 dB AMkr1 23.240 MHz -53.96 dB Auto Tune 0 dB/div Ref 10.00 dBm -53.96 dB Center Freq 2.483500000 GHz Center Freq 2.483500000 GHz 0 0	L <mark>XI</mark> RL	RF 5	OΩ AC	CORREC	SEN	ISE:INT					FI	equency
Commercial Commercial Center Freq 2.48350000 GHz 000 0			NFE						TYPE	M WWWWW		
0.00 X	10 dB/div	Ref 10.0	0 dBm					ΔM	kr1 23.24 -53	40 MHz 3.96 dB		Auto Tune
100 100	0.00		X ² Lat d									
40 0 40 0	-10.0		a an fragr. I all frag	AT WHEN IN WARNA							2.44	Start Freq 8500000 GHz
1Δ2 1Δ2 4.000 MHz 70.0 1.000000 MHz 1.000000 MHz 8000 1.000000 MHz 1.00000 MHz	-30.0										2.51	Stop Freq 8500000 GHz
700 Image: Constraint of the second seco	-50.0	NUTER			Level Bar	1∆2	hina ta sa			dina dan maring		.000000 MHz
Center 2.48350 GHz Span 70.00 MHz Sweep 2.000 ms (2001 pts)	-70.0							Andrew	a frada Abrada Antar	an a frans da si si si si		-
Res BW 100 kHz #VBW 1.0 MHz Sweep 2.000 ms (2001 pts)	-80.0											Scale Type
			z	#\/B\A	1.0 0.0111-			Swoon_1	Span 70	0.00 MHz	Log	Lin
		TOURNZ		#VBW	TUWHZ			Sweep 2		200 F pts)		

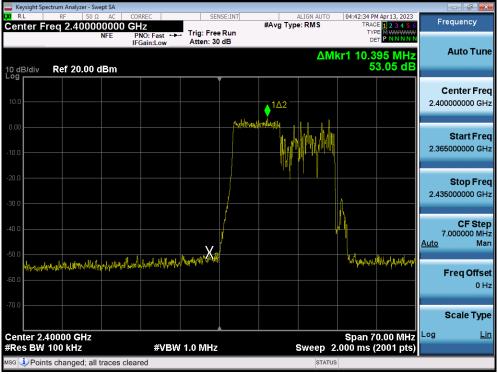
Plot 7-59. Band Edge Plot MIMO ANT1 (802.11ax OFDMA – 242 Tones – Ch. 12)



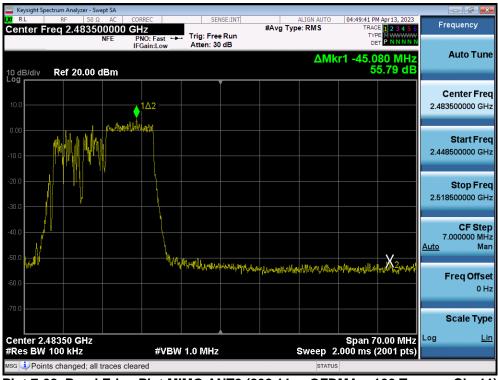
FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	Approved by: Technical Manager		
Test Report S/N:	Test Dates:	EUT Type:	Daga 50 of 111		
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 59 of 114		
© 2023 ELEMENT V9.0 02/01/2					



7.5.3 MIMO Conducted Band Edge Emissions – ANT 2



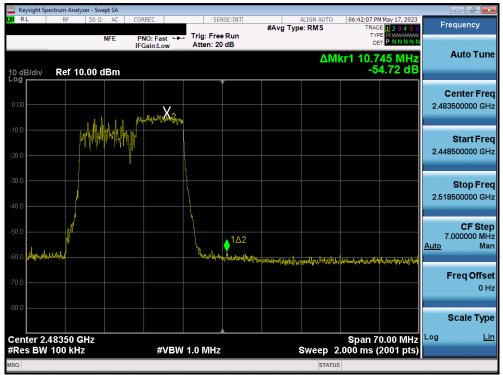
Plot 7-61. Band Edge Plot MIMO ANT2 (802.11ax OFDMA - 106 Tones - Ch. 1)



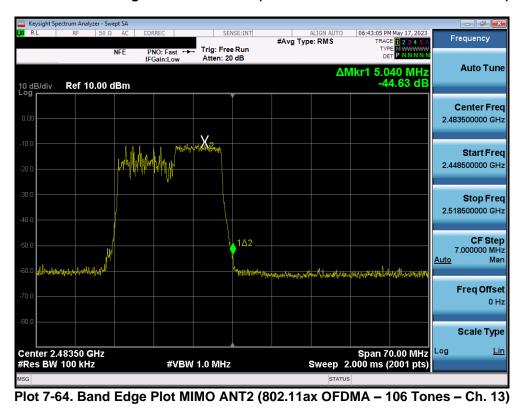
Plot 7-62. Band Edge Plot MIMO ANT2 (802.11ax OFDMA – 106 Tones – Ch. 11)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT			
Test Report S/N:	Test Dates:	EUT Type:	Page 60 of 114		
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	23 - 05/18/2023 Portable Tablet			
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Plot 7-63. Band Edge Plot MIMO ANT2 (802.11ax OFDMA - 106 Tones - Ch. 12)



FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	Dage 61 of 114
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 61 of 114
© 2023 ELEMENT			V9.0 02/01/2019



	ectrum Analyzer - Swept					
Center E	RF 50 Ω req 2.400000		SENSE:INT	ALIGN AUTO #Avg Type: RMS	04:52:43 PM Apr 13, 2023 TRACE 1 2 3 4 5 6	Frequency
Genter 1	NF	E PNO: Fast +++ IFGain:Low	Trig: Free Run Atten: 30 dB		TYPE M WWWWW DET P N N N N N	Auto Truco
10 dB/div Log	Ref 20.00 dB	m		ΔМ	kr1 17.395 MHz 48.88 dB	Auto Tune
			Ĭ	▲ 1∆2		Center Freq
10.0			. n h . J.L. n	internal ter a half the the	Au III	2.400000000 GHz
0.00				is, misterbelieter flerts fretwitt mit in i		Start Freq
-10.0						2.365000000 GHz
-20.0						Stop Freq
-30.0						2.435000000 GHz
-40.0						CF Step
-50.0		Intra	N.//m/m/		monthemanut	7.000000 MHz <u>Auto</u> Man
-50.0	within the provident states and the states of the states o	woom to be well and the second s				Freq Offset
-60.0						0 Hz
-70.0						Scale Type
Center 2	40000 GHz				Span 70.00 MHz	
#Res BW		#VBW	1.0 MHz	Sweep 2	2.000 ms (2001 pts)	
мsg 🧼 Poin	ts changed; all tra	ces cleared		STATUS	3	

Plot 7-65. Band Edge Plot MIMO ANT2 (802.11ax OFDMA – 242 Tones – Ch. 1)



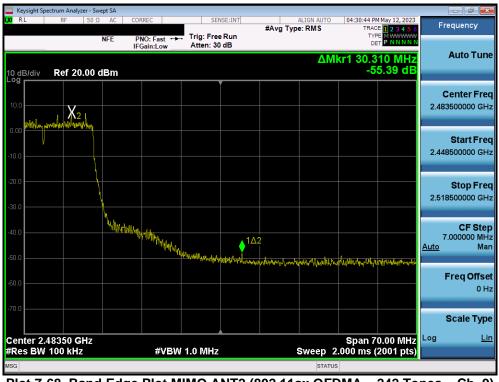
Plot 7-66. Band Edge Plot MIMO ANT2 (802.11ax OFDMA – 242 Tones – Ch. 2)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	Page 62 of 114
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 62 01 114
© 2023 ELEMENT			V9.0 02/01/2019



Keysight Spectrum Analysis							
K RL RF	50 Ω AC CO	RREC	SENSE:INT	#Avg Type:		28:27 PM May 12, 2023 TRACE 1 2 3 4 5 6	Frequency
10 dB/div Ref 2 1			Free Run n: 30 dB			-27.125 MHz -49.52 dB	Auto Tune
10.0				السر	while where the	alastralistadium	Center Freq 2.400000000 GHz
-10.0					¥		Start Freq 2.365000000 GHz
-20.0			440				Stop Freq 2.435000000 GHz
-40.0	hiteoretheinghensorentaattilde	and the second programmer	ANN AN				CF Step 7.000000 MHz <u>Auto</u> Man
-60.0							Freq Offset 0 Hz
Center 2.40000 (#Res BW 100 kH		#VBW 1.0 N	117		S weep 2.000	pan 70.00 MHz) ms (2001 pts)	Scale Type Log <u>Lin</u>
MSG		~ • • • • • • • •			STATUS		

Plot 7-67. Band Edge Plot MIMO ANT2 (802.11ax OFDMA – 242 Tones – Ch. 3)



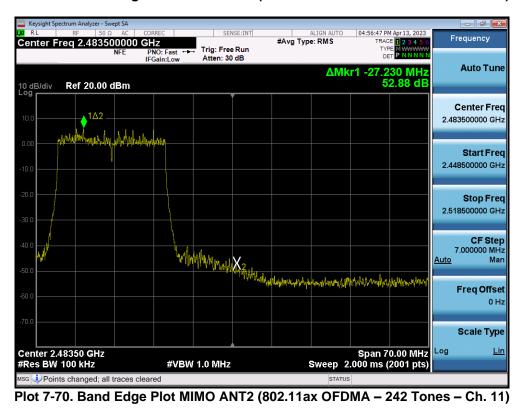
Plot 7-68. Band Edge Plot MIMO ANT2 (802.11ax OFDMA – 242 Tones – Ch. 9)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	Dege 62 of 114
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 63 of 114
© 2023 ELEMENT	V9.0 02/01/2019		





Plot 7-69. Band Edge Plot MIMO ANT2 (802.11ax OFDMA – 242 Tones – Ch. 10)

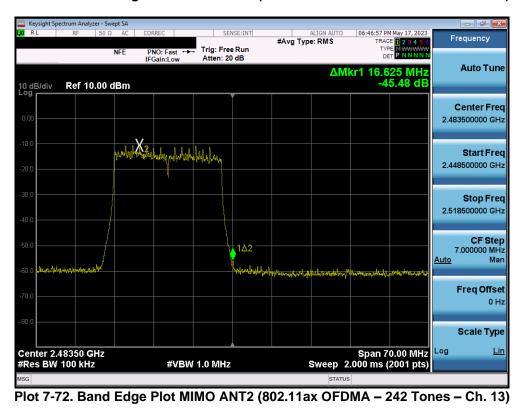


FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 64 of 114
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 64 01 114
© 2023 ELEMENT			V9.0 02/01/2019



	ectrum Analy		ot SA										
LXI RL	RF	50 Ω	AC	CORREC		SEN	ISE:INT	#Avg Tvp	ALIGN AUTO		M May 17, 2023	F	requency
		Ν	NFE	PNO: Fa IFGain:L	ow	Trig: Free Atten: 20				TY			
10 dB/div Log	Ref 10).00 dl	Bm						Δ	:.Wkr1 16	310 MHz 53.11 dB		Auto Tune
0.00		ruladowia	Jul I.,	X	, ifala								Center Freq 3500000 GHz
-10.0			г Чр_ініці. Т	₩₩ ₩₩₩₩₩	n hái hai hai hai hai hai hai hai hai hai ha							2.44	Start Freq 8500000 GHz
-30.0												2.51	Stop Freq 8500000 GHz
-50.0 -60.0 WWM	www.						•	Δ2 AMussiukstums	Manualde	ulul mather states	uhimikatulutustuva	<u>Auto</u>	CF Step 7.000000 MHz Man
-70.0													Freq Offset 0 Hz
-80.0													Scale Type
Center 2. #Res BW				#	VBW	1.0 MHz			Sweep	Span 7 2.000 ms	70.00 MHz (2001 pts)	Log	<u>Lin</u>
MSG									STAT	rus			

Plot 7-71. Band Edge Plot MIMO ANT2 (802.11ax OFDMA – 242 Tones – Ch. 12)



FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT		
Test Report S/N:	Test Dates:	EUT Type:	Dage CE of 114	
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 65 of 114	
© 2023 ELEMENT	V9.0 02/01/2019			



7.6 Conducted Spurious Emissions

Test Overview and Limit

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates, tone configurations, and RU indices were investigated to determine the worst-case configuration. For the following out of band conducted emissions plots, the EUT was set to a data rate of MCS0 in 802.11ax mode as this setting produced the worst-case emissions.

The limit for out-of-band spurious emissions at the band edge is 30dB below the fundamental emission level, as determined from the in-band power measurement of the DTS channel performed in a 100kHz bandwidth per the procedure in Section 11.11.3 of ANSI C63.10-2013.

Test Procedure Used

ANSI C63.10-2013 – Section 11.11.3 ANSI C63.10-2013 – Section 14.3.3

Test Settings

- 1. Start frequency was set to 30MHz and stop frequency was set to 25GHz (separated into two plots per channel)
- 2. RBW = 1MHz
- 3. VBW = 3MHz
- 4. Detector = Peak
- 5. Trace mode = max hold
- 6. Sweep time = auto couple
- 7. The trace was allowed to stabilize

Test Setup

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



Figure 7-5. Test Instrument & Measurement Setup

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 66 of 114
© 2023 ELEMENT	•		V9.0 02/01/2019

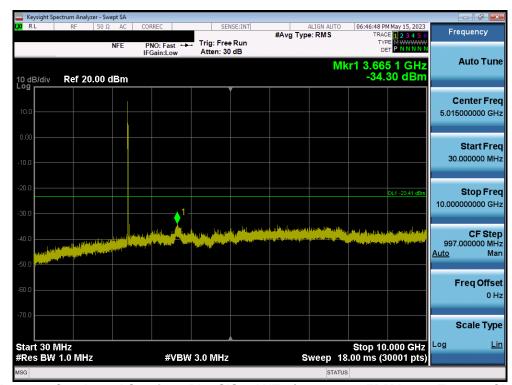


Test Notes

- 1. RBW was set to 1MHz rather than 100kHz in order to increase the measurement speed.
- The display line shown in the following plots denotes the limit at 30dB below the fundamental emission level measured in a 100kHz bandwidth. However, since the traces in the following plots are measured with a 1MHz RBW, the display line may not necessarily appear to be 30dB below the level of the fundamental in a 1MHz bandwidth.
- 3. For plots showing conducted spurious emissions near the limit, the frequencies were investigated with a reduced RBW to ensure that no emissions were present.
- The conducted spurious emissions were measured to relative limits. Therefore, in accordance with ANSI C63.10-2013 Section 14.3.3, it was unnecessary to show compliance through the summation of test results of the individual outputs.

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT		
Test Report S/N:	Test Dates:	EUT Type:	Dogo 67 of 111	
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 67 of 114	
© 2023 ELEMENT	•		V9.0 02/01/2019	





7.6.1 SISO Antenna-2 Conducted Spurious Emissions





Plot 7-74. Conducted Spurious Plot SISO ANT2 (802.11ax OFDMA – 26 Tones – Ch. 1)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 68 of 114
© 2023 ELEMENT			V9.0.02/01/2019



	ectrum Analyzer	- Swept SA										d ×
X/RL	RF	50 Ω AC	CORF	EC		SENSE:INT	#Avg Ty	ALIGN AUTO	TRACE	May 15, 2023	Freque	ncy
		NFE		0:Fast ↔ ain:Low	Trig: F Atten:	ree Run 30 dB			TYP			_
I0 dB/div	Ref 20.0	00 dBm	1					Mł	(r1 3.680 -33.9	3 GHz 6 dBm	Auto	o Tun
						Ĭ					Cente	
10.0											5.0150000	00 GH
0.00											Sta	rtFre
10.0											30.0000	00 MH
20.0										0L1 -24.50 dBm	Sto	p Fre
-30.0				1	_						10.0000000	00 GH
40.0			Linger of P	al a second	and an and a part of	k p ^{er} Appleten and he	and the p ¹ Higher of the local	ang Dallan Para	angalikowa ekstralisty.	and how a	С	F Ste
- 18	ام (المعمل)، المائل من الاستخدام (المعندي			filet han the		المراقع في المراجع ا			a hilling og at er sandet som i	A profilia de la calificación Calificación de la calificación Calificación de la calificación de	997.0000 <u>Auto</u>	M 00 Ma
50.0 50.0											Freq	05
60.0											Freq	0156
70.0											Scal	o Tre
Start 30 N ∮Res BW				#VB\	N 3.0 MH	lz	ę	Sweep 18	Stop 10. 00 ms (30.	000 0112	Log	Li
SG								STATUS				

Plot 7-75. Conducted Spurious Plot SISO ANT2 (802.11ax OFDMA – 26 Tones – Ch. 6)



Plot 7-76. Conducted Spurious Plot SISO ANT2 (802.11ax OFDMA - 26 Tones - Ch. 6)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	Dage 60 of 111
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 69 of 114
© 2023 ELEMENT	•		V9.0 02/01/2019



	pectrum Analyz										- F	×
X/RL	RF	50 Ω AC	C COR	REC	SEI	NSE:INT	#Avg Typ	ALIGN AUTO		M May 15, 2023	Frequency	,
		NFE		IO: Fast ↔ Gain:Low	. Trig: Free Atten: 30			M	דע ם		Auto Ti	un
10 dB/div Log	Ref 20	.00 dBn	n						-33.	71 dBm		
10.0						Ĭ					Center F	
											5.015000000	GF
0.00											Start F	
-10.0											30.000000	MF
-20.0										DL1 -23.68 dBm	Stop F	
-30.0				1 -							10.000000000	GF
-40.0	Level and the state	Instantion of the second	A an alla			suplication and the Transferration	a plitifugiti providen	shekarangi magdan Manangi magdan	nan dir beyind prospily for Interation	a ha filogensand. Seise seise seise	CF S 997.000000 I	
50.0 Manual		ander der bi									<u>Auto</u> I	Ma
60.0											Freq Off	
70.0												0 H
											Scale Ty	Ŋ
Start 30 #Res BW	MHz / 1.0 MHz			#VBW	3.0 MHz		s	weep 1	Stop 10 8.00 ms (3).000 GHz 30001 pts)	Log	L
ISG								STAT				-

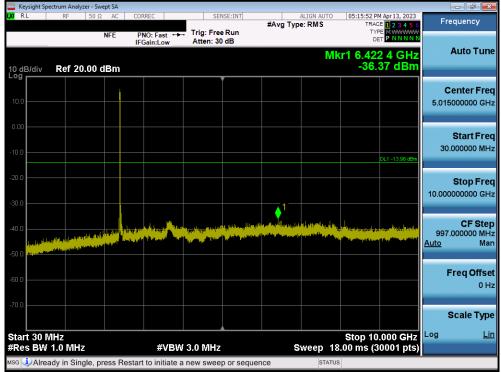
Plot 7-77. Conducted Spurious Plot SISO ANT2 (802.11ax OFDMA - 26 Tones - Ch. 11)



Plot 7-78. Conducted Spurious Plot SISO ANT2 (802.11ax OFDMA - 26 Tones - Ch. 11)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 70 of 111
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 70 of 114
© 2023 ELEMENT			V9.0 02/01/2019





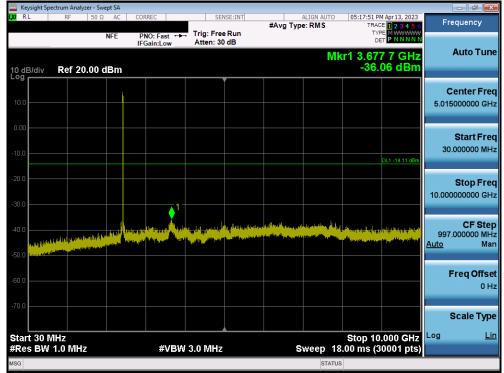
Plot 7-79. Conducted Spurious Plot SISO ANT2 (802.11ax OFDMA - 242 Tones - Ch. 1)



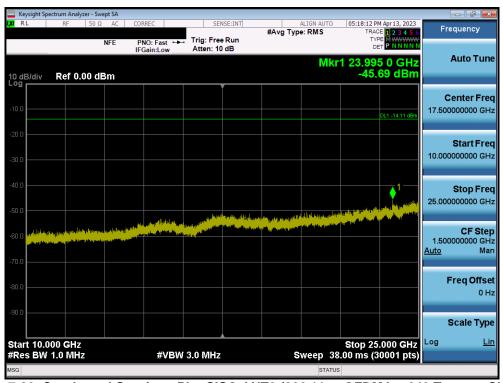
Plot 7-80. Conducted Spurious Plot SISO ANT2 (802.11ax OFDMA - 242 Tones - Ch. 1)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	Dago 71 of 114
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 71 of 114
© 2023 ELEMENT	-		V9.0 02/01/2019





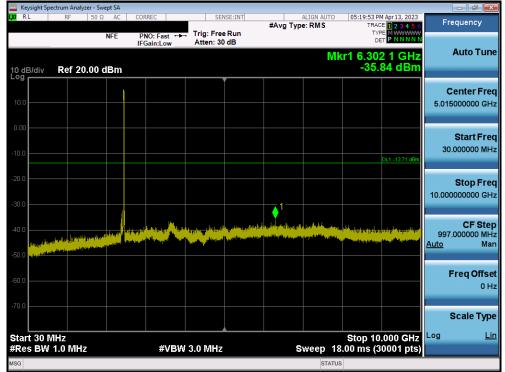
Plot 7-81. Conducted Spurious Plot SISO ANT2 (802.11ax OFDMA - 242 Tones - Ch. 6)



Plot 7-82. Conducted Spurious Plot SISO ANT2 (802.11ax OFDMA – 242 Tones – Ch. 6)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	Page 72 of 114
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 72 01 114
© 2023 ELEMENT			V9.0 02/01/2019





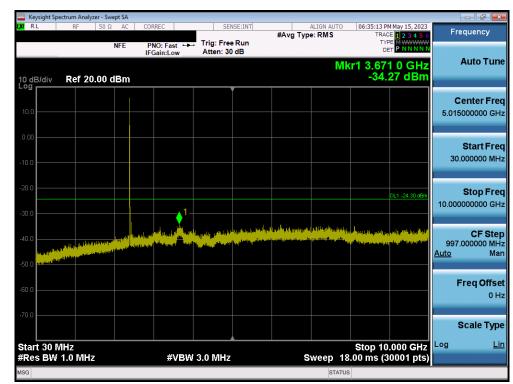
Plot 7-83. Conducted Spurious Plot SISO ANT2 (802.11ax OFDMA - 242 Tones - Ch. 11)



Plot 7-84. Conducted Spurious Plot SISO ANT2 (802.11ax OFDMA – 242 Tones – Ch. 11)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	Daga 72 of 111
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 73 of 114
© 2023 ELEMENT	•		V9.0 02/01/2019





7.6.2 MIMO Conducted Spurious Emissions – ANT1





Plot 7-86. Conducted Spurious Plot MIMO ANT1 (802.11ax OFDMA – 26 Tones – Ch. 1)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	Dana 74 of 444
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 74 of 114
© 2023 ELEMENT			V9.0 02/01/2019



	t Spectrum Ar	-											
XI RL	RF	50 Ω	AC	CORREC			NSE:INT	#Avg Typ	ALIGN AUTO	TRAC	M May 15, 2023 E 1 2 3 4 5 6 E M WWWWW	Frequ	lency
10 dB/div	, Ref	20.00 d	NFE	PNO: IFGain	Fast ↔ :Low	Atten: 3			M	r1 3.66	3 4 GHz 13 dBm	Αι	ito Tun
		20.00 4											n ter Fre 0000 G⊦
10.0													tart Fre
30.0					1 -						DL1 -24.75 dBm	S 10.00000	t op Fre 0000 GH
		a hay new Yest to be						den gelige Street	all na hàinn an tao an tao Tao an tao an	a <mark>diting nel per le del se l</mark> a St ^{all} la per le del se per p	ndigger Biger Konsig <mark>er</mark> nonges Annenges Altern ¹⁷		CF Ste 0000 MH Ma
60.0												Fre	e q Offs 0 I
70.0												Sc	ale Typ
itart 30 Res B	0 MHz W 1.0 M	Hz			#VBW	/ 3.0 MHz		ş	weep 18	Stop 10 .00 ms (3	.000 GHz 0001 pts)	Log	Ŀ
SG									STATUS	6			

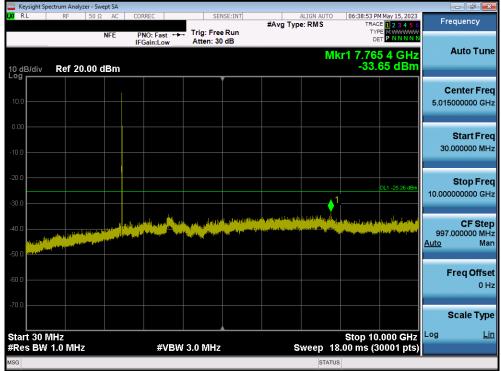
Plot 7-87. Conducted Spurious Plot MIMO ANT1 (802.11ax OFDMA - 26 Tones - Ch. 6)



Plot 7-88. Conducted Spurious Plot MIMO ANT1 (802.11ax OFDMA – 26 Tones – Ch. 6)

FCC ID: A3LSMX910 IC: 649E-SMX910		MEASUREMENT REPORT		
Test Report S/N:	Test Dates:	EUT Type:	Daga 75 of 114	
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 75 of 114	
© 2023 ELEMENT	·		V9.0 02/01/2019	





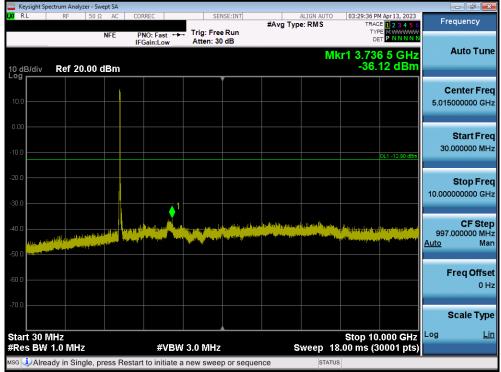
Plot 7-89. Conducted Spurious Plot MIMO ANT1 (802.11ax OFDMA – 26 Tones – Ch. 11)



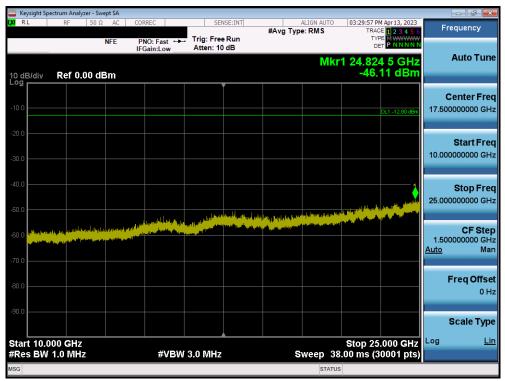
Plot 7-90. Conducted Spurious Plot MIMO ANT1 (802.11ax OFDMA - 26 Tones - Ch. 11)

FCC ID: A3LSMX910 IC: 649E-SMX910		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 76 of 114
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 76 of 114
© 2023 ELEMENT	•		V9.0 02/01/2019





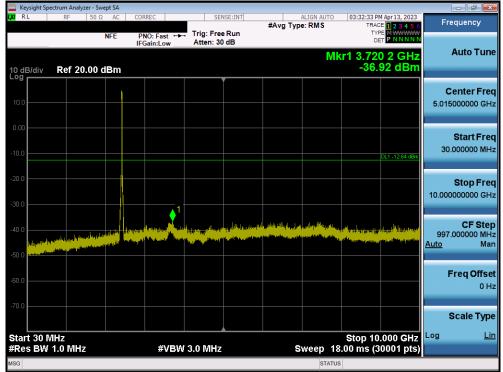
Plot 7-91. Conducted Spurious Plot MIMO ANT1 (802.11ax OFDMA – 242 Tones – Ch. 1)



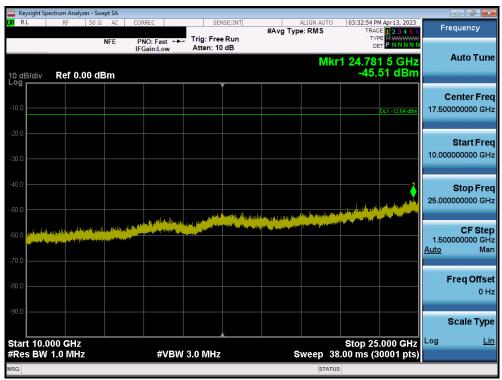
Plot 7-92. Conducted Spurious Plot MIMO ANT1 (802.11ax OFDMA - 242 Tones - Ch. 1)

FCC ID: A3LSMX910 IC: 649E-SMX910		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 77 of 114
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 77 of 114
© 2023 ELEMENT	•		V9.0 02/01/2019





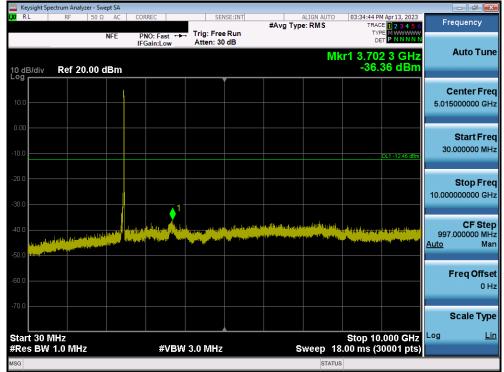
Plot 7-93. Conducted Spurious Plot MIMO ANT1 (802.11ax OFDMA – 242 Tones – Ch. 6)



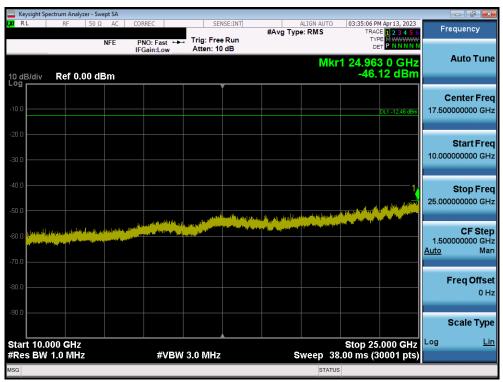
Plot 7-94. Conducted Spurious Plot MIMO ANT1 (802.11ax OFDMA - 242 Tones - Ch. 6)

FCC ID: A3LSMX910 IC: 649E-SMX910		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 70 of 111
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 78 of 114
© 2023 ELEMENT			V9.0 02/01/2019





Plot 7-95. Conducted Spurious Plot MIMO ANT1 (802.11ax OFDMA – 242 Tones – Ch. 11)



Plot 7-96. Conducted Spurious Plot MIMO ANT1 (802.11ax OFDMA – 242 Tones – Ch. 11)

FCC ID: A3LSMX910 IC: 649E-SMX910		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 70 of 114
1M2303200036-05.A3L	04/03/2023 - 05/18/2023	Portable Tablet	Page 79 of 114
© 2023 ELEMENT		•	V9.0 02/01/2019