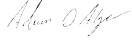


Test Report 3768-180-5G-UNII1-UNII2A

Equipment Under Test:	SONA NX611
Requirement(s):	eCFR 47 Part 15.407 RSS-247
Test Date(s):	02/12/2024-07/10/2024, 12/04/2024-01/17/2025
Prepared for:	Ezurio Attn: Brian Petted W66 N220 Commerce Ct. Cedarburg, WI 53012

Report Issued by: Dylan Rosenfeldt, EMC Engineer	
Signature: 	Date: 02/14/2025
Report Reviewed by: Adam Alger, Manager EMC Manager	
Signature: 	Date: 02/12/2025
Report Constructed by: Dylan Rosenfeldt, EMC Engineer	
Signature: 	Date: 02/12/2025

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Company: Ezurio	Page 1 of 52	Name: SONA NX611
Report: TR3768-180-5G-UNII1-UNII2A		Model: SONA NX611C
Quote: C-3768		Serial: 00026 00028 00042

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Ezurio Test Services in Review

The Ezurio laboratory located at W66 N220 Commerce Court Cedarburg, Wisconsin, 53012 USA is recognized through the following organizations:



A2LA – American Association for Laboratory Accreditation

Accreditation based on ISO/IEC 17025:2017 with Electrical (EMC) Scope

A2LA Certificate Number: 1255.01

Scope of accreditation includes all test methods listed herein unless otherwise noted



Federal Communications Commission (FCC) – USA

Accredited Test Firm Registration Number: 953492

Recognition of two 3 meter Semi-Anechoic Chambers



Innovation, Science and Economic Development Canada

Accredited U.S. Identification Number: US0218

Recognition of two 3 meter Semi-Anechoic Chambers

Company: Ezurio	Page 3 of 52	Name: SONA NX611
Report: TR3768-180-5G-UNII1-UNII2A		Model: SONA NX611C
Quote: C-3768		Serial: 00026 00028 00042

1 TEST REPORT SUMMARY

During **02/15/2024-07/10/2024, 12/04/2024-01/17/2025** the Equipment Under Test (EUT), **SONA NX611**, as provided by Ezurio was tested to the following requirements:

Operation in the 5.15-5.25 and 5.25-5.35 GHz bands

Requirements	Description	Method	Compliant
15.407(b)(1), (2), & (10) 15.209 RSS-247 Clause 6.2.1 & 6.2.2 RSS-GEN	Spurious Radiated Emissions in Restricted Bands 30-40000 MHz	ANSI C63.10 12.7	Yes
15.407(a)(5) RSS-247 Clause 6.2.1 & 6.2.2	26dB and 99% Occupied Bandwidth	ANSI C63.10 12.5	Yes
15.407(a)(1) & (2) RSS-247 Clause 6.2.1 & 6.2.2	RF Output Power	ANSI C63.10 12.4	Yes
15.407(b)(1) & (2) RSS-247 Clause 6.2.1 & 6.2.2	Conducted Out-of-band Emissions	ANSI C63.10 12.7	Yes
15.407(a)(1)(2) RSS-247 Claus 6.2.1 & 6.2.2	Power Spectral Density	ANSI C63.10 12.6	Yes
15.407(b)(9) 15.207 RSS-GEN	AC Conducted Emissions	ANSI C63.10 6.2	Yes
15.407(g)	Frequency Stability	ANSI C63.10 6.8	Reported

Notice:

The results relate only to the item tested as configured and described in this report. Any additional configurations, modes of operation, or modifications made to the equipment under test after the specified test date(s) are at the decision of the client and may not apply to the data seen in this test report.

The decision rule for Pass / Fail assessment to the specification or standard listed in this test report has been agreed upon by the client and laboratory to be as follows:

Measurement Type	Rule
Emissions – Amplitude	0.5 dB below specified limit
Emissions – Frequency	1% less than the specification
Immunity	Tested at specified level

2 CLIENT INFORMATION

Company Name	Ezurio
Contact Person	Brian Petted
Address	W66 N220 Commerce Ct. Cedarburg, WI 53012

2.1 Equipment Under Test (EUT) Information

The following information has been supplied by the client

Product Name	SONA NX611
Part Number	453-00180
Serial Number	00026 00028 00042
FCC ID	SQG-SONANX611C
IC ID	3147A-SONANX611C

2.2 Product Description

The NX611 is based upon NXP IW611 Wi-Fi 6 chipset. Feature-set includes 802.11 a/b/g/n/ac/ax Wi-Fi 6 and Dual-Mode Bluetooth v5.3 (BDR + EDR + BLE).

2.3 Modifications Incorporated for Compliance

None noted at time of test

2.4 Deviations and Exclusions from Test Specifications

None noted at time of test

2.5 EUT Information

Power Supply – INPUT:100-240VAC 50/60 Hz 0.3A

OUTPUT: 5VDC 2A

Firmware - sduart_nw61x_v1.bin.se

Sduart_nw61x_v1_mfg.bin.se

Company: Ezurio	Page 5 of 52	Name: SONA NX611
Report: TR3768-180-5G-UNII1-UNII2A		Model: SONA NX611C
Quote: C-3768		Serial: 00026 00028 00042

2.6 Ancillary Equipment

Equipment used for EUT programming (not part of the EUT)

Development Kit, SU60-SOMC 6.0

P/N: 463-00138-K1 Rev 1

Power Supply: INPUT: 100-240 VAC 50/60Hz 0.7A

OUTPUT: 12VDC 2A

HP Elitebook 840G1

Labtool Version: 1.0.0.45.6

2.7 Antenna Information

Manufacturer	Model	Part Number	Dimension	Type	Peak Gain (dBi)	
					2400-2480 MHz	5150-5850 MHz
TDK	Multilayer Antenna	ANT162442DT-2001A2	1.6mm x 0.8mm x 0.4mm	Chip	3.3	4.2

2.8 Test Channels

Channel	Frequency (MHz)	Bandwidth (MHz)	Data Rates
36	5180	20	802.11a – 6 and 54 Mbps 802.11n – MCS0 and MCS7 802.11ac – MCS0 and MCS9 802.11ax – MCS0 and MCS11
40	5200	20	
48	5240	20	
38	5190	40	
46	5230	40	
42	5210	80	
52	5260	20	
56	5280	20	
64	5320	20	
54	5270	40	
62	5310	40	
58	5290	80	

2.9 Power Table and Reduced Video Bandwidth for Average Measurements

802.11	Channel BW (MHz)	Data Rate	Minimum Average VBW (Hz)	Power Setting
a	20	6 Mbps	698	16
a	20	54 Mbps	5565	16
n	20	MCS0	746	14
n	20	MCS7	5959	14
ac	20	MCS0	742	14
ac	20	MCS8	6361	14
ax	20	MCS0	956	12
ax	20	MCS11	8628	12
n	40	MCS0	1506	13
n	40	MCS7	9980	13
ac	40	MCS0	1489	12
ac	40	MCS9	10870	12
ax	40	MCS0	1815	12
ax	40	MCS11	11737	10
ac	80	MCS0	3013	12
ac	80	MCS9	15601	12
ax	80	MCS0	3414	10
ax	80	MCS11	13280	10

802.11	Channel BW (MHz)	Data Rate	Minimum Average VBW (Hz)	Power Setting
ax RU26	20	MCS0	736	14
ax RU52	20	MCS0	736	14
ax RU106	20	MCS0	736	14
ax RU26	40	MCS0	736	11
ax RU52	40	MCS0	736	11
ax RU106	40	MCS0	736	11
ax RU242	40	MCS0	736	11
ax RU26	80	MCS0	736	8
ax RU52	80	MCS0	736	8
ax RU106	80	MCS0	736	8
ax RU242	80	MCS0	736	8
ax RU484	80	MCS0	736	8

3 WORST CASE TEST RESULTS SUMMARY

UNII-1

Requirement	Radio	Channel and Data Rate	Frequency (MHz)	Measurement	Limit	Margin
15.407(a)(5) RSS-247 Clause 6.2.1 26dB Bandwidth	802.11a	48 54 Mbps	-	19.0 MHz	at least 500 kHz	-
15.407(a)(1) RSS-247 Clause 6.2.1 Output Power	802.11a	40 54 Mbps	-	17.3 dBm	24.0 dBm	6.7 dB
15.407(a)(1) RSS-247 Clause 6.2.1 PSD	802.11ax20	48 MCS0 RU26	-	9.8 dBm/1 MHz	11.0 dBm/1 MHz	1.2 dB
15.407(b)(1) RSS-247 Clause 6.2.1 Restricted Band	802.11ac80	42 MCS9	5145.0	-43.6 dBm	-41.2 dBm	2.3 dB
15.407(b)(9) RSS-GEN Spurious Below 1 GHz	-	-	-	-	-	-
15.407(b)(1) RSS-247 Clause 6.2.1 Radiated Emissions in the Restricted Band	802.11ac40	38 MCS0	5149.6	51.3 dBμV/m	54.0 dBμV/m	2.7 dB
15.407(b)(9) RSS-GEN AC Conducted	802.11a	36 6 Mbps	0.159	59.5 dBμV	65.5 dBμV	6.0 dB

UNII-2A

Requirement	Radio	Channel and Data Rate	Frequency (MHz)	Measurement	Limit	Margin
15.407(a)(5) RSS-247 Clause 6.2.1 26dB Bandwidth	802.11a	56 54 Mbps	-	19.1 MHz	at least 500 kHz	-
15.407(a)(1) RSS-247 Clause 6.2.1 Output Power	802.11a	52 54 Mbps	-	16.6 dBm	24.0 dBm	7.3 dB
15.407(a)(1) RSS-247 Clause 6.2.1 PSD	802.11ax20	52 MCS0 RU26	-	9.1 dBm/1 MHz	11.0 dBm/1 MHz	1.9 dB
15.407(b)(2) RSS-247 Clause 6.2.1 Restricted Band	802.11ac80	58 MCS9	5359.0	-42.2 dBm	-41.2 dBm	1.0 dB
15.407(b)(2) RSS-247 Clause 6.2.1 Radiated Emissions in the Restricted Band	802.11ax80	58 MCS0	5352.6	51.7 dBμV/m	54.0 dBμV/m	2.3 dB

4 REFERENCES

Publication	Edition	Date	AMD 1	AMD 2
FCC eCFR 47 Part 15	-	2025	-	-
ANSI C63.10	-	2020	2024	-
RSS-247	3	2023	-	-
RSS-GEN	5	2018	2019	2021
KDB 558074 D01	-	2019	-	-

5 UNCERTAINTY SUMMARY

Using the guidance of the following publications the calculated measurement uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level, using a coverage factor of $k = 2$.

References

CISPR 16-4-1

CISPR 16-4-2

CISPR 32

ANSI C63.23

A2LA P103

A2LA P103c

ETSI TR 100-028

Measurement Type	Configuration	Uncertainty $\pm$
Radiated Emissions	Biconical Antenna	5.0 dB
Radiated Emissions	Log Periodic Antenna	5.3 dB
Radiated Emissions	Horn Antenna	4.7 dB
AC Line Conducted Emissions	Artificial Mains Network	3.4 dB
Telecom Conducted Emissions	Asymmetric Artificial Network	4.9 dB
Disturbance Power Emissions	Absorbing Clamp	4.1 dB
Radiated Immunity	3 Volts/meter	2.2 dB
Conducted Immunity	CDN/EM/BCI	2.4/3.5/3.4 dB
EFT Burst/Surge	Peak pulse voltage	164 volts
ESD Immunity	15 kV level	1377 Volts

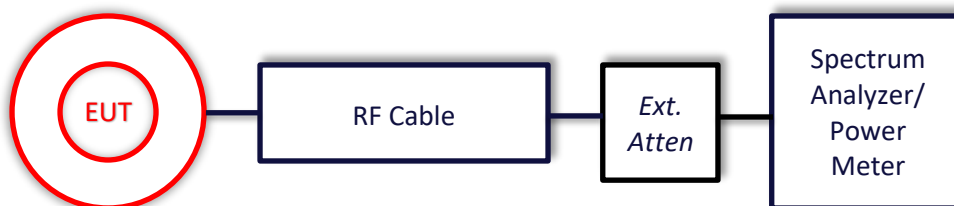
Parameter	ETSI U.C. $\pm$	U.C. $\pm$
Radio Frequency, from F0	1×10^{-7}	0.55×10^{-7}
Occupied Channel Bandwidth	5 %	2 %
RF conducted Power (Power Meter)	1.5 dB	1.2 dB
RF conducted emissions (Spectrum Analyzer)	3.0 dB	1.7 dB
All emissions, radiated	6.0 dB	5.3 dB
Temperature	1° C	0.65° C
Humidity	5 %	2.9 %
Supply voltages	3 %	1 %

6 TEST DATA

6.1 Antenna Port Conducted Emissions

Description of Measurement	The direct measurement of emissions at the antenna port of the EUT is achieved by use of a RF connection to a spectrum analyzer or power meter. The cable and attenuator factors are loaded into the analyzer or power meter allowing for direct measurement readings without the need for further corrections.
Example Calculations	Measurement (dBm) + Cable factor (dB) + External Attenuator (dB) = Corrected Reading (dBm) Margin (dB) = Limit (dBm) – Corrected Reading (dBm)

Block Diagram



6.1.1 26dB and 99% Occupied Bandwidth

Operator	Anthony Smith	QA	Adam Hauke
Temperature	21.9°C 22.4°C	R.H. %	27.50% 25.70%
Test Date	02/15/2024 03/28/2024	Location	Conducted RF Bench
Requirement	15.407 (a)(5) RSS-247 Clause 6.2.1 & 6.2.2	Method	ANSI C63.10 12.5

Limits: The minimum 26 dB bandwidth shall be at least 500 kHz

Test Parameters

Frequency	5150-5350 MHz		
RBW	20 MHz BW – 200 kHz 40 MHz BW – 420 kHz 80 MHz BW – 1 MHz	VBW	20 MHz BW – 620 kHz 40 MHz BW – 1.5 MHz 80 MHz BW – 3 MHz
Detector(s)	Peak	Settings	Max Hold

Instrumentation

Asset #	Description	Manufacturer	Model #	Serial #	Date	Due Date	Status
AA 960173	Cable	A.H. Systems, Inc.	SAC-26G-1	388	6/13/2023	6/12/2024	Active Verification
EE 960088	Analyzer - EMI Receiver	Agilent	N9038A	MY51210138	4/10/2023	4/10/2024	Active Calibration

EUT Parameters

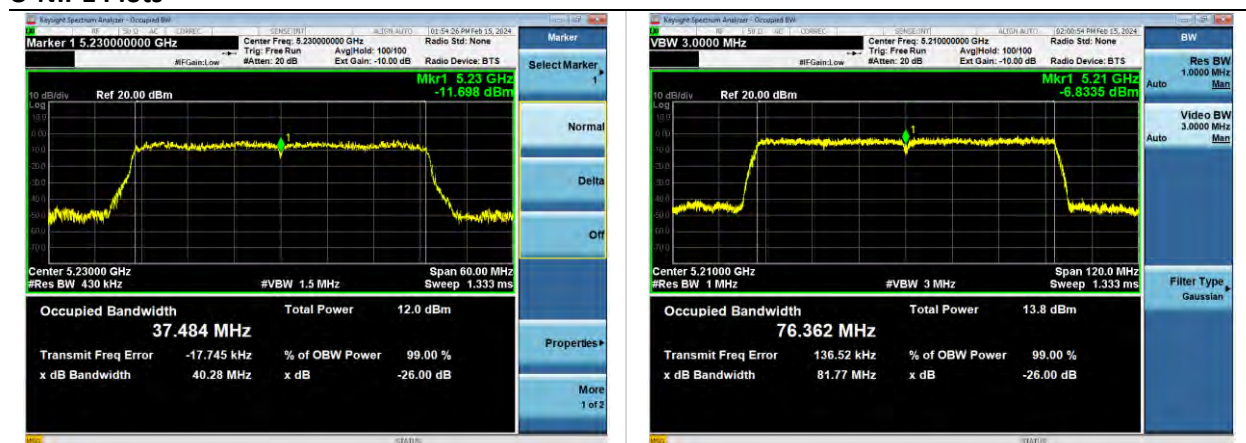
Input Power	120 VAC @ 60 Hz	Mode	5 GHz WLAN Tx
Frequency	5180-5320 MHz	Channel	See 2.8

U-NII-1 Measurements

Mode	Rate	Channel	26 dB BW (MHz)	99% BW (MHz)
802.11a	6 Mbps	36	19.4	16.5
		40	19.7	16.5
		48	19.4	16.5
	54 Mbps	36	19.1	16.5
		40	19.1	16.5
		48	19.0	16.5
802.11n20	MCS0	36	19.6	17.6
		40	19.5	17.6
		48	19.8	17.6
	MCS7	36	19.5	17.6
		40	19.7	17.6
		48	19.7	17.6
802.11ac20	MCS0	36	19.7	17.6
		40	19.7	17.6
		48	19.8	17.6
	MCS8	36	19.7	17.6
		40	19.6	17.6
		48	19.5	17.6
802.11ax20	MCS0	36	20.3	18.8
		40	20.4	18.8
		48	20.3	18.8
	MCS11	36	20.3	18.8
		40	20.2	18.8
		48	20.0	18.7
802.11n40	MCS0	38	40.4	36.1
		46	40.3	36.1
	MCS7	38	40.3	37.5
		46	39.6	37.5
802.11ac40	MCS0	38	40.6	36.1
		46	40.0	36.1
	MCS9	38	40.3	36.2
		46	40.4	36.1
802.11ax40	MCS0	38	39.6	37.5
		46	40.3	37.5
	MCS11	38	40.2	37.5
		46	40.3	37.5
802.11ac80	MCS0	42	81.5	76.0
	MCS9	42	81.8	76.4
802.11ax80	MCS0	42	80.6	77.6
	MCS11	42	80.8	77.5

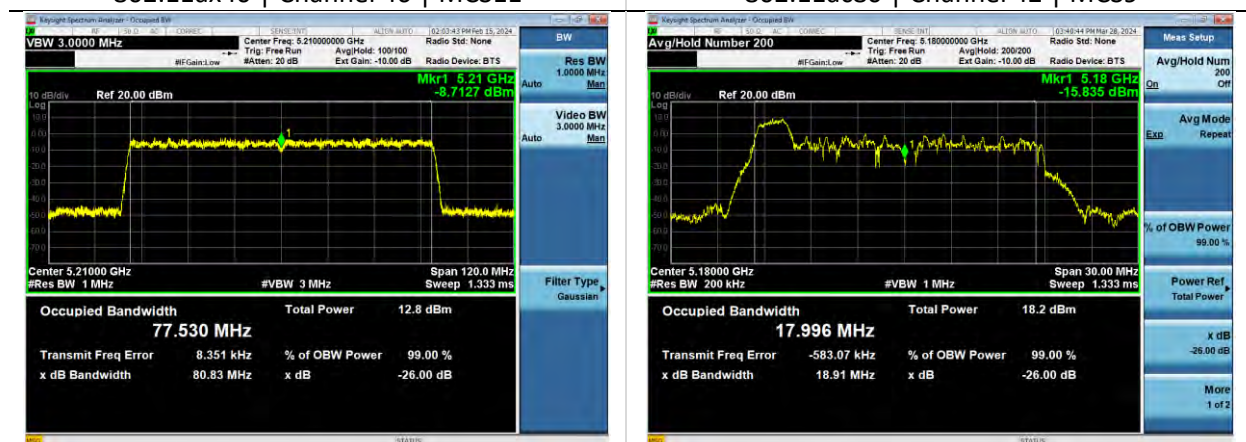
Mode	Rate	Channel	RU Tone / Index	26 dB BW (MHz)	99% BW (MHz)
802.11ax20	MCS0	36	26 / 0	18.9	18.0
			52 / 37	19.2	18.0
			106 / 63	19.0	17.9
802.11ax40	MCS0	38	242 / 61	37.0	20.8
802.11ax80	MCS0	42	484 / 65	80.6	59.9

U-NII-1 Plots



802.11ax40 | Channel 46 | MCS11

802.11ac80 | Channel 42 | MCS9



802.11ax80 | Channel 42 | MCS11

802.11ax20 | Channel 36 | MCS0 | RU Tone 26
Index 0

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802.11ax40 | Channel 38 | MCS0 | RU Tone 242
Index 61



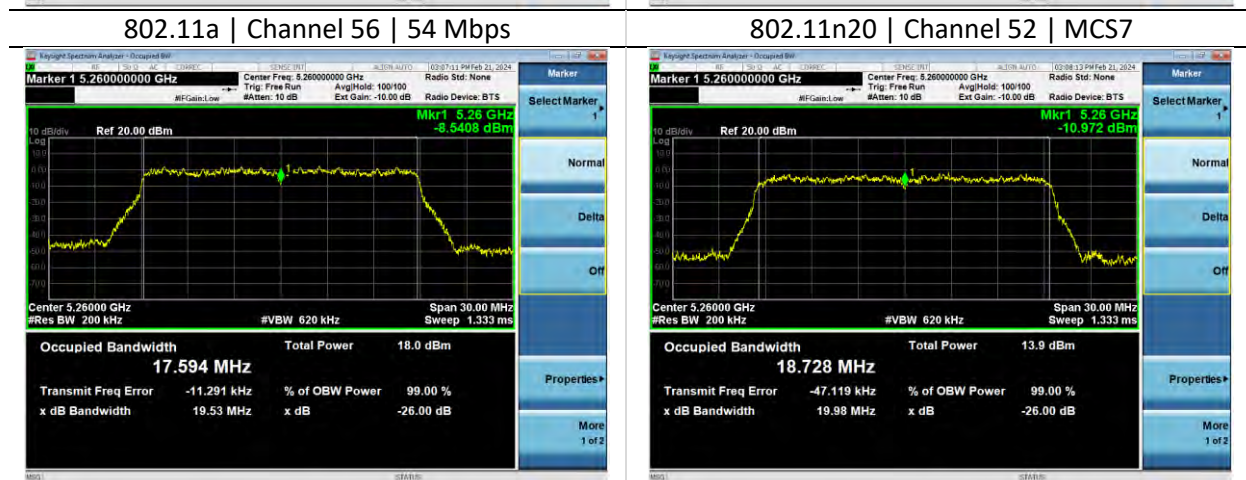
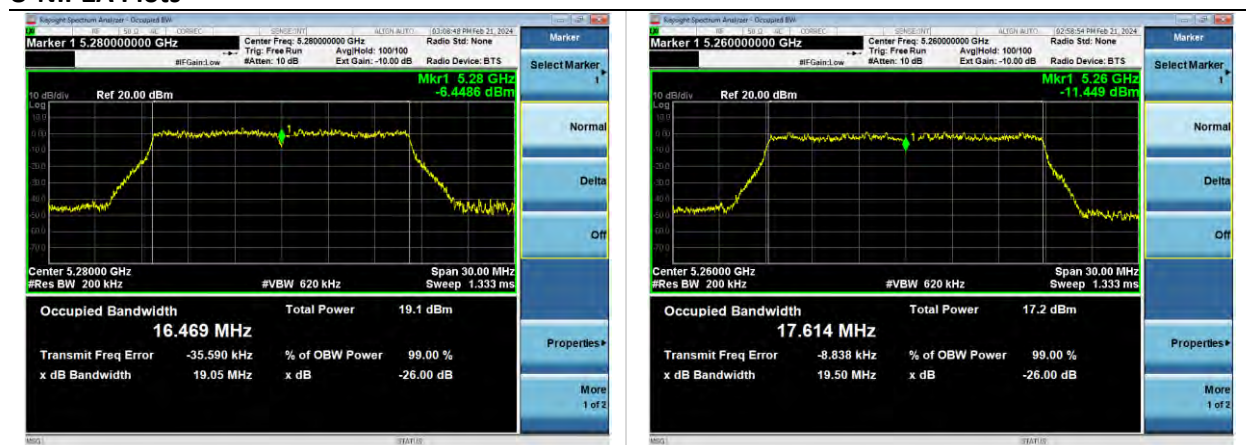
802.11ax80 | Channel 42 | MCS0 | RU Tone 484
Index 65

U-NII-2A Measurements

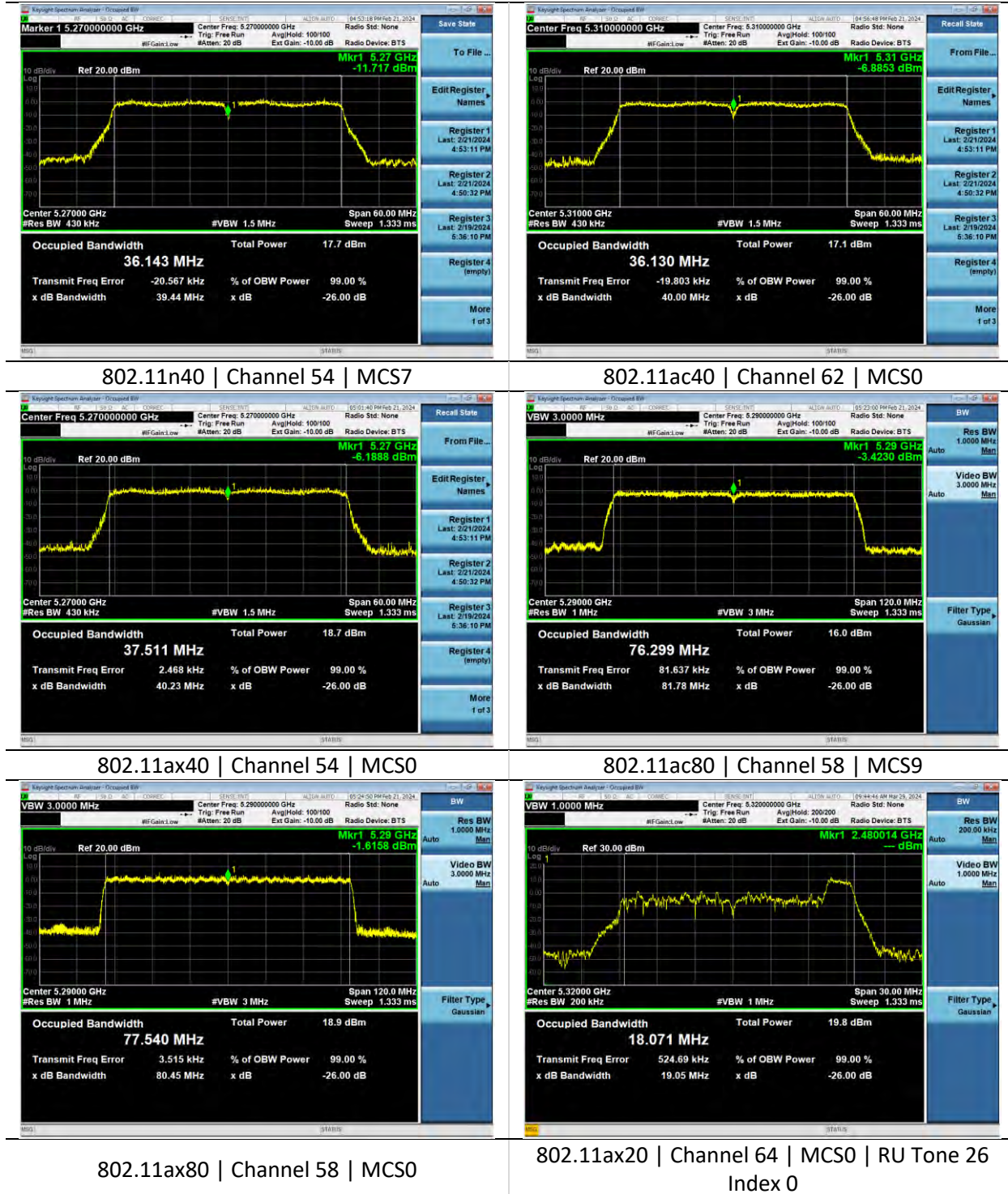
Mode	Rate	Channel	26 dB BW (MHz)	99% BW (MHz)
802.11a	6 Mbps	52	19.7	16.5
		56	19.2	16.5
		64	19.4	16.5
	54 Mbps	52	19.5	16.5
		56	19.1	16.5
		64	19.4	16.5
802.11n20	MCS0	52	19.7	17.6
		56	19.8	17.6
		64	19.7	17.6
	MCS7	52	19.5	17.6
		56	19.6	17.6
		64	19.7	17.6
802.11ac20	MCS0	52	19.7	17.6
		56	19.9	17.6
		64	19.7	17.6
	MCS8	52	19.5	17.6
		56	19.6	17.6
		64	19.7	17.6
802.11ax20	MCS0	52	20.2	18.8
		56	20.3	18.8
		64	20.4	18.8
	MCS11	52	20.0	18.7
		56	20.2	18.8
		64	20.1	18.7
802.11n40	MCS0	54	40.1	36.1
		62	40.4	36.1
	MCS7	54	39.4	36.1
		62	39.9	36.2
802.11ac40	MCS0	54	40.2	36.1
		62	40.0	36.1
	MCS9	54	40.2	36.2
		62	40.5	36.2
802.11ax40	MCS0	54	40.2	37.5
		62	40.3	37.5
	MCS11	54	40.3	37.5
		62	40.2	37.5
802.11ac80	MCS0	58	81.9	75.9
	MCS9	58	81.8	76.3
802.11ax80	MCS0	58	80.5	77.5
	MCS11	58	80.7	77.4

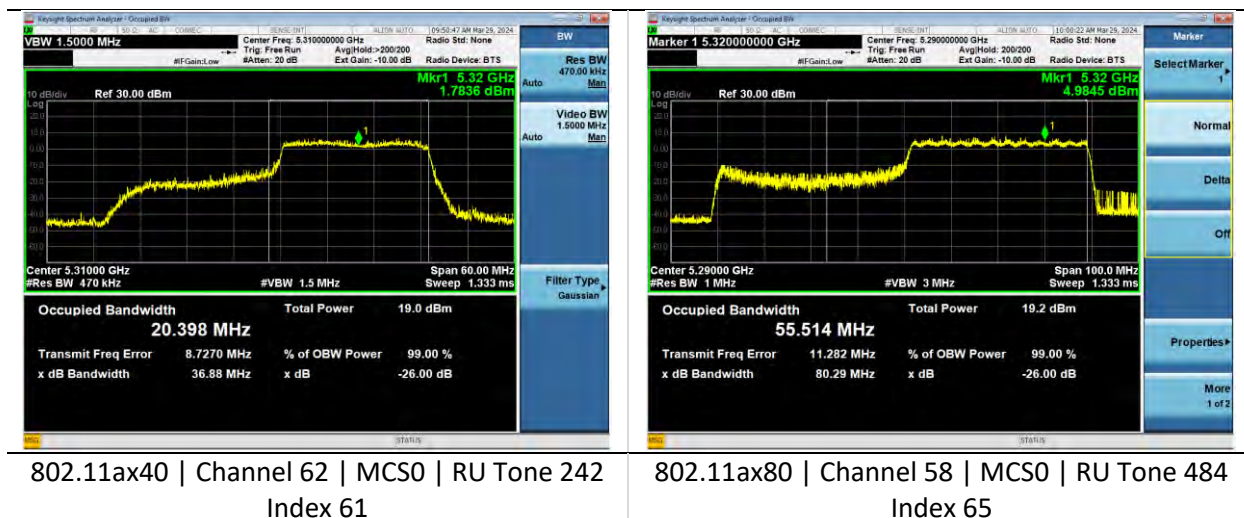
Mode	Rate	Channel	RU Tone / Index	26 dB BW (MHz)	99% BW (MHz)
802.11ax20	MCS0	64	26 / 0	19.1	18.1
			52 / 37	19.1	17.9
			106 / 63	19.3	18.1
802.11ax40	MCS0	62	242 / 61	36.9	20.4
802.11ax80	MCS0	58	484 / 65	80.3	55.5

U-NII-2A Plots



802.11ac20 Channel 52 MCS8	802.11ax20 Channel 52 MCS11
--------------------------------	---------------------------------





6.1.2 RF Output Power

Operator	Dylan Rosenfeldt	QA	Anthony Smith
Temperature	21.6°C 22.1°C 21.8°C 21.6°C 20.1°C 21.5°C	R.H. %	25.90% 29.30% 53.50% 44.40% 18.40% 32.50%
Test Date	02/26/2024-02/27/2024, 04/29/2024-04/30/2024, 01/13/2025-01/16/2025	Location	Conducted RF Bench
Requirement	15.407 (a)(1) & (2) RSS-247 Clause 6.2.1 & 6.2.2	Method	ANSI C63.10 12.4 AVGSA-2

Limit: The maximum peak conducted output power of the intentional radiator shall not exceed 250 mW.

Test Parameters

Frequency	5150-5350 MHz	Setup	Antenna Port
RBW	1 MHz	VBW	3 MHz
Detector(s)	Average (RMS)	Settings	Trace Average Span: 30 MHz 60 MHz 120 MHz
Example Calculations	Average Output Power = Measured Power + 10*log(1/D) where D is the duty cycle.		

Instrumentation

Asset #	Description	Manufacturer	Model #	Serial #	Date	Due Date	Status
AA 960173	Cable	A.H. Systems, Inc.	SAC-26G-1	388	6/13/2024	6/12/2025	Active Verification
EE 960087	Analyzer - Spectrum	Agilent	N9010A	MY53400296	4/10/2024	4/10/2025	Active Calibration

EUT Parameters

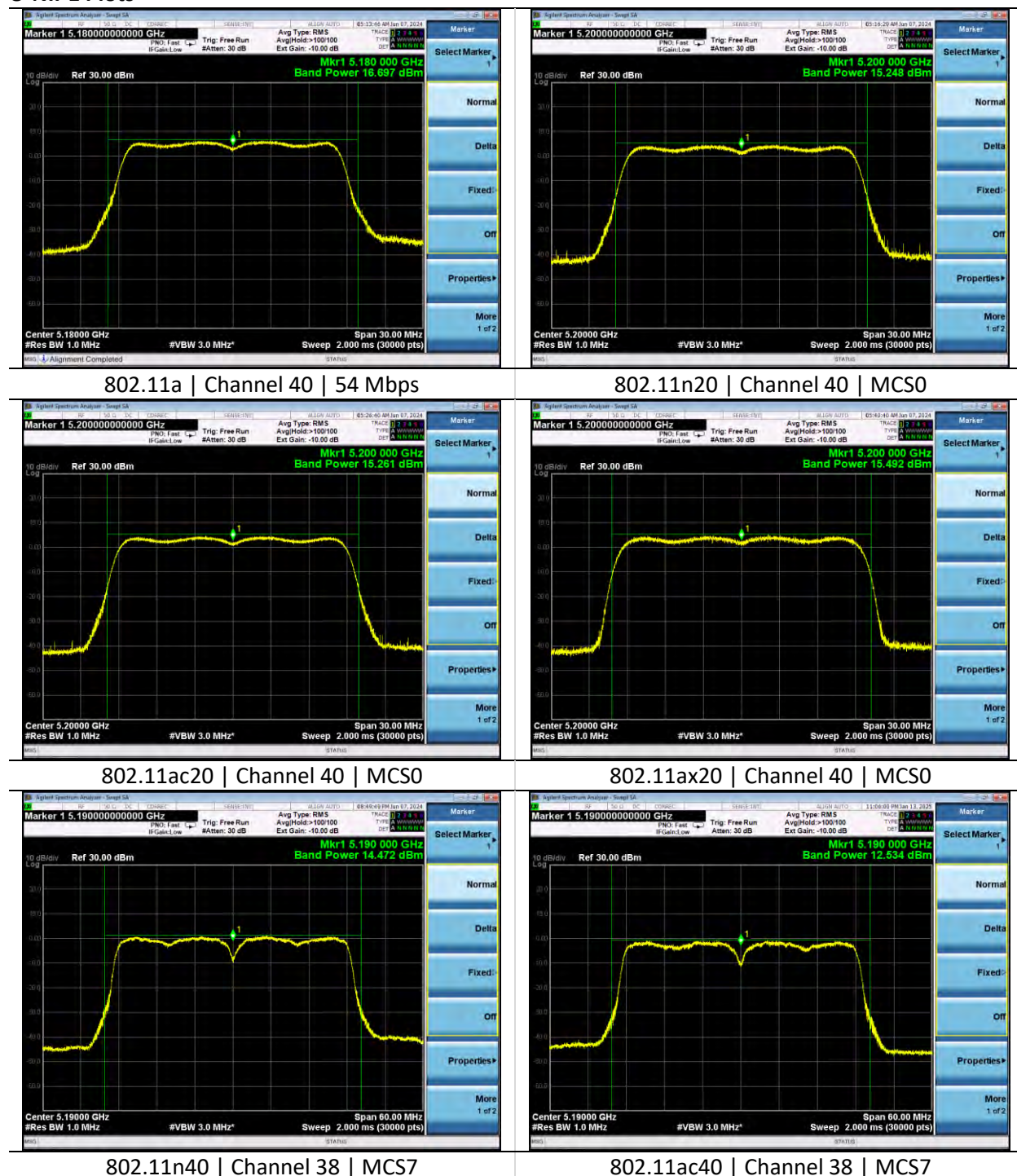
Input Power	120 VAC @ 60 Hz	Mode	5 GHz WLAN Tx
Frequency	5180-5320 MHz	Channel	See 2.8

U-NII-1 Measurements

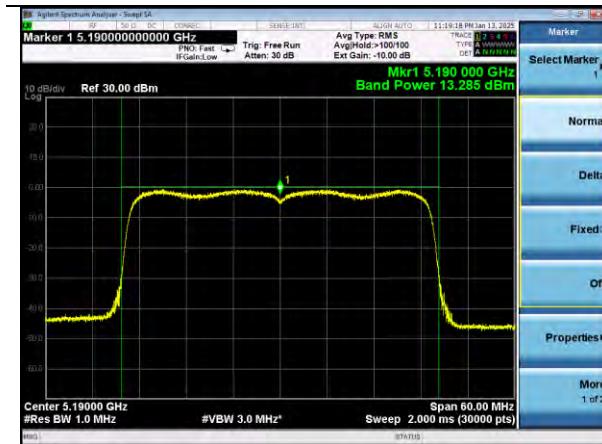
Mode	Rate	Channel	Average Output Power (dBm)	Duty Cycle Correction (dB)	Corrected Output Power (dBm)	Limit (dBm)	Margin (dB)
802.11a	6 Mbps	36	17.1	-	17.1	24.0	6.9
		40	17.2	-	17.2	24.0	6.8
		48	17.1	-	17.1	24.0	6.9
	54 Mbps	36	16.7	0.4	17.1	24.0	6.9
		40	16.9	0.4	17.3	24.0	6.7
		48	16.8	0.4	17.2	24.0	6.8
802.11n20	MCS0	36	15.1	-	15.1	24.0	8.9
		40	15.2	-	15.2	24.0	8.8
		48	15.2	-	15.2	24.0	8.8
	MCS7	36	14.8	0.4	15.2	24.0	8.8
		40	14.9	0.4	15.3	24.0	8.7
		48	14.9	0.4	15.3	24.0	8.7
802.11ac20	MCS0	36	15.1	-	15.1	24.0	8.9
		40	15.3	-	15.3	24.0	8.7
		48	15.2	-	15.2	24.0	8.8
	MCS8	36	14.7	0.4	15.1	24.0	8.9
		40	14.9	0.4	15.3	24.0	8.7
		48	14.8	0.4	15.2	24.0	8.8
802.11ax20	MCS0	36	15.3	-	15.3	24.0	8.7
		40	15.5	-	15.5	24.0	8.5
		48	15.4	-	15.4	24.0	8.6
	MCS11	36	10.6	0.5	11.1	24.0	12.9
		40	10.8	0.5	11.3	24.0	12.7
		48	10.8	0.5	11.3	24.0	12.7
802.11n40	MCS0	38	15.0	0.1	15.1	24.0	8.9
		46	15.1	0.1	15.2	24.0	8.8
	MCS7	38	14.5	0.6	15.1	24.0	8.9
		46	14.6	0.6	15.2	24.0	8.8
802.11ac40	MCS0	38	13.0	0.1	13.1	24.0	10.9
		46	13.1	0.1	13.2	24.0	10.8
	MCS9	38	12.5	0.7	13.2	24.0	10.8
		46	12.6	0.7	13.3	24.0	10.7
802.11ax40	MCS0	38	13.3	0.1	13.4	24.0	10.6
		46	13.4	0.1	13.5	24.0	10.5
	MCS11	38	10.6	0.7	11.3	24.0	12.7
		46	10.8	0.7	11.5	24.0	12.5
802.11ac80	MCS0	42	15.4	0.2	15.6	24.0	8.4
	MCS9	42	12.7	1.0	13.7	24.0	10.3
802.11ax80	MCS0	42	11.5	0.2	11.7	24.0	12.3
	MCS11	42	10.9	0.8	11.7	24.0	12.3

Mode	Rate RU	Channel	Average Output Power (dBm)	Duty Cycle Correction (dB)	Corrected Output Power (dBm)	Limit (dBm)	Margin (dB)
802.11ax20	MCS0 RU26	36	12.4	0.2	12.6	24.0	11.4
		40	12.6	0.2	12.8	24.0	11.2
		48	12.7	0.2	12.9	24.0	11.1
	MCS0 RU52	36	14.4	0.2	14.6	24.0	9.4
		40	14.3	0.2	14.5	24.0	9.5
		48	14.6	0.2	14.8	24.0	9.2
	MCS0 RU106	36	15.3	0.2	15.5	24.0	8.5
		40	15.2	0.2	15.4	24.0	8.6
		48	15.3	0.2	15.5	24.0	8.5
802.11ax40	MCS0 RU26	38	11.7	0.2	11.9	24.0	12.1
	MCS0 RU26	46	12.0	0.2	12.2	24.0	11.8
	MCS0 RU52	38	12.7	0.2	12.9	24.0	11.1
	MCS0 RU52	46	12.3	0.2	12.5	24.0	11.5
	MCS0 RU106	38	12.7	0.2	12.9	24.0	11.1
	MCS0 RU106	46	12.3	0.2	12.5	24.0	11.5
	MCS0 RU242	38	12.3	0.2	12.5	24.0	11.5
	MCS0 RU242	46	12.0	0.2	12.2	24.0	11.8
802.11ax80	MCS0 RU26	42	9.5	0.2	9.7	24.0	14.3
	MCS0 RU52	42	9.5	0.2	9.7	24.0	14.3
	MCS0 RU106	42	9.4	0.2	9.6	24.0	14.4
	MCS0 RU242	42	9.3	0.2	9.5	24.0	14.5
	MCS0 RU484	42	9.4	0.2	9.6	24.0	14.4

U-NII-1 Plots



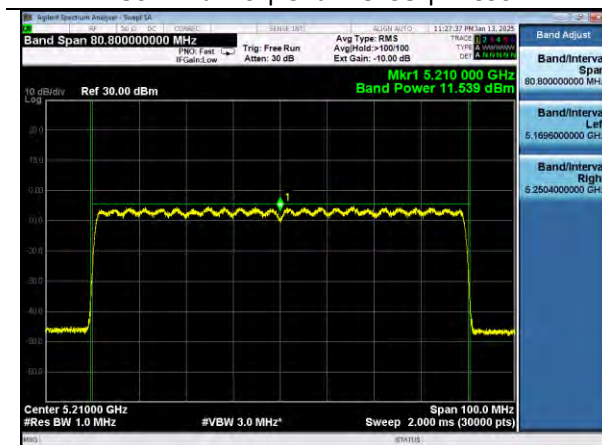
Company: Ezurio	Page 24 of 52	Name: SONA NX611
Report: TR3768-180-5G-UNII1-UNII2A		Model: SONA NX611C
Quote: C-3768		Serial: 00026 00028 00042



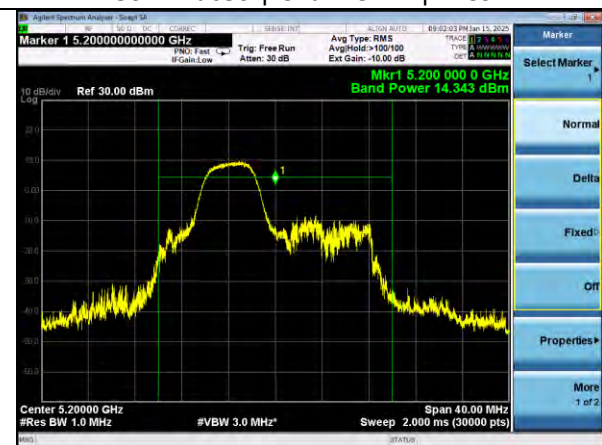
802.11ax40 | Channel 38 | MCS0



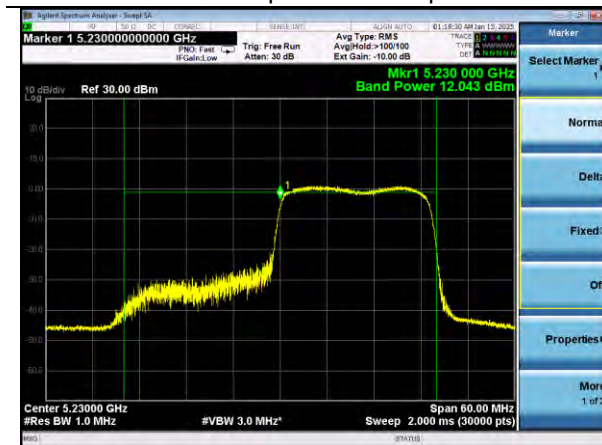
802.11ac80 | Channel 42 | MCS7



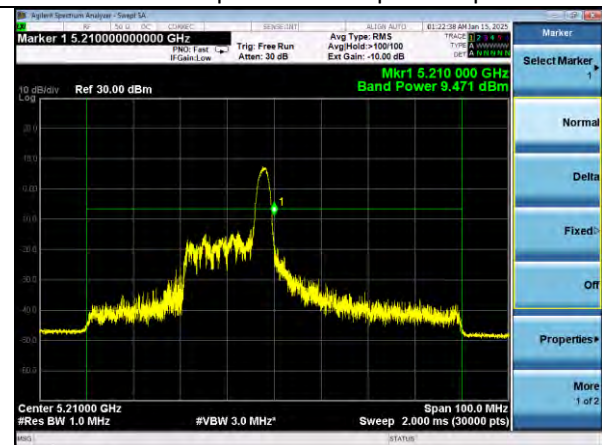
802.11ax80 | Channel 42 | MCS0



802.11ax20 | Channel 40 | MCS0 | RU52



802.11ax40 | Channel 46 | MCS0 | RU 242



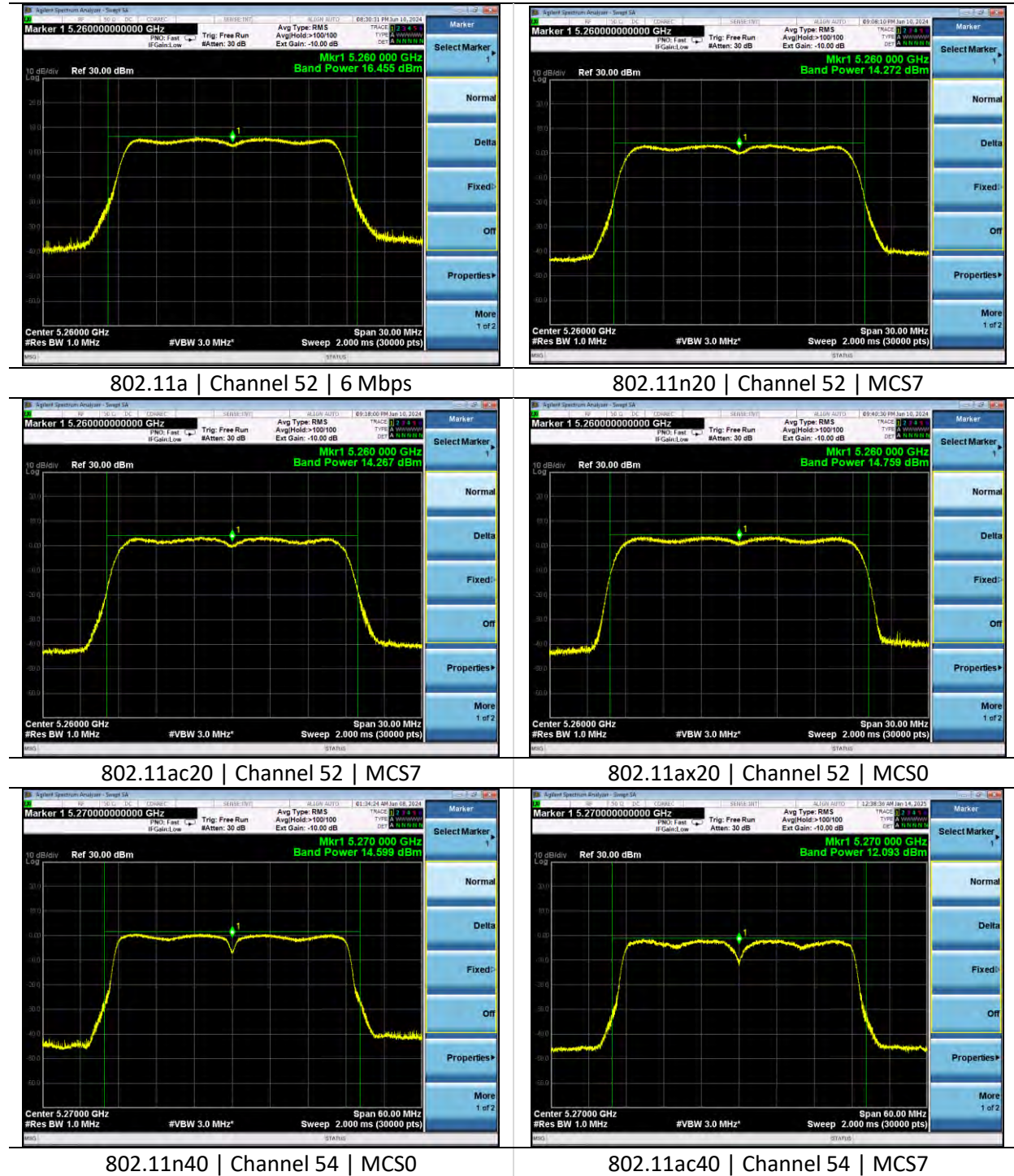
802.11ax80 | Channel 42 | MCS0 | RU26

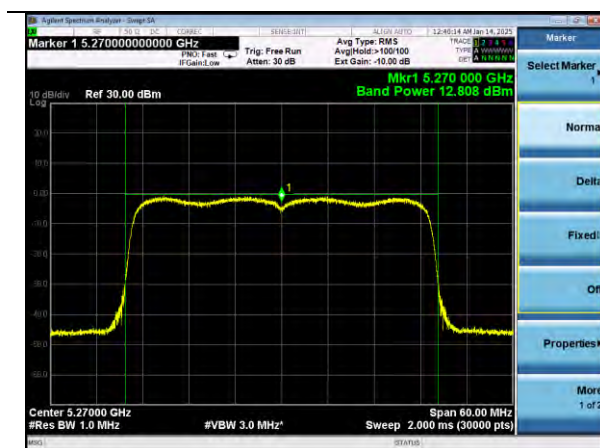
U-NII-2A Measurements

Mode	Rate	Channel	Average Output Power (dBm)	Duty Cycle Correction (dB)	Corrected Output Power (dBm)	Limit (dBm)	Margin (dB)
802.11a	6 Mbps	52	16.5	-	16.5	24.0	7.4
		56	16.3	-	16.3	24.0	7.6
		64	16.0	-	16.0	24.0	7.9
	54 Mbps	52	16.2	0.4	16.6	24.0	7.3
		56	16.0	0.4	16.4	24.0	7.5
		64	15.8	0.4	16.2	24.0	7.7
802.11n20	MCS0	52	14.5	-	14.5	24.0	9.5
		56	14.3	-	14.3	24.0	9.7
		64	14.1	-	14.1	24.0	9.9
	MCS7	52	14.3	0.4	14.7	24.0	9.3
		56	14.1	0.4	14.5	24.0	9.5
		64	13.8	0.4	14.2	24.0	9.8
802.11ac20	MCS0	52	14.5	-	14.5	24.0	9.5
		56	14.3	-	14.3	24.0	9.7
		64	14.1	-	14.1	24.0	9.9
	MCS8	52	14.2	0.4	14.6	24.0	9.4
		56	14.0	0.4	14.4	24.0	9.6
		64	13.7	0.4	14.1	24.0	9.9
802.11ax20	MCS0	52	14.8	-	14.8	24.0	9.2
		56	14.6	-	14.6	24.0	9.4
		64	14.3	-	14.3	24.0	9.7
	MCS11	52	10.3	0.5	10.8	24.0	13.2
		56	10.1	0.5	10.6	24.0	13.4
		64	9.9	0.5	10.4	24.0	13.6
802.11n40	MCS0	54	14.6	0.1	14.7	24.0	9.3
		62	14.3	0.1	14.4	24.0	9.6
	MCS7	54	14.2	0.6	14.8	24.0	9.2
		62	13.8	0.6	14.4	24.0	9.6
802.11ac40	MCS0	54	12.5	0.1	12.6	24.0	11.4
		62	12.3	0.1	12.4	24.0	11.6
	MCS9	54	12.1	0.7	12.8	24.0	11.2
		62	12.1	0.7	12.8	24.0	11.2
802.11ax40	MCS0	54	12.8	0.1	12.9	24.0	11.1
		62	12.6	0.1	12.7	24.0	11.3
	MCS11	54	10.3	0.7	11.0	24.0	13.0
		62	10.0	0.7	10.7	24.0	13.3
802.11ac80	MCS0	58	14.6	0.2	14.8	24.0	9.2
	MCS9	58	12.6	1.0	13.6	24.0	10.4
802.11ax80	MCS0	58	10.9	0.2	11.1	24.0	12.9
	MCS11	58	10.3	0.8	11.1	24.0	12.9

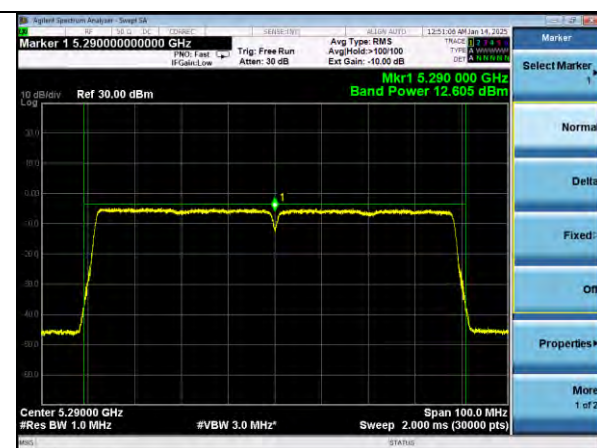
Mode	Rate RU	Channel	Average Output Power (dBm)	Duty Cycle Correction (dB)	Corrected Output Power (dBm)	Limit (dBm)	Margin (dB)
802.11ax20	MCS0 RU26	52	11.6	0.2	11.8	23.9	12.1
		56	11.5	0.2	11.7	23.9	12.2
		64	11.5	0.2	11.7	23.9	12.2
	MCS0 RU52	52	13.2	0.2	13.4	23.9	10.5
		56	13.1	0.2	13.3	23.9	10.6
		64	12.9	0.2	13.1	23.9	10.8
	MCS0 RU106	52	14.9	0.2	15.1	24.0	8.9
		56	14.9	0.2	15.1	24.0	8.9
		64	14.6	0.2	14.8	24.0	9.2
802.11ax40	MCS0 RU26	54	10.9	0.2	11.1	24.0	12.9
	MCS0 RU26	62	10.9	0.2	11.1	24.0	12.9
	MCS0 RU52	54	12.2	0.2	12.4	24.0	11.6
	MCS0 RU52	62	12.0	0.2	12.2	24.0	11.8
	MCS0 RU106	54	12.3	0.2	12.5	24.0	11.5
	MCS0 RU106	62	12.2	0.2	12.4	24.0	11.6
	MCS0 RU242	54	11.8	0.2	12.0	24.0	12.0
	MCS0 RU242	62	11.8	0.2	12.0	24.0	12.0
802.11ax80	MCS0 RU26	58	9.4	0.2	9.6	24.0	14.4
	MCS0 RU52	58	9.2	0.2	9.4	24.0	14.6
	MCS0 RU106	58	9.1	0.2	9.3	24.0	14.7
	MCS0 RU242	58	9.2	0.2	9.4	24.0	14.6
	MCS0 RU484	58	9.1	0.2	9.3	24.0	14.7

U-NII-2A Plots

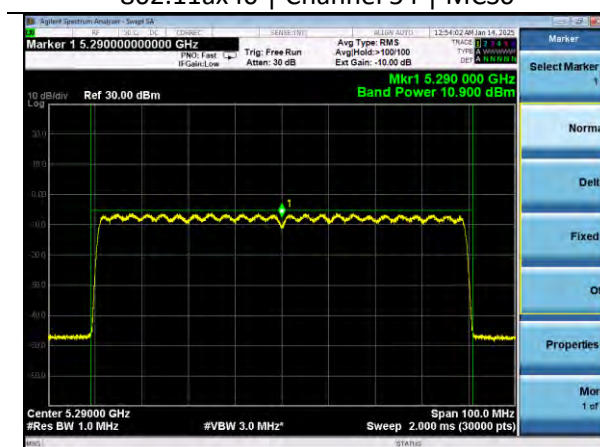




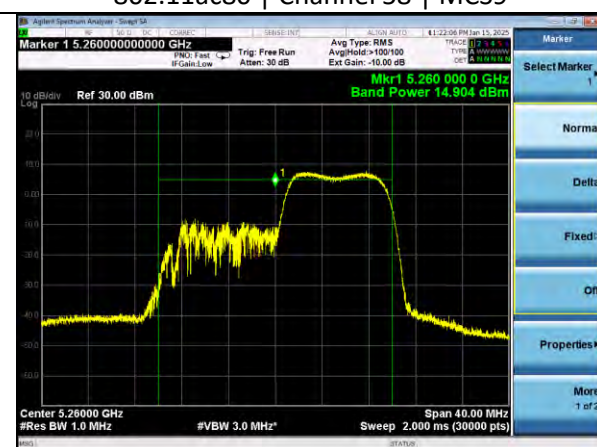
802.11ax40 | Channel 54 | MCS0



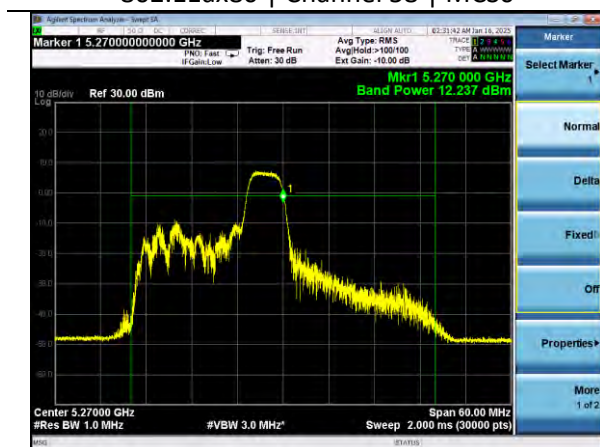
802.11ac80 | Channel 58 | MCS9



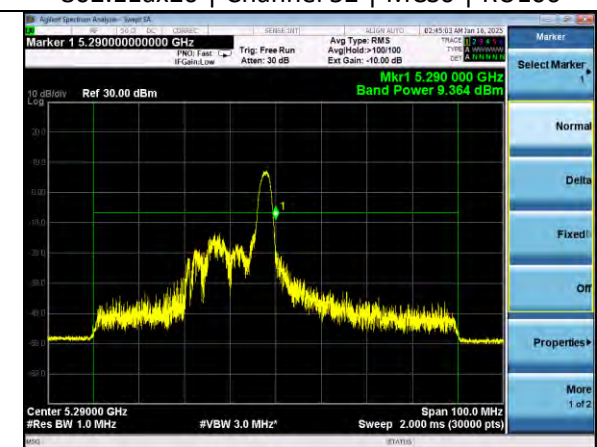
802.11ax80 | Channel 58 | MCS0



802.11ax20 | Channel 52 | MCS0 | RU106



802.11ax40 | Channel 54 | MCS0 | RU52



802.11ax80 | Channel 58 | MCS0 | RU26

6.1.3 Power Spectral Density

Operator	Dylan Rosenfeldt Anthony Smith	QA	Adam Hauke
Temperature	20.1°C-22.2°C	R.H. %	18.40%-50.40%
Test Date	05/01/2024-05/17/2024, 01/13/2025-01/16/2025	Location	Conducted RF Bench
Requirement	15.407 (a)(1) & (2) RSS-247 Clause 6.2.1 & 6.2.2	Method	ANSI C63.10 12.6 AVGPSD-2

Limits: Power spectral density shall not be greater than 11 dBm in any 1 MHz band.

Test Parameters

Frequency	5150-5350 MHz	Detector(s)	Average (RMS)
RBW	1 MHz	VBW	3 MHz
Notes	The same method of determining the conducted output power shall be used to determine the power spectral density		
Example Calculations	Average PSD = Measured PSD + 10*log(1/D) where D is the duty cycle.		

Instrumentation

Asset #	Description	Manufacturer	Model #	Serial #	Date	Due Date	Status
AA 960173	Cable	A.H. Systems, Inc.	SAC-26G-1	388	6/13/2024	6/12/2025	Active Verification
EE 960087	Analyzer - Spectrum	Agilent	N9010A	MY53400296	4/10/2024	4/10/2025	Active Calibration

EUT Parameters

Input Power	120 VAC @ 60 Hz	Mode	5 GHz WLAN Tx
Frequency	5180-5320 MHz	Channel	See 2.8

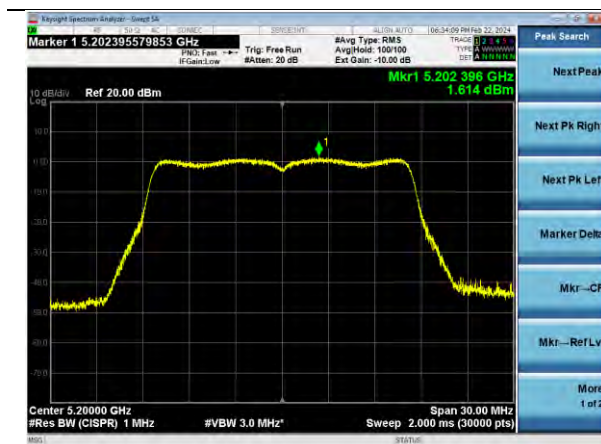
U-NII-1 Measurements

Mode	Rate	Channel	Maximum Average PSD (dBm/1 MHz)	Duty Cycle Correction (dB)	Corrected Output Value (dBm/1 MHz)	Limit (dBm/1 MHz)	Margin (dB)
802.11a	6 Mbps	36	1.0	-	1.0	11.0	10.0
		40	1.6	-	1.6	11.0	9.4
		48	2.3	-	2.3	11.0	8.7
	54 Mbps	36	0.8	0.4	1.2	11.0	9.8
		40	1.4	0.4	1.8	11.0	9.2
		48	2.3	0.4	2.7	11.0	8.3
802.11n20	MCS0	36	-1.4	-	-1.4	11.0	12.4
		40	-0.9	-	-0.9	11.0	11.9
		48	0.2	-	0.2	11.0	10.8
	MCS7	36	-1.6	0.4	-1.2	11.0	12.2
		40	-0.9	0.4	-0.5	11.0	11.5
		48	0.0	0.4	0.4	11.0	10.6
802.11ac20	MCS0	36	-1.4	-	-1.4	11.0	12.4
		40	-0.8	-	-0.8	11.0	11.8
		48	0.1	-	0.1	11.0	10.9
	MCS8	36	-1.3	0.4	-0.9	11.0	11.9
		40	-0.5	0.4	-0.1	11.0	11.1
		48	0.1	0.4	0.5	11.0	10.5
802.11ax20	MCS0	36	-1.4	-	-1.4	11.0	12.4
		40	-0.5	-	-0.5	11.0	11.5
		48	0.0	-	0.0	11.0	11.0
	MCS11	36	-4.9	0.5	-4.4	11.0	15.4
		40	-4.9	0.5	-4.4	11.0	15.4
		48	-3.9	0.5	-3.4	11.0	14.4
802.11n40	MCS0	38	-3.9	0.1	-3.8	11.0	14.8
		46	-3.2	0.1	-3.1	11.0	14.1
	MCS7	38	-4.1	0.6	-3.5	11.0	14.5
		46	-3.3	0.6	-2.7	11.0	13.7
802.11ac40	MCS0	38	-0.3	0.1	-0.2	11.0	11.2
		46	-0.1	0.1	0.0	11.0	11.0
	MCS9	38	-6.2	0.7	-5.5	11.0	16.5
		46	-4.8	0.7	-4.1	11.0	15.1
802.11ax40	MCS0	38	-0.3	0.1	-0.2	11.0	11.2
		46	-0.2	0.1	-0.1	11.0	11.1
	MCS11	38	-7.6	0.7	-6.9	11.0	17.9
		46	-6.8	0.7	-6.1	11.0	17.1
802.11ac80	MCS0	42	-7.1	0.2	-6.9	11.0	17.9
	MCS9	42	-3.8	1.0	-2.8	11.0	13.8
802.11ax80	MCS0	42	-4.9	0.2	-4.7	11.0	15.7
	MCS11	42	-9.9	0.8	-9.1	11.0	20.1

Mode	Rate RU	Channel	Maximum Average PSD (dBm/MHz)	Duty Cycle Correction (dB)	Corrected Output Value (dBm/MHz)	Limit (dBm/1 MHz)	Margin (dB)
802.11ax20	MCS0 RU26	36	9.5	0.2	9.7	11.0	1.3
		40	9.5	0.2	9.7	11.0	1.3
		48	10.0	0.2	10.2	11.0	0.8
	MCS0 RU52	36	10.0	0.2	10.2	11.0	0.8
		40	9.4	0.2	9.6	11.0	1.4
		48	9.1	0.2	9.3	11.0	1.7
	MCS0 RU106	36	9.6	0.2	9.8	11.0	1.2
		40	9.6	0.2	9.8	11.0	1.2
		48	8.0	0.2	8.2	11.0	2.8
802.11ax40	MCS0 RU26	38	8.6	0.2	8.8	11.0	2.2
		46	9.4	0.2	9.6	11.0	1.4
	MCS0 RU52	38	7.7	0.2	7.9	11.0	3.1
		46	8.0	0.2	8.2	11.0	2.8
	MCS0 RU106	38	5.0	0.2	5.2	11.0	5.8
		46	5.0	0.2	5.2	11.0	5.8
	MCS0 RU242	38	1.6	0.2	1.8	11.0	9.2
		46	1.8	0.2	2.0	11.0	9.0
802.11ax80	MCS0 RU26	42	7.5	0.2	7.7	11.0	3.3
		42	4.9	0.2	5.1	11.0	5.9
	MCS0 RU106	42	2.2	0.2	2.4	11.0	8.6
		42	-1.5	0.2	-1.3	11.0	12.3
	MCS0 RU484	42	-3.9	0.2	-3.7	11.0	14.7

U-NII-1 Plots

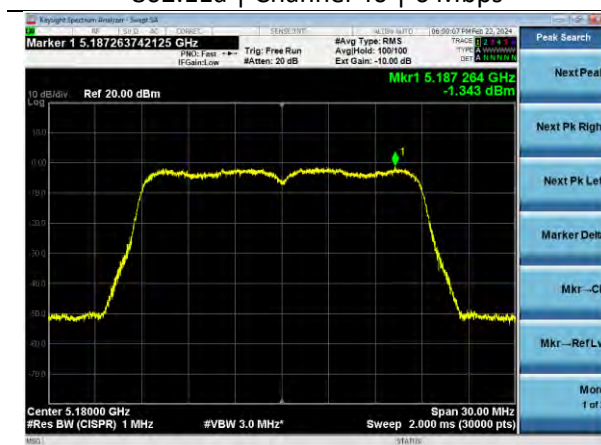
Company: Ezurio	Page 32 of 52	Name: SONA NX611
Report: TR3768-180-5G-UNII1-UNII2A		Model: SONA NX611C
Quote: C-3768		Serial: 00026 00028 00042



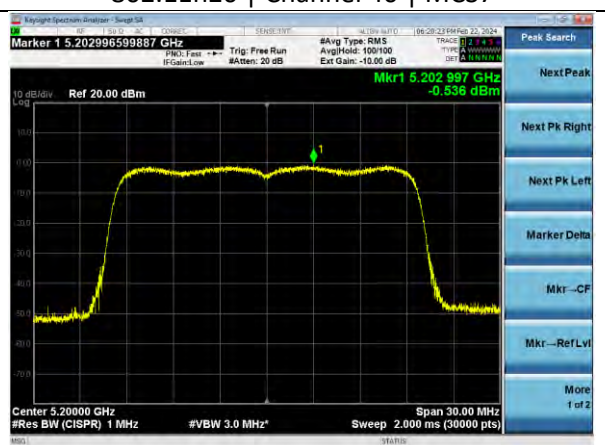
802.11a | Channel 40 | 6 Mbps



802.11n20 | Channel 40 | MCS7



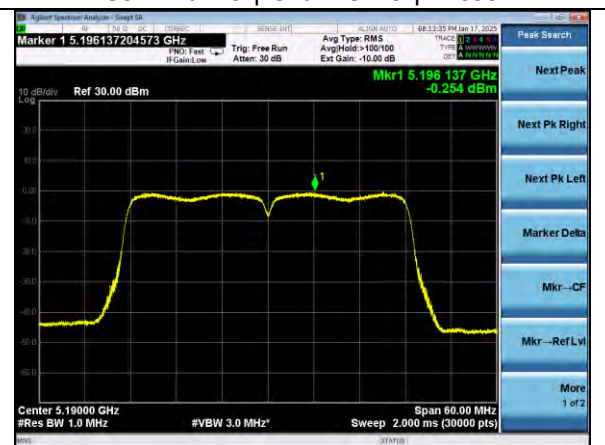
802.11ac20 | Channel 36 | MCS8



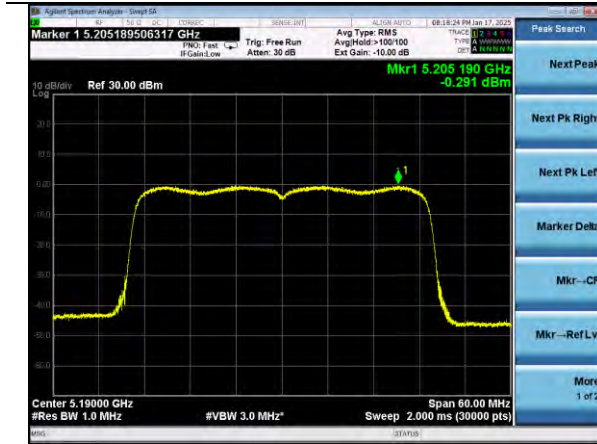
802.11ax20 | Channel 40 | MCS0



802.11n40 | Channel 46 | MCS7



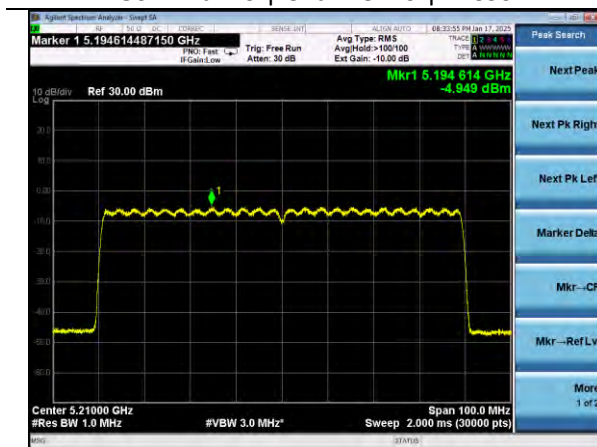
802.11ac40 | Channel 38 | MCS0



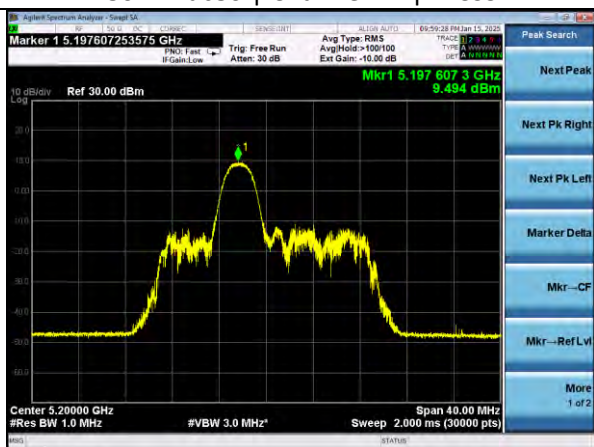
802.11ax40 | Channel 46 | MCS0



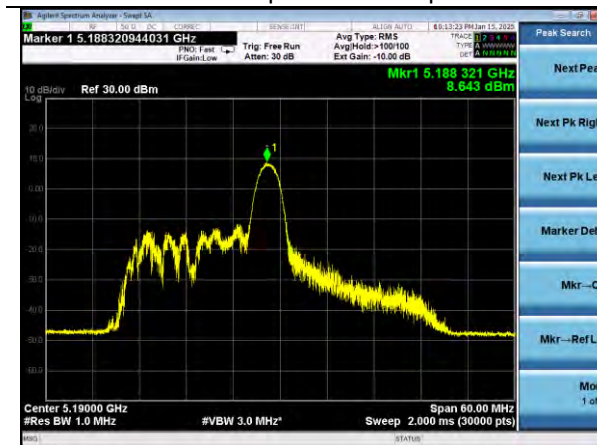
802.11ac80 | Channel 42 | MCS9



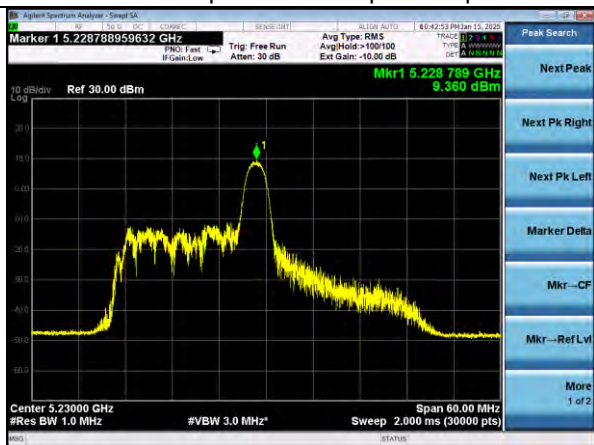
802.11ax80 | Channel 42 | MCS0



802.11ax20 | Channel 40 | MCS0 | RU26



802.11ax40 | Channel 38 | MCS0 | RU26



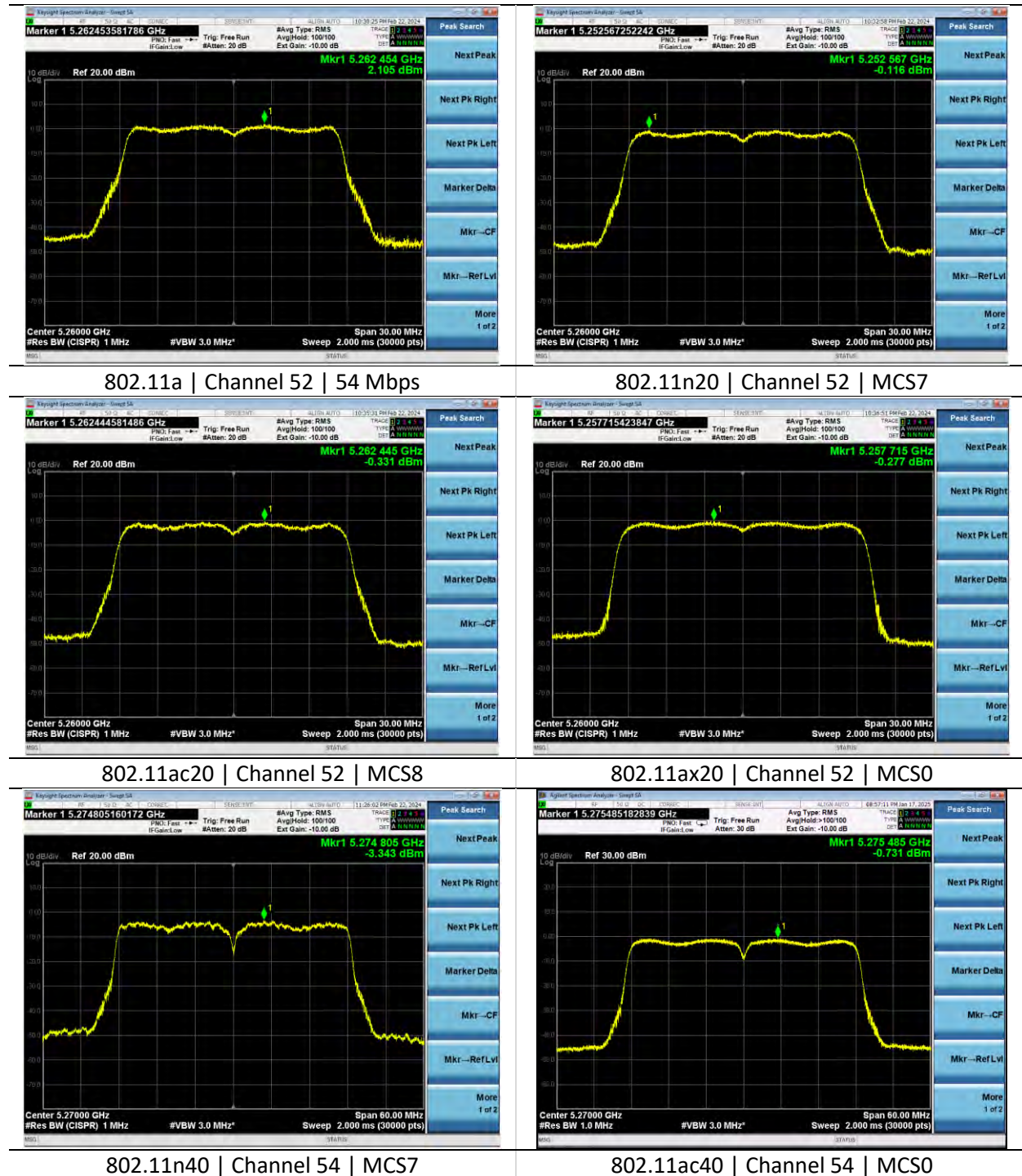
802.11ax80 | Channel 42 | MCS0 | RU26

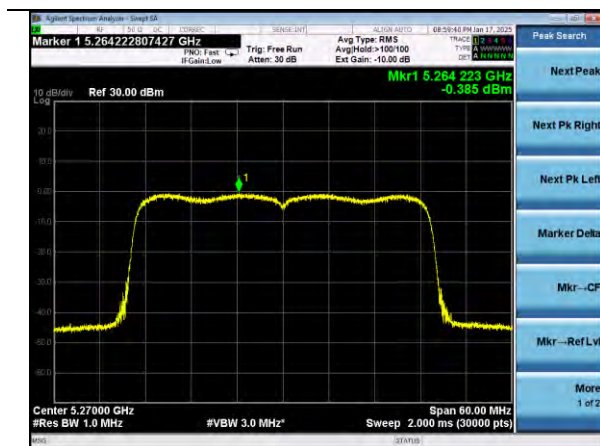
U-NII-2A Measurements

Mode	Rate	Channel	Maximum Average PSD (dBm/MHz)	Duty Cycle Correction (dB)	Corrected Output Value (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
802.11a	6 Mbps	52	2.1	-	2.1	11.0	8.9
		56	1.9	-	1.9	11.0	9.1
		64	1.8	-	1.8	11.0	9.2
	54 Mbps	52	2.1	0.4	2.5	11.0	8.5
		56	1.7	0.4	2.1	11.0	8.9
		64	1.5	0.4	1.9	11.0	9.1
802.11n20	MCS0	52	-0.3	-	-0.3	11.0	11.3
		56	-0.5	-	-0.5	11.0	11.5
		64	-0.4	-	-0.4	11.0	11.4
	MCS7	52	-0.1	0.4	0.3	11.0	10.7
		56	-0.4	0.4	0.0	11.0	11.0
		64	-0.8	0.4	-0.4	11.0	11.4
802.11ac20	MCS0	52	-0.2	-	-0.2	11.0	11.2
		56	-0.2	-	-0.2	11.0	11.2
		64	-0.5	-	-0.5	11.0	11.5
	MCS8	52	-0.3	0.4	0.1	11.0	10.9
		56	-0.4	0.4	0.0	11.0	11.0
		64	-0.9	0.4	-0.5	11.0	11.5
802.11ax20	MCS0	52	-0.3	-	-0.3	11.0	11.3
		56	-0.3	-	-0.3	11.0	11.3
		64	-0.5	-	-0.5	11.0	11.5
	MCS11	52	-4.2	0.5	-3.7	11.0	14.7
		56	-4.3	0.5	-3.8	11.0	14.8
		64	-4.1	0.5	-3.6	11.0	14.6
802.11n40	MCS0	54	-3.5	0.1	-3.4	11.0	14.4
		62	-3.5	0.1	-3.4	11.0	14.4
	MCS7	54	-3.3	0.6	-2.7	11.0	13.7
		62	-3.5	0.6	-2.9	11.0	13.9
	MCS0	54	-0.7	0.1	-0.6	11.0	11.6
		62	-0.7	0.1	-0.6	11.0	11.6
802.11ac40	MCS9	54	-5.6	0.7	-4.9	11.0	15.9
		62	-5.8	0.7	-5.1	11.0	16.1
	MCS0	54	-0.4	0.1	-0.3	11.0	11.3
		62	-1.0	0.1	-0.9	11.0	11.9
802.11ax40	MCS11	54	-7.1	0.7	-6.4	11.0	17.4
		62	-7.4	0.7	-6.7	11.0	17.7
	MCS0	58	-6.9	0.2	-6.7	11.0	17.7
		58	-4.1	1.0	-3.1	11.0	14.1
802.11ac80	MCS0	58	-5.9	0.2	-5.7	11.0	16.7
		58	-10.2	0.8	-9.4	11.0	20.4

Mode	Rate RU	Channel	Maximum Average PSD (dBm/MHz)	Duty Cycle Correction (dB)	Corrected Output Value (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
802.11ax20	MCS0 RU26	52	11.6	0.2	11.8	23.9	12.1
		56	11.5	0.2	11.7	23.9	12.2
		64	11.5	0.2	11.7	23.9	12.2
	MCS0 RU52	52	13.2	0.2	13.4	23.9	10.5
		56	13.1	0.2	13.3	23.9	10.6
		64	12.9	0.2	13.1	23.9	10.8
	MCS0 RU106	52	14.9	0.2	15.1	24.0	8.9
		56	14.9	0.2	15.1	24.0	8.9
		64	14.6	0.2	14.8	24.0	9.2
802.11ax40	MCS0 RU26	54	10.9	0.2	11.1	24.0	12.9
	MCS0 RU26	62	10.9	0.2	11.1	24.0	12.9
	MCS0 RU52	54	12.2	0.2	12.4	24.0	11.6
	MCS0 RU52	62	12.0	0.2	12.2	24.0	11.8
	MCS0 RU106	54	12.3	0.2	12.5	24.0	11.5
	MCS0 RU106	62	12.2	0.2	12.4	24.0	11.6
	MCS0 RU242	54	11.8	0.2	12.0	24.0	12.0
	MCS0 RU242	62	11.8	0.2	12.0	24.0	12.0
802.11ax80	MCS0 RU26	58	9.4	0.2	9.6	24.0	14.4
	MCS0 RU52	58	9.2	0.2	9.4	24.0	14.6
	MCS0 RU106	58	9.1	0.2	9.3	24.0	14.7
	MCS0 RU242	58	9.2	0.2	9.4	24.0	14.6
	MCS0 RU484	58	9.1	0.2	9.3	24.0	14.7
	MCS0 RU484	58	9.1	0.2	9.3	24.0	14.7

U-NII-2A Plots

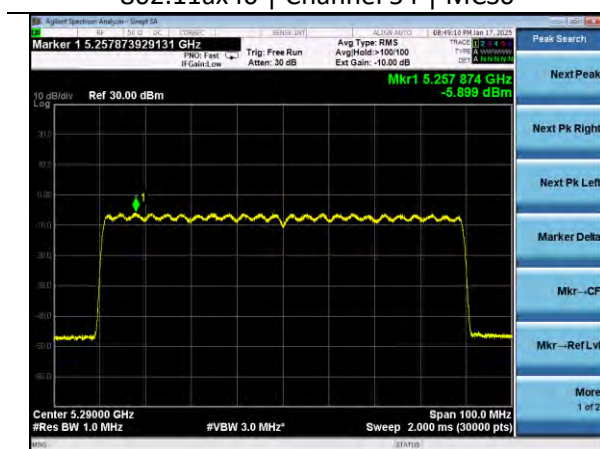




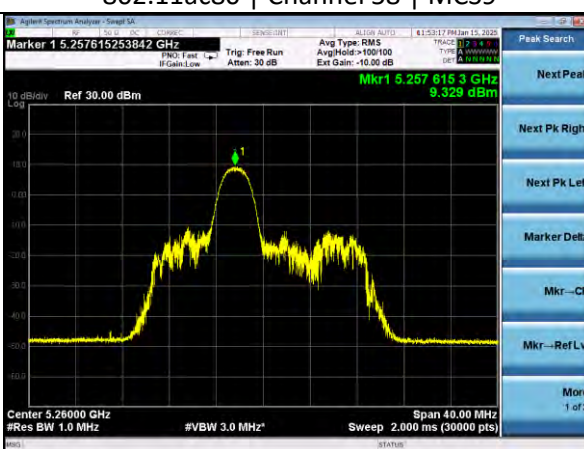
802.11ax40 | Channel 54 | MCS0



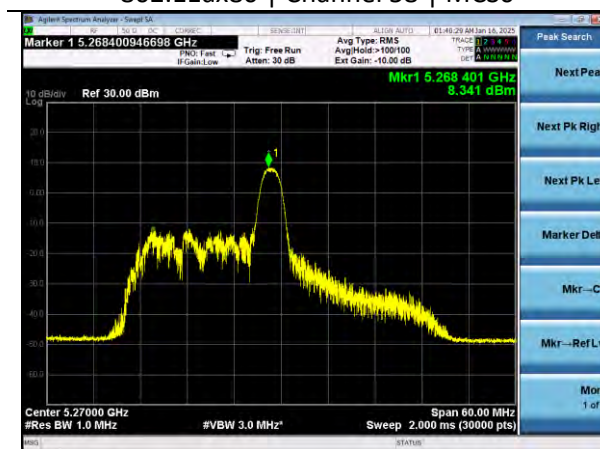
802.11ac80 | Channel 58 | MCS9



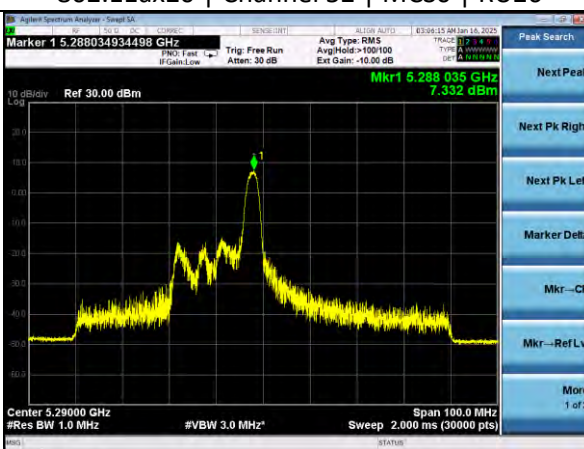
802.11ax80 | Channel 58 | MCS0



802.11ax20 | Channel 52 | MCS0 | RU26



802.11ax40 | Channel 54 | MCS0 | RU26



802.11ax80 | Channel 58 | MCS0 | RU26

6.1.4 Frequency Stability

Operator	Dylan Rosenfeldt	QA	Anthony Smith
Temperature	21.8°C	R.H. %	31.90%
Test Date	04/25/2024	Location	Conducted RF Bench
Requirement	15.407(g) RSS-GEN Clause 6.11	Method	ANSI C63.10 6.8

Test Parameters

Frequency	5170-5330 MHz	Voltage	4.3 VDC, 5 VDC, and 5.8 VDC
Detector(s)	Peak	Settings	Max Hold

Instrumentation

Asset #	Description	Manufacturer	Model #	Serial #	Date	Due Date	Status
AA 960173	Cable	A.H. Systems, Inc.	SAC-26G-1	387	06/13/2023	06/12/2024	Active Verification
EE 960088	Analyzer - EMI Receiver	Agilent	N9038A	MY51210138	4/10/2023	4/10/2024	Active Calibration

Table

Channel	Voltage (VDC)	Center Frequency (Hz)
36	5	5179963970
	4.3	5179962934
	5.8	5179963120
40	5	5199963004
	4.3	5199963222
	5.8	5199962842
48	5	5239962847
	4.3	5239962898
	5.8	5239963980
52	5	5259966867
	4.3	5259963089
	5.8	5259962849
56	5	5279963074
	4.3	5279962760
	5.8	5279963259
64	5	5319963354
	4.3	5319965282
	5.8	5319963922

6.2 Radiated Emissions

Description of Measurement	The frequency spectrum is investigated for intentional and / or unintentional signals emanating from the EUT by use of a standardized test site and measurement antenna. The antenna, cable, pre-amp, and other necessary measurement system correction factors are loaded onto the EMI receiver / spectrum analyzer when the measurements are performed allowing the data to be gathered and reported as corrected values. The maximum emissions from the EUT are determined by turn-table azimuth rotation (360°) and scanning of the measurement antenna. Maximized levels are noted at degree values of azimuth, measurement antenna height, and measurement antenna polarity.
Example Calculations	Measurement (dBμV) + Cable factor (dB) + Other (dB) + Antenna Factor (dB/m) = Corrected Reading (dBμV/m) Margin (dB) = Limit (dBμV/m) - Corrected Reading (dBμV/m) Example at 4000 MHz: Reading = 40 dBμV + 3.4 dB + 0.9 dB + 6.5 dB/m = 50.8 dBμV/m Average Limit = 20 log (500) = 54 dBμV/m Margin = 54 dBμV/m - 50.8 dBμV/m = 3.2 dB

Block Diagram



6.2.1 Undesirable Radiated Emissions

Operator	Jon Dille Dylan Rosenfeldt	QA	Dylan Rosenfeldt Adam Alger Anthony Smith
Temperature	23.1°C-24.1°C	R.H. %	18.20%-28.10%
Test Date	12/09/2024-01/06/2025	Location	Chamber 3 Chamber 5
Requirement	15.407 (b)(1),(2),(9) & (10) RSS-247 Clause 6.2.1 & 6.2.2 RSS-GEN Clause 8.9	Method	ANSI C63.10 12.7

15.407 Limits: For transmitters operating in the 5.15-5.25 GHz band and 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

15.407 Limits:

Frequency (MHz)	Peak Limit (dBμV/m)
30-40000	68.2

15.209 Limits:

Frequency (MHz)	Quasi-Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Peak Limit (dBμV/m)
30-88	40.0	-	-
88-216	43.5	-	-
216-960	46.0	-	-
960-1000	54.0	-	-
1000-40000	-	54.0	74.0

Test Parameters

Frequency	30-40000 MHz	Distance	3 m
Detector(s)	Peak Trace Peak and Average Final	Table height	150 cm
RBW	<1000 MHz – 120 kHz >1000 – 1 MHz	VBW	<1000 – 1.2 MHz >1000 – See 2.9

Instrumentation

Asset #	Description	Manufacturer	Model #	Serial #	Date	Due Date	Status
AA 960007	Antenna - Double Ridge Horn	EMCO	3115	9311-4138	8/10/2023	8/10/2024	Active Calibration
AA 960081	Antenna - Double Ridge Horn	EMCO	3115	6907	1/11/2024	1/11/2025	Active Calibration
AA 960158	Antenna - Double Ridge Horn	ETS Lindgren	3117	109300	2/7/2024	2/7/2025	Active Calibration
AA 960161	Filter - Highpass 5 GHz	K&L Microwave	11SH10-8000	2	4/11/2023	4/11/2024	Active Calibration
AA 960163	Antenna - Log Periodic	A.H. Systems, Inc.	SAS-512-2	500	8/10/2023	8/10/2024	Active Calibration
AA 960217	Antenna - Biconical	A.H. Systems, Inc.	SAS-540	852	7/17/2023	7/17/2024	Active Calibration
AA 960220	Cable	A.H. Systems, Inc.	SAC-26G-6	552	2/16/2023	2/16/2025	Active Verification
AA 960221	Cable	A.H. Systems, Inc.	SAC-26G-6	524	6/13/2023	6/13/2024	Active Verification
EE 960085	Analyzer - EMI Receiver	Agilent	N9038A	MY51210148	4/27/2023	4/27/2024	Active Calibration
EE 960203	Analyzer - EMI Receiver	Keysight	N9038A	MY56400072	4/11/2023	4/11/2024	Active Calibration
LSC-300	Cable	Chamber 3 Emissions	-	-	1/5/2024	1/5/2025	Active Verification
LSC-500	Cable	Chamber 5 Emissions	-	-	1/8/2024	1/8/2025	Active Verification

EUT Parameters

Input Power	120 VAC @ 60 Hz	Mode	5 GHz WLAN Tx
EUT	X, Y, Z Plane Orientations Antenna ports terminated with 50 Ω SMA terminators	AE	HP Elitebook 840G1 Ezurio – SOM60 Development Kit
Notes	6000 MHz Emission from auxiliary equipment. Not a function of the EUT. Only worst case EUT orientation reported.		

Radiated Spurious – 30-1000 MHz

No Emissions measured in 30-1000 MHz frequency range

Company: Ezurio	Page 42 of 52	Name: SONA NX611
Report: TR3768-180-5G-UNII1-UNII2A		Model: SONA NX611C
Quote: C-3768		Serial: 00026 00028 00042

Measurements – Lower Band Edge – UNII 1

Mode	Rate	Channel	Measurement Type	Frequency (MHz)	Measurement (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Power Setting
802.11a	6 Mbps	36	Peak	5147.0	56.0	68.2	12.2	16
		36	Average	5149.9	43.2	54.0	10.8	16
802.11n20	MCS0	36	Peak	4901.7	58.1	68.2	10.1	14
		36	Average	5148.4	46.7	54.0	7.3	14
802.11ac20	MCS0	36	Peak	5147.0	56.0	68.2	12.2	14
		36	Average	5149.9	43.2	54.0	10.8	14
802.11ax20	MCS0	36	Peak	4901.7	58.1	68.2	10.1	14
		36	Average	5148.4	46.7	54.0	7.3	14
802.11n40	MCS0	38	Peak	5148.5	60.4	68.2	7.8	14
		38	Average	5149.6	50.5	54.0	3.5	14
802.11ac40	MCS0	38	Peak	5148.7	60.1	68.2	8.1	14
		38	Average	5149.6	51.3	54.0	2.7	14
802.11ax40	MCS0	38	Peak	5148.9	59.8	68.2	8.4	14
		38	Average	5149.8	50.3	54.0	3.7	14
802.11ac80	MCS0	42	Peak	5148.1	60.5	68.2	7.7	12
		42	Average	5114.1	51.1	54.0	2.9	12
802.11ax80	MCS0	42	Peak	5148.1	60.5	68.2	7.7	12
		42	Average	5114.1	51.1	54.0	2.9	12

Mode	Rate	Channel	Measurement Type	Frequency (MHz)	Measurement (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Power Setting
802.11ax20	MCS0	36	Peak	5146.1	63.8	68.2	4.4	14
	RU26	36	Average	5138.0	47.2	54.0	6.8	14
802.11ax20	MCS0	36	Peak	4858.0	63.5	68.2	4.7	14
	RU52	36	Average	5144.9	45.3	54.0	8.7	14
802.11ax20	MCS0	36	Peak	4832.4	63.5	68.2	4.7	14
	RU106	36	Average	5149.1	45.8	54.0	8.2	14
802.11ax40	MCS0	38	Peak	4882.5	63.4	68.2	4.8	13
	RU26	38	Average	5136.8	47.3	54.0	6.7	13
802.11ax40	MCS0	38	Peak	4839.2	63.1	68.2	5.1	13
	RU52	38	Average	5139.7	47.2	54.0	6.8	13
802.11ax40	MCS0	38	Peak	5108.7	59.6	68.2	8.6	13
	RU106	38	Average	5146.6	45.9	54.0	8.1	13
802.11ax40	MCS0	38	Peak	5149.0	55.3	68.2	12.9	13
	RU242	38	Average	5147.1	45.8	54.0	8.2	13
802.11ax80	MCS0	42	Peak	4873.2	59.2	68.2	9.0	10
	RU26	42	Average	5085.5	45.3	54.0	8.7	10
802.11ax80	MCS0	42	Peak	4980.3	59.1	68.2	9.1	10
	RU52	42	Average	5139.7	45.9	54.0	8.1	10
802.11ax80	MCS0	42	Peak	5047.2	59.7	68.2	8.5	10
	RU106	42	Average	5147.9	45.7	54.0	8.3	10
802.11ax80	MCS0	42	Peak	4869.6	54.7	68.2	13.5	10
	RU242	42	Average	5143.3	46.1	54.0	7.9	10
802.11ax80	MCS0	42	Peak	5149.5	63.7	68.2	4.5	10
	RU484	42	Average	5149.4	47.1	54.0	6.9	10

Measurements – Upper Band Edge – UNII 2A

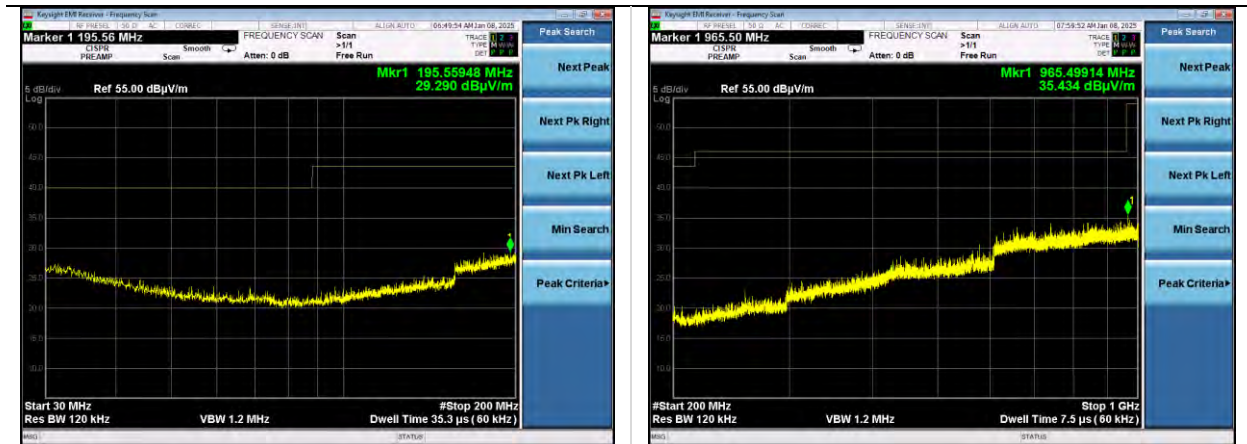
Mode	Rate	Channel	Measurement Type	Frequency (MHz)	Measurement (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Power Setting
802.11a	6 Mbps	64	Peak	5350.3	58.5	68.2	9.7	16
		64	Average	5350.0	45.0	54.0	9.0	16
802.11n20	MCS0	64	Peak	5354.1	54.4	68.2	13.8	14
		64	Average	5350.0	42.3	54.0	11.7	14
802.11ac20	MCS0	64	Peak	5353.6	54.8	68.2	13.4	14
		64	Average	5350.0	42.4	54.0	11.6	14
802.11ax20	MCS0	64	Peak	5350.9	53.6	68.2	14.6	14
		64	Average	5351.2	42.9	54.0	11.1	14
802.11n40	MCS0	62	Peak	5350.1	62.8	68.2	5.4	14
		62	Average	5350.1	47.2	54.0	6.8	14
802.11ac40	MCS0	62	Peak	5354.0	60.1	68.2	8.1	14
		62	Average	5350.9	47.2	54.0	6.8	14
802.11ax40	MCS0	62	Peak	5351.2	61.1	68.2	7.1	14
		62	Average	5350.3	48.5	54.0	5.5	14
802.11ac80	MCS0	58	Peak	5364.3	62.9	68.2	5.3	14
		58	Average	5353.7	51.4	54.0	2.6	14
802.11ax80	MCS0	58	Peak	5354.8	62.5	68.2	5.7	14
		58	Average	5352.6	51.7	54.0	2.3	14

Mode	Rate	Channel	Measurement Type	Frequency (MHz)	Measurement (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Power Setting
802.11ax20	MCS0	64	Peak	5361.2	62.8	68.2	5.4	14
	RU26	64	Average	5408.1	42.6	54.0	11.4	14
802.11ax20	MCS0	64	Peak	5350.0	60.2	68.2	8.0	14
	RU52	64	Average	5350.0	41.5	54.0	12.5	14
802.11ax20	MCS0	64	Peak	5351.9	52.7	68.2	15.5	14
	RU106	64	Average	5351.6	42.0	54.0	12.0	14
802.11ax40	MCS0	62	Peak	5354.8	56.5	68.2	11.7	13
	RU26	62	Average	5388.6	44.1	54.0	9.9	13
802.11ax40	MCS0	62	Peak	5350.8	64.8	68.2	3.4	13
	RU52	62	Average	5359.3	43.0	54.0	11.0	13
802.11ax40	MCS0	62	Peak	5357.5	58.6	68.2	9.6	13
	RU106	62	Average	5356.8	42.8	54.0	11.2	13
802.11ax40	MCS0	62	Peak	5371.1	53.8	68.2	14.4	13
	RU242	62	Average	5350.5	42.5	54.0	11.5	13
802.11ax80	MCS0	58	Peak	5405.2	62.1	68.2	6.1	10
	RU26	58	Average	5404.6	44.6	54.0	9.4	10
802.11ax80	MCS0	58	Peak	5350.8	65.9	68.2	2.3	10
	RU52	58	Average	5352.7	44.4	54.0	9.6	10
802.11ax80	MCS0	58	Peak	5387.9	58.3	68.2	9.9	10
	RU106	58	Average	5359.1	42.5	54.0	11.5	10
802.11ax80	MCS0	58	Peak	5415.5	53.8	68.2	14.4	10
	RU242	58	Average	5353.6	42.4	54.0	11.6	10
802.11ax80	MCS0	58	Peak	5362.9	53.4	68.2	14.8	10
	RU484	58	Average	5350.4	43.4	54.0	10.6	10

Spurious Measurements

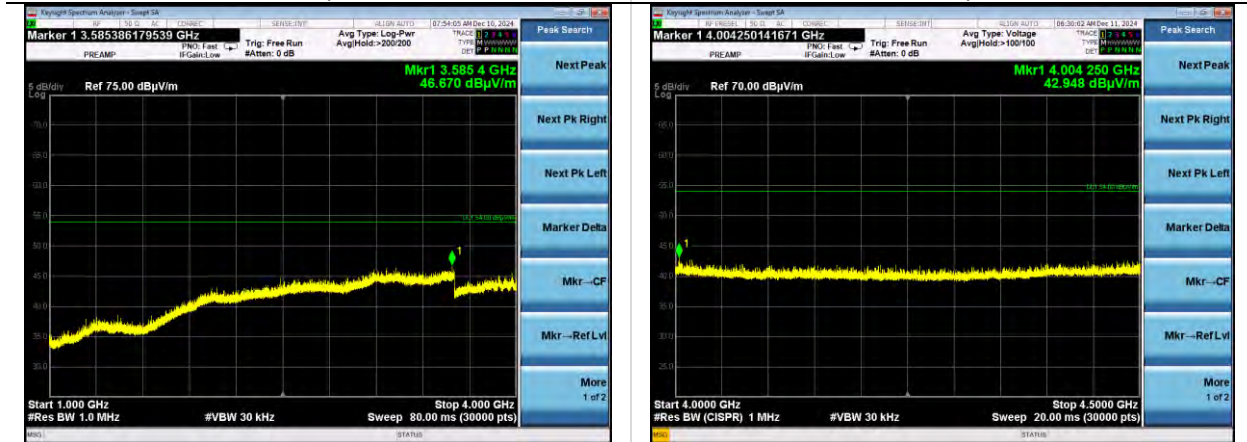
Mode	Rate	Channel	Measurement Type	Frequency (MHz)	Measurement (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Power Setting
802.11a	6 Mbps	52	Peak	24016.9	59.5	68.2	8.7	16
		52	Average	24016.9	46.1	54.0	7.9	16
		52	Peak	38617.3	58.4	68.2	9.8	16
		52	Average	38617.3	46.6	54.0	7.4	16

Worst Case Plots



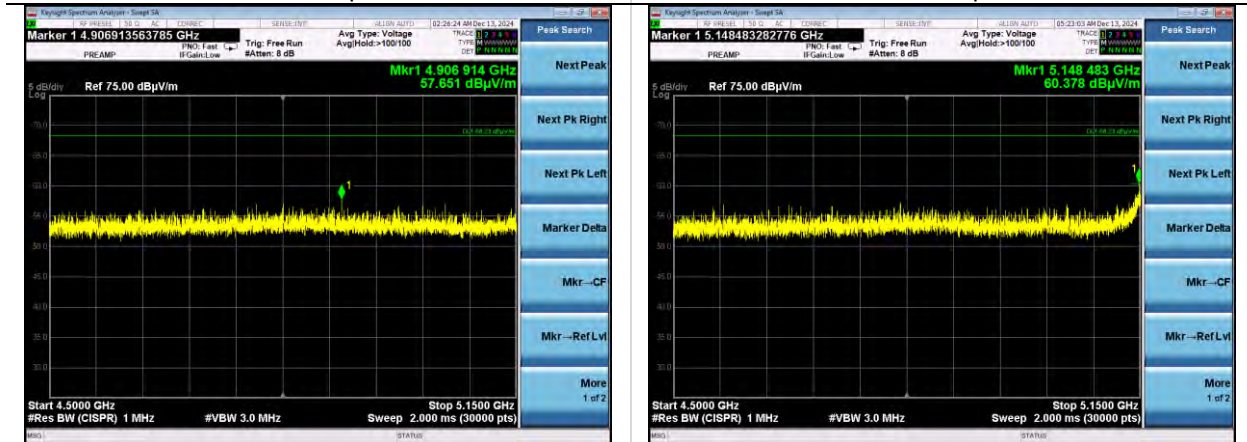
802.11a | Channel 52 | 6 Mbps | X Plane
30-200 MHz | Horizontal

802.11a | Channel 52 | 6 Mbps | X Plane
200-1000 MHz | Horizontal



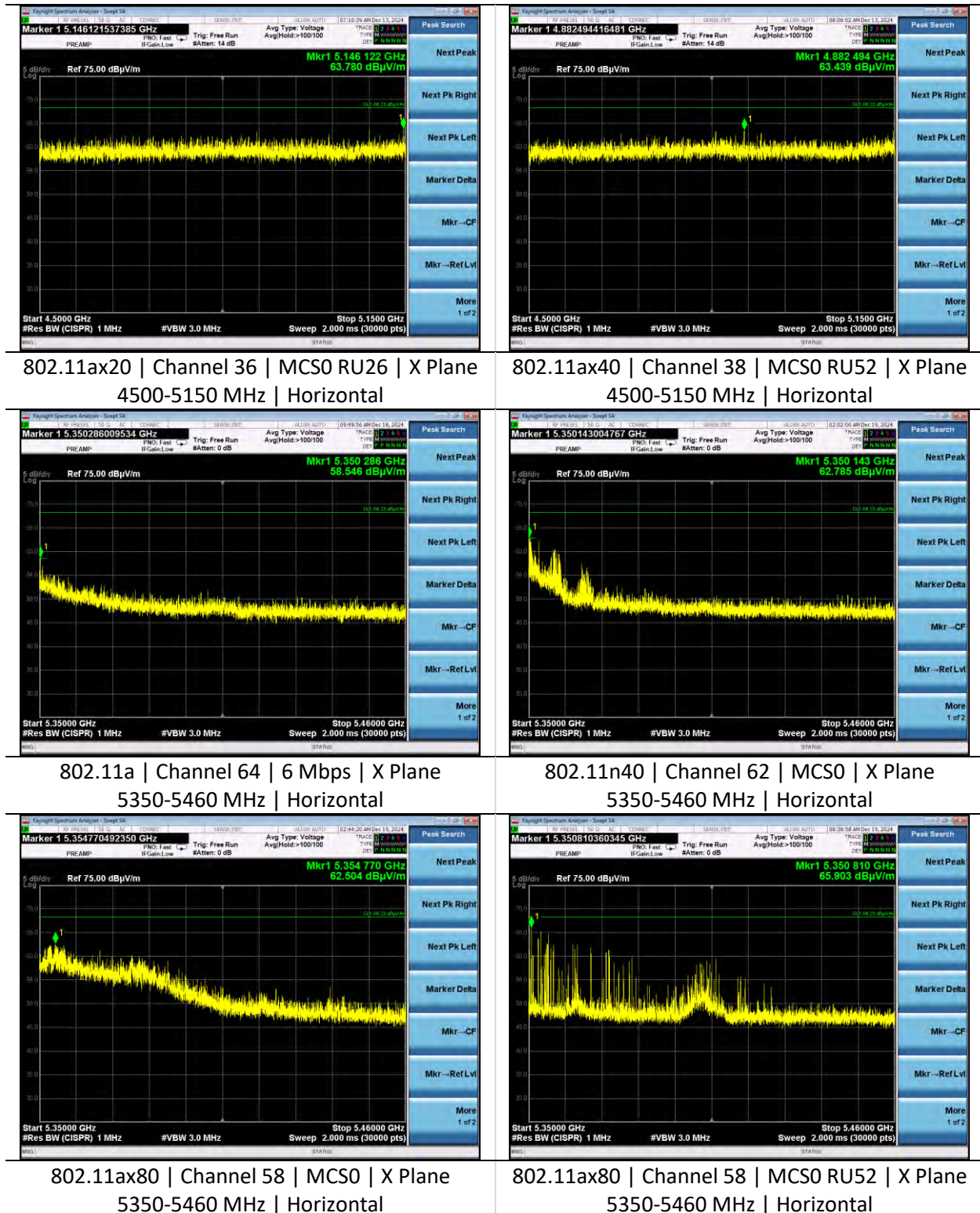
802.11a | Channel 36 | 6 Mbps | X Plane
1000-4000 MHz | Horizontal

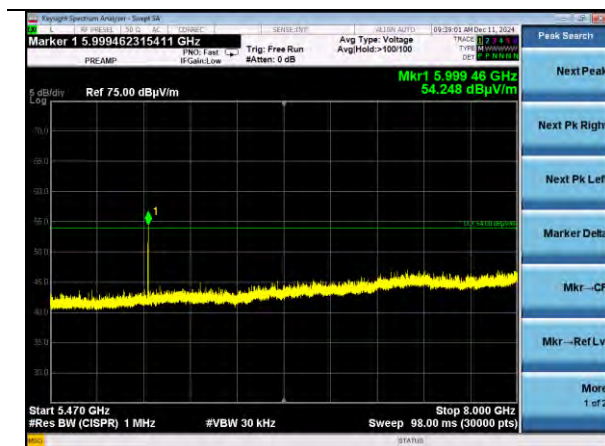
802.11a | Channel 36 | 6 Mbps | Y Plane
4000-4500 MHz | Horizontal



802.11n20 | Channel 36 | MCS0 | X Plane
4500-5150 MHz | Horizontal

802.11ac40 | Channel 38 | MCS0 | X Plane
4500-5150 MHz | Horizontal

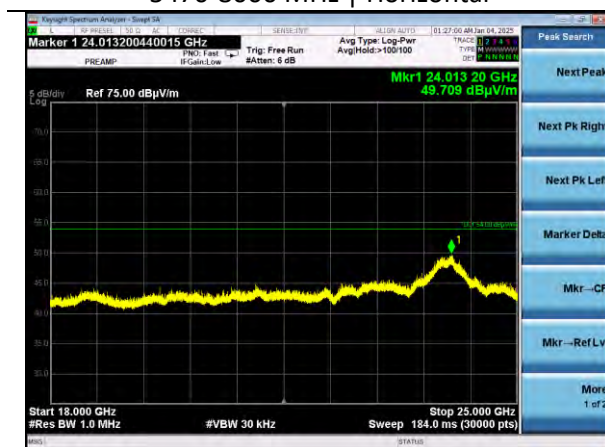




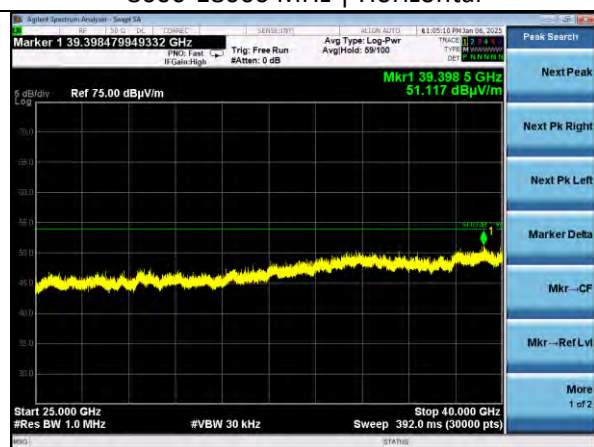
802.11ax20 | Channel 52 | MCS0 RU26 | X Plane
5470-8000 MHz | Horizontal



802.11ax40 | Channel 38 | MCS0 RU52 | X Plane
8000-18000 MHz | Horizontal



802.11a | Channel 52 | 6 Mbps | X Plane
18000-25000 MHz | Vertical



802.11a | Channel 52 | 6 Mbps | X Plane
25000-40000 MHz | Horizontal

6.3 AC Mains Conducted Emissions

A line impedance stabilization network (LISN) or artificial mains network (AMN) allows the emissions of the power supply conductors to be measured while isolating the EUT from the supply mains.

Description of Measurement

The AMN, cable, and other necessary measurement system correction factors are loaded onto the EMI receiver when the measurements are performed. The data is gathered and reported as the corrected values.

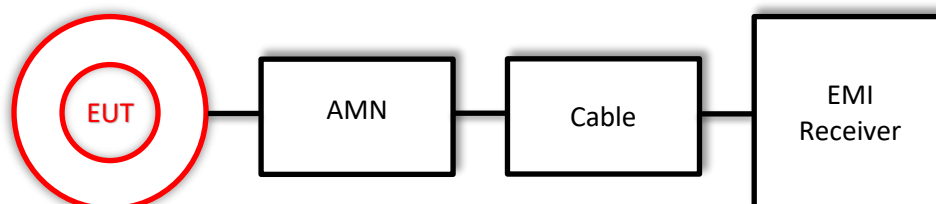
Maximum emissions are determined with a peak max hold trace then measurements at a selection of the highest points are made with quasi-peak and average detectors. Results are recorded and compared to limit for each line. (e.g. line and neutral)

Example Calculations

Measurement (dBμV) + Cable factor (dB) + Other (dB) = Corrected Reading (dBμV)

Margin (dB) = Limit (dBμV) - Corrected Reading (dBμV)

Block Diagram



6.3.1 AC Mains Conducted Emissions

Operator	Jon Dille	QA	Adam Hauke
Temperature	21.2°C	R.H. %	28.40%
Test Date	04/05/2024	Location	AC Conducted Bench
Requirement	15.407(b)(9) RSS-GEN	Method	ANSI C63.10 6.2

Limits:

Frequency (MHz)	Quasi-Peak Limit (dBμV)	Average Limit (dBμV)
0.15-0.5	66.0-56.0*	56.0-46.0*
0.5-5	56.0	46.0
5-30	60.0	50.0

*Decreases with the logarithm of the frequency.

Test Parameters

Frequency	0.15-30 MHz	Distance	40 cm from wall 80 cm from LISN
Detector(s)	Peak Trace Quasi-Peak, Average Final	Table height	80 cm
RBW	9 kHz	VBW	62 kHz
Notes	Channel has no effect on emission		

Instrumentation

Asset #	Description	Manufacturer	Model #	Serial #	Date	Due Date	Status
EE 960088	Analyzer - EMI Receiver	Agilent	N9038A	MY51210148	4/27/2023	4/27/2024	Active Calibration
EE 960089	LISN	COM-POWER	LI-215A	191943	4/10/2023	4/10/2024	Active Calibration
EE 960162	LISN	COM-POWER	LI-215A	191969	4/10/2023	4/10/2024	Active Calibration
LSC-212	Cable	Micro-Coax	UFB311A-0-1440-70U70U	64639 224071-001	1/8/2024	1/8/2025	Active Verification

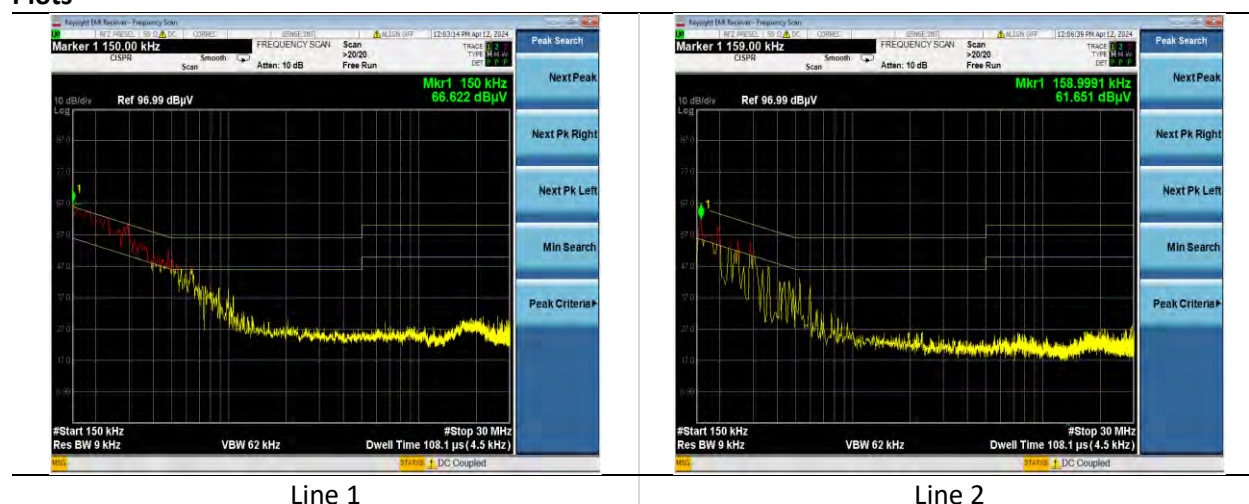
EUT Parameters

Input Power	120 VAC @ 60 Hz	Mode	5 GHz WLAN Tx Channel 64
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Measurements

Line	Frequency (MHz)	Quasi Peak Reading (dBμV)	Quasi-Peak Limit (dBμV)	Quasi Peak Margin (dB)	Average Reading (dBμV)	Average Limit (dBμV)	Average Margin (dB)
1	0.159	59.5	65.5	6.0	35.3	55.5	20.2
1	0.368	42.8	58.6	15.8	23.0	48.6	25.6
1	21.660	27.8	60.0	32.2	19.9	50.0	30.1
2	0.150	58.2	66.0	7.8	35.8	56.0	20.2
2	0.553	34.5	56.0	21.5	20.7	46.0	25.3
2	29.240	26.7	60.0	33.3	19.9	50.0	30.1

Plots



7 REVISION HISTORY

Version	Date	Notes	Person
0	01/23/2025	Initial Draft	Dylan Rosenfeldt
1	02/10/2025	Revised Draft	Dylan Rosenfeldt
2	02/12/2025	Final Draft	Dylan Rosenfeldt

END OF REPORT