

Test Report 3768-156-5G-UNII1-UNII2A

Equipment Under Test:	Module, SONA NX 611 SIP, 1 RF Trace Pin
Requirement(s):	eCFR 47 Part 15.407 RSS-247
Test Date(s):	02/12/2024-07/10/2024
Prepared for:	Ezurio Attn: Brian Petted W66 N220 Commerce Ct. Cedarburg, WI 53012

Report Issued by: Adam Hauke, EMC Engineer

Signature: 

Date: 08/08/2024

Report Reviewed by: Adam Alger, Manager EMC Manager

Signature: 

Date: 8/07/2024

Report Constructed by: Adam Hauke, EMC Engineer

Signature: 

Date: 07/30/2024

This test report may not be reproduced, except in full, without approval of Ezurio

Company: Ezurio	Page 1 of 65	Name: Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model: SONA NX611S
Quote: C-3768		Serial: 00033 00027

CONTENTS

Contents.....	2
Ezurio Test Services in Review	3
1 Test Report Summary	4
2 Client Information.....	5
2.1 Equipment Under Test (EUT) Information.....	5
2.2 Product Description.....	5
2.3 Modifications Incorporated for Compliance	5
2.4 Deviations and Exclusions from Test Specifications.....	5
2.5 EUT Information	5
2.6 Ancillary Equipment	6
2.7 Antenna Information.....	6
2.8 Test Channels.....	7
2.9 Power Table and Reduced Video Bandwidth for Average Measurements	7
3 Worst Case Test Results Summary.....	8
4 References	9
5 Uncertainty Summary	10
6 Test Data	11
6.1 Antenna Port Conducted Emissions	11
6.2 Radiated Emissions.....	50
6.3 AC Mains Conducted Emissions.....	62
7 Revision History	65

Company: Ezurio	Page 2 of 65	Name:Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model:SONA NX611S
Quote: C-3768		Serial:00033 00027

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

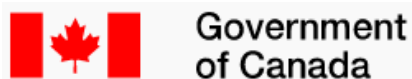
Scope of accreditation includes all test methods listed herein unless otherwise noted



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 65	Name:Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model:SONA NX611S
Quote: C-3768		Serial:00033 00027

1 TEST REPORT SUMMARY

During **02/15/2024-07/10/2024** the Equipment Under Test (EUT), **Module, SONA NX611 SIP, 1 RF Trace Pin**, 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 Clause 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

Company: Ezurio	Page 4 of 65	Name: Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model: SONA NX611S
Quote: C-3768		Serial: 00033 00027

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	Module, SONA NX611 SIP, 1 RF Trace Pin
Part Number	453-00156
Serial Number	00033 00027
FCC ID	SQG-SONANX611S
IC ID	3147A-SONANX611S

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 65	Name:Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model:SONA NX611S
Quote: C-3768		Serial:00033 00027

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)	
					2400-2500 MHz	4900-5925 MHz
Laird Connectivity	FlexMIMO 6E	EFD2471A3S-10MH4L	39.5mm X 39.5mm X 4.7mm	PIFA	2.2	3.8
Laird Connectivity	FlexPIFA 6E	EFB2471A3S-10MH4L	16mm X 36mm X 2.5mm	PIFA	2.2	3.9
Laird Connectivity	Mini NanoBlade Flex 6E	EMF2471A3S-10MH4L	36mm X 12mm X 0.3mm	PCB Dipole	2.4	4.4
Joymax Electronics	N/A	TWX-100BRS3B	137mm X 13mm	Dipole	2.0	4.0
Laird Connectivity	FlexPIFA	EFB2455A3S-16MHF1	38.5mm X 12.7 mm X 2.5mm	PIFA	2.5	3.0

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	11
ax	20	MCS11	8628	10
n	40	MCS0	1506	13
n	40	MCS7	9980	13
ac	40	MCS0	1489	13
ac	40	MCS9	10870	12
ax	40	MCS0	1815	11
ax	40	MCS11	11737	10
ac	80	MCS0	3013	11
ac	80	MCS9	15601	11
ax	80	MCS0	3414	9
ax	80	MCS11	13280	9

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	802.11a	36 6 Mbps	66.3	39.2 dBμV/m	40.0 dBμV/m	0.8 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)(1) RSS-247 Clause 6.2.1 Restricted Band	802.11ac80	58 MCS9	5359.0	-42.2 dBm	-41.2 dBm	1.0 dB

4 REFERENCES

Publication	Edition	Date	AMD 1	AMD 2
FCC eCFR 47 Part 15	-	2023	-	-
ANSI C63.10	-	2020	-	-
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 %

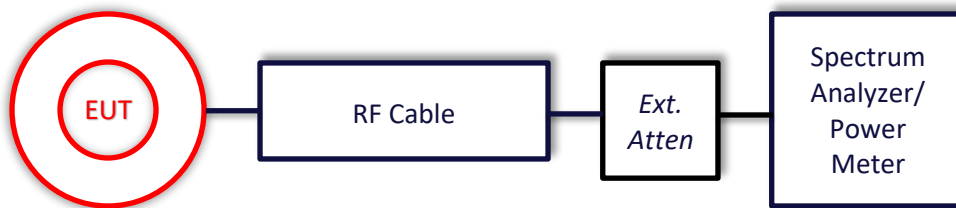
Company: Ezurio	Page 10 of 65	Name: Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model: SONA NX611S
Quote: C-3768		Serial: 00033 00027

6 TEST DATA

6.1 Antenna Port Conducted Emissions

Description of Measurement	<p>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.</p> <p>The cable and attenuator factors are loaded into the analyzer or power meter allowing for direct measurement readings without the need for further corrections.</p>
Example Calculations	<p>Measurement (dBm) + Cable factor (dB) + External Attenuator (dB) = Corrected Reading (dBm)</p> <p>Margin (dB) = Limit (dBm) – Corrected Reading (dBm)</p>

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

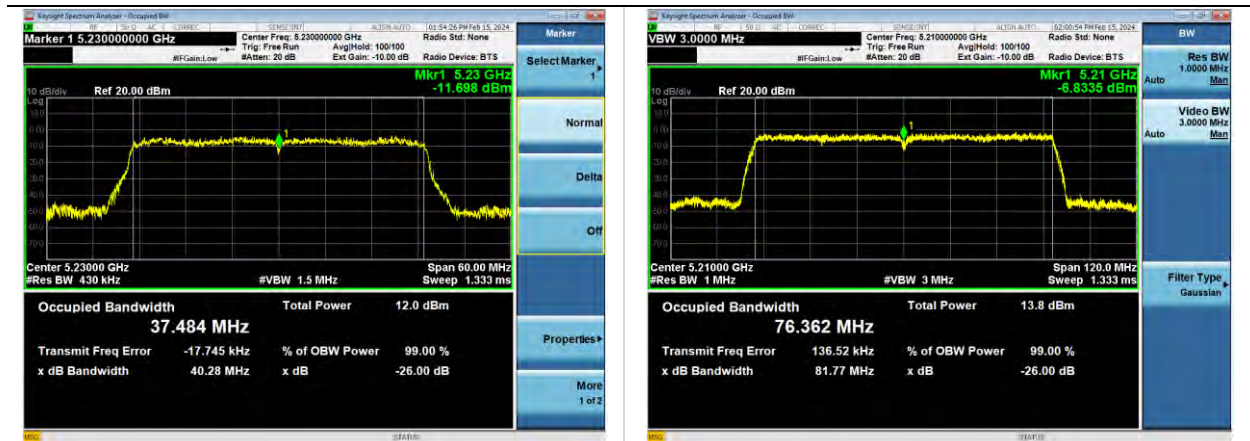
Company: Ezurio	Page 12 of 65	Name: Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model: SONA NX611S
Quote: C-3768		Serial: 00033 00027

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

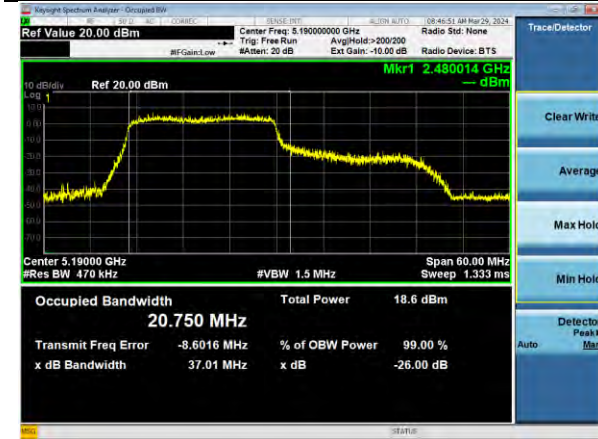
802.11ac80 | Channel 42 | MCS9



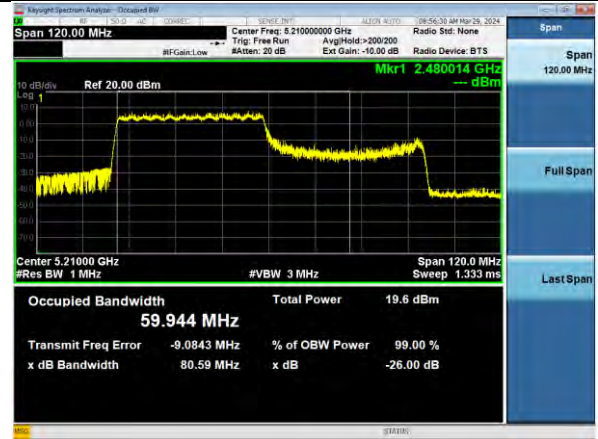
802.11ax80 | Channel 42 | MCS11

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

Company: Ezurio	Page 14 of 65	Name: Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model: SONA NX611S
Quote: C-3768		Serial: 00033 00027



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



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

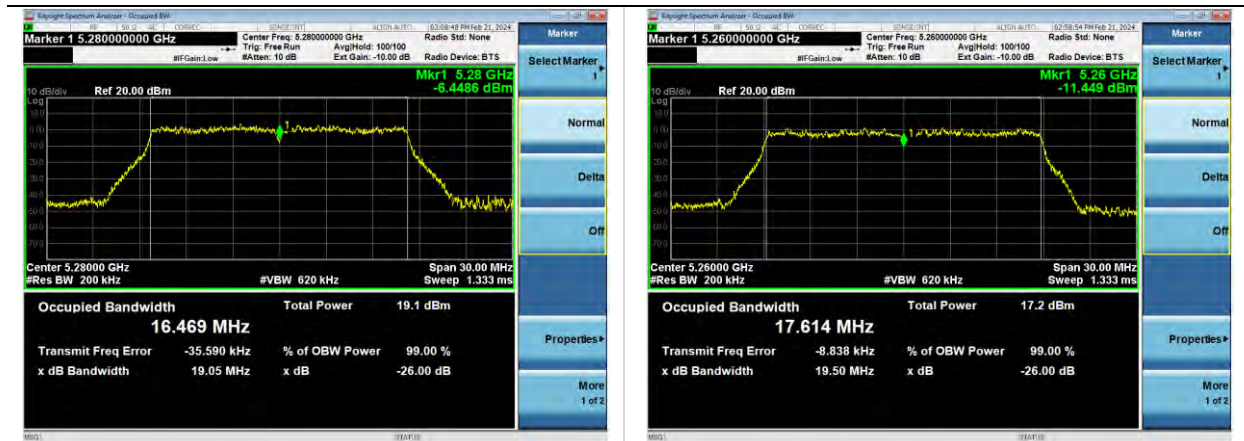
Company: Ezurio	Page 15 of 65	Name: Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model: SONA NX611S
Quote: C-3768		Serial: 00033 00027

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

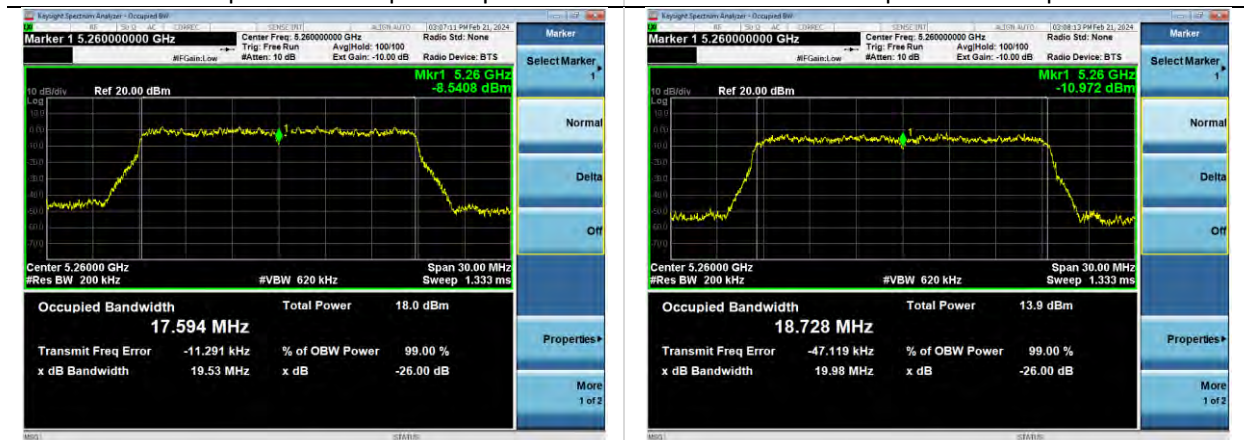
Mode	Rate	Channel	RU Tone / Index	26 dB BW (MHz)	99% BW (MHz)
802.11ax20	MCS0	64	26 / 0	19.1	18.1
			52 / 37	19.1	17.9
			106 / 63	19.3	18.1
802.11ax40	MCS0	62	242 / 61	36.9	20.4
802.11ax80	MCS0	58	484 / 65	80.3	55.5

U-NII-2A Plots



802.11a | Channel 56 | 54 Mbps

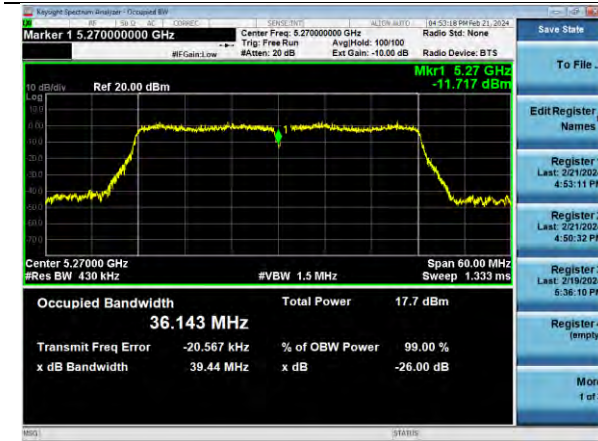
802.11n20 | Channel 52 | MCS7



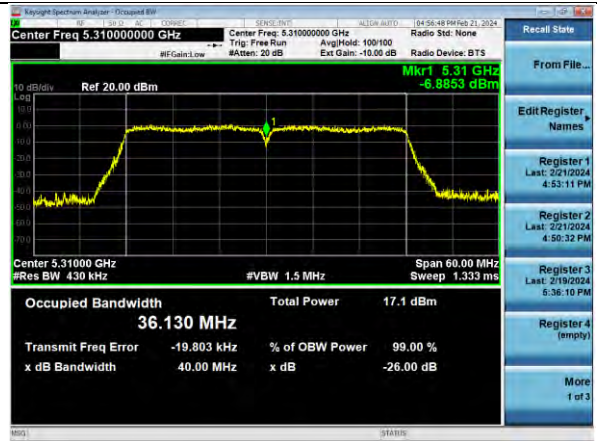
802.11ac20 | Channel 52 | MCS8

802.11ax20 | Channel 52 | MCS11

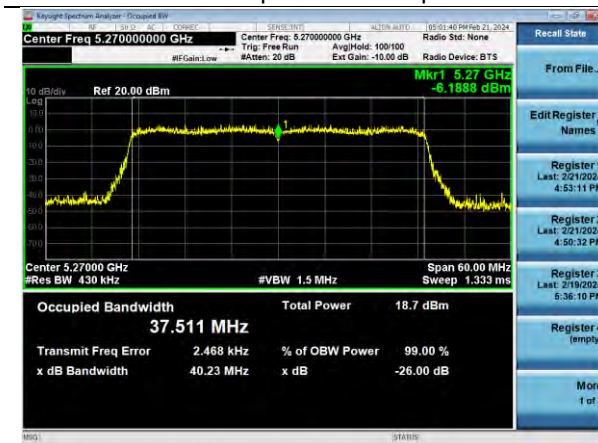
Company: Ezurio	Page 17 of 65	Name: Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model: SONA NX611S
Quote: C-3768		Serial: 00033 00027



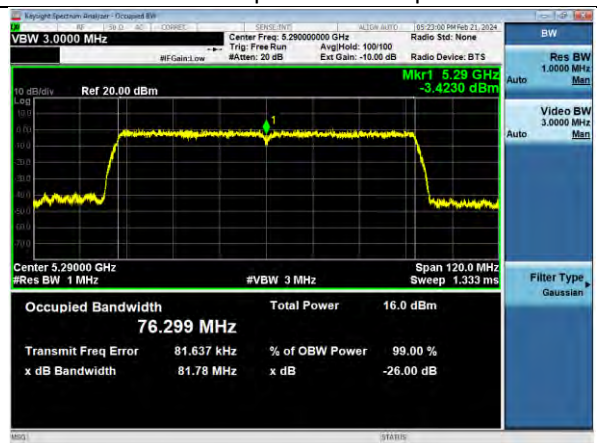
802.11n40 | Channel 54 | MCS7



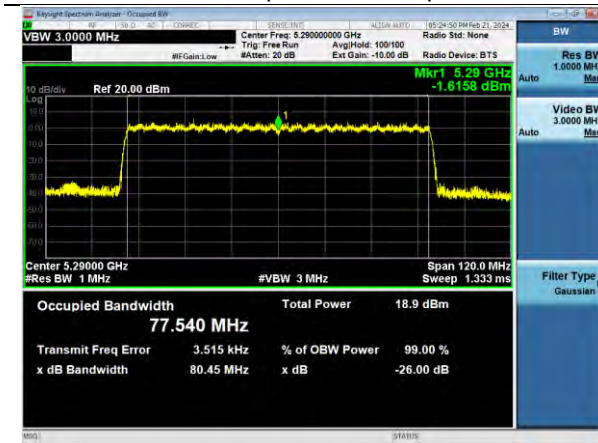
802.11ac40 | Channel 62 | MCS0



802.11ax40 | Channel 54 | MCS0



802.11ac80 | Channel 58 | MCS9

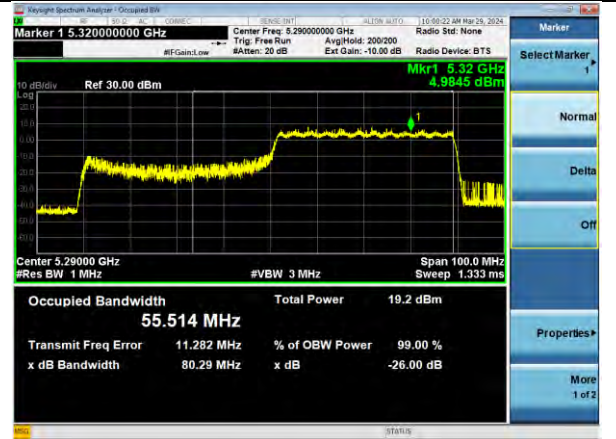
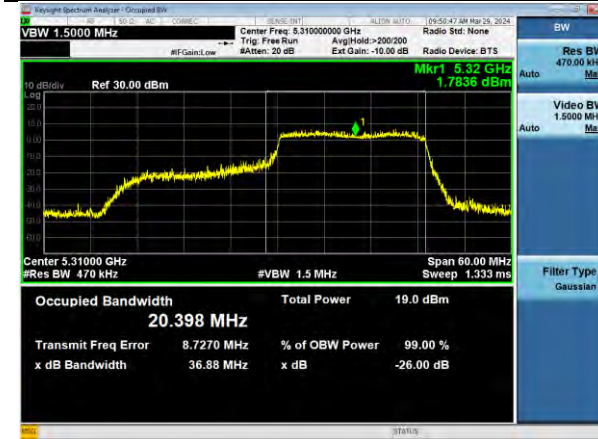


802.11ax80 | Channel 58 | MCS0



802.11ax20 | Channel 64 | MCS0 | RU Tone 26
 Index 0

Company: Ezurio	Page 18 of 65	Name: Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model: SONA NX611S
Quote: C-3768		Serial: 00033 00027



Company: Ezurio	Page 19 of 65	Name: Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model: SONA NX611S
Quote: C-3768		Serial: 00033 00027

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	R.H. %	25.90% 29.30% 53.50% 44.40%
Test Date	02/26/2024-02/27/2024 04/29/2024-04/30/2024	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)	Peak	Settings	Max Hold 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 960172	Cable	A.H. Systems, Inc.	SAC-26G-1	387	06/13/2023	06/12/2024	Active Verification
EE 960087	Analyzer – Spectrum	Agilent	N9010A	MY53400296	04/11/2023	04/11/2024	Active Calibration

EUT Parameters

Input Power	120 VAC @ 60 Hz	Mode	5 GHz WLAN Tx
Frequency	5180-5320 MHz	Channel	See 2.9

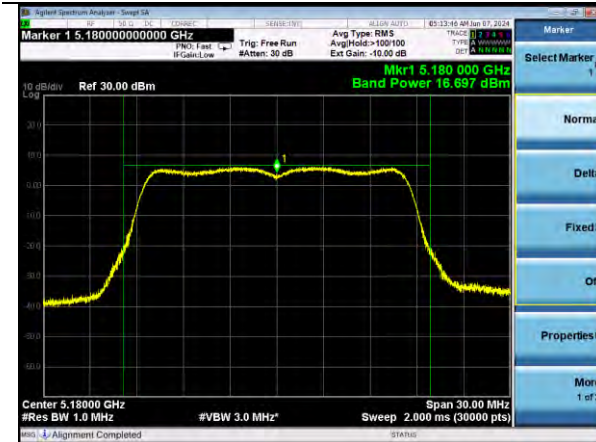
U-NII-1 Measurements

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	14.9	0.1	15.0	24.0	9.0
		46	15.1	0.1	15.2	24.0	8.8
	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	15.3	0.1	15.4	24.0	8.6
		46	15.4	0.1	15.5	24.0	8.5
	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	15.6	0.2	15.8	24.0	8.2
	MCS11	42	10.9	0.8	11.7	24.0	12.3

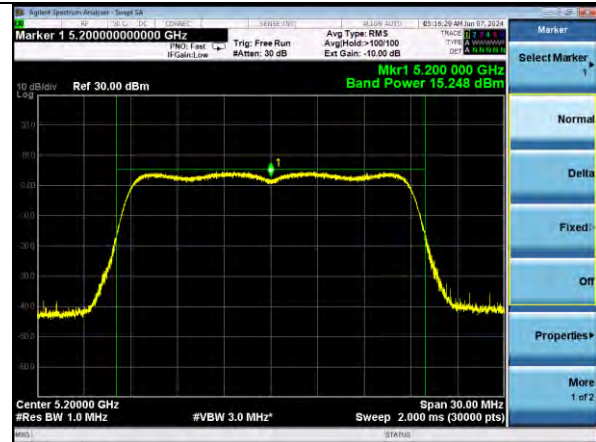
Company: Ezurio	Page 21 of 65	Name: Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model: SONA NX611S
Quote: C-3768		Serial: 00033 00027

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	10.1	0.2	10.3	24.0	13.7
		40	10.1	0.2	10.3	24.0	13.7
		48	10.2	0.2	10.4	24.0	13.6
	MCS0 RU52	36	10.0	0.2	10.2	24.0	13.8
		40	10.2	0.2	10.4	24.0	13.6
		48	10.4	0.2	10.6	24.0	13.5
	MCS0 RU106	36	10.1	0.2	10.3	24.0	13.7
		40	10.1	0.2	10.3	24.0	13.7
		48	10.2	0.2	10.4	24.0	13.6
802.11ax40	MCS0 RU26	38	10.0	0.2	10.2	24.0	13.8
		46	10.3	0.2	10.5	24.0	13.5
	MCS0 RU52	38	10.9	0.2	11.1	24.0	12.9
		46	11.1	0.2	11.3	24.0	12.7
	MCS0 RU106	38	10.9	0.2	11.1	24.0	12.9
		46	11.2	0.2	11.4	24.0	12.6
	MCS0 RU242	38	11.3	0.2	11.5	24.0	12.5
46		11.5	0.2	11.7	24.0	12.3	
802.11ax80	MCS0 RU26	42	11.1	0.2	11.3	24.0	12.7
		42	11.1	0.2	11.3	24.0	12.7
	MCS0 RU106	42	10.8	0.2	11.0	24.0	13.0
		42	10.9	0.2	11.1	24.0	12.9
	MCS0 RU484	42	10.8	0.2	11.0	24.0	13.0

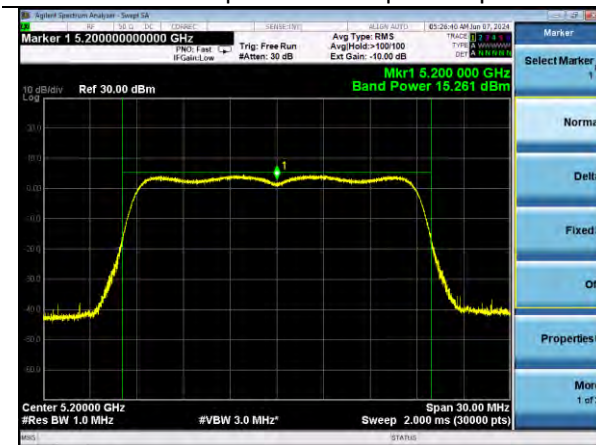
U-NII-1 Plots



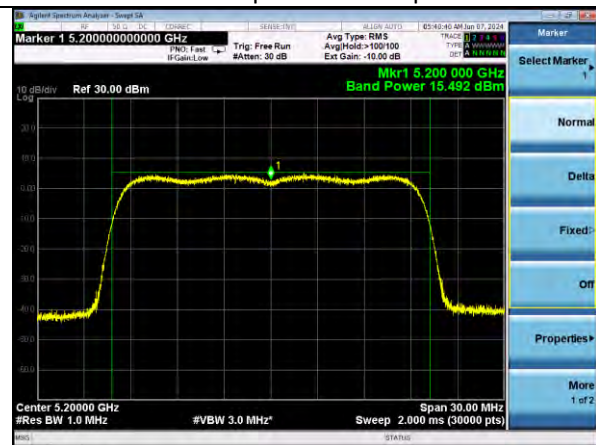
802.11a | Channel 40 | 54 Mbps



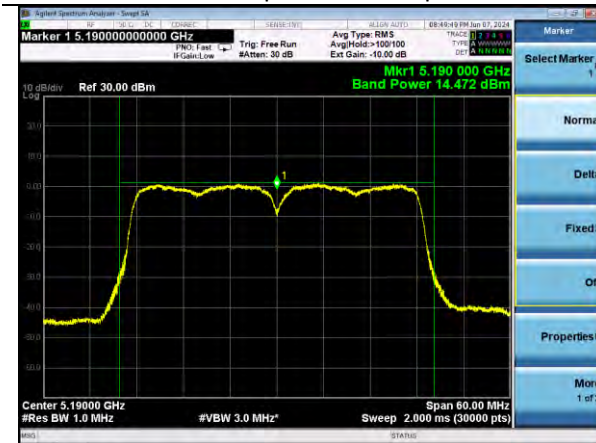
802.11n20 | Channel 40 | MCS0



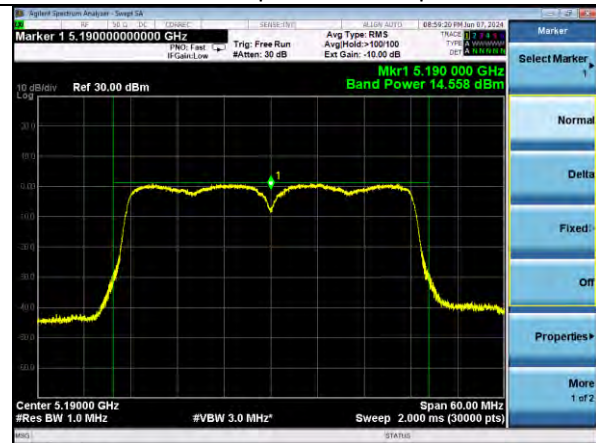
802.11ac20 | Channel 40 | MCS0



802.11ax20 | Channel 40 | MCS0

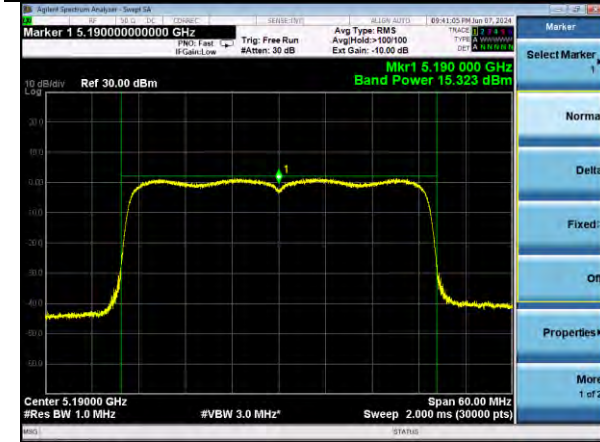


802.11n40 | Channel 38 | MCS7



802.11ac40 | Channel 38 | MCS7

Company: Ezurio	Page 23 of 65	Name: Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model: SONA NX611S
Quote: C-3768		Serial: 00033 00027



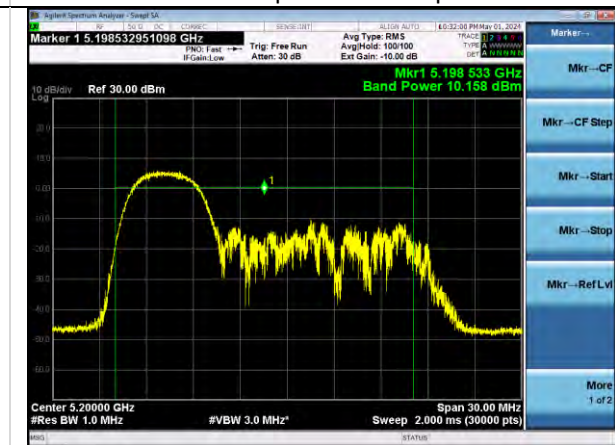
802.11ax40 | Channel 38 | MCS0



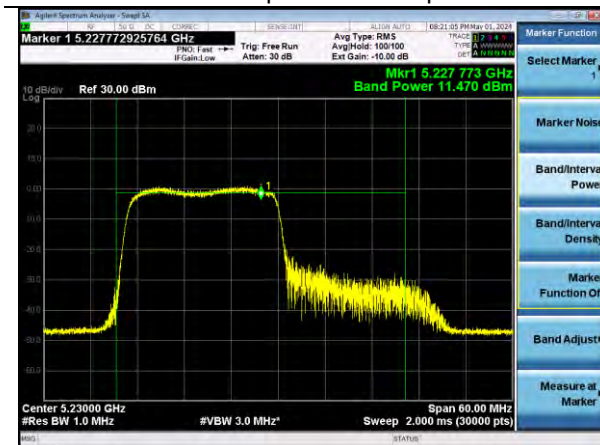
802.11ac80 | Channel 42 | MCS7



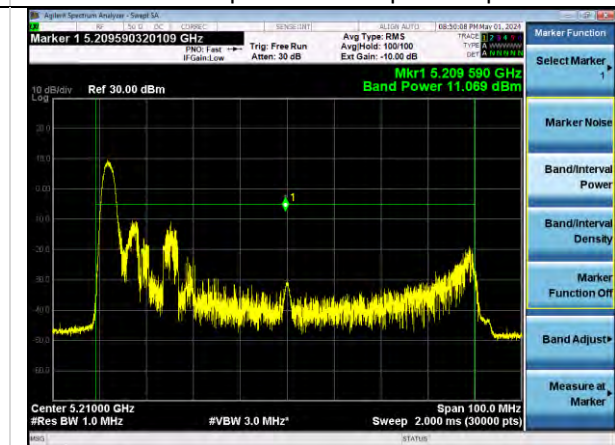
802.11ax80 | Channel 42 | MCS0



802.11ax20 | Channel 40 | MCS0 | RU52



802.11ax40 | Channel 46 | MCS0 | RU 242



802.11ax80 | Channel 42 | MCS0 | RU26

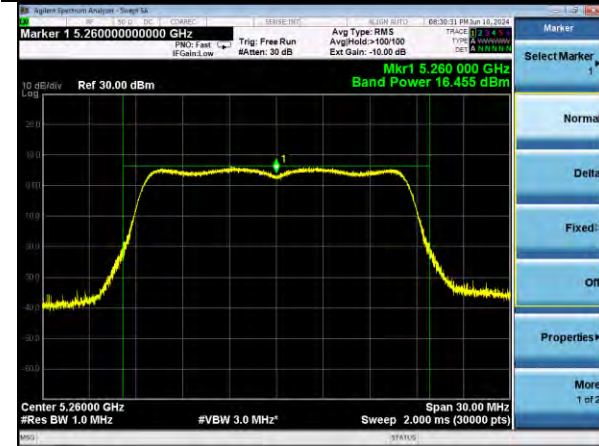
Company: Ezurio	Page 24 of 65	Name: Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model: SONA NX611S
Quote: C-3768		Serial: 00033 00027

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	14.6	0.1	14.7	24.0	9.3
			62	14.3	0.1	14.4	24.0	9.6
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	14.9	0.1	15.0	24.0	9.0	
		62	14.6	0.1	14.7	24.0	9.3	
	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	11.9	1.0	12.9	24.0	11.1	
802.11ax80	MCS0	58	14.9	0.2	15.1	24.0	8.9	
	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	9.8	0.2	10.0	24.0	14.0
		56	9.6	0.2	9.8	24.0	14.2
		64	9.5	0.2	9.7	24.0	14.3
	MCS0 RU52	52	9.9	0.2	10.1	24.0	13.9
		56	9.8	0.2	10.0	24.0	14.0
		64	9.7	0.2	9.9	24.0	14.1
	MCS0 RU106	52	9.8	0.2	10.0	24.0	14.0
		56	9.6	0.2	9.8	24.0	14.2
		64	9.6	0.2	9.8	24.0	14.2
802.11ax40	MCS0 RU26	54	9.8	0.2	10.0	24.0	14.0
		62	9.6	0.2	9.8	24.0	14.2
	MCS0 RU52	54	10.7	0.2	10.9	24.0	13.1
		62	10.5	0.2	10.7	24.0	13.3
	MCS0 RU106	54	10.6	0.2	10.8	24.0	13.2
		62	10.5	0.2	10.7	24.0	13.3
	MCS0 RU242	54	11.0	0.2	11.2	24.0	12.8
62		10.8	0.2	11.0	24.0	13.0	
802.11ax80	MCS0 RU26	58	10.7	0.2	10.9	24.0	13.1
		58	10.7	0.2	10.9	24.0	13.1
	MCS0 RU106	58	10.4	0.2	10.6	24.0	13.4
		58	10.4	0.2	10.6	24.0	13.4
	MCS0 RU484	58	10.2	0.2	10.4	24.0	13.6

U-NII-2A Plots



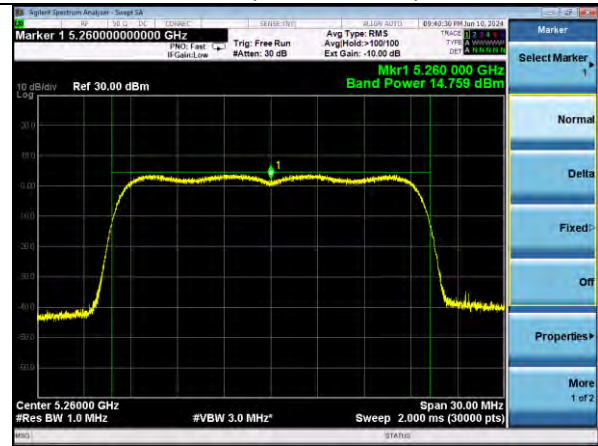
802.11a | Channel 52 | 6 Mbps



802.11n20 | Channel 52 | MCS7



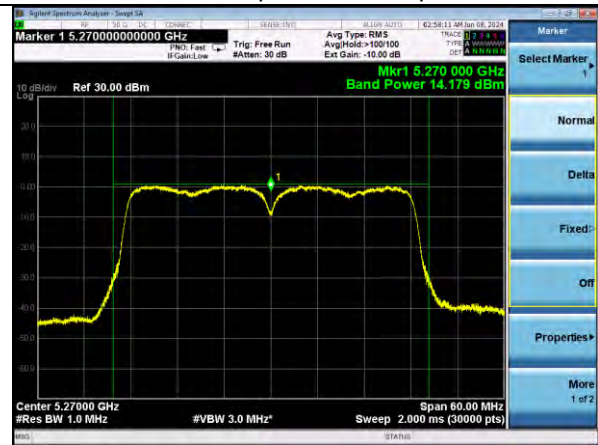
802.11ac20 | Channel 52 | MCS7



802.11ax20 | Channel 52 | MCS0



802.11n40 | Channel 54 | MCS0



802.11ac40 | Channel 54 | MCS7

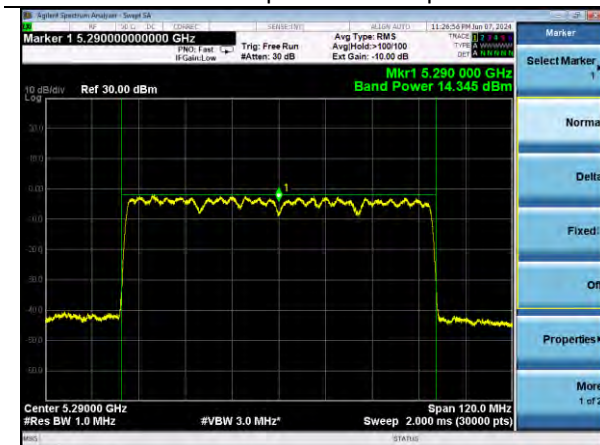
Company: Ezurio	Page 27 of 65	Name: Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model: SONA NX611S
Quote: C-3768		Serial: 00033 00027



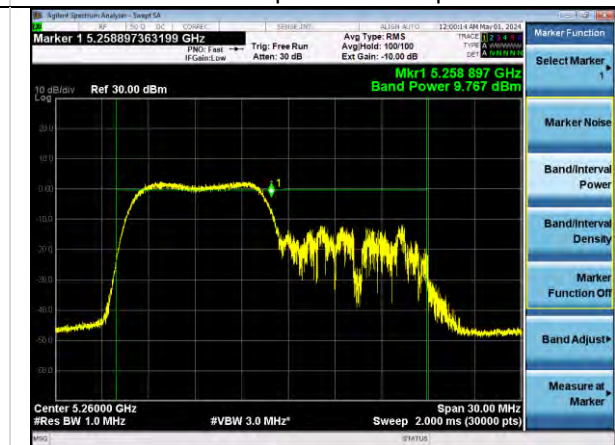
802.11ax40 | Channel 54 | MCS0



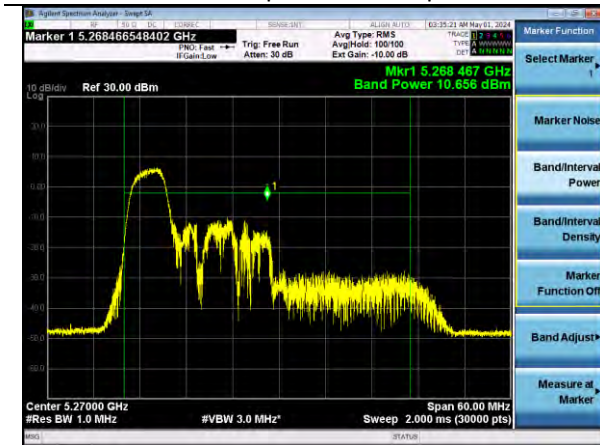
802.11ac80 | Channel 58 | MCS7



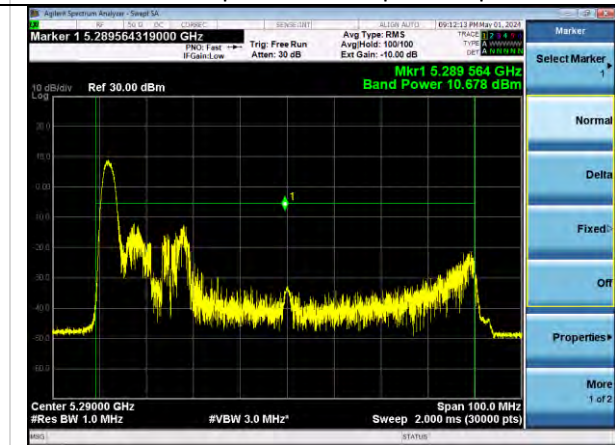
802.11ax80 | Channel 58 | MCS7



802.11ax20 | Channel 52 | MCS0 | RU106



802.11ax40 | Channel 54 | MCS0 | RU 52



802.11ax80 | Channel 58 | MCS0 | RU26

Company: Ezurio	Page 28 of 65	Name: Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model: SONA NX611S
Quote: C-3768		Serial: 00033 00027

6.1.3 Power Spectral Density

Operator	Dylan Rosenfeldt Anthony Smith	QA	Adam Hauke
Temperature	21.8°C-22.2°C	R.H. %	44.80%-50.40%
Test Date	05/01/2024-05/17/2024	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)	Avg (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/D0 where D is the duty cycle.		

Instrumentation

Asset #	Description	Manufacturer	Model #	Serial #	Date	Due Date	Status
AA 960172	Cable	A.H. Systems, Inc.	SAC-26G-1	387	06/13/2023	06/12/2024	Active Verification
EE 960087	Analyzer – Spectrum	Agilent	N9010A	MY53400296	04/11/2023	04/11/2024	Active Calibration

EUT Parameters

Input Power	120 VAC @ 60 Hz	Mode	5 GHz WLAN Tx
Frequency	5180-5320 MHz	Channel	See 2.9

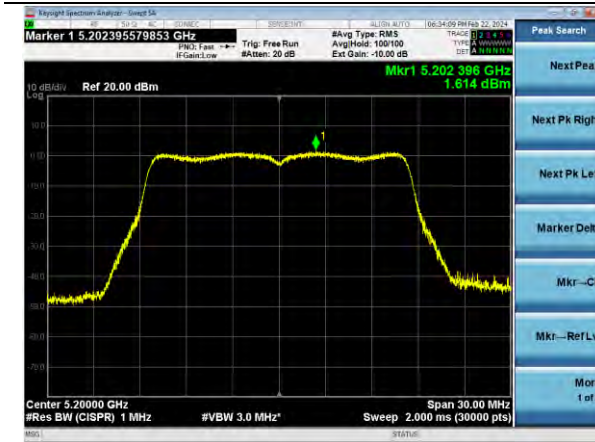
Company: Ezurio	Page 29 of 65	Name:Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model:SONA NX611S
Quote: C-3768		Serial:00033 00027

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	-4.0	0.1	-3.9	11.0	14.9
		46	-3.1	0.1	-3.0	11.0	14.0
	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	-3.5	0.1	-3.4	11.0	14.4
		46	-3.0	0.1	-2.9	11.0	13.9
	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	-8.7	1.0	-7.7	11.0	18.7
802.11ax80	MCS0	42	-5.8	0.2	-5.6	11.0	16.6
	MCS11	42	-9.9	0.8	-9.1	11.0	20.1

Mode	Rate RU	Channel	Maximum Average PSD (dBm/1 MHz)	Duty Cycle Correction (dB)	Corrected Output Value (dBm/1 MHz)	Limit (dBm/1 MHz)	Margin (dB)
802.11ax20	MCS0 RU26	36	9.3	0.2	9.5	11.0	1.5
		40	9.3	0.2	9.5	11.0	1.5
		48	9.6	0.2	9.8	11.0	1.2
	MCS0 RU52	36	5.7	0.2	5.9	11.0	5.1
		40	6.5	0.2	6.7	11.0	4.3
		48	6.0	0.2	6.2	11.0	4.8
	MCS0 RU106	36	2.8	0.2	3.0	11.0	8.0
		40	3.0	0.2	3.2	11.0	7.8
		48	2.9	0.2	3.1	11.0	7.9
802.11ax40	MCS0 RU26	38	8.2	0.2	8.4	11.0	2.6
		46	8.4	0.2	8.6	11.0	2.4
	MCS0 RU52	38	6.6	0.2	6.8	11.0	4.2
		46	6.8	0.2	7.0	11.0	4.0
	MCS0 RU106	38	3.7	0.2	3.9	11.0	7.1
		46	4.3	0.2	4.5	11.0	6.5
	MCS0 RU242	38	0.9	0.2	1.1	11.0	9.9
46		1.0	0.2	1.2	11.0	9.8	
802.11ax80	MCS0 RU26	42	9.3	0.2	9.5	11.0	1.5
		42	6.4	0.2	6.6	11.0	4.4
	MCS0 RU106	42	3.4	0.2	3.6	11.0	7.4
		42	0.1	0.2	0.3	11.0	10.7
	MCS0 RU484	42	-2.9	0.2	-2.7	11.0	13.7

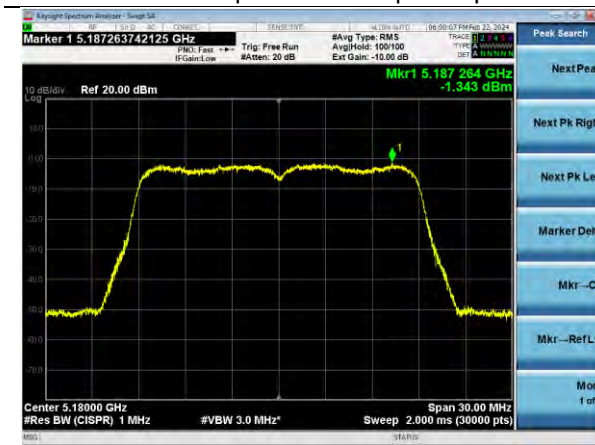
U-NII-1 Plots



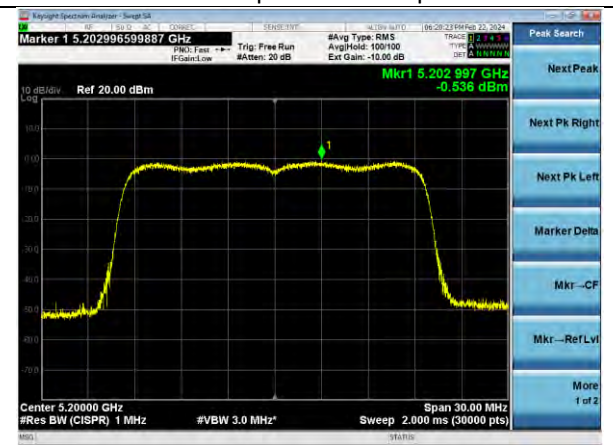
802.11a | Channel 40 | 6 Mbps



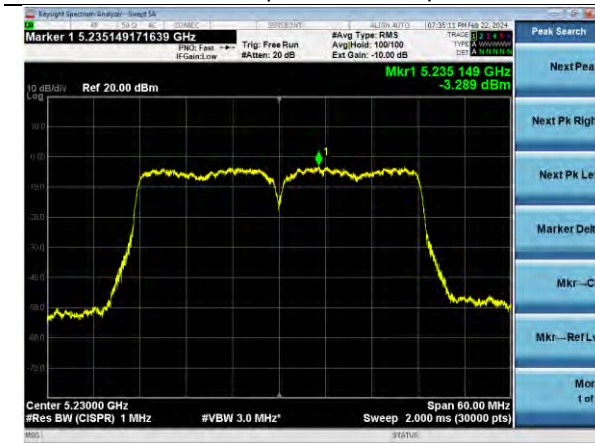
802.11n20 | Channel 40 | MCS7



802.11ac20 | Channel 36 | MCS8



802.11ax20 | Channel 40 | MCS0

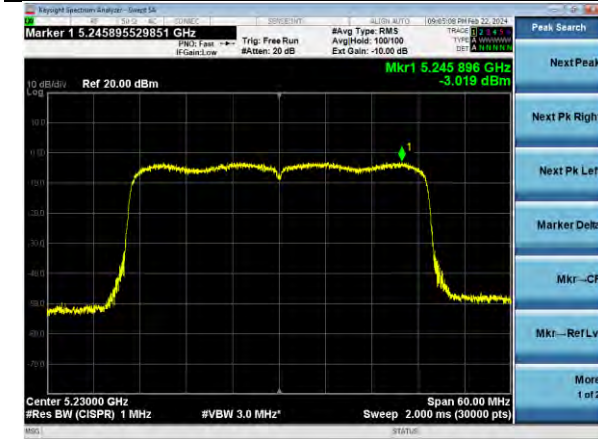


802.11n40 | Channel 46 | MCS7



802.11ac40 | Channel 38 | MCS0

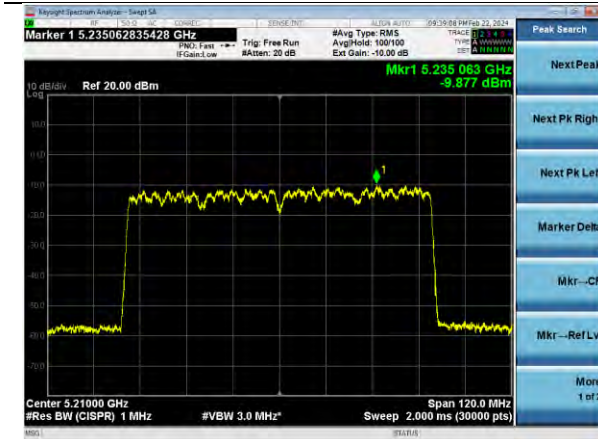
Company: Ezurio	Page 32 of 65	Name: Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model: SONA NX611S
Quote: C-3768		Serial: 00033 00027



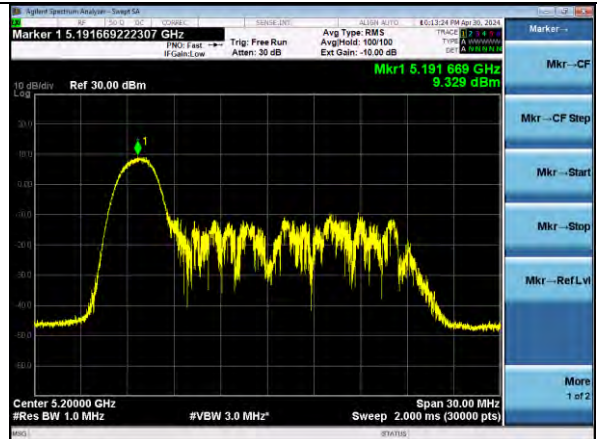
802.11ax40 | Channel 46 | MCS0



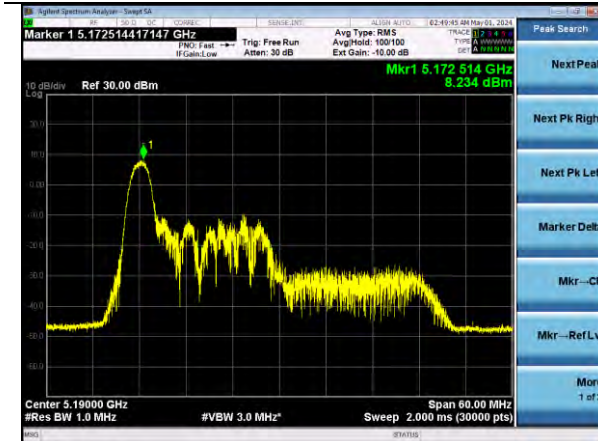
802.11ac80 | Channel 42 | MCS9



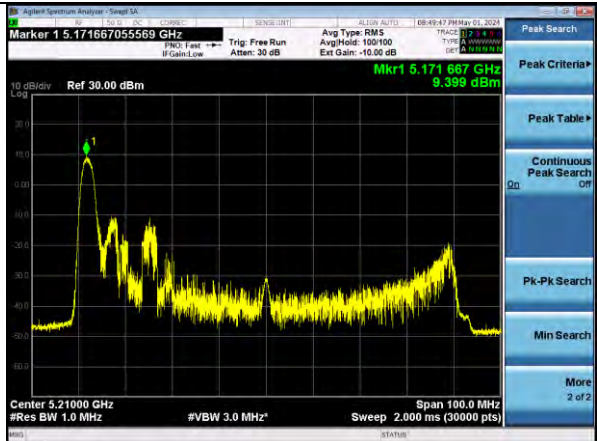
802.11ax80 | Channel 42 | MCS11



802.11ac20 | Channel 40 | MCS0 | RU26



802.11ax40 | Channel 38 | MCS0 | RU26



802.11ax80 | Channel 42 | MCS0 | RU26

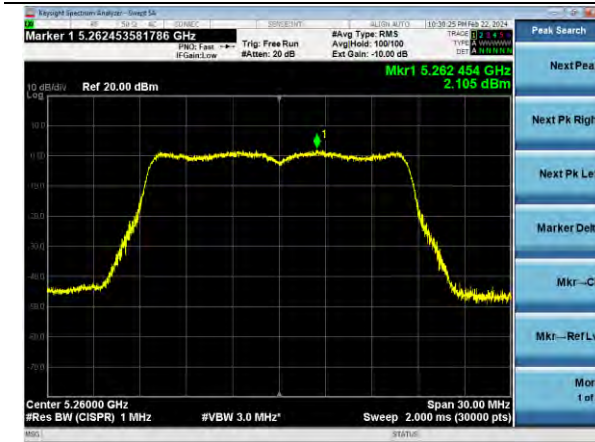
Company: Ezurio	Page 33 of 65	Name: Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model: SONA NX611S
Quote: C-3768		Serial: 00033 00027

U-NII-2A 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	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
802.11ac40	MCS0	54	-3.4	0.1	-3.3	11.0	14.3
		62	-3.4	0.1	-3.3	11.0	14.3
	MCS9	54	-5.6	0.7	-4.9	11.0	15.9
		62	-5.8	0.7	-5.1	11.0	16.1
802.11ax40	MCS0	54	-3.2	0.1	-3.1	11.0	14.1
		62	-3.4	0.1	-3.3	11.0	14.3
	MCS11	54	-7.1	0.7	-6.4	11.0	17.4
		62	-7.4	0.7	-6.7	11.0	17.7
802.11ac80	MCS0	58	-6.9	0.2	-6.7	11.0	17.7
	MCS9	58	-9.1	1.0	-8.1	11.0	19.1
802.11ax80	MCS0	58	-6.2	0.2	-6.0	11.0	17.0
	MCS11	58	-10.2	0.8	-9.4	11.0	20.4

Mode	Rate RU	Channel	Maximum Average PSD (dBm/1 MHz)	Duty Cycle Correction (dB)	Corrected Output Value (dBm/1 MHz)	Limit (dBm/1 MHz)	Margin (dB)
802.11ax20	MCS0 RU26	52	8.9	0.2	9.1	11.0	1.9
		56	8.7	0.2	8.9	11.0	2.1
		64	8.7	0.2	8.9	11.0	2.1
	MCS0 RU52	52	5.6	0.2	5.8	11.0	5.2
		56	5.2	0.2	5.4	11.0	5.6
		64	5.2	0.2	5.4	11.0	5.6
	MCS0 RU106	52	2.5	0.2	2.7	11.0	8.3
		56	2.4	0.2	2.6	11.0	8.4
		64	2.5	0.2	2.7	11.0	8.4
802.11ax40	MCS0 RU26	54	7.7	0.2	7.9	11.0	3.1
		62	7.9	0.2	8.1	11.0	2.9
	MCS0 RU52	54	6.3	0.2	6.5	11.0	4.5
		62	6.2	0.2	6.4	11.0	4.6
	MCS0 RU106	54	3.5	0.2	3.7	11.0	7.3
		62	3.5	0.2	3.7	11.0	7.3
	MCS0 RU242	54	0.7	0.2	0.9	11.0	10.1
62		0.3	0.2	0.5	11.0	10.5	
802.11ax80	MCS0 RU26	58	8.9	0.2	9.1	11.0	1.9
		58	5.8	0.2	6.0	11.0	5.0
	MCS0 RU106	58	3.0	0.2	3.2	11.0	7.8
		58	-0.4	0.2	-0.2	11.0	11.2
	MCS0 RU484	58	-3.6	0.2	-3.4	11.0	14.4

U-NII-2A Plots



802.11a | Channel 52 | 54 Mbps



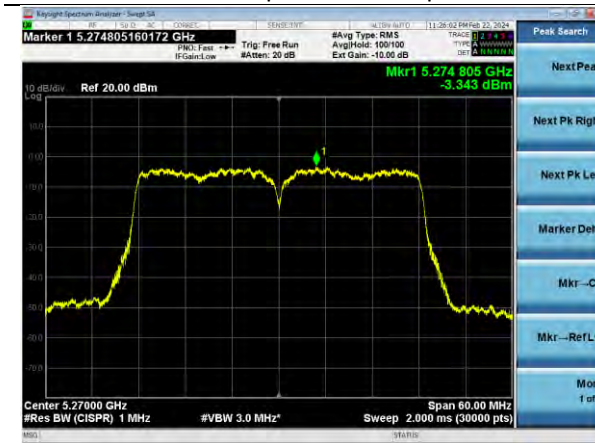
802.11n20 | Channel 52 | MCS7



802.11ac20 | Channel 52 | MCS8



802.11ax20 | Channel 52 | MCS0



802.11n40 | Channel 54 | MCS7



802.11ac40 | Channel 54 | MCS0

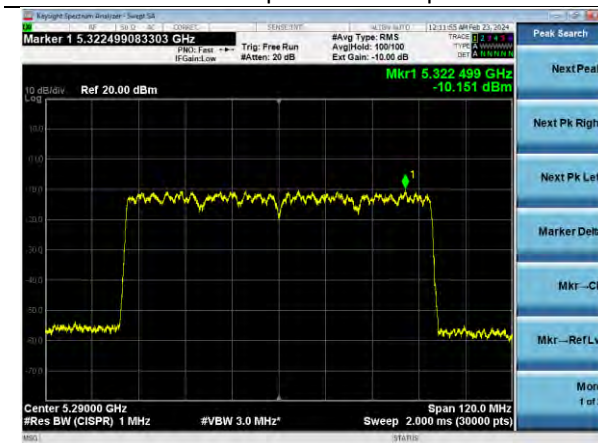
Company: Ezurio	Page 36 of 65	Name: Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model: SONA NX611S
Quote: C-3768		Serial: 00033 00027



802.11ax40 | Channel 54 | MCS0



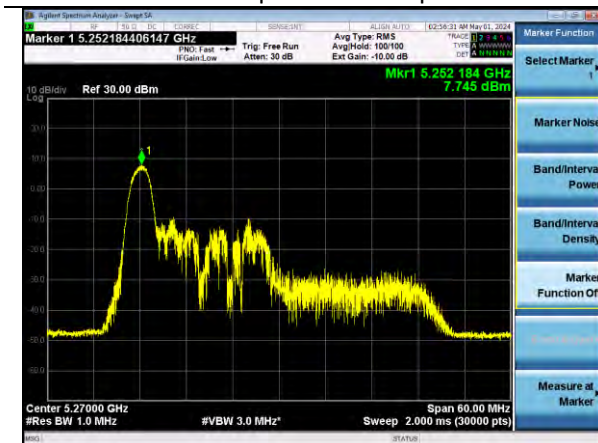
802.11ac80 | Channel 58 | MCS9



802.11ax80 | Channel 58 | MCS11



802.11ax20 | Channel 52 | MCS0 | RU26



802.11ax40 | Channel 54 | MCS0 | RU26



802.11ax80 | Channel 58 | MCS0 | RU26

Company: Ezurio	Page 37 of 65	Name: Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model: SONA NX611S
Quote: C-3768		Serial: 00033 00027

6.1.4 Out-of-band Emissions

Operator	Anthony Smith Dylan Rosenfeldt	QA	Adam Hauke
Temperature	21.6°C-21.9°C 21.8°C-22.2°C	R.H. %	19.90%-41.10% 29.70%-38.0%
Test Date	02/29/2024-03/05/2024 04/05/2024-04/08/2024	Location	Conducted RF Bench
Requirement	15.407(b)(1) & (2) RSS-247 Clause 6.2.1 & 6.2.2	Method	ANSI C63.10 12.7

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.

15.209 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	Setup	Antenna Port
RBW	1 MHz	VBW	3 MHz
Detector(s)	Peak and Average (RMS)		
Notes	Declared antenna gain for band edge – 4.4 dBi		
Example Calculations	Correction Factor = 20 log (1/D), where D is the duty cycle		

Instrumentation

Asset #	Description	Manufacturer	Model #	Serial #	Date	Due Date	Status
AA 960172	Cable	A.H. Systems, Inc.	SAC-26G-1	387	06/13/2023	06/12/2024	Active Verification
EE 960087	Analyzer – Spectrum	Agilent	N9010A	MY53400296	04/11/2023	04/11/2024	Active Calibration

Company: Ezurio	Page 38 of 65	Name:Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model:SONA NX611S
Quote: C-3768		Serial:00033 00027

Input Power	120 VAC @ 60 Hz	Mode	5 GHz WLAN Tx
Frequency	5180-5320 MHz	Channel	See 2.9

U-NII-1 Measurements – Lower Band Edge

Mode	Rate	Channel	Measurement Type	Frequency (MHz)	Measurement (dBm)	Antenna Gain (dBi)	Duty Cycle Correction (dB)	Limit (dBm)	Margin (dB)
802.11a	6 Mbps	36	Peak	5146.6	-35.2	4.4	-	-27.0	3.8
		36	Average	5150.0	-49.6	4.4	0.0	-41.2	4.0
	54 Mbps	36	Peak	5147.3	-35.2	4.4	-	-27.0	3.8
		36	Average	5150.0	-49.7	4.4	0.4	-41.2	3.7
802.11n20	MCS0	36	Peak	5148.3	-40.3	4.4	-	-27.0	8.9
		36	Average	5149.8	-52.2	4.4	0.0	-41.2	6.6
	MCS7	36	Peak	5147.2	-42.1	4.4	-	-27.0	10.7
		36	Average	5150.0	-52.3	4.4	0.4	-41.2	6.3
802.11ac20	MCS0	36	Peak	5149.2	-41.4	4.4	-	-27.0	10.0
		36	Average	5148.1	-51.9	4.4	0.0	-41.2	6.3
	MCS8	36	Peak	5148.8	-42.4	4.4	-	-27.0	11.0
		36	Average	5149.8	-52.7	4.4	0.4	-41.2	6.7
802.11ax20	MCS0	36	Peak	5149.7	-42.4	4.4	-	-27.0	11.0
		36	Average	5149.9	-51.7	4.4	0.0	-41.2	6.1
	MCS11	36	Peak	5149.0	-41.8	4.4	-	-27.0	10.4
		36	Average	5149.4	-52.2	4.4	0.5	-41.2	6.2
802.11n40	MCS0	38	Peak	5147.9	-42.6	4.4	-	-27.0	11.2
		38	Average	5148.5	-50.9	4.4	0.1	-41.2	5.3
	MCS7	38	Peak	5148.3	-43.8	4.4	-	-27.0	12.4
		38	Average	5150.0	-54.1	4.4	0.6	-41.2	7.9
802.11ac40	MCS0	38	Peak	5149.2	-41.3	4.4	-	-27.0	9.9
		38	Average	5149.7	-51.6	4.4	0.1	-41.2	5.9
	MCS9	38	Peak	5147.6	-42.2	4.4	-	-27.0	10.8
		38	Average	5147.4	-51.8	4.4	0.7	-41.2	5.6
802.11ax40	MCS0	38	Peak	5145.4	-39.5	4.4	-	-27.0	8.1
		38	Average	5145.3	-52.1	4.4	0.1	-41.2	5.8
	MCS11	38	Peak	5149.1	-41.6	4.4	-	-27.0	10.2
		38	Average	5149.2	-52.5	4.4	0.7	-41.2	6.8
802.11ac80	MCS0	42	Peak	5149.8	-42.0	4.4	-	-27.0	10.6
		42	Average	5147.5	-51.3	4.4	0.2	-41.2	5.5
	MCS9	42	Peak	5145.6	-39.2	4.4	-	-27.0	7.8
		42	Average	5145.0	-48.9	4.4	0.9	-41.2	2.3
802.11ax80	MCS0	42	Peak	5136.9	-35.9	4.4	-	-27.0	4.5
		42	Average	5137.1	-49.1	4.4	0.2	-41.2	3.3
	MCS11	42	Peak	5147.1	-42.2	4.4	-	-27.0	10.8
		42	Average	5145.7	-53.1	4.4	0.8	-41.2	6.7

Mode	Rate	Channel	Measurement Type	Frequency (MHz)	Measurement (dBm)	Antenna Gain (dBi)	Duty Cycle Correction (dB)	Limit (dBm)	Margin (dB)
802.11ax20	MCS0	36	Peak	5136.0	-43.5	4.4	-	-27.0	12.1
	RU26	36	Average	5149.9	-56.2	4.4	0.2	-41.2	10.4
	MCS0	36	Peak	5149.8	-41.4	4.4	-	-27.0	10.0
	RU52	36	Average	5144.1	-56.5	4.4	0.2	-41.2	10.7
	MCS0	36	Peak	5145.3	-46.0	4.4	-	-27.0	14.6
	RU106	36	Average	5149.8	-55.5	4.4	0.2	-41.2	9.7
802.11ax40	MCS0	38	Peak	5146.1	-40.2	4.4	-	-27.0	8.8
	RU26	38	Average	5136.3	-53.7	4.4	0.2	-41.2	7.9
	MCS0	38	Peak	5146.0	-40.0	4.4	-	-27.0	8.6
	RU52	38	Average	5139.0	-54.1	4.4	0.2	-41.2	8.3
	MCS0	38	Peak	5143.6	-41.8	4.4	-	-27.0	10.4
	RU106	38	Average	5149.7	-54.4	4.4	0.2	-41.2	8.6
	MCS0	38	Peak	5149.0	-40.0	4.4	-	-27.0	8.6
	RU242	38	Average	5149.5	-53.1	4.4	0.2	-41.2	7.3
802.11ax80	MCS0	42	Peak	5109.7	-38.2	4.4	-	-27.0	6.8
	RU26	42	Average	5096.3	-53.4	4.4	0.2	-41.2	7.6
	MCS0	42	Peak	5147.2	-35.8	4.4	-	-27.0	4.4
	RU52	42	Average	5100.5	-56.5	4.4	0.2	-41.2	10.7
	MCS0	42	Peak	5102.5	-44.6	4.4	-	-27.0	13.2
	RU106	42	Average	5140.5	-56.0	4.4	0.2	-41.2	10.2
	MCS0	42	Peak	5149.0	-42.9	4.4	-	-27.0	11.5
	RU242	42	Average	5149.7	-55.7	4.4	0.2	-41.2	9.9
	MCS0	42	Peak	5147.2	-40.1	4.4	-	-27.0	8.7
	RU484	42	Average	5149.3	-54.0	4.4	0.2	-41.2	8.2

U-NII-2A Measurements – Upper Band Edge

Mode	Rate	Channel	Measurement Type	Frequency (MHz)	Measurement (dBm)	Antenna Gain (dBi)	Duty Cycle Correction (dB)	Limit (dBm)	Margin (dB)
802.11a	6	64	Peak	5352.5	-40.0	4.4	-	-27.0	8.6
	Mbps	64	Average	5350.5	-53.2	4.4	0.0	-41.2	7.6
	54	64	Peak	5350.8	-40.4	4.4	-	-27.0	9.0
	Mbps	64	Average	5350.4	-52.6	4.4	0.4	-41.2	6.6
802.11n20	MCS0	64	Peak	5353.8	-43.4	4.4	-	-27.0	12.0
	64	Average	5350.9	-55.0	4.4	0.0	-41.2	9.4	
	MCS7	64	Peak	5351.2	-37.9	4.4	-	-27.0	6.5
802.11ac20	64	Average	5350.2	-53.8	4.4	0.4	-41.2	7.8	
	MCS0	64	Peak	5350.3	-44.7	4.4	-	-27.0	13.3
	64	Average	5350.9	-55.0	4.4	0.0	-41.2	9.4	
	MCS8	64	Peak	5350.6	-45.0	4.4	-	-27.0	13.6
802.11ax20	64	Average	5350.9	-55.6	4.4	0.4	-41.2	9.6	
	MCS0	64	Peak	5350.0	-41.2	4.4	-	-27.0	9.8
	64	Average	5353.3	-54.1	4.4	0.0	-41.2	8.5	
	MCS11	64	Peak	5361.5	-44.9	4.4	-	-27.0	13.5
802.11n40	64	Average	5354.7	-59.3	4.4	0.5	-41.2	13.2	
	MCS0	62	Peak	5350.0	-36.5	4.4	-	-27.0	5.1
	62	Average	5350.3	-51.9	4.4	0.1	-41.2	6.2	
	MCS7	62	Peak	5351.4	-40.9	4.4	-	-27.0	9.5
	62	Average	5351.6	-53.0	4.4	0.6	-41.2	6.8	
	MCS0	62	Peak	5353.9	-39.0	4.4	-	-27.0	7.6
802.11ac40	62	Average	5350.7	-49.8	4.4	0.1	-41.2	4.1	
	MCS0	62	Peak	5350.3	-42.1	4.4	-	-27.0	10.7
	MCS9	62	Average	5350.0	-52.8	4.4	0.7	-41.2	6.5
	62	Peak	5351.6	-36.7	4.4	-	-27.0	5.3	
802.11ax40	62	Average	5351.3	-51.4	4.4	0.1	-41.2	5.7	
	MCS0	62	Peak	5352.1	-39.4	4.4	-	-27.0	8.0
	MCS11	62	Average	5352.6	-53.7	4.4	0.7	-41.2	7.4

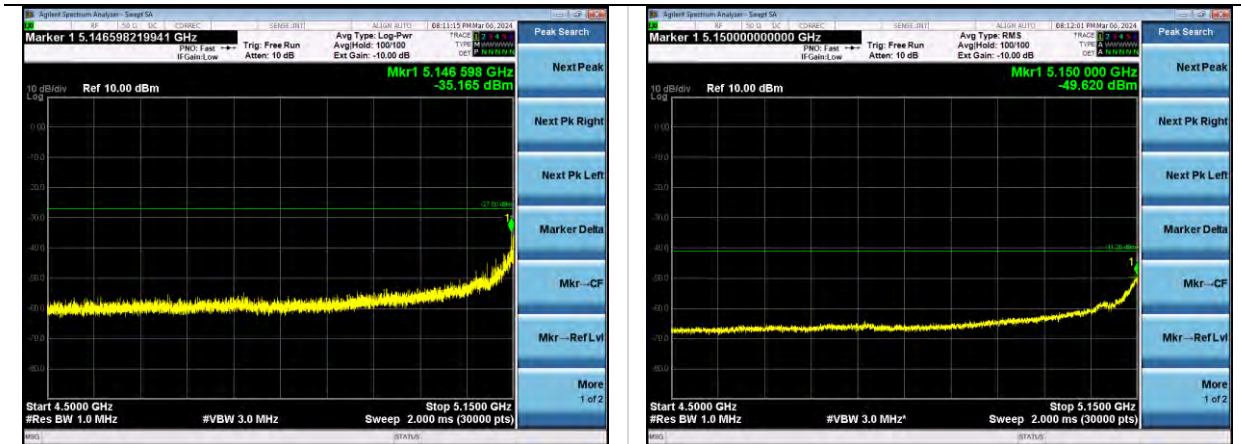
Company: Ezurio	Page 40 of 65	Name: Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model: SONA NX611S
Quote: C-3768		Serial: 00033 00027

802.11ac80	MCS0	58	Peak	5351.6	-39.4	4.4		-27.0	8.0
		58	Average	5350.5	-49.3	4.4	0.2	-41.2	3.5
	MCS9	58	Peak	5359.0	-37.9	4.4		-27.0	6.5
		58	Average	5359.0	-47.5	4.4	0.9	-41.2	1.0
802.11ax80	MCS0	58	Peak	5354.5	-36.7	4.4		-27.0	5.3
		58	Average	5355.3	-48.4	4.4	0.2	-41.2	2.6
	MCS11	58	Peak	5361.0	-41.0	4.4		-27.0	9.6
		58	Average	5356.4	-51.5	4.4	0.8	-41.2	5.1

Mode	Rate	Channel	Measurement Type	Frequency (MHz)	Measurement (dBm)	Antenna Gain (dBi)	Duty Cycle Correction (dB)	Limit (dBm)	Margin (dB)
802.11ax20	MCS0	64	Peak	5361.4	-40.9	4.4	-	-27.0	9.5
	RU26	64	Average	5374.8	-54.6	4.4	0.2	-41.2	8.8
	MCS0	64	Peak	5357.6	-42.7	4.4	-	-27.0	11.3
	RU52	64	Average	5355.2	-53.0	4.4	0.2	-41.2	7.2
	MCS0	64	Peak	5351.4	-37.6	4.4	-	-27.0	6.2
	RU106	64	Average	5353.9	-55.5	4.4	0.2	-41.2	9.7
802.11ax40	MCS0	62	Peak	5351.9	-42.8	4.4	-	-27.0	11.4
	RU26	62	Average	5356.5	-55.0	4.4	0.2	-41.2	9.2
	MCS0	62	Peak	5390.6	-39.7	4.4	-	-27.0	8.3
	RU52	62	Average	5359.2	-56.7	4.4	0.2	-41.2	10.9
	MCS0	62	Peak	5354.7	-42.8	4.4	-	-27.0	11.4
	RU106	62	Average	5351.1	-57.0	4.4	0.2	-41.2	11.2
802.11ax80	MCS0	62	Peak	5351.0	-39.6	4.4	-	-27.0	8.2
	RU242	62	Average	5351.4	-56.4	4.4	0.2	-41.2	10.6
	MCS0	58	Peak	5407.1	-34.6	4.4	-	-27.0	3.2
	RU26	58	Average	5404.0	-52.1	4.4	0.2	-41.2	6.3
	MCS0	58	Peak	5389.6	-35.6	4.4	-	-27.0	4.2
	RU52	58	Average	5361.5	-52.6	4.4	0.2	-41.2	6.8
	MCS0	58	Peak	5396.0	-43.0	4.4	-	-27.0	11.6
	RU106	58	Average	5358.3	-56.7	4.4	0.2	-41.2	10.9
	MCS0	58	Peak	5369.0	-43.7	4.4	-	-27.0	12.3
	RU242	58	Average	5380.7	-57.8	4.4	0.2	-41.2	12.0
802.11ax80	MCS0	58	Peak	5352.5	-45.5	4.4	-	-27.0	14.1
	RU484	58	Average	5352.5	-56.0	4.4	0.2	-41.2	10.2

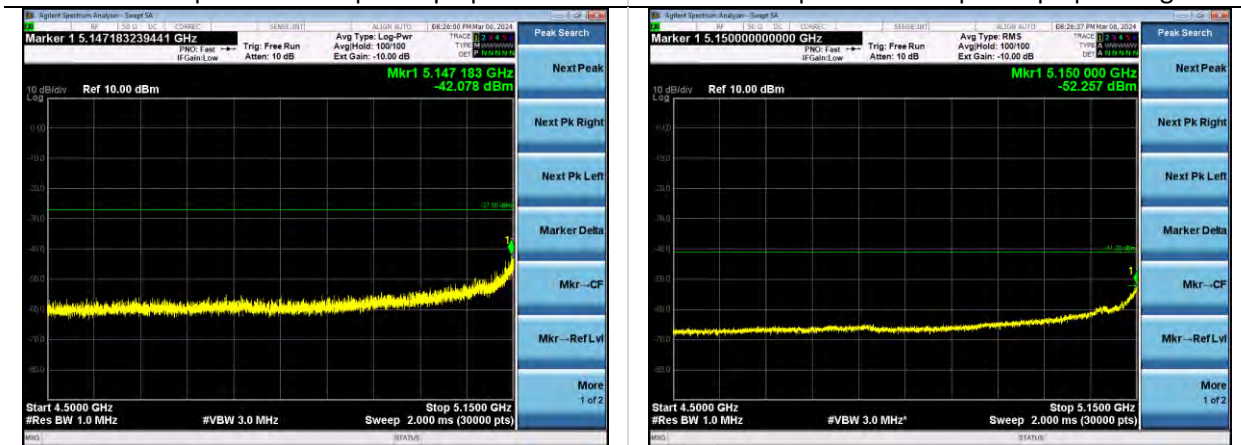
Company: Ezurio	Page 41 of 65	Name: Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model: SONA NX611S
Quote: C-3768		Serial: 00033 00027

Worst Case Plots



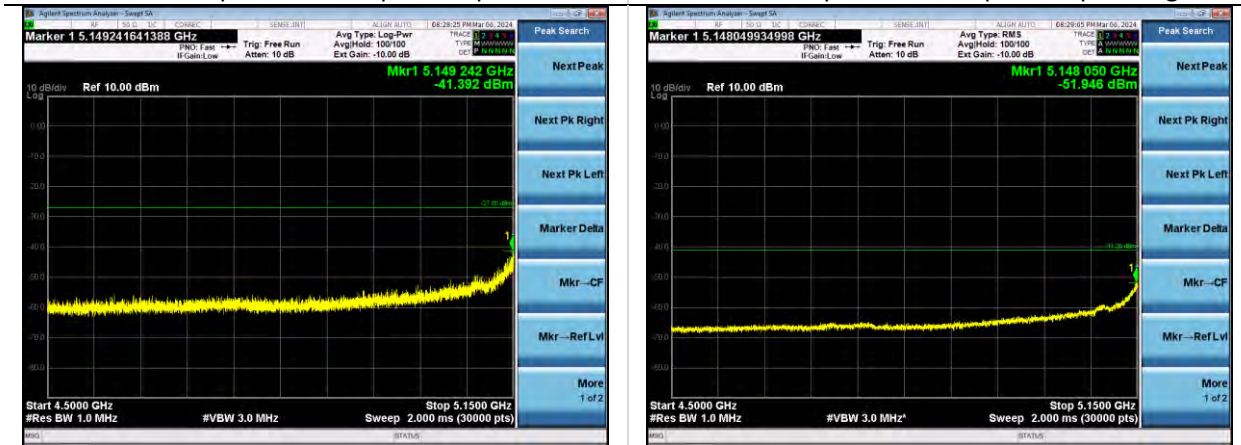
802.11a | Channel 36 | 6 Mbps | Peak

802.11a | Channel 36 | 6 Mbps | Average



802.11n20 | Channel 36 | MCS7 | Peak

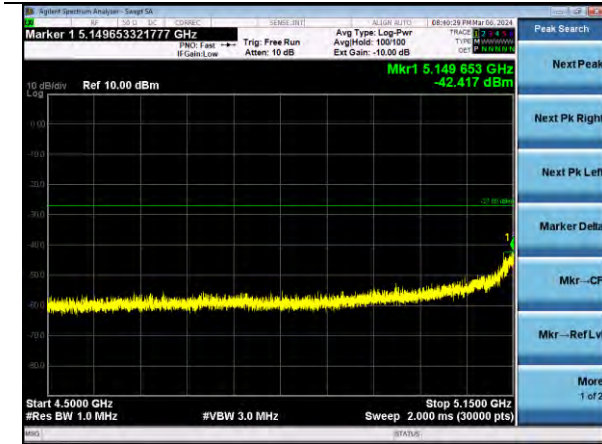
802.11n20 | Channel 36 | MCS7 | Average



802.11ac20 | Channel 36 | MCS0 | Peak

802.11ac20 | Channel 36 | MCS0 | Average

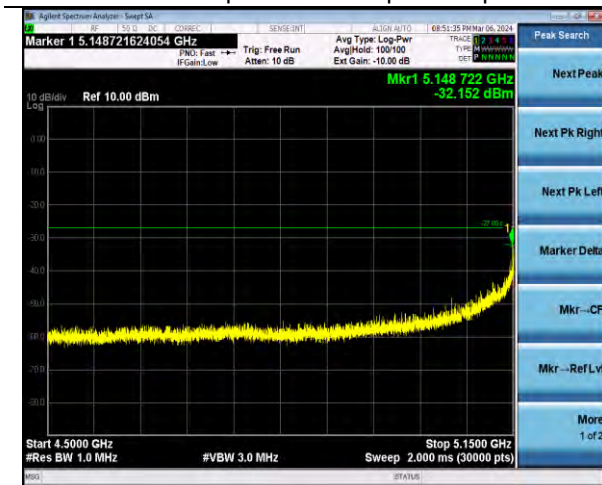
Company: Ezurio	Page 42 of 65	Name: Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model: SONA NX611S
Quote: C-3768		Serial: 00033 00027



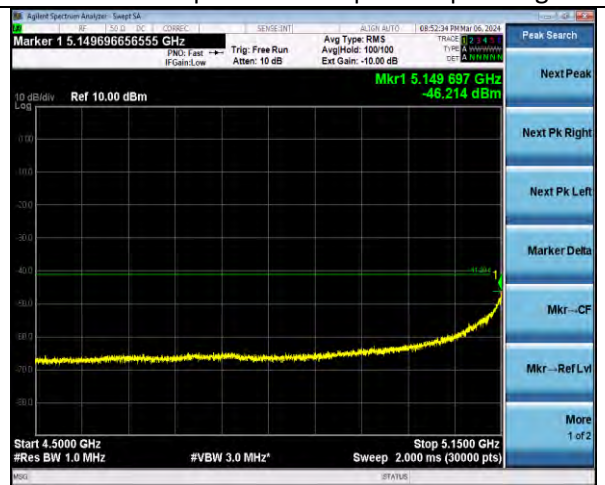
802.11ax20 | Channel 36 | MCS0 | Peak



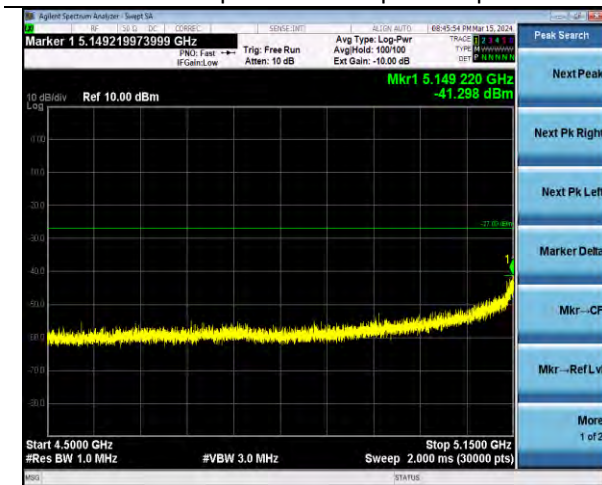
802.11ax20 | Channel 36 | MCS0 | Average



802.11n40 | Channel 38 | MCS0 | Peak



802.11ax20 | Channel 38 | MCS0 | Average

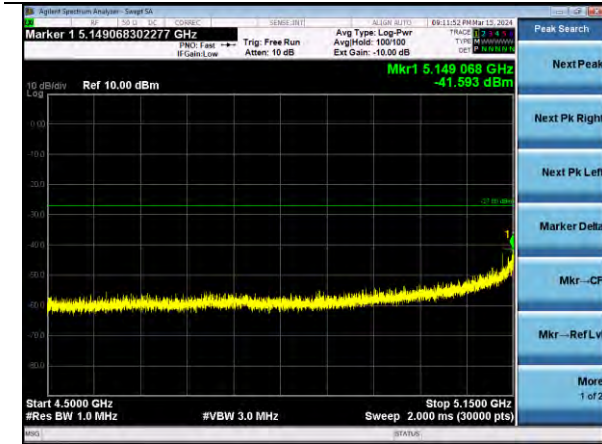


802.11ac40 | Channel 38 | MCS0 | Peak



802.11ac40 | Channel 38 | MCS0 | Average

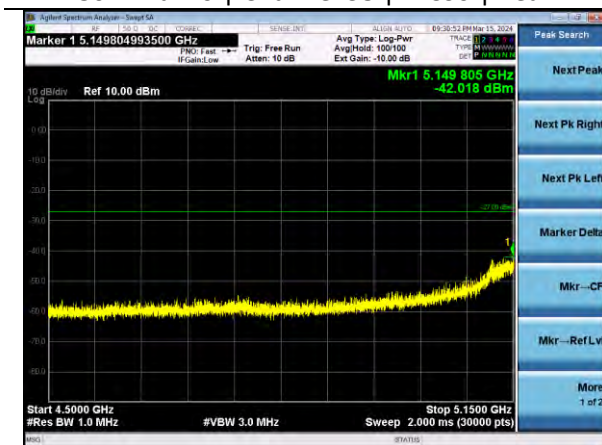
Company: Ezurio	Page 43 of 65	Name: Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model: SONA NX611S
Quote: C-3768		Serial: 00033 00027



802.11ax40 | Channel 38 | MCS0 | Peak



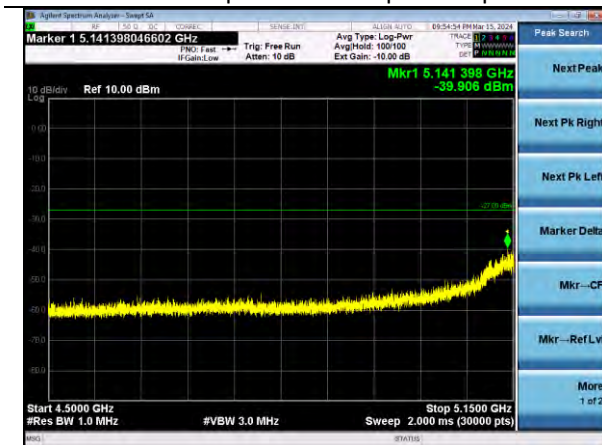
802.11ax40 | Channel 38 | MCS0 | Average



802.11ac80 | Channel 58 | MCS0 | Peak



802.11ac80 | Channel 58 | MCS0 | Average

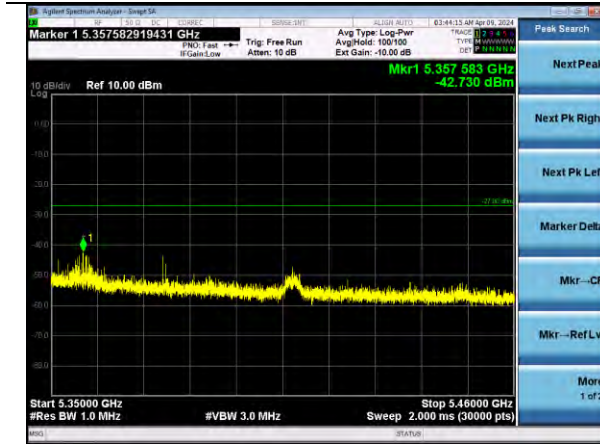


802.11ax80 | Channel 42 | MCS7 | Peak



802.11ax80 | Channel 42 | MCS7 | Average

Company: Ezurio	Page 44 of 65	Name: Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model: SONA NX611S
Quote: C-3768		Serial: 00033 00027



802.11ax20 | Channel 64 | MCS0 | RU52 | Peak



802.11ax20 | Channel 64 | MCS0 | RU52 | Average

Company: Ezurio	Page 45 of 65	Name: Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model: SONA NX611S
Quote: C-3768		Serial: 00033 00027

6.1.5 Spurious Emissions In Restricted Bands

Operator	Anthony Smith	QA	Anthony Smith
Temperature	21.8°C	R.H. %	35.90%
Test Date	03/04/2024	Location	Conducted RF Bench
Requirement	15.407(b)(1),(2),(9), & 10 RSS-247 Clause 6.2.1 & 6.2.2 RSS-GEN	Method	ANSI C63.10 12.7

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.

15.209 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	Setup	Terminated Method
RBW	1 MHz	VBW	3 MHz
Detector(s)	Peak	Settings	
Notes	Declared antenna gain– 4.4 dBi		
Example Calculations	Correction Factor = 20 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	387	06/13/2023	06/12/2024	Active Verification
EE 960085	Analyzer – Spectrum	Agilent	N9010A	MY53400296	04/11/2023	04/11/2024	Active Calibration
AA 960161	Filter - Highpass 5 GHz	K&L Microwave	11SH10-8000	2	4/11/2023	4/11/2024	Active Calibration

Company: Ezurio	Page 46 of 65	Name:Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model:SONA NX611S
Quote: C-3768		Serial:00033 00027

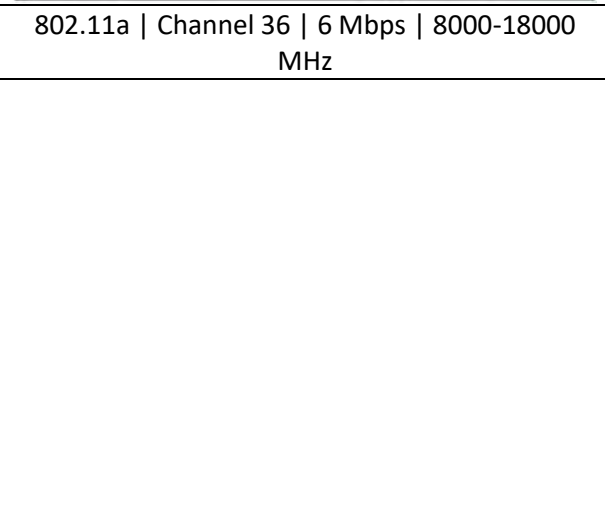
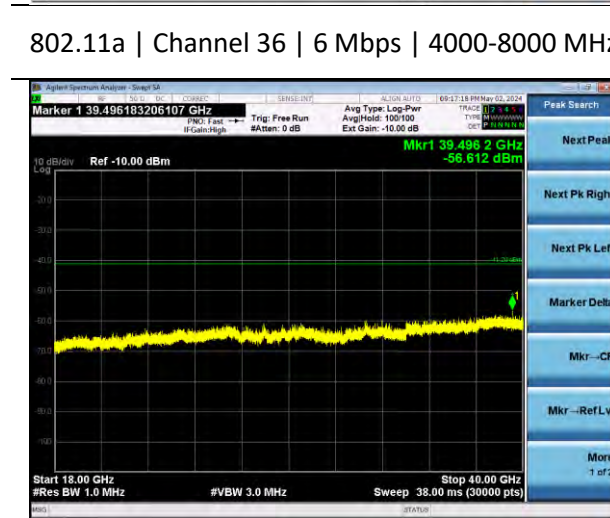
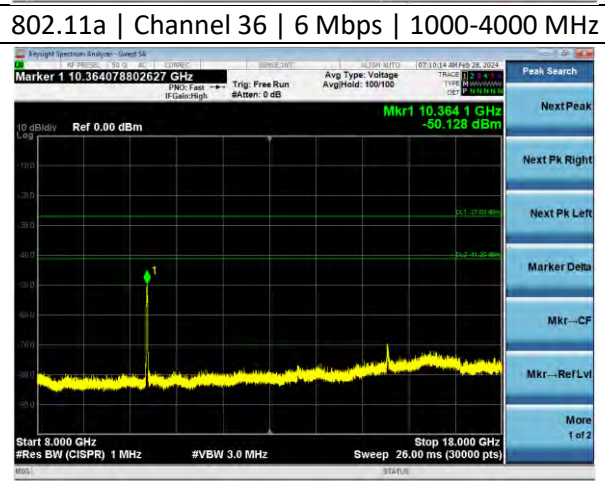
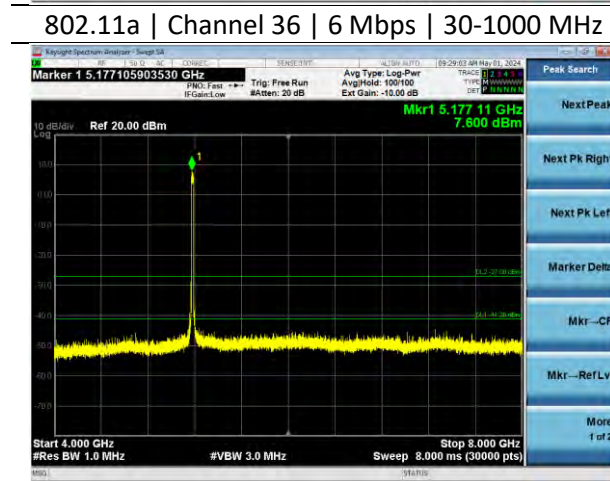
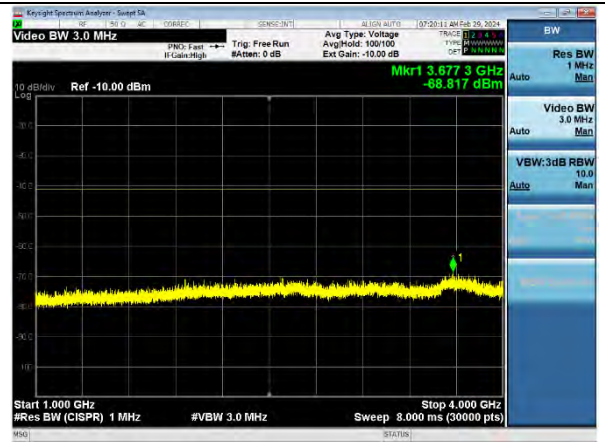
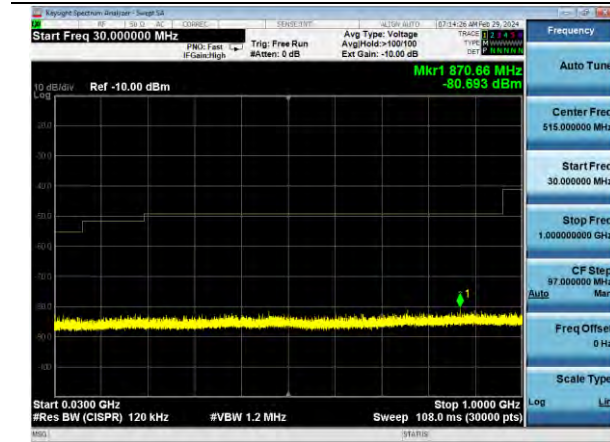
EUT Parameters

Input Power	120 VAC @ 60 Hz	Mode	5 GHz WLAN Tx
Frequency	5180-5320 MHz	Channel	36, 38, 40, 48, 52, 62

Table

Mode	Rate	Channel	Measurement Type	Frequency (MHz)	Measurement (dBm)	Antenna Gain (dBi)	Limit (dBm)	Margin (dB)
802.11a	6 Mbps	36	Peak	10360.3	-49.7	4.4	-27.0	18.3
		36	Average	-	-	-	-	-
802.11a	6 Mbps	64	Peak	10640.5	-58.6	4.4	-27.0	27.2
		64	Average	10639.2	-69.2	4.4	-41.2	23.6
802.11n20	MCS0	64	Peak	10638.7	-61.4	4.4	-27.0	30.0
		64	Average	10638.7	-72.0	4.4	-41.2	26.4
802.11ac20	MCS0	64	Peak	10635.1	-61.6	4.4	-27.0	30.2
		64	Average	10637.3	-72.1	4.4	-41.2	26.5
802.11ax20	MCS0	64	Peak	10634.8	-61.7	4.4	-27.0	30.3
		64	Average	10635.1	-71.8	4.4	-41.2	26.2
802.11n40	MCS0	62	Peak	10616.4	-60.0	4.4	-27.0	28.6
		62	Average	10619.9	-71.9	4.4	-41.2	26.3

Worst Case Plots



Company: Ezurio	Page 48 of 65	Name: Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model: SONA NX611S
Quote: C-3768		Serial: 00033 00027

6.1.6 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

<p>Description of Measurement</p>	<p>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.</p> <p>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.</p> <p>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.</p>
<p>Example Calculations</p>	<p>Measurement (dBμV) + Cable factor (dB) + Other (dB) + Antenna Factor (dB/m) = Corrected Reading (dBμV/m)</p> <p>Margin (dB) = Limit (dBμV/m) - Corrected Reading (dBμV/m)</p> <p>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</p>

Block Diagram



6.2.1 Spurious Radiated Emissions in the Restricted Bands

Operator	Mitchell Freund Nicole Sedmak Jon Dilley Zachary Brown	QA	Anthony Smith Adam Alger Adam Hauke Dylan Rosenfeldt
Temperature	23.2°C-25.1°C	R.H. %	21.30%-25.90%
Test Date	02/12/2024-04/03/2024	Location	Chamber 3 Chamber 5
Requirement	15.247 (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

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

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 Trac 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

Company: Ezurio	Page 51 of 65	Name:Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model:SONA NX611S
Quote: C-3768		Serial:00033 00027

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. No Spurious emissions observed 1000-40000 MHz. Only worst case EUT orientation reported.		

Radiated Spurious – 30-1000 MHz – All Modes

Frequency (MHz)	Antenna Polarity	Height (cm)	Azimuth (degree)	Quasi-Peak Reading (dBμV/m)	Quasi-Peak Limit (dBμV/m)	Margin (dB)
49.3	V	100	49	38.3	40.0	1.7
66.3	V	114	147	39.2	40.0	0.8
101.9	V	142	191	38.6	40.0	1.4
219.9	H	150	264	31.2	46.0	14.8
480.0	V	247	217	35.0	46.0	11.0

*The spurious signals detected do not depend on either the operating channel or the modulation mode

1000-40000 MHz – 802.11a

Band Edge

Rate	Channel	EUT Orientation	Measurement Type	Frequency (MHz)	Antenna Polarity	Measurement (dBμV/m)	Limit (dBμV/m)	Margin (dB)
6 Mbps	36	Z Plane	Peak	5046.1	V	63.4	68.2	4.8
			Average	5148.5	V	52.3	54.0	1.7
	64	X Plane	Peak	5402.4	V	50.6	68.2	17.6
			Average	5350.7	V	39.6	54.0	14.4
54 Mbps	36	Z Plane	Peak	4546.4	V	51.2	68.2	17.0
			Average	4537.6	V	41.2	54.0	12.8
	64	X Plane	Peak	5434.0	V	50.8	68.2	17.4
			Average	5371.7	V	41.3	54.0	12.7

1000-40000 MHz – 802.11n20

Band Edge

Rate	Channel	EUT Orientation	Measurement Type	Frequency (MHz)	Antenna Polarity	Measurement (dBμV/m)	Limit (dBμV/m)	Margin (dB)
MCS0	36	Z Plane	Peak	4644.9	V	51.7	68.2	16.5
			Average	4617.1	V	39.4	54.0	14.6
	64	X Plane	Peak	5367.7	V	51.2	68.2	17.0
			Average	5432.8	V	39.4	54.0	14.6
MCS7	36	Z Plane	Peak	4767.2	V	50.4	68.2	17.8
			Average	4622.2	V	41.3	54.0	12.7
	64	X Plane	Peak	5406.0	V	50.5	68.2	17.7
			Average	5359.3	V	41.3	54.0	12.7

1000-40000 MHz – 802.11ac20

Band Edge

Rate	Channel	EUT Orientation	Measurement Type	Frequency (MHz)	Antenna Polarity	Measurement (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
MCS0	36	Z Plane	Peak	5055.4	V	50.2	68.2	18.0
			Average	4617.5	V	39.3	54.0	14.7
	64	X Plane	Peak	5389.6	V	50.7	68.2	17.5
			Average	5352.9	V	39.4	54.0	14.6
MCS8	36	Z Plane	Peak	4554.9	V	51.3	68.2	16.9
			Average	4596.0	V	41.4	54.0	12.6
	64	X Plane	Peak	5429.4	V	50.8	68.2	17.4
			Average	5378.4	V	41.7	54.0	12.3

1000-40000 MHz – 802.11ax20

Band Edge

Rate	Channel	EUT Orientation	Measurement Type	Frequency (MHz)	Antenna Polarity	Measurement (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
MCS0	36	Z Plane	Peak	4684.5	V	50.1	68.2	18.1
			Average	4616.8	V	39.5	54.0	14.5
	64	X Plane	Peak	5437.6	V	50.8	68.2	17.4
			Average	5360.6	V	39.7	54.0	14.3
MCS11	36	Z Plane	Peak	4563.7	V	50.5	68.2	17.7
			Average	4645.7	V	42.0	54.0	12.0
	64	X Plane	Peak	5456.8	V	50.8	68.2	17.4
			Average	5394.9	V	42.0	54.0	12.0

1000-40000 MHz – 802.11n40

Band Edge

Rate	Channel	EUT Orientation	Measurement Type	Frequency (MHz)	Antenna Polarity	Measurement (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
MCS0	62	Y Plane	Peak	5411.2	H	52.3	68.2	15.9
			Average	5396.3	H	40.0	54.0	14.0
MCS7	38	Z Plane	Peak	5023.6	V	50.5	68.2	17.7
			Average	4632.4	V	39.7	54.0	14.3
	62	Y Plane	Peak	5401.4	H	50.9	68.2	17.3
			Average	5432.5	H	42.1	54.0	11.9

1000-40000 MHz – 802.11ac40

Band Edge

Rate	Channel	EUT Orientation	Measurement Type	Frequency (MHz)	Antenna Polarity	Measurement (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
MCS0	38	Z Plane	Peak	4881.2	V	50.7	68.2	17.5
			Average	4602.9	V	39.7	54.0	14.3
	62	X Plane	Peak	5421.8	H	50.4	68.2	17.8
			Average	5417.2	H	39.9	54.0	14.1
MCS9	38	Z Plane	Peak	4611.3	V	51.0	68.2	17.2
			Average	4764.9	V	41.9	54.0	12.1
	62	X Plane	Peak	5387.1	H	51.1	68.2	17.1
			Average	5428.6	H	42.3	54.0	11.7

1000-40000 MHz – 802.11ax40

Band Edge

Rate	Channel	EUT Orientation	Measurement Type	Frequency (MHz)	Antenna Polarity	Measurement (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
MCS0	38	Z Plane	Peak	4795.8	V	50.8	68.2	17.4
			Average	4633.4	V	41.8	54.0	12.2
	62	X Plane	Peak	5447.4	H	50.8	68.2	17.4
			Average	5380.8	H	40.3	54.0	13.7
MCS11	38	Z Plane	Peak	4906.7	V	49.9	68.2	18.3
			Average	4628.4	V	44.1	54.0	9.9
	62	X Plane	Peak	5412.2	H	50.9	68.2	17.3
			Average	5367.3	H	42.4	54.0	11.6

1000-40000 MHz – 802.11ac80

Band Edge

Rate	Channel	EUT Orientation	Measurement Type	Frequency (MHz)	Antenna Polarity	Measurement (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
MCS0	42	X Plane	Peak	4898.8	V	50.7	68.2	17.5
			Average	4696.3	V	42.2	54.0	11.8
	58	X Plane	Peak	5427.8	V	50.6	68.2	17.6
			Average	5411.1	V	42.0	54.0	12.0
MCS11	42	X Plane	Peak	4665.2	V	50.1	68.2	18.1
			Average	4595.0	V	42.8	54.0	11.2
	58	X Plane	Peak	5453.5	V	50.2	68.2	18.0
			Average	5411.1	V	43.9	54.0	10.1

1000-40000 MHz – 802.11ax80

Band Edge

Rate	Channel	EUT Orientation	Measurement Type	Frequency (MHz)	Antenna Polarity	Measurement (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
MCS0	42	X Plane	Peak	5116.5	V	50.9	68.2	17.3
			Average	4616.6	V	41.7	54.0	12.3
	58	X Plane	Peak	5371.7	V	50.7	68.2	17.5
			Average	5352.7	V	42.4	54.0	11.6
MCS11	42	X Plane	Peak	4803.5	V	51.9	68.2	16.3
			Average	4658.1	V	43.9	54.0	10.1
	58	X Plane	Peak	5358.3	V	50.7	68.2	17.5
			Average	5352.7	V	42.5	54.0	11.5

1000-40000 MHz – 802.11ax20 – MU-RU – MCS0

Band Edge

EUT Orientation	Channel	RU	Measurement Type	Frequency (MHz)	Antenna Polarity	Measurement (dBµV/m)	Limit (dBµV/m)	Margin (dB)		
Z Plane	36	0	Peak	4678.7	V	51.1	68.2	17.1		
			Average	4600.2	V	39.5	54.0	14.5		
		3	Peak	4958.9	V	50.9	68.2	17.3		
			Average	4619.5	V	39.5	54.0	14.5		
		8	Peak	4525.3	V	50.9	68.2	17.3		
			Average	4607.9	V	39.7	54.0	14.3		
		37	Peak	4616.9	V	51.3	68.2	16.9		
			Average	4623.5	V	39.5	54.0	14.5		
		38	Peak	4516.1	V	51.5	68.2	16.7		
			Average	4500.6	V	39.5	54.0	14.5		
		40	Peak	4607.9	V	51.0	68.2	17.2		
			Average	4606.2	V	39.5	54.0	14.5		
		53	Peak	4907.6	V	50.8	68.2	17.4		
			Average	4611.8	V	39.6	54.0	14.4		
		54	Peak	4533.7	V	51.0	68.2	17.2		
			Average	4615.9	V	39.6	54.0	14.4		
		X Plane	64	0	Peak	5455.6	V	50.8	68.2	17.4
					Average	5438.8	V	39.6	54.0	14.4
				3	Peak	5364.3	V	51.1	68.2	17.1
					Average	5352.8	V	39.6	54.0	14.4
8	Peak			5380.4	V	51.8	68.2	16.4		
	Average			5423.7	V	39.6	54.0	14.4		
37	Peak			5448.7	V	50.8	68.2	17.4		
	Average			5357.0	V	39.6	54.0	14.4		
38	Peak			5366.8	V	51.2	68.2	17.0		
	Average			5440.2	V	39.5	54.0	14.5		
40	Peak			5416.8	V	50.7	68.2	17.5		
	Average			5360.1	V	39.6	54.0	14.4		
53	Peak			5437.3	V	51.3	68.2	16.9		
	Average			5355.3	V	39.6	54.0	14.4		
54	Peak			5386.1	V	51.4	68.2	16.8		
	Average			5419.8	V	39.7	54.0	14.3		

1000-40000 MHz – 802.11ax40 – MU-RU – MCS0

Band Edge

EUT Orientation	Channel	RU	Measurement Type	Frequency (MHz)	Antenna Polarity	Measurement (dBµV/m)	Limit (dBµV/m)	Margin (dB)		
Y Plane	38	0	Peak	4582.0	V	51.4	68.2	16.8		
			Average	4614.5	V	40.0	54.0	14.0		
		8	Peak	5051.0	V	51.4	68.2	16.8		
			Average	4615.8	V	40.0	54.0	14.0		
		17	Peak	4527.0	V	50.8	68.2	17.4		
			Average	4588.9	V	40.1	54.0	13.9		
		37	Peak	4803.5	V	50.8	68.2	17.4		
			Average	4602.7	V	40.0	54.0	14.0		
		40	Peak	4562.6	V	50.6	68.2	17.6		
			Average	4607.2	V	40.0	54.0	14.0		
		44	Peak	4811.4	V	51.5	68.2	16.7		
			Average	4627.8	V	39.9	54.0	14.1		
		53	Peak	4598.2	V	50.8	68.2	17.4		
			Average	4606.6	V	40.1	54.0	13.9		
		54	Peak	5040.1	V	50.7	68.2	17.5		
			Average	4607.5	V	40.1	54.0	13.9		
		56	Peak	4774.5	V	51.0	68.2	17.2		
			Average	4634.5	V	40.0	54.0	14.0		
		61	Peak	4604.9	V	50.8	68.2	17.4		
			Average	4596.6	V	39.9	54.0	14.1		
		62	Peak	4891.0	V	50.8	68.2	17.4		
			Average	4636.0	V	39.9	54.0	14.1		
		Y Plane	62	0	Peak	5364.1	H	50.1	68.2	13.9
					Average	5417.6	H	40.1	54.0	13.9
8	Peak			5442.8	H	50.1	68.2	13.9		
	Average			5364.1	H	39.5	54.0	14.5		
17	Peak			5444.3	H	50.3	68.2	13.7		
	Average			5442.8	H	39.2	54.0	14.8		
37	Peak			5387.5	H	50.2	68.2	13.8		
	Average			5444.3	H	39.4	54.0	14.6		
40	Peak			5370.1	H	50.3	68.2	13.7		
	Average			5387.5	H	39.6	54.0	14.4		
44	Peak			54377	H	50.5	68.2	13.5		
	Average			5352.9	H	39.6	54.0	14.4		
53	Peak			5428.0	H	50.8	68.2	13.2		
	Average			5437.7	H	39.3	54.0	14.7		
54	Peak			5444.3	H	50.5	68.2	13.5		
	Average			5428.0	H	39.8	54.0	14.2		
56	Peak			5430.0	H	50.7	68.2	13.3		
	Average			5444.3	H	39.3	54.0	14.7		
61	Peak			5437.8	H	50.4	68.2	13.6		
	Average			5430.0	H	39.2	54.0	14.8		
62	Peak			5396.2	H	51.0	68.2	13.0		
	Average			5437.8	H	39.2	54.0	14.8		

1000-40000 MHz – 802.11ax80 – MU-RU – MCS0

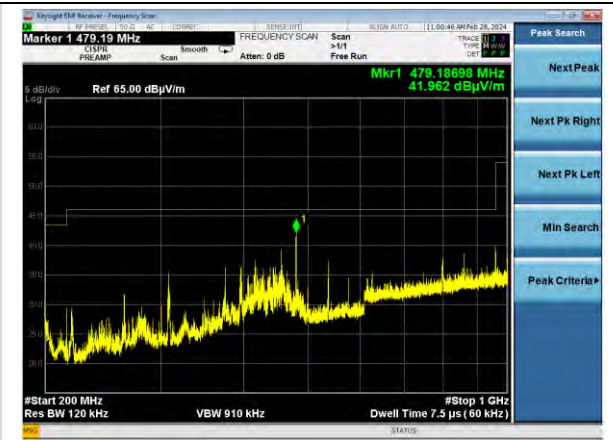
Band Edge

EUT Orientation	Channel	RU	Measurement Type	Frequency (MHz)	Antenna Polarity	Measurement (dBμV/m)	Limit (dBμV/m)	Margin (dB)
X Plane	42	0	Peak	4885.3	V	51.0	68.2	17.2
			Average	4605.3	V	40.6	54.0	13.4
		17	Peak	4597.5	V	50.3	68.2	17.9
			Average	4611.0	V	40.5	54.0	13.5
		36	Peak	4589.4	V	50.7	68.2	17.5
			Average	4613.3	V	40.7	54.0	13.3
		37	Peak	4720.4	V	51.1	68.2	17.1
			Average	4597.8	V	40.4	54.0	13.6
		44	Peak	4870.0	V	51.0	68.2	17.2
			Average	4503.7	V	40.6	54.0	13.4
		52	Peak	4551.2	V	50.7	68.2	17.5
			Average	4581.2	V	40.6	54.0	13.4
		53	Peak	4637.8	V	51.0	68.2	17.2
			Average	4613.5	V	41.0	54.0	13.0
		56	Peak	4750.1	V	50.9	68.2	17.3
			Average	4605.6	V	40.6	54.0	13.4
		60	Peak	4890.4	V	50.9	68.2	17.3
			Average	4600.6	V	40.6	54.0	13.4
		61	Peak	4612.5	V	50.4	68.2	17.8
			Average	4521.9	V	40.6	54.0	13.4
		62	Peak	4553.9	V	50.5	68.2	17.7
			Average	4543.1	V	40.6	54.0	13.4
		64	Peak	4601.4	V	50.7	68.2	17.5
			Average	4592.4	V	40.4	54.0	13.6
		65	Peak	4604.7	V	50.7	68.2	17.5
			Average	4589.0	V	41.0	54.0	13.0
		66	Peak	4593.1	V	50.5	68.2	17.7
			Average	4690.3	V	41.0	54.0	13.0
Z Plane	58	0	Peak	5418.5	V	49.9	68.2	14.1
			Average	5437.5	V	40.7	54.0	13.3
		17	Peak	5358.4	V	50.4	68.2	13.6
			Average	5393.4	V	40.8	54.0	13.2
		36	Peak	5391.5	V	50.7	68.2	13.3
			Average	5383.0	V	40.0	54.0	14.0

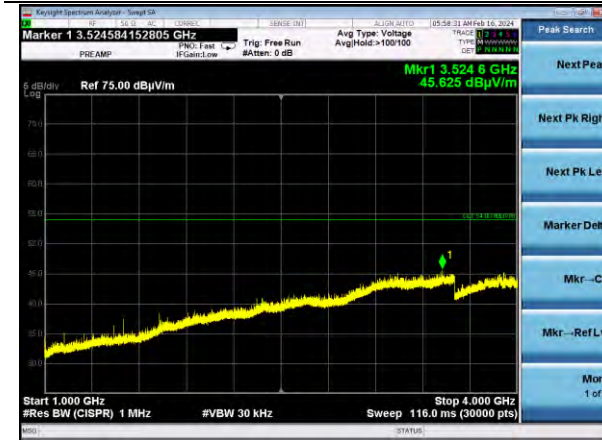
Worst Case Plots



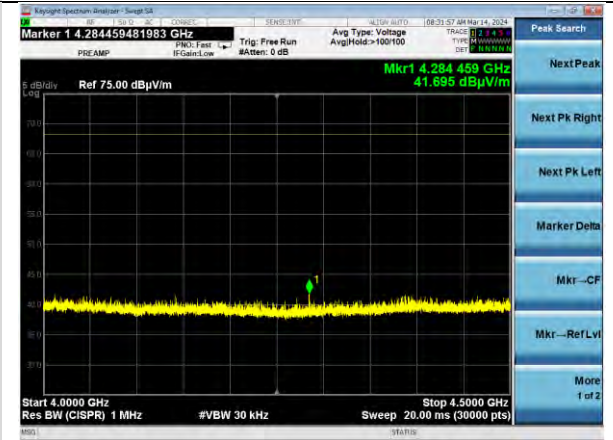
802.11a | Channel 36 | 6 Mbps | Y Plane
30-200 MHz | Vertical



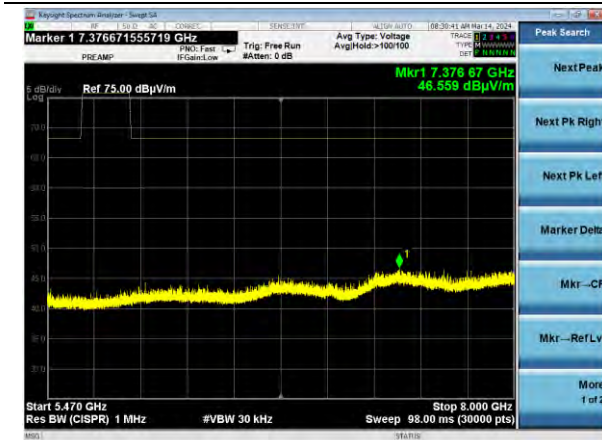
802.11a | Channel 36 | 6 Mbps | Y Plane
200-1000 MHz | Vertical



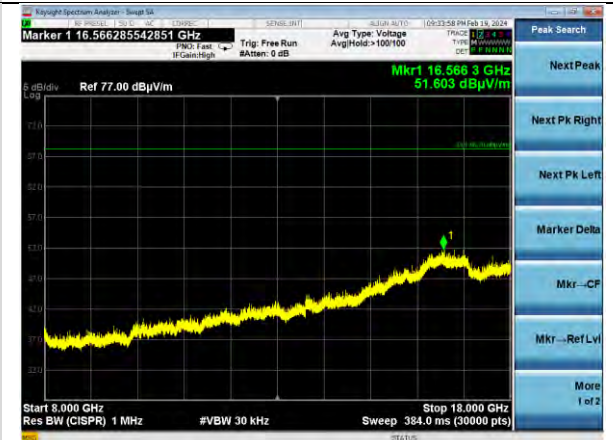
802.11a | Channel 36 | 6 Mbps
1000-4000 MHz | Horizontal



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



802.11a | Channel 36 | 6 Mbps | Y Plane
5470-8000 MHz | Vertical



802.11a | Channel 36 | 6 Mbps | X Plane
8000-18000 MHz | Vertical

Company: Ezurio	Page 60 of 65	Name: Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model: SONA NX611S
Quote: C-3768		Serial: 00033 00027



802.11a | Channel 36 | 6 Mbps | Z Plane
18000-40000 MHz | Horizontal

Company: Ezurio	Page 61 of 65	Name: Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model: SONA NX611S
Quote: C-3768		Serial: 00033 00027

6.3 AC Mains Conducted Emissions

Description of Measurement

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.

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.

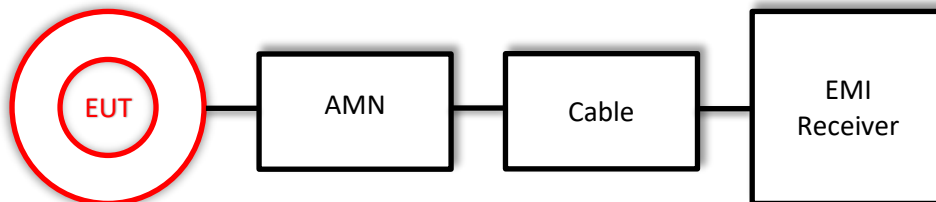
Maximum emissions are determined with a peak max hold trace then measurements at a selection of the highest points are made with quasi-peak and average detectors. Results are recorded and compared to limit for each line. (e.g. line and neutral)

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

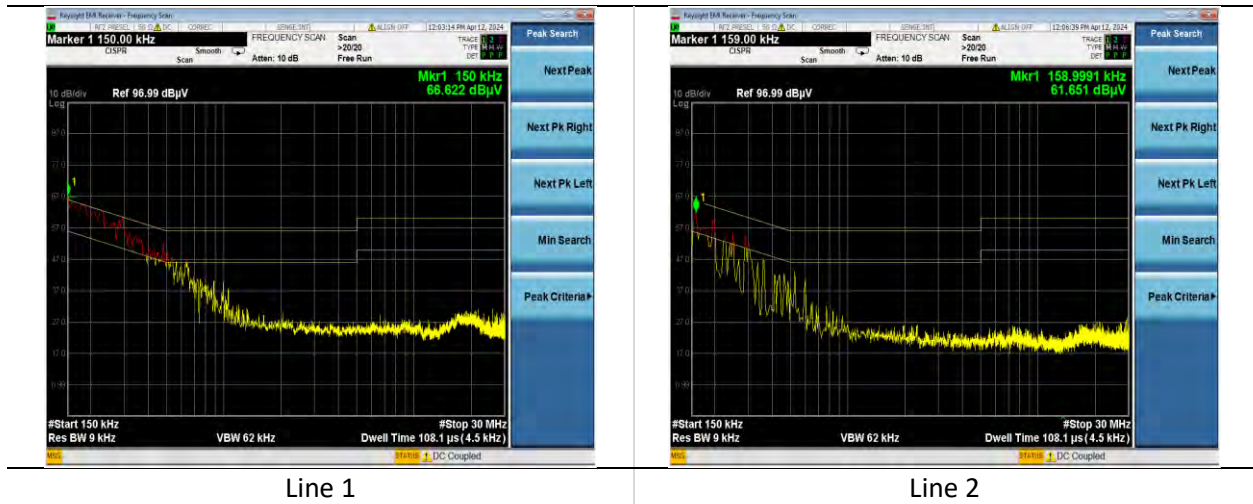
Input Power	120 VAC @ 60 Hz	Mode	5 GHz WLAN Tx Channel 64
--------------------	-----------------	-------------	--------------------------

Company: Ezurio	Page 63 of 65	Name:Module, SONA NX611 SIP, 1 RF Trace Pin
Report: TR3768-156-5G-UNII1-UNII2A		Model:SONA NX611S
Quote: C-3768		Serial:00033 00027

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	07/31/2024	Draft	Adam Hauke
1	08/08/2024	Final	Adam Hauke

END OF REPORT