

# Test Report 3768-166-5G-UNII3

|                              |                                                                              |
|------------------------------|------------------------------------------------------------------------------|
| <b>Equipment Under Test:</b> | Module, SONA NX 611 M.2 2230, 1 MHF                                          |
| <b>Requirement(s):</b>       | eCFR 47 Part 15.407   RSS-247                                                |
| <b>Test Date(s):</b>         | 02/12/2024-07/10/2024                                                        |
| <b>Prepared for:</b>         | Ezurio<br>Attn: Brian Petted<br>W66 N220 Commerce Ct.<br>Cedarburg, WI 53012 |

|                                                                                                |                  |
|------------------------------------------------------------------------------------------------|------------------|
| <b>Report Issued by:</b> Adam Hauke, EMC Engineer                                              |                  |
| Signature:  | Date: 08/08/2024 |
| <b>Report Reviewed by:</b> Adam Alger, Manager EMC Laboratory                                  |                  |
| Signature:  | Date: 8/08/2024  |
| <b>Report Constructed by:</b> Adam Hauke, EMC Engineer                                         |                  |
| Signature:  | Date: 08/07/2024 |

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|                             |              |                                          |
|-----------------------------|--------------|------------------------------------------|
| Company: Ezurio             | Page 1 of 45 | Name: Module, SONA NX611 M.2 2230, 1 MHF |
| Report: TR3768-166-5G-UNII3 |              | Model: SONA NX611M                       |
| Quote: C-3768               |              | Serial: 00047                            |

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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*

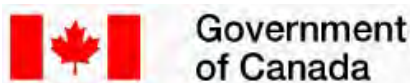
*Scope of accreditation includes all test methods listed herein unless otherwise noted*



### 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*

|                             |              |                                          |
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# 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 5.725-5.85 GHz bands

| Requirements                                                    | Description                                                        | Method           | Compliant |
|-----------------------------------------------------------------|--------------------------------------------------------------------|------------------|-----------|
| 15.407(b)(4) & (9)<br>15.209<br>RSS-247 Clause 6.2.4<br>RSS-GEN | Spurious Radiated Emissions in<br>Restricted Bands<br>30-40000 MHz | ANSI C63.10 12.7 | Yes       |
| 15.407(e)<br>RSS-247 Clause 6.2.4                               | 6dB Bandwidth                                                      | ANSI C63.10 12.5 | Yes       |
| 15.407(a)(3)<br>RSS-247 Clause 6.2.4                            | RF Output Power                                                    | ANSI C63.10 12.4 | Yes       |
| 15.407(b)(4)<br>RSS-247 Clause 6.2.4                            | Conducted Out-of-band Emissions                                    | ANSI C63.10 12.7 | Yes       |
| 15.407(a)(3)<br>RSS-247 Clause 6.2.4                            | Power Spectral Density                                             | ANSI C63.10 12.6 | Yes       |
| 15.407(b)(9)<br>15.207<br>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      |

|                             |                            |                                          |
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| Report: TR3768-166-5G-UNII3 |                            | Model: SONA NX611M                       |
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## 2 CLIENT INFORMATION

|                       |                                              |
|-----------------------|----------------------------------------------|
| <b>Company Name</b>   | Ezurio                                       |
| <b>Contact Person</b> | Brian Petted                                 |
| <b>Address</b>        | W66 N220 Commerce Ct.<br>Cedarburg, WI 53012 |

### 2.1 Equipment Under Test (EUT) Information

*The following information has been supplied by the client*

|                      |                                    |
|----------------------|------------------------------------|
| <b>Product Name</b>  | Module, SONA NX611 M.2 2230, 1 MHF |
| <b>Part Number</b>   | 463-166                            |
| <b>Serial Number</b> | 00047                              |
| <b>FCC ID</b>        | SQG-SONANX611M                     |
| <b>IC ID</b>         | 3147A-SONANX611M                   |

### 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

|                             |              |                                         |
|-----------------------------|--------------|-----------------------------------------|
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## 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-100BR53B      | 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                                                                                                  |
|---------|-----------------|-----------------|-------------------------------------------------------------------------------------------------------------|
| 149     | 5745            | 20              | 802.11a – 6 and 54 Mbps<br>802.11n – MCS0 and MCS7<br>802.11ac – MCS0 and MCS9<br>802.11ax – MCS0 and MCS11 |
| 157     | 5785            | 20              |                                                                                                             |
| 165     | 5825            | 20              |                                                                                                             |
| 151     | 5755            | 40              |                                                                                                             |
| 159     | 5795            | 40              |                                                                                                             |
| 155     | 5775            | 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-3

| Requirement                                             | Radio      | Channel and Data Rate | Frequency  | Measurement      | Limit            | Margin  |
|---------------------------------------------------------|------------|-----------------------|------------|------------------|------------------|---------|
| 15.407(e)<br>RSS-247 Clause 6.2.4<br>6dB Bandwidth      | 802.11a    | 149   6 Mbps          | -          | 16.3 MHz         | at least 500 kHz | -       |
| 15.407(a)(3)<br>RSS-247 Clause 6.2.4<br>Output Power    | 802.11ax20 | 165   MCS0<br>RU26    | -          | 12.2 dBm         | 24.0 dBm         | 11.8 dB |
| 15.407(a)(3)<br>RSS-247 Clause 6.2.4<br>PSD             | 802.11ax20 | 165   MCS0<br>RU26    | -          | 13.9 dBm/500 kHz | 30.0 dBm/500 kHz | 16.7 dB |
| 15.407(b)(4)<br>RSS-247 Clause 6.2.4<br>Restricted Band | 802.11ax80 | 155   MCS0<br>RU26    | 5660.1 MHz | -21.2 dBm        | -19.5 dBm        | 1.7 dB  |
| 15.407(b)(9)<br>RSS-GEN<br>Spurious Below 1 GHz         | 802.11a    | 149   6 Mbps          | 66.2 MHz   | 38.6 dBμV/m      | 40.0 dBμV/m      | 1.4 dB  |
| 15.407(b)(9)<br>RSS-GEN<br>AC Conducted                 | 802.11a    | 149   6 Mbps          | 0.159 MHz  | 64.5 dBμV        | 65.5 dBμV        | 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                   | $1 \times 10^{-7}$ | $0.55 \times 10^{-7}$ |
| 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 %                   |

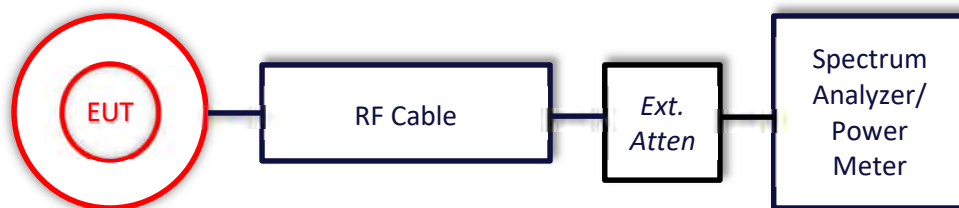
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## 6 TEST DATA

### 6.1 Antenna Port Conducted Emissions

|                                   |                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description of Measurement</b> | <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> |
| <b>Example Calculations</b>       | <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 6dB and 99% Occupied Bandwidth

|                    |                                    |                 |                    |
|--------------------|------------------------------------|-----------------|--------------------|
| <b>Operator</b>    | Anthony Smith                      | <b>QA</b>       | Adam Hauke         |
| <b>Temperature</b> | 21.9°C   22.4°C                    | <b>R.H. %</b>   | 27.50%   25.70%    |
| <b>Test Date</b>   | 02/15/2024   03/28/2024            | <b>Location</b> | Conducted RF Bench |
| <b>Requirement</b> | 15.407 (e)<br>RSS-247 Clause 6.2.4 | <b>Method</b>   | ANSI C63.10 12.5   |

**Limits:** For equipment operating in the band 5725-5850 MHz, the minimum 6 dB bandwidth shall be at least 500 kHz.

#### Test Parameters

|                    |                                                                 |                 |                                                                 |
|--------------------|-----------------------------------------------------------------|-----------------|-----------------------------------------------------------------|
| <b>Frequency</b>   | 5725-5850 MHz                                                   |                 |                                                                 |
| <b>RBW</b>         | 20 MHz BW – 200 kHz<br>40 MHz BW – 420 kHz<br>80 MHz BW – 1 MHz | <b>VBW</b>      | 20 MHz BW – 620 kHz<br>40 MHz BW – 1.5 MHz<br>80 MHz BW – 3 MHz |
| <b>Detector(s)</b> | Peak                                                            | <b>Settings</b> | 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

|                    |                 |                |               |
|--------------------|-----------------|----------------|---------------|
| <b>Input Power</b> | 120 VAC @ 60 Hz | <b>Mode</b>    | 5 GHz WLAN Tx |
| <b>Frequency</b>   | 5745-5825 MHz   | <b>Channel</b> | See 2.8       |

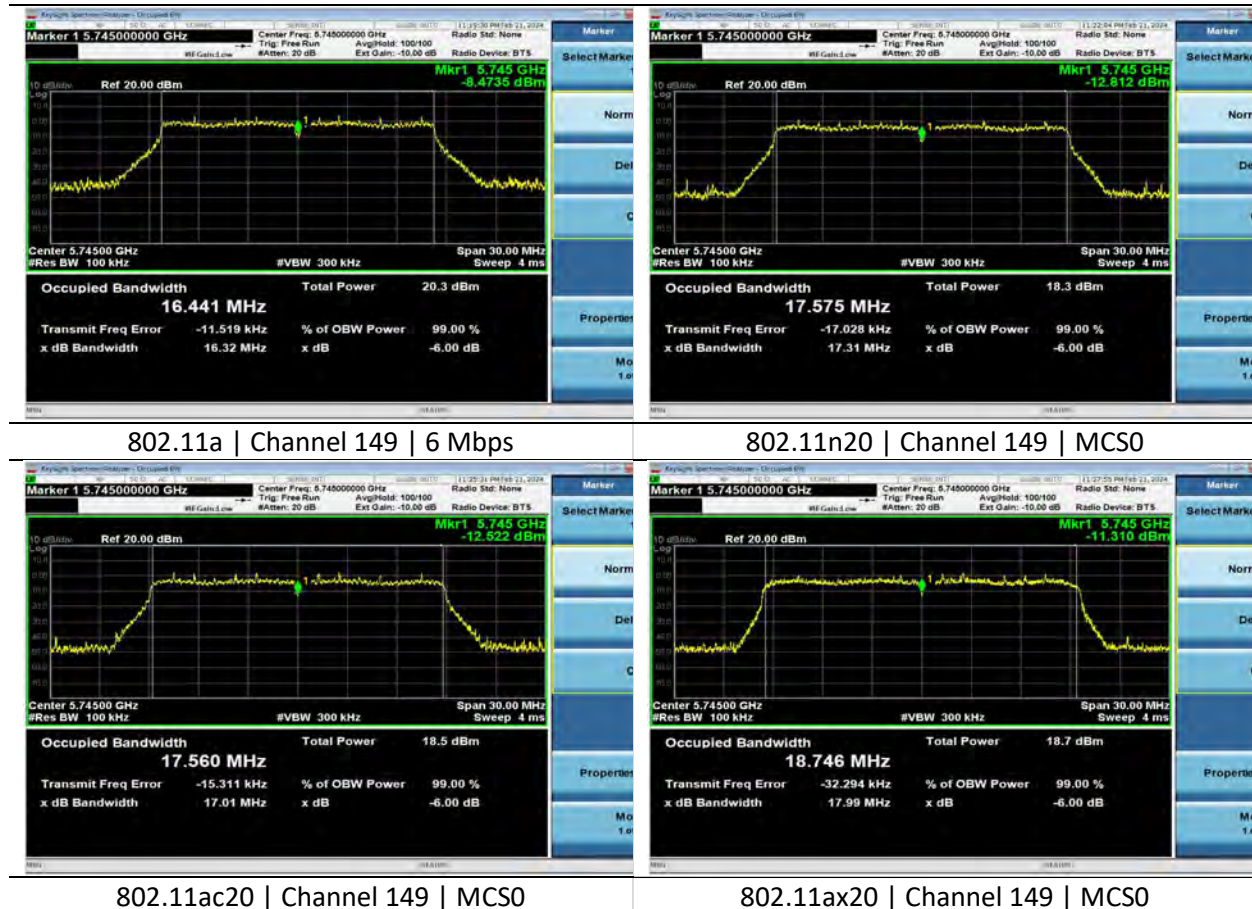
## Measurements

| Mode       | Rate    | Channel | 6 dB BW (MHz) | 99% BW (MHz) |
|------------|---------|---------|---------------|--------------|
| 802.11a    | 6 Mbps  | 149     | 16.3          | 16.4         |
|            |         | 157     | 16.4          | 16.4         |
|            |         | 165     | 16.3          | 16.4         |
|            | 54 Mbps | 149     | 16.4          | 16.4         |
|            |         | 157     | 16.5          | 16.4         |
|            |         | 165     | 16.5          | 16.4         |
| 802.11n20  | MCS0    | 149     | 17.3          | 17.6         |
|            |         | 157     | 17.3          | 17.6         |
|            |         | 165     | 17.5          | 17.6         |
|            | MCS7    | 149     | 17.6          | 17.6         |
|            |         | 157     | 17.7          | 17.6         |
|            |         | 165     | 17.6          | 17.6         |
| 802.11ac20 | MCS0    | 149     | 17.0          | 17.6         |
|            |         | 157     | 17.5          | 17.6         |
|            |         | 165     | 17.5          | 17.6         |
|            | MCS8    | 149     | 17.5          | 17.6         |
|            |         | 157     | 17.6          | 17.6         |
|            |         | 165     | 17.7          | 17.6         |
| 802.11ax20 | MCS0    | 149     | 18.0          | 18.7         |
|            |         | 157     | 18.1          | 18.7         |
|            |         | 165     | 18.2          | 18.7         |
|            | MCS11   | 149     | 18.0          | 18.7         |
|            |         | 157     | 18.2          | 18.7         |
|            |         | 165     | 18.2          | 18.7         |

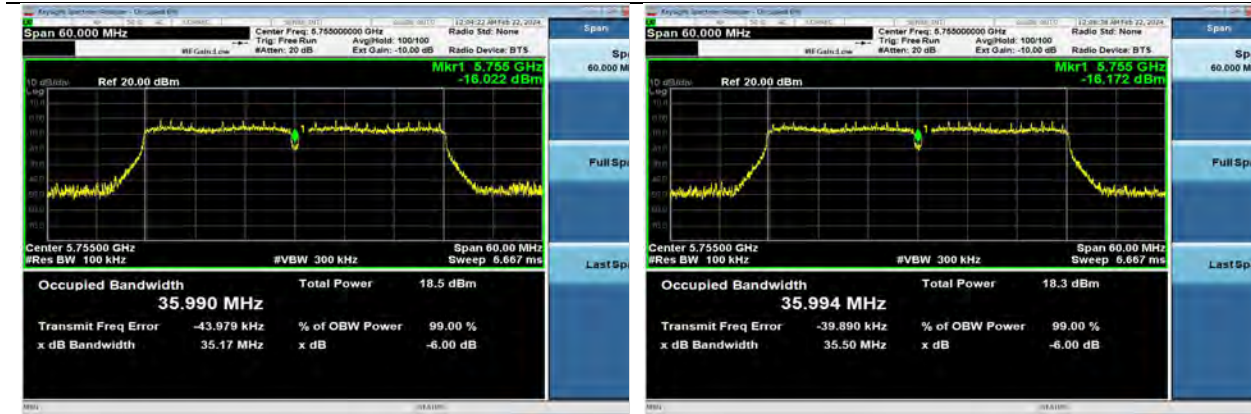
| Mode       | Rate  | Channel | 6 dB BW (MHz) | 99% BW (MHz) |
|------------|-------|---------|---------------|--------------|
| 802.11n40  | MCS0  | 151     | 35.2          | 36.0         |
|            |       | 159     | 35.7          | 36.0         |
|            | MCS7  | 151     | 35.7          | 36.0         |
|            |       | 159     | 36.3          | 36.0         |
| 802.11ac40 | MCS0  | 151     | 35.5          | 36.0         |
|            |       | 159     | 35.7          | 36.0         |
|            | MCS9  | 151     | 35.9          | 36.1         |
|            |       | 159     | 36.0          | 36.0         |
| 802.11ax40 | MCS0  | 151     | 36.5          | 37.5         |
|            |       | 159     | 36.8          | 37.5         |
|            | MCS11 | 151     | 36.2          | 37.4         |
|            |       | 159     | 37.0          | 37.5         |
| 802.11ac80 | MCS0  | 155     | 76.3          | 75.8         |
|            | MCS9  | 155     | 76.4          | 75.8         |
| 802.11ax80 | MCS0  | 155     | 77.9          | 77.5         |
|            | MCS11 | 155     | 77.9          | 77.4         |

| Mode       | Rate | Channel | RU Tone / Index | 6 dB BW (MHz) | 99% BW (MHz) |
|------------|------|---------|-----------------|---------------|--------------|
| 802.11ax20 | MCS0 | 149     | 26 / 0          | 19.0          | 18.0         |
|            |      |         | 52 / 37         | 19.1          | 17.9         |
|            |      |         | 106 / 63        | 19.1          | 17.9         |
| 802.11ax40 | MCS0 | 151     | 242 / 61        | 36.1          | 20.0         |
|            |      | 159     | 242 / 62        | 38.1          | 20.4         |
| 802.11ax80 | MCS0 | 155     | 484 / 65        | 80.3          | 43.0         |
|            |      | 155     | 484 / 66        | 80.1          | 55.2         |

### U-NII-3 Plots

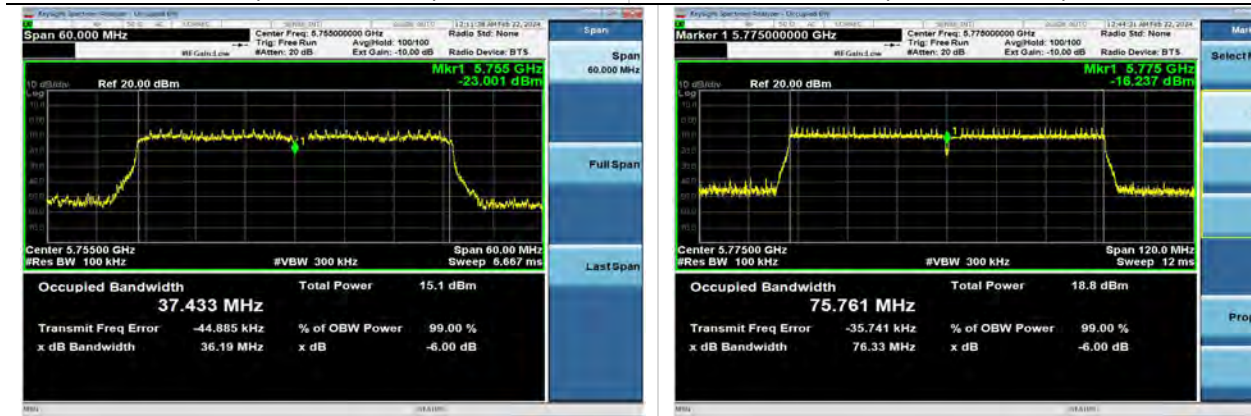


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802.11n40 | Channel 151 | MCS0

802.11ac40 | Channel 151 | MCS0



802.11ax40 | Channel 151 | MCS11

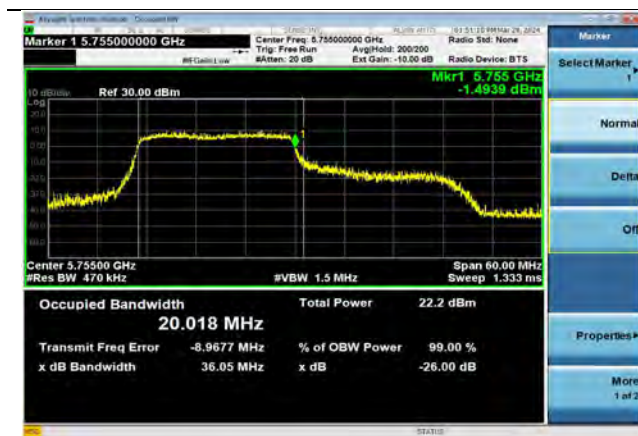
802.11ac80 | Channel 155 | MCS0



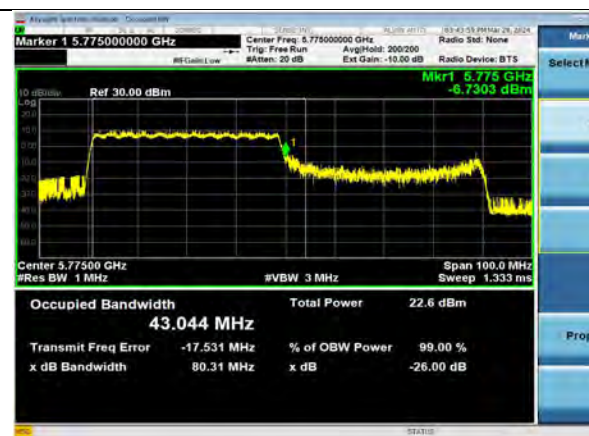
802.11ax80 | Channel 155 | MCS0

802.11ax20 | Channel 149 | MCS0 | RU Tone 26 Index 0

|                             |               |                                          |
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802.11ax40 | Channel 151 | MCS0 | RU Tone 242 Index 61



802.11ax80 | Channel 155 | MCS0 | RU Tone 484 Index 65

|                             |               |                                          |
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## 6.1.2 RF Output Power

|                    |                                                |                 |                                    |
|--------------------|------------------------------------------------|-----------------|------------------------------------|
| <b>Operator</b>    | Dylan Rosenfeldt                               | <b>QA</b>       | Anthony Smith                      |
| <b>Temperature</b> | 21.6°C   22.1°C<br>21.8°C   21.6°C             | <b>R.H. %</b>   | 25.90%   29.30%<br>53.50%   44.40% |
| <b>Test Date</b>   | 02/26/2024-02/27/2024<br>04/29-2024-04/30/2024 | <b>Location</b> | Conducted RF Bench                 |
| <b>Requirement</b> | 15.407 (a)(3)<br>RSS-247 Clause6.2.4           | <b>Method</b>   | ANSI C63.10 12.4 AVGSA-2           |

**Limit:** For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

### Test Parameters

|                             |                                                                                |                 |                                             |
|-----------------------------|--------------------------------------------------------------------------------|-----------------|---------------------------------------------|
| <b>Frequency</b>            | 5725-5850 MHz                                                                  | <b>Setup</b>    | Antenna Port                                |
| <b>RBW</b>                  | 1 MHz                                                                          | <b>VBW</b>      | 3 MHz                                       |
| <b>Detector(s)</b>          | Peak                                                                           | <b>Settings</b> | Max Hold<br>Span: 30 MHz   60 MHz   120 MHz |
| <b>Example Calculations</b> | 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

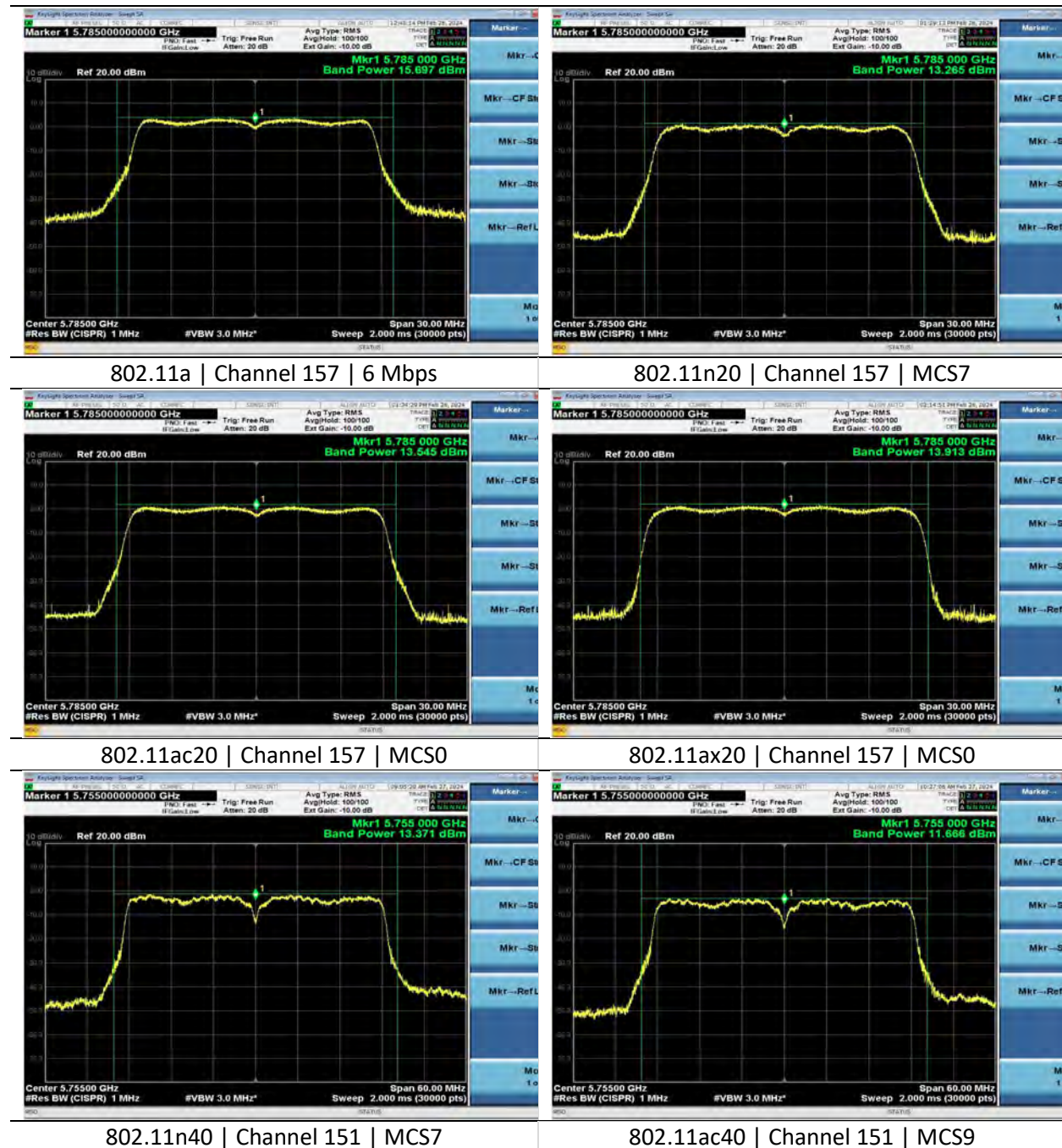
|                    |                 |                |               |
|--------------------|-----------------|----------------|---------------|
| <b>Input Power</b> | 120 VAC @ 60 Hz | <b>Mode</b>    | 5 GHz WLAN Tx |
| <b>Frequency</b>   | 5745-5825 MHz   | <b>Channel</b> | See 2.9       |

## Measurements

| Mode       | Rate    | Channel | Average Output Power (dBm) | Duty Cycle Correction (dB) | Corrected Output Power (dBm) | Limit (dBm) | Margin (dB) |
|------------|---------|---------|----------------------------|----------------------------|------------------------------|-------------|-------------|
| 802.11a    | 6 Mbps  | 149     | 16.5                       |                            | 16.5                         | 30.0        | 13.5        |
|            |         | 157     | 15.7                       |                            | 15.7                         | 30.0        | 14.3        |
|            |         | 165     | 16.1                       |                            | 16.1                         | 30.0        | 13.9        |
|            | 54 Mbps | 149     | 16.0                       | 0.4                        | 16.4                         | 30.0        | 13.7        |
|            |         | 157     | 15.5                       | 0.4                        | 15.9                         | 30.0        | 14.1        |
|            |         | 165     | 15.9                       | 0.4                        | 16.3                         | 30.0        | 13.7        |
| 802.11n20  | MCS0    | 149     | 14.2                       |                            | 14.2                         | 30.0        | 15.9        |
|            |         | 157     | 13.6                       |                            | 13.6                         | 30.0        | 16.4        |
|            |         | 165     | 14.0                       |                            | 14.0                         | 30.0        | 16.0        |
|            | MCS7    | 149     | 13.9                       | 0.4                        | 14.3                         | 30.0        | 15.8        |
|            |         | 157     | 13.3                       | 0.4                        | 13.7                         | 30.0        | 16.3        |
|            |         | 165     | 13.7                       | 0.4                        | 14.1                         | 30.0        | 16.0        |
| 802.11ac20 | MCS0    | 149     | 14.2                       |                            | 14.2                         | 30.0        | 15.8        |
|            |         | 157     | 13.5                       |                            | 13.5                         | 30.0        | 16.5        |
|            |         | 165     | 14.0                       |                            | 14.0                         | 30.0        | 16.0        |
|            | MCS8    | 149     | 13.8                       | 0.4                        | 14.2                         | 30.0        | 15.8        |
|            |         | 157     | 13.2                       | 0.4                        | 13.6                         | 30.0        | 16.4        |
|            |         | 165     | 13.7                       | 0.4                        | 14.1                         | 30.0        | 15.9        |
| 802.11ax20 | MCS0    | 149     | 14.4                       |                            | 14.4                         | 30.0        | 15.6        |
|            |         | 157     | 14.1                       |                            | 14.1                         | 30.0        | 15.9        |
|            |         | 165     | 14.5                       |                            | 14.5                         | 30.0        | 15.5        |
|            | MCS11   | 149     | 10.1                       | 0.5                        | 10.6                         | 30.0        | 19.4        |
|            |         | 157     | 9.5                        | 0.5                        | 10.0                         | 30.0        | 20.0        |
|            |         | 165     | 10.0                       | 0.5                        | 10.5                         | 30.0        | 19.6        |
| 802.11n40  | MCS0    | 151     | 14.0                       | 0.1                        | 14.1                         | 30.0        | 15.9        |
|            |         | 159     | 13.6                       | 0.1                        | 13.7                         | 30.0        | 16.3        |
|            | MCS7    | 151     | 13.4                       | 0.6                        | 14.0                         | 30.0        | 16.0        |
|            |         | 159     | 13.0                       | 0.6                        | 13.6                         | 30.0        | 16.5        |
| 802.11ac40 | MCS0    | 151     | 13.9                       | 0.1                        | 14.0                         | 30.0        | 16.0        |
|            |         | 159     | 13.7                       | 0.1                        | 13.8                         | 30.0        | 16.2        |
|            | MCS9    | 151     | 11.7                       | 0.7                        | 12.4                         | 30.0        | 17.6        |
|            |         | 159     | 11.2                       | 0.7                        | 11.9                         | 30.0        | 18.1        |
| 802.11ax40 | MCS0    | 151     | 14.4                       | 0.1                        | 14.5                         | 30.0        | 15.5        |
|            |         | 159     | 13.9                       | 0.1                        | 14.0                         | 30.0        | 16.0        |
|            | MCS11   | 151     | 9.7                        | 0.7                        | 10.4                         | 30.0        | 19.6        |
|            |         | 159     | 9.3                        | 0.7                        | 10.0                         | 30.0        | 20.0        |
| 802.11ac80 | MCS0    | 155     | 13.9                       | 0.2                        | 14.1                         | 30.0        | 15.9        |
|            | MCS9    | 155     | 11.4                       | 1.0                        | 12.4                         | 30.0        | 17.6        |
| 802.11ax80 | MCS0    | 155     | 14.2                       | 0.2                        | 14.4                         | 30.0        | 15.6        |
|            | MCS11   | 155     | 9.5                        | 0.8                        | 10.3                         | 30.0        | 19.7        |

| Mode       | Rate RU    | Channel | Average Output Power (dBm) | Duty Cycle Correction (dB) | Corrected Output Power (dBm) | Limit (dBm) | Margin (dB) |
|------------|------------|---------|----------------------------|----------------------------|------------------------------|-------------|-------------|
| 802.11ax20 | MCS0 RU26  | 149     | 12.1                       | 0.2                        | 12.3                         | 24.0        | 11.7        |
|            |            | 157     | 12.1                       | 0.2                        | 12.3                         | 24.0        | 11.7        |
|            |            | 165     | 12.5                       | 0.2                        | 12.7                         | 24.0        | 11.3        |
|            | MCS0 RU52  | 149     | 12.0                       | 0.2                        | 12.2                         | 24.0        | 11.8        |
|            |            | 157     | 12.0                       | 0.2                        | 12.2                         | 24.0        | 11.8        |
|            |            | 165     | 12.5                       | 0.2                        | 12.7                         | 24.0        | 11.3        |
|            | MCS0 RU106 | 149     | 12.2                       | 0.2                        | 12.4                         | 24.0        | 11.6        |
|            |            | 157     | 12.2                       | 0.2                        | 12.4                         | 24.0        | 11.6        |
|            |            | 165     | 12.6                       | 0.2                        | 12.8                         | 24.0        | 11.2        |
| 802.11ax40 | MCS0 RU26  | 151     | 11.1                       | 0.2                        | 11.3                         | 24.0        | 12.7        |
|            | MCS0 RU52  | 159     | 11.1                       | 0.2                        | 11.3                         | 24.0        | 12.7        |
|            | MCS0 RU52  | 151     | 12.1                       | 0.2                        | 12.3                         | 24.0        | 11.7        |
|            | MCS0 RU106 | 159     | 11.9                       | 0.2                        | 12.1                         | 24.0        | 11.9        |
|            | MCS0 RU106 | 151     | 12.1                       | 0.2                        | 12.3                         | 24.0        | 11.7        |
|            | MCS0 RU242 | 159     | 11.9                       | 0.2                        | 12.1                         | 24.0        | 11.9        |
|            | MCS0 RU242 | 151     | 12.2                       | 0.2                        | 12.4                         | 24.0        | 11.6        |
| 802.11ax80 | MCS0 RU26  | 155     | 12.1                       | 0.2                        | 12.3                         | 24.0        | 11.7        |
|            | MCS0 RU52  | 155     | 11.8                       | 0.2                        | 12.0                         | 24.0        | 12.0        |
|            | MCS0 RU106 | 155     | 11.9                       | 0.2                        | 12.1                         | 24.0        | 11.9        |
|            | MCS0 RU242 | 155     | 11.8                       | 0.2                        | 12.0                         | 24.0        | 12.0        |
|            | MCS0 RU484 | 155     | 11.9                       | 0.2                        | 12.1                         | 24.0        | 11.9        |

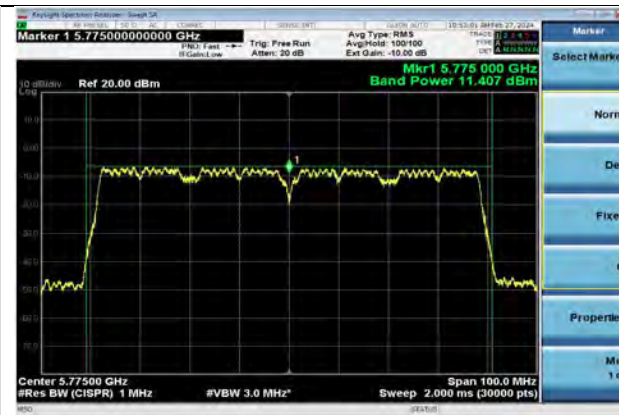
## Plots



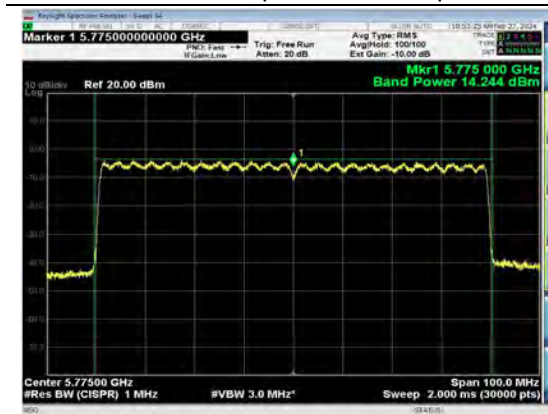
|                             |               |                                          |
|-----------------------------|---------------|------------------------------------------|
| Company: Ezurio             | Page 20 of 45 | Name: Module, SONA NX611 M.2 2230, 1 MHF |
| Report: TR3768-166-5G-UNII3 |               | Model: SONA NX611M                       |
| Quote: C-3768               |               | Serial: 00047                            |



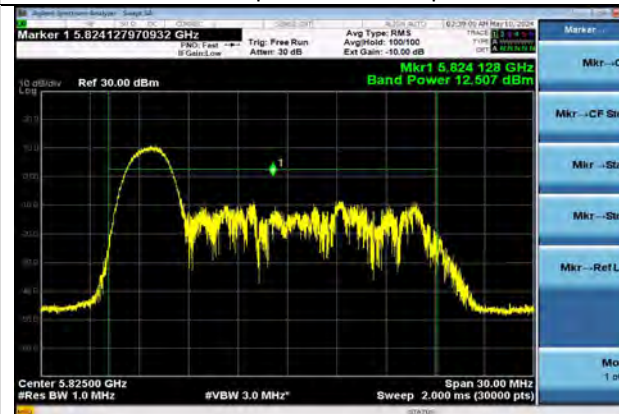
802.11ax40 | Channel 151 | MCS0



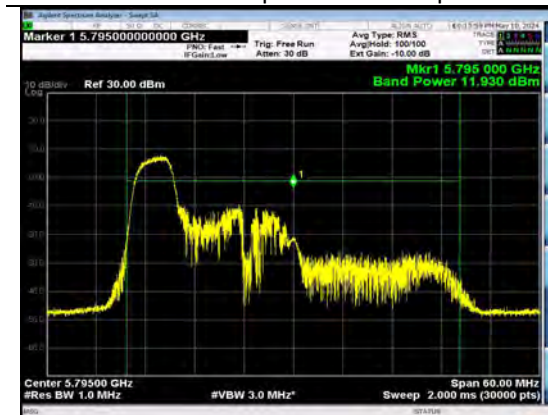
802.11ac80 | Channel 155 | MCS9



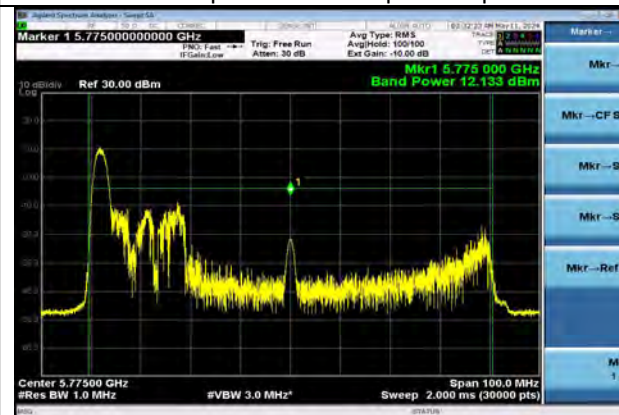
802.11ax80 | Channel 155 | MCS0



802.11ax20 | Channel 165 | MCS0 | RU26



802.11ax40 | Channel 159 | MCS0 | RU 52



802.11ax80 | Channel 155 | MCS0 | RU26

|                             |               |                                          |
|-----------------------------|---------------|------------------------------------------|
| Company: Ezurio             | Page 21 of 45 | Name: Module, SONA NX611 M.2 2230, 1 MHF |
| Report: TR3768-166-5G-UNII3 |               | Model: SONA NX611M                       |
| Quote: C-3768               |               | Serial: 00047                            |

### 6.1.3 Power Spectral Density

|                    |                                                |                 |                                    |
|--------------------|------------------------------------------------|-----------------|------------------------------------|
| <b>Operator</b>    | Dylan Rosenfeldt   Anthony Smith               | <b>QA</b>       | Adam Hauke                         |
| <b>Temperature</b> | 22.0°C   21.1°C<br>22.0°C   21.9°C             | <b>R.H. %</b>   | 26.60%   20.20%<br>30.50%   52.90% |
| <b>Test Date</b>   | 02/28/2024-02/29/2024<br>04/25/2024-04/29/2024 | <b>Location</b> | Conducted RF Bench                 |
| <b>Requirement</b> | 15.407 (a)(3)<br>RSS-247 Clause 6.2.4          | <b>Method</b>   | ANSI C63.10 12.6 AVGPSD-2          |

**Limits:** For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

#### Test Parameters

|                             |                                                                                                                 |                    |           |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------|--------------------|-----------|
| <b>Frequency</b>            | 5725-5850 MHz                                                                                                   | <b>Detector(s)</b> | Avg (RMS) |
| <b>RBW</b>                  | 100 kHz                                                                                                         | <b>VBW</b>         | 300 kHz   |
| <b>Notes</b>                | The same method of determining the conducted output power shall be used to determine the power spectral density |                    |           |
| <b>Example Calculations</b> | 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

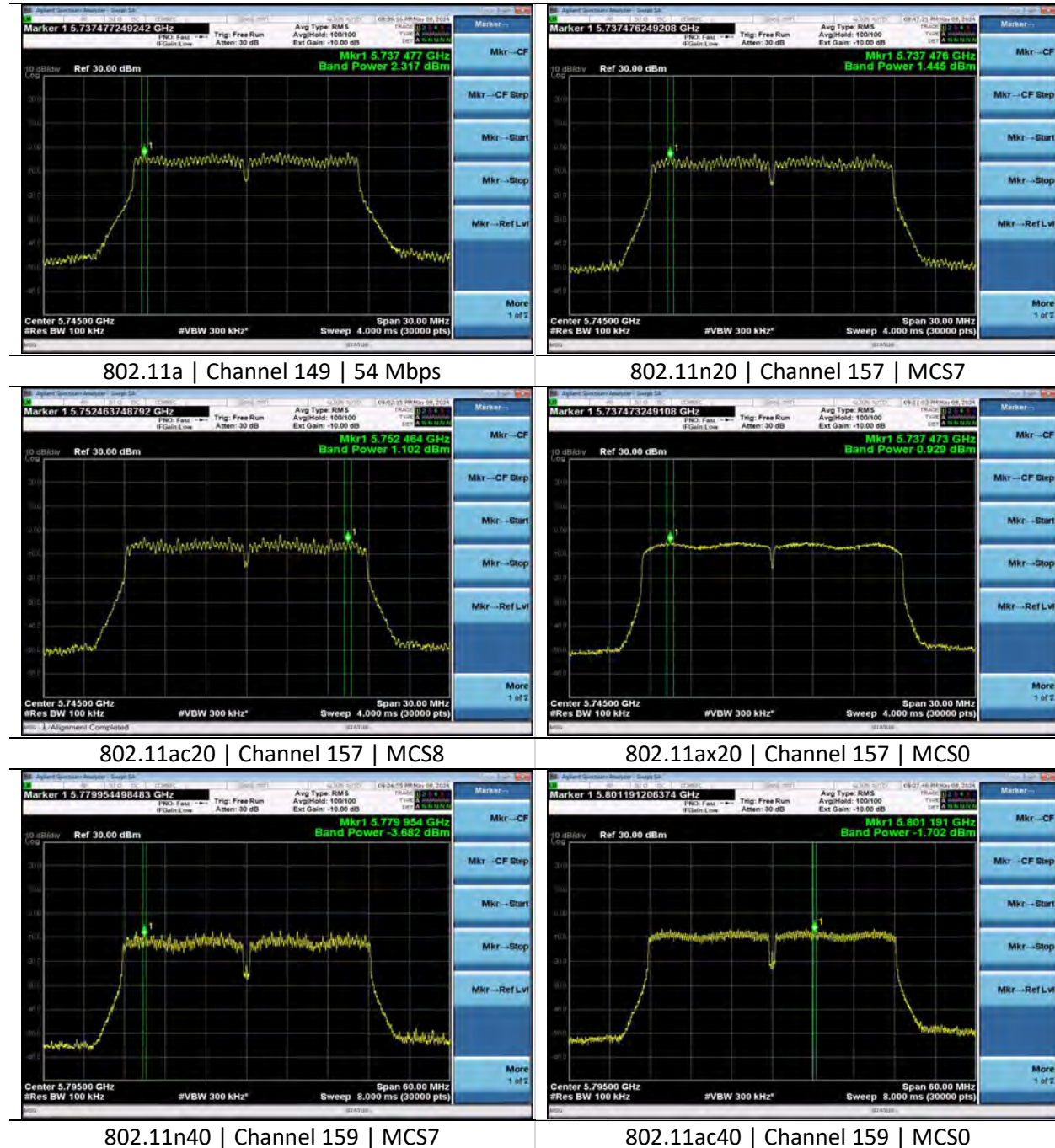
|                    |                 |                |               |
|--------------------|-----------------|----------------|---------------|
| <b>Input Power</b> | 120 VAC @ 60 Hz | <b>Mode</b>    | 5 GHz WLAN Tx |
| <b>Frequency</b>   | 5745-5825 MHz   | <b>Channel</b> | See 2.9       |

## Measurements

| Mode       | Rate    | Channel | Maximum Average PSD (dBm/500 kHz) | Duty Cycle and RBW Correction (dB) | Corrected Output Value (dBm/500 kHz) | Limit (dBm/500 kHz) | Margin (dB) |
|------------|---------|---------|-----------------------------------|------------------------------------|--------------------------------------|---------------------|-------------|
| 802.11a    | 6 Mbps  | 149     | 1.3                               | 7.0                                | 8.3                                  | 30.0                | 21.7        |
|            |         | 157     | 2.4                               | 7.0                                | 9.4                                  | 30.0                | 20.6        |
|            |         | 165     | 2.5                               | 7.0                                | 9.5                                  | 30.0                | 20.5        |
|            | 54 Mbps | 149     | 2.3                               | 7.4                                | 9.7                                  | 30.0                | 20.3        |
|            |         | 157     | 2.4                               | 7.4                                | 9.8                                  | 30.0                | 20.2        |
|            |         | 165     | 2.7                               | 7.4                                | 10.1                                 | 30.0                | 19.9        |
| 802.11n20  | MCS0    | 149     | 1.0                               | 7.0                                | 8.0                                  | 30.0                | 22.0        |
|            |         | 157     | 1.1                               | 7.0                                | 8.1                                  | 30.0                | 21.9        |
|            |         | 165     | 1.2                               | 7.0                                | 8.2                                  | 30.0                | 21.8        |
|            | MCS7    | 149     | 1.4                               | 7.4                                | 8.8                                  | 30.0                | 21.2        |
|            |         | 157     | 1.2                               | 7.4                                | 8.6                                  | 30.0                | 21.4        |
|            |         | 165     | 1.5                               | 7.4                                | 8.9                                  | 30.0                | 21.1        |
| 802.11ac20 | MCS0    | 149     | 0.9                               | 7.0                                | 7.9                                  | 30.0                | 22.1        |
|            |         | 157     | 1.1                               | 7.0                                | 8.1                                  | 30.0                | 21.9        |
|            |         | 165     | 1.3                               | 7.0                                | 8.3                                  | 30.0                | 21.7        |
|            | MCS8    | 149     | 1.1                               | 7.4                                | 8.5                                  | 30.0                | 21.5        |
|            |         | 157     | 1.6                               | 7.4                                | 9.0                                  | 30.0                | 21.0        |
|            |         | 165     | 1.2                               | 7.4                                | 8.6                                  | 30.0                | 21.4        |
| 802.11ax20 | MCS0    | 149     | 0.9                               | 7.0                                | 7.9                                  | 30.0                | 22.1        |
|            |         | 157     | 1.3                               | 7.0                                | 8.3                                  | 30.0                | 21.7        |
|            |         | 165     | 1.8                               | 7.0                                | 8.8                                  | 30.0                | 21.2        |
|            | MCS11   | 149     | -2.1                              | 7.5                                | 5.4                                  | 30.0                | 24.6        |
|            |         | 157     | -2.8                              | 7.5                                | 4.7                                  | 30.0                | 25.3        |
|            |         | 165     | -2.5                              | 7.5                                | 5.0                                  | 30.0                | 25.0        |
| 802.11n40  | MCS0    | 151     | -4.3                              | 7.1                                | 2.8                                  | 30.0                | 27.2        |
|            |         | 159     | -3.8                              | 7.1                                | 3.4                                  | 30.0                | 26.7        |
|            | MCS7    | 151     | -3.8                              | 7.6                                | 3.8                                  | 30.0                | 26.2        |
|            |         | 159     | -3.7                              | 7.6                                | 3.9                                  | 30.0                | 26.1        |
| 802.11ac40 | MCS0    | 151     | -2.4                              | 7.1                                | 4.7                                  | 30.0                | 25.3        |
|            |         | 159     | -1.7                              | 7.1                                | 5.4                                  | 30.0                | 24.6        |
|            | MCS9    | 151     | 3.6                               | 7.7                                | 11.3                                 | 30.0                | 18.8        |
|            |         | 159     | -3.2                              | 7.7                                | 4.5                                  | 30.0                | 25.5        |
| 802.11ax40 | MCS0    | 151     | -2.1                              | 7.1                                | 5.0                                  | 30.0                | 25.0        |
|            |         | 159     | -1.7                              | 7.1                                | 5.4                                  | 30.0                | 24.6        |
|            | MCS11   | 151     | -5.4                              | 7.7                                | 2.4                                  | 30.0                | 27.7        |
|            |         | 159     | -5.2                              | 7.7                                | 2.5                                  | 30.0                | 27.5        |
| 802.11ac80 | MCS0    | 155     | -7.6                              | 7.2                                | -0.4                                 | 30.0                | 30.4        |
|            | MCS9    | 155     | -7.9                              | 8.0                                | 0.1                                  | 30.0                | 29.9        |
| 802.11ax80 | MCS0    | 155     | -9.5                              | 7.2                                | -2.3                                 | 30.0                | 32.3        |
|            | MCS11   | 155     | -9.2                              | 7.8                                | -1.4                                 | 30.0                | 31.4        |

| Mode       | Rate RU    | Channel | Maximum Average PSD (dBm/500 kHz) | Duty Cycle and RBW Correction (dB) | Corrected Output Value (dBm/1 MHz) | Limit (dBm/500 kHz) | Margin (dB) |
|------------|------------|---------|-----------------------------------|------------------------------------|------------------------------------|---------------------|-------------|
| 802.11ax20 | MCS0 RU26  | 149     | 6.7                               | 7.2                                | 13.9                               | 30.0                | 16.2        |
|            |            | 157     | 6.6                               | 7.2                                | 13.8                               | 30.0                | 16.2        |
|            |            | 165     | 7.1                               | 7.2                                | 14.3                               | 30.0                | 15.7        |
|            | MCS0 RU52  | 149     | 3.7                               | 7.2                                | 10.9                               | 30.0                | 19.1        |
|            |            | 157     | 3.5                               | 7.2                                | 10.7                               | 30.0                | 19.3        |
|            |            | 165     | 4.0                               | 7.2                                | 11.2                               | 30.0                | 18.8        |
|            | MCS0 RU106 | 149     | 0.7                               | 7.2                                | 7.9                                | 30.0                | 22.1        |
|            |            | 157     | 0.6                               | 7.2                                | 7.8                                | 30.0                | 22.2        |
|            |            | 165     | 0.9                               | 7.2                                | 8.1                                | 30.0                | 21.9        |
| 802.11ax40 | MCS0 RU26  | 151     | 5.9                               | 7.2                                | 13.1                               | 30.0                | 16.9        |
|            | MCS0 RU26  | 159     | 5.0                               | 7.2                                | 12.2                               | 30.0                | 17.8        |
|            | MCS0 RU52  | 151     | 3.9                               | 7.2                                | 11.1                               | 30.0                | 18.9        |
|            | MCS0 RU52  | 159     | 3.9                               | 7.2                                | 11.1                               | 30.0                | 18.9        |
|            | MCS0 RU106 | 151     | 1.0                               | 7.2                                | 8.2                                | 30.0                | 21.8        |
|            | MCS0 RU106 | 159     | 0.6                               | 7.2                                | 7.8                                | 30.0                | 22.2        |
|            | MCS0 RU242 | 151     | -2.7                              | 7.2                                | 4.5                                | 30.0                | 25.5        |
|            | MCS0 RU242 | 159     | -2.6                              | 7.2                                | 4.6                                | 30.0                | 25.4        |
| 802.11ax80 | MCS0 RU26  | 155     | 6.2                               | 7.2                                | 13.4                               | 30.0                | 16.6        |
|            | MCS0 RU52  | 155     | 3.0                               | 7.2                                | 10.2                               | 30.0                | 19.8        |
|            | MCS0 RU106 | 155     | 0.1                               | 7.2                                | 7.3                                | 30.0                | 22.7        |
|            | MCS0 RU242 | 155     | -3.7                              | 7.2                                | 3.5                                | 30.0                | 26.5        |
|            | MCS0 RU484 | 155     | -7.0                              | 7.2                                | 0.2                                | 30.0                | 29.8        |

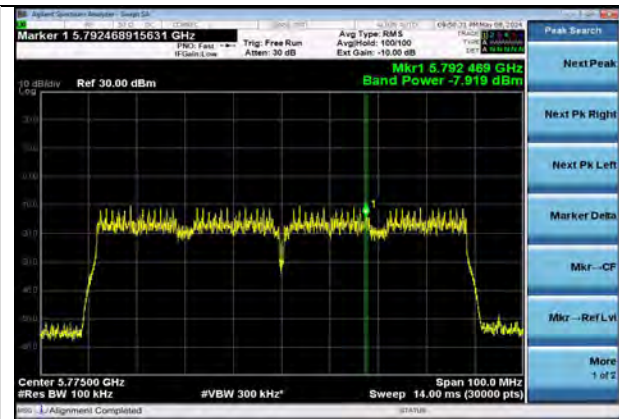
## Plots



|                             |               |                                          |
|-----------------------------|---------------|------------------------------------------|
| Company: Ezurio             | Page 25 of 45 | Name: Module, SONA NX611 M.2 2230, 1 MHF |
| Report: TR3768-166-5G-UNII3 |               | Model: SONA NX611M                       |
| Quote: C-3768               |               | Serial: 00047                            |



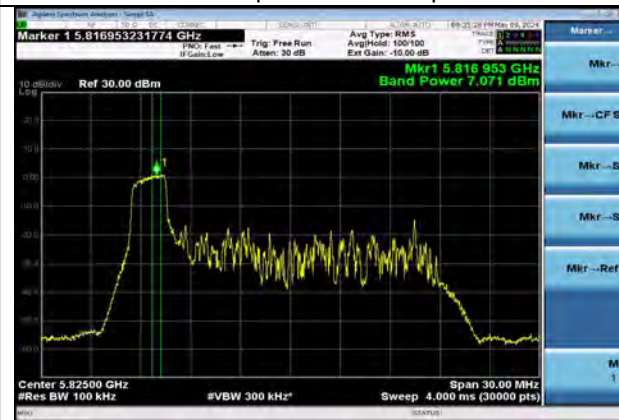
802.11ax40 | Channel 159 | MCS0



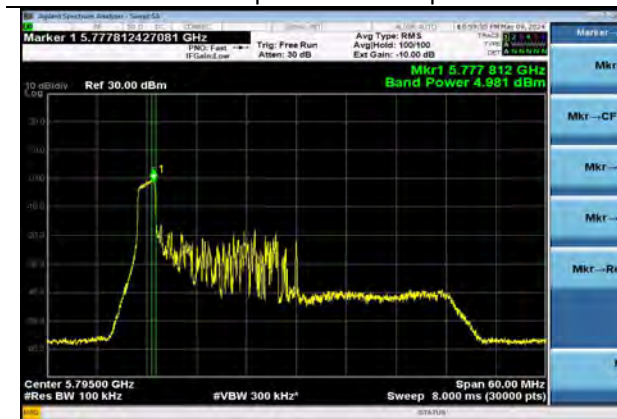
802.11ac80 | Channel 155 | MCS9



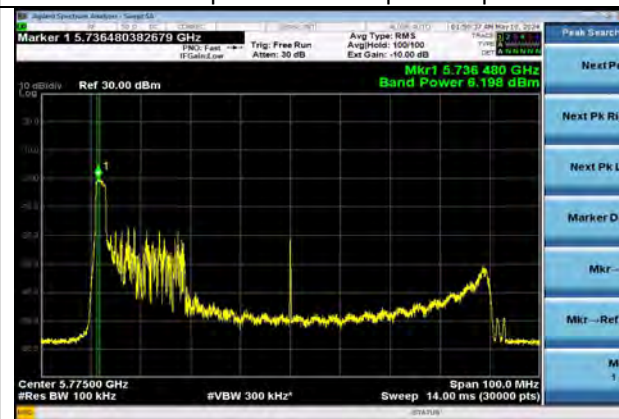
802.11ax80 | Channel 155 | MCS11



802.11ax20 | Channel 165 | MCS0 | RU26



802.11ax40 | Channel 159 | MCS0 | RU26



802.11ax80 | Channel 155 | MCS0 | RU26

|                             |               |                                          |
|-----------------------------|---------------|------------------------------------------|
| Company: Ezurio             | Page 26 of 45 | Name: Module, SONA NX611 M.2 2230, 1 MHF |
| Report: TR3768-166-5G-UNII3 |               | Model: SONA NX611M                       |
| Quote: C-3768               |               | Serial: 00047                            |
|                             |               |                                          |

#### 6.1.4 Out-of-band Emissions

|                    |                                                |                 |                               |
|--------------------|------------------------------------------------|-----------------|-------------------------------|
| <b>Operator</b>    | Anthony Smith   Dylan Rosenfeldt               | <b>QA</b>       | Adam Hauke                    |
| <b>Temperature</b> | 21.6°C-21.9°C<br>21.8°C-22.2°C                 | <b>R.H. %</b>   | 19.90%-41.10%<br>29.70%-38.0% |
| <b>Test Date</b>   | 02/29/2024-03/05/2024<br>04/05/2024-04/08/2024 | <b>Location</b> | Conducted RF Bench            |
| <b>Requirement</b> | 15.407(b)(4)<br>RSS-247 Clause 6.2.4           | <b>Method</b>   | ANSI C63.10 12.7              |

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

#### Test Parameters

|                             |                                                             |              |              |
|-----------------------------|-------------------------------------------------------------|--------------|--------------|
| <b>Frequency</b>            | 30-40000 MHz                                                | <b>Setup</b> | Antenna Port |
| <b>RBW</b>                  | 1 MHz                                                       | <b>VBW</b>   | 3 MHz        |
| <b>Detector(s)</b>          | Peak and Average (RMS)                                      |              |              |
| <b>Notes</b>                | Declared antenna gain for band edge – 4.4 dBi               |              |              |
| <b>Example Calculations</b> | 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  |

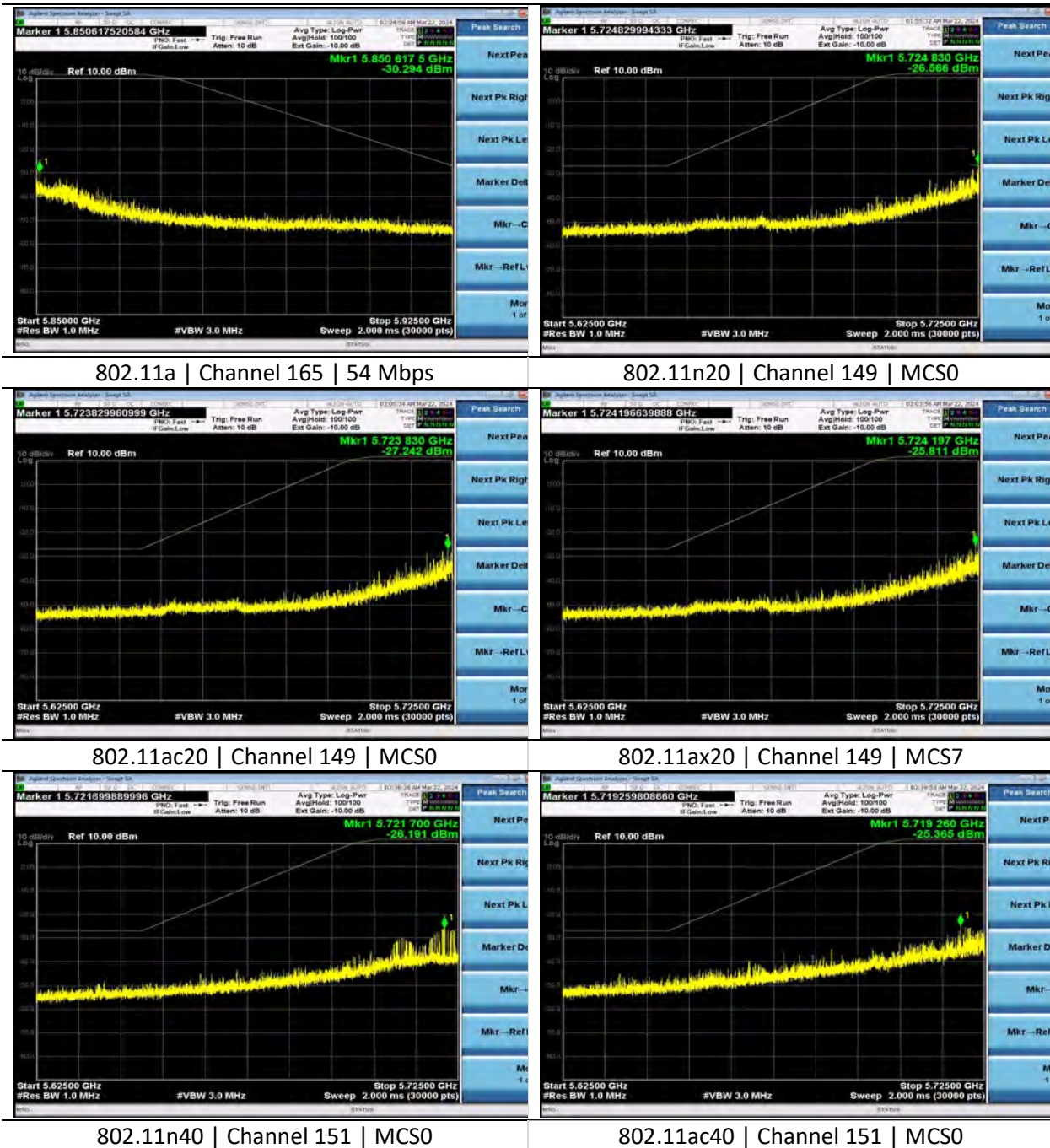
|                    |                 |                |               |
|--------------------|-----------------|----------------|---------------|
| <b>Input Power</b> | 120 VAC @ 60 Hz | <b>Mode</b>    | 5 GHz WLAN Tx |
| <b>Frequency</b>   | 5745-5825 MHz   | <b>Channel</b> | See 2.9       |

## Measurements – Band Edge

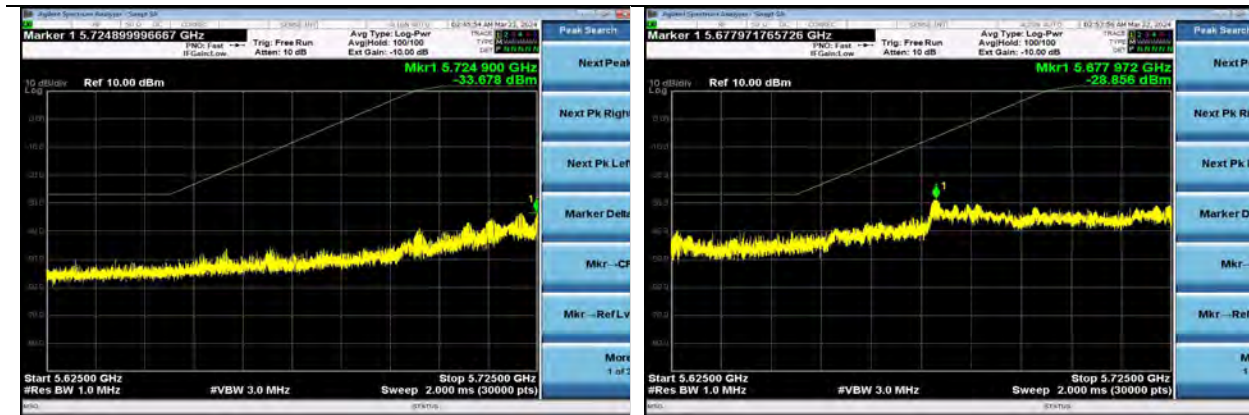
| Mode       | Rate    | Channel | Frequency (MHz) | Measurement (dBm) | Antenna Gain (dBi) | Limit (dBm) | Margin (dB) |
|------------|---------|---------|-----------------|-------------------|--------------------|-------------|-------------|
| 802.11a    | 6 Mbps  | 149     | 5724.8          | -24.7             | 4.4                | 26.5        | 46.8        |
|            |         | 165     | 5851.7          | -31.7             | 4.4                | 23.1        | 50.4        |
|            | 54 Mbps | 149     | 5725.0          | -26.7             | 4.4                | 26.9        | 49.2        |
|            |         | 165     | 5850.6          | -30.3             | 4.4                | 25.6        | 51.5        |
| 802.11n20  | MCS0    | 149     | 5724.8          | -26.6             | 4.4                | 26.5        | 48.7        |
|            |         | 165     | 5851.2          | -31.2             | 4.4                | 24.4        | 51.2        |
|            | MCS7    | 149     | 5720.6          | -29.1             | 4.4                | 17.0        | 41.7        |
|            |         | 165     | 5852.3          | -33.9             | 4.4                | 21.8        | 51.2        |
| 802.11ac20 | MCS0    | 149     | 5723.8          | -27.2             | 4.4                | 24.3        | 47.1        |
|            |         | 165     | 5851.7          | -32.1             | 4.4                | 23.1        | 50.8        |
|            | MCS8    | 149     | 5723.8          | -27.8             | 4.4                | 24.3        | 47.6        |
|            |         | 165     | 5851.5          | -31.6             | 4.4                | 23.6        | 50.8        |
| 802.11ax20 | MCS0    | 149     | 5725.0          | -26.9             | 4.4                | 26.9        | 49.4        |
|            |         | 165     | 5852.4          | -29.7             | 4.4                | 21.6        | 46.8        |
|            | MCS11   | 149     | 5724.2          | -25.8             | 4.4                | 25.2        | 46.6        |
|            |         | 165     | 5855.0          | -30.6             | 4.4                | 15.7        | 41.9        |
| 802.11n40  | MCS0    | 151     | 5721.7          | -26.2             | 4.4                | 19.5        | 41.3        |
|            |         | 159     | 5851.2          | -35.9             | 4.4                | 24.3        | 55.8        |
|            | MCS7    | 151     | 5724.7          | -29.4             | 4.4                | 26.3        | 51.3        |
|            |         | 159     | 5850.7          | -40.8             | 4.4                | 25.4        | 61.8        |
| 802.11ac40 | MCS0    | 151     | 5719.3          | -25.4             | 4.4                | 15.4        | 36.4        |
|            |         | 159     | 5850.1          | -35.4             | 4.4                | 26.8        | 57.7        |
|            | MCS9    | 151     | 5723.5          | -32.3             | 4.4                | 23.6        | 51.4        |
|            |         | 159     | 5850.7          | -39.3             | 4.4                | 25.5        | 60.4        |
| 802.11ax40 | MCS0    | 151     | 5723.0          | -22.6             | 4.4                | 22.4        | 40.6        |
|            |         | 159     | 5853.4          | -31.7             | 4.4                | 19.3        | 46.6        |
|            | MCS11   | 151     | 5724.9          | -33.7             | 4.4                | 26.8        | 56.0        |
|            |         | 159     | 5851.0          | -41.1             | 4.4                | 24.8        | 61.4        |
| 802.11ac80 | MCS0    | 155     | 5678.6          | -29.2             | 4.4                | -5.9        | 18.9        |
|            |         | 155     | 5850.9          | -32.2             | 4.4                | 24.9        | 52.7        |
|            | MCS9    | 155     | 5686.4          | -31.9             | 4.4                | -0.1        | 27.4        |
|            |         | 155     | 5850.4          | -33.9             | 4.4                | 26.1        | 55.6        |
| 802.11ax80 | MCS0    | 155     | 5722.5          | -28.4             | 4.4                | 21.3        | 45.2        |
|            |         | 155     | 5862.4          | -35.0             | 4.4                | 13.5        | 44.1        |
|            | MCS11   | 155     | 5677.4          | -33.2             | 4.4                | -6.8        | 22.0        |
|            |         | 155     | 5854.4          | -37.8             | 4.4                | 17.1        | 50.4        |

| Mode       | Rate  | Channel | Frequency (MHz) | Measurement (dBm) | Antenna Gain (dBi) | Limit (dBm) | Margin (dB) |
|------------|-------|---------|-----------------|-------------------|--------------------|-------------|-------------|
| 802.11ax20 | MCS0  | 149     | 5720.8          | -28.4             | 4.4                | 17.4        | 41.4        |
|            | RU26  | 165     | 5850.8          | -25.1             | 4.4                | 25.2        | 45.9        |
|            | MCS0  | 149     | 5723.7          | -29.0             | 4.4                | 24.0        | 48.6        |
|            | RU52  | 165     | 5850.6          | -34.3             | 4.4                | 25.7        | 55.6        |
|            | MCS0  | 149     | 5724.9          | -29.0             | 4.4                | 26.8        | 51.4        |
|            | RU106 | 165     | 5850.5          | -34.3             | 4.4                | 25.9        | 55.8        |
| 802.11ax40 | MCS0  | 151     | 5718.7          | -25.1             | 4.4                | 15.2        | 35.9        |
|            | RU26  | 159     | 5850.1          | -34.4             | 4.4                | 26.8        | 56.8        |
|            | MCS0  | 151     | 5723.1          | -25.1             | 4.4                | 18.1        | 38.8        |
|            | RU52  | 159     | 5875.5          | -32.5             | 4.4                | 26.2        | 54.3        |
|            | MCS0  | 151     | 5724.9          | -27.2             | 4.4                | 14.6        | 37.4        |
|            | RU106 | 159     | 5867.1          | -41.9             | 4.4                | 25.4        | 62.9        |
|            | MCS0  | 151     | 5724.7          | -20.9             | 4.4                | 26.8        | 43.3        |
|            | RU242 | 159     | 5851.1          | -38.8             | 4.4                | 24.8        | 59.1        |
| 802.11ax80 | MCS0  | 155     | 5661.9          | -27.5             | 4.4                | -18.2       | 4.9         |
|            | RU26  | 155     | 5891.3          | -33.0             | 4.4                | -2.1        | 26.5        |
|            | MCS0  | 155     | 5723.9          | -32.7             | 4.4                | -4.7        | 23.5        |
|            | RU52  | 155     | 5852.1          | -43.8             | 4.4                | 18.8        | 58.2        |
|            | MCS0  | 155     | 5724.2          | -33.3             | 4.4                | -2.6        | 26.3        |
|            | RU106 | 155     | 5876.8          | -38.3             | 4.4                | 25.2        | 59.1        |
|            | MCS0  | 155     | 5663.2          | -29.9             | 4.4                | -6.8        | 18.7        |
|            | RU242 | 155     | 5884.8          | -31.0             | 4.4                | 17.1        | 43.7        |
|            | MCS0  | 155     | 5663.5          | -32.4             | 4.4                | -6.8        | 21.2        |
|            | RU484 | 155     | 5887.1          | -36.4             | 4.4                | 17.1        | 49.1        |

## Worst Case Plots

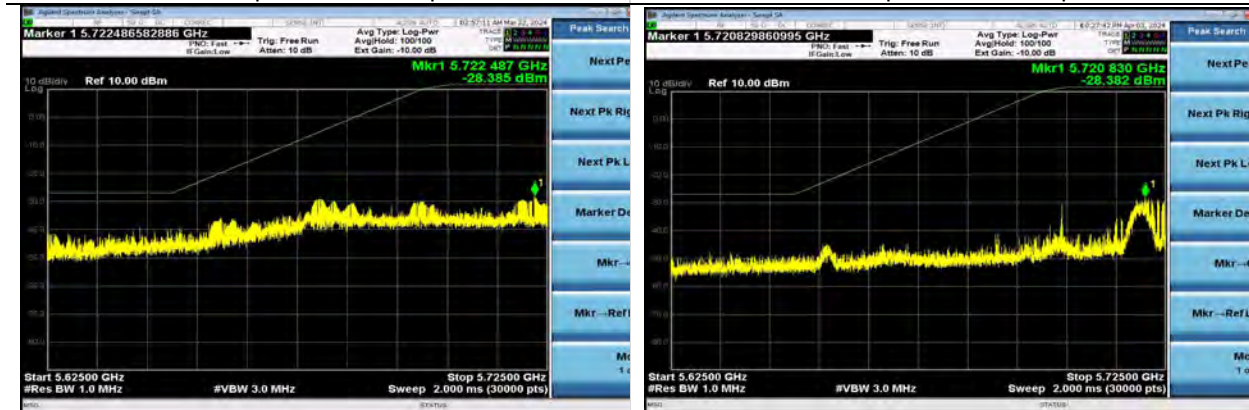


|                             |               |                                          |
|-----------------------------|---------------|------------------------------------------|
| Company: Ezurio             | Page 30 of 45 | Name: Module, SONA NX611 M.2 2230, 1 MHF |
| Report: TR3768-166-5G-UNII3 |               | Model: SONA NX611M                       |
| Quote: C-3768               |               | Serial: 00047                            |



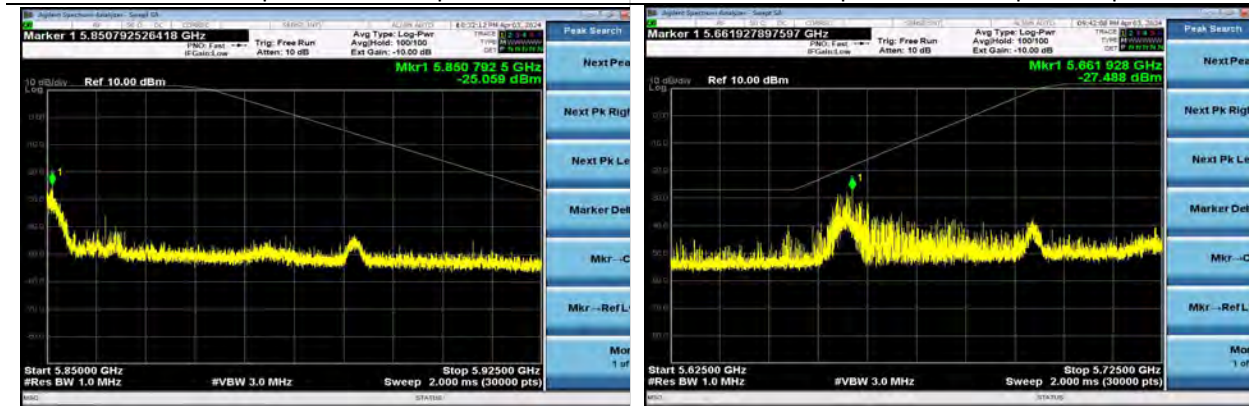
802.11ax40 | Channel 151 | MCS11

802.11ac80 | Channel 155 | MCS7



802.11ax80 | Channel 155 | MCS0

802.11ax20 | Channel 149 | MCS0 | RU26



802.11ax40 | Channel 151 | MCS0 | RU26

802.11ax80 | Channel 155 | MCS0 | RU26

|                             |               |                                          |
|-----------------------------|---------------|------------------------------------------|
| Company: Ezurio             | Page 31 of 45 | Name: Module, SONA NX611 M.2 2230, 1 MHF |
| Report: TR3768-166-5G-UNII3 |               | Model: SONA NX611M                       |
| Quote: C-3768               |               | Serial: 00047                            |
|                             |               |                                          |

### 6.1.5 Spurious Emissions

|                    |                                                 |                 |                    |
|--------------------|-------------------------------------------------|-----------------|--------------------|
| <b>Operator</b>    | Anthony Smith                                   | <b>QA</b>       | Anthony Smith      |
| <b>Temperature</b> | 21.8°C                                          | <b>R.H. %</b>   | 35.90%             |
| <b>Test Date</b>   | 03/04/2024                                      | <b>Location</b> | Conducted RF Bench |
| <b>Requirement</b> | 15.407(b)(4)<br>RSS-247 Clause 6.2.4<br>RSS-GEN | <b>Method</b>   | ANSI C63.10 12.7   |

### 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                   | 62.8                |

### Test Parameters

|                             |                                                             |              |              |
|-----------------------------|-------------------------------------------------------------|--------------|--------------|
| <b>Frequency</b>            | 30-40000 MHz                                                | <b>Setup</b> | Antenna Port |
| <b>RBW</b>                  | 1 MHz                                                       | <b>VBW</b>   | 3 MHz        |
| <b>Detector(s)</b>          | Peak and Average (RMS)                                      |              |              |
| <b>Notes</b>                | Declared antenna gain– 4.4 dBi                              |              |              |
| <b>Example Calculations</b> | 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  |

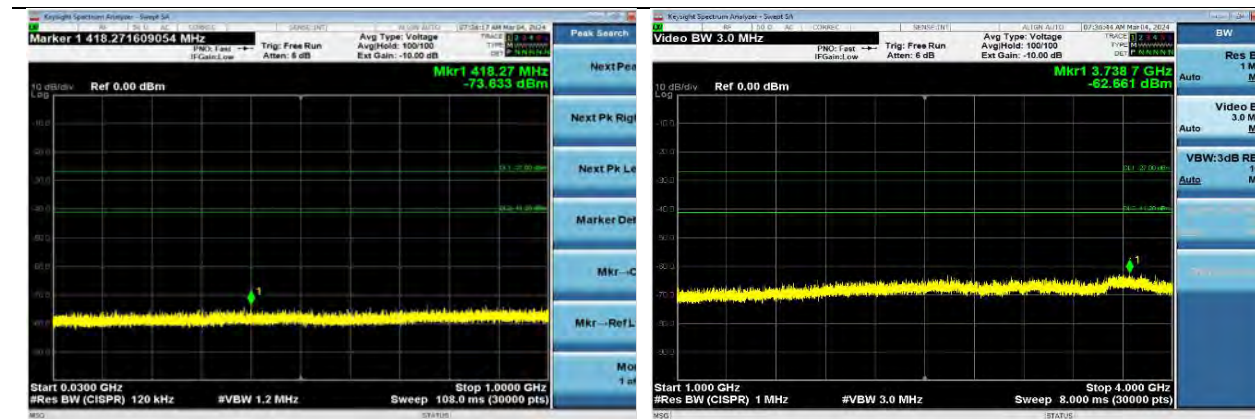
## EUT Parameters

|                    |                 |                |               |
|--------------------|-----------------|----------------|---------------|
| <b>Input Power</b> | 120 VAC @ 60 Hz | <b>Mode</b>    | 5 GHz WLAN Tx |
| <b>Frequency</b>   | 5745-5825 MHz   | <b>Channel</b> | 149, 151      |

## Table

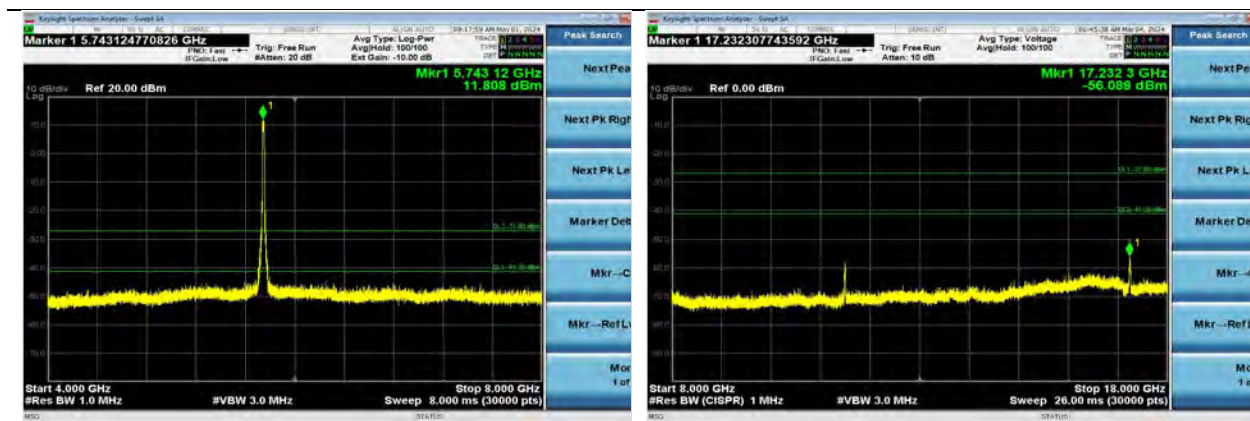
| Mode       | Rate   | Channel | Measurement Type | Frequency (MHz) | Measurement (dBm) | Antenna Gain (dBi) | Limit (dBm) | Margin (dB) |
|------------|--------|---------|------------------|-----------------|-------------------|--------------------|-------------|-------------|
| 802.11a    | 6 Mbps | 149     | Peak             | 11490.5         | -57.0             | 4.4                | -27.0       | 25.6        |
|            |        |         | Average          | 11488.9         | -67.8             | 4.4                | -41.2       | 22.2        |
| 802.11n20  | MCS0   | 149     | Peak             | 11491.8         | -59.7             | 4.4                | -27.0       | 28.3        |
|            |        |         | Average          | 11490.3         | -69.4             | 4.4                | -41.2       | 23.8        |
| 802.11ac20 | MCS0   | 149     | Peak             | 11485.2         | -59.5             | 4.4                | -27.0       | 28.1        |
|            |        |         | Average          | 11489.4         | -69.5             | 4.4                | -41.2       | 23.9        |
| 802.11ax20 | MCS0   | 149     | Peak             | 11489.3         | -59.2             | 4.4                | -27.0       | 27.8        |
|            |        |         | Average          | 11489.1         | -69.7             | 4.4                | -41.2       | 24.1        |
| 802.11n40  | MCS0   | 149     | Peak             | 11490.5         | -57.0             | 4.4                | -27.0       | 25.6        |
|            |        |         | Average          | 11488.9         | -67.8             | 4.4                | -41.2       | 22.2        |

## Worst Case Plots



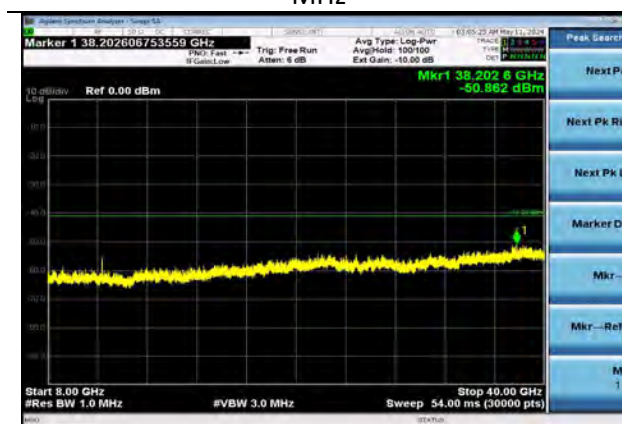
802.11a | Channel 149 | 6 Mbps | 30-1000 MHz

802.11a | Channel 149 | 6 Mbps | 1000-4000 MHz



802.11a | Channel 149 | 6 Mbps | 4000-8000 MHz

802.11a | Channel 149 | 6 Mbps | 8000-18000 MHz



802.11a | Channel 149 | 6 Mbps | 18000-40000 MHz

|                             |               |                                          |
|-----------------------------|---------------|------------------------------------------|
| Company: Ezurio             | Page 34 of 45 | Name: Module, SONA NX611 M.2 2230, 1 MHF |
| Report: TR3768-166-5G-UNII3 |               | Model: SONA NX611M                       |
| Quote: C-3768               |               | Serial: 00047                            |

### 6.1.6 Frequency Stability

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

### Test Parameters

|                    |               |                 |                             |
|--------------------|---------------|-----------------|-----------------------------|
| <b>Frequency</b>   | 5725-5850 MHz | <b>Voltage</b>  | 4.3 VDC, 5 VDC, and 5.8 VDC |
| <b>Detector(s)</b> | Peak          | <b>Settings</b> | 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) |
|---------|---------------|-----------------------|
| 149     | 5             | 5744999006            |
|         | 4.3           | 5744999039            |
|         | 5.8           | 5744999047            |
| 157     | 5             | 5784999137            |
|         | 4.3           | 5784999108            |
|         | 5.8           | 5784999129            |
| 165     | 5             | 5824999191            |
|         | 4.3           | 5824999117            |
|         | 5.8           | 5824999045            |

## 6.2 Radiated Emissions

|                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description of Measurement</b> | <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> |
| <b>Example Calculations</b>       | <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:<br/> Reading = 40 dBμV + 3.4 dB + 0.9 dB + 6.5 dB/m = 50.8 dBμV/m<br/> Average Limit = 20 log (500) = 54 dBμV/m<br/> Margin = 54 dBμV/m - 50.8 dBμV/m = 3.2 dB</p>                                                                                                                                                                                                                                                                                                                             |

### Block Diagram



### 6.2.1 Spurious Radiated Emissions in the Restricted Bands

|                    |                                                                   |                 |                                                             |
|--------------------|-------------------------------------------------------------------|-----------------|-------------------------------------------------------------|
| <b>Operator</b>    | Mitchell Freund   Nicole Sedmak<br>Jon Dilley   Zachary Brown     | <b>QA</b>       | Anthony Smith   Adam Alger<br>Adam Hauke   Dylan Rosenfeldt |
| <b>Temperature</b> | 23.2°C-25.1°C                                                     | <b>R.H. %</b>   | 21.30%-25.90%                                               |
| <b>Test Date</b>   | 02/12/2024-03/27/2024                                             | <b>Location</b> | Chamber 3   Chamber 5                                       |
| <b>Requirement</b> | 15.247 (b)(4) & (9)<br>RSS-247 Clause 6.2.4<br>RSS-GEN Clause 8.9 | <b>Method</b>   | ANSI C63.10 12.7                                            |

### 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                   | 68.2                |

### Test Parameters

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

|                             |               |                                          |
|-----------------------------|---------------|------------------------------------------|
| Company: Ezurio             | Page 37 of 45 | Name: Module, SONA NX611 M.2 2230, 1 MHF |
| Report: TR3768-166-5G-UNII3 |               | Model: SONA NX611M                       |
| Quote: C-3768               |               | Serial: 00047                            |

|           |                         |                     |           |            |           |           |                     |
|-----------|-------------------------|---------------------|-----------|------------|-----------|-----------|---------------------|
| 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

|                    |                                                                                                                                                                               |             |                                                      |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------------------------------|
| <b>Input Power</b> | 120 VAC @ 60 Hz                                                                                                                                                               | <b>Mode</b> | 5 GHz WLAN Tx                                        |
| <b>EUT</b>         | X, Y, Z Plane Orientations<br>Antenna ports terminated with 50 $\Omega$ SMA terminators                                                                                       | <b>AE</b>   | HP Elitebook 840G1<br>Ezurio – SOM60 Development Kit |
| <b>Notes</b>       | 6000 MHz Emission from auxiliary equipment. Not a function of the EUT.<br><br>No Spurious emissions observed 1000-40000 MHz.<br><br>Only worst case EUT orientation reported. |             |                                                      |

## Radiated Spurious – 30-1000 MHz – All Modes

| Frequency (MHz) | Antenna Polarity | Height (cm) | Azimuth (degree) | Quasi-Peak Reading (dB $\mu$ V/m) | Quasi-Peak Limit (dB $\mu$ V/m) | Margin (dB) |
|-----------------|------------------|-------------|------------------|-----------------------------------|---------------------------------|-------------|
| 66.3            | H                | 122         | 200              | 34.4                              | 40.0                            | 5.6         |
| 111.1           | V                | 224         | 171              | 39.9                              | 43.5                            | 13.6        |
| 113.2           | H                | 145         | 120              | 28.7                              | 43.5                            | 14.8        |
| 395.6           | H                | 100         | 212              | 38.8                              | 46.0                            | 7.2         |
| 479.2           | H                | 176         | 203              | 35.7                              | 46.0                            | 10.3        |
| 625.0           | H                | 148         | 45               | 40.7                              | 46.0                            | 5.3         |

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

# 1000-40000 MHz

| Mode       | Rate    | Channel | EUT Orientation | Frequency (MHz) | Antenna Polarity | Measurement (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|------------|---------|---------|-----------------|-----------------|------------------|----------------------|----------------|-------------|
| 802.11a    | 6 Mbps  | 165     | Y Plane         | 5959.0          | Vertical         | 53.2                 | 68.2           | 15.0        |
|            | 54 Mbps |         |                 | 5894.0          | Vertical         | 52.7                 | 91.1           | 38.4        |
| 802.11n20  | MCS0    | 165     | Y Plane         | 5999.5          | Vertical         | 52.1                 | 68.2           | 16.1        |
|            | MCS7    |         |                 | 5999.8          | Vertical         | 52.5                 | 68.2           | 15.7        |
| 802.11ac20 | MCS0    | 165     | Y Plane         | 5999.9          | Vertical         | 51.9                 | 68.2           | 16.3        |
|            | MCS8    |         |                 | 6007.0          | Vertical         | 52.2                 | 68.2           | 16.0        |
| 802.11ax20 | MCS0    | 165     | Y Plane         | 5999.7          | Vertical         | 52.3                 | 68.2           | 15.9        |
|            | MCS11   |         |                 | 5959.3          | Vertical         | 52.9                 | 68.2           | 15.3        |
| 802.11n40  | MCS0    | 159     | Y Plane         | 5944.9          | Vertical         | 51.2                 | 68.2           | 17.0        |
|            | MCS7    |         |                 | 5945.5          | Vertical         | 51.7                 | 68.2           | 16.5        |
| 802.11ac40 | MCS0    | 159     | Y Plane         | 5968.2          | Vertical         | 51.8                 | 68.2           | 16.4        |
|            | MCS9    |         |                 | 5978.0          | Horizontal       | 51.6                 | 68.2           | 16.6        |
| 802.11ax40 | MCS0    | 159     | Y Plane         | 5994.7          | Horizontal       | 51.4                 | 68.2           | 16.8        |
|            | MCS11   |         |                 | 6000.1          | Horizontal       | 52.0                 | 68.2           | 16.2        |
| 802.11ac80 | MCS0    | 155     | Z Plane         | 5920.6          | Horizontal       | 51.6                 | 71.5           | 19.9        |
|            | MCS9    |         |                 | 5970.5          | Horizontal       | 52.2                 | 68.2           | 16.0        |
| 802.11ax80 | MCS0    | 155     | Z Plane         | 5983.9          | Horizontal       | 52.2                 | 68.2           | 16.0        |
|            | MCS11   |         |                 | 6000.2          | Horizontal       | 52.4                 | 68.2           | 15.8        |

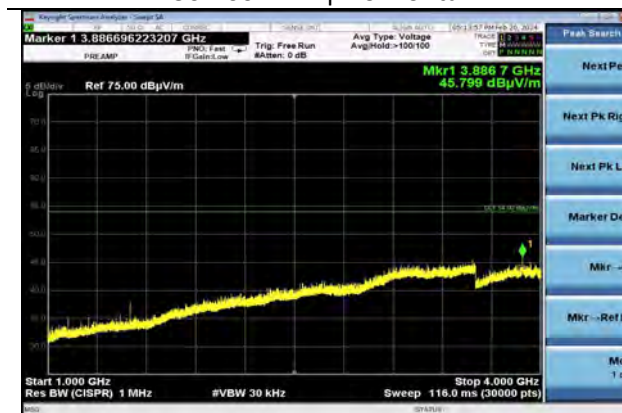
## Worst Case Plots



802.11a | Channel 165 | 6 Mbps | Y Plane  
30-200 MHz | Horizontal



802.11a | Channel 165 | 6 Mbps | Y Plane  
200-1000 MHz | Horizontal

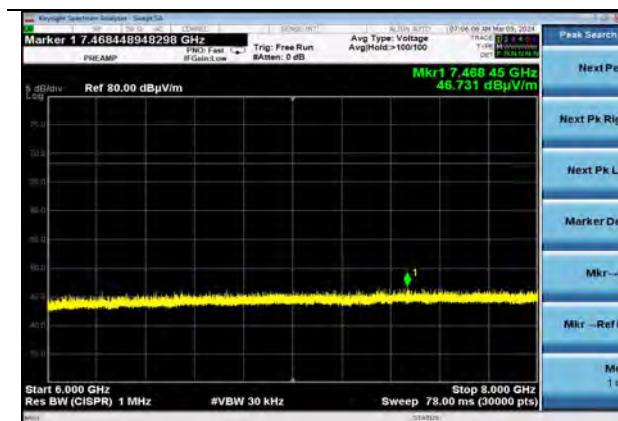


802.11a | Channel 157 | 6 Mbps  
1000-4000 MHz | Horizontal

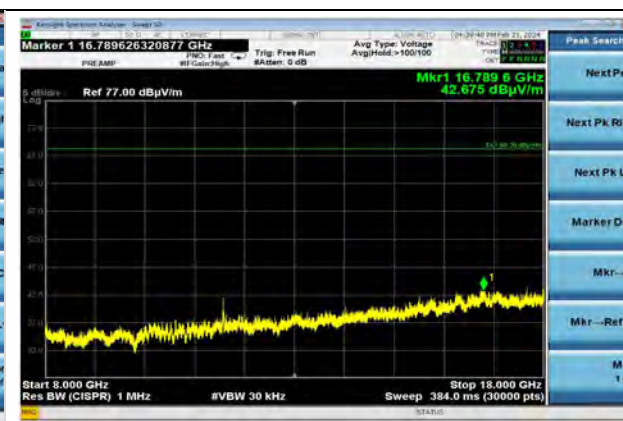


802.11a | Channel 144 | 6 Mbps | Y Plane  
4000-5470 MHz | Horizontal

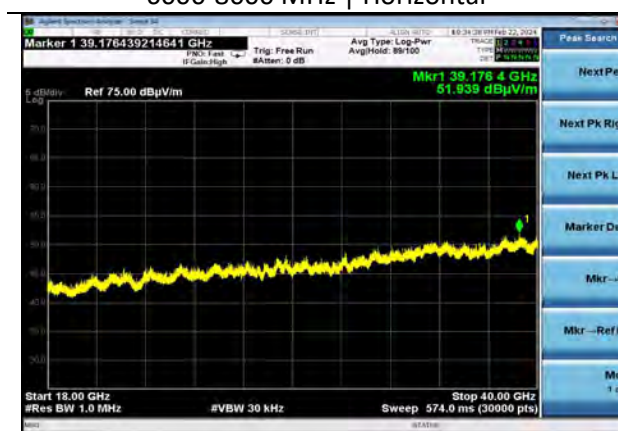
|                             |               |                                          |
|-----------------------------|---------------|------------------------------------------|
| Company: Ezurio             | Page 40 of 45 | Name: Module, SONA NX611 M.2 2230, 1 MHF |
| Report: TR3768-166-5G-UNII3 |               | Model: SONA NX611M                       |
| Quote: C-3768               |               | Serial: 00047                            |



802.11a | Channel 144 | 6 Mbps | Y Plane  
6000-8000 MHz | Horizontal



802.11a | Channel 157 | 6 Mbps | X Plane  
8000-18000 MHz | Vertical



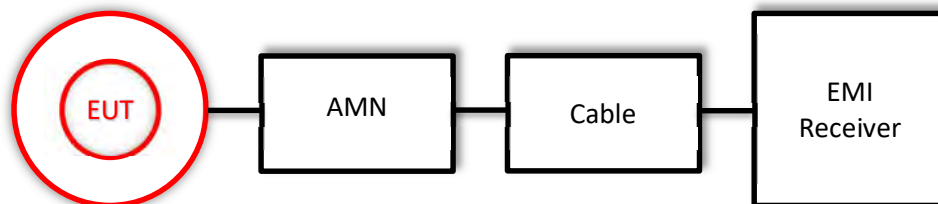
802.11a | Channel 165 | 6 Mbps | Z Plane  
18000-40000 MHz | Horizontal

|                             |               |                                          |
|-----------------------------|---------------|------------------------------------------|
| Company: Ezurio             | Page 41 of 45 | Name: Module, SONA NX611 M.2 2230, 1 MHF |
| Report: TR3768-166-5G-UNII3 |               | Model: SONA NX611M                       |
| Quote: C-3768               |               | Serial: 00047                            |

### 6.3 AC Mains Conducted Emissions

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

#### Block Diagram



### 6.3.1 AC Mains Conducted Emissions

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

|                    |                                         |                     |                                    |
|--------------------|-----------------------------------------|---------------------|------------------------------------|
| <b>Frequency</b>   | 0.15-30 MHz                             | <b>Distance</b>     | 40 cm from wall<br>80 cm from LISN |
| <b>Detector(s)</b> | Peak Trace<br>Quasi-Peak, Average Final | <b>Table height</b> | 80 cm                              |
| <b>RBW</b>         | 9 kHz                                   | <b>VBW</b>          | 62 kHz                             |
| <b>Notes</b>       | 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 |

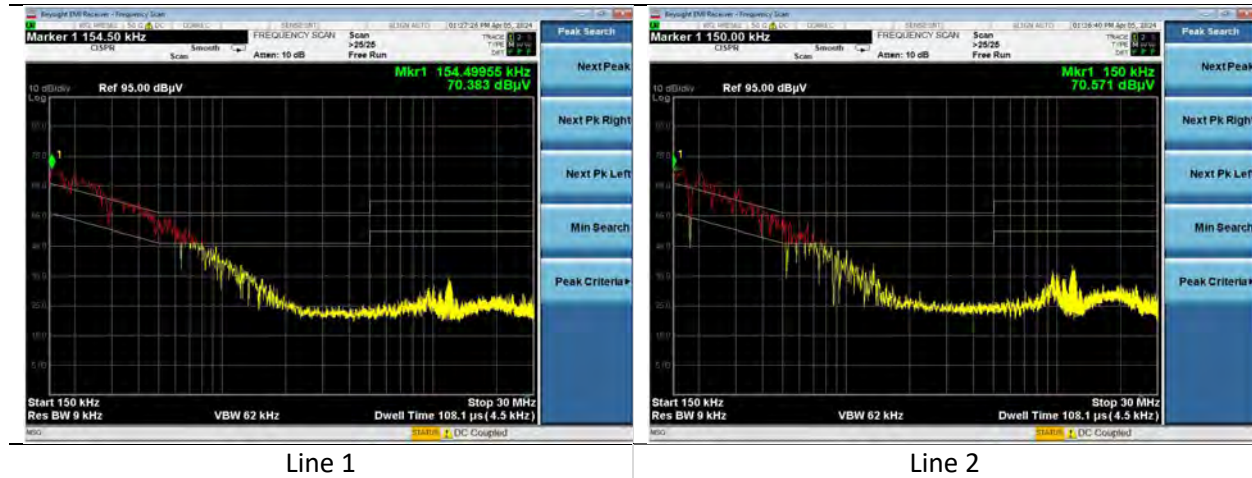
#### EUT Parameters

|                    |                 |             |                          |
|--------------------|-----------------|-------------|--------------------------|
| <b>Input Power</b> | 120 VAC @ 60 Hz | <b>Mode</b> | 5 GHz WLAN Tx Channel 64 |
|--------------------|-----------------|-------------|--------------------------|

## 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           | 64.5                      | 65.5                    | 1.0                    | 36.9                   | 55.5                 | 18.6                |
| 1    | 0.532           | 47.1                      | 56.0                    | 8.9                    | 25.0                   | 46.0                 | 21.0                |
| 1    | 12.080          | 34.6                      | 60.0                    | 25.4                   | 23.4                   | 50.0                 | 26.6                |
| 2    | 0.163           | 63.7                      | 65.3                    | 1.6                    | 36.3                   | 55.3                 | 19.0                |
| 2    | 0.500           | 44.2                      | 56.0                    | 11.8                   | 24.4                   | 46.0                 | 21.6                |
| 2    | 12.098          | 28.9                      | 60.0                    | 31.1                   | 15.4                   | 50.0                 | 34.6                |

## Plots



## 7 REVISION HISTORY

| Version | Date       | Notes         | Person     |
|---------|------------|---------------|------------|
| 0.0     | 08/05/2024 | Initial Draft | Adam Hauke |
| 1.0     | 08/08/2024 | Final Draft   | Adam Hauke |

**END OF REPORT**