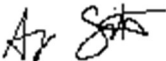


Test Report 3768 165 166 DFS

Equipment Under Test:	Module, SONA NX611 M.2 2230, 2 MHF / 1 MHF
Requirement(s):	FCC 15.407 (h)(2), ISED Canada RSS-247 Section 6.3 for a 5 GHz WLAN device
Test Date(s):	5/21/2024 – 5/22/2024
Prepared for:	Ezurio Attn: Brian Petted W66 N220 Commerce Ct. Cedarburg, WI 53012

Report Issued by: Anthony Smith, EMC Engineering Specialist

Signature: 

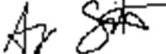
Date: 8/06/2024

Report Reviewed by: Adam Alger, Manager EMC Laboratory

Signature: 

Date: 8/06/2024

Report Constructed by: Anthony Smith, EMC Engineering Specialist

Signature: 

Date: 8/06/2024

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

Company: Ezurio	Page 1 of 23	Name: Module, SONA NX611 M.2 2230, 2 MHF / 1 MHF
Report: TR 3768 165 166 DFS		Model: SONA NX611M
Job: C-3768		Serial: 00048

CONTENTS

Contents	2
Ezurio Test Services in Review	3
1 Test Report Summary	4
2 Client Information	5
2.1 Equipment Under Test (EUT) Information.....	5
2.2 Product Description	5
2.3 Modifications Incorporated for Compliance	5
2.4 Deviations and Exclusions from Test Specifications.....	5
2.5 EUT Information	5
2.6 Ancillary Equipment	6
2.7 Antenna Information	6
2.8 Test Channels.....	6
2.9 KDB 905462 Information	7
3 References	12
4 Uncertainty Summary	13
5 Test Data	14
5.1 Antenna Port Conducted Emissions	14
6 Revision History	23

Ezurio Test Services in Review

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



A2LA – American Association for Laboratory Accreditation

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

A2LA Certificate Number: 1255.01

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



Federal Communications Commission (FCC) – USA

Accredited Test Firm Registration Number: 953492

Recognition of two 3 meter Semi-Anechoic Chambers



Innovation, Science and Economic Development Canada

Accredited U.S. Identification Number: US0218

Recognition of two 3 meter Semi-Anechoic Chambers

Company: Ezurio	Page 3 of 23	Name: Module, SONA NX611 M.2 2230, 2 MHF / 1 MHF
Report: TR 3768 165 166 DFS		Model: SONA NX611M
Job: C-3768		Serial: 00048

1 TEST REPORT SUMMARY

During **May 21st, 2024 to May 22nd, 2024** the Equipment Under Test (EUT), **Module, SONA NX611 M.2 2230, 2MHF and 1MHF**, as provided by **Ezurio** was tested to the following requirements:

FCC Requirements	ISED Canada Requirements	Description	Method	Compliant
15.407 (h)(2)	RSS-247 Sec 6.3	Dynamic Frequency Selection	FCC KDB 905462 D02	Yes ^{Note 1}
15.407 (h)(2)(ii)	RSS-247 Sec 6.3	Channel Availability Check Time	FCC KDB 905462 D02	N/A ^{Note 1}
15.407 (h)(2)(iii)	RSS-247 Sec 6.3	Channel Move Time	FCC KDB 905462 D02	Yes
15.407 (h)(2)(iv)	RSS-247 Sec 6.3	Non-Occupancy Period	FCC KDB 905462 D02	Yes

Note 1: EUT is client only device

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	1 dB below specified limit
Emissions – Frequency	1% less than the specification
Immunity	Tested at specified level

2 CLIENT INFORMATION

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

2.1 Equipment Under Test (EUT) Information

The following information has been supplied by the client

Product Name	Module, Sona NX611 M.2 2230, 2 MHF Module, Sona NX611 M.2 2230, 1 MHF
Part Number	453-00165, 453-00166
Serial Number	00048
FCC ID	SQG-SONANX611S
IC ID	3147A-SONANX611S

2.2 Product Description

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

2.3 Modifications Incorporated for Compliance

None noted at time of test

2.4 Deviations and Exclusions from Test Specifications

None noted at time of test

2.5 EUT Information

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

OUTPUT: 5VDC 2A

Firmware - sduart_nw61x_v1.bin.se

Sduart_nw61x_v1_mfg.bin.se

Company: Ezurio	Page 5 of 23	Name: Module, SONA NX611 M.2 2230, 2 MHF / 1 MHF
Report: TR 3768 165 166 DFS		Model: SONA NX611M
Job: C-3768		Serial: 00048

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

TeraTerm terminal emulation software version 4.105

Dell Laptop running Linux as iPerf companion device

Netgear Nighthawk R6900 wireless router setup with antenna ports connected via conducted path

2.7 Antenna Information

Manufacturer	Model	Part Number	Dimension	Type	Peak Gain (dBi)	
					2400-2500 MHz	4900-5925 MHz
Ezurio	FlexMIMO 6E	EFD2471A3S-10MH4L	39.5mm x 39.5mm x 4.7mm	PIFA	2.2	3.8
Ezurio	FlexPIFA 6E	EFB2471A3S-10MH4L	16mm x 36mm x 2.5mm	PIFA	2.2	3.9
Ezurio	Mini NanoBlade Flex 6E	EMF2471A3S-10MH4L	36mm x 12mm x 0.3mm	PCB Dipole	2.4	4.4
Ezurio	FlexPIFA	001-0021	38.5mm x 12.7mm x 2.5mm	PIFA	2.5	3.0
Joymax Electronics	N/A	TWX-100BRS3B	137mm x 13mm	Dipole	2.0	4.0

2.8 Test Channels

Channel	Frequency (MHz)	Bandwidth (MHz)	Data Rate
58	5290	80	802.11ac

2.9 KDB 905462 Information

Section 8.1

8.1 Complete description of the U-NII device	
a) The operating frequency range(s) of the equipment.	5180-5240 MHz, 5260-5320MHz, 5500-5720MHz, 5745-5825 MHz
b) The operating modes (Master and/or Client) of the U-NII device. Bridge modes and MESH modes, as applicable, must be included in the description.	Client with no radar detection capability
c) For Client devices, indicate whether or not it has radar detection capability and indicate the FCC identifier for the Master U-NII Device that is used with it for DFS testing.	Client with no radar detection capability. Master used with testing, FCC ID: PY316200344
d) List the highest and the lowest possible power level (equivalent isotropic radiated power (EIRP)) of the equipment.	2MHF: Highest EIRP: 16.8 dBm + 4.4 dBi = 21.2 dBm EIRP Lowest EIRP: 9.4 dBm + 3.0 dBi = 12.4 dBm EIRP 1MHF: Highest EIRP: 17.5 dBm + 4.4 dBi = 21.9 dBm EIRP Lowest EIRP: 8.9 dBm + 3.0 dBi = 11.9 dBm EIRP
e) List all antenna assemblies and their corresponding gains.	Refer to section 2.7 of this report
1) If radiated tests are to be performed, the U-NII Device should be tested with the lowest gain antenna assembly (regardless of antenna type). The report should indicate which antenna assembly was used for the tests. For devices with adjustable output power, list the output power range and the maximum EIRP for each antenna assembly.	Not Applicable
2) If conducted tests are to be performed, indicate which antenna port/connection was used for the tests and the antenna assembly gain that was used to set the DFS Detection Threshold level during calibration of the test setup.	Not Applicable- EUT Client only
i) Indicate the calibrated conducted DFS Detection Threshold level.	Not Applicable- EUT Client only
ii) For devices with adjustable output power, list the output power range and the maximum EIRP for each antenna assembly.	No adjustable power. 2 MHF Maximum EIRP: 21.2 dBm 1 MHF Maximum EIRP: 21.9 dBm
iii) Indicate the antenna connector impedance. Ensure that the measurement instruments match (usually 50 Ohms) or use a minimum loss pad and take into account the conversion loss.	50 ohms
3) Antenna gain measurement verification for tested antenna.	Not Applicable- EUT Client only
i) Describe procedure	Not Applicable- EUT Client only
ii) Describe the antenna configuration and how it is mounted	Not Applicable- EUT Client only
iii) If an antenna cable is supplied with the device, cable loss needs to be taken into account. Indicate the maximum cable length and either measure the gain with this cable or adjust the measured gain accordingly. State the cable loss.	Antenna cable was accounted for in the gain measurement.

Company: Ezurio	Page 7 of 23	Name: Module, SONA NX611 M.2 2230, 2 MHF / 1 MHF
Report: TR 3768 165 166 DFS		Model: SONA NX611M
Job: C-3768		Serial: 00048

f) Test sequences or messages that should be used for communication between Master and Client Devices, which are used for Channel loading.	EUT and Master running iPerf to stream data
1) Stream the test file from the Master Device to the Client Device for IP based systems or frame based systems which dynamically allocate the talk/listen ratio.	EUT and Master running iPerf to stream data
2) For frame based systems with fixed talk/listen ratio, set the ratio to the worst case (maximum) that is user configurable during this test as specified by the manufacturer and stream the test file from the Master to the Client.	Not applicable
3) For other system architectures, supply appropriate Channel loading methodology.	Not applicable
g) Transmit Power Control description—Provide a description.	Not Applicable
h) System architectures, data rates, U-NII Channel bandwidths — Indicate the type(s) of system architecture (e.g. IP based or Frame based) that the U-NII device employs. Each type of unique architecture must be tested.	Channel bandwidths: 20, 40, 80MHz Data rates: 6 MBPS – MCS11
i) The time required for the Master Device and/or Client Device to complete its power-on cycle.	Client device takes less than 10 seconds to boot up
j) Manufacturer statement confirming that information regarding the parameters of the detected Radar Waveforms is not available to the end user.	See Software security exhibit
k) The manufacturer is permitted to select the first channel either manually or randomly. The manufacturer may also block DFS channels from use.	Not applicable- EUT client device only

Section 8.2

8.2 Complete description of the Radar Waveform calibration	
a) Description of calibration setup—Block diagram of equipment setup, clearly identifying if a radiated or conducted method was used.	Not Applicable- EUT client device only
b) Description of calibration procedure	Not Applicable- EUT client device only
1) Verify DFS Detection Threshold levels	Not Applicable- EUT client device only
i) Indicate DFS Detection Threshold levels used.	Not Applicable- EUT client device only
ii) Consider output power range and antenna gain.	Not Applicable- EUT client device only
2) For the Short Pulse Radar Types, spectrum analyzer plots of the burst of pulses on the Channel frequency should be provided.	Supplied in this report
3) For the Long Pulse Radar Type, spectrum analyzer plot of a single burst (1-3 pulses) on the Channel frequency should be provided.	Not Applicable- EUT client device only
4) Describe method used to generate frequency hopping signal.	Not Applicable- EUT client device only
5) The U-NII Detection Bandwidth	Not Applicable- EUT client device only
6) For the Frequency Hopping waveform, a spectrum analyzer plot showing 9 pulses on one frequency within the U-NII Detection Bandwidth should be provided.	Not Applicable- EUT client device only
7) Verify use of vertical polarization for testing when using a radiated test method.	Not applicable- testing performed conducted
c) When testing a Client Device with radar detection capability, verify that the Client Device is responding independently based on the Client Device's self-detection rather than responding to the Master Device. If required, provide a description of the method used to isolate the client from the transmissions from the Master Device to ensure Client Device self-detection of the Radar Waveform.	Not Applicable- EUT client device only without radar detection capability

Company: Ezurio	Page 9 of 23	Name: Module, SONA NX611 M.2 2230, 2 MHF / 1 MHF
Report: TR 3768 165 166 DFS		Model: SONA NX611M
Job: C-3768		Serial: 00048

Section 8.3

8.3 Complete description of test procedure	
a) Description of deviations to the procedures or equipment described in this document.	No deviations during test
b) Description of DFS test procedure and test setup used to monitor the U-NII device and Radar Waveform transmissions. Provide a block diagram of the signal monitoring equipment setup.	Provided in this report
1) List of equipment	In report
2) Test setup photos	Test setup photos exhibit
c) Description of DFS test procedure and test setup used to generate the Radar Waveforms.	In report
1) Block diagram of equipment setup	In report
2) List of equipment	In report
3) Test setup photos	Test setup photos exhibit
4) For each of the waveforms that were used for each signal type, supply the characteristics (pulse width, pulse repetition interval, number of pulses per burst, modulation).	Radar type 0 in KDB 905462 D02
5) For selecting the waveform parameters from within the bounds of the signal type, describe how they were selected (i.e., manually or randomly).	Manually using arbitrary waveform generator and signal generator
6) Channel loading description including data type, timing plots, percentage of channel loading calculation, and protocol.	In report
d) The DFS tests are to be performed on U-NII Channel(s). Refer to Table 2 for additional requirements for devices with multiple bandwidth modes.	Testing performed on UNII channel with 80MHz bandwidth
1) List each Channel frequency that was used for the tests.	5290 MHz
2) Data Sheet showing the U-NII Detection Bandwidth for the Channel(s) used during the test.	Not Applicable-EUT client device only
3) Plot of RF measurement system showing its nominal noise floor in the same bandwidth which is used to perform the Channel Availability Check, initial radar bursts, In-Service Monitoring, and 30 minute Non-Occupancy Period tests.	Not Applicable-EUT client device only
e) Timing plot(s) showing compliance with the Channel Availability Check Time requirement of 60 seconds at start up.	Not Applicable-EUT client device only
1) The plot should show the Initial Tpower-up time.	Not Applicable-EUT client device only
2) The plot should include the Initial Tpower-up period in addition to 60 second period.	Not Applicable-EUT client device only

Company: Ezurio	Page 10 of 23	Name: Module, SONA NX611 M.2 2230, 2 MHF / 1 MHF
Report: TR 3768 165 166 DFS		Model: SONA NX611M
Job: C-3768		Serial: 00048

f) Timing plot(s) showing compliance with the Initial DFS radar detection requirements during the 60 second initial Channel Availability Check at start up.	Not Applicable-EUT client device only
1) Plot for DFS radar detection for Radar Waveforms applied 6 seconds after the Initial Tpower-up time period. The minimum length of the plot should be 1.5 minutes after the Tpower-up time period. The plot should show the radar burst at the appropriate time. This test is only required once and Radar Type 0 should be used for the test.	Not Applicable-EUT client device only
2) Plot for DFS radar detection for Radar Waveforms applied 6 seconds before end of the 60 second Channel Availability Check Time. The minimum length of the plot should be 1.5 minutes after the Tpower-up time period. The plot should show the radar burst at the appropriate time. This test is only required once and Radar Types 0 should be used for the test.	Not Applicable-EUT client device only
3) The minimum time resolution of the plots should be sufficient to show the Radar Waveform bursts (overall, not individual pulses within the burst).	In report
g) Verification that when the device is "off" that the RF energy emitted is below the FCC rules for unintentional radiators:	Verified
For the plots of U-NII RF activity versus time, the device is considered to be "off" or not transmitting when intentional U-NII signals (beacons, data packets or transmissions, or control signals) are below the FCC rules for unintentional radiation due to device leakage, oscillator noise, clocks, and other unintentional RF generators.	
h) Spectrum Analyzer, VSA, or some other data gathering Instrument plots showing compliance with the Channel Move Time requirements during in the In-Service Monitoring. The plots need to show U-NII device transmissions on the Channel in the form of RF activity on the vertical axis versus time on the horizontal axis. Only one 10 second plot needs to be reported for Radar Type 0. The plot for the Short Pulse Radar Types should start at the end of the radar burst. The Channel Move Time will be calculated based on the plot of Radar Type 0. The plots need to show U-NII device transmissions on the Channel in the form of RF activity on the vertical axis versus time on the horizontal axis. Sufficient resolution should be used.	In report
1) The plots and/or data must show the U-NII Device's compliance with the 200 milliseconds limit on data transmission and compliance with the 60 millisecond aggregate limit found in Table 4.	In report
2) Indicate the total number of times the test was performed.	Not Applicable-EUT client device only
3) Indicate a detect/not detect for each waveform within a signal type and the number of failures and the number of successful radar detection times within the time limit. Sample data sheets are shown in Tables 8-11.	Not Applicable-EUT client device only
4) Verify compliance with the minimum percentage of successful detection requirements found in Tables 5-7.	Not Applicable-EUT client device only
i) Spectrum Analyzer plot(s) showing compliance with the 30 minute Non-Occupancy Period requirement. Only one plot is required. This is a separate test that is performed in addition to the other In-Service Monitoring tests.	In report

3 REFERENCES

Publication	Edition	Date	AMD 1	AMD 2
FCC eCFR 47 Part 15	-	2024	-	-
RSS 247	3	2023	-	-
FCC KDB 905462 D02 v02	-	2016	-	-
ANSI C63.10	-	2020	-	-

4 UNCERTAINTY SUMMARY

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

References
CISPR 16-4-1
CISPR 16-4-2
CISPR 32
ANSI C63.23
A2LA P103
A2LA P103c
ETSI TR 100-028

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

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

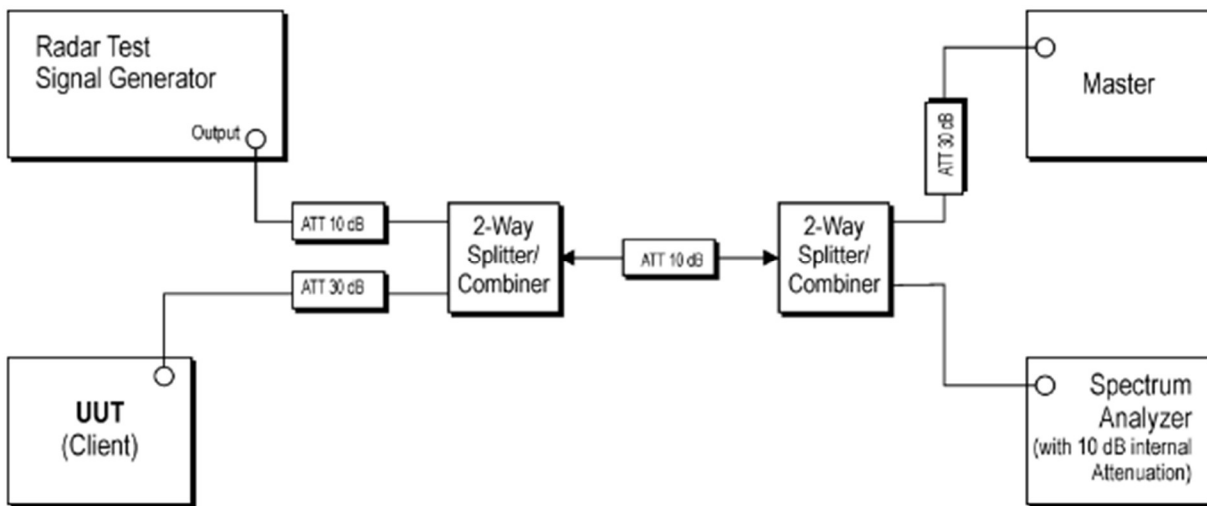
Company: Ezurio	Page 13 of 23	Name: Module, SONA NX611 M.2 2230, 2 MHF / 1 MHF
Report: TR 3768 165 166 DFS		Model: SONA NX611M
Job: C-3768		Serial: 00048

5 TEST DATA

5.1 Antenna Port Conducted Emissions

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

Block Diagram



5.1.1 Antenna Port Conducted Emissions – 2MHF EUT

Operator	Anthony Smith	QA	Adam Alger
Temperature	21.8°C	R.H. %	59.5%
Test Date	5/21/2024	Location	Conducted RF Bench
Requirement	FCC 15.407 (h) RSS-247 6.3	Method	FCC KDB 905462 D02

Requirements:

Client without Radar Detection Requirements Prior to Use of a Channel

1. Non-Occupancy Period
Minimum 30 minutes

Client without Radar Detection Requirements During Normal Operation

1. Channel Closing Time
200ms plus an aggregate of 60ms over remaining 10 second period using Radar Type 0 starting at beginning of Channel Move Time plus any additional control signals not counting quiet periods during the remaining 10 second period.
2. Channel Move Time
10 seconds using Radar Type 0

Radar Type 0

Pulse Width: 1 μ second

Pulse Repetition Intervals: 1.428 μ second

Number of Pulses: 18

Test Parameters

Frequency	5290 MHz	Setup	Conducted
RBW	3 MHz	VBW	3 MHz
Detector(s)	Peak Detector	Settings	Clear Write – Single Sweep
Notes	Radar Injection at the Master Device		
Example Calculations	-		

Instrumentation

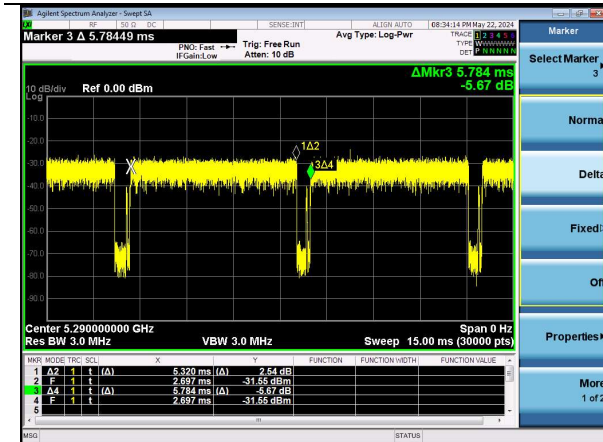
Asset #	Description	Manufacturer	Model #	Serial #	Date	Due Date	Status
AA 960180	Attenuator - Step Variable 1 dB	RF Lambda	RKT2G6A10	16100801	12/12/2023	12/12/2024	Active Verification
AA 960184	Attenuator - Step Variable 10 dB	RF Lambda	RKT2G6A60	17031005	12/12/2023	12/12/2024	Active Verification
CC 000259C	Generator - Function / Arbitrary Waveform	Agilent	33250A	US40000583	4/13/2024	4/13/2025	Active Calibration
CC 000314C	Vector Signal Generator	Agilent	E4438C	US 41469143	9/21/2022	9/20/2024	Active Calibration
CC 000710C	Oscilloscope	Agilent	MSO8104A	MY45001068	4/13/2024	4/13/2025	Active Calibration
EE 960087	Analyzer - Spectrum	Agilent	N9010A	MY53400296	4/11/2024	4/11/2025	Active Calibration
EE 960184	RF Splitter/Combiner	mini-circuits	ZFSC-2-10G +	S F707601702	12/12/2023	12/12/2024	Active Verification
EE 960185	RF Splitter/Combiner	mini-circuits	ZFSC-2-10G +	S F707601702	12/12/2023	12/12/2024	Active Verification

EUT Parameters

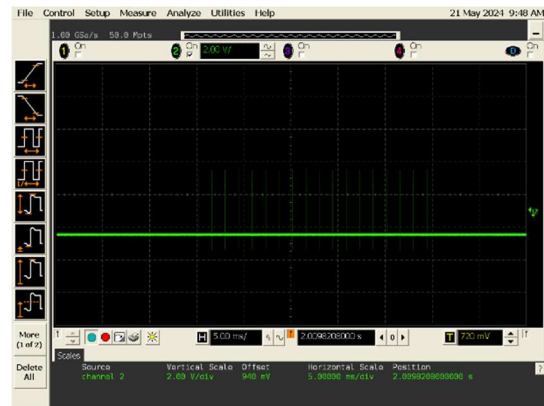
EUT Model	2 MHF M.2 2230	Mode	5G WLAN
Frequency	5290 MHz	Channel	58 (80 MHz BW)
EUT	Client with no monitoring	AE	Linux Laptop and Router as Master Device
Notes	EUT setup to connect to Master device and perform data streaming using iPerf v2 Channel loading greater than 17%		

Company: Ezurio	Page 16 of 23	Name: Module, SONA NX611 M.2 2230, 2 MHF / 1 MHF
Report: TR 3768 165 166 DFS		Model: SONA NX611M
Job: C-3768		Serial: 00048

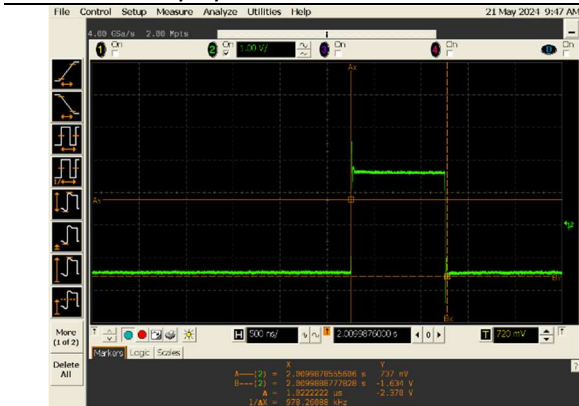
Plots



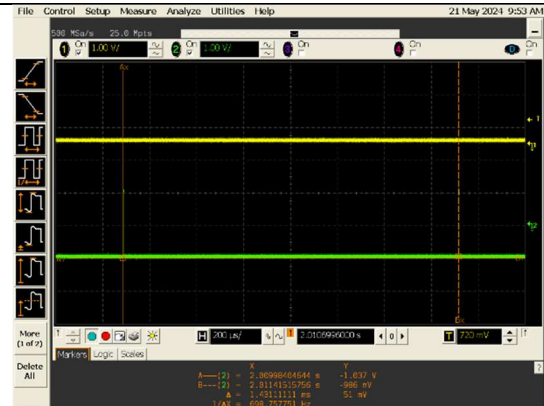
Duty Cycle of iPerf Traffic: 92%



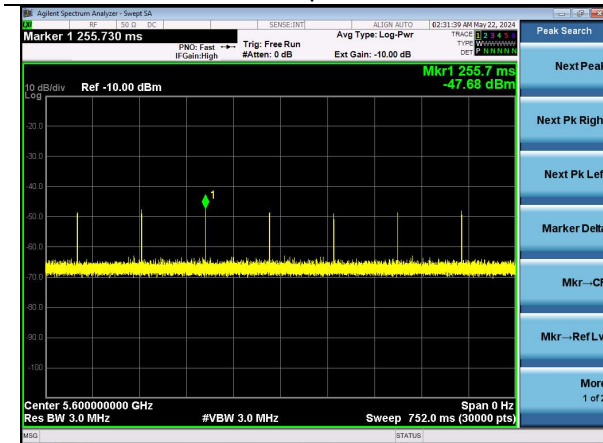
Radar Pulse 0: 18 Pulses



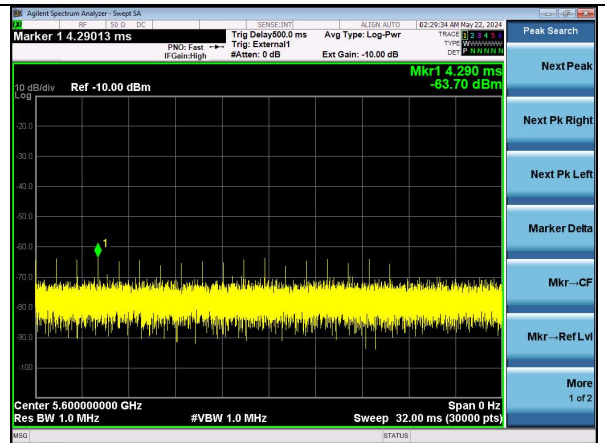
Radar Pulse 0: 1μsec Pulse Width



Radar Pulse 0: PRI 1.428 msec

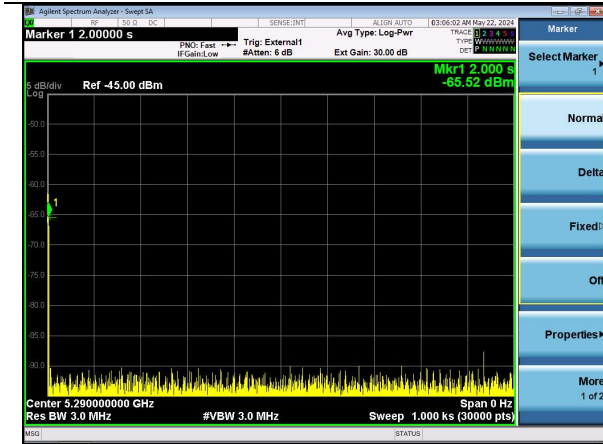


Level of AP Beacon without EUT

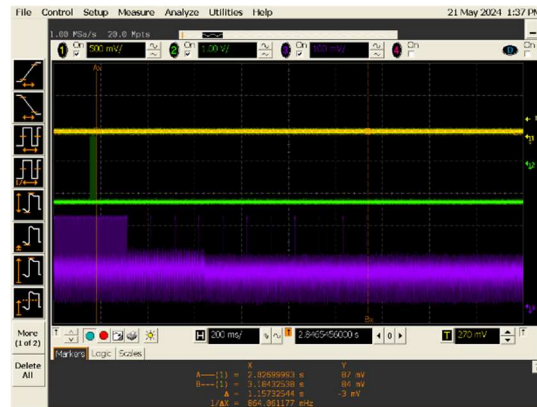


Radar Pulse at Master Device

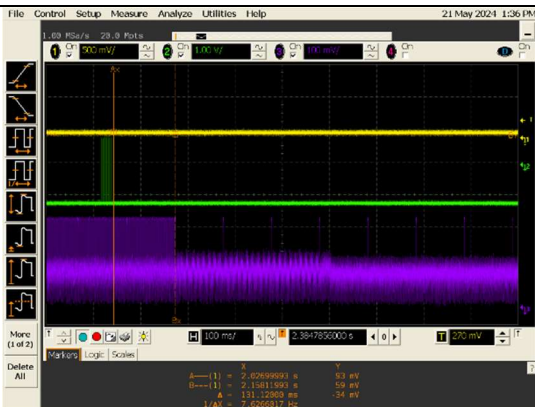
Company: Ezurio	Page 17 of 23	Name: Module, SONA NX611 M.2 2230, 2 MHF / 1 MHF
Report: TR 3768 165 166 DFS		Model: SONA NX611M
Job: C-3768		Serial: 00048



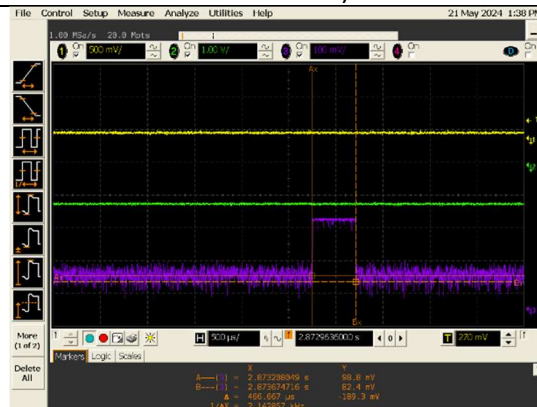
Channel Non-Occupancy Period: 30 Minutes



Channel Move Time: 1.2 Seconds (Required Max 10 Seconds)



10 beacons after transmissions end at 131ms
 $467\mu\text{sec} * 10 = 4.67\text{ms}$ (Require



Individual Beacon 467μsec

Company: Ezurio	Page 18 of 23	Name: Module, SONA NX611 M.2 2230, 2 MHF / 1 MHF
Report: TR 3768 165 166 DFS		Model: SONA NX611M
Job: C-3768		Serial: 00048

5.1.2 Antenna Port Conducted Emissions – 1MHF Port EUT

Operator	Anthony Smith	QA	Adam Alger
Temperature	21.8°C	R.H. %	59.5%
Test Date	5/22/2024	Location	Conducted RF Bench
Requirement	FCC 15.407 (h) RSS-247 6.3	Method	FCC KDB 905462 D02

Requirements:

Client without Radar Detection Requirements Prior to Use of a Channel

2. Non-Occupancy Period
Minimum 30 minutes

Client without Radar Detection Requirements During Normal Operation

3. Channel Closing Time
200ms plus an aggregate of 60ms over remaining 10 second period using Radar Type 0 starting at beginning of Channel Move Time plus any additional control signals not counting quiet periods during the remaining 10 second period.
4. Channel Move Time
10 seconds using Radar Type 0

Radar Type 0

Pulse Width: 1 μ second

Pulse Repetition Intervals: 1.428 μ second

Number of Pulses: 18

Test Parameters

Frequency	5290 MHz	Setup	Conducted
RBW	3 MHz	VBW	3 MHz
Detector(s)	Peak Detector	Settings	Clear Write – Single Sweep
Notes	Radar Injection at the Master Device		
Example Calculations	-		

Instrumentation

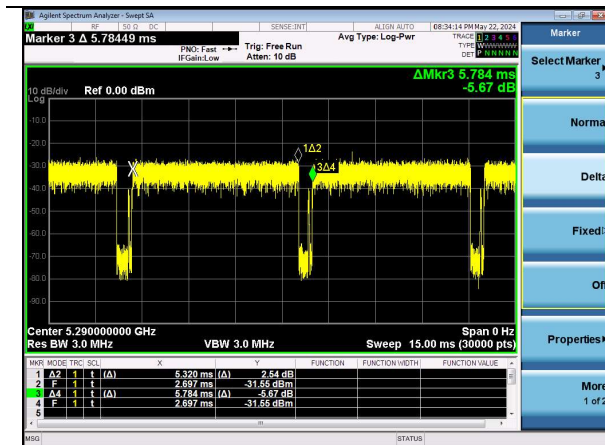
Asset #	Description	Manufacturer	Model #	Serial #	Date	Due Date	Status
AA 960180	Attenuator - Step Variable 1 dB	RF Lambda	RKT2G6A10	16100801	12/12/2023	12/12/2024	Active Verification
AA 960184	Attenuator - Step Variable 10 dB	RF Lambda	RKT2G6A60	17031005	12/12/2023	12/12/2024	Active Verification
CC 000259C	Generator - Function / Arbitrary Waveform	Agilent	33250A	US40000583	4/13/20224	4/13/2025	Active Calibration
CC 000314C	Vector Signal Generator	Agilent	E4438C	US 41469143	9/21/2022	9/20/2024	Active Calibration
CC 000710C	Oscilloscope	Agilent	MSO8104A	MY45001068	4/13/2024	4/13/2025	Active Calibration
EE 960087	Analyzer - Spectrum	Agilent	N9010A	MY53400296	4/11/2024	4/11/2025	Active Calibration
EE 960184	RF Splitter/Combiner	mini-circuits	ZFSC-2-10G +	S F707601702	12/12/2023	12/12/2024	Active Verification
EE 960185	RF Splitter/Combiner	mini-circuits	ZFSC-2-10G +	S F707601702	12/12/2023	12/12/2024	Active Verification

EUT Parameters

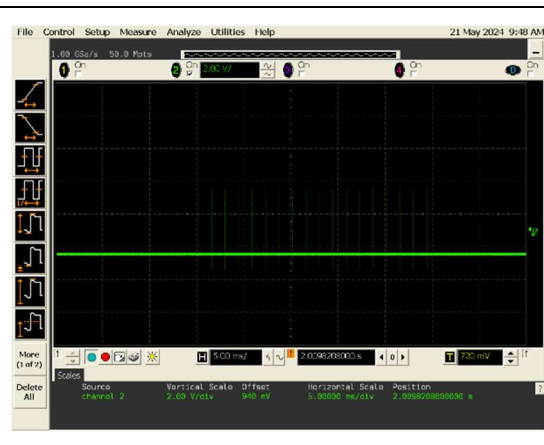
EUT Model	1 MHF M.2 2230	Mode	5G WLAN
Frequency	5290 MHz	Channel	58 (80 MHz BW)
EUT	Client with no monitoring	AE	Linux Laptop and Router as Master Device
Notes	EUT setup to connect to Master device and perform data streaming using iPerf v2 Channel loading greater than 17%		

Company: Ezurio	Page 20 of 23	Name: Module, SONA NX611 M.2 2230, 2 MHF / 1 MHF
Report: TR 3768 165 166 DFS		Model: SONA NX611M
Job: C-3768		Serial: 00048

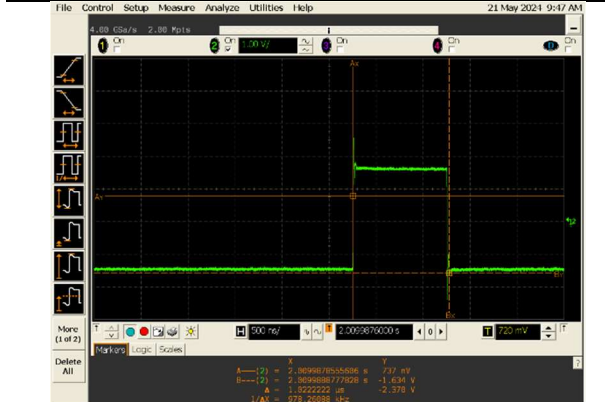
Plots



Duty Cycle of iPerf Traffic: 92%



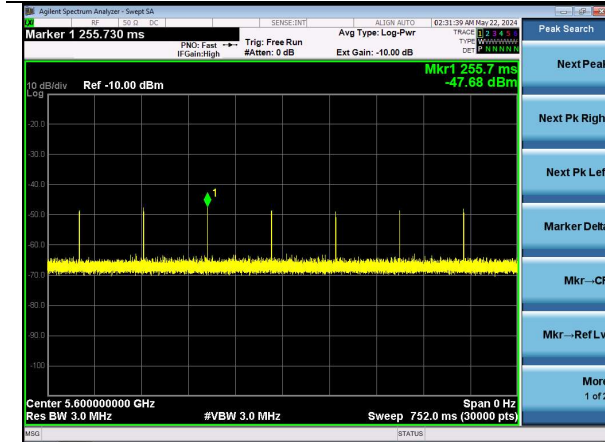
Radar Pulse 0: 18 Pulses



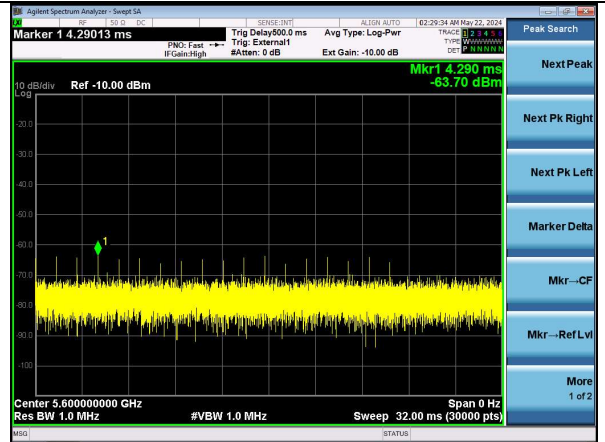
Radar Pulse 0: 1μsec Pulse Width



Radar Pulse 0: PRI 1.428 msec

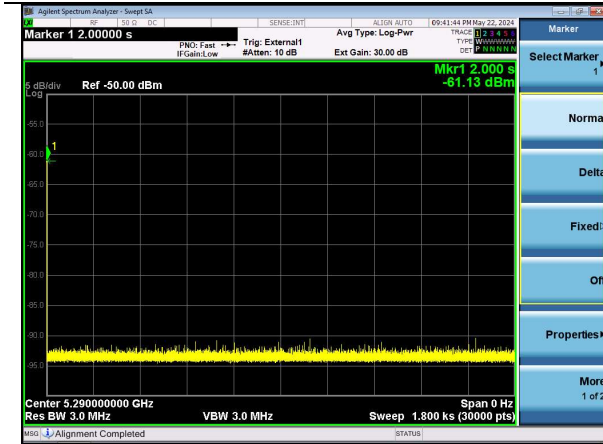


Level of AP Beacon without EUT

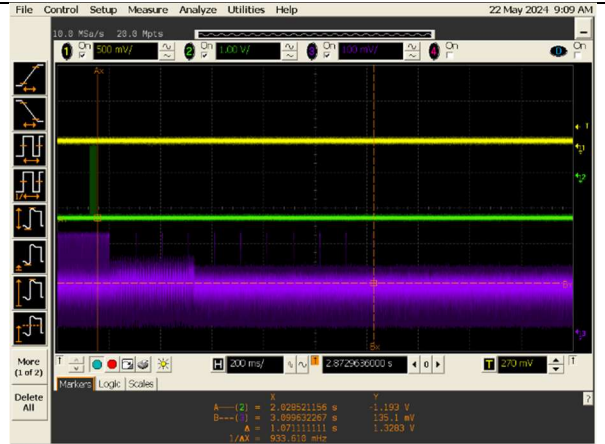


Radar Pulse at Master Device

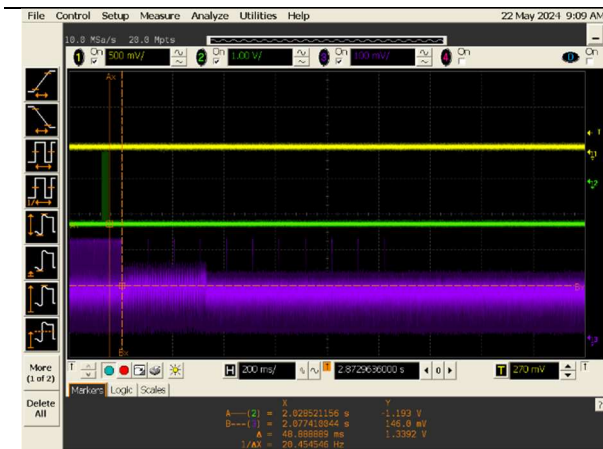
Company: Ezurio	Page 21 of 23	Name: Module, SONA NX611 M.2 2230, 2 MHF / 1 MHF
Report: TR 3768 165 166 DFS		Model: SONA NX611M
Job: C-3768		Serial: 00048



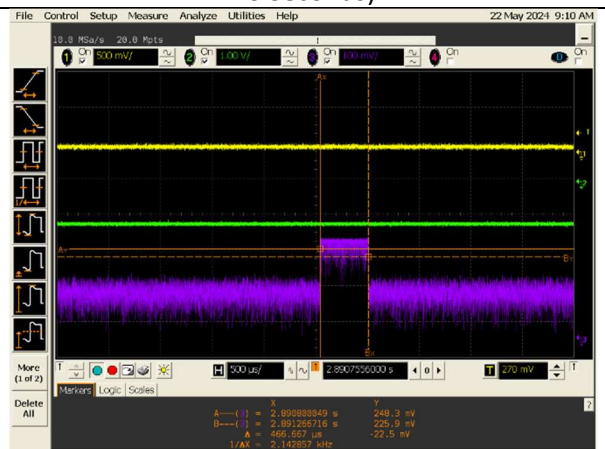
Channel Non-Occupancy Period: 30 Minutes



Channel Move Time: 1.1 Seconds (Required Max 10 Seconds)



10 beacons after transmissions end at 131ms
 $467\mu\text{sec} * 10 = 4.7\text{ms}$ (Require



Individual Beacon 467μsec

Company: Ezurio	Page 22 of 23	Name: Module, SONA NX611 M.2 2230, 2 MHF / 1 MHF
Report: TR 3768 165 166 DFS		Model: SONA NX611M
Job: C-3768		Serial: 00048

6 REVISION HISTORY

Version	Date	Notes	Person
v0.0	5/24/2024	Initial Draft	Anthony Smith
v0.1	8/1/2024	Revised Draft	Anthony Smith
v1.0	8/06/2024	Finalized Draft	Anthony Smith

END OF REPORT

Company: Ezurio	Page 23 of 23	Name: Module, SONA NX611 M.2 2230, 2 MHF / 1 MHF
Report: TR 3768 165 166 DFS		Model: SONA NX611M
Job: C-3768		Serial: 00048