
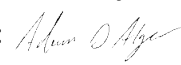



TR3818-RFX

Equipment Under Test:	SONA TI351
Requirement(s):	FCC: 1.1307, 1.1310 ISED: RSS-102
Test Date(s):	10/21/2024
Prepared for:	Ezurio Attn: Brian Petted W66 N220 Commerce Ct. Cedarburg, WI 53012

Report Issued by: Dylan Rosenfeldt, EMC Engineer	
Signature: 	Date: 10/22/2024
Report Reviewed by: Adam Alger, Manager EMC Laboratory	
Signature: 	Date: 10/22/2024
Report Constructed by: Dylan Rosenfeldt, EMC Engineer	
Signature: 	Date: 10/22/2024

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CONTENTS

Contents.....	2
Ezurio Test Services in Review	4
1 Test Report Summary	5
2 Client Information.....	6
2.1 Equipment Under Test (EUT) Information.....	6
2.2 Product Description.....	6
2.3 Modifications Incorporated for Compliance	6
2.4 Deviations and Exclusions from Test Specifications.....	6
2.5 EUT Information	6
2.6 Ancillary Equipment	7
2.7 Antenna Information	7
2.8 Test Channels 2.4 GHz WLAN	7
2.9 Test Channels 5 GHz WLAN	8
2.10 Test Channels BLE.....	8
3 References	9
4 Uncertainty Summary	10
5 Test Data	11
5.1 Antenna Port Conducted Emissions	11
6 FCC SAR Exclusion – 2.4GHz WLAN.....	23
6.1 SAR Exclusion Limit.....	23
6.2 Distance	23
6.3 Power Calculation.....	23
6.4 SAR Test Exclusion Calculation	23
6.5 Result	23
7 FCC SAR Exclusion – BLE.....	24
7.1 SAR Exclusion Limit.....	24
7.2 Distance	24
7.3 Power Calculation.....	24
7.4 SAR Test Exclusion Calculation	24
7.5 Result	24
8 FCC SAR Exclusion – 5GHz WLAN.....	25
8.1 SAR Exclusion Limit.....	25

8.2	Distance	25
8.3	Power Calculation	25
8.4	SAR Test Exclusion Calculation	25
8.5	Result	25
9	ISED SAR Exemption – 2.4GHz WLAN	26
9.1	SAR Exemption Limit.....	26
9.2	Distance	26
9.3	Power Calculation.....	26
9.4	SAR Test Exemption Calculation	26
9.5	Result	26
10	ISED SAR Exemption – BLE	27
10.1	SAR Exemption Limit.....	27
10.2	Distance	27
10.3	Power Calculation.....	27
10.4	SAR Test Exemption Calculation	27
10.5	Result	27
11	ISED SAR Exemption – 5GHz WLAN	28
11.1	SAR Exemption Limit.....	28
11.2	Distance	28
11.3	Power Calculation.....	28
11.4	SAR Test Exemption Calculation	28
11.5	Result	28
12	Revision History	29

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 4 of 29	Name: SONA TI351
Report: TR3818-RFX		Model: SONA TI351
Job: C-3818		Serial: 00013 00008

1 TEST REPORT SUMMARY

During **10/21/2024** the Equipment Under Test (EUT), **SONA TI351**, as provided by **Ezurio** was tested to the following requirements:

Requirements	Description	Method	Compliant
FCC Part 1.1310, 2.1093	Radio Frequency Radiation Exposure Evaluation	KDB 447498 D01	Yes
ISED RSS-102	Radio Frequency Exposure Compliance of Radiocommunication Apparatus	RSS-102	Yes

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	SONA TI351
Model Number	SONA TI351
Serial Number	00013 00008
FCC ID	SQG-SONATI351
IC ID	3147A-SONATI351

2.2 Product Description

The TI351 is based upon TI CC3351 Wi-Fi 6 chipset. Feature-set includes 802.11 a/b/g/n/ac/ax Wi-Fi 6 and Bluetooth Low Energy v5.4.

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 - image-imx8mp-evk-rdvk 1.0.0.5

2.6 Ancillary Equipment

Development Kit, NXP 8MPLUS-BB

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

OUTPUT: USB Type C 45W, 5V/3A; 9V/3A; 15V/3 A; 20V/2.25 A

HP Elitebook 840G1

TeraTerm Version: 5.1

2.7 Antenna Information

Manufacturer	Model	Part Number	Dimension	Type	Peak Gain (dBi)	
					2400-2500 MHz	4900-5925 MHz
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
Ezurio	FlexPIFA	EFB2455A3S-15MH4L	2.5mm X 38.6mm X 12.7mm	PIFA	2.5	3.0
Ezurio	Mini NanoBlade Flex	EMF2449A1-10MH4L	36mm x 12mm x 0.1mm	PIFA	2.8	3.4
Ezurio	NanoBlade	ENB2449A1-10MH4L	50.8mm x 16.5mm	PCB Dipole	3.2	4.1

2.8 Test Channels 2.4 GHz WLAN

Channel	Frequency (MHz)	Bandwidth (MHz)	Data Rates
1	2402	20	802.11b – 1 and 11 Mbps
6	2437	20	802.11g – 6 and 54 Mbps
11	2462	20	802.11n – MCS0 and MCS7 802.11ax – MCS0 and MCS7

2.9 Test Channels 5 GHz WLAN

Channel	Frequency (MHz)	Bandwidth (MHz)	Data Rates
36	5180	20	802.11a – 6 and 54 Mbps 802.11n – MCS0 and MCS7 802.11ac – MCS0 and MCS7 802.11ax – MCS0 and MCS7
40	5200	20	
48	5240	20	
52	5260	20	
56	5280	20	
64	5320	20	
100	5500	20	
116	5580	20	
144	5720	20	
157	5745	20	
161	5785	20	
165	5825	20	

2.10 Test Channels BLE

Channel	Frequency (MHz)	Data Rates
0	2402	125k, 500k, 1M and 2M
19	2440	
39	2480	

3 REFERENCES

Publication	Edition	Date	AMD 1	AMD 2
eCFR	-	2024	-	-
RSS-102	6	2023	-	-
KDB 447498 D01	v06	2015	-	-

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

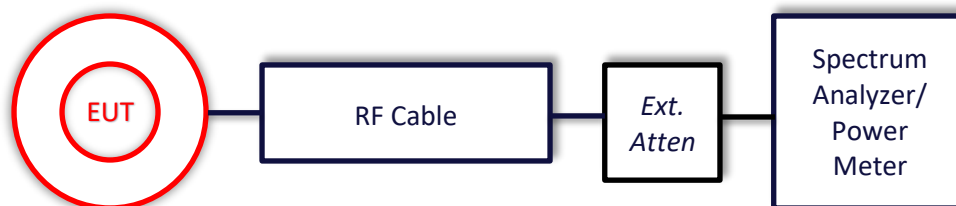
Parameter	ETSI U.C. \pm	U.C. \pm
Radio Frequency, from F0	1×10^{-7}	0.55×10^{-7}
Occupied Channel Bandwidth	5 %	2 %
RF conducted Power (Power Meter)	1.5 dB	1.2 dB
RF conducted emissions (Spectrum Analyzer)	3.0 dB	1.7 dB
All emissions, radiated	6.0 dB	5.3 dB
Temperature	1° C	0.65° C
Humidity	5 %	2.9 %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

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 – RF Output Power 2.4GHz WLAN

Mode	Rate	Channel	Average Output Power (dBm)	Duty Cycle Correction (dB)	Corrected Output Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
802.11b	1 Mbps	1	14.7	0.0	14.7	30.0	15.3	30
		6	15.4	0.0	15.4	30.0	14.6	30
		11	15.1	0.0	15.1	30.0	14.9	30
	11 Mbps	1	15.1	0.2	15.3	30.0	14.7	30
		6	15.2	0.2	15.4	30.0	14.6	30
		11	15.2	0.2	15.4	30.0	14.6	30
802.11g	6 Mbps	1	12.1	0.1	12.2	30.0	17.8	27
		6	15.0	0.1	15.1	30.0	14.9	30
		11	11.3	0.1	11.4	30.0	18.6	26
	54 Mbps	1	11.6	0.8	12.4	30.0	17.6	27
		6	13.3	0.8	14.1	30.0	15.9	30
		11	10.5	0.8	11.3	30.0	18.7	26
802.11n	MCS0	1	11.4	0.1	11.5	30.0	18.5	27
		6	14.8	0.1	14.9	30.0	15.1	30
		11	12.1	0.1	12.2	30.0	17.8	27
	MCS7	1	11.9	0.2	12.1	30.0	17.9	27
		6	13.5	0.2	13.7	30.0	16.3	30
		11	11.6	0.2	11.8	30.0	18.2	27
802.11ax	MCS0	1	11.8	0.1	11.9	30.0	18.1	27
		6	14.6	0.1	14.7	30.0	15.3	30
		11	10.9	0.1	11.0	30.0	19.0	26
	MCS7	1	11.6	0.2	11.8	30.0	18.2	27
		6	13.4	0.2	13.6	30.0	16.4	30
		11	10.8	0.2	11.0	30.0	19.0	26

Mode	Rate and RU	Channel	Average Output Power (dBm)	Duty Cycle Correction (dB)	Corrected Output Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
802.11ax	MCS0 RU26	1	2.1	0.3	2.4	30	27.6	18
		6	11.9	0.3	12.2	30	17.8	27
		11	0.5	0.3	0.8	30	29.2	15
	MCS7 RU26	1	1.4	1.7	3.1	30	26.9	18
		6	10.8	1.7	12.5	30	17.5	27
		11	-1.0	1.7	0.7	30	29.3	15
	MCS0 RU52	1	2.5	0.5	3.0	30	27.0	18
		6	12.7	0.5	13.2	30	16.8	28
		11	-0.6	0.5	-0.1	30	30.1	14
	MCS7 RU52	1	0.6	2.7	3.3	30	26.7	18
		6	11.1	2.7	13.8	30	16.2	28
		11	-2.5	2.7	0.2	30	29.8	14
	MCS0 RU106	1	-1.2	0.9	-0.3	30	30.3	14
		6	12.9	0.9	13.8	30	16.2	28
		11	-2.8	0.9	-1.9	30	31.9	13
	MCS7 RU106	1	-4.0	3.9	-0.1	30	30.1	14
		6	9.7	3.9	13.6	30	16.4	28
		11	-5.7	3.9	-1.8	30	31.8	13
	MCS0 RU242	1	-1.1	1.7	0.6	30	29.4	15
		6	12.6	1.7	14.3	30	15.7	30
		11	-4.5	1.7	-2.8	30	32.8	12
	MCS7 RU242	1	-4.0	5.0	1.0	30	29.0	15
		6	8.9	5.0	13.9	30	16.1	30
		11	-7.6	5.0	-2.6	30	32.6	12

5.1.2 Antenna Port Conducted Emissions – RF Output Power 5GHz WLAN

UNII 1								
Channel	Mode	MCS	Avg Output Power (dBm)	Duty Cycle Correction (dB)	Corrected Output Value (dBm)	Limit (dBm)	Margin (dB)	Power Setting
36	802.11a	OFDM-6	14.5	0.1	14.6	24	9.4	30
40			14.4	0.1	14.5	24	9.5	30
48			14.6	0.1	14.7	24	9.3	30
36	802.11a	OFDM-54	9.5	0.8	10.3	24	13.7	30
40			9.7	0.8	10.5	24	13.5	30
48			9.9	0.8	10.7	24	13.3	30
36	802.11n	MCS0	14.5	0.1	14.6	24	9.4	30
40			13.9	0.1	14.0	24	10.0	30
48			14.4	0.1	14.5	24	9.5	30
36	802.11n	MCS7	10.0	0.2	10.2	24	13.8	30
40			10.0	0.2	10.2	24	13.8	30
48			10.2	0.2	10.4	24	13.6	30
36	802.11ac	MCS0	13.6	0.1	13.7	24	10.3	30
40			14.4	0.1	14.5	24	9.5	30
48			14.7	0.1	14.8	24	9.2	30
36	802.11ac	MCS7	10.0	0.2	10.2	24	13.8	30
40			10.1	0.2	10.3	24	13.7	30
48			10.6	0.2	10.8	24	13.2	30
36	802.11ax	MCS0	13.1	0.1	13.2	24	10.8	29
40			14.2	0.1	14.3	24	9.7	30
48			14.5	0.1	14.6	24	9.4	30
36	802.11ax	MCS7	9.7	0.2	9.9	24	14.1	29
40			10.0	0.2	10.2	24	13.8	30
48			10.3	0.2	10.5	24	13.5	30

UNII 1								
Channel	Mode	MCS	Avg Output Power (dBm)	Duty Cycle Correction (dB)	Corrected Output Value (dBm)	Limit (dBm)	Margin (dB)	Power Setting
36	802.11ax	MCS0 RU26	9.7	0.3	10.0	24	14.0	26
40			9.8	0.3	10.1	24	13.9	30
48			9.9	0.3	10.2	24	13.8	30
36	802.11ax	MCS7 RU26	8.8	1.7	10.5	24	13.5	26
40			8.3	1.7	10.0	24	14.0	30
48			8.9	1.7	10.6	24	13.4	30
36	802.11ax	MCS0 RU52	9.3	0.5	9.8	24	14.2	26
40			9.5	0.5	10.0	24	14.0	30
48			10.0	0.5	10.5	24	13.5	30
36	802.11ax	MCS7 RU52	8.2	2.7	10.9	24	13.1	26
40			8.3	2.7	11.0	24	13.0	30
48			7.8	2.7	10.5	24	13.5	30
36	802.11ax	MCS0 RU106	9.5	0.9	10.4	24	13.6	26
40			9.9	0.9	10.8	24	13.2	30
48			9.9	0.9	10.8	24	13.2	30
36	802.11ax	MCS7 RU106	6.9	3.9	10.8	24	13.2	26
40			6.8	3.9	10.7	24	13.3	30
48			7.1	3.9	11.0	24	13.0	30
36	802.11ax	MCS0 RU242	8.4	1.7	10.1	24	13.9	25
40			8.6	1.7	10.3	24	13.7	30
48			9.0	1.7	10.7	24	13.3	30
36	802.11ax	MCS7 RU242	5.6	5.0	10.6	24	13.4	25
40			5.8	5.0	10.8	24	13.2	30
48			6.1	5.0	11.1	24	12.9	30

UNII 2A								
Channel	Mode	MCS	Avg Output Power (dBm)	Duty Cycle Correction (dB)	Corrected Output Value (dBm)	Limit (dBm)	Margin (dB)	Power Setting
52	802.11a	OFDM-6	14.7	0.1	14.8	24	9.2	30
56			14.5	0.1	14.6	24	9.4	30
64			14.9	0.1	15.0	24	9.0	30
52	802.11a	OFDM-54	9.7	0.8	10.5	24	13.5	30
56			9.8	0.8	10.6	24	13.4	30
64			10.1	0.8	10.9	24	13.1	30
52	802.11n	MCS0	14.5	0.1	14.6	24	9.4	30
56			14.5	0.1	14.6	24	9.4	30
64			14.8	0.1	14.9	24	9.1	30
52	802.11n	MCS7	10.1	0.2	10.3	24	13.7	30
56			10.2	0.2	10.4	24	13.6	30
64			10.5	0.2	10.7	24	13.3	30
52	802.11ac	MCS0	14.5	0.1	14.6	24	9.4	30
56			14.5	0.1	14.6	24	9.4	30
64			14.7	0.1	14.8	24	9.2	30
52	802.11ac	MCS7	10.1	0.2	10.3	24	13.7	30
56			10.2	0.2	10.4	24	13.6	30
64			10.5	0.2	10.7	24	13.3	30
52	802.11ax	MCS0	14.6	0.1	14.7	24	9.3	30
56			14.4	0.1	14.5	24	9.5	30
64			14.6	0.1	14.7	24	9.3	30
52	802.11ax	MCS7	10.0	0.2	10.2	24	13.8	30
56			10.2	0.2	10.4	24	13.6	30
64			10.2	0.2	10.4	24	13.6	30

UNII 2A								
Channel	Mode	MCS	Avg Output Power (dBm)	Duty Cycle Correction (dB)	Corrected Output Value (dBm)	Limit (dBm)	Margin (dB)	Power Setting
52	802.11ax	MCS0 RU26	10.0	0.3	10.3	24	13.7	30
56			9.9	0.3	10.2	24	13.8	30
64			8.0	0.3	8.3	24	15.7	23
52	802.11ax	MCS7 RU26	8.4	1.7	10.1	24	13.9	30
56			8.9	1.7	10.6	24	13.4	30
64			6.8	1.7	8.5	24	15.5	23
52	802.11ax	MCS0 RU52	9.8	0.5	10.3	24	13.7	30
56			9.8	0.5	10.3	24	13.7	30
64			8.0	0.5	8.5	24	15.5	23
52	802.11ax	MCS7 RU52	7.7	2.7	10.4	24	13.6	30
56			8.4	2.7	11.1	24	12.9	30
64			6.6	2.7	9.3	24	14.7	23
52	802.11ax	MCS0 RU106	9.9	0.9	10.8	24	13.2	30
56			10.0	0.9	10.9	24	13.1	30
64			8.4	0.9	9.3	24	14.7	24
52	802.11ax	MCS7 RU106	7.4	3.9	11.3	24	12.7	30
56			7.6	3.9	11.5	24	12.5	30
64			6.5	3.9	10.4	24	13.6	24
52	802.11ax	MCS0 RU242	9.2	1.7	10.9	24	13.1	30
56			9.3	1.7	11.0	24	13.0	30
64			8.4	1.7	10.1	24	13.9	24
52	802.11ax	MCS7 RU242	6.3	5.0	11.3	24	12.7	30
56			6.4	5.0	11.4	24	12.6	30
64			5.5	5.0	10.5	24	13.5	24

UNII 2C								
Channel	Mode	MCS	Avg Output Power (dBm)	Duty Cycle Correction (dB)	Corrected Output Value (dBm)	Limit (dBm)	Margin (dB)	Power Setting
100	802.11a	OFDM-6	13.6	0.1	13.7	24	10.3	29
116			14.8	0.1	14.9	24	9.1	30
144			14.2	0.1	14.3	24	9.7	30
100	802.11a	OFDM-54	9.7	0.8	10.5	24	13.5	29
116			10.0	0.8	10.8	24	13.2	30
144			9.5	0.8	10.3	24	13.7	30
100	802.11n	MCS0	13.7	0.1	13.8	24	10.2	29
116			14.8	0.1	14.9	24	9.1	30
144			14.3	0.1	14.4	24	9.6	30
100	802.11n	MCS7	10.2	0.2	10.4	24	13.6	29
116			10.4	0.2	10.6	24	13.4	30
144			9.9	0.2	10.1	24	13.9	30
100	802.11ac	MCS0	13.8	0.1	13.9	24	10.1	29
116			15.0	0.1	15.1	24	8.9	30
144			14.4	0.1	14.5	24	9.5	30
100	802.11ac	MCS7	10.1	0.2	10.3	24	13.7	29
116			10.3	0.2	10.5	24	13.5	30
144			9.9	0.2	10.1	24	13.9	30
100	802.11ax	MCS0	13.5	0.1	13.6	24	10.4	29
116			14.8	0.1	14.9	24	9.1	30
144			14.4	0.1	14.5	24	9.5	30
100	802.11ax	MCS7	10.2	0.2	10.4	24	13.6	29
116			10.3	0.2	10.5	24	13.5	30
144			9.8	0.2	10.0	24	14.0	30

UNII 2C								
Channel	Mode	MCS	Avg Output Power (dBm)	Duty Cycle Correction (dB)	Corrected Output Value (dBm)	Limit (dBm)	Margin (dB)	Power Setting
100	802.11ax	MCS0 RU26	8.2	0.3	8.5	24	15.5	23
116			10.3	0.3	10.6	24	13.4	30
144			9.8	0.3	10.1	24	13.9	30
100	802.11ax	MCS7 RU26	7.0	1.7	8.7	24	15.3	23
116			8.7	1.7	10.4	24	13.6	30
144			8.4	1.7	10.1	24	13.9	30
100	802.11ax	MCS0 RU52	8.0	0.5	8.5	24	15.5	23
116			10.2	0.5	10.7	24	13.3	30
144			10.0	0.5	10.5	24	13.5	30
100	802.11ax	MCS7 RU52	6.5	2.7	9.2	24	14.8	23
116			8.2	2.7	10.9	24	13.1	30
144			8.3	2.7	11.0	24	13.0	30
100	802.11ax	MCS0 RU106	8.1	0.9	9.0	24	15.0	23
116			10.0	0.9	10.9	24	13.1	30
144			9.6	0.9	10.5	24	13.5	30
100	802.11ax	MCS7 RU106	5.1	3.9	9.0	24	15.0	23
116			7.6	3.9	11.5	24	12.5	30
144			7.2	3.9	11.1	24	12.9	30
100	802.11ax	MCS0 RU242	7.4	1.7	9.1	24	14.9	23
116			9.3	1.7	11.0	24	13.0	30
144			9.1	1.7	10.8	24	13.2	30
100	802.11ax	MCS7 RU242	4.4	5.0	9.4	24	14.6	23
116			6.6	5.0	11.6	24	12.4	30
144			6.0	5.0	11.0	24	13.0	30

UNII 3								
Channel	Mode	MCS	Avg Output Power (dBm)	Duty Cycle Correction (dB)	Corrected Output Value (dBm)	Limit (dBm)	Margin (dB)	Power Setting
149	802.11a	OFDM-6	14.8	0.1	14.9	30	15.1	30
157			14.9	0.1	15.0	30	15.0	30
165			14.9	0.1	15.0	30	15.0	30
149	802.11a	OFDM-54	9.7	0.8	10.5	30	19.5	30
157			10.0	0.8	10.8	30	19.2	30
165			10.0	0.8	10.8	30	19.2	30
149	802.11n	MCS0	14.7	0.1	14.8	30	15.2	30
157			14.9	0.1	15.0	30	15.0	30
165			14.8	0.1	14.9	30	15.1	30
149	802.11n	MCS7	10.1	0.2	10.3	30	19.7	30
157			10.5	0.2	10.7	30	19.3	30
165			10.5	0.2	10.7	30	19.3	30
149	802.11ac	MCS0	14.5	0.1	14.6	30	15.4	30
157			14.8	0.1	14.9	30	15.1	30
165			14.9	0.1	15.0	30	15.0	30
149	802.11ac	MCS7	10.0	0.2	10.2	30	19.8	30
157			10.4	0.2	10.6	30	19.4	30
165			10.4	0.2	10.6	30	19.4	30
149	802.11ax	MCS0	14.4	0.1	14.5	30	15.5	30
157			14.8	0.1	14.9	30	15.1	30
165			14.8	0.1	14.9	30	15.1	30
149	802.11ax	MCS7	9.8	0.2	10.0	30	20.0	30
157			10.4	0.2	10.6	30	19.4	30
165			10.3	0.2	10.5	30	19.5	30

UNII 3								
Channel	Mode	MCS	Avg Output Power (dBm)	Duty Cycle Correction (dB)	Corrected Output Value (dBm)	Limit (dBm)	Margin (dB)	Power Setting
149	802.11ax	MCS0 RU26	9.9	0.3	10.2	30	19.8	30
157			9.9	0.3	10.2	30	19.8	30
165			10.0	0.3	10.3	30	19.7	30
149	802.11ax	MCS7 RU26	8.9	1.7	10.6	30	19.4	30
157			9.2	1.7	10.9	30	19.1	30
165			9.4	1.7	11.1	30	18.9	30
149	802.11ax	MCS0 RU52	9.6	0.5	10.1	30	19.9	30
157			9.8	0.5	10.3	30	19.7	30
165			10.0	0.5	10.5	30	19.5	30
149	802.11ax	MCS7 RU52	8.2	2.7	10.9	30	19.1	30
157			7.6	2.7	10.3	30	19.7	30
165			8.3	2.7	11.0	30	19.0	30
149	802.11ax	MCS0 RU106	10.3	0.9	11.2	30	18.8	30
157			10.6	0.9	11.5	30	18.5	30
165			10.5	0.9	11.4	30	18.6	30
149	802.11ax	MCS7 RU106	7.8	3.9	11.7	30	18.3	30
157			8.3	3.9	12.2	30	17.8	30
165			8.3	3.9	12.2	30	17.8	30
149	802.11ax	MCS0 RU242	9.7	1.7	11.4	30	18.6	30
157			10.0	1.7	11.7	30	18.3	30
165			10.0	1.7	11.7	30	18.3	30
149	802.11ax	MCS7 RU242	6.9	5.0	11.9	30	18.1	30
157			7.3	5.0	12.3	30	17.7	30
165			7.2	5.0	12.2	30	17.8	30

5.1.3 Antenna Port Conducted Emissions – RF Output Power BLE

Channel	Mode	Peak Output Power (dBm)	Limit (dBm)	Margin (dB)
0	1M	5.1	30	24.9
19	1M	5.4	30	24.6
39	1M	5.1	30	24.9
0	2M	5.1	30	24.9
19	2M	5.6	30	24.4
39	2M	5.4	30	24.6
0	125k	4.9	30	25.1
19	125k	5.3	30	24.7
39	125k	4.9	30	25.1
0	500k	4.9	30	25.1
19	500k	5.3	30	24.7
39	500k	5.0	30	25.0

6 FCC SAR EXCLUSION – 2.4GHz WLAN

6.1 SAR Exclusion Limit

For separation distance of 50mm or less

$$\left[\frac{(\text{max. power of channel, including tune-up tolerance, mW})}{(\text{min. test separation distance, mm})} \right] \cdot [f(\text{GHz})] \leq 3.0 \text{ for 1-g SAR}$$

- F(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- The value 3.0 is referred to as numeric thresholds

For separation distance of greater than 50 mm

$$\{[\text{Power allowed at numeric threshold for 50 mm}] + [(\text{test separation distance} - 50 \text{ mm}) \cdot 10]\} \text{ mW, for } > 1500 \text{ MHz and } \leq 6 \text{ GHz}$$

KDB 447498 D01

6.2 Distance

$\geq 50 \text{ mm}$

6.3 Power Calculation

Max Power of Channel = 15.4 dBm (802.11b, cck-11, channel 11)

Tune-up Tolerance = 1.00 dB

Antenna Gain = 3.2 dBi

Total Power = 15.4 dBm + Tune-up Tolerance + Gain = 19.6 dBm = 91.2 mW

6.4 SAR Test Exclusion Calculation

$$\left[\frac{(X \text{ mW})}{(50 \text{ mm})} \right] \times \sqrt{2.462} = 3.0$$

X = 95.6 mW

6.5 Result

The EUT is excluded from SAR testing for WLAN in the 2.4GHz band at $\geq 50 \text{ mm}$ as 91.2 mW is less than the limit of 95.6 mW.

Company: Ezurio	Page 23 of 29	Name: SONA TI351
Report: TR3818-RFX		Model: SONA TI351
Job: C-3818		Serial: 00013 00008

7 FCC SAR EXCLUSION – BLE

7.1 SAR Exclusion Limit

For separation distance of 50mm or less

$$\left[\frac{\text{max. power of channel, including tune-up tolerance, mW}}{\text{min. test separation distance, mm}} \right] \cdot [f(\text{GHz})] \leq 3.0 \text{ for 1-g SAR}$$

- F(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- The value 3.0 is referred to as numeric thresholds

For separation distance of greater than 50 mm

$$\{[\text{Power allowed at numeric threshold for 50 mm}] + [(\text{test separation distance} - 50 \text{ mm}) \cdot 10]\} \text{ mW, for } > 1500 \text{ MHz and } \leq 6 \text{ GHz}$$

KDB 447498 D01

7.2 Distance

$\geq 5 \text{ mm}$

7.3 Power Calculation

Max Power of Channel = 5.6 dBm (2M, channel 19)

Tune-up Tolerance = 1.00 dB

Antenna Gain = 3.2 dBi

Total Power = 5.6 dBm + Tune-up Tolerance + Gain = 9.8 dBm = 9.6 mW

7.4 SAR Test Exclusion Calculation

$$\left[\frac{(9.6 \text{ mW})}{(5 \text{ mm})} \right] \times \sqrt{2.440} = 3.0$$

$3.0 \leq 3.0$

7.5 Result

The EUT is excluded from SAR testing at $\geq 5 \text{ mm}$ for BLE in the 2.4GHz band.

8 FCC SAR EXCLUSION – 5GHz WLAN

8.1 SAR Exclusion Limit

For separation distance of 50mm or less

$$\left[\frac{\text{max. power of channel, including tune-up tolerance, mW}}{[\text{vf(GHz)}]} \leq 3.0 \text{ for 1-g SAR} \right]$$

- F(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- The value 3.0 is referred to as numeric thresholds

For separation distance of greater than 50 mm

$$\{[\text{Power allowed at numeric threshold for 50 mm}] + [(\text{test separation distance} - 50 \text{ mm}) \cdot 10]\} \text{ mW, for } > 1500 \text{ MHz and } \leq 6 \text{ GHz}$$

KDB 447498 D01

8.2 Distance

$\geq 55 \text{ mm}$

8.3 Power Calculation

Max Power of Channel = 15.1 dBm (802.11ac, MCS0, channel 116)

Tune-up Tolerance = 1.00 dB

Antenna Gain = 4.4 dBi

Total Power = 15.1 dBm + Tune-up Tolerance + Gain = 20.5 dBm = 112.2 mW

8.4 SAR Test Exclusion Calculation

$$\left[\frac{(X \text{ mW})}{(50 \text{ mm})} \right] \times \sqrt{5.580} = 3.0$$

X = 63.5 mW

$$\{[63.5 \text{ mW} + [(55 \text{ mm} - 50 \text{ mm}) \times 10]] = 113.5 \text{ mW}$$

8.5 Result

The EUT is excluded from SAR testing for WLAN in the 5GHz band at $\geq 55 \text{ mm}$ as 112.2 mW is less than the limit of 113.5 mW.

Company: Ezurio	Page 25 of 29	Name: SONA TI351
Report: TR3818-RFX		Model: SONA TI351
Job: C-3818		Serial: 00013 00008

9 ISED SAR EXEMPTION – 2.4GHZ WLAN

9.1 SAR Exemption Limit

Frequency (MHz)	≤ 5 mm (mW)	10 mm (mW)	15 mm (mW)	20 mm (mW)	25 mm (mW)	30 mm (mW)	35 mm (mW)	40 mm (mW)	45 mm (mW)	> 50 mm (mW)
≤ 300	45	116	139	163	189	216	246	280	319	362
450	32	71	87	104	124	147	175	208	248	296
835	21	32	41	54	72	96	129	172	228	298
1900	6	10	18	33	57	92	138	194	257	323
2450	3	7	16	32	56	89	128	170	209	245
3500	2	6	15	29	50	72	94	114	134	158
5800	1	5	13	23	32	41	54	74	102	128

Power Limits for exemption from SAR evaluation RSS-102

9.2 Distance

≥35 mm

9.3 Power Calculation

Max Power of Channel = 15.4 dBm (802.11b, cck-11, channel 11)

Tune-up Tolerance = 1.00 dB

Antenna Gain = 3.2 dBi

Total Power = 15.4 dBm + Tune-up Tolerance + Gain = 19.6 dBm = 91.2 mW

9.4 SAR Test Exemption Calculation

The exemption limit at 35 mm is 128 mW. The total power of the EUT is 91.2 mW.

91.2 mW ≤ 128 mW.

9.5 Result

The EUT is exempt from routine SAR testing at ≥35 mm as 91.2 mW is less than 128 mW.

10 ISED SAR EXEMPTION – BLE

10.1 SAR Exemption Limit

Frequency (MHz)	≤ 5 mm (mW)	10 mm (mW)	15 mm (mW)	20 mm (mW)	25 mm (mW)	30 mm (mW)	35 mm (mW)	40 mm (mW)	45 mm (mW)	> 50 mm (mW)
≤ 300	45	116	139	163	189	216	246	280	319	362
450	32	71	87	104	124	147	175	208	248	296
835	21	32	41	54	72	96	129	172	228	298
1900	6	10	18	33	57	92	138	194	257	323
2450	3	7	16	32	56	89	128	170	209	245
3500	2	6	15	29	50	72	94	114	134	158
5800	1	5	13	23	32	41	54	74	102	128

Power Limits for exemption from SAR evaluation RSS-102

10.2 Distance

≥15 mm

10.3 Power Calculation

Max Power of Channel = 5.6 dBm (2M, channel 19)

Tune-up Tolerance = 1.00 dB

Antenna Gain = 3.2 dBi

Total Power = 5.6 dBm + Tune-up Tolerance + Gain = 9.8 dBm = 9.6 mW

10.4 SAR Test Exemption Calculation

The exemption limit at 15 mm is 16 mW. The total power of the EUT is 9.6 mW.

9.6 mW ≤ 16 mW.

10.5 Result

The EUT is exempt from routine SAR testing at ≥15 mm as 9.6 mW is less than 16 mW.

11 ISED SAR EXEMPTION – 5GHZ WLAN

11.1 SAR Exemption Limit

Frequency (MHz)	≤ 5 mm (mW)	10 mm (mW)	15 mm (mW)	20 mm (mW)	25 mm (mW)	30 mm (mW)	35 mm (mW)	40 mm (mW)	45 mm (mW)	> 50 mm (mW)
≤ 300	45	116	139	163	189	216	246	280	319	362
450	32	71	87	104	124	147	175	208	248	296
835	21	32	41	54	72	96	129	172	228	298
1900	6	10	18	33	57	92	138	194	257	323
2450	3	7	16	32	56	89	128	170	209	245
3500	2	6	15	29	50	72	94	114	134	158
5800	1	5	13	23	32	41	54	74	102	128

Power Limits for exemption from SAR evaluation RSS-102

11.2 Distance

≥50 mm

11.3 Power Calculation

Max Power of Channel = 15.1 dBm (802.11ac, MCS0, channel 116)

Tune-up Tolerance = 1.00 dB

Antenna Gain = 4.4 dBi

Total Power = 15.1 dBm + Tune-up Tolerance + Gain = 20.5 dBm = 112.2 mW

11.4 SAR Test Exemption Calculation

The exemption limit at 50 mm is 128 mW. The total power of the EUT is 112.2 mW.

112.2 mW ≤ 128 mW.

11.5 Result

The EUT is exempt from routine SAR testing at ≥50 mm as 112.2 mW is less than 128 mW.

12 REVISION HISTORY

Version	Date	Notes	Person
0	10/21/2024	Initial Draft	Dylan Rosenfeldt
1	10/22/2024	Final Draft	Dylan Rosenfeldt

END OF REPORT