

TR3874-RFX

Equipment Under Test:	Veda SL917
Requirement(s):	FCC: 1.1307, 1.1310 ISED: RSS-102
Test Date(s):	08/06/2025
Prepared for:	Ezurio Attn: Brian Petted W66 N220 Commerce Ct. Cedarburg, WI 53012

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Signature: 	Date: 08/06/2025
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Ezurio Test Services in Review

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



A2LA – American Association for Laboratory Accreditation

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

A2LA Certificate Number: 1255.01

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



Federal Communications Commission (FCC) – USA

Accredited Test Firm Registration Number: 953492

Recognition of two 3 meter Semi-Anechoic Chambers



Innovation, Science and Economic Development Canada

Accredited U.S. Identification Number: US0218

Recognition of two 3 meter Semi-Anechoic Chambers

Company: Ezurio	Page 4 of 17	Name: Veda SL917
Report: TR3874-RFX		Model: 453-00219, 453-00220
Job: C-3874		Serial: Engineering Sample

1 TEST REPORT SUMMARY

During **08/06/2025** the Equipment Under Test (EUT), **Veda SL917**, as provided by **Ezurio** was tested to the following requirements for the purpose of a Class 2 permissive change to add antennas:

Requirements	Description	Method	Compliant
FCC Part 1.1310, 2.1093	Radio Frequency Radiation Exposure Evaluation	ANSI C63.10	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	Veda SL917
Model Number	453-00219, 453-00220
Serial Number	Engineering Sample
FCC ID	SQG-SL917
IC ID	3147A-SL917

2.2 Product Description

The Veda SL917 is based upon Silicon Labs SiWx917 chipset. Feature-set includes 802.11 b/g/n/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 – OUTPUT: 5VDC 0.5A (supplied by laptop USB port)

Programming – STM32CubeIDE Version 1.17.0

EUT is not capable of transmitting BLE and WLAN simultaneously

2.6 Ancillary Equipment

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

- STM32 NUCLEO-F411RE development board
- Nucleo 64 click shield board
- HP Elitebook 840G1

2.7 Antenna Information

Manufacturer	Model	Part Number	Dimension	Type	Peak Gain (dBi) 2400-2480 MHz
Ezurio	FlexNotch	001-0023	32mm X 21.1mm	Notch	2.0
Ezurio	i-FlexPIFA Mini	EFG2401A3S- 10MH4L	35.9mm X 11mm X 2.9mm	PIFA	2.0
Ezurio	FlexPIFA	001-0022	40.1mm X 11.0mm X 2.5mm	PIFA	2.0
Ezurio	NanoBlue	EBL2400A1- 10MH4L	44.5mm X 12.7mm X 0.8mm	Dipole	2.0
Ezurio	i-FlexPIFA	EFG2400A3S- 10MH4L	40.9mm X 11mm X 2.9mm	PIFA	3.1
Ezurio	mFlexPIFA	EFA2400A3S- 10MH4L	25.4mm x 23.4mm x 2.5mm	PIFA	2.0

2.8 Test Channels BLE

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

2.9 Test Channels 2.4 GHz WLAN

Channel	Frequency (MHz)	Bandwidth (MHz)	Data Rates
1	2412	20	802.11b – 1 Mbps 802.11g – 6 Mbps
6	2437	20	802.11n – MCS0 802.11ax – MCS0
11	2462	20	802.11ax RU26 – MCS0

3 REFERENCES

Publication	Edition	Date	AMD 1	AMD 2
eCFR	-	2024	-	-
RSS-102	6	2023	-	-
¹ KDB 447498 D01	v06	2015	-	-
ANSI C63.10	-	2020	2024	-

¹ KDB 447498 D01 is not in Ezurio's scope of accreditation

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

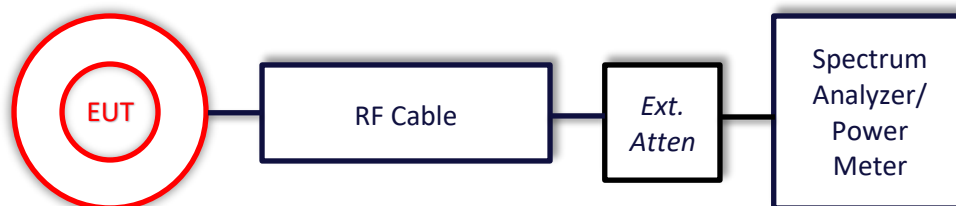
Parameter	ETSI U.C. $\pm$	U.C. $\pm$
Radio Frequency, from F0	1×10^{-7}	0.55×10^{-7}
Occupied Channel Bandwidth	5 %	2 %
RF conducted Power (Power Meter)	1.5 dB	1.2 dB
RF conducted emissions (Spectrum Analyzer)	3.0 dB	1.7 dB
All emissions, radiated	6.0 dB	5.3 dB
Temperature	1° C	0.65° C
Humidity	5 %	2.9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

5 TEST DATA

5.1 Antenna Port Conducted Emissions

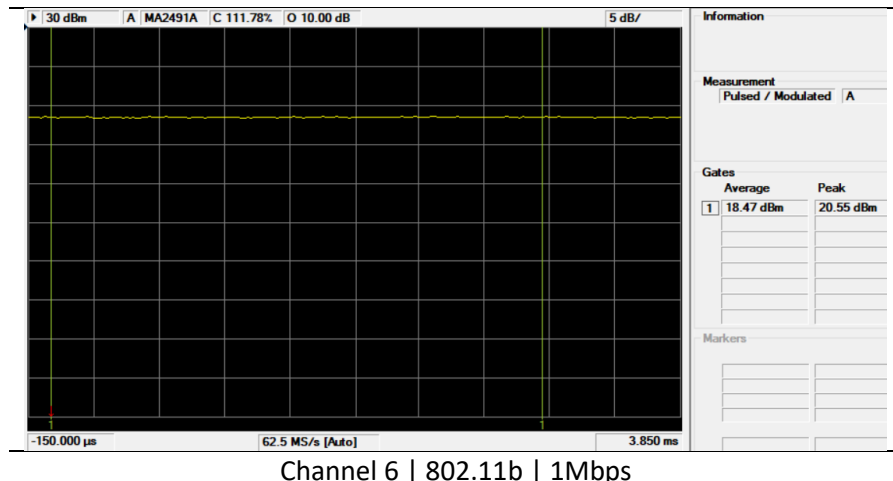
Description of Measurement	The direct measurement of emissions at the antenna port of the EUT is achieved by use of a RF connection to a spectrum analyzer or power meter. The cable and attenuator factors are loaded into the analyzer or power meter allowing for direct measurement readings without the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

Block Diagram



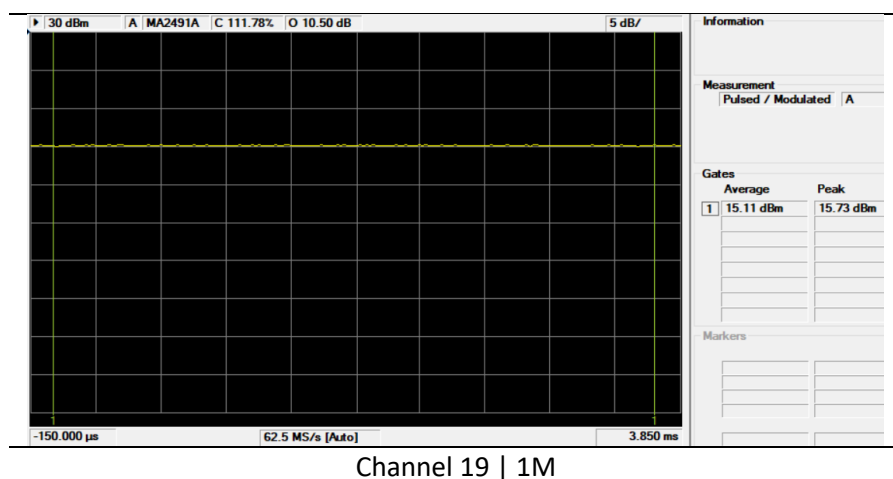
5.1.1 Antenna Port Conducted Emissions – RF Output Power 2.4GHz WLAN

Mode	Rate	Channel	Average Output Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
802.11b	1 Mbps	1	15.0	30	14.2	15
		6	18.5	30	14.3	20
		11	14.3	30	19.2	15
802.11g	6 Mbps	1	12.2	30	18.1	11
		6	18.3	30	13.5	20
		11	9.6	30	19.4	10
802.11n	MCS0	1	11.3	30	18.7	10
		6	18.3	30	14.3	20
		11	9.8	30	19.8	10
802.11ax	MCS0	1	11.0	30	18.1	10
		6	16.7	30	15.6	18
		11	9.3	30	19.4	10
802.11ax RU26	MCS0	1	10.4	30	18.7	10
		6	16.4	30	16.2	18
		11	9.0	30	20.1	10



5.1.2 Antenna Port Conducted Emissions – RF Output Power BLE

Rate	Channel	Peak Output Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
1 Mbps	0	14.2	30	15.8	13
	19	15.7	30	14.3	14
	39	15.2	30	14.8	14
2 Mbps	0	14.4	30	15.6	13
	19	15.3	30	14.7	14
	38	15.2	30	14.8	14
125 kbps	0	9.5	30	20.5	7
	19	10.3	30	19.7	8
	39	9.5	30	20.5	8
500 kbps	0	9.7	30	20.3	7
	19	10.5	30	19.5	8
	39	9.8	30	20.2	8



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

$\geq 47 \text{ mm}$

6.3 Power Calculation

Max Power of Channel = 18.5 dBm (802.11b, 1Mbps, channel 6)

Tune-up Tolerance = 1.00 dB

Total Power = 18.5 dBm + Tune-up Tolerance = 19.5 dBm = 89.1 mW

6.4 SAR Test Exclusion Calculation

$$\left[\frac{(89.1 \text{ mW})}{(47 \text{ mm})} \right] \times \sqrt{2.437} = 3.0$$

6.5 Result

The EUT is excluded from SAR testing at $\geq 47 \text{ mm}$ for WLAN in the 2.4GHz band as the result of the SAR test exclusion calculation is less than or equal to the numerical threshold of 3.0.

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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

$\geq 25 \text{ mm}$

7.3 Power Calculation

Max Power of Channel = 15.7 dBm (1M, channel 19)

Tune-up Tolerance = 1.00 dB

Total Power = 15.7 dBm + Tune-up Tolerance = 16.7 dBm = 46.8 mW

7.4 SAR Test Exclusion Calculation

$$\left[\frac{(46.8 \text{ mW})}{(25 \text{ mm})} \right] \times \sqrt{2.440} = 2.9$$

7.5 Result

The EUT is excluded from SAR testing at $\geq 25 \text{ mm}$ for BLE in the 2.4GHz band as the result of the SAR test exclusion calculation is less than or equal to the numerical threshold of 3.0.

8 ISED SAR EXEMPTION – 2.4GHZ WLAN

8.1 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

8.2 Distance

≥45 mm

8.3 Power Calculation

Max Power of Channel = 18.5 dBm (802.11b, 1Mbps, channel 6)

Tune-up Tolerance = 1.00 dB

Antenna Gain = 3.1 dBi

Total Power = 18.5 dBm + Tune-up Tolerance + Gain = 22.6 dBm = 182.0 mW

8.4 SAR Test Exclusion Calculation

The exemption limit at 45 mm is 209 mW. The total power of the EUT is 182.0 mW.

182.0 mW ≤ 209.0 mW.

8.5 Result

The EUT is exempt from routine SAR testing at ≥45 mm as 182.0 mW is less than 209.0 mW.

9 ISED SAR EXEMPTION – BLE

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 = 15.7 dBm (1M, channel 19)

Tune-up Tolerance = 1.00 dB

Antenna Gain = 3.1 dBi

Total Power = 15.7 dBm + Tune-up Tolerance + Gain = 19.8 dBm = 95.5 mW

9.4 SAR Test Exclusion Calculation

The exemption limit at 35 mm is 128 mW. The total power of the EUT is 95.5 mW.

95.5 mW ≤ 128 mW.

9.5 Result

The EUT is exempt from routine SAR testing at ≥35 mm as 95.5 mW is less than 128.0 mW.

10 REVISION HISTORY

Version	Date	Notes	Person
0	4/30/2025	Initial Draft	Dylan Rosenfeldt
1	4/30/2025	Final Draft	Dylan Rosenfeldt
2	8/6/2025	Updated calculations with new power settings	Dylan Rosenfeldt
3	8/6/2025	Final Draft	Dylan Rosenfeldt

END OF REPORT