

**COMPLIANCE WORLDWIDE INC.
TEST REPORT 291-23RF**

**In Accordance with the Requirements of
FCC PART 2.1093 Radio Frequency Exposure Evaluation:
Portable Devices**

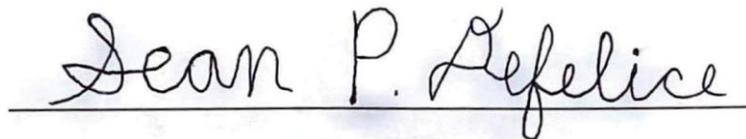
Issued to
**Wiser Systems, Inc.
819 W Hargett St
Raleigh, NC 27603
(919) 551-5566**

For the
**USB Dongle
Models: USB5V1.0**

FCC ID: 2AGZM-A01116

Report Issued on October 6, 2023

Tested by



Sean P. Defelice

Reviewed by



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1. Scope

This test report certifies that the Wiser Systems USB Dongle USB5V1.0 as tested, meets the FCC Part 2.1093 requirements exempting the device from a SAR Evaluation. The scope of this test report is limited to the test sample provided by the client, only in as much as that sample represents other production units. If any significant changes are made to the unit, the changes shall be evaluated and a retest may be required.

2. Product Details

- 2.1. Manufacturer:** Wiser Systems, Inc.
- 2.2. Model Numbers:** USB5V1.0
- 2.3. Serial Numbers:** Pre production
- 2.4. Description:** RRLT Locator System leverages new advances in Ultra-Wideband technology to deliver low cost/high accuracy, real-time localization.
- 2.5. Power Source:** 5 VDC via USB, External Battery or USB to AC Adapter
- 2.6. Hardware Revision:** Rev 3
- 2.7. Software Revision:** N/A
- 2.8. Modulation Type:** Pulse Modulation, Frequency Hopping
- 2.9. Operating Frequencies:** 4.5 GHz Center Frequency Nominal (Channel 3 – 500 MHz BW),
4.5 GHz Center Frequency Nominal (Channel 3 – 900 MHz BW)
- 2.10. EMC Modifications:** None

3. Product Configuration

3.1 Operational Characteristics & Software

Hardware Setup:

Connect the Wiser USB Dongle to a laptop computer via USB.

Using the software tool configure the USB dongle to control the tag to transmit on Channels 3 normal and wide modes.

3.2. EUT Hardware

Manufacturer	Model/Part # / Options	Serial Number	Input Volts	Freq (Hz)	Description/Function
Wiser Systems	USB5V1.0	Pre-production	3.0	DC	Client Tag

3.3. EUT Cables/Transducers

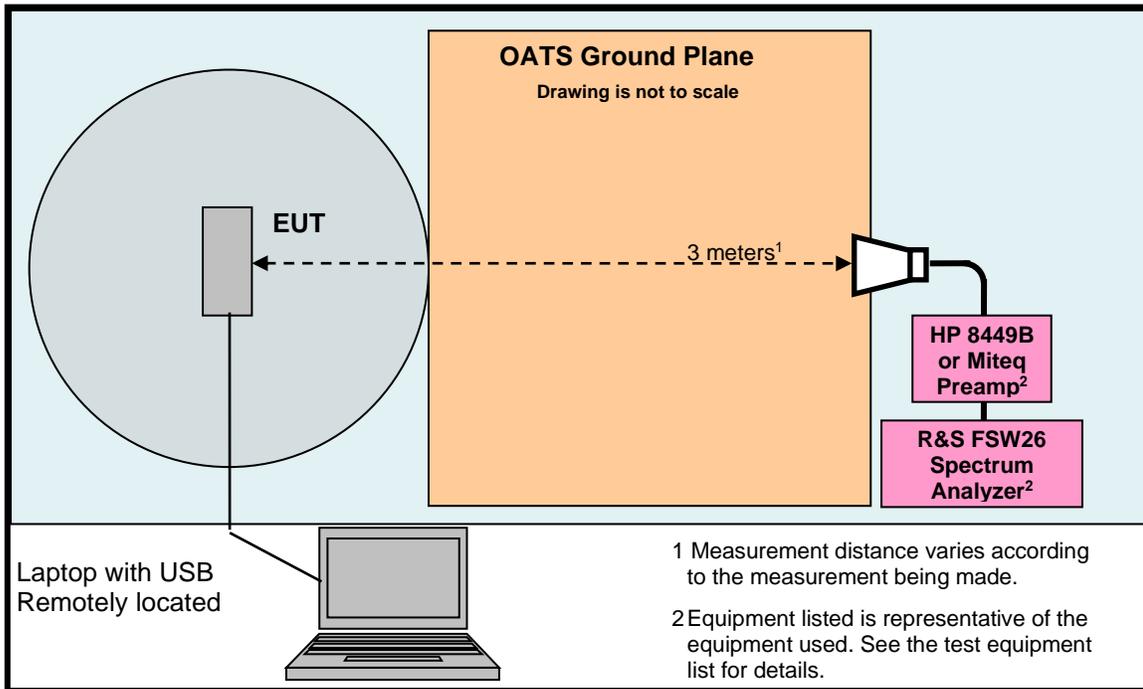
Cable Type	Length	Shield	From	To
USB	1M	Yes	EUT	Laptop for Control / Battery Power

3.4. Support Equipment

Manufacturer	Model/Part # / Options	Serial Number	Input Voltage	Freq (Hz)	Description/Function
Dell	XPS 13 – L321X	41647808737	120	60	For controlling the USB Dongle

3. Product Configuration (cont.)

3.5. Test Setup Diagram



4. Measurements Parameters

4.1. Measurement Equipment Used to Perform Test

Device	Manufacturer	Model No.	Serial No.	Cal Due	Interval
Spectrum Analyzer, 2 Hz to 26.5 GHz ¹	Rohde & Schwarz	FSW26	102057	6/24/2024	3 Years
Dbl Ridged Guide Antenna 1- 18 GHz	ETS-Lindgren	3117	00143292	5/11/2024	2 Years
Dbl Ridged Guide Antenna 1- 18 GHz	ETS-Lindgren	3117	00227631	4/21/2024	2 Years
Preamplifier 2 to 12 GHz	JCA	JCA48-4111B1	7087S	2/28/2024	1 Year
Barometric Pressure/Humidity & Temp Datalogger	Extech Instruments	SD700	Q590483	10/14/2023	2 Years

¹ FSW26 Firmware revision: V4.71 SP1, Date installed: 11/16/2020 Previous V4.61, installed 08/11/2020.

4.2. Measurement & Equipment Setup

Test Dates: 9/12/2023, 9/22/2023
 Test Engineers: Sean Defelice
 Normal Site Temperature (15 - 35°C): 21.6
 Relative Humidity (20 -75%RH): 35
 Frequency Range: 4 to 5 GHz, 3.5 to 5.5 GHz
 Measurement Distance: 3 Meters
 EMI Receiver IF Bandwidth: 1 MHz - Above 1 GHz
 EMI Receiver Avg Bandwidth: $\geq 3 * \text{RBW or IF(BW)}$
 Detector Function: Peak

4. Measurements Parameters (continued)

4.3. Measurement Procedure

Test measurements were made in accordance FCC Part 15.519 Subpart F.

The test methods used to generate the data in this test report is in accordance with ANSI C63.10:2013, American National Standard for Testing Unlicensed Wireless Devices.

4.4. Measurement Uncertainty

The following uncertainties are expressed for an expansion/coverage factor of K=2.

RF Frequency (out of band)	$\pm 1 \times 10^{-8}$
Radiated Emission of Transmitter to 100 GHz	± 4.55 dB
Radiated Emission of Receiver	± 4.55 dB
Temperature	$\pm 0.91^{\circ}$ C
Humidity	$\pm 5\%$

5. Measurement Data

5.1. Peak Emissions in a 50 MHz Bandwidth (15.519 (e), 15.521 (g) continued)

5.1.1 Plot of Peak Power at 3 Meters (CH3 Normal)

Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBμV/m)	(dBμV/m)	(dB)	H/V	cm	Deg	
4.497	95.13	95.20	-0.07	V	127	67	Compliant

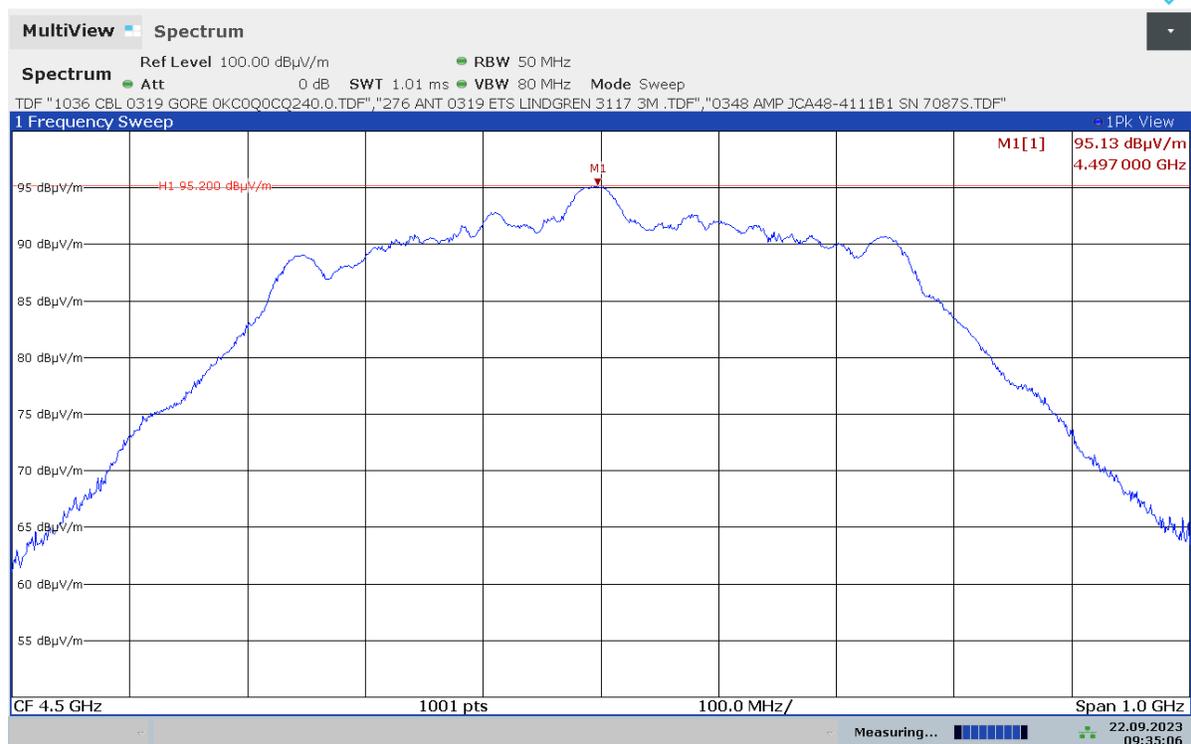
Notes: ¹ Antenna Factor (AF), Cable Factor (CF) and External Preamplifier Gain (PAG) have been entered into the analyzer as transducer factors.

Equation (22) from ANSI C63.10-2013, $EIRP = E_{meas} + 20 \log(d_{meas}) - 104.7$; $d_{meas} = 3$

$EIRP (dBm) = E_{meas} (dBμV/m) - 95.2$

Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBm)	(dBm)	(dB)	H/V	cm	Deg	
4.497	-0.07	0.00	-0.07	V	127	67	Compliant

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5. Measurement Data (continued)

5.1. Peak Emissions in a 50 MHz Bandwidth (15.519 (e), 15.521 (g) continued)

5.1.2 Plot of Peak Power at 3 Meters (CH3 Wide)

Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBµV/m)	(dBµV/m)	(dB)	H/V	cm	Deg	
4.498	94.91	95.20	-0.29	V	127	101	Compliant

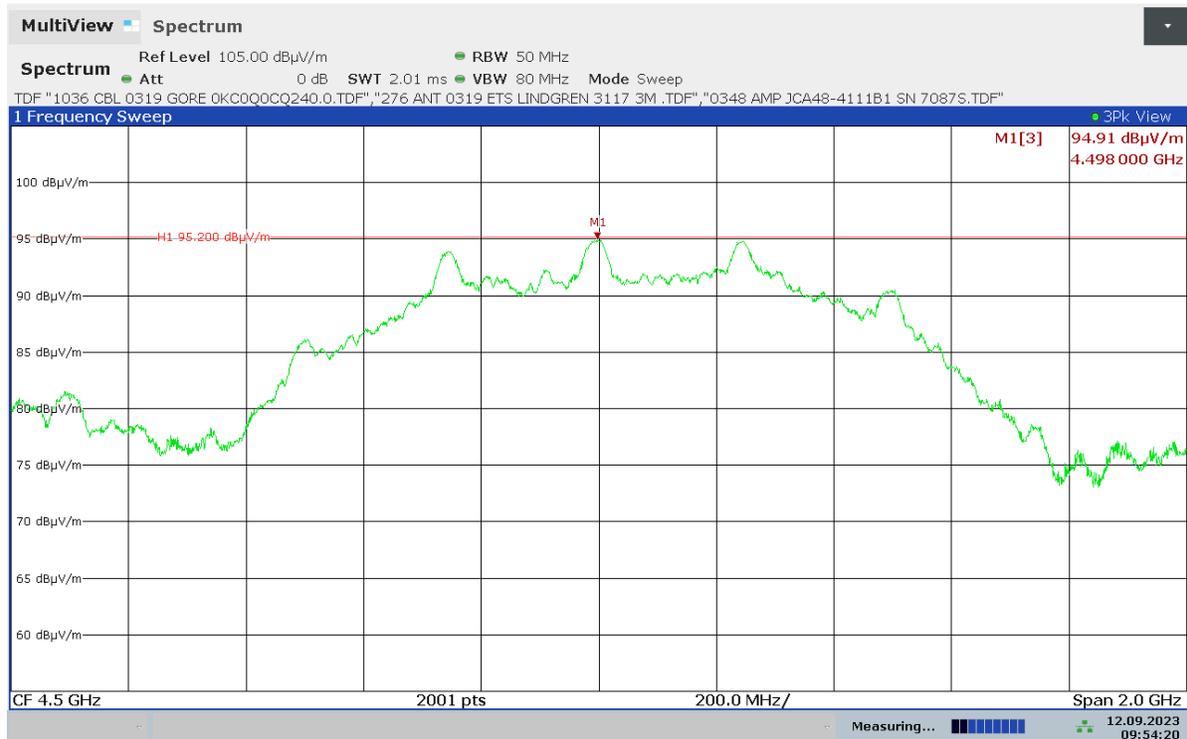
Notes: ¹ Antenna Factor (AF), Cable Factor (CF) and External Pre-amplifier Gain (PAG) have been entered into the analyzer as transducer factors.

Equation (22) from ANSI C63.10-2013, $EIRP = E_{meas} + 20 \log(d_{meas}) - 104.7$; $d_{meas} = 3$

$EIRP (dBm) = E_{meas} (dBµV/m) - 95.2$

Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBm)	(dBm)	(dB)	H/V	cm	Deg	
4.498	-0.29	0.00	-0.29	V	127	101	Compliant

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5. Measurement Data (continued)

5.2. Public Exposure to Radio Frequency Energy Levels (2.1093)

5.2.1. 2.1093 Requirements

Requirement: Portable devices are subject to radio frequency radiation exposure requirements. For purposes of this section, a portable device is defined as a transmitting device designed to be used so that the radiating structure(s) of the device is/are within 20 centimeters of the body of the user.

Evaluation of compliance with the exposure limits in § 1.1310 of this chapter, and preparation of an EA if the limits are exceeded, is necessary for portable devices having single RF sources with more than an available maximum time-averaged power of 1 mW.

The 1-mW exemption is independent of service type and covers the full range of 100 kHz to 100 GHz, but it may not be used in conjunction with other exemption criteria or in devices with higher-power transmitters operating in the same time-averaging period.

Power levels from Section 5.1

Channel	Frequency	Peak Field Strength	Distance	Antenna Gain ¹	Measured Output Power	Measured Output Power	Output Power Limit	Result
	(GHz)	(dBµV/m)	(m)	(dBi)	(dBm)	(mW)	(mW)	
3	4.497	95.13	3.0	0.000	-0.07	0.978	1	Compliant
3W	4.498	94.91	3.0	0.000	-0.29	0.929	1	Compliant

Note: Antenna gain is included in the field strength measurements. Measured Power is determined by 3M Peak Field Strength – 95.2 = dBm

Conclusion: The device under test meets the exclusion requirement detailed in FCC OET 447498 D01, dated October 23, 2015 Clause 4.3.1 (a).