

Test Report

Prepared for: Wavetronix LLC

Model: Fathom Tank Level Sensor

FCC ID: PCB-FA01

Serial Number: 000126

Project No: _p2470002

Test Results: Pass

To

FCC Part 1.1310

Date of Issue: October 22, 2024

On the behalf of the applicant:

Wavetronix
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Attention of:

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Prepared By:

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ANAB Cert#: AT-2901
FCC Site Reg. #US2901
ISED Site Reg. #2044A-2



Greg Corbin
Project Test Engineer

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Test Report Revision History

Revision	Date	Revised By	Reason for Revision
1.0	10/22/24	Greg Corbin	Original Document

ANAB

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The tests results contained within this test report all fall within our scope of accreditation, unless noted below.

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FCC Site Reg. #349717

IC Site Reg. #2044A-2

Non-accredited tests contained in this report:

N/A

EUT Description

Model:	Fathom Tank Level Sensor
Serial:	000126
Firmware:	2.0.3
Software:	N/A
Description:	Fathom Tank Level Sensor
Additional Information:	Sensor measures level of grey and black water holding tanks for RV's. Freq Range = 57 – 64 GHz Modulation = FMCW
Receipt of Sample(s):	October 7, 2024
EUT Condition:	Visual Damage No State of Development Production/Production Equivalent

Test Setup and Modes of Operation

For alignment and maximizing signal levels at mm-wave frequencies, the EUT was placed in CW mode of operation.

For final data, the EUT was placed in FMCW mode of operation.

EUT Operation during Tests

The EUT was tested in FMCW mode of operation.

The EUT was powered with a AC to DC power supply with 12 vdc output.

MPE Evaluation

The EUT is a mobile device used in an Uncontrolled Exposure environment.

Limits Uncontrolled Exposure 47 CFR 1.1310 Table 1, (ii)

0.3-1.234 MHz:	Limit [mW/cm ²] = 100
1.34-30 MHz:	Limit [mW/cm ²] = (180/f ²)
30-300 MHz:	Limit [mW/cm ²] = 0.2
300-1500 MHz:	Limit [mW/cm ²] = f/1500
1500-100,000 MHz	Limit [mW/cm ²] = 1.0

Test Data

The radiated output power was measured in normal operation with the FMCW signal sweeping from 57 – 64 GHz.

The EUT FMCW output was recorded from 57 – 64 GHz with the spectrum analyzer trace set to peak detector with max hold.

RBW = 1 MHz

Due to the signal BW of 7 GHz being greater than the RBW of 1 MHz a desensitization factor was added to the measurement per C63.10-2020 4.1.5.2.8 and Annex L.

The radar unit is installed inside RV and motor home grey and black water holding tanks and will always be greater than 20 cm from the RV operator.

$S = \frac{P * G}{4\pi r^2}$
Power Density (S) mW/cm ²

MPE calculation

Test Frequency, MHz	59.641
Power, Conducted, mW (P)	2.17
Antenna Gain Isotropic	0
Antenna Gain Numeric (G)	1
Antenna Type	trace
Distance (R)	20 cm

Power Density (S) =0.0004 mW/cm ²
Limit = (from above table) = 1.0 mW/cm ²

The EUT Power Density of 0.0004 mW/cm² is under the limit of 1.0 mW/cm² at 20 cm.

END OF TEST REPORT