



# REPORT

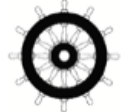
For

## Fluid Life Corporation

4371 Savaryn Drive SW  
Edmonton, Alberta  
T6X 2E8, Canada

Date: 10 December 2020  
Report No.: 19882-1E  
Revision No.: 0  
Project No.: 19882  
Model No.: Telematics  
FCC ID: 2AYWR-FLWIF11  
IC ID:

### ONE STOP GLOBAL CERTIFICATION SOLUTIONS





Unit 205 – 8291 92 ST., Delta, BC  
V4G 0A4, Canada  
Phone: 604-247-0444  
Fax: 604-247-0442  
www.labtestcert.com

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## TEST REPORT

### Radiated Spurious for FCC 47 CFR Part 15 Subpart C and ISED RSS-247 Issue 2

<b>Report Reference No.</b> .....	19882-1E	
<b>Report Revision History</b> .....	✓ Rev. 0: 10 December 2020	
Compiled by (+ signature) .....	Jeremy Lee	
Approved by (+ signature) .....	David Johanson	
Date of issue .....	10 December 2020	
Total number of pages .....	23	
<b>FCC Site Registration No.:</b> .....		
	721268	
<b>IC Site Registration No.:</b> .....		
	5970A	
<b>Testing Laboratory</b> .....		
	LabTest Certification Inc.	
Address .....		
	Unit 205 – 8291 92st Delta, B.C. V4G 0A4, Canada	
<b>Applicant's name</b> .....		
	Fluid Life Corporation	
Address .....		
	4371 Savaryn Drive SW, Edmonton, AB, T6X 2E8 Canada	
<b>Manufacture's Name</b> .....		
	Same as Applicant	
Address .....		
	Same as Applicant	
<b>Test specification:</b>		
Standards .....	<ul style="list-style-type: none"> <li>➤ FCC 47 CFR Part 15, Subpart C; 2020</li> <li>➤ IC RSS-247 Issue 2, February 2017</li> </ul>	
Test procedure .....	<ul style="list-style-type: none"> <li>➤ ANSI C63.10:2013</li> <li>➤ ANSI C63.4:2014</li> <li>➤ RSS-Gen, Issue 5, April 2018</li> <li>➤ KDB 558074 D01 15.247 Meas Guidance v05</li> </ul>	
Non-standard test method.....	N/A	
Test Report Form(s) Originator.....	Jeremy Lee	
Master TRF .....	1036_Rev2 – RF Report Template	
<b>Test item description :</b>		
Trade Mark.....	n/p	
Model/Type reference .....	Telematics	
Serial Number .....	WWQZKL2HU3 for Conducted emission Test, n/p for Radio test.	

FCC ID .....	2AYWR-FLWIFI1
IC ID .....	
<b>Possible test case verdicts:</b>	
- test case does not apply to the test object.....	N/A
- test object does meet the requirement .....	P (Pass)
- test object does not meet the requirement .....	F (Fail)
<b>Testing:</b>	
Date of receipt of test item .....	28 OCT. 2020
Date (s) of performance of tests .....	15 to 18 NOV. 2020

## Revision History

Revision	Date	Reason For Change	Author(s)
0	10 December 2020	Initial Data	Jeremy Lee

## Description of Radio Module

Application for .....	WLAN
EUT Frequency Range (in MHz) .....	2412.0 – 2462.0 MHz
Conducted Output Power (in dBm) at Antenna Connector Port on HOST .....	+19.60dBm at 1Mbps data rate +12.89dBm at MCS7 data rate
Field Strength at 3 meters .....	1 Mbps data rate: 118.15 dBuV/m @ 3m MCS7 data rate: 109.97 dBuV/m @ 3m
Type of Modulation .....	FSK
Antenna Type/Gain.....	MA600.A.ABC.007, MA600 Spartan Screw mount 3in1 Combination Antenna Peak Gain: 2.1dBi, Average Gain: -2.3dBi
Equipment mobility .....	Yes, on Vehicle.
<b>Nominal Voltages for:</b>	<input checked="" type="checkbox"/> stand-alone equipment <input type="checkbox"/> combined (or host) equipment
Supply Voltage:	<input type="checkbox"/> 12V DC <input type="checkbox"/> 1.0 Amps
If DC Power:	<input type="checkbox"/> Internal Power Supply <input checked="" type="checkbox"/> External Power Supply or AC/DC adapter <input type="checkbox"/> Battery

## Program details

Testing Facility by procedure:	
<input checked="" type="checkbox"/>	<b>All Testing:</b> LabTest Certification Inc.
Testing location/ address .....	Unit 3128-20800 Westminster HWY, Richmond, B.C. V6V 2W3 Canada

Summary of testing:	
<b>Tests performed (name of test and test clause):</b> Conducted Output Power Radiated Field strength and Emissions AC Power Line Conducted Emissions	<b>Testing location:</b> On GRP, Richmond In SAC, Richmond On GRP, Richmond
The tests indicated in Test Summary were performed on the product constructed as described below. The test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted. Based on the results of our investigation, we have concluded the product tested <b>complies</b> with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested. LabTest does not make any claims of compliance for samples or variants which were not tested.	

## Description of Equipment Under Test and Variant Models

<b>Description:</b> The EUT is Telematic solution of Fluid Life Corporation. It is including three different Radio in one unit with 3in1 Antenna for communicating with three different Telemetry Device Modes, Direct, Close Mobile Assets and Distant Mobile Assets. It is including pre-certified Modular Radio module for WiFi service. <b>FCC ID: 2AYWR-FLWIFI1</b> <b>IC ID:</b>
<b>Variant Models:</b> The following variant models were not tested as part of this evaluation but have been identified by the manufacturer as being electrically identical models, depopulated models, or with reasonable similarity to the model(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested. None

## Client Equipment Used During Test

Use*	Product Type	Manufacturer	Model	Comments
EUT	Telematic	Fluid Life Corp.	Telematic	
EUT	Antenna	Taoglas	MA600.A.ABC.007	3in1 Combination Antenna, GPS, Cellular and WiFi
SIM	Telematic	Fluid Life Corp.	Telematic	2 <sup>nd</sup> unit as SIMULATOR, only for conducted emissions.

SIM	Power Supply	DVE	DSA-12PFT-12FUS	Input: 115VAC, 60Hz, 0.5A Output: 12VDC, 1A Max.
Abbreviations: EUT - Equipment Under Test, SIM - Simulator (Not Subjected to Test)				

## Software and Firmware

Use*	Description	Version
n/p		
Abbreviations: EUT - Equipment Under Test, AE - Auxiliary/Associated Equipment, or SIM - Simulator (Not Subjected to Test)		

## Input/Output Ports

Port #	Name	Type*	Cable Max. >3m	Cable Shielded	Comments
1	GPS	TP	N	Y	Connected to Antenna via separated Coaxial cable
2	Cell	TP	N	Y	Connected to Antenna via separated Coaxial cable
3	WiFi	TP	N	Y	Connected to Antenna via separated Coaxial cable
4	Ethernet #1	TP	Y	N	Only one port of ethernet can be connected to Network
5	Ethernet #2	TP	Y	N	Only one port of ethernet can be connected to Network
6	USB	I/O	N	N	Only connecting for maintenance purpose
7	Sensors A	I/O	Y	N	Connecting to Wired Sensor
8	Sensors B	I/O	Y	N	Connecting to Wired Sensor
9	Power	AC/DC	N	N	Connecting to Power Source, For testing, connected to DSA-12PFT-12FUS
10	ModBus	I/O	Y	N	Connecting to ModBus
11	Com	I/O	Y	N	Connecting to Com communication device
12	USB	I/O	N	N	Connecting to USB device
13	CAN/CDL	I/O	Y	N	Connecting to CAN/CDL unit(s)
*Note: AC = AC Power Port DC = DC Power Port N/E = Non-Electrical I/O = Signal Input or Output Port (Not Involved in Process Control) TP = Telecommunication Ports					

## Power Interface

Mode #	Voltage (V)	Current (A)	Power (W)	Frequency (DC/AC-Hz)	Phases (#)	Comments
1	115	-	-	AC-60Hz	-	via DSA-12PFT-12FUS

## EUT Operation Modes

Mode #	Description
1	Keep operating of WiFi Radio as changing its channel and Type as based on origin test report of manufacturer, 310117 by LS Research, LLC.
2	Keep operating via WiFi, Ethernet and sensors.

## EUT Configuration Modes

Mode #	Description
1	EUT on test table and connected output connector to Spectrum Analyzer via RF Coaxial cable.
2	EUT on test table and three output connectors were connected to Antenna and for control, special USB cable was conneted to Laptop.
3	EUT on test table and connected to Antenna, Laptop, 2nd Telematic and Term.

## Test Equipment Verified for function

Model #	Description	Checked Function	Results
N9038A	EMI Receiver	Frequency and Amplitude	In Tolerance
SAS-540	Antenna, 30 to 300MHz	Checked structure	Normal – no damage.
VUSLP9111B	Antenna, 300 to 1,000MHz	Checked structure	Normal – no damage.
JB1	Antenna, 30 to 2000MHz	Checked structure	Normal – no damage.
SAS-571	Antenna, 1 to 18GHz	Checked structure	Normal – no damage.
SAS-572	Antenna, 18 to 25GHz	Checked structure	Normal – no damage.
8449B	Pre-Amplifier	Gain	In Tolerance
LIN-120C	LISN	Checked Insertion Losses	In Tolerance
AL-130	Antenna, 9kHz to 30MHz	Checked structure	Normal – no damage.

## Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests:

Parameter	Uncertainty
Radio Frequency	$\pm 0.2$ ppm
RF Power, Conducted	$\pm 1$ dB
Radiated Emission, 30 to 250MHz	$\pm 4.37$ dB
Radiated Emission, 250 to 1000MHz	$\pm 4.29$ dB
Radiated Emission, 1 to 6GHz	$\pm 5.02$ dB
Radiated Emission, 6 to 18GHz	$\pm 5.02$ dB
Conducted Measurements, 0.15 to 30MHz	$\pm 1.71$ dB

Uncertainty figures are valid to a confidence level of 95%.



## Result Summary

The Compliance Status is a judgment based on the direct measurements and calculated highest emissions to appropriate standard limits. Measurement uncertainty values, provided on calibration certificates, were not be used in the judgment of the final status of compliance.

47 CFR FCC Part 15, Subpart C(15.247) and IC RSS-247			
Test Type	Regulation	Measurement Method	Result
<b>15.247 &amp; RSS-247</b>			
Conducted Output Power at Antenna Connector Port of HOST unit	FCC 15.247(b) & RSS-247	KDB 558074 D01 15.247 Meas Guidance v05 ANSI C63.10:2013, Clause 6	P
Unwanted Radiated Emissions	FCC 15.247(d) & RSS-247	ANSI C63.4:2014 & ANSI C63.10:2013, Clause 6	P
General			
AC Power Line Conducted Emissions	FCC 15.207(a) & RSS-Gen	ANSI C63.4:2014	P
Antenna Requirement	FCC 15.203 & RSS-Gen	-	P

### Conducted Output Power at Antenna Connector Port of HOST unit

Governing Doc	FCC 15.247(b) & RSS-247	Room Temperature (°C)	21.1		
Basic Standard	KDB 558074 D01 15.247 Meas Guidance v05 ANSI C63.10:2013, Clause 6	Relative Humidity (%)	38.0		
Test Location	Richmond	Barometric Pressure (kPa)	102.3		
Test Engineer	Jeremy Lee	Date	19 Nov. 2020		
EUT Voltage	<input type="checkbox"/> DC <input checked="" type="checkbox"/> 115VAC @ 60Hz				
Test Equipment Used	Manufacturer	Model	Identifier	Calibration	Calibration due
Spectrum Analyzer	Keysight	N9038A	702	27-May-2020	27-May-2021
RF Cable	MRO	n/a	n/a	IHC <sup>1</sup>	IHC <sup>1</sup>
AC Power Source	California Instrument	5001i	059	IHC <sup>3</sup>	IHC <sup>2</sup>
Note1) In House Calibration Ref. # 6 Note2) In House Calibration Ref. # 7					
<b>- Test Data for 1Mbps</b>					
Channel #	Center Frequency(MHz)	Peak Power at Antenna terminal(dBm)	Conducted Power Limit(dBm)	Margin(dB)	
06	2437	19.60	30.00	10.4	
<b>- Test Data for MCS7</b>					
Channel #	Center Frequency(MHz)	Peak Power at Antenna terminal(dBm)	Conducted Power Limit(dBm)	Margin(dB)	
01	2412	12.89	30.00	17.11	
Compliant <input checked="" type="checkbox"/> Non-Compliant <input type="checkbox"/> Not Applicable <input type="checkbox"/>					

#### Test setup

Description of test set-up:

The EUT was placed on a 0.8 m non-conducting table.  
 The EUT was set to **Operation Mode #1 with configuration Mode #1 & power interface #1.**

```

    graph LR
      EUT[EUT] --- N9038A[N9038A]
    
```

## Measurement Procedure

Test procedure is based on ANSI C63.10, Clause 6.7 Antenna-port conducted emission measurements.

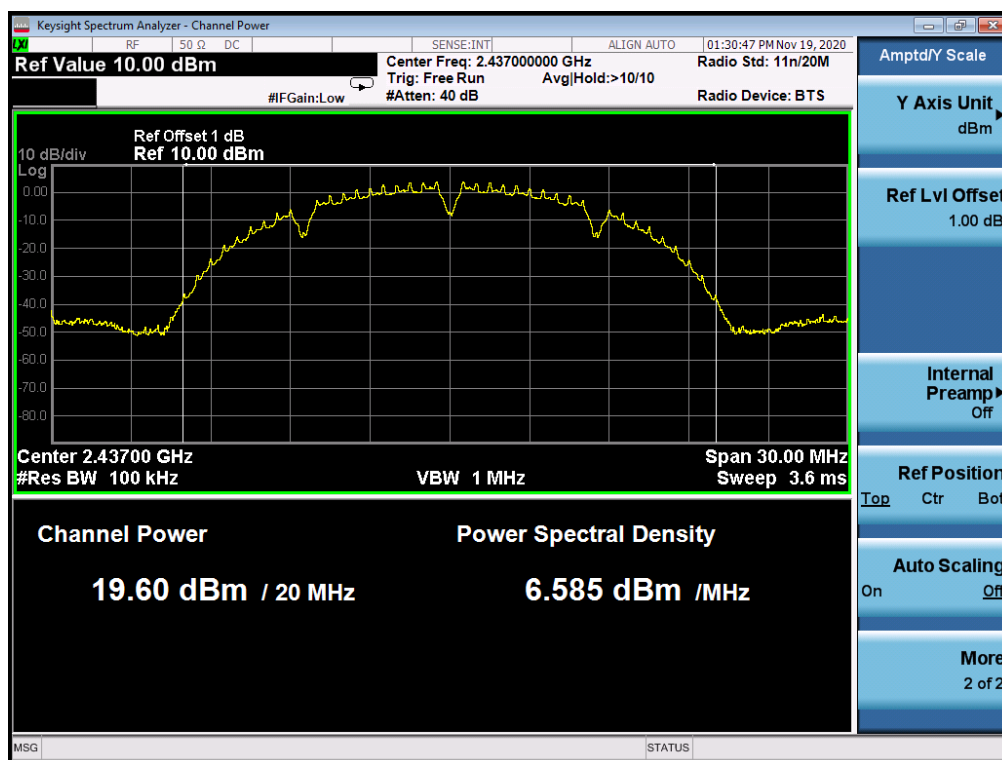
The conducted RF output power of the EUT was measured at the antenna port of HOST unit using a short RF cable. The loss from the cable was added on the analyzer as gain offset settings, thereby allowing direct measurements without the need for any further corrections. The unit was configured to run in a continuous transmit mode, while being supplied with typical data as a modulation source.

It was measured using Channel Power under Radio Standard : 802.11x in N9038A.

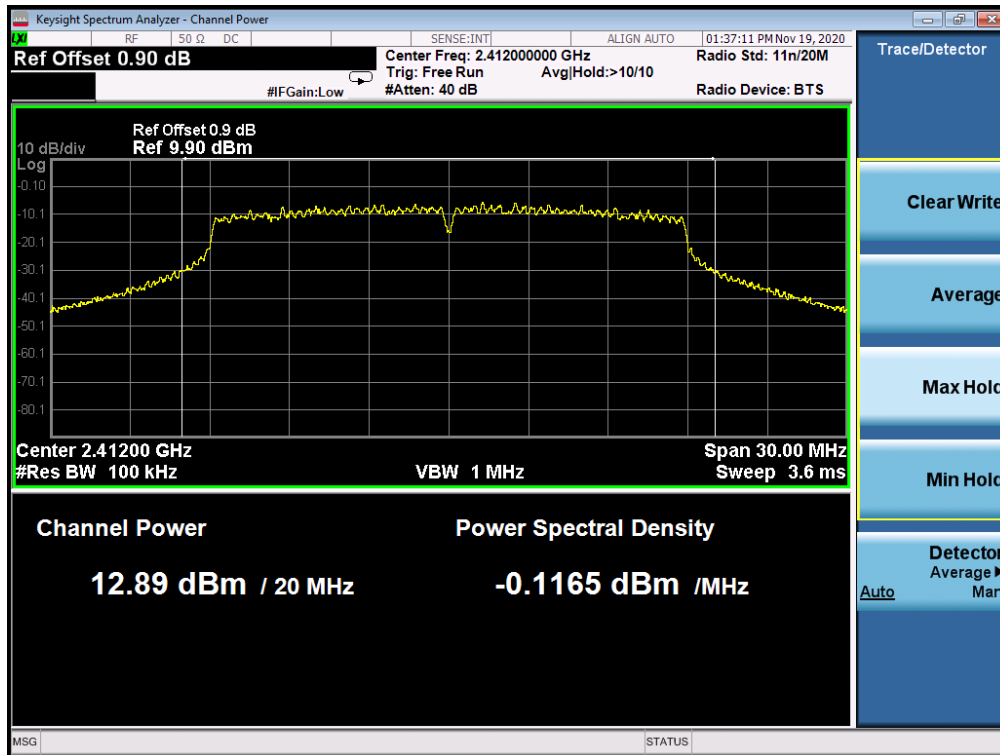
For conducted output power test the spectrum analyzer was used with resolution bandwidths set to 100kHz and video bandwidths set to 1 MHz, and a span of 30 MHz respectively, with measurements.

## Screen Captures

### - 1Mbps, Channel 06



- MCS7, Channel 01



## Unwanted Radiated Emissions

Governing Doc	FCC 15.247(d) & RSS-247	Room Temperature (°C)	20.9 to 21.1		
Basic Standard	KDB 558074 D01 15.247 Meas Guidance v05 ANSI C63.10:2013, Clause 6	Relative Humidity (%)	38.0 to 40.3		
Test Location	Richmond	Barometric Pressure (kPa)	100.1 to 102.3		
Test Engineer	Jeremy Lee	Date	18-19 Nov. 2020		
EUT Voltage	<input type="checkbox"/> DC <input checked="" type="checkbox"/> 115VAC @ 60Hz				
Test Equipment Used	Manufacturer	Model	Identifier	Calibration	Calibration due
Spectrum Analyzer	Keysight	N9038A	702	27-May-2020	27-May-2021
Horn Antenna	A.H Systems	SAS-571	227C	12-Aug-2020	12-Aug-2022
Horn Antenna	A.H Systems	SAS-572	227D	11-Dec-2018	11-Dec-2021
Broadband Antenna	Sunol	JB1	371	24-Sep-2020	24-Sep-2022
LPDA Antenna	Schwarzbeck Mess	VUSLP9111B	996	26-Mar-2019	26-Mar-2021
BiCon Antenna	A.H Systems	SAS-540	1115	29-Apr-2019	29-Apr-2021
RF Preamplifier	Agilent	8449B	273	IHC <sup>1</sup>	IHC <sup>1</sup>
RF Cable	MRO	n/a	n/a	IHC <sup>1</sup>	IHC <sup>1</sup>
RF Cable	MRO Elec.	SMA-SMA-12FT	n/a	IHC <sup>1</sup>	IHC <sup>1</sup>
AC Power Source	California Instrument	5001i	059	IHC <sup>2</sup>	IHC <sup>2</sup>
Used Software	<input checked="" type="checkbox"/> Tile! 7 v7.3.0.6				
Used Template	_FCC_RadEmi_30-1000MHz_Spur_20201008 _FCC_RadEmi_1-18GHz_Spur_20200824 _FCC_RadEmi_18-26.5GHz_Spur_20200810				
Note1) In House Calibration Ref. # 6 Note2) In House Calibration Ref. # 7					
Detector:	<input checked="" type="checkbox"/> Peak	<input checked="" type="checkbox"/> Quasi-Peak	<input checked="" type="checkbox"/> AVG(over 1GHz)		
RBW/VBW:	<input checked="" type="checkbox"/> 120/300kHz	<input checked="" type="checkbox"/> 1/3MHz			
Type of Facility:	<input checked="" type="checkbox"/> SAC	<input checked="" type="checkbox"/> FSOATS	<input type="checkbox"/> <i>in-situ</i>		
Distance:	<input checked="" type="checkbox"/> 3meter	<input type="checkbox"/> 10meter	<input type="checkbox"/> 1meter		
Arrangement of EUT:	<input checked="" type="checkbox"/> Table-top only	<input type="checkbox"/> Floor-standing only	<input type="checkbox"/> Rack Mounted		
The EUT was found to <b>MEET</b> the Radiated Emissions requirements of Title 47 CFR, FCC Part 15.247 and Canada RSS-247 for a DTS transmitter. The frequencies with significant RF signal strength were recorded and plotted as shown in the Data Charts and Graphs.					
Frequency (MHz)	Ant Pol	Peak (dBuV/m)	Limit(dBuV/m)	Margin (dB)	
4874.725	V	73.51	74.00	0.49	
Compliant <input checked="" type="checkbox"/> Non-Compliant <input type="checkbox"/> Not Applicable <input type="checkbox"/>					

## Test setup

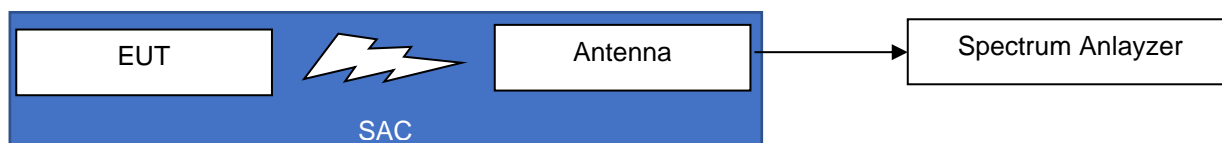
### Description of test set-up:

The test setup was assembled in accordance with Title 47, CFR FCC Part 15, RSS GEN and ANSI C63.10. The EUT was placed on an 80cm high non-conductive pedestal, centered on a flush mounted 1.2-meter diameter turntable inside a 3-meter Semi-Anechoic Chamber.

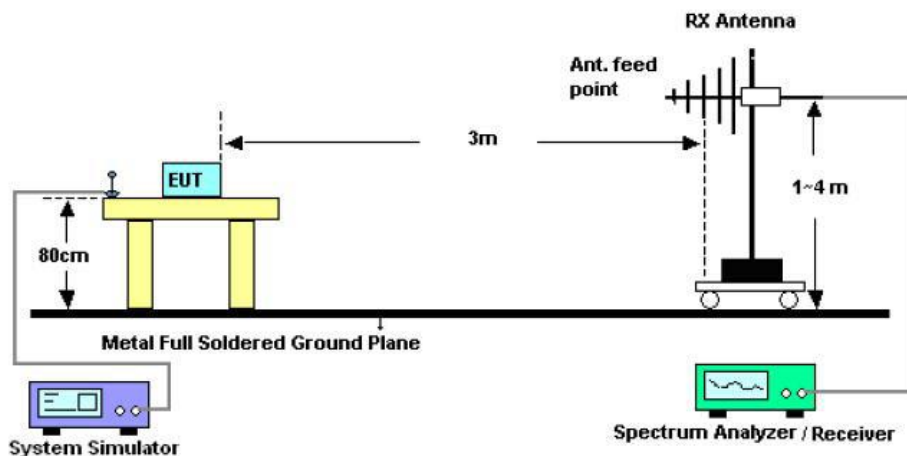
The EUT was operated in continuous transmitting with proper modulation. The unit has the capability to operate on 11 channels, controllable via laptop PC. The applicable limits apply at a 3-meter distance. The calculations to determine these limits are detailed in the following pages. The test sample was operated on the highest output power channel and mode, 1Mbps, Channel # 06.

The EUT with ANT was placed on a 0.8 m for under 1GHz and 1.5m for over 1GHz non-conducting table above a Turn table in SAC.

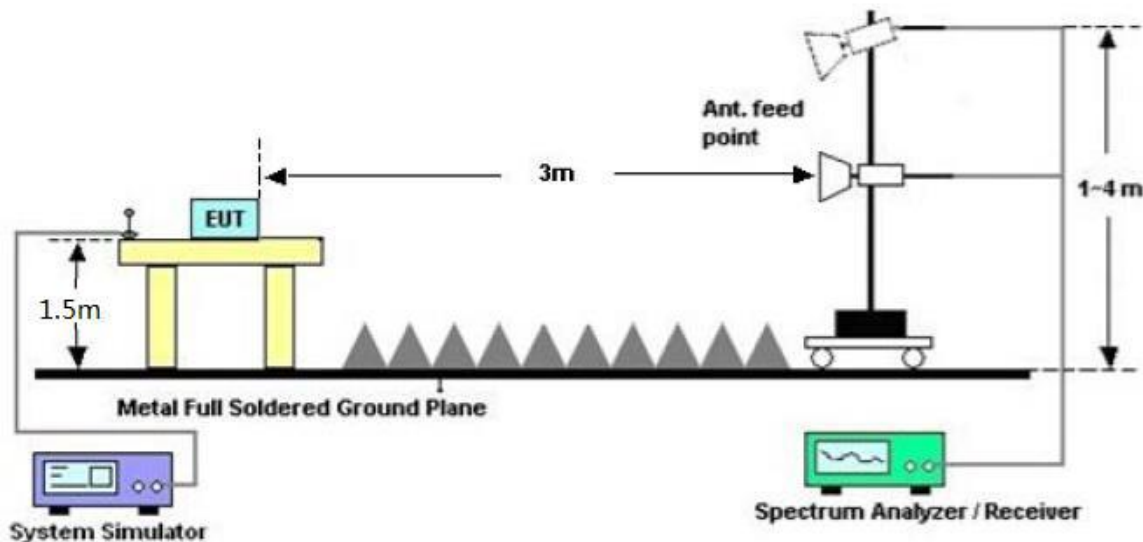
The EUT was set to **Operation Mode #1 with configuration Mode #2 & power interface #1.**



- Tested with JB-1 under 1GHz as followed by ANSI C63.10



- Tested with SAS-571 & SAS-572 over 1GHz as followed by ANSI C63.10



### Measurement Procedure

Test procedure is based on the FCC15.31(a)(3) - Other intentional and unintentional radiators are to be measured for compliance using the following procedure excluding sections 4.1.5.2, 5.7, 9 and 14: ANSI C63.4-2014: "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz" (incorporated by reference, see § 15.38). This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51.

This test measures the radiating levels from the EUT, thus evaluating the potential for the EUT to cause radio frequency interference to other electronic devices. Testing was performed in accordance with the test standard(s) referenced in the test summary section of this report. The Equipment Under Test (EUT) was configured based upon the requirements of the applicable test standard. Initially, the primary emission frequencies are identified by positioning a broadband receive antenna three meter from the EUT. A scan was made with an EMC Analyzer, controlled by EMC Test Software, Tile7, from 30 to 25000 MHz with the receiver in the peak mode. The receiver IF bandwidth was 120 kHz/1MHz and scan step was about 25 kHz/250kHz. To ensure that the maximum emission at each discrete frequency of interest is observed, the receive antenna is varied in height from one to four meters and rotated to produce horizontal and vertical polarities while the turntable is rotated to determine the worst emitting configuration. Measurements were then made using CISPR quasi peak when the peak readings were within 10dB of the limit line. The numerical results are included herein to demonstrate compliance.

### Test Result

- Radiated Emissions level (dB $\mu$ V/m) = Analyzer level (dB $\mu$ V) + AFCL (dB/m)
- AFCL (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) - Pre-Amplifier Gain(dB)
- Margin (dB) = Limit (dB $\mu$ V/m) - Field Strength level (dB $\mu$ V/m)

### Calculation of Radiated Emission Limits

The maximum peak output power of an intentional radiator in the 2400-2483.5 MHz band, as specified in Title 47 CFR 15.247 (b)(3) and RSS-247 is 1 Watt. The harmonic and spurious RF emissions, as measured in any 100 kHz bandwidth, as specified in 15.247 (d) and RSS-247, shall be at least 20 dB below the measured power of the desired signal, and must also meet the requirements described in 15.205(c) for FCC and section 2.2, 2.6.

The following table depicts the general radiated emission limits above 30 MHz. These limits are obtained from Title 47 CFR, Part 15.209, for radiated emissions measurements. These limits were applied to any signals found in the 15.205 restricted bands. The mentioned limits correspond to those limits listed in RSS-247.

Frequency (MHz)	3m Limit( $\mu$ V/m)	3m Limit(dBuV/m)
30-88	100(QP)	40.0(QP)
88-216	150(QP)	43.5(QP)
216-960	200(QP)	46.0(QP)
960-25000	500(AVG)/5000(PEAK)	54.0(AVG)/74.0(Peak)

Sample conversion of field strength ( $\mu$ V/m to dB $\mu$ V/m):

$$\text{dB}\mu\text{V/m} = 20 \log_{10} (100) = 40 \text{ dB}\mu\text{V/m (from 30-88 MHz)}$$

Reported data is the raw data corrected for all applicable factors such as antenna factors, cable loss, etc.

Sample reported data for 60MHz:

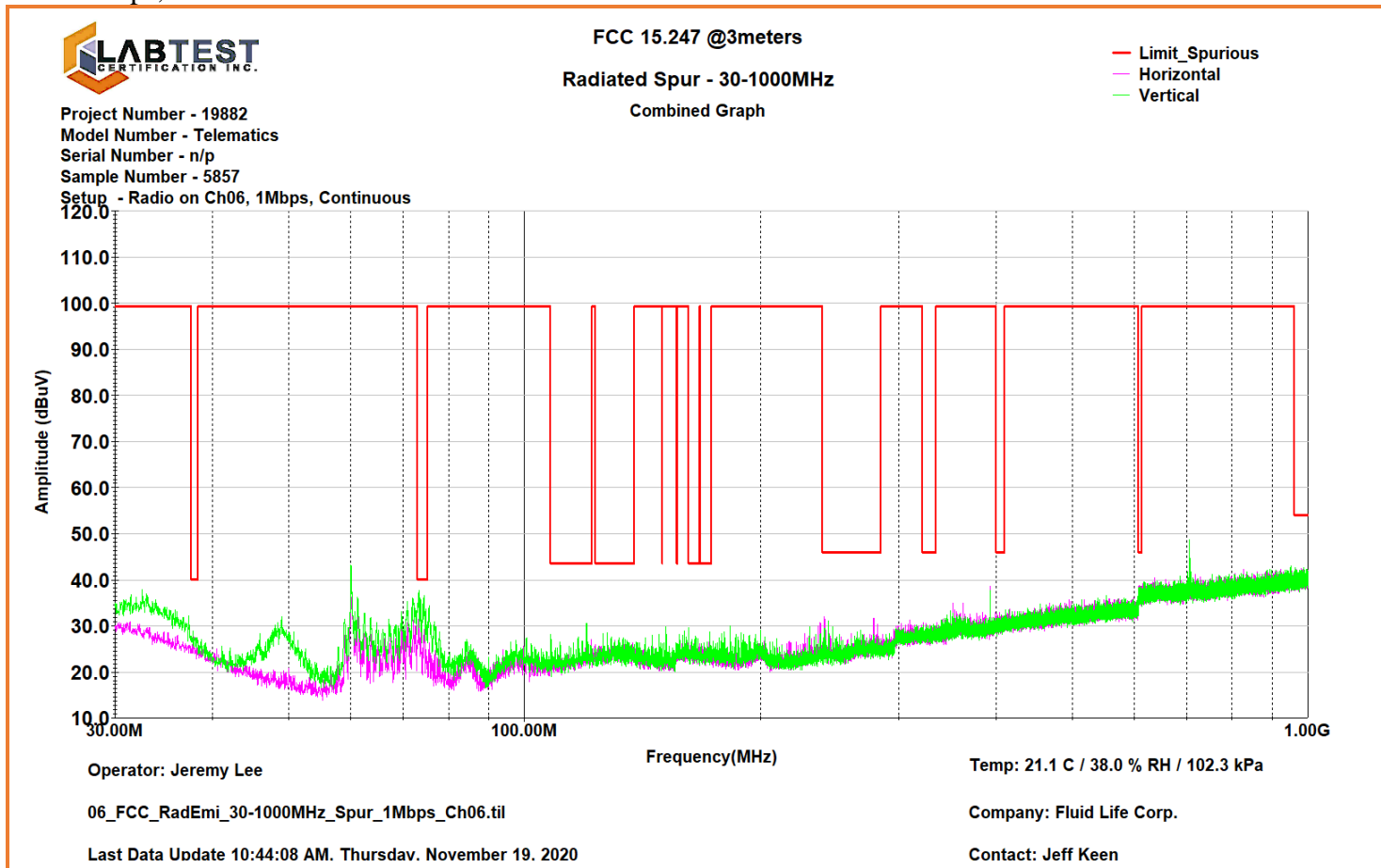
Raw Data + Antenna Factor + Cable Factor = Reported Data

$$30.41 \text{ dB}\mu\text{V/m} + 11.6 \text{ dB} + 1.15 \text{ dB} = 43.16 \text{ dB}\mu\text{V/m}$$



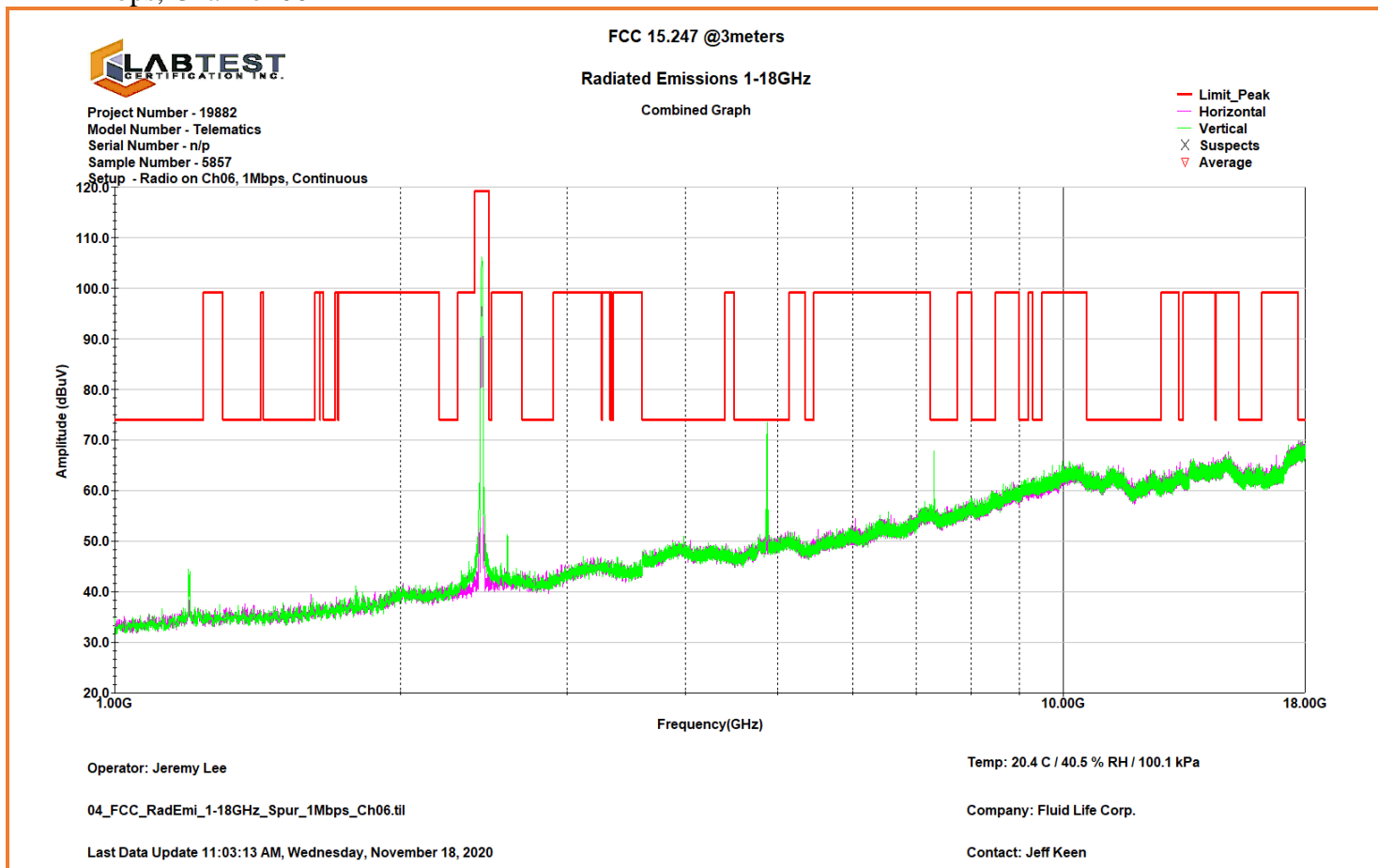
**Graphical Representation for Emission - Radiated 30to1000MHz**

- 1Mbps, Channel 06



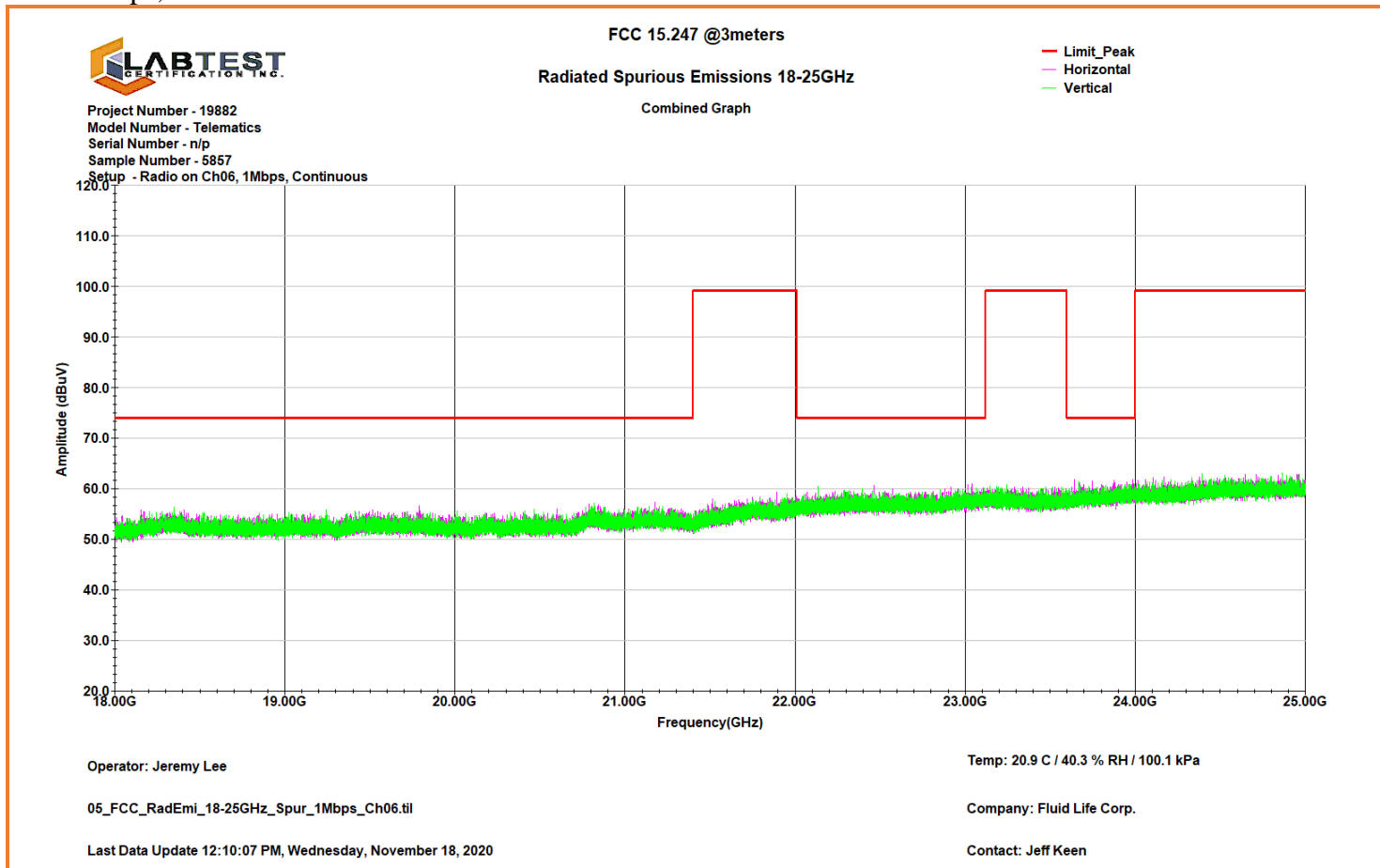
### Graphical Representation for Emission - Radiated 1 to 18GHz

- 1Mbps, Channel 06



### Graphical Representation for Emission - Radiated 18 to 25GHz

- 1Mbps, Channel 06



## AC Power Line Conducted Emissions

Governing Doc	FCC 15.207(a) & RSS-Gen	Room Temperature (°C)	21.3		
Basic Standard	ANSI C63.4	Relative Humidity (%)	40.6		
Test Location	Richmond	Barometric Pressure (kPa)	99.0		
Test Engineer	Jeremy Lee	Date	17 Nov. 2020		
EUT Voltage	<input type="checkbox"/> DC <input type="checkbox"/> 115VAC @ 60Hz				
Test Equipment Used	Manufacturer	Model	Identifier	Calibration	Calibration due
EMC Analyzer	KeySight	N9038A	702	27-May-2020	27-May-2021
LISN	Com-Power	LIN-120C	920	26-Nov-2019	26-Nov-2020
RF Cable	MRO	n/a	n/a	IHC <sup>1</sup>	IHC <sup>1</sup>
AC Power Source	California Instruments	5001i	059	IHC <sup>2</sup>	IHC <sup>2</sup>
Used Software	<input checked="" type="checkbox"/> Tile! 7 v7.3.0.6				
Used Template	_FCC_ConEmi_AC Mains_LSN120C_TRON_20200726				
Note1) In House Calibration Ref. # 6					
Note2) In House Calibration Ref. # 7					
Frequency Range:	<input checked="" type="checkbox"/> 150kHz-30MHz <input type="checkbox"/> 9-150kHz				
Detector:	<input checked="" type="checkbox"/> Peak <input type="checkbox"/> Quasi-Peak <input type="checkbox"/> Averaging				
RBW/VBW:	<input checked="" type="checkbox"/> 9/30kHz <input type="checkbox"/> 200/300Hz				
Coupling device:	<input checked="" type="checkbox"/> AMN <input type="checkbox"/> AAN <input type="checkbox"/> Current Probe <input type="checkbox"/> CVP				
Arrangement of EUT:	<input checked="" type="checkbox"/> Table-top only <input type="checkbox"/> Floor-standing only <input type="checkbox"/> Rack Mounted				
Compliant <input checked="" type="checkbox"/>	Non-Compliant <input type="checkbox"/>				

### Test Method

This test measures the levels emanating from the EUT, thus evaluating the potential for the EUT to cause radio frequency interference to other electronic devices. Testing was performed in accordance with the test standard(s) referenced in the test summary section of this report. The Equipment Under Test (EUT) was configured based upon the requirements of the applicable test standard. Initially a scan was made with an EMC Analyzer, controlled by EMC Test Software, Tile7, from 150 kHz to 30 MHz on each phase with the receiver in the peak mode. The measuring bandwidth was set up 9 kHz. Measurements were then made using CISPR16-1 quasi peak and averaging detectors when the peak readings were within 10dB of the Quasi-peak limit line.

### Test Result

- Conducted Emissions (QP/AV) level (dBµV) = Analyzer level (dBµV) + Corr. (dB)
- Corr. (dB) = Insertion Loss of LISN (dB) + Cable Loss (dB)
- Margin (dB) = QP/AV Limit (dBµV) – QP/AV level (dBµV)

### Test setup

Description of test set-up:

The EUT was placed on a 0.8m non-conducting table above a ground reference plane (GRP).  
The EUT was set to **Operation Mode #2 with configuration Mode #3 & power interface #1**

### Measurement Graphical representation for Emission

#### - Graph of Line 1(Hot)



FCC 15.207

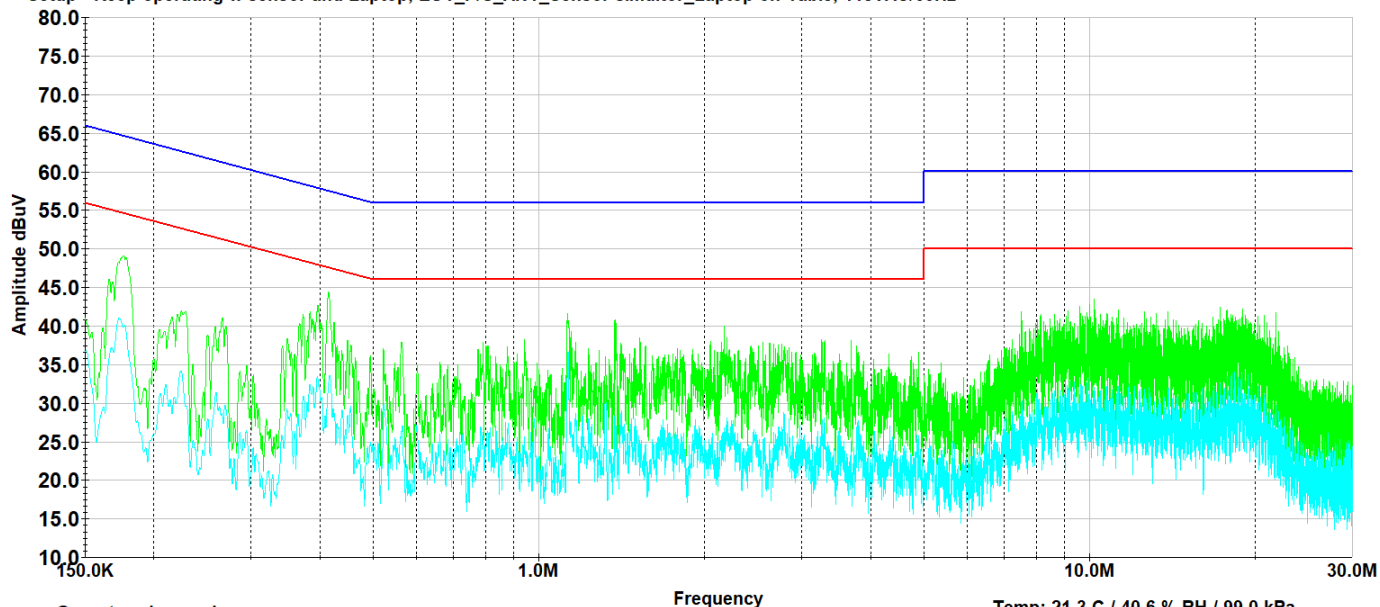
Conducted Emissions - 150K-30MHz

Line 1

- QP Limit
- Average Limit
- Line 1 Scan
- Ave Trace
- × Suspects
- ▽ QP
- ▽ Ave

Project Number - 19882  
Model Number - Telematics  
Serial Number - WWQZKL2HU3  
Sample Number - 5870

Setup - Keep operating w sensor and Laptop, EUT\_P/S\_ANT\_Sensor simulator\_Laptop on Table, 115VAC/60Hz



Operator: Jeremy Lee

Temp: 21.3 C / 40.6 % RH / 99.0 kPa

07\_FCC\_ConEmi\_AC Mains\_via PS.til

Company: Fluid Life Corp.

Last Data Update 05:46:23 PM. Wednesday, December 23, 2020

Contact: Jeff Keen

### - Graph of Line 2(Neutral)



Project Number - 19882  
Model Number - Telematics  
Serial Number - WWQZKL2HU3  
Sample Number - 5870

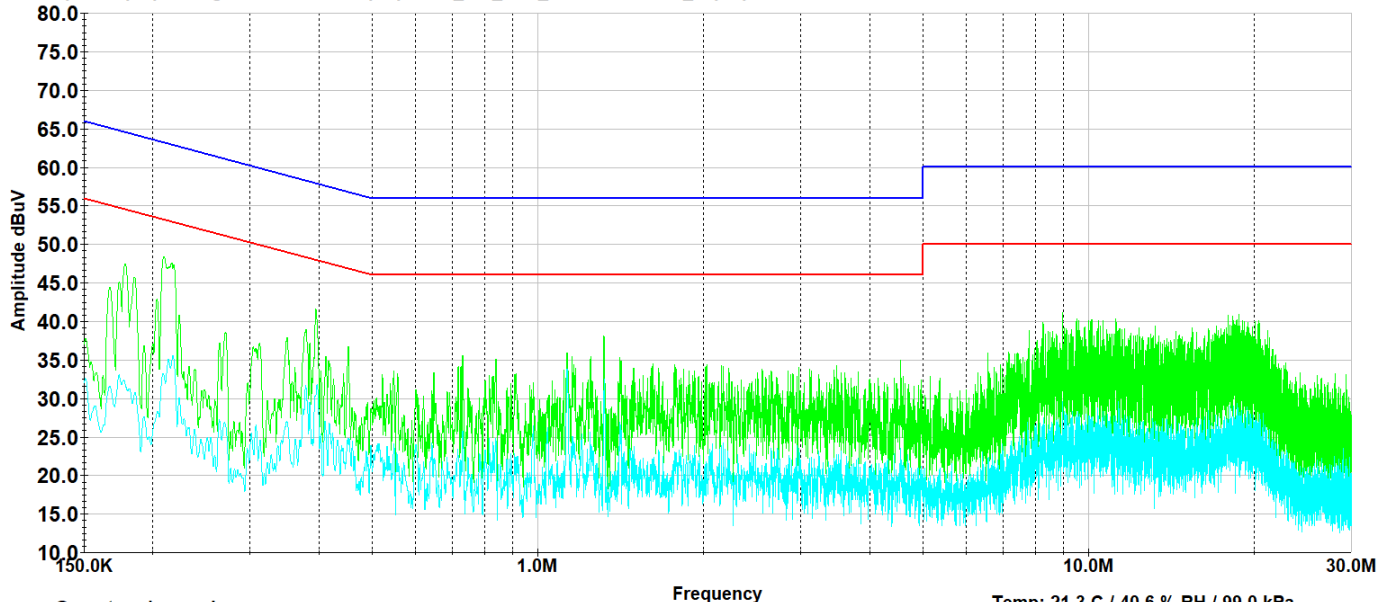
FCC 15.207

Conducted Emissions - 150K-30MHz

Line 2

- QP Limit
- Average Limit
- Line 2 Scan
- Ave Trace
- × Suspects
- ▽ QP
- ▽ Ave

Setup - Keep operating w sensor and Laptop, EUT\_P/S\_ANT\_Sensor simultor\_Laptop on Table, 115VAC/60Hz



Operator: Jeremy Lee

Temp: 21.3 C / 40.6 % RH / 99.0 kPa

07\_FCC\_ConEmi\_AC Mains\_via PS.til

Company: Fluid Life Corp.

Last Data Update 05:46:23 PM, Wednesday, December 23, 2020

Contact: Jeff Keen

## Antenna Requirement

Governing Doc	FCC 15.203	Room Temperature (°C)	
Basic Standard	n/a	Relative Humidity (%)	
Test Location	Richmond	Barometric Pressure (kPa)	
Test Engineer	Jeremy Lee	Date	
EUT Voltage	<input type="checkbox"/> DC	<input checked="" type="checkbox"/> 115VAC @ 60Hz	
Compliant <input checked="" type="checkbox"/>	Non-Compliant <input type="checkbox"/>	Not Applicable <input type="checkbox"/>	

## Results

According to §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

The EUT, MA600.A.ABC.007 is MA600 Spartan Screw mount 3in1 Combination antenna, which accordance to the above sections, is considered sufficient to comply with the provisions of these sections. Please see EUT photo for details.

The Antenna is special Antenna, which combines a 3in1GPS, Cellular and WiFi. The Antenna screws down permanently onto a roof or metal panel.



END REPORT