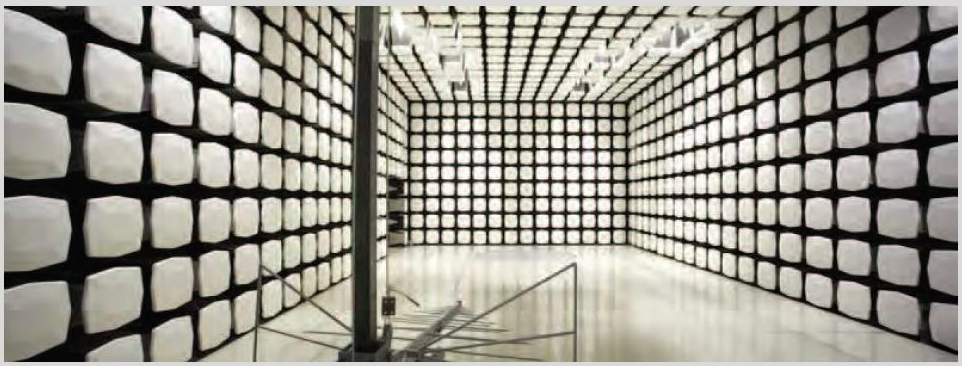
Radio Bridge, Inc.

Wireless Multifunction Sensor

FCC 15.247:2018

902 - 928 MHz Transceiver

Report # RDBR0003



NVLAP LAB CODE: 200881-0

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CERTIFICATE OF TEST

Last Date of Test: September 19, 2018
Radio Bridge, Inc.
Model: Wireless Multifunction Sensor

Radio Equipment Testing

Standards

Specification	Method
FCC 15.247:2018	ANSI C63.10:2013

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	No	N/A	Not required for a battery powered EUT.
6.5, 6.6	Spurious Radiated Emissions	Yes	Pass	
7.5	Duty Cycle	No	N/A	Not required. Covered by testing under FCC ID: VPYCMABZ
7.8.2	Carrier Frequency Separation	No	N/A	Not required. Covered by testing under FCC ID: VPYCMABZ
7.8.3	Number of Hopping Frequencies	No	N/A	Not required. Covered by testing under FCC ID: VPYCMABZ
7.8.4	Dwell Time	No	N/A	Not required. Covered by testing under FCC ID: VPYCMABZ
7.8.5	Output Power	Yes	Pass	
7.8.6	Band Edge Compliance	No	N/A	Not required. Covered by testing under FCC ID: VPYCMABZ
7.8.6	Band Edge Compliance - Hopping Mode	No	N/A	Not required. Covered by testing under FCC ID: VPYCMABZ
7.8.7	Occupied Bandwidth	No	N/A	Not required. Covered by testing under FCC ID: VPYCMABZ
7.8.8	Spurious Conducted Emissions	No	N/A	Not required. Covered by testing under FCC ID: VPYCMABZ
11.10.2	Power Spectral Density	No	N/A	Not required. Covered by testing under FCC ID: VPYCMABZ

Deviations From Test Standards

None

Approved By:

Matt Nuernberg, Operations Manager

Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information. As indicated in the Statement of Work sent with the quotation, Element's standard process is to always use the latest published version of the test methods even when earlier versions are cited in the test specification. Issuance of a purchase order was de facto acceptance of this approach. Otherwise, the client would have advised Element in writing of the specific version of the test methods they wanted applied to the subject testing.

REVISION HISTORY

Revision Number	Description	Date (yyyy-mm-dd)	Page Number
00	None		

ACCREDITATIONS AND AUTHORIZATIONS

United States

FCC - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

A2LA - Accredited by A2LA to ISO / IEC 17065 as a product certifier. This allows Element to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

ISED - Recognized by Innovation, Science and Economic Development Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with ISED.

European Union

European Commission – Within Element, we have a EU Notified Body validated for the EMCD and RED Directives.

Australia/New Zealand

ACMA - Recognized by ACMA as a CAB for the acceptance of test data.

Korea

MSIT / RRA - Recognized by KCC's RRA as a CAB for the acceptance of test data.

Japan

VCCI - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

Taiwan

BSMI – Recognized by BSMI as a CAB for the acceptance of test data.

NCC - Recognized by NCC as a CAB for the acceptance of test data.

Singapore

IDA – Recognized by IDA as a CAB for the acceptance of test data.

Israel

MOC – Recognized by MOC as a CAB for the acceptance of test data.

Hong Kong

OFCA – Recognized by OFCA as a CAB for the acceptance of test data.

Vietnam

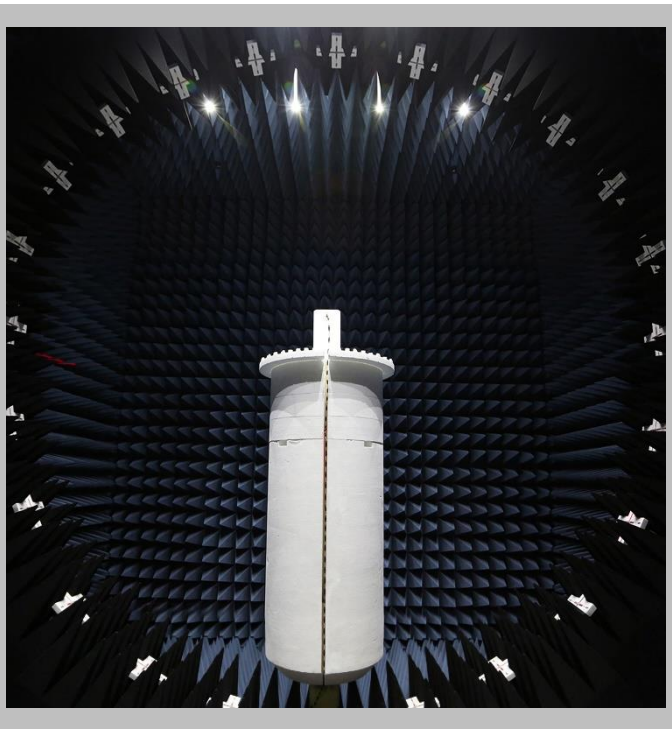
MIC – Recognized by MIC as a CAB for the acceptance of test data.

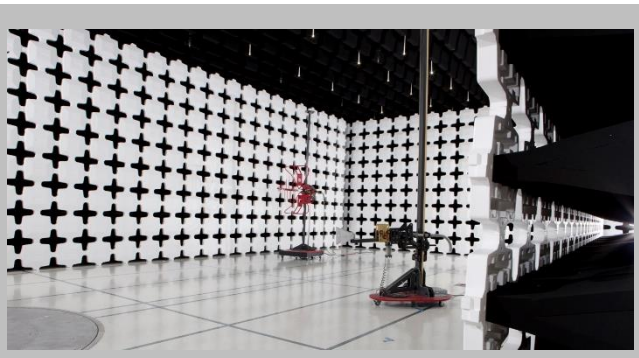
SCOPE

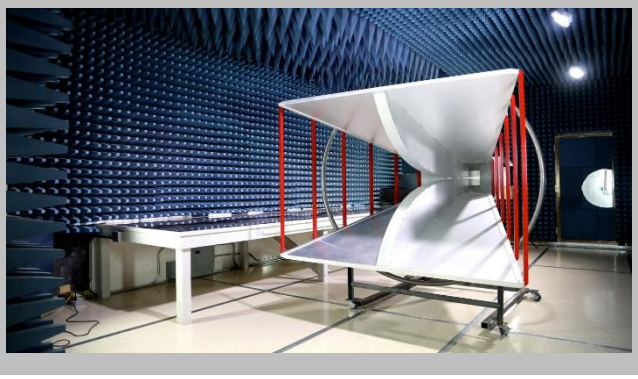
For details on the Scopes of our Accreditations, please visit:
https://www.nwemc.com/emc-testing-accreditations

FACILITIES

California	Minnesota	New York	Oregon	Texas	Washington
Labs OC01-17 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs MN01-10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214	Labs EV01-12 6775 NE Evergreen Pkwy #400 Hillsboro, OR 97124 (503) 844-4066	Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Labs NC01-05 19201 120th Ave NE Bothell, WA 98011 (425)984-6600
NVLAP					
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200761-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code:201049-0	NVLAP Lab Code: 200629-0
Innovation, Science and Economic Development Canada					
2834B-1, 2834B-3	2834E-1, 2834E-3	N/A	2834D-1, 2834D-*2*	2834G-1	2834F-1
BSMI					
SL2-IN-E-1154R	SL2-IN-E-1152R	N/A	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI					
A-0029	A-0109	N/A	A-0108	A-0201	A-0110
Recognized Phase I CAB for ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA					
US0158	US0175	N/A	US0017	US0191	US0157







MEASUREMENT UNCERTAINTY

element
TMU.2015.07.10

Measurement Uncertainty

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

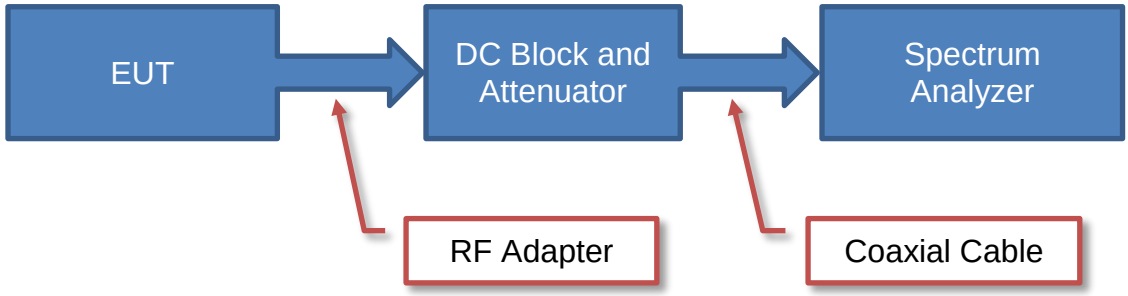
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable test description page. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-2 as applicable), and are available upon request.

The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

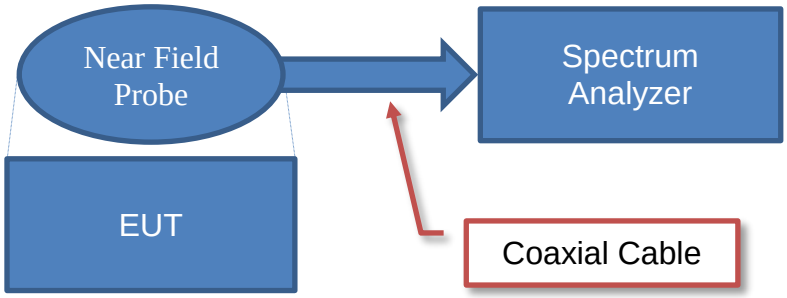
Test	+ MU	- MU
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.2 dB	-5.2 dB
AC Powerline Conducted Emissions (dB)	2.4 dB	-2.4 dB

Test Setup Block Diagrams

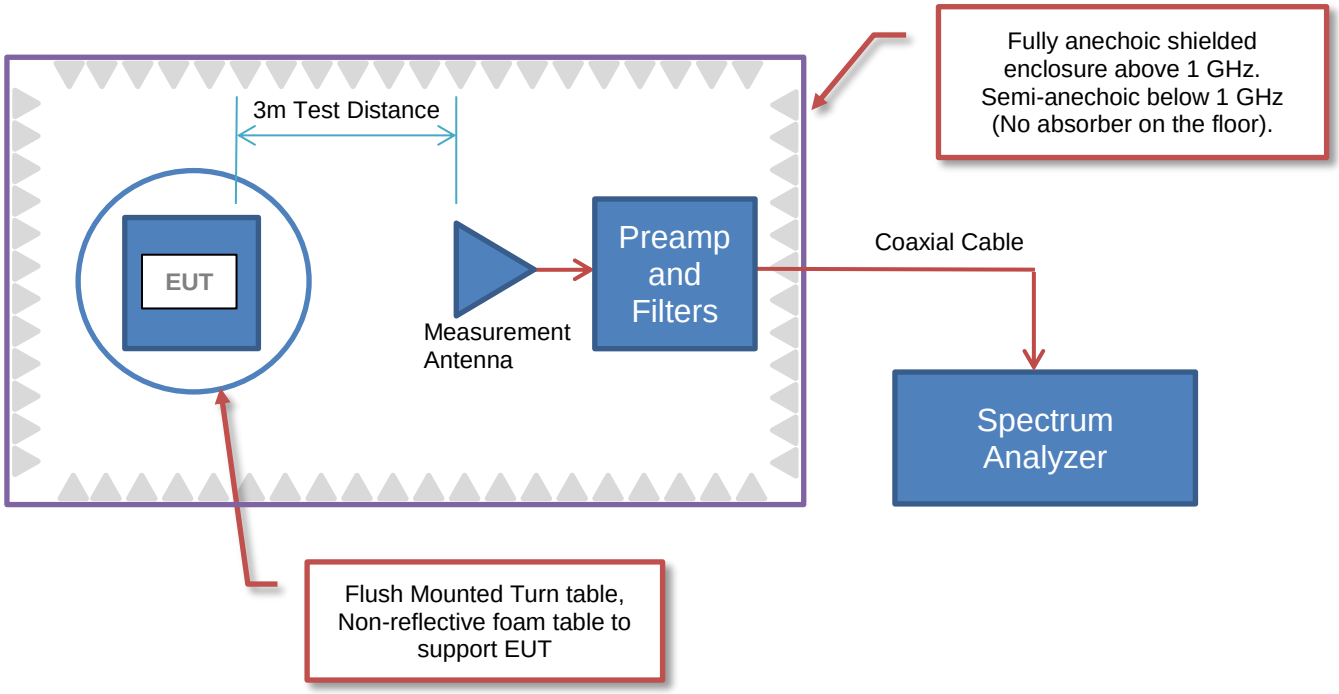
Antenna Port Conducted Measurements



Near Field Test Fixture Measurements



Spurious Radiated Emissions



PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Radio Bridge, Inc.
Address:	6272 Boone Ave N
City, State, Zip:	Brooklyn Park, MN 55428
Test Requested By:	Mike Fette
Model:	Wireless Multifunction Sensor
First Date of Test:	September 17, 2018
Last Date of Test:	September 19, 2018
Receipt Date of Samples:	August 22, 2018
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
The wireless acceleration-based movement sensor uses an internal accelerometer to detect movement of an asset. When motion is detected that exceeds a certain threshold, an alert is sent over the wireless network. Versions of the sensor support the major LPWAN standards such as Sigfox, LoRa/LoRaWAN, and SubGig.

Testing Objective:
Seeking to demonstrate compliance under FCC 15.247:2018 for operation in the 902 - 928 MHz Band through a Class 2 Permissive Change (C2PC) to the limited modular approval Grant for adding a new host and new antenna.

CONFIGURATIONS

Configuration RDBR0003- 1

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Wireless Multifunction Sensor (LoRa)	Radio Bridge, Inc.	RBS-301	L2

Configuration RDBR0003- 2

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Wireless Multifunction Sensor (LoRa)	Radio Bridge, Inc.	RBS-301	L3

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2018-09-17	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
2	2018-09-19	Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

SPURIOUS RADIATED EMISSIONS

PSA-ESCI 2018.05.04

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting LoRa 125kHz at 902.3 MHz (low channel), 908.5 MHz (mid channel), and 914.9 MHz (high channel)

POWER SETTINGS INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

RDBR0003 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	12400 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Filter - Band Pass/Notch	K&L Microwave	3TNF-500/1000-N/N	HGS	31-Jul-2018	12 mo
Filter - Low Pass	Micro-Tronics	LPM50003	LFJ	20-Sep-2017	12 mo
Filter - High Pass	Micro-Tronics	HPM50108	LFM	20-Sep-2017	12 mo
Attenuator	Fairview Microwave	SA18E-10	TYA	20-Sep-2017	12 mo
Attenuator	Fairview Microwave	SA18E-20	TWZ	20-Sep-2017	12 mo
Cable	ESM Cable Corp.	Standard Gain Horn Cables	MNJ	12-Jul-2018	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVV	13-Feb-2018	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AXP	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVT	13-Feb-2018	12 mo
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	21-Nov-2017	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AJA	27-Jun-2018	24 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AVO	9-Nov-2017	12 mo
Cable	ESM Cable Corp.	Bilog Cables	MNH	9-Nov-2017	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYD	25-Jan-2018	24 mo
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFN	27-Apr-2018	12 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies and the modes as showed in the data sheets.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These “pre-scans” are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector
PK = Peak Detector
AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Measurements at the edges of the allowable band may be presented in an alternative method as provided for in the ANSI C63.10 Marker-Delta method. This method involves performing an in-band fundamental measurement followed by a screen capture of the fundamental and out-of-band emission using reduced measurement instrumentation bandwidths. The amplitude delta measured on this screen capture is applied to the fundamental emission value to show the out-of-band emission level as applied to the limit.

Where the radio test software does not provide for a duty cycle at continuous transmit conditions (> 98%) and the RMS (power average) measurements were made across the on and off times of the EUT transmissions, a duty cycle correction is added to the measurements using the formula of 10*LOG(dc).

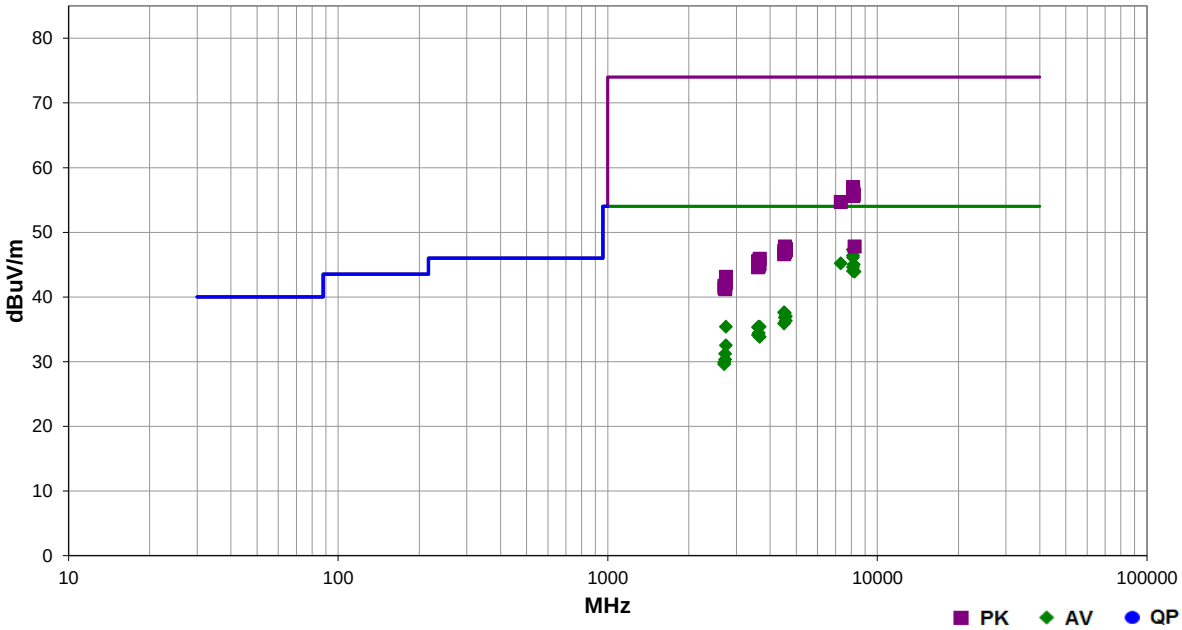
SPURIOUS RADIATED EMISSIONS

EmiR5 2018.05.07 PSA-ESCI 2018.05.04

Work Order:	RDBR0003	**Date:**	17-Sep-2018		
Project:	None	**Temperature:**	23.1 °C		
Job Site:	MN05	**Humidity:**	51% RH		
Serial Number:	L2	**Barometric Pres.:**	1015 mbar	**Tested by:**	Dustin Sparks
EUT:	Wireless Multifunction Sensor				
Configuration:	1				
Customer:	Radio Bridge, Inc.				
Attendees:	Michael Fette				
EUT Power:	Battery				
Operating Mode:	Transmitting LoRa 125kHz at 902.3 MHz (low channel), 908.5 MHz (mid channel), and 914.9 MHz (high channel)				
Deviations:	None				
Comments:	None				

Test Specifications	**Test Method**
FCC 15.247:2018	ANSI C63.10:2013

Run #	35	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
8120.842	34.9	12.4	3.0	61.0	0.1	0.0	Vert	AV	0.0	47.3	54.0	-6.7	Low ch, EUT horizontal
8120.867	34.9	12.4	1.1	57.0	0.1	0.0	Horz	AV	0.0	47.3	54.0	-6.7	Low ch, EUT on side
8121.017	34.0	12.4	2.9	26.1	0.1	0.0	Vert	AV	0.0	46.4	54.0	-7.6	Low ch, EUT vertical
8120.875	33.7	12.4	3.5	70.1	0.1	0.0	Horz	AV	0.0	46.1	54.0	-7.9	Low ch, EUT vertical
7319.133	34.5	10.6	3.0	138.1	0.1	0.0	Horz	AV	0.0	45.2	54.0	-8.8	High ch, EUT on side
8176.475	32.2	12.7	1.0	246.9	0.1	0.0	Horz	AV	0.0	45.0	54.0	-9.0	Mid ch, EUT on side
8120.658	32.2	12.4	1.0	37.1	0.1	0.0	Vert	AV	0.0	44.6	54.0	-9.4	Low ch, EUT on side
8120.733	31.6	12.4	1.0	348.9	0.1	0.0	Horz	AV	0.0	44.0	54.0	-10.0	Low ch, EUT horizontal
8234.083	50.7	-6.9	2.1	176.0	0.1	0.0	Horz	AV	0.0	43.9	54.0	-10.1	High ch, EUT on side
4511.650	34.6	2.9	1.0	289.9	0.1	0.0	Vert	AV	0.0	37.6	54.0	-16.4	Low ch, EUT horizontal
4542.592	34.3	3.1	1.0	314.0	0.1	0.0	Vert	AV	0.0	37.5	54.0	-16.5	Mid ch, EUT horizontal
4574.783	33.6	3.3	3.0	5.1	0.1	0.0	Vert	AV	0.0	37.0	54.0	-17.0	High ch, EUT horizontal
8120.933	44.6	12.4	1.1	57.0		0.0	Horz	PK	0.0	57.0	74.0	-17.0	Low ch, EUT on side
4542.517	33.6	3.1	1.0	325.0	0.1	0.0	Horz	AV	0.0	36.8	54.0	-17.2	Mid ch, EUT on side
8120.017	44.1	12.4	3.0	61.0		0.0	Vert	PK	0.0	56.5	74.0	-17.5	Low ch, EUT horizontal
4574.508	32.9	3.3	1.0	115.0	0.1	0.0	Horz	AV	0.0	36.3	54.0	-17.7	High ch, EUT on side
8121.417	43.6	12.4	1.0	348.9		0.0	Horz	PK	0.0	56.0	74.0	-18.0	Low ch, EUT horizontal
8120.767	43.6	12.4	3.5	70.1		0.0	Horz	PK	0.0	56.0	74.0	-18.0	Low ch, EUT vertical

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
8120.658	43.6	12.4	2.9	26.1		0.0	Vert	PK	0.0	56.0	74.0	-18.0	Low ch, EUT vertical
4511.567	32.9	2.9	1.0	102.1	0.1	0.0	Horz	AV	0.0	35.9	54.0	-18.1	Low ch, EUT on side
8176.075	43.1	12.7	1.0	246.9		0.0	Horz	PK	0.0	55.8	74.0	-18.2	Mid ch, EUT on side
8120.058	43.2	12.4	1.0	37.1		0.0	Vert	PK	0.0	55.6	74.0	-18.4	Low ch, EUT on side
3634.083	35.6	-0.3	1.0	318.9	0.1	0.0	Vert	AV	0.0	35.4	54.0	-18.6	Mid ch, EUT horizontal
2744.600	38.7	-3.4	3.9	358.9	0.1	0.0	Vert	AV	0.0	35.4	54.0	-18.6	High ch, EUT horizontal
3659.542	35.3	0.0	1.1	133.0	0.1	0.0	Horz	AV	0.0	35.4	54.0	-18.6	High ch, EUT on side
3609.275	35.5	-0.3	1.8	67.0	0.1	0.0	Horz	AV	0.0	35.3	54.0	-18.7	Low ch, EUT on side
7319.517	44.1	10.6	3.0	138.1		0.0	Horz	PK	0.0	54.7	74.0	-19.3	High ch, EUT on side
3634.075	34.6	-0.3	1.0	342.0	0.1	0.0	Horz	AV	0.0	34.4	54.0	-19.6	Mid ch, EUT on side
3609.075	34.3	-0.3	1.0	351.9	0.1	0.0	Vert	AV	0.0	34.1	54.0	-19.9	Low ch, EUT horizontal
3659.858	33.7	0.0	1.0	180.0	0.1	0.0	Vert	AV	0.0	33.8	54.0	-20.2	High ch, EUT horizontal
2744.658	35.7	-3.3	1.0	27.0	0.1	0.0	Horz	AV	0.0	32.5	54.0	-21.5	High ch, EUT on side
2725.408	34.5	-3.4	1.0	5.1	0.1	0.0	Horz	AV	0.0	31.2	54.0	-22.8	Mid ch, EUT on side
2725.425	33.6	-3.4	1.0	178.1	0.1	0.0	Vert	AV	0.0	30.3	54.0	-23.7	Mid ch, EUT horizontal
2704.850	33.2	-3.4	1.0	274.0	0.1	0.0	Vert	AV	0.0	29.9	54.0	-24.1	Low ch, EUT horizontal
2704.983	32.9	-3.4	1.0	271.0	0.1	0.0	Horz	AV	0.0	29.6	54.0	-24.4	Low ch, EUT on side
8234.175	54.7	-6.9	2.1	176.0		0.0	Horz	PK	0.0	47.8	74.0	-26.2	High ch, EUT on side
4542.692	44.7	3.1	1.0	314.0		0.0	Vert	PK	0.0	47.8	74.0	-26.2	Mid ch, EUT horizontal
4576.625	44.1	3.3	1.0	115.0		0.0	Horz	PK	0.0	47.4	74.0	-26.6	High ch, EUT on side
4574.483	43.9	3.3	3.0	5.1		0.0	Vert	PK	0.0	47.2	74.0	-26.8	High ch, EUT horizontal
4511.392	44.2	2.9	1.0	289.9		0.0	Vert	PK	0.0	47.1	74.0	-26.9	Low ch, EUT horizontal
4542.508	43.8	3.1	1.0	325.0		0.0	Horz	PK	0.0	46.9	74.0	-27.1	Mid ch, EUT on side
4511.150	43.7	2.9	1.0	102.1		0.0	Horz	PK	0.0	46.6	74.0	-27.4	Low ch, EUT on side
3659.608	45.9	0.0	1.1	133.0		0.0	Horz	PK	0.0	45.9	74.0	-28.1	High ch, EUT on side
3633.425	45.9	-0.3	1.0	318.9		0.0	Vert	PK	0.0	45.6	74.0	-28.4	Mid ch, EUT horizontal
3609.642	45.8	-0.3	1.8	67.0		0.0	Horz	PK	0.0	45.5	74.0	-28.5	Low ch, EUT on side
3658.100	45.1	0.0	1.0	180.0		0.0	Vert	PK	0.0	45.1	74.0	-28.9	High ch, EUT horizontal
3634.492	45.1	-0.3	1.0	342.0		0.0	Horz	PK	0.0	44.8	74.0	-29.2	Mid ch, EUT on side
3608.567	44.9	-0.3	1.0	351.9		0.0	Vert	PK	0.0	44.6	74.0	-29.4	Low ch, EUT horizontal
2745.008	46.4	-3.3	3.9	358.9		0.0	Vert	PK	0.0	43.1	74.0	-30.9	High ch, EUT horizontal
2745.225	45.5	-3.3	1.0	27.0		0.0	Horz	PK	0.0	42.2	74.0	-31.8	High ch, EUT on side
2708.000	45.1	-3.4	1.0	274.0		0.0	Vert	PK	0.0	41.7	74.0	-32.3	Low ch, EUT horizontal
2725.467	45.1	-3.4	1.0	5.1		0.0	Horz	PK	0.0	41.7	74.0	-32.3	Mid ch, EUT on side
2708.600	44.8	-3.4	1.0	271.0		0.0	Horz	PK	0.0	41.4	74.0	-32.6	Low ch, EUT on side
2725.558	44.6	-3.4	1.0	178.1		0.0	Vert	PK	0.0	41.2	74.0	-32.8	Mid ch, EUT horizontal

OUTPUT POWER

XMit 2017.12.13

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	E4422B	TGQ	15-Mar-18	15-Mar-21
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	15-Mar-18	15-Mar-19
Attenuator	S.M. Electronics	SA26B-20	RFW	13-Feb-18	13-Feb-19
Block - DC	Fairview Microwave	SD3379	AMI	7-Sep-18	7-Sep-19
Analyzer - Spectrum Analyzer	Keysight	N9010A (EXA)	AFQ	19-Dec-17	19-Dec-18

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum.

Prior to measuring peak transmit power the DTS bandwidth (B) was measured.

The method found in ANSI C63.10:2013 Section 11.9.1.1 was used because the RBW on the analyzer was greater than the DTS Bandwidth of the radio.

De Facto EIRP Limit: The EUT meets the de facto EIRP limit of +36 dBm.

OUTPUT POWER

TbtTx 2018.06.19 XMit 2017.12.13

EUT:	Wireless Multifunction Sensor			Work Order:	RDBR0003
Serial Number:	L3			Date:	19-Sep-18
Customer:	Radio Bridge, Inc.			Temperature:	23.1 °C
Attendees:	Michael Fette			Humidity:	48.5% RH
Project:	None			Barometric Pres.:	1018 mbar
Tested by:	Dustin Sparks	Power:	Battery	Job Site:	MN08

TEST SPECIFICATIONS	Test Method
FCC 15.247:2018	ANSI C63.10:2013

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

Configuration #	2	Signature

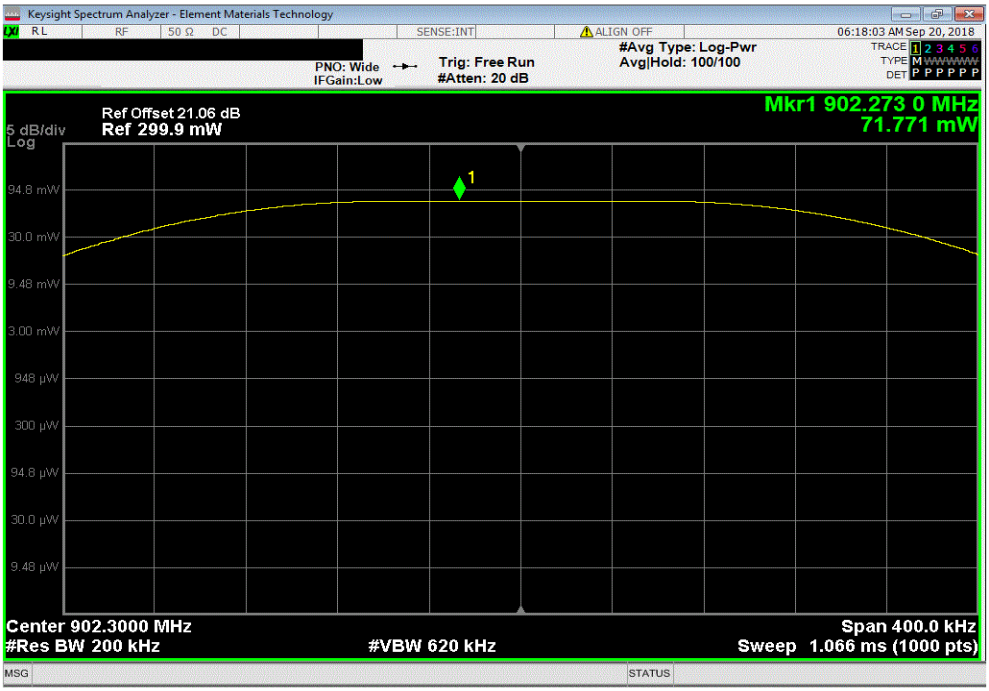
	Value	Limit (<)	Result
LoRa 125kHz - Low Channel (902.3 MHz)	71.771 mW	1 W	Pass
LoRa 125kHz - Mid Channel (908.5 MHz)	70.808 mW	1 W	Pass
LoRa 125kHz - High Channel (914.9 MHz)	70.228 mW	1 W	Pass

OUTPUT POWER

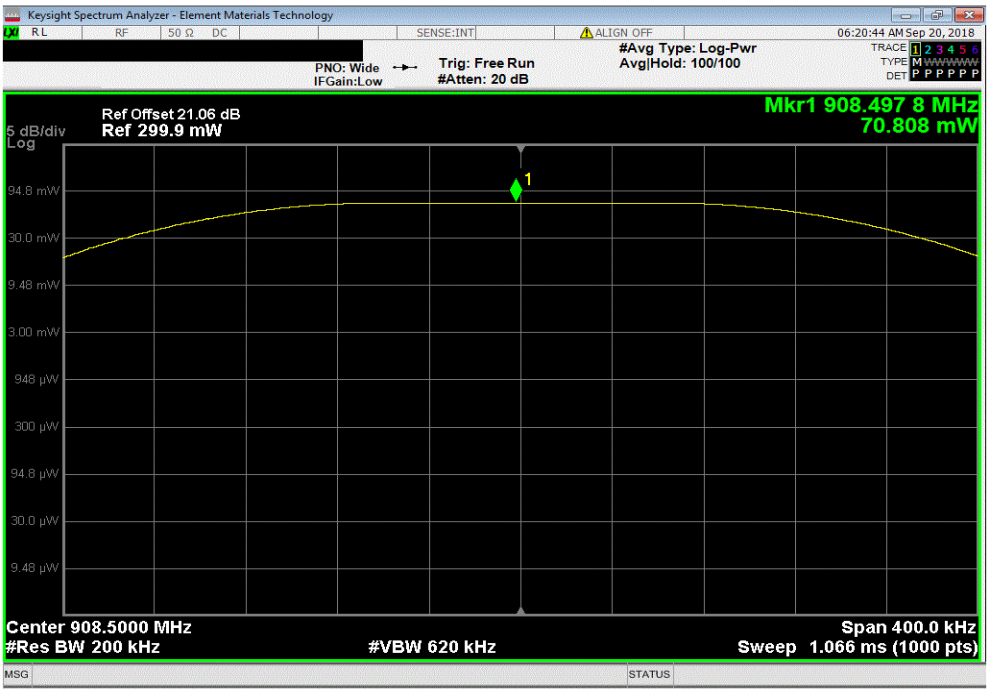
element

TbtTx 2018.06.19 XMit 2017.12.13

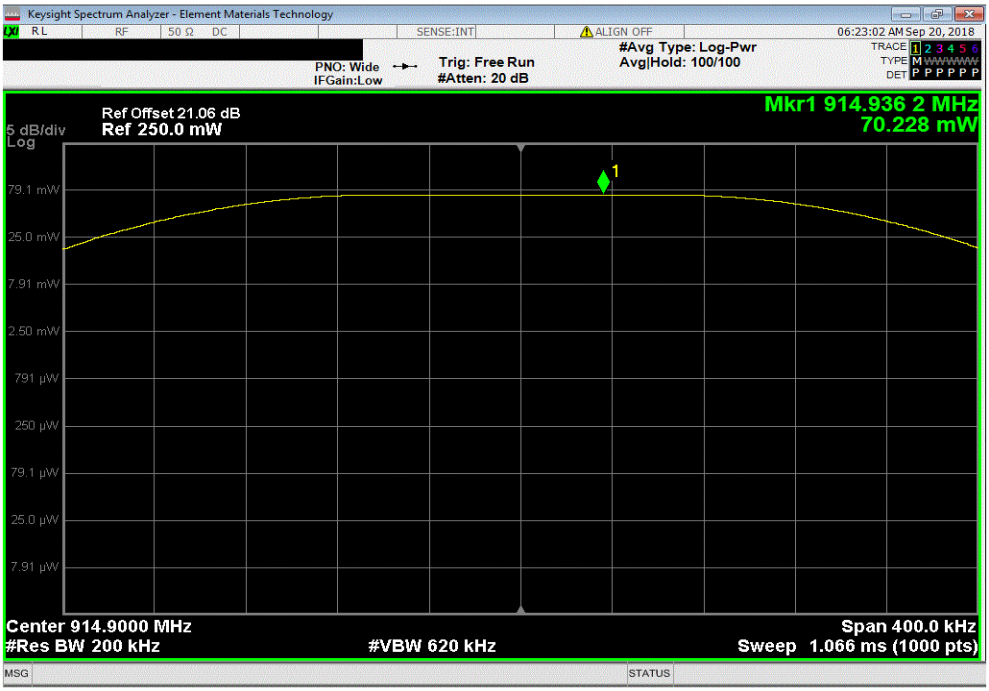
LoRa 125kHz - Low Channel (902.3 MHz)						
				Value	Limit (<)	Result
				71.771 mW	1 W	Pass



LoRa 125kHz - Mid Channel (908.5 MHz)						
				Value	Limit (<)	Result
				70.808 mW	1 W	Pass



OUTPUT POWER

TbtTx 2018.06.19 XMit 2017.12.13

LoRa 125kHz - High Channel (914.9 MHz)						
				Value	Limit (<)	Result
				70.228 mW	1 W	Pass