Report Number: D20802P1

Panic Button Model: WST-131

FCC PART 15, SUBPART B and C; FCC 15.231; RSS-210 and RSS GEN TEST REPORT

for

PANIC BUTTON

Model: WST-131

Prepared for

ECOLINK INTELLIGENT TECHNOLOGY, INC. 2055 CORTE DEL NOGAL CARLSBAD, CALIFORNIA 92011

Prepared by:

JAMES ROSS

KYLE FUJIMOTO

COMPATIBLE ELECTRONICS INC. 20621 PASCAL WAY LAKE FOREST, CALIFORNIA 92630 (714) 579-0500

DATE: JANUARY 20, 2023

	REPORT		APPENDICES			TOTAL	
	BODY	A	В	С	D	E	
PAGES	22	2	2	2	13	29	70

This report shall not be reproduced except in full, without the written approval of Compatible Electronics.



TABLE OF CONTENTS

Section / Title	PAGE
GENERAL REPORT SUMMARY	4
SUMMARY OF TEST RESULTS	5
1. PURPOSE	6
1.1 Decision Rule & Risk	7
2. ADMINISTRATIVE DATA	8
2.1 Location of Testing	8
2.2 Traceability Statement	8
2.3 Cognizant Personnel	8
2.4 Date Test Sample was Received	8
2.5 Disposition of the Test Sample	8
2.6 Abbreviations and Acronyms	8
3. APPLICABLE DOCUMENTS	9
4. DESCRIPTION OF TEST CONFIGURATION	10
4.1 Description of Test Configuration – Emissions	10
4.1.1 Cable Construction and Termination	10
5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT	11
5.1 EUT, Accessory List	11
5.2 Emissions Test Equipment, and Software/Title	12
6. TEST SITE DESCRIPTION	13
6.1 Test Facility Description	13
6.2 EUT Mounting, Bonding and Grounding	13
6.3 Measurement Uncertainty	13
7. TEST PROCEDURES	14
7.1 RF Emissions	14
7.1.1 Conducted Emissions Test	14
7.1.2 Radiated Emissions Test	15
7.1.3 RF Emissions Test Results	17
7.1.4 Sample Calculations	18
7.1.5 Duty Cycle Calculation	19
7.1.6 99 % Bandwidth	20
7.1.7 -20 dB Bandwidth	20
7.1.8 Transmission Time	21
7.1.9 Variation of the Input Power	21
8. CONCLUSIONS	22

LIST OF APPENDICES

APPENDIX	TITLE		
A	Laboratory Accreditations and Recognitions		
В	Modifications to the EUT		
С	Models Covered Under This Report		
D	Diagrams, Charts, and Photos		
	Test Setup Diagrams		
	Antenna and Effective Gain Factors		
	• Emissions Photos		
Е	Data Sheets		

LIST OF FIGURES

FIGURE	TITLE	
1	Conducted Emissions Test Setup	
2	Layout of the Semi-Anechoic Test Chamber	

LIST OF TABLES

TABLE	TITLE
1	Radiated Emission Results

GENERAL REPORT SUMMARY

This electromagnetic emission test report is generated by Compatible Electronics Inc., which is an independent testing and consulting firm. The test report is based on testing performed by Compatible Electronics personnel according to the measurement procedures described in the test specifications given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced without the written permission of Compatible Electronics, unless done so in full.

This report must not be used by the client to claim product certification, approval or endorsement by NVLAP, NIST or any agency of the United States government.

Device Tested: Panic Button

Model: WST-131

S/N: N/A

The equipment under test is a Panic Button that uses RF technology. Product Description:

The transmit frequency is 319.50 MHz.

The clock oscillators are 4 MHz and 9.984375 MHz. Dimensions: 3.4 cm x 3.4 cm x 1.03 cm (approximately).

Modifications: The EUT was not modified to meet the specifications.

Customer: Ecolink Intelligent Technology, Inc.

> 2055 Corte Del Nogal Carlsbad, California 92011

Test Dates: August 1 and 2, 2022; and January 17, 2023

Test Specifications covered by accreditation:

Test Specifications: Emissions requirements

CFR Title 47, Part 15, Subpart B;

CFR Title 47, Part 15, Subpart C, sections 15.205, 15.207, 15.209, and 15.231;

RSS-210 and RSS-Gen



Test Procedures: ANSI C63.4 and ANSI C63.10

Test Deviations: The test procedure was not deviated from during the testing.

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 150 kHz – 30 MHz	This test was not performed because the EUT operates on internal battery power only and cannot be plugged into the AC public mains.
2	Spurious Radiated RF Emissions, 9 kHz – 3.195 GHz (Transmitter and Digital portion)	Complies with the Class B limits of CFR Title 47, Part 15 Subpart B; the limits of CFR Title 47, Part 15 Subpart C, sections 15.205, 15.209, and 15.231; and the limits of RSS-210 and RSS-Gen Highest reading in relation to spec limit 44.30 dBuV/m (QP) @ 1278.00 MHz (*U = 3.59 dB)
3	-20 dB Bandwidth	Complies with limits of CFR Title 47, Part 15 Subpart C, section 15.231 (c); and the limits of RSS-210
4	Transmission Time	Complies with limits of CFR Title 47, Part 15 Subpart C, section 15.231 (a)(1) and (a)(2); and the limits of RSS-210

^{*}U = Expanded Uncertainty with a coverage factor of k=2

Report Number: D20802P1 Page 6 of 22



Panic Button Model: WST-131

1. **PURPOSE**

This document is a qualification test report based on the emissions tests performed on the Panic Button, Model: WST-131. The emissions measurements were performed according to the measurement procedure described in ANSI C63.4 and ANSI C63.10. The tests were performed to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the Class B specification limits defined by CFR Title 47, Part 15 Subpart B section, 15.109; the specification limits defined by CFR Title 47, Part 15 Subpart C sections 15.205, 15.209 and 15.231; and the specifications limits defined by RSS-210 and RSS-Gen.

Report Number: **D20802P1**

1.1 Decision Rule & Risk

If a measured value exceeds a specification limit it implies non-compliance. If the value is below a specification limit it implies compliance. Measurement uncertainty of the laboratory is reported with all measurement results but generally not taken into consideration unless a standard, rule or law requires it to be considered.

Qualification test reports are only produced for products that are in compliance with the test requirements, therefore results are always in conformity. Otherwise, an engineering report or just the data is provided to the customer.

When performing a measurement and making a statement of conformity, in or out-of-specification to manufacturer's specifications or Pass/Fail against a requirement, there are two possible outcomes:

- The result is reported as conforming with the specification
- The result is reported as not conforming with the specification

The decision rule is defined below.

When the test result is found to be below the limit but within our measurement uncertainty of the limit, it is our policy that the final acceptance decision is left to the customer, after discussing the implications and potential risks of the decision.

When the test result is found to be exactly on the specification, it is our policy, in the case of unwanted emissions measurements to consider the result non-compliant, however, the final decision is left to the customer, after discussing the implications and potential risks of the decision.

When the test result is found to be over the specification limit under any condition, it is our policy to consider the result non-compliant.

In terms of uncertainty of measurement, the laboratory is a calibrated and tightly controlled environment and generally exceptionally stable, the measurement uncertainties are evaluated without the considering of the test sample. When it comes to the test sample however, as most testing is performed on a single sample rather than a sample population, and that sample is often a preproduction representation of the final product, that test sample represents a significantly higher source of measurement uncertainty. We advise our customers of this and that when in doubt (small test to limit margins), they may wish to perform statistical sampling on a population to gain a higher confidence in the results. All lab reported results are that of a single sample in any event.

Report Number: D20802P1
FCC Part 15 Subpart B and C; FCC Section 15.231; and RSS-210 and RSS-GEN Test Report

OMPATIBLE

Report Number: D20802P1

Panic Button

Model: WST-131

2. ADMINISTRATIVE DATA

2.1 Location of Testing

The emissions tests described herein were performed at the test facility of Compatible Electronics, 20621 Pascal Way, Lake Forest, California 92630.

2.2 Traceability Statement

The calibration certificates of all test equipment used during the test are on file at the location of the test. The calibration is traceable to the National Institute of Standards and Technology (NIST).

2.3 Cognizant Personnel

Ecolink Intelligent Technology, Inc.

David Shepard Product Compliance/QA Specialist

Jay Stone Director of Engineering

Compatible Electronics Inc.

Tom Szynal Test Engineer
Kyle Fujimoto Senior Test Engineer
James Ross Senior Test Engineer

2.4 Date Test Sample was Received

The test sample was received prior to the initial test date of testing in this report.

2.5 Disposition of the Test Sample

The test sample has not been returned to Ecolink Intelligent Technology, Inc. as of the date of this report.

2.6 Abbreviations and Acronyms

The following abbreviations and acronyms may be used in this document.

EMI Electromagnetic Interference EUT Equipment Under Test

P/N Part Number S/N Serial Number

FCC Federal Communications Commission

DoC Declaration of Conformity

N/A Not Applicable
Tx Transmit
Rx Receive
Inc. Incorporated

RSS Radio Standards Specification

RF Radio Frequency
BLE Bluetooth Low Energy
CFR Code of Federal Regulations

PCB Printed Circuit Board DC Direct Current

LED Light Emitting Diode

APPLICABLE DOCUMENTS 3.

The following documents are referenced or used in the preparation of this emission Test Report.

SPEC	TITLE	
FCC Title 47, Part 15 Subpart B	FCC Rules – Radio frequency devices (including digital devices) – Unintentional Radiators	
FCC Title 47, Part 15 Subpart C	FCC Rules – Radio frequency devices (including digital devices) – Intentional Radiators	
RSS-210 Issue 10: 2019 + Amendment (April 2020)	License-exempt Radio Apparatus: Category I Equipment	
RSS-Gen Issue 5: 2018 + Amendment 1: 2019 + Amendment 2: 2021	General Requirements for Compliance of Radio Apparatus	
ANSI C63.4: 2014	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	
ANSI C63.10: 2013	American National Standard of procedure for compliance testing of unlicensed wireless devices	

Report Number: **D20802P1** Page 10 of 22

Panic Button Model: WST-131

DESCRIPTION OF TEST CONFIGURATION 4.

4.1 **Description of Test Configuration – Emissions**

The Panic Button, Model: WST-131 (EUT) tested as a stand alone unit and placed in the middle of the turntable. The EUT was transmtting at 319.50 MHz on a continuous basis.

The EUT was tested for emissions while in the X, Y and Z axis. The X orientation is when the EUT is parallel to the ground mounted horizontally. The Y orientation is when the EUT is perpendicular to the ground mounted vertically. The Z orientation is when the EUT is perpendicular to the ground mounted horizontally.

The EUT had a fresh Lithium battery installed prior to the testing.

The firmware inside the EUT allowed the EUT to continuously transmit at 319.50 MHz.

The firmware is stored on the company's servers.

The final radiated emissions data for the EUT was taken in the configuration described above. Please see Appendix E for the data sheets.

4.1.1 **Cable Construction and Termination**

There were no external cables connected to the EUT.

Report Number: D20802P1 Page 11 of 22



Panic Button Model: WST-131

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 **EUT, Accessory List**

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	ID
PANIC BUTTON (EUT)	ECOLINK INTELLIGENT TECHNOLOGY, INC.	WST-131	N/A	FCC: XQC-WST131 IC: 9863B-WST131
FIRMWARE	ECOLINK INTELLIGENT TECHNOLOGY, INC.	N/A	N/A	N/A

5.2 **Emissions Test Equipment, and Software/Title**

EQUIPMENT TYPE	MANU- FACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. DUE DATE
Thermometer & Hygrometer	Davis Instruments	6312C	NONE	08/27/2021	08/27/2024
Computer	Compatible Electronics	NONE	NONE	NCR	NCR
EMI Receiver	Keysight Technologies	N9038A	MY55330012	07/21/2021	07/21/2023
EMI Receiver	Keysight Technologies	N9038A	MY59050117	11/09/2022	11/09/2024
Antenna, CombiLog	Com-Power	AC-220	061123	09/01/2021	09/01/2023
Antenna, Horn	Com-Power	AH-118	10050074	07/13/2021	07/13/2023
Preamplifier 1-18 GHz	Com-Power	PAM-118A	551033	01/11/2022	01/11/2023
Mast, Antenna Positioner	Sunol Science Corporation	SC104V	020808-1	NCR	NCR
Antenna Mast	Sunol Science Corporation	TWR 95-4	020808-3	NCR	NCR
Turntable	Sunol Science Corporation	FM2001	NONE	NCR	NCR
Antenna, Loop	Com-Power	AL-130	121049	03/16/2021	03/16/2023

LAB(S)	SOFTWARE TITLE	MANUFACTURER	VERSION
P, R	Measurement and Automation Software	TDK TestLab	12.12

TEST SITE DESCRIPTION **6.**

6.1 **Test Facility Description**

Please refer to section 2.1 of this report for emissions test location.

6.2 **EUT Mounting, Bonding and Grounding**

The EUT was mounted on a 0.6 by 1.2-meter by 0.8 meters high non-conductive table for below 1 GHz which was placed on the ground plane. For above 1 GHz, the EUT was mounted 1.5 meters above the ground plane.

The EUT was not grounded.

6.3 **Measurement Uncertainty**

Compatible Electronics' U_{lab} value is less than U_{cispr}, thus based on this – compliance is deemed to occur if no measured disturbance exceeds the disturbance limit

$$u_{c}(y) = \sqrt{\sum_{i} c_{i}^{2} u^{2}(x_{i})}$$

Measurem	Ucispr	$U_{\rm lab} = 2 \ uc \ (y)$	
Conducted disturbance (mains port)	(150 kHz – 30 MHz)	3.6 dB	2.88 dB
Radiated disturbance (electric field strength on an open area test site or alternative test site)	(0.009 MHz – 1 000 MHz)	6.2 dB	3.53 dB
Radiated disturbance (electric field strength on an open area test site or alternative test site)	(1 GHz - 6 GHz)	5.2 dB	3.59 dB
Radiated disturbance (electric field strength on an open area test site or alternative test site)	(6 GHz – 18 GHz)	5.5 dB	3.71 dB

Report Number: **D20802P1** Page 14 of 22

Panic Button Model: WST-131

TEST PROCEDURES 7.

The following sections describe the test methods and the specifications for the tests. Test results are also included in this section.

7.1 RF Emissions

7.1.1 **Conducted Emissions Test**

The EMI Receiver was used as a measuring meter. A quasi-peak and/or average reading was taken only where indicated in the data sheets. A 10 dB attenuator was used for the protection of the EMI Receiver input stage, and the offset was adjusted accordingly to read the actual data measured. The LISN output was measured using the EMI Receiver. The output of the second LISN was terminated by a 50-ohm termination. The effective measurement bandwidth used for this test was 9 kHz.

Please see section 6.2 of this report for mounting, bonding, and grounding of the EUT. The EUT was powered through the LISN, which was bonded to the ground plane. The LISN power was filtered and the filter was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in ANSI 63:4. The excess power cord was wrapped in a figure eight pattern to form a bundle not exceeding 0.4 meters in length.

The conducted emissions from the EUT were maximized for operating mode as well as cable placement. The final data was collected under program control by computer software. The final qualification data is located in Appendix E.

Test Results:

This test was not performed because the EUT operates on internal battery power only and cannot be plugged into the AC public mains.

Report Number: **D20802P1** Page 15 of 22

Panic Button Model: WST-131

7.1.2 **Radiated Emissions Test**

The EMI Receiver was used as the measuring meter. An internal preamplifier was used to increase the sensitivity of the instrument during emissions tests up to 1000 MHz, and an external preamplifier was used to increase the sensitivity of the instrument during emissions tests above 1 GHz. The EMI Receiver was initially used with the Analyzer mode feature activated. In this mode, the EMI receiver can then record the actual frequency to be measured. This final reading is then taken accurately in the EMI Receiver mode, which considers the cable loss, amplifier gain and antenna factors, so that a true reading is compared to the true limit. The effective measurement bandwidth used for the radiated emissions test was according to the frequency measured.

The frequencies below 1 GHz, except for the fundamental frequency, and the 2nd and 3rd harmonic of the fundamental frequency, were quasi-peaked using the quasi-peak detector of the EMI Receiver.

The harmonic frequencies above 1 GHz were averaged using the duty cycle correction calculation.

All other frequencies above 1 GHz were averaged using the average detector of the EMI Receiver.

The EMI test chamber of Compatible Electronics, Inc. was used for radiated emissions testing. This test site is in full compliance with ANSI C63.4. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength). The gunsight method was used when measuring with the horn antenna to ensure accurate results.

The EUT was tested at a 3-meter test distance. The six highest emissions are listed in Table 1.

Report Number: D20802P1 Page 16 of 22

Panic Button Model: WST-131

Radiated Emissions Test (Continued)

The measurement bandwidths and transducers used for the radiated emissions test were:

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
9 kHz to 150 kHz	200 Hz	Loop Antenna
150 kHz to 30 MHz	9 kHz	Loop Antenna
30 MHz to 1 GHz	120 kHz	CombiLog Antenna
1 GHz to 3.195 GHz	1 MHz	Horn Antenna

Test Results:

The EUT complies with the Class B limits of CFR Title 47, Part 15, Subpart B; the limits of CFR Title 47, Part 15, Subpart C sections 15.205, 15.209 and 15.231; and the limits of RSS-210 and RSS-Gen for radiated emissions.



7.1.3 **RF Emissions Test Results**

RADIATED EMISSION RESULTS Table 1

Panic Button, Model: WST-131

Frequency (MHz)	Average Corrected Reading* (dBµV/m)	Average Specification Limit (dBµV/m)	Delta (Cor. Reading – Spec. Limit) (dB)
1278.00 (H) (Y-Axis)	44.30	53.98	-9.68
1278.00 (V) (Z-Axis)	44.19	53.98	-9.79
319.50 (H) (X-Axis)	65.81	75.89	-10.08
1278.00 (H) (X-Axis)	43.88	53.98	-10.10
1278.00 (V) (Y-Axis)	43.38	53.98	-10.60
1278.00 (H) (Z-Axis)	42.70	53.98	-11.28

Notes:

- The complete emissions data is given in Appendix E of this report.
- Vertical (V)
- (H) Horizontal

7.1.4 Sample Calculations

A correction factor for the antenna, cable and a distance factor (if any) must be applied to the meter reading before a true field strength reading can be obtained. This Corrected Meter Reading is then compared to the specification limit in order to determine compliance with the limits.

Conversion to logarithmic terms: Specification limit (µV/m) log x 20 = Specification Limit in dBuV/m

To correct for distance when measuring at a distance other than the specification

For measurements below 30 MHz: (Specification distance / test distance) log x 40 = distance factor

For measurements above 30 MHz: (Specification distance / test distance) log x 20 = distance factor

Note: When using an Active Antenna, the Antenna factor shall be subtracted due to the combination of the internal amplification and antenna loss.

Corrected Meter Reading = meter reading + F - A + C

F = antenna factor where:

A= amplifier gain C = cable loss

The correction factors for the antenna and the amplifier gain are attached in Appendix D of this report. The data sheets are attached in Appendix E.

The distance factor D is 0 when the test is performed at the required specification distance.

When the limit is in terms of magnetic field, the following equation applies:

$$H[dB(\mu A/m)] = V[dB(\mu V)] + L_{C}\left[dB\right] \text{ - } G_{PA}\left[dB\right] + AF^{H}\left[dB(S/m)\right]$$

H is the magnetic field strength (to be compared with the limit),

V is the voltage level measured by the receiver or spectrum analyzer,

 L_C is the cable loss,

 G_{PA} is the gain of the preamplifier (if used), and

 AF^{H} is the magnetic antenna factor.

The G_{PA} term is only included in the equation when an external preamplifier is used in the measurement chain, in front of the receiver or spectrum analyzer. An external preamplifier is not usually necessary (or even advisable, due to risk of saturating the input mixer of the receiver) when an active loop antenna is used. In that case, the antenna factor of the loop already includes the gain of its built-in preamplifier.

If the "electrical" antenna factor is used instead, the above equation becomes:

$$H[dB(\mu A/m)] = V[dB(\mu V)] + L_C[dB] - G_{PA}[dB] + AF^E[dB(m^{-1})] - 51.5[dB\Omega]$$

 AF^{E} is the "electric" antenna factor, as provided by the antenna calibration where:

laboratory.

When the limit is in terms of electric field, the following equation applies:

$$E[dB(\mu V/m)] = V[dB(\mu V)] + L_C[dB]$$
 - $G_{PA}[dB] + AF^E\left[dB(m^{\text{-}1})\right]$ or, if the magnetic antenna factor is used:

$$E[dB(\mu V/m)] = V[dB(\mu V)] + L_C[dB] - G_{PA}[dB] + AF^H \left[dB(S/m)\right] + 51.5[dB\Omega]$$

The display of the receiver (or spectrum analyzer) **shall not** be configured in units of current, e.g. μA or $dB(\mu A)$. That conversion is calculated inside the receiver (or spectrum analyzer) using its input impedance, which is 50 Ω , while the magnetic field calculation is based on the free-space impedance of 377 Ω .

7.1.5 **Duty Cycle Calculation**

The fundamental and harmonics were measured at a 3-meter test distance. The EMI Receiver was used to obtain the final test data. The final qualification data sheets are in Appendix E.

Where

$$\delta(dB) = 20 \log \left[\sum (nt_1 + mt_2 + \dots + \xi t_x) / T \right]$$

n is the number of pulses of duration t_1 m is the number of pulses of duration t_2 ξ is the number of pulses of duration t_x

T is the period of the pulse train or 100 ms if the pulse train length is greater than 100 ms

Duty Cycle Correction Factor = -19.49 dB

Time of One Small Pulse = $150 \mu s$

Time of One Medium Pulse = $515 \mu s$

Time of One Large Pulse = $1380 \mu s$

Number of Small Pulses = 58

Number of Medium Pulses = 1

Number of Large Pulses = 1

Total On Time = $10595 \mu s = 10.595 ms$

The time between pulses is greater than 100 ms

Duty Cycle = 10.595 ms / 100 ms = 10.595 %

7.1.6 99 % Bandwidth

The 99 % bandwidth was measured using an EMI Receiver.

The following steps were performed for measuring the 99 % bandwidth per RSS-GEN, Issue 5, clause 6.7:

- 1. Set RBW to 1 % to 5 % of the actual occupied bandwidth.
- 2. Set VBW to greater than 3 times the RBW.
- 3. Set the EMI Receiver to the occupied bandwidth Function set at 99 %
- 4. Set the peak detector to max hold.
- 5. Set the sweep time to auto
- 6. Allow the trace to stabilize.

Please note that this was only used to determine the emission bandwidth and that there are no limits or pass/fail criteria for this test. Please see the data sheets located in Appendix E.

7.1.7 -20 dB Bandwidth

The -20 dB bandwidth was measured using an EMI Receiver.

The following steps were performed for measuring the -20 dB bandwidth:

- 1. Set RBW from 1% to 5% of the Occupied Bandwidth.
- 2. Set the span to 100 kHz.
- 3. Set VBW to greater than 3 times the RBW.
- 4. Set the peak detector to max hold.
- 5. Set the sweep time to auto
- 6. Allow the trace to stabilize.
- 7. Set the markers to -20 dB of the peak fundamental emission

Test Results:

The EUT complies with limits of CFR Title 47, Part 15, Subpart C section 15.231 (c); and the limits of RSS-210.

7.1.8 **Transmission Time**

The transmission time was measured using an EMI Receiver.

The following steps were performed for measuring transmission time:

- 1. Set RBW = 114 kHz
- 2. Set VBW = 510 kHz
- 3. Span = 0 Hz
- 4. Set the sweep time to 5 seconds
- 5. Push a button on the EUT, which automatically activated the transmitter
- 6. Allow the trace to stabilize
- 7. Set the 1st marker to start of the transmission
- 8. Set the 2nd marker to the end of the transmission
- 9. Verify the transmission does not go beyond 5 seconds

Test Results:

The EUT complies with limits of CFR Title 47, Part 15, Subpart C section 15.231 (a)(1) and (a)(2); and the limits of RSS-210.

7.1.9 Variation of the Input Power

The variation of the input power test was performed using the EMI Receiver. The EUT input power was varied between 85% and 115% of the nominal rated supply voltage. The carrier frequency was monitored for any change in amplitude.

Test Results:

This test was not performed because the EUT is internal battery powered only.

Report Number: **D20802P1** Page 22 of 22



Panic Button Model: WST-131

8. **CONCLUSIONS**

The Panic Button, Model: WST-131 (EUT), as tested, meets all the specification limits defined in RSS-210, RSS-Gen, the Class B specification limits defined in CFR Title 47, Part 15, Subpart B; and the specification limits defined in CFR Title 47, Part, 15, Subpart C, sections 15.205, 15.207, 15.209 and 15.231.

APPENDIX A

LABORATORY ACCREDITATIONS AND RECOGNITIONS

LABORATORY ACCREDITATIONS AND RECOGNITIONS



For US, Canada, Australia/New Zealand, Japan, Taiwan, Korea, and the European Union, Compatible Electronics is currently accredited by NVLAP to ISO/IEC 17025.

For the most up-to-date version of our scopes and certificates please visit

http://celectronics.com/quality/scope/

Quote from ISO-ILAC-IAF Communiqué on the Management Systems Requirements of ISO/IEC 17025, General Requirements for the competence of testing and calibration laboratories:

"A laboratory's fulfilment of the requirements of ISO/IEC 17025 means the laboratory meets both the technical competence requirements and management system requirements that are necessary for it to consistently deliver technically valid test results and calibrations. The management system requirements in ISO/IEC 17025 are written in language relevant to laboratory operations and operate generally in accordance with the principles of ISO 9001"

Innovation, Science and Economic Development Canada Lab Code 2154C

APPENDIX B

MODIFICATIONS TO THE EUT

MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC Subpart B, FCC 15.231, RSS-210, and RSS-Gen specifications.

All the rework described below was implemented during the test in a method that could be reproduced in all the units by the manufacturer.

No modifications were made to the EUT during the testing.



APPENDIX C

MODELS COVERED UNDER THIS REPORT

MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST Panic Button

Model: WST-131

S/N: N/A

ADDITIONAL MODELS COVERED:

The following models are considered by the manufacturer to be similar to the sample tested, however the test results contained in this report relate only to the sample tested.

Panic Button Model: RE103P

The additional model covered under this report, RE103P, is exactly the same operationally, physically, and electronically as the WST-131 (EUT). Ecolink Intelligent Technology, Inc. is the original equipment manufacturer of both covered models, but is relabeling the EUT from WST-131 to RE103P for the security company Alula.

APPENDIX D

DIAGRAMS, CHARTS, AND PHOTOS

FIGURE 1: CONDUCTED EMISSIONS TEST SETUP

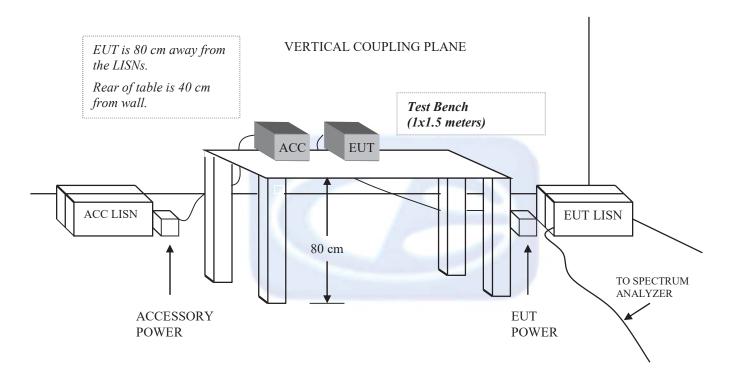
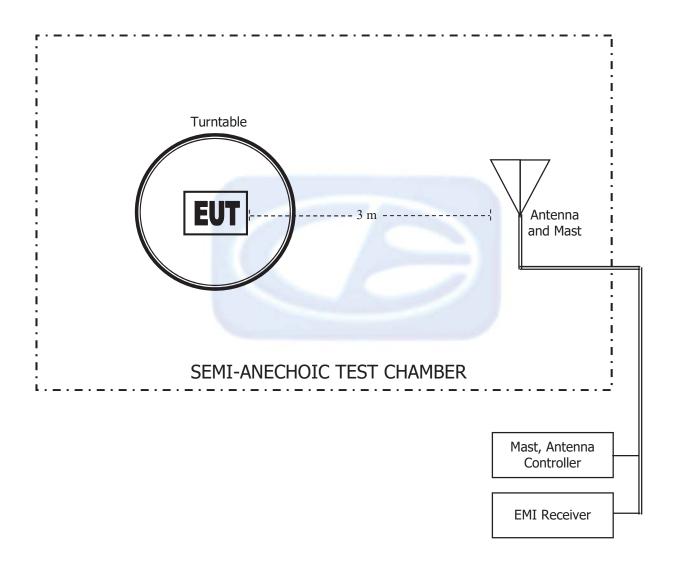


FIGURE 2: LAYOUT OF THE SEMI -ANECHOIC TEST CHAMBER



COM-POWER AL-130

LOOP ANTENNA

S/N: 121049

CALIBRATION DUE: MARCH 16, 2023

FREQUENCY (MHz)	FACTOR (dBuA/m)	FREQUENCY (MHz)	FACTOR (dBuA/m)
0.009	-30.97	0.8	-37.47
0.01	-31.91	0.9	-37.28
0.02	-35.03	1	-37.07
0.03	-34.97	2	-37.07
0.04	-35.91	3	-37.07
0.05	-36.76	4	-36.97
0.06	-36.66	5	-36.98
0.07	-37.02	6	-37.07
0.08	-37.05	7	-37.07
0.09	-37.00	8	-37.06
0.1	-37.42	9	-37.07
0.2	-37.47	10	-36.77
0.3	-37.58	15	-37.04
0.4	-37.58	20	-36.72
0.5	-37.39	25	-38.60
0.6	-37.38	30	-38.64
0.7	-37.38		

COM-POWER AC-220

COMBILOG ANTENNA

S/N: 061123

CALIBRATION DUE: SEPTEMBER 01, 2023

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
25	24.3	275	18.4
30	22.4	300	18.7
35	21.0	350	19.3
40	20.1	350	20.6
45	19.3	400	21.2
50	18.3	450	22.0
60	14.9	500	22.7
70	11.8	550	24.4
80	11.9	600	24.4
90	13.7	650	24.4
100	14.3	700	26.0
120	15.4	750	26.1
140	14.3	800	26.8
160	14.1	850	27.4
180	14.8	900	27.7
200	15.5	950	27.6
225	15.8	1000	29.2
250	16.7	1050	22.7

COM-POWER AH-118

HORN ANTENNA

S/N: 10050074

CALIBRATION DUE: JULY 13, 2023

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
700	26.34	7500	38.21
750	25.86	8000	38.60
800	24.70	8500	38.32
850	24.21	9000	38.93
900	24.05	9500	39.62
950	23.97	10000	39.39
1000	24.29	10500	39.54
1250	25.19	11000	39.84
1500	25.64	11500	40.67
1750	26.67	12000	40.80
2000	28.43	12500	40.95
2250	28.43	13000	40.95
2500	29.30	13500	40.87
3000	30.34	14000	40.89
3500	31.02	14500	41.73
4000	31.89	15000	44.11
4500	32.86	15500	40.57
5000	34.11	16000	40.38
5500	34.35	16500	39.79
6000	35.66	17000	40.90
6500	36.35	17500	42.34
7000	37.48	18000	43.69

COM-POWER PAM-118A

1-18GHz - PREAMPLIFIER

S/N: 551033

CALIBRATION DUE: JANUARY 11, 2023

FREQUENCY (MHz)	FACTOR	FREQUENCY (MHz)	FACTOR
=0.0	(dB)		(dB)
500	39.78	5500	40.45
1000	40.31	6000	40.40
1100	40.54	6500	40.57
1200	40.60	7000	40.88
1300	40.71	7500	40.84
1400	40.78	8000	40.73
1500	40.82	8500	40.14
1600	40.88	9000	40.35
1700	40.97	9500	41.19
1800	41.07	10000	41.11
1900	41.21	11000	39.69
2000	41.31	12000	40.33
2500	41.74	13000	39.29
3000	42.17	14000	39.32
3500	42.38	15000	39.57
4000	42.19	16000	39.58
4500	41.65	17000	38.67
5000	41.05	18000	39.61



FRONT VIEW

LOOP ANTENNA

ECOLINK INTELLIGENT TECHNOLOGY, INC. PANIC BUTTON MODEL: WST-131 FCC SUBPART B AND C; RSS-210 AND RSS-GEN – RADIATED EMISSIONS – BELOW 30 MHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

Panic Button



REAR VIEW

LOOP ANTENNA

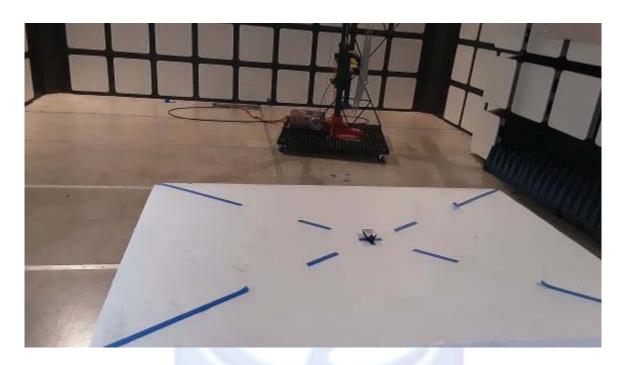
ECOLINK INTELLIGENT TECHNOLOGY, INC. PANIC BUTTON MODEL: WST-131 FCC SUBPART B AND C; RSS-210 AND RSS-GEN – RADIATED EMISSIONS – BELOW 30 MHz



FRONT VIEW

COMBILOG ANTENNA

ECOLINK INTELLIGENT TECHNOLOGY, INC. PANIC BUTTON MODEL: WST-131 FCC SUBPART B AND C; RSS-210 AND RSS-GEN – RADIATED EMISSIONS – 30 MHz TO 1000 MHz



REAR VIEW

COMBILOG ANTENNA

ECOLINK INTELLIGENT TECHNOLOGY, INC. PANIC BUTTON MODEL: WST-131

FCC SUBPART B AND C; RSS-210 AND RSS-GEN – RADIATED EMISSIONS – 30 MHz TO 1000 MHz



FRONT VIEW

HORN ANTENNA

ECOLINK INTELLIGENT TECHNOLOGY, INC. PANIC BUTTON MODEL: WST-131 FCC SUBPART B AND C; RSS-210 AND RSS-GEN – RADIATED EMISSIONS – ABOVE 1 GHz



REAR VIEW

HORN ANTENNA

ECOLINK INTELLIGENT TECHNOLOGY, INC. PANIC BUTTON MODEL: WST-131 FCC SUBPART B AND C; RSS-210 AND RSS-GEN – RADIATED EMISSIONS – ABOVE 1 GHz

FCC Part 15 Subpart B and C; FCC Section 15.231; and RSS-210 and RSS-GEN Test Report COMPATIBLE

Panic Button

Model: WST-131

APPENDIX E

DATA SHEETS





RADIATED EMISSIONS

DATA SHEETS

8/1/2022 9:52:54 AM

Sequence: Preliminary Scan

Report Number: D20802P1



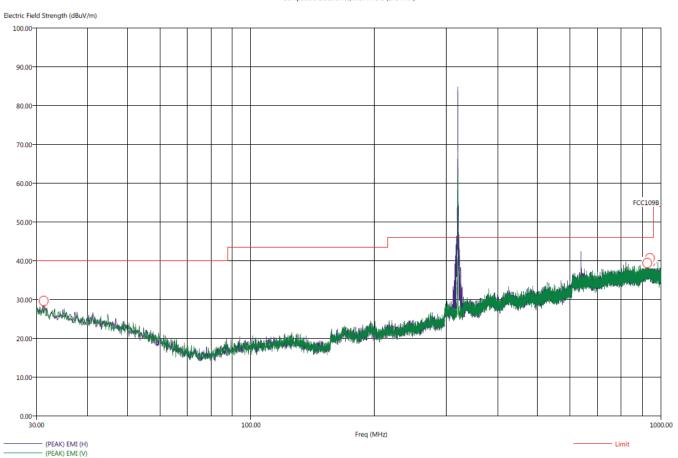
Test title: FCC 15.231 File: Tx X-axis Radiated Pre - Scan 30 MHz - 1000MHz.set

Operator name: Tom Szynal EUT type: 319.5 MHz Transmitter EUT condition: The EUT is transmitting in X-axis Company: Ecolink Intelligent Technology, Inc. EUT Name: Panic Button; Model: WST-131

Temp: 27 C, Hum: 51 % Note 1: The frequencies at 319.5 MHz, 639 MHz, and 958.5 MHz are subject to the limits of FCC 15.231 instead

Note 2: No spurious emissions were discovered below 30 MHz
Note 3: No spurious emissions were found above 1 GHz, except for harmonics

Compatible Electronics, Inc . FAC-3 (LAB XXX)



8/1/2022 10:35:22 AM Sequence: Final Measurements

Report Number: D20802P1



Model: WST-131

Test title: FCC 15.231 File: Tx X-axis Radiated Final - Scan 30 MHz - 1000 MHz.set

Operator name: Tom Szynal EUT type: 319.5 MHz Transmitter

EUT condition: The EUT is transmitting in X-axis Company: Ecolink Intelligent Technology, Inc. EUT Name: Panic Button; Model: WST-131

Temp: 27 C, Hum: 51 %
Note 1: The frequencies at 319.5 MHz, 639 MHz, and 958.5 MHz are subject to the limits of FCC 15.231 instead

Note 2: No spurious emissions were discovered below 30 MHz

Note 3: No spurious emissions were found above 1 GHz, except for harmonics

Compatible Electronics, Inc FAC-3 (LAB P)

Freq (MHz)	Pol	(PEAK) EMI (dBuV/m)	(QP) EMI (dBuV/m)	(QP) Margin (dB)	Limit (dBuV/m)	Twr Ht (cm)	Ttbl Ang (deg)	Cable (dB)	Transducer (dB)
31.30	н	29.77	24.33	-15.67	40.00	127.76	31.00	0.47	21.87
893.90	V	39.23	33.60	-12.40	46.00	127.17	270.75	2.96	27.20
926.20	V	39.34	34.59	-11.41	46.00	381.64	344.00	3.04	28.32
939.90	V	39.47	34.35	-11.65	46.00	151.05	164.00	3.08	28.10
941.30	Н	40.11	34.30	-11.70	46.00	206.35	123.50	3.08	28.07
942.50	V	39.93	34.26	-11.74	46.00	382.76	277.75	3.08	28.00
949.10	V	39.38	33.98	-12.02	46.00	354.11	158.50	3.10	27.78



FUNDAMENTAL AND HARMONICS

DATA SHEETS

Report Number: D20802P1
FCC Part 15 Subpart B and C; FCC Section 15.231; and RSS-210 and RSS-GEN Test Report



Panic Button Model: WST-131

FCC Section 15.231

Ecolink Intelligent Technology, Inc.

Date: 8/1/2022

Panic Button Lab: P
Tested

Model: WST-131 by: Tom Szynal

Fundamental

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
319.50	65.49	V	95.89	-30.40	PEAK	20.75	111.47	X-Axis
319.50	46.00	٧	75.89	-29.89	AVG			A-AXIS
			/					
319.50	83.21	V	95.89	-12.68	PEAK	108.25	167.05	Y-Axis
319.50	63.72	V	75.89	-12.17	AVG			1-7415
			11/4		Allo			
319.50	83.66	V	95.89	-12.23	PEAK	294.25	184.41	Z-Axis
319.50	64.17	V	75.89	-11.72	AVG			Z-AXI3
319.50	85.30	Н	95.89	-10.59	PEAK	60.25	107.29	X-Axis
319.50	65.81	Н	75.89	-10.08	AVG			
319.50	79.91	Н	95.89	-15.98	PEAK	210.25	205.70	Y-Axis
319.50	60.42	Н	75.89	-15.47	AVG			. 7500
319.50	79.23	Н	95.89	-16.66	PEAK	186.00	221.23	Z-Axis
319.50	59.74	Н	75.89	-16.15	AVG			





FCC Section 15.231

Ecolink Intelligent Technology, Inc. Date: 8/1/2022

Panic Button Lab: Р Tested

Model: WST-131 Tom Szynal by:

Harmonics

Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
639.00		V	75.89		PEAK			No Emissions Detected
639.00		V	55.89		AVG			
			1					
958.50		V	75.89		PEAK			No Emissions Detected
958.50		V	55.89	100	AVG			
					1 10			
1278.00	59.24	V	73.98	-14.74	PEAK	240.00	156.00	
1278.00	39.75	V	53.98	-14.23	AVG			
1597.50	48.05	V	73.98	-25.93	PEAK	170.00	154.05	
1597.50	28.56	V	53.98	-25.42	AVG			
1917.00	47.01	V	75.89	-28.88	PEAK	0.00	118.58	
1917.00	27.52	V	55.89	-28.37	AVG			
2236.50	45.83	V	73.98	-28.15	PEAK	120.25	254.41	
2236.50	26.34	V	53.98	-27.64	AVG			
2556.00	43.94	V	75.89	-31.96	PEAK	0.00	256.70	
2556.00	24.45	V	55.89	-31.45	AVG			
2875.50	47.24	V	73.98	-26.74	PEAK	0.00	142.88	
2875.50	27.75	V	53.98	-26.23	AVG			
3195.00	50.35	V	75.89	-25.54	PEAK	116.50	242.29	
3195.00	30.86	V	55.89	-25.03	AVG			

Report Number: D20802P1



Panic Button Model: WST-131

FCC Section 15.231

Ecolink Intelligent Technology, Inc. Date: 8/1/2022

Panic Button Lab: Р Tested

Model: WST-131 Tom Szynal by:

Harmonics

Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
639.00	59.65	V	75.89	-16.24	PEAK	260.00	172.64	
639.00	40.16	V	55.89	-15.73	AVG			
			1					
958.50	60.08	V	75.89	-15.81	PEAK	24.00	118.52	
958.50	40.59	V	55.89	-15.30	AVG			
1278.00	62.87	V	73.98	-11.11	PEAK	178.75	130.76	
1278.00	43.38	V	53.98	-10.60	AVG			
1597.50	48.12	V	73.98	-25.86	PEAK	122.50	230.58	
1597.50	28.63	V	53.98	-25.35	AVG			
1917.00	48.92	V	75.89	-26.97	PEAK	0.00	182.64	
1917.00	29.43	V	55.89	-26.46	AVG			
2236.50	47.33	V	73.98	-26.65	PEAK	51.75	203.35	
2236.50	27.84	V	53.98	-26.14	AVG			
2556.00	45.01	V	75.89	-30.88	PEAK	46.75	149.64	
2556.00	25.52	V	55.89	-30.37	AVG			
2875.50	51.51	V	73.98	-22.47	PEAK	259.75	175.23	
2875.50	32.02	V	53.98	-21.96	AVG			
3195.00	55.80	V	75.89	-20.09	PEAK	216.75	123.29	
3195.00	36.31	V	55.89	-19.58	AVG			

Report Number: D20802P1



Panic Button Model: WST-131

FCC Section 15.231

Ecolink Intelligent Technology, Inc. Date: 8/1/2022

Panic Button Lab: Р Tested

Model: WST-131 Tom Szynal by:

Harmonics

Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
639.00	59.30	V	75.89	-16.59	PEAK	0.00	180.70	
639.00	39.81	٧	55.89	-16.08	AVG			
			1					
958.50	59.91	V	75.89	-15.98	PEAK	0.00	150.00	
958.50	40.42	V	55.89	-15.47	AVG			
1278.00	63.68	V	73.98	-10.30	PEAK	61.00	208.58	
1278.00	44.19	V	53.98	-9.79	AVG			
			1			100		
1597.50	52.20	V	73.98	-21.78	PEAK	221.50	210.11	
1597.50	32.71	V	53.98	-21.27	AVG			
1917.00	48.29	V	75.89	-27.60	PEAK	217.75	208.52	
1917.00	28.80	V	55.89	-27.09	AVG			
2236.50	46.36	V	73.98	-27.62	PEAK	74.75	117.82	
2236.50	26.87	V	53.98	-27.11	AVG			
2556.00	47.32	V	75.89	-28.57	PEAK	200.00	192.70	
2556.00	27.83	V	55.89	-28.06	AVG			
2875.50	49.72	V	73.98	-24.26	PEAK	240.00	211.76	
2875.50	30.23	V	53.98	-23.75	AVG			
3195.00	57.61	V	75.89	-18.28	PEAK	221.50	214.05	
3195.00	38.12	V	55.89	-17.77	AVG	I		

Report Number: D20802P1



FCC Part 15 Subpart B and C; FCC Section 15.231; and RSS-210 and RSS-GEN Test Report Panic Button Model: WST-131

FCC Section 15.231

Ecolink Intelligent Technology, Inc. Date: 8/1/2022

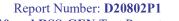
Panic Button Lab: Р Tested

Model: WST-131 Tom Szynal by:

Harmonics

Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
639.00		Н	75.89		PEAK			No Emissions Detected
639.00		Н	55.89		AVG			
			1					
958.50		Н	75.89		PEAK			No Emissions Detected
958.50		Н	55.89		AVG			
					/ /			
1278.00	63.37	Н	73.98	-10.61	PEAK	61.00	142.17	
1278.00	43.88	Н	53.98	-10.10	AVG			
1597.50	51.56	Н	73.98	-22.42	PEAK	275.00	125.64	
1597.50	32.07	Н	53.98	-21.91	AVG			
1917.00	50.40	Н	75.89	-25.49	PEAK	58.50	204.29	
1917.00	30.91	Н	55.89	-24.98	AVG			
2236.50	47.23	Н	73.98	-26.75	PEAK	0.00	185.82	
2236.50	27.74	Н	53.98	-26.24	AVG			
2556.00	48.27	Н	75.89	-27.62	PEAK	306.00	189.00	
2556.00	28.78	Н	55.89	-27.11	AVG			
2875.50	53.31	Н	73.98	-20.67	PEAK	201.00	173.88	
2875.50	33.82	Н	53.98	-20.16	AVG			
3195.00	58.51	Н	75.89	-17.38	PEAK	228.25	149.58	
3195.00	39.02	Н	55.89	-16.87	AVG	I		





FCC Section 15.231

Ecolink Intelligent Technology, Inc. Date: 8/1/2022

Panic Button Lab: Р Tested

Model: WST-131 Tom Szynal by:

Harmonics

Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
639.00	58.50	Н	75.89	-17.39	PEAK	177.25	202.41	
639.00	39.01	Н	55.89	-16.88	AVG			
958.50	59.87	Н	75.89	-16.02	PEAK	59.00	212.70	
958.50	40.38	Н	55.89	-15.51	AVG			
1278.00	63.79	Н	73.98	-10.19	PEAK	199.50	152.23	
1278.00	44.30	Н	53.98	-9.68	AVG			
1597.50	52.27	Н	73.98	-21.71	PEAK	186.75	157.64	
1597.50	32.78	Н	53.98	-21.20	AVG			
1917.00	49.38	Н	75.89	-26.51	PEAK	153.50	100.00	
1917.00	29.89	Н	55.89	-26.00	AVG			
2236.50	45.32	Н	73.98	-28.66	PEAK	168.00	152.00	
2236.50	25.83	Н	53.98	-28.15	AVG			
2556.00	48.47	Н	75.89	-27.42	PEAK	0.00	150.58	
2556.00	28.98	Н	55.89	-26.91	AVG			
2875.50	47.04	Н	73.98	-26.94	PEAK	255.50	155.82	
2875.50	27.55	Н	53.98	-26.43	AVG			
3195.00	54.89	Н	75.89	-21.00	PEAK	173.00	119.11	
3195.00	35.40	Н	55.89	-20.49	AVG			





FCC Section 15.231

Ecolink Intelligent Technology, Inc. Date: 8/1/2022

Panic Button Lab: Р Tested

Model: WST-131 Tom Szynal by:

Harmonics

Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
639.00	58.25	Н	75.89	-17.64	PEAK	210.00	214.82	
639.00	38.76	Н	55.89	-17.13	AVG			
			1					
958.50	60.13	Н	75.89	-15.76	PEAK	0.00	108.88	
958.50	40.64	Н	55.89	-15.25	AVG	100		
1278.00	62.19	Н	73.98	-11.79	PEAK	325.25	174.64	
1278.00	42.70	Н	53.98	-11.28	AVG			
1597.50	48.73	Н	73.98	-25.25	PEAK	0.00	163.52	
1597.50	29.24	Н	53.98	-24.74	AVG			
1917.00	47.80	Н	75.89	-28.09	PEAK	328.25	196.05	
1917.00	28.31	Н	55.89	-27.58	AVG			
2236.50	45.95	Н	73.98	-28.03	PEAK	0.00	138.17	
2236.50	26.46	Н	53.98	-27.52	AVG			
2556.00	44.37	Н	75.89	-31.52	PEAK	0.00	109.52	
2556.00	24.88	Н	55.89	-31.01	AVG			
2875.50	51.04	Н	73.98	-22.94	PEAK	198.25	165.00	
2875.50	31.55	Н	53.98	-22.43	AVG			
3195.00	54.27	Н	75.89	-21.62	PEAK	180.00	165.41	
3195.00	34.78	Н	55.89	-21.11	AVG	7		





BAND EDGES

DATA SHEETS

FCC Section 15.231

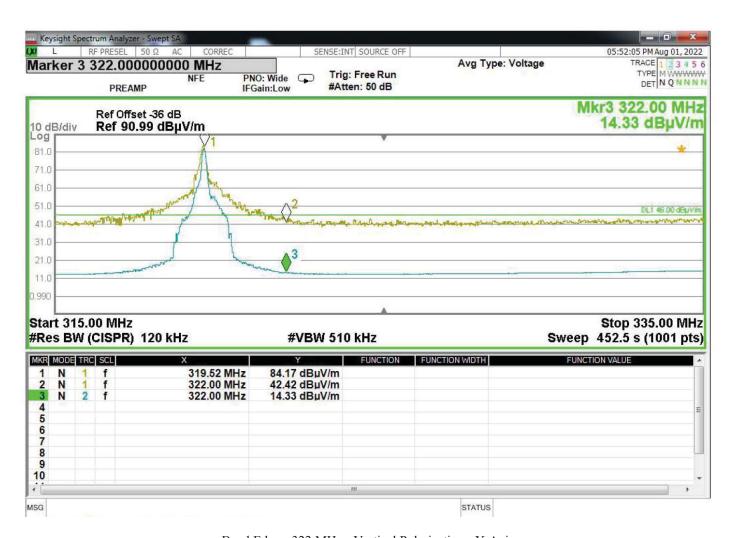
Ecolink Intelligent Technology, Inc. Date: 8/1/2022

Lab: P Panic Button

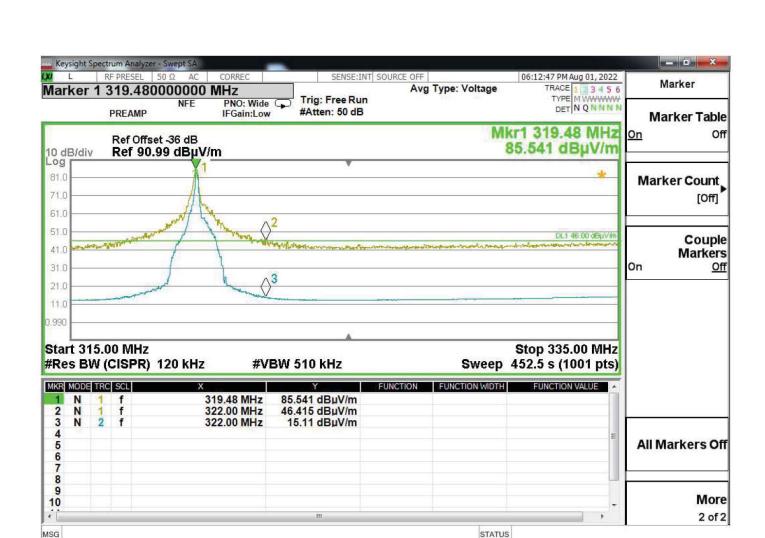
Model: WST-131 Tested by: Tom Szynal

Band Edges

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
319.50	85.54	Н	95.89	-10.35	Peak			Fundamental
319.50	66.05	Н	75.89	-9.84	Avg			X-Axis - Worst Case
322.00	46.42	Н	46.00	0.42	Peak			Band Edge
322.00	15.11	Н	46.00	-30.89	QP			X-Axis - Worst Case
			1,77,74					
319.50	84.17	V	95.89	-11.72	Peak			Fundamental
319.50	64.68	V	75.89	-11.21	Avg			Y-Axis - Worst Case
						- 18 th)		
322.00	42.42	V	46.00	-3.58	Peak			Band Edge
322.00	14.33	V	46.00	-31.67	QP			Y-Axis - Worst Case



Band Edge - 322 MHz - Vertical Polarization - Y-Axis



Band Edge - 322 MHz - Horizontal Polarization - X-Axis

-20 dB BANDWIDTH PLOT **DATA SHEET**



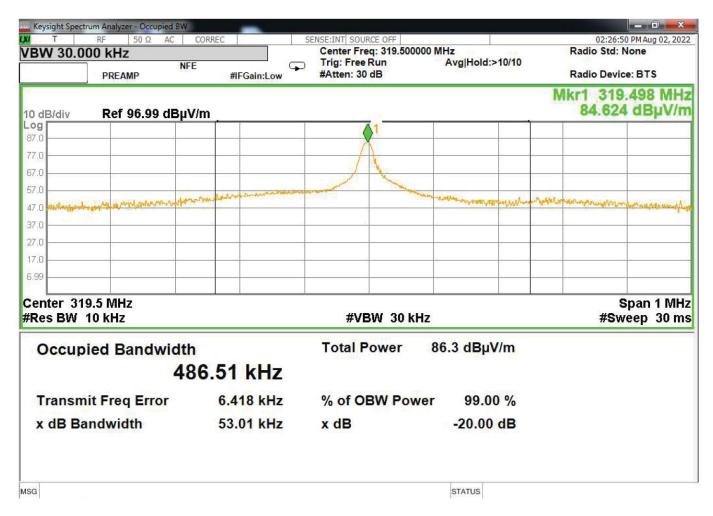
-20 dB Bandwidth Plot - 510 Hz RBW

TRANSMISSION TIME **DATA SHEET**



Plot Showing Time of Full Transmission – 4.42 Seconds

99% BANDWIDTH **DATA SHEET**



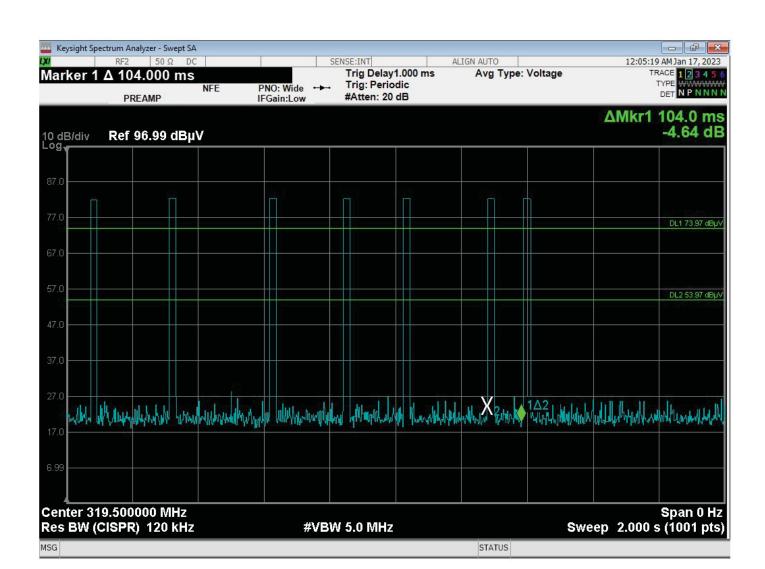
99% Bandwidth Plot



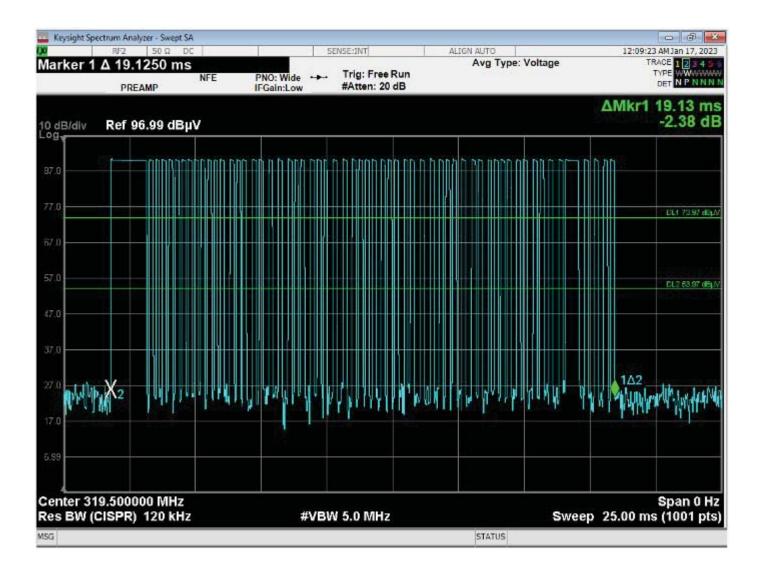


DUTY CYCLE

DATA SHEETS

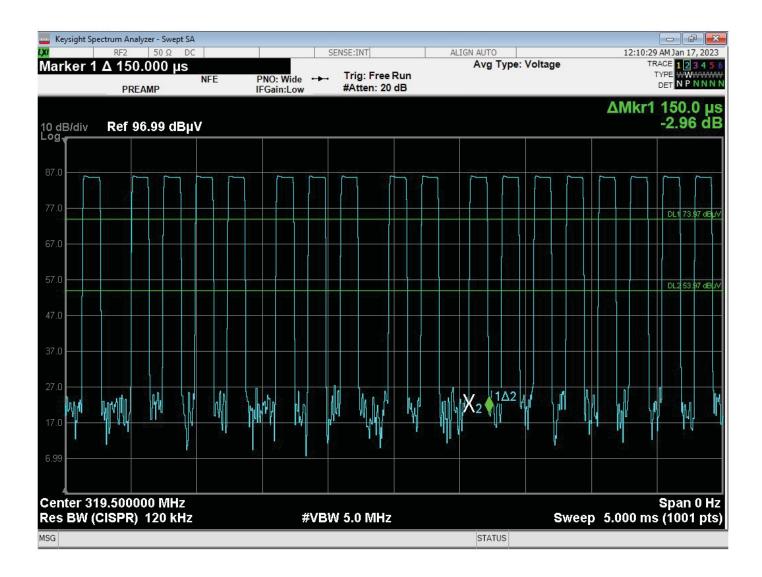


The pulse train has at least 100 ms blanking interval – Worst Case

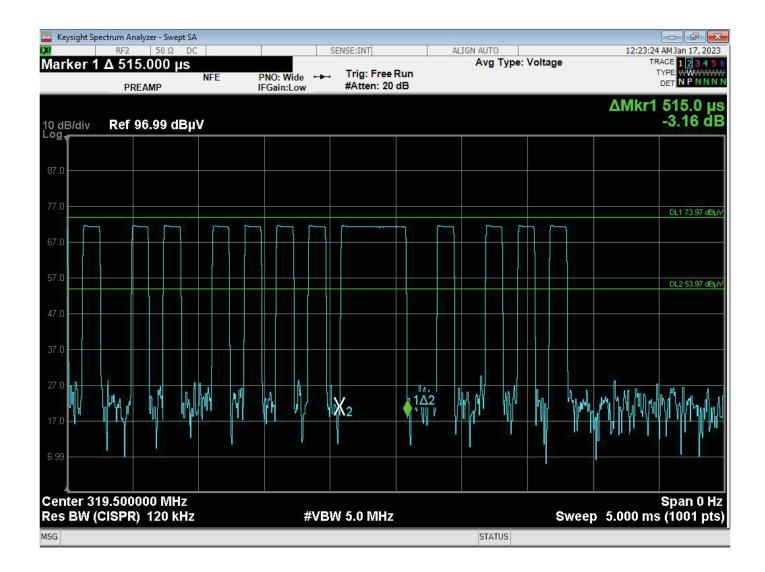


Number of Pulses: 60

Small = 58 PulsesMedium = 1 Pulse Large = 1 Pulse



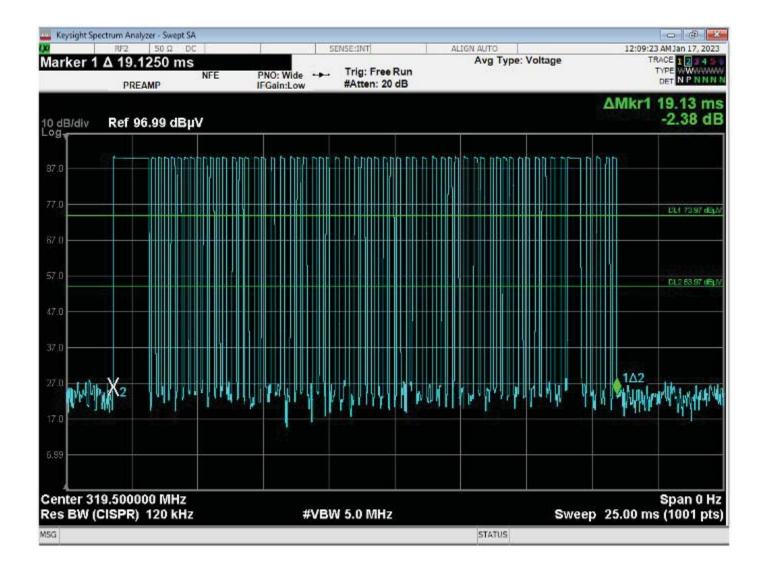
Time of Small Pulse = 150 us



Time of Medium Pulse = 515 us



Time of Large Pulse = 1.380 ms



Total On Time: 58*150 us = 8700 us1 * 235 us = 515 us1 * 450 us = 1380 us

Total On Time = 10.595 ms

Total Duty Cycle = 10.595 ms / 100 ms = 10.595%

The Peak to Average Ratio is -19.49 dB