Multi-Tech Systems, Inc.

RBS304 Panic Button

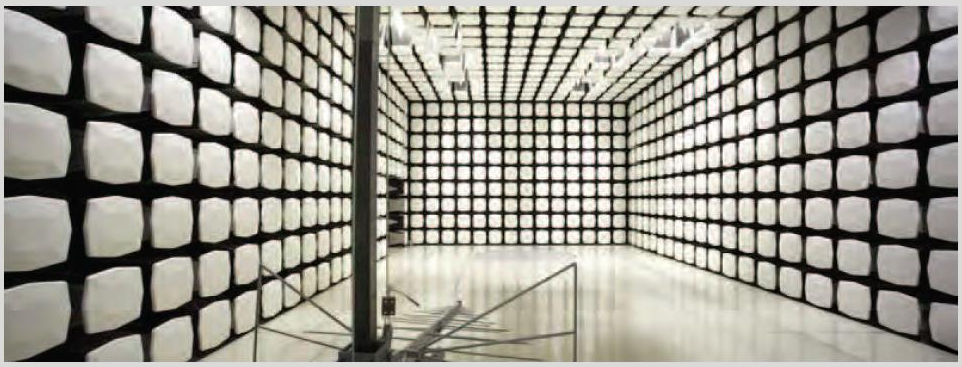
FCC 15.247:2024

RSS-Gen Issue 5:2018+A1:2019+A2:2021

RSS-247 Issue 3:2023

Hybrid LoRa transceiver

Report: MLTI0360.0 Rev. 1, Issue Date: July 18, 2024



ACCREDITED
CERT #3310.05

TABLE OF CONTENTS

element
2023.04.17

Section	Page Number

CERTIFICATE OF TEST

Last Date of Test: February 14, 2022
Multi-Tech Systems, Inc.
EUT: RBS304 Panic Button

Radio Equipment Testing

Standards

Specification	Method
FCC 15.247:2024	ANSI C63.10:2013
RSS-Gen Issue 5:2018+A1:2019+A2:2021	
RSS-247 Issue 3:2023	

Note: RSS-247 Issue 3 has been updated superseding prior Issues and amendments noted within the body of this report. The FCC year has also been updated. The changes between the specifications do not affect the results of the prior testing. The manufacture attests that no changes have been made to the product. See gap analysis for RSS-247 below).

1. Modified section 6.2 to clarify that different measurement methods can apply depending on the operating frequency range of the device.
2. Added section 6.2.5 to introduce the requirements for devices operating from 5850 5895 MHz and channels that span across 5850 MHz.
3. Added section 6.2.5.1 to provide general information and definitions.
4. Added section 6.2.5.2 to identify the power limits associated with devices operating in the 5850-5895 MHz band.
5. Added section 6.2.5.3 to identify the unwanted emission limits associated with devices operating in the 5850-5895 MHz band.
6. Made editorial changes and clarifications, as appropriate.

Guidance

FCC KDB 558074 v05r02:2019

Results

Test Description	Result	FCC Section(s)	RSS Section(s)	ANSI C63.10 Section(s)	Comments
Powerline Conducted Emissions (Transmitter)	N/A	15.207	RSS-Gen 8.8	6.2	Not required for a battery powered EUT.
Spurious Radiated Emissions	Pass	15.247(d)	RSS-247 5.5	6.5, 6.6	
Duty Cycle	N/A	15.247	RSS-Gen 3.2	7.5	
Carrier Frequency Separation	N/A	15.247(a)(1)	RSS-247 5.1(b)	7.8.2	Not included for a C2PC related to adding a new antenna and addressing portable usage.
Number of Hopping Frequencies	N/A	15.247(a)(1), KDB 558074 10(b)(4)	RSS-247 5.1(d)	7.8.3	Not included for a C2PC related to adding a new antenna and addressing portable usage.
Dwell Time	N/A	15.247(a)(1), KDB 558074 10(b)(2)	RSS-247 5.1(d)	7.8.4	Not included for a C2PC related to adding a new antenna and addressing portable usage.
Output Power	Pass	15.247(b)	RSS-247 5.4(d)	11.9	
Equivalent Isotropic Radiated Power (EIRP)	Pass	15.247(b)	RSS-247 5.4(d)	11.9	

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.

CERTIFICATE OF TEST

Band Edge Compliance	N/A	15.247(d)	RSS-247 5.5	7.8.6	Not included for a C2PC related to adding a new antenna and addressing portable usage.
Band Edge Compliance - Hopping Mode	N/A	15.247(d)	RSS-247 5.5	7.8.6	Not included for a C2PC related to adding a new antenna and addressing portable usage.
Emissions Bandwidth (20 dB)	Pass	15.247(a), KDB 558074 10(b)(3)	RSS-247 5.2(a)	7.8.7	
Occupied Bandwidth (99%)	N/A	15.247(a)	RSS-Gen 6.7	7.8.7	Not included for a C2PC related to adding a new antenna and addressing portable usage.
Spurious Conducted Emissions	N/A	15.247(d)	RSS-247 5.5	7.8.8	Not included for a C2PC related to adding a new antenna and addressing portable usage.
Power Spectral Density	N/A	15.247(e), KDB 558074 10(b)(1)	RSS-247 5.2(b)	11.10.2	Not included for a C2PC related to adding a new antenna and addressing portable usage.
Powerline Conducted Emissions (Receiver)	N/A	15.101, 15.107	RSS-Gen 5.2	ANSI C63.4 - 12.2.4	Not included per FCC 15.101 as this will be covered under SDoC rules for the FCC. RSS-Gen section 7 stated receiver requirements only apply to standalone receivers operating in the 30-960 MHz band and this is not a standalone receiver.
Radiated Emissions for Receiver	N/A	15.101, 15.109	RSS-Gen 5.2	ANSI C63.4 - 12.2.5	Not included per FCC 15.101 as this will be covered under SDoC rules for the FCC. RSS-Gen section 7 stated receiver requirements only apply to standalone receivers operating in the 30-960 MHz band and this is not a standalone receiver.

Deviations From Test Standards

None

Approved By:

Trevor Buls

Trevor Buls, Principal EMC Test Engineer
Signed for and on behalf of Element

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		
01	Corrected configurations, CoT results for output power, test description for emissions bandwidth	2024-07-17	3, 14, 34
01	Added Attestation to appendix	2024-07-18	39
01	Updated SRE data	2024-07-18	19-20
01	Updated Modifications and configurations to reflect updated SRE data.	2024-07-18	14, 16

ACCREDITATIONS AND AUTHORIZATIONS

element
2021.09.01

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 - Each laboratory is accredited by A2LA to ISO / IEC 17025, and as a product certifier to ISO / IEC 17065 which allows Element to certify transmitters to FCC and IC specifications.

Canada

ISED - Recognized by Innovation, Science and Economic Development Canada as a Certification Body (CB) and as a CAB for the acceptance of test data.

European Union

European Commission – Recognized as an EU Notified Body validated for the EMCD and RED Directives.

United Kingdom

BEIS – Recognized by the UK as an Approved Body under the UK Radio Equipment and UK EMC Regulations.

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:

California Minnesota Oregon Texas Washington

FACILITIES

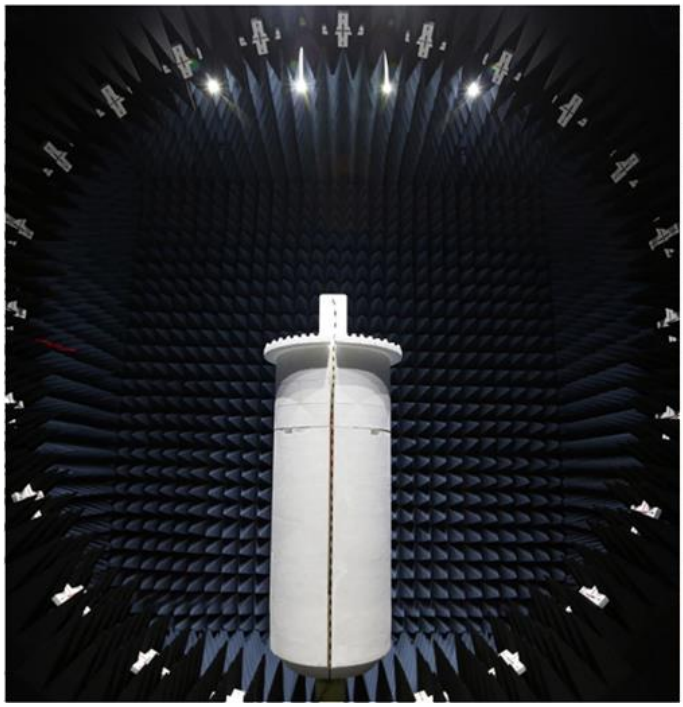
element
2023.09.21

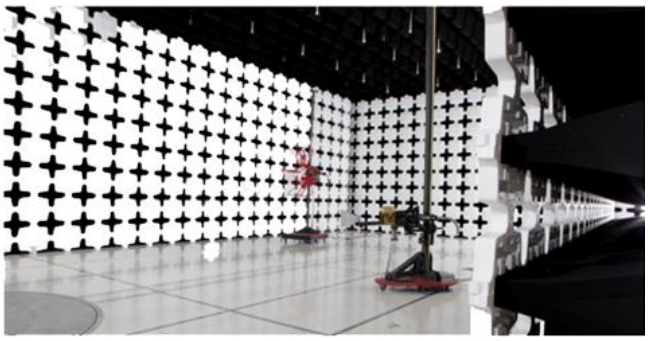
Testing was performed at the following location(s)

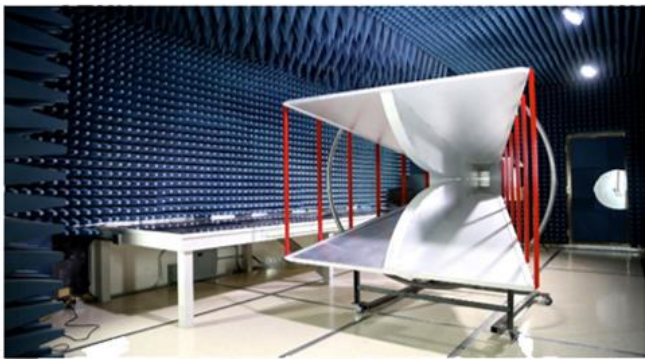
	Location	Labs (1)	Address	A2LA (2)	ISED (3)	BSMI (4)	VCCI (5)	CAB (6)	FDA (7)
☐	California	OC01-17	41 Tesla Irvine, CA 92618 (949) 861-8918	3310.04	2834B	SL2-IN-E-1154R	A-0029	US0158	TL-55
☒	Minnesota	MN01-11	9349 W Broadway Ave. Brooklyn Park, MN 55445 (612) 638-5136	3310.05	2834E	SL2-IN-E-1152R	A-0109	US0175	TL-57
☐	Oregon	EV01-12	6775 NE Evergreen Pkwy #400 Hillsboro, OR 97124 (503) 844-4066	3310.02	2834D	SL2-IN-E-1017	A-0108	US0017	TL-56
☐	Texas	TX01-09	3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	3310.03	2834G	SL2-IN-E-1158R	A-0201	US0191	TL-54
☐	Washington	NC01-05	19201 120th Ave NE Bothell, WA 98011 (425) 984-6600	3310.06	2834F	SL2-IN-E-1153R	A-0110	US0157	TL-67
☐	Offsite	N/A	See Product Description	N/A	N/A	N/A	N/A	N/A	N/A

See data sheets for specific labs

(1) The lab designations denote individual rooms within each location. (OC01, OC02, OC03, etc.)
(2) A2LA Certificate No.
(3) ISED Company No.
(4) BSMI No.
(5) VCCI Site Filing No.
(6) CAB Identifier. Recognized Phase I CAB for ISED, ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA
(7) FDA ASCA No.







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 in the table below. A lab specific value may also be found in the applicable test description section. 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	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	1.2 dB	-1.2 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)	3.2 dB	-3.2 dB

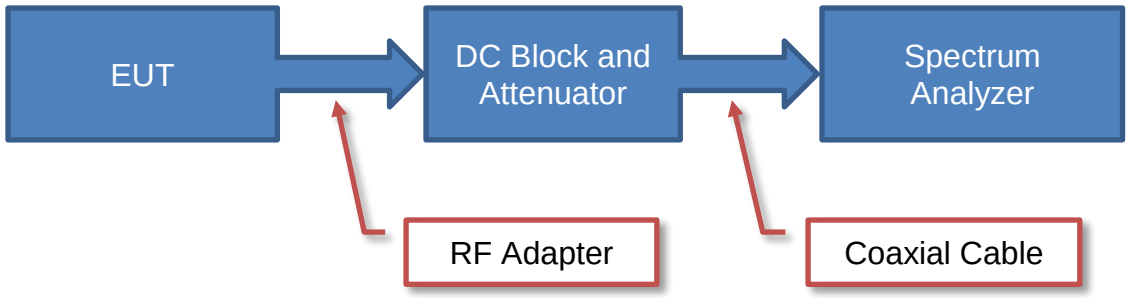
TEST SETUP BLOCK DIAGRAMS

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

Unless otherwise stated, measurements were made using the bandwidths and detectors specified. No video filter was used.

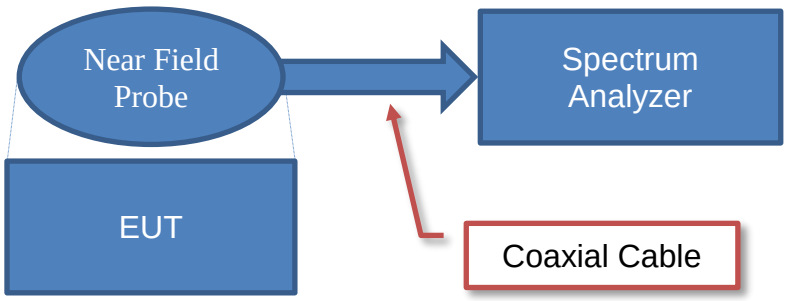
Antenna Port Conducted Measurements



Sample Calculation (logarithmic units)

Measured Value		Measured Level		Reference Level Offset
71.2	=	42.6	+	28.6

Near Field Test Fixture Measurements

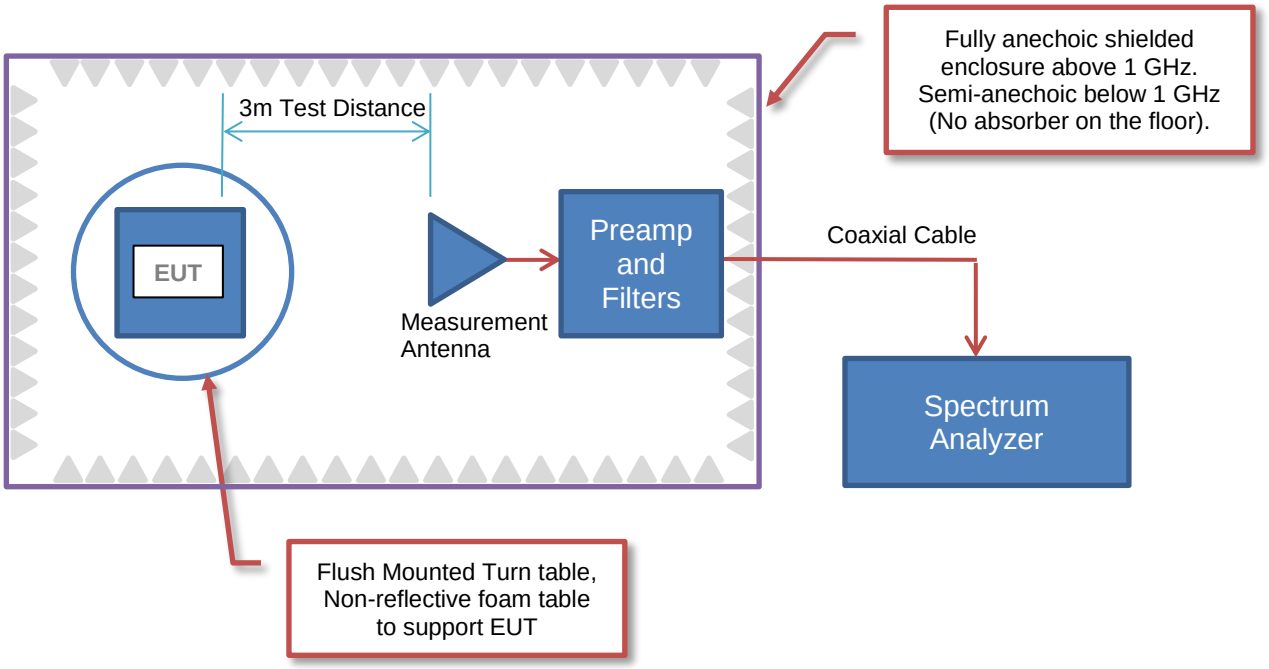


Sample Calculation (logarithmic units)

Measured Value		Measured Level		Reference Level Offset
71.2	=	42.6	+	28.6

TEST SETUP BLOCK DIAGRAMS

Emissions Measurements



Sample Calculation (logarithmic units)

Radiated Emissions:

Measured Level (Amplitude)		Factor: Antenna Factor		Factor: Cable Factor		Factor: Amplifier Gain		Distance Adjustment Factor		External Attenuation		Field Strength
42.6	+	28.6	+	3.1	-	40.8	+	0.0	+	0.0	=	**33.5**

Conducted Emissions:

Measured Level (Amplitude)		Factor: Transducer Factor		Factor: Cable Factor		External Attenuation		Adjusted Level
26.7	+	0.3	+	0.1	+	20.0	=	**47.1**

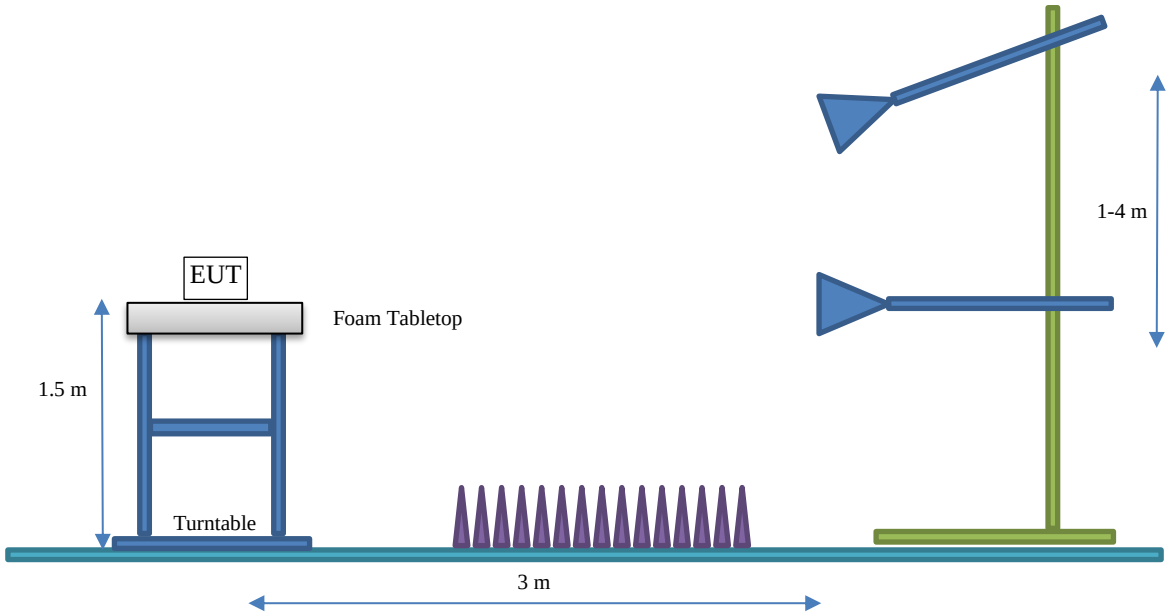
Radiated Power (ERP/EIRP) – Substitution Method:

Measured Level into Substitution Antenna (Amplitude dBm)		Substitution Antenna Factor (dBi)		EIRP to ERP (if applicable)		Measured power (dBm ERP/EIRP)
10.0	+	6.0	-	2.15	=	**13.9/16.0**

TEST SETUP BLOCK DIAGRAMS

Bore Sighting (>1GHz)

The diameter of the illumination area is the dimension of the line tangent to the EUT formed by 3 dB beamwidth of the measurement antenna at the measurement distance. At a 3 meter test distance, the diameter of the illumination area was 3.8 meters at 1 GHz and greater than 2.1 meters up to 6 GHz. Above 1 GHz, when required by the measurement standard, the antenna is pointed for both azimuth and elevation to maintain the receive antenna within the cone of radiation from the EUT. The specified measurement detectors were used for comparison of the emissions to the peak and average specification limits.



PRODUCT DESCRIPTION

Client and Equipment under Test (EUT) Information

Company Name:	Multi-Tech Systems, Inc.
Address:	2205 Woodale Dr
City, State, Zip:	Mounds View, MN 55112
Test Requested By:	Tim Gunn
EUT:	RBS304 Panic Button
First Date of Test:	February 14, 2022
Last Date of Test:	February 14, 2022
Receipt Date of Samples:	February 14, 2022
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 sensors designed and manufactured by Radio Bridge provide full sensor to cloud solutions for Internet of Things (IoT) applications. The wireless single push button sensor can be used as a panic button, PERS, remote control, or other remote push button applications. When the button is pressed, a message is sent over the wireless network.

This radio has both DTS and Hybrid modes. This test report covers Hybrid operation.

Testing Objective:

Seeking to demonstrate compliance of the LoRa radio with operation under FCC 15.247:2024 and RSS-Gen Issue 5:2018+A1:2019+A2:2021, RSS-247 Issue 3:2023 specifications under technology category Other.

POWER SETTINGS AND ANTENNAS

The power settings, antenna gain value(s) and cable loss (if applicable) used for the testing contained in this report were provided by the customer and will affect the validity of the results. Element assumes no responsibility for the accuracy of this information.

ANTENNA GAIN (dBi)

Type	Provided by:	Frequency Range (MHz)	Gain (dBi)
Ceramic Chip Antenna	Unictron Technologies Corp.	902-928	0.8

The EUT was tested using the power settings provided by the manufacturer:

SETTINGS FOR ALL TESTS IN THIS REPORT

Modulation Types	Position (if multiple channels)	Frequency (MHz)	Power Setting
CSS Modulation 125 kHz Channel Bandwidth	Low Channel	902.3	18 dBm
	Mid Channel	908.7	18 dBm
	High Channel	914.9	18 dBm

TEST FIRMWARE AND SOFTWARE

Main Processor – PIC18LF26K40 Firmware Version 2.2.14
Radio Processor – 1SJ Firmware Version 1.0.02

Test Software:
Tera Term Version 4.106

CONFIGURATIONS

Configuration MLTI0217-1

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Panic Button	Multi-Tech Systems, Inc.	RBS304	1243133741-0013

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop	Lenovo	P15s	PF-2Z6MQL
Power Supply (Laptop)	Lenovo	14F006V	8SSA10R16898D1SG
USB to Serial Bridge	N/A	YPU-05	N/A

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Cable (Laptop)	No	1.0 m	No	AC Mains	Power Supply (Laptop)
DC Cable (Laptop)	No	1.8 m	No	Power Supply (Laptop)	Laptop
USB Cable	Yes	1.8 m	No	Laptop	USB to Serial Bridge
Serial Cable	No	0.2 m	No	USB to Serial Bridge	Panic Button

Configuration MLTI0217-2

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Panic Button	Multi-Tech Systems, Inc.	RBS304	1243133741-0015

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop	Lenovo	P15s	PF-2Z6MQL
Power Supply (Laptop)	Lenovo	14F006V	8SSA10R16898D1SG
USB to Serial Bridge	N/A	YPU-05	N/A

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Cable (Laptop)	No	1.0 m	No	AC Mains	Power Supply (Laptop)
DC Cable (Laptop)	No	1.8 m	No	Power Supply (Laptop)	Laptop
USB Cable	Yes	1.8 m	No	Laptop	USB to Serial Bridge
Serial Cable	No	0.2 m	No	USB to Serial Bridge	Panic Button

CONFIGURATIONS

Configuration MLTI0217-3

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Panic Button	Multi-Tech Systems, Inc.	RBS304	1243133741-0023

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop	Lenovo	P15s	PF-2Z6MQL
Power Supply (Laptop)	Lenovo	14F006V	8SSA10R16898D1SG
USB to Serial Bridge	N/A	YPU-05	N/A

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Cable (Laptop)	No	1.0 m	No	AC Mains	Power Supply (Laptop)
DC Cable (Laptop)	No	1.8 m	No	Power Supply (Laptop)	Laptop
USB Cable	Yes	1.8 m	No	Laptop	USB to Serial Bridge
Serial Cable	No	0.2 m	No	USB to Serial Bridge	Panic Button

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2022-01-31	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	2022-02-14	Duty Cycle	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
3	2022-02-14	Emissions Bandwidth (20dB)	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
4	2022-02-14	Output Power	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
5	2022-02-14	Equivalent Isotropic Radiated Power (EIRP)	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

SPURIOUS RADIATED EMISSIONS

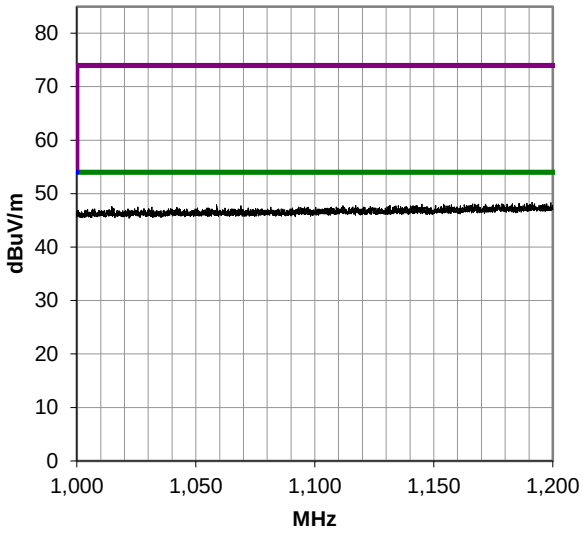
element
WTD.2024.01.16.0
EmiR5 2023.08.29.0
PSA-ESCI 2023.12.23.0

PRESCAN DATA

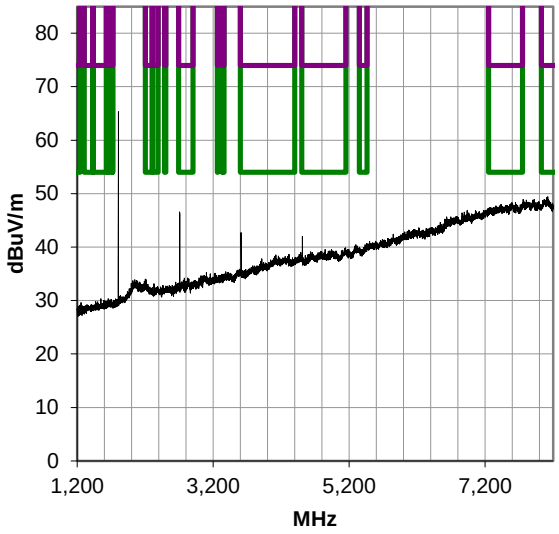
Radiated spurious emissions from the EUT are initially reviewed with Pre-scans (Preview scans). Pre-scans are performed, with the EUT transmitting on the lowest applicable data rate, for both vertical and horizontal polarizations. The Pre-scan plots below are shown with a peak detector and RBW for the following frequency ranges: 9 kHz RBW (< 30 MHz); 120 kHz RBW (30 - 1000 MHz); 1 MHz RBW (> 1 GHz). In the case where unintentional emissions are observed, an ambient or idle pre-scan with the radio off, will be shown for comparison.

These prescans were also referenced in MLTI0360.1

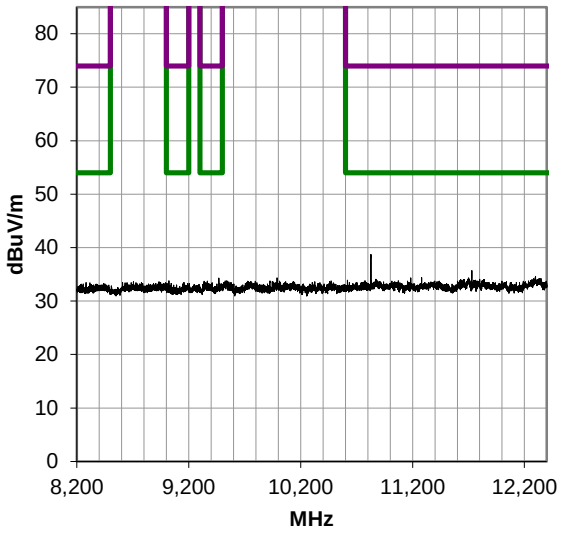
1000-1200 MHz, Run 4



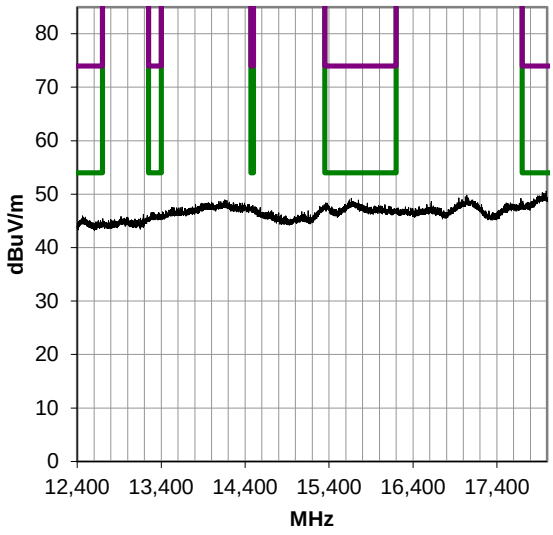
1200-8200 MHz, Run 5



8200-12400 MHz, Run 6



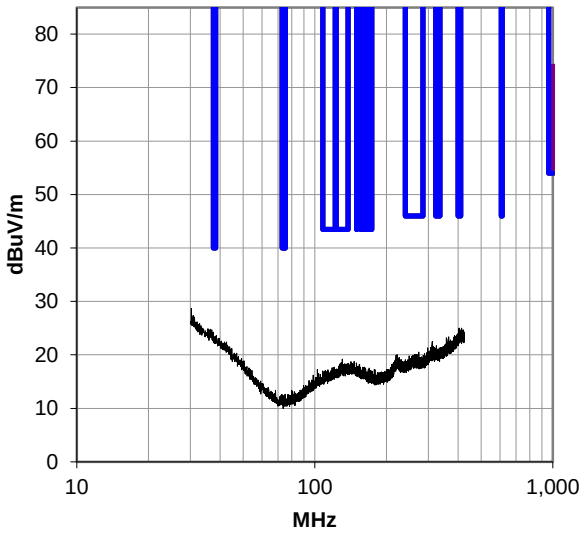
12400-18000 MHz, Run 7



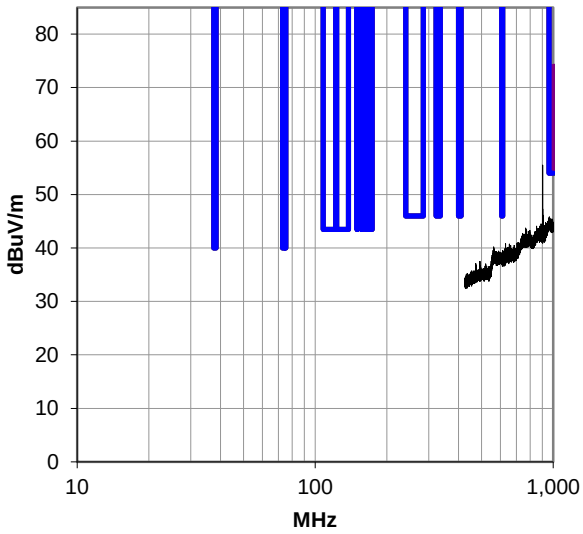
SPURIOUS RADIATED EMISSIONS

element
WTD.2024.01.16.0
EmiR5 2023.08.29.0
PSA-ESCI 2023.12.23.0

30-425 MHz, Run 19



425-1000 MHz, Run 21



SPURIOUS RADIATED EMISSIONS

element

PSA-ESCI 2022.1.12.0

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

SRD Transmitting on Low Channel 902.3 MHz, Mid Channel 908.7 MHz, High Channel 914.9 MHz, modulated.

POWER SETTINGS INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

MLTI0217 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	18 GHz

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.	Cal. Due
Filter - Low Pass	Micro-Tronics	LPM50003	HGL	2021-09-10	2022-09-10
Filter - High Pass	Micro-Tronics	HPM50108	HFW	2021-09-10	2022-09-10
Filter - High Pass	Micro-Tronics	HPM50111	HFM	2021-09-10	2022-09-10
Filter - Band Pass/Notch	K&L Microwave	3TNF-500/1000-N/N	HGS	2021-06-28	2022-06-28
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFG	2021-05-18	2022-05-18
Cable	Element	Biconilog Cable	MNX	2022-01-24	2023-01-24
Cable	Element	Double Ridge Guide Horn Cables	MNV	2022-01-24	2023-01-24
Cable	Element	Standard Gain Cable	MNW	2022-01-24	2023-01-24
Antenna - Biconilog	Teseq	CBL 6141B	AYD	2020-02-05	2022-02-05
Attenuator	Coaxicom	3910-20	AXY	2021-09-10	2022-09-10
Attenuator	Coaxicom	3910-10	AWZ	2021-09-10	2022-09-10
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVX	2022-01-24	2023-01-24
Antenna - Standard Gain	ETS-Lindgren	3160-08	AJP	NCR	NCR
Antenna - Standard Gain	ETS-Lindgren	3160-07	AJJ	NCR	NCR
Antenna - Double Ridge	ETS Lindgren	3115	AIB	2020-09-03	2022-09-03
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVC	2022-01-24	2023-01-24

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 within 2 MHz of the allowable band may have been taken using the integration method from ANSI C63.10 clause 11.13.3. This procedure uses the channel power feature of the spectrum analyzer to integrate the power of the emission within a 1 MHz bandwidth.

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(1/dc).

SPURIOUS RADIATED EMISSIONS

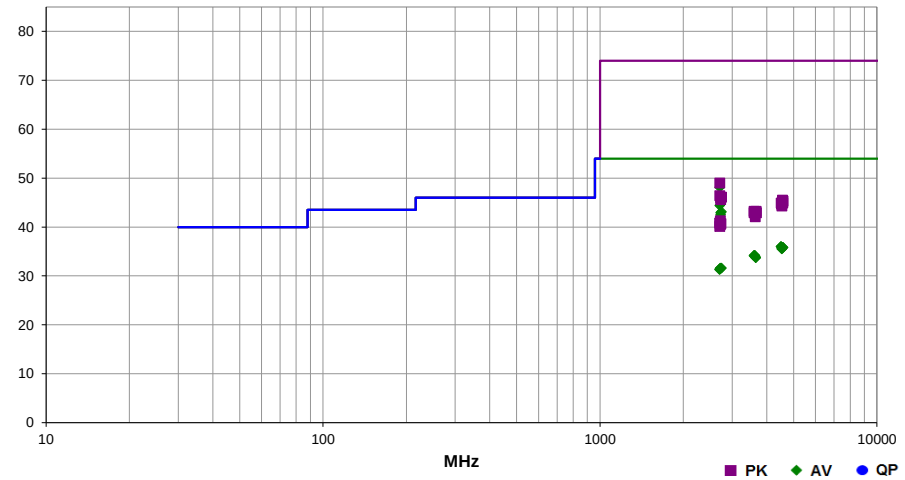
element

EmRS 2021.09.09.0 PSA-ESCI 2022.1.12.0

Work Order:	MLTI0217	**Date:**	2022-01-31		
Project:	None	**Temperature:**	22.2 °C		
Job Site:	MN09	**Humidity:**	19.8% RH		
Serial Number:	1243133741-0023	**Barometric Pres.:**	1014 mbar	**Tested by:**	Chris Patterson
EUT:	RBS304 Panic Button				
Configuration:	1				
Customer:	Multi-Tech Systems, Inc.				
Attendees:	Mike Fette, Mike Dauk				
EUT Power:	Battery				
Operating Mode:	SRD Transmitting on Low Channel 902.3 MHz, Mid Channel 908.7 MHz, High Channel 914.9 MHz, modulated.				
Deviations:	None				
Comments:	Duty Cycle Correction Factor (DCCF) was applied based on the test mode duty cycle of 65.6% = 10 * LOG(1/0.656) = 1.8 dB				

Test Specifications	Test Method
FCC 15.247:2022	ANSI C63.10:2013
RSS-247: Issue 3:2023	ANSI C63.10:2013
RSS-Gen Issue 5:2018+A1:2019+A2:2021	ANSI C63.10:2013

Run #	15	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2706.780	48.4	-2.1	1.1	87.0	1.8	0.0	Horz	AV	0.0	48.1	54.0	-5.9	EUT Horz, Low Ch
2706.780	44.7	-2.1	1.4	211.0	1.8	0.0	Vert	AV	0.0	44.4	54.0	-9.6	EUT Horz, Low Ch
2744.870	43.3	-2.0	1.1	85.0	1.8	0.0	Horz	AV	0.0	43.1	54.0	-10.9	EUT Horz, High Ch
2726.220	43.0	-1.9	1.5	82.0	1.8	0.0	Horz	AV	0.0	42.9	54.0	-11.1	EUT Horz, Mid Ch
2725.930	42.6	-1.9	1.1	33.0	1.8	0.0	Vert	AV	0.0	42.5	54.0	-11.5	EUT Horz, Mid Ch
4507.040	29.4	4.8	1.5	323.0	1.8	0.0	Horz	AV	0.0	36.0	54.0	-18.0	EUT Horz, Low Ch
4499.290	29.4	4.8	1.5	39.0	1.8	0.0	Vert	AV	0.0	36.0	54.0	-18.0	EUT Horz, Low Ch
4580.250	28.9	5.1	1.5	291.0	1.8	0.0	Horz	AV	0.0	35.8	54.0	-18.2	EUT Horz, High Ch
4577.210	28.9	5.1	2.4	317.0	1.8	0.0	Vert	AV	0.0	35.8	54.0	-18.2	EUT Horz, High Ch
4533.120	28.8	5.0	1.5	70.0	1.8	0.0	Vert	AV	0.0	35.6	54.0	-18.4	EUT Horz, Mid Ch
4532.250	28.8	4.9	3.0	99.0	1.8	0.0	Horz	AV	0.0	35.5	54.0	-18.5	EUT Horz, Mid Ch
3623.550	31.1	1.3	1.5	297.0	1.8	0.0	Horz	AV	0.0	34.2	54.0	-19.8	EUT Horz, Mid Ch
3596.780	31.4	1.0	1.5	172.0	1.8	0.0	Horz	AV	0.0	34.2	54.0	-19.8	EUT Horz, Low Ch
3623.050	31.0	1.3	1.5	355.0	1.8	0.0	Vert	AV	0.0	34.1	54.0	-19.9	EUT Horz, Mid Ch
3596.910	31.3	1.0	1.9	66.0	1.8	0.0	Vert	AV	0.0	34.1	54.0	-19.9	EUT Horz, Low Ch
3653.390	30.4	1.6	1.5	151.0	1.8	0.0	Vert	AV	0.0	33.8	54.0	-20.2	EUT Horz, High Ch
3653.140	30.3	1.6	1.5	36.0	1.8	0.0	Horz	AV	0.0	33.7	54.0	-20.3	EUT Horz, High Ch
2719.110	31.7	-1.9	1.5	107.0	1.8	0.0	Horz	AV	0.0	31.6	54.0	-22.4	EUT On Side, Low Ch
2745.910	31.8	-2.0	3.8	138.0	1.8	0.0	Vert	AV	0.0	31.6	54.0	-22.4	EUT Horz, High Ch
2718.440	31.6	-1.9	3.5	308.0	1.8	0.0	Vert	AV	0.0	31.5	54.0	-22.5	EUT Vert, Low Ch
2704.980	31.7	-2.1	1.5	231.0	1.8	0.0	Vert	AV	0.0	31.4	54.0	-22.6	EUT On Side, Low Ch
2703.520	31.6	-2.1	1.5	51.0	1.8	0.0	Horz	AV	0.0	31.3	54.0	-22.7	EUT Vert, Low Ch
2706.820	51.1	-2.1	1.1	87.0	0.0	0.0	Horz	PK	0.0	49.0	74.0	-25.0	EUT Horz, Low Ch
2706.940	48.5	-2.1	1.4	211.0	0.0	0.0	Vert	PK	0.0	46.4	74.0	-27.6	EUT Horz, Low Ch
2744.660	48.1	-2.0	1.1	85.0	0.0	0.0	Horz	PK	0.0	46.1	74.0	-27.9	EUT Horz, High Ch
2726.100	47.9	-1.9	1.5	82.0	0.0	0.0	Horz	PK	0.0	46.0	74.0	-28.0	EUT Horz, Mid Ch
2726.020	47.5	-1.9	1.1	33.0	0.0	0.0	Vert	PK	0.0	45.6	74.0	-28.4	EUT Horz, Mid Ch
4555.210	40.6	4.9	3.0	99.0	0.0	0.0	Horz	PK	0.0	45.5	74.0	-28.5	EUT Horz, Mid Ch
4579.750	40.2	5.1	2.4	317.0	0.0	0.0	Vert	PK	0.0	45.3	74.0	-28.7	EUT Horz, High Ch
4506.500	40.1	4.8	1.5	323.0	0.0	0.0	Horz	PK	0.0	44.9	74.0	-29.1	EUT Horz, Low Ch
4566.120	40.0	4.9	1.5	291.0	0.0	0.0	Horz	PK	0.0	44.9	74.0	-29.1	EUT Horz, High Ch
4515.250	39.9	4.8	1.5	39.0	0.0	0.0	Vert	PK	0.0	44.7	74.0	-29.3	EUT Horz, Low Ch
4534.750	39.3	5.0	1.5	70.0	0.0	0.0	Vert	PK	0.0	44.3	74.0	-29.7	EUT Horz, Mid Ch
3660.770	41.6	1.6	1.5	36.0	0.0	0.0	Horz	PK	0.0	43.2	74.0	-30.8	EUT Horz, High Ch
3598.200	42.2	1.0	1.5	172.0	0.0	0.0	Horz	PK	0.0	43.2	74.0	-30.8	EUT Horz, Low Ch
3623.300	41.6	1.3	1.5	355.0	0.0	0.0	Vert	PK	0.0	42.9	74.0	-31.1	EUT Horz, Mid Ch
3668.220	41.2	1.7	1.5	151.0	0.0	0.0	Vert	PK	0.0	42.9	74.0	-31.1	EUT Horz, High Ch
3598.700	41.9	1.0	1.9	66.0	0.0	0.0	Vert	PK	0.0	42.9	74.0	-31.1	EUT Horz, Low Ch
3632.590	40.8	1.3	1.5	297.0	0.0	0.0	Horz	PK	0.0	42.1	74.0	-31.9	EUT Horz, Mid Ch
2717.980	43.2	-1.9	1.5	231.0	0.0	0.0	Vert	PK	0.0	41.3	74.0	-32.7	EUT On Side, Low Ch
2703.440	42.9	-2.1	1.5	107.0	0.0	0.0	Horz	PK	0.0	40.8	74.0	-33.2	EUT On Side, Low Ch
2732.820	42.6	-1.9	3.8	138.0	0.0	0.0	Vert	PK	0.0	40.7	74.0	-33.3	EUT Horz, High Ch
2718.610	42.4	-1.9	1.5	51.0	0.0	0.0	Horz	PK	0.0	40.5	74.0	-33.5	EUT Vert, Low Ch
2705.150	42.2	-2.1	3.5	308.0	0.0	0.0	Vert	PK	0.0	40.1	74.0	-33.9	EUT Vert, Low Ch

DUTY CYCLE

XMit 2020.12.30.0

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	Keysight	N5171B (EXG)	TEY	2019-12-31	2022-12-31
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2021-04-16	2022-04-16
Block - DC	Fairview Microwave	SD3379	AMI	2021-08-13	2022-08-13
Attenuator	Fairview Microwave	18B5W-26	RFY	2021-06-02	2022-06-02
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2021-09-12	2022-09-12

TEST DESCRIPTION

The Duty Cycle (x) of the single channel operation of the radio as controlled by the provided test software was measured for each of the EUT operating modes.

There is no compliance requirement to be met by this test, so therefore no Pass / Fail criteria.

The measurements were made using a zero span on the spectrum analyzer to see the pulses in the time domain. The transmit power was set to its default maximum.

The duty cycle was calculated by dividing the transmission pulse duration (T) by the total period of a single on and total off time.

If the transmit duty cycle < 98 percent, burst gating may have been used during some of the other tests in this report to only take the measurement during the burst duration.

DUTY CYCLE

element

TbtTx 2021.12.14.1 XMit 2020.12.30.0

EUT:	**RBS304 Panic Button**			**Work Order:**	**MLTI0217**
Serial Number:	**1243133741-0015**			**Date:**	**14-Feb-22**
Customer:	**Multi-Tech Systems, Inc.**			**Temperature:**	**22.2 °C**
Attendees:	**Mike Dauk**			**Humidity:**	**16.4% RH**
Project:	**None**			**Barometric Pres.:**	**1028 mbar**
Tested by:	**Andrew Rogstad**	**Power:**	**Battery**	**Job Site:**	**MN08**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2022	ANSI C63.10:2013
RSS-Gen Issue 5:2018+A1:2019+A2:2021	ANSI C63.10:2013
RSS-247 Issue 2:2017	ANSI C63.10:2013

COMMENTS

Reference level offset includes measurement cable, attenuator, DC block, and customer's patch cable.

DEVIATIONS FROM TEST STANDARD

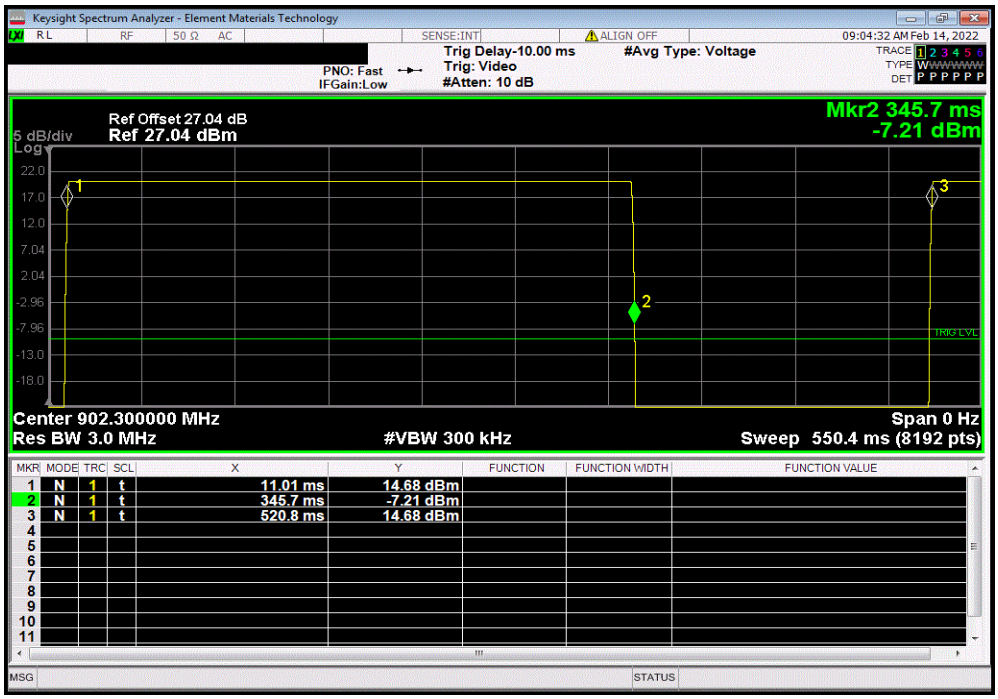
None

Configuration #	**2**	*Signature* 

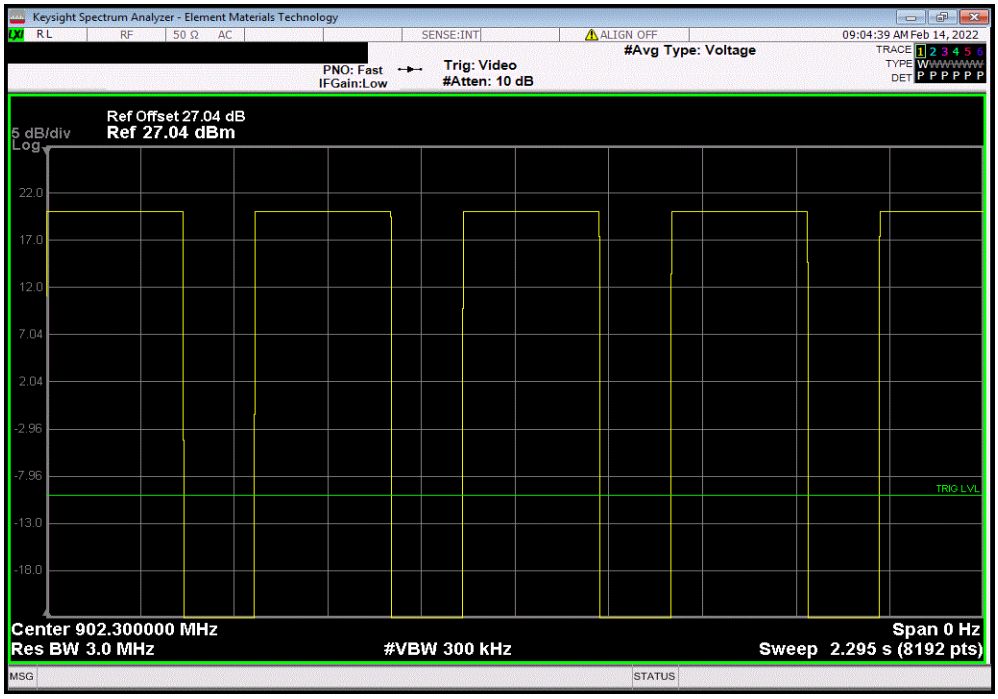
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
125k Channel						
Low Channel, 902.3 MHz	334.644 ms	509.789 ms	1	65.6	N/A	N/A
Low Channel, 902.3 MHz	N/A	N/A	5	N/A	N/A	N/A
Mid Channel, 908.7 MHz	334.634 ms	509.846 ms	1	65.6	N/A	N/A
Mid Channel, 908.7 MHz	N/A	N/A	5	N/A	N/A	N/A
High Channel, 914.9 MHz	334.577 ms	509.796 ms	1	65.6	N/A	N/A
High Channel, 914.9 MHz	N/A	N/A	5	N/A	N/A	N/A

DUTY CYCLE

125k Channel, Low Channel, 902.3 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	334.644 ms	509.789 ms	1	65.6	N/A	N/A

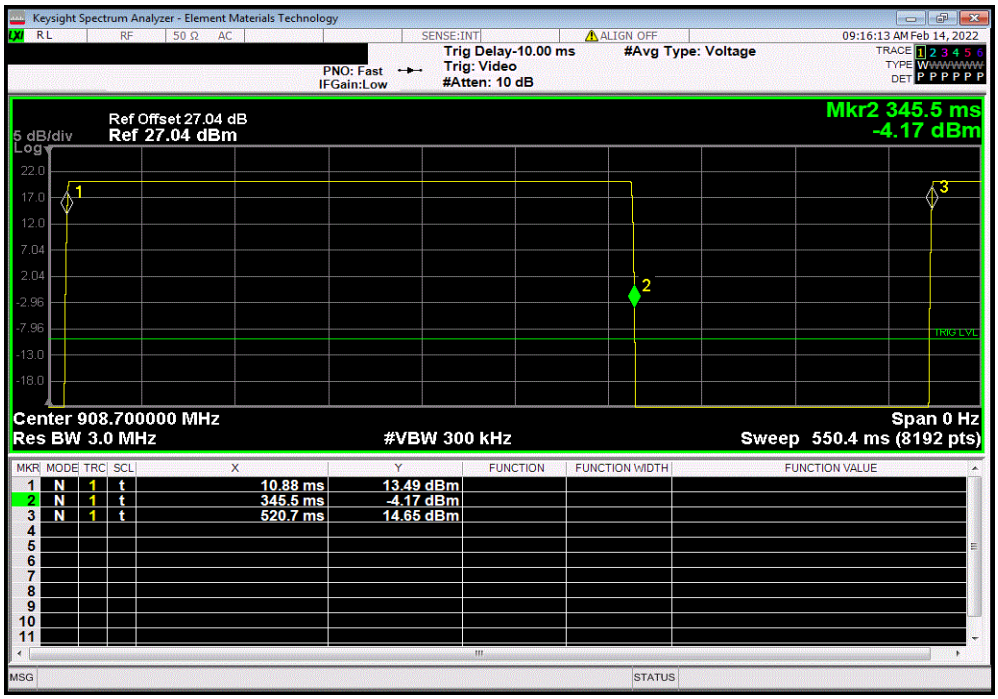


125k Channel, Low Channel, 902.3 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

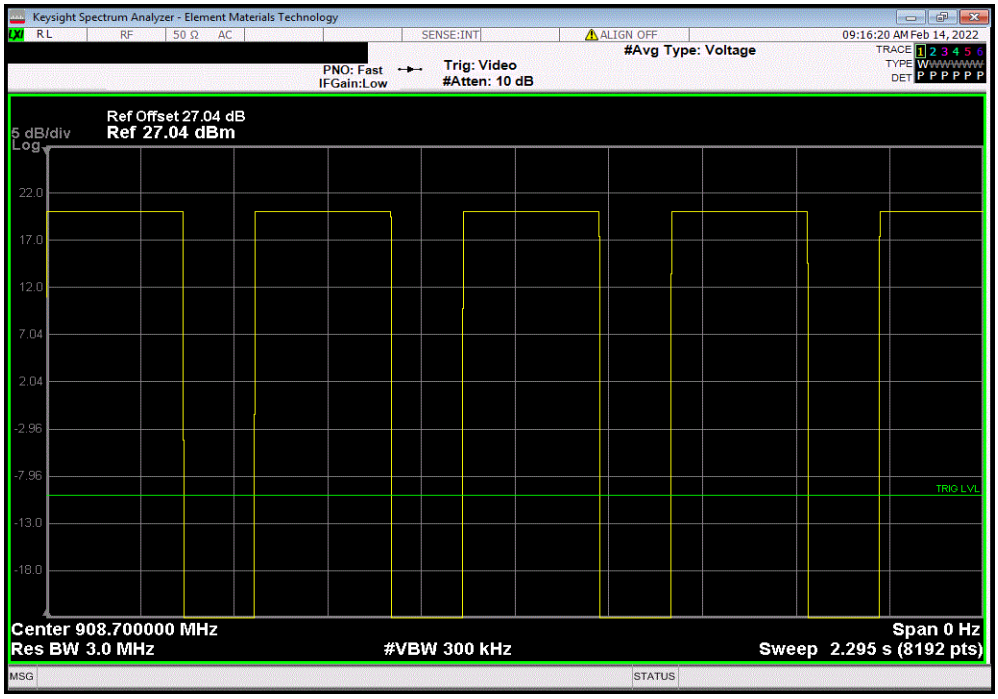


DUTY CYCLE

125k Channel, Mid Channel, 908.7 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	334.634 ms	509.846 ms	1	65.6	N/A	N/A

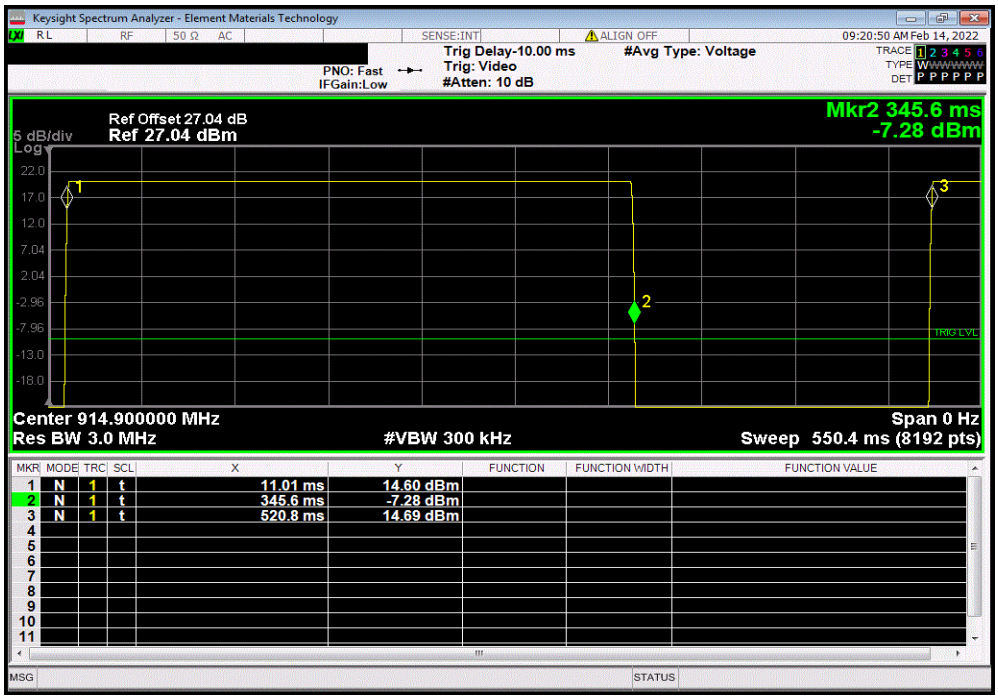


125k Channel, Mid Channel, 908.7 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

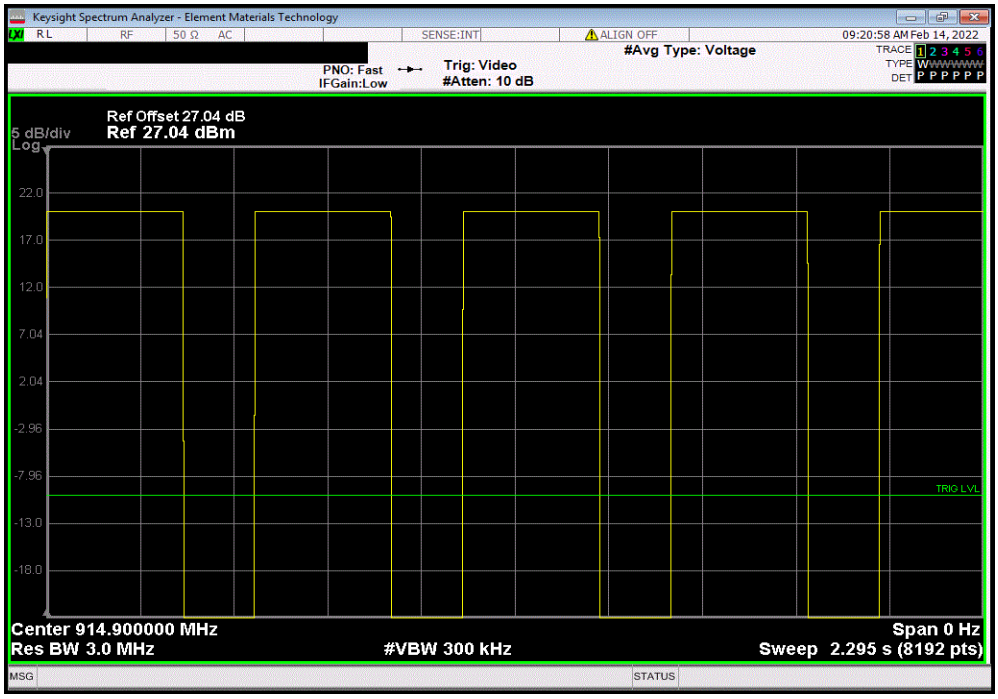


DUTY CYCLE

125k Channel, High Channel, 914.9 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	334.577 ms	509.796 ms	1	65.6	N/A	N/A



125k Channel, High Channel, 914.9 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



OUTPUT POWER

XMit 2020.12.30.0

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	Keysight	N5171B (EXG)	TEY	2019-12-31	2022-12-31
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2021-04-16	2022-04-16
Block - DC	Fairview Microwave	SD3379	AMI	2021-08-13	2022-08-13
Attenuator	Fairview Microwave	18B5W-26	RFY	2021-06-02	2022-06-02
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2021-09-12	2022-09-12

TEST DESCRIPTION

The fundamental emission output power (maximum average conducted output power) was measured using the channels and modes as called out on the following data sheets. The transmit power was set to its default maximum.

Prior to measuring output power; the emission bandwidth (B) and the transmission pulse duration (T) were measured. Both are required to determine the method of measuring Maximum Conducted Output Power. The transmission pulse duration (T) was measured using a zero span on the spectrum analyzer to see the pulses in the time domain.

The method AVGSA-2 in section 11.9.2.2.4 of ANSI C63.10:2013 was used to make the measurement. This method uses trace averaging across ON and OFF times of the EUT transmissions in the spectrum analyzer channel power function using an RMS detector. Following the measurement a duty cycle correction was applied by adding [10 log (1 / D)], where D is the duty cycle, to the measured power to compute the average power during the actual transmission times.

The AVGSA-2 method was modified as the emissions bandwidth (B) was less than the available resolution bandwidth (RBw) of the spectrum analyzer. RBw was set wider than B. This follows the guidance of section 11.9.1.1 and is equivalent to a measurement with a power meter AVGPM per section 11.9.2.3.

OUTPUT POWER

element

TbtTx 2021.12.14.1 XMit 2020.12.30.0

EUT:	**RBS304 Panic Button**			**Work Order:**	**MLTI0217**
Serial Number:	**1243133741-0015**			**Date:**	**14-Feb-22**
Customer:	**Multi-Tech Systems, Inc.**			**Temperature:**	**22.2 °C**
Attendees:	**Mike Dauk**			**Humidity:**	**16.7% RH**
Project:	**None**			**Barometric Pres.:**	**1028 mbar**
Tested by:	**Andrew Rogstad**	**Power:**	**Battery**	**Job Site:**	**MN08**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2022	ANSI C63.10:2013
RSS-Gen Issue 5:2018+A1:2019+A2:2021	ANSI C63.10:2013
RSS-247 Issue 2:2017	ANSI C63.10:2013

COMMENTS

Reference level offset includes measurement cable, attenuator, DC block, and customer's patch cable.

DEVIATIONS FROM TEST STANDARD

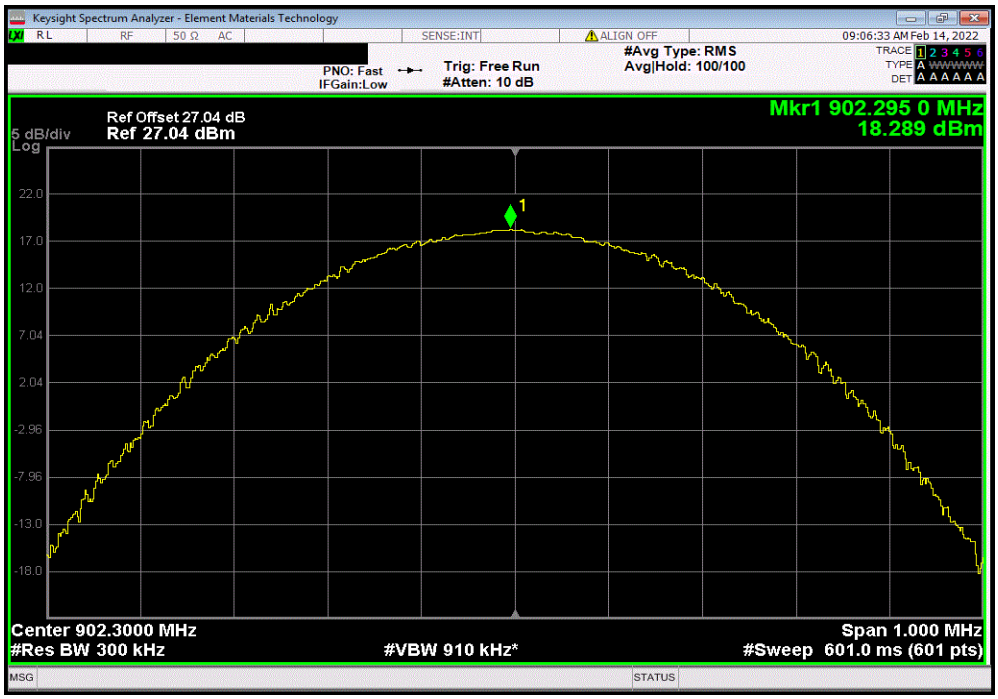
None

Configuration #	**2**	*Signature* 

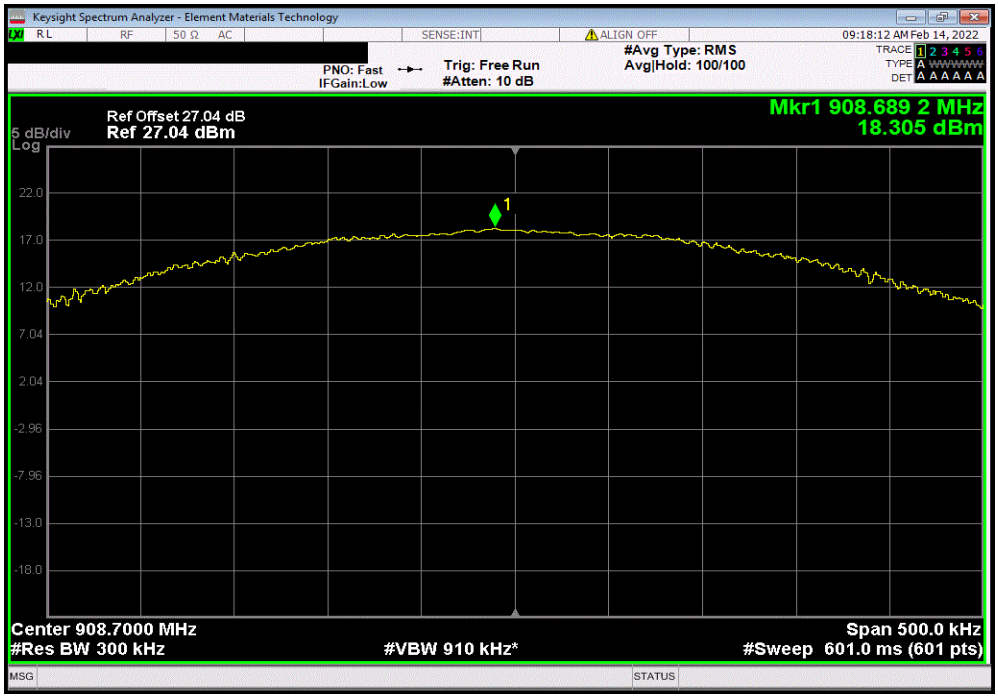
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Value (dBm)	Limit (dBm)	Results
125k Channel					
Low Channel, 902.3 MHz	18.289	1.8	20.1	30	Pass
Mid Channel, 908.7 MHz	18.305	1.8	20.1	30	Pass
High Channel, 914.9 MHz	18.162	1.8	20	30	Pass

OUTPUT POWER

125k Channel, Low Channel, 902.3 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	18.289	1.8		20.1	30	Pass



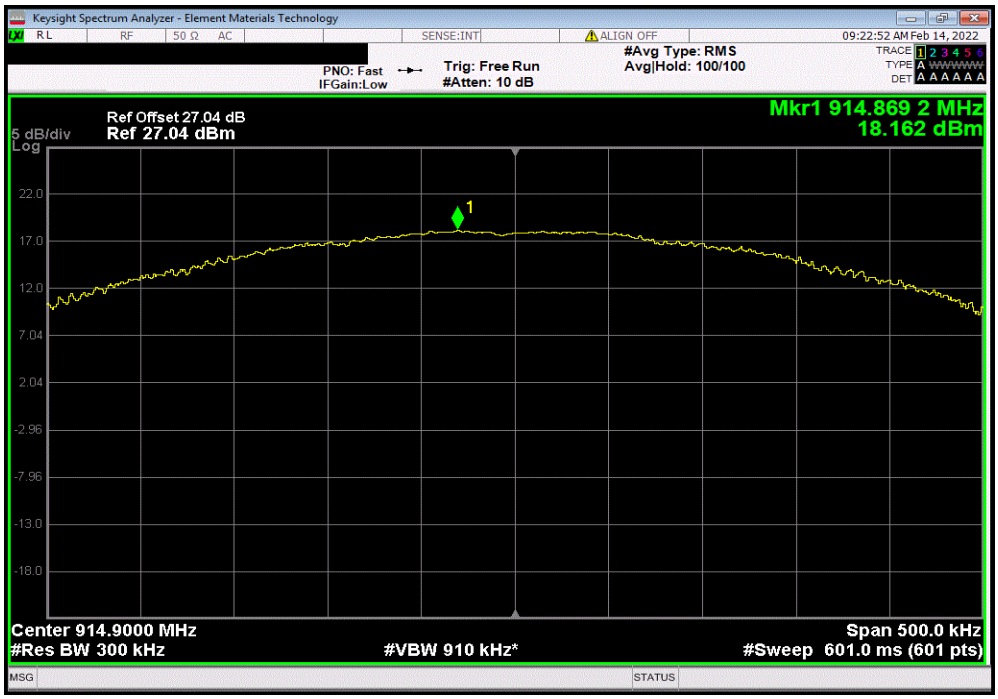
125k Channel, Mid Channel, 908.7 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	18.305	1.8		20.1	30	Pass



OUTPUT POWER

TbtTx 2021.12.14.1 XMit 2020.12.30.0

125k Channel, High Channel, 914.9 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	18.162	1.8		20	30	Pass



EQUIVALENT ISOTROPIC RADIATED POWER

XMit 2020.12.30.0

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	Keysight	N5171B (EXG)	TEY	2019-12-31	2022-12-31
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2021-04-16	2022-04-16
Block - DC	Fairview Microwave	SD3379	AMI	2021-08-13	2022-08-13
Attenuator	Fairview Microwave	18B5W-26	RFY	2021-06-02	2022-06-02
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2021-09-12	2022-09-12

TEST DESCRIPTION

The fundamental emission output power (maximum average conducted output power) was measured using the channels and modes as called out on the following data sheets. The transmit power was set to its default maximum.

Prior to measuring output power; the emission bandwidth (B) and the transmission pulse duration (T) were measured. Both are required to determine the method of measuring Maximum Conducted Output Power. The transmission pulse duration (T) was measured using a zero span on the spectrum analyzer to see the pulses in the time domain.

The method AVGSA-2 in section 11.9.2.2.4 of ANSI C63.10:2013 was used to make the measurement. This method uses trace averaging across ON and OFF times of the EUT transmissions in the spectrum analyzer channel power function using an RMS detector. Following the measurement a duty cycle correction was applied by adding [10 log (1 / D)], where D is the duty cycle, to the measured power to compute the average power during the actual transmission times.

The AVGSA-2 method was modified as the emissions bandwidth (B) was less than the available resolution bandwidth (RBw) of the spectrum analyzer. RBw was set wider than B. This follows the guidance of section 11.9.1.1 and is equivalent to a measurement with a power meter AVGPM per section 11.9.2.3.

Equivalent Isotropic Radiated Power (EIRP) = Max Measured Power + Antenna gain (dBi)

EQUIVALENT ISOTROPIC RADIATED POWER

TbtTx 2021.12.14.1 XMit 2020.12.30.0

EUT:	RBS304 Panic Button			**Work Order:**	MLTI0217
Serial Number:	1243133741-0015			**Date:**	14-Feb-22
Customer:	Multi-Tech Systems, Inc.			**Temperature:**	22.2 °C
Attendees:	Mike Dauk			**Humidity:**	16.7% RH
Project:	None			**Barometric Pres.:**	1028 mbar
Tested by:	Andrew Rogstad	**Power:**	Battery	**Job Site:**	MN08

TEST SPECIFICATIONS	Test Method
FCC 15.247:2022	ANSI C63.10:2013
RSS-Gen Issue 5:2018+A1:2019+A2:2021	ANSI C63.10:2013
RSS-247 Issue 2:2017	ANSI C63.10:2013

COMMENTS

Reference level offset includes measurement cable, attenuator, DC block, and customer's patch cable.

DEVIATIONS FROM TEST STANDARD

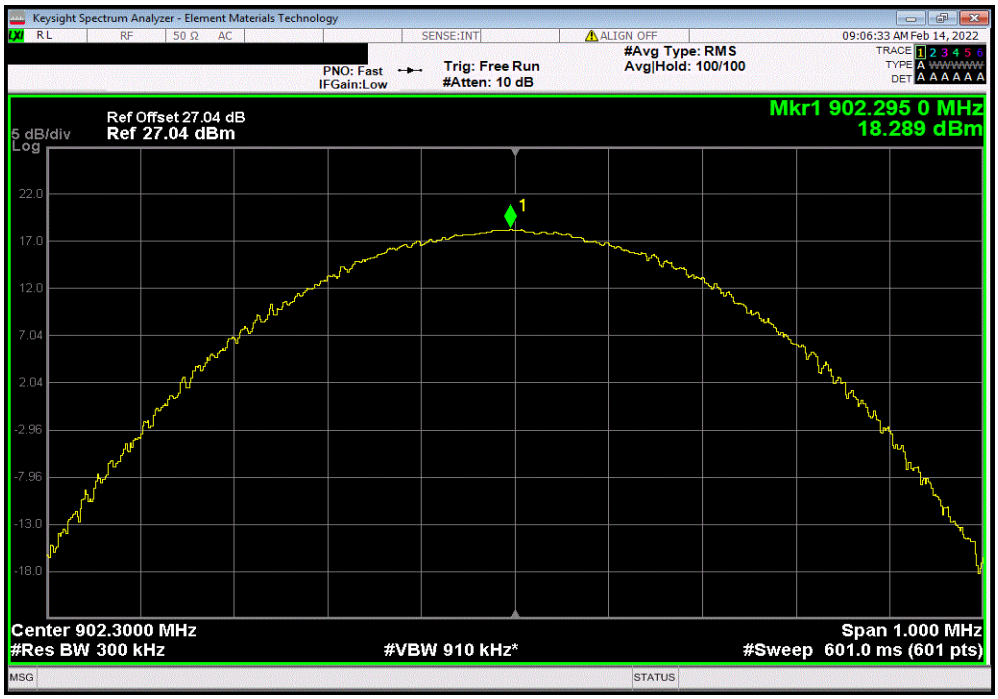
None

Configuration #	2	*Signature*

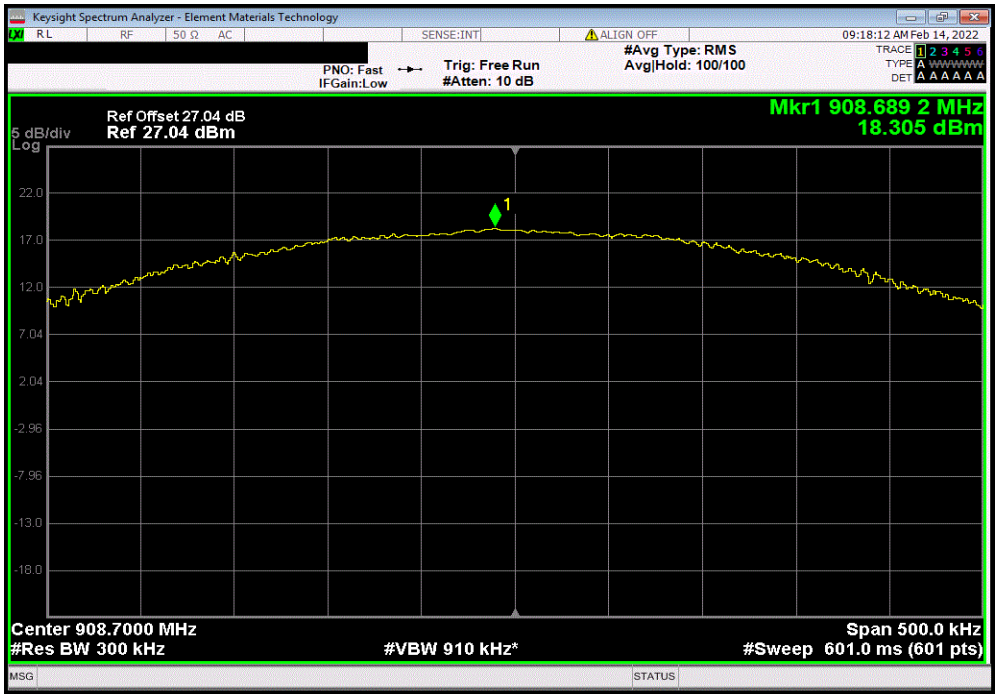
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Antenna Gain (dBi)	Value (dBm EIRP)	Limit (dBm EIRP)	Results
125k Channel						
Low Channel, 902.3 MHz	18.289	1.8	0.8	20.89	36	Pass
Mid Channel, 908.7 MHz	18.305	1.8	0.8	20.91	36	Pass
High Channel, 914.9 MHz	18.162	1.8	0.8	20.76	36	Pass

EQUIVALENT ISOTROPIC RADIATED POWER

125k Channel, Low Channel, 902.3 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Antenna Gain (dBi)	Value (dBm EIRP)	Limit (dBm EIRP)	Results
	18.289	1.8	0.8	20.89	36	Pass



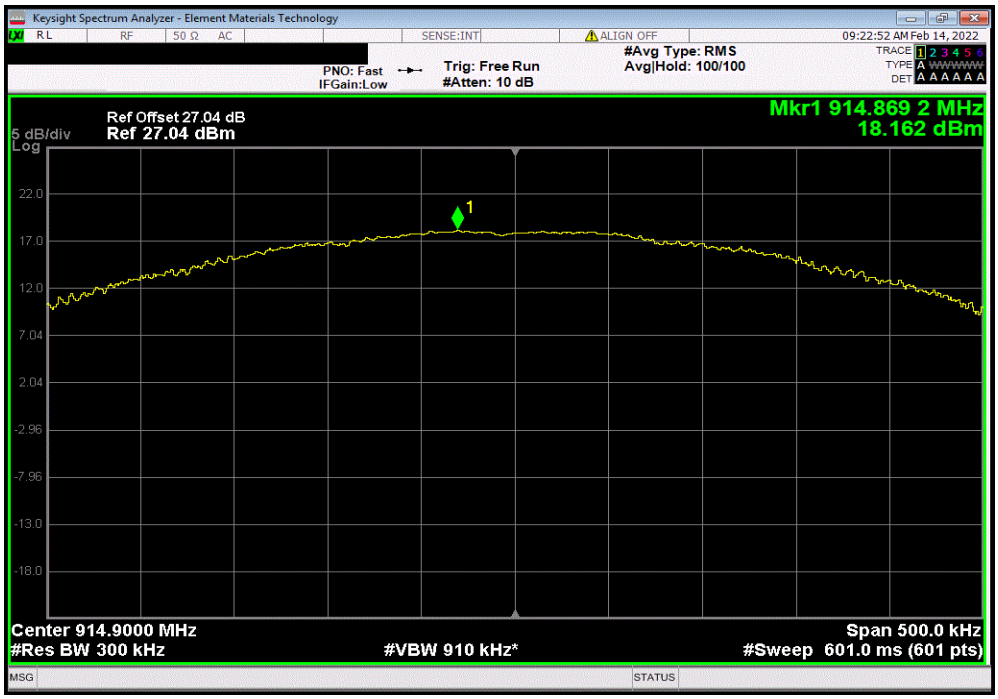
125k Channel, Mid Channel, 908.7 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Antenna Gain (dBi)	Value (dBm EIRP)	Limit (dBm EIRP)	Results
	18.305	1.8	0.8	20.91	36	Pass



EQUIVALENT ISOTROPIC RADIATED POWER

TbtTx 2021.12.14.1 XMit 2020.12.30.0

125k Channel, High Channel, 914.9 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Antenna Gain (dBi)	Value (dBm EIRP)	Limit (dBm EIRP)	Results
	18.162	1.8	0.8	20.76	36	Pass



EMISSIONS BANDWIDTH (20dB)

XMit 2020.12.30.0

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	Keysight	N5171B (EXG)	TEY	2019-12-31	2022-12-31
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2021-04-16	2022-04-16
Block - DC	Fairview Microwave	SD3379	AMI	2021-08-13	2022-08-13
Attenuator	Fairview Microwave	18B5W-26	RFY	2021-06-02	2022-06-02
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2021-09-12	2022-09-12

TEST DESCRIPTION

The EUT was set to the channels and modes listed in the datasheet.

The 20 dB emissions bandwidth was measured with the resolution bandwidth set to greater than 1% of the measured emissions bandwidth. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.

EMISSIONS BANDWIDTH (20dB)

element

TbtTx 2021.12.14.1 XMit 2020.12.30.0

EUT:	**RBS304 Panic Button**			**Work Order:**	**MLTI0217**
Serial Number:	**1243133741-0015**			**Date:**	**14-Feb-22**
Customer:	**Multi-Tech Systems, Inc.**			**Temperature:**	**22.2 °C**
Attendees:	**Mike Dauk**			**Humidity:**	**16.3% RH**
Project:	**None**			**Barometric Pres.:**	**1028 mbar**
Tested by:	**Andrew Rogstad**	**Power:**	**Battery**	**Job Site:**	**MN08**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2022	ANSI C63.10:2013
RSS-Gen Issue 5:2018+A1:2019+A2:2021	ANSI C63.10:2013
RSS-247 Issue 2:2017	ANSI C63.10:2013

COMMENTS

Reference level offset includes measurement cable, attenuator, DC block, and customer's patch cable.

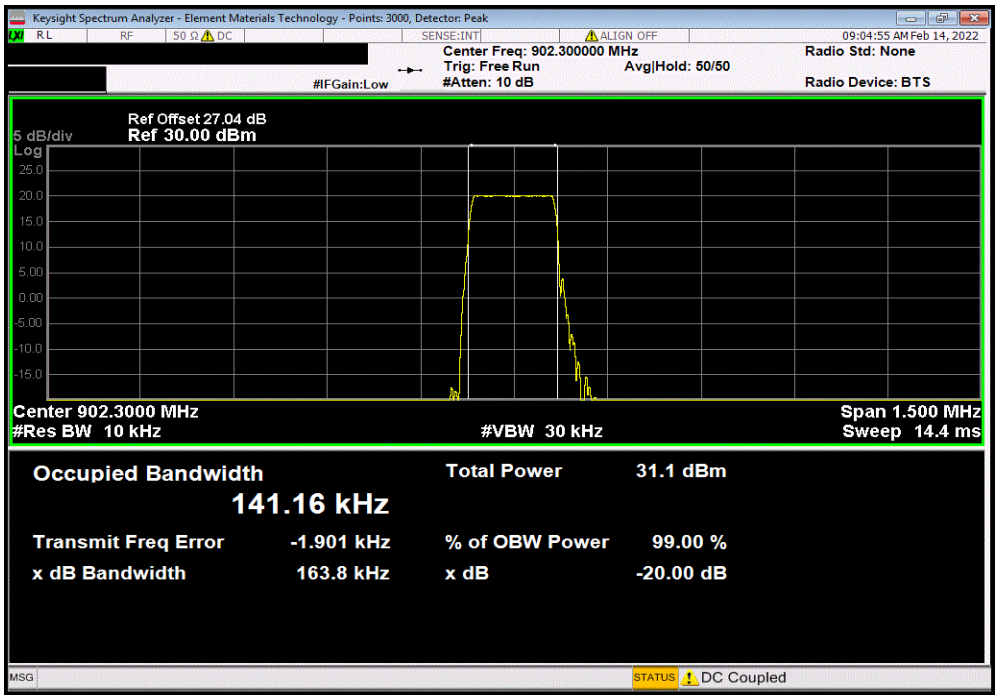
DEVIATIONS FROM TEST STANDARD

None

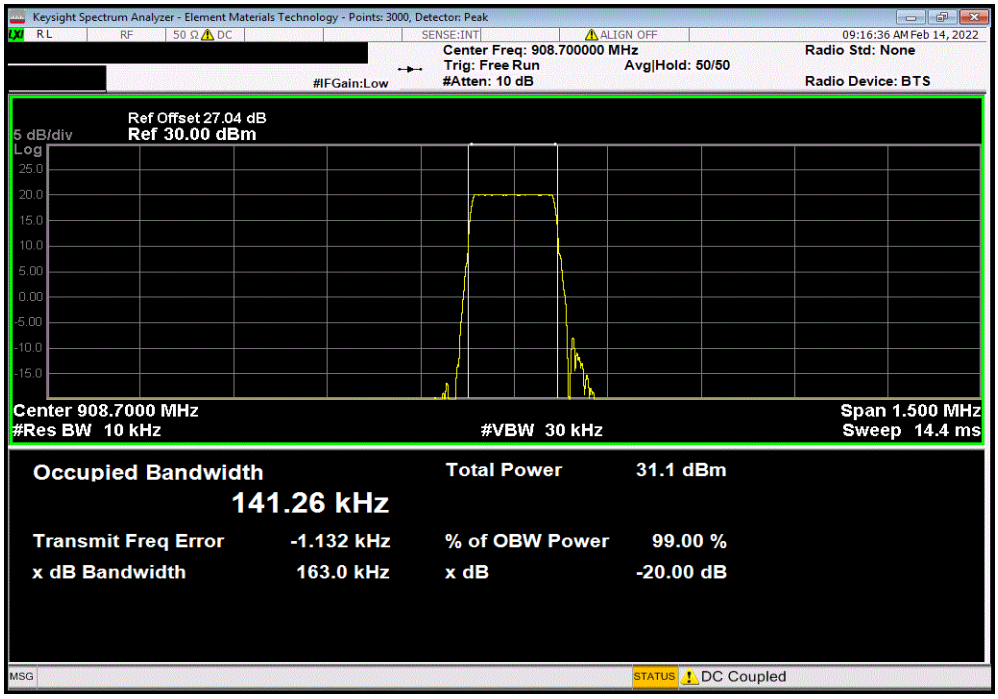
Configuration #	**2**	*Signature* 

	Value	**Limit (>)**	**Result**
125k Channel			
Low Channel, 902.3 MHz	163.828 kHz	N/A	N/A
Mid Channel, 908.7 MHz	162.982 kHz	N/A	N/A
High Channel, 914.9 MHz	162.384 kHz	N/A	N/A

125k Channel, Low Channel, 902.3 MHz						
				Value	Limit (>)	Result
				163.828 kHz	N/A	N/A

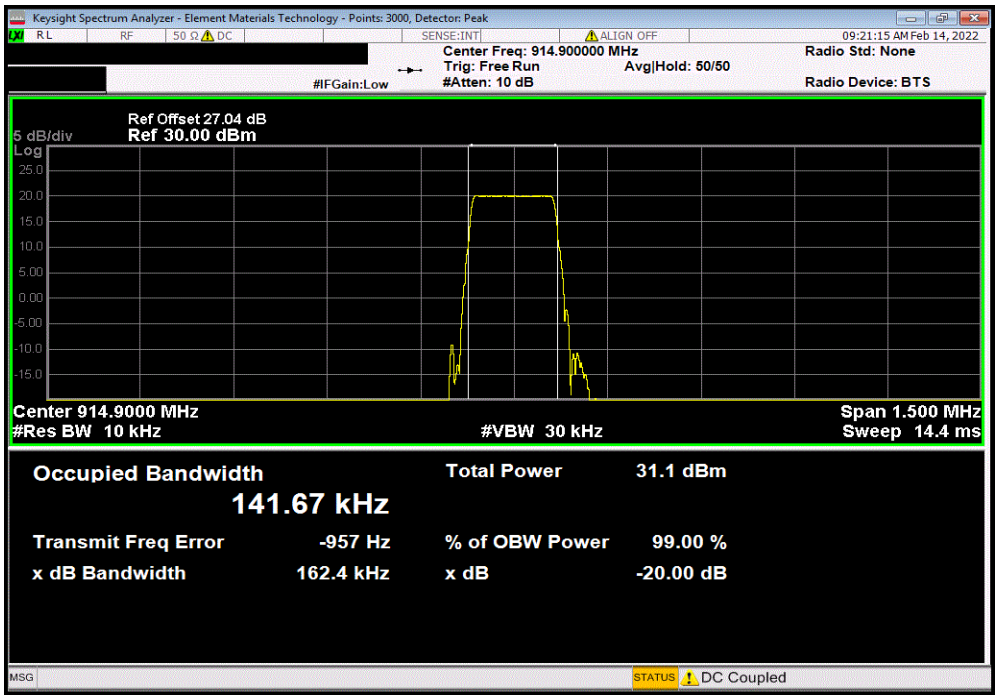


125k Channel, Mid Channel, 908.7 MHz						
				Value	Limit (>)	Result
				162.982 kHz	N/A	N/A



EMISSIONS BANDWIDTH (20dB)

125k Channel, High Channel, 914.9 MHz						
				Value	Limit (>)	Result
				162.384 kHz	N/A	N/A



APPENDIX

DATE: June 5, 2024

Attestation for RBS304 reports
Project MLTI0360

The project got delayed by other priorities but has been re-activated.
The EUT for MLTI0360 reports has not changed since it was tested.

Sincerely,

_____

Name : Tim Gunn
Position: Directory of Technical Engineering Services
Company: Multi-Tech Systems, Inc

End of Test Report