

Garrett Metal Detectors

Wireless/LBC

FCC 15.247:2019

2400 – 2483.5 MHz Wideband DTS Transceiver

Report # GARR0041.1 Rev. 1





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CERTIFICATE OF TEST



Last Date of Test: September 9, 2019 Garrett Metal Detectors Model: Wireless/LBC

Radio Equipment Testing

Standards

Specification	Method
FCC 15.207:2019	ANSI C63.10:2013
FCC 15.247:2019	ANSI 663.10.2013

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	Yes	Pass	
6.5, 6.6, 11.12.1, 11.13.2	Spurious Radiated Emissions	Yes	Pass	
11.6	Duty Cycle	Yes	N/A	Characterization of radio operation.
7.8.2	Carrier Frequency Separation	No	N/A	Not required for DTS devices.
7.8.3	Number of Hopping Frequencies	No	N/A	Not required for DTS devices.
7.8.4	Dwell Time	No	N/A	Not required for DTS devices.
11.9.1.1	Output Power	Yes	Pass	
11.9.1.1	Equivalent Isotropic Radiated Power	Yes	Pass	
11.11	Band Edge Compliance	Yes	Pass	
7.8.6	Band Edge Compliance - Hopping Mode	No	N/A	Not required for DTS devices.
11.8.2	Occupied Bandwidth	Yes	Pass	
11.11	Spurious Conducted Emissions	Yes	Pass	
11.10.2	Power Spectral Density	Yes	Pass	

Deviations From Test Standards

None

Approved By:

Jeremiah Darden, Operations Manager

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

REVISION HISTORY



Revision Number	Description	Date (yyyy-mm-dd)	Page Number
	Updated Power Settings Table	2019-06-27	12
01	Updated all data sheets	2019-06-27	13-52
	Updated last date of test and/or first date of test	2019-06-27	2 and 8
	Replaced configurations with configurations from GARR0058	2019-06-27	9 and 10
	Updated all dates in modifications	2019-06-27	11
	Updated standard dates	2019-06-27	1 and 2

ACCREDITATIONS AND AUTHORIZATIONS



United States

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

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

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

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

European Union

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

Australia/New Zealand

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

Korea

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

Japan

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

Taiwan

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

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

Singapore

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

Israel

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

Hong Kong

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

Vietnam

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

SCOPE

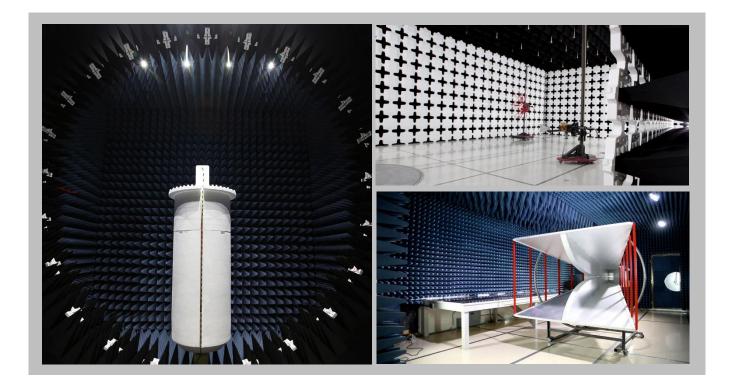
For details on the Scopes of our Accreditations, please visit: https://www.nwemc.com/emc-testing-accreditations

FACILITIES





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



MEASUREMENT UNCERTAINTY



Measurement Uncertainty

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

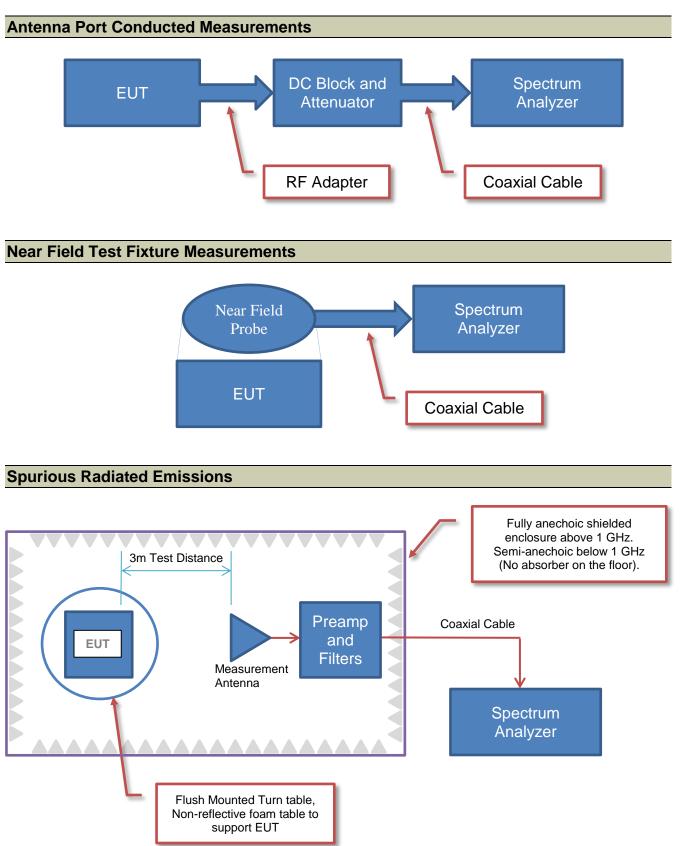
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable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

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

Test	+ MU	- MU
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.1 dB	-5.1 dB
AC Powerline Conducted Emissions (dB)	2.4 dB	-2.4 dB

Test Setup Block Diagrams





PRODUCT DESCRIPTION



Client and Equipment Under Test (EUT) Information

Company Name:	Garrett Metal Detectors
Address:	1881 W. State Street
City, State, Zip:	Garland, TX 75042
Test Requested By:	Weldon Sanders
Model:	Wireless/LBC
First Date of Test:	June 19, 2019
Last Date of Test:	September 9, 2019
Receipt Date of Samples:	November 30, 2018
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT: Light Bar Controller with TI CC2520 Radio Module

Testing Objective:

Seeking to demonstrate compliance of the Wideband DTS Transceiver under FCC 15.247:2019 for operation in the 2400 - 2483.5 MHz Band.





EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Light Bar Controller with TI CC2520 Radio Module (Radiated Transmit, 2405)	Garrett Metal Detectors	Unknown	2405

Peripherals in test setup boundary					
Description Manufacturer Model/Part Number Serial Number					
AC/DC Adapter	Netgear	MU05-J050100-A1	2613321821029100F9		

Cables						
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2	
DC Cable	No	1.5m	No	AC/DC Adapter	Light Bar Controller with TI CC2520 Radio Module	

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Light Bar Controller with TI CC2520 Radio Module (Radiated Transmit, 2440)	Garrett Metal Detectors	Unknown	2440

Peripherals in test setup boundary					
Description Manufacturer Model/Part Number Serial Number					
AC/DC Adapter	Netgear	MU05-J050100-A1	2613321821029100F9		

Cables						
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2	
DC Cable	No	1.5m	No	AC/DC Adapter	Light Bar Controller with TI CC2520 Radio Module	





EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Light Bar Controller with TI CC2520 Radio Module (Radiated Transmit, 2480)	Garrett Metal Detectors	Unknown	2480

Peripherals in test setup boundary					
Description Manufacturer Model/Part Number Serial Number					
AC/DC Adapter	Netgear	MU05-J050100-A1	2613321821029100F9		

Cables						
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2	
DC Cable	No	1.5m	No	AC/DC Adapter	Light Bar Controller with TI CC2520 Radio Module	

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Light Bar Controller with TI CC2520 Radio Module (SMA Transmit, 2405)	Garrett Metal Detectors	Unknown	2405

Peripherals in test setup boundary					
Description	Manufacturer	Model/Part Number	Serial Number		
AC/DC Adapter	Netgear	MU05-J050100-A1	2613321821029100F9		

Cables						
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2	
DC Cable	No	1.5m	No	AC/DC Adapter	Light Bar Controller with TI CC2520 Radio Module	





EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Light Bar Controller with TI CC2520 Radio Module (Radiated Transmit, 2405)	Garrett Metal Detectors	Unknown	2405

Cables						
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2	
DC Power	No	1.0m	No	DC Power	Light Bar Controller with	
Leads	No	1.0m	No	Supply	TI CC2520 Radio Module	

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Light Bar Controller with TI CC2520 Radio Module (Radiated Transmit, 2440)	Garrett Metal Detectors	Unknown	2440

Cables						
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2	
DC Power	No	1.0m	No	DC Power	Light Bar Controller with	
Leads	INO	1.0m	INO	Supply	TI CC2520 Radio Module	





EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Light Bar Controller with TI CC2520 Radio Module (Radiated Transmit, 2480)	Garrett Metal Detectors	Unknown	2480

Cables						
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2	
DC Power	Ne	1.0m	No	DC Power	Light Bar Controller with	
Leads	No	1.0m	No	Supply	TI CC2520 Radio Module	

MODIFICATIONS



Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2019-06-19	Spurious Radiated	Tested as delivered to	No EMI suppression devices were added or	EUT remained at Element following the
		Emissions	Test Station.	modified during this test.	test.
2	2019-06-24	Band Edge	Tested as delivered to	No EMI suppression devices were added or	EUT remained at Element following the
_	2010 00 21	Compliance	Test Station.	modified during this test.	test.
		Occupied	Tested as	No EMI suppression	EUT remained at
3	2019-06-24	Bandwidth	delivered to	devices were added or	Element following the
		Banawiati	Test Station.	modified during this test.	test.
		Spurious	Tested as	No EMI suppression	EUT remained at
4	2019-06-24	Conducted	delivered to	devices were added or	Element following the
		Emissions	Test Station.	modified during this test.	test.
		Power	Tested as	No EMI suppression	EUT remained at
5	2019-06-24	Spectral	delivered to	devices were added or	Element following the
		Density	Test Station.	modified during this test.	test.
6	2019-06-24	Equivalent Isotropic Radiated 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.
7	2019-06-24	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.
8	2019-09-03	Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

POWER SETTINGS



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

SETTINGS FOR ALL TESTS IN THIS REPORT

Position	Frequency (MHz)	Power Setting
Low Channel	2405	Max
Mid Channel	2440	Мах
High Channel	2480	Max



TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Per the standard, an insulating material was also added to ground plane between the EUT's power and remote I/O cables. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 500hm measuring port is terminated by a 500hm EMI meter or a 500hm resistive load. All 500hm measuring ports of the LISN are terminated by 500hm. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Receiver	Rohde & Schwarz	ESCI	ARF	2019-07-31	2020-07-31
Cable - Conducted Cable Assembly	Northwest EMC	TXA, HHZ, TQU	ТХАА	2019-01-30	2020-01-30
LISN	Solar Electronics	9252-50-R-24-BNC	LJK	2019-09-01	2020-09-01
DC Power Supply	Ametek Programmable Power, Inc.	Sorenson XEL30-30	TQE	NCR	NCR

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.4 dB	-2.4 dB

CONFIGURATIONS INVESTIGATED

GARR0058-15

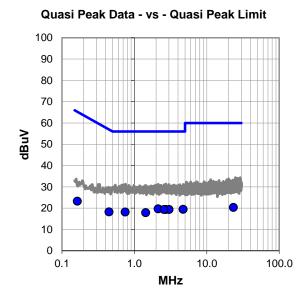
MODES INVESTIGATED

Continuously Transmitting at Mid Channel 2440 MHz

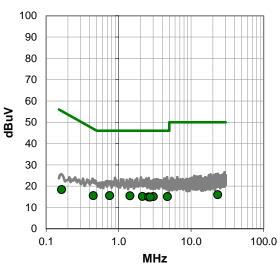


EUT:	Wireless/LE	SC			Work Order:	GARR0058	
Serial Number:	See Config	uration			Date:	2019-09-03	
Customer:	Garrett Met	al Detector	S		Temperature:	22.1°C	
Attendees:	None				Relative Humidity:	51.9%	
Customer Proje	ect: None				Bar. Pressure:	1016 mb	
Tested By:	Jonathan K	iefer			Job Site:	TX01	
Power:	5 VDC				Configuration:	GARR0058-15	
TEST SPECII Specification:	FICATIONS			Method:			
FCC 15.207:20	10				ANSI C63.10:2013		
		Line	Desitive Load		Add. Ext. Attenuation (d		
Run #: 2	22	Line:	Positive Lead	Positive Lead Ad		B): 0	
COMMENTS							
None							
	TING MODES						
Continuously II	ransmitting at Mic	i Channel 2	2440 MHZ				
DEVIATIONS	FROM TEST	STAND	ARD				
Nese							

None









RESULTS - Run #22

CONCLUSION

Pass

Quasi Peak Data - vs - Quasi Peak Limit							
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)		
2.126	-0.5	20.2	19.7	56.0	-36.3		
4.711	-0.7	20.2	19.5	56.0	-36.5		
2.720	-0.7	20.1	19.4	56.0	-36.6		
3.014	-0.8	20.2	19.4	56.0	-36.6		
2.579	-0.8	20.2	19.4	56.0	-36.6		
0.748	-2.0	20.2	18.2	56.0	-37.8		
1.432	-2.1	20.0	17.9	56.0	-38.1		
0.446	-1.8	20.1	18.3	56.9	-38.6		
23.246	-1.0	21.4	20.4	60.0	-39.6		
0.163	3.0	20.3	23.3	65.3	-42.0		

Average Data - vs - Average Limit							
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)		
0.748	-4.6	20.2	15.6	46.0	-30.4		
1.432	-4.5	20.0	15.5	46.0	-30.5		
2.126	-5.0	20.2	15.2	46.0	-30.8		
3.014	-5.1	20.2	15.1	46.0	-30.9		
4.711	-5.1	20.2	15.1	46.0	-30.9		
2.579	-5.2	20.2	15.0	46.0	-31.0		
2.720	-5.2	20.1	14.9	46.0	-31.1		
0.446	-4.5	20.1	15.6	46.9	-31.3		
23.246	-5.4	21.4	16.0	50.0	-34.0		
0.163	-1.9	20.3	18.4	55.3	-36.9		

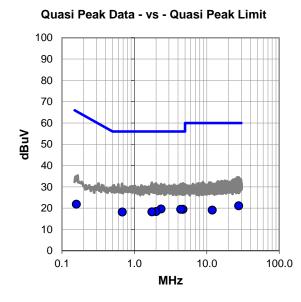
Jonathan Kiefer

Tested By

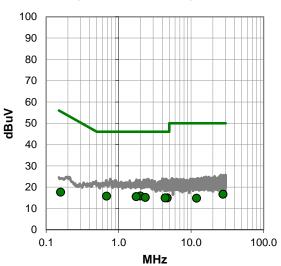


EUT:	V	/ireless/LB0	0			Work Order:	GARR0058
Serial Number	r: S	ee Configu	ration			Date:	2019-09-03
Customer:	G	arrett Meta	I Detectors	3		Temperature:	22.1°C
Attendees:	N	lone				Relative Humidity:	51.9%
Customer Proj	ject: N	lone				Bar. Pressure:	1016 mb
Tested By:	J	onathan Kie	efer			Job Site:	TX01
Power:	5	VDC				Configuration:	GARR0058-15
TEST SPEC	IFICAT	IONS			Method:		
FCC 15.207:20	019				ANSI C63.10:2013		
TEST PARA Run #:	METE 23	RS	Line:	Negative Lead		Add. Ext. Attenuation (d	B): 0
COMMENTS None							
			0 10	440 MIL			
Continuously 1	I ransmi	tting at Mid	Channel 2	440 MHZ			
DEVIATIONS	S FRO	M TEST	STANDA	RD			
<u></u>							

None









RESULTS - Run #23

Q	Quasi Peak Data - vs - Quasi Peak Limit							
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)			
2.334	-0.6	20.2	19.6	56.0	-36.4			
4.685	-0.7	20.2	19.5	56.0	-36.5			
4.374	-0.7	20.2	19.5	56.0	-36.5			
1.990	-1.8	20.2	18.4	56.0	-37.6			
1.750	-1.9	20.2	18.3	56.0	-37.7			
0.682	-2.0	20.2	18.2	56.0	-37.8			
27.591	-0.8	21.9	21.1	60.0	-38.9			
11.899	-1.5	20.6	19.1	60.0	-40.9			
0.158	1.6	20.3	21.9	65.6	-43.7			

Average Data - vs - Average Limit							
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)		
1.990	-4.3	20.2	15.9	46.0	-30.1		
0.682	-4.4	20.2	15.8	46.0	-30.2		
1.750	-4.6	20.2	15.6	46.0	-30.4		
2.334	-5.0	20.2	15.2	46.0	-30.8		
4.685	-5.2	20.2	15.0	46.0	-31.0		
4.374	-5.2	20.2	15.0	46.0	-31.0		
27.591	-5.2	21.9	16.7	50.0	-33.3		
11.899	-5.8	20.6	14.8	50.0	-35.2		
0.158	-2.6	20.3	17.7	55.6	-37.9		

Jonathan Kiefer

Tested By

CONCLUSION

Pass



PSA-ESCI 2019.05.1

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

Continuously Transmitting at High Channel 2480 MHz	
Continuously Transmitting at Mid Channel 2440 MHz	
Continuously Transmitting at Low Channel 2405 MHz	

POWER SETTINGS INVESTIGATED

5 VDC

CONFIGURATIONS INVESTIGATED

GARR0058 - 16		
GARR0058 - 15		
GARR0058 - 14		

FREQUENCY RANGE INVESTIGATED

Start Frequency 3	U MHZ
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Stop Frequency 26500 MHz

SAMPLE CALCULATIONS

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Amplifier - Pre-Amplifier	Miteg	JSDWK42-18004000-60-5P	PAM	10-Oct-2018	12 mo
Antenna - Double Ridge	A.H. Systems, Inc.	SAS-574	AXW	21-Aug-2018	24 mo
Cable	Northwest EMC	18-40GHz	TXE	10-Oct-2018	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	PAL	9-Oct-2018	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AJG	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	PAK	9-Oct-2018	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AJF	NCR	0 mo
Cable	Northwest EMC	8-18GHz	TXD	14-May-2019	12 mo
Filter - High Pass	Micro-Tronics	HPM50111	HGC	17-Mar-2019	12 mo
Attenuator	Weinschel Corp	4H-20	AWB	17-Mar-2019	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAJ	17-Mar-2019	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AJL	11-Oct-2018	24 mo
Cable	Northwest EMC	1-8.2 GHz	TXC	14-May-2019	12 mo
Filter - Low Pass	Micro-Tronics	LPM50004	HHV	3-Aug-2018	12 mo
Amplifier - Pre-Amplifier	Fairview Microwave	FMAM63001	PAS	24-Jan-2019	12 mo
Cable	Northwest EMC	RE 9kHz - 1GHz	TXB	22-Aug-2018	12 mo
Antenna - Biconilog	ETS Lindgren	3143B	AYF	10-May-2018	24 mo
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	27-Feb-2019	12 mo
DC Power Supply	Ametek Programmable	Sorenson XEL30-30	TQE	NCR	0 mo

TEST DESCRIPTION

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

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

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

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

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

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

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

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

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



Work Order: GARR0058 Date: 19-Jun-2019 Construction Job Site: TX02 Humidity: 55.1% RH Tested by: Jonathan Kiefer EUT: Wireless/LBC Grentfiguration Barometric Pres:: 1010 mbar Tested by: Jonathan Kiefer EUT: Wireless/LBC Garatt Metal Detectors Attendees Sciental Mumidity: Scienal Mumidity: Sciental Mumidit						EmiR5 2019.05.20	PSA-ESCI 201
Job Site: TX02 Humidity: 55.1% RH Serial Number: See Configuration Id Configuration: Id Customer: Garrett Metal Detectors Attendes: None EUT Power: 5 VDC Operating Mode: Configuration Comments: None Low Ch harmonic spurious emissions. See table comments below for EUT channel and orientation. State Specifications Test Method ANSI C63.10:2013			Date:		9		
Job Site: TX02 Humidity: 55.1% RH Tested by: Jonathan Kiefer EUT: Wireless/LBC Configuration 14 Customer: Garrett Metal Detectors			Temperature:		Jon	athan Ki	efer
EUT: Wireless.LBC Configuration: 14 Castrett Metal Detectors Attendees: None EUT Power: S VDC Operating Mode: Continuously Transmitting at Low Channel 2405 MHz Deviations: None Comments: Low Ch harmonic spurious emissions. See table comments below for EUT channel and orientation. Stepe:ifications Test Method ANSI CeS.10:2013 Mone Run # 50 Test Distance (m) 3 Antenna Height(s) 1 to 4(m) Results Pass %0 0	Job Sit		Humidity:	55.1% RH	0		0
EUT: Wireless/LBC Configuration: 14 Consomer: Carrett Metal Detectors Attendees: None		r: See Configuration			Tested	by: Jonathan Kiefe	er
Configuration: 14 Custome: Garrett Metal Detectors Attendes: None EUT Power: 5 VDC Operating Mode: Continuously Transmitting at Low Channel 2405 MHz Deviations: None Its: Low Ch harmonic spurious emissions. See table comments below for EUT channel and orientation. St Specifications Test Method C 15.247:2019 ANSI C63.10:2013	EU	C: Wireless/LBC	•				
Customer: Garrett Metal Detectors Attendee: None EUT Power: 5 VDC Operating Mode: Deviations: None Low Ch harmonic spurious emissions. See table comments below for EUT channel and orientation. ts Specifications C 15.247:2019 Antenna Height(s) 1 to 4(m) Results Pass	Configuratio	1: 14					
Attendees: None EUT Power: 5 VDC Operating Mode: Continuously Transmitting at Low Channel 2405 MHz Deviations Low Ch harmonic spurious emissions. See table comments below for EUT channel and orientation. Comments Low Ch harmonic spurious emissions. See table comments below for EUT channel and orientation. Comments Co			ors				
EUT Power: 5 UCC Operating Mode: Continuously Transmitting at Low Channel 2405 MHz Deviations: Comments: Low Ch harmonic spurious emissions. See table comments below for EUT channel and orientation. Test Method ANSI C63.10:2013 Run # 50 Test Distance (m) 3 Antenna Height(s) 1 to 4(m) Results Pass 80							
Continuously Transmitting at Low Channel 2405 MHz None Low Ch harmonic spurious emissions. See table comments below for EUT channel and orientation. Test Method ANSI C63.10:2013 Run # 50 Test Distance (m) 3 Antenna Height(s) 1 to 4(m) Results Pass 80 60 <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>							
Low Ch harmonic spurious emissions. See table comments below for EUT channel and orientation.			itting at Low Channel 240	05 MHz			
Comments: Test Method 215.247:2019 ANSI C63.10:2013 Run # 50 Test Distance (m) 3 Antenna Height(s) 1 to 4(m) Results Pass 80	Deviation	s: None					
ANSI C63.10:2013	Comment		urious emissions. See tab	le comments b	elow for EUT channel an	d orientation.	
Run # 50 Test Distance (m) 3 Antenna Height(s) 1 to 4(m) Results Pass 80		3					
	Run # 50	Test Distance (m)	3 Antenna I	leight(s)	1 to 4(m)	Results	Pass
				ioigin(o)		rtoouno	1 400
	60						
	50				•		
	4 0						
0	30						
MHz Reference and a second sec	20						

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
4808.983	41.1	4.1	2.44	171.0	3.0	0.0	Horz	AV	0.0	45.2	54.0	-8.8	Low Ch, EUT Horz
4809.000	40.4	4.1	3.78	213.9	3.0	0.0	Vert	AV	0.0	44.5	54.0	-9.5	Low Ch, EUT Horz
4809.000	48.7	4.1	2.44	171.0	3.0	0.0	Horz	PK	0.0	52.8	74.0	-21.2	Low Ch, EUT Horz
4809.200	48.4	4.1	3.78	213.9	3.0	0.0	Vert	PK	0.0	52.5	74.0	-21.5	Low Ch, EUT Horz
12022.530	34.4	-4.2	1.91	352.9	3.0	0.0	Horz	AV	0.0	30.2	54.0	-23.8	Low Ch, EUT Horz
12022.570	34.1	-4.2	1.5	260.0	3.0	0.0	Vert	AV	0.0	29.9	54.0	-24.1	Low Ch, EUT Horz
12027.250	45.3	-4.2	1.91	352.9	3.0	0.0	Horz	PK	0.0	41.1	74.0	-32.9	Low Ch, EUT Horz
12023.080	44.9	-4.2	1.5	260.0	3.0	0.0	Vert	PK	0.0	40.7	74.0	-33.3	Low Ch, EUT Horz



												EmiR5 2019.05.20		PSA-ES	SCI 2019.05.10
	Work	Order:	GARR0	058		Date		lun-2019		0.00	_			<u> </u>	
		Project:	None	;	Ten	nperature		2.1 °C		Sto	nat	han?	rief	en	
		ob Site:	TX02			Humidity		.1% RH		\sim			0	· .	
	Serial N	lumber:	See Config	uration	Barome	tric Pres.	: 10	10 mbar		Test	ed by:	Jonathan k	Kiefer		
			Wireless/LB0)											
	Config	uration:	15												
			Garrett Meta	Detector	S										
	Atte	endees:	None												
	EUT	Power:	5 VDC												
0	perating	g Mode:	Continuously	Transmit	tting at Mid	Channel 2	2440 MHz								
	Dev	iations:	None												
	Con	nments:	Mid Ch harm	onic spur	ious emiss	ions. See	table com	ments belov	v for EUT	channe	l and or	ientation.			
Test	Specific	ations						Test Met	hod						
	15.247:2								3.10:2013						
P	Run #	49	Test Dista	ince (m)	3	Antenn	a Height(5)	1 to 4(r	<u>n)</u>		Results		Pass	
		73	Test Dista		5	Antenn	a neight	3/	1 10 4(1			Results		1 033	
dBuV/m	80 70 60 50 40 30 20 10										•				
	0 10			100			1000 MH:			10	000	PK	◆ AV	100	0000 QP
													- AV		UF

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	
													Comments
4879.942	41.5	4.3	2.47	171.9	3.0	0.0	Horz	AV	0.0	45.8	54.0	-8.2	Mid Ch, EUT Horz
7321.242	33.3	11.7	1.5	224.0	3.0	0.0	Horz	AV	0.0	45.0	54.0	-9.0	Mid Ch, EUT Horz
4880.033	39.9	4.3	2.63	188.0	3.0	0.0	Vert	AV	0.0	44.2	54.0	-9.8	Mid Ch, EUT Horz
7320.875	30.2	11.7	1.5	73.0	3.0	0.0	Vert	AV	0.0	41.9	54.0	-12.1	Mid Ch, EUT Horz
7321.225	43.7	11.7	1.5	224.0	3.0	0.0	Horz	PK	0.0	55.4	74.0	-18.6	Mid Ch, EUT Horz
7321.850	41.6	11.7	1.5	73.0	3.0	0.0	Vert	PK	0.0	53.3	74.0	-20.7	Mid Ch, EUT Horz
4880.750	48.3	4.3	2.47	171.9	3.0	0.0	Horz	PK	0.0	52.6	74.0	-21.4	Mid Ch, EUT Horz
4879.667	47.5	4.3	2.63	188.0	3.0	0.0	Vert	PK	0.0	51.8	74.0	-22.2	Mid Ch, EUT Horz
12202.120	33.3	-3.9	1.5	207.9	3.0	0.0	Vert	AV	0.0	29.4	54.0	-24.6	Mid Ch, EUT Horz
12201.260	32.8	-3.9	1.5	91.0	3.0	0.0	Horz	AV	0.0	28.9	54.0	-25.1	Mid Ch, EUT Horz
12200.090	44.3	-3.9	1.5	91.0	3.0	0.0	Horz	PK	0.0	40.4	74.0	-33.6	Mid Ch, EUT Horz
12202.130	44.3	-3.9	1.5	207.9	3.0	0.0	Vert	PK	0.0	40.4	74.0	-33.6	Mid Ch, EUT Horz



rk Order: Project:		0058								
				Date:		-2019				
				perature:	22.1	°C		Jona	than K	iefer
Job Site:				Humidity:	55.19			\mathcal{O}		0
Number:		guration	Baromet	ric Pres.:	1010	mbar		Tested by	: Jonathan Kie	fer
		SC								
ustomer:	Garrett Meta	al Detector	rs							
tendees:	None									
T Power:	5 VDC									
ng Mode:	Continuous	y Transmi	tting at High	Channel 24	480 MHz					
viations:	None									
omments:	High Ch har	monic spu	irious emissi	ons. See ta	able comm	nts below	for EUT (channel and	orientation.	
ications						Test Meth	nod			
:2019										
47	Test Dist	tance (m)	3	Antenna	Height(s)		1 to 4(m	1)	Results	Pass
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		++++-		+						
		100			1000			10000		1000
	guration: ustomer: ttendees: T Power: ng Mode: eviations: wmments: ications :2019	guration: 16 ustomer: Garrett Meta tendees: None T Power: 5 VDC ng Mode: Continuous eviations: None High Ch har fications :2019	ustomer: Garrett Metal Detector tendees: None T Power: 5 VDC ng Mode: Continuously Transmi viations: None High Ch harmonic spu fications 12019	guration: 16 ustomer: Garrett Metal Detectors tendees: None T Power: 5 VDC ng Mode: Continuously Transmitting at High eviations: None High Ch harmonic spurious emissi iccations Supervision ':2019 Continuously	guration: 16 ustomer: Garrett Metal Detectors tendees: None T Power: 5 VDC ng Mode: Continuously Transmitting at High Channel 24 eviations: None High Ch harmonic spurious emissions. See ta fications 1 ':2019 1	guration: 16 ustomer: Garrett Metal Detectors tendees: None T Power: 5 VDC ng Mode: Continuously Transmitting at High Channel 2480 MHz wiations: None High Ch harmonic spurious emissions. See table comme ications . ':2019 .	guration: 16 ustomer: Garrett Metal Detectors tendees: None T Power: 5 VDC ng Mode: Continuously Transmitting at High Channel 2480 MHz eviations: None High Ch harmonic spurious emissions. See table comments below rications Test Meth ':2019 ANSI C63	guration: 16 ustomer: Garrett Metal Detectors tendees: None T Power: 5 VDC ng Mode: Continuously Transmitting at High Channel 2480 MHz eviations: None High Ch harmonic spurious emissions. See table comments below for EUT of the forments: ications Test Method ':2019 ANSI C63.10:2013	guration: 16 ustomer: Garrett Metal Detectors itendees: None T Power: 5 VDC ng Mode: Continuously Transmitting at High Channel 2480 MHz iviations: None High Ch harmonic spurious emissions. See table comments below for EUT channel and ications Test Method :2019 ANSI C63.10:2013	guration: 16 ustomer: Garrett Metal Detectors tendees: None T Power: 5 VDC ng Mode: Continuously Transmitting at High Channel 2480 MHz wiations: None High Ch harmonic spurious emissions. See table comments below for EUT channel and orientation. mments: Test Method 'ications ANSI C63.10:2013

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
7441.367	35.3	11.7	1.5	18.0	3.0	0.0	Horz	AV	0.0	47.0	54.0	-7.0	High Ch, EUT Horz
4959.983	40.8	4.7	2.37	177.0	3.0	0.0	Horz	AV	0.0	45.5	54.0	-8.5	High Ch, EUT Horz
7441.425	33.6	11.7	3.55	18.0	3.0	0.0	Vert	AV	0.0	45.3	54.0	-8.7	High Ch, EUT Horz
7441.325	33.0	11.7	1.5	124.9	3.0	0.0	Horz	AV	0.0	44.7	54.0	-9.3	High Ch, EUT On Side
7441.342	32.5	11.7	2.65	213.0	3.0	0.0	Vert	AV	0.0	44.2	54.0	-9.8	High Ch, EUT On Side
7441.275	32.2	11.7	1.92	271.0	3.0	0.0	Vert	AV	0.0	43.9	54.0	-10.1	High Ch, EUT Vert
7441.283	31.2	11.7	1.5	207.0	3.0	0.0	Horz	AV	0.0	42.9	54.0	-11.1	High Ch, EUT Vert
4959.933	38.1	4.7	2.38	162.0	3.0	0.0	Vert	AV	0.0	42.8	54.0	-11.2	High Ch, EUT Horz
7441.200	44.9	11.7	1.5	18.0	3.0	0.0	Horz	PK	0.0	56.6	74.0	-17.4	High Ch, EUT Horz
7441.233	43.5	11.7	3.55	18.0	3.0	0.0	Vert	PK	0.0	55.2	74.0	-18.8	High Ch, EUT Horz
7438.175	43.0	11.7	2.65	213.0	3.0	0.0	Vert	PK	0.0	54.7	74.0	-19.3	High Ch, EUT On Side
7441.575	42.8	11.7	1.5	124.9	3.0	0.0	Horz	PK	0.0	54.5	74.0	-19.5	High Ch, EUT On Side
7438.550	42.6	11.7	1.92	271.0	3.0	0.0	Vert	PK	0.0	54.3	74.0	-19.7	High Ch, EUT Vert
7441.375	42.5	11.7	1.5	207.0	3.0	0.0	Horz	PK	0.0	54.2	74.0	-19.8	High Ch, EUT Vert
4959.250	48.8	4.7	2.37	177.0	3.0	0.0	Horz	PK	0.0	53.5	74.0	-20.5	High Ch, EUT Horz
4960.433	46.4	4.7	2.38	162.0	3.0	0.0	Vert	PK	0.0	51.1	74.0	-22.9	High Ch, EUT Horz
12397.740	32.4	-3.0	1.5	103.0	3.0	0.0	Horz	AV	0.0	29.4	54.0	-24.6	High Ch, EUT Horz
12397.570	32.4	-3.0	1.5	177.0	3.0	0.0	Vert	AV	0.0	29.4	54.0	-24.6	High Ch, EUT Horz

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
12398.800	44.2	-3.0	1.5	103.0	3.0	0.0	Horz	PK	0.0	41.2	74.0	-32.8	High Ch, EUT Horz
12399.700	43.5	-3.0	1.5	177.0	3.0	0.0	Vert	PK	0.0	40.5	74.0	-33.5	High Ch, EUT Horz



										EmiR5 2019.05.20		PSA-ESCI 2019.05.10	0
W	ork Order:	GAR	R0058		Date:	20-Ju	n-2019						1
	Project:	N	one	Ter	nperature:	21.	6 °C		Jonat	than ?	Kiefe		
	Job Site:	T	X02		Humidity:	51.1	% RH	<	2		-0		
Seria	al Number:	See Cor	nfiguration	Barome	etric Pres.:		mbar	-	Tested by:	Jonathan k	Kiefer		-
	EUT:	Wireless/											-
Con	figuration:												-
	Customer:	Garrett M	etal Detector	rs									-
	Attendees:			-									-
	UT Power:												-
			usly Transmi	tting at Lov	v Channel 2	405 MHz							-
Opera	ting Mode:												
	Deviations:	None											-
	Deviations:												
		Low Ch T	ransmit Ban	d Edae. Se	e table com	ments belo	ow for EUT	channel an	d orientatio	n.			-
C	Comments:			0									
Teat Space	cifications						Test Meth	ad					=
FCC 15.24							ANSI C63.		l				-
FCC 15.24	47:2019						ANSI C63.	10:2013					
D	5 4	Test D	- (()		A f			A 1 - A()		Dessite			-
Run #	51	lest D	istance (m)	3	Antenna	Height(s)		1 to 4(m)		Results	Pa	ass	-
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80 -													
00													
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70 -													
10													
60 -													
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W/NnBb													
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20													
30 -													
20 -													
20													
10 -													
0 +													
1	0		100			1000			10000			100000	
						MHz							
										PK	AV	QP	
							Polarity/						
_						External	Transducer		Distance			Compared to	
Freq	Amplitude (dBu)()	Factor	Antenna Height	Azimuth (degrees)	Test Distance	Attenuation	Туре	Detector	Adjustment	Adjusted	Spec. Limit (dBuV/m)	Spec.	
(MHz)	(dBuV)	(dB)	(meters)	(degrees)	(meters)	(dB)			(dB)	(dBuV/m)	(ubuv/m)	(dB)	Comments
2389.830	34.0	-5.4	1.5	51.9	3.0	20.0	Horz	AV	0.0	48.6	54.0	-5.4	Low Ch, EUT Horz
2389.603	34.0	-5.4	1.5	192.0	3.0	20.0	Vert	AV	0.0	48.6	54.0	-5.4	Low Ch, EUT Horz
2388.443	45.8	-5.4	1.5	51.9	3.0	20.0	Horz	PK	0.0	60.4	74.0	-13.6	Low Ch, EUT Horz
2389.563	45.7	-5.4	1.5	192.0	3.0	20.0	Vert	PK	0.0	60.3	74.0	-13.7	Low Ch, EUT Horz



Wo	rk Order:		R0058		Date:		n-2019				
	Project:	No	one	Ten	nperature:	21.6	S°C	A	onat	han Ki	iefer
	Job Site:		X02		Humidity:	51.1%		\mathcal{O}			0
Serial	Number:		nfiguration	Barome	etric Pres.:	1012	mbar	Tes	sted by:	Jonathan Kief	er
	EUT:	Wireless/L	BC								
	guration:										
С	ustomer:	Garrett Me	etal Detecto	ors							
	ttendees:										
EU	T Power:										
Operatiı	ng Mode:	Continuou	sly Transm	itting at High	h Channel 248	80 MHz					
De	eviations:	None									
Co	omments:		ransmit Ba	nd Edge. Se	ee table comm	nents belo	w for EUT char	nnel and c	prientation	l.	
st Specif	fications						Test Method				
C 15.247	7:2019						ANSI C63.10:2	013			
Run #	51	Test Di	stance (m)	3	Antenna H	leight(s)	1 tc	o 4(m)		Results	Pass
Run #	51	Test Di	stance (m)	3	Antenna H	leight(s)	1 tc	o 4(m)		Results	Pass
	51	Test Di	stance (m)	3	Antenna H	leight(s)	1 tc	o 4(m)		Results	Pass
Run #	51	Test Di	stance (m)	3	Antenna H	leight(s)	1 tc	o 4(m)		Results	Pass
	51	Test Di	stance (m)	3	Antenna H	leight(s)	1 tc	o 4(m)		Results	Pass
80 -	51	Test Di	stance (m)	3	Antenna H	leight(s)	1 tc	0 4(m)		Results	Pass
	51	Test Di	stance (m)	3	Antenna H	leight(s)	1 tc	o 4(m)		Results	Pass
80	51	Test Di	stance (m)	3	Antenna H	leight(s)	1 tc	0 4(m)		Results	Pass
80	51	Test Di	stance (m)	3	Antenna H	leight(s)		0 4(m)		Results	Pass
80 -	51	Test Di	stance (m)	3	Antenna H	leight(s)		2 4(m)		Results	Pass
80	51	Test Di	stance (m)	3	Antenna H	leight(s)		2 4(m)		Results	Pass
80	51	Test Di	stance (m)	3	Antenna H	leight(s)		o 4(m)		Results	Pass
80	51	Test Di	stance (m)	3	Antenna H	leight(s)		o 4(m)		Results	Pass
80 - 70 - 60 -	51	Test Di	stance (m)	3	Antenna H	leight(s)		o 4(m)		Results	Pass
80	51	Test Di	stance (m)	3	Antenna H	leight(s)		0 4(m)			Pass
80	51	Test Di	stance (m)	3	Antenna H	leight(s)		0 4(m)		Results	Pass
80 70 60 50 50 40	51	Test Di	stance (m)	3	Antenna H	leight(s)		0 4(m)		Results	Pass
80	51	Test Di	stance (m)	3	Antenna H			0 4(m)			Pass
80 70 60 50 50 40	51	Test Di	stance (m)	3	Antenna H	leight(s)		o 4(m)		Results	Pass
80 - 70 - 60 - 60 - 60 - 60 - 60 - 60 - 6	51	Test Di	stance (m)	3	Antenna H	leight(s)		o 4(m)		Results	Pass
80 70 60 50 40	51	Test Di	stance (m)	3	Antenna H			0 4(m)			Pass
80 70 60 50 40 30	51	Test Di	stance (m)	3	Antenna H			0 4(m)			Pass
80 70 60 50 50 30 20	51	Test Di	stance (m)	3	Antenna H			0 4(m)			Pass
80 - 70 - 60 - 50 - 50 - 50 - 30 - 30 - 30 - 50 - 5	51		stance (m)	3	Antenna H			0 4(m)			Pass
80 70 60 50 50 30 20	51		stance (m)	3	Antenna H			D 4(m)			Pass
80 70 60 50 50 30 20	51		stance (m)	3	Antenna H			D 4(m)		Results	Pass
80 70 60 50 50 30 20 10	51		Stance (m)		Antenna H						Pass

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2483.500	58.8	-5.0	3.4	237.9	3.0	20.0	Horz	PK	0.0	73.8	74.0	-0.2	High Ch, EUT Horz
2484.500	38.2	-5.0	3.4	237.9	3.0	20.0	Horz	AV	0.0	53.2	54.0	-0.8	High Ch, EUT Horz.
2483.540	56.4	-5.0	3.9	28.9	3.0	20.0	Vert	PK	0.0	71.4	74.0	-2.6	High Ch, EUT Horz
2484.500	36.3	-5.0	1.0	249.9	3.0	20.0	Horz	AV	0.0	51.3	54.0	-2.7	High Ch, EUT On Side.
2483.503	56.2	-5.0	1.0	249.9	3.0	20.0	Horz	PK	0.0	71.2	74.0	-2.8	High Ch, EUT On Side
2484.500	35.6	-5.0	3.9	28.9	3.0	20.0	Vert	AV	0.0	50.6	54.0	-3.4	High Ch, EUT Horz.
2483.520	55.4	-5.0	1.6	226.9	3.0	20.0	Horz	PK	0.0	70.4	74.0	-3.6	High Ch, EUT Vert
2483.520	54.3	-5.0	3.4	260.0	3.0	20.0	Vert	PK	0.0	69.3	74.0	-4.7	High Ch, EUT On Side
2484.500	34.2	-5.0	4.0	100.9	3.0	20.0	Vert	AV	0.0	49.2	54.0	-4.8	High Ch, EUT Vert.
2484.500	33.9	-5.0	3.4	260.0	3.0	20.0	Vert	AV	0.0	48.9	54.0	-5.1	High Ch, EUT On Side.
2484.500	33.7	-5.0	2.3	157.0	3.0	20.0	Horz	AV	0.0	48.7	54.0	-5.3	High Ch, EUT Vert.
2389.830	34.0	-5.4	1.5	51.9	3.0	20.0	Horz	AV	0.0	48.6	54.0	-5.4	Low Ch, EUT Horz
2483.500	34.0	-5.4	1.5	192.0	3.0	20.0	Vert	AV	0.0	48.6	54.0	-5.4	Low Ch, EUT Horz
2483.500	52.5	-5.0	4.0	100.9	3.0	20.0	Vert	PK	0.0	67.5	74.0	-6.5	High Ch, EUT Vert

DUTY CYCLE



TEST DESCRIPTION

The Duty Cycle (x) were measured for each of the EUT operating modes. 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. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used

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

The EUT operates at 100% Duty Cycle.



XMit 2019.05.15

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
Attenuator	Fairview Microwave	SA4018-20	TYE	10-Oct-18	10-Oct-19
Block - DC	Fairview Microwave	SD3379	AMT	10-Oct-18	10-Oct-19
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	10-Oct-18	10-Oct-19
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	19-Mar-19	19-Mar-20

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.



EUT: Wi	ireless/LBC			Work Order:	GARR0058	
Serial Number: See	e Configuration			Date:	24-Jun-19	
Customer: Ga	arrett Metal Detectors			Temperature:	22 °C	
Attendees: No	one			Humidity:	53.1% RH	
Project: No	one			Barometric Pres.:	1017 mbar	
Tested by: Jor	nathan Kiefer	Power: 110VAC/60Hz		Job Site:	TX09	
EST SPECIFICATIONS	IS	Test Method				
CC 15.247:2019		ANSI C63.10:2013				
	3 dB (20 dB attenuator + dc block + cable). EUT antenna gain is 5.44	4 dBi.				
Reference Offset 21.13	· · · ·	4 dBi.				
COMMENTS Reference Offset 21.13 DEVIATIONS FROM TE None	· · · ·	4 dBi.				
Reference Offset 21.13	EST STANDARD	4 dBi. rothan Kiefer				
eference Offset 21.13 EVIATIONS FROM TE	6		Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result
eference Offset 21.13 EVIATIONS FROM TE lone configuration #	6 Signature	othan Kiefer Avg Cond Pwr				Result Pass
Reference Offset 21.13 DEVIATIONS FROM TE Lone	EST STANDARD 6 Signature	athan Kiefer Avg Cond Pwr (dBm)	Factor (dB)	(dBm)	(dBm)	



		Channel, 2405				
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	3.197	0	3.2	30	Pass	
📕 Keysight Spectrum Analyzer - Element Materials Te						
XX RL RF 50Ω AC	SE	NSE:INT	ALIGN OFF #Avg Type	e. DMS	02:40:54 PM Jun 24, 2	19
	PNO: Fast ↔→ IFGain:Low	Trig: Free Run #Atten: 10 dB	Avg Hold:		TRACE 1 2 3 4 TYPE A WWW DET A A A A	
Ref Offset 21.13 dB	n Gameen			Mkr1	2.404 883 G	Iz
5 dB/div Ref 8.00 dBm			1		3.197 dE	m
		4 1				
3.00						
-2.00						
-7.00						
-12.0						
-17.0						
-22.0						
-27.0						
-32.0						
-37.0						
Center 2.405000 GHz					Span 10.00 M 601.0 ms (601 p	Hz
#Res BW 5 MHz	#VBW	8.0 MHz*		#Sweep	601.0 ms (601 p	ts)
MSG			STATUS			
	N.4:	Channel, 2440 M				

	Avg Cond Pwr	Duty Cycle	Out Pwr	Limit	
	(dBm)	Factor (dB)	(dBm)	(dBm)	Result
	3.396	0	3.4	30	Pass

Keysight Spectrum Analyzer - Element Materia RL RF 50 Ω AC	SENSE:INT	ALIGN OFF	01:40:14 PM Jun 24, 201
NC N 50 32 AC	PNO: Fast Trig: Free Run IFGain:Low #Atten: 10 dB	#Avg Type: RMS	TRACE 1 2 3 4 5 TYPE A WWW DET A A A A A
Ref Offset 21.13 dB dB/div Ref 8.00 dBm		M	r1 2.439 900 GH 3.396 dBr
bg	·····		
.00			
2.0			
.0			
.0			
.0			
2.0			
enter 2.440000 GHz Res BW 5 MHz	#VBW 8.0 MHz*	#Swee	Span 10.00 Mi p 601.0 ms (601 pt
G		STATUS	



	Hig	h Channel, 2480 l	MHz		
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result
	3.187	0	3.2	30	Pass
- I I					
Keysight Spectrum Analyzer - Element Materials	Technology				
LXU RL RF 50Ω AC		NSE:INT	ALIGN OFF		01:46:35 PM Jun 24, 2019
	PNO: Fast ↔→ IFGain:Low	Trig: Free Run #Atten: 10 dB	#Avg Type Avg Hold:	: RMS 100/100	TRACE 1 2 3 4 5 (TYPE A WWWW DET A A A A A A
Ref Offset 21.13 dB				Mkr1	2.479 867 GHz
10 dB/div Ref 8.00 dBm					3.187 dBm
Log		 1			
-2.00					
100					
-12.0					
-22.0					
-32.0					
-52.0					
-42.0					
42.0					
-52.0					
-62.0					
-72.0					
-82.0					
Center 2.480000 GHz					Span 10 00 MHz
#Res BW 5 MHz	#VBW	8.0 MHz*		#Sweep	Span 10.00 MHz 601.0 ms (601 pts)
MSG			STATUS		

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



XMit 2019.05.15

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
Attenuator	Fairview Microwave	SA4018-20	TYE	10-Oct-18	10-Oct-19
Block - DC	Fairview Microwave	SD3379	AMT	10-Oct-18	10-Oct-19
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	10-Oct-18	10-Oct-19
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	19-Mar-19	19-Mar-20

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. 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.

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



	ireless/LBC						Work Order:		
Serial Number: Se	e Configuration							24-Jun-19	
Customer: Ga	arrett Metal Detectors						Temperature:	22.2 °C	
Attendees: No	one							51.1% RH	
Project: No						E	Barometric Pres.:		
Tested by: Jo				110VAC/60Hz			Job Site:	TX09	
TEST SPECIFICATION	S		1	Test Method					
FCC 15.247:2019			/	ANSI C63.10:2013					
	3 dB (20 dB attenuator + dc bl	ock + cable). EUT antenna gai	in is 5.44 dBi.						
Reference Offset 21.13		ock + cable). EUT antenna gair	in is 5.44 dBi.						
COMMENTS Reference Offset 21.13 DEVIATIONS FROM TE None		ock + cable). EUT antenna gai	in is 5.44 dBi.						
Reference Offset 21.13 DEVIATIONS FROM TE None		ock + cable). EUT antenna gai	in is 5.44 dBi. Jonathan	Kiefo					
Reference Offset 21.13 DEVIATIONS FROM TE None	EST STANDARD			Niefer Duty Cycle Factor (dB)	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
Reference Offset 21.13 DEVIATIONS FROM TE None Configuration #	EST STANDARD		Jonathan Avg Cond Pwr	Duty Cycle					Result Pass
Reference Offset 21.13	EST STANDARD 6		Jonethan Avg Cond Pwr (dBm)	Duty Cycle	(dBm)	Gain (dBi)	(dBm)	(dBm)	

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



			ow Channel, 2405 M				
Avg Cond Pw		Out Pwr	Antenna	EIRP	EIRP Limit		
(dBm)	Factor (dB)	(dBm)	Gain (dBi)	(dBm)	(dBm)	Result	
3.197	0	3.2	5.44	8.6	36	Pass	
Keysight Spectrum Analyz	50 Ω AC		SENSE:INT	ALIGN OFF		02:40:54 PM Jun 24, 2019	1
				#Avg Typ	e: RMS	TRACE 1 2 3 4 5	6
		PNO: Fast +++ IFGain:Low	Trig: Free Run #Atten: 10 dB	Avg Hold:	: 100/100	TRACE 1 2 3 4 5 TYPE A WWW DET A A A A A	Ă
		in outline on			Mkr1	2.404 883 GH	
5 dB/div Ref 8.0	set 21.13 dB 0 0 dBm					3.197 dBn	
Log							
			↓]				
3.00							
-2.00							
7.00							
-7.00							
-12.0							
-12.0							
-17.0							
-22.0							
-27.0							
-32.0							
-37.0							
Center 2.405000						Span 10.00 MH	
#Res BW 5 MHz	GHZ	#VB	W 8.0 MHz*		#Sweep 6	i01.0 ms (601 pts	ί.
MSG				STATUS	•	· · ·	
			id Channel, 2440 M				
Avg Cond Pw		Out Pwr	Antenna	EIRP	EIRP Limit		
(dBm)	Factor (dB)	(dBm)	Gain (dBi)	(dBm)	(dBm)	Result	
3.396	0	3.4	5.44	8.8	36	Pass	
We can be from the second							
Keysight Spectrum Analyz	zer - Element Materials Techr 50 Ω AC		SENSE:INT	ALIGN OFF		01:40:14 PM Jun 24, 2019	1.00
				#Avg Typ		TRACE 1 2 3 4 5	6
		PNO: Fast +++ IFGain:Low	Trig: Free Run #Atten: 10 dB	Avg Hold:	100/100	TYPE A WWWW DET A A A A A	Å
Difor					Mkr1	2.439 900 GH	
10 dB/div Ref 8.0	set 21.13 dB 0 0 dBm					3.396 dBn	
IU UD/UIV							
			\ 1				1

2.00		
12.0		
22.0		
32.0		
42.0		
52.0		
2.0		
/2.0		
12.0		
enter 2.440000 GHz Res BW 5 MHz	#VBW 8.0 MHz*	Span 10.00 MH #Sweep 601.0 ms (601 pt
SG		STATUS

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



			h Channel, 2480			
	Duty Cycle	Out Pwr	Antenna	EIRP	EIRP Limit	
(dBm) F	Factor (dB)	(dBm)	Gain (dBi)	(dBm)	(dBm)	Result
3.187	0	3.2	5.44	8.6	36	Pass
🎉 Keysight Spectrum Analyzer - Eler	ment Materials Techn	ology				
	AC		INSE:INT	ALIGN OFF		01:46:35 PM Jun 24, 2019
			Trig: Free Run	#Avg Type Avg Hold:	: RMS	TRACE 1 2 3 4 5 6 TYPE A WWWW DET A A A A A A
		PNO: Fast +++ IFGain:Low	#Atten: 10 dB	Avginoid.	100/100	DET A A A A A A
B (08 / 04					Mkr1	2.479 867 GHz
Ref Offset 21 10 dB/div Ref 8.00 dE	.13 dB 3m					3.187 dBm
Log			<u> </u>			
-2.00						
-12.0						
-22.0						
-32.0						
-42.0						
-52.0						
-62.0						
-72.0						
-82.0						
Center 2.480000 GHz						Span 10.00 MHz
#Res BW 5 MHz		#VBW	/ 8.0 MHz*		#Sweep	601.0 ms (601 pts)
MSG				STATUS		(see Flate)

BAND EDGE COMPLIANCE



XMit 2019.05.15

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
Attenuator	Fairview Microwave	SA4018-20	TYE	10-Oct-18	10-Oct-19
Block - DC	Fairview Microwave	SD3379	AMT	10-Oct-18	10-Oct-19
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	10-Oct-18	10-Oct-19
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	19-Mar-19	19-Mar-20

TEST DESCRIPTION

The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in each available band. The channels closest to the band edges were selected. The EUT was transmitting at the data rate(s) listed in the datasheet.

The spectrum was scanned below the lower band edge and above the higher band edge.

An RMS detector was used to match the method called out for Output Power. Because the reference level was taken with an RMS detector, the attenuation requirement is -30 dBc.

BAND EDGE COMPLIANCE



EUT: Wir	ireless/LBC		Work Order:	GARR0058	
Serial Number: See	e Configuration		Date:	24-Jun-19	
Customer: Gar	arrett Metal Detectors		Temperature:	22.2 °C	
Attendees: Nor	one		Humidity:	54.2% RH	
Project: Nor	one		Barometric Pres.:	1017 mbar	
Tested by: Jon	onathan Kiefer	Power: 110VAC/60Hz	Job Site:	TX09	
TEST SPECIFICATIONS	IS	Test Method			
FCC 15.247:2019		ANSI C63.10:2013			
COMMENTS					
Reference Offset 21.13	3 dB (20 dB attenuator + dc block + cable). EUT antenna gain	n is 5.44 dBi.			
Reference Offset 21.13	· · · ·	ı is 5.44 dBi.			
Reference Offset 21.13	· · · ·	ı is 5.44 dBi.			
Reference Offset 21.13	EST STANDARD) is 5.44 dBi. Jonathan Niefer			
Reference Offset 21.13 DEVIATIONS FROM TE None	EST STANDARD		Value	Limit	
Reference Offset 21.13 DEVIATIONS FROM TE None	EST STANDARD		Value (dBc)	Limit ≤(dBc)	Result
Reference Offset 21.13 DEVIATIONS FROM TE None	6 Signature				Result Pass

BAND EDGE COMPLIANCE









XMit 2019.05.15

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
Attenuator	Fairview Microwave	SA4018-20	TYE	10-Oct-18	10-Oct-19
Block - DC	Fairview Microwave	SD3379	AMT	10-Oct-18	10-Oct-19
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	10-Oct-18	10-Oct-19
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	19-Mar-19	19-Mar-20

TEST DESCRIPTION

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

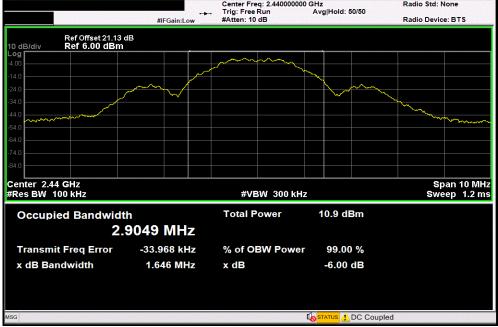
The 6dB occupied bandwidth was measured using 100 kHz resolution bandwidth and 300 kHz video bandwidth. The 99.0% occupied bandwidth was also measured at the same time which can be needed during Output Power depending on the applicable method.



EUT: Wire	eless/LBC			Work Order	GARR0058	
Serial Number: See	Configuration			Date	24-Jun-19	
Customer: Gar	ett Metal Detectors			Temperature	22.2 °C	
Attendees: Non	e			Humidity	54.2% RH	
Project: Non				Barometric Pres.		
Tested by: Jon			Power: 110VAC/60Hz	Job Site:	TX09	
EST SPECIFICATIONS			Test Method			
CC 15.247:2019			ANSI C63.10:2013			
OMMENTS						
	B (20 dB attenuator + dc blo	ock + cable). EUT antenna ga	in is 5.44 dBi.			
	dB (20 dB attenuator + dc blo	ock + cable). EUT antenna ga	in is 5.44 dBi.			
	dB (20 dB attenuator + dc blo	ock + cable). EUT antenna ga	in is 5.44 dBi.			
	•	ock + cable). EUT antenna ga	in is 5.44 dBi.			
eference Offset 21.13	•	ock + cable). EUT antenna ga	in is 5.44 dBi.			
eference Offset 21.13 (•	ock + cable). EUT antenna ga				
eference Offset 21.13 (•	ock + cable). EUT antenna ga				
eference Offset 21.13 of EVIATIONS FROM TES	ST STANDARD	ock + cable). EUT antenna ga	in is 5.44 dBi. Jonathan Niefe			
eference Offset 21.13 of EVIATIONS FROM TES	ST STANDARD				Limit	
eference Offset 21.13 d EVIATIONS FROM TES	ST STANDARD			Value	Limit (>)	Result
eference Offset 21.13 (EVIATIONS FROM TES one configuration #	ST STANDARD			Value 1.627 MHz		Result Pass
eference Offset 21.13 of EVIATIONS FROM TES	ST STANDARD				(>)	













XMit 2019.05.15

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
Attenuator	Fairview Microwave	SA4018-20	TYE	10-Oct-18	10-Oct-19
Block - DC	Fairview Microwave	SD3379	AMT	10-Oct-18	10-Oct-19
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	10-Oct-18	10-Oct-19
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	19-Mar-19	19-Mar-20

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The spurious RF conducted emissions were measured with the EUT set to low, medium and high transmit frequencies. The EUT was transmitting at the data rate(s) listed in the datasheet. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.



XMit 2019.05.15 EUT: Wireless/LBC Serial Number: See Configuration Customer: Garrett Metal Detectors Work Order: GARR0058 Date: 24-Jun-19 Temperature: 22.2 °C Humidity: 54.2% RH Barometric Pres.: 1017 mbar Attendees: None Project: None Tested by: Jonathan Kiefer TEST SPECIFICATIONS Power: 110VAC/60Hz Test Method Job Site: TX09 FCC 15.247:2019 ANSI C63.10:2013 COMMENTS Reference Offset 21.13 dB (20 dB attenuator + dc block + cable). EUT antenna gain is 5.44 dBi. DEVIATIONS FROM TEST STANDARD None Configuration # 6 Jonathan Kiefer Signature Measured Freq (MHz) 2405.22 Frequency Max Value Limit Range Fundamental (dBc) Result ≤ (dBc) N/A Low Channel, 2405 MHz N/A N/A Low Channel, 2405 MHz Low Channel, 2405 MHz Pass Pass N/A 30 MHz - 12.5 GHz 4810.34 -48.64 -30 12.5 GHz - 25 GHz 24998.47 -39.31 -30 -30 N/A -30 -30 N/A Fundamental 30 MHz - 12.5 GHz Mid Channel, 2440 MHz 2439.71 N/A Mid Channel, 2440 MHz 4880.37 -48.23 Pass 12.5 GHz - 25 GHz Fundamental Mid Channel, 2440 MHz 24946.59 -39.89 Pass High Channel, 2480 MHz 2480.2 N/A N/A High Channel, 2480 MHz High Channel, 2480 MHz 30 MHz - 12.5 GHz 12.5 GHz - 25 GHz -47.32 -30 -30 Pass Pass 4961.06 24870.28 -39.46





RL RF	50 Ω AC		ENSE:INT	ALIGN OFF		02:42:3	
		PNO: Fast 😱 IFGain:Low	Trig: Free Run #Atten: 10 dB	#Avg Type	Log-Pwr		RACE 1 2 3 4 TYPE MWWW DET P P P P
Ref dB/div Ref	Offset 21.13 dB 15.00 dBm					Mkr1 4.8 -4	10 3 GH 8.57 dB
9 00							
00							
0							
0							
0							
0		• ¹					
0	and the second	Marine and a state of the state			an the second	elekteli tekenen fi	
o							
o							
art 0.030 GH						Ston	12 500 CI
es BW 1001		#VB	N 300 kHz		Sw	Stop eep 1.192	s (8192 p
1				STATUS			

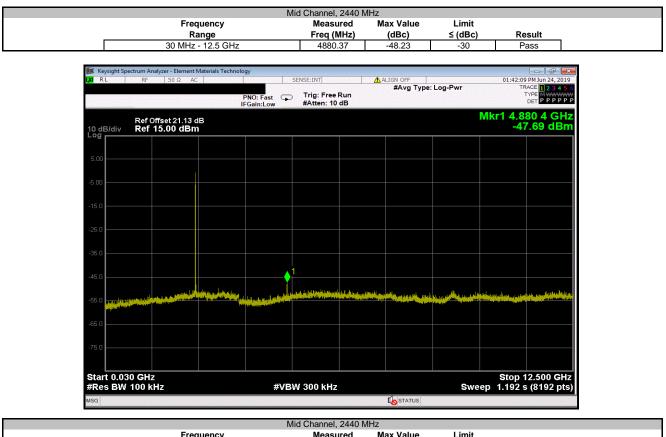




Frequency	Measured	Max Value	Limit	
Range	Freq (MHz)	(dBc)	≤ (dBc)	Result
Fundamental	2439.71	N/A	N/A	N/A







Frequency	Measured	Max Value	Limit	
Range	Freq (MHz)	(dBc)	≤ (dBc)	Result
12.5 GHz - 25 GHz	24946.59	-39.89	-30	Pass







10 dB/div	Ref Offset 21.13 o Ref 15.00 dBm	iB 1						Mkr1 4.9 -47	61 1 GHz 7.22 dBm
-									
5.00									
-5.00									
15.0									
25.0									
35.0									
-45.0				1					
55.0 	المرازية المراسية والمراجع والمراجع	and the second second	and the second		a dini sa dikataka a		Net Martines	uk atau atakatan Jawa	ann a tao dhi bhabana
	and a set of the set of the set								
-65.0									
-75.0									
Start 0.030 #Res BW 1			#VB	W 300 kHz			Swe	Stop ² ep 1.192 s	12.500 GHz s (8192 pts
ISG						STATUS			







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
Attenuator	Fairview Microwave	SA4018-20	TYE	10-Oct-18	10-Oct-19
Block - DC	Fairview Microwave	SD3379	AMT	10-Oct-18	10-Oct-19
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	10-Oct-18	10-Oct-19
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	19-Mar-19	19-Mar-20

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The power spectral density was measured using the channels and modes as called out on the following data sheets. The transmit power was set to its default maximum.

The method AVGPSD-1 in section 11.10.3 of ANSI C63.10:2013 was used to make the measurement. This method uses trace averaging and RMS detection across the full power of the burst. This method is allowed as the same method has been used to determine the conducted output power.



				TbtTx 2018.09.13	XMit 2019.0
EUT: Wi	ireless/LBC		Work Order:	GARR0058	
Serial Number: Se	e Configuration		Date:	24-Jun-19	
Customer: Ga	arrett Metal Detectors		Temperature:	22.2 °C	
Attendees: No	one			54.2% RH	
Project: No	one		Barometric Pres.:		
Tested by: Jo	nathan Kiefer	Power: 110VAC/60Hz	Job Site:	TX09	
TEST SPECIFICATION		Test Method			
CC 15.247:2019		ANSI C63.10:2013			
COMMENTS					
	3 dB (20 dB attenuator + dc block + cable). EUT antenna gair				
DEVIATIONS FROM TE	EST STANDARD				
lone					
Configuration #	6 Signature	Jonathan Kiefe			
			Value dBm/3kHz	Limit < dBm/3kHz	Results
ow Channel, 2405 MH	Z		-10.846	8	Pass
lid Channel, 2440 MHz	Z		-10.929	8	Pass
ligh Channel, 2480 MH			-11.957	8	Pass
5			111001	-	. 400

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