



element

2333 Designs & Mfg.

Footmarks BLE Rev A

FCC 15.247:2020

Bluetooth LE Radio

Report: 23DM0009.2, Issue Date: December 22, 2020



NVLAP LAB CODE: 200629-0



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CERTIFICATE OF TEST

Last Date of Test: November 5, 2020

2333 Designs & Mfg.

EUT: Footmarks BLE Rev A

Radio Equipment Testing

Standards

Specification	Method
FCC 15.247:2020	ANSI C63.10:2013

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	No	N/A	Not required for a battery powered EUT.
6.5, 6.6, 11.12.1, 11.13.2	Spurious Radiated Emissions	Yes	Pass	
11.6	Duty Cycle	Yes	Pass	
11.8.2	Occupied Bandwidth	Yes	Pass	
11.9.1.1	Output Power	Yes	Pass	
11.9.1.1	Equivalent Isotropic Radiated Power	Yes	Pass	
11.10.2	Power Spectral Density	Yes	Pass	
11.11	Band Edge Compliance	Yes	Pass	
11.11	Spurious Conducted Emissions	Yes	Pass	

Deviations From Test Standards

None

Approved By:



Kyle Holgate, Operations Manager

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

REVISION HISTORY



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

ACCREDITATIONS AND AUTHORIZATIONS



United States

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

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

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

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

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	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
NVLAP				
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	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	2834D-1	2834G-1	2834F-1
BSMI				
SL2-IN-E-1154R	SL2-IN-E-1152R	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI				
A-0029	A-0109	A-0108	A-0201	A-0110
Recognized Phase I CAB for ISED, ACMA, BSMI, IDA, KCC/RRR, MIC, MOC, NCC, OFCA				
US0158	US0175	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.

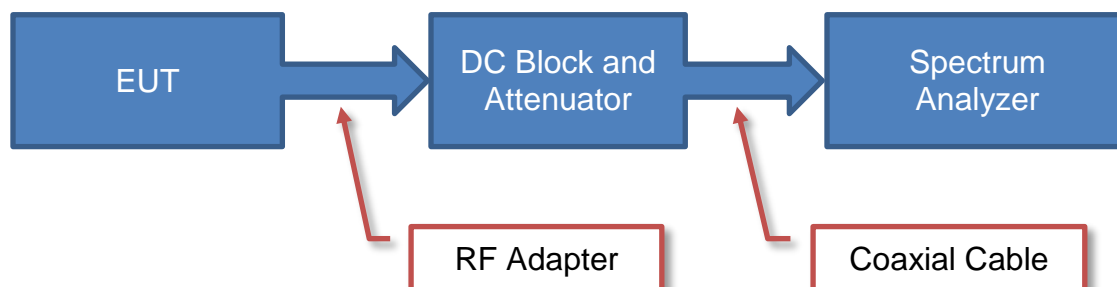
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable 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.

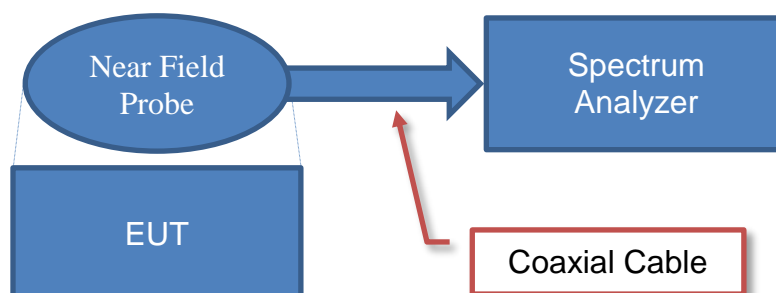
Test	+ MU	- MU
Frequency Accuracy	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	1.2 dB	-1.2 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.2 dB	-5.2 dB
AC Powerline Conducted Emissions (dB)	2.6 dB	-2.6 dB

Test Setup Block Diagrams

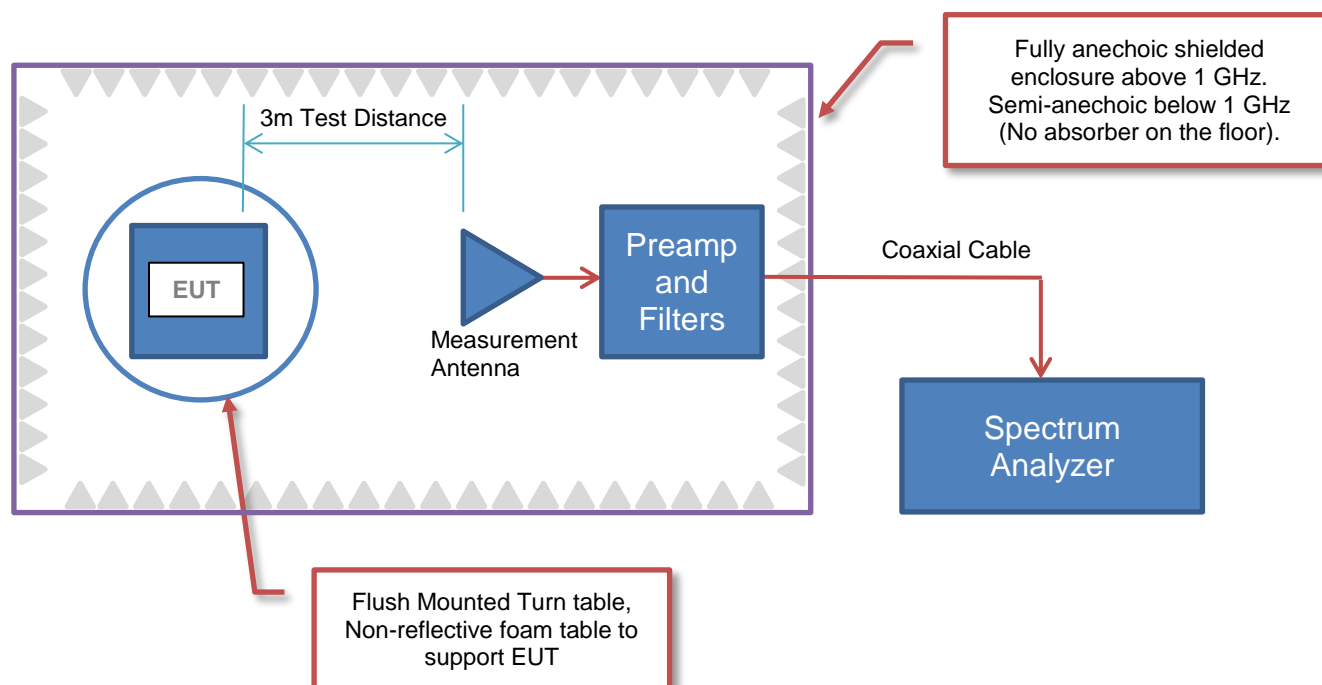
Antenna Port Conducted Measurements



Near Field Test Fixture Measurements



Spurious Radiated Emissions



PRODUCT DESCRIPTION



Client and Equipment Under Test (EUT) Information

Company Name:	2333 Designs & Mfg.
Address:	32411 NE 134th St
City, State, Zip:	Duvall, WA 98019
Test Requested By:	Jeff Kriegbaum
EUT:	Footmarks BLE Rev A
First Date of Test:	October 8, 2020
Last Date of Test:	November 5, 2020
Receipt Date of Samples:	August 28, 2020
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
BLE Beacon
Testing Objective:
To demonstrate compliance of the Bluetooth LE radio to FCC 15.247 requirements.

CONFIGURATIONS



Configuration 23DM0009- 2

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Footmarks BLE	2333 Designs & Mfg.	Rev. A	Low Channel
Footmarks BLE	2333 Designs & Mfg.	Rev. A	Mid Channel
Footmarks BLE	2333 Designs & Mfg.	Rev. A	High Channel

Configuration 23DM0009- 3

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Footmarks BLE	2333 Designs & Mfg.	Rev. A	#1
Footmarks BLE	2333 Designs & Mfg.	Rev. A	#2
Footmarks BLE	2333 Designs & Mfg.	Rev. A	#3

MODIFICATIONS



Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2020-10-08	Band Edge Compliance	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	2020-10-08	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.
3	2020-11-05	Occupied Bandwidth	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	2020-11-05	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	2020-11-05	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.
6	2020-11-05	Power Spectral Density	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	2020-11-05	Spurious 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 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)
F Type	Dialog	2328 – 2.685	0

No adjustable power settings were provided. The EUT was tested using power settings pre-defined by the manufacturer.

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.

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.

OCCUPIED BANDWIDTH



XMIT 2020.03.25.0

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
Block - DC	Weinschel Corp.	7006	AMS	17-Jan-20	17-Jan-21
Attenuator	Weinschel	54A-20	TYR	17-Jan-20	17-Jan-21
Cable	Micro-Coax	UFD150A-1-0720-200200	NCS	17-Jan-20	17-Jan-21
Generator - Signal	Agilent	E4422B	TGR	11-Aug-20	11-Aug-23
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	25-Jun-20	25-Jun-21

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.

OCCUPIED BANDWIDTH



TbTtx 2019.08.30.0 XMit 2020.03.25.0

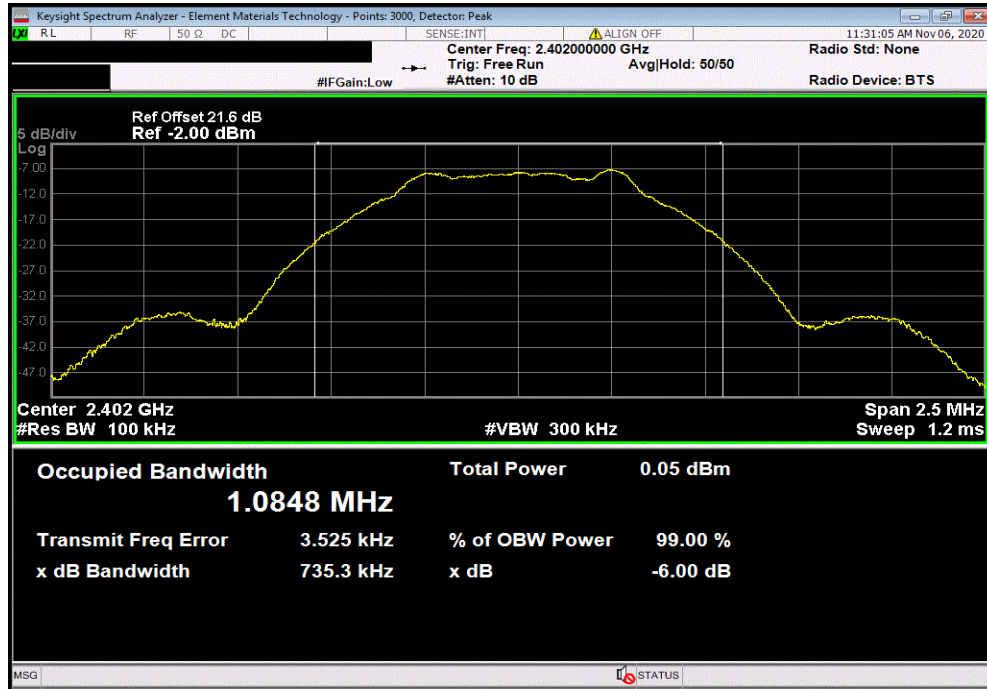
EUT: Footmarks BLE Rev A		Work Order: 23DM0009	
Serial Number: See configurations		Date: 5-Nov-20	
Customer: 2333 Designs & Mfg.		Temperature: 21.9 °C	
Attendees: None		Humidity: 50.6% RH	
Project: None		Barometric Pres.: 1020 mbar	
Tested by: Brian Fahey		Job Site: NC0A	
Power: 3 VDC via Battery			
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2020		ANSI C63.10:2013	
COMMENTS			
Reference level offset includes RF measurement cable, 20 dB attenuator, and DC block.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	2	Signature 	
		Value	Limit (±) Result
BLE/GFSK 1 Mbps Low Channel, 2402 MHz		735.319 kHz	500 kHz Pass
BLE/GFSK 1 Mbps Mid Channel, 2440 MHz		739.443 kHz	500 kHz Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz		746.366 kHz	500 kHz Pass

OCCUPIED BANDWIDTH

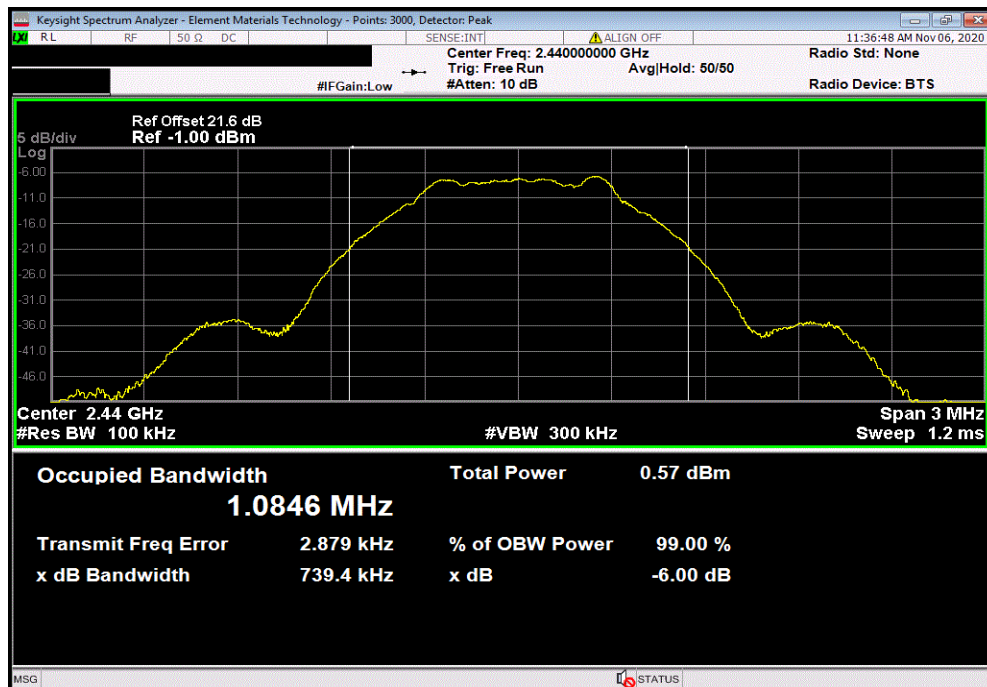


TbTx 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
				Value	Limit (≥)	Result
				735.319 kHz	500 kHz	Pass



BLE/GFSK 1 Mbps Mid Channel, 2440 MHz						
				Value	Limit (≥)	Result
				739.443 kHz	500 kHz	Pass

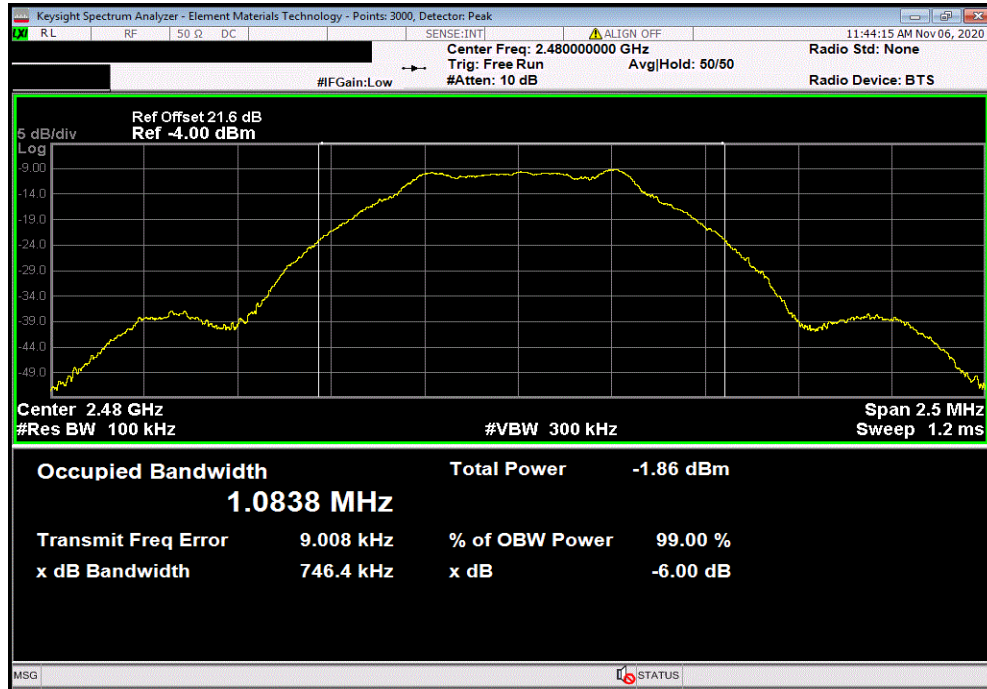


OCCUPIED BANDWIDTH



TbTx 2019.08.30.0 XMI 2020.03.25.0

BLE/GFSK 1 Mbps High Channel, 2480 MHz						
Value				Limit	Result	
				(≥)		
			746.366 kHz	500 kHz	Pass	



OUTPUT POWER



XMIT 2020.03.25.0

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
Block - DC	Weinschel Corp.	7006	AMS	17-Jan-20	17-Jan-21
Attenuator	Weinschel	54A-20	TYR	17-Jan-20	17-Jan-21
Cable	Micro-Coax	UFD150A-1-0720-200200	NCS	17-Jan-20	17-Jan-21
Generator - Signal	Agilent	E4422B	TGR	11-Aug-20	11-Aug-23
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	25-Jun-20	25-Jun-21

TEST DESCRIPTION

The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum.


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

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

OUTPUT POWER



TbTtx 2019.08.30.0 XMtr 2020.03.25.0

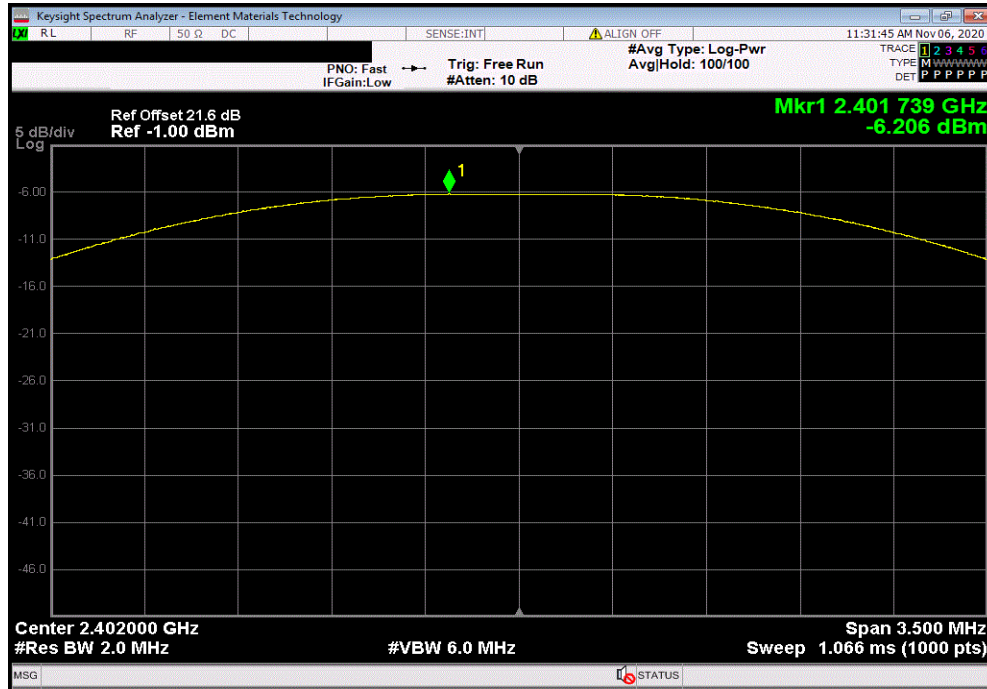
EUT: Footmarks BLE Rev A		Work Order: 23DM0009	
Serial Number: See configurations		Date: 5-Nov-20	
Customer: 2333 Designs & Mfg.		Temperature: 21.9 °C	
Attendees: None		Humidity: 50.7% RH	
Project: None		Barometric Pres.: 1020 mbar	
Tested by: Brian Fahey		Job Site: NC0A	
Power: 3 VDC via Battery			
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2020		ANSI C63.10:2013	
COMMENTS			
Reference level offset includes RF measurement cable, 20 dB attenuator, and DC block.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	2	Signature 	
		Out Pwr (dBm)	Limit (dBm) Result
BLE/GFSK 1 Mbps Low Channel, 2402 MHz		-6.206	30 Pass
BLE/GFSK 1 Mbps Mid Channel, 2440 MHz		-5.115	30 Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz		-8.505	30 Pass

OUTPUT POWER

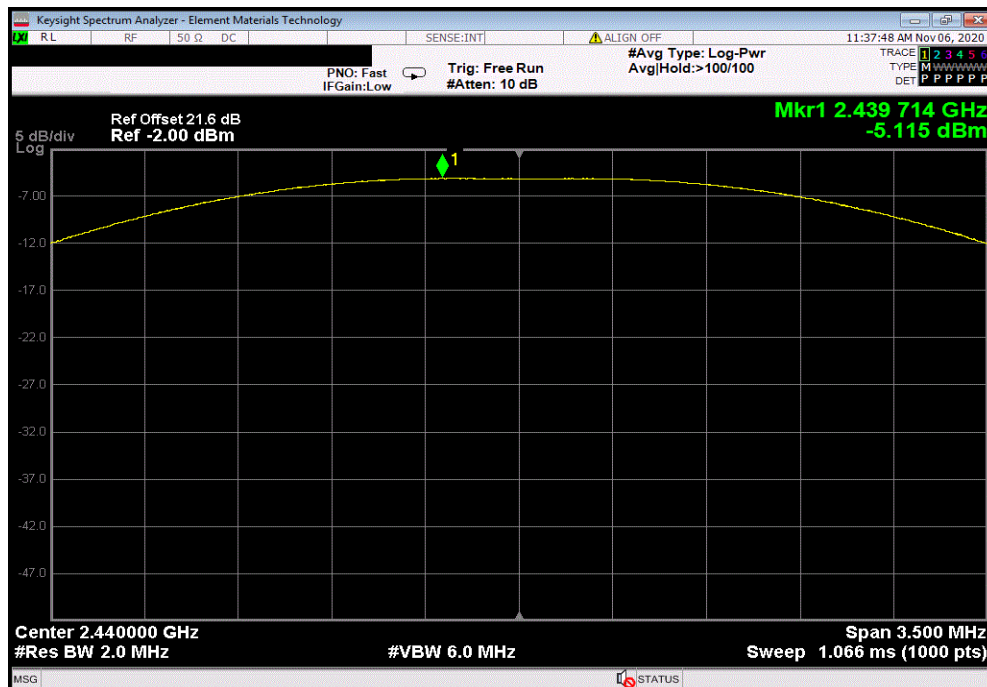


TbTx 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				-6.206	30	Pass



BLE/GFSK 1 Mbps Mid Channel, 2440 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				-5.115	30	Pass

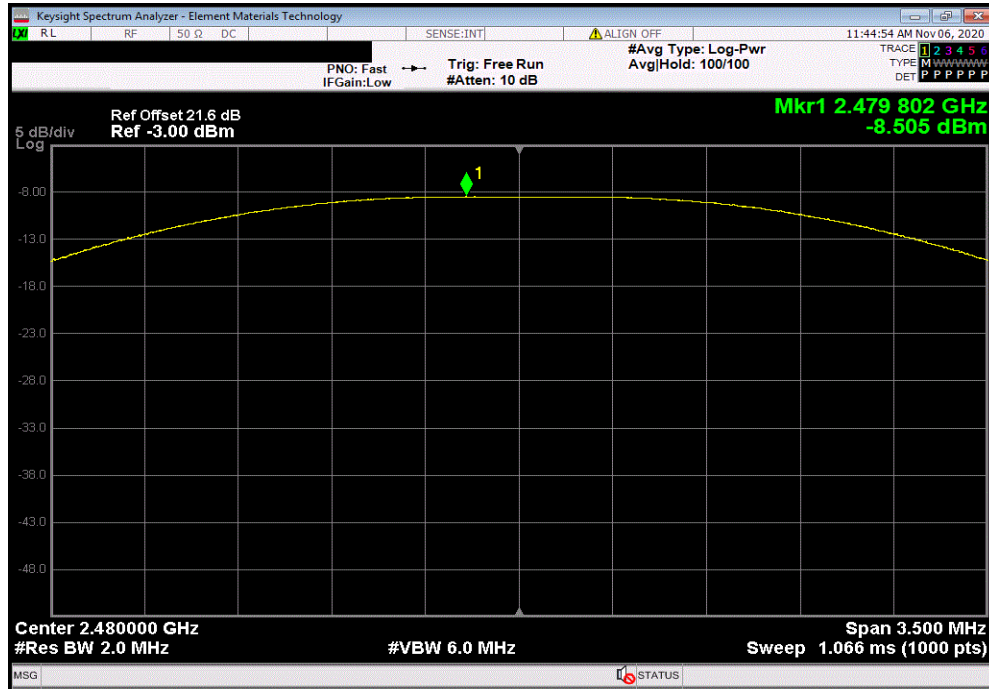


OUTPUT POWER



TbTx 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 1 Mbps High Channel, 2480 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				-8.505	30	Pass



EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



XMIT 2020.03.25.0

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
Block - DC	Weinschel Corp.	7006	AMS	17-Jan-20	17-Jan-21
Attenuator	Weinschel	54A-20	TYR	17-Jan-20	17-Jan-21
Cable	Micro-Coax	UFD150A-1-0720-200200	NCS	17-Jan-20	17-Jan-21
Generator - Signal	Agilent	E4422B	TGR	11-Aug-20	11-Aug-23
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	25-Jun-20	25-Jun-21

TEST DESCRIPTION

The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum.

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


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

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

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



TstTx 2019.08.30.0 XMt 2020.03.25.0

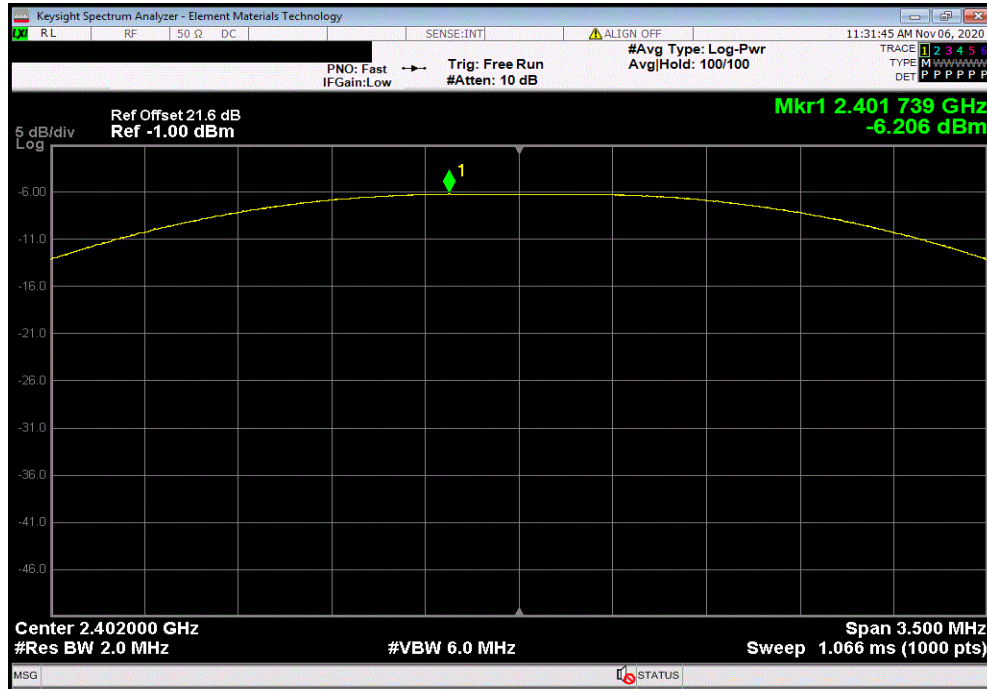
EUT:	Footmarks BLE Rev A		Work Order:	23DM0009		
Serial Number:	See configurations		Date:	5-Nov-20		
Customer:	2333 Designs & Mfg.		Temperature:	21.9 °C		
Attendees:	None		Humidity:	50.6% RH		
Project:	None		Barometric Pres.:	1020 mbar		
Tested by:	Brian Fahey	Power:	3 VDC via Battery	Job Site:	NC0A	
TEST SPECIFICATIONS			Test Method			
FCC 15.247:2020			ANSI C63.10:2013			
COMMENTS						
Reference level offset includes RF measurement cable, 20 dB attenuator, and DC block.						
DEVIATIONS FROM TEST STANDARD						
None						
Configuration #	2	Signature 				
		Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
BLE/GFSK 1 Mbps Low Channel, 2402 MHz		-6.206	0	-6.206	36	Pass
BLE/GFSK 1 Mbps Mid Channel, 2440 MHz		-5.115	0	-5.115	36	Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz		-8.505	0	-8.505	36	Pass

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

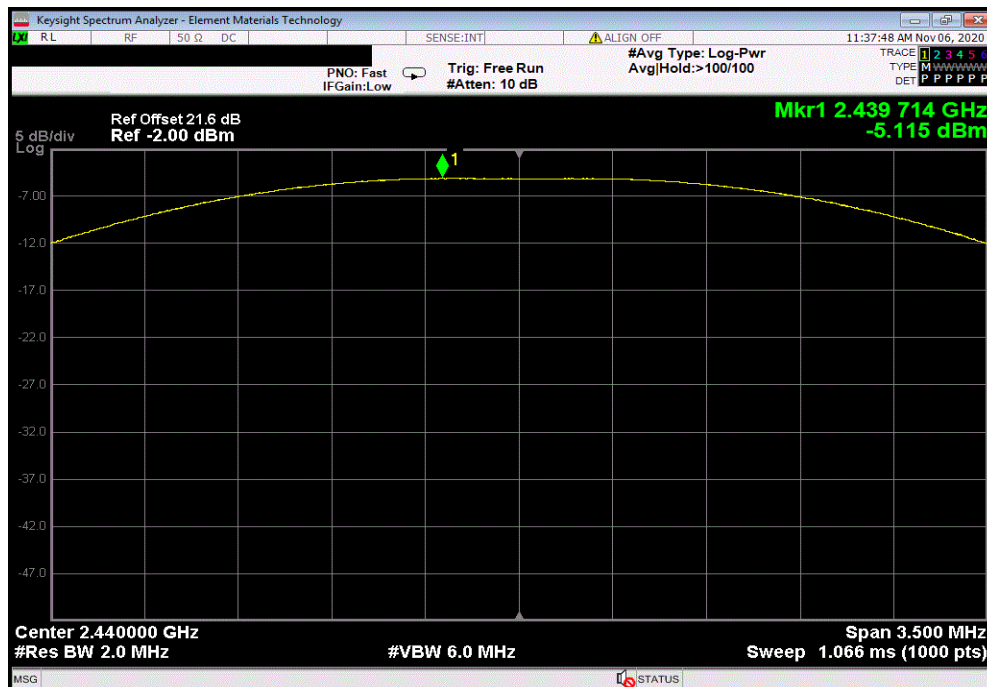


TbTx 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result		
-6.206	0	-6.206	36	Pass		



BLE/GFSK 1 Mbps Mid Channel, 2440 MHz						
Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result		
-5.115	0	-5.115	36	Pass		

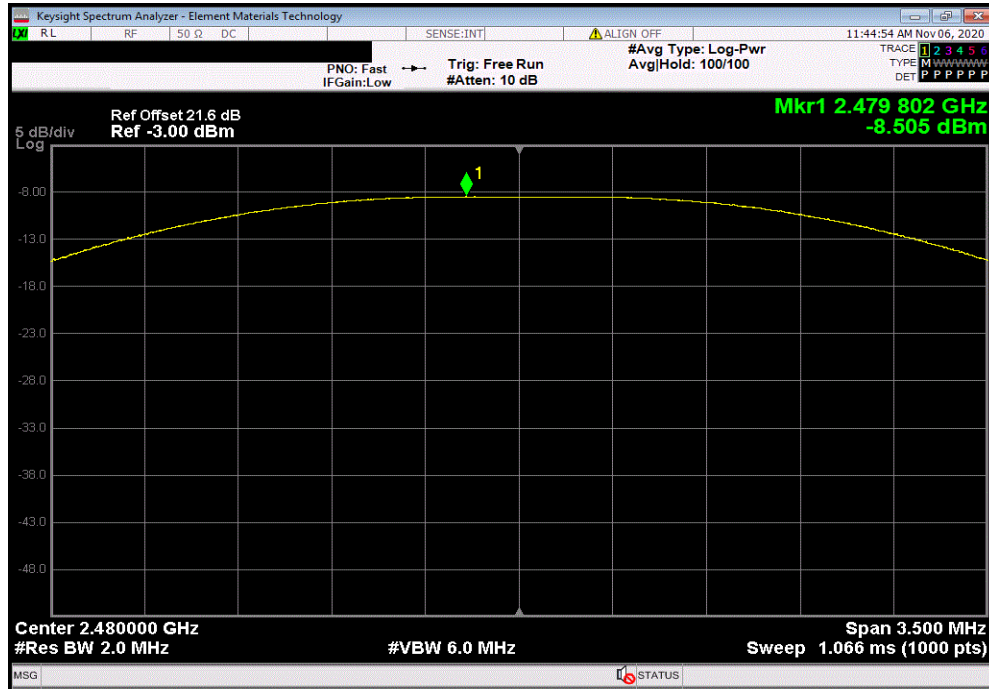


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



TbTx 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 1 Mbps High Channel, 2480 MHz						
	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result	
	-8.505	0	-8.505	36	Pass	



POWER SPECTRAL DENSITY



XMIT 2020.03.25.0

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.

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Attenuator	Weinschel	54A-20	TYR	17-Jan-20	17-Jan-21
Cable	Micro-Coax	UFD150A-1-0720-200200	NCS	17-Jan-20	17-Jan-21
Generator - Signal	Agilent	E4422B	TGR	11-Aug-20	11-Aug-23
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	25-Jun-20	25-Jun-21

TEST DESCRIPTION


The maximum power spectral density measurements was measured using the channels and modes as called out on the following data sheets.

Per the procedure outlined in ANSI C63.10 the peak power spectral density was measured in a 3 kHz RBW.

POWER SPECTRAL DENSITY



TstTx 2019.08.30.0 XMI 2020.03.25.0

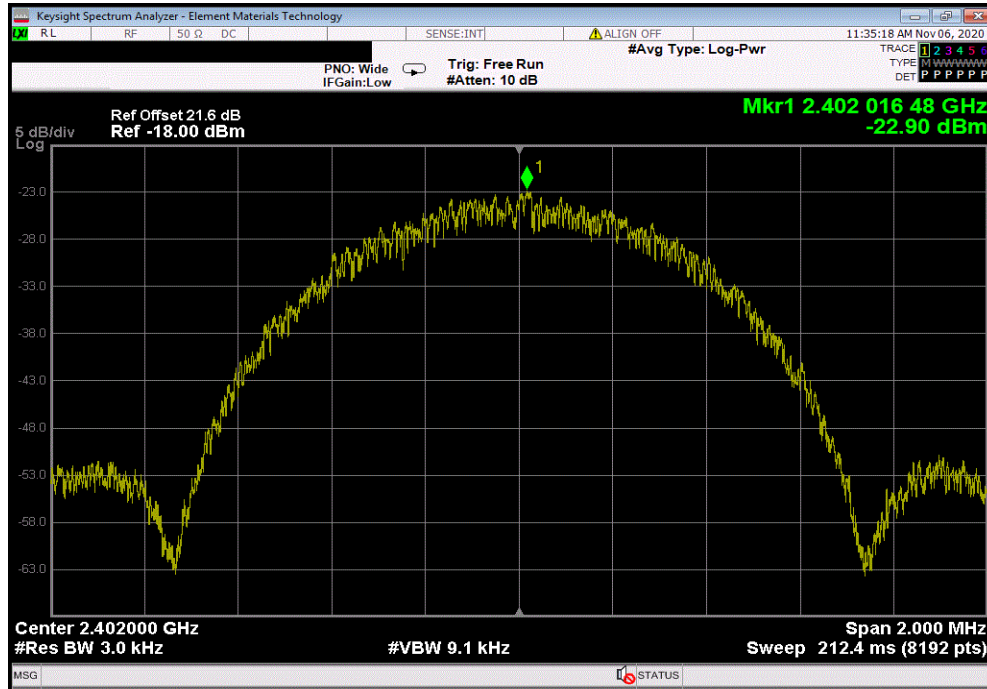
EUT: Footmarks BLE Rev A		Work Order: 23DM0009	
Serial Number: See configurations		Date: 5-Nov-20	
Customer: 2333 Designs & Mfg.		Temperature: 21.9 °C	
Attendees: None		Humidity: 50.6% RH	
Project: None		Barometric Pres.: 1020 mbar	
Tested by: Brian Fahey		Power: 3 VDC via Battery	
		Job Site: NC0A	
TEST SPECIFICATIONS			
FCC 15.247:2020		Test Method	
		ANSI C63.10:2013	
COMMENTS			
Reference level offset includes RF measurement cable, 20 dB attenuator, and DC block.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	2	Signature 	
		Value dBm/3kHz	Limit < dBm/3kHz
BLE/GFSK 1 Mbps Low Channel, 2402 MHz		-22.895	8
BLE/GFSK 1 Mbps Mid Channel, 2440 MHz		-22.807	8
BLE/GFSK 1 Mbps High Channel, 2480 MHz		-24.777	8
			Results
			Pass
			Pass
			Pass

POWER SPECTRAL DENSITY

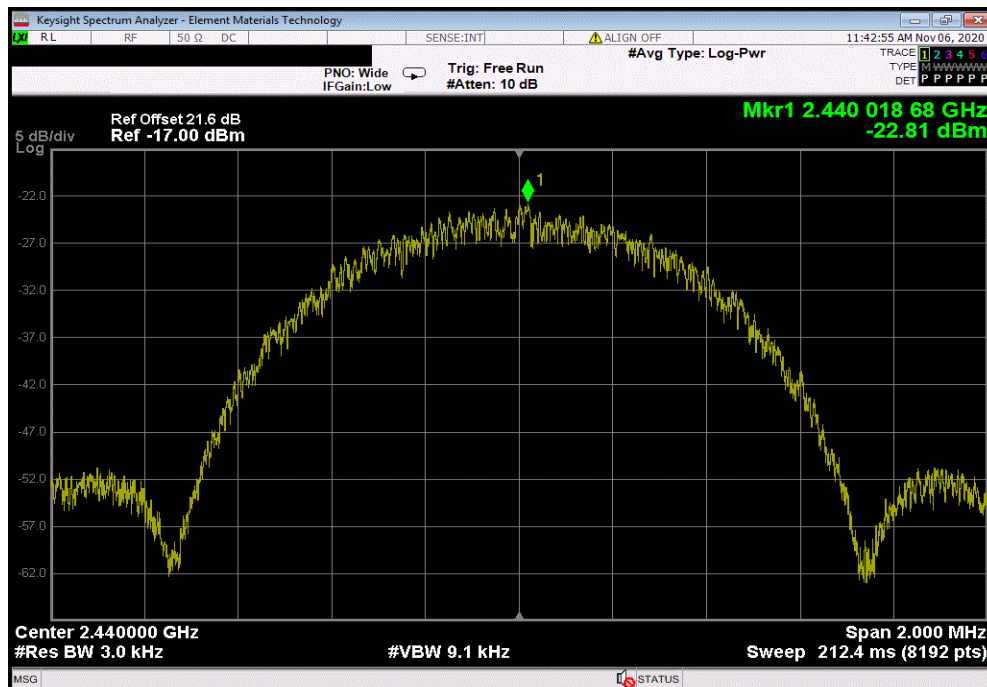


TbTx 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
	Value	Limit	Results			
	dBm/3kHz	< dBm/3kHz				
	-22.895	8	Pass			



BLE/GFSK 1 Mbps Mid Channel, 2440 MHz						
	Value	Limit	Results			
	dBm/3kHz	< dBm/3kHz				
	-22.807	8	Pass			

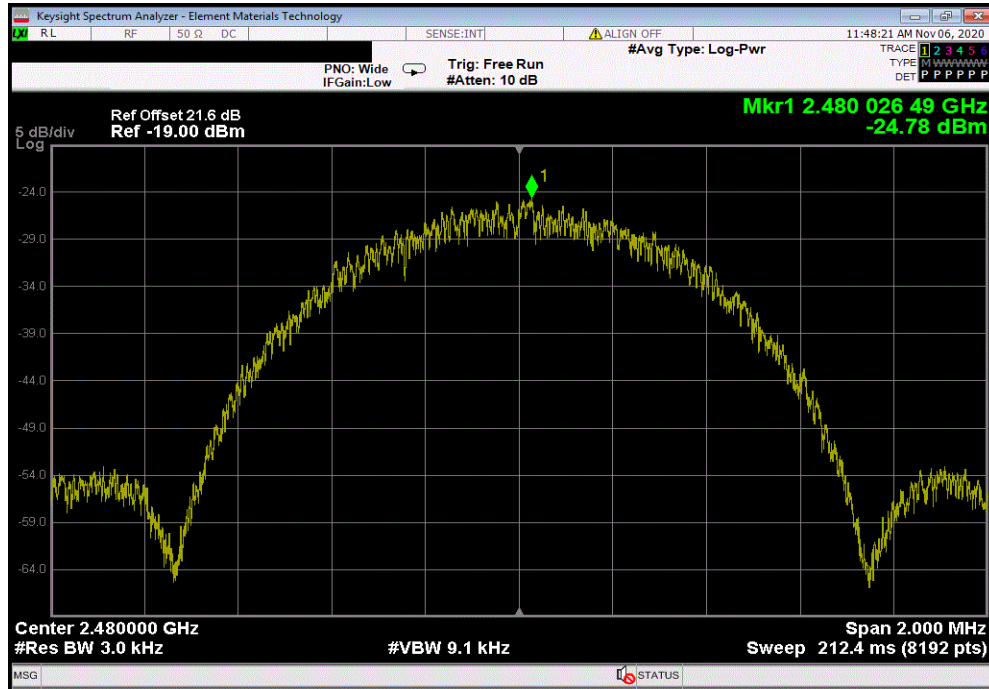


POWER SPECTRAL DENSITY



TbTx 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 1 Mbps High Channel, 2480 MHz						
	Value	Limit				
	dBm/3kHz	< dBm/3kHz	Results			
	-24.777	8	Pass			



BAND EDGE COMPLIANCE



XMit 2020.03.25.0

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
Block - DC	Weinschel Corp.	7006	AMS	17-Jan-20	17-Jan-21
Cable	Micro-Coax	UFD150A-1-0720-200200	NCS	17-Jan-20	17-Jan-21
Generator - Signal	Agilent	E4422B	TGR	11-Aug-20	11-Aug-23
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	25-Jun-20	25-Jun-21

TEST DESCRIPTION

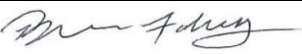
The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in each available band. The channels closest to the band edges were selected. The EUT was transmitting at the data rate(s) listed in the datasheet.

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

BAND EDGE COMPLIANCE



TbTfx 2019.08.30.0 XMt 2020.03.25.0

EUT: Footmarks BLE Rev A		Work Order: 23DM0009	
Serial Number: See configurations		Date: 8-Oct-20	
Customer: 2333 Designs & Mfg.		Temperature: 22.7 °C	
Attendees: None		Humidity: 54.1% RH	
Project: None		Barometric Pres.: 1014 mbar	
Tested by: Brian Fahey		Power: 3 VDC via Battery	
		Job Site: NC0A	
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2020		ANSI C63.10:2013	
COMMENTS			
Reference level offset includes DC block and RF measurement cable.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	2	Signature 	
		Value (dBc)	Limit ≤ (dBc)
		-40.95	-20
		-30.74	-20
			Result
			Pass

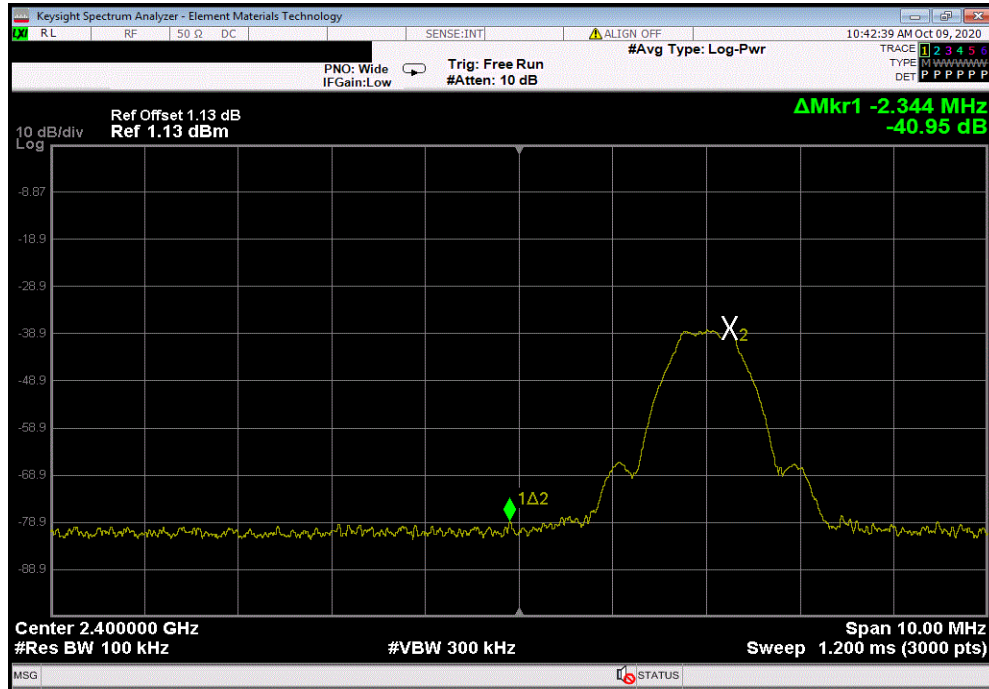
BLE/GFSK 1 Mbps Low Channel, 2402 MHz
BLE/GFSK 1 Mbps High Channel, 2480 MHz

BAND EDGE COMPLIANCE

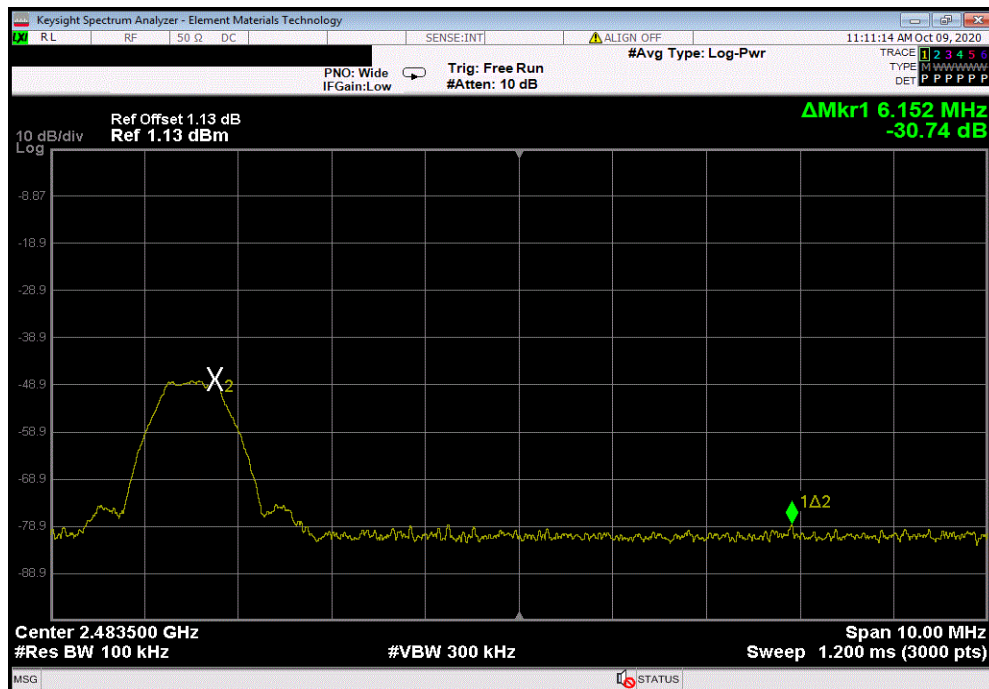


TbTtX 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-40.95	-20	Pass



BLE/GFSK 1 Mbps High Channel, 2480 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-30.74	-20	Pass



SPURIOUS CONDUCTED EMISSIONS



XMIT 2020.03.25.0

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
Block - DC	Weinschel Corp.	7006	AMS	17-Jan-20	17-Jan-21
Attenuator	Weinschel	54A-20	TYR	17-Jan-20	17-Jan-21
Cable	Micro-Coax	UFD150A-1-0720-200200	NCS	17-Jan-20	17-Jan-21
Generator - Signal	Agilent	E4422B	TGR	11-Aug-20	11-Aug-23
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	25-Jun-20	25-Jun-21

TEST DESCRIPTION

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.

SPURIOUS CONDUCTED EMISSIONS



TstTx 2019.08.30.0 XMI 2020.03.25.0

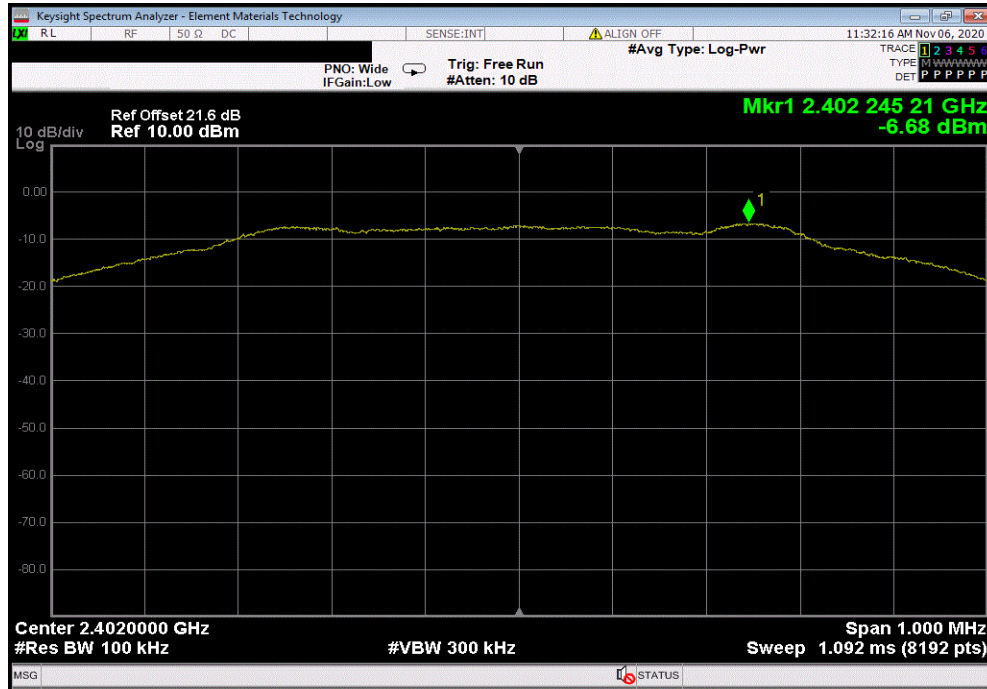
EUT: Footmarks BLE Rev A		Work Order: 23DM0009				
Serial Number: See configurations		Date: 5-Nov-20				
Customer: 2333 Designs & Mfg.		Temperature: 21.9 °C				
Attendees: None		Humidity: 50.4% RH				
Project: None		Barometric Pres.: 1020 mbar				
Tested by: Brian Fahey		Power: 3 VDC via Battery				
		Job Site: NC0A				
TEST SPECIFICATIONS						
FCC 15.247:2020		Test Method: ANSI C63.10:2013				
COMMENTS						
Reference level offset includes RF measurement cable, 20 dB attenuator, and DC block.						
DEVIATIONS FROM TEST STANDARD						
None						
Configuration #	2	Signature				
		Frequency Range	Measured Freq (MHz)			
			Max Value (dBc)			
			Limit ≤ (dBc)			
			Result			
BLE/GFSK 1 Mbps Low Channel, 2402 MHz		Fundamental	2402.25	N/A	N/A	
BLE/GFSK 1 Mbps Low Channel, 2402 MHz		30 MHz - 12.5 GHz	1200.73	-43.63	-20	Pass
BLE/GFSK 1 Mbps Low Channel, 2402 MHz		12.5 GHz - 25 GHz	24632.22	-44.37	-20	Pass
BLE/GFSK 1 Mbps Mid Channel, 2440 MHz		Fundamental	2440.25	N/A	N/A	N/A
BLE/GFSK 1 Mbps Mid Channel, 2440 MHz		30 MHz - 12.5 GHz	1220.52	-45.42	-20	Pass
BLE/GFSK 1 Mbps Mid Channel, 2440 MHz		12.5 GHz - 25 GHz	24560.49	-45.48	-20	Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz		Fundamental	2480.25	N/A	N/A	N/A
BLE/GFSK 1 Mbps High Channel, 2480 MHz		30 MHz - 12.5 GHz	1240.31	-39.85	-20	Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz		12.5 GHz - 25 GHz	23878.34	-43.62	-20	Pass

SPURIOUS CONDUCTED EMISSIONS

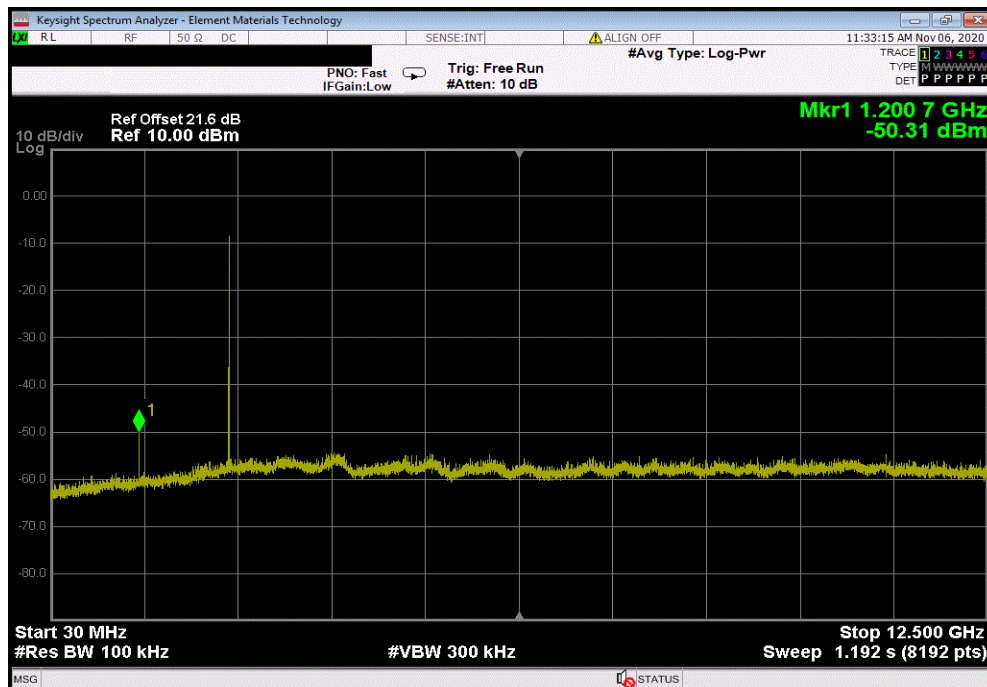


TbTx 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
Fundamental	2402.25	N/A	N/A	N/A	



BLE/GFSK 1 Mbps Low Channel, 2402 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
30 MHz - 12.5 GHz	1200.73	-43.63	-20	Pass	

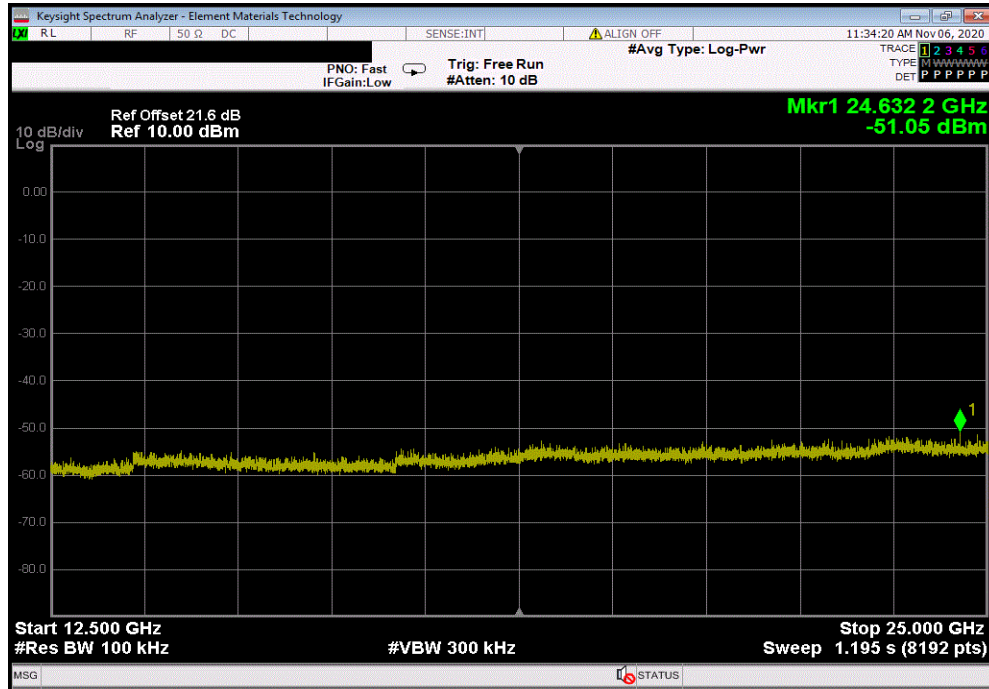


SPURIOUS CONDUCTED EMISSIONS

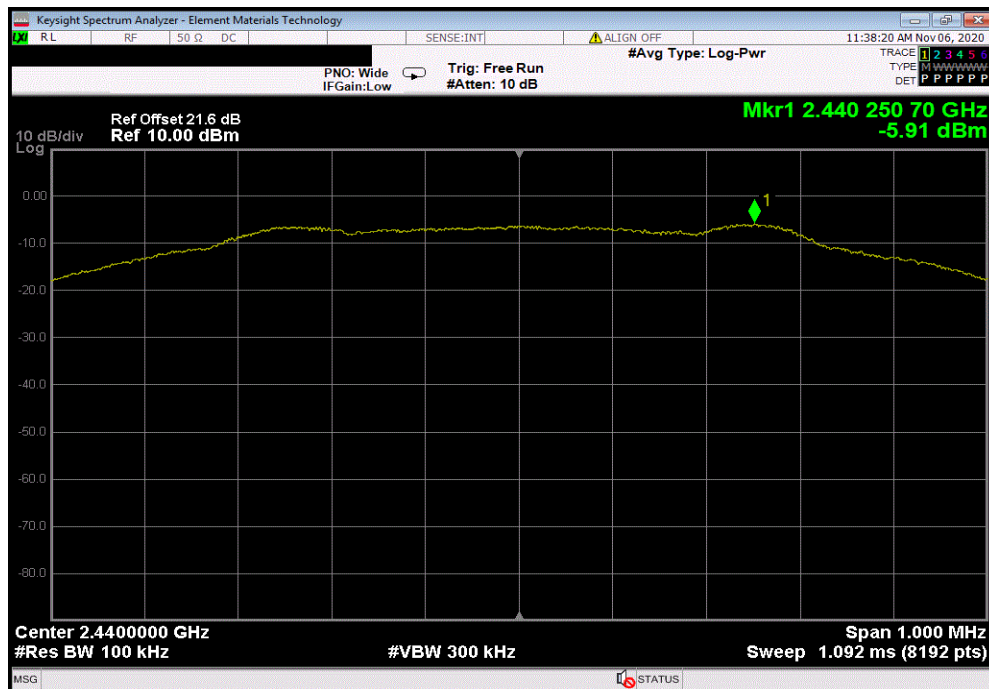


TbTx 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
12.5 GHz - 25 GHz	24632.22	-44.37	-20	Pass	



BLE/GFSK 1 Mbps Mid Channel, 2440 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
Fundamental	2440.25	N/A	N/A	N/A	

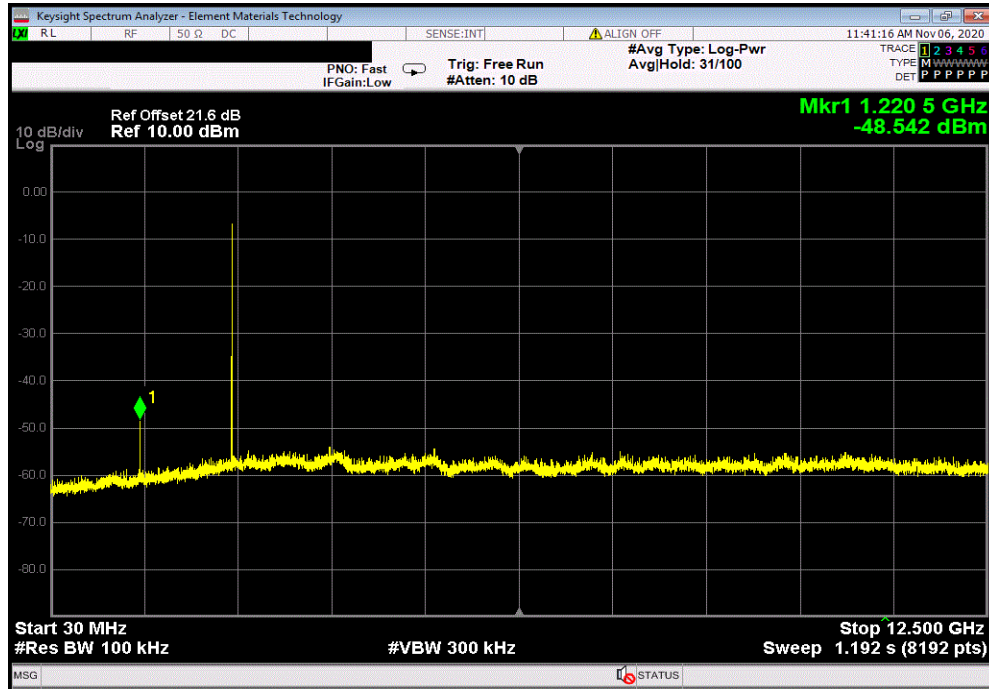


SPURIOUS CONDUCTED EMISSIONS

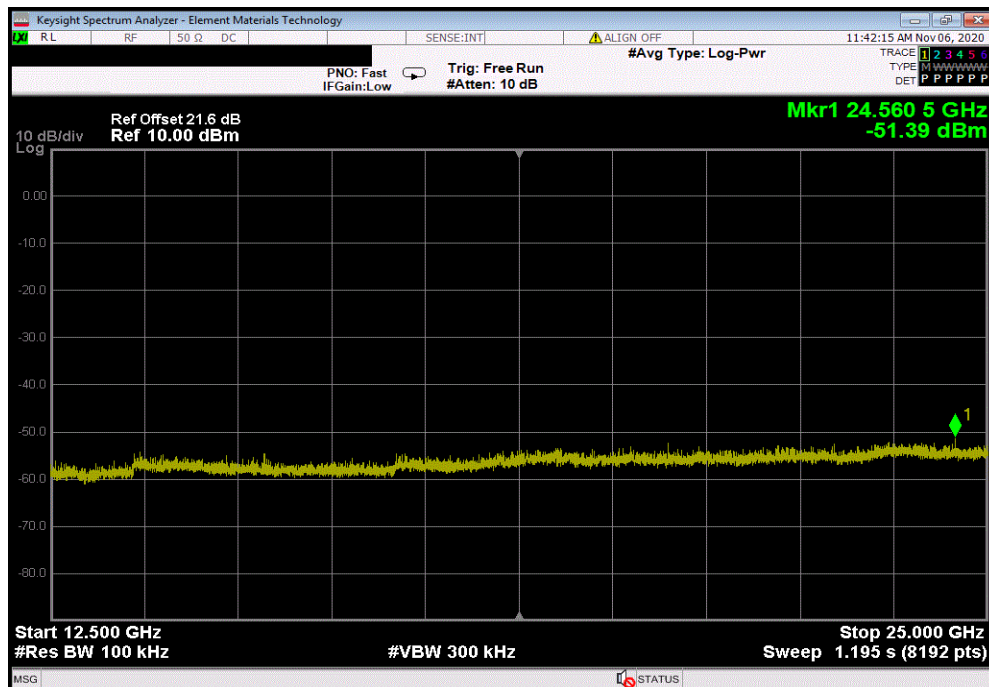


TbTx 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 1 Mbps Mid Channel, 2440 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
30 MHz - 12.5 GHz	1220.52	-45.42	-20	Pass	



BLE/GFSK 1 Mbps Mid Channel, 2440 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
12.5 GHz - 25 GHz	24560.49	-45.48	-20	Pass	

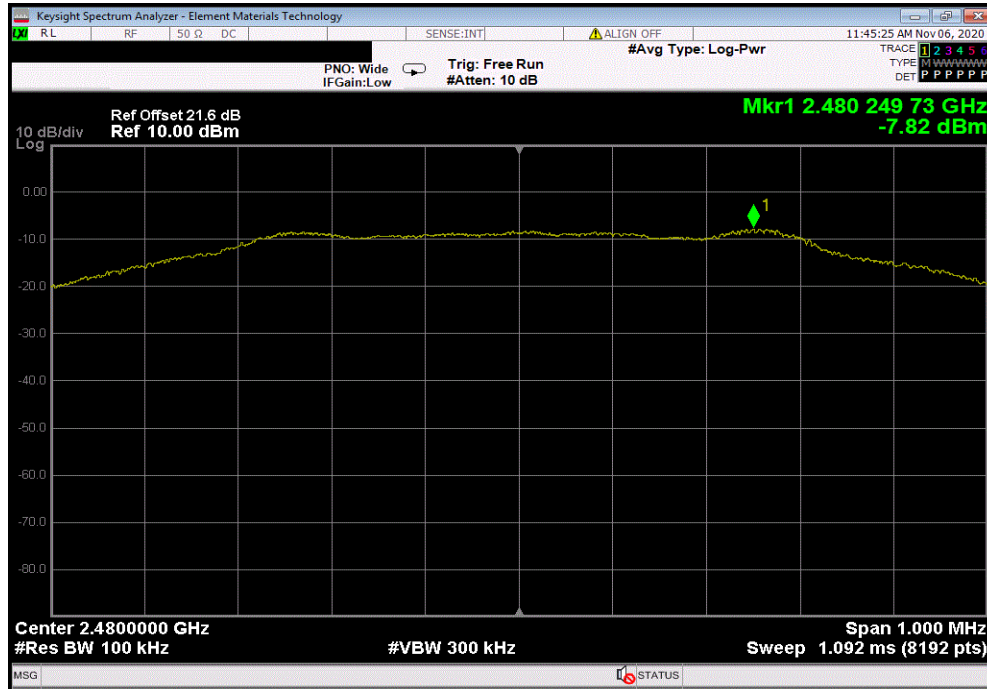


SPURIOUS CONDUCTED EMISSIONS

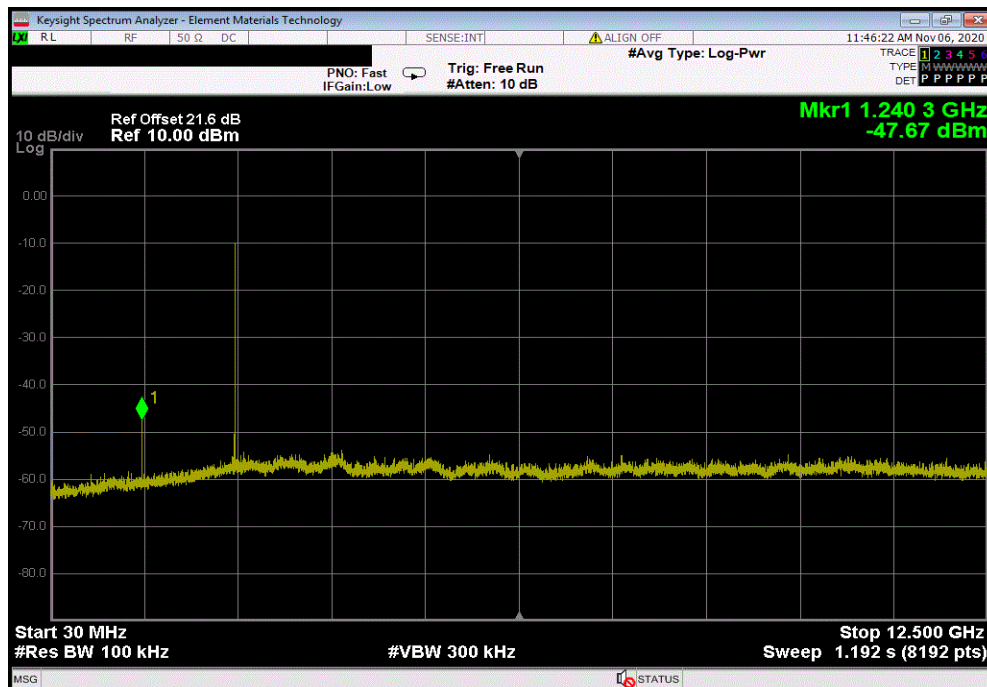


TbTx 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 1 Mbps High Channel, 2480 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
Fundamental	2480.25	N/A	N/A	N/A	



BLE/GFSK 1 Mbps High Channel, 2480 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
30 MHz - 12.5 GHz	1240.31	-39.85	-20	Pass	

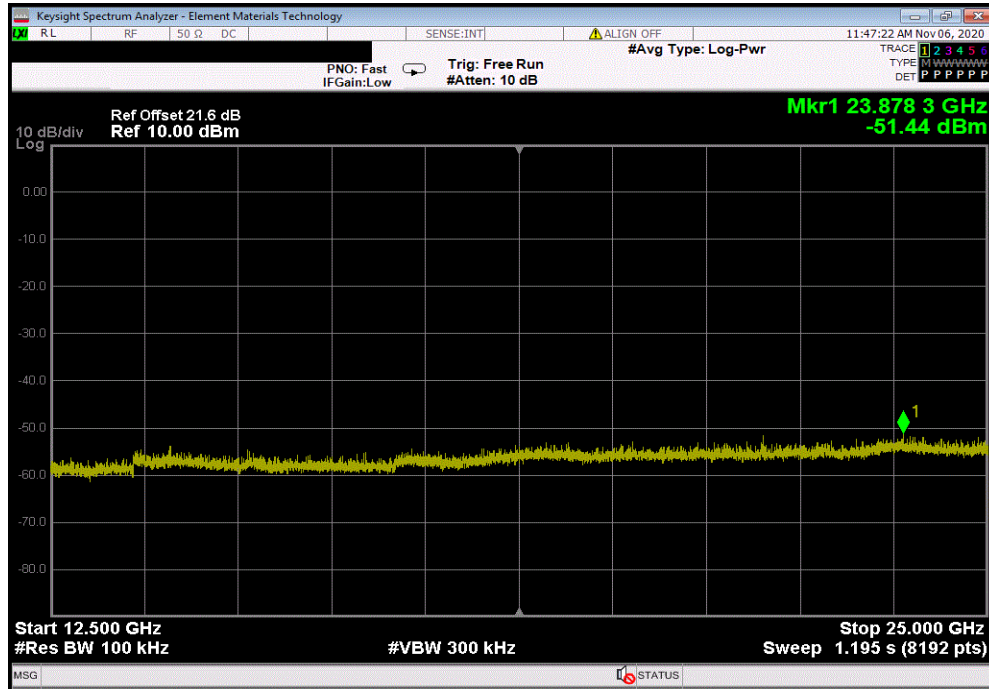


SPURIOUS CONDUCTED EMISSIONS



TbTx 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 1 Mbps High Channel, 2480 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
12.5 GHz - 25 GHz	23878.34	-43.62	-20	Pass	



SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2020.06.24.2

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

BTLE Tx, GFSK, 1 Mbps, 100% Duty Cycle, Low Channel = 2402 MHz, Mid Channel = 2440 MHz, High Channel = 2480 MHz.

POWER SETTINGS INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

23DM0009 - 3

FREQUENCY RANGE INVESTIGATED

Start Frequency | 30 MHz | Stop Frequency | 26 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.	Interval
Antenna - Double Ridge	ETS Lindgren	3115	AJM	2020-06-02	24 mo
Power Sensor	Amplifier Research	PH2000	SQT	2020-07-27	12 mo
Cable	Northwest EMC	N/A	NC8	2020-02-07	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AOD	2020-02-07	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-09	AIY	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AOJ	2020-08-26	12 mo
Antenna - Standard Gain	EMCO	3160-08	AHO	NCR	0 mo
Cable	High Speed Interconnects	EW292A-NGNG-300	NC3	2020-08-28	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AOK	2020-08-26	12 mo
Antenna - Standard Gain	EMCO	3160-07	AHP	NCR	0 mo
Filter - High Pass	Micro-Tronics	HPM50111	HHI	2020-09-25	12 mo
Cable	Northwest EMC	3115 Horn Cable	NC2	2020-04-20	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVZ	2020-04-20	12 mo
Antenna - Double Ridge	EMCO	3115	AHM	2020-07-01	24 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	PAB	2020-01-28	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYL	2019-09-25	24 mo
Cable	Northwest EMC	Bilog Cables	NC1	2020-01-28	12 mo
Filter - Low Pass	Micro-Tronics	LPM50004	LFF	2019-11-08	12 mo
Generator - Signal	Agilent	E4422B	TGR	2020-08-11	36 mo
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	2020-04-15	12 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 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 $10 \cdot \log(1/dc)$.

RADIATED SPURIOUS EMISSIONS

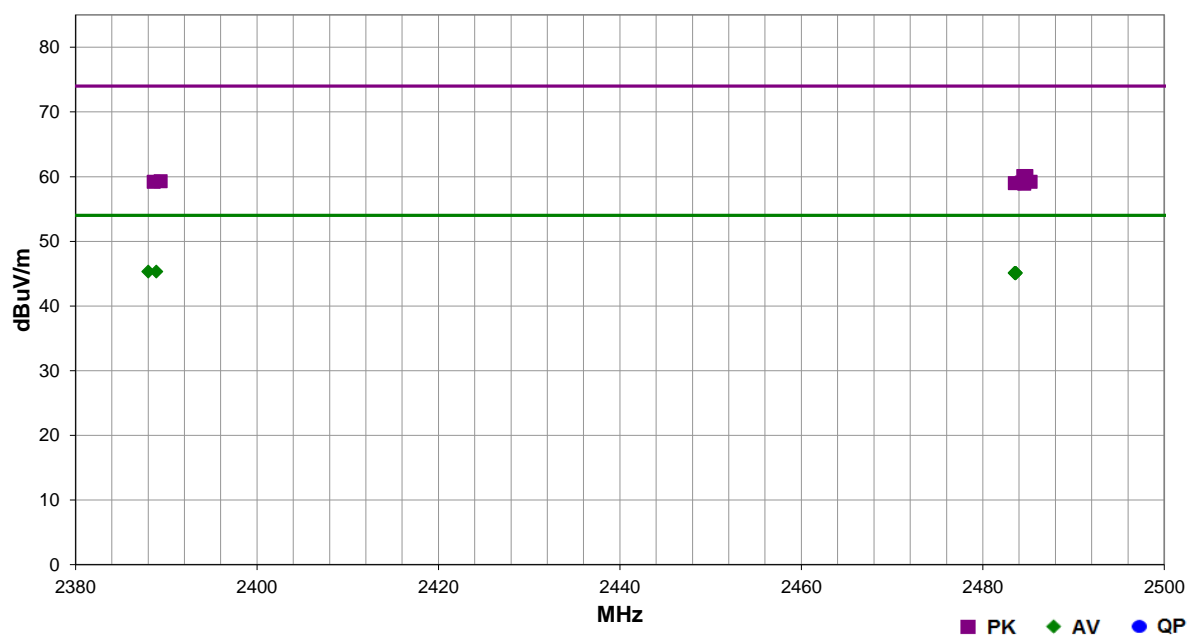


EmiR5 2020.06.24.4 PSA-ESCI 2020.06.24.2

Work Order:	23DM0009	Date:	2020-10-08	
Project:	None	Temperature:	23.4 °C	
Job Site:	NC01	Humidity:	51.2% RH	
Serial Number:	See configurations	Barometric Pres.:	1014 mbar	
EUT:		Footmarks BLE Rev A		
Configuration:	3			
Customer:	2333 Designs & Mfg.			
Attendees:	None			
EUT Power:	Battery			
Operating Mode:	BTLE Tx, GFSK, 1 Mbps, 100% Duty Cycle, Low Channel = 2402 MHz, Mid Channel = 2440 MHz, High Channel = 2480 MHz.			
Deviations:	None			
Comments:	See measurement comments for Channel and EUT orientation.			

Test Specifications	Test Method
FCC 15.247:2020	ANSI C63.10:2013

Run #	16	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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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
2388.020	25.9	-0.6	1.5	181.0	3.0	20.0	Vert	AV	0.0	45.3	54.0	-8.7	Low Ch., EUT on Side
2388.910	25.9	-0.6	3.09	58.0	3.0	20.0	Horz	AV	0.0	45.3	54.0	-8.7	Low Ch., EUT Horz
2483.573	25.9	-0.8	1.5	123.0	3.0	20.0	Horz	AV	0.0	45.1	54.0	-8.9	High Ch., EUT Horz
2483.657	25.9	-0.8	2.35	220.0	3.0	20.0	Horz	AV	0.0	45.1	54.0	-8.9	High Ch., EUT on Side
2483.623	25.9	-0.8	1.5	2.0	3.0	20.0	Vert	AV	0.0	45.1	54.0	-8.9	High Ch., EUT on Side
2483.503	25.9	-0.8	1.5	50.0	3.0	20.0	Horz	AV	0.0	45.1	54.0	-8.9	High Ch., EUT Vert
2483.567	25.9	-0.8	2.55	274.0	3.0	20.0	Vert	AV	0.0	45.1	54.0	-8.9	High Ch., EUT Vert
2483.603	25.8	-0.8	1.5	164.0	3.0	20.0	Vert	AV	0.0	45.0	54.0	-9.0	High Ch., EUT Horz
2484.463	40.9	-0.8	2.35	220.0	3.0	20.0	Horz	PK	0.0	60.1	74.0	-13.9	High Ch., EUT on Side
2484.807	40.9	-0.8	1.5	50.0	3.0	20.0	Horz	PK	0.0	60.1	74.0	-13.9	High Ch., EUT Vert
2389.373	39.9	-0.6	3.09	58.0	3.0	20.0	Horz	PK	0.0	59.3	74.0	-14.7	Low Ch., EUT Horz
2485.273	40.0	-0.8	2.55	274.0	3.0	20.0	Vert	PK	0.0	59.2	74.0	-14.8	High Ch., EUT Vert
2388.613	39.8	-0.6	1.5	181.0	3.0	20.0	Vert	PK	0.0	59.2	74.0	-14.8	Low Ch., EUT on Side
2484.283	39.9	-0.8	1.5	123.0	3.0	20.0	Horz	PK	0.0	59.1	74.0	-14.9	High Ch., EUT Horz
2483.527	39.8	-0.8	1.5	2.0	3.0	20.0	Vert	PK	0.0	59.0	74.0	-15.0	High Ch., EUT on Side
2484.563	39.7	-0.8	1.5	164.0	3.0	20.0	Vert	PK	0.0	58.9	74.0	-15.1	High Ch., EUT Horz

RADIATED SPURIOUS EMISSIONS



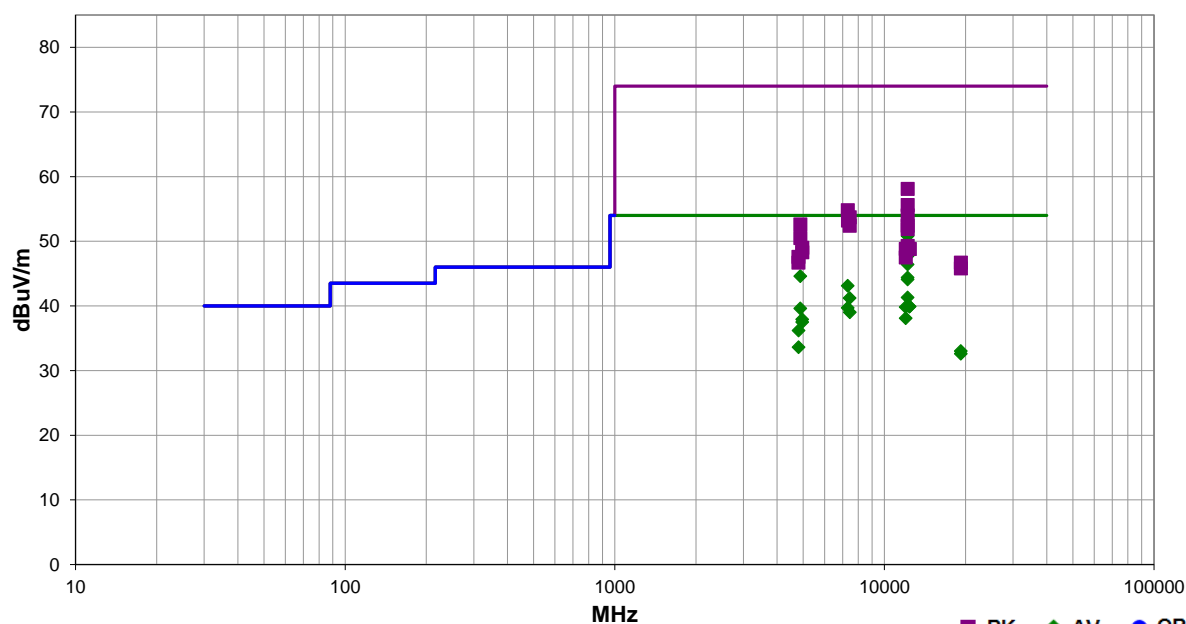
EmiR5 2020.06.24.4

PSA-ESCI 2020.06.24.2

Work Order:	23DM0009	Date:	2020-10-08	
Project:	None	Temperature:	23.4 °C	
Job Site:	NC01	Humidity:	51.2% RH	
Serial Number:	See configurations	Barometric Pres.:	1014 mbar	
EUT:	Footmarks BLE Rev A			Tested by: Brian Fahey
Configuration:	3			
Customer:	2333 Designs & Mfg.			
Attendees:	None			
EUT Power:	Battery			
Operating Mode:	BTLE Tx, GFSK, 1 Mbps, 100% Duty Cycle, Low Channel = 2402 MHz, Mid Channel = 2440 MHz, High Channel = 2480 MHz.			
Deviations:	None			
Comments:	See measurement comments for Channel and EUT orientation.			

Test Specifications	Test Method
FCC 15.247:2020	ANSI C63.10:2013

Run #	17	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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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
12201.130	48.8	2.0	1.27	253.0	3.0	0.0	Horz	AV	0.0	50.8	54.0	-3.2	Mid Ch., EUT Horz
12201.130	45.7	2.0	1.01	297.0	3.0	0.0	Vert	AV	0.0	47.7	54.0	-6.3	Mid Ch., EUT on Side
12201.170	44.4	2.0	1.33	236.0	3.0	0.0	Vert	AV	0.0	46.4	54.0	-7.6	Mid Ch., EUT Vert
4880.025	34.8	9.8	1.68	159.0	3.0	0.0	Horz	AV	0.0	44.6	54.0	-9.4	Mid Ch., EUT Horz
12201.150	42.4	2.0	1.45	236.0	3.0	0.0	Vert	AV	0.0	44.4	54.0	-9.6	Mid Ch., EUT Horz
12201.100	42.1	2.0	3.03	201.0	3.0	0.0	Horz	AV	0.0	44.1	54.0	-9.9	Mid Ch., EUT Vert
7320.658	28.6	14.5	1.5	146.0	3.0	0.0	Horz	AV	0.0	43.1	54.0	-10.9	Mid Ch., EUT Horz
12201.110	39.3	2.0	1.5	17.0	3.0	0.0	Horz	AV	0.0	41.3	54.0	-12.7	Mid Ch., EUT on Side
7439.358	26.2	15.0	1.63	40.0	3.0	0.0	Horz	AV	0.0	41.2	54.0	-12.8	High Ch., EUT Horz
12398.910	37.9	2.0	1.1	223.0	3.0	0.0	Vert	AV	0.0	39.9	54.0	-14.1	High Ch., EUT on Side
12398.860	37.9	2.0	1.0	170.0	3.0	0.0	Horz	AV	0.0	39.9	54.0	-14.1	High Ch., EUT Horz
12008.880	37.3	2.5	1.17	276.0	3.0	0.0	Horz	AV	0.0	39.8	54.0	-14.2	Low Ch., EUT Horz
7319.425	25.2	14.5	1.5	49.0	3.0	0.0	Vert	AV	0.0	39.7	54.0	-14.3	Mid Ch., EUT on Side
4880.008	29.8	9.8	1.08	255.0	3.0	0.0	Vert	AV	0.0	39.6	54.0	-14.4	Mid Ch., EUT on Side
7442.083	24.0	15.0	1.5	84.0	3.0	0.0	Vert	AV	0.0	39.0	54.0	-15.0	High Ch., EUT on Side
12201.280	56.1	2.0	1.27	253.0	3.0	0.0	Horz	PK	0.0	58.1	74.0	-15.9	Mid Ch., EUT Horz
12008.870	35.6	2.5	1.04	275.0	3.0	0.0	Vert	AV	0.0	38.1	54.0	-15.9	Low Ch., EUT on Side
4960.208	28.4	9.5	1.75	178.0	3.0	0.0	Horz	AV	0.0	37.9	54.0	-16.1	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
4960.192	28.0	9.5	4.0	55.0	3.0	0.0	Vert	AV	0.0	37.5	54.0	-16.5	High Ch., EUT on Side
4804.283	26.5	9.7	2.91	293.0	3.0	0.0	Horz	AV	0.0	36.2	54.0	-17.8	Low Ch., EUT Horz
12201.230	53.6	2.0	1.01	297.0	3.0	0.0	Vert	PK	0.0	55.6	74.0	-18.4	Mid Ch., EUT on Side
7320.650	40.3	14.5	1.5	146.0	3.0	0.0	Horz	PK	0.0	54.8	74.0	-19.2	Mid Ch., EUT Horz
12201.320	52.0	2.0	1.33	236.0	3.0	0.0	Vert	PK	0.0	54.0	74.0	-20.0	Mid Ch., EUT Vert
7440.767	38.7	15.0	1.63	40.0	3.0	0.0	Horz	PK	0.0	53.7	74.0	-20.3	High Ch., EUT Horz
4803.967	23.9	9.7	1.42	191.0	3.0	0.0	Vert	AV	0.0	33.6	54.0	-20.4	Low Ch., EUT on Side
7321.358	38.7	14.5	1.5	49.0	3.0	0.0	Vert	PK	0.0	53.2	74.0	-20.8	Mid Ch., EUT on Side
19217.920	32.4	0.6	1.6	359.0	3.0	0.0	Horz	AV	0.0	33.0	54.0	-21.0	Low Ch., EUT Horz
19218.490	32.0	0.6	1.6	230.0	3.0	0.0	Vert	AV	0.0	32.6	54.0	-21.4	Low Ch., EUT on Side
4879.717	42.8	9.8	1.68	159.0	3.0	0.0	Horz	PK	0.0	52.6	74.0	-21.4	Mid Ch., EUT Horz
12201.290	50.4	2.0	1.45	236.0	3.0	0.0	Vert	PK	0.0	52.4	74.0	-21.6	Mid Ch., EUT Horz
7441.667	37.4	15.0	1.5	84.0	3.0	0.0	Vert	PK	0.0	52.4	74.0	-21.6	High Ch., EUT on Side
12201.180	49.9	2.0	3.03	201.0	3.0	0.0	Horz	PK	0.0	51.9	74.0	-22.1	Mid Ch., EUT Vert
4880.000	40.7	9.8	1.08	255.0	3.0	0.0	Vert	PK	0.0	50.5	74.0	-23.5	Mid Ch., EUT on Side
12201.230	47.3	2.0	1.5	17.0	3.0	0.0	Horz	PK	0.0	49.3	74.0	-24.7	Mid Ch., EUT on Side
4960.433	39.5	9.5	1.75	178.0	3.0	0.0	Horz	PK	0.0	49.0	74.0	-25.0	High Ch., EUT Horz
12398.690	46.8	2.0	1.1	223.0	3.0	0.0	Vert	PK	0.0	48.8	74.0	-25.2	High Ch., EUT on Side
12398.650	46.8	2.0	1.0	170.0	3.0	0.0	Horz	PK	0.0	48.8	74.0	-25.2	High Ch., EUT Horz
12011.170	46.3	2.5	1.17	276.0	3.0	0.0	Horz	PK	0.0	48.8	74.0	-25.2	Low Ch., EUT Horz
4960.292	38.8	9.5	4.0	55.0	3.0	0.0	Vert	PK	0.0	48.3	74.0	-25.7	High Ch., EUT on Side
4803.350	37.9	9.7	2.91	293.0	3.0	0.0	Horz	PK	0.0	47.6	74.0	-26.4	Low Ch., EUT Horz
12011.340	45.0	2.5	1.04	275.0	3.0	0.0	Vert	PK	0.0	47.5	74.0	-26.5	Low Ch., EUT on Side
19217.730	46.1	0.6	1.6	359.0	3.0	0.0	Horz	PK	0.0	46.7	74.0	-27.3	Low Ch., EUT Horz
4803.017	37.0	9.7	1.42	191.0	3.0	0.0	Vert	PK	0.0	46.7	74.0	-27.3	Low Ch., EUT on Side
19216.340	45.2	0.6	1.6	230.0	3.0	0.0	Vert	PK	0.0	45.8	74.0	-28.2	Low Ch., EUT on Side