Sensosafe LLC

VitalBand

FCC 15.207:2017

FCC 15.247:2017

Bluetooth Radio

Report # SNSF0001.1

NVLAP Lab Code: 201049-0

CERTIFICATE OF TEST

2017-1-25

Last Date of Test: October 24, 2017
Sensosafe LLC
Model: VitalBand

Radio Equipment Testing

Standards

Specification	Method
FCC 15.207:2017	ANSI C63.10:2013
FCC 15.247:2017	

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	Yes	Pass	
11.12.1, 11.13.2, 6.5, 6.6	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	
11.10.2	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:

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.

REVISION HISTORY

Revision Number	Description	Date	Page Number
00	None		

ACCREDITATIONS AND AUTHORIZATIONS

2017.6.12

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

MSIP / 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:
http://portlandcustomer.element.com/ts/scope/scope.htm
http://gsi.nist.gov/global/docs/cabs/designations.html

MEASUREMENT UNCERTAINTY

TMU.2015.07.10

Measurement Uncertainty

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

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

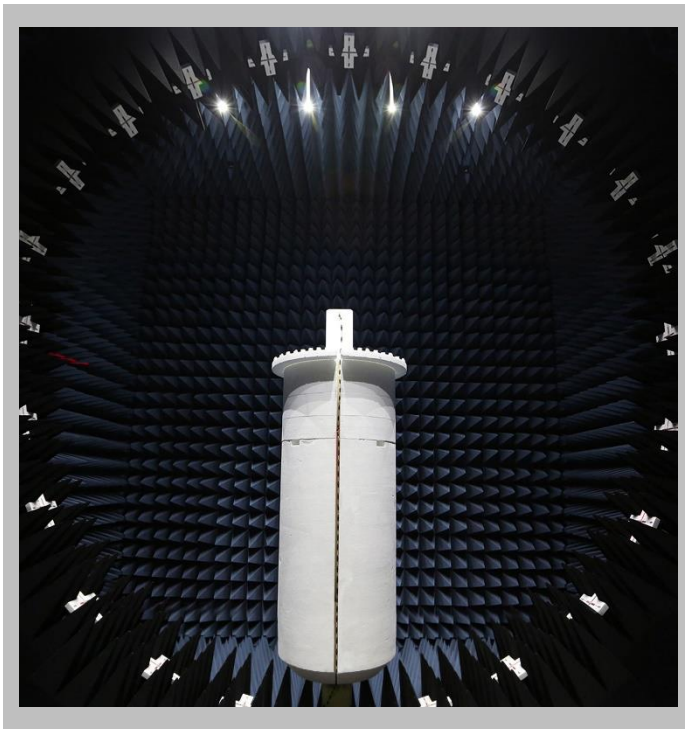
The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

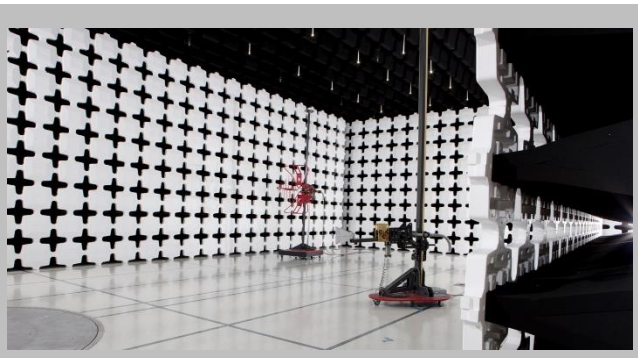
Test	+ MU	- MU
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	4.9 dB	-4.9 dB
AC Powerline Conducted Emissions (dB)	2.4 dB	-2.4 dB

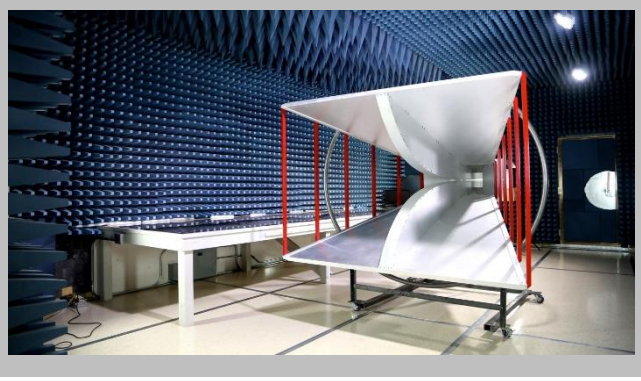
FACILITIES

2017.9.15

California	Minnesota	New York	Oregon	Texas	Washington
Labs OC01-17 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs MN01-08, MN10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214	Labs EV01-12 22975 NW Evergreen Pkwy Hillsboro, OR 97124 (503) 844-4066	Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Labs NC01-05 19201 120th Ave NE Bothell, WA 98011 (425)984-6600
NVLAP					
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200761-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code:201049-0	NVLAP Lab Code: 200629-0
Innovation, Science and Economic Development Canada					
2834B-1, 2834B-3	2834E-1, 2834E-3	N/A	2834D-1, 2834D-*2*	2834G-1	2834F-1
BSMI					
SL2-IN-E-1154R	SL2-IN-E-1152R	N/A	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI					
A-0029	A-0109	N/A	A-0108	A-0201	A-0110
Recognized Phase I CAB for ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA					
US0158	US0175	N/A	US0017	US0191	US0157



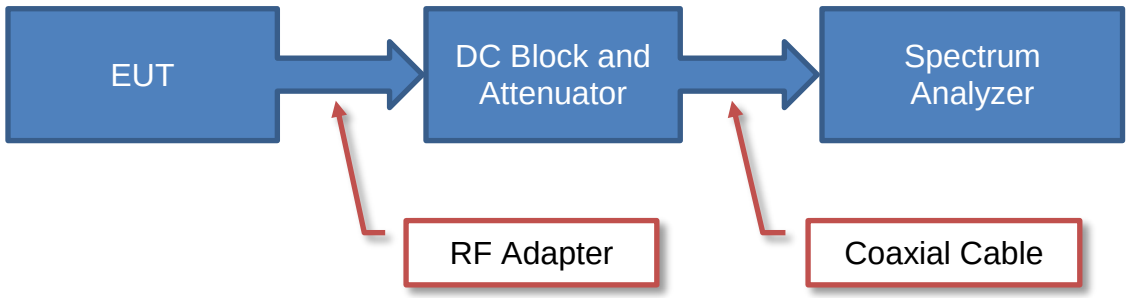




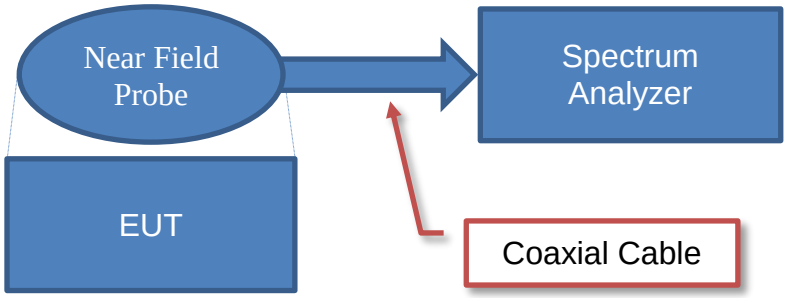
Test Setup Block Diagrams

2017.1.25

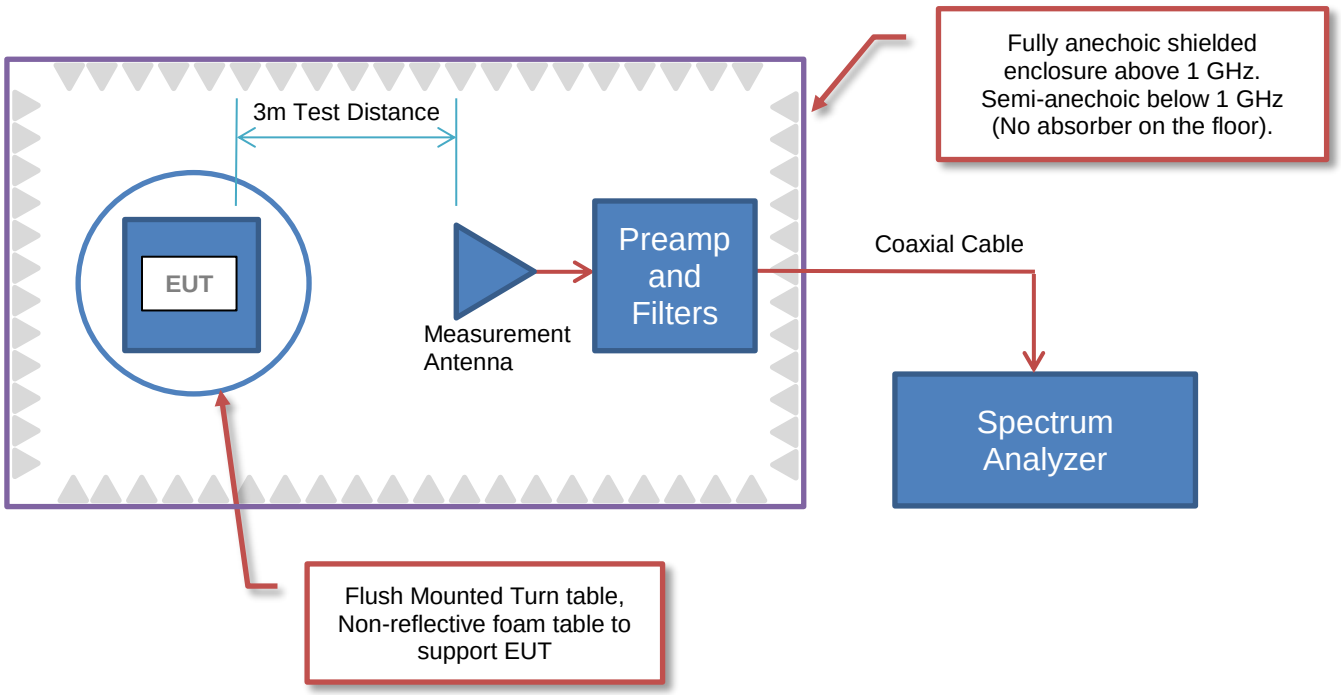
Antenna Port Conducted Measurements



Near Field Test Fixture Measurements



Spurious Radiated Emissions



PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Sensosafe LLC
Address:	2745 North Dallas Parkway, Suite 560
City, State, Zip:	Plano, TX 75093
Test Requested By:	Pete Ianace
Model:	VitalBand
First Date of Test:	October 12, 2017
Last Date of Test:	October 24, 2017
Receipt Date of Samples:	October 12, 2017
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
Smart watch that monitors and tracks falls, heart rate, resp. rate, activity like step count, communicates with smart phone using BLE.

Testing Objective:
To demonstrate compliance of the Bluetooth radio to FCC 15.247 requirements.

CONFIGURATIONS

Configuration SNSF0001- 1

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Monitoring Wrist Watch	Sensosafe LLC	V100	None

Configuration SNSF0001- 2

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Monitoring Wrist Watch Direct Connect Board	Sensosafe LLC	V100	None

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	10/12/2017	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.
2	10/12/2017	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.
3	10/12/2017	Spurious Conducted 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.
4	10/12/2017	Duty Cycle	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
5	10/12/2017	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.
6	10/12/2017	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.
7	10/23/2017	Powerline Conducted 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.
8	10/24/2017	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

POWERLINE CONDUCTED EMISSIONS

WTD.2017.07.11.1

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 50ohm measuring port is terminated by a 50ohm EMI meter or a 50ohm resistive load. All 50ohm measuring ports of the LISN are terminated by 50ohm. 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	7/17/2017	7/17/2018
Cable - Conducted Cable Assembly	Element	TXA, HHZ, TQR	TXAA	4/17/2017	4/17/2018
LISN	Solar Electronics	9252-50-R-24-BNC	LJK	9/11/2017	9/11/2018

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.4 dB	-2.4 dB

CONFIGURATIONS INVESTIGATED

SNSF0001-2

MODES INVESTIGATED

Transmitting mid channel at 2442 MHz

POWERLINE CONDUCTED EMISSIONS

EUT:	VitalBand	Work Order:	SNSF0001
Serial Number:	None	Date:	10/23/2017
Customer:	Sensosafe LLC	Temperature:	22.8°C
Attendees:	None	Relative Humidity:	39.6%
Customer Project:	None	Bar. Pressure:	1022 mb
Tested By:	Willie Love	Job Site:	TX03
Power:	110VAC/60Hz	Configuration:	SNSF0001-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2017	ANSI C63.10:2013

TEST PARAMETERS

Run #:	6	Line:	High Line	Add. Ext. Attenuation (dB):	0

COMMENTS

TX Power setting -02

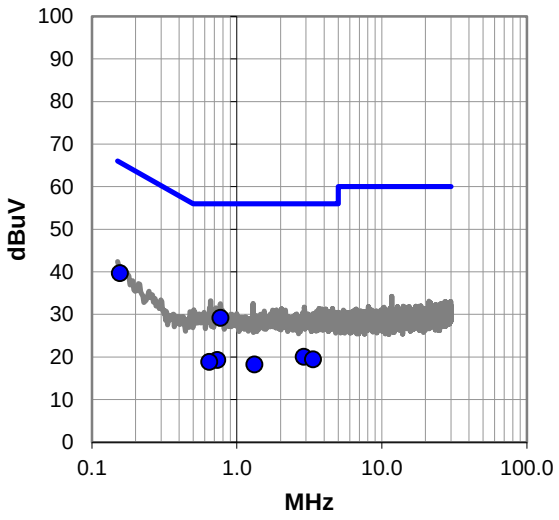
EUT OPERATING MODES

Transmitting mid channel at 2442 MHz

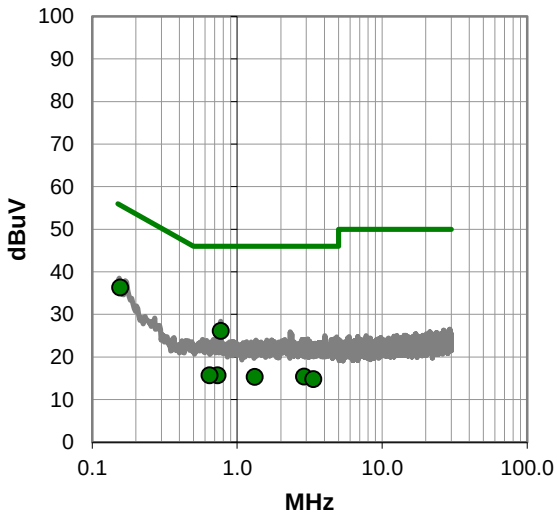
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

WTD.2017.07.11.1

RESULTS - Run #6

Quasi Peak Data - vs - Quasi Peak Limit

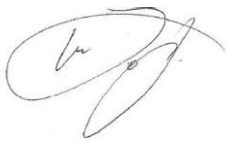
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.156	19.9	19.8	39.7	65.7	-26.0
0.771	9.3	19.9	29.2	56.0	-26.8
2.892	0.2	19.8	20.0	56.0	-36.0
3.357	-0.4	19.8	19.4	56.0	-36.6
0.735	-0.6	19.9	19.3	56.0	-36.7
0.646	-1.2	20.0	18.8	56.0	-37.2
1.323	-1.6	19.8	18.2	56.0	-37.8

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.156	16.5	19.8	36.3	55.7	-19.4
0.771	6.2	19.9	26.1	46.0	-19.9
0.735	-4.2	19.9	15.7	46.0	-30.3
0.646	-4.3	20.0	15.7	46.0	-30.3
2.892	-4.4	19.8	15.4	46.0	-30.6
1.323	-4.5	19.8	15.3	46.0	-30.7
3.357	-5.0	19.8	14.8	46.0	-31.2

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	VitalBand	Work Order:	SNSF0001
Serial Number:	None	Date:	10/23/2017
Customer:	Sensosafe LLC	Temperature:	22.8°C
Attendees:	None	Relative Humidity:	39.6%
Customer Project:	None	Bar. Pressure:	1022 mb
Tested By:	Willie Love	Job Site:	TX03
Power:	110VAC/60Hz	Configuration:	SNSF0001-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2017	ANSI C63.10:2013

TEST PARAMETERS

Run #:	7	Line:	Neutral	Add. Ext. Attenuation (dB):	0

COMMENTS

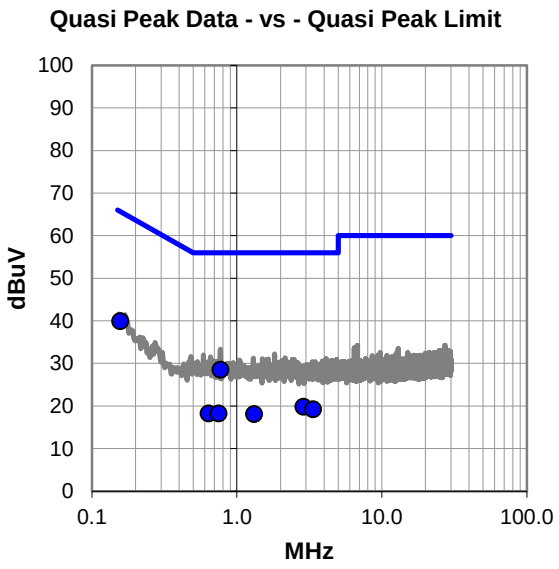
TX Power setting -02

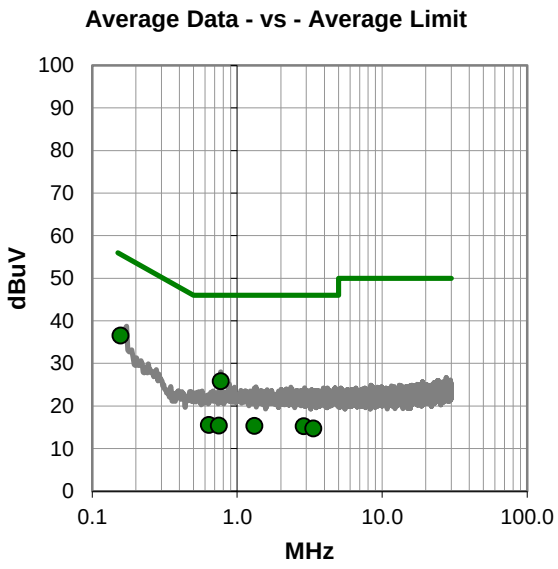
EUT OPERATING MODES

Transmitting mid channel at 2442 MHz

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

WTD.2017.07.11.1

RESULTS - Run #7

Quasi Peak Data - vs - Quasi Peak Limit

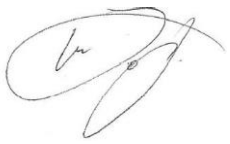
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.157	20.1	19.8	39.9	65.6	-25.7
0.771	8.6	19.9	28.5	56.0	-27.5
2.886	0.0	19.8	19.8	56.0	-36.2
3.364	-0.6	19.8	19.2	56.0	-36.8
0.640	-1.8	20.0	18.2	56.0	-37.8
0.748	-1.7	19.9	18.2	56.0	-37.8
1.317	-1.7	19.8	18.1	56.0	-37.9

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.157	16.7	19.8	36.5	55.6	-19.1
0.771	5.9	19.9	25.8	46.0	-20.2
0.640	-4.5	20.0	15.5	46.0	-30.5
0.748	-4.5	19.9	15.4	46.0	-30.6
1.317	-4.5	19.8	15.3	46.0	-30.7
2.886	-4.6	19.8	15.2	46.0	-30.8
3.364	-5.1	19.8	14.7	46.0	-31.3

CONCLUSION

Pass



Tested By

SPURIOUS RADIATED EMISSIONS

PSA-ESCI 2017.06.01

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

MODES OF OPERATION

Transmitting Continuously. Low channel = 2402 MHz, Mid Channel = 2442 MHz, High Channel = 2480 MHz

POWER SETTINGS INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

SNSF0001 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	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	Miteq	AMF-3D-00100800-32-13P	PAJ	5/31/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	PAK	10/9/2017	12 mo
Antenna - Double Ridge	A.H. Systems, Inc.	SAS-574	AXW	8/5/2016	24 mo
Amplifier - Pre-Amplifier	Miteq	JSDWK42-18004000-60-5P	PAM	11/18/2016	12 mo
Cable	Element	18-40GHz	TXE	11/18/2016	12 mo
Cable	Element	RE 9kHz - 1GHz	TXB	10/10/2017	12 mo
Antenna - Biconilog	ETS Lindgren	3143B	AYF	4/13/2016	24 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AJG	NCR	0 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AJF	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	PAL	10/9/2017	12 mo
Cable	Element	1-8.2 GHz	TXC	5/31/2017	12 mo
Cable	Element	8-18GHz	TXD	5/31/2017	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AJN	9/15/2016	24 mo
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	10/10/2017	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 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.

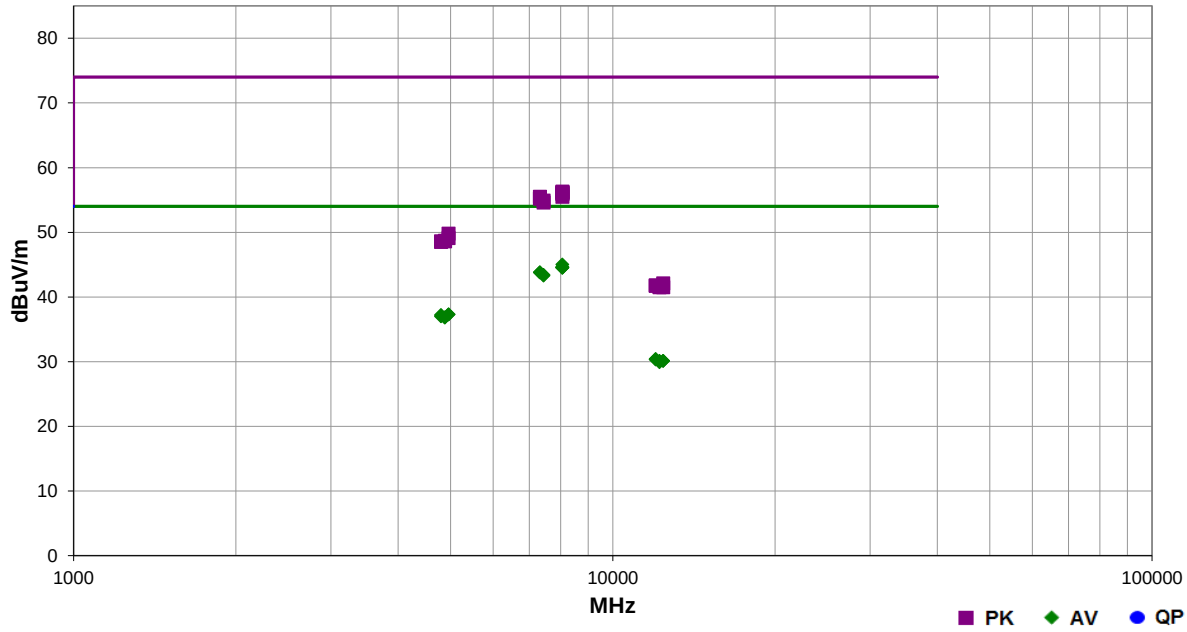
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.07.11 PSA-ESCI 2017.06.01

Work Order:	SNSF0001	**Date:**	10/24/17		
Project:	None	**Temperature:**	23.5 °C		
Job Site:	TX02	**Humidity:**	36% RH		
Serial Number:	None	**Barometric Pres.:**	1030 mbar	**Tested by:**	Marty Martin
EUT:	VitalBand				
Configuration:	1				
Customer:	Sensosafe LLC				
Attendees:	None				
EUT Power:	Battery				
Operating Mode:	Transmitting Continuously				
Deviations:	None				
Comments:	Low channel = 2402 MHz, Mid Channel = 2442 MHz, High Channel = 2480 MHz, TX Power setting -02				

Test Specifications	**Test Method**
FCC 15.247:2017	ANSI C63.10:2013

Run #	50	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	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
8064.080	30.1	14.9	1.2	194.0	3.0	0.0	Horz	AV	0.0	45.0	54.0	-9.0	EUT X, mid ch
8064.165	29.7	14.9	1.0	301.0	3.0	0.0	Vert	AV	0.0	44.6	54.0	-9.4	EUT X, mid ch
8064.225	29.7	14.9	1.2	271.0	3.0	0.0	Horz	AV	0.0	44.6	54.0	-9.4	EUT Y, mid ch
8063.035	29.7	14.9	3.3	195.0	3.0	0.0	Vert	AV	0.0	44.6	54.0	-9.4	EUT Z, mid ch
8063.755	29.6	14.9	1.0	357.9	3.0	0.0	Vert	AV	0.0	44.5	54.0	-9.5	EUT Y, mid ch
8063.795	29.6	14.9	1.2	207.0	3.0	0.0	Horz	AV	0.0	44.5	54.0	-9.5	EUT Z, mid ch
7326.760	29.8	14.0	1.0	235.0	3.0	0.0	Horz	AV	0.0	43.8	54.0	-10.2	EUT X, mid ch
7326.660	29.8	14.0	1.0	118.9	3.0	0.0	Vert	AV	0.0	43.8	54.0	-10.2	EUT X, mid ch
7440.630	29.3	14.1	1.0	64.9	3.0	0.0	Horz	AV	0.0	43.4	54.0	-10.6	EUT X, high ch
7438.970	29.2	14.1	1.0	159.9	3.0	0.0	Vert	AV	0.0	43.3	54.0	-10.7	EUT X, high ch
4961.460	30.3	7.0	1.0	166.9	3.0	0.0	Horz	AV	0.0	37.3	54.0	-16.7	EUT X, high ch
4961.415	30.3	7.0	1.0	224.0	3.0	0.0	Vert	AV	0.0	37.3	54.0	-16.7	EUT X, high ch
4802.680	30.4	6.8	1.0	336.0	3.0	0.0	Vert	AV	0.0	37.2	54.0	-16.8	EUT X, low ch
4802.570	30.2	6.8	1.0	166.9	3.0	0.0	Horz	AV	0.0	37.0	54.0	-17.0	EUT X, low ch
4882.930	29.9	6.9	1.0	310.9	3.0	0.0	Horz	AV	0.0	36.8	54.0	-17.2	EUT X, mid ch
4883.630	29.9	6.9	1.0	141.0	3.0	0.0	Vert	AV	0.0	36.8	54.0	-17.2	EUT X, mid ch
8062.285	41.4	14.9	3.2	142.9	3.0	0.0	Vert	PK	0.0	56.3	74.0	-17.7	EUT X, mid ch
8064.265	41.3	14.9	1.2	358.9	3.0	0.0	Horz	PK	0.0	56.2	74.0	-17.8	EUT Z, mid ch

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
8063.405	41.2	14.9	1.2	13.0	3.0	0.0	Horz	PK	0.0	56.1	74.0	-17.9	EUT Y, mid ch
8062.180	41.2	14.9	1.0	212.0	3.0	0.0	Vert	PK	0.0	56.1	74.0	-17.9	EUT Y, mid ch
8064.405	41.0	14.9	1.0	196.9	3.0	0.0	Vert	PK	0.0	55.9	74.0	-18.1	EUT Z, mid ch
8063.310	40.6	14.9	3.3	69.0	3.0	0.0	Horz	PK	0.0	55.5	74.0	-18.5	EUT X, mid ch
7326.275	41.5	14.0	1.0	118.9	3.0	0.0	Vert	PK	0.0	55.5	74.0	-18.5	EUT X, mid ch
7327.365	41.2	14.0	1.0	235.0	3.0	0.0	Horz	PK	0.0	55.2	74.0	-18.8	EUT X, mid ch
7441.455	40.8	14.1	1.0	159.9	3.0	0.0	Vert	PK	0.0	54.9	74.0	-19.1	EUT X, high ch
7438.840	40.5	14.1	1.0	64.9	3.0	0.0	Horz	PK	0.0	54.6	74.0	-19.4	EUT X, high ch
4959.170	42.8	7.0	1.0	224.0	3.0	0.0	Vert	PK	0.0	49.8	74.0	-24.2	EUT X, high ch
4960.730	42.1	7.0	1.0	166.9	3.0	0.0	Horz	PK	0.0	49.1	74.0	-24.9	EUT X, high ch
4882.980	41.8	6.9	1.0	310.9	3.0	0.0	Horz	PK	0.0	48.7	74.0	-25.3	EUT X, mid ch
4885.390	41.7	6.9	1.0	141.0	3.0	0.0	Vert	PK	0.0	48.6	74.0	-25.4	EUT X, mid ch
4803.180	41.8	6.8	1.0	336.0	3.0	0.0	Vert	PK	0.0	48.6	74.0	-25.4	EUT X, low ch
4803.255	41.7	6.8	1.0	166.9	3.0	0.0	Horz	PK	0.0	48.5	74.0	-25.5	EUT X, low ch
12009.960	31.3	-0.9	1.0	44.0	3.0	0.0	Vert	AV	0.0	30.4	54.0	-23.6	EUT X, low ch
12009.580	31.2	-0.9	1.0	154.9	3.0	0.0	Horz	AV	0.0	30.3	54.0	-23.7	EUT X, low ch
12398.160	29.9	0.2	1.0	234.0	3.0	0.0	Horz	AV	0.0	30.1	54.0	-23.9	EUT X, high ch
12398.940	29.9	0.2	1.0	30.0	3.0	0.0	Vert	AV	0.0	30.1	54.0	-23.9	EUT X, high ch
12209.760	30.7	-0.6	1.0	350.0	3.0	0.0	Horz	AV	0.0	30.1	54.0	-23.9	EUT X, mid ch
12209.250	30.5	-0.6	2.7	180.0	3.0	0.0	Vert	AV	0.0	29.9	54.0	-24.1	EUT X, mid ch
12397.620	41.9	0.2	1.0	234.0	3.0	0.0	Horz	PK	0.0	42.1	74.0	-31.9	EUT X, high ch
12009.210	42.7	-0.9	1.0	154.9	3.0	0.0	Horz	PK	0.0	41.8	74.0	-32.2	EUT X, low ch
12011.060	42.6	-0.9	1.0	44.0	3.0	0.0	Vert	PK	0.0	41.7	74.0	-32.3	EUT X, low ch
12210.760	42.2	-0.6	1.0	350.0	3.0	0.0	Horz	PK	0.0	41.6	74.0	-32.4	EUT X, mid ch
12398.450	41.3	0.2	1.0	30.0	3.0	0.0	Vert	PK	0.0	41.5	74.0	-32.5	EUT X, high ch
12208.870	42.1	-0.6	2.7	180.0	3.0	0.0	Vert	PK	0.0	41.5	74.0	-32.5	EUT X, mid ch

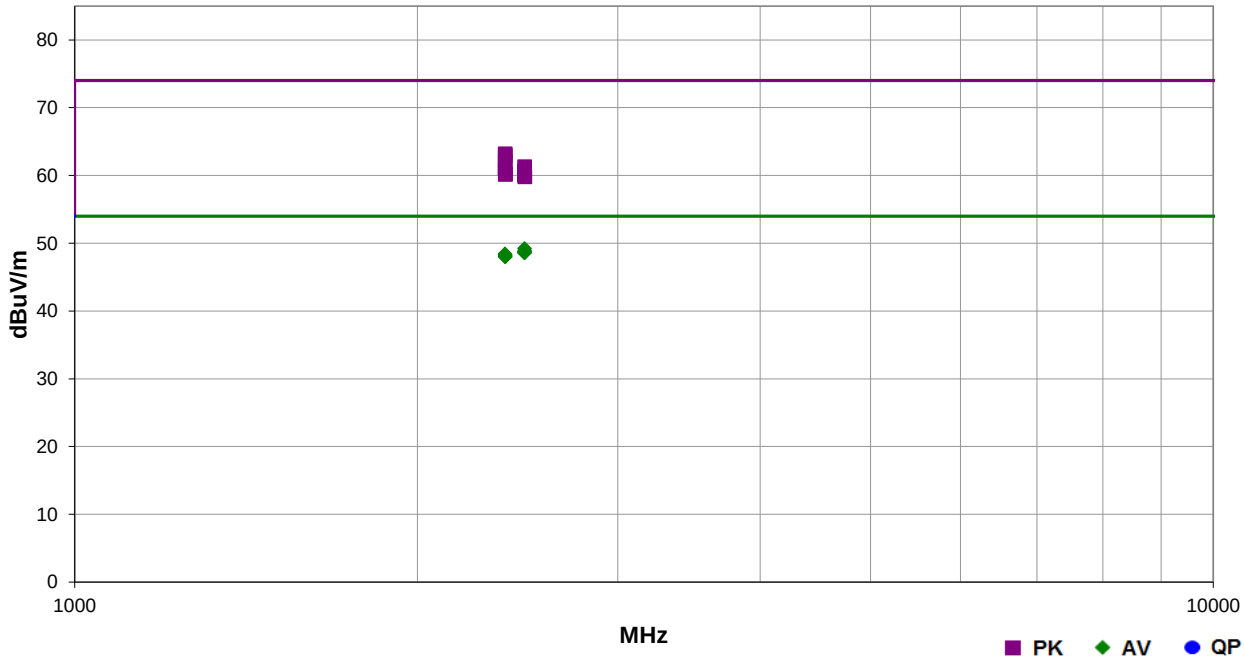
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.07.11 PSA-ESCI 2017.06.01

Work Order:	SNSF0001	**Date:**	10/24/17		
Project:	None	**Temperature:**	23.5 °C		
Job Site:	TX02	**Humidity:**	36% RH		
Serial Number:	None	**Barometric Pres.:**	1030 mbar	**Tested by:**	Marty Martin
EUT:	VitalBand				
Configuration:	1				
Customer:	Sensosafe LLC				
Attendees:	None				
EUT Power:	Battery				
Operating Mode:	Transmitting Continuously				
Deviations:	None				
Comments:	TX Power setting -02, Band Edges				

Test Specifications	**Test Method**
FCC 15.247:2017	ANSI C63.10:2013

Run #	52	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	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
2484.450	33.2	-4.0	1.0	187.0	3.0	20.0	Horz	AV	0.0	49.2	54.0	-4.8	EUT X, high ch
2485.157	32.9	-4.0	1.4	57.0	3.0	20.0	Vert	AV	0.0	48.9	54.0	-5.1	EUT X, high ch
2483.713	32.7	-4.0	1.0	186.0	3.0	20.0	Horz	AV	0.0	48.7	54.0	-5.3	EUT Y, high ch
2484.023	32.7	-4.0	1.0	338.0	3.0	20.0	Vert	AV	0.0	48.7	54.0	-5.3	EUT Y, high ch
2485.210	32.6	-4.0	2.1	91.0	3.0	20.0	Horz	AV	0.0	48.6	54.0	-5.4	EUT Z, high ch
2483.793	32.6	-4.0	1.0	76.9	3.0	20.0	Vert	AV	0.0	48.6	54.0	-5.4	EUT Z, high ch
2388.413	33.1	-4.7	3.7	318.0	3.0	20.0	Horz	AV	0.0	48.4	54.0	-5.6	EUT X, low ch
2388.850	33.0	-4.7	3.7	158.0	3.0	20.0	Horz	AV	0.0	48.3	54.0	-5.7	EUT Y, low ch
2389.110	32.9	-4.7	1.0	182.0	3.0	20.0	Vert	AV	0.0	48.2	54.0	-5.8	EUT Z, low ch
2388.783	32.8	-4.7	3.5	231.9	3.0	20.0	Vert	AV	0.0	48.1	54.0	-5.9	EUT Y, low ch
2388.777	32.7	-4.7	1.0	345.0	3.0	20.0	Vert	AV	0.0	48.0	54.0	-6.0	EUT X, low ch
2389.297	32.7	-4.7	2.2	339.0	3.0	20.0	Horz	AV	0.0	48.0	54.0	-6.0	EUT Z, low ch
2388.667	47.9	-4.7	3.7	318.0	3.0	20.0	Horz	PK	0.0	63.2	74.0	-10.8	EUT X, low ch
2388.670	47.6	-4.7	3.7	158.0	3.0	20.0	Horz	PK	0.0	62.9	74.0	-11.1	EUT Y, low ch

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
2389.087	46.8	-4.7	1.0	182.0	3.0	20.0	Vert	PK	0.0	62.1	74.0	-11.9	EUT Z, low ch
2484.927	45.3	-4.0	1.0	187.0	3.0	20.0	Horz	PK	0.0	61.3	74.0	-12.7	EUT X, high ch
2388.413	45.7	-4.7	3.5	231.9	3.0	20.0	Vert	PK	0.0	61.0	74.0	-13.0	EUT Y, low ch
2484.310	44.6	-4.0	1.0	186.0	3.0	20.0	Horz	PK	0.0	60.6	74.0	-13.4	EUT Y, high ch
2484.800	44.6	-4.0	1.0	338.0	3.0	20.0	Vert	PK	0.0	60.6	74.0	-13.4	EUT Y, high ch
2484.370	44.2	-4.0	1.4	57.0	3.0	20.0	Vert	PK	0.0	60.2	74.0	-13.8	EUT X, high ch
2389.613	44.9	-4.7	1.0	345.0	3.0	20.0	Vert	PK	0.0	60.2	74.0	-13.8	EUT X, low ch
2389.667	44.9	-4.7	2.2	339.0	3.0	20.0	Horz	PK	0.0	60.2	74.0	-13.8	EUT Z, low ch
2483.747	44.1	-4.0	2.1	91.0	3.0	20.0	Horz	PK	0.0	60.1	74.0	-13.9	EUT Z, high ch
2485.380	43.8	-4.0	1.0	76.9	3.0	20.0	Vert	PK	0.0	59.8	74.0	-14.2	EUT Z, high ch

DUTY CYCLE

XMit 2017.02.08

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	10/24/2016	10/24/2017
Cable	Fairview Microwave	SCK0963-60	TXF	11/18/2016	11/18/2017
Block - DC	Fairview Microwave	SD3379	AMM	2/24/2017	2/24/2018
Generator - Signal	Agilent	E4422B	TGS	7/11/2017	7/11/2020
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	3/14/2017	3/14/2018

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The Duty Cycle (x) of the single channel operation of the radio as controlled by the provided test software was measured for each of the EUT operating modes.

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

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

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

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

DUTY CYCLE

TbtTx 2017.09.26 XMit 2017.02.08

EUT:	VitalBand			**Work Order:**	SNSF0001
Serial Number:	None			**Date:**	10/12/17
Customer:	Sensosafe LLC			**Temperature:**	23.8 °C
Attendees:	None			**Humidity:**	42.8% RH
Project:	None			**Barometric Pres.:**	1019 mbar
Tested by:	Marty Martin	**Power:**	Battery	**Job Site:**	TX09

TEST SPECIFICATIONS	Test Method
FCC 15.247:2017	ANSI C63.10:2013

COMMENTS

Mode on operation = TX Modulation-01, Set TX Power-02.

DEVIATIONS FROM TEST STANDARD

None

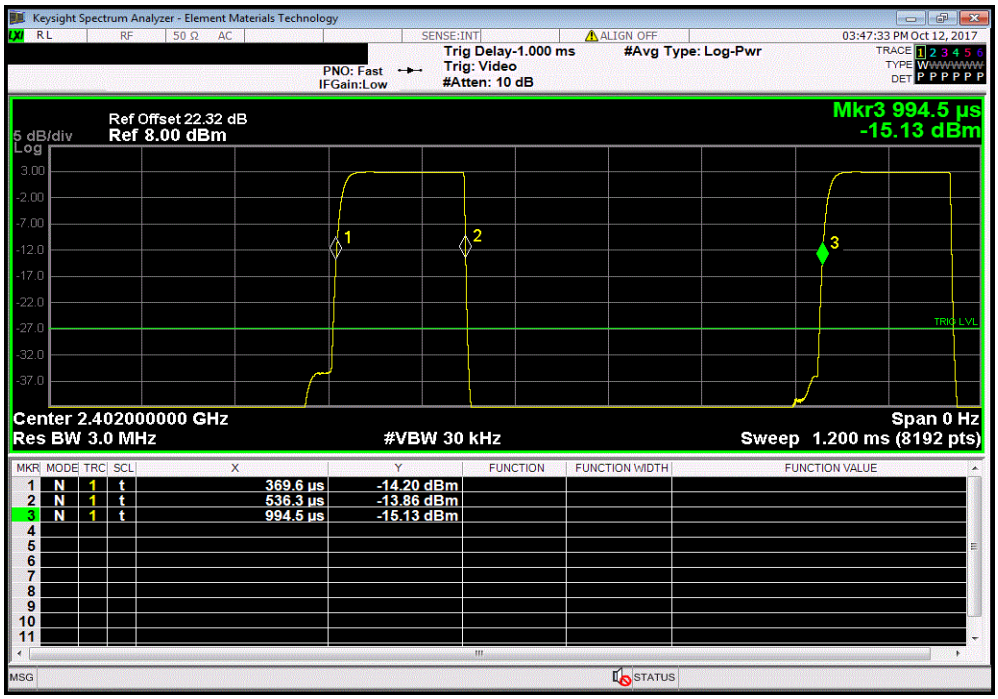
Configuration #	2	Signature

	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
BLE/GFSK Low Channel, 2402 MHz	166.682 us	624.854 us	1	26.7	N/A	N/A
BLE/GFSK Low Channel, 2402 MHz	N/A	N/A	5	N/A	N/A	N/A
BLE/GFSK Mid Channel, 2442 MHz	166.262 us	623.804 us	1	26.7	N/A	N/A
BLE/GFSK Mid Channel, 2442 MHz	N/A	N/A	5	N/A	N/A	N/A
BLE/GFSK High Channel, 2480 MHz	166.903 us	624.487 us	1	26.7	N/A	N/A
BLE/GFSK High Channel, 2480 MHz	N/A	N/A	5	N/A	N/A	N/A

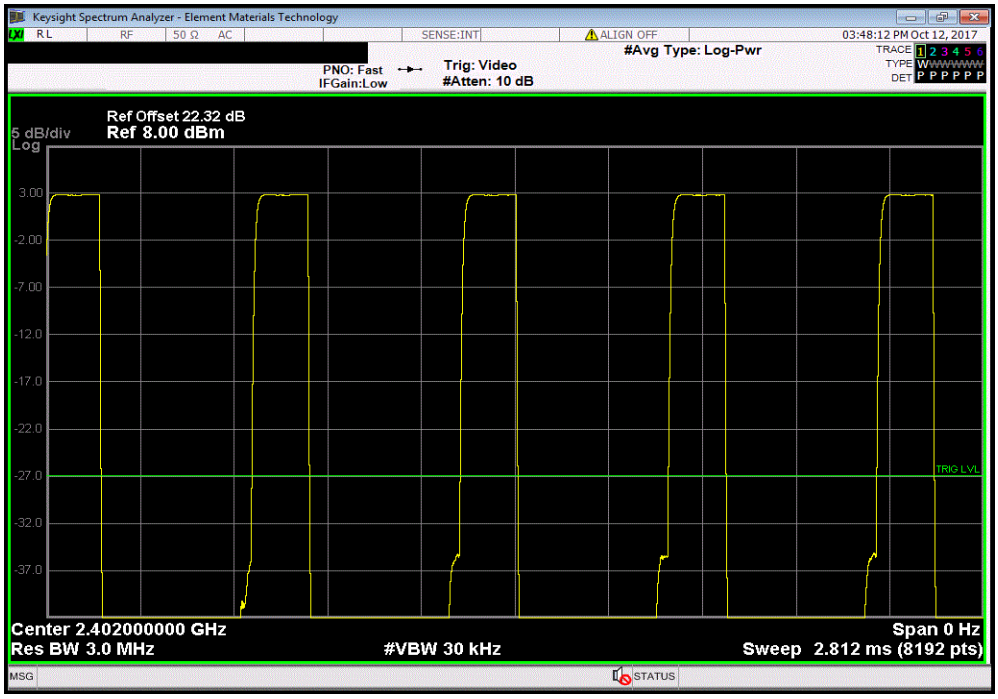
DUTY CYCLE

TbtTx 2017.09.26 XMit 2017.02.08

BLE/GFSK Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	166.682 us	624.854 us	1	26.7	N/A	N/A



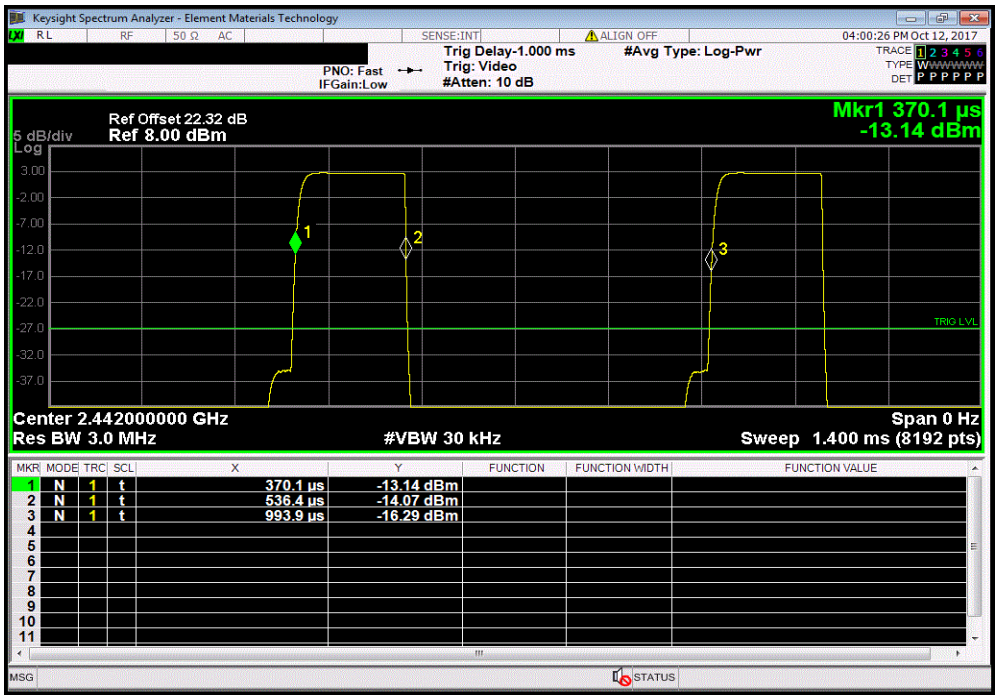
BLE/GFSK Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



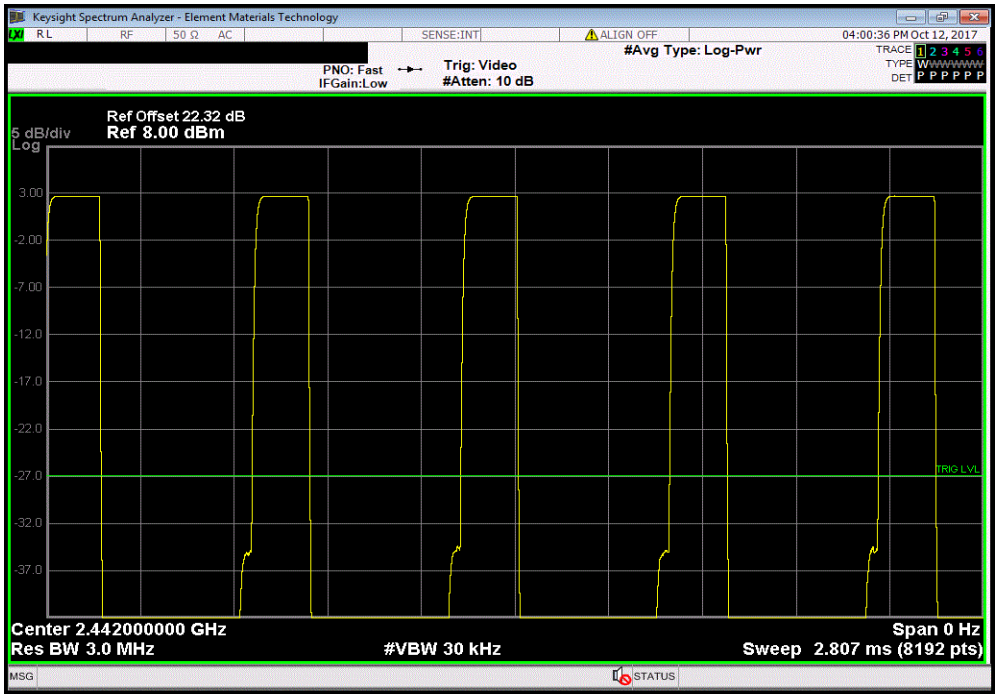
DUTY CYCLE

TbtTx 2017.09.26 XMit 2017.02.08

BLE/GFSK Mid Channel, 2442 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	166.262 us	623.804 us	1	26.7	N/A	N/A



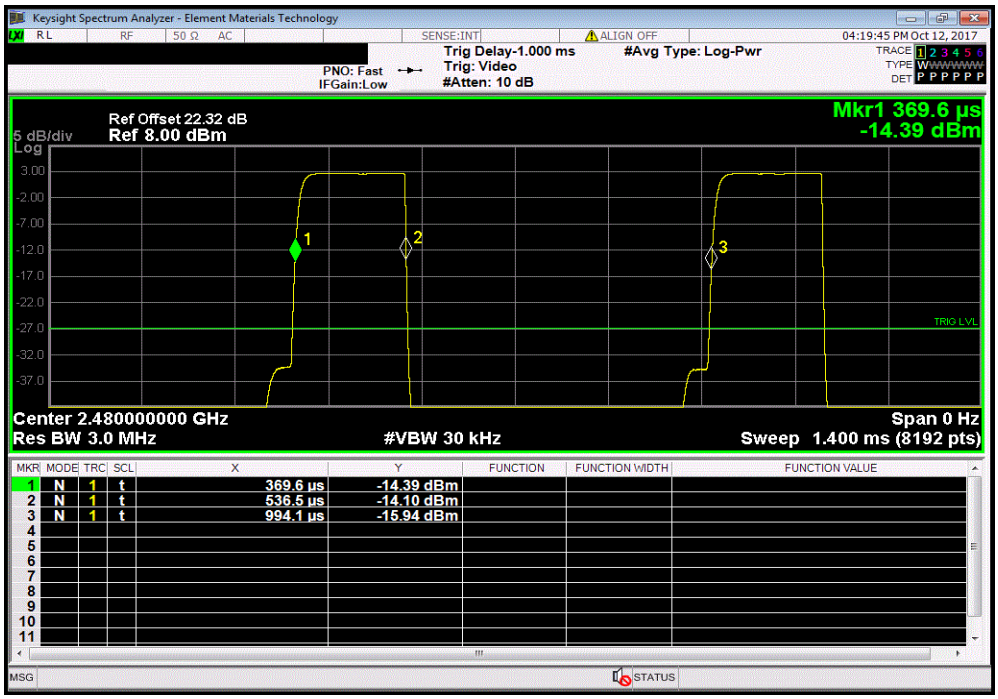
BLE/GFSK Mid Channel, 2442 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



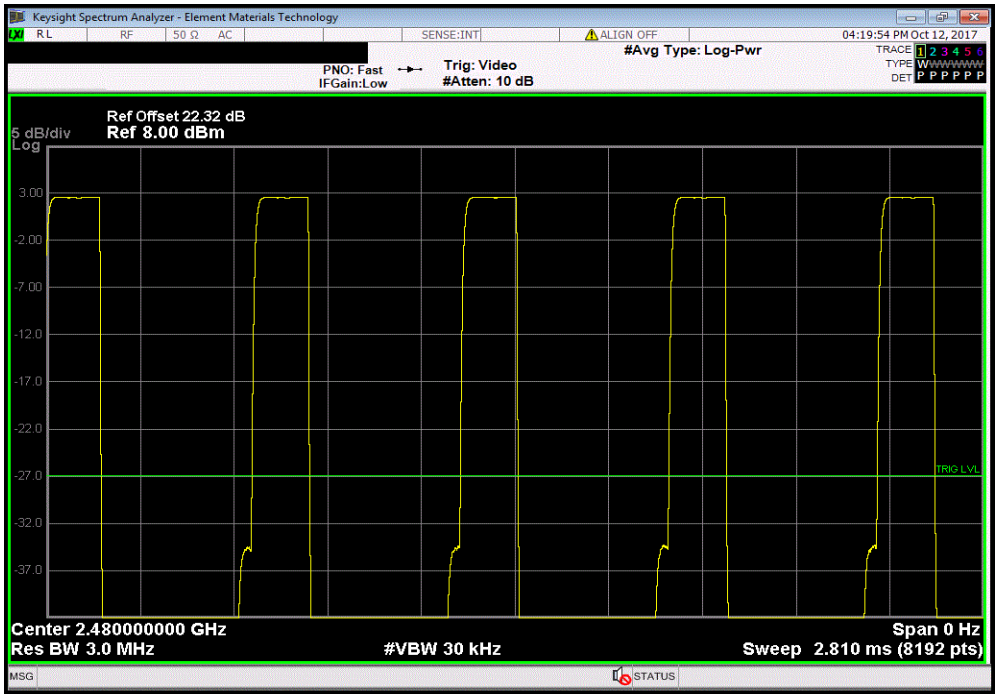
DUTY CYCLE

TbtTx 2017.09.26 XMit 2017.02.08

BLE/GFSK High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	166.903 us	624.487 us	1	26.7	N/A	N/A



BLE/GFSK High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



OCCUPIED BANDWIDTH

XMit 2017.02.08

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
Cable	Fairview Microwave	SCK0963-60	TXF	11/18/2016	11/18/2017
Block - DC	Fairview Microwave	SD3379	AMM	2/24/2017	2/24/2018
Generator - Signal	Agilent	E4422B	TGS	7/11/2017	7/11/2020
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	3/14/2017	3/14/2018
Attenuator	Fairview Microwave	SA4018-20	TYE	10/24/2016	10/24/2017

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. 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 2017.09.26 XMit 2017.02.08

EUT:	VitalBand			**Work Order:**	SNSF0001
Serial Number:	None			**Date:**	10/12/17
Customer:	Sensosafe LLC			**Temperature:**	23.5 °C
Attendees:	None			**Humidity:**	43.6% RH
Project:	None			**Barometric Pres.:**	1020 mbar
Tested by:	Marty Martin	**Power:**	Battery	**Job Site:**	TX09

TEST SPECIFICATIONS	Test Method
FCC 15.247:2017	ANSI C63.10:2013

COMMENTS

TX Power setting -02

DEVIATIONS FROM TEST STANDARD

None

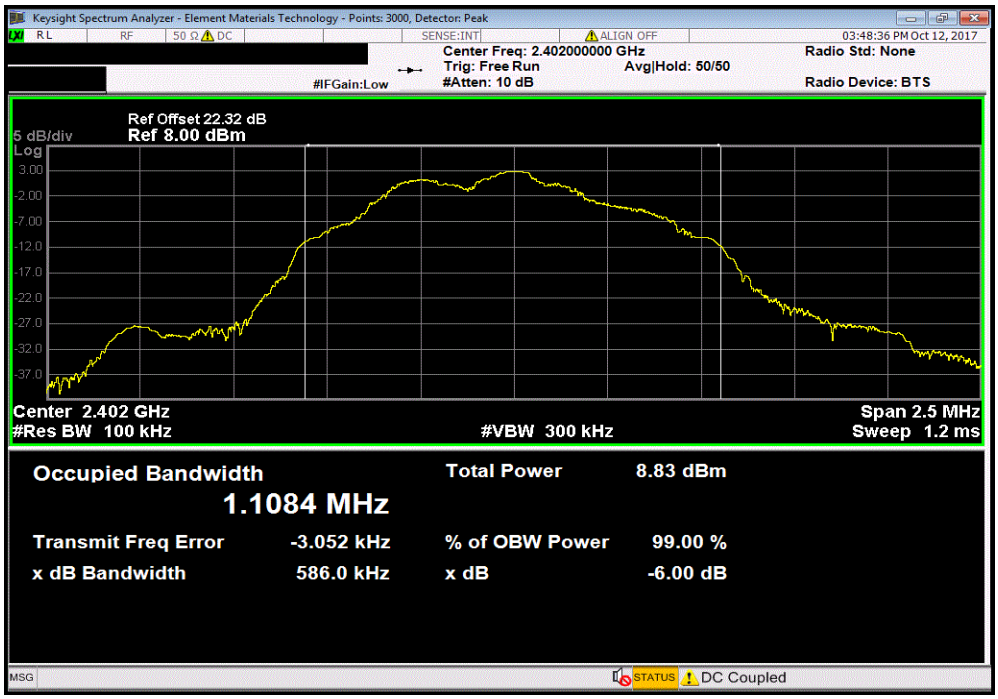
Configuration #	2	Signature

	Value	Limit (≥)	Result
BLE/GFSK Low Channel, 2402 MHz	585.962 kHz	500 kHz	Pass
BLE/GFSK Mid Channel, 2442 MHz	577.766 kHz	500 kHz	Pass
BLE/GFSK High Channel, 2480 MHz	597.811 kHz	500 kHz	Pass

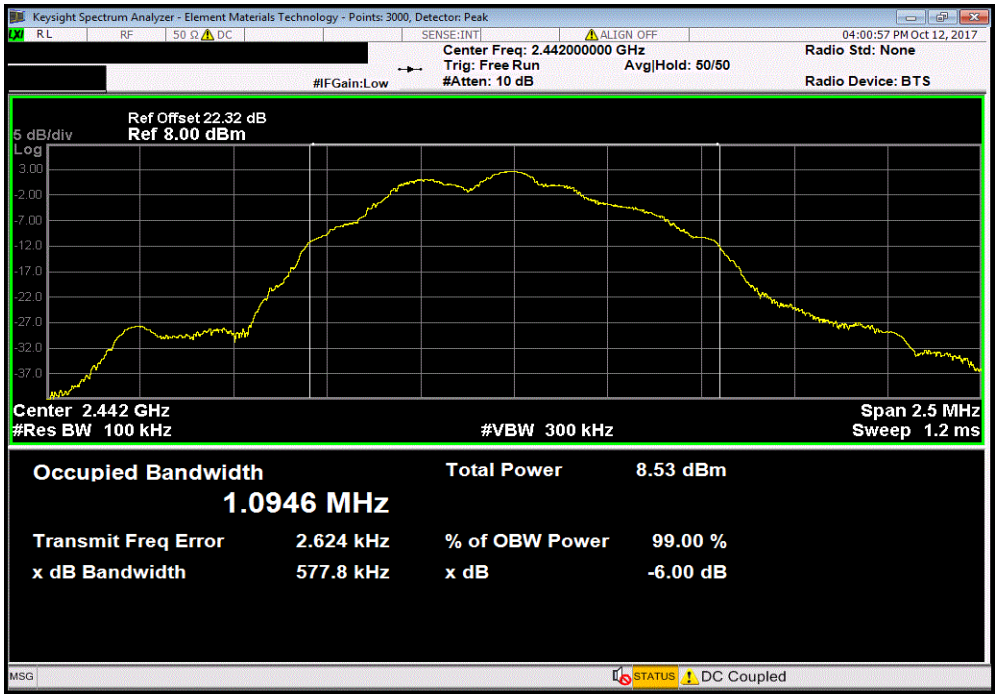
OCCUPIED BANDWIDTH

TbtTx 2017.09.26 XMit 2017.02.08

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



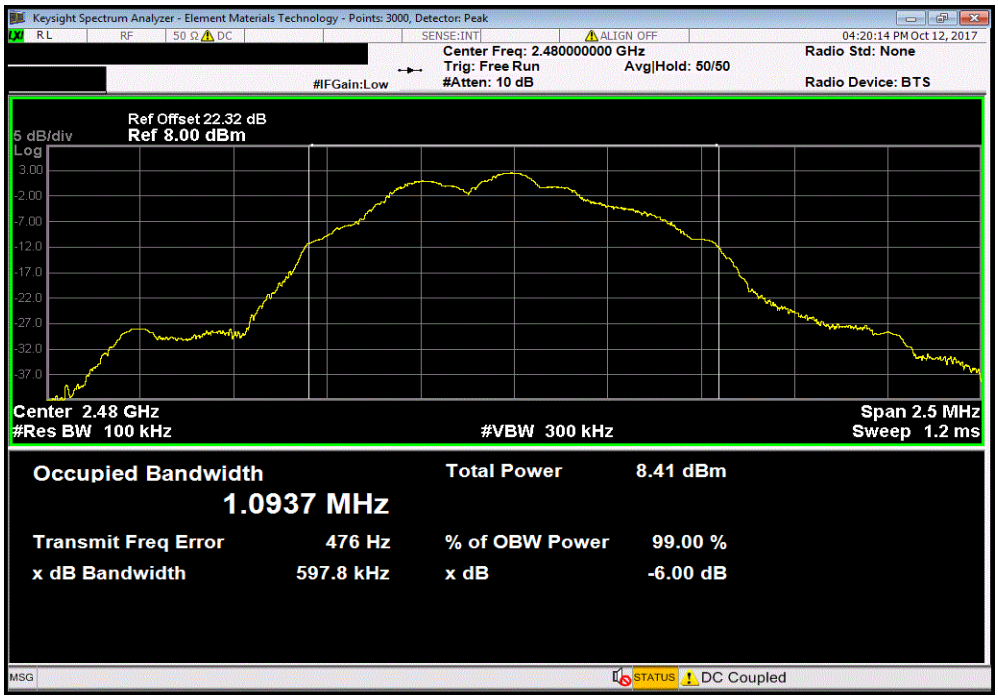
BLE/GFSK Mid Channel, 2442 MHz						
				Value	Limit (≥)	Result
				577.766 kHz	500 kHz	Pass



OCCUPIED BANDWIDTH

TbtTx 2017.09.26 XMit 2017.02.08

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



OUTPUT POWER

XMit 2017.02.08

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	10/24/2016	10/24/2017
Cable	Fairview Microwave	SCK0963-60	TXF	11/18/2016	11/18/2017
Block - DC	Fairview Microwave	SD3379	AMM	2/24/2017	2/24/2018
Generator - Signal	Agilent	E4422B	TGS	7/11/2017	7/11/2020
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	3/14/2017	3/14/2018

TEST DESCRIPTION

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

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

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

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

OUTPUT POWER

TbtTx 2017.09.26 XMit 2017.02.08

EUT:	VitalBand			**Work Order:**	SNSF0001
Serial Number:	None			**Date:**	10/12/17
Customer:	Sensosafe LLC			**Temperature:**	23.6 °C
Attendees:	None			**Humidity:**	43.1% RH
Project:	None			**Barometric Pres.:**	1020 mbar
Tested by:	Marty Martin	**Power:**	Battery	**Job Site:**	TX09

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2017	ANSI C63.10:2013

COMMENTS

TX Power setting -02

DEVIATIONS FROM TEST STANDARD

None

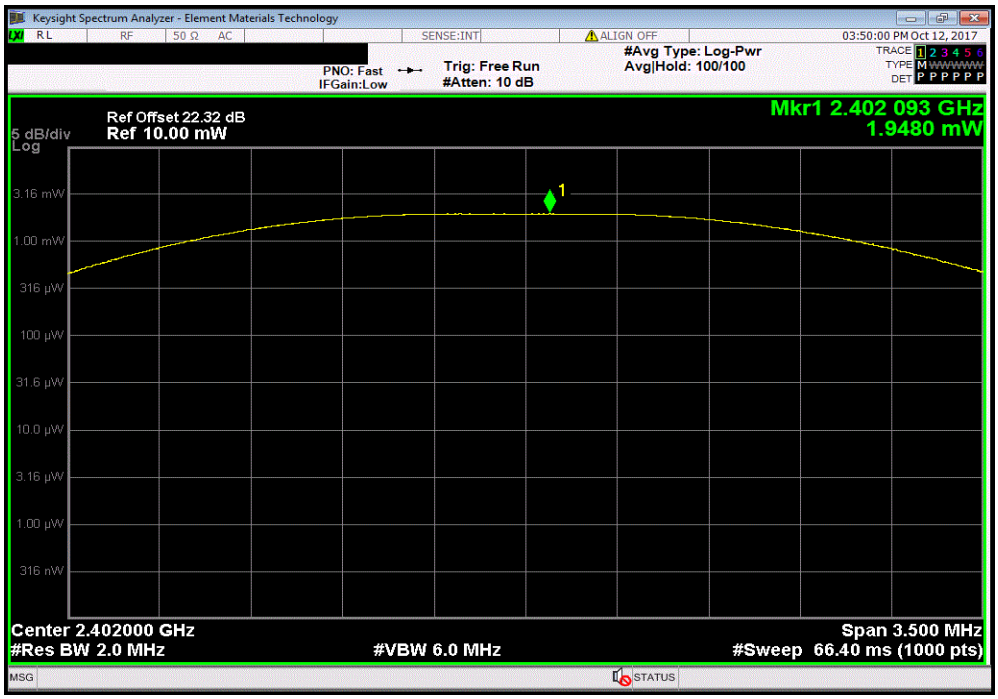
Configuration #	**2**	*Signature* 

	Value	**Limit (<)**	**Result**
BLE/GFSK Low Channel, 2402 MHz	1.948 mW	1 W	Pass
BLE/GFSK Mid Channel, 2442 MHz	1.885 mW	1 W	Pass
BLE/GFSK High Channel, 2480 MHz	1.833 mW	1 W	Pass

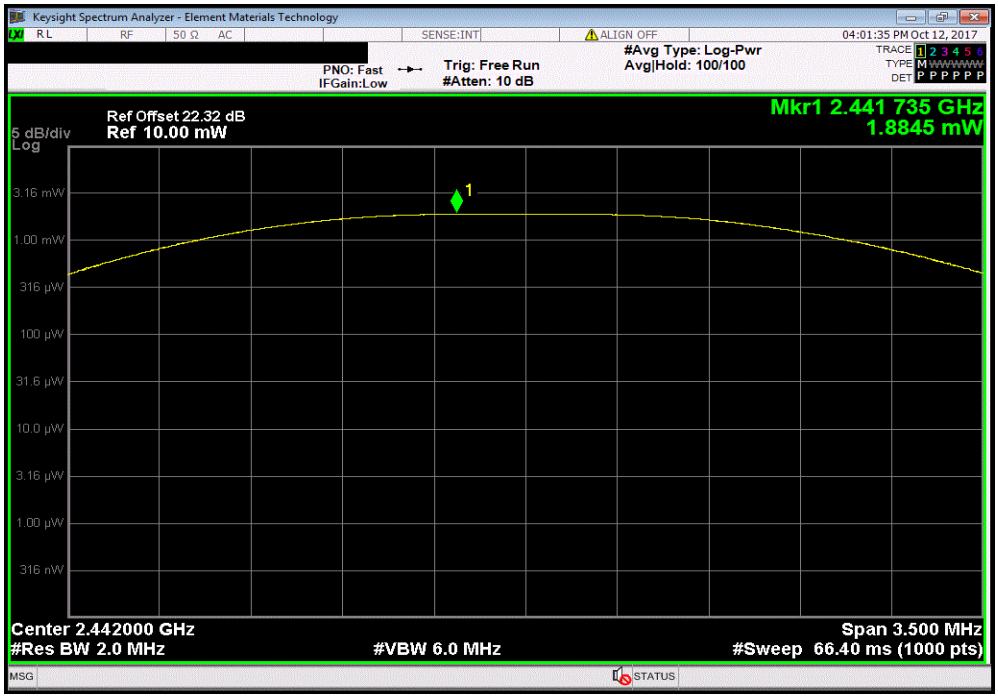
OUTPUT POWER

TbtTx 2017.09.26 XMit 2017.02.08

BLE/GFSK Low Channel, 2402 MHz						
				Value	Limit (<)	Result
				1.948 mW	1 W	Pass

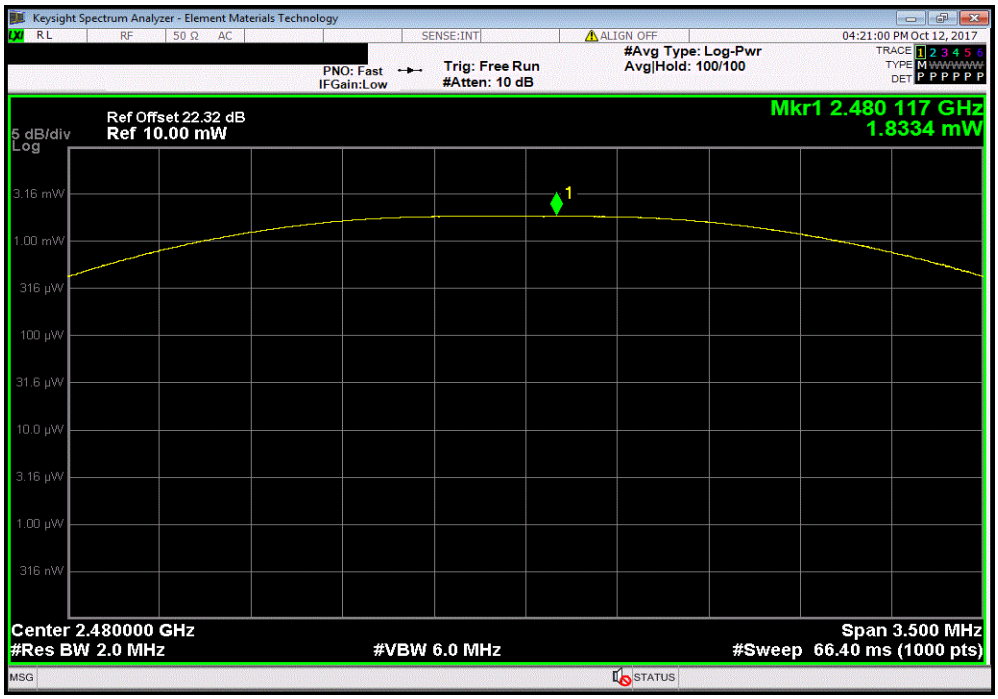


BLE/GFSK Mid Channel, 2442 MHz						
				Value	Limit (<)	Result
				1.885 mW	1 W	Pass



OUTPUT POWER

BLE/GFSK High Channel, 2480 MHz						
				Value	Limit (<)	Result
				1.833 mW	1 W	Pass



POWER SPECTRAL DENSITY

XMit 2017.02.08

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
Cable	Fairview Microwave	SCK0963-60	TXF	11/18/2016	11/18/2017
Attenuator	Fairview Microwave	SA4018-20	TYE	10/24/2016	10/24/2017
Block - DC	Fairview Microwave	SD3379	AMM	2/24/2017	2/24/2018
Generator - Signal	Agilent	E4422B	TGS	7/11/2017	7/11/2020
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	3/14/2017	3/14/2018

TEST DESCRIPTION

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

TbtTx 2017.09.26 XMit 2017.02.08

EUT:	**VitalBand**			**Work Order:**	**SNSF0001**
Serial Number:	**None**			**Date:**	**10/12/17**
Customer:	**Sensosafe LLC**			**Temperature:**	**23.7 °C**
Attendees:	**None**			**Humidity:**	**42.7% RH**
Project:	**None**			**Barometric Pres.:**	**1020 mbar**
Tested by:	**Marty Martin**	**Power:**	**Battery**	**Job Site:**	**TX09**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2017	ANSI C63.10:2013

COMMENTS

TX Power setting -02

DEVIATIONS FROM TEST STANDARD

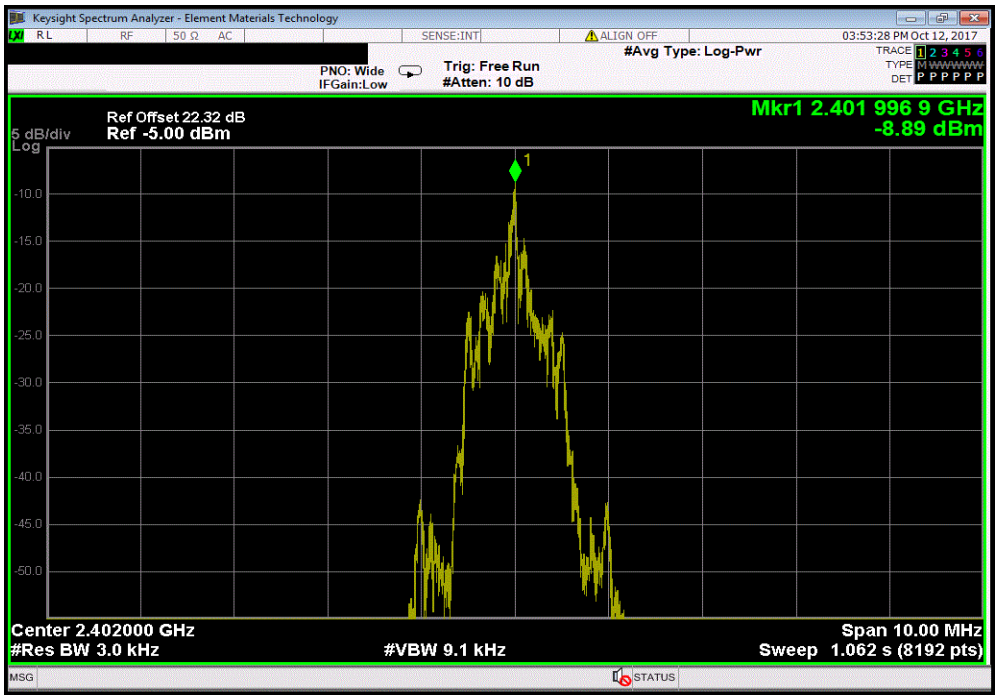
None

Configuration #	**2**	*Signature* 

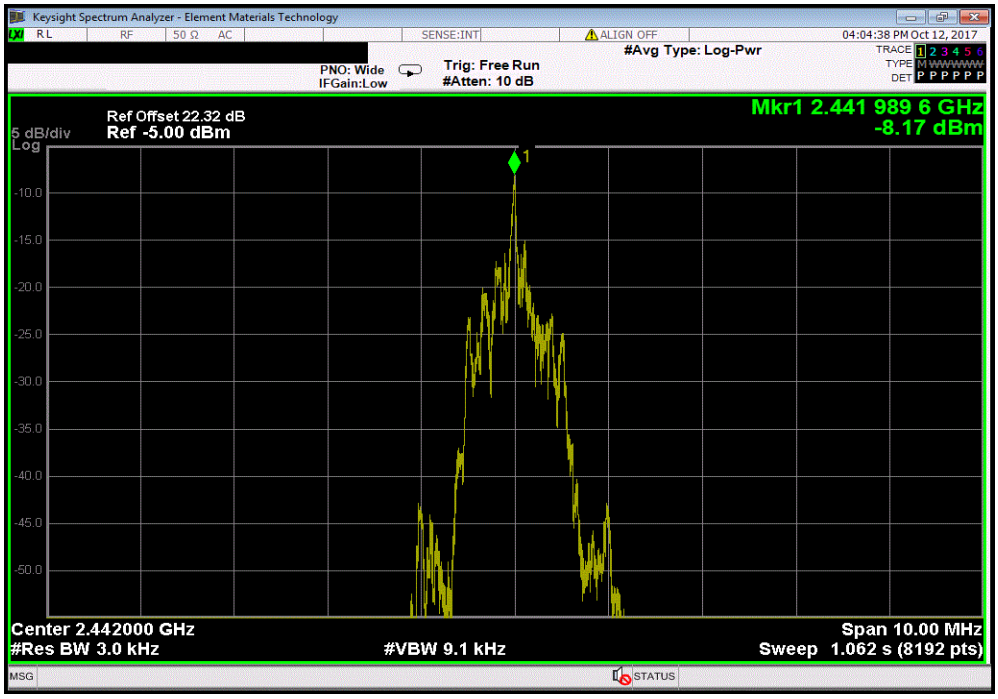
	Value dBm/3kHz	**Limit < dBm/3kHz**	**Results**
BLE/GFSK Low Channel, 2402 MHz	-8.888	8	Pass
BLE/GFSK Mid Channel, 2442 MHz	-8.169	8	Pass
BLE/GFSK High Channel, 2480 MHz	-8.502	8	Pass

POWER SPECTRAL DENSITY

BLE/GFSK Low Channel, 2402 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-8.888	8	Pass

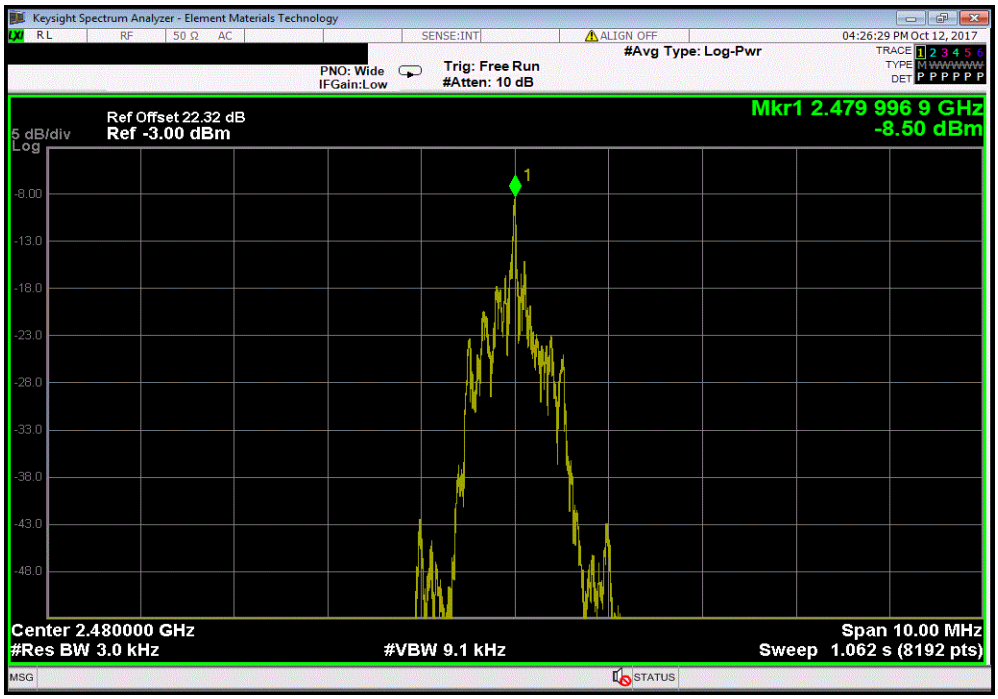


BLE/GFSK Mid Channel, 2442 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-8.169	8	Pass



POWER SPECTRAL DENSITY

BLE/GFSK High Channel, 2480 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-8.502	8	Pass



BAND EDGE COMPLIANCE

XMit 2017.02.08

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
Cable	Fairview Microwave	SCK0963-60	TXF	11/18/2016	11/18/2017
Generator - Signal	Agilent	E4422B	TGS	7/11/2017	7/11/2020
Block - DC	Fairview Microwave	SD3379	AMM	2/24/2017	2/24/2018
Attenuator	Fairview Microwave	SA4018-20	TYE	10/24/2016	10/24/2017
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	3/14/2017	3/14/2018

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 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

TbtTx 2017.09.26 XMit 2017.02.08

EUT:	**VitalBand**			**Work Order:**	**SNSF0001**
Serial Number:	**None**			**Date:**	**10/12/17**
Customer:	**Sensosafe LLC**			**Temperature:**	**23.3 °C**
Attendees:	**None**			**Humidity:**	**44% RH**
Project:	**None**			**Barometric Pres.:**	**1020 mbar**
Tested by:	**Marty Martin**	**Power:**	**Battery**	**Job Site:**	**TX09**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2017	ANSI C63.10:2013

COMMENTS

TX Power setting -02

DEVIATIONS FROM TEST STANDARD

None

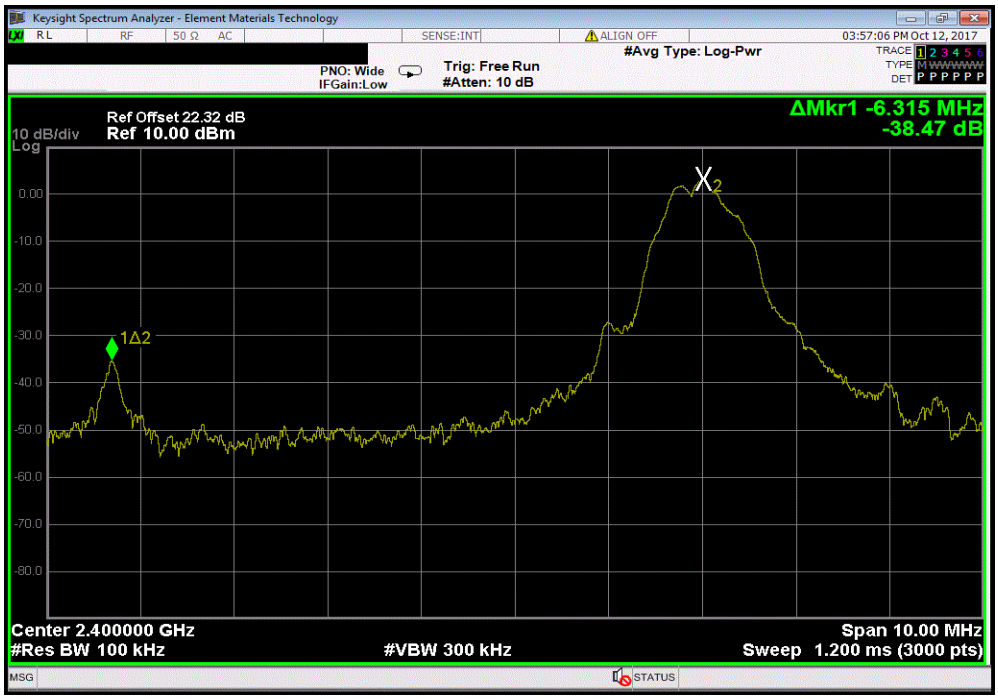
Configuration #	**2**	*Signature* Marty Martin

	Value (dBc)	**Limit ≤ (dBc)**	**Result**
BLE/GFSK Low Channel, 2402 MHz	-38.47	-20	Pass
BLE/GFSK High Channel, 2480 MHz	-38.42	-20	Pass

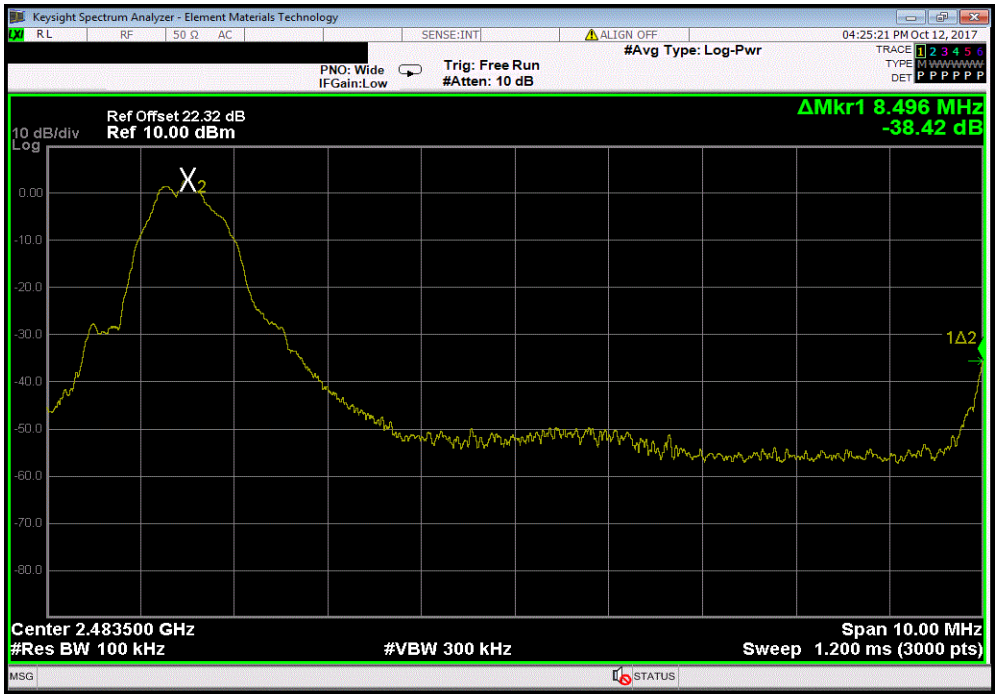
BAND EDGE COMPLIANCE

TbtTx 2017.09.26 XMit 2017.02.08

BLE/GFSK Low Channel, 2402 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-38.47	-20	Pass



BLE/GFSK High Channel, 2480 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-38.42	-20	Pass



SPURIOUS CONDUCTED EMISSIONS

XMit 2017.02.08

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	10/24/2016	10/24/2017
Cable	Fairview Microwave	SCK0963-60	TXF	11/18/2016	11/18/2017
Block - DC	Fairview Microwave	SD3379	AMM	2/24/2017	2/24/2018
Generator - Signal	Agilent	E4422B	TGS	7/11/2017	7/11/2020
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	3/14/2017	3/14/2018

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.

SPURIOUS CONDUCTED EMISSIONS

TbtTx 2017.09.26 XMit 2017.02.08

EUT:	**VitalBand**			**Work Order:**	**SNSF0001**
Serial Number:	**None**			**Date:**	**10/12/17**
Customer:	**Sensosafe LLC**			**Temperature:**	**23.7 °C**
Attendees:	**None**			**Humidity:**	**43.2% RH**
Project:	**None**			**Barometric Pres.:**	**1019 mbar**
Tested by:	**Marty Martin**	**Power:**	**Battery**	**Job Site:**	**TX09**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2017	ANSI C63.10:2013

COMMENTS

Mode on operation = TX Modulation-01, Set TX Power-02.

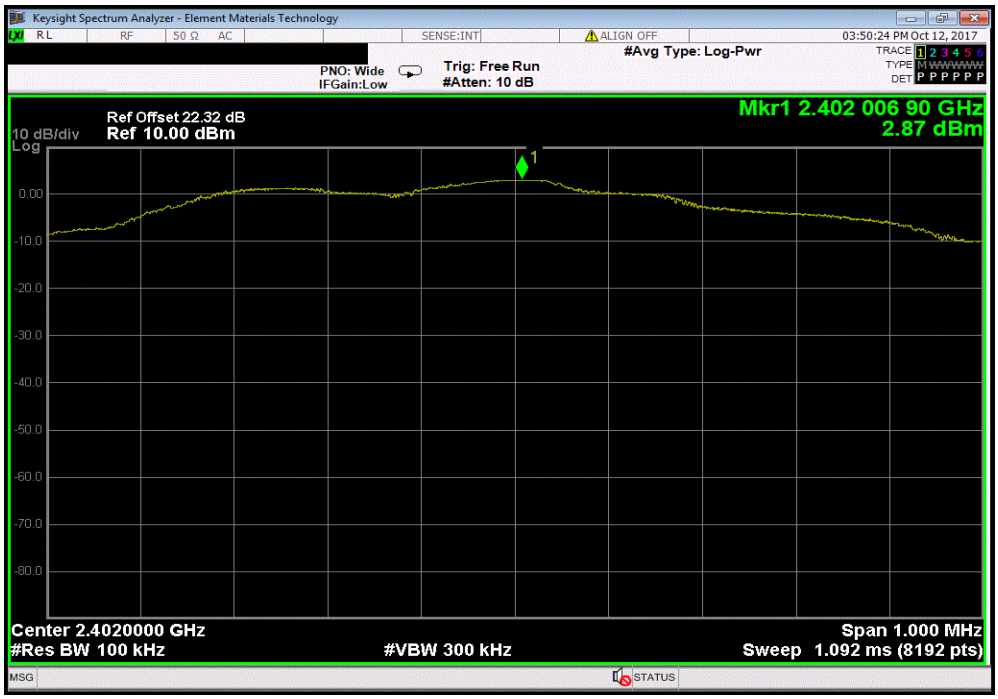
DEVIATIONS FROM TEST STANDARD

None

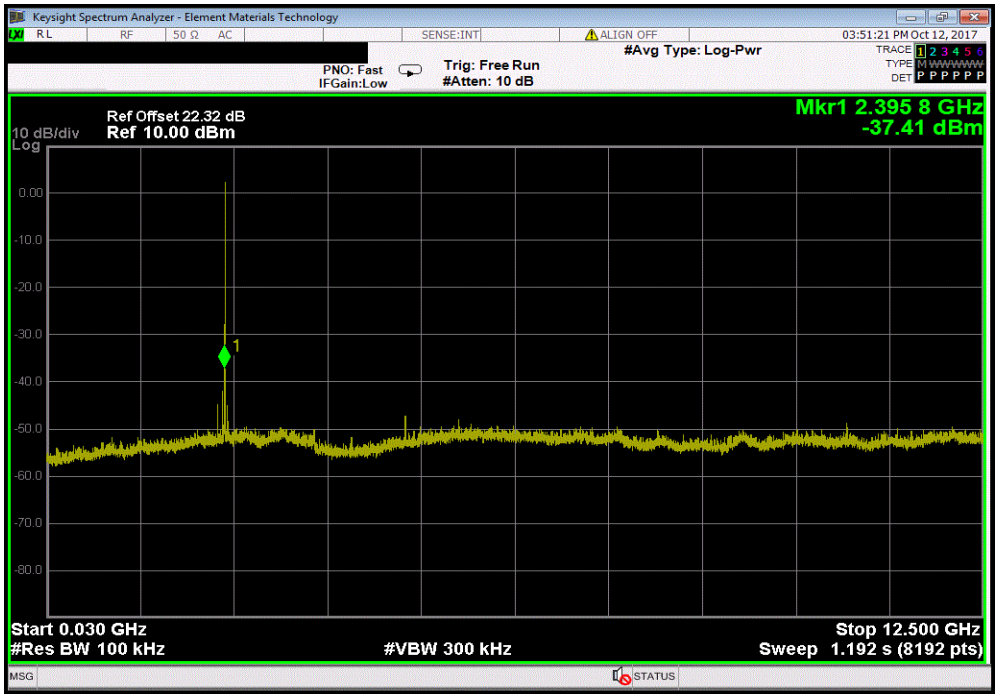
Configuration #	**2**	*Signature* Marty Martin

	Frequency Range	Max Value (dBc)	Limit ≤ (dBc)	Result
BLE/GFSK Low Channel, 2402 MHz	Fundamental	N/A	N/A	N/A
BLE/GFSK Low Channel, 2402 MHz	30 MHz - 12.5 GHz	-40.28	-20	Pass
BLE/GFSK Low Channel, 2402 MHz	12.5 GHz - 25 GHz	-41.33	-20	Pass
BLE/GFSK Mid Channel, 2442 MHz	Fundamental	N/A	N/A	N/A
BLE/GFSK Mid Channel, 2442 MHz	30 MHz - 12.5 GHz	-44.46	-20	Pass
BLE/GFSK Mid Channel, 2442 MHz	12.5 GHz - 25 GHz	-40.84	-20	Pass
BLE/GFSK High Channel, 2480 MHz	Fundamental	N/A	N/A	N/A
BLE/GFSK High Channel, 2480 MHz	30 MHz - 12.5 GHz	-37.08	-20	Pass
BLE/GFSK High Channel, 2480 MHz	12.5 GHz - 25 GHz	-40.62	-20	Pass

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

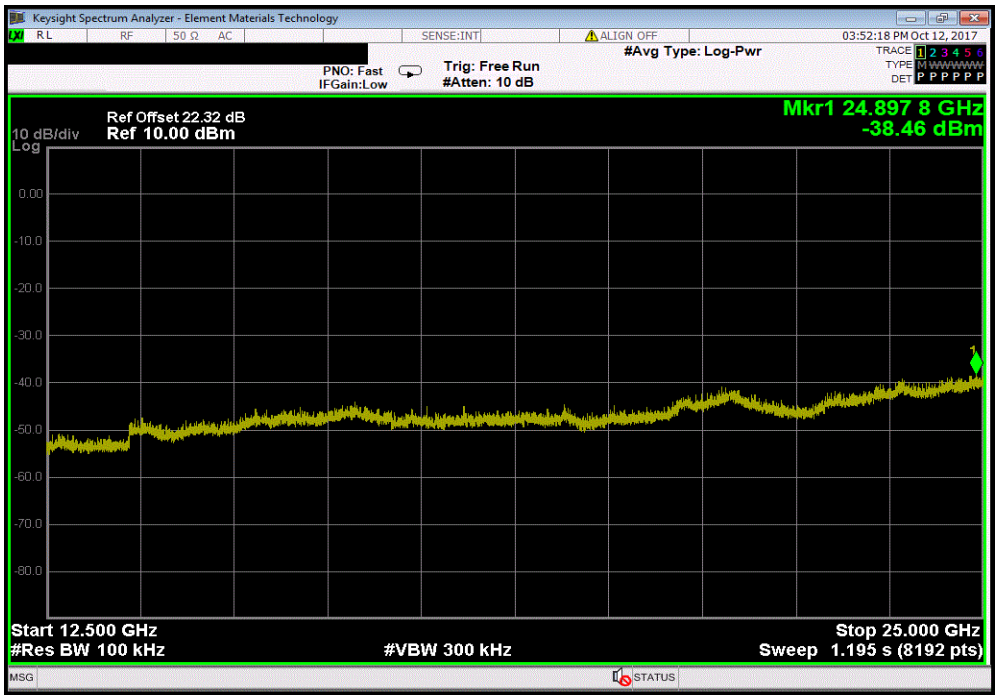


BLE/GFSK Low Channel, 2402 MHz					
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result	
30 MHz - 12.5 GHz		-40.28	-20	Pass	

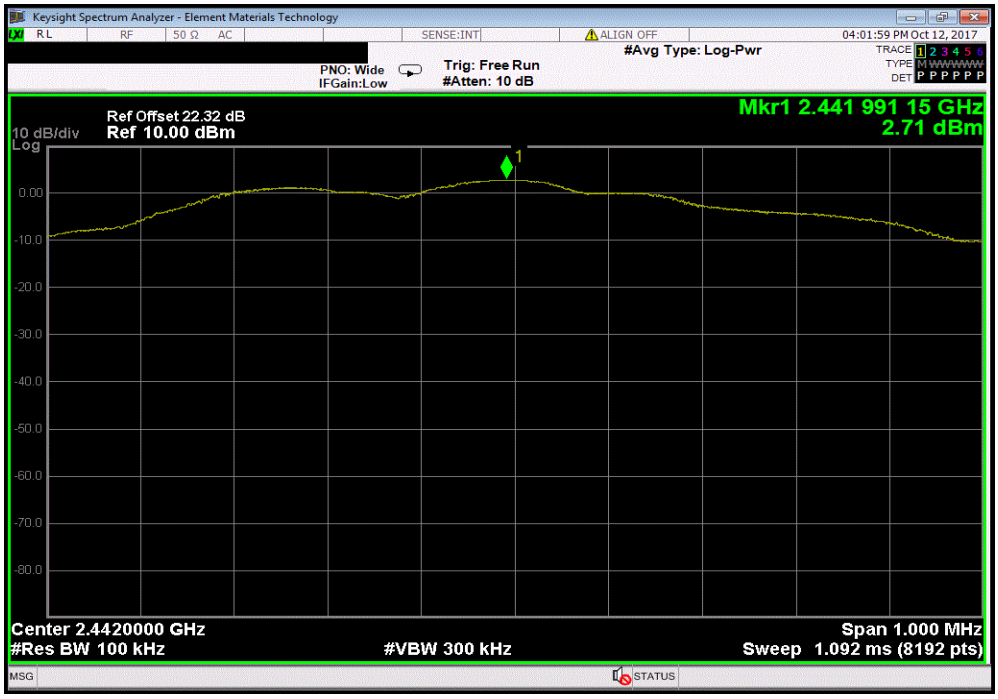


SPURIOUS CONDUCTED EMISSIONS

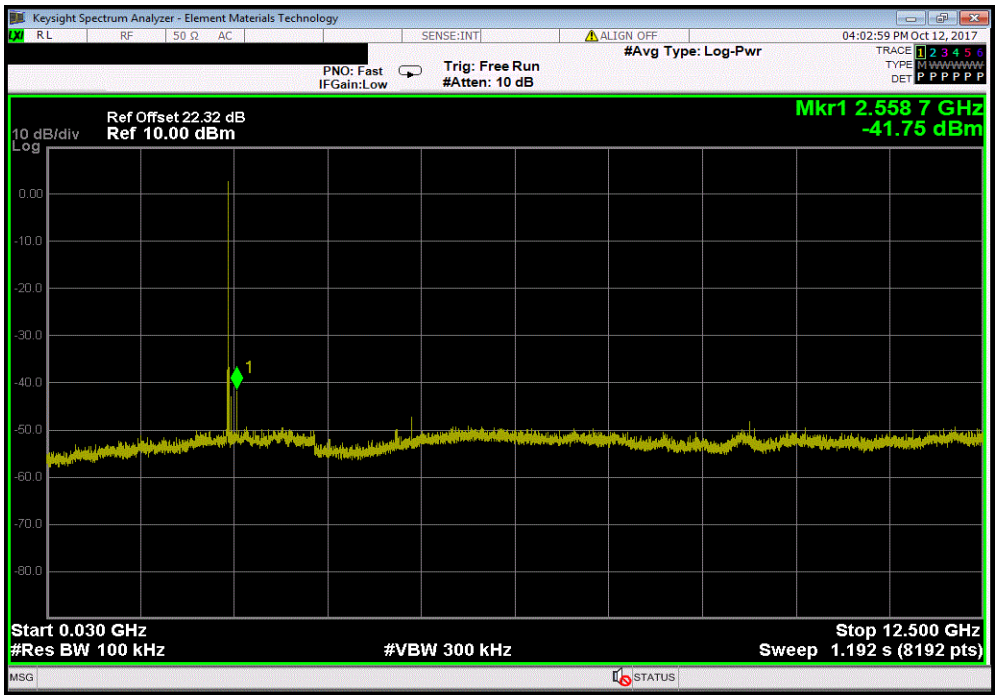
BLE/GFSK Low Channel, 2402 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-41.33	-20	Pass



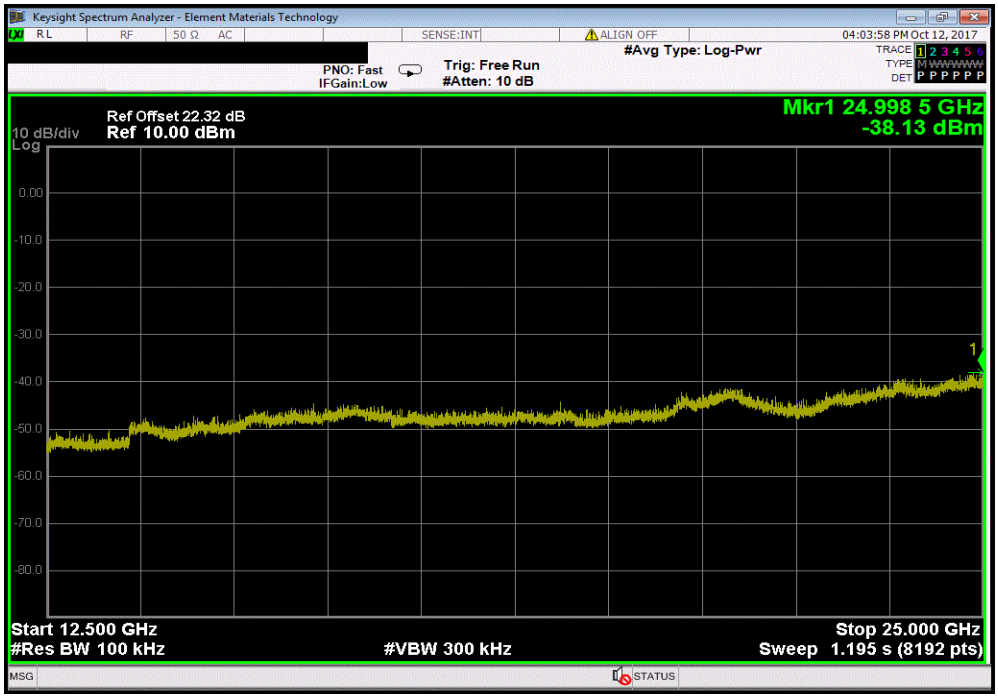
BLE/GFSK Mid Channel, 2442 MHz					
Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental		N/A	N/A	N/A



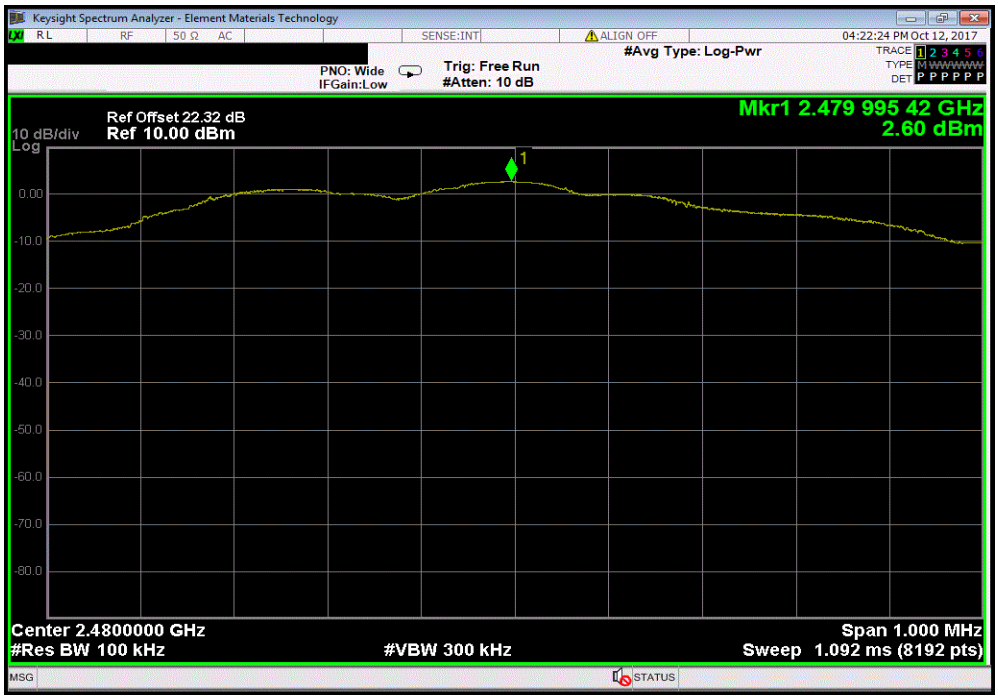
BLE/GFSK Mid Channel, 2442 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-44.46	-20	Pass



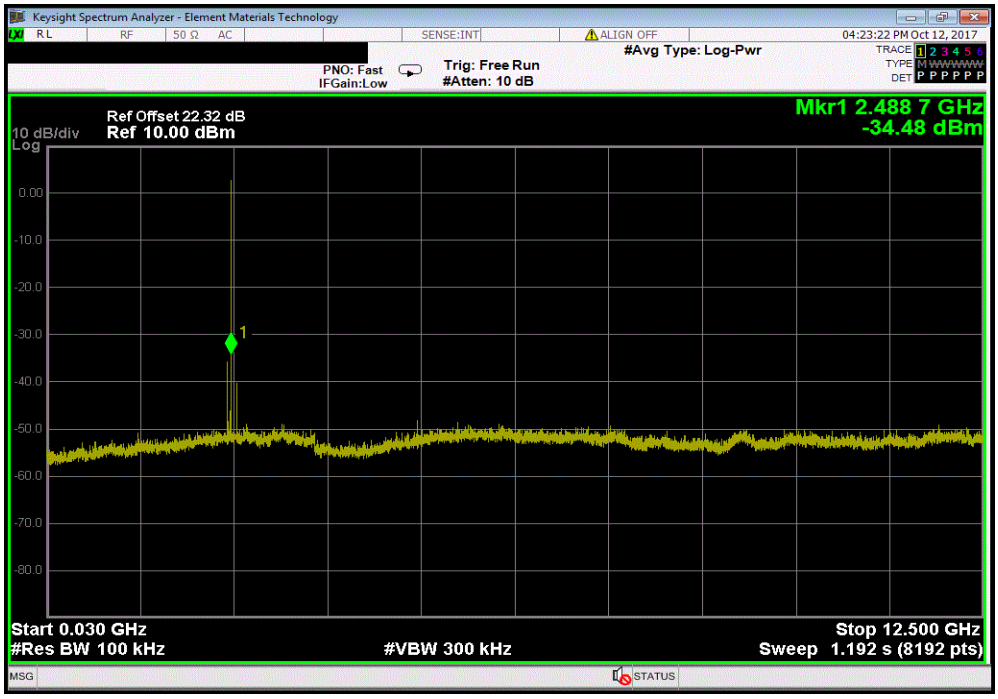
BLE/GFSK Mid Channel, 2442 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-40.84	-20	Pass



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



BLE/GFSK High Channel, 2480 MHz					
Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz			-37.08	-20	Pass



BLE/GFSK High Channel, 2480 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-40.62	-20	Pass