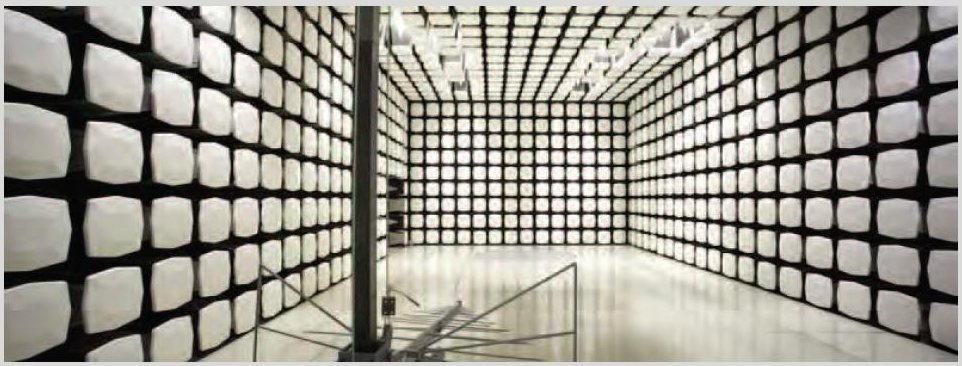
Veris Industries, Inc.

PX3

FCC 15.247:2017

Bluetooth Low Energy Radio

Report # VERI0267



NVLAP Lab Code: 200630-0

CERTIFICATE OF TEST

2017-1-25

Last Date of Test: May 4, 2017
Veris Industries, Inc.
Model: PX3

Radio Equipment Testing

Standards

Specification	Method
FCC 15.247:2017	ANSI C63.10:2013
	KDB 558074

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	AC - Powerline Conducted 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	
11.12.1, 11.13.2, 6.5, 6.6	Spurious Radiated 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.

REVISION HISTORY

Revision Number	Description	Date	Page Number
00	None		

ACCREDITATIONS AND AUTHORIZATIONS

2017.5.15

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 – Validated by the European Commission as a Notified Body under the R&TTE Directive. 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.

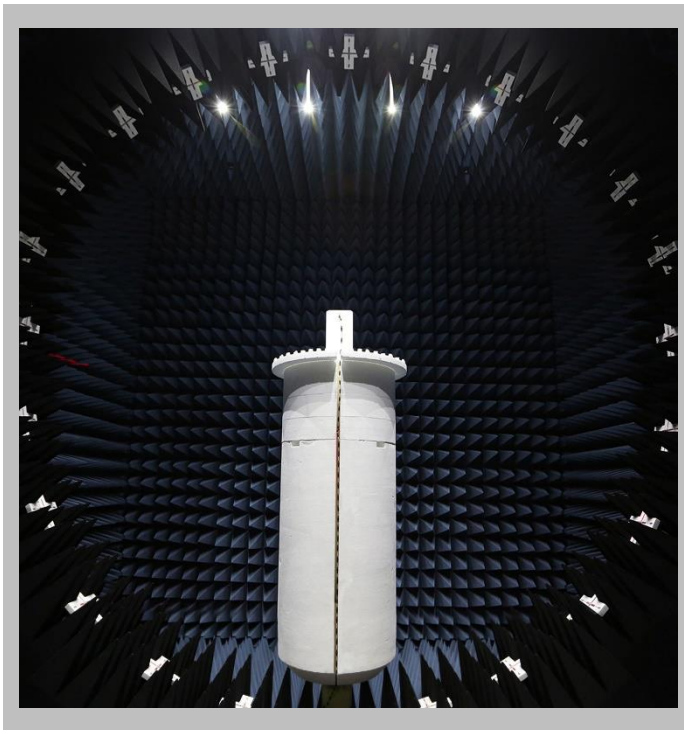
SCOPE

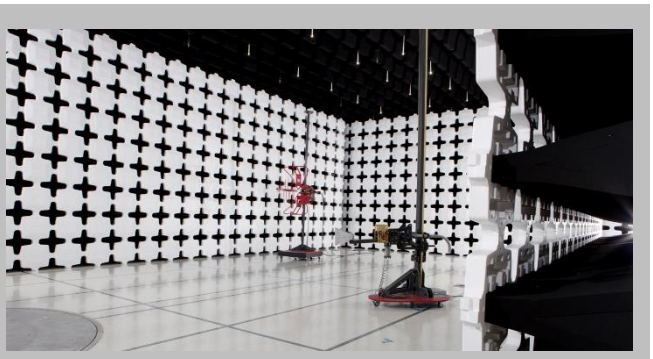
For details on the Scopes of our Accreditations, please visit:
http://portlandcustomer.element.com/ts/scope/scope.htm
http://gsi.nist.gov/global/docs/cabs/designations.html

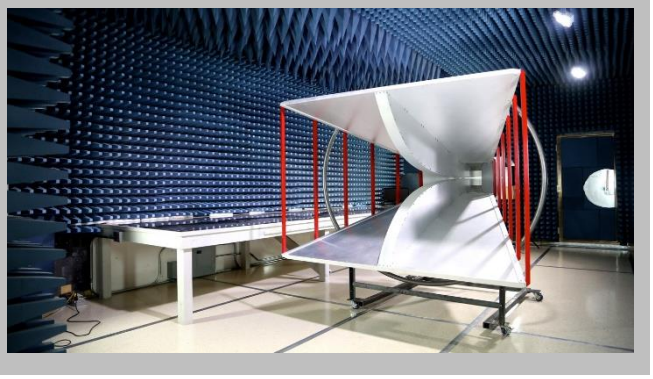
FACILITIES

2017.3.2

California	Minnesota	New York	Oregon	Texas	Washington
Labs OC01-13 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	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







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.

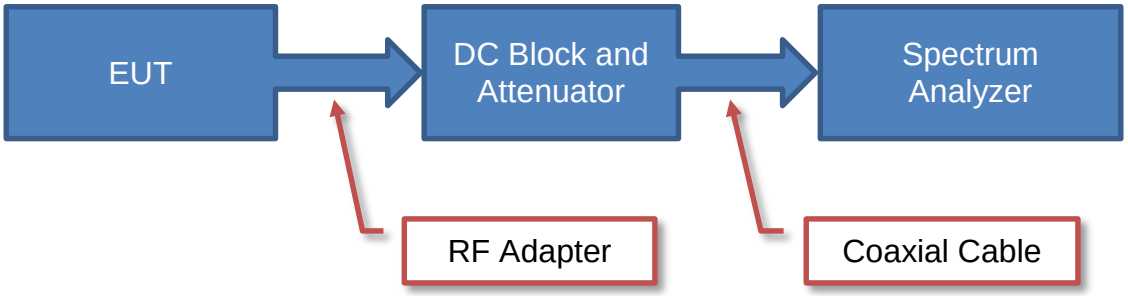
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable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

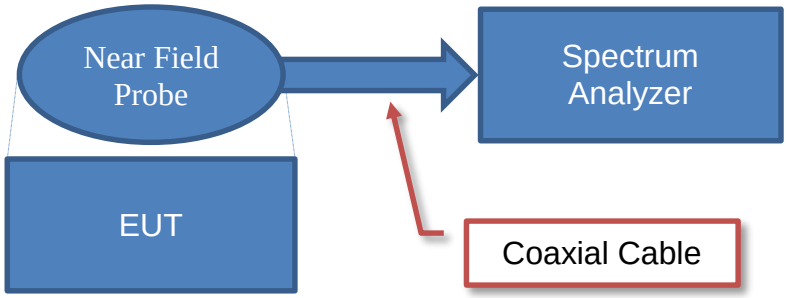
Test	+ MU	- MU
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.2 dB	-5.2 dB
AC Powerline Conducted Emissions (dB)	2.4 dB	-2.4 dB

Test Setup Block Diagrams

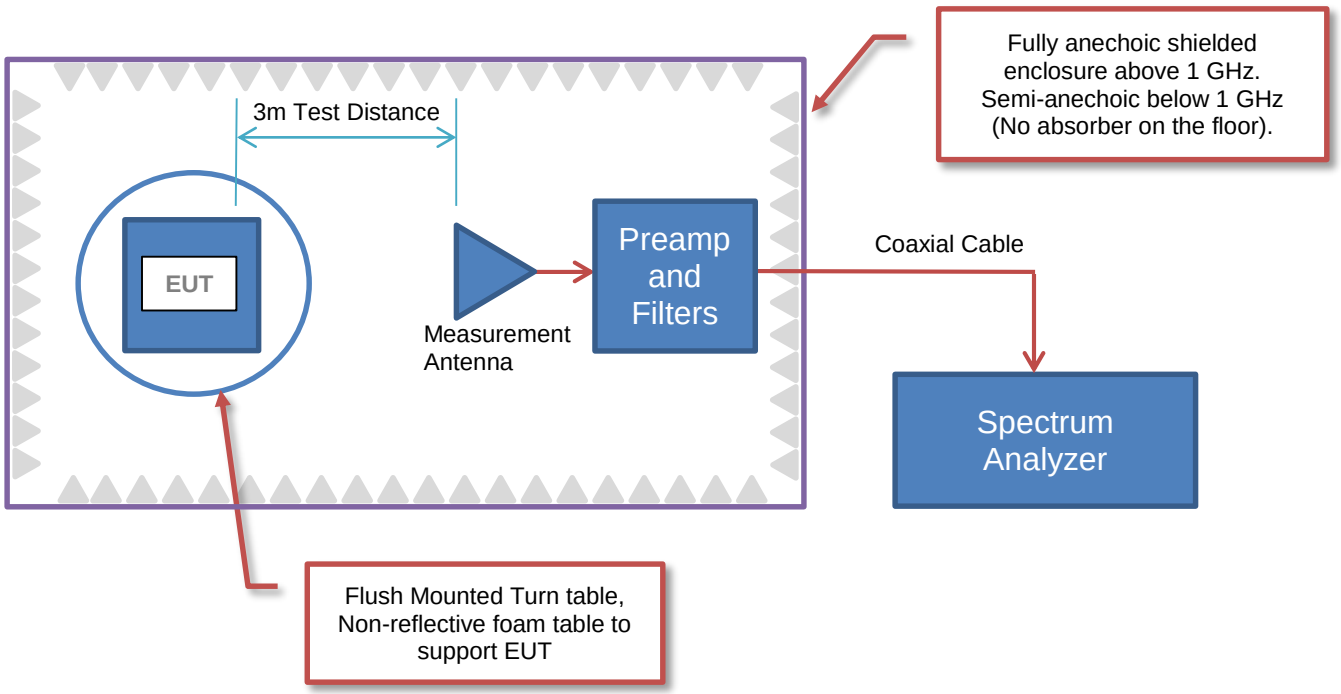
Antenna Port Conducted Measurements



Near Field Test Fixture Measurements



Spurious Radiated Emissions



PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Veris Industries, Inc.
Address:	12345 SW Leveton Dr.
City, State, Zip:	Tualatin, OR 97062
Test Requested By:	Gene Hukkanen
Model:	PX3
First Date of Test:	May 1, 2017
Last Date of Test:	May 4, 2017
Receipt Date of Samples:	May 1, 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:
Low pressure (dry) sensor (0-10 inches H2O) utilizing a Bluetooth Low Energy radio. Operates in 3-wire or 4-20 mA loop power.

Testing Objective:
To demonstrate compliance of the Bluetooth Low Energy radio to FCC 15.247 requirements for DTS operation in the 2.4 GHz band.

CONFIGURATIONS

Configuration VERI0267- 1

Software/Firmware Running during test	
Description	**Version**
Cypress PSOC	3.25.0.25.04

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Room Sensor	Schneider Electric	PX3	1

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
DC Power Supply	TENMA	TENMA 72-2010	None
Mini Prog 3	Cypress Perform	Rev B	None

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Remote Laptop	HP	Elitebook 8540P	CND0350X08

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
JT I/O	No	0.1 m	No	Room Sensor	JTag Pinout
DC Leads	No	2.5 m	No	Room Sensor	DC Power Supply
USB Cable	Yes	2.1 m	No	Remote Laptop	Controller

Configuration VERI0267- 2

Software/Firmware Running during test	
Description	**Version**
Cypress PSOC	3.25.0.25.04

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Room Sensor	Schneider Electric	PX3	1

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Mini Prog 3	Cypress Perform	Rev B	None
Transformer 110VAC to 24VDC	Veris Industries, Inc	X100CHB	None

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Remote Laptop	HP	Elitebook 8540P	CND0350X08

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
JT I/O	No	0.1 m	No	Room Sensor	JTag Pinout
DC Leads	No	2.5 m	No	Room Sensor	DC Power Supply

CONFIGURATIONS

Configuration VERI0267- 3

Software/Firmware Running during test	
Description	**Version**
Cypress PSOC	3.25.0.25.04

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Room Sensor	Schneider Electric	PX3	1

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
DC Power Supply	TENMA	TENMA 72-2010	None
Mini Prog 3	Cypress Perform	Rev B	None

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Remote Laptop	HP	Elitebook 8540P	CND0350X08

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
JT I/O	No	0.1 m	No	Room Sensor	JTag Pinout
DC Leads	No	2.5 m	No	Room Sensor	DC Power Supply

MODIFICATIONS

2017-1-25

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	5/1/2017	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.
2	5/1/2017	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.
3	5/1/2017	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.
4	5/1/2017	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.
5	5/1/2017	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.
6	5/1/2017	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.
7	5/3/2017	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.
8	5/4/2017	AC – Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

AC – POWERLINE CONDUCTED EMISSIONS

WTD.2017.03.21

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
Cable - Conducted Cable Assembly	Northwest EMC	EVG, HHD, RKA	EVGA	4/13/2017	4/13/2018
Receiver	Rohde & Schwarz	ESCI	ARH	3/27/2017	3/27/2018
LISN	Solar Electronics	9252-50-R-24-BNC	LIP	10/4/2016	10/4/2018

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.4 dB	-2.4 dB

CONFIGURATIONS INVESTIGATED

VERI0267-2

MODES INVESTIGATED

On, BLE Continuous Tx, Mid Ch. 2440 MHz

AC – POWERLINE CONDUCTED EMISSIONS

EUT:	PX3	Work Order:	VERI0267
Serial Number:	1	Date:	05/04/2017
Customer:	Veris Industries, Inc.	Temperature:	23.4°C
Attendees:	Rich Soennichsen	Relative Humidity:	51.4%
Customer Project:	None	Bar. Pressure:	1012 mb
Tested By:	Brandon Hobbs	Job Site:	EV07
Power:	24VDC	Configuration:	VERI0267-2

TEST SPECIFICATIONS

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

TEST PARAMETERS

Run #:	1	Line:	High Line	Add. Ext. Attenuation (dB):	0

COMMENTS

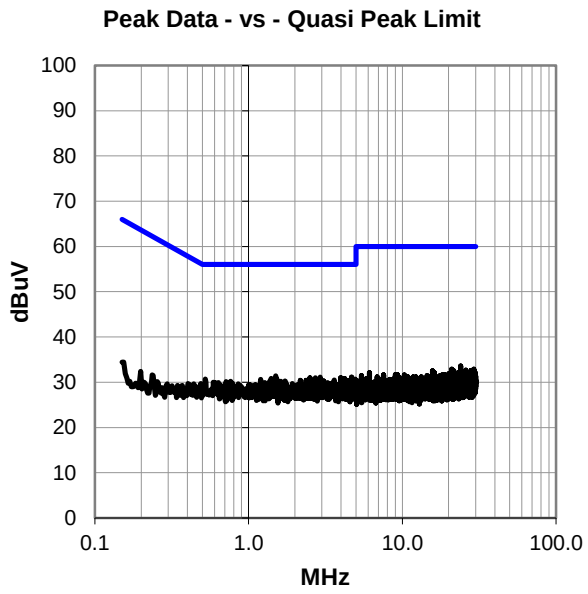
EUT was powered by client provided unfiltered 110 VAC to 24VDC transformer.

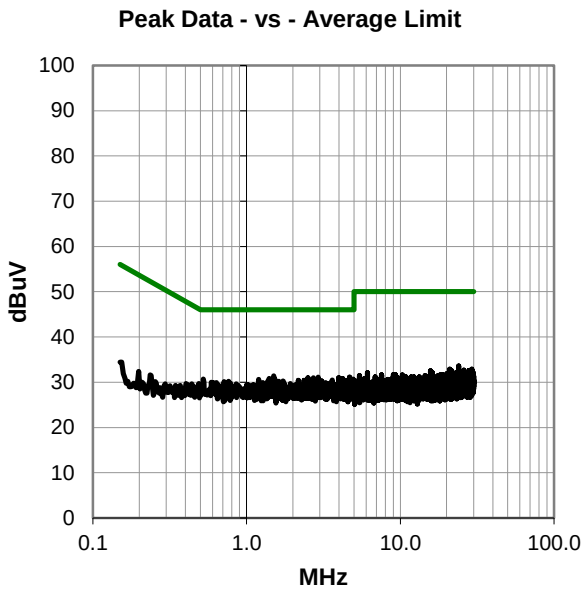
EUT OPERATING MODES

On, BLE Continuous Tx, Mid Ch. 2440 MHz

DEVIATIONS FROM TEST STANDARD

None





AC – POWERLINE CONDUCTED EMISSIONS

WTD.2017.03.21

RESULTS - Run #1

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
1.504	11.8	19.6	31.4	56.0	-24.6
2.929	11.3	19.8	31.1	56.0	-24.9
4.672	11.3	19.8	31.1	56.0	-24.9
2.508	11.3	19.7	31.0	56.0	-25.0
2.717	11.3	19.7	31.0	56.0	-25.0
3.967	11.2	19.8	31.0	56.0	-25.0
4.023	11.1	19.8	30.9	56.0	-25.1
1.404	11.3	19.5	30.8	56.0	-25.2
4.202	11.0	19.8	30.8	56.0	-25.2
0.523	11.2	19.5	30.7	56.0	-25.3
4.918	10.9	19.8	30.7	56.0	-25.3
1.198	11.1	19.5	30.6	56.0	-25.4
3.601	10.7	19.8	30.5	56.0	-25.5
4.959	10.7	19.8	30.5	56.0	-25.5
2.172	10.8	19.6	30.4	56.0	-25.6
2.366	10.8	19.6	30.4	56.0	-25.6
2.702	10.7	19.7	30.4	56.0	-25.6
4.425	10.6	19.8	30.4	56.0	-25.6
1.728	10.7	19.6	30.3	56.0	-25.7
3.079	10.5	19.8	30.3	56.0	-25.7
0.762	10.7	19.5	30.2	56.0	-25.8
1.370	10.7	19.5	30.2	56.0	-25.8
1.564	10.6	19.6	30.2	56.0	-25.8
4.784	10.4	19.8	30.2	56.0	-25.8
0.713	10.6	19.5	30.1	56.0	-25.9
4.522	10.3	19.8	30.1	56.0	-25.9

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
1.504	11.8	19.6	31.4	46.0	-14.6
2.929	11.3	19.8	31.1	46.0	-14.9
4.672	11.3	19.8	31.1	46.0	-14.9
2.508	11.3	19.7	31.0	46.0	-15.0
2.717	11.3	19.7	31.0	46.0	-15.0
3.967	11.2	19.8	31.0	46.0	-15.0
4.023	11.1	19.8	30.9	46.0	-15.1
1.404	11.3	19.5	30.8	46.0	-15.2
4.202	11.0	19.8	30.8	46.0	-15.2
0.523	11.2	19.5	30.7	46.0	-15.3
4.918	10.9	19.8	30.7	46.0	-15.3
1.198	11.1	19.5	30.6	46.0	-15.4
3.601	10.7	19.8	30.5	46.0	-15.5
4.959	10.7	19.8	30.5	46.0	-15.5
2.172	10.8	19.6	30.4	46.0	-15.6
2.366	10.8	19.6	30.4	46.0	-15.6
2.702	10.7	19.7	30.4	46.0	-15.6
4.425	10.6	19.8	30.4	46.0	-15.6
1.728	10.7	19.6	30.3	46.0	-15.7
3.079	10.5	19.8	30.3	46.0	-15.7
0.762	10.7	19.5	30.2	46.0	-15.8
1.370	10.7	19.5	30.2	46.0	-15.8
1.564	10.6	19.6	30.2	46.0	-15.8
4.784	10.4	19.8	30.2	46.0	-15.8
0.713	10.6	19.5	30.1	46.0	-15.9
4.522	10.3	19.8	30.1	46.0	-15.9

CONCLUSION

Pass

Tested By

AC – POWERLINE CONDUCTED EMISSIONS

EUT:	PX3	Work Order:	VERI0267
Serial Number:	1	Date:	05/04/2017
Customer:	Veris Industries, Inc.	Temperature:	23.4°C
Attendees:	Rich Soennichsen	Relative Humidity:	51.4%
Customer Project:	None	Bar. Pressure:	1012 mb
Tested By:	Brandon Hobbs	Job Site:	EV07
Power:	24VDC	Configuration:	VERI0267-2

TEST SPECIFICATIONS

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

TEST PARAMETERS

Run #:	2	Line:	Neutral	Add. Ext. Attenuation (dB):	0

COMMENTS

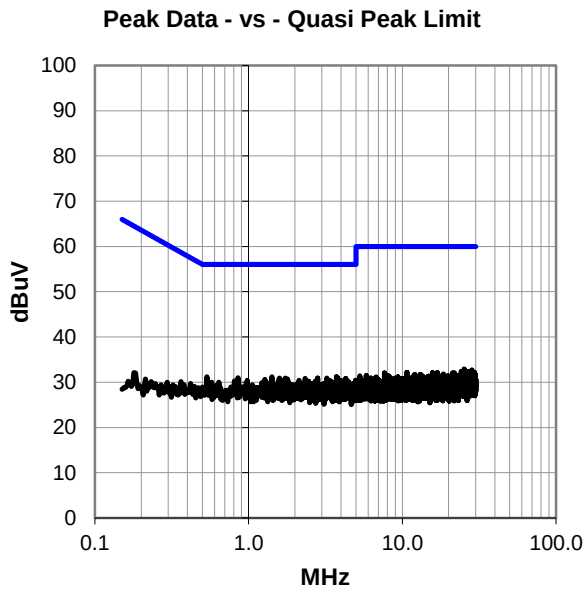
EUT was powered by client provided unfiltered 110 VAC to 24VDC transformer.

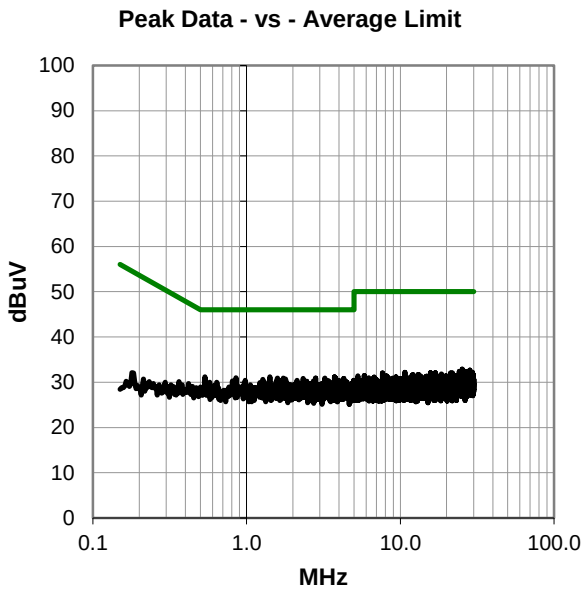
EUT OPERATING MODES

On, BLE Continuous Tx, Mid Ch. 2440 MHz

DEVIATIONS FROM TEST STANDARD

None





AC – POWERLINE CONDUCTED EMISSIONS

WTD.2017.03.21

RESULTS - Run #2

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.534	11.7	19.5	31.2	56.0	-24.8
1.418	11.7	19.5	31.2	56.0	-24.8
3.728	11.4	19.8	31.2	56.0	-24.8
0.851	11.5	19.5	31.0	56.0	-25.0
3.784	11.2	19.8	31.0	56.0	-25.0
1.586	11.3	19.6	30.9	56.0	-25.1
1.736	11.3	19.6	30.9	56.0	-25.1
2.814	11.2	19.7	30.9	56.0	-25.1
3.228	11.1	19.8	30.9	56.0	-25.1
2.336	11.2	19.6	30.8	56.0	-25.2
4.287	11.0	19.8	30.8	56.0	-25.2
1.795	11.1	19.6	30.7	56.0	-25.3
1.277	11.1	19.5	30.6	56.0	-25.4
0.978	10.9	19.5	30.4	56.0	-25.6
1.702	10.8	19.6	30.4	56.0	-25.6
2.127	10.8	19.6	30.4	56.0	-25.6
2.351	10.8	19.6	30.4	56.0	-25.6
3.873	10.6	19.8	30.4	56.0	-25.6
3.970	10.6	19.8	30.4	56.0	-25.6
4.981	10.6	19.8	30.4	56.0	-25.6
0.810	10.8	19.5	30.3	56.0	-25.7
2.717	10.6	19.7	30.3	56.0	-25.7
3.411	10.5	19.8	30.3	56.0	-25.7
1.557	10.6	19.6	30.2	56.0	-25.8
2.459	10.5	19.7	30.2	56.0	-25.8
4.433	10.3	19.8	30.1	56.0	-25.9

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.534	11.7	19.5	31.2	46.0	-14.8
1.418	11.7	19.5	31.2	46.0	-14.8
3.728	11.4	19.8	31.2	46.0	-14.8
0.851	11.5	19.5	31.0	46.0	-15.0
3.784	11.2	19.8	31.0	46.0	-15.0
1.586	11.3	19.6	30.9	46.0	-15.1
1.736	11.3	19.6	30.9	46.0	-15.1
2.814	11.2	19.7	30.9	46.0	-15.1
3.228	11.1	19.8	30.9	46.0	-15.1
2.336	11.2	19.6	30.8	46.0	-15.2
4.287	11.0	19.8	30.8	46.0	-15.2
1.795	11.1	19.6	30.7	46.0	-15.3
1.277	11.1	19.5	30.6	46.0	-15.4
0.978	10.9	19.5	30.4	46.0	-15.6
1.702	10.8	19.6	30.4	46.0	-15.6
2.127	10.8	19.6	30.4	46.0	-15.6
2.351	10.8	19.6	30.4	46.0	-15.6
3.873	10.6	19.8	30.4	46.0	-15.6
3.970	10.6	19.8	30.4	46.0	-15.6
4.981	10.6	19.8	30.4	46.0	-15.6
0.810	10.8	19.5	30.3	46.0	-15.7
2.717	10.6	19.7	30.3	46.0	-15.7
3.411	10.5	19.8	30.3	46.0	-15.7
1.557	10.6	19.6	30.2	46.0	-15.8
2.459	10.5	19.7	30.2	46.0	-15.8
4.433	10.3	19.8	30.1	46.0	-15.9

CONCLUSION

Pass

Tested By

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	Weinschel Corp	3330A-6	AUF	12/5/2016	12/5/2017
Generator - Signal	Agilent	E8257D	TGX	12/21/2015	12/21/2017
Meter - Power	Gigatronics	8651A	SPM	4/26/2017	4/26/2018
Power Sensor	Gigatronics	80701A	SPL	4/26/2017	4/26/2018
Cable	Micro-Coax	UFD150A-1-0720-200200	EVH	6/7/2016	6/7/2017
Attenuator	S.M. Electronics	SA26B-20	AUY	6/27/2016	6/27/2017
Block - DC	Fairview Microwave	SD3379	AMQ	6/8/2016	6/8/2017
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	8/10/2016	8/10/2017

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 2017.01.27 XMit 2017.02.08

EUT:	PX3			**Work Order:**	VERI0267
Serial Number:	1			**Date:**	05/01/17
Customer:	Veris Industries, Inc.			**Temperature:**	21.9 °C
Attendees:	Rich Soennichsen			**Humidity:**	37.5% RH
Project:	None			**Barometric Pres.:**	1026 mbar
Tested by:	Brandon Hobbs	**Power:**	24VDC	**Job Site:**	EV06

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

COMMENTS

EUT was powered by client provided Power Supply.

DEVIATIONS FROM TEST STANDARD

None

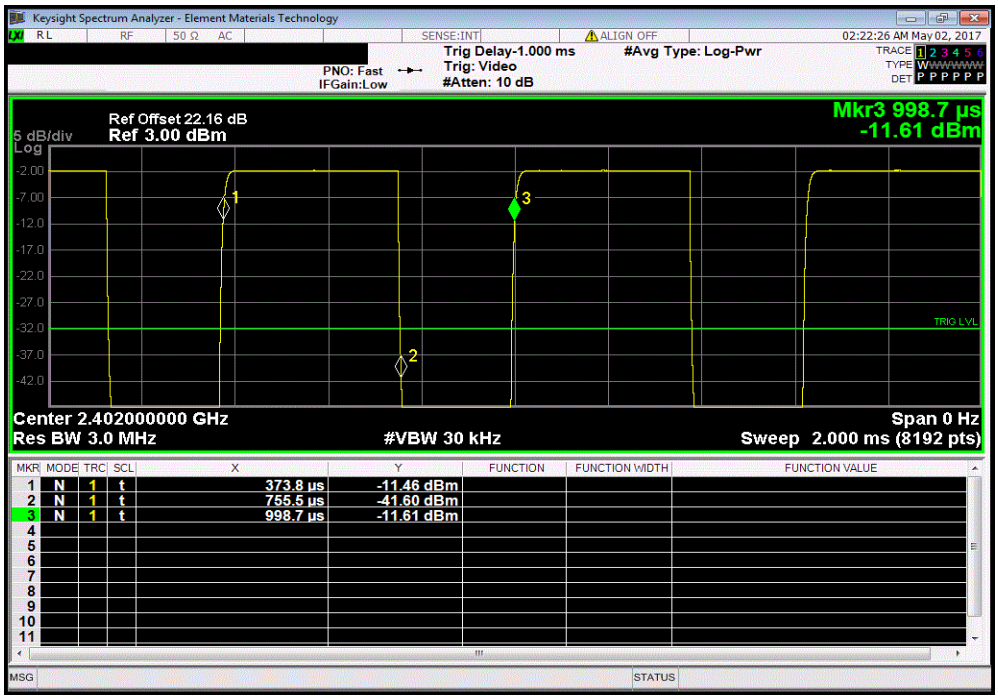
Configuration #	1	Signature

	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
BLE/GFSK Low Channel, 2402 MHz	381.7 us	624.9 us	1	61.1	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, 2440 MHz	382.4 us	624.8 us	1	61.2	N/A	N/A
BLE/GFSK Mid Channel, 2440 MHz	N/A	N/A	5	N/A	N/A	N/A
BLE/GFSK High Channel, 2480 MHz	382.6 us	624.8 us	1	61.2	N/A	N/A
BLE/GFSK High Channel, 2480 MHz	N/A	N/A	5	N/A	N/A	N/A

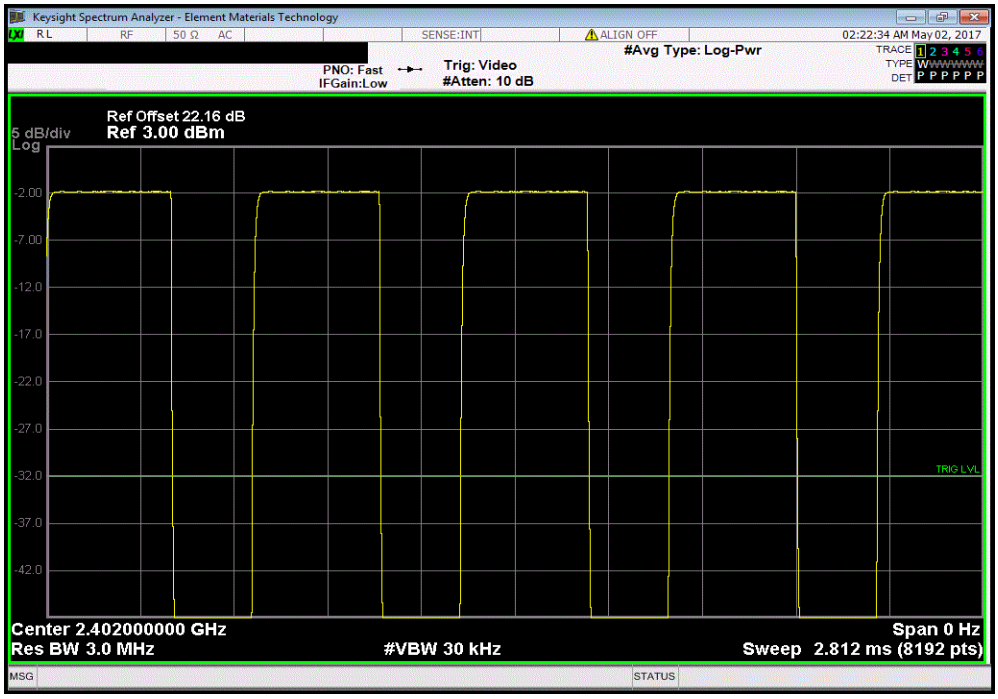
DUTY CYCLE

TbtTx 2017.01.27 XMit 2017.02.08

BLE/GFSK Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	381.7 us	624.9 us	1	61.1	N/A	N/A



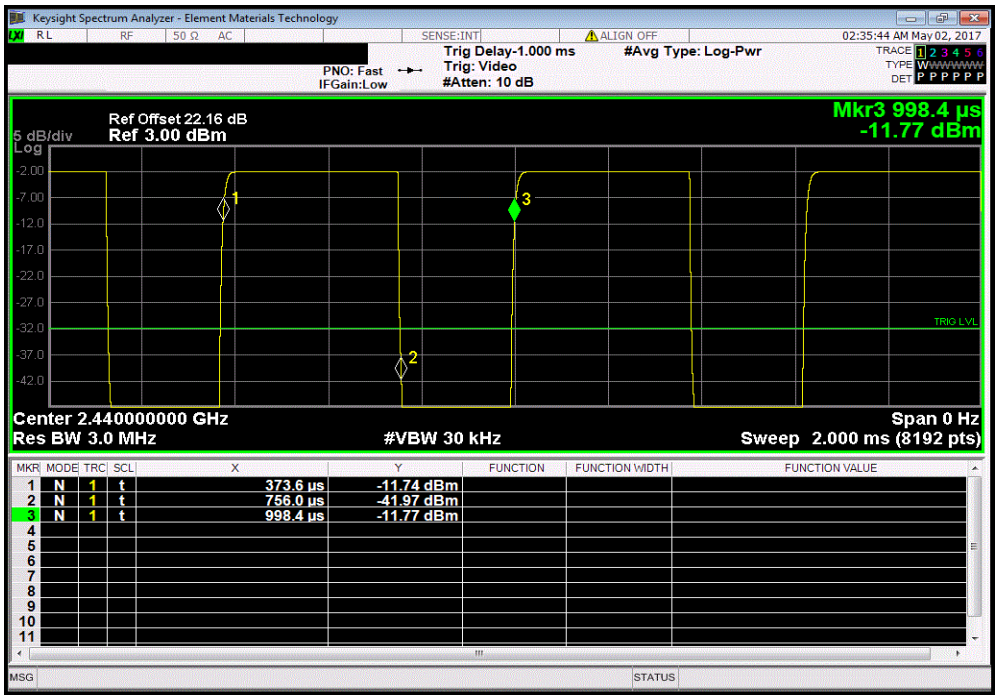
BLE/GFSK Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



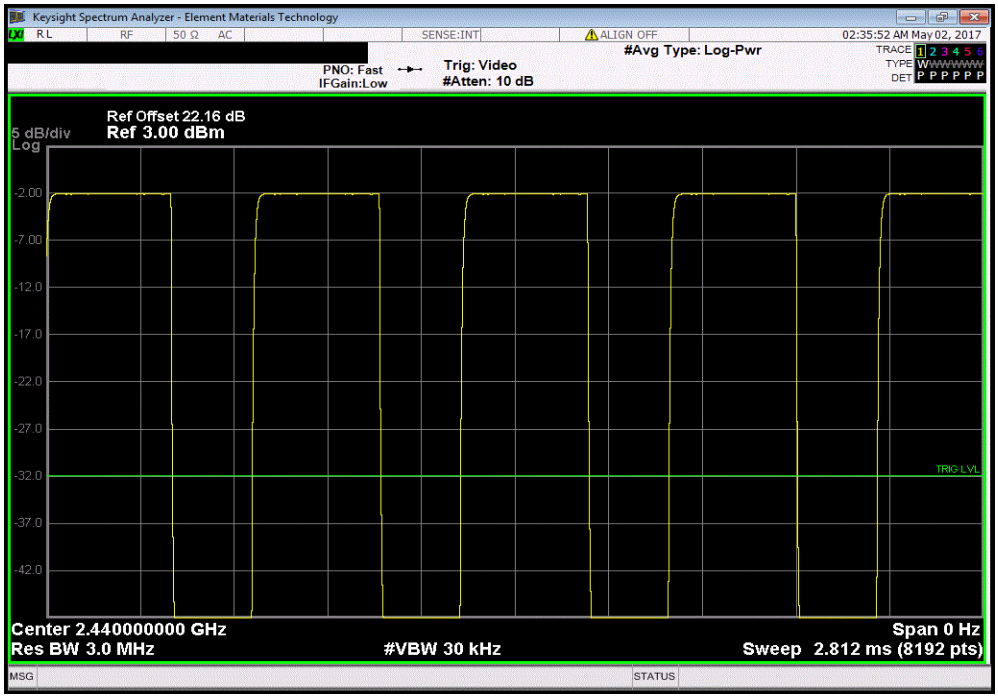
DUTY CYCLE

TbtTx 2017.01.27 XMit 2017.02.08

BLE/GFSK Mid Channel, 2440 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	382.4 us	624.8 us	1	61.2	N/A	N/A



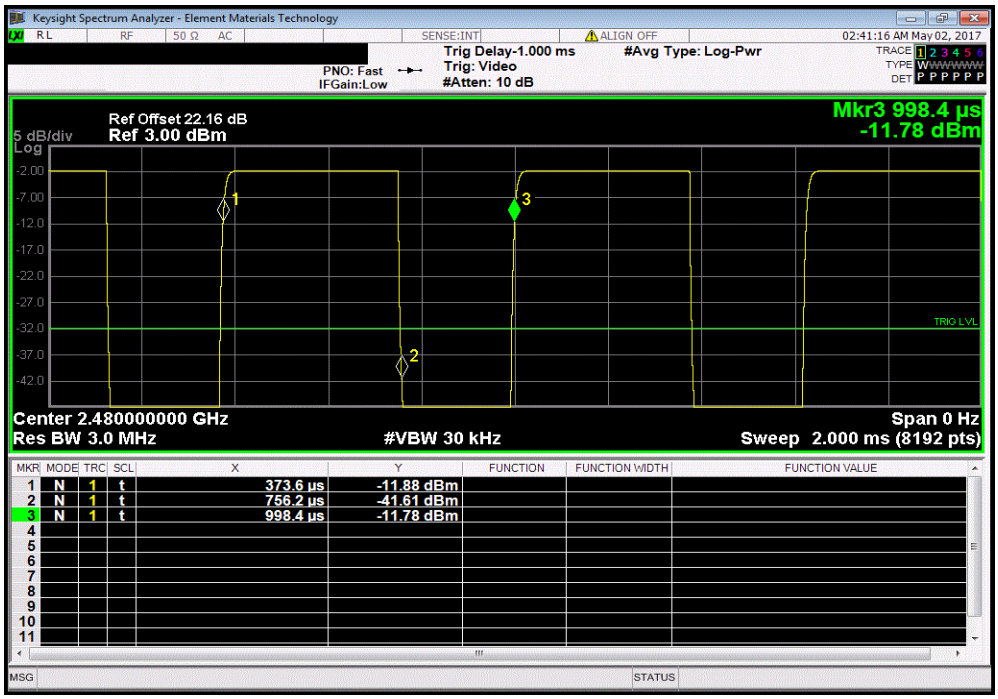
BLE/GFSK Mid Channel, 2440 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



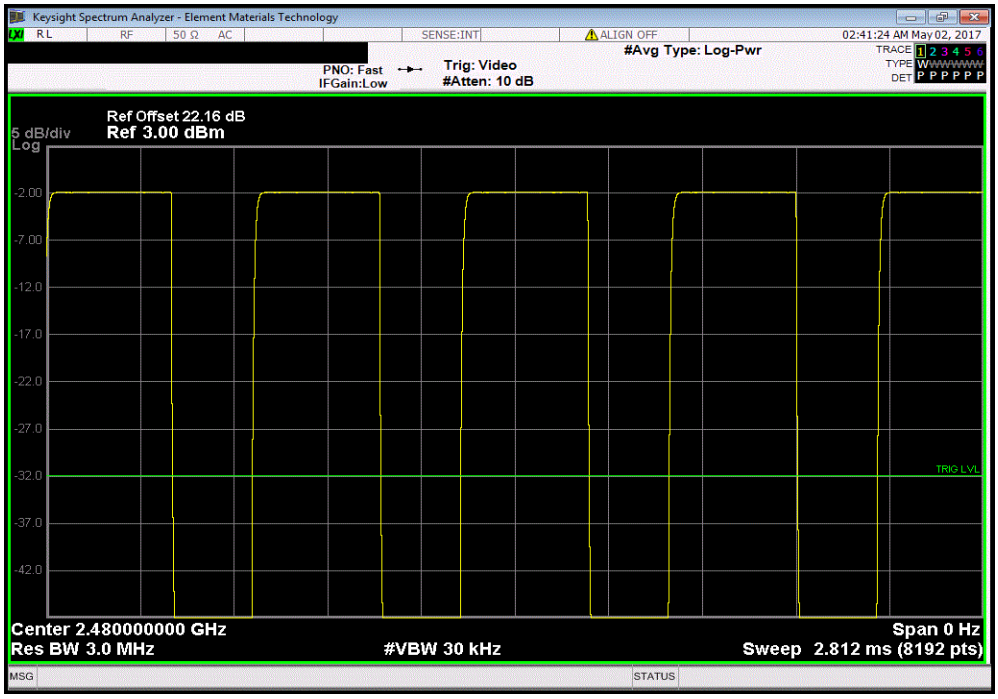
DUTY CYCLE

TbtTx 2017.01.27 XMit 2017.02.08

BLE/GFSK High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	382.6 us	624.8 us	1	61.2	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
Attenuator	Weinschel Corp	3330A-6	AUF	12/5/2016	12/5/2017
Generator - Signal	Agilent	E8257D	TGX	12/21/2015	12/21/2017
Meter - Power	Gigatronics	8651A	SPM	4/26/2017	4/26/2018
Power Sensor	Gigatronics	80701A	SPL	4/26/2017	4/26/2018
Cable	Micro-Coax	UFD150A-1-0720-200200	EVH	6/7/2016	6/7/2017
Attenuator	S.M. Electronics	SA26B-20	AUY	6/27/2016	6/27/2017
Block - DC	Fairview Microwave	SD3379	AMQ	6/8/2016	6/8/2017
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	8/10/2016	8/10/2017

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 2017.01.27 XMit 2017.02.08

EUT:	PX3			**Work Order:**	VERI0267
Serial Number:	1			**Date:**	05/01/17
Customer:	Veris Industries, Inc.			**Temperature:**	21.9 °C
Attendees:	Rich Soennichsen			**Humidity:**	37.6% RH
Project:	None			**Barometric Pres.:**	1027 mbar
Tested by:	Brandon Hobbs	**Power:**	24VDC	**Job Site:**	EV06

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

COMMENTS

EUT was powered by client provided Power Supply.

DEVIATIONS FROM TEST STANDARD

None

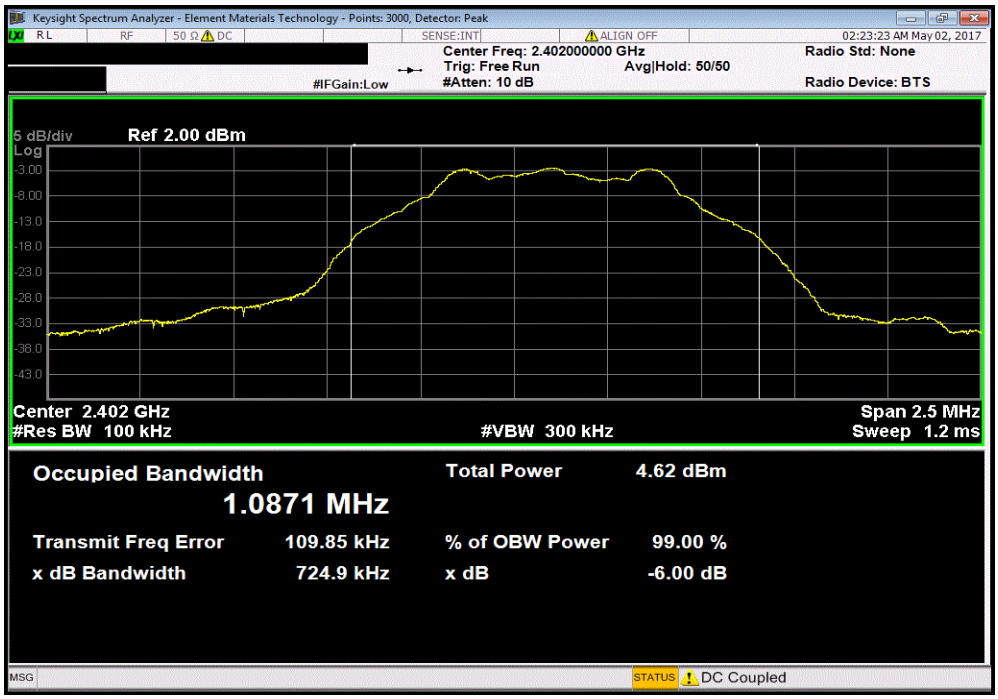
Configuration #	1	Signature

	Value	Limit (≥)	Result
BLE/GFSK Low Channel, 2402 MHz	724.898 kHz	500 kHz	Pass
BLE/GFSK Mid Channel, 2440 MHz	729.826 kHz	500 kHz	Pass
BLE/GFSK High Channel, 2480 MHz	711.525 kHz	500 kHz	Pass

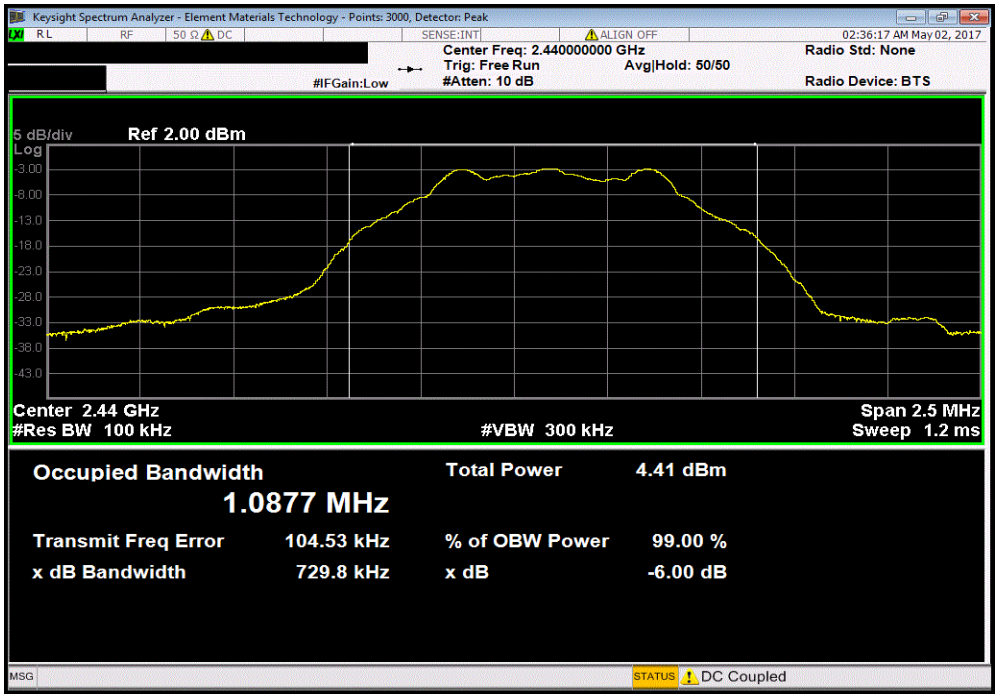
OCCUPIED BANDWIDTH

TbtTx 2017.01.27 XMit 2017.02.08

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



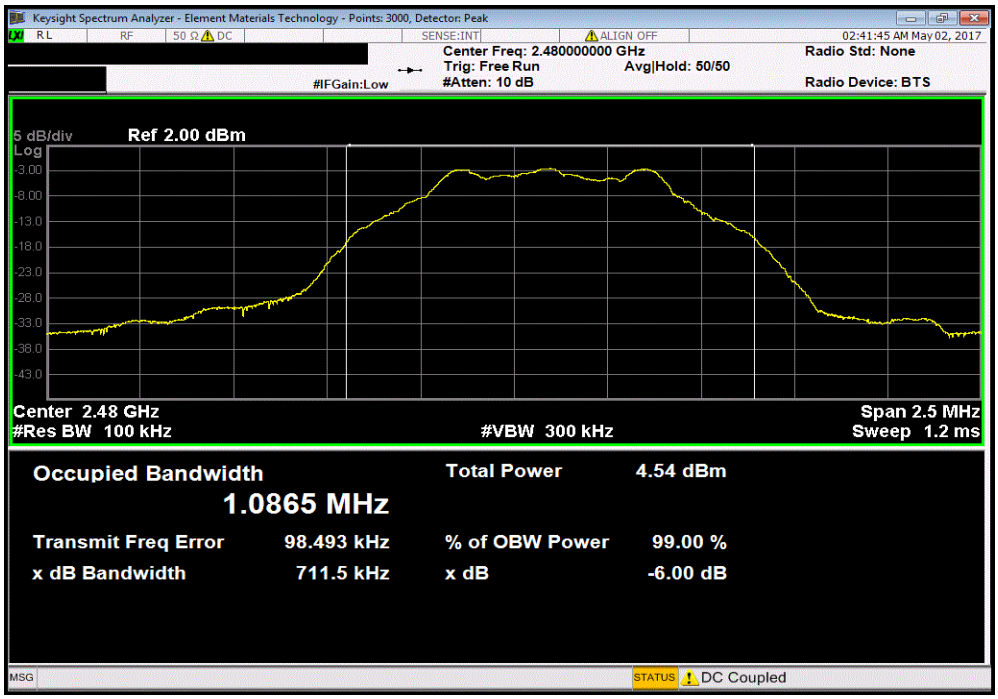
BLE/GFSK Mid Channel, 2440 MHz						
				Value	Limit (≥)	Result
				729.826 kHz	500 kHz	Pass



OCCUPIED BANDWIDTH

TbtTx 2017.01.27 XMit 2017.02.08

BLE/GFSK High Channel, 2480 MHz						
				Value	Limit (≥)	Result
				711.525 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
Generator - Signal	Agilent	E8257D	TGX	12/21/2015	12/21/2017
Attenuator	Weinschel Corp	3330A-6	AUF	12/5/2016	12/5/2017
Meter - Power	Gigatronics	8651A	SPM	4/26/2017	4/26/2018
Power Sensor	Gigatronics	80701A	SPL	4/26/2017	4/26/2018
Cable	Micro-Coax	UFD150A-1-0720-200200	EVH	6/7/2016	6/7/2017
Attenuator	S.M. Electronics	SA26B-20	AUY	6/27/2016	6/27/2017
Block - DC	Fairview Microwave	SD3379	AMQ	6/8/2016	6/8/2017
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	8/10/2016	8/10/2017

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 2017.01.27 XMit 2017.02.08

EUT:	PX3			**Work Order:**	VERI0267
Serial Number:	1			**Date:**	05/01/17
Customer:	Veris Industries, Inc.			**Temperature:**	22 °C
Attendees:	Rich Soennichsen			**Humidity:**	37.5% RH
Project:	None			**Barometric Pres.:**	1027 mbar
Tested by:	Brandon Hobbs	**Power:**	24VDC	**Job Site:**	EV06

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

COMMENTS

EUT was powered by client provided Power Supply. The client's maximum power setting was set at 0 dbm for all testing.

DEVIATIONS FROM TEST STANDARD

None

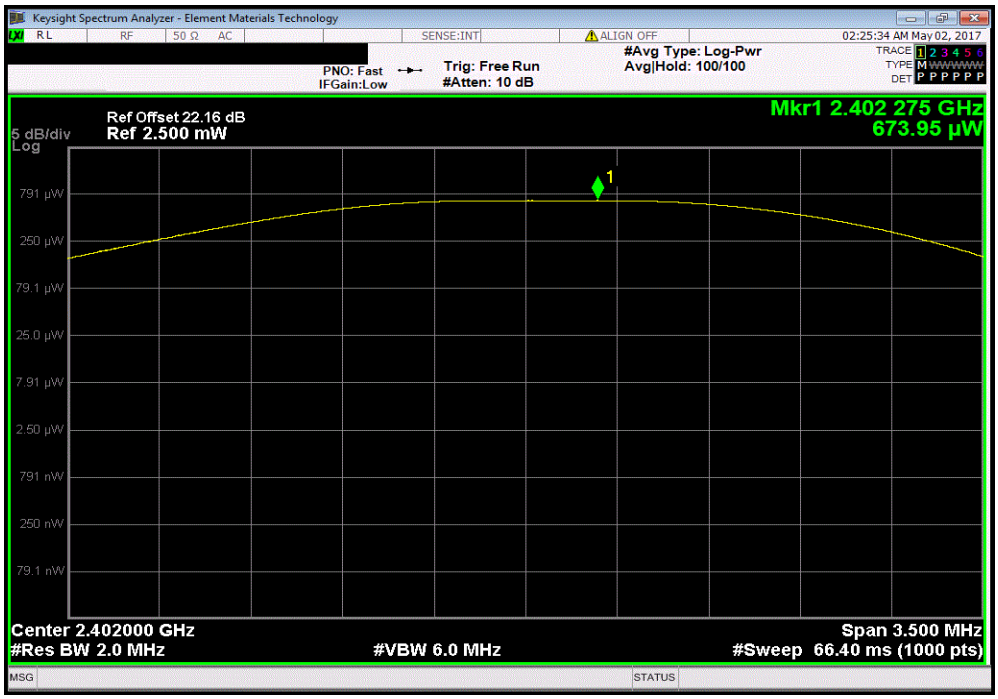
Configuration #	1	Signature

	Value	Limit (<)	Result
BLE/GFSK Low Channel, 2402 MHz	673.95 uW	1 W	Pass
BLE/GFSK Mid Channel, 2440 MHz	639.49 uW	1 W	Pass
BLE/GFSK High Channel, 2480 MHz	666.42 uW	1 W	Pass

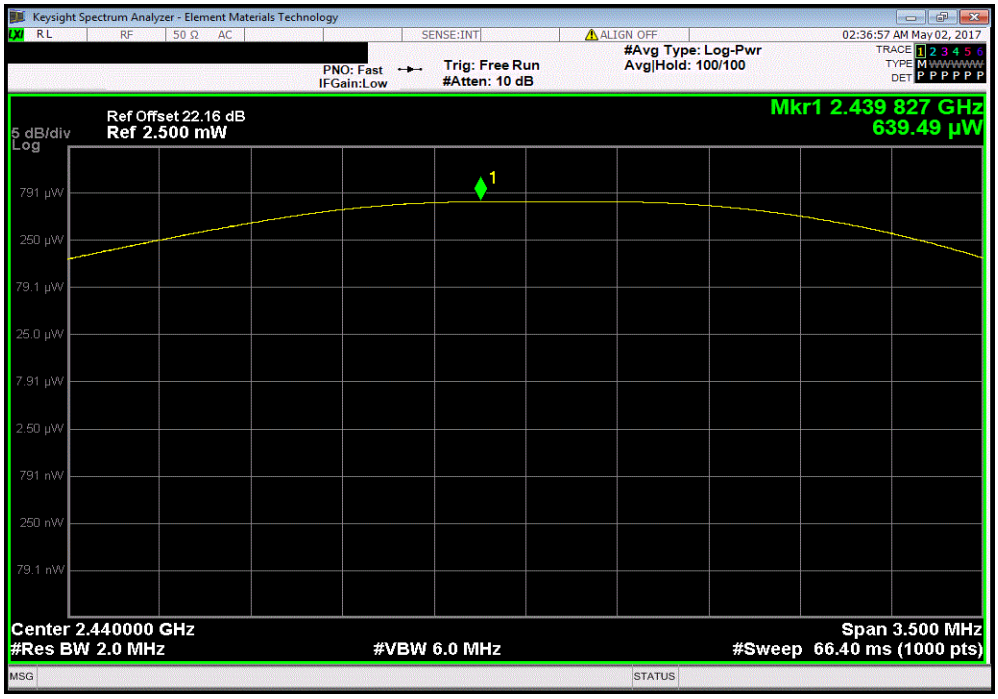
OUTPUT POWER

TbtTx 2017.01.27 XMit 2017.02.08

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



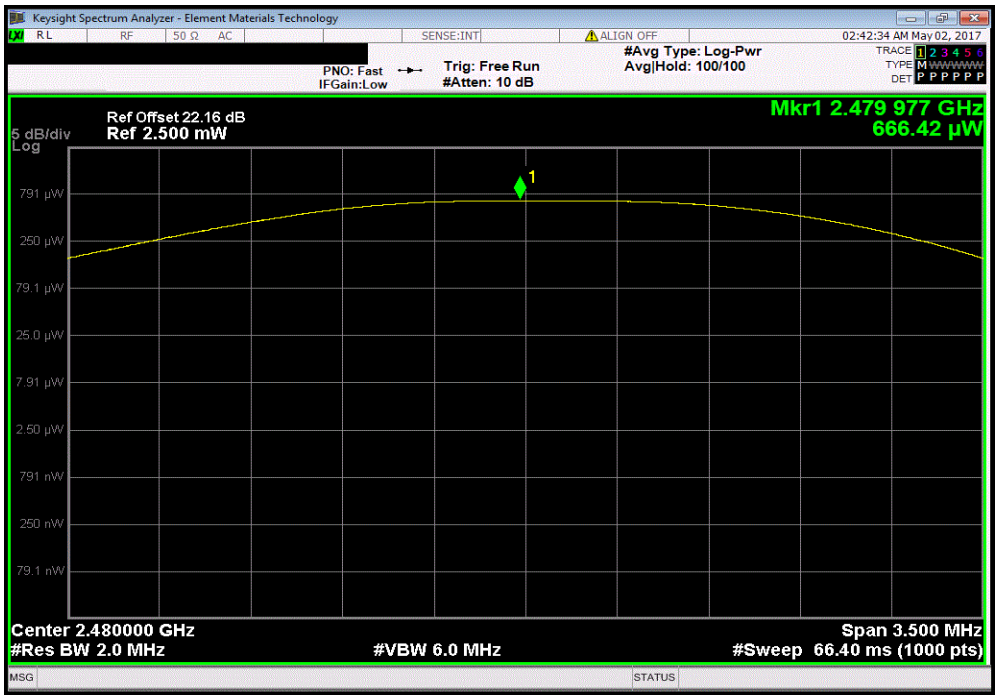
BLE/GFSK Mid Channel, 2440 MHz						
				Value	Limit (<)	Result
				639.49 uW	1 W	Pass



OUTPUT POWER

TbtTx 2017.01.27 XMit 2017.02.08

BLE/GFSK High Channel, 2480 MHz						
				Value	Limit (<)	Result
				666.42 uW	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
Attenuator	Weinschel Corp	3330A-6	AUF	12/5/2016	12/5/2017
Generator - Signal	Agilent	E8257D	TGX	12/21/2015	12/21/2017
Meter - Power	Gigatronics	8651A	SPM	4/26/2017	4/26/2018
Power Sensor	Gigatronics	80701A	SPL	4/26/2017	4/26/2018
Cable	Micro-Coax	UFD150A-1-0720-200200	EVH	6/7/2016	6/7/2017
Attenuator	S.M. Electronics	SA26B-20	AUY	6/27/2016	6/27/2017
Block - DC	Fairview Microwave	SD3379	AMQ	6/8/2016	6/8/2017
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFN	4/13/2017	4/13/2018

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 2017.01.27 XMit 2017.02.08

EUT:	**PX3**			**Work Order:**	**VERI0267**
Serial Number:	**1**			**Date:**	**05/01/17**
Customer:	**Veris Industries, Inc.**			**Temperature:**	**21.9 °C**
Attendees:	**Rich Soennichsen**			**Humidity:**	**37.4% RH**
Project:	**None**			**Barometric Pres.:**	**1027 mbar**
Tested by:	**Brandon Hobbs**	**Power:**	**24VDC**	**Job Site:**	**EV06**

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

COMMENTS

EUT was powered by client provided Power Supply.

DEVIATIONS FROM TEST STANDARD

None

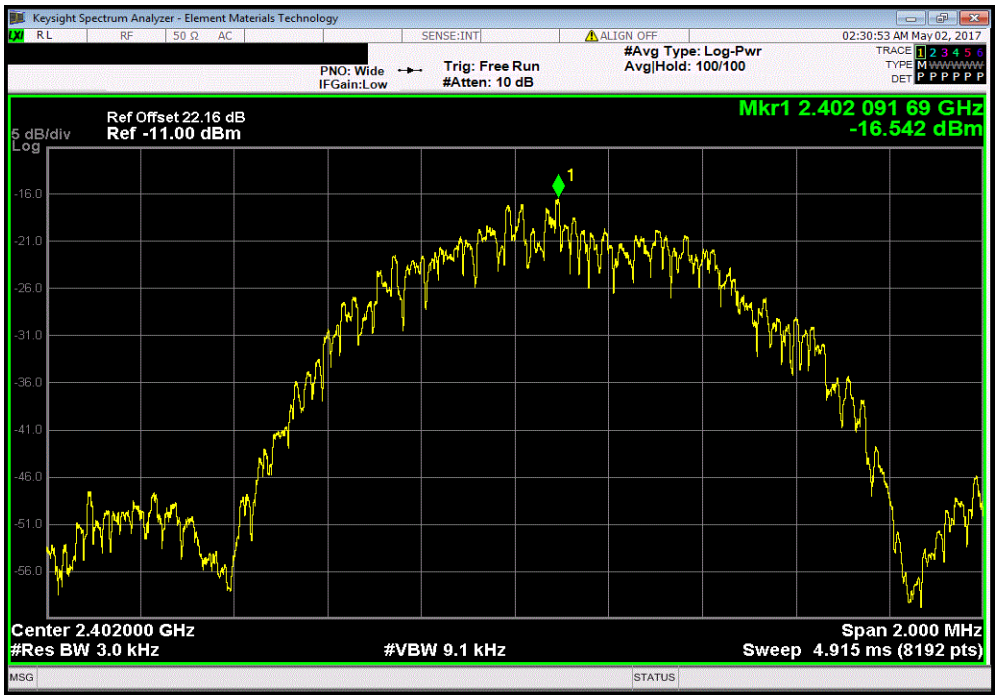
Configuration #	**1**	*Signature*

	Value dBm/3kHz	**Limit < dBm/3kHz**	**Results**
BLE/GFSK Low Channel, 2402 MHz	-16.542	8	Pass
BLE/GFSK Mid Channel, 2440 MHz	-16.687	8	Pass
BLE/GFSK High Channel, 2480 MHz	-16.282	8	Pass

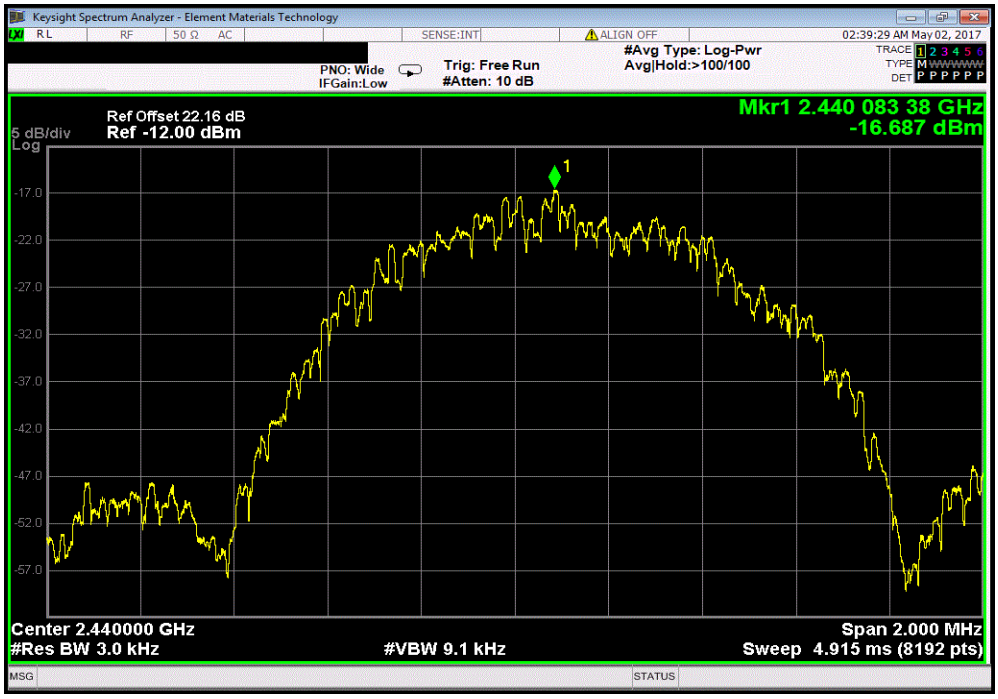
POWER SPECTRAL DENSITY

TbtTx 2017.01.27 XMit 2017.02.08

BLE/GFSK Low Channel, 2402 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-16.542	8	Pass



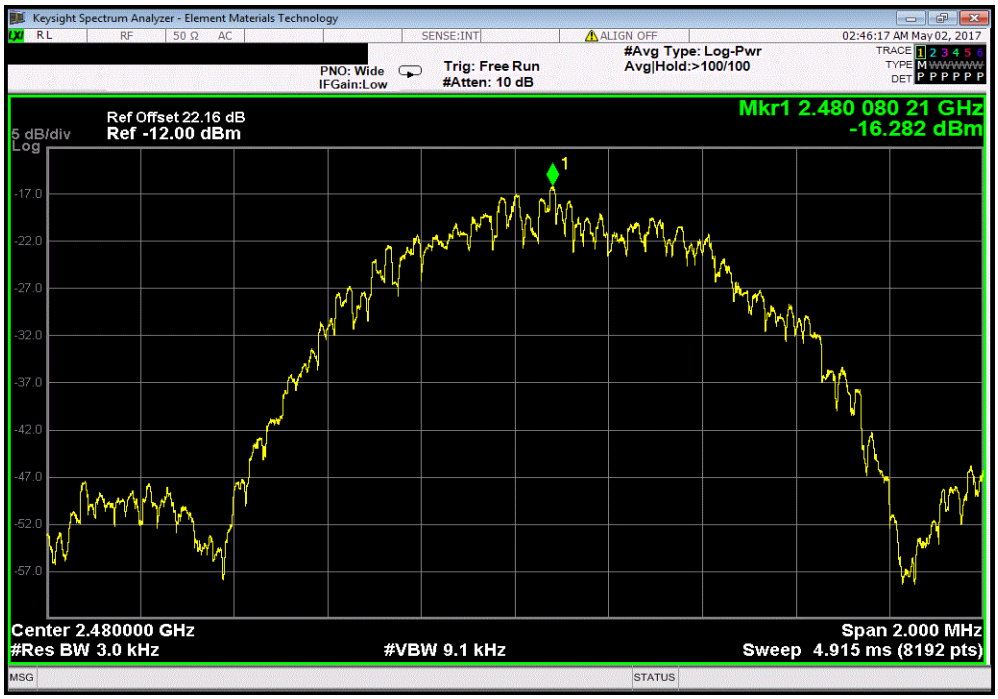
BLE/GFSK Mid Channel, 2440 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-16.687	8	Pass



POWER SPECTRAL DENSITY

TbtTx 2017.01.27 XMit 2017.02.08

BLE/GFSK High Channel, 2480 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-16.282	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
Attenuator	Weinschel Corp	3330A-6	AUF	12/5/2016	12/5/2017
Generator - Signal	Agilent	E8257D	TGX	12/21/2015	12/21/2017
Meter - Power	Gigatronics	8651A	SPM	4/26/2017	4/26/2018
Power Sensor	Gigatronics	80701A	SPL	4/26/2017	4/26/2018
Cable	Micro-Coax	UFD150A-1-0720-200200	EVH	6/7/2016	6/7/2017
Block - DC	Fairview Microwave	SD3379	AMQ	6/8/2016	6/8/2017
Attenuator	S.M. Electronics	SA26B-20	AUY	6/27/2016	6/27/2017
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	8/10/2016	8/10/2017

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 2017.01.27 XMit 2017.02.08

EUT:	PX3			**Work Order:**	VERI0267
Serial Number:	1			**Date:**	05/01/17
Customer:	Veris Industries, Inc.			**Temperature:**	22 °C
Attendees:	Rich Soennichsen			**Humidity:**	37.3% RH
Project:	None			**Barometric Pres.:**	1027 mbar
Tested by:	Brandon Hobbs	**Power:**	24VDC	**Job Site:**	EV06

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

COMMENTS

EUT was powered by client provided Power Supply.

DEVIATIONS FROM TEST STANDARD

None

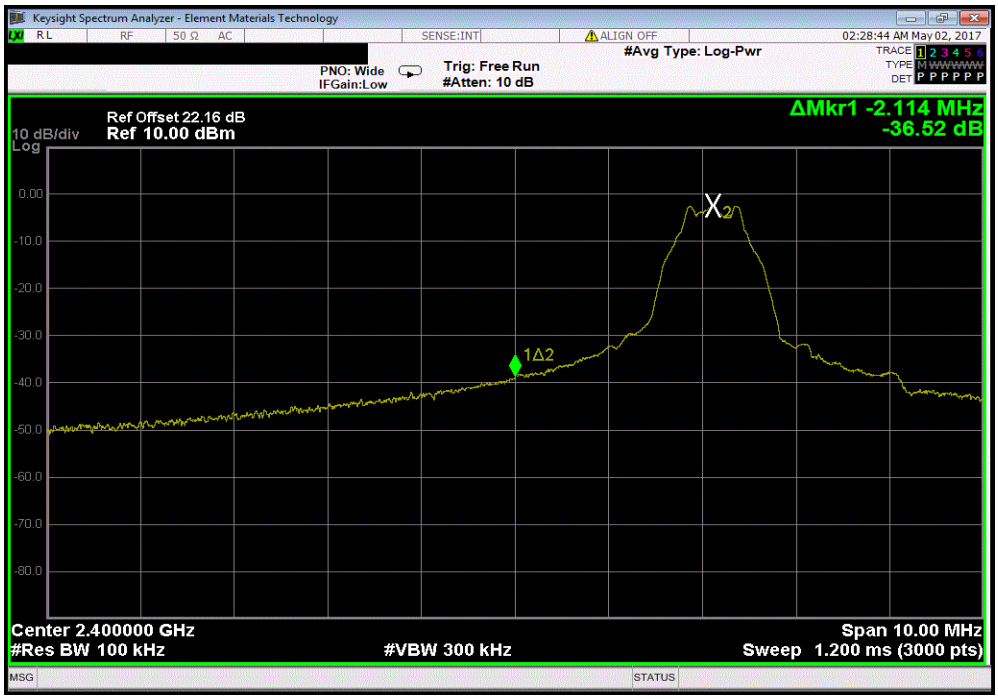
Configuration #	1	*Signature*

	Value (dBc)	Limit ≤ (dBc)	Result
BLE/GFSK Low Channel, 2402 MHz	-36.52	-20	Pass
BLE/GFSK High Channel, 2480 MHz	-40.56	-20	Pass

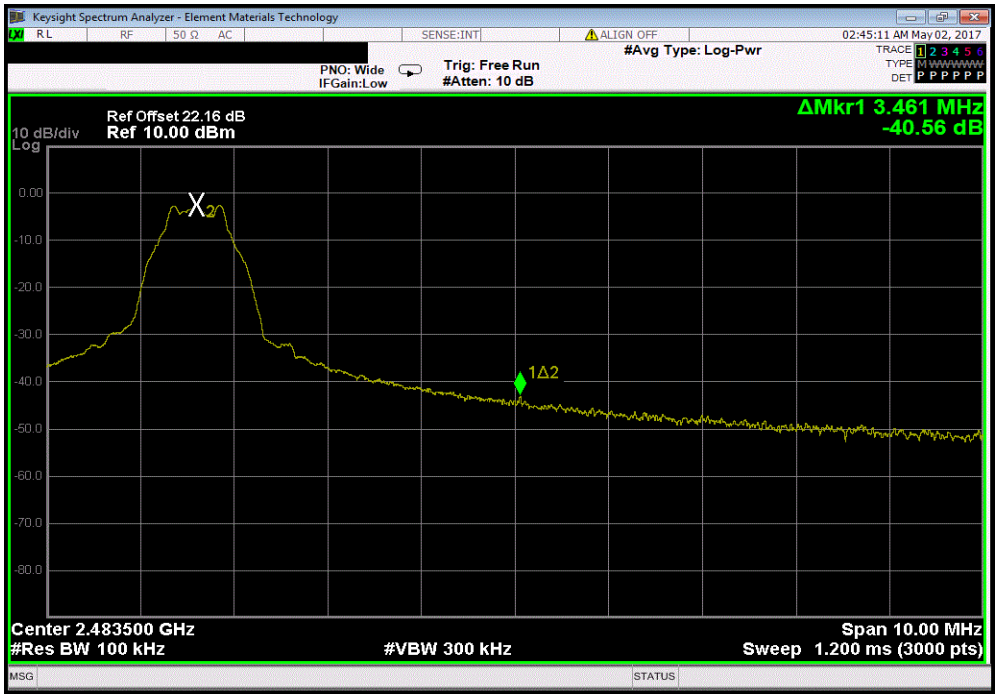
BAND EDGE COMPLIANCE

TbtTx 2017.01.27 XMit 2017.02.08

BLE/GFSK Low Channel, 2402 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-36.52	-20	Pass



BLE/GFSK High Channel, 2480 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-40.56	-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	Weinschel Corp	3330A-6	AUF	12/5/2016	12/5/2017
Generator - Signal	Agilent	E8257D	TGX	12/21/2015	12/21/2017
Meter - Power	Gigatronics	8651A	SPM	4/26/2017	4/26/2018
Power Sensor	Gigatronics	80701A	SPL	4/26/2017	4/26/2018
Cable	Micro-Coax	UFD150A-1-0720-200200	EVH	6/7/2016	6/7/2017
Attenuator	S.M. Electronics	SA26B-20	AUY	6/27/2016	6/27/2017
Block - DC	Fairview Microwave	SD3379	AMQ	6/8/2016	6/8/2017
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	8/10/2016	8/10/2017

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 2017.01.27 XMit 2017.02.08

EUT:	PX3			**Work Order:**	VERI0267
Serial Number:	1			**Date:**	05/01/17
Customer:	Veris Industries, Inc.			**Temperature:**	21.9 °C
Attendees:	Rich Soennichsen			**Humidity:**	37.5% RH
Project:	None			**Barometric Pres.:**	1026 mbar
Tested by:	Brandon Hobbs	**Power:**	24VDC	**Job Site:**	EV06

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

COMMENTS

EUT was powered by client provided Power Supply.

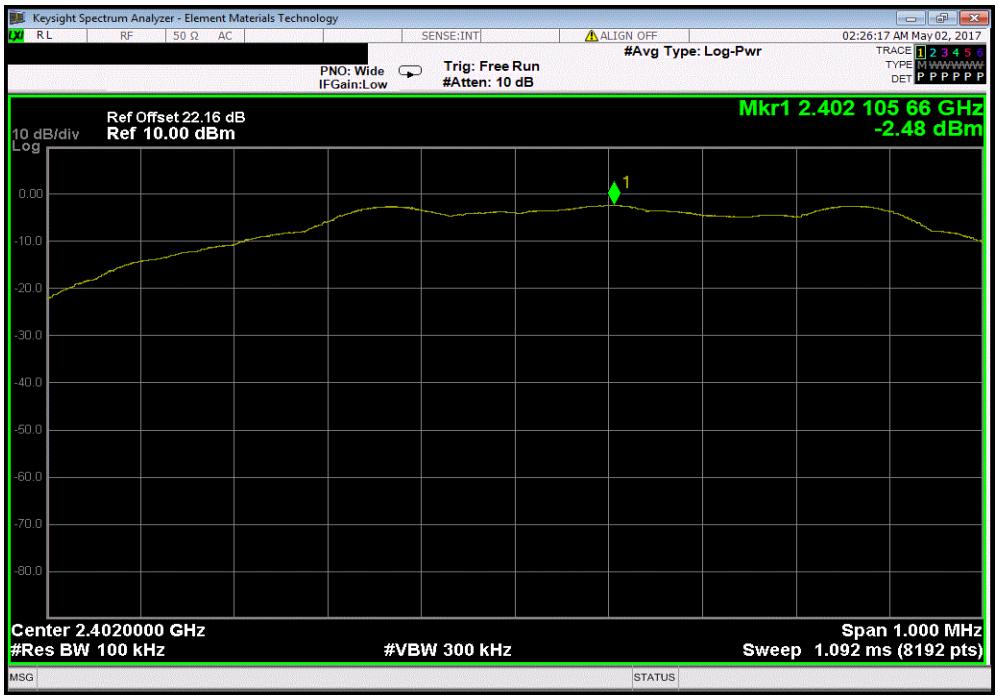
DEVIATIONS FROM TEST STANDARD

None

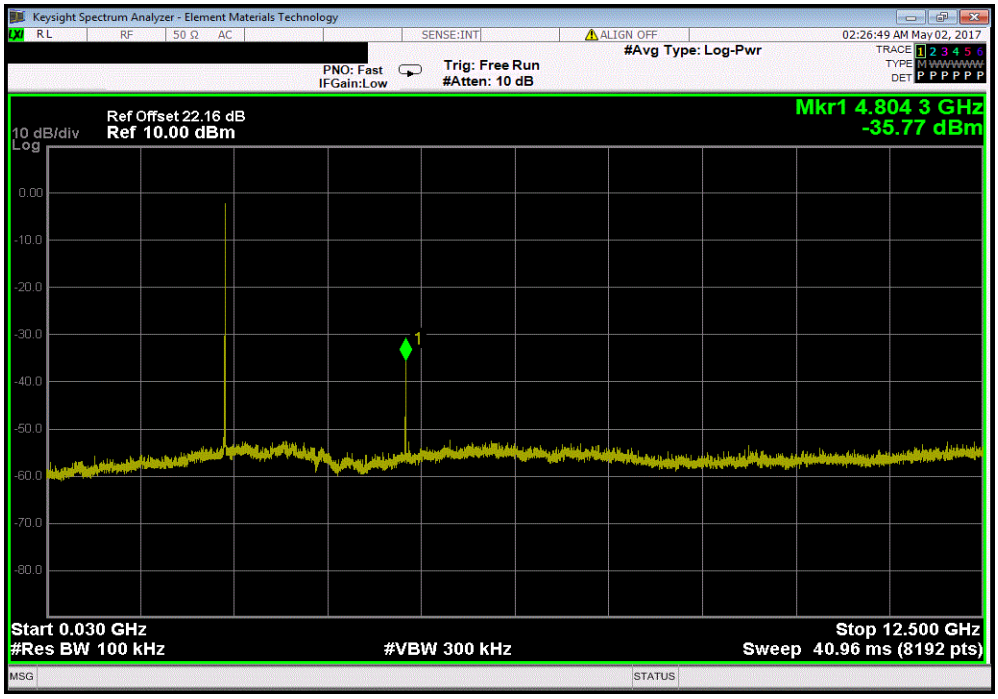
Configuration #	1	Signature

	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	-33.29	-20	Pass
BLE/GFSK Low Channel, 2402 MHz	12.5 GHz - 25 GHz	-35.28	-20	Pass
BLE/GFSK Mid Channel, 2440 MHz	Fundamental	N/A	N/A	N/A
BLE/GFSK Mid Channel, 2440 MHz	30 MHz - 12.5 GHz	-32.69	-20	Pass
BLE/GFSK Mid Channel, 2440 MHz	12.5 GHz - 25 GHz	-34.76	-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	-33.2	-20	Pass
BLE/GFSK High Channel, 2480 MHz	12.5 GHz - 25 GHz	-34.48	-20	Pass

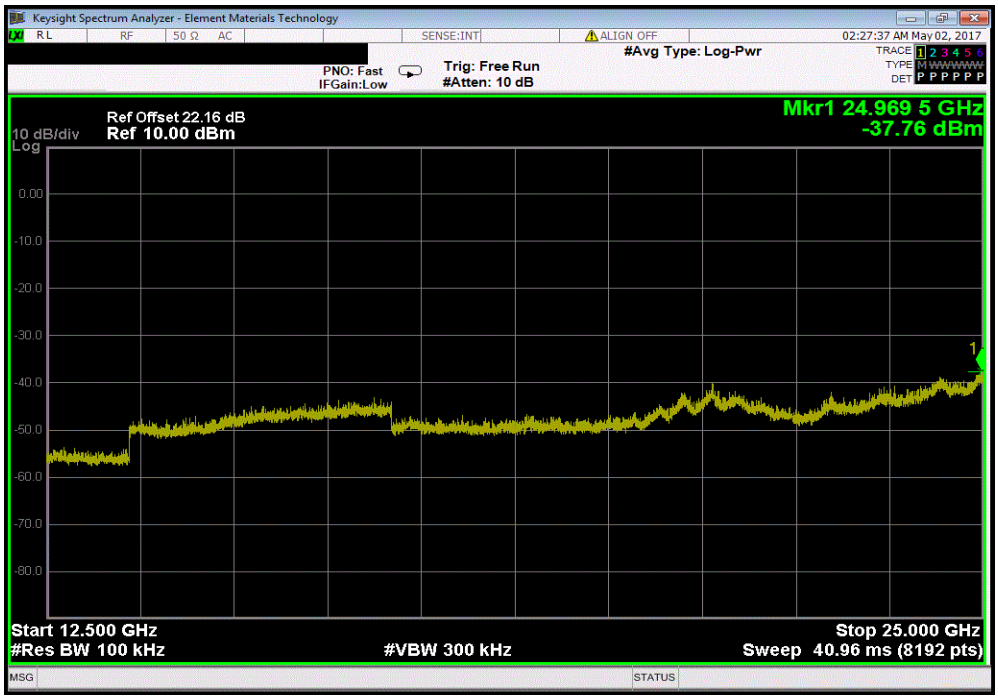
BLE/GFSK Low Channel, 2402 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



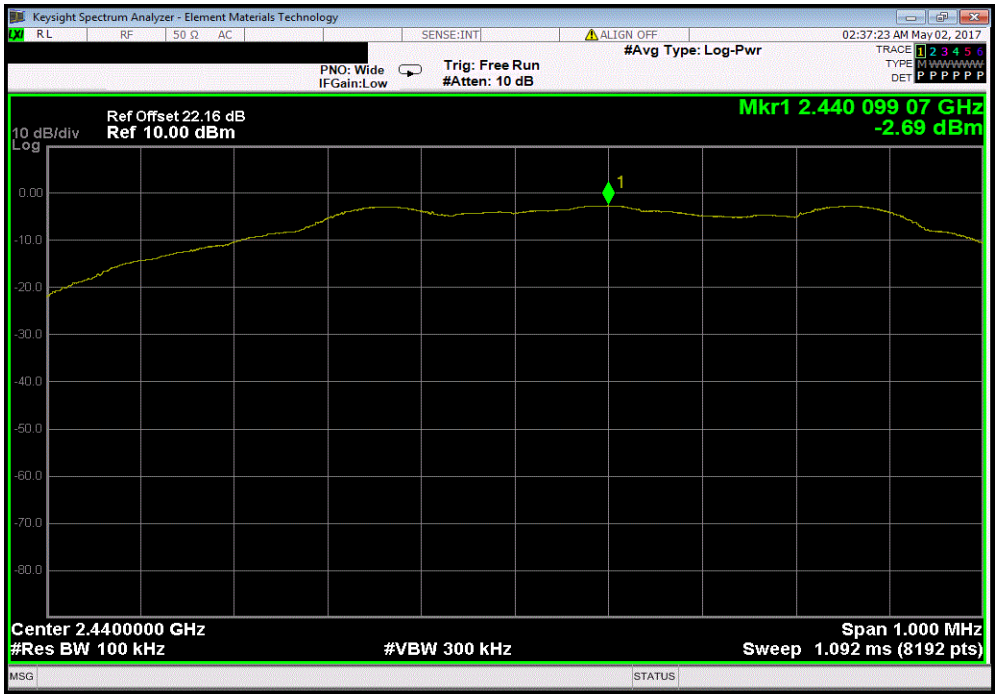
BLE/GFSK Low Channel, 2402 MHz					
Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz			-33.29	-20	Pass



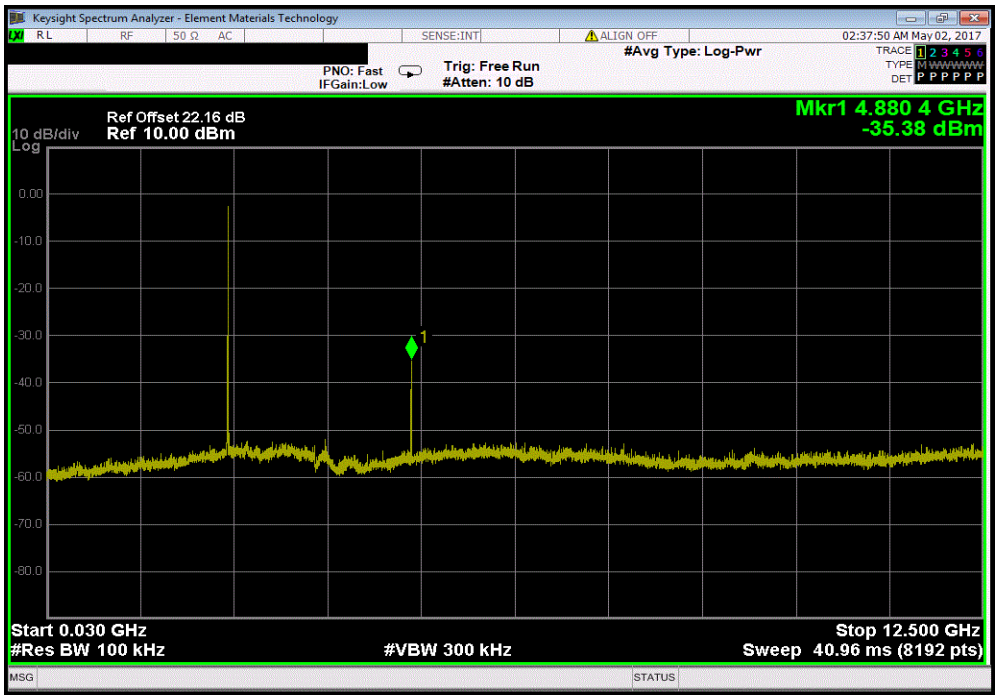
BLE/GFSK Low Channel, 2402 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-35.28	-20	Pass



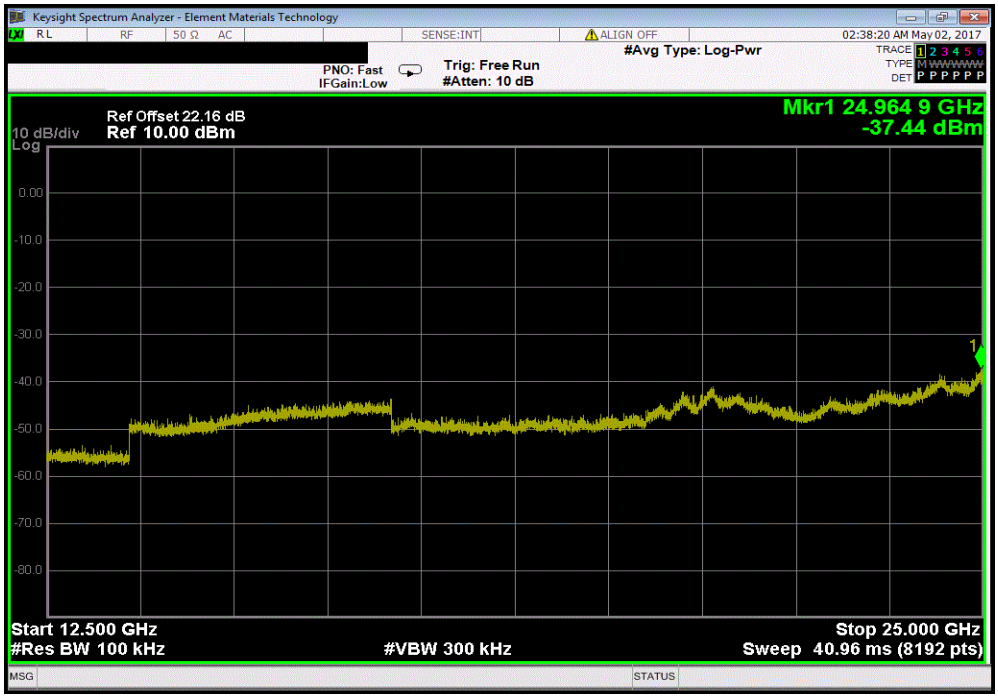
BLE/GFSK Mid Channel, 2440 MHz						
Frequency Range				Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



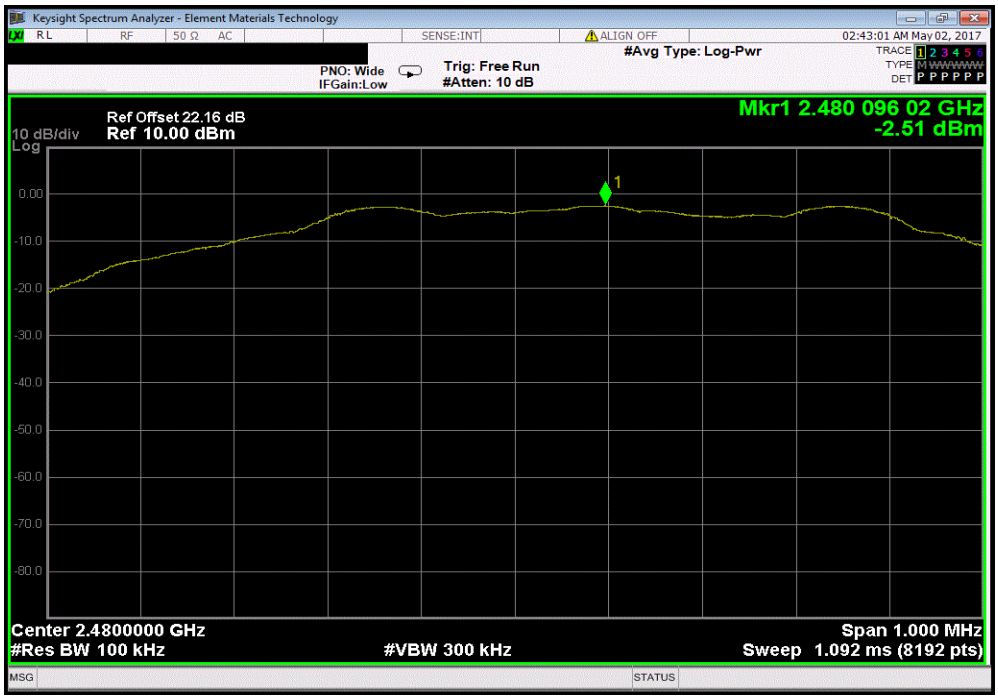
BLE/GFSK Mid Channel, 2440 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz		-32.69	-20	Pass



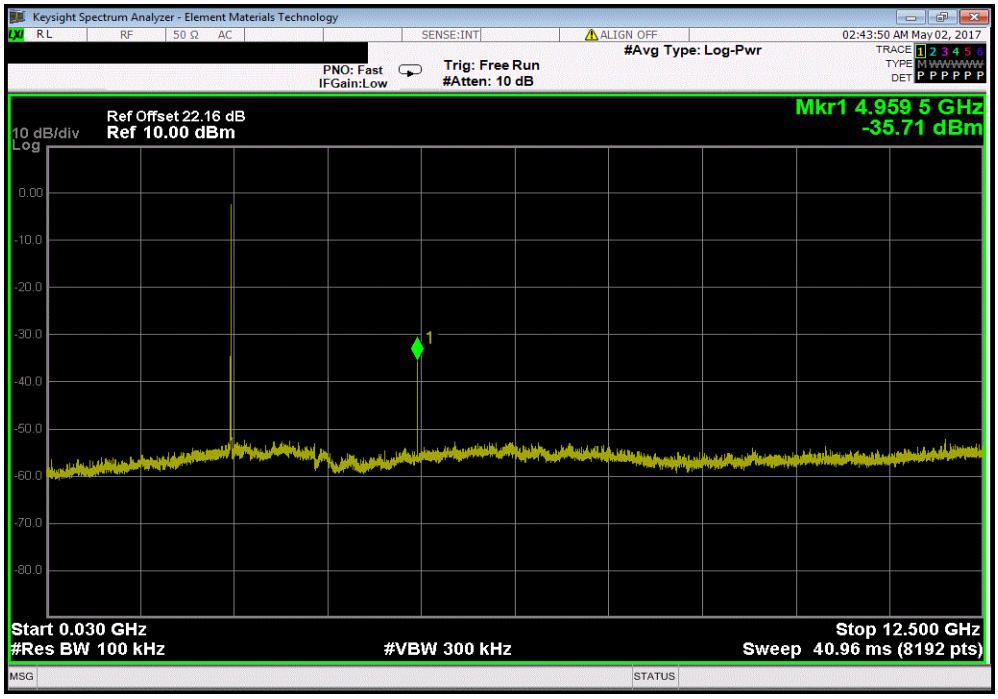
BLE/GFSK Mid Channel, 2440 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-34.76	-20	Pass



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



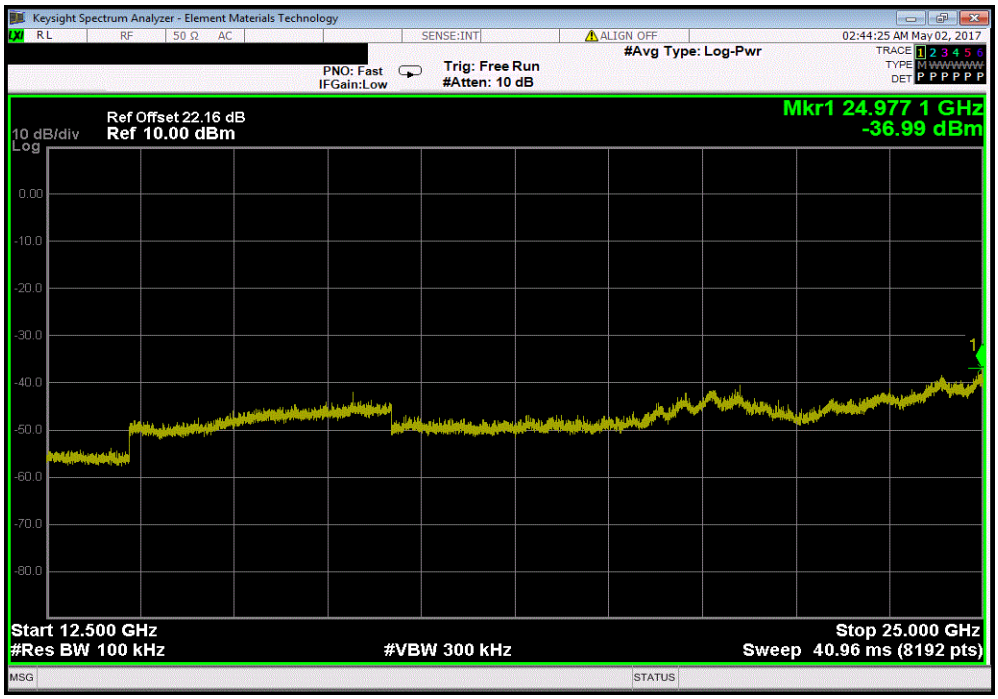
BLE/GFSK High Channel, 2480 MHz					
Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz			-33.2	-20	Pass



SPURIOUS CONDUCTED EMISSIONS

TbtTx 2017.01.27 XMit 2017.02.08

BLE/GFSK High Channel, 2480 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-34.48	-20	Pass



SPURIOUS RADIATED EMISSIONS

PSA-ESCI 2017.01.26

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

BLE Continuous Tx

CHANNELS OF OPERATION

Low Ch. 2402 MHz
Mid Ch. 2440 MHz
High Ch. 2480 MHz

POWER SETTINGS INVESTIGATED

24VDC

CONFIGURATIONS INVESTIGATED

VERI0267 - 3

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
Antenna - Standard Gain	ETS Lindgren	3160-09	AIV	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AVU	10/17/2016	12 mo
Cable	ESM Cable Corp.	KMKM-72	EVY	10/17/2016	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	2/6/2017	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AHV	NCR	0 mo
Amplifier - Pre-Amplifier	L-3 Narda-MITEQ	AMF-6F-08001200-30-10P	PAO	2/7/2017	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AHU	NCR	0 mo
Filter - High Pass	Micro-Tronics	HPM50111	HFO	2/6/2017	12 mo
Attenuator	Coaxicom	3910-10	AWX	4/19/2017	12 mo
Attenuator	Coaxicom	3910-20	AXZ	4/19/2017	12 mo
Cable	N/A	Double Ridge Horn Cables	EVB	2/6/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAG	2/6/2017	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIZ	2/3/2016	24 mo
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFN	4/13/2017	12 mo
Filter - Low Pass	Micro-Tronics	LPM50004	LFD	4/19/2017	12 mo
Cable	N/A	Bilog Cables	EVA	2/6/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AOL	2/6/2017	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AXR	6/30/2016	24 mo

TEST DESCRIPTION

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.

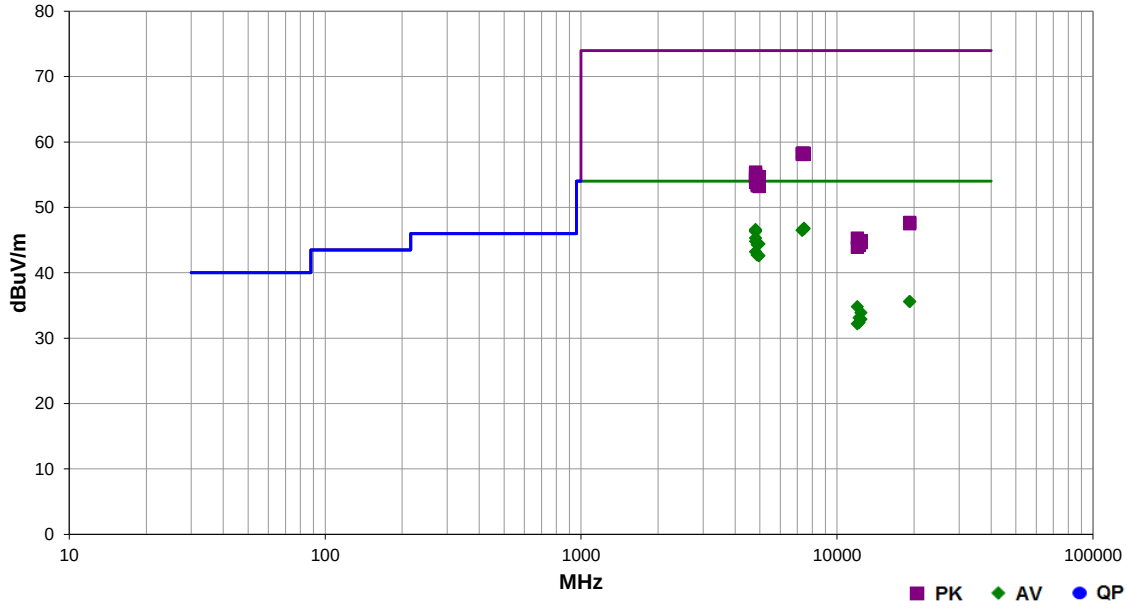
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	VERI0267	**Date:**	05/03/17		
Project:	None	**Temperature:**	22 °C		
Job Site:	EV01	**Humidity:**	49.8% RH		
Serial Number:	1	**Barometric Pres.:**	1025 mbar	**Tested by:**	Brandon Hobbs
EUT:	PX3				
Configuration:	3				
Customer:	Veris Industries, Inc.				
Attendees:	Rich Soennichsen				
EUT Power:	24VDC				
Operating Mode:	BLE Continuous Tx Please test data comments for EUT operating mode and frequency				
Deviations:	None				
Comments:	EUT was powered by client provided Power Supply.				

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

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



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	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
7440.455	27.4	19.4	1.0	254.0	3.0	0.0	Horz	AV	0.0	46.8	54.0	-7.2	High Ch. 2480 MHz, EUT On Side
7441.475	27.3	19.4	1.0	287.0	3.0	0.0	Vert	AV	0.0	46.7	54.0	-7.3	High Ch. 2480 MHz, EUT Horz
4804.050	36.0	10.6	1.1	33.0	3.0	0.0	Horz	AV	0.0	46.6	54.0	-7.4	Low Ch. 2402 MHz, EUT On Side
4804.155	35.9	10.6	1.0	229.0	3.0	0.0	Horz	AV	0.0	46.5	54.0	-7.5	Low Ch. 2402 MHz, EUT Horz
7319.135	27.7	18.8	1.0	236.0	3.0	0.0	Vert	AV	0.0	46.5	54.0	-7.5	Mid Ch. 2440 MHz, EUT Horz
7319.610	27.7	18.8	2.2	0.0	3.0	0.0	Horz	AV	0.0	46.5	54.0	-7.5	Mid Ch. 2440 MHz, EUT On Side
4804.090	35.7	10.6	1.0	7.0	3.0	0.0	Vert	AV	0.0	46.3	54.0	-7.7	Low Ch. 2402 MHz, EUT Horz
4804.095	34.7	10.6	2.4	338.0	3.0	0.0	Vert	AV	0.0	45.3	54.0	-8.7	Low Ch. 2402 MHz, EUT On Side
4803.910	34.2	10.6	1.0	352.0	3.0	0.0	Horz	AV	0.0	44.8	54.0	-9.2	Low Ch. 2402 MHz, EUT Vert
4960.060	33.4	11.0	1.0	288.0	3.0	0.0	Vert	AV	0.0	44.4	54.0	-9.6	High Ch. 2480 MHz, EUT Horz
4880.200	33.5	10.8	1.0	293.0	3.0	0.0	Vert	AV	0.0	44.3	54.0	-9.7	Mid Ch. 2440 MHz, EUT Horz
4804.055	32.6	10.6	1.0	148.0	3.0	0.0	Vert	AV	0.0	43.2	54.0	-10.8	Low Ch. 2402 MHz, EUT Vert
4880.085	31.9	10.8	1.0	9.0	3.0	0.0	Horz	AV	0.0	42.7	54.0	-11.3	Mid Ch. 2440 MHz, EUT On Side
4960.015	31.6	11.0	1.0	356.0	3.0	0.0	Horz	AV	0.0	42.6	54.0	-11.4	High Ch. 2480 MHz, EUT On Side
7319.250	39.5	18.8	2.2	0.0	3.0	0.0	Horz	PK	0.0	58.3	74.0	-15.7	Mid Ch. 2440 MHz, EUT On Side
7439.200	38.9	19.4	1.0	254.0	3.0	0.0	Horz	PK	0.0	58.3	74.0	-15.7	High Ch. 2480 MHz, EUT On Side
7320.815	39.3	18.8	1.0	236.0	3.0	0.0	Vert	PK	0.0	58.1	74.0	-15.9	Mid Ch. 2440 MHz, EUT Horz
7439.645	38.7	19.4	1.0	287.0	3.0	0.0	Vert	PK	0.0	58.1	74.0	-15.9	High Ch. 2480 MHz, EUT Horz
19215.650	34.6	1.0	1.6	263.0	3.0	0.0	Horz	AV	0.0	35.6	54.0	-18.4	Low Ch. 2402 MHz, EUT On Side
19216.260	34.6	1.0	1.6	194.0	3.0	0.0	Vert	AV	0.0	35.6	54.0	-18.4	Low Ch. 2402 MHz, EUT Horz
4804.575	44.8	10.6	1.0	229.0	3.0	0.0	Horz	PK	0.0	55.4	74.0	-18.6	Low Ch. 2402 MHz, EUT Horz
4803.535	44.5	10.6	1.1	33.0	3.0	0.0	Horz	PK	0.0	55.1	74.0	-18.9	Low Ch. 2402 MHz, EUT On Side
4804.075	44.3	10.6	1.0	7.0	3.0	0.0	Vert	PK	0.0	54.9	74.0	-19.1	Low Ch. 2402 MHz, 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
12009.260	31.6	3.2	1.0	168.0	3.0	0.0	Horz	AV	0.0	34.8	54.0	-19.2	Low Ch.2402 Mhz, EUT On Side
4959.620	43.7	11.0	1.0	288.0	3.0	0.0	Vert	PK	0.0	54.7	74.0	-19.3	High Ch. 2480 MHz, EUT Horz
4804.730	43.9	10.6	1.0	352.0	3.0	0.0	Horz	PK	0.0	54.5	74.0	-19.5	Low Ch. 2402 MHz, EUT Vert
4804.470	43.7	10.6	2.4	338.0	3.0	0.0	Vert	PK	0.0	54.3	74.0	-19.7	Low Ch. 2402 MHz, EUT On Side
12399.180	30.0	3.9	2.0	201.0	3.0	0.0	Horz	AV	0.0	33.9	54.0	-20.1	High Ch. 2480 MHz, EUT On Side
4803.760	43.2	10.6	1.0	148.0	3.0	0.0	Vert	PK	0.0	53.8	74.0	-20.2	Low Ch. 2402 MHz, EUT Vert
4880.715	42.7	10.8	1.0	293.0	3.0	0.0	Vert	PK	0.0	53.5	74.0	-20.5	Mid Ch. 2440 MHz, EUT Horz
4880.780	42.5	10.8	1.0	9.0	3.0	0.0	Horz	PK	0.0	53.3	74.0	-20.7	Mid Ch. 2440 MHz, EUT On Side
4960.980	42.2	11.0	1.0	356.0	3.0	0.0	Horz	PK	0.0	53.2	74.0	-20.8	High Ch. 2480 MHz, EUT On Side
12199.220	29.8	3.3	2.3	208.0	3.0	0.0	Horz	AV	0.0	33.1	54.0	-20.9	Mid Ch. 2440 Mhz, EUT On Side
12399.430	29.0	3.9	1.0	176.0	3.0	0.0	Vert	AV	0.0	32.9	54.0	-21.1	High Ch. 2480 MHz, EUT Horz
12199.210	29.1	3.3	1.0	199.0	3.0	0.0	Vert	AV	0.0	32.4	54.0	-21.6	Mid Ch. 2440 Mhz, EUT Horz
12009.340	29.0	3.2	1.0	201.0	3.0	0.0	Vert	AV	0.0	32.2	54.0	-21.8	Low Ch.2402 Mhz, EUT Horz
19216.090	46.7	1.0	1.6	194.0	3.0	0.0	Vert	PK	0.0	47.7	74.0	-26.3	Low Ch. 2402 MHz, EUT Horz
19217.160	46.5	1.0	1.6	263.0	3.0	0.0	Horz	PK	0.0	47.5	74.0	-26.5	Low Ch. 2402 MHz, EUT On Side
12011.230	42.1	3.2	1.0	168.0	3.0	0.0	Horz	PK	0.0	45.3	74.0	-28.7	Low Ch.2402 Mhz, EUT On Side
12399.710	41.0	3.9	2.0	201.0	3.0	0.0	Horz	PK	0.0	44.9	74.0	-29.1	High Ch. 2480 MHz, EUT On Side
12399.570	40.7	3.9	1.0	176.0	3.0	0.0	Vert	PK	0.0	44.6	74.0	-29.4	High Ch. 2480 MHz, EUT Horz
12199.250	41.0	3.3	2.3	208.0	3.0	0.0	Horz	PK	0.0	44.3	74.0	-29.7	Mid Ch. 2440 Mhz, EUT On Side
12199.190	40.9	3.3	1.0	199.0	3.0	0.0	Vert	PK	0.0	44.2	74.0	-29.8	Mid Ch. 2440 Mhz, EUT Horz
12010.870	40.7	3.2	1.0	201.0	3.0	0.0	Vert	PK	0.0	43.9	74.0	-30.1	Low Ch.2402 Mhz, EUT Horz

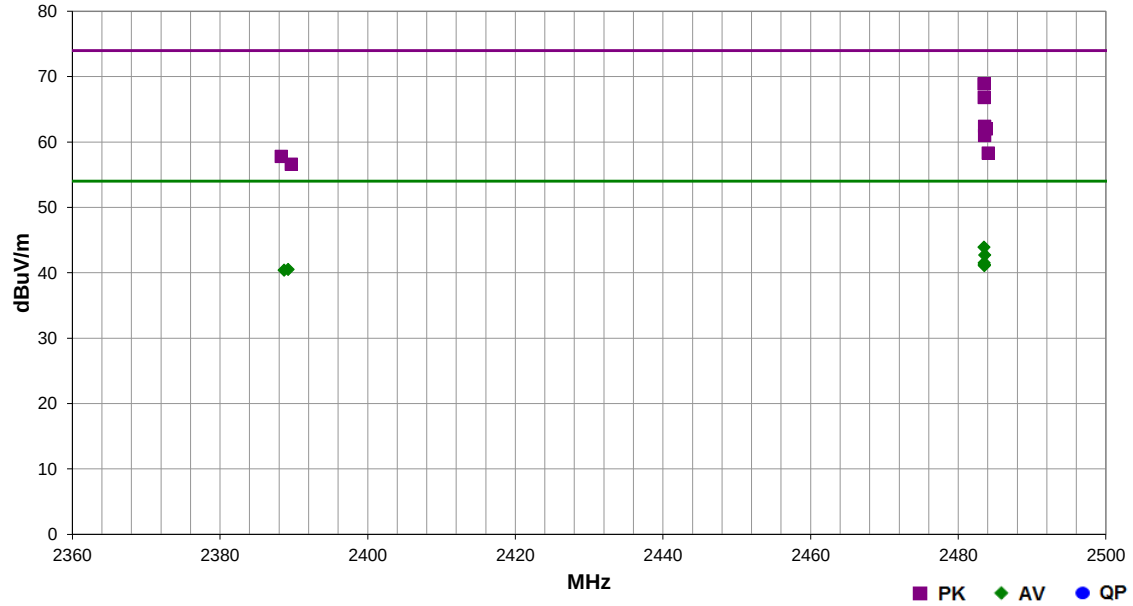
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	VERI0267	**Date:**	05/03/17		
Project:	None	**Temperature:**	23.1 °C		
Job Site:	EV01	**Humidity:**	48.8% RH		
Serial Number:	1	**Barometric Pres.:**	1022 mbar	**Tested by:**	Brandon Hobbs
EUT:	PX3				
Configuration:	3				
Customer:	Veris Industries, Inc.				
Attendees:	Rich Soennichsen				
EUT Power:	24VDC				
Operating Mode:	BLE Continuous Tx, High Ch. 2480 MHz				
Deviations:	None				
Comments:	EUT was powered by client provided Power Supply.				

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

Run #	19	**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
2483.503	58.6	0.3	1.0	81.0	3.0	10.0	Horz	PK	0.0	68.9	74.0	-5.1	High Ch. 2480 MHz, EUT Horz
2483.527	56.5	0.3	1.0	231.0	3.0	10.0	Vert	PK	0.0	66.8	74.0	-7.2	High Ch. 2480 MHz, EUT Vert
2483.500	33.6	0.3	1.0	81.0	3.0	10.0	Horz	AV	0.0	43.9	54.0	-10.1	High Ch. 2480 MHz, EUT Horz
2483.590	32.4	0.3	1.0	231.0	3.0	10.0	Vert	AV	0.0	42.7	54.0	-11.3	High Ch. 2480 MHz, EUT Vert
2483.577	52.1	0.3	1.0	43.0	3.0	10.0	Horz	PK	0.0	62.4	74.0	-11.6	High Ch. 2480 MHz, EUT On Side
2483.787	51.7	0.3	2.9	221.0	3.0	10.0	Horz	PK	0.0	62.0	74.0	-12.0	High Ch. 2480 MHz, EUT Vert
2483.517	31.2	0.3	1.0	43.0	3.0	10.0	Horz	AV	0.0	41.5	54.0	-12.5	High Ch. 2480 MHz, EUT On Side
2483.577	30.9	0.3	1.6	136.0	3.0	10.0	Vert	AV	0.0	41.2	54.0	-12.8	High Ch. 2480 MHz, EUT On Side
2483.523	30.9	0.3	2.9	221.0	3.0	10.0	Horz	AV	0.0	41.2	54.0	-12.8	High Ch. 2480 MHz, EUT Vert
2483.540	30.8	0.3	3.3	126.0	3.0	10.0	Vert	AV	0.0	41.1	54.0	-12.9	High Ch. 2480 MHz, EUT Horz
2483.567	50.7	0.3	1.6	136.0	3.0	10.0	Vert	PK	0.0	61.0	74.0	-13.0	High Ch. 2480 MHz, EUT On Side
2389.223	30.6	-0.1	1.0	250.0	3.0	10.0	Horz	AV	0.0	40.5	54.0	-13.5	Low Ch. 2402 MHz, EUT Horz
2388.683	30.5	-0.1	1.0	343.0	3.0	10.0	Vert	AV	0.0	40.4	54.0	-13.6	Low Ch. 2402 MHz, EUT Vert
2484.057	48.0	0.3	3.3	126.0	3.0	10.0	Vert	PK	0.0	58.3	74.0	-15.7	High Ch. 2480 MHz, EUT Horz
2388.293	47.9	-0.1	1.0	250.0	3.0	10.0	Horz	PK	0.0	57.8	74.0	-16.2	Low Ch. 2402 MHz, EUT Horz
2389.643	46.7	-0.1	1.0	343.0	3.0	10.0	Vert	PK	0.0	56.6	74.0	-17.4	Low Ch. 2402 MHz, EUT Vert