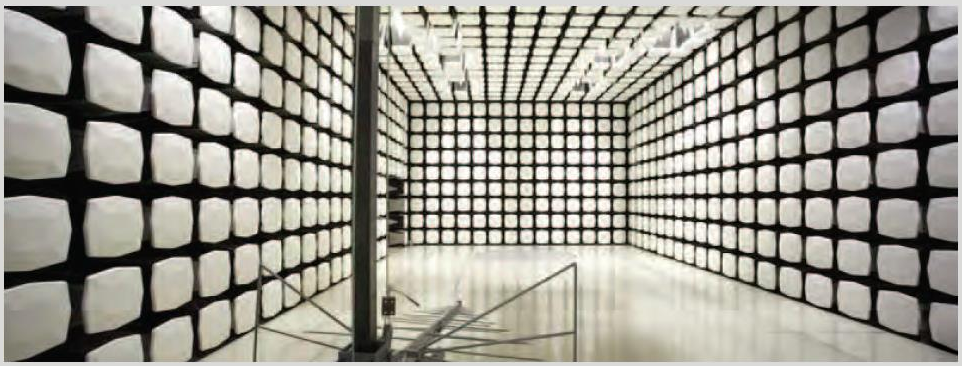
Vitls Inc

Vitls Tego VT-F-010-V2

FCC 15.247:2022

Bluetooth Low Energy (DTS) Radio

Report: VITL0001.2 Rev. 1, Issue Date: August 5, 2022



CERT #3310.04

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CERTIFICATE OF TEST

Last Date of Test: July 28, 2022
Vitls Inc
EUT: Vitls Tego VT-F-010-V2

Radio Equipment Testing

Standards

Specification	Method
FCC 15.247:2022	ANSI C63.10:2013, FCC KDB 558074 v05r02:2019

Results

Test Description	Result	Specification Section(s)	Method Section(s)	Comments
Band Edge Compliance	Pass	15.247(d), KDB 558074 - 8.5	11.11	
DTS Bandwidth (6 dB)	Pass	15.247(a)(2), KDB 558074 -8.2	11.8.2	
Duty Cycle	N/A	KDB 558074 -6.0	11.6	
Equivalent Isotropic Radiated Power	Pass	15.247(b)(3), KDB 558074 -8.3.2	11.9.1.1	
Occupied Bandwidth (99%)	N/A	KDB 558074 -2.1	6.9.3	
Output Power	Pass	15.247(b)(3), KDB 558074 -8.3.2	11.9.1.1	
Power Spectral Density	Pass	15.247(e), KDB 558074 - 8.4	11.10.2	
Powerline Conducted Emissions	N/A	15.207	6.2	Not required for a battery powered EUT.
Spurious Conducted Emissions	Pass	15.247(d), KDB 558074 - 8.5	11.11	
Spurious Radiated Emissions	Pass	15.247(d), KDB 558074 - 8.6, 8.7	11.12.1, 11.13.2, 6.5, 6.6	

Deviations From Test Standards

None

Approved By:

Johnny Candelas, Operations Manager

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

REVISION HISTORY

Revision Number	Description	Date (yyyy-mm-dd)	Page Number
01	Changed EUT name to VT-F-010-V2.	2022-08-05	1, 2, 10, 12, 15, 23, 28, 33, 38, 43, 48, 52, 64
	Changed result on certificate of test to N/A for Duty Cycle and Occupied Bandwidth.	2022-08-05	2
	Updated power settings table.	2022-08-05	11
	Updated dates for EIRP and Power Spectral Density	2022-08-05	13

ACCREDITATIONS AND AUTHORIZATIONS

United States

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

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

Canada

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

European Union

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

United Kingdom

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

Australia/New Zealand

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

Korea

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

Japan

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

Taiwan

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

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

Singapore

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

Israel

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

Hong Kong

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

Vietnam

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

SCOPE

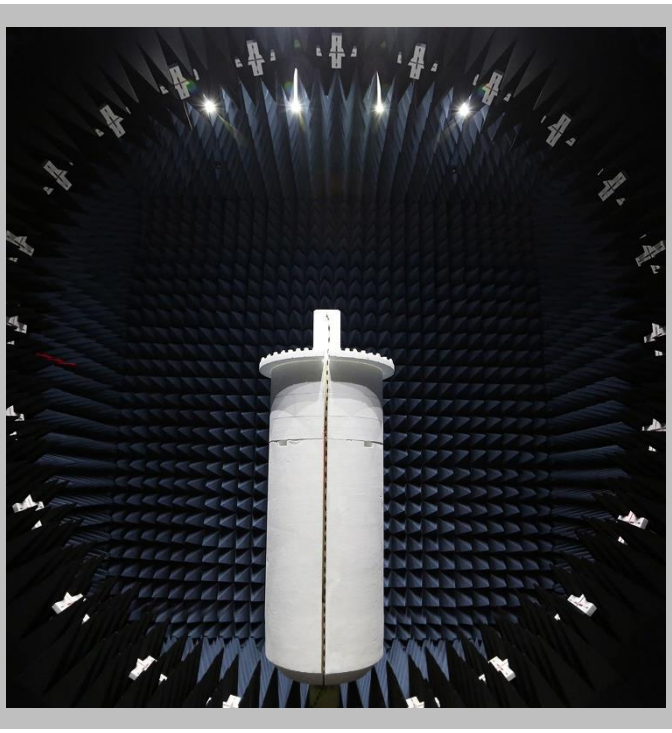
For details on the Scopes of our Accreditations, please visit:

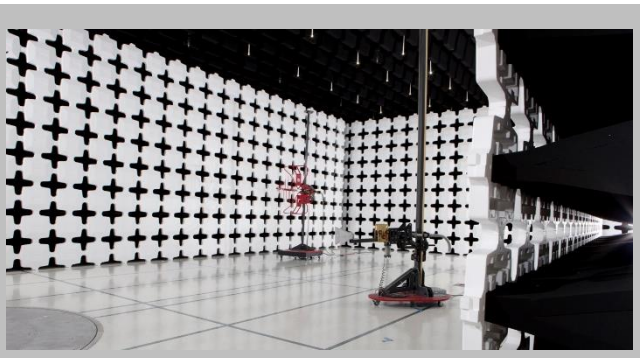
California Minnesota Oregon Texas Washington

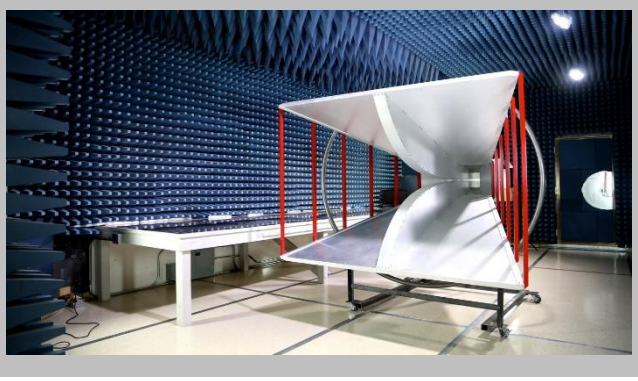
FACILITIES

element
2020.12.15

California	Minnesota	Oregon	Texas	Washington
Labs OC01-17 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs MN01-11 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Labs EV01-12 6775 NE Evergreen Pkwy #400 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
A2LA				
Lab Code: 3310.04	Lab Code: 3310.05	Lab Code: 3310.02	Lab Code: 3310.03	Lab Code: 3310.06
Innovation, Science and Economic Development Canada				
2834B-1, 2834B-3	2834E-1, 2834E-3	2834D-1	2834G-1	2834F-1
BSMI				
SL2-IN-E-1154R	SL2-IN-E-1152R	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI				
A-0029	A-0109	A-0108	A-0201	A-0110
Recognized Phase I CAB for ISED, ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA				
US0158	US0175	US0017	US0191	US0157







MEASUREMENT UNCERTAINTY

element
TMU.2015.07.10

Measurement Uncertainty

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

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

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

Test	+ MU	- MU
Frequency Accuracy	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	1.2 dB	-1.2 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.1 dB	-5.1 dB
AC Powerline Conducted Emissions (dB)	3.2 dB	-3.2 dB

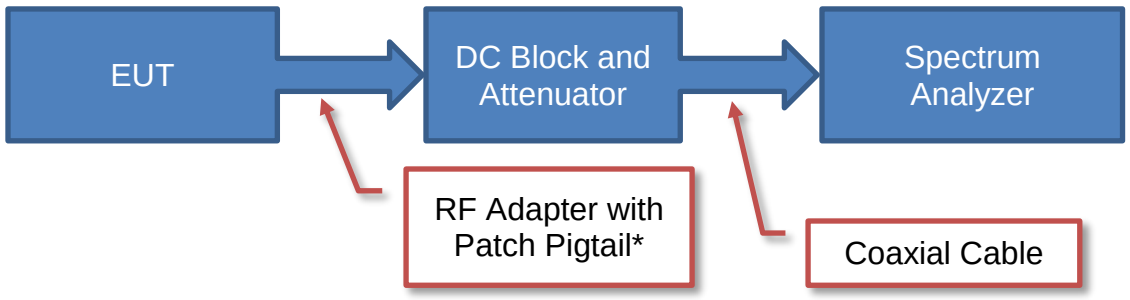
TEST SETUP BLOCK DIAGRAMS

Measurement Bandwidths

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

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

Antenna Port Conducted Measurements

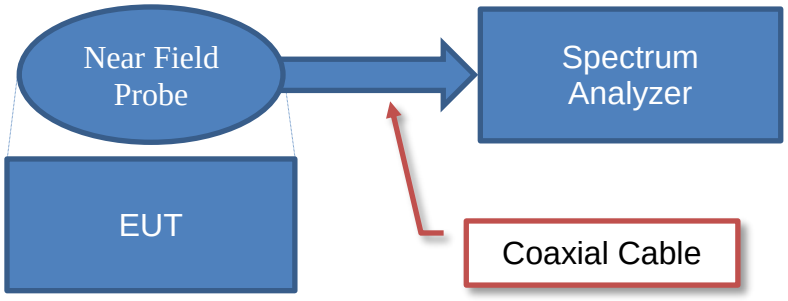


Sample Calculation (logarithmic units)

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

*Patch pigtail connector used during measurements and accounted for in reference level offset.

Near Field Test Fixture Measurements

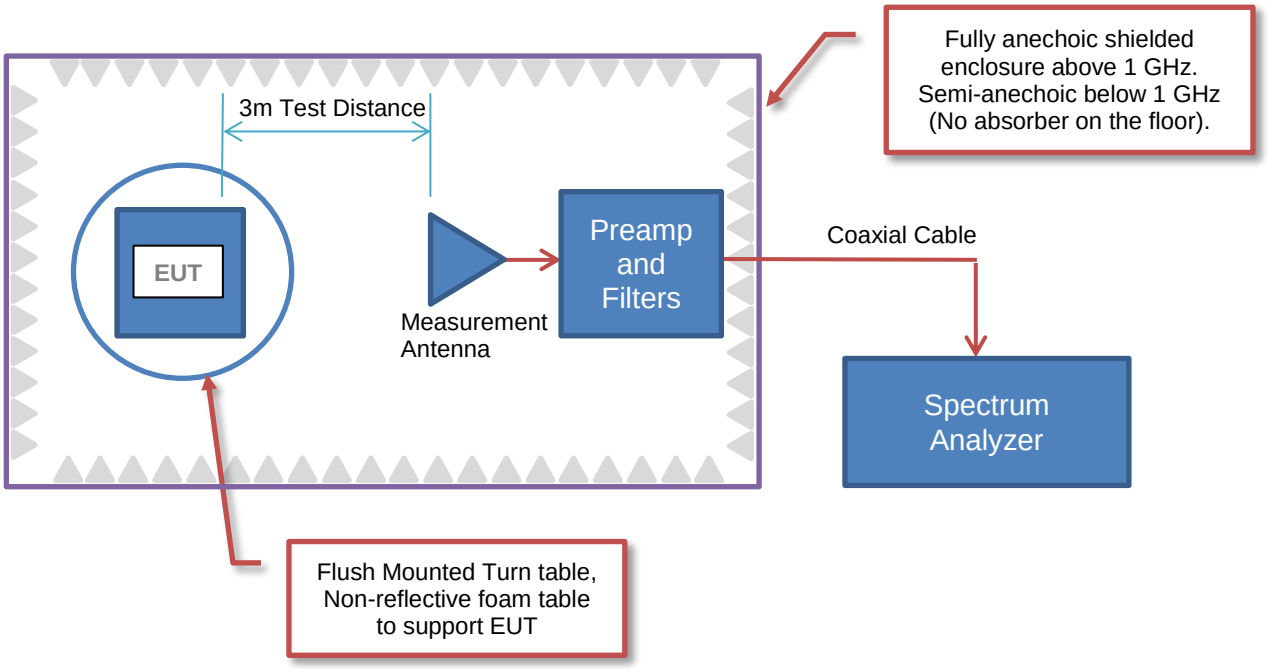


Sample Calculation (logarithmic units)

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

TEST SETUP BLOCK DIAGRAMS

Emissions Measurements



Sample Calculation (logarithmic units)

Radiated Emissions:

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

Conducted Emissions:

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

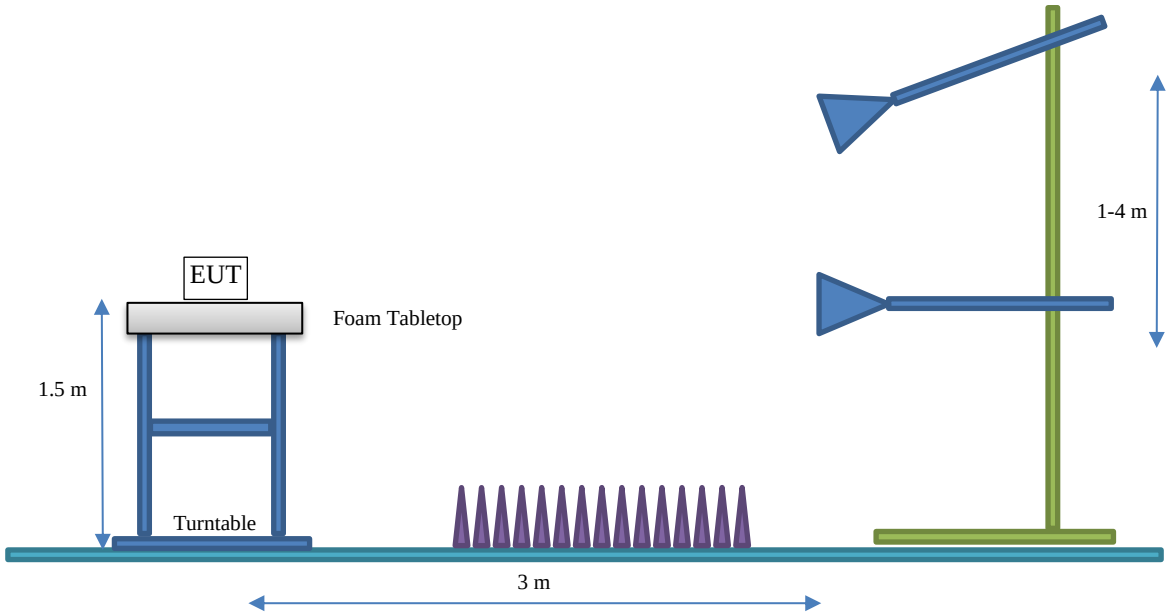
Radiated Power (ERP/EIRP) – Substitution Method:

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

TEST SETUP BLOCK DIAGRAMS

Bore Sighting (>1GHz)

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



PRODUCT DESCRIPTION

Client and Equipment under Test (EUT) Information

Company Name:	Vitls Inc
Address:	2450 Holcombe Blvd
City, State, Zip:	Houston, TX 77021
Test Requested By:	Mohamed Elmahdy
EUT:	Vitls Tego VT-F-010-V2
First Date of Test:	July 14, 2022
Last Date of Test:	July 28, 2022
Receipt Date of Samples:	July 12, 2022
Equipment Design Stage:	Prototype
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
Bluetooth vital sign monitoring wearable. Measure temperature, heart rate, pulse oxygen saturation and respiration rate. Allows clients to connect and sends notifications for vital sign, motion and flag messages.

Testing Objective:
To demonstrate compliance of the Bluetooth Low Energy (DTS) radio to FCC 15.247 requirements.

POWER SETTINGS AND ANTENNAS

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

ANTENNA GAIN (dBi)

Type	Provided by:	Frequency Range (MHz)	Antenna Diversity	Gain (dBi)
2.4Ghz SMT MID Chip	Molex 47948-0001	2400-2500 +/- 3	N/A	3.7

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

SETTINGS FOR ALL TESTS IN THIS REPORT

Bluetooth Version	Radio	Modulation Types	Channel	Position	Frequency (MHz)	Power Setting*
4.2	Bluetooth LE	GFSK - 1 Mbps, 2 Mbps	37	Low Channel	2402	4
			18	Mid Channel	2442	4
			39	High Channel	2480	4

*Power setting is unit less and dictated by proprietary software.

CONFIGURATIONS

Configuration VITL0001- 3

Software/Firmware Running During Test	
Description	**Version**
nRF Connect	V3.11.1

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Vitls Tego	Vitls	VT-F-010-V2	CBA8C35BC97E

Configuration VITL0001- 4

Software/Firmware Running During Test	
Description	**Version**
nRF Connect	V3.11.1

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Vitls Tego	Vitls	VT-F-010-V2	EF7D9BEDAB03

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2022-07-14	Band Edge Compliance	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
2	2022-07-14	DTS Bandwidth (6 dB)	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
3	2022-07-14	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	2022-07-14	Occupied Bandwidth (99%)	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
5	2022-07-20	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.
6	2022-07-21	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.
7	2022-07-25	Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
8	2022-07-25	Equivalent Isotropic Radiated Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
9	2022-07-28	Power Spectral Density	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

DUTY CYCLE

XMit 2022.02.07.0

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	E8257D	TGU	2020-11-03	2023-11-03
Cable	Element	None	OC5	2022-02-14	2023-02-14
Attenuator	Fairview Microwave	SA18H-20	UAY	2022-03-30	2023-03-30
Block - DC	Aeroflex	INMET 8535	AMO	2022-02-18	2023-02-18
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	2021-10-14	2022-10-14

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 2022.06.03.0 XMit 2022.02.07.0

EUT:	Vitls Tego VT-F-010-V2			**Work Order:**	VITL0001
Serial Number:	EF7D9BEDAB03			**Date:**	21-Jul-22
Customer:	Vitls Inc			**Temperature:**	23.4 °C
Attendees:	Mohamed Elmahdy			**Humidity:**	46.4% RH
Project:	None			**Barometric Pres.:**	1018 mbar
Tested by:	Mark Baytan	**Power:**	3.0VDC via Battery	**Job Site:**	OC13

TEST SPECIFICATIONS	Test Method
FCC 15.247:2022	ANSI C63.10:2013

COMMENTS

Reference Level Offset = 20dB Attenuator + DC Block + Coax Cable + Patch Pigtail Cable = 23.4dB

DEVIATIONS FROM TEST STANDARD

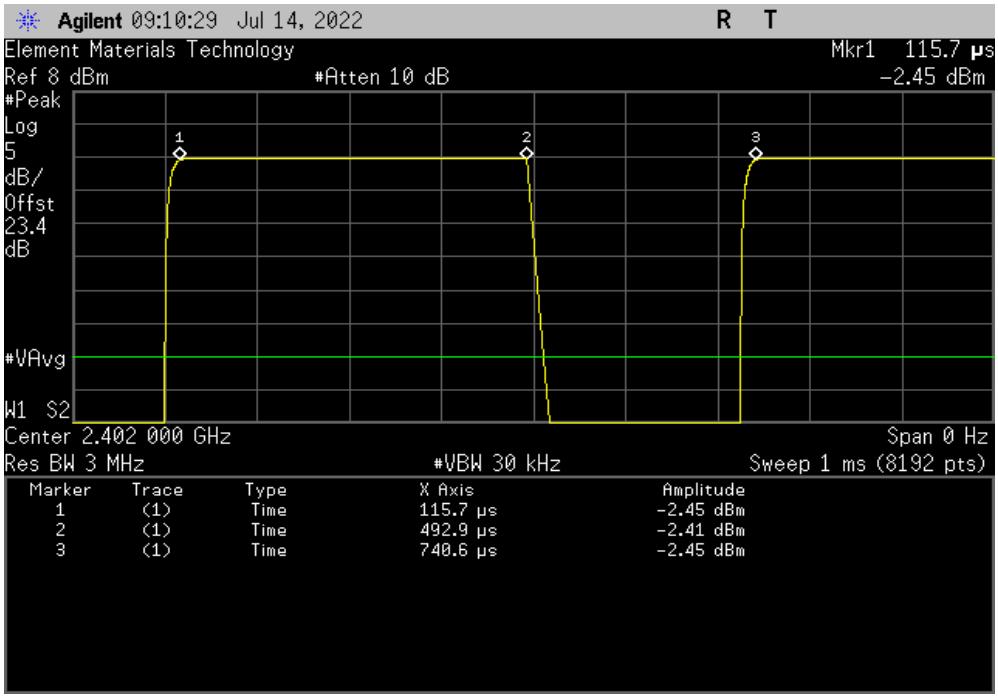
None

Configuration #	4	Signature

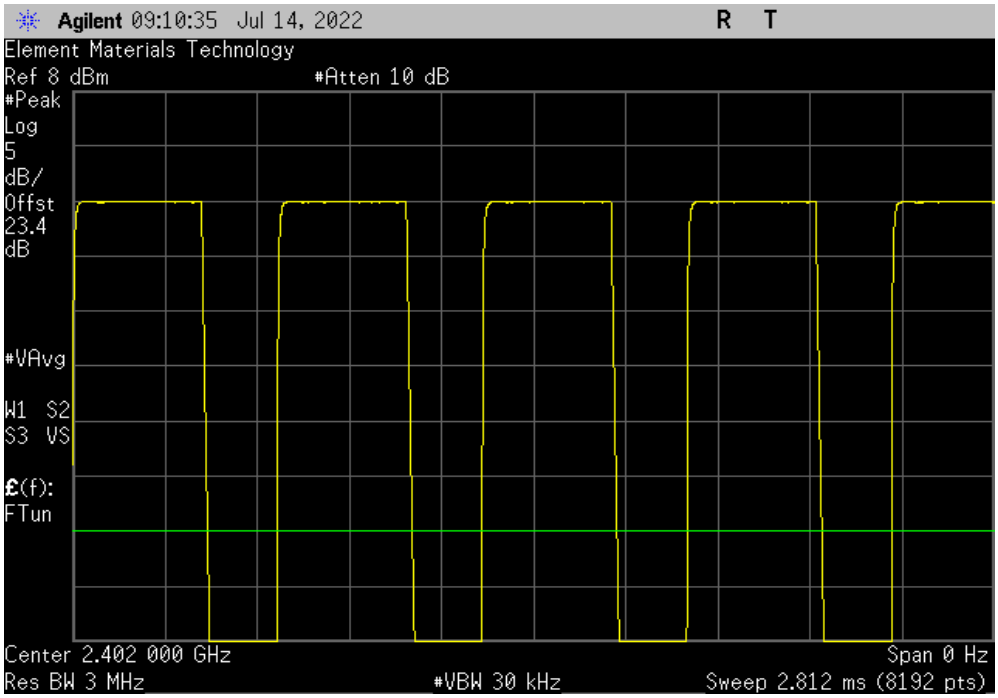
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
BLE/GFSK 1 Mbps Low Channel, 2402 MHz	377.189 us	624.878 us	1	60.4	N/A	N/A
BLE/GFSK 1 Mbps Low Channel, 2402 MHz	N/A	N/A	5	N/A	N/A	N/A
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz	376.042 us	625.122 us	1	60.2	N/A	N/A
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz	N/A	N/A	5	N/A	N/A	N/A
BLE/GFSK 1 Mbps High Channel, 2480 MHz	377.473 us	625.344 us	1	60.4	N/A	N/A
BLE/GFSK 1 Mbps High Channel, 2480 MHz	N/A	N/A	5	N/A	N/A	N/A
BLE/GFSK 2 Mbps Low Channel, 2402 MHz	192.331 us	625 us	1	30.8	N/A	N/A
BLE/GFSK 2 Mbps Low Channel, 2402 MHz	N/A	N/A	5	N/A	N/A	N/A
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz	195.414 us	625.244 us	1	31.3	N/A	N/A
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz	N/A	N/A	5	N/A	N/A	N/A
BLE/GFSK 2 Mbps High Channel, 2480 MHz	193.971 us	625.488 us	1	31.0	N/A	N/A
BLE/GFSK 2 Mbps High Channel, 2480 MHz	N/A	N/A	5	N/A	N/A	N/A

DUTY CYCLE

BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	377.189 us	624.878 us	1	60.4	N/A	N/A

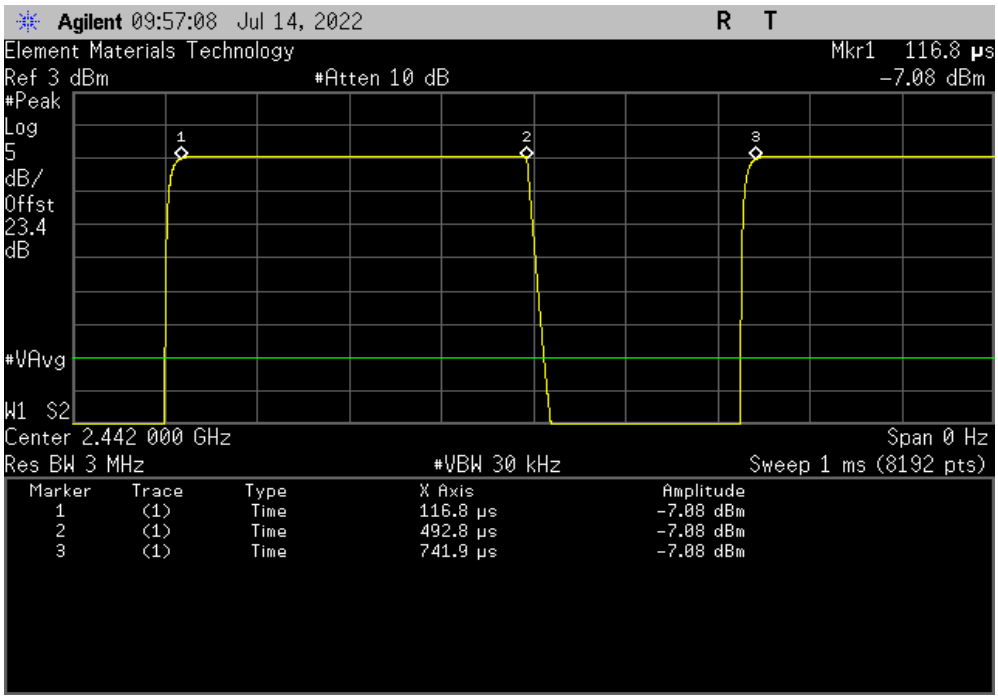


BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

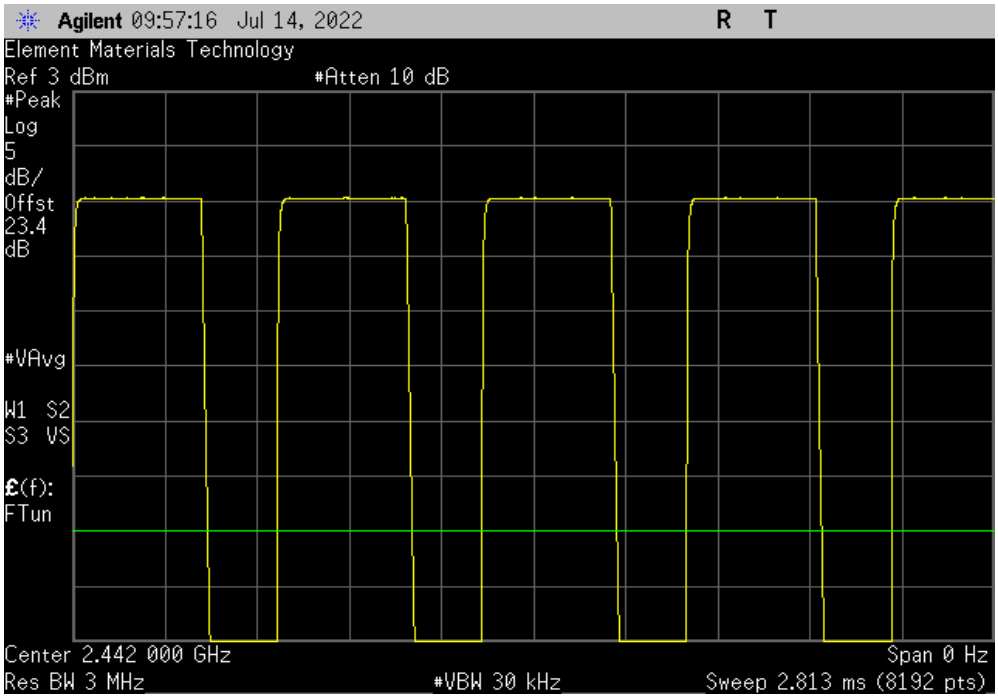


DUTY CYCLE

BLE/GFSK 1 Mbps Mid Channel, 2442 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	376.042 us	625.122 us	1	60.2	N/A	N/A

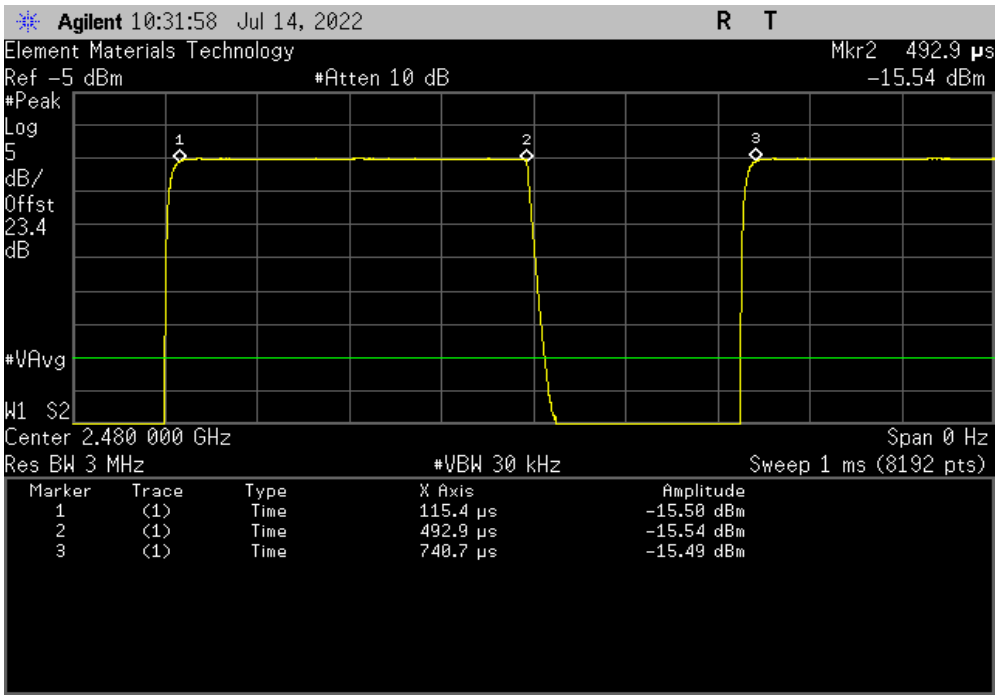


BLE/GFSK 1 Mbps Mid Channel, 2442 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

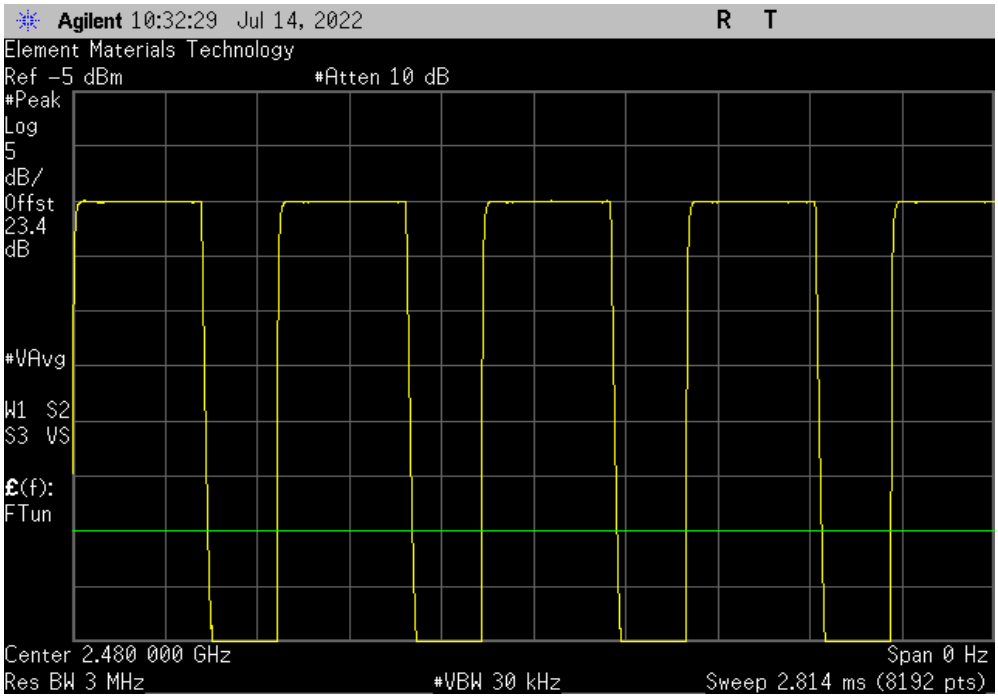


DUTY CYCLE

BLE/GFSK 1 Mbps High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	377.473 us	625.344 us	1	60.4	N/A	N/A

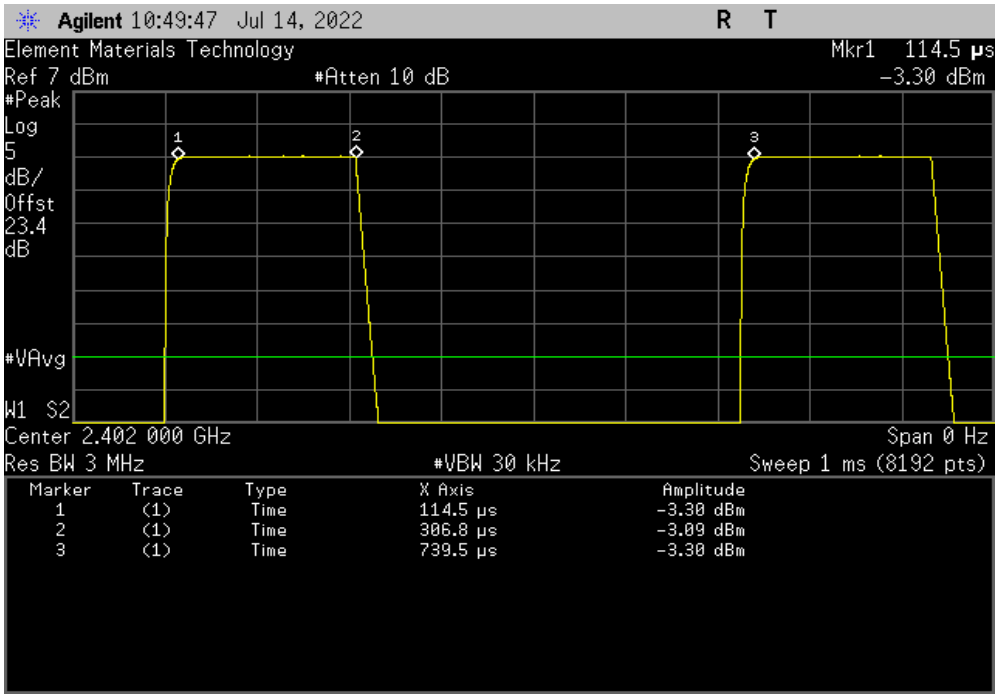


BLE/GFSK 1 Mbps High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

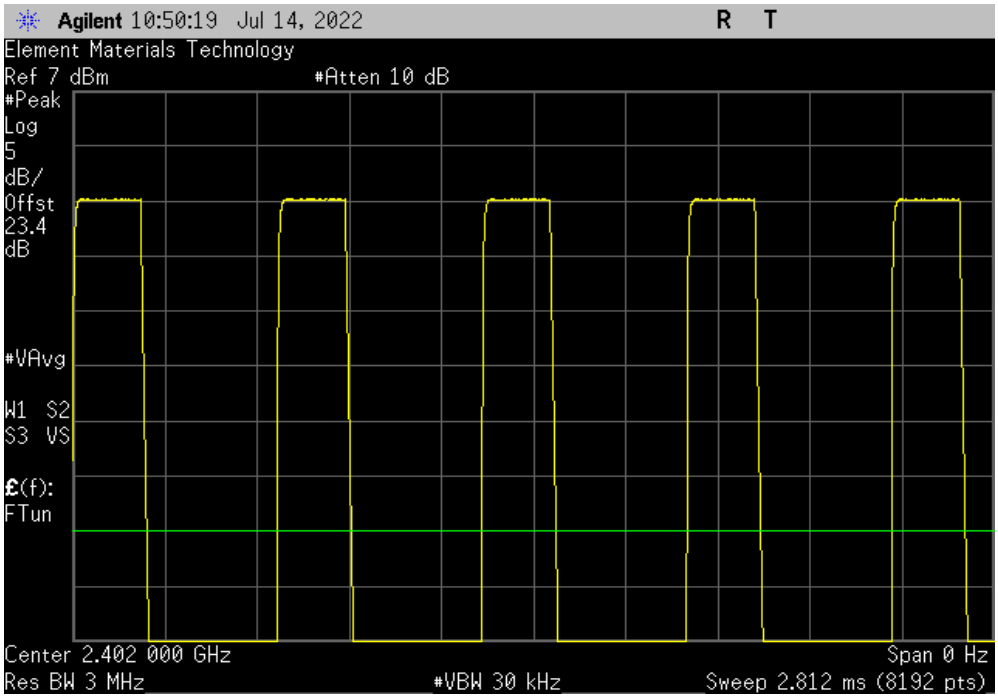


DUTY CYCLE

BLE/GFSK 2 Mbps Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	192.331 us	625 us	1	30.8	N/A	N/A

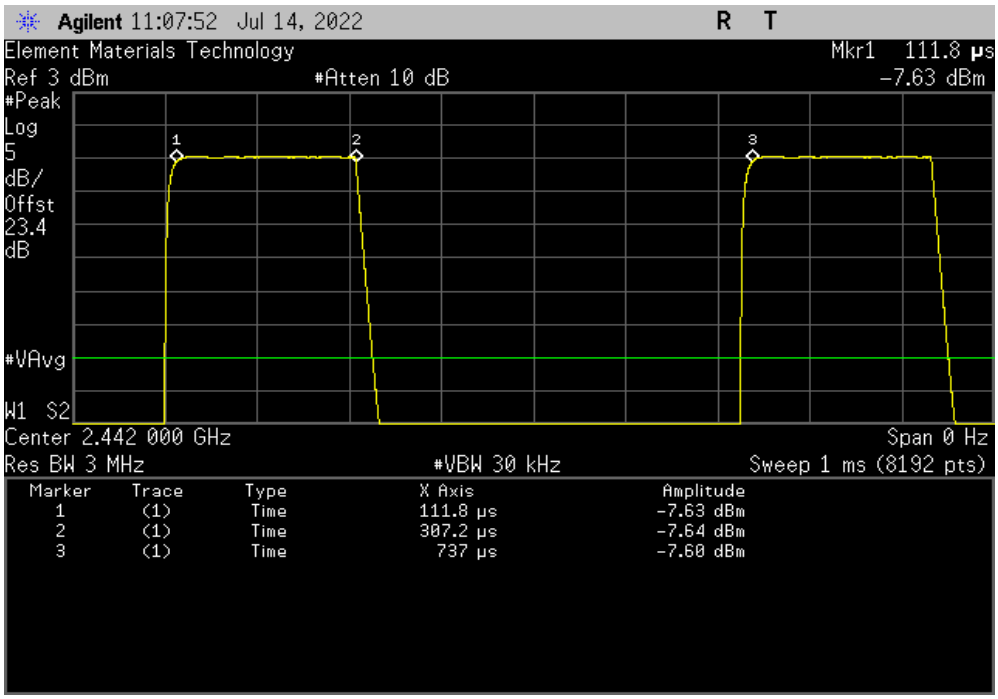


BLE/GFSK 2 Mbps Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

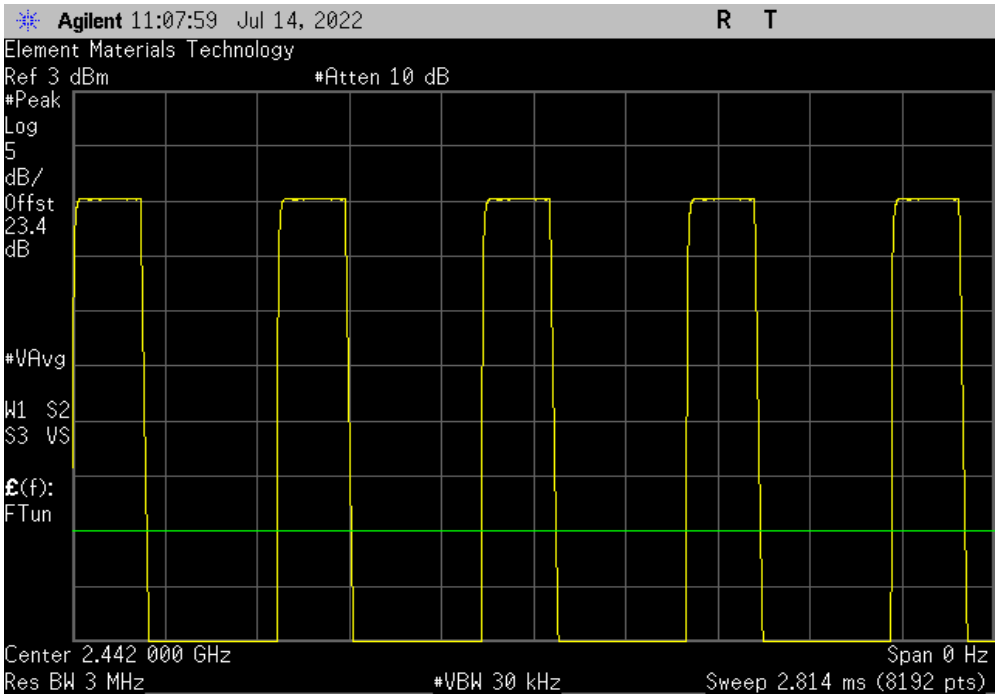


DUTY CYCLE

BLE/GFSK 2 Mbps Mid Channel, 2442 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	195.414 us	625.244 us	1	31.3	N/A	N/A

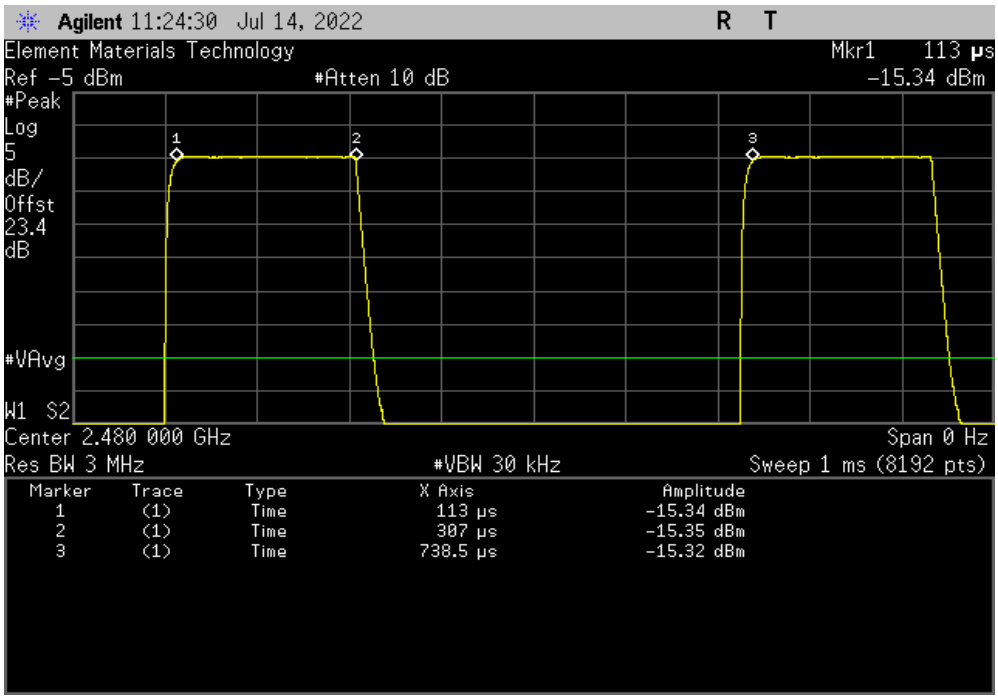


BLE/GFSK 2 Mbps Mid Channel, 2442 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

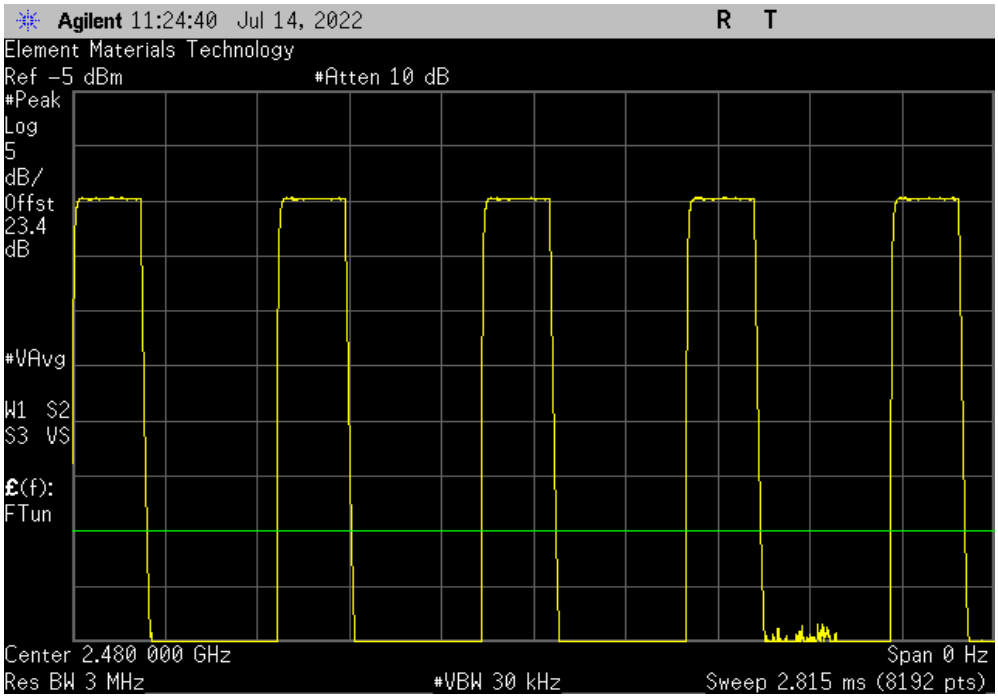


DUTY CYCLE

BLE/GFSK 2 Mbps High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	193.971 us	625.488 us	1	31.0	N/A	N/A



BLE/GFSK 2 Mbps High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



DTS BANDWIDTH

XMit 2022.02.07.0

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	E8257D	TGU	2020-11-03	2023-11-03
Cable	Element	None	OC5	2022-02-14	2023-02-14
Attenuator	Fairview Microwave	SA18H-20	UAY	2022-03-30	2023-03-30
Block - DC	Aeroflex	INMET 8535	AMO	2022-02-18	2023-02-18
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	2021-10-14	2022-10-14

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 DTS bandwidth was measured using 100 kHz resolution bandwidth and 300 kHz video bandwidth. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.

DTS BANDWIDTH

TbtTx 2022.06.03.0 XMit 2022.02.07.0

EUT:	Vitls Tego VT-F-010-V2			**Work Order:**	VITL0001
Serial Number:	EF7D9BEDAB03			**Date:**	14-Jul-22
Customer:	Vitls Inc			**Temperature:**	23.8 °C
Attendees:	Mohamed Elmahdy			**Humidity:**	48% RH
Project:	None			**Barometric Pres.:**	1017 mbar
Tested by:	Vincent Liwag, Mark Baytan	**Power:**	3.0VDC via Battery	**Job Site:**	OC13

TEST SPECIFICATIONS	Test Method
FCC 15.247:2022	ANSI C63.10:2013

COMMENTS

Reference Level Offset = 20dB Attenuator + DC Block + Coax Cable + Patch Pigtail Cable = 23.4dB

DEVIATIONS FROM TEST STANDARD

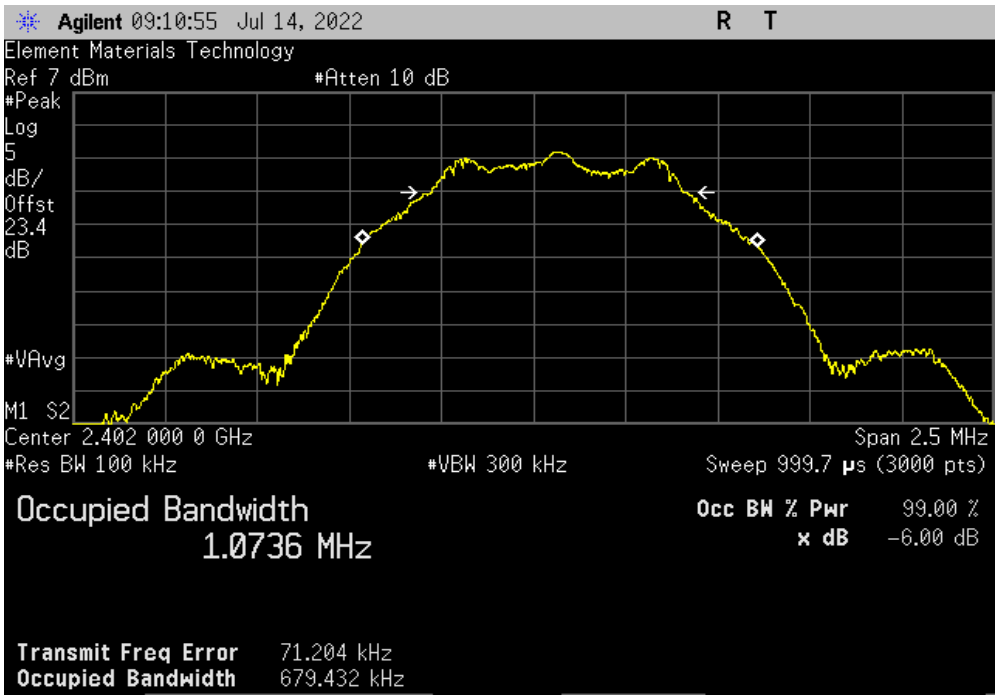
None

Configuration #	4	*Signature*

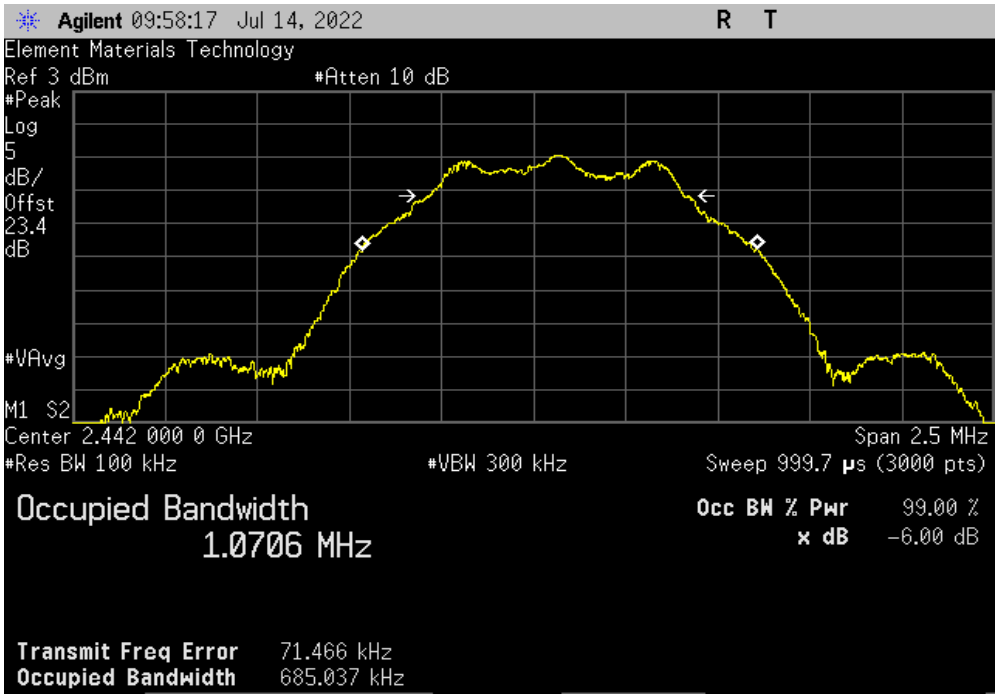
	Value	Limit (≥)	Result
BLE/GFSK 1 Mbps Low Channel, 2402 MHz	679.432 kHz	500 kHz	Pass
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz	685.037 kHz	500 kHz	Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz	727.266 kHz	500 kHz	Pass
BLE/GFSK 2 Mbps Low Channel, 2402 MHz	1.11 MHz	500 kHz	Pass
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz	1.14 MHz	500 kHz	Pass
BLE/GFSK 2 Mbps High Channel, 2480 MHz	1.13 MHz	500 kHz	Pass

DTS BANDWIDTH

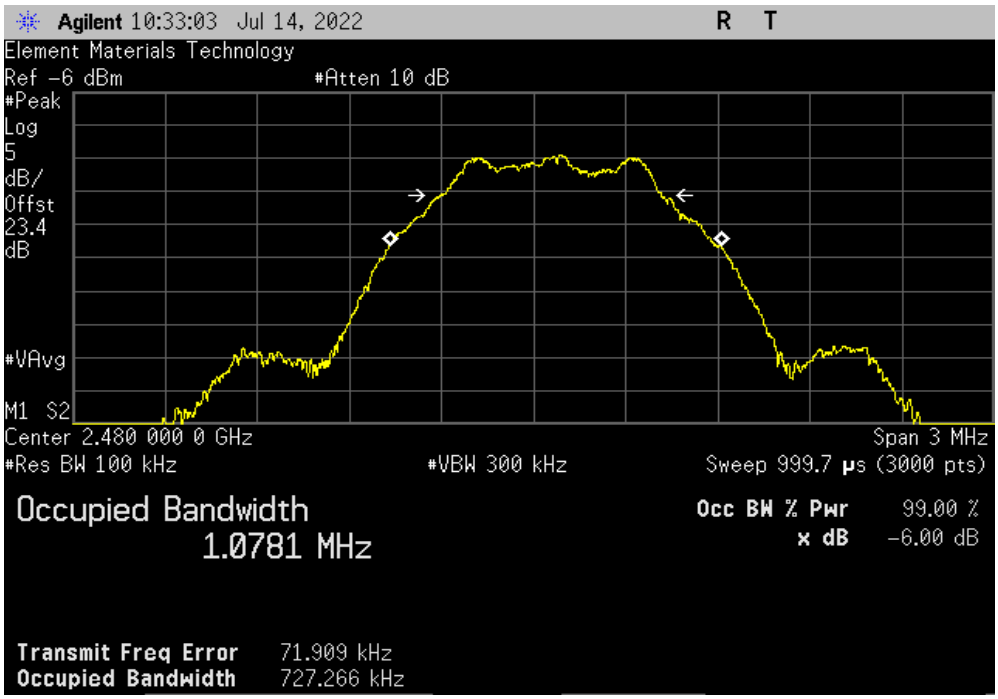
BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
				Value	Limit (≥)	Result
				679.432 kHz	500 kHz	Pass



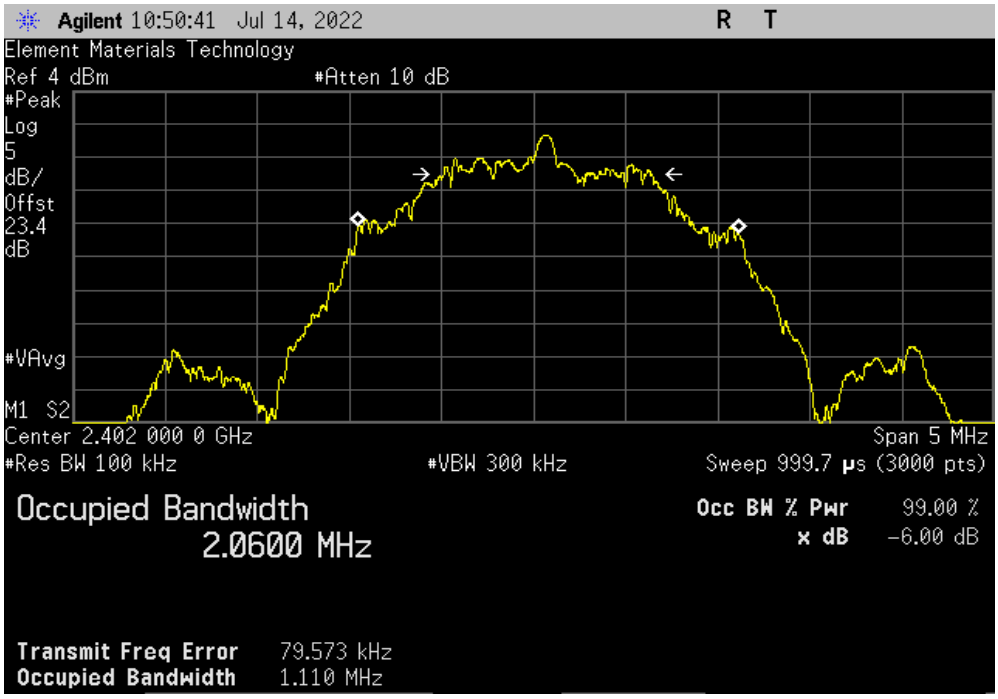
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz						
				Value	Limit (≥)	Result
				685.037 kHz	500 kHz	Pass



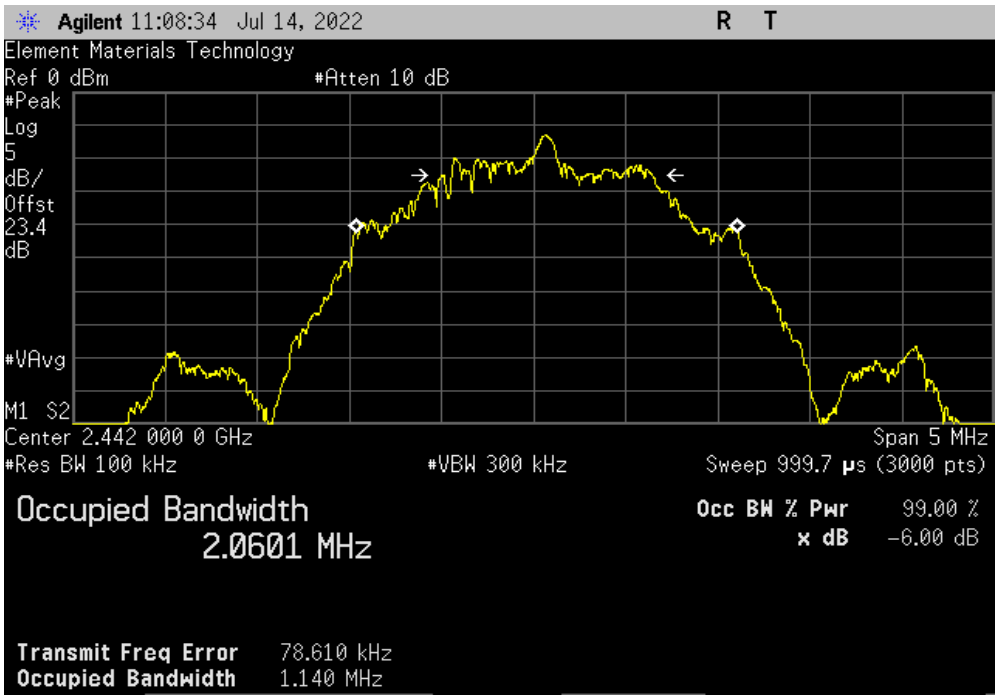
BLE/GFSK 1 Mbps High Channel, 2480 MHz						
				Value	Limit (≥)	Result
				727.266 kHz	500 kHz	Pass



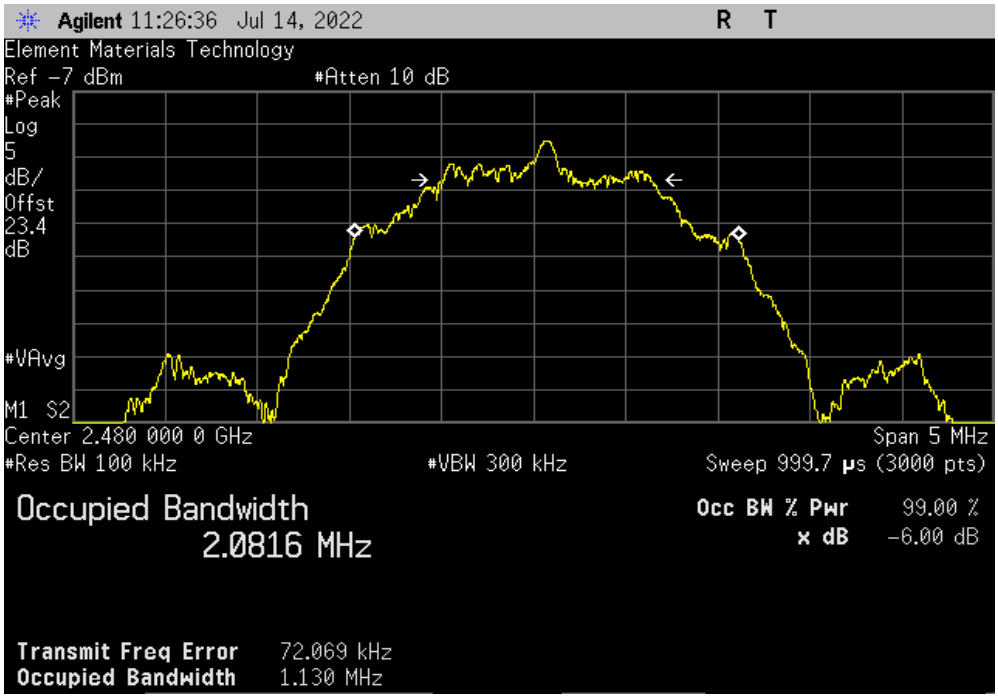
BLE/GFSK 2 Mbps Low Channel, 2402 MHz						
				Value	Limit (≥)	Result
				1.11 MHz	500 kHz	Pass



BLE/GFSK 2 Mbps Mid Channel, 2442 MHz						
				Value	Limit (≥)	Result
				1.14 MHz	500 kHz	Pass



BLE/GFSK 2 Mbps High Channel, 2480 MHz						
				Value	Limit (≥)	Result
				1.13 MHz	500 kHz	Pass



OCCUPIED BANDWIDTH 99%

XMit 2022.02.07.0

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	E8257D	TGU	2020-11-03	2023-11-03
Cable	Element	None	OC5	2022-02-14	2023-02-14
Attenuator	Fairview Microwave	SA18H-20	UAY	2022-03-30	2023-03-30
Block - DC	Aeroflex	INMET 8535	AMO	2022-02-18	2023-02-18
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	2021-10-14	2022-10-14

TEST DESCRIPTION

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

The 99% occupied bandwidth was measured with the EUT configured for continuous modulated operation.

Per ANSI C63.10:2013, 6.9.3, the spectrum analyzer was configured as follows:

The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.

The resolution bandwidth (RBW) of the spectrum analyzer was set to the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) bandwidth was set to at least 3 times the resolution bandwidth. The analyzer sweep time was set to auto to prevent video filtering or averaging. A sample detector was used unless the device was not able to be operated in a continuous transmit mode, in which case a peak detector was used.

The spectrum analyzer occupied bandwidth measurement function was used to sum the power of the transmission in linear terms to obtain the 99% bandwidth.

OCCUPIED BANDWIDTH 99%

TbtTx 2022.06.03.0 XMit 2022.02.07.0

EUT:	**Vitls Tego VT-F-010-V2**			**Work Order:**	**VITL0001**
Serial Number:	**EF7D9BEDAB03**			**Date:**	**14-Jul-22**
Customer:	**Vitls Inc**			**Temperature:**	**23.8 °C**
Attendees:	**Mohamed Elmahdy**			**Humidity:**	**48% RH**
Project:	**None**			**Barometric Pres.:**	**1017 mbar**
Tested by:	**Vincent Liwag, Mark Baytan**	**Power:**	**3.0VDC via Battery**	**Job Site:**	**OC13**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2022	ANSI C63.10:2013

COMMENTS

Reference Level Offset = 20dB Attenuator + DC Block + Coax Cable + Patch Pigtail Cable = 23.4dB

DEVIATIONS FROM TEST STANDARD

None

Configuration #	**4**	*Signature*

	Value	**Limit**	**Result**
BLE/GFSK 1 Mbps Low Channel, 2402 MHz	1.061 MHz	N/A	N/A
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz	1.058 MHz	N/A	N/A
BLE/GFSK 1 Mbps High Channel, 2480 MHz	1.062 MHz	N/A	N/A
BLE/GFSK 2 Mbps Low Channel, 2402 MHz	2.042 MHz	N/A	N/A
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz	2.042 MHz	N/A	N/A
BLE/GFSK 2 Mbps High Channel, 2480 MHz	2.053 MHz	N/A	N/A

OCCUPIED BANDWIDTH 99%

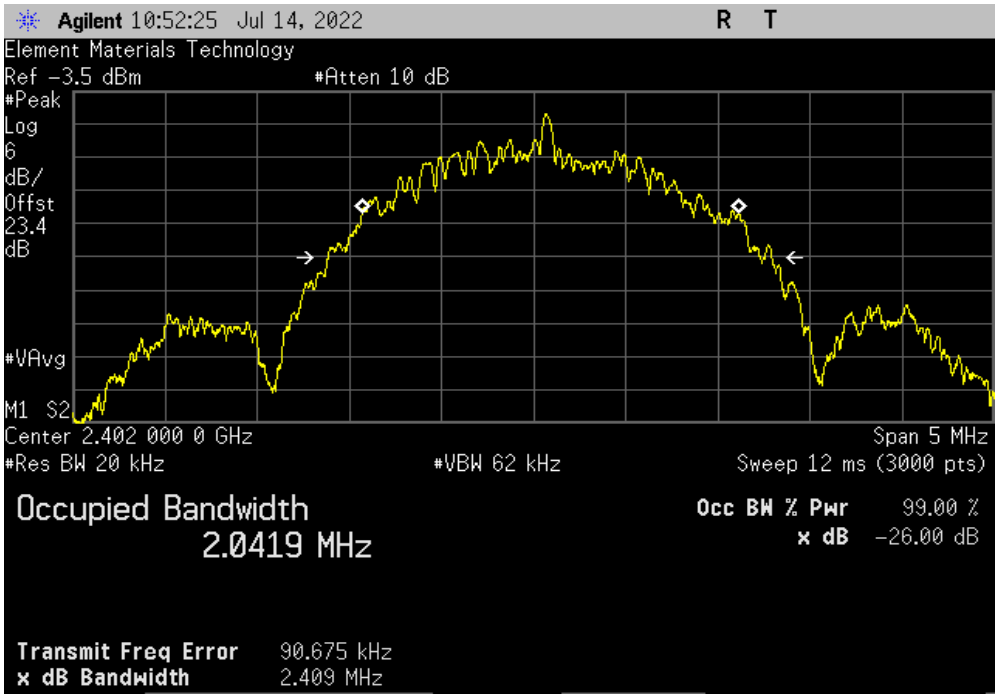
BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
				Value	Limit	Result
				1.061 MHz	N/A	N/A

BLE/GFSK 1 Mbps Mid Channel, 2442 MHz						
				Value	Limit	Result
				1.058 MHz	N/A	N/A

OCCUPIED BANDWIDTH 99%

BLE/GFSK 1 Mbps High Channel, 2480 MHz						
				Value	Limit	Result
				1.062 MHz	N/A	N/A

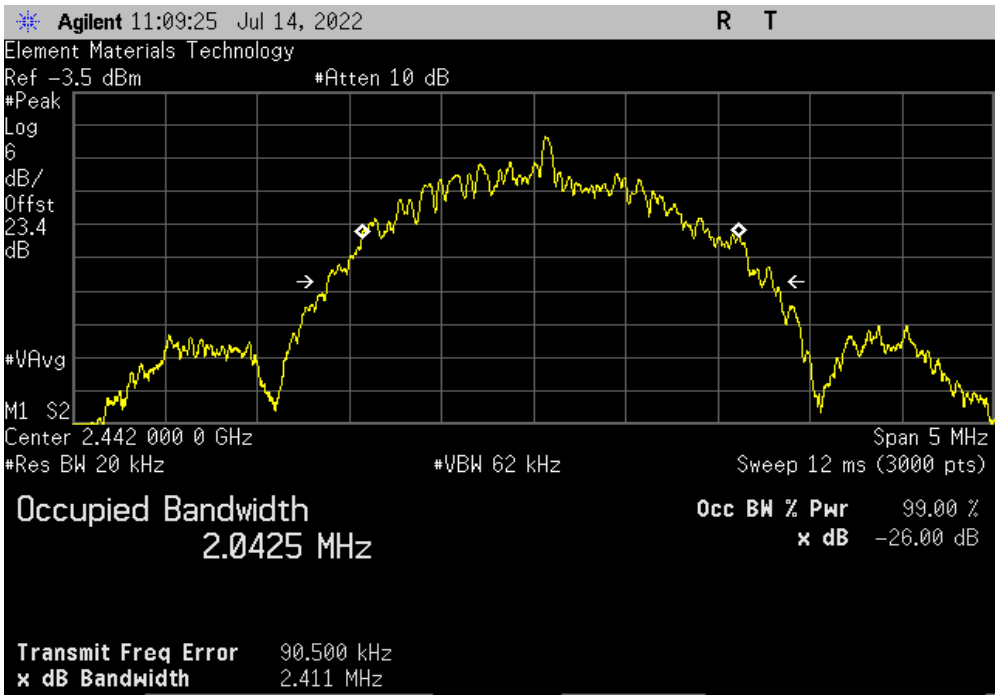
BLE/GFSK 2 Mbps Low Channel, 2402 MHz						
				Value	Limit	Result
				2.042 MHz	N/A	N/A



OCCUPIED BANDWIDTH 99%

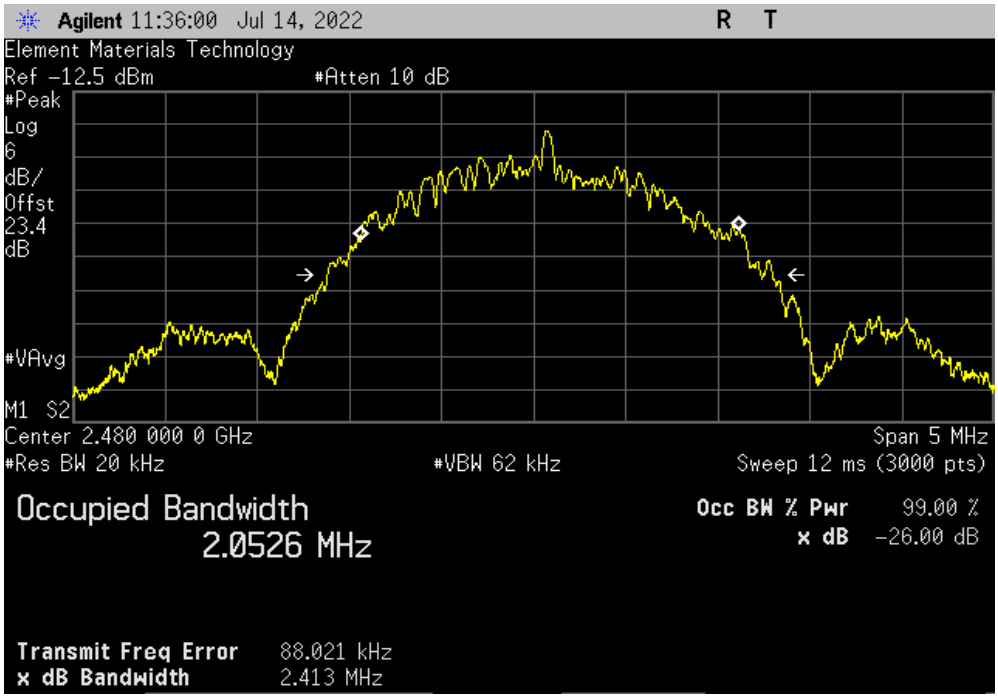
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz

				Value	Limit	Result
				2.042 MHz	N/A	N/A



BLE/GFSK 2 Mbps High Channel, 2480 MHz

				Value	Limit	Result
				2.053 MHz	N/A	N/A



OUTPUT POWER

XMit 2022.02.07.0

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	2021-10-14	2022-10-14
Block - DC	Aeroflex	INMET 8535	AMO	2022-02-18	2023-02-18
Attenuator	Fairview Microwave	SA18H-20	UAY	2022-03-30	2023-03-30
Cable	Element	None	OC5	2022-02-14	2023-02-14
Generator - Signal	Agilent	E8257D	TGU	2020-11-03	2023-11-03

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.

OUTPUT POWER

TbtTx 2022.06.03.0 XMit 2022.02.07.0

EUT:	**Vitls Tego VT-F-010-V2**			**Work Order:**	**VITL0001**
Serial Number:	**EF7D9BEDAB03**			**Date:**	**25-Jul-22**
Customer:	**Vitls Inc**			**Temperature:**	**23.9 °C**
Attendees:	**Mohamed Elmahdy**			**Humidity:**	**47.6% RH**
Project:	**None**			**Barometric Pres.:**	**1015 mbar**
Tested by:	**Mark Baytan**	**Power:**	**3.0VDC via Battery**	**Job Site:**	**OC13**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2022	ANSI C63.10:2013

COMMENTS

Reference Level Offset = 20dB Attenuator + DC Block + Coax Cable + Patch Pigtail Cable = 23.4dB

DEVIATIONS FROM TEST STANDARD

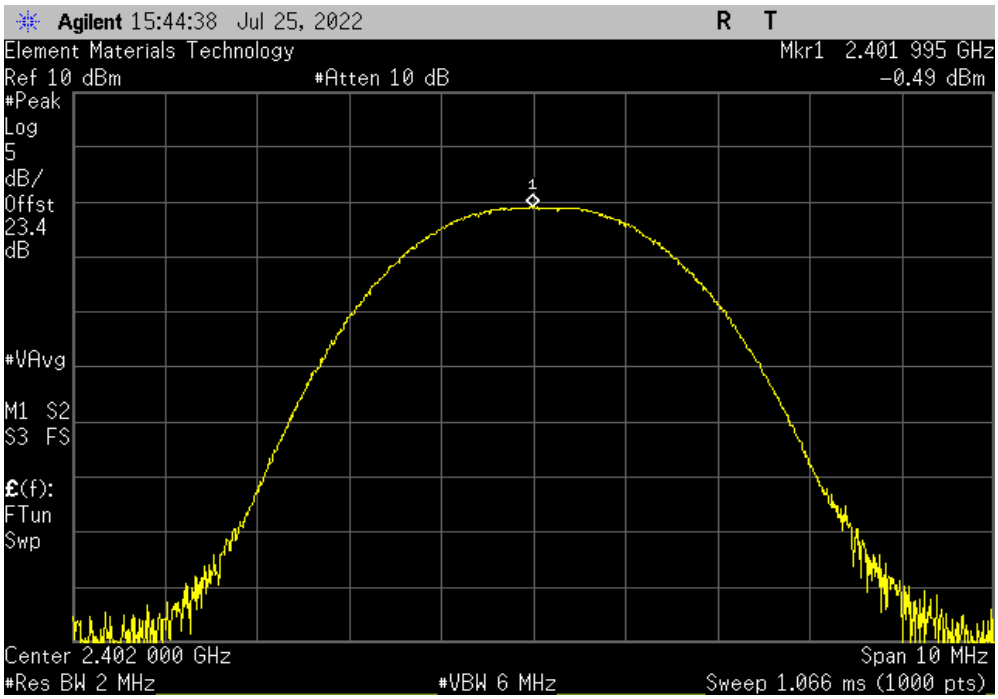
None

Configuration #	**4**	*Signature*

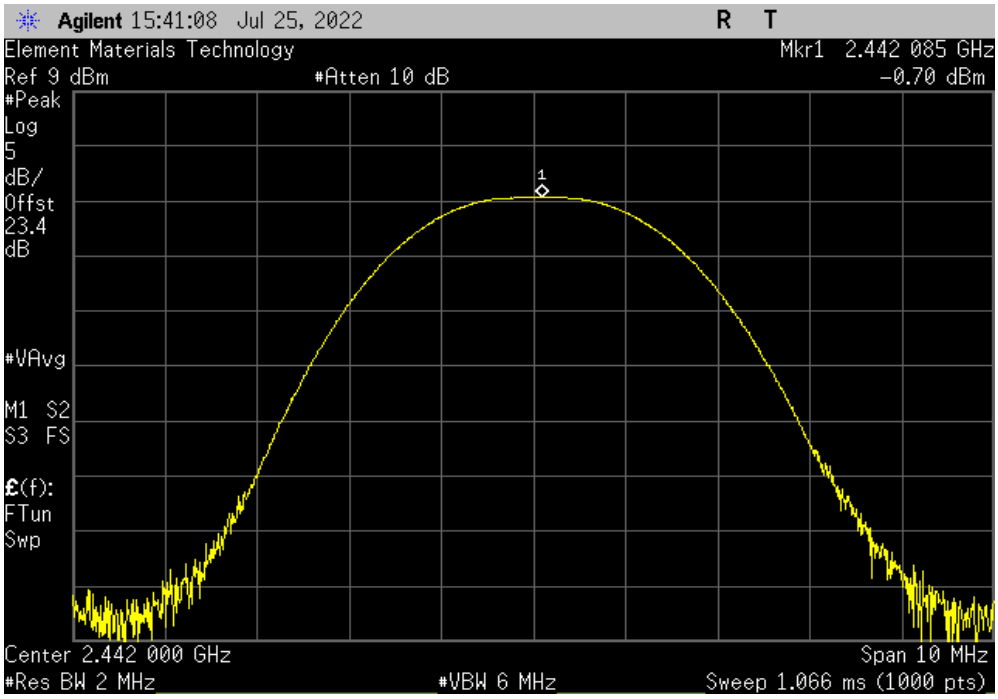
	Out Pwr (dBm)	**Limit (dBm)**	**Result**
BLE/GFSK 1 Mbps Low Channel, 2402 MHz	-0.485	30	Pass
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz	-0.696	30	Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz	0.223	30	Pass
BLE/GFSK 2 Mbps Low Channel, 2402 MHz	-0.401	30	Pass
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz	-0.603	30	Pass
BLE/GFSK 2 Mbps High Channel, 2480 MHz	0.297	30	Pass

OUTPUT POWER

BLE/GFSK 1 Mbps Low Channel, 2402 MHz							
					Out Pwr (dBm)	Limit (dBm)	Result
					-0.485	30	Pass

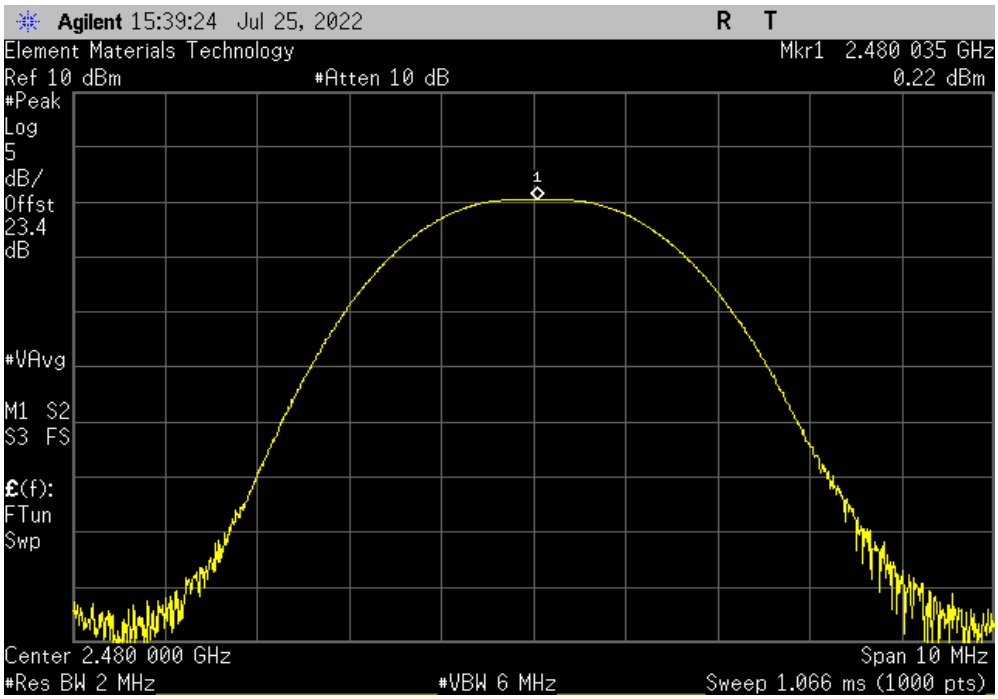


BLE/GFSK 1 Mbps Mid Channel, 2442 MHz							
					Out Pwr (dBm)	Limit (dBm)	Result
					-0.696	30	Pass

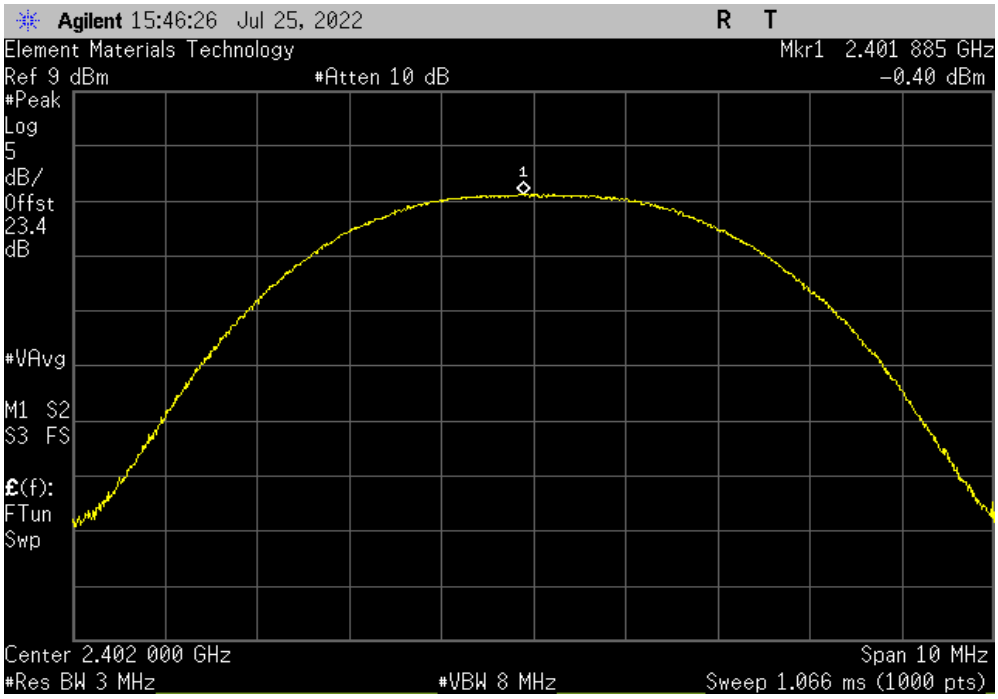


OUTPUT POWER

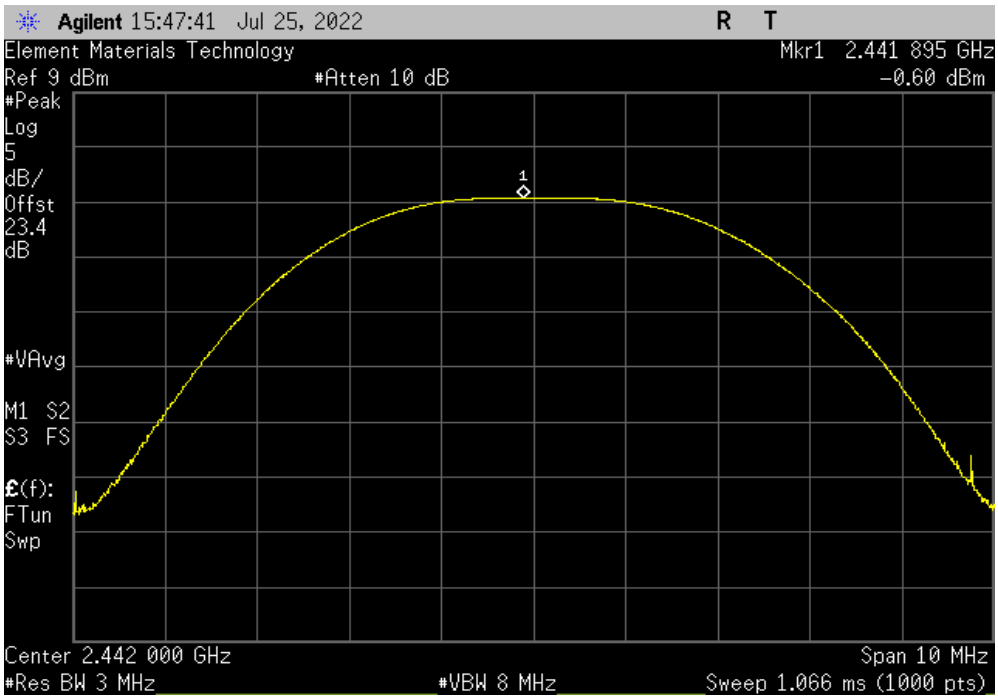
BLE/GFSK 1 Mbps High Channel, 2480 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				0.223	30	Pass



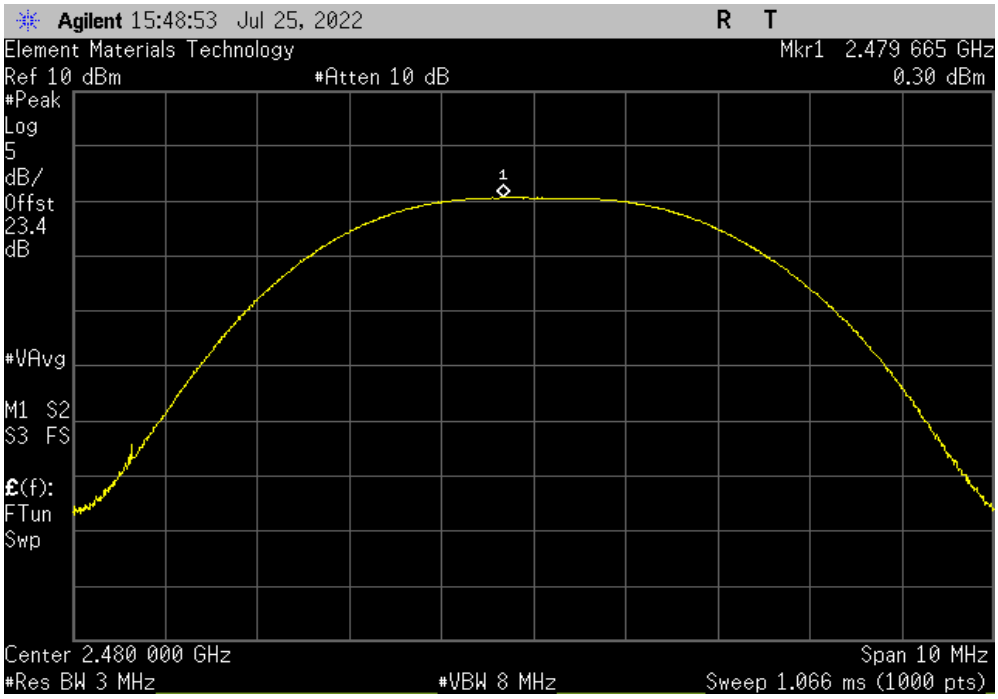
BLE/GFSK 2 Mbps Low Channel, 2402 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				-0.401	30	Pass



BLE/GFSK 2 Mbps Mid Channel, 2442 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				-0.603	30	Pass



BLE/GFSK 2 Mbps High Channel, 2480 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				0.297	30	Pass



EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

XMit 2022.02.07.0

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	E8257D	TGU	2020-11-03	2023-11-03
Cable	Element	None	OC5	2022-02-14	2023-02-14
Attenuator	Fairview Microwave	SA18H-20	UAY	2022-03-30	2023-03-30
Block - DC	Aeroflex	INMET 8535	AMO	2022-02-18	2023-02-18
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	2021-10-14	2022-10-14

TEST DESCRIPTION

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

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

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

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

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

TbtTx 2022.06.03.0 XMit 2022.02.07.0

EUT:	Vitls Tego VT-F-010-V2			**Work Order:**	VITL0001
Serial Number:	EF7D9BEDAB03			**Date:**	25-Jul-22
Customer:	Vitls Inc			**Temperature:**	23.9 °C
Attendees:	Mohamed Elmahdy			**Humidity:**	47.6% RH
Project:	None			**Barometric Pres.:**	1015 mbar
Tested by:	Mark Baytan	**Power:**	3.0VDC via Battery	**Job Site:**	OC13

TEST SPECIFICATIONS	Test Method
FCC 15.247:2022	ANSI C63.10:2013

COMMENTS

Reference Level Offset = 20dB Attenuator + DC Block + Coax Cable + Patch Pigtail Cable = 23.4dB

DEVIATIONS FROM TEST STANDARD

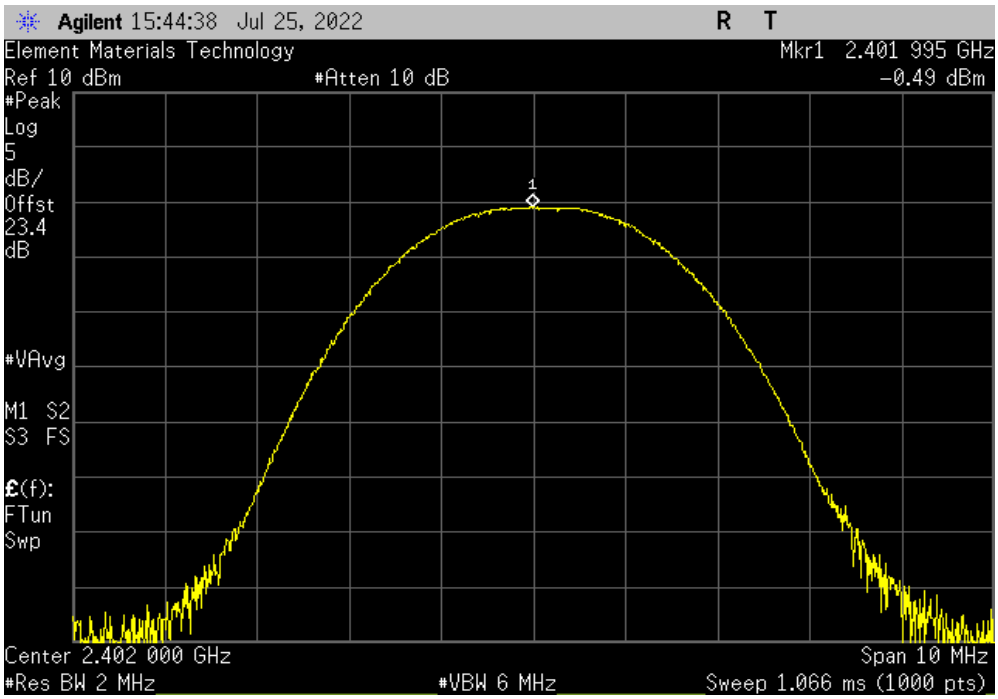
None

Configuration #	4	Signature

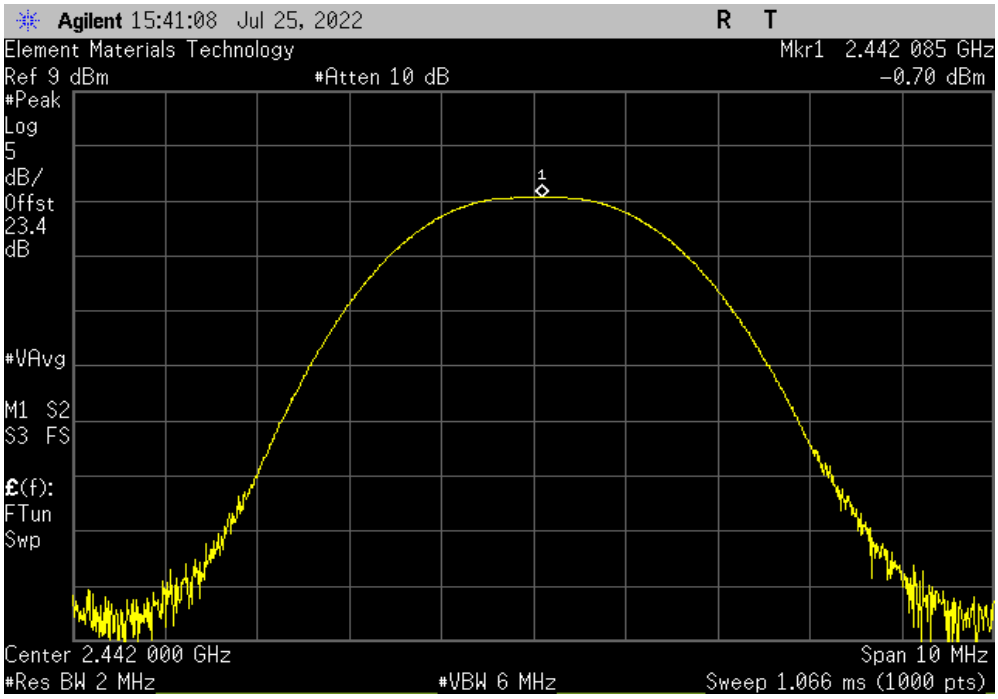
	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
BLE/GFSK 1 Mbps Low Channel, 2402 MHz	-0.485	3.7	3.215	36	Pass
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz	-0.696	3.7	3.004	36	Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz	0.223	3.7	3.923	36	Pass
BLE/GFSK 2 Mbps Low Channel, 2402 MHz	-0.401	3.7	3.299	36	Pass
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz	-0.603	3.7	3.097	36	Pass
BLE/GFSK 2 Mbps High Channel, 2480 MHz	0.297	3.7	3.997	36	Pass

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
		Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
		-0.485	3.7	3.215	36	Pass

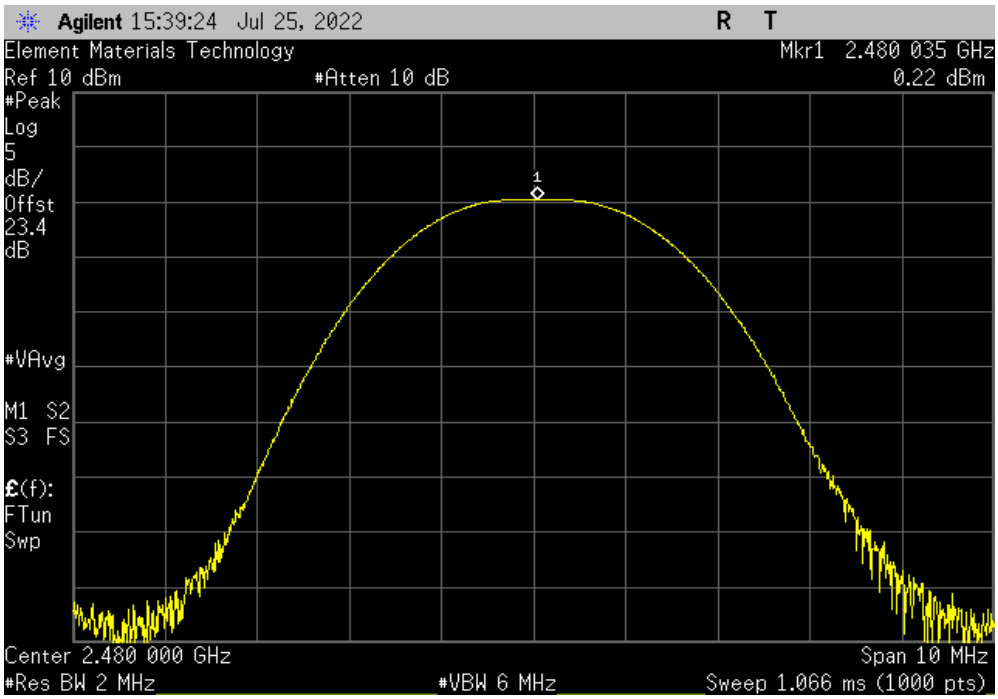


BLE/GFSK 1 Mbps Mid Channel, 2442 MHz						
		Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
		-0.696	3.7	3.004	36	Pass

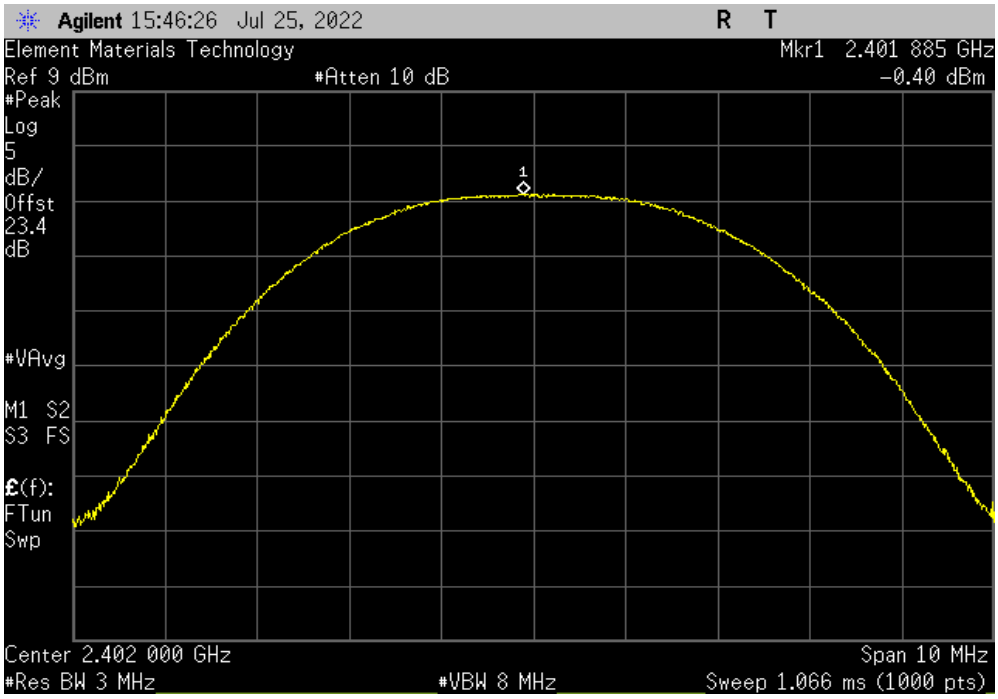


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

BLE/GFSK 1 Mbps High Channel, 2480 MHz						
		Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
		0.223	3.7	3.923	36	Pass

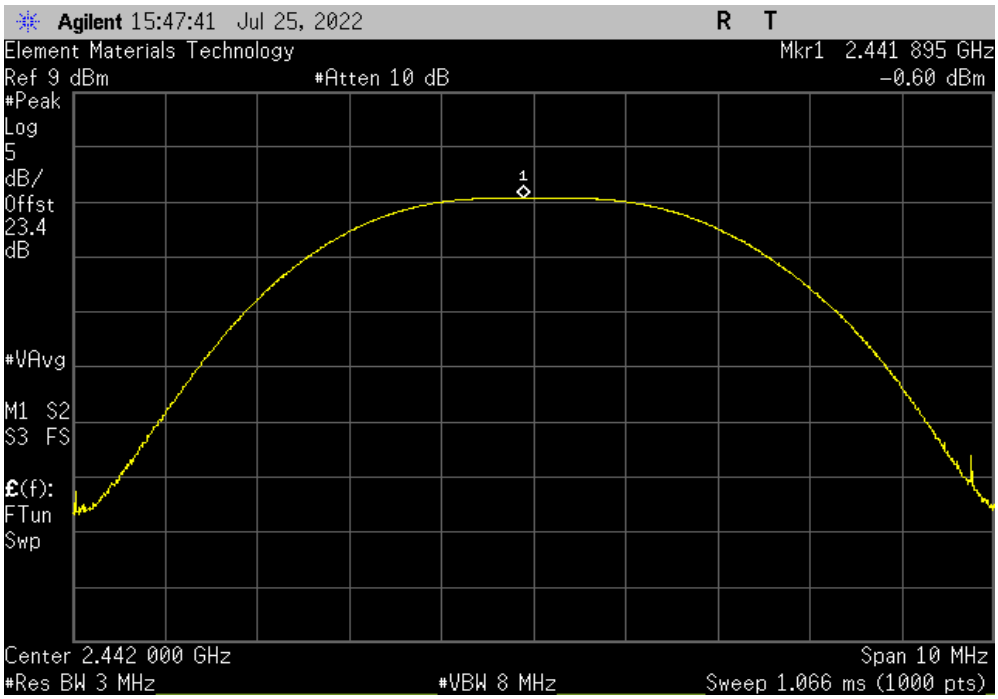


BLE/GFSK 2 Mbps Low Channel, 2402 MHz						
		Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
		-0.401	3.7	3.299	36	Pass

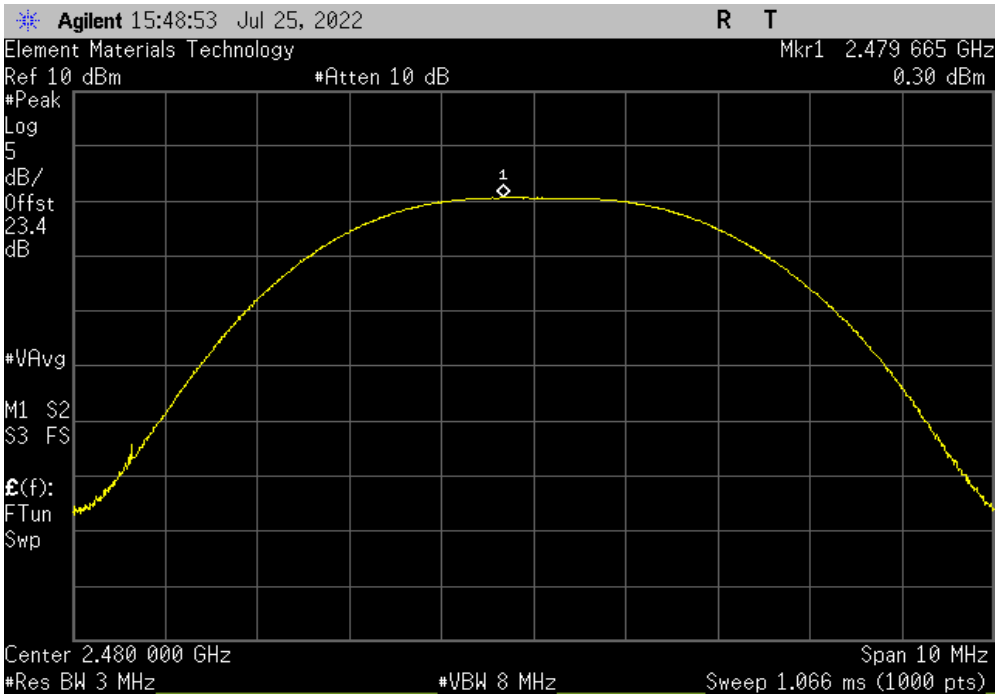


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

BLE/GFSK 2 Mbps Mid Channel, 2442 MHz						
		Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
		-0.603	3.7	3.097	36	Pass



BLE/GFSK 2 Mbps High Channel, 2480 MHz						
		Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
		0.297	3.7	3.997	36	Pass



POWER SPECTRAL DENSITY

XMit 2022.02.07.0

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	E8257D	TGU	2020-11-03	2023-11-03
Cable	Element	None	OC5	2022-02-14	2023-02-14
Attenuator	Fairview Microwave	SA18H-20	UAY	2022-03-30	2023-03-30
Block - DC	Aeroflex	INMET 8535	AMO	2022-02-18	2023-02-18
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	2021-10-14	2022-10-14

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 2022.06.03.0 XMit 2022.02.07.0

EUT:	**Vitls Tego VT-F-010-V2**			**Work Order:**	**VITL0001**
Serial Number:	**EF7D9BEDAB03**			**Date:**	**28-Jul-22**
Customer:	**Vitls Inc**			**Temperature:**	**24.3 °C**
Attendees:	**Mohamed Elmahdy**			**Humidity:**	**46.6% RH**
Project:	**None**			**Barometric Pres.:**	**1014 mbar**
Tested by:	**Mark Baytan**	**Power:**	**3.0VDC via Battery**	**Job Site:**	**OC13**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2022	ANSI C63.10:2013

COMMENTS

Reference Level Offset = 20dB Attenuator + DC Block + Coax Cable + Patch Pigtail Cable = 23.4dB

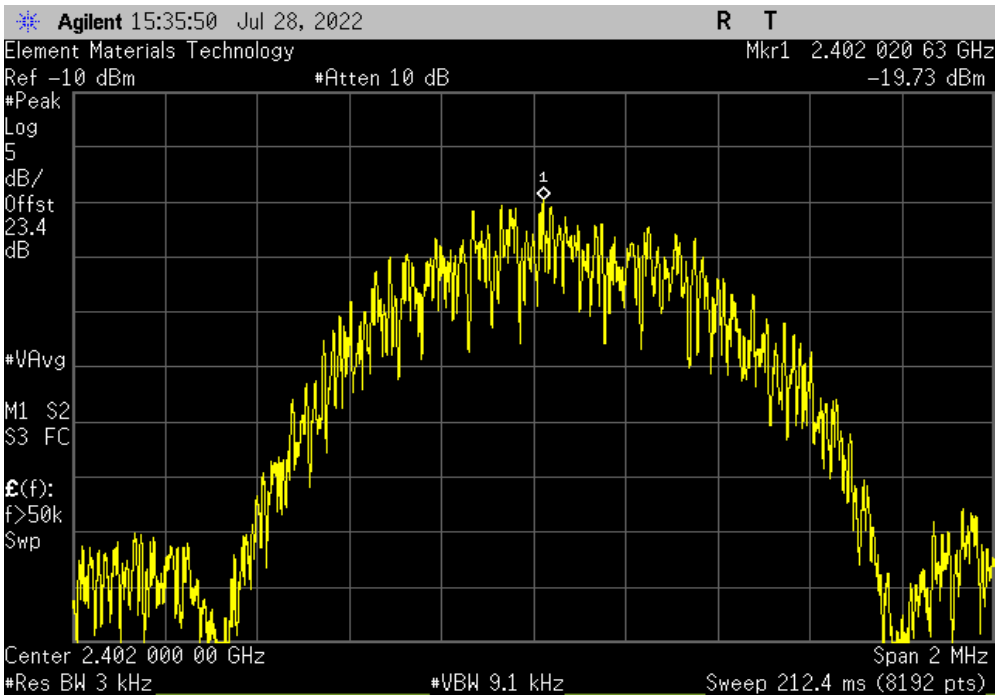
DEVIATIONS FROM TEST STANDARD

None

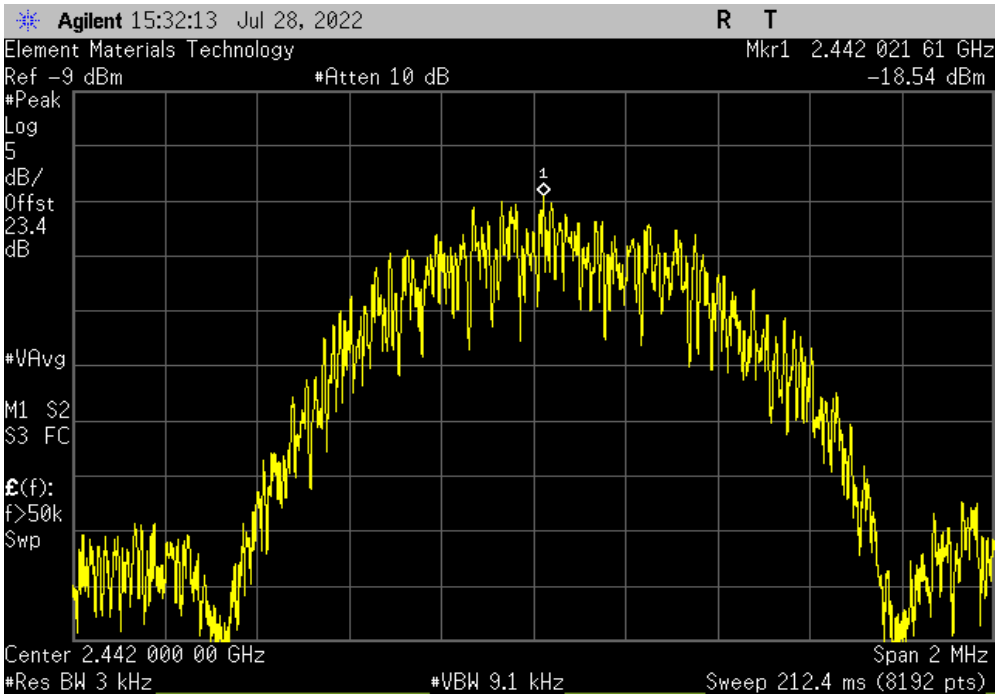
Configuration #	**4**	*Signature*

	Value dBm/3kHz	**Limit < dBm/3kHz**	**Results**
BLE/GFSK 1 Mbps Low Channel, 2402 MHz	-19.728	8	Pass
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz	-18.539	8	Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz	-17.183	8	Pass
BLE/GFSK 2 Mbps Low Channel, 2402 MHz	-22.176	8	Pass
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz	-21.004	8	Pass
BLE/GFSK 2 Mbps High Channel, 2480 MHz	-19.731	8	Pass

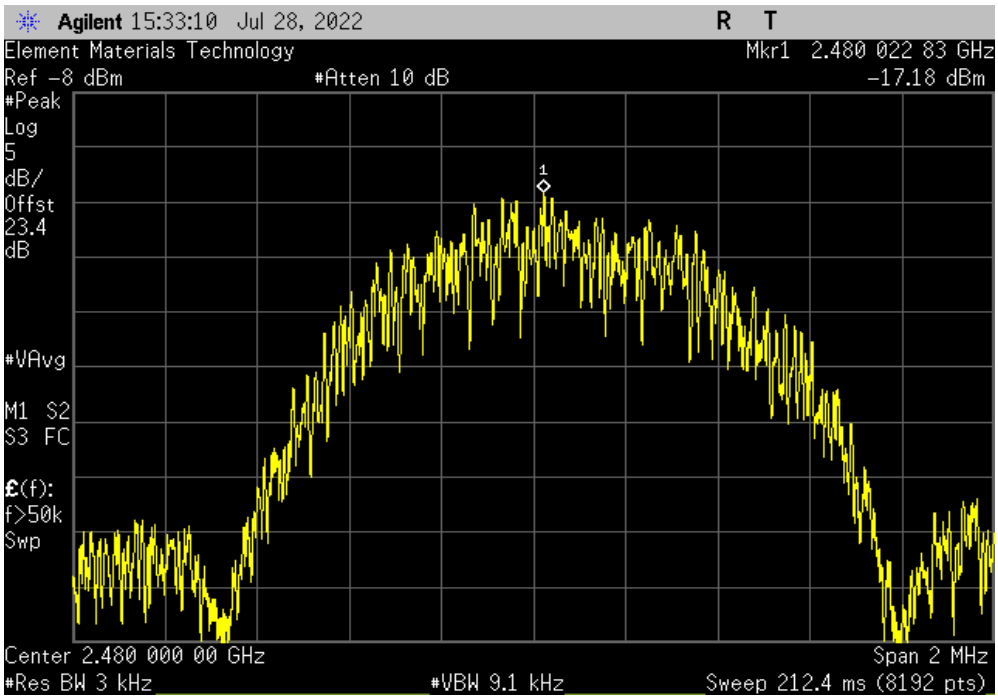
BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-19.728	8	Pass



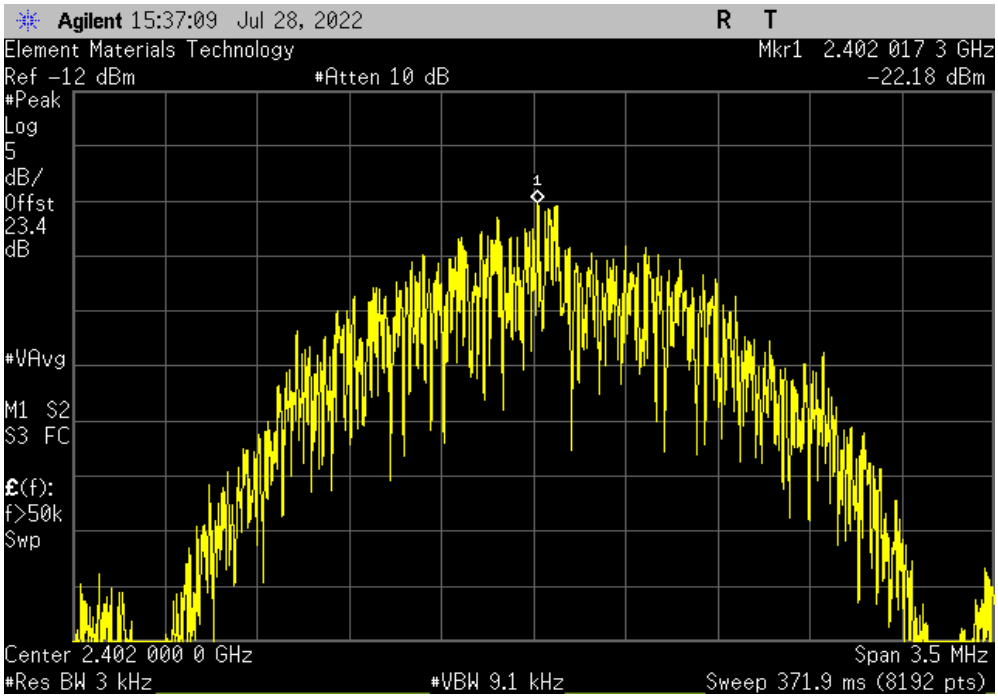
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-18.539	8	Pass



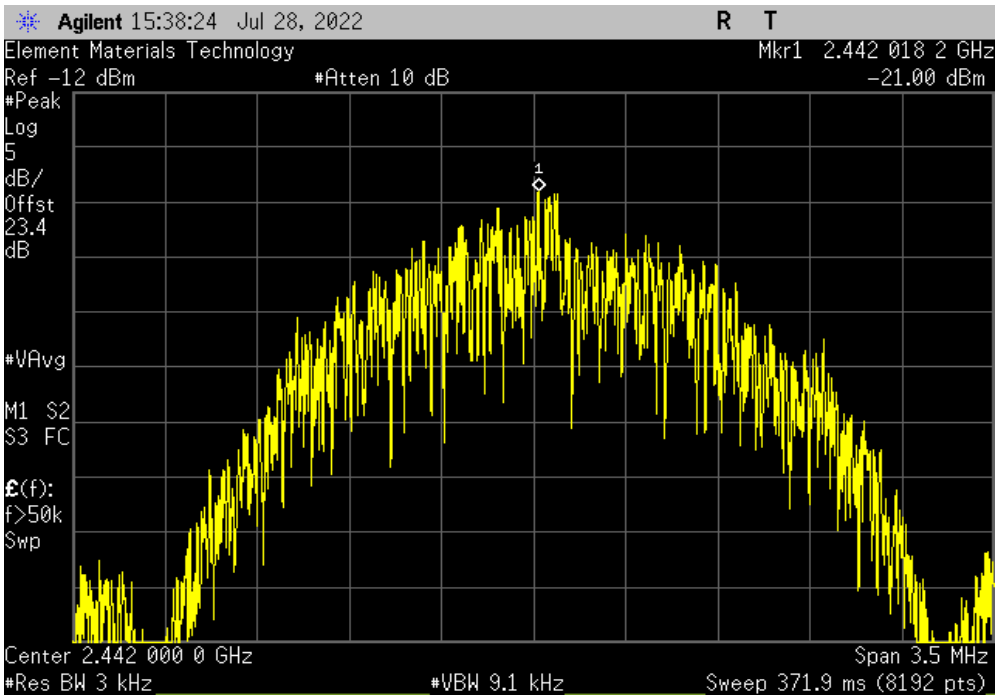
BLE/GFSK 1 Mbps High Channel, 2480 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-17.183	8	Pass



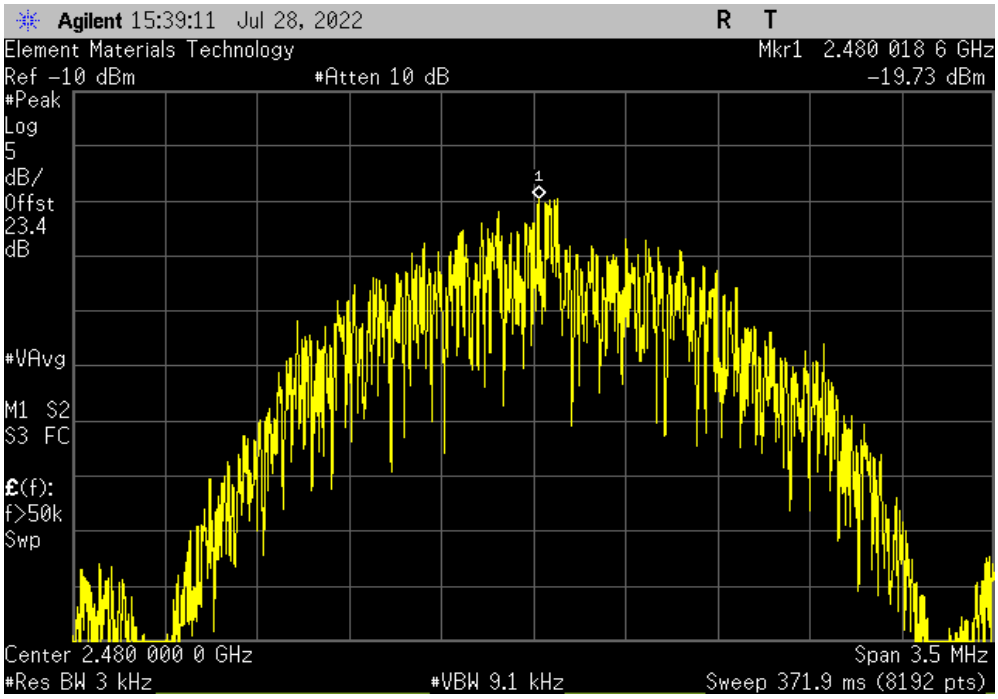
BLE/GFSK 2 Mbps Low Channel, 2402 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-22.176	8	Pass



BLE/GFSK 2 Mbps Mid Channel, 2442 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-21.004	8	Pass



BLE/GFSK 2 Mbps High Channel, 2480 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-19.731	8	Pass



BAND EDGE COMPLIANCE

XMit 2022.02.07.0

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	E8257D	TGU	2020-11-03	2023-11-03
Cable	Element	None	OC5	2022-02-14	2023-02-14
Attenuator	Fairview Microwave	SA18H-20	UAY	2022-03-30	2023-03-30
Block - DC	Aeroflex	INMET 8535	AMO	2022-02-18	2023-02-18
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	2021-10-14	2022-10-14

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 2022.06.03.0 XMit 2022.02.07.0

EUT:	Vitls Tego VT-F-010-V2			**Work Order:**	VITL0001
Serial Number:	EF7D9BEDAB03			**Date:**	14-Jul-22
Customer:	Vitls Inc			**Temperature:**	23.8 °C
Attendees:	Mohamed Elmahdy			**Humidity:**	48% RH
Project:	None			**Barometric Pres.:**	1017 mbar
Tested by:	Vincent Liwag, Mark Baytan	**Power:**	3.0VDC via Battery	**Job Site:**	OC13

TEST SPECIFICATIONS	Test Method
FCC 15.247:2022	ANSI C63.10:2013

COMMENTS

Reference Level Offset = 20dB Attenuator + DC Block + Coax Cable + Patch Pigtail Cable = 23.4dB

DEVIATIONS FROM TEST STANDARD

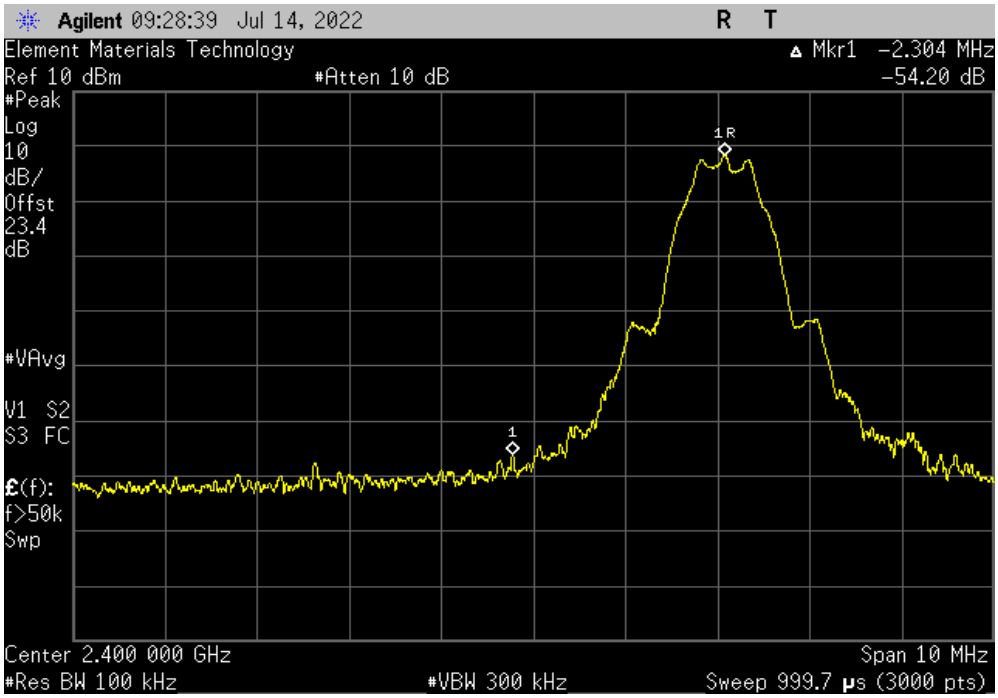
None

Configuration #	4	Signature

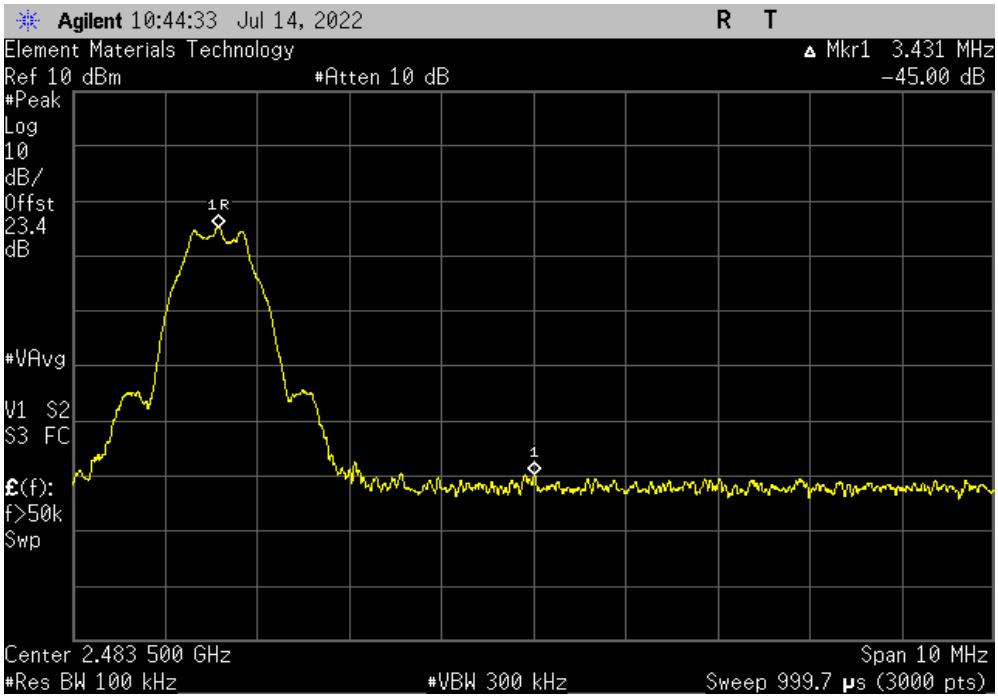
	Value (dBc)	Limit ≤ (dBc)	Result
BLE/GFSK 1 Mbps Low Channel, 2402 MHz	-54.20	-20	Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz	-45.00	-20	Pass
BLE/GFSK 2 Mbps Low Channel, 2402 MHz	-35.74	-20	Pass
BLE/GFSK 2 Mbps High Channel, 2480 MHz	-44.37	-20	Pass

BAND EDGE COMPLIANCE

BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-54.20	-20	Pass



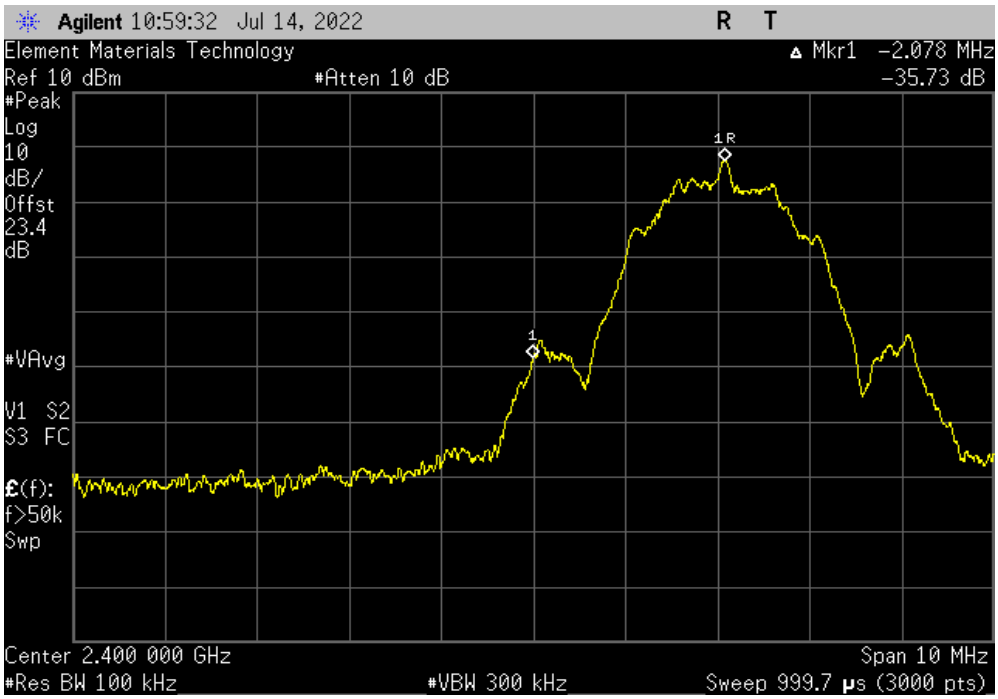
BLE/GFSK 1 Mbps High Channel, 2480 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-45.00	-20	Pass



BAND EDGE COMPLIANCE

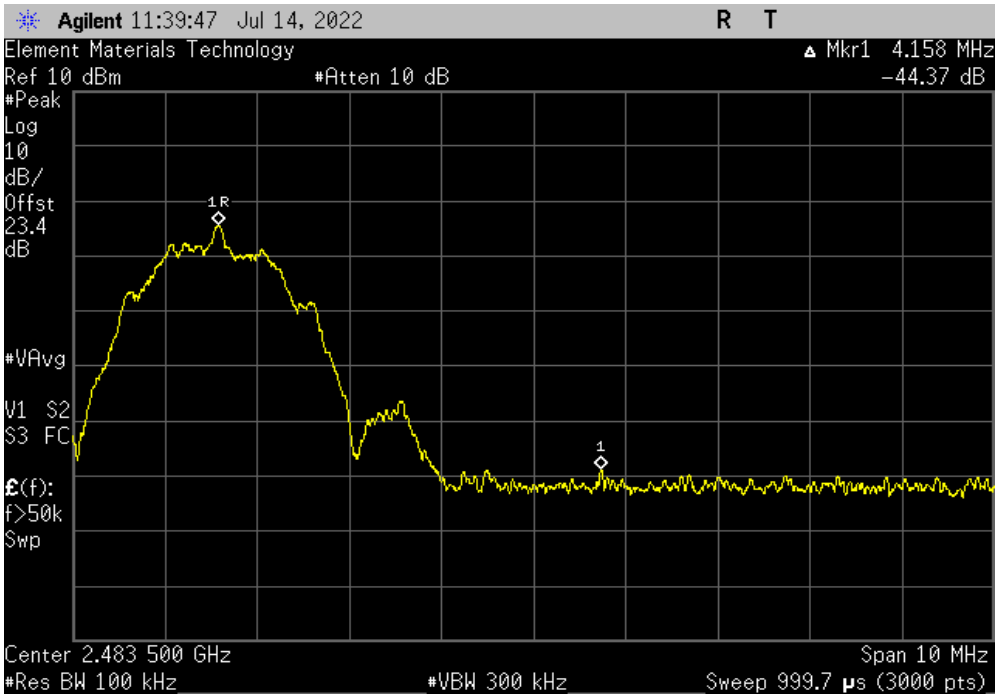
BLE/GFSK 2 Mbps Low Channel, 2402 MHz

				Value (dBc)	Limit ≤ (dBc)	Result
				-35.74	-20	Pass



BLE/GFSK 2 Mbps High Channel, 2480 MHz

				Value (dBc)	Limit ≤ (dBc)	Result
				-44.37	-20	Pass



SPURIOUS CONDUCTED EMISSIONS

XMit 2022.02.07.0

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	E8257D	TGU	2020-11-03	2023-11-03
Cable	Element	None	OC5	2022-02-14	2023-02-14
Attenuator	Fairview Microwave	SA18H-20	UAY	2022-03-30	2023-03-30
Block - DC	Aeroflex	INMET 8535	AMO	2022-02-18	2023-02-18
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	2021-10-14	2022-10-14

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 fundamental was measured with a 100 kHz resolution bandwidth and the highest value was recorded. The rest of the spectrum was then measured with a 100 kHz resolution bandwidth and the highest value was found. The difference between the value found on the fundamental and the rest of the spectrum was compared against the limit to determine compliance.

The reference level offset for the fundamental screen capture was based on a measured value of the loss between the spectrum analyzer and the EUT which was verified at the time of test. The remaining screen capture(s) use an internal transducer factor on the analyzer to correct the displayed trace based on the cable loss over frequency. The reference level offset for the additional screen capture(s) is then based on the expected attenuator value and any other losses.

Fundamental Offset = Ref Lvl Offset showing measured composite factor of all losses

Remaining Screen capture(s) Offset = “Internal” cable loss factor not shown on screen capture + Ref Lvl Offset showing expected attenuator value and any other losses

SPURIOUS CONDUCTED EMISSIONS

TbtTx 2022.06.03.0 XMit 2022.02.07.0

EUT:	Vitls Tego VT-F-010-V2			**Work Order:**	VITL0001
Serial Number:	EF7D9BEDAB03			**Date:**	14-Jul-22
Customer:	Vitls Inc			**Temperature:**	23.8 °C
Attendees:	Mohamed Elmahdy			**Humidity:**	48% RH
Project:	None			**Barometric Pres.:**	1017 mbar
Tested by:	Vincent Liwag, Mark Baytan	**Power:**	3.0VDC via Battery	**Job Site:**	OC13

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2022	ANSI C63.10:2013

COMMENTS

Reference Level Offset = 20dB Attenuator + DC Block + Coax Cable + Patch Pigtail Cable = 23.4dB

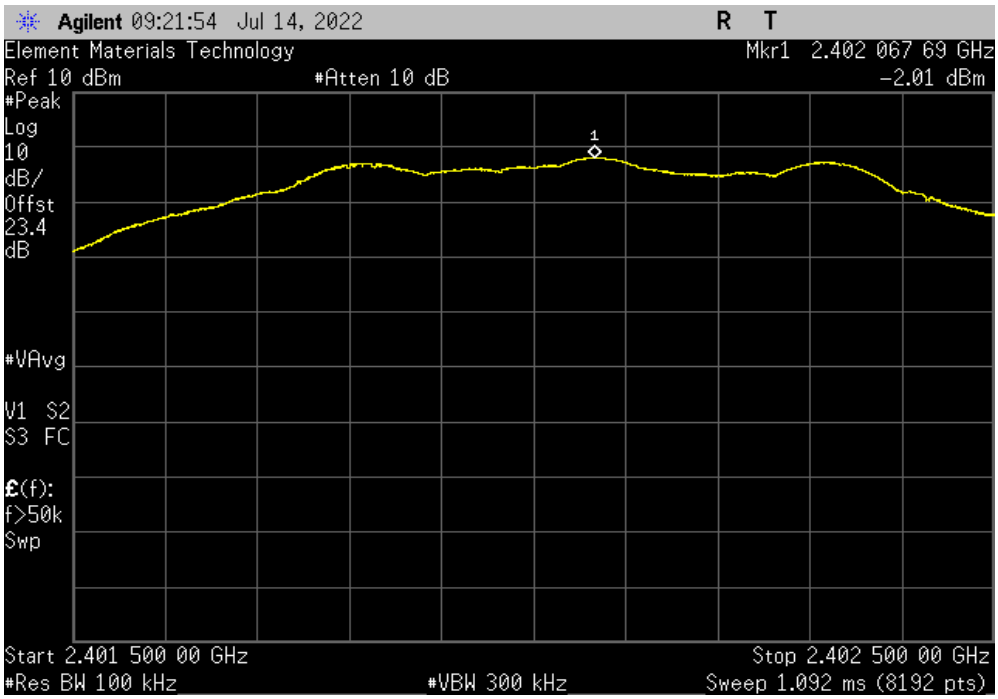
DEVIATIONS FROM TEST STANDARD

None

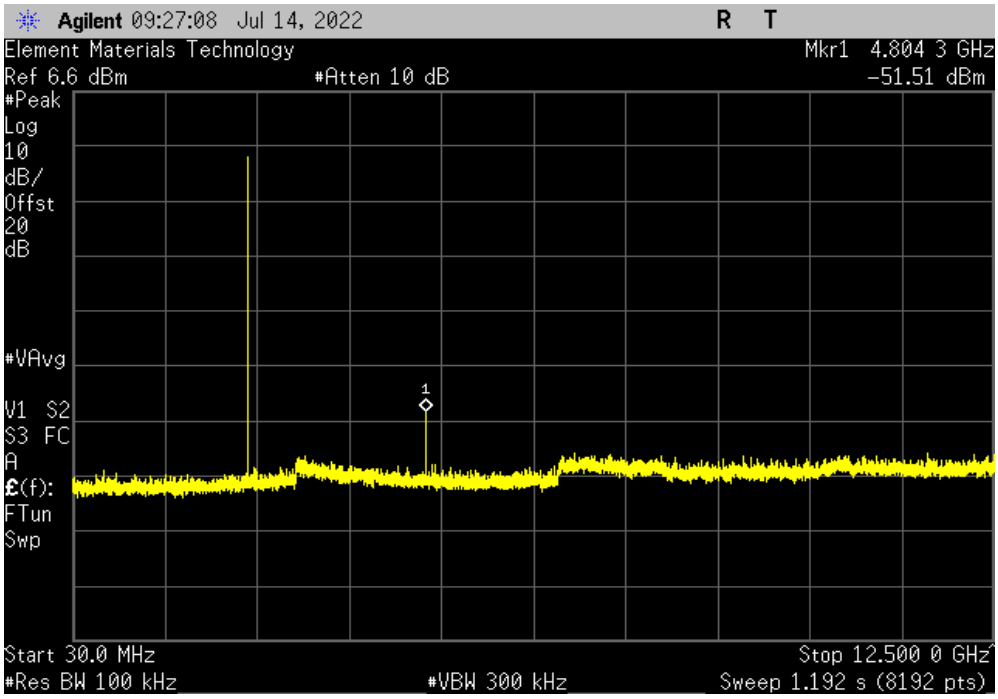
Configuration #	4	*Signature*

	Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
BLE/GFSK 1 Mbps Low Channel, 2402 MHz	Fundamental	2402.07	N/A	N/A	N/A
BLE/GFSK 1 Mbps Low Channel, 2402 MHz	30 MHz - 12.5 GHz	4804.3	-49.51	-20	Pass
BLE/GFSK 1 Mbps Low Channel, 2402 MHz	12.5 GHz - 25 GHz	22416.4	-53.55	-20	Pass
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz	Fundamental	2442.07	N/A	N/A	N/A
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz	30 MHz - 12.5 GHz	4883.4	-45.66	-20	Pass
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz	12.5 GHz - 25 GHz	24694.8	-48.55	-20	Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz	Fundamental	2480.07	N/A	N/A	N/A
BLE/GFSK 1 Mbps High Channel, 2480 MHz	30 MHz - 12.5 GHz	4959.5	-36.29	-20	Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz	12.5 GHz - 25 GHz	24763.5	-40.53	-20	Pass
BLE/GFSK 2 Mbps Low Channel, 2402 MHz	Fundamental	2402.07	N/A	N/A	N/A
BLE/GFSK 2 Mbps Low Channel, 2402 MHz	30 MHz - 12.5 GHz	4805.8	-49.82	-20	Pass
BLE/GFSK 2 Mbps Low Channel, 2402 MHz	12.5 GHz - 25 GHz	20846.1	-51.71	-20	Pass
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz	Fundamental	2442.07	N/A	N/A	N/A
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz	30 MHz - 12.5 GHz	4883.4	-46.67	-20	Pass
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz	12.5 GHz - 25 GHz	24049.3	-48.96	-20	Pass
BLE/GFSK 2 Mbps High Channel, 2480 MHz	Fundamental	2480.06	N/A	N/A	N/A
BLE/GFSK 2 Mbps High Channel, 2480 MHz	30 MHz - 12.5 GHz	4959.5	-39.95	-20	Pass
BLE/GFSK 2 Mbps High Channel, 2480 MHz	12.5 GHz - 25 GHz	24027.9	-40.58	-20	Pass

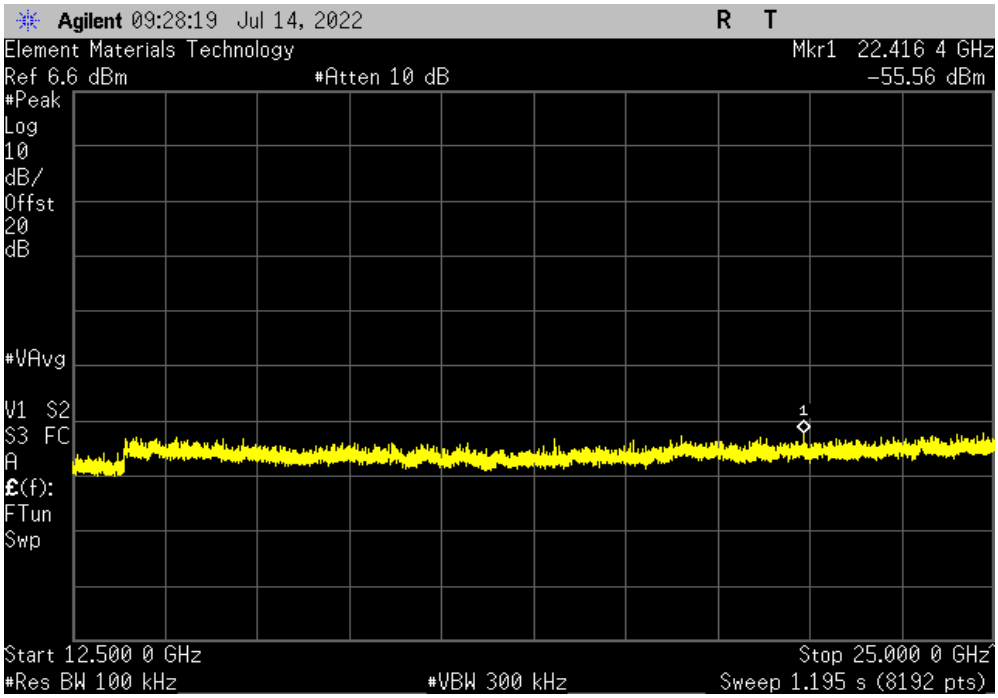
BLE/GFSK 1 Mbps Low Channel, 2402 MHz					
Frequency Range		Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
Fundamental		2402.07	N/A	N/A	N/A



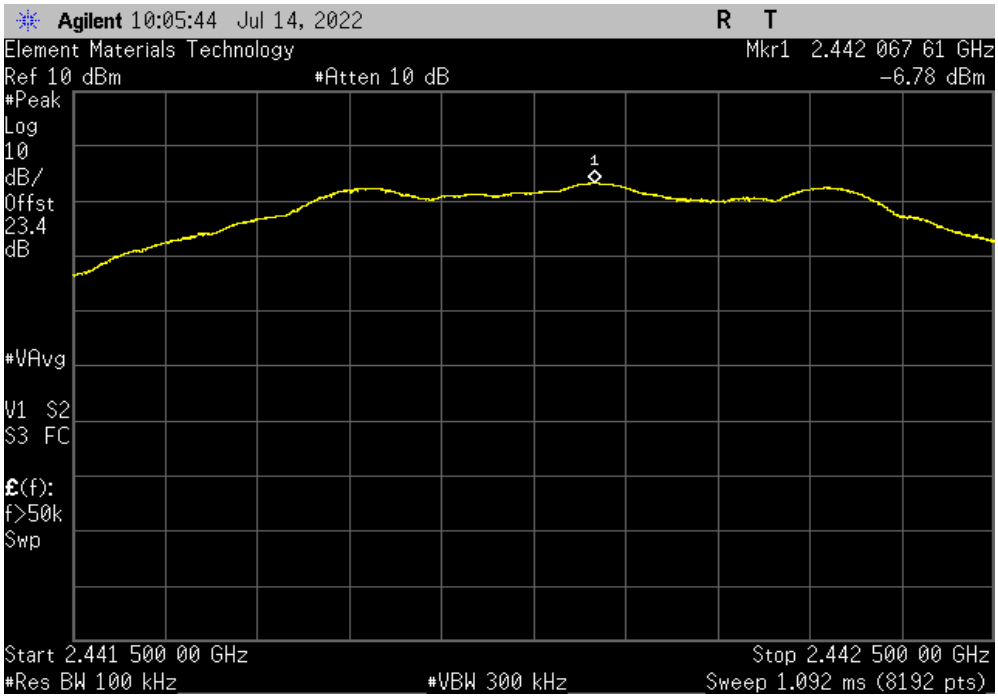
BLE/GFSK 1 Mbps Low Channel, 2402 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz	4804.3	-49.51	-20	Pass



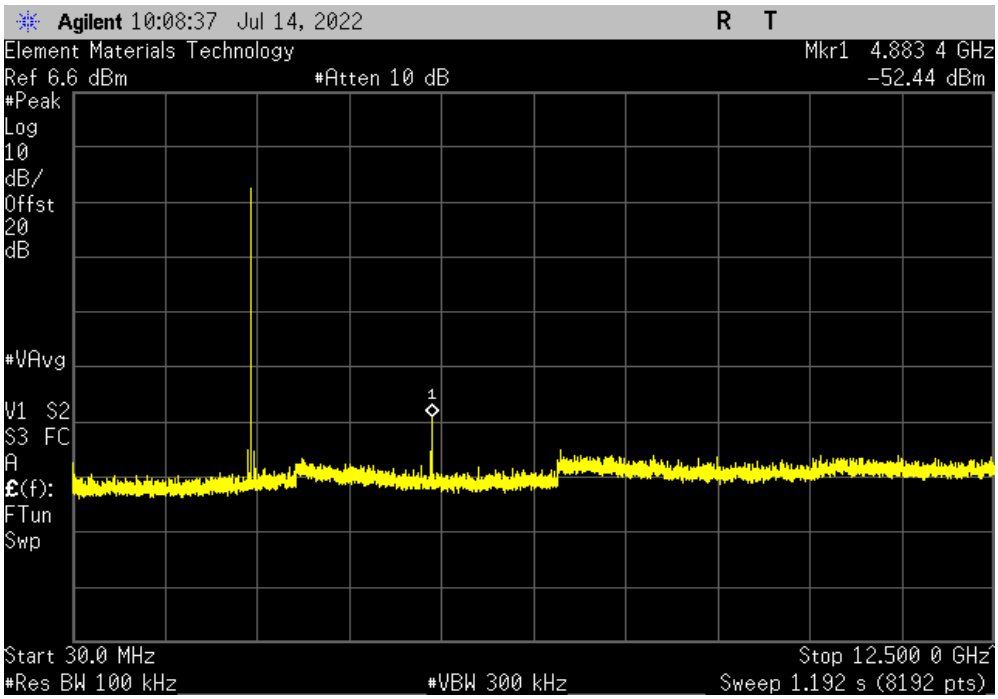
BLE/GFSK 1 Mbps Low Channel, 2402 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz	22416.4	-53.55	-20	Pass



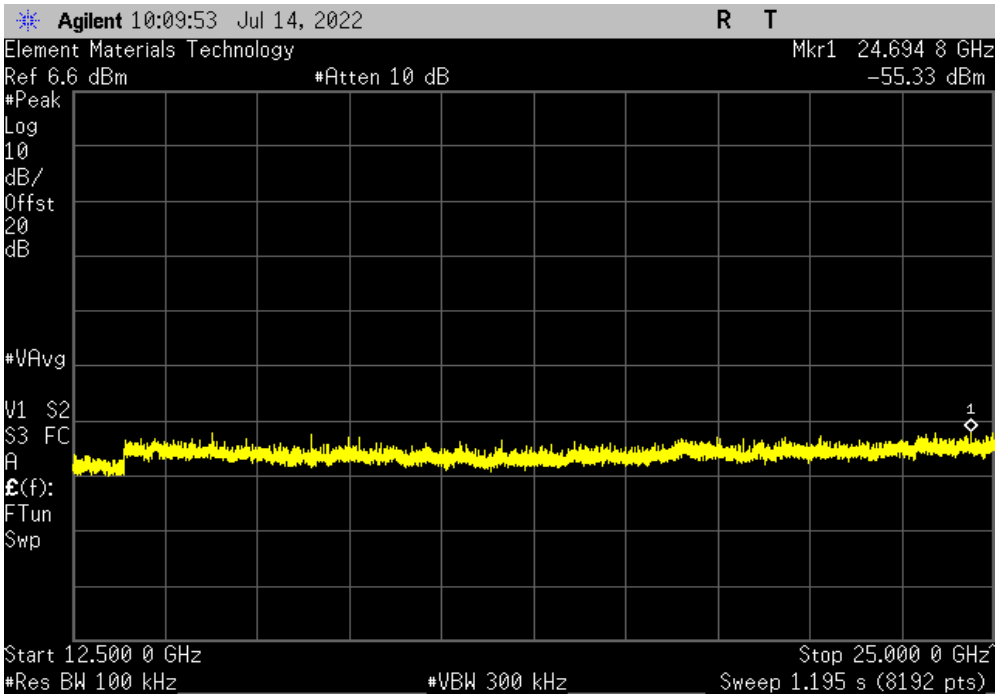
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
Fundamental	2442.07	N/A	N/A	N/A



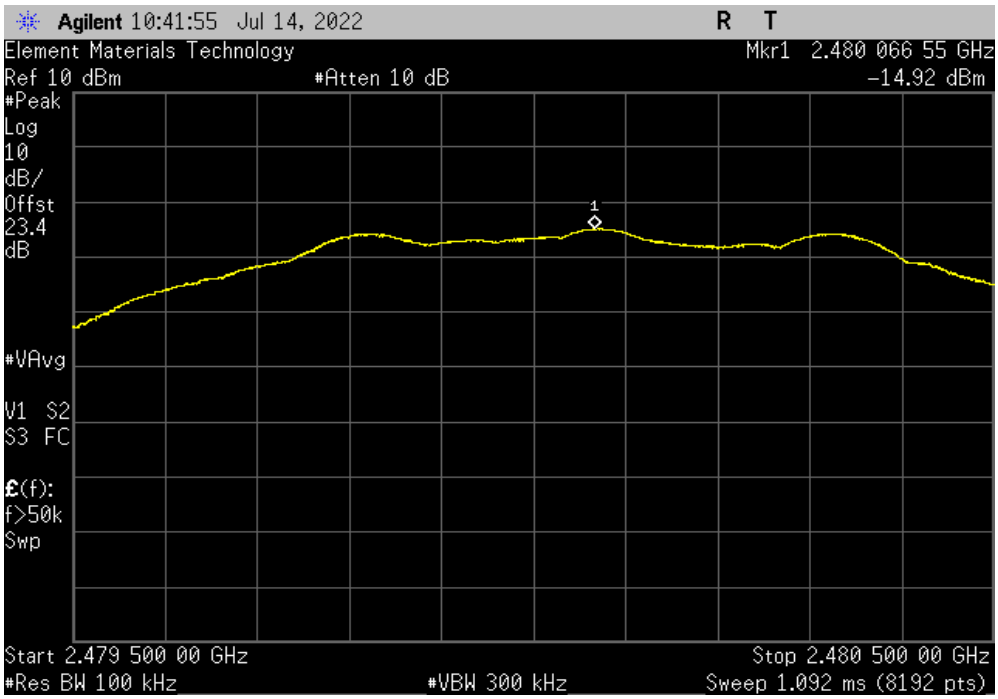
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz				
Frequency Range	**Measured Freq (MHz)**	**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz	4883.4	-45.66	-20	Pass



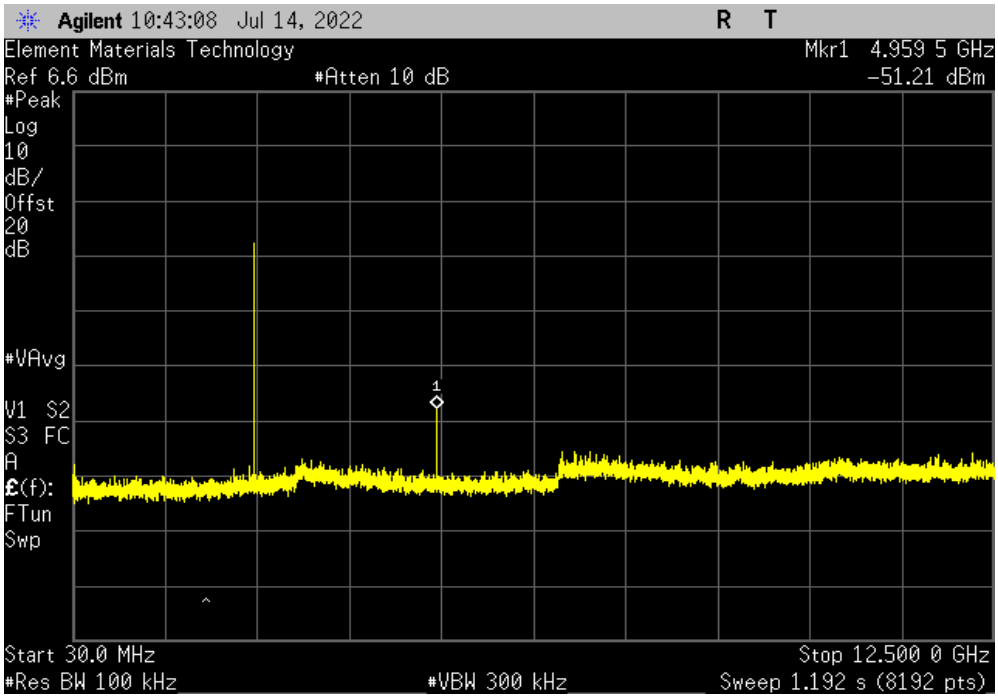
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz				
Frequency Range	**Measured Freq (MHz)**	**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz	24694.8	-48.55	-20	Pass



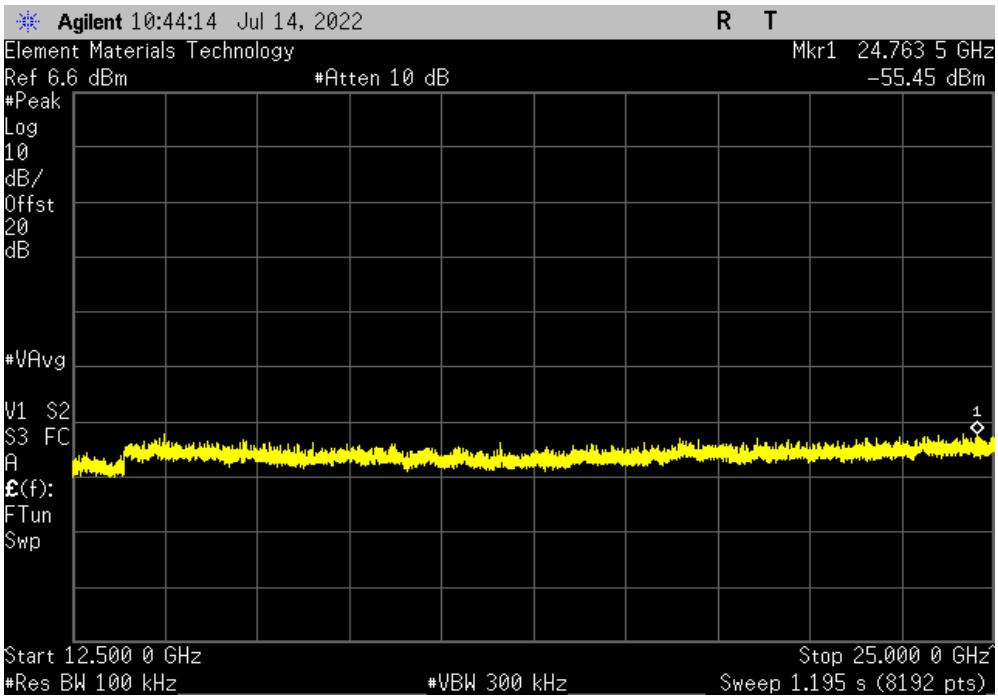
BLE/GFSK 1 Mbps High Channel, 2480 MHz					
Frequency Range		Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
Fundamental		2480.07	N/A	N/A	N/A



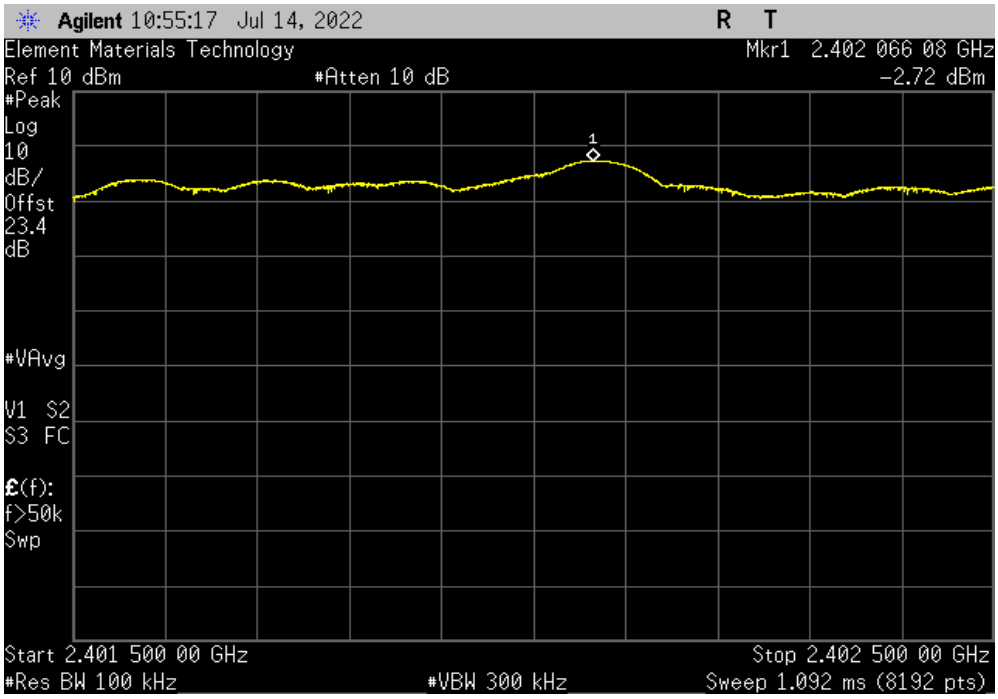
BLE/GFSK 1 Mbps High Channel, 2480 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz	4959.5	-36.29	-20	Pass



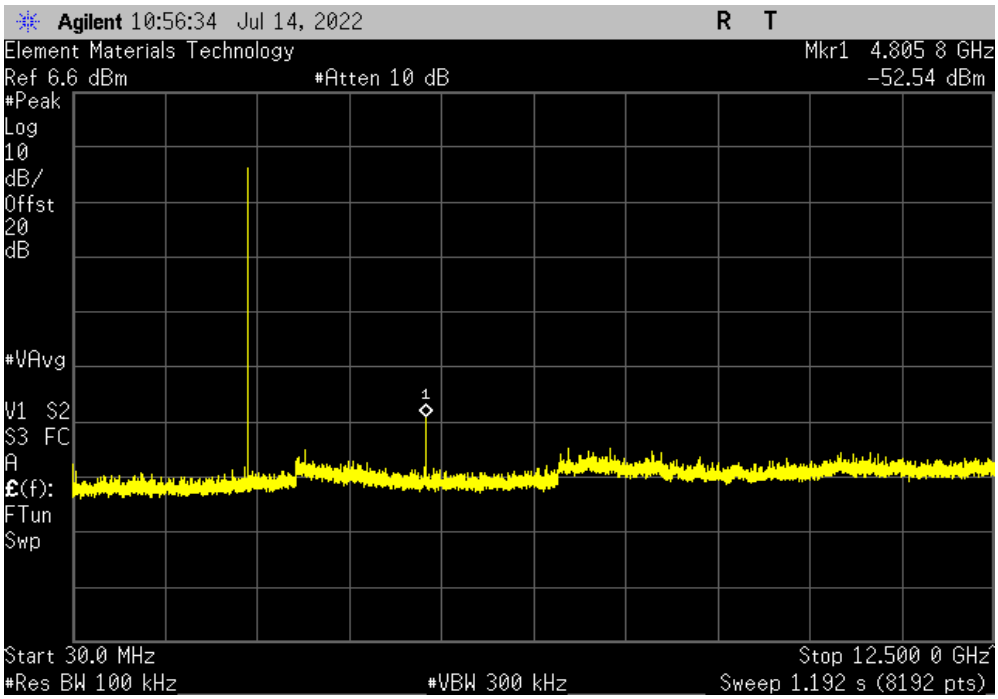
BLE/GFSK 1 Mbps High Channel, 2480 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz	24763.5	-40.53	-20	Pass



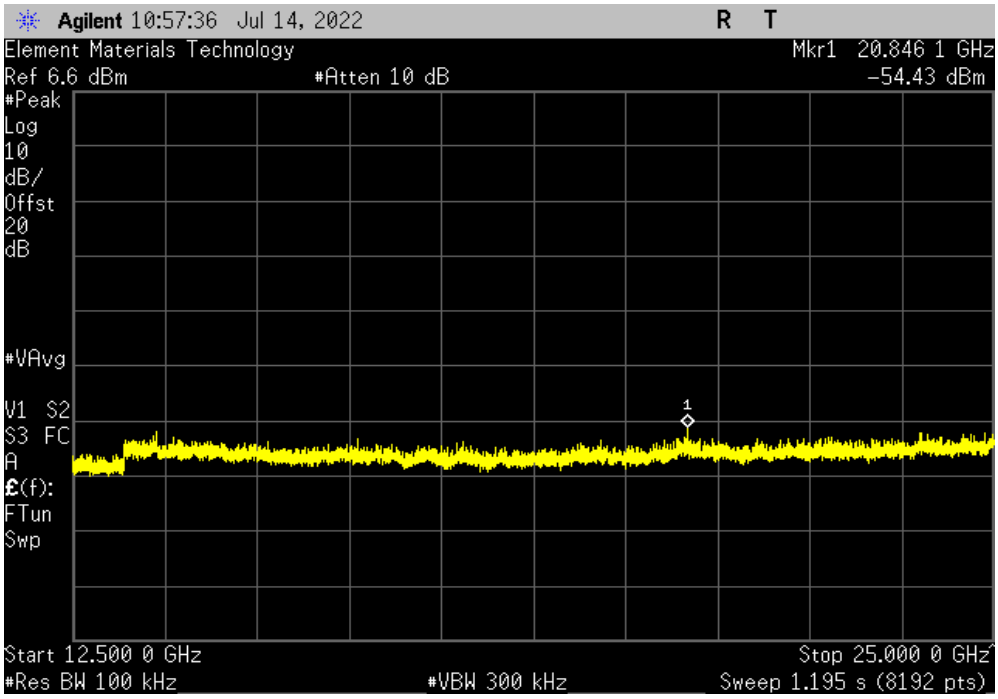
BLE/GFSK 2 Mbps Low Channel, 2402 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
Fundamental	2402.07	N/A	N/A	N/A



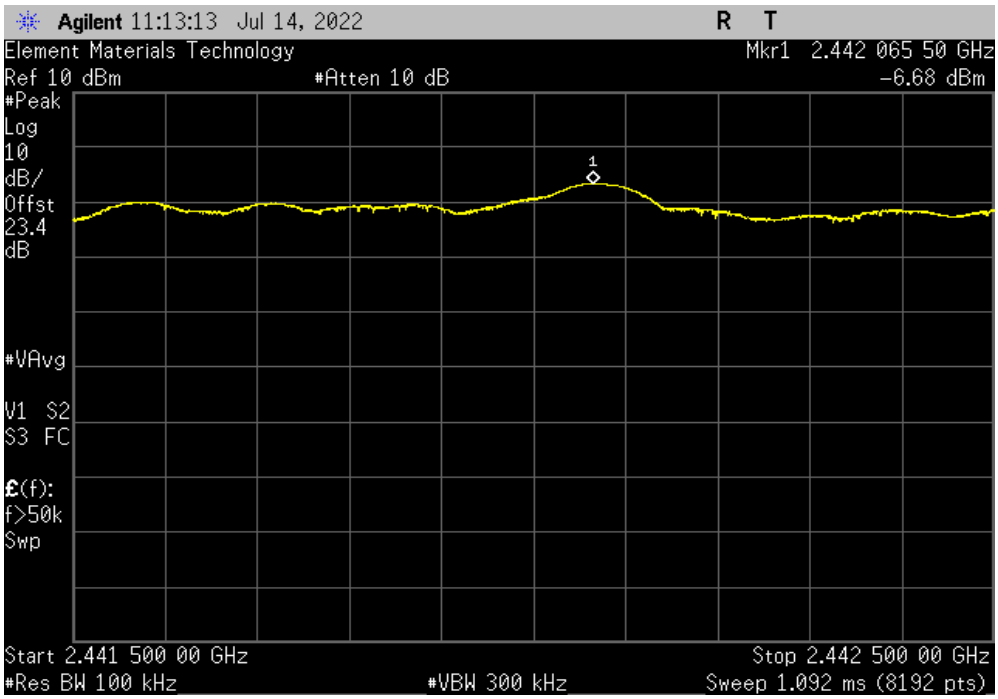
BLE/GFSK 2 Mbps Low Channel, 2402 MHz				
Frequency Range	**Measured Freq (MHz)**	**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz	4805.8	-49.82	-20	Pass



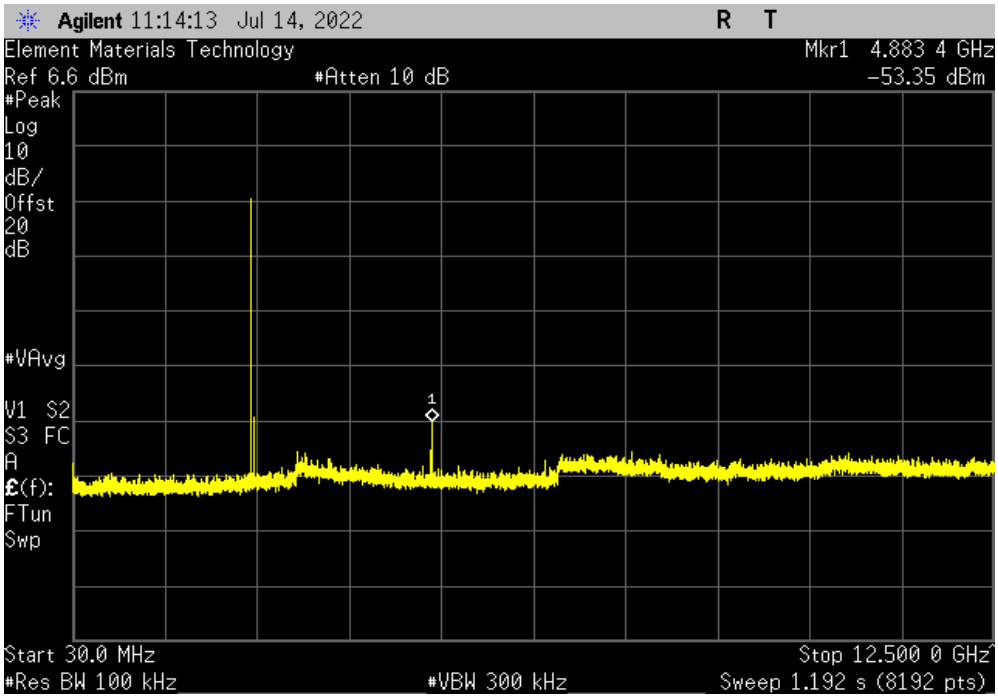
BLE/GFSK 2 Mbps Low Channel, 2402 MHz				
Frequency Range	**Measured Freq (MHz)**	**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz	20846.1	-51.71	-20	Pass



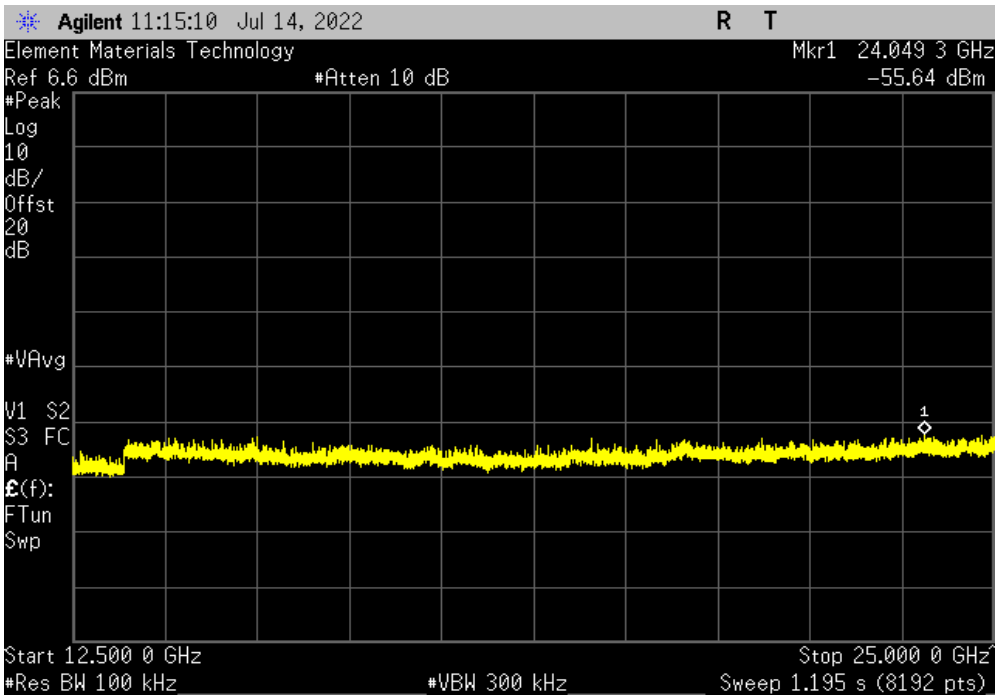
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz						
	Frequency Range		Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental		2442.07	N/A	N/A	N/A



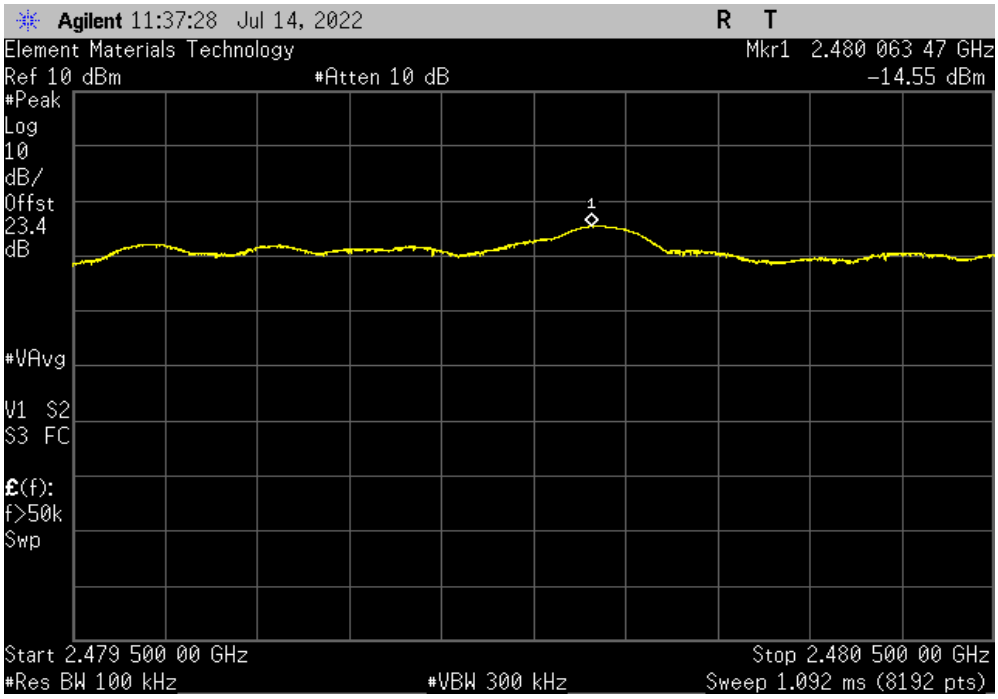
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz	4883.4	-46.67	-20	Pass



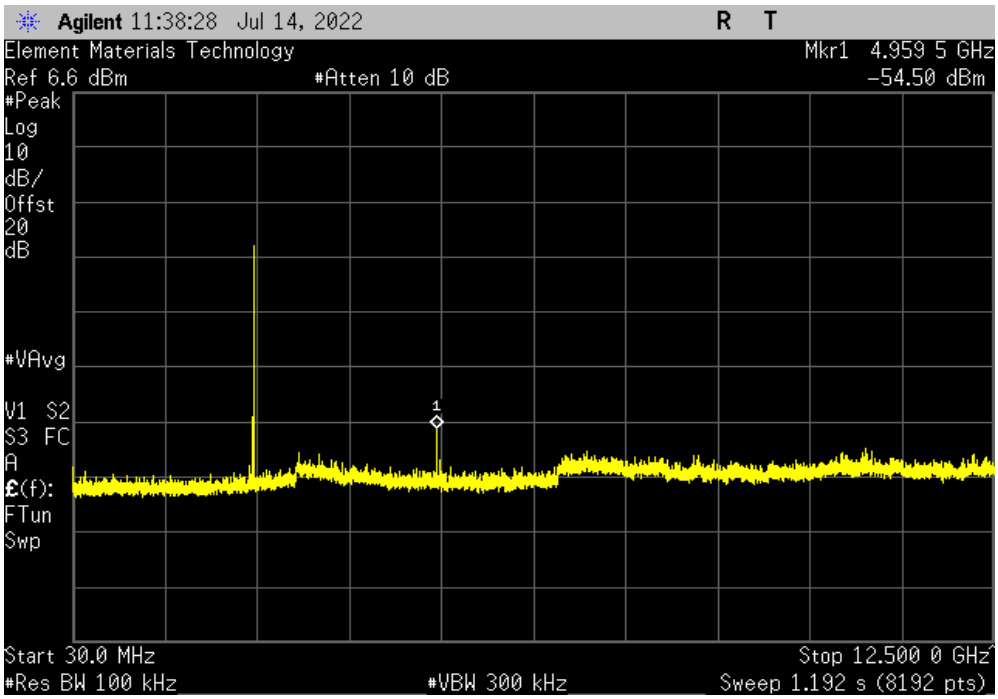
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz	24049.3	-48.96	-20	Pass



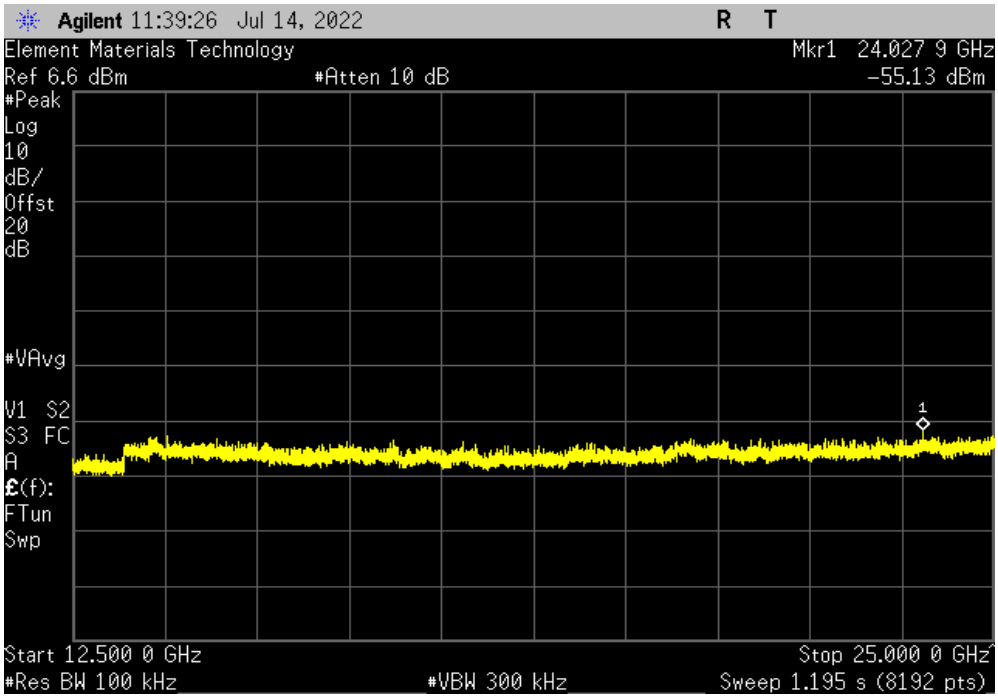
BLE/GFSK 2 Mbps High Channel, 2480 MHz					
Frequency Range		Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental	2480.06	N/A	N/A	N/A



BLE/GFSK 2 Mbps High Channel, 2480 MHz				
Frequency Range	**Measured Freq (MHz)**	**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz	4959.5	-39.95	-20	Pass



BLE/GFSK 2 Mbps High Channel, 2480 MHz				
Frequency Range	**Measured Freq (MHz)**	**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz	24027.9	-40.58	-20	Pass



SPURIOUS RADIATED EMISSIONS

element
WTD.2022.02.22.0
EmiR5 2022.07.06.0
PSA-ESCI 2022.1.12.0

TEST DESCRIPTION

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

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

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

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

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

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

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

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

Where the radio test software does not provide for a duty cycle at continuous transmit conditions (> 98%) and the RMS (power average) measurements were made across the on and off times of the EUT transmissions, a duty cycle correction is added to the measurements using the formula of 10*log(1/dc

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFJ	2022-01-12	2023-01-12
Antenna - Biconilog	EMCO	3142B	AXK	2022-04-19	2024-04-19
Cable	Northwest EMC	10kHz-1GHz RE Cables	OCH	2022-02-11	2023-02-11
Amplifier - Pre-Amplifier	Miteq	AM-1402	AOZ	2022-02-11	2023-02-11
Filter - Low Pass	Micro-Tronics	LPM50004	LFT	2022-01-14	2023-01-14
Antenna - Double Ridge	ETS Lindgren	3117	AHQ	2021-10-07	2023-10-07
Cable	Northwest EMC	1-8GHz RE Cables	OCJ	2022-02-09	2023-02-09
Amplifier - Pre-Amplifier	Cernex	CBL01084020-xx	PAX	2022-02-09	2023-02-09
Attenuator	Fairview Microwave	SA18H-10	TKP	2022-06-06	2023-06-06
Filter - High Pass	Micro-Tronics	HPM50111	HHX	2022-06-06	2023-06-06
Antenna - Standard Gain	ETS Lindgren	3160-07	AHR	NCR	NCR
Cable	Northwest EMC	8-18GHz RE Cables	OCO	2022-02-09	2023-02-09
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AOE	2022-02-09	2023-02-09
Antenna - Standard Gain	ETS Lindgren	3160-08	AHT	NCR	NCR
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AOF	2022-02-09	2023-02-09
Antenna - Standard Gain	ETS Lindgren	3160-09	AHN	NCR	NCR
Cable	Northwest EMC	18-26GHz RE Cables	OCK	2021-12-17	2022-12-17
Amplifier - Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AOI	2021-12-17	2022-12-17

SPURIOUS RADIATED EMISSIONS

element
WTD.2022.02.22.0
EmiR5 2022.07.06.0
PSA-ESCI 2022.1.12.0

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	5.1 dB	-5.1 dB

FREQUENCY RANGE INVESTIGATED

30 MHz TO 26500 MHz

POWER INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

VITL0001-3

MODES INVESTIGATED

Transmitting Bluetooth LE: Low Ch. 2402 MHz and High Ch. 2480 MHz. See comments for data rate.
Transmitting Bluetooth LE: Low Ch. 2402 MHz, Mid Ch. 2442 MHz, and High Ch. 2480 MHz. See comments for data rate.

SPURIOUS RADIATED EMISSIONS

element
WTD.2022.02.22.0
EmiR5 2022.07.06.0
PSA-ESCI 2022.1.12.0

EUT:	Vitls Tego VT-F-010-V2	Work Order:	VITL0001
Serial Number:	CBA8C35BC97E	Date:	2022-07-20
Customer:	Vitls Inc	Temperature:	23.6°C
Attendees:	Mohamed Elmahdy	Relative Humidity:	44.5%
Customer Project:	None	Bar. Pressure (PMSL):	1021 mb
Tested By:	Mark Baytan	Job Site:	OC10
Power:	3.0VDC via Battery	Configuration:	VITL0001-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.247:2022	ANSI C63.10:2013

TEST PARAMETERS

Run #:	19	Test Distance (m):	3	Ant. Height(s) (m):	1 to 4(m)

COMMENTS

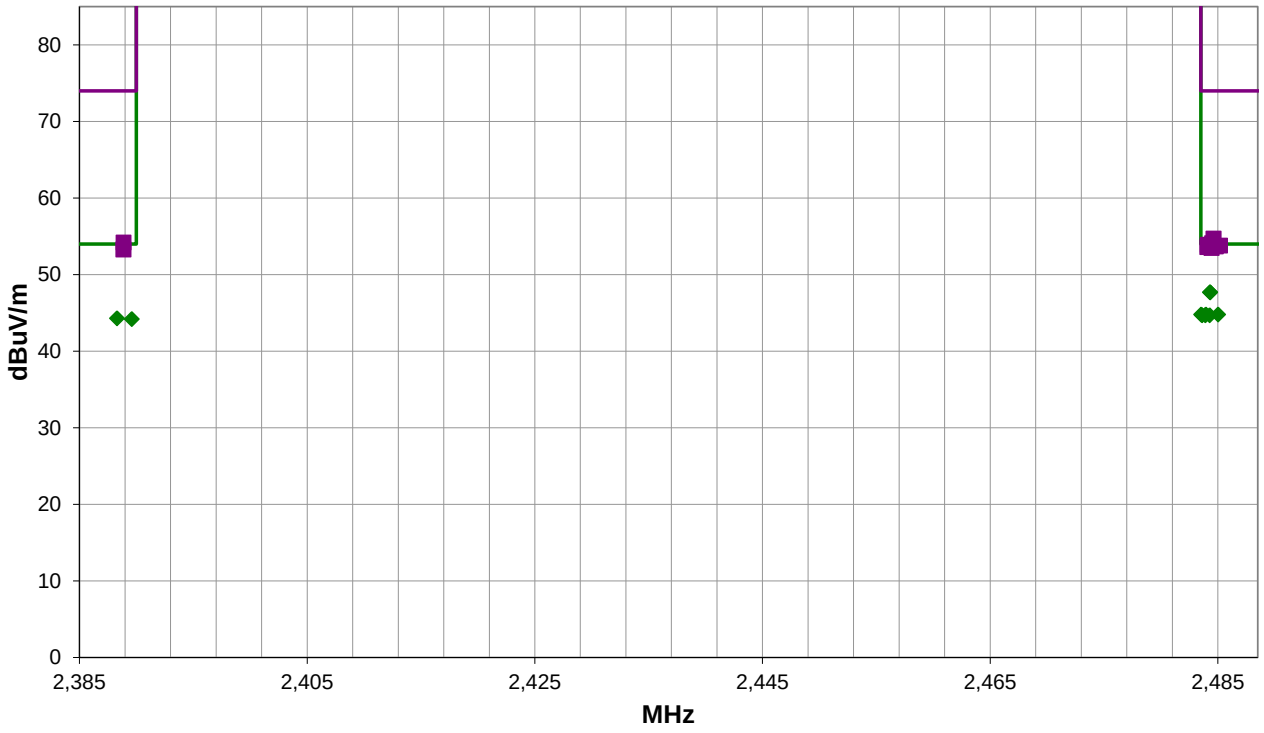
Upward duty cycle correction factor applied to average data as EUT was operating at <98% duty cycle. For 1Mbps, 60.2% Duty Cycle: 10log(1/.602) = 2.2 dB DCCF. For 2Mbps, 30.8% Duty Cycle: 10log(1/.308) = 5.1 dB DCCF.

EUT OPERATING MODES

Transmitting Bluetooth LE: Low Ch. 2402 MHz and High Ch. 2480 MHz. See comments for data rate.

DEVIATIONS FROM TEST STANDARD

None



Run #: 19 ■ PK ◆ AV ● QP

SPURIOUS RADIATED EMISSIONS

element
WTD.2022.02.22.0
EmiR5 2022.07.06.0
PSA-ESCI 2022.1.12.0

RESULTS - Run #19

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2484.320	40.8	-8.2	1.5	73.0	5.1	10.0	Horz	AV	0.0	47.7	54.0	-6.3	High Ch, EUT Horz, 2Mbps
2483.950	40.8	-8.2	1.5	187.0	2.2	10.0	Vert	AV	0.0	44.8	54.0	-9.2	High Ch, EUT Horz, 1Mbps
2483.533	40.8	-8.2	1.5	301.0	2.2	10.0	Horz	AV	0.0	44.8	54.0	-9.2	High Ch, EUT Horz, 1Mbps
2485.023	40.8	-8.2	1.5	140.0	2.2	10.0	Horz	AV	0.0	44.8	54.0	-9.2	High Ch, EUT on Side, 1Mbps
2484.320	40.8	-8.2	1.5	73.0	5.1	10.0	Horz	AV	0.0	47.7	54.0	-6.3	High Ch, EUT Horz, 2Mbps
2483.617	40.7	-8.2	1.5	289.0	2.2	10.0	Horz	AV	0.0	44.7	54.0	-9.3	High Ch, EUT Vert, 1Mbps
2484.280	40.7	-8.2	1.5	123.0	2.2	10.0	Vert	AV	0.0	44.7	54.0	-9.3	High Ch, EUT Vert, 1Mbps
2483.897	40.7	-8.2	1.5	152.0	2.2	10.0	Vert	AV	0.0	44.7	54.0	-9.3	High Ch, EUT on Side, 1Mbps
2388.293	40.8	-8.7	3.9	317.0	2.2	10.0	Horz	AV	0.0	44.3	54.0	-9.7	Low Ch, EUT Horz, 1Mbps
2389.590	40.7	-8.7	1.5	200.0	2.2	10.0	Vert	AV	0.0	44.2	54.0	-9.8	Low Ch, EUT Horz, 1Mbps
2484.627	52.9	-8.2	1.5	187.0	0.0	10.0	Vert	PK	0.0	54.7	74.0	-19.3	High Ch, EUT Horz, 1Mbps
2388.870	52.9	-8.7	1.5	200.0	0.0	10.0	Vert	PK	0.0	54.2	74.0	-19.8	Low Ch, EUT Horz, 1Mbps
2484.503	52.3	-8.2	1.5	301.0	0.0	10.0	Horz	PK	0.0	54.1	74.0	-19.9	High Ch, EUT Horz, 1Mbps
2484.120	52.1	-8.2	1.5	73.0	0.0	10.0	Horz	PK	0.0	53.9	74.0	-20.1	High Ch, EUT Horz, 2Mbps
2485.190	52.0	-8.2	1.5	289.0	0.0	10.0	Horz	PK	0.0	53.8	74.0	-20.2	High Ch, EUT Vert, 1Mbps
2484.820	51.9	-8.2	1.5	140.0	0.0	10.0	Horz	PK	0.0	53.7	74.0	-20.3	High Ch, EUT on Side, 1Mbps
2484.070	51.8	-8.2	1.5	152.0	0.0	10.0	Vert	PK	0.0	53.6	74.0	-20.4	High Ch, EUT on Side, 1Mbps
2484.447	51.7	-8.2	1.5	123.0	0.0	10.0	Vert	PK	0.0	53.5	74.0	-20.5	High Ch, EUT Vert, 1Mbps
2388.857	52.0	-8.7	3.9	317.0	0.0	10.0	Horz	PK	0.0	53.3	74.0	-20.7	Low Ch, EUT Horz, 1Mbps

CONCLUSION

Pass

Tested By

SPURIOUS RADIATED EMISSIONS

element
WTD.2022.02.22.0
EmiR5 2022.07.06.0
PSA-ESCI 2022.1.12.0

EUT:	Vitls Tego VT-F-010-V2	Work Order:	VITL0001
Serial Number:	CBA8C35BC97E	Date:	2022-07-20
Customer:	Vitls Inc	Temperature:	23.6°C
Attendees:	Mohamed Elmahdy	Relative Humidity:	44.5%
Customer Project:	None	Bar. Pressure (PMSL):	1021 mb
Tested By:	Mark Baytan	Job Site:	OC10
Power:	3.0VDC via Battery	Configuration:	VITL0001-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.247:2022	ANSI C63.10:2013

TEST PARAMETERS

Run #:	21	Test Distance (m):	3	Ant. Height(s) (m):	1 to 4(m)

COMMENTS

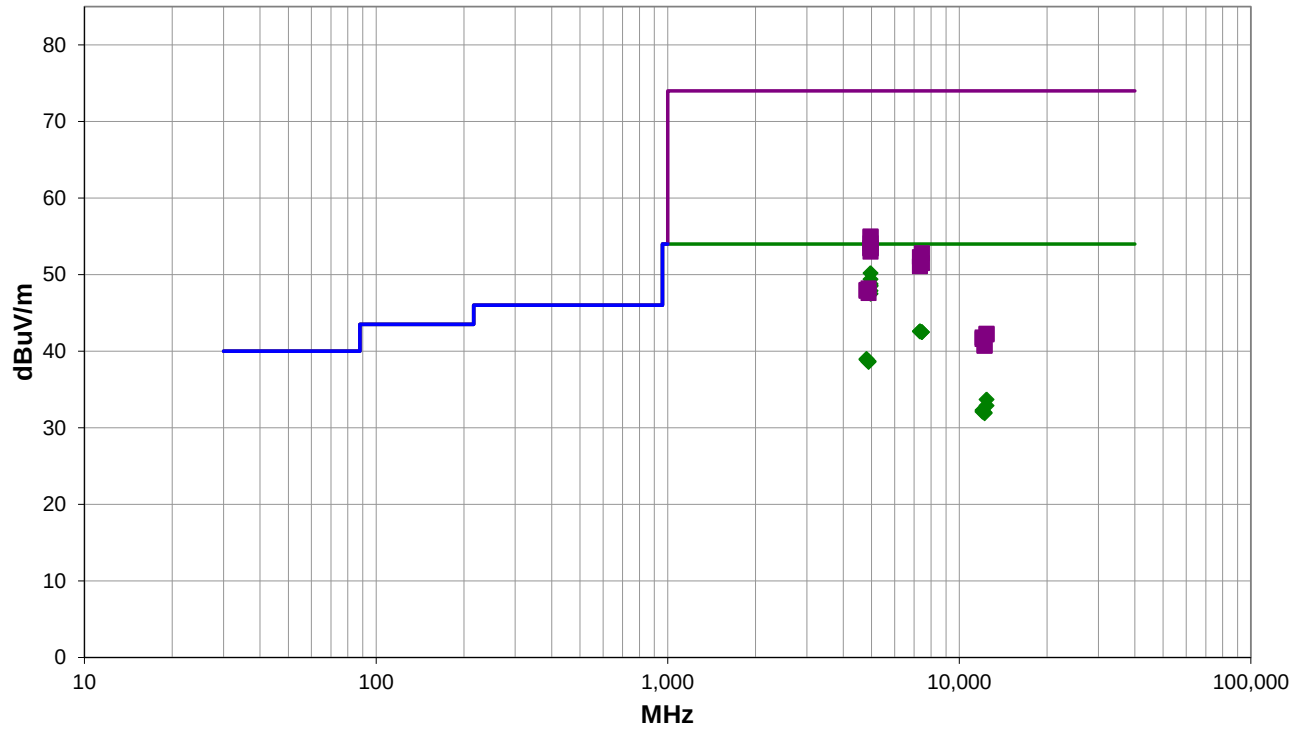
Upward duty cycle correction factor applied to average data as EUT was operating at <98% duty cycle. For 1Mbps, 60.2% Duty Cycle: 10log(1/.602) = 2.2 dB DCCF. For 2Mbps, 30.8% Duty Cycle: 10log(1/.308) = 5.1 dB DCCF.

EUT OPERATING MODES

Transmitting Bluetooth LE: Low Ch. 2402 MHz, Mid Ch. 2442 MHz, and High Ch. 2480 MHz. See comments for data rate.

DEVIATIONS FROM TEST STANDARD

None



Run #: 21 ■ PK ◆ AV ● QP

SPURIOUS RADIATED EMISSIONS

element
WTD.2022.02.22.0
EmiR5 2022.07.06.0
PSA-ESCI 2022.1.12.0

RESULTS - Run #21

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
4959.890	49.4	-1.4	1.8	62.0	2.2	0.0	Horz	AV	0.0	50.2	54.0	-3.8	High Ch, EUT Horz, 1Mbps
4959.480	45.7	-1.4	2.5	75.0	5.1	0.0	Horz	AV	0.0	49.4	54.0	-4.6	High Ch, EUT Horz, 2Mbps
4960.100	48.0	-1.4	1.5	24.0	2.2	0.0	Horz	AV	0.0	48.8	54.0	-5.2	High Ch, EUT on Side, 1Mbps
4959.960	47.8	-1.4	4.0	102.0	2.2	0.0	Vert	AV	0.0	48.6	54.0	-5.4	High Ch, EUT Horz, 1Mbps
4959.913	47.7	-1.4	1.5	345.0	2.2	0.0	Vert	AV	0.0	48.5	54.0	-5.5	High Ch, EUT Vert, 1Mbps
4959.950	47.1	-1.4	2.0	172.0	2.2	0.0	Horz	AV	0.0	47.9	54.0	-6.1	High Ch, EUT Vert, 1Mbps
4959.993	46.7	-1.4	1.5	146.0	2.2	0.0	Vert	AV	0.0	47.5	54.0	-6.5	High Ch, EUT on Side, 1Mbps
7325.110	34.8	5.6	1.5	125.0	2.2	0.0	Horz	AV	0.0	42.6	54.0	-11.4	Mid Ch, EUT Horz, 1Mbps
7325.397	34.8	5.6	2.9	355.0	2.2	0.0	Vert	AV	0.0	42.6	54.0	-11.4	Mid Ch, EUT Horz, 1Mbps
7439.947	34.7	5.6	2.9	49.0	2.2	0.0	Horz	AV	0.0	42.5	54.0	-11.5	High Ch, EUT Horz, 1Mbps
7439.470	34.7	5.6	1.5	221.0	2.2	0.0	Vert	AV	0.0	42.5	54.0	-11.5	High Ch, EUT Horz, 1Mbps
4804.640	38.3	-1.5	2.4	235.0	2.2	0.0	Vert	AV	0.0	39.0	54.0	-15.0	Low Ch, EUT Horz, 1Mbps
4804.957	38.2	-1.5	1.5	84.0	2.2	0.0	Horz	AV	0.0	38.9	54.0	-15.1	Low Ch, EUT Horz, 1Mbps
4884.533	38.0	-1.5	2.0	289.0	2.2	0.0	Vert	AV	0.0	38.7	54.0	-15.3	Mid Ch, EUT Horz, 1Mbps
4884.043	37.9	-1.5	3.3	343.0	2.2	0.0	Horz	AV	0.0	38.6	54.0	-15.4	Mid Ch, EUT Horz, 1Mbps
4959.283	56.4	-1.4	2.5	75.0	0.0	0.0	Horz	PK	0.0	55.0	74.0	-19.0	High Ch, EUT Horz, 2Mbps
4960.457	56.3	-1.4	1.8	62.0	0.0	0.0	Horz	PK	0.0	54.9	74.0	-19.1	High Ch, EUT Horz, 1Mbps
4959.603	55.5	-1.4	1.5	24.0	0.0	0.0	Horz	PK	0.0	54.1	74.0	-19.9	High Ch, EUT on Side, 1Mbps
12399.080	33.1	-1.6	4.0	249.0	2.2	0.0	Horz	AV	0.0	33.7	54.0	-20.3	High Ch, EUT Horz, 1Mbps
4959.660	54.9	-1.4	4.0	102.0	0.0	0.0	Vert	PK	0.0	53.5	74.0	-20.5	High Ch, EUT Horz, 1Mbps
4959.577	54.9	-1.4	1.5	345.0	0.0	0.0	Vert	PK	0.0	53.5	74.0	-20.5	High Ch, EUT Vert, 1Mbps
4960.403	54.8	-1.4	2.0	172.0	0.0	0.0	Horz	PK	0.0	53.4	74.0	-20.6	High Ch, EUT Vert, 1Mbps
4960.200	54.4	-1.4	1.5	146.0	0.0	0.0	Vert	PK	0.0	53.0	74.0	-21.0	High Ch, EUT on Side, 1Mbps
12399.160	32.3	-1.6	2.2	79.0	2.2	0.0	Vert	AV	0.0	32.9	54.0	-21.1	High Ch, EUT Horz, 1Mbps
7440.207	47.2	5.6	2.9	49.0	0.0	0.0	Horz	PK	0.0	52.8	74.0	-21.2	High Ch, EUT Horz, 1Mbps
12009.220	32.7	-2.6	3.7	259.0	2.2	0.0	Vert	AV	0.0	32.3	54.0	-21.7	Low Ch, EUT Horz, 1Mbps
7325.923	46.7	5.6	2.9	355.0	0.0	0.0	Vert	PK	0.0	52.3	74.0	-21.7	Mid Ch, EUT Horz, 1Mbps
12009.140	32.5	-2.6	1.5	36.0	2.2	0.0	Horz	AV	0.0	32.1	54.0	-21.9	Low Ch, EUT Horz, 1Mbps
12209.840	31.6	-1.8	2.6	54.0	2.2	0.0	Horz	AV	0.0	32.0	54.0	-22.0	Mid Ch, EUT Horz, 1Mbps
12210.760	31.5	-1.8	1.7	59.0	2.2	0.0	Vert	AV	0.0	31.9	54.0	-22.1	Mid Ch, EUT Horz, 1Mbps
7440.170	45.9	5.6	1.5	221.0	0.0	0.0	Vert	PK	0.0	51.5	74.0	-22.5	High Ch, EUT Horz, 1Mbps
7326.933	45.5	5.6	1.5	125.0	0.0	0.0	Horz	PK	0.0	51.1	74.0	-22.9	Mid Ch, EUT Horz, 1Mbps
4883.763	49.7	-1.5	2.0	289.0	0.0	0.0	Vert	PK	0.0	48.2	74.0	-25.8	Mid Ch, EUT Horz, 1Mbps
4803.093	49.5	-1.5	2.4	235.0	0.0	0.0	Vert	PK	0.0	48.0	74.0	-26.0	Low Ch, EUT Horz, 1Mbps
4803.637	49.4	-1.5	1.5	84.0	0.0	0.0	Horz	PK	0.0	47.9	74.0	-26.1	Low Ch, EUT Horz, 1Mbps
4884.993	49.1	-1.5	3.3	343.0	0.0	0.0	Horz	PK	0.0	47.6	74.0	-26.4	Mid Ch, EUT Horz, 1Mbps
12399.240	43.9	-1.6	2.2	79.0	0.0	0.0	Vert	PK	0.0	42.3	74.0	-31.7	High Ch, EUT Horz, 1Mbps
12399.530	43.8	-1.6	4.0	249.0	0.0	0.0	Horz	PK	0.0	42.2	74.0	-31.8	High Ch, EUT Horz, 1Mbps

SPURIOUS RADIATED EMISSIONS

element
WTD.2022.02.22.0
EmiR5 2022.07.06.0
PSA-ESCI 2022.1.12.0

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
12009.100	44.4	-2.6	3.7	259.0	0.0	0.0	Vert	PK	0.0	41.8	74.0	-32.2	Low Ch, EUT Horz, 1Mbps
12009.690	44.2	-2.6	1.5	36.0	0.0	0.0	Horz	PK	0.0	41.6	74.0	-32.4	Low Ch, EUT Horz, 1Mbps
12209.650	42.6	-1.8	1.7	59.0	0.0	0.0	Vert	PK	0.0	40.8	74.0	-33.2	Mid Ch, EUT Horz, 1Mbps
12210.590	42.5	-1.8	2.6	54.0	0.0	0.0	Horz	PK	0.0	40.7	74.0	-33.3	Mid Ch, EUT Horz, 1Mbps

CONCLUSION

Pass

Tested By

End of Test Report