



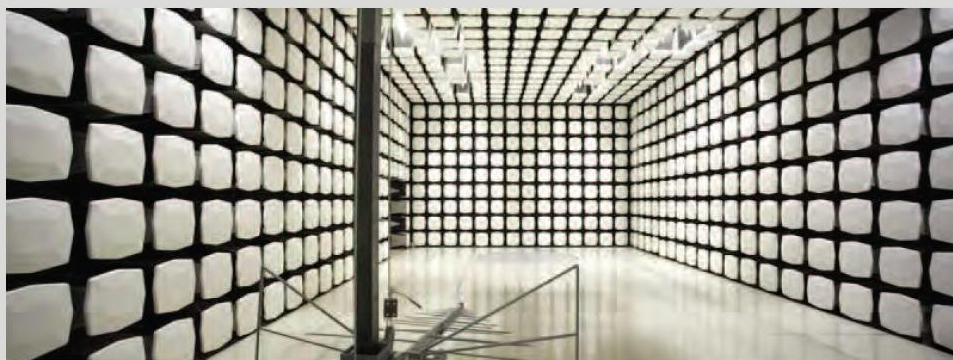
Novidan, Inc.

Kamen

FCC 15.247:2021

Bluetooth

Report: NOVI0007.3, Issue Date: May 3, 2021



NVLAP LAB CODE: 200881-0



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CERTIFICATE OF TEST



Last Date of Test: March 2, 2021

Novidan, Inc.

EUT: Kamen

Radio Equipment Testing

Standards

Specification	Method
FCC 15.247:2021	ANSI C63.10:2013

Results

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

Deviations From Test Standards

None

Approved By:

Eric Brandon, Department Manager

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

REVISION HISTORY



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

ACCREDITATIONS AND AUTHORIZATIONS



United States

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

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

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

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

European Union

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

Australia/New Zealand

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

Korea

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

Japan

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

Taiwan

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

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

Singapore

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

Israel

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

Hong Kong

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

Vietnam

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

SCOPE

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

<https://www.nwemc.com/emc-testing-accreditations>

FACILITIES



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



MEASUREMENT UNCERTAINTY

Measurement Uncertainty

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

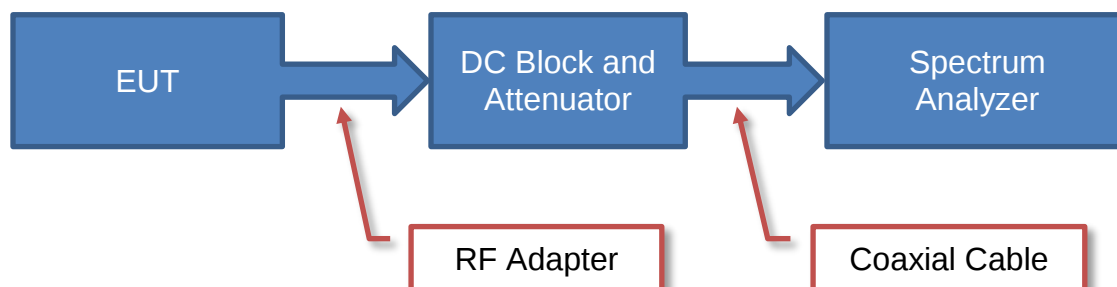
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable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

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

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

Test Setup Block Diagrams

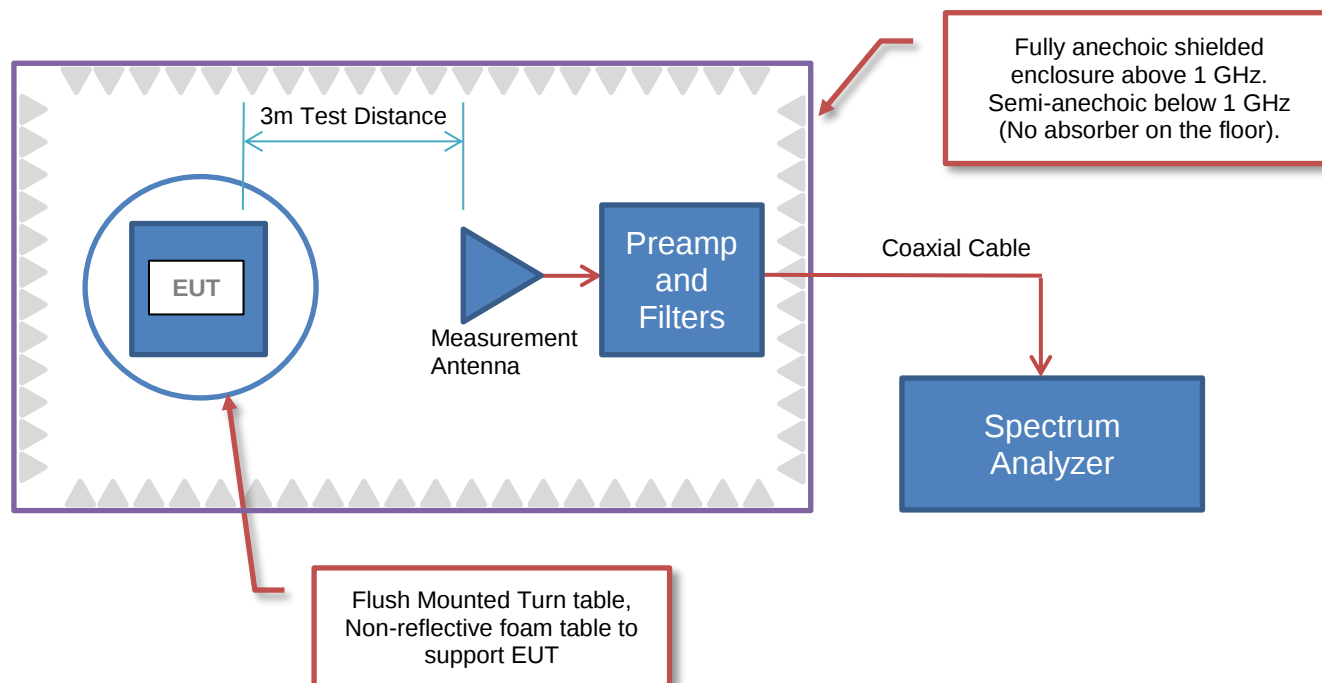
Antenna Port Conducted Measurements



Near Field Test Fixture Measurements



Spurious Radiated Emissions



PRODUCT DESCRIPTION



Client and Equipment Under Test (EUT) Information

Company Name:	Novidan, Inc.
Address:	672 Mendelssohn Avenue North
City, State, Zip:	Golden Valley, MN 55427
Test Requested By:	John Becker
EUT:	Kamen
First Date of Test:	October 27, 2020
Last Date of Test:	March 2, 2021
Receipt Date of Samples:	October 27, 2020
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
2.4 GHz BLE hearing aid
Testing Objective:
To demonstrate compliance of the Bluetooth radio to FCC 15.247 requirements.

CONFIGURATIONS



Configuration NOVI0007- 1

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Hearing Aid	Novidan, Inc.	Kamen RIC	0228-R

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop	Lenovo	IdeaPad Flex 5	000008
Communication Accelerator Adapter	ON Semiconductor	N/A	N/A
RSL10 QFN EVB V1.3	ON Semiconductor	N/A	183100215

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
USB Cable	Yes	0.5 m	No	Laptop	RSL10 QFN EVB V1.3
CS64 Cable	No	2.1 m	No	Communication Accelerator Adapter	Hearing Aid
USB Cable	Yes	1.8 m	No	Laptop	Communication Accelerator Adapter

Configuration NOVI0007- 3

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Hearing Aid	Novidan, Inc.	Kamen RIC	0223-L

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop	Lenovo	IdeaPad Flex 5	000008
Communication Accelerator Adapter	ON Semiconductor	N/A	N/A
RSL10 QFN EVB V1.3	ON Semiconductor	N/A	183100215

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
USB Cable	Yes	0.5 m	No	Laptop	RSL10 QFN EVB V1.3
USB Cable	Yes	1.8 m	No	Laptop	Communication Accelerator Adapter
CS64 Cable	No	2.1 m	No	Communication Accelerator Adapter	Unterminated

CONFIGURATIONS



Configuration NOVI0007- 17

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Hearing Aid	Novidan, Inc.	Kamen RIC	0226-R

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop	Lenovo	IdeaPad Flex 5	000008
Communication Accelerator Adapter	ON Semiconductor	N/A	N/A
RSL10 QFN EVB V1.3	ON Semiconductor	N/A	183100215

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
USB Cable	Yes	0.5 m	No	Laptop	RSL10 QFN EVB V1.3
USB Cable	Yes	1.8 m	No	Laptop	Communication Accelerator Adapter
CS64 Cable	No	2.1 m	No	Communication Accelerator Adapter	Unterminated

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2020-10-27	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	2020-10-27	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	2020-10-27	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	2020-10-27	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.
5	2020-10-27	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.
6	2020-10-27	Band Edge Compliance	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
7	2020-10-27	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.
8	2021-03-02	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

POWER SETTINGS AND ANTENNAS



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

ANTENNA GAIN (dBi)

Type	Provided by:	Frequency Range (MHz)	Gain (dBi)
Monopole	Manufacturer	2402-2480	-1.12

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

SETTINGS FOR ALL TESTS IN THIS REPORT

Kamen RIC	Power Setting
BLE	0 dBm

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DUTY CYCLE



XMIT 2020.03.25.0

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Keysight	N5171B (EXG)	TEY	31-Dec-19	31-Dec-22
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	14-Apr-20	14-Apr-21
Block - DC	Fairview Microwave	SD3379	AMZ	9-Nov-19	9-Nov-20
Attenuator	S.M. Electronics	SA26B-20	RFW	10-Feb-20	10-Feb-21
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNO	20-May-20	20-May-21

TEST DESCRIPTION

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.

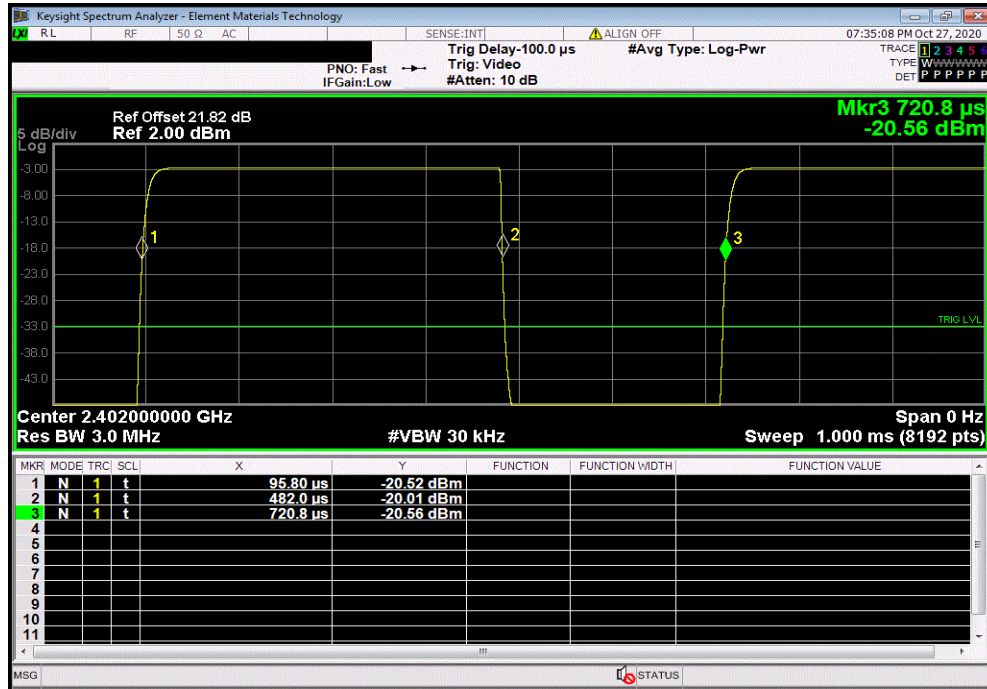
TbTx 2019.08.30.0 XMIT 2020.03.25.0

DUTY CYCLE

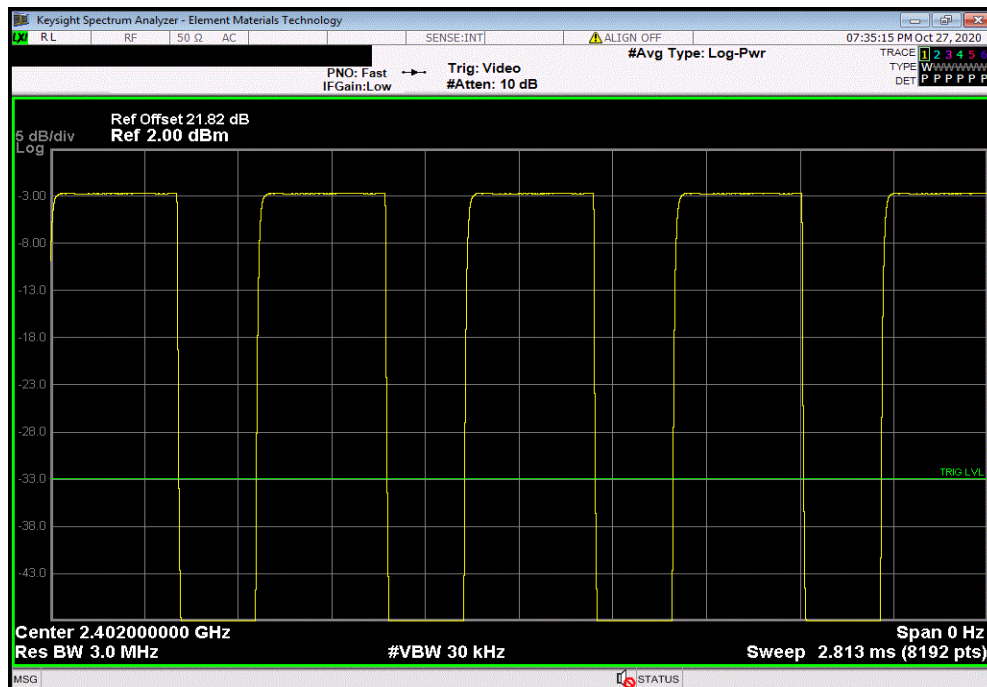


TbTx 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
386.2 us	625 us	1	61.8	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	

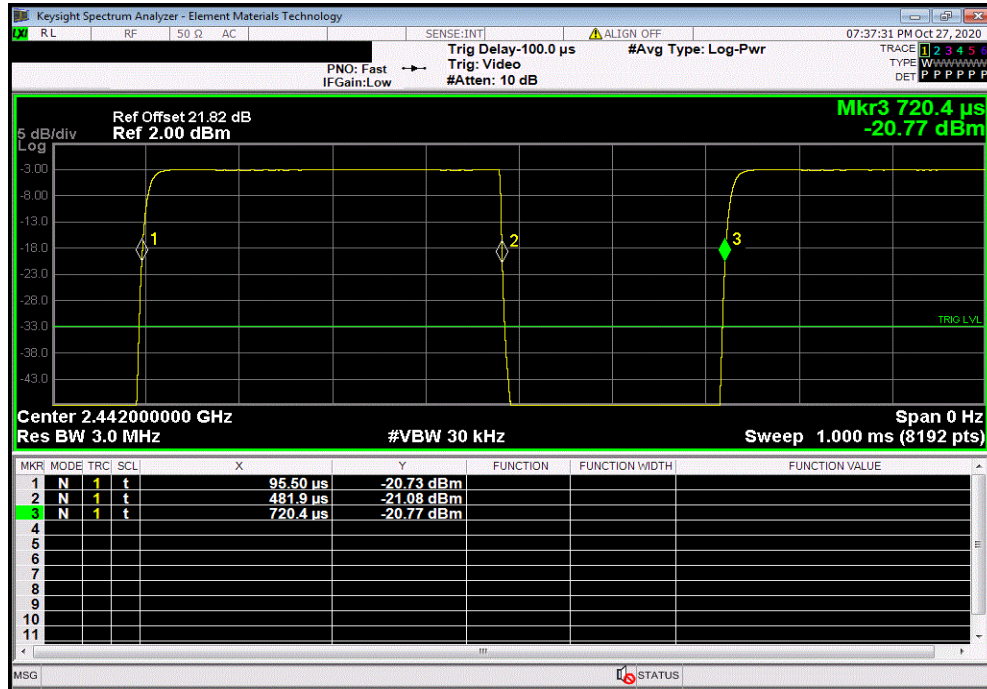


DUTY CYCLE

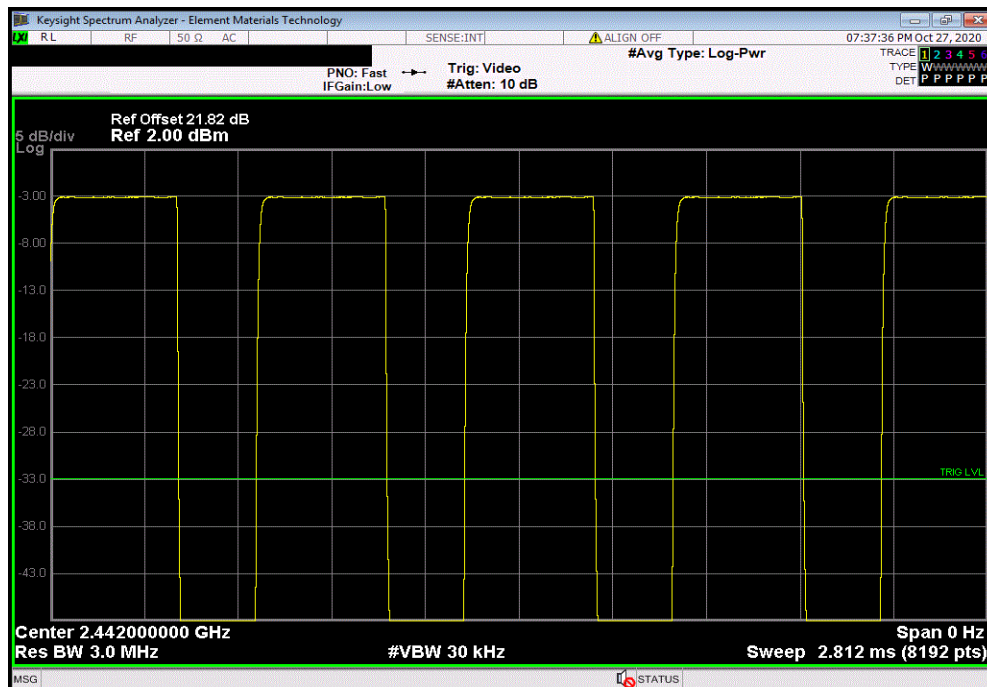


TbTx 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 1 Mbps Mid Channel, 2442 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
386.4 μ s	624.9 μ s	1	61.8	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	

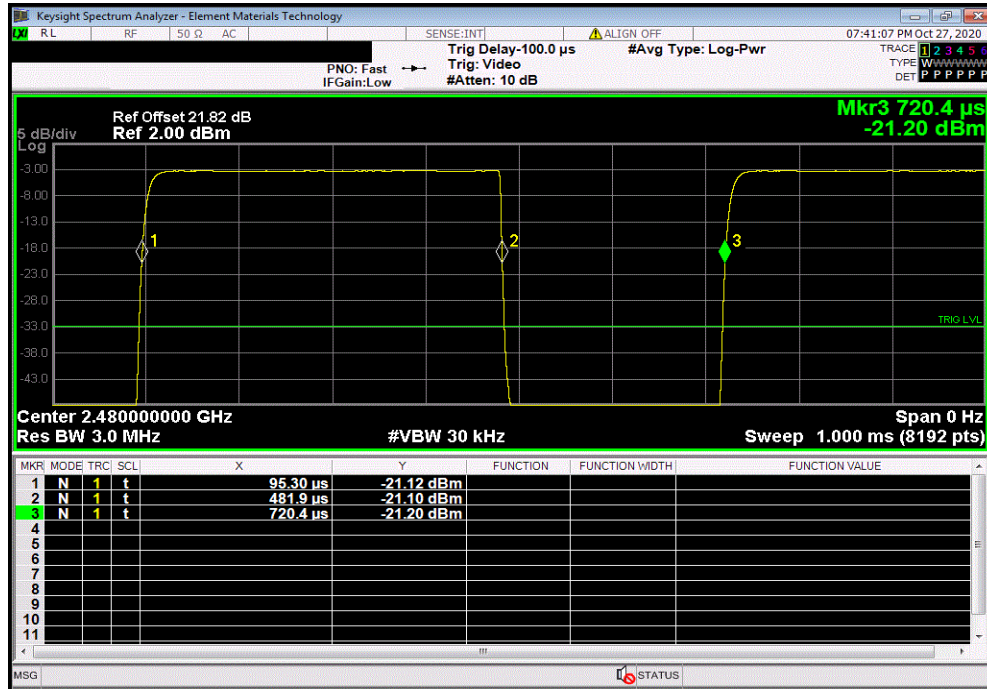


DUTY CYCLE

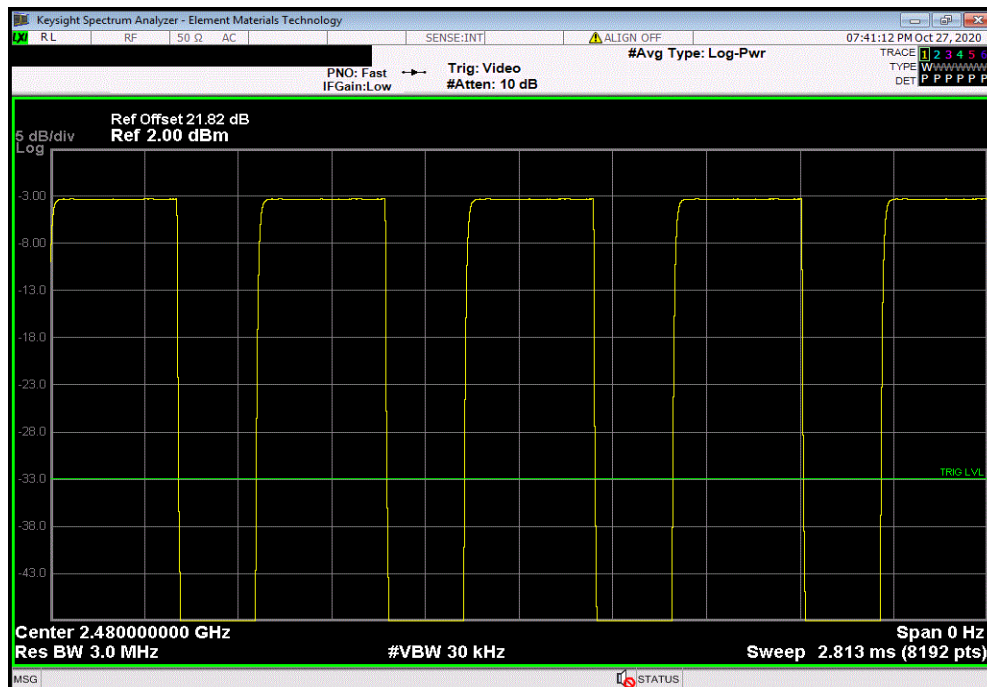


TMX 2019.08.30.0 XM 2020.03.25.0

BLE/GFSK 1 Mbps High Channel, 2480 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
386.6 μ s	625.1 μ s	1	61.8	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	

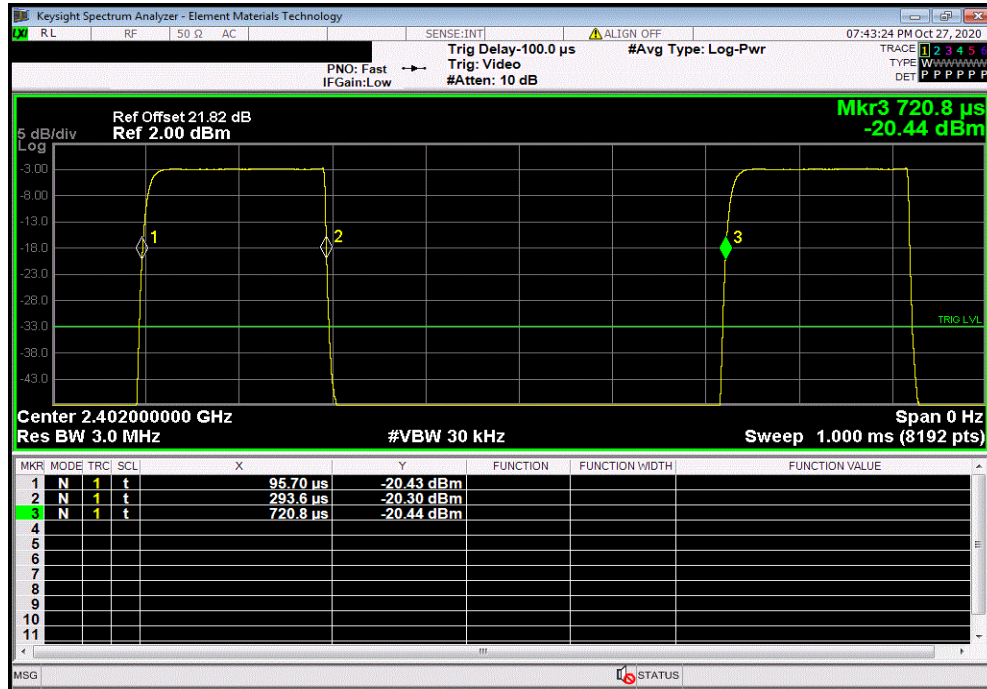


DUTY CYCLE

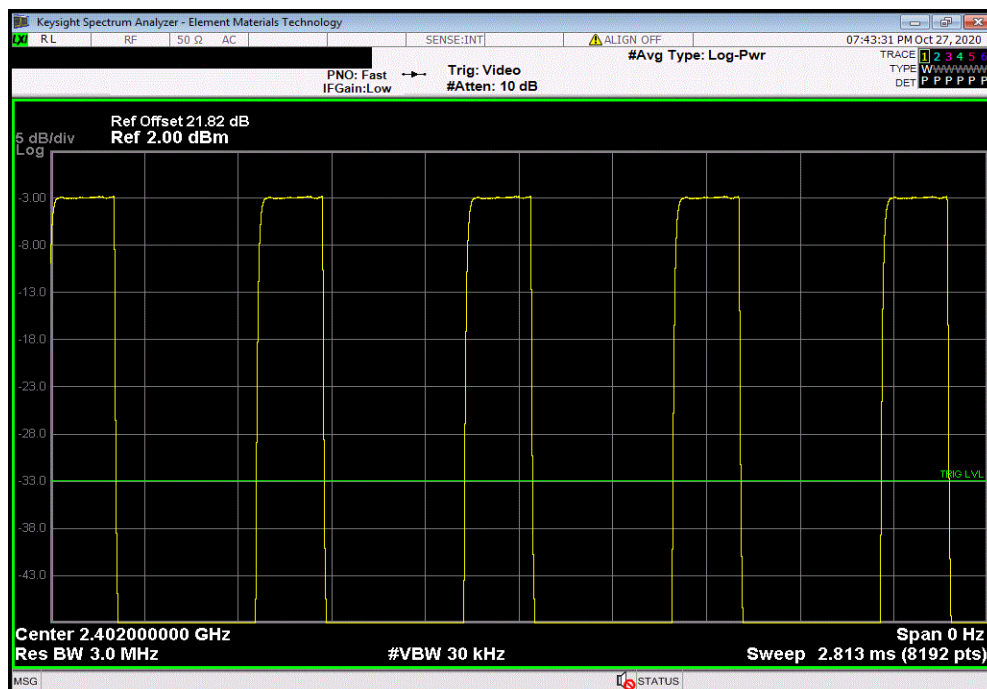


TbTtX 2019.08.30.0 XMI 2020.03.25.0

BLE/GFSK 2 Mbps Low Channel, 2402 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
197.9 μ s	625.1 μ s	1	31.7	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	

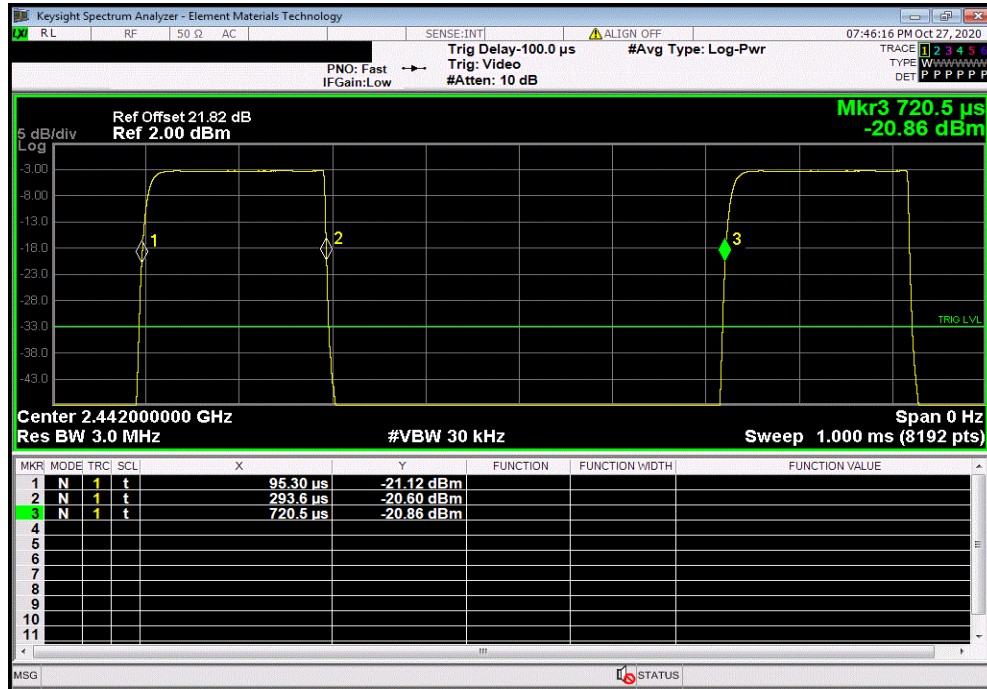


DUTY CYCLE

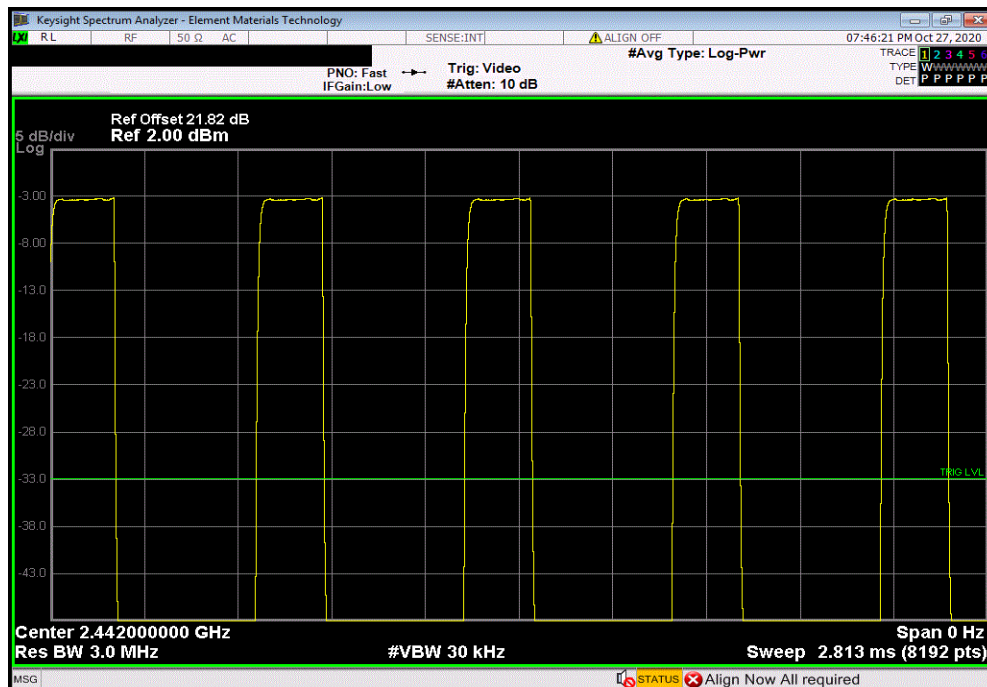


TMX 2019.08.30.0 XM8 2020.03.25.0

BLE/GFSK 2 Mbps Mid Channel, 2442 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
198.3 μ s	625.2 μ s	1	31.7	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	

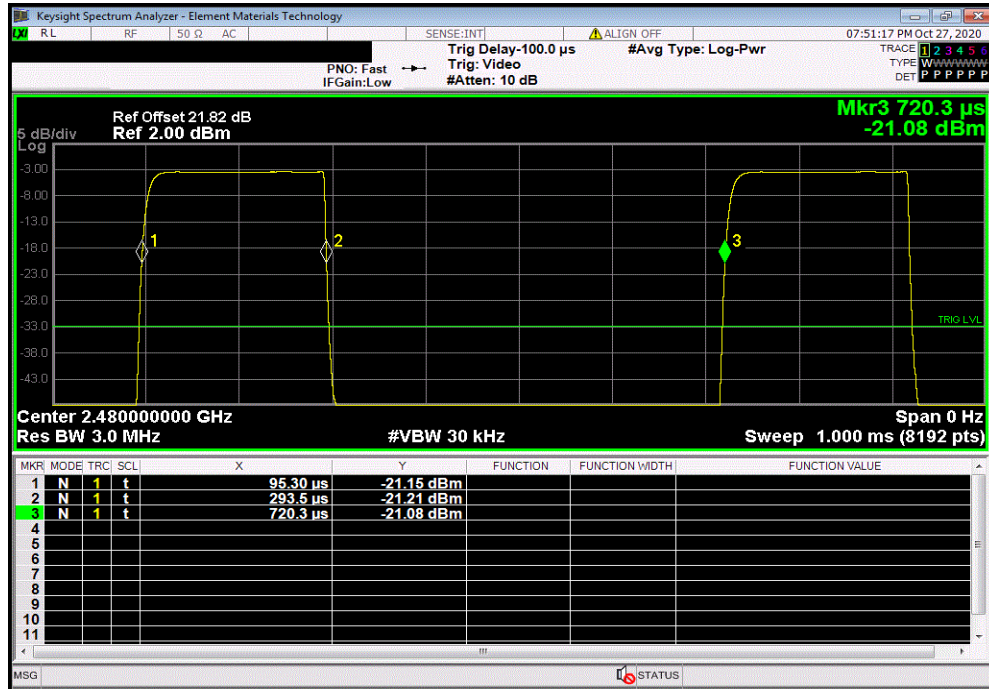


DUTY CYCLE

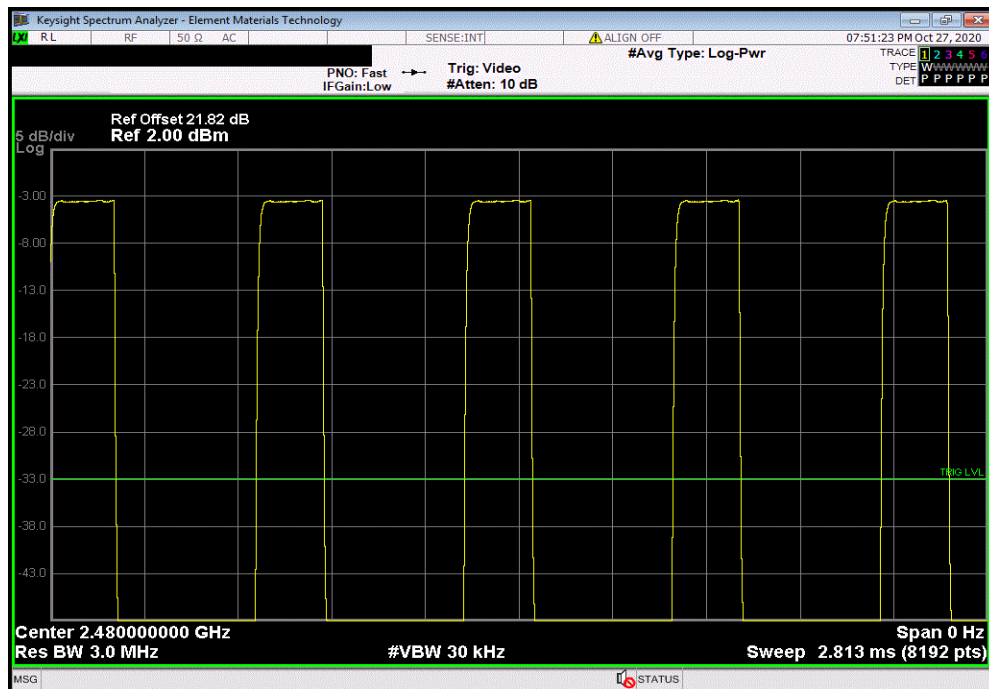


TMX 2019.08.30.0 XMR 2020.03.25.0

BLE/GFSK 2 Mbps High Channel, 2480 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
198.2 μ s	625 μ s	1	31.7	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	



OCCUPIED BANDWIDTH



XMH 2020.03.25.0

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Keysight	N5171B (EXG)	TEY	31-Dec-19	31-Dec-22
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	14-Apr-20	14-Apr-21
Block - DC	Fairview Microwave	SD3379	AMZ	9-Nov-19	9-Nov-20
Attenuator	S.M. Electronics	SA26B-20	RFW	10-Feb-20	10-Feb-21
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNO	20-May-20	20-May-21

TEST DESCRIPTION

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

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

OCCUPIED BANDWIDTH



TSMTx 2019.08.30.0 XMR 2020.03.25.0

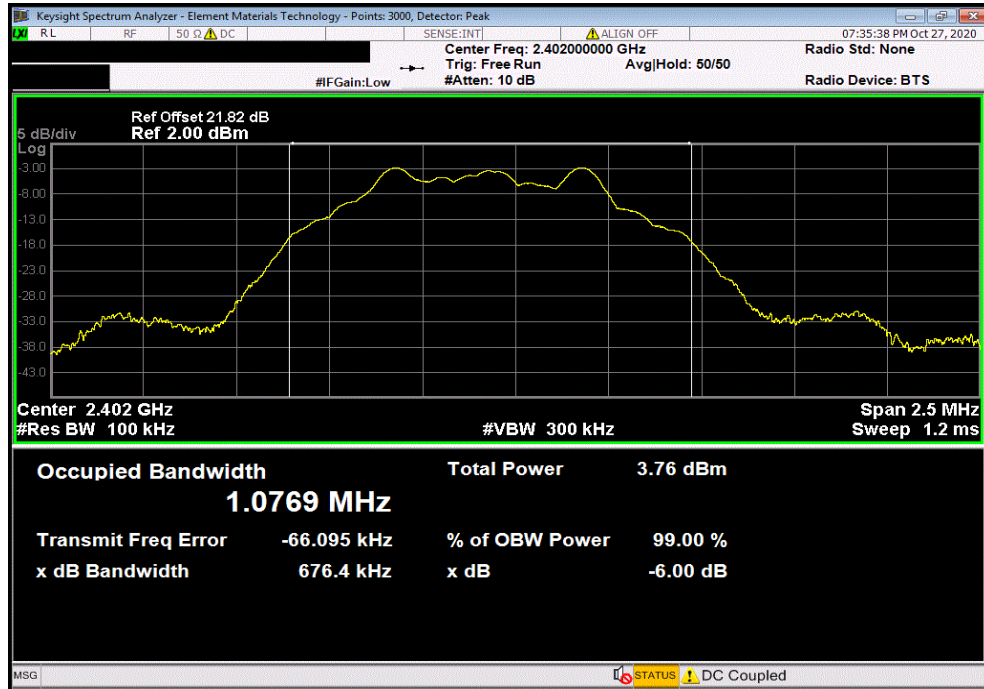
EUT: Kamen RIC		Work Order: NOVI0007	
Serial Number: 0228-R		Date: 27-Oct-20	
Customer: Novidan, Inc.		Temperature: 21.3 °C	
Attendees: Katie Himes		Humidity: 29% RH	
Project: None		Barometric Pres.: 1025 mbar	
Tested by: Andrew Rogstad		Power: Battery	
		Job Site: MN08	
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2020		ANSI C63.10:2013	
COMMENTS			
Reference level offset includes measurement cable, DC block, and 20 dB attenuator.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature <i>Andrew Rogstad</i>	
		Value	Limit (±) Result
BLE/GFSK 1 Mbps Low Channel, 2402 MHz		676.434 kHz	500 kHz Pass
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz		675.874 kHz	500 kHz Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz		676.71 kHz	500 kHz Pass
BLE/GFSK 2 Mbps Low Channel, 2402 MHz		1.27 MHz	500 kHz Pass
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz		1.263 MHz	500 kHz Pass
BLE/GFSK 2 Mbps High Channel, 2480 MHz		1.264 MHz	500 kHz Pass

OCCUPIED BANDWIDTH

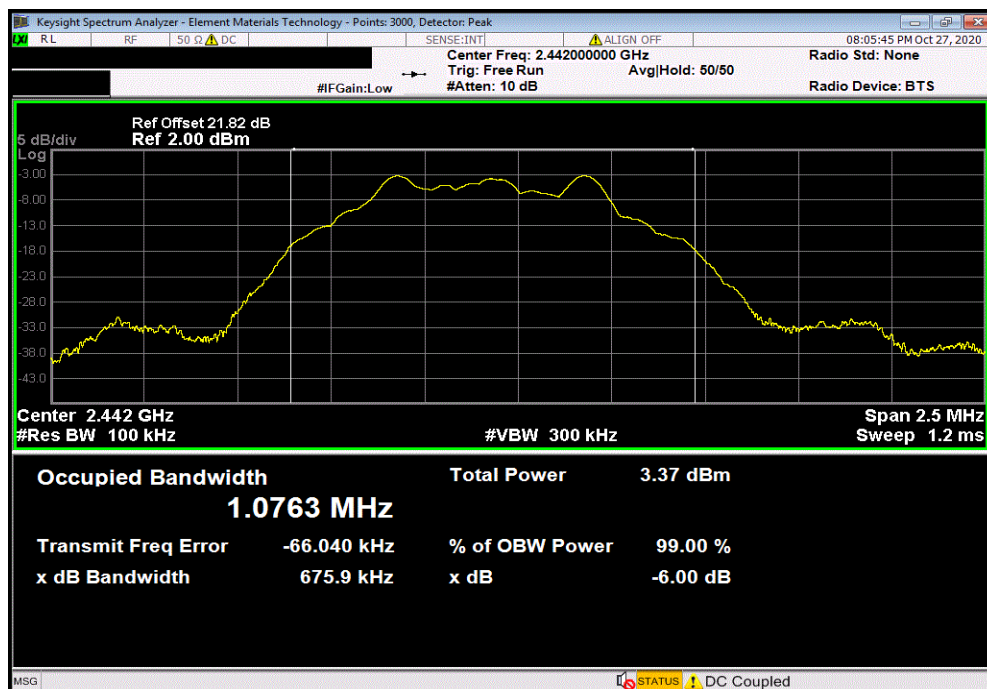


TbTx 2019.08.30.0 XMt 2020.03.25.0

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



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

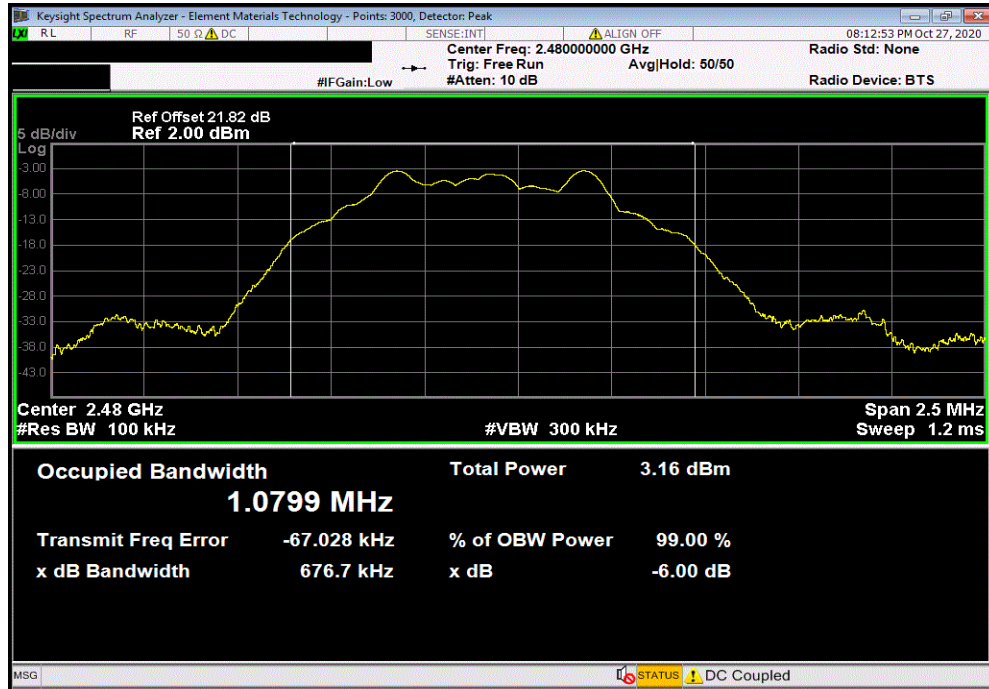


OCCUPIED BANDWIDTH

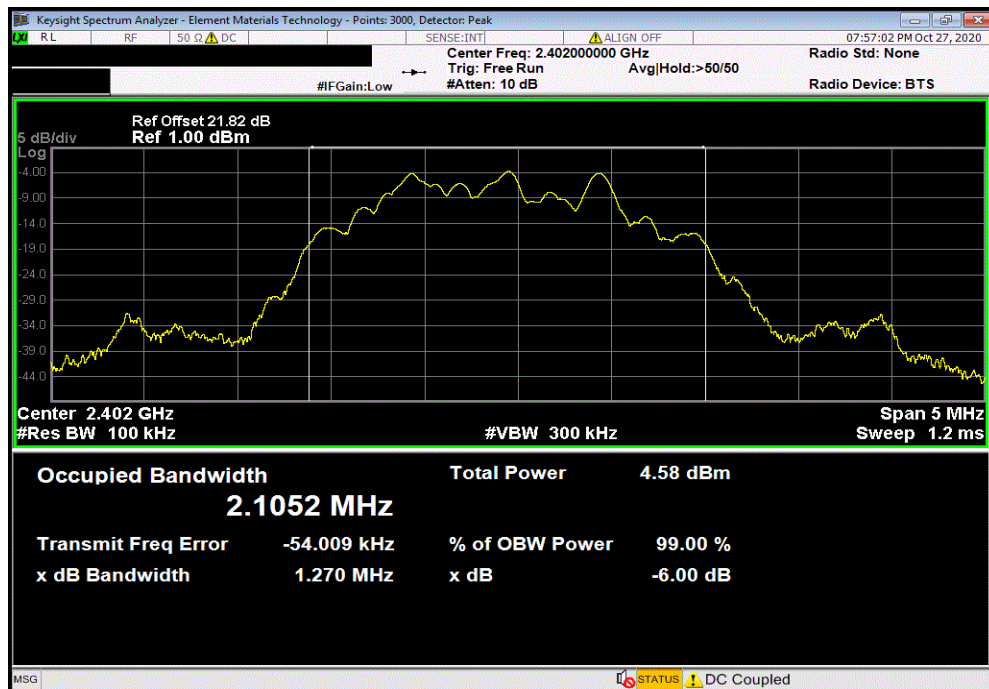


TbTx 2019.08.30.0 XMt 2020.03.25.0

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



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

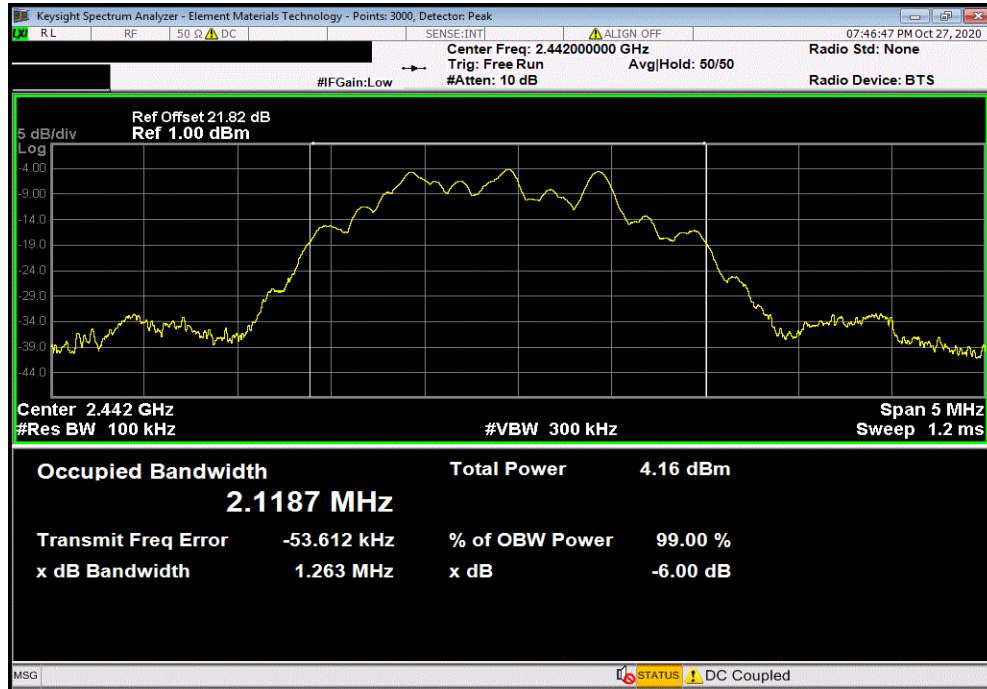


OCCUPIED BANDWIDTH

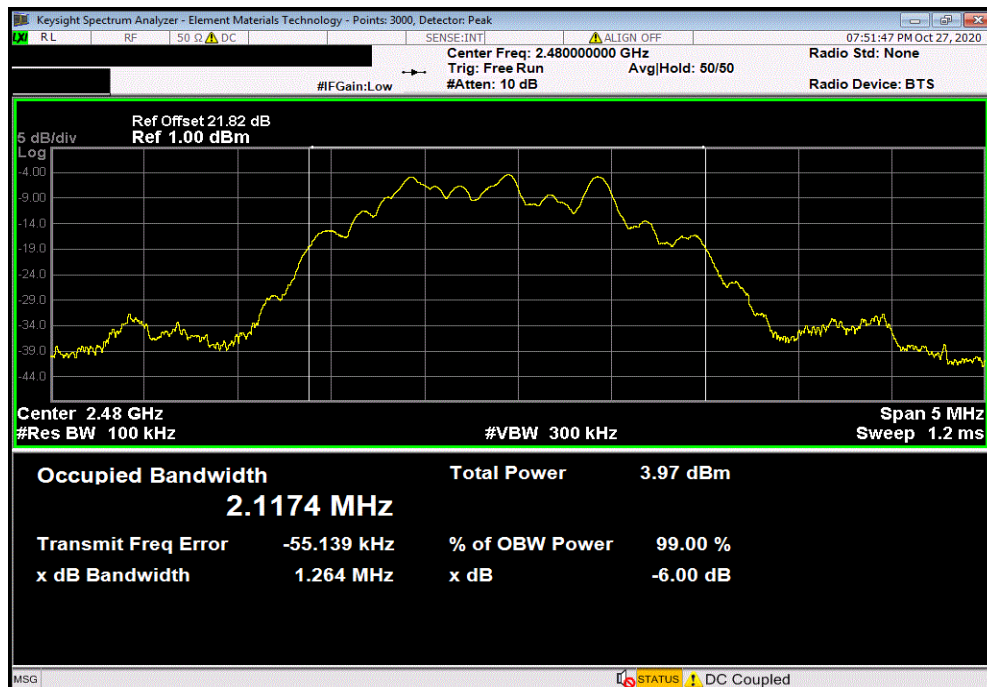


TbTx 2019.08.30.0 XMt 2020.03.25.0

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



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



OUTPUT POWER



XMIT 2020.03.25.0

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TEST EQUIPMENT

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Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	14-Apr-20	14-Apr-21
Block - DC	Fairview Microwave	SD3379	AMZ	9-Nov-19	9-Nov-20
Attenuator	S.M. Electronics	SA26B-20	RFW	10-Feb-20	10-Feb-21
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNO	20-May-20	20-May-21

TEST DESCRIPTION

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

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

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

OUTPUT POWER



TSMTx 2019.08.30.0 XMH 2020.03.25.0

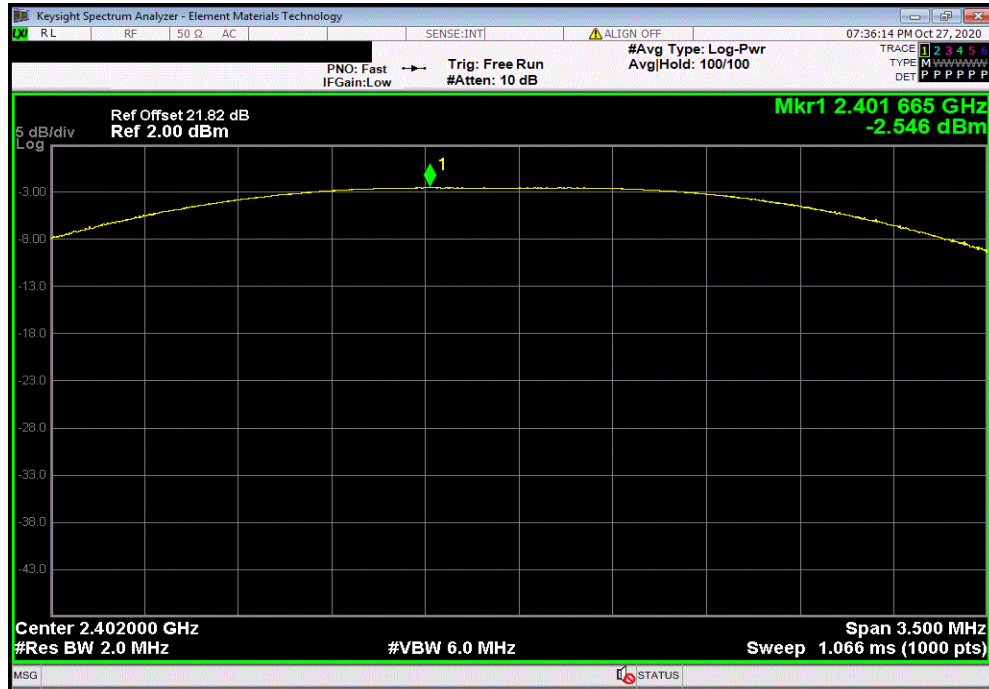
EUT: Kamen RIC		Work Order: NOVI0007	
Serial Number: 0228-R		Date: 27-Oct-20	
Customer: Novidan, Inc.		Temperature: 21.3 °C	
Attendees: Katie Himes		Humidity: 29% RH	
Project: None		Barometric Pres.: 1025 mbar	
Tested by: Andrew Rogstad		Power: Battery	
		Job Site: MN08	
TEST SPECIFICATIONS			
FCC 15.247:2020		Test Method	
		ANSI C63.10:2013	
COMMENTS			
Reference level offset includes measurement cable, DC block, and 20 dB attenuator.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature <i>Andrew Rogstad</i>	
		Out Pwr (dBm)	Limit (dBm)
BLE/GFSK 1 Mbps Low Channel, 2402 MHz		-2.546	30
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz		-2.81	30
BLE/GFSK 1 Mbps High Channel, 2480 MHz		-3.136	30
BLE/GFSK 2 Mbps Low Channel, 2402 MHz		-2.504	30
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz		-2.88	30
BLE/GFSK 2 Mbps High Channel, 2480 MHz		-3.084	30
			Result
			Pass
			Pass
			Pass
			Pass
			Pass

OUTPUT POWER

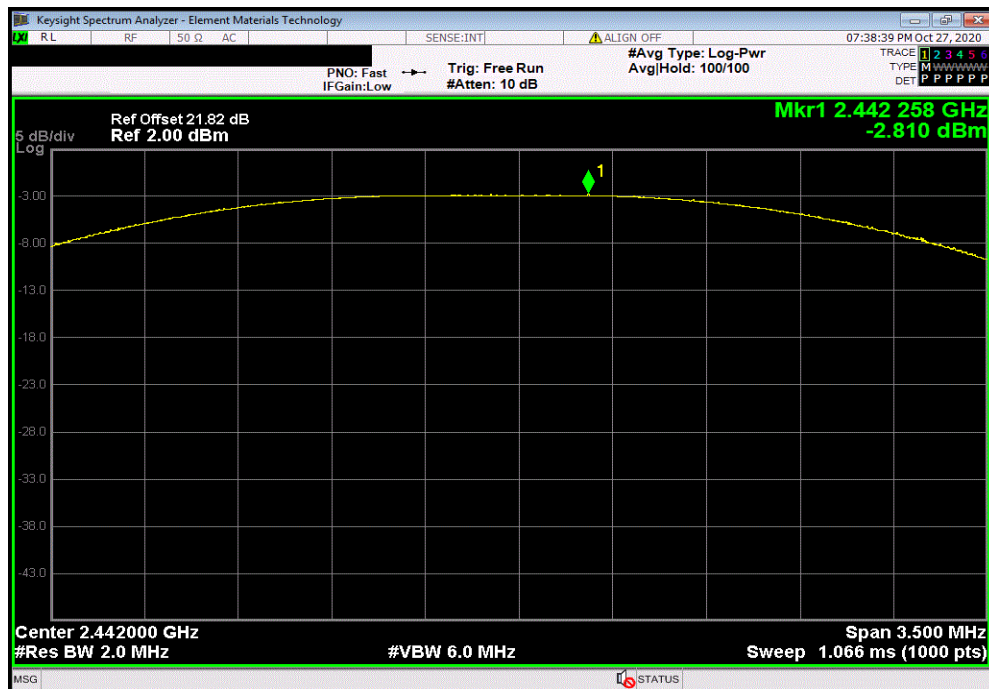


TbTtx 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				-2.546	30	Pass



BLE/GFSK 1 Mbps Mid Channel, 2442 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				-2.81	30	Pass

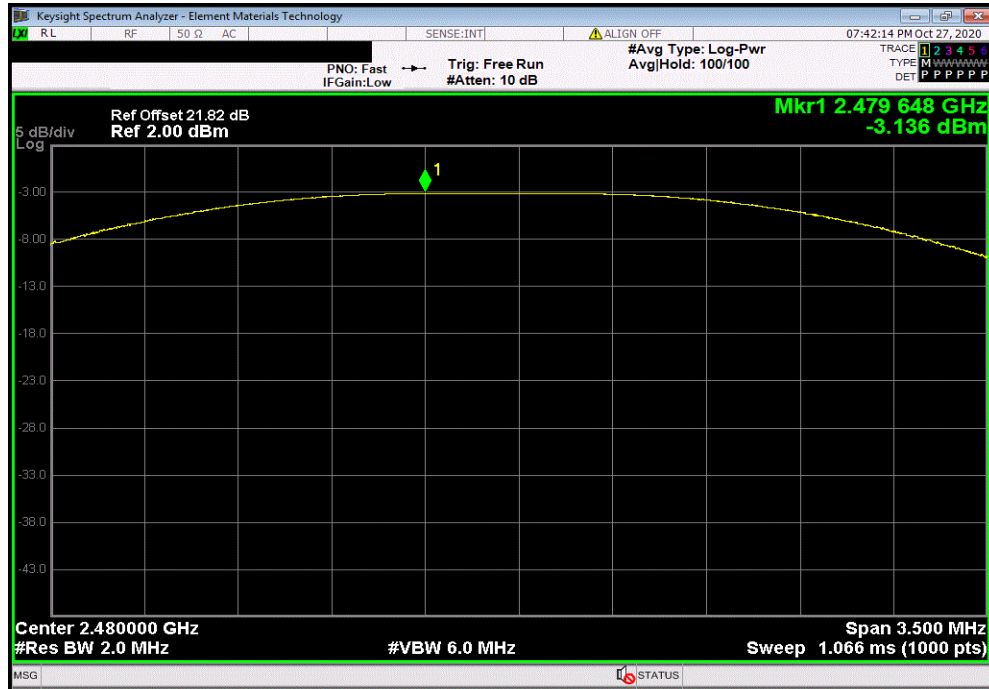


OUTPUT POWER

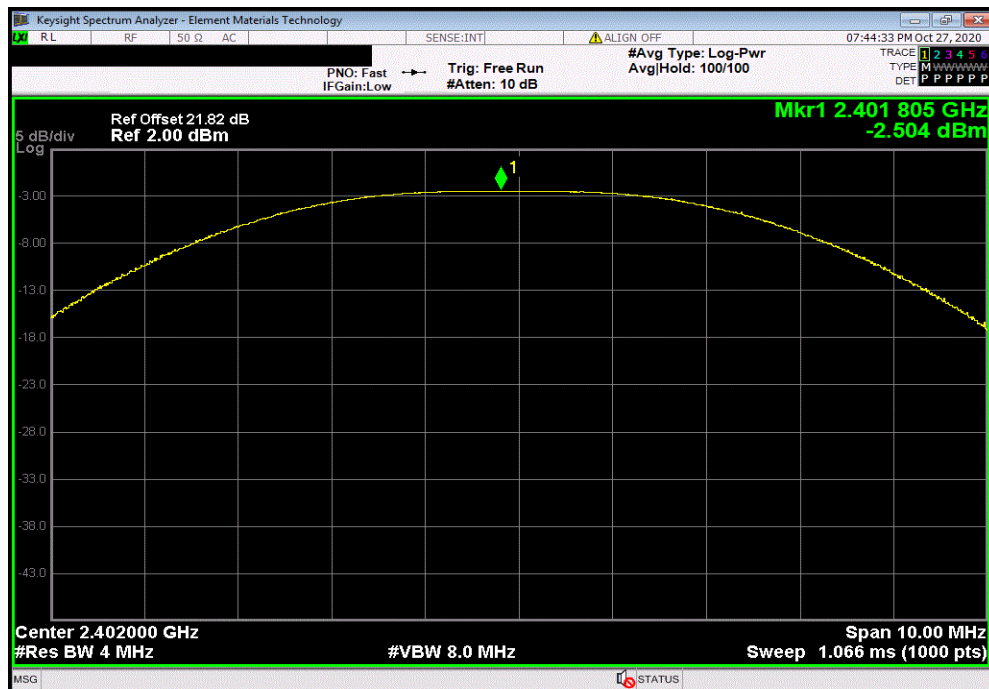


TbTx 2019.08.30.0 XbTx 2020.03.25.0

BLE/GFSK 1 Mbps High Channel, 2480 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				-3.136	30	Pass



BLE/GFSK 2 Mbps Low Channel, 2402 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				-2.504	30	Pass

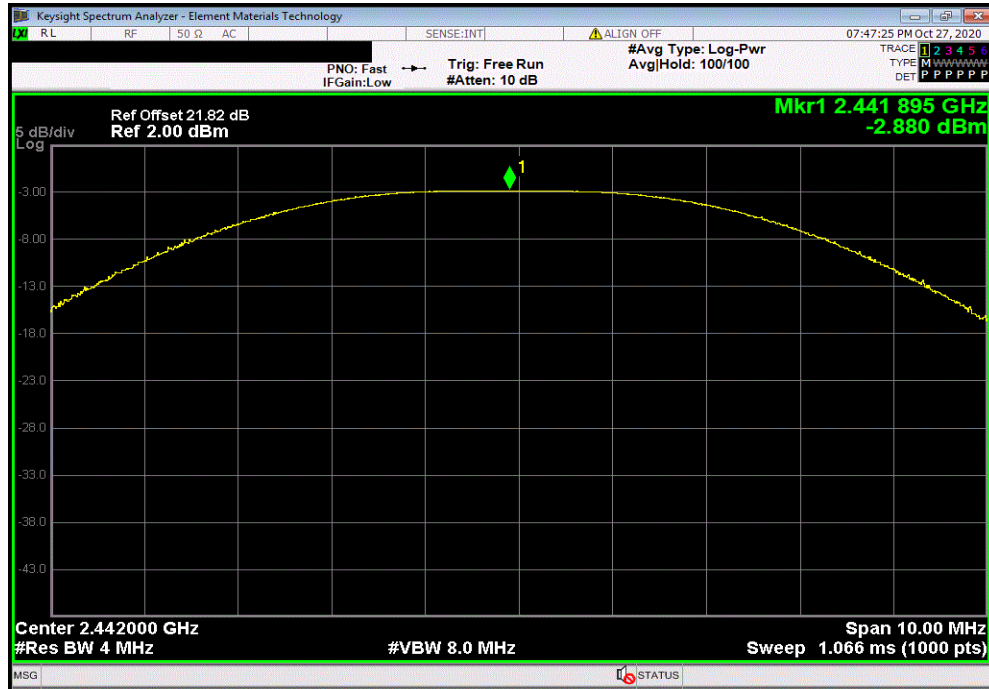


OUTPUT POWER

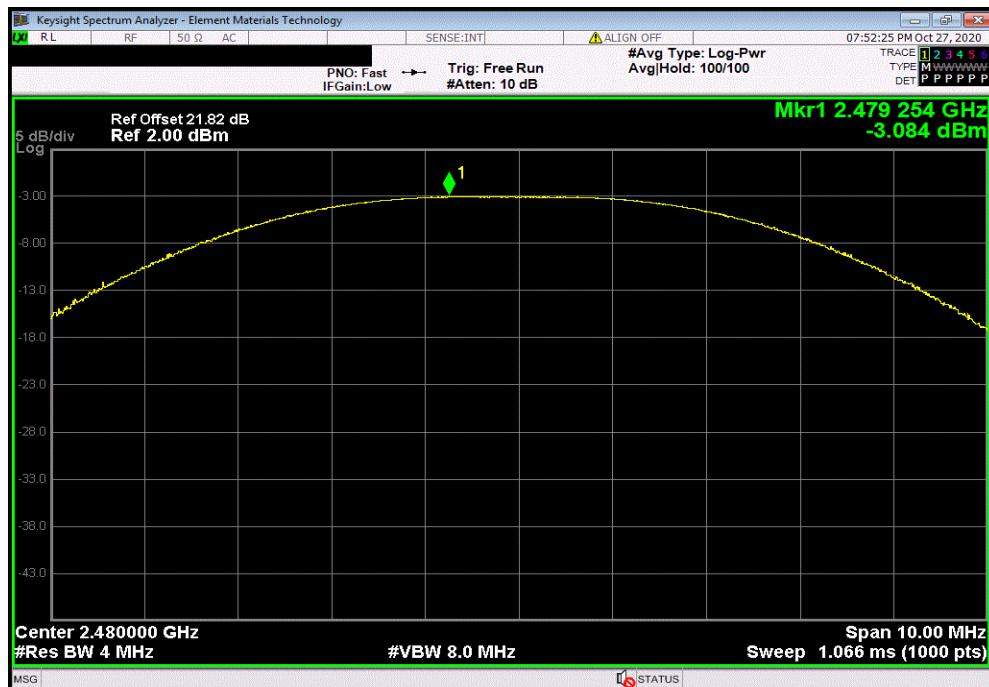


TbTtx 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 2 Mbps Mid Channel, 2442 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				-2.88	30	Pass



BLE/GFSK 2 Mbps High Channel, 2480 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				-3.084	30	Pass



EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



XMIT 2020.03.25.0

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Keysight	N5171B (EXG)	TEY	31-Dec-19	31-Dec-22
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	14-Apr-20	14-Apr-21
Block - DC	Fairview Microwave	SD3379	AMZ	9-Nov-19	9-Nov-20
Attenuator	S.M. Electronics	SA26B-20	RFW	10-Feb-20	10-Feb-21
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNO	20-May-20	20-May-21

TEST DESCRIPTION

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

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

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

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

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



TSTx 2019.08.30.0 XMR 2020.03.25.0

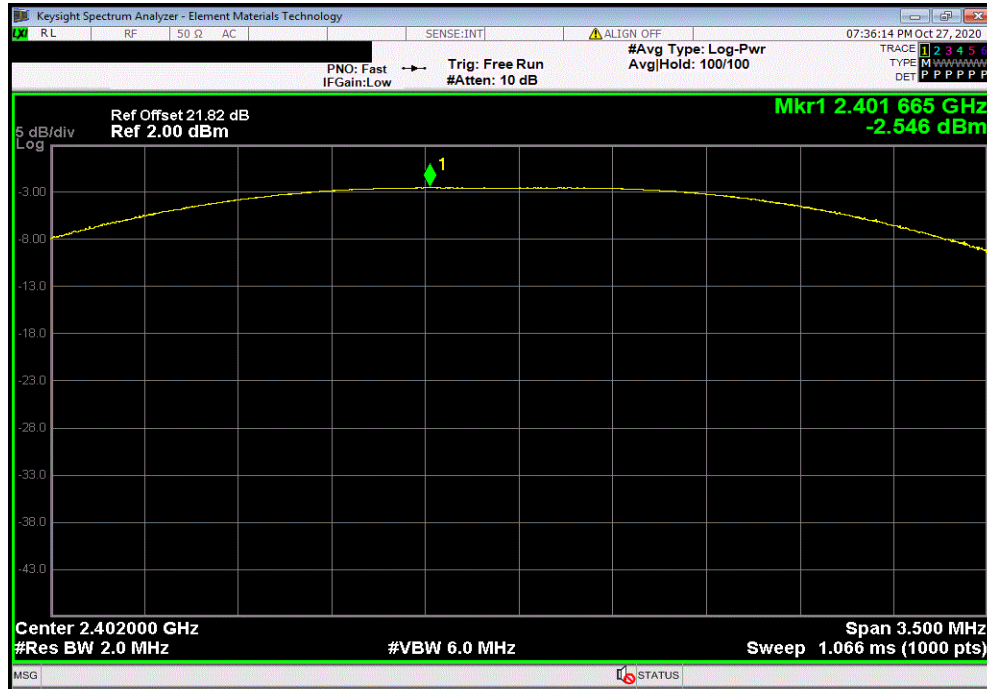
EUT: Kamen RIC		Work Order: NOVI0007	
Serial Number: 0228-R		Date: 27-Oct-20	
Customer: Novidan, Inc.		Temperature: 21.3 °C	
Attendees: Katie Himes		Humidity: 28.9% RH	
Project: None		Barometric Pres.: 1025 mbar	
Tested by: Andrew Rogstad		Power: Battery	
		Job Site: MN08	
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2020		ANSI C63.10:2013	
COMMENTS			
Reference level offset includes measurement cable, DC block, and 20 dB attenuator.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature <i>Andrew Rogstad</i>	
		Out Pwr (dBm)	Antenna Gain (dBi)
BLE/GFSK 1 Mbps Low Channel, 2402 MHz		-2.546	-1.12
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz		-2.81	-1.12
BLE/GFSK 1 Mbps High Channel, 2480 MHz		-3.136	-1.12
BLE/GFSK 2 Mbps Low Channel, 2402 MHz		-2.504	-1.12
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz		-2.88	-1.12
BLE/GFSK 2 Mbps High Channel, 2480 MHz		-3.084	-1.12
		EIRP (dBm)	EIRP Limit (dBm)
		-3.666	36
		-3.93	36
		-4.256	36
		-3.624	36
		-4	36
		-4.204	36
			Result
			Pass
			Pass
			Pass
			Pass
			Pass
			Pass

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

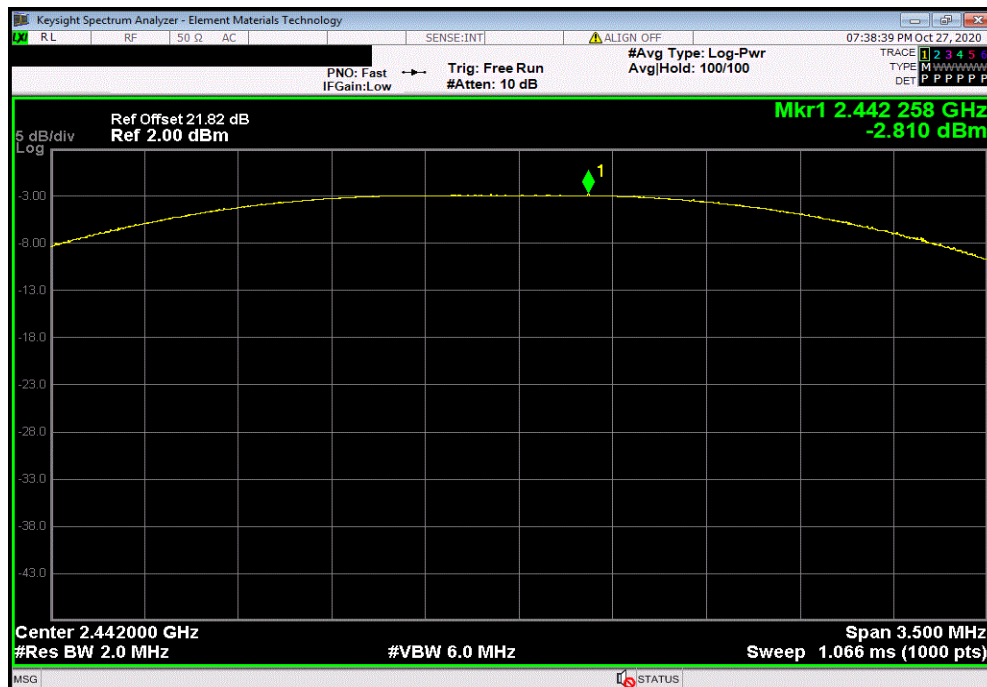


TbTtx 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result		
-2.546	-1.12	-3.666	36	Pass		



BLE/GFSK 1 Mbps Mid Channel, 2442 MHz						
Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result		
-2.81	-1.12	-3.93	36	Pass		

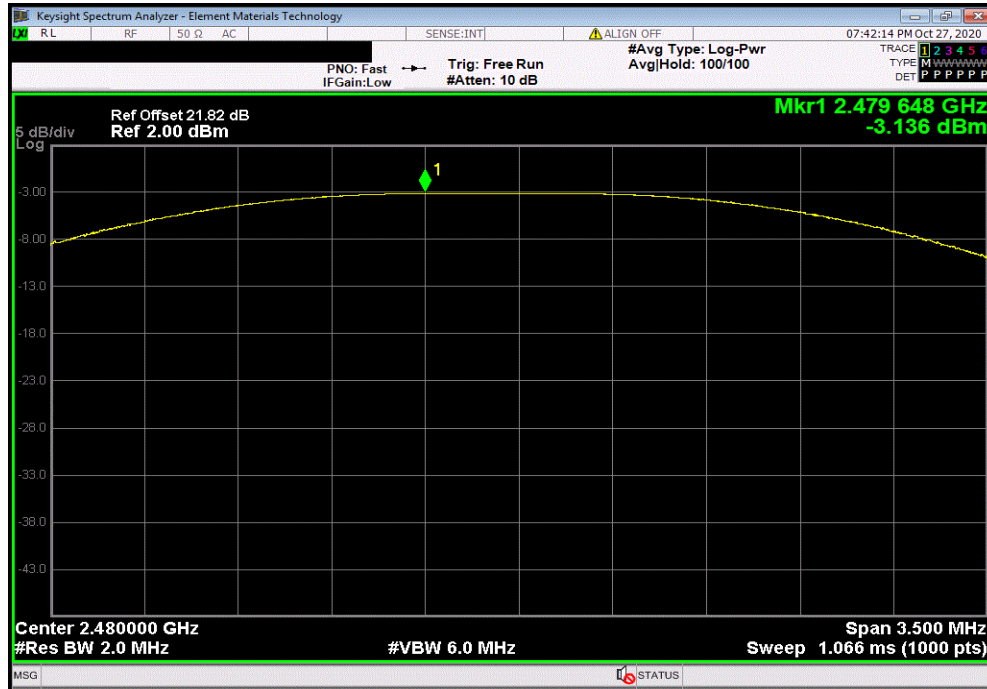


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

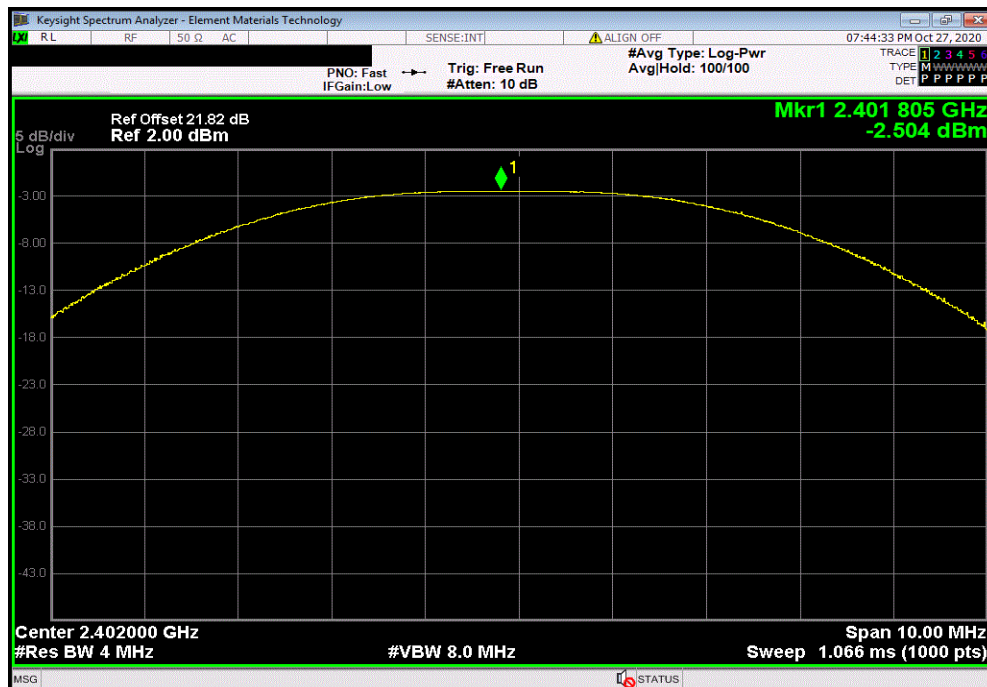


TbTx 2019.08.30.0 XbTx 2020.03.25.0

BLE/GFSK 1 Mbps High Channel, 2480 MHz						
Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result		
-3.136	-1.12	-4.256	36	Pass		



BLE/GFSK 2 Mbps Low Channel, 2402 MHz						
Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result		
-2.504	-1.12	-3.624	36	Pass		

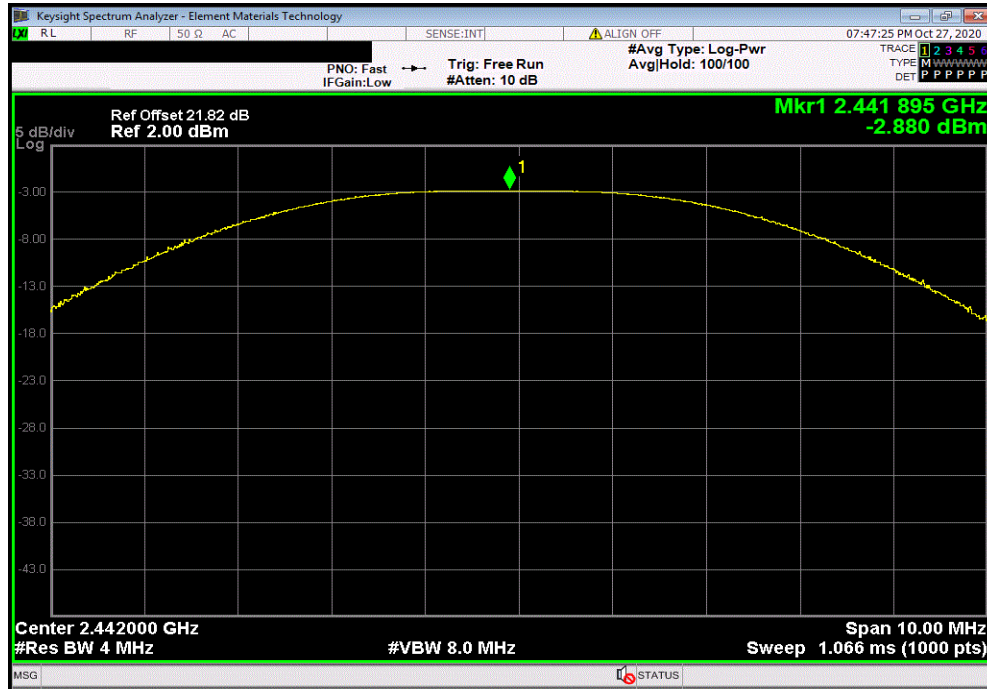


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

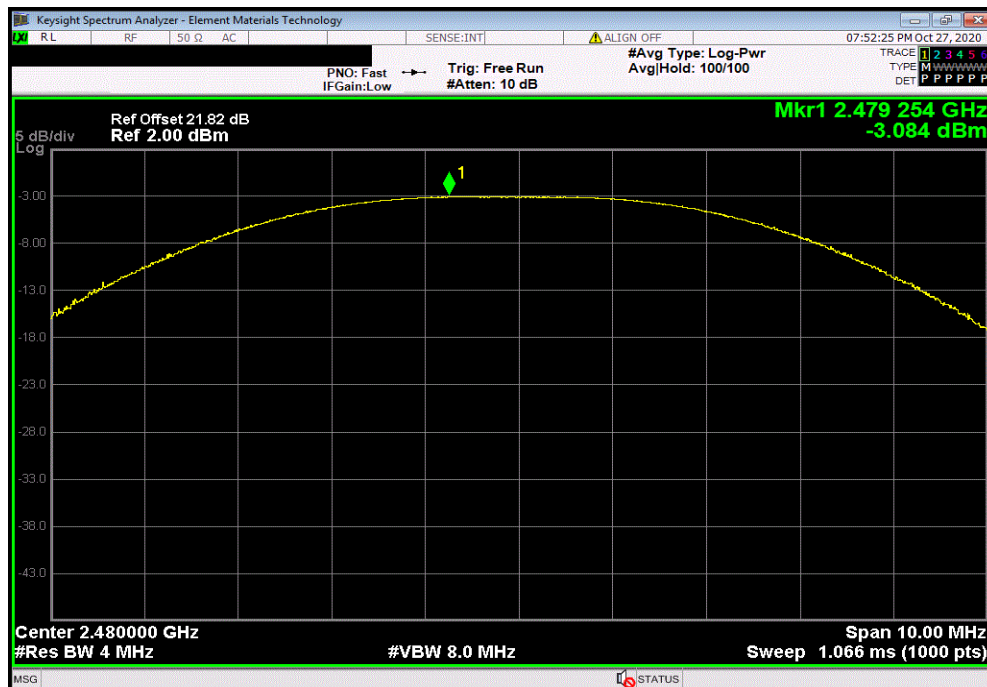


TbTx 2019.08.30.0 XMR 2020.03.25.0

BLE/GFSK 2 Mbps Mid Channel, 2442 MHz						
Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result		
-2.88	-1.12	-4	36	Pass		



BLE/GFSK 2 Mbps High Channel, 2480 MHz						
Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result		
-3.084	-1.12	-4.204	36	Pass		



POWER SPECTRAL DENSITY



XMIT 2020.03.25.0

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Keysight	N5171B (EXG)	TEY	31-Dec-19	31-Dec-22
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	14-Apr-20	14-Apr-21
Block - DC	Fairview Microwave	SD3379	AMZ	9-Nov-19	9-Nov-20
Attenuator	S.M. Electronics	SA26B-20	RFW	10-Feb-20	10-Feb-21
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNO	20-May-20	20-May-21

TEST DESCRIPTION

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

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

POWER SPECTRAL DENSITY



TSMTx 2019.08.30.0 XMR 2020.03.25.0

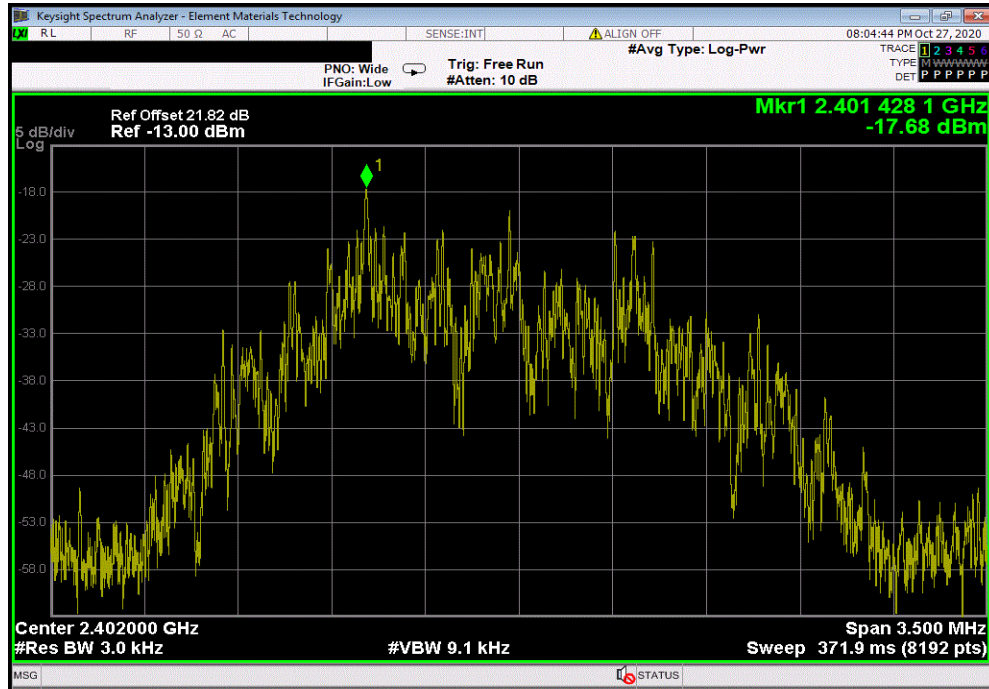
EUT: Kamen RIC		Work Order: NOVI0007	
Serial Number: 0228-R		Date: 27-Oct-20	
Customer: Novidan, Inc.		Temperature: 21.3 °C	
Attendees: Katie Himes		Humidity: 29.1% RH	
Project: None		Barometric Pres.: 1025 mbar	
Tested by: Andrew Rogstad		Power: Battery	
		Job Site: MN08	
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2020		ANSI C63.10:2013	
COMMENTS			
Reference level offset includes measurement cable, DC block, and 20 dB attenuator.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature <i>Andrew Rogstad</i>	
		Value dBm/3kHz	Limit < dBm/3kHz
BLE/GFSK 1 Mbps Low Channel, 2402 MHz		-17.679	8
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz		-12.82	8
BLE/GFSK 1 Mbps High Channel, 2480 MHz		-13.02	8
BLE/GFSK 2 Mbps Low Channel, 2402 MHz		-17.694	8
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz		-18.132	8
BLE/GFSK 2 Mbps High Channel, 2480 MHz		-18.322	8
			Results
			Pass
			Pass
			Pass
			Pass
			Pass
			Pass

POWER SPECTRAL DENSITY



TbTtX 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
	Value	Limit	Results			
	dBm/3kHz	< dBm/3kHz				
	-17.679	8	Pass			



BLE/GFSK 1 Mbps Mid Channel, 2442 MHz						
	Value	Limit	Results			
	dBm/3kHz	< dBm/3kHz				
	-12.82	8	Pass			

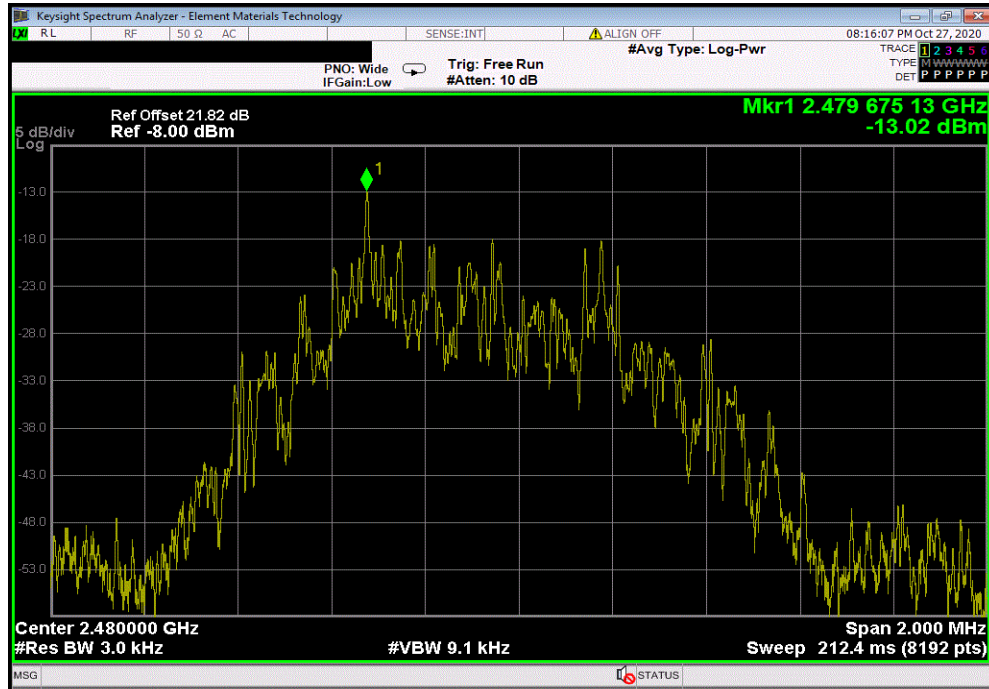


POWER SPECTRAL DENSITY

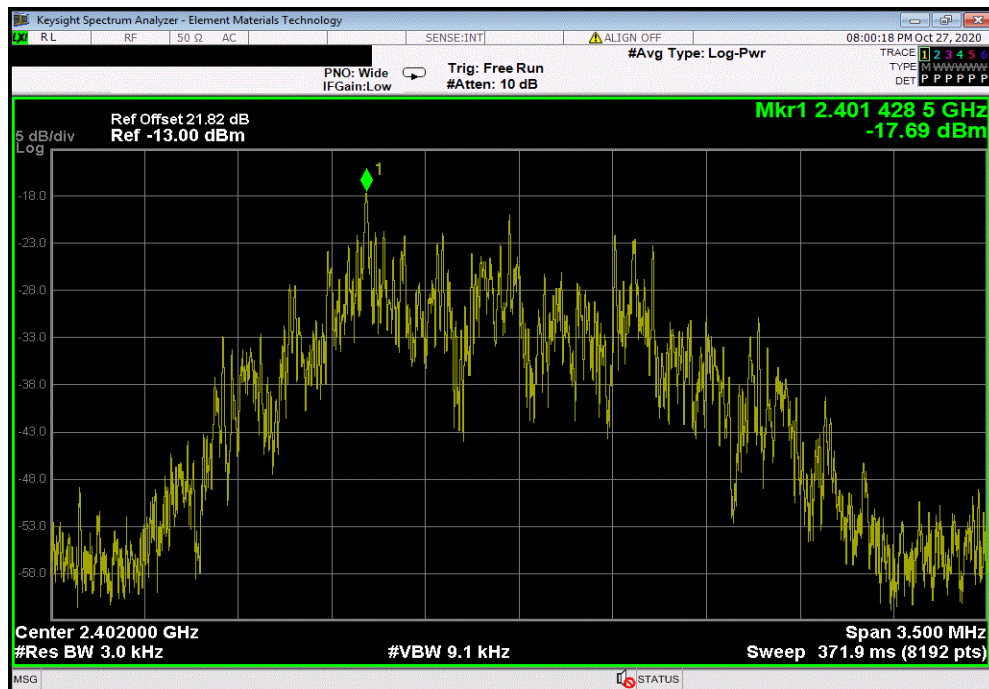


TbTtX 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 1 Mbps High Channel, 2480 MHz						
	Value	Limit	Results			
	dBm/3kHz	< dBm/3kHz				
	-13.02	8	Pass			



BLE/GFSK 2 Mbps Low Channel, 2402 MHz						
	Value	Limit	Results			
	dBm/3kHz	< dBm/3kHz				
	-17.694	8	Pass			

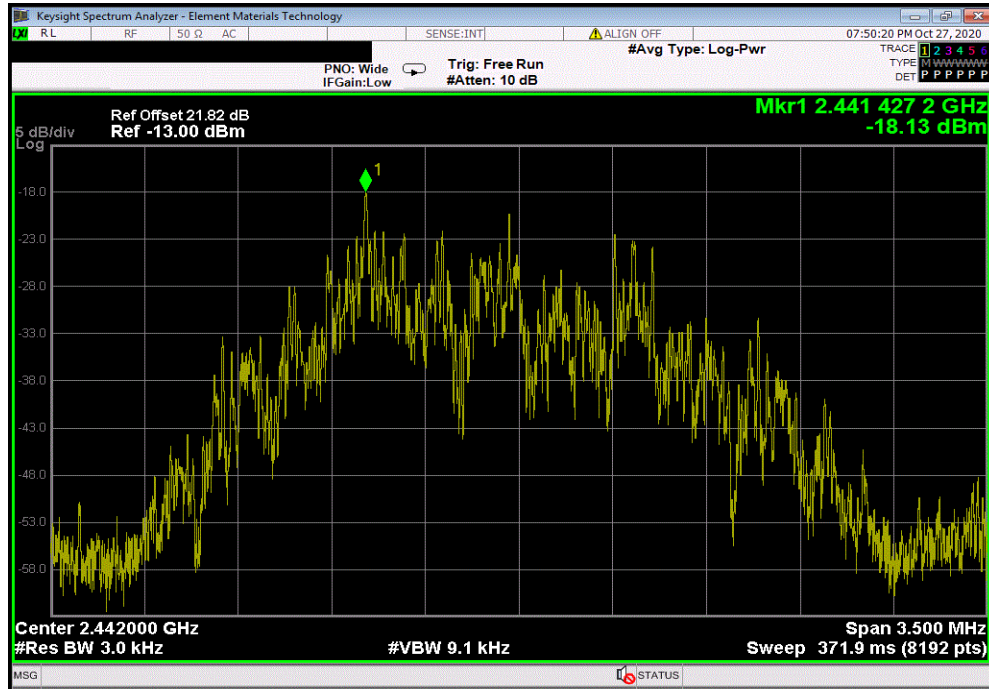


POWER SPECTRAL DENSITY

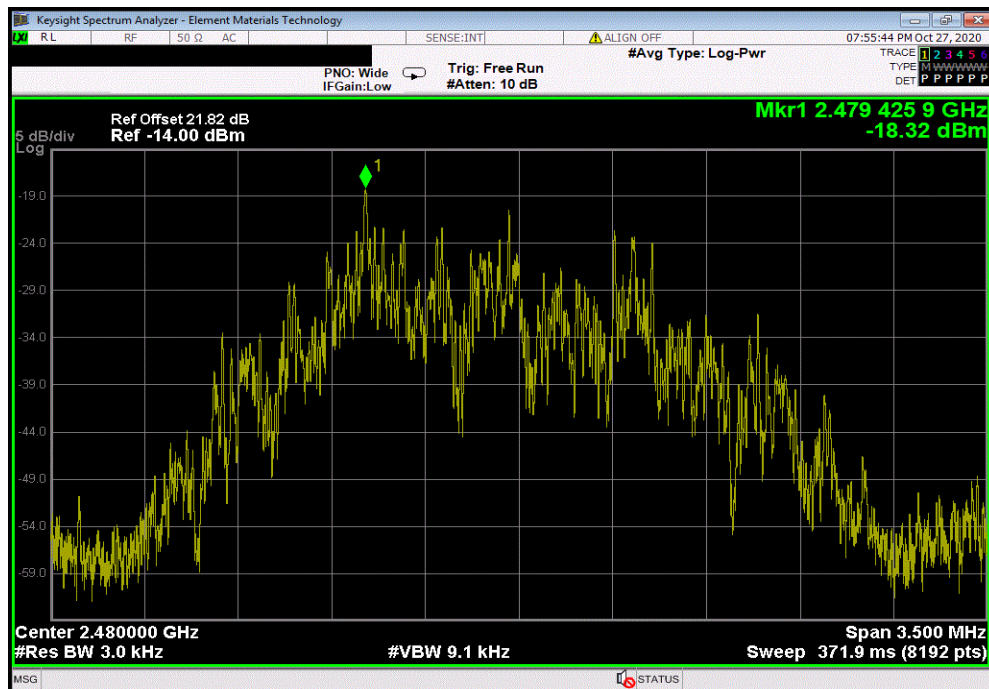


TbTtX 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 2 Mbps Mid Channel, 2442 MHz						
	Value	Limit	Results			
	dBm/3kHz	< dBm/3kHz				
	-18.132	8	Pass			



BLE/GFSK 2 Mbps High Channel, 2480 MHz						
	Value	Limit	Results			
	dBm/3kHz	< dBm/3kHz				
	-18.322	8	Pass			



BAND EDGE COMPLIANCE



XMIT 2020.03.25.0

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Keysight	N5171B (EXG)	TEY	31-Dec-19	31-Dec-22
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	14-Apr-20	14-Apr-21
Block - DC	Fairview Microwave	SD3379	AMZ	9-Nov-19	9-Nov-20
Attenuator	S.M. Electronics	SA26B-20	RFW	10-Feb-20	10-Feb-21
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNO	20-May-20	20-May-21

TEST DESCRIPTION

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

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

BAND EDGE COMPLIANCE



TSTx 2019.08.30.0 XMR 2020.03.25.0

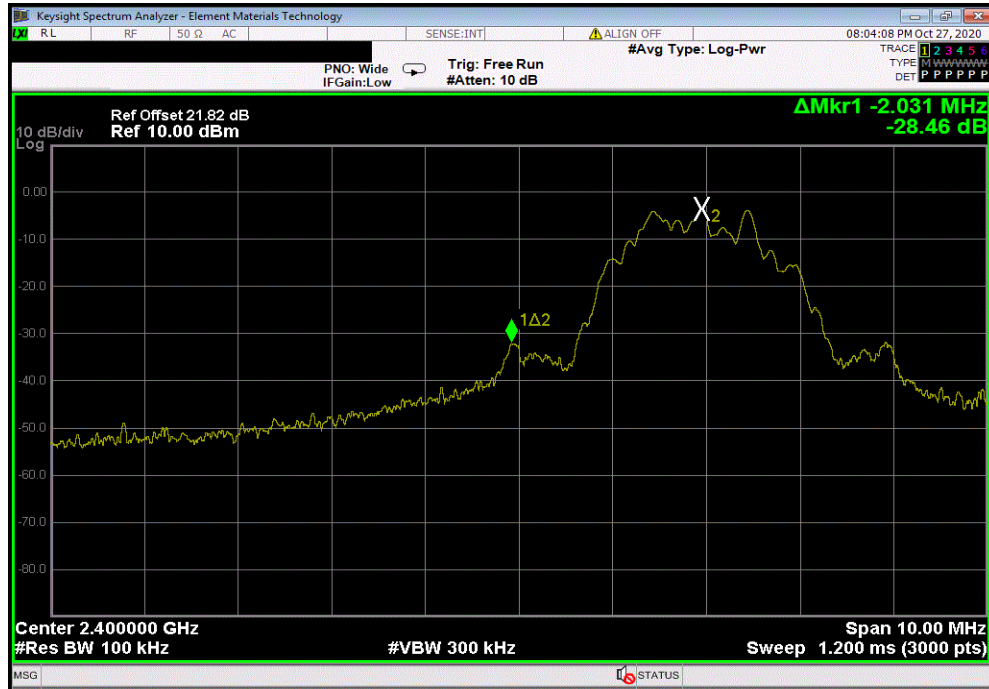
EUT: Kamen RIC		Work Order: NOVI0007	
Serial Number: 0228-R		Date: 27-Oct-20	
Customer: Novidan, Inc.		Temperature: 21.4 °C	
Attendees: Katie Himes		Humidity: 28.9% RH	
Project: None		Barometric Pres.: 1025 mbar	
Tested by: Andrew Rogstad		Power: Battery	
		Job Site: MN08	
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2020		ANSI C63.10:2013	
COMMENTS			
Reference level offset includes measurement cable, DC block, and 20 dB attenuator.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature <i>Andrew Rogstad</i>	
		Value (dBc)	Limit ≤ (dBc) Result
BLE/GFSK 1 Mbps Low Channel, 2402 MHz		-28.46	-20 Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz		-43.98	-20 Pass
BLE/GFSK 2 Mbps Low Channel, 2402 MHz		-27.91	-20 Pass
BLE/GFSK 2 Mbps High Channel, 2480 MHz		-36.06	-20 Pass

BAND EDGE COMPLIANCE



TbTtx 2019.08.30.0 XMI 2020.03.25.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-28.46	-20	Pass



BLE/GFSK 1 Mbps High Channel, 2480 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-43.98	-20	Pass

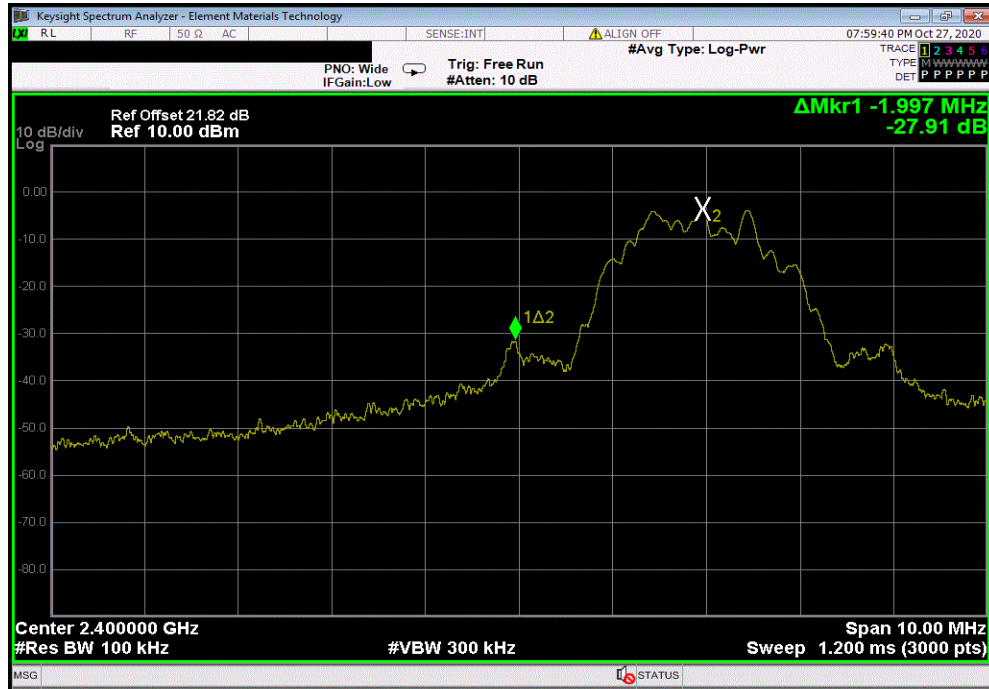


BAND EDGE COMPLIANCE

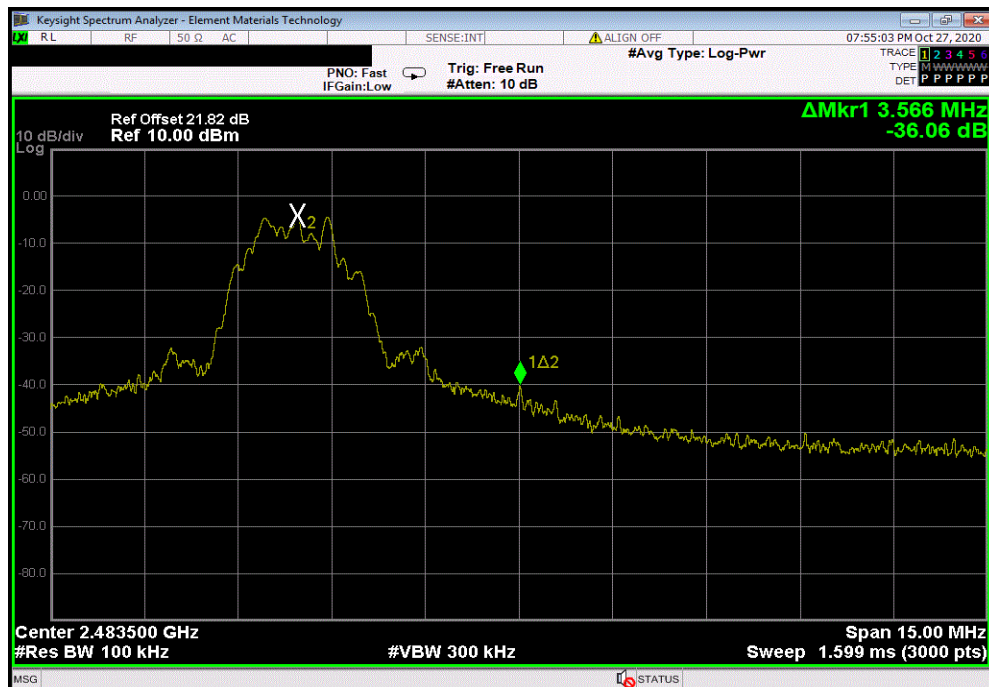


TbTtx 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 2 Mbps Low Channel, 2402 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-27.91	-20	Pass



BLE/GFSK 2 Mbps High Channel, 2480 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-36.06	-20	Pass



SPURIOUS CONDUCTED EMISSIONS



XMIT 2020.03.25.0

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Keysight	N5171B (EXG)	TEY	31-Dec-19	31-Dec-22
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	14-Apr-20	14-Apr-21
Attenuator	S.M. Electronics	SA26B-20	RFW	10-Feb-20	10-Feb-21
Block - DC	Fairview Microwave	SD3379	AMZ	9-Nov-19	9-Nov-20
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNO	20-May-20	20-May-21

TEST DESCRIPTION

The spurious RF conducted emissions were measured with the EUT set to low, medium and high transmit frequencies. The EUT was transmitting at the data rate(s) listed in the datasheet. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.

SPURIOUS CONDUCTED EMISSIONS



TestTx 2019.08.30.0 XMI 2020.03.25.0

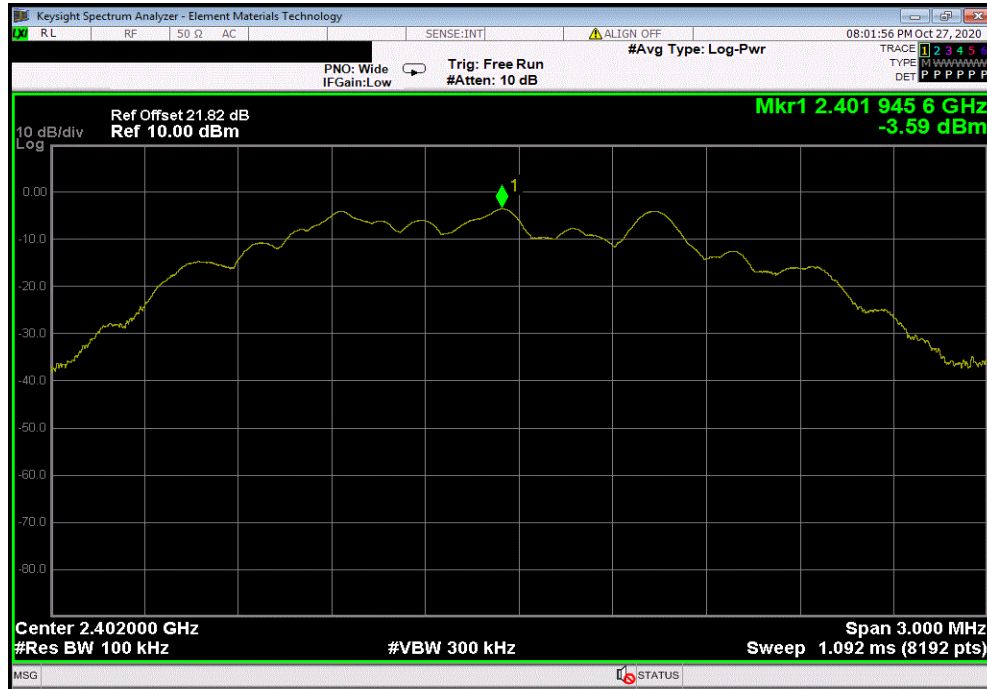
EUT: Kamen RIC		Work Order: NOVI0007			
Serial Number: 0228-R		Date: 27-Oct-20			
Customer: Novidan, Inc.		Temperature: 21.3 °C			
Attendees: Katie Himes		Humidity: 29.1% RH			
Project: None		Barometric Pres.: 1025 mbar			
Tested by: Andrew Rogstad		Power: Battery			
Job Site: MN08					
TEST SPECIFICATIONS		Test Method			
FCC 15.247:2020		ANSI C63.10:2013			
COMMENTS					
Reference level offset includes measurement cable, DC block, and 20 dB attenuator.					
DEVIATIONS FROM TEST STANDARD					
None					
Configuration #	1	Signature <i>Andrew Rogstad</i>			
	Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
BLE/GFSK 1 Mbps Low Channel, 2402 MHz	Fundamental	2401.95	N/A	N/A	N/A
BLE/GFSK 1 Mbps Low Channel, 2402 MHz	30 MHz - 12.5 GHz	5195.51	-40.75	-20	Pass
BLE/GFSK 1 Mbps Low Channel, 2402 MHz	12.5 GHz - 25 GHz	24957.27	-35.42	-20	Pass
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz	Fundamental	2442.18	N/A	N/A	N/A
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz	30 MHz - 12.5 GHz	4884.94	-45.48	-20	Pass
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz	12.5 GHz - 25 GHz	24955.74	-35.11	-20	Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz	Fundamental	2480.18	N/A	N/A	N/A
BLE/GFSK 1 Mbps High Channel, 2480 MHz	30 MHz - 12.5 GHz	6020.65	-44.7	-20	Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz	12.5 GHz - 25 GHz	24745.15	-35.54	-20	Pass
BLE/GFSK 2 Mbps Low Channel, 2402 MHz	Fundamental	2401.95	N/A	N/A	N/A
BLE/GFSK 2 Mbps Low Channel, 2402 MHz	30 MHz - 12.5 GHz	4802.73	-43.42	-20	Pass
BLE/GFSK 2 Mbps Low Channel, 2402 MHz	12.5 GHz - 25 GHz	24853.5	-34.39	-20	Pass
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz	Fundamental	2441.95	N/A	N/A	N/A
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz	30 MHz - 12.5 GHz	12160.5	-44.53	-20	Pass
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz	12.5 GHz - 25 GHz	24893.18	-33.77	-20	Pass
BLE/GFSK 2 Mbps High Channel, 2480 MHz	Fundamental	2479.95	N/A	N/A	N/A
BLE/GFSK 2 Mbps High Channel, 2480 MHz	30 MHz - 12.5 GHz	12079.82	-44.78	-20	Pass
BLE/GFSK 2 Mbps High Channel, 2480 MHz	12.5 GHz - 25 GHz	24957.27	-34.72	-20	Pass

SPURIOUS CONDUCTED EMISSIONS

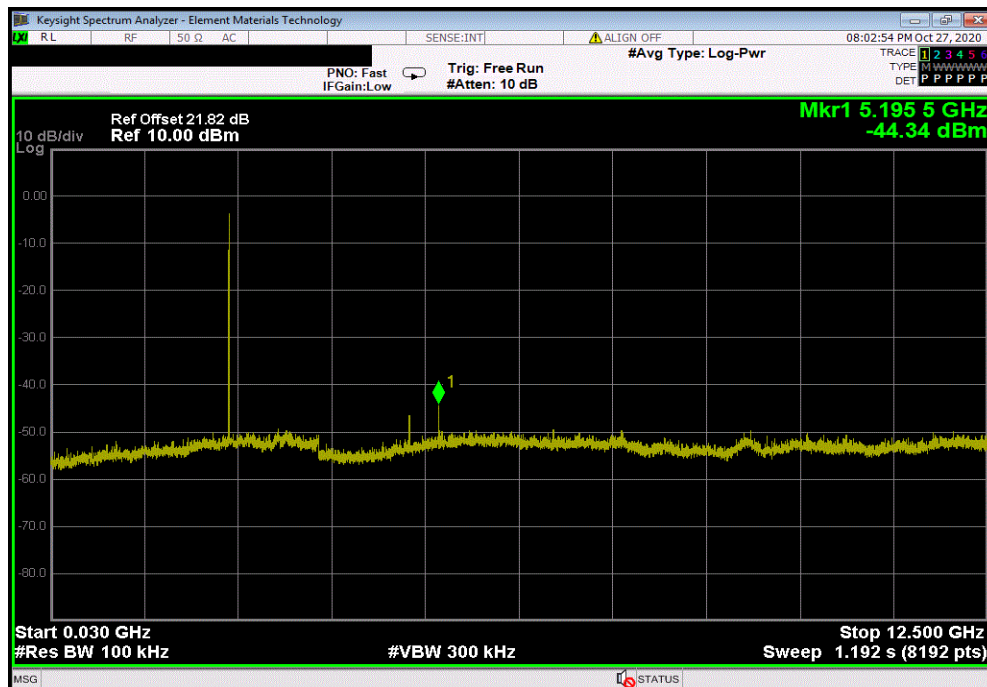


TbTx 2019.08.30.0 XbTx 2020.03.25.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
Fundamental	2401.95	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	5195.51	-40.75	-20	Pass	

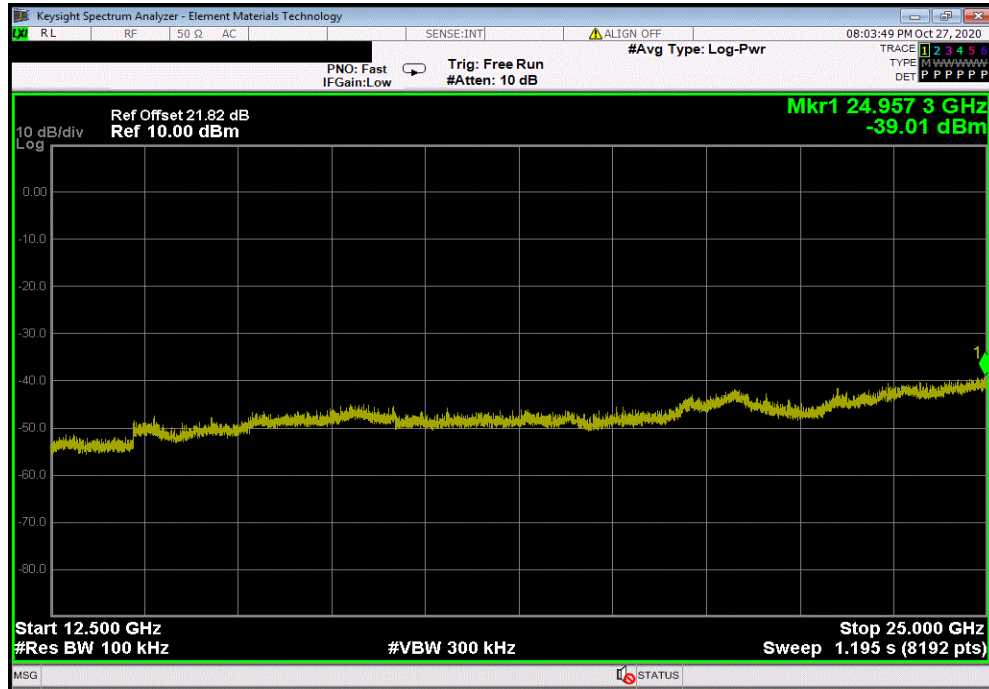


SPURIOUS CONDUCTED EMISSIONS

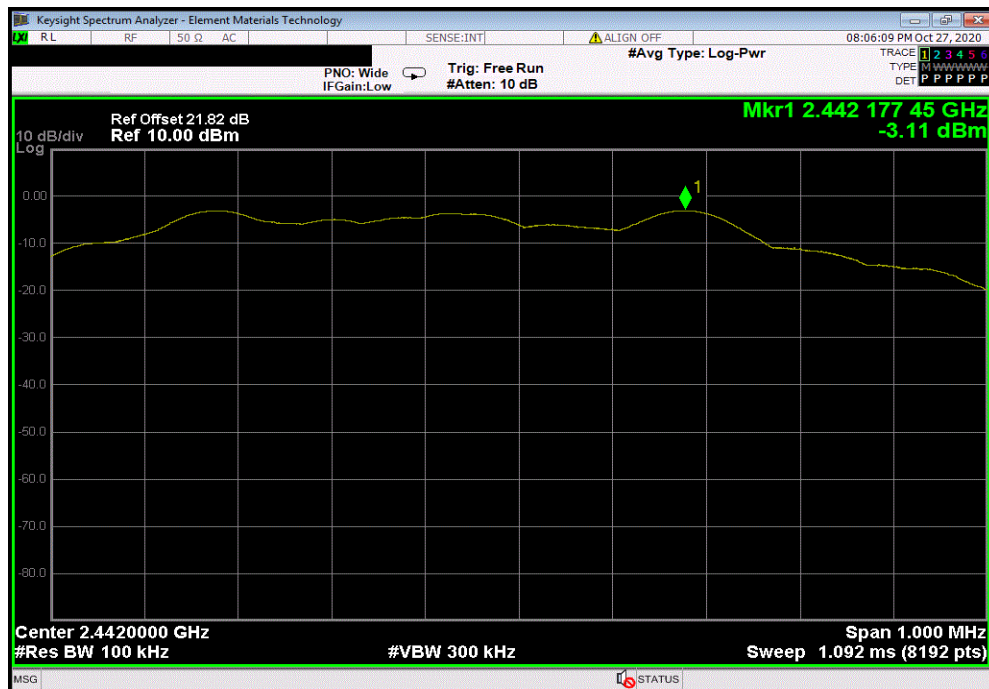


TbTtx 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
12.5 GHz - 25 GHz	24957.27	-35.42	-20	Pass	



BLE/GFSK 1 Mbps Mid Channel, 2442 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
Fundamental	2442.18	N/A	N/A	N/A	

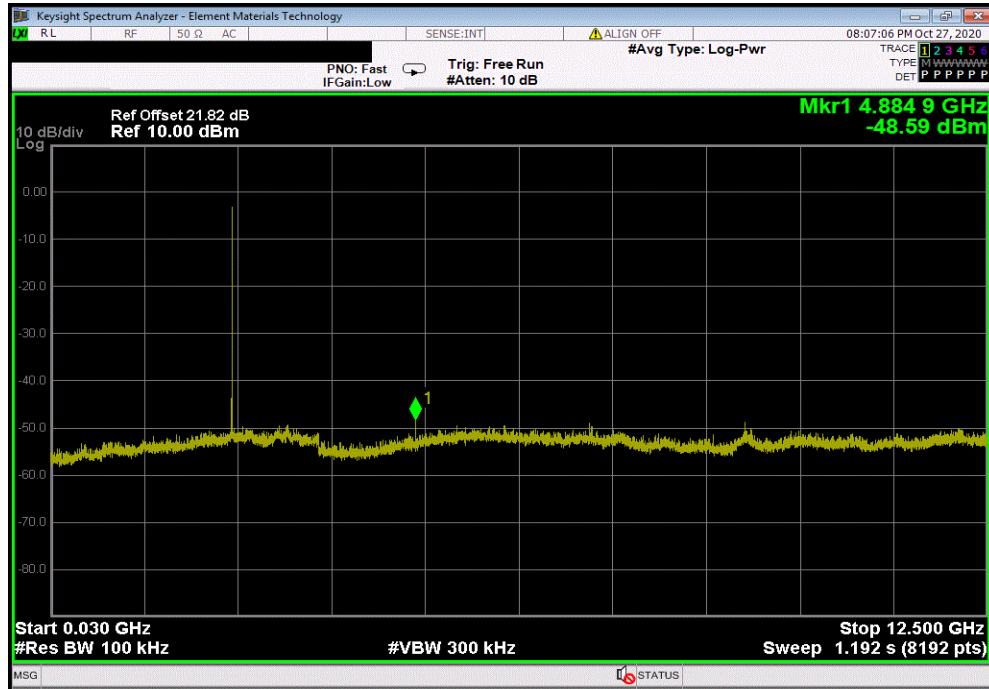


SPURIOUS CONDUCTED EMISSIONS

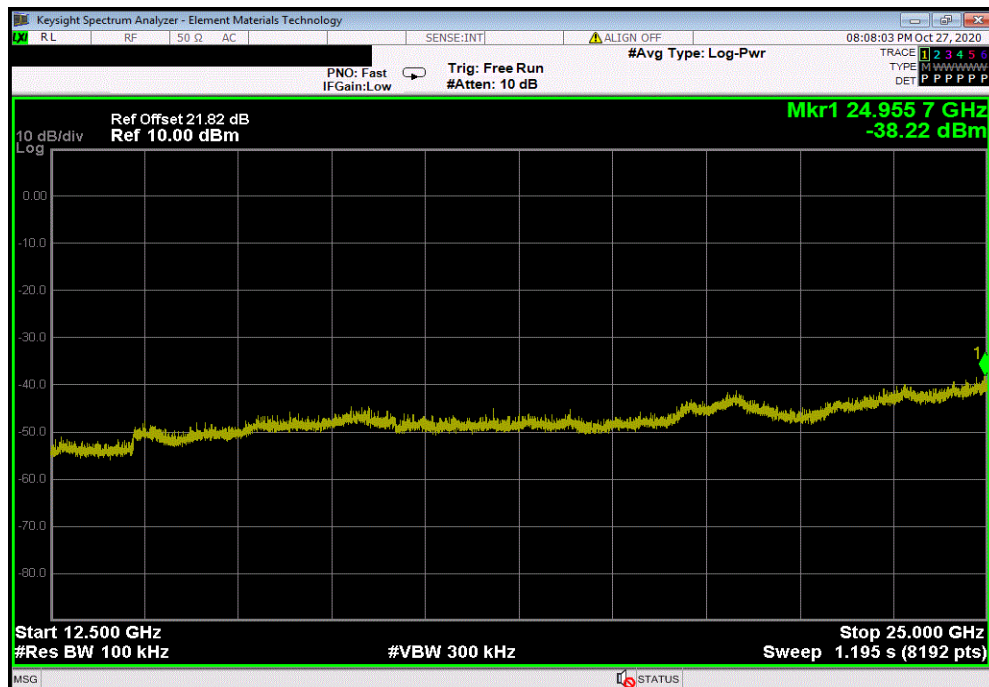


TbTtX 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 1 Mbps Mid Channel, 2442 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
30 MHz - 12.5 GHz	4884.94	-45.48	-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	24955.74	-35.11	-20	Pass	

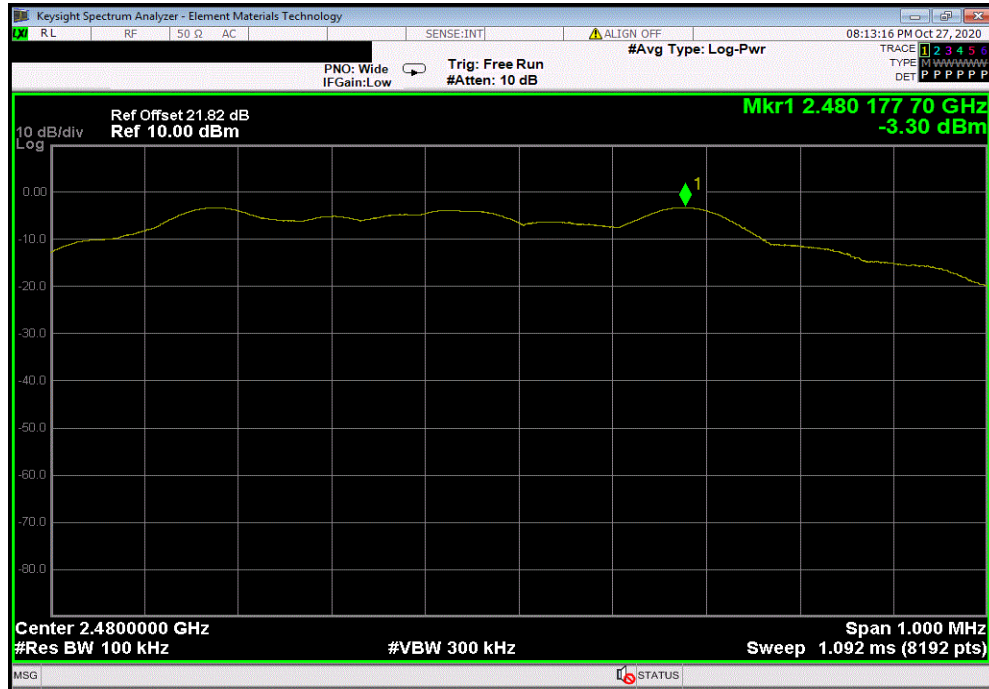


SPURIOUS CONDUCTED EMISSIONS

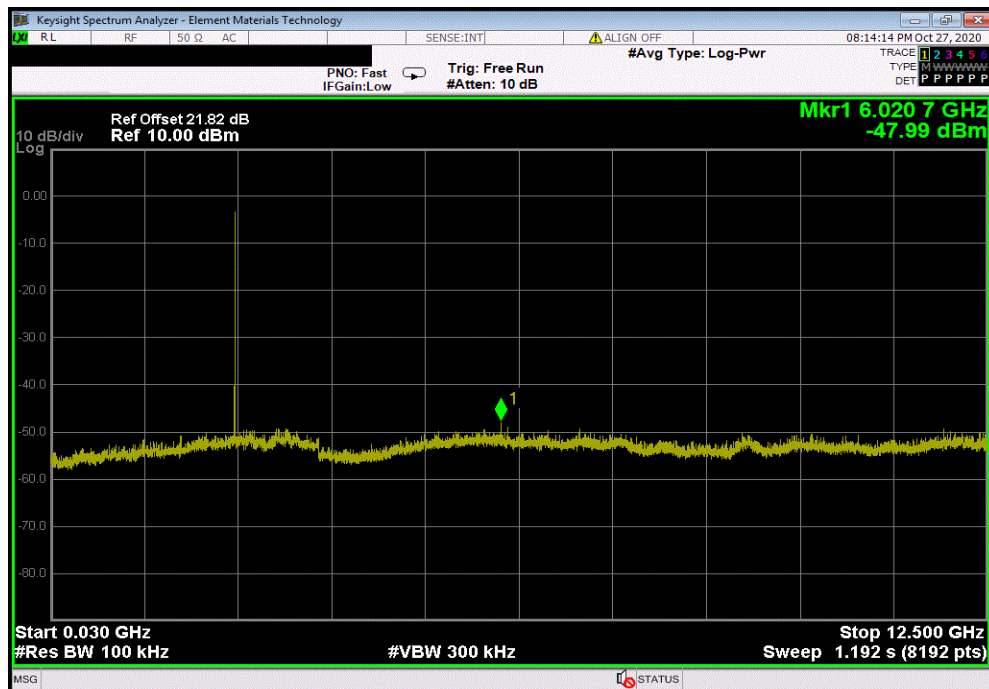


TbTtx 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 1 Mbps High Channel, 2480 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
Fundamental	2480.18	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	6020.65	-44.7	-20	Pass	

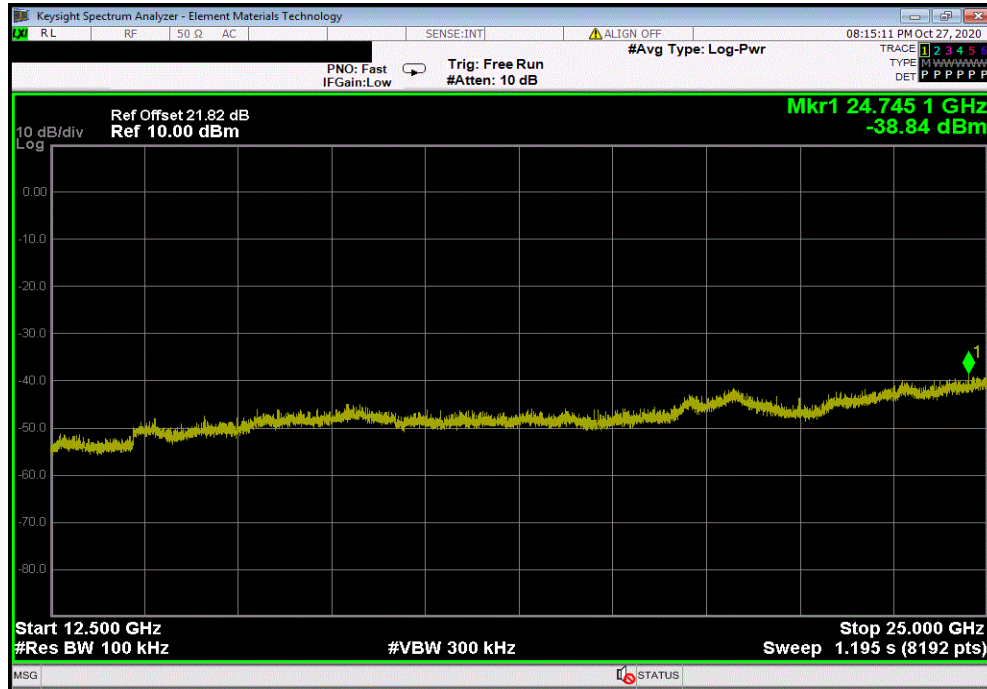


SPURIOUS CONDUCTED EMISSIONS

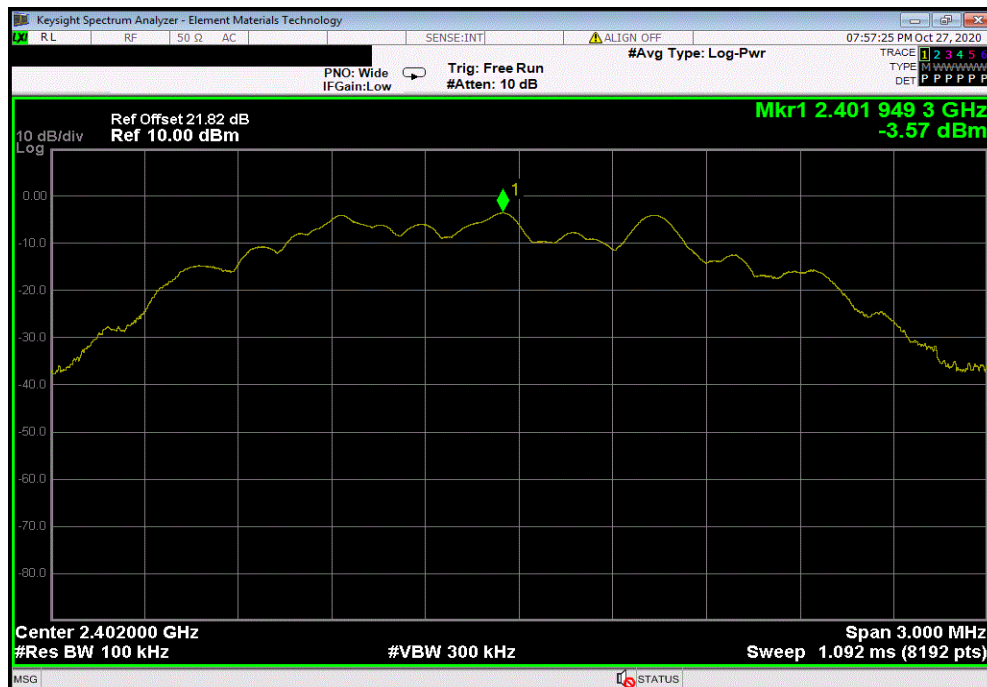


TbTx 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 1 Mbps High Channel, 2480 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
12.5 GHz - 25 GHz	24745.15	-35.54	-20	Pass	



BLE/GFSK 2 Mbps Low Channel, 2402 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
Fundamental	2401.95	N/A	N/A	N/A	

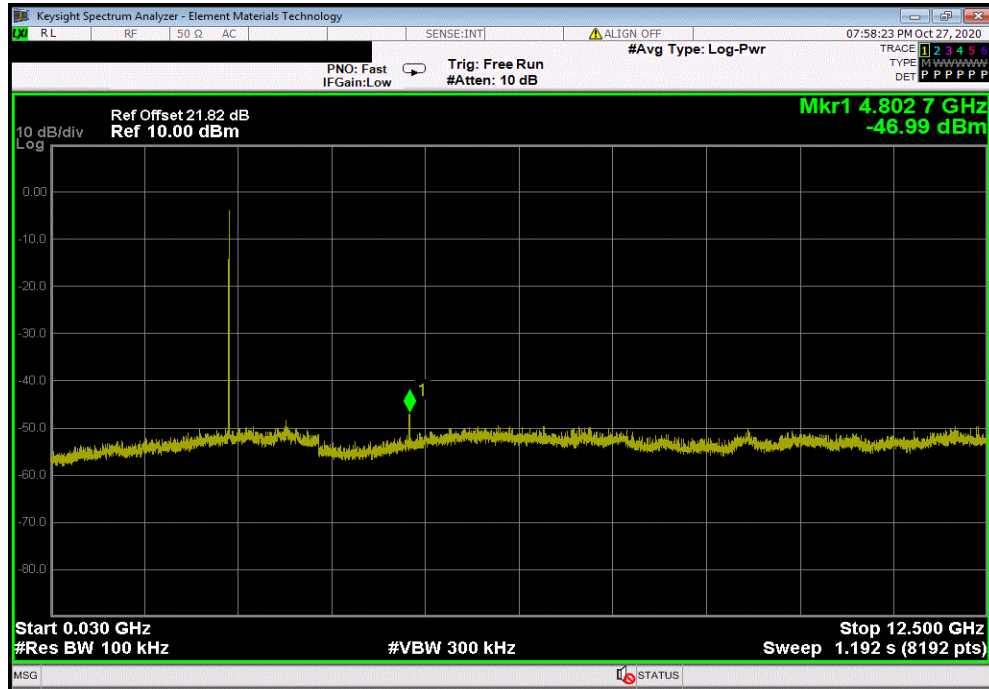


SPURIOUS CONDUCTED EMISSIONS

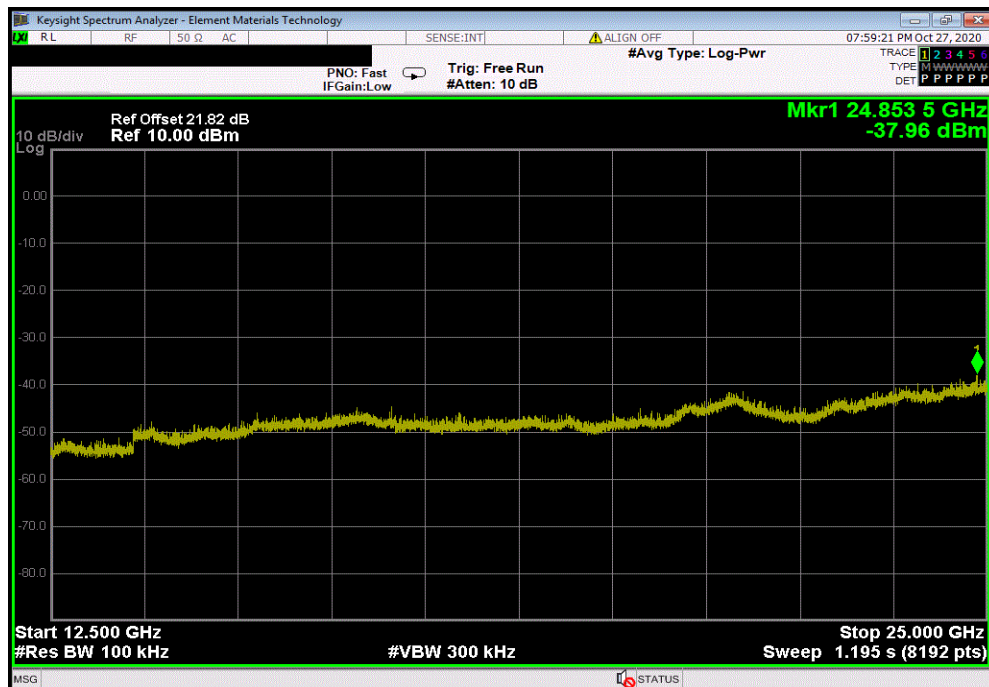


TbTtx 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 2 Mbps Low Channel, 2402 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
30 MHz - 12.5 GHz	4802.73	-43.42	-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	24853.5	-34.39	-20	Pass	

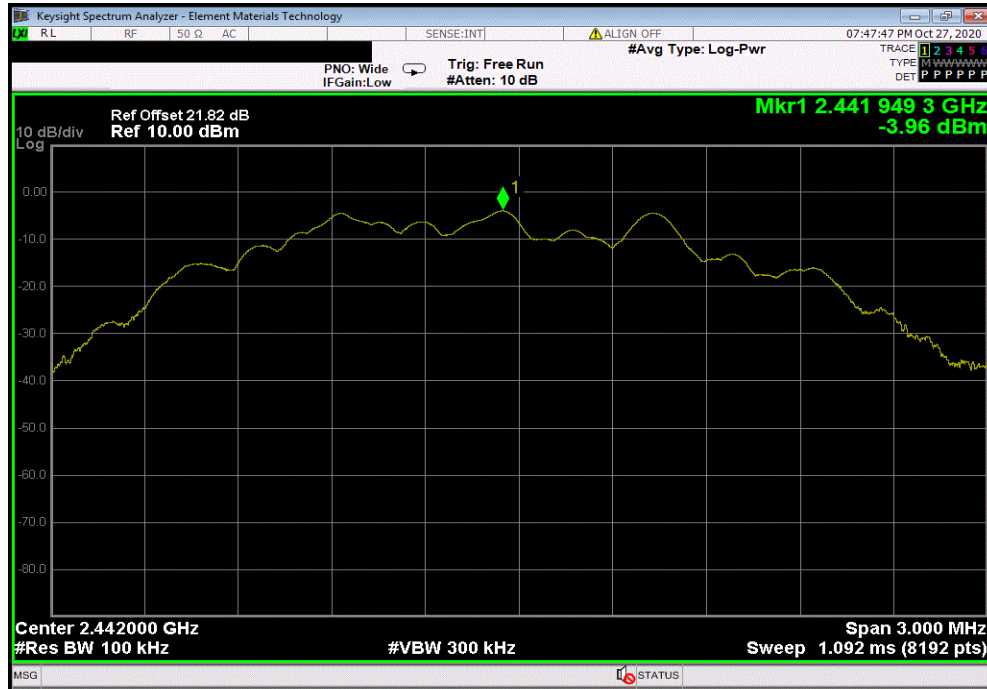


SPURIOUS CONDUCTED EMISSIONS

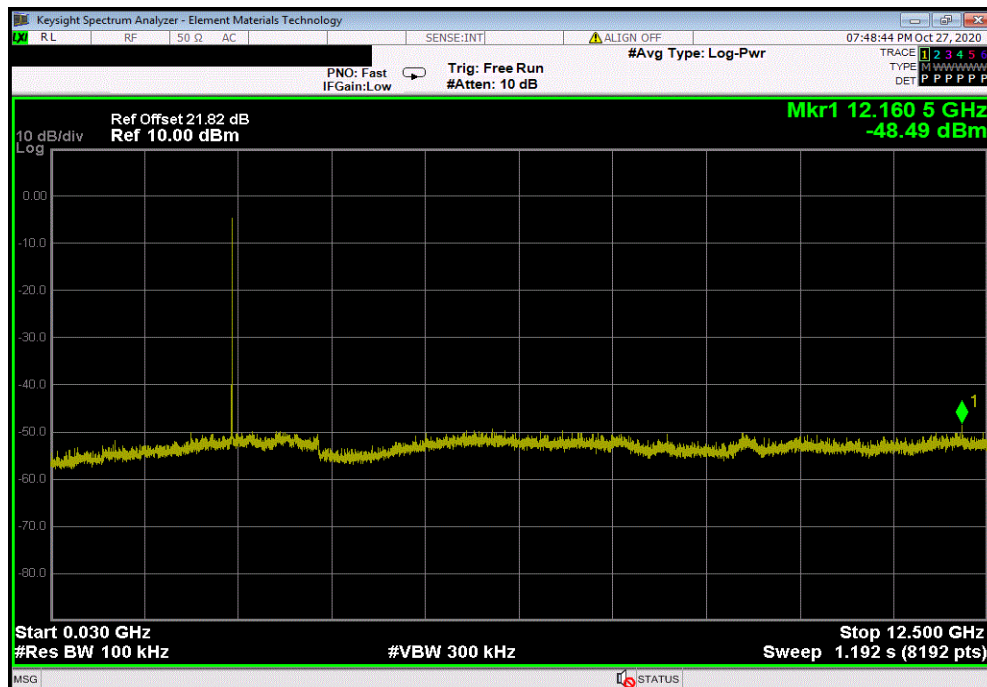


TbTx 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 2 Mbps Mid Channel, 2442 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
Fundamental	2441.95	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	12160.5	-44.53	-20	Pass	

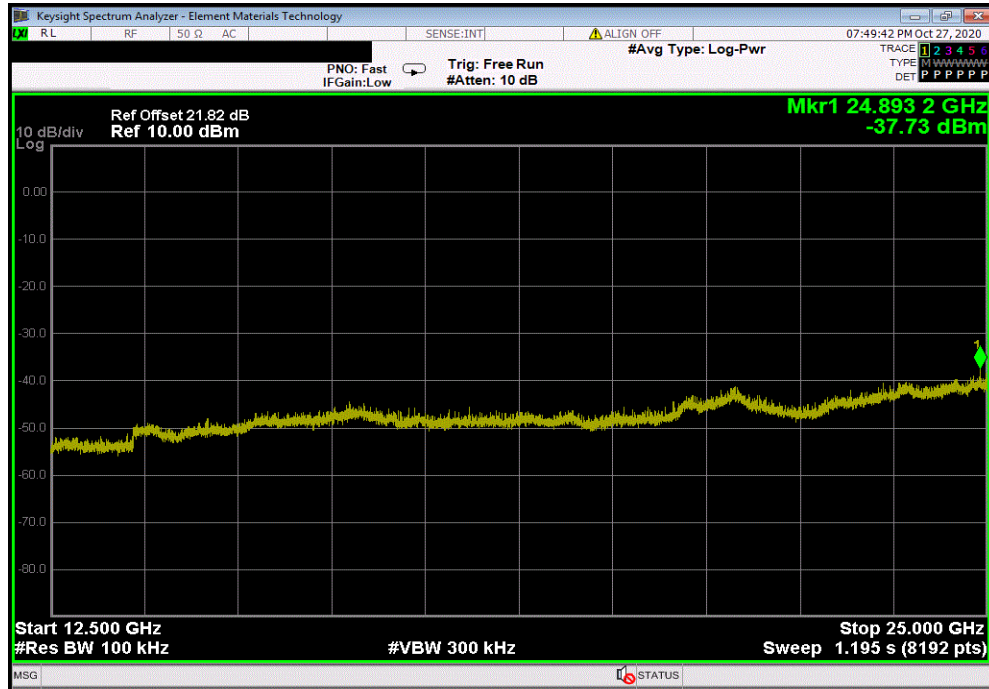


SPURIOUS CONDUCTED EMISSIONS

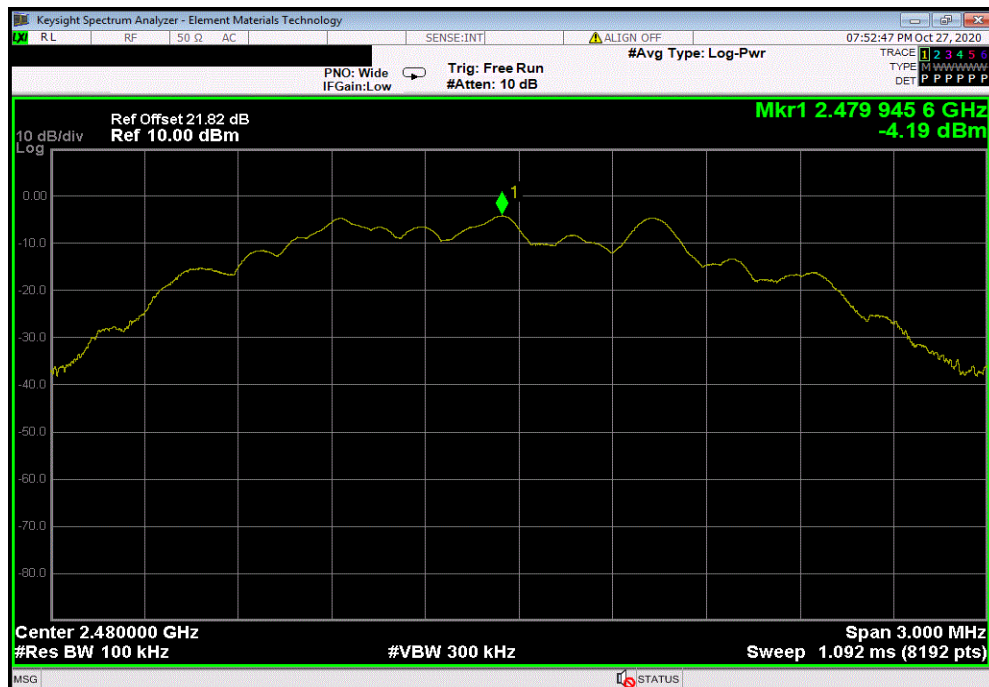


TbTtx 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 2 Mbps Mid Channel, 2442 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
12.5 GHz - 25 GHz	24893.18	-33.77	-20	Pass	



BLE/GFSK 2 Mbps High Channel, 2480 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
Fundamental	2479.95	N/A	N/A	N/A	

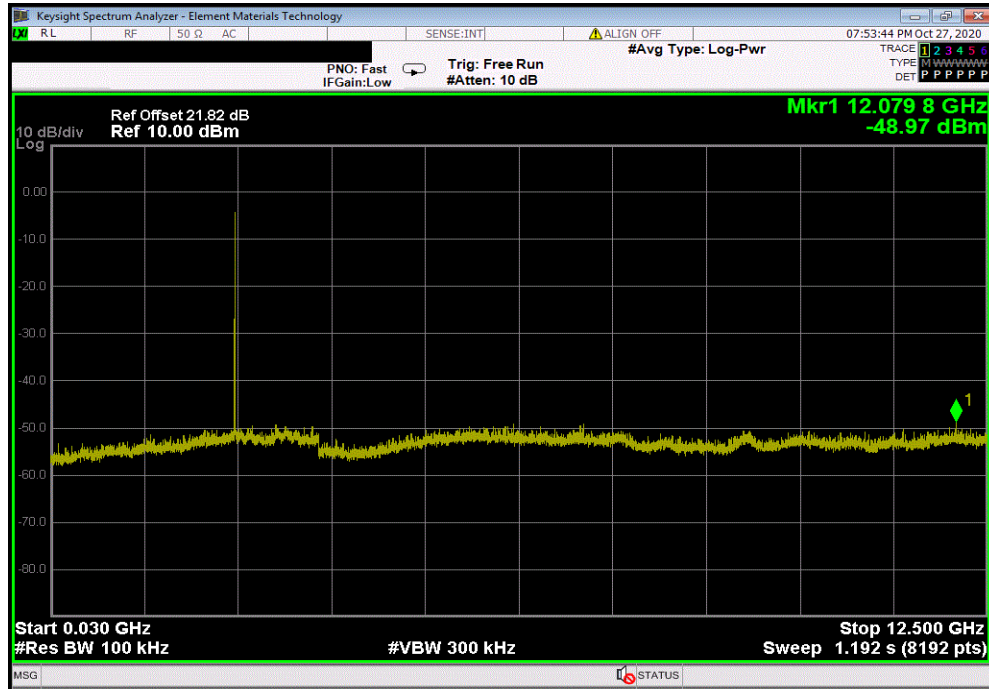


SPURIOUS CONDUCTED EMISSIONS

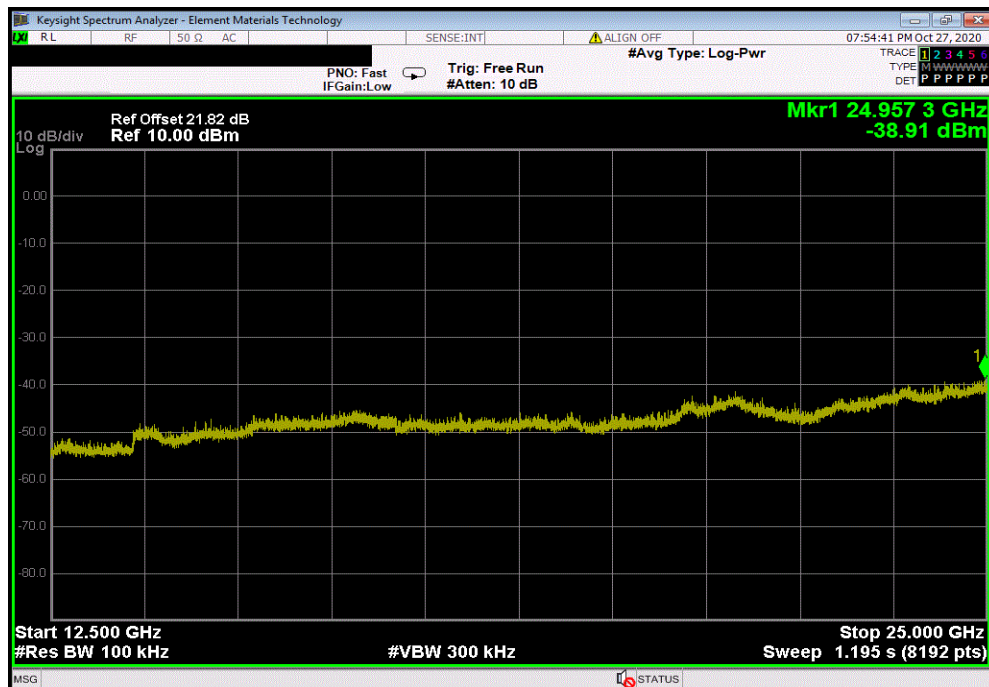


TbTtX 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 2 Mbps High Channel, 2480 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
30 MHz - 12.5 GHz	12079.82	-44.78	-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	24957.27	-34.72	-20	Pass	



SPURIOUS RADIATED EMISSIONS

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

MODES OF OPERATION

Transmitting Bluetooth Low Energy (BLE) - low channel (2402 MHz), mid channel (2440 MHz), or high channel (2480 MHz), 1 Mbps or 2 Mbps data rates.

POWER SETTINGS INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

NOVI0007 - 3

NOVI0007 - 17

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	26500 MHz
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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
Attenuator	Coaxicom	3910-20	AXY	2020-09-14	12 mo
Filter - High Pass	Micro-Tronics	HPM50111	HFM	2020-09-14	12 mo
Amplifier - Pre-Amplifier	L-3 Narda-MITEQ	AMF-6F-12001800-30-10P	PAP	2020-02-18	12 mo
Cable	Element	Biconilog Cable	MNX	2020-02-18	12 mo
Cable	Element	Standard Gain Cable	MNW	2020-02-18	12 mo
Cable	Element	Double Ridge Guide Horn Cables	MNV	2020-02-18	12 mo
Antenna - Biconilog	Ametek	CBL 6141B	AYS	2019-03-19	24 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVX	2020-02-18	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVC	2020-02-18	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1064-9079 and SA18E-10	AOO	2020-02-18	12 mo
Antenna - Standard Gain	ETS-Lindgren	3160-08	AJP	NCR	0 mo
Antenna - Standard Gain	ETS-Lindgren	3160-07	AJJ	NCR	0 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIB	2020-09-03	24 mo
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFN	2019-12-23	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVW	2020-01-17	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVV	2020-01-17	12 mo
Cable	ESM Cable Corp.	Standard Gain Horn Cables	MNJ	2020-03-10	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AXP	NCR	0 mo
Filter - High Pass	Micro-Tronics	HPM50111	LFN	2020-09-14	12 mo
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	2020-09-14	12 mo
Analyzer - Spectrum Analyzer	Keysight	N9010A (EXA)	AFQ	2020-12-27	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AIQ	NCR	0 mo
Attenuator	Fairview Microwave	SA18E-20	TWZ	2020-09-14	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVT	2020-01-17	12 mo
Antenna - Double Ridge	ETS-Lindgren	3115	AJQ	2019-01-16	24 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AVO	2020-10-06	12 mo
Cable	ESM Cable Corp.	Bilog Cables	MNH	2020-10-06	12 mo
Antenna - Biconilog	ETS Lindgren	3142D	AXO	2019-09-03	24 mo

SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2020.06.24.2

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

TEST DESCRIPTION

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

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

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

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

QP = Quasi-Peak Detector

PK = Peak Detector

AV = RMS Detector

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

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

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

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

SPURIOUS RADIATED EMISSIONS



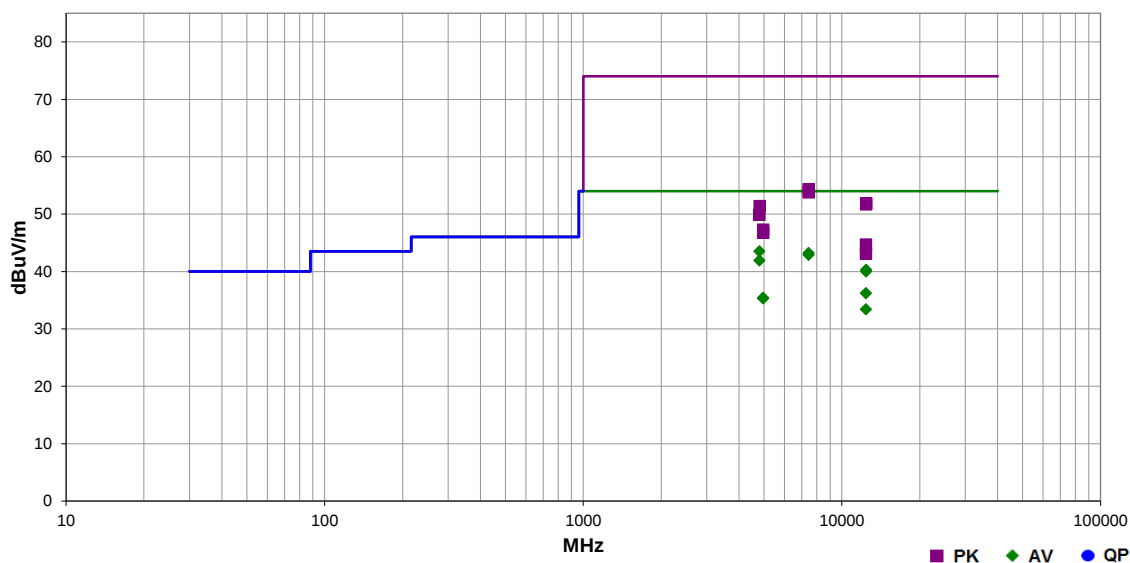
EmiRS 2020.06.24.4

PSA-ESCI 2020.06.24.2

Work Order:	NOVI0007	Date:	2020-10-30		
Project:	None	Temperature:	21.4 °C		
Job Site:	MN09	Humidity:	29.3% RH		
Serial Number:	0223-L	Barometric Pres.:	1027 mbar	Tested by:	Chris Patterson
EUT:	Kamen RIC				
Configuration:	3				
Customer:	Novidan, Inc.				
Attendees:	Katie Himes				
EUT Power:	Battery				
Operating Mode:	Transmitting Bluetooth Low Energy (BLE) - low channel (2402 MHz), mid channel (2440 MHz), or high channel (2480 MHz), 1 Mbps or 2 Mbps data rates.				
Deviations:	None				
Comments:	1 Mbps data rate: testing duty cycle = 61.9% (2.1 dB DCCF); maximum operational duty cycle = 62.5% (-2.0 DCCF); Total correction of 0.1 dB DCCF. 2 Mbps data rate: testing duty cycle = 31.3% (5.0 dB DCCF); maximum operational duty cycle = 57.3% (-2.4 DCCF); Total correction of 2.6 dB DCCF.				

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

Run #	4	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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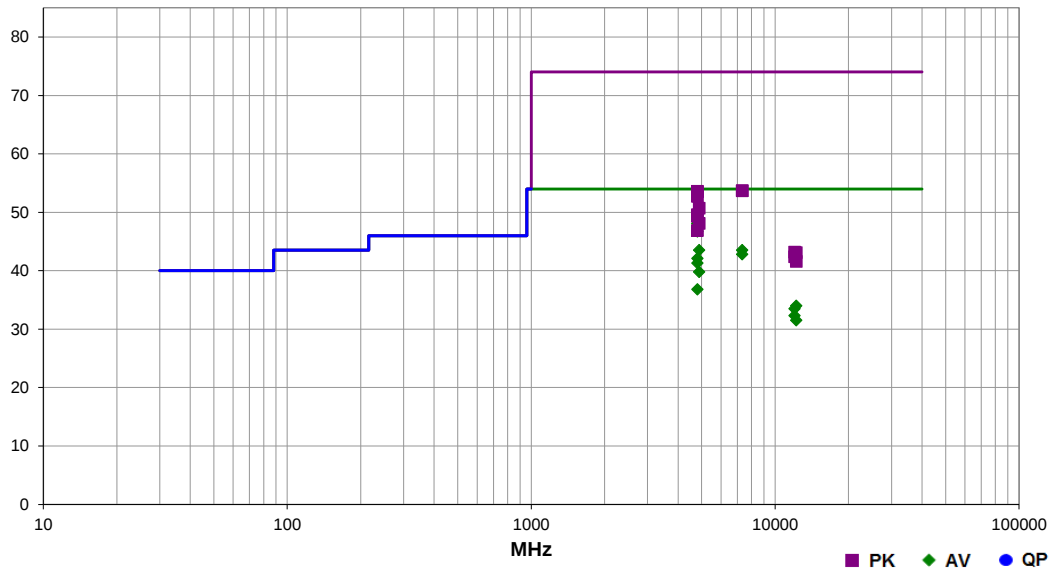
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	Duty Cycle Correction	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
4802.942	35.6	5.3	3.7	7.0	3.0	2.6	0.0	Horz	AV	0.0	43.5	54.0	-10.5	EUT Horz, Low Ch, 2 Mbps
7438.958	28.5	14.6	1.1	84.0	3.0	0.1	0.0	Vert	AV	0.0	43.2	54.0	-10.8	EUT Vert, High Ch, 1 Mbps
7437.517	28.2	14.6	1.5	232.0	3.0	0.1	0.0	Horz	AV	0.0	42.9	54.0	-11.1	EUT Horz, High Ch, 1 Mbps
4802.958	34.0	5.3	1.5	337.0	3.0	2.6	0.0	Vert	AV	0.0	41.9	54.0	-12.1	EUT Vert, Low Ch, 2 Mbps
12400.940	26.1	14.1	1.5	215.0	3.0	0.1	0.0	Horz	AV	0.0	40.3	54.0	-13.7	EUT Horz, High Ch, 1 Mbps
12400.810	25.8	14.1	1.5	105.0	3.0	0.1	0.0	Vert	AV	0.0	40.0	54.0	-14.0	EUT Vert, High Ch, 1 Mbps
12398.520	36.4	-0.3	2.7	210.0	3.0	0.1	0.0	Horz	AV	0.0	36.2	54.0	-17.8	EUT Horz, High Ch, 1 Mbps
4959.367	29.7	5.6	3.7	202.0	3.0	0.1	0.0	Horz	AV	0.0	35.4	54.0	-18.6	EUT Horz, High Ch, 1 Mbps
4959.767	29.6	5.6	1.5	102.0	3.0	0.1	0.0	Vert	AV	0.0	35.3	54.0	-18.7	EUT Vert, High Ch, 1 Mbps
12398.410	33.6	-0.3	3.9	340.0	3.0	0.1	0.0	Vert	AV	0.0	33.4	54.0	-20.6	EUT Vert, High Ch, 1 Mbps
7438.608	39.7	14.6	1.1	84.0	3.0	0.0	0.0	Vert	PK	0.0	54.3	74.0	-19.7	EUT Vert, High Ch, 1 Mbps
7439.558	39.2	14.6	1.5	232.0	3.0	0.0	0.0	Horz	PK	0.0	53.8	74.0	-20.2	EUT Horz, High Ch, 1 Mbps
12400.320	37.8	14.1	1.5	215.0	3.0	0.0	0.0	Horz	PK	0.0	51.9	74.0	-22.1	EUT Horz, High Ch, 1 Mbps
12400.770	37.6	14.1	1.5	105.0	3.0	0.0	0.0	Vert	PK	0.0	51.7	74.0	-22.3	EUT Vert, High Ch, 1 Mbps
4804.892	46.1	5.3	3.7	7.0	3.0	0.0	0.0	Horz	PK	0.0	51.4	74.0	-22.6	EUT Horz, Low Ch, 2 Mbps
4802.633	44.6	5.3	1.5	337.0	3.0	0.0	0.0	Vert	PK	0.0	49.9	74.0	-24.1	EUT Vert, Low Ch, 2 Mbps
4961.817	41.7	5.6	3.7	202.0	3.0	0.0	0.0	Horz	PK	0.0	47.3	74.0	-26.7	EUT Horz, High Ch, 1 Mbps
4960.950	41.2	5.6	1.5	102.0	3.0	0.0	0.0	Vert	PK	0.0	46.8	74.0	-27.2	EUT Vert, High Ch, 1 Mbps
12398.500	45.0	-0.3	2.7	210.0	3.0	0.0	0.0	Horz	PK	0.0	44.7	74.0	-29.3	EUT Horz, High Ch, 1 Mbps
12398.220	43.4	-0.3	3.9	340.0	3.0	0.0	0.0	Vert	PK	0.0	43.1	74.0	-30.9	EUT Vert, High Ch, 1 Mbps

SPURIOUS RADIATED EMISSIONS



Work Order:	NOVI0007	Date:	2020-10-27	<i>Andrew Rogstad</i>
Project:	None	Temperature:	21.5 °C	
Job Site:	MN05	Humidity:	24.1% RH	
Serial Number:	0223-L	Barometric Pres.:	1021 mbar	
EUT:	Kamen RIC			Tested by: Andrew Rogstad
Configuration:	3			
Customer:	Novidan, Inc.			
Attendees:	Katie Himes			
EUT Power:	Battery			
Operating Mode:	Transmitting Bluetooth Low Energy (BLE) - low channel (2402 MHz), mid channel (2440 MHz), or high channel (2480 MHz), 1 Mbps or 2 Mbps data rates.			
Deviations:	None			
Comments:	1 Mbps data rate: testing duty cycle = 61.9% (2.1 dB DCCF); maximum operational duty cycle = 62.5% (-2.0 DCCF); Total correction of 0.1 dB DCCF. 2 Mbps data rate: testing duty cycle = 31.3% (5.0 dB DCCF); maximum operational duty cycle = 57.3% (-2.4 DCCF); Total correction of 2.6 dB DCCF.			
Test Specifications	FCC 15.247:2020			Test Method
				ANSI C63.10:2013

Run #	14	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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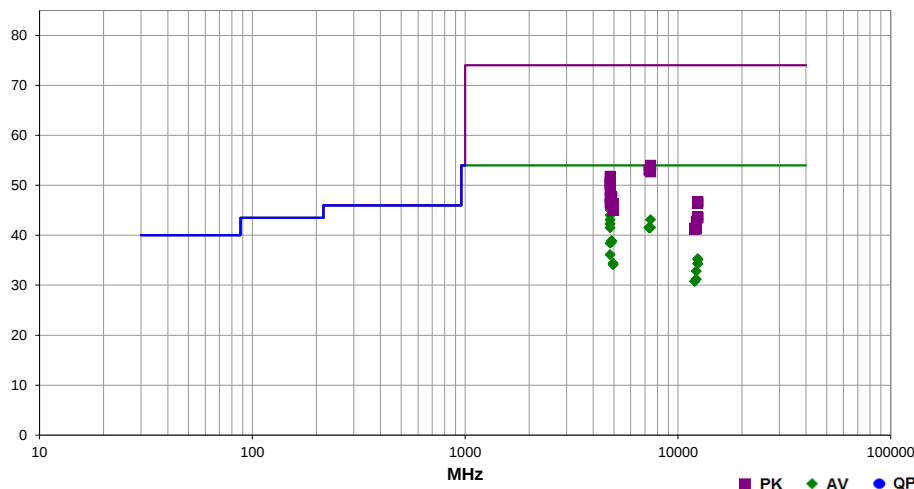
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
4803.542	44.9	3.1	2.3	88.0	0.1	0.0	Horz	AV	0.0	48.1	54.0	-5.9	EUT horz, Low ch., 1 Mbps
4803.533	44.8	3.1	1.1	121.9	0.1	0.0	Vert	AV	0.0	48.0	54.0	-6.0	EUT vert, Low ch., 1 Mbps
4803.533	43.5	3.1	2.1	137.0	0.1	0.0	Horz	AV	0.0	46.7	54.0	-7.3	EUT on side, Low ch., 1 Mbps
4883.550	40.4	3.0	2.4	105.0	0.1	0.0	Horz	AV	0.0	43.5	54.0	-10.5	EUT horz, Mid ch., 1 Mbps
7325.133	33.0	10.4	1.9	286.9	0.1	0.0	Horz	AV	0.0	43.5	54.0	-10.5	EUT horz, Mid ch., 1 Mbps
7325.025	32.3	10.4	1.0	196.9	0.1	0.0	Vert	AV	0.0	42.8	54.0	-11.2	EUT vert, Mid ch., 1 Mbps
4803.533	38.9	3.1	3.0	34.0	0.1	0.0	Vert	AV	0.0	42.1	54.0	-11.9	EUT on side, Low ch., 1 Mbps
4803.558	38.1	3.1	2.4	88.0	0.1	0.0	Vert	AV	0.0	41.3	54.0	-12.7	EUT horz, Low ch., 1 Mbps
4883.483	36.7	3.0	1.5	199.0	0.1	0.0	Vert	AV	0.0	39.8	54.0	-14.2	EUT vert, Mid ch., 1 Mbps
4803.542	33.6	3.1	1.5	91.9	0.1	0.0	Horz	AV	0.0	36.8	54.0	-17.2	EUT vert, Low ch., 1 Mbps
12208.490	33.9	0.0	1.4	207.9	0.1	0.0	Vert	AV	0.0	34.0	54.0	-20.0	EUT vert, Low ch., 1 Mbps
7325.175	43.3	10.4	1.0	196.9	0.0	0.0	Vert	PK	0.0	53.7	74.0	-20.3	EUT vert, Mid ch., 1 Mbps
7325.033	43.3	10.4	1.9	286.9	0.0	0.0	Horz	PK	0.0	53.7	74.0	-20.3	EUT horz, Mid ch., 1 Mbps
4803.350	50.5	3.1	2.3	88.0	0.0	0.0	Horz	PK	0.0	53.6	74.0	-20.4	EUT horz, Low ch., 1 Mbps
4803.217	50.4	3.1	1.1	121.9	0.0	0.0	Vert	PK	0.0	53.5	74.0	-20.5	EUT vert, Low ch., 1 Mbps
12008.430	33.9	-0.5	2.0	52.0	0.1	0.0	Horz	AV	0.0	33.5	54.0	-20.5	EUT horz, Low ch., 1 Mbps
4804.383	49.6	3.1	2.1	137.0	0.0	0.0	Horz	PK	0.0	52.7	74.0	-21.3	EUT on side, Low ch., 1 Mbps
12008.550	32.7	-0.5	1.6	148.0	0.1	0.0	Vert	AV	0.0	32.3	54.0	-21.7	EUT vert, Low ch., 1 Mbps
12208.290	31.4	0.0	1.2	177.0	0.1	0.0	Horz	AV	0.0	31.5	54.0	-22.5	EUT horz, Mid ch., 1 Mbps
4884.358	47.7	3.0	2.4	105.0	0.0	0.0	Horz	PK	0.0	50.7	74.0	-23.3	EUT horz, Mid ch., 1 Mbps
4804.358	46.5	3.1	3.0	34.0	0.0	0.0	Vert	PK	0.0	49.6	74.0	-24.4	EUT on side, Low ch., 1 Mbps
4803.317	46.2	3.1	2.4	88.0	0.0	0.0	Vert	PK	0.0	49.3	74.0	-24.7	EUT horz, Low ch., 1 Mbps
4883.392	45.1	3.0	1.5	199.0	0.0	0.0	Vert	PK	0.0	48.1	74.0	-25.9	EUT vert, Mid ch., 1 Mbps
4802.825	43.8	3.1	1.5	91.9	0.0	0.0	Horz	PK	0.0	46.9	74.0	-27.1	EUT vert, Low ch., 1 Mbps
12008.430	43.7	-0.5	2.0	52.0	0.0	0.0	Horz	PK	0.0	43.2	74.0	-30.8	EUT horz, Low ch., 1 Mbps
12208.730	43.1	0.0	1.4	207.9	0.0	0.0	Vert	PK	0.0	43.1	74.0	-30.9	EUT vert, Mid ch., 1 Mbps
12010.510	42.9	-0.5	1.6	148.0	0.0	0.0	Vert	PK	0.0	42.4	74.0	-31.6	EUT vert, Low ch., 1 Mbps
12210.680	41.6	0.0	1.2	177.0	0.0	0.0	Horz	PK	0.0	41.6	74.0	-32.4	EUT horz, Mid ch., 1 Mbps

SPURIOUS RADIATED EMISSIONS



Work Order:	NOVI0007	Date:	2020-11-24	
Project:	None	Temperature:	22 °C	
Job Site:	MN05	Humidity:	31.3% RH	
Serial Number:	0226-R	Barometric Pres.:	1013 mbar	
EUT: Kamen RIC			Tested by: Dan Haas	
Configuration:	17			
Customer:	Novidan, Inc.			
Attendees:	None			
EUT Power:	Battery			
Operating Mode:	Transmitting Bluetooth Low Energy (BLE) - low channel (2402 MHz), mid channel (2440 MHz), or high channel (2480 MHz), 1 Mbps or 2 Mbps data rates.			
Deviations:	None			
Comments:	1 Mbps data rate: testing duty cycle = 61.9% (2.1 dB DCCF); maximum operational duty cycle = 62.5% (-2.0 DCCF); Total correction of 0.1 dB DCCF. 2 Mbps data rate: testing duty cycle = 31.3% (5.0 dB DCCF); maximum operational duty cycle = 57.3% (-2.4 DCCF); Total correction of 2.6 dB DCCF.			

Test Specifications				Test Method			
FCC 15.247:2020				ANSI C63.10:2013			
Run #	49	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass



Freq (MHz)	Amplitude (dBμV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBμV/m)	Spec. Limit (dBμV/m)	Compared to Spec. (dB)	Comments
4803.500	41.9	3.1	1.0	261.9	0.1	0.0	Vert	AV	0.0	45.1	54.0	-8.9	Low channel (2402MHz), 1Mbps, EUT Vert
4803.467	40.8	3.1	3.0	253.9	0.1	0.0	Horz	AV	0.0	44.0	54.0	-10.0	Low channel (2402MHz), 1Mbps, EUT on Side
4803.433	39.9	3.1	1.0	91.9	0.1	0.0	Horz	AV	0.0	43.1	54.0	-10.9	Low channel (2402MHz), 1Mbps, EUT Horiz
7439.100	32.3	10.7	2.5	109.0	0.1	0.0	Vert	AV	0.0	43.1	54.0	-10.9	High channel (2480MHz), 1Mbps, EUT Vert
4803.558	38.3	3.1	3.4	330.9	0.1	0.0	Vert	AV	0.0	41.5	54.0	-12.5	Low channel (2402MHz), 1Mbps, EUT on Side
7325.050	31.0	10.4	1.3	178.0	0.1	0.0	Horz	AV	0.0	41.5	54.0	-12.5	Mid channel (2442MHz), 1Mbps, EUT on Side
7325.092	31.0	10.4	1.1	167.9	0.1	0.0	Vert	AV	0.0	41.5	54.0	-12.5	Mid channel (2442MHz), 1Mbps, EUT Vert
7439.000	30.7	10.7	1.3	343.9	0.1	0.0	Horz	AV	0.0	41.5	54.0	-12.5	High channel (2480MHz), 1Mbps, EUT on Side
4802.833	36.6	3.1	1.0	261.9	2.6	0.0	Vert	AV	0.0	42.3	54.0	-12.7	Low channel (2402MHz), 2Mbps, EUT Vert
4883.558	35.8	3.0	1.1	80.0	0.1	0.0	Vert	AV	0.0	38.9	54.0	-15.1	Mid channel (2442MHz), 1Mbps, EUT Vert
4883.475	35.5	3.0	2.9	84.0	0.1	0.0	Horz	AV	0.0	38.6	54.0	-15.4	Mid channel (2442MHz), 1Mbps, EUT on Side
4803.508	35.2	3.1	1.3	94.0	0.1	0.0	Vert	AV	0.0	38.4	54.0	-15.6	Low channel (2402MHz), 1Mbps, EUT Horiz
4803.417	32.9	3.1	1.3	321.0	0.1	0.0	Horz	AV	0.0	36.1	54.0	-17.9	Low channel (2402MHz), 1Mbps, EUT Vert
12400.900	29.4	5.8	2.0	30.0	0.1	0.0	Horz	AV	0.0	35.3	54.0	-18.7	High channel (2480MHz), 1Mbps, EUT on Side
12400.560	29.2	5.8	1.3	347.9	0.1	0.0	Vert	AV	0.0	35.1	54.0	-18.9	High channel (2480MHz), 1Mbps, EUT Vert
4959.483	31.2	3.1	1.1	257.0	0.1	0.0	Horz	AV	0.0	34.4	54.0	-19.6	High channel (2480MHz), 1Mbps, EUT on Side
12398.490	33.5	0.7	2.3	217.0	0.1	0.0	Horz	AV	0.0	34.3	54.0	-19.7	High channel (2480MHz), 1Mbps, EUT on Side
12398.500	33.5	0.7	2.2	304.0	0.1	0.0	Vert	AV	0.0	34.3	54.0	-19.7	High channel (2480MHz), 1Mbps, EUT Vert
4959.442	30.9	3.1	1.3	180.0	0.1	0.0	Vert	AV	0.0	34.1	54.0	-19.9	High channel (2480MHz), 1Mbps, EUT Vert
7440.600	43.3	10.7	2.5	109.0	0.0	0.0	Vert	PK	0.0	54.0	74.0	-20.0	High channel (2480MHz), 1Mbps, EUT Vert
7326.933	42.7	10.4	1.3	178.0	0.0	0.0	Horz	PK	0.0	53.1	74.0	-20.9	Mid channel (2442MHz), 1Mbps, EUT on Side
7325.917	42.6	10.4	1.1	167.9	0.0	0.0	Vert	PK	0.0	53.0	74.0	-21.0	Mid channel (2442MHz), 1Mbps, EUT Vert
12208.320	32.7	0.0	2.4	19.0	0.1	0.0	Horz	AV	0.0	32.8	54.0	-21.2	Mid channel (2442MHz), 1Mbps, EUT on Side
7442.333	42.0	10.7	1.3	343.9	0.0	0.0	Horz	PK	0.0	52.7	74.0	-21.3	High channel (2480MHz), 1Mbps, EUT on Side
4803.367	48.7	3.1	1.0	261.9	0.0	0.0	Vert	PK	0.0	51.8	74.0	-22.2	Low channel (2402MHz), 1Mbps, EUT Vert
12208.450	31.1	0.0	1.3	318.9	0.1	0.0	Vert	AV	0.0	31.2	54.0	-22.8	Mid channel (2442MHz), 1Mbps, EUT Vert
12008.540	31.2	-0.5	1.3	30.0	0.1	0.0	Horz	AV	0.0	30.8	54.0	-23.2	Low channel (2402MHz), 1Mbps, EUT on Side
12008.450	31.2	-0.5	3.7	1.9	0.1	0.0	Vert	AV	0.0	30.8	54.0	-23.2	Low channel (2402MHz), 1Mbps, EUT Vert
4803.483	47.7	3.1	3.0	253.9	0.0	0.0	Horz	PK	0.0	50.8	74.0	-23.2	Low channel (2402MHz), 1Mbps, EUT on Side
4804.350	47.2	3.1	1.0	91.9	0.0	0.0	Horz	PK	0.0	50.3	74.0	-23.7	Low channel (2402MHz), 1Mbps, EUT Horiz
4803.100	47.2	3.1	1.0	261.9	0.0	0.0	Vert	PK	0.0	50.3	74.0	-23.7	Low channel (2402MHz), 2Mbps, EUT Vert
4803.375	45.9	3.1	3.4	330.9	0.0	0.0	Vert	PK	0.0	49.0	74.0	-25.0	Low channel (2402MHz), 1Mbps, EUT on Side
4883.342	44.8	3.0	1.1	80.0	0.0	0.0	Vert	PK	0.0	47.8	74.0	-26.2	Mid channel (2442MHz), 1Mbps, EUT Vert
4883.225	44.6	3.0	2.9	84.0	0.0	0.0	Horz	PK	0.0	47.6	74.0	-26.4	Mid channel (2442MHz), 1Mbps, EUT on Side
4804.233	44.4	3.1	1.3	94.0	0.0	0.0	Vert	PK	0.0	47.5	74.0	-26.5	Low channel (2402MHz), 1Mbps, EUT Horiz
12401.280	40.9	5.8	1.3	347.9	0.0	0.0	Vert	PK	0.0	46.7	74.0	-27.3	High channel (2480MHz), 1Mbps, EUT Vert
4804.217	43.3	3.1	1.3	321.0	0.0	0.0	Horz	PK	0.0	46.4	74.0	-27.6	Low channel (2402MHz), 1Mbps, EUT Vert
12400.160	40.6	5.8	2.0	30.0	0.0	0.0	Horz	PK	0.0	46.4	74.0	-27.6	High channel (2480MHz), 1Mbps, EUT on Side
4959.542	43.2	3.1	1.1	257.0	0.0	0.0	Horz	PK	0.0	46.3	74.0	-27.7	High channel (2480MHz), 1Mbps, EUT on Side
4960.067	41.9	3.1	1.3	180.0	0.0	0.0	Vert	PK	0.0	45.0	74.0	-29.0	High channel (2480MHz), 1Mbps, EUT Vert
12398.550	43.0	0.7	2.2	304.0	0.0	0.0	Vert	PK	0.0	43.7	74.0	-30.3	High channel (2480MHz), 1Mbps, EUT on Side
12398.510	42.8	0.7	2.3	217.0	0.0	0.0	Horz	PK	0.0	43.5	74.0	-30.5	High channel (2480MHz), 1Mbps, EUT on Side
12208.270	42.8	0.0	2.4	19.0	0.0	0.0	Horz	PK	0.0	42.8	74.0	-31.2	Mid channel (2442MHz), 1Mbps, EUT on Side
12008.380	41.9	-0.5	1.3	30.0	0.0	0.0	Horz	PK	0.0	41.4	74.0	-32.6	Low channel (2402MHz), 1Mbps, EUT on Side
12208.080	41.3	0.0	1.3	318.9	0.0	0.0	Vert	PK	0.0	41.3	74.0	-32.7	Mid channel (2442MHz), 1Mbps, EUT Vert
12008.650	41.7	-0.5	3.7	1.9	0.0	0.0	Vert	PK	0.0	41.2	74.0	-32.8	Low channel (2402MHz), 1Mbps, EUT Vert

SPURIOUS RADIATED EMISSIONS

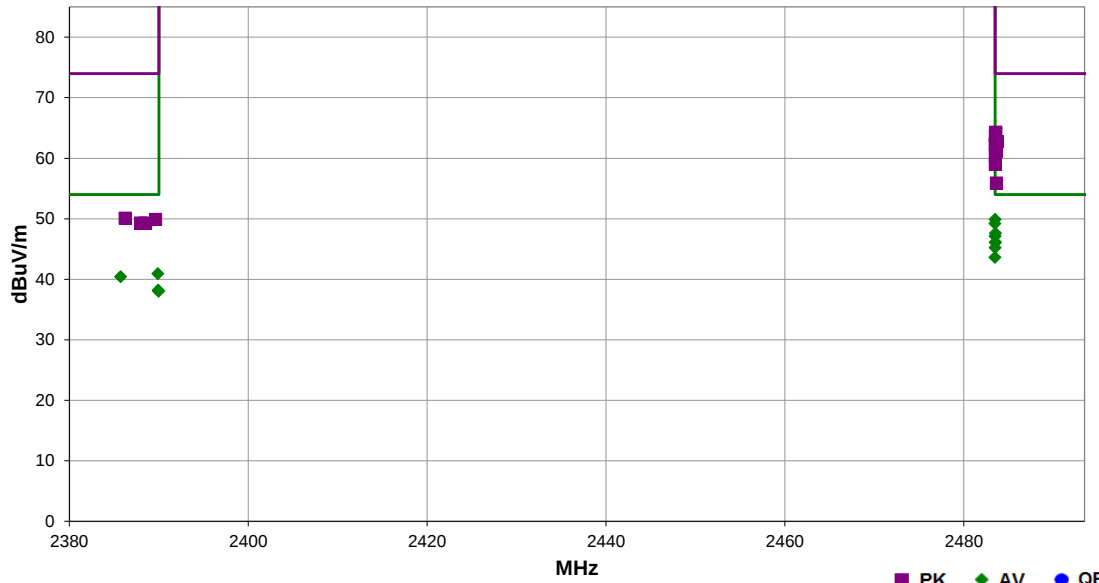


EmiRS 2021.01.08.0 PSA-ESCI 2021.01.22.0

Work Order:	NOVI0007	Date:	2021-03-02	
Project:	None	Temperature:	21.7 °C	
Job Site:	MN09	Humidity:	20% RH	
Serial Number:	0226-R	Barometric Pres.:	1015 mbar	
EUT:		Kamen RIC		
Configuration: 17				
Customer:		Novidan, Inc.		
Attendees:		Katie Himes		
EUT Power:		Battery		
Operating Mode:	Transmitting Bluetooth Low Energy (BLE) - low channel (2402 MHz), mid channel (2440 MHz), or high channel (2480 MHz), 1 Mbps or 2 Mbps data rates.			
Deviations:	None			
Comments:	1 Mbps data rate: testing duty cycle = 61.9% (2.1 dB DCCF); maximum operational duty cycle = 62.5% (-2.0 DCCF); Total correction of 0.1 dB DCCF. 2 Mbps data rate: testing duty cycle = 31.3% (5.0 dB DCCF); maximum operational duty cycle = 57.3% (-2.4 DCCF); Total correction of 2.6 dB DCCF.			

Test Specifications	FCC 15.247:2021	Test Method	ANSI C63.10:2013
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Run #	40	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	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
2483.508	40.5	-3.2	1.07	62.0	2.6	10.0	Horz	AV	0.0	49.9	54.0	-4.1	EUT on side, High ch., 2 Mbps
2483.500	39.8	-3.2	2.78	97.0	2.6	10.0	Horz	AV	0.0	49.2	54.0	-4.8	EUT horz, High ch., 2 Mbps
2483.542	38.2	-3.2	1.5	356.0	2.6	10.0	Vert	AV	0.0	47.6	54.0	-6.4	EUT vert, High ch., 2 Mbps
2483.517	37.7	-3.2	1.0	337.0	2.6	10.0	Vert	AV	0.0	47.1	54.0	-6.9	EUT horz, High ch., 2 Mbps
2483.550	39.2	-3.2	1.0	145.0	0.1	10.0	Vert	AV	0.0	46.1	54.0	-7.9	EUT vert, High ch., 1 Mbps
2483.533	36.7	-3.2	3.31	139.0	2.6	10.0	Vert	AV	0.0	46.1	54.0	-7.9	EUT on side, High ch., 2 Mbps
2483.508	38.3	-3.2	1.0	161.0	0.1	10.0	Horz	AV	0.0	45.2	54.0	-8.8	EUT on side, High ch., 1 Mbps
2483.592	57.5	-3.2	1.07	62.0	0.0	10.0	Horz	PK	0.0	64.3	74.0	-9.7	EUT on side, High ch., 2 Mbps
2483.533	57.0	-3.2	1.0	145.0	0.0	10.0	Vert	PK	0.0	63.8	74.0	-10.2	EUT vert, High ch., 1 Mbps
2483.500	34.2	-3.2	1.5	42.0	2.6	10.0	Horz	AV	0.0	43.6	54.0	-10.4	EUT vert, High ch., 2 Mbps
2483.742	55.9	-3.2	2.78	97.0	0.0	10.0	Horz	PK	0.0	62.7	74.0	-11.3	EUT horz, High ch., 2 Mbps
2483.517	55.5	-3.2	1.0	161.0	0.0	10.0	Horz	PK	0.0	62.3	74.0	-11.7	EUT on side, High ch., 1 Mbps
2483.625	54.3	-3.2	1.5	356.0	0.0	10.0	Vert	PK	0.0	61.1	74.0	-12.9	EUT vert, High ch., 2 Mbps
2389.900	31.8	-3.5	1.5	291.0	2.6	10.0	Vert	AV	0.0	40.9	54.0	-13.1	EUT vert, Low ch., 2 Mbps
2483.525	53.6	-3.2	1.0	337.0	0.0	10.0	Vert	PK	0.0	60.4	74.0	-13.6	EUT horz, High ch., 2 Mbps
2385.725	31.3	-3.5	1.5	156.0	2.6	10.0	Horz	AV	0.0	40.4	54.0	-13.6	EUT on side, Low ch., 2 Mbps
2483.533	52.2	-3.2	3.31	139.0	0.0	10.0	Vert	PK	0.0	59.0	74.0	-15.0	EUT on side, High ch., 2 Mbps
2389.942	31.6	-3.5	1.5	76.0	0.1	10.0	Vert	AV	0.0	38.2	54.0	-15.8	EUT vert, Low ch., 1 Mbps
2389.983	31.4	-3.5	1.5	318.0	0.1	10.0	Horz	AV	0.0	38.0	54.0	-16.0	EUT on side, Low ch., 1 Mbps
2483.650	49.1	-3.2	1.5	42.0	0.0	10.0	Horz	PK	0.0	55.9	74.0	-18.1	EUT vert, High ch., 2 Mbps
2386.242	43.6	-3.5	1.5	291.0	0.0	10.0	Vert	PK	0.0	50.1	74.0	-23.9	EUT vert, Low ch., 2 Mbps
2389.642	43.4	-3.5	1.5	318.0	0.0	10.0	Horz	PK	0.0	49.9	74.0	-24.1	EUT on side, Low ch., 1 Mbps
2387.950	42.8	-3.5	1.5	156.0	0.0	10.0	Horz	PK	0.0	49.3	74.0	-24.7	EUT on side, Low ch., 2 Mbps
2388.525	42.8	-3.5	1.5	76.0	0.0	10.0	Vert	PK	0.0	49.3	74.0	-24.7	EUT vert, Low ch., 1 Mbps

SPURIOUS RADIATED EMISSIONS



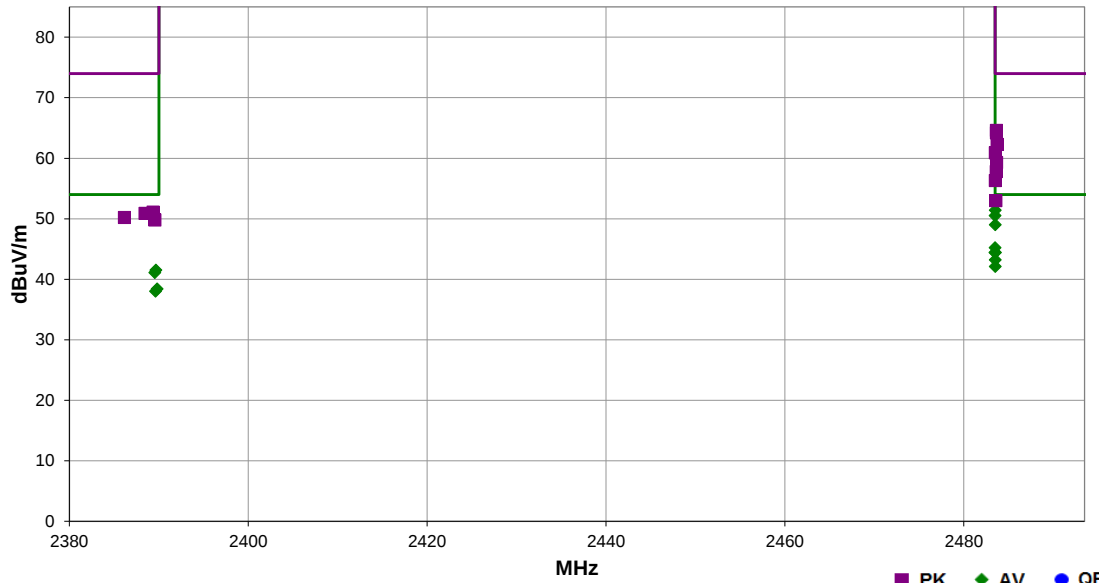
EmiRS 2021.01.08.0

PSA-ESCI 2021.01.22.0

Work Order:	NOVI0007	Date:	2021-03-02	
Project:	None	Temperature:	21.7 °C	
Job Site:	MN09	Humidity:	20% RH	
Serial Number:	0223-L	Barometric Pres.:	1015 mbar	
EUT:	Kamen RIC			
Configuration:	3			
Customer:	Novidan, Inc.			
Attendees:	Katie Himes			
EUT Power:	Battery			
Operating Mode:	Transmitting Bluetooth Low Energy (BLE) - low channel (2402 MHz), mid channel (2440 MHz), or high channel (2480 MHz), 1 Mbps or 2 Mbps data rates.			
Deviations:	None			
Comments:	1 Mbps data rate: testing duty cycle = 61.9% (2.1 dB DCCF); maximum operational duty cycle = 62.5% (-2.0 DCCF); Total correction of 0.1 dB DCCF. 2 Mbps data rate: testing duty cycle = 31.3% (5.0 dB DCCF); maximum operational duty cycle = 57.3% (-2.4 DCCF); Total correction of 2.6 dB DCCF.			

Test Specifications	Test Method
FCC 15.247:2021	ANSI C63.10:2013

Run #	41	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	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
2483.525	42.0	-3.2	4.0	1.0	2.6	10.0	Horz	AV	0.0	51.4	54.0	-2.6	EUT on side, High ch., 2 Mbps
2483.517	41.1	-3.2	1.18	226.0	2.6	10.0	Vert	AV	0.0	50.5	54.0	-3.5	EUT vert, High ch., 2 Mbps
2483.525	39.6	-3.2	3.57	22.0	2.6	10.0	Horz	AV	0.0	49.0	54.0	-5.0	EUT horz, High ch., 2 Mbps
2483.508	35.8	-3.2	4.0	24.0	2.6	10.0	Horz	AV	0.0	45.2	54.0	-8.8	EUT vert, High ch., 2 Mbps
2483.658	57.8	-3.2	4.0	1.0	0.0	10.0	Horz	PK	0.0	64.6	74.0	-9.4	EUT on side, High ch., 2 Mbps
2483.542	37.5	-3.2	1.5	61.0	0.1	10.0	Vert	AV	0.0	44.4	54.0	-9.6	EUT vert, High ch., 1 Mbps
2483.500	35.0	-3.2	1.5	226.0	2.6	10.0	Vert	AV	0.0	44.4	54.0	-9.6	EUT horz, High ch., 2 Mbps
2483.642	57.4	-3.2	1.18	226.0	0.0	10.0	Vert	PK	0.0	64.2	74.0	-9.8	EUT vert, High ch., 2 Mbps
2483.533	36.3	-3.2	1.5	186.0	0.1	10.0	Horz	AV	0.0	43.2	54.0	-10.8	EUT on side, High ch., 1 Mbps
2483.725	55.5	-3.2	3.57	22.0	0.0	10.0	Horz	PK	0.0	62.3	74.0	-11.7	EUT horz, High ch., 2 Mbps
2483.525	32.7	-3.2	1.5	355.0	2.6	10.0	Vert	AV	0.0	42.1	54.0	-11.9	EUT on side, High ch., 2 Mbps
2389.683	32.4	-3.5	4.0	18.0	2.6	10.0	Horz	AV	0.0	41.5	54.0	-12.5	EUT on side, Low ch., 2 Mbps
2389.558	32.0	-3.5	1.5	331.0	2.6	10.0	Vert	AV	0.0	41.1	54.0	-12.9	EUT vert, Low ch., 2 Mbps
2483.525	54.1	-3.2	1.5	61.0	0.0	10.0	Vert	PK	0.0	60.9	74.0	-13.1	EUT vert, High ch., 1 Mbps
2483.675	52.5	-3.2	1.5	186.0	0.0	10.0	Horz	PK	0.0	59.3	74.0	-14.7	EUT on side, High ch., 1 Mbps
2389.825	31.8	-3.5	2.7	52.0	0.1	10.0	Horz	AV	0.0	38.4	54.0	-15.6	EUT on side, Low ch., 1 Mbps
2389.642	31.4	-3.5	1.5	122.0	0.1	10.0	Vert	AV	0.0	38.0	54.0	-16.0	EUT vert, Low ch., 1 Mbps
2483.625	51.0	-3.2	4.0	24.0	0.0	10.0	Horz	PK	0.0	57.8	74.0	-16.2	EUT vert, High ch., 2 Mbps
2483.533	49.5	-3.2	1.5	226.0	0.0	10.0	Vert	PK	0.0	56.3	74.0	-17.7	EUT horz, High ch., 2 Mbps
2483.592	46.2	-3.2	1.5	355.0	0.0	10.0	Vert	PK	0.0	53.0	74.0	-21.0	EUT on side, High ch., 2 Mbps
2389.350	44.6	-3.5	2.7	52.0	0.0	10.0	Horz	PK	0.0	51.1	74.0	-22.9	EUT on side, Low ch., 1 Mbps
2388.458	44.4	-3.5	4.0	18.0	0.0	10.0	Horz	PK	0.0	50.9	74.0	-23.1	EUT on side, Low ch., 2 Mbps
2386.158	43.7	-3.5	1.5	331.0	0.0	10.0	Vert	PK	0.0	50.2	74.0	-23.8	EUT vert, Low ch., 2 Mbps
2389.567	43.3	-3.5	1.5	122.0	0.0	10.0	Vert	PK	0.0	49.8	74.0	-24.2	EUT vert, Low ch., 1 Mbps