



# element

**Novidan, Inc.**

**Indy1**

**FCC 15.247:2021**

**Bluetooth**

**Report: NOVI0007.1, Issue Date: May 5, 2021**



NVLAP LAB CODE: 200881-0



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# CERTIFICATE OF TEST

**Last Date of Test: March 2, 2021**  
**Novidan, Inc.**  
**EUT: Indy1**

## 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	Pass	
11.8.2	Occupied Bandwidth	Yes	Pass	
11.9.1.1	Output Power	Yes	Pass	
11.9.1.1	Equivalent Isotropic Radiated Power	Yes	Pass	
11.10.2	Power Spectral Density	Yes	Pass	
11.11	Band Edge Compliance	Yes	Pass	
11.11	Spurious Conducted Emissions	Yes	Pass	
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



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## 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

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## 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.

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## European Union

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

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## Australia/New Zealand

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

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## Korea

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

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## Japan

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

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## 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.

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## Singapore

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

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## Israel

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

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## Hong Kong

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

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## Vietnam

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

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## SCOPE

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

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

# FACILITIES



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

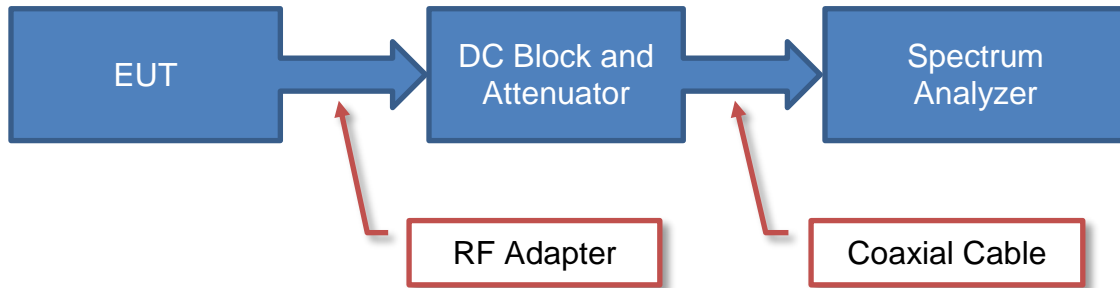
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable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

<b>Test</b>	<b>+ MU</b>	<b>- MU</b>
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

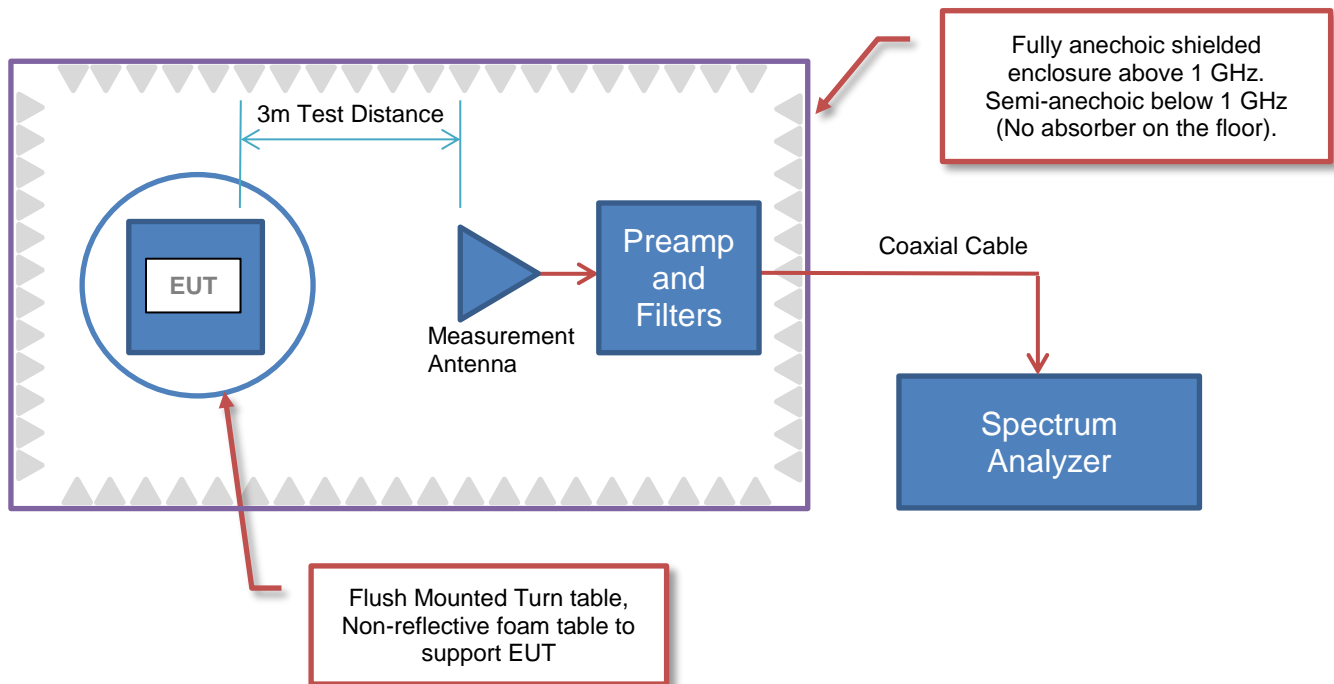
## Antenna Port Conducted Measurements



## Near Field Test Fixture Measurements



## Spurious Radiated Emissions





# PRODUCT DESCRIPTION

## Client and Equipment Under Test (EUT) Information

<b>Company Name:</b>	Novidan, Inc.
<b>Address:</b>	672 Mendelssohn Avenue North
<b>City, State, Zip:</b>	Golden Valley, MN 55427
<b>Test Requested By:</b>	John Becker
<b>EUT:</b>	Indy1
<b>First Date of Test:</b>	October 30, 2020
<b>Last Date of Test:</b>	March 2, 2021
<b>Receipt Date of Samples:</b>	October 27, 2020
<b>Equipment Design Stage:</b>	Production
<b>Equipment Condition:</b>	No Damage
<b>Purchase Authorization:</b>	Verified

## Information Provided by the Party Requesting the Test

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



# CONFIGURATIONS



## Configuration NOVI0007- 9

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Hearing Aid Indy1 RIC	Novidan, Inc.	Indy1 RIC	i026-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

## Configuration NOVI0007- 11

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Hearing Aid	Novidan, Inc.	Indy1 RIC	i035-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

# CONFIGURATIONS



## Configuration NOVI0007- 16

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Hearing Aid Indy1 RIC	Novidan, Inc.	Indy1 RIC	i029-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

## Configuration NOVI0007- 18

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Hearing Aid Indy1 RIC	Novidan, Inc.	Indy1 RIC	i028-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	2020-10-30	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	2020-10-30	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	2020-10-30	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	2020-10-30	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	2020-10-30	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	2020-10-30	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	2020-10-30	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

Indy1	Power Setting
BLE	0 dBm

# DUTY CYCLE



element

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	Micro-Coax	UFD150A-1-0720-200200	MNL	14-Sep-20	14-Sep-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.

# DUTY CYCLE



TelTx 2019.08.30.0 XMt 2020.03.25.0

EUT: <b>Indy1 RIC</b>		Work Order: <b>NOVI0007</b>	
Serial Number: <b>i035-R</b>		Date: <b>30-Oct-20</b>	
Customer: <b>Novidan, Inc.</b>		Temperature: <b>21.2 °C</b>	
Attendees: <b>Katie Himes</b>		Humidity: <b>29.5% RH</b>	
Project: <b>None</b>		Barometric Pres.: <b>1025 mbar</b>	
Tested by: <b>Andrew Rogstad</b>		Power: <b>Battery</b>	
Job Site: <b>MN08</b>			
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 #	11	Signature <i>Andrew Rogstad</i>	

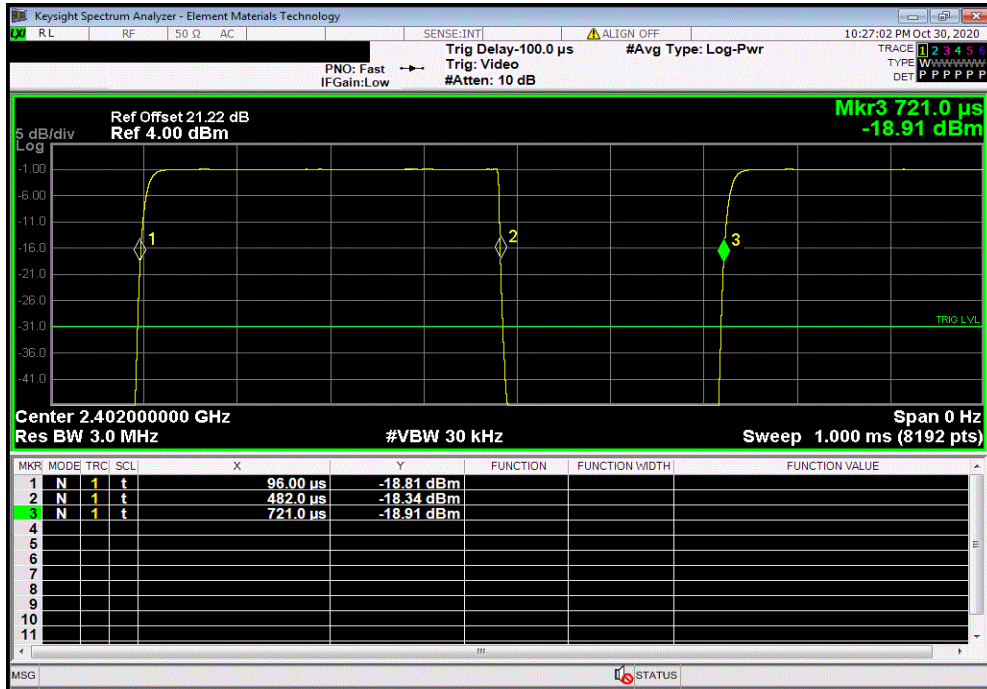
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
BLE/GFSK 1 Mbps Low Channel, 2402 MHz	386 us	625 us	1	61.8	N/A	N/A
BLE/GFSK 1 Mbps Low Channel, 2402 MHz	N/A	N/A	5	N/A	N/A	N/A
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz	386 us	625 us	1	61.8	N/A	N/A
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz	N/A	N/A	5	N/A	N/A	N/A
BLE/GFSK 1 Mbps High Channel, 2480 MHz	386.4 us	625.1 us	1	61.8	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	197.6 us	625 us	1	31.6	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	197.8 us	625.4 us	1	31.6	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	197.9 us	625.1 us	1	31.7	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

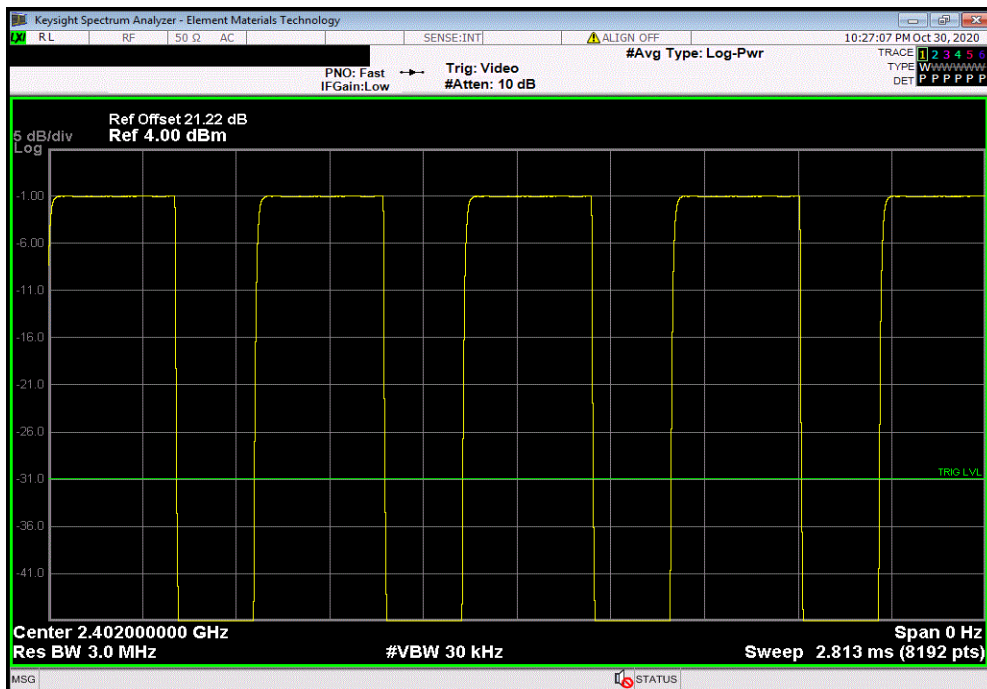


TbTx 2019.08.30.0 XMI 2020.03.25.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
386 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	



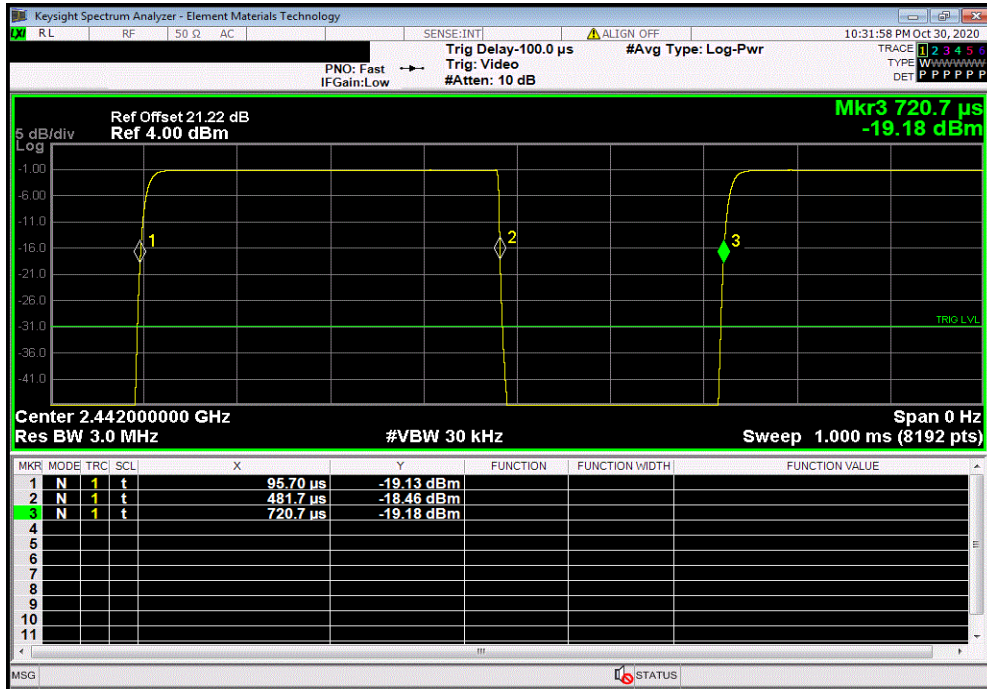


# DUTY CYCLE

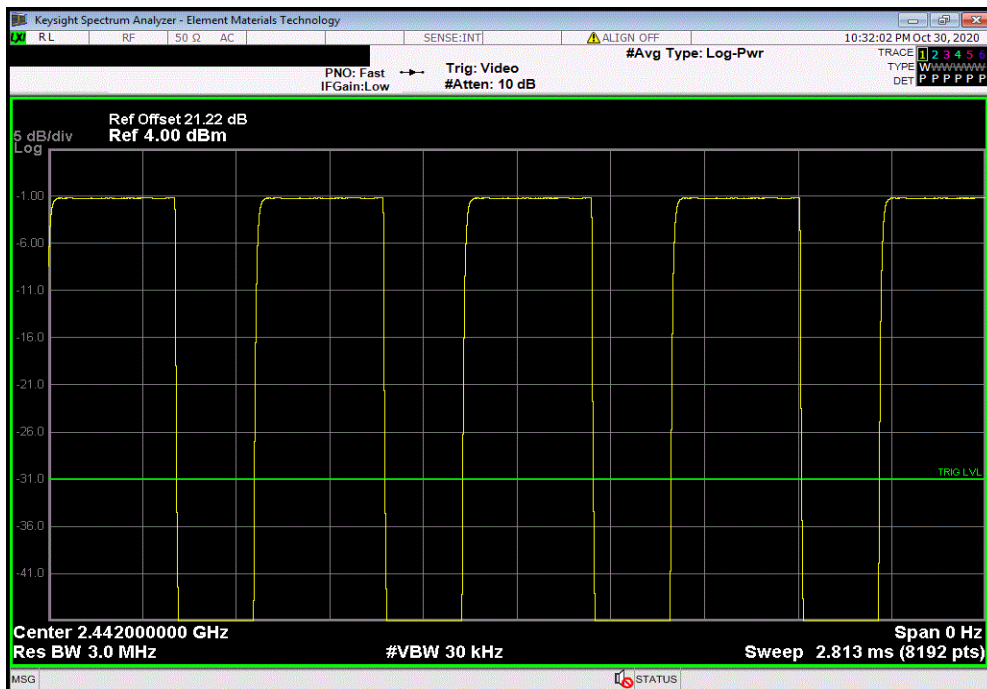


TbTx 2019.08.30.0 XMI 2020.03.25.0

BLE/GFSK 1 Mbps Mid Channel, 2442 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
386 us	625 us	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	

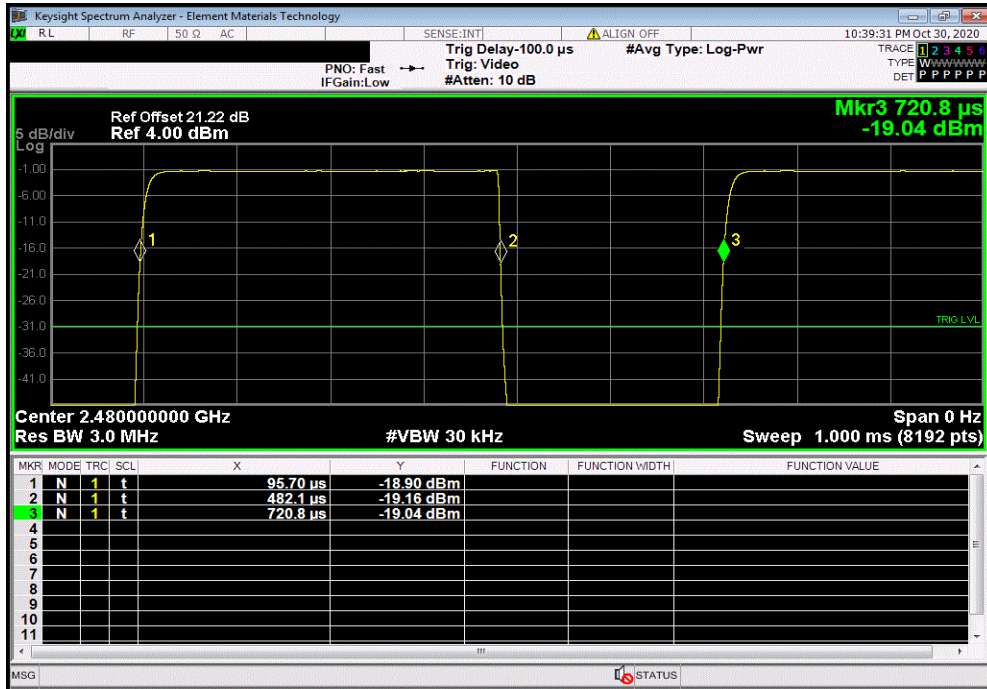


# DUTY CYCLE

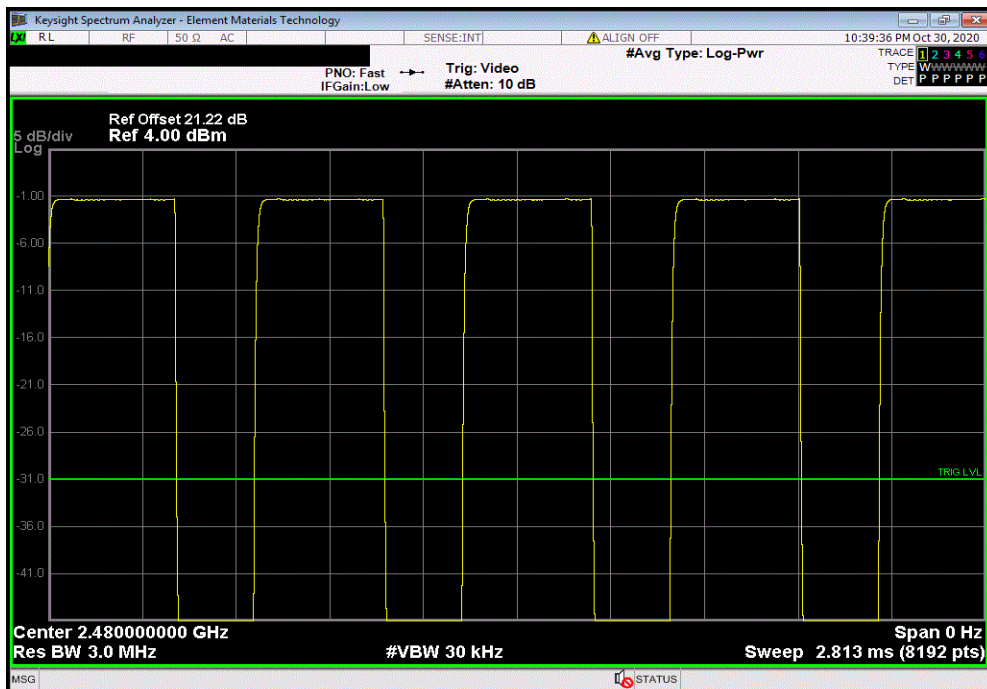


TbTx 2019.08.30.0 XMI 2020.03.25.0

BLE/GFSK 1 Mbps High Channel, 2480 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
386.4 us	625.1 us	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	

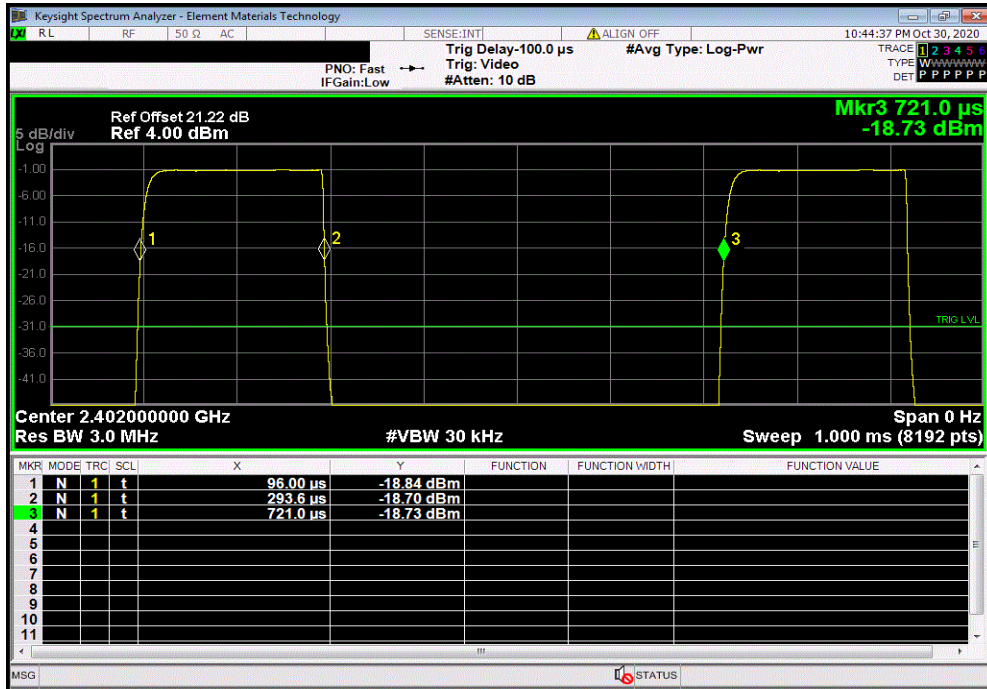


# DUTY CYCLE

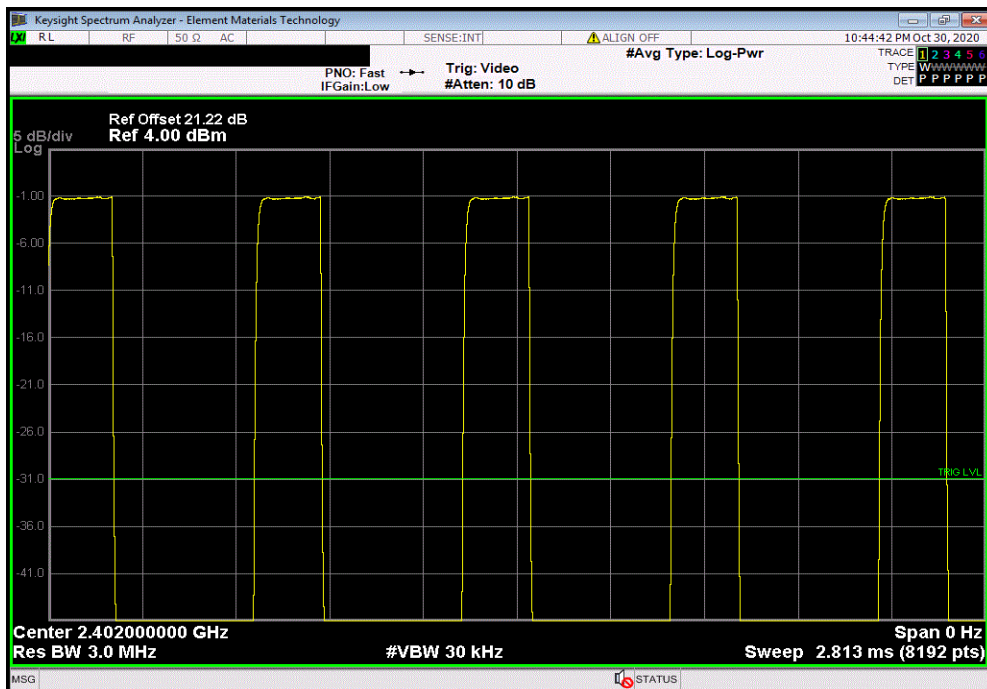


TbTx 2019.08.30.0 XMI 2020.03.25.0

BLE/GFSK 2 Mbps Low Channel, 2402 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
197.6 us	625 us	1	31.6	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	

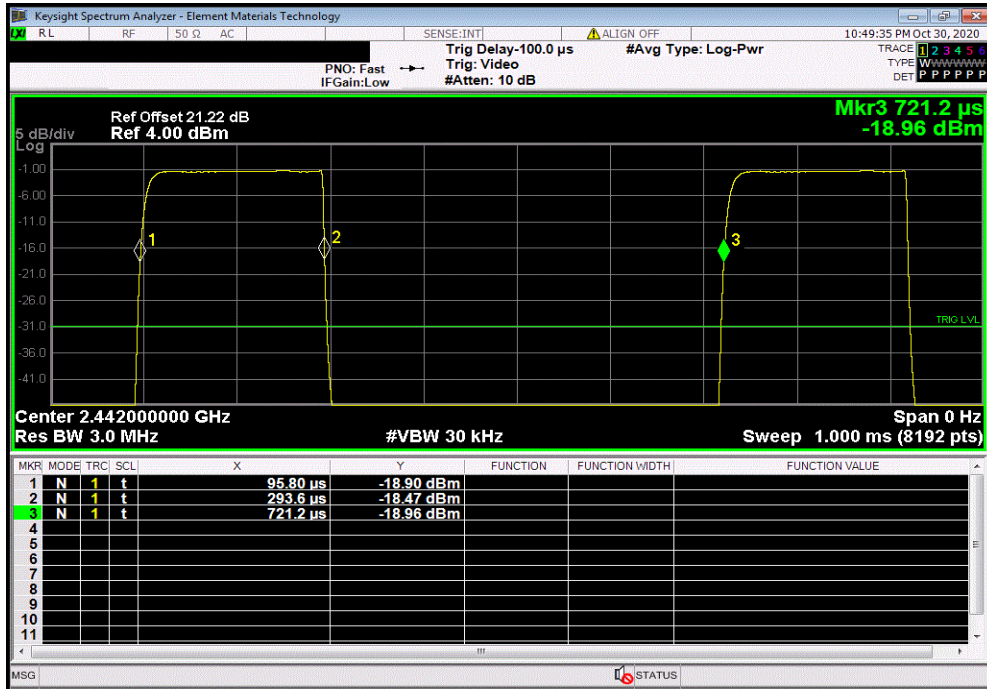


# DUTY CYCLE

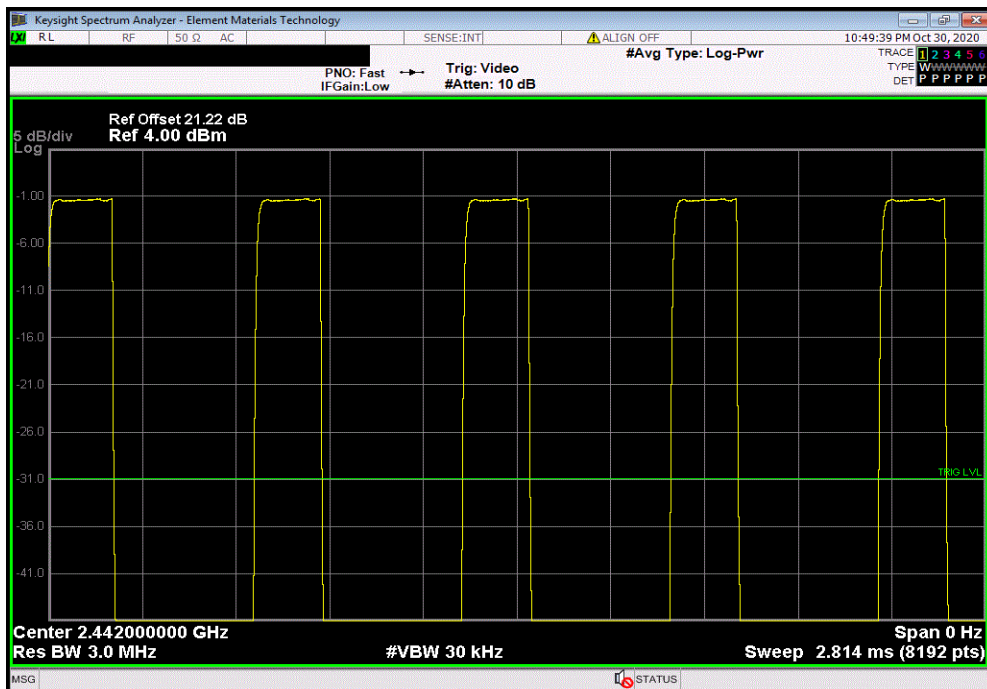


TbTx 2019.08.30.0 XMI 2020.03.25.0

BLE/GFSK 2 Mbps Mid Channel, 2442 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
197.8 us	625.4 us	1	31.6	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	

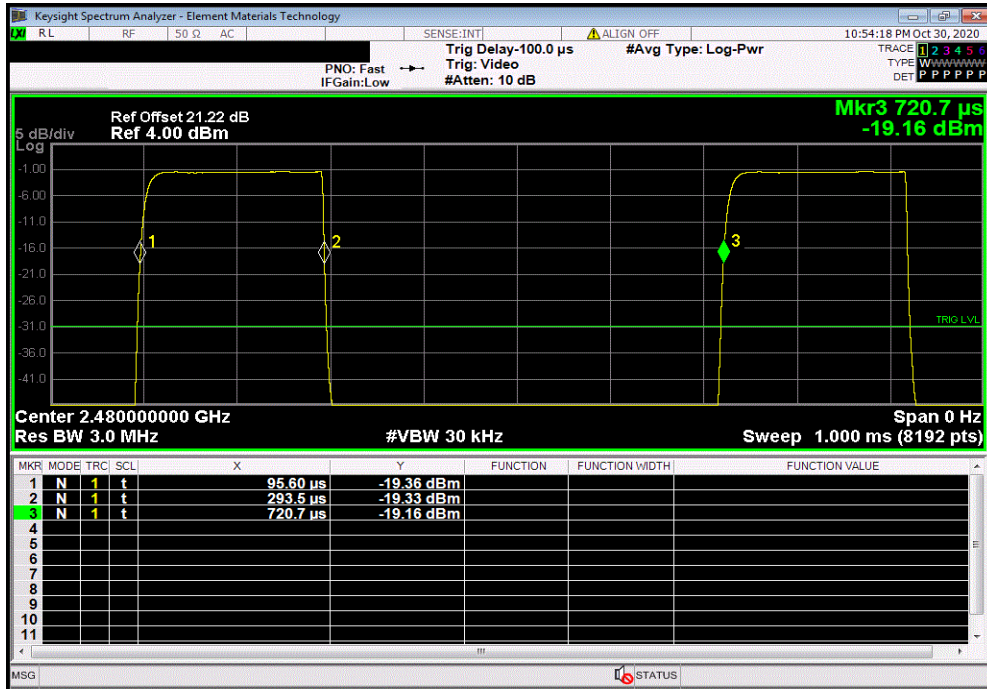


# DUTY CYCLE

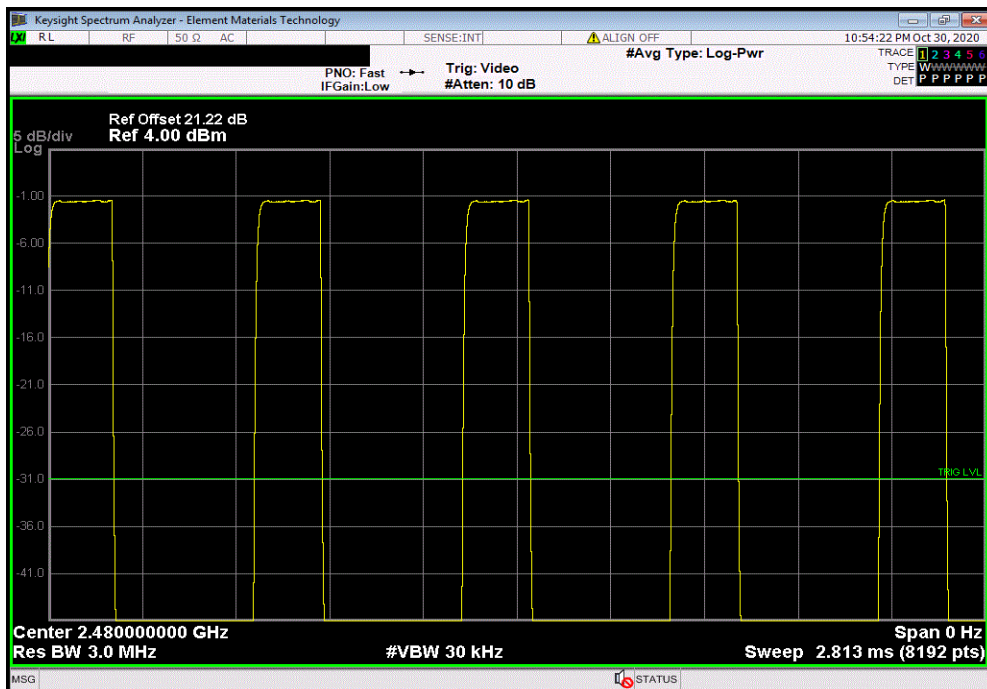


TbTx 2019.08.30.0 XMI 2020.03.25.0

BLE/GFSK 2 Mbps High Channel, 2480 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
197.9 us	625.1 us	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



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	Micro-Coax	UFD150A-1-0720-200200	MNL	14-Sep-20	14-Sep-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



Tel: 2019.08.30.0 XMI: 2020.03.25.0

EUT: <b>Indy1 RIC</b>		Work Order: <b>NOVI0007</b>
Serial Number: <b>i035-R</b>		Date: <b>30-Oct-20</b>
Customer: <b>Novidan, Inc.</b>		Temperature: <b>21.2 °C</b>
Attendees: <b>Katie Himes</b>		Humidity: <b>29.5% RH</b>
Project: <b>None</b>		Barometric Pres.: <b>1025 mbar</b>
Tested by: <b>Andrew Rogstad</b>	Power: <b>Battery</b>	Job Site: <b>MN08</b>
<b>TEST SPECIFICATIONS</b>		
FCC 15.247:2020		Test Method: <b>ANSI C63.10:2013</b>
<b>COMMENTS</b>		
Reference level offset includes measurement cable, DC block, and 20 dB attenuator.		
<b>DEVIATIONS FROM TEST STANDARD</b>		
None		
Configuration #	11	Signature <i>Andrew Rogstad</i>

	Value	Limit (±)	Result
BLE/GFSK 1 Mbps Low Channel, 2402 MHz	679.118 kHz	500 kHz	Pass
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz	675.038 kHz	500 kHz	Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz	676.601 kHz	500 kHz	Pass
BLE/GFSK 2 Mbps Low Channel, 2402 MHz	1.268 MHz	500 kHz	Pass
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz	1.262 MHz	500 kHz	Pass
BLE/GFSK 2 Mbps High Channel, 2480 MHz	1.263 MHz	500 kHz	Pass

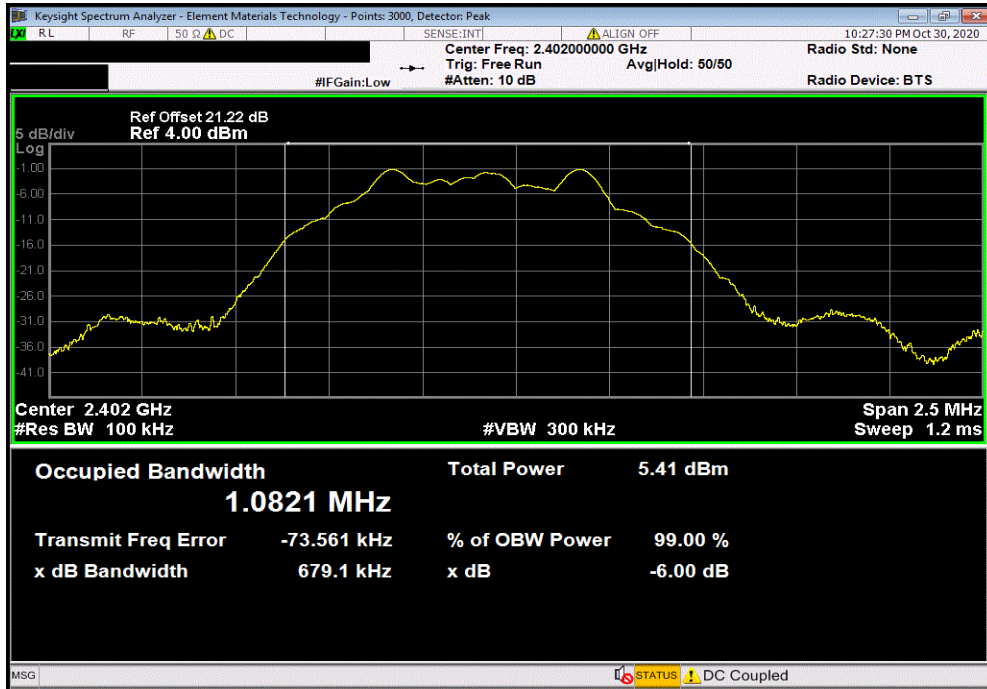


# OCCUPIED BANDWIDTH

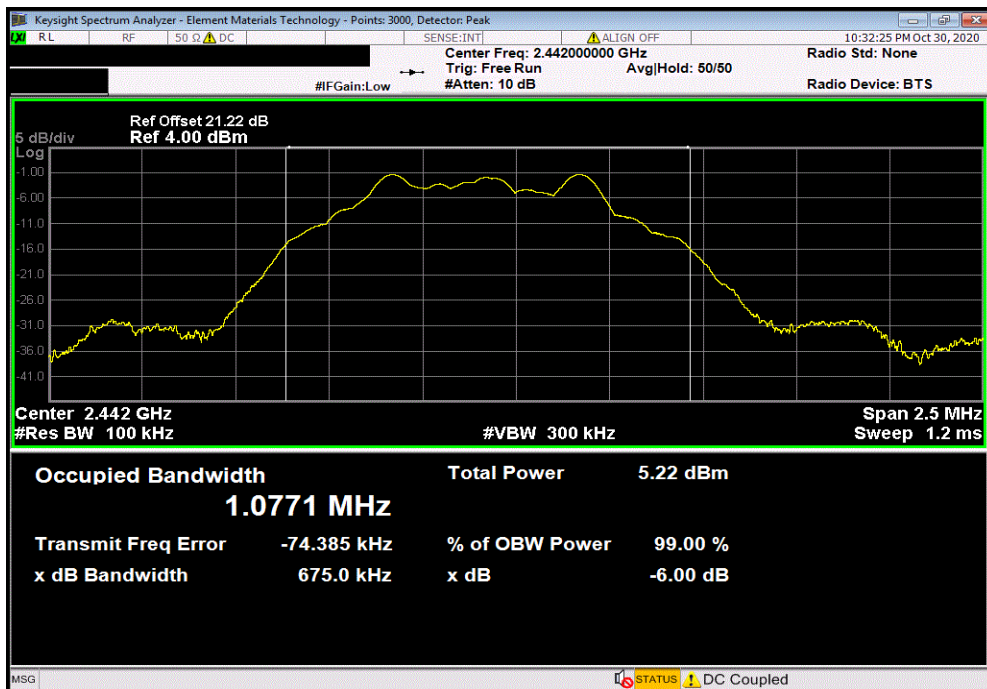


TbTx 2019.08.30.0 XMI 2020.03.25.0

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



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

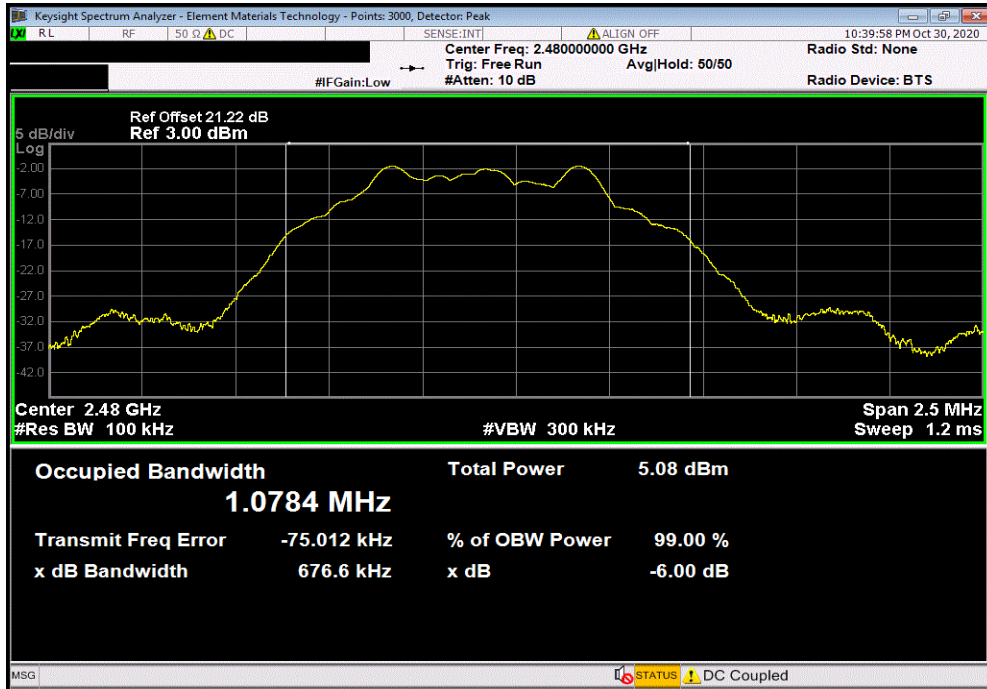


# OCCUPIED BANDWIDTH

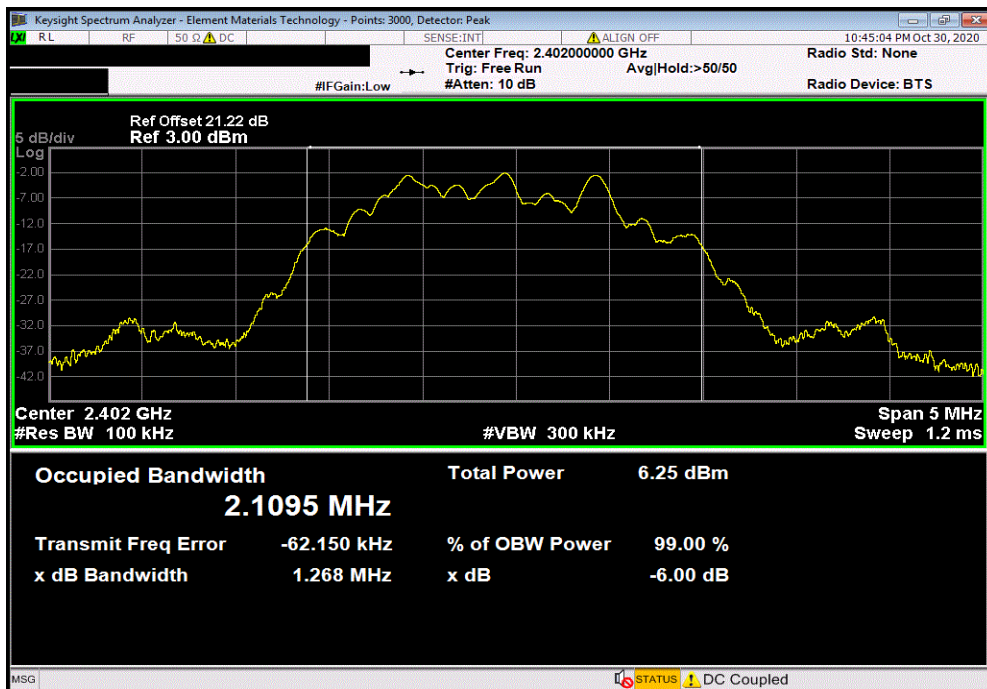


TbTx 2019.08.30.0 XMI 2020.03.25.0

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



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

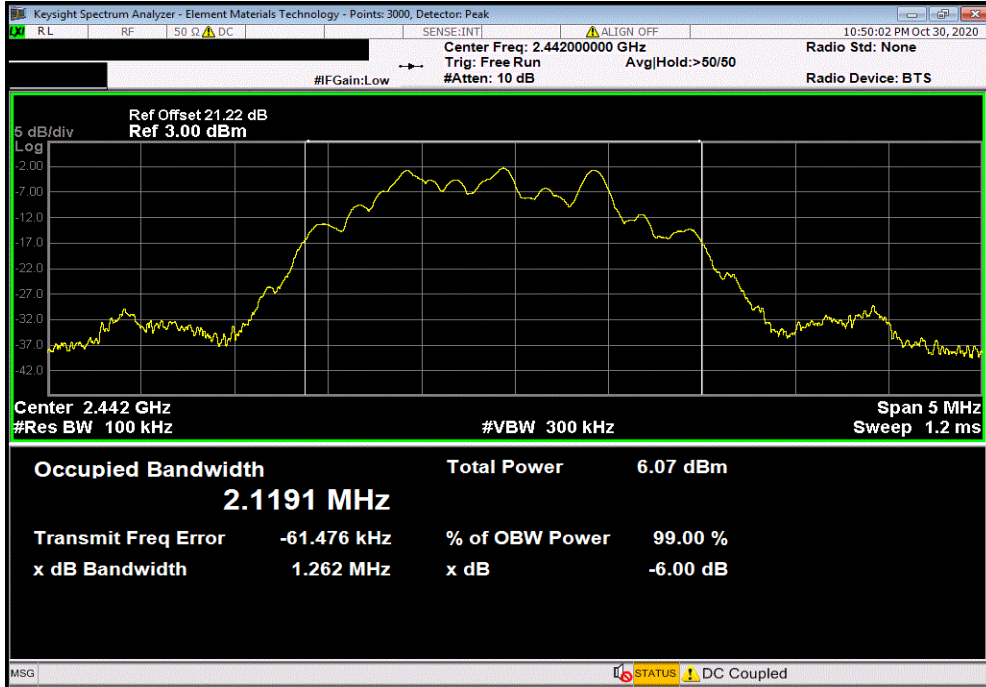


# OCCUPIED BANDWIDTH

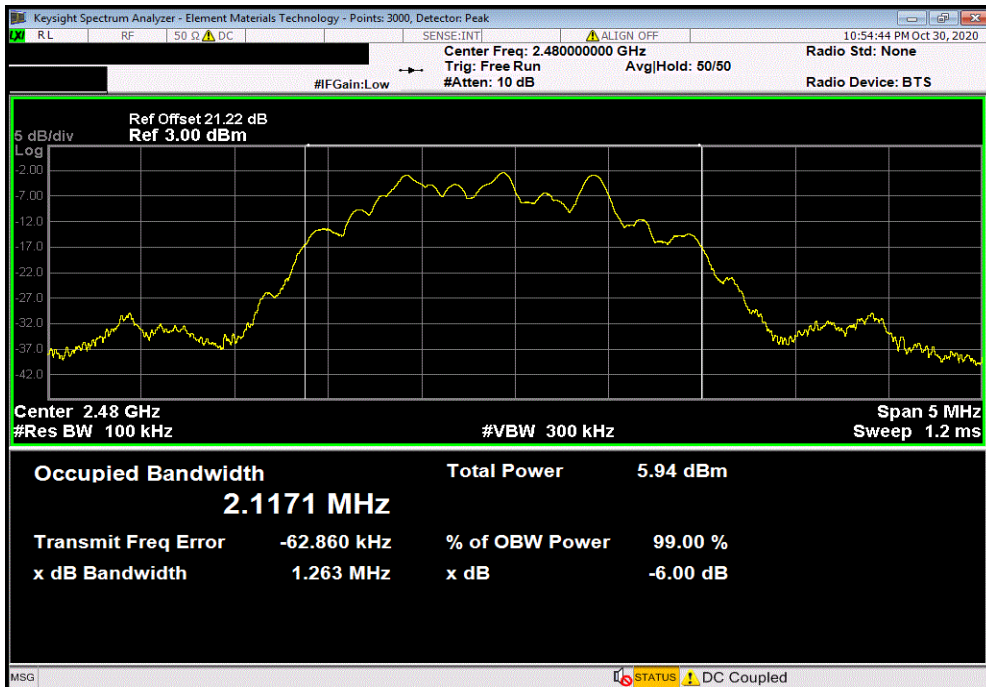


TbTx 2019.08.30.0 XMI 2020.03.25.0

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



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



# OUTPUT POWER



XMI 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	Micro-Coax	UFD150A-1-0720-200200	MNL	14-Sep-20	14-Sep-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



TelTx 2019.08.30.0 XMI 2020.03.25.0

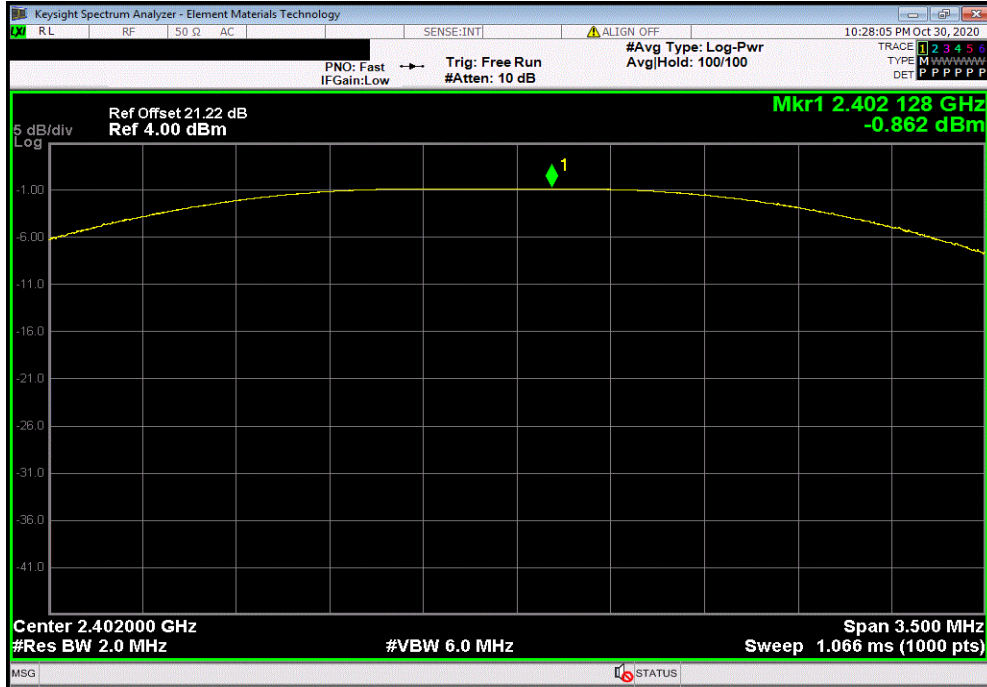
EUT: Indy1 RIC		Work Order: NOVI0007	
Serial Number: i035-R		Date: 30-Oct-20	
Customer: Novidan, Inc.		Temperature: 21.1 °C	
Attendees: Katie Himes		Humidity: 29.4% RH	
Project: None		Barometric Pres.: 1025 mbar	
Tested by: Andrew Rogstad		Power: Battery	
Job Site: MN08			
TEST SPECIFICATIONS		Test Method	
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 #	11	Signature <i>Andrew Rogstad</i>	
		Out Pwr (dBm)	Limit (dBm) Result
BLE/GFSK 1 Mbps Low Channel, 2402 MHz		-0.862	30 Pass
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz		-1.049	30 Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz		-1.194	30 Pass
BLE/GFSK 2 Mbps Low Channel, 2402 MHz		-0.788	30 Pass
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz		-0.967	30 Pass
BLE/GFSK 2 Mbps High Channel, 2480 MHz		-1.123	30 Pass

# OUTPUT POWER

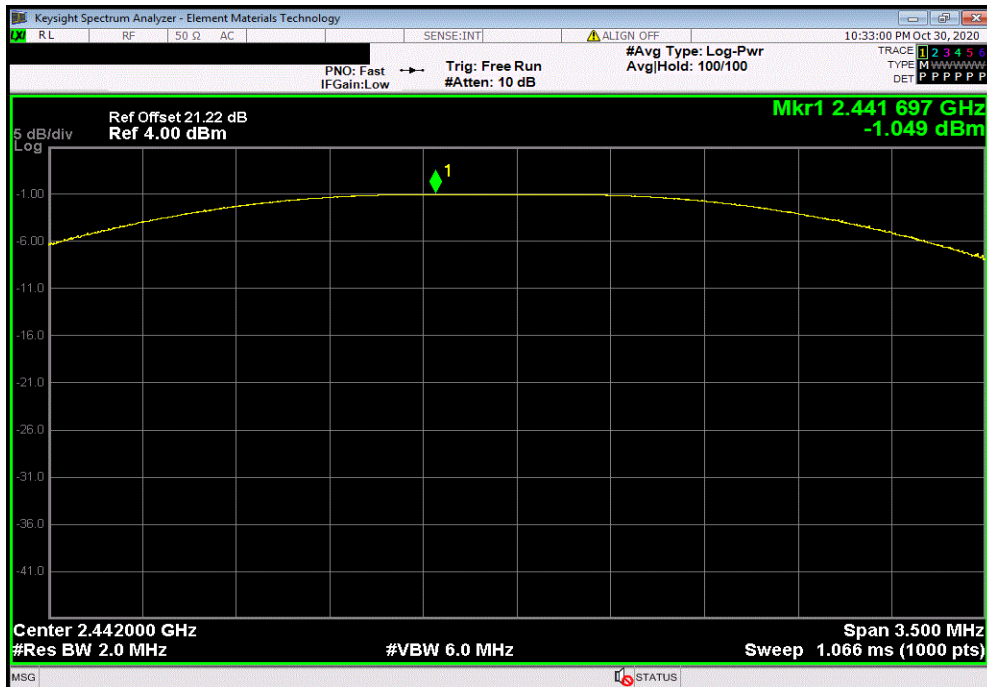


TbTx 2019.08.30.0 XMI 2020.03.25.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
	Out Pwr (dBm)	Limit (dBm)	Result			
	-0.862	30	Pass			



BLE/GFSK 1 Mbps Mid Channel, 2442 MHz						
	Out Pwr (dBm)	Limit (dBm)	Result			
	-1.049	30	Pass			



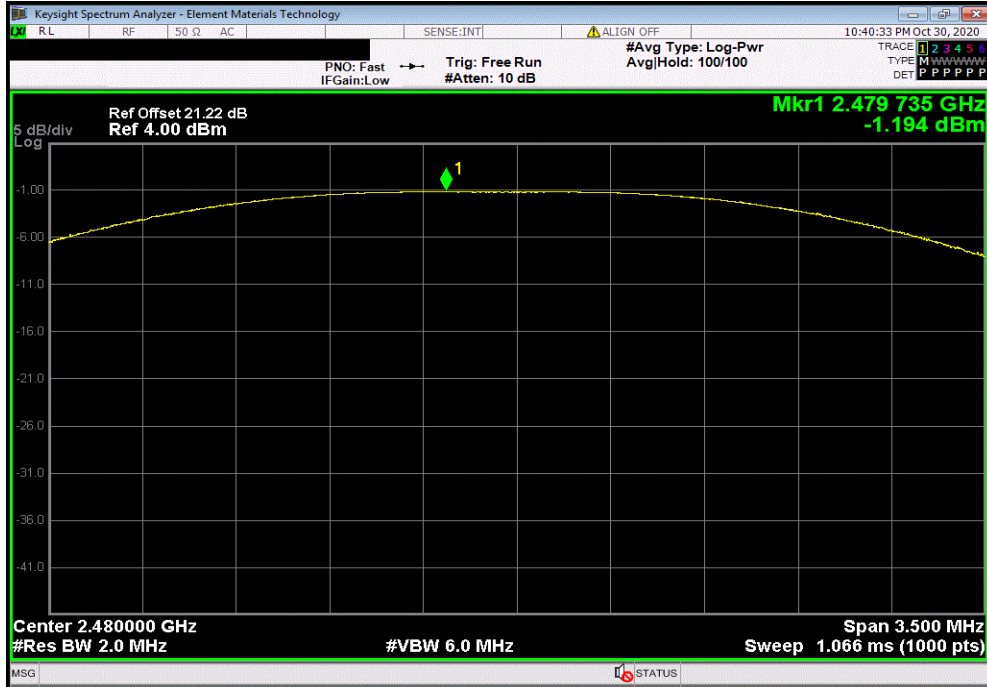


# OUTPUT POWER

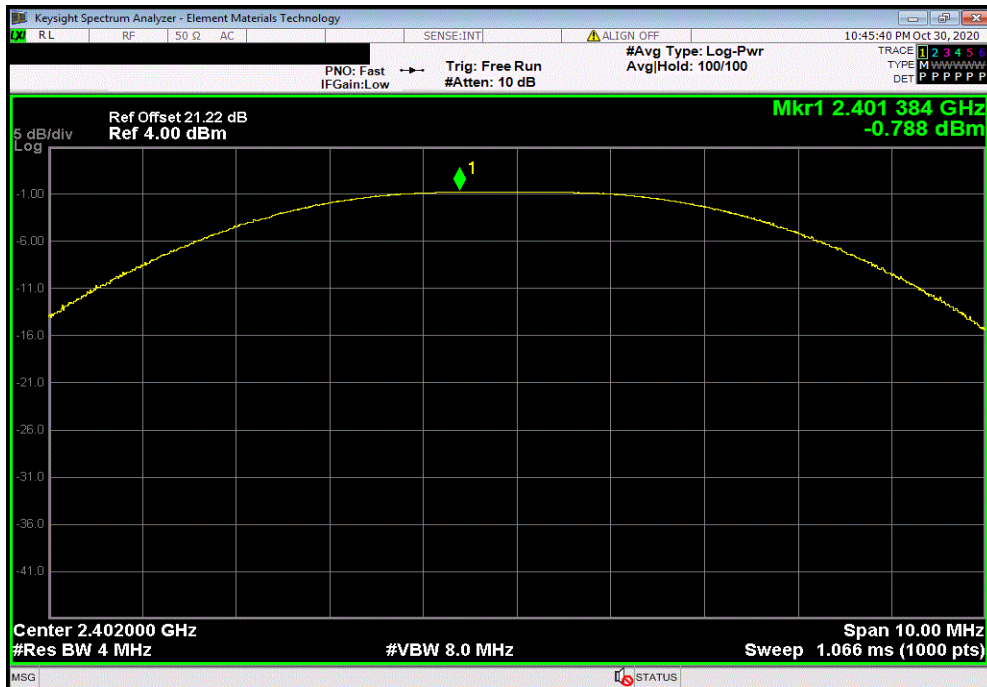


TbTx 2019.08.30.0 XMi 2020.03.25.0

BLE/GFSK 1 Mbps High Channel, 2480 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				-1.194	30	Pass



BLE/GFSK 2 Mbps Low Channel, 2402 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				-0.788	30	Pass



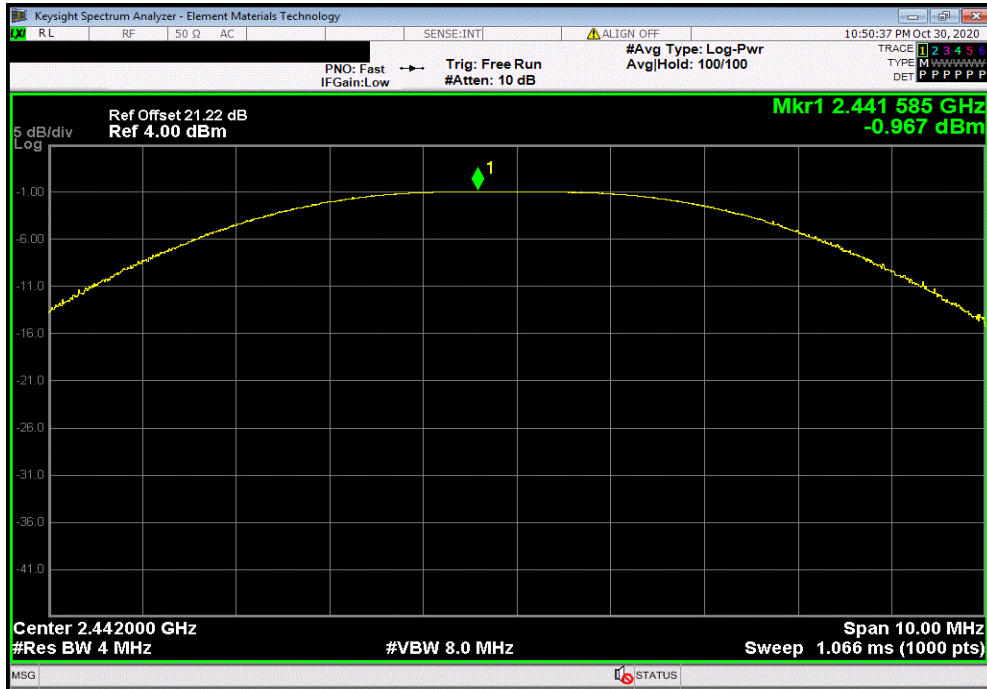


# OUTPUT POWER

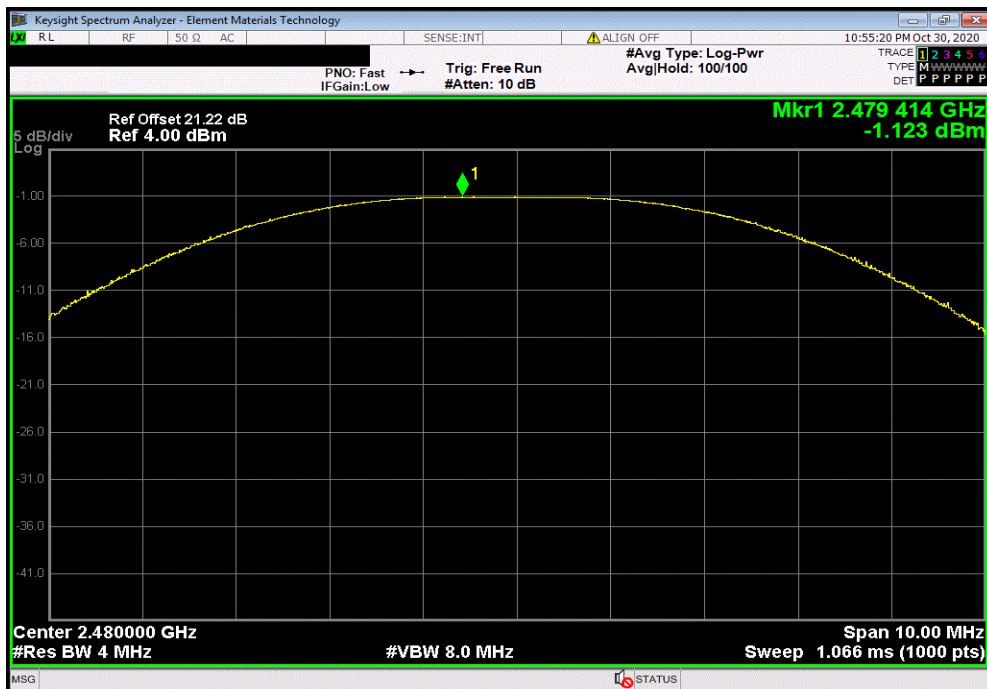


TbTx 2019.08.30.0 XMi 2020.03.25.0

BLE/GFSK 2 Mbps Mid Channel, 2442 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				-0.967	30	Pass



BLE/GFSK 2 Mbps High Channel, 2480 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				-1.123	30	Pass



# EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



element

XMI 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	Micro-Coax	UFD150A-1-0720-200200	MNL	14-Sep-20	14-Sep-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)



TelTx 2019.08.30.0 XMI 2020.03.25.0

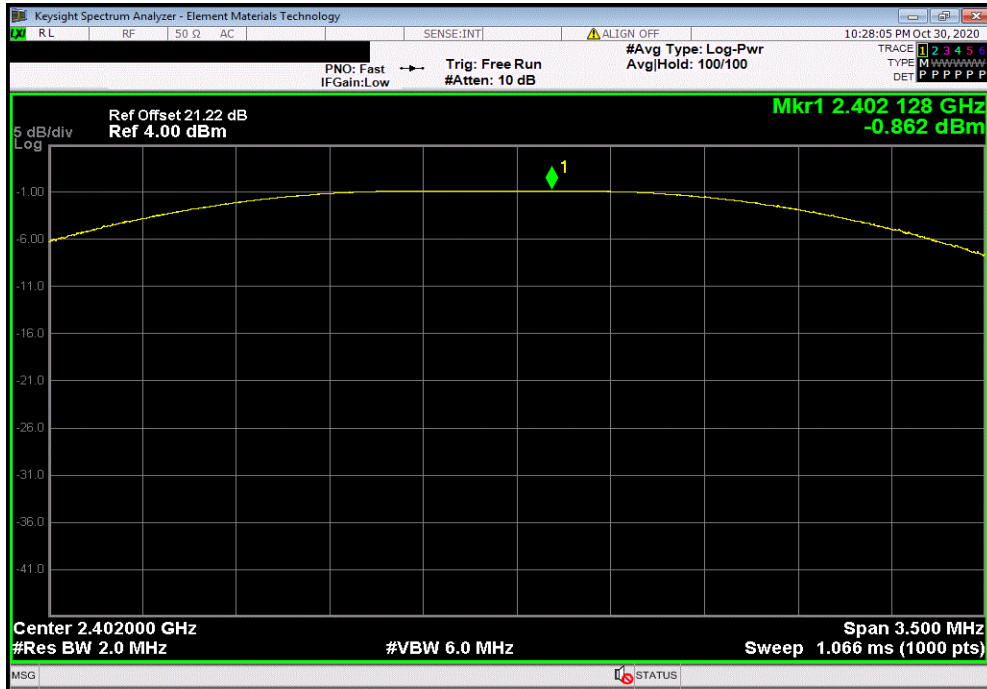
EUT: Indy1 RIC		Work Order: NOVI0007				
Serial Number: i035-R		Date: 30-Oct-20				
Customer: Novidan, Inc.		Temperature: 21.2 °C				
Attendees: Katie Himes		Humidity: 29.3% RH				
Project: None		Barometric Pres.: 1025 mbar				
Tested by: Andrew Rogstad		Power: Battery				
Job Site: MN08						
TEST SPECIFICATIONS		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 #	11	Signature <i>Andrew Rogstad</i>				
		Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
BLE/GFSK 1 Mbps Low Channel, 2402 MHz		-0.862	-1.12	-1.982	36	Pass
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz		-1.049	-1.12	-2.169	36	Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz		-1.194	-1.12	-2.314	36	Pass
BLE/GFSK 2 Mbps Low Channel, 2402 MHz		-0.788	-1.12	-1.908	36	Pass
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz		-0.967	-1.12	-2.087	36	Pass
BLE/GFSK 2 Mbps High Channel, 2480 MHz		-1.123	-1.12	-2.243	36	Pass

# EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

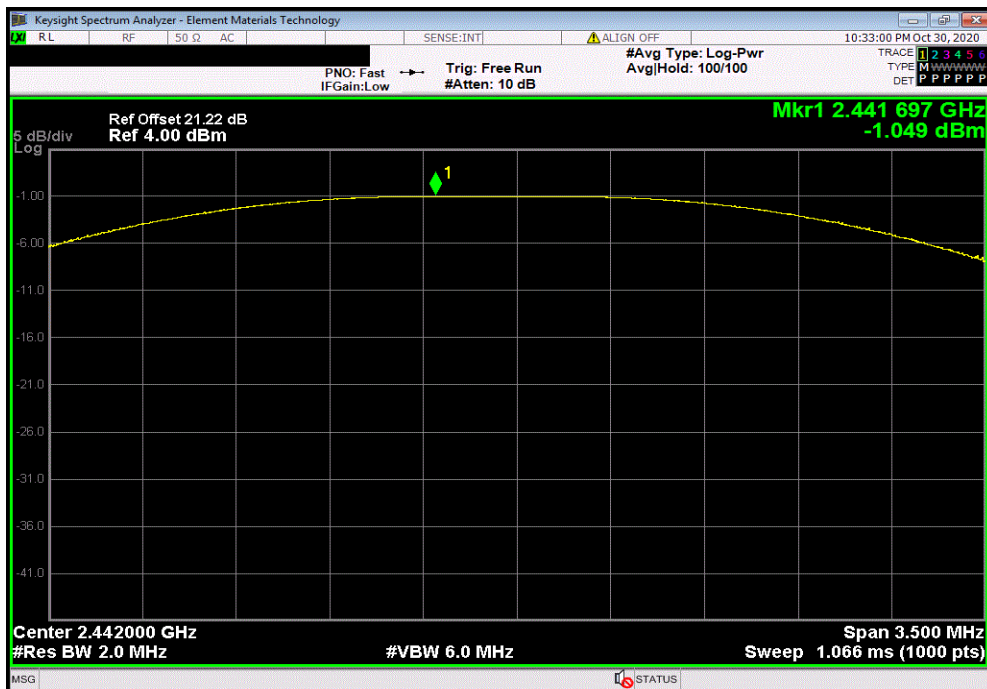


TbTx 2019.08.30.0 XMi 2020.03.25.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result		
-0.862	-1.12	-1.982	36	Pass		



BLE/GFSK 1 Mbps Mid Channel, 2442 MHz						
Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result		
-1.049	-1.12	-2.169	36	Pass		

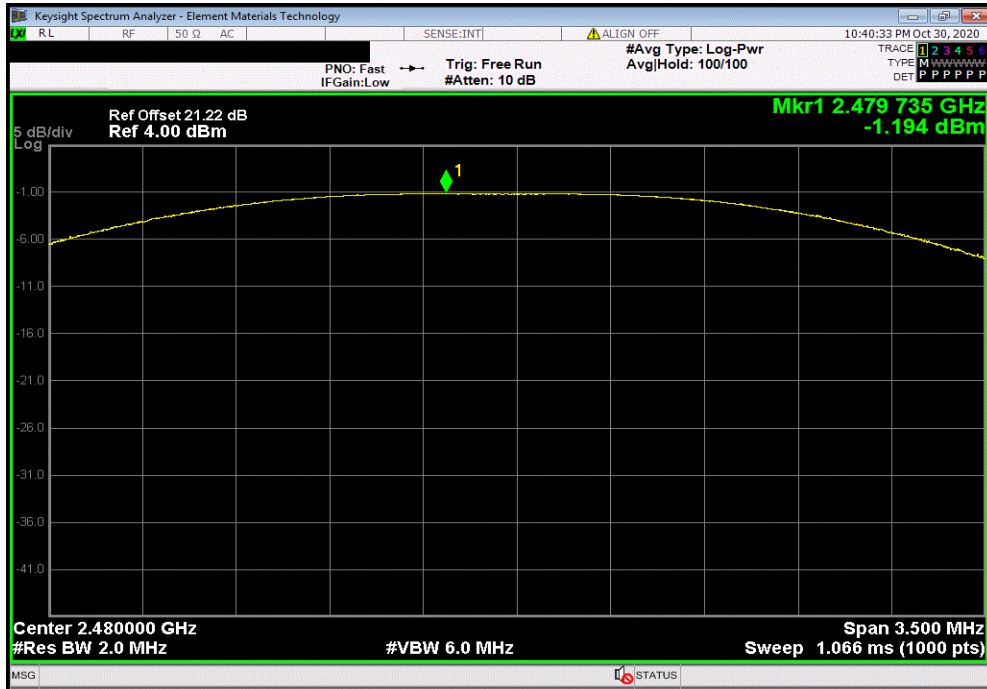


# EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

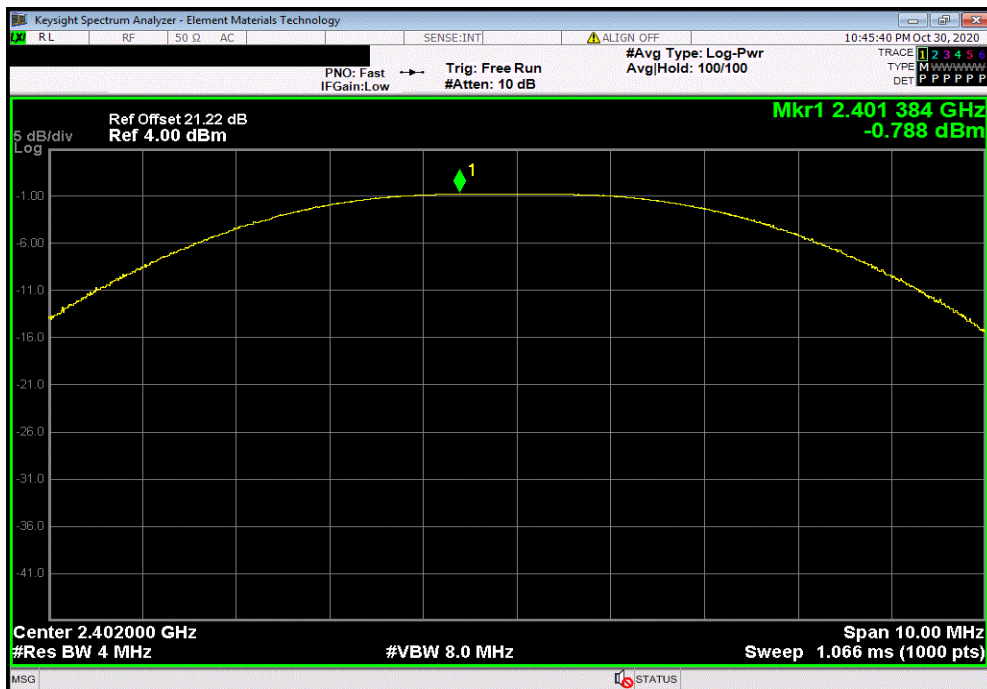


TbTx 2019.08.30.0 XMI 2020.03.25.0

BLE/GFSK 1 Mbps High Channel, 2480 MHz						
Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result		
-1.194	-1.12	-2.314	36	Pass		



BLE/GFSK 2 Mbps Low Channel, 2402 MHz						
Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result		
-0.788	-1.12	-1.908	36	Pass		

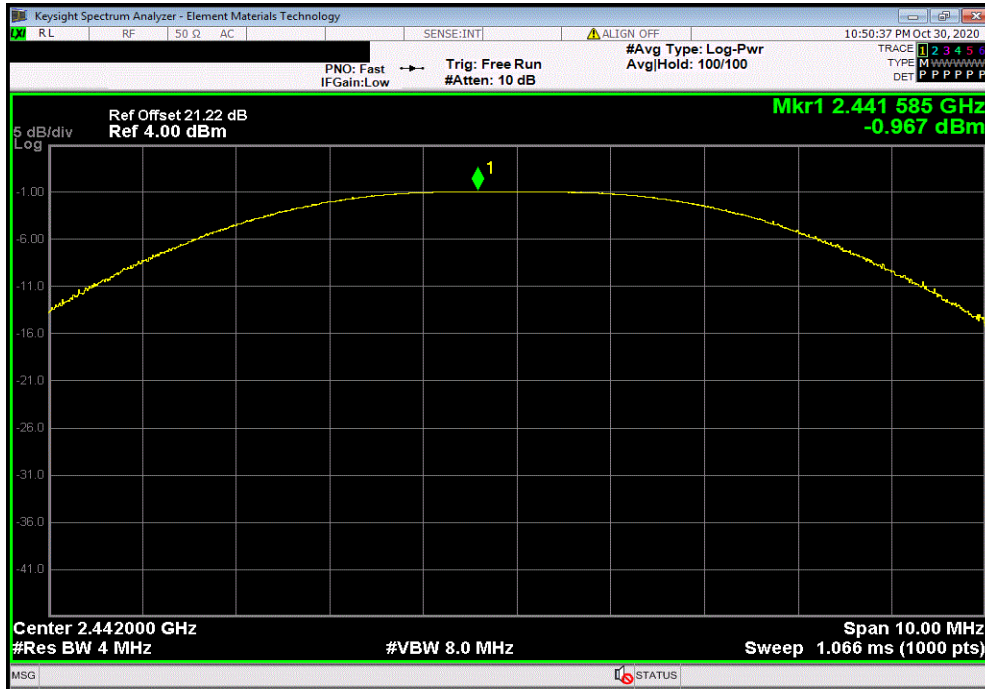


# EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

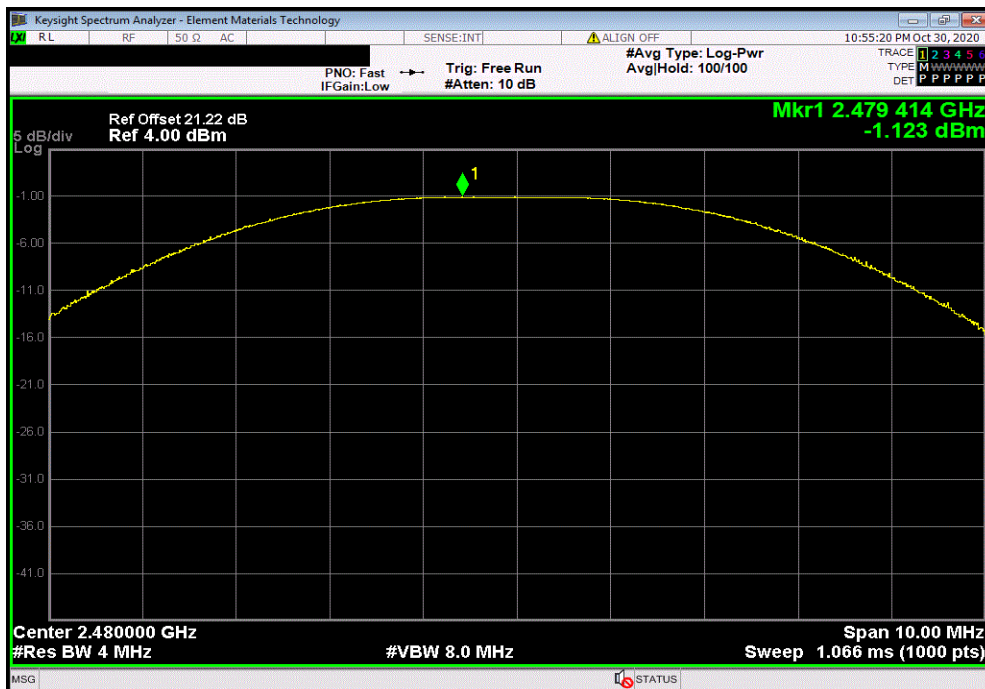


TbTx 2019.08.30.0 XMi 2020.03.25.0

BLE/GFSK 2 Mbps Mid Channel, 2442 MHz						
Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result		
-0.967	-1.12	-2.087	36	Pass		



BLE/GFSK 2 Mbps High Channel, 2480 MHz						
Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result		
-1.123	-1.12	-2.243	36	Pass		





element

XMit 2020.03.25.0

# POWER SPECTRAL DENSITY

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	Micro-Coax	UFD150A-1-0720-200200	MNL	14-Sep-20	14-Sep-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



Tel: 2019.08.30.0 XMI: 2020.03.25.0

EUT: <b>Indy1 RIC</b>		Work Order: <b>NOVI0007</b>		
Serial Number: <b>i035-R</b>		Date: <b>30-Oct-20</b>		
Customer: <b>Novidan, Inc.</b>		Temperature: <b>21.2 °C</b>		
Attendees: <b>Katie Himes</b>		Humidity: <b>29.4% RH</b>		
Project: <b>None</b>		Barometric Pres.: <b>1025 mbar</b>		
Tested by: <b>Andrew Rogstad</b>		Power: <b>Battery</b>		
Job Site: <b>MN08</b>				
<b>TEST SPECIFICATIONS</b>		<b>Test Method</b>		
<b>FCC 15.247:2020</b>		<b>ANSI C63.10:2013</b>		
<b>COMMENTS</b>				
Reference level offset includes measurement cable, DC block, and 20 dB attenuator.				
<b>DEVIATIONS FROM TEST STANDARD</b>				
None				
Configuration #	11	Signature <i>Andrew Rogstad</i>		
		Value dBm/3kHz	Limit < dBm/3kHz	Results
BLE/GFSK 1 Mbps Low Channel, 2402 MHz		-10.679	8	Pass
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz		-10.927	8	Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz		-11.076	8	Pass
BLE/GFSK 2 Mbps Low Channel, 2402 MHz		-15.966	8	Pass
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz		-16.19	8	Pass
BLE/GFSK 2 Mbps High Channel, 2480 MHz		-16.369	8	Pass

# POWER SPECTRAL DENSITY



TbTx 2019.08.30.0 XMI 2020.03.25.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
	Value	Limit	Results			
	dBm/3kHz	< dBm/3kHz				
	-10.679	8	Pass			



BLE/GFSK 1 Mbps Mid Channel, 2442 MHz						
	Value	Limit	Results			
	dBm/3kHz	< dBm/3kHz				
	-10.927	8	Pass			

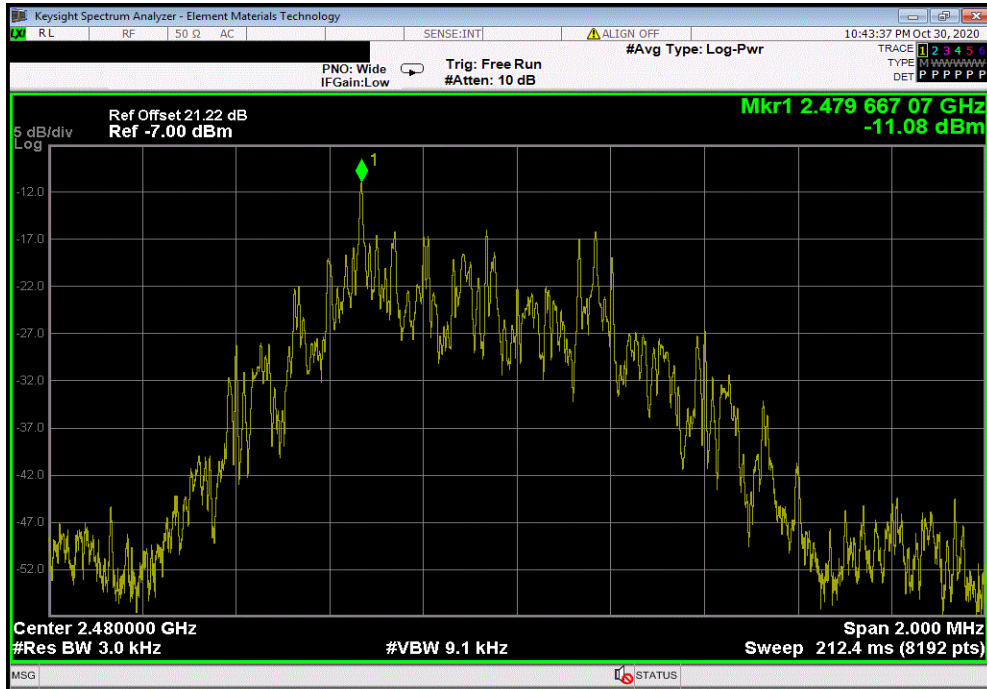


# POWER SPECTRAL DENSITY

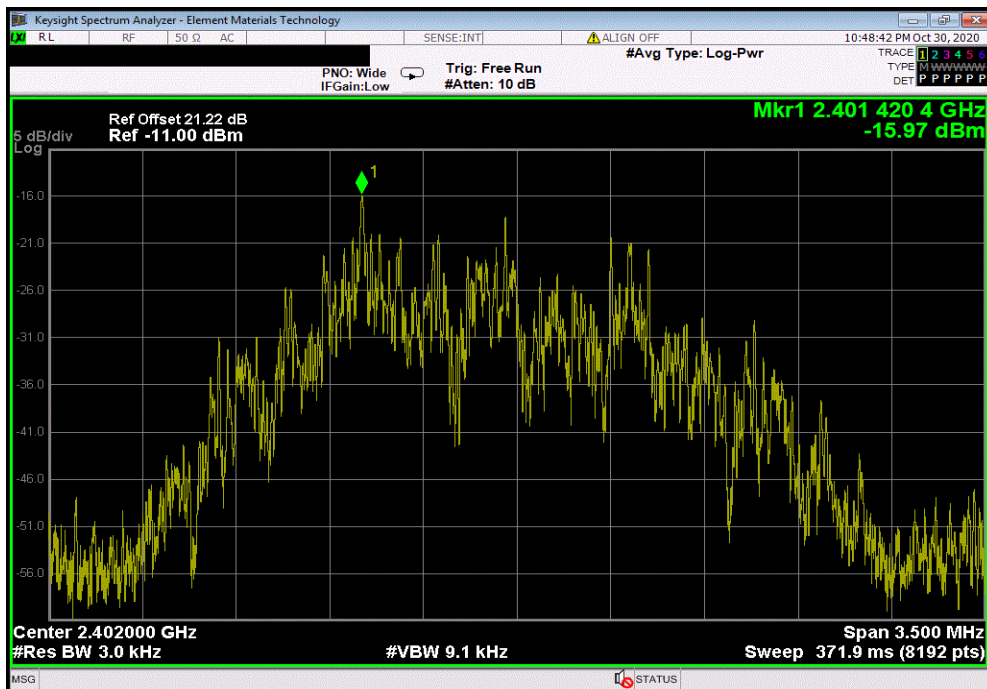


TbTx 2019.08.30.0 XMI 2020.03.25.0

BLE/GFSK 1 Mbps High Channel, 2480 MHz			
	Value	Limit	Results
	dBm/3kHz	< dBm/3kHz	
	-11.076	8	Pass



BLE/GFSK 2 Mbps Low Channel, 2402 MHz			
	Value	Limit	Results
	dBm/3kHz	< dBm/3kHz	
	-15.966	8	Pass

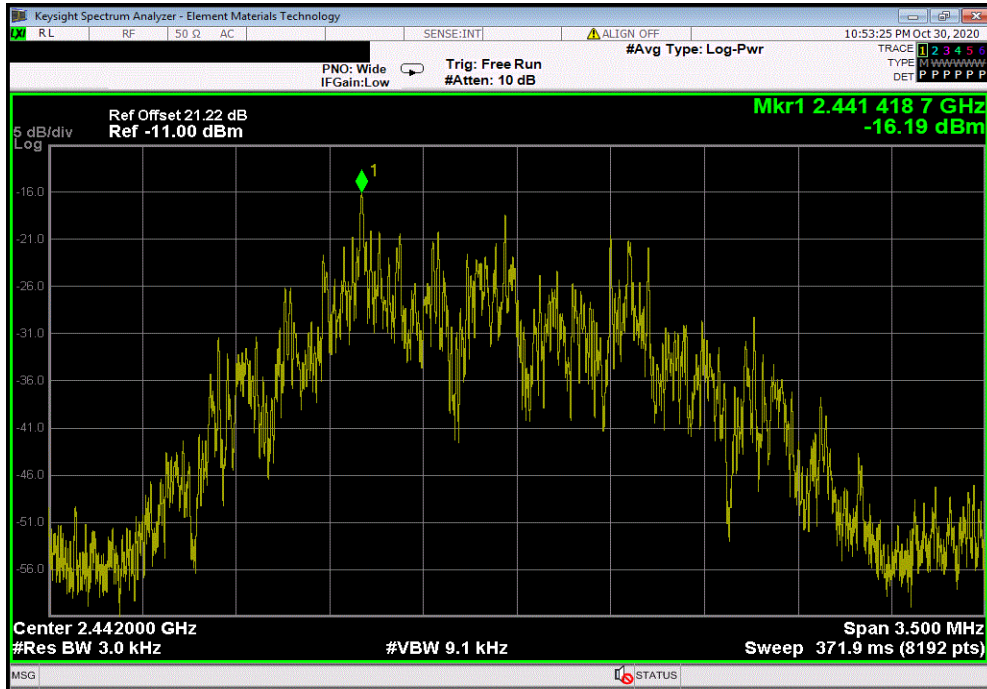


# POWER SPECTRAL DENSITY

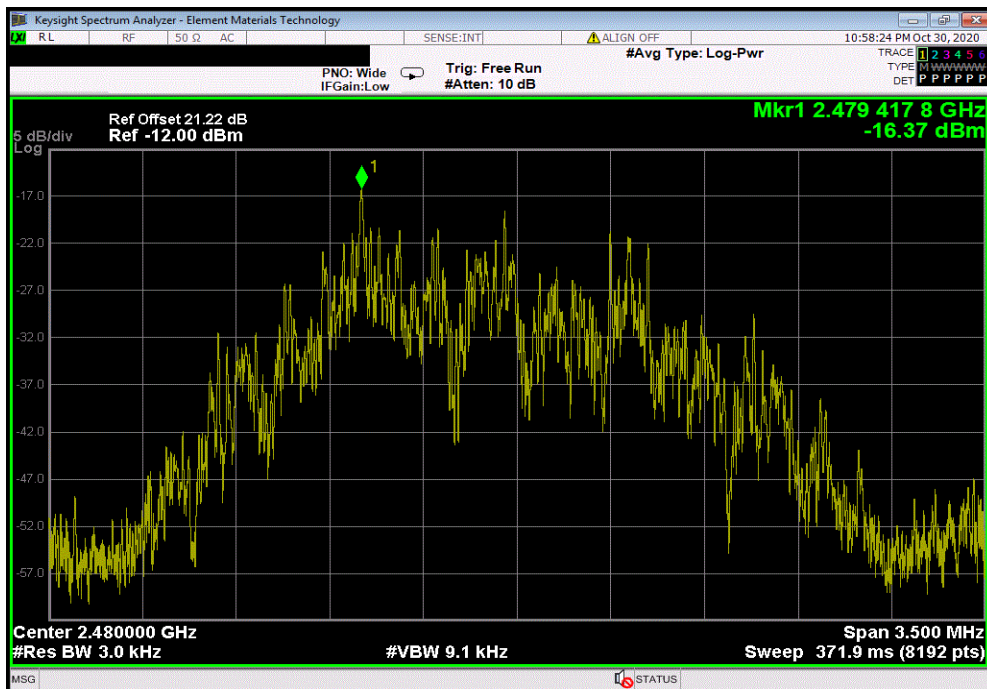


TbTx 2019.08.30.0 XMI 2020.03.25.0

BLE/GFSK 2 Mbps Mid Channel, 2442 MHz						
	Value	Limit	Results			
	dBm/3kHz	< dBm/3kHz				
	-16.19	8	Pass			



BLE/GFSK 2 Mbps High Channel, 2480 MHz						
	Value	Limit	Results			
	dBm/3kHz	< dBm/3kHz				
	-16.369	8	Pass			





XMH 2020.03.25.0

# BAND EDGE COMPLIANCE

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	Micro-Coax	UFD150A-1-0720-200200	MNL	14-Sep-20	14-Sep-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



Tel: 2019.08.30.0 XMI: 2020.03.25.0

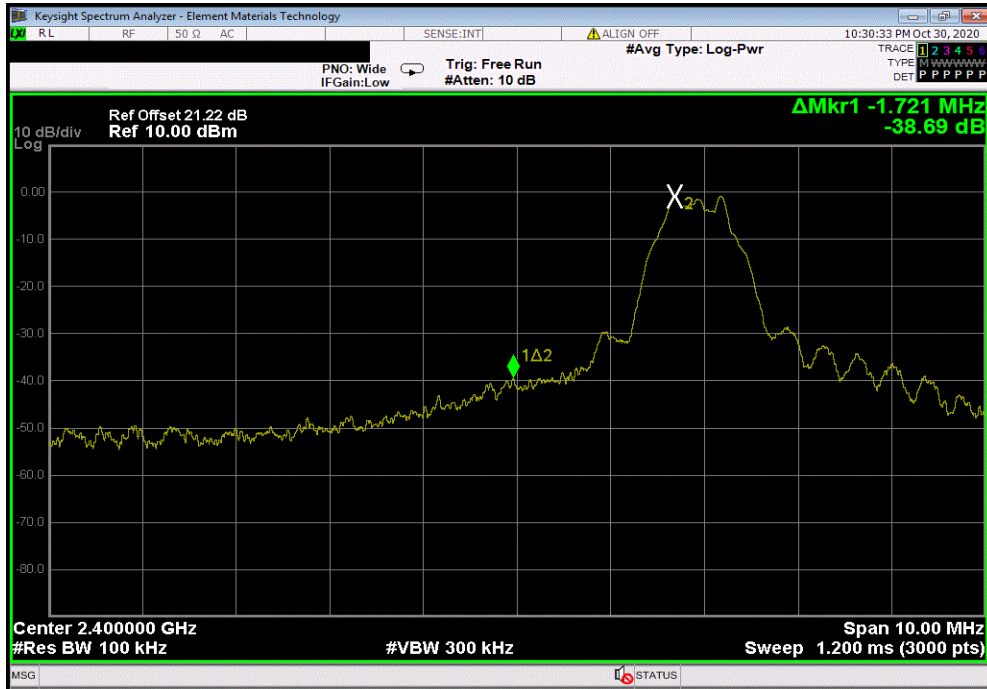
EUT: Indy1 RIC		Work Order: NOVI0007	
Serial Number: i035-R		Date: 30-Oct-20	
Customer: Novidan, Inc.		Temperature: 21.2 °C	
Attendees: Katie Himes		Humidity: 29.2% RH	
Project: None		Barometric Pres.: 1025 mbar	
Tested by: Andrew Rogstad		Power: Battery	
Job Site: MN08			
TEST SPECIFICATIONS		Test Method	
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 #	11	Signature <i>Andrew Rogstad</i>	
		Value (dBc)	Limit ≤ (dBc) Result
BLE/GFSK 1 Mbps Low Channel, 2402 MHz		-38.69	-20 Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz		-42.42	-20 Pass
BLE/GFSK 2 Mbps Low Channel, 2402 MHz		-28.23	-20 Pass
BLE/GFSK 2 Mbps High Channel, 2480 MHz		-38.08	-20 Pass

# BAND EDGE COMPLIANCE



TbTx 2019.08.30.0 XMI 2020.03.25.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-38.69	-20	Pass



BLE/GFSK 1 Mbps High Channel, 2480 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-42.42	-20	Pass



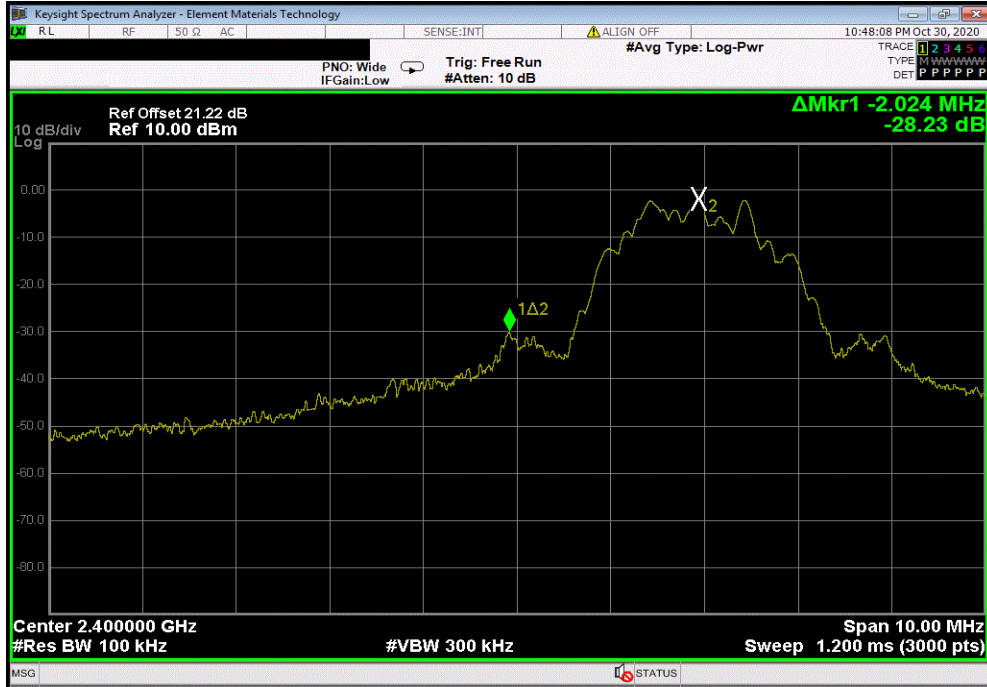


# BAND EDGE COMPLIANCE



TbTx 2019.08.30.0 XMt 2020.03.25.0

BLE/GFSK 2 Mbps Low Channel, 2402 MHz						
	Value (dBc)	Limit ≤ (dBc)	Result			
	-28.23	-20	Pass			



BLE/GFSK 2 Mbps High Channel, 2480 MHz						
	Value (dBc)	Limit ≤ (dBc)	Result			
	-38.08	-20	Pass			



# SPURIOUS CONDUCTED EMISSIONS



element

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	Micro-Coax	UFD150A-1-0720-200200	MNL	14-Sep-20	14-Sep-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



TelTx 2019.08.30.0 XMt 2020.03.25.0

EUT: <b>Indy1 RIC</b>		Work Order: <b>NOVI0007</b>	
Serial Number: <b>i035-R</b>		Date: <b>30-Oct-20</b>	
Customer: <b>Novidan, Inc.</b>		Temperature: <b>21.1 °C</b>	
Attendees: <b>Katie Himes</b>		Humidity: <b>29.5% RH</b>	
Project: <b>None</b>		Barometric Pres.: <b>1025 mbar</b>	
Tested by: <b>Andrew Rogstad</b>		Power: <b>Battery</b>	
Job Site: <b>MN08</b>			
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 #	11	Signature <i>Andrew Rogstad</i>	

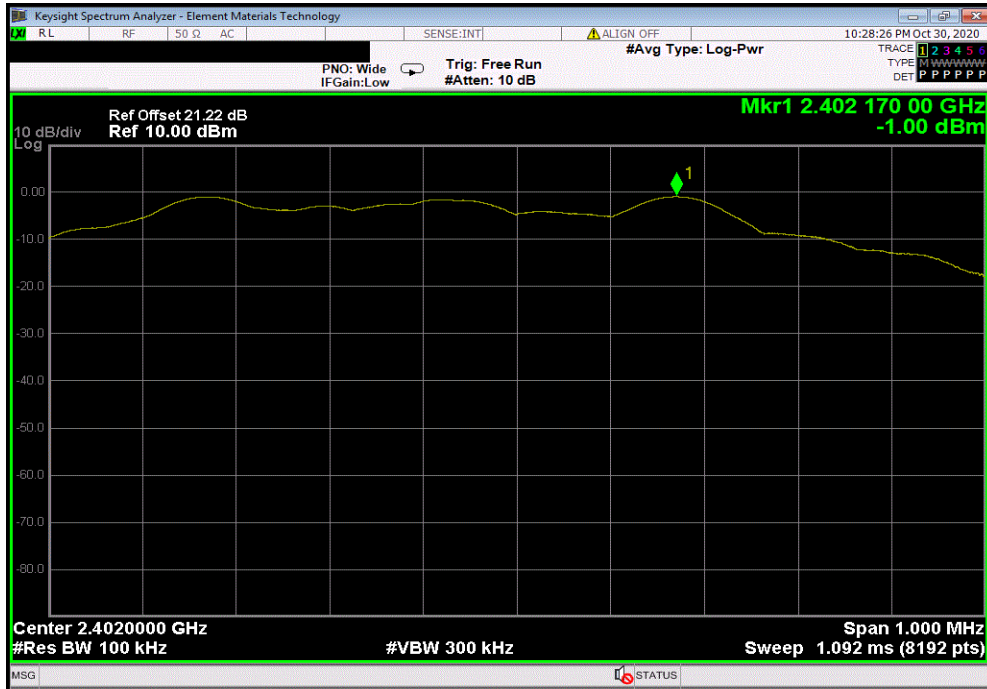
	Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
BLE/GFSK 1 Mbps Low Channel, 2402 MHz	Fundamental	2402.17	N/A	N/A	N/A
BLE/GFSK 1 Mbps Low Channel, 2402 MHz	30 MHz - 12.5 GHz	2397.34	-48.24	-20	Pass
BLE/GFSK 1 Mbps Low Channel, 2402 MHz	12.5 GHz - 25 GHz	24847.39	-37.63	-20	Pass
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz	Fundamental	2442.17	N/A	N/A	N/A
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz	30 MHz - 12.5 GHz	3161.58	-48.26	-20	Pass
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz	12.5 GHz - 25 GHz	24876.39	-37.77	-20	Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz	Fundamental	2480.17	N/A	N/A	N/A
BLE/GFSK 1 Mbps High Channel, 2480 MHz	30 MHz - 12.5 GHz	3211.82	-48.7	-20	Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz	12.5 GHz - 25 GHz	24937.43	-37.89	-20	Pass
BLE/GFSK 2 Mbps Low Channel, 2402 MHz	Fundamental	2401.94	N/A	N/A	N/A
BLE/GFSK 2 Mbps Low Channel, 2402 MHz	30 MHz - 12.5 GHz	2397.34	-44.64	-20	Pass
BLE/GFSK 2 Mbps Low Channel, 2402 MHz	12.5 GHz - 25 GHz	24902.33	-37.16	-20	Pass
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz	Fundamental	2441.94	N/A	N/A	N/A
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz	30 MHz - 12.5 GHz	3076.33	-47.43	-20	Pass
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz	12.5 GHz - 25 GHz	24980.16	-37.45	-20	Pass
BLE/GFSK 2 Mbps High Channel, 2480 MHz	Fundamental	2479.93	N/A	N/A	N/A
BLE/GFSK 2 Mbps High Channel, 2480 MHz	30 MHz - 12.5 GHz	2487.16	-43.97	-20	Pass
BLE/GFSK 2 Mbps High Channel, 2480 MHz	12.5 GHz - 25 GHz	24824.5	-37.15	-20	Pass

# SPURIOUS CONDUCTED EMISSIONS

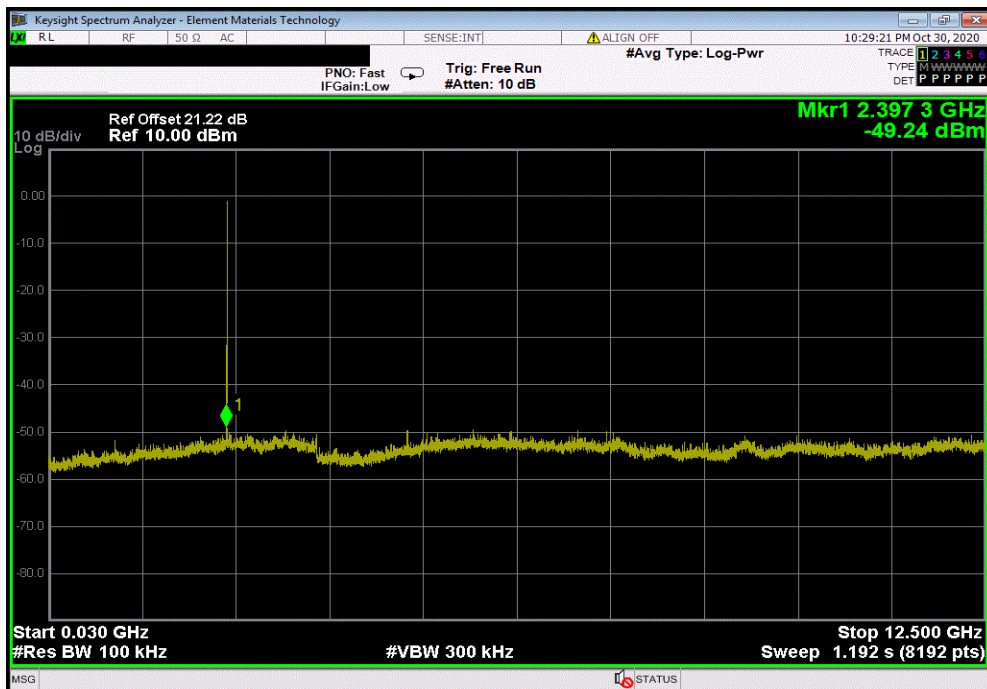


TbTx 2019.08.30.0 XMI 2020.03.25.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
Fundamental	2402.17	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	2397.34	-48.24	-20	Pass	

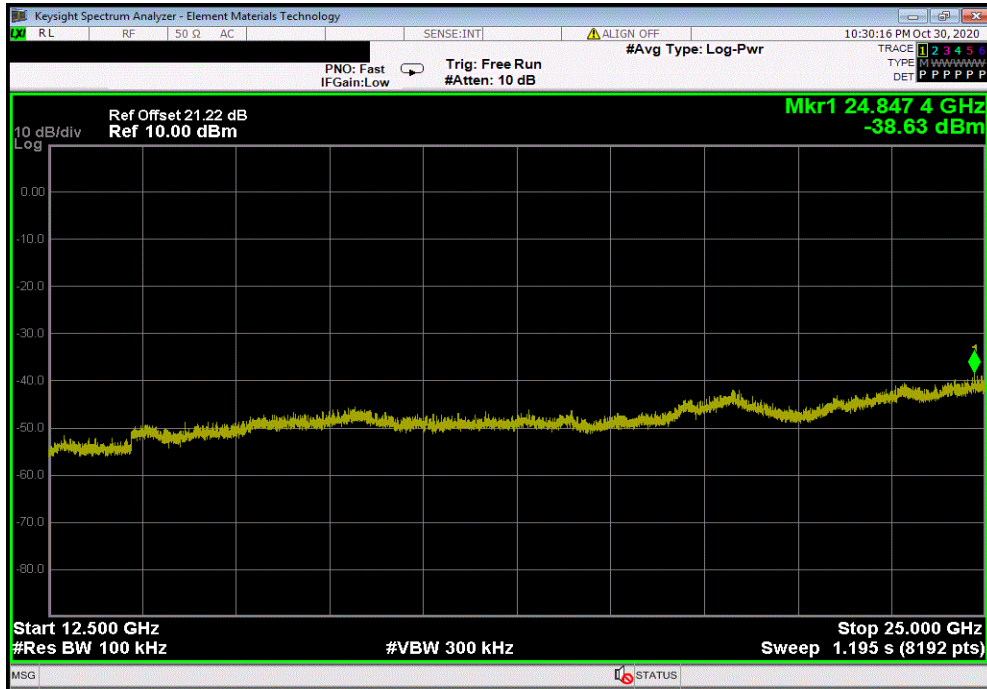


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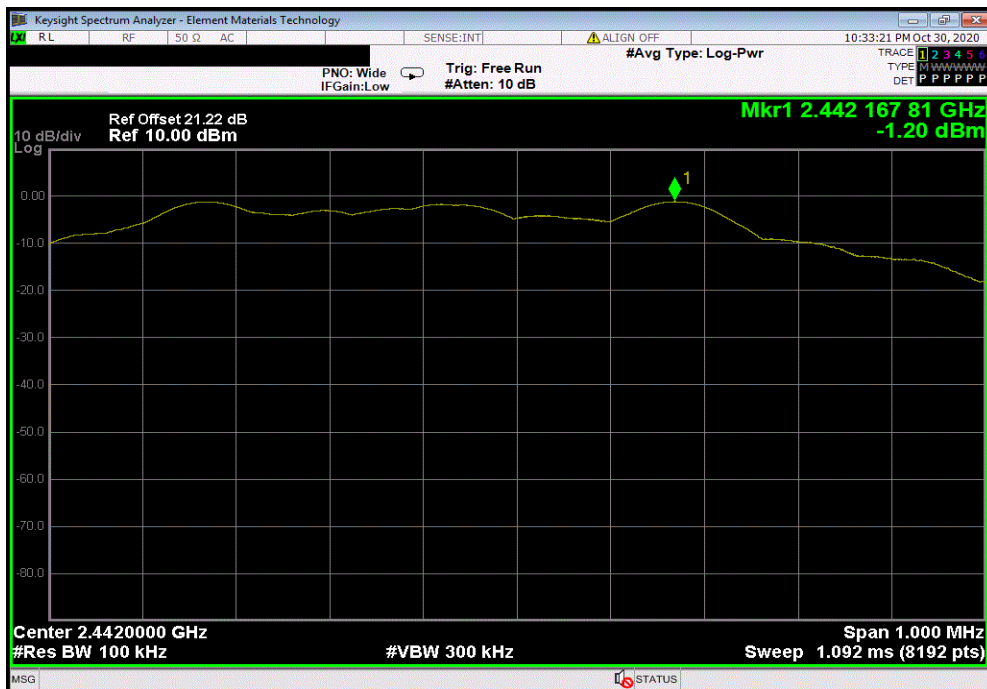


TbTx 2019.08.30.0 XMI 2020.03.25.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
12.5 GHz - 25 GHz	24847.39	-37.63	-20	Pass	



BLE/GFSK 1 Mbps Mid Channel, 2442 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
Fundamental	2442.17	N/A	N/A	N/A	

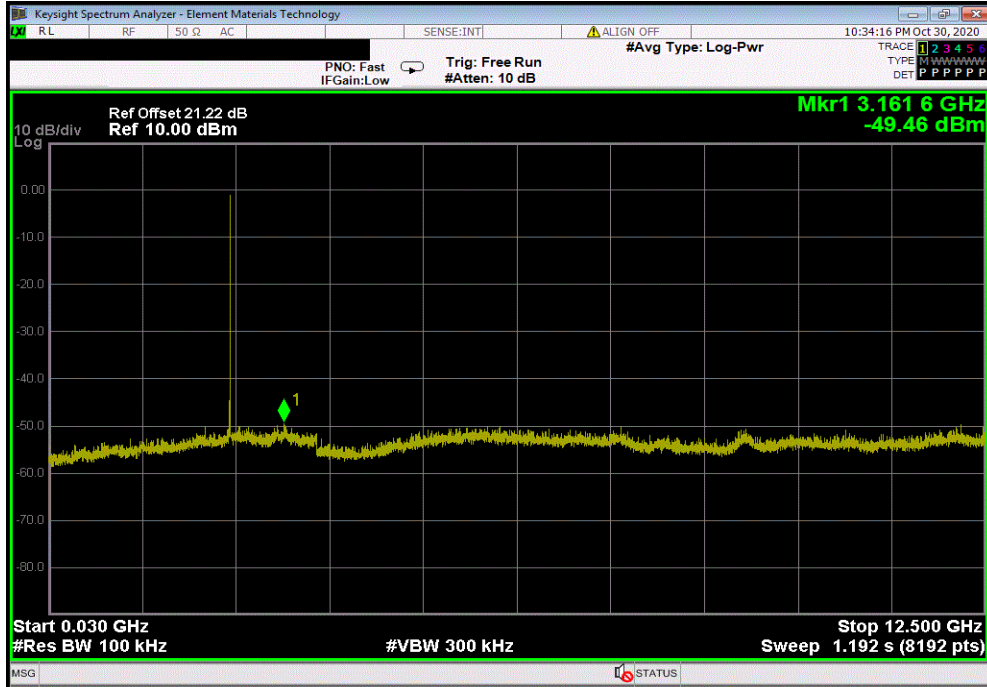


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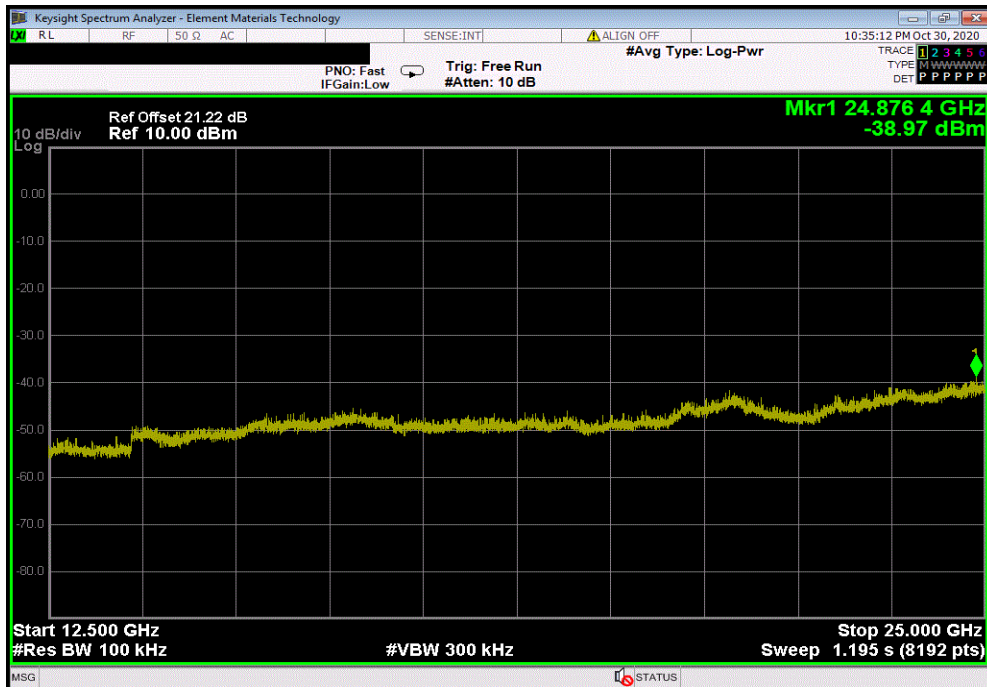


TbTx 2019.08.30.0 XMI 2020.03.25.0

BLE/GFSK 1 Mbps Mid Channel, 2442 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz	3161.58	-48.26	-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	24876.39	-37.77	-20	Pass



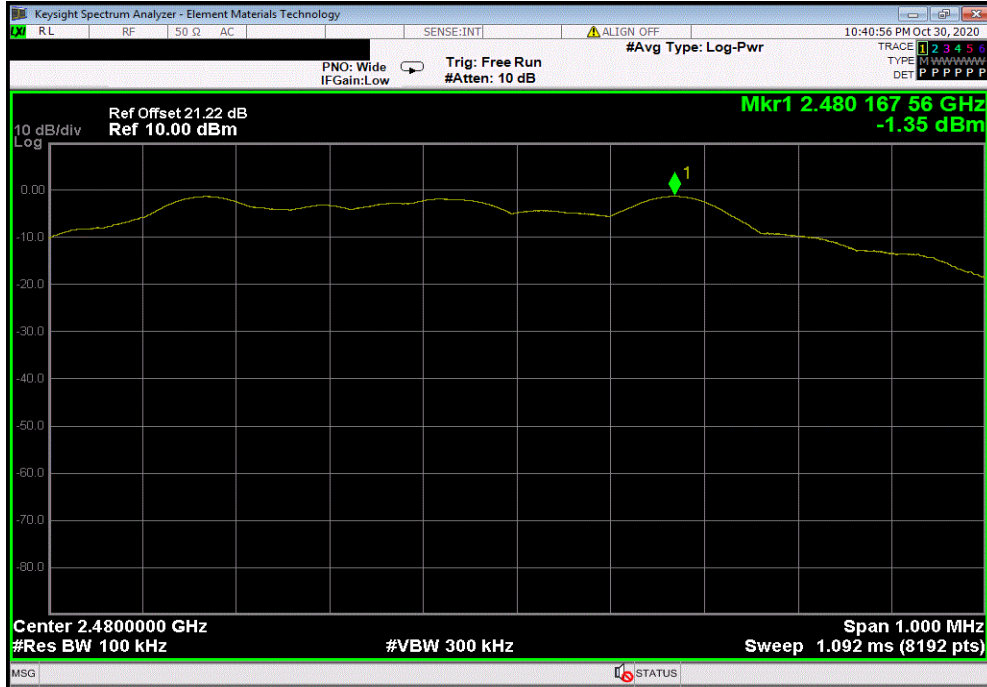


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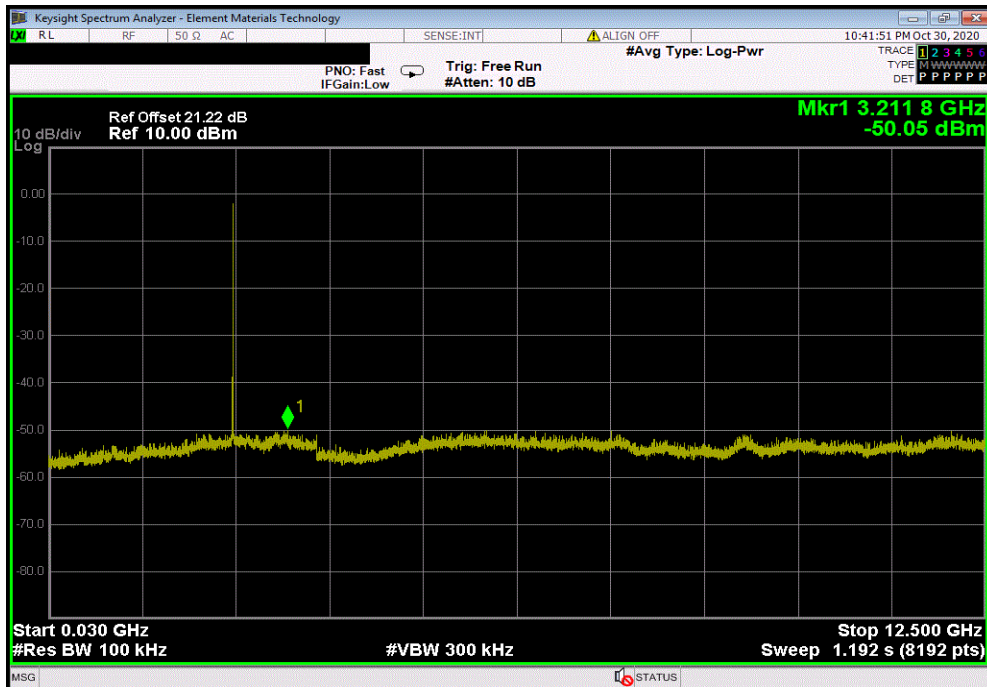


TbTx 2019.08.30.0 XMI 2020.03.25.0

BLE/GFSK 1 Mbps High Channel, 2480 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
Fundamental	2480.17	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	3211.82	-48.7	-20	Pass	



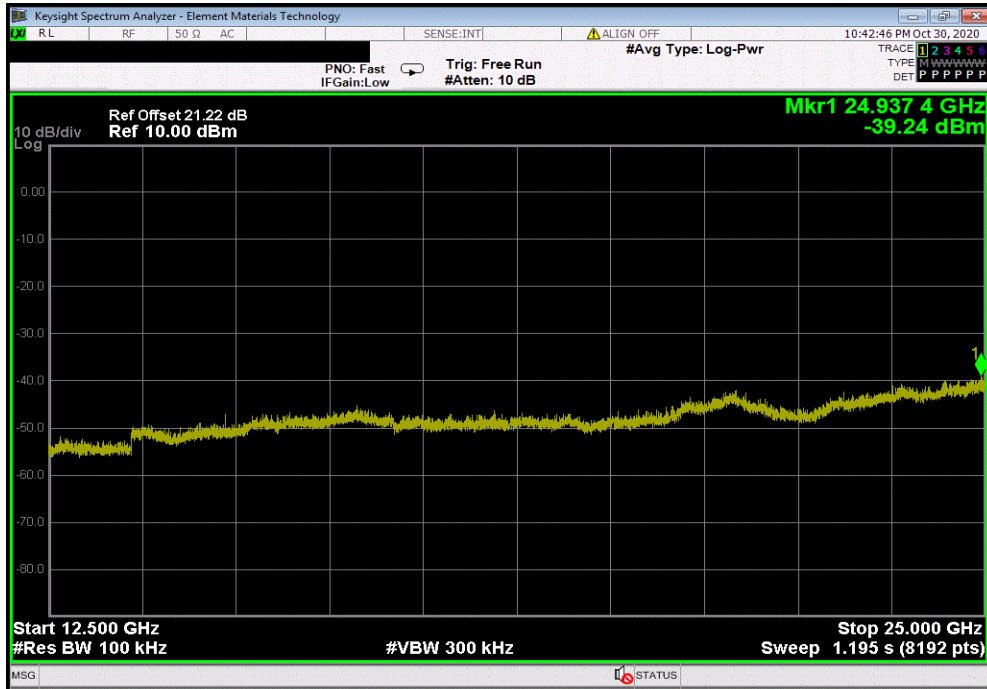


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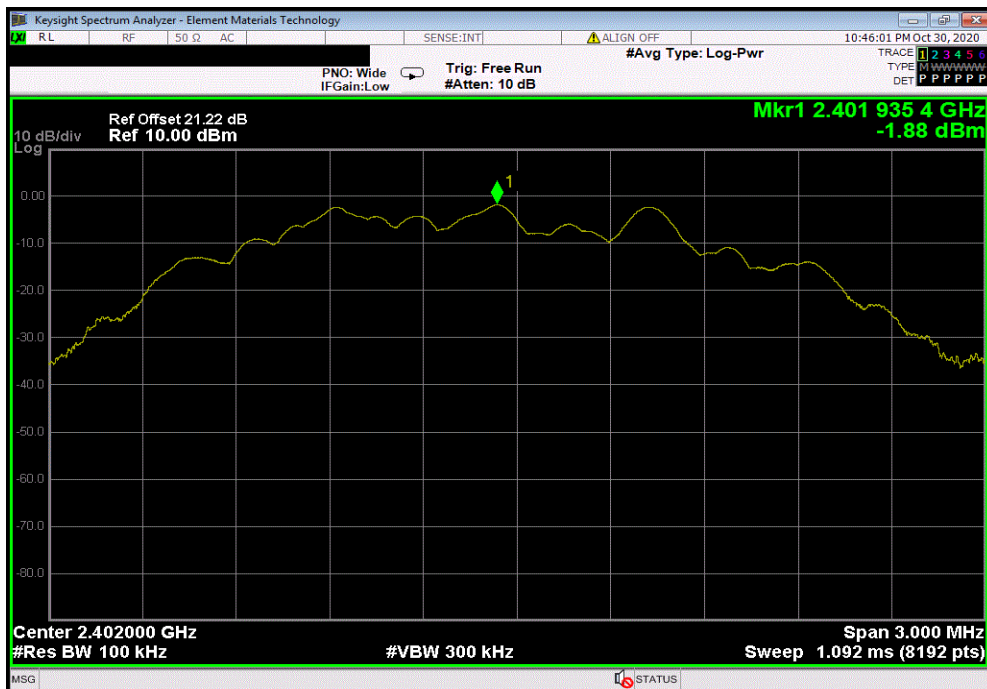


TbTx 2019.08.30.0 XMI 2020.03.25.0

BLE/GFSK 1 Mbps High Channel, 2480 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
12.5 GHz - 25 GHz	24937.43	-37.89	-20	Pass	



BLE/GFSK 2 Mbps Low Channel, 2402 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
Fundamental	2401.94	N/A	N/A	N/A	

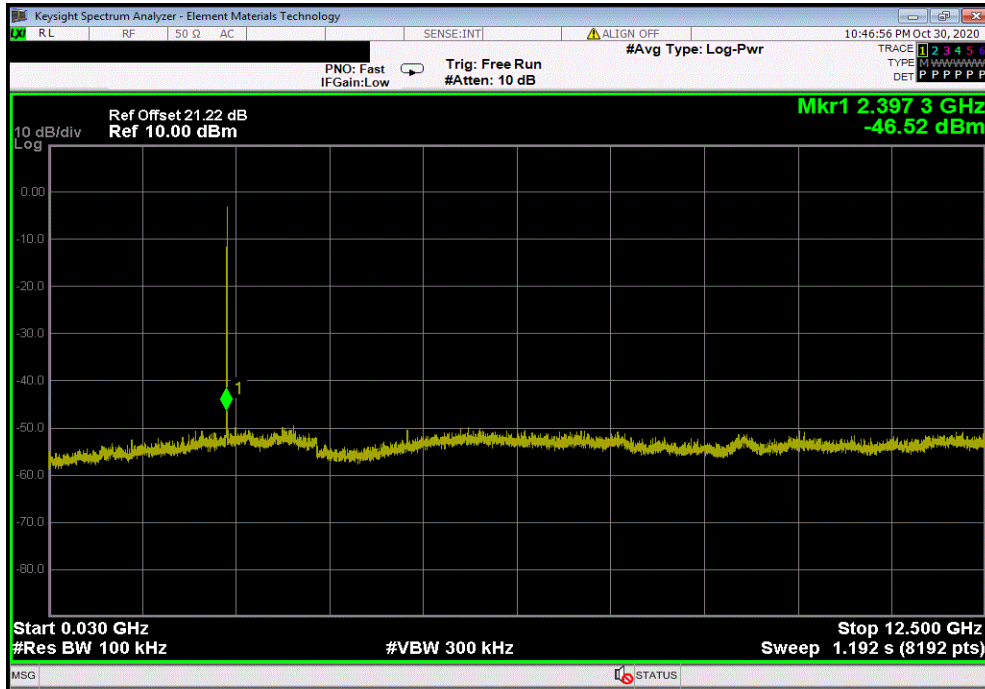


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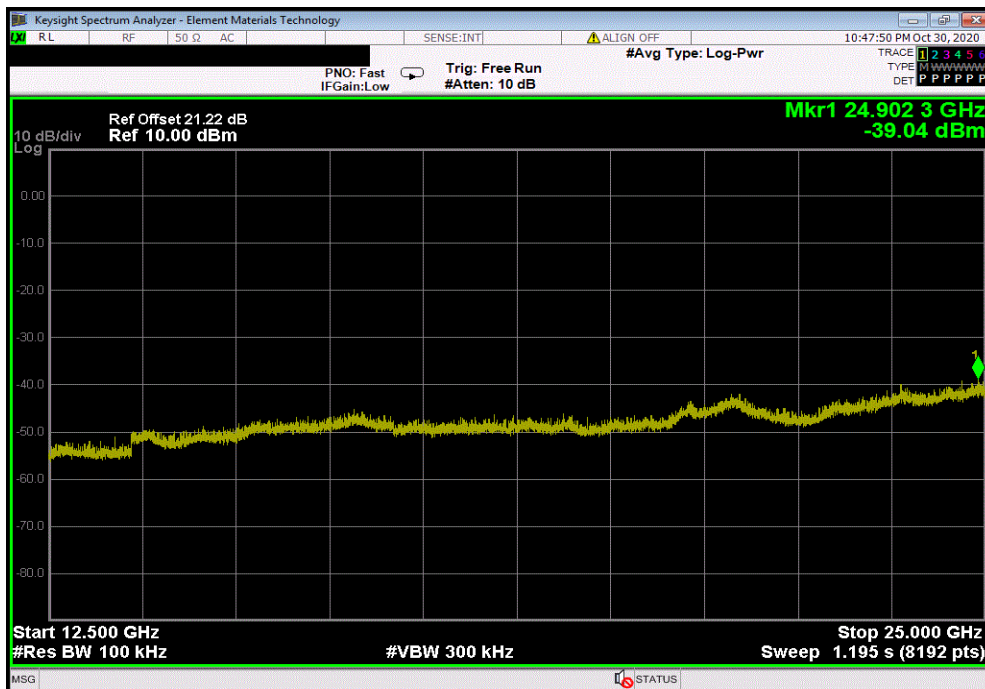


TbTx 2019.08.30.0 XMI 2020.03.25.0

BLE/GFSK 2 Mbps Low Channel, 2402 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz	2397.34	-44.64	-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	24902.33	-37.16	-20	Pass

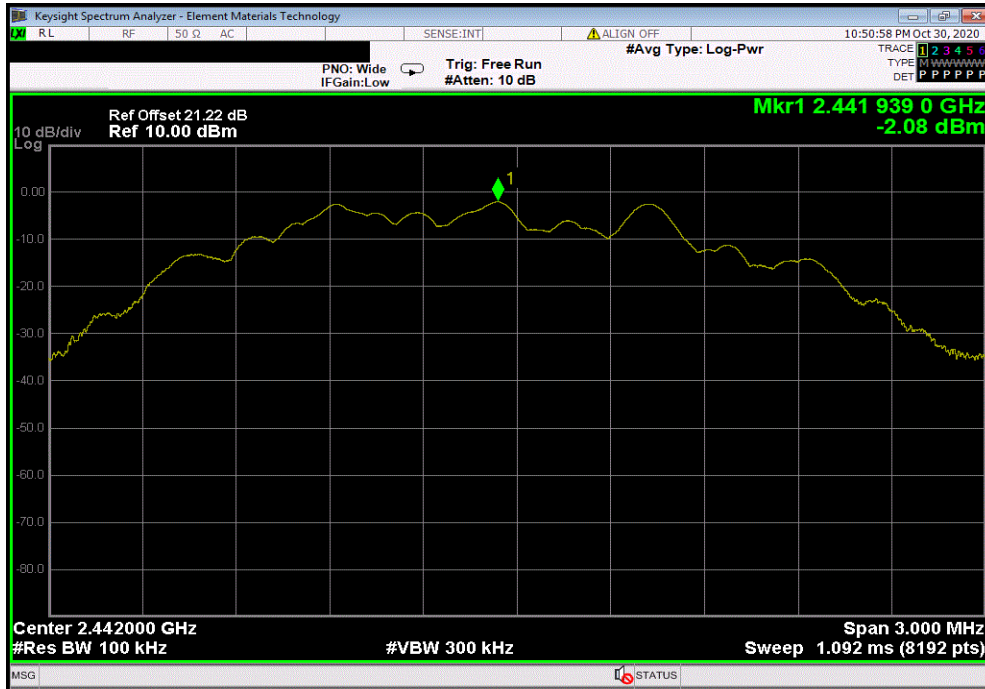


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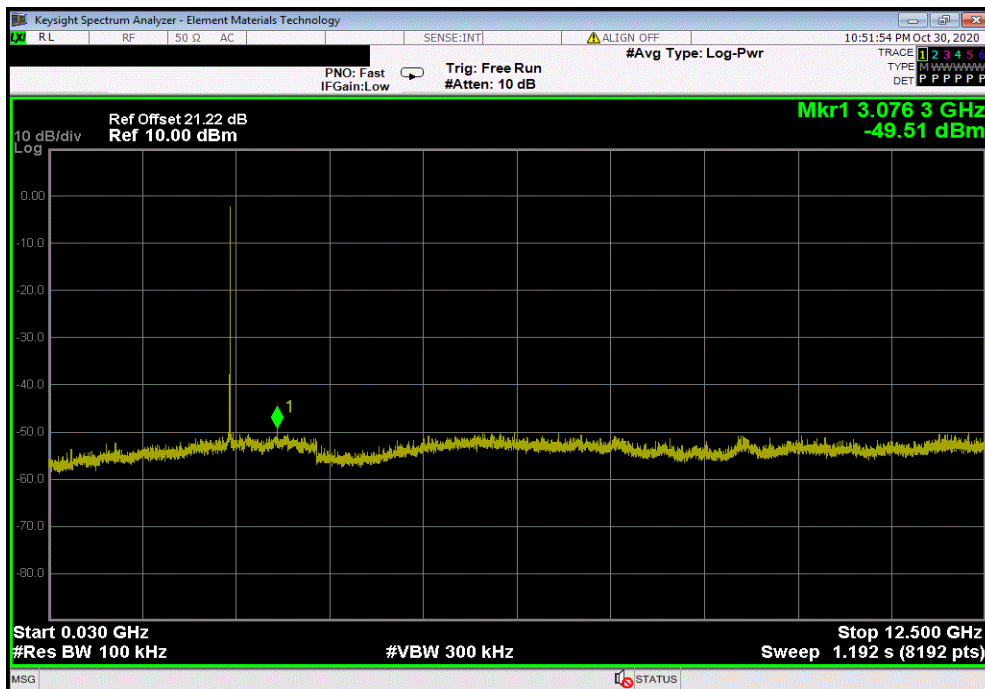


TbTx 2019.08.30.0 XMI 2020.03.25.0

BLE/GFSK 2 Mbps Mid Channel, 2442 MHz						
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result		
Fundamental	2441.94	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	3076.33	-47.43	-20	Pass		

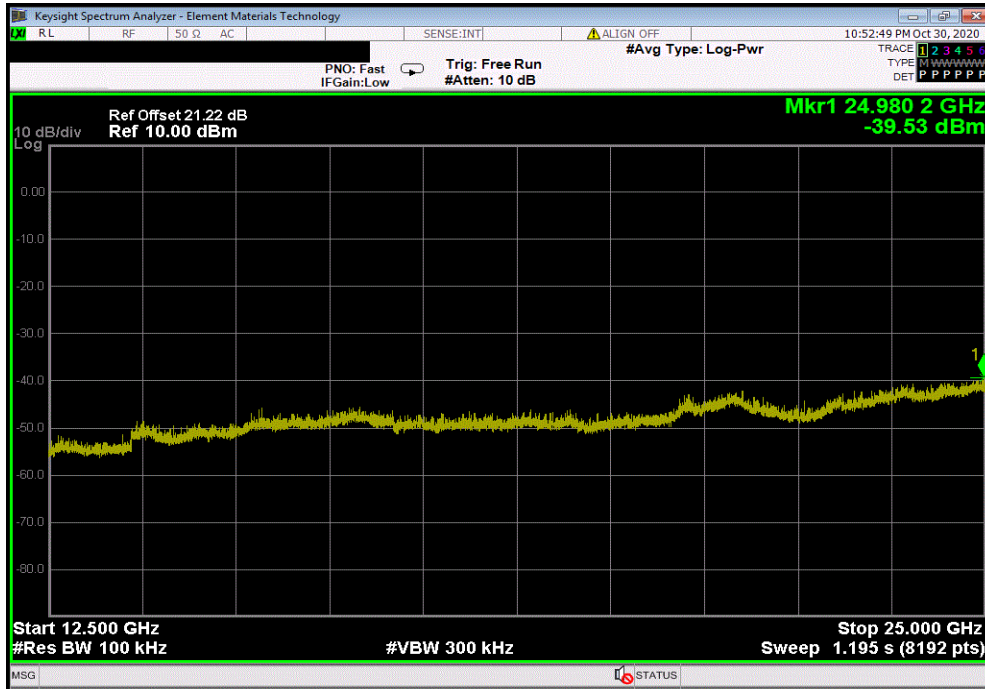


# SPURIOUS CONDUCTED EMISSIONS

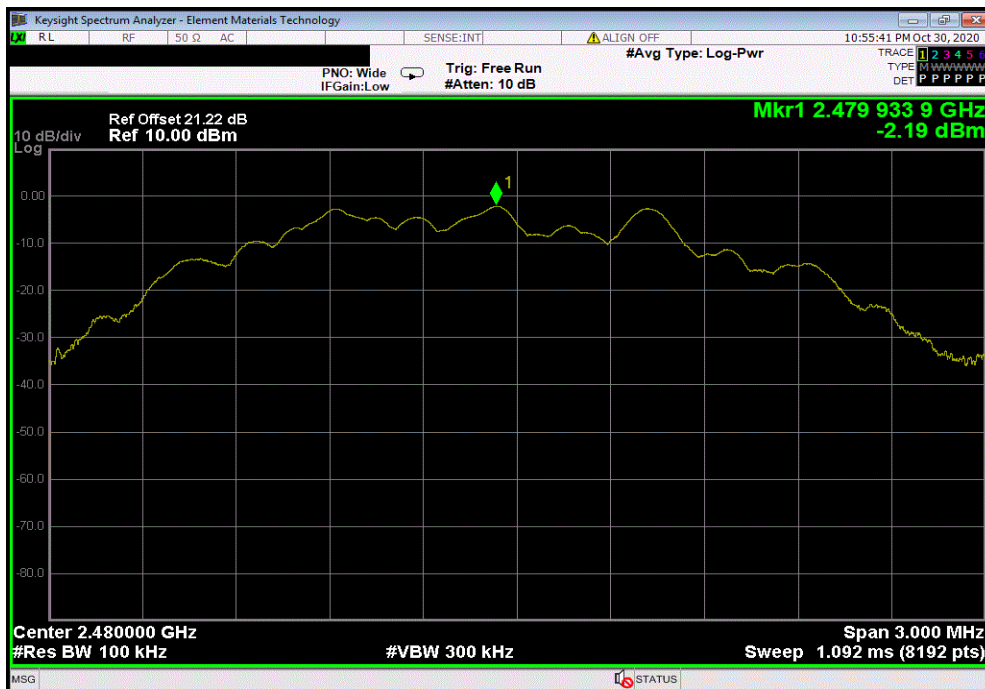


TbTx 2019.08.30.0 XMI 2020.03.25.0

BLE/GFSK 2 Mbps Mid Channel, 2442 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
12.5 GHz - 25 GHz	24980.16	-37.45	-20	Pass	



BLE/GFSK 2 Mbps High Channel, 2480 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
Fundamental	2479.93	N/A	N/A	N/A	

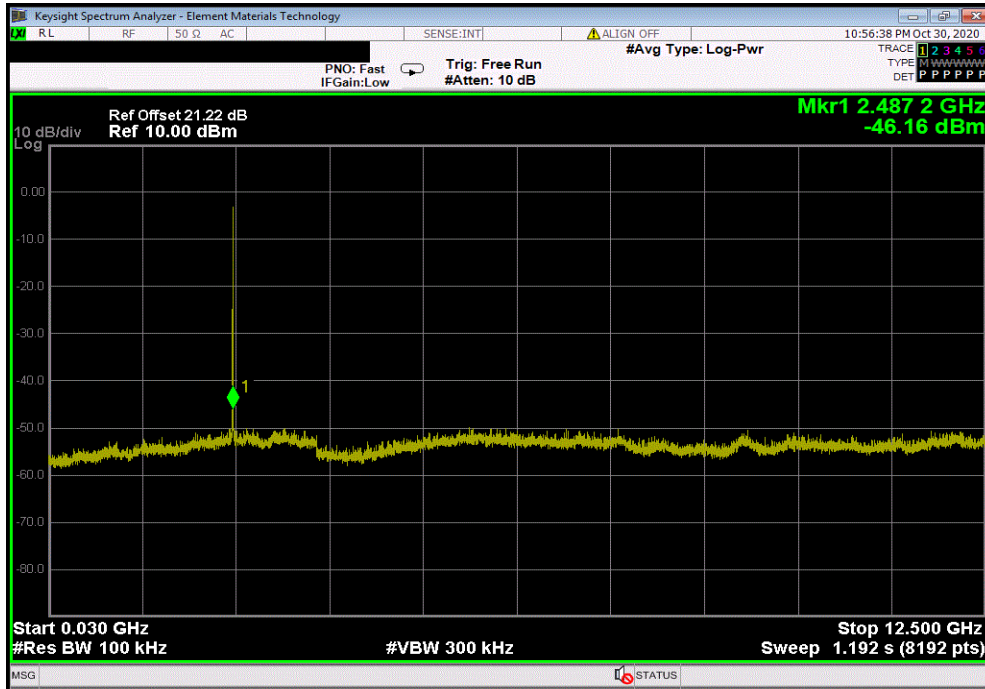


# SPURIOUS CONDUCTED EMISSIONS

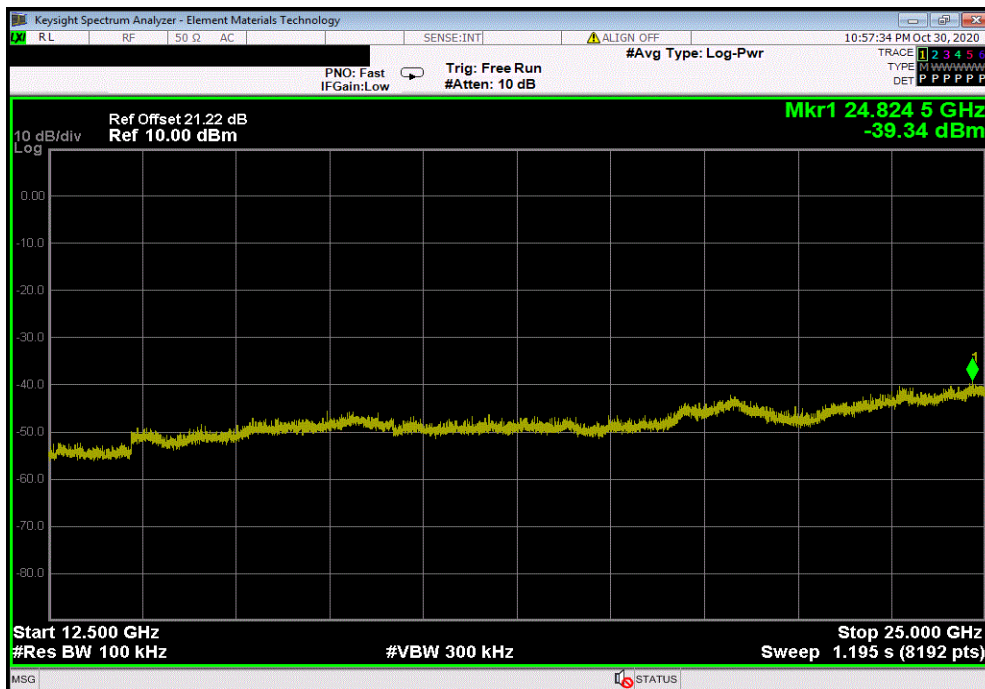


TbTx 2019.08.30.0 XMI 2020.03.25.0

BLE/GFSK 2 Mbps High Channel, 2480 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz	2487.16	-43.97	-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	24824.5	-37.15	-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 BLE, See comments for transmit channel, data rate, and EUT orientation.

Transmitting BLE on Low Ch (2402 MHz) Mid Ch (2442 MHz) and High Ch (2480), 1 Mbps, Low Ch (2402 MHz), 2 Mbps

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

## POWER SETTINGS INVESTIGATED

Battery

## CONFIGURATIONS INVESTIGATED

NOVI0007 - 9

NOVI0007 - 16

NOVI0007 - 18

## 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
Analyzer - Spectrum Analyzer	Keysight	N9010A (EXA)	AFQ	2019-12-21	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVW	2020-01-17	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AIQ	NCR	0 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
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
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	2020-09-14	12 mo
Antenna - Double Ridge	ETS-Lindgren	3115	AJQ	2019-01-16	24 mo

# SPURIOUS RADIATED EMISSIONS

## 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



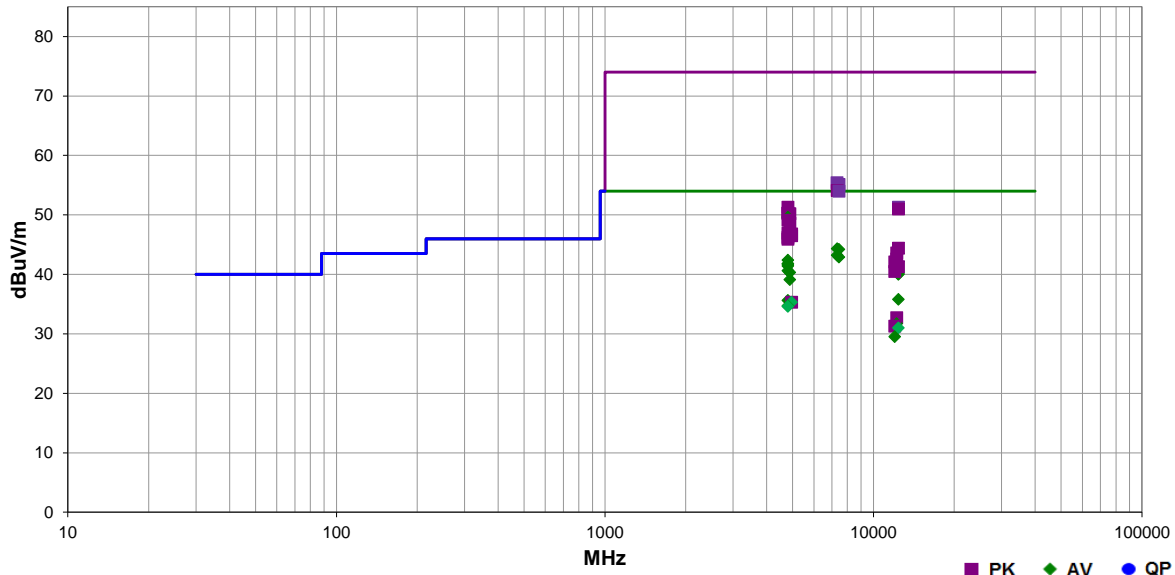
EmiRS 2020.06.24.4 PSA-ESCI 2020.06.24.2

*Chris Patterson*

Work Order:	NOVI0007	Date:	2020-10-30
Project:	None	Temperature:	21.4 °C
Job Site:	MNO9	Humidity:	29.3% RH
Serial Number:	i026-R	Barometric Pres.:	1027 mbar
EUT: Indy1 RIC		Tested by: Chris Patterson	
Configuration:	9		
Customer:	Novidan, Inc.		
Attendees:	Katie Himes		
EUT Power:	Battery		
Operating Mode:	Transmitting BLE on Low Ch (2402 MHz) Mid Ch (2442 MHz) and High Ch (2480), 1 Mbps, Low Ch (2402 MHz), 2 Mbps		
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 #	24	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
7325.092	30.2	14.0	1.3	178.0	3.0	0.1	0.0	Vert	AV	0.0	44.3	54.0	-9.7	EUT Vert, Mid Ch, 1 Mbps
7439.142	29.5	14.6	1.4	0.0	3.0	0.1	0.0	Vert	AV	0.0	44.2	54.0	-9.8	EUT Vert, High Ch, 1 Mbps
7325.333	29.1	14.0	1.1	213.0	3.0	0.1	0.0	Horz	AV	0.0	43.2	54.0	-10.8	EUT On Side, Mid Ch, 1 Mbps
7439.883	28.2	14.6	1.5	31.0	3.0	0.1	0.0	Horz	AV	0.0	42.9	54.0	-11.1	EUT On Side, High Ch, 1 Mbps
4803.467	37.0	5.3	1.2	239.0	3.0	0.1	0.0	Vert	AV	0.0	42.4	54.0	-11.6	EUT Vert, Low Ch, 1 Mbps
4803.492	36.4	5.3	4.0	292.0	3.0	0.1	0.0	Horz	AV	0.0	41.8	54.0	-12.2	EUT On Side, Low Ch, 1 Mbps
4802.942	33.8	5.3	1.1	295.0	3.0	2.6	0.0	Vert	AV	0.0	41.7	54.0	-12.3	EUT Vert, Low Ch, 2 Mbps
4802.825	33.5	5.3	2.5	279.0	3.0	2.6	0.0	Horz	AV	0.0	41.4	54.0	-12.6	EUT On Side, Low Ch, 2 Mbps
4803.508	35.2	5.3	2.4	267.0	3.0	0.1	0.0	Horz	AV	0.0	40.6	54.0	-13.4	EUT Horz, Low Ch, 1 Mbps
4883.450	34.8	5.4	3.7	272.0	3.0	0.1	0.0	Horz	AV	0.0	40.3	54.0	-13.7	EUT On Side, Mid Ch, 1 Mbps
12400.800	25.9	14.1	2.7	137.0	3.0	0.1	0.0	Vert	AV	0.0	40.1	54.0	-13.9	EUT Vert, High Ch, 1 Mbps
12400.630	25.8	14.1	1.5	62.0	3.0	0.1	0.0	Horz	AV	0.0	40.0	54.0	-14.0	EUT On Side, High Ch, 1 Mbps
4883.583	33.6	5.4	3.9	220.0	3.0	0.1	0.0	Vert	AV	0.0	39.1	54.0	-14.9	EUT Vert, Mid Ch, 1 Mbps
12398.360	36.0	-0.3	1.9	296.0	3.0	0.1	0.0	Horz	AV	0.0	35.8	54.0	-18.2	EUT On Side, High Ch, 1 Mbps
4803.533	30.2	5.3	1.5	132.0	3.0	0.1	0.0	Horz	AV	0.0	35.6	54.0	-18.4	EUT Vert, Low Ch, 1 Mbps
4959.417	29.6	5.6	1.5	294.0	3.0	0.1	0.0	Vert	AV	0.0	35.3	54.0	-18.7	EUT Vert, High Ch, 1 Mbps
4959.492	29.6	5.6	1.5	109.0	3.0	0.1	0.0	Horz	AV	0.0	35.3	54.0	-18.7	EUT On Side, High Ch, 1 Mbps
4806.283	29.3	5.3	1.5	309.0	3.0	0.1	0.0	Vert	AV	0.0	34.7	54.0	-19.3	EUT Horz, Low Ch, 1 Mbps
4806.342	29.2	5.3	1.5	245.0	3.0	0.1	0.0	Vert	AV	0.0	34.6	54.0	-19.4	EUT On Side, Low Ch, 1 Mbps
7324.733	41.4	14.0	1.3	178.0	3.0	0.0	0.0	Vert	PK	0.0	55.4	74.0	-18.6	EUT Vert, Mid Ch, 1 Mbps
7439.192	40.5	14.6	1.4	0.0	3.0	0.0	0.0	Vert	PK	0.0	55.1	74.0	-18.9	EUT Vert, High Ch, 1 Mbps
12208.500	32.8	-0.2	3.0	102.0	3.0	0.1	0.0	Horz	AV	0.0	32.7	54.0	-21.3	EUT On Side, Mid Ch, 1 Mbps
7327.467	40.1	14.0	1.1	213.0	3.0	0.0	0.0	Horz	PK	0.0	54.1	74.0	-19.9	EUT Vert, Mid Ch, 1 Mbps
7441.442	39.4	14.6	1.5	31.0	3.0	0.0	0.0	Horz	PK	0.0	54.0	74.0	-20.0	EUT On Side, High Ch, 1 Mbps
12208.480	31.8	-0.2	1.0	105.0	3.0	0.1	0.0	Vert	AV	0.0	31.7	54.0	-22.3	EUT Vert, Mid Ch, 1 Mbps
12008.410	32.9	-1.7	3.2	41.0	3.0	0.1	0.0	Horz	AV	0.0	31.3	54.0	-22.7	EUT On Side, Low Ch, 1 Mbps
12398.380	31.2	-0.3	3.6	285.0	3.0	0.1	0.0	Vert	AV	0.0	31.0	54.0	-23.0	EUT Vert, High Ch, 1 Mbps

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
12008.570	31.1	-1.7	2.0	158.0	3.0	0.1	0.0	Vert	AV	0.0	29.5	54.0	-24.5	EUT Vert, Low Ch, 1 Mbps
4804.400	46.0	5.3	4.0	292.0	3.0	0.0	0.0	Horz	PK	0.0	51.3	74.0	-22.7	EUT On Side, Low Ch, 1 Mbps
12400.180	37.2	14.1	2.7	137.0	3.0	0.0	0.0	Vert	PK	0.0	51.3	74.0	-22.7	EUT Vert, High Ch, 1 Mbps
12400.020	36.9	14.1	1.5	62.0	3.0	0.0	0.0	Horz	PK	0.0	51.0	74.0	-23.0	EUT On Side, High Ch, 1 Mbps
4803.267	45.0	5.3	1.2	239.0	3.0	0.0	0.0	Vert	PK	0.0	50.3	74.0	-23.7	EUT Vert, Low Ch, 1 Mbps
4802.833	45.0	5.3	1.1	295.0	3.0	0.0	0.0	Vert	PK	0.0	50.3	74.0	-23.7	EUT Vert, Low Ch, 2 Mbps
4883.175	44.8	5.4	3.7	272.0	3.0	0.0	0.0	Horz	PK	0.0	50.2	74.0	-23.8	EUT On Side, Mid Ch, 1 Mbps
4802.842	44.3	5.3	2.5	279.0	3.0	0.0	0.0	Horz	PK	0.0	49.6	74.0	-24.4	EUT On Side, Low Ch, 2 Mbps
4803.375	43.8	5.3	2.4	267.0	3.0	0.0	0.0	Horz	PK	0.0	49.1	74.0	-24.9	EUT Horz, Low Ch, 1 Mbps
4883.575	43.2	5.4	3.9	220.0	3.0	0.0	0.0	Vert	PK	0.0	48.6	74.0	-25.4	EUT Vert, Mid Ch, 1 Mbps
4802.850	41.6	5.3	1.5	132.0	3.0	0.0	0.0	Horz	PK	0.0	46.9	74.0	-27.1	EUT Vert, Low Ch, 1 Mbps
4959.358	41.2	5.6	1.5	109.0	3.0	0.0	0.0	Horz	PK	0.0	46.8	74.0	-27.2	EUT On Side, High Ch, 1 Mbps
4959.350	40.9	5.6	1.5	294.0	3.0	0.0	0.0	Vert	PK	0.0	46.5	74.0	-27.5	EUT Vert, High Ch, 1 Mbps
4803.025	40.9	5.3	1.5	309.0	3.0	0.0	0.0	Vert	PK	0.0	46.2	74.0	-27.8	EUT Horz, Low Ch, 1 Mbps
4802.475	40.6	5.3	1.5	245.0	3.0	0.0	0.0	Vert	PK	0.0	45.9	74.0	-28.1	EUT On Side, Low Ch, 1 Mbps
12398.310	44.7	-0.3	1.9	296.0	3.0	0.0	0.0	Horz	PK	0.0	44.4	74.0	-29.6	EUT On Side, High Ch, 1 Mbps
12208.250	43.8	-0.2	3.0	102.0	3.0	0.0	0.0	Horz	PK	0.0	43.6	74.0	-30.4	EUT On Side, Mid Ch, 1 Mbps
12210.780	42.8	-0.2	1.0	105.0	3.0	0.0	0.0	Vert	PK	0.0	42.6	74.0	-31.4	EUT Vert, Mid Ch, 1 Mbps
12008.090	43.8	-1.7	3.2	41.0	3.0	0.0	0.0	Horz	PK	0.0	42.1	74.0	-31.9	EUT On Side, Low Ch, 1 Mbps
12397.950	41.6	-0.3	3.6	285.0	3.0	0.0	0.0	Vert	PK	0.0	41.3	74.0	-32.7	EUT Vert, High Ch, 1 Mbps
12008.620	42.2	-1.7	2.0	158.0	3.0	0.0	0.0	Vert	PK	0.0	40.5	74.0	-33.5	EUT Vert, Low Ch, 1 Mbps

# SPURIOUS RADIATED EMISSIONS

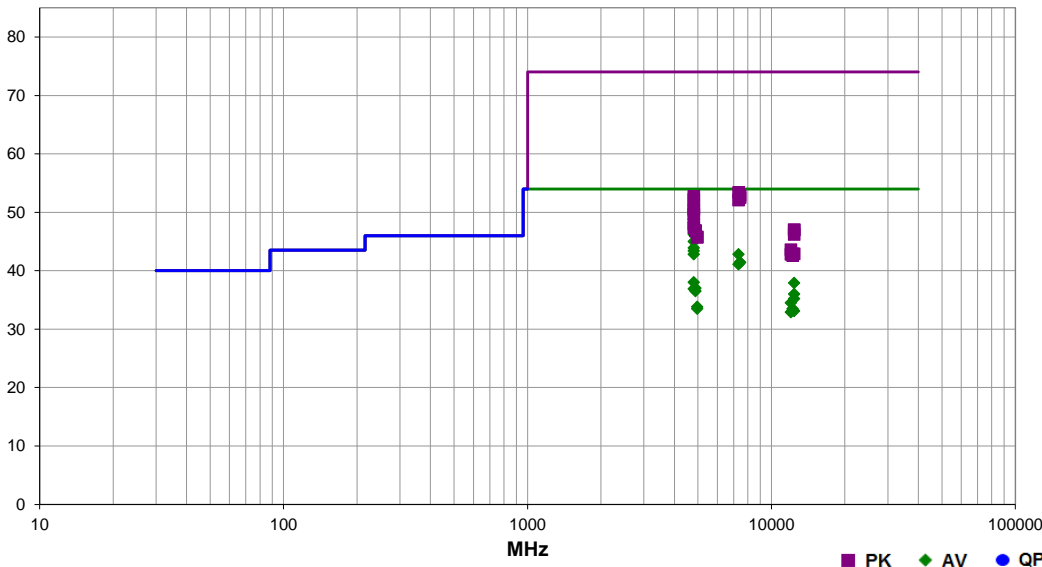


EmiRS 2020.06.24.4 PSA-ESCI 2020.06.24.2

<b>Work Order:</b>	NOVI0007	<b>Date:</b>	2020-11-24		
<b>Project:</b>	None	<b>Temperature:</b>	21.3 °C		
<b>Job Site:</b>	MN05	<b>Humidity:</b>	30.1% RH		
<b>Serial Number:</b>	i029-L	<b>Barometric Pres.:</b>	1016 mbar		<b>Tested by:</b> Dan Haas
<b>EUT:</b>	Indy1 RIC				
<b>Configuration:</b>	16				
<b>Customer:</b>	Novidan, Inc.				
<b>Attendees:</b>	None				
<b>EUT Power:</b>	Battery				
<b>Operating Mode:</b>	Transmitting BLE, See comments for transmit channel, data rate, and EUT orientation.				
<b>Deviations:</b>	None				
<b>Comments:</b>	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.				

<b>Test Specifications</b>	<b>Test Method</b>
FCC 15.247:2020	ANSI C63.10:2013

<b>Run #</b>	33	<b>Test Distance (m)</b>	3	<b>Antenna Height(s)</b>	1 to 4(m)	<b>Results</b>	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
4803.500	43.0	3.1	2.8	119.0	0.1	0.0	Horz	AV	0.0	46.2	54.0	-7.8	Low channel (2402MHz), 1Mbps, EUT on Side
4802.925	39.2	3.1	2.8	119.0	2.6	0.0	Horz	AV	0.0	45.0	54.0	-9.0	Low channel (2402MHz), 2Mbps, EUT on Side
4803.483	40.7	3.1	1.2	106.9	0.1	0.0	Vert	AV	0.0	43.9	54.0	-10.1	Low channel (2402MHz), 1Mbps, EUT Vert
4803.475	40.2	3.1	1.2	123.0	0.1	0.0	Horz	AV	0.0	43.4	54.0	-10.6	Low channel (2402MHz), 1Mbps, EUT Horiz
4803.483	39.6	3.1	1.1	257.9	0.1	0.0	Vert	AV	0.0	42.8	54.0	-11.2	Low channel (2402MHz), 1Mbps, EUT Horiz
7324.992	32.3	10.4	2.9	203.9	0.1	0.0	Horz	AV	0.0	42.8	54.0	-11.2	Mid channel (2442MHz), 1Mbps, EUT on Side
7441.867	30.6	10.7	1.3	294.9	0.1	0.0	Vert	AV	0.0	41.4	54.0	-12.6	High channel (2480MHz), 1Mbps, EUT Vert
7440.600	30.6	10.7	1.9	325.9	0.1	0.0	Horz	AV	0.0	41.4	54.0	-12.6	High channel (2480MHz), 1Mbps, EUT on Side
7325.058	30.6	10.4	1.3	135.9	0.1	0.0	Vert	AV	0.0	41.1	54.0	-12.9	Mid channel (2442MHz), 1Mbps, EUT Vert
4803.567	34.8	3.1	1.2	121.9	0.1	0.0	Horz	AV	0.0	38.0	54.0	-16.0	Low channel (2402MHz), 1Mbps, EUT Vert
12398.420	37.1	0.7	2.4	351.9	0.1	0.0	Horz	AV	0.0	37.9	54.0	-16.1	High channel (2480MHz), 1Mbps, EUT on Side
4883.675	33.9	3.0	1.3	66.0	0.1	0.0	Vert	AV	0.0	37.0	54.0	-17.0	Mid channel (2442MHz), 1Mbps, EUT Vert
4803.558	33.7	3.1	1.0	260.0	0.1	0.0	Vert	AV	0.0	36.9	54.0	-17.1	Low channel (2402MHz), 1Mbps, EUT on Side
4883.475	33.4	3.0	1.5	268.0	0.1	0.0	Horz	AV	0.0	36.5	54.0	-17.5	Mid channel (2442MHz), 1Mbps, EUT on Side
12400.770	30.1	5.8	2.5	180.0	0.1	0.0	Horz	AV	0.0	36.0	54.0	-18.0	High channel (2480MHz), 1Mbps, EUT on Side
12400.760	29.3	5.8	1.3	0.0	0.1	0.0	Vert	AV	0.0	35.2	54.0	-18.8	High channel (2480MHz), 1Mbps, EUT Vert
12008.380	34.9	-0.5	2.7	264.0	0.1	0.0	Horz	AV	0.0	34.5	54.0	-19.5	Low channel (2402MHz), 1Mbps, EUT on Side
4959.692	30.6	3.1	1.3	246.9	0.1	0.0	Vert	AV	0.0	33.8	54.0	-20.2	High channel (2480MHz), 1Mbps, EUT Vert
4959.642	30.3	3.1	1.3	96.9	0.1	0.0	Horz	AV	0.0	33.5	54.0	-20.5	High channel (2480MHz), 1Mbps, EUT on Side
12208.360	33.4	0.0	1.1	260.0	0.1	0.0	Vert	AV	0.0	33.5	54.0	-20.5	Mid channel (2442MHz), 1Mbps, EUT Vert
7326.558	43.0	10.4	2.9	203.9	0.0	0.0	Horz	PK	0.0	53.4	74.0	-20.6	Mid channel (2442MHz), 1Mbps, EUT on Side
12208.420	33.1	0.0	1.3	355.9	0.1	0.0	Horz	AV	0.0	33.2	54.0	-20.8	Mid channel (2442MHz), 1Mbps, EUT on Side
12398.390	32.3	0.7	1.3	358.9	0.1	0.0	Vert	AV	0.0	33.1	54.0	-20.9	High channel (2480MHz), 1Mbps, EUT Vert
7439.725	42.2	10.7	1.3	294.9	0.0	0.0	Vert	PK	0.0	52.9	74.0	-21.1	High channel (2480MHz), 1Mbps, EUT Vert
12008.440	33.3	-0.5	1.1	252.0	0.1	0.0	Vert	AV	0.0	32.9	54.0	-21.1	Low channel (2402MHz), 1Mbps, EUT Vert
4803.717	49.6	3.1	2.8	119.0	0.0	0.0	Horz	PK	0.0	52.7	74.0	-21.3	Low channel (2402MHz), 1Mbps, EUT on Side
7440.067	41.8	10.7	1.9	325.9	0.0	0.0	Horz	PK	0.0	52.5	74.0	-21.5	High channel (2480MHz), 1Mbps, EUT on Side
4802.933	49.1	3.1	2.8	119.0	0.0	0.0	Horz	PK	0.0	52.2	74.0	-21.8	Low channel (2402MHz), 2Mbps, EUT on Side
7326.575	41.7	10.4	1.3	135.9	0.0	0.0	Vert	PK	0.0	52.1	74.0	-21.9	Mid channel (2442MHz), 1Mbps, EUT Vert

4803.492	47.5	3.1	1.2	106.9	0.0	0.0	Vert	PK	0.0	50.6	74.0	-23.4	Low channel (2402MHz), 1Mbps, EUT Vert
4803.958	47.2	3.1	1.2	123.0	0.0	0.0	Horz	PK	0.0	50.3	74.0	-23.7	Low channel (2402MHz), 1Mbps, EUT Horiz
4803.675	46.6	3.1	1.1	257.9	0.0	0.0	Vert	PK	0.0	49.7	74.0	-24.3	Low channel (2402MHz), 1Mbps, EUT Horiz
4804.192	44.9	3.1	1.2	121.9	0.0	0.0	Horz	PK	0.0	48.0	74.0	-26.0	Low channel (2402MHz), 1Mbps, EUT Vert
4803.500	44.3	3.1	1.0	260.0	0.0	0.0	Vert	PK	0.0	47.4	74.0	-26.6	Low channel (2402MHz), 1Mbps, EUT on Side
12400.730	41.2	5.8	1.3	0.0	0.0	0.0	Vert	PK	0.0	47.0	74.0	-27.0	High channel (2480MHz), 1Mbps, EUT Vert
12401.080	41.2	5.8	2.5	180.0	0.0	0.0	Horz	PK	0.0	47.0	74.0	-27.0	High channel (2480MHz), 1Mbps, EUT on Side
4883.833	43.9	3.0	1.3	66.0	0.0	0.0	Vert	PK	0.0	46.9	74.0	-27.1	Mid channel (2442MHz), 1Mbps, EUT Vert
4883.917	43.8	3.0	1.5	268.0	0.0	0.0	Horz	PK	0.0	46.8	74.0	-27.2	Mid channel (2442MHz), 1Mbps, EUT on Side
12398.250	45.5	0.7	2.4	351.9	0.0	0.0	Horz	PK	0.0	46.2	74.0	-27.8	High channel (2480MHz), 1Mbps, EUT on Side
4961.100	42.6	3.2	1.3	96.9	0.0	0.0	Horz	PK	0.0	45.8	74.0	-28.2	High channel (2480MHz), 1Mbps, EUT on Side
4959.817	42.6	3.1	1.3	246.9	0.0	0.0	Vert	PK	0.0	45.7	74.0	-28.3	High channel (2480MHz), 1Mbps, EUT Vert
12009.700	44.1	-0.5	2.7	264.0	0.0	0.0	Horz	PK	0.0	43.6	74.0	-30.4	Low channel (2402MHz), 1Mbps, EUT on Side
12398.590	42.2	0.7	1.3	358.9	0.0	0.0	Vert	PK	0.0	42.9	74.0	-31.1	High channel (2480MHz), 1Mbps, EUT Vert
12208.480	42.9	0.0	1.1	260.0	0.0	0.0	Vert	PK	0.0	42.9	74.0	-31.1	Mid channel (2442MHz), 1Mbps, EUT Vert
12009.720	43.3	-0.5	1.1	252.0	0.0	0.0	Vert	PK	0.0	42.8	74.0	-31.2	Low channel (2402MHz), 1Mbps, EUT Vert
12208.410	42.6	0.0	1.3	355.9	0.0	0.0	Horz	PK	0.0	42.6	74.0	-31.4	Mid channel (2442MHz), 1Mbps, EUT on Side

# SPURIOUS RADIATED EMISSIONS

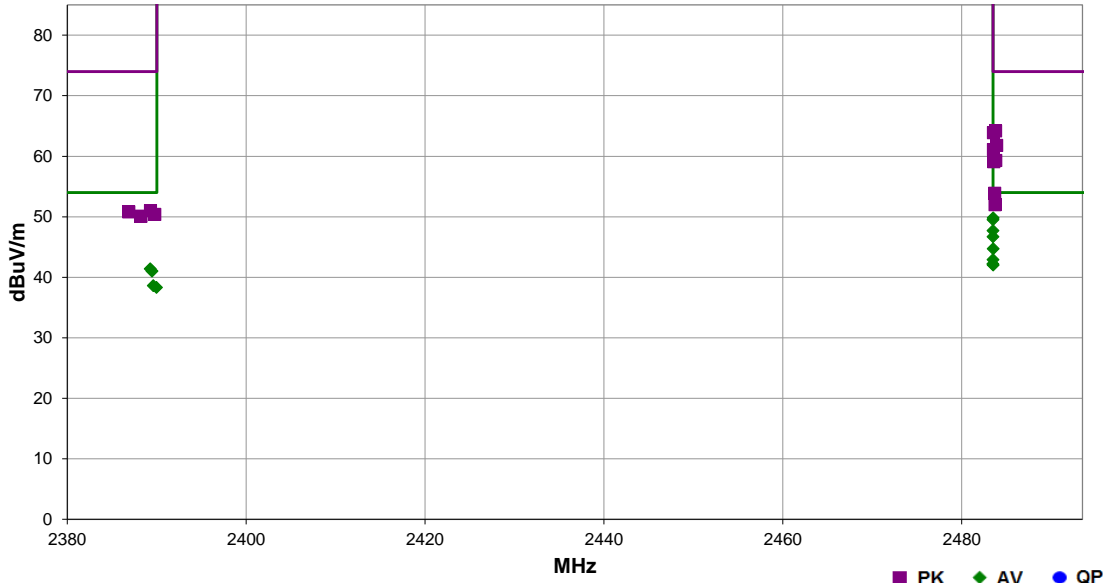


EmiRS 2021.01.08.0 PSA-ESCI 2021.01.22.0

<b>Work Order:</b>	NOVI0007	<b>Date:</b>	2021-03-02	
<b>Project:</b>	None	<b>Temperature:</b>	21.7 °C	
<b>Job Site:</b>	MN09	<b>Humidity:</b>	20% RH	
<b>Serial Number:</b>	i029-L	<b>Barometric Pres.:</b>	1015 mbar	
<b>EUT:</b>	lindy1 RIC			
<b>Configuration:</b>	16			
<b>Customer:</b>	Novidan, Inc.			
<b>Attendees:</b>	Katie Himes			
<b>EUT Power:</b>	Battery			
<b>Operating Mode:</b>	Transmitting Bluetooth Low Energy (BLE) - low channel (2402 MHz) and high channel (2480 MHz); 1 Mbps and 2 Mbps data rates			
<b>Deviations:</b>	None			
<b>Comments:</b>	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.			

<b>Test Specifications</b>	<b>Test Method</b>
FCC 15.247:2021	ANSI C63.10:2013

<b>Run #</b>	36	<b>Test Distance (m)</b>	3	<b>Antenna Height(s)</b>	1 to 4(m)	<b>Results</b>	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	40.4	-3.2	1.0	142.0	2.6	10.0	Horz	AV	0.0	49.8	54.0	-4.2	EUT on side, High ch., 2 Mbps
2483.508	40.1	-3.2	1.0	166.0	2.6	10.0	Vert	AV	0.0	49.5	54.0	-4.5	EUT vert, High ch., 2 Mbps
2483.517	38.3	-3.2	1.5	89.0	2.6	10.0	Horz	AV	0.0	47.7	54.0	-6.3	EUT horz, High ch., 2 Mbps
2483.517	37.3	-3.2	3.8	336.0	2.6	10.0	Vert	AV	0.0	46.7	54.0	-7.3	EUT horz, High ch., 2 Mbps
2483.525	37.8	-3.2	1.05	222.0	0.1	10.0	Horz	AV	0.0	44.7	54.0	-9.3	EUT on side, High ch., 1 Mbps
2483.800	57.4	-3.2	1.0	142.0	0.0	10.0	Horz	PK	0.0	64.2	74.0	-9.8	EUT on side, High ch., 2 Mbps
2483.542	57.1	-3.2	1.0	166.0	0.0	10.0	Vert	PK	0.0	63.9	74.0	-10.1	EUT vert, High ch., 2 Mbps
2483.508	36.0	-3.2	1.5	96.0	0.1	10.0	Vert	AV	0.0	42.9	54.0	-11.1	EUT vert, High ch., 1 Mbps
2483.500	32.8	-3.2	1.28	166.0	2.6	10.0	Vert	AV	0.0	42.2	54.0	-11.8	EUT on side, High ch., 2 Mbps
2483.525	32.6	-3.2	3.73	94.0	2.6	10.0	Horz	AV	0.0	42.0	54.0	-12.0	EUT vert, High ch., 2 Mbps
2483.908	55.0	-3.2	1.05	222.0	0.0	10.0	Horz	PK	0.0	61.8	74.0	-12.2	EUT on side, High ch., 1 Mbps
2389.283	32.3	-3.5	1.5	247.0	2.6	10.0	Vert	AV	0.0	41.4	54.0	-12.6	EUT vert, Low ch., 2 Mbps
2483.542	54.3	-3.2	1.5	89.0	0.0	10.0	Horz	PK	0.0	61.1	74.0	-12.9	EUT horz, High ch., 2 Mbps
2389.483	31.9	-3.5	1.5	221.0	2.6	10.0	Horz	AV	0.0	41.0	54.0	-13.0	EUT on side, Low ch., 2 Mbps
2483.817	52.5	-3.2	3.8	336.0	0.0	10.0	Vert	PK	0.0	59.3	74.0	-14.7	EUT horz, High ch., 2 Mbps
2483.600	52.3	-3.2	1.5	96.0	0.0	10.0	Vert	PK	0.0	59.1	74.0	-14.9	EUT vert, High ch., 1 Mbps
2389.625	32.0	-3.5	1.5	37.0	0.1	10.0	Vert	AV	0.0	38.6	54.0	-15.4	EUT vert, Low ch., 1 Mbps
2389.983	31.7	-3.5	1.5	5.0	0.1	10.0	Horz	AV	0.0	38.3	54.0	-15.7	EUT on side, Low ch., 1 Mbps
2483.700	47.1	-3.2	1.28	166.0	0.0	10.0	Vert	PK	0.0	53.9	74.0	-20.1	EUT on side, High ch., 2 Mbps
2483.725	45.2	-3.2	3.73	94.0	0.0	10.0	Horz	PK	0.0	52.0	74.0	-22.0	EUT vert, High ch., 2 Mbps
2389.292	44.5	-3.5	1.5	37.0	0.0	10.0	Vert	PK	0.0	51.0	74.0	-23.0	EUT vert, Low ch., 1 Mbps
2386.867	44.3	-3.5	1.5	247.0	0.0	10.0	Vert	PK	0.0	50.8	74.0	-23.2	EUT vert, Low ch., 2 Mbps
2389.783	43.9	-3.5	1.5	5.0	0.0	10.0	Horz	PK	0.0	50.4	74.0	-23.6	EUT on side, Low ch., 1 Mbps
2388.242	43.6	-3.5	1.5	221.0	0.0	10.0	Horz	PK	0.0	50.1	74.0	-23.9	EUT on side, Low ch., 2 Mbps

# SPURIOUS RADIATED EMISSIONS

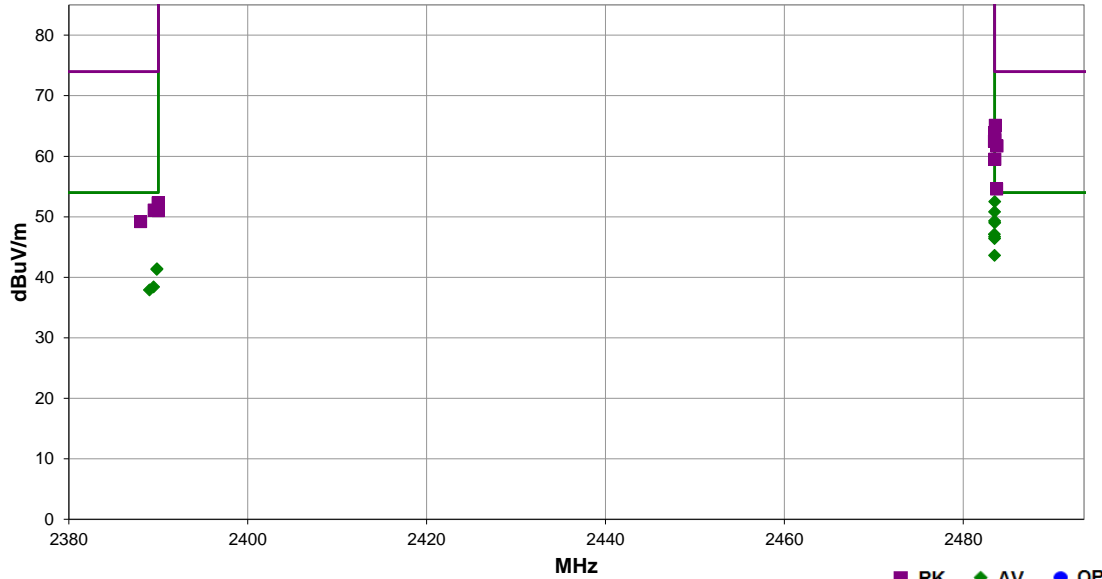


EmiRS 2021.01.08.0 PSA-ESCI 2021.01.22.0

<b>Work Order:</b>	NOVI0007	<b>Date:</b>	2021-03-02	
<b>Project:</b>	None	<b>Temperature:</b>	21.7 °C	
<b>Job Site:</b>	MN09	<b>Humidity:</b>	20% RH	
<b>Serial Number:</b>	i028-R	<b>Barometric Pres.:</b>	1015 mbar	
<b>EUT:</b>	lindy1 RIC			
<b>Configuration:</b>	18			
<b>Customer:</b>	Novidan, Inc.			
<b>Attendees:</b>	Katie Himes			
<b>EUT Power:</b>	Battery			
<b>Operating Mode:</b>	Transmitting Bluetooth Low Energy (BLE) - low channel (2402 MHz) and high channel (2480 MHz), 1 Mbps and 2 Mbps data rates			
<b>Deviations:</b>	None			
<b>Comments:</b>	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.			

<b>Test Specifications</b>	FCC 15.247:2021	<b>Test Method</b>	ANSI C63.10:2013
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<b>Run #</b>	39	<b>Test Distance (m)</b>	3	<b>Antenna Height(s)</b>	1 to 4(m)	<b>Results</b>	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	43.1	-3.2	1.5	223.0	2.6	10.0	Vert	AV	0.0	52.5	54.0	-1.5	EUT vert, High ch., 2 Mbps
2483.508	41.4	-3.2	2.7	144.0	2.6	10.0	Horz	AV	0.0	50.8	54.0	-3.2	EUT horz, High ch., 2 Mbps
2483.517	39.9	-3.2	1.5	31.0	2.6	10.0	Horz	AV	0.0	49.3	54.0	-4.7	EUT on side, High ch., 2 Mbps
2483.533	39.6	-3.2	1.0	109.0	2.6	10.0	Vert	AV	0.0	49.0	54.0	-5.0	EUT horz, High ch., 2 Mbps
2483.500	40.2	-3.2	1.4	157.0	0.1	10.0	Vert	AV	0.0	47.1	54.0	-6.9	EUT vert, High ch., 1 Mbps
2483.508	37.3	-3.2	2.7	206.0	2.6	10.0	Horz	AV	0.0	46.7	54.0	-7.3	EUT vert, High ch., 2 Mbps
2483.508	39.5	-3.2	1.5	109.0	0.1	10.0	Horz	AV	0.0	46.4	54.0	-7.6	EUT horz, High ch., 1 Mbps
2483.592	58.3	-3.2	1.5	223.0	0.0	10.0	Vert	PK	0.0	65.1	74.0	-8.9	EUT vert, High ch., 2 Mbps
2483.517	57.1	-3.2	2.7	144.0	0.0	10.0	Horz	PK	0.0	63.9	74.0	-10.1	EUT horz, High ch., 2 Mbps
2483.517	34.2	-3.2	1.5	14.0	2.6	10.0	Vert	AV	0.0	43.6	54.0	-10.4	EUT on side, High ch., 2 Mbps
2483.508	56.8	-3.2	1.4	157.0	0.0	10.0	Vert	PK	0.0	63.6	74.0	-10.4	EUT on side, High ch., 1 Mbps
2483.533	55.9	-3.2	1.5	109.0	0.0	10.0	Horz	PK	0.0	62.7	74.0	-11.3	EUT horz, High ch., 1 Mbps
2483.500	55.7	-3.2	1.0	109.0	0.0	10.0	Vert	PK	0.0	62.5	74.0	-11.5	EUT horz, High ch., 2 Mbps
2483.775	54.9	-3.2	1.5	31.0	0.0	10.0	Horz	PK	0.0	61.7	74.0	-12.3	EUT on side, High ch., 2 Mbps
2389.867	32.3	-3.5	3.2	129.0	2.6	10.0	Horz	AV	0.0	41.4	54.0	-12.6	EUT horz, Low ch., 2 Mbps
2389.833	32.2	-3.5	3.6	40.0	2.6	10.0	Vert	AV	0.0	41.3	54.0	-12.7	EUT vert, Low ch., 2 Mbps
2483.525	52.7	-3.2	2.7	206.0	0.0	10.0	Horz	PK	0.0	59.5	74.0	-14.5	EUT vert, High ch., 2 Mbps
2389.475	31.8	-3.5	1.5	285.0	0.1	10.0	Vert	AV	0.0	38.4	54.0	-15.6	EUT horz, Low ch., 1 Mbps
2389.017	31.3	-3.5	1.5	74.0	0.1	10.0	Horz	AV	0.0	37.9	54.0	-16.1	EUT horz, Low ch., 1 Mbps
2483.725	47.8	-3.2	1.5	14.0	0.0	10.0	Vert	PK	0.0	54.6	74.0	-19.4	EUT on side, High ch., 2 Mbps
2389.975	45.8	-3.5	1.5	285.0	0.0	10.0	Vert	PK	0.0	52.3	74.0	-21.7	EUT vert, Low ch., 1 Mbps
2389.550	44.6	-3.5	3.2	129.0	0.0	10.0	Horz	PK	0.0	51.1	74.0	-22.9	EUT horz, Low ch., 2 Mbps
2390.000	44.5	-3.5	3.6	40.0	0.0	10.0	Vert	PK	0.0	51.0	74.0	-23.0	EUT vert, Low ch., 2 Mbps
2388.017	42.7	-3.5	1.5	74.0	0.0	10.0	Horz	PK	0.0	49.2	74.0	-24.8	EUT horz, Low ch., 1 Mbps