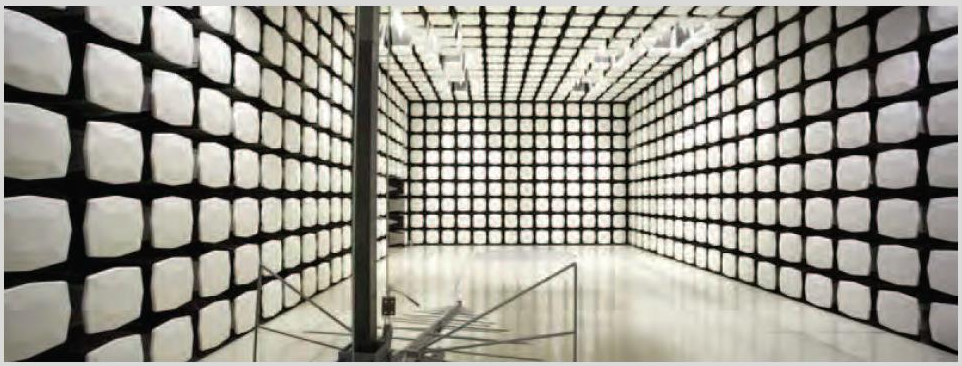
Novidan, Inc.

Indy2 Rechargeable RIC (Left Ear)

FCC 15.247:2022

Bluetooth Low Energy Radio

Report: NOVI0019.1 Rev. 2, Issue Date: October 7, 2022



ACCREDITED
CERT #3310.05

CERTIFICATE OF TEST

Last Date of Test: December 29, 2021
Novidan, Inc.
EUT: Indy2 Rechargeable RIC

Radio Equipment Testing

Standards

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

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	No	N/A	Not required for a battery powered EUT. Radio disabled during recharging
6.5, 6.6, 11.12.1, 11.13.2	Spurious Radiated Emissions	Yes	Pass	
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	

Deviations From Test Standards

None

Approved By:

James E Morris

James Morris, Operations Manager

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

REVISION HISTORY

Revision Number	Description	Date (yyyy-mm-dd)	Page Number
01	Revised report due to a formatting issue to reflect Spurious Radiated Emissions data	2022-07-19	14-21
02	Removed photos from spurious radiated	2022-10-07	19-21

ACCREDITATIONS AND AUTHORIZATIONS

United States

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

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

Canada

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

European Union

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

United Kingdom

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

Australia/New Zealand

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

Korea

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

Japan

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

Taiwan

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

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

Singapore

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

Israel

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

Hong Kong

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

Vietnam

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

SCOPE

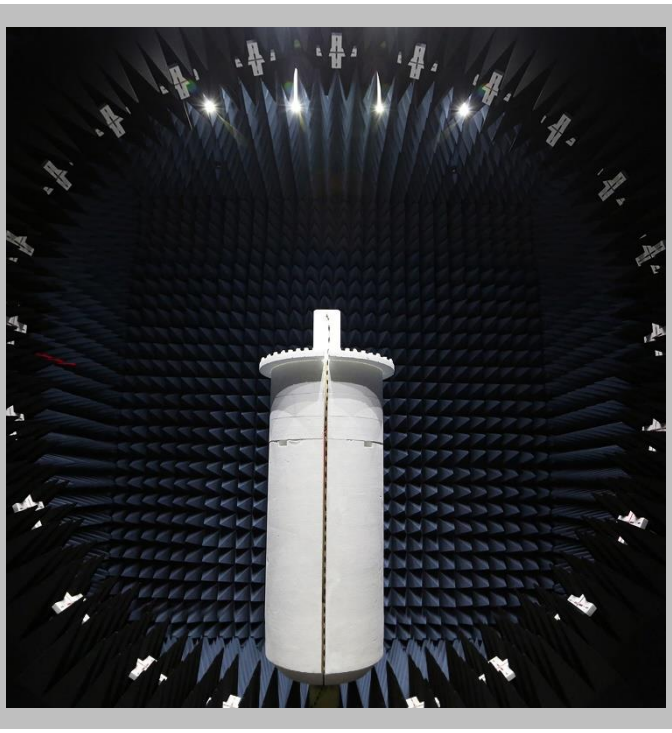
For details on the Scopes of our Accreditations, please visit:

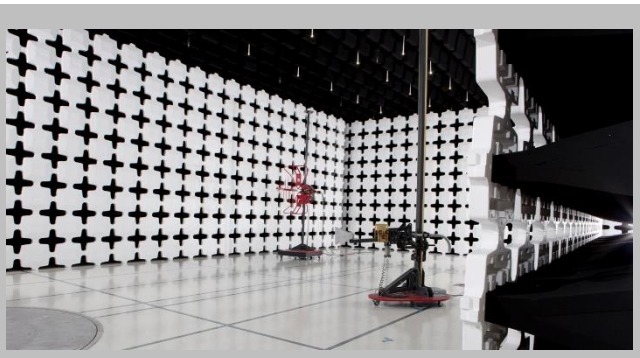
California Minnesota Oregon Texas Washington

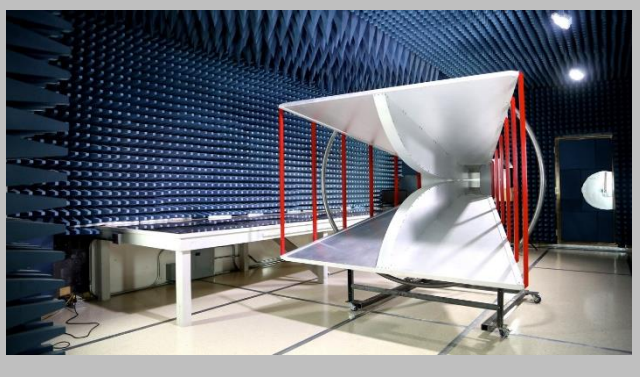
FACILITIES

element
2020.12.15

California	Minnesota	Oregon	Texas	Washington
Labs OC01-17 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs MN01-11 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Labs EV01-12 6775 NE Evergreen Pkwy #400 Hillsboro, OR 97124 (503) 844-4066	Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Labs NC01-05 19201 120th Ave NE Bothell, WA 98011 (425)984-6600
A2LA				
Lab Code: 3310.04	Lab Code: 3310.05	Lab Code: 3310.02	Lab Code: 3310.03	Lab Code: 3310.06
Innovation, Science and Economic Development Canada				
2834B-1, 2834B-3	2834E-1, 2834E-3	2834D-1	2834G-1	2834F-1
BSMI				
SL2-IN-E-1154R	SL2-IN-E-1152R	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI				
A-0029	A-0109	A-0108	A-0201	A-0110
Recognized Phase I CAB for ISED, ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA				
US0158	US0175	US0017	US0191	US0157







MEASUREMENT UNCERTAINTY

element
TMU.2015.07.10

Measurement Uncertainty

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

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

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

Test	+ MU	- MU
Frequency Accuracy	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	1.2 dB	-1.2 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.2 dB	-5.2 dB
AC Powerline Conducted Emissions (dB)	3.2 dB	-3.2 dB

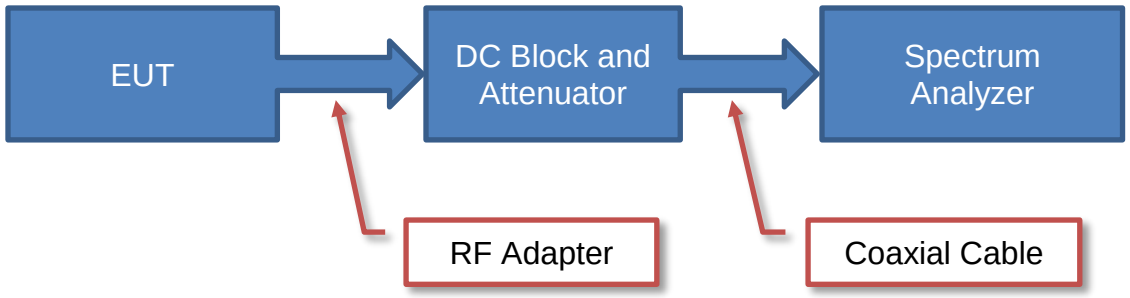
TEST SETUP BLOCK DIAGRAMS

Measurement Bandwidths

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

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

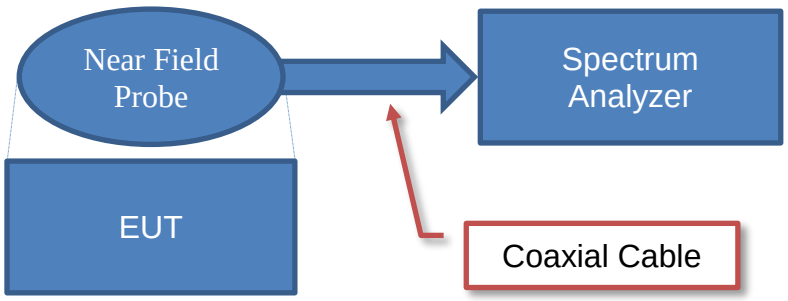
Antenna Port Conducted Measurements



Sample Calculation (logarithmic units)

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

Near Field Test Fixture Measurements

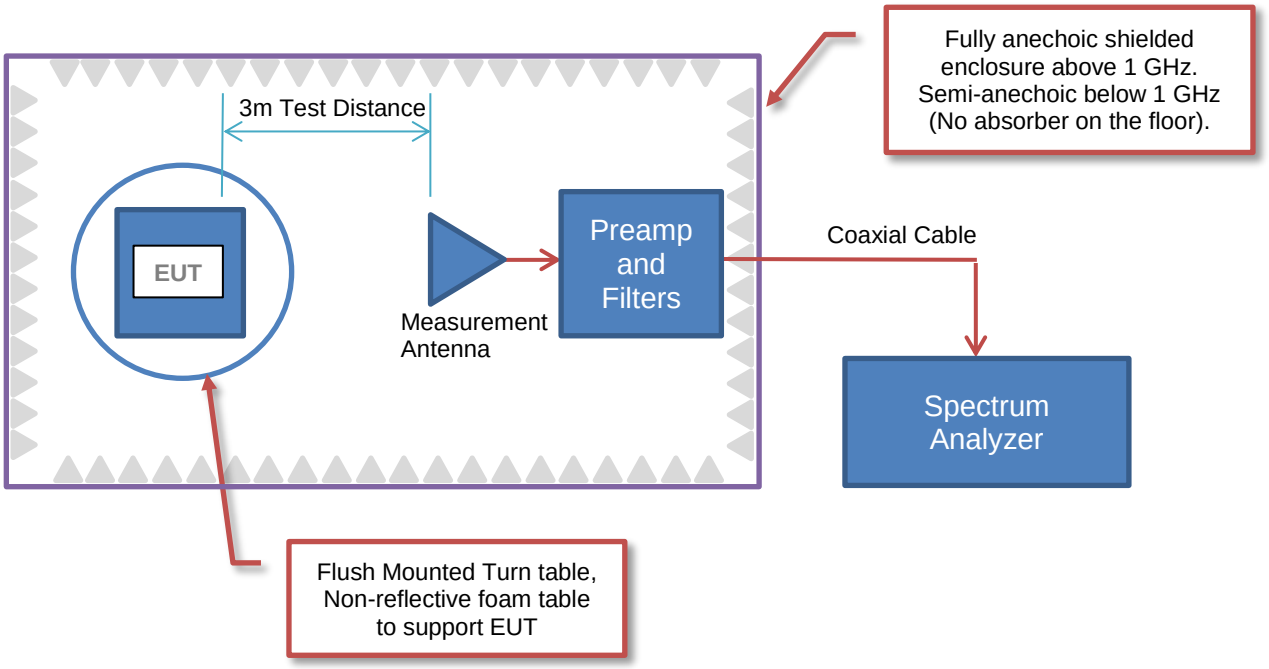


Sample Calculation (logarithmic units)

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

TEST SETUP BLOCK DIAGRAMS

Emissions Measurements



Sample Calculation (logarithmic units)

Radiated Emissions:

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

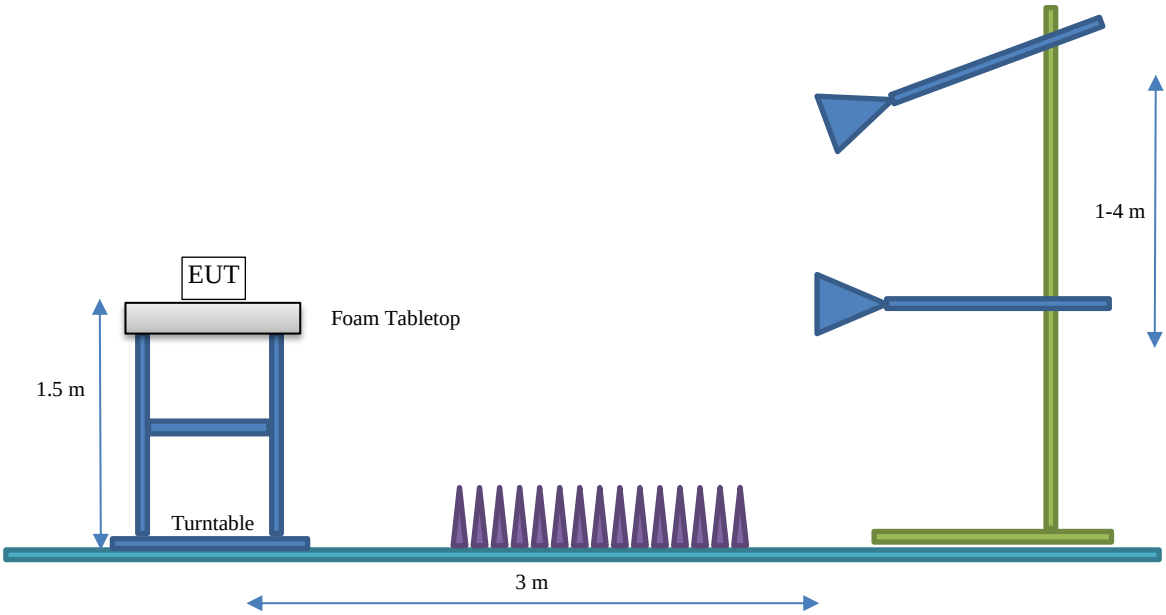
Conducted Emissions:

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

TEST SETUP BLOCK DIAGRAMS

Bore Sighting (>1GHz)

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



PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Novidan, Inc.
Address:	672 Mendelssohn Avenue North
City, State, Zip:	Golden Valley, MN 55427
Test Requested By:	Katie Himes
EUT:	Indy2 Rechargeable RIC (Left Ear)
First Date of Test:	December 29, 2021
Last Date of Test:	December 30, 2021
Receipt Date of Samples:	December 29, 2021
Equipment Design Stage:	Prototype
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
Rechargeable Hearing Aid

Testing Objective:
To demonstrate compliance of the Bluetooth Low Energy Radio to FCC 15.247 requirements.

POWER SETTINGS AND ANTENNAS

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

ANTENNA GAIN (dBi)

Type	Provided by:	Frequency Range (MHz)	Gain (dBi)
Loop	Novidan, Inc.	2402-2480	-4.27

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

SETTINGS FOR ALL TESTS IN THIS REPORT

Modulation Types / Data Rates	Type	Channel	Frequency (MHz)	Power Setting
BLE GFSK 1 Mbps, 2 Mbps	DTS	0 or 37	2402	0 dBm
		20 or 18	2442	
		39	2480	

CONFIGURATIONS

Configuration NOVI0019- 11

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Hearing Aid	Novidan, Inc.	BMD0014-L	ii001

Configuration NOVI0019- 14

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Hearing Aid (SRE)	Novidan, Inc.	Indy2 Rechargeable RIC	INDY2Z1DV20008AE - Left

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2021-12-29	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	2021-12-29	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	2021-12-29	Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT was taken home by the client before the next scheduled test.
4	2021-12-29	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	2021-12-29	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	2021-12-29	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	2021-12-29	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	2021-12-30	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

SPURIOUS RADIATED EMISSIONS

element
WTD.2021.09.21.0
EmiR5 2021.09.09.0
PSA-ESCI 2021.12.10.0

TEST DESCRIPTION

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

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

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

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

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

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

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

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

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	2021-05-21	2022-05-21
Antenna - Biconilog	Ametek	CBL 6141B	AYS	2021-03-09	2023-03-09
Cable	ESM Cable Corp.	Bilog Cables	MNH	2021-10-13	2022-10-13
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AVO	2021-10-13	2022-10-13
Antenna - Standard Gain	ETS Lindgren	3160-09	AHG	NCR	NCR
Amplifier - Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	2021-09-09	2022-09-09
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNP	2021-09-09	2022-09-09
Antenna - Double Ridge	ETS Lindgren	3115	AJQ	2021-01-25	2023-01-25
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	2021-01-15	2022-01-15
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVT	2021-01-15	2022-01-15
Antenna - Standard Gain	ETS Lindgren	3160-07	AXP	NCR	NCR
Cable	ESM Cable Corp.	Standard Gain Horn Cables	MNJ	2021-03-07	2022-03-07
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVV	2021-01-15	2022-01-15
Antenna - Standard Gain	ETS Lindgren	3160-08	AIQ	NCR	NCR
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVW	2021-01-15	2022-01-15
Filter - High Pass	Micro-Tronics	HPM50108	LFM	2021-09-09	2022-09-09
Attenuator	Fairview Microwave	SA18E-10	TYA	2021-09-09	2022-09-09
Filter - Low Pass	Micro-Tronics	LPM50004	LFK	2021-09-09	2022-09-09

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	5.2 dB	-5.2 dB

SPURIOUS RADIATED EMISSIONS

element
WTD.2021.09.21.0
EmiR5 2021.09.09.0
PSA-ESCI 2021.12.10.0

FREQUENCY RANGE INVESTIGATED

30 MHz TO 26500 MHz

POWER INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

NOVI0019-14

MODES INVESTIGATED

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

SPURIOUS RADIATED EMISSIONS

element
WTD.2021.09.21.0
EmiR5 2021.09.09.0
PSA-ESCI 2021.12.10.0

EUT:	Indy2 Rechargeable RIC	Work Order:	NOVI0019
Serial Number:	INDY2Z1DV20008AE - Left	Date:	2021-12-30
Customer:	Novidan, Inc.	Temperature:	23.1°C
Attendees:	Katie Himes	Relative Humidity:	18%
Customer Project:	None	Bar. Pressure (PMSL):	1011 mb
Tested By:	Christopher Heintzelman	Job Site:	MN05
Power:	Battery	Configuration:	NOVI0019-14

TEST SPECIFICATIONS

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

TEST PARAMETERS

Run #:	35	Test Distance (m):	3	Ant. Height(s) (m):	1 to 4(m)

COMMENTS

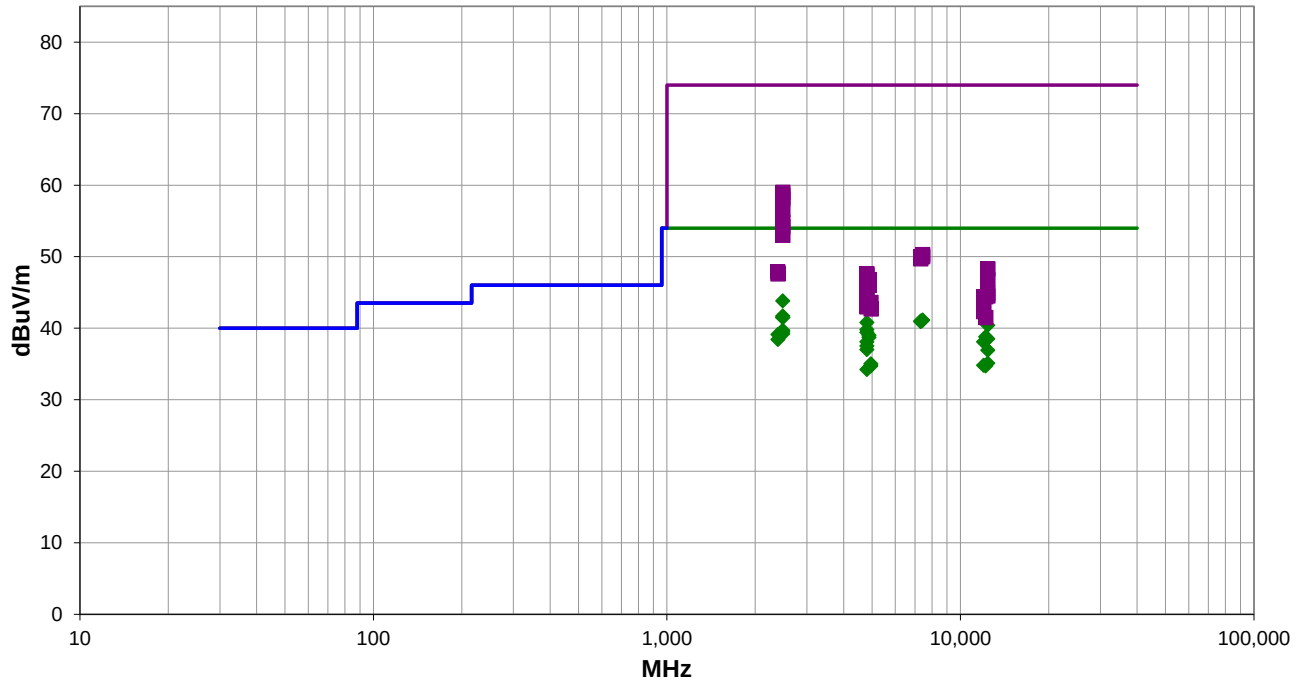
Left Ear unit. Test mode is 65% for 1 Mbps and 57% for 2 Mbps. An upward duty cycle correction factor (DCCF) was applied using DCCF=10*log(1/duty cycle) giving 1.8dB correction for 1 Mbps and 2.4dB correction for 2 Mbps.

EUT OPERATING MODES

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

DEVIATIONS FROM TEST STANDARD

None



Run #: 35 ■ PK ◆ AV ● QP

SPURIOUS RADIATED EMISSIONS

element
WTD.2021.09.21.0
EmiR5 2021.09.09.0
PSA-ESCI 2021.12.10.0

RESULTS - Run #35

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2483.533	36.2	-4.8	1.2	180.0	2.4	10.0	Horz	AV	0.0	43.8	54.0	-10.2	EUT On Side, High Ch, 2 Mbps
2483.508	34.7	-4.8	1.0	88.0	1.8	10.0	Horz	AV	0.0	41.7	54.0	-12.3	EUT On Side, High Ch, 1 Mbps
2483.500	34.5	-4.8	1.0	37.9	1.8	10.0	Horz	AV	0.0	41.5	54.0	-12.5	EUT Vert, High Ch, 1 Mbps
2483.508	34.5	-4.8	1.2	139.9	1.8	10.0	Vert	AV	0.0	41.5	54.0	-12.5	EUT Horz, High Ch, 1 Mbps
7438.958	30.1	9.2	2.9	127.0	1.8	0.0	Vert	AV	0.0	41.1	54.0	-12.9	EUT Horz, High Ch, 1 Mbps
7441.067	30.1	9.2	1.5	221.9	1.8	0.0	Horz	AV	0.0	41.1	54.0	-12.9	EUT On Side, High Ch, 1 Mbps
7324.900	30.0	9.2	2.3	55.9	1.8	0.0	Horz	AV	0.0	41.0	54.0	-13.0	EUT On Side, Mid Ch, 1 Mbps
7323.633	29.9	9.2	1.5	127.9	1.8	0.0	Vert	AV	0.0	40.9	54.0	-13.1	EUT Horz, Mid Ch, 1 Mbps
4803.583	36.7	2.3	1.1	299.0	1.8	0.0	Vert	AV	0.0	40.8	54.0	-13.2	EUT Horz, Low Ch, 1 Mbps
12398.390	37.6	1.0	2.6	16.0	1.8	0.0	Horz	AV	0.0	40.4	54.0	-13.6	EUT On Side, High Ch, 1 Mbps
4803.683	35.7	2.3	3.0	240.9	1.8	0.0	Horz	AV	0.0	39.8	54.0	-14.2	EUT On Side. Low Ch, 1 Mbps
2483.533	32.7	-4.8	3.0	135.0	1.8	10.0	Vert	AV	0.0	39.7	54.0	-14.3	EUT Vert, High Ch, 1 Mbps
2483.525	32.5	-4.8	2.9	186.9	1.8	10.0	Vert	AV	0.0	39.5	54.0	-14.5	EUT On Side, High Ch, 1 Mbps
4803.592	35.3	2.3	3.1	265.9	1.8	0.0	Horz	AV	0.0	39.4	54.0	-14.6	EUT Vert, Low Ch, 1 Mbps
2483.508	32.2	-4.8	1.3	225.9	1.8	10.0	Horz	AV	0.0	39.2	54.0	-14.8	EUT Horz, High Ch, 1 Mbps
2389.933	31.3	-4.6	1.5	282.0	2.4	10.0	Horz	AV	0.0	39.1	54.0	-14.9	EUT On Side, Low Ch, 2 Mbps
4883.592	34.7	2.5	1.5	265.9	1.8	0.0	Horz	AV	0.0	39.0	54.0	-15.0	EUT On Side, Mid Ch, 1 Mbps
2483.600	53.8	-4.8	1.0	88.0		10.0	Horz	PK	0.0	59.0	74.0	-15.0	EUT On Side, High Ch, 1 Mbps
12208.420	36.9	0.1	1.8	294.9	1.8	0.0	Horz	AV	0.0	38.8	54.0	-15.2	EUT On Side, Mid Ch, 1 Mbps
4883.508	34.4	2.5	1.0	289.9	1.8	0.0	Vert	AV	0.0	38.7	54.0	-15.3	EUT Horz, Mid Ch, 1 Mbps
2483.533	53.4	-4.8	1.0	37.9		10.0	Horz	PK	0.0	58.6	74.0	-15.4	EUT Vert, High Ch, 1 Mbps
12400.830	30.7	6.0	2.8	199.9	1.8	0.0	Horz	AV	0.0	38.5	54.0	-15.5	EUT On Side, High Ch, 1 Mbps
2389.983	31.2	-4.6	2.2	286.9	1.8	10.0	Horz	AV	0.0	38.4	54.0	-15.6	EUT On Side, Low Ch, 1 Mbps
4803.583	34.0	2.3	1.1	322.9	1.8	0.0	Vert	AV	0.0	38.1	54.0	-15.9	EUT Vert, Low Ch, 1 Mbps
12008.470	36.4	-0.1	1.0	279.0	1.8	0.0	Horz	AV	0.0	38.1	54.0	-15.9	EUT On Side, Low Ch, 1 Mbps
2483.533	52.9	-4.8	1.2	139.9		10.0	Vert	PK	0.0	58.1	74.0	-15.9	EUT Horz, High Ch, 1 Mbps
4803.608	33.4	2.3	1.0	321.0	1.8	0.0	Vert	AV	0.0	37.5	54.0	-16.5	EUT On Side. Low Ch, 1 Mbps
4804.833	32.2	2.4	1.5	228.0	2.4	0.0	Vert	AV	0.0	37.0	54.0	-17.0	EUT Horz, Low Ch, 2 Mbps
12398.450	34.1	1.0	1.1	130.0	1.8	0.0	Vert	AV	0.0	36.9	54.0	-17.1	EUT Horz, High Ch, 1 Mbps
2483.708	51.4	-4.8	1.2	180.0		10.0	Horz	PK	0.0	56.6	74.0	-17.4	EUT On Side, High Ch, 2 Mbps
12400.060	27.3	6.0	1.5	27.9	1.8	0.0	Vert	AV	0.0	35.1	54.0	-18.9	EUT Horz, High Ch, 1 Mbps
4959.500	30.6	2.6	3.1	66.0	1.8	0.0	Vert	AV	0.0	35.0	54.0	-19.0	EUT Horz, High Ch, 1 Mbps
12008.460	33.1	-0.1	1.8	307.0	1.8	0.0	Vert	AV	0.0	34.8	54.0	-19.2	EUT Horz, Low Ch, 1 Mbps
2483.525	49.6	-4.8	3.0	135.0		10.0	Vert	PK	0.0	54.8	74.0	-19.2	EUT Vert, High Ch, 1 Mbps
12208.420	32.8	0.1	3.8	246.9	1.8	0.0	Vert	AV	0.0	34.7	54.0	-19.3	EUT Horz, Mid Ch, 1 Mbps
4959.675	30.3	2.6	1.6	99.9	1.8	0.0	Horz	AV	0.0	34.7	54.0	-19.3	EUT On Side, High Ch, 1 Mbps
4803.467	30.1	2.3	1.5	347.9	1.8	0.0	Horz	AV	0.0	34.2	54.0	-19.8	EUT Horz, Low Ch, 1 Mbps
2483.583	49.0	-4.8	1.3	225.9		10.0	Horz	PK	0.0	54.2	74.0	-19.8	EUT Horz, High Ch, 1 Mbps
2483.525	47.8	-4.8	2.9	186.9		10.0	Vert	PK	0.0	53.0	74.0	-21.0	EUT On Side, High Ch, 1 Mbps
7438.250	41.1	9.2	1.5	221.9		0.0	Horz	PK	0.0	50.3	74.0	-23.7	EUT On Side, High Ch, 1 Mbps
7323.942	40.8	9.2	1.5	127.9		0.0	Vert	PK	0.0	50.0	74.0	-24.0	EUT Horz, Mid Ch, 1 Mbps
7438.858	40.8	9.2	2.9	127.0		0.0	Vert	PK	0.0	50.0	74.0	-24.0	EUT Horz, High Ch, 1 Mbps

SPURIOUS RADIATED EMISSIONS

element
WTD.2021.09.21.0
EmiR5 2021.09.09.0
PSA-ESCI 2021.12.10.0

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
7324.250	40.5	9.2	2.3	55.9		0.0	Horz	PK	0.0	49.7	74.0	-24.3	EUT On Side, Mid Ch, 1 Mbps
12400.880	42.3	6.0	2.8	199.9		0.0	Horz	PK	0.0	48.3	74.0	-25.7	EUT On Side, High Ch, 1 Mbps
2385.150	42.5	-4.6	2.2	286.9		10.0	Horz	PK	0.0	47.9	74.0	-26.1	EUT On Side, Low Ch, 1 Mbps
4803.417	45.3	2.3	3.1	265.9		0.0	Horz	PK	0.0	47.6	74.0	-26.4	EUT Vert, Low Ch, 1 Mbps
2388.583	42.2	-4.6	1.5	282.0		10.0	Horz	PK	0.0	47.6	74.0	-26.4	EUT On Side, Low Ch, 2 Mbps
4803.358	45.1	2.3	1.1	299.0		0.0	Vert	PK	0.0	47.4	74.0	-26.6	EUT Horz, Low Ch, 1 Mbps
4804.258	44.5	2.3	2.1	245.0		0.0	Horz	PK	0.0	46.8	74.0	-27.2	EUT On Side. Low Ch, 1 Mbps
4884.333	44.3	2.5	1.0	289.9		0.0	Vert	PK	0.0	46.8	74.0	-27.2	EUT Horz, Mid Ch, 1 Mbps
12398.450	45.8	1.0	2.6	16.0		0.0	Horz	PK	0.0	46.8	74.0	-27.2	EUT On Side, High Ch, 1 Mbps
4803.825	44.4	2.3	3.0	240.9		0.0	Horz	PK	0.0	46.7	74.0	-27.3	EUT On Side. Low Ch, 1 Mbps
4804.058	43.7	2.3	1.1	322.9		0.0	Vert	PK	0.0	46.0	74.0	-28.0	EUT Vert, Low Ch, 1 Mbps
4884.000	43.5	2.5	1.5	265.9		0.0	Horz	PK	0.0	46.0	74.0	-28.0	EUT On Side, Mid Ch, 1 Mbps
4803.642	43.0	2.3	1.0	321.0		0.0	Vert	PK	0.0	45.3	74.0	-28.7	EUT On Side. Low Ch, 1 Mbps
4805.183	42.6	2.4	1.5	228.0		0.0	Vert	PK	0.0	45.0	74.0	-29.0	EUT Horz, Low Ch, 2 Mbps
12398.580	43.8	1.0	1.1	130.0		0.0	Vert	PK	0.0	44.8	74.0	-29.2	EUT Horz, High Ch, 1 Mbps
12400.890	38.5	6.0	1.5	27.9		0.0	Vert	PK	0.0	44.5	74.0	-29.5	EUT Horz, High Ch, 1 Mbps
12010.780	44.5	-0.1	1.0	279.0		0.0	Horz	PK	0.0	44.4	74.0	-29.6	EUT On Side, Low Ch, 1 Mbps
12208.380	44.3	0.1	1.8	294.9		0.0	Horz	PK	0.0	44.4	74.0	-29.6	EUT On Side, Mid Ch, 1 Mbps
4959.275	41.0	2.6	3.1	66.0		0.0	Vert	PK	0.0	43.6	74.0	-30.4	EUT Horz, High Ch, 1 Mbps
4801.767	40.7	2.3	1.5	347.9		0.0	Horz	PK	0.0	43.0	74.0	-31.0	EUT Horz, Low Ch, 1 Mbps
4960.875	40.1	2.6	1.6	99.9		0.0	Horz	PK	0.0	42.7	74.0	-31.3	EUT On Side, High Ch, 1 Mbps
12010.760	42.4	-0.1	1.8	307.0		0.0	Vert	PK	0.0	42.3	74.0	-31.7	EUT Horz, Low Ch, 1 Mbps
12208.510	41.4	0.1	3.8	246.9		0.0	Vert	PK	0.0	41.5	74.0	-32.5	EUT Horz, Mid Ch, 1 Mbps

CONCLUSION
Pass

Tested By

DUTY CYCLE

XMit 2020.12.30.0

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	N5182B	TFX	2020-04-28	2023-04-28
Block - DC	Fairview Microwave	SD3379	AMZ	2021-11-05	2022-11-05
Attenuator	S.M. Electronics	SA26B-20	TZP	2021-11-05	2022-11-05
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2021-09-12	2022-09-12
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFG	2021-05-18	2022-05-18

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

element

TbtTx 2021.10.29.2 XMit 2020.12.30.0

EUT:	**Indy2 Rechargeable RIC**			**Work Order:**	**NOVI0019**
Serial Number:	**ii001**			**Date:**	**29-Dec-21**
Customer:	**Novidan, Inc.**			**Temperature:**	**23 °C**
Attendees:	**Katie Himes**			**Humidity:**	**16.7% RH**
Project:	**None**			**Barometric Pres.:**	**1020 mbar**
Tested by:	**Andrew Rogstad**	**Power:**	**Battery**	**Job Site:**	**MN08**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2021	ANSI C63.10:2013

COMMENTS

Reference level offset includes measurement cable, attenuator, DC block, and customer's patch cable.

DEVIATIONS FROM TEST STANDARD

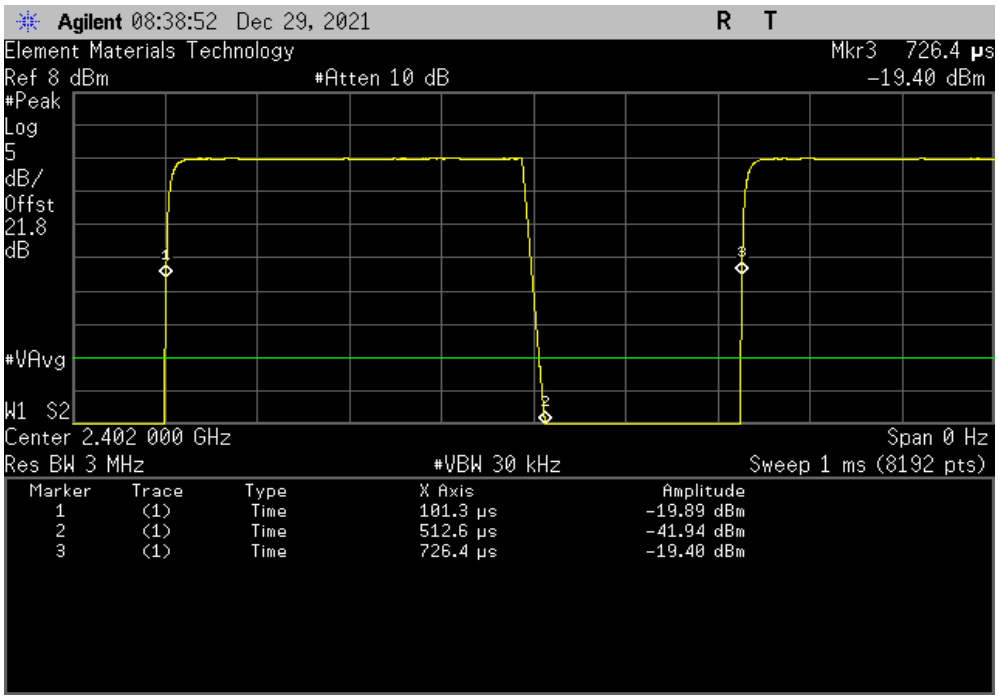
None

Configuration #	**11**	*Signature* Andrew Rogstad

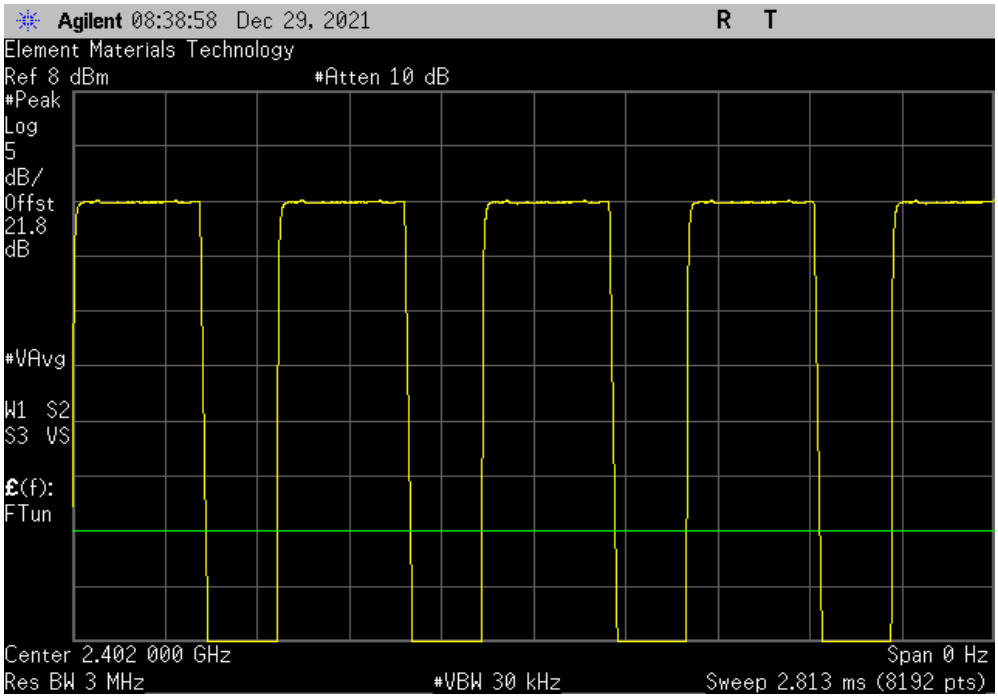
		Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
BLE/GFSK 1 Mbps							
	Low Channel, 2402 MHz	411.3 us	625.1 us	1	65.8	N/A	N/A
	Low Channel, 2402 MHz	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel, 2442 MHz	411.1 us	624.9 us	1	65.8	N/A	N/A
	Mid Channel, 2442 MHz	N/A	N/A	5	N/A	N/A	N/A
	High Channel, 2480 MHz	410.8 us	624.9 us	1	65.7	N/A	N/A
	High Channel, 2480 MHz	N/A	N/A	5	N/A	N/A	N/A
BLE/GFSK 2 Mbps							
	Low Channel, 2402 MHz	1.081 ms	1.875 ms	1	57.7	N/A	N/A
	Low Channel, 2402 MHz	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel, 2442 MHz	1.081 ms	1.875 ms	1	57.7	N/A	N/A
	Mid Channel, 2442 MHz	N/A	N/A	5	N/A	N/A	N/A
	High Channel, 2480 MHz	1.081 ms	1.875 ms	1	57.7	N/A	N/A
	High Channel, 2480 MHz	N/A	N/A	5	N/A	N/A	N/A

DUTY CYCLE

BLE/GFSK 1 Mbps, Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	411.3 us	625.1 us	1	65.8	N/A	N/A

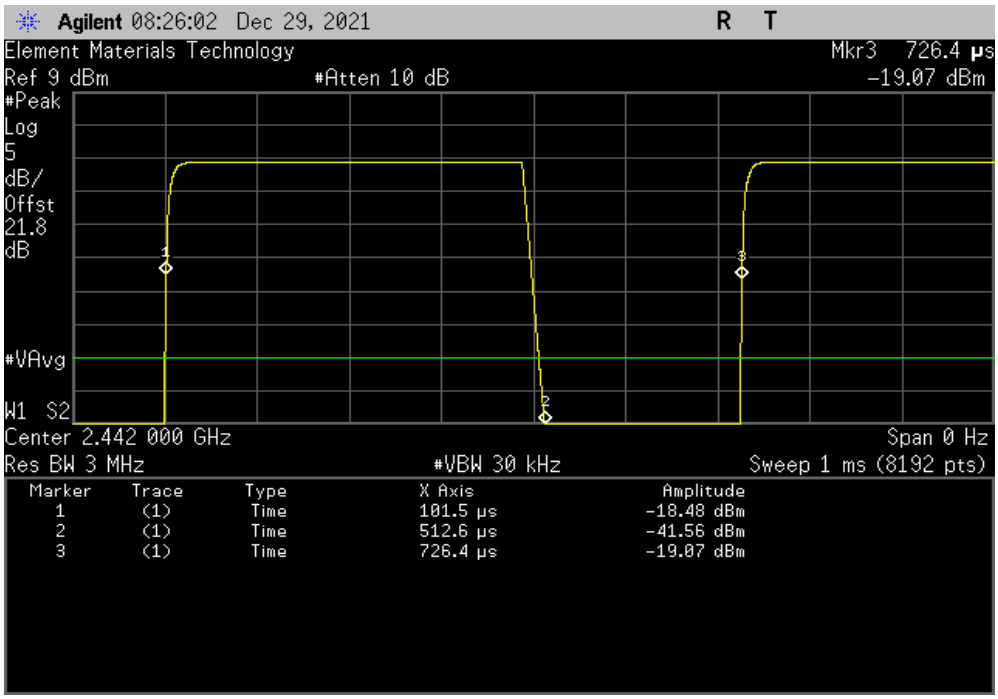


BLE/GFSK 1 Mbps, Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

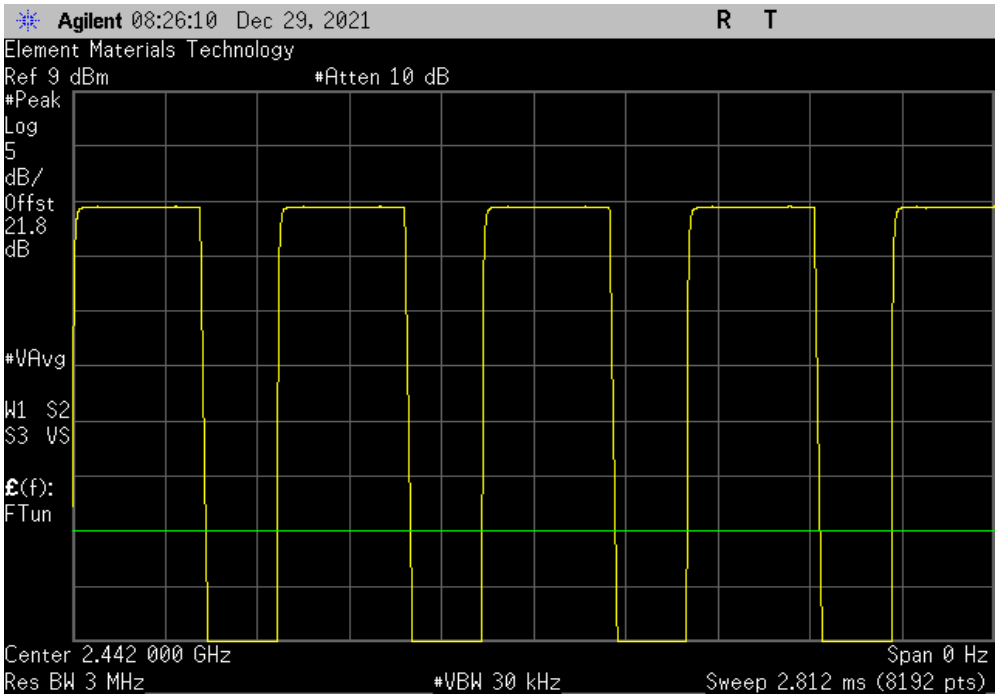


DUTY CYCLE

BLE/GFSK 1 Mbps, Mid Channel, 2442 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	411.1 us	624.9 us	1	65.8	N/A	N/A

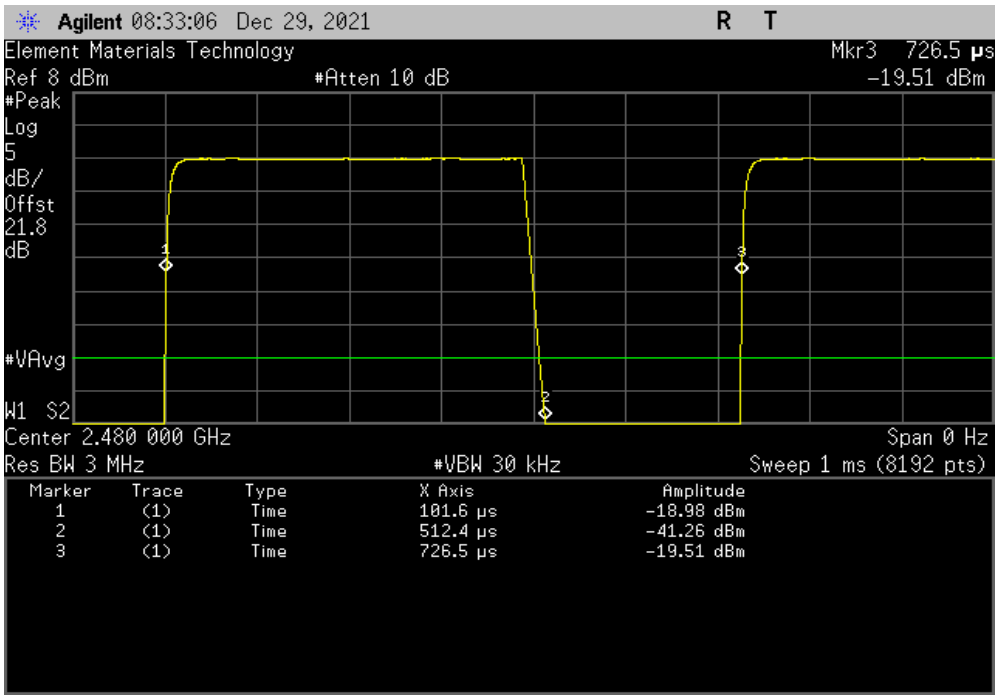


BLE/GFSK 1 Mbps, Mid Channel, 2442 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

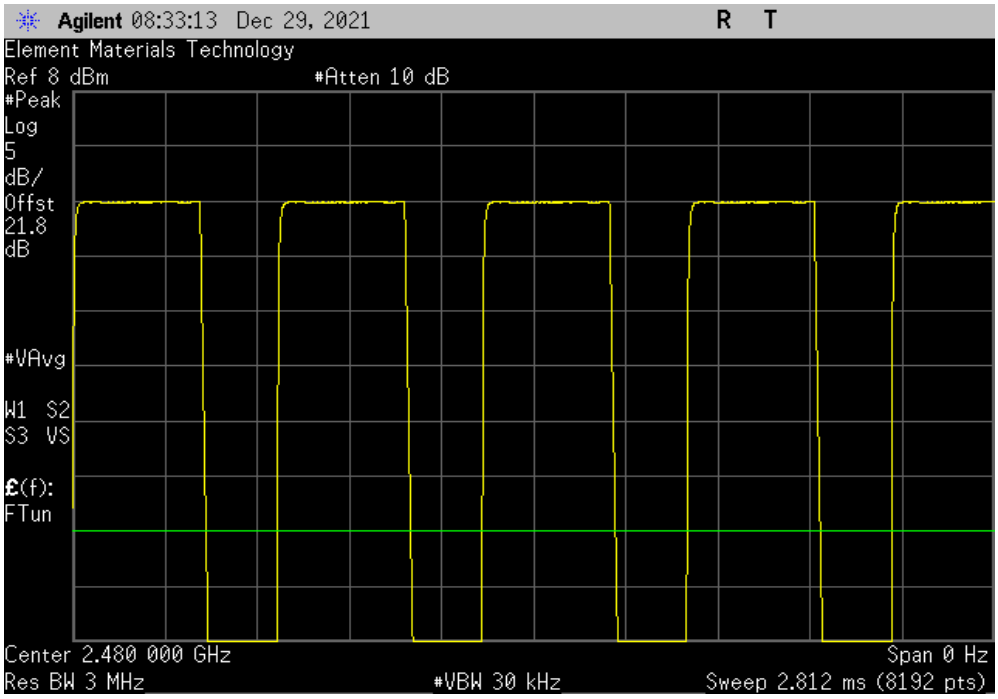


DUTY CYCLE

BLE/GFSK 1 Mbps, High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	410.8 us	624.9 us	1	65.7	N/A	N/A

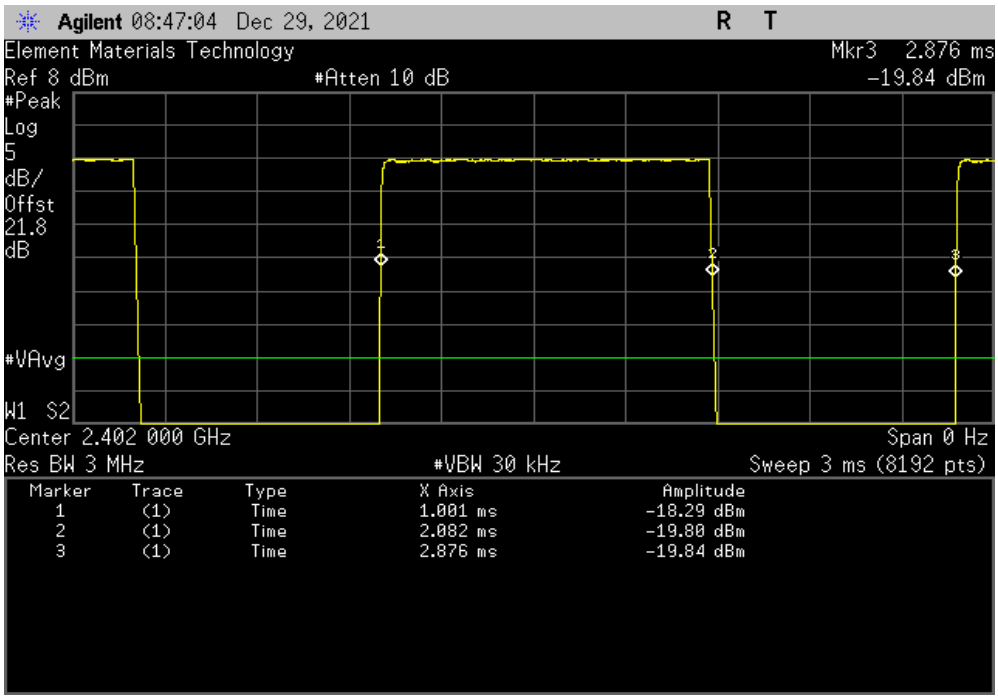


BLE/GFSK 1 Mbps, High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

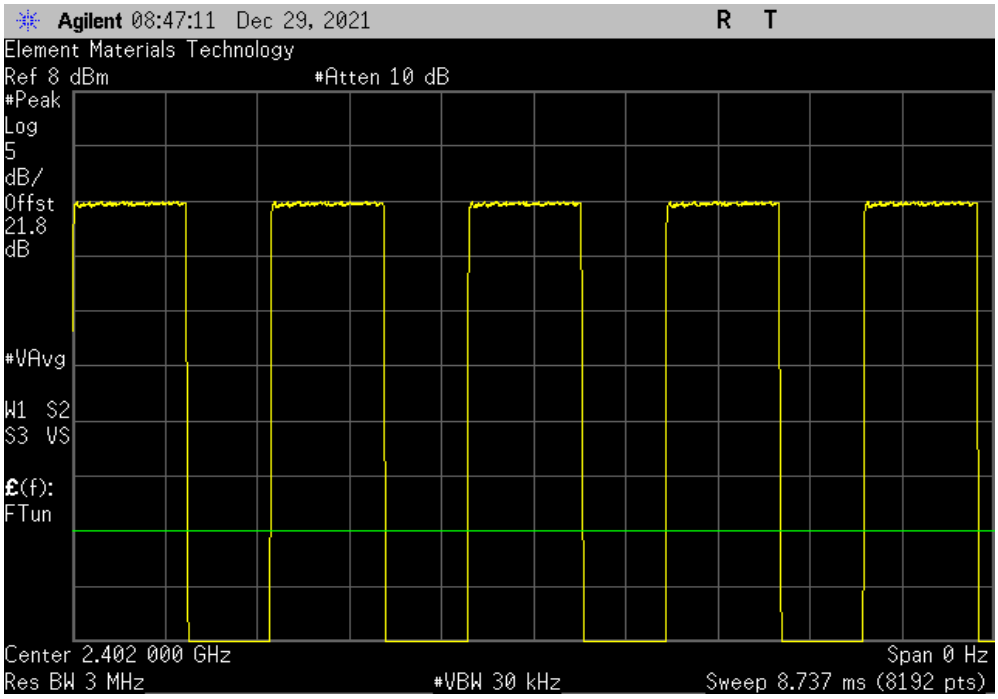


DUTY CYCLE

BLE/GFSK 2 Mbps, Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	1.081 ms	1.875 ms	1	57.7	N/A	N/A

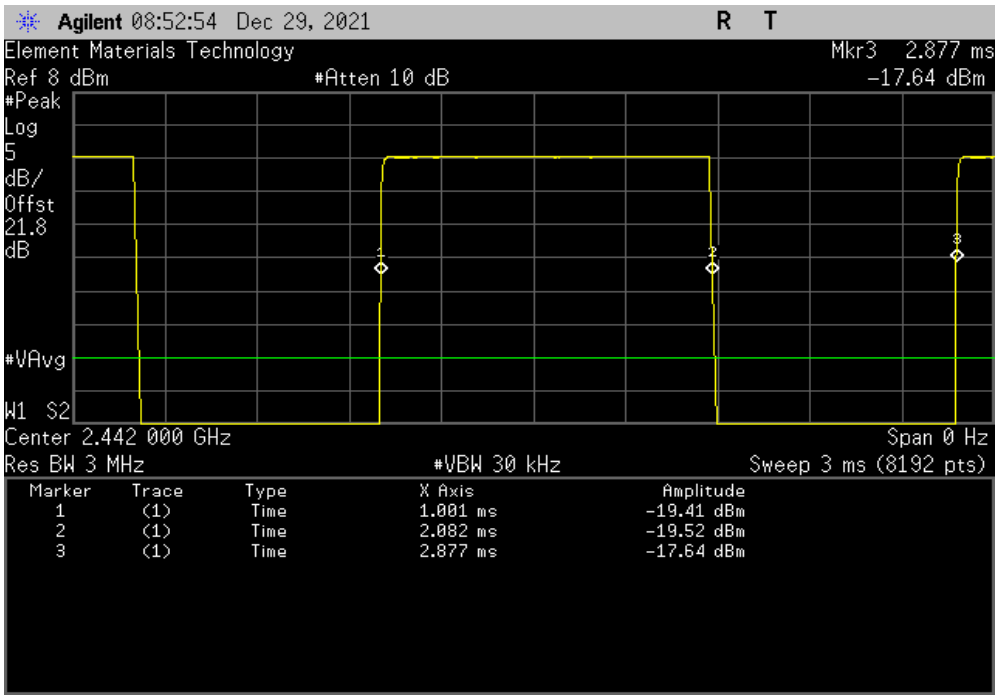


BLE/GFSK 2 Mbps, Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

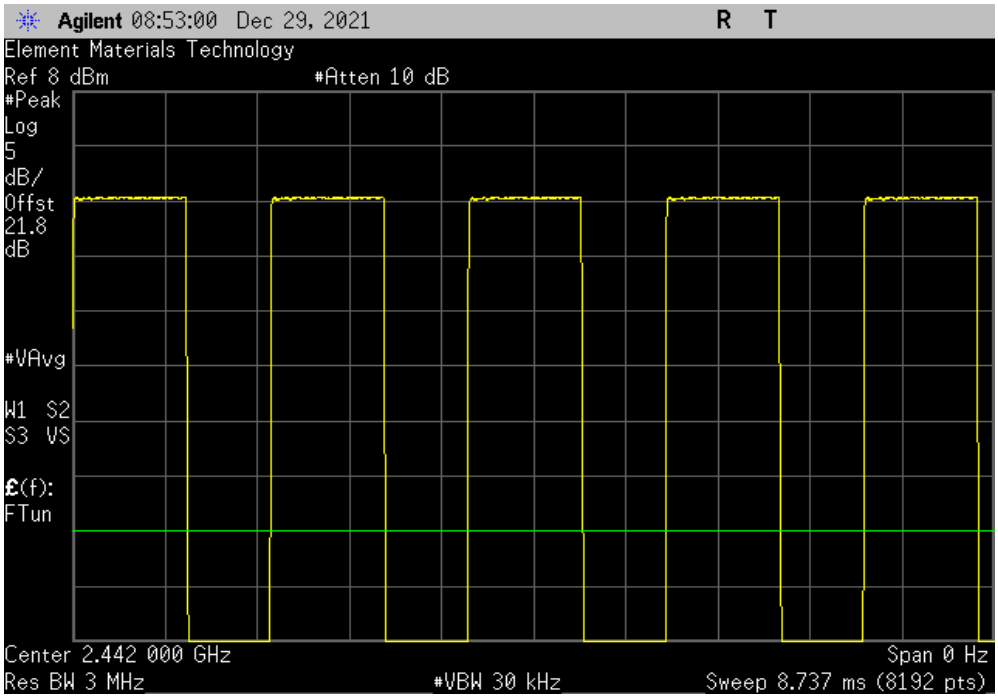


DUTY CYCLE

BLE/GFSK 2 Mbps, Mid Channel, 2442 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	1.081 ms	1.875 ms	1	57.7	N/A	N/A

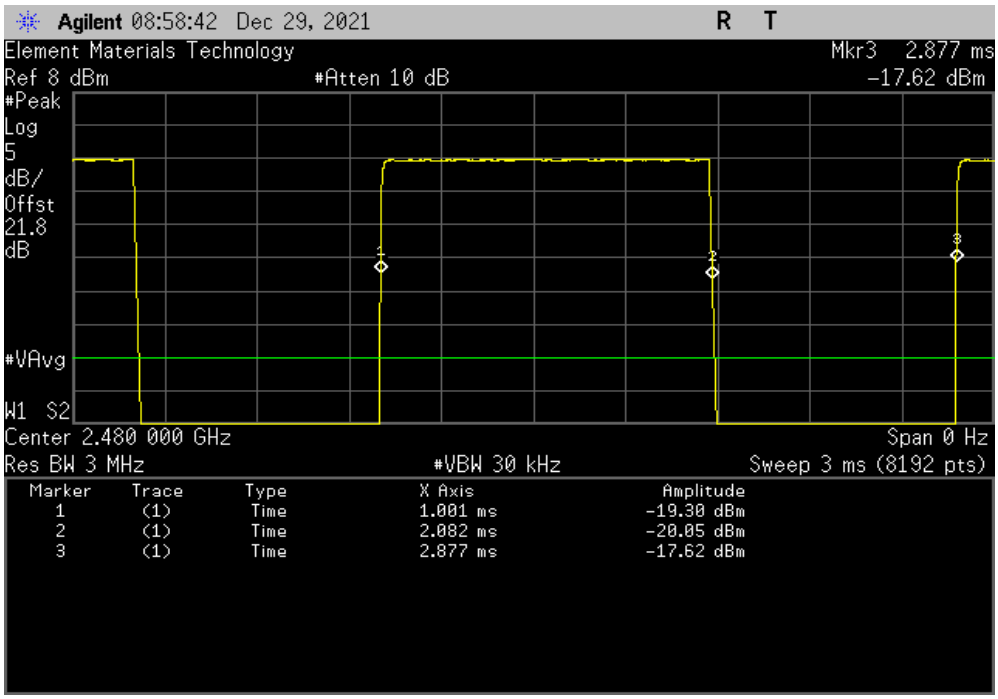


BLE/GFSK 2 Mbps, Mid Channel, 2442 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

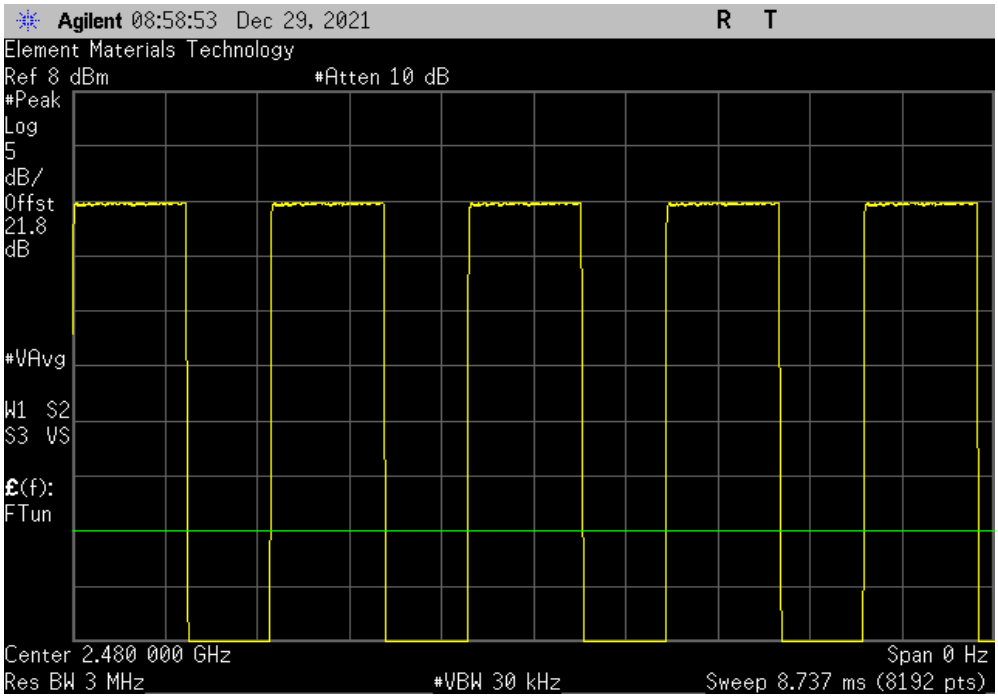


DUTY CYCLE

BLE/GFSK 2 Mbps, High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	1.081 ms	1.875 ms	1	57.7	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 2020.12.30.0

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	N5182B	TFX	2020-04-28	2023-04-28
Block - DC	Fairview Microwave	SD3379	AMZ	2021-11-05	2022-11-05
Attenuator	S.M. Electronics	SA26B-20	TZP	2021-11-05	2022-11-05
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2021-09-12	2022-09-12
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFG	2021-05-18	2022-05-18

TEST DESCRIPTION

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

The 6dB DTS bandwidth was measured using 100 kHz resolution bandwidth and 300 kHz video bandwidth. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.

OCCUPIED BANDWIDTH

TbtTx 2021.10.29.2 XMit 2020.12.30.0

EUT:	**Indy2 Rechargeable RIC**			**Work Order:**	**NOVI0019**
Serial Number:	**ii001**			**Date:**	**29-Dec-21**
Customer:	**Novidan, Inc.**			**Temperature:**	**22.9 °C**
Attendees:	**Katie Himes**			**Humidity:**	**16.7% RH**
Project:	**None**			**Barometric Pres.:**	**1020 mbar**
Tested by:	**Andrew Rogstad**	**Power:**	**Battery**	**Job Site:**	**MN08**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2021	ANSI C63.10:2013

COMMENTS

Reference level offset includes measurement cable, attenuator, DC block, and customer's patch cable.

DEVIATIONS FROM TEST STANDARD

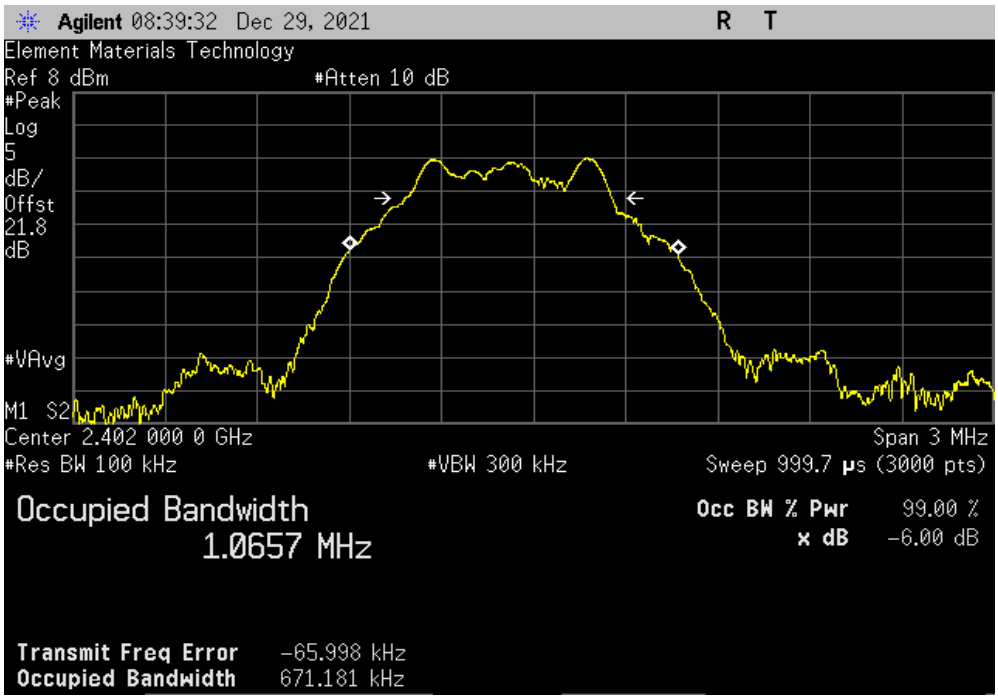
None

Configuration #	**11**	*Signature* Andrew Rogstad

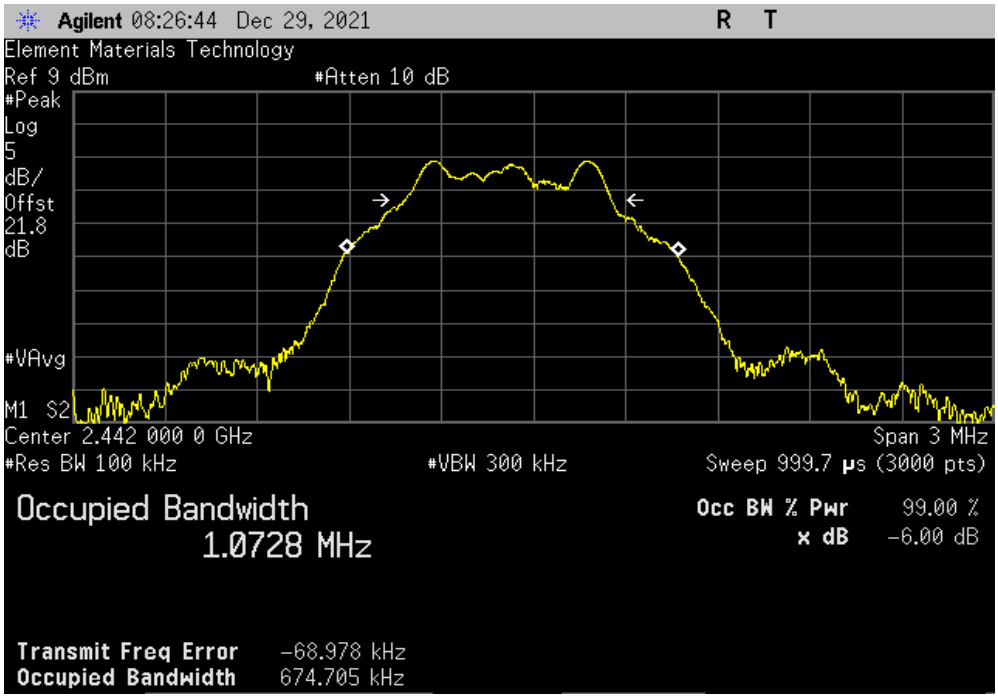
		Value	**Limit (≥)**	**Result**
BLE/GFSK 1 Mbps				
	Low Channel, 2402 MHz	671.181 kHz	500 kHz	Pass
	Mid Channel, 2442 MHz	674.705 kHz	500 kHz	Pass
	High Channel, 2480 MHz	672.633 kHz	500 kHz	Pass
BLE/GFSK 2 Mbps				
	Low Channel, 2402 MHz	1.211 MHz	500 kHz	Pass
	Mid Channel, 2442 MHz	1.257 MHz	500 kHz	Pass
	High Channel, 2480 MHz	1.248 MHz	500 kHz	Pass

OCCUPIED BANDWIDTH

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

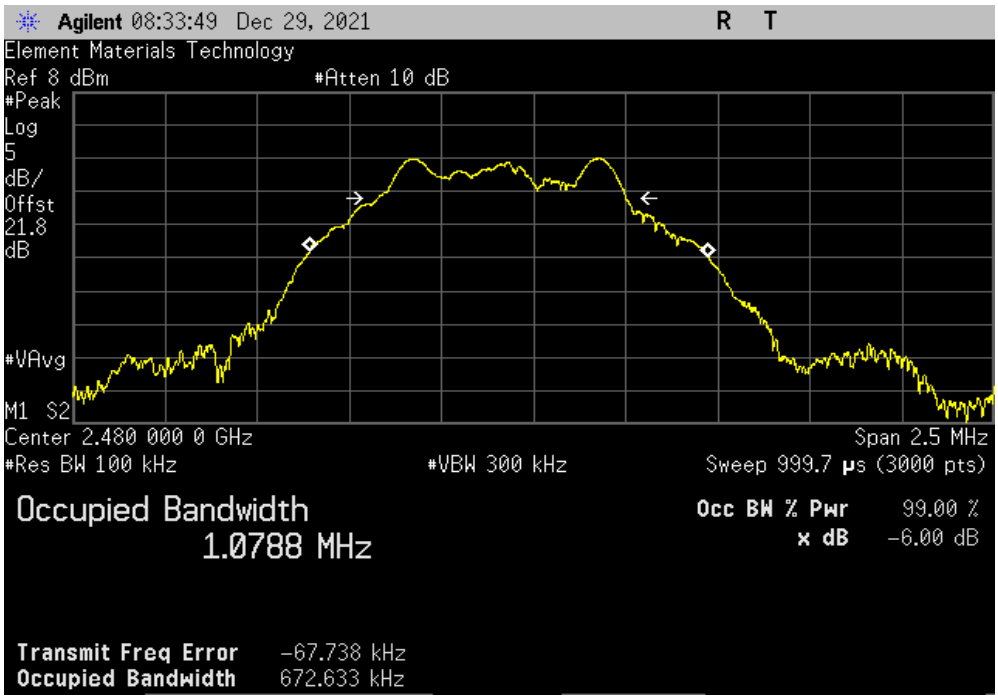


BLE/GFSK 1 Mbps, Mid Channel, 2442 MHz						
				Value	Limit (≥)	Result
				674.705 kHz	500 kHz	Pass

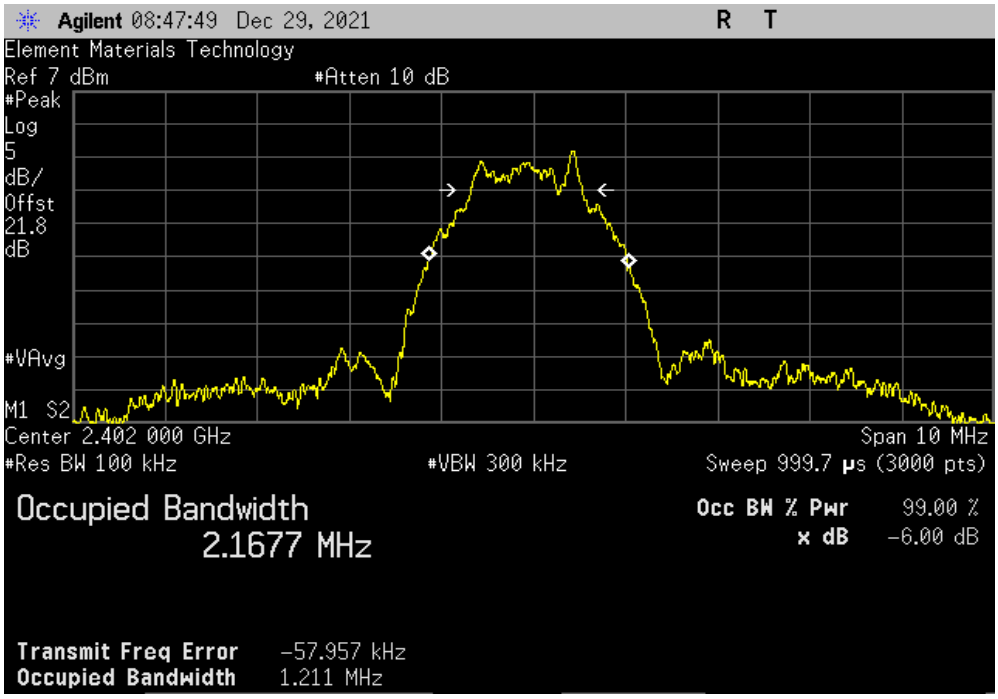


OCCUPIED BANDWIDTH

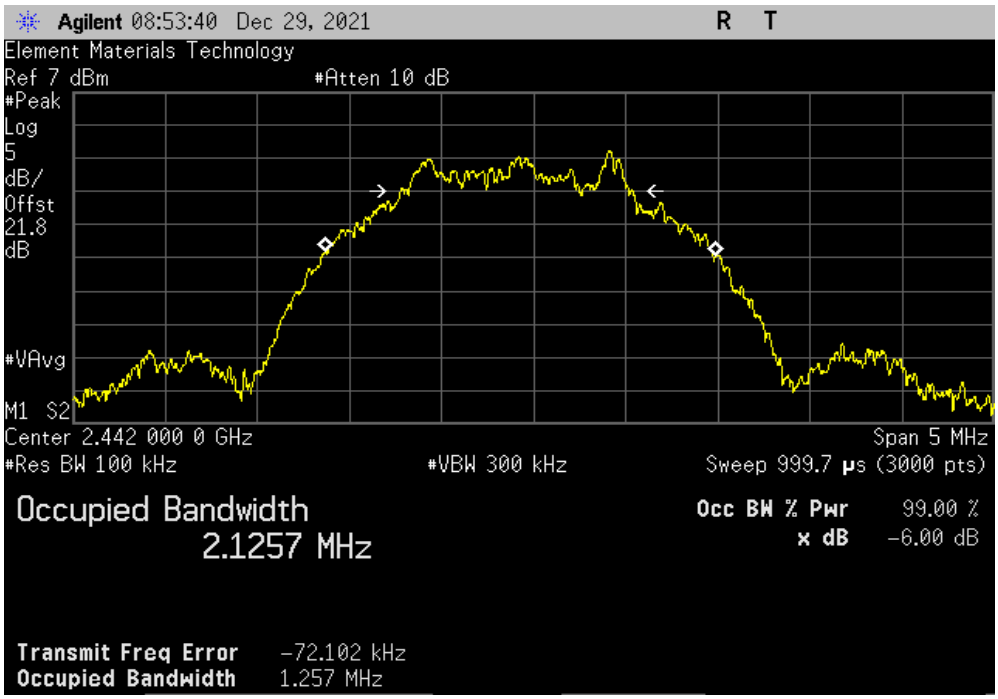
BLE/GFSK 1 Mbps, High Channel, 2480 MHz						
				Value	Limit (≥)	Result
				672.633 kHz	500 kHz	Pass



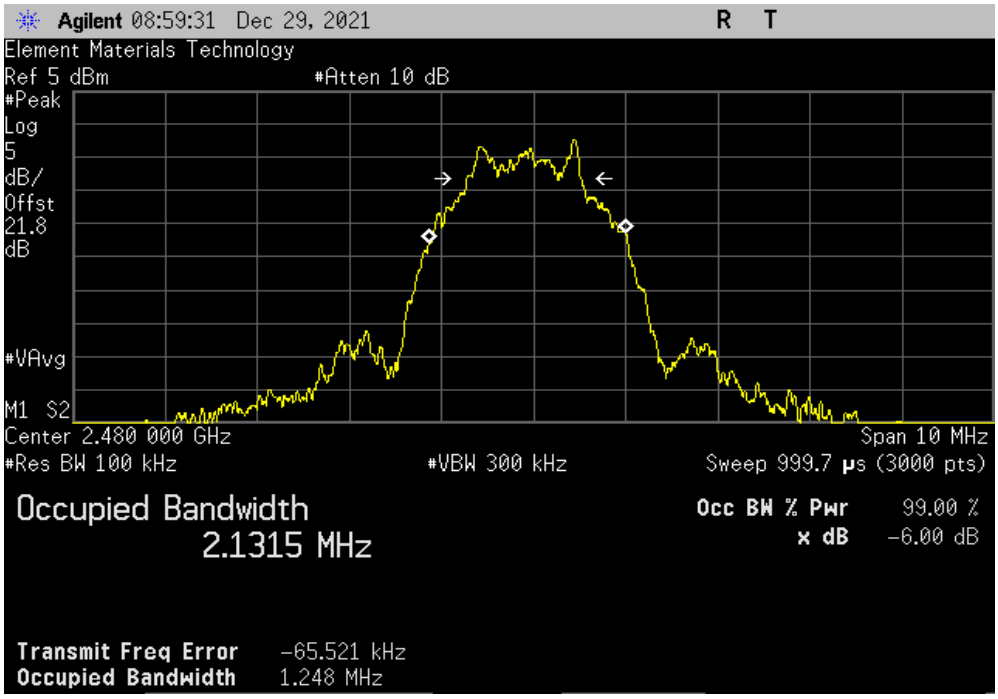
BLE/GFSK 2 Mbps, Low Channel, 2402 MHz						
				Value	Limit (≥)	Result
				1.211 MHz	500 kHz	Pass



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



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



OUTPUT POWER

XMit 2020.12.30.0

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	N5182B	TFX	2020-04-28	2023-04-28
Block - DC	Fairview Microwave	SD3379	AMZ	2021-11-05	2022-11-05
Attenuator	S.M. Electronics	SA26B-20	TZP	2021-11-05	2022-11-05
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2021-09-12	2022-09-12
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFG	2021-05-18	2022-05-18

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

TbtTx 2021.10.29.2 XMit 2020.12.30.0

EUT:	**Indy2 Rechargeable RIC**			**Work Order:**	**NOVI0019**
Serial Number:	**ii001**			**Date:**	**29-Dec-21**
Customer:	**Novidan, Inc.**			**Temperature:**	**23 °C**
Attendees:	**Katie Himes**			**Humidity:**	**16.7% RH**
Project:	**None**			**Barometric Pres.:**	**1020 mbar**
Tested by:	**Andrew Rogstad**	**Power:**	**Battery**	**Job Site:**	**MN08**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2021	ANSI C63.10:2013

COMMENTS

Reference level offset includes measurement cable, attenuator, DC block, and customer's patch cable.

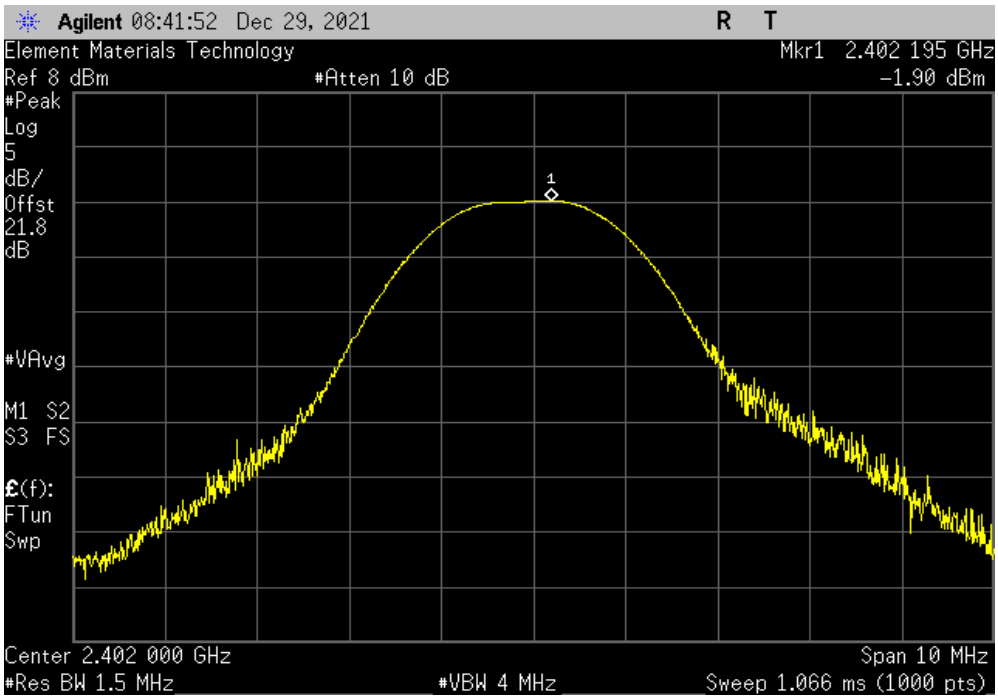
DEVIATIONS FROM TEST STANDARD

None

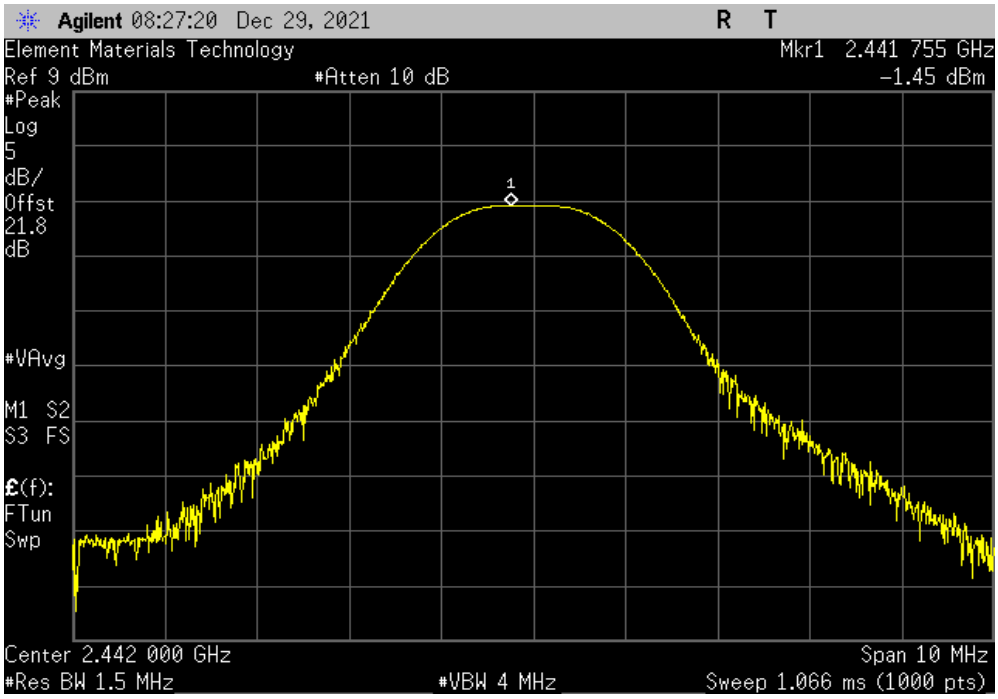
Configuration #	**11**	*Signature*

		Out Pwr (dBm)	**Limit (dBm)**	**Result**
BLE/GFSK 1 Mbps				
	Low Channel, 2402 MHz	-1.897	30	Pass
	Mid Channel, 2442 MHz	-1.446	30	Pass
	High Channel, 2480 MHz	-1.948	30	Pass
BLE/GFSK 2 Mbps				
	Low Channel, 2402 MHz	-1.816	30	Pass
	Mid Channel, 2442 MHz	-1.415	30	Pass
	High Channel, 2480 MHz	-1.921	30	Pass

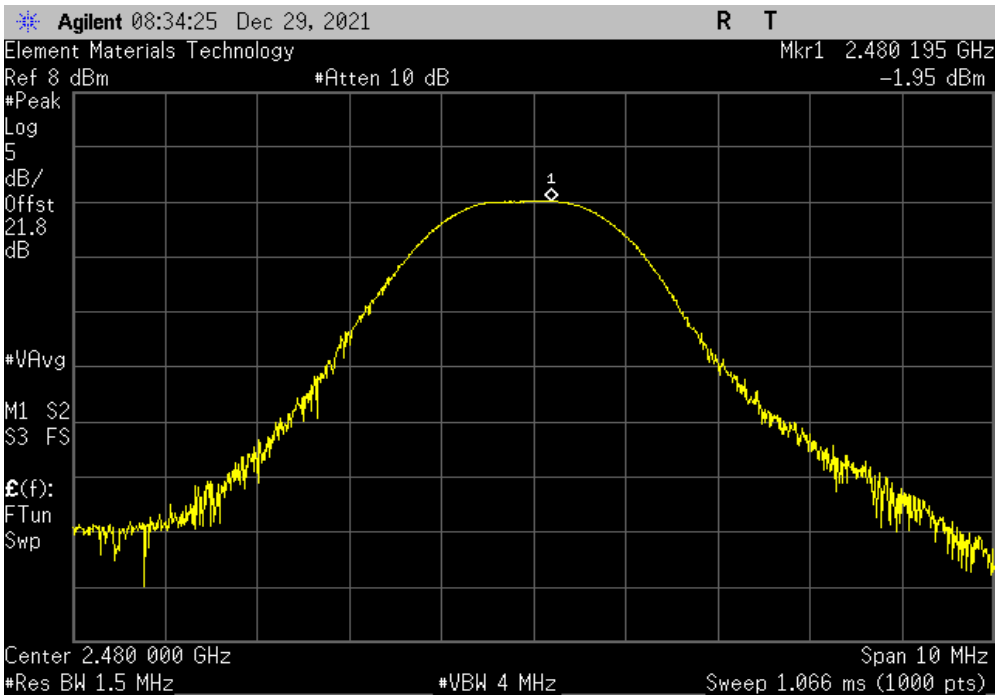
BLE/GFSK 1 Mbps, Low Channel, 2402 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				-1.897	30	Pass



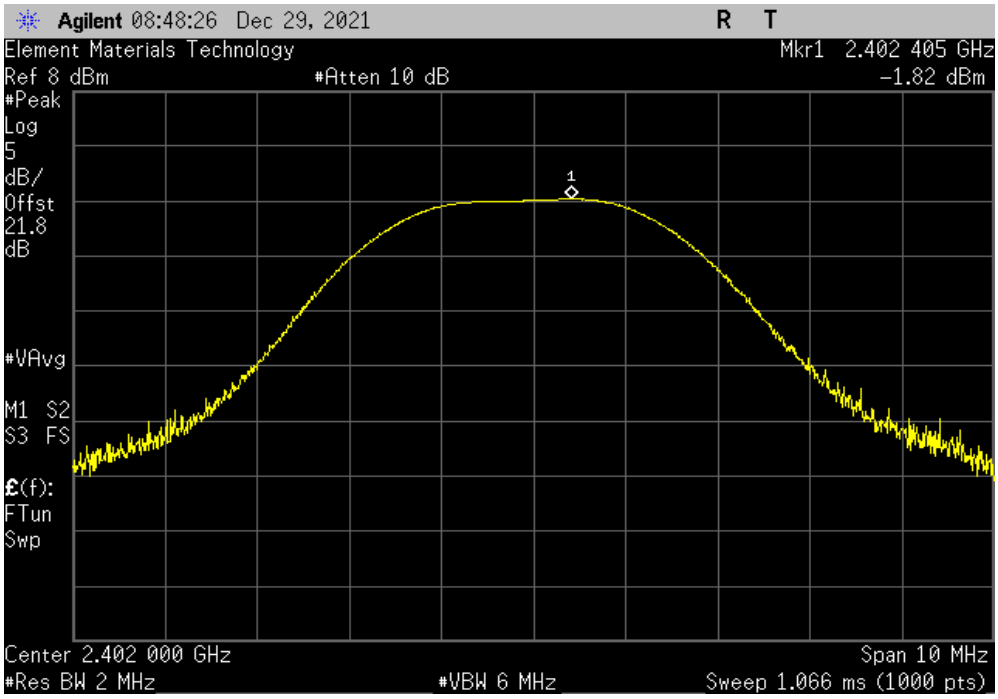
BLE/GFSK 1 Mbps, Mid Channel, 2442 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				-1.446	30	Pass



BLE/GFSK 1 Mbps, High Channel, 2480 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				-1.948	30	Pass

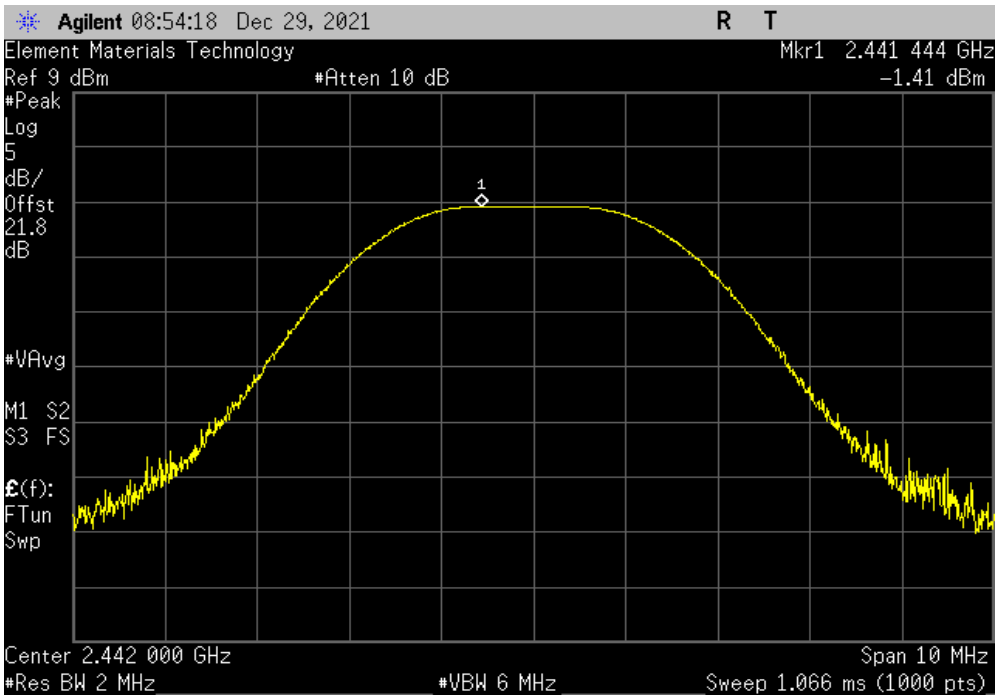


BLE/GFSK 2 Mbps, Low Channel, 2402 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				-1.816	30	Pass

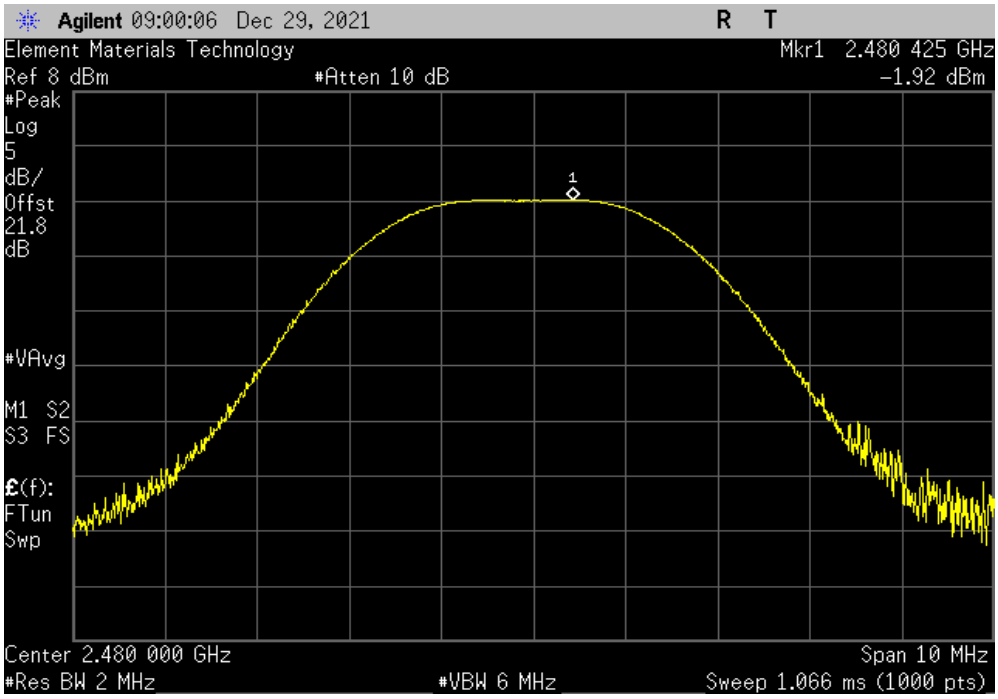


OUTPUT POWER

BLE/GFSK 2 Mbps, Mid Channel, 2442 MHz							
					Out Pwr (dBm)	Limit (dBm)	Result
					-1.415	30	Pass



BLE/GFSK 2 Mbps, High Channel, 2480 MHz							
					Out Pwr (dBm)	Limit (dBm)	Result
					-1.921	30	Pass



EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

XMit 2020.12.30.0

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	N5182B	TFX	2020-04-28	2023-04-28
Block - DC	Fairview Microwave	SD3379	AMZ	2021-11-05	2022-11-05
Attenuator	S.M. Electronics	SA26B-20	TZP	2021-11-05	2022-11-05
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2021-09-12	2022-09-12
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFG	2021-05-18	2022-05-18

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)

element

TbtTx 2021.10.29.2 XMit 2020.12.30.0

EUT:	**Indy2 Rechargeable RIC**			**Work Order:**	**NOVI0019**
Serial Number:	**ii001**			**Date:**	**29-Dec-21**
Customer:	**Novidan, Inc.**			**Temperature:**	**23.3 °C**
Attendees:	**Katie Himes**			**Humidity:**	**16.7% RH**
Project:	**None**			**Barometric Pres.:**	**1020 mbar**
Tested by:	**Andrew Rogstad**	**Power:**	**Battery**	**Job Site:**	**MN08**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2021	ANSI C63.10:2013

COMMENTS

Reference level offset includes measurement cable, attenuator, DC block, and customer's patch cable.

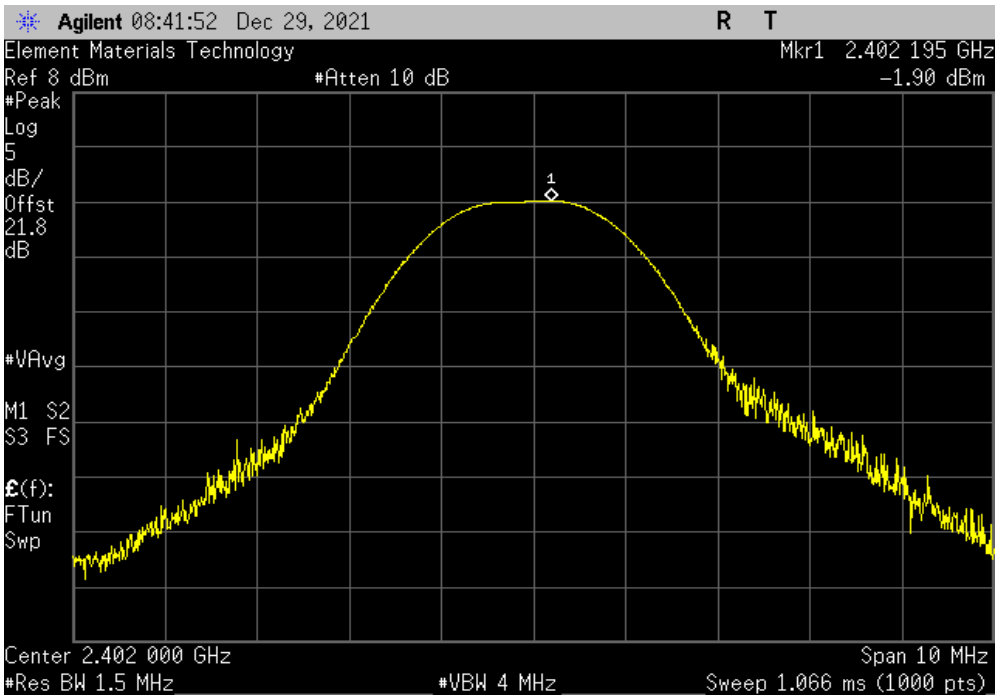
DEVIATIONS FROM TEST STANDARD

None

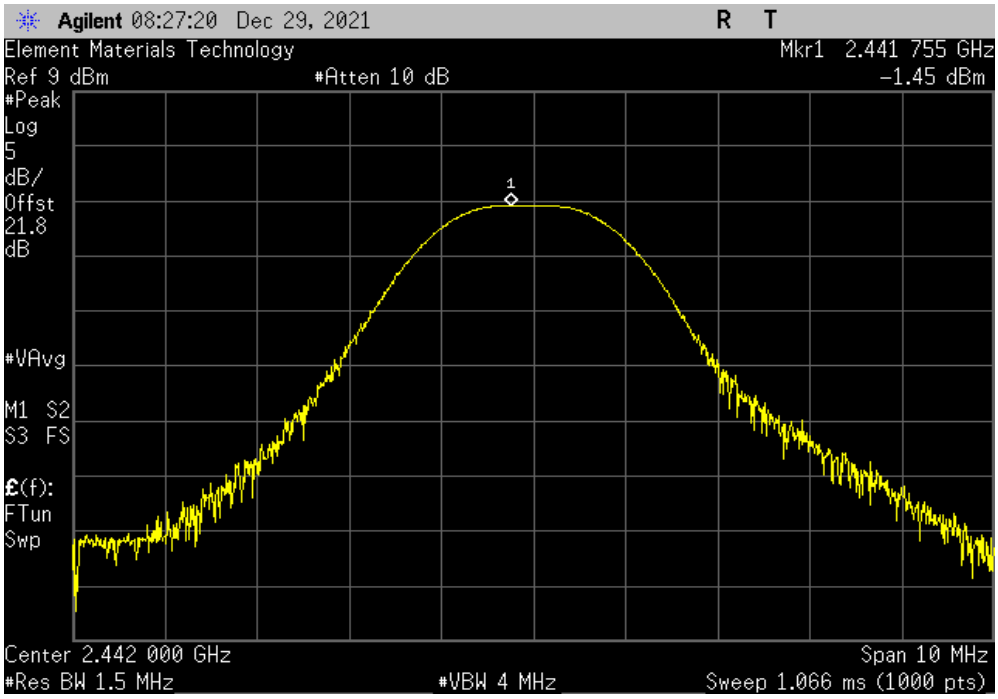
Configuration #	**11**	*Signature* Andrew Rogstad

		Out Pwr (dBm)	**Antenna Gain (dBi)**	**EIRP (dBm)**	**EIRP Limit (dBm)**	**Result**
BLE/GFSK 1 Mbps						
	Low Channel, 2402 MHz	-1.897	-4.27	-6.167	36	Pass
	Mid Channel, 2442 MHz	-1.446	-4.27	-5.716	36	Pass
	High Channel, 2480 MHz	-1.948	-4.27	-6.218	36	Pass
BLE/GFSK 2 Mbps						
	Low Channel, 2402 MHz	-1.816	-4.27	-6.086	36	Pass
	Mid Channel, 2442 MHz	-1.415	-4.27	-5.685	36	Pass
	High Channel, 2480 MHz	-1.921	-4.27	-6.191	36	Pass

BLE/GFSK 1 Mbps, Low Channel, 2402 MHz						
		Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
		-1.897	-4.27	-6.167	36	Pass

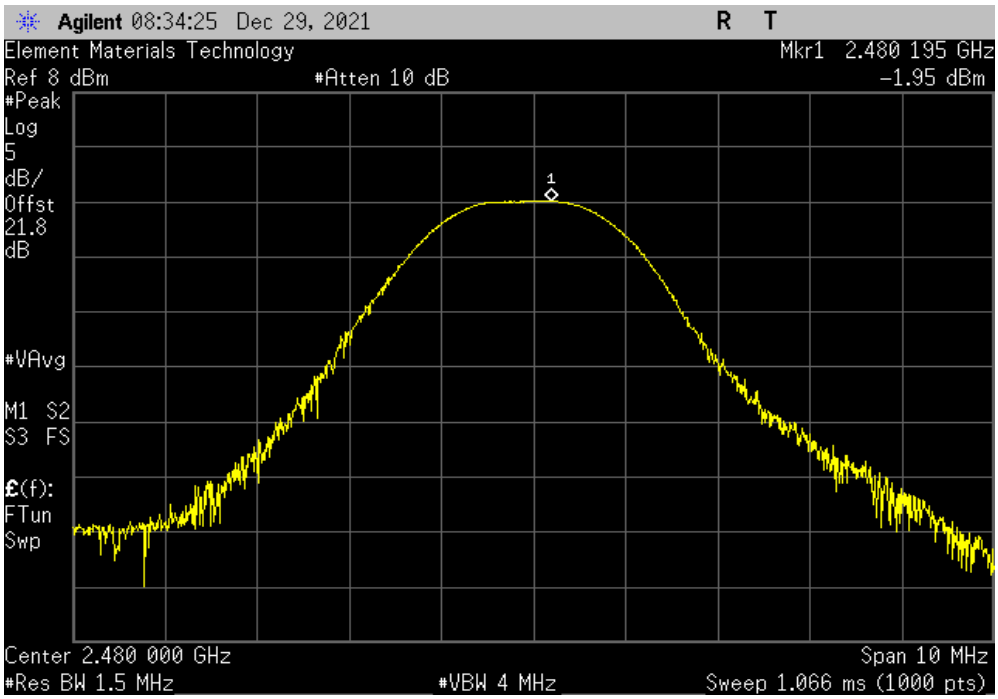


BLE/GFSK 1 Mbps, Mid Channel, 2442 MHz						
		Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
		-1.446	-4.27	-5.716	36	Pass

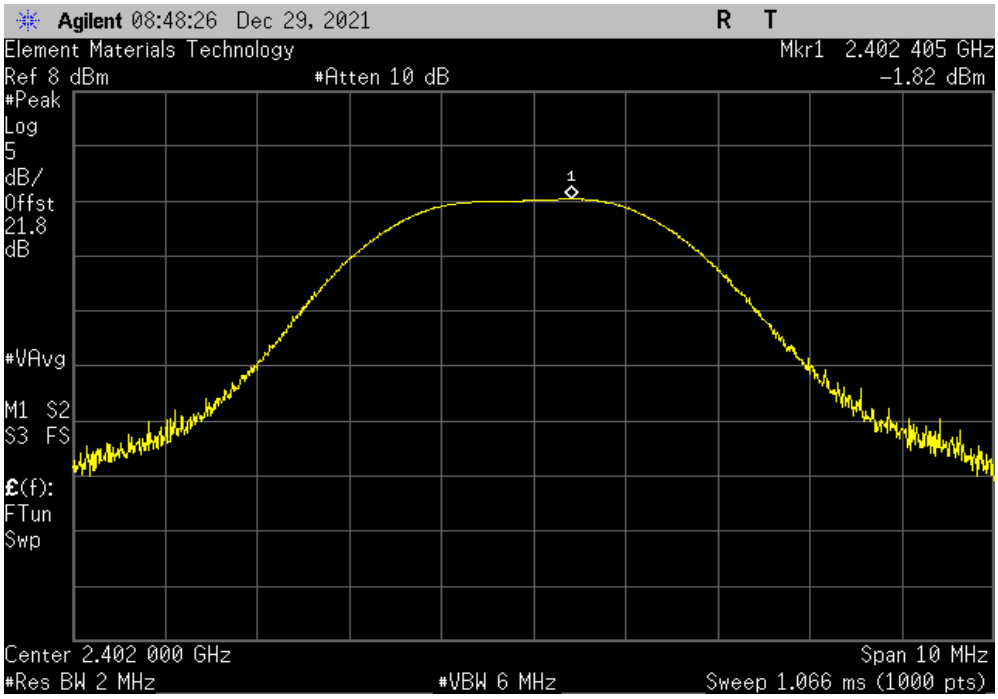


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

BLE/GFSK 1 Mbps, High Channel, 2480 MHz						
		Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
		-1.948	-4.27	-6.218	36	Pass

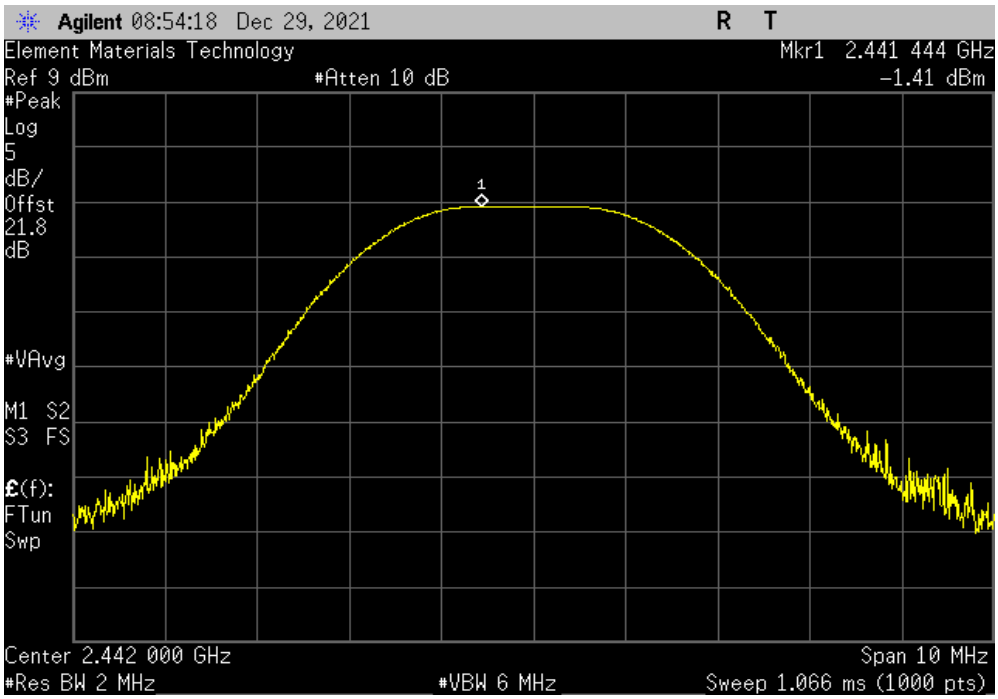


BLE/GFSK 2 Mbps, Low Channel, 2402 MHz						
		Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
		-1.816	-4.27	-6.086	36	Pass

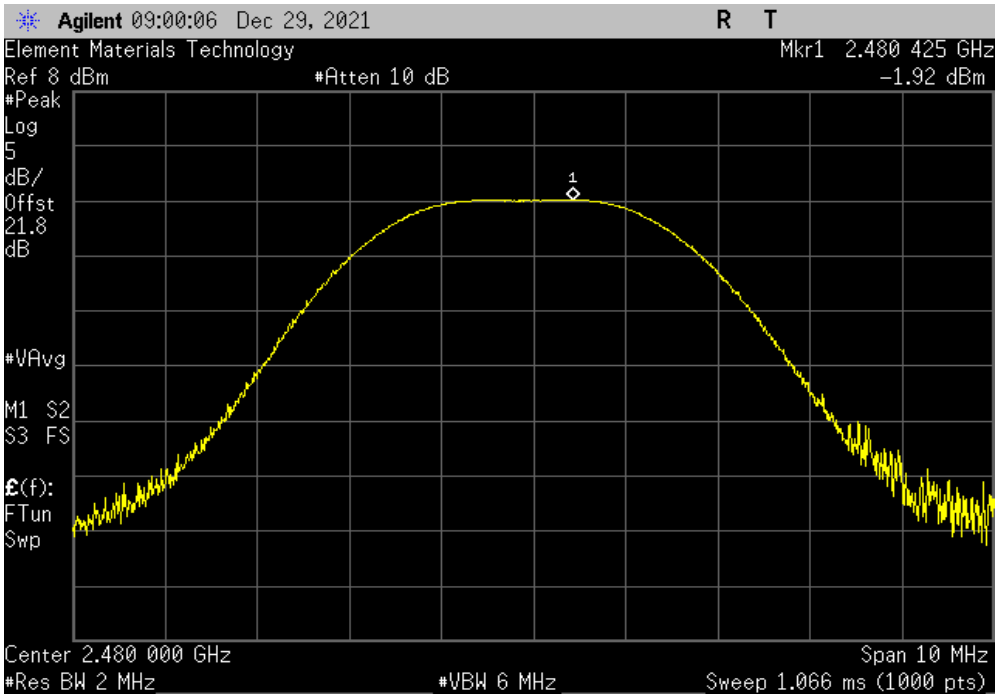


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

BLE/GFSK 2 Mbps, Mid Channel, 2442 MHz						
		Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
		-1.415	-4.27	-5.685	36	Pass



BLE/GFSK 2 Mbps, High Channel, 2480 MHz						
		Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
		-1.921	-4.27	-6.191	36	Pass



POWER SPECTRAL DENSITY

XMit 2020.12.30.0

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	N5182B	TFX	2020-04-28	2023-04-28
Block - DC	Fairview Microwave	SD3379	AMZ	2021-11-05	2022-11-05
Attenuator	S.M. Electronics	SA26B-20	TZP	2021-11-05	2022-11-05
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2021-09-12	2022-09-12
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFG	2021-05-18	2022-05-18

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

TbtTx 2021.10.29.2 XMit 2020.12.30.0

EUT:	**Indy2 Rechargeable RIC**			**Work Order:**	**NOVI0019**
Serial Number:	**ii001**			**Date:**	**29-Dec-21**
Customer:	**Novidan, Inc.**			**Temperature:**	**23 °C**
Attendees:	**Katie Himes**			**Humidity:**	**16.7% RH**
Project:	**None**			**Barometric Pres.:**	**1020 mbar**
Tested by:	**Andrew Rogstad**	**Power:**	**Battery**	**Job Site:**	**MN08**
TEST SPECIFICATIONS			**Test Method**		
FCC 15.247:2021			ANSI C63.10:2013		

COMMENTS

Reference level offset includes measurement cable, attenuator, DC block, and customer's patch cable.

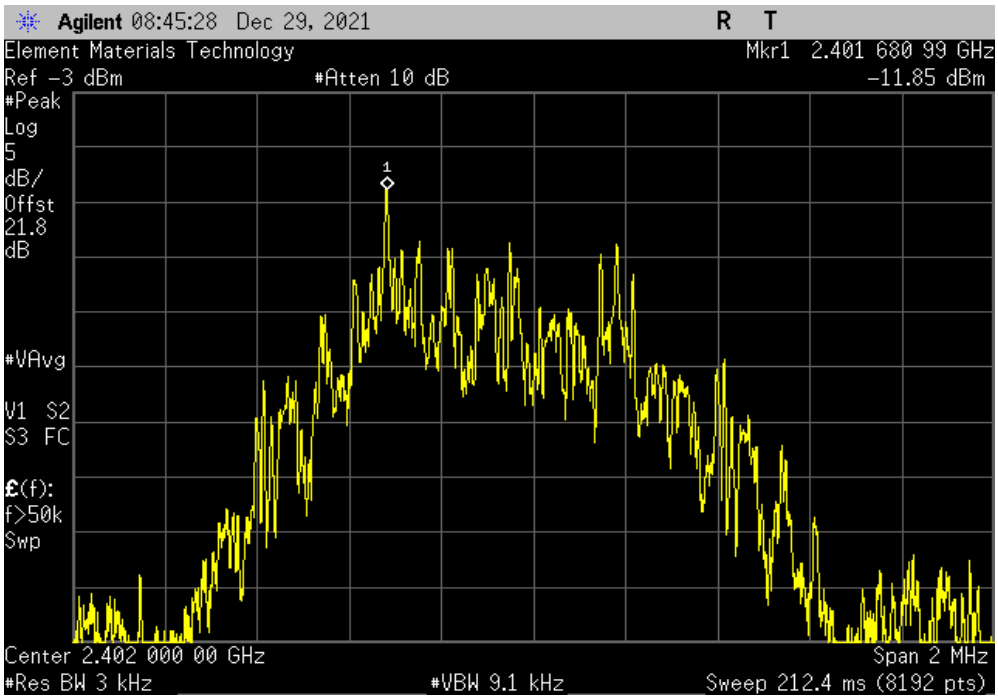
DEVIATIONS FROM TEST STANDARD

None

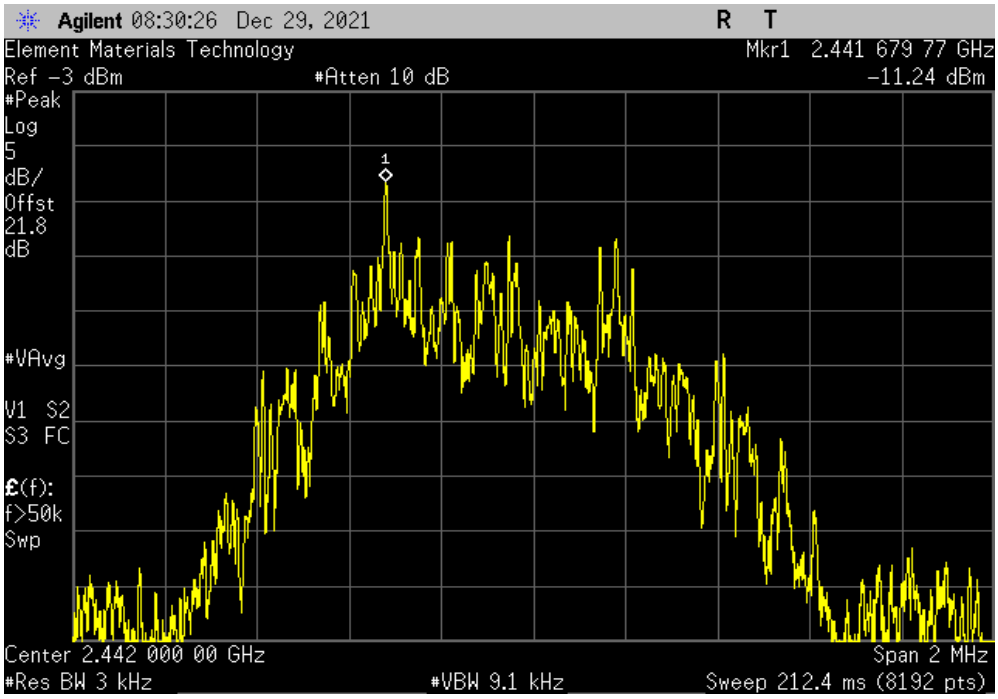
Configuration #	**11**	*Signature* Andrew Rogstad

		Value dBm/3kHz	Limit < dBm/3kHz	Results
BLE/GFSK 1 Mbps				
	Low Channel, 2402 MHz	-11.846	8	Pass
	Mid Channel, 2442 MHz	-11.241	8	Pass
	High Channel, 2480 MHz	-11.764	8	Pass
BLE/GFSK 2 Mbps				
	Low Channel, 2402 MHz	-14.369	8	Pass
	Mid Channel, 2442 MHz	-13.65	8	Pass
	High Channel, 2480 MHz	-14.234	8	Pass

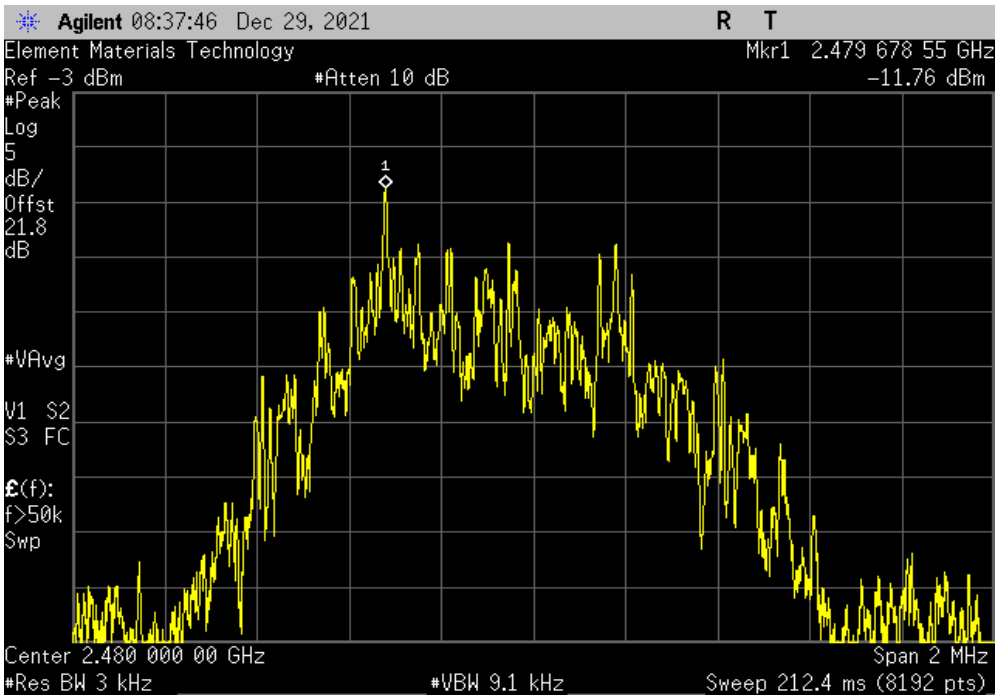
BLE/GFSK 1 Mbps, Low Channel, 2402 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-11.846	8	Pass



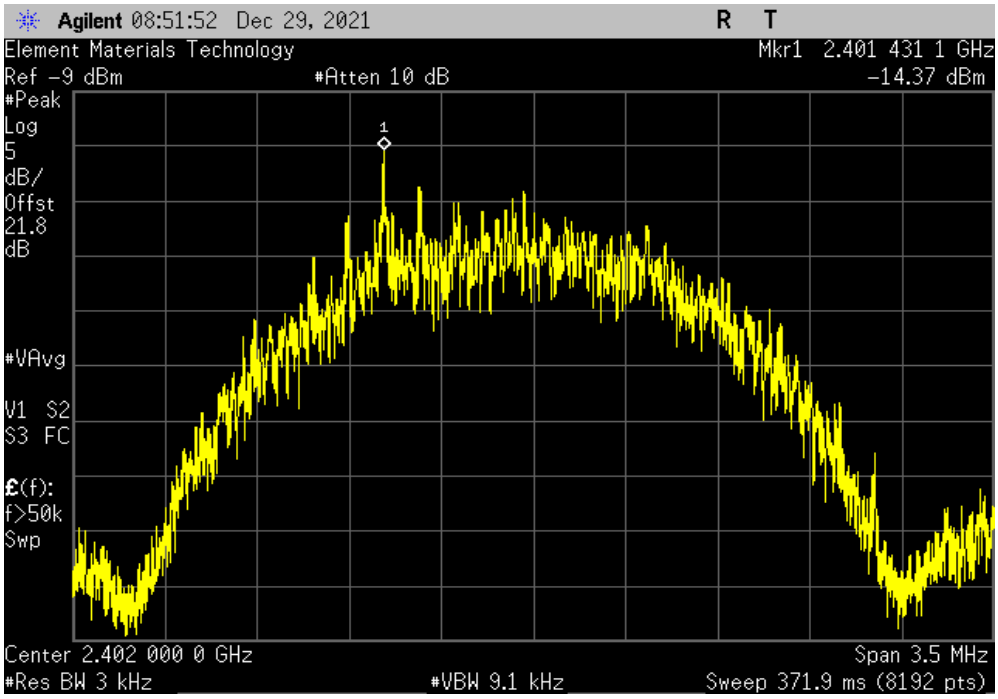
BLE/GFSK 1 Mbps, Mid Channel, 2442 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-11.241	8	Pass



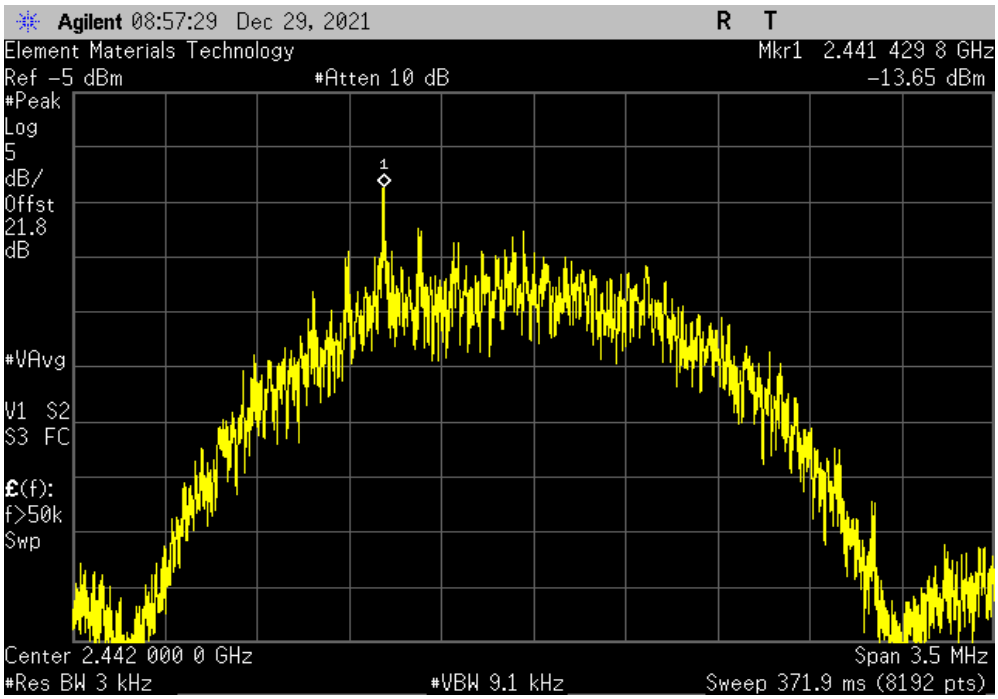
BLE/GFSK 1 Mbps, High Channel, 2480 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-11.764	8	Pass



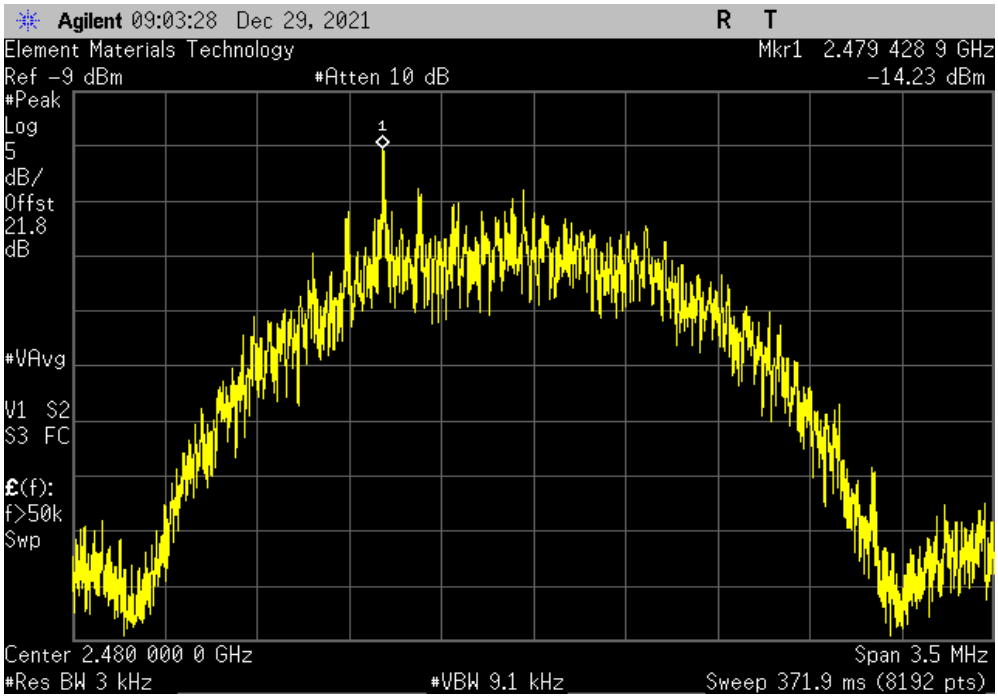
BLE/GFSK 2 Mbps, Low Channel, 2402 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-14.369	8	Pass



BLE/GFSK 2 Mbps, Mid Channel, 2442 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-13.65	8	Pass



BLE/GFSK 2 Mbps, High Channel, 2480 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-14.234	8	Pass



BAND EDGE COMPLIANCE

XMit 2020.12.30.0

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	N5182B	TFX	2020-04-28	2023-04-28
Block - DC	Fairview Microwave	SD3379	AMZ	2021-11-05	2022-11-05
Attenuator	S.M. Electronics	SA26B-20	TZP	2021-11-05	2022-11-05
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2021-09-12	2022-09-12
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFG	2021-05-18	2022-05-18

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

TbtTx 2021.10.29.2 XMit 2020.12.30.0

EUT:	**Indy2 Rechargeable RIC**			**Work Order:**	**NOVI0019**
Serial Number:	**ii001**			**Date:**	**29-Dec-21**
Customer:	**Novidan, Inc.**			**Temperature:**	**22.9 °C**
Attendees:	**Katie Himes**			**Humidity:**	**16.5% RH**
Project:	**None**			**Barometric Pres.:**	**1020 mbar**
Tested by:	**Andrew Rogstad**	**Power:**	**Battery**	**Job Site:**	**MN08**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2021	ANSI C63.10:2013

COMMENTS

Reference level offset includes measurement cable, attenuator, DC block, and customer's patch cable.

DEVIATIONS FROM TEST STANDARD

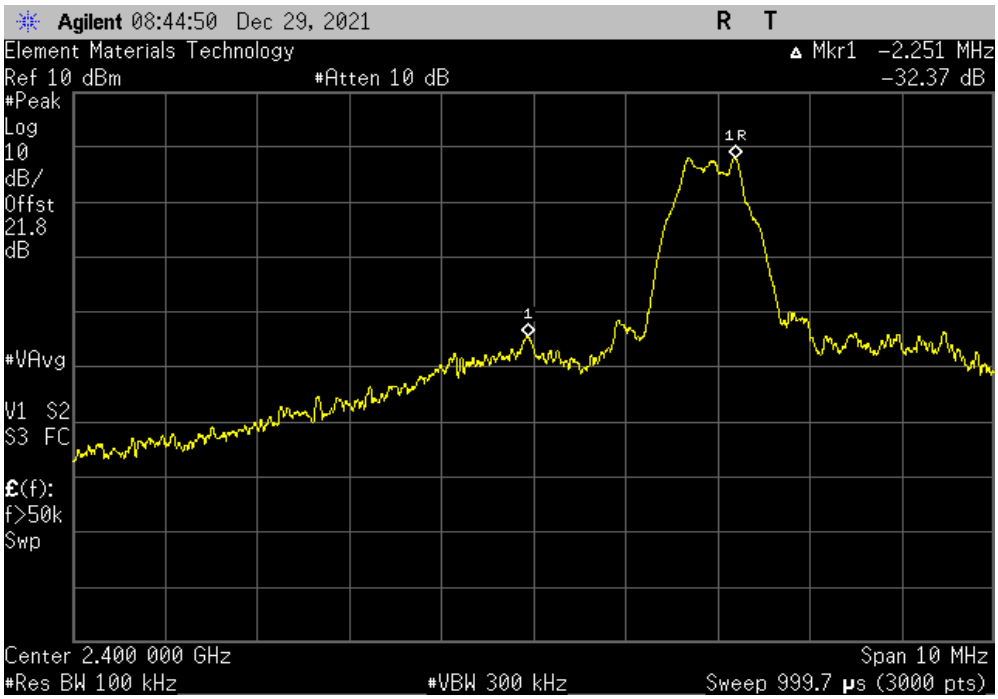
None

Configuration #	**11**	*Signature* Andrew Rogstad

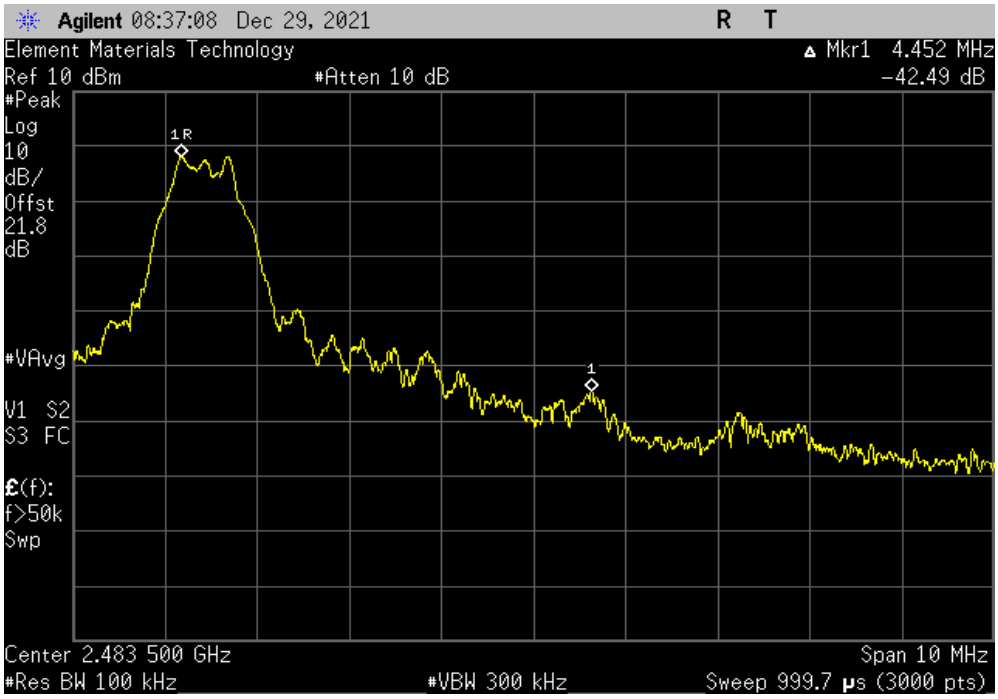
		Value (dBc)	**Limit ≤ (dBc)**	**Result**
BLE/GFSK 1 Mbps				
	Low Channel, 2402 MHz	-32.37	-20	Pass
	High Channel, 2480 MHz	-42.49	-20	Pass
BLE/GFSK 2 Mbps				
	Low Channel, 2402 MHz	-27.66	-20	Pass
	High Channel, 2480 MHz	-40.51	-20	Pass

BAND EDGE COMPLIANCE

BLE/GFSK 1 Mbps, Low Channel, 2402 MHz							
					Value (dBc)	Limit ≤ (dBc)	Result
					-32.37	-20	Pass

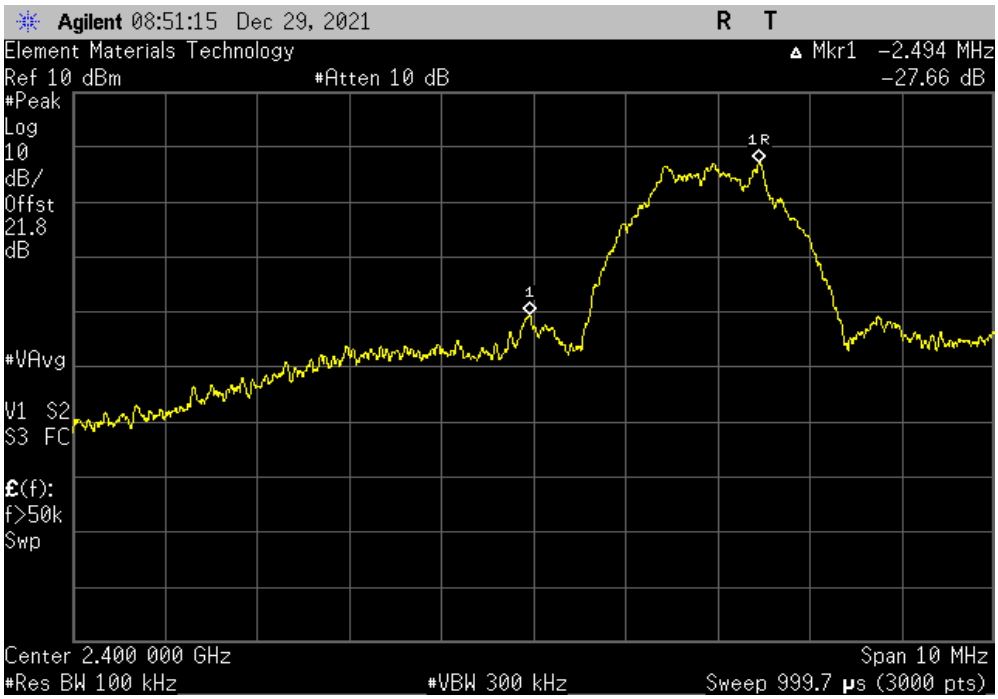


BLE/GFSK 1 Mbps, High Channel, 2480 MHz							
					Value (dBc)	Limit ≤ (dBc)	Result
					-42.49	-20	Pass

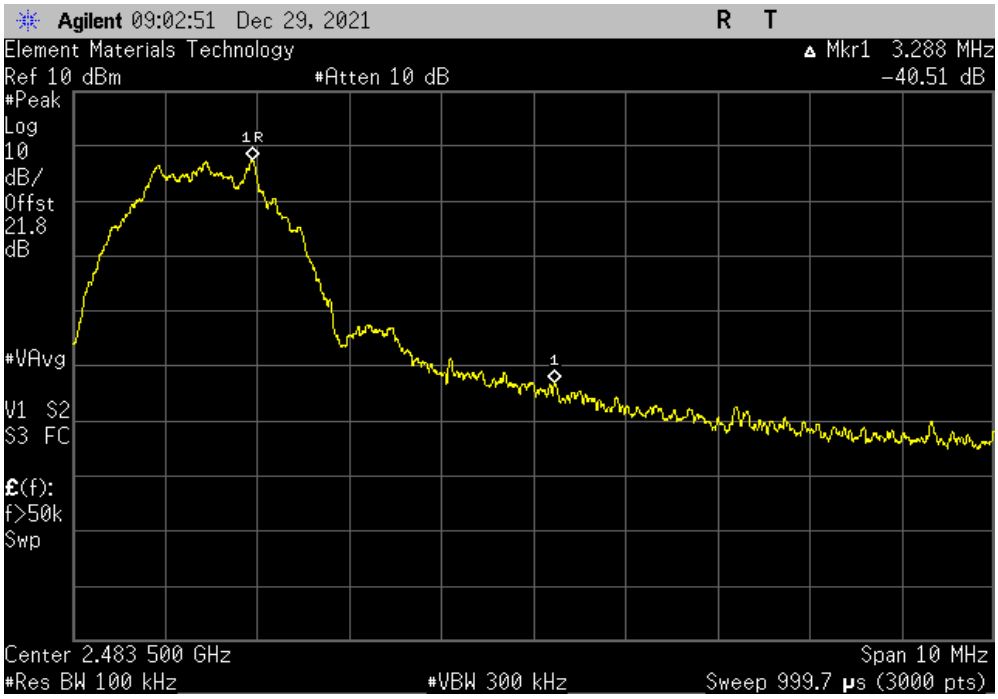


BAND EDGE COMPLIANCE

BLE/GFSK 2 Mbps, Low Channel, 2402 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-27.66	-20	Pass



BLE/GFSK 2 Mbps, High Channel, 2480 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-40.51	-20	Pass



SPURIOUS CONDUCTED EMISSIONS

XMit 2020.12.30.0

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	N5182B	TFX	2020-04-28	2023-04-28
Block - DC	Fairview Microwave	SD3379	AMZ	2021-11-05	2022-11-05
Attenuator	S.M. Electronics	SA26B-20	TZP	2021-11-05	2022-11-05
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2021-09-12	2022-09-12
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFG	2021-05-18	2022-05-18

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

SPURIOUS CONDUCTED EMISSIONS

TbtTx 2021.10.29.2 XMit 2020.12.30.0

EUT:	**Indy2 Rechargeable RIC**			**Work Order:**	**NOVI0019**
Serial Number:	**ii001**			**Date:**	**29-Dec-21**
Customer:	**Novidan, Inc.**			**Temperature:**	**23 °C**
Attendees:	**Katie Himes**			**Humidity:**	**16.7% RH**
Project:	**None**			**Barometric Pres.:**	**1020 mbar**
Tested by:	**Andrew Rogstad**	**Power:**	**Battery**	**Job Site:**	**MN08**
TEST SPECIFICATIONS		**Test Method**			
FCC 15.247:2021		ANSI C63.10:2013			

COMMENTS

Reference level offset includes measurement cable, attenuator, DC block, and customer's patch cable.

DEVIATIONS FROM TEST STANDARD

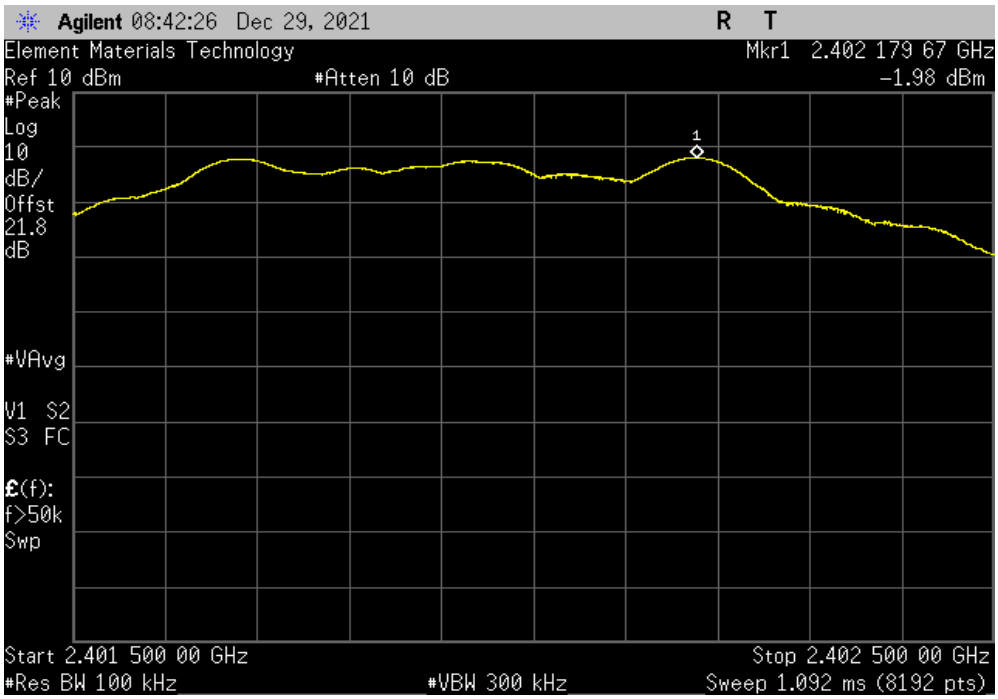
None

Configuration #	**11**	*Signature*

		Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
BLE/GFSK 1 Mbps						
	Low Channel, 2402 MHz	Fundamental	2402.18	N/A	N/A	N/A
	Low Channel, 2402 MHz	30 MHz - 12.5 GHz	2397.3	-44.8	-20	Pass
	Low Channel, 2402 MHz	12.5 GHz - 25 GHz	24919.1	-46.85	-20	Pass
	Mid Channel, 2442 MHz	Fundamental	2442.18	N/A	N/A	N/A
	Mid Channel, 2442 MHz	30 MHz - 12.5 GHz	6775.8	-53.88	-20	Pass
	Mid Channel, 2442 MHz	12.5 GHz - 25 GHz	24908.4	-47.69	-20	Pass
	High Channel, 2480 MHz	Fundamental	2480.18	N/A	N/A	N/A
	High Channel, 2480 MHz	30 MHz - 12.5 GHz	7269	-53.01	-20	Pass
	High Channel, 2480 MHz	12.5 GHz - 25 GHz	24890.1	-47.57	-20	Pass
BLE/GFSK 2 Mbps						
	Low Channel, 2402 MHz	Fundamental	2402.43	N/A	N/A	N/A
	Low Channel, 2402 MHz	30 MHz - 12.5 GHz	2397.3	-35.93	-20	Pass
	Low Channel, 2402 MHz	12.5 GHz - 25 GHz	24845.9	-47.15	-20	Pass
	Mid Channel, 2442 MHz	Fundamental	2442.43	N/A	N/A	N/A
	Mid Channel, 2442 MHz	30 MHz - 12.5 GHz	6617.4	-54.05	-20	Pass
	Mid Channel, 2442 MHz	12.5 GHz - 25 GHz	24983.2	-47.58	-20	Pass
	High Channel, 2480 MHz	Fundamental	2480.43	N/A	N/A	N/A
	High Channel, 2480 MHz	30 MHz - 12.5 GHz	2488.7	-48.79	-20	Pass
	High Channel, 2480 MHz	12.5 GHz - 25 GHz	24937.4	-47.6	-20	Pass

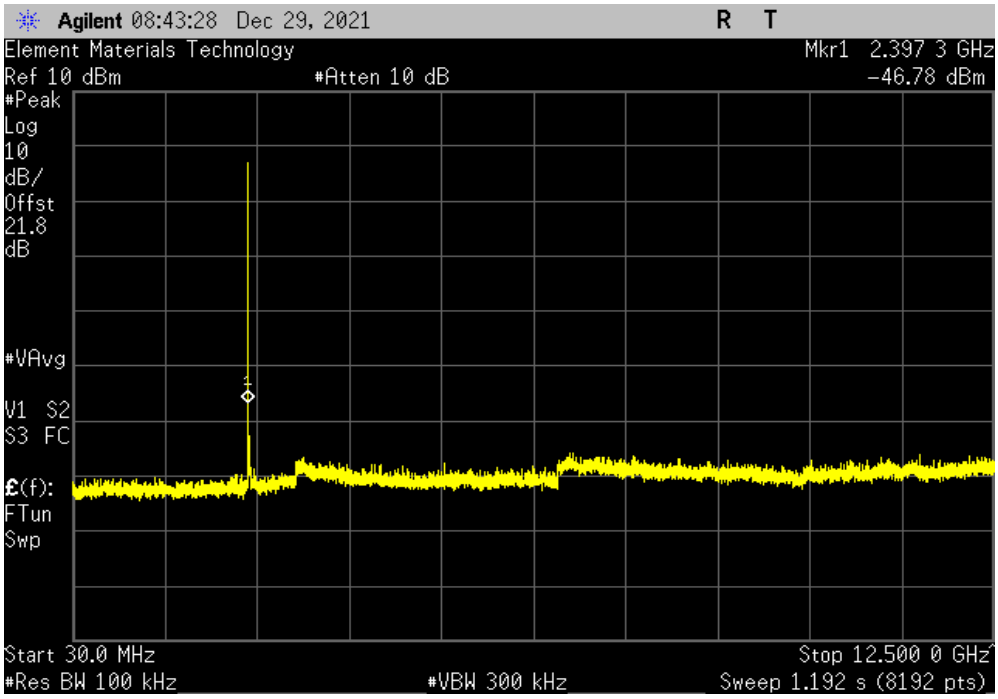
BLE/GFSK 1 Mbps, Low Channel, 2402 MHz

Frequency Range		Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
Fundamental		2402.18	N/A	N/A	N/A

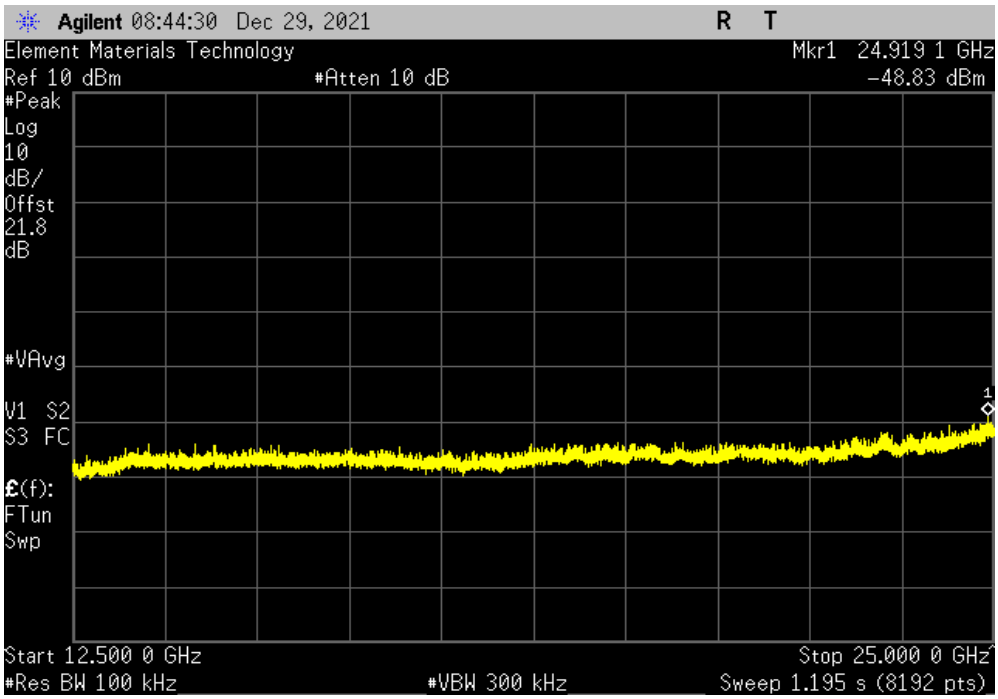


BLE/GFSK 1 Mbps, Low Channel, 2402 MHz

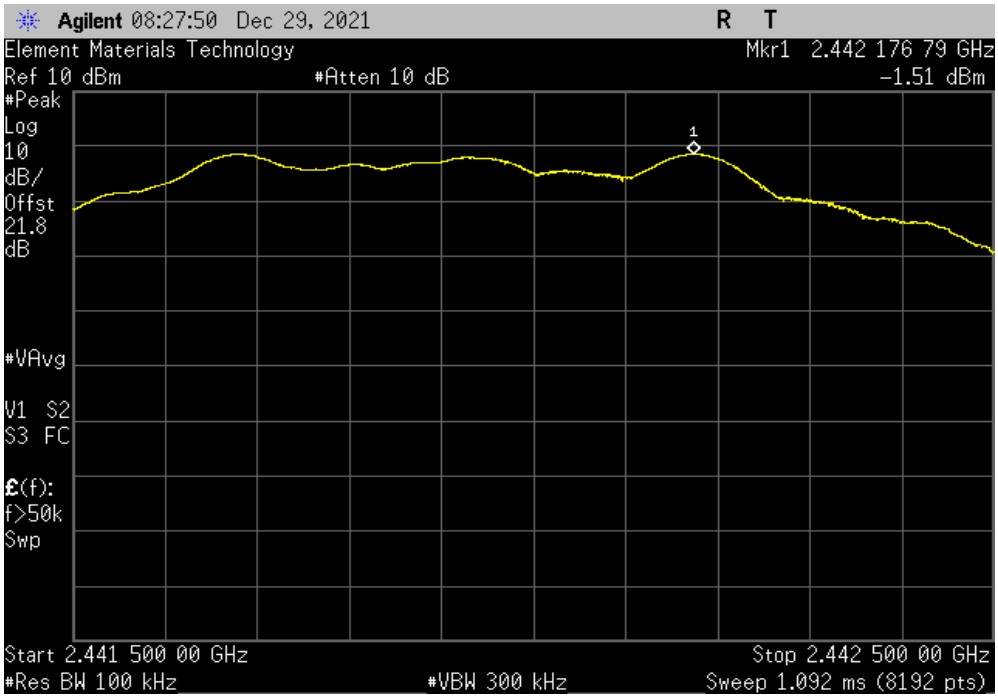
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz	2397.3	-44.8	-20	Pass



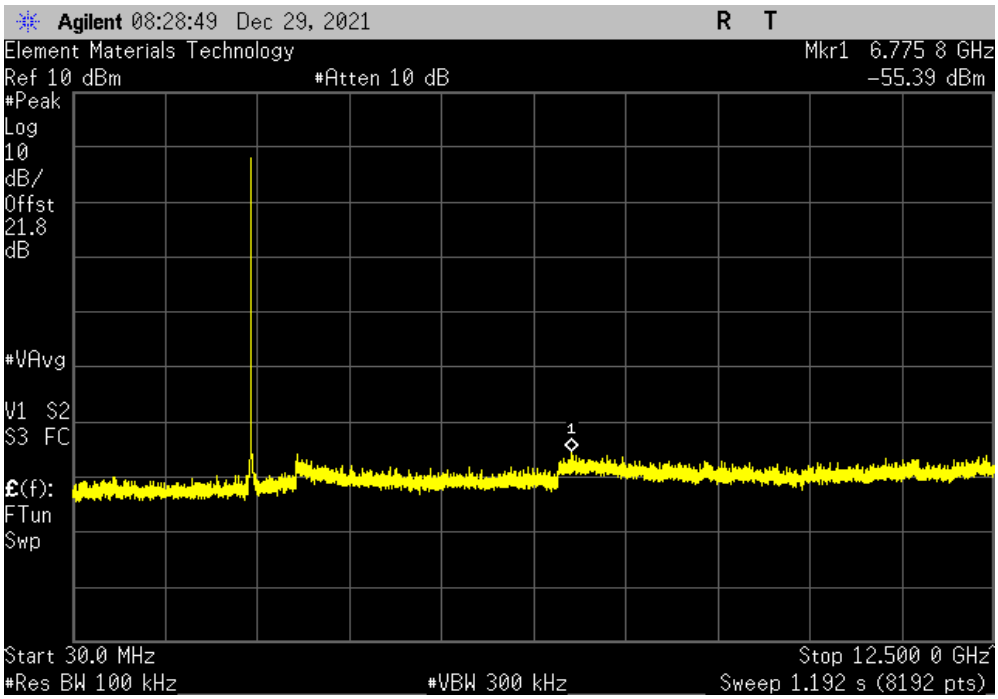
BLE/GFSK 1 Mbps, Low Channel, 2402 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz	24919.1	-46.85	-20	Pass



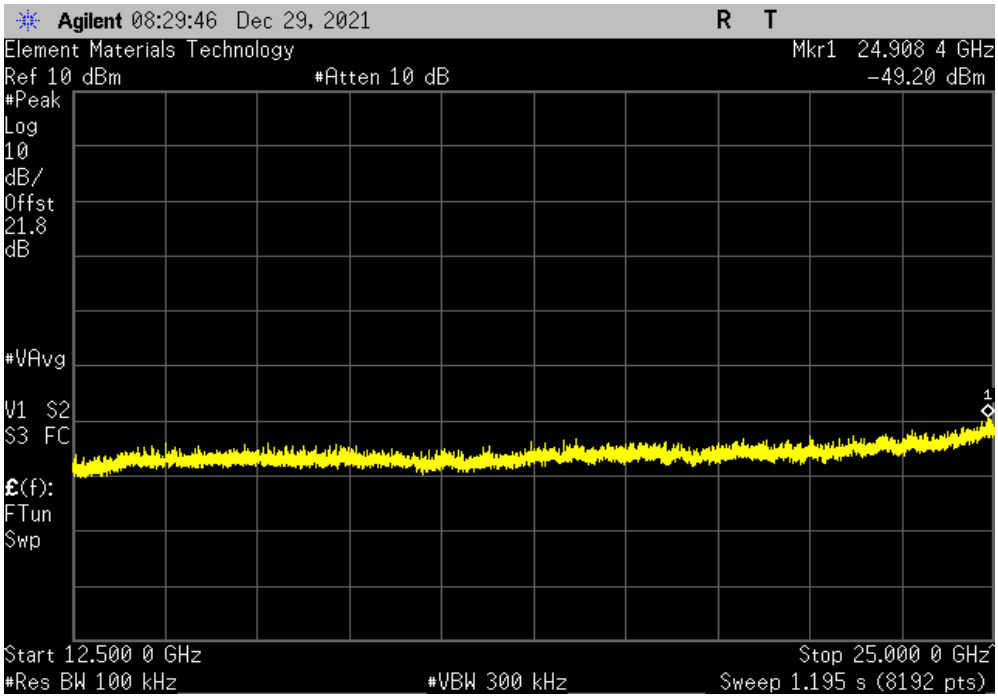
BLE/GFSK 1 Mbps, Mid Channel, 2442 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
Fundamental	2442.18	N/A	N/A	N/A



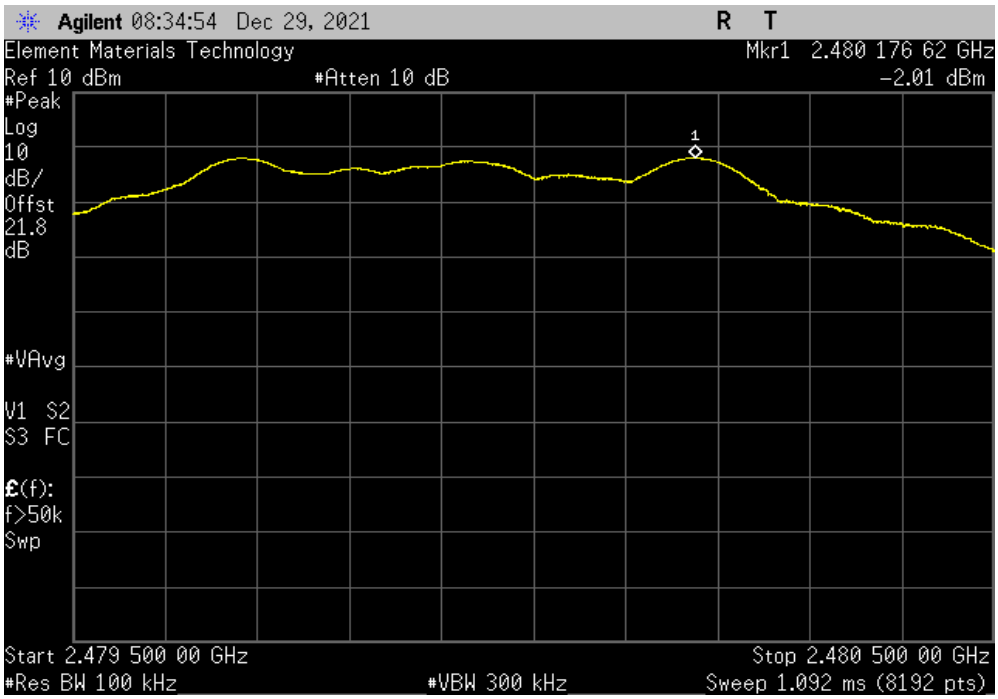
BLE/GFSK 1 Mbps, Mid Channel, 2442 MHz				
Frequency Range	**Measured Freq (MHz)**	**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz	6775.8	-53.88	-20	Pass



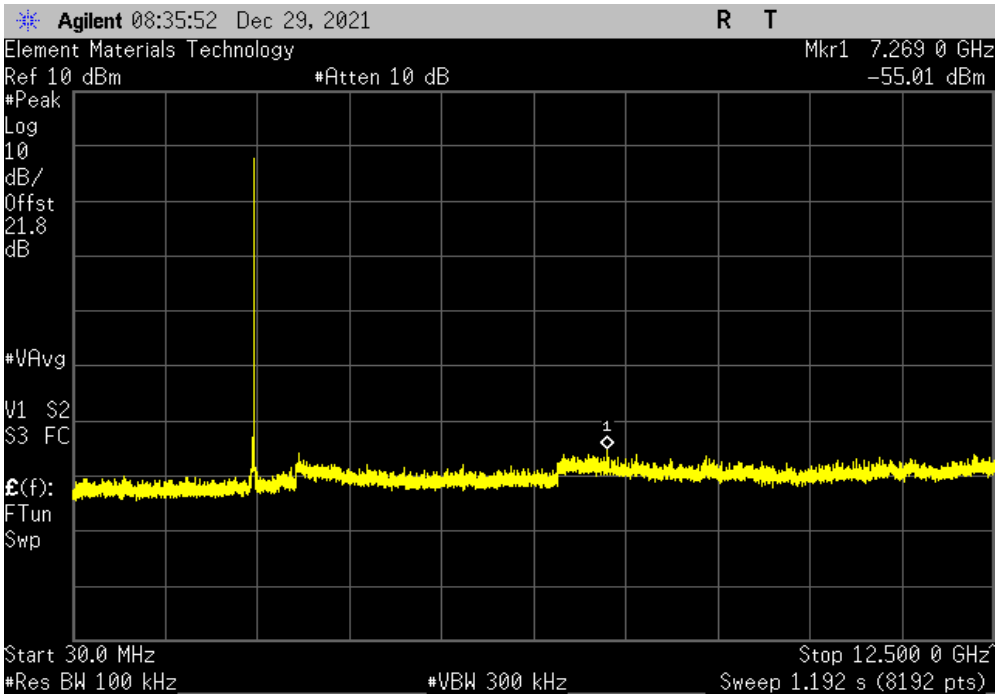
BLE/GFSK 1 Mbps, Mid Channel, 2442 MHz				
Frequency Range	**Measured Freq (MHz)**	**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz	24908.4	-47.69	-20	Pass



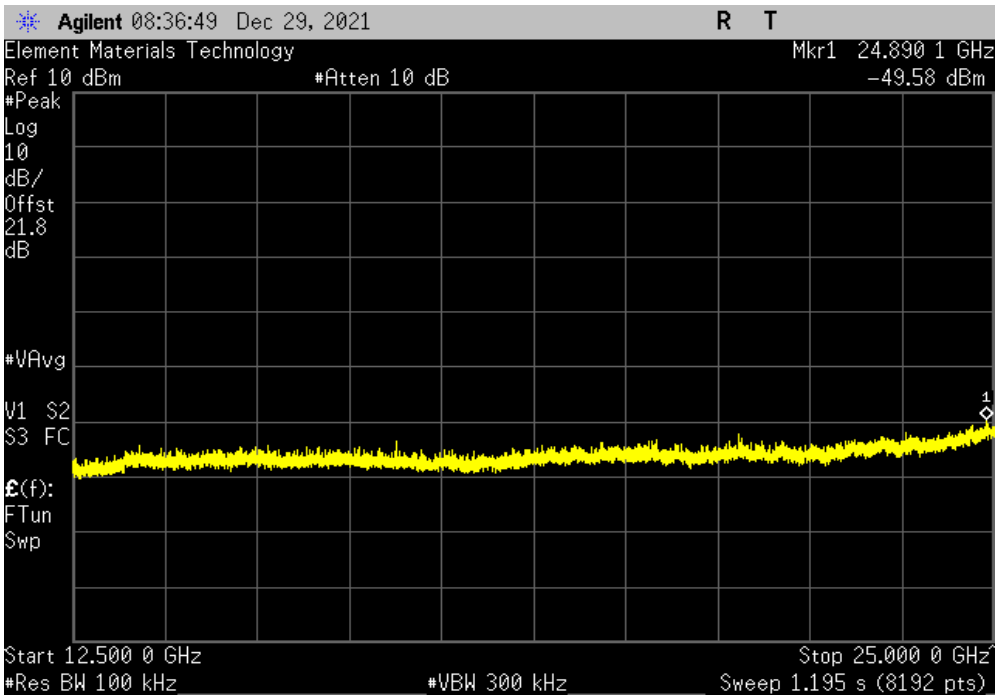
BLE/GFSK 1 Mbps, High Channel, 2480 MHz					
Frequency Range		Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental	2480.18	N/A	N/A	N/A



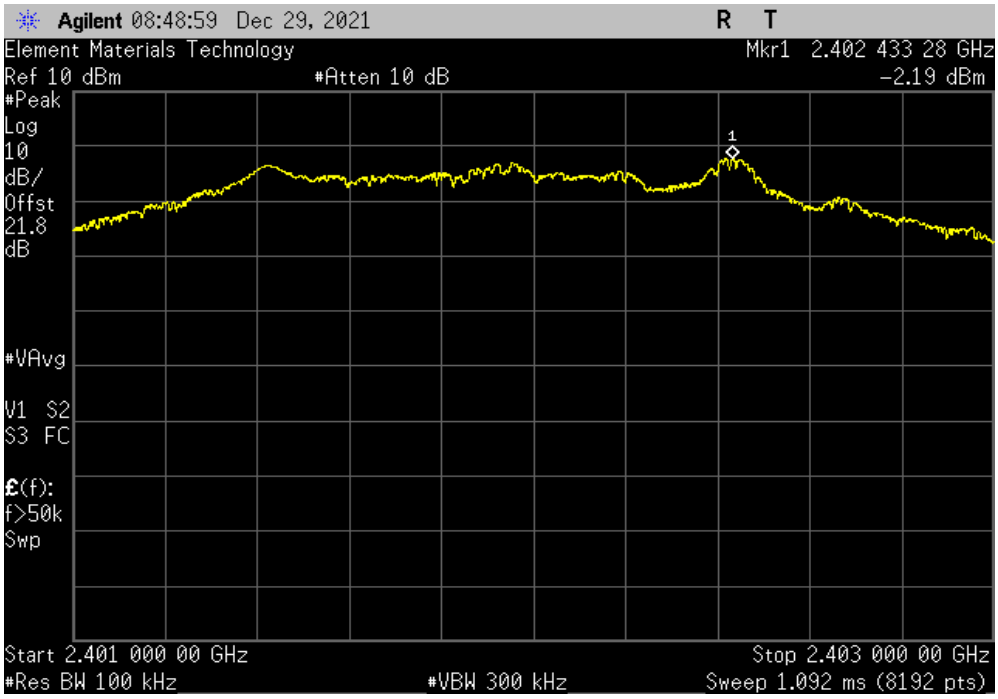
BLE/GFSK 1 Mbps, High Channel, 2480 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz	7269	-53.01	-20	Pass



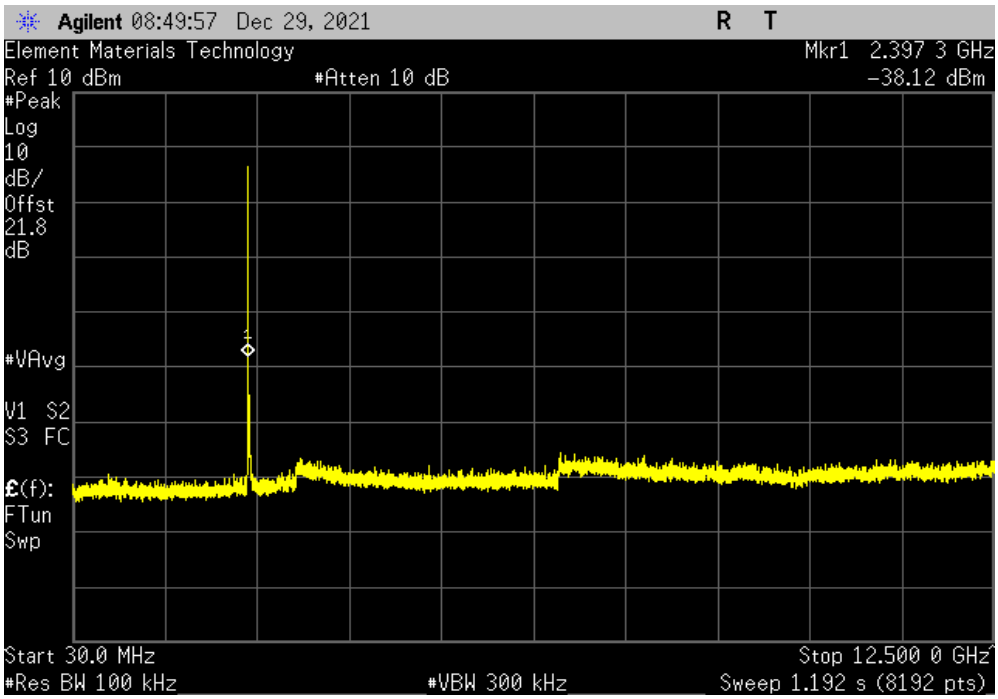
BLE/GFSK 1 Mbps, High Channel, 2480 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz	24890.1	-47.57	-20	Pass



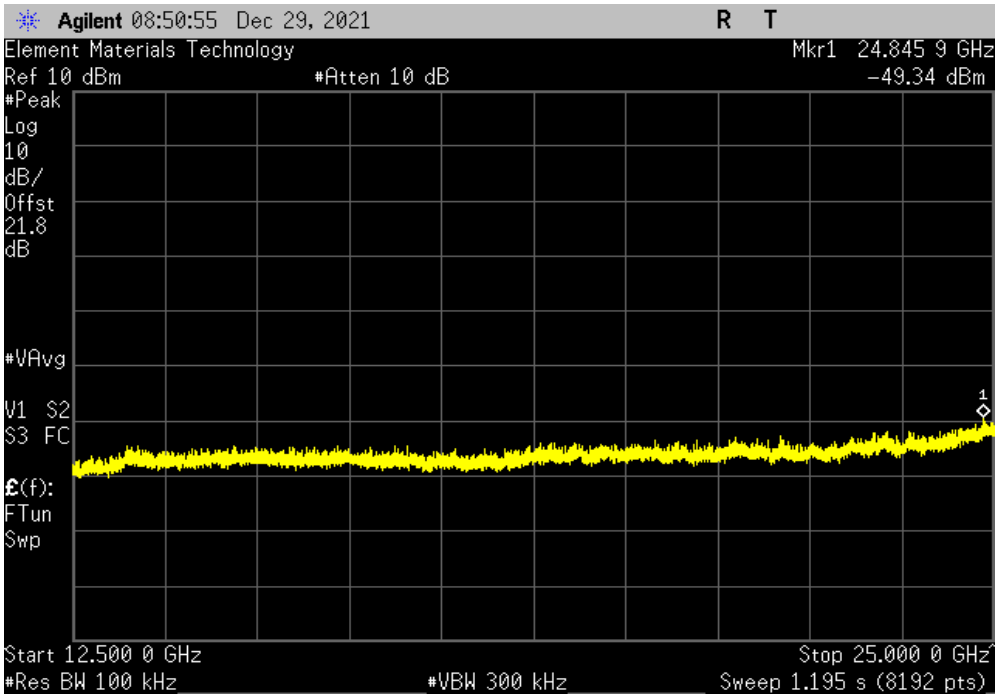
BLE/GFSK 2 Mbps, Low Channel, 2402 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
Fundamental	2402.43	N/A	N/A	N/A



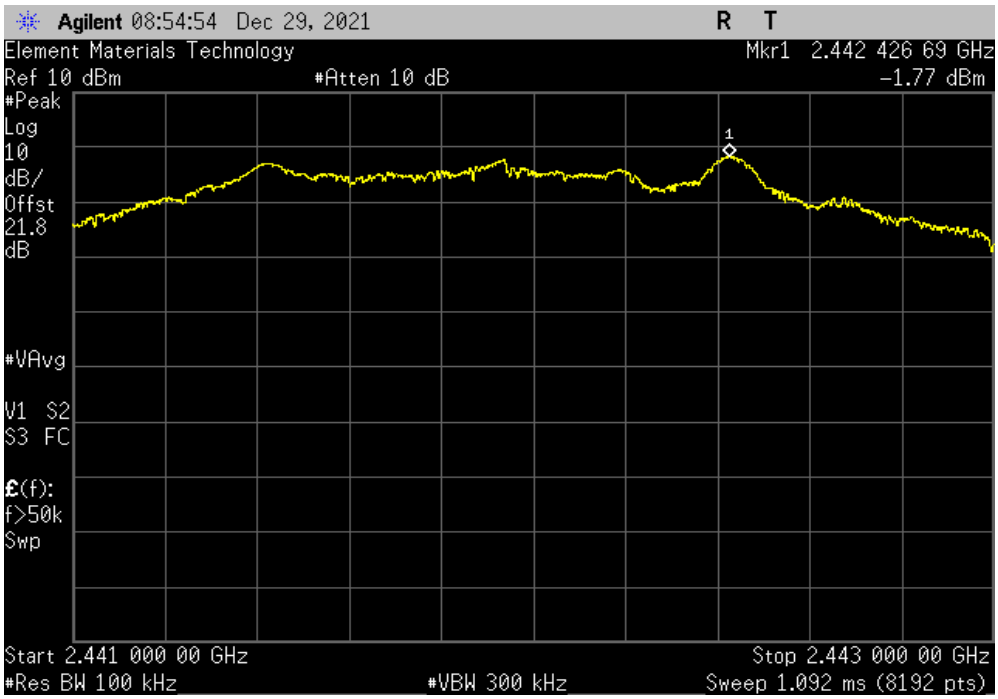
BLE/GFSK 2 Mbps, Low Channel, 2402 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz	2397.3	-35.93	-20	Pass



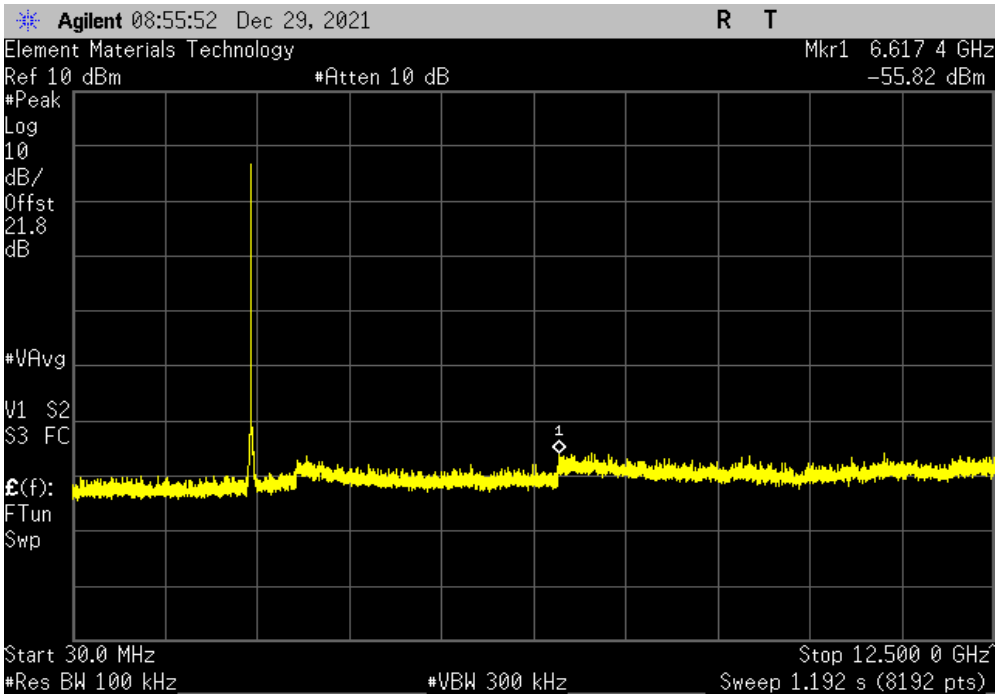
BLE/GFSK 2 Mbps, Low Channel, 2402 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz	24845.9	-47.15	-20	Pass



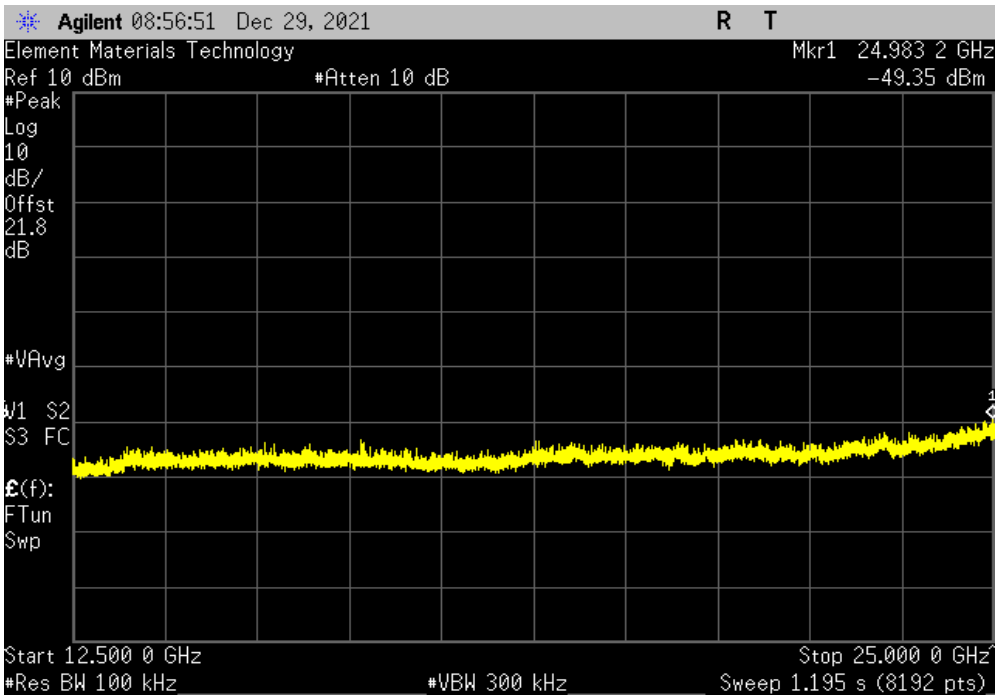
BLE/GFSK 2 Mbps, Mid Channel, 2442 MHz					
Frequency Range		Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
Fundamental		2442.43	N/A	N/A	N/A



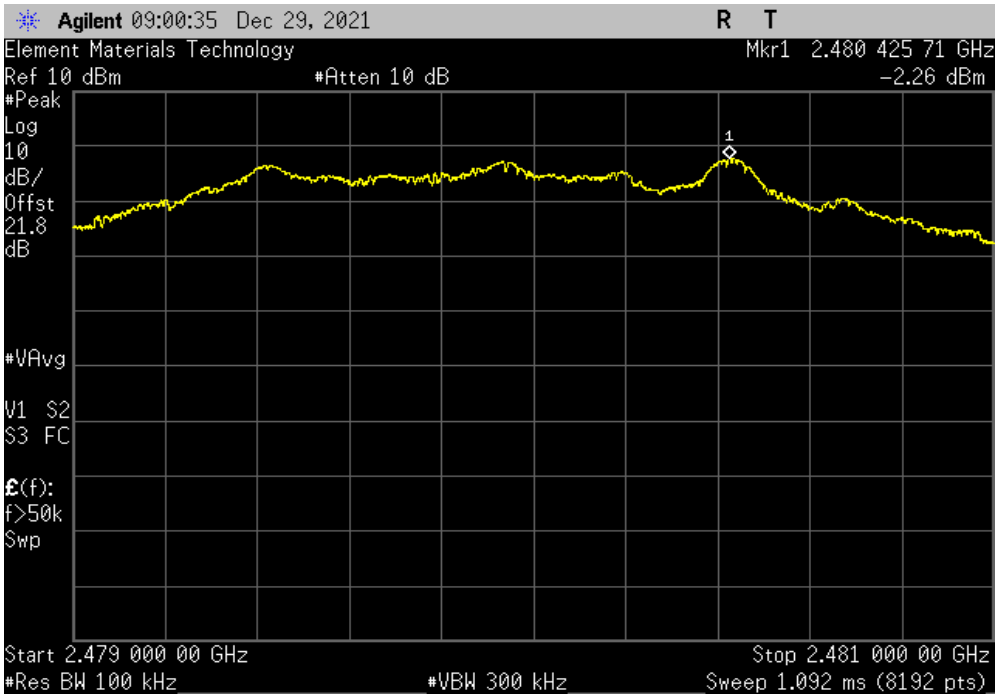
BLE/GFSK 2 Mbps, Mid Channel, 2442 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz	6617.4	-54.05	-20	Pass



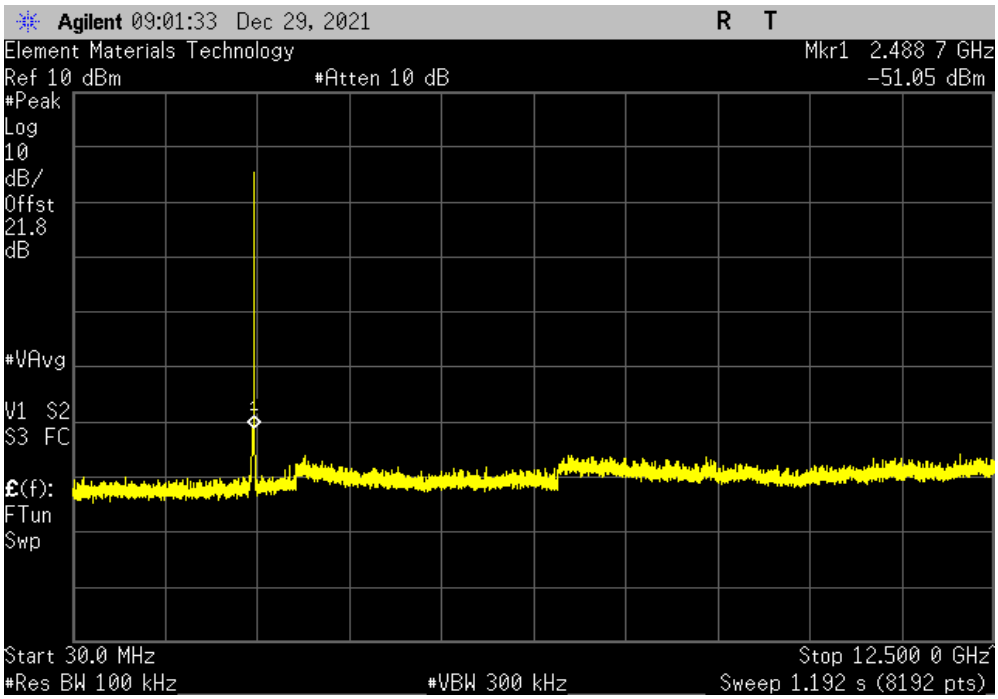
BLE/GFSK 2 Mbps, Mid Channel, 2442 MHz				
Frequency Range	**Measured Freq (MHz)**	**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz	24983.2	-47.58	-20	Pass



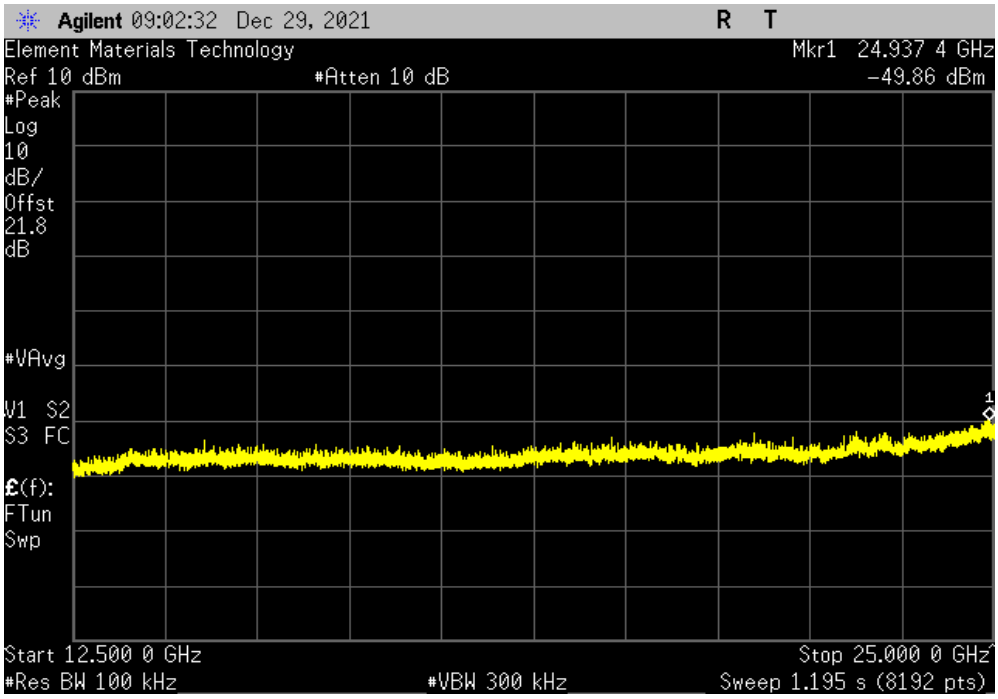
BLE/GFSK 2 Mbps, High Channel, 2480 MHz					
Frequency Range		**Measured Freq (MHz)**	**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
	Fundamental	2480.43	N/A	N/A	N/A



BLE/GFSK 2 Mbps, High Channel, 2480 MHz				
Frequency Range	**Measured Freq (MHz)**	**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz	2488.7	-48.79	-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	24937.4	-47.6	-20	Pass



End of Test Report