Starkey Laboratories, Inc.

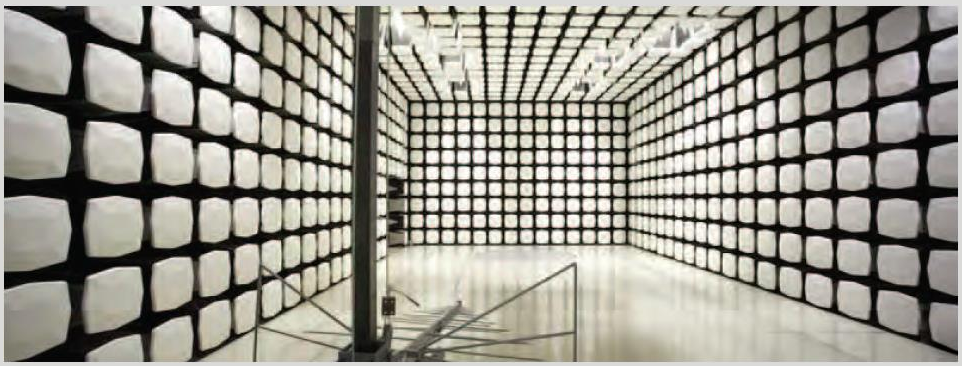
CIC in Genesis AI family

FCC 15.247:2023

RSS-247 Issue 2:2017

Bluetooth Radio

Report: STAK0289.1 Rev. 1, Issue Date: July 11, 2023



CERT #3310.05

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Section	Page Number

CERTIFICATE OF TEST

Last Date of Test: April 20, 2023
Starkey Laboratories, Inc.
EUT: CIC in Genesis AI family

Radio Equipment Testing

Standards

Specification	Method
FCC 15.247:2023	ANSI C63.10:2013, FCC KDB 558074 v05r02:2019
RSS-247 Issue 2:2017	
RSS-Gen Issue 5:2018+A1:2019+A2:2021	

Results

Test Description	Result	FCC Section(s)	RSS Section(s)	ANSI C63.10 Section(s)	Comments
Powerline Conducted Emissions	N/A	15.207	RSS-Gen 8.8	6.2	Not required for battery powered device
Duty Cycle	Pass	KDB 558074 -6.0	RSS-Gen 3.2	11.6	
DTS Bandwidth (6 dB)	Pass	15.247(a)(2), KDB 558074 -8.2	RSS-247 5.2(a)	11.8.2	
Occupied Bandwidth (99%)	Pass	KDB 558074 -2.1	RSS-Gen 6.7	6.9.3	
Output Power	Pass	15.247(b)(3), KDB 558074 - 8.3.1	RSS-247 5.4(d, f), RSS-Gen 6.12	11.9.1.1	
Equivalent Isotropic Radiated Power	Pass	15.247(b)(3), KDB 558074 - 8.3.1	RSS-247 5.4(d, f), RSS-Gen 6.12	11.9.1.1	
Power Spectral Density	Pass	15.247(e), KDB 558074 -8.4	RSS-247 5.2(b)	11.10.2	
Band Edge Compliance	Pass	15.247(d), KDB 558074 -8.5	RSS-247 5.5	11.11	
Spurious Conducted Emissions	Pass	15.247(d), KDB 558074 -8.5	RSS-247 5.5	11.11	
Spurious Radiated Emissions	Pass	15.247(d), KDB 558074 - 8.6, 8.7	RSS-247 5.5, RSS-Gen 6.13, 8.10	11.12.1, 11.13.2, 6.5, 6.6	

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		
01	Added Contents, updated CoT, corrected OBW	2023-07-11	All

ACCREDITATIONS AND AUTHORIZATIONS

element
2021.09.01

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

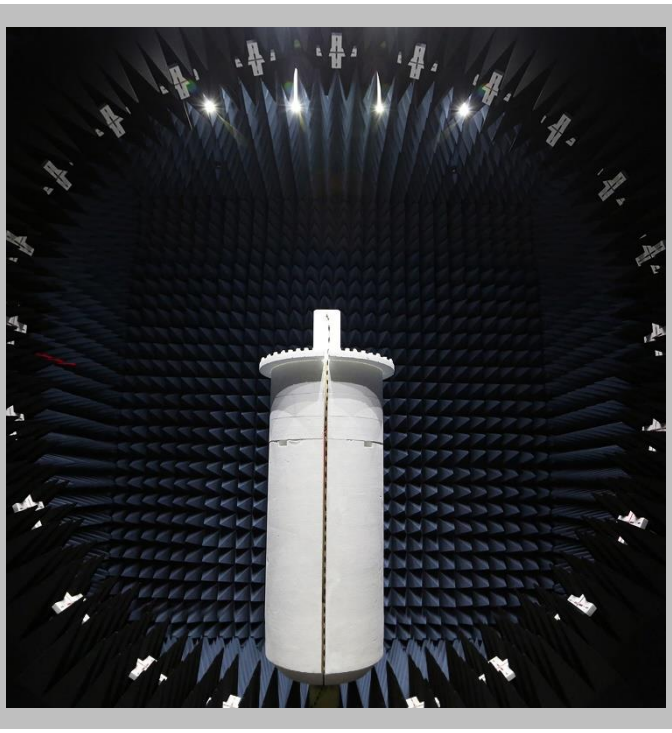
For details on the Scopes of our Accreditations, please visit:

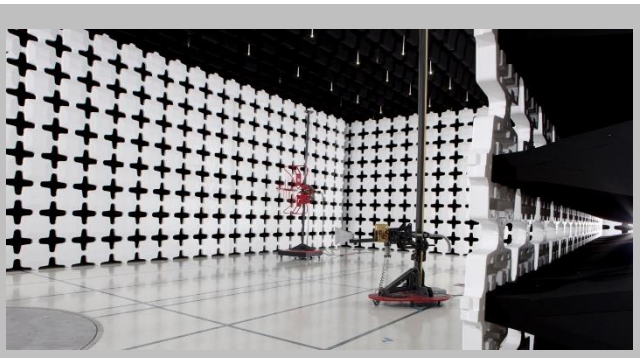
California Minnesota Oregon Texas Washington

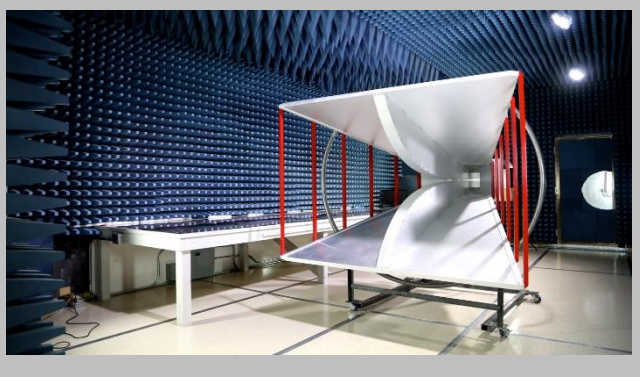
FACILITIES

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
RP.2023.05.08.0

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 Location: Minneapolis

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

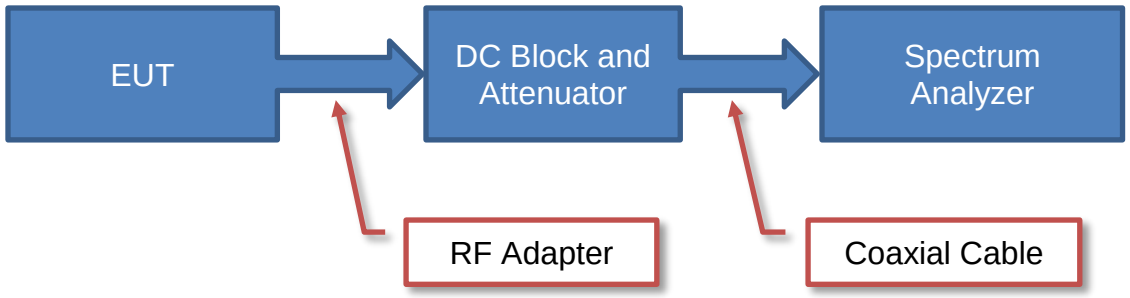
TEST SETUP BLOCK DIAGRAMS

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.

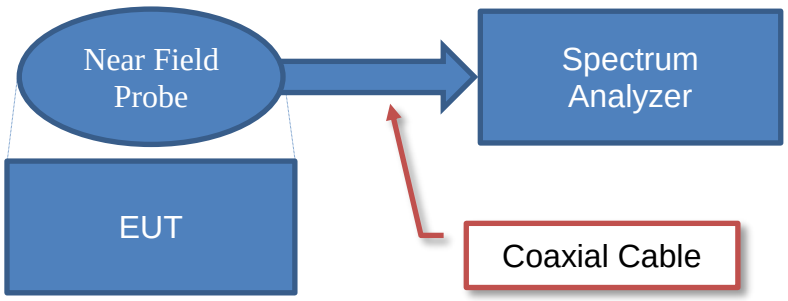
Antenna Port Conducted Measurements



Sample Calculation (logarithmic units)

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

Near Field Test Fixture Measurements

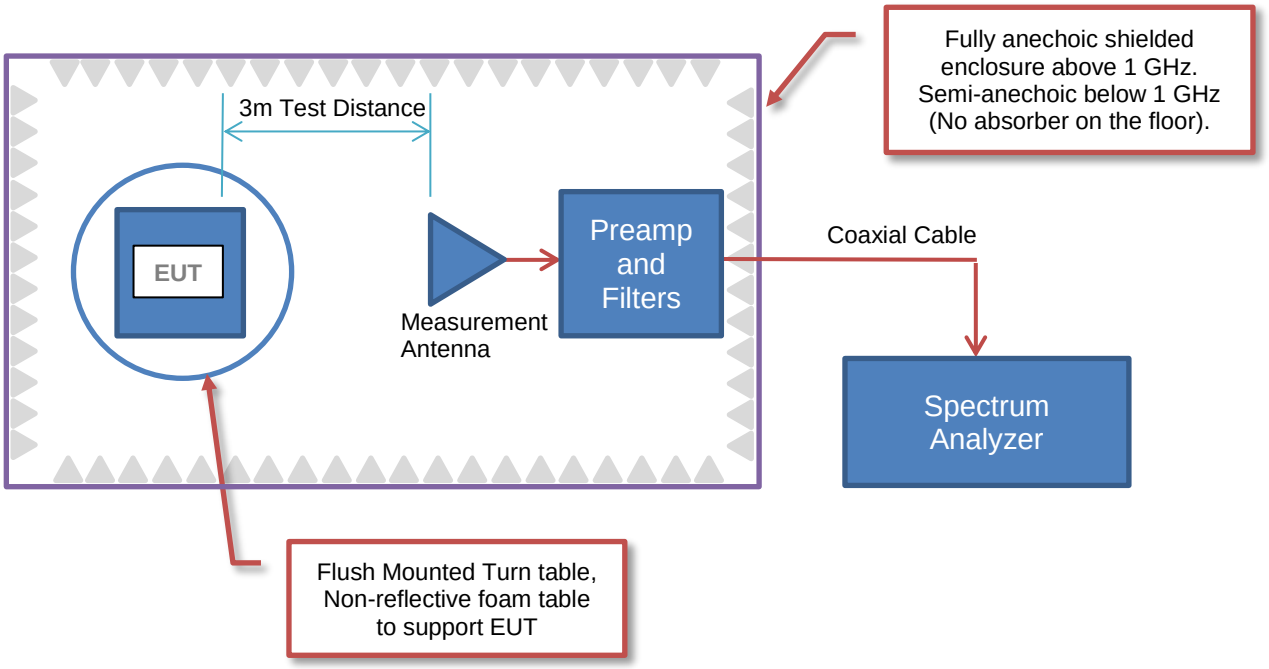


Sample Calculation (logarithmic units)

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**

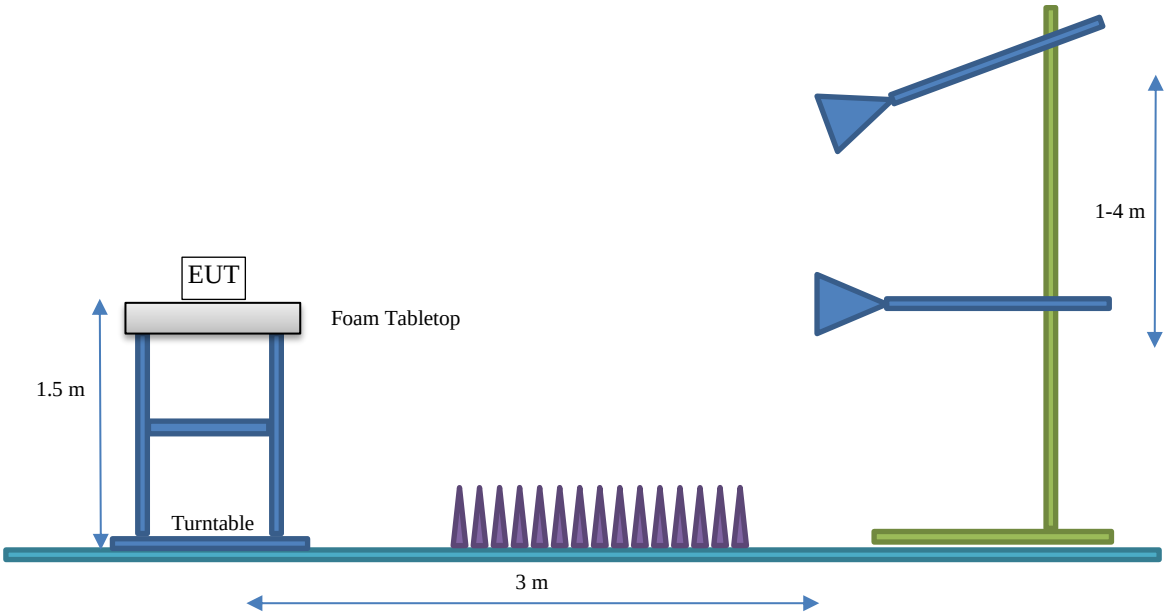
Radiated Power (ERP/EIRP) – Substitution Method:

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

TEST SETUP BLOCK DIAGRAMS

Bore Sighting (>1GHz)

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



PRODUCT DESCRIPTION

Client and Equipment under Test (EUT) Information

Company Name:	Starkey Laboratories, Inc.
Address:	6600 Washington Ave S
City, State, Zip:	Eden Prairie, MN 55344-3404
Test Requested By:	Bill Mitchell
EUT:	CIC in Genesis AI family
First Date of Test:	April 18, 2023
Last Date of Test:	April 20, 2023
Receipt Date of Samples:	April 18, 2023
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
CIC Hearing aids

Testing Objective:
To demonstrate compliance of the Bluetooth radio to FCC 15.247/RSS-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. The power settings below reflect the maximum power that the EUT is allowed to transmit at during normal operation.

ANTENNA GAIN (dBi)

Type	Provided by:	Frequency Range (MHz)	Gain (dBi)
Flex PCB	Starkey Laboratories, Inc	2400-2483.5	-4.0

The EUT was tested using the power settings provided by the manufacturer which were based upon:

☐ Test software settings Test software/firmware installed on EUT: Monaco ver 6.3.3.0
☒ Rated power settings

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	+6
		20 or 18	2442	+6
		39	2480	+6

CONFIGURATIONS

Configuration STAK0289-1

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Hearing Aid	Starkey Laboratories, Inc	CIC in Genesis AI family	2911336569

Configuration STAK0289-3

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Hearing Aid	Starkey Laboratories, Inc	CIC in Genesis AI family	2911336581

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2023-04-18	Band Edge Compliance	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
2	2023-04-18	DTS Bandwidth (6 dB)	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
3	2023-04-18	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.
4	2023-04-18	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	2023-04-18	Occupied Bandwidth (99%)	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
6	2023-04-18	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.
7	2023-04-18	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.
8	2023-04-18	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.
9	2023-04-20	Spurious Radiated Emissions	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
10	2023-04-20	Duty Cycle (SRE Test Mode)	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

DUTY CYCLE

XMit 2023.02.14.0

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
Block - DC	Fairview Microwave	SD3379	AMZ	2022-11-06	2023-11-06
Meter - Power	ETS Lindgren	7002-008	SRA	2023-02-21	2024-02-21
Attenuator	S.M. Electronics	SA26B-20	TZP	2022-11-06	2023-11-06
Generator - Signal	Agilent	N5183A	TIK	2022-01-24	2025-01-24
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2022-04-25	2023-04-25
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2022-09-10	2023-09-10

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 USB RF Power Meter. The transmit power was set to its default maximum.

The duty cycle was calculated by dividing the transmission pulse duration (T) by the total period of a single on and total off time.

If the transmit duty cycle < 98 percent, burst gating may have been used during some of the other tests in this report to only take the measurement during the burst duration.

DUTY CYCLE

TbtTx 2022.06.03.0 XMit 2023.02.14.0

EUT:	**CIC in Genesis AI family**			**Work Order:**	**STAK0289**
Serial Number:	**2911336569**			**Date:**	**04/18/2023**
Customer:	**Starkey Laboratories, Inc.**			**Temperature:**	**21.2°C**
Attendees:	**John Quach**			**Humidity:**	**27.8%**
Project:	**None**			**Barometric Pres.:**	**1014 mbar**
Tested by:	**Christopher Heintzelman**	**Power:**	**1.45 VDC Battery**	**Job Site:**	**MN11**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2023	ANSI C63.10:2013
RSS-247 Issue 2:2017	ANSI C63.10:2013

COMMENTS

Reference level offset includes attenuator, measurement cable, DC block, and 1.0 dB loss in the customer's patch cable, as declared by the customer. The duty cycle of this product is not regular, so an USB RF Power Sensor was used to determine the duty cycle. The settings on this page were used for all tests in this report except for Spurious Radiated Emissions. These settings are: 1 Mbps mode is set to 3500us on, 8000us off. 2 Mbps mode is set to 3500us on, 8000us off.

DEVIATIONS FROM TEST STANDARD

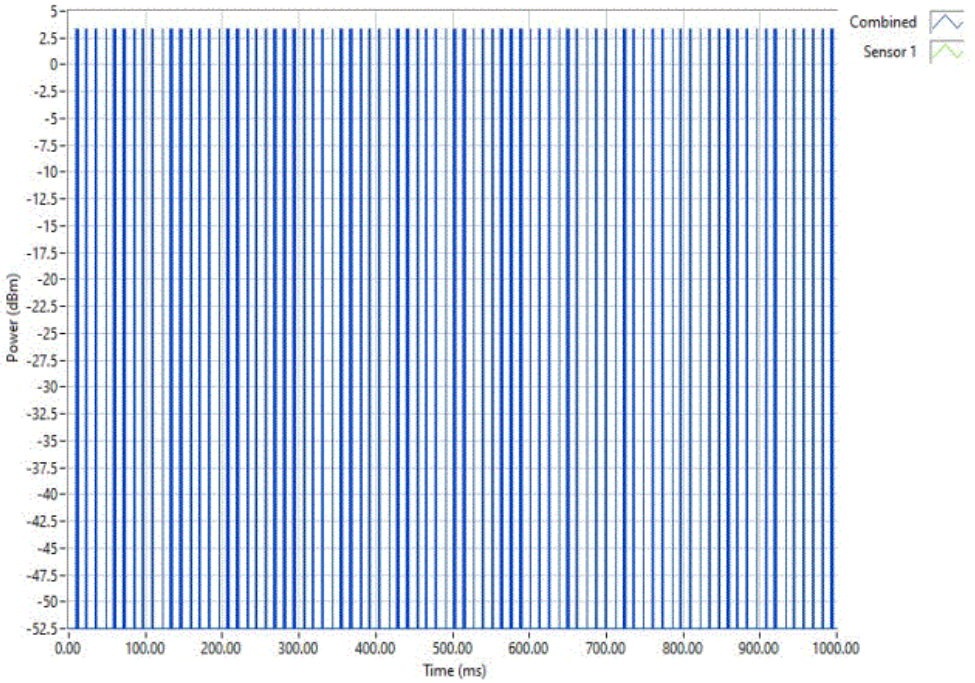
None

Configuration #	**STAK0289-1**	*Signature*

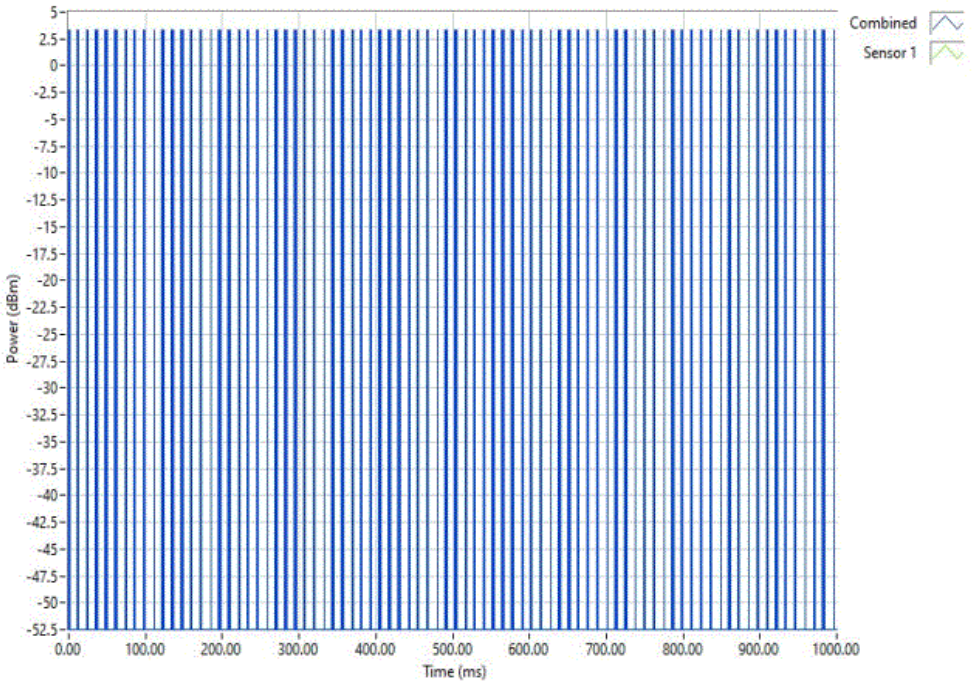
	Duty Cycle (%)	**Results**
Normal Test Conditions		
BLE/GFSK 1 Mbps Low Channel, 2402 MHz	10.345	N/A
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz	10.754	N/A
BLE/GFSK 1 Mbps High Channel, 2480 MHz	10.209	N/A
BLE/GFSK 2 Mbps Low Channel, 2402 MHz	5.272	N/A
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz	5.67	N/A
BLE/GFSK 2 Mbps High Channel, 2480 MHz	5.459	N/A

DUTY CYCLE

Normal Test Conditions, BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
		Duty Cycle (%)				Results
		10.345				N/A

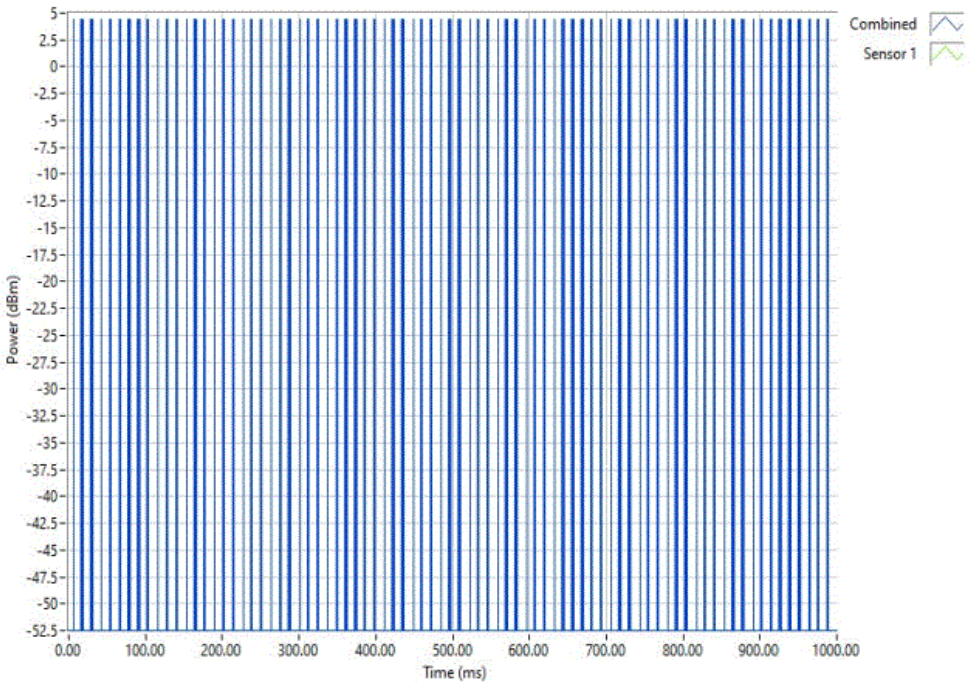


Normal Test Conditions, BLE/GFSK 1 Mbps Mid Channel, 2442 MHz						
		Duty Cycle (%)				Results
		10.754				N/A

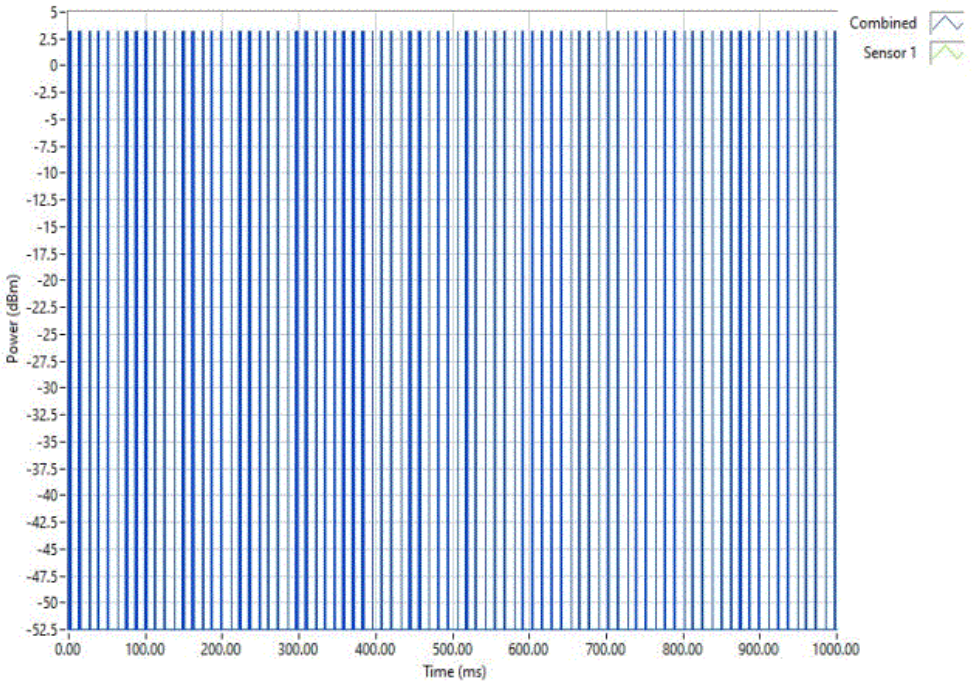


DUTY CYCLE

Normal Test Conditions, BLE/GFSK 1 Mbps High Channel, 2480 MHz						
		Duty Cycle (%)				Results
		10.209				N/A



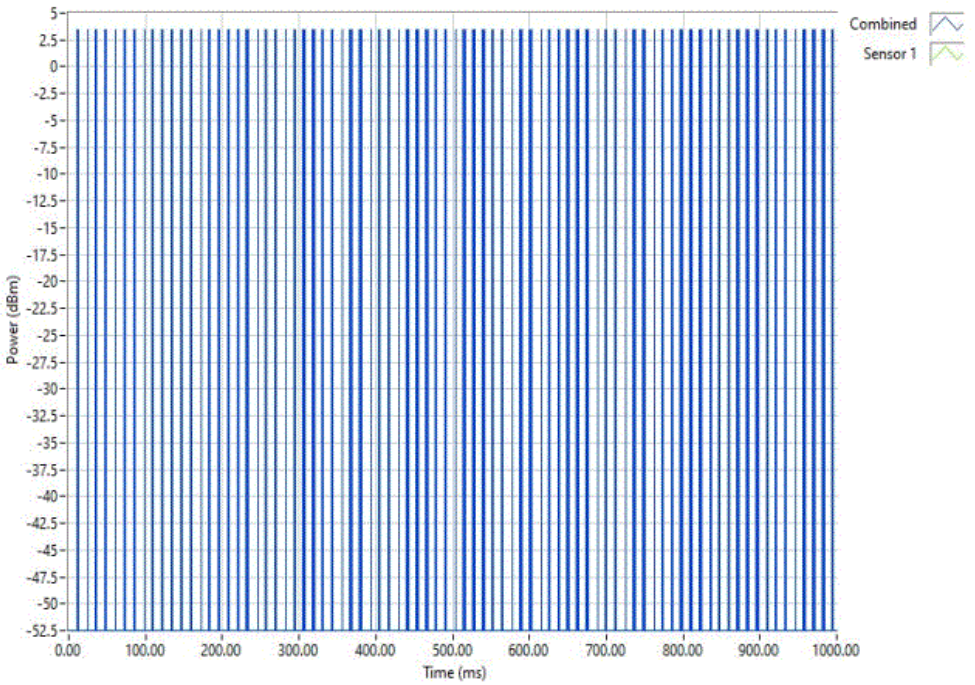
Normal Test Conditions, BLE/GFSK 2 Mbps Low Channel, 2402 MHz						
		Duty Cycle (%)				Results
		5.272				N/A



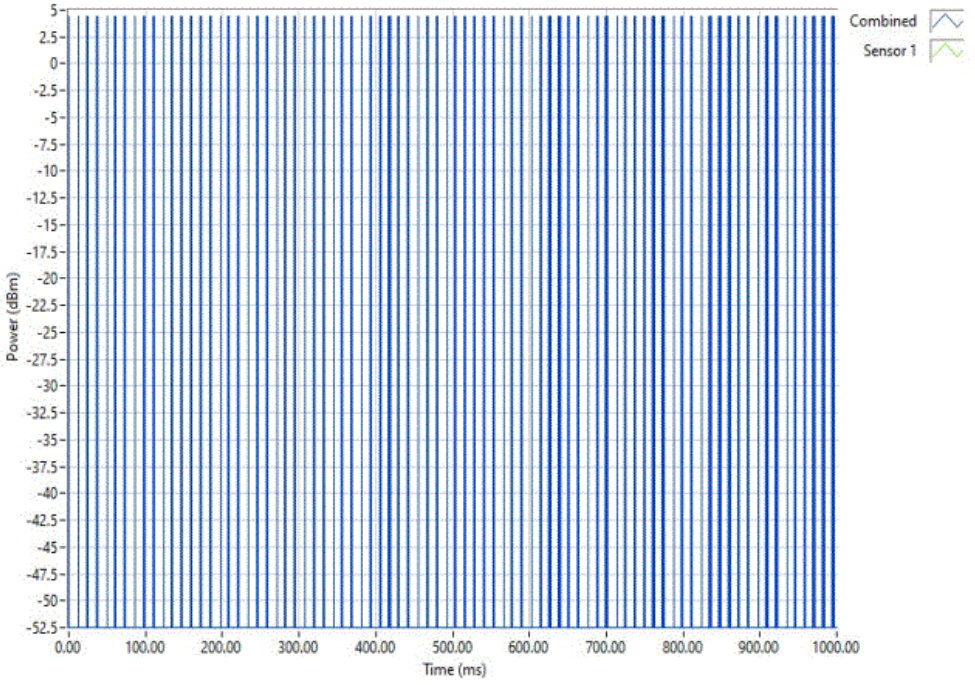
DUTY CYCLE

TbtTx 2022.06.03.0 XMit 2023.02.14.0

Normal Test Conditions, BLE/GFSK 2 Mbps Mid Channel, 2442 MHz						
		Duty Cycle (%)				Results
		5.67				N/A



Normal Test Conditions, BLE/GFSK 2 Mbps High Channel, 2480 MHz						
		Duty Cycle (%)				Results
		5.459				N/A



DUTY CYCLE (SRE TEST MODE)

XMit 2023.02.14.0

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
Attenuator	S.M. Electronics	SA26B-20	TZP	2022-11-06	2023-11-06
Block - DC	Fairview Microwave	SD3379	AMZ	2022-11-06	2023-11-06
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2022-09-10	2023-09-10
Generator - Signal	Agilent	N5183A	TIK	2022-01-24	2025-01-24
Meter - Power	ETS Lindgren	7002-008	SRA	2023-02-21	2024-02-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2022-04-25	2023-04-25

TEST DESCRIPTION

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

The Duty Cycle (x) of the single channel operation of the radio as controlled by the provided test software was measured for each of the EUT operating modes.

There is no compliance requirement to be met by this test, so therefore no Pass / Fail criteria.

The measurements were made using a zero span on the spectrum analyzer to see the pulses in the time domain. The transmit power was set to its default maximum.

The duty cycle was calculated by dividing the transmission pulse duration (T) by the total period of a single on and total off time.

If the transmit duty cycle < 98 percent, burst gating may have been used during some of the other tests in this report to only take the measurement during the burst duration.

DUTY CYCLE (SRE TEST MODE)

element

TbtTx 2022.06.03.0 XMit 2023.02.14.0

EUT:	CIC in Genesis AI family			**Work Order:**	STAK0289
Serial Number:	2911336569			**Date:**	04/20/2023
Customer:	Starkey Laboratories, Inc.			**Temperature:**	21.3°C
Attendees:	John Quach			**Humidity:**	32.8%
Project:	None			**Barometric Pres.:**	1006 mbar
Tested by:	Christopher Heintzelman	**Power:**	1.45 VDC Battery	**Job Site:**	MN05

TEST SPECIFICATIONS	Test Method
FCC 15.247:2023	ANSI C63.10:2013
RSS-247 Issue 2:2017	ANSI C63.10:2013

COMMENTS

Reference level offset includes attenuator, measurement cable, DC block, and 1.0 dB loss in the customer's patch cable, as declared by the customer. The duty cycle of this product is not regular, so an USB RF Power Sensor was used to determine the duty cycle. The settings on this page were used for Spurious Radiated Emissions only. These settings are: 1 Mbps mode is set to 3500us on, 4420us off. 2 Mbps mode is set to 3500us on, 8000us off.

DEVIATIONS FROM TEST STANDARD

None

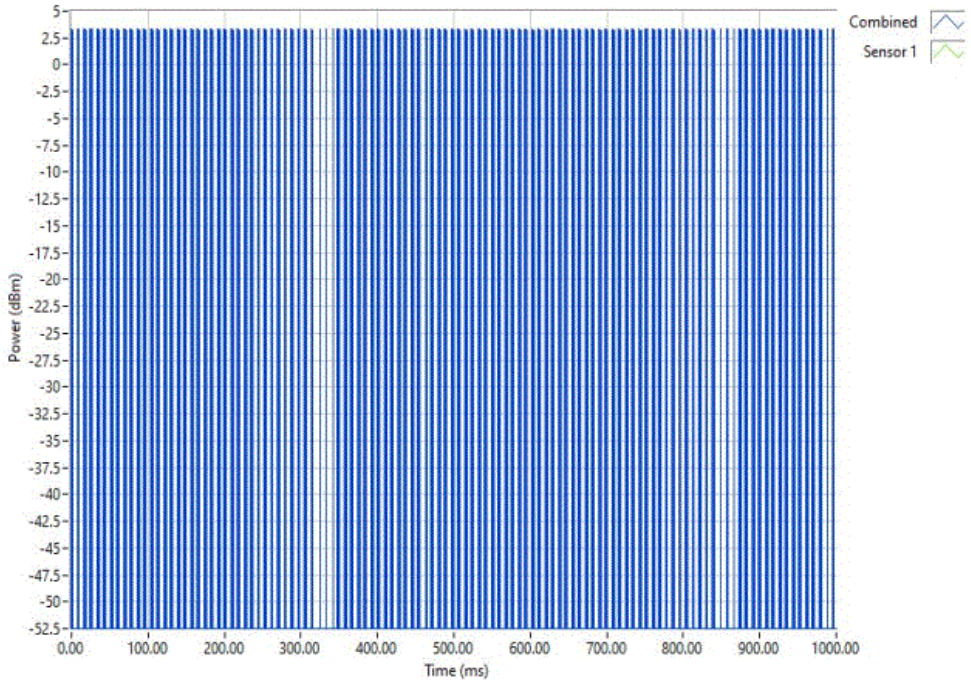
Configuration #	STAK0289-1	Signature

	Duty Cycle (%)	Limit	Results
Normal Test Conditions			
BLE/GFSK 1 Mbps Low Channel, 2402 MHz	20.341	N/A	N/A
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz	22.348	N/A	N/A
BLE/GFSK 1 Mbps High Channel, 2480 MHz	21.918	N/A	N/A
BLE/GFSK 2 Mbps Low Channel, 2402 MHz	5.336	N/A	N/A
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz	5.631	N/A	N/A
BLE/GFSK 2 Mbps High Channel, 2480 MHz	5.756	N/A	N/A

DUTY CYCLE (SRE TEST MODE)

TbtTx 2022.06.03.0 XMit 2023.02.14.0

Normal Test Conditions, BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
		Duty Cycle (%)			Limit	Results
		20.341			N/A	N/A

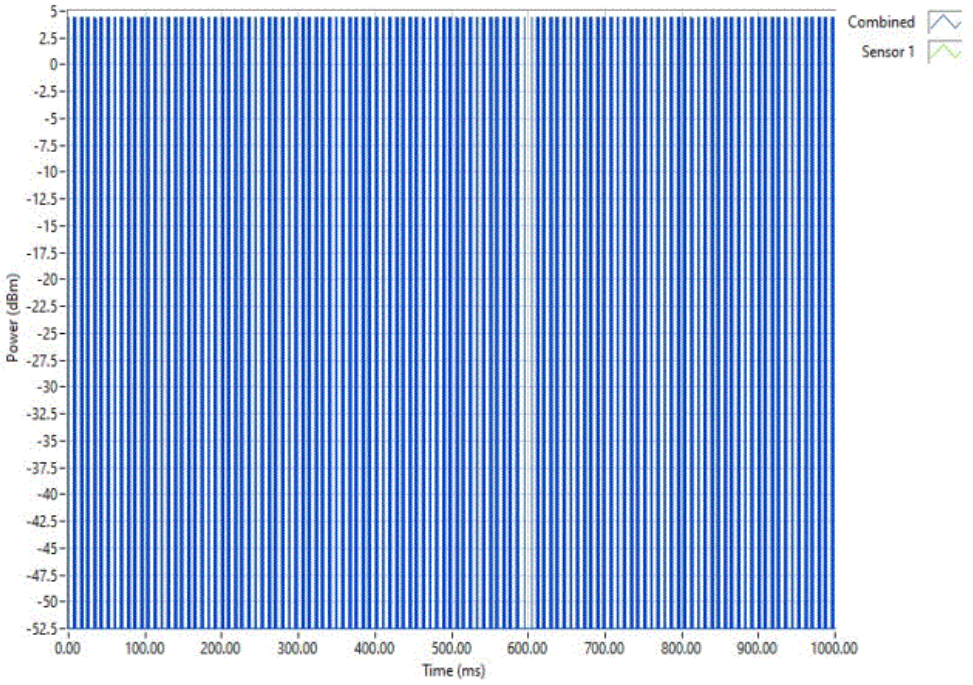


Normal Test Conditions, BLE/GFSK 1 Mbps Mid Channel, 2442 MHz						
		Duty Cycle (%)			Limit	Results
		22.348			N/A	N/A

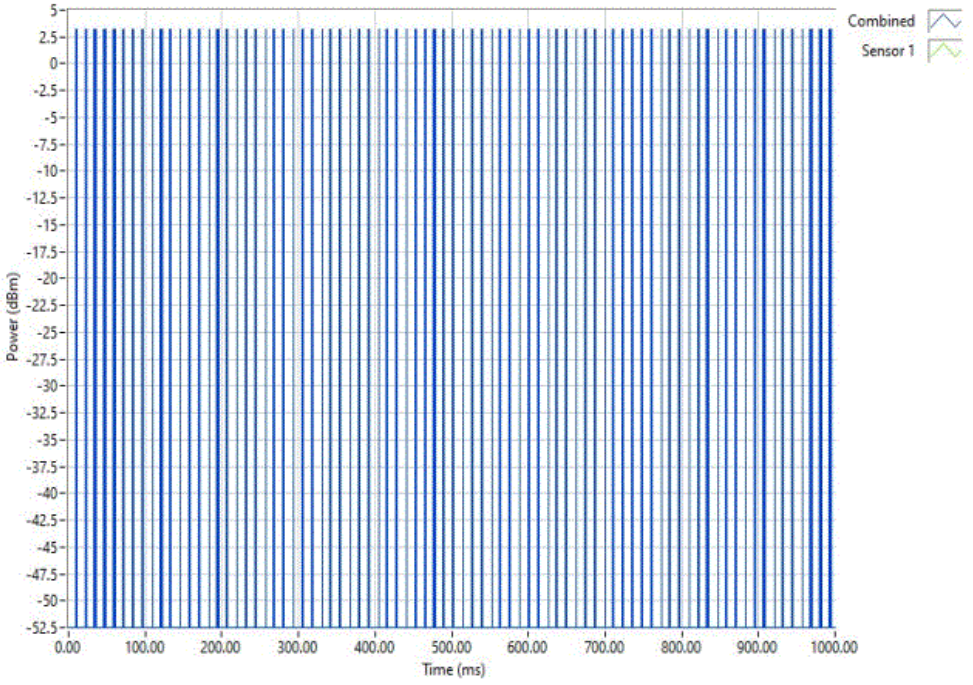
Screen capture were not saved. USB Probe results were saved instead.

DUTY CYCLE (SRE TEST MODE)

Normal Test Conditions, BLE/GFSK 1 Mbps High Channel, 2480 MHz						
		Duty Cycle (%)			Limit	Results
		21.918			N/A	N/A

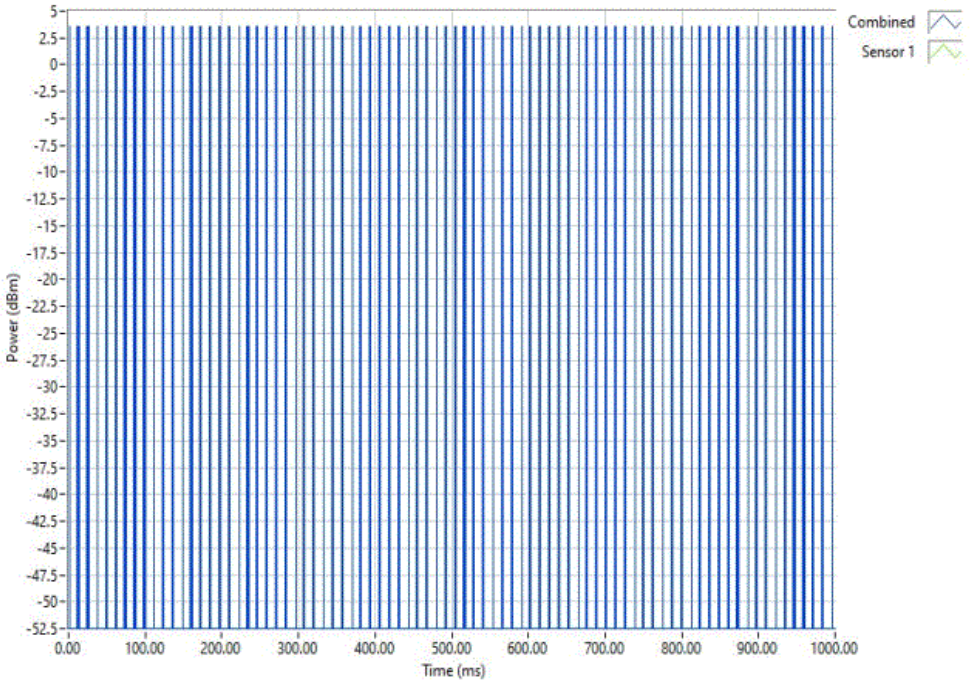


Normal Test Conditions, BLE/GFSK 2 Mbps Low Channel, 2402 MHz						
		Duty Cycle (%)			Limit	Results
		5.336			N/A	N/A

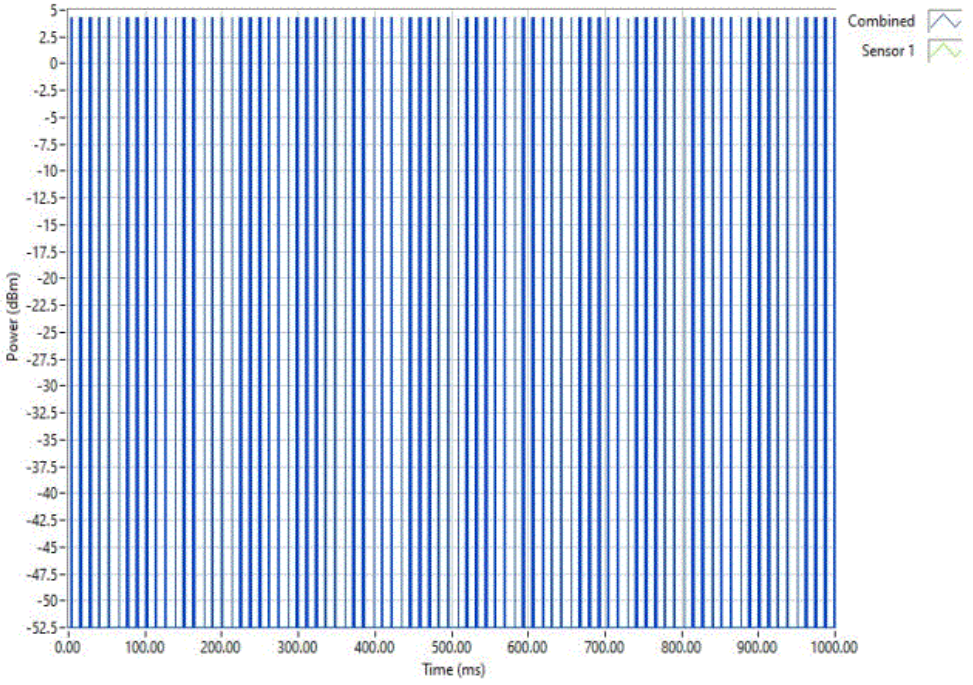


DUTY CYCLE (SRE TEST MODE)

Normal Test Conditions, BLE/GFSK 2 Mbps Mid Channel, 2442 MHz						
		Duty Cycle (%)			Limit	Results
		5.631			N/A	N/A



Normal Test Conditions, BLE/GFSK 2 Mbps High Channel, 2480 MHz						
		Duty Cycle (%)			Limit	Results
		5.756			N/A	N/A



DTS BANDWIDTH (6 dB)

XMit 2023.02.14.0

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
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2022-09-10	2023-09-10
Attenuator	S.M. Electronics	SA26B-20	TZP	2022-11-06	2023-11-06
Block - DC	Fairview Microwave	SD3379	AMZ	2022-11-06	2023-11-06
Generator - Signal	Agilent	N5183A	TIK	2022-01-24	2025-01-24
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2022-04-25	2023-04-25

TEST DESCRIPTION

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

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

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

DTS BANDWIDTH (6 dB)

TbtTx 2022.06.03.0 XMit 2023.02.14.0

EUT:	CIC in Genesis AI family			**Work Order:**	STAK0289
Serial Number:	2911336569			**Date:**	04/18/2023
Customer:	Starkey Laboratories, Inc.			**Temperature:**	21.4°C
Attendees:	John Quach			**Humidity:**	26.5%
Project:	None			**Barometric Pres.:**	1013 mbar
Tested by:	Christopher Heintzelman	**Power:**	1.45 VDC Battery	**Job Site:**	MN11

TEST SPECIFICATIONS	Test Method
FCC 15.247:2023	ANSI C63.10:2013
RSS-247 Issue 2:2017	ANSI C63.10:2013

COMMENTS

Reference level offset includes attenuator, measurement cable, DC block, and 1.0 dB loss in the customer's patch cable, as declared by the customer.

DEVIATIONS FROM TEST STANDARD

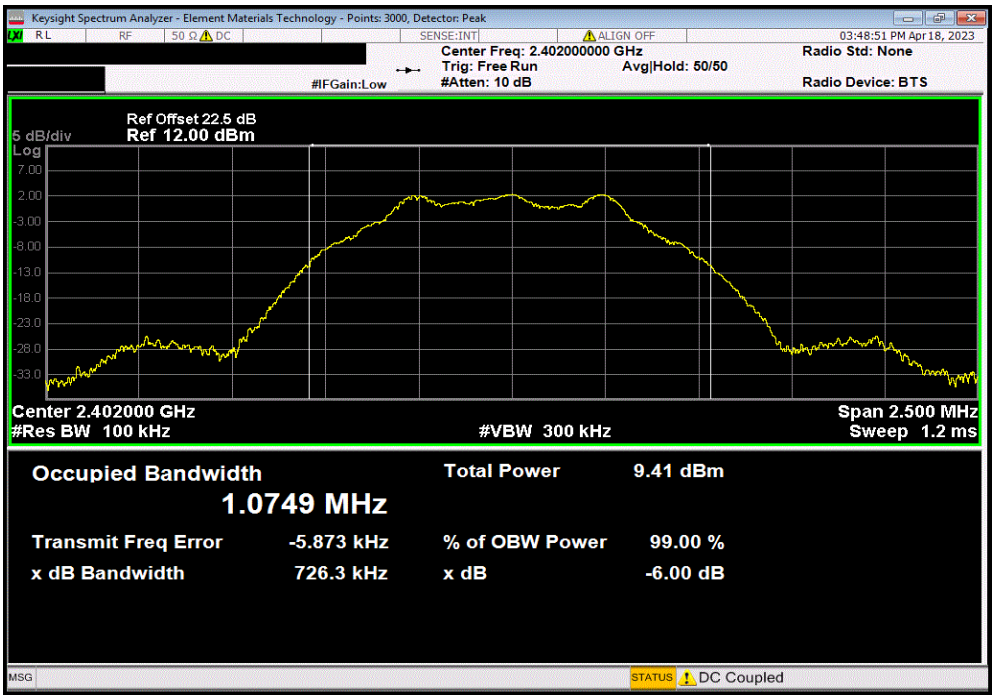
None

Configuration #	STAK0289-1	Signature

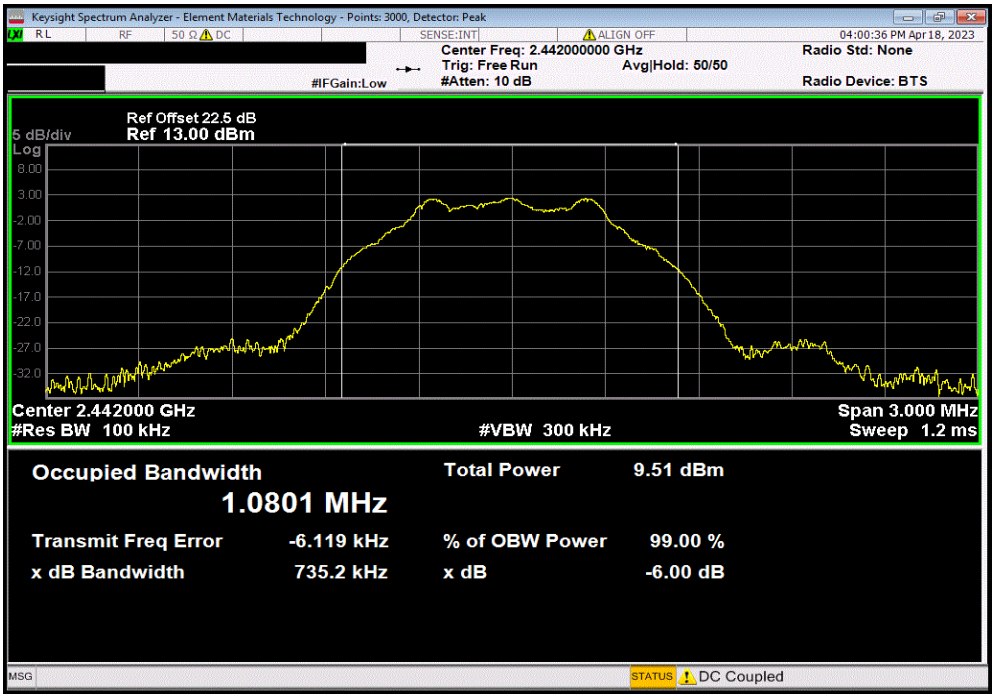
		Value	Limit (≥)	Result
BLE/GFSK 1 Mbps				
	Low Channel, 2402 MHz	726.328 kHz	500 kHz	Pass
	Mid Channel, 2442 MHz	735.204 kHz	500 kHz	Pass
	High Channel, 2480 MHz	750.474 kHz	500 kHz	Pass
BLE/GFSK 2 Mbps				
	Low Channel, 2402 MHz	1.27 MHz	500 kHz	Pass
	Mid Channel, 2442 MHz	1.243 MHz	500 kHz	Pass
	High Channel, 2480 MHz	1.235 MHz	500 kHz	Pass

DTS BANDWIDTH (6 dB)

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

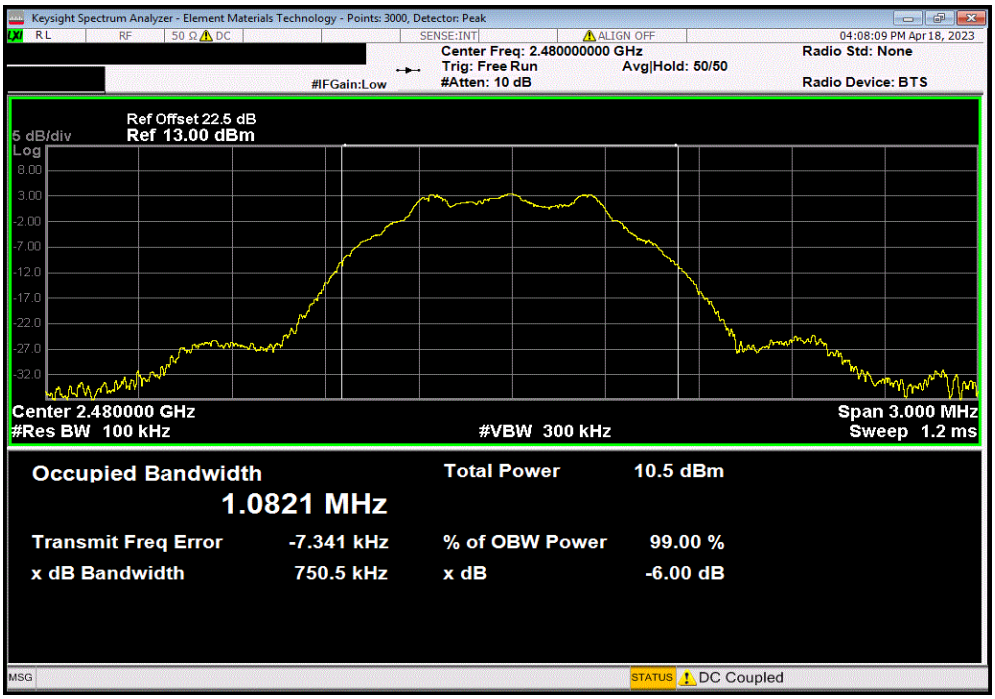


BLE/GFSK 1 Mbps, Mid Channel, 2442 MHz						
				Value	Limit (≥)	Result
				735.204 kHz	500 kHz	Pass

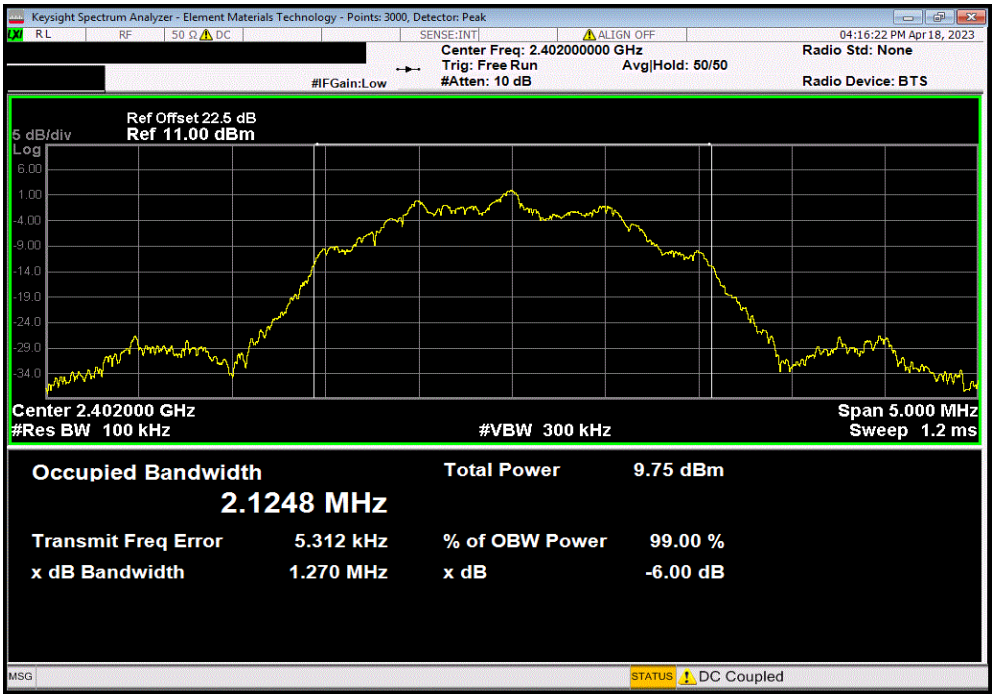


DTS BANDWIDTH (6 dB)

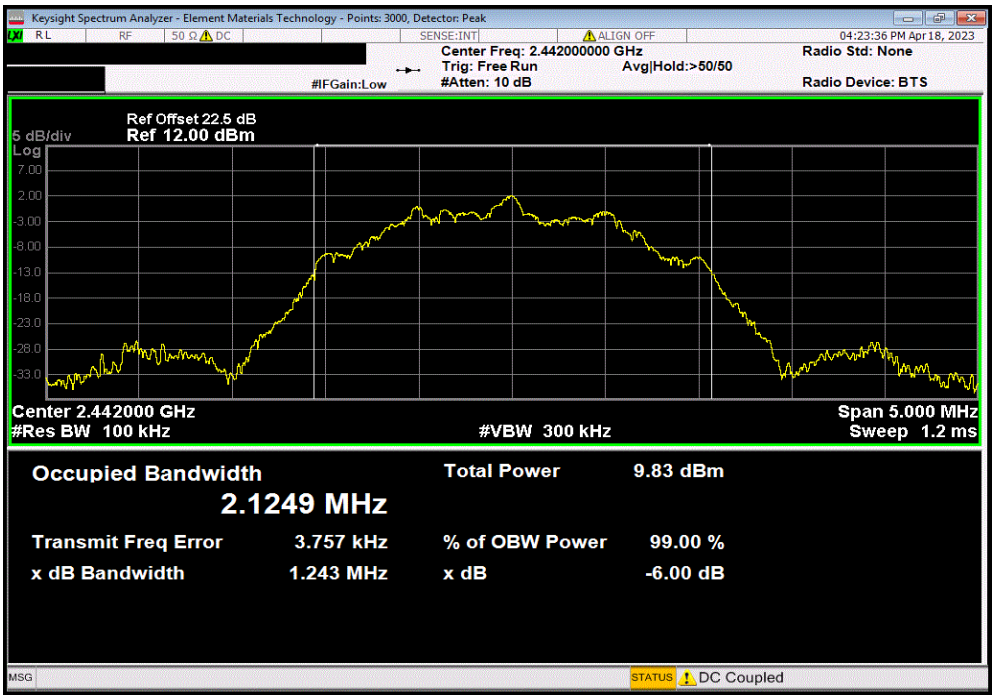
BLE/GFSK 1 Mbps, High Channel, 2480 MHz						
				Value	Limit (≥)	Result
				750.474 kHz	500 kHz	Pass



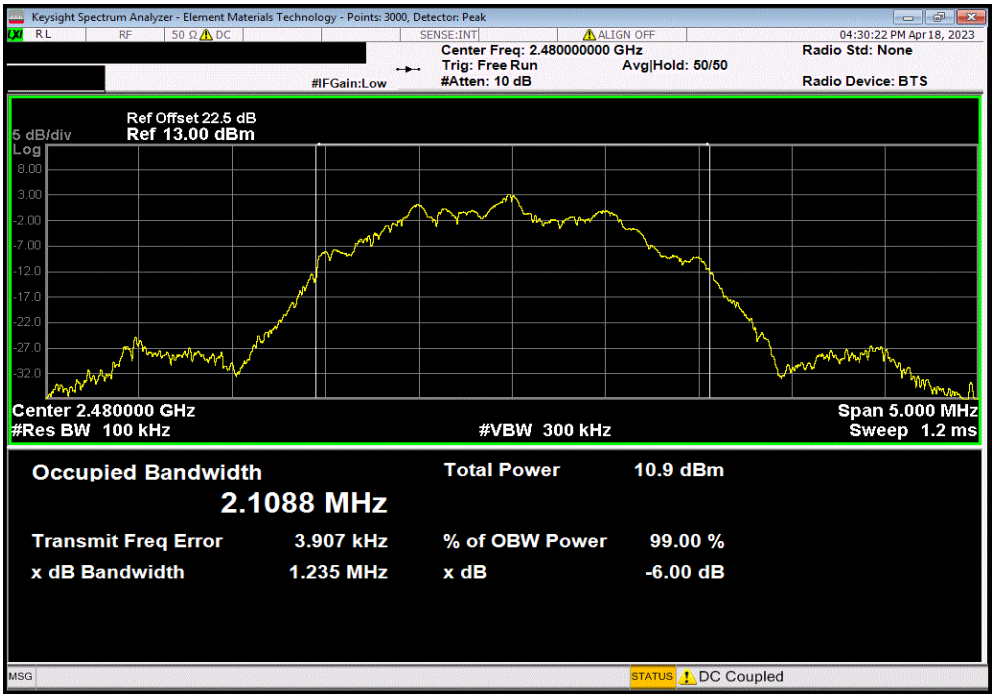
BLE/GFSK 2 Mbps, Low Channel, 2402 MHz						
				Value	Limit (≥)	Result
				1.27 MHz	500 kHz	Pass



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



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



OCCUPIED BANDWIDTH (99%)

XMit 2023.02.14.0

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
Attenuator	S.M. Electronics	SA26B-20	TZP	2022-11-06	2023-11-06
Generator - Signal	Agilent	N5183A	TIK	2022-01-24	2025-01-24
Block - DC	Fairview Microwave	SD3379	AMZ	2022-11-06	2023-11-06
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2022-09-10	2023-09-10
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2022-04-25	2023-04-25

TEST DESCRIPTION

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

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

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

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

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

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

OCCUPIED BANDWIDTH (99%)

element

TbtTx 2022.06.03.0 XMit 2023.02.14.0

EUT:	**CIC in Genesis AI family**			**Work Order:**	**STAK0289**
Serial Number:	**2911336569**			**Date:**	**04/18/2023**
Customer:	**Starkey Laboratories, Inc.**			**Temperature:**	**21.4°C**
Attendees:	**John Quach**			**Humidity:**	**26.4%**
Project:	**None**			**Barometric Pres.:**	**1013 mbar**
Tested by:	**Christopher Heintzelman**	**Power:**	**1.45 VDC Battery**	**Job Site:**	**MN11**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2023	ANSI C63.10:2013
RSS-247 Issue 2:2017	ANSI C63.10:2013

COMMENTS

Reference level offset includes attenuator, measurement cable, DC block, and 1.0 dB loss in the customer's patch cable, as declared by the customer.

DEVIATIONS FROM TEST STANDARD

None

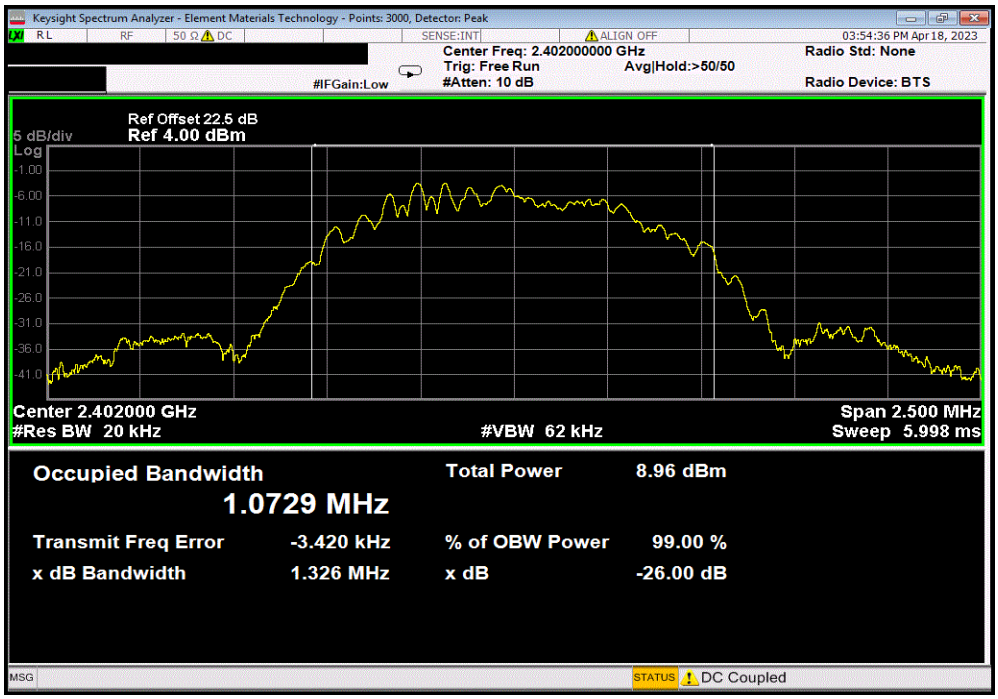
Configuration #	**STAK0289-1**	*Signature*

		Value	**Limit**	**Result**
BLE/GFSK 1 Mbps				
	Low Channel, 2402 MHz	1.073 MHz	N/A	N/A
	Mid Channel, 2442 MHz	1.068 MHz	N/A	N/A
	High Channel, 2480 MHz	1.075 MHz	N/A	N/A
BLE/GFSK 2 Mbps				
	Low Channel, 2402 MHz	2.142 MHz	N/A	N/A
	Mid Channel, 2442 MHz	2.153 MHz	N/A	N/A
	High Channel, 2480 MHz	2.115 MHz	N/A	N/A

OCCUPIED BANDWIDTH (99%)

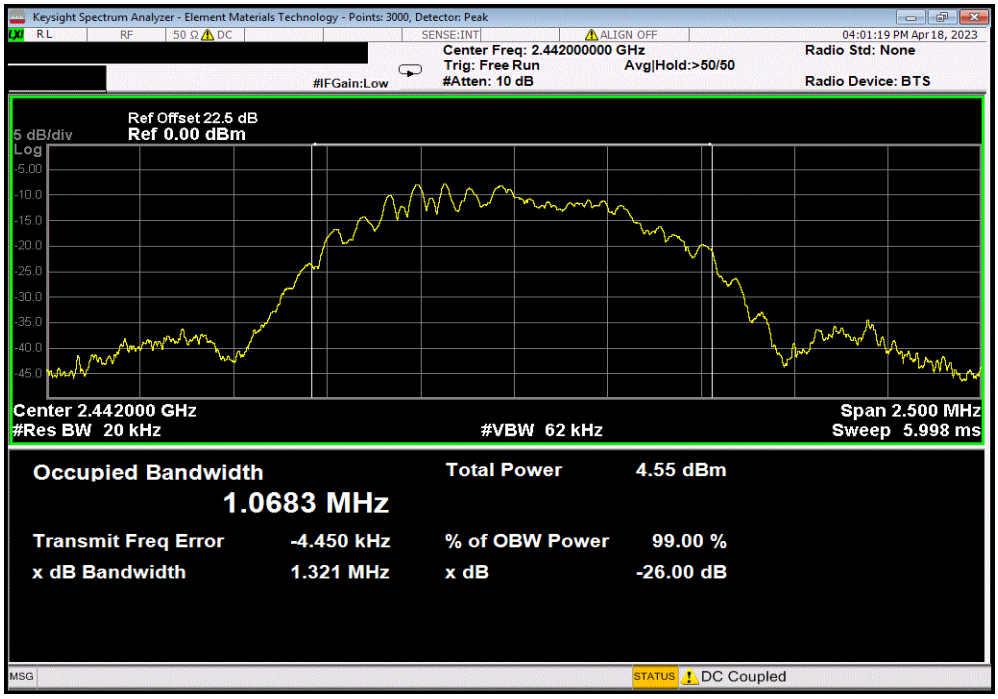
BLE/GFSK 1 Mbps, Low Channel, 2402 MHz

				Value	Limit	Result
				1.073 MHz	N/A	N/A



BLE/GFSK 1 Mbps, Mid Channel, 2442 MHz

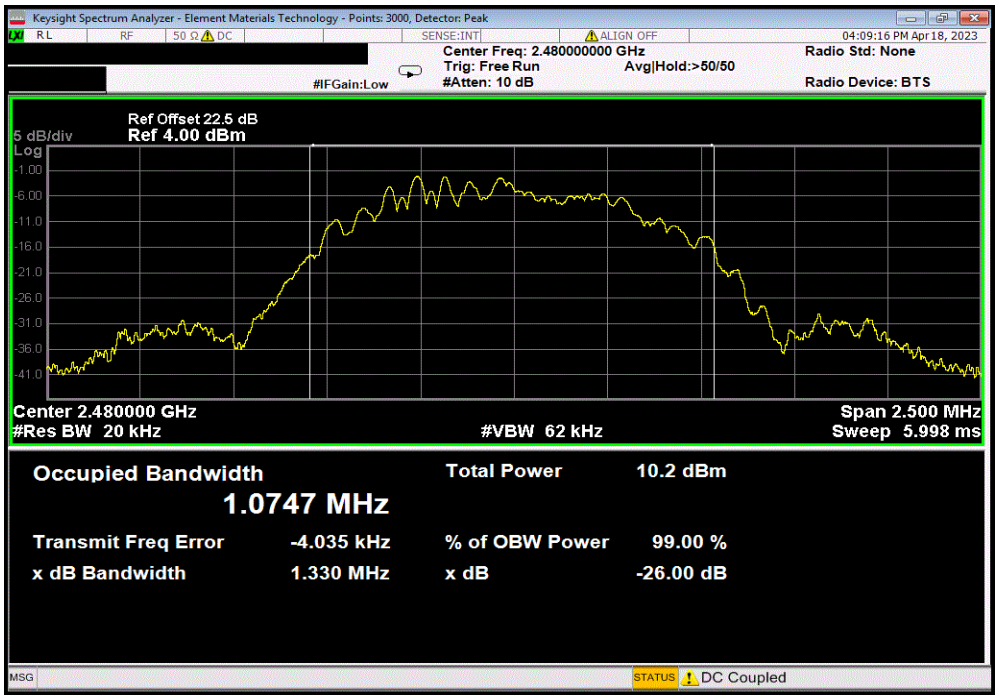
				Value	Limit	Result
				1.068 MHz	N/A	N/A



OCCUPIED BANDWIDTH (99%)

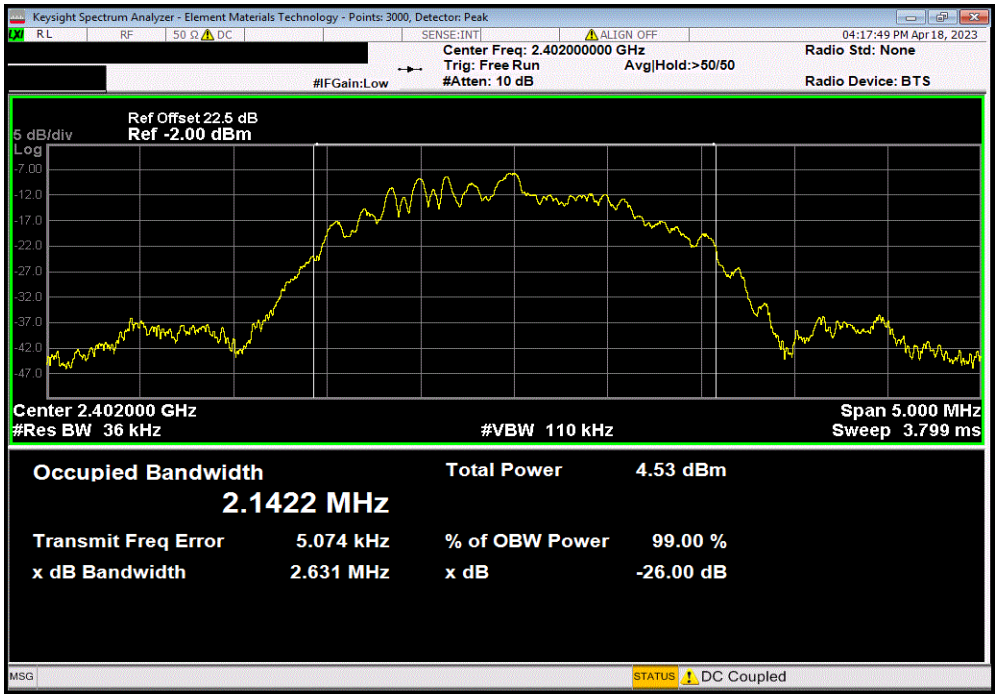
BLE/GFSK 1 Mbps, High Channel, 2480 MHz

				Value	Limit	Result
				1.075 MHz	N/A	N/A



BLE/GFSK 2 Mbps, Low Channel, 2402 MHz

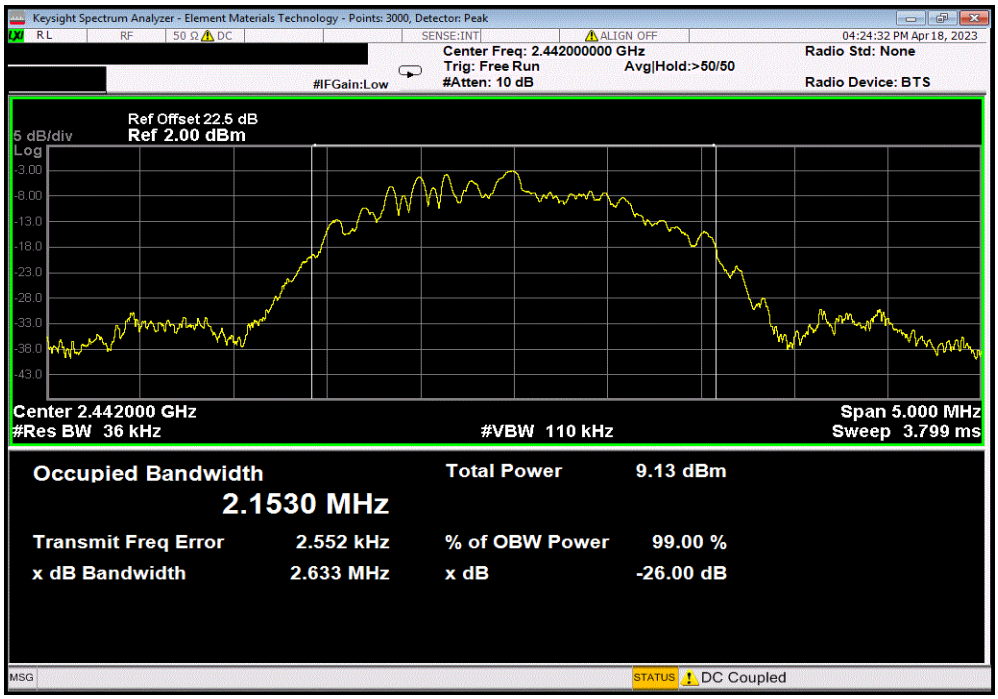
				Value	Limit	Result
				2.142 MHz	N/A	N/A



OCCUPIED BANDWIDTH (99%)

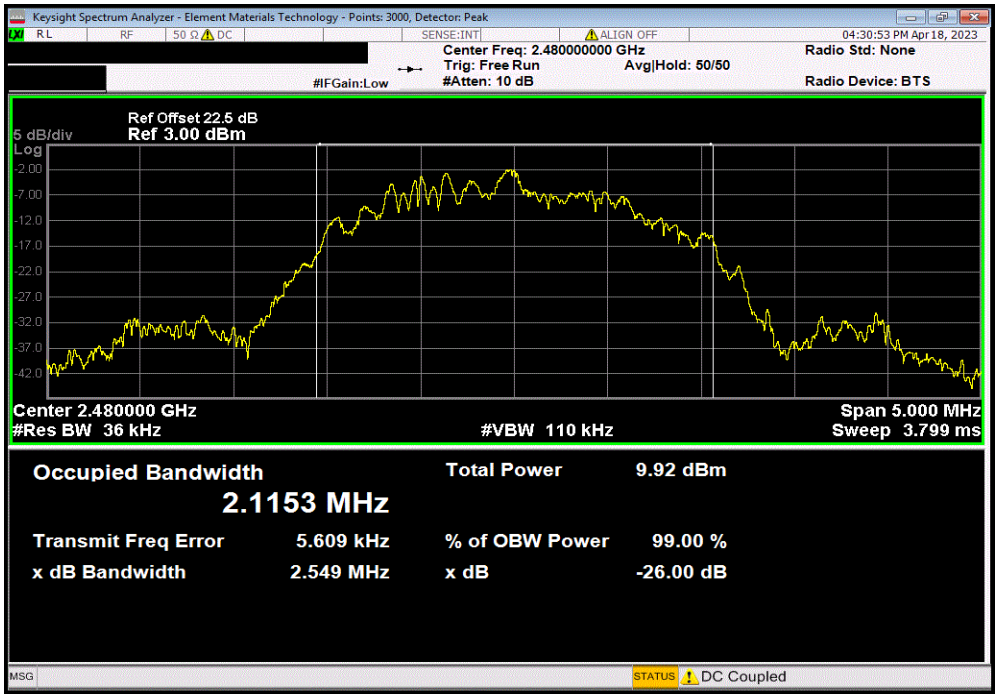
BLE/GFSK 2 Mbps, Mid Channel, 2442 MHz

				Value	Limit	Result
				2.153 MHz	N/A	N/A



BLE/GFSK 2 Mbps, High Channel, 2480 MHz

				Value	Limit	Result
				2.115 MHz	N/A	N/A



OUTPUT POWER

XMit 2023.02.14.0

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
Attenuator	S.M. Electronics	SA26B-20	TZP	2022-11-06	2023-11-06
Block - DC	Fairview Microwave	SD3379	AMZ	2022-11-06	2023-11-06
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2022-09-10	2023-09-10
Generator - Signal	Agilent	N5183A	TIK	2022-01-24	2025-01-24
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2022-04-25	2023-04-25

TEST DESCRIPTION

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

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

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

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

OUTPUT POWER

TbtTx 2022.06.03.0 XMit 2023.02.14.0

EUT:	CIC in Genesis AI family			**Work Order:**	STAK0289
Serial Number:	2911336569			**Date:**	04/18/2023
Customer:	Starkey Laboratories, Inc.			**Temperature:**	21.5°C
Attendees:	John Quach			**Humidity:**	26.4%
Project:	None			**Barometric Pres.:**	1013 mbar
Tested by:	Christopher Heintzelman	**Power:**	1.45 VDC Battery	**Job Site:**	MN11

TEST SPECIFICATIONS	Test Method
FCC 15.247:2023	ANSI C63.10:2013
RSS-247 Issue 2:2017	ANSI C63.10:2013

COMMENTS

Reference level offset includes attenuator, measurement cable, DC block, and 1.0 dB loss in the customer's patch cable, as declared by the customer.

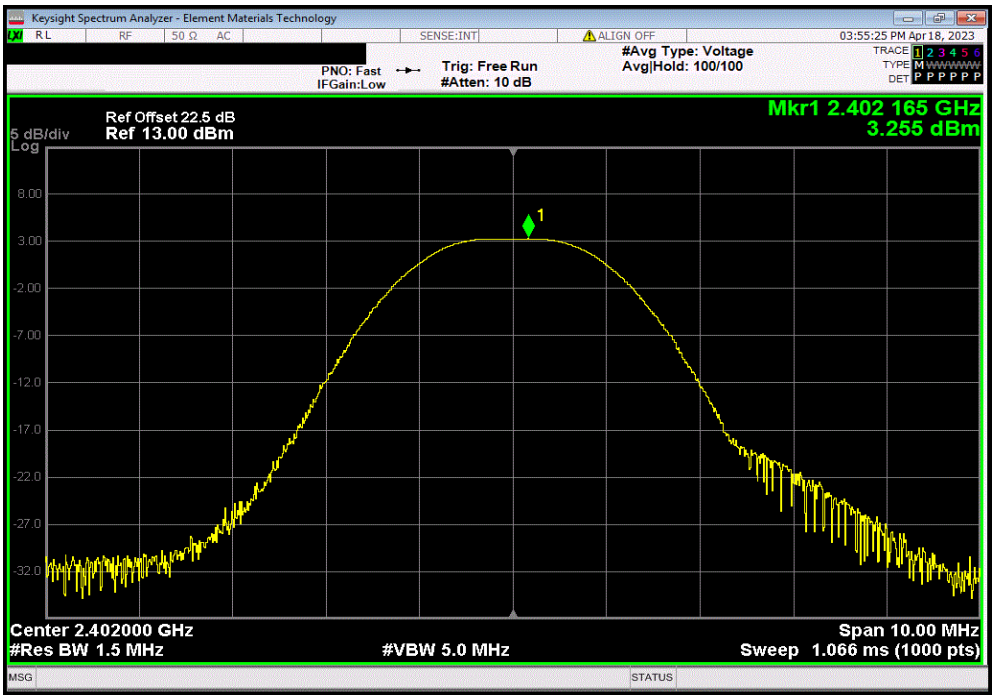
DEVIATIONS FROM TEST STANDARD

None

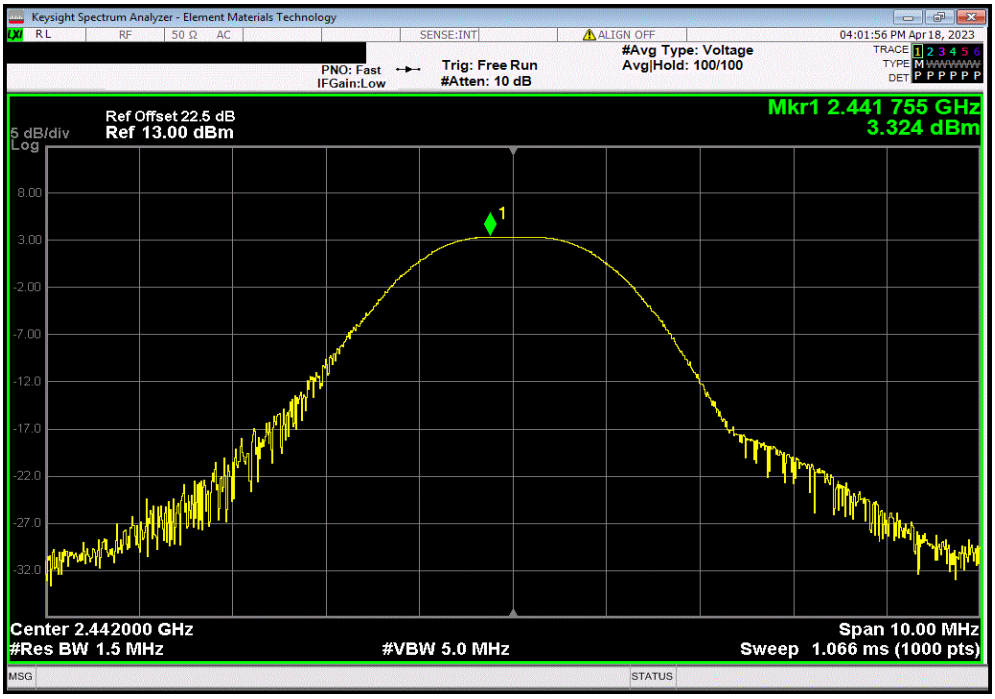
Configuration #	STAK0289-1	Signature

		Out Pwr (dBm)	Limit (dBm)	Result
BLE/GFSK 1 Mbps				
	Low Channel, 2402 MHz	3.255	30	Pass
	Mid Channel, 2442 MHz	3.324	30	Pass
	High Channel, 2480 MHz	4.419	30	Pass
BLE/GFSK 2 Mbps				
	Low Channel, 2402 MHz	3.239	30	Pass
	Mid Channel, 2442 MHz	3.35	30	Pass
	High Channel, 2480 MHz	4.466	30	Pass

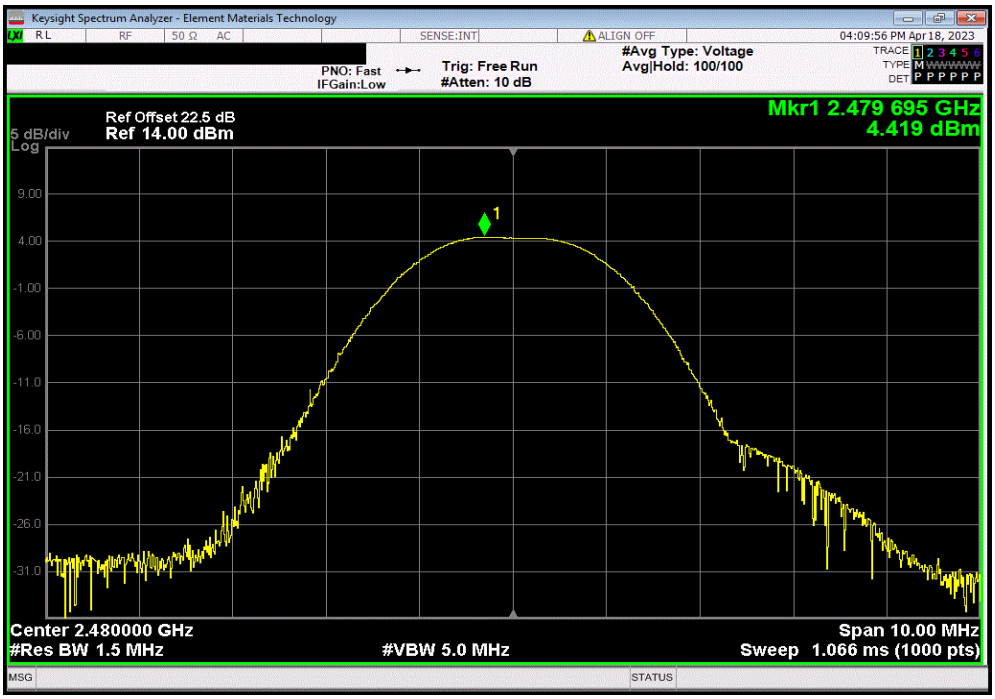
BLE/GFSK 1 Mbps, Low Channel, 2402 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				3.255	30	Pass



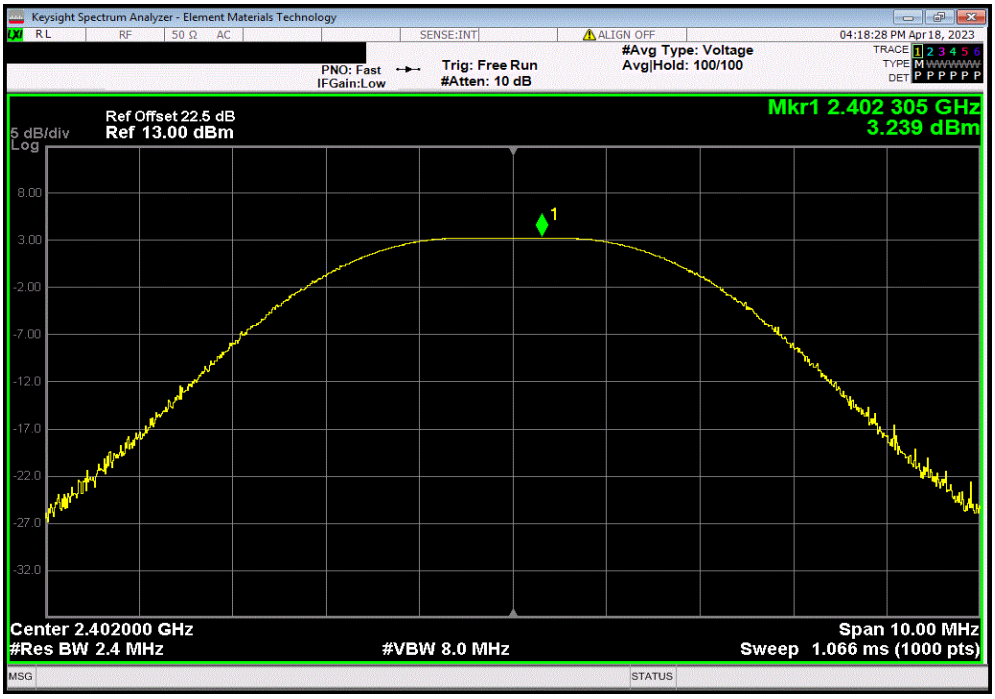
BLE/GFSK 1 Mbps, Mid Channel, 2442 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				3.324	30	Pass



BLE/GFSK 1 Mbps, High Channel, 2480 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				4.419	30	Pass



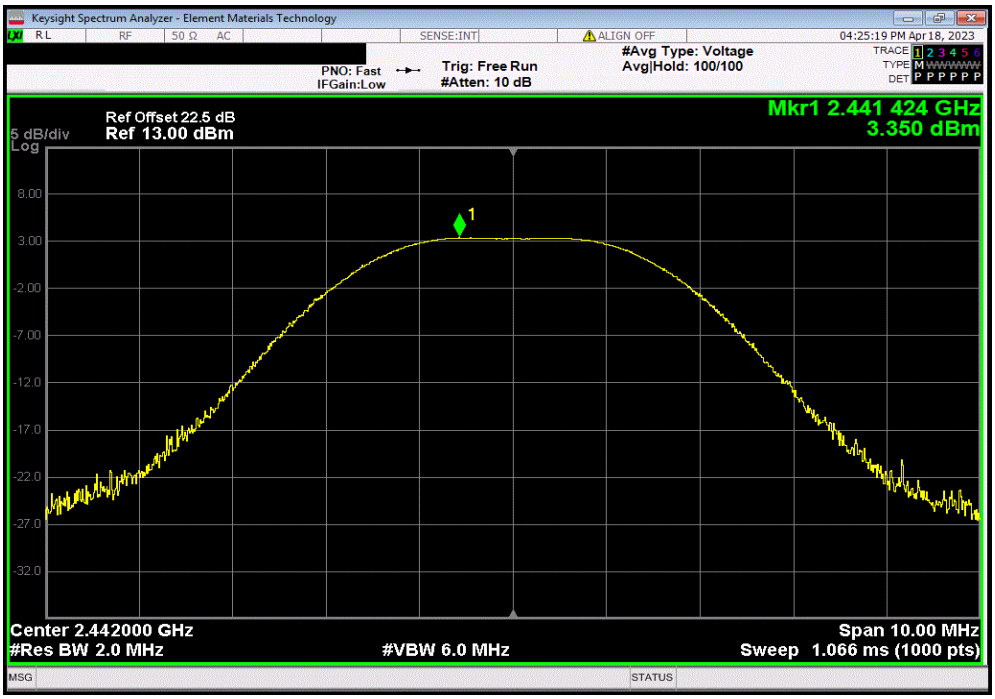
BLE/GFSK 2 Mbps, Low Channel, 2402 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				3.239	30	Pass



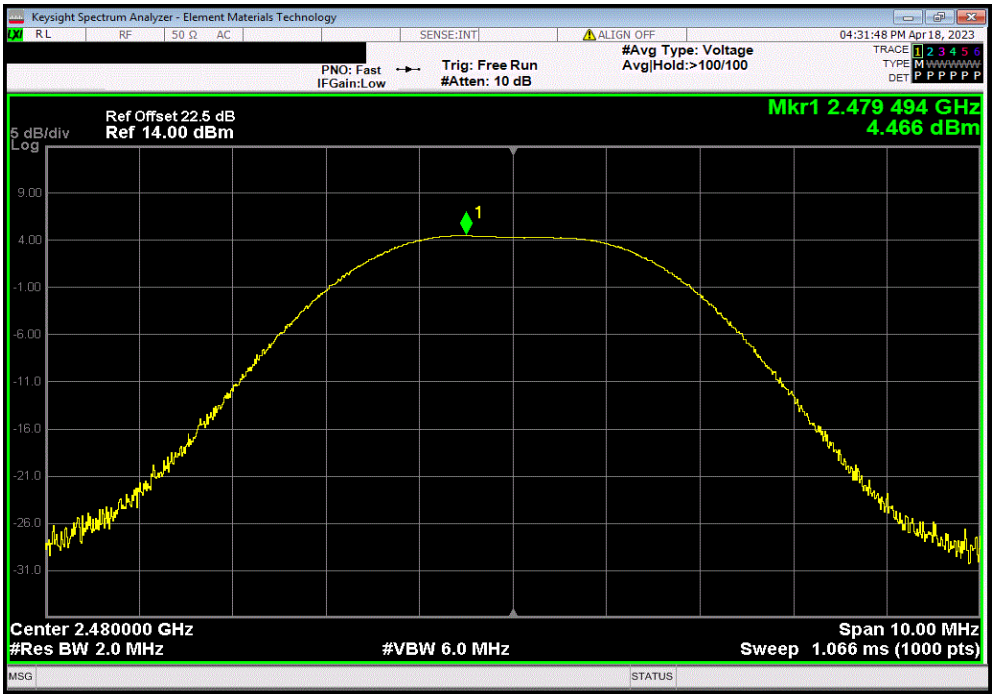
OUTPUT POWER

TbtTx 2022.06.03.0 XMit 2023.02.14.0

BLE/GFSK 2 Mbps, Mid Channel, 2442 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				3.35	30	Pass



BLE/GFSK 2 Mbps, High Channel, 2480 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				4.466	30	Pass



EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

XMit 2023.02.14.0

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
Attenuator	S.M. Electronics	SA26B-20	TZP	2022-11-06	2023-11-06
Block - DC	Fairview Microwave	SD3379	AMZ	2022-11-06	2023-11-06
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2022-09-10	2023-09-10
Generator - Signal	Agilent	N5183A	TIK	2022-01-24	2025-01-24
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2022-04-25	2023-04-25

TEST DESCRIPTION

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

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

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

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

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

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

TbtTx 2022.06.03.0 XMit 2023.02.14.0

EUT:	CIC in Genesis AI family			**Work Order:**	STAK0289
Serial Number:	2911336569			**Date:**	04/18/2023
Customer:	Starkey Laboratories, Inc.			**Temperature:**	21.4°C
Attendees:	John Quach			**Humidity:**	26.3%
Project:	None			**Barometric Pres.:**	1013 mbar
Tested by:	Christopher Heintzelman	**Power:**	1.45 VDC Battery	**Job Site:**	MN11

TEST SPECIFICATIONS	Test Method
FCC 15.247:2023	ANSI C63.10:2013
RSS-247 Issue 2:2017	ANSI C63.10:2013

COMMENTS

Reference level offset includes attenuator, measurement cable, DC block, and 1.0 dB loss in the customer's patch cable, as declared by the customer.

DEVIATIONS FROM TEST STANDARD

None

Configuration #	STAK0289-1	Signature

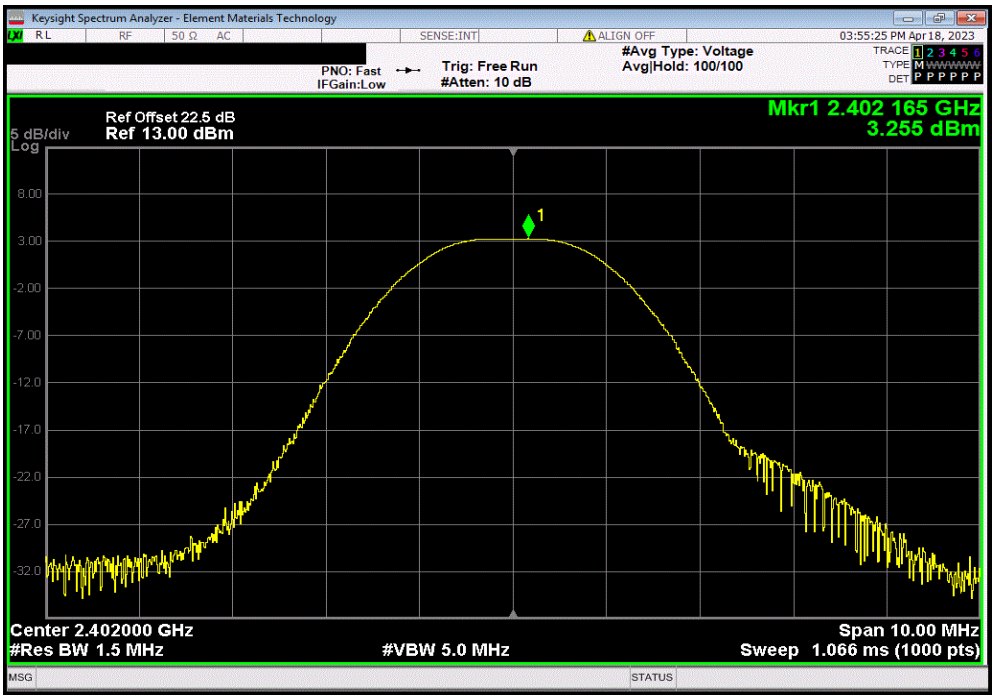
		Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
BLE/GFSK 1 Mbps						
	Low Channel, 2402 MHz	3.255	-4	-0.745	36	Pass
	Mid Channel, 2442 MHz	3.324	-4	-0.676	36	Pass
	High Channel, 2480 MHz	4.419	-4	0.419	36	Pass
BLE/GFSK 2 Mbps						
	Low Channel, 2402 MHz	3.239	-4	-0.761	36	Pass
	Mid Channel, 2442 MHz	3.35	-4	-0.65	36	Pass
	High Channel, 2480 MHz	4.466	-4	0.466	36	Pass

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

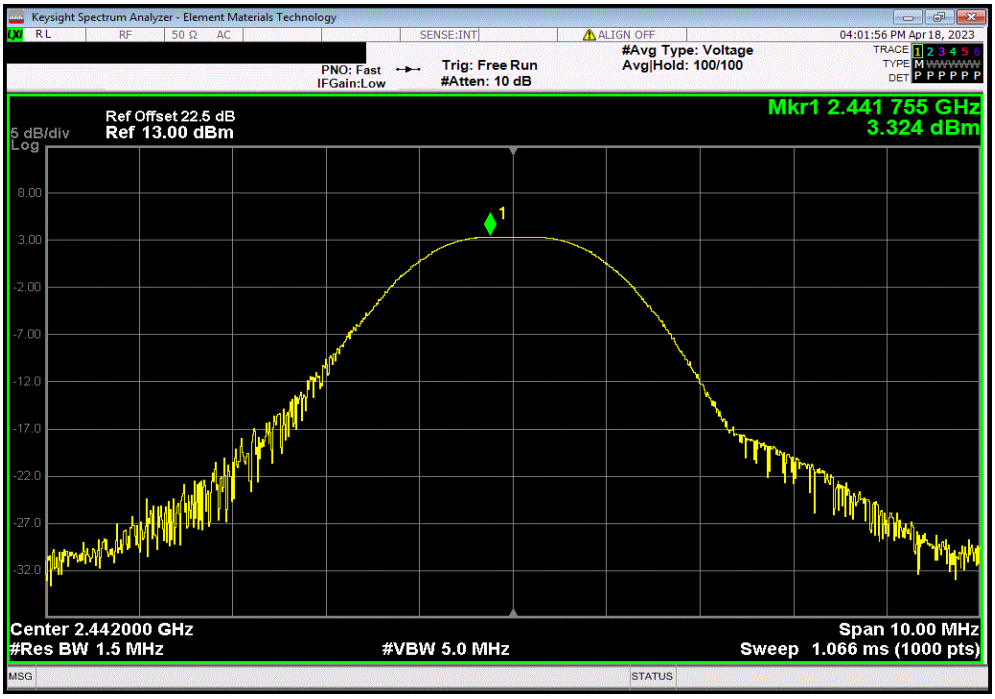
element

TbtTx 2022.06.03.0 XMit 2023.02.14.0

BLE/GFSK 1 Mbps, Low Channel, 2402 MHz						
		Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
		3.255	-4	-0.745	36	Pass



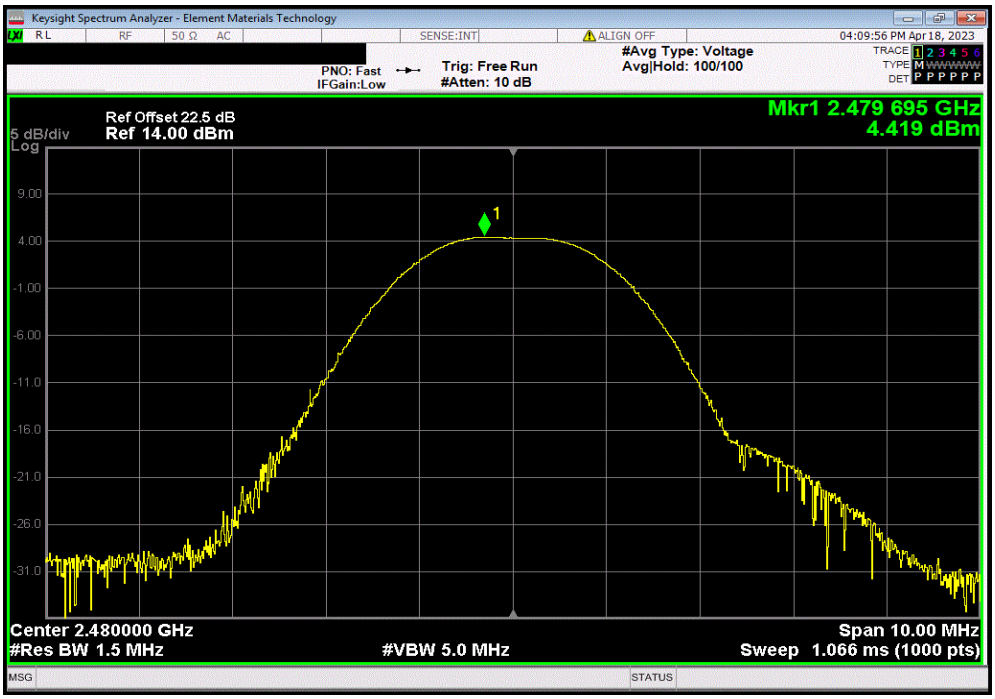
BLE/GFSK 1 Mbps, Mid Channel, 2442 MHz						
		Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
		3.324	-4	-0.676	36	Pass



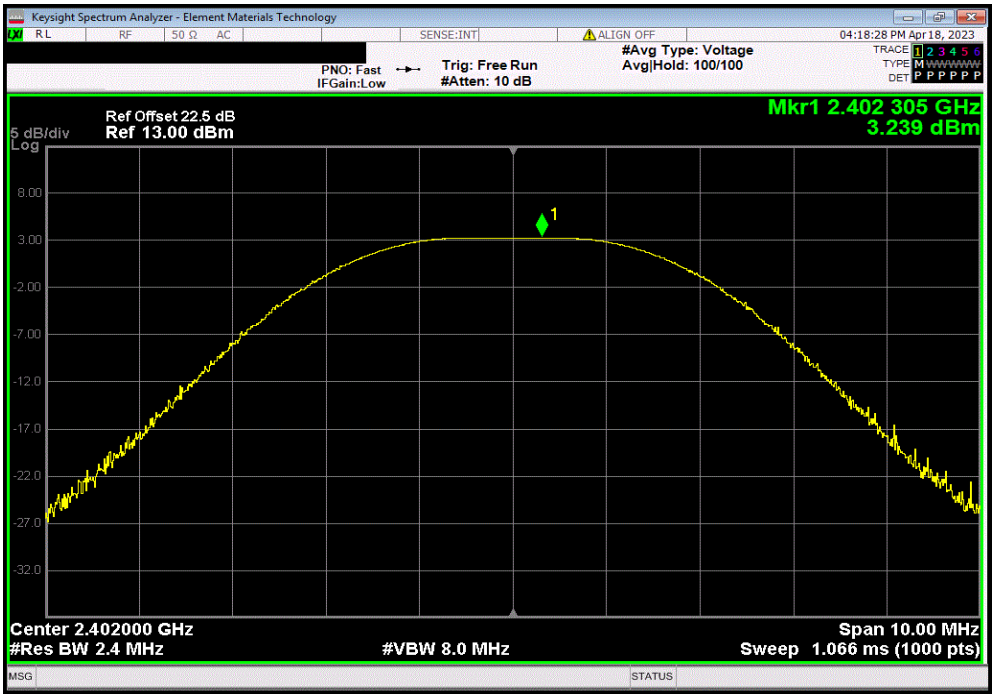
EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

TbtTx 2022.06.03.0 XMit 2023.02.14.0

BLE/GFSK 1 Mbps, High Channel, 2480 MHz						
		Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
		4.419	-4	0.419	36	Pass



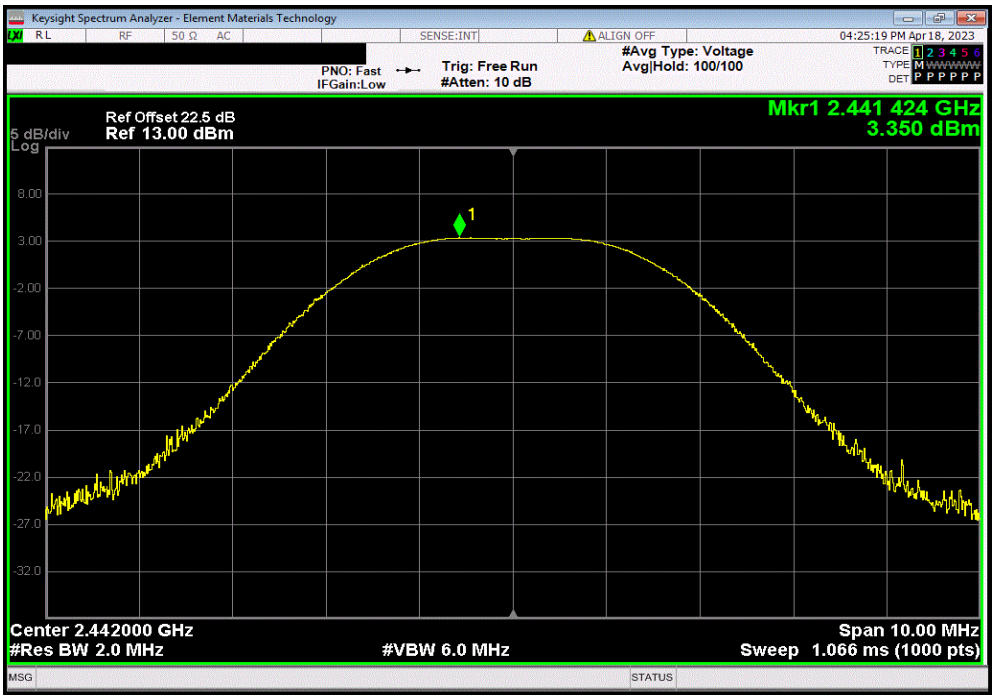
BLE/GFSK 2 Mbps, Low Channel, 2402 MHz						
		Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
		3.239	-4	-0.761	36	Pass



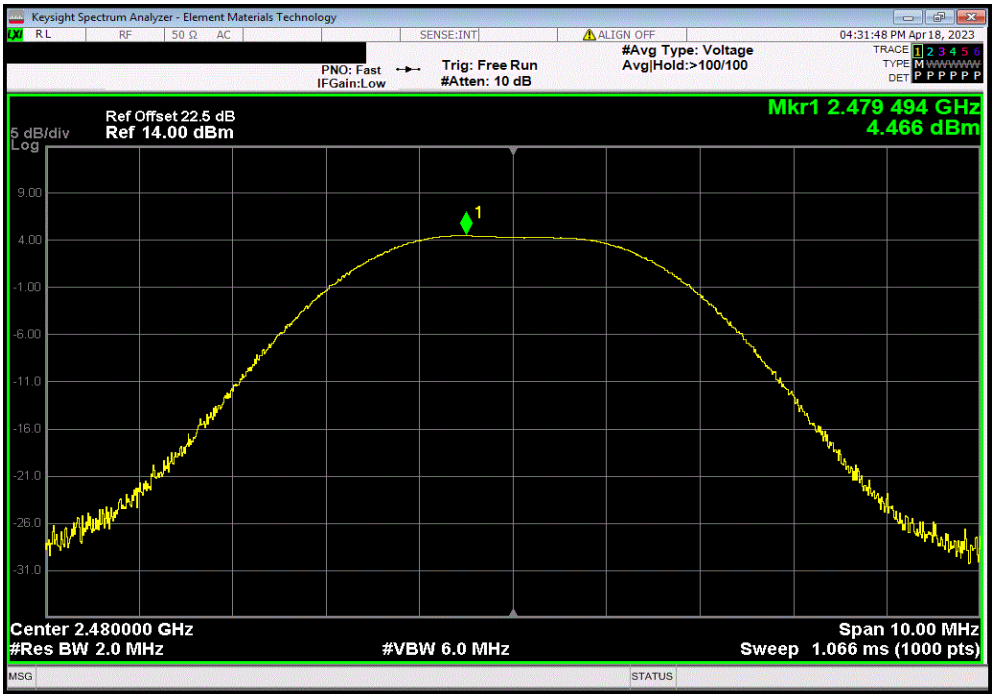
EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

TbtTx 2022.06.03.0 XMit 2023.02.14.0

BLE/GFSK 2 Mbps, Mid Channel, 2442 MHz						
		Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
		3.35	-4	-0.65	36	Pass



BLE/GFSK 2 Mbps, High Channel, 2480 MHz						
		Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
		4.466	-4	0.466	36	Pass



POWER SPECTRAL DENSITY

XMit 2023.02.14.0

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
Attenuator	S.M. Electronics	SA26B-20	TZP	2022-11-06	2023-11-06
Block - DC	Fairview Microwave	SD3379	AMZ	2022-11-06	2023-11-06
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2022-09-10	2023-09-10
Generator - Signal	Agilent	N5183A	TIK	2022-01-24	2025-01-24
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2022-04-25	2023-04-25

TEST DESCRIPTION

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

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

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

POWER SPECTRAL DENSITY

TbtTx 2022.06.03.0 XMit 2023.02.14.0

EUT:	CIC in Genesis AI family			**Work Order:**	STAK0289
Serial Number:	2911336569			**Date:**	04/18/2023
Customer:	Starkey Laboratories, Inc.			**Temperature:**	21.5°C
Attendees:	John Quach			**Humidity:**	26.5%
Project:	None			**Barometric Pres.:**	1013 mbar
Tested by:	Christopher Heintzelman	**Power:**	1.45 VDC Battery	**Job Site:**	MN11

TEST SPECIFICATIONS	Test Method
FCC 15.247:2023	ANSI C63.10:2013
RSS-247 Issue 2:2017	ANSI C63.10:2013

COMMENTS

Reference level offset includes attenuator, measurement cable, DC block, and 1.0 dB loss in the customer's patch cable, as declared by the customer.

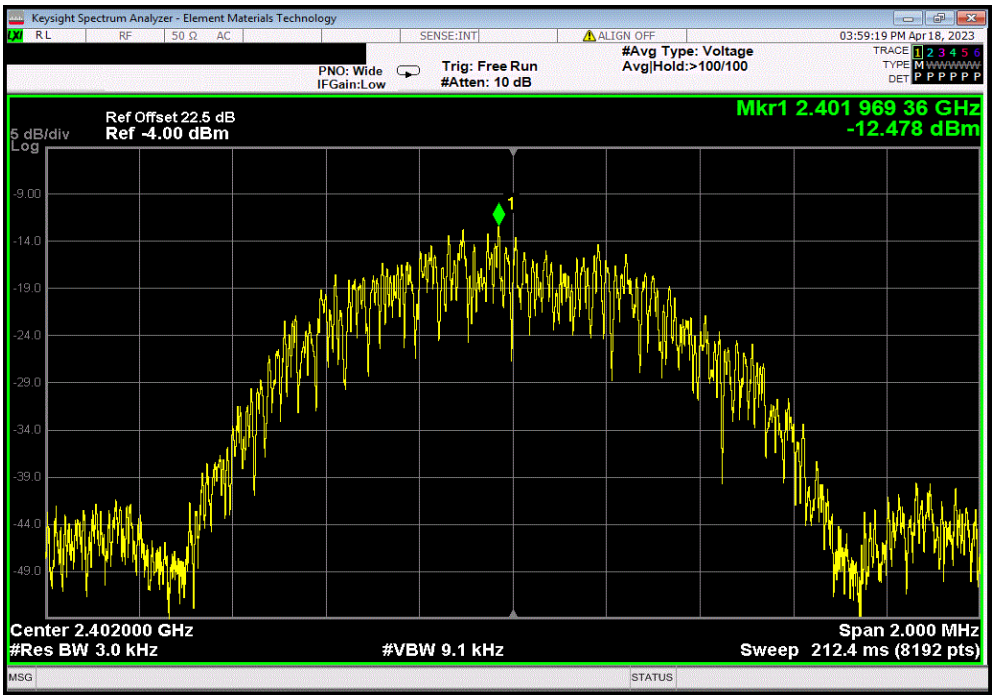
DEVIATIONS FROM TEST STANDARD

None

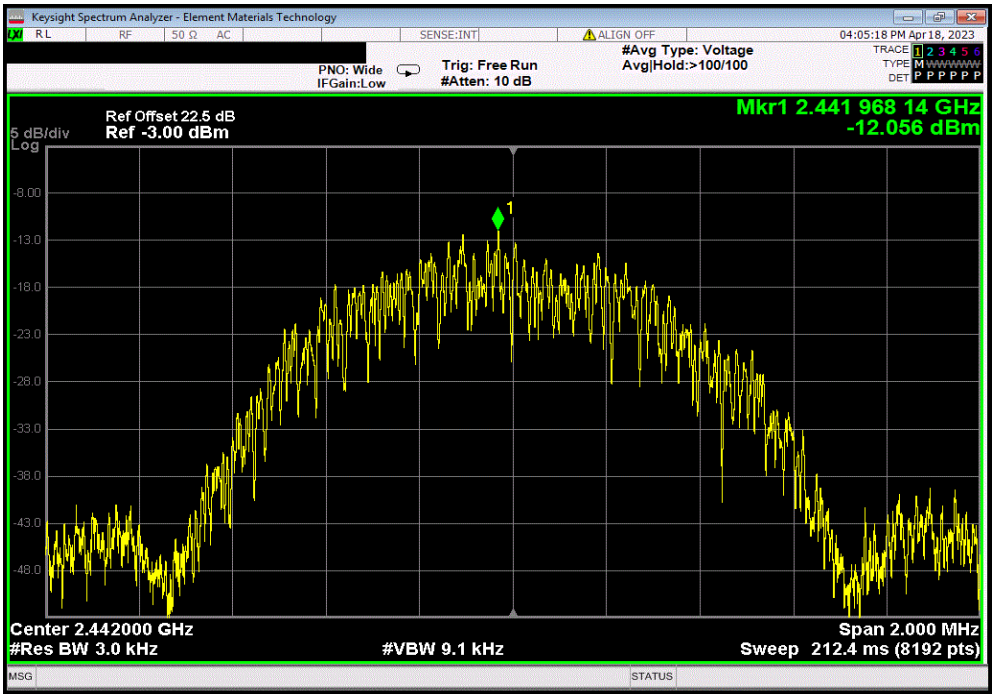
Configuration #	STAK0289-1	Signature

		Value dBm/3kHz	Limit < dBm/3kHz	Results
BLE/GFSK 1 Mbps				
	Low Channel, 2402 MHz	-12.478	8	Pass
	Mid Channel, 2442 MHz	-12.056	8	Pass
	High Channel, 2480 MHz	-11.116	8	Pass
BLE/GFSK 2 Mbps				
	Low Channel, 2402 MHz	-14.667	8	Pass
	Mid Channel, 2442 MHz	-14.412	8	Pass
	High Channel, 2480 MHz	-13.429	8	Pass

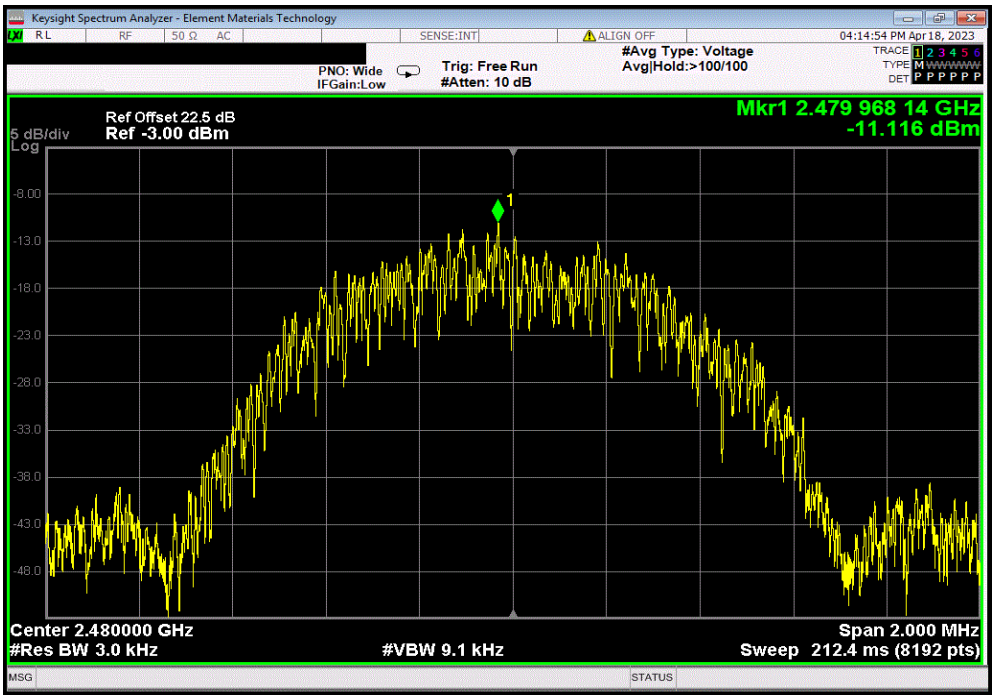
BLE/GFSK 1 Mbps, Low Channel, 2402 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-12.478	8	Pass



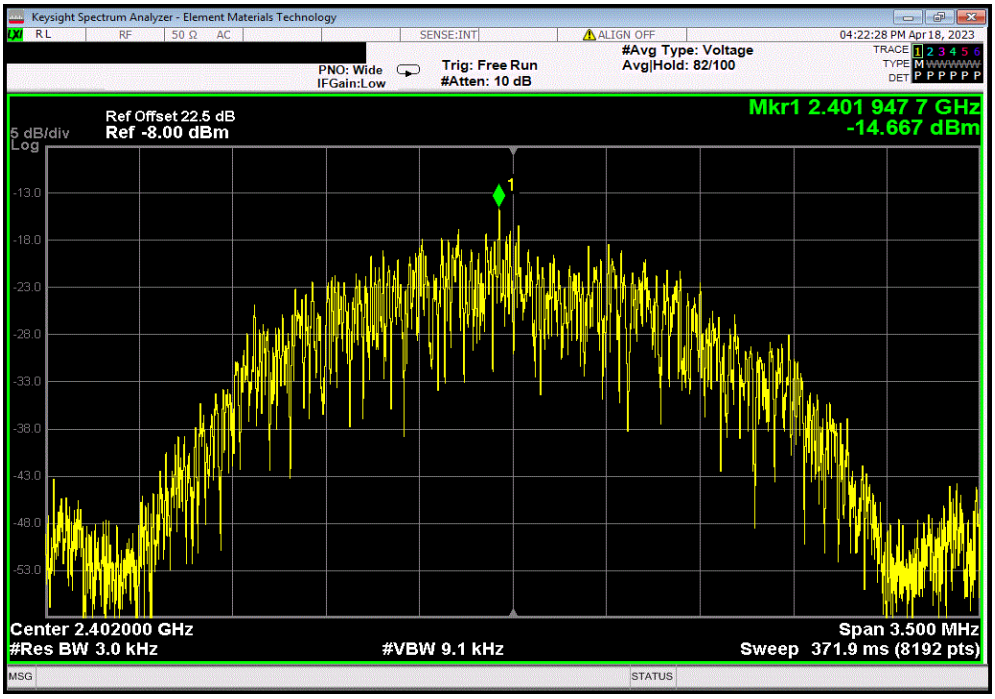
BLE/GFSK 1 Mbps, Mid Channel, 2442 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-12.056	8	Pass



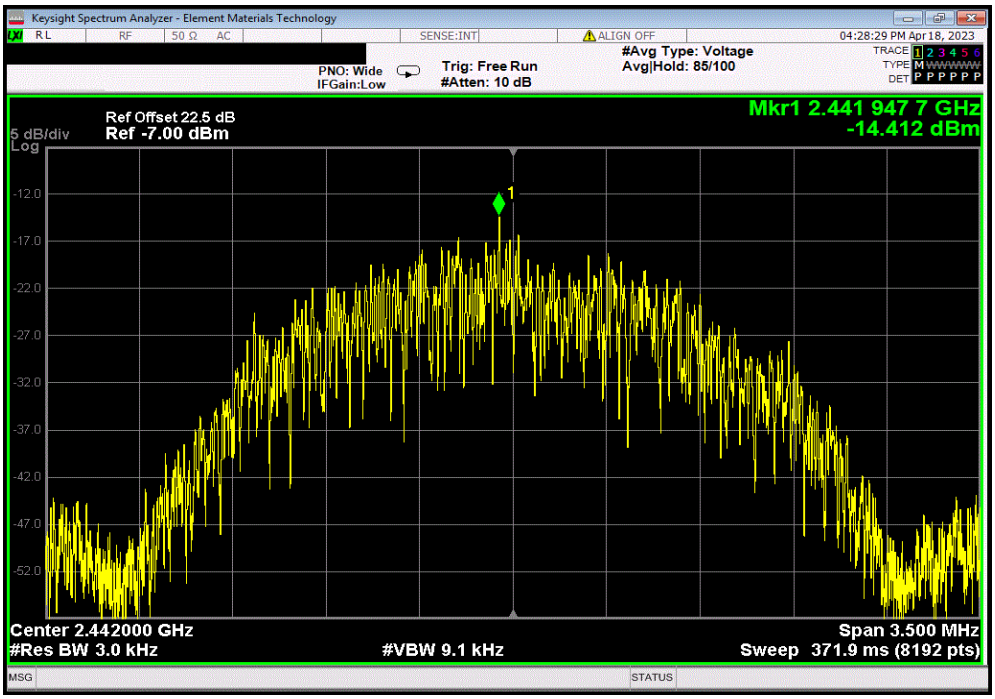
BLE/GFSK 1 Mbps, High Channel, 2480 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-11.116	8	Pass



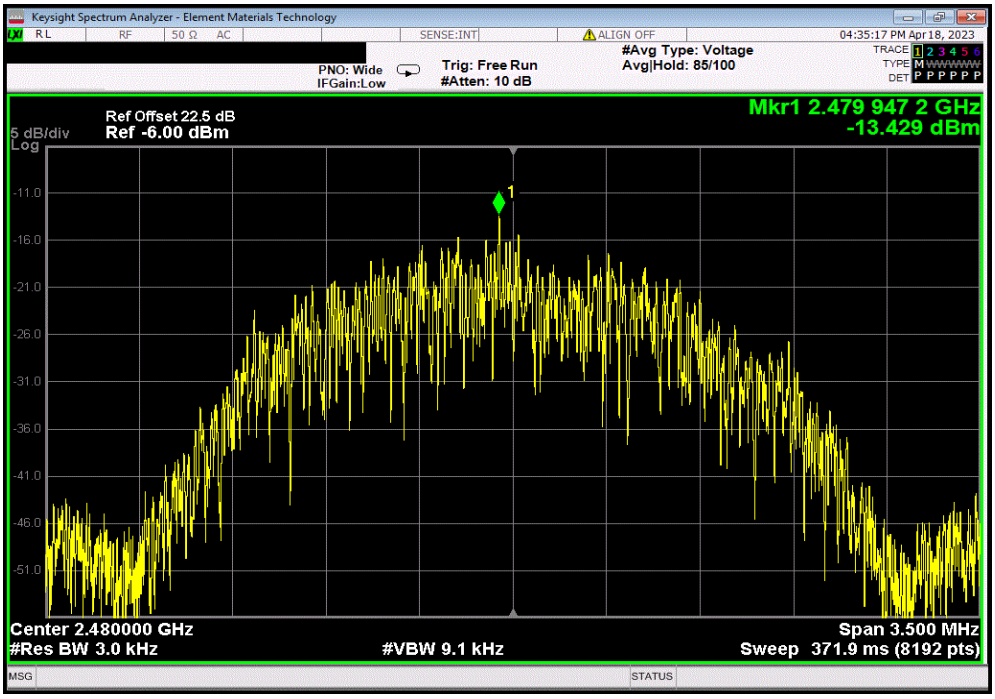
BLE/GFSK 2 Mbps, Low Channel, 2402 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-14.667	8	Pass



BLE/GFSK 2 Mbps, Mid Channel, 2442 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-14.412	8	Pass



BLE/GFSK 2 Mbps, High Channel, 2480 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-13.429	8	Pass



BAND EDGE COMPLIANCE

XMit 2023.02.14.0

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
Attenuator	S.M. Electronics	SA26B-20	TZP	2022-11-06	2023-11-06
Block - DC	Fairview Microwave	SD3379	AMZ	2022-11-06	2023-11-06
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2022-09-10	2023-09-10
Generator - Signal	Agilent	N5183A	TIK	2022-01-24	2025-01-24
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2022-04-25	2023-04-25

TEST DESCRIPTION

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

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

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

BAND EDGE COMPLIANCE

TbtTx 2022.06.03.0 XMit 2023.02.14.0

EUT:	CIC in Genesis AI family			**Work Order:**	STAK0289
Serial Number:	2911336569			**Date:**	04/18/2023
Customer:	Starkey Laboratories, Inc.			**Temperature:**	21.5°C
Attendees:	John Quach			**Humidity:**	27.1%
Project:	None			**Barometric Pres.:**	1013 mbar
Tested by:	Christopher Heintzelman	**Power:**	1.45 VDC Battery	**Job Site:**	MN11

TEST SPECIFICATIONS	Test Method
FCC 15.247:2023	ANSI C63.10:2013
RSS-247 Issue 2:2017	ANSI C63.10:2013

COMMENTS

Reference level offset includes attenuator, measurement cable, DC block, and 1.0 dB loss in the customer's patch cable, as declared by the customer.

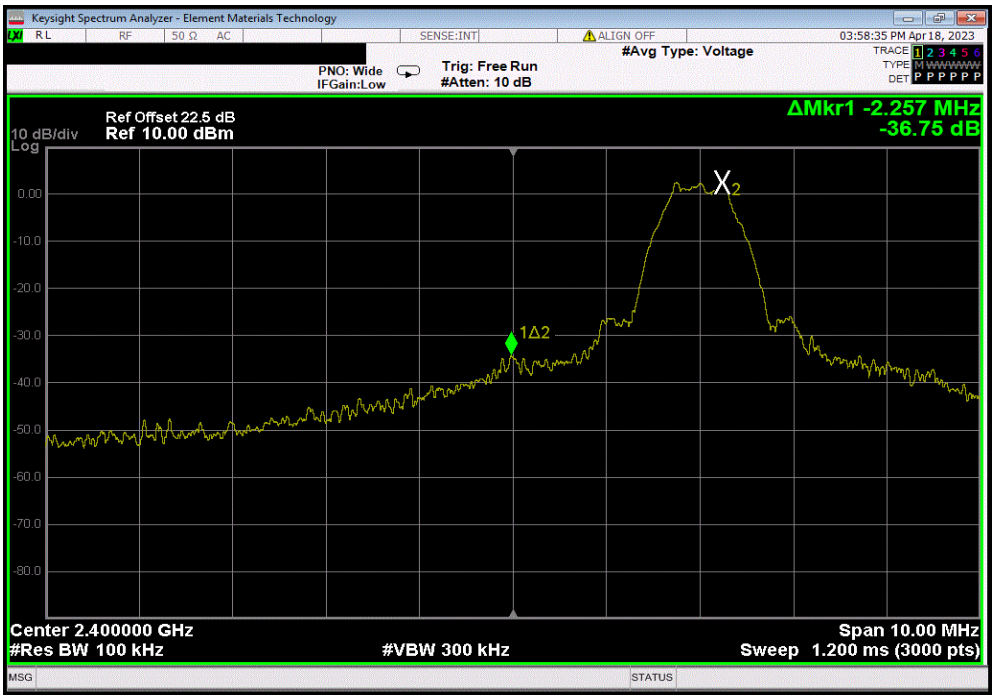
DEVIATIONS FROM TEST STANDARD

None

Configuration #	STAK0289-1	Signature

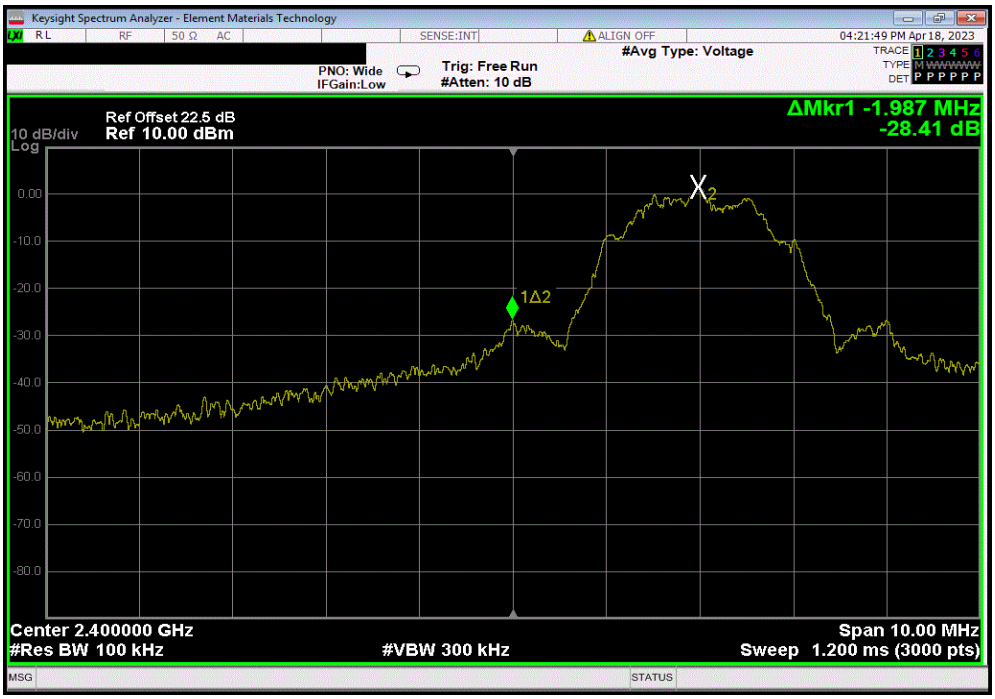
		Value (dBc)	Limit ≤ (dBc)	Result
BLE/GFSK 1 Mbps				
	Low Channel, 2402 MHz	-36.75	-20	Pass
	High Channel, 2480 MHz	-46.96	-20	Pass
BLE/GFSK 2 Mbps				
	Low Channel, 2402 MHz	-28.41	-20	Pass
	High Channel, 2480 MHz	-43.52	-20	Pass

BLE/GFSK 1 Mbps, Low Channel, 2402 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-36.75	-20	Pass



BLE/GFSK 1 Mbps, High Channel, 2480 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-46.96	-20	Pass

BLE/GFSK 2 Mbps, Low Channel, 2402 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-28.41	-20	Pass



BLE/GFSK 2 Mbps, High Channel, 2480 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-43.52	-20	Pass

SPURIOUS CONDUCTED EMISSIONS

XMit 2023.02.14.0

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
Attenuator	S.M. Electronics	SA26B-20	TZP	2022-11-06	2023-11-06
Block - DC	Fairview Microwave	SD3379	AMZ	2022-11-06	2023-11-06
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2022-09-10	2023-09-10
Generator - Signal	Agilent	N5183A	TIK	2022-01-24	2025-01-24
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2022-04-25	2023-04-25

TEST DESCRIPTION

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

The spurious RF conducted emissions were measured with the EUT set to low, medium and high transmit frequencies. The EUT was transmitting at the data rate(s) listed in the datasheet. For each transmit frequency, the fundamental was measured with a 100 kHz resolution bandwidth and the highest value was recorded. The rest of the spectrum was then measured with a 100 kHz resolution bandwidth and the highest value was found. The difference between the value found on the fundamental and the rest of the spectrum was compared against the limit to determine compliance.

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

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

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

SPURIOUS CONDUCTED EMISSIONS

TbtTx 2022.06.03.0 XMit 2023.02.14.0

EUT:	**CIC in Genesis AI family**			**Work Order:**	**STAK0289**
Serial Number:	**2911336569**			**Date:**	**04/18/2023**
Customer:	**Starkey Laboratories, Inc.**			**Temperature:**	**21.5°C**
Attendees:	**John Quach**			**Humidity:**	**26.5%**
Project:	**None**			**Barometric Pres.:**	**1013 mbar**
Tested by:	**Christopher Heintzelman**	**Power:**	**1.45 VDC Battery**	**Job Site:**	**MN11**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2023	ANSI C63.10:2013
RSS-247 Issue 2:2017	ANSI C63.10:2013

COMMENTS

Reference level offset includes 20 dB attenuator and 1.0 dB loss in the customer's patch cable, as declared by the customer.

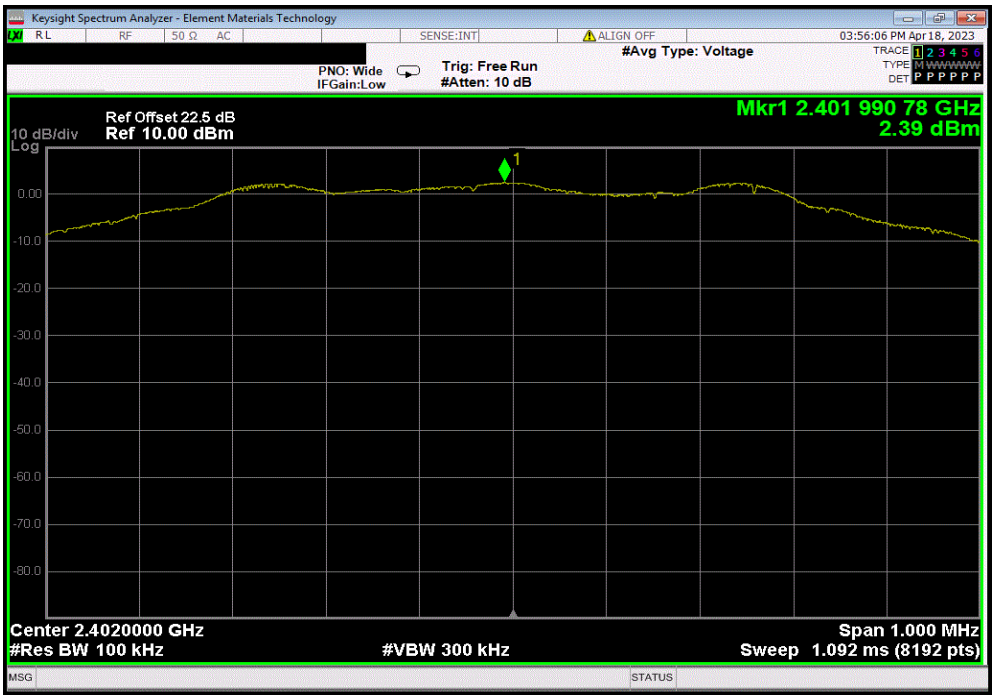
DEVIATIONS FROM TEST STANDARD

None

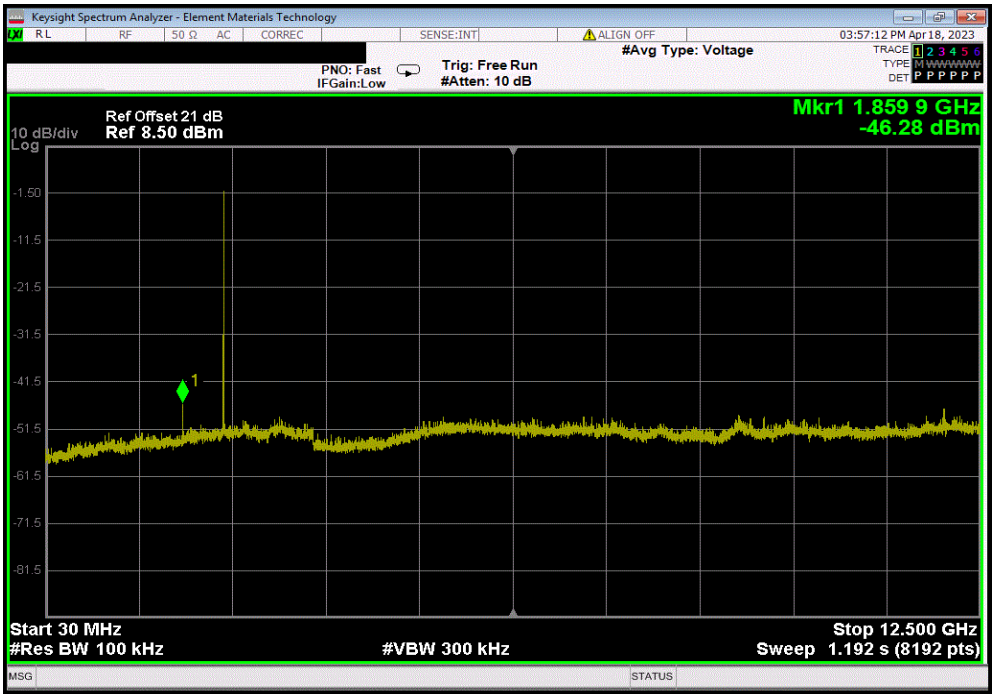
Configuration #	**STAK0289-1**	*Signature*

		Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
BLE/GFSK 1 Mbps						
	Low Channel, 2402 MHz	Fundamental	2401.99	N/A	N/A	N/A
	Low Channel, 2402 MHz	30 MHz - 12.5 GHz	1859.93	-48.68	-20	Pass
	Low Channel, 2402 MHz	12.5 GHz - 25 GHz	24861.13	-37.96	-20	Pass
	Mid Channel, 2442 MHz	Fundamental	2441.99	N/A	N/A	N/A
	Mid Channel, 2442 MHz	30 MHz - 12.5 GHz	1858.41	-37.09	-20	Pass
	Mid Channel, 2442 MHz	12.5 GHz - 25 GHz	24957.27	-38.06	-20	Pass
	High Channel, 2480 MHz	Fundamental	2480	N/A	N/A	N/A
	High Channel, 2480 MHz	30 MHz - 12.5 GHz	1859.93	-40.41	-20	Pass
	High Channel, 2480 MHz	12.5 GHz - 25 GHz	24836.71	-39.55	-20	Pass
BLE/GFSK 2 Mbps						
	Low Channel, 2402 MHz	Fundamental	2401.99	N/A	N/A	N/A
	Low Channel, 2402 MHz	30 MHz - 12.5 GHz	1753.36	-40.74	-20	Pass
	Low Channel, 2402 MHz	12.5 GHz - 25 GHz	24830.61	-38.56	-20	Pass
	Mid Channel, 2442 MHz	Fundamental	2441.99	N/A	N/A	N/A
	Mid Channel, 2442 MHz	30 MHz - 12.5 GHz	3061.1	-50.42	-20	Pass
	Mid Channel, 2442 MHz	12.5 GHz - 25 GHz	24986.27	-38.09	-20	Pass
	High Channel, 2480 MHz	Fundamental	2479.99	N/A	N/A	N/A
	High Channel, 2480 MHz	30 MHz - 12.5 GHz	1850.79	-37.76	-20	Pass
	High Channel, 2480 MHz	12.5 GHz - 25 GHz	24963.37	-39.04	-20	Pass

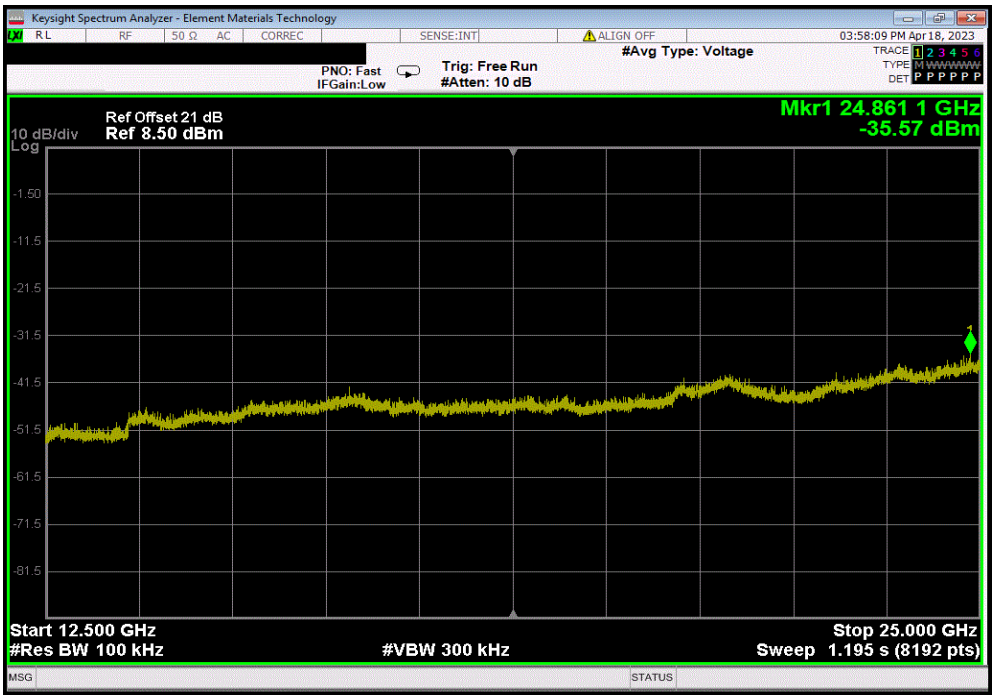
BLE/GFSK 1 Mbps, Low Channel, 2402 MHz					
Frequency Range		Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental	2401.99	N/A	N/A	N/A



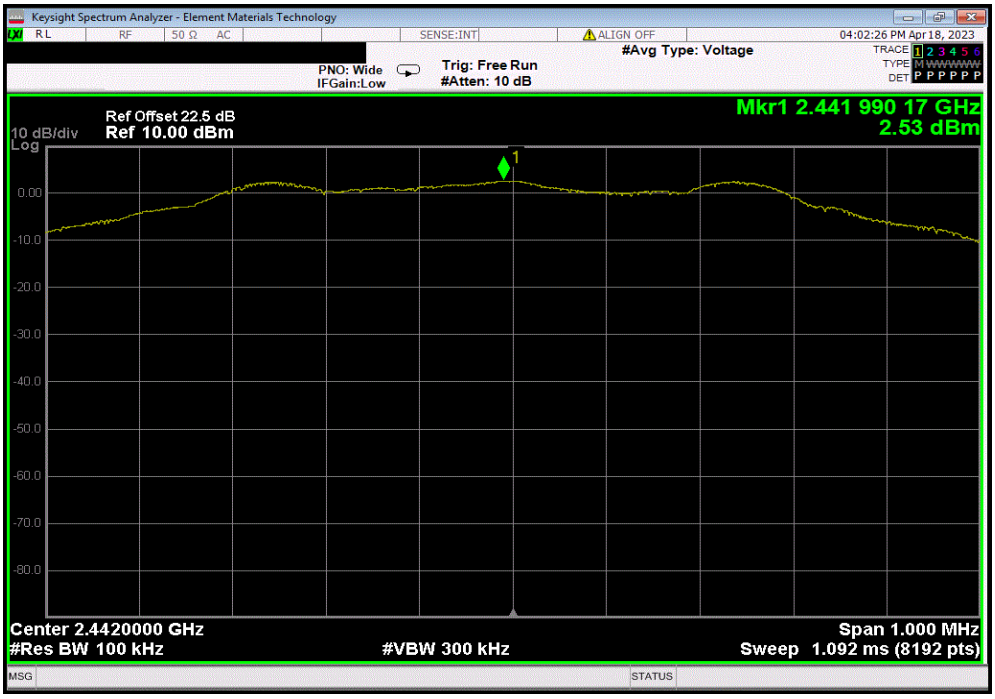
BLE/GFSK 1 Mbps, Low Channel, 2402 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz	1859.93	-48.68	-20	Pass



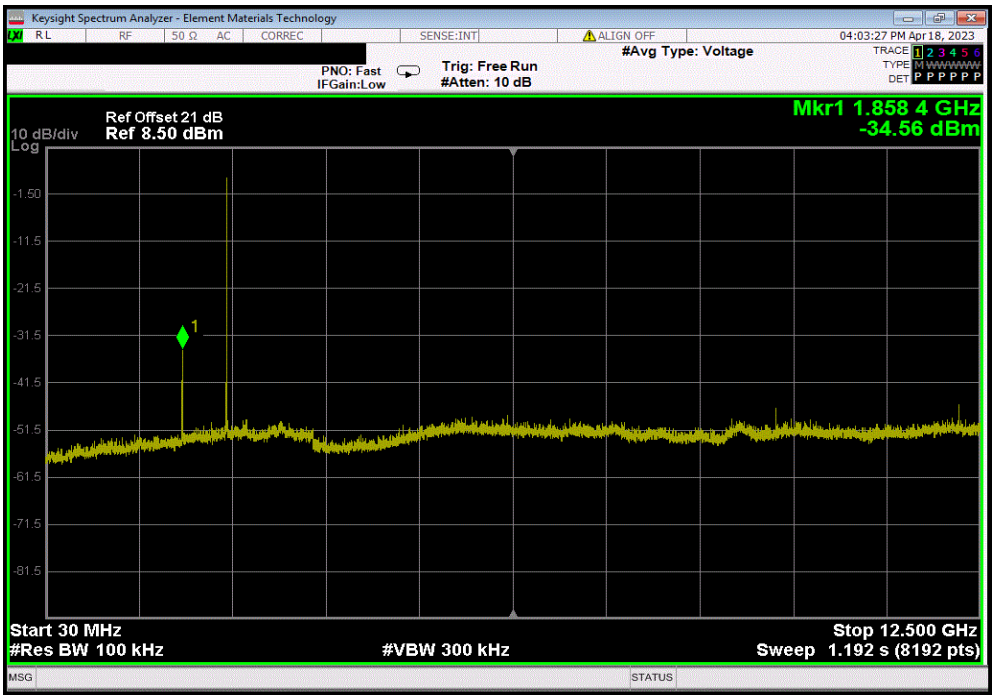
BLE/GFSK 1 Mbps, Low Channel, 2402 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz	24861.13	-37.96	-20	Pass



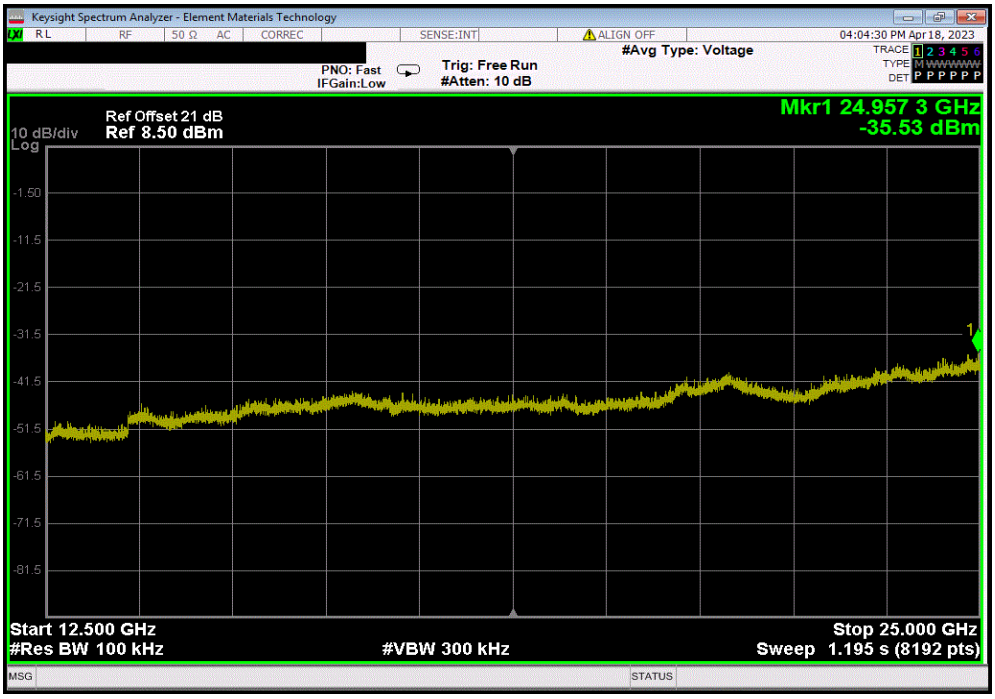
BLE/GFSK 1 Mbps, Mid Channel, 2442 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
Fundamental	2441.99	N/A	N/A	N/A



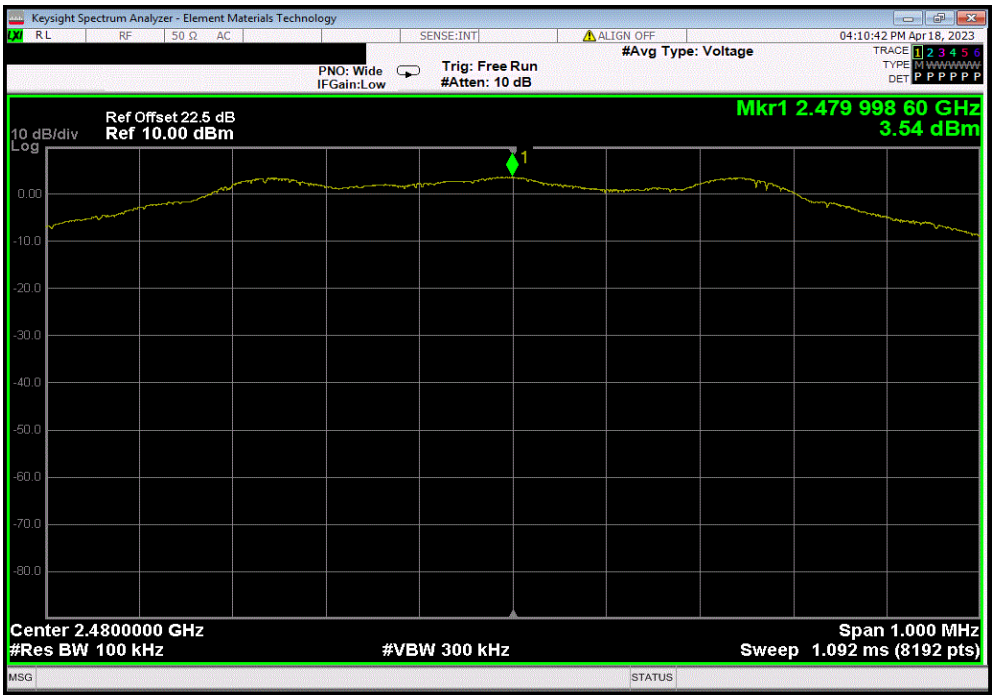
BLE/GFSK 1 Mbps, Mid Channel, 2442 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz	1858.41	-37.09	-20	Pass



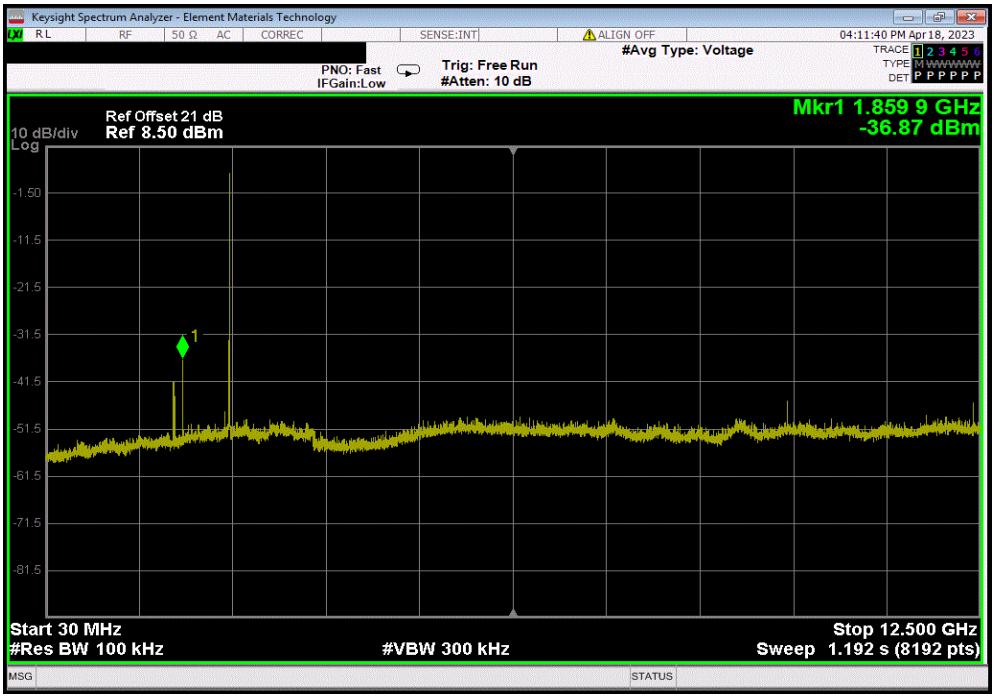
BLE/GFSK 1 Mbps, Mid Channel, 2442 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz	24957.27	-38.06	-20	Pass



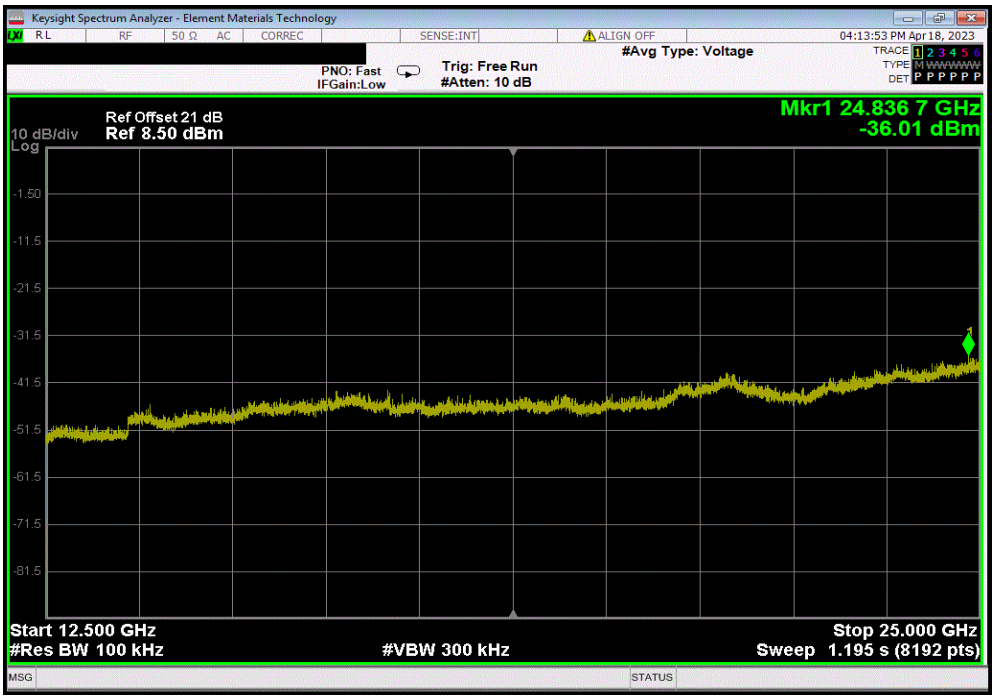
BLE/GFSK 1 Mbps, High Channel, 2480 MHz					
Frequency Range		Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental	2480	N/A	N/A	N/A



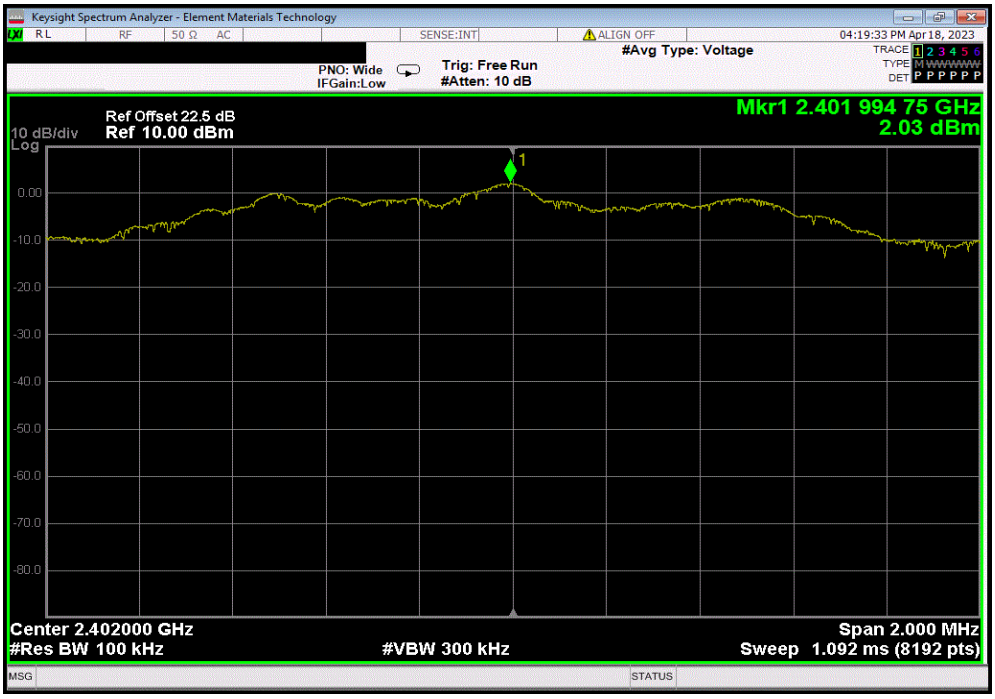
BLE/GFSK 1 Mbps, High Channel, 2480 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz	1859.93	-40.41	-20	Pass



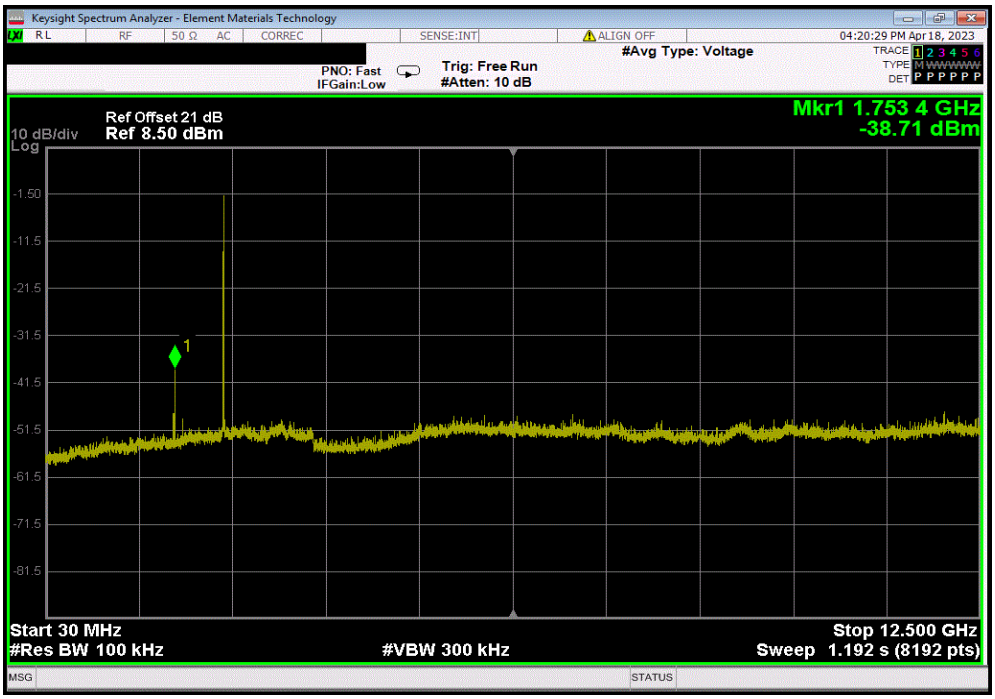
BLE/GFSK 1 Mbps, High Channel, 2480 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz	24836.71	-39.55	-20	Pass



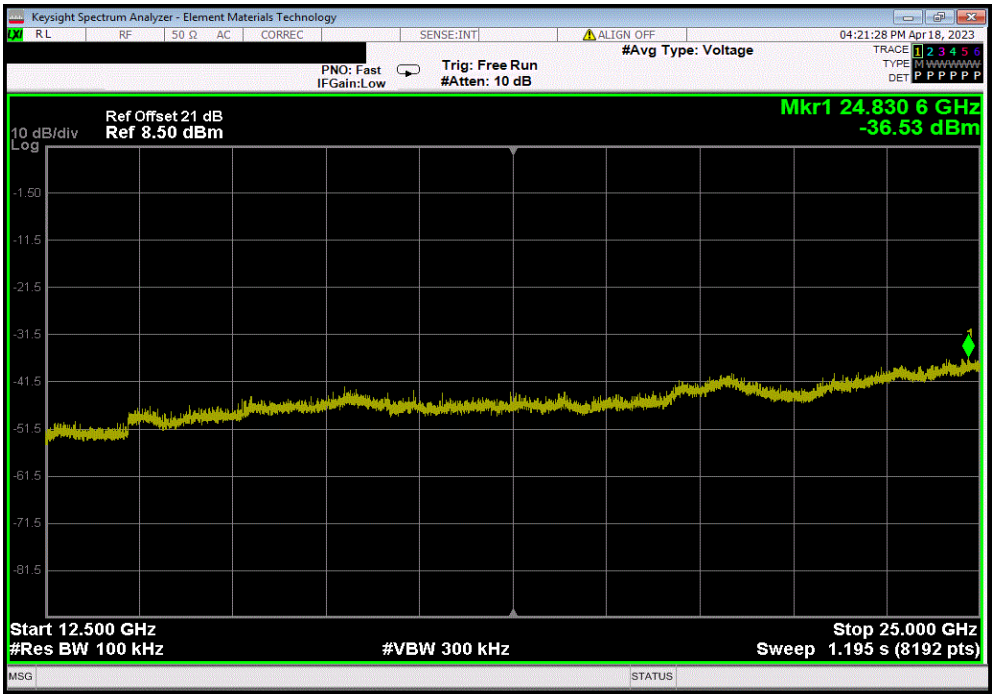
BLE/GFSK 2 Mbps, Low Channel, 2402 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
Fundamental	2401.99	N/A	N/A	N/A



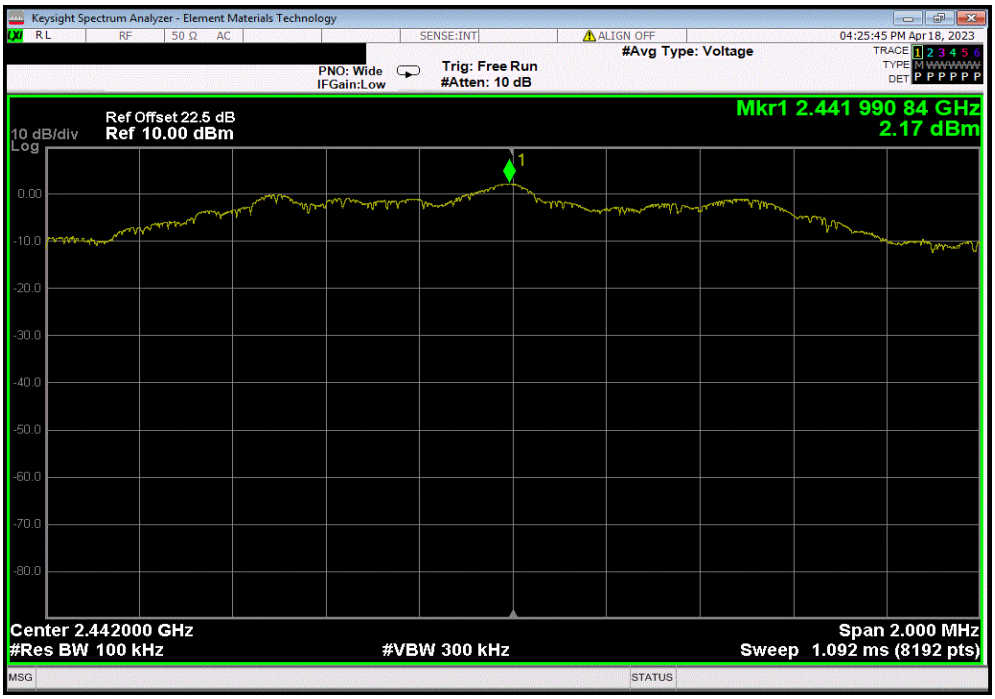
BLE/GFSK 2 Mbps, Low Channel, 2402 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz	1753.36	-40.74	-20	Pass



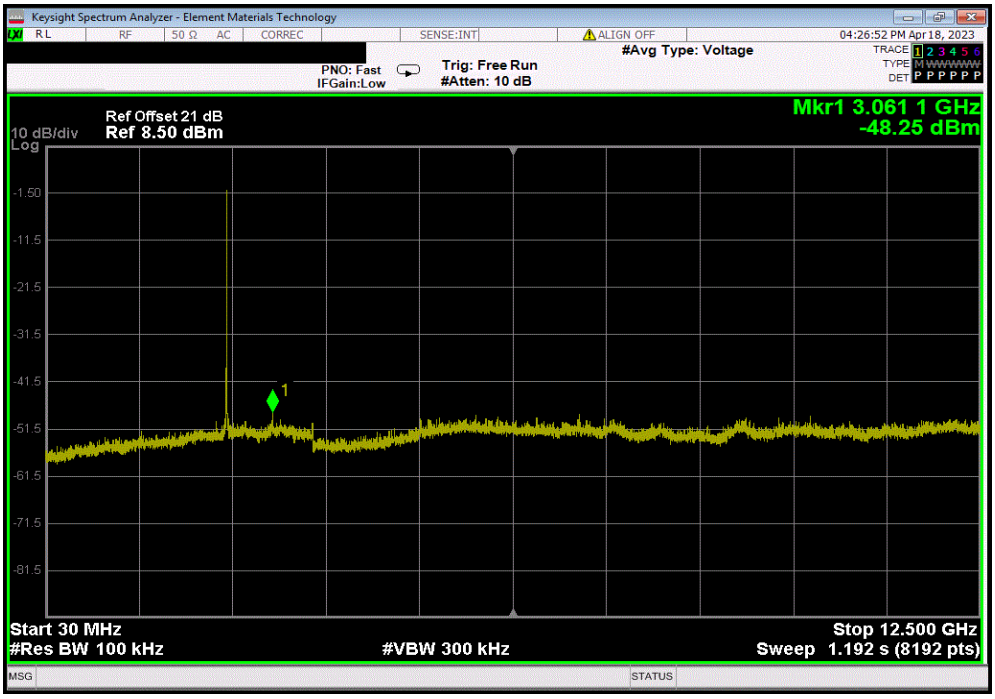
BLE/GFSK 2 Mbps, Low Channel, 2402 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz	24830.61	-38.56	-20	Pass



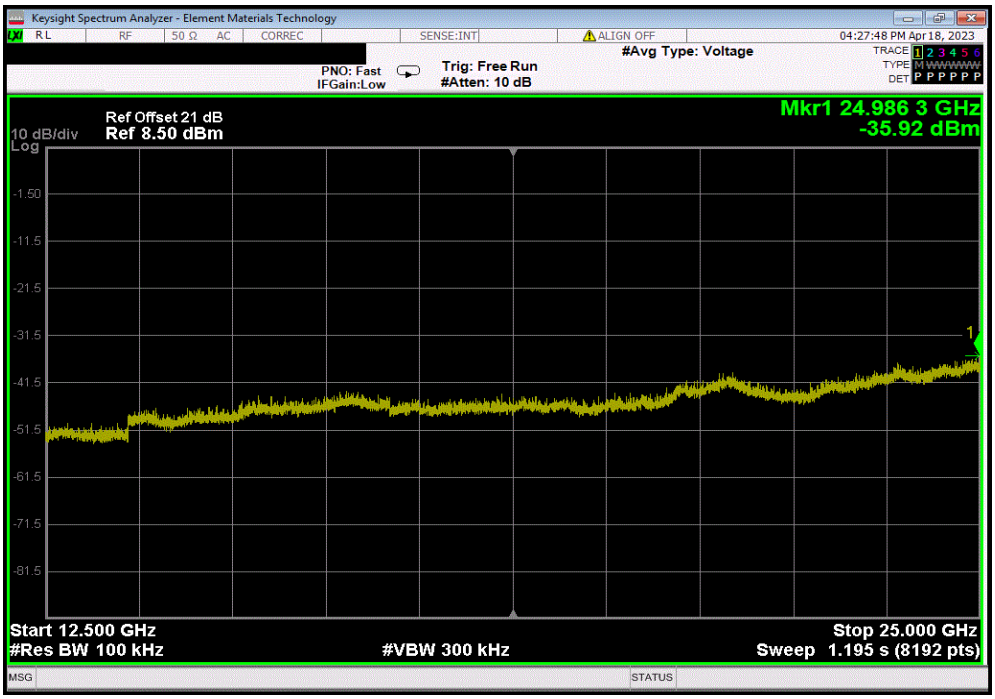
BLE/GFSK 2 Mbps, Mid Channel, 2442 MHz					
Frequency Range		Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental	2441.99	N/A	N/A	N/A



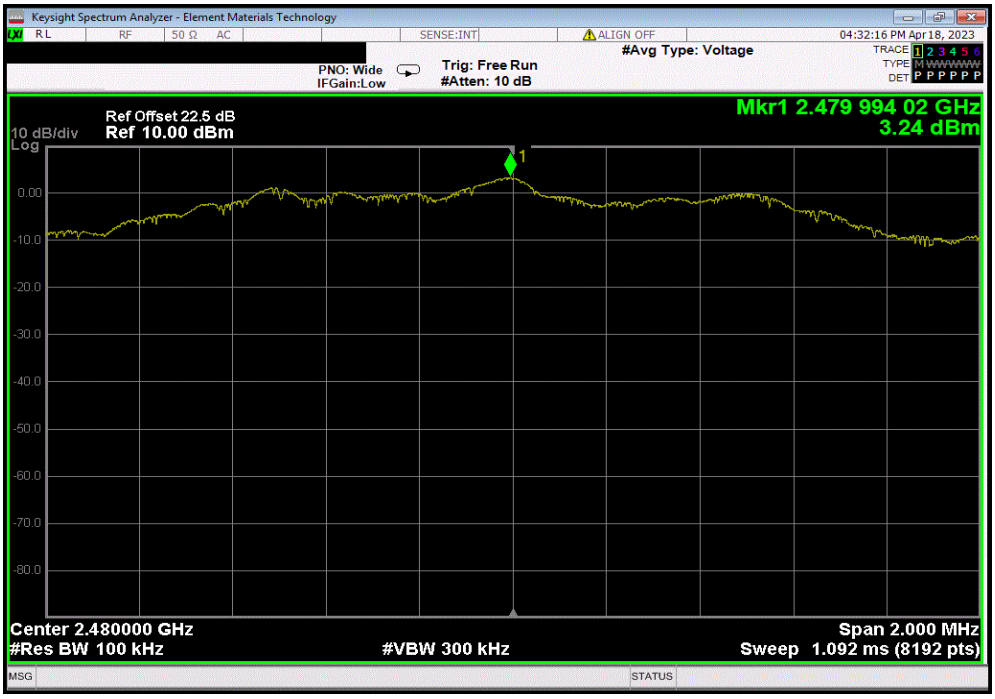
BLE/GFSK 2 Mbps, Mid Channel, 2442 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz	3061.1	-50.42	-20	Pass



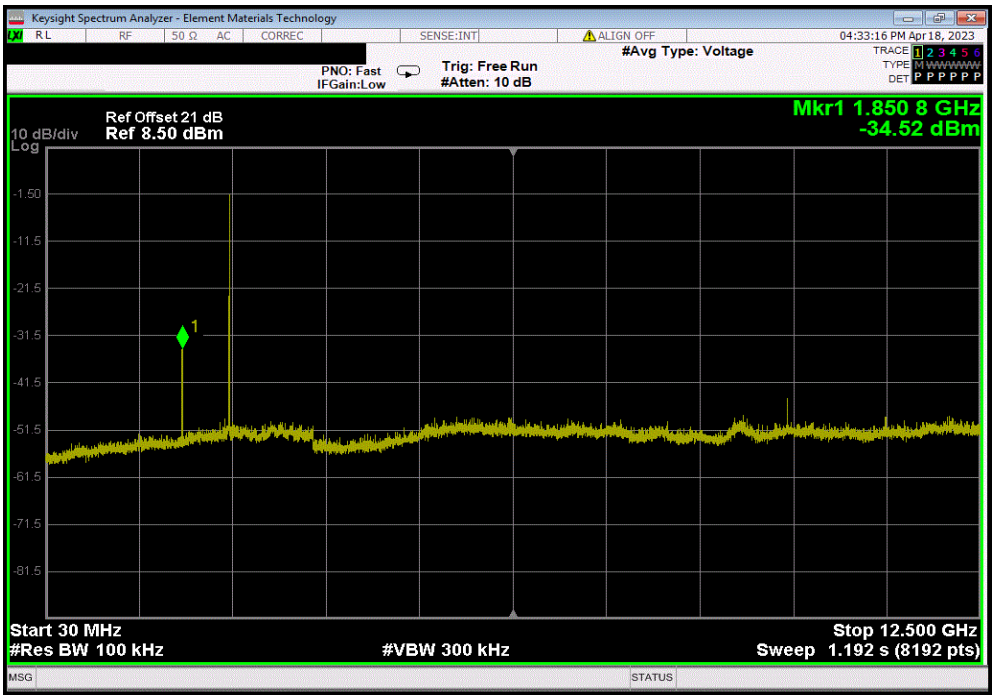
BLE/GFSK 2 Mbps, Mid Channel, 2442 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz	24986.27	-38.09	-20	Pass



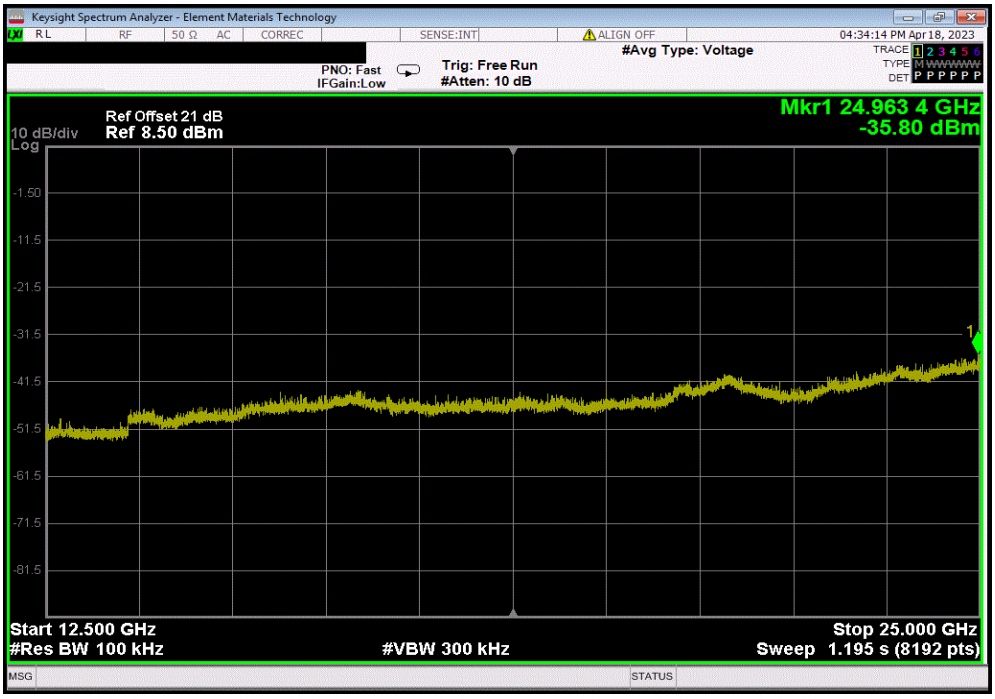
BLE/GFSK 2 Mbps, High Channel, 2480 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
Fundamental	2479.99	N/A	N/A	N/A



BLE/GFSK 2 Mbps, High Channel, 2480 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz	1850.79	-37.76	-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	24963.37	-39.04	-20	Pass



SPURIOUS RADIATED EMISISONS

element
WTD.2023.02.14.0
EmiR5 2022.07.06.0
PSA-ESCI 2023.02.14.0

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
Antenna - Double Ridge	ETS Lindgren	3115	AIP	2022-07-20	2024-07-20
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	2023-01-14	2024-01-14
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVT	2023-01-14	2024-01-14
Attenuator	Fairview Microwave	SA18E-20	TWZ	2022-08-27	2023-08-27
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	2023-02-06	2024-02-06
Antenna - Standard Gain	ETS Lindgren	3160-07	AXP	NCR	NCR
Cable	ESM Cable Corp.	Standard Gain Horn Cables	MNJ	2023-01-14	2024-01-14
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVV	2023-01-14	2024-01-14
Antenna - Standard Gain	ETS Lindgren	3160-08	AIQ	NCR	NCR
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVW	2023-01-14	2024-01-14
Filter - High Pass	Micro-Tronics	HPM50111	LFN	2022-08-27	2023-08-27
Antenna - Standard Gain	ETS Lindgren	3160-09	AHG	NCR	NCR
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNP	2022-09-10	2023-09-10
Amplifier - Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	2022-09-10	2023-09-10
Antenna - Biconilog	ETS Lindgren	3142D	AXO	2021-09-14	2023-09-14
Cable	ESM Cable Corp.	Bilog Cables	MNH	2022-10-08	2023-10-08
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AVO	2022-10-08	2023-10-08
Filter - Low Pass	Micro-Tronics	LPM50004	LFK	2022-08-27	2023-08-27

SPURIOUS RADIATED EMISISONS

element
WTD.2023.02.14.0
EmiR5 2022.07.06.0
PSA-ESCI 2023.02.14.0

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	5.2 dB	-5.2 dB

FREQUENCY RANGE INVESTIGATED

30 MHz TO 26500 MHz

POWER INVESTIGATED

1.45 VDC Battery

CONFIGURATIONS INVESTIGATED

STAK0289-3

MODES INVESTIGATED

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

SPURIOUS RADIATED EMISISONS

element
WTD.2023.02.14.0
EmiR5 2022.07.06.0
PSA-ESCI 2023.02.14.0

EUT:	CIC in Genesis AI family	Work Order:	STAK0289
Serial Number:	2911336581	Date:	2023-04-20
Customer:	Starkey Laboratories, Inc.	Temperature:	21.3°C
Attendees:	John Quach	Relative Humidity:	32.2%
Customer Project:	None	Bar. Pressure (PMSL):	1007 mb
Tested By:	Christopher Heintzelman	Job Site:	MN05
Power:	1.45 VDC Battery	Configuration:	STAK0289-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.247:2023	ANSI C63.10:2013
RSS-247 Issue 2:2017	ANSI C63.10:2013

TEST PARAMETERS

Run #:	24	Test Distance (m):	3	Ant. Height(s) (m):	1 to 4(m)

COMMENTS

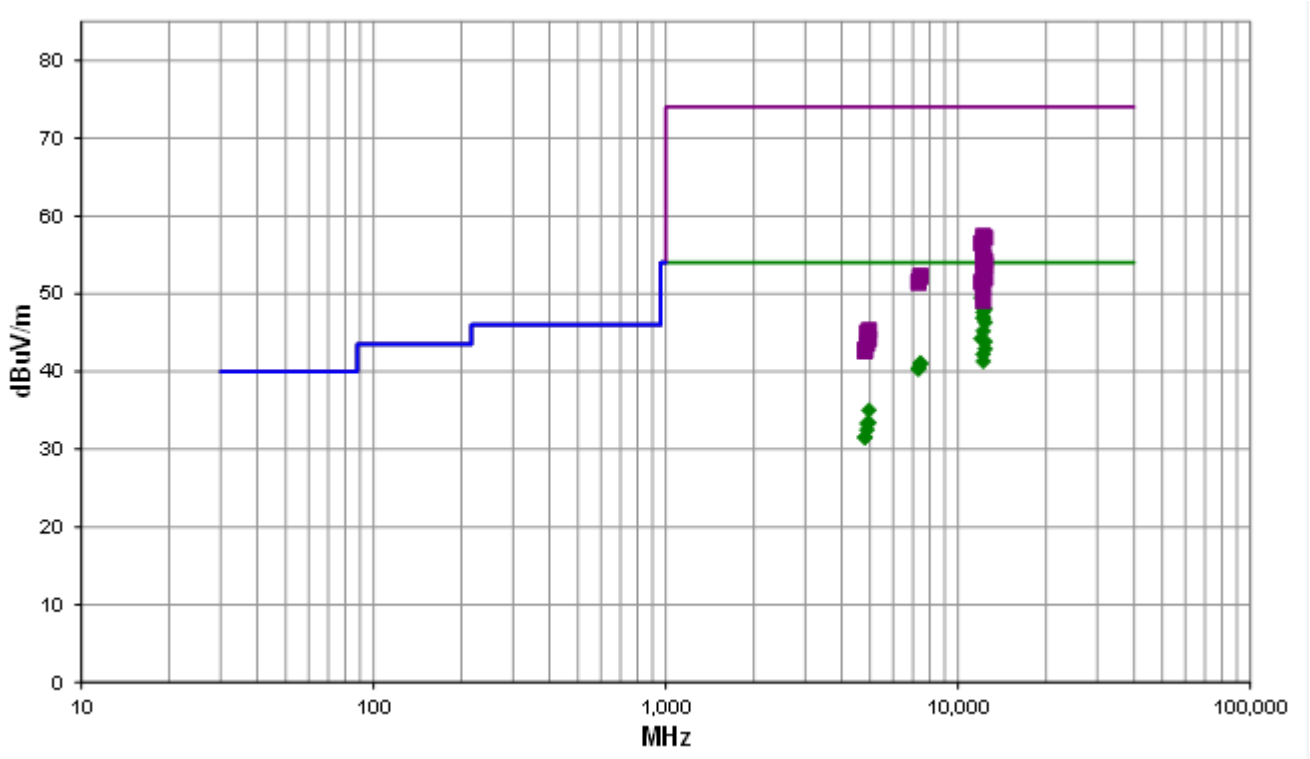
Power level +6. Duty cycle settings 3500/8000us for 2 Mbps, 3500/4420us for 1 Mbps. Test mode duty cycle is 20.34% for 1 mbps and 5.33% for 2 Mbps. Customer states operational mode will be locked at 17% for 1 Mbps and 7% for 2 Mbps. Using a correction factor of 10*log(duty cycle), an upwards correction was applied to reach 100%, then a downwards correction was applied to represent the max operational duty cycle. For 1 Mbps this is +6.9-7.7= -0.8dB, for 2 Mbps this is +12.7-11.5= +1.2dB.

EUT OPERATING MODES

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

DEVIATIONS FROM TEST STANDARD

None



Run #: 24 PK AV QP

SPURIOUS RADIATED EMISISONS

element
WTD.2023.02.14.0
EmiR5 2022.07.06.0
PSA-ESCI 2023.02.14.0

RESULTS - Run #24

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor	External Attenuation (dB)	Polarity/ Transducer	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
12208.800	49.5	1.8	3.0	250.9	-0.8	0.0	Horz	AV	0.0	50.5	54.0	-3.5	EUT On Side, Mid Ch, 1 Mbps
12008.790	49.9	0.4	2.0	8.0	-0.8	0.0	Horz	AV	0.0	49.5	54.0	-4.5	EUT On Side, Low Ch, 1 Mbps
12208.800	47.1	1.8	2.5	232.9	-0.8	0.0	Horz	AV	0.0	48.1	54.0	-5.9	EUT Horz, Mid Ch, 1 Mbps
12401.050	40.7	8.1	2.8	329.0	-0.8	0.0	Horz	AV	0.0	48.0	54.0	-6.0	EUT On Side, High Ch, 1 Mbps
12208.800	46.6	1.8	1.9	26.0	-0.8	0.0	Vert	AV	0.0	47.6	54.0	-6.4	EUT Vert, Mid Ch, 1 Mbps
12208.850	45.9	1.8	2.0	353.0	-0.8	0.0	Horz	AV	0.0	46.9	54.0	-7.1	EUT On Side, Mid Ch, 1 Mbps
12208.730	45.9	1.8	1.2	324.0	-0.8	0.0	Vert	AV	0.0	46.9	54.0	-7.1	EUT Horz, Mid Ch, 1 Mbps
12398.830	45.2	1.9	2.0	307.0	-0.8	0.0	Horz	AV	0.0	46.3	54.0	-7.7	EUT On Side, High Ch, 1 Mbps
12208.780	44.2	1.8	3.1	113.0	-0.8	0.0	Horz	AV	0.0	45.2	54.0	-8.8	EUT Vert, Mid Ch, 1 Mbps
12008.780	44.6	0.4	1.4	70.9	-0.8	0.0	Vert	AV	0.0	44.2	54.0	-9.8	EUT Vert, Low Ch, 1 Mbps
12398.750	42.7	1.9	1.9	34.9	-0.8	0.0	Vert	AV	0.0	43.8	54.0	-10.2	EUT Vert, High Ch, 1 Mbps
12401.170	35.6	8.1	3.7	340.9	-0.8	0.0	Vert	AV	0.0	42.9	54.0	-11.1	EUT Vert, High Ch, 1 Mbps
12207.580	39.2	1.8	2.0	358.9	1.2	0.0	Horz	AV	0.0	42.2	54.0	-11.8	EUT On Side, Mid Ch, 2 Mbps
12208.750	40.3	1.8	1.3	163.0	-0.8	0.0	Vert	AV	0.0	41.3	54.0	-12.7	EUT On Side, Mid Ch, 1 Mbps
7439.408	30.0	11.9	1.5	34.0	-0.8	0.0	Vert	AV	0.0	41.1	54.0	-12.9	EUT Vert, High Ch, 1 Mbps
7439.408	29.8	11.9	1.5	184.0	-0.8	0.0	Horz	AV	0.0	40.9	54.0	-13.1	EUT On Side, High Ch, 1 Mbps
7324.008	29.5	11.7	1.8	232.9	-0.8	0.0	Vert	AV	0.0	40.4	54.0	-13.6	EUT Vert, Mid ch, 1 Mbps
7323.658	29.4	11.7	1.5	281.0	-0.8	0.0	Horz	AV	0.0	40.3	54.0	-13.7	EUT On Side, Mid Ch, 1 Mbps
12208.620	55.6	1.8	3.0	250.9	0.0	0.0	Horz	PK	0.0	57.4	74.0	-16.6	EUT On Side, Mid Ch, 1 Mbps
12400.070	49.1	8.1	2.8	329.0	0.0	0.0	Horz	PK	0.0	57.2	74.0	-16.8	EUT On Side, High Ch, 1 Mbps
12008.780	56.1	0.4	2.0	8.0	0.0	0.0	Horz	PK	0.0	56.5	74.0	-17.5	EUT On Side, Low Ch, 1 Mbps
4959.917	32.2	3.6	4.0	178.0	-0.8	0.0	Horz	AV	0.0	35.0	54.0	-19.0	EUT On Side, High Ch, 1 Mbps
12209.750	53.4	1.8	2.5	232.9	0.0	0.0	Horz	PK	0.0	55.2	74.0	-18.8	EUT Horz, Mid Ch, 1 Mbps
12209.980	52.9	1.8	1.9	26.0	0.0	0.0	Vert	PK	0.0	54.7	74.0	-19.3	EUT Vert, Mid Ch, 1 Mbps
12208.570	52.5	1.8	1.2	324.0	0.0	0.0	Vert	PK	0.0	54.3	74.0	-19.7	EUT Horz, Mid Ch, 1 Mbps
4959.900	30.6	3.6	2.2	184.0	-0.8	0.0	Vert	AV	0.0	33.4	54.0	-20.6	EUT Vert, High Ch, 1 Mbps
12211.230	52.4	1.8	2.0	353.0	0.0	0.0	Horz	PK	0.0	54.2	74.0	-19.8	EUT On Side, Mid Ch, 3500 ms on, 4420 ms off
12399.800	52.3	1.9	2.0	307.0	0.0	0.0	Horz	PK	0.0	54.2	74.0	-19.8	EUT On Side, High Ch, 1 Mbps
4883.850	30.7	3.4	1.5	178.0	-0.8	0.0	Vert	AV	0.0	33.3	54.0	-20.7	EUT Vert, Mid ch, 1 Mbps
12401.330	45.6	8.1	3.7	340.9	0.0	0.0	Vert	PK	0.0	53.7	74.0	-20.3	EUT Vert, High Ch, 1 Mbps
4883.008	29.9	3.4	1.0	62.0	-0.8	0.0	Horz	AV	0.0	32.5	54.0	-21.5	EUT On Side, Mid Ch, 1 Mbps
12208.730	50.8	1.8	3.1	113.0	0.0	0.0	Horz	PK	0.0	52.6	74.0	-21.4	EUT Vert, Mid Ch, 1 Mbps
4804.500	29.0	3.3	1.5	0.0	-0.8	0.0	Horz	AV	0.0	31.5	54.0	-22.5	EUT On Side, Low Ch, 1 Mbps
4803.892	29.0	3.3	1.5	211.9	-0.8	0.0	Vert	AV	0.0	31.5	54.0	-22.5	EUT Vert, Low Ch, 1 Mbps
7441.092	40.4	11.9	1.5	184.0	0.0	0.0	Horz	PK	0.0	52.3	74.0	-21.7	EUT On Side, High Ch, 1 Mbps
7439.342	40.3	11.9	1.5	34.0	0.0	0.0	Vert	PK	0.0	52.2	74.0	-21.8	EUT Vert, High Ch, 1 Mbps
12399.830	50.1	1.9	1.9	34.9	0.0	0.0	Vert	PK	0.0	52.0	74.0	-22.0	EUT Vert, High Ch, 1 Mbps
7323.983	39.9	11.7	1.5	281.0	0.0	0.0	Horz	PK	0.0	51.6	74.0	-22.4	EUT On Side, Mid Ch, 1 Mbps
12008.640	51.1	0.4	1.4	70.9	0.0	0.0	Vert	PK	0.0	51.5	74.0	-22.5	EUT Vert, Low Ch, 1 Mbps

SPURIOUS RADIATED EMISISONS

element
WTD.2023.02.14.0
EmiR5 2022.07.06.0
PSA-ESCI 2023.02.14.0

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor	External Attenuation (dB)	Polarity/ Transducer	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
7326.850	39.7	11.7	1.8	232.9	0.0	0.0	Vert	PK	0.0	51.4	74.0	-22.6	EUT Vert, Mid ch, 1 Mbps
12209.750	49.1	1.8	2.0	358.9	0.0	0.0	Horz	PK	0.0	50.9	74.0	-23.1	EUT On Side, Mid Ch, 2 Mbps
12208.870	47.3	1.8	1.3	163.0	0.0	0.0	Vert	PK	0.0	49.1	74.0	-24.9	EUT On Side, Mid Ch, 1 Mbps
4960.025	41.7	3.6	4.0	178.0	0.0	0.0	Horz	PK	0.0	45.3	74.0	-28.7	EUT On Side, High Ch, 1 Mbps
4884.650	41.6	3.4	1.5	178.0	0.0	0.0	Vert	PK	0.0	45.0	74.0	-29.0	EUT Vert, Mid ch, 1 Mbps
4960.250	40.6	3.6	2.2	184.0	0.0	0.0	Vert	PK	0.0	44.2	74.0	-29.8	EUT Vert, High Ch, 1 Mbps
4884.367	40.2	3.4	1.0	62.0	0.0	0.0	Horz	PK	0.0	43.6	74.0	-30.4	EUT On Side, Mid Ch, 1 Mbps
4802.200	39.5	3.3	1.5	211.9	0.0	0.0	Vert	PK	0.0	42.8	74.0	-31.2	EUT Vert, Low Ch, 1 Mbps
4801.825	39.3	3.3	1.5	0.0	0.0	0.0	Horz	PK	0.0	42.6	74.0	-31.4	EUT On Side, Low Ch, 1 Mbps

CONCLUSION

Pass

Tested By

SPURIOUS RADIATED EMISISONS

element
WTD.2023.02.14.0
EmiR5 2022.07.06.0
PSA-ESCI 2023.02.14.0

EUT:	CIC in Genesis AI family	Work Order:	STAK0289
Serial Number:	2911336581	Date:	2023-04-20
Customer:	Starkey Laboratories, Inc.	Temperature:	21.3°C
Attendees:	John Quach	Relative Humidity:	32.2%
Customer Project:	None	Bar. Pressure (PMSL):	1007 mb
Tested By:	Christopher Heintzelman	Job Site:	MN05
Power:	1.45 VDC Battery	Configuration:	STAK0289-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.247:2023	ANSI C63.10:2013
RSS-247 Issue 2:2017	ANSI C63.10:2013

TEST PARAMETERS

Run #:	42	Test Distance (m):	3	Ant. Height(s) (m):	1 to 4(m)

COMMENTS

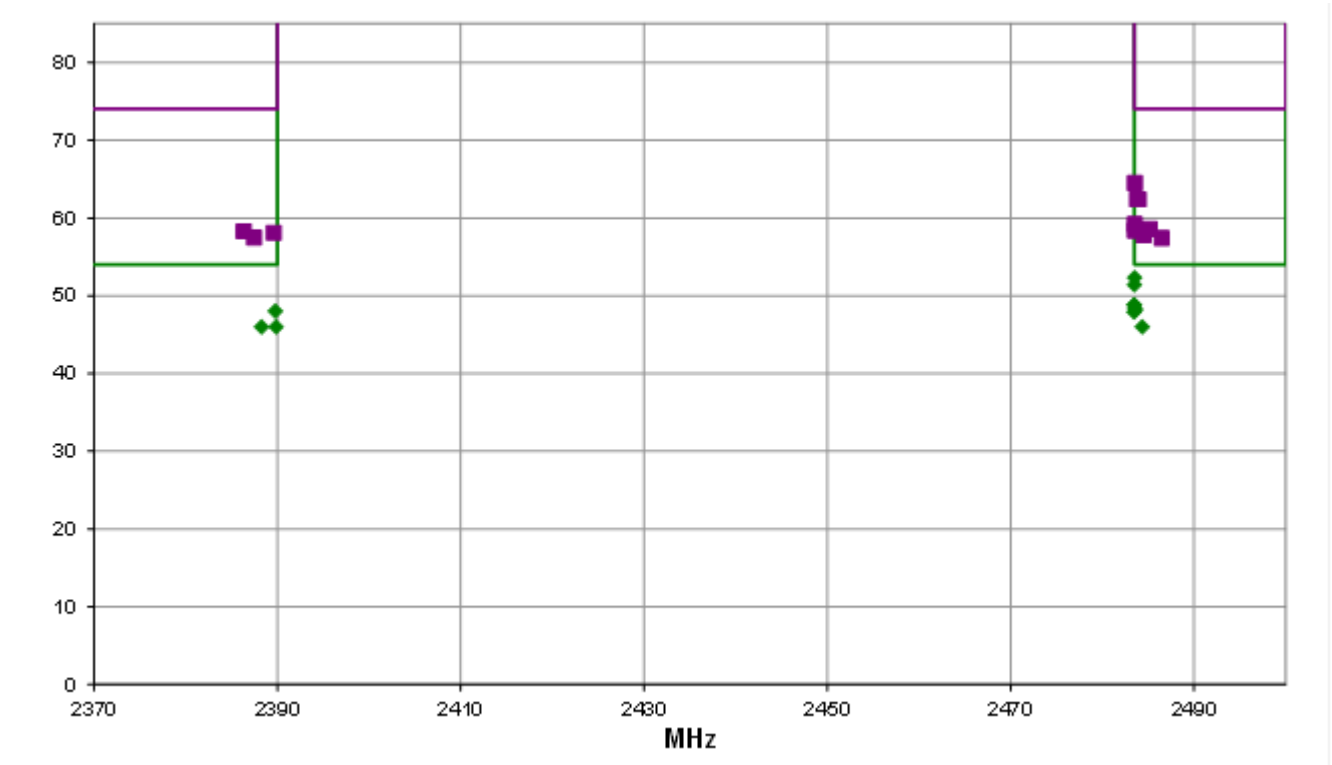
Power level +6. Duty cycle settings 3500/8000us for 2 Mbps, 3500/4420us for 1 Mbps. Test mode duty cycle is 20.34% for 1 mbps and 5.33% for 2 Mbps. Customer states operational mode will be locked at 17% for 1 Mbps and 7% for 2 Mbps. Using a correction factor of 10*log(duty cycle), an upwards correction was applied to reach 100%, then a downwards correction was applied to represent the max operational duty cycle. For 1 Mbps this is +6.9-7.7= -0.8dB, for 2 Mbps this is +12.7-11.5= +1.2dB.

EUT OPERATING MODES

Transmitting BLE Low and High Chs (2402 and 2480 MHz), GSFK 1 and 2 Mbps

DEVIATIONS FROM TEST STANDARD

None



Run #: 42 ■ PK ◆ AV ● QP

SPURIOUS RADIATED EMISISONS

element
WTD.2023.02.14.0
EmiR5 2022.07.06.0
PSA-ESCI 2023.02.14.0

RESULTS - Run #42

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor	External Attenuation (dB)	Polarity/ Transducer	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2483.533	35.3	-4.2	1.0	175.9	1.2	20.0	Horz	AV	0.0	52.3	54.0	-1.7	EUT On Side, High Ch, 2 Mbps
2483.508	34.4	-4.2	1.5	145.0	1.2	20.0	Vert	AV	0.0	51.4	54.0	-2.6	EUT Vert, High Ch, 2 Mbps
2483.508	31.8	-4.2	1.5	128.9	1.2	20.0	Vert	AV	0.0	48.8	54.0	-5.2	EUT On Side, High Ch, 2 Mbps
2483.500	31.8	-4.2	2.9	18.0	1.2	20.0	Horz	AV	0.0	48.8	54.0	-5.2	Integration Method, EUT Horz, High Ch, 2 Mbps
2483.567	31.3	-4.2	1.5	235.9	1.2	20.0	Vert	AV	0.0	48.3	54.0	-5.7	EUT Horz, High Ch, 2 Mbps
2483.633	31.2	-4.2	1.5	41.0	1.2	20.0	Horz	AV	0.0	48.2	54.0	-5.8	EUT Vert, High Ch, 2 Mbps
2389.775	31.1	-4.3	1.5	27.9	1.2	20.0	Vert	AV	0.0	48.0	54.0	-6.0	EUT Horz, Low Ch, 2 Mbps
2483.500	32.9	-4.2	1.5	142.0	-0.8	20.0	Vert	AV	0.0	47.9	54.0	-6.1	EUT Vert, High Ch, 1 Mbps
2389.883	31.1	-4.3	1.5	0.0	-0.8	20.0	Horz	AV	0.0	46.0	54.0	-8.0	EUT Horz, Low Ch, 1 Mbps
2388.283	31.1	-4.3	1.5	152.0	-0.8	20.0	Horz	AV	0.0	46.0	54.0	-8.0	EUT Horz, Low Ch, 1 Mbps
2484.383	31.0	-4.2	1.5	30.0	-0.8	20.0	Horz	AV	0.0	46.0	54.0	-8.0	EUT Horz, High Ch, 1 Mbps
2483.550	48.7	-4.2	2.9	18.0	0.0	20.0	Horz	PK	0.0	64.5	74.0	-9.5	EUT Horz, High Ch, 2 Mbps
2483.967	46.6	-4.2	1.0	175.9	0.0	20.0	Horz	PK	0.0	62.4	74.0	-11.6	EUT On Side, High Ch, 2 Mbps
2483.800	46.6	-4.2	1.5	145.0	0.0	20.0	Vert	PK	0.0	62.4	74.0	-11.6	EUT Vert, High Ch, 2 Mbps
2483.542	43.4	-4.2	1.5	142.0	0.0	20.0	Vert	PK	0.0	59.2	74.0	-14.8	EUT Vert, High Ch, 1 Mbps
2485.175	42.8	-4.2	1.5	128.9	0.0	20.0	Vert	PK	0.0	58.6	74.0	-15.4	EUT On Side, High Ch, 2 Mbps
2483.558	42.6	-4.2	1.5	30.0	0.0	20.0	Horz	PK	0.0	58.4	74.0	-15.6	EUT Horz, High Ch, 1 Mbps
2386.333	42.6	-4.3	1.5	152.0	0.0	20.0	Horz	PK	0.0	58.3	74.0	-15.7	EUT Horz, Low Ch, 1 Mbps
2389.617	42.4	-4.3	1.5	0.0	0.0	20.0	Horz	PK	0.0	58.1	74.0	-15.9	EUT Horz, Low Ch, 1 Mbps
2484.517	42.0	-4.2	1.5	235.9	0.0	20.0	Vert	PK	0.0	57.8	74.0	-16.2	EUT Horz, High Ch, 2 Mbps
2387.458	41.8	-4.3	1.5	27.9	0.0	20.0	Vert	PK	0.0	57.5	74.0	-16.5	EUT Horz, Low Ch, 2 Mbps
2486.500	41.6	-4.2	1.5	41.0	0.0	20.0	Horz	PK	0.0	57.4	74.0	-16.6	EUT Vert, High Ch, 2 Mbps

CONCLUSION

Pass

Tested By

End of Test Report