

Starkey Laboratories, Inc.

Evolv AI Power Plus BTE 13 BLE Hearing Aid

FCC 15.247:2021 Bluetooth Low Energy (DTS) Radio

Report: STAK0238, Issue Date: July 22, 2021



NVLAP LAB CODE: 200881-0







Last Date of Test: May 21, 2021 Starkey Laboratories, Inc. EUT: Evolv AI Power Plus BTE 13 BLE Hearing Aid

Radio Equipment Testing

Standards	
Specification	Method
FCC 15.247:2021	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.
11.12.1, 11.13.2, 6.5, 6.6	Spurious Radiated Emissions	Yes	Pass	
11.6	Duty Cycle	Yes	Pass	
11.8.2	Occupied Bandwidth	Yes	Pass	
11.9.1.1	Output Power	Yes	Pass	
11.9.1.1	Equivalent Isotropic Radiated Power	Yes	Pass	
11.10.2	Power Spectral Density	Yes	Pass	
11.11	Band Edge Compliance	Yes	Pass	
11.11	Spurious Conducted Emissions	Yes	Pass	

Deviations From Test Standards

None

Approved By:

a.

Eric Brandon, Department Manager

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

REVISION HISTORY



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

ACCREDITATIONS AND AUTHORIZATIONS



United States

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

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

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

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

European Union

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

FACILITIES





California Labs OC01-17 41 Tesla Irvine, CA 92618 (949) 861-8918	Minnesota Labs MN01-11 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Oregon Labs EV01-12 6775 NE Evergreen Pkwy #400 Hillsboro, OR 97124 (503) 844-4066	Texas Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Washington Labs NC01-05 19201 120 th Ave NE Bothell, WA 98011 (425)984-6600		
		NVLAP				
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code:201049-0	NVLAP Lab Code: 200629-0		
	Innovation, Science and Economic Development Canada					
2834B-1, 2834B-3	2834E-1, 2834E-3	2834D-1	2834G-1	2834F-1		
		BSMI				
SL2-IN-E-1154R	SL2-IN-E-1152R	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R		
	VCCI					
A-0029	A-0109	A-0108	A-0201	A-0110		
Recognized Phase I CAB for ISED, ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA						
US0158	US0175	US0017	US0191	US0157		



MEASUREMENT UNCERTAINTY



Measurement Uncertainty

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

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





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:	Evolv AI Power Plus BTE 13 BLE Hearing Aid
First Date of Test:	May 17, 2021
Last Date of Test:	May 21, 2021
Receipt Date of Samples:	May 17,2021
Equipment Design Stage:	Prototype
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT: New BLE 5.0 Hearing Aid

Model Equivalency Statement: Evolv AI 2400 Power Plus BTE 13 Evolv AI 2000 Power Plus BTE 13 Evolv AI 1600 Power Plus BTE 13 Evolv AI 1200 Power Plus BTE 13 Evolv AI 1000 Power Plus BTE 13

Hardware and RF performance is identical. Firmware is identical. The different numbers indicated represent different levels of features (such as the number of noise reduction levels) that are unlocked in the device firmware when the device is programmed at manufacture. The level is set at manufacture and cannot be changed in the field. This allows the various levels to be sold at different price points.

Testing Objective:

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





Configuration STAK0238-1

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Hearing Aid	Starkey	Evolv AI Power Plus BTE 13	210990482

Configuration STAK0238-2

Software/Firmware Running during test	
Description	Version
Firmware	Rev 7.5.0.5

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Hearing Aid	Starkey	Evolv AI Power Plus BTE 13	210990483

MODIFICATIONS



Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
			Tested as	No EMI suppression	EUT remained at
1	2021-05-17	Duty Cycle	delivered to	devices were added or	Element following
			Test Station.	modified during this test.	the test.
		Occupied	Tested as	No EMI suppression	EUT remained at
2	2021-05-17	Bondwidth	delivered to	devices were added or	Element following
		Danuwiutii	Test Station.	modified during this test.	the test.
			Tested as	No EMI suppression	EUT remained at
3	2021-05-17	Output Power	delivered to	devices were added or	Element following
			Test Station.	modified during this test.	the test.
		Equivalent	Tested as	No EMI suppression	EUT remained at
4	2021-05-17	Isotropic	delivered to	devices were added or	Element following
		Radiated Power	Test Station.	modified during this test.	the test.
		Dowor Spootrol	Tested as	No EMI suppression	EUT remained at
5	2021-05-17	Power Spectral	delivered to	devices were added or	Element following
		Density	Test Station.	modified during this test.	the test.
		Dond Edge	Tested as	No EMI suppression	EUT remained at
6	2021-05-17		delivered to	devices were added or	Element following
		Compliance	Test Station.	modified during this test.	the test.
		Spurious	Tested as	No EMI suppression	EUT remained at
7	2021-05-17	Conducted	delivered to	devices were added or	Element following
		Emissions	Test Station.	modified during this test.	the test.
		Spurious	Tested as	No EMI suppression	Schodulad testing
8	2021-05-21	Radiated	delivered to	devices were added or	was completed
		Emissions	Test Station.	modified during this test.	was completed.

POWER SETTINGS AND ANTENNAS



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

ANTENNA GAIN (dBi)

Туре	Provided by:	Frequency Range (MHz)	Gain (dBi)
Polyimide flexible circuit "Bow tie"	Manufacturer	2402-2480	-7.5

No adjustable power settings were provided. The EUT was tested using power settings pre-defined by the manufacturer.



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).

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Keysight	N9010A (EXA)	AFQ	2020-12-27	2021-12-27
Antenna - Standard Gain	ETS Lindgren	3160-09	AHG	NCR	NCR
Amplifier - Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	2020-09-11	2021-09-11
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNP	2020-09-11	2021-09-11
Antenna - Standard Gain	ETS Lindgren	3160-08	AIQ	NCR	NCR
Antenna - Double Ridge	ETS-Lindgren	3115	AJQ	2021-01-25	2023-01-25
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVT	2021-01-15	2022-01-15
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVV	2021-01-15	2022-01-15
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVW	2021-01-15	2022-01-15
Antenna - Biconilog	ETS Lindgren	3142D	AXO	2019-09-03	2021-09-03
Antenna - Standard Gain	ETS Lindgren	3160-07	AXP	NCR	NCR
Filter - Low Pass	Micro-Tronics	LPM50004	LFK	2020-09-24	2021-09-24
Filter - High Pass	Micro-Tronics	HPM50111	LFN	2020-09-14	2021-09-14
Cable	ESM Cable Corp.	Bilog Cables	MNH	2020-10-06	2021-10-06
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	2021-01-15	2022-01-15
Cable	ESM Cable Corp.	Standard Gain Horn Cables	MNJ	2021-03-07	2022-03-07
Attenuator	Fairview Microwave	SA18E-20	TWZ	2020-09-14	2021-09-14
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AVO	2020-10-06	2021-10-06

TEST EQUIPMENT



MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	5.2 dB	-5.2 dB

FREQUENCY RANGE INVESTIGATED

30 MHz TO 26500 MHz

POWER INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

STAK0238-2

MODES INVESTIGATED

Transmitting Bluetooth Low Energy Low and High Ch (2402, 2480 MHz), 1 Mbps and 2 Mbps Transmitting Bluetooth Low Energy Low, Mid, and High Channels (2402, 2442, and 2480 MHz); 1 Mbps and 2 Mbps



EUT:	Evolv AI Power P	lus BTE 13 BLE Hear	ing Aid		Work Order:	STAK0238
Serial Number:	210990483				Date:	2021-05-21
Customer:	Starkey Laborato	ries, Inc.			Temperature:	22.4°C
Attendees:	John Quach				Relative Humidity:	55%
Customer Project:	None				Bar. Pressure:	1021 mb
Tested By:	Christopher Heint	tzelman			Job Site:	MN05
Power:	Battery				Configuration:	STAK0238-2
TEST SPECIFI	CATIONS					
Specification:				Method:		
FCC 15.247:2021				ANSI C63.10:2	2013	
TEST PARAME	ETERS					
Run #:	12	Test Distance (m):	3		Ant. Height(s) (m):	1 to 4(m)
COMMENTS						
DCCF (2Mbps)=10	*log(1/0.14)=8.5dB					
DCCF (1Mbps)=10	*log(1/0.28)=5.5dB					
EUT OPERATI	NG MODES					
Transmitting Blueto	ooth Low Energy Lo	w, Mid, and High Cha	nnels (2	402, 2442, and	2480 MHz); 1 Mbps ar	nd 2 Mbps

DEVIATIONS FROM TEST STANDARD

None





RESULTS - Run #12

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
7438.517	30.7	9.2	1.1	116.0	8.5	0.0	Horz	AV	0.0	48.4	54.0	-5.6	EUT Horz, High Ch, 2 Mbps
7438.325	30.7	9.2	1.5	192.9	5.5	0.0	Horz	AV	0.0	45.4	54.0	-8.6	EUT Horz, High Ch, 1 Mbps
7438.025	30.6	9.2	1.5	83.0	5.5	0.0	Vert	AV	0.0	45.3	54.0	-8.7	EUT Vert, High Ch, 1 Mbps
7328.467	30.4	9.2	1.5	83.0	5.5	0.0	Vert	AV	0.0	45.1	54.0	-8.9	EUT Vert, Mid Ch, 1 Mbps
7327.867	30.3	9.2	1.5	138.9	5.5	0.0	Horz	AV	0.0	45.0	54.0	-9.0	EUT Horz, Mid Ch, 1 Mbps
12401.070	30.0	6.0	1.0	360.0	5.5	0.0	Vert	AV	0.0	41.5	54.0	-12.5	EUT Vert, High Ch, 1 Mbps
12008.790	35.8	-0.1	1.9	188.0	5.5	0.0	Horz	AV	0.0	41.2	54.0	-12.8	EUT Horz, Low Ch, 1 Mbps
12401.030	29.2	6.0	1.0	99.0	5.5	0.0	Horz	AV	0.0	40.7	54.0	-13.3	EUT Vert, High Ch, 1 Mbps
12401.400	29.0	6.0	1.0	297.9	5.5	0.0	Vert	AV	0.0	40.5	54.0	-13.5	EUT Horz, High Ch, 1 Mbps
12397.530	30.9	1.0	2.5	267.0	8.5	0.0	Horz	AV	0.0	40.4	54.0	-13.6	EUT Horz, High Ch, 2 Mbps
12400.860	28.7	6.0	1.0	45.9	5.5	0.0	Horz	AV	0.0	40.2	54.0	-13.8	EUT Horz, High Ch, 1 Mbps
12208.740	34.0	0.1	1.9	199.0	5.5	0.0	Horz	AV	0.0	39.6	54.0	-14.4	EUT Horz, Mid Ch, 1 Mbps
4884.475	30.9	2.5	1.5	193.9	5.5	0.0	Vert	AV	0.0	38.9	54.0	-15.1	EUT Vert, Mid Ch, 1 Mbps
4883.158	30.9	2.5	1.5	16.0	5.5	0.0	Horz	AV	0.0	38.9	54.0	-15.1	EUT Horz, Mid Ch, 1 Mbps
12398.790	32.3	1.0	2.2	163.9	5.5	0.0	Horz	AV	0.0	38.8	54.0	-15.2	EUT Horz, High Ch, 1 Mbps
12208.880	33.1	0.1	2.4	152.0	5.5	0.0	Vert	AV	0.0	38.7	54.0	-15.3	EUT Vert, Mid Ch, 1 Mbps
4801.733	30.8	2.3	3.6	312.9	5.5	0.0	Vert	AV	0.0	38.6	54.0	-15.4	EUT Vert, Low Ch, 1 Mbps
4961.992	30.5	2.6	1.5	328.0	5.5	0.0	Horz	AV	0.0	38.6	54.0	-15.4	EUT Horz, High Ch, 1 Mbps
4801.642	30.7	2.3	1.5	138.9	5.5	0.0	Horz	AV	0.0	38.5	54.0	-15.5	EUT Horz, Low Ch, 1 Mbps
4962.150	30.3	2.6	1.5	332.0	5.5	0.0	Vert	AV	0.0	38.4	54.0	-15.6	EUT Vert, High Ch, 1 Mbps
12398.730	31.6	1.0	2.3	166.0	5.5	0.0	Vert	AV	0.0	38.1	54.0	-15.9	EUT Vert, High Ch, 1 Mbps
12008.970	32.5	-0.1	2.6	246.9	5.5	0.0	Horz	AV	0.0	37.9	54.0	-16.1	EUT Vert, Low Ch, 1 Mbps
12008.930	32.1	-0.1	1.8	307.9	5.5	0.0	Vert	AV	0.0	37.5	54.0	-16.5	EUT Vert, Low Ch, 1 Mbps
12008.880	29.8	-0.1	2.2	131.0	5.5	0.0	Vert	AV	0.0	35.2	54.0	-18.8	EUT Horz, Low Ch, 1 Mbps
12009.020	29.2	-0.1	1.5	204.9	5.5	0.0	Vert	AV	0.0	34.6	54.0	-19.4	EUT On Side, Low Ch, 1 Mbps
12008.980	29.1	-0.1	1.5	127.9	5.5	0.0	Horz	AV	0.0	34.5	54.0	-19.5	EUT On Side, Low Ch, 1 Mbps
7328.400	42.9	9.2	1.5	138.9		0.0	Horz	PK	0.0	52.1	74.0	-21.9	EUT Horz, Mid Ch, 1 Mbps
7439.642	42.4	9.2	1.5	192.9		0.0	Horz	PK	0.0	51.6	74.0	-22.4	EUT Horz, High Ch, 1 Mbps
7438.292	42.4	9.2	1.5	83.0		0.0	Vert	PK	0.0	51.6	74.0	-22.4	EUT Vert, High Ch, 1 Mbps
7324.875	41.8	9.2	1.5	83.0		0.0	Vert	PK	0.0	51.0	74.0	-23.0	EUT Vert, Mid Ch, 1 Mbps
7442.225	41.7	9.2	1.1	116.0		0.0	Horz	PK	0.0	50.9	74.0	-23.1	EUT Horz, High Ch, 2 Mbps
12401.340	41.7	6.0	1.0	360.0		0.0	Vert	PK	0.0	47.7	74.0	-26.3	EUT Vert, High Ch, 1 Mbps
12402.150	41.2	6.0	1.0	99.0		0.0	Horz	PK	0.0	47.2	74.0	-26.8	EUT Vert, High Ch, 1 Mbps
12401.240	40.5	6.0	1.0	45.9		0.0	Horz	PK	0.0	46.5	74.0	-27.5	EUT Horz, High Ch, 1 Mbps
12401.100	40.2	6.0	1.0	297.9		0.0	Vert	PK	0.0	46.2	74.0	-27.8	EUT Horz, High Ch, 1 Mbps
12011.370	45.2	-0.1	1.9	188.0		0.0	Horz	PK	0.0	45.1	74.0	-28.9	EUT Horz, Low Ch, 1 Mbps
4882.833	42.5	2.5	1.5	193.9		0.0	Vert	PK	0.0	45.0	74.0	-29.0	EUT Vert, Mid Ch, 1 Mbps
4804.183	42.5	2.3	1.5	138.9		0.0	Horz	PK	0.0	44.8	74.0	-29.2	EUT Horz, Low Ch, 1 Mbps
4961.717	42.2	2.6	1.5	328.0		0.0	Horz	PK	0.0	44.8	74.0	-29.2	EUT Horz, High Ch, 1 Mbps
4962.408	42.2	2.6	1.5	322.9		0.0	Vert	PK	0.0	44.8	74.0	-29.2	EUT Vert, High Ch, 1 Mbps



Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
4957.858	42.3	2.5	1.5	332.0		0.0	Vert	PK	0.0	44.8	74.0	-29.2	EUT Vert, High Ch, 1 Mbps
4884.492	42.2	2.5	1.5	16.0		0.0	Horz	PK	0.0	44.7	74.0	-29.3	EUT Horz, Mid Ch, 1 Mbps
4803.658	42.2	2.3	3.6	312.9		0.0	Vert	PK	0.0	44.5	74.0	-29.5	EUT Vert, Low Ch, 1 Mbps
12398.530	43.0	1.0	2.2	163.9		0.0	Horz	PK	0.0	44.0	74.0	-30.0	EUT Horz, High Ch, 1 Mbps
12208.580	43.8	0.1	1.9	199.0		0.0	Horz	PK	0.0	43.9	74.0	-30.1	EUT Horz, Mid Ch, 1 Mbps
12397.760	42.6	1.0	2.5	267.0		0.0	Horz	PK	0.0	43.6	74.0	-30.4	EUT Horz, High Ch, 2 Mbps
12208.330	43.1	0.1	2.4	152.0		0.0	Vert	PK	0.0	43.2	74.0	-30.8	EUT Vert, Mid Ch, 1 Mbps
12398.830	41.8	1.0	2.3	166.0		0.0	Vert	PK	0.0	42.8	74.0	-31.2	EUT Vert, High Ch, 1 Mbps
12008.480	42.8	-0.1	2.6	246.9		0.0	Horz	PK	0.0	42.7	74.0	-31.3	EUT Vert, Low Ch, 1 Mbps
12010.280	42.5	-0.1	1.8	307.9		0.0	Vert	PK	0.0	42.4	74.0	-31.6	EUT Vert, Low Ch, 1 Mbps
12011.120	41.3	-0.1	2.2	131.0		0.0	Vert	PK	0.0	41.2	74.0	-32.8	EUT Horz, Low Ch, 1 Mbps
12011.130	40.9	-0.1	1.5	127.9		0.0	Horz	PK	0.0	40.8	74.0	-33.2	EUT On Side, Low Ch, 1 Mbps
12009.980	40.8	-0.1	1.5	204.9		0.0	Vert	PK	0.0	40.7	74.0	-33.3	EUT On Side, Low Ch, 1 Mbps

CONCLUSION

Pass

CliAm Henten Tested By



EUT:	Evolv AI Power P	lus BTE 13 BLE Heari	ng Aid		Work Order:	STAK0238
Serial Number:	210990483				Date:	2021-05-21
Customer:	Starkey Laborato	ries, Inc.			Temperature:	22.4°C
Attendees:	John Quach				Relative Humidity:	55%
Customer Project:	None				Bar. Pressure:	1021 mb
Tested By:	Christopher Hein	tzelman			Job Site:	MN05
Power:	Battery				Configuration:	STAK0238-2
TEST SPECIFIC	CATIONS					
Specification:				Method:		
FCC 15.247:2021				ANSI C63.10:2	2013	
TEST PARAME	TERS					
Run #:	19	Test Distance (m):	3		Ant. Height(s) (m):	1 to 4(m)
COMMENTS						
Band edge measure	ements are noise fl	oor so no DCCF applie	ed.			
	NG MODES					

Transmitting Bluetooth Low Energy Low and High Ch (2402, 2480 MHz), 1 Mbps and 2 Mbps

DEVIATIONS FROM TEST STANDARD

None





RESULTS - Run #19

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2388.642	32.6	-4.6	2.05	45.9	3.0	20.0	Vert	AV	0.0	48.0	54.0	-6.0	EUT Vert, Low Ch, 1 Mbps
2483.733	32.7	-4.8	1.5	252.0	3.0	20.0	Vert	AV	0.0	47.9	54.0	-6.1	EUT Vert, High Ch, 1 Mbps
2483.542	32.7	-4.8	1.5	224.0	3.0	20.0	Vert	AV	0.0	47.9	54.0	-6.1	EUT Vert, High Ch, 2 Mbps
2389.633	32.5	-4.6	1.5	160.0	3.0	20.0	Horz	AV	0.0	47.9	54.0	-6.1	EUT Vert, Low Ch, 1 Mbps
2388.650	32.5	-4.6	3.11	120.0	3.0	20.0	Horz	AV	0.0	47.9	54.0	-6.1	EUT Vert, Low Ch, 2 Mbps
2389.942	32.5	-4.6	1.5	16.9	3.0	20.0	Vert	AV	0.0	47.9	54.0	-6.1	EUT Vert, Low Ch, 2 Mbps
2488.183	32.7	-4.9	1.5	134.0	3.0	20.0	Horz	AV	0.0	47.8	54.0	-6.2	EUT Vert, High Ch, 1 Mbps
2486.750	32.6	-4.8	1.5	350.0	3.0	20.0	Horz	AV	0.0	47.8	54.0	-6.2	EUT On Side, High Ch, 1 Mbps
2483.617	32.6	-4.8	1.5	358.9	3.0	20.0	Vert	AV	0.0	47.8	54.0	-6.2	EUT On Side, High Ch, 1 Mbps
2487.792	32.6	-4.8	1.5	181.0	3.0	20.0	Horz	AV	0.0	47.8	54.0	-6.2	EUT Vert, High Ch, 2 Mbps
2488.233	32.6	-4.9	1.95	217.9	3.0	20.0	Horz	AV	0.0	47.7	54.0	-6.3	EUT Horz, High Ch, 1 Mbps
2488.408	32.6	-4.9	1.5	342.0	3.0	20.0	Vert	AV	0.0	47.7	54.0	-6.3	EUT Horz, High Ch, 1 Mbps
2487.583	44.5	-4.8	1.5	181.0	3.0	20.0	Horz	PK	0.0	59.7	74.0	-14.3	EUT Vert, High Ch, 2 Mbps
2389.925	44.2	-4.6	3.11	120.0	3.0	20.0	Horz	PK	0.0	59.6	74.0	-14.4	EUT Vert, Low Ch, 2 Mbps
2483.900	44.3	-4.8	1.5	252.0	3.0	20.0	Vert	PK	0.0	59.5	74.0	-14.5	EUT Vert, High Ch, 1 Mbps
2386.542	44.1	-4.6	2.05	45.9	3.0	20.0	Vert	PK	0.0	59.5	74.0	-14.5	EUT Vert, Low Ch, 1 Mbps
2385.792	44.0	-4.6	1.5	16.9	3.0	20.0	Vert	PK	0.0	59.4	74.0	-14.6	EUT Vert, Low Ch, 2 Mbps
2385.900	43.9	-4.6	1.5	160.0	3.0	20.0	Horz	PK	0.0	59.3	74.0	-14.7	EUT Vert, Low Ch, 1 Mbps
2486.875	44.0	-4.8	1.5	134.0	3.0	20.0	Horz	PK	0.0	59.2	74.0	-14.8	EUT Vert, High Ch, 1 Mbps
2487.742	44.0	-4.8	1.5	350.0	3.0	20.0	Horz	PK	0.0	59.2	74.0	-14.8	EUT On Side, High Ch, 1 Mbps
2487.517	43.9	-4.8	1.5	342.0	3.0	20.0	Vert	PK	0.0	59.1	74.0	-14.9	EUT Horz, High Ch, 1 Mbps
2486.908	43.8	-4.8	1.5	358.9	3.0	20.0	Vert	PK	0.0	59.0	74.0	-15.0	EUT On Side, High Ch, 1 Mbps
2484.108	43.7	-4.8	1.95	217.9	3.0	20.0	Horz	PK	0.0	58.9	74.0	-15.1	EUT Horz, High Ch, 1 Mbps
2485.333	43.7	-4.8	1.5	224.0	3.0	20.0	Vert	PK	0.0	58.9	74.0	-15.1	EUT Vert, High Ch, 2 Mbps

CONCLUSION

Pass

CliAm Hentem Tested By



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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5183A	TIK	2019-04-30	2022-04-30
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2021-04-16	2022-04-16
Block - DC	Fairview Microwave	SD3379	AMZ	2020-11-04	2021-11-04
Attenuator	S.M. Electronics	SA26B-20	RFW	2021-02-05	2022-02-05
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2020-09-14	2021-09-14

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.



									XMit 2020.12.30.0
EUT	Evolv Al Power Plus BTE	E 13 BLE Hearing Aid					Work Order:	STAK0238	
Serial Number	: 210990482						Date:	17-May-21	
Customer	Starkey Laboratories, Inc	с.					Temperature:	22.2 °C	
Attendees	John Quach						Humidity:	45.2% RH	
Project	None						Barometric Pres.:	1022 mbar	
Tested by	: Andrew Rogstad		Power:	Battery			Job Site:	MN08	
TEST SPECIFICAT	TONS			Test Method					
FCC 15.247:2021				ANSI C63.10:2013					
COMMENTS									
Reference level of	fset includes measuremen	nt cable, attenuator, and DC bl	ock.						
DEVIATIONS FROM	MIESISIANDARD								
None		1			S				
Configuration #	1		/ +	, Up					
Configuration #	1	Cimpoture	Cho R	antark					
		Signature	Dulas	Number of	Total On	Devied	Value	Lineld	
			Puise Width (mc)	Number of	Total On Time (mc)	(mc)	value (%)		Bocult
PLE/CESK 1 Mbpg	Low Chappel 2402 MHz		width (IIIS)	ruises	Time (ins)	(iiis)	(70)	(70)	Result
DLE/GFSK I WOPS	Dules Length		0.0774	N1/A	N1/A	NI/A	N1/A	NI/A	N1/A
	Pulse Ceunt		0.3771	IN/A	IN/A	IN/A	IN/A	IN/A	IN/A
	Puise Count		IN/A	30	11.313	IN/A	IN/A	IN/A	N/A
	Depentebility		IN/A	IN/A	IN/A	39.99	20.29	N/A	N/A
DI E/CESK 1 Mbpg	Mid Chappel 2442 MHz		IN/A	IN/A	IN/A	IN/A	IN/A	IN/A	IN/A
DEC/OF SIX 1 Mbps	Pulse Length		0.3764	NI/A	NI/A	NI/A	NI/A	N/A	NI/A
	Pulse Count		0.5764	20	11 202	N/A	N/A	N/A	N/A
	Overall Period		N/A	N/A	N/A	30.00	28.24	N/A	N/A
	Repeatability		N/A	N/A	N/A	N/A	20.24 N/A	N/A	N/A
BLE/GESK 1 Mbps	High Channel 2480 MHz		IN/A	IN/A	IN/A	IN/A	19/75	11/7	11/15
DEE/OF OR TIMOPS	Pulse Length		0 3778	N/A	N/A	N/A	N/A	N/A	N/A
	Pulse Count		N/A	30	11 334	N/A	N/A	N/A	N/A
	Overall Period		N/A	N/A	N/A	30.00	28.34	N/A	N/A
	Repeatability		N/A	N/A	N/A	N/A	N/A	N/A	N/A
BLE/GESK 2 Mbps	Low Channel 2402 MHz		14/74	14/73	1.071	110/11	14/74	TU/K	10/74
	Pulse Length		0.1891	N/A	N/A	N/A	N/A	N/A	N/A
	Pulse Count		N/A	30	5 673	N/A	N/A	N/A	N/A
	Overall Period		N/A	N/A	N/A	40.00	14.18	N/A	N/A
	Repeatability		N/A	N/A	N/A	N/A	N/A	N/A	N/A
BLE/GFSK 2 Mbps	Mid Channel, 2442 MHz								
	Pulse Length		0.1902	N/A	N/A	N/A	N/A	N/A	N/A
	Pulse Count		N/A	30	5,706	N/A	N/A	N/A	N/A
	Overall Period		N/A	N/A	N/A	39.99	14.27	N/A	N/A
	Repeatability		N/A	N/A	N/A	N/A	N/A	N/A	N/A
BLE/GFSK 2 Mbps	High Channel, 2480 MHz								
	Pulse Length		0.1891	N/A	N/A	N/A	N/A	N/A	N/A
	Pulse Count		N/A	30	5.673	N/A	N/A	N/A	N/A
	Overall Period		N/A	N/A	N/A	40.00	14.18	N/A	N/A
	Repeatability		N/A	N/A	N/A	N/A	N/A	N/A	N/A
	· ·								



Pulse	Number of	Total On	Period	Value	Limit		
Width (ms)	Pulses	Time (ms)	(ms)	(%)	(%)	Result	
0.3771	IN/A	N/A	IN/A	N/A	IN/A	IN/A	
Keysight Spectrum Analy	zer - Element Materials Tech 50 Ω AC	nology SEN	SE:INT	ALIGN OFF		05:46:49 PM May 17, 2	021
		PNO: Fast 🔸	Trig Delay-1.000 ms Trig: Video	s Avg Type	Log-Pwr	TRACE 1 2 3 4	5 6 WW
		IFGain:Low	Atten: 10 dB			Mkr3 1 003 n	
10 dB/div Ref 0.	00 dBm					-31.27 dB	m
-10.0							
-20.0						3	
-40.0		- Y				TRIG	
-50.0							
-60.0							
-80.0	monthe	. J		have	mann		
-90.0							
Center 2.402000	000 GHz					Span 0	Hz
Res BW 1.0 MHz	¥	#VBW	30 KHZ		Sweep 1	.200 ms (8192 p	s)
	<u>376.0</u> 753.1	μs -32.48 dB μs -32.16 dB	3m 3m		FUNCT	S. ALUL	
3 N 1 t 4	1.003	ms -31.27 dB	3m				
6 7							
8							
3							
10 11							-
10 11 • [MSG			III.	STATUS		,	÷
10 11 MSG	BI	E/GESK 1 Mbps L	w Channel 240	STATUS	nunt		¥
Pulse	BL Number of	E/GFSK 1 Mbps L Total On		STATUS 2 MHz, Pulse Co Value	ount Limit	Presté	
Pulse Width (ms) N/A	BL Number of Pulses 30	E/GFSK 1 Mbps L Total On Time (ms) 11.313	" ow Channel, 240 Period (ms) N/A	STATUS 2 MHz, Pulse Co Value (%) N/A	ount Limit (%) N/A	Result N/A	
Pulse Width (ms) N/A	BL Number of Pulses 30	E/GFSK 1 Mbps L Total On Time (ms) 11.313	w Channel, 240 Period (ms) N/A	STATUS 2 MHz, Pulse Co Value (%) N/A	ount Limit (%) N/A	Result N/A	*
Pulse Width (ms) N/A	BL Number of Pulses 30 eer - Element Materials Tech	E/GFSK 1 Mbps L Total On Time (ms) 11.313	w Channel, 240 Period (ms) N/A	STATUS 2 MHz, Pulse Cr Value (%) N/A	Dunt Limit (%) N/A	Result N/A	× 221 221 25 6
Pulse Width (ms) N/A Keysight Spectrum Analy W RL RF	BL Number of Pulses 30 cer - Element Materials Tech 50 Ω AC	E/GFSK 1 Mbps L Total On Time (ms) 11.313 nology PNO: Fast ++	m ow Channel, 240 Period (ms) N/A Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS 2 MHz, Pulse Co Value (%) N/A ALIGN OFF Avg Type	Dunt Limit (%) N/A Log-Pwr	Result N/A 05:48:24 PMMay 17, 2 TRACE 12 24 TYPE WWWW OET WWWW	• 021 5 6
Pulse Width (ms) N/A	BL Number of Pulses 30 cer - Element Materials Tech 50 Ω AC	E/GFSK 1 Mbps L Total On Time (ms) 11.313 nology PNO: Fast IFGain:Low	m ow Channel, 240 Period (ms) N/A ss:INTI Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS 2 MHz, Pulse Co Value (%) N/A MALIGN OFF Avg Type	Dunt Limit (%) N/A	Result N/A 05:48:24 PMMay 17, 2 TRACE 10 3 4 TRACE 10 4 T	×
Pulse Width (ms) N/A	BL Number of Pulses 30 eer - Element Materials Tech 50 Ω AC	E/GFSK 1 Mbps L Total On Time (ms) 11.313 nology PNO: Fast →→ IFGain:Low	" .ow Channel, 240 Period (ms) N/A ISE:INT Trig Delay-1.000 m: Trig: Video Atten: 10 dB	STATUS 2 MHz, Pulse Cr Value (%) N/A ALIGN OFF Avg Type	Dunt Limit (%) N/A	Result N/A 05:48:24 PM May 17, 22 TRACE 10 23 4 TYPE WANNA OFT NINN	
Pulse Width (ms) N/A	BL Number of Pulses 30 eer - Element Materials Tech 50 Ω AC	E/GFSK 1 Mbps L Total On Time (ms) 11.313 nology PNO: Fast → IFGain:Low	m ow Channel, 240 Period (ms) N/A SEINT Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS 2 MHz, Pulse Co Value (%) N/A Aulign off Avg Type	Dunt Limit (%) N/A Log-Pwr	Result N/A 05:48:24 PMMay 17.2 TRACE P2 44 TYPE WWWW DET	22 021 5 6 N N
Pulse Width (ms) N/A MSG N/A MSG N/A MSG N/A MSG N/A N/A	BL Number of Pulses 30 2er - Element Materials Tech 50 Ω AC	E/GFSK 1 Mbps L Total On Time (ms) 11.313 11.313 Nology PNO: Fast → IFGain:Low	III IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	STATUS 2 MHz, Pulse Co Value (%) N/A MALIGN OFF Avg Type	Dunt Limit (%) N/A	Result N/A 05:48:24 PMMay 17, 2 TRACE 13 24 TYPE	221 5 6 N N
Pulse Width (ms) N/A	BL Number of Pulses 30 eer - Element Materials Tech 50 Ω AC	E/GFSK 1 Mbps L Total On Time (ms) 11.313 nology PNO: Fast →→ IFGain:Low	" .ow Channel, 240 Period (ms) N/A ISE:INT Trig Delay-1.000 m: Trig: Video Atten: 10 dB	STATUS 2 MHz, Pulse Co Value (%) N/A ALIGN OFF Avg Type	Dunt Limit (%) N/A	Result N/A 05:48:24 PMMay 17, 2 TRACE 12 34 TYPE OET NAME	221 021 021 N N
Pulse Width (ms) N/A	BL Number of Pulses 30 2er - Element Materials Tech 50 Ω AC 200 dBm	E/GFSK 1 Mbps L Total On Time (ms) 11.313 nology PNO: Fast IFGain:Low	m .ow Channel, 240 Period (ms) N/A ise:INT Trig Delay-1.000 m: Trig: Video Atten: 10 dB	STATUS 2 MHz, Pulse Co Value (%) N/A ALIGN OFF Avg Type	Dunt Limit (%) N/A	Result N/A 05:48:24 PMMay 17, 2 TRACE 123 4 TYPE WWWW OET WWWW OET WWWW	
IO Pulse Width (ms) N/A III RF III RF IIII RF IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	BL Number of Pulses 30 cer - Element Materials Tech 50 Ω AC	E/GFSK 1 Mbps L Total On Time (ms) 11.313 nology PNO: Fast →→ IFGain:Low	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	STATUS 2 MHz, Pulse Co Value (%) N/A ALIGN OFF Avg Type	Limit (%) N/A	Result N/A 05:48:24 PM May 17.2 TRACE 19.24 TYPE OET NNNN	
IO Pulse Width (ms) N/A Image: Sector and the sector and	BL Number of Pulses 30 eer - Element Materials Tech 50 Ω AC	E/GFSK 1 Mbps L Total On Time (ms) 11.313 nology PNO: Fast → IFGain:Low	III IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	STATUS 2 MHz, Pulse Co Value (%) N/A Align OFF Avg Type	Dunt Limit (%) N/A	Result N/A 05:48:24 PMMay 17, 2 TRACE []] 2 4 TYPE DET NINN DET NINN	221 221 5 6 N N
IO Pulse Width (ms) N/A Image: Spectrum Analy N/A Image: Spectrum Analy RF Image: Spectrum Anal	BL Number of Pulses 30 2er - Element Materials Tech 50 Ω AC 00 dBm	E/GFSK 1 Mbps L Total On Time (ms) 11.313	m ow Channel, 240 Period (ms) N/A Trig Delay-1.000 m Trig: Video Atten: 10 dB	STATUS 2 MHz, Pulse Ca Value (%) N/A ALIGN OFF Avg Type	Dunt Limit (%) N/A Log-Pwr Log-Pwr	Result N/A 05:48:24 PM May 17,2 TRACE 12 24 M May 17,2 OCT NINN OCT NINN	
IO Pulse Width (ms) N/A IMSG N/A IMSG RE IO RL IO RE	BL Number of Pulses 30 cer - Element Materials Tech 50 Ω AC 50 Ω AC 50 Ω AC	E/GFSK 1 Mbps L Total On Time (ms) 11.313 nology PNO: Fast → IFGain:Low	m .ow Channel, 240 Period (ms) N/A Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS 2 MHz, Pulse Co Value (%) N/A ALIGN OFF Avg Type	Dunt Limit (%) N/A	Result N/A 05:48:24 PM May 17, 2 TRACE 19 3 4 TYPE WWW DET WWW DET WWW	
Pulse Width (ms) N/A	BL Number of Pulses 30 2er - Element Materials Tech 50 Ω AC 00 dBm	E/GFSK 1 Mbps L Total On Time (ms) 11.313 nology PNO: Fast → IFGain:Low	III IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	STATUS	Dunt Limit (%) N/A		221 5. G N N
Pulse Width (ms) N/A	BL Number of Pulses 30 cer - Element Materials Tech 50 Ω AC 00 dBm	E/GFSK 1 Mbps L Total On Time (ms) 11.313 nology PNO: Fast IFGain:Low	III IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	STATUS	Dunt Limit (%) N/A	Result N/A 05:48:24 PMMay 17, 2 TRACE []] 2:4 TVPE DET NINN DET NINN	
IO Pulse Width (ms) N/A IN/A N/A IN/A RF IO dB/div Ref 0 IO RF IO dB/div Ref 0 IO IO	BL Number of Pulses 30 200 AC 50 Ω AC	E/GFSK 1 Mbps L Total On Time (ms) 11.313 nology PNO: Fast IFGain:Low	m .ow Channel, 240 Period (ms) N/A Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS	Dunt Limit (%) N/A Log-Pwr Log-Pwr 1 1 1 1 1 1 1 1 1 1 1 1 1	Result N/A 05:48:24 PM May 17, 2 TRACE 12 24 M M M M MAY 17, 2 TRACE 12 4 M M M M M M M M M M M M M M M M M M	
Pulse Width (ms) N/A	BL Number of Pulses 30 cer - Element Materials Tech 50 Ω AC 50 Ω AC 5	E/GFSK 1 Mbps L Total On Time (ms) 11.313 nology PNO: Fast	m .ow Channel, 240 Period (ms) N/A Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS 2 MHz, Pulse Co Value (%) N/A ALIGN OFF Avg Type	Dunt Limit (%) N/A		
International and the second	BL Number of Pulses 30 cer - Element Materials Tech 50 Ω AC 00 dBm	E/GFSK 1 Mbps L Total On Time (ms) 11.313 PNO: Fast PNO: Fast IFGain:Low	III IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	STATUS	Dunt Limit (%) N/A		











	Pulse	Number of	Total On	Period	Value	Limit		
	Width (ms)	Pulses	Time (ms)	(ms)	(%)	(%)	Result	-
[0.3764	N/A	N/A	N/A	N/A	N/A	N/A	
🚺 Keys	ght Spectrum Analyzer	- Element Materials Te	chnology					X
LXI RL	RF	50 Ω AC	SEN	NSE:INT Trig Delay-1.000 ms	ALIGN OFF Avg Type	: Log-Pwr	05:55:54 PM May 17, 2 TRACE 1 2 3 4	2021
			PNO: Fast ↔→ IFGain:Low	Trig: Video Atten: 10 dB			DET NNN	NNN
							Mkr3 1.001 n	ns
	div Ref 0.00) dBm					-34.15 0E	
-10.0								
-30.0				· · · ·	<mark>2</mark>		3	TVE
-40.0								
-50.0								
-60.0 -								
-80.0	\v	man	~~		mm	munn		
-90.0 -								
Cent	er 2.44200000	0 GHz	#\/B\M	30 kHz		Sweep 4	Span 0	Hz
MKR M	DDE TRC SCL	x	#VDW	FUNCTION	FUNCTION WIDTH	FUNCTI	DN VALUE	<u></u>
1 2	N 1 t N 1 t	375 751	.4 μs -34.70 dE .8 μs -32.97 dE	Bm Bm				
3 4 5		1.00	1 ms -34.15 dE	3m				
6 7								
8								
9								And a second sec
9 10 11								-
9 10 11 •				m	STATUS			
9 10 11 (MSG			BLE/GESK 1 Mbps 1	m Mid Channel 244	STATUS	Sunt		•
9 10 11 •	Pulse Width (max)	E Number of	BLE/GFSK 1 Mbps N Total On	m Mid Channel, 244 Period	STATUS 2 MHz, Pulse Co Value	ount Limit	Baswith	F
9 10 11 •	Pulse Width (ms) N/A	E Number of Pulses 30	BLE/GFSK 1 Mbps N Total On Time (ms) 11.292	m Mid Channel, 244 Period (ms) N/A	STATUS 2 MHz, Pulse Co Value (%) N/A	ount Limit (%) N/A	Result N/A	
9 10 11 MSG	Pulse Width (ms) N/A	E Number of Pulses 30	BLE/GFSK 1 Mbps N Total On Time (ms) 11.292	"' Vid Channel, 244: Period (ms) N/A	STATUS 2 MHz, Pulse Co Value (%) N/A	Dunt Limit (%) N/A	Result N/A	× .
9 10 11 * MSG	Pulse Width (ms) N/A ght Spectrum Analyzer	E Number of Pulses 30 - Element Materials Te 50 Q AC	BLE/GFSK 1 Mbps M Total On Time (ms) 11.292	Wid Channel, 244 Period (ms) N/A	STATUS 2 MHz, Pulse Co Value (%) N/A ALIGN OFF	Limit (%) N/A	Result N/A	×
9 10 11 × MSG XI RL	Pulse Width (ms) N/A ght Spectrum Analyzer RF	E Number of Pulses 30 - Element Materials Te 50 Q AC	BLE/GFSK 1 Mbps N Total On Time (ms) 11.292 schnology PNO: Fast → IFGain.Low	III Wid Channel, 244: Period (ms) N/A VSE:INT Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS 2 MHz, Pulse Co Value (%) N/A ALIGN OFF Avg Type	Dunt Limit (%) N/A	Result N/A 05:56:54 PM May 17, TRACE OFT NNM	2021 5 6 V N
9 10 11 MSG	Pulse Width (ms) N/A ght Spectrum Analyzer	E Number of Pulses 30 - Element Materials Te 50 & AC	BLE/GFSK 1 Mbps N Total On Time (ms) 11.292 chnology PNC: Fast IFGain:Low	Trig Delay-1.000 ms Trig Delay-1.000 ms Trig: Video	STATUS 2 MHz, Pulse Co Value (%) N/A N/A	Dunt Limit (%) N/A	Result N/A 05:56:54 PM May 17, TRACE 12 34 TYPE WWW DET NNN	
9 10 11 *	Pulse Width (ms) N/A ght Spectrum Analyzer RF S	E Number of Pulses 30 - Element Materials Te 50 Ω AC	BLE/GFSK 1 Mbps M Total On Time (ms) 11.292 tchnology PNO: Fast IFGain:Low	Wid Channel, 244 Period (ms) N/A VSE:INT Trig Delay-1.000 m: Trig: Video Atten: 10 dB	STATUS 2 MHZ, Pulse Co Value (%) N/A MALIGN OFF Avg Type	Dunt Limit (%) N/A	Result N/A 05:56:54 PMMay 17, TRACE 20 TIPE WWWW OET NINN	2021 5 5 6 5 0 1 N N
9 10 11 * MSG	Pulse Width (ms) N/A ght Spectrum Analyzer RF 5 div Ref 0.00	Element Materials Te	BLE/GFSK 1 Mbps N Total On Time (ms) 11.292	III Wid Channel, 244: Period (ms) N/A VSE:INT Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS 2 MHz, Pulse Co Value (%) N/A ALIGN OFF Avg Type	Dunt Limit (%) N/A	Result N/A 05:56:54 PM May 17, 7 TRACE TYPE OET NAME	
9 10 11 Keys 04 RL Log -10.0	Pulse Width (ms) N/A ght Spectrum Analyzer RF Sectrum Analyzer	Element Materials Te 50 Q AC	BLE/GFSK 1 Mbps N Total On Time (ms) 11.292 cchnology PNO: Fast → IFGain:Low	III Mid Channel, 244: Period (ms) N/A Visc.INT Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS 2 MHz, Pulse Co Value (%) N/A ALIGN OFF Avg Type	Dunt Limit (%) N/A	Result N/A 05:55:54 PM May 17, 7 TRACE 12 23 TRACE 12 23 TRACE 12 23	2021 2021 VNN
9 10 11 MSG MSG MRL 10 10 -20.0	Pulse Width (ms) N/A ght Spectrum Analyzer RF S	E Number of Pulses 30 - Element Materials Te 50 & AC	BLE/GFSK 1 Mbps N Total On Time (ms) 11.292 chnology PNC: Fast IFGain:Low	Trig Delay-1.000 ms Trig Delay-1.000 ms Trig: Video	STATUS 2 MHz, Pulse Co Value (%) N/A MALIGN OFF Avg Type	Sunt Limit (%) N/A	Result N/A 05:56:54 PM May 17, TRACE 1234 TYPE	
9 10 11 MSG 00 RL 10 dB Log -10.0 - -20.0 - -30.0 -	Pulse Width (ms) N/A ght Spectrum Analyzer RF S	Element Materials Te	BLE/GFSK 1 Mbps N Total On Time (ms) 11.292 chnology PNO: Fast IFGain:Low	III Wid Channel, 244: Period (ms) N/A VSE:INT Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS 2 MHz, Pulse Co Value (%) N/A ALIGN OFF Avg Type	Dunt Limit (%) N/A Log-Pwr	Result N/A 05:56:54 PM May 17, TRACE 223 TYPE 223 OCT NAME	2021 15 5 6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
9 10 11 Keys 10 dBJ -10.0 -20.0 -30.0	Pulse Width (ms) N/A ght Spectrum Analyzer RF 2 div Ref 0.00	Element Materials Te	BLE/GFSK 1 Mbps N Total On Time (ms) 11.292 cchnology PNO: Fast IFGain:Low	Mid Channel, 244: Period (ms) N/A Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS 2 MHz, Pulse Co Value (%) N/A	Dunt Limit (%) N/A	Result N/A	2021 F 5 6 WWW N
9 10 11 ×	Pulse Width (ms) N/A ght Spectrum Analyzer RF 5	Element Materials Te	BLE/GFSK 1 Mbps N Total On Time (ms) 11.292 chnology PNO: Fast IFGain:Low	Trig Delay-1.000 ms Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS 2 MHz, Pulse Co Value (%) N/A ALIGN OFF Avg Type	Sunt Limit (%) N/A	Result N/A 05:56:54 PM May 17, TRACE 12 33 TYPE WWW DET NNN	
9 10 11 NSG 10 10 -10.0 - -20.0 - -30.0 - -40.0 - -50.0 -	Pulse Width (ms) N/A	E Number of Pulses 30 - Element Materials Te 50 Ω AC 9 dBm	BLE/GFSK 1 Mbps N Total On Time (ms) 11.292 chnology PNC: Fast IFGain:Low	III Wid Channel, 244: Period (ms) N/A VSE:INT Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS	Sunt Limit (%) N/A	Result N/A 05:56:54 PM May 17, TRACE DET NNN DET NNN	2021 1 3 5 6 1 N N
9 10 11 MISG MISG 10 10 10 10 10 10 10 10 10 10 10 10 10	Pulse Width (ms) N/A	Element Materials Te	BLE/GFSK 1 Mbps N Total On Time (ms) 11.292 cchnology PNC: Fast IFGain:Low	Mid Channel, 244 Period (ms) N/A Trig Delay-1.000 m Trig: Video Atten: 10 dB	STATUS	Dunt Limit (%) N/A	Result N/A 05:56:54 PM May 17, TRACE OFT NAME OFT NAME	× 2021 20
9 10 11 ✓ MSG ✓ RL 0 dB Log -10.0 - -10.0 - -20.0 - -30.0 - -40.0 - -50.0 - -50.0 -	Pulse Width (ms) N/A	Element Materials Te 50 Ω AC O dBm	BLE/GFSK 1 Mbps N Total On Time (ms) 11.292 cchnology PNO: Fast IFGain:Low	Mid Channel, 244 Period (ms) N/A Trig Delay-1.000 m Trig: Video Atten: 10 dB	STATUS	Dunt Limit (%) N/A	Result N/A 05:55:54 PM May 17, 7 TRACE 12 23 TRACE 12 13 TRACE 12 13 TRACE 12 13 TRACE 12 13 TRACE	
9 10 11 NSG 20 10 -10 -20 -20 -30 -40 -40 -40 -50 - -40 - -70 - -70 - -70 - - -70 -	Pulse Width (ms) N/A	Element Materials Te 50 Ω AC	BLE/GFSK 1 Mbps N Total On Time (ms) 11.292 chnology PNO: Fast IFGain:Low	Mid Channel, 244: Period (ms) N/A VSE:INT Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS	Dunt Limit (%) N/A		
9 9 10 11 × × × × × × × × × × × × × × × × × ×	Pulse Width (ms) N/A ght Spectrum Analyzer RF S div Ref 0.000	Element Materials Te 0 dBm	BLE/GFSK 1 Mbps N Total On Time (ms) 11.292 chnology PNC: Fast IFGain:Low PNC: Fast IFGain:Low	Trig Delay-1.000 ms Trig Delay-1.000 ms Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS	Sunt Limit (%) N/A		
9 9 10 11 	Pulse Width (ms) N/A ght Spectrum Analyzer RF S div Ref 0.000	EINUMBER of Pulses 30 - Element Materials Te 50 Ω AC - OdBm - O	BLE/GFSK 1 Mbps N Total On Time (ms) 11.292 schnology PNO: Fast IFGain:Low	Trig Delay-1.000 m Atten: 10 dB	STATUS	Sunt Limit (%) N/A	Result N/A 05:56:54 PMMay 17, TRACE OET NANN	
9 10 11 	Pulse Width (ms) N/A	Element Materials Te 50 Ω AC 0 dBm	BLE/GFSK 1 Mbps N Total On Time (ms) 11.292 cchnology PNO: Fast IFGain:Low	Mid Channel, 244: Period (ms) N/A VSE:INT Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS 2 MHz, Pulse Co Value (%) N/A ALIGN OFF Avg Type	Dunt Limit (%) N/A	Result N/A	











Pul	se	B Number of	Total On	High Channel, 248 Period	0 MHz, Pulse Le Value	ength Limit		
Width	(ms)	Pulses	Time (ms)	(ms)	(%)	(%)	Result	
0.37	78	N/A	N/A	N/A	N/A	N/A	N/A	
Keysight Spectru	n Analyzer - RF 5	- Element Materials Τι ίο Ω ΑC	echnology S	SENSE:INT	ALIGN OFF		06:06:04 PM May 17.2	021
				Trig Delay-1.000 ms	s Avg Type	: Log-Pwr	TRACE 1 2 3 4	5 6
			IFGain:Low	Atten: 10 dB			DETNNN	
							Mkr3 1.000 n	ns
10 dB/div	ef 0.00	dBm					-34.08 aB	m
-10.0								
-20.0			. 1		A 2		3	
-30.0			Ŷ `				TRIG	LVL
-40.0								
-50.0								
-70.0								
-80.0	l Vy	manyman	Jum		- Your	in more sound		
-90.0								
Center 2 480	00000	0 GHz					Spap 0	Hz
Res BW 1.0	MHz		#VBV	N 30 kHz		Sweep 1	200 ms (8192 p	ts)
MKR MODE TRC S	CL	х	Y	FUNCTION	FUNCTION WIDTH	FUNCTI	ON VALUE	-
1 N 1 2 N 1	1	375	5.1 µs -34.33 (2.9 µs -33.32 (dBm dBm				
4 1		1.00	Jums -34.08 d	aBm				
6								
8								
10								
10 11				m				-
9 10 11 •		en offension of the second	BLE/GFSK 1 Mbps	" High Channel, 248	STATUS 0 MHz, Pulse C	ount		
Pul:	se (ms)	E Number of Pulses 30	BLE/GFSK 1 Mbps Total On Time (ms) 11.334	High Channel, 248 Period (ms) N/A	ISTATUS IO MHz, Pulse C Value (%) N/A	ount Limit (%) N/A	Result N/A	
Puls Width	se (ms)	E Number of Pulses 30	BLE/GFSK 1 Mbps Total On Time (ms) 11.334	High Channel, 248 Period (ms) N/A	status 80 MHz, Pulse C Value (%) N/A	ount Limit (%) N/A	Result N/A	
Pul: Width N/2	se (ms) A	E Number of Pulses 30	BLE/GFSK 1 Mbps Total On Time (ms) 11.334	High Channel, 248 Period (ms) N/A	STATUS 00 MHz, Pulse C Value (%) N/A	ount Limit (%) N/A	Result N/A	•
Pul: Width Keysight Spectru	se (ms) A n Analyzer - RF 5	E Number of Pulses 30 Element Materials To D 0 Q AC	BLE/GFSK 1 Mbps Total On Time (ms) 11.334	III High Channel, 248 Period (ms) N/A	STATUS 0 MHz, Pulse C Value (%) N/A ALIGN OFF 5 Avg Type	ount Limit (%) N/A : Log-Pwr	Result N/A	×
9 10 11 MSG Pul: Width N//	Se (ms) A N Analyzer - RF 5	Element Materials Tr 0 Q AC	BLE/GFSK 1 Mbps Total On Time (ms) 11.334 echnology PNO: Fast	Trig: Video Atten: 10 dB	STATUS O MHZ, Pulse C Value (%) N/A N/A	ount Limit (%) N/A	Result N/A 06:06:57 PM May 17, TRACE 123 44 TYPE OET NNM	× 1021 505 505
9 10 11 Konstant MSG Pulls Width N//	se (ms) A RF 5	Element Materials Tr Pulses 30 Element Materials Tr 0 Ω AC	BLE/GFSK 1 Mbps Total On Time (ms) 11.334 cchnology PNO: Fast IFGain:Low	m High Channel, 248 Period (ms) N/A N/A	STATUS 0 MHz, Pulse C Value (%) N/A ALIGN OFF s Avg Type	ount Limit (%) N/A	Result N/A 06:06:57 PM May 12,7 TRACE TIPE WANNY DET NINK	
Pulls MSG Pulls Width N// Keysight Spectru RL 10 dB/div R	3e (ms) 4 RF 5 ef 0.00	Element Materials Tr 0 Q AC	BLE/GFSK 1 Mbps Total On Time (ms) 11.334 echnology PNO: Fast IFGain:Low	m High Channel, 248 Period (ms) N/A SENSE:INTI Trig Delay-1.000 m Trig: Video Atten: 10 dB	STATUS 0 MHz, Pulse C Value (%) N/A ALIGN OFF Avg Type	ount Limit (%) N/A	Result N/A 00:06:57 PM May 12,2 TRACE 12,23 TYPE WAYNY DET	2 2 2 2 2 2 2 2 2 2 2 2 2 2
Pul: MSG Pul: Width N// Keysight Spectru M RL 10 dE/div R	se (ms) n Analyzer - RF 5 ef 0.00	Element Materials Tr 0 Ω AC	BLE/GFSK 1 Mbps Total On Time (ms) 11.334 echnology PNO: Fast IFGain:Low	High Channel, 248 Period (ms) N/A SENSE:INT Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS 0 MHz, Pulse C Value (%) N/A ALIGN OFF Avg Type	ount Limit (%) N/A	Result N/A 00:00:57 PM May 12, 2 TRRAC 12, 2 TYPE OET NM	
Pul: Width Width N// N// N// N// N// N// N// N/	3e (ms) 1 n Analyzer - RF 5 ef 0.00	Element Materials T 0 Ω AC	BLE/GFSK 1 Mbps Total On Time (ms) 11.334 echnology PNO: Fast →	High Channel, 248 Period (ms) N/A SENSE:INT Trig Delay-1.000 m: Trig: Video Atten: 10 dB	STATUS SO MHZ, Pulse C Value (%) N/A AVG Type	ount Limit (%) N/A	Result N/A 06:06:57 PM May 17.2 TRRACE [] 2:34 TYPE WWWY DET NNM	
Pul: Width Width N// MSG 0 dB/div R -10.0 -200	se (ms) A RF 5 ef 0.00	Element Materials T O Q AC	BLE/GFSK 1 Mbps Total On Time (ms) 11.334 echnology PNO: Fast → IFGain:Low	High Channel, 248 Period (ms) N/A SENSE:INT Trig Delay-1.000 mt Trig: Video Atten: 10 dB	STATUS SO MHZ, Pulse C Value (%) N/A AVG Type	ount Limit (%) N/A	Result N/A 06:06:57 PM May 17, 2 TRRACE 12 3 4 TYPE WAY DET NNM	
Pul: Width Width N// Width N// N// N// N// N// N// N// N/	se (ms) A N Analyzer - RF 5 ef 0.00	Element Materials Tr 0 Q AC dBm	BLE/GFSK 1 Mbps Total On Time (ms) 11.334 echnology PNO: Fast → IFGain:Low	High Channel, 248 Period (ms) N/A SENSE:INT Trig Delay-1.000 m: Trig: Video Atten: 10 dB	STATUS SO MHZ, Pulse C Value (%) N/A AVG Type	ount Limit (%) N/A : Log-Pwr	Result N/A 00:06:57 PM May 17, 200 TRRACE 12 3 44 TYPE Workstow DET NNM	
Pul: Width Width N// Width N// M RL 10 dB/div R -10.0 -20.0 -30.0	se (ms) A n Analyzer - RF 5 ef 0.00	Element Materials Tr dBm	BLE/GFSK 1 Mbps Total On Time (ms) 11.334 echnology PNO: Fast IFGain:Low	High Channel, 248 Period (ms) N/A SENSE:INT Trig Delay-1.000 m Trig: Video Atten: 10 dB	STATUS 0 MHz, Pulse C Value (%) N/A ALIGN OFF Avg Type	ount Limit (%) N/A : Log-Pwr	Result N/A 06:06:57 PM May 127, TRACE 12 3 4 TYPE DET NNM	
Pul: Width N// Width N// N// N// N// N// N// N// N/	3e (ms) A RF 5 ef 0.00	Element Materials Tr 0 Ω AC dBm	BLE/GFSK 1 Mbps Total On Time (ms) 11.334 echnology PNO: Fast IFGain:Low	High Channel, 248 Period (ms) N/A SENSE:INT Trig Delay-1.000 m Trig: Video Atten: 10 dB	STATUS	Ount Limit (%) N/A : Log-Pwr	Result N/A 06:06:57 PMMy 17, TRACE 12 3 4 TYPE DET NNM	
Pul: Width N// Width N// N// N// N// N// N// N// N/	se (ms) A RF 5 ef 0.00	Element Materials Tr 0 Ω AC dBm	BLE/GFSK 1 Mbps Total On Time (ms) 11.334 echnology PNO: Fast IFGain:Low	High Channel, 248 Period (ms) N/A	STATUS	Ount Limit (%) N/A : Log-Pwr	Result N/A 06:06:57 PMMay 17, TRACE 12 3 4 TYPE DET NNM	
Pul: Width N// Width N// N// N// N// N// N// N// N/	se (ms) \ n Analyzer - RF 5 ef 0.00	Element Materials Tr 0 Ω AC dBm	BLE/GFSK 1 Mbps Total On Time (ms) 11.334 echnology PNO: Fast IFGain:Low	High Channel, 248 Period (ms) N/A	STATUS	Ount Limit (%) N/A : Log-Pwr : Log-Pwr	Result N/A 06:06:70 PMMay 17, TRACE 12 3 4 TYPE WOWN DET NNNN	
Pul: Width N// N// N// N// N// N// N// N/	se (ms) \ n Analyzer - RF 5 ef 0.00	Element Materials Tr 0 Ω AC dBm	BLE/GFSK 1 Mbps Total On Time (ms) 11.334 cchnology PNO: Fast IFGain:Low	High Channel, 248 Period (ms) N/A	STATUS	ount Limit (%) N/A : Log-Pwr : Log-Pwr		
Pul: Width N// N// N// N// N// N// N// N/	se (ms) \ n Analyzer RF 5 ef 0.00	Element Materials Tr dBm	BLE/GFSK 1 Mbps Total On Time (ms) 11.334 echnology	High Channel, 248 Period (ms) N/A	STATUS	ount Limit (%) N/A : Log-Pwr : Log - Pwr : Log - Pwr : Log - Pwr : Log - Pwr	Result N/A	
Pul: Width N// Width N// N// N// N// N// N// N// N/	se (ms) n Analyzer RF 5 ef 0.000	Element Materials Tr dBm	BLE/GFSK 1 Mbps Total On Time (ms) 11.334 echnology	High Channel, 248 Period (ms) N/A	STATUS	ount Limit (%) N/A : Log-Pwr : Log - Pwr : Log - A - A - A - A - A - A - A - A - A -	Result N/A	
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Pul: Width MSG IO dB/div R -10.0 -20.0 -30.0 -50.0 -60.0 -60.0 -60.0 -60.0 -60.0	se (ms) A RF 5 ef 0.00	Element Materials T dBm	BLE/GFSK 1 Mbps Total On Time (ms) 11.334 echnology PNO: Fast IFGain:Low	High Channel, 248 Period (ms) N/A SENSE:INT Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS	ount Limit (%) N/A : Log-Pwr : Log-Pwr : log-2 :	Result N/A	
Pul: Width MSG IO dE/div R -10.0 -20.0 -30.0 -50	se (ms) A RF 5 ef 0.00	Element Materials T dBm	BLE/GFSK 1 Mbps Total On Time (ms) 11.334 echnology PNO: Fast IFGain:Low	High Channel, 248 Period (ms) N/A SENSE:INT Trig Delay-1.000 m Trig: Video Atten: 10 dB	STATUS	ount Limit (%) N/A : Log-Pwr : Log-Pwr : log-2,	Result N/A	
Pul: Width MSG Pul: Width N// SC Pul: Width N// SC Pul: Width N// SC Pul: Width N// SC Pul: Width N// SC Pul:	se (ms) A RF 5 ef 0.00	Element Materials T dBm	BLE/GFSK 1 Mbps Total On Time (ms) 11.334 echnology PNO: Fast IFGain:Low	High Channel, 248 Period (ms) N/A SENSE:INT Trig Delay-1.000 m Trig: Video Atten: 10 dB	STATUS	ount Limit (%) N/A : Log-Pwr : Log-Pwr : Log-Querent (%) : Log (%) :		









Pulse	Number of	Total On	Period	Value	Limit		
Width (ms)	Pulses	Time (ms)	(ms)	(%)	(%)	Result	I
0.1891	N/A	N/A	N/A	N/A	N/A	N/A	
📕 Keysight Spectrum Analyzer - E	lement Materials Tec	hnology					×
KI RF 50	Ω AC	SENS	E:INT Trig Delay-1.000 ms	ALIGN OFF Avg Type:	Log-Pwr	05:11:04 PM May 17, 2 TRACE 1 2 3 4	021
		PNO: Fast +++	Trig: Video Atten: 10 dB			TYPE WWWW DET NNNN	IN N
						Mkr3 1.000 n	ns
10 dB/div Ref 0.00 d	dBm				-	-34.12 dB	m
-10.0							
-20.0			<u>^2</u>			3	
-30.0		- Yimmer				TRIGI	tvi.
-40.0							
-50.0							
-70.0							
-80.0	mmm	-	human	man marker and a	manund		
-90.0							
Center 2.40200000	GHz					Span 0.	Hz
Res BW 1.0 MHz		#VBW 3	30 kHz		Sweep 1.	200 ms (8192 pi	ts)
MKR MODE TRC SCL	X 275	7 us 22 02-15	FUNCTION	FUNCTION WIDTH	FUNCTION	ON VALUE	Â
2 N 1 t	375. 564.	-33.23 dB 8 μs -32.16 dB	m				
4	1.000	-54.12 dB					
6							
8							
10							
11							
			m			ŀ	
MSG			ш	STATUS		•	
	В	LE/GFSK 2 Mbps Lo	w Channel, 240	STATUS	punt		
Pulse Width (ms)	B Number of Pulses	LE/GFSK 2 Mbps Lo Total On Time (ms)	w Channel, 240 Period (ms)	STATUS 2 MHz, Pulse Cc Value (%)	ount Limit (%)	Result	
Pulse Width (ms)	B Number of Pulses 30	LE/GFSK 2 Mbps Lo Total On Time (ms) 5.673	w Channel, 240 Period (ms) N/A	2 MHz, Pulse Cc Value (%) N/A	ount Limit (%) N/A	Result N/A	
Pulse Width (ms) N/A	B Number of Pulses 30	LE/GFSK 2 Mbps Lo Total On Time (ms) 5.673	w Channel, 240 Period (ms) N/A	STATUS 2 MHz, Pulse Co Value (%) N/A	bunt Limit (%) N/A	Result N/A	
Pulse Width (ms) N/A	B Number of Pulses 30 Iement Materials Teco Ω AC	LE/GFSK 2 Mbps Lo Total On Time (ms) 5.673	w Channel, 240 Period (ms) N/A	STATUS 2 MHz, Pulse Cc Value (%) N/A	ount Limit (%) N/A	Result N/A 05:12:00 PM May 17, 21	×
Pulse Width (ms) N/A Keysight Spectrum Analyzer - E	B Number of Pulses 30 Iement Materials Tec 2 AC	LE/GFSK 2 Mbps Lo Total On Time (ms) 5.673	w Channel, 240 Period (ms) N/A	STATUS 2 MHz, Pulse Co Value (%) N/A ALIGN OFF S Avg Type:	Dunt Limit (%) N/A Log-Pwr	Result N/A 05:12:00 PM May 17, 22 TRace 1, 34 Type Weather 1, 34	
Pulse Width (ms) N/A Keysight Spectrum Analyzer - E	B Number of Pulses 30 Iement Materials Tec Ω AC	LE/GFSK 2 Mbps Lo Total On Time (ms) 5.673 thrology PNO: Fast IFGain:Low	W Channel, 240 Period (ms) N/A Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS 2 MHz, Pulse Co Value (%) N/A ALIGN OFF Avg Type:	Dunt Limit (%) N/A Log-Pwr	Result N/A 05:12:00 PM kay 17, 22 TRACE [2:34 TYPE WWWW DET NNNN	2021 25 6
Pulse Width (ms) N/A Keysight Spectrum Analyzer - E RL RF SO	B Number of Pulses 30 Iement Materials Tec Ω AC	LE/GFSK 2 Mbps Lo Total On Time (ms) 5.673 hnology PNO: Fast IFGain:Low	W Channel, 240 Period (ms) N/A Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS 2 MHz, Pulse Cc Value (%) N/A ALIGN OFF Avg Type:	Dunt Limit (%) N/A Log-Pwr	Result N/A 05:12:00 PM May 17, 2 TRACE DET	2021 5 6 4 N N
Pulse Width (ms) N/A Keysight Spectrum Analyzer - E RL RF 50	B Number of Pulses 30 Iement Materials Tec Ω AC	LE/GFSK 2 Mbps Lo Total On Time (ms) 5.673 hnology PNO: Fast IFGain:Low	W Channel, 240 Period (ms) N/A Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS 2 MHz, Pulse Cc Value (%) N/A ALIGN OFF Avg Type:	Dunt Limit (%) N/A Log-Pwr	Result N/A 05:12:00 PMMay 17, 2 TRACE 22:34 TYPE DET NNN	2021 5.6
Pulse Width (ms) N/A Keysight Spectrum Analyzer - E RL RF 50 10 dB/div Ref 0.00 c	B Number of Pulses 30 Iement Materials Tec Ω AC	LE/GFSK 2 Mbps Lo Total On Time (ms) 5.673 hnology PNO: Fast IFGain:Low	W Channel, 240 Period (ms) N/A Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS 2 MHz, Puise Cc Value (%) N/A ALIGN OFF Avg Type:	Dunt Limit (%) N/A	Result N/A 05:12:00 PM May 17, 21 TRACE 23:4 TYPE WWWW DET	2021 5 5 6 1N N
Pulse Width (ms) N/A Keysight Spectrum Analyzer - E RL RF 50	B Number of Pulses 30 Iement Materials Tec Ω AC	LE/GFSK 2 Mbps Lo Total On Time (ms) 5.673	W Channel, 240 Period (ms) N/A Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS 2 MHz, Puise Cc Value (%) N/A ALIGN OFF Avg Type:	Dunt Limit (%) N/A	Result N/A 05:12:00 PM May 17, 2 TRACE D 34 TYPE VYPE	× 1021 1011 1011
Pulse Width (ms) N/A Keysight Spectrum Analyzer - E R RL RF 50	B Number of Puises 30 Iement Materials Tec Ω AC	LE/GFSK 2 Mbps Lo Total On Time (ms) 5.673	W Channel, 240 Period (ms) N/A SEINT Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS 2 MHz, Puise Cc Value (%) N/A ALIGN OFF Avg Type:	Dunt Limit (%) N/A Log-Pwr	Result N/A 05:12:00 PM May 17, 2 TRACE 10 34 TYPE DET	2021 5 5 6 1 N N
Pulse Width (ms) N/A Keysight Spectrum Analyzer - E RL RF 10 dB/div Ref 0.000 c -10.0	B Number of Pulses 30 Iement Materials Tec Ω AC	LE/GFSK 2 Mbps Lo Total On Time (ms) 5.673	W Channel, 240 Period (ms) N/A SEINT Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS 2 MHz, Pulse Cc Value (%) N/A	Dunt Limit (%) N/A	Result N/A 05:12:00 PM May 17, 2: TRACE 12:34 TRACE 12:34 TRACE 12:34	2 021 021 1 1 1 1 1
Pulse Width (ms) N/A Keysight Spectrum Analyzer - E RL RF 50 10 dB/div Ref 0.00 c -10.0 -20.0	B Number of Pulses 30 Itement Materials Tec Ω AC	LE/GFSK 2 Mbps Lo Total On Time (ms) 5.673	W Channel, 240 Period (ms) N/A Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS 2 MHz, Pulse Co Value (%) N/A	Dunt Limit (%) N/A Log-Pwr	Result N/A 05:12:00 PM May 17, 21 TRACE 12:34 TRACE 12:34 TRACE 12:34	
Pulse Width (ms) N/A Keysight Spectrum Analyzer - E RL RF 10 dB/div Ref 0.000 c -09	B Number of Pulses 30 Iement Materials Tec Ω AC	LE/GFSK 2 Mbps Lo Total On Time (ms) 5.673 ↓ hnology PNO: Fast IFGain:Low	W Channel, 240 Period (ms) N/A Trig Delay-1.000 ms Trig Delay-1.000 ms Atten: 10 dB	STATUS 2 MHz, Pulse Co Value (%) N/A ALIGN OFF Avg Type:	Dunt Limit (%) N/A	Result N/A 05:12:00 PM May 17, 21 TRACE 12:34 TYPE 12:34 TYPE 12:34	1021 1021 1N N
Pulse Width (ms) N/A Keysight Spectrum Analyzer - E RL RF 50 10 dB/div Ref 0.00 d -20.0	B Number of Pulses 30 Iement Materials Tec Ω AC	LE/GFSK 2 Mbps Lo Total On Time (ms) 5.673	W Channel, 240 Period (ms) N/A Frig Delay-1.000 ms Trig Delay-1.000 ms Atten: 10 dB	STATUS 2 MHz, Pulse Cc Value (%) N/A ALIGN OFF Avg Type:	bunt Limit (%) N/A	Result N/A 05:12:00 PMay 17,20 TRACE 12:34 TYPE 12:34 TYPE 12:34	2021 5 5 6 1 N N
Pulse Width (ms) N/A Keysight Spectrum Analyzer - E RL RF 50 RL RF 50	B Number of Pulses 30 Iement Materials Tec 2 AC IBm	LE/GFSK 2 Mbps Lo Total On Time (ms) 5.673	W Channel, 240 Period (ms) N/A Frig Delay-1.000 ms Trig Delay-1.000 ms Atten: 10 dB	STATUS	Sunt Limit (%) N/A	Result N/A 05:12:00 PMay 17,20 TRACE 12:34 TYPE DET NNNN	
Pulse Width (ms) N/A Keysight Spectrum Analyzer - E RL RF 50 RL RF 50 10 dB/div Ref 0.00 d -20.0 -30.0 -40.0 -50.0	B Number of Pulses 30 Iement Materials Tec 2 AC IBm	LE/GFSK 2 Mbps Lo Total On Time (ms) 5.673	W Channel, 240 Period (ms) N/A SE:INT Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS	Sunt Limit (%) N/A	Result N/A 05:12:00 PMMay 17, 21 TRACE 12 334 TYPE DET MININ	
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Pulse Width (ms) N/A Keysight Spectrum Analyzer - E X RL RF S0 10 dB/div Ref 0.00 c -10.0 -20.0 -30.0 -40.0 -50.0 -70.0	B Number of Pulses 30 Iement Materials Tec Ω AC IBm	LE/GFSK 2 Mbps Lo Total On Time (ms) 5.673	w Channel, 240 Period (ms) N/A Frig Delay-1.000 ms Trig Delay-1.000 ms Atten: 10 dB	STATUS	Dunt Limit (%) N/A	Result N/A 05:12:00 PMMay 17, 21 TRACE 12:34 TYPE 12:34 DET NNNN	
Pulse Width (ms) N/A Keysight Spectrum Analyzer - E R RL RF SO RL RF SO 10 dB/dly Ref 0.00 c -10.0 -20.0 -30.0 -40.0 -50.0 -70.0	B Number of Pulses 30 iement Materials Tec Ω AC	LE/GFSK 2 Mbps Lo Total On Time (ms) 5.673 PNO: Fast IFGain:Low	w Channel, 240 Period (ms) N/A Frig Delay-1.000 ms Trig Delay-1.000 ms Atten: 10 dB	STATUS	Sunt Limit (%) N/A	Result N/A 05:12:00 PM May 17, 21 TRACE 12:34 TYPE 12:3	
Pulse Width (ms) N/A Keysight Spectrum Analyzer - E R RL RF 50 RL RF 50 RL RF 50 RC 9 RL RF 50 RC 9 RC 9	B Number of Pulses 30 Iement Materials Tec Ω AC IBm	LE/GFSK 2 Mbps Lo Total On Time (ms) 5.673 PNO: Fast IFGain:Low	W Channel, 240 Period (ms) N/A SEIINT Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS	Sunt Limit (%) N/A	Result N/A 05:12:00 PM May 17, 21 TRACE 12:34 TYPE 12:3	
Pulse Width (ms) N/A Image: Section Analyzer - E RL RF SO Image: Section Analyzer - E RL RF SO Image: Section Analyzer - E	B Number of Pulses 30 Iement Materials Tec Ω AC IBm	LE/GFSK 2 Mbps Lo Total On Time (ms) 5.673 PNO: Fast IFGain:Low	W Channel, 240 Period (ms) N/A SEINT Trig Delay-1.000 ms Trig: Video ms Atten: 10 dB	STATUS	Dunt Limit (%) N/A	Result N/A 05:12:00 PM May 17, 2 TRACE 12:34 TYPE 12:34	
Pulse Width (ms) N/A Image: Section Analyzer - E Image: Section Analyzer - E <	B Number of Pulses 30	LE/GFSK 2 Mbps Lo Total On Time (ms) 5.673 PNO: Fast IFGain:Low	W Channel, 240 Period (ms) N/A SEINT Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS	Dunt Limit (%) N/A	Result N/A 05:12:00 PM May 17, 2 TRACE 12 3 4 TYPE 12	
Pulse Width (ms) N/A Keysight Spectrum Analyzer - E RL RF SO 0 dB/div Ref 0.000 c -00	B Number of Pulses 30 Iement Materials Tec Ω AC IBm	LE/GFSK 2 Mbps Lo Total On Time (ms) 5.673 PNO: Fast IFGain:Low	W Channel, 240 Period (ms) N/A SEINT Trig Delay-1.000 ms Atten: 10 dB	STATUS	Dunt Limit (%) N/A	Result N/A 05:12:00 PMMay 17,2 TRACE 12 3 4 TRACE 12	











	BLI	E/GFSK 2 Mbps N	/lid Channel, 2442	2 MHz, Pulse Le	ength	
Pulse	Number of	Total On	Period	Value	Limit	
Width (ms)	Pulses	Time (ms)	(ms)	(%)	(%)	Result
0.1902	N/A	N/A	N/A	N/A	N/A	N/A
Keysight Spectrum Analyze	er - Element Materials Tech	nology SET	NSE:INT	ALIGN OFF		05:25:46 PM May 17, 2021
	30 3 AC		Trig Delay-1.000 m	s Avg Type	: Log-Pwr	TRACE 1 2 3 4 5 6
		PNO: Fast +++ IFGain:Low	Atten: 10 dB			DET NNNNN
						Mkr3 1.000 ms
10 dB/div Ref 0.0	0 dBm					-36.74 dBm
Log						
-10.0						
-20.0		<u>^1</u>	2			3
-30.0		- Yimmer	~~~~{\$ ²			TRIGLV
-40.0						
-50.0						
-60.0						
-70.0				<u></u>		
-60.0	and the second s	V	V. martin	Manhanan	Marine Ma	
-90.0						
Center 2.4420000	00 GHz				l	Span 0 Hz
Res BW 1.0 MHz		#VBW	30 kHz		Sweep 1	.200 ms (8192 pts)
MKR MODE TRC SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCT	ON VALUE
	375.7 565.9	μs -36.18 di μs -38.36 di	3m 3m			
3 N 1 t	1.000	ms dE	3m			
5						E
7						
7 8 9						
7 8 9 10 11						
7 8 9 10 11			m			
7 8 9 10 11 			III.	STATUS		
7 8 9 10 11 MSG	DI	E/GESK 2 Mbro	" Mid Chappel 244		out	
7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	BL Number of	E/GFSK 2 Mbps I Total On	Wid Channel, 244	status 2 MHz, Pulse C Value	ount Limit	
Pulse Width (ms)	BL Number of Pulses	E/GFSK 2 Mbps I Total On Time (ms)	" Mid Channel, 244 Period (ms)	STATUS 2 MHz, Pulse C Value (%)	ount Limit (%)	Result
Pulse Width (ms) N/A	BL Number of Pulses 30	E/GFSK 2 Mbps I Total On Time (ms) 5.706	" Mid Channel, 244 Period (ms) N/A	STATUS 2 MHz, Pulse C Value (%) N/A	ount Limit (%) N/A_	Result N/A
Pulse Width (ms)	BL Number of Pulses 30	E/GFSK 2 Mbps I Total On Time (ms) 5.706	" Mid Channel, 244 Period (ms) N/A	STATUS 2 MHz, Pulse C Value (%) N/A	ount Limit (%) N/A	Result N/A
Pulse Width (ms) N/A	BL Number of Pulses 30 r - Element Materials Tech	E/GFSK 2 Mbps I Total On Time (ms) 5.706	" Mid Channel, 244 Period (ms) N/A	status 2 MHz, Pulse C Value (%) N/A	ount Limit (%) N/A	Result N/A
Pulse Width (ms) N/A	BL Number of Pulses 30 tr - Element Materials Tech 50 Q AC	E/GFSK 2 Mbps I Total On Time (ms) 5.706	" Wid Channel, 244 Period (ms) N/A V/A VSE:INT	STATUS 2 MHz, Pulse C Value (%) N/A	ount Limit (%) N/A	Result N/A 05:26:21 PM @ 17, 2021 TRACE 21, 204 5 4 5 4
Pulse Width (ms) N/A	BL Number of Pulses 30 tr - Element Materials Tech 50 Q AC	E/GFSK 2 Mbps I Total On Time (ms) 5.706	" Wid Channel, 244 Period (ms) N/A V/A Visc.intT Trig Delay-1.000 m Trig: Video	STATUS 2 MHz, Pulse C Value (%) N/A Aug Type	ount Limit (%) N/A : Log-Pwr	Result N/A 05:26:21 PM May 17, 2021 TRACE 12, 32 A 221 TRACE 12, 32 A 221 TRACE 12, 32 A 221 TRACE 12, 32 A 221 TRACE 12, 32 A 321 TRACE 12, 32 A
Pulse Width (ms) N/A	BL Number of Pulses 30 r - Element Materials Tech 50 Ω AC	E/GFSK 2 Mbps I Total On Time (ms) 5.706	m Mid Channel, 244 Period (ms) N/A sse:INT Trig Delay-1.000 m Trig: Video Atten: 10 dB	STATUS 2 MHz, Pulse C Value (%) N/A ALIGN OFF S Avg Type	ount Limit (%) N/A : Log-Pwr	Result N/A 05:26:21 PM May 17, 2021 TRACE 12, 23, 45, 45, 45, 45, 45, 45, 45, 45, 45, 45
Pulse Width (ms) N/A	BL Number of Pulses 30 ar - Element Materials Tech 50 Ω AC	E/GFSK 2 Mbps I Total On Time (ms) 5.706	m Wid Channel, 244 Period (ms) N/A SEEINT Trig Delay-1.000 m Trig: Video Atten: 10 dB	STATUS 2 MHz, Pulse C Value (%) N/A ALIGN OFF s Avg Type	ount Limit (%) N/A :: Log-Pwr	Result N/A 05:26:21 PM May 17, 2021 TRACE 12, 34 AU TYPE 12, 34 AU DET NNNNN
Pulse Width (ms) N/A	BL Number of Pulses 30 r - Element Materials Tech 50 Ω AC	E/GFSK 2 Mbps I Total On Time (ms) 5.706	Wid Channel, 244 Period (ms) N/A N/A VSE:INT Trig Delay-1.000 m Trig: Video Atten: 10 dB	STATUS 2 MHz, Pulse C Value (%) N/A MALIGN OFF Avg Type	ount Limit (%) N/A :: Log-Pwr	Result N/A 05:26:21 PM May 17, 2021 TRACE 2 3 4 5 6 TRACE 2 3 4 5 6 TRACE DET NNNNN
Pulse Width (ms) N/A	BL Number of Pulses 30 r - Element Materials Tech 50 Ω AC	E/GFSK 2 Mbps I Total On Time (ms) 5.706	Wid Channel, 244 Period (ms) N/A VSE:INT Trig Delay-1.000 m Trig: Video Atten: 10 dB	STATUS 2 MHz, Pulse C Value (%) N/A N/A	Ount Limit (%) N/A E: Log-Pwr	Result N/A 05:26:21 PM May 17, 2021 TRACE 23 4 5 6 TYPE 23 4 5 6 TYPE 23 4 5 6 TYPE 23 4 5 6
Pulse Width (ms) N/A	BL Number of Pulses 30 r - Element Materials Tech 50 Ω AC	E/GFSK 2 Mbps I Total On Time (ms) 5.706	Wid Channel, 244 Period (ms) N/A VSE:INT Trig Delay-1.000 m Trig: Video Atten: 10 dB	STATUS 2 MHz, Pulse C Value (%) N/A N/A	ount Limit (%) N/A : Log-Pwr	Result N/A 05:26:21 PM May 17, 2021 TRACE 23 4 5 6 TYPE WWWNNNN DET
Pulse Width (ms) N/A	BL Number of Pulses 30 r - Element Materials Tech 50 Ω AC 0 dBm	E/GFSK 2 Mbps I Total On Time (ms) 5.706	Wid Channel, 244 Period (ms) N/A VSE:INT Trig Delay-1.000 m Trig: Video Atten: 10 dB	STATUS 2 MHz, Pulse C Value (%) N/A MALIGN OFF Avg Type	ount Limit (%) N/A	Result N/A 05:26:21 PMMay 17, 2021 TRACE 23:4 5 6 TYPE YMMAY 17, 2021 TRACE 12:3 4 5 6 TYPE YMMAY 17, 2021
Pulse Width (ms) N/A	BL Number of Pulses 30 r-Element Materials Tech 50 Q AC 0 dBm	E/GFSK 2 Mbps I Total On Time (ms) 5.706	Wid Channel, 244 Period (ms) N/A VSE:INT Trig Delay-1.000 m Trig: Video Atten: 10 dB	STATUS 2 MHz, Pulse C Value (%) N/A ALIGN OFF Avg Type	ount Limit (%) N/A : Log-Pwr	Result N/A 05:26:21 PM May 17, 2021 TRACE 23:4 5 6 TYPE YYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYY
Pulse Width (ms) N/A	BL Number of Pulses 30 cr - Element Materials Tech 50 Q AC 0 dBm	E/GFSK 2 Mbps I Total On Time (ms) 5.706	Wid Channel, 244 Period (ms) N/A Trig Delay-1.000 m Trig: Video Atten: 10 dB	STATUS 2 MHz, Pulse C Value (%) N/A ALIGN OFF Avg Type	ount Limit (%) N/A : Log-Pwr	Result N/A 05:26:21 PMMay 17, 2021 TRACE 23:4 5 0 TYPE WAYNAY OF DET NNNNN













	BL	E/GFSK 2 Mbps H	igh Channel 248	0 MHz. Pulse L	enath		
Pulse	Number of	Total On	Period	Value	Limit		
Width (ms)	Pulses	Time (ms)	(ms)	(%)	(%)	Result	
0.1891	N/A	N/A	N/A	N/A	N/A	N/A	L
📕 Keysight Spectrum Analyzer	- Element Materials Tech	hnology					X
X/RL RF	50 Ω AC	SEN	SE:INT	ALIGN OFF	: Log-Pwr	05:35:55 PM May 17, 2 TRACE 1 2 3 4	021
		PNO: Fast ++++	Trig: Video Atten: 10 dB			DET N N N N	
						Mkr3 1.000 n	ns
10 dB/div Ref 0.0	0 dBm					-34.12 dB	m
-10.0						*	
-20.0			A 2			3	
-30.0						TRIGT	CV1
-40.0							
-50.0							
-70.0							
-80.0	many	~~^	hower	want and a start	mann		
-90.0							
Center 2.4800000	00 GHz					Span 0 l	Hz
Res BW 1.0 MHz		#VBW	30 kHz		Sweep 1.	198 ms (8192 p	is)
MKR MODE TRC SCL	× 375.4	Υ 4 μs <u>-33.85 d</u> E	FUNCTION	FUNCTION WIDTH	FUNCTIO	ON VALUE	ń
2 N 1 t 3 N 1 t	564.5 1.000	5 µs -33.84 dE ms -34.12 dE	3m 3m				
5							
6							
9							
40							
10							
10 11 • [MSG]			m	STATUS		•	
10 11 4 4 4 5 6			m	STATUS		•	
10 11 Asg	BL Number of	.E/GFSK 2 Mbps H Total On	iigh Channel, 248 Period	STATUS 0 MHz, Pulse (Value	Count Limit	•	
Pulse Width (ms)	BL Number of Pulses	.E/GFSK 2 Mbps H Total On Time (ms)	" ligh Channel, 248 Period (ms)	STATUS 0 MHz, Pulse (Value (%)	Count Limit (%)	Result	
10 11 MSG ✓ MUlse Width (ms) N/A	BL Number of Pulses 30	E/GFSK 2 Mbps H Total On Time (ms) 5.673	" ligh Channel, 248 Period (ms) N/A	STATUS 0 MHz, Pulse 0 Value (%) N/A	Count Limit (%) N/A	Result N/A	~
Pulse Width (ms) N/A	BL Number of Pulses 30 Element Materials Tech	E/GFSK 2 Mbps H Total On Time (ms) 5.673	" ligh Channel, 248 Period (ms) N/A	STATUS 0 MHz, Pulse (Value (%) N/A	Count Limit (%) N/A	Result N/A	
10 11 4SG Pulse Width (ms) N/A Keysight Spectrum Analyzer RL RF	BL Number of Puises 30 - Element Materials Tech 50 Ω AC	E/GFSK 2 Mbps H Total On Time (ms) 5.673	" ligh Channel, 248 Period (ms) N/A ™	STATUS 0 MHz, Pulse (Value (%) N/A ALIGN OFF a Avg Type	Count Limit (%) N/A : Log-Pwr	Result N/A 05:36:15 PM May 17, 2 TRACE	× 021
Pulse Width (ms) N/A Keysight Spectrum Analyzer	BL Number of Pulses 30 *- Element Materials Tech 50 Ω AC	E/GFSK 2 Mbps H Total On Time (ms) 5.673 hnology PNO: Fast ↔ IFGain:Low	iigh Channel, 248 Period (ms) N/A Trig Delay-1.000 ms Trig: Video Atten: 10 dB	STATUS O MHZ, Pulse C Value (%) N/A ALIGN OFF s Avg Type	Count Limit (%) N/A : Log-Pwr	Result N/A 05:36:15 PM May 17, 2 TRACE 12:34 TYPE	×
10 11 4SG Pulse Width (ms) N/A Keysight Spectrum Analyzer RL RF	BLEME PART AND A STATE	E/GFSK 2 Mbps H Total On Time (ms) 5.673 bnology PNO: Fast IFGain:Low	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	STATUS O MHz, Pulse C Value (%) N/A N/A	Count Limit (%) N/A : Log-Pwr	Result N/A 05:36:15 PM May 17, 2 TRACE DET	221 5 6 N N
Pulse Width (ms) N/A Keysight Spectrum Analyzer RL RF 10 dB/dliv Ref 0.00	BL Number of Pulses 30 - Element Materials Tech 50 \(\Omega \) AC	E/GFSK 2 Mbps H Total On Time (ms) 5.673 hnology PNO: Fast IFGain:Low	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	STATUS 0 MHz, Pulse (Value (%) N/A ALIGN OFF Avg Type	Count Limit (%) N/A	Result N/A 05:36:15 PMMay 17.2 TRACE 23.4 YPE WWWW DET	021 5 6 N N
10 11 Asg Pulse Width (ms) N/A Keysight Spectrum Analyzer N/A RL RF 10 dB/dlv Ref 0.00 0	BL Number of Pulses 30 Element Materials Tech 50 R AC D dBm	E/GFSK 2 Mbps H Total On Time (ms) 5.673 hnology PNO: Fast IFGain:Low	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	STATUS 0 MHz, Pulse C Value (%) N/A ALIGN OFF S Avg Type	Count Limit (%) N/A : Log-Pwr	Result N/A 05:36:15 PM May 17, 2 TRace 10 3 d Type Winny Det	021
10 11 11	BL Number of Pulses 30 - Element Materials Tech 50 \overline AC	E/GFSK 2 Mbps H Total On Time (ms) 5.673 hnology PNO: Fast IFGain:Low	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	STATUS 0 MHz, Pulse C Value (%) N/A ALIGN OFF Avg Type	Count Limit (%) N/A	Result N/A 05:36:15 PM May 17, 2 TRACE 12:34 TYPE WWWW DET NNN	■ 2 2 2 2 2 1 2 2 1 5 6
10 11 15 15 16 17 18 10 10 10 10 10 10 10 10 10 10	BL Number of Puises 30 - Element Materials Tech 50 Ω AC	E/GFSK 2 Mbps H Total On Time (ms) 5.673 hnology PNO: Fast IFGain:Low	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	STATUS 0 MHz, Pulse C Value (%) N/A ALIGN OFF Avg Type	Count Limit (%) N/A : Log-Pwr	Result N/A 05:361:5 PMay 17, 2 TRACE 1/2 3 4 TYPE WANN DET	21 3 5 5 6 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
10 11 15 15 16 17 18 10 10 10 10 10 10 10 10 10 10	BL Number of Puises 30	E/GFSK 2 Mbps H Total On Time (ms) 5.673 hnology PNO: Fast IFGain:Low	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	STATUS 0 MHz, Pulse C Value (%) N/A ALIGN OFF Avg Type	Count Limit (%) N/A	Result N/A 05:36:15 PMMy 17, 2 TRACE 779E DET	221 221 221 221 221
10 11 12 13 14 15 10 10 10 10 10 10 10 10 10 10	BL Number of Puises 30Element Materials Tech 50 Q AC	E/GFSK 2 Mbps H Total On Time (ms) 5.673 hnology PNO: Fast IFGain:Low	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	STATUS 0 MHz, Pulse C Value (%) N/A ALIGN OFF Avg Type	Count Limit (%) N/A : Log-Pwr	Result N/A 05:36:15 PM My 17, 2 TRACE 12:34 TYPE WINN DET NINN	
10 Pulse Vidth (ms) N/A Keysight Spectrum Analyzer RE 20.0 RE -30.0 -40.0	BL Number of Pulses 30 - Element Materials Tech 50 Ω AC	E/GFSK 2 Mbps H Total On Time (ms) 5.673 hnology PNO: Fast IFGain:Low	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	STATUS O MHZ, Pulse C Value (%) N/A	Count Limit (%) N/A	Result N/A	
10 Pulse Vidth (ms) N/A Keysight Spectrum Analyzer RL RL RF 10 dB/div Ref 0.00 -10.0	BL Number of Pulses 30 - Element Materials Tech 50 Q AC D dBm	E/GFSK 2 Mbps H Total On Time (ms) 5.673 hnology PNO: Fast IFGain:Low	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	STATUS O MHZ, Pulse C Value (%) N/A	Count Limit (%) N/A	Result N/A 05:36:15 PMMay 17,2 TRACE 23 4 TYPE WWW DET	
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10 10 .rssG Pulse Width (ms) N/A It RE RL RF 10 dB/dlv Ref 0.00 -10.0	BL Number of Pulses 30 - Element Materials Tech 50 Q AC D dBm	E/GFSK 2 Mbps H Total On Time (ms) 5.673 hnology PNO: Fast IFGain:Low	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	STATUS O MHZ, Pulse C Value (%) N/A	Count Limit (%) N/A		221 356 1111 1111 1111
Io Pulse #ssG Pulse Width (ms) N/A It RE Rt RF 10 dB/div Ref 0.00 9	BL Number of Pulses 30 - Element Materials Tech 50 Q AC	LE/GFSK 2 Mbps H Total On Time (ms) 5.673 hnology PNO: Fast IFGain:Low	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	STATUS	Count Limit (%) N/A : Log-Pwr	Result N/A 05:36:15 PM May 17, 2 TRace [2:34 Type Winner Det NNNN	021 356 576
Inglesize Pulse Vidth (ms) N/A Image: Sector manage of the sector man	Blender Haterials Tech 30 - Element Materials Tech 50 Q AC D dBm	E/GFSK 2 Mbps H Total On Time (ms) 5.673 hnology PNO: Fast IFGain:Low	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	STATUS	Count Limit (%) N/A	Result N/A 05:36:15 PM May 17, 2 TRACE 12, 3 4 TYPE WWW DET NNNN	021 3 6 10 10 10 10 10 10 10 10 10 10 10 10 10
Ion Pulse Width (ms) N/A Image: Section Analyzer N/A Image: Section Analyzer RL RF Image: Section Analyzer RL RF Image: Section Analyzer Image: Section Analyzer	BL Number of Puises 30 - Element Materials Tech 50 Ω AC D dBm	E/GFSK 2 Mbps H Total On Time (ms) 5.673 hnology PNO: Fast IFGain:Low IFGain:Low IFGain:Low IFGain:Low IFGain:Low IFGain:Low IFGain:Low IFGain:Low IFGain:Low IFGAIN I	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	STATUS	Count Limit (%) N/A : Log-Pwr	Result N/A 05:36:15 PMay 17, 2 TRACE 12:3 4 TYPE WWWY DET	
10 11 13 14 15 15 15 15 15 10 10 10 10 10 10 10 10 10 10	BL Number of Puises 30Element Materials Tech 50 ACD dBm	E/GFSK 2 Mbps H Total On Time (ms) 5.673 hnology PNO: Fast IFGain:Low 4 1 1 1 1 1 1 1 1 1 1 1 1 1	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	STATUS	Count Limit (%) N/A : Log-Pwr	Result N/A 05:361:5 PMay 17.2 TRACE 12.3.4 TYPE WHAT 17.2 DET NNNN DET NNNN 057 00000000000000000000000000000000000	
10 11 13 14 15 15 15 10 10 10 10 10 10 10 10 10 10	BL Number of Puises 30 - Element Materials Tech 50 Ω AC - O dBm	E/GFSK 2 Mbps H Total On Time (ms) 5.673 hnology PNO: Fast IFGain:Low 4 4 4 4 4 4 4 4 4 4 4 4 4	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	STATUS	Count Limit (%) N/A : Log-Pwr : Log-Pwr	Result N/A 05:36:15 PM My 17, 2 TRACE 12:34 TYPE WWWW DET WNNN	
10 Pulse visit Pulse Width (ms) N/A It RL RL RF 10 B/div Ref 0.00 10 -20.0 10 -30.0 10 -40.0 10 -50.0 10 -60.0 10 -60.0 10 -60.0 10 -60.0 10 -60.0 10 -60.0 10 -60.0 10 -60.0 10 -60.0 10 -70.0 10 -80.0 10	BL Number of Pulses 30 - Element Materials Tech 50 Ω AC - D dBm	E/GFSK 2 Mbps H Total On Time (ms) 5.673	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	STATUS	Count Limit (%) N/A : Log-Pwr		

STATUS

SG











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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5183A	TIK	2019-04-30	2022-04-30
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2021-04-16	2022-04-16
Block - DC	Fairview Microwave	SD3379	AMZ	2020-11-04	2021-11-04
Attenuator	S.M. Electronics	SA26B-20	RFW	2021-02-05	2022-02-05
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2020-09-14	2021-09-14

TEST DESCRIPTION

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

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



			TbtTx 2021.03.19.1	XMit 2020.12.30.0
EUT: Evolv Al Power Plus BTE 13 BLE Hearing Aid		Work Order:	STAK0238	
Serial Number: 210990482		Date:	17-May-21	
Customer: Starkey Laboratories, Inc.		Temperature:	22.3 °C	
Attendees: John Quach		Humidity:	45% RH	
Project: None		Barometric Pres.:	1023 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, and DC block.				
DEVIATIONS FROM TEST STANDARD				
None				
Configuration # 1 Signature	to Rogatal			
			Limit	
		Value	(≥)	Result
BLE/GFSK 1 Mbps Low Channel, 2402 MHz		744.079 kHz	500 kHz	Pass
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz		746.817 kHz	500 kHz	Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz		747.829 kHz	500 kHz	Pass
BLE/GFSK 2 Mbps Low Channel, 2402 MHz		1.282 MHz	500 kHz	Pass
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz		1.277 MHz	500 kHz	Pass
BLE/GFSK 2 Mbps High Channel, 2480 MHz		1.32 MHz	500 kHz	Pass





















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TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5183A	TIK	2019-04-30	2022-04-30
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2021-04-16	2022-04-16
Block - DC	Fairview Microwave	SD3379	AMZ	2020-11-04	2021-11-04
Attenuator	S.M. Electronics	SA26B-20	RFW	2021-02-05	2022-02-05
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2020-09-14	2021-09-14

TEST DESCRIPTION

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

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

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



			TbtTx 2021.03.19.1	XMit 2020.12.30.0
EUT: Evolv AI Power Plus BTE 13 BLE Hearing Aid		Work Order:	STAK0238	
Serial Number: 210990482		Date:	17-May-21	
Customer: Starkey Laboratories, Inc.		Temperature:	22.2 °C	
Attendees: John Quach		Humidity:	44.9% RH	
Project: None		Barometric Pres.:	1023 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, and DC block.				
DEVIATIONS FROM TEST STANDARD				
None				
Configuration # 1 Signature	to Roptan			
		Out Pwr	Limit	
		(dBm)	(dBm)	Result
BLE/GFSK 1 Mbps Low Channel, 2402 MHz		-5.848	30	Pass
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz		-8.546	30	Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz		-6.799	30	Pass
BLE/GFSK 2 Mbps Low Channel, 2402 MHz		-5.697	30	Pass
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz		-8.387	30	Pass
BLE/GFSK 2 Mbps High Channel, 2480 MHz		-6.684	30	Pass



Image: Sense: Interview of the sense	.848 30 IN OFF 4 #Avg Type: Voltage Avg Hold: 100/100	Pass 05:41:16 PM y 17, 2021 TRACE [] 2:3 4:5 TYPE MWWWW DET PPPPP xr1 2.402 236 GHz -5.848 dBm
Keysight Spectrum Analyzer - Element Materials Technology SENSE:INT ALIC PNO: Fast	#Avg Type: Voltage Avg Hold: 100/100	05:41:16 PM May 17, 201 TRACE 12:34:56 TYPE MANNARY OF PPPPPP of PPPPPP cr1 2:402 236 GHz -5.848 dBm
Keysight Spectrum Analyzer - Element Materials Technology SENSE:INT ▲ ALIC PNO: Fast → Trig: Free Run IFGain:Low #Atten: 10 dB 6.00 0 -11.0 0 -16.0 - -21.0 -	N OFF #Avg Type: Voltage Avg Hold: 100/100	05:41:16 PMMay 17, 2021 TRACE 12 3 4 5 6 TYPE 03 4 4 5 6 TYPE 03 4 5 6 TYPE 04 2 2 3 6 GHz -5.848 dBm
PNO: Fast → Trig: Free Run IFGain:Low #Atten: 10 dB 5 dB/div Ref -1.00 dBm -0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	#Avg Type: Voltage Avg Hold: 100/100	TRACE 123436 TYPE MANNAS TO PPPPP r1 2.402 236 GHz -5.848 dBm
Ref Offset 21.53 dB e dB/div Ref -1.00 dBm 6.00 -11.0 -16.0 -21.0	Mi	r1 2.402 236 GHz -5.848 dBm
Log ↓1 6.00 ↓1 -11.0 ↓1 -16.0 ↓1 -21.0 ↓1		
-6.00 -11.0 -16.0 -21.0		
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-21.0		
-21.0		
-26.0		
-31.0		
-36.0		
.410		
-46.0		
Center 2.402000 GHz #Res BW 2.0 MHz #VBW 6.0 MHz	Sweep	Span 3.500 MHz 1.066 ms (1000 pts)
MSG	STATUS	
BLE/GFSK 1 Mbps Mid Channel, 244	Z MHZ	
(ď	IBm) (dBm)	Result

🇾 Keysight Sp	ectrum Analyzer - Element Materi	als Technology				
LXI RL	RF 50 Ω AC		SENSE:INT	ALIGN OFF	Voltago	05:52:05 PM May 17, 2021
		PNO: Fast ↔ IFGain:Low	Trig: Free Run #Atten: 10 dB	Avg Hold: 10	00/100	TYPE MWWWWW DET P P P P P
5 dB/div	Ref Offset 21.53 dB Ref -4.00 dBm				Mk	r1 2.441 669 GHz -8.546 dBm
			↓ ¹			
-9.00	and a second and a second and a second					
-14.0						
-19.0						
-24.0						
-29.0						
-34.0						
-39.0						
-44.0						
-49.0						
Center 2. #Res BW	442000 GHz 2.0 MHz	#VB	W 6.0 MHz		Sweep	Span 3.500 MHz 1.066 ms (1000 pts)
MSG				STATUS		



		BLE/GFSI	K 1 Mbps High Cl	hannel, i	2480 MHz		
					Out Pwr	Limit	
					(dBm)	(dBm)	Result
					-6.799	30	Pass
📜 Keysight Spe	ctrum Analyzer - Element Materials Tec	hnology	cence wit				
	RF 50 Ω AC		SENSE:INT		#Avg Type	: Voltage	TRACE 1 2 3 4 5 6
		PNO: Fast ← IFGain:Low	Trig: Free Run #Atten: 10 dB	1	Avg Hold:	100/100	TYPE MWWWWWW DET PPPPP
	Pof Offect 21 52 dP					Mkr	1 2.480 226 GHz
5 dB/div	Ref -2.00 dBm						-6.799 dBm
L09				▲1			
-7.00							
-12.0							
-17.0							
-17.0							
-22.0							
-27.0							
-32.0							
-37.0							
-42 በ							
14							
-47.0							
Center 2.4	80000 GHz						Span 3.500 MHz
#Res BW 3	2.0 MHz	#V	BW 6.0 MHz			Sweep	1.066 ms (1000 pts)
MSG					STATUS		
		BLE/GFS	K 2 Mbps Low Ch	nannel, 2	2402 MHz		
					Out Pwr	Limit	
		-			(dBm)	(dBm)	Result
		1	1		-5 697	30	Pass

🍺 Keysight Spe	ectrum Analyzer - Elei	ment Materials T	echnology					
LXI RL	RF 50 Ω	AC		SENSE:INT	ALIGN OFF		05:14:29	PM May 17, 2021
	_		PNO: Fast ↔→ IFGain:Low	. Trig: Free Run #Atten: 10 dB	#Avg Type: Avg Hold: 1	Voltage 00/100	TR T	ACE 1 2 3 4 5 6 YPE MWWWW DET P P P P P P
5 dB/div	Ref Offset 21 Ref -1.00 d	.53 dB Bm				Mk	(r1 2.402 -5.0	065 GHz 697 dBm
209				↓ ¹				
-b.UU							_	
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-16.0								- Marine Ver
-21.0								
-26.0								
-31.0								
-36.0								
-41.0								
-46.0								
Center 2.4	402000 GHz						Span	10.00 M <u>Hz</u>
#Res BW	4 MHz		#VB	W 8.0 MHz		Sweep	1.066 ms	(1000 pts)
MSG					STATUS			





🗾 Keysight Sp	ectrum Analyzer - Element Materials	Technology				
L <mark>XI</mark> RL	RF 50 Ω AC		SENSE:INT	ALIGN OFF	una: Maltana	05:31:42 PM May 17, 2021
		PNO: Fast ++- IFGain:Low	Trig: Free Run #Atten: 10 dB	Avg Ho	ld: 100/100	TYPE MWWWW DET P P P P P
5 dB/div	Ref Offset 21.53 dB Ref -2.00 dBm				Mk	r1 2.480 546 GHz -6.684 dBm
209				<u>⊾</u> 1		
-7.00						
-12.0						
-17 በ	and and a second s					and the second s
						and the second s
-22.0						
-27.0						
-32.0						
-37.0						
51.5						
-42.0						
-47.0						
Center 2. #Res BW	480000 GHz 4 MHz	#VB	W 8.0 MHz		Sweep	Span 10.00 MHz 1.066 ms (1000 pts)
MSG				STATUS		



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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5183A	TIK	2019-04-30	2022-04-30
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2021-04-16	2022-04-16
Block - DC	Fairview Microwave	SD3379	AMZ	2020-11-04	2021-11-04
Attenuator	S.M. Electronics	SA26B-20	RFW	2021-02-05	2022-02-05
Cable	Micro-Coax	D150A-1-0720-200	MNL	2020-09-14	2021-09-14

TEST DESCRIPTION

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

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

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

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



							TbtTx 2021.03.19.1	XMit 2020.12.30.0
EUT:	Evolv Al Power Plus BTE	13 BLE Hearing Aid		Work Order:	STAK0238			
Serial Number:	210990482			Date:	17-May-21			
Customer:	Starkey Laboratories, Inc	-				Temperature:	22.3 °C	
Attendees:	John Quach					Humidity:	45.1% RH	
Project:	None					Barometric Pres.:	1023 mbar	
Tested by:	Andrew Rogstad		Power: Battery			Job Site:	MN08	
TEST SPECIFICATI	IONS		Test Method					
FCC 15.247:2021			ANSI C63.10:2013					
COMMENTS								
Reference level off	set includes measuremen	t cable, attenuator, and DC block.						
DEVIATIONS FROM	I TEST STANDARD							
None								
Configuration #	1	Signature	in Roptant					
				Out Pwr	Antenna	EIRP	EIRP Limit	
				(dBm)	Gain (dBi)	(dBm)	(dBm)	Result
BLE/GFSK 1 Mbps Low Channel, 2402 MHz -5.848						-13.3	36	Pass
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz -8.546						-16.0	36	Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz -6.799						-14.3	36	Pass
BLE/GFSK 2 Mbps Low Channel, 2402 MHz -5.697						-13.2	36	Pass
BLE/GFSK 2 Mbps I	Vid Channel, 2442 MHz			-8.387	-7.5	-15.9	36	Pass
BLE/GFSK 2 Mbps I	High Channel, 2480 MHz			-6.684	-7.5	-14.2	36	Pass



	Out Pwr	Antenna	EIRP	EIRP Limit	
	(dBm)	Gain (dBi)	(dBm)	(dBm)	Result
	-5.848	-7.5	-13.3	36	Pass
🎩 Keysight Spectrum Analyzer - Element Materials Tech	nology				
X RL RF 50 Ω AC	SI	ENSE:INT	ALIGN OFF		05:41:16 PM May 17, 2021
	PNO: Fast +++	Trig: Free Run #Atten: 10 dB	Avg Hold	e: voltage : 100/100	TYPE MWWWW DET PPPPP
Pof Offeet 21 53 dB				Mkr1	2.402 236 GHz
5 dB/div Ref -1.00 dBm					-5.848 dBm
			4		
			♦ '		
-6.00					
11.0					and a second
-11.0					
46.0					
-10.0					
21.0					
-21.0					
-26.0					
-31.0					
-36.0					
-41.0					
-46.0					
Center 2.402000 GHz	#\/B\/			Swoon 1	Span 3.500 MHz
	#VBV	ro.o winz		Sweep 1.	oo nis (1000 pis
ISG			STATUS		

	DEE, 01 011 1								
	Out Pwr	Antenna	EIRP	EIRP Limit					
	(dBm)	Gain (dBi)	(dBm)	(dBm)	Result				
	-8.546	-7.5	-16.0	36	Pass				

🊺 Keysight Sp	ectrum Analyzer - Element I	Materials Technology				
X/ RL	RF 50 Ω AC		SENSE:INT	ALIGN OFF	05:52	2:05 PM May 17, 2021
		PNO: Fast IFGain:Low	Trig: Free Ru #Atten: 10 dE	#Avg Type: \ In Avg Hold: 10 3	/oltage 0/100	TRACE 1 2 3 4 5 6 TYPE MWWWW DET P P P P P
5 dB/div	Ref Offset 21.53 d Ref -4.00 dBm	IB			Mkr1 2.44	l1 669 GHz 8.546 dBm
			1			
-9.00	and the second second second second					
-14.0						
-19.0						
-24.0						
24.0						
-34.0						
-44.0						
-49.0						
Center 2. #Res BW	442000 GHz 2.0 MHz	#	BW 6.0 MHz		Spa Sweep 1.066 i	an 3.500 MHz ms (1000 pts)
NSG				STATUS		





🚺 Keysight Sp	ectrum Analyzer - Element Materi	als Technology					
LXI RL	RF 50 Ω AC		SENSE:INT	ALIGN OFF		05:14:29	PM May 17, 2021
		PNO: Fast ↔→ IFGain:Low	Trig: Free Run #Atten: 10 dB	#Avg Type Avg Hold:	: Voltage 100/100	TR T	ACE 1 2 3 4 5 6 YPE MWWWWW DET P P P P P P
5 dB/div	Ref Offset 21.53 dB Ref -1.00 dBm				Mk	r1 2.402 -5.	065 GHz 697 dBm
			♦ '				
-6.00		And the second					
-11.0							
10.0	- March Conner					and the second s	North Market
-16.0							and the second
-21.0							
26.0							
-20.0							
-31.0							
-36.0							
-41.0							
-46.0							
Center 2. #Res BW	402000 GHz 4 MHz	#VB	W 8.0 MHz		Sweep	Span 1.066 ms	10.00 MHz (1000 pts)
MSG				STATUS			





🚺 Keysight	Spectrum Ana	alyzer - Eleme	ent Materials Te	echnology						
LXI RL	RF	50 Ω	AC		SENSE:INT		ALIGN OFF		05:31:42	PM May 17, 2021
				PNO: Fast IFGain:Low	++- Trig: F #Atten:	ree Run 10 dB	#Avg Avg I	Type: Voltage Iold: 100/100	TF	ACE 1 2 3 4 5 6 TYPE M WWWW DET P P P P P P
5 dB/div Loa	Ref 0 Ref -	ffset 21.5 2.00 dB	3 dB m						/kr1 2.480 -6.	546 GHz 684 dBm
Ŭ							1			
-7.00										
-12.0		and the second second								
-17.0	- www	Market and a second								Mr. mark
-	Arr Arr									
-22.0										
-27.0										
-32.0										
-37.0										
-42.0										
-47.0										
Center : #Res Bi	2.48000 N 4 MHz) GHz		#	VBW 8.0 M	Hz		Swe	Span ep 1.066 ms	10.00 MHz (1000 pts)
MSG							STAT	US		



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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5183A	TIK	2019-04-30	2022-04-30
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2021-04-16	2022-04-16
Block - DC	Fairview Microwave	SD3379	AMZ	2020-11-04	2021-11-04
Attenuator	S.M. Electronics	SA26B-20	RFW	2021-02-05	2022-02-05
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2020-09-14	2021-09-14

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.



		TbtTx 2021.03.19.1	XMit 2020.12.30.0
EUT: Evolv AI Power Plus BTE 13 BLE Hearing Aid	Work Order:	STAK0238	
Serial Number: 210990482	Date:	17-May-21	
Customer: Starkey Laboratories, Inc.	Temperature:	22.2 °C	
Attendees: John Quach	Humidity:	44.9% RH	
Project: None	Barometric Pres.:	1023 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, and DC block.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration # 1 Signature Charles Regularity			
	Value dBm/3kHz	Limit < dBm/3kHz	Results
BLE/GFSK 1 Mbps Low Channel, 2402 MHz	-21.504	8	Pass
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz	-24.081	8	Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz	-22.476	8	Pass
BLE/GFSK 2 Mbps Low Channel, 2402 MHz	-23.882	8	Pass
BLE/GFSK 2 Mbps Mid Channel, 2442 MHz	-26.696	8	Pass
BLE/GFSK 2 Mbps High Channel, 2480 MHz	-25	8	Pass

Report No. STAK0238

















