

NORTHWEST EMC

Starkey Laboratories, Inc.

Halo 2 RIC 312 Hearing Aid

FCC 15.247:2016

Bluetooth Radio

Report # STAK0074



NVLAP Lab Code: 200881-0

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CERTIFICATE OF TEST

Last Date of Test: November 17, 2016
Starkey Laboratories, Inc.
Model: Hearing Aid

Radio Equipment Testing

Standards

Specification	Method
FCC 15.247:2016	ANSI C63.10:2013, KDB 558074

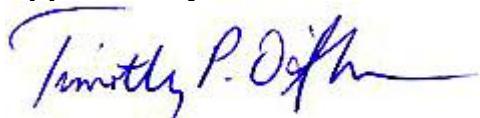
Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	No	N/A	Not required for a battery powered EUT.
6.5, 6.6, 11.12.1, 11.13.2	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	
11.10.2	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:



Tim O'Shea, Operations Manager

Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information.

REVISION HISTORY

Revision Number	Description	Date	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 Northwest EMC 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). Certification chambers and Open Area Test Sites are filed with ISED.

European Union

European Commission – Validated by the European Commission as a Notified Body under the R&TTE Directive.

Australia/New Zealand

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

Korea

MSIP / 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:

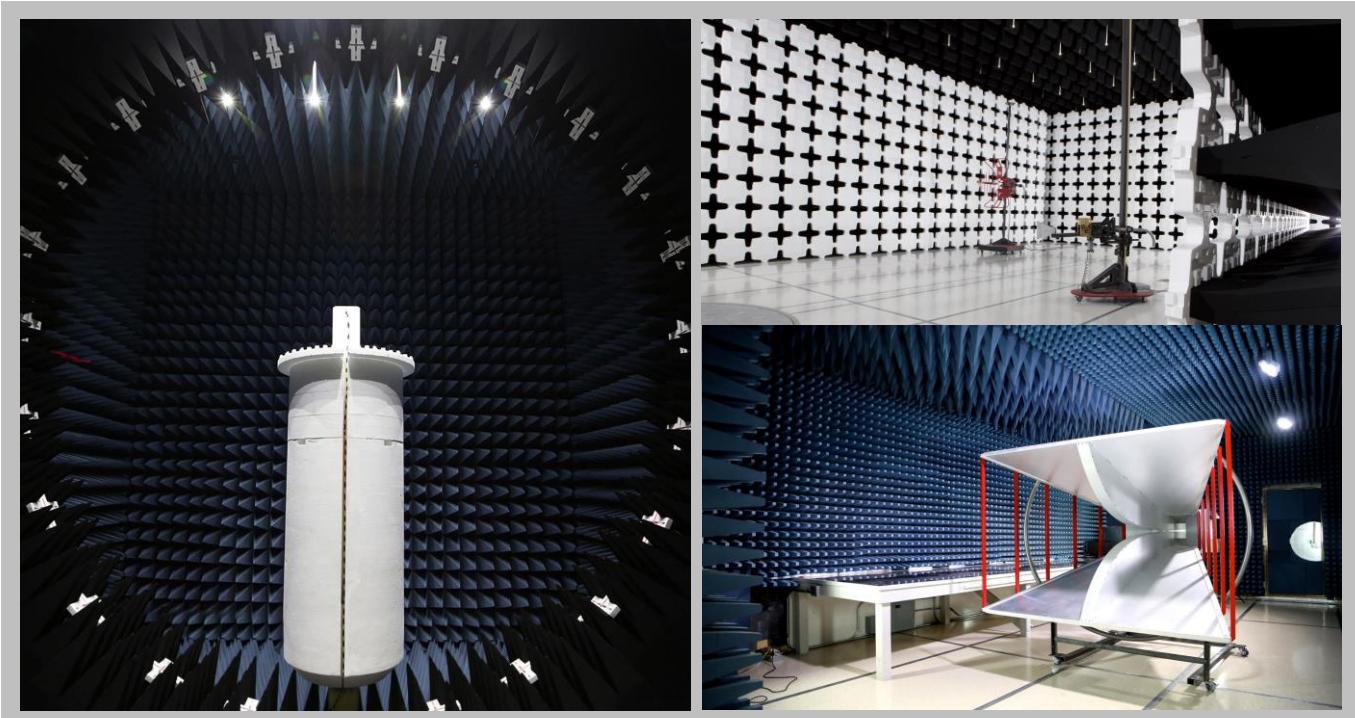
<http://www.nwemc.com/accreditations/>

<http://gsi.nist.gov/global/docs/cabs/designations.html>

FACILITIES



California	Minnesota	New York	Oregon	Texas	Washington
Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs MN01-08, MN10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214	Labs EV01-12 22975 NW Evergreen Pkwy Hillsboro, OR 97124 (503) 844-4066	Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	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: 200761-0	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	N/A	2834D-1, 2834D-2	2834G-1	2834F-1
BSMI					
SL2-IN-E-1154R	SL2-IN-E-1152R	N/A	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI					
A-0029	A-0109	N/A	A-0108	A-0201	A-0110
Recognized Phase I CAB for ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA					
US0158	US0175	N/A	US0017	US0191	US0157



MEASUREMENT UNCERTAINTY

Measurement Uncertainty

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

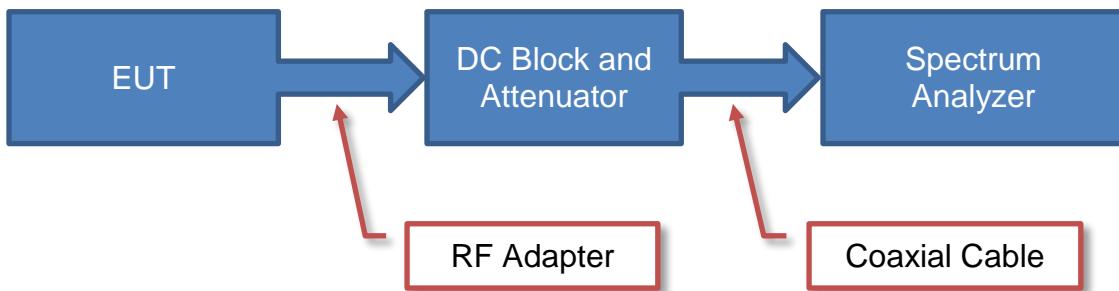
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable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

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

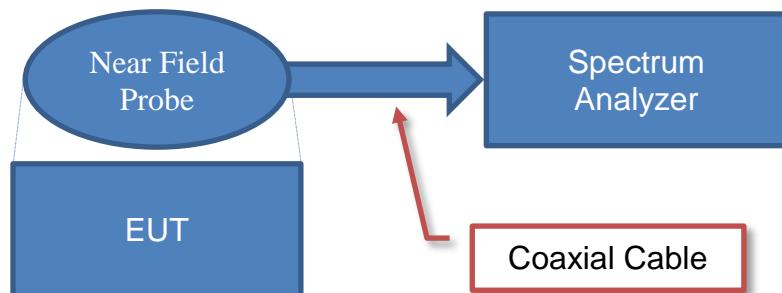
Test	+ MU	- MU
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.2 dB	-5.2 dB
AC Powerline Conducted Emissions (dB)	2.4 dB	-2.4 dB

Test Setup Block Diagrams

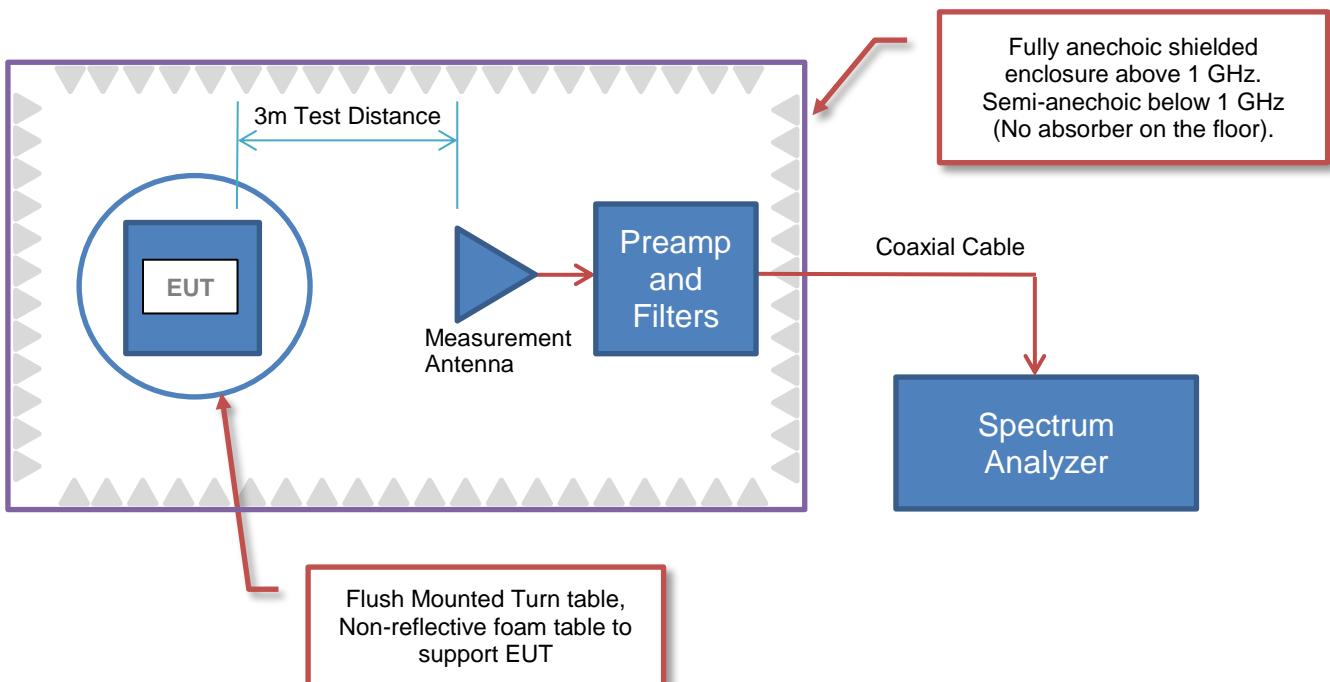
Antenna Port Conducted Measurements



Near Field Test Fixture Measurements



Spurious Radiated Emissions



PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Starkey Laboratories, Inc.
Address:	6600 Washington Ave. SO.
City, State, Zip:	Eden Prairie, MN 55344
Test Requested By:	Bill Mitchell
Model:	Hearing Aid
First Date of Test:	November 17, 2016
Last Date of Test:	November 17, 2016
Receipt Date of Samples:	November 17, 2016
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
Hearing Aid with Bluetooth Low Energy radio and one antenna. Changing to a smaller battery (size 13 to size 312).
Testing Objective:
To demonstrate compliance of the Bluetooth radio to FCC 15.247 requirements.

CONFIGURATIONS

Configuration STAK0074- 1

EUT					
Description	Manufacturer	Model/Part Number	Serial Number		
Hearing Aid	Starkey Laboratories, Inc.	Halo 2 RIC312	161034686		

Peripherals in test setup boundary					
Description	Manufacturer	Model/Part Number	Serial Number		
DC Power Supply	Agilent	E3630A	MY40009424		

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	No	2.5m	No	Hearing Aid	DC Power Supply
AC Mains Cable	No	1.8m	No	AC Mains	DC Power Supply

Configuration STAK0074- 2

EUT					
Description	Manufacturer	Model/Part Number	Serial Number		
Hearing Aid	Starkey Laboratories, Inc.	Halo 2 RIC312	161307836		

Peripherals in test setup boundary					
Description	Manufacturer	Model/Part Number	Serial Number		
DC Power Supply	Agilent	E3630A	MY40009424		

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	No	2.5m	No	Hearing Aid	DC Power Supply
AC Mains Cable	No	1.8m	No	AC Mains	DC Power Supply

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	11/17/2016	Duty Cycle	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	11/17/2016	Occupied Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
3	11/17/2016	Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
4	11/17/2016	Power Spectral Density	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
5	11/17/2016	Band Edge Compliance	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
6	11/17/2016	Spurious Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
7	11/17/2016	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

SPURIOUS RADIATED EMISSIONS

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

MODES OF OPERATION

Transmitting BLE - low channel (2402 MHz), mid channel (2442 MHz), and high channel (2480 MHz)

POWER SETTINGS INVESTIGATED

1.45VDC

CONFIGURATIONS INVESTIGATED

STAK0074 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency | 30 MHz | Stop Frequency | 26500 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Attenuator	Fairview Microwave	SA18E-20	TWZ	9/23/2016	12 mo
Cable	Northwest EMC	18-26GHz Standard Gain Horn Cable	MNP	9/15/2016	12 mo
Cable	ESM Cable Corp.	Standard Gain Horn Cables	MNJ	7/29/2016	12 mo
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	12/7/2015	12 mo
Cable	ESM Cable Corp.	Bilog Cables	MNH	12/7/2015	12 mo
Filter - High Pass	Micro-Tronics	HPM50111	LFN	9/23/2016	12 mo
Filter - Low Pass	Micro-Tronics	LPM50004	LFK	9/22/2016	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYD	1/6/2016	24 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AXP	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVW	3/1/2016	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVV	3/1/2016	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVT	3/1/2016	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AVO	12/10/2015	12 mo
Amplifier - Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	9/15/2016	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AJA	6/23/2016	24 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AIQ	NCR	0 mo
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFI	1/27/2016	12 mo

MEASUREMENT BANDWIDTHS

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

TEST DESCRIPTION

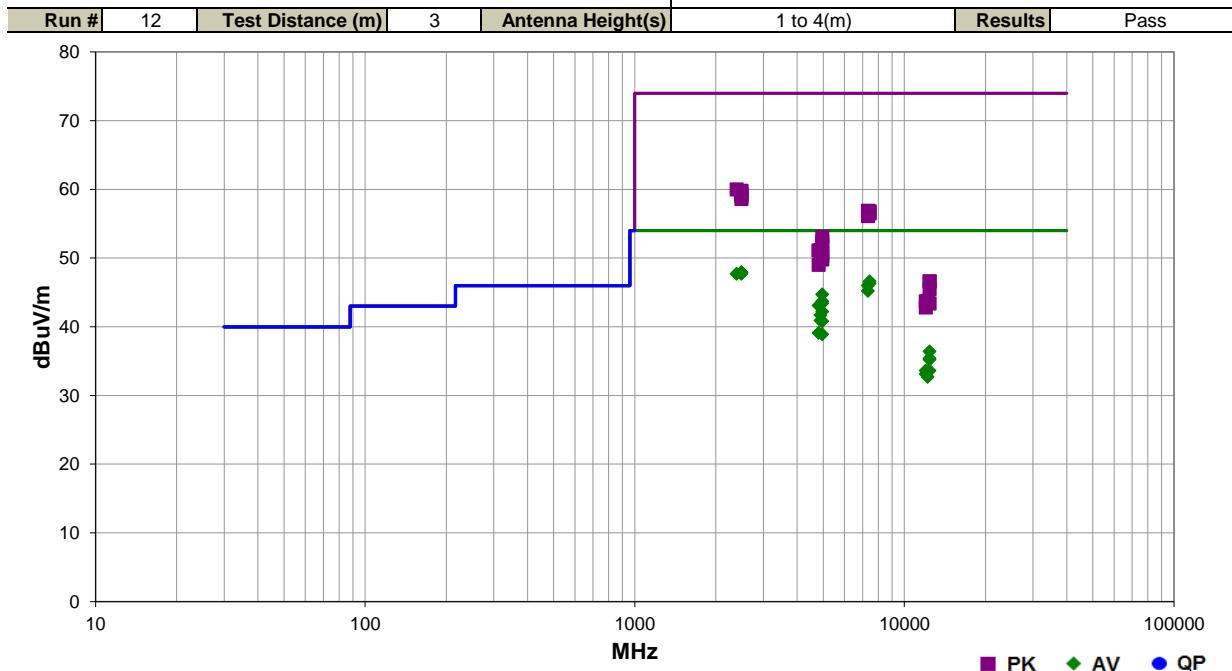
The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify compliance. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and the EUT antenna in three orthogonal axis, and adjusting measurement antenna height and polarization. A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

SPURIOUS RADIATED EMISSIONS

NORTHWEST
EMC
PSA-ESCI 2016.07.22
EmiR5 2016.08.26

Work Order:	STAK0074	Date:	11/17/16	
Project:	None	Temperature:	22.4 °C	
Job Site:	MN05	Humidity:	37.5% RH	
Serial Number:	161034686	Barometric Pres.:	1005 mbar	
EUT:	Hearing Aid	Tested by:	Dustin Sparks	
Configuration:	1			
Customer:	Starkey Laboratories, Inc.			
Attendees:	Charlie Esch			
EUT Power:	1.45VDC			
Operating Mode:	Transmitting BLE - low channel (2402 MHz), mid channel (2442 MHz), and high channel (2480 MHz)			
Deviations:	None			
Comments:	Battery replaced by DC power supply.			

Test Specifications	Test Method
FCC 15.247:2016	ANSI C63.10:2013



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	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
2484.858	31.3	-3.4	1.4	65.1	3.0	20.0	Horz	AV	0.0	47.9	54.0	-6.1	High ch, EUT vert
2484.358	31.3	-3.4	1.0	314.0	3.0	20.0	Vert	AV	0.0	47.9	54.0	-6.1	High ch, EUT vert
2487.350	31.3	-3.4	1.0	232.0	3.0	20.0	Horz	AV	0.0	47.9	54.0	-6.1	High ch, EUT on side
2485.883	31.3	-3.4	3.6	104.0	3.0	20.0	Vert	AV	0.0	47.9	54.0	-6.1	High ch, EUT on side
2484.317	31.2	-3.4	1.0	65.1	3.0	20.0	Vert	AV	0.0	47.8	54.0	-6.2	High ch, EUT horz
2486.425	31.1	-3.4	1.0	134.1	3.0	20.0	Horz	AV	0.0	47.7	54.0	-6.3	High ch, EUT horz
2388.025	31.0	-3.3	1.0	162.0	3.0	20.0	Horz	AV	0.0	47.7	54.0	-6.3	Low ch, EUT on side
7439.683	33.0	13.6	1.0	172.0	3.0	0.0	Vert	AV	0.0	46.6	54.0	-7.4	High ch, EUT vert
7440.258	32.7	13.6	1.0	336.9	3.0	0.0	Horz	AV	0.0	46.3	54.0	-7.7	High ch, EUT horz
7325.542	32.8	13.2	2.4	93.0	3.0	0.0	Vert	AV	0.0	46.0	54.0	-8.0	Mid ch, EUT vert
7325.483	32.0	13.2	1.0	172.0	3.0	0.0	Horz	AV	0.0	45.2	54.0	-8.8	Mid ch, EUT horz
4960.108	39.2	5.5	1.0	45.0	3.0	0.0	Vert	AV	0.0	44.7	54.0	-9.3	High ch, EUT vert
4960.017	38.2	5.5	1.5	151.0	3.0	0.0	Vert	AV	0.0	43.7	54.0	-10.3	High ch, EUT on side
4960.133	37.9	5.5	1.4	80.1	3.0	0.0	Horz	AV	0.0	43.4	54.0	-10.6	High ch, EUT horz
4804.083	38.0	5.1	3.1	314.0	3.0	0.0	Horz	AV	0.0	43.1	54.0	-10.9	Low ch, EUT horz
4960.117	36.7	5.5	1.0	107.0	3.0	0.0	Horz	AV	0.0	42.2	54.0	-11.8	High ch, EUT on side
4883.983	36.4	5.3	1.0	68.0	3.0	0.0	Vert	AV	0.0	41.7	54.0	-12.3	Mid ch, EUT vert
4883.908	35.6	5.3	1.0	93.0	3.0	0.0	Horz	AV	0.0	40.9	54.0	-13.1	Mid ch, EUT horz

Freq (MHz)	Amplitude (dBuV)	Factor	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
4960.100	35.3	5.5	1.0	130.1	3.0	0.0	Horz	AV	0.0	40.8	54.0	-13.2	High ch, EUT vert
2386.517	43.3	-3.3	1.0	162.0	3.0	20.0	Horz	PK	0.0	60.0	74.0	-14.0	Low ch, EUT on side
2487.025	43.2	-3.4	1.0	232.0	3.0	20.0	Horz	PK	0.0	59.8	74.0	-14.2	High ch, EUT on side
2484.542	43.1	-3.4	3.6	104.0	3.0	20.0	Vert	PK	0.0	59.7	74.0	-14.3	High ch, EUT on side
2486.067	42.7	-3.4	1.0	65.1	3.0	20.0	Vert	PK	0.0	59.3	74.0	-14.7	High ch, EUT horz
4804.083	34.0	5.1	1.0	97.0	3.0	0.0	Vert	AV	0.0	39.1	54.0	-14.9	Low ch, EUT vert
2488.417	42.5	-3.4	1.0	134.1	3.0	20.0	Horz	PK	0.0	59.1	74.0	-14.9	High ch, EUT horz
2486.692	42.5	-3.4	1.0	314.0	3.0	20.0	Vert	PK	0.0	59.1	74.0	-14.9	High ch, EUT vert
4959.925	33.4	5.5	1.0	17.0	3.0	0.0	Vert	AV	0.0	38.9	54.0	-15.1	High ch, EUT horz
2487.950	42.0	-3.4	1.4	65.1	3.0	20.0	Horz	PK	0.0	58.6	74.0	-15.4	High ch, EUT vert
7326.767	43.7	13.2	2.4	93.0	3.0	0.0	Vert	PK	0.0	56.9	74.0	-17.1	Mid ch, EUT vert
7441.075	43.2	13.6	1.0	172.0	3.0	0.0	Vert	PK	0.0	56.8	74.0	-17.2	High ch, EUT vert
7440.683	42.9	13.6	1.0	336.9	3.0	0.0	Horz	PK	0.0	56.5	74.0	-17.5	High ch, EUT horz
12398.930	35.7	0.7	1.7	250.9	3.0	0.0	Vert	AV	0.0	36.4	54.0	-17.6	High ch, EUT vert
7327.033	42.9	13.2	1.0	172.0	3.0	0.0	Horz	PK	0.0	56.1	74.0	-17.9	Mid ch, EUT horz
12401.370	29.2	6.2	1.0	211.0	3.0	0.0	Vert	AV	0.0	35.4	54.0	-18.6	High ch, EUT vert
12401.260	29.0	6.2	1.6	308.9	3.0	0.0	Horz	AV	0.0	35.2	54.0	-18.8	High ch, EUT horz
12009.060	34.7	-1.1	1.6	261.9	3.0	0.0	Horz	AV	0.0	33.6	54.0	-20.4	Low ch, EUT horz
12398.930	32.9	0.7	3.0	17.0	3.0	0.0	Horz	AV	0.0	33.6	54.0	-20.4	High ch, EUT horz
12209.290	34.0	-0.5	1.0	77.1	3.0	0.0	Horz	AV	0.0	33.5	54.0	-20.5	Mid ch, EUT horz
4960.750	47.6	5.5	1.4	80.1	3.0	0.0	Horz	PK	0.0	53.1	74.0	-20.9	High ch, EUT horz
12008.970	34.2	-1.1	1.0	267.0	3.0	0.0	Vert	AV	0.0	33.1	54.0	-20.9	Low ch, EUT vert
12209.150	33.2	-0.5	1.9	303.0	3.0	0.0	Vert	AV	0.0	32.7	54.0	-21.3	Mid ch, EUT vert
4959.700	46.9	5.5	1.0	45.0	3.0	0.0	Vert	PK	0.0	52.4	74.0	-21.6	High ch, EUT vert
4960.658	46.3	5.5	1.5	151.0	3.0	0.0	Vert	PK	0.0	51.8	74.0	-22.2	High ch, EUT on side
4883.300	45.8	5.4	1.0	93.0	3.0	0.0	Horz	PK	0.0	51.2	74.0	-22.8	Mid ch, EUT horz
4803.467	46.0	5.1	3.1	314.0	3.0	0.0	Horz	PK	0.0	51.1	74.0	-22.9	Low ch, EUT horz
4884.533	45.5	5.3	1.0	68.0	3.0	0.0	Vert	PK	0.0	50.8	74.0	-23.2	Mid ch, EUT vert
4960.800	45.2	5.5	1.0	107.0	3.0	0.0	Horz	PK	0.0	50.7	74.0	-23.3	High ch, EUT on side
4959.450	44.8	5.5	1.0	130.1	3.0	0.0	Horz	PK	0.0	50.3	74.0	-23.7	High ch, EUT vert
4960.942	44.3	5.5	1.0	17.0	3.0	0.0	Vert	PK	0.0	49.8	74.0	-24.2	High ch, EUT horz
4804.158	43.9	5.1	1.0	97.0	3.0	0.0	Vert	PK	0.0	49.0	74.0	-25.0	Low ch, EUT vert
12401.490	40.4	6.2	1.0	211.0	3.0	0.0	Vert	PK	0.0	46.6	74.0	-27.4	High ch, EUT vert
12401.150	40.4	6.2	1.6	308.9	3.0	0.0	Horz	PK	0.0	46.6	74.0	-27.4	High ch, EUT horz
12399.100	44.8	0.7	1.7	250.9	3.0	0.0	Vert	PK	0.0	45.5	74.0	-28.5	High ch, EUT vert
12208.620	44.3	-0.5	1.0	77.1	3.0	0.0	Horz	PK	0.0	43.8	74.0	-30.2	Mid ch, EUT horz
12008.530	44.8	-1.1	1.6	261.9	3.0	0.0	Horz	PK	0.0	43.7	74.0	-30.3	Low ch, EUT horz
12210.940	44.1	-0.5	1.9	303.0	3.0	0.0	Vert	PK	0.0	43.6	74.0	-30.4	Mid ch, EUT vert
12398.960	42.7	0.7	3.0	17.0	3.0	0.0	Horz	PK	0.0	43.4	74.0	-30.6	High ch, EUT horz
12011.570	43.9	-1.1	1.0	267.0	3.0	0.0	Vert	PK	0.0	42.8	74.0	-31.2	Low ch, EUT vert

DUTY CYCLE

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	10/17/2014	10/17/2017
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/15/2016	9/15/2017
Block - DC	Fairview Microwave	SD3379	AMI	9/15/2016	9/15/2017
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	2/26/2017
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	3/24/2017

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.

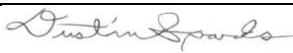
There is no compliance requirement to be met by this test, so therefore no Pass / Fail criteria.

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.

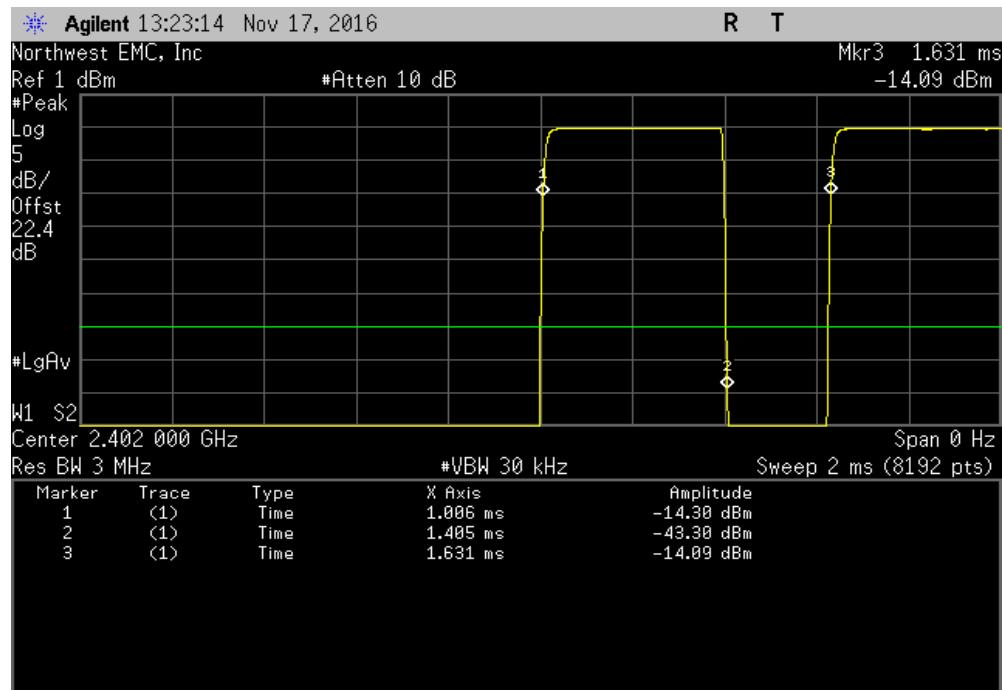
If the transmit duty cycle < 98 percent, burst gating may have been used during some of the other tests in this report to only take the measurement during the burst duration.

DUTY CYCLE

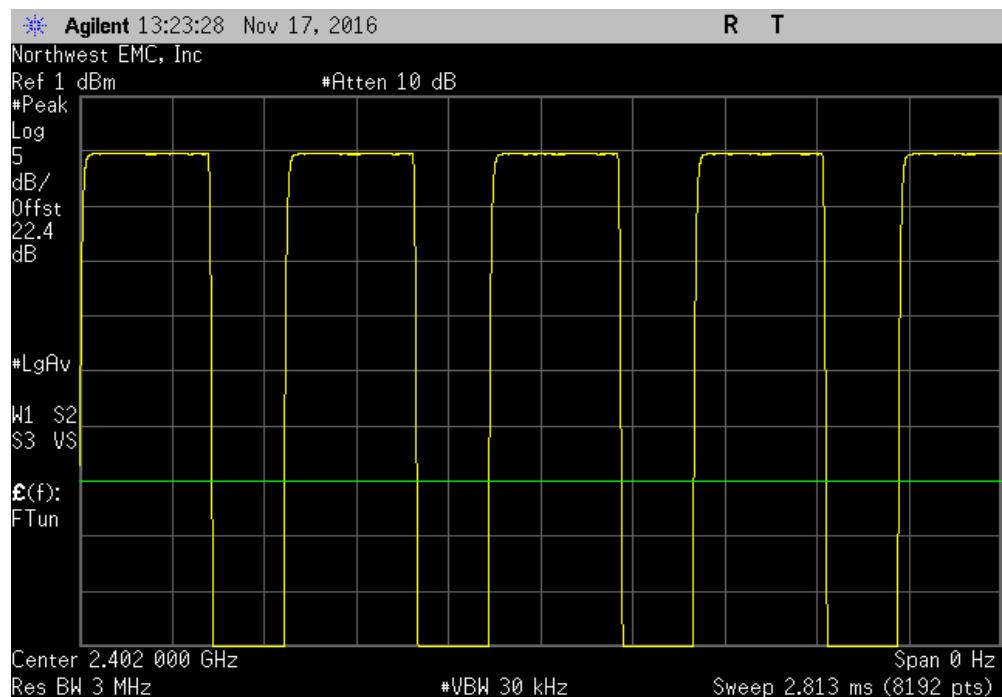
EUT:	Hearing Aid		Work Order:	STAK0074	
Serial Number:	161307836		Date:	11/17/16	
Customer:	Starkey Laboratories, Inc.		Temperature:	21.5 °C	
Attendees:	Charlie Esch		Humidity:	40.6% RH	
Project:	None		Barometric Pres.:	1007 mbar	
Tested by:	Dustin Sparks	Power:	1.45VDC	Job Site:	MN08
TEST SPECIFICATIONS		Test Method			
FCC 15.247:2016		ANSI C63.10:2013			
COMMENTS					
Transmitting BLE modulated. Battery replaced with DC power supply					
DEVIATIONS FROM TEST STANDARD					
None					
Configuration #	2	Signature 			
		Pulse Width	Period	Number of Pulses	Value (%)
BLE/GFSK Low Channel, 2402 MHz		399.7 us	625.1 us	1	63.9
BLE/GFSK Low Channel, 2402 MHz		N/A	N/A	5	N/A
BLE/GFSK Mid Channel, 2442 MHz		399.5 us	625.1 us	1	63.9
BLE/GFSK Mid Channel, 2442 MHz		N/A	N/A	5	N/A
BLE/GFSK High Channel, 2480 MHz		400.4 us	625.2 us	1	64
BLE/GFSK High Channel, 2480 MHz		N/A	N/A	5	N/A

DUTY CYCLE

BLE/GFSK Low Channel, 2402 MHz					
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
399.7 us	625.1 us	1	63.9	N/A	N/A

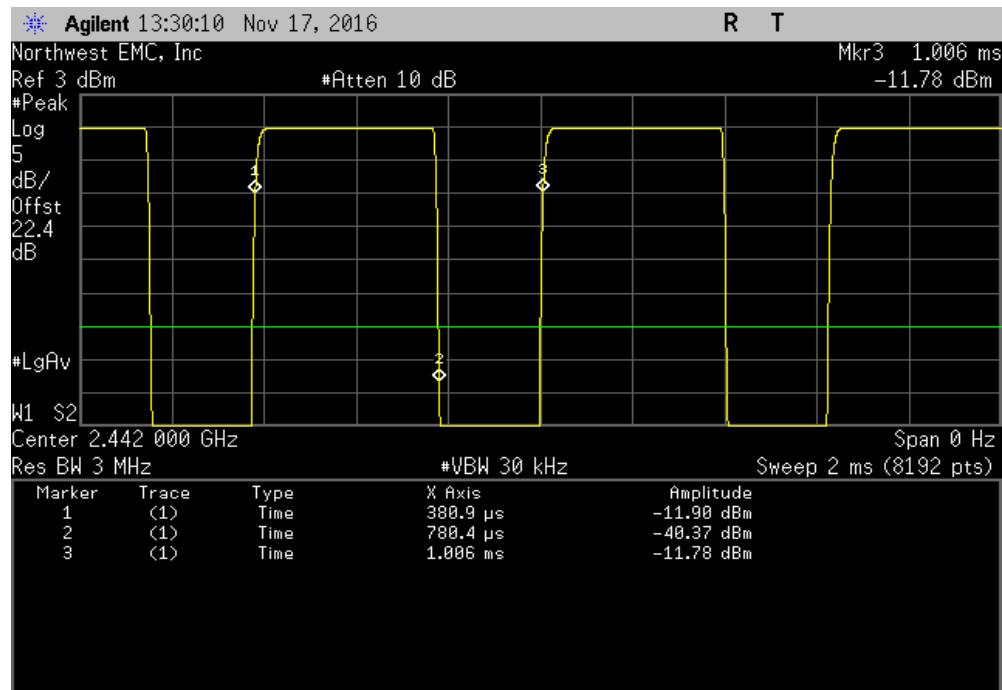


BLE/GFSK Low Channel, 2402 MHz					
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
N/A	N/A	5	N/A	N/A	N/A

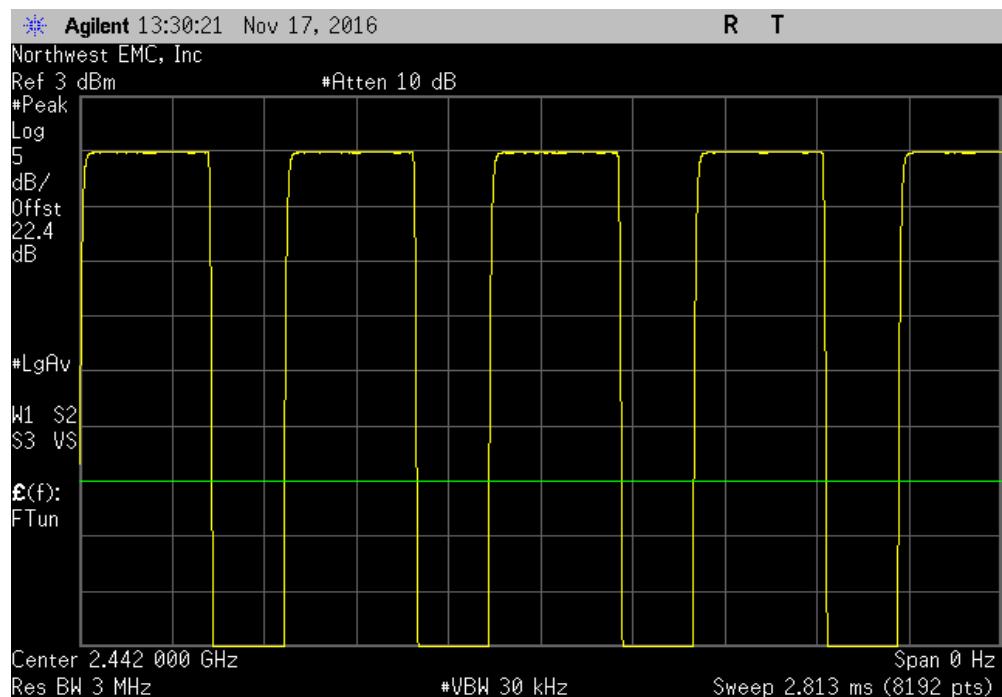


DUTY CYCLE

BLE/GFSK Mid Channel, 2442 MHz					
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
399.5 us	625.1 us	1	63.9	N/A	N/A

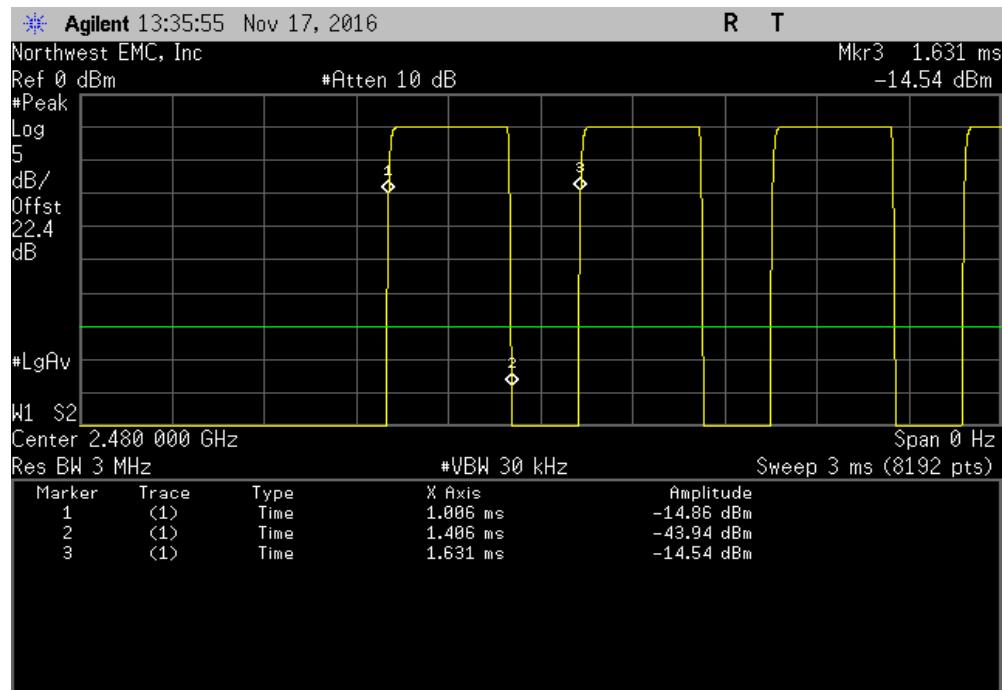


BLE/GFSK Mid Channel, 2442 MHz					
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
N/A	N/A	5	N/A	N/A	N/A

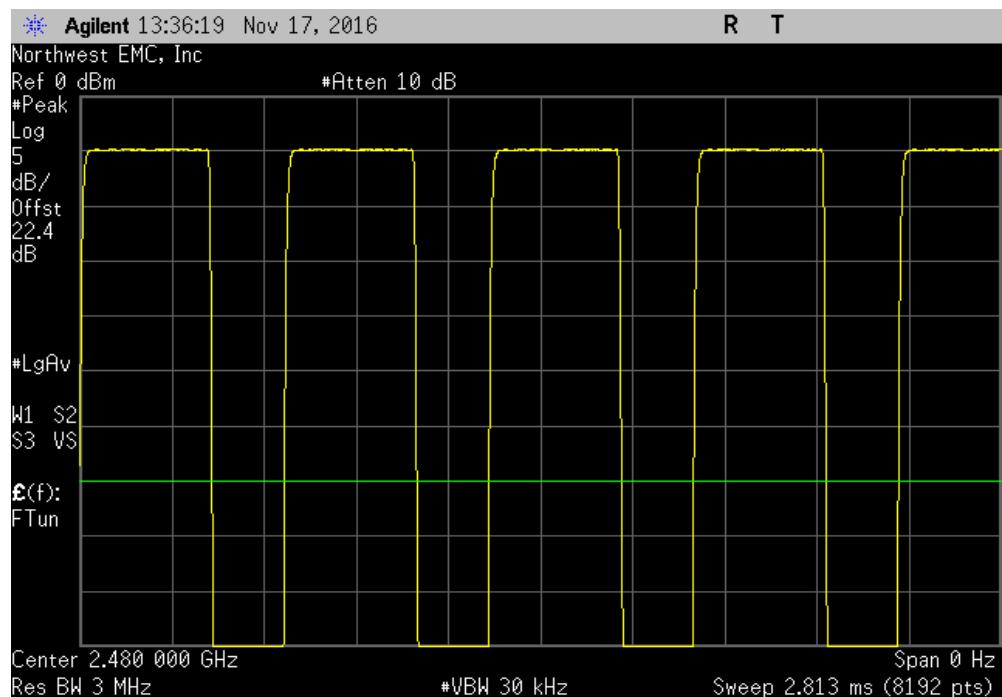


DUTY CYCLE

BLE/GFSK High Channel, 2480 MHz					
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
400.4 us	625.2 us	1	64	N/A	N/A



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



OCCUPIED BANDWIDTH

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	10/17/2014	10/17/2017
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/15/2016	9/15/2017
Block - DC	Fairview Microwave	SD3379	AMI	9/15/2016	9/15/2017
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	2/26/2017
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	3/24/2017

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

OCCUPIED BANDWIDTH

EUT:	Hearing Aid		Work Order:	STAK0074	
Serial Number:	161307836		Date:	11/17/16	
Customer:	Starkey Laboratories, Inc.		Temperature:	21.7 °C	
Attendees:	Charlie Esch		Humidity:	40.2% RH	
Project:	None		Barometric Pres.:	1006 mbar	
Tested by:	Dustin Sparks	Power:	1.45VDC	Job Site:	MN08
TEST SPECIFICATIONS			Test Method		
FCC 15.247:2016			ANSI C63.10:2013		
COMMENTS					
Transmitting BLE modulated. Battery replaced with DC power supply					
DEVIATIONS FROM TEST STANDARD					
None					
Configuration #	2	Signature			
			Value	Limit (±)	Result
			802.995 kHz	500 kHz	Pass
			781.182 kHz	500 kHz	Pass
			702.509 kHz	500 kHz	Pass

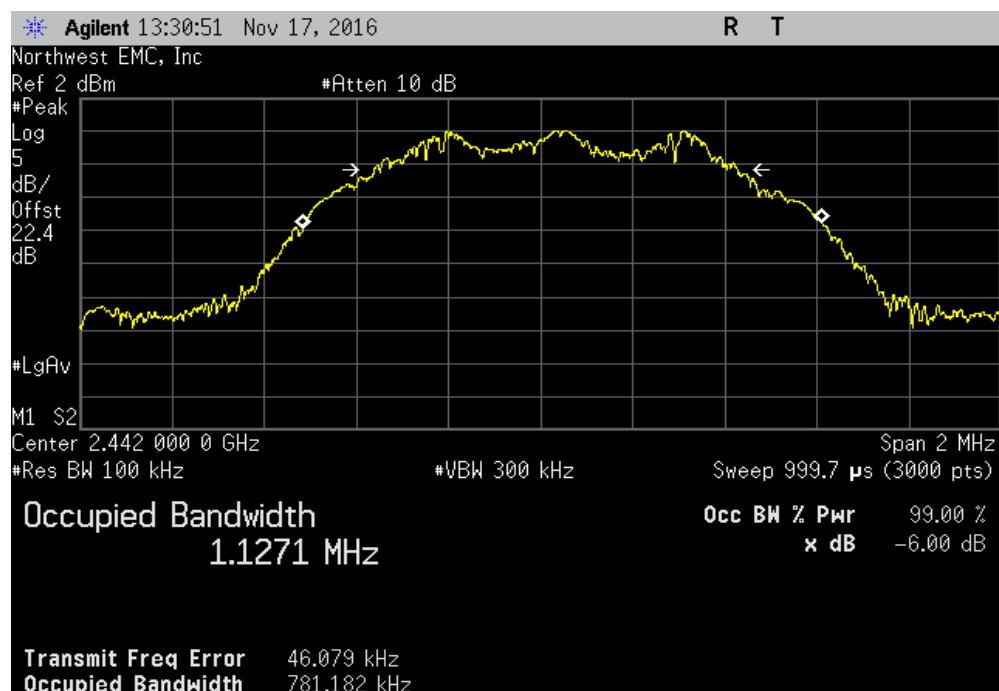
BLE/GFSK Low Channel, 2402 MHz
BLE/GFSK Mid Channel, 2442 MHz
BLE/GFSK High Channel, 2480 MHz

OCCUPIED BANDWIDTH

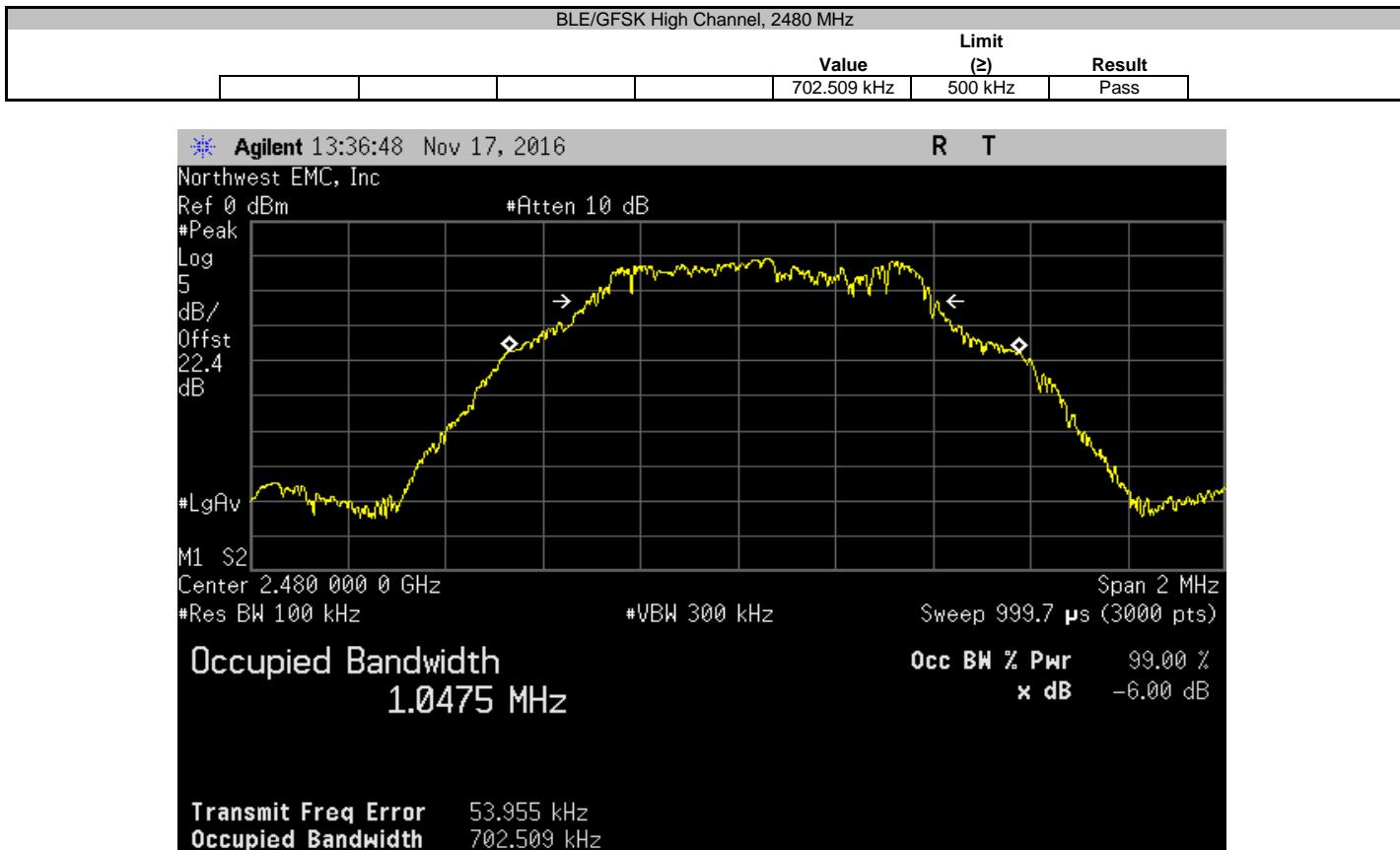
BLE/GFSK Low Channel, 2402 MHz			Value	Limit (≥)	Result
			802.995 kHz	500 kHz	Pass



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



OCCUPIED BANDWIDTH



OUTPUT POWER

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	10/17/2014	10/17/2017
Cable	ESM Cable Corp.	TTBJ141 KMMK-72	MNU	9/15/2016	9/15/2017
Block - DC	Fairview Microwave	SD3379	AMI	9/15/2016	9/15/2017
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	2/26/2017
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	3/24/2017

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..

De Facto EIRP Limit: The EUT meets the de facto EIRP limit of +36 dBm.

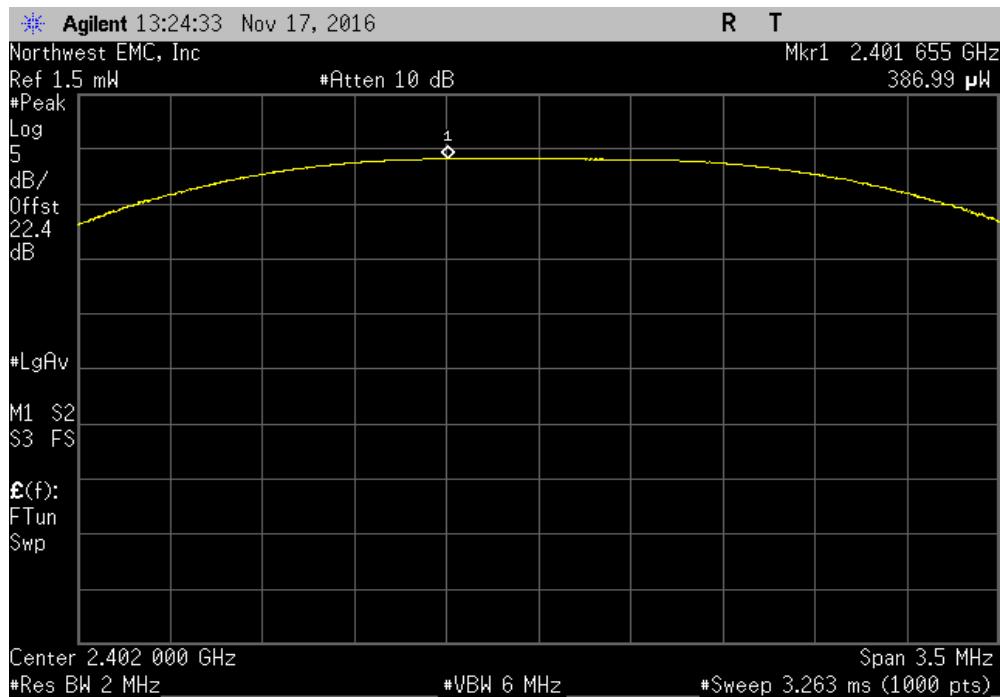
OUTPUT POWER

**NORTHWEST
EMC**

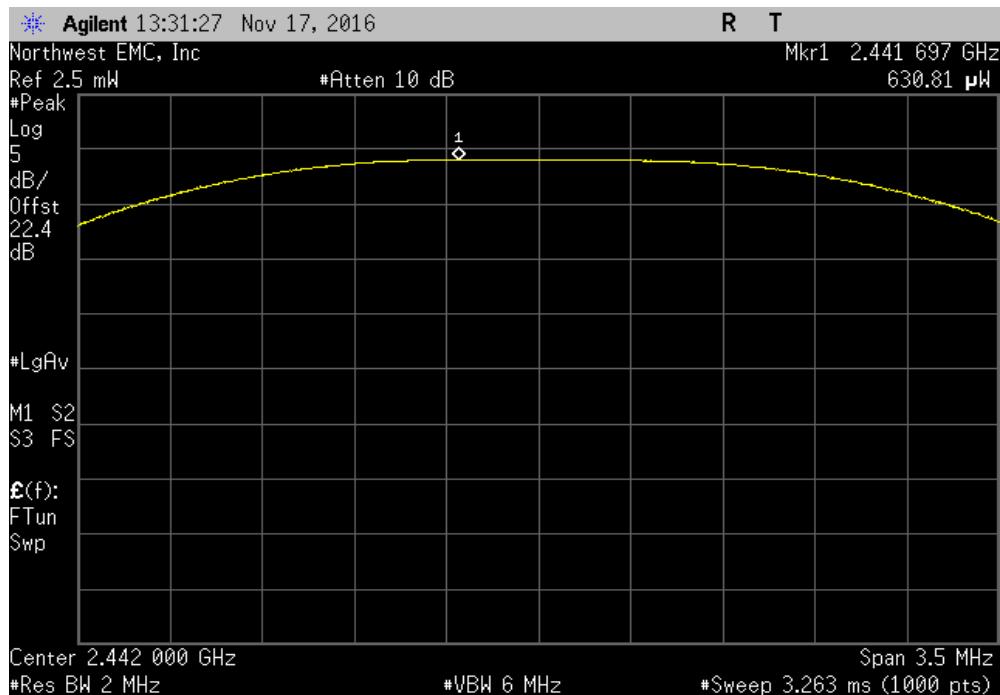
EUT:	Hearing Aid		Work Order:	STAK0074
Serial Number:	161307836		Date:	11/17/16
Customer:	Starkey Laboratories, Inc.		Temperature:	21.6 °C
Attendees:	Charlie Esch		Humidity:	40.3% RH
Project:	None		Barometric Pres.:	1007 mbar
Tested by:	Dustin Sparks		Job Site:	MN08
TEST SPECIFICATIONS			Power:	1.45VDC
			Test Method:	
FCC 15.247:2016			ANSI C63.10:2013	
COMMENTS				
Transmitting BLE modulated. Battery replaced with DC power supply				
DEVIATIONS FROM TEST STANDARD				
None				
Configuration #	2	 <i>Dustin Sparks</i> Signature		
			Value	Limit
			386.99 μ W	(<)
			630.812 μ W	1 W
			929.6 μ W	Pass
			1.45 W	Pass
			2.12 W	Pass
			2.75 W	Pass
			3.38 W	Pass
			4.01 W	Pass
			4.64 W	Pass
			5.27 W	Pass
			5.9 W	Pass
			6.53 W	Pass
			7.16 W	Pass
			7.79 W	Pass
			8.42 W	Pass
			9.05 W	Pass
			9.68 W	Pass
			10.31 W	Pass
			10.94 W	Pass
			11.57 W	Pass
			12.2 W	Pass
			12.83 W	Pass
			13.46 W	Pass
			14.09 W	Pass
			14.72 W	Pass
			15.35 W	Pass
			15.98 W	Pass
			16.61 W	Pass
			17.24 W	Pass
			17.87 W	Pass
			18.5 W	Pass
			19.13 W	Pass
			19.76 W	Pass
			20.39 W	Pass
			21.02 W	Pass
			21.65 W	Pass
			22.28 W	Pass
			22.91 W	Pass
			23.54 W	Pass
			24.17 W	Pass
			24.8 W	Pass
			25.43 W	Pass
			26.06 W	Pass
			26.69 W	Pass
			27.32 W	Pass
			27.95 W	Pass
			28.58 W	Pass
			29.21 W	Pass
			29.84 W	Pass
			30.47 W	Pass
			31.1 W	Pass
			31.73 W	Pass
			32.36 W	Pass
			32.99 W	Pass
			33.62 W	Pass
			34.25 W	Pass
			34.88 W	Pass
			35.51 W	Pass
			36.14 W	Pass
			36.77 W	Pass
			37.4 W	Pass
			38.03 W	Pass
			38.66 W	Pass
			39.29 W	Pass
			39.92 W	Pass
			40.55 W	Pass
			41.18 W	Pass
			41.81 W	Pass
			42.44 W	Pass
			43.07 W	Pass
			43.7 W	Pass
			44.33 W	Pass
			44.96 W	Pass
			45.59 W	Pass
			46.22 W	Pass
			46.85 W	Pass
			47.48 W	Pass
			48.11 W	Pass
			48.74 W	Pass
			49.37 W	Pass
			50.0 W	Pass
			50.63 W	Pass
			51.26 W	Pass
			51.89 W	Pass
			52.52 W	Pass
			53.15 W	Pass
			53.78 W	Pass
			54.41 W	Pass
			55.04 W	Pass
			55.67 W	Pass
			56.3 W	Pass
			56.93 W	Pass
			57.56 W	Pass
			58.19 W	Pass
			58.82 W	Pass
			59.45 W	Pass
			60.08 W	Pass
			60.71 W	Pass
			61.34 W	Pass
			61.97 W	Pass
			62.6 W	Pass
			63.23 W	Pass
			63.86 W	Pass
			64.49 W	Pass
			65.12 W	Pass
			65.75 W	Pass
			66.38 W	Pass
			66.91 W	Pass
			67.54 W	Pass
			68.17 W	Pass
			68.8 W	Pass
			69.43 W	Pass
			69.96 W	Pass
			70.59 W	Pass
			71.22 W	Pass
			71.85 W	Pass
			72.48 W	Pass
			73.11 W	Pass
			73.74 W	Pass
			74.37 W	Pass
			74.9 W	Pass
			75.53 W	Pass
			76.16 W	Pass
			76.79 W	Pass
			77.42 W	Pass
			78.05 W	Pass
			78.68 W	Pass
			79.31 W	Pass
			79.94 W	Pass
			80.57 W	Pass
			81.2 W	Pass
			81.83 W	Pass
			82.46 W	Pass
			83.09 W	Pass
			83.72 W	Pass
			84.35 W	Pass
			84.98 W	Pass
			85.61 W	Pass
			86.24 W	Pass
			86.87 W	Pass
			87.5 W	Pass
			88.13 W	Pass
			88.76 W	Pass
			89.39 W	Pass
			89.92 W	Pass
			90.55 W	Pass
			91.18 W	Pass
			91.81 W	Pass
			92.44 W	Pass
			93.07 W	Pass
			93.7 W	Pass
			94.33 W	Pass
			94.96 W	Pass
			95.59 W	Pass
			96.22 W	Pass
			96.85 W	Pass
			97.48 W	Pass
			98.11 W	Pass
			98.74 W	Pass
			99.37 W	Pass
			99.9 W	Pass
			100.53 W	Pass
			101.16 W	Pass
			101.79 W	Pass
			102.42 W	Pass
			103.05 W	Pass
			103.68 W	Pass
			104.31 W	Pass
			104.94 W	Pass
			105.57 W	Pass
			106.2 W	Pass
			106.83 W	Pass
			107.46 W	Pass
			108.09 W	Pass
			108.72 W	Pass
			109.35 W	Pass
			110.98 W	Pass
			111.61 W	Pass
			112.24 W	Pass
			112.87 W	Pass
			113.5 W	Pass
			114.13 W	Pass
			114.76 W	Pass
			115.39 W	Pass
			116.02 W	Pass
			116.65 W	Pass
			117.28 W	Pass
			117.91 W	Pass
			118.54 W	Pass
			119.17 W	Pass
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			122.32 W	Pass
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			126.73 W	Pass
			127.36 W	Pass
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			128.62 W	Pass
			129.25 W	Pass
			129.88 W	Pass
			130.51 W	Pass
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			131.77 W	Pass
			132.4 W	Pass
			133.03 W	Pass
			133.66 W	Pass
			134.29 W	Pass
			134.92 W	Pass
			135.55 W	Pass
			136.18 W	Pass
			136.81 W	Pass
			137.44 W	Pass
			138.07 W	Pass
			138.7 W	Pass
			139.33 W	Pass
			139.96 W	Pass
			140.59 W	Pass
			141.22 W	Pass
			141.85 W	Pass
			142.48 W	Pass
			143.11 W	Pass
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			144.37 W	Pass
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			147.42 W	Pass
			148.05 W	Pass
			148.68 W	Pass
			149.31 W	Pass
			149.94 W	Pass
			150.57 W	Pass
			151.2 W	Pass
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			155.61 W	Pass
			156.24 W	Pass
			156.87 W	Pass
			157.5 W	Pass
			158.13 W	Pass
			158.76 W	Pass
			159.39 W	Pass
			159.92 W	Pass
			160.55 W	Pass
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			161.81 W	Pass
			162.44 W	Pass
			163.07 W	Pass
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			164.33 W	Pass
			164.96 W	Pass
			165.59 W	Pass
			166.22 W	Pass
			166.85 W	Pass
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			193.11 W	Pass
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			194.37 W	Pass
			194.9 W	Pass
			195.53 W	Pass
			196.16 W	Pass
			196.79 W	Pass
			197.42 W	Pass
			198.05 W	Pass
			198.68 W	Pass
			199.31 W	Pass
			199.94 W	Pass
			200.57 W	Pass
			201.2 W	Pass
			201.83 W	Pass
			202.46 W	Pass
			203.09 W	Pass
			203.72 W	Pass
			204.35 W	Pass
			204.98 W	Pass
			205.61 W	Pass
			206.24 W	Pass
			206.87 W	Pass
			207.5 W	Pass
			208.13 W	Pass
			208.76 W	Pass
			209.39 W	Pass
			209.92 W	Pass
			210.55 W	Pass
			211.18 W	Pass
			211.81 W	Pass
			212.44 W	Pass
			213.07 W	Pass
			213.7 W	Pass
			214.33 W	Pass
			214.96 W	Pass
			215.59 W	Pass
			216.22 W	Pass
			216.85 W	Pass
			217.48 W	Pass
			218.11 W	Pass
			218.74 W	Pass
			219.37 W	Pass
			219.9 W	Pass
			220.53 W	Pass
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			221.79 W	Pass
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			223.05 W	Pass
			223.68 W	Pass
			224.31 W	Pass
			224.94 W	Pass
			225.57 W	Pass
			226.2 W	Pass
			226.83 W	Pass
			227.46 W	Pass
			228.09 W	Pass
			228.72 W	Pass
			229.35 W	Pass
			229.98 W	Pass
			230.61 W	Pass
			231.24 W	Pass
			231.87 W	Pass
			232.5 W	Pass
			233.13 W	Pass
			233.76 W	Pass
			234.39 W	Pass
			234.92 W	Pass
			235.55 W	Pass
			236.18 W	Pass
			236.81 W	Pass
			237.44 W	Pass
			238.07 W	Pass
			238.7 W	Pass
			239.33 W	Pass
			239.96 W	Pass
			240.59 W	Pass
			241.22 W	Pass
			241.85 W	Pass
			242.48 W	Pass
			243.11 W	Pass
			243.74 W	Pass
			244.37 W	Pass
			244.9 W	Pass
			245.53 W	Pass
			246.16 W	Pass
			246.79 W	Pass
			247.42 W	Pass
			248.05 W	Pass
			248.68 W	Pass
			249.31 W	Pass
			249.94 W	Pass
			250.57 W	Pass
			251.2 W	Pass

OUTPUT POWER

BLE/GFSK Low Channel, 2402 MHz		
	Value	Limit (<)
	386.99 uW	1 W

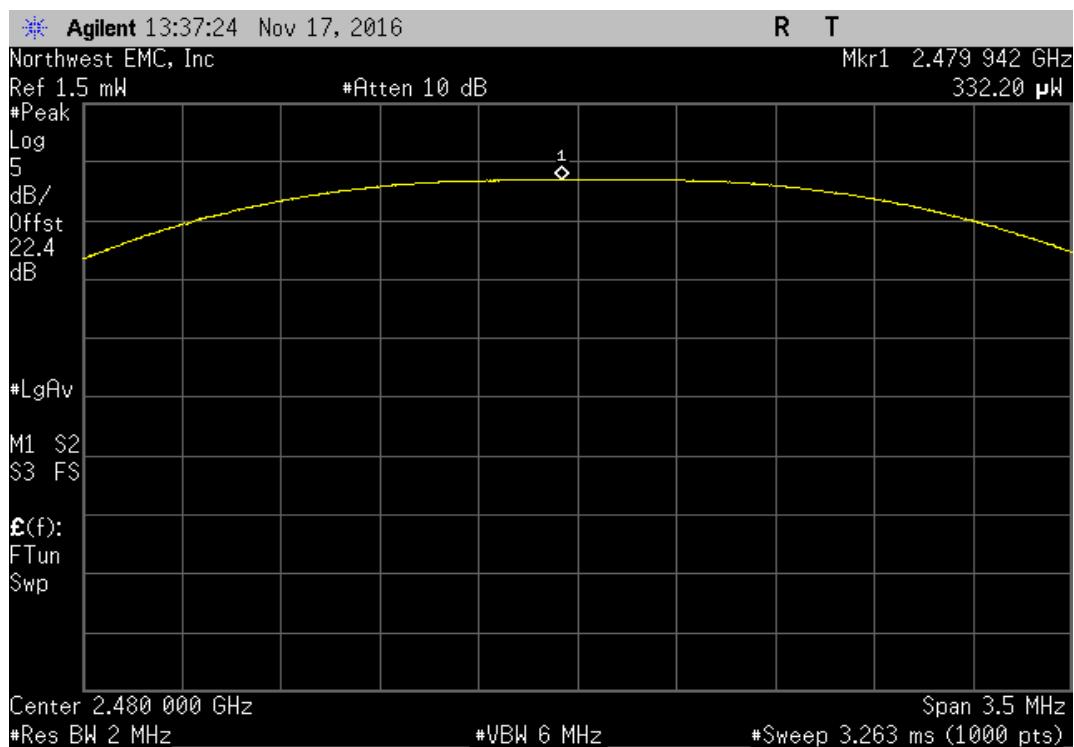


BLE/GFSK Mid Channel, 2442 MHz		
	Value	Limit (<)
	630.812 uW	1 W



OUTPUT POWER

BLE/GFSK High Channel, 2480 MHz				Value	Limit	Result
				332.2 μ W	(≤) 1 W	Pass



POWER SPECTRAL DENSITY

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	10/17/2017
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/15/2016	9/15/2017
Block - DC	Fairview Microwave	SD3379	AMI	9/15/2016	9/15/2017
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	2/26/2017
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	3/24/2017

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.

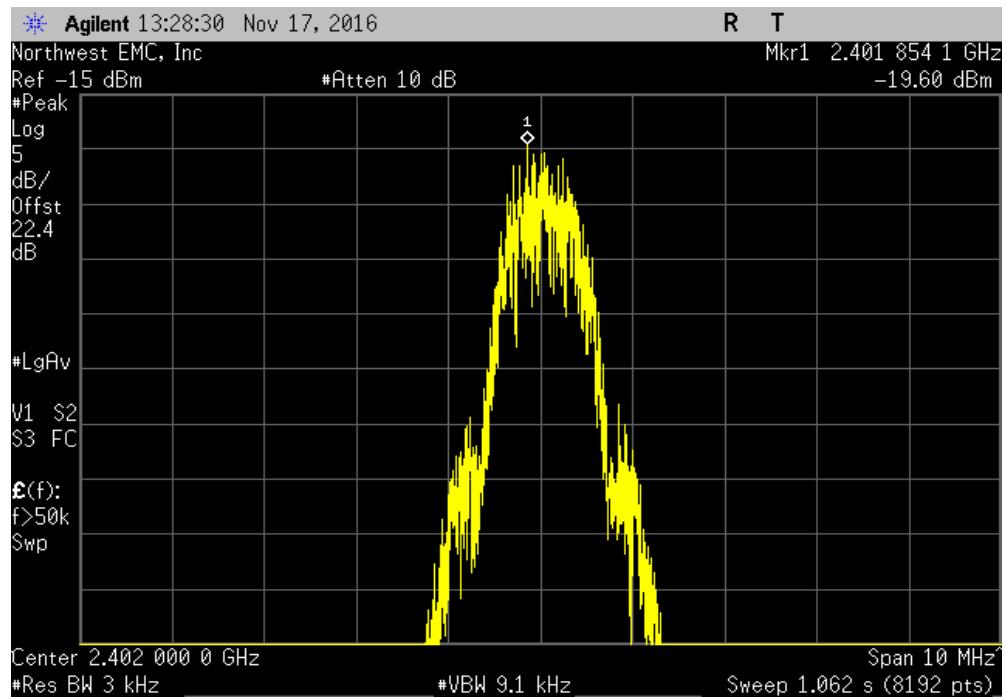
POWER SPECTRAL DENSITY

EUT:	Hearing Aid		Work Order:	STAK0074	
Serial Number:	161307836		Date:	11/17/16	
Customer:	Starkey Laboratories, Inc.		Temperature:	21.5 °C	
Attendees:	Charlie Esch		Humidity:	40.5% RH	
Project:	None		Barometric Pres.:	1007 mbar	
Tested by:	Dustin Sparks	Power:	1.45VDC	Job Site:	MN08
TEST SPECIFICATIONS		Test Method			
FCC 15.247:2016		ANSI C63.10:2013			
COMMENTS					
Transmitting BLE modulated. Battery replaced with DC power supply					
DEVIATIONS FROM TEST STANDARD					
None					
Configuration #	2	Signature			
			Value	Limit	Results
			dBm/3kHz	< dBm/3kHz	
			-19.599	8	Pass
			-17.592	8	Pass
			-17.968	8	Pass

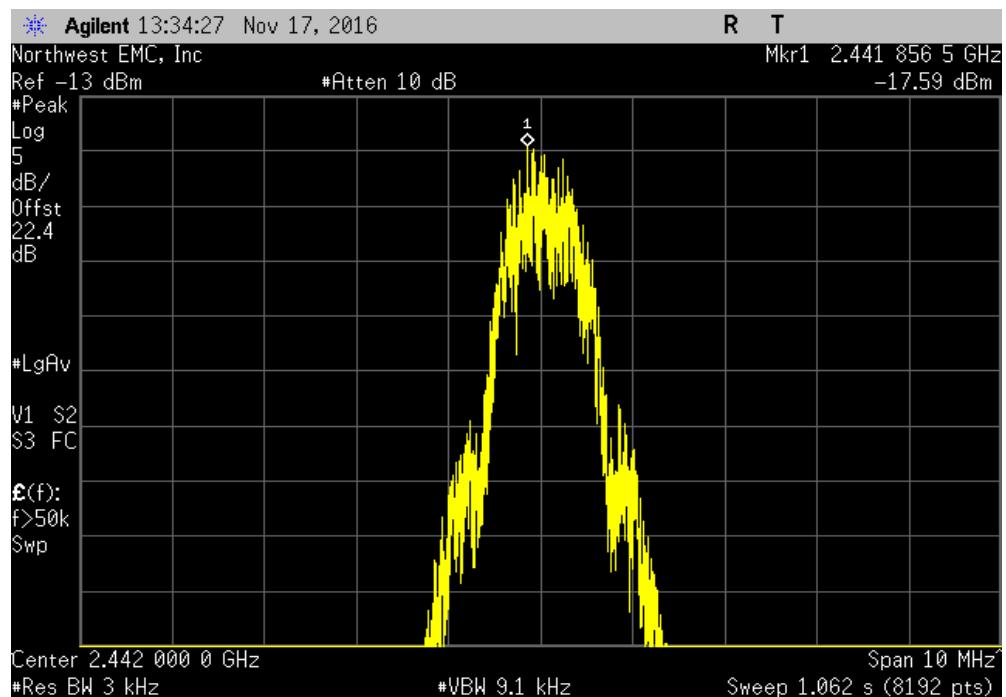
BLE/GFSK Low Channel, 2402 MHz
BLE/GFSK Mid Channel, 2442 MHz
BLE/GFSK High Channel, 2480 MHz

POWER SPECTRAL DENSITY

BLE/GFSK Low Channel, 2402 MHz			
	Value dBm/3kHz	Limit < dBm/3kHz	Results
	-19.599	8	Pass

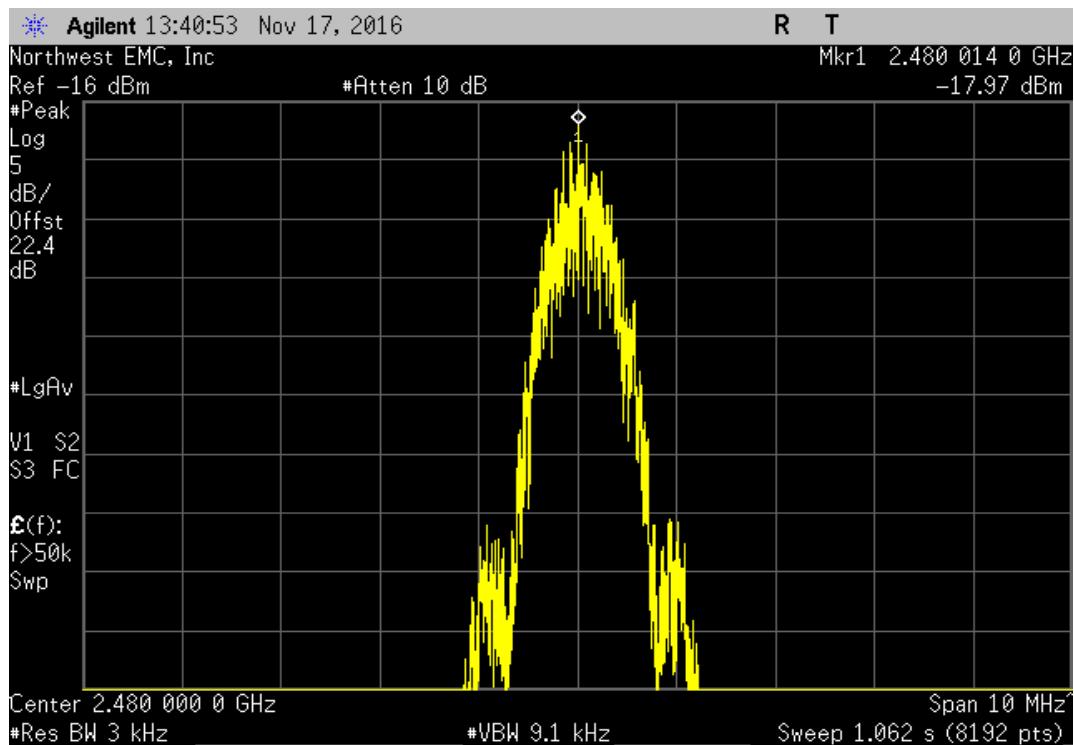


BLE/GFSK Mid Channel, 2442 MHz			
	Value dBm/3kHz	Limit < dBm/3kHz	Results
	-17.592	8	Pass



POWER SPECTRAL DENSITY

BLE/GFSK High Channel, 2480 MHz				Value	Limit	Results
				dBm/3kHz	< dBm/3kHz	
				-17.968	8	Pass



BAND EDGE COMPLIANCE

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	10/17/2017
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/15/2016	9/15/2017
Block - DC	Fairview Microwave	SD3379	AMI	9/15/2016	9/15/2017
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	2/26/2017
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	3/24/2017

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.

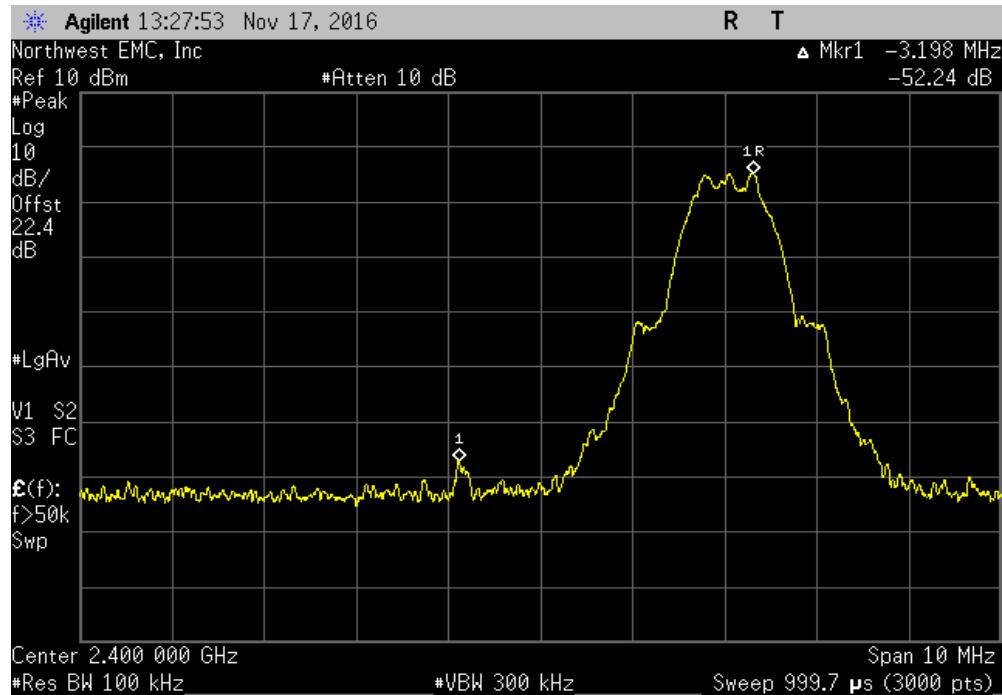
The spectrum was scanned below the lower band edge and above the higher band edge.

BAND EDGE COMPLIANCE

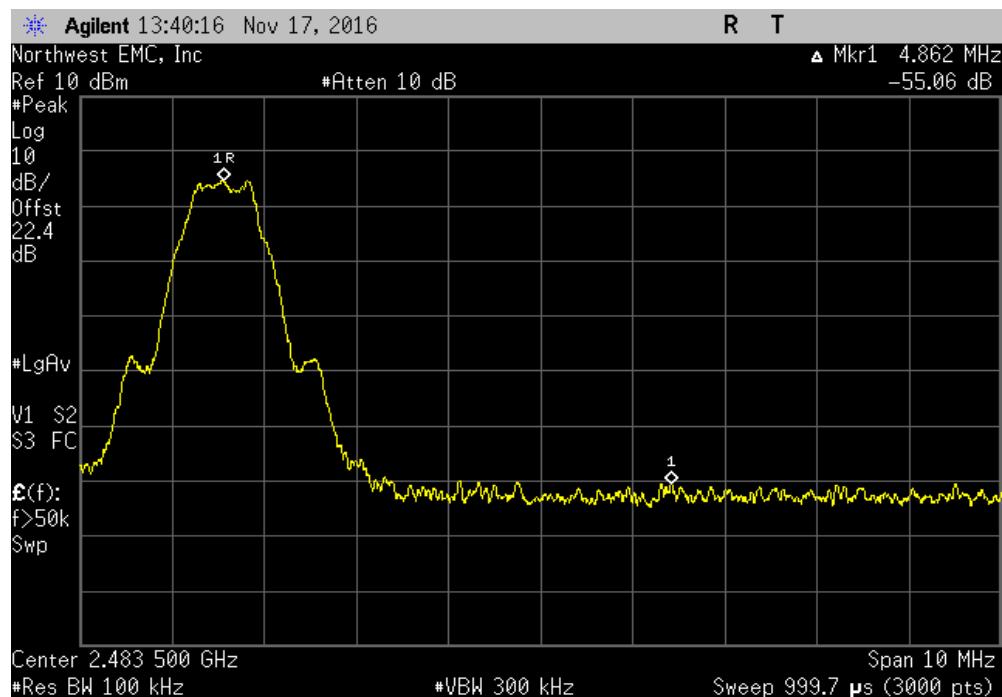
EUT:	Hearing Aid		Work Order:	STAK0074	
Serial Number:	161307836		Date:	11/17/16	
Customer:	Starkey Laboratories, Inc.		Temperature:	22.1 °C	
Attendees:	Charlie Esch		Humidity:	39.5% RH	
Project:	None		Barometric Pres.:	1006 mbar	
Tested by:	Dustin Sparks	Power:	1.45VDC	Job Site:	MN08
TEST SPECIFICATIONS			Test Method		
FCC 15.247:2016			ANSI C63.10:2013		
COMMENTS					
Transmitting BLE modulated. Battery replaced with DC power supply					
DEVIATIONS FROM TEST STANDARD					
None					
Configuration #	2	Signature			
			Value (dBc)	Limit ≤ (dBc)	Result
			-52.24	-20	Pass
			-55.06	-20	Pass
BLE/GFSK Low Channel, 2402 MHz					
BLE/GFSK High Channel, 2480 MHz					

BAND EDGE COMPLIANCE

BLE/GFSK Low Channel, 2402 MHz			
	Value (dBc)	Limit ≤ (dBc)	Result
	-52.24	-20	Pass



BLE/GFSK High Channel, 2480 MHz			
	Value (dBc)	Limit ≤ (dBc)	Result
	-55.06	-20	Pass



SPURIOUS CONDUCTED EMISSIONS

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	10/17/2017
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/15/2016	9/15/2017
Block - DC	Fairview Microwave	SD3379	AMI	9/15/2016	9/15/2017
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	2/26/2017
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	3/24/2017

TEST DESCRIPTION

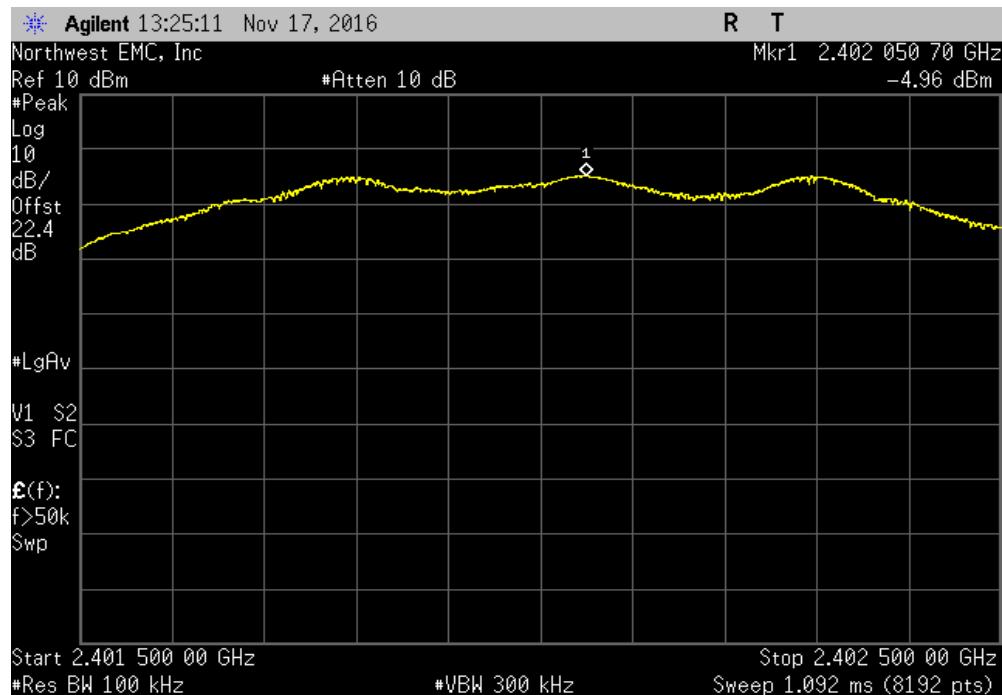
The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The spurious RF conducted emissions were measured with the EUT set to low, medium and high transmit frequencies. The EUT was transmitting at the data rate(s) listed in the datasheet. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.

SPURIOUS CONDUCTED EMISSIONS

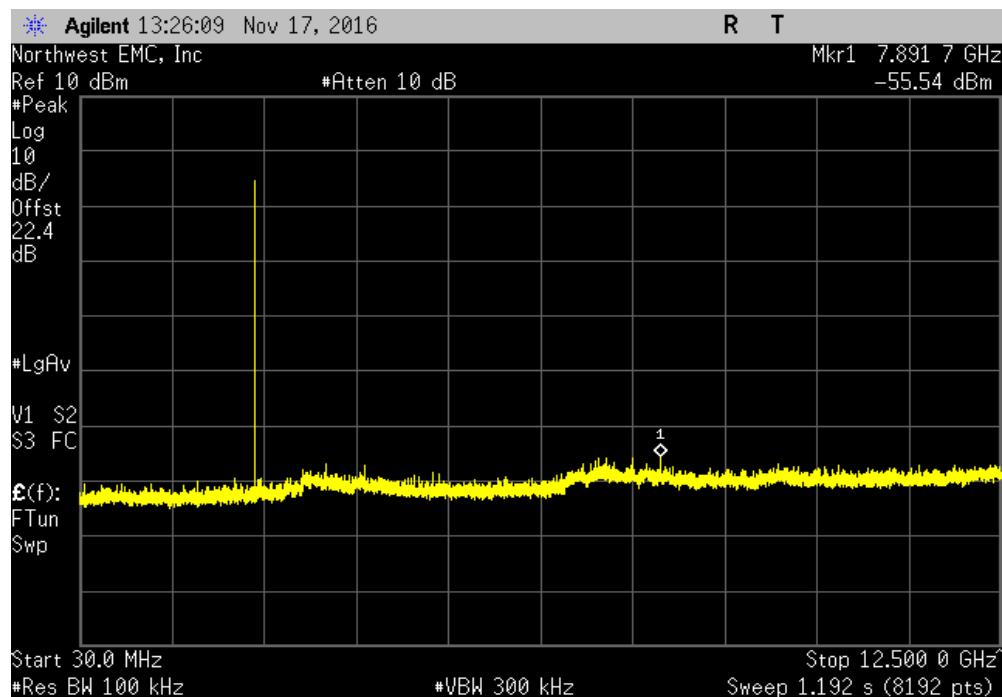
EUT:	Hearing Aid		Work Order:	STAK0074	
Serial Number:	161307836		Date:	11/17/16	
Customer:	Starkey Laboratories, Inc.		Temperature:	21.5 °C	
Attendees:	Charlie Esch		Humidity:	40.6% RH	
Project:	None		Barometric Pres.:	1007 mbar	
Tested by:	Dustin Sparks	Power:	1.45VDC	Job Site:	MN08
TEST SPECIFICATIONS		Test Method			
FCC 15.247:2016		ANSI C63.10:2013			
COMMENTS					
Transmitting BLE modulated. Battery replaced with DC power supply					
DEVIATIONS FROM TEST STANDARD					
None					
Configuration #	2	Signature			
		Frequency Range	Max Value (dBc)	Limit ≤ (dBc)	Result
BLE/GFSK Low Channel, 2402 MHz		Fundamental	N/A	N/A	N/A
BLE/GFSK Low Channel, 2402 MHz		30 MHz - 12.5 GHz	-50.58	-20	Pass
BLE/GFSK Low Channel, 2402 MHz		12.5 GHz - 25 GHz	-47.31	-20	Pass
BLE/GFSK Mid Channel, 2442 MHz		Fundamental	N/A	N/A	N/A
BLE/GFSK Mid Channel, 2442 MHz		30 MHz - 12.5 GHz	-50.99	-20	Pass
BLE/GFSK Mid Channel, 2442 MHz		12.5 GHz - 25 GHz	-49.2	-20	Pass
BLE/GFSK High Channel, 2480 MHz		Fundamental	N/A	N/A	N/A
BLE/GFSK High Channel, 2480 MHz		30 MHz - 12.5 GHz	-49.88	-20	Pass
BLE/GFSK High Channel, 2480 MHz		12.5 GHz - 25 GHz	-46.35	-20	Pass

SPURIOUS CONDUCTED EMISSIONS

Frequency Range		Max Value (dBc)	Limit \leq (dBc)	Result
Fundamental		N/A	N/A	N/A

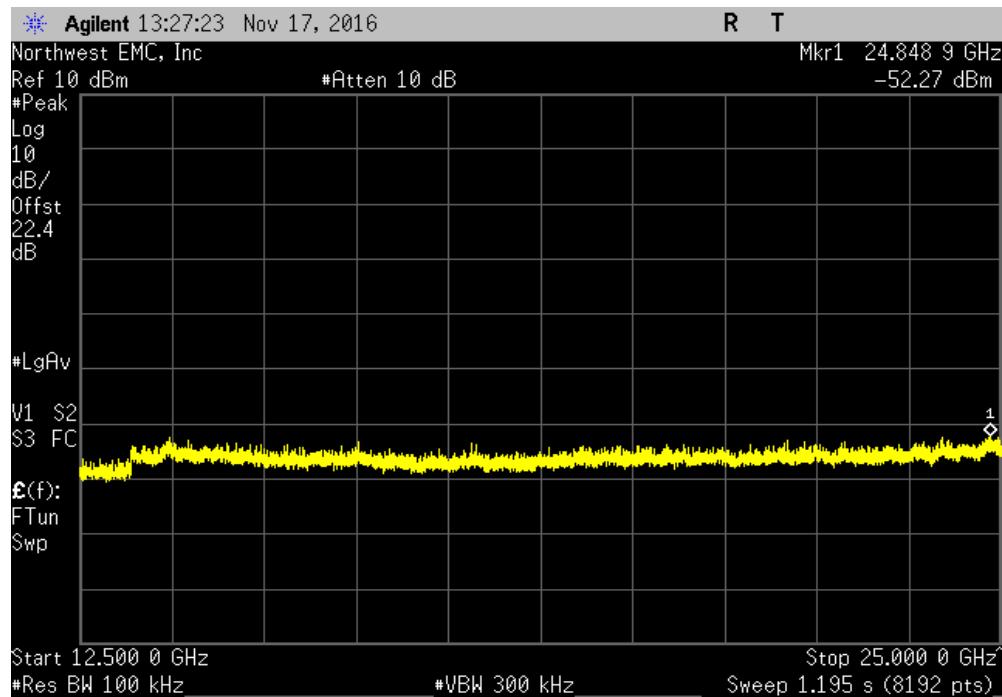


Frequency Range		Max Value (dBc)	Limit \leq (dBc)	Result
30 MHz - 12.5 GHz		-50.58	-20	Pass

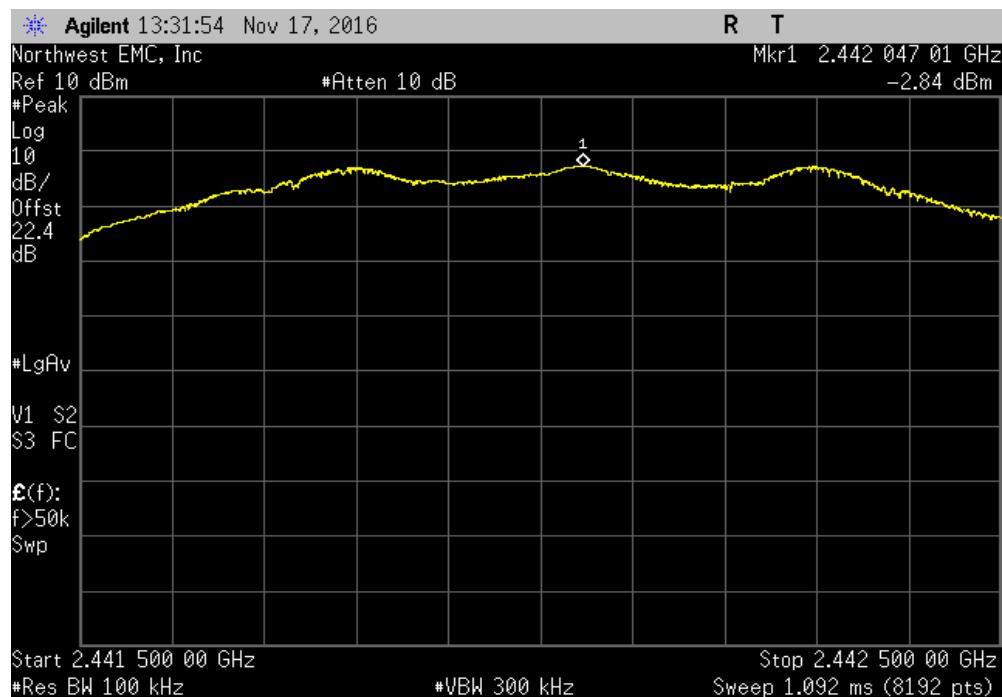


SPURIOUS CONDUCTED EMISSIONS

BLE/GFSK Low Channel, 2402 MHz					
Frequency Range		Max Value (dBc)	Limit \leq (dBc)	Result	
12.5 GHz - 25 GHz		-47.31	-20	Pass	

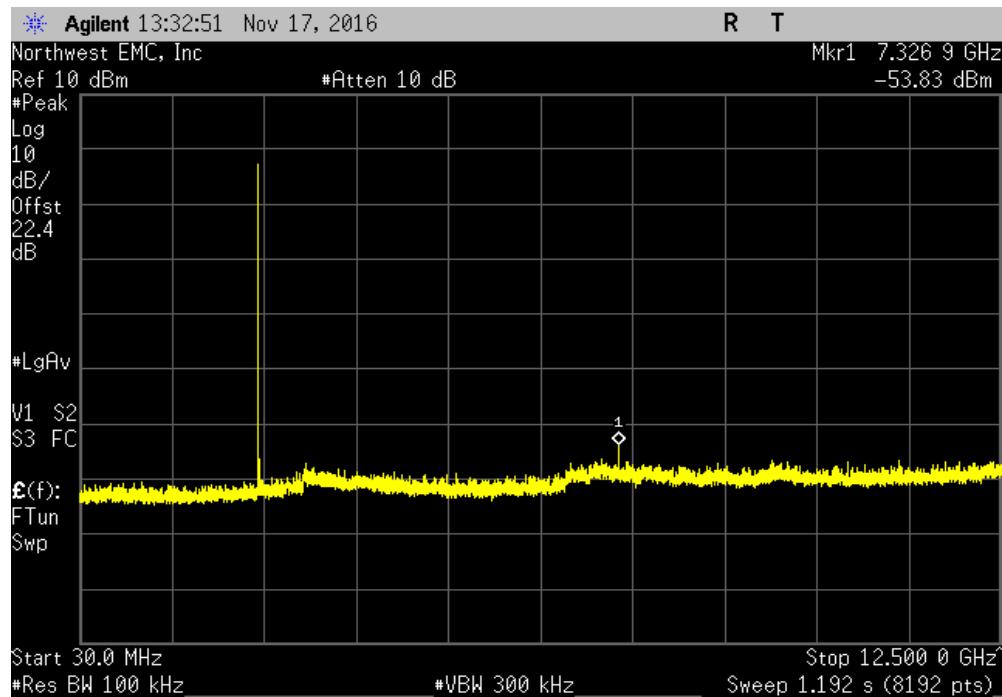


BLE/GFSK Mid Channel, 2442 MHz					
Frequency Range		Max Value (dBc)	Limit \leq (dBc)	Result	
Fundamental		N/A	N/A	N/A	

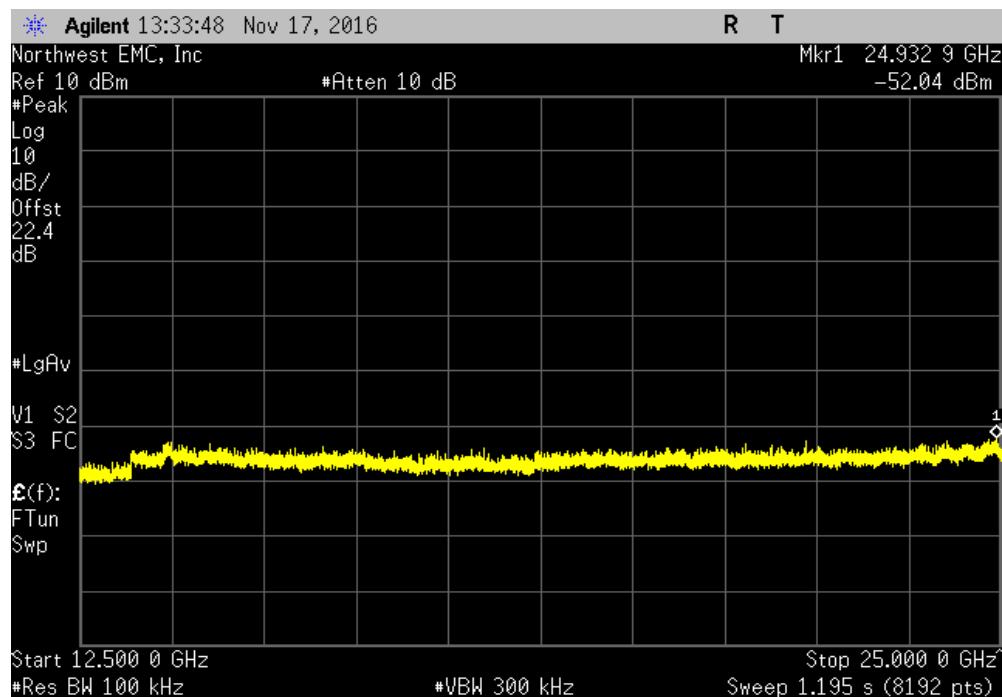


SPURIOUS CONDUCTED EMISSIONS

BLE/GFSK Mid Channel, 2442 MHz				
Frequency Range		Max Value (dBc)	Limit \leq (dBc)	Result
30 MHz - 12.5 GHz		-50.99	-20	Pass

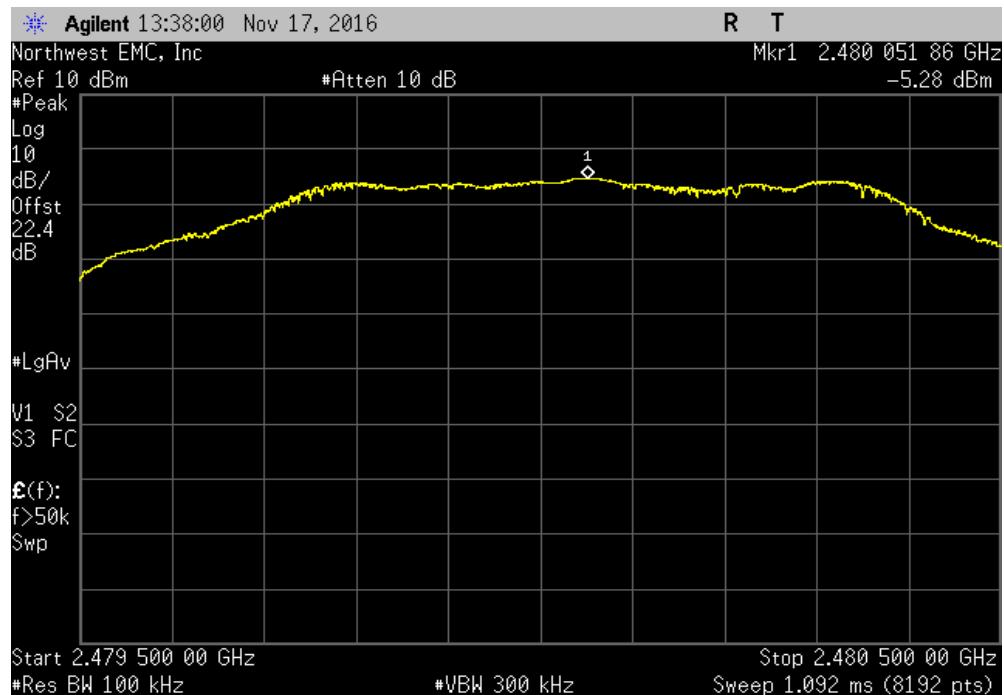


BLE/GFSK Mid Channel, 2442 MHz				
Frequency Range		Max Value (dBc)	Limit \leq (dBc)	Result
12.5 GHz - 25 GHz		-49.2	-20	Pass

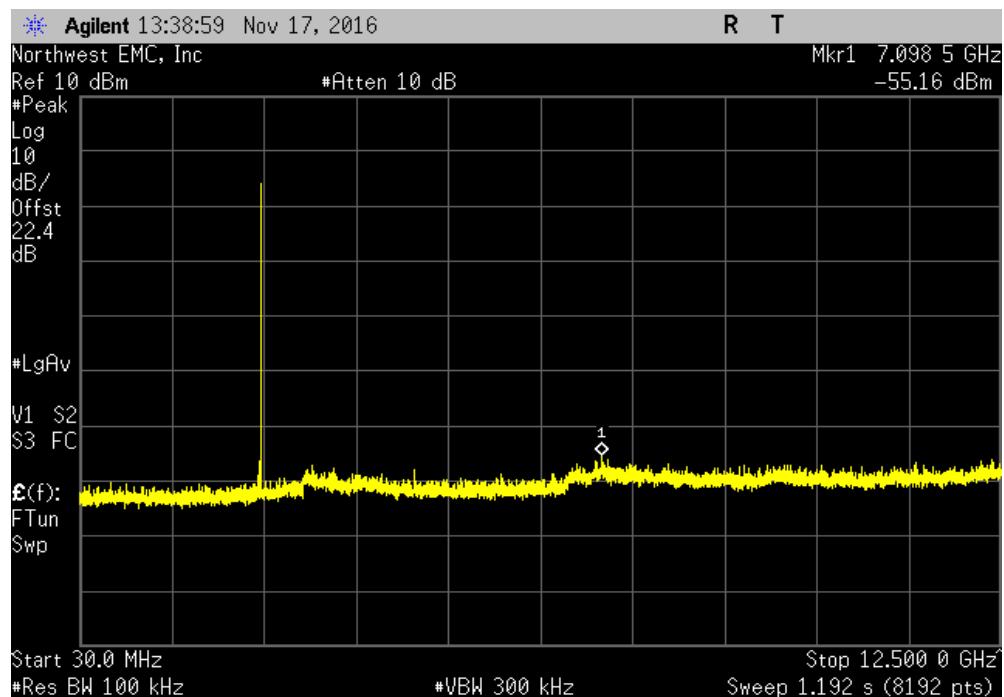


SPURIOUS CONDUCTED EMISSIONS

Frequency Range		Max Value (dBc)	Limit \leq (dBc)	Result
Fundamental		N/A	N/A	N/A



Frequency Range		Max Value (dBc)	Limit \leq (dBc)	Result
30 MHz - 12.5 GHz		-49.88	-20	Pass



SPURIOUS CONDUCTED EMISSIONS

BLE/GFSK High Channel, 2480 MHz				
Frequency Range	Max Value (dBc)	Limit ≤ (dBc)	Result	
12.5 GHz - 25 GHz	-46.35	-20	Pass	

