



Starkey Laboratories, Inc.

Hearing Aid

FCC 15.209:2018

NFMI Radio

Report # STAK0116.4



NVLAP LAB CODE: 200881-0



This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America. This Report shall not be reproduced, except in full without written approval of the laboratory.

CERTIFICATE OF TEST

Last Date of Test: April 27, 2018
Starkey Laboratories, Inc.
Model: Hearing Aid

Radio Equipment Testing

Standards

Specification	Method
FCC 15.209:2018	ANSI C63.10:2013

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	No	N/A	Not required for battery operated device.
6.4	Field Strength of Fundamental	Yes	Pass	
6.4, 6.5	Spurious Radiated Emissions	Yes	Pass	

Deviations From Test Standards

None

Approved By:



Matt Nuernberg, 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 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). Certification chambers and Open Area Test Sites are filed with ISED.

European Union

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

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:

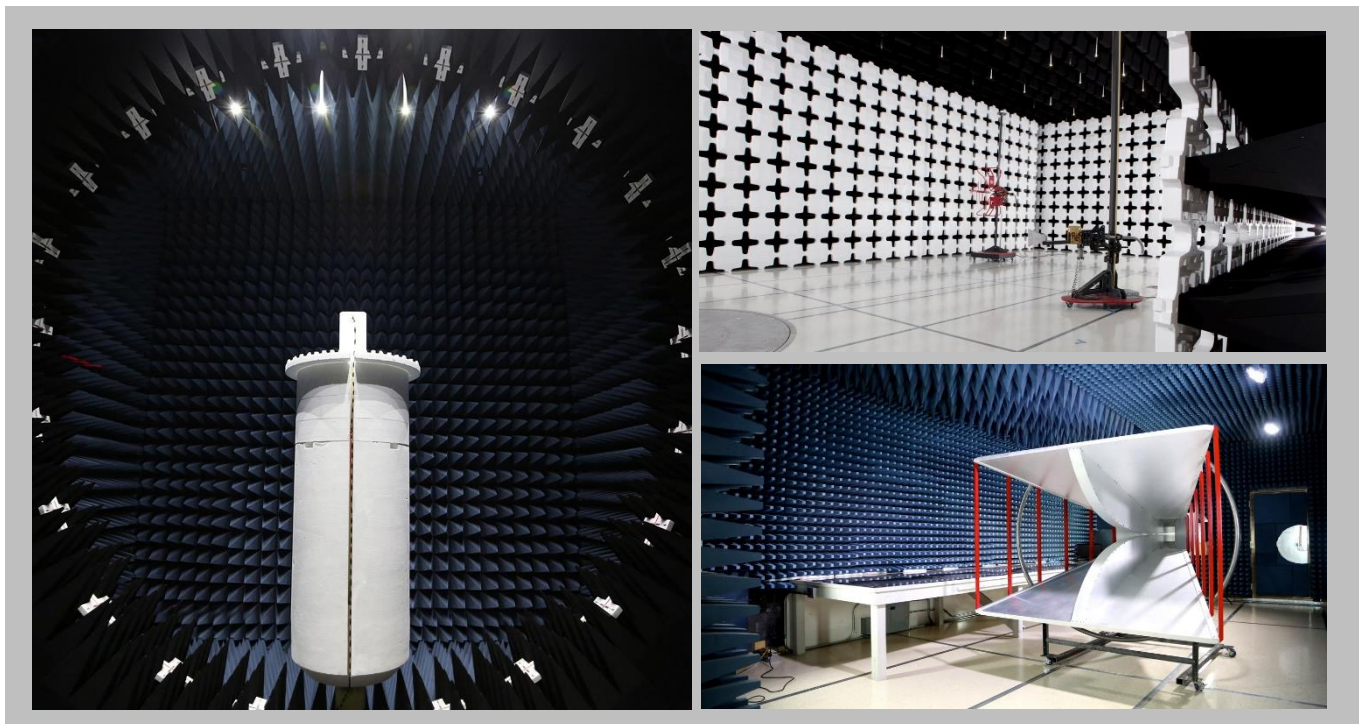
<http://portlandcustomer.element.com/ts/scope/scope.htm>

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

FACILITIES



California Labs OC01-17 41 Tesla Irvine, CA 92618 (949) 861-8918	Minnesota Labs MN01-10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	New York Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214	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: 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, 2834E-3	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/RRR, 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

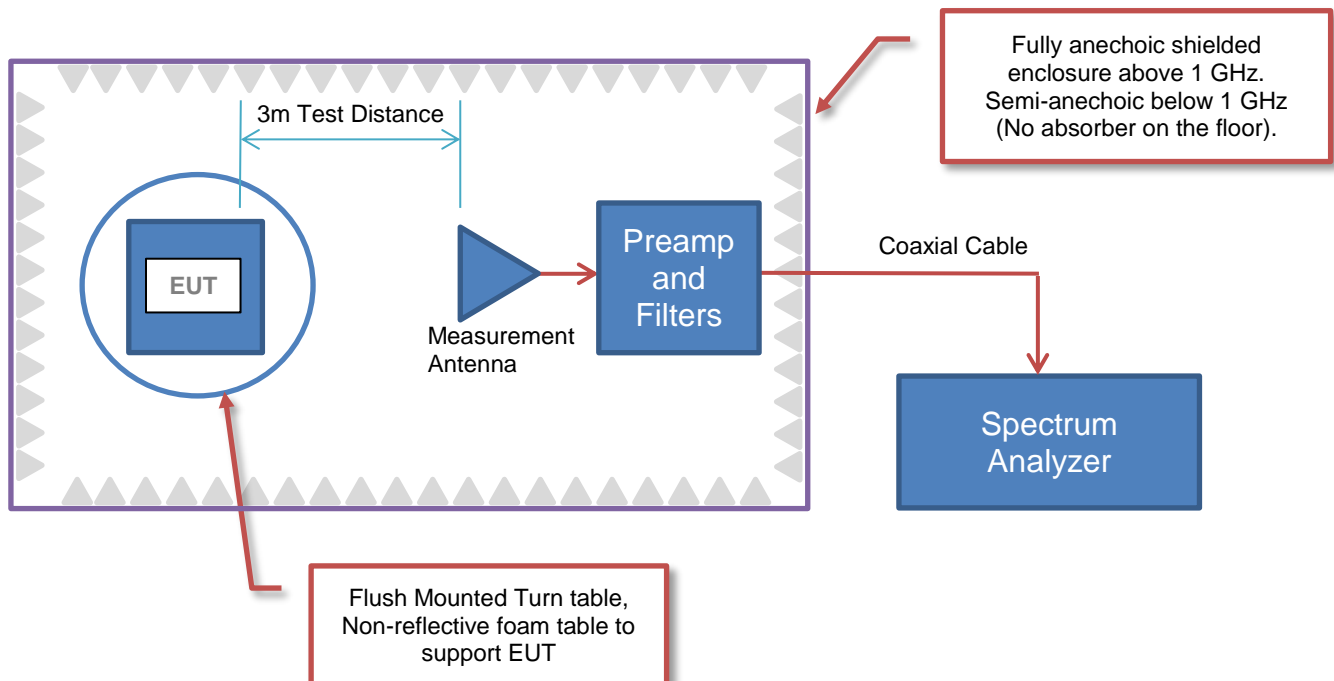
Antenna Port Conducted Measurements



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:	April 27, 2018
Last Date of Test:	April 27, 2018
Receipt Date of Samples:	April 23, 2018
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 which communicates using a 2.4 GHz Bluetooth Low Energy (BLE) radio and a 10.2 MHz Near Field Magnetic Induction (NFMI) radio.
Testing Objective:
To demonstrate compliance of the Near Field Magnetic Induction (NFMI) radio to FCC Part 15.209 specifications.

CONFIGURATIONS



Configuration STAK0116- 4

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Hearing Aid	Starkey Laboratories, Inc.	Livio ONE RIC 312	180367053
Hearing Aid	Starkey Laboratories, Inc.	Livio ONE RIC 312	180367054

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop	Lenovo	ThinkPad T430	11306
Power Supply (Laptop)	Lenovo	ADLX90NCT2A	11S45N0311Z1ZLZ633M0T4

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
USB Cable (Bluetooth Dongle Dock)	No	1.8m	No	Bluetooth Dongle Dock	Laptop
AC Cable (Laptop)	No	1.0m	No	AC Mains	Power Supply (Laptop)
DC Cable (Laptop)	No	1.8m	Yes	Power Supply (Laptop)	Laptop

MODIFICATIONS



Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	4/27/2018	Field Strength of Fundamental	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
2	4/27/2018	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

FIELD STRENGTH OF FUNDAMENTAL



PSA-ESCI 2017.12.19

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 NFMI (10.281 MHz) - SN 180367053 streaming to SN 180367054.

POWER SETTINGS INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

STAK0116 - 4

FREQUENCY RANGE INVESTIGATED

Start Frequency	10 MHz	Stop Frequency	10.5 MHz
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SAMPLE CALCULATIONS

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Cable	ESM Cable Corp.	Bilog Cables	MNH	9-Nov-2017	12 mo
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFD	2-Aug-2017	12 mo
Antenna - Loop	ETS Lindgren	6502	AOB	16-May-2017	24 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 antennas to be used with the EUT were tested. The EUT was continuously transmitting while set to the channel specified.

The fundamental carrier of the EUT was maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A calibrated active loop antenna was used for this test in order to provide sufficient measurement sensitivity. The center of the loop antenna was maintained at 1m above the ground plane during the testing.

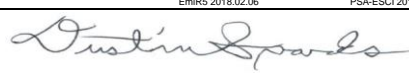
Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

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

As outlined in 15.209(e), 15.31(f)(2), and RSS-GEN, 6.4, measurements may be performed at a distance closer than what is specified with the limit. The limit at the specified distance is shown on the data sheet. Measurements are made at a closer distance and the data is adjusted using a distance correction factor of 40dB/decade for comparison to the limit.

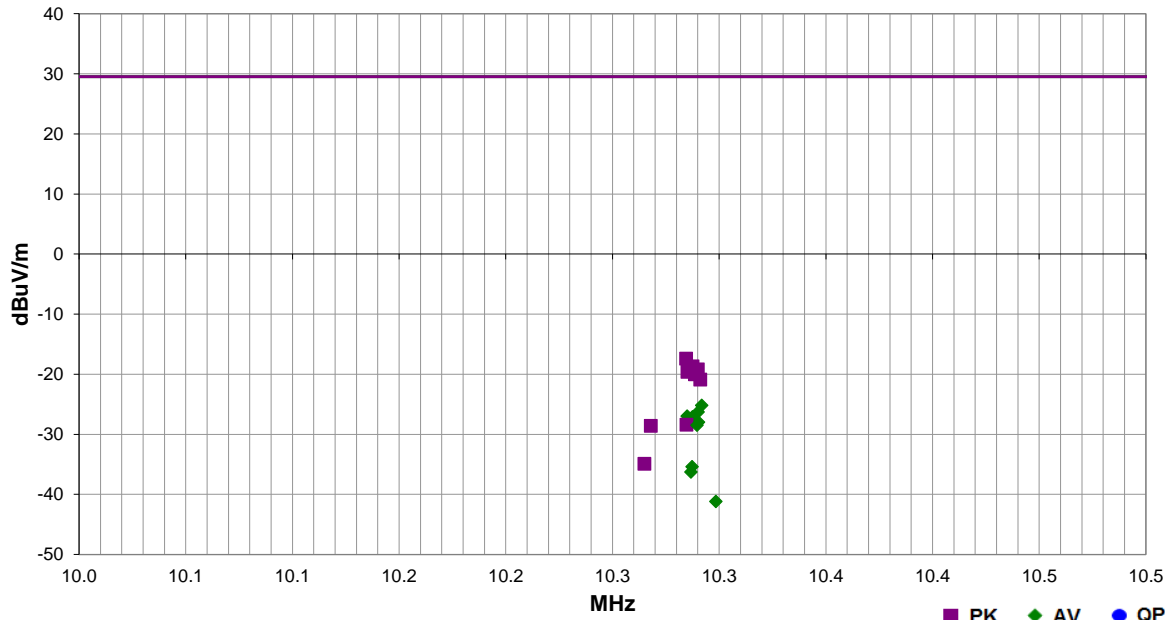
FIELD STRENGTH OF FUNDAMENTAL



Work Order:	STAK0116	Date:	27-Apr-2018	<div>EmiR5 2018.02.06</div> <div>PSA-ESCI 2017.12.19</div> <div></div>	
Project:	None	Temperature:	21.6 °C		
Job Site:	MN05	Humidity:	28% RH		
Serial Number:	180367053, 180367054	Barometric Pres.:	1009 mbar		
EUT:	Hearing Aid			Tested by:	Dustin Sparks
Configuration:	4				
Customer:	Starkey Laboratories, Inc.				
Attendees:	Charlie Esch				
EUT Power:	Battery				
Operating Mode:	Transmitting NFMI (10.281 MHz) - SN 180367053 streaming to SN 180367054.				
Deviations:	None				
Comments:	None				

Test Specifications	Test Method
FCC 15.209:2018	ANSI C63.10:2013

Run #	11	Test Distance (m)	1	Antenna Height(s)	1(m)	Results	Pass
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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
10.285	30.3	11.4	1.0	271.0	1.0	0.0	Par to EUT	PK	-59.1	-17.4	29.5	-46.9	EUT vertical
10.288	29.0	11.4	1.0	264.0	1.0	0.0	Par to EUT	PK	-59.1	-18.7	29.5	-48.2	EUT horizontal
10.290	28.5	11.4	1.0	333.9	1.0	0.0	Par to GND	PK	-59.1	-19.2	29.5	-48.7	EUT on side
10.285	28.1	11.4	1.0	175.0	1.0	0.0	Perp to GND	PK	-59.1	-19.6	29.5	-49.1	EUT vertical
10.289	27.7	11.4	1.0	173.1	1.0	0.0	Perp to GND	PK	-59.1	-20.0	29.5	-49.5	EUT horizontal
10.291	26.8	11.4	1.0	27.0	1.0	0.0	Par to EUT	PK	-59.1	-20.9	29.5	-50.4	EUT on side
10.292	22.5	11.4	1.0	271.0	1.0	0.0	Par to EUT	AV	-59.1	-25.2	29.5	-54.7	EUT vertical
10.290	21.4	11.4	1.0	264.0	1.0	0.0	Par to EUT	AV	-59.1	-26.3	29.5	-55.8	EUT horizontal
10.285	20.7	11.4	1.0	175.0	1.0	0.0	Perp to GND	AV	-59.1	-27.0	29.5	-56.5	EUT vertical
10.288	20.6	11.4	1.0	333.9	1.0	0.0	Par to GND	AV	-59.1	-27.1	29.5	-56.6	EUT on side
10.290	19.7	11.4	1.0	173.1	1.0	0.0	Perp to GND	AV	-59.1	-28.0	29.5	-57.5	EUT horizontal
10.285	19.3	11.4	1.0	231.0	1.0	0.0	Par to GND	PK	-59.1	-28.4	29.5	-57.9	EUT vertical
10.290	19.2	11.4	1.0	27.0	1.0	0.0	Par to EUT	AV	-59.1	-28.5	29.5	-58.0	EUT on side
10.268	19.1	11.4	1.0	40.1	1.0	0.0	Par to GND	PK	-59.1	-28.6	29.5	-58.1	EUT horizontal
10.265	12.8	11.4	1.0	235.0	1.0	0.0	Perp to GND	PK	-59.1	-34.9	29.5	-64.4	EUT on side
10.287	12.3	11.4	1.0	40.1	1.0	0.0	Par to GND	AV	-59.1	-35.4	29.5	-64.9	EUT horizontal
10.287	11.4	11.4	1.0	231.0	1.0	0.0	Par to GND	AV	-59.1	-36.3	29.5	-65.8	EUT vertical
10.299	6.5	11.4	1.0	235.0	1.0	0.0	Perp to GND	AV	-59.1	-41.2	29.5	-70.7	EUT on side

SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2017.12.19

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 NFMI (10.281 MHz) - SN 180367053 streaming to SN 180367054.

POWER SETTINGS INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

STAK0116 - 4

FREQUENCY RANGE INVESTIGATED

Start Frequency 490 kHz Stop Frequency 1000 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
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AVO	9-Nov-2017	12 mo
Antenna - Biconilog	Teseg	CBL 6141B	AYD	25-Jan-2018	24 mo
Cable	ESM Cable Corp.	Bilog Cables	MNH	9-Nov-2017	12 mo
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFD	2-Aug-2017	12 mo
Antenna - Loop	ETS Lindgren	6502	AOB	16-May-2017	24 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 antennas to be used with the EUT were tested. The EUT was continuously transmitting while set to the channel specified.

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, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A calibrated active loop antenna was used for this test in order to provide sufficient measurement sensitivity. The center of the loop antenna was maintained at 1 m above the ground plane during the testing.

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


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

Measurements at the edges of the allowable band may be presented in an alternative method as provided for in the ANSI C63.10 Marker-Delta method. This method involves performing an in-band fundamental measurement followed by a screen capture of the fundamental and out-of-band emission using reduced measurement instrumentation bandwidths. The amplitude delta measured on this screen capture is applied to the fundamental emission value to show the out-of-band emission level as applied to the limit.

As outlined in 15.209(e), 15.31(f)(2), and RSS-GEN, 6.4, measurements may be performed at a distance closer than what is specified with the limit. The limit at the specified distance is shown on the data sheet. Measurements are made at a closer distance and the data is adjusted using a distance correction factor of 40dB/decade for comparison to the limit.

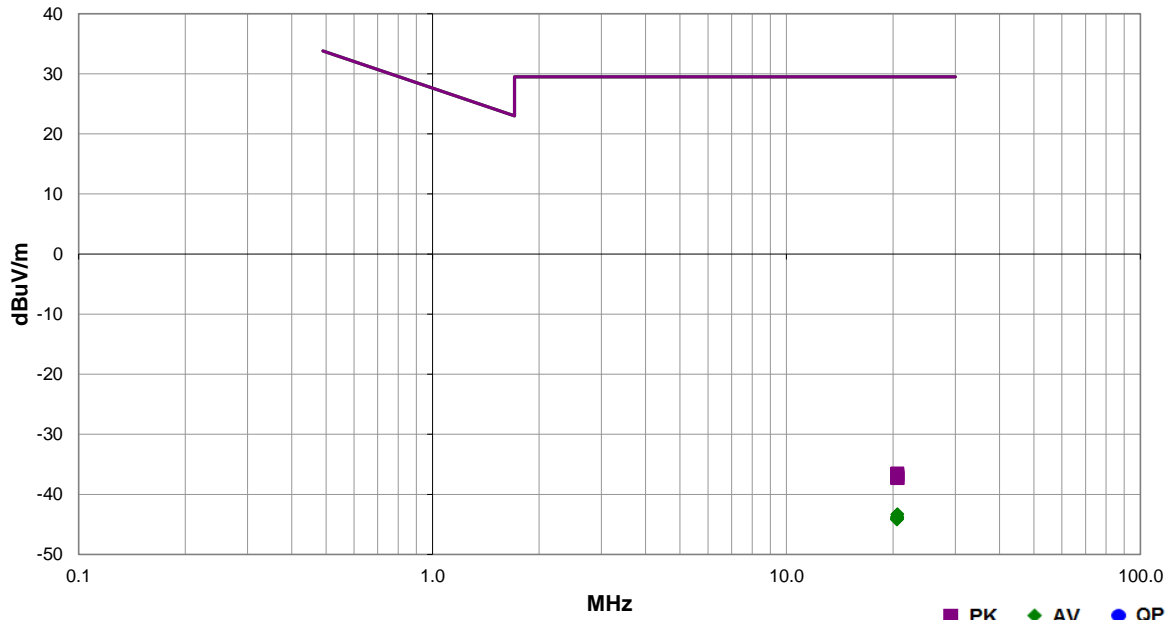
SPURIOUS RADIATED EMISSIONS



Work Order:	STAK0116	Date:	27-Apr-2018	
Project:	None	Temperature:	21.6 °C	
Job Site:	MN05	Humidity:	28% RH	
Serial Number:	180367053, 180367054	Barometric Pres.:	1009 mbar	
EUT:	Hearing Aid			
Configuration:	4			
Customer:	Starkey Laboratories, Inc.			
Attendees:	Charlie Esch			
EUT Power:	Battery			
Operating Mode:	Transmitting NFMI (10.281 MHz) - SN 180367053 streaming to SN 180367054.			
Deviations:	None			
Comments:	None			

Test Specifications	Test Method
FCC 15.209:2018	ANSI C63.10:2013

Run #	13	Test Distance (m)	1	Antenna Height(s)	1(m)	Results	Pass
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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
20.575	11.8	10.8	1.0	314.0	1.0	0.0	Perp to GND	PK	-59.1	-36.5	29.5	-66.0	EUT vertical
20.545	11.7	10.8	1.0	301.9	1.0	0.0	Par to EUT	PK	-59.1	-36.6	29.5	-66.1	EUT on side
20.535	11.7	10.8	1.0	318.0	1.0	0.0	Par to EUT	PK	-59.1	-36.6	29.5	-66.1	EUT horizontal
20.527	11.6	10.8	1.0	263.0	1.0	0.0	Perp to GND	PK	-59.1	-36.7	29.5	-66.2	EUT horizontal
20.580	11.4	10.8	1.0	296.0	1.0	0.0	Par to GND	PK	-59.1	-36.9	29.5	-66.4	EUT vertical
20.519	11.1	10.8	1.0	268.0	1.0	0.0	Par to EUT	PK	-59.1	-37.2	29.5	-66.7	EUT vertical
20.527	11.1	10.8	1.0	245.0	1.0	0.0	Par to GND	PK	-59.1	-37.2	29.5	-66.7	EUT on side
20.556	11.1	10.8	1.0	326.9	1.0	0.0	Perp to GND	PK	-59.1	-37.2	29.5	-66.7	EUT on side
20.609	11.0	10.8	1.0	35.0	1.0	0.0	Par to GND	PK	-59.1	-37.3	29.5	-66.8	EUT horizontal
20.579	5.0	10.8	1.0	318.0	1.0	0.0	Par to EUT	AV	-59.1	-43.3	29.5	-72.8	EUT horizontal
20.554	4.9	10.8	1.0	301.9	1.0	0.0	Par to EUT	AV	-59.1	-43.4	29.5	-72.9	EUT on side
20.515	4.5	10.8	1.0	268.0	1.0	0.0	Par to EUT	AV	-59.1	-43.8	29.5	-73.3	EUT vertical
20.592	4.5	10.8	1.0	314.0	1.0	0.0	Perp to GND	AV	-59.1	-43.8	29.5	-73.3	EUT vertical
20.558	4.5	10.8	1.0	263.0	1.0	0.0	Perp to GND	AV	-59.1	-43.8	29.5	-73.3	EUT horizontal
20.527	4.2	10.8	1.0	296.0	1.0	0.0	Par to GND	AV	-59.1	-44.1	29.5	-73.6	EUT vertical
20.549	4.2	10.8	1.0	245.0	1.0	0.0	Par to GND	AV	-59.1	-44.1	29.5	-73.6	EUT on side
20.577	4.2	10.8	1.0	326.9	1.0	0.0	Perp to GND	AV	-59.1	-44.1	29.5	-73.6	EUT on side
20.516	4.1	10.8	1.0	35.0	1.0	0.0	Par to GND	AV	-59.1	-44.2	29.5	-73.7	EUT horizontal

SPURIOUS RADIATED EMISSIONS



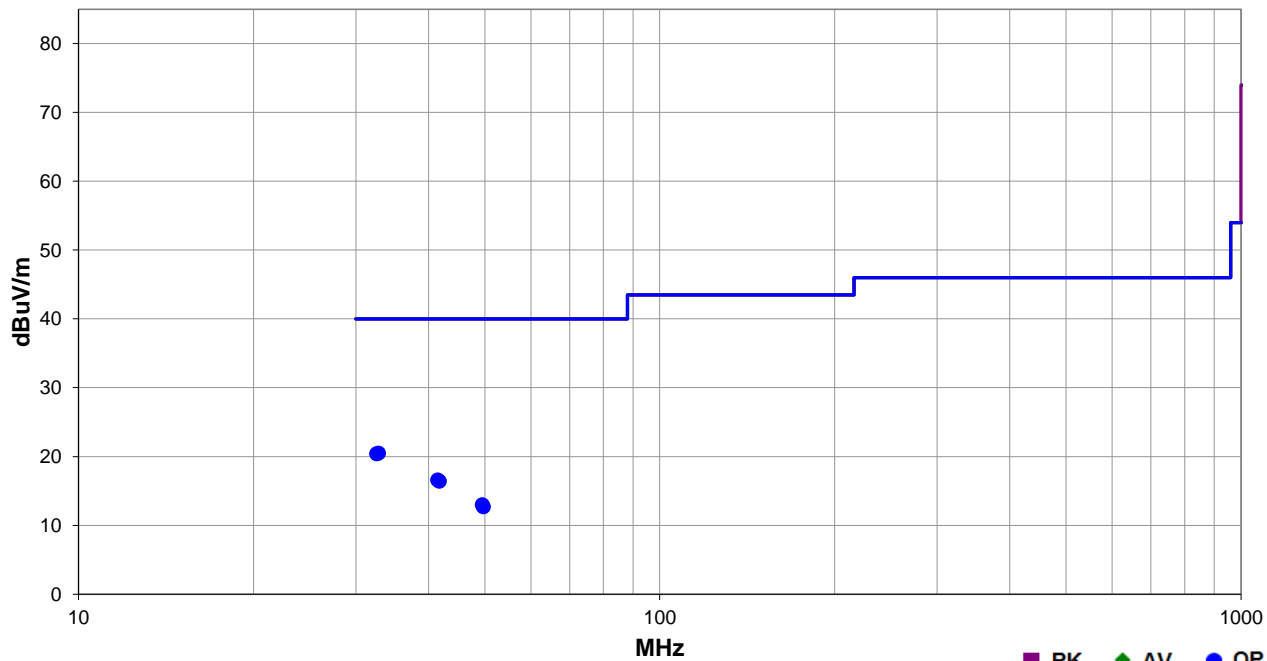
EmiRS 2018.02.06

PSA-ESC1 2017.12.19

Work Order:	STAK0116	Date:	27-Apr-2018	
Project:	None	Temperature:	22.5 °C	
Job Site:	MN05	Humidity:	26.8% RH	
Serial Number:	180367053, 180367054	Barometric Pres.:	1010 mbar	Tested by: Dustin Sparks
EUT:	Hearing Aid			
Configuration:	4			
Customer:	Starkey Laboratories, Inc.			
Attendees:	Charlie Esch			
EUT Power:	Battery			
Operating Mode:	Transmitting NFMI (10.281 MHz) - SN 180367053 streaming to SN 180367054.			
Deviations:	None			
Comments:	None			

Test Specifications	Test Method
FCC 15.209:2018	ANSI C63.10:2013

Run #	15	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
32.813	16.4	4.1	3.2	16.1	3.0	0.0	Horz	QP	0.0	20.5	40.0	-19.5	EUT vertical
32.574	16.2	4.2	2.3	27.0	3.0	0.0	Vert	QP	0.0	20.4	40.0	-19.6	EUT vertical
41.474	16.5	0.1	1.0	193.0	3.0	0.0	Horz	QP	0.0	16.6	40.0	-23.4	EUT vertical
41.762	16.5	-0.1	1.0	184.1	3.0	0.0	Vert	QP	0.0	16.4	40.0	-23.6	EUT vertical
49.502	16.5	-3.5	1.0	271.0	3.0	0.0	Vert	QP	0.0	13.0	40.0	-27.0	EUT vertical
49.701	16.3	-3.6	1.0	223.0	3.0	0.0	Horz	QP	0.0	12.7	40.0	-27.3	EUT vertical