

NORTHWEST EMC

Starkey Laboratories, Inc.

Hearing Aid

Halo 2 R13, A4i R13, Start 1200i R13, and Start 1000i R13

FCC 15.247:2015

Report # STAK0061.1



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 may only be duplicated in its entirety

CERTIFICATE OF TEST

Last Date of Test: November 23, 2015
Starkey Laboratories, Inc.
Model: Hearing Aid

Radio Equipment Testing

Standards

| Specification | Method |
|-----------------|------------------|
| FCC 15.247:2015 | ANSI C63.10:2013 |

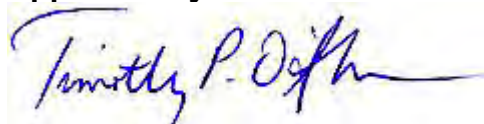
Results

| 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 | |
| 11.10.2 | Power Spectral Density | Yes | Pass | |
| 11.9.2.2.4 | Output Power | 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

IC - Recognized by Industry Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with IC.

European Union

European Commission – Validated by the European Commission as a Conformity Assessment Body (CAB) under the EMC directive and 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>

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 WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) for each test is on each data sheet. 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.

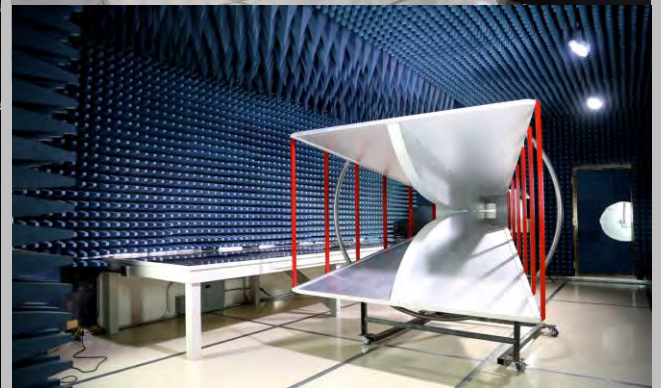
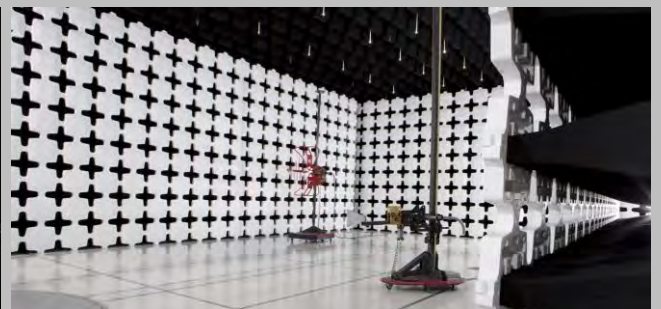
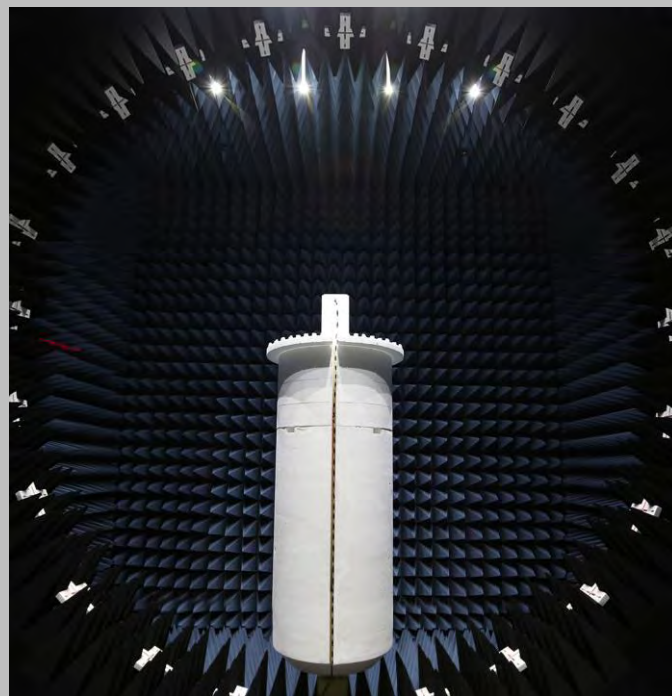
The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

| 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 |

FACILITIES



| | | | | | |
|---|---|--|---|--|--|
| California Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918 | Minnesota Labs MN01-08, MN10 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 22975 NW Evergreen Pkwy 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 9801 (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 |
| Industry 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/RRR, MIC, MOC, NCC, OFCA | | | | | |
| US0158 | US0175 | N/A | US0017 | US0191 | US0157 |



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 20, 2015 |
| Last Date of Test: | November 23, 2015 |
| Receipt Date of Samples: | November 16, 2015 |
| Equipment Design Stage: | Production |
| Equipment Condition: | No Damage |

Information Provided by the Party Requesting the Test

| |
|--|
| Functional Description of the EUT: |
| Hearing aid with a BLE radio. |
| Statement of Similarity: |
| The hearing aid models listed in the cover page are electrically and physically identical; the only difference is that they are sold under different brand names (Starkey or Audibel) and different model names (Halo 2 R13, A4i R13, Start 1200i R13, and Start 1000i R13). |
| Testing Objective: |
| To demonstrate compliance of the Bluetooth radio to FCC 15.247 requirements. |

CONFIGURATIONS

Configuration STAK0061- 1

| EUT | | | |
|-------------|----------------------------|-------------------|---------------|
| Description | Manufacturer | Model/Part Number | Serial Number |
| Hearing Aid | Starkey Laboratories, Inc. | 64118-020 | 151250094 |

Configuration STAK0061- 3

| EUT | | | |
|-------------|----------------------------|-------------------|---------------|
| Description | Manufacturer | Model/Part Number | Serial Number |
| Hearing Aid | Starkey Laboratories, Inc. | 64118-020 | 151250091 |

MODIFICATIONS

Equipment Modifications

| Item | Date | Test | Modification | Note | Disposition of EUT |
|------|------------|------------------------------|--|---|--|
| 1 | 11/20/2015 | Duty Cycle | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT was taken home by the client before the next scheduled test. |
| 2 | 11/20/2015 | 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 | 11/20/2015 | 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. |
| 4 | 11/20/2015 | Output Power | Modified from delivered configuration. | No EMI suppression devices were added or modified during this test. | EUT remained at Northwest EMC following the test. |
| 5 | 11/20/2015 | 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 | 11/20/2015 | 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 | 11/23/2015 | Spurious Radiated Emissions | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | Scheduled testing was completed. |

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 Bluetooth Low Energy - low channel (2402 MHz), mid channel (2442 MHz), and high channel (2480 MHz)

POWER SETTINGS INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

STAK0061 - 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 |
|------------------------------|------------------|-----------------------------------|-----|------------|----------|
| Filter - Low Pass | Micro-Tronics | LPM50004 | HGK | 3/2/2015 | 12 mo |
| Filter - High Pass | Micro-Tronics | HPM50111 | HGQ | 3/2/2015 | 12 mo |
| Attenuator | S.M. Electronics | SA6-20 | REO | 3/2/2015 | 12 mo |
| Amplifier - Pre-Amplifier | Miteq | JSD4-18002600-26-8P | APU | 9/18/2015 | 12 mo |
| Cable | Northwest EMC | 18-26GHz Standard Gain Horn Cable | MNP | 9/18/2015 | 12 mo |
| Antenna - Standard Gain | ETS Lindgren | 3160-09 | AHG | NCR | 0 mo |
| Amplifier - Pre-Amplifier | Miteq | AMF-6F-12001800-30-10P | AVW | 3/2/2015 | 12 mo |
| Antenna - Standard Gain | ETS Lindgren | 3160-08 | AIQ | NCR | 0 mo |
| Cable | ESM Cable Corp. | Standard Gain Horn Cables | MNJ | 11/13/2015 | 12 mo |
| Amplifier - Pre-Amplifier | Miteq | AMF-6F-08001200-30-10P | AVV | 3/2/2015 | 12 mo |
| Antenna - Standard Gain | ETS Lindgren | 3160-07 | AXP | NCR | 0 mo |
| Amplifier - Pre-Amplifier | Miteq | AMF-3D-00100800-32-13P | AVX | 3/2/2015 | 12 mo |
| Cable | ESM Cable Corp. | Double Ridge Guide Horn Cables | MNI | 5/5/2015 | 12 mo |
| Antenna - Double Ridge | ETS Lindgren | 3115 | AJA | 6/3/2014 | 24 mo |
| Amplifier - Pre-Amplifier | Miteq | AM-1616-1000 | PAD | 3/2/2015 | 12 mo |
| Cable | ESM Cable Corp. | Bilog Cables | MNH | 3/30/2015 | 12 mo |
| Antenna - Biconilog | Teseq | CBL 6141B | AYD | 12/17/2013 | 24 mo |
| Analyzer - Spectrum Analyzer | Agilent | E4440A | AFG | 6/5/2015 | 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 |

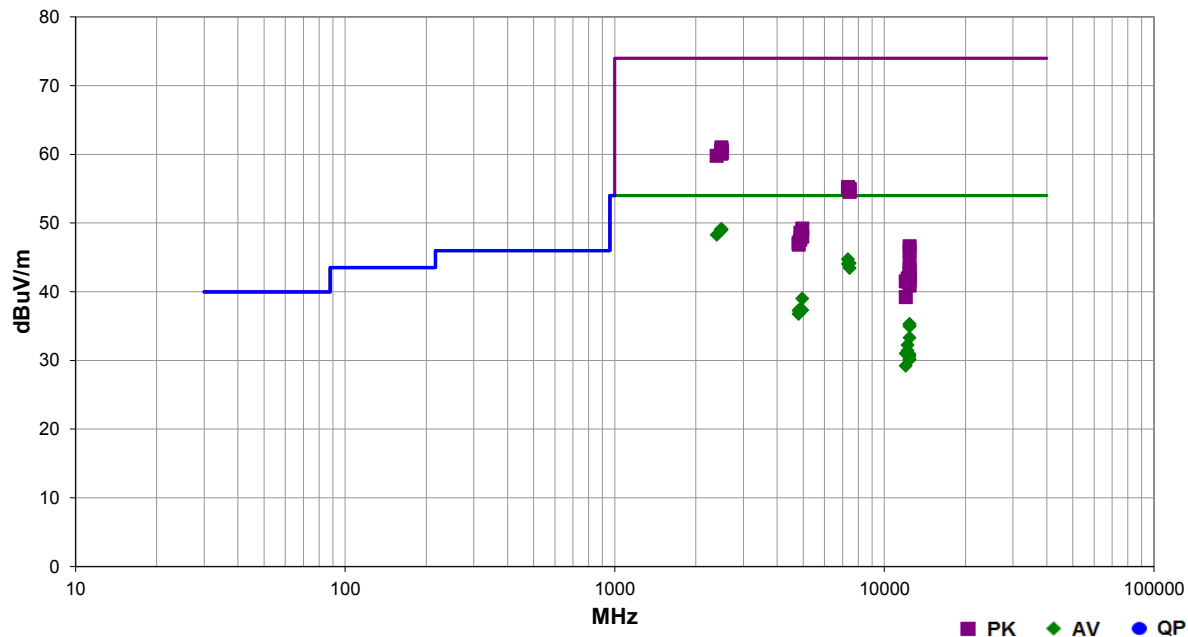
TEST DESCRIPTION

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.

| | | | | |
|-----------------|---|-------------------|------------|--|
| Work Order: | STAK0061 | Date: | 11/23/15 |  |
| Project: | None | Temperature: | 22.3 °C | |
| Job Site: | MN05 | Humidity: | 22.6% RH | |
| Serial Number: | 151250094 | Barometric Pres.: | 983.7 mbar | |
| EUT: | Hearing Aid | | | |
| Configuration: | 1 | | | |
| Customer: | Starkey Laboratories, Inc. | | | |
| Attendees: | Charlie Esch | | | |
| EUT Power: | Battery | | | |
| Operating Mode: | Transmitting Bluetooth Low Energy - low channel (2402 MHz), mid channel (2442 MHz), and high channel (2480 MHz) | | | |
| Deviations: | None | | | |
| Comments: | None | | | |

| | |
|---------------------|------------------|
| Test Specifications | Test Method |
| FCC 15.247:2015 | ANSI C63.10:2013 |

| | | | | | | | |
|-------|----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 17 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|----|-------------------|---|-------------------|-----------|---------|------|



| 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 |
|------------|------------------|-------------|-------------------------|-------------------|------------------------|---------------------------|--------------------------|----------|--------------------------|-------------------|----------------------|------------------------|----------------------|
| 2485.783 | 31.0 | -1.9 | 2.1 | 178.1 | 3.0 | 20.0 | Vert | AV | 0.0 | 49.1 | 54.0 | -4.9 | High ch, EUT vert |
| 2485.108 | 31.0 | -1.9 | 1.0 | 234.0 | 3.0 | 20.0 | Horz | AV | 0.0 | 49.1 | 54.0 | -4.9 | High ch, EUT on side |
| 2486.650 | 30.9 | -1.9 | 1.0 | 159.1 | 3.0 | 20.0 | Vert | AV | 0.0 | 49.0 | 54.0 | -5.0 | High ch, EUT horz |
| 2485.892 | 30.9 | -1.9 | 1.0 | 158.0 | 3.0 | 20.0 | Horz | AV | 0.0 | 49.0 | 54.0 | -5.0 | High ch, EUT horz |
| 2484.867 | 30.9 | -1.9 | 1.2 | 297.0 | 3.0 | 20.0 | Horz | AV | 0.0 | 49.0 | 54.0 | -5.0 | High ch, EUT vert |
| 2484.367 | 30.9 | -1.9 | 1.0 | 66.1 | 3.0 | 20.0 | Vert | AV | 0.0 | 49.0 | 54.0 | -5.0 | High ch, EUT on side |
| 2389.500 | 30.5 | -2.2 | 1.0 | 127.1 | 3.0 | 20.0 | Horz | AV | 0.0 | 48.3 | 54.0 | -5.7 | Low ch, EUT on side |
| 7325.733 | 30.5 | 14.2 | 1.0 | 0.0 | 3.0 | 0.0 | Vert | AV | 0.0 | 44.7 | 54.0 | -9.3 | Mid ch, EUT vert |
| 7439.533 | 29.5 | 14.6 | 1.0 | 194.0 | 3.0 | 0.0 | Horz | AV | 0.0 | 44.1 | 54.0 | -9.9 | High ch, EUT horz |
| 7325.217 | 29.8 | 14.2 | 1.0 | 328.0 | 3.0 | 0.0 | Horz | AV | 0.0 | 44.0 | 54.0 | -10.0 | Mid ch, EUT horz |
| 7437.592 | 28.8 | 14.6 | 2.0 | 129.0 | 3.0 | 0.0 | Vert | AV | 0.0 | 43.4 | 54.0 | -10.6 | High ch, EUT vert |
| 2487.925 | 42.9 | -1.9 | 1.2 | 297.0 | 3.0 | 20.0 | Horz | PK | 0.0 | 61.0 | 74.0 | -13.0 | High ch, EUT vert |
| 2488.483 | 42.5 | -1.9 | 1.0 | 159.1 | 3.0 | 20.0 | Vert | PK | 0.0 | 60.6 | 74.0 | -13.4 | High ch, EUT horz |
| 2486.875 | 42.5 | -1.9 | 1.0 | 66.1 | 3.0 | 20.0 | Vert | PK | 0.0 | 60.6 | 74.0 | -13.4 | High ch, EUT on side |
| 2485.575 | 42.2 | -1.9 | 2.1 | 178.1 | 3.0 | 20.0 | Vert | PK | 0.0 | 60.3 | 74.0 | -13.7 | High ch, EUT vert |
| 2486.392 | 42.0 | -1.9 | 1.0 | 234.0 | 3.0 | 20.0 | Horz | PK | 0.0 | 60.1 | 74.0 | -13.9 | High ch, EUT on side |
| 2485.742 | 42.0 | -1.9 | 1.0 | 158.0 | 3.0 | 20.0 | Horz | PK | 0.0 | 60.1 | 74.0 | -13.9 | High ch, EUT horz |
| 2385.492 | 42.0 | -2.2 | 1.0 | 127.1 | 3.0 | 20.0 | Horz | PK | 0.0 | 59.8 | 74.0 | -14.2 | Low ch, EUT on side |
| 4959.733 | 32.2 | 6.8 | 2.0 | 68.0 | 3.0 | 0.0 | Horz | AV | 0.0 | 39.0 | 54.0 | -15.0 | High ch, EUT horz |
| 4883.850 | 31.0 | 6.5 | 1.5 | 124.1 | 3.0 | 0.0 | Vert | AV | 0.0 | 37.5 | 54.0 | -16.5 | Mid ch, EUT vert |
| 4960.033 | 30.5 | 6.8 | 1.7 | 183.0 | 3.0 | 0.0 | Vert | AV | 0.0 | 37.3 | 54.0 | -16.7 | High ch, EUT vert |
| 4804.133 | 30.9 | 6.4 | 1.0 | 110.0 | 3.0 | 0.0 | Horz | AV | 0.0 | 37.3 | 54.0 | -16.7 | Low ch, EUT horz |

| 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 |
|---------------|---------------------|----------------|----------------------------|----------------------|---------------------------|---------------------------------|---------------------------------|----------|--------------------------------|----------------------|-------------------------|------------------------------|----------------------|
| 4885.275 | 30.7 | 6.5 | 1.0 | 229.9 | 3.0 | 0.0 | Horz | AV | 0.0 | 37.2 | 54.0 | -16.8 | Mid ch, EUT horz |
| 4803.917 | 30.4 | 6.4 | 1.0 | 214.1 | 3.0 | 0.0 | Vert | AV | 0.0 | 36.8 | 54.0 | -17.2 | Low ch, EUT vert |
| 12399.230 | 37.8 | -2.5 | 1.8 | 197.0 | 3.0 | 0.0 | Horz | AV | 0.0 | 35.3 | 54.0 | -18.7 | High ch, EUT horz |
| 7326.708 | 41.0 | 14.2 | 1.0 | 0.0 | 3.0 | 0.0 | Vert | PK | 0.0 | 55.2 | 74.0 | -18.8 | Mid ch, EUT vert |
| 12402.300 | 32.8 | 2.4 | 1.0 | 78.0 | 3.0 | 0.0 | Horz | AV | 0.0 | 35.2 | 54.0 | -18.8 | High ch, EUT horz |
| 7323.675 | 40.9 | 14.2 | 1.0 | 328.0 | 3.0 | 0.0 | Horz | PK | 0.0 | 55.1 | 74.0 | -18.9 | Mid ch, EUT horz |
| 7441.025 | 40.3 | 14.6 | 1.0 | 194.0 | 3.0 | 0.0 | Horz | PK | 0.0 | 54.9 | 74.0 | -19.1 | High ch, EUT horz |
| 12402.290 | 32.5 | 2.4 | 1.0 | 11.1 | 3.0 | 0.0 | Vert | AV | 0.0 | 34.9 | 54.0 | -19.1 | High ch, EUT vert |
| 7440.300 | 39.9 | 14.6 | 2.0 | 129.0 | 3.0 | 0.0 | Vert | PK | 0.0 | 54.5 | 74.0 | -19.5 | High ch, EUT vert |
| 12399.080 | 35.8 | -2.5 | 3.9 | 48.1 | 3.0 | 0.0 | Horz | AV | 0.0 | 33.3 | 54.0 | -20.7 | High ch, EUT vert |
| 12209.080 | 34.9 | -2.7 | 1.0 | 296.0 | 3.0 | 0.0 | Horz | AV | 0.0 | 32.2 | 54.0 | -21.8 | Mid ch, EUT horz |
| 12208.810 | 34.1 | -2.7 | 1.8 | 300.9 | 3.0 | 0.0 | Vert | AV | 0.0 | 31.4 | 54.0 | -22.6 | Mid ch, EUT vert |
| 12008.730 | 34.5 | -3.5 | 1.0 | 190.0 | 3.0 | 0.0 | Horz | AV | 0.0 | 31.0 | 54.0 | -23.0 | Low ch, EUT horz |
| 12399.160 | 33.4 | -2.5 | 2.3 | 76.1 | 3.0 | 0.0 | Vert | AV | 0.0 | 30.9 | 54.0 | -23.1 | High ch, EUT vert |
| 12399.350 | 33.1 | -2.5 | 1.0 | 114.0 | 3.0 | 0.0 | Horz | AV | 0.0 | 30.6 | 54.0 | -23.4 | High ch, EUT on side |
| 12400.000 | 32.7 | -2.5 | 1.2 | 301.9 | 3.0 | 0.0 | Vert | AV | 0.0 | 30.2 | 54.0 | -23.8 | High ch, EUT horz |
| 12398.970 | 32.6 | -2.5 | 2.7 | 11.1 | 3.0 | 0.0 | Vert | AV | 0.0 | 30.1 | 54.0 | -23.9 | High ch, EUT on side |
| 12008.650 | 32.7 | -3.5 | 1.0 | 235.0 | 3.0 | 0.0 | Vert | AV | 0.0 | 29.2 | 54.0 | -24.8 | Low ch, EUT vert |
| 4959.117 | 42.4 | 6.8 | 2.0 | 68.0 | 3.0 | 0.0 | Horz | PK | 0.0 | 49.2 | 74.0 | -24.8 | High ch, EUT horz |
| 4882.500 | 42.1 | 6.5 | 1.5 | 124.1 | 3.0 | 0.0 | Vert | PK | 0.0 | 48.6 | 74.0 | -25.4 | Mid ch, EUT vert |
| 4961.708 | 41.2 | 6.8 | 1.7 | 183.0 | 3.0 | 0.0 | Vert | PK | 0.0 | 48.0 | 74.0 | -26.0 | High ch, EUT vert |
| 4881.675 | 41.1 | 6.5 | 1.0 | 229.9 | 3.0 | 0.0 | Horz | PK | 0.0 | 47.6 | 74.0 | -26.4 | Mid ch, EUT horz |
| 4803.808 | 40.8 | 6.4 | 1.0 | 110.0 | 3.0 | 0.0 | Horz | PK | 0.0 | 47.2 | 74.0 | -26.8 | Low ch, EUT horz |
| 4806.058 | 40.5 | 6.4 | 1.0 | 214.1 | 3.0 | 0.0 | Vert | PK | 0.0 | 46.9 | 74.0 | -27.1 | Low ch, EUT vert |
| 12402.060 | 44.2 | 2.4 | 1.0 | 78.0 | 3.0 | 0.0 | Horz | PK | 0.0 | 46.6 | 74.0 | -27.4 | High ch, EUT horz |
| 12402.010 | 43.6 | 2.4 | 1.0 | 11.1 | 3.0 | 0.0 | Vert | PK | 0.0 | 46.0 | 74.0 | -28.0 | High ch, EUT vert |
| 12399.330 | 46.8 | -2.5 | 1.8 | 197.0 | 3.0 | 0.0 | Horz | PK | 0.0 | 44.3 | 74.0 | -29.7 | High ch, EUT horz |
| 12398.760 | 45.8 | -2.5 | 3.9 | 48.1 | 3.0 | 0.0 | Horz | PK | 0.0 | 43.3 | 74.0 | -30.7 | High ch, EUT vert |
| 12399.140 | 45.2 | -2.5 | 1.2 | 301.9 | 3.0 | 0.0 | Vert | PK | 0.0 | 42.7 | 74.0 | -31.3 | High ch, EUT horz |
| 12398.540 | 44.7 | -2.5 | 1.0 | 114.0 | 3.0 | 0.0 | Horz | PK | 0.0 | 42.2 | 74.0 | -31.8 | High ch, EUT on side |
| 12208.800 | 44.6 | -2.7 | 1.0 | 296.0 | 3.0 | 0.0 | Horz | PK | 0.0 | 41.9 | 74.0 | -32.1 | Mid ch, EUT horz |
| 12399.290 | 44.1 | -2.5 | 2.3 | 76.1 | 3.0 | 0.0 | Vert | PK | 0.0 | 41.6 | 74.0 | -32.4 | High ch, EUT vert |
| 12008.440 | 45.0 | -3.5 | 1.0 | 190.0 | 3.0 | 0.0 | Horz | PK | 0.0 | 41.5 | 74.0 | -32.5 | Low ch, EUT horz |
| 12212.370 | 44.1 | -2.6 | 1.8 | 300.9 | 3.0 | 0.0 | Vert | PK | 0.0 | 41.5 | 74.0 | -32.5 | Mid ch, EUT vert |
| 12399.760 | 43.4 | -2.5 | 2.7 | 11.1 | 3.0 | 0.0 | Vert | PK | 0.0 | 40.9 | 74.0 | -33.1 | High ch, EUT on side |
| 12009.870 | 42.7 | -3.5 | 1.0 | 235.0 | 3.0 | 0.0 | Vert | PK | 0.0 | 39.2 | 74.0 | -34.8 | 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. | Interval (mos) |
|------------------------------|--------------------|-----------------|-----|------------|----------------|
| Meter - Multimeter | Fluke | 117/EFSP | MLR | 5/27/2015 | 36 |
| Power Supply - DC | EZ Digital Co | GP-4303D | TPY | NCR | 0 |
| Cable | ESM Cable Corp. | TTBJ141 KMKM-72 | MNU | 9/18/2015 | 12 |
| Attenuator | S.M. Electronics | SA26B-20 | RFW | 3/10/2015 | 12 |
| Block - DC | Fairview Microwave | SD3379 | AMI | 9/18/2015 | 12 |
| Generator - Signal | Agilent | N5183A | TIK | 10/17/2014 | 36 |
| Analyzer - Spectrum Analyzer | Agilent | E4440A | AAX | 4/20/2015 | 12 |

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. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used.

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.

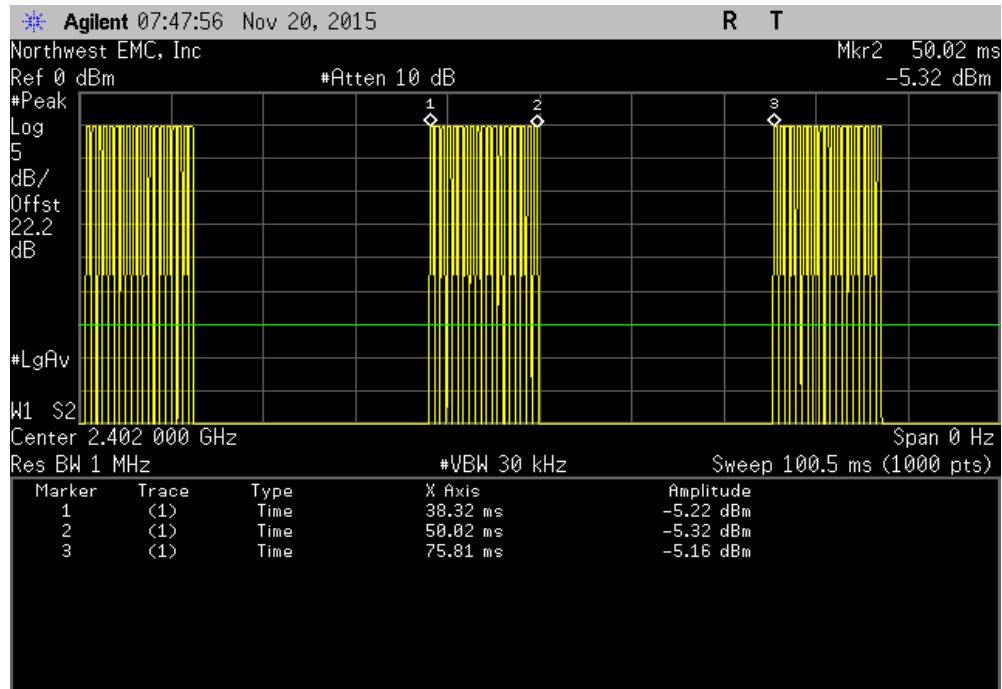
DUTY CYCLE

XMIT 2015 01 14

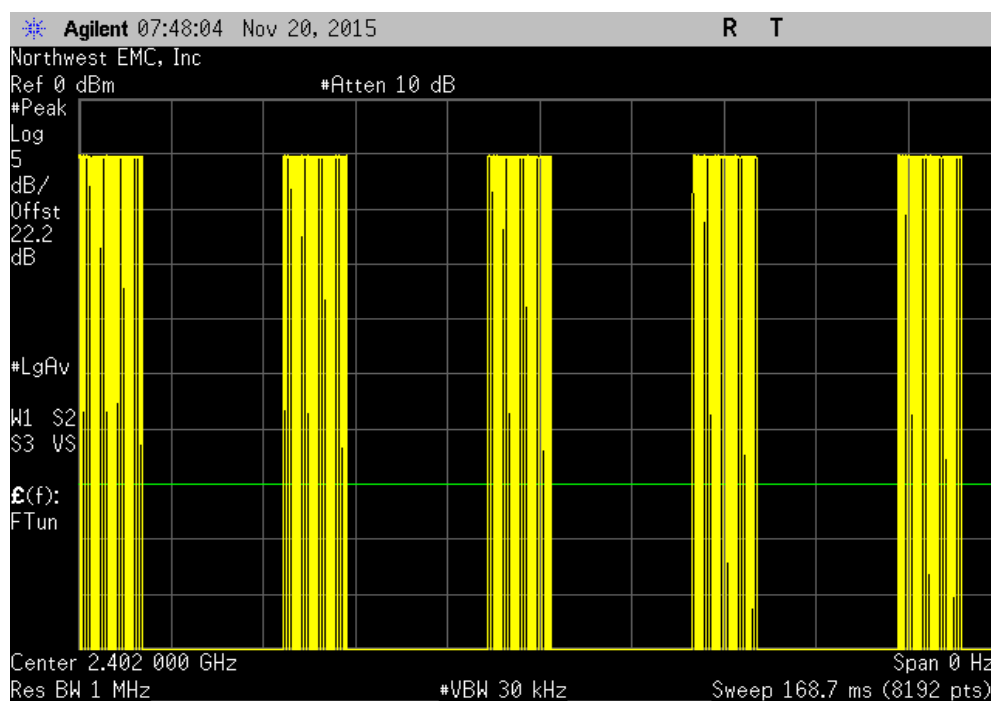
| | | | | | | | |
|--------------------------------------|---|---|-------------------------|------------------|-----------|-----------|---------|
| EUT: Hearing Aid | | | Work Order: STAK0061 | | | | |
| Serial Number: 151250091 | | | Date: 11/20/15 | | | | |
| Customer: Starkey Laboratories, Inc. | | | Temperature: 20.8°C | | | | |
| Attendees: Charlie Esch | | | Humidity: 25% | | | | |
| Project: None | | | Barometric Pres.: 993.3 | | | | |
| Tested by: Trevor Buls | | Power: Battery | Job Site: MN08 | | | | |
| TEST SPECIFICATIONS | | | Test Method | | | | |
| FCC 15.247:2015 | | | ANSI C63.10:2013 | | | | |
| COMMENTS | | | | | | | |
| None | | | | | | | |
| DEVIATIONS FROM TEST STANDARD | | | | | | | |
| None | | | | | | | |
| Configuration # | 3 | Signature  | | | | | |
| | | Pulse Width | Period | Number of Pulses | Value (%) | Limit (%) | Results |
| Low Channel, 2402 MHz | | 11.702 ms | 37.485 ms | 1 | 31.2 | N/A | N/A |
| Low Channel, 2402 MHz | | N/A | N/A | 95 | N/A | N/A | N/A |
| Mid Channel, 2442 MHz | | 11.733 ms | 37.546 ms | 1 | 31.3 | N/A | N/A |
| Mid Channel, 2442 MHz | | N/A | N/A | 90 | N/A | N/A | N/A |
| High Channel, 2480 MHz | | 11.682 ms | 37.566 ms | 1 | 31.1 | N/A | N/A |
| High Channel, 2480 MHz | | N/A | N/A | 95 | N/A | N/A | N/A |

DUTY CYCLE

| Low Channel, 2402 MHz | | | | | | |
|-----------------------|-------------|-----------|------------------|-----------|-----------|---------|
| | Pulse Width | Period | Number of Pulses | Value (%) | Limit (%) | Results |
| | 11.702 ms | 37.485 ms | 1 | 31.2 | N/A | N/A |

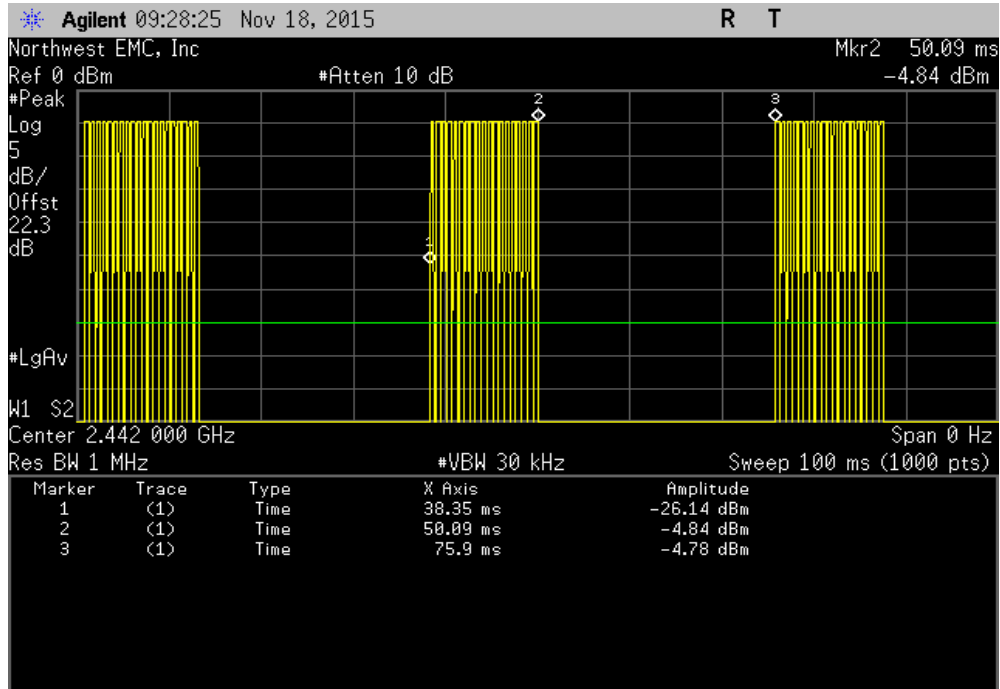


| Low Channel, 2402 MHz | | | | | | |
|-----------------------|-------------|--------|------------------|-----------|-----------|---------|
| | Pulse Width | Period | Number of Pulses | Value (%) | Limit (%) | Results |
| | N/A | N/A | 95 | N/A | N/A | N/A |

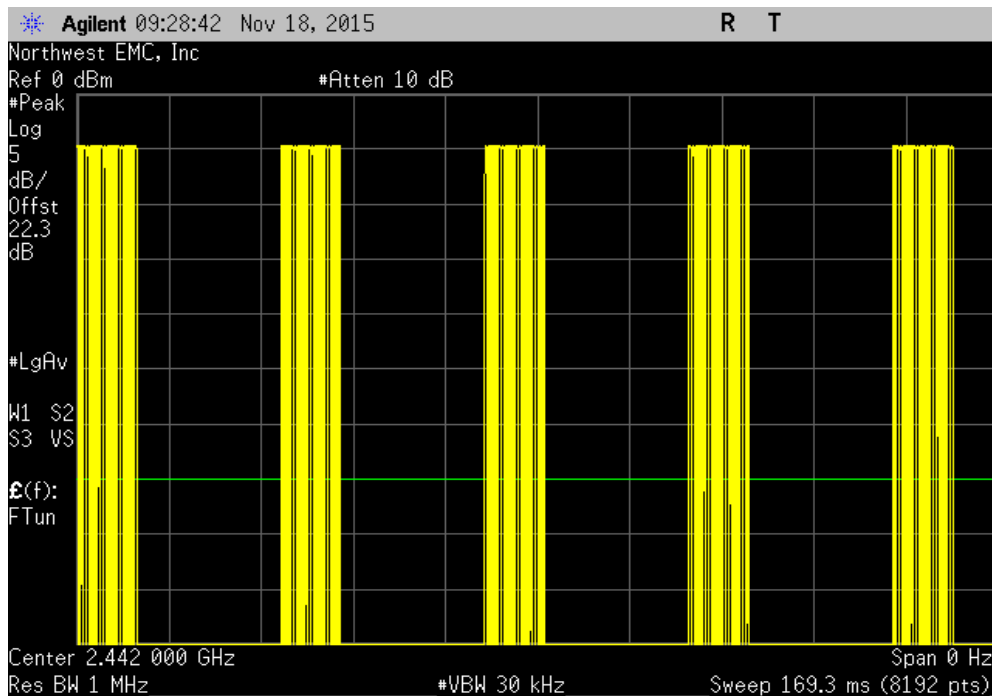


DUTY CYCLE

| Mid Channel, 2442 MHz | | | | | | |
|-----------------------|-------------|-----------|------------------|-----------|-----------|---------|
| | Pulse Width | Period | Number of Pulses | Value (%) | Limit (%) | Results |
| | 11.733 ms | 37.546 ms | 1 | 31.3 | N/A | N/A |

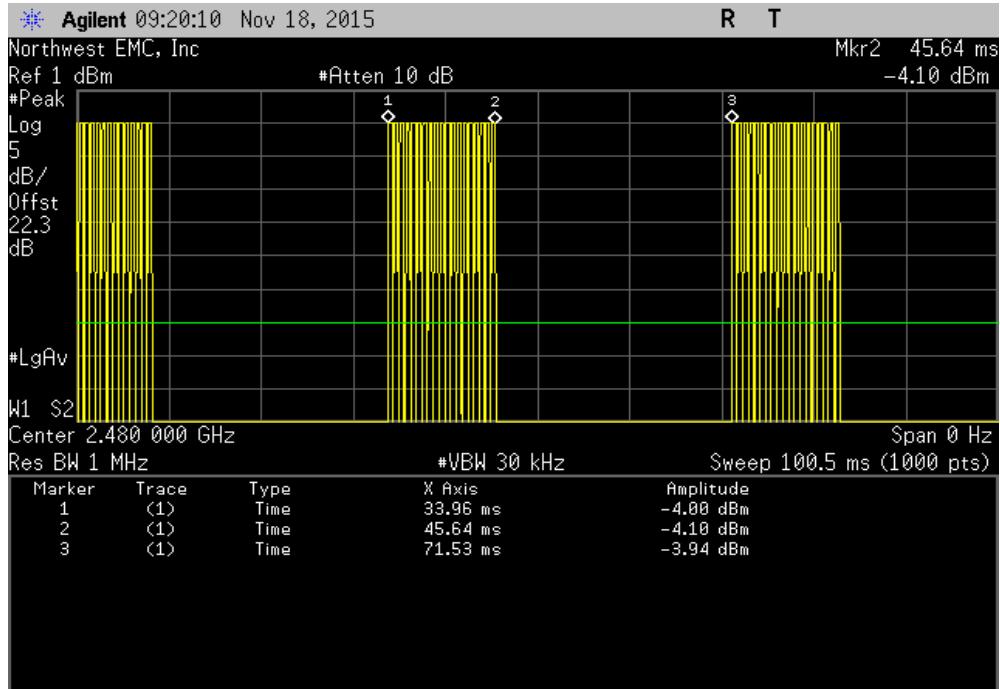


| Mid Channel, 2442 MHz | | | | | | |
|-----------------------|-------------|--------|------------------|-----------|-----------|---------|
| | Pulse Width | Period | Number of Pulses | Value (%) | Limit (%) | Results |
| | N/A | N/A | 90 | N/A | N/A | N/A |

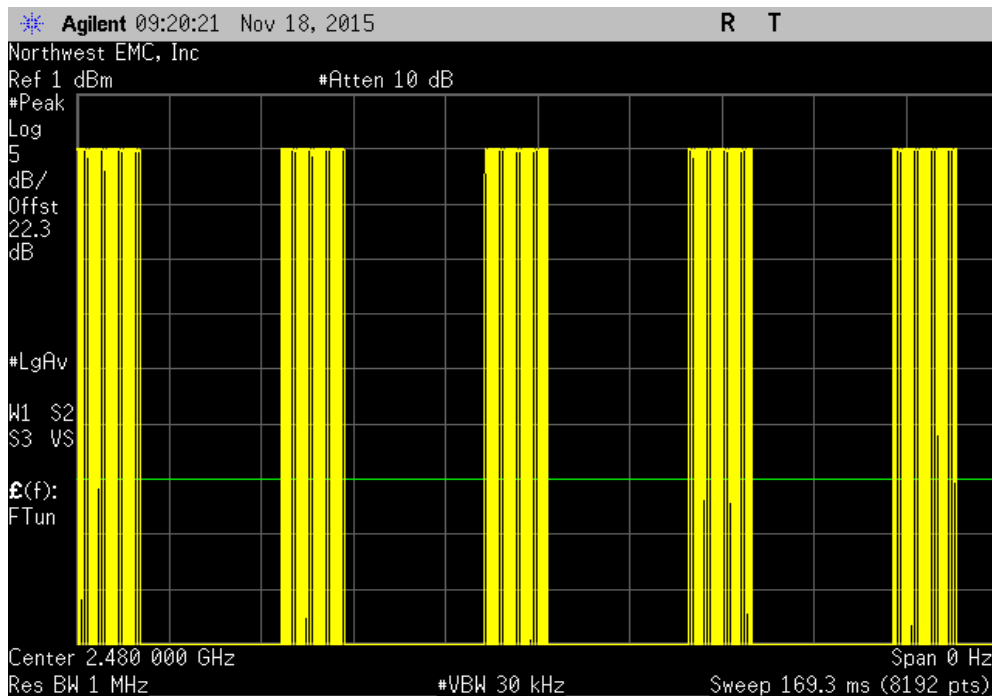


DUTY CYCLE

| High Channel, 2480 MHz | | | | | | |
|------------------------|-------------|-----------|------------------|-----------|-----------|---------|
| | Pulse Width | Period | Number of Pulses | Value (%) | Limit (%) | Results |
| | 11.682 ms | 37.566 ms | 1 | 31.1 | N/A | N/A |



| High Channel, 2480 MHz | | | | | | |
|------------------------|-------------|--------|------------------|-----------|-----------|---------|
| | Pulse Width | Period | Number of Pulses | Value (%) | Limit (%) | Results |
| | N/A | N/A | 95 | 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. | Interval (mos) |
|------------------------------|--------------------|-----------------|-----|------------|----------------|
| Meter - Multimeter | Fluke | 117/EFSP | MLR | 5/27/2015 | 36 |
| Power Supply - DC | EZ Digital Co | GP-4303D | TPY | NCR | 0 |
| Cable | ESM Cable Corp. | TTBJ141 KMKM-72 | MNU | 9/18/2015 | 12 |
| Attenuator | S.M. Electronics | SA26B-20 | RFW | 3/10/2015 | 12 |
| Block - DC | Fairview Microwave | SD3379 | AMI | 9/18/2015 | 12 |
| Generator - Signal | Agilent | N5183A | TIK | 10/17/2014 | 36 |
| Analyzer - Spectrum Analyzer | Agilent | E4440A | AAX | 4/20/2015 | 12 |

TEST DESCRIPTION

The 6dB occupied bandwidth was measured using 100 kHz resolution bandwidth and 300 kHz video bandwidth. The 99.0% (approximate 26 dB) emission bandwidth (EBW) was also measured at the same time.

The EUT was set to the channels and modes listed in the datasheet. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer.

OCCUPIED BANDWIDTH

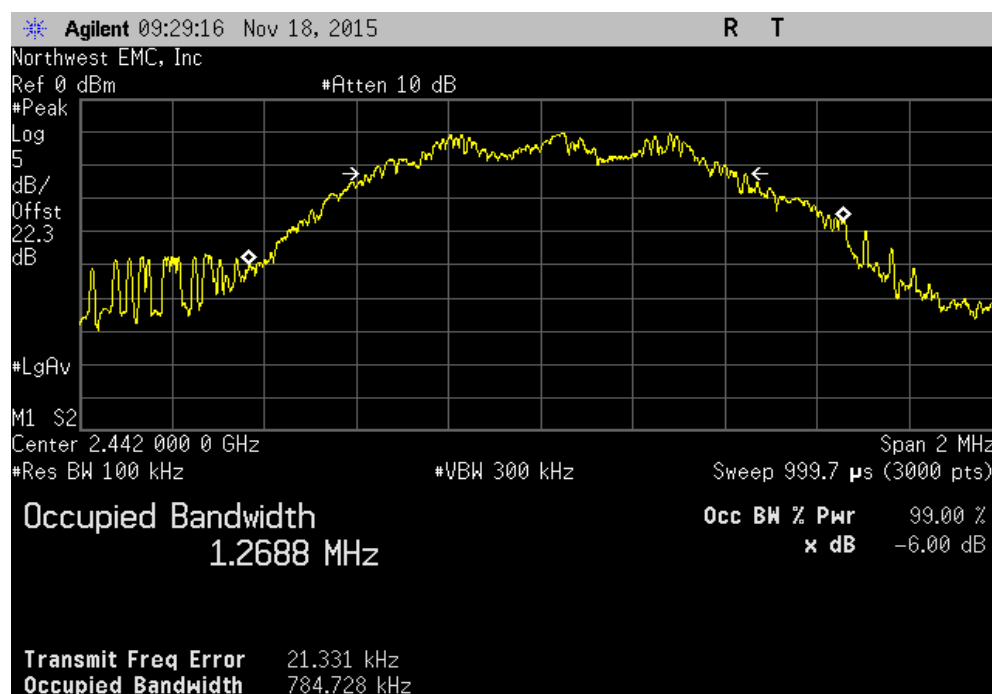
| | | | |
|--------------------------------------|----------------|-------------------------------|------------------|
| EUT: Hearing Aid | | Work Order: STAK0061 | |
| Serial Number: 151250091 | | Date: 11/20/15 | |
| Customer: Starkey Laboratories, Inc. | | Temperature: 20.8°C | |
| Attendees: Charlie Esch | | Humidity: 25% | |
| Project: None | | Barometric Pres.: 993.3 | |
| Tested by: Trevor Buls | Power: Battery | Job Site: MN08 | |
| TEST SPECIFICATIONS | | | |
| FCC 15.247:2015 | | Test Method: ANSI C63.10:2013 | |
| COMMENTS | | | |
| None | | | |
| DEVIATIONS FROM TEST STANDARD | | | |
| None | | | |
| Configuration # | 3 | Signature: <i>Trevor Buls</i> | |
| | | Value | Limit (±) Result |
| Low Channel, 2402 MHz | | 814.224 kHz | 500 kHz Pass |
| Mid Channel, 2442 MHz | | 784.728 kHz | 500 kHz Pass |
| High Channel, 2480 MHz | | 787.559 kHz | 500 kHz Pass |

OCCUPIED BANDWIDTH

| Low Channel, 2402 MHz | | | | | | |
|-----------------------|--|--|--|-------------|--------------|--------|
| | | | | Value | Limit (≥) | Result |
| | | | | 814.224 kHz | 500 kHz | Pass |

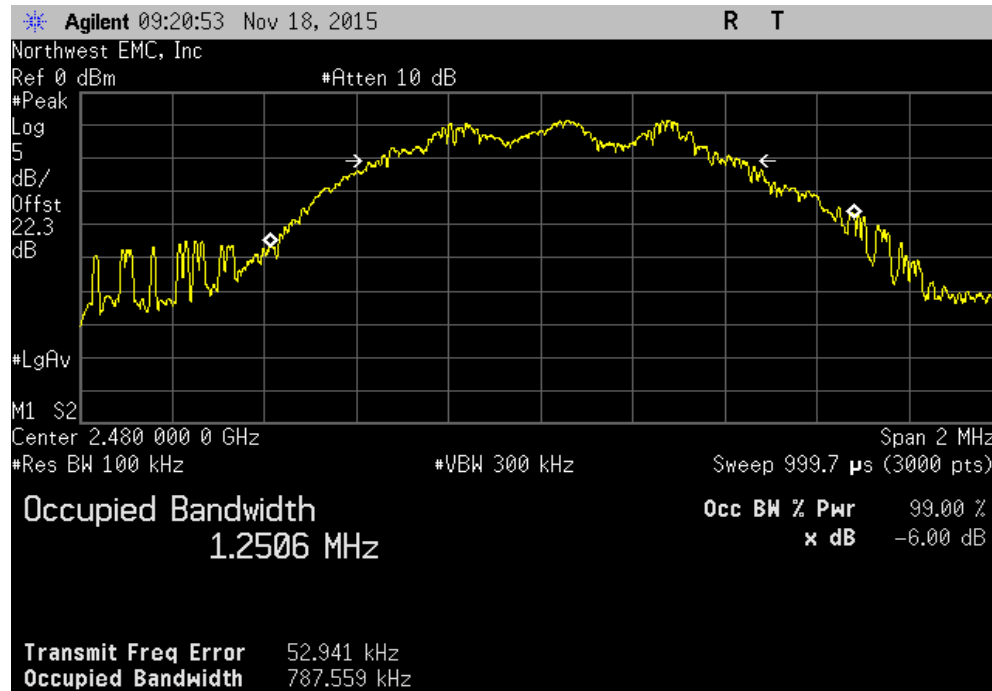


| Mid Channel, 2442 MHz | | | | | | |
|-----------------------|--|--|--|-------------|--------------|--------|
| | | | | Value | Limit (≥) | Result |
| | | | | 784.728 kHz | 500 kHz | Pass |



OCCUPIED BANDWIDTH

| High Channel, 2480 MHz | | | | | | |
|------------------------|--|--|--|-------------|--------------|--------|
| | | | | Value | Limit (≥) | Result |
| | | | | 787.559 kHz | 500 kHz | 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. | Interval (mos) |
|------------------------------|--------------------|-----------------|-----|------------|----------------|
| Meter - Multimeter | Fluke | 117/EFSP | MLR | 5/27/2015 | 36 |
| Power Supply - DC | EZ Digital Co | GP-4303D | TPY | NCR | 0 |
| Cable | ESM Cable Corp. | TTBJ141 KMKM-72 | MNU | 9/18/2015 | 12 |
| Attenuator | S.M. Electronics | SA26B-20 | RFW | 3/10/2015 | 12 |
| Block - DC | Fairview Microwave | SD3379 | AMI | 9/18/2015 | 12 |
| Generator - Signal | Agilent | N5183A | TIK | 10/17/2014 | 36 |
| Analyzer - Spectrum Analyzer | Agilent | E4440A | AAX | 4/20/2015 | 12 |

TEST DESCRIPTION

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

A direct connection was made between the RF output of the EUT and a spectrum analyzer. External attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input.

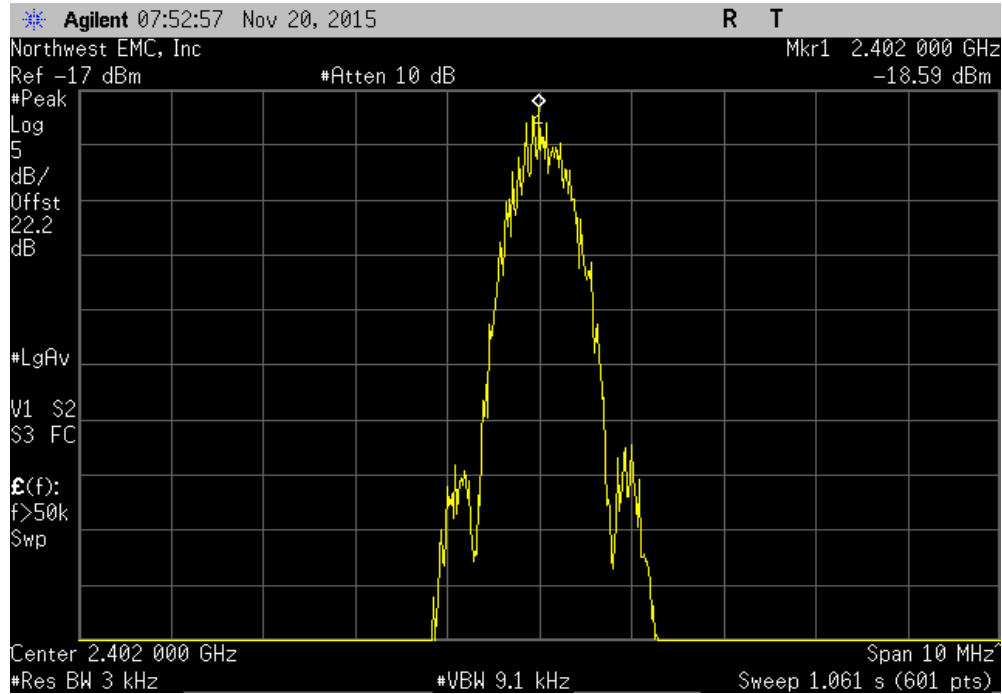
Per the procedure outlined in ANSI C63.10 the peak power spectral density was measured in a 3 kHz RBW.

POWER SPECTRAL DENSITY

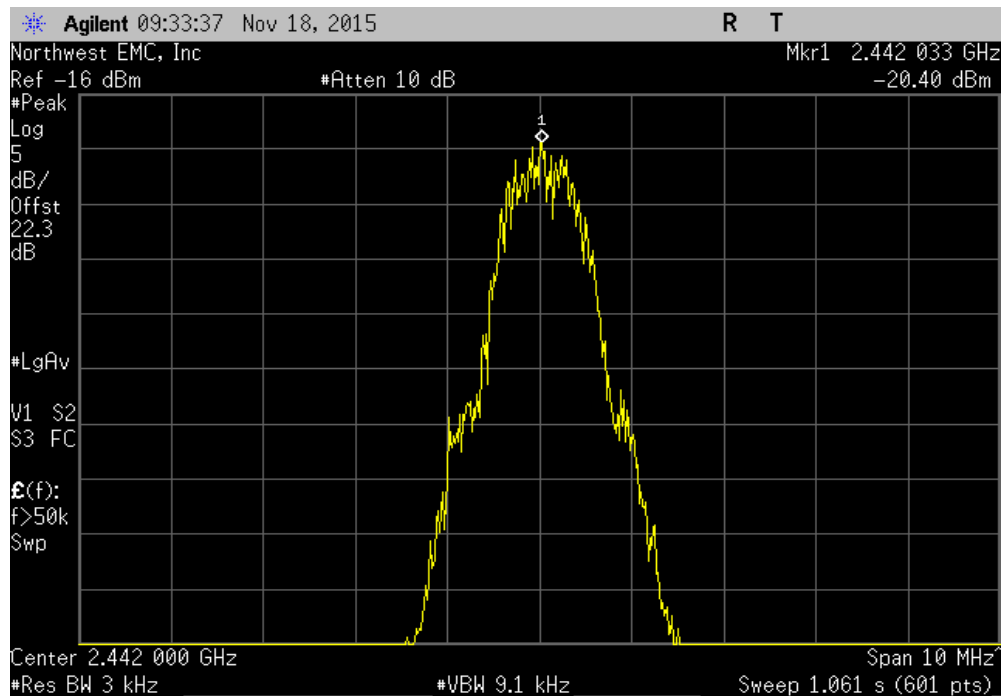
| | | | |
|--------------------------------------|----------------|-------------------------------|---------------------|
| EUT: Hearing Aid | | Work Order: STAK0061 | |
| Serial Number: 151250091 | | Date: 11/20/15 | |
| Customer: Starkey Laboratories, Inc. | | Temperature: 20.8°C | |
| Attendees: Charlie Esch | | Humidity: 25% | |
| Project: None | | Barometric Pres.: 993.3 | |
| Tested by: Trevor Buls | Power: Battery | Job Site: MN08 | |
| TEST SPECIFICATIONS | | | |
| FCC 15.247:2015 | | Test Method: ANSI C63.10:2013 | |
| COMMENTS | | | |
| None | | | |
| DEVIATIONS FROM TEST STANDARD | | | |
| None | | | |
| Configuration # | 3 | Signature: <i>Trevor Buls</i> | |
| | | Value dBm/3kHz | Limit < dBm/3kHz |
| Low Channel, 2402 MHz | | -18.587 | 8 |
| Mid Channel, 2442 MHz | | -20.398 | 8 |
| High Channel, 2480 MHz | | -18.412 | 8 |
| | | | Results |
| | | | Pass |
| | | | Pass |
| | | | Pass |

POWER SPECTRAL DENSITY

| Low Channel, 2402 MHz | | | | | | |
|-----------------------|--|--|--|-------------------|---------------------|---------|
| | | | | Value dBm/3kHz | Limit < dBm/3kHz | Results |
| | | | | -18.587 | 8 | Pass |

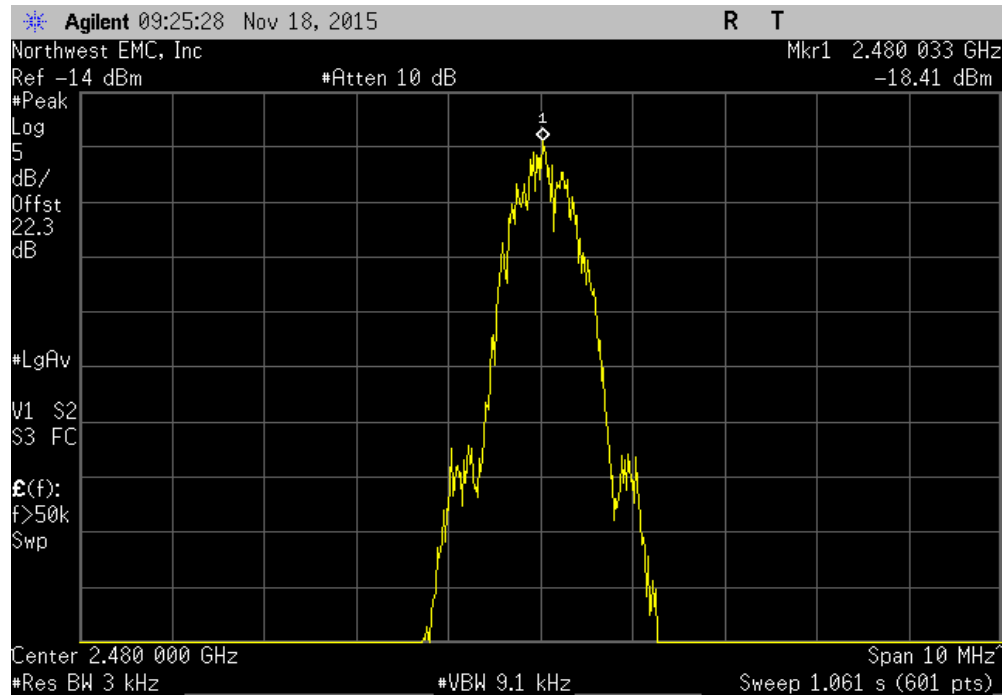


| Mid Channel, 2442 MHz | | | | | | |
|-----------------------|--|--|--|-------------------|---------------------|---------|
| | | | | Value dBm/3kHz | Limit < dBm/3kHz | Results |
| | | | | -20.398 | 8 | Pass |



POWER SPECTRAL DENSITY

| High Channel, 2480 MHz | | | | | | |
|------------------------|--|--|--|-------------------|---------------------|---------|
| | | | | Value dBm/3kHz | Limit < dBm/3kHz | Results |
| | | | | -18.412 | 8 | Pass |



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. | Interval (mos) |
|------------------------------|--------------------|-----------------|-----|------------|----------------|
| Meter - Multimeter | Fluke | 117/EFSP | MLR | 5/27/2015 | 36 |
| Power Supply - DC | EZ Digital Co | GP-4303D | TPY | NCR | 0 |
| Cable | ESM Cable Corp. | TTBJ141 KMKM-72 | MNU | 9/18/2015 | 12 |
| Attenuator | S.M. Electronics | SA26B-20 | RFW | 3/10/2015 | 12 |
| Block - DC | Fairview Microwave | SD3379 | AMI | 9/18/2015 | 12 |
| Generator - Signal | Agilent | N5183A | TIK | 10/17/2014 | 36 |
| Analyzer - Spectrum Analyzer | Agilent | E4440A | AAX | 4/20/2015 | 12 |

TEST DESCRIPTION

The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input.

Prior to measuring peak transmit power the DTS bandwidth (B) and the transmission pulse duration (T) were measured. Both are required to determine the method of measuring Maximum Conducted Output Power. The transmission pulse duration (T) was measured using a zero span on the spectrum analyzer to see the pulses in the time domain.

The method found in ANSI C63.10:2013 Section 11.10.2 was used because the RBW on the analyzer was greater than the DTS Bandwidth of the radio..

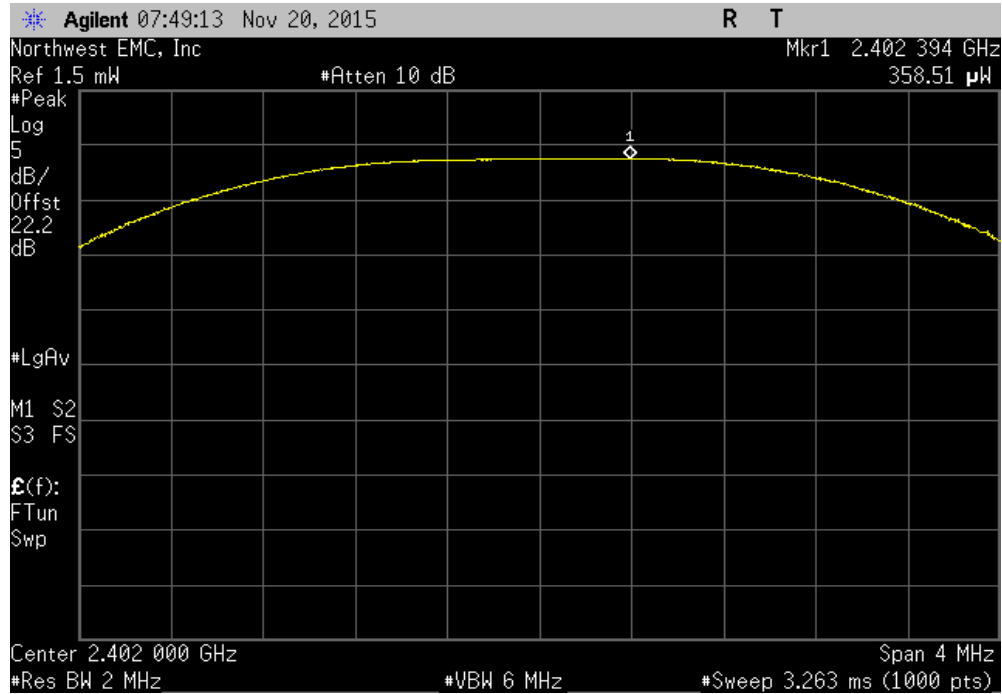
De Facto EIRP Limit: Per 47 CFR 15.247 (b)(1-3), the EUT meets the de facto EIRP limit of +36 dBm.

OUTPUT POWER

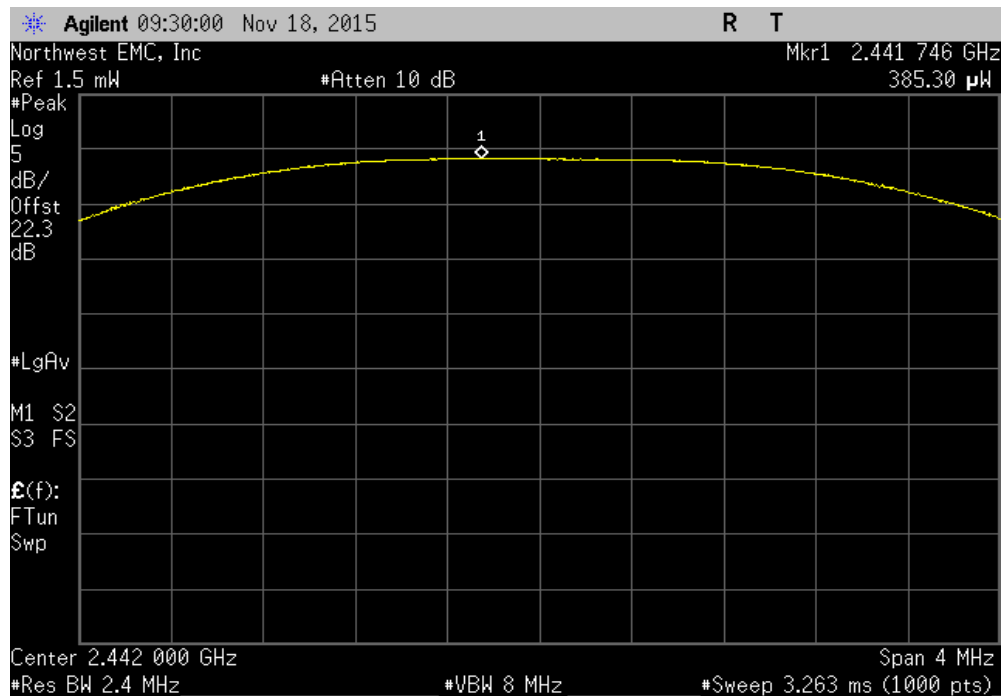
| | | | |
|--------------------------------------|----------------|-------------------------------|------------------|
| EUT: Hearing Aid | | Work Order: STAK0061 | |
| Serial Number: 151250091 | | Date: 11/20/15 | |
| Customer: Starkey Laboratories, Inc. | | Temperature: 20.8°C | |
| Attendees: Charlie Esch | | Humidity: 25% | |
| Project: None | | Barometric Pres.: 993.3 | |
| Tested by: Trevor Buls | Power: Battery | Job Site: MN08 | |
| TEST SPECIFICATIONS | | | |
| FCC 15.247:2015 | | Test Method: ANSI C63.10:2013 | |
| COMMENTS | | | |
| None | | | |
| DEVIATIONS FROM TEST STANDARD | | | |
| None | | | |
| Configuration # | 3 | Signature: <i>Trevor Buls</i> | |
| | | Value | Limit (<) Result |
| Low Channel, 2402 MHz | | 358.509 uW | 1 W Pass |
| Mid Channel, 2442 MHz | | 385.301 uW | 1 W Pass |
| High Channel, 2480 MHz | | 459.939 uW | 1 W Pass |

OUTPUT POWER

| Low Channel, 2402 MHz | | | | | | |
|-----------------------|--|--|--|------------|-----------|--------|
| | | | | Value | Limit (<) | Result |
| | | | | 358.509 uW | 1 W | Pass |

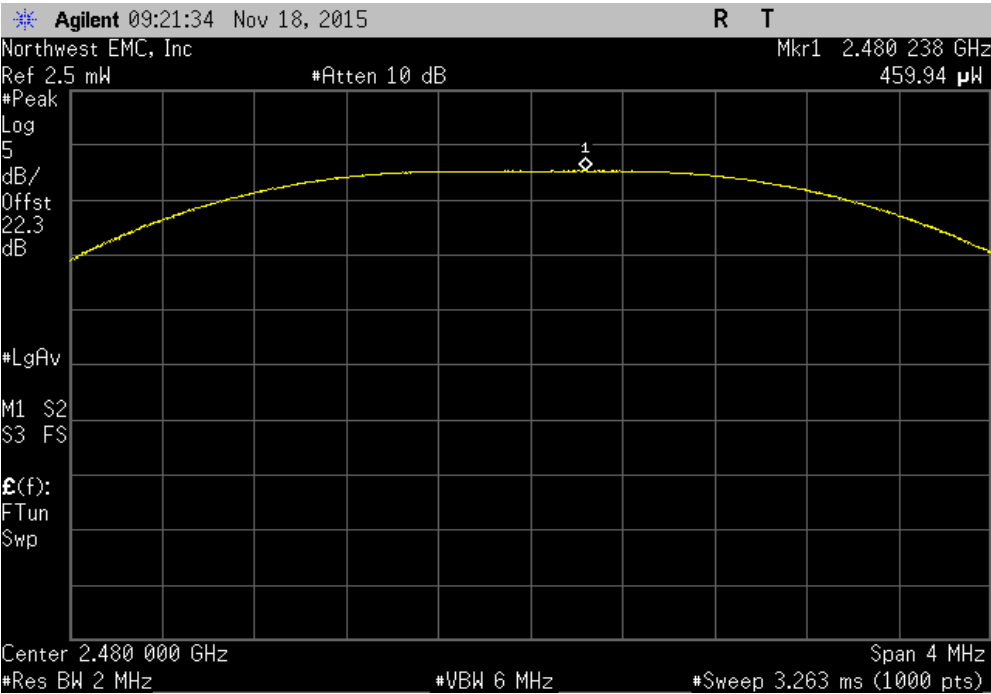


| Mid Channel, 2442 MHz | | | | | | |
|-----------------------|--|--|--|------------|-----------|--------|
| | | | | Value | Limit (<) | Result |
| | | | | 385.301 uW | 1 W | Pass |



OUTPUT POWER

| High Channel, 2480 MHz | | | | | | |
|------------------------|--|--|--|------------|--------------|--------|
| | | | | Value | Limit (<) | Result |
| | | | | 459.939 uW | 1 W | 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. | Interval (mos) |
|------------------------------|--------------------|-----------------|-----|------------|----------------|
| Power Supply - DC | EZ Digital Co | GP-4303D | TPY | NCR | 0 |
| Meter - Multimeter | Fluke | 117/EFSP | MLR | 5/27/2015 | 36 |
| Cable | ESM Cable Corp. | TTBJ141 KMKM-72 | MNU | 9/18/2015 | 12 |
| Attenuator | S.M. Electronics | SA26B-20 | RFW | 3/10/2015 | 12 |
| Block - DC | Fairview Microwave | SD3379 | AMI | 9/18/2015 | 12 |
| Generator - Signal | Agilent | N5183A | TIK | 10/17/2014 | 36 |
| Analyzer - Spectrum Analyzer | Agilent | E4440A | AAX | 4/20/2015 | 12 |

TEST DESCRIPTION

The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in each available band. The channels closest to the band edges were selected. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. 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.

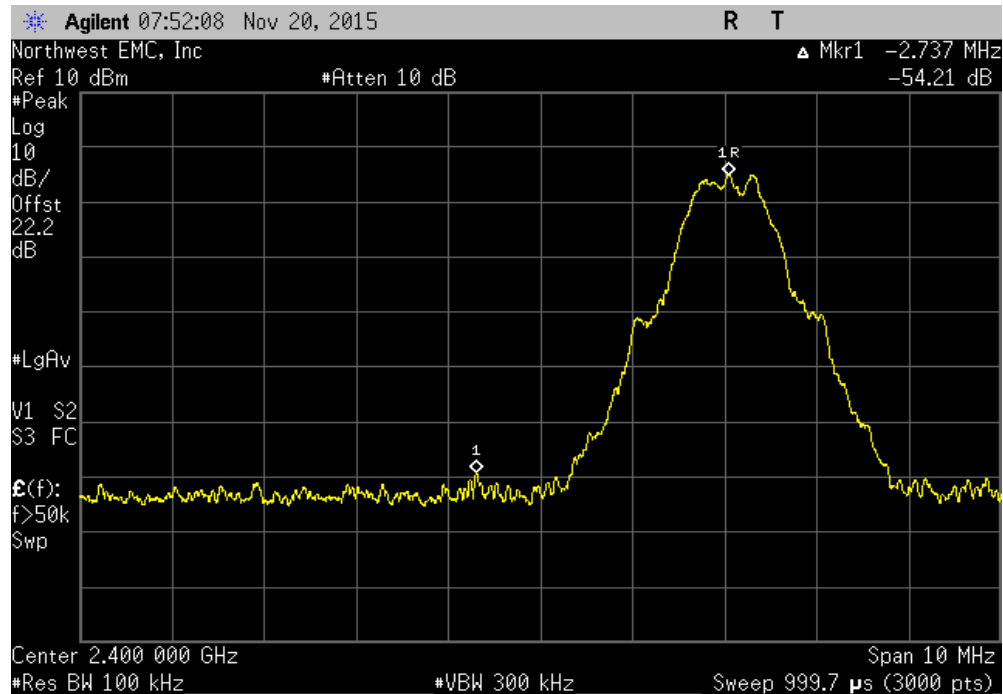
An RMS detector was used to match the method called out for Output Power. Because the reference level was taken with an RMS detector, the attenuation requirement is -30 dBc.

BAND EDGE COMPLIANCE

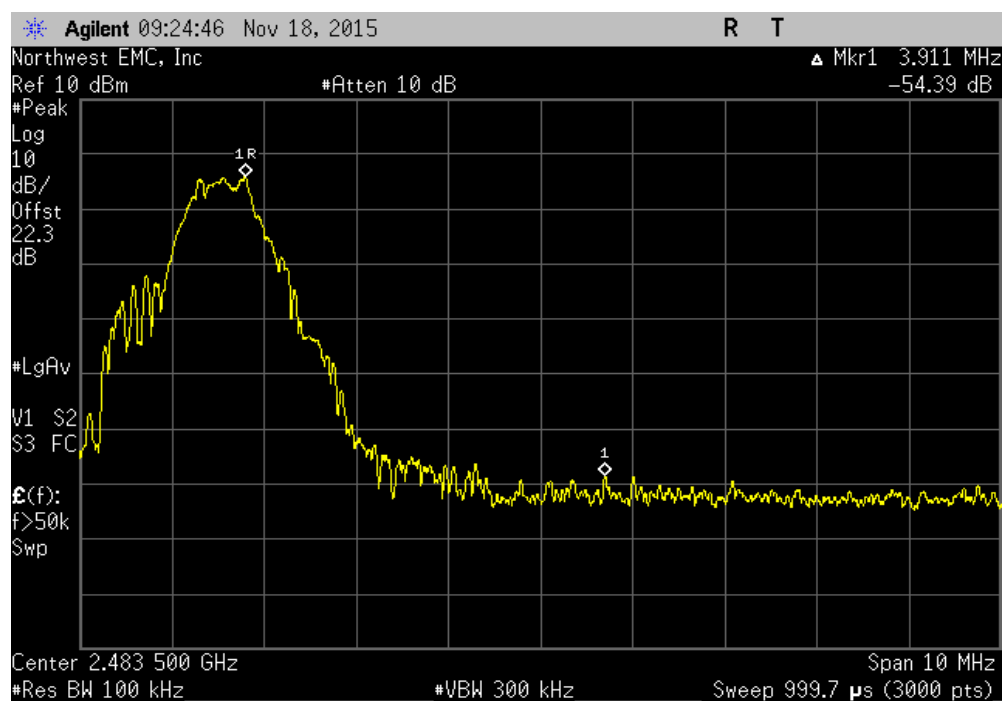
| | | | |
|--------------------------------------|----------------|-------------------------------|----------------------|
| EUT: Hearing Aid | | Work Order: STAK0061 | |
| Serial Number: 151250091 | | Date: 11/20/15 | |
| Customer: Starkey Laboratories, Inc. | | Temperature: 20.8°C | |
| Attendees: Charlie Esch | | Humidity: 25% | |
| Project: None | | Barometric Pres.: 993.3 | |
| Tested by: Trevor Buls | Power: Battery | Job Site: MN08 | |
| TEST SPECIFICATIONS | | | |
| FCC 15.247:2015 | | Test Method: ANSI C63.10:2013 | |
| COMMENTS | | | |
| None | | | |
| DEVIATIONS FROM TEST STANDARD | | | |
| None | | | |
| Configuration # | 3 | Signature: <i>Trevor Buls</i> | |
| | | Value (dBc) | Limit ≤ (dBc) Result |
| Low Channel, 2402 MHz | | -54.21 | -20 Pass |
| High Channel, 2480 MHz | | -54.39 | -20 Pass |

BAND EDGE COMPLIANCE

| Low Channel, 2402 MHz | | | | Value (dBc) | Limit ≤ (dBc) | Result |
|-----------------------|--|--|--|----------------|------------------|--------|
| | | | | -54.21 | -20 | Pass |



| High Channel, 2480 MHz | | | | Value (dBc) | Limit ≤ (dBc) | Result |
|------------------------|--|--|--|----------------|------------------|--------|
| | | | | -54.39 | -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. | Interval (mos) |
|------------------------------|--------------------|-----------------|-----|------------|----------------|
| Power Supply - DC | EZ Digital Co | GP-4303D | TPY | NCR | 0 |
| Meter - Multimeter | Fluke | 117/EFSP | MLR | 5/27/2015 | 36 |
| Cable | ESM Cable Corp. | TTBJ141 KMKM-72 | MNU | 9/18/2015 | 12 |
| Attenuator | S.M. Electronics | SA26B-20 | RFW | 3/10/2015 | 12 |
| Block - DC | Fairview Microwave | SD3379 | AMI | 9/18/2015 | 12 |
| Generator - Signal | Agilent | N5183A | TIK | 10/17/2014 | 36 |
| Analyzer - Spectrum Analyzer | Agilent | E4440A | AAX | 4/20/2015 | 12 |

TEST DESCRIPTION

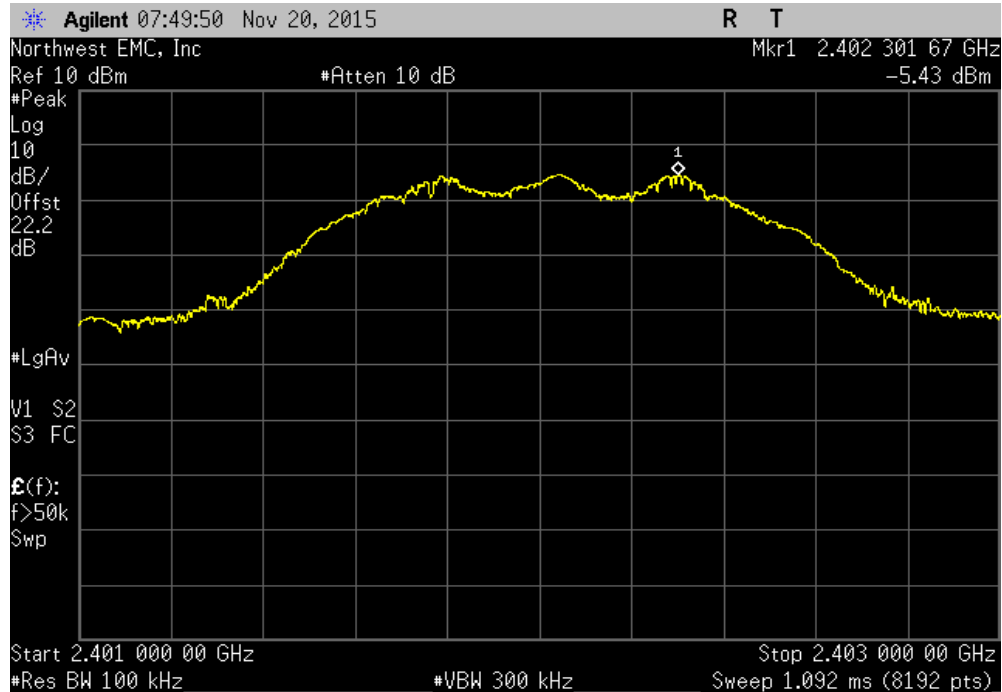
The spurious RF conducted emissions were measured with the EUT set to low, medium and high transmit frequencies. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the data rate(s) listed in the datasheet. For each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

SPURIOUS CONDUCTED EMISSIONS

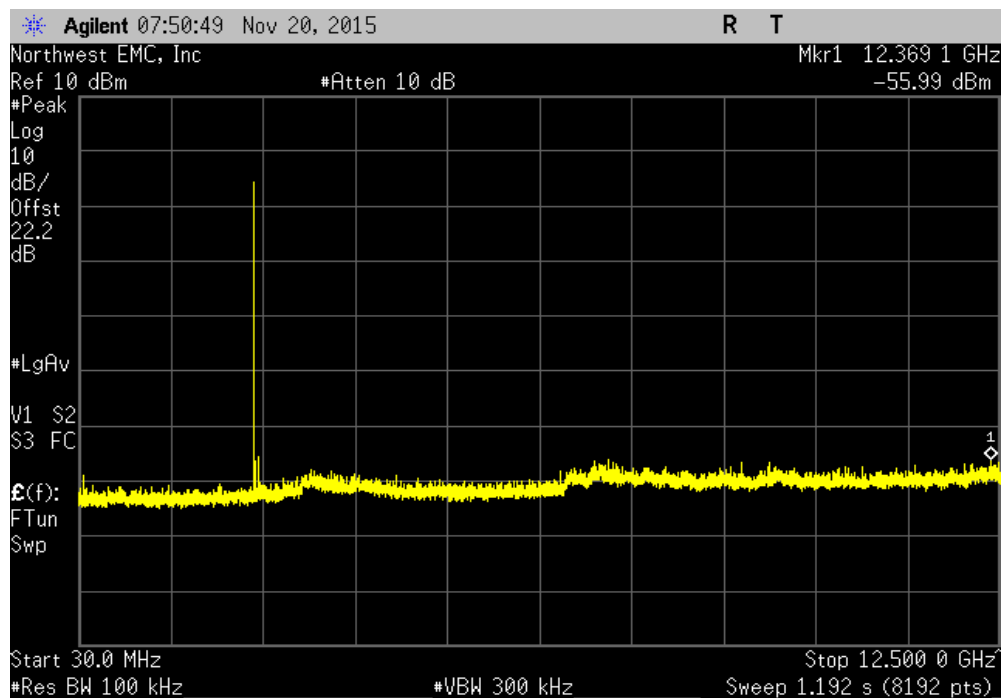
| | | | |
|--------------------------------------|---|------------------------------|-----------------|
| EUT: Hearing Aid | | Work Order: STAK0061 | |
| Serial Number: 151250091 | | Date: 11/20/15 | |
| Customer: Starkey Laboratories, Inc. | | Temperature: 20.8°C | |
| Attendees: Charlie Esch | | Humidity: 25% | |
| Project: None | | Barometric Pres.: 993.3 | |
| Tested by: Trevor Buls | | Power: Battery | |
| | | Job Site: MN08 | |
| TEST SPECIFICATIONS | | Test Method | |
| FCC 15.247:2015 | | ANSI C63.10:2013 | |
| COMMENTS | | | |
| None | | | |
| DEVIATIONS FROM TEST STANDARD | | | |
| None | | | |
| Configuration # | 3 | Signature <i>Trevor Buls</i> | |
| | | Frequency Range | Max Value (dBc) |
| | | | Limit ≤ (dBc) |
| | | | Result |
| Low Channel, 2402 MHz | | Fundamental | N/A |
| Low Channel, 2402 MHz | | 30 MHz - 12.5 GHz | -50.57 |
| Low Channel, 2402 MHz | | 12.5 GHz - 25 GHz | -46.99 |
| Mid Channel, 2442 MHz | | Fundamental | N/A |
| Mid Channel, 2442 MHz | | 30 MHz - 12.5 GHz | -51.32 |
| Mid Channel, 2442 MHz | | 12.5 GHz - 25 GHz | -45.78 |
| High Channel, 2480 MHz | | Fundamental | N/A |
| High Channel, 2480 MHz | | 30 MHz - 12.5 GHz | -52.26 |
| High Channel, 2480 MHz | | 12.5 GHz - 25 GHz | -48.16 |

SPURIOUS CONDUCTED EMISSIONS

| Low Channel, 2402 MHz | | | | | |
|-----------------------|--|-----------------|---------------|--------|--|
| Frequency Range | | Max Value (dBc) | Limit ≤ (dBc) | Result | |
| Fundamental | | N/A | N/A | N/A | |

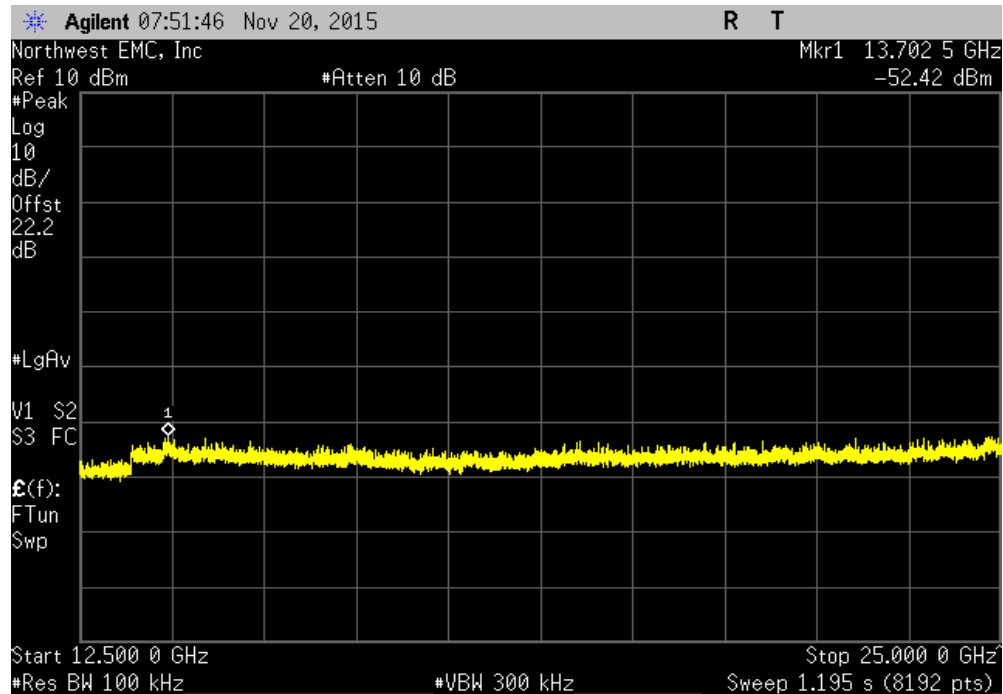


| Low Channel, 2402 MHz | | | | | |
|-----------------------|--|-----------------|---------------|--------|--|
| Frequency Range | | Max Value (dBc) | Limit ≤ (dBc) | Result | |
| 30 MHz - 12.5 GHz | | -50.57 | -20 | Pass | |

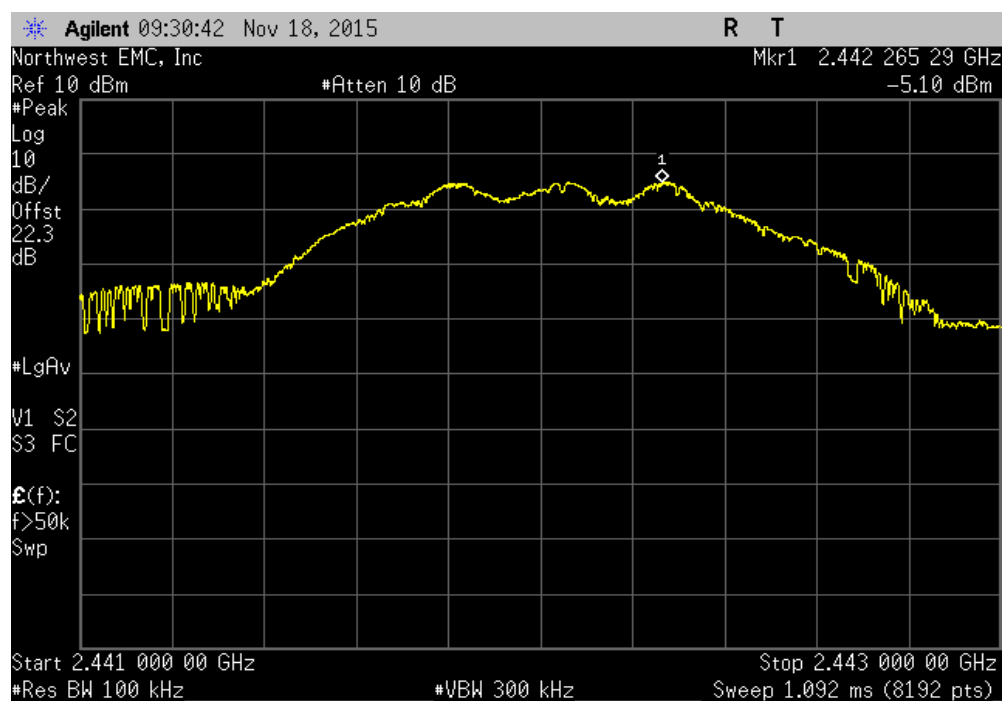


SPURIOUS CONDUCTED EMISSIONS

| Low Channel, 2402 MHz | | | | |
|-----------------------|-----------------|---------------|--------|--|
| Frequency Range | Max Value (dBc) | Limit ≤ (dBc) | Result | |
| 12.5 GHz - 25 GHz | -46.99 | -20 | Pass | |

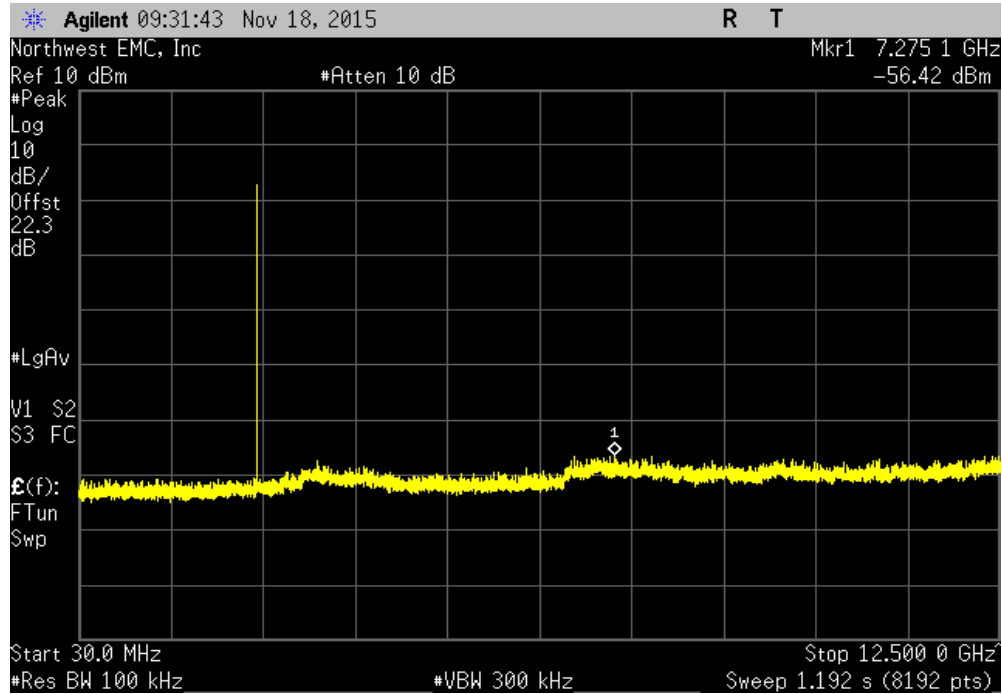


| Mid Channel, 2442 MHz | | | | |
|-----------------------|-----------------|---------------|--------|--|
| Frequency Range | Max Value (dBc) | Limit ≤ (dBc) | Result | |
| Fundamental | N/A | N/A | N/A | |

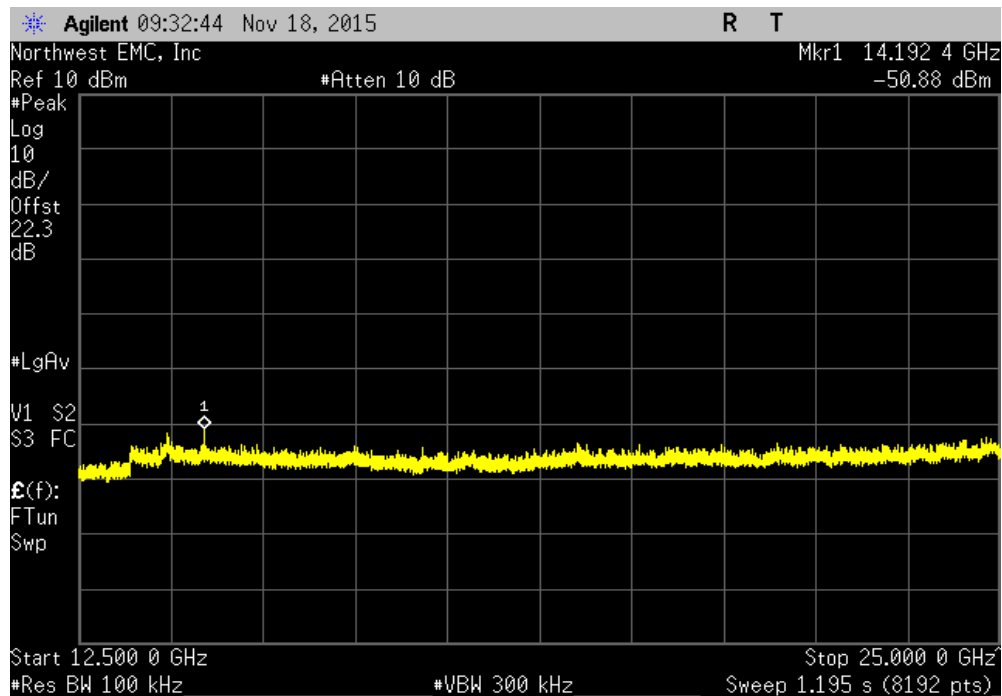


SPURIOUS CONDUCTED EMISSIONS

| Mid Channel, 2442 MHz | | | | |
|-----------------------|-----------------|---------------|--------|--|
| Frequency Range | Max Value (dBc) | Limit ≤ (dBc) | Result | |
| 30 MHz - 12.5 GHz | -51.32 | -20 | Pass | |

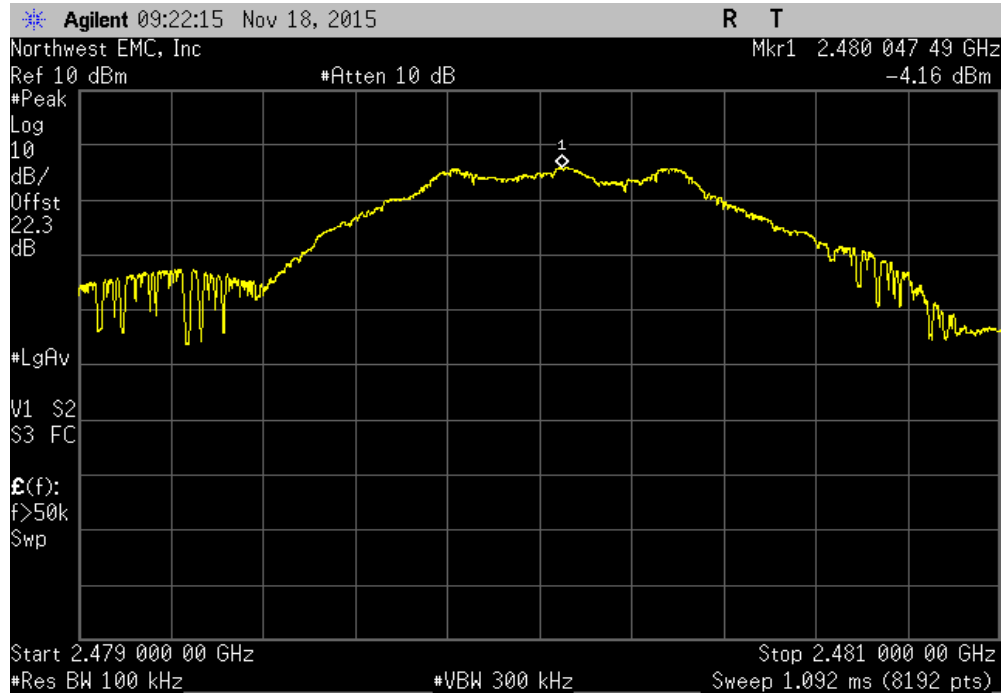


| Mid Channel, 2442 MHz | | | | |
|-----------------------|-----------------|---------------|--------|--|
| Frequency Range | Max Value (dBc) | Limit ≤ (dBc) | Result | |
| 12.5 GHz - 25 GHz | -45.78 | -20 | Pass | |

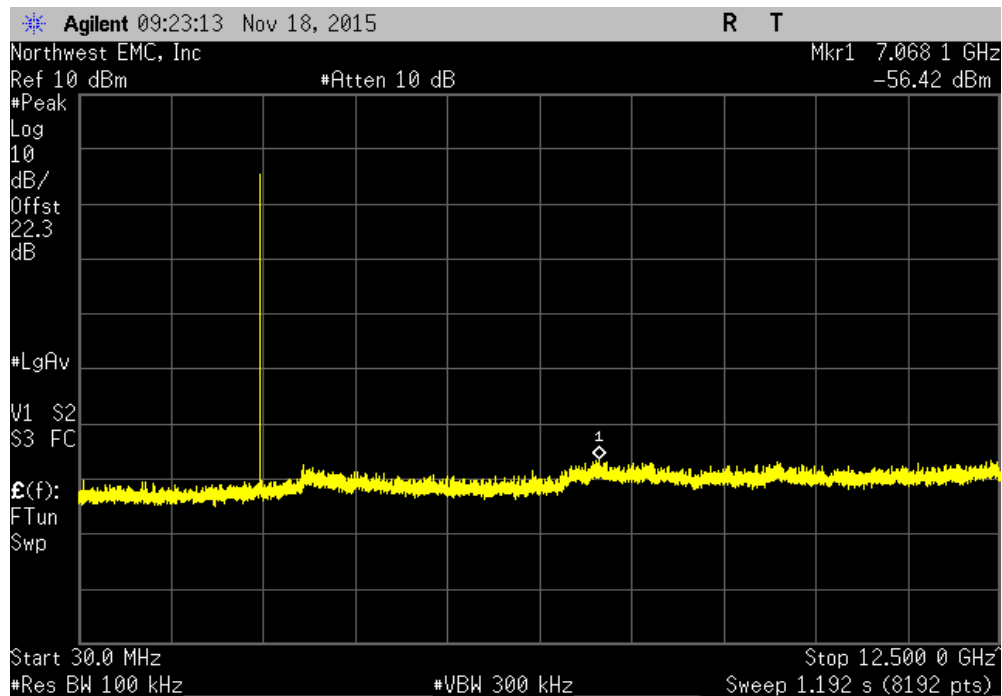


SPURIOUS CONDUCTED EMISSIONS

| High Channel, 2480 MHz | | | | | | |
|------------------------|--|-----------------|--|---------------|--------|--|
| Frequency Range | | Max Value (dBc) | | Limit ≤ (dBc) | Result | |
| Fundamental | | N/A | | N/A | N/A | |



| High Channel, 2480 MHz | | | | | | |
|------------------------|--|-----------------|--|---------------|--------|--|
| Frequency Range | | Max Value (dBc) | | Limit ≤ (dBc) | Result | |
| 30 MHz - 12.5 GHz | | -52.26 | | -20 | Pass | |



SPURIOUS CONDUCTED EMISSIONS

| High Channel, 2480 MHz | | | | |
|------------------------|-----------------|---------------|--------|--|
| Frequency Range | Max Value (dBc) | Limit ≤ (dBc) | Result | |
| 12.5 GHz - 25 GHz | -48.16 | -20 | Pass | |

