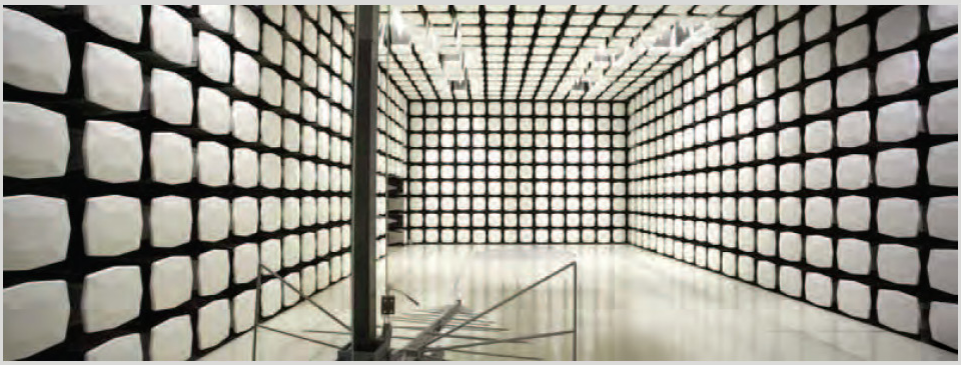
# Radio Design Group, Inc.

## UV-1G Belt Pack

### FCC 74H:2013

**Report #: RDIO0001**



Report Prepared By Northwest EMC Inc.

NORTHWEST EMC – (888) 364-2378 – www.nwemc.com

California – Minnesota – Oregon – New York – Washington

# CERTIFICATE OF TEST

WTD 12.5.23

**Last Date of Test: October 11, 2013**
**Radio Design Group, Inc.**
**Model: UV-1G Belt Pack**

## Emissions

| Test Description | Specification | Test Method | Pass/Fail |
|---|---|---|---|
| Output Power | FCC 74H:2013 (FCC 2.1046) | ANSI/TIA/EIA-603-C-2004 | Pass |
| Modulation Characteristics | FCC 74H:2013 (FCC 2.1047) | ANSI/TIA/EIA-603-C-2004 | Pass |
| Occupied Bandwidth | FCC 74H:2013 (FCC 2.1049) | ANSI/TIA/EIA-603-C-2004 | Pass |
| Emission Mask | FCC 74H:2013 (FCC 2.1049) | ANSI/TIA/EIA-603-C-2004 | Pass |
| Spurious Conducted Emissions | FCC 74H:2013 (FCC 2.1051) | ANSI/TIA/EIA-603-C-2004 | Pass |
| Spurious Radiated Emissions | FCC 74H:2013 (FCC 2.1053) | ANSI/TIA/EIA-603-C-2004 | Pass |
| Frequency Stability | FCC 74H:2013 (FCC 2.1055) | ANSI/TIA/EIA-603-C-2004 | Pass |

## Deviations From Test Standards

None

**Approved By:**

*Kyle Holgate, Operations Manager*

**NVLAP Lab Code: 200630-0**

***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.***

***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. This Report may only be duplicated in its entirety. 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.***

NORTHWEST EMC
REV 2012.08.02

# REVISION HISTORY

| Revision Number | Description | Date | Page Number |
|---|---|---|---|
| 00 | None | | |

## Barometric Pressure

The recorded barometric pressure has been normalized to sea level.

REV 2012.05.24

# 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 Guide 65 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

**KCC / 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.

## Hong Kong

**OFTA** – Recognized by OFTA as a CAB for the acceptance of test data.

## Vietnam

**MIC** – Recognized by MIC as a CAB for the acceptance of test data.

## Russia

**GOST** – Accredited by Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC to perform EMC and Hygienic testing for Information Technology products to GOST standards.

## SCOPE

For details on the Scopes of our Accreditations, please visit:
http://www.nwemc.com/accreditations/

# 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 listed below. 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 16-4-1 as applicable), and are available upon request.

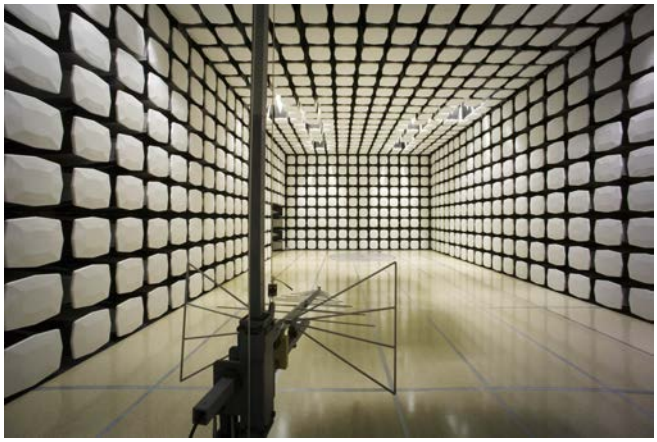
The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

| Test | + MU | - MU |
|---|---|---|
| Frequency Accuracy (Hz) | 0.12 | -0.01 |
| Amplitude Accuracy (dB) | 0.49 | -0.49 |
| Conducted Power (dB) | 0.41 | -0.41 |
| Radiated Power via Substitution (dB) | 0.69 | -0.68 |
| Temperature (degrees C) | 0.81 | -0.81 |
| Humidity (% RH) | 2.89 | -2.89 |
| Field Strength (dB) | 3.80 | -3.80 |
| AC Powerline Conducted Emissions (dB) | 2.94 | -2.94 |

# FACILITIES

REV 2013.06.28

| Oregon | California | New York | Minnesota | Washington |
|---|---|---|---|---|
| Labs EV01-12<br>22975 NW Evergreen Pkwy<br>Hillsboro, OR 97124<br>(503) 844-4066 | Labs OC01-13<br>41 Tesla<br>Irvine, CA 92618<br>(949) 861-8918 | Labs NY01-04<br>4939 Jordan Rd.<br>Elbridge, NY 13060<br>(315) 685-0796 | Labs MN01-08<br>9349 W Broadway Ave.<br>Brooklyn Park, MN 55445<br>(763) 425-2281 | Labs NC01-05,SU02,SU07<br>19201 120th Ave. NE<br>Bothell, WA 98011<br>(425) 984-6600 |
| **VCCI** | | | | |
| A-0108 | A-0029 | | A-0109 | A-0110 |
| **Industry Canada** | | | | |
| 2834D-1, 2834D-2 | 2834B-1, 2834B-2, 2834B-3 | | 2834E-1 | 2834C-1 |
| **NVLAP** | | | | |
| NVLAP Lab Code: 200630-0 | NVLAP Lab Code: 200676-0 | NVLAP Lab Code: 200761-0 | NVLAP Lab Code: 200881-0 | NVLAP Lab Code: 200629-0 |



# PRODUCT DESCRIPTION

## Client and Equipment Under Test (EUT) Information

| | |
|---|---|
| **Company Name:** | Radio Design Group, Inc. |
| **Address:** | 8925 Rogue River Highway |
| **City, State, Zip:** | Grants Pass, OR 97527 |
| **Test Requested By:** | Dennis Haley |
| **Model:** | UV-1G Belt Pack |
| **First Date of Test:** | October 07, 2013 |
| **Last Date of Test:** | October 11, 2013 |
| **Receipt Date of Samples:** | October 07, 2013 |
| **Equipment Design Stage:** | Production |
| **Equipment Condition:** | No Damage |

## Information Provided by the Party Requesting the Test

| **Functional Description of the EUT (Equipment Under Test):** |
|---|
| Wireless Intercom System Belt Pack |

| **Testing Objective:** |
|---|
| To demonstrate compliance with the requirements of FCC Part 74H |

# CONFIGURATIONS

## Configuration RDIO0001- 1

| Software/Firmware Running during test | |
|---|---|
| **Description** | **Version** |
| Radio Active Designs UV-1G | 1 |

| EUT | | | |
|---|---|---|---|
| **Description** | **Manufacturer** | **Model/Part Number** | **Serial Number** |
| Belt Pack | Radio Design Group, Inc. | UV-1G | 113-008 |

| Remote Equipment Outside of Test Setup Boundary | | | |
|---|---|---|---|
| **Description** | **Manufacturer** | **Model/Part Number** | **Serial Number** |
| Remote Laptop | Acer | TravelMate 8200 | LXTAX060346090A219EM15 |
| AC/DC Adapter | LITE-ON Technologies, Inc. | PA-1900-04 | 5Z03016001 |

| Cables | | | | | |
|---|---|---|---|---|---|
| **Cable Type** | **Shield** | **Length (m)** | **Ferrite** | **Connection 1** | **Connection 2** |
| Micro USB Adapter | No | 1m | No | Belt Pack | Remote Laptop |
| AC Power Cable | No | 1.2m | No | DC Power Supply | AC mains |
| AC Power Cable | No | 1m | No | AC/DC Power Adapter | AC mains |
| DC Power Cable | PA | 1.5m | PA | Laptop | AC/DC Power Adapter |
| DC Leads | No | .5m | No | DC Power Supply | Belt Pack |
| DC Leads | No | .5m | No | DC Power Supply | DMM |
| **PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.** | | | | | |

## Configuration RDIO0001- 2

| Software/Firmware Running during test | |
|---|---|
| **Description** | **Version** |
| Radio Active Designs UV-1G | 1 |

| EUT | | | |
|---|---|---|---|
| **Description** | **Manufacturer** | **Model/Part Number** | **Serial Number** |
| Belt Pack | Radio Design Group, Inc. | UV-1G | 092712-074 |

| Remote Equipment Outside of Test Setup Boundary | | | |
|---|---|---|---|
| **Description** | **Manufacturer** | **Model/Part Number** | **Serial Number** |
| Remote Laptop | Acer | TravelMate 8200 | LXTAX060346090A219EM15 |
| AC/DC Adapter | LITE-ON Technologies, Inc. | PA-1900-04 | 5Z03016001 |

| Cables | | | | | |
|---|---|---|---|---|---|
| **Cable Type** | **Shield** | **Length (m)** | **Ferrite** | **Connection 1** | **Connection 2** |
| MIC XLR Cable | No | 1.2m | No | Belt Pack | Unterminated |
| AC Power Cable | No | 1.2m | No | DC Power Supply | AC mains |
| AC Power Cable | No | 1m | No | AC/DC Power Adapter | AC mains |
| DC Power Cable | PA | 1.5m | PA | Laptop | AC/DC Power Adapter |
| **PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.** | | | | | |

# CONFIGURATIONS

## Configuration RDIO0001- 4

| Software/Firmware Running during test | |
|---|---|
| **Description** | **Version** |
| Radio Active Designs UV-1G | 1 |

| EUT | | | |
|---|---|---|---|
| **Description** | **Manufacturer** | **Model/Part Number** | **Serial Number** |
| Belt Pack | Radio Design Group, Inc. | UV-1G | 113-008 |

| Remote Equipment Outside of Test Setup Boundary | | | |
|---|---|---|---|
| **Description** | **Manufacturer** | **Model/Part Number** | **Serial Number** |
| Remote Laptop | Acer | TravelMate 8200 | LXTAX060346090A219EM15 |
| AC/DC Adapter | LITE-ON Technologies, Inc. | PA-1900-04 | 5Z03016001 |

| Cables | | | | | |
|---|---|---|---|---|---|
| **Cable Type** | **Shield** | **Length (m)** | **Ferrite** | **Connection 1** | **Connection 2** |
| Micro USB Adapter | No | 1m | No | Belt Pack | Remote Laptop |
| AC Power Cable | No | 1.2m | No | DC Power Supply | AC mains |
| AC Power Cable | No | 1m | No | AC/DC Power Adapter | AC mains |
| DC Power Cable | PA | 1.5m | PA | Laptop | AC/DC Power Adapter |
| DC Leads | No | .5m | No | DC Power Supply | Belt Pack |
| DC Leads | No | .5m | No | DC Power Supply | DMM |
| MIC XLR to BNC | No | 1.1m | No | Belt Pack | Function Generator |
| BNC Cable | No | 1m | No | Function Generator | Oscilloscope |
| **PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.** | | | | | |

# MODIFICATIONS

WTD 12.5.23

## Equipment Modifications

| Item | Date | Test | Modification | Note | Disposition of EUT |
|---|---|---|---|---|---|
| 1 | 10/07/2013 | 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. |
| 2 | 10/07/2013 | 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. |
| 3 | 10/08/2013 | Frequency Stability | 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 | 10/08/2013 | Emission Mask | 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 | 10/10/2013 | Spurious Radiated 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. |
| 6 | 10/11/2013 | 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. |
| 7 | 10/11/2013 | Modulation Characteristics | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | Scheduled testing was completed. |

# 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 |
|---|---|---|---|---|---|
| MXG Vector Signal Generator | Agilent | N5182A | TIF | NCR | 0 |
| Attenuator, 'Precision N' | S.M. Electronics | SA18N-06/SM4032 | REE | 12/11/2012 | 12 |
| Power Meter | Gigatronics | 8651A | SPM | 1/9/2012 | 24 |
| Power Sensor | Gigatronics | 80701A | SPL | 7/8/2011 | 36 |
| DC Power Supply | Topward | TPS-2000 | TPD | NCR | 0 |
| Multimeter | Tektronix | DMM912 | MMH | 2/5/2013 | 24 |
| EV06 Direct Connect Cable | ESM Cable Corp. | TT | ECA | NCR | 0 |
| Attenuator 20 dB, SMA M/F 26GHz | S.M. Electronics | SA26B-20 | AUY | 7/30/2013 | 12 |
| 40GHz DC Block | Miteq | DCB4000 | AMD | 5/16/2013 | 12 |
| Spectrum Analyzer | Agilent | E4440A | AFD | 7/5/2012 | 24 |

**TEST DESCRIPTION**

Per FCC Part 2.1046, the output power shall be measured at the RF terminal. The peak output power was measured with the EUT set to low, medium and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was transmitting on low, mid and high frequencies.

# OUTPUT POWER

| | | | | | |
|---|---|---|---|---|---|
| **EUT:** | UV-1G Belt Pack | | | **Work Order:** | RDIO0001 |
| **Serial Number:** | 113-008 | | | **Date:** | 10/08/13 |
| **Customer:** | Radio Design Group, Inc | | | **Temperature:** | 22°C |
| **Attendees:** | None | | | **Humidity:** | 41% |
| **Project:** | None | | | **Barometric Pres.:** | 1013.1 |
| **Tested by:** | Brandon Hobbs | **Power:** | 7.5 VDC | **Job Site:** | EV06 |

| TEST SPECIFICATIONS | Test Method |
|---|---|
| FCC 74H:2013 | ANSI/TIA/EIA-603-C-2004 |
| | |

**COMMENTS**

None

**DEVIATIONS FROM TEST STANDARD**

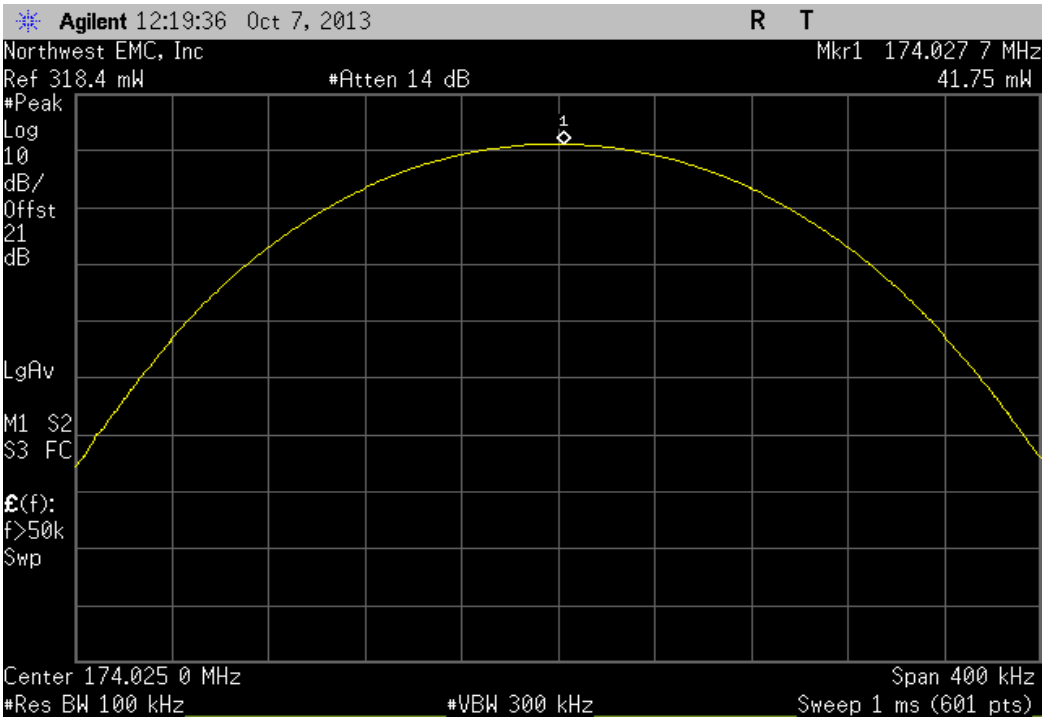
None

| Configuration # | 1 | Signature |
|---|---|---|

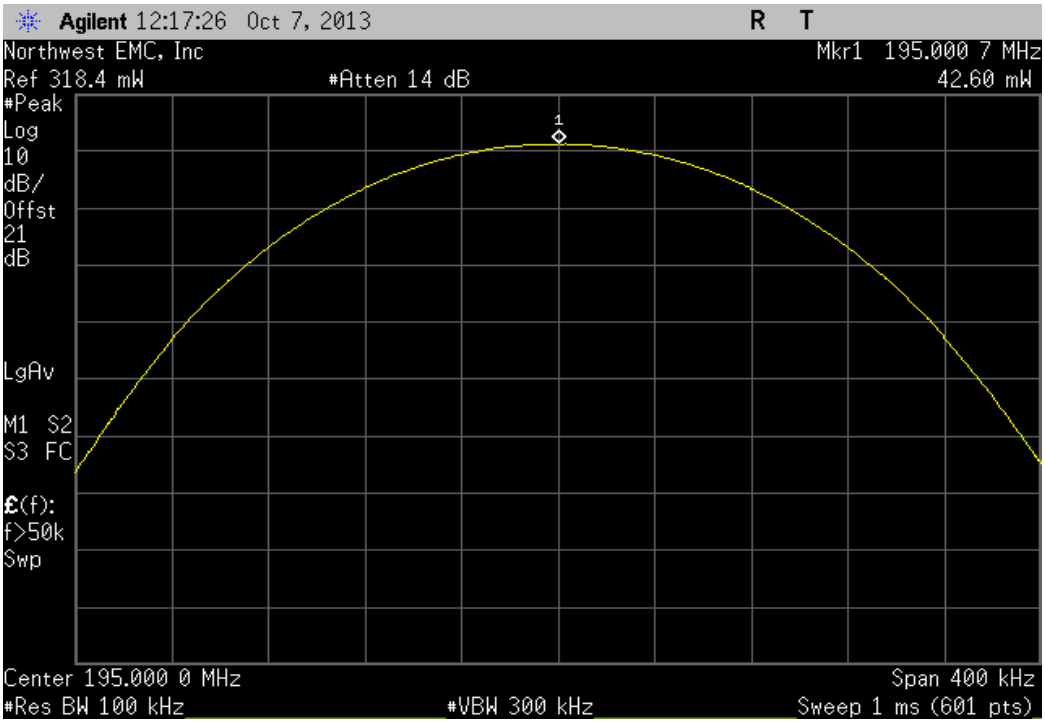
| | Value | Limit | Result |
|---|---|---|---|
| Broadcasting Frequencies | | | |
| Low Channel, 174.025 MHz | 41.70 mW | 50 mW | Pass |
| Mid Channel, 195 MHz | 42.60 mW | 50 mW | Pass |
| High Channel, 215.975 MHz | 42.91 mW | 50 mW | Pass |

# OUTPUT POWER

| Broadcasting Frequencies, Low Channel, 174.025 MHz | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | Value | Limit | Result |
| | | | | | 41.70 mW | 50 mW | Pass |

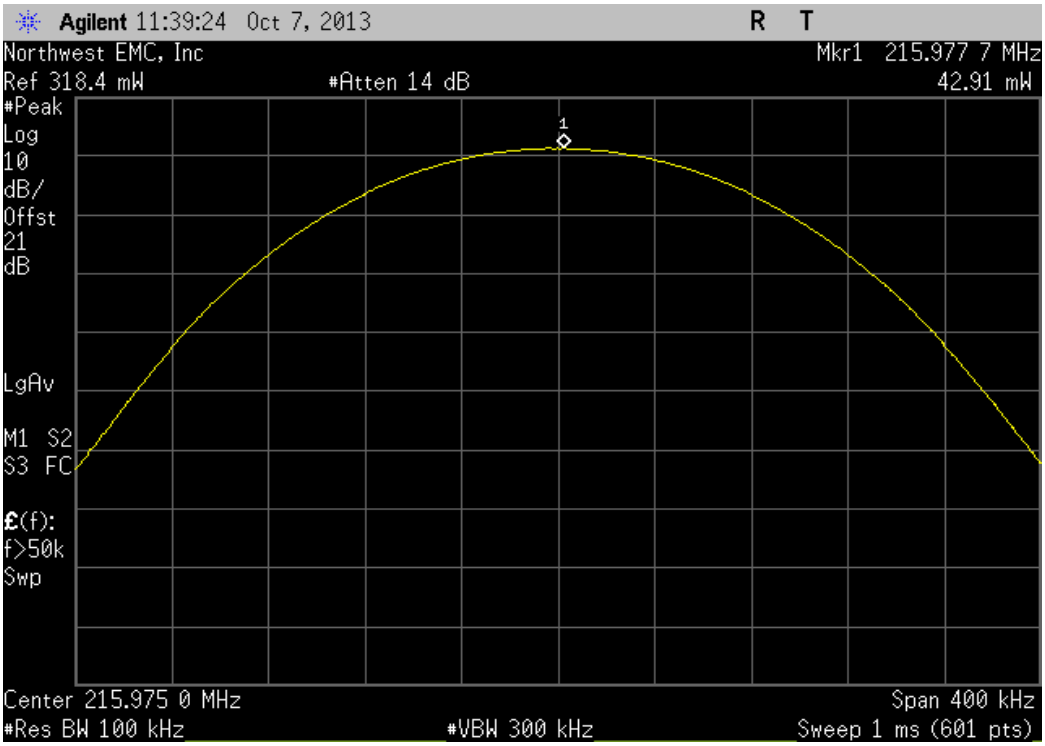



| Broadcasting Frequencies, Mid Channel, 195 MHz | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | Value | Limit | Result |
| | | | | | 42.60 mW | 50 mW | Pass |



# OUTPUT POWER

| Broadcasting Frequencies, High Channel, 215.975 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit | Result |
| | | | | 42.91 mW | 50 mW | Pass |



# Modulation Characteristics

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 |
|---|---|---|---|---|---|
| Attenuator, 20 dB, 'BNC' | SM Electronics | SA01B-20 | REZ | 12/11/2012 | 12 |
| Waveform Generator | Agilent | 33120A | TEC | NCR | 0 |
| scilloscope (For REFERENCE ONLY | Tektronix | TDS 3052 | TOF | NCR | 0 |
| DC Power Supply | Topward | TPS-2000 | TPD | NCR | 0 |
| Multimeter | Tektronix | DMM912 | MMH | 2/5/2013 | 24 |
| EV06 Direct Connect Cable | ESM Cable Corp. | TT | ECA | NCR | 0 |
| Attenuator 20 dB, SMA M/F 26GHz | S.M. Electronics | SA26B-20 | AUY | 7/30/2013 | 12 |
| 40GHz DC Block | Miteq | DCB4000 | AMD | 5/16/2013 | 12 |
| Spectrum Analyzer | Agilent | E4440A | AFD | 7/5/2012 | 24 |
| MXG Vector Signal Generator | Agilent | N5182A | TIF | NCR | 0 |
| Attenuator, 'Precision N' | S.M. Electronics | SA18N-06/SM4032 | REE | 12/11/2012 | 12 |
| Power Meter | Gigatronics | 8651A | SPM | 1/9/2012 | 24 |
| Power Sensor | Gigatronics | 80701A | SPL | 7/8/2011 | 36 |

**TEST DESCRIPTION**

Per FCC rule part 2.1047(a) the modulation characteristics of the radio were measured across its rated audio input voltage and frequency ranges.

# Modulation Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **EUT:** | UV-1G Belt Pack | | | **Work Order:** | RDIO0001 |
| **Serial Number:** | 113-008 | | | **Date:** | 10/11/13 |
| **Customer:** | Radio Design Group, Inc. | | | **Temperature:** | 22°C |
| **Attendees:** | None | | | **Humidity:** | 41% |
| **Project:** | None | | | **Barometric Pres.:** | 1013.1 |
| **Tested by:** | Brandon Hobbs | **Power:** | 7.5 VDC | **Job Site:** | EV06 |

| TEST SPECIFICATIONS | Test Method |
|---|---|
| FCC 74H:2013 | ANSI/TIA/EIA-603-C-2004 |
| | |

**COMMENTS**

None

**DEVIATIONS FROM TEST STANDARD**

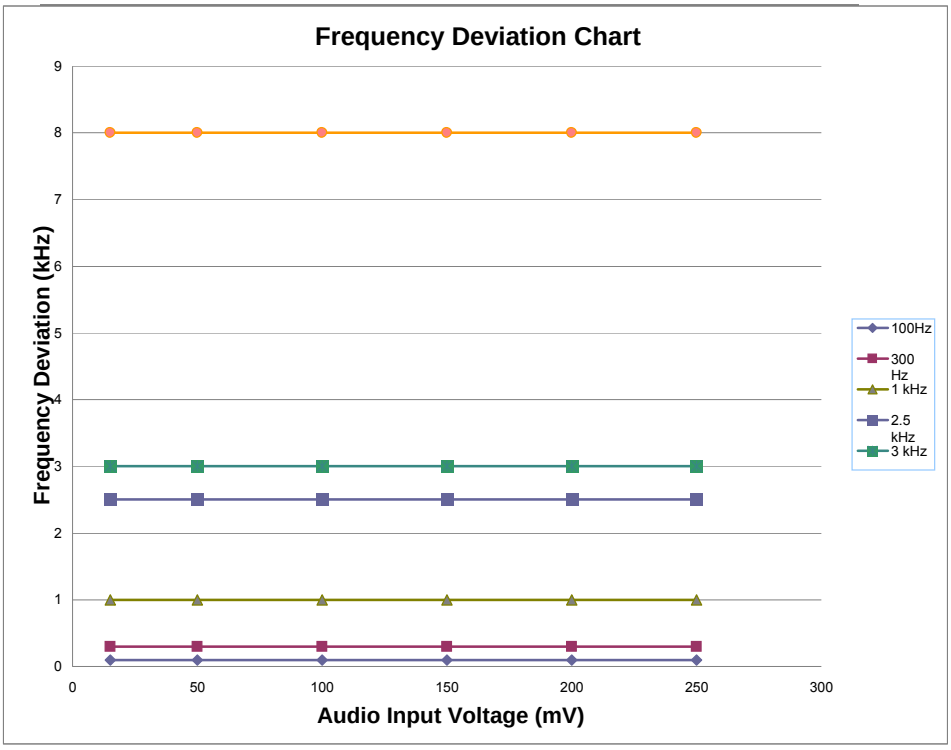
None

| Configuration # | 4 | Signature |
|---|---|---|

| | Deviation (kHz) | Limit | Result |
|---|---|---|---|
| Broadcasting Frequency | | | |
| Mid Channel, 195 MHz | SEE GRAPH | N/A | N/A |

# Modulation Characteristics

| Broadcasting Frequency, Mid Channel, 195 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Deviation (kHz) | Limit | Result |
| | | | | SEE GRAPH | N/A | N/A |




| Audio Input Voltage (mV) | Audio Input Frequency | | | | | |
|---|---|---|---|---|---|---|
| | 100 Hz | 300 Hz | 1 kHz | 2.5 kHz | 3 kHz | 8 kHz |
| | Frequency Deviation (kHz) | | | | | |
| 15 | 0.1 | 0.3 | 1 | 2.5 | 3 | 8 |
| 50 | 0.1 | 0.3 | 1 | 2.5 | 3 | 8 |
| 100 | 0.1 | 0.3 | 1 | 2.5 | 3 | 8 |
| 150 | 0.1 | 0.3 | 1 | 2.5 | 3 | 8 |
| 200 | 0.1 | 0.3 | 1 | 2.5 | 3 | 8 |
| 250 | 0.1 | 0.3 | 1 | 2.5 | 3 | 8 |

Note that the maximum rated audio input voltage is 250 mV

# 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 |
|---|---|---|---|---|---|
| Attenuator, 20 dB, 'BNC' | SM Electronics | SA01B-20 | REZ | 12/11/2012 | 12 |
| Oscilloscope (For REFERENCE | Tektronix | TDS 3052 | TOF | NCR | 0 |
| Waveform Generator | Agilent | 33120A | TEC | NCR | 0 |
| DC Power Supply | Topward | TPS-2000 | TPD | NCR | 0 |
| Multimeter | Tektronix | DMM912 | MMH | 2/5/2013 | 24 |
| Attenuator, 'Precision N' | S.M. Electronics | SA18N-06/SM4032 | REE | 12/11/2012 | 12 |
| MXG Vector Signal Generator | Agilent | N5182A | TIF | NCR | 0 |
| Power Meter | Gigatronics | 8651A | SPM | 1/9/2012 | 24 |
| Power Sensor | Gigatronics | 80701A | SPL | 7/8/2011 | 36 |
| EV06 Direct Connect Cable | ESM Cable Corp. | TT | ECA | NCR | 0 |
| Attenuator 20 dB, SMA M/F 26GHz | S.M. Electronics | SA26B-20 | AUY | 7/30/2013 | 12 |
| 40GHz DC Block | Miteq | DCB4000 | AMD | 5/16/2013 | 12 |
| Spectrum Analyzer | Agilent | E4440A | AFD | 7/5/2012 | 24 |

**TEST DESCRIPTION**

Per FCC rule part 74.861(e)(5), the emission bandwidth was determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency with a 2.5kHz tone modulated across the carrier. The points are 26 dB down relative to the maximum level of the modulated carrier. A spectrum analyzer using a peak detector with no video filtering was used with a resolution bandwidth equal to approximately 1-3% percent of the emission bandwidth of the EUT.

# OCCUPIED BANDWIDTH

| | | | | | |
|---|---|---|---|---|---|
| **EUT:** | UV-1G Belt Pack | | | **Work Order:** | RDIO0001 |
| **Serial Number:** | 113-008 | | | **Date:** | 10/11/13 |
| **Customer:** | Radio Design Group, Inc. | | | **Temperature:** | 22°C |
| **Attendees:** | None | | | **Humidity:** | 41% |
| **Project:** | None | | | **Barometric Pres.:** | 1013.1 |
| **Tested by:** | Brandon Hobbs | **Power:** | 7.5 VDC | **Job Site:** | EV06 |

| TEST SPECIFICATIONS | Test Method |
|---|---|
| FCC 74H:2013 | ANSI/TIA/EIA-603-C-2004 |
| | |

**COMMENTS**

None

**DEVIATIONS FROM TEST STANDARD**

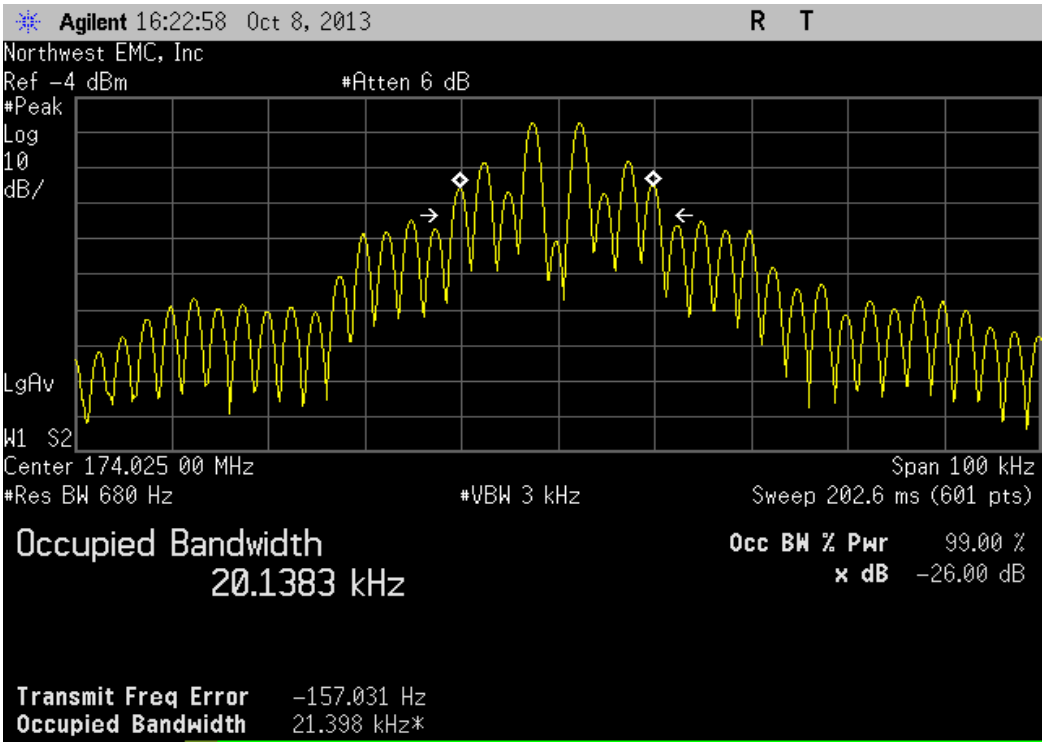
None

| Configuration # | 1 | Signature |
|---|---|---|

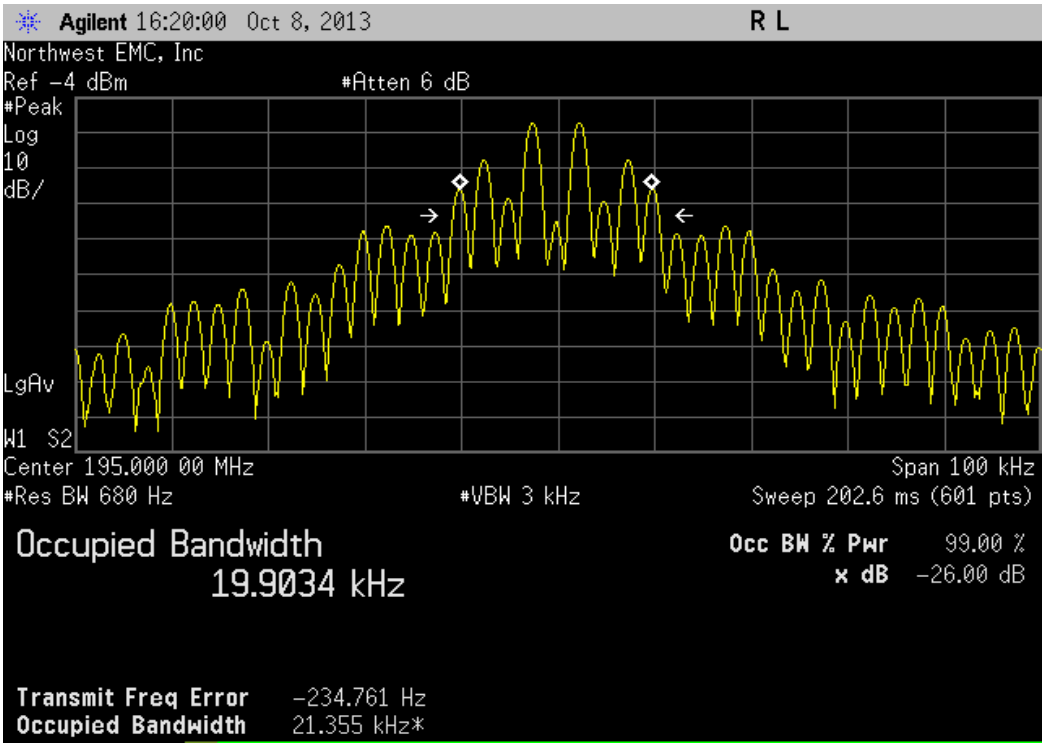
| | Value | Limit | Result |
|---|---|---|---|
| Broadcasting Frequencies | | | |
| Low Channel, 174.025 MHz | 21.398 kHz | < 200 kHz | Pass |
| Mid Channel, 195 MHz | 21.355 kHz | < 200 kHz | Pass |
| High Channel, 215.975 MHz | 21.788 kHz | < 200 kHz | Pass |

# OCCUPIED BANDWIDTH

| Broadcasting Frequencies, Low Channel, 174.025 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit | Result |
| | | | | 21.398 kHz | < 200 kHz | Pass |

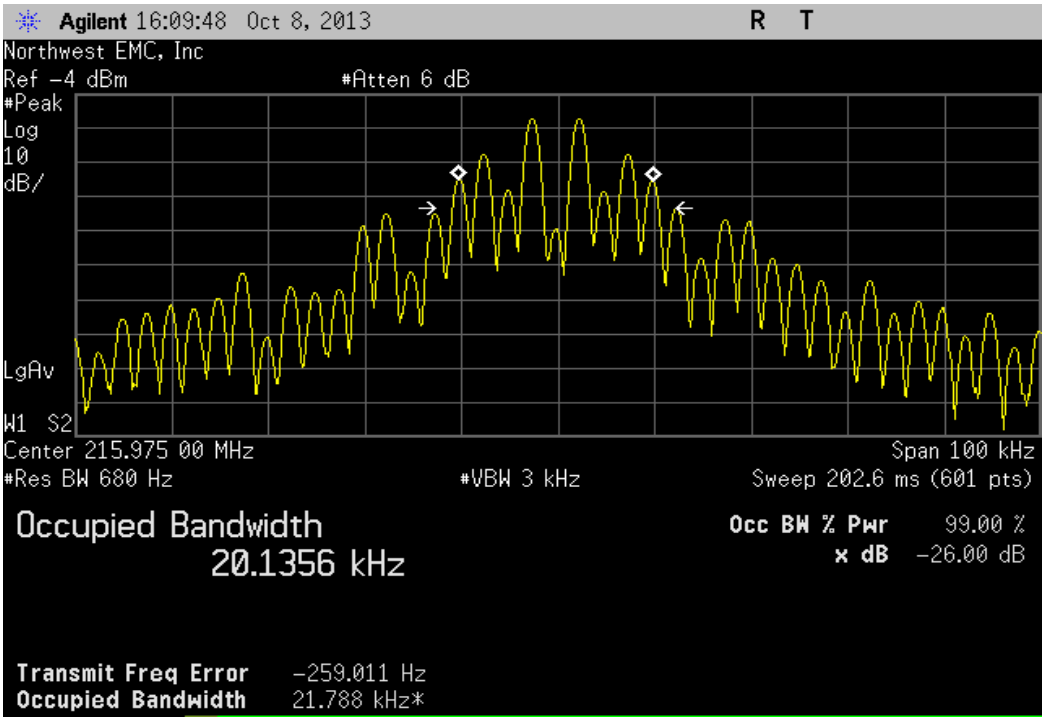



| Broadcasting Frequencies, Mid Channel, 195 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit | Result |
| | | | | 21.355 kHz | < 200 kHz | Pass |



# OCCUPIED BANDWIDTH

| Broadcasting Frequencies, High Channel, 215.975 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit | Result |
| | | | | 21.788 kHz | < 200 kHz | Pass |



# EMISSION MASK

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 |
|---|---|---|---|---|---|
| DC Power Supply | Topward | TPS-2000 | TPD | NCR | 0 |
| Multimeter | Tektronix | DMM912 | MMH | 2/5/2013 | 24 |
| Attenuator, 'Precision N' | S.M. Electronics | SA18N-06/SM4032 | REE | 12/11/2012 | 12 |
| MXG Vector Signal Generator | Agilent | N5182A | TIF | NCR | 0 |
| Power Meter | Gigatronics | 8651A | SPM | 1/9/2012 | 24 |
| Power Sensor | Gigatronics | 80701A | SPL | 7/8/2011 | 36 |
| EV06 Direct Connect Cable | ESM Cable Corp. | TT | ECA | NCR | 0 |
| Attenuator 20 dB, SMA M/F 26GHz | S.M. Electronics | SA26B-20 | AUY | 7/30/2013 | 12 |
| 40GHz DC Block | Miteq | DCB4000 | AMD | 5/16/2013 | 12 |
| Spectrum Analyzer | Agilent | E4440A | AFD | 7/5/2012 | 24 |

**TEST DESCRIPTION**

Per FCC Part 74.861(e)(6) the emission mask was measured. Emissions more than 100 - 200kHz away from the center frequency must be attenuated below the transmitter output power by at least 25 dB. This was evaluated by the Occupied Bandwidth measurement according to FCC Part 74.861(e)(5). In addition, emissions 200 - 500kHz away from the center frequency must be attenuated below the transmitter output power by at least 35 dB.

A spectrum analyzer was used to measure the emission mask. A spectrum analyzer using a peak detector.

# EMISSION MASK

| | | | | | |
|---|---|---|---|---|---|
| **EUT:** | UV-1G Belt Pack | | | **Work Order:** | RDIO0001 |
| **Serial Number:** | 113-008 | | | **Date:** | 10/08/13 |
| **Customer:** | Radio Design Group, Inc | | | **Temperature:** | 22.2°C |
| **Attendees:** | None | | | **Humidity:** | 43% |
| **Project:** | None | | | **Barometric Pres.:** | 1017.9 |
| **Tested by:** | Brandon Hobbs | **Power:** | 7.5 VDC | **Job Site:** | EV06 |

| TEST SPECIFICATIONS | Test Method |
|---|---|
| FCC 74H:2013 | ANSI/TIA/EIA-603-C-2004 |
| | |

**COMMENTS**

None

**DEVIATIONS FROM TEST STANDARD**

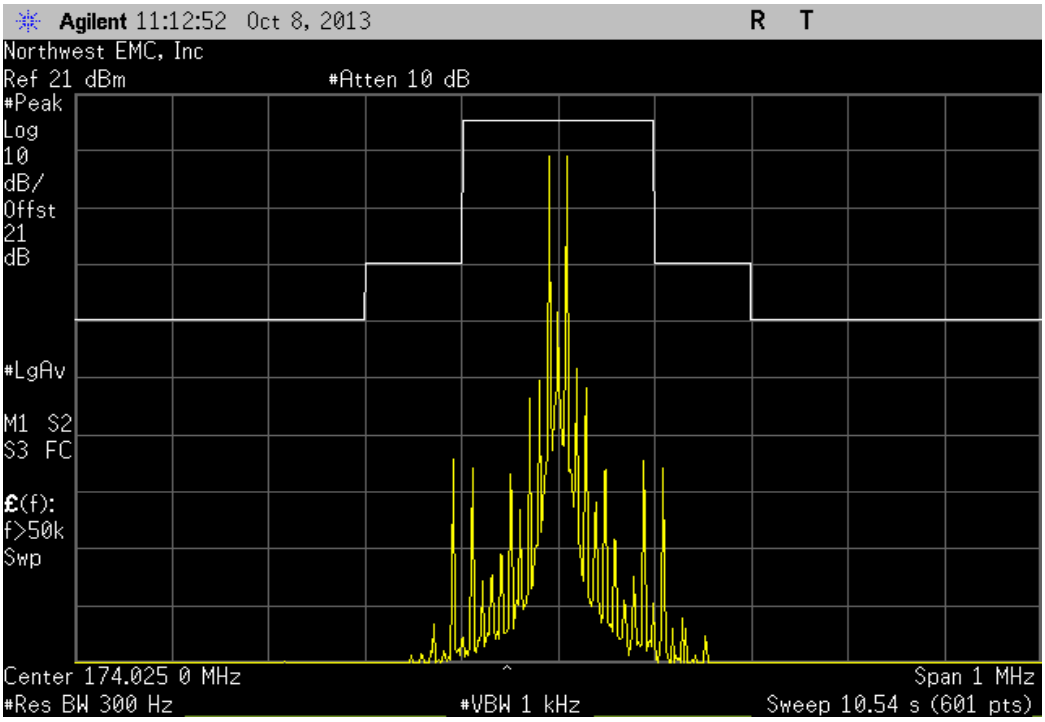
None

| Configuration # | 1 | Signature |
|---|---|---|

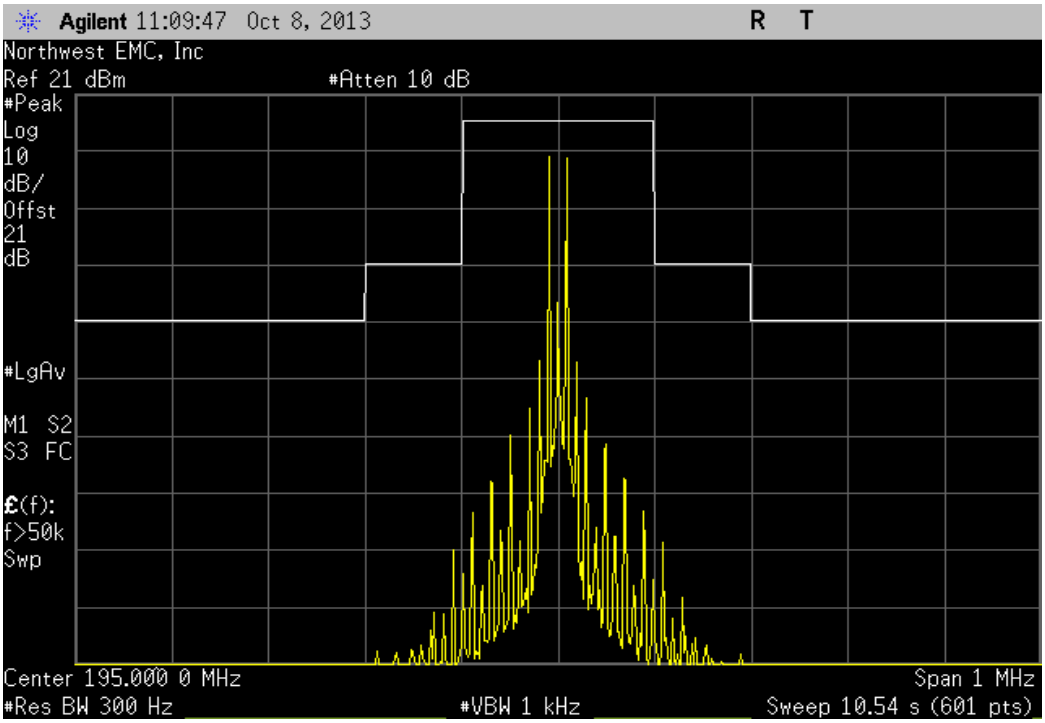
| | Value | Limit | Result |
|---|---|---|---|
| Broadcasting Frequencies | | | |
| Low Channel, 174.025 MHz | SEE GRAPH | SEE GRAPH | Pass |
| Mid Channel, 195 MHz | SEE GRAPH | SEE GRAPH | Pass |
| High Channel, 215.975 MHz | SEE GRAPH | SEE GRAPH | Pass |

# EMISSION MASK

| Broadcasting Frequencies, Low Channel, 174.025 MHz | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | Value | Limit | Result |
| | | | | | SEE GRAPH | SEE GRAPH | Pass |

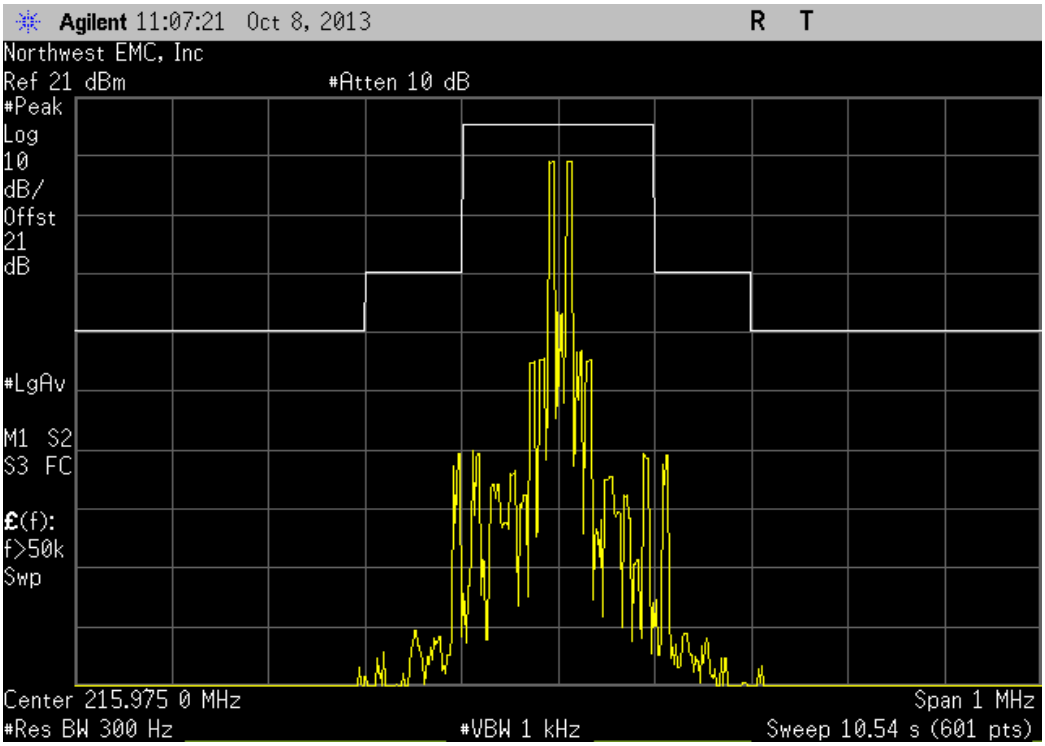



| Broadcasting Frequencies, Mid Channel, 195 MHz | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | Value | Limit | Result |
| | | | | | SEE GRAPH | SEE GRAPH | Pass |



# EMISSION MASK

| Broadcasting Frequencies, High Channel, 215.975 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit | Result |
| | | | | SEE GRAPH | SEE GRAPH | 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 |
|---|---|---|---|---|---|
| DC Power Supply | Topward | TPS-2000 | TPD | NCR | 0 |
| Multimeter | Tektronix | DMM912 | MMH | 2/5/2013 | 24 |
| Attenuator, 'Precision N' | S.M. Electronics | SA18N-06/SM4032 | REE | 12/11/2012 | 12 |
| MXG Vector Signal Generator | Agilent | N5182A | TIF | NCR | 0 |
| Power Meter | Gigatronics | 8651A | SPM | 1/9/2012 | 24 |
| Power Sensor | Gigatronics | 80701A | SPL | 7/8/2011 | 36 |
| EV06 Direct Connect Cable | ESM Cable Corp. | TT | ECA | NCR | 0 |
| Attenuator 20 dB, SMA M/F 26GHz | S.M. Electronics | SA26B-20 | AUY | 7/30/2013 | 12 |
| 40GHz DC Block | Miteq | DCB4000 | AMD | 5/16/2013 | 12 |
| Spectrum Analyzer | Agilent | E4440A | AFD | 7/5/2012 | 24 |

**TEST DESCRIPTION**

The antenna port spurious conducted emissions were measured at the RF output terminal of the EUT with 20dB of external attenuation on the RF input of the spectrum analyzer. Analyzer plots were made from 30 MHz to 2.2 GHz. The peak conducted power of spurious emissions, up to the 10th harmonic of the transmit frequency, were investigated to a limit of –13 dBm.

# SPURIOUS CONDUCTED EMISSIONS

| | | | | | |
|---|---|---|---|---|---|
| **EUT:** | UV-1G Belt Pack | | | **Work Order:** | RDIO0001 |
| **Serial Number:** | 113-008 | | | **Date:** | 10/08/13 |
| **Customer:** | Radio Design Group, Inc | | | **Temperature:** | 22°C |
| **Attendees:** | None | | | **Humidity:** | 41% |
| **Project:** | None | | | **Barometric Pres.:** | 1013.1 |
| **Tested by:** | Brandon Hobbs | **Power:** | 7.5 VDC | **Job Site:** | EV06 |

| TEST SPECIFICATIONS | Test Method |
|---|---|
| FCC 74H:2013 | ANSI/TIA/EIA-603-C-2004 |
| | |

**COMMENTS**

None

**DEVIATIONS FROM TEST STANDARD**

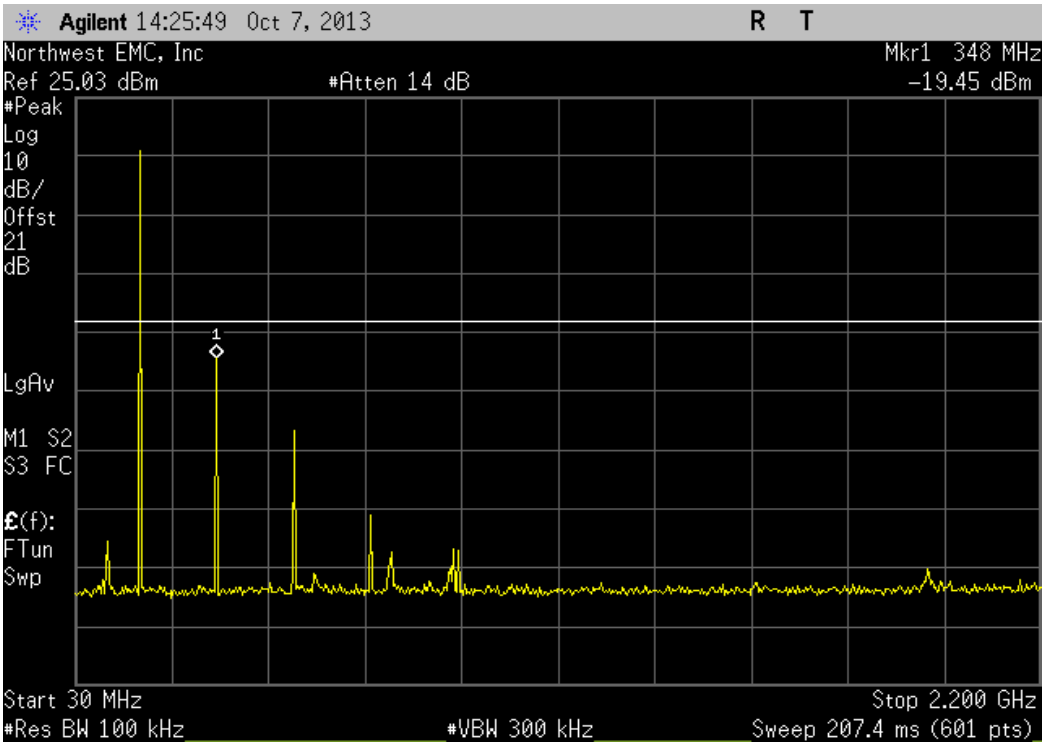
None

| Configuration # | 1 | Signature |
|---|---|---|

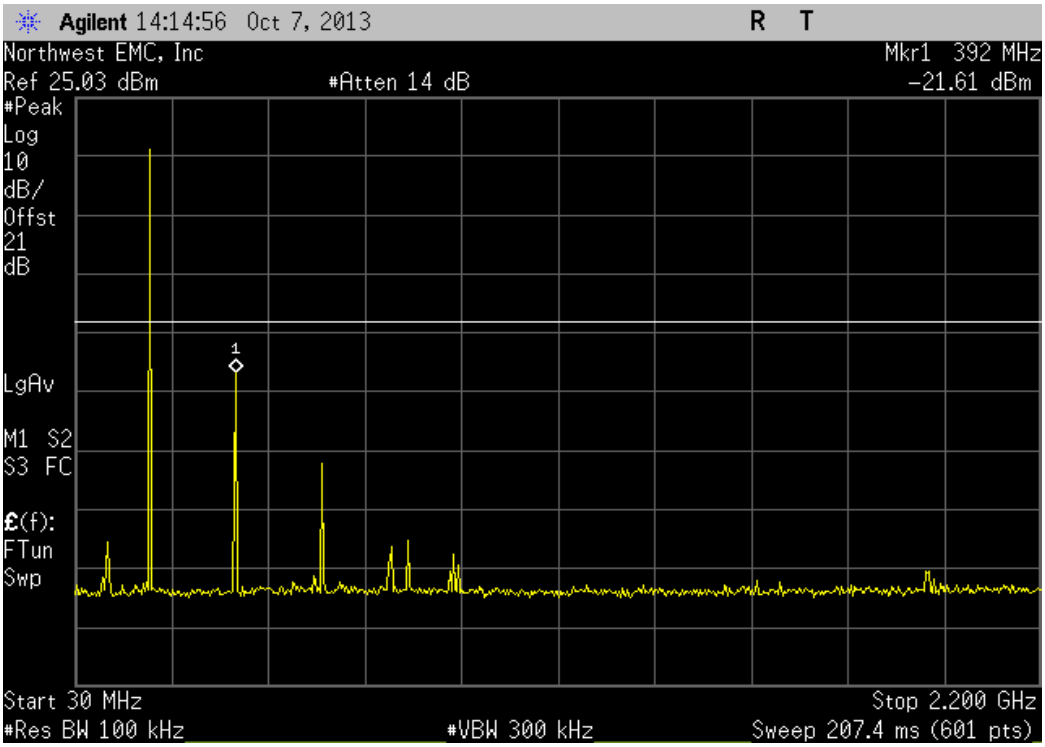
| | Value | Limit | Result |
|---|---|---|---|
| Broadcasting Frequencies | | | |
| Low Channel, 174.025 MHz | -19.45 dBm | -13 dBm | Pass |
| Mid Channel, 195 MHz | -21.91 dBm | -13 dBm | Pass |
| High Channel, 215.975 MHz | -21.11 dBm | -13 dBm | Pass |

# SPURIOUS CONDUCTED EMISSIONS

| Broadcasting Frequencies, Low Channel, 174.025 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit | Result |
| | | | | -19.45 dBm | -13 dBm | Pass |

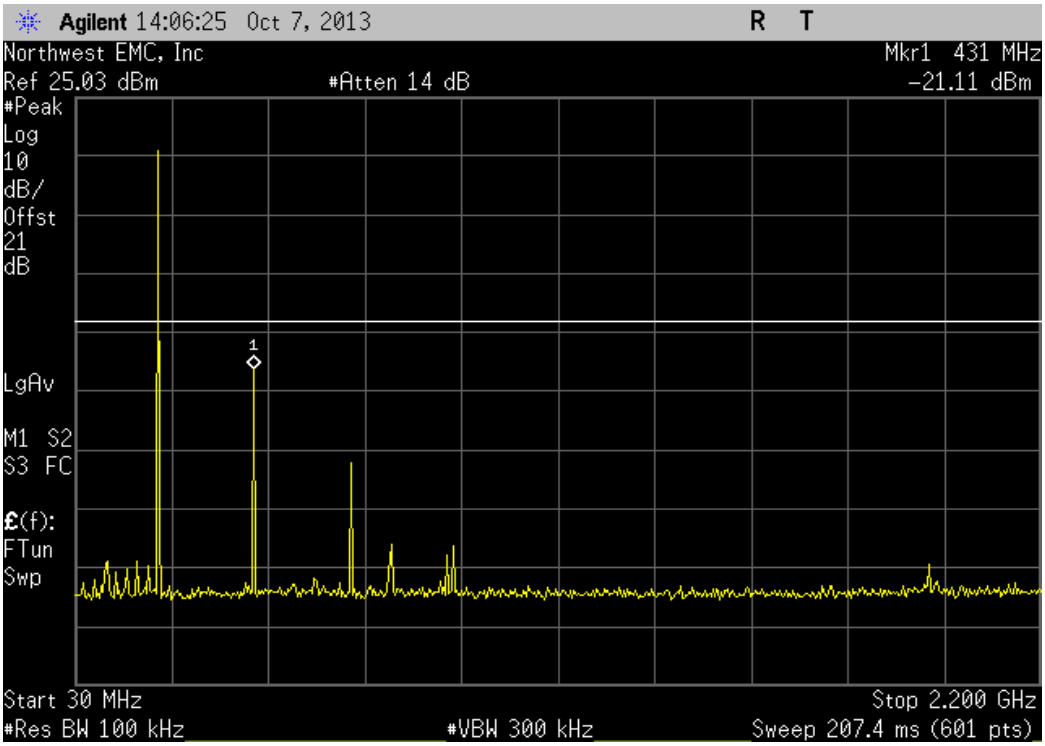



| Broadcasting Frequencies, Mid Channel, 195 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit | Result |
| | | | | -21.91 dBm | -13 dBm | Pass |



# SPURIOUS CONDUCTED EMISSIONS

| Broadcasting Frequencies, High Channel, 215.975 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit | Result |
| | | | | -21.11 dBm | -13 dBm | Pass |



# 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**

Tx 174.025 MHz, Low Channel
Tx 195 MHz, Mid Channel
Tx 215.975 MHz, High Channel

**POWER SETTINGS INVESTIGATED**

Battery

**CONFIGURATIONS INVESTIGATED**

RDIO0001 - 2

**FREQUENCY RANGE INVESTIGATED**

| Start Frequency | 30 MHz | Stop Frequency | 3000 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 |
|---|---|---|---|---|---|
| Spectrum Analyzer | Agilent | E4446A | AAQ | 2/7/2012 | 24 mo |
| EV01 Cables | N/A | Double Ridge Horn Cables | EVB | 9/2/2013 | 12 mo |
| Pre-Amplifier | Miteq | AMF-4D-010100-24-10P | APW | 6/20/2013 | 12 mo |
| Antenna, Horn | ETS | 3115 | AIZ | 1/24/2011 | 36 mo |
| EV01 Cables | N/A | Bilog Cables | EVA | 6/20/2013 | 12 mo |
| Pre-Amplifier | Miteq | AM-1616-1000 | AOL | 6/20/2013 | 12 mo |
| Antenna, Biconilog | EMCO | 3141 | AXG | 4/10/2012 | 36 mo |
| Antenna, Dipole | A.H. Systems, Inc. | FCC-4 | ADCA | 5/17/2013 | 36 mo |
| Attenuator, 'Precision N' | S.M. Electronics | SA18N-06/SM4032 | REE | 12/11/2012 | 12 mo |
| MXG Vector Signal Generator | Agilent | N5182A | TIF | NCR | 0 mo |
| Power Meter | Gigatronics | 8651A | SPM | 1/9/2012 | 24 mo |
| Power Sensor | Gigatronics | 80701A | SPL | 7/8/2011 | 36 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 Field Strength of Spurious Radiation was measured in the far-field at an FCC Listed OATS up to 3 GHz. Spectrum analyzer, signal generator, and linearly polarized antennas were used to measure radiated harmonics and spurious emissions. The orientation of the EUT and measurement antenna were manipulated to maximize the level of emissions. The EUT was configured to transmit at the highest output power.

For licensed transmitters, the FCC references TIA/EIA-603 as the measurement procedure standard. TIA/EIA-603 Section 2.2.12 describes a method for measuring radiated spurious emissions that utilizes an antenna substitution method:

At an approved test site, the transmitter is place on a remotely controlled turntable, and the measurement antenna is placed 3 meters from the transmitter. The turntable azimuth is varied to maximize the level of spurious emissions. The height of the measurement antenna is also varied from 1 to 4 meters. The amplitude and frequency of the highest emissions are noted. The transmitter is then replaced with a ½ wave dipole that is successively tuned to each of the highest spurious emissions. A signal generator is connected to the dipole (horn antenna for frequencies above 1 GHz), and its output is adjusted to match the level previously noted for each frequency. The output of the signal generator is recorded, and by factoring in the cable loss to the dipole antenna and its gain; the power (dBm) into an ideal ½ wave dipole antenna is determined for each radiated spurious emission.

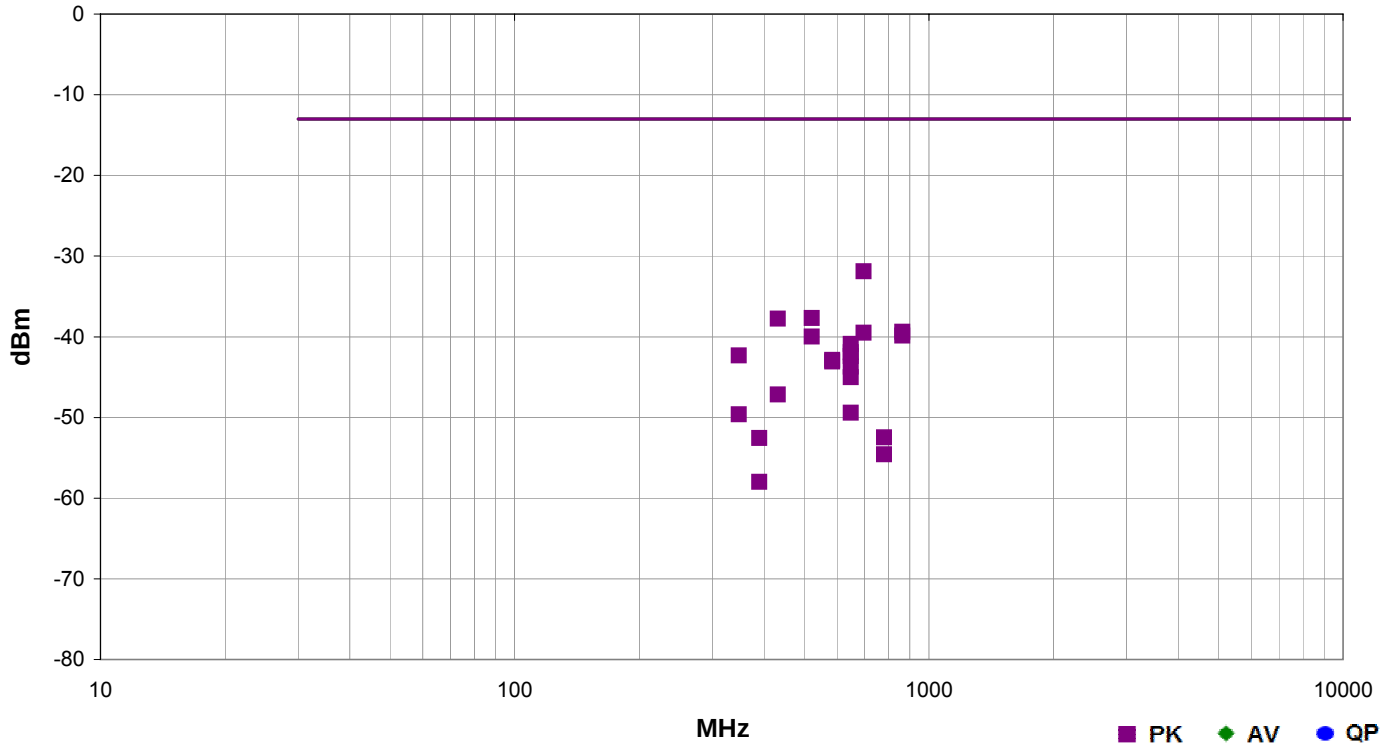
For the purposes of preliminary measurements, the field strength of the spurious emissions can be measured and compared with a 3 meter limit. The 3 meter limit was calculated to be 82.2 dBuV/m at 3 meters. The final measurements must be made utilizing the substitution method described above and applied against the EIRP limit of -13 dBm.

# SPURIOUS RADIATED EMISSIONS

| | | | | | |
|---|---|---|---|---|---|
| **Work Order:** | RDIO0001 | **Date:** | 10/10/13 | | |
| **Project:** | None | **Temperature:** | 22.7 °C | | |
| **Job Site:** | EV01 | **Humidity:** | 39.8% RH | | |
| **Serial Number:** | 092712-074 | **Barometric Pres.:** | 1016.3 mbar | **Tested by:** | Brandon Hobbs |
| **EUT:** | UV-1G Belt Pack | | | | |
| **Configuration:** | 2 | | | | |
| **Customer:** | Radio Design Group, Inc. | | | | |
| **Attendees:** | None | | | | |
| **EUT Power:** | Battery | | | | |
| **Operating Mode:** | Tx | | | | |
| **Deviations:** | None | | | | |
| **Comments:** | Please reference data comments for EUT orientation and frequency | | | | |

| **Test Specifications** | **Test Method** |
|---|---|
| FCC 74H:2013 | ANSI/TIA/EIA-603-C-2004 |

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




| | Freq (MHz) | Antenna Height (meters) | Azimuth (degrees) | Polarity/ Transducer Type | Detector | EIRP (Watts) | EIRP (dBm) | Spec. Limit (dBm) | Compared to Spec. (dB) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | 696.100 | 1.0 | 104.0 | Vert | PK | 6.48E-07 | -31.9 | -13.0 | -18.9 | Low Ch. 174.025 MHz, EUT Vert |
| | 522.078 | 1.5 | 183.0 | Horz | PK | 1.70E-07 | -37.7 | -13.0 | -24.7 | Low Ch. 174.025 MHz, EUT Horz |
| | 431.948 | 1.0 | 151.0 | Horz | PK | 1.68E-07 | -37.7 | -13.0 | -24.7 | High Ch. 215.975 MHz, EUT Horz |
| | 863.898 | 1.0 | 340.0 | Horz | PK | 1.16E-07 | -39.4 | -13.0 | -26.4 | High Ch. 215.975 MHz, EUT Horz |
| | 696.095 | 1.0 | 105.0 | Horz | PK | 1.13E-07 | -39.5 | -13.0 | -26.5 | Low Ch. 174.025 MHz, EUT Horz |
| | 863.897 | 1.4 | 360.0 | Vert | PK | 1.03E-07 | -39.9 | -13.0 | -26.9 | High Ch. 215.975 MHz, EUT Vert |
| | 522.075 | 1.0 | 63.0 | Vert | PK | 1.00E-07 | -40.0 | -13.0 | -27.0 | Low Ch. 174.025 MHz, EUT Vert |

| | Freq (MHz) | Antenna Height (meters) | Azimuth (degrees) | Polarity/ Transducer Type | Detector | EIRP (Watts) | EIRP (dBm) | Spec. Limit (dBm) | Compared to Spec. (dB) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | 647.933 | 1.3 | 221.0 | Horz | PK | 8.11E-08 | -40.9 | -13.0 | -27.9 | High Ch. 215.975 MHz, EUT Horz |
| | 647.917 | 1.0 | 343.0 | Vert | PK | 6.44E-08 | -41.9 | -13.0 | -28.9 | High Ch. 215.975 MHz, EUT Vert |
| | 348.048 | 1.0 | 203.0 | Horz | PK | 5.88E-08 | -42.3 | -13.0 | -29.3 | Low Ch. 174.025 MHz, EUT Horz |
| | 647.930 | 1.3 | 50.0 | Horz | PK | 5.74E-08 | -42.4 | -13.0 | -29.4 | High Ch. 215.975 MHz, EUT On Side |
| | 585.005 | 1.0 | 45.0 | Vert | PK | 5.18E-08 | -42.9 | -13.0 | -29.9 | Mid Ch. 195 MHz, EUT Vert |
| | 585.010 | 1.6 | 78.0 | Horz | PK | 4.95E-08 | -43.1 | -13.0 | -30.1 | Mid Ch. 195 MHz, EUT Horz |
| | 647.920 | 1.0 | 38.0 | Horz | PK | 4.26E-08 | -43.7 | -13.0 | -30.7 | High Ch. 215.975 MHz, EUT Vert |
| | 647.918 | 1.0 | 163.0 | Vert | PK | 3.15E-08 | -45.0 | -13.0 | -32.0 | High Ch. 215.975 MHz, EUT On Side |
| | 431.948 | 1.4 | 360.0 | Vert | PK | 1.93E-08 | -47.1 | -13.0 | -34.1 | High Ch. 215.975 MHz, EUT Vert |
| | 647.933 | 2.8 | 307.0 | Vert | PK | 1.15E-08 | -49.4 | -13.0 | -36.4 | High Ch. 215.975 MHz, EUT Horz |
| | 348.050 | 1.4 | 249.0 | Vert | PK | 1.09E-08 | -49.6 | -13.0 | -36.6 | Low Ch. 174.025 MHz, EUT Vert |
| | 780.005 | 1.1 | 53.0 | Horz | PK | 5.65E-09 | -52.5 | -13.0 | -39.5 | Mid Ch. 195 MHz, EUT Horz |
| | 390.000 | 1.0 | 197.0 | Horz | PK | 5.54E-09 | -52.6 | -13.0 | -39.6 | Mid Ch. 195 MHz, EUT Horz |
| | 780.000 | 1.4 | 101.0 | Vert | PK | 3.49E-09 | -54.6 | -13.0 | -41.6 | Mid Ch. 195 MHz, EUT Vert |
| | 390.000 | 1.1 | 99.0 | Vert | PK | 1.60E-09 | -58.0 | -13.0 | -45.0 | Mid Ch. 195 MHz, EUT Vert |

# FREQUENCY STABILITY

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 |
|---|---|---|---|---|---|
| Humidity Temperature Meter | Omegaette | HH311 | DTY | 3/29/2011 | 36 |
| Temp./Humidity Chamber | Cincinnati Sub Zero (CSZ) | ZH-32-2-2-H/AC | TBA | NCR | 0 |
| DC Power Supply | Topward | TPS-2000 | TPD | NCR | 0 |
| Multimeter | Tektronix | DMM912 | MMH | 2/5/2013 | 24 |
| Attenuator, 'Precision N' | S.M. Electronics | SA18N-06/SM4032 | REE | 12/11/2012 | 12 |
| MXG Vector Signal Generator | Agilent | N5182A | TIF | NCR | 0 |
| Power Meter | Gigatronics | 8651A | SPM | 1/9/2012 | 24 |
| Power Sensor | Gigatronics | 80701A | SPL | 7/8/2011 | 36 |
| EV06 Direct Connect Cable | ESM Cable Corp. | TT | ECA | NCR | 0 |
| Attenuator 20 dB, SMA M/F 26GHz | S.M. Electronics | SA26B-20 | AUY | 7/30/2013 | 12 |
| 40GHz DC Block | Miteq | DCB4000 | AMD | 5/16/2013 | 12 |
| Spectrum Analyzer | Agilent | E4440A | AFD | 7/5/2012 | 24 |

**TEST DESCRIPTION**

A direct connect measurement was made between the EUT's antenna cable and a spectrum analyzer. The spectrum analyzer is equipped with a precision frequency reference that exceeds the stability requirement of the EUT.

Measurements were made at the edges of the main transmit band as called out on the data sheets. Testing was done with modulation.

The primary supply voltage was varied from 85 % to 115% of the nominal voltage Using a temperature chamber, the transmit frequency was recorded at the extremes of the specified temperature range (-30 ° to +50° C) and at 10°C intervals.

# FREQUENCY STABILITY

| | | | | | |
|---|---|---|---|---|---|
| **EUT:** | UV-1G Belt Pack | | | **Work Order:** | RDIO0001 |
| **Serial Number:** | 113-008 | | | **Date:** | 10/08/13 |
| **Customer:** | Radio Design Group, Inc. | | | **Temperature:** | 22°C |
| **Attendees:** | None | | | **Humidity:** | 41% |
| **Project:** | None | | | **Barometric Pres.:** | 1013.1 |
| **Tested by:** | Brandon Hobbs | **Power:** | 7.5 VDC | **Job Site:** | EV06 |

| TEST SPECIFICATIONS | Test Method |
|---|---|
| FCC 74H:2013 | ANSI/TIA/EIA-603-C-2004 |
| | |

**COMMENTS**

None

**DEVIATIONS FROM TEST STANDARD**

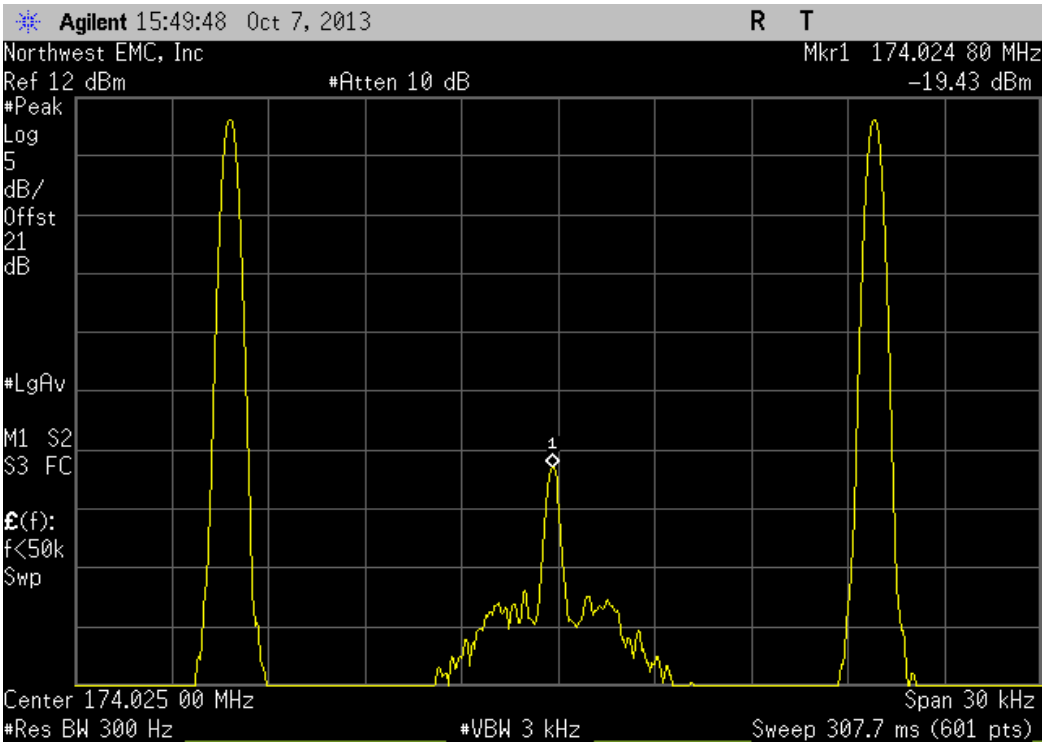
None

| Configuration # | 1 | Signature |
|---|---|---|

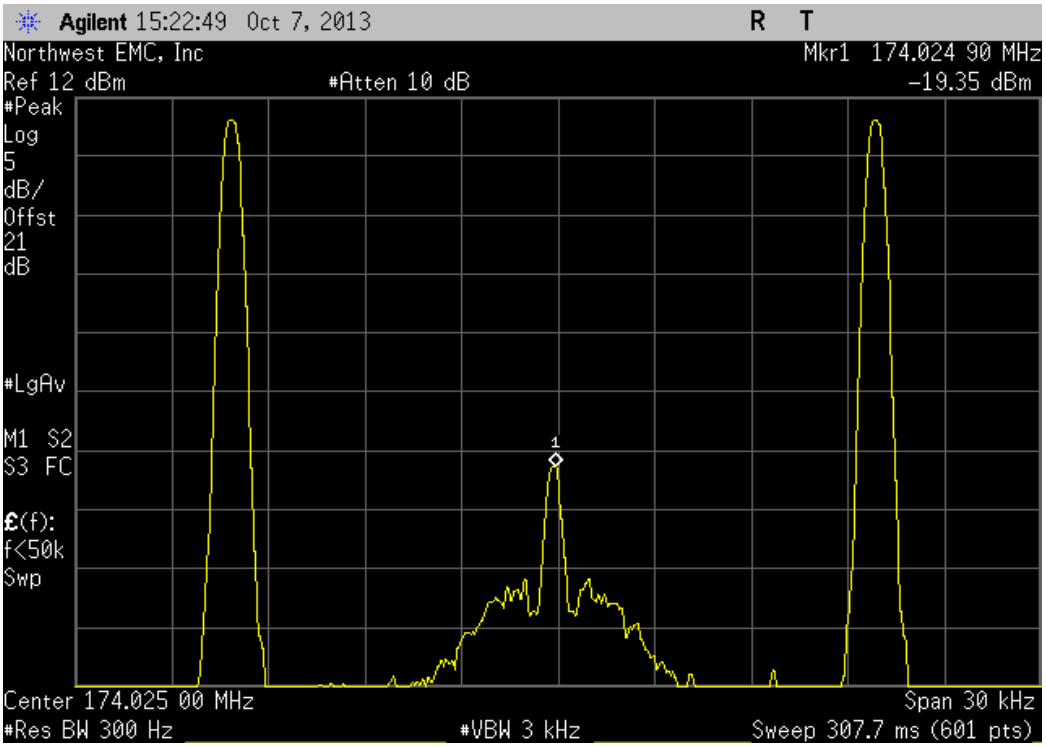
| | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
|---|---|---|---|---|---|
| Low Channel 174.025 MHz | | | | | |
| Voltage: 115% | 174.0248 | 174.025 | 1.2 | 50 | Pass |
| Voltage: 100% | 174.0249 | 174.025 | 0.6 | 50 | Pass |
| Voltage: 85% | 174.02485 | 174.025 | 0.9 | 50 | Pass |
| Temperature: +50° | 174.02485 | 174.025 | 0.9 | 50 | Pass |
| Temperature: +40° | 174.02485 | 174.025 | 0.9 | 50 | Pass |
| Temperature: +30° | 174.02485 | 174.025 | 0.9 | 50 | Pass |
| Temperature: +20° | 174.02485 | 174.025 | 0.9 | 50 | Pass |
| Temperature: +10° | 174.0247 | 174.025 | 1.7 | 50 | Pass |
| Temperature: 0° | 174.02475 | 174.025 | 1.4 | 50 | Pass |
| Temperature: -10° | 174.0247 | 174.025 | 1.7 | 50 | Pass |
| Temperature: -20° | 174.02465 | 174.025 | 2 | 50 | Pass |
| Temperature: -30° | 174.0246 | 174.025 | 2.3 | 50 | Pass |
| Mid Channel 195 MHz | | | | | |
| Voltage: 115% | 194.9998 | 195 | 1 | 50 | Pass |
| Voltage: 100% | 194.9998 | 195 | 1 | 50 | Pass |
| Voltage: 85% | 194.9998 | 195 | 1 | 50 | Pass |
| Temperature: +50° | 194.99985 | 195 | 0.8 | 50 | Pass |
| Temperature: +40° | 194.99985 | 195 | 0.8 | 50 | Pass |
| Temperature: +30° | 194.9998 | 195 | 1 | 50 | Pass |
| Temperature: +20° | 194.9998 | 195 | 1 | 50 | Pass |
| Temperature: +10° | 194.9997 | 195 | 1.5 | 50 | Pass |
| Temperature: 0° | 194.9997 | 195 | 1.5 | 50 | Pass |
| Temperature: -10° | 194.99965 | 195 | 1.8 | 50 | Pass |
| Temperature: -20° | 194.99955 | 195 | 2.3 | 50 | Pass |
| Temperature: -30° | 194.9996 | 195 | 2 | 50 | Pass |
| High Channel 215.975 MHz | | | | | |
| Voltage: 115% | 215.97475 | 215.975 | 1.2 | 50 | Pass |
| Voltage: 100% | 215.97475 | 215.975 | 1.2 | 50 | Pass |
| Voltage: 85% | 215.97475 | 215.975 | 1.2 | 50 | Pass |
| Temperature: +50° | 215.9748 | 215.975 | 0.9 | 50 | Pass |
| Temperature: +40° | 215.9748 | 215.975 | 0.9 | 50 | Pass |
| Temperature: +30° | 215.9748 | 215.975 | 0.9 | 50 | Pass |
| Temperature: +20° | 215.9748 | 215.975 | 0.9 | 50 | Pass |
| Temperature: +10° | 215.97465 | 215.975 | 1.6 | 50 | Pass |
| Temperature: 0° | 215.97465 | 215.975 | 1.6 | 50 | Pass |
| Temperature: -10° | 215.97455 | 215.975 | 2.1 | 50 | Pass |
| Temperature: -20° | 215.9745 | 215.975 | 2.3 | 50 | Pass |
| Temperature: -30° | 215.9745 | 215.975 | 2.3 | 50 | Pass |

# FREQUENCY STABILITY

| Low Channel 174.025 MHz, Voltage: 115% | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 174.0248 | 174.025 | 1.2 | 50 | Pass |

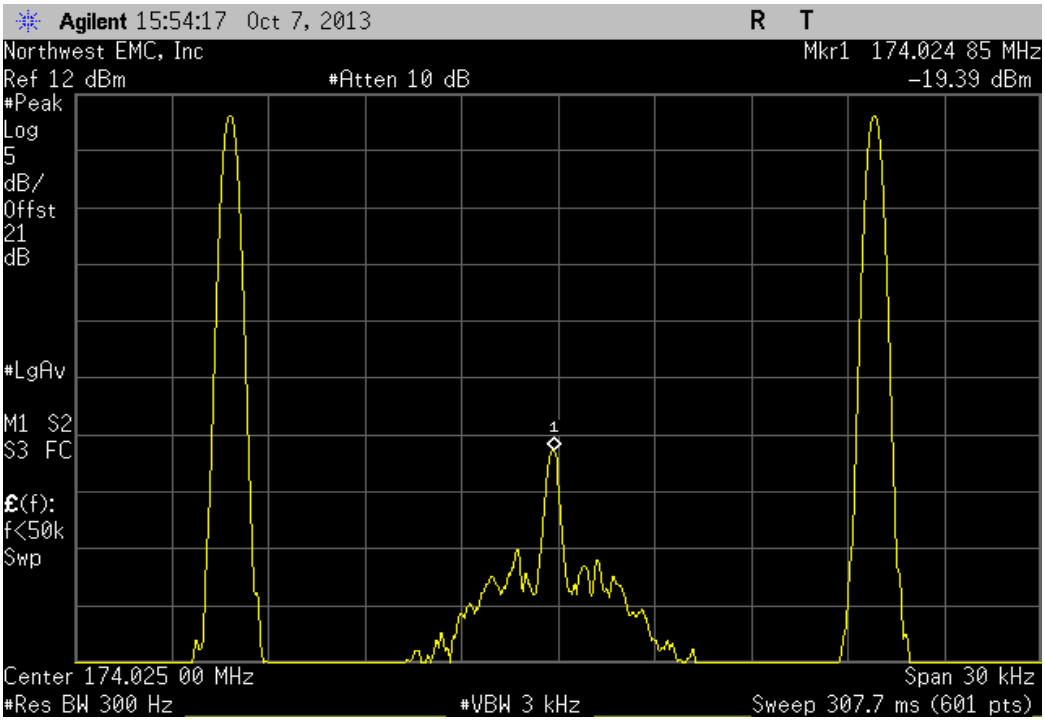



| Low Channel 174.025 MHz, Voltage: 100% | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 174.0249 | 174.025 | 0.6 | 50 | Pass |

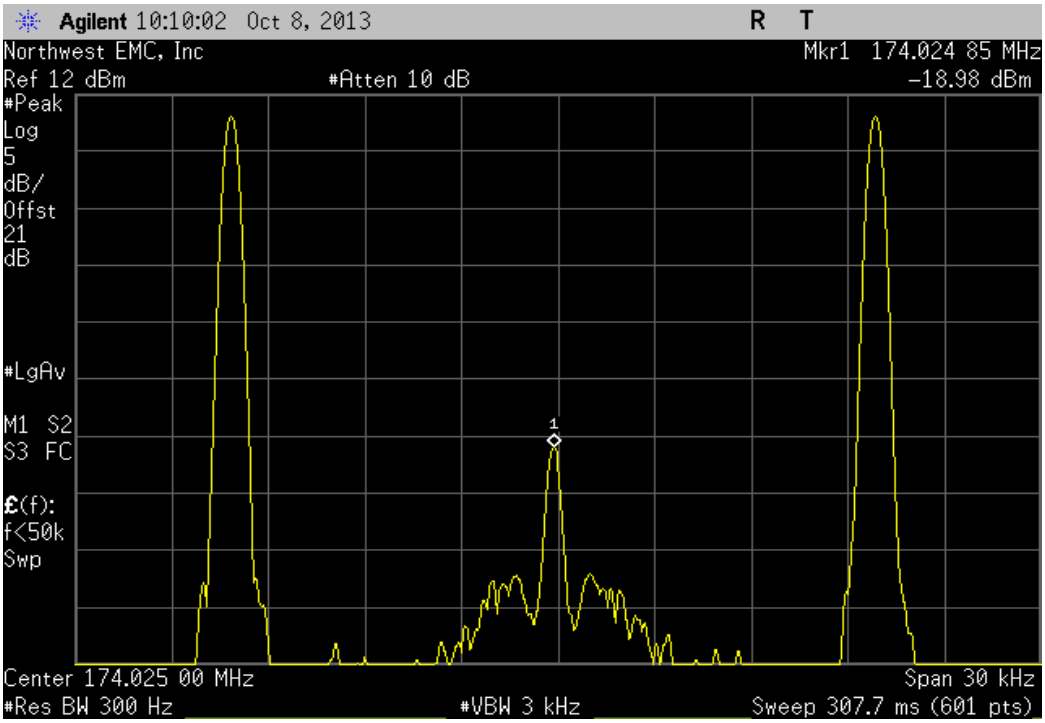


# FREQUENCY STABILITY

| Low Channel 174.025 MHz, Voltage: 85% | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 174.02485 | 174.025 | 0.9 | 50 | Pass |

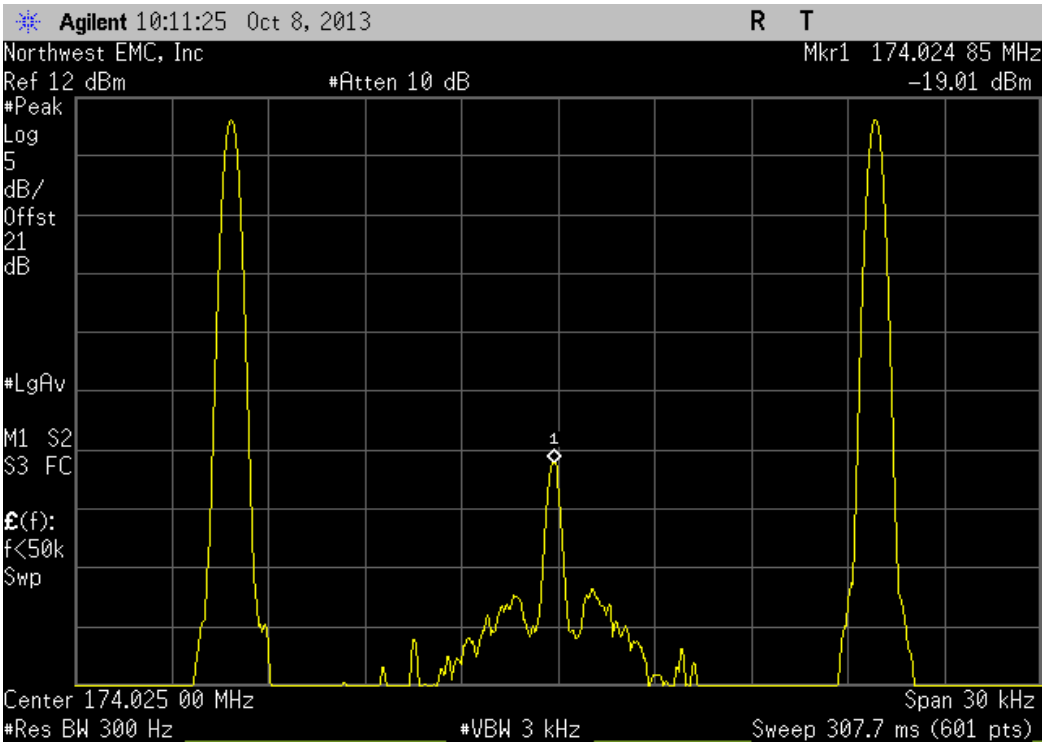



| Low Channel 174.025 MHz, Temperature: +50° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 174.02485 | 174.025 | 0.9 | 50 | Pass |

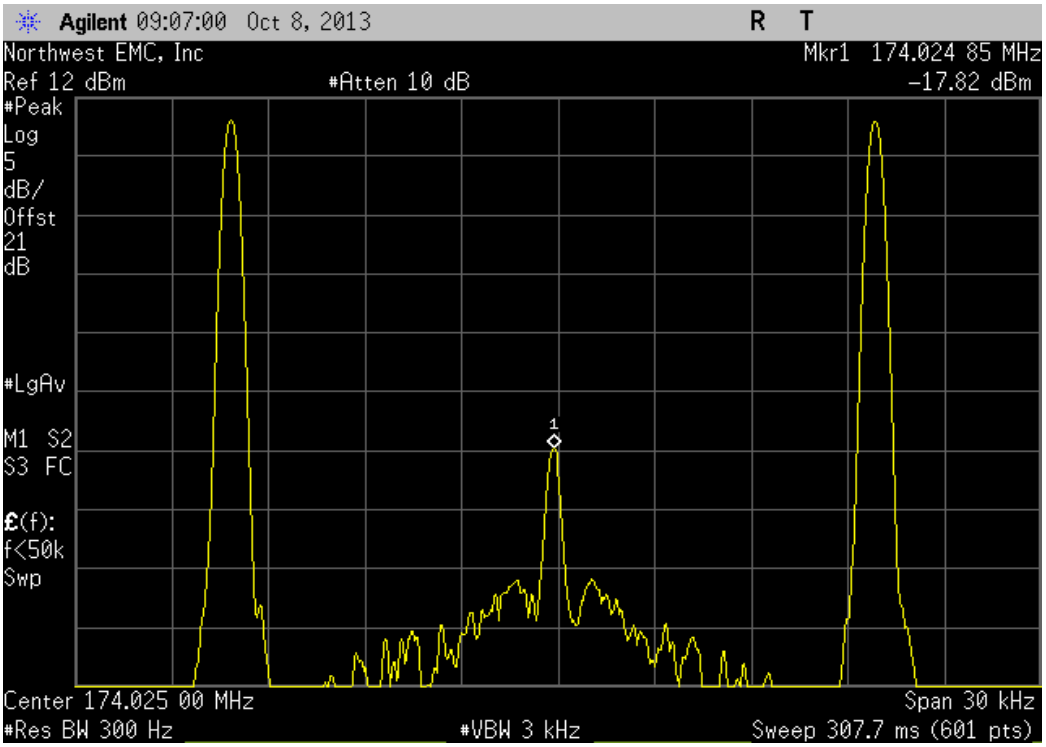


# FREQUENCY STABILITY

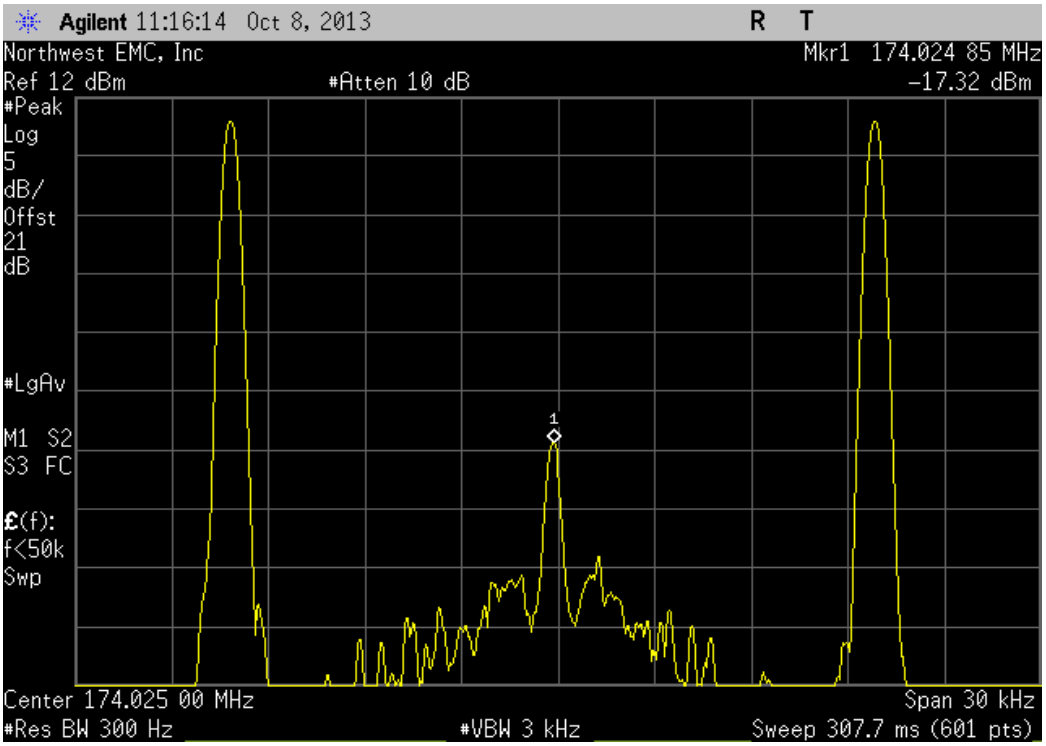
| Low Channel 174.025 MHz, Temperature: +40° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 174.02485 | 174.025 | 0.9 | 50 | Pass |



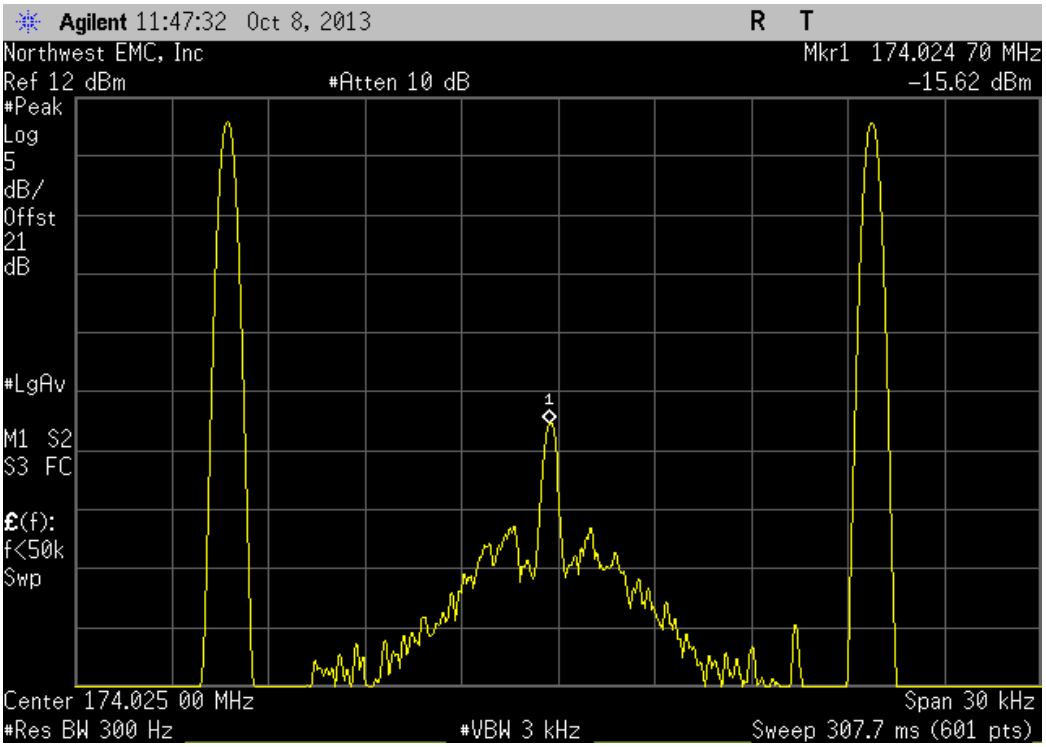

| Low Channel 174.025 MHz, Temperature: +30° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 174.02485 | 174.025 | 0.9 | 50 | Pass |



| Low Channel 174.025 MHz, Temperature: +20° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 174.02485 | 174.025 | 0.9 | 50 | Pass |

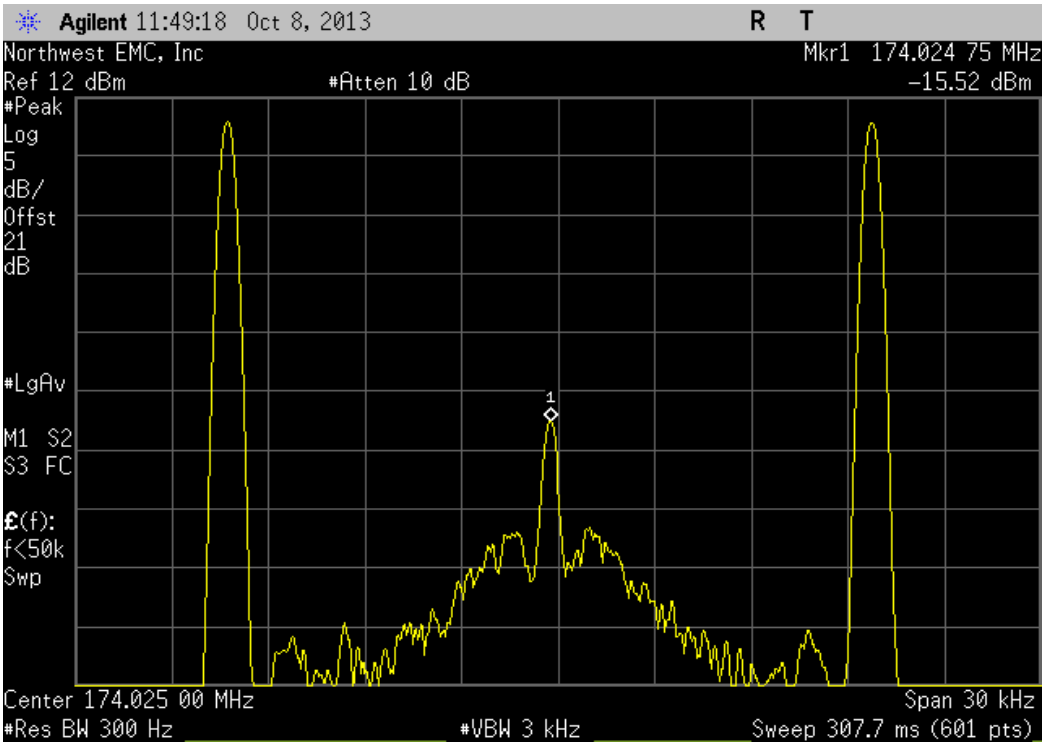



| Low Channel 174.025 MHz, Temperature: +10° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 174.0247 | 174.025 | 1.7 | 50 | Pass |

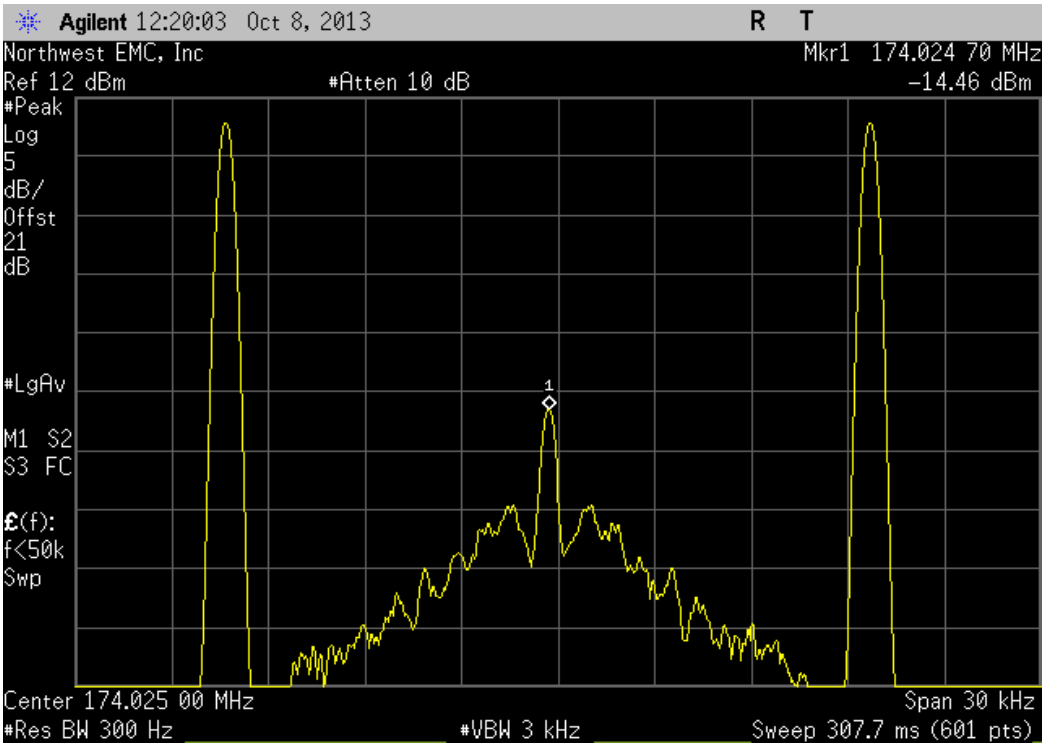


# FREQUENCY STABILITY

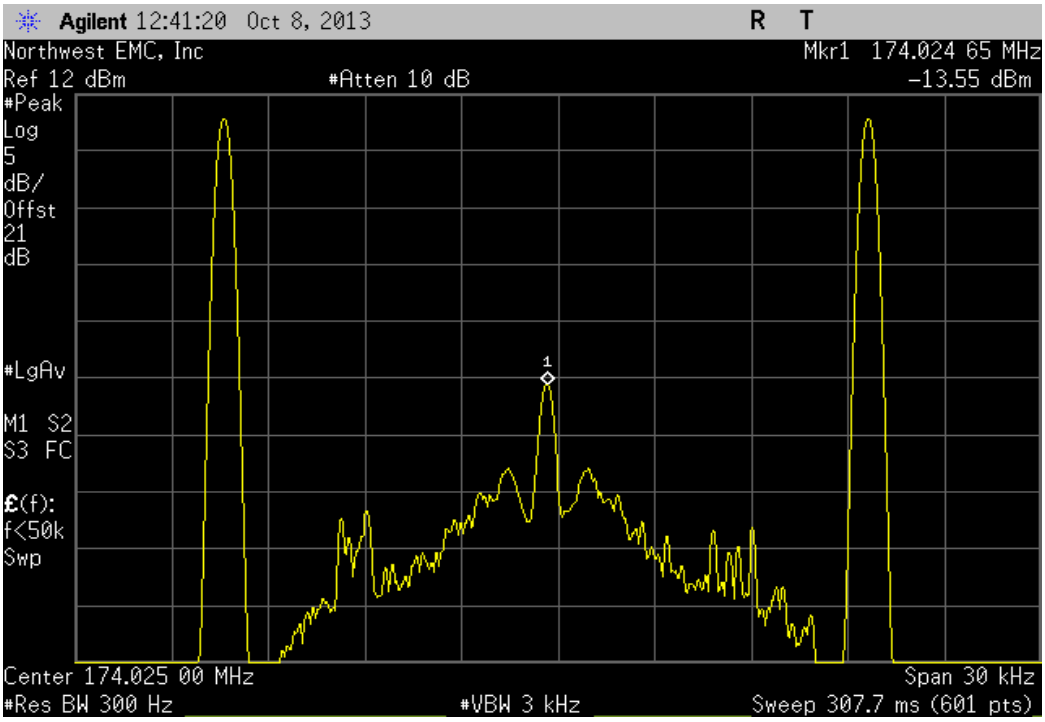
| Low Channel 174.025 MHz, Temperature: 0° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 174.02475 | 174.025 | 1.4 | 50 | Pass |



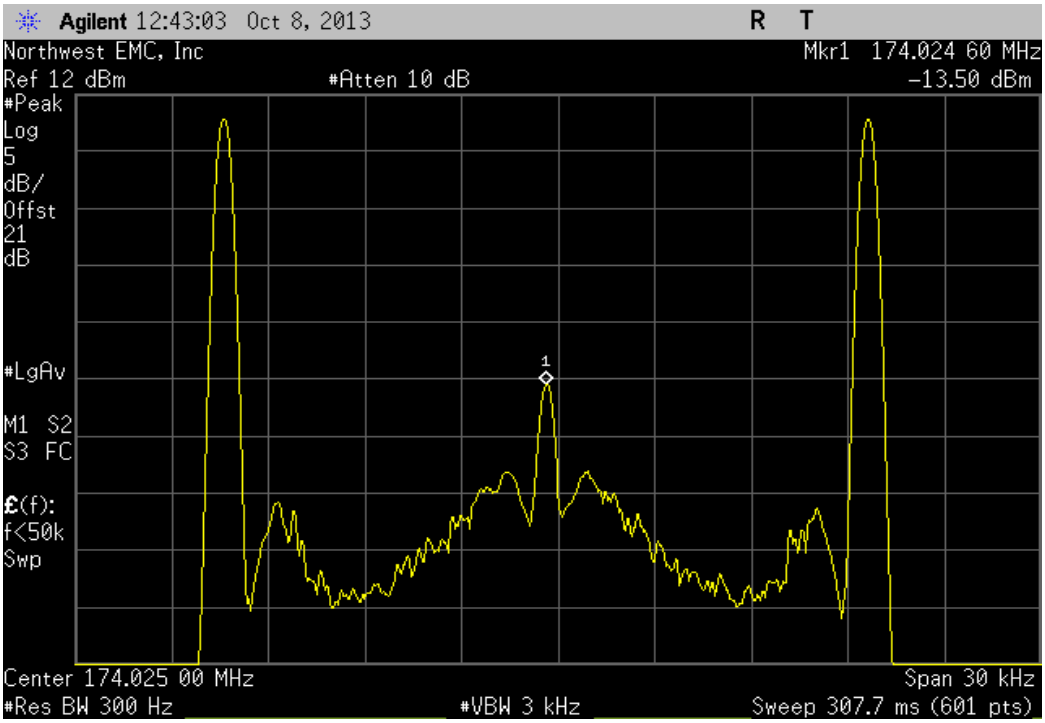

| Low Channel 174.025 MHz, Temperature: -10° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 174.0247 | 174.025 | 1.7 | 50 | Pass |



| Low Channel 174.025 MHz, Temperature: -20° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 174.02465 | 174.025 | 2 | 50 | Pass |

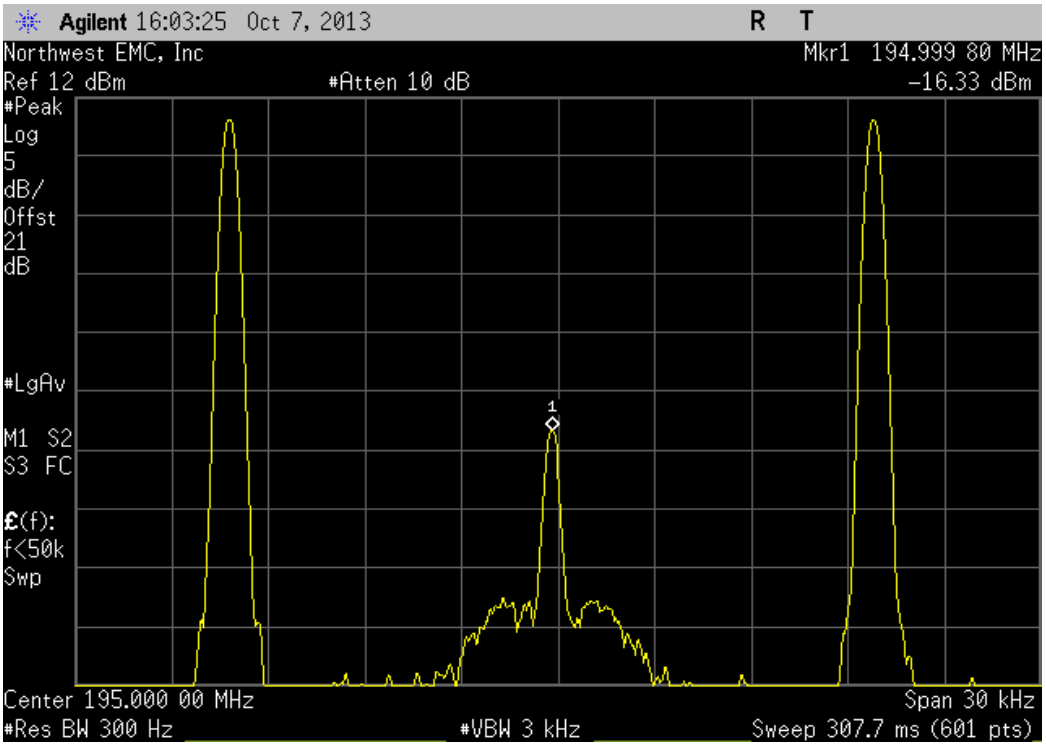



| Low Channel 174.025 MHz, Temperature: -30° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 174.0246 | 174.025 | 2.3 | 50 | Pass |

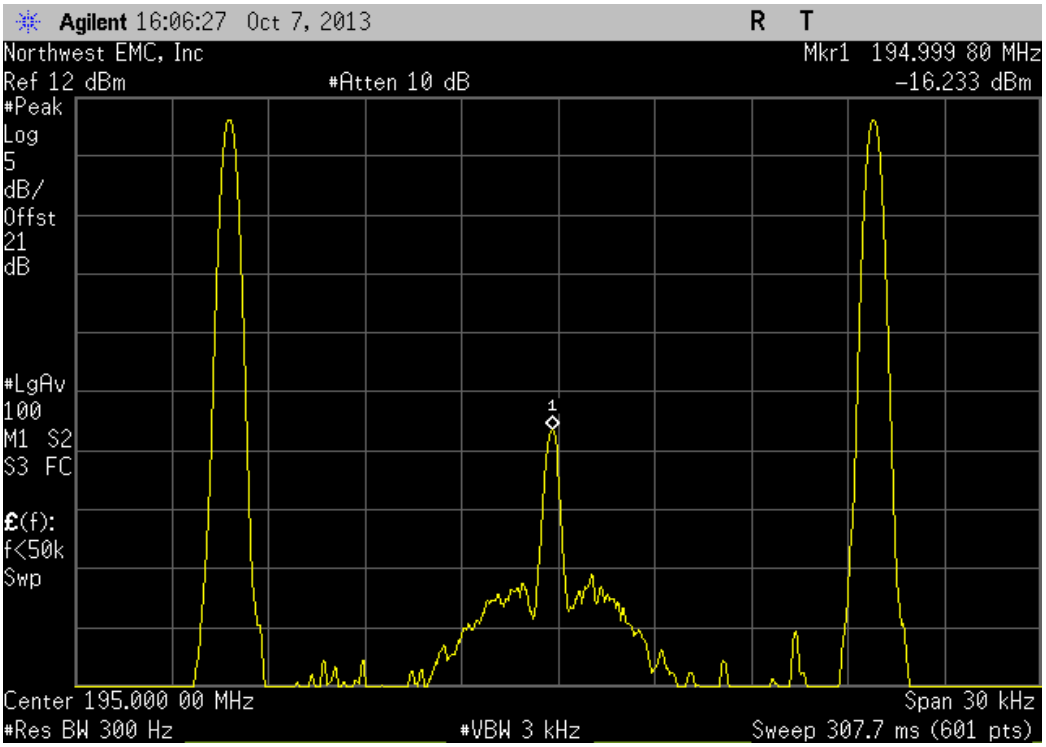


# FREQUENCY STABILITY

| Mid Channel 195 MHz, Voltage: 115% | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 194.9998 | 195 | 1 | 50 | Pass |

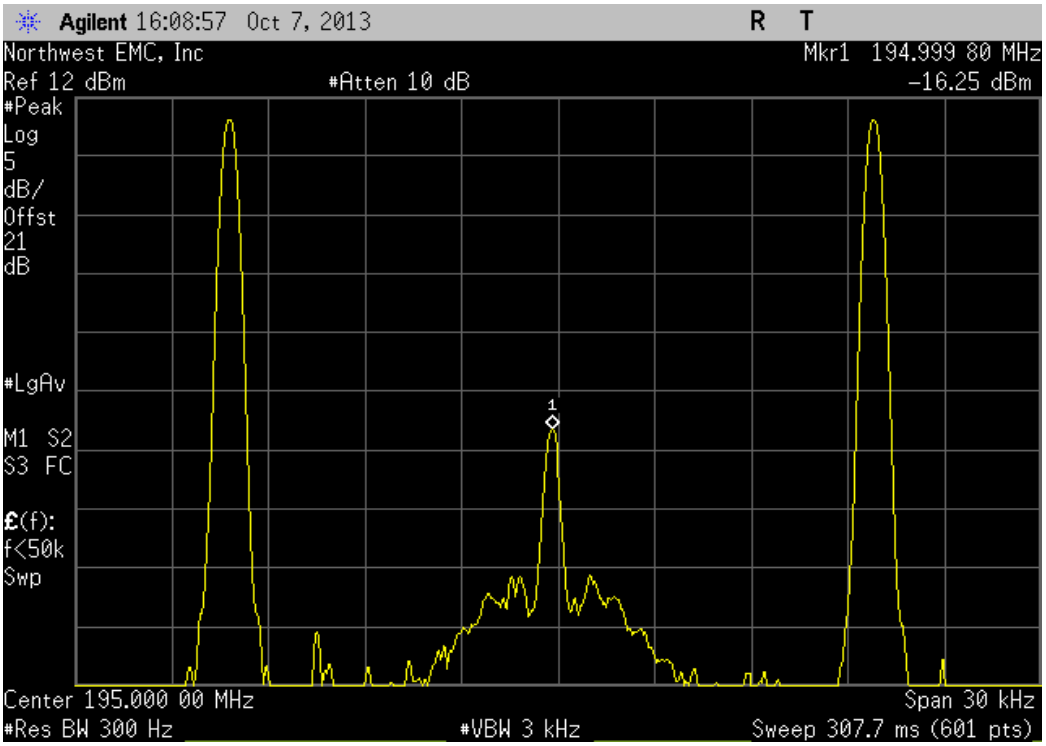



| Mid Channel 195 MHz, Voltage: 100% | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 194.9998 | 195 | 1 | 50 | Pass |

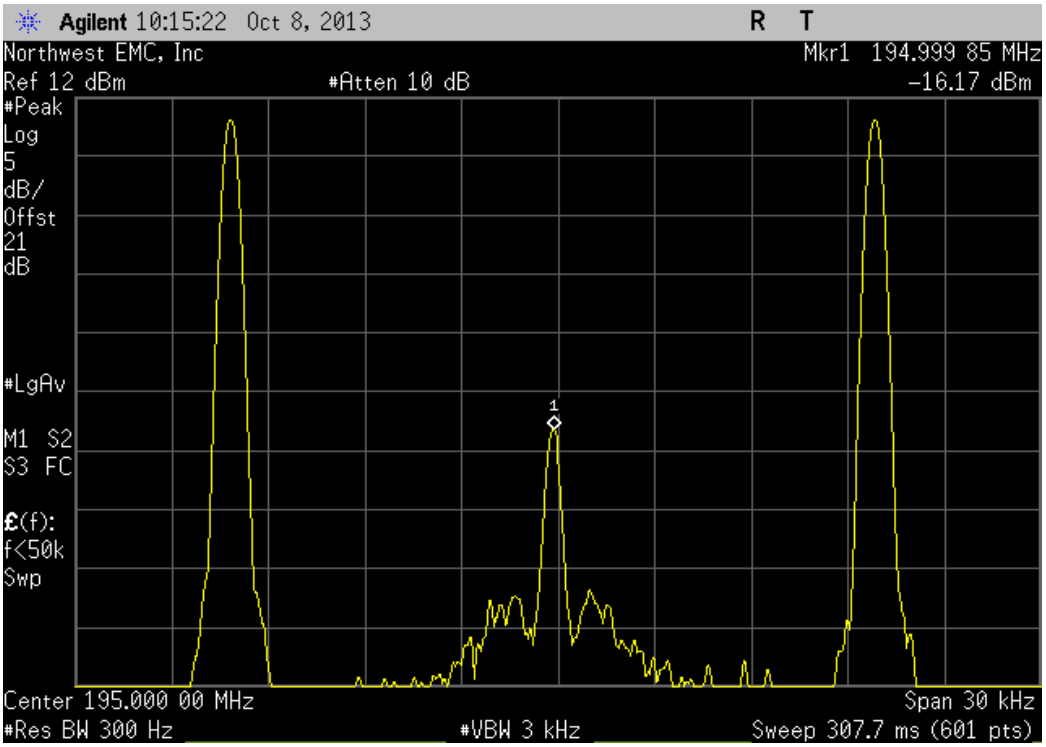


# FREQUENCY STABILITY

| Mid Channel 195 MHz, Voltage: 85% | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 194.9998 | 195 | 1 | 50 | Pass |

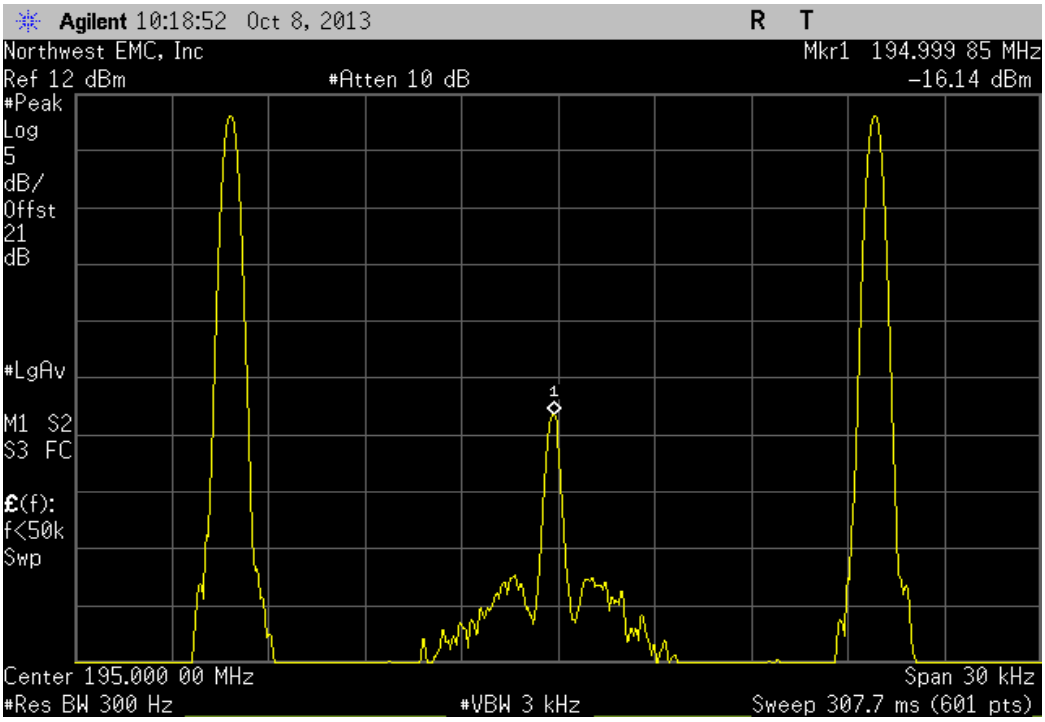



| Mid Channel 195 MHz, Temperature: +50° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 194.99985 | 195 | 0.8 | 50 | Pass |

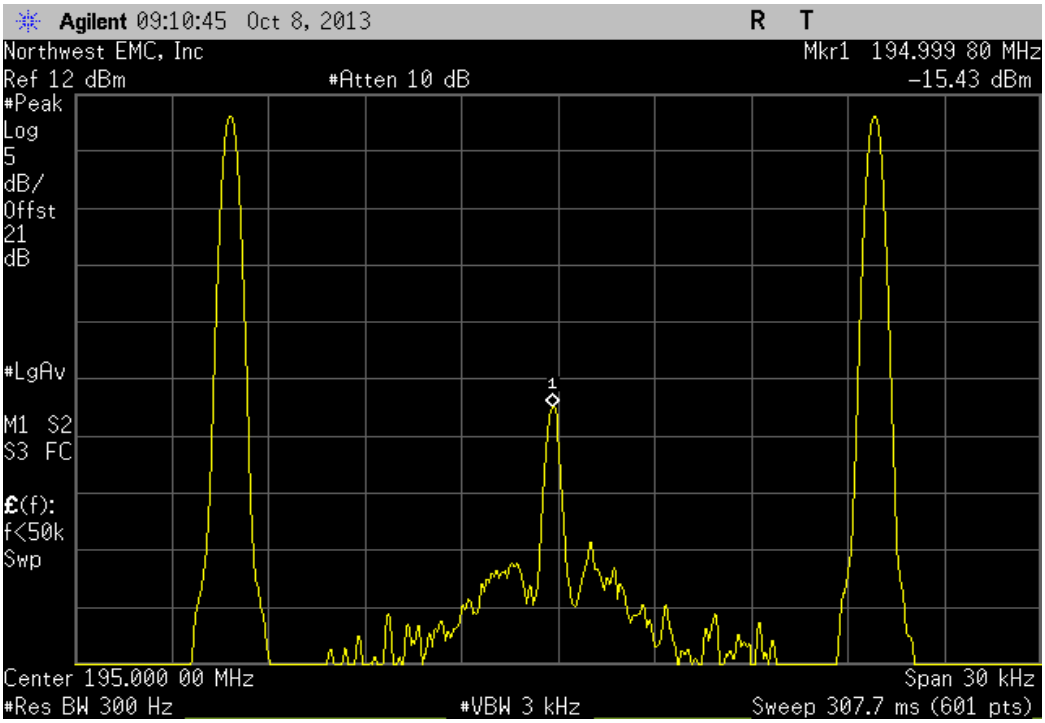


# FREQUENCY STABILITY

| Mid Channel 195 MHz, Temperature: +40° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 194.99985 | 195 | 0.8 | 50 | Pass |

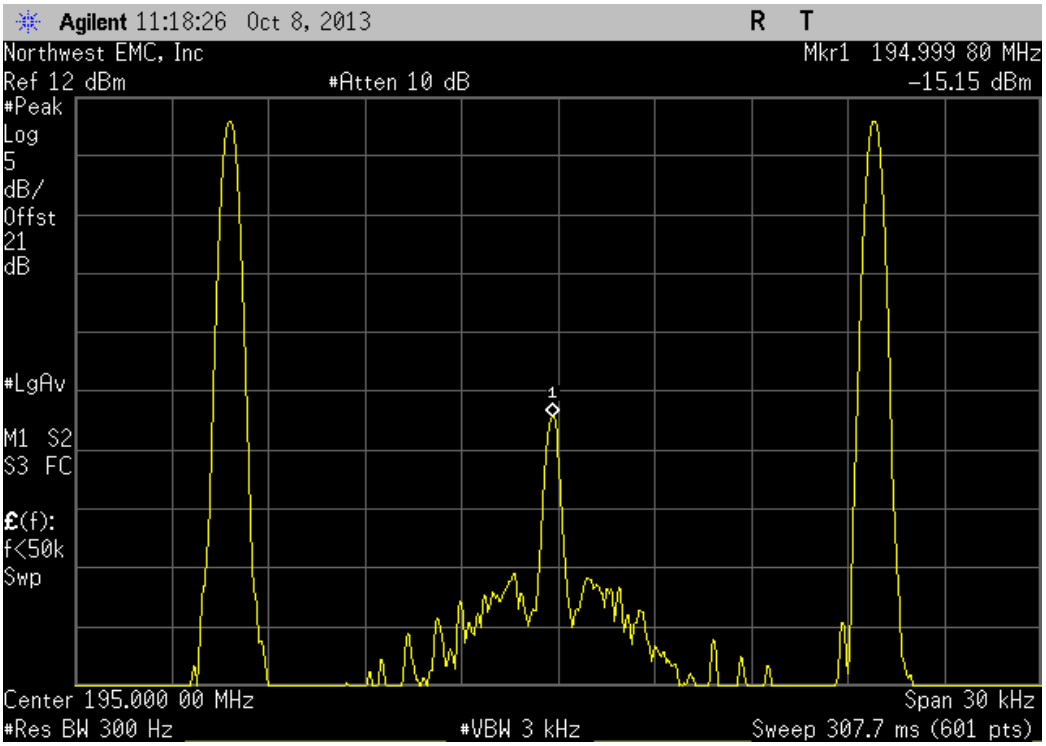



| Mid Channel 195 MHz, Temperature: +30° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 194.9998 | 195 | 1 | 50 | Pass |

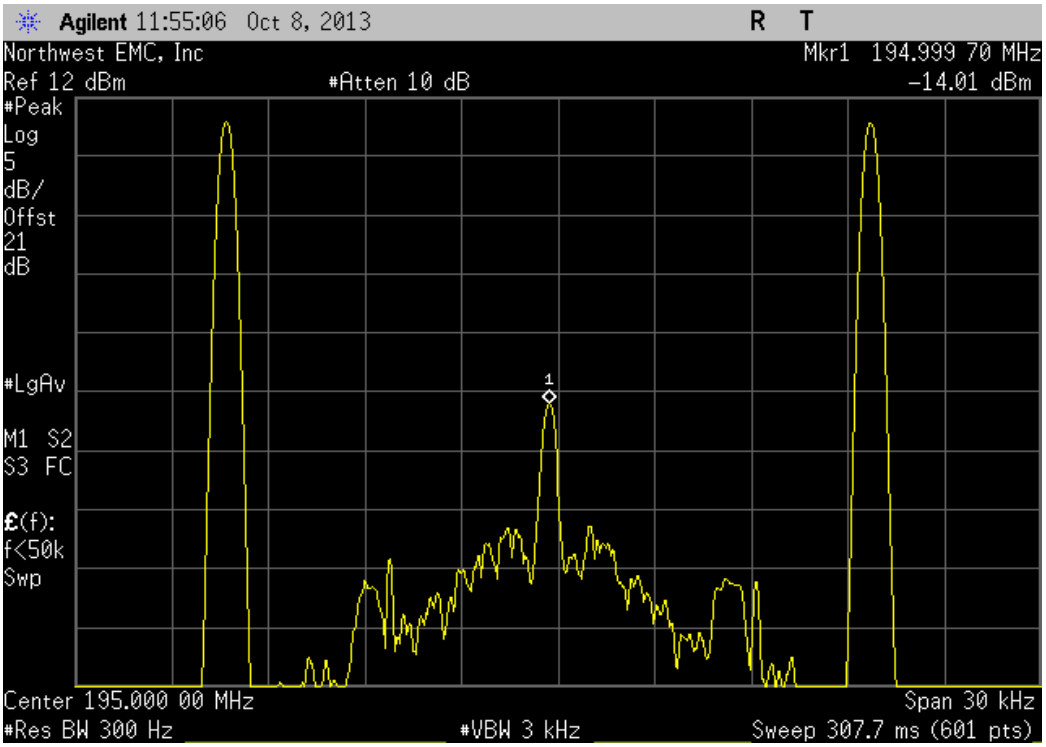


# FREQUENCY STABILITY

| Mid Channel 195 MHz, Temperature: +20° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 194.9998 | 195 | 1 | 50 | Pass |

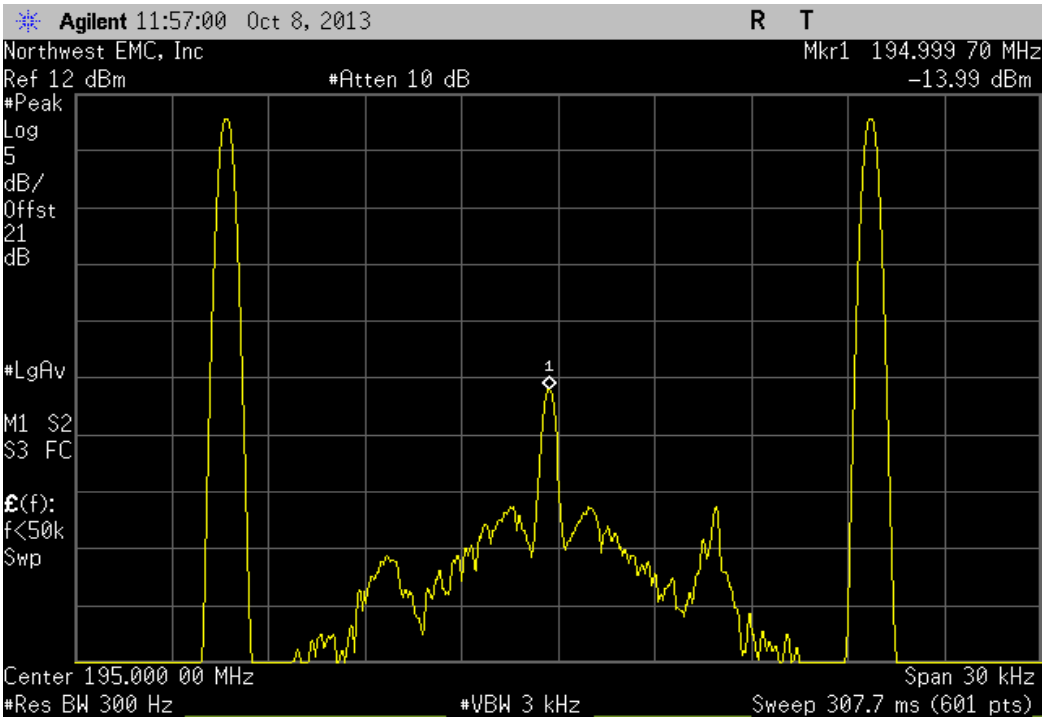



| Mid Channel 195 MHz, Temperature: +10° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 194.9997 | 195 | 1.5 | 50 | Pass |

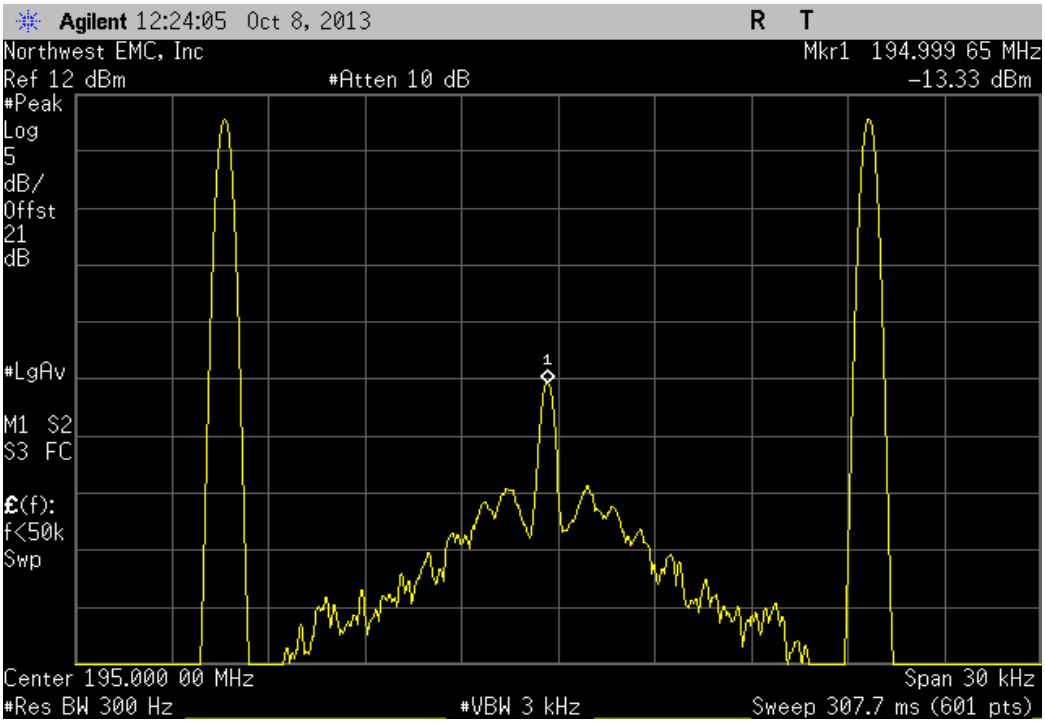


# FREQUENCY STABILITY

| Mid Channel 195 MHz, Temperature: 0° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 194.9997 | 195 | 1.5 | 50 | Pass |

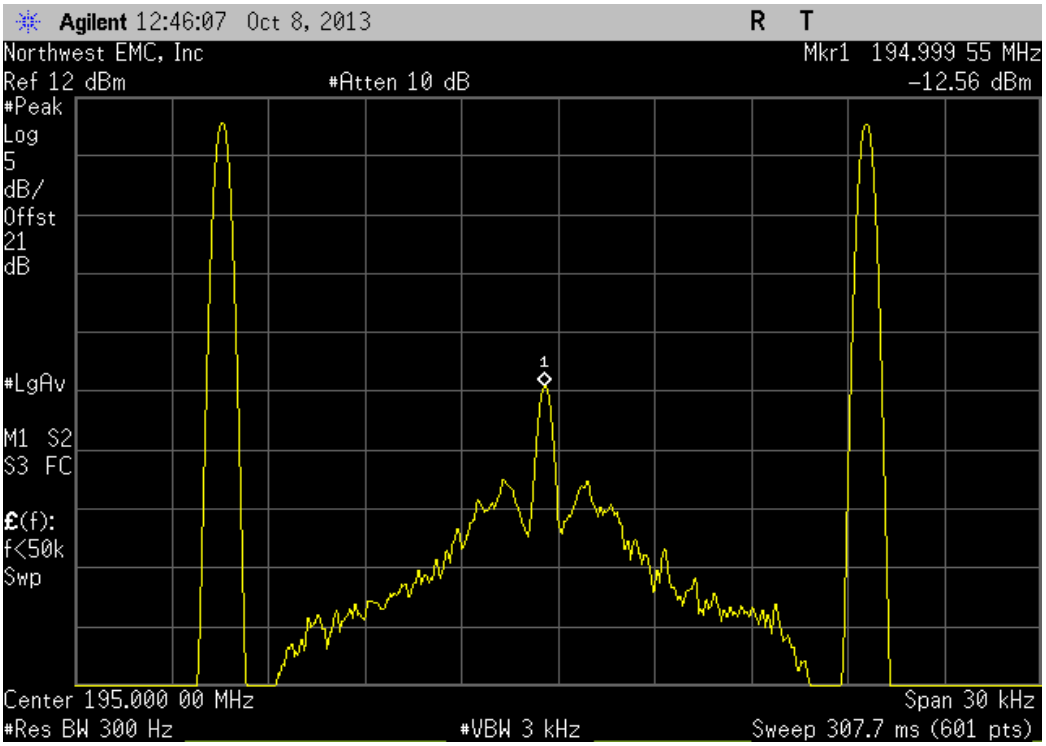



| Mid Channel 195 MHz, Temperature: -10° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 194.99965 | 195 | 1.8 | 50 | Pass |

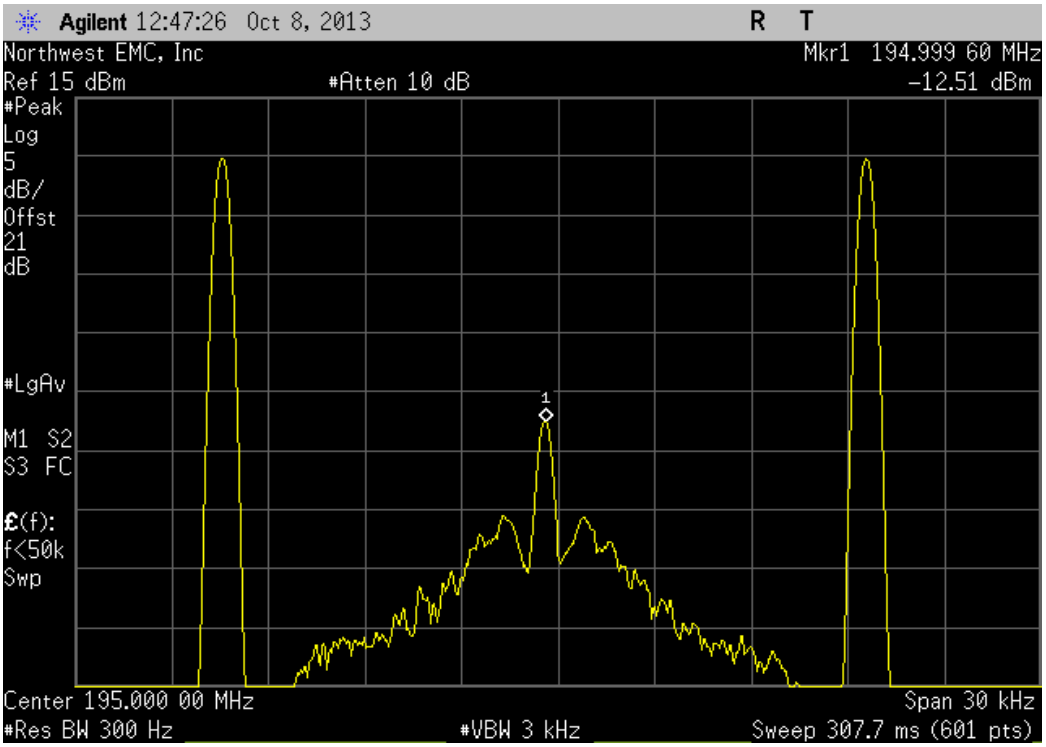


# FREQUENCY STABILITY

| Mid Channel 195 MHz, Temperature: -20° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 194.99955 | 195 | 2.3 | 50 | Pass |

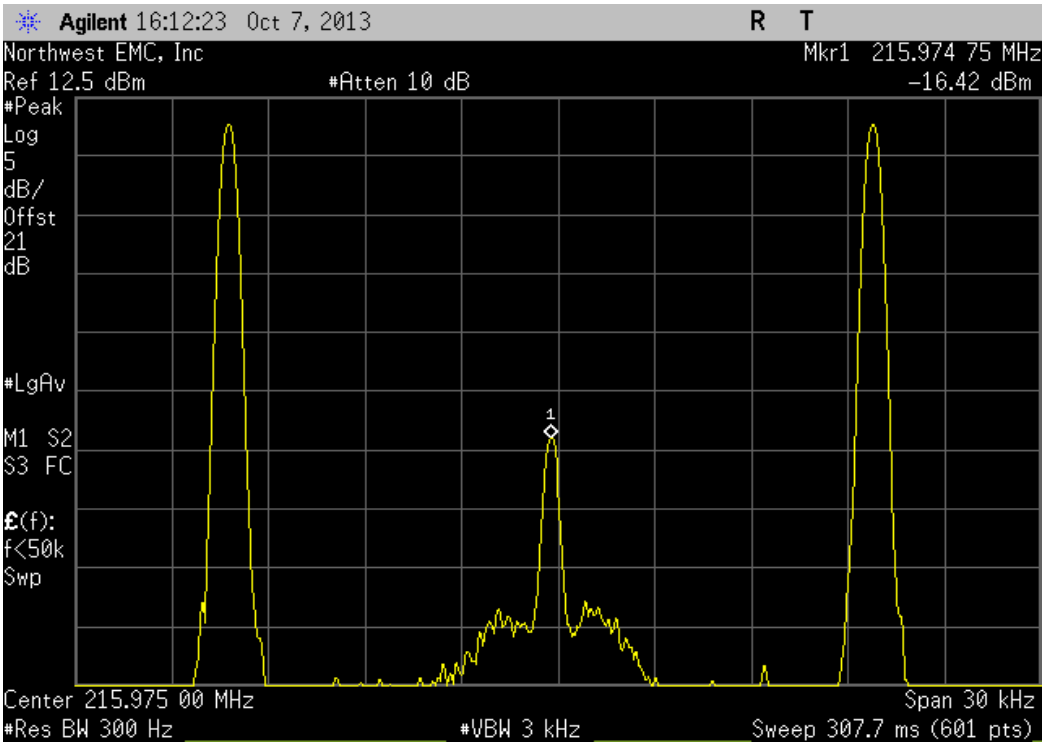



| Mid Channel 195 MHz, Temperature: -30° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 194.9996 | 195 | 2 | 50 | Pass |

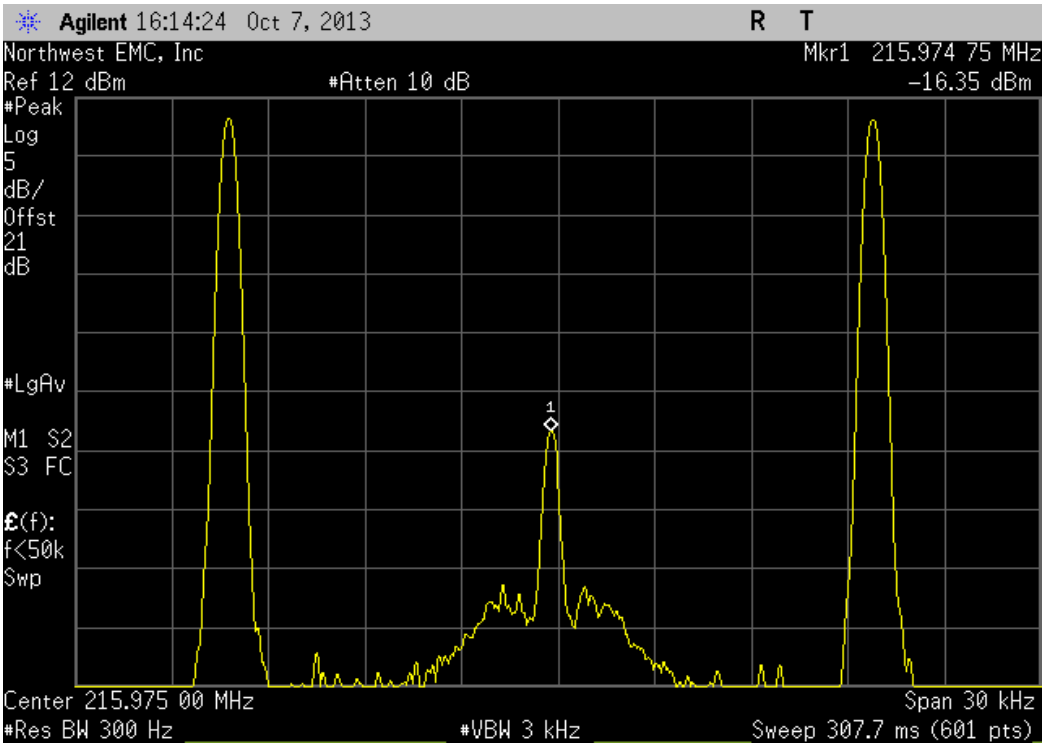


# FREQUENCY STABILITY

| High Channel 215.975 MHz, Voltage: 115% | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 215.97475 | 215.975 | 1.2 | 50 | Pass |

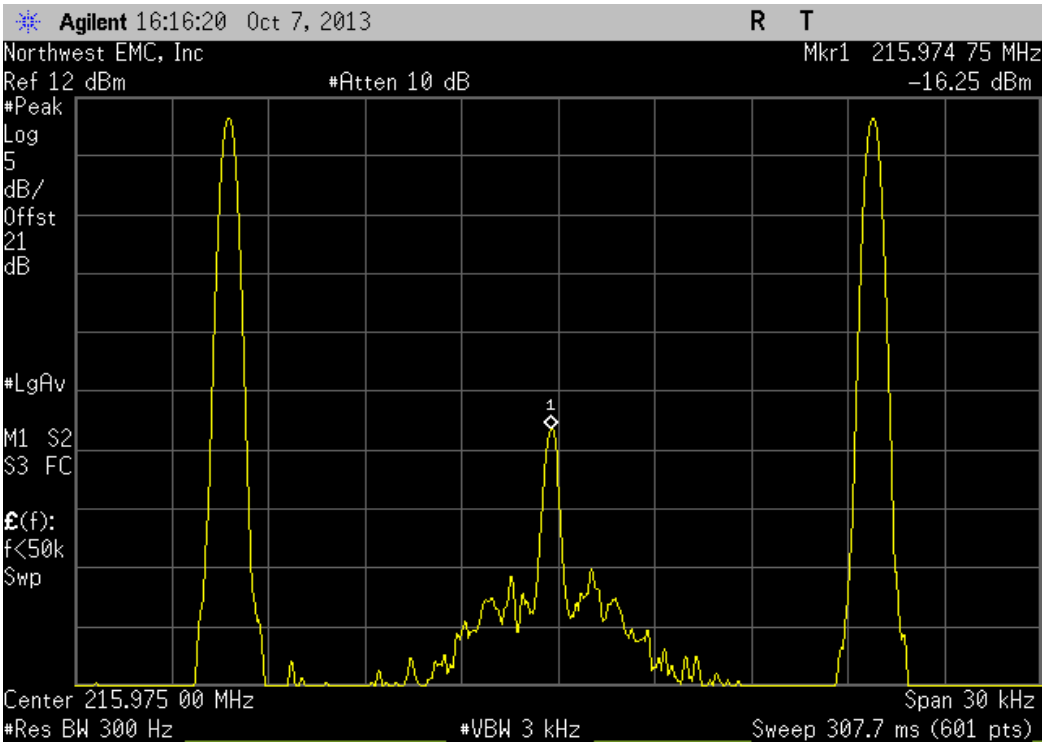



| High Channel 215.975 MHz, Voltage: 100% | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 215.97475 | 215.975 | 1.2 | 50 | Pass |

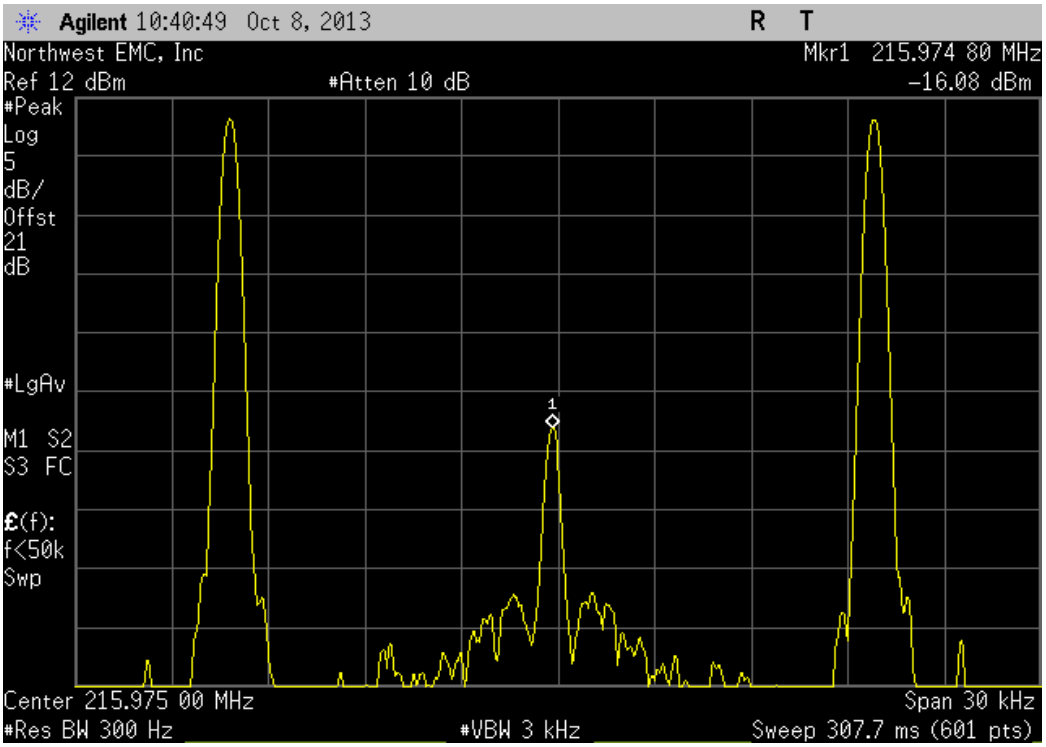


# FREQUENCY STABILITY

| High Channel 215.975 MHz, Voltage: 85% | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 215.97475 | 215.975 | 1.2 | 50 | Pass |

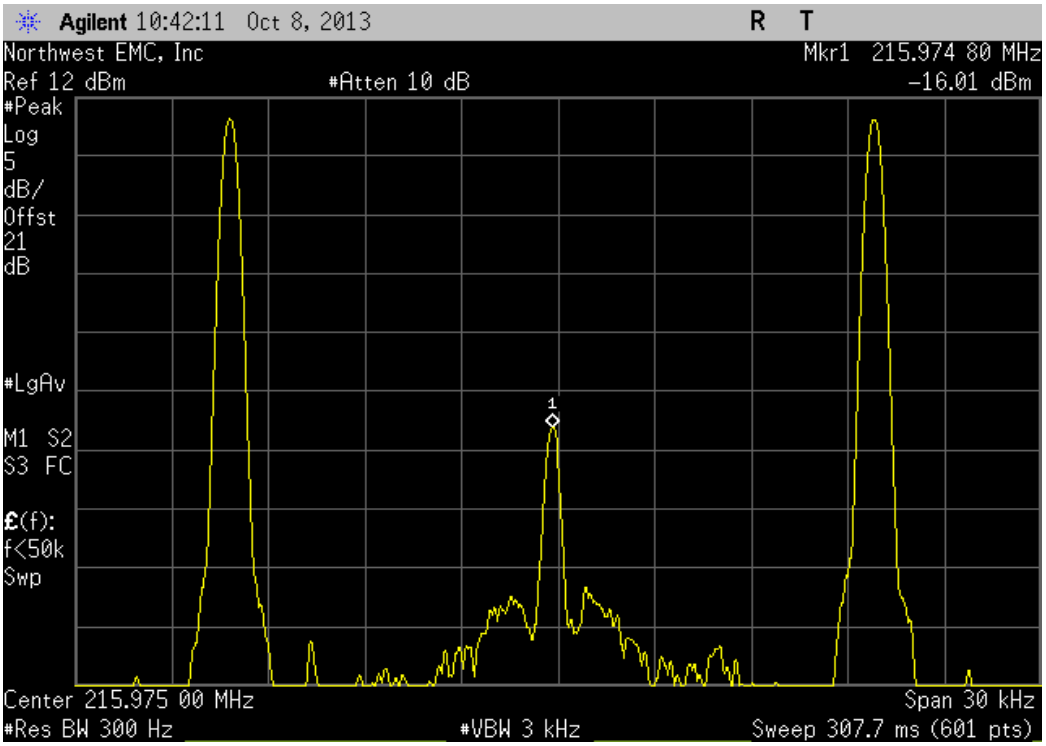



| High Channel 215.975 MHz, Temperature: +50° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 215.9748 | 215.975 | 0.9 | 50 | Pass |

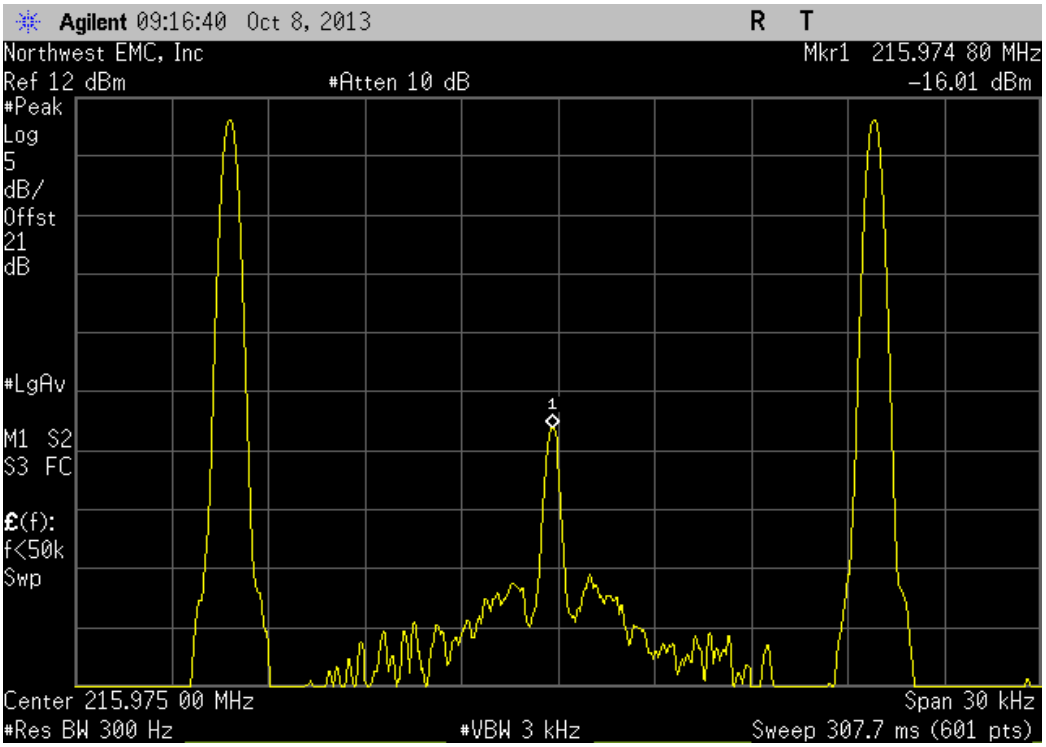


# FREQUENCY STABILITY

| High Channel 215.975 MHz, Temperature: +40° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 215.9748 | 215.975 | 0.9 | 50 | Pass |

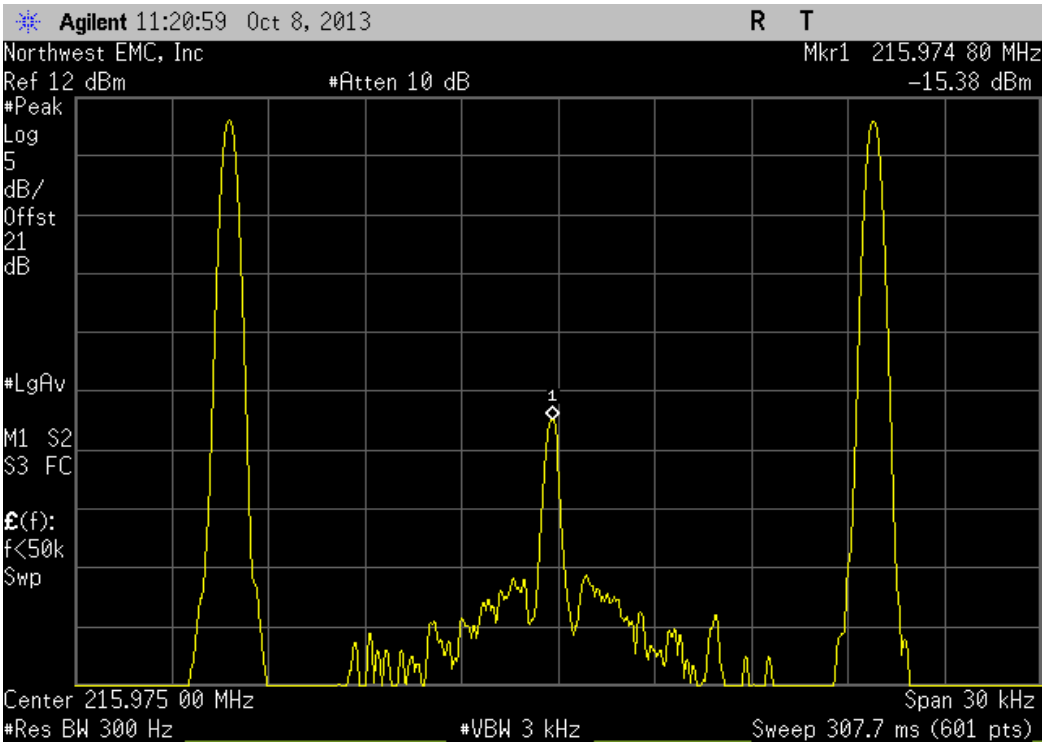



| High Channel 215.975 MHz, Temperature: +30° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 215.9748 | 215.975 | 0.9 | 50 | Pass |

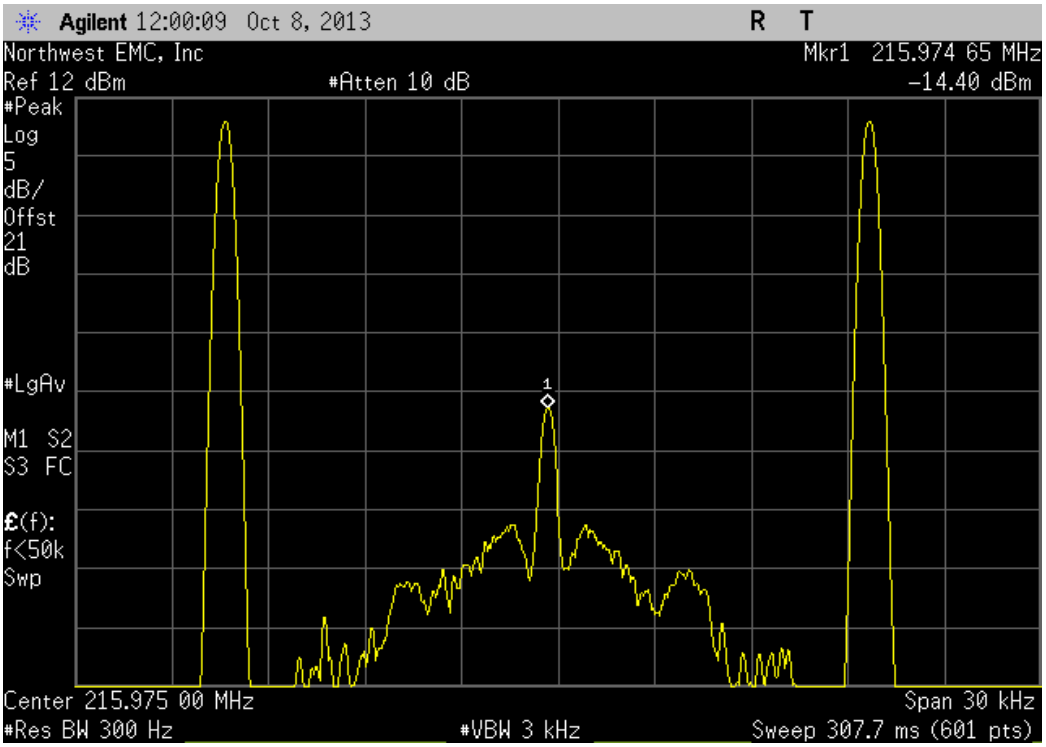


# FREQUENCY STABILITY

| High Channel 215.975 MHz, Temperature: +20° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 215.9748 | 215.975 | 0.9 | 50 | Pass |

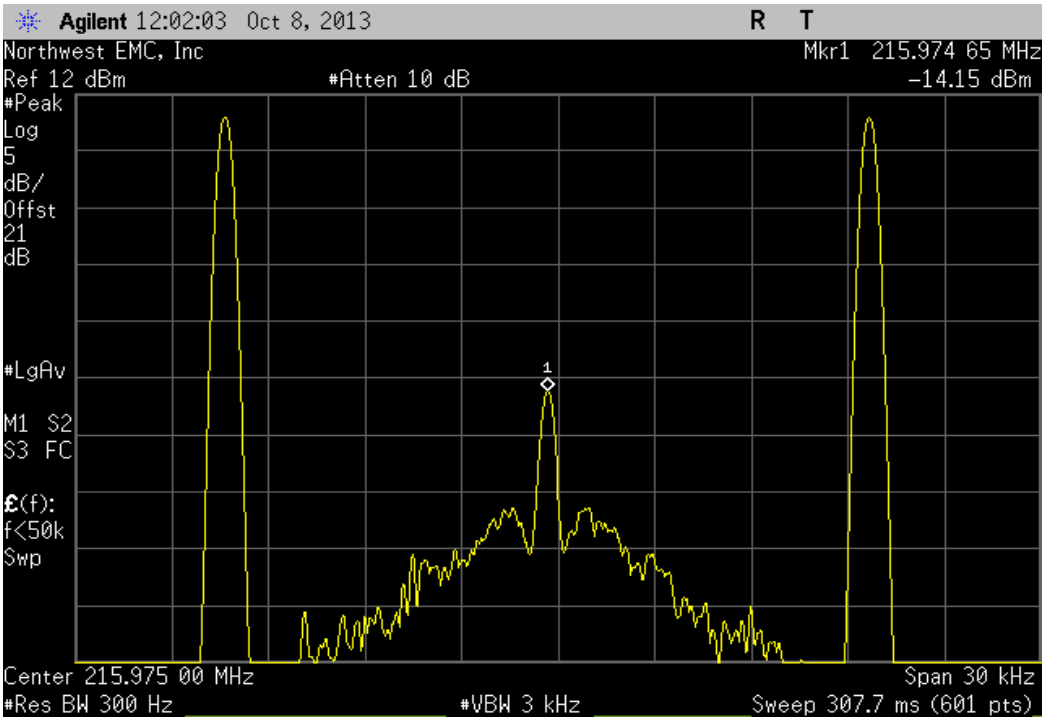



| High Channel 215.975 MHz, Temperature: +10° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 215.97465 | 215.975 | 1.6 | 50 | Pass |

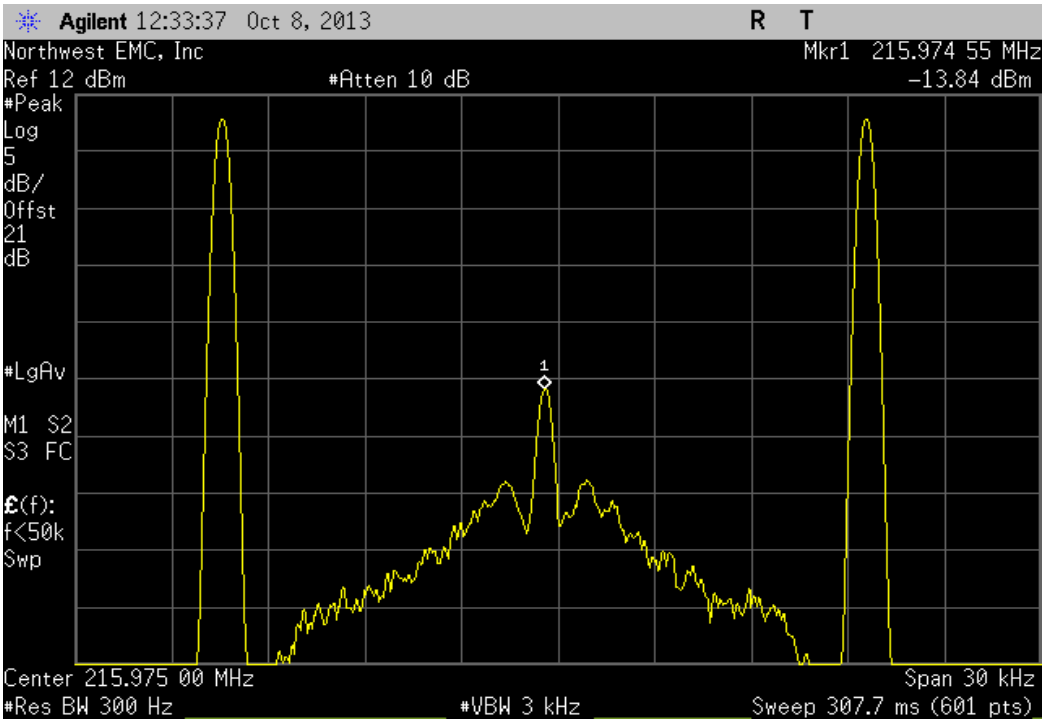


# FREQUENCY STABILITY

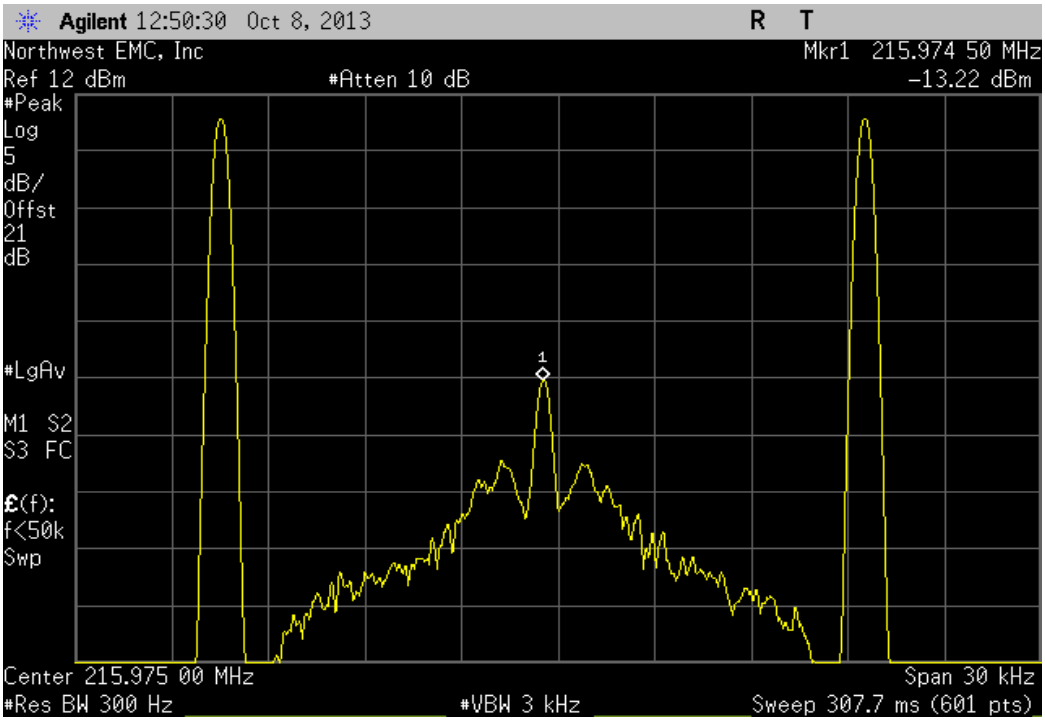
| High Channel 215.975 MHz, Temperature: 0° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 215.97465 | 215.975 | 1.6 | 50 | Pass |




| High Channel 215.975 MHz, Temperature: -10° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 215.97455 | 215.975 | 2.1 | 50 | Pass |



| High Channel 215.975 MHz, Temperature: -20° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 215.9745 | 215.975 | 2.3 | 50 | Pass |




| High Channel 215.975 MHz, Temperature: -30° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Result |
| | | 215.9745 | 215.975 | 2.3 | 50 | Pass |