# Electromagnetic Compatibility Test Report

## Tests Performed on a Nomi Technologies'

## Bluetooth Beacon Transmitter Transciever, Model 2617

## Radiometrics Document RP-7698

ACCREDITED
TESTING CERT #1495.01

| *Product Detail:* |
|---|
| FCC ID: 2ADER-2617<br>IC: 11584A-2617<br>Equipment type: 2.4 GHz transmitter |
| *Test Standards:* |
| US CFR Title 47, Chapter I, FCC Part 15 Subpart C<br>FCC Part 15 CFR Title 47: 2012<br>Industry Canada RSS-210, Issue 8: 2010 as required for Category I Equipment<br><br>This report concerns: Original Grant for Certification<br>FCC Part 15.249 |

| *Tests Performed For:* | *Test Facility:* |
|---|---|
| **Nomi Technologies**<br>26 W. 17th St., 2nd Floor<br>New York, NY 10011 | **Radiometrics Midwest Corporation**<br>12 East Devonwood<br>Romeoville, IL 60446<br>(815) 293-0772 |

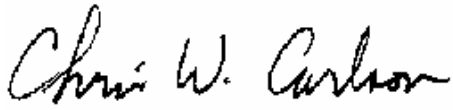
| *Test Date(s): (Month-Day-Year)* |
|---|
| October 4 thru 7, 2013 |

Document RP-7698 Revisions:

| Rev. | Issue Date | Affected Sections | Revised By |
|---|---|---|---|
| 0 | June 11, 2014 | | |
| 1 | August 26, 2014 | 3.2 | Joseph Strzelecki |
| 2 | January 13, 2015 | Cover, 3.1, 10.1.3 | Joseph Strzelecki |
| 3 | February 11, 2015 | Cover | Joseph Strzelecki |
| 4 | February 17, 2015 | 10.2 | Joseph Strzelecki |

# Table of Contents

## 1 ADMINISTRATIVE DATA

| *Equipment Under Test:* | |
|---|---|
| A Nomi Technologies, Bluetooth Beacon Transmitter<br>Model: 2617 Serial Number: none<br>This will be referred to as the EUT in this Report | |
| *Date EUT Received at Radiometrics: (Month-Day-Year)* | *Test Date(s): (Month-Day-Year)* |
| October 4, 2013 | October 4 thru 7, 2013 |
| *Test Report Written By:* | *Tests were not Witnessed by Personnel from:* |
| Joseph Strzelecki<br>Senior EMC Engineer | Nomi Technologies |
| *Radiometrics' Personnel Responsible for Test:* | *Test Report Approved By* |
|  <br>Joseph Strzelecki<br>Senior EMC Engineer<br>NARTE EMC-000877-NE |  <br>Chris W. Carlson<br>Director of Engineering<br>NARTE EMC-000921-NE |

## 2 TEST SUMMARY AND RESULTS

The EUT (Equipment Under Test) is a Bluetooth Beacon Transmitter, Model 2617, manufactured by Nomi Technologies. The detailed test results are presented in a separate section. The following is a summary of the test results.

**Emissions Tests Results**

| Environmental Phenomena | Frequency Range | Basic Standard | Test Result |
|---|---|---|---|
| RF Radiated Emissions | 30-25,000 MHz | RSS-210 &<br>FCC Part 15 | Pass |
| Occupied Bandwidth Test | Fundamental Freq. | RSS-210 &<br>FCC Part 15 | Pass |

Note: The RSS-210 specification is not currently covered in Radiometrics' Scope of Accreditation. This is technically very similar to FCC, CFR 47 Part 15 which is on Radiometrics scope.

### 2.1 RF Exposure Compliance Requirements

Since the power output is 1.4 mW, the EUT meets the FCC requirement for RF exposure and is exempt from RSS-102 SAR and RF exposure evaluations. There are no power level adjustments and the antenna is permanently attached. The detailed calculations for RF Exposure are presented in a separate document.

# 3 EQUIPMENT UNDER TEST (EUT) DETAILS

## 3.1 EUT Description

The EUT is a Bluetooth Beacon Transmitter, Model 2617, manufactured by Nomi Technologies. The EUT was in good working condition during the tests, with no known defects.

The EUT is used for proximity detection. The product only transmits on 2402, 2426 and 2480 MHz.

## 3.2 Product Family

The following is the product family list of the beacons that use the same electronics and PCB as the one tested in this report:

| Model Number | Description |
|---|---|
| 2617 | Regular transmitter |
| 2618 | Transmitter in waterproof housing |

### 3.2.1 FCC Section 15.203 & RSS-GEN Antenna Requirements

The antenna is permanently attached to the printed circuit board. The antenna is internal to the EUT and it is not readily available to be modified by the end user. Therefore it meets the 15.203 Requirements.

## 3.3 Related Submittals

Nomi Technologies is not submitting any other products simultaneously for equipment authorization related to the EUT.

# 4 TESTED SYSTEM DETAILS

## 4.1 Tested System Configuration

The system was configured for testing in a typical fashion. The EUT was placed on an 80-cm high, nonconductive test stand. The testing was performed in conditions as close as possible to installed conditions. Wiring was consistent with manufacturer's recommendations.

The EUT was tested as a stand-alone device. Power was supplied with a new battery.

The identification for all equipment, plus descriptions of all cables used in the tested system, are:

**Tested System Configuration List**

| Item | Description | Type* | Manufacturer | Model Number | Serial Number |
|---|---|---|---|---|---|
| 1 | Bluetooth Beacon Transmitter | E | Nomi Technologies | 2617 | Sample 1 |

* Type: E = EUT, P = Peripheral, S = Support Equipment; H = Host Computer

## 4.2 Special Accessories

No special accessories were used during the tests in order to achieve compliance.

### 4.3 Equipment Modifications

No modifications were made to the EUT at Radiometrics' test facility in order to comply with the standards listed in this report.

## 5 TEST SPECIFICATIONS AND RELATED DOCUMENTS

| Document | Date | Title |
|---|---|---|
| FCC CFR Title 47 | 2012 | Code of Federal Regulations Title 47, Chapter 1, Federal Communications Commission, Part 15 - Radio Frequency Devices |
| ANSI C63.4-2009 | 2009 | Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz |
| ANSI C63.10-2009 | 2009 | American National Standard for Testing Unlicensed Wireless Devices |
| IC RSS-210 Issue 8 | 2010 | Low Power Licence-Exempt Radiocommunication Devices (All Frequency Bands) Category I Equipment |
| IC RSS-Gen Issue 3 | 2010 | General Requirements and Information for the Certification of Radiocommunication Equipment (RSS-Gen) |

The test procedures used are in accordance with the Industry Canada RSS-GEN and ANSI document C63.4, "Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz". The specific procedures are described herein. Radiated testing was performed at an antenna to EUT distance of 3 meters. The antenna was raised and lowered from 1 to 4 meters.

## 6 RADIOMETRICS' TEST FACILITIES

The results of these tests were obtained at Radiometrics Midwest Corp. in Romeoville, Illinois, USA. Radiometrics is accredited by A2LA (American Association for Laboratory Accreditation) to conform to ISO/IEC 17025: 2005 "General Requirements for the Competence of Calibration and Testing Laboratories". Radiometrics' Lab Code is 121191 and Certification Number is 1495.01. Radiometrics' scope of accreditation includes all of the test methods listed herein. A copy of the accreditation can be accessed on our web site (www.radiomet.com). Radiometrics accreditation status can be verified at A2LA's web site (www.a2la2.org).

The following is a list of shielded enclosures located in Romeoville, Illinois used during the tests:

Chamber E: Is a custom made anechoic chamber that measures 52' L X 30' W X 18' H. The walls and ceiling are fully lined with RF absorber. Pro-shield of Collinsville, Oklahoma manufactured the chamber. The floor has a 9' x 9' section of microwave absorber for testing above 1 GHz.

Test Station F: Is an area that measures 10' D X 12' W X 10' H. The floor and back wall are metal shielded. This area is used for conducted emissions measurements.

A separate ten-foot long, brass plated, steel ground rod attached via a 6 inch copper braid grounds each of the above chambers. Each enclosure is also equipped with low-pass power line filters.

The FCC has accepted these sites as test site number US1065. The FCC test site Registration Number is 732175. Details of the site characteristics are on file with the Industry Canada as site number IC8727A-1.

A complete list of the test equipment is provided herein. The calibration due dates are indicated on the equipment list. The equipment is calibrated in accordance to ANSI/NCSL Z540-1 with traceability to the National Institute of Standards and Technology (NIST).

## 7 DEVIATIONS AND EXCLUSIONS FROM THE TEST SPECIFICATIONS

There were no deviations or exclusions from the test specifications.

## 8 CERTIFICATION

Radiometrics Midwest Corporation certifies that the data contained herein was taken under conditions that meet or exceed the requirements of the test specification and the data contained herein was taken with calibrated test equipment. The results relate only to the EUT listed herein.

## 9 TEST EQUIPMENT TABLE

| RMC ID | Manufacturer | Description | Model No. | Serial No. | Frequency Range | Cal Period | Cal Date |
|---|---|---|---|---|---|---|---|
| AMP-05 | RMC/Celeritek | Pre-amplifier | MW110G | 1001 | 1.0-12GHz | 12 Mo. | 01/24/13 |
| AMP-20 | Avantek | Pre-amplifier | SF8-0652 | 15221 | 8-18GHz | 12 Mo | 01/15/13 |
| AMP-22 | Anritsu | Pre-amplifier | MH648A | M23969 | 0.1-1200MHz | 12 Mo. | 01/16/13 |
| AMP-29 | HP / Agilent | Amplifier | 11975A | 2304A00158 | 2-8 GHz | 12 Mo. | 11/06/12 |
| ANT-13 | EMCO | Horn Antenna | 3115 | 2502 | 1.0-18GHz | 24 Mo. | 12/05/12 |
| ANT-44 | Impossible Machine | Super Log Antenna | SL-20M2G | 1002 | 20-2000MHz | 24 Mo. | 12/14/11 |
| ANT-48 | RMC | Std Gain Horn | HW2020 | 1001 | 18-26 GHz | 12 Mo. | 04/05/12 |
| MXR-02 | HP / Agilent | Harmonic Mixer | 11970K | 2332A00489 | 18-26.5GHz | 12 Mo. | 11/06/12 |
| REC-08 | Hewlett Packard | Spectrum Analyzer | 8566B | 2648A13481 2209A01436 | 30Hz-22GHz | 24 Mo. | 10/28/11 |
| REC-11 | Hewlett Packard | Spectrum Analyzer | E7405A | US39110103 | 9Hz-26.5GHz | 12 Mo. | 06/13/13 |
| THM-02 | Fluke | Temp/Humid Meter | 971 | 93490471 | N/A | 24 Mo. | 06/27/13 |

Note: All calibrated equipment is subject to periodic checks.

## 10 TEST SECTIONS

### 10.1 Radiated RF Emissions

Radiated emission measurements were performed with linearly polarized broadband antennas. The results obtained with these antennas can be correlated with results obtained with a tuned dipole antenna. The radiated emission measurements were performed with a spectrum analyzer. The bandwidth used from 150 kHz to 30 MHz is 9 or 10 kHz and the bandwidth from 30 MHz to 1000 MHz is 100 or 120 kHz. Above 1 GHz, a 1 MHz bandwidth is used. A 10 dB linearity check is performed prior to start of testing in order to determine if an overload condition exists.

From 30 to 1000 MHz, an Anritsu spectrum analyzer was used. For tests from 1 to 25 GHz, an HP 8566 spectrum analyzer was used. For tests from 1 to 10 GHz, a high pass filter was used to reduce the fundamental emission. A harmonic mixer was used from 18 to 25 GHz. Figure 4 herein lists the details of the test equipment used during radiated emissions tests.

The EUT was rotated through three orthogonal axis as per 13.1.4.1 of ANSI C63.4 during the radiated tests.

Final radiated emissions measurements were performed inside of an anechoic chamber at a test distance of 3 meters. The anechoic chamber is designated as Chamber E. This Chamber meets the Site Attenuation requirements of ANSI C63.4 and CISPR 16-1. Chamber E is located at 12 East Devonwood Ave. Romeoville, Illinois EMI test lab.

The entire frequency range from 30 to 25,000 MHz was slowly scanned with particular attention paid to those frequency ranges which appeared high. Measurements were performed using two antenna polarizations, (vertical and horizontal). The worst case emissions were recorded. All measurements may be performed using either the peak, average or quasi-peak detector functions. If the peak detector data exceeds or is marginally close to the limits, the measurements are repeated using a quasi-peak detector or average function as required by the specification for final determination of compliance.

The detected emission levels were maximized by rotating the EUT, adjusting the positions of all cables, and by scanning the measurement antenna from 1 to 4 meters above the ground.

### 10.1.1 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Loss, and by subtracting the Amplifier Gain from the measured reading. The basic equation is as follows:

FS = RA + AF + CF - AG + HPF + PKA

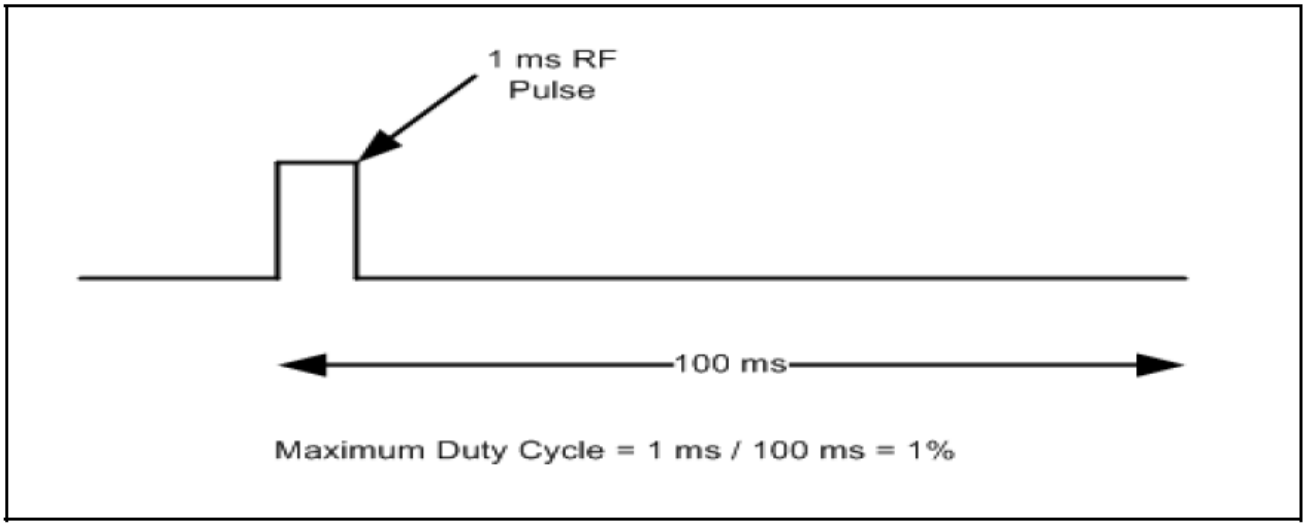
Where: FS = Field Strength
RA = Receiver Amplitude
AF = Antenna Factor
CF = Cable Attenuation Factor
AG = Amplifier Gain
PKA = Peak to Average Factor (This is zero for non-average measurements)

The Peak to average factor is used when average measurements are required. It is calculated by the highest duty cycle in percent over any 100mS transmission. The factor in dB is 20 * Log(Duty cycle/100).

### 10.1.2 Duty Cycle

The Peak to average factor is calculated by the highest duty cycle in percent over any 100mS transmission. The factor in dB is 20 * Log(Duty cycle/100). The EUT transmits a single RF pulse on a channel no more than once every 100 msec. The duration of the pulse is less than 1 mSec.

20 Log*(1mSec/100mSec) = -40 dB Peak to average Correction factor.




Transmitter Duty Cycle

As required by FCC section 15.35 and RSS-210 section 6.5, the Peak to Average correction factor was calculated.

### 10.1.3 Radiated Emissions Test Results

| | |
|---|---|
| Test Date | 10/4/2013 |
| Test Distance | 3 Meters |
| Specification | FCC Part 15 Subpart C & RSS-210 |
| Tested by | Richard Tichgelaar |
| Abbreviations | P = peak; Q = QP Pol = Antenna Polarization; V = Vertical; H = Horizontal;<br>For Antenna Type Bi-Log = (ANT-44) ; Horn = (ANT-13)<br>ANT-44 for 30-1000 MHz; ANT-13 Above 1 GHz |

Corr. Factors = Antenna factor + cable Loss – Preamp gain.

| Freq MHz | Reading dBuV | Detector | Ant Pol. | Corr. dB | EUT dBuV/m | Limit dBuV/m | Margin dB | Note |
|---|---|---|---|---|---|---|---|---|
| 103.6 | 29.8 | P | H | -16.7 | 13.1 | 43.5 | 30.4 | |
| 162.0 | 32.3 | P | H | -16.4 | 15.9 | 43.5 | 27.6 | |
| 344.8 | 29.1 | P | H | -12.7 | 16.4 | 46.0 | 29.6 | |
| 57.6 | 30.4 | P | V | -16.5 | 13.9 | 40.0 | 26.1 | |
| 66.8 | 30.8 | P | V | -19.6 | 11.2 | 40.0 | 28.8 | |
| 103.6 | 31.3 | P | V | -16.7 | 14.6 | 43.5 | 28.9 | |
| 162.0 | 32.9 | P | V | -16.4 | 16.5 | 43.5 | 27.0 | |
| 167.6 | 31.9 | P | V | -17.2 | 14.7 | 43.5 | 28.8 | |
| 310.1 | 29.1 | P | V | -14.1 | 15.0 | 46.0 | 31.0 | |
| 1007.5 | 41.0 | P | V | -3.0 | 38.0 | 54.0 | 16.0 | 1 |
| 1457.5 | 32.8 | P | V | -1.1 | 31.7 | 54.0 | 22.3 | 1 |
| 1520.0 | 41.9 | P | V | -0.8 | 41.1 | 54.0 | 12.9 | 1 |
| 1867.5 | 35.1 | P | V | 1.3 | 36.4 | 54.0 | 17.6 | 1 |
| 1922.5 | 43.7 | P | V | 1.2 | 44.9 | 54.0 | 9.1 | 1 |
| 2750.0 | 31.7 | P | V | 4.6 | 36.3 | 54.0 | 17.7 | 1 |
| 3027.5 | 34.5 | P | V | 6.2 | 40.7 | 54.0 | 13.3 | 1 |
| 3522.5 | 33.9 | P | V | 8.9 | 42.8 | 54.0 | 11.2 | 1 |
| 3977.5 | 32.7 | P | V | 10.0 | 42.7 | 54.0 | 11.3 | 1 |
| 4542.5 | 33.4 | P | V | 10.6 | 44.0 | 54.0 | 10.0 | 1 |
| 1017.5 | 33.9 | P | H | -2.8 | 31.1 | 54.0 | 22.9 | 1 |
| 1597.5 | 32.2 | P | H | -0.8 | 31.4 | 54.0 | 22.6 | 1 |
| 1972.5 | 31.0 | P | H | 1.6 | 32.6 | 54.0 | 21.4 | 1 |
| 2050.0 | 32.8 | P | H | 1.8 | 34.6 | 54.0 | 19.4 | 1 |
| 2350.0 | 31.2 | P | H | 2.7 | 33.9 | 54.0 | 20.1 | 1 |
| 2522.5 | 31.2 | P | H | 3.8 | 35.0 | 54.0 | 19.0 | 1 |
| 3062.5 | 35.7 | P | H | 6.5 | 42.2 | 54.0 | 11.8 | 1 |
| 3577.5 | 32.4 | P | H | 9.1 | 41.5 | 54.0 | 12.5 | 1 |
| 3915.0 | 33.7 | P | H | 10.4 | 44.1 | 54.0 | 9.9 | 1 |
| 4062.5 | 31.1 | P | H | 9.4 | 40.5 | 54.0 | 13.5 | 1 |
| 4550.0 | 31.5 | P | H | 10.6 | 42.1 | 54.0 | 11.9 | 1 |
| 4932.5 | 31.0 | P | H | 10.8 | 41.8 | 54.0 | 12.2 | 1 |

Note 1: Peak Reading under the average limit, therefore average reading was not performed.

Test Date: 10/4/2013 to 10/7/2013
Tested by: Richard Tichgelaar

Fundammental and Harmonic Emissions

| | | Spectrum Analyzer Readings dBuV | | | | | | | | | EUT | Peak | Ave | Peak | Ave | Margin |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| hrm | Tx | Peak | | | Ave | Peak | | | Ave | Corr. | Emission | Tot. FS | | Limit | | Under |
| | | Vertical Polarization | | | | Horizontal Polarization | | | | | Freq | | | | | |
| # | Freq | X | Y | Z | Max | X | Y | Z | Max | Fact. | MHz | dBuV/m | | dBuV/m | | Limit |
| 1 | 2402 | 89.2 | 77.2 | 90.6 | 50.6 | 77.9 | 87.2 | 86.9 | 47.2 | 3.3 | 2402.0 | 93.9 | 53.9 | 114 | 94 | 20.1 |
| BE | 2402 | 39.2 | 27.2 | 40.6 | 0.6 | 27.9 | 37.2 | 36.9 | -2.8 | 3.2 | 2390.0 | 43.8 | 3.8 | 74 | 54 | 30.2 |
| 2 | 2402 | 44.0 | 41.8 | 44.2 | 4.2 | 43.3 | 41.8 | 42.1 | 3.3 | 10.9 | 4804.0 | 55.1 | 15.1 | 74 | 54 | 18.9 |
| 3 | 2402 | 41.4 | 40.6 | 41.2 | 1.4 | 42.1 | 41.1 | 41.0 | 2.1 | 12.4 | 7206.0 | 54.5 | 14.5 | 74 | 54 | 19.5 |
| 1 | 2426 | 90.7 | 80.4 | 90.8 | 50.8 | 82.5 | 93.2 | 88.3 | 53.2 | 3.4 | 2426.0 | 96.6 | 56.6 | 114 | 94 | 17.4 |
| 2 | 2426 | 43.7 | 41.3 | 44.1 | 4.1 | 42.1 | 42.5 | 42.2 | 2.5 | 10.6 | 4852.0 | 54.7 | 14.7 | 74 | 54 | 19.3 |
| 3 | 2426 | 40.7 | 40.8 | 41.0 | 1.0 | 40.6 | 41.0 | 40.1 | 1.0 | 12.6 | 7278.0 | 53.6 | 13.6 | 74 | 54 | 20.4 |
| 1 | 2480 | 86.8 | 76.9 | 86.9 | 46.9 | 76.1 | 88.7 | 86.5 | 48.7 | 3.5 | 2480.0 | 92.2 | 52.2 | 114 | 94 | 21.8 |
| BE | 2480 | 43.1 | 0.0 | 43.2 | 3.2 | 32.4 | 45.0 | 42.8 | 5.0 | 3.5 | 2483.5 | 48.5 | 8.5 | 74 | 54 | 25.5 |
| 2 | 2480 | 41.9 | 42.2 | 41.7 | 2.2 | 40.7 | 40.8 | 40.9 | 0.9 | 10.9 | 4960.0 | 53.1 | 13.1 | 74 | 54 | 20.9 |
| 3 | 2480 | 41.9 | 42.0 | 41.6 | 2.0 | 40.1 | 40.2 | 40.4 | 0.4 | 13.0 | 7440.0 | 55.0 | 15.0 | 74 | 54 | 19.0 |
| Column numbers (see below for explanations) | | | | | | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |

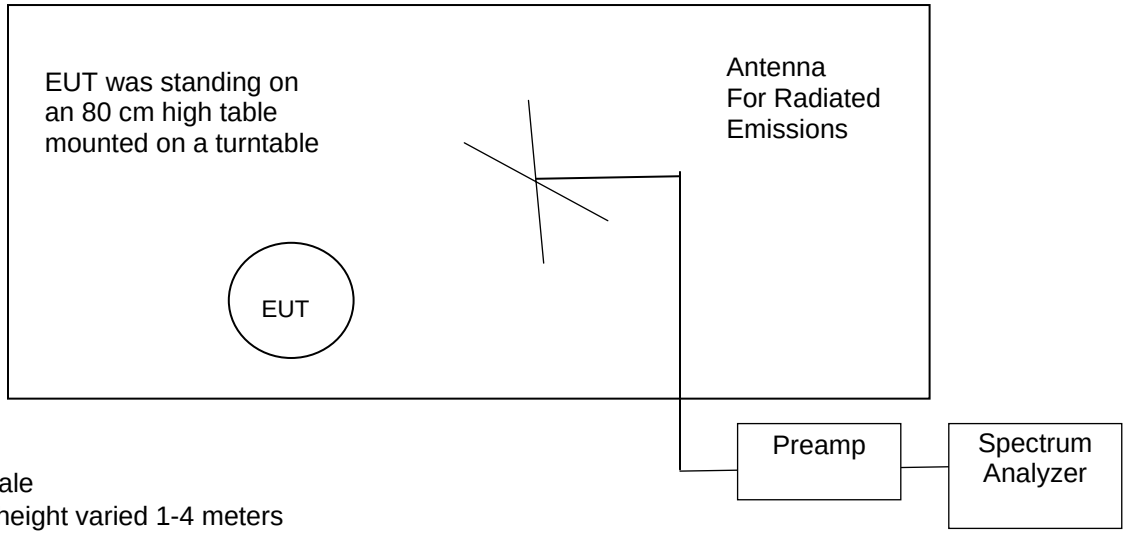
Column #1. hrm = Harmonic; BE = Band Edge emissions
Column #2. Frequency of Transmitter.
Column #3. Uncorrected readings from the spectrum analyzer with First Axis Rotation.
Column #4. Uncorrected readings from the spectrum analyzer with Second Axis Rotation.
Column #5. Uncorrected readings from the spectrum analyzer with Third Axis Rotation.
Column #6. Average Reading based on peak reading reduced by the Duty cycle correction of 40 dB
Column #7. Uncorrected readings from the spectrum analyzer with First Axis Rotation.
Column #8. Uncorrected readings from the spectrum analyzer with Second Axis Rotation.
Column #9. Uncorrected readings from the spectrum analyzer with Third Axis Rotation.
Column #10. Average Reading based on peak reading reduced by the Duty cycle correction of 40 dB
Column #11. Corr. Factors = Cable Loss – Preamp Gain + Antenna Factor
Column #12. Frequency of Tested Emission
Column #13. Highest peak field strength at listed frequency.
Column #14. Highest Average field strength at listed frequency.
Column #15. Peak Limit.
Column #16. Average Limit.
Column #17. The margin (last column) is the worst case margin under the peak or average limits for that row.

Overall Judgment: Passed by at least 9.1 dB

No Emissions were detected from 30 to 25,000 MHz within 10 dB of the limits.

**Figure 1. Drawing of Radiated Emissions Setup**

Chamber E, anechoic




**Notes:**
- Not to Scale
- Antenna height varied 1-4 meters
- Distance from antenna to tested system is 3 meters
- AC cords not shown. They are connected to AC outlet with low-pass filter on turntable

| Frequency Range | Receive Antenna | Pre-Amplifier | Spectrum Analyzer |
|---|---|---|---|
| 0.01 to 30 MHz | ANT-53 | None | REC-11 |
| 30 to 1000 MHz | ANT-44 | AMP-22 | REC-11 |
| 1 to 10 GHz | ANT-13 | AMP-05 | REC-11 |
| 10 to 18 GHz | ANT-13 | AMP-20 | REC-11 |
| 18 to 25 GHz | ANT-48 | AMP-29 | REC-08; MXR-01 |

## 10.2 Occupied Bandwidth Data

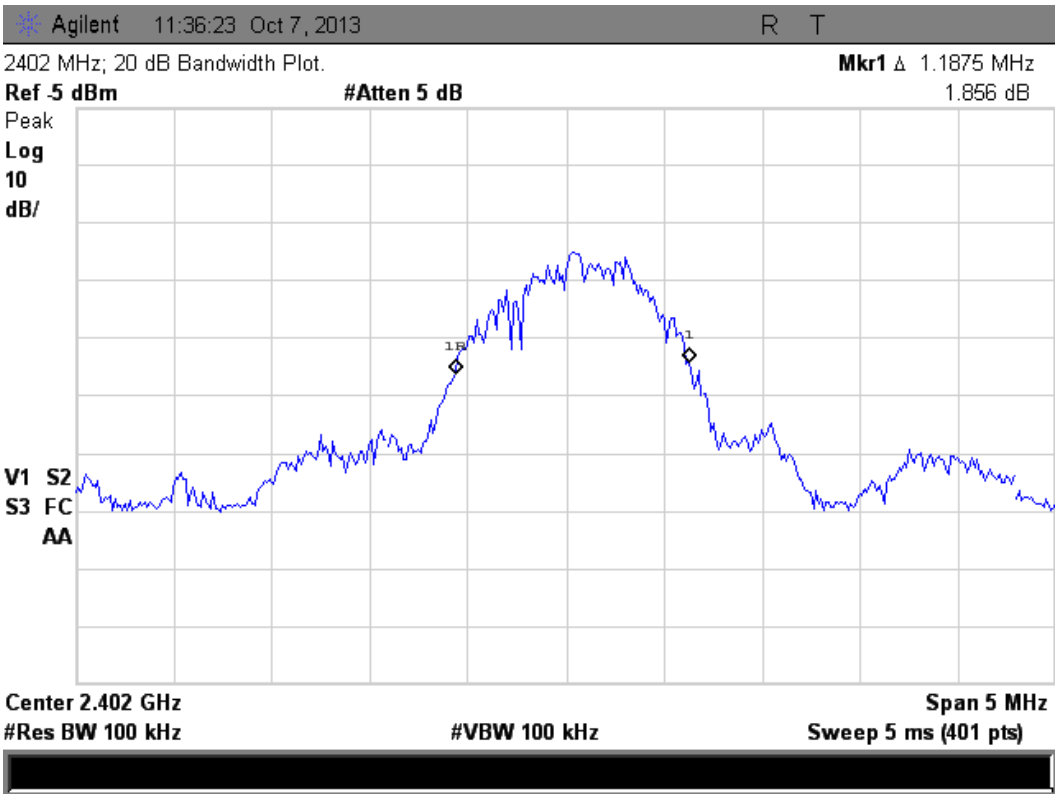
The occupied bandwidth of the RF output was measured using a spectrum analyzer. The bandwidth was measured using the peak detector function and a narrow resolution bandwidth.

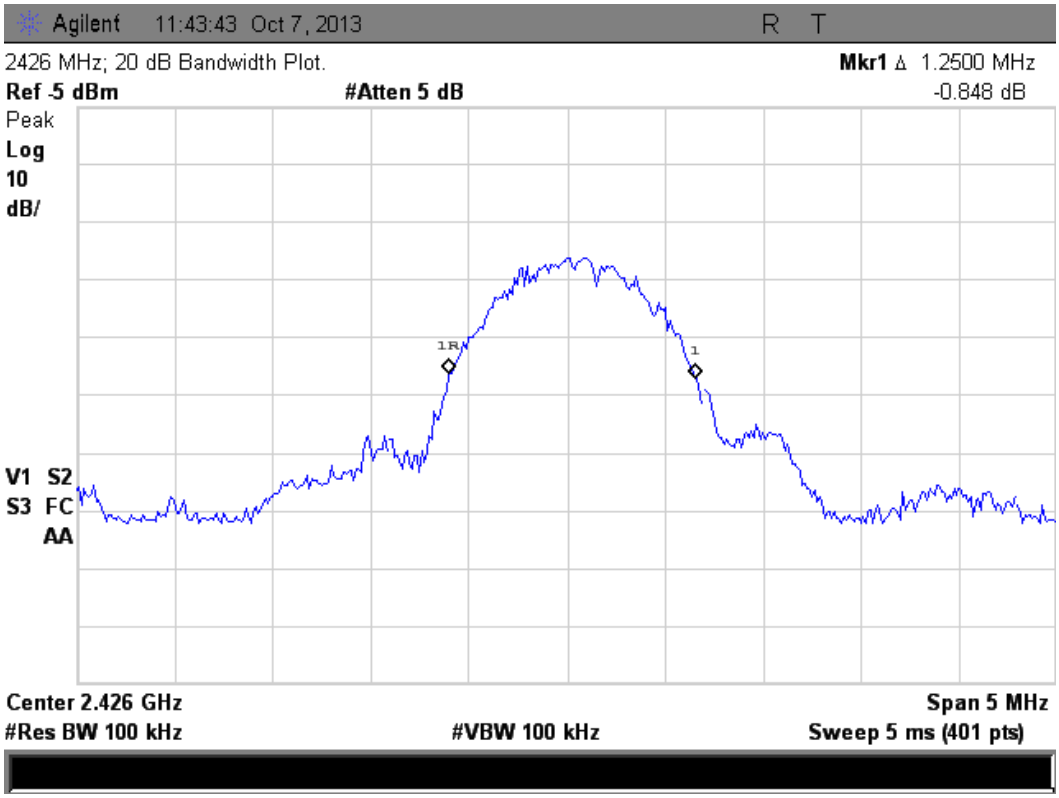
A broadband antenna was used to receive the modulated signal. The spectrum analyzer was set to the MAX HOLD mode to record the worst case of the modulation. The spectrum analyzer display was digitized and plotted. A limit was drawn on the plots based on the level of the modulated carrier. The plots of the occupied bandwidth for the EUT are supplied on the following page.

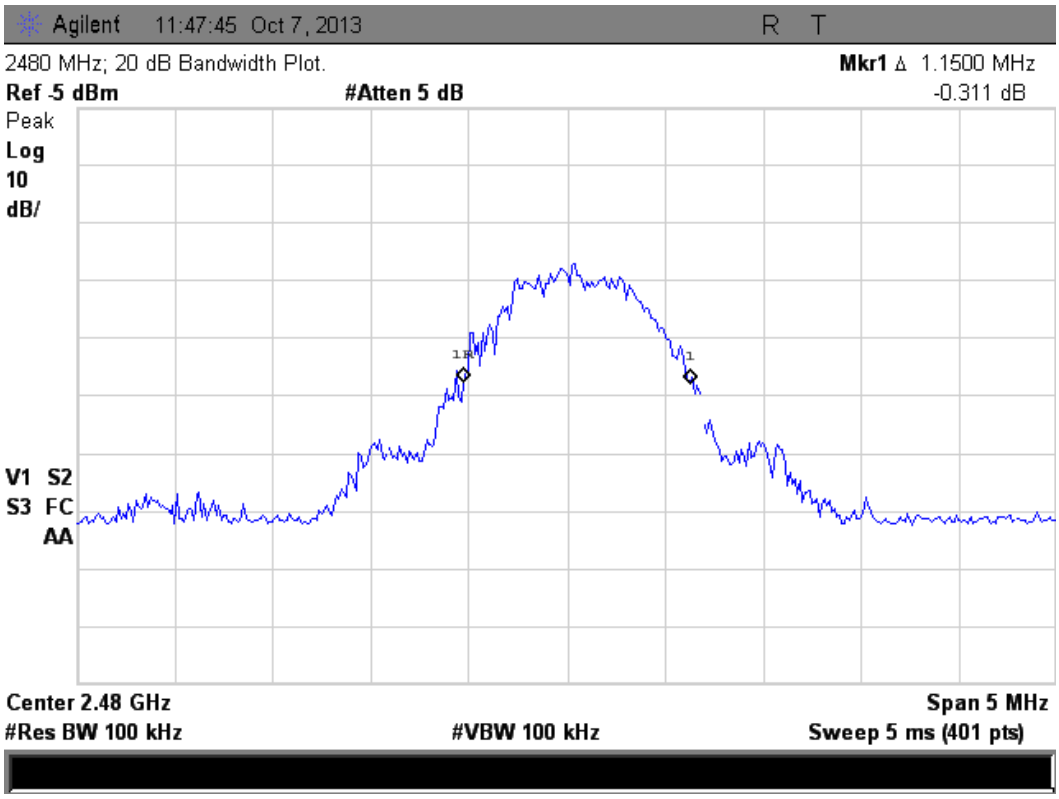
Test Date: 10/4/2013 to 10/7/2013
Tested by: Richard Tichgelaar

| Channel | 20 dB EBW MHz |
|---|---|
| 2402 | 1.19 |
| 2426 | 1.25 |
| 2480 | 1.15 |

**Figure 2. Occupied Bandwidth Plot**

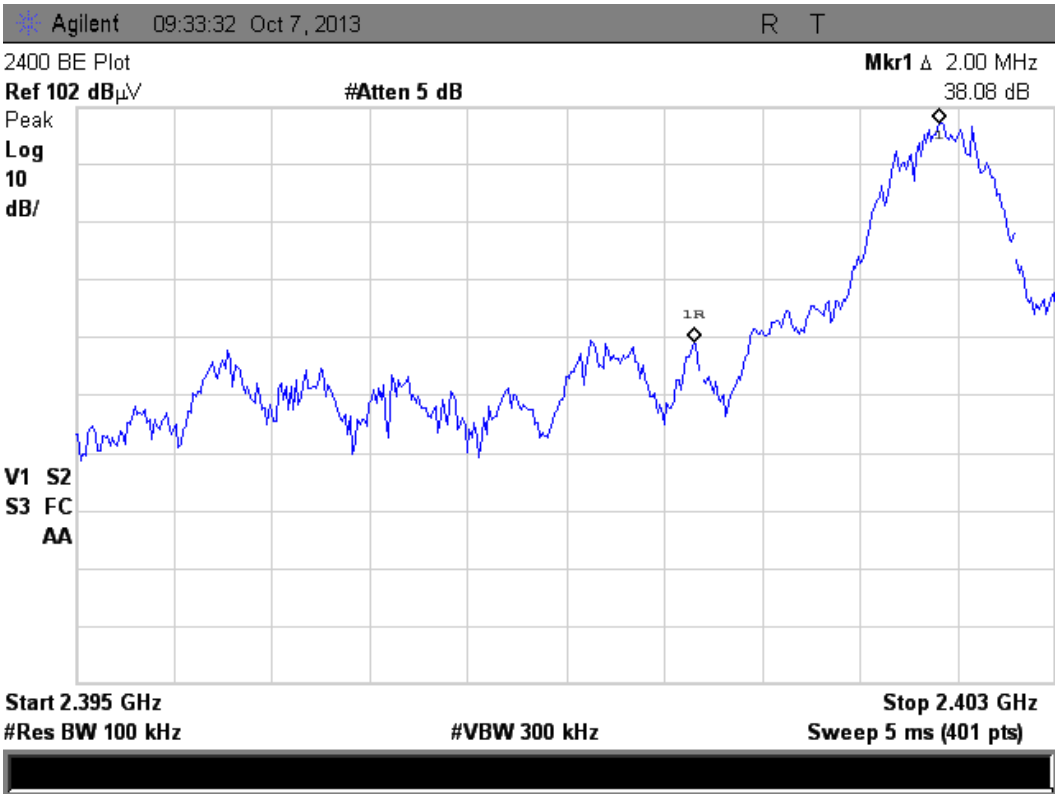



Agilent 11:43:43 Oct 7, 2013
R T
2426 MHz; 20 dB Bandwidth Plot.
Mkr1 Δ 1.2500 MHz
Ref -5 dBm
#Atten 5 dB
-0.848 dB
Peak
Log
10
dB/
1R
1
V1 S2
S3 FC
AA
Center 2.426 GHz
Span 5 MHz
#Res BW 100 kHz
#VBW 100 kHz
Sweep 5 ms (401 pts)

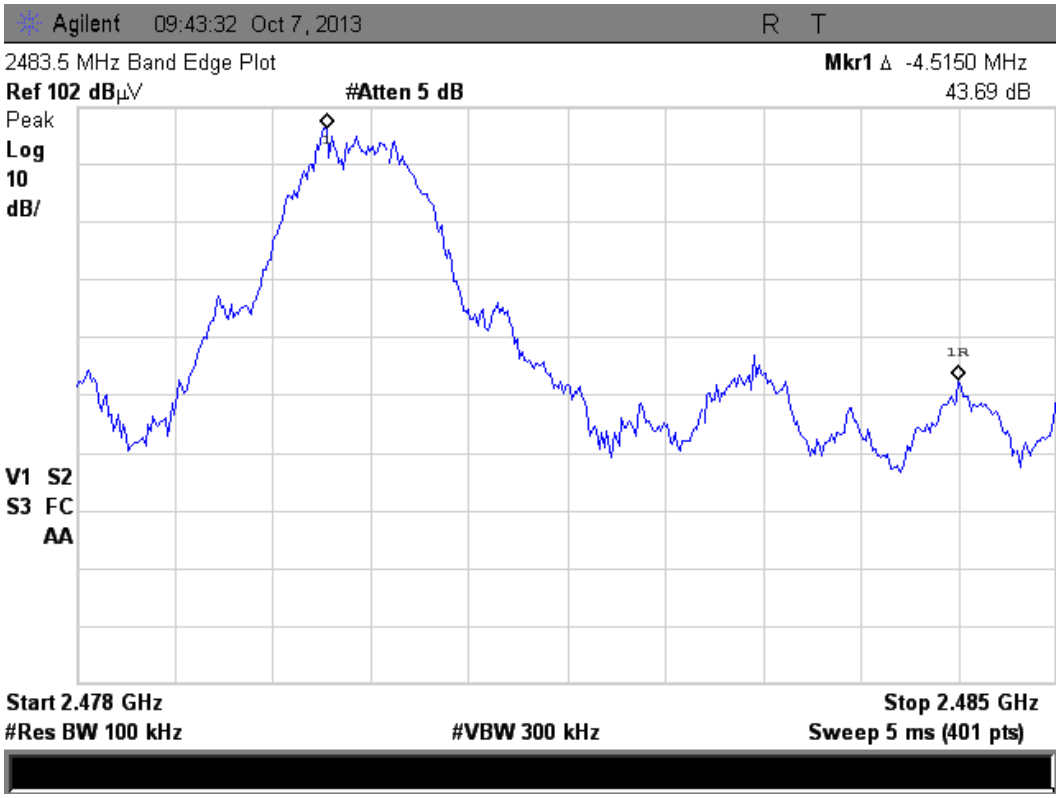

Agilent 11:47:45 Oct 7, 2013
R T
2480 MHz; 20 dB Bandwidth Plot.
Mkr1 Δ 1.1500 MHz
Ref -5 dBm
#Atten 5 dB
-0.311 dB
Peak
Log
10
dB/
1R
1
V1 S2
S3 FC
AA
Center 2.48 GHz
Span 5 MHz
#Res BW 100 kHz
#VBW 100 kHz
Sweep 5 ms (401 pts)

## 10.3 Band-edge Compliance of RF Conducted Emissions

The spectrum analyzer was set to the MAX HOLD mode to record the worst case of the modulation at the band-edge, with the EUT set to the lowest frequency. The trace was allowed to stabilize.




Delta from 2400 MHz.




Delta from 2483.5 MHz.

| Channel | Reading at Band Edge | |
|---|---|---|
| | Freq. (MHz) | Delta (dB) |
| 2402 Lower Band edge | 2400 | 38.1 |
| 2480 Upper Band edge | 2483.5 | 43.7 |

These results were used in the Band edge calculations on page 10 herein.

It was fully compliant with the general field strength limits of 15.209 at the band edge using the delta-marker method, section 6.9.3 of ANSI C63.10-2009.

Judgment: Passed by 25.5 dB

## 10.4 Unintentional Emissions (Receive Mode)

Since the EUT is a transmit-only product, this test was not performed.