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July 8, 2014

Pruf Energy Controls
900 Washington Ave
Suite 506
Waco, TX 76701

Gentlemen:

Thank you for allowing Professional Testing (EMI), Inc. an opportunity to perform testing for Pruf Energy Controls. Enclosed is the Wireless Certification Report for the PEC915V10. This report can be used to demonstrate compliance with requirements for wireless devices in the United States and Canada.

If you have any questions, please contact me.

Sincerely,

Jeffrey A. Lenk
President

Attachment

Project 15590-15

**Pruf Energy Controls
PEC915V10**

Wireless Certification Report

Prepared for:

Pruf Energy Controls
900 Washington Ave
Suite 506
Waco, TX 76701

By

Professional Testing (EMI), Inc.
1601 North A.W. Grimes Blvd., Suite B
Round Rock, Texas 78665

July 8, 2014

Reviewed by



Larry Finn
Product Development Engineer

Written by



Eric Lifsey
Test Engineer

Revision History

| Revision Number | Description | Date |
|------------------------|--|---------------|
| 00 | Draft for review. | June 17, 2014 |
| 01 | Revised per client JD comments. | June 19, 2014 |
| 02 | Revised per TUV/BABT comments & BW change. | July 8, 2014 |
| | | |

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Certificate of Compliance

| Applicant | Device & Test Identification |
|---|--|
| Pruf Energy Controls 900 Washington Ave Suite 506 Waco, TX 76701 Certificate Date: July 8, 2014 | FCC ID: 2ACB8-PEC915V10 Industry Canada ID: 11970A-PEC915V10 Model(s): PEC915V10 Part Number(s): N/A Laboratory Project ID: 15590-15 |

The device named above was tested utilizing the following documents and found to be in compliance with the required criteria:

| Standard | Reference | Detail |
|----------------------|--|---|
| FCC 47 CFR Part 15 C | 15.247 | Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz. |
| FCC 47 CFR Part 15 C | 15.209 | Radiated emission limits; general requirements. |
| FCC 47 CFR Part 15 C | 15.207 | Conducted limits. |
| FCC 47 CFR Part 15 C | 15.205 | Restricted Bands of Operation |
| KDB 558074 D01 | DR01 | DTS Measurement Guidance v03r02 |
| KDB 412172 | D01 | Guidelines for Determining the ERP and EIRP of an RF Transmitting System |
| OET Bulletin 65* | Edition 97-01, and Supplement C, Ed. 01-01 | Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields |
| RSS-210 | Issue 8 | Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment |
| RSS-Gen | Issue 3 | General Requirements and Information for the Certification of Radio Apparatus |
| RSS-102 | Issue 4 | Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands) |

*MPE is reported separately from this document.

I, Jeffrey A. Lenk, for Professional Testing (EMI), Inc., being familiar with the FCC rules and test procedures, have reviewed the test setup, measured data, and this report. I believe them to be true and accurate.

Jeffrey A. Lenk
President

This report has been reviewed and accepted by Pruf Energy Controls. The undersigned is responsible for ensuring that the PEC915V10 by Pruf Energy Controls will continue to comply with the applicable rules.

Representative of Pruf Energy Controls

1.0 Introduction

1.1 Scope

This report describes the extent to which the equipment under test (EUT) conformed to the intentional radiator requirements of the United States and Canada.

Professional Testing (EMI), Inc., (PTI) follows the guidelines of National Institute of Standards and Technology (NIST) for all uncertainty calculations, estimates, and expressions thereof for electromagnetic compatibility testing. The procedures of ANSI C63.4: 2009 were used for making all radiated enclosure and mains emission measurements.

1.2 EUT Description

The EUT is the **PEC915V10** by **Pruf Energy Controls**. This device is a wireless transmitter/receiver module. The EUT as tested consisted of the following:

Table 1.2.1: Equipment Under Test

| Manufacturer | Model | Serial # | Description |
|----------------------|-----------|----------------------------------|---|
| Pruf Energy Controls | PEC915V10 | V4 003 (Ant 1) V4 002 (Ant 2) | Wireless transmitter/receiver module for 902 – 928 MHz. |

This device is constructed as a modular component for wireless applications. It is supplied either with an external printed-circuit antenna (Antenna 1) or a directly soldered-on helical antenna (Antenna 2).

The EUT is powered by a 3.3 Volts DC.

The EUT measures approximately 30 x 24 x 3 mm. A photograph of the EUT is provided below.



Photograph 1.2.1: EUT

1.3 EUT Operation

The EUT was exercised in a manner consistent with normal operations. This device could be powered by systems connected to the AC mains network, so mains conducted emission measurements are included.

The EUT internal software operated the transmitter in a continuous modulated mode or unmodulated mode as required.

1.4 Modifications to Equipment

No modifications were made to the EUT during the performance of the test program.

1.5 Test Site

Measurements were made at the PTI semi-anechoic facility designated Site 45 (FCC 459644, IC 3036B-1) in Austin, Texas. The site is registered with the FCC under Section 2.948 and Industry Canada per RSS-GEN, and is subsequently confirmed by laboratory accreditation (NVLAP). The test site is located at 11400 Burnet Road, Austin, Texas 78758, while the main office is located at 1601 North A.W. Grimes Boulevard, Suite B, Round Rock, Texas, 78665.

2.0 Fundamental Power

2.1 Test Procedure

Bandwidth is first determined to select correct entire bandwidth for power measurement and the fundamental power is measured.

2.2 Test Criteria

| 47 CFR (USA) // IC (Canada) | | |
|--|--|------------|
| Section Reference | Parameter | Date |
| 15.247(a)(3) // RSS-210 Issue 8, A2.9 | Fundamental Power Conducted Limit: 1 Watt | 2014-07-07 |

2.3 Test Results

Bandwidth is found to be 579 kHz in 20 dB, so 1 MHz resolution bandwidth was employed for peak power measurement.

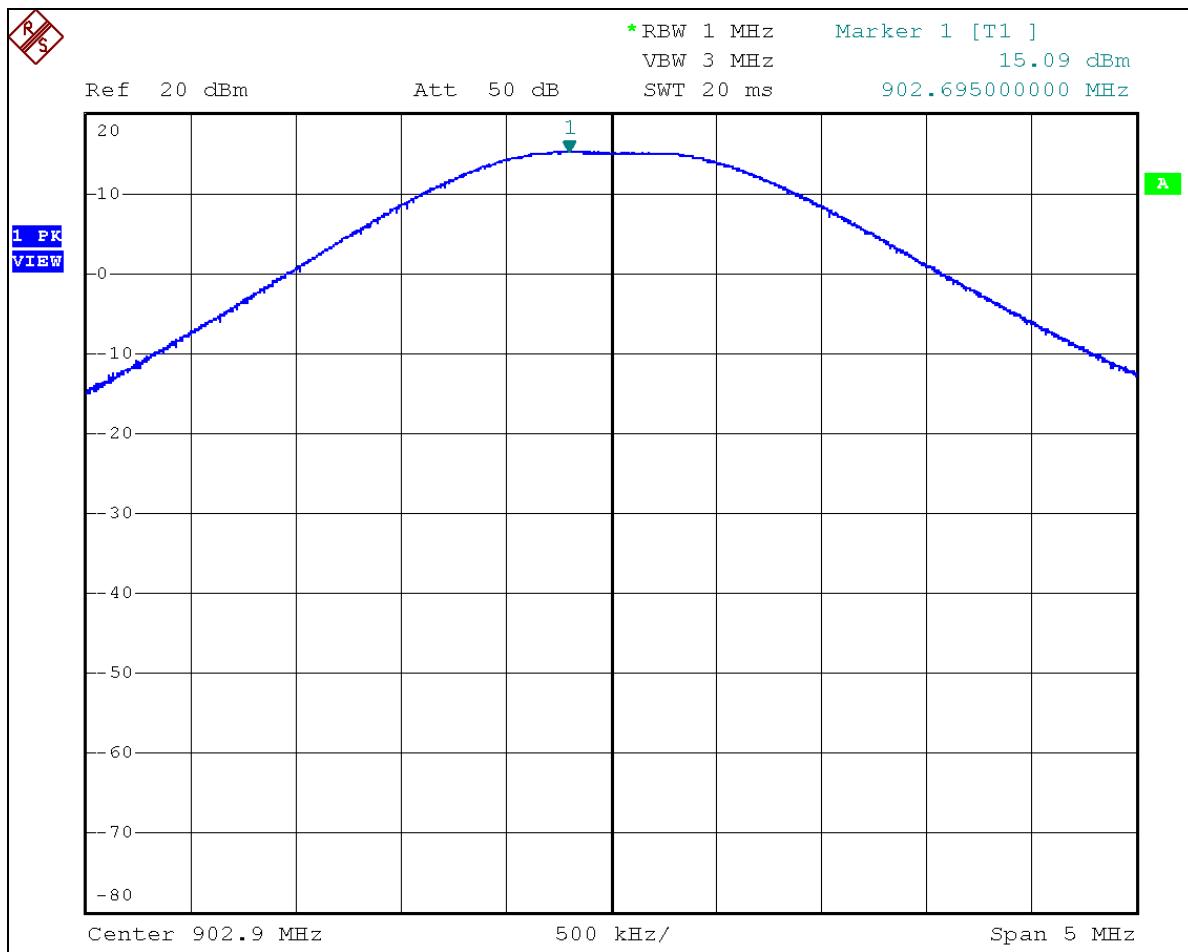
Fundamental Power Measured as Field Strength Conducted Limit 1 Watt (30 dBm)

| Conducted Port Power | |
|----------------------|---------------------------|
| Frequency (MHz) | Measured Peak Power (dBm) |
| 902.9 | 15.09 |
| 915.0 | 14.56 |
| 927.5 | 14.98 |

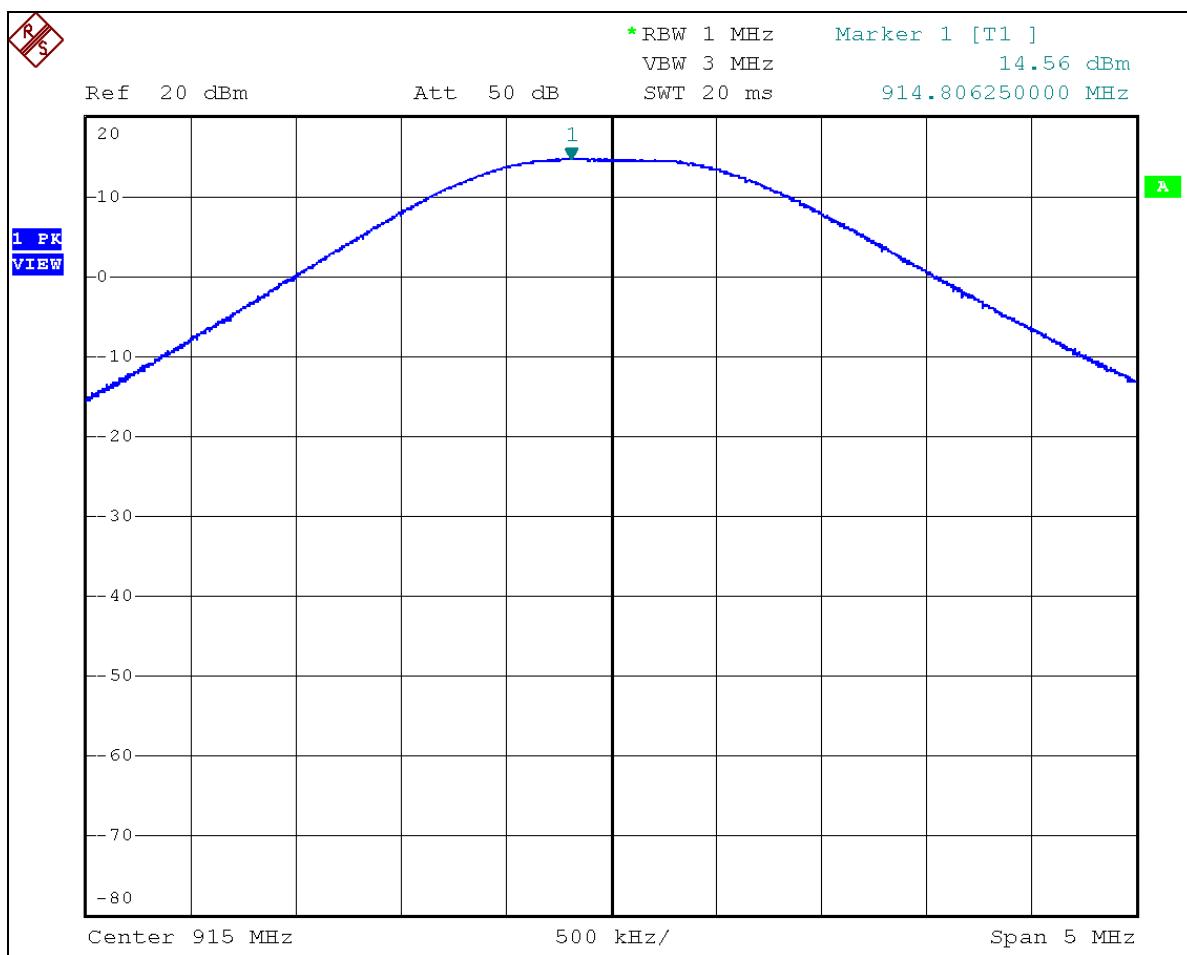
Measured in 1 MHz RBW, 3 MHz VBW.

The EUT was found to be in compliance with the applicable criteria. Plotted measurement appears below.

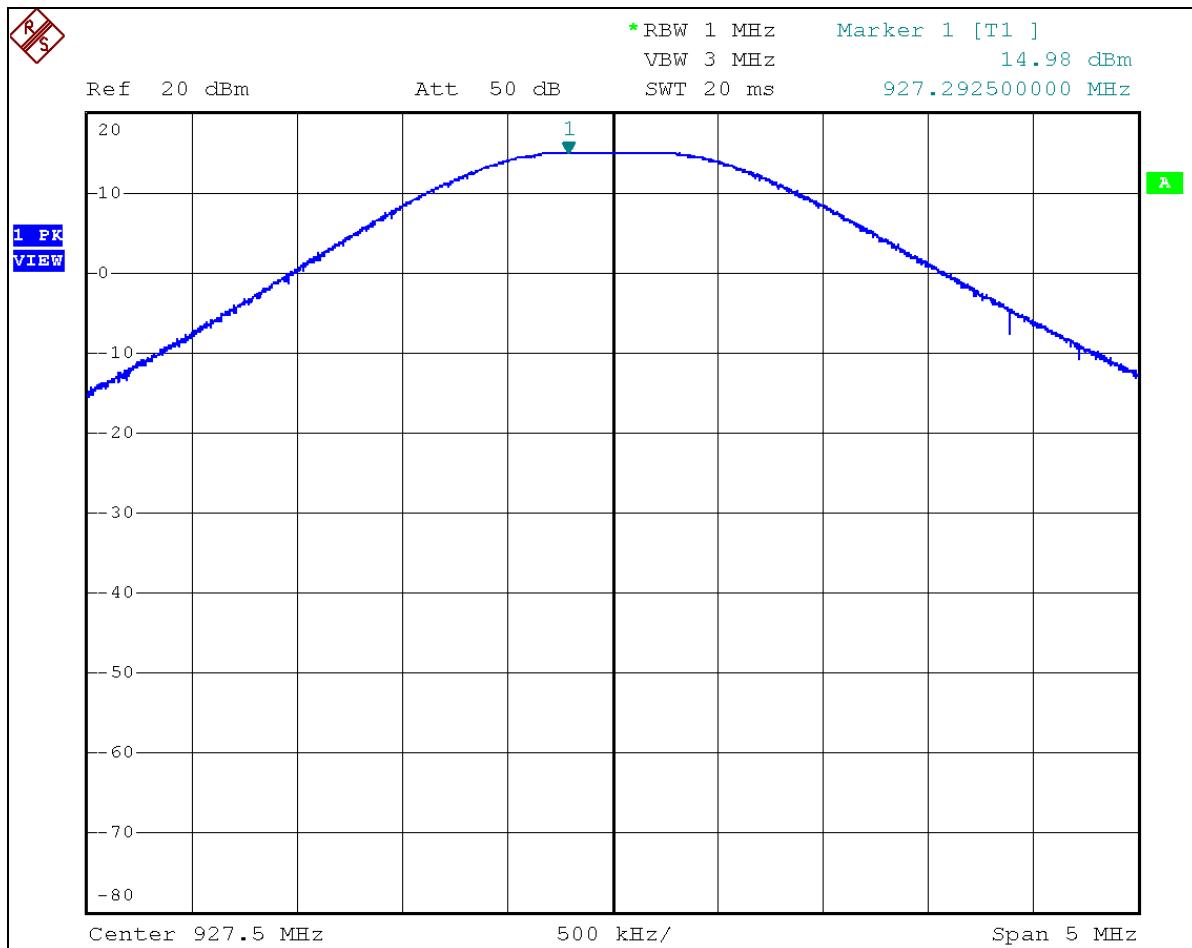
2.3.1 Low Channel



2.3.2 Middle Channel



2.3.3 High Channel



3.0 Power Spectral Density

3.1 Test Procedure

The EUT is connected to a spectrum analyzer. The spectrum analyzer is then adjusted to measure the power spectral density in the prescribed resolution bandwidth with an extended sweep time.

3.2 Test Criteria

| 47 CFR (USA) // IC (Canada) | | |
|-------------------------------------|---|------------|
| Section Reference | Parameter | Date |
| 15.247e // RSS-210 Issue 8, A2.9 | Power Spectral Density, Conducted Limit: 8 dBm / 3 kHz | 2014-07-07 |

3.3 Test Results

Power Spectral Density Conducted Limit 8 dBm, Measured Conducted

| Frequency MHz | Corrected* Measured Peak PSD (dBm) |
|------------------|---|
| 902.9 | 7.36 |
| 915.0 | 6.45 |
| 927.5 | 6.69 |

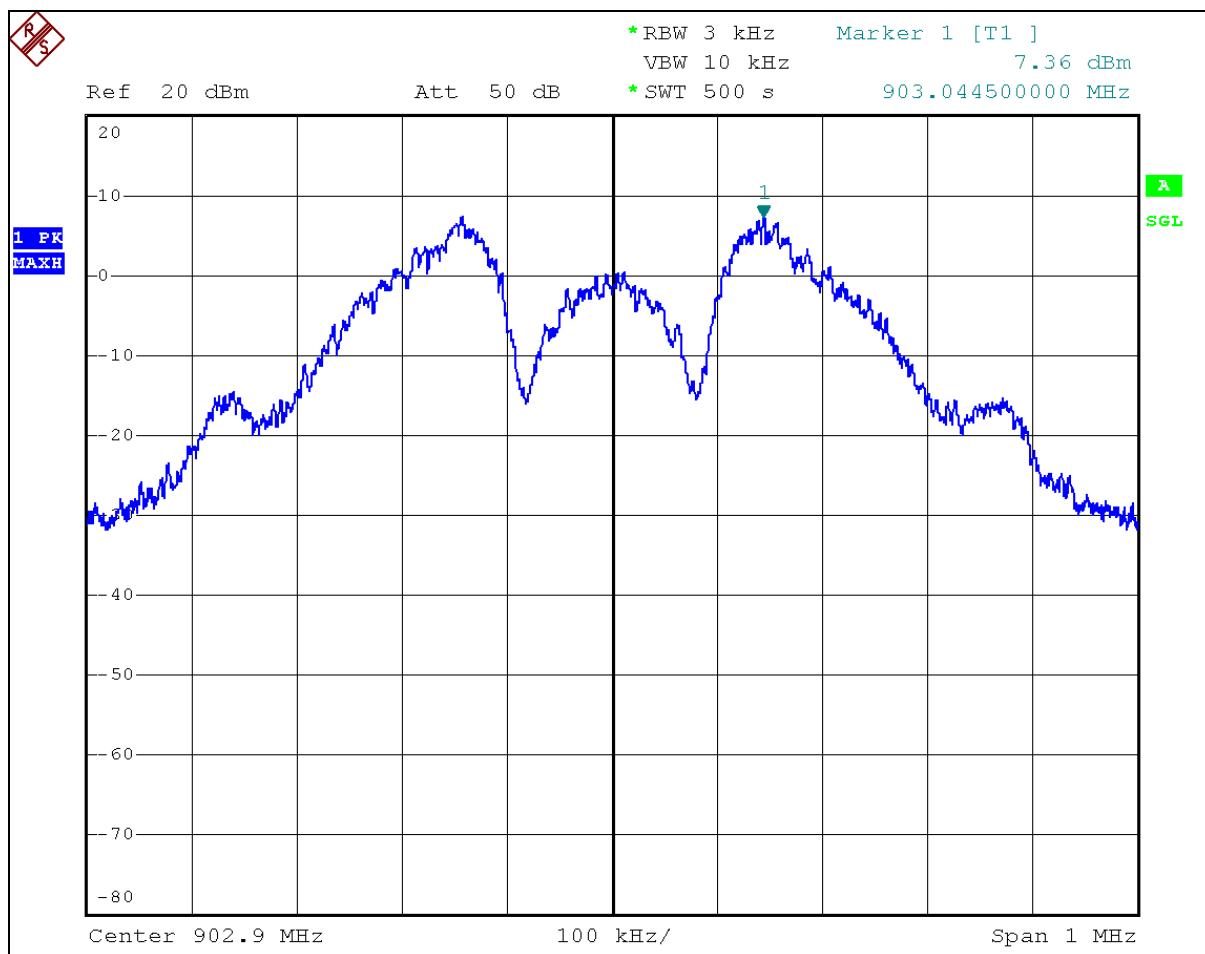
*Connection to the spectrum analyzer was direct.

Sweep time 500 seconds.

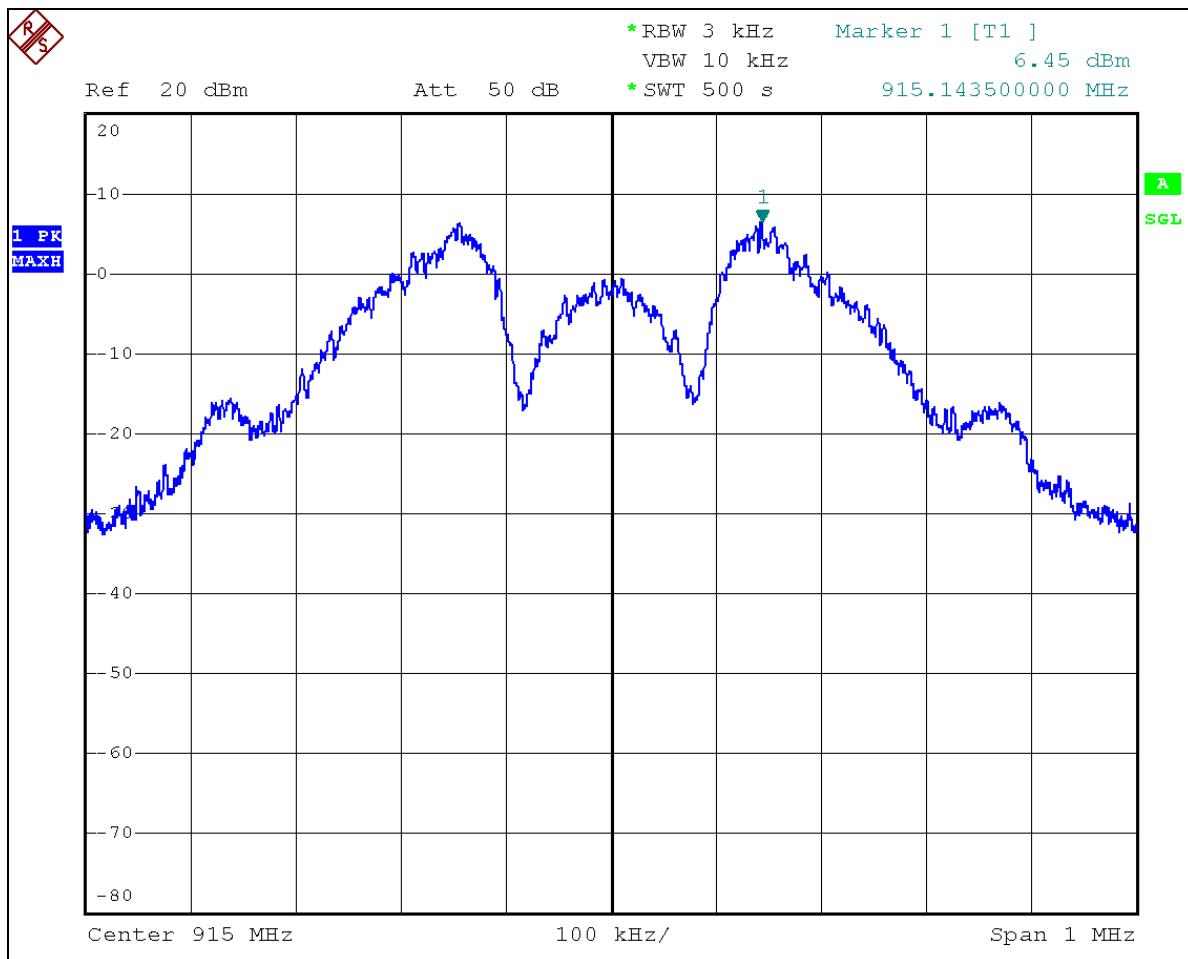
The EUT was found to be in compliance with the applicable criteria.

Plotted measurements appear below.

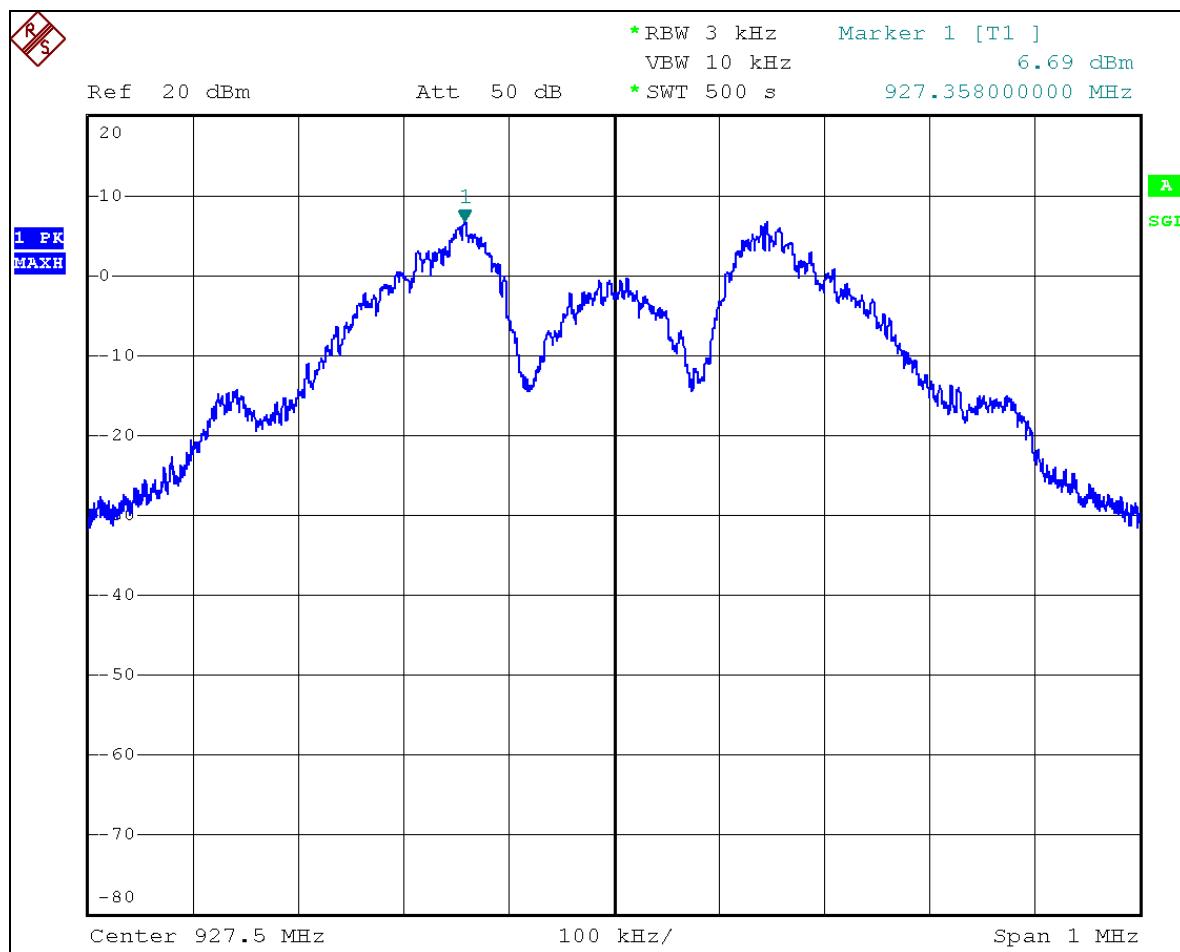
3.3.1 Low Channel PSD



3.3.2 Middle Channel PSD



3.3.3 High Channel PSD



4.0 Transmitter Duty Cycle

4.1 Test Procedure

EUT is placed into normal transmit operation to observe and record transmitter time domain performance.

4.2 Test Criteria

Measurement is based on intervals not to exceed 100 msec. Maximum transmitter on time is divided by the lesser of 100 msec or the actual measured minimum transmitter interval time. The result is converted to dB and applied as needed to peak measurements of transmitter artifacts to determine average power. This is not a pass/fail measurement.

4.3 Test Results

Due to the low peak power of the fundamental and spurious emissions, the duty cycle was not measured.

5.0 Occupied Bandwidth

5.1 Test Procedure

Bandwidth is measured by conducted means. A recording of the results is included.

5.2 Test Criteria

| 47 CFR (USA) // IC (Canada) | | |
|---|------------------------|------------|
| Section Reference | Parameter | Date(s) |
| 14.247(a)(2), 2.1049, KDB 558074 D01 // RSS-Gen Issue 3, 4.6 | Bandwidth, 6 dB, 20 dB | 2014-07-07 |

5.3 Test Results

EUT was found to be in compliance with applicable requirements.

| |
|---|
| Bandwidth 6 dB |
| Minimum 500 kHz |
| (RBW 100 kHz Per FCC KDB 558074 D01) |

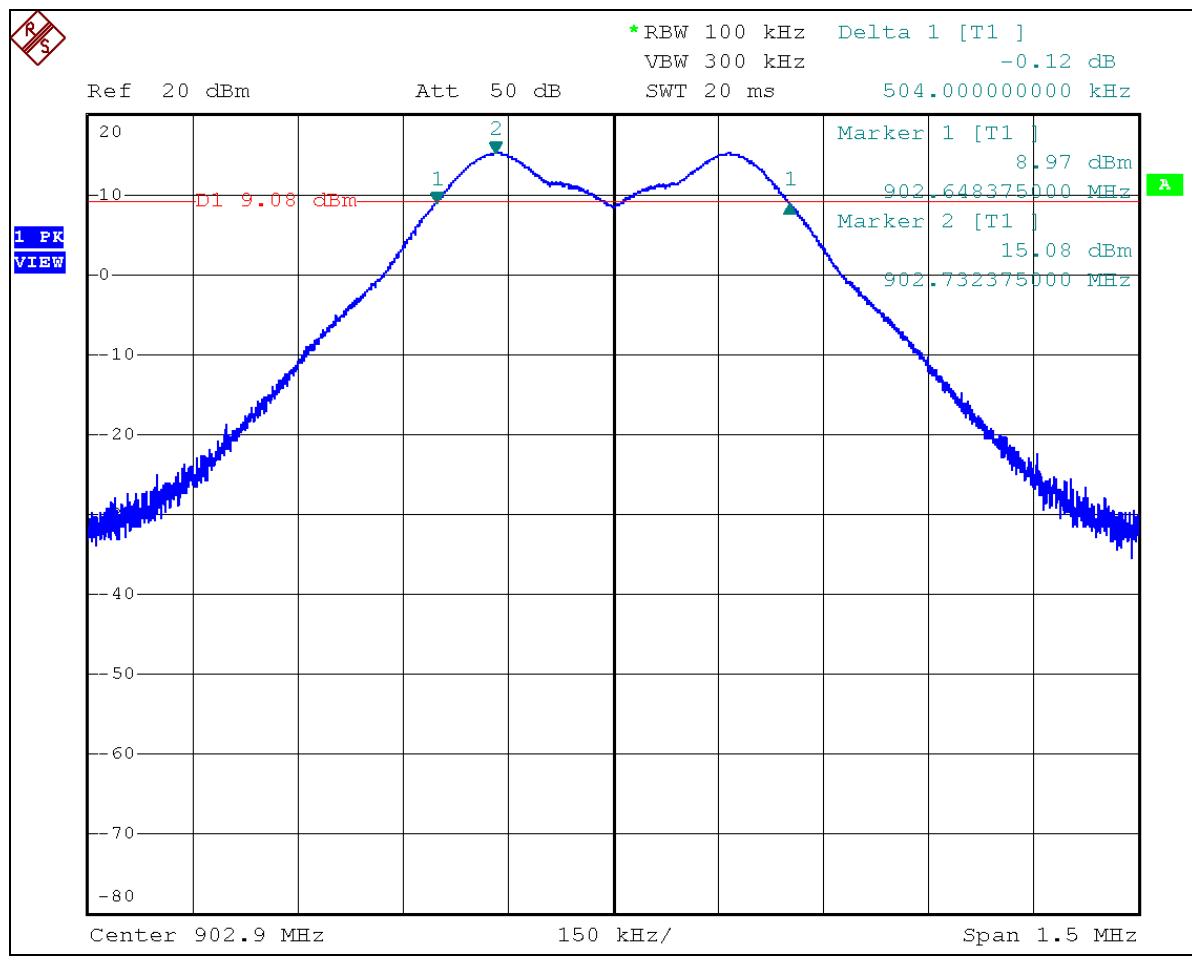
| Low Channel Measured BW (kHz) | Mid Channel Measured BW (kHz) | High Channel Measured BW (kHz) | Minimum BW (kHz) |
|-------------------------------------|-------------------------------------|--------------------------------------|-----------------------------|
| 504.0 | 507.0 | 510.0 | 504.0 |

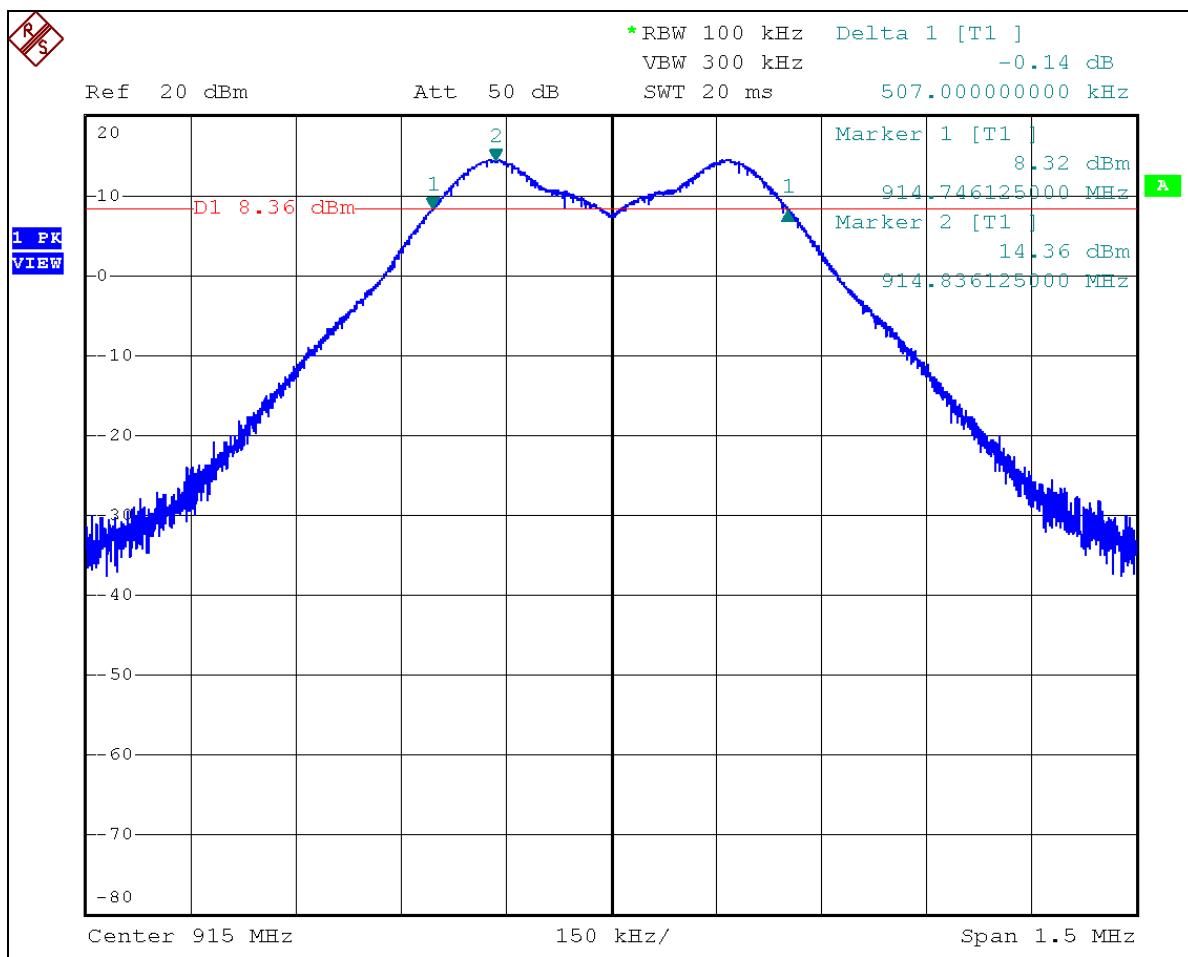
| |
|---------------------------|
| Bandwidth 20 dB |
| Measure and Report |

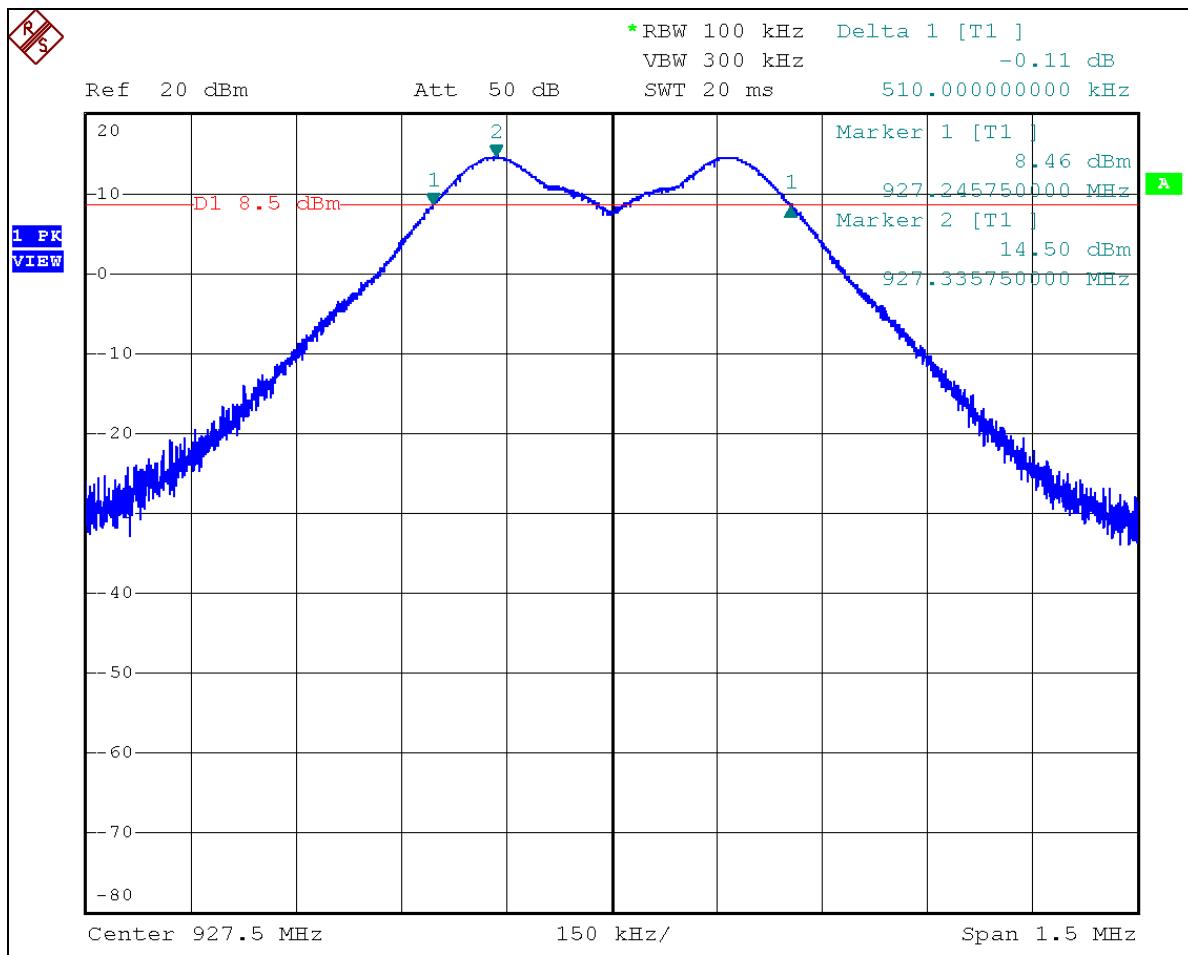
| Low Channel Measured BW (kHz) | Mid Channel Measured BW (kHz) | High Channel Measured BW (kHz) | Reported Maximum BW (kHz) |
|-------------------------------------|-------------------------------------|--------------------------------------|--|
| 579.0 | 576.0 | 573.0 | 579.0 |

Plotted measurements appear on the following pages.

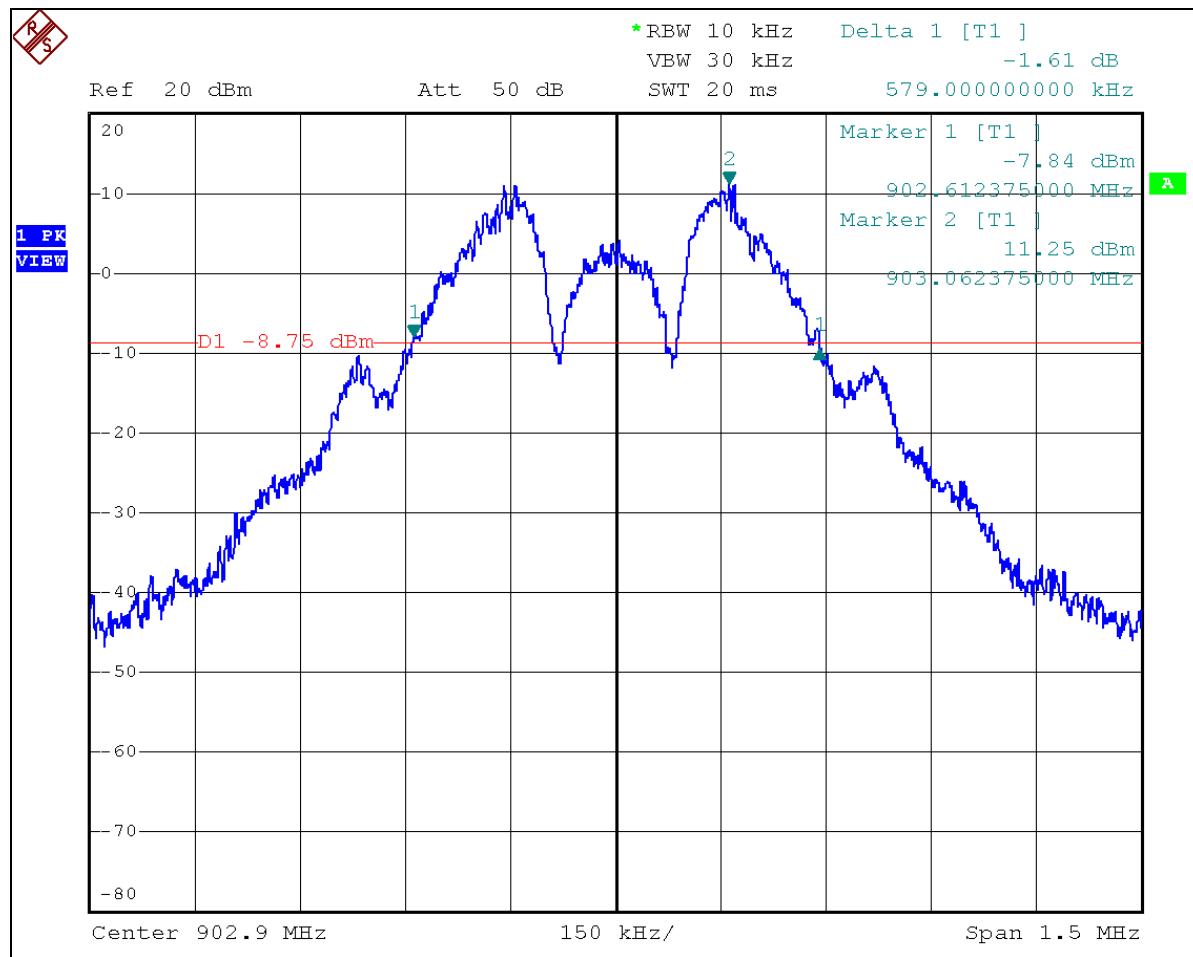
5.3.1 Bandwidth Plots, 6 dB

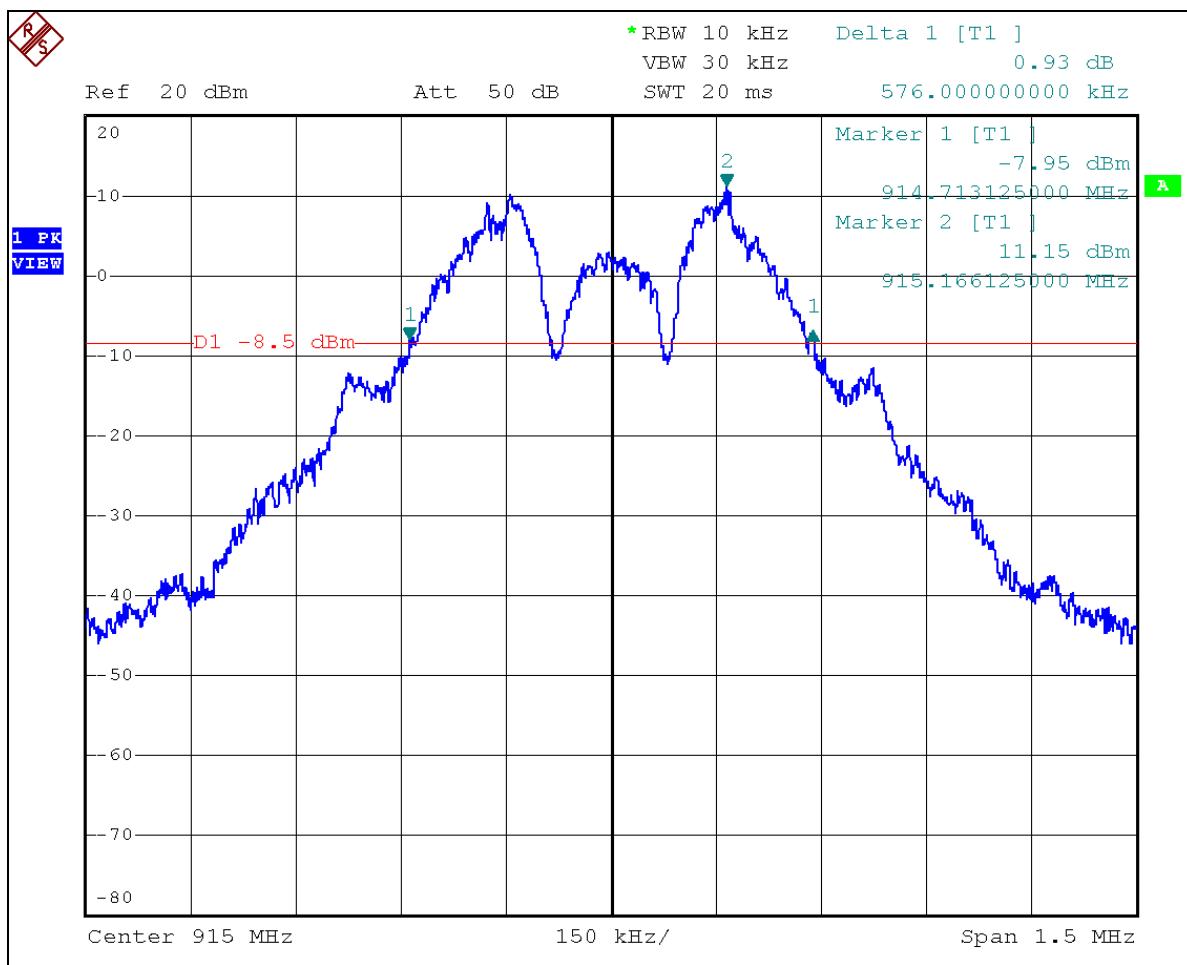


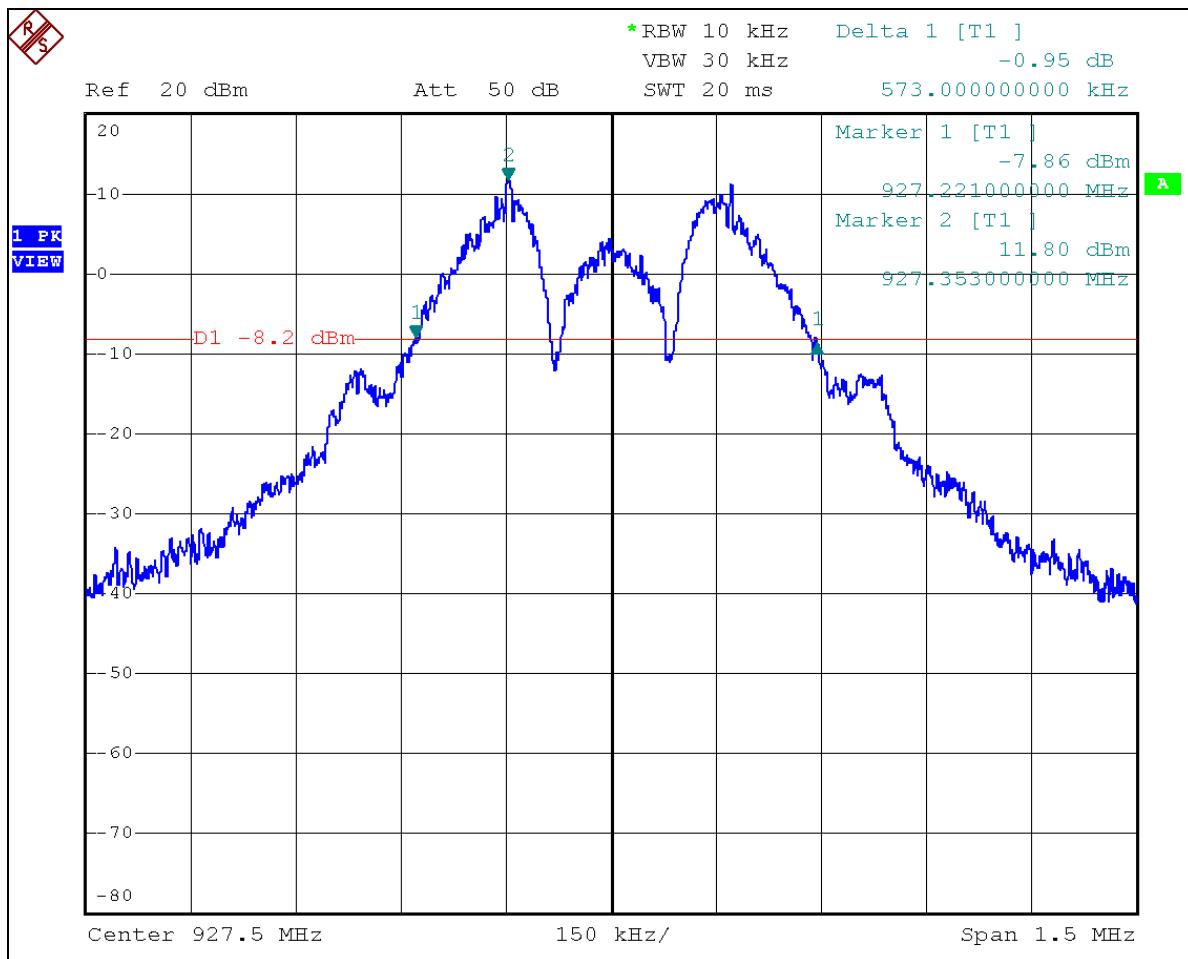




5.3.2 Bandwidth Plots, 20 dB







6.0 Band Edge

6.1 Test Procedure

EUT is placed into normal transmit operation on the nearest band edge channel. The spectrum analyzer is centered on the band edge frequency with span sufficient to include the peak of the adjacent fundamental signal. Measurement includes two standard bandwidths from the respective band edge. If required, the band-edge marker-delta method of C63.4 is utilized.

6.2 Test Criteria

| 47 CFR (USA) // IC (Canada) | | |
|---|--|------------|
| Section Reference | Parameter | Date(s) |
| 15.247, 15.205 // RSS-Gen Issue 3, 4.9 | Unwanted Emissions Adjacent to Authorized Band, Conducted | 2014-05-22 |

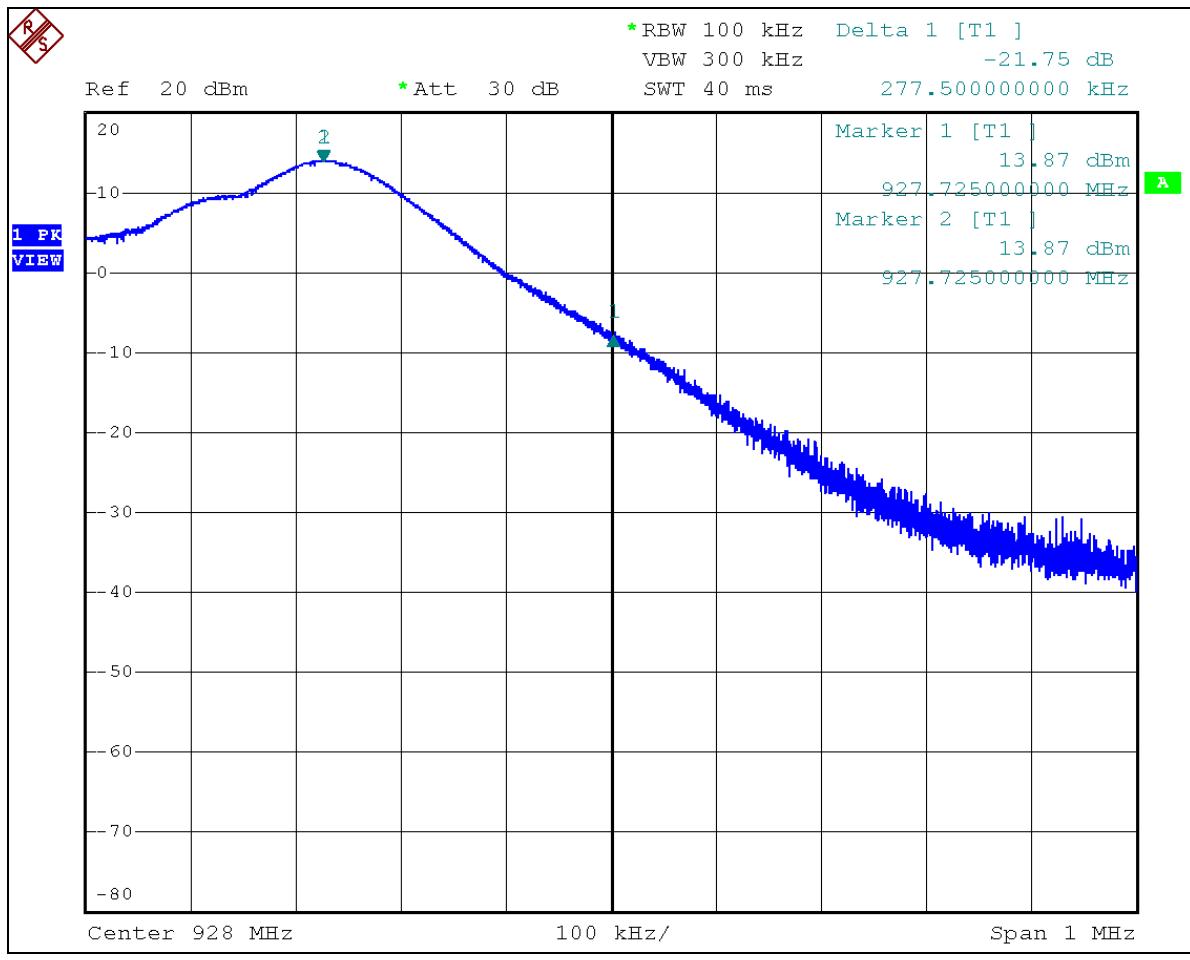
6.3 Test Results

Measurements included more than 2 standard bandwidths (standard bandwidth 100 kHz) from the band edges to provide a clear view of the declining emission levels.

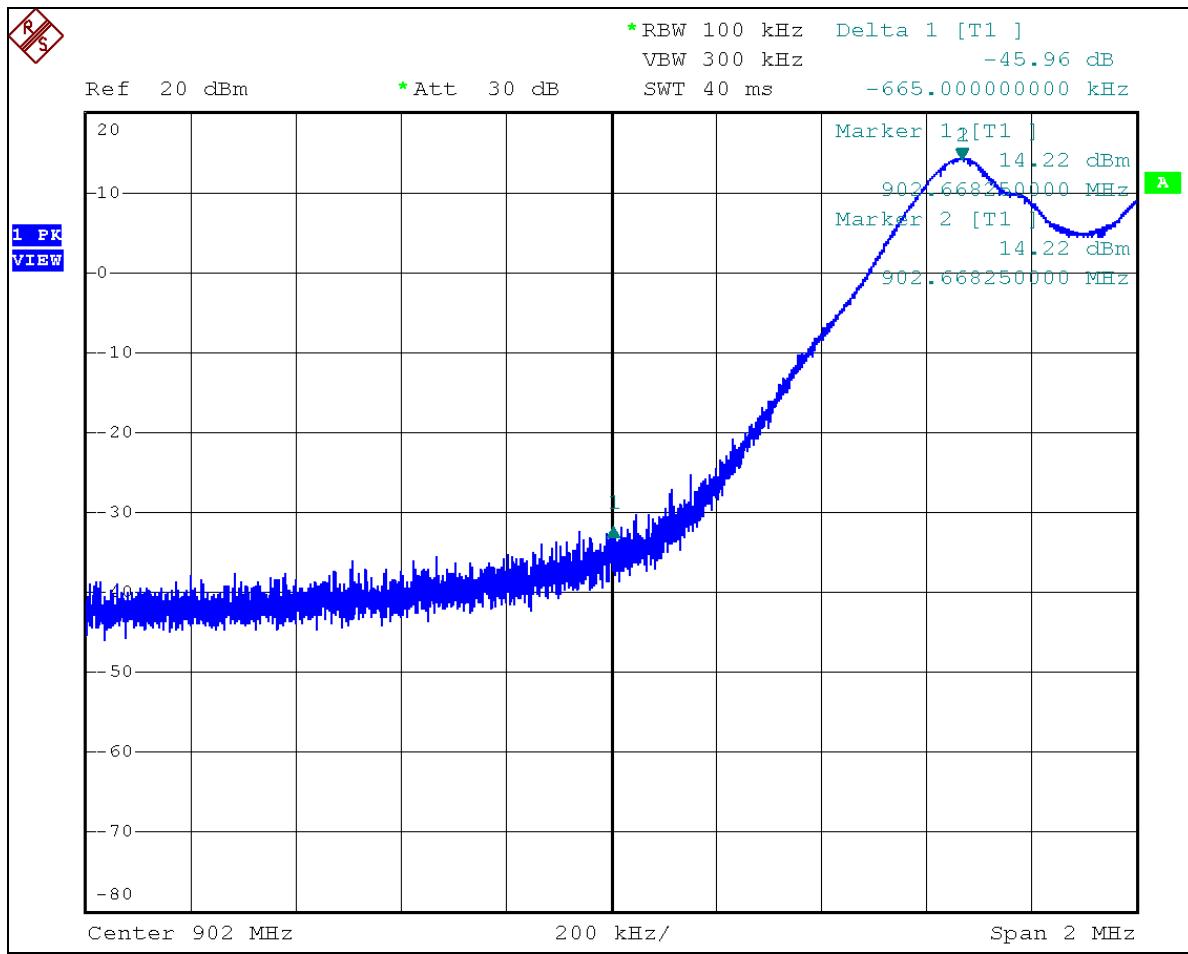
Peak detection of emissions at band edges were below the -20dBc limits with worse case margin of -21.75 dB. No restricted bands are adjacent to this band.

The EUT satisfied the criteria. Plotted results appears on the following pages.

6.3.1 High Channel Band Edge



6.3.2 Low Channel Band Edge



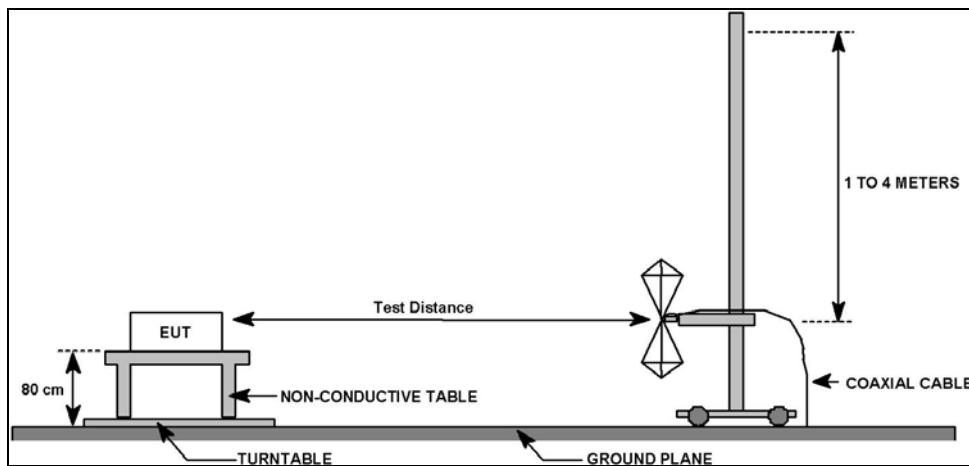
7.0 Radiated Spurious Emissions, Receive Mode

Out of band spurious/harmonic emissions measurements were performed on the EUT to determine compliance to 47 CFR, Part 15.

7.1 Test Procedure

The EUT was placed on a non-conductive table 0.8 meters above the ground plane. The EUT was centered on a rotating turntable. Measurements below 1 GHz were taken at a test distance of 10 meters from the measurement antenna. Above 1 GHz the measurement distance was 3 meters.

Spurious emissions below 1 GHz were measured with quasi-peak detection with a resolution bandwidth of 120 kHz. Above 1 GHz peak measurements were taken and average measured where appropriate. A diagram showing the test setup appears below.



7.2 Test Criteria

| 47 CFR (USA) // IC (Canada) | | |
|---|---|--------------------------|
| Section Reference | Parameter | Date(s) |
| 15.247, 15.209 // RSS-Gen Issue 3, 4.9, 4.10 | Field Strength of Radiated Spurious/Harmonic Emissions | 2014-05-19 2014-05-20 |

7.3 Test Results

Emission measurements of receiver spurious were taken using the antenna with the highest gain plus largest radiating structure. The EUT was tuned to the middle channel.

The EUT satisfied the criteria. Recorded data is presented below.

Table 7.3.1: Radiated Spurious Emissions, Receive Mode, Below 1 GHz, Vertical Polarity**Antenna 1: Pulse Printed Circuit Antenna**

| Professional Testing, EMI, Inc. | | | | | | | | | |
|---|--|-------------------------|-------------------------|-----------------------------|---------------------------------|--------------------------------|----------------------------|-------------|--------------|
| Test Method: | ANSI C63.4-2003: "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz" (incorporated by reference, see §15.38). | | | | | | | | |
| In accordance with: | FCC Part 15.209 - Code of Federal Regulations Part 47, Subpart C - Intentional Radiators, Radiated Emissions Limits | | | | | | | | |
| Section: | 15.209 | | | | | | | | |
| Test Date(s): | 5/19/2014 | | | EUT Serial #: | V4 003 | | | | |
| Customer: | BCP Controls LLC DBA Pruf Energy | | | EUT Part #: | None | | | | |
| Project Number: | 15590-15 | | | Test Technician: | Dave Kohutek | | | | |
| Purchase Order #: | PTI_014_001 | | | Supervisor: | Rob McCollough | | | | |
| Equip. Under Test: | PEC915V10 | | | Witness' Name: | J.D. Holland | | | | |
| Radiated Emissions Test Results Data Sheet | | | | | | | Page: | 1 | of 1 |
| EUT Line Voltage: | 3.3 | VDC | | EUT Power Frequency: | N/A | N/A | | | |
| Antenna Orientation: | Vertical | | | Frequency Range: | 30MHz to 1GHz | | | | |
| EUT Mode of Operation: | | | | | Receiver Mode, 915MHz | | | | |
| Frequency Measured (MHz) | Test Distance (Meters) | EUT Direction (Degrees) | Antenna Height (Meters) | Detector Function | Recorded Amplitude (dB μ V) | Corrected Level (dB μ V/m) | Limit Level (dB μ V/m) | Margin (dB) | Test Results |
| 30.0133 | 10 | 148 | 0 | Quasi-peak | 30.8 | 19.788 | 29.5 | -9.7 | Pass |
| 30.3304 | 10 | 62 | 2.5 | Quasi-peak | 24.1 | 12.919 | 29.5 | -16.6 | Pass |
| 60.0208 | 10 | 242 | 3.83 | Quasi-peak | 33.2 | 11.862 | 29.5 | -17.6 | Pass |
| 93.7134 | 10 | 273 | 3.74 | Quasi-peak | 28.4 | 7.737 | 33.1 | -25.4 | Pass |
| 94.6828 | 10 | 78 | 2.18 | Quasi-peak | 30.3 | 9.767 | 33.1 | -23.3 | Pass |
| 622.849 | 10 | 190 | 1.44 | Quasi-peak | 22.1 | 16.496 | 35.6 | -19.1 | Pass |
| 876.64 | 10 | 233 | 3.04 | Quasi-peak | 21.4 | 20.552 | 35.6 | -15.0 | Pass |
| 955.641 | 10 | 95 | 3.73 | Quasi-peak | 21.1 | 21.481 | 35.6 | -14.1 | Pass |
| Professional Testing, EMI, Inc Radiated Emissions, 10m Distance 30MHz - 1GHz Vertical Polarity Measured Emissions | | | | | | | | | |
| | | | | | | | | | |
| Field Strength (dB μ V/m) 30M 100M 1G Operator: Dave Kohutek 15590-15_RE_V4 003_915Mhz_RCV.til 03:38:23 PM, Monday, May 19, 2014 | | | | | | | | | |
| Frequency EUT Mode: 915MHz, Receiver EUT Power: 3.3VDC Serial Number: V4 003 EUT: PEC915V10 Project Number: 15590-15 Client: BCP Controls LLC DBA Pruf Energy | | | | | | | | | |
| ≤ 1GHz Vertical Antenna Polarity Measured Emissions | | | | | | | | | |

Table 7.3.2: Radiated Spurious Emissions, Receive Mode, Below 1 GHz, Horizontal Polarity**Antenna 1: Pulse Printed Circuit Antenna**

| Professional Testing, EMI, Inc. | | | | | | | | | |
|---|--|-------------------------|-------------------------|-------------------|---------------------------------|--------------------------------|----------------------------|-------------|--------------|
| Test Method: | ANSI C63.4-2003: "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz" (incorporated by reference, see §15.38). | | | | | | | | |
| In accordance with: | FCC Part 15.209 - Code of Federal Regulations Part 47, Subpart C - Intentional Radiators, Radiated Emissions Limits | | | | | | | | |
| Section: | 15.209 | | | | | | | | |
| Test Date(s): | 5/19/2014 | | | | EUT Serial #: | V4 003 | | | |
| Customer: | BCP Controls LLC DBA Pruf Energy | | | | EUT Part #: | None | | | |
| Project Number: | 15590-15 | | | | Test Technician: | Dave Kohutek | | | |
| Purchase Order #: | PTI_014_001 | | | | Supervisor: | Rob McCollough | | | |
| Equip. Under Test: | PEC915V10 | | | | Witness' Name: | J.D. Holland | | | |
| Radiated Emissions Test Results Data Sheet | | | | | | | Page: | 1 | of 1 |
| EUT Line Voltage: | 3.3 | VDC | | | EUT Power Frequency: | N/A | N/A | | |
| Antenna Orientation: | Horizontal | | | | Frequency Range: | 30MHz to 1GHz | | | |
| EUT Mode of Operation: | | | | | Receiver Mode, 915MHz | | | | |
| Frequency Measured (MHz) | Test Distance (Meters) | EUT Direction (Degrees) | Antenna Height (Meters) | Detector Function | Recorded Amplitude (dB μ V) | Corrected Level (dB μ V/m) | Limit Level (dB μ V/m) | Margin (dB) | Test Results |
| 30.731 | 10 | 185 | 1.26 | Quasi-peak | 24.2 | 12.763 | 29.5 | -16.7 | Pass |
| 32.281 | 10 | 28 | 3.95 | Quasi-peak | 23.9 | 11.659 | 29.5 | -17.8 | Pass |
| 42.748 | 10 | 351 | 1.33 | Quasi-peak | 23 | 5.505 | 29.5 | -24.0 | Pass |
| 45.6423 | 10 | 275 | 3.26 | Quasi-peak | 23.5 | 4.865 | 29.5 | -24.6 | Pass |
| 94.3566 | 10 | 34 | 1.74 | Quasi-peak | 23.4 | 2.806 | 33.1 | -30.3 | Pass |
| 179.924 | 10 | 98 | 2.08 | Quasi-peak | 22.8 | 5.276 | 33.1 | -27.8 | Pass |
| 721.081 | 10 | 181 | 3.75 | Quasi-peak | 21.8 | 17.899 | 35.6 | -17.7 | Pass |
| 909.709 | 10 | 237 | 3.59 | Quasi-peak | 21.3 | 21.118 | 35.6 | -14.5 | Pass |
| 984.666 | 10 | 145 | 3.56 | Quasi-peak | 21.1 | 22.02 | 43.5 | -21.5 | Pass |
| Professional Testing, EMI, Inc Radiated Emissions, 10m Distance 30MHz - 1GHz Horizontal Polarity Measured Emissions | | | | | | | | | |
| | | | | | | | | | |
| Operator: Dave Kohutek 15590-15_RE_V4 003_915Mhz_RCV.til 03:38:23 PM, Monday, May 19, 2014 | | | | | | | | | |
| Frequency: EUT Mode: 915MHz, Receiver EUT Power: 3.3VDC Serial Number: V4 003 | | | | | | | | | |
| EUT: PEC915V10 Project Number: 15590-15 Client: BCP Controls LLC DBA Pruf Energy | | | | | | | | | |
| ≤ 1GHz Horizontal Antenna Polarity Measured Emissions | | | | | | | | | |

Table 7.3.3: Radiated Spurious Emissions, Receive Mode, Above 1 GHz, Vertical Polarity**Antenna 1: Pulse Printed Circuit Antenna**

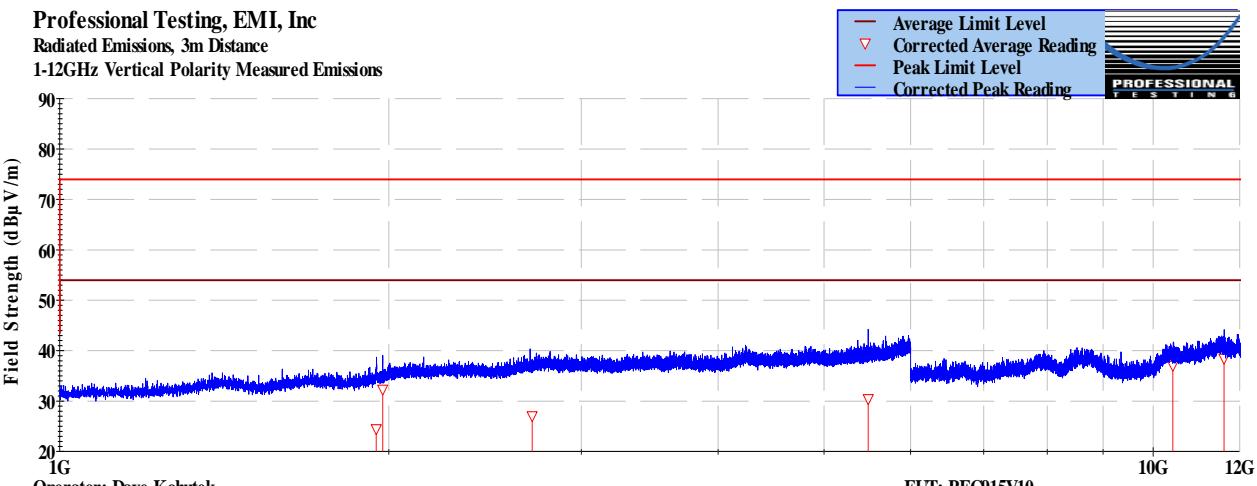
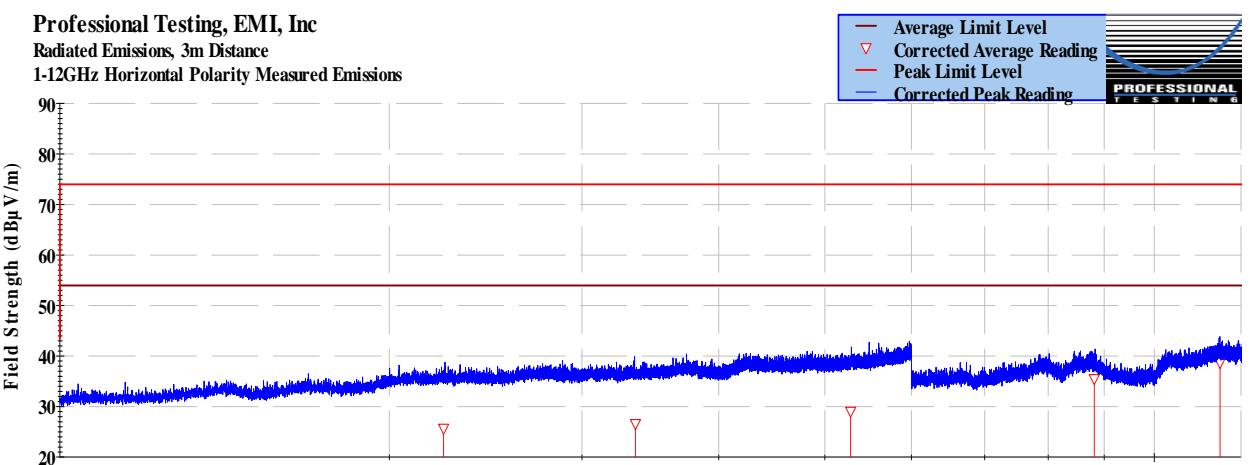
| Professional Testing, EMI, Inc. | | | | | | | | | | | |
|---|--|-------------------------|-------------------------|-----------------------------|--|--------------------------------|----------------------------|-------------|--------------|--|--|
| Test Method: | ANSI C63.4-2003: "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz" (incorporated by reference, see §15.38). | | | | | | | | | | |
| In accordance with: | FCC Part 15.209 - Code of Federal Regulations Part 47, Subpart C - Intentional Radiators, Radiated Emissions Limits | | | | | | | | | | |
| Section: | 15.209 | | | | | | | | | | |
| Test Date(s): | 5/19/2014 | | | EUT Serial #: | V4 003 | | | | | | |
| Customer: | BCP Controls LLC DBA Pruf Energy | | | EUT Part #: | None | | | | | | |
| Project Number: | 15590-15 | | | Test Technician: | Dave Kohutek | | | | | | |
| Purchase Order #: | PTI_014_001 | | | Supervisor: | Rob McCollough | | | | | | |
| Equip. Under Test: | PEC915V10 | | | Witness' Name: | J.D. Holland | | | | | | |
| Radiated Emissions Test Results Data Sheet | | | | | | | Page: | 1 | of 1 | | |
| EUT Line Voltage: | 3.3 | VDC | | EUT Power Frequency: | N/A | | N/A | | | | |
| Antenna Orientation: | Vertical | | | Frequency Range: | Above 1GHz | | | | | | |
| EUT Mode of Operation: | | | | | Receiver Mode, 915MHz | | | | | | |
| Frequency Measured (MHz) | Test Distance (Meters) | EUT Direction (Degrees) | Antenna Height (Meters) | Detector Function | Recorded Amplitude (dB μ V) | Corrected Level (dB μ V/m) | Limit Level (dB μ V/m) | Margin (dB) | Test Results | | |
| 1947.43 | 3 | 64 | 1 | Average | 34.7 | 24.467 | 54.0 | -29.5 | Pass | | |
| 1974.36 | 3 | 189 | 1 | Average | 42.5 | 32.302 | 54.0 | -21.7 | Pass | | |
| 2704.66 | 3 | 33 | 1 | Average | 34.9 | 27.045 | 54.0 | -26.9 | Pass | | |
| 5488.04 | 3 | 136 | 1 | Average | 33.5 | 30.425 | 54.0 | -23.5 | Pass | | |
| 10424.2 | 3 | 145 | 1 | Average | 26.8 | 37.063 | 54.0 | -16.9 | Pass | | |
| 11607.8 | 3 | 297 | 1 | Average | 27.6 | 38.449 | 54.0 | -15.5 | Pass | | |
| Professional Testing, EMI, Inc Radiated Emissions, 3m Distance 1-12GHz Vertical Polarity Measured Emissions  | | | | | | | | | | | |
| Operator: Dave Kohutek | EUT Mode: 915MHz, Receiver | | | EUT: PEC915V10 | Project Number: 15590-15 | | | | | | |
| 15590-15_RE_V4 003_915Mhz_RCV.til | EUT Power: 3.3VDC | | | Serial Number: V4 003 | Client: BCP Controls LLC DBA Pruf Energy | | | | | | |
| > 1GHz Vertical Antenna Polarity Measured Emissions | | | | | | | | | | | |

Table 7.3.4: Radiated Spurious Emissions, Receive Mode, Above 1 GHz, Vertical Polarity**Antenna 1: Pulse Printed Circuit Antenna**

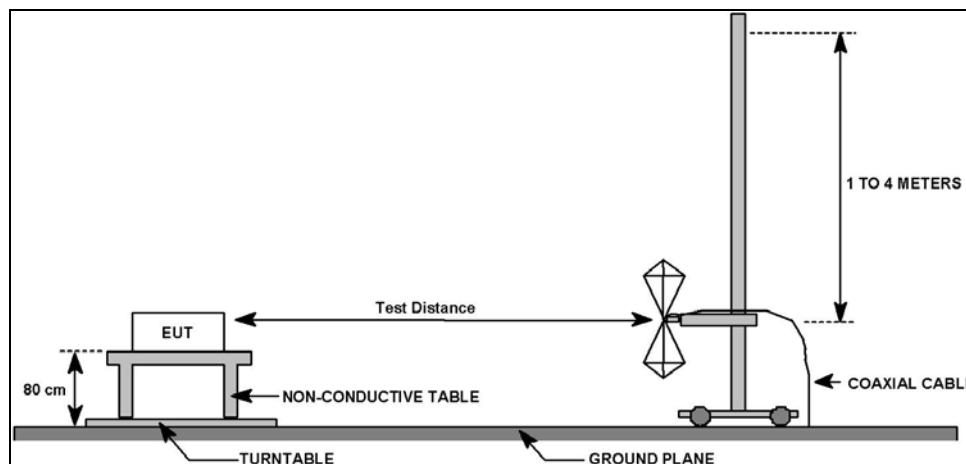
| Professional Testing, EMI, Inc. | | | | | | | | | | | | |
|---|--|-------------------------|-----------------------------|-------------------------|---------------------------------|--------------------------------|----------------------------|-------------|--------------|--|--|--|
| Test Method: | ANSI C63.4-2003: "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz" (incorporated by reference, see §15.38). | | | | | | | | | | | |
| In accordance with: | FCC Part 15.209 - Code of Federal Regulations Part 47, Subpart C - Intentional Radiators, Radiated Emissions Limits | | | | | | | | | | | |
| Section: | 15.209 | | | | | | | | | | | |
| Test Date(s): | 5/19/2014 | | | EUT Serial #: | V4 003 | | | | | | | |
| Customer: | BCP Controls LLC DBA Pruf Energy | | | EUT Part #: | None | | | | | | | |
| Project Number: | 15590-15 | | | Test Technician: | Dave Kohutek | | | | | | | |
| Purchase Order #: | PTI_014_001 | | | Supervisor: | Rob McCollough | | | | | | | |
| Equip. Under Test: | PEC915V10 | | | Witness' Name: | J.D. Holland | | | | | | | |
| Radiated Emissions Test Results Data Sheet | | | | | | | Page: | 1 | of 1 | | | |
| EUT Line Voltage: | 3.3 | VDC | EUT Power Frequency: | N/A | | N/A | N/A | | | | | |
| Antenna Orientation: | Horizontal | | | Frequency Range: | Above 1GHz | | | | | | | |
| EUT Mode of Operation: | | | | | Receiver Mode, 915MHz | | | | | | | |
| Frequency Measured (MHz) | Test Distance (Meters) | EUT Direction (Degrees) | Antenna Height (Meters) | Detector Function | Recorded Amplitude (dB μ V) | Corrected Level (dB μ V/m) | Limit Level (dB μ V/m) | Margin (dB) | Test Results | | | |
| 2242.46 | 3 | 331 | 1 | Average | 34.6 | 25.659 | 54.0 | -28.3 | Pass | | | |
| 3356.87 | 3 | 214 | 1 | Average | 34.2 | 26.593 | 54.0 | -27.4 | Pass | | | |
| 5278.56 | 3 | 126 | 1 | Average | 32.5 | 29.028 | 54.0 | -24.9 | Pass | | | |
| 8814.2 | 3 | 284 | 1 | Average | 27.2 | 35.497 | 54.0 | -18.5 | Pass | | | |
| 11483.9 | 3 | 173 | 1 | Average | 27.4 | 38.681 | 54.0 | -15.3 | Pass | | | |
| Professional Testing, EMI, Inc Radiated Emissions, 3m Distance 1-12GHz Horizontal Polarity Measured Emissions | | | | | | | | | | | | |
|  | | | | | | | | | | | | |
| Operator: Dave Kohutek 15590-15_RE_V4 003_915MHz_RCV.til 02:15:58 PM, Monday, May 19, 2014 | | | | | | | | | | | | |
| Frequency: 915MHz, Receiver EUT Power: 3.3VDC Serial Number: V4 003 EUT: PEC915V10 Project Number: 15590-15 Client: BCP Controls LLC DBA Pruf Energy | | | | | | | | | | | | |
| > 1GHz Horizontal Antenna Polarity Measured Emissions | | | | | | | | | | | | |

8.0 Radiated Spurious Emissions, Transmit Mode, Antenna 1: Pulse

8.1 Test Procedure

The EUT was placed on a non-conductive table 0.8 meters above the ground plane. The EUT was centered on a rotating turntable. Measurements below 1 GHz were taken at a test distance of 10 meters from the measurement antenna. Above 1 GHz the measurement distance was 3 meters.

Spurious emissions below 1 GHz were measured with quasi-peak detection with a resolution bandwidth of 120 kHz. Above 1 GHz peak measurements were taken and average measured where appropriate. A diagram showing the test setup appears below.



8.2 Test Criteria

| 47 CFR (USA) // IC (Canada) | | |
|---|---|---------------------------|
| Section Reference | Parameter | Date(s) |
| 15.247, 15.209 // RSS-Gen Issue 3, 4.9, 4.10 | Field Strength of Radiated Spurious/Harmonic Emissions | 2014-05-19, 2014-05-20 |

8.3 Test Results

This section reports results with the Pulse printed circuit board antenna option.

Below 1 GHz measurements were taken in transmit mode on the middle channel. Above 1 GHz measurements were taken on the three standard channels of the band.

The applicable duty cycle factor for averaging above 1 GHz is 0 dB. All peak emissions can be seen as being well below the average limit, meaning the average level would also be under the average limit.

Table 8.3.1: Radiated Spurious Emissions, TX Mode, Below 1 GHz, Vertical Polarity, Mid. Channel**Antenna 1: Pulse Printed Circuit Antenna**

| Professional Testing, EMI, Inc. | | | | | | | | | | | | |
|--|--|-------------------------|-------------------------|-----------------------------|---------------------------------|--------------------------------|----------------------------|-------------|--------------|--|--|--|
| Test Method: | ANSI C63.4-2003: "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz" (incorporated by reference, see §15.38). | | | | | | | | | | | |
| In accordance with: | FCC Part 15.209 - Code of Federal Regulations Part 47, Subpart C - Intentional Radiators, Radiated Emissions Limits | | | | | | | | | | | |
| Section: | 15.209 | | | | | | | | | | | |
| Test Date(s): | 5/19/2014 | | | EUT Serial #: | V4 003 | | | | | | | |
| Customer: | BCP Controls LLC DBA Pruf Energy | | | EUT Part #: | None | | | | | | | |
| Project Number: | 15590-15 | | | Test Technician: | Dave Kohutek | | | | | | | |
| Purchase Order #: | PTI_014_001 | | | Supervisor: | Rob McCollough | | | | | | | |
| Equip. Under Test: | PEC915V10 | | | Witness' Name: | J.D. Holland | | | | | | | |
| Radiated Emissions Test Results Data Sheet | | | | | | | Page: | 1 | of 1 | | | |
| EUT Line Voltage: | 3.3 | VDC | | EUT Power Frequency: | N/A | | N/A | | | | | |
| Antenna Orientation: | Vertical | | | Frequency Range: | 30MHz to 1GHz | | | | | | | |
| EUT Mode of Operation: | | | | | Transmit Mode, 915MHz | | | | | | | |
| Frequency Measured (MHz) | Test Distance (Meters) | EUT Direction (Degrees) | Antenna Height (Meters) | Detector Function | Recorded Amplitude (dB μ V) | Corrected Level (dB μ V/m) | Limit Level (dB μ V/m) | Margin (dB) | Test Results | | | |
| 30.0098 | 10 | 291 | 1.37 | Quasi-peak | 30.3 | 19.245 | 29.5 | -10.3 | Pass | | | |
| 32.0581 | 10 | 122 | 1.57 | Quasi-peak | 24.1 | 11.997 | 29.5 | -17.5 | Pass | | | |
| 55.9652 | 10 | 326 | 2.67 | Quasi-peak | 26.1 | 5.219 | 29.5 | -24.3 | Pass | | | |
| 59.9803 | 10 | 161 | 3.36 | Quasi-peak | 33.4 | 12.067 | 29.5 | -17.4 | Pass | | | |
| 93.709 | 10 | 125 | 2.24 | Quasi-peak | 28.9 | 8.287 | 33.1 | -24.8 | Pass | | | |
| 94.6549 | 10 | 191 | 3.75 | Quasi-peak | 30.2 | 9.615 | 33.1 | -23.5 | Pass | | | |
| 257.236 | 10 | 323 | 3.07 | Quasi-peak | 22.1 | 8.427 | 35.6 | -27.2 | Pass | | | |
| 720.918 | 10 | 8 | 1.89 | Quasi-peak | 21.8 | 17.849 | 35.6 | -17.8 | Pass | | | |
| 772.448 | 10 | 327 | 1.72 | Quasi-peak | 21.6 | 18.298 | 35.6 | -17.3 | Pass | | | |
| | | | | | | | | | | | | |
| Operator: Dave Kohutek 15590-15_RE_V4 003_915Mhz.til 01:14:58 PM, Monday, May 19, 2014 | | | | | | | | | | | | |
| Frequency: 915MHz EUT Mode: 915MHz, GFSK14.36dBm Output EUT Power: 3.3VDC Serial Number: V4 003 | | | | | | | | | | | | |
| EUT: PEC915V10 Project Number: 15590-15 Client: BCP Controls LLC DBA Pruf Energy | | | | | | | | | | | | |
| ≤ 1GHz Vertical Antenna Polarity Measured Emissions | | | | | | | | | | | | |

Table 8.3.2: Radiated Spurious Emissions, TX Mode, Below 1 GHz, Horizontal Polarity, Mid. Channel
Antenna 1: Pulse Printed Circuit Antenna

| Professional Testing, EMI, Inc. | | | | | | | | | | | | |
|---|--|-------------------------|-----------------------------|-------------------------|---------------------------------|--------------------------------|----------------------------|-------------|--------------|--|--|--|
| Test Method: | ANSI C63.4-2003: "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz" (incorporated by reference, see §15.38). | | | | | | | | | | | |
| In accordance with: | FCC Part 15.209 - Code of Federal Regulations Part 47, Subpart C - Intentional Radiators, Radiated Emissions Limits | | | | | | | | | | | |
| Section: | 15.209 | | | | | | | | | | | |
| Test Date(s): | 5/19/2014 | | | EUT Serial #: | V4 003 | | | | | | | |
| Customer: | BCP Controls LLC DBA Pruf Energy | | | EUT Part #: | None | | | | | | | |
| Project Number: | 15590-15 | | | Test Technician: | Dave Kohutek | | | | | | | |
| Purchase Order #: | PTI_014_001 | | | Supervisor: | Rob McCollough | | | | | | | |
| Equip. Under Test: | PEC915V10 | | | Witness' Name: | J.D. Holland | | | | | | | |
| Radiated Emissions Test Results Data Sheet | | | | | | | Page: | 1 | of 1 | | | |
| EUT Line Voltage: | 3.3 | VDC | EUT Power Frequency: | | | N/A | N/A | | | | | |
| Antenna Orientation: | Horizontal | | | Frequency Range: | 30MHz to 1GHz | | | | | | | |
| EUT Mode of Operation: | | | | | Transmit Mode, 915MHz | | | | | | | |
| Frequency Measured (MHz) | Test Distance (Meters) | EUT Direction (Degrees) | Antenna Height (Meters) | Detector Function | Recorded Amplitude (dB μ V) | Corrected Level (dB μ V/m) | Limit Level (dB μ V/m) | Margin (dB) | Test Results | | | |
| 31.1133 | 10 | 126 | 3.14 | Quasi-peak | 24.2 | 12.574 | 29.5 | -16.9 | Pass | | | |
| 36.9482 | 10 | 11 | 1.84 | Quasi-peak | 23.1 | 8.274 | 29.5 | -21.2 | Pass | | | |
| 40.0834 | 10 | 27 | 1.42 | Quasi-peak | 24 | 7.461 | 29.5 | -22.0 | Pass | | | |
| 165.223 | 10 | 352 | 3.58 | Quasi-peak | 22.8 | 4.082 | 33.1 | -29.0 | Pass | | | |
| 206.702 | 10 | 168 | 1.03 | Quasi-peak | 22.4 | 5.893 | 33.1 | -27.2 | Pass | | | |
| 737.889 | 10 | 229 | 2.95 | Quasi-peak | 21.8 | 18.31 | 35.6 | -17.3 | Pass | | | |
| 801.816 | 10 | 318 | 1.16 | Quasi-peak | 21.4 | 19.066 | 35.6 | -16.5 | Pass | | | |
| Professional Testing, EMI, Inc Radiated Emissions, 10m Distance 30MHz - 1GHz Horizontal Polarity Measured Emissions | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Operator: Dave Kohutek 15590-15_RE_V4 003_915Mhz.til 01:14:58 PM, Monday, May 19, 2014 | | | | | | | | | | | | |
| Frequency EUT Mode: 915MHz, GFSK14.36dBm Output EUT Power: 3.3VDC Serial Number: V4 003 | | | | | | | | | | | | |
| EUT: PEC915V10 Project Number: 15590-15 Client: BCP Controls LLC DBA Pruf Energy | | | | | | | | | | | | |
| ≤ 1GHz Horizontal Antenna Polarity Measured Emissions | | | | | | | | | | | | |

Table 8.3.3: Radiated Spurious Emissions, TX Mode, Above 1 GHz, Vertical Polarity, Low Channel**Antenna 1: Pulse Printed Circuit Antenna**

| Professional Testing, EMI, Inc. | | | | | | | | | | | | |
|---|--|-----|--|--------------------------|--------|--|--|--|--|--|--|--|
| Test Method: | ANSI C63.4-2003: "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz" (incorporated by reference, see §15.38). | | | | | | | | | | | |
| In accordance with: | FCC Part 15.209 - Code of Federal Regulations Part 47, Subpart C - Intentional Radiators, Radiated Emissions Limits | | | | | | | | | | | |
| Section: | 15.209 | | | | | | | | | | | |
| Test Date(s): | 5/19/2014 | | EUT Serial #: | V4 003 | | | | | | | | |
| Customer: | BCP Controls LLC DBA Pruf Energy | | EUT Part #: | None | | | | | | | | |
| Project Number: | 15590-15 | | Test Technician: | Dave Kohutek | | | | | | | | |
| Purchase Order #: | PTI_014_001 | | Supervisor: | Rob McCollough | | | | | | | | |
| Equip. Under Test: | PEC915V10 | | Witness' Name: | J.D. Holland | | | | | | | | |
| Radiated Emissions Test Results Data Sheet | | | | Page: | 1 of 1 | | | | | | | |
| EUT Line Voltage: | 3.3 | VDC | EUT Power Frequency: | N/A | N/A | | | | | | | |
| Antenna Orientation: | Vertical | | Frequency Range: | Above 1GHz | | | | | | | | |
| EUT Mode of Operation: | Transmit Mode, 902.9MHz | | | | | | | | | | | |
| Professional Testing, EMI, Inc Radiated Emissions, 3m Distance 1-12GHz Vertical Polarity Measured Emissions | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Operator: Dave Kohutek | Frequency: 902.9MHz | | EUT: PEC915V10 | Project Number: 15590-15 | | | | | | | | |
| 15590-15_RE_V4 003_902.9Mhz.til | EUT Mode: 902.9MHz, GFSK14.36dBm Output | | Client: BCP Controls LLC DBA Pruf Energy | Serial Number: V4 003 | | | | | | | | |
| 11:26:41 AM, Monday, May 19, 2014 | > 1GHz Vertical Antenna Polarity Measured Emissions | | | | | | | | | | | |

Table 8.3.4: Radiated Spurious Emissions, TX Mode, Above 1 GHz, Horizontal Polarity, Low Channel
Antenna 1: Pulse Printed Circuit Antenna

| Professional Testing, EMI, Inc. | | | | | | | | | | | | |
|---|--|-----|-----------------------------|--|--------|--|--|--|--|--|--|--|
| Test Method: | ANSI C63.4-2003: "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz" (incorporated by reference, see §15.38). | | | | | | | | | | | |
| In accordance with: | FCC Part 15.209 - Code of Federal Regulations Part 47, Subpart C - Intentional Radiators, Radiated Emissions Limits | | | | | | | | | | | |
| Section: | 15.209 | | | | | | | | | | | |
| Test Date(s): | 5/19/2014 | | EUT Serial #: | V4 003 | | | | | | | | |
| Customer: | BCP Controls LLC DBA Pruf Energy | | EUT Part #: | None | | | | | | | | |
| Project Number: | 15590-15 | | Test Technician: | Dave Kohutek | | | | | | | | |
| Purchase Order #: | PTI_014_001 | | Supervisor: | Rob McCollough | | | | | | | | |
| Equip. Under Test: | PEC915V10 | | Witness' Name: | J.D. Holland | | | | | | | | |
| Radiated Emissions Test Results Data Sheet | | | | Page: | 1 of 1 | | | | | | | |
| EUT Line Voltage: | 3.3 | VDC | EUT Power Frequency: | N/A | N/A | | | | | | | |
| Antenna Orientation: | Horizontal | | Frequency Range: | Above 1GHz | | | | | | | | |
| EUT Mode of Operation: | Transmit Mode, 902.9MHz | | | | | | | | | | | |
| Professional Testing, EMI, Inc Radiated Emissions, 3m Distance 1-12GHz Horizontal Polarity Measured Emissions | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Operator: Dave Kohutek | Frequency | | EUT: PEC915V10 | Project Number: 15590-15 | | | | | | | | |
| 15590-15_RE_V4 003_902.9Mhz.til | EUT Mode: 902.9MHz, GFSK14.36dBm Output | | | Client: BCP Controls LLC DBA Pruf Energy | | | | | | | | |
| 11:26:40 AM, Monday, May 19, 2014 | EUT Power: 3.3VDC | | | | | | | | | | | |
| | Serial Number: V4 003 | | | | | | | | | | | |
| > 1GHz Horizontal Antenna Polarity Measured Emissions | | | | | | | | | | | | |

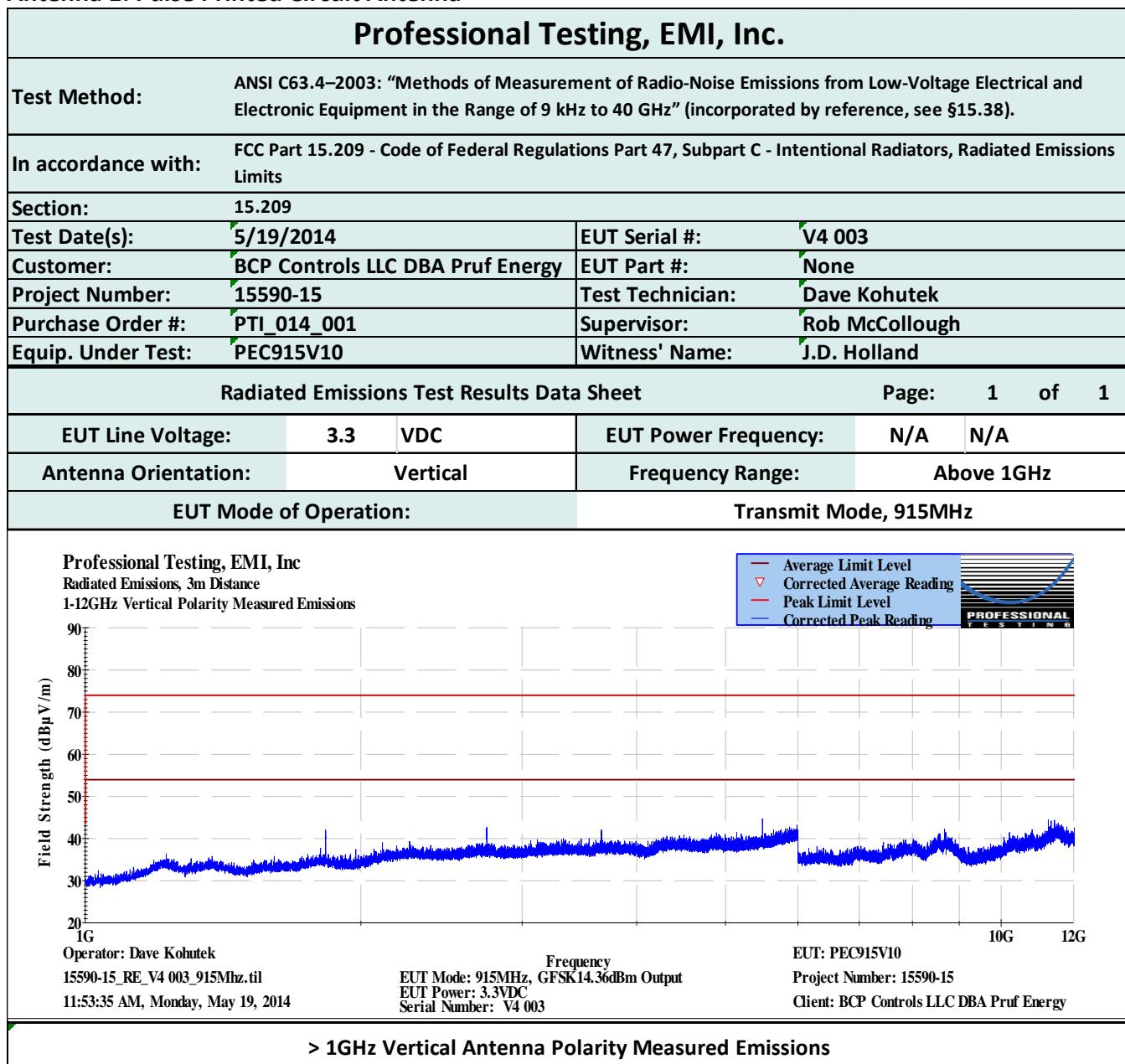
Table 8.3.5: Radiated Spurious Emissions, TX Mode, Above 1 GHz, Vertical Polarity, Mid. Channel**Antenna 1: Pulse Printed Circuit Antenna**

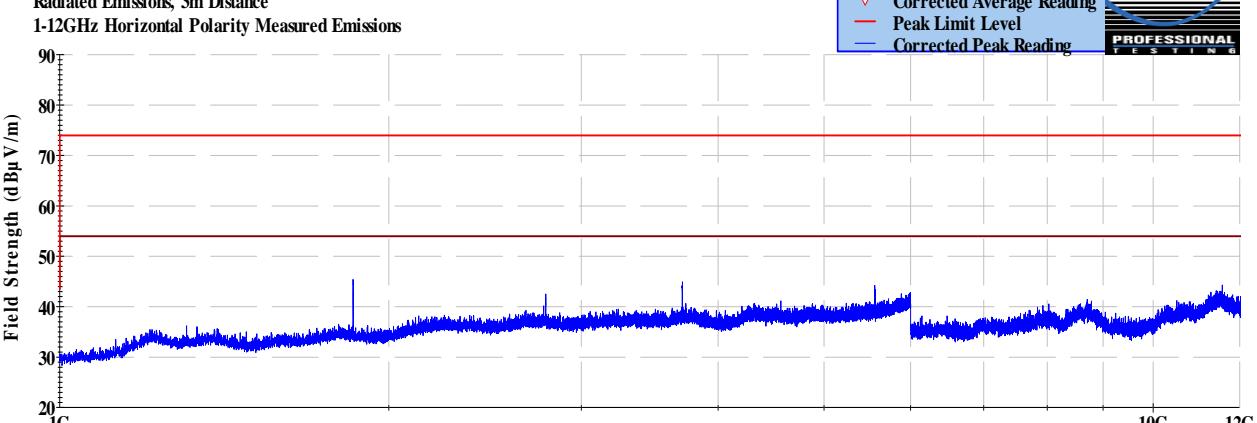
Table 8.3.6: Radiated Spurious Emissions, TX Mode, Above 1 GHz, Horizontal Polarity, Mid. Channel
Antenna 1: Pulse Printed Circuit Antenna

| Professional Testing, EMI, Inc. | | | | | | | | | | | | |
|---|--|-----|-----------------------------|--|--------|--|--|--|--|--|--|--|
| Test Method: | ANSI C63.4-2003: "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz" (incorporated by reference, see §15.38). | | | | | | | | | | | |
| In accordance with: | FCC Part 15.209 - Code of Federal Regulations Part 47, Subpart C - Intentional Radiators, Radiated Emissions Limits | | | | | | | | | | | |
| Section: | 15.209 | | | | | | | | | | | |
| Test Date(s): | 5/19/2014 | | EUT Serial #: | V4 003 | | | | | | | | |
| Customer: | BCP Controls LLC DBA Pruf Energy | | EUT Part #: | None | | | | | | | | |
| Project Number: | 15590-15 | | Test Technician: | Dave Kohutek | | | | | | | | |
| Purchase Order #: | PTI_014_001 | | Supervisor: | Rob McCollough | | | | | | | | |
| Equip. Under Test: | PEC915V10 | | Witness' Name: | J.D. Holland | | | | | | | | |
| Radiated Emissions Test Results Data Sheet | | | | Page: | 1 of 1 | | | | | | | |
| EUT Line Voltage: | 3.3 | VDC | EUT Power Frequency: | N/A | N/A | | | | | | | |
| Antenna Orientation: | Horizontal | | Frequency Range: | Above 1GHz | | | | | | | | |
| EUT Mode of Operation: | Transmit Mode, 915MHz | | | | | | | | | | | |
| Professional Testing, EMI, Inc Radiated Emissions, 3m Distance 1-12GHz Horizontal Polarity Measured Emissions | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Operator: Dave Kohutek | Frequency | | EUT: PEC915V10 | Project Number: 15590-15 | | | | | | | | |
| 15590-15_RE_V4 003_915Mhz.til | EUT Mode: 915MHz, GFSK14.36dBm Output | | | Client: BCP Controls LLC DBA Pruf Energy | | | | | | | | |
| 11:53:34 AM, Monday, May 19, 2014 | EUT Power: 3.3VDC | | | | | | | | | | | |
| | Serial Number: V4 003 | | | | | | | | | | | |
| > 1GHz Horizontal Antenna Polarity Measured Emissions | | | | | | | | | | | | |

Table 8.3.7: Radiated Spurious Emissions, TX Mode, Above 1 GHz, Vertical Polarity, High Channel**Antenna 1: Pulse Printed Circuit Antenna**

| Professional Testing, EMI, Inc. | | | | | | | | | | | | |
|---|--|-----|-----------------------------|----------------|--------|--|--|--|--|--|--|--|
| Test Method: | ANSI C63.4-2003: "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz" (incorporated by reference, see §15.38). | | | | | | | | | | | |
| In accordance with: | FCC Part 15.209 - Code of Federal Regulations Part 47, Subpart C - Intentional Radiators, Radiated Emissions Limits | | | | | | | | | | | |
| Section: | 15.209 | | | | | | | | | | | |
| Test Date(s): | 5/19/2014 | | EUT Serial #: | V4 003 | | | | | | | | |
| Customer: | BCP Controls LLC DBA Pruf Energy | | EUT Part #: | None | | | | | | | | |
| Project Number: | 15590-15 | | Test Technician: | Dave Kohutek | | | | | | | | |
| Purchase Order #: | PTI_014_001 | | Supervisor: | Rob McCollough | | | | | | | | |
| Equip. Under Test: | PEC915V10 | | Witness' Name: | J.D. Holland | | | | | | | | |
| Radiated Emissions Test Results Data Sheet | | | | Page: | 1 of 1 | | | | | | | |
| EUT Line Voltage: | 3.3 | VDC | EUT Power Frequency: | N/A | N/A | | | | | | | |
| Antenna Orientation: | Vertical | | Frequency Range: | Above 1GHz | | | | | | | | |
| EUT Mode of Operation: | Transmit Mode, 927.5MHz | | | | | | | | | | | |
| Professional Testing, EMI, Inc Radiated Emissions, 3m Distance 1-12GHz Vertical Polarity Measured Emissions | | | | | | | | | | | | |
| <p>Field Strength (dBμV/m)</p> <p>Frequency (GHz)</p> <p>1G 10G 12G</p> <p>Operator: Dave Kohutek</p> <p>15590-15_RE_V4 003_927.5MHz.til</p> <p>01:36:25 PM, Monday, May 19, 2014</p> <p>EUT Mode: 927.5MHz, GFSK14.36dBm Output</p> <p>EUT Power: 3.3VDC</p> <p>Serial Number: V4 003</p> <p>EUT: PEC915V10</p> <p>Project Number: 15590-15</p> <p>Client: BCP Controls LLC DBA Pruf Energy</p> | | | | | | | | | | | | |
| > 1GHz Vertical Antenna Polarity Measured Emissions | | | | | | | | | | | | |

Table 8.3.8: Radiated Spurious Emissions, TX Mode, Above 1 GHz, Horizontal Polarity, High Channel Antenna 1: Pulse Printed Circuit Antenna

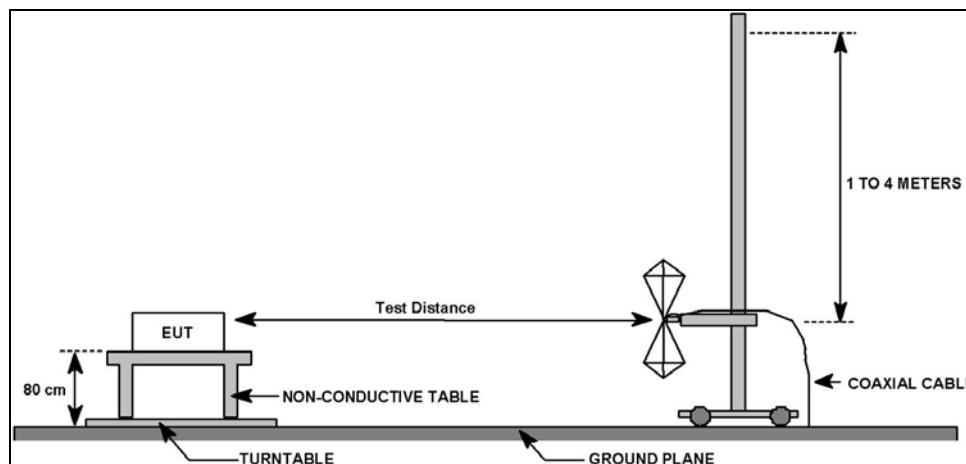
| Professional Testing, EMI, Inc. | | | | | | | | | | | | |
|---|--|-----|-----------------------------|----------------|--------|--|--|--|--|--|--|--|
| Test Method: | ANSI C63.4-2003: "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz" (incorporated by reference, see §15.38). | | | | | | | | | | | |
| In accordance with: | FCC Part 15.209 - Code of Federal Regulations Part 47, Subpart C - Intentional Radiators, Radiated Emissions Limits | | | | | | | | | | | |
| Section: | 15.209 | | | | | | | | | | | |
| Test Date(s): | 5/19/2014 | | EUT Serial #: | V4 003 | | | | | | | | |
| Customer: | BCP Controls LLC DBA Pruf Energy | | EUT Part #: | None | | | | | | | | |
| Project Number: | 15590-15 | | Test Technician: | Dave Kohutek | | | | | | | | |
| Purchase Order #: | PTI_014_001 | | Supervisor: | Rob McCollough | | | | | | | | |
| Equip. Under Test: | PEC915V10 | | Witness' Name: | J.D. Holland | | | | | | | | |
| Radiated Emissions Test Results Data Sheet | | | | Page: | 1 of 1 | | | | | | | |
| EUT Line Voltage: | 3.3 | VDC | EUT Power Frequency: | N/A | N/A | | | | | | | |
| Antenna Orientation: | Horizontal | | Frequency Range: | Above 1GHz | | | | | | | | |
| EUT Mode of Operation: | Transmit Mode, 927.5MHz | | | | | | | | | | | |
| Professional Testing, EMI, Inc Radiated Emissions, 3m Distance 1-12GHz Horizontal Polarity Measured Emissions | | | | | | | | | | | | |
|  <p>Field Strength (dBμV/m)</p> <p>Frequency (GHz)</p> <p>1G 10G 12G</p> <p>Operator: Dave Kohutek 15590-15_RE_V4 003_927.5Mhz.til 01:36:23 PM, Monday, May 19, 2014</p> <p>EUT Mode: 927.5MHz, GFSK14.36dBm Output EUT Power: 3.3VDC Serial Number: V4 003</p> <p>EUT: PEC915V10 Project Number: 15590-15 Client: BCP Controls LLC DBA Pruf Energy</p> | | | | | | | | | | | | |
| > 1GHz Horizontal Antenna Polarity Measured Emissions | | | | | | | | | | | | |

9.0 Radiated Spurious Emissions, Transmit Mode, Antenna 2: Helical

9.1 Test Procedure

The EUT was placed on a non-conductive table 0.8 meters above the ground plane. The EUT was centered on a rotating turntable. Measurements below 1 GHz were taken at a test distance of 10 meters from the measurement antenna. Above 1 GHz the measurement distance was 3 meters.

Spurious emissions below 1 GHz were measured with quasi-peak detection with a resolution bandwidth of 120 kHz. Above 1 GHz peak measurements were taken and average measured where appropriate. A diagram showing the test setup appears below.



9.2 Test Criteria

| 47 CFR (USA) // IC (Canada) | | |
|---|---|---------------------------|
| Section Reference | Parameter | Date(s) |
| 15.247, 15.209 // RSS-Gen Issue 3, 4.9, 4.10 | Field Strength of Radiated Spurious/Harmonic Emissions | 2014-05-19, 2014-05-20 |

9.3 Test Results

This section reports results with the helical antenna option.

Below 1 GHz measurements were taken in transmit mode on the middle channel. Above 1 GHz measurements were taken on the three standard channels of the band.

The applicable duty cycle factor for averaging above 1 GHz is 0 dB. All peak emissions can be seen as being well below the average limit, meaning the average level would also be under the average limit.

Table 9.3.1: Radiated Spurious Emissions, TX Mode, Below 1 GHz, Vertical Polarity, Mid. Channel**Antenna 2: Helical**

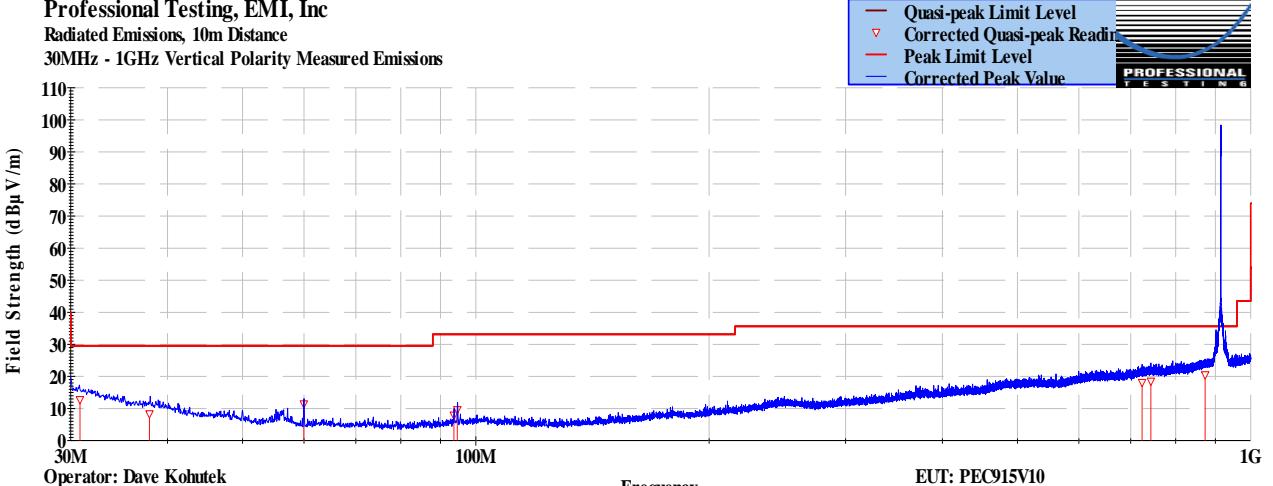
| Professional Testing, EMI, Inc. | | | | | | | | | | | | | | | | | |
|--|--|-------------------------|-------------------------|-----------------------------|---------------------------------|--------------------------------|----------------------------|-------------|--------------|--|--|--|--|--|--|--|--|
| Test Method: | ANSI C63.4-2003: "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz" (incorporated by reference, see §15.38). | | | | | | | | | | | | | | | | |
| In accordance with: | FCC Part 15.209 - Code of Federal Regulations Part 47, Subpart C - Intentional Radiators, Radiated Emissions Limits | | | | | | | | | | | | | | | | |
| Section: | 15.209 | | | | | | | | | | | | | | | | |
| Test Date(s): | 5/19/2014 & 5/20/2014 | | | EUT Serial #: | V4 002 | | | | | | | | | | | | |
| Customer: | BCP Controls LLC DBA Pruf Energy | | | EUT Part #: | None | | | | | | | | | | | | |
| Project Number: | 15590-15 | | | Test Technician: | Dave Kohutek | | | | | | | | | | | | |
| Purchase Order #: | PTI_014_001 | | | Supervisor: | Rob McCollough | | | | | | | | | | | | |
| Equip. Under Test: | PEC915V10 | | | Witness' Name: | J.D. Holland | | | | | | | | | | | | |
| Radiated Emissions Test Results Data Sheet | | | | | | | | | | | | | | | | | |
| Page: 1 of 1 | | | | | | | | | | | | | | | | | |
| EUT Line Voltage: | 3.3 | VDC | | EUT Power Frequency: | N/A | N/A | | | | | | | | | | | |
| Antenna Orientation: | Vertical | | | Frequency Range: | 30MHz to 1GHz | | | | | | | | | | | | |
| EUT Mode of Operation: | | | | | Transmit Mode, 915MHz | | | | | | | | | | | | |
| Frequency Measured (MHz) | Test Distance (Meters) | EUT Direction (Degrees) | Antenna Height (Meters) | Detector Function | Recorded Amplitude (dB μ V) | Corrected Level (dB μ V/m) | Limit Level (dB μ V/m) | Margin (dB) | Test Results | | | | | | | | |
| 30.8376 | 10 | 170 | 2.15 | Quasi-peak | 24.2 | 12.731 | 29.5 | -16.8 | Pass | | | | | | | | |
| 37.9117 | 10 | 113 | 2.76 | Quasi-peak | 23.7 | 8.321 | 29.5 | -21.2 | Pass | | | | | | | | |
| 59.9874 | 10 | 292 | 3.23 | Quasi-peak | 32.7 | 11.392 | 29.5 | -18.1 | Pass | | | | | | | | |
| 93.6608 | 10 | 342 | 1.21 | Quasi-peak | 28.5 | 7.873 | 33.1 | -25.2 | Pass | | | | | | | | |
| 94.6398 | 10 | 55 | 2.07 | Quasi-peak | 30.2 | 9.609 | 33.1 | -23.5 | Pass | | | | | | | | |
| 723.986 | 10 | 159 | 1.18 | Quasi-peak | 21.9 | 18.065 | 35.6 | -17.5 | Pass | | | | | | | | |
| 743.178 | 10 | 290 | 3.04 | Quasi-peak | 21.8 | 18.478 | 35.6 | -17.1 | Pass | | | | | | | | |
| 873.425 | 10 | 173 | 1.96 | Quasi-peak | 21.4 | 20.472 | 35.6 | -15.1 | Pass | | | | | | | | |
| Professional Testing, EMI, Inc Radiated Emissions, 10m Distance 30MHz - 1GHz Vertical Polarity Measured Emissions | | | | | | | | | | | | | | | | | |
|  Field Strength (dB μ V/m) vs Frequency (MHz) | | | | | | | | | | | | | | | | | |
| Operator: Dave Kohutek 15590-15_RE_V4 002_915Mhz.til 09:38:26 AM, Tuesday, May 20, 2014 | | | | | | | | | | | | | | | | | |
| Frequency: 915MHz, GFSK14.36dBm Output EUT Power: 3.3VDC Serial Number: V4 002 | | | | | | | | | | | | | | | | | |
| EUT: PEC915V10 Project Number: 15590-15 Client: BCP Controls LLC DBA Pruf Energy | | | | | | | | | | | | | | | | | |
| ≤ 1GHz Vertical Antenna Polarity Measured Emissions | | | | | | | | | | | | | | | | | |

Table 9.3.2: Radiated Spurious Emissions, TX Mode, Below 1 GHz, Horizontal Polarity, Mid. Channel Antenna 2: Helical

| Professional Testing, EMI, Inc. | | | | | | | | | | | | |
|---|--|-------------------------|-------------------------|-----------------------------|---------------------------------|--------------------------------|----------------------------|-------------|--------------|--|--|--|
| Test Method: | ANSI C63.4-2003: "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz" (incorporated by reference, see §15.38). | | | | | | | | | | | |
| In accordance with: | FCC Part 15.209 - Code of Federal Regulations Part 47, Subpart C - Intentional Radiators, Radiated Emissions Limits | | | | | | | | | | | |
| Section: | 15.209 | | | | | | | | | | | |
| Test Date(s): | 5/19/2014 & 5/20/2014 | | | EUT Serial #: | V4 002 | | | | | | | |
| Customer: | BCP Controls LLC DBA Pruf Energy | | | EUT Part #: | None | | | | | | | |
| Project Number: | 15590-15 | | | Test Technician: | Dave Kohutek | | | | | | | |
| Purchase Order #: | PTI_014_001 | | | Supervisor: | Rob McCollough | | | | | | | |
| Equip. Under Test: | PEC915V10 | | | Witness' Name: | J.D. Holland | | | | | | | |
| Radiated Emissions Test Results Data Sheet | | | | | | | Page: | 1 | of 1 | | | |
| EUT Line Voltage: | 3.3 | VDC | | EUT Power Frequency: | N/A | | N/A | | | | | |
| Antenna Orientation: | Horizontal | | | Frequency Range: | 30MHz to 1GHz | | | | | | | |
| EUT Mode of Operation: | | | | | Transmit Mode, 915MHz | | | | | | | |
| Frequency Measured (MHz) | Test Distance (Meters) | EUT Direction (Degrees) | Antenna Height (Meters) | Detector Function | Recorded Amplitude (dB μ V) | Corrected Level (dB μ V/m) | Limit Level (dB μ V/m) | Margin (dB) | Test Results | | | |
| 30.3061 | 10 | 60 | 3.45 | Quasi-peak | 24 | 12.758 | 29.5 | -16.7 | Pass | | | |
| 31.8996 | 10 | 205 | 2.82 | Quasi-peak | 24.2 | 12.09 | 29.5 | -17.4 | Pass | | | |
| 182.418 | 10 | 157 | 2.16 | Quasi-peak | 22.6 | 5.061 | 33.1 | -28.0 | Pass | | | |
| 189.536 | 10 | 228 | 2.85 | Quasi-peak | 22.6 | 4.858 | 33.1 | -28.2 | Pass | | | |
| 753.119 | 10 | 184 | 3.71 | Quasi-peak | 21.8 | 18.597 | 35.6 | -17.0 | Pass | | | |
| 801.24 | 10 | 97 | 1.78 | Quasi-peak | 21.4 | 19.06 | 35.6 | -16.5 | Pass | | | |
| 810.261 | 10 | 35 | 2.76 | Quasi-peak | 21.5 | 19.218 | 35.6 | -16.4 | Pass | | | |
| Professional Testing, EMI, Inc. Radiated Emissions, 10m Distance 30MHz - 1GHz Horizontal Polarity Measured Emissions | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Field Strength (dB μ V/m) 30M 100M 1000M 1G Operator: Dave Kohutek 15590-15_RE_V4 002_915MHz.til 09:38:26 AM, Tuesday, May 20, 2014 | | | | | | | | | | | | |
| Frequency EUT Mode: 915MHz, GFSK14.3dBm Output EUT Power: 3.3VDC Serial Number: V4 002 EUT: PEC915V10 Project Number: 15590-15 Client: BCP Controls LLC DBA Pruf Energy | | | | | | | | | | | | |
| ≤ 1GHz Horizontal Antenna Polarity Measured Emissions | | | | | | | | | | | | |

Table 9.3.3: Radiated Spurious Emissions, TX Mode, Below 1 GHz, Vertical Polarity, Low Channel Antenna 2: Helical

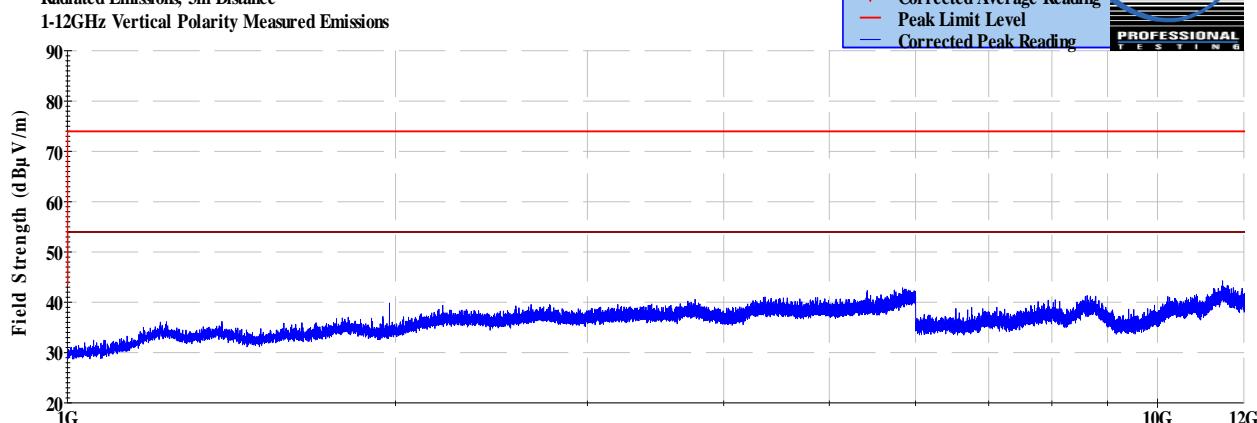
| Professional Testing, EMI, Inc. | | | | | | | | | | | | |
|--|--|-----|-----------------------------|----------------|-----|--|--|--|--|--|--|--|
| Test Method: | ANSI C63.4-2003: "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz" (incorporated by reference, see §15.38). | | | | | | | | | | | |
| In accordance with: | FCC Part 15.209 - Code of Federal Regulations Part 47, Subpart C - Intentional Radiators, Radiated Emissions Limits | | | | | | | | | | | |
| Section: | 15.209 | | | | | | | | | | | |
| Test Date(s): | 5/19/2014 & 5/20/2014 | | EUT Serial #: | V4 002 | | | | | | | | |
| Customer: | BCP Controls LLC DBA Pruf Energy | | EUT Part #: | None | | | | | | | | |
| Project Number: | 15590-15 | | Test Technician: | Dave Kohutek | | | | | | | | |
| Purchase Order #: | PTI_014_001 | | Supervisor: | Rob McCollough | | | | | | | | |
| Equip. Under Test: | PEC915V10 | | Witness' Name: | J.D. Holland | | | | | | | | |
| EUT Line Voltage: | 3.3 | VDC | EUT Power Frequency: | N/A | N/A | | | | | | | |
| Antenna Orientation: | Vertical | | Frequency Range: | Above 1GHz | | | | | | | | |
| EUT Mode of Operation: | | | Transmit Mode, 902.9MHz | | | | | | | | | |
| <p>Professional Testing, EMI, Inc Radiated Emissions, 3m Distance 1-12GHz Vertical Polarity Measured Emissions</p>  <p>Field Strength (dBμV/m)</p> <p>Frequency (GHz)</p> <p>Operator: Dave Kohutek 15590-15_RE_V4 002_902.9Mhz.til 04:07:54 PM, Monday, May 19, 2014</p> <p>EUT Mode: 902.9MHz, GFSK14.36dBm Output EUT Power: 3.3VDC Serial Number: V4 002</p> <p>EUT: PEC915V10 Project Number: 15590-15 Client: BCP Controls LLC DBA Pruf Energy</p> | | | | | | | | | | | | |
| > 1GHz Vertical Antenna Polarity Measured Emissions | | | | | | | | | | | | |

Table 9.3.4: Radiated Spurious Emissions, TX Mode, Below 1 GHz, Horizontal Polarity, Low Channel Antenna 2: Helical

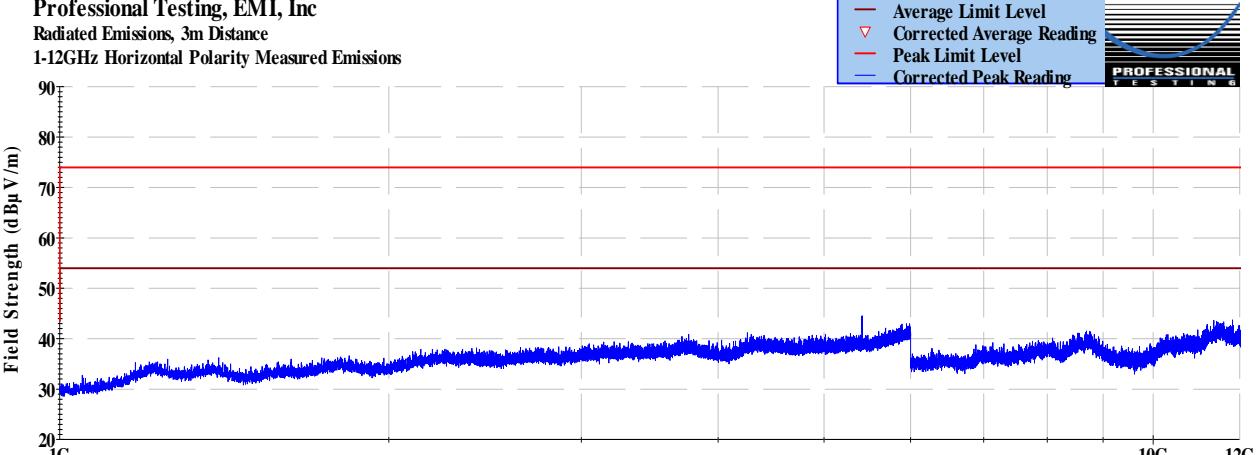
| Professional Testing, EMI, Inc. | | | | | | | | | | | | |
|---|--|-----|-----------------------------|--|--------|--|--|--|--|--|--|--|
| Test Method: | ANSI C63.4-2003: "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz" (incorporated by reference, see §15.38). | | | | | | | | | | | |
| In accordance with: | FCC Part 15.209 - Code of Federal Regulations Part 47, Subpart C - Intentional Radiators, Radiated Emissions Limits | | | | | | | | | | | |
| Section: | 15.209 | | | | | | | | | | | |
| Test Date(s): | 5/19/2014 & 5/20/2014 | | EUT Serial #: | V4 002 | | | | | | | | |
| Customer: | BCP Controls LLC DBA Pruf Energy | | EUT Part #: | None | | | | | | | | |
| Project Number: | 15590-15 | | Test Technician: | Dave Kohutek | | | | | | | | |
| Purchase Order #: | PTI_014_001 | | Supervisor: | Rob McCollough | | | | | | | | |
| Equip. Under Test: | PEC915V10 | | Witness' Name: | J.D. Holland | | | | | | | | |
| Radiated Emissions Test Results Data Sheet | | | | Page: | 1 of 1 | | | | | | | |
| EUT Line Voltage: | 3.3 | VDC | EUT Power Frequency: | N/A | N/A | | | | | | | |
| Antenna Orientation: | Horizontal | | Frequency Range: | Above 1GHz | | | | | | | | |
| EUT Mode of Operation: | Transmit Mode, 902.9MHz | | | | | | | | | | | |
| Professional Testing, EMI, Inc Radiated Emissions, 3m Distance 1-12GHz Horizontal Polarity Measured Emissions | | | | | | | | | | | | |
|  | | | | | | | | | | | | |
| Operator: Dave Kohutek | Frequency | | EUT: PEC915V10 | Project Number: 15590-15 | | | | | | | | |
| 15590-15_RE_V4 002_902.9Mhz.til | EUT Mode: 902.9MHz, GFSK14.36dBm Output | | | Client: BCP Controls LLC DBA Pruf Energy | | | | | | | | |
| 04:07:52 PM, Monday, May 19, 2014 | EUT Power: 3.3VDC | | | | | | | | | | | |
| | Serial Number: V4 002 | | | | | | | | | | | |
| > 1GHz Horizontal Antenna Polarity Measured Emissions | | | | | | | | | | | | |

Table 9.3.5: Radiated Spurious Emissions, TX Mode, Below 1 GHz, Vertical Polarity, Mid. Channel**Antenna 2: Helical**

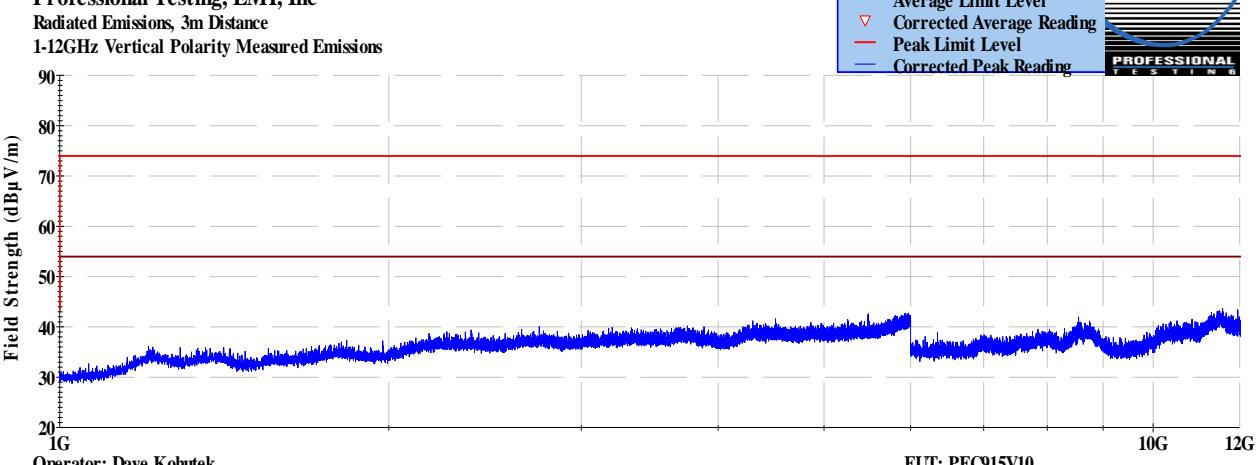
| Professional Testing, EMI, Inc. | | | | | | | | | | | | |
|--|--|-----|-----------------------------|----------------|-----|--|--|--|--|--|--|--|
| Test Method: | ANSI C63.4-2003: "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz" (incorporated by reference, see §15.38). | | | | | | | | | | | |
| In accordance with: | FCC Part 15.209 - Code of Federal Regulations Part 47, Subpart C - Intentional Radiators, Radiated Emissions Limits | | | | | | | | | | | |
| Section: | 15.209 | | | | | | | | | | | |
| Test Date(s): | 5/19/2014 & 5/20/2014 | | EUT Serial #: | V4 002 | | | | | | | | |
| Customer: | BCP Controls LLC DBA Pruf Energy | | EUT Part #: | None | | | | | | | | |
| Project Number: | 15590-15 | | Test Technician: | Dave Kohutek | | | | | | | | |
| Purchase Order #: | PTI_014_001 | | Supervisor: | Rob McCollough | | | | | | | | |
| Equip. Under Test: | PEC915V10 | | Witness' Name: | J.D. Holland | | | | | | | | |
| Radiated Emissions Test Results Data Sheet | | | | Page: 1 of 1 | | | | | | | | |
| EUT Line Voltage: | 3.3 | VDC | EUT Power Frequency: | N/A | N/A | | | | | | | |
| Antenna Orientation: | Vertical | | Frequency Range: | Above 1GHz | | | | | | | | |
| EUT Mode of Operation: | | | Transmit Mode, 915MHz | | | | | | | | | |
| <p>Professional Testing, EMI, Inc Radiated Emissions, 3m Distance 1-12GHz Vertical Polarity Measured Emissions</p>  <p>Field Strength (dBμV/m)</p> <p>Frequency (GHz)</p> <p>1G 10G 12G</p> <p>Operator: Dave Kohutek 15590-15_RE_V4 002_915MHz.til 08:20:19 AM, Tuesday, May 20, 2014</p> <p>EUT Mode: 915MHz, GFSK14.3dBm Output EUT Power: 3.3VDC Serial Number: V4 002</p> <p>EUT: PEC915V10 Project Number: 15590-15 Client: BCP Controls LLC DBA Pruf Energy</p> | | | | | | | | | | | | |
| > 1GHz Vertical Antenna Polarity Measured Emissions | | | | | | | | | | | | |

Table 9.3.6: Radiated Spurious Emissions, TX Mode, Below 1 GHz, Horizontal Polarity, Mid. Channel Antenna 2: Helical

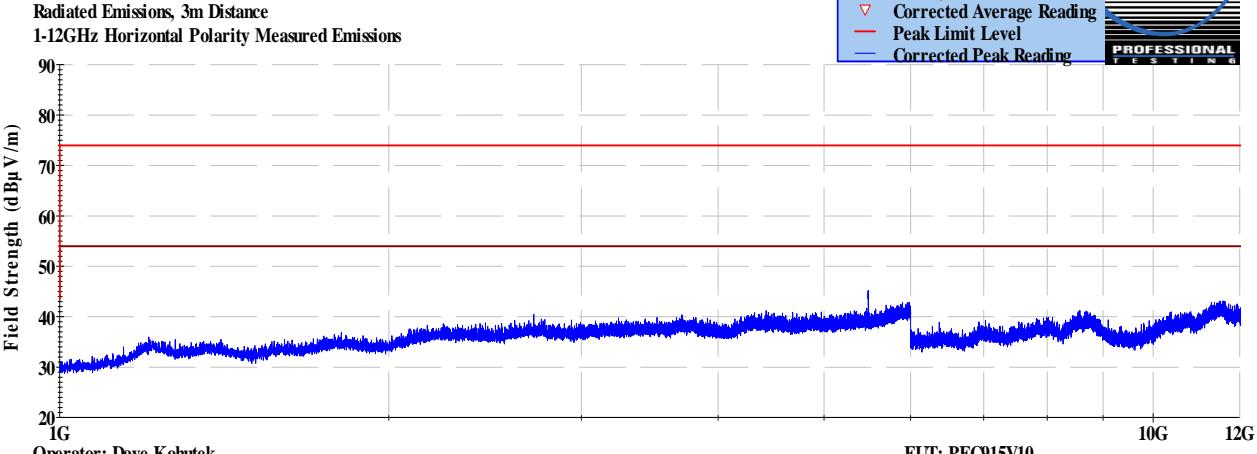
| Professional Testing, EMI, Inc. | | | | | | | | | | | | | | | |
|---|--|----------------------|----------------|--|--------|--|--|--|--|--|--|--|--|--|--|
| Test Method: | ANSI C63.4-2003: "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz" (incorporated by reference, see §15.38). | | | | | | | | | | | | | | |
| In accordance with: | FCC Part 15.209 - Code of Federal Regulations Part 47, Subpart C - Intentional Radiators, Radiated Emissions Limits | | | | | | | | | | | | | | |
| Section: | 15.209 | | | | | | | | | | | | | | |
| Test Date(s): | 5/19/2014 & 5/20/2014 | EUT Serial #: | V4 002 | | | | | | | | | | | | |
| Customer: | BCP Controls LLC DBA Pruf Energy | EUT Part #: | None | | | | | | | | | | | | |
| Project Number: | 15590-15 | Test Technician: | Dave Kohutek | | | | | | | | | | | | |
| Purchase Order #: | PTI_014_001 | Supervisor: | Rob McCollough | | | | | | | | | | | | |
| Equip. Under Test: | PEC915V10 | Witness' Name: | J.D. Holland | | | | | | | | | | | | |
| Radiated Emissions Test Results Data Sheet | | | | Page: | 1 of 1 | | | | | | | | | | |
| EUT Line Voltage: | 3.3 VDC | EUT Power Frequency: | N/A | N/A | | | | | | | | | | | |
| Antenna Orientation: | Horizontal | Frequency Range: | Above 1GHz | | | | | | | | | | | | |
| EUT Mode of Operation: | Transmit Mode, 915MHz | | | | | | | | | | | | | | |
| Professional Testing, EMI, Inc Radiated Emissions, 3m Distance 1-12GHz Horizontal Polarity Measured Emissions | | | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | |
| Operator: Dave Kohutek | Frequency | | EUT: PEC915V10 | Project Number: 15590-15 | | | | | | | | | | | |
| 15590-15_RE_V4 002_915Mhz.til | EUT Mode: 915MHz, GFSK14.36dBm Output | | | Client: BCP Controls LLC DBA Pruf Energy | | | | | | | | | | | |
| 08:20:17 AM, Tuesday, May 20, 2014 | EUT Power: 3.3VDC | | | | | | | | | | | | | | |
| | Serial Number: V4 002 | | | | | | | | | | | | | | |
| > 1GHz Horizontal Antenna Polarity Measured Emissions | | | | | | | | | | | | | | | |

Table 9.3.7: Radiated Spurious Emissions, TX Mode, Below 1 GHz, Vertical Polarity, High Channel**Antenna 2: Helical**

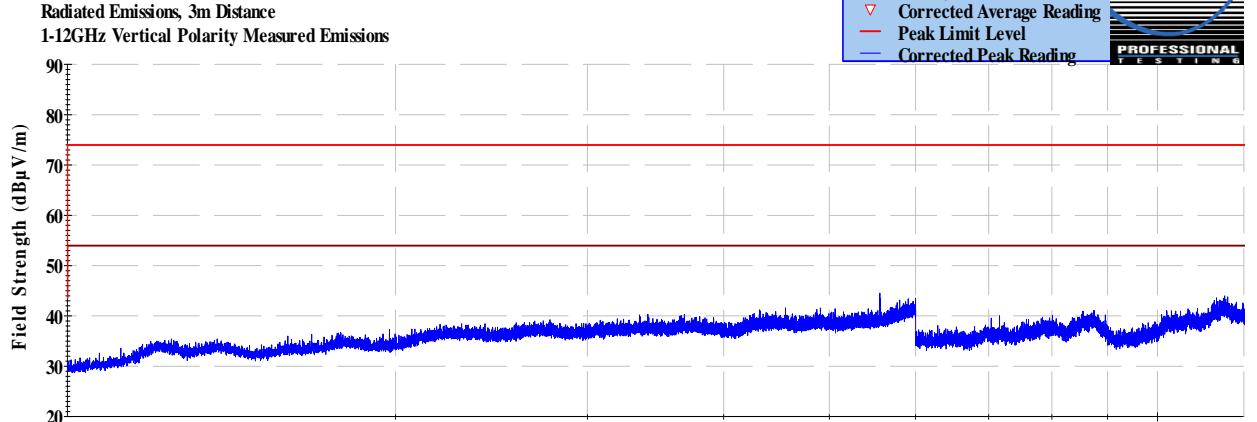
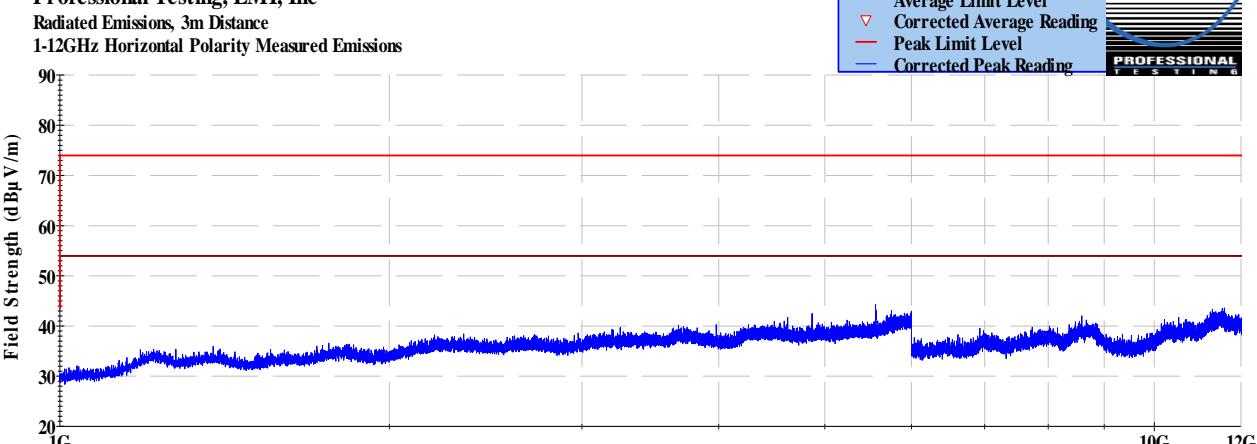
| Professional Testing, EMI, Inc. | | | | | | | | | | | | |
|--|--|-----|-----------------------------|----------------|-----|--|--|--|--|--|--|--|
| Test Method: | ANSI C63.4-2003: "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz" (incorporated by reference, see §15.38). | | | | | | | | | | | |
| In accordance with: | FCC Part 15.209 - Code of Federal Regulations Part 47, Subpart C - Intentional Radiators, Radiated Emissions Limits | | | | | | | | | | | |
| Section: | 15.209 | | | | | | | | | | | |
| Test Date(s): | 5/19/2014 & 5/20/2014 | | EUT Serial #: | V4 002 | | | | | | | | |
| Customer: | BCP Controls LLC DBA Pruf Energy | | EUT Part #: | None | | | | | | | | |
| Project Number: | 15590-15 | | Test Technician: | Dave Kohutek | | | | | | | | |
| Purchase Order #: | PTI_014_001 | | Supervisor: | Rob McCollough | | | | | | | | |
| Equip. Under Test: | PEC915V10 | | Witness' Name: | J.D. Holland | | | | | | | | |
| Radiated Emissions Test Results Data Sheet | | | | Page: 1 of 1 | | | | | | | | |
| EUT Line Voltage: | 3.3 | VDC | EUT Power Frequency: | N/A | N/A | | | | | | | |
| Antenna Orientation: | Vertical | | Frequency Range: | Above 1GHz | | | | | | | | |
| EUT Mode of Operation: | Transmit Mode, 927.5MHz | | | | | | | | | | | |
| <p>Professional Testing, EMI, Inc Radiated Emissions, 3m Distance 1-12GHz Vertical Polarity Measured Emissions</p>  <p>Field Strength (dBμV/m)</p> <p>Frequency (GHz)</p> <p>1G 10G 12G</p> <p>Operator: Dave Kohutek 15590-15_RE_V4 002_927.5MHz.til 04:25:52 PM, Monday, May 19, 2014</p> <p>Frequency EUT Mode: 927.5MHz, GFSK14.36dBm Output EUT Power: 3.3VDC Serial Number: V4 002</p> <p>EUT: PEC915V10 Project Number: 15590-15 Client: BCP Controls LLC DBA Pruf Energy</p> | | | | | | | | | | | | |
| > 1GHz Vertical Antenna Polarity Measured Emissions | | | | | | | | | | | | |

Table 9.3.8: Radiated Spurious Emissions, TX Mode, Below 1 GHz, Horizontal Polarity, High Channel Antenna 2: Helical

| Professional Testing, EMI, Inc. | | | | | | | | | | | | | | | |
|---|--|----------------------|--|--------------------------|--------|--|--|--|--|--|--|--|--|--|--|
| Test Method: | ANSI C63.4-2003: "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz" (incorporated by reference, see §15.38). | | | | | | | | | | | | | | |
| In accordance with: | FCC Part 15.209 - Code of Federal Regulations Part 47, Subpart C - Intentional Radiators, Radiated Emissions Limits | | | | | | | | | | | | | | |
| Section: | 15.209 | | | | | | | | | | | | | | |
| Test Date(s): | 5/19/2014 & 5/20/2014 | EUT Serial #: | V4 002 | | | | | | | | | | | | |
| Customer: | BCP Controls LLC DBA Pruf Energy | EUT Part #: | None | | | | | | | | | | | | |
| Project Number: | 15590-15 | Test Technician: | Dave Kohutek | | | | | | | | | | | | |
| Purchase Order #: | PTI_014_001 | Supervisor: | Rob McCollough | | | | | | | | | | | | |
| Equip. Under Test: | PEC915V10 | Witness' Name: | J.D. Holland | | | | | | | | | | | | |
| Radiated Emissions Test Results Data Sheet | | | | Page: | 1 of 1 | | | | | | | | | | |
| EUT Line Voltage: | 3.3 VDC | EUT Power Frequency: | N/A | N/A | | | | | | | | | | | |
| Antenna Orientation: | Horizontal | Frequency Range: | Above 1GHz | | | | | | | | | | | | |
| EUT Mode of Operation: | Transmit Mode, 927.5MHz | | | | | | | | | | | | | | |
| Professional Testing, EMI, Inc Radiated Emissions, 3m Distance 1-12GHz Horizontal Polarity Measured Emissions | | | | | | | | | | | | | | | |
|  Field Strength (dB μ V/m) vs Frequency (GHz) | | | | | | | | | | | | | | | |
| Operator: Dave Kohutek | Frequency | | EUT: PEC915V10 | Project Number: 15590-15 | | | | | | | | | | | |
| 15590-15_RE_V4 002_927.5Mhz.til | EUT Mode: 927.5MHz, GFSK14.36dBm Output | | Client: BCP Controls LLC DBA Pruf Energy | | | | | | | | | | | | |
| 04:25:51 PM, Monday, May 19, 2014 | EUT Power: 3.3VDC | | | | | | | | | | | | | | |
| | Serial Number: V4 002 | | | | | | | | | | | | | | |
| > 1GHz Horizontal Antenna Polarity Measured Emissions | | | | | | | | | | | | | | | |

10.0 Conducted Spurious Emissions, Transmit Mode

10.1 Test Procedure

Spurious emissions were measured with peak detection using resolution bandwidth 100 kHz and video bandwidth 300 kHz.

10.2 Test Criteria

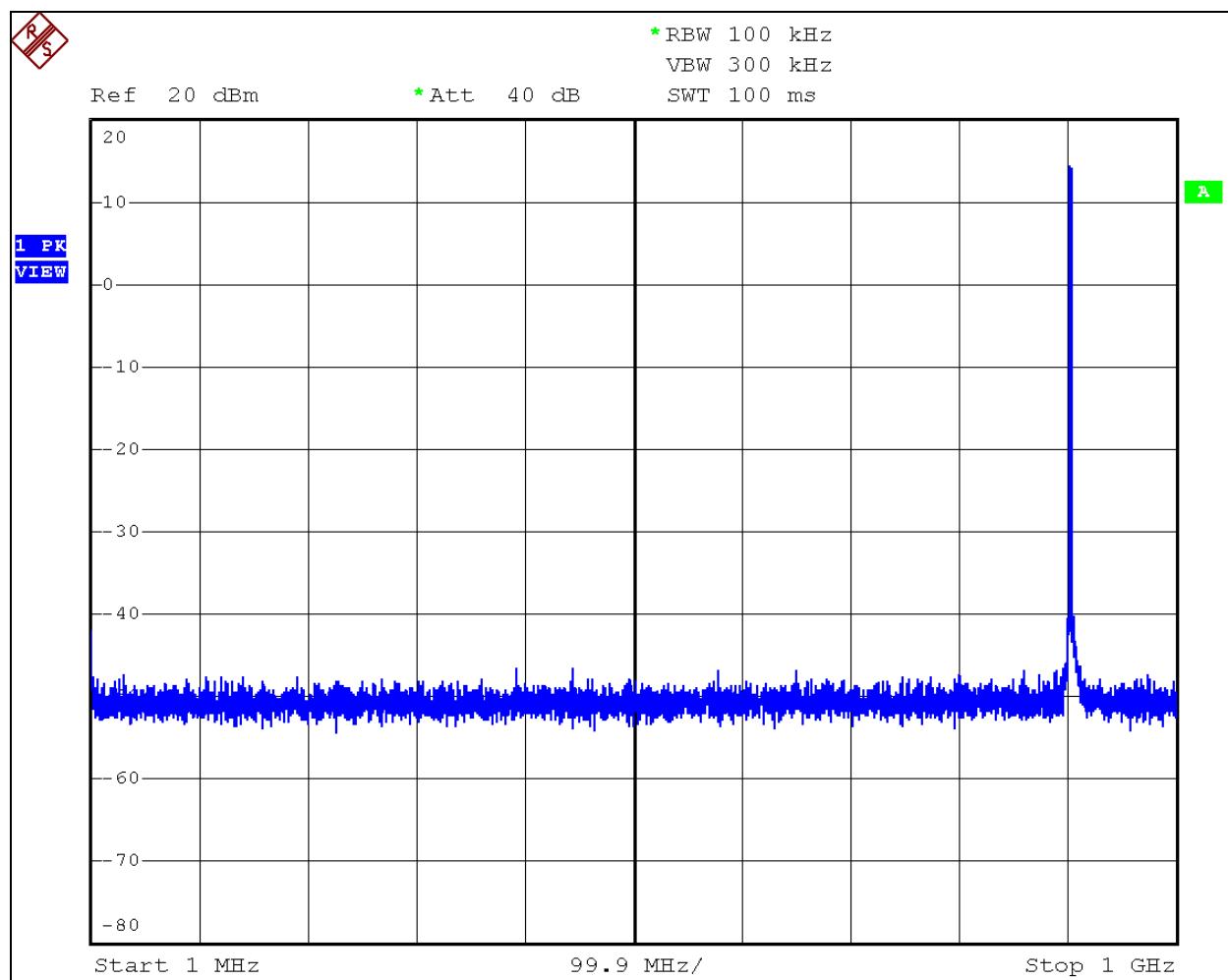
| 47 CFR (USA) // IC (Canada) | | |
|---|---|------------|
| Section Reference | Parameter | Date(s) |
| 15.247, 15.209 // RSS-Gen Issue 3, 4.9, 4.10 | Field Strength of Radiated Spurious/Harmonic Emissions | 2014-05-22 |

10.3 Test Results

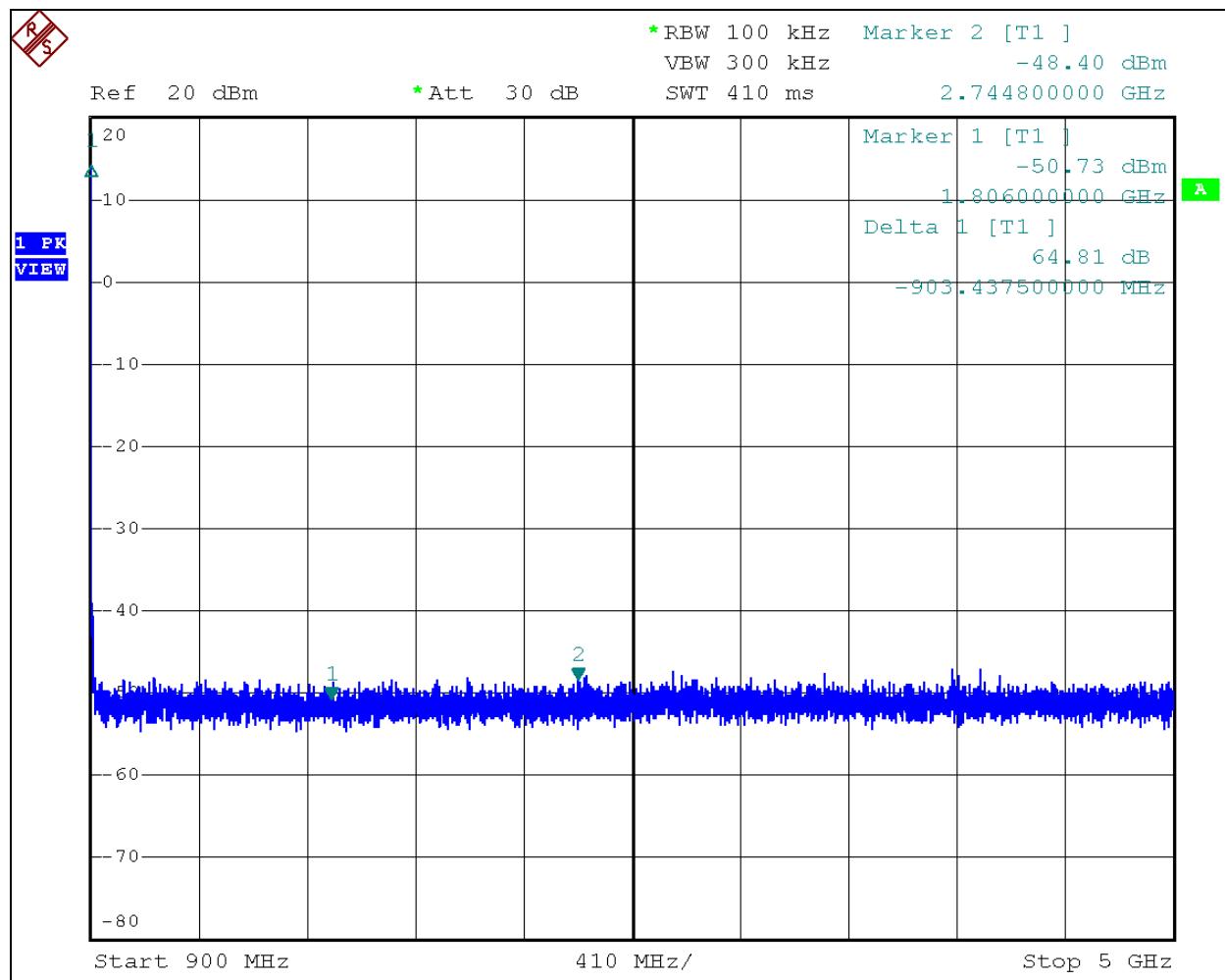
Measurements were taken for frequency range of 1 MHz to 10 GHz and repeated for each of the three standard transmit channels.

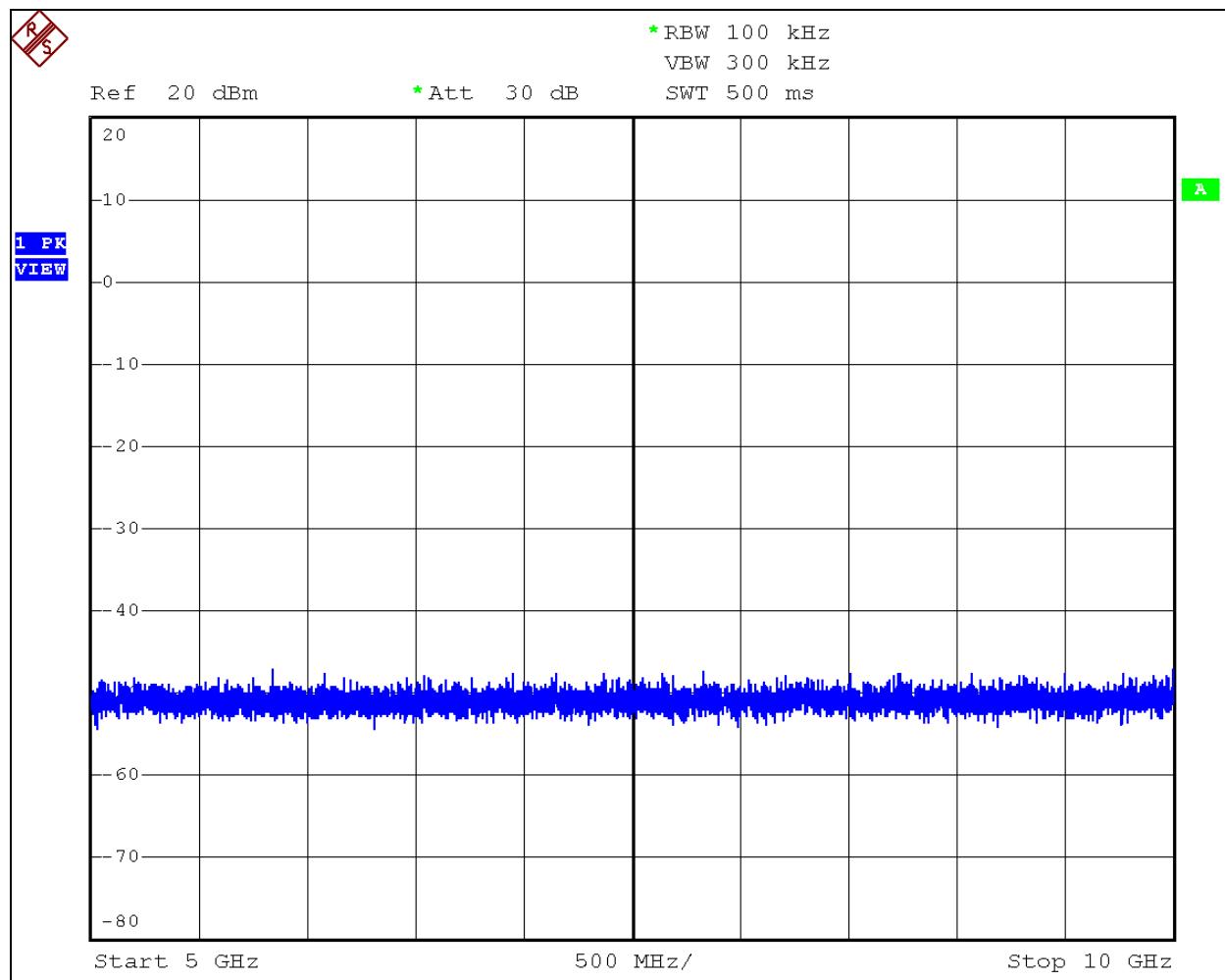
The transmitter operation was verified by including the fundamental frequency where possible.

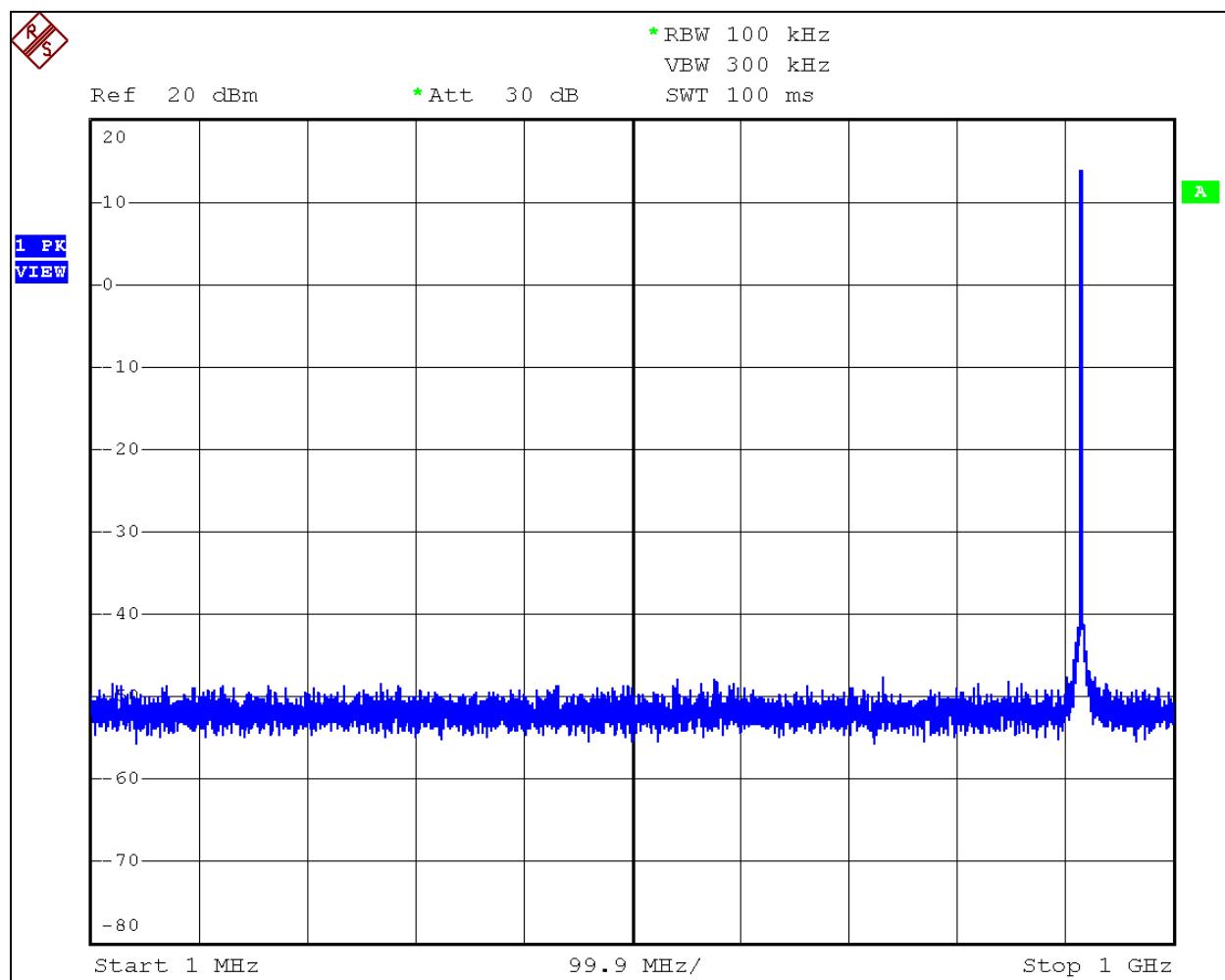
The EUT satisfied the criteria. Plotted data appears on the following pages.

Plot 10.3.1: Conducted Spurious Emissions, TX Mode, 1 MHz to 1 GHz, Low Channel

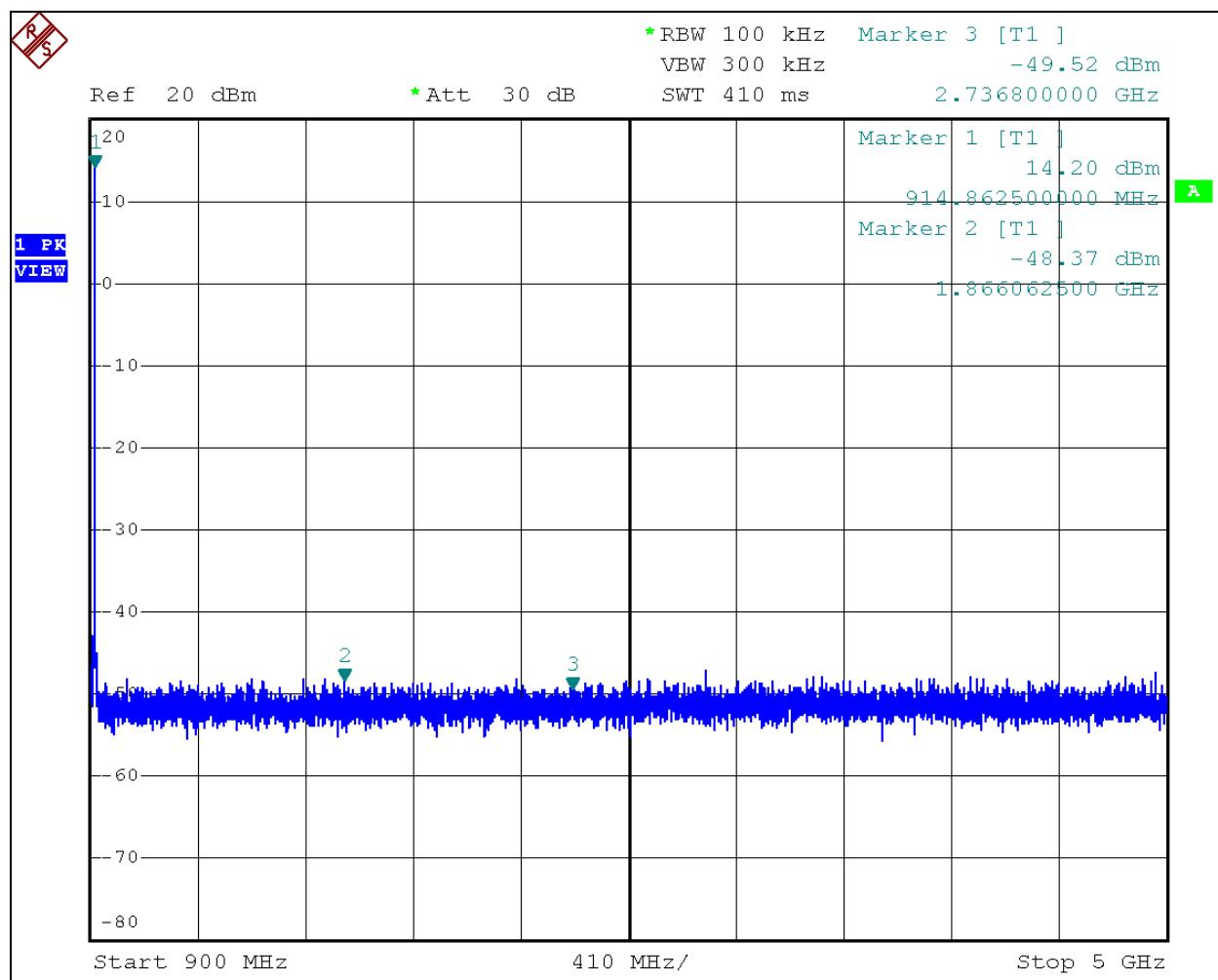
Plot 10.3.2: Conducted Spurious Emissions, TX Mode, 0.9 GHz to 5 GHz, Low Channel

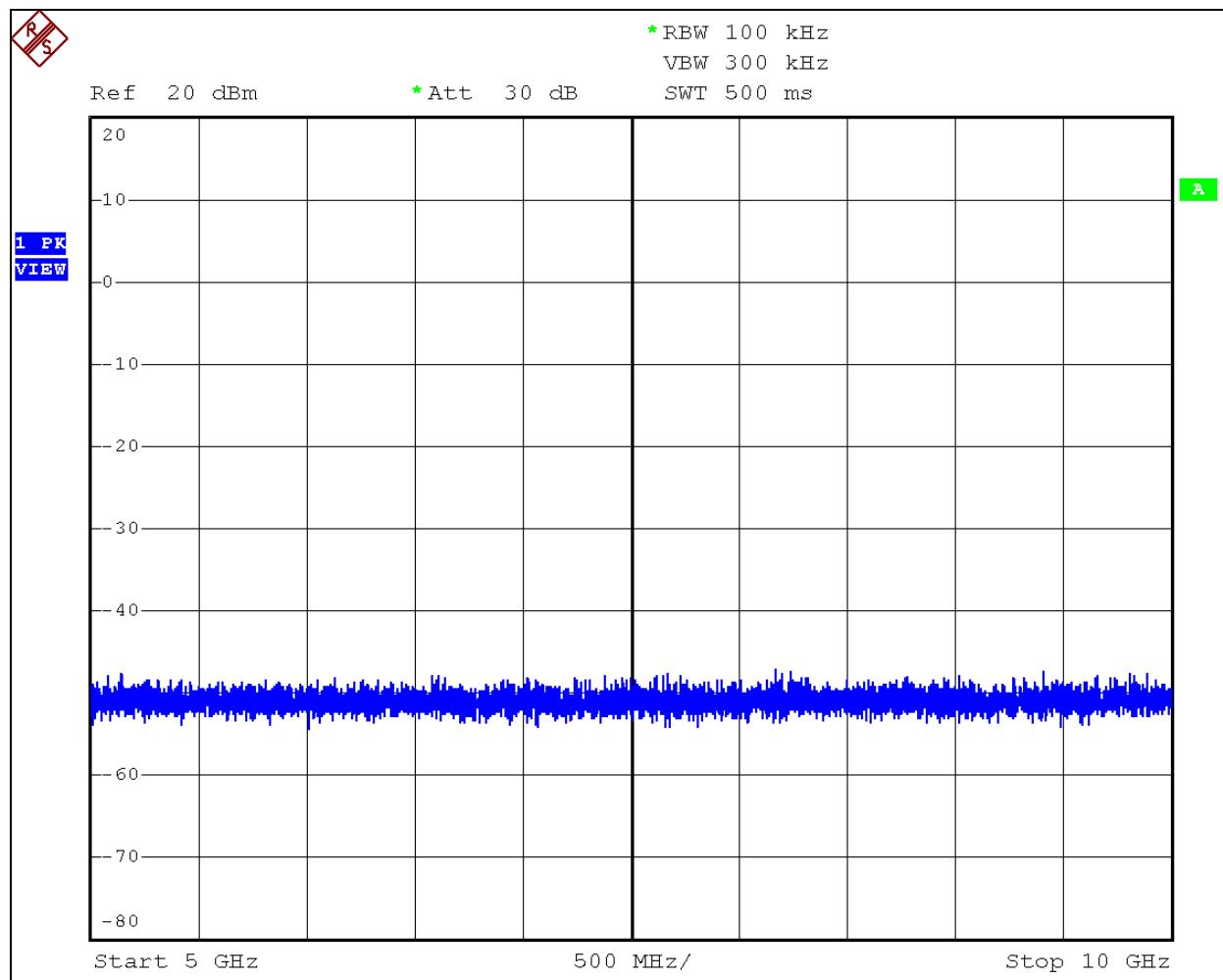


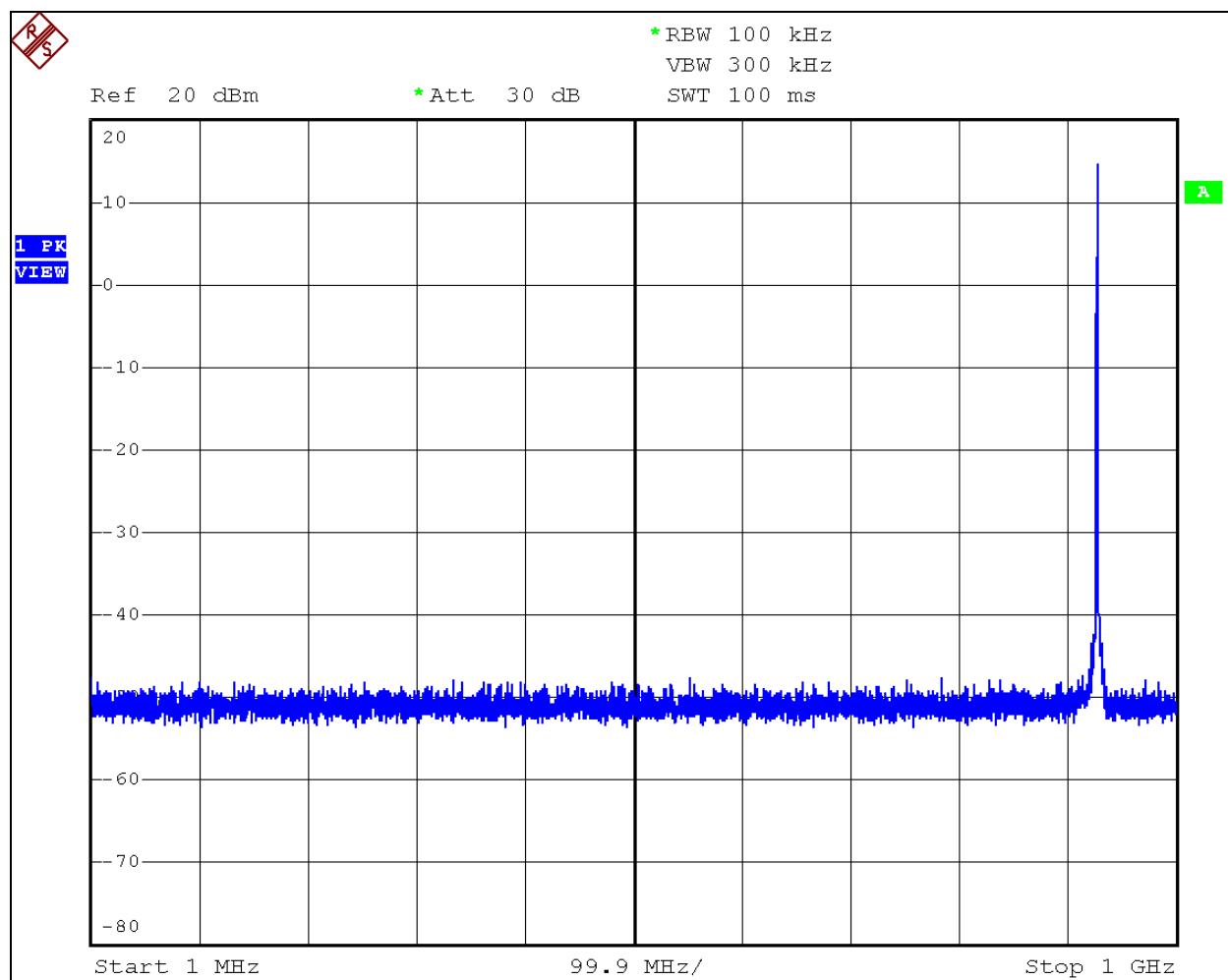
Plot 10.3.3: Conducted Spurious Emissions, TX Mode, 5 GHz to 10 GHz, Low Channel

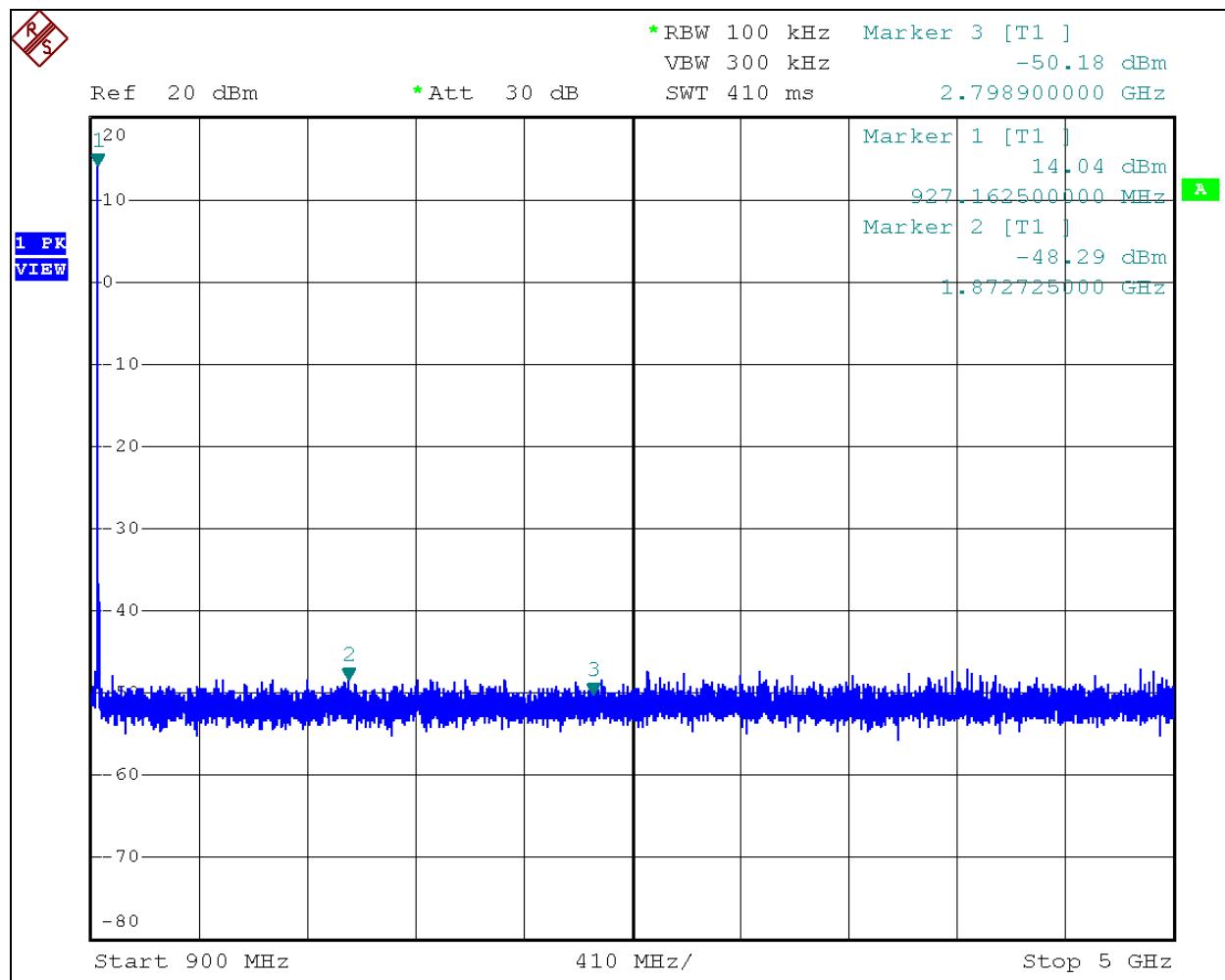
Plot 10.3.4: Conducted Spurious Emissions, TX Mode, 1 MHz to 1 GHz, Middle Channel

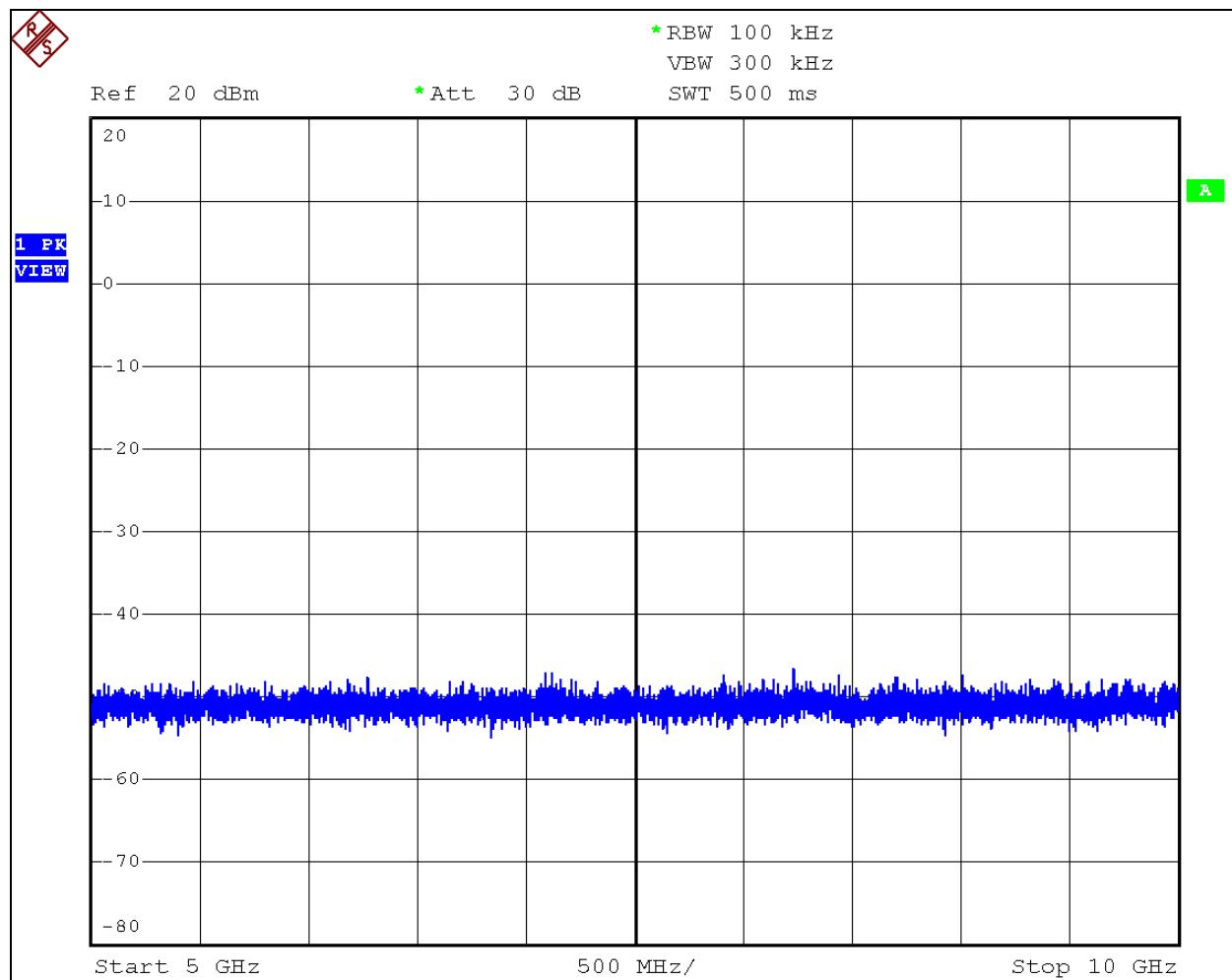
Plot 10.3.5: Conducted Spurious Emissions, TX Mode, 0.9 GHz to 5 GHz, Middle Channel



Plot 10.3.6: Conducted Spurious Emissions, TX Mode, 5 GHz to 10 GHz, Middle Channel

Plot 10.3.7: Conducted Spurious Emissions, TX Mode, 1 MHz to 1 GHz, High Channel

Plot 10.3.8: Conducted Spurious Emissions, TX Mode, 0.9 GHz to 5 GHz, High Channel

Plot 10.3.9: Conducted Spurious Emissions, TX Mode, 5 GHz to 10 GHz, High Channel

11.0 Conducted Emissions, Mains

11.1 Test Procedure

The EUT was placed on a non-conductive table 0.8 meters above the floor and 0.4 meters from the conductive reference plane (wall). The EUT is powered through a line impedance stabilization network (LISN) that provides a measurement tap and a termination approximating 50 Ohms in the measurement range of 150 kHz to 30 MHz. A spectrum analyzer is connected, in turn, to each mains line measurement tap and software is employed to measure the radio frequency noise generated by the EUT.

11.2 Test Criteria

| 47 CFR (USA) // IC (Canada) | | |
|------------------------------|---------------------------|------------|
| Section Reference | Parameter | Date(s) |
| 15.207 // RSS-210 Issue 8 | Mains conducted emissions | 2014-05-20 |

11.3 Test Results

Note that the power supply employed had no additional or built-in EMI filtering.

The EUT satisfied the criteria. Tabular and plotted measurements appear on the following pages.

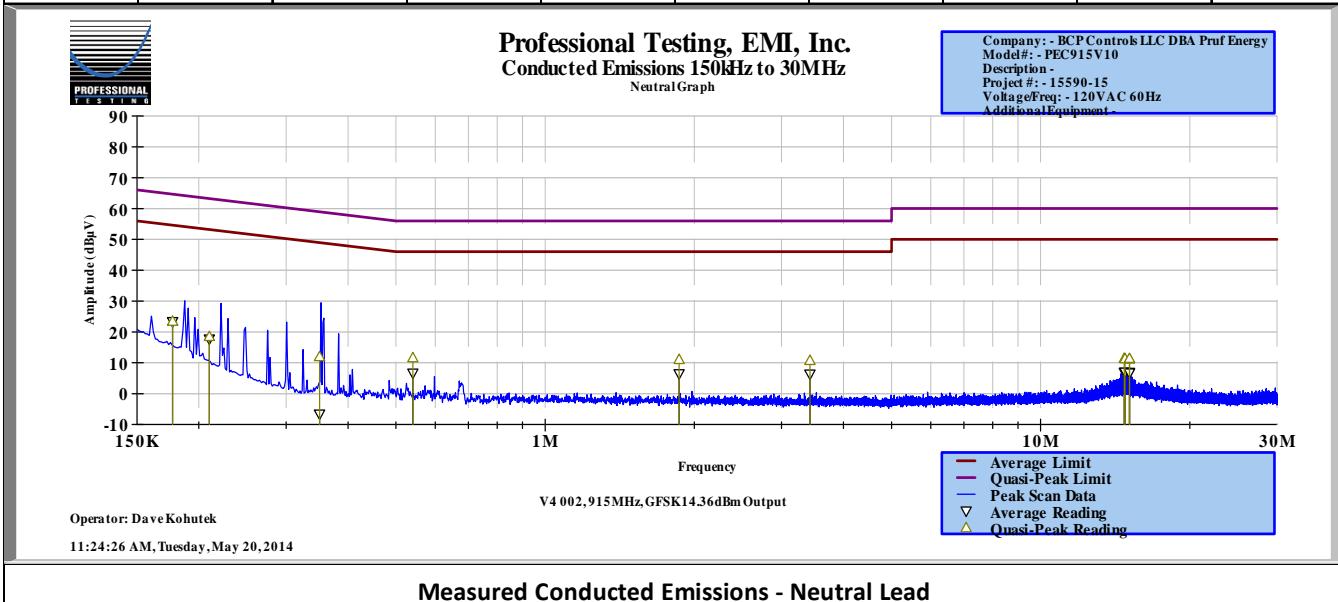
Professional Testing, EMI, Inc.

| | | | |
|---------------------|--|------------------|----------------|
| Test Method: | ANSI C63.4-2009: Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (incorporated by reference, see §15.38). | | |
| In accordance with: | FCC Part 15.207 - Code of Federal Regulations Part 47, Subpart C - Intentional Radiators, Conducted Emissions Limits | | |
| Section: | 15.207 | | |
| Test Date(s): | 5/20/2014 | EUT Serial #: | V4 002 |
| Customer: | BCP Controls LLC DBA Pruf Energy | EUT Part #: | None |
| Project Number: | 15590-15 | Test Technician: | Dave Kohutek |
| Purchase Order #: | PTI_014_001 | Supervisor: | Rob McCollough |
| Equip. Under Test: | PEC915V10 | Witness' Name: | None |

Conducted Emissions Test Results Data Sheet - Neutral Lead

Page: 1 of 2

| EUT Line Voltage: | | | 120 | VAC | EUT Line Frequency: | | | 60 | Hz |
|--------------------------|------------------------------------|--|--|---------------------------------|----------------------------------|---------------------------------------|-------------------------------------|------------------------------|-------------------------------|
| Frequency Measured (MHz) | Peak Detector Reading (dB μ V) | Quasi-peak Detector Reading (dB μ V) | Quasi-peak Detector Limit (dB μ V) | Quasi-peak Detector Margin (dB) | Quasi-peak Detector Test Results | Average Detector Reading (dB μ V) | Average Detector Limit (dB μ V) | Average Detector Margin (dB) | Average Detector Test Results |
| 0.17705 | 34.8 | 23.4 | 64.6 | -41.2 | PASS | 23.4 | 54.6 | -31.3 | PASS |
| 0.21 | 31.9 | 18.5 | 63.2 | -44.7 | PASS | 17.7 | 53.2 | -35.5 | PASS |
| 0.35034 | 28.3 | 11.9 | 59 | -47 | PASS | -6.6 | 49 | -55.6 | PASS |
| 0.54077 | 20.4 | 11.6 | 56 | -44.4 | PASS | 6.6 | 46 | -39.4 | PASS |
| 1.8631 | 18.2 | 11 | 56 | -45 | PASS | 6.5 | 46 | -39.5 | PASS |
| 3.4228 | 19.1 | 10.7 | 56 | -45.3 | PASS | 6.3 | 46 | -39.7 | PASS |
| 14.7477 | 18.9 | 11.4 | 60 | -48.6 | PASS | 6.9 | 50 | -43.1 | PASS |
| 14.8014 | 19.4 | 11.3 | 60 | -48.7 | PASS | 7 | 50 | -43 | PASS |
| 15.1112 | 18.4 | 11.2 | 60 | -48.8 | PASS | 6.9 | 50 | -43.1 | PASS |
| 15.1144 | 19.1 | 11.4 | 60 | -48.6 | PASS | 6.7 | 50 | -43.3 | PASS |



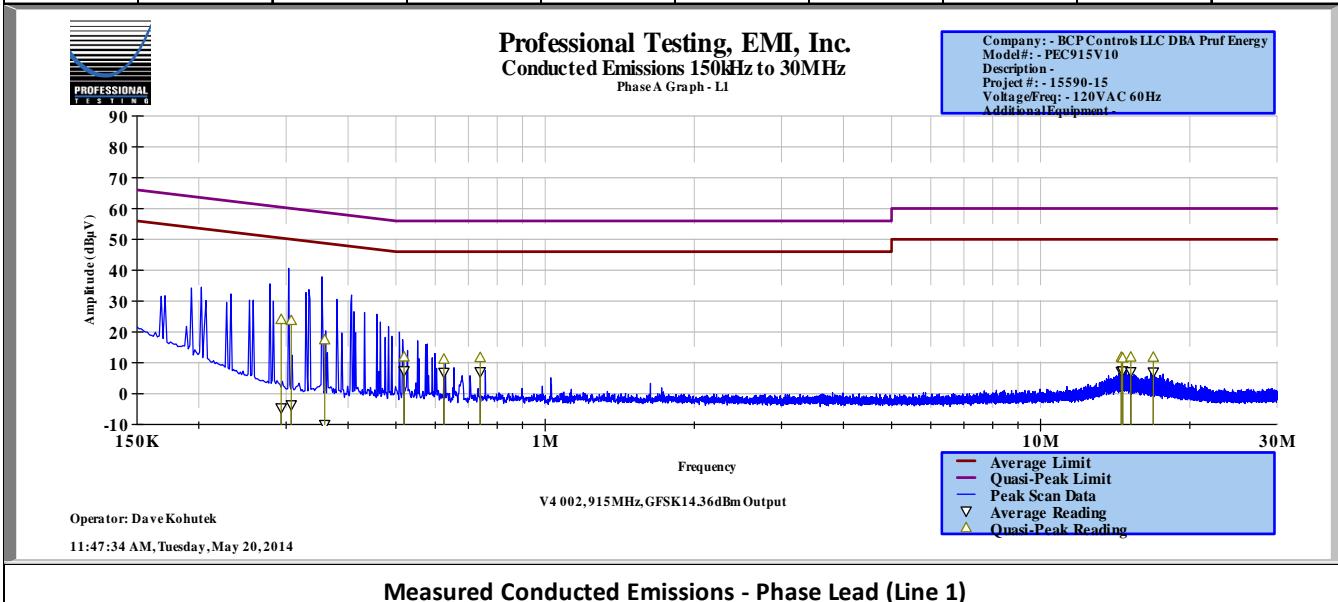
Professional Testing, EMI, Inc.

| | | | |
|----------------------------|--|-------------------------|----------------|
| Test Method: | ANSI C63.4-2009: Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (incorporated by reference, see §15.38). | | |
| In accordance with: | FCC Part 15.207 - Code of Federal Regulations Part 47, Subpart C - Intentional Radiators, Conducted Emissions Limits | | |
| Section: | 15.207 | | |
| Test Date(s): | 5/20/2014 | EUT Serial #: | V4 002 |
| Customer: | BCP Controls LLC DBA Pruf Energy | EUT Part #: | None |
| Project Number: | 15590-15 | Test Technician: | Dave Kohutek |
| Purchase Order #: | PTI_014_001 | Supervisor: | Rob McCollough |
| Equip. Under Test: | PEC915V10 | Witness' Name: | None |

Conducted Emissions Test Results Data Sheet - Phase Lead (Line 1)

Page: 2 of 2

| EUT Line Voltage: | | | 120 | VAC | EUT Line Frequency: | | | 60 | Hz |
|--------------------------|------------------------------------|--|--|---------------------------------|----------------------------------|---------------------------------------|-------------------------------------|------------------------------|-------------------------------|
| Frequency Measured (MHz) | Peak Detector Reading (dB μ V) | Quasi-peak Detector Reading (dB μ V) | Quasi-peak Detector Limit (dB μ V) | Quasi-peak Detector Margin (dB) | Quasi-peak Detector Test Results | Average Detector Reading (dB μ V) | Average Detector Limit (dB μ V) | Average Detector Margin (dB) | Average Detector Test Results |
| 0.29315 | 38.5 | 24 | 60.4 | -36.4 | PASS | -4.6 | 50.4 | -55 | PASS |
| 0.30727 | 41.4 | 23.7 | 60 | -36.4 | PASS | -3.6 | 50 | -53.7 | PASS |
| 0.35891 | 34 | 17.4 | 58.8 | -41.3 | PASS | -10 | 48.8 | -58.7 | PASS |
| 0.519 | 19.4 | 11.9 | 56 | -44.1 | PASS | 7.4 | 46 | -38.6 | PASS |
| 0.6246 | 19.4 | 11.1 | 56 | -44.9 | PASS | 6.9 | 46 | -39.1 | PASS |
| 0.7394 | 19.1 | 11.6 | 56 | -44.4 | PASS | 7.1 | 46 | -38.9 | PASS |
| 14.5514 | 18.9 | 11.8 | 60 | -48.2 | PASS | 7.2 | 50 | -42.8 | PASS |
| 14.6407 | 19.2 | 11.5 | 60 | -48.5 | PASS | 7.4 | 50 | -42.6 | PASS |
| 15.2062 | 20.6 | 11.8 | 60 | -48.2 | PASS | 7.1 | 50 | -42.9 | PASS |
| 16.877 | 20.1 | 11.8 | 60 | -48.2 | PASS | 7 | 50 | -43 | PASS |



Measured Conducted Emissions - Phase Lead (Line 1)

12.0 Antenna Construction Requirements

The design was investigated for meeting the antenna construction requirements of the applicable rules.

12.1 Procedure

A direct examination of the antenna construction is performed and compared to rule criteria that prevent wireless device antennas from being modified by end users in ways that would void their authorization to use the device. Note that this device is supplied as a modular unit.

12.2 Criteria

| 47 CFR (USA) // IC (Canada) | | |
|------------------------------------|----------------------|------------|
| Section Reference | Parameter | Date(s) |
| 15.203 // RSS-210 Issue 8, A2.9 | Antenna Construction | 2014-06-17 |

12.3 Results

| Antenna 1: Pulse (printed circuit antenna) | | | | | | | | | | | | | |
|---|-------------------------|-------------------------------------|-----------------------|-----------------------|-----------------------------|---------------|-----------------------------|-----------|-------------------------|-------------------------------------|----|----|------------|
| Antenna Manufacturer and Model | Specifications | | | | | | | | | | | | |
| Pulse Antenna USA 12220 World Trade Drive San Diego, CA 92128, USA | | | | | | | | | | | | | |
| W3538B0200 / W3538E0200/ W3538M0200 / W3538T0200 | | | | | | | | | | | | | |
| Typical free space performance, measured in test unit mechanics (position1.) | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th>Frequency Range [MHz]</th> <th>Max Gain [dBi]</th> <th>Efficiency [%] / [dB]</th> <th>Return loss min. [dB]</th> <th>Impedance [Ω]</th> <th>Operating Temperature [° C]</th> </tr> </thead> <tbody> <tr> <td>824 – 960</td> <td>2,8 (peak) 0,5 (min)</td> <td>70 / -1,6 (peak) 50 / -3,0 (min)</td> <td>-6</td> <td>50</td> <td>-40 to +85</td> </tr> </tbody> </table> | | Frequency Range [MHz] | Max Gain [dBi] | Efficiency [%] / [dB] | Return loss min. [dB] | Impedance [Ω] | Operating Temperature [° C] | 824 – 960 | 2,8 (peak) 0,5 (min) | 70 / -1,6 (peak) 50 / -3,0 (min) | -6 | 50 | -40 to +85 |
| Frequency Range [MHz] | Max Gain [dBi] | Efficiency [%] / [dB] | Return loss min. [dB] | Impedance [Ω] | Operating Temperature [° C] | | | | | | | | |
| 824 – 960 | 2,8 (peak) 0,5 (min) | 70 / -1,6 (peak) 50 / -3,0 (min) | -6 | 50 | -40 to +85 | | | | | | | | |

| Antenna 2: Helical (loaded wire antenna) | |
|---|---|
| Antenna Manufacturer and Model | Specifications |
| Pruf Energy Controls PEC Drawing Number 34915-HELI | Helical Style (inductive loaded quarter-wave) Gain: 0 dBi |
| |  Appearance: |

- Antennas 1 and 2 are not supplied together.
- Antenna 1 is kitted with 1 of 2 configurations of the product.
- Antenna 2 is kitted with 1 of 2 configurations of the product and is soldered to the module board.
- As a modular device, the final integrator is instructed not to substitute any other antenna.

The antenna designs above satisfy the requirements of the rules.

13.0 Equipment and Bandwidths

13.1 Equipment for Spurious Radiated Emissions 30 MHz to 12 GHz

| Professional Testing, EMI, Inc. | | | | | | | | |
|--|---|--------------------------|---|----------------|----------------------|--|--|--|
| Test Method: | ANSI C63.4-2003: "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz" (incorporated by reference, | | | | | | | |
| In accordance with: | FCC Part 15.209 - Code of Federal Regulations Part 47, Subpart C - Intentional Radiators, | | | | | | | |
| Section: | Radiated Emissions Limits | | | | | | | |
| Test Date(s): | 5/19/2014, 5/20/2014 | EUT Serial #: | V4 003 | | | | | |
| Customer: | BCP Controls LLC DBA Pruf Energy | EUT Part #: | None | | | | | |
| Project Number: | 15590-15 | Test Technician: | Dave Kohutek | | | | | |
| Purchase Order #: | PTI_014_001 | Supervisor: | Rob McCollough | | | | | |
| Equip. Under Test: | PEC915V10 | Witness' Name: | J.D. Holland | | | | | |
| Radiated Emissions Test Equipment List | | | | | | | | |
| Test Profile: | Radiated Emissions_Profile Version October 12, 2011 | | | | | | | |
| Asset # | Manufacturer | Model | Equipment Nomenclature | Serial Number | Calibration Due Date | | | |
| 1509A | Braden | N/A | TDK 10M Chamber, NSA < 1 GHz | DAC-012915-005 | 7/29/2014 | | | |
| 1890 | HP | 8447F | Preamp/Amp, 9kHz-1300MHz, 28/25dB | 3313A05298 | 1/22/2015 | | | |
| 1937 | Agilent | E4440A | Spectrum Analyzer, 3 Hz - 26.5 GHz | MY44303298 | 12/2/2015 | | | |
| 1926 | ETS-Lindgren | 3142D | Antenna, Biconilog, 26 MHz - 6 GHz | 00135454 | 7/29/2014 | | | |
| C027 | N/A | RG214 | Cable Coax, N-N, 25m | none | 9/26/2014 | | | |
| 1327 | EMCO | 1050 | Controller, Antenna Mast | none | N/A | | | |
| 0942 | EMCO | 11968D | Turntable, 4ft. | 9510-1835 | N/A | | | |
| 1969 | HP | 11713A | Attenuator/Switch Driver | 3748A04113 | N/A | | | |
| | | | | | | | | |
| 1509B | Braden | N/A | TDK 10M Chamber, VSWR > 1 GHz | DAC-012915-005 | 7/16/2014 | | | |
| 2004 | Miteq | AFS44-00101800-2S-10P-44 | Amplifier, 40dB, .1-18GHz | 0 | 11/19/2014 | | | |
| C030 | N/A | 0 | Cable Coax, N-N, 30m | none | 9/26/2014 | | | |
| 1780 | ETS-Lindgren | 3117 | Antenna, Double Ridged Guide Horn, 1 - 18 GHz | 00110313 | 1/21/2015 | | | |
| 1325 | EMCO | 1050 | Controller, Antenna Mast | 9003-1461 | N/A | | | |

13.2 Equipment for Mains Conducted Emissions

| Professional Testing, EMI, Inc. | | | | | | | | | |
|--|---|----------|---------------------------------|----------------|----------------------|--|--|--|--|
| Test Method: | ANSI C63.4-2009: Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (incorporated by reference, | | | | | | | | |
| | FCC Part 15.207 - Code of Federal Regulations Part 47, Subpart C - Intentional Radiators, | | | | | | | | |
| In accordance with: | Conducted Emissions Limits | | | | | | | | |
| Section: | 15.207 | | | | | | | | |
| Test Date(s): | 5/20/2014 | | EUT Serial #: | V4 002 | | | | | |
| Customer: | BCP Controls LLC DBA Pruf Energy | | EUT Part #: | None | | | | | |
| Project Number: | 15590-15 | | Test Technician: | Dave Kohutek | | | | | |
| Purchase Order #: | PTI_014_001 | | Supervisor: | Rob McCollough | | | | | |
| Equip. Under Test: | PEC915V10 | | Witness' Name: | None | | | | | |
| Conducted Emissions Test Equipment List | | | | | | | | | |
| Test! Software Version: 4.1.A.0, April 14, 2009, 11:01:00PM | | | | | | | | | |
| Test Profile: Profile#: CE_2010.til, dated December 16, 2010 | | | | | | | | | |
| Asset # | Manufacturer | Model | Equipment Nomenclature | Serial Number | Calibration Due Date | | | | |
| 1842 | HP | 8568B | Spectrum Analyzer | 2732A03633 | 6/17/2014 | | | | |
| 0045 | HP | 85662A | Spec Anal Dsply for AN1842 | 2816A16413 | N/A | | | | |
| 0990 | HP | 85685A | RF Preselector | 3010A01119 | 8/29/2014 | | | | |
| 1281 | HP | 85650A | Quasi Peak Adapter | 2043A00063 | 6/5/2014 | | | | |
| 1173 | PTI | 100k HPF | Filter, High Pass, 100kHz | none | 10/30/2014 | | | | |
| 1086 | PTI | PTI-ALF2 | Attenuator Limiter Filter | none | 5/7/2015 | | | | |
| C107 | Pomona | RG-223 | Cable 9 ft BNC RG-223 (black) | none | 7/10/2014 | | | | |
| C108 | Pomona | RG-223 | Cable 5.5 ft BNC RG-223 (black) | none | 7/10/2014 | | | | |
| 0939 | EMCO | 3825/2 | LISN, 10kHz-100MHz | 9603-2521 | 10/31/2014 | | | | |
| 1668 | B&K Precision | 1610 | Power Supply 30VDC 1 Amp | 145-00069 | N/A | | | | |

13.3 Equipment for Timings, Bandwidth, and Conducted Spurious Measurements

| Asset # | Manufacturer | Model # | Description | Calibration Due |
|---------|-----------------|---------|-------------------|-----------------|
| ALN-077 | Rohde & Schwarz | FSP-30 | Spectrum Analyzer | 2015-01-29 |

13.4 Measurement Bandwidths, Radiated Emissions

| Radiated Emissions Spectrum Analyzer Bandwidth and Measurement Time - Peak Scan | | | | |
|---|---------------------------|----------------------|-----------------------|----------------------------|
| Frequency Band Start (MHz) | Frequency Band Stop (MHz) | 6 dB Bandwidth (kHz) | Number of Ranges Used | Measurement Time per Range |
| 0.009 | 0.15 | 0.3 | 2 | Multiple Sweeps |
| 0.15 | 30 | 9 | 6 | Multiple Sweeps |
| 30 | 1000 | 120 | 2 | Multiple 800 mS Sweeps |
| 1000 | 6000 | 1000 | 2 | Multiple Sweeps |
| 6000 | 18000 | 300 | 2 | Multiple Sweeps |

*Notes:

1. The settings above are specifically calculated for the E4440A series of spectrum analyzers, which have 8,000 data points per range.
2. The measurement receiver resolution bandwidth setting was 300 Hz for quasi-peak measurements from 9-150 kHz.
3. The measurement receiver resolution bandwidth setting was 9 kHz for quasi-peak measurements from 0.15-30 MHz.
4. The measurement receiver resolution bandwidth setting was 120 kHz for quasi-peak measurements from 30-1000 MHz.
5. The measurement receiver resolution bandwidth setting was 1 MHz for average measurements from 1-18 GHz.

13.5 Measurement Bandwidths, Mains Conducted Emissions

| Conducted Emissions Spectrum Analyzer Bandwidth and Measurement Time | | | | |
|--|---------------------------|----------------------|-----------------------|----------------------------|
| Frequency Band Start (MHz) | Frequency Band Stop (MHz) | 6 dB Bandwidth (kHz) | Number of Ranges Used | Measurement Time per Range |
| 0.01 | 0.15 | 0.3 | 7 | Five 1 second sweeps |
| 0.15 | 30 | 9 | 20 | Five 1 second sweeps |

*Notes:

1. The settings above are specifically calculated for the HP856X series of spectrum analyzers, which have 1,000 data points per range.
2. The measurement receiver resolution bandwidth setting was 300 Hz for quasi-peak measurements from 10-150 kHz.
3. The measurement receiver resolution bandwidth setting was 9 kHz for quasi-peak measurements from 0.15-30 MHz.

Appendix: Policy, Rationale, and Evaluation of EMC Measurement Uncertainty

All uncertainty calculations, estimates and expressions thereof shall be in accordance with NIST policy. Since PTI operates in accordance with NIST (NVLAP) Handbook 150-11: 2007, all instrumentation having an effect on the accuracy or validity of tests shall be periodically calibrated or verified traceable to national standards by a competent calibration laboratory. The certificates of calibration or verification on this instrumentation shall include estimates of uncertainty as required by NIST Handbook 150-11.

1. Rationale and Summary of Expanded Uncertainty.

Each piece of instrumentation at PTI that is used in making measurements for determining conformance to a standard (or limit), shall be assessed to evaluate its contribution to the overall uncertainty of the measurement in which it is used. The assessment of each item will be based on either a type A evaluation or a type B evaluation. Most of the evaluations will be type B, since they will be based on the manufacturer's statements or specifications of the calibration tolerances, or uncertainty will be stated along with a brief rationale for the type of evaluation and the resulting stated uncertainties.

The individual uncertainties included in the combined standard uncertainty for a specific test result will depend on the configuration in which the item of instrumentation is used. The combination will always be based on the law of propagation of uncertainty. Any systematic effects will be accommodated by including their uncertainties, in the calculation of the combined standard uncertainty; except that if the direction and amount of the systematic effect cannot be determined and separated from its uncertainty, the whole effect will be treated as uncertainty and combined along with the other elements of the test setup.

Type A evaluations of standard uncertainty will usually be based on calculating the standard deviation of the mean of a series of independent observations, but may be based on a least-squares curve fit or the analysis of variance for unusual situations. Type B evaluations of standard uncertainty will usually be based on manufacturer's specifications, data provided in calibration reports, and experience. The type of probability distribution used (normal, rectangular, a priori, or u-shaped) will be stated for each Type B evaluation.

In the evaluation of the uncertainty of each type of measurement, the uncertainty caused by the operator will be estimated. One notable operator contribution to measurement uncertainty is the manipulation of cables to maximize the measured values of radiated emissions. The operator contribution to measurement uncertainty is evaluated by having several operators independently repeat the same test. This results in a Type A evaluation of operator-contributed measurement uncertainty.

A summary of the expanded uncertainties of PTI measurements is shown as Table 1. These are the worst-case uncertainties considering all operative influence factors.

Table 1: Summary of Measurement Uncertainties for Site 45

| Type of Measurement | Frequency Range | Meas. Dist. | Expanded Uncertainty U, dB (k=2) |
|-----------------------------|-------------------|-------------|----------------------------------|
| Mains Conducted Emissions | 150 kHz to 30 MHz | N/A | 2.9 |
| Telecom Conducted Emissions | 150 kHz to 30 MHz | N/A | 2.8 |
| Radiated Emissions | 30 to 1,000 MHz | 10 m | 4.8 |
| | 1 to 18 GHz | 3 m | 5.7 |

End of Report

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