



Engineering Solutions & Electromagnetic Compatibility Services

**FCC Part 15.249 Test Data**

**EUT: 908.42 MHz Panel Translator Zwave Module 56-0065-00 RevA02**

**for**

**Resolution Engineering, Inc.  
1402 Heggen Street  
Hudson, WI 54016  
Contact: Josh Gathje**

**Testing Conducted By  
Rhein Tech Laboratories, Inc.  
360 Herndon Parkway, Suite 1400  
Herndon, VA 20170**

**RTL Test Engineer: Dan Baltzell**

**RTL Project/Report Number: 2014214**

**December 17, 2014**

This report may not be reproduced, except in full, without the full written approval of Rhein Tech Laboratories, Inc. and Resolution Engineering. Test results relate only to the item tested.

These tests are accredited and meet the requirements of ISO/IEC 17025 as verified by ANSI-ASQ National Accreditation Board/ACLASS. Refer to certificate and scope of accreditation AT-1445.

## Testing Represented in Report

### 15.249

The data and limits presented in this report are for radiated emissions per 15.249 which references 15.35(b), and peak limiting for restricted bands per 15.209(e), which again references 15.35(b)(2), as procured by Resolution Engineering. No average data is presented in this report. Data is also presented for spurious, non-harmonic radiated emissions per 15.209.

### 15.207

Unintentional digital emissions, mains conducted.

The Equipment Under Test (EUT) was the **908.42 MHz Panel Translator Zwave Module 56-0065-00 RevA02 (RTL Bar Code 21546) with AC Adapter (RTL Bar Code 21547).**

### 15.249 Radiated Emissions Test Data – FCC Limits/ 3m Distance

| Emission Frequency (MHz) | Test Detector | Analyzer Reading (dBuV) | Site Correction Factor (dB/m) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------------|---------------|-------------------------|-------------------------------|-------------------------|----------------|-------------|
| 908.420                  | Quasi-Peak    | 96.5                    | -4.1                          | 92.4                    | 94.0           | -1.6        |
| 1816.840                 | Peak          | 24.4                    | 30.1                          | 54.5                    | 74.0           | -19.5       |
| 2725.260                 | Peak          | 63.3                    | -9.1                          | 54.2                    | 74.0           | -19.8       |
| 3633.680                 | Peak          | 55.5                    | -5.5                          | 50.0                    | 74.0           | -24.0       |
| 4542.100                 | Peak          | 54.9                    | -1.4                          | 53.5                    | 74.0           | -20.5       |
| 5450.520                 | Peak          | 55.3                    | -0.8                          | 54.5                    | 74.0           | -19.5       |
| 6358.940                 | Peak          | 53.6                    | 0.0                           | 53.6                    | 74.0           | -20.4       |
| 7267.360                 | Peak          | 52.5                    | 0.9                           | 53.4                    | 74.0           | -20.6       |
| 8175.780                 | Peak          | 56.7                    | 5.9                           | 62.6                    | 74.0           | -11.4       |
| 9084.200                 | Peak          | 52.9                    | 6.4                           | 59.3                    | 74.0           | -14.7       |

### FCC/IC Cross Reference

|              |                      |
|--------------|----------------------|
| FCC 15.249   | RSS-210 Issue 8 A2.9 |
| FCC 15.35(b) | RSS-Gen Issue 4 8.1  |
| FCC 15.205   | RSS-Gen Issue 4 8.10 |
| FCC 15.209   | RSS-Gen Issue 4 8.9  |

### 15.209 Radiated Emissions Unintentional Test Data – FCC Limits/ 3m Distance

| Temperature: 38°F Humidity: 40% |               |                        |                    |                         |                               |                         |                |             |           |
|---------------------------------|---------------|------------------------|--------------------|-------------------------|-------------------------------|-------------------------|----------------|-------------|-----------|
| Emission Frequency (MHz)        | Test Detector | Antenna Polarity (H/V) | Antenna Height (m) | Analyzer Reading (dBuV) | Site Correction Factor (dB/m) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Pass/Fail |
| 67.822                          | Qp            | H                      | 1.0                | 36.6                    | -25.3                         | 11.3                    | 40.0           | -28.7       | Pass      |
| 96.818                          | Qp            | H                      | 1.0                | 35.1                    | -21.4                         | 13.7                    | 43.5           | -29.8       | Pass      |
| 103.690                         | Qp            | V                      | 1.0                | 44.9                    | -20.7                         | 24.2                    | 43.5           | -19.3       | Pass      |
| 106.512                         | Qp            | H                      | 1.0                | 57.7                    | -20.5                         | 37.2                    | 43.5           | -6.3        | Pass      |
| 107.199                         | Qp            | V                      | 1.0                | 46.5                    | -20.5                         | 26.0                    | 43.5           | -17.5       | Pass      |
| 108.182                         | Qp            | V                      | 1.0                | 32.3                    | -20.5                         | 11.8                    | 43.5           | -31.7       | Pass      |
| 913.690                         | Qp            | V                      | 1.0                | 32.7                    | -5.9                          | 26.8                    | 46.0           | -19.2       | Pass      |
| 915.590                         | Qp            | V                      | 1.0                | 31.9                    | -5.9                          | 26.0                    | 46.0           | -20.0       | Pass      |

#### Test Procedure

Radiated fundamental and spurious emissions were tested at three meters. The EUT was tested in the three orthogonal planes with the receive antenna in both polarities. The emissions were maximized per ANSI C63.4:2003 8.3.1.2; that is, the measurement antenna height was varied between 1 and 4 m, and the EUT was rotated through 360° on a rotating turntable until the maximum emissions were found. Both horizontal and vertical measurement antenna polarizations were used. A resolution bandwidth of 100 kHz was used for frequencies less than 1000 MHz, and a resolution bandwidth of 1 MHz was used for frequencies greater than or equal to 1000 MHz. The video bandwidth was set to a value at least three times greater than the resolution bandwidth.

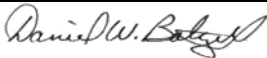
#### EUT Disposition

The EUT was adapted to continuously transmit for testing purposes.

### Radiated Emissions Test Equipment

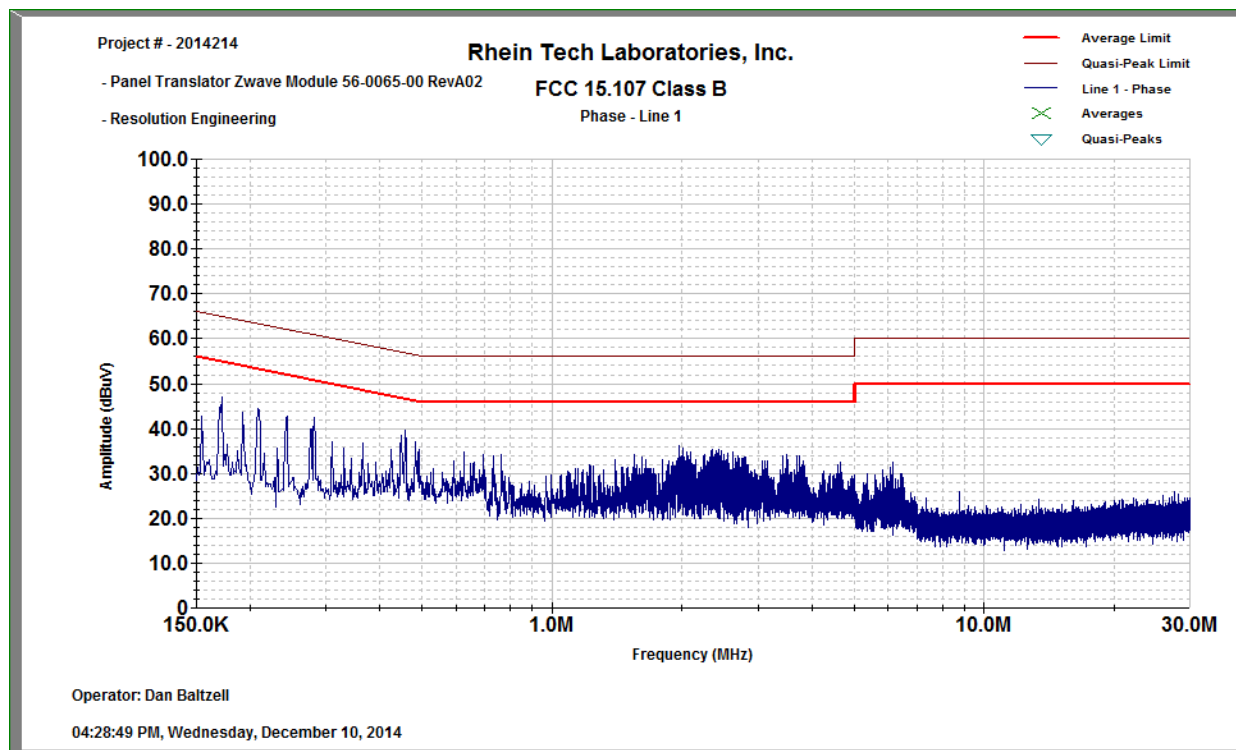
| RTL Bar Code | Manufacturer                  | Model                     | Part                              | Serial Number | Calibration Due Date |
|--------------|-------------------------------|---------------------------|-----------------------------------|---------------|----------------------|
| 901581       | Rohde & Schwarz               | FSU                       | Spectrum Analyzer                 | 1166.1660.50  | 11/13/15             |
| 900791       | Chase                         | CBL6111B                  | Bilog antenna (30 MHz – 2000 MHz) | N/A           | 6/11/17              |
| 900932       | Hewlett Packard               | 8449B OPT H02             | Preamplifier 1-26.5 GHz           | 3008A00505    | 9/5/15               |
| 900772       | EMCO                          | 3161-02                   | Horn Antenna (2.0-4.0 GHz)        | 9804-1044     | 4/20/15              |
| 900321       | EMCO                          | 3161-03                   | Horn Antenna (4.0-8.0 GHz)        | 9508-1020     | 4/20/17              |
| 900323       | EMCO                          | 3160-07                   | Horn Antenna (8.0-12.4 GHz)       | 9605-1054     | 4/20/17              |
| 900356       | EMCO                          | 3160-08                   | Horn Antenna (12.4-18.0 GHz)      | 9607-1044     | 4/20/17              |
| 901218       | EMCO                          | RA42-K-F-43_C             | Horn Antenna (18.0-26.5 GHz)      | 960281-003    | 4/20/17              |
| N/A          | Rhein Tech Laboratories, Inc. | Automated Emission Tester | Emissions Testing Software        | Rev. 14.0.2   | N/A                  |
| 901592       | Insulated Wire Inc.           | KPS-1503-3600-KPR         | SMK RF Cables 20'                 | NA            | 9/3/15               |
| 901593       | Insulated Wire Inc.           | KPS-1503-360-KPR          | SMK RF Cables 36"                 | NA            | 9/3/15               |
| 900905       | Rhein Tech Laboratories, Inc. | PR-1040                   | Amplifier (20 MHz-2 GHz)          | 900905        | 9/5/15               |

### Test Personnel:

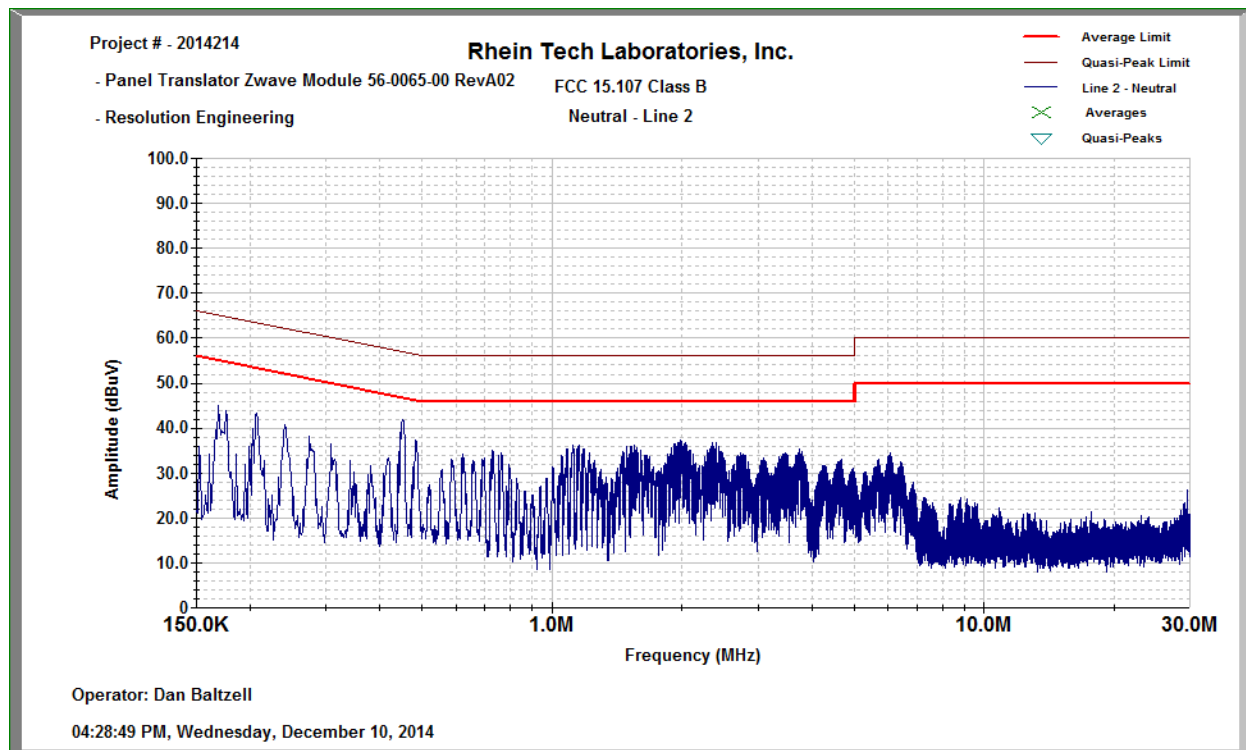
|               |                                                                                     |                          |
|---------------|-------------------------------------------------------------------------------------|--------------------------|
| Dan Baltzell  |  | December 10-11, 17, 2014 |
| Test Engineer | Signature                                                                           | Date Of Test             |

## 15.207 Conducted Line Emissions Test Data – FCC Limits

### Phase



## Neutral



**Result: Pass**

### **Test Procedure**

The power line conducted emission measurements were performed in a Series 81 type shielded enclosure manufactured by Rayproof. The EUT was placed on a wooden table. Power was fed to the EUT through a 50-ohm/50 microhenry LISN. The 50-ohm output of the EUT LISN was connected to the spectrum analyzer input through a Solar 100 kHz high-pass filter. The filter is used to prevent overload of the spectrum analyzer from noise below 100 kHz. Conducted emission levels were measured on each current-carrying line with the spectrum analyzer operating in the CISPR quasi-peak mode (or peak mode if applicable). The analyzer's 6 dB resolution bandwidth was set to 9 kHz. The video bandwidth was set to a value at least three times greater than the resolution bandwidth. Average measurements are performed in linear mode using a 9 kHz resolution bandwidth and a 1 Hz video bandwidth. The frequency spectrum was scanned from 150 kHz to 30 MHz.

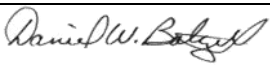
### **EUT Disposition**

The EUT was adapted to continuously transmit for testing purposes.

### **Conducted Line Emissions Test Equipment**

| RTL Asset # | Manufacturer      | Model | Part Type         | Serial Number | Calibration Due Date |
|-------------|-------------------|-------|-------------------|---------------|----------------------|
| 901581      | Rohde & Schwarz   | FSU   | Spectrum Analyzer | 1166.1660.50  | 11/13/15             |
| 901083      | AFJ International | LS16  | 16A LISN          | 16010020080   | 8/27/15              |

### **Test Personnel:**

|               |                                                                                     |                   |
|---------------|-------------------------------------------------------------------------------------|-------------------|
| Dan Baltzell  |  | December 11, 2014 |
| Test Engineer | Signature                                                                           | Date Of Test      |

## Test Configuration Photographs

### Radiated Emissions





**Conducted Emissions**

