



Engineering Solutions & Electromagnetic Compatibility Services

FCC 15.231 Test Data

for

Model: 56-0042-01 WIRELESS SIREN

319.5 MHz

(RTL barcode: 020232)

for

Resolution Engineering

RTL Project Number 2011177

Test Engineer: Jon Wilson

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.

Description of testing presented in this test report

The data and limits presented in this report are for peak emissions limiting per 15.231(b)(2) 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.

Radiated Emissions Test Data – FCC Limits / 3m Distance

Mode: Antenna - DIP 1 On

Emission Frequency (MHz)	Test Detector	Antenna Polarity (H/V)	Analyzer Reading (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pass/Fail
319.510	Peak	H	63.2	26.4	89.6	95.9	-6.3	Pass
639.020	Peak	H	69.6	-5.2	64.4	75.9	-11.5	Pass
958.520	Peak	V	53.7	-1.8	51.9	75.9	-24.0	Pass
1278.025	Peak	H	66.1	3.0	69.1	74.0	-4.9	Pass
1597.535	Peak	H	54.4	6.7	61.1	74.0	-12.9	Pass
1917.045	Peak	H	48.6	11.7	60.3	75.9	-15.6	Pass
2236.661	Peak	H	49.5	-8.3	41.2	74.0	-32.8	Pass
2556.184	Peak	H	48.8	-9.1	39.7	75.9	-36.2	Pass
2875.707	Peak	V	59.9	-8.0	51.9	74.0	-22.1	Pass
3195.230	Peak	H	49.0	-6.8	42.2	75.9	-33.7	Pass

Mode: Antenna - DIP 2 On

Emission Frequency (MHz)	Test Detector	Antenna Polarity (H/V)	Analyzer Reading (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pass/Fail
319.505	Peak	H	64.6	26.4	91.0	95.9	-4.9	Pass
639.015	Peak	H	71.8	-5.2	66.6	75.9	-9.3	Pass
958.525	Peak	H	60.3	-1.8	58.5	75.9	-17.4	Pass
1278.008	Peak	V	67.6	3.0	70.6	74.0	-3.4	Pass
1597.533	Peak	V	55.0	6.7	61.7	74.0	-12.3	Pass
1917.027	Peak	V	48.3	11.7	60.0	75.9	-15.9	Pass
2236.661	Peak	H	48.3	-8.3	40.0	74.0	-34.0	Pass
2556.184	Peak	V	44.7	-9.1	35.6	75.9	-40.3	Pass
2875.707	Peak	H	50.1	-8.0	42.1	74.0	-31.9	Pass
3195.230	Peak	H	47.9	-6.8	41.1	75.9	-34.8	Pass

Test Procedure

Radiated emissions of the harmonics 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.

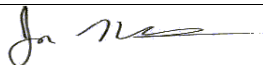
EUT Disposition

The EUT was adapted to continuously transmit for testing purposes.

Radiated Emissions Test Equipment

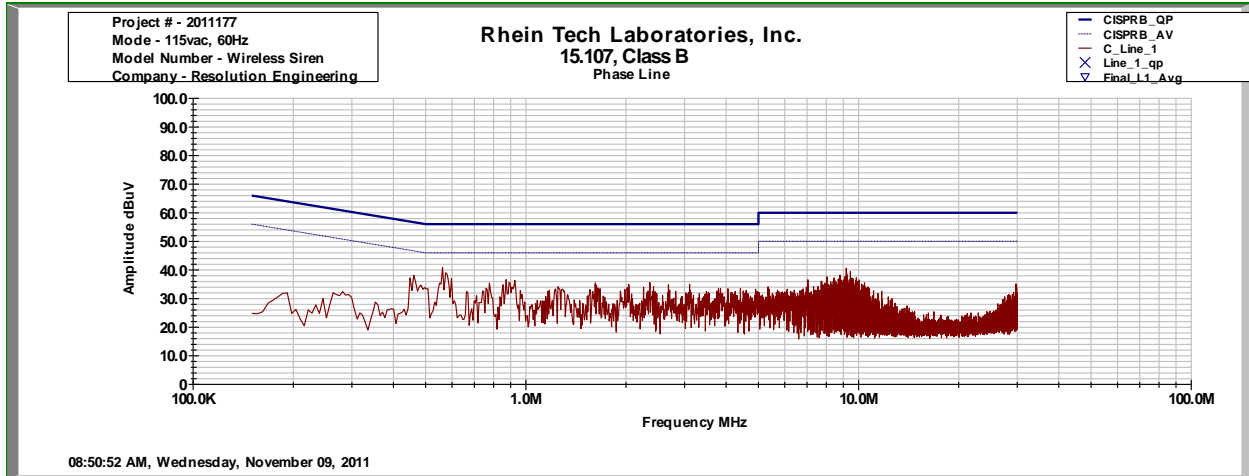
Part	Manufacturer	Model	Serial Number	RTL Bar Code	Calibration Due Date
Amplifier (20 MHz-2 GHz)	Rhein Tech Laboratories, Inc.	PR-1040	900905	900905	4/10/12
Bilog Periodic Antenna (25 MHz-2 GHz)	Schaffner Chase	CBL6112	2099	900791	12/12/12
EMI Receiver RF Section (9 KHz-6.5 GHz)	Hewlett Packard	85462A	3325A00159	900913	6/8/12
RF Filter Section (100 KHz-6.5 GHz)	Hewlett Packard	85460A	3330A00107	900914	6/8/12
Amplifier (1 GHz-26.0 GHz)	Rhein Tech Laboratories, Inc.	PR-1042	N/A	901364	7/14/12
Horn Antenna (2.0-4.0 GHz)	EMCO	3161-02	9804-1044	900772	6/13/12
Emissions Testing Software	Rhein Tech Laboratories, Inc.	Automated Emission Tester	Rev. 14.0.2	N/A	N/A

Test Personnel:

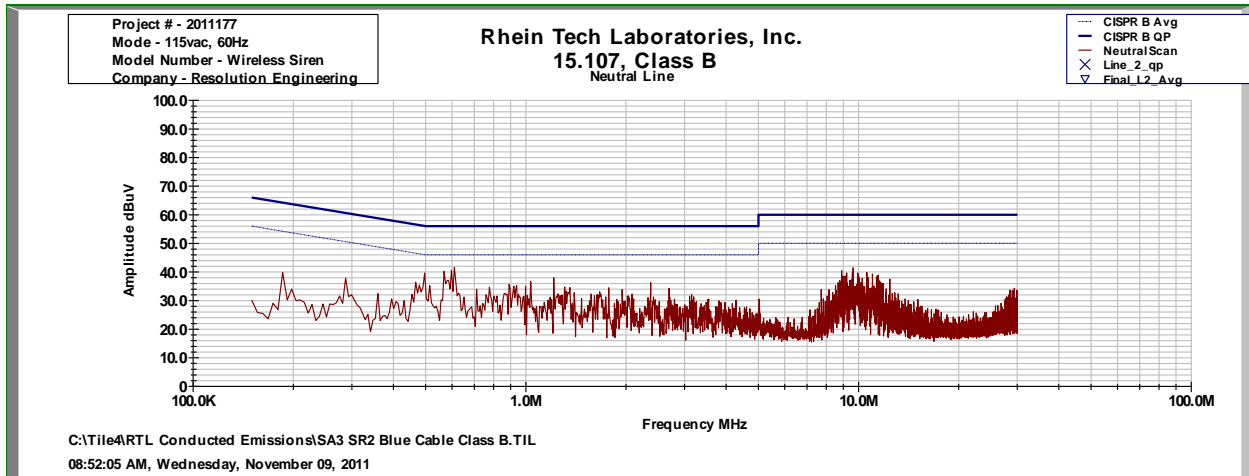
Jon Wilson		November 10, 2011
Test Engineer	Signature	Date of Test

Conducted Line Emissions Test Data – FCC Limits

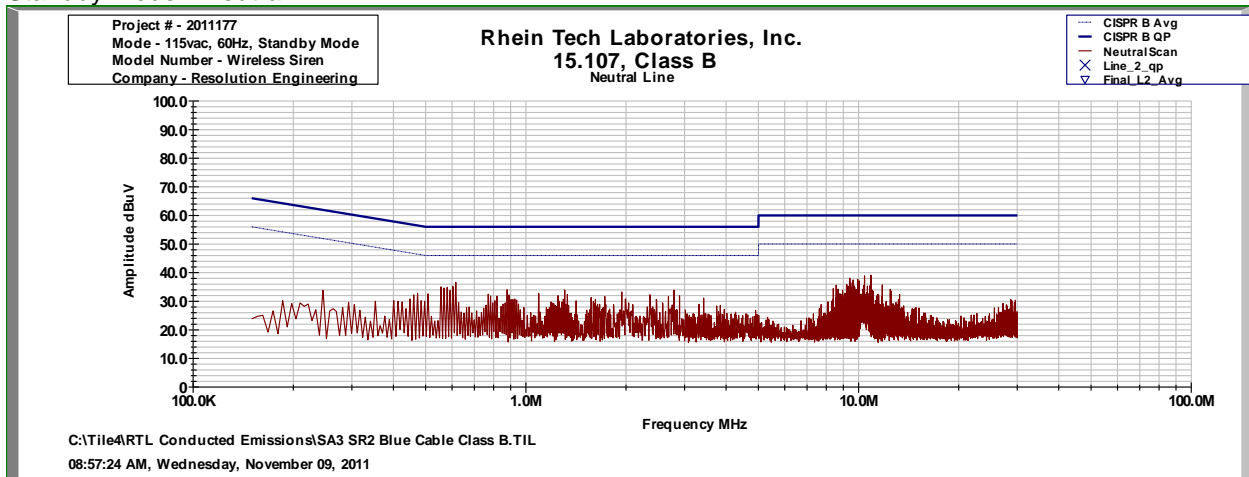
DIP 2 On - Phase



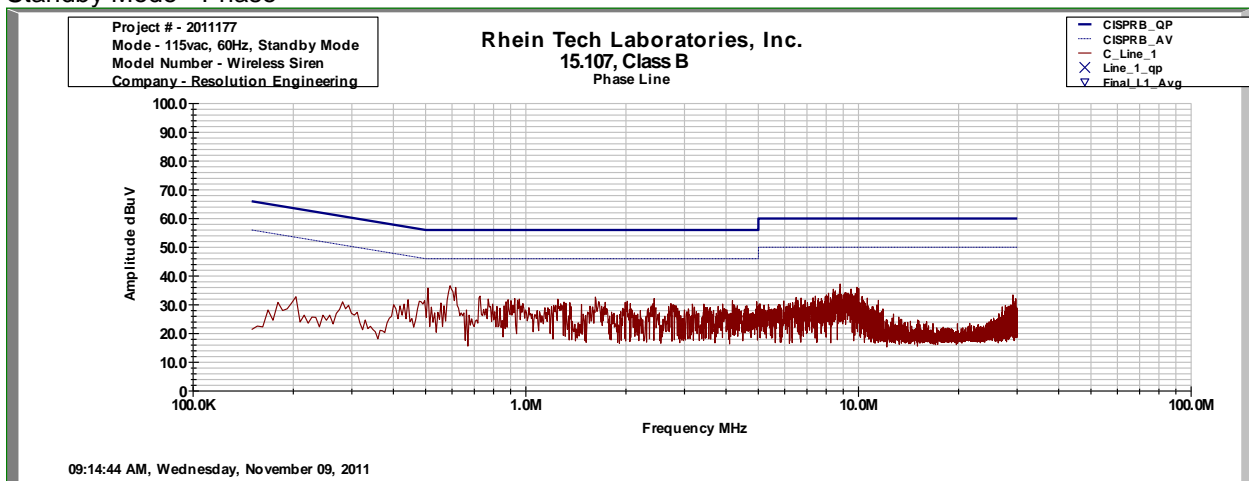
DIP 2 On - Neutral



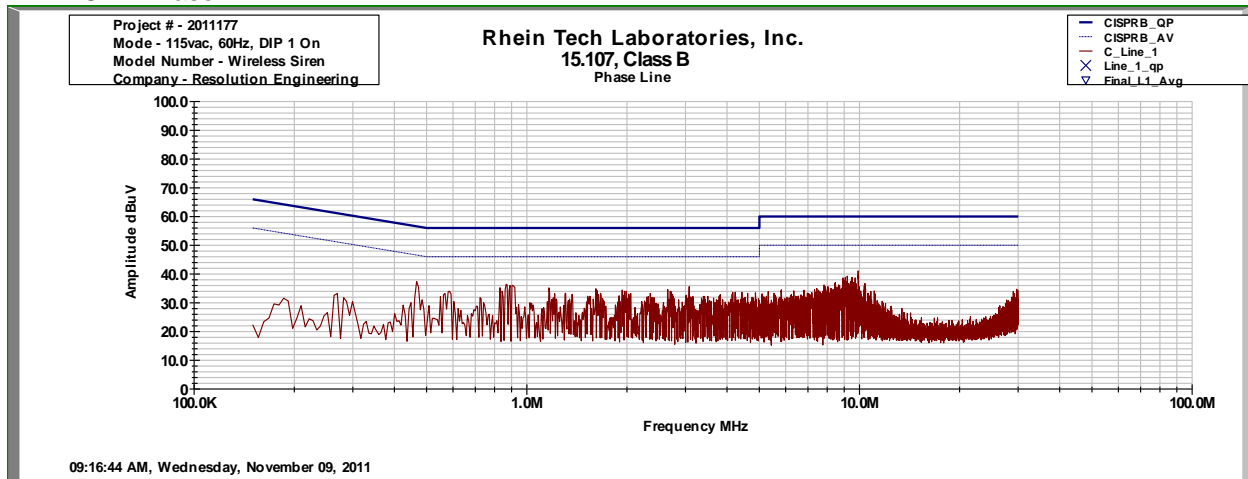
Standby Mode - Neutral



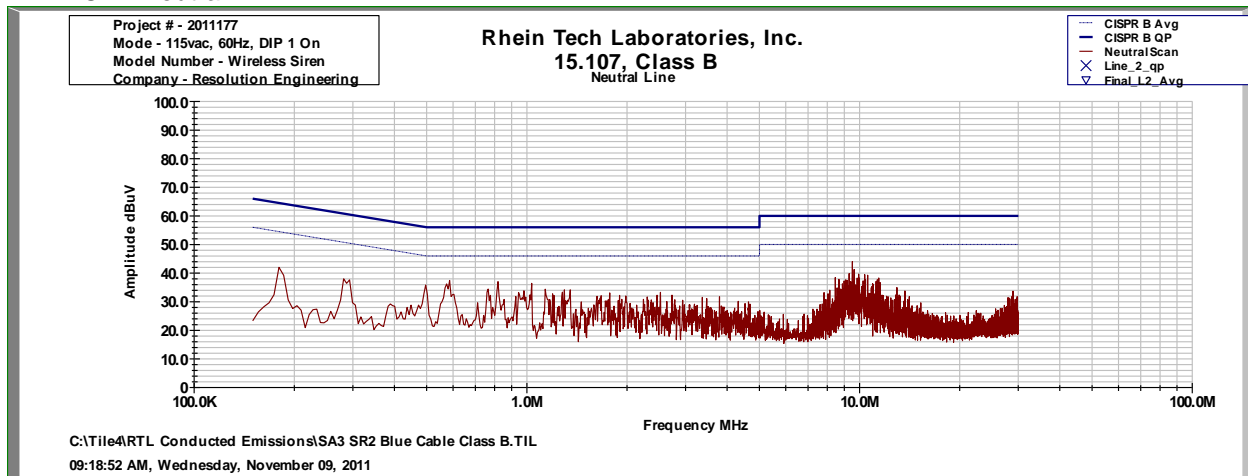
Standby Mode - Phase



DIP 1 On - Phase



DIP 2 On - 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.

Rhein Tech Laboratories, Inc.
 360 Herndon Parkway
 Suite 1400
 Herndon, VA 20170
<http://www.rheintech.com>

Client: Resolution Engineering
 Model: 56-0042-01 WIRELESS SIREN 433.9 MHz
 FCC ID: N/A
 Standards: FCC Part 2, 15
 Report #: 2011177

Conducted Line Emissions Test Equipment

Part Type	Manufacturer	Model	Serial Number	Barcode	Cal Due Date
Conducted Emissions					
Spectrum Analyzer (100 Hz-1.5GHz)	Hewlett Packard	8567A	2602A00160	900968	11/17/2012
Spectrum Analyzer Display Section	Hewlett Packard	85662A	2542A11239	900970	11/17/2012
Quasi-Peak Adapter	Hewlett Packard	85650A	2521A00743	900339	11/17/2012
Filter	Solar	8130	947306	900728	2/22/2012
16A LISN	AFJ International	LS16/110VAC	16010020080	901083	12/1/2012
Test software	Quantum Change	Tile!	4.0.A.8	N/A	N/A

Test Personnel:

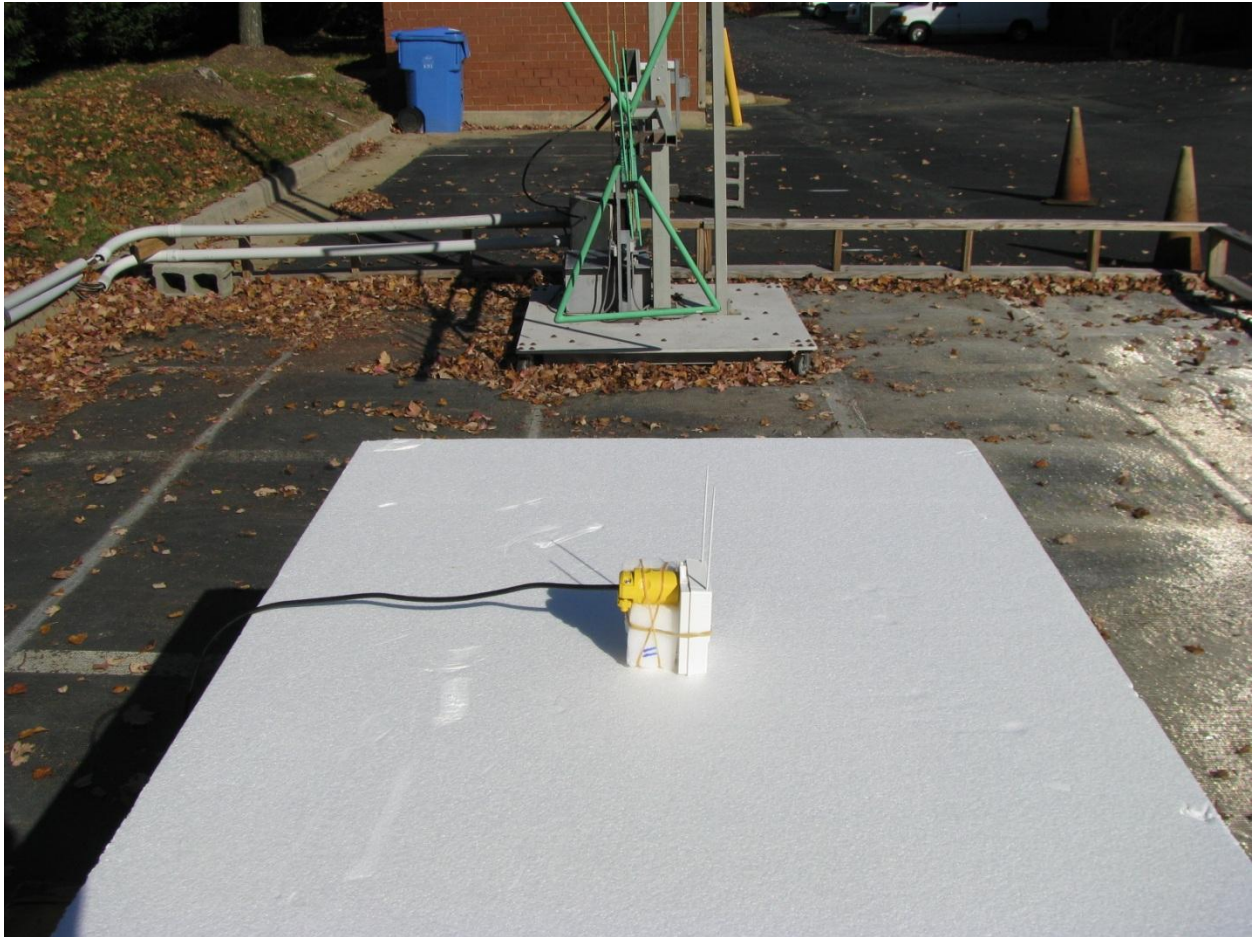
Jon Wilson		November 9, 2011
Test Engineer	Signature	Date Of Test

Test Configuration Photographs

Radiated Emissions - Front



Radiated Emissions - Rear



Conducted Emissions – Front



Conducted Emissions - Rear



Rhein Tech Laboratories, Inc.
360 Herndon Parkway
Suite 1400
Herndon, VA 20170
<http://www.rheintech.com>

Client: Resolution Engineering
Model: 56-0042-01 WIRELESS SIREN 433.9 MHz
FCC ID: N/A
Standards: FCC Part 2, 15
Report #: 2011177

EUT Photograph

