



Engineering Solutions & Electromagnetic Compatibility Services

FCC Part 15.231/IC RSS-210 Test Data

for

EUT: 55-0055-00 Module in Simon 319.5 MHz

for

**Resolution Engineering, Inc.
226 Locust Street, Suite 4
Hudson, WI 54016
Contact: Josh Gathje**

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

Test Engineer: Jon Wilson

Project Number 2013069

March 22, 2013

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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

15.207

Mains conducted.

15.231

The data and limits presented in this report are for radiated emissions 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. The Equipment Under Test (EUT) was the 319.5 MHz 55-0055-00 module (RTL Bar Codes: EUT- 20870, host- 20845, power supply- 20846).

15.231 Radiated Emissions Test Data – FCC Limits / 3m Distance

Mode: EUT Antenna - Horizontal

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	V	62.2	25.8	88.0	95.9	-7.9	Pass
639.010	Peak	H	64.4	-9.1	55.3	75.9	-20.6	Pass
958.510	Peak	H	53.8	-5.1	48.7	75.9	-27.2	Pass
1278.010*	Peak	H	50.7	-0.8	49.9	74.0	-24.1	Pass
1597.510	Peak	V	55.1	2.2	57.3	74.0	-16.7	Pass
1917.010	Peak	V	51.9	6.9	58.8	75.9	-17.1	Pass
2,236.660	Peak	V	76.3	-18.5	57.8	74.0	-16.2	Pass
2,556.180	Peak	V	66.0	-18.9	47.1	75.9	-28.8	Pass
2,875.710	Peak	V	63.8	-18.3	45.5	74.0	-28.5	Pass
3,195.230	Peak	V	61.1	-17.6	43.5	75.9	-32.4	Pass

* IC restricted band

** all spurious emissions in the applicable frequency range were investigated, only harmonic emissions were present as noted above

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

Part	Manufacturer	Model	Serial Number	RTL Bar Code	Calibration Due Date
Amplifier (20 MHz-2 GHz)	Rhein Tech Laboratories, Inc.	PR-1040	900905	900905	8/20/13
Bilog Periodic Antenna (25 MHz-2 GHz)	Schaffner Chase	CBL6112	2099	900791	2/02/14
EMI Receiver RF Section (9 kHz-6.5 GHz)	Hewlett Packard	85462A	3325A00159	900913	9/20/13
RF Filter Section (100 kHz-6.5 GHz)	Hewlett Packard	85460A	3330A00107	900914	9/20/13
Amplifier (1 GHz-26.0 GHz)	Rhein Tech Laboratories, Inc.	PR-1042	N/A	901364	9/28/13
Horn Antenna (2.0-4.0 GHz)	EMCO	3161-02	9804-1044	900772	4/20/15
Horn Antenna (4.0-8.2 GHz)	EMCO	3161-03	9508-1020	900321	4/20/15
Horn Antenna (8.2-12.4 GHz)	EMCO	3160-07	9605-1054	900323	4/20/15
Emissions Testing Software	Rhein Tech Laboratories, Inc.	Automated Emission Tester	Rev. 14.0.2	N/A	N/A

Test Personnel:

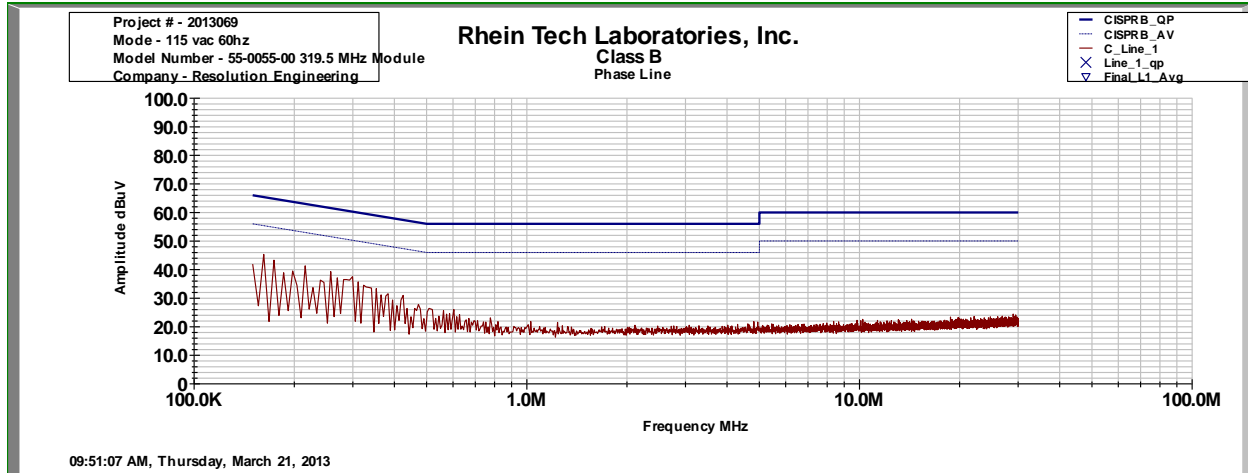
Jon Wilson		March 21, 2013
Test Engineer	Signature	Date of Test

FCC/IC Cross Reference

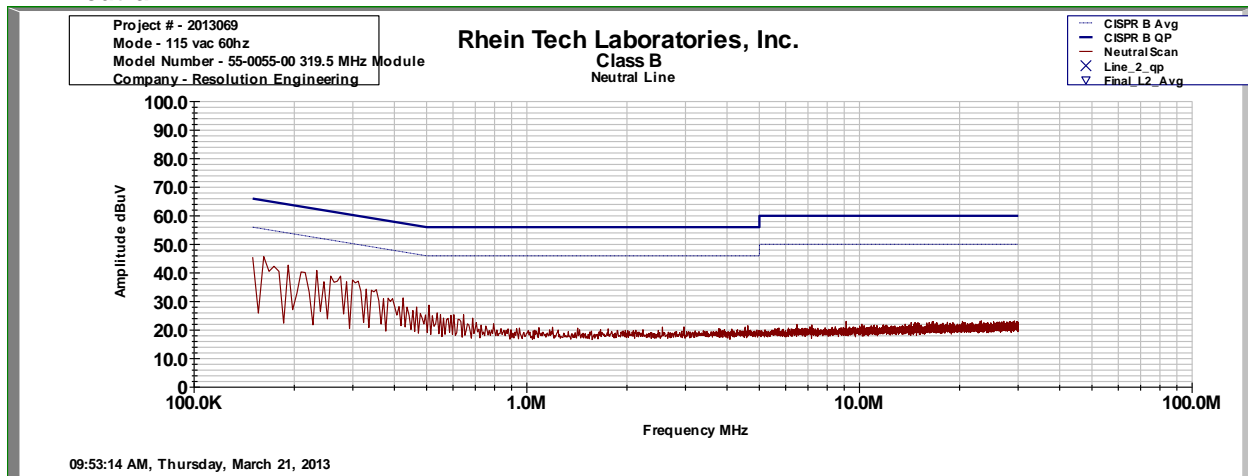
FCC 15.231(b)(2)	RSS-210 Issue 8 A1.1
FCC 15.35(b)	RSS-Gen Issue 3 7.2.3
FCC 15.205	RSS-Gen Issue 3 7.2.2
FCC 15.209	RSS-Gen Issue 3 7.2.5

15.207 Conducted Line Emissions Test Data – FCC Limits

TX – Phase



TX - 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

Part	Manufacturer	Model	Serial Number	RTL Bar Code	Calibration Due Date
Conducted Emissions					
Spectrum Analyzer (100 Hz-1.5GHz)	Hewlett Packard	8567A	2602A00160	900968	2/7/14
Spectrum Analyzer Display Section	Hewlett Packard	85662A	2542A11239	900970	2/7/14
Quasi-Peak Adapter	Hewlett Packard	85650A	2521A00743	900339	2/7/14
Filter	Solar	8130	947306	900728	3/1/13
16A LISN	AFJ International	LS16/110VAC	16010020080	901083	4/18/13
Test Software	Quantum Change	Tile!	4.0.A.8	N/A	N/A

Test Personnel:

Jon Wilson		March 21, 2012
Test Engineer	Signature	Date Of Test

Test Configuration Photographs

Radiated Emissions



Radiated Emissions



Conducted Emissions



EUT Photographs

