



Engineering Solutions & Electromagnetic Compatibility Services

FCC Part 15.231 Test Data

EUT: 319.5 MHz Micro Door Window Sensor

for

**Resolution Engineering, Inc.
1402 Heggen Street
Hudson, WI 54016
Contact: Jake Peterson**

**Testing Conducted By
Rhein Tech Laboratories, Inc.
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RTL Test Engineer: Jon Wilson

RTL Project/Report Number: 2014072

April 24, 2014

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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

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. Data is also presented for spurious, non-harmonic radiated emissions per 15.209. The Equipment Under Test (EUT) was the **319.5 MHz Micro Door Window Sensor (RTL Bar Code 21426)**.

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

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
319.523	Peak	H	79.8	15.8	95.6	95.9	-0.3	Pass
639.046	Peak	V	69.3	-5.4	63.9	75.9	-12.0	Pass
958.569	Peak	H	52.1	-1.3	50.8	75.9	-25.1	Pass
1278.092*	Peak	H	46.3	2.4	48.7	74.0	-25.3	Pass
1597.615	Peak	H	53.1	4.2	57.3	74.0	-16.7	Pass
1917.138	Peak	H	55.2	6.9	62.1	75.9	-13.8	Pass
2236.661	Peak	V	65.7	-10.5	55.2	74.0	-18.8	Pass
2556.184	Peak	V	54.5	-9.6	44.9	75.9	-31.0	Pass
2875.707	Peak	V	47.9	-8.8	39.1	74.0	-34.9	Pass
3195.230	Peak	V	43.5	-7.2	36.3	75.9	-39.6	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.

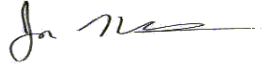
EUT Disposition

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	8/20/14
Spectrum Analyzer (10 Hz-26.5 GHz)	Agilent	EXA N9010	MY51250846	901583	4/16/15
Bilog Periodic Antenna (25 MHz-2000 MHz)	ARA	LPB-2520	1037	900724	4/19/15
Amplifier (1 GHz-26.5 GHz)	Hewlett Packard	8449B OPT H02	3008A00505	900932	8/10/2014
Horn Antenna (2.0-4.0 GHz)	EMCO	3161-02	9804-1044	900772	4/20/15
Emissions Testing Software	Rhein Tech Laboratories, Inc.	Automated Emission Tester	Rev. 14.0.2	N/A	N/A

Test Personnel:

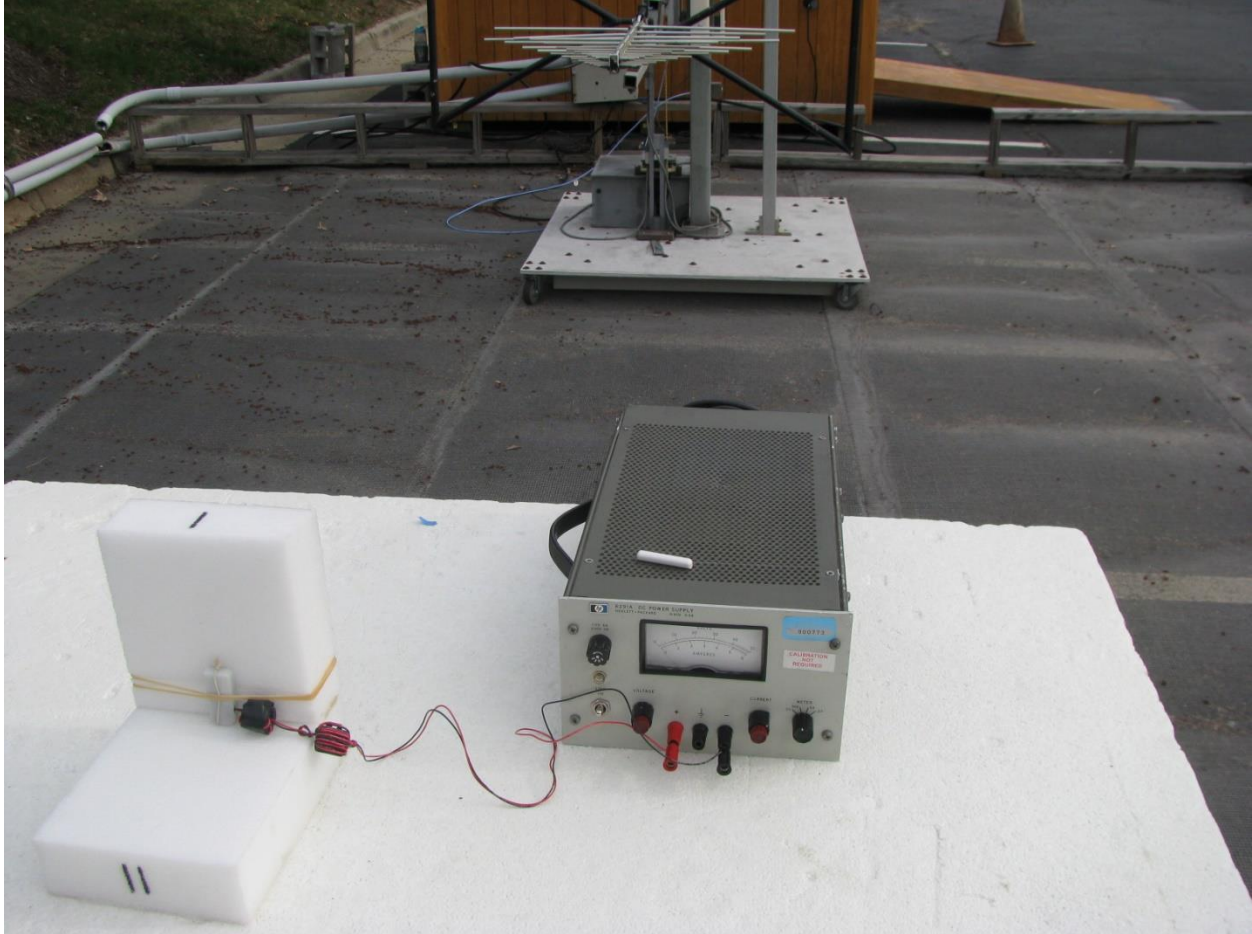
Jon Wilson		April 24, 2014
Test Engineer	Signature	Date of Test

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

Test Configuration Photograph

Radiated Emissions



EUT Photograph

