



Engineering Solutions & Electromagnetic Compatibility Services

**FCC Part 15.231 Test Data**

**for**

**EUT: 56-0046-02 Hidden Fob 345 MHz**

(RTL barcode: 21076)

**for**

**Resolution Engineering, Inc.  
1402 Heggen St.  
Hudson, WI 54016**

**RTL Project Number 2012329**

**Test Engineer: Jon Wilson**

**June 14, 2013**

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

The data and limits presented in this report are for radiated emissions per FCC 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 for intentional emissions is presented in this report. Data is also presented for spurious, non-harmonics radiated emissions per 15.209.

#### 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
345.000	Peak	H	62.1	26.7	88.8	97.3	-8.5	Pass
689.978	Peak	V	57.0	-9.1	47.9	77.3	-29.4	Pass
1034.973	Peak	H	42.3	-4.3	38.0	74.0	-36.0	Pass
1379.976	Peak	V	37.3	0.6	37.9	74.0	-36.1	Pass
1724.976	Peak	H	47.6	3.7	51.3	77.3	-26.0	Pass
2070.027	Peak	V	73.6	-19.1	54.5	77.3	-22.8	Pass
2415.027	Peak	V	57.9	-18.6	39.3	77.3	-38.0	Pass
2760.027	Peak	H	73.0	-18.5	54.5	74.0	-19.5	Pass
3105.027	Peak	H	74.4	-17.9	56.5	77.3	-20.8	Pass
3450.027	Peak	V	57.6	-17.3	40.3	77.3	-37.0	Pass

#### Unintentional and Spurious Emissions – 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
133.000	Qp	V	40.6	-20.5	20.1	43.5	-23.4	Pass
172.500	Qp	V	41.3	-21.4	19.9	43.5	-23.6	Pass
258.755	Qp	V	37.6	-13.3	24.3	46.0	-21.7	Pass
431.247	Qp	V	42.8	-8.3	34.5	46.0	-11.5	Pass
517.488	Qp	V	44.5	-9.5	35.0	46.0	-11.0	Pass
603.730	Qp	V	44.2	-9.3	34.9	46.0	-11.1	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.

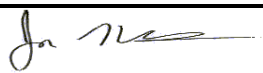
### EUT Disposition

The EUT was adapted to continuously transmit for testing purposes.

### Radiated Emissions Test Equipment

Part Type	Manufacturer	Model	Serial Number	Barcode	Cal Due Date
Amplifier (20 MHz-2 GHz)	Rhein Tech Laboratories, Inc.	PR-1040	900905	900905	8/20/2013
Bilog Periodic Antenna (25 MHz-2 GHz)	Schaffner Chase	CBL6112	2099	900791	2/2/2014
EMI Receiver RF Section (9 KHz-6.5 GHz)	Hewlett Packard	85462A	3325A00159	900913	9/20/2013
RF Filter Section (100 KHz-6.5 GHz)	Hewlett Packard	85460A	3330A00107	900914	9/20/2013
Spectrum Analyzer	Hewlett Packard	8596EM	3826A00144	901215	3/15/2014
Amplifier (1 GHz – 26.4 GHz)	Rhein Tech Laboratories, Inc.	PR-1042	1003	901364	7/14/2013
Horn Antenna, 2.0-4.0 GHz	EMCO	3161-02	9804-1044	900772	4/20/2015
Horn Antenna, 4.0-8.2 GHz	EMCO	3161-03	9508-1020	900321	4/20/2015
Emissions Testing Software	Rhein Tech Laboratories, Inc.	Automated Emission Tester	Rev. 14.0.2	N/A	N/A

### Test Personnel:

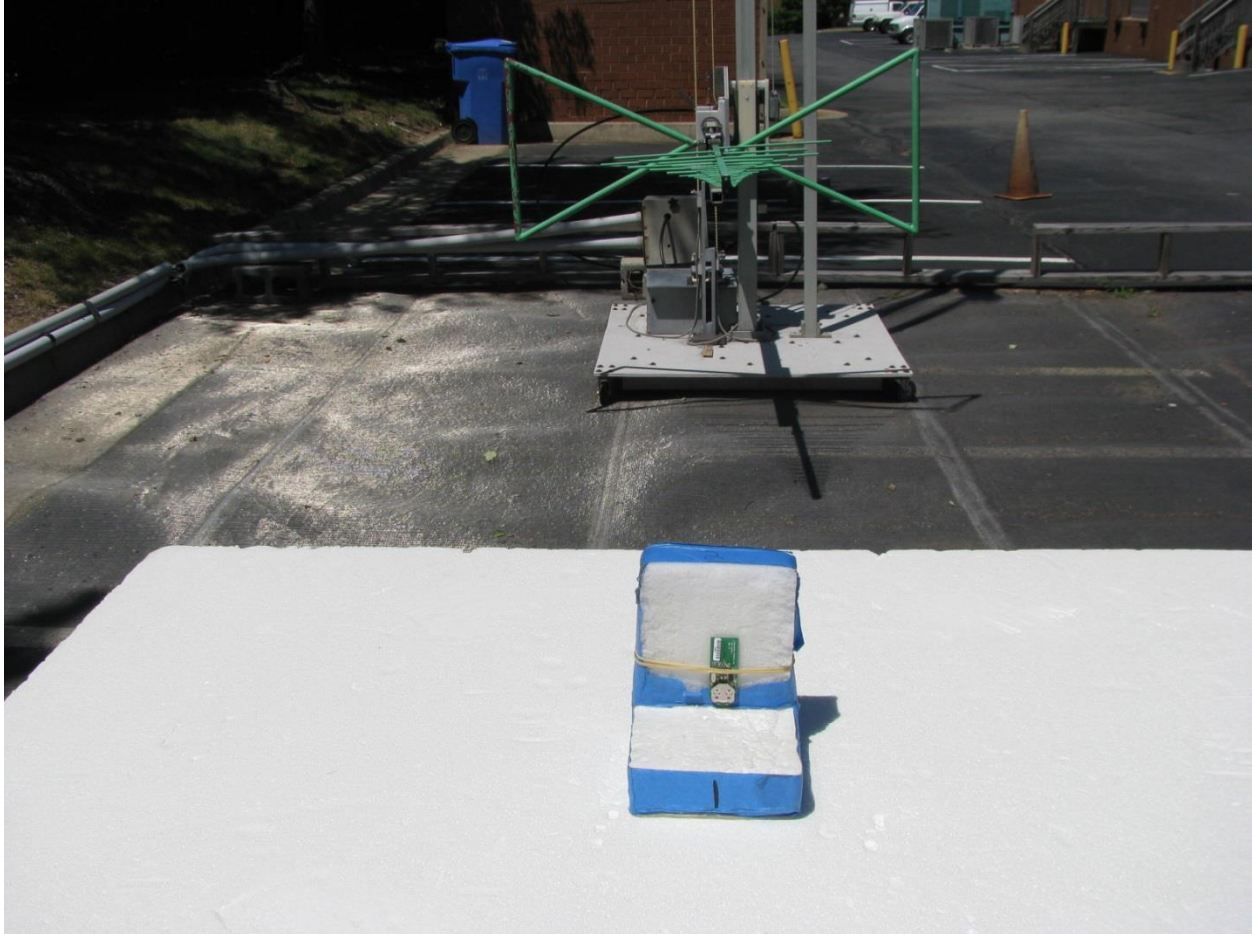
Jon Wilson		June 4-14, 2013
Test Engineer	Signature	Date of Test

### 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

## Test Configuration Photograph

### Radiated Emissions



**EUT Photographs**



