Compliance Testing, LLC
Previously Flom Test Lab
EMI, EMC, RF Testing Experts Since 1963

toll-free: (866) 311-3268
fax: (480) 926-3598
http://www.ComplianceTesting.com
info@ComplianceTesting.com

Test Report

Prepared for: Hancett Entry Systems, Inc.

Model: K100-620IA

Description: Electronic Cabinet Lock System

To

FCC Part 15.225

Date of Issue: June 21, 2012

On the behalf of the applicant:

Hancett Entry Systems, Inc.
10027 S. 51st St.
Suite 102
Phoenix, AZ 85044

Attention of:

Brian Whipple, Electrical Engineer
Ph: (623) 582-4626
E-Mail: bwhipple@assaabloyems.com

Prepared by
Compliance Testing, LLC
3356 N San Marcos Pl, Suite-107
Chandler, AZ 85225-7176
(866) 311-3268 phone / (480) 926-3598 fax
www.compliancetesting.com
Project No: p1250006

Greg Corbin

Greg Corbin
Project Test Engineer

Test Report Revision History

Revision	Date	Revised By	Reason for Revision
1.0	5/31/12	Greg Corbin	Original Document
2.0	10/22/2012	Karen Springer	Updated model information
3.0	11/29/2012	Greg Corbin	Updated the occupied bandwidth test data

Table of Contents

ILAC / A2LA

Compliance Testing, LLC, has been accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer joint ISO-ILAC-IAF Communiqué dated January 2009)

The tests results contained within this test report all fall within our scope of accreditation, unless noted below.

Please refer to http://www.compliancetesting.com/labscope.html for current scope of accreditation.

Testing Certificate Number: **2152.01**

FCC OATS Reg, #933597

IC Reg. #2044A-1

Non-accredited tests contained in this report:

N/A

The applicant has been cautioned as to the following:

15.21 Information to User

The user's manual or instruction manual for an intentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

15.27(a) Special Accessories

Equipment marketed to a consumer must be capable of complying with the necessary regulations in the configuration in which the equipment is marketed. Where special accessories, such as shielded cables and/or special connectors are required to enable an unintentional or intentional radiator to comply with the emission limits in this part, the equipment must be marketed with, i.e. shipped and sold with, those special accessories. However, in lieu of shipping or packaging the special accessories with the unintentional or intentional radiator the responsible part may employ other methods of ensuring that the special accessories are provided to the consumer, without an additional charge.

Information detailing any alternative method used to supply the special accessories for a grant of equipment authorization or retained in the verification records, as appropriate. The party responsible for the equipment, as detailed in § 2.909 of this chapter, shall ensure that these special accessories are provided with the equipment. The instruction manual for such devices shall include appropriate instructions on the first page of text concerned with the installation of the device that these special accessories must be used with the device. It is the responsibility of the user to use the needed special accessories supplied with the equipment.

Standard Test Conditions Engineering Practices

Except as noted herein, the following conditions and procedures were observed during the testing.

In accordance with ANSI C63.10-2009 and unless otherwise indicated in the specific measurement results, the ambient temperature of the actual EUT was maintained within the range of 10° to 40°C (50° to 104°F) unless the particular equipment requirements specify testing over a different temperature range. Also, unless otherwise indicated the humidity levels were in the range of 10% to 90% relative humidity.

Measurement results, unless otherwise noted, are worst-case measurements.

Environmental Conditions		
Temperature (º C)	**Humidity (%)**	**Pressure (mbar)**
23.2 – 26.2	26.5 – 47.9	959 – 968.6

EUT Description

Model: K100-620IA
Description: Electronic Cabinet Lock System
Additional Information:

Door mounted keycard entry system with 2 wireless RF transmitters. One transmitter is operating at 13.56 MHz using ASK modulation. The 2nd transmitter is operating at 2.4 GHz using DSS. The 2.4 GHz transmitter was not transmitting while testing the 13.56 MHz transmitter.
The EUT is powered by 3.0 v Lithium battery (battery type = CR123A) that is not rechargeable and the EUT never connects to the AC mains.

EUT Operation during Tests

The transmitter was powered on continuously during the test.

Accessories: None

Modifications: None

15.203: Antenna Requirement:

X	The antenna is permanently attached to the EUT
	The antenna uses a unique coupling
	The EUT must be professionally installed
	The antenna requirement does not apply

Test Results Summary

Specification	Test Name	Pass, Fail, N/A	Comments
15.225(a)	Fundamental Field Strength	Pass	
15.225(b)(c)	Out of Band Spurious Emissions	Pass	
15.225(e)	Frequency Stability	Pass	
15.225(d) 15.209	Radiated Emissions	Pass	
15.207	Conducted Powerline Emissions	N/A	EUT is battery powered and does not connect to the AC mains.
RSS-210	99% Occupied Bandwidth	Pass	

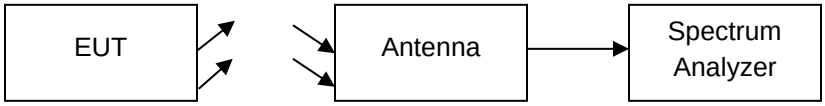
Field Strength

Name of Test:	Field Strength	
Specification:	15.225(a)(b)(c)	**Engineer:** Greg Corbin
Test Equipment Utilized:	i00326, i00379	**Test Date:** 5/29/2012

Test Procedure

The EUT was tested in an anechoic chamber at a distance of 1 meter from the receiving loop antenna and characterized to the 30 meter limit. A spectrum analyzer was used to verify that the EUT met the requirements for Fundamental Field Strength. The antenna correction and distance correction factors were summed with the quasi-peak measurement to ensure accurate readings were obtained. The following table indicates the highest emission in each of the indicated bands.

Test Setup



Distance CF = 40*LOG(1/30) = 59.1 dB

Corrected Measurement = Monitored Level – (Distance CF + Antenna CF)

Field Strength

Frequency Band (MHz)	Measured Frequency (MHz)	Monitored Level (dBuV/m)	Distance CF (dB)	Antenna CF (dB)	Corrected Measurement (dBuV/m)	Limit (dBuV/m)	Result
13.110-13.410	13.401	23.9	59.1	17.8	-53	40.51	Pass
13.410-13.553	13.553	42.5	59.1	17.8	-34.4	50.47	Pass
13.553-13.567	13.56	56.6	59.1	17.8	-20.3	84.00	Pass
13.567-13.710	13.56699	43.8	59.1	17.8	-33.1	50.47	Pass
13.710-14.010	13.719	22.7	59.1	17.8	-54.2	40.51	Pass

Note: Cable correction factors are not included in this measurement as the low loss of the high quality coax cable at low frequencies is practically non-existent.

Frequency Stability

Name of Test: Frequency Stability

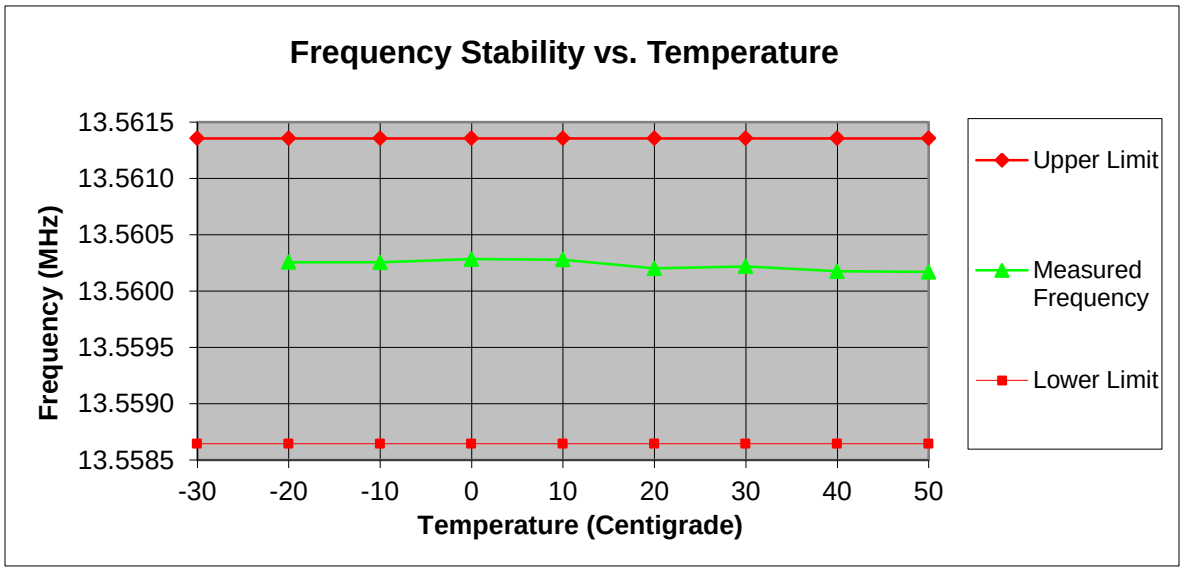
Specification: 15.225(e) **Engineer:** Greg Corbin

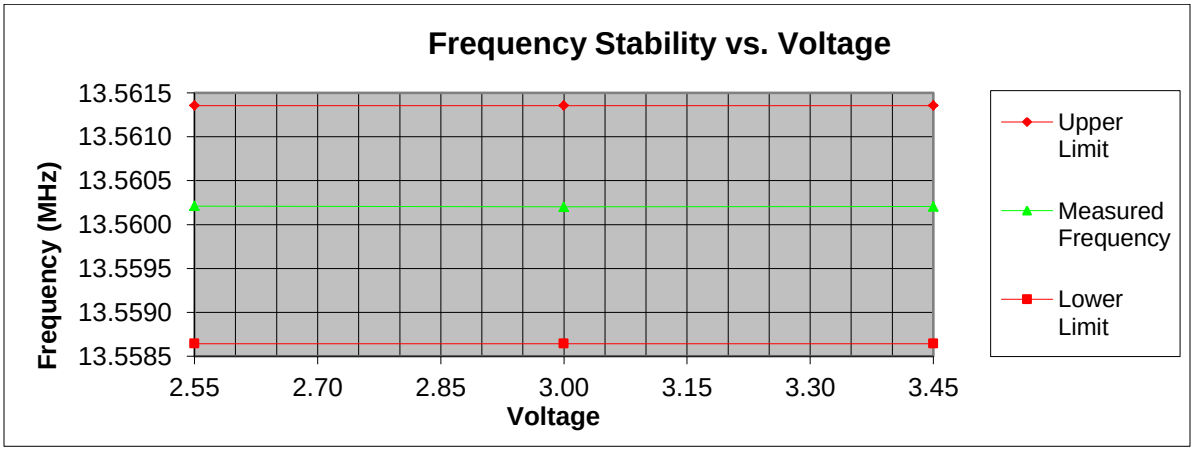
Test Equipment Utilized: i00008, i00287, i00319, i00343, i00345 **Test Date:** 5/30/2012

Test Procedure

The EUT was placed in an environmental test chamber and a spectrum analyzer was utilized to verify that the frequency stability met the requirement for frequency stability across the temperature range from -20°C to +50°C. A variable DC power supply was used to vary the voltage from 85% to 115% of the rated voltage. The nominal voltage = 3.0 vdc.

Test Setup





Radiated Emissions

Name of Test: Radiated Emissions

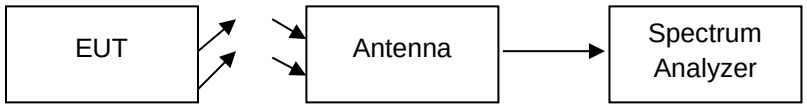
Specification: 15.225(d), 15.209 **Engineer:** Greg Corbin

Test Equipment Utilized: i00033, i00267 **Test Date:** 6/19/2012

Test Procedure

The EUT was tested on an Open Area Test Site (OATS) at a distance of 3 meters from the receiving antenna. A spectrum analyzer was used to verify that the UUT met the requirements for Radiated Emissions. The spectrum for each tuned frequency was examined beyond the 10th harmonic.

Test Setup



Radiated Emissions

Emission Freq (MHz)	Measured Value (dBuV/m)	Corr. Factor (dB)	Corr. Value (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Polarity (V/H)	Antenna Height (cm)	Turntable Position (deg)
54.542	18.330	7.403	25.733	40.000	-14.267	H	104	188
176.429	12.820	10.741	23.561	43.500	-19.939	H	104	188
352.009	5.850	16.968	22.818	46.000	-23.182	H	104	188
524.918	6.770	20.509	27.279	46.000	-18.721	H	104	188
704.906	5.500	23.078	28.578	46.000	-17.422	H	104	188
896.772	6.210	25.854	32.064	46.000	-13.936	H	104	188

99% Occupied Bandwidth

Name of Test: 99% Occupied Bandwidth

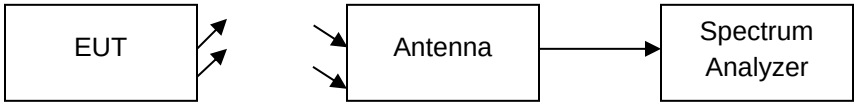
Specification: RSS 210 Industry Canada Only **Engineer:** Greg Corbin

Test Equipment Utilized: i00326, i00379 **Test Date:** 11/29/2012

Test Procedure

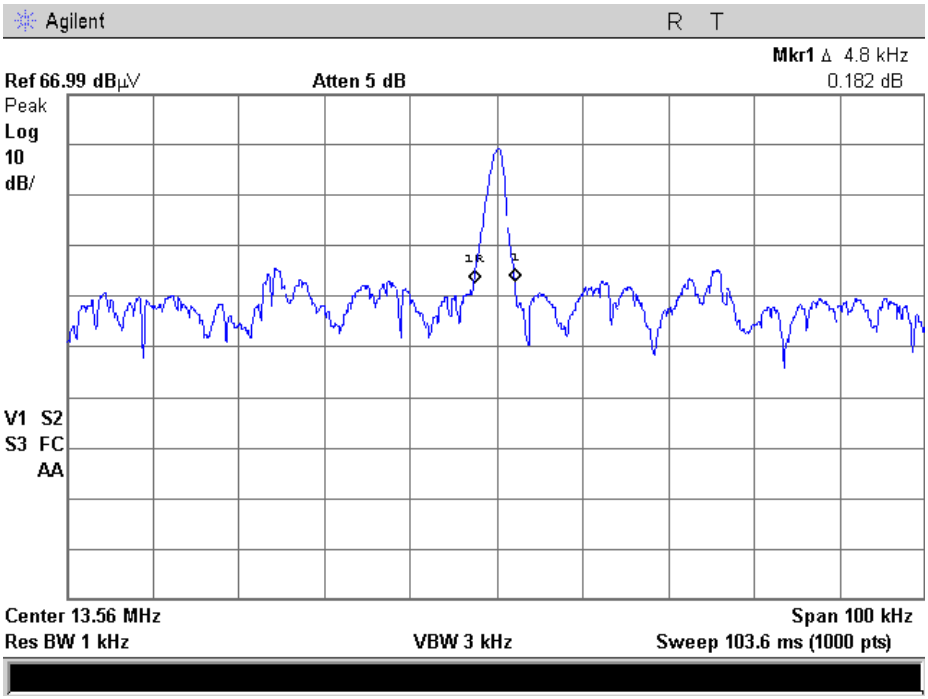
The EUT was tested in an anechoic chamber at a distance of 1 meter from the receiving loop antenna.
A spectrum analyzer was used to measure the 99% occupied bandwidth, by measuring the -26 dB points.

Test Setup



99% Bandwidth Summary

Frequency (MHz)	Recorded Measurement	Result
13.56	4.8 kHz	Pass



Test Equipment Utilized

Description	Manufacturer	Model Number	CT Asset #	Last Cal Date	Cal Due Date
Power Supply	Kenwood	PR18-3A	i00008	Verified on: 5/30/12	
EMI Receiver	HP	8546A	i00033	12/20/11	12/20/12
Bilog Antenna	Schaffner	CBL6111C	i00267	12/19/11	12/19/13
Temperature Chamber	Tenney	Tenney II Benchmaster	i00287	Verified on: 5/30/12	
Humidity / Temp Meter	Newport	IBTHX-W-5	i00282	11/5/11	11/5/12
Voltmeter	Fluke	87III	i00319	6/20/11	6/20/12
Active Loop Antenna	EMCO	6507	i00326	4/29/11	4/29/13
Data Logger	Fluke	Hydra Data Bucket	i00343	12/15/11	12/15/12
Spectrum Analyzer	Tektronix	RSA3308A	i00345	9/16/11	9/16/12
Humidity / Temp Meter	Control Company	4189CC	i00355	1/11/12	1/11/13
Spectrum Analyzer	Agilent	E7405A	i00379	12/14/11	12/14/12

In addition to the above listed equipment standard RF connectors and cables were utilized in the testing of the described equipment. Prior to testing these components were tested to verify proper operation.

END OF TEST REPORT