RHEIN TECH LABORATORIES, INC.

Engineering Solutions & Electromagnetic Compatibility Services

FCC Part 15.231 & IC RSS-210 Class II Permissive Change Report

Test Lab:	Applicant:
Rhein Tech Laboratories, Inc. Tel: 703-689-0368 360 Herndon Parkway Fax: 703-689-2056 Suite 1400 Web: www.rheintech.com Herndon, VA 20170	Safety Technology International, Inc. 2306 Airport Road Waterford, MI 48327 Contact: John Taylor

FCC ID **IC**	TXL34071 6335A-34071	**Test Report Date**	July 26, 2012
Platform	N/A	**RTL Work Order Number**	2012203
Model	34071	**RTL Quote Number**	QRTL12-203A

FCC Classification	DSC – Part 15 Security/Remote Control Transmitter
FCC Rule Part(s)	Part 15.231: Periodic operation in the band 40.66 – 40.70 MHz and above 70 MHz (10-01-11)
IC Standard	RSS-210 Issue 8: Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment
Procedure or Other Guidance	ANSI C63.4-2003 Standard for Methods of Measurement of Radio-Noise Emissions
Digital Interface Information	N/A

Frequency Range (MHz)	Output Power (W)	Frequency Tolerance	Emission Designator
433.92	N/A	N/A	143KP1D

I, the undersigned, hereby declare that the equipment tested and referenced in this report conforms to the identified standard(s) as described in this test report. Modifications made to the equipment during testing in order to achieve compliance with these standards are listed in the report. Furthermore, there was no deviation from, additions to, or exclusions from the applicable parts of FCC Part 2, FCC Part 15 and ANSI C63.4.

Signature: _____ Date: July 26, 2012

Typed/Printed Name: Desmond A. Fraser Position: President

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.

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1 General Information

1.1 Scope

FCC Rules Part 15.231: Periodic operation in the band 40.66–40.70 MHz and above 70 MHz (Part 15.231(b) limits).

IC RSS-210 Issue 8: License-exempt Radio Apparatus (All Frequency Bands): Category I Equipment

1.2 Modifications

N/A

1.3 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located at Rhein Tech Laboratories, Inc. (RTL), 360 Herndon Parkway, Suite 1400, Herndon, Virginia 20170. This site has been fully described in a report and approved by the Federal Communications Commission to perform AC line conducted and radiated emissions testing (ANSI C63.4 2003).

1.4 Related Submittal(s)/Grant(s)

This is a FCC Class II Permissive Change/IC reassessment application for Safety Technology International, Inc. Model 34071, FCC ID: TXL34071, IC: 6335A-34071. The original FCC grant was issued November 26, 2010, and the original IC certificate was issued November 30, 2010.

2 Test Information

2.1 Test Justification

The EUT was tested in all three orthogonal planes in order to determine worst-case emissions. The EUT's frequencies were tested and investigated from 9 kHz to the 10th harmonic. The test results relate only to the item that was tested.

The antenna transmits, receives, and is internal. The IF, LO, and up to the 2nd LO, were investigated and tested, and found to be compliant for unintentional emissions compliance.

2.2 Exercising the EUT

The EUT was adapted to continuously transmit for testing purposes. The carrier was also checked to verify that the information was being transmitted. The unit was reprogrammed for normal operation for the duty cycle and timing plots. Note that the EUT is a manually activated transmitter.

There were no deviations from the test standard(s) and/or methods.

2.3 Test Result Summary

Table 2-1: Test Result Summary

FCC	IC	Test	Pass/Fail Or N/A
FCC 15.231(b)	RSS-210 A1.1.2	Radiated Emissions	Pass

2.4 Test System Details

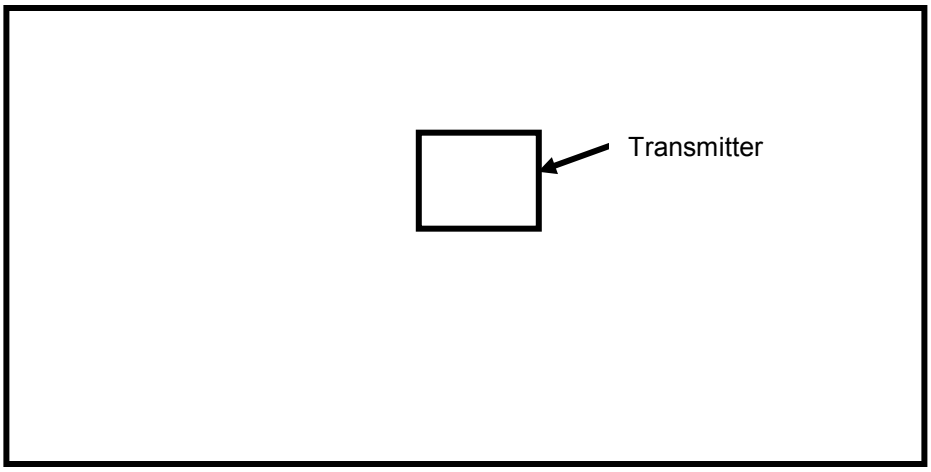
The test samples were received on July 16, 2012. The FCC Identifiers for all equipment, plus descriptions of all cables used in the tested system, are shown in the following table.

Table 2-2: Equipment Under Test (EUT)

Part	Manufacturer	Model	Serial Number	FCC ID	Cable Description	RTL Bar Code
Exit Stopper	Safety Technology International, Inc.	34071	N/A	TXL34071	N/A	20348

2.5 Configuration of Tested System

Figure 2-1: Worst Case Configuration of System under Test



3 Radiated Emissions – FCC 15.209, 15.231(b)

3.1 Radiated Fundamental Emissions Test Procedure

Radiated emissions of the fundamentals were tested at three meters, and meet the requirements of average mode, and 20 dB higher in peak mode. The limit is calculated from a linear interpolation between 3,750 and 12,500 uV/m, and from 260-470 MHz, or 10,997 uV/m at 433.92 MHz. The EUT was tested in all three orthogonal planes. Measurement was based on a peak detector and an average level was calculated. The average level was compared to the average limit as per 15.231(b) and the peak level was compared to the average limit +20 dB per 15.35(b).

3.1.1 Radiated Fundamental Emissions Limits Test Data

Table 3-1: Radiated Fundamental Emissions

Emission Frequency (MHz)	Peak Analyzer Reading (dBuV)	Site Correction Factor (dB/m)	Peak Corrected Level (dBuV/m)	Limit (dBuV/m)	Peak Margin (dB)	Duty Cycle Correction (dB)	Calculated Average Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)
434.007	58.8	31.1	89.9	100.8	-10.9	-20.4	69.5	80.8	-11.3

3.2 Radiated Harmonics/Spurious Emissions – FCC 15.231(b)

3.2.1 Radiated Emissions Harmonics/Spurious 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.

Table 3-2: Radiated Spurious Harmonics

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
868.023	Peak	H	57.6	-2.7	54.9	80.8	-25.9	Pass
1302.023	Peak	V	51.8	4.0	55.8	74.0	-18.2	Pass
1736.023	Peak	V	38.5	7.8	46.3	80.8	-34.5	Pass
2169.590	Peak	V	40.7	-18.8	21.9	80.8	-58.9	Pass
2603.510	Peak	V	39.9	-18.5	21.4	80.8	-59.4	Pass
3037.430	Peak	V	48.9	-18.7	30.2	80.8	-50.6	Pass
3471.350	Peak	H	47.6	-17.4	30.2	80.8	-50.6	Pass
3905.270	Peak	H	42.5	-17.2	25.3	74.0	-48.7	Pass
4339.190	Peak	V	40.6	-11.2	29.4	74.0	-44.6	Pass

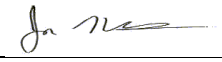
Table 3-3: Radiated Digital Unintentional/RX Emissions

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
48.000	Qp	V	46.9	-19.3	27.6	40.0	-12.4	Pass
112.000	Qp	H	41.1	-16.0	25.1	43.5	-18.4	Pass
224.000	Qp	V	38.4	-18.5	19.9	46.0	-26.1	Pass
320.000	Qp	H	36.5	-13.0	23.5	46.0	-22.5	Pass
433.900	Qp	V	37.0	-9.2	27.8	46.0	-18.2	Pass
745.900	Qp	V	36.2	-3.9	32.3	46.0	-13.7	Pass
1301.700	Av	V	36.2	4.0	40.2	54.0	-13.8	Pass

Table 3-4: Radiated Emissions Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901364	Rhein Tech Laboratories	PR-1042	40dB PreAmplifier, (1 - 18 GHz)	1003	07/14/2013
900905	Rhein Tech Laboratories	PR-1040	Preamplifier 40dB (30 MHz – 2 GHz)	1006	07/14/2013
900878	Rhein Tech Laboratories	AM3-1197-0005	4 meter antenna mast, polarizing	Outdoor Range 1	Not Required
901334	RF Depot	N/A	RF cable, 30'	NA	05/24/2013
901336	RF Depot	N/A	RF cable, 3'	NA	05/24/2013
901242	Rhein Tech Laboratories	WRT-000-0003	Polystyrene rotating table	N/A	Not Required
900913	Hewlett Packard	85462A	EMI Receiver RF Section (9 kHz – 6.5 GHz)	3325A00159	08/02/2012
900914	Hewlett Packard	8546OA	RF Filter Section, (100 kHz - 6.5 GHz)	3330A00107	08/02/2012
900772	EMCO	3161-02	Horn Antenna (2 - 4 GHz)	9804-1044	04/20/2017
900321	EMCO	3161-03	Horn Antenna (4.0 - 8.2 GHz)	9508-1020	04/20/2017
901581	Rohde & Schwarz	1166.1660.50	FSU Spectrum Analyzer (20 Hz – 50 GHz)	200106	01/19/2013

Test Personnel:

Jon Wilson		July 16, 2012
Test Engineer	Signature	Date of Test

4 Conducted Emissions

4.1 Site and Test Description

The power line conducted emissions measurements were performed in a Series 81 type shielded enclosure manufactured by Rayproof. The EUT was assembled on a wooden table 80 centimeters high. Power was fed to the EUT through a 50 ohm/50 microhenry Line Impedance Stabilization Network (LISN). The EUT LISN was fed power through an A.C. filter box on the outside of the shielded enclosure. The filter box and EUT LISN housing are bonded to the ground plane of the shielded enclosure. A second LISN, the peripheral LISN, provides isolation for the EUT test peripherals. This peripheral LISN was also fed A.C. power. A metal power outlet box, which is bonded to the ground plane and electrically connected to the peripheral LISN, powers the EUT host peripherals.

The spectrum analyzer was connected to the A.C. line through an isolation transformer. 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 bandwidth was set to 9 kHz. Video filter less than 10 times the resolution bandwidth is not used. Average measurements are performed in linear mode using a 10 kHz resolution bandwidth, a 1 Hz video bandwidth, by increasing the sweep time in order to obtain a calibrated measurement. The emission spectrum was scanned from 150 kHz to 30 MHz. The highest emission amplitudes relative to the appropriate limits were measured and have been recorded. The limits for Class A and Class B are contained therein.

4.2 Test Limits

Class A Line-Conducted Emissions		
	Limit (dBµV)	
Frequency (MHz)	Quasi-Peak	Average
0.15 to 0.50	79	66
0.50 to 30.0	73	60

Class B Line-Conducted Emissions		
	Limit (dBµV)	
Frequency (MHz)	Quasi-Peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5.00	56	46
5.00 to 30.00	60	50

4.3 Conducted Emissions Test Results

Testing is N/A – the EUT is battery powered.

5 Conclusion

The data in this measurement report shows that Safety Technology International, Inc. Model 34071, FCC ID: TXL34071, IC: 6335A-34071, complies with all the applicable requirements of FCC rules Parts 2 and 15 and IC RSS-210, and qualifies for a Class II permissive change/reassessment.