

Test Report

FCC Part 15 Certification

ACS Report Number: 04-0035-15C

Manufacturer: Standard Access Locks

Equipment Type: Electronic Door Lock Equipped with Proximity Sensor

Model: 420 KP

FCC ID: SPI-420KPMR

Enclosure Variants:

Low Profile Standard Door Access Lock
Rollup Door Access Lock

Test Begin Date: November 18, 2004

Test End Date: November 18, 2004

Report Issue Date: November 24, 2004



FOR THE SCOPE OF ACCREDITATION UNDER LAB Code 200612

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This report contains 10 pages

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Additional Exhibits Included In Filing

Internal Photographs	External Photographs
Test Setup Photographs	Product Labeling
BOM	Installation/Users Guide
Theory of Operation	System Block Diagram
Schematics	

1.0 GENERAL

1.1 Introduction

The purpose of this report is to demonstrate compliance with Part 15.209 of the FCC's Code of Federal Regulations.

1.2 Product Description

The 420 KP is an electronic door locking assembly equipped with a proximity sensor used for keyless entry. The 420 KP is designed for installation in various enclosure types. Photographs of the variant enclosures are shown in detail in another exhibit in this filing.

Low profile

The Low Profile unit represents a motorized locking solution housed in a metal frame mounted to the door unit it self. The 420 KP board is housed inside the medal enclosure similar to the electronic strike housing on the inside of the door unit behind the keypad or proximity reader.

Roll up door

This application allows the 420 KP to complete an electric current that activates a solenoid that allows the lock to disengage and release a lever opening the lock. The 420 controller board is housed in an enclosure similar to the electronic strike or in a plastic housing that is located at the door assembly above the opening and connected to a power source.

The electronics for each enclosure type are identical.

1.3 Manufacturer Information

The EUT is manufactured by Standard Access Locks

Single Access Lock Inc. (SALock.inc.)
11450 Technology Circle
Duluth, GA 30097

Contact: Herbert Guck
Phone: 678-473-8376

2.0 LOCATION OF TEST FACILITY

All testing was performed by qualified ACS personnel located at the following address:

ACS, Inc.
5015 B.U. Bowman Drive
Buford, GA 30518
(770) 831-8048
www.acstestlab.com

2.1 DESCRIPTION OF TEST FACILITY

Both the Open Area Test Site (OATS) and Conducted Emissions site have been fully described, submitted to, and accepted by the FCC, Industry Canada and the Japanese Voluntary Control Council for Interference by information technology equipment.

In addition, ACS holds accreditation to ISO 17025 for the test method contained in this test report among others.

The following certification numbers have been issued in recognition of these accreditations and certifications:

FCC Registration Number: 89450

Industry Canada Lab Code: IC 4175

VCCI Member Number: 1831

- VCCI OATS Registration Number R-1526
- VCCI Conducted Emissions Site Registration Number: C-1608
- NVLAP Lab Code: 200612

2.1.1 Open Area Test Site

The Semi-Anechoic Chamber Test Site consists of a 20' x 30' x 18' shielded enclosure. The chamber is lined with Toyo Ferrite Grid Absorber, model number FFG-1000. The ferrite tile grid is 101 x 101 x 19mm thick and weighs approximately 550 grams. These tiles are mounted on steel panels and installed directly on the inner walls of the chamber.

The turntable is 150cm in diameter and is located 160cm from the back wall of the chamber. The chamber is grounded via 1 - 8' copper ground rod, installed at the center of the back wall, it is bound to the ground plane using 3/4" stainless steel braided cable.

The turntable is all steel, flush mounted table installed in an all steel frame. The table is remotely operated from inside the control room located 25' from the range. The turntable is electrically bonded to the surrounding ground plane via steel fingers installed on the edge of the turn table. The steel fingers make constant contact with the ground plane during operation.

Behind the turntable is a 3' x 6' x 4' deep shielded pit used for support equipment if necessary. The pit is equipped with 1 - 4" PVC chases from the turntable to the pit that allow for cabling to the EUT if necessary. The underside of the turntable can be accessed from the pit so cables can be supplied to the EUT from the pit.

A diagram of the Semi-Anechoic Chamber Test Site is shown in Figure 3.3-1 below:

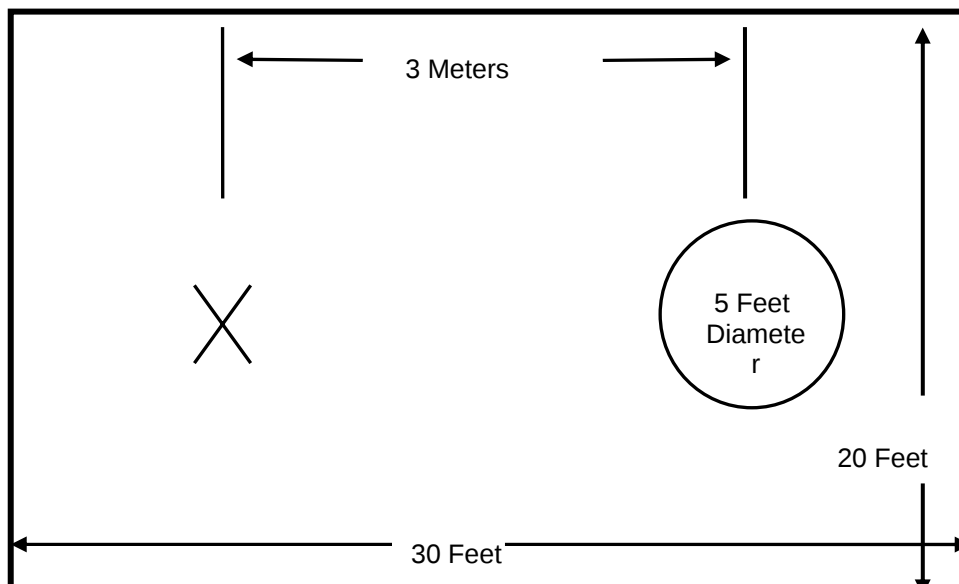


Figure 2.1.1-1: Semi-Anechoic Chamber Test Site

2.1.2 Conducted Emissions Test Site Description

The AC mains conducted EMI site is a shielded room with the following dimensions:

- Height: 3.0 Meters
- Width: 3.6 Meters
- Length: 4.9 Meters

The room is manufactured by Rayproof Corporation and installed by Panashield, Inc. Earth ground is provided to the room via an 8' copper ground rod. Each panel of the room is connected electrically at intervals of 4".

Power to the room is filtered to prevent ambient noise from coupling to the EUT and measurement equipment. Filters are models 1B42-60P manufactured by Rayproof Corporation.

The room is of sufficient size to test table top and floor standing equipment in accordance with section 6.1.4 of ANSI C63.4.

A diagram of the room is shown below in figure 2.1.2-1:

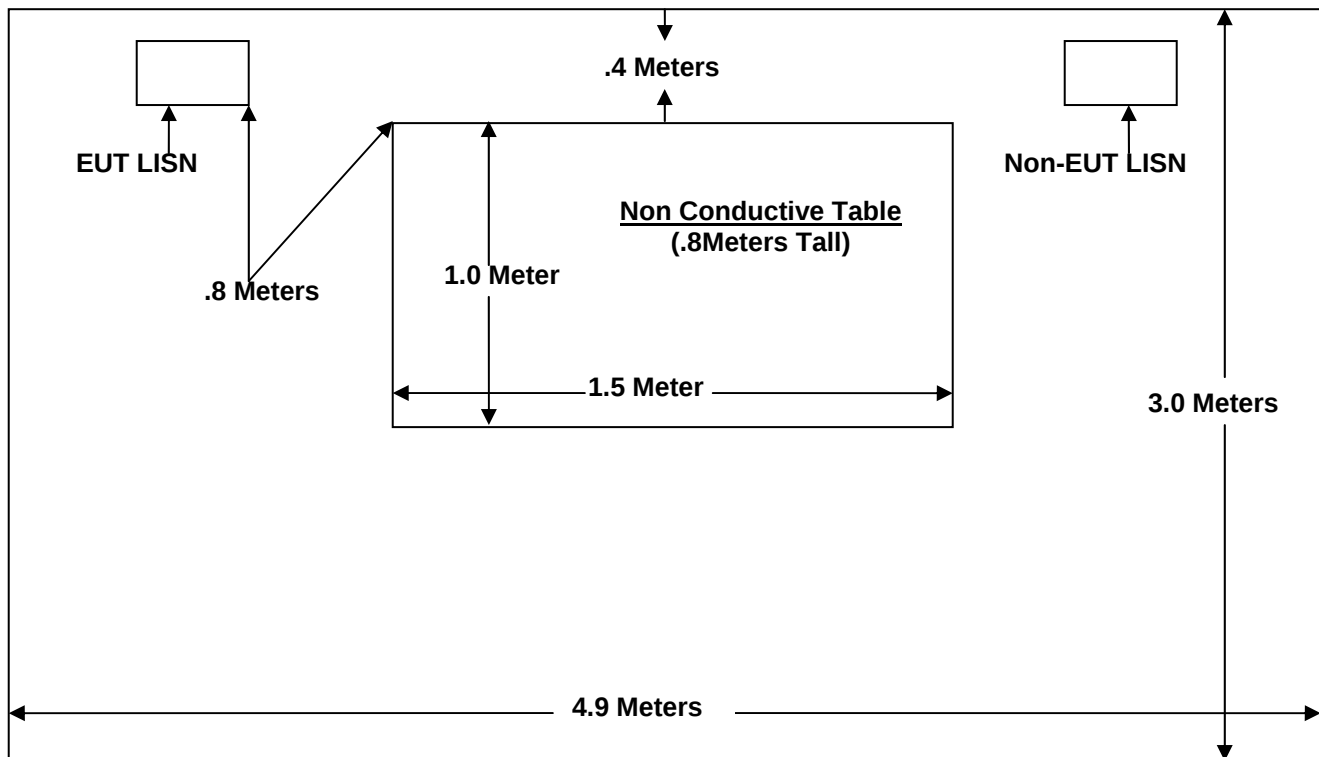


Figure 2.1.2-1: AC Mains Conducted EMI Site

3.0 APPLICABLE STANDARDS AND REFERENCE

- 1 - ANSI C63.4-1992: Method of Measurements of Radio-Noise Emissions from Low-Voltage Electrical And Electronic Equipment in the 9 KHz to 40GHz
- 2 - US Code of Federal Regulations (CFR): Title 47, Part 15, Subpart C: Radio Frequency Devices, Intentional Radiators (October 2002)
- 3 - FCC OET Bulletin 65 Appendix C - Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields

4.0 LIST OF TEST EQUIPMENT

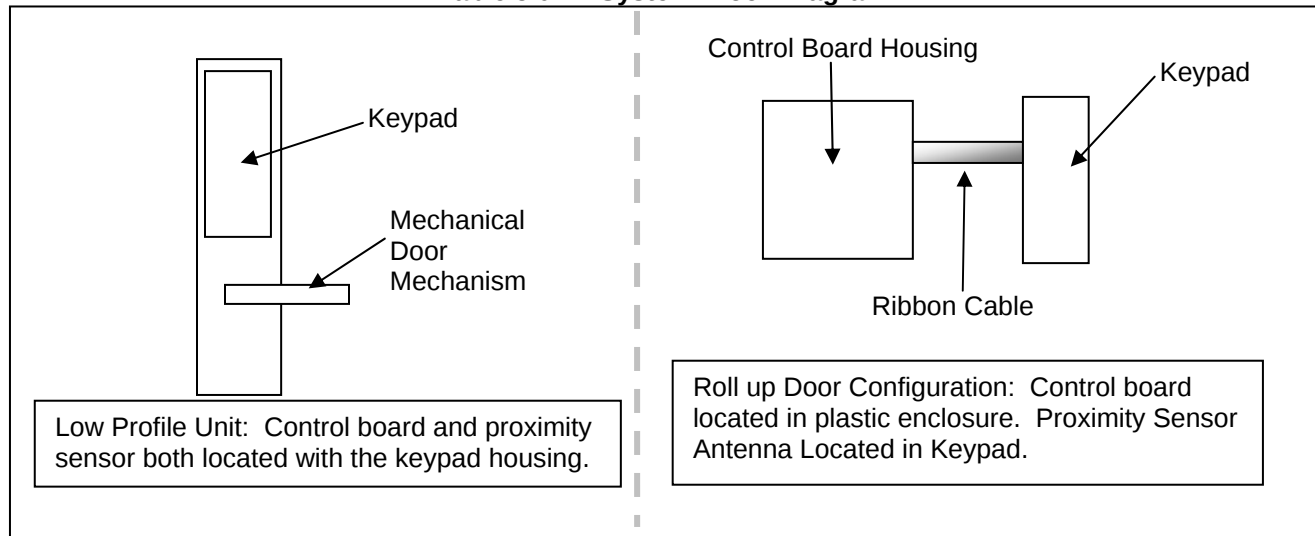
All test equipment used for regulatory testing is calibrated yearly or according to manufacturer's specifications.

Table 4.0-1: Test Equipment

Equipment Calibration Information					
ACS#	Mfg.	Eq. type	Model	S/N	Cal. Due
26	Chase	Bi-Log Antenna	CBL6111	1044	10/05/05
167	ACS	Conducted EMI Cable Set	RG8	167	01/09/05
73	Agilent	Pre-Amplifier	8447D	272A05624	04/30/05
1	Rohde & Schwarz	Receiver	804.8932.52	833771/007	02/26/05
2	Rohde & Schwarz	Receiver	1032.5640.53	839587/003	02/26/05
78	EMCO	Loop Antenna	6502	9104-2608	01/07/05

5.0 SYSTEM BLOCK DIAGRAM

Table 5.0-1: System Block Diagram



6.0 TEST RESULTS

6.1 Test Requirement

6.1.1 Conducted Emissions (15.207)

An intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency (MHz)	QP LIMITS (dBuV)	AV LIMITS (dBuV)
0.15 to 0.5	66.0 to 56.0	56.0 to 46.0
0.5 to 5.0	56.0	46.0
5.0 to 30.0	60.0	50.0

6.1.2 Radiated Emissions (15.209)

Emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

6.2 Test Methodology

6.2.1 Conducted Emissions

Conducted emissions were performed from 150kHz to 30MHz with the spectrum analyzer's resolution bandwidth set to 9kHz and the video bandwidth set to 30kHz. The calculation for the conducted emissions is as follows:

Corrected Reading = Analyzer Reading + LISN Loss + Cable Loss

Margin = Corrected Reading – Applicable Limit

6.2.2 Radiated Emissions

Radiated emissions measurements were made over the frequency range of 9kHz to 30MHz. Quasi-Peak measurements were made as follows:

Frequency (MHz)	RBW Setting
0.009 - 0.150	>100Hz
0.150 – 30.0	9kHz

The EUT was caused to generate a continuous carrier at 125kHz.

6.3 Test Data

6.3.1 Conducted Emissions

Ambient Atmospheric Conditions

 AMBIENT TEMPERATURE: 20° (15° C to 35° C)

 RELATIVE HUMIDITY: 32% (30% to 60%)

 ATMOSPHERIC PRESSURE: 1004 (860 mbar to 1060 mbar)

 DATE: April 12, 2004

 MANUFACTURER: SALock Inc.

 EUT: 420 MR and 420 KP

 EUT VOLTAGE: 230VAC/50 Hz _____ 120 VAC/60 Hz ☒ 12 VDC _____ OTHER: _____

 TYPE OF TEST: _____ FCC CLASS A ☒ FCC CLASS B

TABLE 6.3.1-1: CONDUCTED EMISSIONS LINE 1 –Quasi-Peak

Frequency MHz	Level dB μ V	Transducer dB	Limit dB μ V	Margin dB	Line	PE
0.42	31.40	9.5	57.4	26.0	L1	GND
0.76	23.90	9.5	56.0	32.0	L1	GND
1.458	25.40	9.5	56.0	30.5	L1	GND
2.16	22.10	9.5	56.0	33.8	L1	GND
11.136	26.50	9.9	60.0	33.4	L1	GND
11.97	26.0	9.9	60.0	33.9	L1	GND
12.528	26.30	9.9	60.0	33.6	L1	GND
13.666	25.30	10.0	60.0	34.6	L1	GND
29.928	25.90	10.6	60.0	34.0	L1	GND

TABLE 6.3.1-2: CONDUCTED EMISSIONS LINE 1 –Average

Frequency MHz	Level dB μ V	Transducer dB	Limit dB μ V	Margin dB	Line	PE
0.42	25.80	9.5	47.4	21.5	L1	GND
0.768	18.30	9.5	46.0	27.6	L1	GND
1.458	21.00	9.5	46.0	24.9	L1	GND
2.16	17.00	9.5	46.0	28.9	L1	GND
11.136	19.80	9.9	50.0	30.1	L1	GND
11.97	17.30	9.9	50.0	32.7	L1	GND
12.666	15.60	10.0	50.0	34.3	L1	GND
12.768	16.20	10.0	50.0	33.7	L1	GND
29.928	20.20	10.6	50.0	29.7	L1	GND

TABLE 6.3.1-3: CONDUCTED EMISSIONS LINE 2-Quasi-Peak

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.174	26.10	9.5	64.7	38.5	L2	GND
0.42	31.70	9.5	57.4	25.6	L2	GND
0.45	26.30	9.5	56.8	30.5	L2	GND
1.11	20.20	9.6	56.0	35.7	L2	GND
1.458	25.80	9.5	56.0	30.1	L2	GND
2.364	21.70	9.5	56.0	34.2	L2	GND
2.646	21.00	9.5	56.0	34.9	L2	GND
2.712	22.40	9.5	56.0	33.5	L2	GND
3.198	22.90	9.5	56.0	33.0	L2	GND
3.894	22.70	9.6	56.0	33.2	L2	GND

TABLE 6.3.1-4: CONDUCTED EMISSIONS LINE 2 -Average

Frequency MHz	Level dBμV	Transducer dB	Limit dBμV	Margin dB	Line	PE
0.174	20.30	9.5	54.7	34.4	L2	GND
0.42	29.80	9.5	47.4	17.6	L2	GND
0.45	22.60	9.5	46.8	24.1	L2	GND
1.116	17.90	9.6	46.0	28.0	L2	GND
1.458	21.40	9.5	46.0	24.5	L2	GND
2.364	21.00	9.5	46.0	24.9	L2	GND
2.646	20.20	9.5	46.0	25.7	L2	GND
2.712	21.90	9.5	46.0	24.0	L2	GND
3.198	22.40	9.5	46.0	23.5	L2	GND
3.894	21.60	9.6	46.0	24.3	L2	GND

6.3.2 Radiated Spurious Emissions

Enter ACS Project #:	04-0035	Notes						
Enter Test Date:	11/18/04	1) EUT was caused to generate a continuous carrier at 125kHz						
Enter Technician Name:	S. Wismer	2) Receive antenna height was set to 1 Meter						
Enter Manufacturer:	SA Lock							
Enter EUT Name:	420KP							
Enter Antenna Distance:	3							
Frequency (kHz)	Uncorrected Reading (dBµV/m)	Antenna Factor (dB)	Cable Attenuation (dB)	Pre-Amp (dB)	15.31 Range Correction* (dB)	Corrected Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)
124.985	68.96	10.8	0.1	25.5	80	-25.64	25.7	51.3
188.3	69.66	10.7	0.1	26.3	80	-25.84	22.1	47.9
313.3	64.96	10.6	0.1	26.8	80	-31.14	17.7	48.8
439.3	60.76	10.5	0.1	27.1	80	-35.74	14.7	50.4
563.3	58.16	10.5	0.1	27.1	40	1.66	32.5	30.8
688.3	54.46	10.6	0.1	27.1	40	-1.94	30.9	32.8
813.3	50.46	10.6	0.1	27.1	40	-5.94	29.4	35.3
938.3	51.16	10.6	0.1	27.2	40	-5.34	28.2	33.5

* At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade).

7.0 CONCLUSION

In our opinion, the EUT as presented to ACS and as defined in figure 5.0-1 in section 5.0 of this report, meets the requirements of CFR 47 Part 15.209.