INTERNATIONAL ELECTRONICS, INC.

ADDENDUM TO TEST REPORT FC01-002

FOR THE

SELF-CONTAINED DOOR LOCK,

PA1, PA2, PA3, PK1, PK2 & PK3

FCC PART 15 SUBPART C SECTION 15.209

COMPLIANCE

DATE OF ISSUE: APRIL 12, 2001

PREPARED FOR:

International Electronics, Inc.
427 Turnpike Street
Canton, MA 02021

P.O. No.: 16068
W.O. No.: 75906

PREPARED BY:

Helen Parrish
CKC Laboratories, Inc.
5473A Clouds Rest
Mariposa, CA 95338

Date of test: December 21, 2000 and
March 26, 2001

Report No.: FC01-002A

TABLE OF CONTENTS

ADMINISTRATIVE INFORMATION

DATE OF TEST:	December 21, 2000 and March 26, 2001
DATE OF RECEIPT:	December 21, 2000
PURPOSE OF TEST:	To demonstrate the compliance of the Self-Contained Door Lock, PA1, PA2, PA3, PK1, PK2 and PK3 with the requirements for FCC Part 15 Subpart C Section 15.209 devices. Original testing was done December 21, 2000 on the PK1 only. Additional testing was performed March 26, 2001 on the PA1, PA2, PA3, PK1, PK2 and PK3. This addendum includes data on the PA1, PA2, PA3, PK2 and PK3, in addition to corrected data on the PK1 for the 9 kHz-30 MHz testing.
TEST METHOD:	ANSI C63.4 1992
MANUFACTURER:	International Electronics, Inc. 427 Turnpike Street Canton, MA 02021
REPRESENTATIVE:	Chris Hentschel
TEST LOCATION:	CKC Laboratories, Inc. 5473A Clouds Rest Mariposa, CA 95338

SUMMARY OF RESULTS

As received, the International Electronics, Inc. Self-Contained Door Lock, PA1, PA2, PA3, PK1, PK2 and PK3 was found to be fully compliant with the following standards and specifications:

United States

- FCC Part 15 Subpart C Section 15.209
- ANSI C63.4 (1992) method

The results in this report apply only to the items tested, as identified herein.

Test Overview

Section	Test Type	Results
15.33	Frequency Ranges	Pass
15.35	Bandwidth Settings	Pass
15.203	Antenna Requirements	Pass
15.205	Restricted Band	Pass
15.207	Mains Conducted Emissions	NA*
15.209	Field Strength of Fundamental Frequency	Pass
15.209	Field Strength of Radiated Spurious Emissions	Pass

*NA=Not applicable. 15.207 testing is not necessary since EUT is battery operated.

MODIFICATIONS REQUIRED FOR COMPLIANCE

No modifications to the EUT were necessary to comply.

APPROVALS

QUALITY ASSURANCE:

Dennis Ward, Quality Manager

Chuck Kendall, EMC/Lab Manager

TEST PERSONNEL:

Randy Clark, EMC Engineer

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The EUT tested by CKC Laboratories was a production unit.

The EUTs are card readers and self-contained door lock using an HID proximity card reader. EUTs have new batteries installed.

The difference between the PK and PA is that the PA variation does not have a keypad.

EQUIPMENT UNDER TEST

Self-Contained Door Lock
Manuf: International Electronics, Inc.
Model: PA1
Serial: 001
FCC ID: PHU-PA-PK (Pending)

Self-Contained Door Lock
Manuf: International Electronics, Inc.
Model: PK1
Serial: 16777215
FCC ID: PHU-PA-PK (Pending)

Self-Contained Door Lock
Manuf: International Electronics, Inc.
Model: PA2
Serial: 001
FCC ID: PHU-PA-PK (Pending)

Self-Contained Door Lock
Manuf: International Electronics, Inc.
Model: PK2
Serial: 001
FCC ID: PHU-PA-PK (Pending)

Self-Contained Door Lock
Manuf: International Electronics, Inc.
Model: PA3
Serial: 001
FCC ID: PHU-PA-PK (Pending)

Self-Contained Door Lock
Manuf: International Electronics, Inc.
Model: PK3
Serial: 001
FCC ID: PHU-PA-PK (Pending)

PERIPHERAL DEVICES

The EUT was tested with the following peripheral device(s):

Test Card
Manuf: HID Corporation
Model: Manufacturing Test Card
Serial: F0203AAAAAA
FCC ID: DoC

MODE OF OPERATION

EUTs have been programmed to read a card continuously.

15.33 FREQUENCY RANGE TESTED

15.209 Radiated: 9 kHz – 1000 MHz

EUT OPERATING FREQUENCY

The EUT was operating at 125 kHz.

TEMPERATURE AND HUMIDITY DURING TESTING

The temperature during testing was within +15°C and + 35°C.
The relative humidity was between 20% and 75%.

REPORT OF MEASUREMENTS

The following tables report the worst case emissions levels recorded during the tests performed on the Self-Contained Door Lock, PA1, PA2, PA3, PK1, PK2 and PK3. All readings taken were peak readings unless otherwise stated. The data sheets from which the emissions tables were compiled are contained in Appendix C.

Table 1: 15.209 Field Strength of Fundamental Frequency (PA1)

FREQUENCY	METER READING	CORRECTION FACTORS				CORRECTED READING	SPEC LIMIT	MARGIN	NOTES
		Mag	Cable	FCC 15.31	Dist				
MHz	dBµV	dB	dB	dB	dB	dBµV/m	dBµV/m	dB	
0.126	57.2	10.8	0.1	-80.0		-11.9	25.6	-37.5	N

Test Method: ANSI C63.4 1992
Spec Limit: FCC Part 15.209
Test Distance: 3 Meters

NOTES: N = No Polarization

COMMENTS: EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Measurements taken at 3 meters test distance to elevate fundamental above ambient noise level. Correction factors used in accordance with FCC 15.31 (40dB/decade). Field strength of fundamental frequency.

Table 2: 15.209 Highest Radiated Emission Levels - 9 kHz - 30 MHz (PA1)									
	METER	CORRECTION FACTORS				CORRECTED	SPEC		
FREQUENCY	READING	Mag	Cable	FCC 15.31	Dist	READING	LIMIT	MARGIN	NOTES
MHz	dBµV	dB	dB	dB	dB	dBµV/m	dBµV/m	dB	
0.251	43.7	10.6	0.1	-60.0		-5.6	19.6	-25.2	N
0.377	41.1	10.6	0.0	-60.0		-8.3	16.1	-24.4	N
0.502	32.3	10.7	0.1	-20.0		23.1	33.6	-10.5	N
0.628	31.1	10.7	0.1	-20.0		21.9	31.6	-9.7	N
0.749	34.2	10.8	0.2	-20.0		25.2	30.1	-4.9	N
0.878	28.5	10.6	0.2	-20.0		19.3	28.7	-9.4	N

Test Method: ANSI C63.4 1992
Spec Limit: FCC 15.209
Test Distance: 10 Meters

NOTES: N = No Polarization

COMMENTS: EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Correction factors used in accordance with FCC 15.31 (40dB/decade). Test range 9 kHz-30 MHz.

Table 3: 15.209 Highest Radiated Emission Levels - 30-1000 MHz (PA1)									
	METER	CORRECTION FACTORS				CORRECTED	SPEC		
FREQUENCY MHz	READING dBµV	Bicon dB	Amp dB	Cable dB	Dist dB	READING dBµV/m	LIMIT dBµV/m	MARGIN dB	NOTES
44.607	46.9	10.9	-25.0	1.2		34.0	40.0	-6.0	VQ
44.609	38.9	10.9	-25.0	1.2		26.0	40.0	-14.0	H
54.746	35.5	10.5	-24.9	1.4		22.5	40.0	-17.5	V
235.900	30.7	16.3	-24.7	3.0		25.3	46.0	-20.7	V
248.735	31.0	15.8	-24.6	3.1		25.3	46.0	-20.7	V

Test Method: ANSI C63.4 1992
Spec Limit: FCC Part 15.209
Test Distance: 3 Meters

NOTES: H = Horizontal Polarization
V = Vertical Polarization
Q = Quasi Peak Reading

COMMENTS: EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Frequency range 30 MHz – 1000 MHz with no emissions found above 300 MHz.

Table 4: 15.209 Field Strength of Fundamental Frequency (PA2)									
	METER	CORRECTION FACTORS				CORRECTED	SPEC		
FREQUENCY	READING	Mag	Cable	FCC 15.31	Dist	READING	LIMIT	MARGIN	NOTES
MHz	dBµV	dB	dB	dB	dB	dBµV/m	dBµV/m	dB	
0.126	59.5	10.8	0.1	-80.0		-9.6	25.6	-35.2	N

Test Method: ANSI C63.4 1992
Spec Limit: FCC Part 15.209
Test Distance: 3 Meters

NOTES: N = No Polarization

COMMENTS: EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Measurements taken at 3 meters test distance to elevate fundamental above ambient noise level. Correction factors used in accordance with FCC 15.31 (40dB/decade). Field strength of fundamental frequency.

Table 5: 15.209 Highest Radiated Emission Levels - 9 kHz - 30 MHz (PA2)									
	METER	CORRECTION FACTORS				CORRECTED	SPEC		
FREQUENCY	READING	Mag	Cable	FCC 15.31	Dist	READING	LIMIT	MARGIN	NOTES
MHz	dBµV	dB	dB	dB	dB	dBµV/m	dBµV/m	dB	
0.377	39.8	10.6	0.0	-60.0		-9.6	16.1	-25.7	N
0.503	34.1	10.7	0.1	-20.0		24.9	33.6	-8.7	N
0.628	32.2	10.7	0.1	-20.0		23.0	31.6	-8.6	N
0.754	30.7	10.8	0.2	-20.0		21.7	30.0	-8.3	N
0.880	29.0	10.6	0.2	-20.0		19.8	28.7	-8.9	N
1.006	28.8	10.7	0.2	-20.0		19.7	27.5	-7.8	N

Test Method: ANSI C63.4 1992
Spec Limit: FCC 15.209
Test Distance: 10 Meters

NOTES: N = No Polarization

COMMENTS: EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Correction factors used in accordance with FCC 15.31 (40dB/decade). Test range 9 kHz-30 MHz with no emissions found above 300 MHz.

Table 6: 15.209 Highest Radiated Emission Levels - 30-1000 MHz (PA2)									
	METER	CORRECTION FACTORS				CORRECTED	SPEC		
FREQUENCY MHz	READING dBµV	Bicon dB	Amp dB	Cable dB	Dist dB	READING dBµV/m	LIMIT dBµV/m	MARGIN dB	NOTES
44.619	47.7	10.9	-25.0	1.2		34.8	40.0	-5.2	VQ
55.319	39.0	10.4	-24.9	1.5		26.0	40.0	-14.0	H
128.933	36.7	14.1	-25.0	2.3		28.1	43.5	-15.4	V
268.250	33.0	18.0	-24.7	3.2		29.5	46.0	-16.5	V

Test Method: ANSI C63.4 1992
Spec Limit: FCC Part 15.209
Test Distance: 3 Meters

NOTES: H = Horizontal Polarization
V = Vertical Polarization
Q = Quasi Peak Reading

COMMENTS: EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Frequency range 30 MHz – 1000 MHz with no emissions found above 300 MHz.

Table 7: 15.209 Field Strength of Fundamental Frequency (PA3)									
	METER	CORRECTION FACTORS				CORRECTED	SPEC		
FREQUENCY	READING	Mag	Cable	FCC 15.31	Dist	READING	LIMIT	MARGIN	NOTES
MHz	dBµV	dB	dB	dB	dB	dBµV/m	dBµV/m	dB	
0.125	58.1	10.8	0.1	-80.0		-11.0	25.6	-36.6	N

Test Method: ANSI C63.4 1992
Spec Limit: FCC Part 15.209
Test Distance: 3 Meters

NOTES: N = No Polarization

COMMENTS: EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Measurements taken at 3 meters test distance to elevate fundamental above ambient noise level. Correction factors used in accordance with FCC 15.31 (40dB/decade). Field strength of fundamental frequency.

Table 8: 15.209 Highest Radiated Emission Levels - 9 kHz - 30 MHz (PA3)									
	METER	CORRECTION FACTORS				CORRECTED	SPEC		
FREQUENCY	READING	Mag	Cable	FCC 15.31	Dist	READING	LIMIT	MARGIN	NOTES
MHz	dBµV	dB	dB	dB	dB	dBµV/m	dBµV/m	dB	
0.248	42.7	10.6	0.1	-60.0		-6.6	19.7	-26.3	N
0.502	33.3	10.7	0.1	-20.0		24.1	33.6	-9.5	N
0.627	30.3	10.7	0.1	-20.0		21.1	31.6	-10.5	N
0.750	30.2	10.8	0.2	-20.0		21.2	30.1	-8.9	N
0.877	26.6	10.6	0.2	-20.0		17.4	28.7	-11.3	N
1.001	25.6	10.7	0.2	-20.0		16.5	27.6	-11.1	N

Test Method: ANSI C63.4 1992
Spec Limit: FCC 15.209
Test Distance: 10 Meters

NOTES: N = No Polarization

COMMENTS: EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Correction factors used in accordance with FCC 15.31 (40dB/decade). Test range 9 kHz-30 MHz with no emissions found above 300 MHz.

Table 9: 15.209 Highest Radiated Emission Levels - 30-1000 MHz (PA3)									
	METER	CORRECTION FACTORS				CORRECTED	SPEC		
FREQUENCY MHz	READING dBµV	Bicon dB	Amp dB	Cable dB	Dist dB	READING dBµV/m	LIMIT dBµV/m	MARGIN dB	NOTES
44.585	38.4	10.9	-25.0	1.2		25.5	40.0	-14.5	H
44.596	47.1	10.9	-25.0	1.2		34.2	40.0	-5.8	VQ
128.909	32.2	14.1	-25.0	2.3		23.6	43.5	-19.9	H
128.958	36.0	14.1	-25.0	2.3		27.4	43.5	-16.1	V
246.510	32.9	15.8	-24.6	3.1		27.2	46.0	-18.8	V

Test Method: ANSI C63.4 1992
Spec Limit: FCC Part 15.209
Test Distance: 3 Meters

NOTES: H = Horizontal Polarization
V = Vertical Polarization
Q = Quasi Peak Reading

COMMENTS: EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Frequency range 30 MHz – 1000 MHz with no emissions found above 300 MHz.

Table 10: 15.209 Field Strength of Fundamental Frequency (PK1)

FREQUENCY	METER READING	CORRECTION FACTORS				CORRECTED READING	SPEC LIMIT	MARGIN	NOTES
		Mag	Cable	FCC 15.31	Dist				
MHz	dBµV	dB	dB	dB	dB	dBµV/m	dBµV/m	dB	
0.126	59.0	10.8	0.1	-80.0		-10.1	25.6	-35.7	N

Test Method: ANSI C63.4 1992
Spec Limit: FCC Part 15.209
Test Distance: 3 Meters

NOTES: N = No Polarization

COMMENTS: EUT is continuously transmitting on 125 kHz via use of the HID manufacturing test card. EUT is battery operated. Field strength of fundamental frequency.

Table 11: 15.209 Highest Radiated Emission Levels - 9 kHz - 30 MHz (PK1)									
	METER	CORRECTION FACTORS				CORRECTED	SPEC		
FREQUENCY	READING	Mag	Cable	FCC 15.31	Dist	READING	LIMIT	MARGIN	NOTES
MHz	dBµV	dB	dB	dB	dB	dBµV/m	dBµV/m	dB	
0.250	42.2	10.6	0.1	-60.0		-7.1	19.6	-26.7	N
0.344	43.6	10.6	0.0	-60.0		-5.8	16.9	-22.7	N
0.375	39.5	10.6	0.0	-60.0		-9.9	16.1	-26.0	N
0.500	36.7	10.7	0.1	-20.0		27.5	33.6	-6.1	N
0.751	35.0	10.8	0.2	-20.0		26.0	30.1	-4.1	N
0.876	32.6	10.6	0.2	-20.0		23.4	28.7	-5.3	N

Test Method: ANSI C63.4 1992
Spec Limit: FCC 15.209
Test Distance: 10 Meters

NOTES: N = No Polarization

COMMENTS: EUT is continuously transmitting on 125 kHz via use of the HID manufacturing test card. EUT is battery operated. Test range 9 kHz-30 MHz with no emissions found above 300 MHz.

Table 12: 15.209 Highest Radiated Emission Levels - 30-1000 MHz (PK1)									
	METER	CORRECTION FACTORS				CORRECTED	SPEC		
FREQUENCY MHz	READING dBµV	Bicon dB	Amp dB	Cable dB	Dist dB	READING dBµV/m	LIMIT dBµV/m	MARGIN dB	NOTES
43.120	37.7	11.0	-25.0	1.2		24.9	40.0	-15.1	V
43.120	34.7	11.0	-25.0	1.2		21.9	40.0	-18.1	H
54.720	35.3	10.5	-24.9	1.4		22.3	40.0	-17.7	V
54.720	34.4	10.5	-24.9	1.4		21.4	40.0	-18.6	H
128.725	34.6	14.1	-25.0	2.3		26.0	43.5	-17.5	V
250.090	31.6	15.7	-24.6	3.1		25.8	46.0	-20.2	V

Test Method: ANSI C63.4 1992
Spec Limit: FCC Part 15.209
Test Distance: 3 Meters

NOTES: H = Horizontal Polarization
V = Vertical Polarization

COMMENTS: EUT is continuously transmitting on 125 kHz via use of the HID manufacturing test card. EUT is battery operated. Frequency range 30 MHz – 1000 MHz with no emissions found above 300 MHz.

Table 13: 15.209 Field Strength of Fundamental Frequency (PK2)									
	METER	CORRECTION FACTORS				CORRECTED	SPEC		
FREQUENCY	READING	Mag	Cable	FCC 15.31	Dist	READING	LIMIT	MARGIN	NOTES
MHz	dBµV	dB	dB	dB	dB	dBµV/m	dBµV/m	dB	
0.126	59.0	10.8	0.1	-80.0		-10.1	25.6	-35.7	N

Test Method: ANSI C63.4 1992
Spec Limit: FCC Part 15.209
Test Distance: 3 Meters

NOTES: N = No Polarization

COMMENTS: EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Measurements taken at 3 meters test distance to elevate fundamental above ambient noise level. Correction factors used in accordance with FCC 15.31 (40dB/decade). Field strength of fundamental frequency.

Table 14: 15.209 Highest Radiated Emission Levels - 9 kHz - 30 MHz (PK2)									
	METER	CORRECTION FACTORS				CORRECTED	SPEC		
FREQUENCY	READING	Mag	Cable	FCC 15.31	Dist	READING	LIMIT	MARGIN	NOTES
MHz	dBµV	dB	dB	dB	dB	dBµV/m	dBµV/m	dB	
0.251	43.3	10.6	0.1	-60.0		-6.0	19.6	-25.6	N
0.376	40.7	10.6	0.0	-60.0		-8.7	16.1	-24.8	N
0.502	32.3	10.7	0.1	-20.0		23.1	33.6	-10.5	N
0.753	31.5	10.8	0.2	-20.0		22.5	30.0	-7.5	N
0.878	27.1	10.6	0.2	-20.0		17.9	28.7	-10.8	N
1.003	27.7	10.7	0.2	-20.0		18.6	27.5	-8.9	N

Test Method: ANSI C63.4 1992
Spec Limit: FCC 15.209
Test Distance: 10 Meters

NOTES: N = No Polarization

COMMENTS: EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Correction factors used in accordance with FCC 15.31 (40dB/decade). Test range 9 kHz-30 MHz with no emissions found above 300 MHz.

Table 15: 15.209 Highest Radiated Emission Levels - 30-1000 MHz (PK2)									
	METER	CORRECTION FACTORS				CORRECTED	SPEC		
FREQUENCY MHz	READING dBµV	Bicon dB	Amp dB	Cable dB	Dist dB	READING dBµV/m	LIMIT dBµV/m	MARGIN dB	NOTES
44.570	39.8	10.9	-25.0	1.2		26.9	40.0	-13.1	H
44.612	40.6	10.9	-25.0	1.2		27.7	40.0	-12.3	VQ
52.445	39.0	10.7	-24.9	1.4		26.2	40.0	-13.8	H
128.945	35.4	14.1	-25.0	2.3		26.8	43.5	-16.7	V
150.089	37.2	12.6	-24.9	2.3		27.2	43.5	-16.3	V
259.290	29.7	16.9	-24.6	3.2		25.2	46.0	-20.8	V

Test Method: ANSI C63.4 1992
Spec Limit: FCC Part 15.209
Test Distance: 3 Meters

NOTES: H = Horizontal Polarization
V = Vertical Polarization
Q = Quasi Peak Reading

COMMENTS: EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Frequency range 30 MHz – 1000 MHz with no emissions found above 300 MHz.

Table 16: 15.209 Field Strength of Fundamental Frequency (PK3)									
	METER	CORRECTION FACTORS				CORRECTED	SPEC		
FREQUENCY	READING	Mag	Cable	FCC 15.31	Dist	READING	LIMIT	MARGIN	NOTES
MHz	dBµV	dB	dB	dB	dB	dBµV/m	dBµV/m	dB	
0.125	58.7	10.8	0.1	-80.0		-10.4	25.6	-36.0	N

Test Method: ANSI C63.4 1992
Spec Limit: FCC Part 15.209
Test Distance: 3 Meters

NOTES: N = No Polarization

COMMENTS: EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Measurements taken at 3 meters test distance to elevate fundamental above ambient noise level. Correction factors used in accordance with FCC 15.31 (40dB/decade). Field strength of fundamental frequency.

Table 17: 15.209 Highest Radiated Emission Levels - 9 kHz - 30 MHz (PK3)									
	METER	CORRECTION FACTORS				CORRECTED	SPEC		
FREQUENCY	READING	Mag	Cable	FCC 15.31	Dist	READING	LIMIT	MARGIN	NOTES
MHz	dBµV	dB	dB	dB	dB	dBµV/m	dBµV/m	dB	
0.251	43.4	10.6	0.1	-60.0		-5.9	19.6	-25.5	N
0.502	37.0	10.7	0.1	-20.0		27.8	33.6	-5.8	N
0.627	32.0	10.7	0.1	-20.0		22.8	31.6	-8.8	N
0.753	31.8	10.8	0.2	-20.0		22.8	30.0	-7.2	N
0.878	28.7	10.6	0.2	-20.0		19.5	28.7	-9.2	N
1.004	29.6	10.7	0.2	-20.0		20.5	27.5	-7.0	N

Test Method: ANSI C63.4 1992
Spec Limit: FCC 15.209
Test Distance: 10 Meters

NOTES: N = No Polarization

COMMENTS: EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Correction factors used in accordance with FCC 15.31 (40dB/decade). Test range 9 kHz-30 MHz with no emissions found above 300 MHz.

Table 18: 15.209 Highest Radiated Emission Levels - 30-1000 MHz (PK3)									
	METER	CORRECTION FACTORS				CORRECTED	SPEC		
FREQUENCY MHz	READING dBµV	Bicon dB	Amp dB	Cable dB	Dist dB	READING dBµV/m	LIMIT dBµV/m	MARGIN dB	NOTES
44.580	37.8	10.9	-25.0	1.2		24.9	40.0	-15.1	H
54.725	37.4	10.5	-24.9	1.4		24.4	40.0	-15.6	V
55.340	39.3	10.4	-24.9	1.5		26.3	40.0	-13.7	H
154.845	37.3	12.9	-24.9	2.4		27.7	43.5	-15.8	V
174.125	33.7	15.9	-24.8	2.6		27.4	43.5	-16.1	V
247.190	36.2	15.8	-24.6	3.1		30.5	46.0	-15.5	V

Test Method: ANSI C63.4 1992
Spec Limit: FCC Part 15.209
Test Distance: 3 Meters

NOTES: H = Horizontal Polarization
V = Vertical Polarization

COMMENTS: EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Frequency range 30 MHz – 1000 MHz with no emissions found above 300 MHz.

MEASUREMENT UNCERTAINTY

Associated with data in this report is a ± 4dB measurement uncertainty.

EUT SETUP

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the photographs in Appendix A. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables. The corrected data was then compared to the applicable emission limits to determine compliance.

The radiated emissions data of the Self-Contained Door Lock, PA1, PA2, PA3, PK1, PK2 and PK3, was taken with the HP Spectrum Analyzer. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in Table A.

Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dBµV/m, the spectrum analyzer reading in dBµV was corrected by using the following formula in Table A. This reading was then compared to the applicable specification limit to determine compliance.

TABLE A: SAMPLE CALCULATIONS

	Meter reading	(dBµV)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dBµV/m)

A typical data sheet will display the following in column format:

#	Freq MHz	Rdng dBuV	Mag	Cable	FCC 15.31	Amp	Bicon	Log	Dist	Corr dBuV/m	Spec	Margin	Polar

#	Reading number, order of frequencies listed by margin.
Freq MHz	Frequency in MHz of the obtained reading.
Rdng dBuV	Reading obtained on the spectrum analyzer in dBµV.
Mag	Magnetic loop antenna factor in dB
Cable	Cable loss in dB of the coaxial cable on the OATS.
FCC 15.31	Is the distance correction called out in FCC Part 15.31.
Amp	Preamplifier factor or gain in dB.
Bicon	Bicon antenna factor in dB.
Log	Log Periodic antenna factor in dB
Dist	Distance factor in dB. It is used when testing at a different test distance than otherwise stated in the spec.
Corr dBµV/m	Corrected reading which is now in dBµV/m (field strength).
Spec	Specification limit (dB) stated in the appropriate standard.
Margin	Closeness to the specified limit in dB; + is over and - is under the limit.
Polar	Polarity of the antenna with respect to earth.

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed in Appendix B were used to collect the radiated emissions data for the Self-Contained Door Lock, PA1, PA2, PA3, PK1, PK2 and PK3. For radiated measurements below 30 MHz, the mag loop antenna was used. For frequencies from 30 to 1000 MHz, the bicon antenna was used. No emissions were found above 300 MHz.

The HP spectrum analyzer was used for all measurements. Table B shows the analyzer bandwidth settings that were used in designated frequency bands. During radiated testing, the measurements were made with 0 dB of attenuation, a reference level of 97 dBµV, and a vertical scale of 10 dB per division.

FCC SECTION 15.35:
TABLE B: ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE

TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
RADIATED EMISSIONS	9 kHz	150 kHz	200 Hz
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz

SPECTRUM ANALYZER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "Peak" mode. Whenever a "Quasi-Peak" or "Average" reading is listed as one of the highest readings, this is indicated as a "Q" or an "A" in the appropriate table. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data for the Self-Contained Door Lock, PA1, PA2, PA3, PK1, PK2 and PK3.

Peak

In this mode, the Spectrum Analyzer or test engineer recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the analyzer called "peak hold," the analyzer had the ability to measure transients or low duty cycle transient emission peak levels. In this mode the analyzer made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the HP Quasi-Peak Adapter for the HP Spectrum Analyzer. The detailed procedure for making quasi peak measurements contained in the HP Quasi-Peak Adapter manual were followed.

Average

For certain frequencies, average measurements may be made using the spectrum analyzer. To make these measurements, the test engineer reduces the video bandwidth on the analyzer until the modulation of the signal is filtered out. At this point the analyzer is set into the linear mode and the scan time is reduced.

EUT TESTING

Radiated Emissions

The EUT was mounted on a nonconductive, rotating table 80 cm above the conductive grid. The nonconductive table dimensions were 1 meter by 1.5 meters.

During the preliminary radiated scan, the EUT was powered up and operating in its defined FCC test mode. The frequency range of 9 kHz - 30 MHz was scanned using the mag loop antenna. The frequency range of 30 MHz to 88 MHz was scanned with the bicon antenna located about 1.5 meter above the ground plane in the vertical configuration. During this scan, the turntable was rotated and all peaks at or near the limit were recorded. The frequency range of 100 to 300 MHz was then scanned in the same manner using the bicon antenna and the peaks recorded. Lastly, a scan of the FM band from 88 to 110 MHz was made, using a reduced resolution bandwidth and frequency span. The bicon antenna was changed to the horizontal polarity and the above steps were repeated. After changing to the log periodic antenna in the horizontal configuration, the frequency range of 300 to 1000 MHz was scanned. The log periodic antenna was changed to the vertical polarity and the frequency range of 300 to 1000 MHz was again scanned. Care was taken to ensure that no frequencies were missed within the FM and TV bands. An analysis was performed to determine if the signals that were at or near the limit were caused by an ambient transmission. If unable to determine by analysis, the equipment was powered down to make the final determination if the EUT was the source of the emission.

A thorough scan of all frequencies was made manually using a small frequency span, rotating the turntable as needed. Comparison with the previously recorded measurements was then made.

Using the peak readings from both scans as a guide, the test engineer then maximized the readings with respect to the table rotation and antenna height. Photographs showing the final worst case configuration of the EUT are contained in Appendix A.

TRANSMITTER CHARACTERISTICS

15.203 Antenna Requirements

Antenna Type: The antenna is part of the keypad bezel.
Connection to EUT: Integral, non-removable

The antenna is an integral part of the EUT and is NON-Removable; therefore the EUT complies with Section 15.203 of the FCC rules.

15.205 Restricted Bands

Operating frequency: 125 kHz.

The fundamental operating frequency lies outside the restricted bands and therefore complies with the requirements of Section 15.205 of the FCC rules.

Any spurious emission coming from the EUT was investigated to determine if any portion lies inside the restricted band. If any portion of a spurious emissions signal was found to be within a restricted band, investigation was performed to ensure compliance with Section 15.209.

15.209(a) Power Output

The following table demonstrates the maximum field strength of the transmitters when measured at a test distance of three meters. These measurements were made with the integral antennas of the EUTs, as there is no provision for connecting an external antenna.

Model	Transmitter Field Strength
PA1	-11.9 dBµV/m
PA2	-9.6 dBµV/m
PA3	-11.0 dBµV/m
PK1	-17.5 dBµV/m
PK2	-10.1 dBµV/m
PK3	-10.4 dBµV/m

APPENDIX A

INFORMATION ABOUT THE EQUIPMENT UNDER TEST

INFORMATION ABOUT THE EQUIPMENT UNDER TEST	
Test Software/Firmware:	
CRT was displaying:	
Power Supply Manufacturer:	
Power Supply Part Number:	
AC Line Filter Manufacturer:	
AC Line Filter Part Number:	
Line voltage used during testing:	

I/O PORTS	
Type	#

CRYSTAL OSCILLATORS	
Type	Freq In MHz

PRINTED CIRCUIT BOARDS				
Function	Model & Rev	Clocks, MHz	Layers	Location
MAIN BD	209-5006	4.00 MHz	4	
KEYPAD BD	209-5007	none	2	
LED BD	209-5008	none	2	
EPROX BD	4041ANN00	4.00 MHz	2	

CABLE INFORMATION

Cable #:	SHK1	Cable(s) of this type:	
Cable Type:		Shield Type:	None
Construction:	Ribbon cable	Length In Meters:	.3
Connected To End (1):		Connected To End (2):	
Connector At End (1):		Connector At End (2):	
Shield Grounded At (1):		Shield Grounded At (2):	
Part Number:	432-5066	Number of Conductors:	24
Notes and/or description:			

Cable #:	EPC1	Cable(s) of this type:	
Cable Type:		Shield Type:	None
Construction:	Wire	Length In Meters:	.05
Connected To End (1):		Connected To End (2):	
Connector At End (1):		Connector At End (2):	
Shield Grounded At (1):		Shield Grounded At (2):	
Part Number:	432-5088	Number of Conductors:	9
Notes and/or description:			

Cable #:	EPA2	Cable(s) of this type:	
Cable Type:	Wire	Shield Type:	None
Construction:		Length In Meters:	.05
Connected To End (1):		Connected To End (2):	
Connector At End (1):		Connector At End (2):	
Shield Grounded At (1):		Shield Grounded At (2):	
Part Number:	432-5077	Number of Conductors:	2
Notes and/or description:			

Cable #:	GND	Cable(s) of this type:	
Cable Type:	Wire	Shield Type:	None
Construction:		Length In Meters:	.076
Connected To End (1):		Connected To End (2):	
Connector At End (1):		Connector At End (2):	
Shield Grounded At (1):		Shield Grounded At (2):	
Part Number:	431-8801	Number of Conductors:	1
Notes and/or description:			

PHOTOGRAPH SHOWING RADIATED EMISSIONS (PA1)

Radiated Emissions - Front View (PA1)

PHOTOGRAPH SHOWING RADIATED EMISSIONS (PA1)

Radiated Emissions - Back View (PA1)

PHOTOGRAPH SHOWING RADIATED EMISSIONS (PA2)

Radiated Emissions - Front View (PA2)

PHOTOGRAPH SHOWING RADIATED EMISSIONS (PA2)

Radiated Emissions - Back View (PA2)

PHOTOGRAPH SHOWING RADIATED EMISSIONS (PA3)

Radiated Emissions - Front View (PA3)

PHOTOGRAPH SHOWING RADIATED EMISSIONS (PA3)

Radiated Emissions - Back View (PA3)

PHOTOGRAPH SHOWING RADIATED EMISSIONS (PK1)

Radiated Emissions - Front View (PK1)

PHOTOGRAPH SHOWING RADIATED EMISSIONS (PK1)

Radiated Emissions - Back View (PK1)

PHOTOGRAPH SHOWING RADIATED EMISSIONS (PK2)

Radiated Emissions - Front View (PK2)

PHOTOGRAPH SHOWING RADIATED EMISSIONS (PK2)

Radiated Emissions - Back View (PK2)

PHOTOGRAPH SHOWING RADIATED EMISSIONS (PK3)

Radiated Emissions - Front View (PK3)

PHOTOGRAPH SHOWING RADIATED EMISSIONS (PK3)

Radiated Emissions - Back View (PK3)

APPENDIX B

TEST EQUIPMENT LIST

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer, RF Section HP 8566B	2209A01404	11/3/2000	11/3/2001	00490
SA Display Section HP 8566B	2403A08241	11/3/2000	11/3/2001	00489
QP Adapter HP 85650A	2811A01267	11/3/2000	11/3/2001	00478
Antenna, Mag Loop EMCO 6502	1074	7/3/2000	7/3/2001	00226
Preamp HP 8447D	1937A02604	4/3/2000	4/3/2001	00099
Antenna, Log Periodic A & H SAS-200/510	154	5/8/2000	5/8/2001	01330
Antenna, Bicon A & H SAS 200/542	156	12/8/2000	12/8/2001	00225

APPENDIX C

MEASUREMENT DATA SHEETS

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **International Electronics**
Specification: **FCC 15 C PARA 15.209**
Work Order #: **75906** Date: 03/26/2001
Test Type: **Maximized Emissions** Time: 16:29:04
Equipment: **Card Reader/Door Lock** Sequence#: 14
Manufacturer: International Electronics Tested By: Randal Clark
Model: PA1
S/N: 001

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Card Reader/Door Lock*	International Electronics	PA1	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Measurements taken at 3 meters test distance to elevate fundamental above ambient noise level. Correction factors used in accordance with FCC 15.31 (40dB/decade). Field strength of fundamental frequency.

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	Mag dB	Cable dB	FCC 15.31 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	125.526k	57.2	+10.8	+0.1	-80.0		+0.0	-11.9	25.6	-37.5	None

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **International Electronics**
Specification: **FCC 15 C PARA 15.209**
Work Order #: **75906** Date: 03/26/2001
Test Type: **Maximized Emissions** Time: 17:05:21
Equipment: **Card Reader/Door Lock** Sequence#: 17
Manufacturer: International Electronics Tested By: Randal Clark
Model: PA1
S/N: 001

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Card Reader/Door Lock*	International Electronics	PA1	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Correction factors used in accordance with FCC 15.31 (40dB/decade). Test range 9 kHz-30 MHz.

Measurement Data: Reading listed by margin. Test Distance: 10 Meters

#	Freq MHz	Rdng dBµV	Mag dB	Cable dB	FCC 15.31 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	748.660k	34.2	+10.8	+0.2	-20.0		+0.0	25.2	30.1	-4.9	None
2	878.460k	28.5	+10.6	+0.2	-20.0		+0.0	19.3	28.7	-9.4	None
3	627.740k	31.1	+10.7	+0.1	-20.0		+0.0	21.9	31.6	-9.7	None
4	502.230k	32.3	+10.7	+0.1	-20.0		+0.0	23.1	33.6	-10.5	None
5	376.800k	41.1	+10.6	+0.0	-60.0		+0.0	-8.3	16.1	-24.4	None
6	250.900k	43.7	+10.6	+0.1	-60.0		+0.0	-5.6	19.6	-25.2	None

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **International Electronics**
Specification: **FCC 15.209**
Work Order #: **75906** Date: 03/26/2001
Test Type: **Maximized Emissions** Time: 16:04:59
Equipment: **Card Reader/Door Lock** Sequence#: 11
Manufacturer: International Electronics Tested By: Randal Clark
Model: PA1
S/N: 001

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Card Reader/Door Lock*	International Electronics	PA1	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Frequency range 30 MHz – 1000 MHz with no emissions found above 300 MHz.

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	Amp dB	Bicon dB	Log 1 dB	Cable dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1 QP	44.607M	46.9	-25.0	+10.9	+0.0	+1.2	+0.0	34.0	40.0	-6.0	Vert
^	44.565M	49.8	-25.0	+10.9	+0.0	+1.2	+0.0	36.9	40.0	-3.1	Vert
3	44.609M	38.9	-25.0	+10.9	+0.0	+1.2	+0.0	26.0	40.0	-14.0	Horiz
4	54.746M	35.5	-24.9	+10.5	+0.0	+1.4	+0.0	22.5	40.0	-17.5	Vert
5	235.900M	30.7	-24.7	+16.3	+0.0	+3.0	+0.0	25.3	46.0	-20.7	Vert
6	248.735M	31.0	-24.6	+15.8	+0.0	+3.1	+0.0	25.3	46.0	-20.7	Vert

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **International Electronics**
Specification: **FCC 15 C PARA 15.209**
Work Order #: **75906** Date: 03/26/2001
Test Type: **Maximized Emissions** Time: 16:33:07
Equipment: **Card Reader/Door Lock** Sequence#: 15
Manufacturer: International Electronics Tested By: Randal Clark
Model: PA2
S/N: 001

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Card Reader/Door Lock*	International Electronics	PA2	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Measurements taken at 3 meters test distance to elevate fundamental above ambient noise level. Correction factors used in accordance with FCC 15.31 (40dB/decade). Field strength of fundamental frequency.

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	Mag dB	Cable dB	FCC 15.31 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	125.707k	59.5	+10.8	+0.1	-80.0		+0.0	-9.6	25.6	-35.2	None

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **International Electronics**
Specification: **FCC 15 C PARA 15.209**
Work Order #: **75906** Date: 03/26/2001
Test Type: **Maximized Emissions** Time: 17:09:48
Equipment: **Card Reader/Door Lock** Sequence#: 18
Manufacturer: International Electronics Tested By: Randal Clark
Model: PA2
S/N: 001

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Card Reader/Door Lock*	International Electronics	PA2	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Correction factors used in accordance with FCC 15.31 (40dB/decade). Test range 9 kHz-30 MHz.

Measurement Data: Reading listed by margin. Test Distance: 10 Meters

#	Freq MHz	Rdng dBµV	Mag dB	Cable dB	FCC 15.31 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	1.006M	28.8	+10.7	+0.2	-20.0		+0.0	19.7	27.5	-7.8	None
2	754.182k	30.7	+10.8	+0.2	-20.0		+0.0	21.7	30.0	-8.3	None
3	628.483k	32.2	+10.7	+0.1	-20.0		+0.0	23.0	31.6	-8.6	None
4	502.772k	34.1	+10.7	+0.1	-20.0		+0.0	24.9	33.6	-8.7	None
5	879.883k	29.0	+10.6	+0.2	-20.0		+0.0	19.8	28.7	-8.9	None
6	377.189k	39.8	+10.6	+0.0	-60.0		+0.0	-9.6	16.1	-25.7	None
7	251.384k	42.8	+10.6	+0.1	-60.0		+0.0	-6.5	19.6	-26.1	None

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **International Electronics**
Specification: **FCC 15.209**
Work Order #: **75906** Date: 03/26/2001
Test Type: **Maximized Emissions** Time: 16:11:10
Equipment: **Card Reader/Door Lock** Sequence#: 12
Manufacturer: International Electronics Tested By: Randal Clark
Model: PA2
S/N: 001

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Card Reader/Door Lock*	International Electronics	PA2	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Frequency range 30 MHz – 1000 MHz with no emissions found above 300 MHz.

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	Amp dB	Bicon dB	Log 1 dB	Cable dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1 QP	44.619M	47.7	-25.0	+10.9	+0.0	+1.2	+0.0	34.8	40.0	-5.2	Vert
^	44.605M	50.3	-25.0	+10.9	+0.0	+1.2	+0.0	37.4	40.0	-2.6	Vert
3	55.319M	39.0	-24.9	+10.4	+0.0	+1.5	+0.0	26.0	40.0	-14.0	Horiz
4	128.933M	36.7	-25.0	+14.1	+0.0	+2.3	+0.0	28.1	43.5	-15.4	Vert
5	268.250M	33.0	-24.7	+18.0	+0.0	+3.2	+0.0	29.5	46.0	-16.5	Vert

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **International Electronics**
Specification: **FCC 15 C PARA 15.209**
Work Order #: **75906** Date: 03/26/2001
Test Type: **Maximized Emissions** Time: 16:56:09
Equipment: **Card Reader/Door Lock** Sequence#: 16
Manufacturer: International Electronics Tested By: Randal Clark
Model: PA3
S/N: 001

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Card Reader/Door Lock*	International Electronics	PA3	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Measurements taken at 3 meters test distance to elevate fundamental above ambient noise level. Correction factors used in accordance with FCC 15.31 (40dB/decade). Field strength of fundamental frequency.

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	Mag dB	Cable dB	FCC 15.31 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	125.251k	58.1	+10.8	+0.1	-80.0		+0.0	-11.0	25.6	-36.6	None

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **International Electronics**
Specification: **FCC 15 C PARA 15.209**
Work Order #: **75906** Date: 03/26/2001
Test Type: **Maximized Emissions** Time: 17:13:40
Equipment: **Card Reader/Door Lock** Sequence#: 19
Manufacturer: International Electronics Tested By: Randal Clark
Model: PA3
S/N: 001

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Card Reader/Door Lock*	International Electronics	PA3	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Correction factors used in accordance with FCC 15.31 (40dB/decade). Test range 9 kHz-30 MHz.

Measurement Data: Reading listed by margin. Test Distance: 10 Meters

#	Freq MHz	Rdng dBµV	Mag dB	Cable dB	FCC 15.31 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	750.100k	30.2	+10.8	+0.2	-20.0		+0.0	21.2	30.1	-8.9	None
2	501.600k	33.3	+10.7	+0.1	-20.0		+0.0	24.1	33.6	-9.5	None
3	626.900k	30.3	+10.7	+0.1	-20.0		+0.0	21.1	31.6	-10.5	None
4	1.001M	25.6	+10.7	+0.2	-20.0		+0.0	16.5	27.6	-11.1	None
5	877.100k	26.6	+10.6	+0.2	-20.0		+0.0	17.4	28.7	-11.3	None
6	248.400k	42.7	+10.6	+0.1	-60.0		+0.0	-6.6	19.7	-26.3	None
7	377.400k	38.9	+10.6	+0.0	-60.0		+0.0	-10.5	16.1	-26.6	None

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **International Electronics**
Specification: **FCC 15.209**
Work Order #: **75906** Date: 03/26/2001
Test Type: **Maximized Emissions** Time: 16:19:24
Equipment: **Card Reader/Door Lock** Sequence#: 13
Manufacturer: International Electronics Tested By: Randal Clark
Model: PA3
S/N: 001

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Card Reader/Door Lock*	International Electronics	PA3	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Frequency range 30 MHz – 1000 MHz with no emissions found above 300 MHz.

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	Amp dB	Bicon dB	Log 1 dB	Cable dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1 QP	44.596M	47.1	-25.0	+10.9	+0.0	+1.2	+0.0	34.2	40.0	-5.8	Vert
^	44.575M	51.2	-25.0	+10.9	+0.0	+1.2	+0.0	38.3	40.0	-1.7	Vert
3	44.585M	38.4	-25.0	+10.9	+0.0	+1.2	+0.0	25.5	40.0	-14.5	Horiz
4	128.958M	36.0	-25.0	+14.1	+0.0	+2.3	+0.0	27.4	43.5	-16.1	Vert
5	246.510M	32.9	-24.6	+15.8	+0.0	+3.1	+0.0	27.2	46.0	-18.8	Vert
6	128.909M	32.2	-25.0	+14.1	+0.0	+2.3	+0.0	23.6	43.5	-19.9	Horiz

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **International Electronics**
Specification: **FCC 15 C PARA 15.209**
Work Order #: **75906** Date: 03/26/2001
Test Type: **Maximized Emissions** Time: 10:49:37
Equipment: **Card Reader/Door Lock** Sequence#: 5
Manufacturer: International Electronics Tested By: Randal Clark
Model: PK1
S/N: 16777215

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Card Reader/Door Lock*	International Electronics	PK1	16777215

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is continuously transmitting on 125 kHz via use of the HID manufacturing test card. EUT is battery operated. Field strength of fundamental frequency.

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	Mag dB	Cable dB	FCC 15.31 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	125.536k	59.0	+10.8	+0.1	-80.0		+0.0	-10.1	25.6	-35.7	None

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **International Electronics**
Specification: **FCC 15 C PARA 15.209**
Work Order #: **75906** Date: 03/26/2001
Test Type: **Maximized Emissions** Time: 11:30:29
Equipment: **Card Reader/Door Lock** Sequence#: 8
Manufacturer: International Electronics Tested By: Randal Clark
Model: PK1
S/N: 16777215

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Card Reader/Door Lock*	International Electronics	PK1	16777215

Support Devices:

Function	Manufacturer	Model #	S/N
Test Card	HID	Manufacturing Test Card	F0203AAAAAA

Test Conditions / Notes:

EUT is continuously transmitting on 125 kHz via use of the HID manufacturing test card. EUT is battery operated. Test range 9 kHz-30 MHz.

Measurement Data: Reading listed by margin. Test Distance: 10 Meters

#	Freq MHz	Rdng dBµV	Mag dB	Cable dB	FCC 15.31 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	622.000k Ambient	39.6	+10.7	+0.1	-20.0		+0.0	30.4	31.7 Ambient Radio Station	-1.3	None
2	751.000k	35.0	+10.8	+0.2	-20.0		+0.0	26.0	30.1	-4.1	None
3	875.800k	32.6	+10.6	+0.2	-20.0		+0.0	23.4	28.7	-5.3	None
4	500.000k	36.7	+10.7	+0.1	-20.0		+0.0	27.5	33.6	-6.1	None
5	343.800k	43.6	+10.6	+0.0	-60.0		+0.0	-5.8	16.9	-22.7	None
6	375.000k	39.5	+10.6	+0.0	-60.0		+0.0	-9.9	16.1	-26.0	None
7	249.900k	42.2	+10.6	+0.1	-60.0		+0.0	-7.1	19.6	-26.7	None

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **International Electronics**
Specification: **FCC 15.209**
Work Order #: **75906** Date: 12/21/2000
Test Type: **Maximized Emissions** Time: 12:56:39
Equipment: **Card Reader/Door Lock** Sequence#: 2
Manufacturer: International Electronics Tested By: Randal Clark
Model: PK1
S/N: 16777215

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Card Reader/Door Lock*	International Electronics	PK1	16777215

Support Devices:

Function	Manufacturer	Model #	S/N
Test Card	HID	Manufacturing Test Card	F0203AAAAAA

Test Conditions / Notes:

EUT is continuously transmitting on 125 kHz via use of the HID manufacturing test card. EUT is battery operated. Frequency range 30 MHz – 1000 MHz with no emissions found above 300 MHz.

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	Pream dB	Bicon dB	Log 3 dB	Cable dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	43.120M	37.7	-25.0	+11.0	+0.0	+1.2	+0.0	24.9	40.0	-15.1	Vert
2	128.725M	34.6	-25.0	+14.1	+0.0	+2.3	+0.0	26.0	43.5	-17.5	Vert
3	54.720M	35.3	-24.9	+10.5	+0.0	+1.4	+0.0	22.3	40.0	-17.7	Vert
4	43.120M	34.7	-25.0	+11.0	+0.0	+1.2	+0.0	21.9	40.0	-18.1	Horiz
5	54.720M	34.4	-24.9	+10.5	+0.0	+1.4	+0.0	21.4	40.0	-18.6	Horiz
6	250.090M	31.6	-24.6	+15.7	+0.0	+3.1	+0.0	25.8	46.0	-20.2	Vert
7	250.090M	28.9	-24.6	+15.7	+0.0	+3.1	+0.0	23.1	46.0	-22.9	Horiz
8	128.725M	28.8	-25.0	+14.1	+0.0	+2.3	+0.0	20.2	43.5	-23.3	Horiz

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **International Electronics**
Specification: **FCC 15 C PARA 15.209**
Work Order #: **75906** Date: 03/26/2001
Test Type: **Maximized Emissions** Time: 10:38:14
Equipment: **Card Reader/Door Lock** Sequence#: 3
Manufacturer: International Electronics Tested By: Randal Clark
Model: PK2
S/N: 001

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Card Reader/Door Lock*	International Electronics	PK2	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Measurements taken at 3 meters test distance to elevate fundamental above ambient noise level. Correction factors used in accordance with FCC 15.31 (40dB/decade). Field strength of fundamental frequency.

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	Mag dB	Cable dB	FCC 15.31 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	125.768k	59.0	+10.8	+0.1	-80.0		+0.0	-10.1	25.6	-35.7	None

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **International Electronics**
Specification: **FCC 15 C PARA 15.209**
Work Order #: **75906** Date: 03/26/2001
Test Type: **Maximized Emissions** Time: 11:16:41
Equipment: **Card Reader/Door Lock** Sequence#: 6
Manufacturer: International Electronics Tested By: Randal Clark
Model: PK2
S/N: 001

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Card Reader/Door Lock*	International Electronics	PK2	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Correction factors used in accordance with FCC 15.31 (40dB/decade). Test range 9 kHz-30 MHz.

Measurement Data: Reading listed by margin. Test Distance: 10 Meters

#	Freq MHz	Rdng dBµV	Mag dB	Cable dB	FCC 15.31 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	752.992k	31.5	+10.8	+0.2	-20.0		+0.0	22.5	30.0	-7.5	None
2	1.003M	27.7	+10.7	+0.2	-20.0		+0.0	18.6	27.5	-8.9	None
3	501.696k	32.3	+10.7	+0.1	-20.0		+0.0	23.1	33.6	-10.5	None
4	877.558k	27.1	+10.6	+0.2	-20.0		+0.0	17.9	28.7	-10.8	None
5	376.370k	40.7	+10.6	+0.0	-60.0		+0.0	-8.7	16.1	-24.8	None
6	251.000k	43.3	+10.6	+0.1	-60.0		+0.0	-6.0	19.6	-25.6	None

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **International Electronics**
Specification: **FCC 15.209**
Work Order #: **75906** Date: 03/26/2001
Test Type: **Maximized Emissions** Time: 11:59:32
Equipment: **Card Reader/Door Lock** Sequence#: 9
Manufacturer: International Electronics Tested By: Randal Clark
Model: PK2
S/N: 001

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Card Reader/Door Lock*	International Electronics	PK2	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Frequency range 30 MHz – 1000 MHz with no emissions found above 300 MHz.

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	Amp dB	Bicon dB	Log 1 dB	Cable dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	44.612M QP	40.6	-25.0	+10.9	+0.0	+1.2	+0.0	27.7	40.0	-12.3	Vert
^	44.612M	48.1	-25.0	+10.9	+0.0	+1.2	+0.0	35.2	40.0	-4.8	Vert
3	44.570M	39.8	-25.0	+10.9	+0.0	+1.2	+0.0	26.9	40.0	-13.1	Horiz
4	52.445M	39.0	-24.9	+10.7	+0.0	+1.4	+0.0	26.2	40.0	-13.8	Horiz
5	150.089M	37.2	-24.9	+12.6	+0.0	+2.3	+0.0	27.2	43.5	-16.3	Vert
6	128.945M	35.4	-25.0	+14.1	+0.0	+2.3	+0.0	26.8	43.5	-16.7	Vert
7	259.290M	29.7	-24.6	+16.9	+0.0	+3.2	+0.0	25.2	46.0	-20.8	Vert

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **International Electronics**
Specification: **FCC 15 C PARA 15.209**
Work Order #: **75906** Date: 03/26/2001
Test Type: **Maximized Emissions** Time: 10:48:46
Equipment: **Card Reader/Door Lock** Sequence#: 4
Manufacturer: International Electronics Tested By: Randal Clark
Model: PK3
S/N: 001

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Card Reader/Door Lock*	International Electronics	PK3	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Measurements taken at 3 meters test distance to elevate fundamental above ambient noise level. Correction factors used in accordance with FCC 15.31 (40dB/decade). Field strength of fundamental frequency.

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	Mag dB	Cable dB	FCC 15.31 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	125.261k	58.7	+10.8	+0.1	-80.0		+0.0	-10.4	25.6	-36.0	None

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **International Electronics**
Specification: **FCC 15 C PARA 15.209**
Work Order #: **75906** Date: 03/26/2001
Test Type: **Maximized Emissions** Time: 11:23:54
Equipment: **Card Reader/Door Lock** Sequence#: 7
Manufacturer: International Electronics Tested By: Randal Clark
Model: PK3
S/N: 001

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Card Reader/Door Lock*	International Electronics	PK3	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Correction factors used in accordance with FCC 15.31 (40dB/decade). Test range 9 kHz-30 MHz.

Measurement Data: Reading listed by margin. Test Distance: 10 Meters

#	Freq MHz	Rdng dBµV	Mag dB	Cable dB	FCC 15.31 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	501.698k	37.0	+10.7	+0.1	-20.0		+0.0	27.8	33.6	-5.8	None
2	1.004M	29.6	+10.7	+0.2	-20.0		+0.0	20.5	27.5	-7.0	None
3	752.670k	31.8	+10.8	+0.2	-20.0		+0.0	22.8	30.0	-7.2	None
4	627.250k	32.0	+10.7	+0.1	-20.0		+0.0	22.8	31.6	-8.8	None
5	878.184k	28.7	+10.6	+0.2	-20.0		+0.0	19.5	28.7	-9.2	None
6	250.664k	43.4	+10.6	+0.1	-60.0		+0.0	-5.9	19.6	-25.5	None
7	376.192k	38.6	+10.6	+0.0	-60.0		+0.0	-10.8	16.1	-26.9	None

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **International Electronics**
Specification: **FCC 15.209**
Work Order #: **75906** Date: 03/26/2001
Test Type: **Maximized Emissions** Time: 12:08:15
Equipment: **Card Reader/Door Lock** Sequence#: 10
Manufacturer: International Electronics Tested By: Randal Clark
Model: PK3
S/N: 001

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Card Reader/Door Lock*	International Electronics	PK3	001

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is continuously transmitting on 125 kHz. EUT is battery operated only. Frequency range 30 MHz – 1000 MHz with no emissions found above 300 MHz.

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	Amp dB	Bicon dB	Log 1 dB	Cable dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	55.340M	39.3	-24.9	+10.4	+0.0	+1.5	+0.0	26.3	40.0	-13.7	Horiz
2	44.580M	37.8	-25.0	+10.9	+0.0	+1.2	+0.0	24.9	40.0	-15.1	Horiz
3	247.190M	36.2	-24.6	+15.8	+0.0	+3.1	+0.0	30.5	46.0	-15.5	Vert
4	54.725M	37.4	-24.9	+10.5	+0.0	+1.4	+0.0	24.4	40.0	-15.6	Vert
5	154.845M	37.3	-24.9	+12.9	+0.0	+2.4	+0.0	27.7	43.5	-15.8	Vert
6	174.125M	33.7	-24.8	+15.9	+0.0	+2.6	+0.0	27.4	43.5	-16.1	Vert
7	128.944M	35.5	-25.0	+14.1	+0.0	+2.3	+0.0	26.9	43.5	-16.6	Vert
8	46.400M	35.8	-24.9	+10.9	+0.0	+1.3	+0.0	23.1	40.0	-16.9	Vert