TIMCO **ENGINEERING INC.**
849 NW State Road 45
Newberry, Florida 32669
http://www.timcoengr.com
888.472.2424 F 352.472.2030 email: sid@timcoengr.com

Test Report

Product Name: DIGITAL DOOR LOCK

FCC ID: S79FD-2100

Applicant:

FIRSTECH I&C CO., LTD.
B105, B-DONG, WOOLIM LION'S VALLEY 1
371-28, GASAN-DONG, KUMCHON-GU
SEOUL, KOREA

Date Receipt: 3/29/2005

Date Tested: 4/1/2005

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APPLICANT: FIRSTECH I&C CO., LTD.

FCC ID: S79FD-2100

TEST REPORT CONTAINING:

EXHIBITS INCLUDING:

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Equipment List

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
3/10-Meter OATS	TEI	N/A	N/A	Listed 3/27/04	3/26/07
3-Meter OATS	TEI	N/A	N/A	Listed 1/13/03	1/12/06
Biconnical Antenna	Eaton	94455-1	1057	CAL 3/18/03	3/18/05
Biconnical Antenna	Eaton	94455-1	1096	CAL 8/17/04	8/17/06
Biconnical Antenna	Electro-Metrics	BIA-25	1171	CAL 4/29/05	4/29/07
Blue Tower Quasi-Peak Adapter	HP	85650A	2811A01279	CAL 4/13/05	4/13/07
Blue Tower RF Preselector	HP	85685A	2926A00983	CAL 4/13/05	4/13/07
Blue Tower Spectrum Analyzer	HP	8568B	2928A04729 2848A18049	CAL 4/13/05	4/13/07
LISN	Electro-Metrics	ANS-25/2	2604	CAL 8/27/04	8/27/06
LISN	Electro-Metrics	EM-7820	2682	CAL 4/28/05	4/28/07
Log-Periodic Antenna	Eaton	96005	1243	CAL 5/8/03	5/8/05

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TEST PROCEDURES

GENERAL: This report shall NOT be reproduced except in full without the written approval of TIMCO ENGINEERING, INC.

RADIATION INTERFERENCE: The test procedure used was ANSI STANDARD C63.4-2003 using a HEWLETT PACKARD spectrum analyzer with a preselector. In the frequency range 10 kHz to 30 MHz the RBW was 10 kHz and from 30-1000 MHz the RBW of the spectrum analyzer was 100 kHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The resolution bandwidth was 100 kHz and the video bandwidth was 300 kHz. The ambient temperature of the UUT was 78°F with a humidity of 40%.

FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB. The gain of the Preselector was accounted for in the Spectrum Analyzer Meter Reading.

Example:
Freq (MHz) METER READING + ACF = FS
33 20 dBuV + 10.36 dB = 30.36 dBuV/m @ 3m

ANSI C63.4-2003 Section 8.2.1 MEASUREMENT PROCEDURES: The EUT was placed on a non-conducting table 80 cm above the ground plane with the EUT located in the center of the table. With the antenna vertical a preliminary scan was done at 1 meters distance, the EUT was moved to a 3.0-meter distance and the antenna height varied and also placed in a horizontal position. The frequency was scanned from 9.0 kHz to 1.0 GHz. When an emission was found, the table was rotated to produce the maximum signal strength. The EUT was measured in three (3) orthogonal planes. The unit was measured at TIMCO ENGINEERING, INC. located at 849 N.W. State Road 45 Newberry, Florida 32669.

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APPLICANT: FIRSTECH I&C CO., LTD.

FCC ID: S79FD-2100

NAME OF TEST: RADIATION INTERFERENCE

RULES PART NO: 15.225 and 15.209

REQUIREMENTS: THE FIELD STRENGTH OF ANY EMISSION WITHIN THE BAND OF 13.553-13.57 MHz SHALL NOT EXCEEDS 10,000 uV/m (80 dBuV/m) AT 30 METERS (120 dBuV/m @ 3 Meters)

THE FIELD STRENGTH OF ANY EMISSIONS APPEARING OUTSIDE OF THIS BAND SHALL NOT EXCEED THE GENERAL RADIATED EMISSION LIMITS SHOWN IN §15.209.

9 to 490 KHz:	2400/F (kHz) uV/m @ 300 METERS
490 to 1705 KHz:	24000/F (kHz) uV/m @ 30 METERS
1705 to 30 MHz:	29.54 dBuV/M @ 30 METERS
1705 to 30 MHz:	69.54 dBuV/M @ 3 METERS
30 to 88 MHz:	40.00 dBuV/M @ 3 METERS
88 to 216 MHz:	43.50 dBuV/M
216 to 960 MHz:	46.02 dBuV/M
ABOVE 960 MHz:	54.00 dBuV/M

TEST DATA:

Emission Frequency MHz	Meter Reading dBuV	Ant. Polarity	Coax Loss dB	Correction Factor dB	Field Strength dBuV/m	Margin dB
13.56	26.81	H	0	35.52	62.33	57.67
23.80	9.9	V	10.94	15.35	36.19	33.35
24.50	15.0	V	9.75	14.97	39.72	29.82
26.40	14.6	V	10.70	13.94	39.24	30.30
29.85	11.2	H	0.88	13.59	25.67	43.87
31.40	17.7	V	0.41	11.55	29.66	10.34
49.15	14.1	H	0.50	11.47	26.07	13.93
124.40	10.4	V	0.67	13.70	24.77	18.73
124.40	12.6	H	0.67	13.14	26.41	17.09
132.30	10.2	V	0.68	13.16	24.04	19.46
132.30	13.3	H	0.68	12.91	26.89	16.61
140.20	8.1	V	0.69	12.80	21.59	21.91
140.20	11.4	H	0.69	12.81	24.90	18.60
328.70	14.2	H	1.13	15.20	30.53	15.47
344.60	13.9	H	1.14	15.15	30.19	15.81
360.80	15.3	H	1.16	15.11	31.57	14.43
381.80	13.9	V	1.18	14.93	30.01	15.99
516.80	14.2	H	1.35	19.17	34.72	11.28

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1705 to 30 MHz:	29.54 dBuV/M @ 30 METERS
30 to 88 MHz:	40.00 dBuV/M @ 3 METERS
88 to 216 MHz:	43.50 dBuV/M
216 to 960 MHz:	46.02 dBuV/M
ABOVE 960 MHz:	54.00 dBuV/M

TEST DATA CONTD.

Emission Frequency MHz	Meter Reading dBuV	Ant. Polarity	Coax Loss dB	Correction Factor dB	Field Strength dBuV/m	Margin dB
532.80	16.5	H	1.40	18.70	36.60	9.40
541.00	12.5	V	1.42	18.21	32.13	13.87
548.90	16.5	H	1.45	18.79	36.74	9.26
549.10	11.9	V	1.45	18.29	31.64	14.36
565.10	15.5	H	1.50	19.20	36.20	9.80
577.80	14.7	H	1.53	19.38	35.61	10.39

SAMPLE CALCULATION: FSdBuV/m = MR (dBuV) + ACFdB.

TEST PROCEDURE: The procedure used was ANSI C63.4-1992 Section 8.2. The frequency was scanned from 9.0 kHz to 1.0 GHz. When an emission was found, the table was rotated to produce the maximum signal strength. The EUT was measured in three (3) orthogonal planes. The unit was measured at TIMCO ENGINEERING, INC. located at 849 N.W. State Road 45 Newberry, Florida 32669.

TEST RESULTS: THE UNIT DOES MEET THE FCC REQUIREMENTS.

PERFORMED BY: Nam Nguyen **DATE:** 4/1/2005

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APPLICANT: FIRSTECH I&C CO., LTD.

FCC ID: S79FD-2100

NAME OF TEST: FREQUENCY STABILITY

RULES PART #: 15.225 (c)

Temperature and voltage tests were performed to verify that the frequency tolerance of the carrier signal remains within the ±0.01% of the operating frequency over a temperature variation of –20 degrees C to +50 degrees C at normal supply voltage and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. The test was conducted as follows: The transmitter was placed in the temperature chamber at 25 degrees C and allowed to stabilize for one hour. The transmitter was keyed ON for one minute during which four frequency readings were recorded at 15-second intervals. The worse case number was taken for temperature plotting. The assigned channel frequency was considered to be the reference frequency. The temperature was then reduced to -20 degrees C after which the transmitter was again allowed to stabilize for one hour. The transmitter was keyed ON for one minute, and again frequency readings were noted at 15-second intervals. The worst-case number was recorded for temperature plotting. This procedure was repeated in 10-degree increments up to +50 degrees C.

Readings were also taken at 15% of the battery voltage of 6 VDC.

MEASUREMENT DATA:

Assigned Frequency (Ref. Frequency): 13.560 000

TEMPERATURE °C	FREQUENCY MHz	PPM
-30C	13.559300	-51.62
-20C	13.559380	-45.72
-10C	13.559411	-43.44
0C	13.559570	-31.71
10C	13.559711	-21.31
20C	13.559921	-5.83
30C	13.560110	8.11
40C	13.560211	15.56
50C	13.560360	26.55

Batt. Volts	Batt. Data	PPM
-15%	13.560100	7.37
+15%	13.560100	7.37

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APPLICANT: FIRSTECH I&C CO., LTD.

FCC ID: S79FD-2100

NAME OF TEST: Occupied Bandwidth

RULES PART NO.: 15.209

REQUIREMENTS: The field strength of any emissions appearing between the band edges and up to 10 kHz above and below the band edges shall be attenuated at least 26 dB below the level of the unmodulated carrier or to the general limits of 15.209, whichever permits the higher emission levels.

THE GRAPH ON THE FOLLOWING PAGE REPRESENTS THE EMISSIONS TAKEN FOR THE DEVICE.

METHOD OF MEASUREMENT: A small sample of the transmitter output was fed into the spectrum analyzer and the above photo was taken. The vertical scale is set to -10 dBm per division.

TEST RESULTS: The unit DOES meet the FCC requirements.

PERFORMED BY: Nam Nguyen **DATE:** 4/1/2005

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APPLICANT: FIRSTECH I&C CO., LTD.

FCC ID: S79FD-2100

NAME OF TEST: OCCUPIED BANDWIDTH

NOTES:

FIRSTECH I&C CO., LTD. - FCC ID: S79FD-2100
OCCUPIED BANDWIDTH PLOT