Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan, R.O.C.	**TEST REPORT**	Reference No.:A08081305 Report No.:FCCA08081305 FCC ID:TV2ERX2 Page:1 of 17 Date: Aug 14, 2008

Product Name:	Electronic Access Security Keyless-entry
Model No.:	24322-02
Applicant:	TriMark
	500 Bailey Ave. P.O. BOX 350. New Hampton, IA 50659
Date of Receipt:	Mar. 19,2008
Finished date of Test:	Jun. 09, 2008
Applicable Standards:	47 CFR Part 15, Subpart B
	ANSI C63.4:2003

We, **Spectrum Research & Testing Laboratory Inc.**, hereby certify that one sample of the above was tested in our laboratory with positive results according to the above-mentioned standards. The records in the report are an accurate account of the results. Details of the results are given in the subsequent pages of this report.

Tested By : Shunm Wang , Date: Aug. 14. 2008
(Shunm Wang)

Approved By : , Date: 8/14/2008
(Johnson Ho, Director)

NVLAP

Lab Code: 200099-0

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1. DOCUMENT POLICY AND TEST STATEMENT

1.1 DOCUMENT POLICY

- The report shall not be reproduced except in full, without the written approval of SRT Lab, Inc.
- The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

1.2 TEST STATEMENT

- The test results in the report apply only to the unit tested by SRT Lab.
- There was no deviation from the requirements of test standards during the test.
- DC power supply was used during the test as a power source.
- The antennas were soldered on the PCB.

1.3 EUT MODIFICATION

- No modification in SRT Lab.

2. DESCRIPTION OF EUT AND TEST MODE

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Electronic Access Security Keyless-entry
MODEL NO.	24322-02
POWER SUPPLY	12Vdc
Carrier Frequency	433.92 MHz
Number of Channel	1
RF Output Power	10 dBm = 0.01W
Modulation Type	ASK
I.F. & L.O.	L.O.: 433.92MHz
Mode of operation	Simplex
Bit Rate of Transmission	4K
Antenna Type	Integral Antenna
Operating Temperature Range	0 ~ 55 ^{o}C

NOTE :
For more detailed information, please refer to the EUT's specification or user's manual provided by manufacturer.

2.2 DESCRIPTION OF EUT INTERNAL DEVICE

DEVICE	BRAND/MAKER	MODEL #	FCC ID/DOC	REMARK
N/A				

1. Frequency range to be measured.
   Radiated emission is 30 MHz to 1 GHz.

2.3 DESCRIPTION OF TEST MODE

The EUT was operated in continunely receiving mode.

2.4 DESCRIPTION OF SUPPORT UNIT

The EUT was configured by the requirement of ANSI C63.4:2003 and CISPR 22:2006.

All interface ports were connected to the appropriate support units via specific cables.

The support units and cables are listed below.

NO	DEVICE	BRAND	MODEL #	FCC ID/DOC	CABLE
1	DC Power Supply	LEADER	LPS-161A/ 8110190	N/A	1.5m unshielded power cord

NOTE : For the actual test configuration, please refer to the photos of testing.

3. DESCRIPTION OF APPLIED STANDARDS

The EUT is a kind of ITE and according to the specifications provided by the applicant, it must comply with the requirements of the following standards:

47 CFR Part 15 Subpart B, Class B

All tests have been performed and recorded as per the above standards.

4. CONDUCTED EMISSION TEST

4.1 CONDUCTED EMISSION LIMIT

FREQUENCY (MHz)	Class A (dBμV)		Class B (dBμV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.5 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

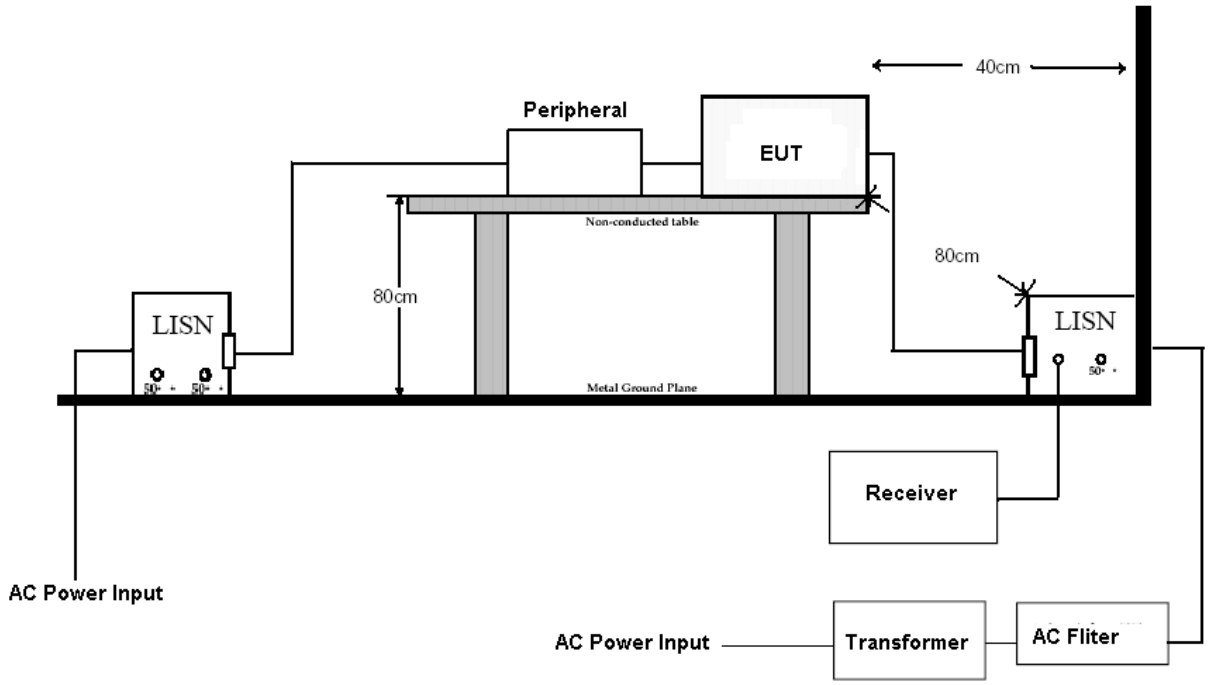
NOTE:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

4.2 TEST EQUIPMENT

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
EMI TEST RECEIVER	9 kHz TO 30 MHz	ROHDE & SCHWARZ	ESHS30 / 826003/008	SEP. 2008 ETC
LISN	50 μH, 50 ohm	FCC	FCC-LISN-50-25-2 / 01017	OCT. 2008 ETC
LISN	50μH, 50 ohm	FCC	9252-50-R24-BNC / 951315	JUN. 2009 ETC
50 OHM TERMINATOR	50 ohm	HP	11593A / #2	OCT. 2008 ETC
COAXIAL CABLE	5M	TIMES	EQM-0159 / #5-5m	AUG. 2008 SRT
Filter	2 LINE, 30A	FIL.COIL	FC-943 / 771	NCR
GROUND PLANE	2.3M (H) x 2.4M (W)	SRT	N/A	NCR
GROUND PLANE	2.4M (H) x 2.4M (W)	SRT	N/A	NCR

4.3 TEST SETUP



NOTE:

1. The EUT was put on a wooden table with 0.8m height above ground plane, and 0.4m away from reference ground plane (> 2mx2m).
2. For the actual test configuration, please refer to the photos of testing.

4.4 TEST PROCEDURE

The EUT was tested according to the requirement of ANSI C63.4:2003. The frequency spectrum from 0.15 MHz to 30 MHz was investigated. The LISN used was 50 ohm/50µH as specified. All readings were quasi-peak and average values with 10 kHz resolution bandwidth of the test receiver. The EUT system was operated in all typical methods by users. Both lines of the power mains of EUT were measured and the cables connected to EUT and support units were moved to find the maximum emission levels for each frequency.

First, find the margin or higher points at least 6 points by software, then use manual to find the maximum data. The procedure is referred on the test procedure of SRT LAB.

4.5 EUT OPERATING CONDITION

1.Setup the EUT and all peripheral devices .

2.Turn on the power of all equipment and EUT.

3. The EUT was operated in continunely receiving mode.

4.6 SUMMARY OF CONDUCTED EMISSION TEST RESULT

Temperature:	21 °C	Humidity:	60 %RH
Frequency Range:	0.15 – 30 MHz	Tested Mode:	Rx
Receiver Detector:	Q.P. and AV.	Tested By:	Shunm Wang
		Tested Date:	Jun 05, 2008

Power Line Measured : Line

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dBμV)		Emission Level (dBμV)		Limit (dBμV)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.773	0.20	18.28	12.37	18.48	12.57	56.00	46.00	-37.52	-33.43
1.418	0.15	17.98	14.61	18.13	14.76	56.00	46.00	-37.87	-31.24
1.428	0.15	9.94	5.34	10.09	5.49	56.00	46.00	-45.91	-40.51
7.284	0.22	17.88	12.14	18.10	12.36	60.00	50.00	-41.90	-37.64
12.003	0.24	10.14	7.71	10.38	7.95	60.00	50.00	-49.62	-42.05
17.614	0.32	24.86	26.83	25.18	27.15	60.00	50.00	-34.82	-22.85

Power Line Measured : Neutral

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dBμV)		Emission Level (dBμV)		Limit (dBμV)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.180	0.30	10.10	5.24	10.40	5.54	64.47	54.47	-54.07	-48.93
1.009	0.14	11.56	5.78	11.70	5.92	56.00	46.00	-44.30	-40.08
1.418	0.15	14.20	11.15	14.35	11.30	56.00	46.00	-41.65	-34.70
9.507	0.23	18.96	20.52	19.19	20.75	60.00	50.00	-40.81	-29.25
13.759	0.24	22.08	16.58	22.32	16.82	60.00	50.00	-37.68	-33.18
17.614	0.28	23.26	21.93	23.54	22.21	60.00	50.00	-36.46	-27.79

NOTE :

1. Measurement uncertainty is +/-2dB
2. Emission level = Reading value + Correction factor
3. Correction Factor = Cable loss + Insertion loss of LISN
4. Margin value = Emission level - Limit
5. The emission of other frequencies were very low against the limit.
6. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.

5. RADIATED EMISSION TEST

5.1 RADIATED EMISSION LIMIT

FCC part15C 15.209 limits of radiated emission measurement for frequency below 1000 MHz

FREQUENCY (MHz)	DISTANCE (m)	FIELS STRENGTH (dBμV/m)
30 - 88	3	40.0
88 - 216	3	43.5
216 - 960	3	46.0
ABOVE 960	3	54.0

FCC part15C 15.231(b) limit of fundamental and spurious emissions measurement.

FREQUENCY (MHz)	Field Strength of Fundamental (microvolts/meter)	Field Strength of Spurious Emissions (microvolts/meter)
40.66-40.70	2250	225
70-130	1250	125
130-174	1250 to 3750 (NOTE 5)	125 to 375 (NOTE 7)
174-260	3750	375 (NOTE 7)
260-470	3750 to 12500 (NOTE 6)	375 to 1250
Above 470	12500	1250

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBμV/m) = 20 log Emission level (μV/m).
3. In the emission tables above, the tighter limit applies at the band edges.
4. Distance refers to the distance between measuring nstrument, antenna, and the closest point of any part of the device or system.
5. Limit = 20log(56.81818(F) - 6136.3636) ; F : Fundamental Frequency (MHz)
6. Limit = 20log(41.667 x F – 7083.3333) ; F : Fundamental Frequency (MHz)
7. Limit = The Limit of Fundamental Frequency – 20dB
8. The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.

5.2 TEST EQUIPMENT

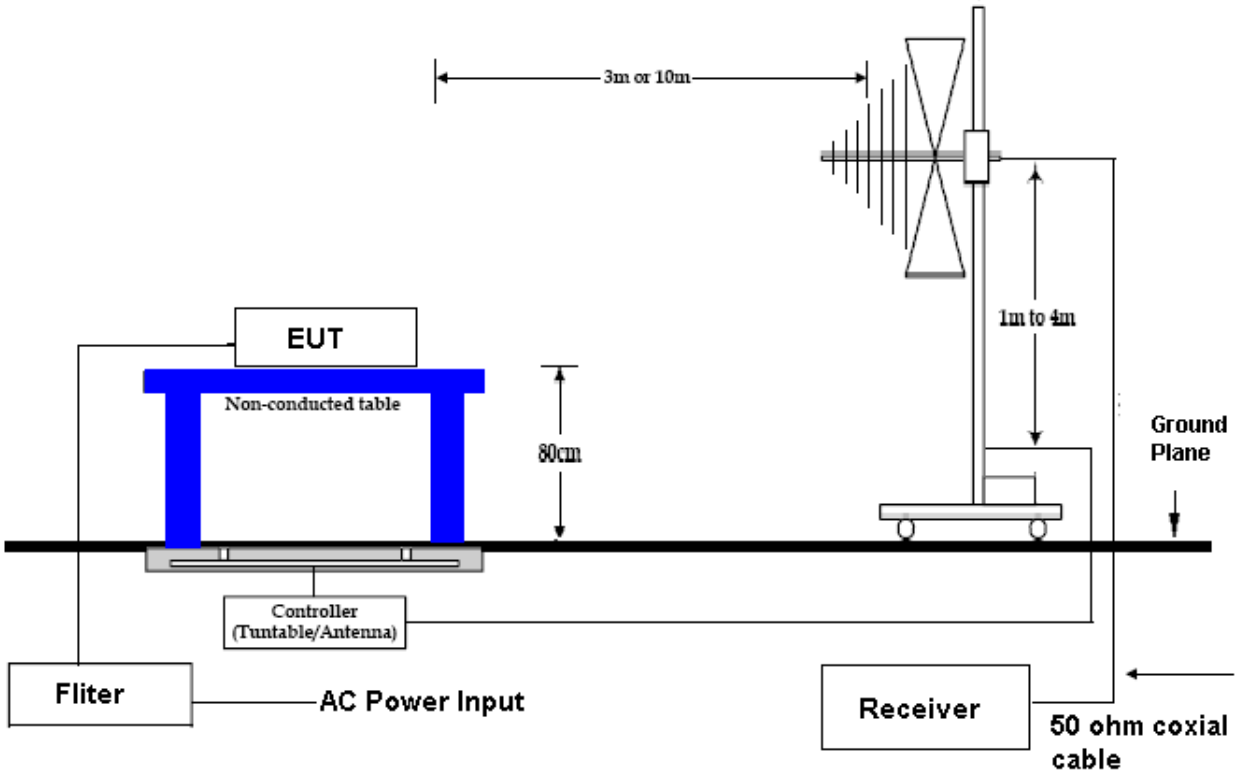
The following test equipment was used during the radiated emission test:

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
EMI TEST RECEIVER	9kHz TO 2.75 GHz	ROHDE & SCHWARZ	ESCS30 / 830245/012	OCT. 2008 ETC
BI-LOG ANTENNA	26 MHz TO 2 GHz	EMCO	3142B / 0005-1534	NOV. 2008 ETC
OATS	3 – 10 M MEASUREMENT	SRT	SRT-1	NOV. 2008 SRT
COAXIAL CABLE	25M	TIMES	J400 / #25M	AUG. 2008 ETC
FILTER	2 LINE, 30A	FIL.COIL	FC-943 / 869	NCR
HORN ANTENNA	1GHz TO 18GHz	EMCO	3115/ 9602-4681	NOV. 2008 ETC

NOTE:

1. The Open Area Test Site (SRT-1) is registered by FCC with No. 90957 and VCCI with No. R-1081.
2. The Open Area Test Site (SRT-2) is registered by FCC with No. 98458 and VCCI with No. R-1168.

5.3 TEST SET-UP



NOTE :

1. The EUT system was put on a wooden table with 0.8m heights above a ground plane.
2. For the actual test configuration, please refer to the photos of testing.

5.4 TEST PROCEDURE

The EUT was tested according to the requirement of ANSI C63.4:2003 and CISPR 22:2006. The frequency spectrum measured started from 30 MHz. Under 1 GHz, all readings were quasi-peak values with 120 kHz resolution bandwidth of the test receiver. Above 1 GHz, the measurements were made at an open area test site with 3 meter measurement distance and all readings were peak or average values with 1 MHz resolution bandwidth of the test receiver. The EUT system was operated in all typical methods by users. The cables connected to EUT and support units were moved to find the maximum emission levels for each frequency. First, find the margin or higher points at least 6 points by software, then use manual to find the maximum data. The procedure is referred on the test procedure of SRT LAB.

5.5 EUT OPERATING CONDITION

Same as section 4.5 of this report.

5.6 MAXIMUM MODULATION PERCENTAGE

Duty Cycle = 50%

5.7 SUMMARY OF RADIATED EMISSION TEST RESULT

Temperature:	25 °C	Humidity:	60 %RH
Frequency Range:	30 – 1000 MHz	Measured Distance:	3m
Receiver Detector:	Q.P	Tested Mode:	Rx
Tested By:	Shunm Wang	Tested Date:	Jun. 05, 2008

Antenna Polarization:Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
112.1350	1.59	7.36	25.1	34.1	43.5	-9.4	137	1.91
128.2640	1.45	9.24	22.4	33.1	43.5	-10.4	204	1.53
144.6250	1.68	11.48	19.5	32.7	43.5	-10.8	155	1.65
176.0360	1.70	9.08	24.6	35.4	43.5	-8.1	143	1.74
424.1168	3.04	16.51	22.1	41.7	46.0	-4.3	57	1.43
486.9960	3.35	17.32	18.7	39.4	46.0	-6.6	233	1.37

Antenna Polarization:Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
31.5510	0.37	13.19	20.0	33.6	40.0	-6.4	349	1
46.3390	0.97	7.22	24.5	32.7	40.0	-7.3	15	1
50.9450	0.98	5.70	27.4	34.1	40.0	-5.9	351	1.1
148.6180	1.51	10.66	23.3	35.5	43.5	-8.0	213	1.2
210.0350	1.90	9.82	20.2	31.9	43.5	-11.6	166	1.1
424.1167	3.04	16.51	20.6	40.2	46.0	-5.8	61	1

NOTE :

1. Measurement uncertainty is +/-3.7dB.
2. "*": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.

Temperature:	25 °C	Humidity:	60 %RH
Frequency Range:	1 – 5 GHz	Measured Distance:	3m
Receiver Detector:	PK. or AV.	Tested Mode:	Rx
Tested By:	Shunm Wang	Tested Frequency:	433.92MHz
Tested Date:	Jun. 05, 2008	Modulation Type:	N/A

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1003.13	-34.99	24.21	*	*	*	*	74.0	54.0	*	*	*	*
1085.49	-34.68	24.39	*	*	*	*	74.0	54.0	*	*	*	*
1273.22	-33.73	24.80	39.5	*	30.6	*	74.0	54.0	-43.4	*	47	1.33
1283.53	-33.75	24.82	46.7	39.7	37.8	30.8	74.0	54.0	-36.2	-23.2	103	1.46
1680.24	-32.85	25.98	38.1	*	31.2	*	74.0	54.0	-42.8	*	351	1.20
1910.43	-32.61	26.86	44.5	*	38.7	*	74.0	54.0	-35.3	*	110	1.15

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1003.13	-34.99	24.21	*	*	*	*	74.0	54.0	*	*	*	*
1085.49	-34.68	24.39	*	*	*	*	74.0	54.0	*	*	*	*
1168.13	-34.33	24.57	*	*	*	*	74.0	54.0	*	*	*	*
1273.22	-33.73	24.80	38.1	*	29.2	*	74.0	54.0	-44.8	*	204	1.38
1696.15	-32.91	26.04	*	*	*	*	74.0	54.0	*	*	*	*
1910.43	-32.61	26.86	43.9	*	38.1	*	74.0	54.0	-35.9	*	158	1.00

NOTE :

1. Measurement uncertainty is +/-3.7dB.
2. "*": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emissiom Level = Reading Value + Ant. Factor + Correct Factor (incl.:Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F):The field stregth of fundamental frequency.

7. TERMS OF ABBREVIATION

AV.	Average detection
AZ(°)	Turn table azimuth
Correct.	Correction
EL(m)	Antenna height (meter)
EUT	Equipment Under Test
Horiz.	Horizontal direction
LISN	Line Impedance Stabilization Network
NSA	Normalized Site Attenuation
Q.P.	Quasi-peak detection
SRT Lab	Spectrum Research & Testing Laboratory, Inc.
Vert.	Vertical direction