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386-1, Ho-dong, Cheoin-gu, Yongin-si, Gyeonggi-do, 449-100, Korea
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TEST REPORT For FCC

Test Report No. : 2009040038

Date of Issue : April 16, 2009

Model/Type No. : SHS-3120XMK/EN

FCC ID : WQRSHS-3120XMKEN

Kind of Product : DIGITAL DOORLOCK

Applicant : SEOUL COMMTECH Co., Ltd.

Applicant Address : 448-11, Seongnae 3-dong, Gangdong-gu, Seoul, Korea

Manufacturer 1 : ORIENTAL INTERGRATED ELECTRONICS Co., Ltd.

Manufacturer Address 1: 281-34, Dodang-dong, Wonmi-gu, Buchun-si, Gyeonggi-do, Korea

Manufacturer 2 : JE TECHNOLOGY Co., Ltd.

Manufacturer Address 2: Dasong B/D 5F 694-29, Gumjung-dong, Kunpo-si, Gyeonggi-do, Korea

Contact Person : Dong Yeol Kim / Engineer

Telephone : +82-2-2225-6804

Received Date : March 20, 2009

Test Period : Start : March 20, 2009 End : April 16, 2009

Test Results : In Compliance Not in Compliance

The test results presented in this report relate only to the object tested.

Tested by

Eun-Won, Lee
Test Engineer
Date: April 16, 2009

Reviewed by

Young-Joon, Park
Technical Manager
Date: April 16, 2009



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REPORT REVISION HISTORY

Date	Revision	Page No
April 16, 2009	Issued (2009040038)	All

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1.0 General Product Description

1.0.1 Tested Equipment

- Unless otherwise indicated, all tests were conducted on Model SHS-3120XMK/EN.
- Tests performed on Model _____ were considered to be representative of Model(s) _____.

1.0.2 Equipment Size, Mobility and Identification

Dimensions: 68.7(W) by 175.1(H) by 21.5(D) mm (Outdoor Unit)
69.9(W) by 128.0(H) by 40.5(D) mm (Indoor Unit)

Mobility: Hand-held Table-top Built-in
 Traveling Floor-standing

Serial No.: Prototype

1.0.3 Electrical Ratings

Input: 6 Vdc (4 AA Alkaline 1.5 V Batteries (LR6))
Output: -

1.0.4 Test Voltage & Frequency

Unless indicated otherwise on the individual data sheet or test results, the test voltage and frequency was as indicated below.

Voltage: 6 Vdc (Battery)
Frequency: -

1.0.5 Clock & Other Frequencies Utilized

8 MHz, 13.56 MHz

1.1 Model Differences

Not applicable

1.2 Device Modifications

Not applicable



1.3 EUT Configuration(s)

See Appendix A for individual test set-up configuration(s). The following peripheral devices and/or interface cables were connected during the measurement:

Peripheral Devices

Device	Manufacturer	Model No.	Serial No.	FCC ID or DoC

Cable Description

#	Description	Ferrite Core	Length (m)	Other Details

1.4 Test Software

- EMC Test V 1.0
- Display Test Patterns – V1.5
- Ping.exe
- Not applicable

1.5 EUT Operating Mode(s)

Equipment under test was operated during the measurement under the following conditions:

- Standby
- Scrolling 'H'
- Display circles pattern
- Read / Write
- Practice operation – EUT transmitting at 13.56 MHz continuously



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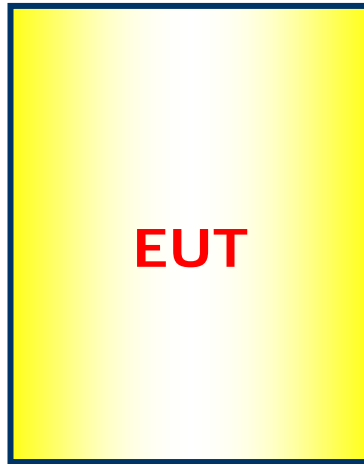
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1.6 Configuration





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1.7 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

1.8 Test Facility

The measurement facility is located at 386-1, Ho-dong, Cheoin-gu, Yongin-si, Gyeonggi-do, 449-100, Korea. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

1.9 Measurement Procedure

Preliminary AC power line conducted emissions tests were performed shielded room. To find worst mode, several typical mode and typical cable position were tested. Final AC power line conducted emissions test was performed shielded room. (location is same as Preliminary test)
Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

Preliminary radiated emissions test were performed anechoic chamber (Distance of antenna and EUT was 3 m). To find worst mode, several typical mode and typical cable position were tested and peak level and frequency were recorded.

Final radiated emissions test was performed Open Area Test Site. Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

* Measurement procedures was In accordance with ANSI C63.4-2003 7.2.3, 7.2.4, 8.3.1.1, 8.3.1.2



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1.10 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3 & 10 meter Open Area Test Sites and one conducted site to perform FCC Part 15/18 measurements.	 93250
JAPAN	VCCI	10 meter Open Area Test Site and one conducted site.	 R-948, C-986
KOREA	KCC	EMI (10 meter Open Area Test Site and two conducted sites) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 No. 51, KR0025
International	KOLAS	EMC	



2.0 Emissions Test Regulations

The emissions tests were performed according to following regulations:

- | | | |
|--|--|--|
| <input type="checkbox"/> EN 61000-6-3:2007 | | |
| <input type="checkbox"/> EN 61000-6-4:2007 | | |
| <input type="checkbox"/> EN 55011:2007 +A2:2007 | <input type="checkbox"/> Group 1
<input type="checkbox"/> Class A | <input type="checkbox"/> Group 2
<input type="checkbox"/> Class B |
| <input type="checkbox"/> EN 55013:2001 +A1:2003 +A2:2006 | | |
| <input type="checkbox"/> EN 55014-1:2006 | | |
| <input type="checkbox"/> EN 55015:2006 | | |
| <input type="checkbox"/> EN 61204-3:2000 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> EN 61131-2:2003 | | |
| <input type="checkbox"/> EN 61326-1:2006 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> EN 55022:2006 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> EN 61000-3-2:2006 | | |
| <input type="checkbox"/> EN 61000-3-3:1995 +A1:2001 +A2:2005 | | |
| <input type="checkbox"/> VCCI V-3/2008.04 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> AS/NZS CISPR22:2006 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input checked="" type="checkbox"/> FCC Part 15 Subpart C | | |
| <input type="checkbox"/> CISPR 22:2006 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |



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2.1 Radiated Electric Field Emissions - 15.225(a)

Reference Standard

FCC Part 15.225(a)

Test Date

April 6, 2009

Test Location

EMI-OATS: Testing was performed at a test distance of 3 m

Test Equipment

	Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
<input checked="" type="checkbox"/>	Field Strength Meter	Rohde & Schwarz	ESHS30	828144/002	2010-02-27
<input checked="" type="checkbox"/>	Loop Antenna	EMCO	6502	9107-2652	2010-10-13

Frequency Range of Measurement

13.553 MHz to 13.567 MHz

Instrument Settings

IF Band Width: 10 kHz

Radiated emission limits

Frequency (MHz)	Field Strength of Fundamental uV/m	Field Strength of Fundamental dBuV/m (30 m)	Field Strength of Fundamental dBuV/m (3 m)
13.553-13.567	15,848	84	104

Test Results

The requirements are:

- MET
- NOT MET
- NOT APPLICABLE

Remarks

See Appendix A for test data



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2.2 Radiated Electric Field Emissions - 15.225(b)(c)

Reference Standard

FCC Part 15.225(b)(c)

Test Date

April 6, 2009

Test Location

EMI-OATS: Testing was performed at a test distance of 3 m

Test Equipment

	Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
<input checked="" type="checkbox"/>	Field Strength Meter	Rohde & Schwarz	ESHS30	828144/002	2010-02-27
<input checked="" type="checkbox"/>	Loop Antenna	EMCO	6502	9107-2652	2010-10-13

Frequency Range of Measurement

13.410 MHz to 13.553 MHz, 13.567 MHz to 13.710 MHz
13.110 MHz to 13.410 MHz, 13.710 MHz to 14.010 MHz

Instrument Settings

IF Band Width: 10 kHz

Radiated emission limits

Frequency (MHz)	Field Strength of Fundamental uV/m	Field Strength of Fundamental dBuV/m (30 m)	Field Strength of Fundamental dBuV/m (3 m)
13.410-13.553	334	50.4	70.4
13.567-13.710	334	50.4	70.4
13.110-13.410	106	40.5	60.5
13.710-14.010	106	40.5	60.5

Test Results

The requirements are:

- MET
 NOT MET
 NOT APPLICABLE

Remarks

Emissions 20dB's below the limit were not necessarily recorded.



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2.3 Radiated Electric Field Emissions - 15.225(d)

Reference Standard

FCC Part 15.225(d), 15.209

Test Date

April 6, 2009

Test Location

EMI-OATS: Testing was performed at a test distance of 3 m

Test Equipment

	Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
<input checked="" type="checkbox"/>	Field Strength Meter	Rohde & Schwarz	ESVS30	826638/008	2009-06-10
<input checked="" type="checkbox"/>	ULTRA Broadband Antenna	Rohde & Schwarz	HL562	361324/014	2010-06-20
<input checked="" type="checkbox"/>	Field Strength Meter	Rohde & Schwarz	ESHS30	828144/002	2010-02-27
<input checked="" type="checkbox"/>	Loop Antenna	EMCO	6502	9107-2652	2010-10-13

Frequency Range of Measurement

9 kHz to 1000 MHz

Instrument Settings

IF Band Width: 10 kHz (9 kHz to 30 MHz)

IF Band Width: 120 kHz (30 MHz to 1000 MHz)

Radiated emission limits

Frequency (MHz)	Field Strength of Fundamental uV/m	Field Strength of Fundamental dBuV/m (3 m)
1.705-30.0	30	49.5
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	600	54

Test Results

The requirements are:

- MET
 NOT MET
 NOT APPLICABLE

Remarks

See Appendix A for test data



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2.4 Frequency Stability – 15.225(e)

Reference Standard

FCC Part 15.225(e)

Test Date

April 7, 2009

Test Equipment

	Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
<input checked="" type="checkbox"/>	Spectrum Analyzer	HP	E4403B	US39440619	2009-10-31
<input checked="" type="checkbox"/>	Temp & Humi Chamber	Kunpoong Engineering	KP-1000	2002KP050041	2010-01-29

Test Results

The requirements are:

- MET
- NOT MET
- NOT APPLICABLE

Test Data

Timing	-20 °C	-10 °C	0 °C	10 °C	20 °C	30 °C	40 °C	50 °C
Start-up	13.56017	13.56022	13.56026	13.56028	13.56028	13.56028	13.56028	13.56029
10 min	13.56018	13.56022	13.56026	13.56027	13.56028	13.56028	13.56029	13.56029
30 min	13.56017	13.56023	13.56025	13.56028	13.56028	13.56028	13.56028	13.56028

Timing	Power 85%	Power 115%
Start-up	Not Applicable (Battery Power)	Not Applicable (Battery Power)
10 min	Not Applicable (Battery Power)	Not Applicable (Battery Power)
30 min	Not Applicable (Battery Power)	Not Applicable (Battery Power)



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2.5 Conducted Voltage Emissions – 15.207

Reference Standard

FCC Part 15.207

Test Date

Not Applicable (Battery Power)

Test Location

Shielded Room

Test Equipment

	Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
<input type="checkbox"/>	Field Strength Meter	Rohde & Schwarz	ESHS30	828144/002	2010-02-27
<input type="checkbox"/>	LISN	EMCO	3825/2	9607-2575	2009-08-19
<input type="checkbox"/>	LISN	EMCO	3825/2	9409-2246	2009-08-19
<input type="checkbox"/>	Field Strength Meter	Rohde & Schwarz	ESHS30	862024/001	2010-03-04
<input type="checkbox"/>	LISN	Rohde & Schwarz	ESH3-Z5	100207	2009-12-12
<input type="checkbox"/>	LISN	EMCO	3825/2	9206-1971	2009-12-12

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Conducted Emission limits

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

Test Results

The requirements are:

MET

Frequency (MHz)	Measured Data (dBuV)	Margin (dB)	Remark

NOT MET

NOT APPLICABLE

Remarks



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APPENDIX A – TEST DATA

Radiated Electric Field Emissions (Quasi-Peak reading)

1) Fundamental Frequency Test Data

Frequency [MHz]	Reading [dBuV/m]	Pol.	Height [m]	Correction Factor		Limits [dBuV/m]	Result [dBuV/m]	Margin [dB]
				Antenna	Cable			
13.56	39.5	H	1.0	9.1	0.1	104.0	48.7	55.3
13.56	38.8	V	1.0	9.1	0.1	104.0	48.0	56.0

2) Frequency Range from 9 kHz to 30 MHz Test Data

Frequency [MHz]	Reading [dBuV/m]	Pol.	Height [m]	Correction Factor		Limits [dBuV/m]	Result [dBuV/m]	Margin [dB]
				Antenna	Cable			
8.37	26.7	H	1.0	9.4	0.1	49.5	36.2	13.3
8.39	27.0	V	1.0	9.4	0.1	49.5	36.5	13.0

3) Frequency Range from 30 MHz to 1000 MHz Test Data

Frequency [MHz]	Reading [dBuV/m]	Pol.	Height [m]	Correction Factor		Limits [dBuV/m]	Result [dBuV/m]	Margin [dB]
				Antenna	Cable			
105.60	19.9	V	1.0	9.7	0.9	43.5	30.5	13.0
248.70	25.9	H	4.0	9.4	1.9	46.0	37.2	8.8
262.87	24.6	H	4.0	9.9	2.1	46.0	36.6	9.4
340.25	27.7	H	2.5	12.0	2.6	46.0	42.3	3.7
923.00	16.4	H	1.8	21.2	4.6	46.0	42.2	3.8
949.25	16.8	V	2.4	21.5	4.5	46.0	42.8	3.2



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Bandwidth of the Operating Frequency

