

# EMI TEST REPORT

**Test Report No. : 30IE0136-SH-02-B**

**Applicant** : Honda Lock Mfg. Co., Ltd.  
**Type of Equipment** : Integrate Immobilizer System with RKE  
**Model No.** : HLIKN-1R  
**FCC ID** : MLBHLIKN-1R  
**Test standard** : FCC Part 15 Subpart B 2010  
**Test Result** : Complied

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6. The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.

**Date of test:** June 20 and 21, 2010

**Representative  
test engineer:**



Tatsuya Arai  
Engineer of EMC Service

**Approved by:**



Ichiro Isozaki  
Leader of EMC Service

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**JAB**  
Testing  
RTL02610

**UL Japan, Inc.  
Shonan EMC Lab.**

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## **SECTION 1: Customer information**

Company Name : Honda Lock Mfg. Co., Ltd.  
Address : 535-14 Oaza-Ishizue, Takanezawamachi, Shioya-Gun, Tochigi, 329-1225 Japan  
Telephone Number : +81-50-3757-5619  
Facsimile Number : +81-28-680-1045  
Contact Person : Mitsunori Suyama

## **SECTION 2: Equipment under test (E.U.T.)**

### **2.1 Identification of E.U.T.**

Type of Equipment : Integrate Immobilizer System with RKE  
Model No. : HLIKN-1R  
Serial No. : Refer to Clause 4.2  
Rating : DC12.0V  
Receipt Date of Sample : June 19, 2010  
Country of Mass-production : Japan  
Condition of EUT : Production prototype  
(Not for Sale: This sample is equivalent to mass-produced items.)  
Modification of EUT : No Modification by the test lab

### **2.2 Product Description**

Model No: HLIKN-1R (referred to as the EUT in this report) is the Integrate Immobilizer System with RKE.

Equipment Type : Transceiver  
Power Supply : DC12.0V  
Operating Voltage : DC5.0V

[Transmitter part] \*1)  
Frequency of Operation : 125kHz  
Type of modulation : ASK  
Mode of Operation : Simplex  
Antenna Type : Loop Antenna

[Receiver part]  
Receiving frequency : 313.85MHz  
Antenna Type : Monopole Antenna

\*1) Please refer to UL Japan, Inc. Test Report No. 30IE0136-HO-02-A for Transmitter part test (FCC 15 Subpart C test)

### **FCC15.111(b)**

The receiving antenna (of this EUT) is installed inside the EUT and cannot be removed (permanently attached). Therefore, Radiated emission test was performed.

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## **SECTION 3: Test specification, procedures & results**

### **3.1 Test specification**

Test Specification : FCC Part 15 Subpart B 2010, final revised on January 22, 2010 and effective March 1, 2010

Title : FCC 47CFR Part15 Radio Frequency Device  
Subpart B Unintentional Radiators

### **3.2 Procedures and results**

<b>Item</b>	<b>Test Procedure</b>	<b>Limits</b>	<b>Deviation</b>	<b>Worst margin</b>	<b>Result</b>
Conducted emission	FCC: ANSI C63.4: 2003 7. AC powerline conducted emission measurements	Receiver	N/A	N/A *1)	N/A
	IC: RSS-Gen 7.2.2				
Radiated emission	FCC: ANSI C63.4: 2003 8. Radiated emission measurements	Receiver	N/A	14.1dB 39.198MHz Vertical	Complied
	IC: RSS-Gen 4.10				

\*Note: UL Japan, Inc's EMI Work Procedure QPM05.

\*1) The test is not applicable since the EUT is not the device that is designed to be connected to the public utility (AC) power line.

### **3.3 Addition to standard**

No addition, exclusion nor deviation has been made from the standard.

### 3.4 Uncertainty

#### EMI

The following uncertainties have been calculated to provide a confidence level of 95% using a coverage factor k=2.

Item	Frequency range	No.1 SAC <sup>*1</sup> /SR <sup>*2</sup> (±)	No.2 SAC/SR (±)	No.3 SAC/SR (±)
Radiated emission (Measurement distance: 3m)	9kHz-30MHz	3.4 dB	2.7 dB	3.4 dB
	30MHz-300MHz	4.6 dB	4.5 dB	4.9 dB
	300MHz-1GHz	4.5 dB	4.6 dB	5.1 dB
	1GHz-18GHz	3.9 dB	3.9 dB	4.0 dB
	18GHz-26.5GHz	4.4 dB	4.4 dB	4.4 dB

\*1: SAC=Semi-Anechoic Chamber

\*2: SR= Shielded Room is applied besides radiated emission

#### Radiated emission test(3m)

The data listed in this report meets the limits unless the uncertainty is taken into consideration.

### 3.5 Test Location

UL Japan, Inc. Shonan EMC Lab.  
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JAB Accreditation No. : RTL02610

No.1/ No.2/ No.3 anechoic chamber has been fully described in a report submitted to FCC office, and accepted on April 17, 2009 (Registration No.: 697847).

IC Registration No. : 2973D-1 (No1 anechoic chamber)  
2973D-2 (No2 anechoic chamber)  
2973D-3 (No3 anechoic chamber)

Test room	Width x Depth x Height (m)	Test room	Width x Depth x Height (m)
No.1 Semi-anechoic chamber	20.6 x 11.3 x 7.65 Maximum measurement distance: 10m	No.1 Shielded room	6.8 x 4.1 x 2.7
No.2 Semi-anechoic chamber	20.6 x 11.3 x 7.65 Maximum measurement distance: 10m	No.2 Shielded room	6.8 x 4.1 x 2.7
No.3 Semi-anechoic chamber	12.7 x 7.7 x 5.35 Maximum measurement distance: 5m	No.3 Shielded room	6.3 x 4.7 x 2.7
No.4 Semi-anechoic chamber	8.1 x 5.1 x 3.55	No.4 Shielded room	4.4 x 4.7 x 2.7
		No.5 Shielded room	7.8 x 6.4 x 2.7
		No.6 Shielded room	7.8 x 6.4 x 2.7

### 3.6 Test set up, Data of EMI, and Test instruments

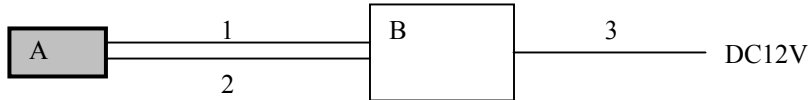
Refer to APPENDIX.

## **SECTION 4: Operation of E.U.T. during testing**

### **4.1 Operating modes**

The mode is used : Receiving mode

### **4.2 Configuration and peripherals**



\* Cabling and setup were taken into consideration and test data was taken under worse case conditions.

#### **Description of EUT and Support equipment**

No.	Item	Model number	Serial number	Manufacturer	Remark
A	Integrate Immobilizer System with RKE	HLIKN-1R	001	Honda Lock Mfg. Co., Ltd.	EUT
B	Checker	-	-	Honda Lock Mfg. Co., Ltd.	-

#### **List of cables used**

No.	Name	Length (m)	Shield		Remark
			Cable	Connector	
1	Signal Cable (IG1)	0.5	Unshielded	Unshielded	-
2	DC Cable	0.5	Unshielded	Unshielded	-
3	DC Cable	1.2	Unshielded	Unshielded	-

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## **SECTION 5: Radiated Emission**

### **5.1 Operating environment**

Test place : No.3 semi anechoic chamber  
Temperature : See data  
Humidity : See data

### **5.2 Test configuration**

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane. The table is made of Styrofoam and covered with polyvinyl chloride. That has very low permittivity. The rear of EUT, including its peripherals was aligned and flushed with rear of tabletop. I/O cables that were connected to the peripherals were bundled in center. They were folded back and for the forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane. Photographs of the set up are shown in Appendix 1.

### **5.3 Test conditions**

Frequency range : 30MHz-300MHz (Biconical antenna) / 300MHz-1000MHz (Logperiodic antenna)  
1000MHz -2000MHz (Horn antenna)  
Test distance : 3m  
EUT position : Table top  
EUT operation mode : See Clause 4.1

### **5.4 Test procedure**

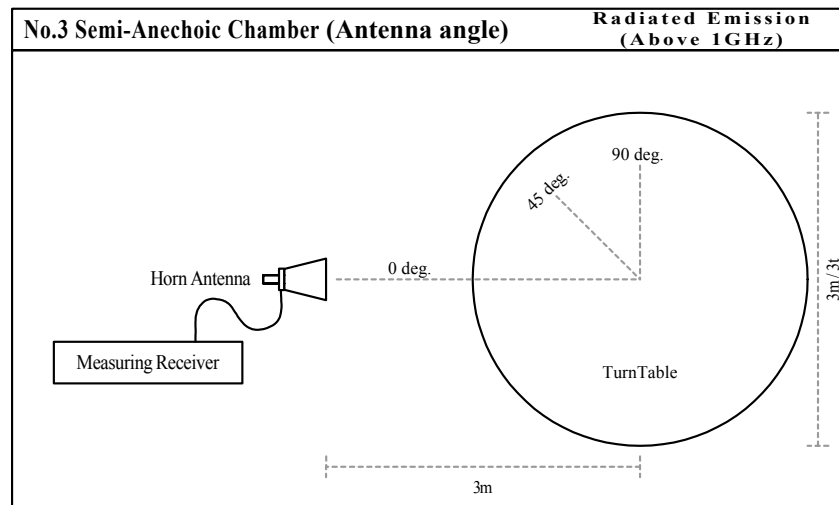
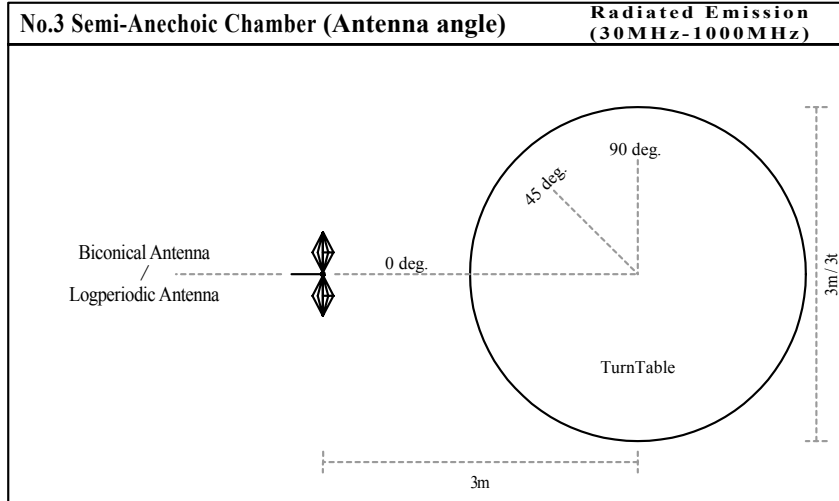
The height of the measuring antenna varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity. The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer. The radiated emission measurements were made with the following detector function of the test receiver and the Spectrum analyzer.

Frequency	Below 1GHz	Above 1GHz
Instrument used	Test Receiver	Spectrum Analyzer
IF Bandwidth	QP: BW 120kHz	PK: RBW:1MHz/VBW: 3MHz AV *1): RBW:1MHz/VBW:10Hz

\*1) When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

- The noise levels were confirmed at each position of X, Y and Z axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.





## 6.5 Test result

Summary of the test results: Pass

Date: June 20 and 21, 2010

Test engineer: Tatsuya Arai