




## RADIO TEST REPORT


Test Report No. : 28DE0074-HO-A-R3

Applicant : DENSO CORPORATION  
Type of Equipment : Electronic Key  
Model No. : 14AAM  
Test regulation : FCC Part 15 Subpart C:2008  
Section 15.231  
FCC ID : HYQ14AAM  
Test Result : Complied

1. This test report shall not be reproduced in full or partial, without the written approval of UL Japan, Inc.
2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with above regulation.
4. The test results in this report are traceable to the national or international standards.
5. Original test report number of this report is 28DE0074-HO-A.

Date of test : November 22, 2007

Tested by :   
Shinya Watanabe  
EMC Services

Approved by :   
Mitsuru Fujimura  
Assistant Manager of EMC Services



NVLAP LAB CODE: 200572-0

This laboratory is accredited by the NVLAP LAB CODE 200572-0, U.S.A. The tests reported herein have been performed in accordance with its terms of accreditation.  
\*As for the range of Accreditation in NVLAP, you may refer to the WEB address, <http://uljapan.co.jp/emc/nvlap.htm>

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## **SECTION 1: Customer information**

Company Name	:	DENSO CORPORATION
Address	:	1-1 Showa-cho, Kariya-shi, Aichi-ken, 448-8661 Japan
Telephone Number	:	+81-566-20-2958
Facsimile Number	:	+81-566-25-4837
Contact Person	:	JUN NAMIZAKI

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

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

Type of Equipment	:	Electronic Key
Model No.	:	14AAM
Serial No.	:	001
Country of Manufacture	:	Japan
Receipt Date of Sample	:	November 10, 2007
Condition of EUT	:	Production model (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: 14AAM (referred to as the EUT in this report) is the Electronic Key.

Equipment Type	:	Transmitter
Frequency of Operation	:	315.12MHz
Oscillator frequency	:	315.12MHz SAW resonator
Type of Modulation	:	A1D
Power Supply	:	DC3.0V
Antenna Type	:	Built-in type (Fixed)

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

### **3.1 Test Specification**

Test Specification : FCC Part 15 Subpart C: 2008, final revised on March 24, 2008  
Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators  
Section 15.231 Periodic operation in the band 40.66 - 40.70MHz  
and above 70MHz

\*The revision on March 24, 2008 does not influence the test specification applied to the EUT.

#### **FCC 15.31 (e)**

This test was performed with the New Battery (DC 3.0V) and the constant voltage was supplied to the EUT during the tests. Therefore, the EUT complies with the requirement.

#### **FCC Part 15.203 Antenna requirement**

It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT. Therefore, the equipment complies with the antenna requirement of Section 15.203.

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### 3.2 Procedures and results

No.	Item	Test Procedure	Specification	Deviation	Worst margin	Results
1	Automatically Deactivate	ANSI C63.4:2003 13. Measurement of intentional radiators	Section 15.231(a)(1)	N/A	-	Complied
2	Electric Field Strength of Fundamental Emission	ANSI C63.4:2003 13. Measurement of intentional radiators	Section 15.231(b)	N/A	7.4dB 315.13MHz Horizontal	Complied
3	Electric Field Strength of Spurious Emission	ANSI C63.4:2003 13. Measurement of intentional radiators	Section 15.205 Section 15.209 Section 15.231(b)	N/A	10.5dB 945.38MHz Horizontal / Vertical	Complied
4	-20dB Bandwidth	ANSI C63.4:2003 13. Measurement of intentional radiators	Section 15.231(c)	N/A	-	Complied
5	Conducted emission	ANSI C63.4:2003 7. AC powerline conducted emission measurements	Section 15.207	-	N/A*1)	N/A
Note: UL Japan, Inc.'s EMI Work procedures No. QPM05 and QPM15 *1) The test is not applicable since the EUT does not have AC Mains.						

### 3.3 Addition to standards

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	99% Occupied Band Width	<IC> RSS-Gen 4.6.1	<IC> RSS-210 A1.1.3	Conducted	N/A	N/A	N/A

### 3.4 Uncertainty

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

Test room	Conducted emission	Radiated emission (10m*)			Radiated emission (3m*)			Radiated emission (3m*)	
	150kHz-30MHz	9kHz-30MHz	30MHz-300MHz	300MHz-1GHz	9kHz-30MHz	30MHz-300MHz	300MHz-1GHz	1GHz-18GHz	18GHz-40GHz
No.1 semi-anechoic chamber (±)	3.7dB	3.1dB	4.7dB	4.4dB	3.2dB	3.7dB	4.4dB	5.9dB	6.1dB
No.2 semi-anechoic chamber (±)	3.7dB	-	-	-	3.2dB	4.3dB	3.9dB	5.9dB	6.1dB
No.3 semi-anechoic chamber (±)	3.7dB	-	-	-	3.2dB	4.2dB	4.4dB	5.9dB	6.1dB
No.4 semi-anechoic chamber (±)	3.7dB	-	-	-	3.2dB	4.2dB	4.4dB	5.9dB	6.1dB

\*10m/3m = Measurement distance

#### Radiated emission test

The data listed in this test report has enough margin, more than the site margin.

### 3.5 Test Location

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	FCC Registration Number	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms
No.1 semi-anechoic chamber	313583	IC4247	19.2 x 11.2 x 7.7m	7.0 x 6.0m	No.1 Power source room
No.2 semi-anechoic chamber	655103	IC4247-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 semi-anechoic chamber	148738	IC4247-3	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.3 Preparation room
No.3 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.4 semi-anechoic chamber	134570	IC4247-4	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.4 Preparation room
No.4 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.5 semi-anechoic chamber	-	-	6.0 x 6.0 x 3.9m	6.0 x 6.0m	-
No.6 shielded room	-	-	4.0 x 4.5 x 2.7m	4.75 x 5.4 m	-
No.6 measurement room	-	-	4.75 x 5.4 x 3.0m	4.75 x 4.15 m	-
No.7 shielded room	-	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.8 measurement room	-	-	3.1 x 5.0 x 2.7m	N/A	-
No.9 measurement room	-	-	8.0 x 4.5 x 2.8m	2.0 x 2.0m	-
No.10 measurement room	-	-	2.6 x 2.8 x 2.5m	2.4 x 2.4m	-
No.11 measurement room	-	-	3.1 x 3.4 x 3.0m	2.4 x 3.4m	-

\* Size of vertical conducting plane (for Conducted Emission test) : 2.0 x 2.0m for No.1, No.2, No.3, and No.4 semi-anechoic chambers and No.3 and No.4 shielded rooms.

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

Refer to APPENDIX 1 to 3.

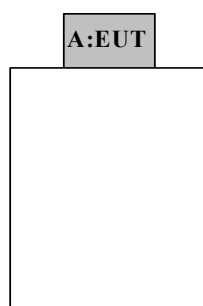
## **SECTION 4: Operation of E.U.T. during testing**

### **4.1 Operating Modes**

The mode is used :      1) Normal use mode (for Automatically deactivate test only)  
                                 2) Transmitting mode (for the other tests)\*  
                                 \*Transmit signal was used from the data for Production model. (Signal of Normal use mode is sent successively.)

Justification        :      The system was configured in typical fashion (as a customer would normally use it) for testing.

### **4.2 Configuration and peripherals**



\* Setup was taken into consideration and test data was taken under worse case conditions.

#### **Description of EUT**

No	Item	Model number	Serial number	Manufacturer	Remarks
A	Electronic Key	14AAM	001	DENSO COPORATION	-

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## **SECTION 5: Radiated Emission (Electric Field Strength of Fundamental and Spurious Emission)**

### **5.1 Operating environment**

Test place : No.4 semi anechoic chamber  
 Temperature : See data  
 Humidity : See data

### **5.2 Test configuration**

EUT was placed on a urethane platform of nominal size, 1.0m by 0.5m, raised 80cm above the conducting ground plane. The EUT was set on the center of the tabletop.  
 Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.  
 A drawing of the set up is shown in the photos of APPENDIX 1.

### **5.3 Test conditions**

Frequency range : 30MHz-3200MHz  
 Test distance : 3m  
 EUT position : Table top  
 EUT operation mode : See Clause 4.1

### **5.4 Test procedure**

The Radiated Electric Field Strength intensity has been measured on No.4 semi anechoic chamber with a ground plane and at a distance of 3m.  
 The measuring antenna height was 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.  
 The radiated emission measurements were made with the following detector function of the test receiver/spectrum analyzer.

	Pulse emissions		Other emissions	
	Below or equal to 1GHz	Above 1GHz (FCC15.205)/(FCC15.231)	Below or equal to 1GHz	Above 1GHz (FCC15.205)/(FCC15.209)
Detector Type	QP	Peak and Peak with Duty factor	QP	Peak and Average
IF Bandwidth	T/R: BW 120kHz	PK: S/A: RBW 1MHz, VBW 1MHz	T/R: BW 120kHz	PK: S/A: RBW 1MHz, VBW 1MHz AV: S/A: RBW 1MHz, VBW 10Hz

- The carrier level (or, noise levels) was (or were) measured at each position of all three axes X, Y and Z, and the position of maximum noise, and the test was made at the position that has the maximum noise.

### **5.5 Results**

Summary of the test results: Pass

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