EMI TEST REPORT

Test Report No. : 28JE0164-HO-01-A

Applicant : **Mitsubishi Electric Corporation Himeji Works**

Type of Equipment : **NORMAL KEYLESS SYSTEM (RECEIVER)**

Model No. : **SKE125-01 (X1T854 VARIANT)**

FCC ID : **WAZX1T854SKE12501**

Test regulation : **FCC Part 15 Subpart B 2008**

Test Result : **Complied**

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the above regulation.
4. The test results in this report are traceable to the national or international standards.
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Date of test: June 23, 2008

Tested by: T. Sasagawa
Tomotaka Sasagawa
EMC Services

Approved by :
Makoto Kosaka
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	:	Mitsubishi Electric Corporation Himeji Works
Address	:	840 CHIYODA-MACHI HIMEJI HYOGO 670-8677, JAPAN
Telephone Number	:	+81-79-298-8994
Facsimile Number	:	+81-79-298-9929
Contact Person	:	Yoshiharu Goto

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

2.1 Identification of E.U.T.

Type of Equipment	:	NORMAL KEYLESS SYSTEM (RECEIVER)
Model No.	:	SKE125-01 (X1T854 VARIANT)
Serial No.	:	20080512-R3
Receipt Date of Sample	:	June 17, 2008
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: SKE125-01 (X1T854 VARIANT) (referred to as the EUT in this report) is the NORMAL KEYLESS SYSTEM (RECEIVER).

Clock frequency(ies) in the system	:	8MHz(CPU), 9.850625MHz(VCO)
Equipment Type	:	Receiver
Type of Receiver	:	Super Heterodyne
Frequency of Operation	:	315MHz
Oscillator Frequency	:	9.850625MHz(Crystal) (9.850625MHz×32=315.22MHz(Local Oscillator Frequency))
Intermediate Frequency	:	220KHz
Antenna Type	:	Bar antenna
Method of Frequency Generation	:	Crystal
Operating voltage (Inner)	:	DC 5.0V

FCC15.111(b)

The receiving antenna (of this EUT) is installed inside the EUT and cannot be removed. Therefore, this EUT complies with the requirement in section 15.111(b).

SECTION 3: Test specification, procedures & results

3.1 Test specification

Test Specification	:	FCC Part 15 Subpart B 2008, final revised on May 19, 2008
Title	:	FCC 47CFR Part15 Radio Frequency Device Subpart B Unintentional Radiators

3.2 Procedures and results

Item	Test Procedure	Limits	Deviation	Worst margin	Result
Conducted emission	**FCC:** ANSI C63.4: 2003 7. AC powerline conducted emission measurements **IC:** RSS-Gen 7.2.2	Receiver	N/A	-	N/A *1)
Radiated emission	**FCC:** ANSI C63.4: 2003 8. Radiated emission measurements **IC:** RSS-Gen 4.10	Receiver	N/A	19.3dB 959.011MHz Horizontal, QP	Complied
*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.					

*These tests were performed without any deviations from test procedure except for additions or exclusions.

3.3 Additions or deviations to standards

No addition nor deviation has been made from standards.

3.4 Uncertainty

EMI
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	3.9dB	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(3m)
The data listed in this test report has enough margin, more than the site margin.

3.5 Test Location

UL Japan, Inc. Head Office EMC Lab. *NVLAP Lab. code: 200572-0
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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	2973C-1	19.2 x 11.2 x 7.7m	7.0 x 6.0m	No.1 Power source room
No.2 semi-anechoic chamber	655103	2973C-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 semi-anechoic chamber	148738	2973C-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	2973C-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, Data of EMI, and Test instruments

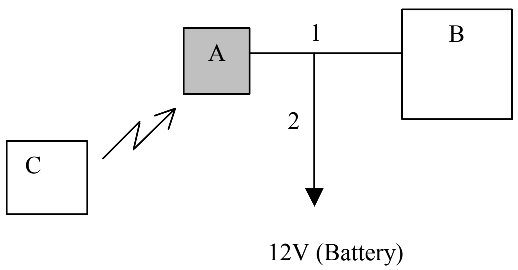
Refer to APPENDIX 1 to 3.

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

4.1 Operating modes

The mode is used : Continuous Receiving mode
This EUT receives 315MHz signal from hand unit.

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	NORMAL KEYLESS SYSTEM (RECEIVER)	SKE125-01 (X1T854 VARIANT)	20080512-R3	Mitsubishi Electric Corporation Himeji Works	EUT
B	BCM	-	-	Mitsubishi Electric Corporation Himeji Works	-
C	Key (Transmitter)	-	-	Mitsubishi Electric Corporation Himeji Works	-

List of cables used

No.	Name	Length (m)	Shield	
			Cable	Connector
1	DC & Signal Cable	1.5	Unshielded	Unshielded
2	DC Cable	0.5	Unshielded	Unshielded

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 an urethane platform of nominal size, 0.5m by 1.0m, raised 80cm above the conducting ground plane. The EUT was set on the center 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-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 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 (in linear mode).
The test was made with the detector (RBW/VBW) in the following table.
When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

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

*1) The Spectrum Analyzer was used in 3dB resolution bandwidth.

- 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.

5.5 Test result

Summary of the test results: Pass

Date: June 23, 2008 Test engineer: Tomotaka Sasagawa