EMI TEST REPORT

Test Report No. : 25AE0094-HO-3

Applicant	:	**OMRON Corporation**
Type of Equipment	:	**Immobilizer System /Receiver of Keyless Entry System**
Model No.	:	**G8C-505M**
Test standard	:	**FCC Part 15 Subpart B Class B: 2004**
FCC ID	:	**OUCG8C-505M**
Test Result	:	**Complied**

1. This test report shall not be reproduced in full or partial, without the written approval of UL Apex Co., Ltd.
2. The results in this report apply only to the sample tested.
3. This equipment is in compliance with above regulation. We hereby certify that the data contain a true representation of the EMC profile.
4. The test results in this report are traceable to the national or international standards.

Date of test: October 7, 2004

Tested by: K. Adachi
Kenichi Adachi
EMC Service

Approved by :
Naoki Sakamoto
Group Leader of
EMC Service

UL Apex Co., Ltd.
Head Office EMC Lab.
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
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SECTION 1: Client information

Company Name	:	OMRON Corporation
Address	:	6368 NENJOZAKA,OKUSA,KOMAKI,AICHI,485-0802 JAPAN
Telephone Number	:	+81-568-78-6394
Facsimile Number	:	+81-568-78-6188
Contact Person	:	Harumi Itatsu

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

2.1 Identification of E.U.T.

Type of Equipment	:	Immobilizer System /Receiver of Keyless Entry System
Model No.	:	G8C-505M
Serial No.	:	1
Rating	:	DC12.0V
Country of Manufacture	:	Japan
Receipt Date of Sample	:	October 1, 2004
Condition of EUT	:	Production prototype (Not for Sale: This sample is equivalent to mass-produced items.)

2.2 Product Description

Model No: G8C-505M is the Immobilizer System/ Receiver of Keyless Entry System
*This EUT has the Immobilizer System and Receiver of Keyless Entry System inside of the enclosure. As for the each test report, the part of Immobilizer System is in Report No. 25AE0093-HO-1, and the part of the Receiver of Keyless Entry System is in report No. 25AE0094-HO-3.

Variant model:G8C-513M
The difference between Models, G8C-505M and G8C-513M is as follows:
- G8C-505M has the control function of rear wiper.
- G8C-513M does not have the control function of rear wiper.

As the radio characteristics of the above two models are same, G8C-505M has been tested as a representative model , because it is considered as superior model.

Equipment Type	:	Super Heterodyne
Operating Frequency	:	313.85MHz
Intermediate Frequency	:	10.7MHz
CPU	:	8MHz
Antenna Type	:	Inverted F antenna
Antenna connector Type	:	No connector
Method of Frequency Generation	:	Crystal
Power Supply (inner)	:	DC5.0V at Battery DC12.0V

FCC 15.31 (e)
The power supply of this EUT is transformed to DC5.0V and provides stable voltage (DC5.0V) constantly to Radio part. Therefore, this EUT complies with the requirement.
FCC Part 15.111 (b)
It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT.

SECTION 3: Test specification, procedures & results

3.1 Test specification

Test Specification : FCC Part 15 Subpart B 2004
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	ANSI C63.4: 2003 7. AC powerline conducted emission measurements	Class B	N/A	N/A *1)	N/A
Radiated emission	ANSI C63.4: 2003 8. Radiated emission measurements	Class B	N/A	20.9dB 1120.000MHz, Vertical, AV	Complied
*Note: UL Apex'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 Additions or deviations to standards

No addition, deviation, nor exclusion has been made from standards.

3.4 Uncertainty

Radiated Emission
The measurement uncertainty (with a 95% confidence level) for this test using Biconical antenna is ±4.5dB(3m).
The measurement uncertainty (with a 95% confidence level) for this test using Logperiodic antenna is ±5.2dB(3m).
The measurement uncertainty (with a 95% confidence level) for this test using Horn antenna is ±6.6dB.

*In case of the margin below the EMC Head Office's uncertainty.
The data listed in this report meets the limits unless the uncertainty is taken into consideration.

3.5 Test Location

UL Apex Co., Ltd. Head Office EMC Lab. *NVLAP Lab. code: 200572-0
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8116
Facsimile : +81 596 24 8124

	Listed date (for FCC)	FCC Registration Number	IC Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms
No.1 semi-anechoic chamber	February 01, 2002	313583	IC4247	19.2 x 11.2 x 7.7m	7.0 x 6.0m	Preparation room
No.2 semi-anechoic chamber	June 05, 2002	846015	IC4247-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 shielded room	-	-	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.4 measurement room	-	-	-	3.1 x 5.0 x 2.7m	N/A	-

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

3.6 Test set up, Test instruments and Data of EMI

Refer to APPENDIX 1 to 3.

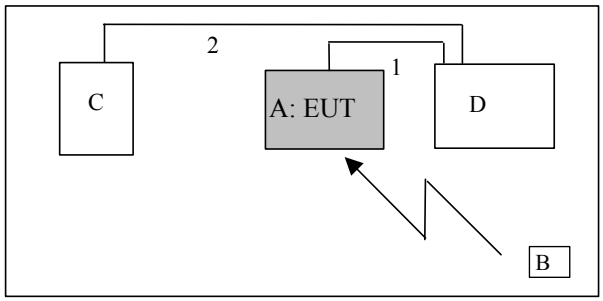
SECTION 4: Operation of E.U.T. during testing

4.1 Operating modes

The mode is used : Continuous Receiving of the conventional signals from the keyless transmitter.

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

4.2 Configuration and peripherals



*Cabling was 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	FCC ID	Remark
A	Immobilizer System /Receiver of Keyless Entry System	G8C-505M	1	OMRON	OUCG8C-505M	EUT
B	Keyless Entry System (Transmitter)	G8D-620M-A	1	OMRON	OUCG8D-620M-A	-
C	Car Battery	40B19L	A030402	YUASA	-	-
D	Checker	-	-	OMRON	-	-

List of cables used

No.	Name	Length (m)	Shield	Backshell Material
1	Signal Cable	1.0	N	Polyvinyl chloride
2	DC Cable	0.65	N	Polyvinyl chloride

SECTION 5: Radiated Emission

5.1 Operating environment

Test place : No.2 semi anechoic chamber
Temperature : See data
Humidity : See data

5.2 Test configuration

EUT was placed on a platform of nominal size, 0.5m by 1.0m, raised 80cm above the conducting ground plane.
The EUT was set on the edge 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 - 300MHz (Biconical antenna) / 300MHz - 1000MHz (Logperiodic antenna)
1000-2000MHz (Horn antenna)
Test distance : 3m
EUT position : Table top
EUT operation mode : See Clause 4.1

5.4 Test procedure

The measuring antenna height 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.

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

- The noise levels were measured at each position of all three axes X, Y and Z, and the position that has the maximum noise was determined. With the position, the noise levels of all the frequencies were measured.

5.5 Test result

Summary of the test results: Pass

Date: October 7, 2004 Test engineer: Kenichi Adachi

APPENDIX 1: Photographs of test setup

This Page has been submitted for a separate exhibit.

This Page has been submitted for a separate exhibit.

APPENDIX 2: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
MAEC-02	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	RE	2004/04/12 * 12
MTR-02	Test Receiver	Rohde & Schwarz	ESCS30	RE	2004/02/03 * 12
MRENT-09	Spectrum Analyzer	Advantest	R3273	RE	2004/02/18 * 12
MCC-12	Coaxial Cable	Fujikura/Agilent	-	RE	2004/02/24 * 12
MPA-06	Pre Amplifier	Hewlett Packard	8447D	RE	2004/08/29 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	RE	2003/12/16 * 12
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	RE	2003/10/15 * 12
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2003/10/15 * 12
MCC-04	Microwave Cable	Storm	421-011	RE	2004/01/06 * 12
MPA-03	Microwave System Power Amplifier	Agilent	83050A	RE	2004/06/12 * 12
MCC-24	Microwave Cable	Storm	-	RE	2004/05/01 * 12
MHA-06	Horn Antenna	Schwarzbeck	BBHA9120D	RE	2004/01/10 * 12

All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
Test Item:
RE: Radiated emission

APPENDIX 3: Data of EMI test

Radiated Emission

DATA OF RADIATED EMISSION TEST

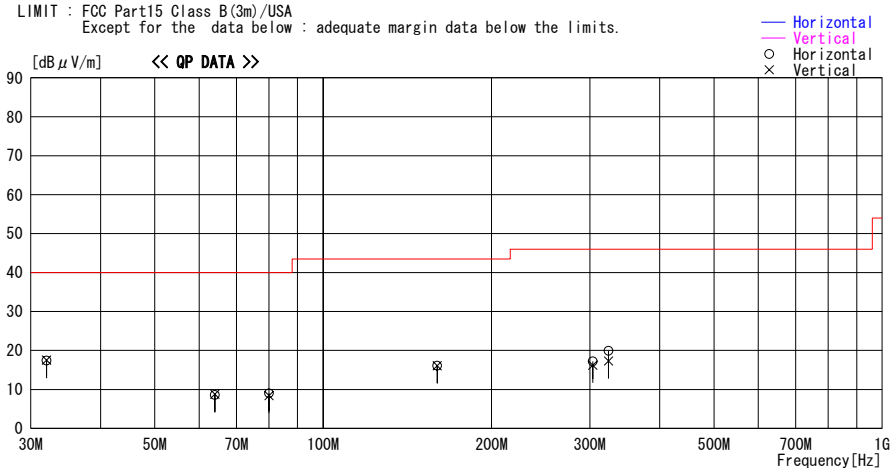
UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2004/10/07 02:34:37

Applicant : OMRON Corporation
Kind of EUT : Keyless entry system (Receiver)
Model No. : G8C-505M
Sample No. : 1

Report No. : 25AE0094-HO
Power : DC 12.0V
Temp./Humi. : 24 deg.C / 55 %
Operator : Kenichi Adachi

Mode / Remarks : Receiving 313.85MHz / EUT Max-axis (X-axis)

LIMIT : FCC Part15 Class B(3m)/USA
Except for the data below : adequate margin data below the limits.



Frequency	Reading	DET	Antenna Factor	Loss& Gain	Level	Angle	Height	Polar.	Limit	Margin
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]
32.000	21.1	QP	17.7	-21.4	17.4	0	300	Hori.	40.0	22.6
32.000	21.2	QP	17.7	-21.4	17.5	0	100	Vert.	40.0	22.5
64.000	22.0	QP	7.6	-20.8	8.8	0	100	Vert.	40.0	31.2
64.000	21.8	QP	7.6	-20.8	8.6	0	128	Hori.	40.0	31.4
80.000	22.6	QP	6.3	-20.5	8.4	0	255	Vert.	40.0	31.6
80.000	23.2	QP	6.3	-20.5	9.0	0	250	Hori.	40.0	31.0
160.000	20.6	QP	15.2	-19.7	16.1	0	300	Hori.	43.5	27.4
160.000	20.6	QP	15.2	-19.7	16.1	0	100	Vert.	43.5	27.4
303.710	21.5	QP	14.2	-18.5	17.2	0	100	Hori.	46.0	28.8
303.710	20.5	QP	14.2	-18.5	16.2	0	100	Vert.	46.0	29.8
323.990	23.3	QP	15.1	-18.5	19.9	0	100	Hori.	46.0	26.1
323.990	20.7	QP	15.1	-18.5	17.3	0	100	Vert.	46.0	28.7

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP,30-300MHz BICONICAL,300MHz-1000MHz LOGPERIODIC,1000MHz- HORN
CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP.GAIN Page:

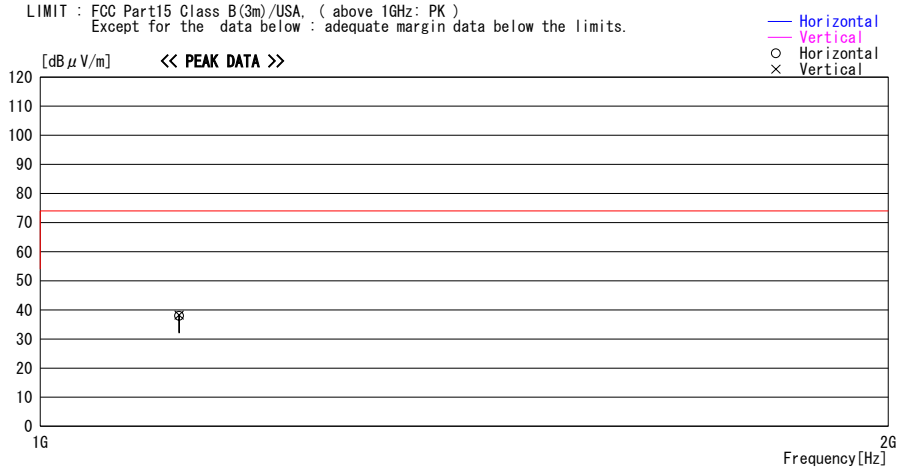
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2004/10/07 05:59:41

Applicant	: OMRON Corporation	Report No.	: 25AE0094-HO
Kind of EUT	: Keyless entry system (Receiver)	Power	: DC 12.0V
Model No.	: G8C-505M	Temp./Humi.	: 24 deg.C / 55 %
Sample No.	: 1	Operator	: Kenichi Adachi

Mode / Remarks : Receiving 313.85MHz / EUT Max-axis (X-axis)

LIMIT : FCC Part15 Class B(3m)/USA, (above 1GHz: PK)
Except for the data below : adequate margin data below the limits.



Frequency	Reading	DET	Antenna Factor	Loss& Gain	Level	Angle	Height	Polar.	Limit	Margin
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg.]	[cm]		[dBuV/m]	[dB]
1120.000	38.0	PK	22.8	-22.8	38.0	0	100	Hori.	74.0	36.0
1120.000	38.2	PK	22.8	-22.8	38.2	0	100	Vert.	74.0	35.8

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP,30-300MHz BICONICAL,300MHz-1000MHz LOGPERIODIC,1000MHz- HORN
CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP.GAIN Page:

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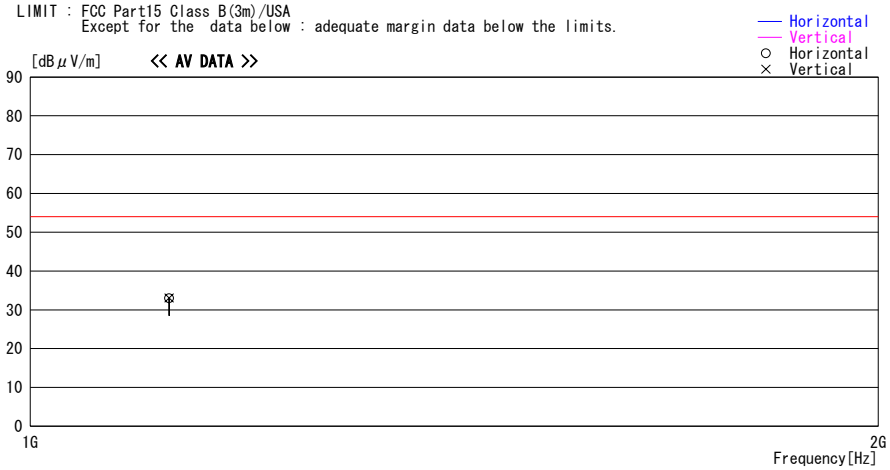

Frequency	Reading	DET	Antenna Factor	Loss& Gain	Level	Angle	Height	Polar.	Limit	Margin
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg.]	[cm]		[dBuV/m]	[dB]
1120.000	33.0	AV	22.8	-22.8	33.0	0	100	Hori.	54.0	21.0
1120.000	33.1	AV	22.8	-22.8	33.1	0	100	Vert.	54.0	20.9

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP,30-300MHz BICONICAL,300MHz-1000MHz LOGPERIODIC,1000MHz- HORN
CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP.GAIN Page: