ELECTROMAGNETIC EMISSION COMPLIANCE REPORT

Test report file number	**: E009R-023**
Applicant	**: OMRON AUTOMOTIVE ELECTRONICS KOREA CO., LTD.**
Address	**: 481-2, Kasan-Dong, Kumchun-Ku, Seoul, 153-023, Korea**
Manufacturer	**: OMRON AUTOMOTIVE ELECTRONICS KOREA CO., LTD.**
Address	**: 481-2, Kasan-Dong, Kumchun-Ku, Seoul, 153-023, Korea**
Type of Equipment	**: REMOTE CONTROL SECURITY RECEIVER**
FCC ID	**: OSLOKA-400R**
Model / Type No.	**: OKA-400R**
Serial number	**: N/A**
Total page of Report	**: 10 pages (including this page)**
Date of Incoming	**: August 25, 2000**
Date of issuing	**: September 15, 2000**

SUMMARY

The equipment complies with the regulation; FCC PART 15 SUBPART B §15.101

This test report contains only the result of a single test of the sample supplied for the examination. It is not a general valid assessment of the features of the respective products of the mass-production

Prepared by: G. W. Lee/ Ass. Chief Engineer

Reviewed by: Y. K. Kwon/ Chief Engineer

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CONTENTS

Page

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1. VERIFICATION OF COMPLIANCE

APPLICANT	: OMRON AUTOMOTIVE ELECTRONICS KOREA CO., LTD.
ADDRESS	: 481-2, Kasan-Dong, Kumchun-Ku, Seoul, 153-023, Korea
CONTACT PERSON	: K. Y. JANG / SECTION MANAGER
TELEPHONE NO	: 82-2-8505-747
FCC ID	: OSLOKA-400R
MODEL NO/NAME	: OKA-400R
SERIAL NUMBER	: N/A
DATE	: September 15, 2000

DEVICE TYPE	UNINTENTIONAL RADIATOR
E.U.T. DESCRIPTION	REMOTE CONTROL SECURITY RECEIVER
THIS REPORT CONCERNS	ORIGINAL GRANT
MEASUREMENT PROCEDURES	ANSI C63.4/1992
TYPE OF EQUIPMENT TESTED	PRE-PRODUCTION
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	CERTIFICATION
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	FCC PART 15 §15.101
MODIFICATIONS ON THE EQUIPMENT TO ACHIEVE COMPLIANCE	No
FINAL TEST WAS CONDUCTED ON	3 METER OPEN AREA TEST SITE

The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

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2. GENERAL INFORMATION

2.1 Product Description

The OMRON AUTOMOTIVE ELECTRONICS KOREA CO., LTD., Model OKA-400R (referred to as the EUT in this report) is a receiver that is fixed inside the vehicle and receives the signal from the transmitter, FCC ID: OSLOKA-510T, and then decide locking and unlocking the door of the vehicle. The product specification described herein was obtained from product data sheet or user's manual.

CHASSIS TYPE	Plastic
LOCAL CLOCK FREQUENCY	307.9 MHz
MODULATION SCHEME	FM (Single Superheterodyne)
LIST OF EACH OSC. OR CRY. FREQ.(FREQ.>=1MHz)	10 MHz
RF MODULE	M/N: WMF-R13, Manufacturer: Mitsumi
POWER REQUIREMENTS	DC 12V, 50mA(4mA on standby) from Car Battery
NUMBER OF LAYERS	2 LAYERS

Model Differences:

-. No other model differences have been mentioned

2.2 Related Submittal(s) / Grant(s)

Original submittal only

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2.3 Test System Details

The EUT was tested with the following all equipment used in the tested systems are:

Model	Manufacturer	FCC ID	Description	Connected to
OKA-400R	OMRON AUTOMOTIVE ELECTRONICS KOREA CO., LTD.	OSLOKA-400R	RECEIVER	N/A
E3643A	HP	N/A	DC Power Supply	EUT
8657A	HP	N/A	Signal Generator	EUT

2.4 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4/1992. Radiated testing was performed at a distance of 3 meters from EUT to the antenna.

2.5 Test Facility

The open area test site and conducted measurement facilities are located on at 426-1 Daessangryung-Ri, Chowol-Myun, Kwangju-Kun, Kyunggi-Do 464-080 Korea. Description details of test facilities were submitted to the Commission on January 12, 1999. (Registration Number: 92819)

3. SYSTEM TEST CONFIGURATION

3.1 Justification

This device was configured for testing in a typical way as a normal customer is supposed to be used. During the test, the following components were installed inside of the EUT.

DEVICE TYPE	MANUFACTURER	MODEL/PART NUMBER	FCC ID
MAIN BOARD	OMRON Automotive Electronics Korea Co., Ltd.	LC-ETACS	N/A

3.2 EUT exercise Software

The RF signal from RF signal generator directly was conducted into the antenna terminal of the EUT.

3.3 Equipment Modifications

To achieve compliance to FCC part 15 rule, the following change(s) were made by OMRON Automotive Electronics Korea Co., Ltd. during compliance testing:

"There was no Modified items during EMI test"

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3.4 Configuration of Test System

Line Conducted Emission Test:

It is not need to test this requirement, because the power of the EUT supplies from a car battery.

Radiated Emission Test:

Preliminary radiated emissions tests were conducted using the procedure in ANSI C63.4/1992, 8.3.1.1 to determine the worse operating conditions. Final radiated emission tests were conducted at 3 meters open area test site.

Coherent Test:

During Radiated Emission Tests, H.P. signal generator model no: 8657A was used to radiate an unmodulated CW signal to EUT at 307.9 MHz in order to cohere the individual components of the characteristic broadband emissions from EUT.

Antenna Power Conduction Test:

This equipment was only with a permanently attached antenna, so the radiated emission measurement was performed with the antenna attached.

4. PRELIMINARY TEST

4.1 AC Power line Conducted Emissions Tests

During Preliminary Tests, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
N/A	N/A

4.2 Radiated Emissions Tests

During Preliminary Tests, the following operating modes were investigated

Operation Mode	The Worse operating condition (Please check one only)
RX mode	X

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5. FINAL RESULT OF MEASURMENT

Preliminary test was done in normal operation mode. And the final measurement was selected for the maximized emission level

5.1 Conducted Emission Test

Humidity Level : % Temperature :

Limits apply to : FCC CFR 47, PART 15, SUBPART C

Type of Test : Unintentional Radiator

Result : PASSED BY dB at MHz

EUT : REMOTE CONTROL SECURITY RECEIVER Date:

Operating Condition :

Power Line Conducted Emission			FCC LIMIT	
Frequency (MHz)	**Amplitude (dBuV)**	**Conductor**	**Limit (dBuV)**	**Margin (dB)**
It is not need to test this requirement, because the power of the EUT is supplied from a car battery.				

Line Conducted Emission Tabulated Data

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5.2 Radiated Emission Test

The following table shows the highest levels of radiated emission on both polarizations of horizontal and vertical.

Humidity Level : 56 % Temperature : 27

Limits apply to : FCC CFR 47, PART 15, SUBPART B (Section: 15.109)

Type of Test : Unintentional Radiator

Result : PASSED BY –21.48 dB at 318.6 MHz

EUT : REMOTE CONTROL SECURITY RECEIVER Date: August 25, 2000

Operating Condition : RX mode

Distance : 3 Meter

Radiated Emission		Ant	Correction Factors		Total	FCC LIMIT	
Freq. (MHz)	Amp. (dBuV)	Pol.	Ant. (dBuV/m)	Cable (dB)	Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
235.20	9.00	H	12.12	1.75	22.87	46.00	-23.13
247.60	7.10	H	12.33	1.82	21.25	46.00	-24.75
318.60	7.20	H	15.21	2.11	24.52	46.00	-21.48
339.00	5.40	H	15.20	2.22	22.82	46.00	-23.18
366.40	4.90	V	15.40	2.35	22.65	46.00	-23.35
-	-	-	-	-	-	-	-
Other frequencies are more than 20dB below the limit up to 2GHz.							

Radiated Emission Tabulated Data

Measuring by: Seung Hyun, Nam / Test Engineer

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6. FIELD STRENGTH CALCULATION

Meter readings are compared to the specification limit correcting for antenna and cable losses

+ Meter reading (dBuV)

+ Cable Loss (dB)

+ Antenna Factor (Loss) (dB/meter)

= Corrected Reading (dBuV/meter)

- Specification Limit (dBuV/meter)

= dB Relative to Spec (+/- dB)

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7. LIST OF TEST EQUIPMENT

No.	EQUIPMENTS	MFR.	MODEL	SER. NO.	LAST CAL	DUE CAL	USE
1.	Test receiver	R/S	ESVS 10	827864/005	SEP/99	12MONTH	■
2.	Test receiver	R/S	ESHS10	834467/007	APRIL/00	12MONTH	
3.	Spectrum analyzer	HP	8568B	3026A0226	SEP/99	12MONTH	■
4.	RF preselector	HP	85685A	3107A01264	SEP/99	12MONTH	■
5.	Quasi-Peak Adapter	HP	85650A	3107A01542	SEP/99	12MONTH	■
6.	Dipole Antenna	EMCO	3121C	9107-745	JUN/00	12MONTH	
7.	Biconical antenna	EMCO	3104C	9109-4441 9109-4443 9109-4444	MAR/00	12MONTH	■
8.	Log Periodic antenna	EMCO	3146	9109-3213 9109-3214 9109-3217	MAR/00	12MONTH	■
10.	Horn Antenna	EMCO	3115	9509-4563	MAR/00	12MONTH	■
11.	LISN	EMCO	3825/2	9109-1867 9109-1869	FEB/00	12MONTH	
12.	RF Amplifier	HP	8447F	3113A04554	JUN/00	N/A	
13	Spectrum Analyzer	HP	8561E	3350A00546	SEP/99	12MONTH	■
14.	Spectrum Analyzer	HP	8591A	3131A02312	APR/00	12MONTH	
15.	Computer System Hard disk drive	HP	98581C 9153C	98543A CMC762Z9153	N/A N/A	N/A N/A	■ ■
16.	Plotter	HP	7475A	30052 22986	N/A	N/A	■
17.	Position Controller	EMCO	1090	9107-1038	N/A	N/A	■
18.	Turn Table	EMCO	1080-1.21	9109-1576	N/A	N/A	■
19.	Antenna Master	EMCO	1070-1	9109-1624	N/A	N/A	■

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