



FCC TEST REPORT

Reference No. : G-44-2012-01088
 Applicant : Omron Automotive Electronics Korea Co., Ltd.
 Equipment Under Test (EUT) :
 Product Name : RF Keyless Entry System (Receiver)
 Model Name : OKA-870R
 Applied Standards : FCC Part 15 : 2010, Subpart B, Class B
 ANSI C63.4 : 2003
 CISPR 22 : 2006
 Date of Receipt : April 17, 2012
 Date of Test : April 18, 2012
 Date of Issue : May 04, 2012
 Test Results : Complied

Tested by	:	 ----- Jerry Jeong
Reviewed by	:	 ----- Forest Lee

Remarks :

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Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only."

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1. General Information

1.1 Client Information

Applicant : Omron Automotive Electronics Korea Co., Ltd.
 Address of Applicant : 492, Gayul-Ri, Bogye-Myeon, Anseong-City,
 Kyonggi-Do, Korea
 Manufacturer : Omron Automotive Electronics Korea Co., Ltd.
 Address of Manufacturer : 492, Gayul-Ri, Bogye-Myeon, Anseong-City,
 Kyonggi-Do, Korea

1.2 Test Laboratory

Name and Address : SGS Korea Co., Ltd.
 18-34, Sanbon-dong, Gunpo, Gyeonggi-do, Korea
 435-040
 Phone : + 82 31 428 5700
 Fax : + 82 31 427 2370
 e-mail : forest.lee@sgs.com

1.3 General Information of E.U.T.

Product Name	RF Keyless Entry System (Receiver)
Model Name	OKA-870R
Serial No.	-
EMI Classification	Class B
Operating Frequency	313.89 MHz
Test Voltage	12 Vd.c.

1.4 Operating Modes and Conditions

Operating mode	Operating condition
RX Mode	RX Mode

1.5 Auxiliary Equipments

Description	Model	Serial No.	Manufacturer
Remote Keyless Entry	OKA-870T	-	Omron Automotive Electronics Korea Co.,LTD
Code Checker	-	-	-

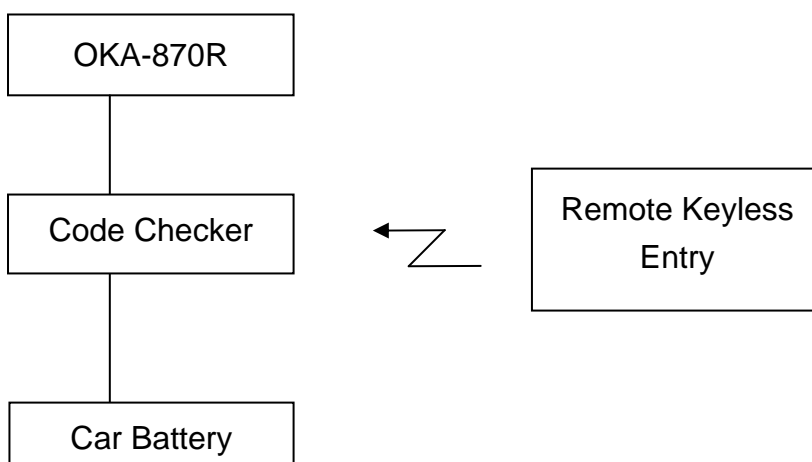
1.6 Cable List

Start		END		Cable Spec.	
Name	I/O Port	Name	I/O Port	Length	Shield
RF Keyless Entry System (Receiver)	IO	Code Checker	-	0.1	Unshield
Code Checker	DC IN	Car Battery	-	0.5	Unshield

1.7 System Configurations

Description	Model	Serial No.	Manufacturer
Main Board	YD-BCM	95400A76305H CU9862002	-

1.8 Test System Layout



1.9 Modifications

There was no modified item during the test.

1.10 Applicable Standards for Testing

Standards	Status	Deviation
FCC Part 15 : 2010, Subpart B	Applicable	No Deviation

1.11 Summary of Test Results

Test Item	Basic Standards	Results
Conducted Emission	ANSI C63.4 : 2003	Complied
Radiated Emission	ANSI C63.4 : 2003	Complied

Note: Test methods of all test items are performed according to the basic standards in this table.

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2.1 Test Results

Test Items	Basic Standards	Test Results
Conducted Emission	ANSI C63.4 : 2003	N/A
Radiated Emission	ANSI C63.4 : 2003	Complied

2.2 Test Method and Limits

2.2.1 Test Method

Test Items	Measuring Frequency Range	RBW	Measuring Distance
Conducted Emission	0.15 MHz ~ 30 MHz	9 kHz	N/A
Radiated Emission	30 MHz ~ 1 GHz	120 kHz	10 m & 3 m
	Above 1 GHz	1 MHz	3 m

Note : 10 m method of radiated emission measurement is only applied to Class A equipment over the frequency range of 30 MHz ~ 1 GHz. Except this, 3 m method is applied to Class B equipment over the frequency range of 30 MHz ~ 1 GHz and Class A and Class B equipment above 1 GHz.

2.2.2 Test Limits

-Conducted Emission Limits

Frequency Range	Limits(dB(μ V))		Class
	Quasi-peak	Average	
0.15 MHz ~ 0.5 MHz	79	66	Class A
0.5 MHz ~ 30 MHz	73	60	
0.15 MHz ~ 0.5 MHz	66 to 56	56 to 46	Class B
0.5 MHz ~ 5 MHz	56	46	
5 MHz ~ 30 MHz	60	50	

Note : The lower limit shall apply at the transition frequencies. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

-Radiated Emission Limits below 1 GHz

Frequency Range	Limits(dB(μ V/m))		Class
	Quasi-peak		
30 MHz ~ 88 MHz	39.1		Class A
88 MHz ~ 216 MHz	43.5		
216 MHz ~ 960 MHz	46.4		
960 MHz ~ 1 GHz	49.5		
30 MHz ~ 88 MHz	40		Class B
88 MHz ~ 216 MHz	43.5		
216 MHz ~ 960 MHz	46		
960 MHz ~ 1 GHz	54		

-Radiated Emission Limits above 1 GHz

Frequency Range	Limits(dB(μ V/m))		Class
	Average	Peak	
Above 1 GHz	59.5	79.5	Class A
Above 1 GHz	54	74	Class B

Note : The limits of class A equipment is extrapolated using an extrapolation factor of 20 dB/decade because it was measured at 3m distance not 10m distance.

2.3 Radiated Emission

The initial preliminary exploratory scans were performed over the measuring frequency range(30 MHz to 2 GHz) using a max hold mode incorporating a Peak detector and using the software of EP5RE(Version Ver3.10.20 from TOYO). The final test data was measured using a Quasi-Peak detector below 1 GHz and a Peak and Average detector above 1 GHz. Measurements were made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna height was varied from 1 m to 4 m and the EUT was rotated 360° to find the maximum emitting point for each frequency.

2.3.1 Test Equipments

Description	Model No.	Manufacturer	S/N	Last Cal. Date
Horn Antenna	HF906	R & S	100229	2011.05.04
Signal Conditioning Unit	SCU 18	R & S	10117	2012.01.12
Bilog Antenna	VULB9163	SCHWARZBEC K MESS- ELEKTRONIK	396	2011.05.12
Test Receiver	ESU26	R & S	100109	2011.05.04
Amplifier	8447F	HP	2944A03909	2011.07.04

Note : Only the calibration period of Antennas is 2 years but the period of every equipment is 1 year.

2.3.2 Test Site

3 m Semi-Anechoic Chamber in Gunpo Laboratory

2.3.3 Environment Conditions

Below 1 GHz (3 m method)

Temperature : 23.4

Humidity : 25.0 %R.H.

Atmospheric Pressure : 100.9 kPa

Test Date : April 18, 2012

Freq. (MHz)	Level (dB μ V)	Pol. (H/V)	A (°)	H (m)	AF (dB)	CL (dB)	Amp. (dB)	F/S (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
35.25	26.10	H	121.5	1.01	12.61	0.61	27.17	12.15	40.00	27.85
275.65	40.30	H	174.5	1.01	12.63	1.72	26.55	28.10	46.00	17.90
292.79	26.50	V	134.8	1.97	12.63	1.78	26.51	14.40	46.00	31.60
301.72	29.40	V	134.8	1.97	12.65	1.81	26.51	17.35	46.00	28.65
551.38	24.00	V	47.7	1.97	16.80	2.49	27.90	15.39	46.00	30.61
941.48	24.50	V	234.9	1.01	22.58	3.13	27.28	22.93	46.00	23.07

Measurement Uncertainty (Horizontal) : \pm 5.00 dB (The confidential level is about 95%, K=2)

Measurement Uncertainty (Vertical) : \pm 5.36 dB (The confidential level is about 95%, K=2)

Note: • AF = Antenna Factor • CL = Cable Loss • F/S = Field Strength
 • Pol.(H) = Horizontal • Pol.(V) = Vertical • Amp. = Amplifier Gain
 • Margin = Limit – F/S • F/S = Level + AF + CL – Amp.
 • A : Angle • H : Height

Above 1 GHz (3 m method)

Temperature : 23.2

Humidity : 26.0 %R.H.

Atmospheric Pressure : 100.9 kPa

Test Date : April 18, 2012

Freq. (MHz)	Level (dBμV)	Pol. (H/V)	A (°)	H (m)	AF (dB)	CL (dB)	Amp. (dB)	F/S (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Peak Detector										
1425.63	45.20	V	193.3	1.00	25.01	3.91	43.75	30.37	74.00	43.63
1765.21	46.20	H	74.4	1.00	27.02	4.38	43.88	33.72	74.00	40.28
Average Detector										
1425.63	31.10	V	193.3	1.00	25.01	3.91	43.75	16.27	54.00	37.73
1765.21	32.30	H	74.4	1.00	27.02	4.38	43.88	19.82	54.00	34.18

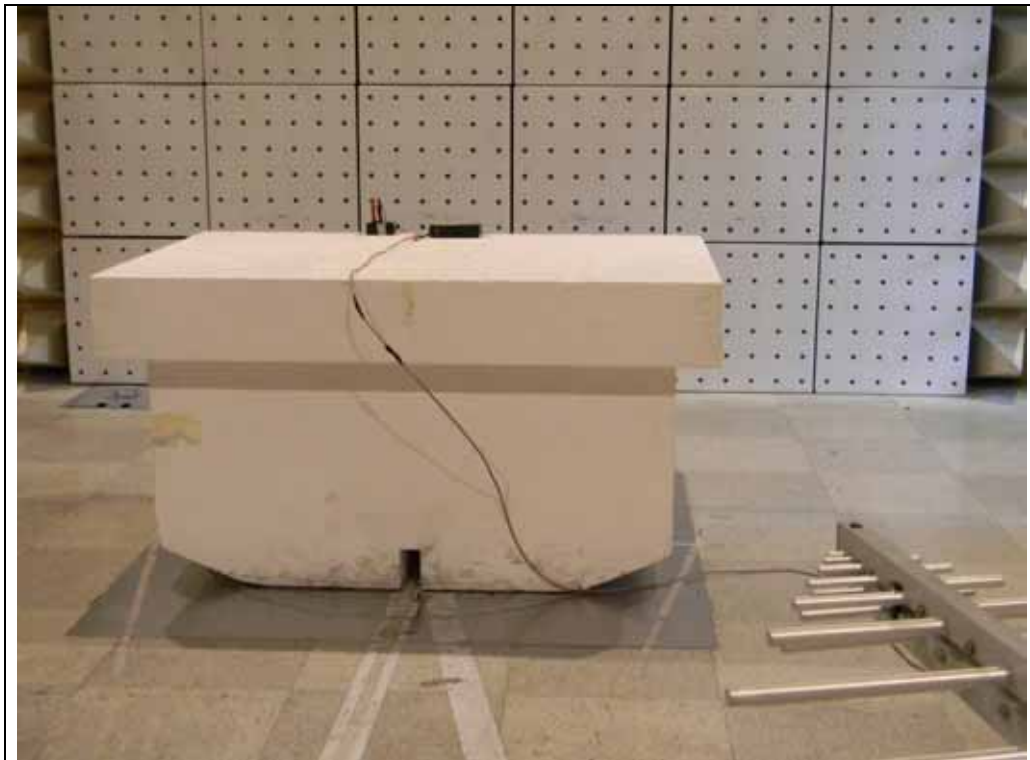
Measurement Uncertainty (Horizontal) : ± 4.89 dB (The confidential level is about 95%, K=2)

Measurement Uncertainty (Vertical) : ± 4.93 dB (The confidential level is about 95%, K=2)

Note: • AF = Antenna Factor • CL = Cable Loss • F/S = Field Strength
 • Pol.(H) = Horizontal • Pol.(V) = Vertical • Amp. = Amplifier Gain
 • Margin = Limit – F/S • F/S = Level + AF + CL – Amp.
 • A : Angle • H : Height

See Appendix A (Radiated Emission)

2.4 Photographs of Radiated Emission (3m method below 1 GHz)



2.5 Photographs of Radiated Emission (3m method above 1 GHz)



3. Photographs of EUT

- Front View



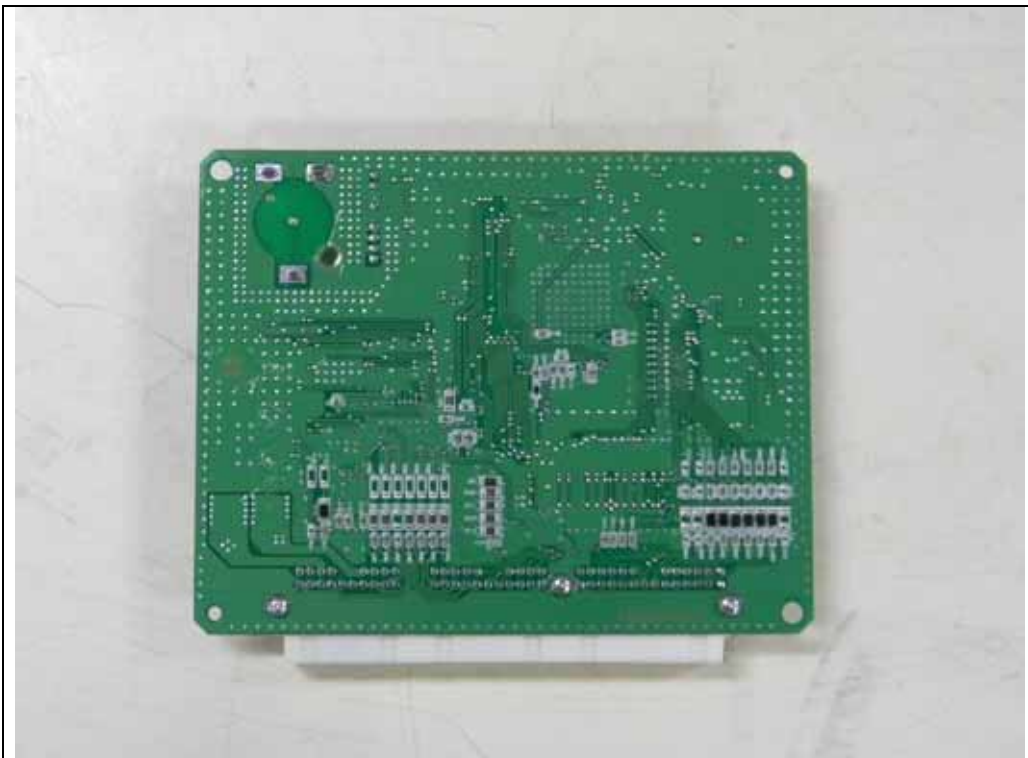
- Rear View



● **Top View of Main Board**



● **Bottom View of Main Board**

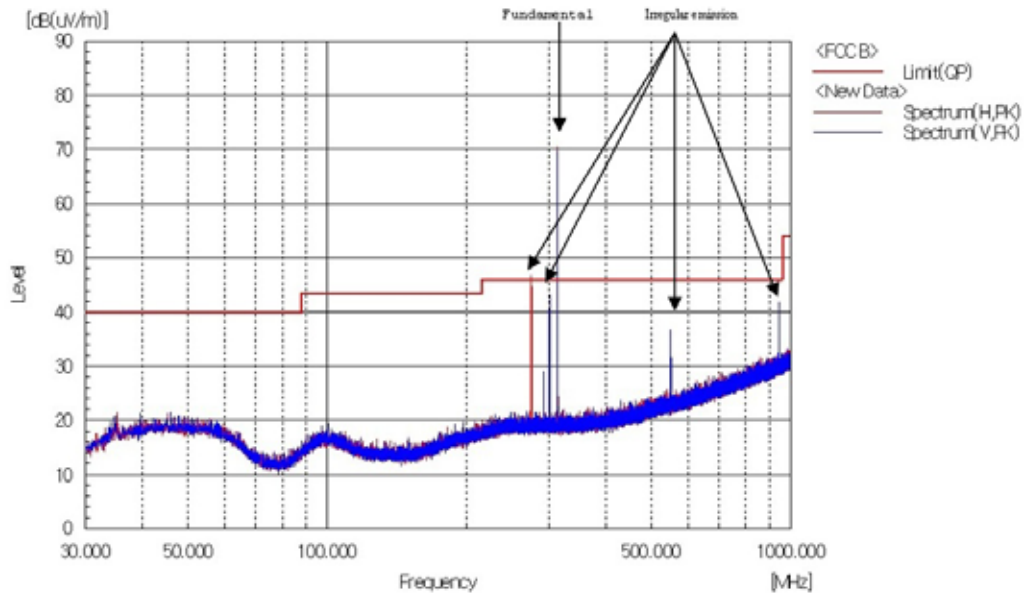


● Inside



Appendix A : Radiated Emission

Below 1 GHz



Above 1 GHz

