


ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR SUPERHETRODYNE RECEIVER


Test Report No. : E07OR-038
AGR No. : A07OA-040
Applicant : SHINCHANG ELECTRICS CO., LTD.
Address : 734-2, Wonshi-Dong, Ansan-Si, Gyungki-Do, 425-090, Korea
Manufacturer : SHINCHANG ELECTRICS CO., LTD.
Address : 734-2, Wonshi-Dong, Ansan-Si, Gyungki-Do, 425-090, Korea
Type of Equipment : REMOTE KEYLESS ENTRY SYSTEM
FCC ID : NYOSEKS-KM08RX
Model No. : SEKS-KM08Rx
Serial number : N/A
Total page of Report : 10 pages (including this page)
Date of Incoming : October 01, 2007
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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.

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CONTENTS

	Page
1. VERIFICATION OF COMPLIANCE.....	3
2. GENERAL INFORMATION.....	4
2.1 PRODUCT DESCRIPTION.....	4
2.2 RELATED SUBMITTAL(S) / GRANT(S)	4
2.3 TEST SYSTEM DETAILS	5
2.4 TEST METHODOLOGY	5
2.5 TEST FACILITY	5
3. SYSTEM TEST CONFIGURATION.....	6
3.1 JUSTIFICATION	6
3.2 EUT EXERCISE SOFTWARE.....	6
3.3 EQUIPMENT MODIFICATIONS	6
3.4 CONFIGURATION OF TEST SYSTEM	6
4. PRELIMINARY TEST	7
4.1 AC POWER LINE CONDUCTED EMISSIONS TESTS.....	7
4.2 RADIATED EMISSIONS TESTS.....	7
5. FINAL RESULT OF MEASUREMENT	8
5.1 RADIATED EMISSION TEST	8
6. FIELD STRENGTH CALCULATION	9
7. LIST OF TEST EQUIPMENT.....	10

1. VERIFICATION OF COMPLIANCE

APPLICANT : SHINCHANG ELECTRICS CO., LTD.
ADDRESS : 734-2, Wonshi-Dong, Ansan-Si, Gyungki-Do, 425-090, Korea
CONTACT PERSON : Kyung Yeon, Ha / Assistant Manager
TELEPHONE NO : 82-41-901-0472
FCC ID : NYOSEKS-KM08RX
MODEL NO/NAME : SEKS-KM08Rx
SERIAL NUMBER : N/A
DATE : October 22, 2007

DEVICE TYPE	UNINTENTIONAL RADIATOR
E.U.T. DESCRIPTION	REMOTE KEYLESS ENTRY SYSTEM -SUPERHETRODYNE RECEIVER
THIS REPORT CONCERNS	ORIGINAL GRANT
MEASUREMENT PROCEDURES	ANSI C63.4/2003
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.

2. GENERAL INFORMATION

2.1 Product Description

The SHINCHANG ELECTRICS CO., LTD., Model SEKS-09Rx (referred to as the EUT in this report) is a receiver that is fixed inside the vehicle and receives the signal from the transmitter, Model: SEKS-KM08Tx and FCC ID: NYOSEKS-09TX, which was manufactured by Shingchang Electronics Co., Ltd. and then decided 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
RECEIVING FREQUENCY	315.00 MHz
SENSITIVITY	Min -98dBm
LIST OF EACH OSC. OR CRY. FREQ.(FREQ.>=1MHz)	10.245 MHz, 315MHz
ANTENNA TYPE	External Antenna
RATED SUPPLY VOLTAGE	DC 12V
OPERATING VOLTAGE	DC 9 ~ 16V
NUMBER OF LAYERS	2 LAYERS

Model Differences:

-. No other model differences have been mentioned.

2.2 Related Submittal(s) / Grant(s)

Original submittal only.

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
SEKS-KM08Rx	SHINCHANG ELECTRICS CO., LTD.	NYOSEKS-KM08RX	RECEIVER	BATTERY
N/A	N/A	N/A	BATTERY	EUT
8657A	HP	N/A	Signal Generator	N/A

2.4 Test Methodology

Radiated testing was performed according to the procedures in ANSI C63.4: 2003 at a distance of 3 meters from EUT to the antenna.

2.5 Test Facility

The Electromagnetic compatibility measurement facilities are located on at 307-51 Daessangryung-ri, Chowol-eup, Gwangju-si, Gyeonggi-do, 464-080, Korea. Description details of test facilities were submitted to the Federal Communications Commission on August 30, 2005 (Registration Number: 92819 and 340658), accredited by KOLAS (Korea Laboratory Accreditation Scheme, No: 85) and approved by TUV, DNV and MIC (Ministry of Information and Communications in Korea) according to the requirement of ISO17025.

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	N/A	KM-ETACS COST V2.1	N/A
RF Module	STF	ENW17B11R	N/A

3.2 EUT exercise Software

Set the signal generator to transmit at 315MHz and then the EUT receives the signal.

Used battery for the EUT was fully charged.

To get a maximum emission levels from the EUT, the EUT was moved throughout the XY, XZ, and YZ planes.

3.3 Equipment Modifications

None

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 C63.4/2001, 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 315.00 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)
It is not need to test this requirement, because the power of the EUT is supplied from a car battery.	

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

5. FINAL RESULT OF MEASUREMENT

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

5.1 Radiated Emission Test

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

Humidity Level : 50 % Temperature: 25 °C
 Limits apply to : FCC CFR 47, Part 15, Subpart B (Section: 15.109)
 Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)
 Type of Test : Unintentional Radiator
 Result : PASSED BY -11.70dB at 786.80 MHz

EUT : REMOTE KEYLESS ENTRY SYSTEM Date: October 9, 2007
 Operating Condition : RX mode
 Distance : 3 Meter

Radiated Emission		Ant	Correction Factors		Total	FCC	
Freq. (MHz)	Amp. (dBuV)	Pol.	Antenna (dB/m)	Cable (dB)	Amplitude (dBuV/m)	Limit (dBuV/m)	Margin (dB)
49.40	9.70	V	11.38	1.70	22.78	40.00	-17.22
67.52	12.40	V	6.14	1.95	20.49	40.00	-19.51
151.80	11.20	H	14.91	2.65	28.76	43.52	-14.76
202.90	10.10	H	16.53	3.03	29.66	43.52	-13.86
235.40	13.10	H	17.44	3.18	33.72	46.02	-12.30
305.20	9.40	H	14.22	3.33	26.95	46.02	-19.07
457.90	8.60	H	19.06	4.43	32.09	46.02	-13.93
610.24	8.80	H	19.92	5.42	34.14	46.02	-11.88
786.80	7.20	H	21.17	5.95	34.32	46.02	-11.70
Other frequencies are more than 30dB below the limit up to 2GHz.							

Radiated Emission Tabulated Data

Tested by:  In-Sub, Youn / Test Engineer

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)

7. LIST OF TEST EQUIPMENT

No.	EQUIPMENTS	MFR.	MODEL	SER. NO.	LAST CAL	DUE CAL	USE
1.	Test receiver	R/S	ESVS10	827864/005	DEC/06	12MONTH	■
2.	Test receiver	R/S	ESHS 10	834467/007	MAY/07	12MONTH	
3.	Spectrum analyzer	HP	8566B	2516A01677	JUN/07	12MONTH	■
4.	TRILOG Broadband Antenna	Schwarzbeck	VULB9163	VULB9163 202	AUG/06	24MONTH	
5.	Biconical antenna	EMCO	3110	9003-1121	JUN/07	12MONTH	
		Schwarzbeck	VHA9103	91031852	FEB/07		■
6.	Log Periodic antenna	Schwarzbeck	9108-A(494)	62281001	FEB/07	12MONTH	
7.	LISN	EMCO	3825/2	9109-1867	JUN/07	12MONTH	
				9109-1869	JUN/07		
		Schwarzbeck	NSLK 8126	8126-404	JUL/07		
8.	Position Controller	HD GmbH	HD100	N/A	N/A	N/A	■
9.	Turn Table	HD GmbH	DS420S	N/A	N/A	N/A	■
10.	Antenna Master	HD GmbH	MA240	N/A	N/A	N/A	■
11.	RF Amplifier	HP	8447D	2727A04987	JUN/07	12MONTH	■
12.	Horn Antenna	Schwarzbeck	BBHA9120D	BBHA9120D294	JUL/06	24MONTH	■
13.	Spectrum Analyzer	HP	8564E	3650A00756	JUN/07	12MONTH	■
14.	Position Controller	HD	HD100	100/788	N/A	N/A	
15.	Turn Table	HD	DS420S	N/A	N/A	N/A	
16.	Antenna Master	HD	HD240	N/A	N/A	N/A	
17.	Isolation Transformer	Digitek Power	DPT	DPF-22027	N/A	N/A	■
18.	Isolation Transformer	Digitek Power	DPT	DPF-22028	N/A	N/A	■
19.	Frequency Converter	Digitek Power	VFS/DEFC	N/A	N/A	N/A	■