

ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR SUPERHETRODYNE RECEIVER

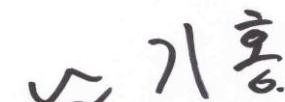
Test Report No. : E135R-061
AGR No. : A134A-115
Applicant : DAEDONG Co., Ltd.
Address : 424, Sinwon-ro, Danwon-gu, Ansan-si, Gyeonggi-do, Korea
Manufacturer : DAEDONG Co., Ltd.
Address : 424, Sinwon-ro, Danwon-gu, Ansan-si, Gyeonggi-do, Korea
Type of Equipment : Remote Keyless Entry System
FCC ID : NYODDBCM1307-SL
Model No. : DDBCM1307-SL
Serial number : N/A
Total page of Report : 11 pages (including this page)
Date of Incoming : May 15, 2013
Date of issuing : May 29, 2013

SUMMARY

The equipment complies with the regulation; **FCC PART 15 SUBPART B §15.101 and RSS-Gen Issue 3**

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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1. VERIFICATION OF COMPLIANCE

APPLICANT : DAEDONG Co., Ltd.
ADDRESS : 424, Sinwon-ro, Danwon-gu, Ansan-si, Gyeonggi-do, Korea
CONTACT PERSON : Mr. Hak-Su, Khim / Quality Control Assistant Manager
TELEPHONE NO : +82-2-6930-4215
FCC ID : NYODDBCM1307-SL
MODEL NAME : DDBCM1307-SL
BRAND NAME : KMC
SERIAL NUMBER : N/A
DATE : May 29, 2013

EQUIPMENT CLASS	FCC: CYY - Communications Receiver used w/ Pt 15 Tx IC: Category I Equipment Receiver
E.U.T. DESCRIPTION	Remote Keyless Entry System-SUPERHETRODYNE RECEIVER
THIS REPORT CONCERNS	Original Grant
MEASUREMENT PROCEDURES	ANSI C63.10: 2009
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 and RSS-Gen Issue 3
MODIFICATIONS ON THE EQUIPMENT TO ACHIEVE COMPLIANCE	No
FINAL TEST WAS CONDUCTED ON	10 m, Open Area Test Site

The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC & IC 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 DAEDONG Co., Ltd., Model DDBCM1307-SL (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: DD4TX1306-TFL has FCC ID: NYODDBCM1307-SL which was manufactured by DAEDONG 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 MHz
LIST OF EACH OSC. OR CRY. FREQ.(FREQ.>= 1 MHz)	9.841 75 MHz
ANTENNA TYPE	External Antenna
RATED SUPPLY VOLTAGE	DC 12.0 V
OPERATING VOLTAGE	DC 9 V ~ DC 16 V
NUMBER OF LAYERS	2 Layers

2.2 Model Differences:

- None

2.3 Related Submittal(s) / Grant(s)

Original submittal only

2.4 Purpose of the test

To determine whether the equipment under test fulfills the requirements of the regulation stated in FCC Part 15B, section 15.101 and IC, RSS-Gen Issue 3, section 6.

2.5 Test Methodology

Radiated testing was performed according to the procedures in ANSI C63.10: 2009 and RSS-Gen Issue 3 at a distance of 3 m from EUT to the antenna.

2.6 Test Facility

The 10 m Open Area Test Site is located at 307-51 Daessangryung-ri, Chowol-eup, Gwangju-si, Gyeonggi-do and the 10 m, Semi Anechoic Chamber and conducted measurement facilities are located on at 301-14, Daessangryung-ri, Chowol-eup, Gwangju-si, Gyeonggi-do, 464-862, Korea. The Onetech Corp. has been accredited as a Conformity Assessment Body (CAB) with designation number KR0013 and was submitted to the Industry Canada on April 14, 2009.(Registration Number:IC3736A-2).

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	DAEDONG Co., Ltd.	TF FL BCM V3.0	N/A

3.2 Peripheral equipment

- . None

3.3 Mode of operation during the test

- . The EUT was operated with receiving mode continuously during the test.

3.4 Equipment Modifications

- . None

3.5 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 C63.10: 2009 to determine the worse operating conditions. Final radiated emission tests were conducted at 3 m semi anechoic chamber.

The turntable was rotated through 360 degrees and the EUT was tested by positioned three orthogonal planes to obtain the highest reading on the field strength meter. Once maximum reading was determined, the search antenna was raised and lowered in both vertical and horizontal polarization.

Coherent Test:

During Radiated Emission Tests, the EUT was operated with standby mode of receiving condition.

Antenna Power Conduction Test:

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

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 MEASURMENT

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

5.1 Radiated Emission Test

5.1.1 Test data for Blow 30 MHz

- Test Date : May 28, 2013
- Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- Frequency range : 9 kHz ~ 30 MHz
- Measurement distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dB μ V/m)	Limits (dB μ V/m)	Margin (dB)
It was not observed any emissions from the EUT.									

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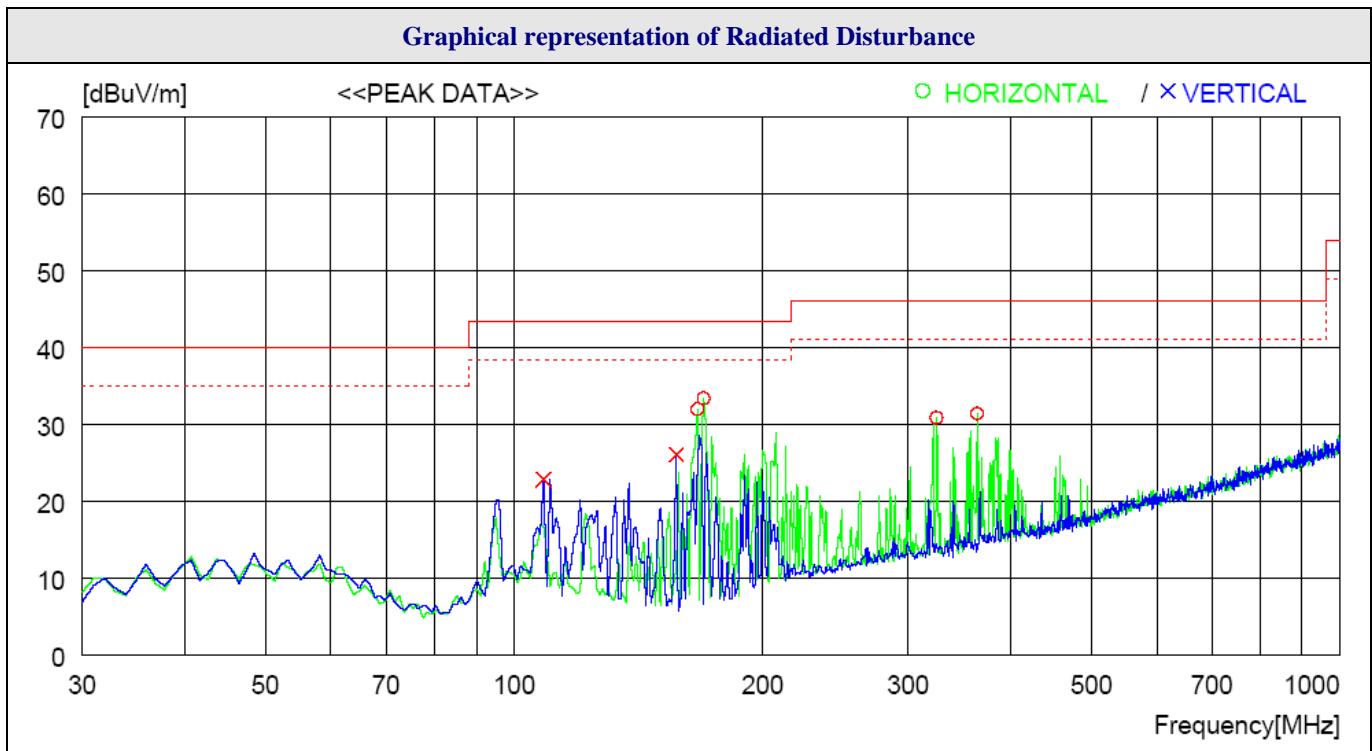
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5.1.2 Test data for 30 MHz to 1 000 MHz

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

Humidity Level	: <u>(40 ~ 41) % R.H.</u>	Temperature: <u>(21 ~22) °C</u>
Limits apply to	: <u>FCC CFR 47, Part 15, Subpart B (Section: 15.109) and RSS-Gen Issue 3 Section 6</u>	
Detector	: CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)	
Type of Test	: <u>Unintentional Radiator</u>	
Result	: <u>PASSED</u>	

EUT	: Remote Keyless Entry System	Date: May 28, 2013
Operating Condition	: RX mode	
Distance	: 3 m	
Frequency Range	: 30 MHz ~ 1 000 MHz	



Tabulated Results for Radiated Disturbance										
No.	FREQ [MHz]	READING PEAK [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	166.770	52.8	9.5	2.7	33.0	32.0	43.5	11.5	200	359
2	169.680	54.1	9.6	2.7	33.0	33.4	43.5	10.1	200	273
3	324.880	44.8	15.3	3.7	32.9	30.9	46.0	15.1	100	0
4	363.680	44.4	16.1	3.9	33.0	31.4	46.0	14.6	100	0
----- Vertical -----										
5	108.570	40.9	12.7	2.2	33.0	22.8	43.5	20.7	100	239
6	157.070	47.0	9.4	2.7	33.0	26.1	43.5	17.4	100	94
Remark: Margin (dB) = Limit – Result and Result = Reading Peak + Antenna Factor + Loss – Gain Loss and Gain in above table means Cable Loss and Pre-amplifier gain.										

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5.1.3 Test data for above 1 GHz

- Test Date : May 28, 2013
- Resolution bandwidth : 1 MHz
- Frequency range : 1 GHz ~ 2 GHz
- Measurement distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Ant. Pol. (H/V)	Ant. Height (m)	Angle ($^{\circ}$)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dB μ V/m)	Limits (dB μ V/m)	Margin (dB)
It was not observed any emissions from the EUT.									

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6. FIELD STRENGTH CALCULATION

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

$$\begin{array}{rcl} + & \text{Meter Reading} & (\text{dB}\mu\text{V}) \\ + & \text{Cable Loss} & (\text{dB}) \\ + & \text{Antenna Factor} & (\text{dB}/\text{m}) \\ - & \text{Amplifier Gain} & (\text{dB}) \\ \hline = & \text{Emission Level} & (\text{dB}\mu\text{V}/\text{m}) \end{array}$$

$$\begin{array}{rcl} & \text{Specification Limit} & (\text{dB}\mu\text{V}/\text{m}) \\ - & \text{Emission Level} & (\text{dB}\mu\text{V}/\text{m}) \\ \hline = & \text{dB Relative to Spec} & (\pm \text{dB}) \end{array}$$

7. LIST OF TEST EQUIPMENT

No.	EQUIPMENTS	MFR.	MODEL	SER. NO.	LAST CAL	DUE CAL	USE
1.	Test receiver	R/S	ESCI	101012	FEB/13	12MONTH	■
2.	Test Receiver	R/S	ESU	100261	SEP/13	12MONTH	■
3.	Amplifier	Sonoma Instrument	310N	312544	MAY/13	12MONTH	■
4.	Amplifier	Sonoma Instrument	310N	312545	MAY/13	12MONTH	■
5.	TRILOG Broadband Antenna	Schwarzbeck	VULB9163	VULB9163-202	DEC/12	24MONTH	■
6.	TRILOG Broadband Antenna	Schwarzbeck	VULB9163	9163-419	FEB/12	24MONTH	■
7.	Controller	Innco System	CO2000	619/27030611/L	N/A	N/A	■
8.	Turn Table	Innco System	DT3000	930611	N/A	N/A	■
9.	Antenna Master	Innco System	MA4000-EP	3320611	N/A	N/A	■
10.	Antenna Master	Innco System	MA4000-EP	3350611	N/A	N/A	■
11.	Pre-Amplifier	R/S	SCU-18	10041	DEC/12	12MONTH	■
12.	Horn Antenna	Schwarzbeck	BBHA9120D	BBHA9120D294	AUG/11	24MONTH	■
13.	Loop Antenna	R/S	HFH2-Z2	889 285 / 26	AUG/12	24MONTH	■