


ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR SUPERHETRODYNE RECEIVER


Test Report No. : E07OR-023
AGR No. : A079A-045
Applicant : RITS-N Co., Ltd.
Address : B-305, Changmi Building, Sung-Su 2ga-3dong, Sungdong-gu, Seoul, Korea
Manufacturer : RITS-N Co., Ltd.
Address : B-305, Changmi Building, Sung-Su 2ga-3dong, Sungdong-gu, Seoul, Korea
Type of Equipment : Garage door remote control (RF Receiver)
FCC ID : VQP-RMC321GRX
Model / Type No. : RMC-321GRX
Serial number : None
Total page of Report : 9 pages (including this page)
Date of Incoming : September 28, 2007
Date of issuing : October 15, 2007

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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1. VERIFICATION OF COMPLIANCE

APPLICANT : RITS-N Co., Ltd.
ADDRESS : B-305, Changmi Building, Sung-Su 2ga-3dong, Sungdong-gu, Seoul, Korea
CONTACT PERSON : Mr. Jun-Seok, Kim / General Manager
TELEPHONE NO : B-305, Changmi Building, Sung-Su 2ga-3dong, Sungdong-gu, Seoul, Korea
FCC ID : VQP-RMC321GRX
MODEL NO/NAME : RMC-321GRX
SERIAL NUMBER : N/A
DATE : October 15, 2007

EQUIPMENT CLASS	CYY - COMMUNICATIONS RECEIVER USED W/ PT 15 TX
KIND OF EQUIPMENT	GARAGE DOOR REMOTE CONTROL (RF 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 Subpart §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 RITS-N Co., Ltd., Model RMC-321GRX(referred to as the EUT in this report) is a Garage door remote control (RF Receiver) that receives the signal from the transmitter, Model: RT-321A, FCC ID: VQP-RT321A which was manufactured by RITS-N Co., Ltd. The product specification described herein was obtained from product data sheet or user’s manual.

CHASSIS TYPE	Plastic
RECEIVING FREQUENCY	311.06 MHz
LIST OF EACH OSC. OR CRY. FREQ.(FREQ.>=1MHz)	4MHz
POWER REQUIREMENT	DC 12V
NUMBER OF LAYERS	2 LAYERS

2.2 Model Differences

-. None

2.3 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 No	Manufacturer	Description	Connected to
RMC-321GRX	RITS-N Co., Ltd.	RECEIVER	Battery
N/A	N/A	DC Battery	EUT
83650L	HP	Swept CW 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	RITS-N Co., Ltd.	N/A	N/A

3.2 EUT exercise Software

Set the signal generator to transmit at 311.06MHz and then the EUT receives the signal.

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:

This test is not performed because the EUT is operated by DC voltage and is not connected to public low-voltage distribution system.

Radiated Emission Test:

Preliminary radiated emissions test were conducted using the procedure in ANSI C63.4: 2003 8.3.1.1 and 13.1.4.1 to determine the worse operating conditions. Final radiated emission tests were conducted at 3meter open area test site.

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, H.P. signal generator model no: 83650L was used to radiate an unmodulated CW signal to EUT at 311.06 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
This test is not performed because the EUT is operated by DC voltage and is not connected to public low-voltage distribution system.	

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

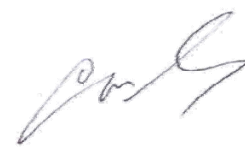
The following table shows the highest levels of radiated emission on both polarizations of horizontal and vertical.

Humidity Level : 45 % Temperature: 25 °C
 Limits apply to : FCC CFR 47, PART 15, SUBPART B (Section: 15.109)
 Type of Test : CLASS B
 Result : PASSED BY -5.38 dB at 311.20 MHz

EUT : Garage door remote control (RF Receiver) Date: October 08, 2007
 Operating Condition : RX mode
 Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)
 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)
120.20	13.40	H	12.99	2.11	28.50	43.52	-15.02
153.10	14.80	V	14.95	2.61	32.36	43.52	-11.16
160.80	15.20	H	15.23	2.40	32.83	43.52	-10.69
164.70	16.10	H	15.34	2.40	33.84	43.52	-9.68
172.80	15.90	H	15.55	2.60	34.05	43.52	-9.47
311.20	22.80	H	14.47	3.37	40.64	46.02	-5.38
Other frequencies are more than 20dB 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	■