CMA Testing and Certification Laboratories
廠商會檢定中心

TEST REPORT

Report No.	:	AG016948-001	Date :	2006 July 19
Application No.	:	LG211854(0)		
Applicant	:	High Champion Limited Room 1901, 19/F., Block A, Kailey Ind. Centre, 12 Fung Yip Street, Chai Wan, Hong Kong		
Sample Description	:	One(1) submitted sample(s) stated to be R/C XGEAR Scrambler of Model No. 8620 Rating : 1 x 9V size battery No. of submitted sample : One (1) piece(s) ***		
Date Received	:	2006 May 24		
Test Period	:	2006 June 1 – 2006 July 17		
Test Requested	:	FCC Part 15 Certification.		
Test Method	:	47 CFR Part 15 (10-1-05 Edition) ANSI C63.4 – 2003		
Test Result	:	See attached sheet(s) from page 2 to 11.		
Conclusion	:	The submitted sample was found to comply with requirement of FCC Part 15 Subpart C.		

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____
Danny Chui
Deputy Manager - EL. Division

FCC ID: OPMHC20028620

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1 General Information

1.1 General Description

The equipment under test (EUT) is a transmitter for R/C XGEAR Scrambler. It is operate at 27.145MHz which is controlled by a crystal. The EUT is powered by 1 x 9V size battery and it has 2pcs of control stick in the EUT. When the control trigger is pressed once, it will transmit the radio frequency signal to receiver.

The brief circuit description is listed as follows:

- TX2, 9014 and associated circuit act as encoder.
- Y1, 9014 and associated circuit act as oscillator.
- Q3 and associated circuit act as RF amplify.

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1.2 Location of the test site

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2003. A Semi-Anechoic Chamber Testing Site is set up for investigation and located at:

Ground Floor, Yan Hing Centre,
9 – 13 Wong Chuk Yeung Street,
Fo Tan, Shatin,
New Territories,
Hong Kong.

Conducted emissions measurements are investigated and also taken pursuant to the procedures of ANSI C63.4 – 2003. A shielded room is located at :

Ground Floor, Yan Hing Centre,
9 – 13 Wong Chuk Yeung Street,
Fo Tan, Shatin,
New Territories,
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1.3 List of measuring equipment

Equipment	Manufacturer	Model No.	Serial No.
EMI Test Receiver	R&S	ESCI	100152
Broadband Antenna	Schaffner	CBL6112B	2692
Loop Antenna	EMCO	6502	00056620

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2 Description of the radiated emission test

2.1 Test Procedure

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2003.

The equipment under test (EUT) was placed on a non-conductive turntable with dimensions of 1.5m x 1m and 0.8m high above the ground. 3m from the EUT, a broadband antenna mounting on the mast received the signal strength. The turntable was rotated to maximize the emission level. The antenna was then moving along the mast from 1m up to 4m until no more higher value was found. Both horizontal and vertical polarization of the antenna were placed and investigated.

For below 30MHz, a loop antenna with its vertical plane is placed 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1 m above the ground.

The device was rotated through three orthogonal axes to determine which attitude and configuration produce the highest emission during measurement.

2.2 Test Result

Peak Detector data was measured unless otherwise stated.

The harmonic emissions meeting the requirement of section 15.209 are based on measurements employing the CISPR quasi-peak detector below 1000MHz and average detector for frequencies above 1000MHz.

* Emissions appearing within the restricted bands shall follow the requirement of section 15.205.

It was found that the EUT meet the FCC requirement.

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2.3 Radiated Emission Measurement Data

Radiated emission

pursuant to

the requirement of FCC Part 15 subpart C

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV/m)	Antenna and Cable factor (dB)	Average Factor (dB)	Field Strength (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
27.145	V	64.1	9.0	-5.0	68.1	80.0	-11.9
54.290	H	24.7	8.1	-	32.8	40.0	-7.2
81.435	H	26.7	7.2	-	23.9	40.0	-16.1
*108.580	H	19.4	11.0	-	30.4	43.5	-13.1
*135.725	H	13.6	12.4	-	26.0	43.5	-17.5
*162.874	H	12.4	10.4	-	22.8	43.5	-20.7
190.011	H	13.9	9.2	-	23.1	43.5	-20.4
217.162	H	16.1	9.7	-	25.8	46.0	-20.2
*244.297	H	27.8	9.7	-	37.5	46.0	-8.5
*271.442	H	14.6	13.9	-	28.5	46.0	-17.5

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3 Description of the Line-conducted Test

3.1 Test Procedure

Conducted emissions measurements are investigated and also taken pursuant to the procedures of ANSI C63.4 – 2003. The EUT was setup as described in the procedures, and both lines were measured.

3.2 Test Result

No measurement is required as the EUT is a battery-operated product.

3.3 Graph and Table of Conducted Emission Measurement Data

Not Applicable

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4 Photograph

4.1 Photographs of the Test Setup for Radiated Emission and Conduction Emission

For electronic filing, the photos are saved with filename TSup1.jpg to TSup2.jpg

4.2 Photographs of the External and Internal Configurations of the EUT

For electronic filing, the photos are saved with filename ExPho1.jpg to ExPho2.jpg and InPho1.jpg to InPho2.jpg.

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5 Supplementary document

The following document were submitted by applicant, and for electronic filing, the document are saved with the following filenames:

Document	Filename
ID Label/Location	LabelSmp.jpg
Block Diagram	BlkDia.pdf
Schematic Diagram	Schem.pdf
Users Manual	UserMan.pdf
Operational Description	OpDes.pdf

5.1 Bandwidth

The plot on saved in TestRpt2.pdf shows the fundamental emission is confined in the specified band. It also shows that the band edge met the 15.209 requirement at 26.9599 and 27.2801 MHz.

5.2 Duty cycle

The duty cycle is simply the on-time divided by the period:

The duration of one cycle = 22.1ms

Effective period of the cycle = (1.04ms x 10) + (0.34ms x 6)
= 12.44ms

Duty Cycle = (12.44 / 22.1)ms
= 0.563

Therefore, the average factor is found by $\underline{20 \log_{10}}\ 0.563 = -5.0$dB

5.3 Transmission time

N/A

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6 Appendices

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A2.	Photos of External Configurations	1	page
A3.	Photos of Internal Configurations	1	page
A4.	ID Label/Location	1	page
A5.	Bandwidth Plot	1	page
A6.	Average Factor	2	pages
A7.	Block Diagram	1	page
A8.	Schematics Diagram	1	page
A9.	User Manual	2	pages
A10.	Operation Description	1	page

***** End of Report *****

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