CMA Testing and Certification Laboratories
廠商會檢定中心

TEST REPORT

Report No.	:	AM0040319(6)	Date :	2010-08-23
Application No.	:	LM010221(6)		
Applicant	:	Jada Toys Co., Ltd. Unit 305-308, 3/F, Tower B New Mandarin Plaza, 14 Science Museum Rd T.S.T. East, Kowloon, Hong Kong		
Sample Description	:	One(1) submitted sample(s) stated to be 1:16 Battle Machine of Model No. 84712, 83196, 83197, 84713 and 84045 Radio Frequency : 49.860MHz Transmitter Rating : 1 x 9V size battery No. of submitted sample : Two (2) piece(s)		
Date Received	:	2010-07-05.		
Test Period	:	2010-07-22 to 2010-07-30.		
Test Requested	:	FCC Part 15 Permissive Change		
Test Method	:	47 CFR Part 15 (10-1-09 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.		
Remark	:	All five models are the same in circuitry and components and construction, and therefore model 84712 was chosen to be the representative of the test sample. There are three channels and channel B was tested. The different of three channels is the pattern of coding.		

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____

Mr. WONG Lap-pong, Andrew
Assistant Manager
Electrical Division

FCC ID: PWYJT49TX99000

CMA Industrial Development Foundation Limited
Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.
Tel: (852) 2698 8198 Fax: (852) 2695 4177 E-mail: info@cmatcl.com Web Site: http://www.cmatcl.com

CMA Testing and Certification Laboratories
廠商會檢定中心

TEST REPORT

Report No. : AM0040319(6) Date : 2010-08-23

Table of Contents

CMA Industrial Development Foundation Limited
Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.
Tel: (852) 2698 8198 Fax: (852) 2695 4177 E-mail: info@cmatcl.com Web Site: http://www.cmatcl.com

TEST REPORT

Report No. : AM0040319(6) Date : 2010-08-23

1 General Information

1.1 General Description

The equipment under test (EUT) is a transmitter for 1:16 Battle Machine. It operates at 49.860MHz and the oscillation of radio control is generated by a crystal. The EUT is powered by 1 x 9V size battery. There are two control triggers, one "Fire" button and one coding switch on the EUT. The coding switch is used to change coding to prevent interference. When the control triggers and "Fire" button are pressed, it will transmit different radio control signal to receiver.

The antenna is permanently attached in EUT and the radio output power is unable to adjust.

The brief circuit description is listed as follows:

- D2 and its associated circuit act as a voltage regulator.
- IC1 and its associated circuit act as an encoder.
- Y1, Q1 and its associated circuit act as an oscillator.
- Q2 and its associated circuit act as an amplifier.

CMA Industrial Development Foundation Limited
Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.
Tel: (852) 2698 8198 Fax: (852) 2695 4177 E-mail: info@cmatcl.com Web Site: http://www.cmatcl.com

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,
Hong Kong.

CMA Industrial Development Foundation Limited
Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.
Tel: (852) 2698 8198 Fax: (852) 2695 4177 E-mail: info@cmatcl.com Web Site: http://www.cmatcl.com

1.3 List of measuring equipment

Equipment	Manufacturer	Model No.	Serial No.	Calibration Due Date
EMI Test Receiver	R&S	ESCI	100152	2010-12-23
Broadband Antenna	Schaffner	CBL6112B	2718	2010-08-04

1.4 Measurement Uncertainty

The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%.

Radiated emissions

Frequency	Uncertainty (U_{lab})
30MHz ~ 200MHz (Horizontal)	4.63dB
30MHz ~ 200MHz (Vertical)	4.64dB
200MHz ~1000MHz (Horizontal)	4.65dB
200MHz ~1000MHz (Vertical)	4.64dB

Conducted emissions

Frequency	Uncertainty (U_{lab})
150kHz~30MHz	3.04dB

CMA Industrial Development Foundation Limited
Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.
Tel: (852) 2698 8198 Fax: (852) 2695 4177 E-mail: info@cmatcl.com Web Site: http://www.cmatcl.com

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 for Radiated Emission measurement.

2.2 Test Result

Peak Detector data was measured unless otherwise stated.

"#" means emissions appearing within the restricted bands shall follow the requirement of section 15.205.

The Frequencies from fundamental up to that tenth harmonics were investigated, and emissions more 20dB below limit were not reported. Thus, those highest emissions were presented in next page (section 2.3)

It was found that the EUT meet the FCC requirement.

CMA Industrial Development Foundation Limited
Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.
Tel: (852) 2698 8198 Fax: (852) 2695 4177 E-mail: info@cmatcl.com Web Site: http://www.cmatcl.com

2.3 Radiated Emission Measurement Data

Radiated emission

pursuant to

the requirement of FCC Part 15 subpart C

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	24	° C
Relative humidity:	61	%

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV)	Antenna Factor and Cable Loss (dB/m)	Average Factor (dB)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
49.862	V	61.2	10.9	-18.9	53.2	80.0	-26.8
99.722	H	27.0	9.8	-	36.8	43.5	-6.7
199.442	H	16.8	11.2	-	28.0	43.5	-15.5
# 249.303	H	21.9	10.3	-	32.2	46.0	-13.8
299.163	H	24.5	14.1	-	38.6	46.0	-7.4
349.024	H	15.1	15.9	-	31.0	46.0	-15.0
398.887	H	19.6	15.9	-	35.5	46.0	-10.5
448.748	H	12.5	19.4	-	31.9	46.0	-14.1
498.609	H	16.5	19.4	-	35.9	46.0	-10.1
548.471	H	15.9	20.5	-	36.4	46.0	-9.6

CMA Industrial Development Foundation Limited
Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.
Tel: (852) 2698 8198 Fax: (852) 2695 4177 E-mail: info@cmatcl.com Web Site: http://www.cmatcl.com

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

CMA Industrial Development Foundation Limited
Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.
Tel: (852) 2698 8198 Fax: (852) 2695 4177 E-mail: info@cmatcl.com Web Site: http://www.cmatcl.com

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.

CMA Industrial Development Foundation Limited
Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.
Tel: (852) 2698 8198 Fax: (852) 2695 4177 E-mail: info@cmatcl.com Web Site: http://www.cmatcl.com

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. The field strength of any emission appearing between the band edges and up to 10 kHz above and below the band edges (49.81 and 49.91 MHz) is at least 26dB below the carrier level. It meets the requirement of Section 15.235(b).

5.2 Duty Cycle Calculation

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

The duration of one cycle = 40.4ms

Effective period of the cycle = (2.94ms x 1) + (180μs x 9)
= 4.56ms

Duty Cycle = 4.56/40.4
= 0.113

Therefore, the average factor is found by $\underline{20 \log_{10}} 0.113 = -18.9$dB

5.3 Transmission time

Not Applicable

CMA Industrial Development Foundation Limited
Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.
Tel: (852) 2698 8198 Fax: (852) 2695 4177 E-mail: info@cmatcl.com Web Site: http://www.cmatcl.com

TEST REPORT

Report No. : AM0040319(6) Date : 2010-08-23

6 Appendices

A1	Photos of the set-up of Radiated Emissions	1	page
A2	Photos of External Configurations	1	page
A3	Photos of Internal Configurations	1	page
A4	Photo of 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	1	page
A10	Operation Description	2	pages

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

CMA Industrial Development Foundation Limited
Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.
Tel: (852) 2698 8198 Fax: (852) 2695 4177 E-mail: info@cmatcl.com Web Site: http://www.cmatcl.com