CMA Testing and Certification Laboratories
廠商會檢定中心

TEST REPORT

Report No. : AF009139-001 Date : 2005 May 05

Application No. : LF203161(2)

Applicant : K&B International Limited
406 Empire Centre,
67 Mody Road, TST East,
Hong Kong

Sample Description : One(1) submitted sample stated to be:
Thunder Spin RC 4x4 Road Rage Stunt Machine
of Model No. KR-930, KR-910A, KR-980, KR-990, KR-1006 and KR-1007
Rating : 1 x 9V battery
No. of submitted sample : One (1) piece***

Date Received : 2005 March 16

Test Period : 2005 March 16 – 2005 April 16

Test Requested : FCC Part 15 Certification

Test Method : FCC Rules and Regulations Part 15 – July 2004
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 six models are the same in circuitry and components and construction, and therefore model KR-930 was chosen to be the representative of the test sample.

For and on behalf of
CMA Testing and Certification Laboratories

Authorized Signature : _____

Danny Chui
EMC Engineer - EL. Division

FCC ID : Q5K9309T

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TEST REPORT

Report No. : AF009139-001 Date : 2005 May 05

Table of Contents

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TEST REPORT

Report No. : AF009139-001 Date : 2005 May 05

1 General Information

1.1 General Description

The equipment under test (EUT) is a transmitter for Thunder Spin RC 4x4 Road Rage Stunt Machine operating at 49.860MHz and is controlled by a crystal. The EUT is powered by 1 x 9V battery. There are two trigger levers on the EUT. When the trigger levers are activated, it will transmit different radio signals for the receiver to move in forward, backward, left or right direction.

The brief circuit description is listed as follows :
- Y1, Q1 and associated circuit act as oscillator.
- ZD1 and associated circuit act as voltage regulator.
- IC1 and associated circuit act as encoder.
- Q2 and associated circuit act as amplifier.

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TEST REPORT

Report No. : AF009139-001 Date : 2005 May 05

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,
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TEST REPORT

Report No. : AF009139-001 Date : 2005 May 05

1.3 List of measuring equipment

Equipment	Manufacturer	Model No.	Serial No.	Calibration Certification No.
EMI Test Receiver	R&S	ESCS30	100001	S43284
Broadband Antenna	Schaffner	CBL6112B	2692	CA3025
Signal Generator	IFR	2023B	202302/938	S43098
LISN	R&S	ESH3-Z5	100038	S43377
LISN	R&S	ESH3-Z5	100010	S43101
Pulse Limiter	R&S	ESH3-Z2	100001	S43325
Biconical Antenna	R&S	HK116	837414/004	2GB05000535-001

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TEST REPORT

Report No. : AF009139-001 Date : 2005 May 05

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.

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 qusai-peak detector.

* 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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TEST REPORT

Report No. : AF009139-001 Date : 2005 May 05

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)
49.860	V	70.3	10.3	-4.3	76.3	80.0	-3.7
99.720	H	30.0	9.2	-	39.2	43.5	-4.3
149.581	H	18.3	11.9	-	30.2	43.5	-13.3
199.445	H	19.0	9.2	-	28.2	43.5	-15.3
* 249.305	H	25.7	9.7	-	35.4	46.0	-10.6
299.165	H	21.1	13.9	-	35.0	46.0	-11.0
349.021	H	22.5	14.9	-	37.4	46.0	-8.6
398.881	H	20.2	14.9	-	33.1	46.0	-10.9
448.741	H	14.6	17.7	-	32.3	46.0	-13.7
498.601	H	15.3	17.7	-	33.0	46.0	-13.0

TEST REPORT

Report No. : AF009139-001 Date : 2005 May 05

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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TEST REPORT

Report No. : AF009139-001 Date : 2005 May 05

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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TEST REPORT

Report No. : AF009139-001 Date : 2005 May 05

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 TestRpt 2.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

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

The duration of one cycle = 17.65 ms

Effective period of the cycle = (4 x 1.48 + 10 x 0.48) ms

= 10.72 ms

Duty Cycle = 10.72 / 17.65

= 0.607

Therefore, the average factor is found by $20 \log_{10} 0.607 = -4.3$ dB

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TEST REPORT

Report No. : AF009139-001 Date : 2005 May 05

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	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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