



TEST REPORT

Report No. : AK009737-001 Date : 2008 March 25

Application No. : LK204813(7)

Applicant : Enertec Enterprises Ltd.
Rm. 1017, Chinachem Golden Plaza,
No. 77 Mody Road,
T.S.T. East, Kln.,
Hong Kong.

Sample Description : One(1) submitted sample(s) stated to be R/C Monster Wheels Chubbies of Model No. 26231

Radio Frequency : 49.860MHz Transmitter

Rating : 1 x 9V size battery

No. of submitted sample : One (1) piece(s) ***

Date Received : 2008 February 29

Test Period : 2008 March 03 – 2008 March 14

Test Requested : FCC Part 15 Certification.

Test Method : 47 CFR Part 15 (10-1-07 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 four models 26231, 2623, 1711 and 17111 are the same in circuitry and components and construction, and therefore model 26231 was chosen to be the representative of the test sample.

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : 
Andrew Wong
Senior Technical Officer

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Page 1 of 11

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TEST REPORT

Report No. : AK009737-001

Date : 2008 March 25

Table of Contents

| | | |
|-----|--|----|
| 1 | General Information | 3 |
| 1.1 | General Description | 3 |
| 1.2 | Location of the test site | 4 |
| 1.3 | List of measuring equipment..... | 5 |
| 2 | Description of the radiated emission test | 6 |
| 2.1 | Test Procedure..... | 6 |
| 2.2 | Test Result..... | 6 |
| 3 | Description of the Line-conducted Test..... | 8 |
| 3.1 | Test Procedure..... | 8 |
| 3.2 | Test Result..... | 8 |
| 3.3 | Graph and Table of Conducted Emission Measurement Data | 8 |
| 4 | Photograph | 9 |
| 4.1 | Photographs of the Test Setup for Radiated Emission and Conducted Emission | 9 |
| 4.2 | Photographs of the External and Internal Configurations of the EUT..... | 9 |
| 5 | Supplementary document..... | 10 |
| 5.1 | Bandwidth | 10 |
| 5.2 | Duty cycle | 10 |
| 5.3 | Transmission time | 10 |
| 5.4 | Power Spectrum Density | 10 |
| 6 | Appendices | 11 |

FCC ID: OGM26231TX-49

Page 2 of 11

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Report No. : AK009737-001

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1 General Information

1.1 General Description

The equipment under test (EUT) is a transmitter for R/C Monster Wheels Chubbies. It operates at 49.860MHz and the oscillation of radio control is generated by a crystal. The EUT is powered by 1x 9V size battery. There are two control sticks in the center of EUT. When it switched on and pressed the stick once, it will transmit a radio control signal to receiver. The antenna terminal is using unique connector and the radio output power is unable to adjust.

The brief circuit description is listed as follows:

- TX-2 and associated circuit act as encoder.
- Y1, Q2 and associated circuit act as oscillator.
- Q1 and associated circuit act as amplifier.

FCC ID: OGM26231TX-49

Page 3 of 11

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TEST REPORT

Report No. : AK009737-001

Date : 2008 March 25

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,
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FCC ID: OGM26231TX-49

Page 4 of 11

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1.3 List of measuring equipment

| Equipment | Manufacturer | Model No. | Serial No. | Calibration Due Date |
|-------------------|--------------|-----------|------------|----------------------|
| EMI Test Receiver | R&S | ESCI | 100152 | 2008 October 14 |
| Broadband Antenna | Schaffner | CBL6112B | 2718 | 2008 May 23 |

FCC ID: OGM26231TX-49

Page 5 of 11

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Report No. : AK009737-001

Date : 2008 March 25

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.

“#” 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 limited were not reported.

It was found that the EUT meet the FCC requirement.

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Page 6 of 11

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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 (dB μ V/m) | Antenna and Cable factor (dB) | Average Factor (dB) | Field Strength (dB μ V/m) | Limit at 3m (dB μ V/m) | Margin (dB) |
|-----------------|----------------|------------------------------|-------------------------------|---------------------|-------------------------------|----------------------------|-------------|
| 49.860 | V | 67.8 | 10.6 | -4.3 | 69.8 | 80.0 | -10.2 |
| 99.720 | H | 28.6 | 9.5 | / | 38.1 | 43.5 | -5.4 |
| 149.580 | H | 11.6 | 12.0 | / | 23.6 | 43.5 | -19.9 |
| 199.440 | H | 11.1 | 9.5 | / | 20.6 | 43.5 | -22.9 |
| #249.300 | H | 13.7 | 9.8 | / | 23.5 | 46.0 | -22.5 |
| 299.160 | H | 9.7 | 13.9 | / | 23.6 | 46.0 | -22.4 |
| 349.020 | H | 8.6 | 14.9 | / | 23.5 | 46.0 | -22.5 |
| 398.880 | H | 10.0 | 14.9 | / | 24.9 | 46.0 | -21.1 |
| 448.739 | H | 8.1 | 17.9 | / | 26.0 | 46.0 | -20.0 |
| 498.600 | H | 8.7 | 17.9 | / | 26.6 | 46.0 | -19.4 |

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Page 7 of 11

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Report No. : AK009737-001

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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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Page 8 of 11

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Date : 2008 March 25

4 Photograph

4.1 Photographs of the Test Setup for Radiated Emission and Conducted 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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Page 9 of 11

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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. 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:

$$\text{The duration of one cycle} = 15.9\text{ms}$$

$$\begin{aligned}\text{Effective period of the cycle} &= (1.32 \times 4)\text{ms} + (0.44 \times 10)\text{ms} \\ &= 9.68\text{ms}\end{aligned}$$

$$\begin{aligned}\text{Duty Cycle} &= 9.68 / 15.9 \\ &= 0.609\end{aligned}$$

Therefore, the average factor is found by $20 \log_{10} 0.609 = -4.3\text{dB}$

5.3 Transmission time

Not Applicable

5.4 Power Spectrum Density

Not Applicable



TEST REPORT

Report No. : AK009737-001

Date : 2008 March 25

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 *****

FCC ID: OGM26231TX-49

Page 11 of 11

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