



## **TEST REPORT**

Report No. : AC014089-1

Date : 2002 September 23

Client : Grandway Toys Limited  
Room 1201-3 & 5, Fullerton Centre,  
No. 19 Hung To Road, Kwun Tong,  
Kowloon, Hong Kong.

Sample Description : Sample stated to be :  
Description: RC Mini Car  
Model No. : SL2100  
Rating : 2 x 1.5 V AA size batteries  
No. of sample(s) : Two(2) sets \*\*\*

Date Received : 2002 August 06.

Test Period : 2002 August 06 – 2002 August 20.  
2002 August 21 – 2002 August 24.

Test Requested : FCC Part 15 Certification

Test Method : FCC Rules and Regulations Part 15 – May 2002  
ANSI C63.4 – 1992

Test Result : See attached sheet(s) from page 2 to 10.

Conclusion : The submitted sample was found to comply with requirement of FCC  
Part 15 Subpart C.

*For and on behalf of*  
CMA Testing and Certification Laboratories

Authorized Signature :

Danny Chui  
EMC Engineer - EL. Division

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### **1 General Information**

#### **1.1 General Description**

The equipment under test (EUT) is a transmitter for RC Mini Car operating at 49.860 MHz which is controlled by a crystal. The EUT is powered two 1.5 V AA size batteries, it has an ON/OFF switch, and there are four main buttons to control forward, backward, left and right movement. It also has a charging terminal on the EUT for charging the toy car.

The brief circuit description is listed as follows :

- IC1 and associated circuit act as encoding.
- Q5, Q6 and associated circuit act as modulation.
- X1, Q6 and associated circuit act as oscillation and amplification.

#### **1.2 Related Submittal Grants**

This is a single application for certification of a transmitter. The receiver for this transmitter is authorized by Certification procedure.

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### **1.3 Location of the test site**

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 1992. An Open Area Testing Site is set up for investigation and located at :

Top of the Roof, 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 – 1992. A double shielded room is located at :

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



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### **1.4 List of measuring equipment**

Equipment	Manufacturer	Model No.	Serial No.	Calibration Certification No.	Calibration Date	Calibration Due Date
EMI Test Receiver	R&S	ESCS30	100001	20-69223	Mar. 21, 2001	Sept. 20, 2002
Broadband Antenna	Schaffner	CBL6113B	2718	AC1753	Dec. 15, 2000	Dec. 14, 2002
Signal Generator	IFR	2023B	202302/938	Nil	Oct. 23, 2000	Oct. 22, 2002
LISN	R&S	ESH3-Z5	100010	20-70405	Mar. 29, 2001	Sept. 28, 2002
Pulse Limiter	R&S	ESH3-Z2	100001	20-73194	May 2, 2001	Nov. 1, 2002
Biconical Antenna	R&S	HK116	837414/004	4000.7752.02	Oct. 23, 2000	Oct. 22, 2002

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Room 1401-3, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, Hong Kong.  
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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 – 1992.

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.

#### **2.2 Test Result**

The fundamental emission was based on measurements employing the peak detector on the open area test site.

The harmonic emissions meeting the requirement of section 15.209 are based on measurements employing the CISPR quasipeak 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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### **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 $\mu$ V/m)	Antenna and Cable factor (dB)	Field Strength (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
49.860	V	50.9	12.9	63.8	80.0	-16.2
99.720	H	15.5	12.1	27.6	43.5	-15.9
149.580	H	14.6	14.0	28.6	43.5	-14.9
199.021	H	14.0	13.4	27.4	43.5	-16.1
*249.302	H	9.6	14.2	23.8	46.0	-22.2
299.162	H	12.3	17.5	29.8	46.0	-16.2
349.028	H	18.0	19.7	37.7	46.0	-8.3
398.883	H	20.8	19.7	40.5	46.0	-5.5
449.016	H	15.2	24.2	39.4	46.0	-6.6
498.604	H	17.1	24.2	41.3	46.0	-4.7

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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 – 1992. 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 ExtPho1.jpg to ExtPho2.jpg and IntPho1.jpg to IntPho3.jpg.

### **5 Supplementary document**

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

<b>Document</b>	<b>Filename</b>
ID Label/Location	LabelSmpl.pdf
Block Diagram	BlkDia.pdf
Schematic Diagram	Schem.pdf
Users Manual	UserMan.pdf
Operational Description	OpDes.pdf

#### **5.1 Bandwidth**

The plot 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 26 dB below the carrier level. It meets the requirement of Section 15.235(b).

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### **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	2 pages
A4.	ID Label/Location	1 page
A5.	Block Diagram	1 page
A6.	Schematics	1 page
A7.	User Manual	3 pages
A8.	Operation Description	1 page
A9.	Bandwidth Plot	1 page

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

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