

TEST REPORT

Report No.: HK10040785-1

Goldlok Toys Holdings (Guangdong) Co., Ltd.

Application
For
Certification

(FCC ID: UFR230723082309)

Transmitter

Prepared and Checked by:

Approved by:

Signed On File
Lau Chin Yu, Benny
Engineer

Chan Chi Hung, Terry
Senior Lead Engineer
Date: May 28, 2010

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GENERAL INFORMATION

Goldlok Toys Holdings (Guangdong) Co., Ltd.

MODEL: 2308-A

FCC ID: UFR230723082309

Grantee:	Goldlok Toys Holdings (Guangdong) Co., Ltd.
Grantee Address:	Room 701-706, 7/F., Tower B, New Mandarin Plaza, 14 Science Museum Road, Tsim Sha Tsui East, Kowloon, Hong Kong.
Contact Person:	Ms Sandy Mui
Tel:	23121577
Fax:	23120490
e-mail:	sandy@goldlok.com
Manufacturer:	Goldlok Toys Holdings (Guangdong) Co., Ltd.
Manufacturer Address:	N/A
Brand Name:	N/A
Model:	2308-A
Additional Model:	2308-01, 2308-02, 2308-03, 2308-04, 2308-05, 2308-06, 2308-07, 2308-08, 2308-09, 2308-10, 2308-11, 2308-12, 2308-13, 2308-14, 2308-15, 2308-16, 2308-17, 2308-18, 2308-19, 2308-20, 2308-20GF, 2308-21, 2308-22, 2308- 23, 2308-24, 2308-25, 2308-26, 2308-27, 2308-28, 2308- 51, 2308-52, 2308-53, 2308-54, 2308-55, 2308-56, 2308- 57, 2308-58, 2308-59, 2308-60, 2309-01, 2309-02, 2309- 03, 2309-04, 2309-05, 2309-06, 2309-07, 2309-08, 2309- 21, 2309-22, 2309-23, 2309-24, 2309-25, 2309-26, 2309- 51, 2309-52, 2309-53, 2309-54, 2309-55, 2309-56, 2307- 01, 2307-02, 2307-03, 2307-04, 2307-05, 2307-06, 2307- 07, 2307-08, 2307-21, 2307-22, 2307-23, 2307-24, 2307- 25, 2307-26, 2307-51, 2307-52, 2307-53, 2307-54, 2307- 55, 2307-56, 2311-01, 2311-02, 2311-03, 2311-04, 2311- 05, 2311-06, 2311-07, 2311-08, 2311-09, 2311-10, 2311- 51, 2311-52A, 2311-52B, 2311-52C, 2311-52D, 2311- 52E, 2311-52F, 2311-52G, 2311-52H, 2311-52I, 2311- 52J, 2311-52K, 2311-52L, 2311-52M, 2311-52N, 2311- 52O, 2311-52P, 2311-52Q, 2311-52R, 2311-52S, 2311- 52T, 2311-52U, 2311-52V, 2311-52W, 2311-52X, 2311- 52Y, 2311-52Z, 2311-53, 2311-54, 2311-55, 2311-56, 2311-91, 2311-92, 2311-93, 2311-94, 2311-95, 2311-96, 2311-97, 2311-98, 2311-99
Asst. No.:	2308, 2308-21-A, 2308-51-A, 2307, 2307-A, 2307-21-A, 2307-51-A, 2309, 2309-A, 2309-21-A, 2309-51-A, 2311, 2311-A, 2311-52, 2311-52-A
Type of EUT:	Transmitter
Description of EUT:	Radio Control Thunder Charger (Radio Control Racing Car), (Radio Control Car)
Serial Number:	N/A
FCC ID:	UFR230723082309
Date of Sample Submitted:	April 16, 2010
Date of Test:	April 23, 2010
Report No.:	HK10040785-1
Report Date:	May 28, 2010
Environmental Coniditions:	Temperature: +10 to 40°C Humidity: 10 to 90%

Report No.: HK10040785-1
FCC ID: UFR230723082309

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SUMMARY OF TEST RESULT

Goldlok Toys Holdings (Guangdong) Co., Ltd.
MODEL: 2308-A

FCC ID: UFR230723082309

TEST SPECIFICATION	REFERENCE	RESULTS
Maximum Peak Output Power	15.247(b), (c) / RSS-210 A8.4	N/A
Hopping Channel Carrier Frequencies Separation	15.247(e) / RSS-210 A8.1	N/A
20dB Bandwidth of the Hopping Channel	15.247(a) / RSS-210 A8.1	N/A
Number of Hopping Frequencies	15.247(e) / RSS-210 A8.1	N/A
Average Time of Occupancy of Hopping Frequency	15.247(e) / RSS-210 A8.1	N/A
Antennae Conducted Spurious Emissions	15.247(d) / RSS-210 A8.5	N/A
Radiated Spurious Emissions	15.247(d) / RSS-210 A8.5	N/A
RF Exposure Compliance	15.247(i) / RSS-Gen 5.5	N/A
Transmitter Power Line Conducted Emissions	15.207 / RSS-Gen 7.2.2	N/A
Transmitter Field Strength	15.227 / RSS-310 3.8	Pass
Transmitter Field Strength	15.229 / RSS-210 A2.7	N/A
Transmitter Field Strength, Bandwidth and Timing Requirement	15.231(a) / RSS-210 A1.1.1	N/A
Transmitter Field Strength, Bandwidth and Timing Requirement	15.231(e) / RSS-210 A1.1.5	N/A
Transmitter Field Strength and Bandwidth Requirement	15.239 / RSS-210 A2.8	N/A
Transmitter Field Strength and Bandwidth Requirement	15.249 / RSS-210 A2.9	N/A
Transmitter Field Strength and Bandwidth Requirement	15.235 / RSS-310 3.9	N/A
Receiver / Digital Device Radiated Emissions	15.109 / ICES-003	N/A
Digital Device Conducted Emissions	15.107 / ICES-003	N/A

- Note: 1. The EUT uses a permanently attached antenna which, in accordance to section 15.203, is considered sufficient to comply with the provisions of this section.
2. Pursuant to FCC part 15 Section 15.215(c), the 20 dB bandwidth of the emission was contained within the frequency band designated (mentioned as above) which the EUT operated. The effects, if any, from frequency sweeping, frequency hopping, other modulation techniques and frequency stability over expected variations in temperature and supply voltage were considered.

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1.0 General Description

1.1 Product Description

The equipment under test (EUT) is a transmitter for a RC Car operating at 27.145 MHz which is controlled by a crystal. The EUT is powered by 3VDC (2 x 1.5V 'AA' batteries). The EUT has 4 buttons. The 4 buttons are used to control the RC Car to move forward, backward, left and right.

The Model: 2308-01, 2308-02, 2308-03, 2308-04, 2308-05, 2308-06, 2308-07, 2308-08, 2308-09, 2308-10, 2308-11, 2308-12, 2308-13, 2308-14, 2308-15, 2308-16, 2308-17, 2308-18, 2308-19, 2308-20, 2308-20GF, 2308-21, 2308-22, 2308-23, 2308-24, 2308-25, 2308-26, 2308-27, 2308-28, 2308-51, 2308-52, 2308-53, 2308-54, 2308-55, 2308-56, 2308-57, 2308-58, 2308-59, 2308-60, 2309-01, 2309-02, 2309-03, 2309-04, 2309-05, 2309-06, 2309-07, 2309-08, 2309-21, 2309-22, 2309-23, 2309-24, 2309-25, 2309-26, 2309-51, 2309-52, 2309-53, 2309-54, 2309-55, 2309-56, 2307-01, 2307-02, 2307-03, 2307-04, 2307-05, 2307-06, 2307-07, 2307-08, 2307-21, 2307-22, 2307-23, 2307-24, 2307-25, 2307-26, 2307-51, 2307-52, 2307-53, 2307-54, 2307-55, 2307-56, 2311-01, 2311-02, 2311-03, 2311-04, 2311-05, 2311-06, 2311-07, 2311-08, 2311-09, 2311-10, 2311-51, 2311-52A, 2311-52B, 2311-52C, 2311-52D, 2311-52E, 2311-52F, 2311-52G, 2311-52H, 2311-52I, 2311-52J, 2311-52K, 2311-52L, 2311-52M, 2311-52N, 2311-52O, 2311-52P, 2311-52Q, 2311-52R, 2311-52S, 2311-52T, 2311-52U, 2311-52V, 2311-52W, 2311-52X, 2311-52Y, 2311-52Z, 2311-53, 2311-54, 2311-55, 2311-56, 2311-91, 2311-92, 2311-93, 2311-94, 2311-95, 2311-96, 2311-97, 2311-98 and 2311-99 are the same as the Model: 2308-A in hardware aspect. They are different in packing only.

Antenna Type : Telescope-type antenna (with unique antenna connector)

For electronic filing, the brief circuit description is saved with filename: descri.pdf.

1.2 Related Submittal(s) Grants

The receiver for this transmitter is exempted from the Part 15 technical rules per 15.101(b).

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1.3 Test Methodology

Radiated emission measurements was performed according to the procedures in ANSI C63.4 (2003). All radiated measurements were performed in an Open Area Test Site. Preliminary scans were performed in the Open Area Test Site only to determine worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the “**Justification Section**” of this Application.

1.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located at Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong. This test facility and site measurement data have been placed on file with the FCC.

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2.0 **System Test Configuration**

2.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in ANSI C63.4 (2003).

The EUT was powered by 2 new AA size batteries during test.

For maximizing emissions below 30 MHz, the EUT was rotated through 360°, the centre of the loop antenna was placed 1 meter above the ground, and the antenna polarization was changed. For maximizing emission at and above 30 MHz, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed. This step by step procedure for maximizing emissions led to the data report in Exhibit 3.0.

The unit was operated standalone and placed in the center of the turntable.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was mounted to a plastic stand if necessary and placed on the wooden turntable, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

2.2 EUT Exercising Software

There was no special software to exercise the device. Once the unit is powered up, it transmits the RF signal continuously.

2.3 Special Accessories

There are no special accessories necessary for compliance of this product.

2.4 Equipment Modification

Any modifications installed previous to testing by Intertek Testing Services Hong Kong Ltd will be incorporated in each production model sold/leased in the United States.

2.5 Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty of test has been considered.

2.6 Support Equipment List and Description

N/A.

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3.0 Emission Results

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.

3.1 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any), Average Factor (optional) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG - AV$$

where

- FS = Field Strength in dB μ V/m
- RA = Receiver Amplitude (including preamplifier) in dB μ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB
- AG = Amplifier Gain in dB
- AV = Average Factor in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows:

$$FS = RR + LF$$

where

- FS = Field Strength in dB μ V/m
- RR = RA - AG - AV in dB μ V
- LF = CF + AF in dB

Assume a receiver reading of 52.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB are added. The amplifier gain of 29 dB and average factor of 5 dB are subtracted, giving a field strength of 27 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

RA = 52.0 dB μ V/m	
AF = 7.4 dB	RR = 18.0 dB μ V
CF = 1.6 dB	LF = 9.0 dB
AG = 29.0 dB	
AV = 5.0 dB	
FS = RR + LF	
FS = 18 + 9 = 27 dB μ V/m	

$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm} [(27 \text{ dB}\mu\text{V/m})/20] = 22.4 \mu\text{V/m}$$

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3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission at 54.280 MHz

For electronic filing, the worst case radiated emission configuration photographs are saved with filename: radiated photos.pdf.

3.3 Radiated Emission Data

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Judgment: Passed by 1.9 dB

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Applicant: Goldlok Toys Holdings (Guangdong) Co., Ltd. Date of Test: April 26, 2010
Model: 2308-A
Mode: TX

Table 1

Radiated Emissions

Polari- zation	Frequency (MHz)	Reading (dB μ V)	Pre- Amp (dB)	Antenna Factor (dB)	Average Factor (dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
V	27.145	77.4	16	15.4	0.0	76.8	80.0	-3.2
V	54.280	43.1	16	11.0	-	38.1	40.0	-1.9
H	81.420	38.6	16	7.0	-	29.6	40.0	-10.4
H	108.560	30.8	16	14.0	-	28.8	43.5	-14.7
H	135.700	32.1	16	14.0	-	30.1	43.5	-13.4
H	162.840	30.8	16	16.0	-	30.8	43.5	-12.7
H	189.980	34.1	16	16.0	-	34.1	43.5	-9.4
H	217.120	31.8	16	17.0	-	32.8	46.0	-13.2
H	244.260	27.8	16	20.0	-	31.8	46.0	-14.2
H	271.400	25.4	16	22.0	-	31.4	46.0	-14.6

- NOTES: 1. Peak Detector Data unless otherwise stated.
2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative sign in the column shows value below limit.
4. Loop antenna is used for the emissions below 30 MHz.
5. Horn antenna is used for the emissions over 1000MHz.

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4.0 **Equipment Photographs**

For electronic filing, the photographs are saved with filename: external photos.pdf and internal photos.pdf.

5.0 **Product Labelling**

For electronics filing, the FCC ID label artwork and the label location are saved with filename: label.pdf.

6.0 **Technical Specifications**

For electronic filing, the block diagram and schematic of the tested EUT are saved with filename: block.pdf and circuit.pdf respectively.

7.0 **Instruction Manual**

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

This manual will be provided to the end-user with each unit sold/leased in the United States.

8.0 **Miscellaneous Information**

This miscellaneous information includes details of the measured bandwidth.

8.1 **Measured Bandwidth**

The plot saved in bw.pdf which shows the fundamental emission is confined in the specified band. And it also shows that the emission is at least 33 dB below the carrier level at the band edge (26.96 and 27.28 MHz). It meets the requirement of Section 15.227(b).

Pursuant to FCC part 15 Section 15.215(c), the 20dB bandwidth of the emission was contained within the frequency band designated (mentioned as above) which the EUT operated. The effects, if any, from frequency sweeping, frequency hopping, other modulation techniques and frequency stability over expected variations in temperature and supply voltage were considered.

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8.2 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services in the measurements of transmitters operating under Part 15, Subpart C rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.4 - 2003.

The transmitting equipment under test (EUT) is placed on a wooden turntable which is four feet in diameter and approximately one meter in height above the ground plane. During the radiated emissions test, the turntable is rotated and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The EUT is adjusted through all three orthogonal axes to obtain maximum emission levels. The antenna height and polarization are varied during the testing to search for maximum signal levels.

Detector function for radiated emissions is in peak mode. Average readings, when required, are taken by measuring the duty cycle of the equipment under test and subtracting the corresponding amount in dB from the measured peak readings.

The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower. For line conducted emissions, the range scanned is 150 kHz to 30 MHz.

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8.2 Emissions Test Procedures (cont'd)

The EUT is warmed up for 15 minutes prior to the test.

AC power to the unit is varied from 85% to 115% nominal and variation in the fundamental emission field strength is recorded. If battery powered, a new, fully charged battery is used.

Conducted measurements are made as described in ANSI C63.4 - 2003.

The IF bandwidth used for measurement of radiated signal strength was 10 kHz for emission below 30 MHz and 120 kHz for emission from 30 MHz to 1000 MHz.

Transmitter measurements are normally conducted at a measurement distance of three meters. However, to assure low enough noise floor in the restricted bands and above 1 GHz, signals are acquired at a distance of one meter or less. All measurements are extrapolated to three meters using inverse scaling, but those measurements taken at a closer distance are so marked.

9.0 Equipment List

Radiated Emissions Test

Equipment	EMI Test Receiver	Biconical Antenna	Log Periodic Antenna	Active H-field Loop Antenna
Registration No.	EW-0014	EW-0571	EW-0447	EW-0191
Manufacturer	R&S	EMCO	EMCO	EMCO
Model No.	ESVS30	3104C	3146	6502
Calibration Date	Jun 01, 2009	Nov 12, 2008	Nov 12, 2008	Dec 25, 2009
Calibration Due Date	Jun 01, 2010	May 12, 2010	May 12, 2010	Jun 25, 2010

Equipment	14m Double Shield RF Cable (20MHz - 6GHz)	14m Double Shield RF Cable (9kHz - 6GHz)	Spectrum Analyzer
Registration No.	EW-2528	EW-2375	EW-2188
Manufacturer	RADIALL	RADIALL	AGILENTTECH
Model No.	nm / br5d / sma 14m	n m/br56/bnc m 14m	E4407B
Calibration Date	Feb 18, 2010	Sep 11, 2009	Dec 25, 2009
Calibration Due Date	Feb 23, 2011	Sep 12, 2010	Dec 31, 2010