FCC PART 15.227
EMI MEASUREMENT AND TEST REPORT

For

SHANTOU CHUNCHEN PLASTICS & METALS INDUSTRIAL CO., LTD.

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FCC ID: SS7YMW0001

2004-12-13

This Report Concerns:	**Equipment Type:**
☒ Original Report	Transmitter, RC ELECTRIC TOY CAR

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Report No.:	RSZ04112202 (T)
Test Date:	2004-12-10
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Note: The test report is specially limited to the above company and the product model only. It may not be duplicated without prior written consent of Bay Area Compliance Laboratory Corporation. This report **must not** be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the US Government.

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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The *SHANTOU CHUNCHEN PLASTICS & METALS INDUSTRIAL CO., LTD.* 's product, model number: YMW Z8 or the "EUT" as referred to in this report is a Transmitter, RC ELECTRIC TOY CAR. The EUT is measured approximately 7.0cm L x 8.0cm W x 5.5cm H.

** The test data gathered are from production sample, serial number:* 0411022, *provided by the manufacturer.*

Objective

This type approval report is prepared on behalf of *SHANTOU CHUNCHEN PLASTICS & METALS INDUSTRIAL CO., LTD.* in accordance with Part 2, Subpart J, and Part 15, Subparts A, B and C of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC rules, sec 15.203, 15.205, 15.209 and sec 15.227.

Related Submittal(s)/Grant(s)

No Related Submittals.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2001, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz. All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratory, Corp.

Test Facility

Test site at Bay Area Compliance Laboratory Corporation has been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports has been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997 and Article 8 of the VCCI regulations on December 25, 1997. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2001.

The Federal Communications Commission and Voluntary Control Council for Interference has the reports on file and is listed under FCC file 31040/SIT 1400F2 and VCCI Registration No.: C-1298 and R-1234. The test site has been approved by the FCC and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Justification

The EUT was configured for testing according to ANSI C63.4-2001.

Schematics and Block Diagram

Please refer to Appendix D.

Equipment Modifications

No modifications were made to the EUT.

SUMMARY OF TEST RESULTS

Results reported relate only to the product tested, serial number: 0411022.

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.203	Antenna requirement	Compliant
§15.205	Restricted Band	Compliant
§15.209	Radiated Emission Limit	Compliant
§15.227	Frequency of Operation	Compliant
§15.227(a)	Field Strength	Compliant
§15.227(b)	Outside of band emission	Compliant

§15.203 - ANTENNA REQUIREMENT

Standard Applicable

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

The antenna for this device is an integral antenna that the end user cannot access.

§15.205, §15.209, §15.227 - RADIATED EMISSIONS TEST

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at BACL is ±4.0 dB.

EUT Setup

The radiated emission tests were performed in the open area 10-meter test site, EUT to test Antenna distance is 3-meters, using the setup accordance with the ANSI C63.4-2001. The specification used was the FCC Part 15 Subpart C limits.

Spectrum Analyzer Setup

The radiated emission tests were performed in the open area 10-meter test site; EUT to test antenna distance is 3 meters, using the setup accordance with the ANSI C63.4-2001. The specification used was the FCC Part 15 Subpart C limits.

According to FCC rules, 47 CFR 15.33, The EUT emission were investigated from 25 – 1000 MHz

Frequency Range	***RBW***	***Video B/W***
Below 30MHz	10kHz	10kHz
30 – 1000MHz	100kHz	100kHz
Above 1000MHz	1MHz	1MHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date
HP	Amplifier	8447D	2944A10198	2004-09-23
HP	Analyzer, Spectrum, Display	8565EC	3026A20081	2004-06-13
HP	Adapter, Quasi-Peak	85650A	3107A01505	2004-09-30
HP	Analyzer, Spectrum, RF	8568B	3019A05393	2004-06-13
HP	Plotter	7475A	2541A49659	N/R
EMCO	Antenna, Loop, H-Field Gain/AF	6512	00029604	2004-02-12
Electro Metrics	Biconical Antenna	EM-6912	585	2004-04-17
Electro Metrics	Logperiodic Antenna	EM-6950	788	2004-04-15

*** Statement of Traceability: BACL** attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

Margin = Corr. Ampl. - Limit

Summary of Test Results

According to the final data in following table, the EUT complied with the FCC 15.227 standards, and had the worst margin of:

-1.6 dB at **54.30 MHz** in the **Vertical** polarization

Environmental Conditions

Temperature:	23° C
Relative Humidity:	45%
ATM Pressure:	1017 mbar
Date Tested:	2004-12-10

Radiated Emissions Test Result Data

Indicated		Detector	Table	Antenna		Correction Factor			Corrected Amplitude	FCC Subpart C	
Freq. MHz	Ampl. dBµV/m	pk/av	Angle Degree	Height Meter	Polar H/ V	Antenna dBµV/m	Cable dB	Amp. dB	Correction Factor. dBµV/m	Limit dBµV/m	Margin dB
54.30	55.49	pk	45	1.0	v	8.5	0.7	26.24	38.4	40	-1.6
54.60	47.17	pk	180	1.2	h	8.5	0.7	28.70	27.7	40	-12.3
81.80	45.00	pk	60	1.0	v	8.4	0.9	28.70	25.6	40	-14.4
27.14	68.26	pk	45	1.0	v	24.1	0.6	28.80	69.1	80	-15.9
26.96	24.79	pk	45	1.0	v	24.1	0.6	28.80	20.7	40	-19.3
27.28	23.59	pk	45	1.0	v	24.1	0.6	28.80	19.5	40	-20.5
26.96	23.14	pk	45	1.0	h	24.1	0.6	28.80	19.0	40	-21.0
27.28	22.76	pk	45	1.0	h	24.1	0.6	28.80	18.7	40	-21.3
81.80	36.05	pk	45	1.0	h	8.4	0.9	28.70	16.6	40	-23.4
27.14	56.75	pk	45	1.2	h	24.1	0.6	28.80	52.6	80	-27.4

NOTES:

The RC ELECTRIC TOY CAR transmitter was placed in continuous transmit mode for all tests.
The EUT was tested in all 3 orthogonal planes.

§15.227(b) - Out of Band Emission

The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in §15.209.

The result has been complied with the 15.227(b), see the following plot and reference to the radiation emission test.