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FEDERAL COMMUNICATIONS COMMISSION
Registration number: 282399

Report No.: GLEMO050100002RFF
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FCC ID: SX2LM-102BL-RC

FCC TEST REPORT

Application No. : GLEMO050100002RF (SGS SZ NO.: SZTYR041207168/TS)

Applicant: HAIBOXING TOYS FACTORY

FCC ID: SX2LM-102BL-RC

Fundamental Carrier Frequency : 27.145MHz

Equipment Under Test (EUT):

Name: SHAFT DRIVEN 4WD

Model: NO. 6508, NO. 6518, NO. 6528♣



Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.

Standards: FCC PART 15, SUBPART C : 2004

Date of Receipt: 4 January 2005

Date of Test: 6 to 31 January 2005

Date of Issue: 2 February 2005

Test Result :	PASS *
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* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Kent Hsu
Laboratory Manager

This report refers to the General Conditions for Inspection and Testing Services, printed overleaf

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the SGS PRODUCT CERTIFICATION MARK.. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

All test results in this report can be traceable to National or International Standards.

2 Test Summary

Test	Test Requirement	Standard Paragraph	Result
Flid Strength of Fundamental	FCC PART 15 :2004	Section 15.227	PASS
Flid Strength of Harmornics or other Frequency	FCC PART 15 :2004	Section 15.227	PASS**
Occupied Bandwidth	FCC PART 15 :2004	Section 15.227	PASS

Remark:

♣ Model : NO. 6508, NO. 6518, NO. 6528

Only one model was tested, since the electrical circuit design of the remote controll was identical for the above models. For further details please refer to the facsimile from HAIBOXING TOYS FACTORY dated 28 December 2004.

** The EUT passed Flid Strength of Harmornics or other Frequency after the modification as shown as the below:

1. Removed C11;
2. Added one capacitor C601(30PF) and one capacitor C602(0.001μF) for C10;
3. Added one FB and four capacitors for the power line;
FB: BLM18HD601SN1(MURATA), C603, C604: 0.001μF, C605, C606: 30PF.
4. Added one resistor (1KΩ) for the crystal;
5. Added one inductor(6μH) and one capacitor C607(30PF) for ANT;
6. Cut the earth line as short as possible and changed the connecting point;
7. Added several earth line;
8. Added one capacitor C608(0.01μF) for D1;
9. Added one capacitor C609(30PF) and one capacitorC610(0.01μF) for R11;
10. Added one capacitor C611(0.01μF) for U1 24PIN;
11. Added one capacitor C612(0.01μF) for U1 23PIN;
and one capacitor C614(30PF) for U122PIN;
- 12 Added one capacitor C613(0.01μF) and one capacitor C614(30PF) for U1 22PIN;
- 13 Added one capacitor C615(0.01μF) and one capacitor C616(30PF) for VR3;



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4 General Information

4.1 Client Information

Applicant Name: HAIBOXING TOYS FACTORY
Applicant Address: Long Tian Guang Tou industrial estate, Guang Yi street, Cheng Hai area, Shan Tou City, China.

4.2 Details of E.U.T.

Product Name: SHAFT DRIVEN 4WD
Model: NO. 6508, NO. 6518, NO. 6528♣
♣ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Power Supply: 6V DC (4 x AA Size Batteries) for Tx ;
7.2V DC (Rechargeable Battery) for Rx.
Power Cord: N/A-

4.3 Description of Support Units

The EUT was tested as an independent unit: a 27MHz radio transmitter.

4.4 Test Location

All tests were performed at:-

SGS-CSTC Standards Technical Services Ltd., Guangzhou EMC Laboratory, 1/F,
Building No. 1, Agriculture Machinery Materials Company Warehouse Ltd., Wushan
Road Shipai, Tianhe District, Guangzhou, China. P.C. 510630.

Tel: +86 20 3848 1001

Fax: +86 20 3848 1006

4.5 Other Information Requested by the Customer

None.



4.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **NVLAP – Lab Code: 200611-0**
SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is recognized under the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0. Effective through December 31, 2004.
- **ACA**
SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our NVLAP accreditation.
- **VCCI**
The 3m Semi-anechoic chamber and Shielded Room (11.5m x 4m x 4m) of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-1599 and C-1706 respectively.
Date of Registration: February 28, 2003. Valid until May 30, 2005
- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**
Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.
- **CNAL – LAB Code: L0141**
SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAL/AC01:2002 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:1999 General Requirements) for the Competence of Testing Laboratories.
- **FCC – Registration No.: 282399**
SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 282399, May 31, 2002. With the above and NVLAP's accreditation, SGS-CSTC is an authorised test laboratory for the DoC process.
SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAL/AC01:2002 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:1999 General Requirements) for the Competence of Testing Laboratories.
- **Industry Canada (IC)**
The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 5169.

5 Test Results

5.1 Test Instruments

Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Due Date
3m Semi- Anechoic Chamber	Frankonia	N/A	N/A	15-02-2005
EMI Test Receiver	Rohde & Schwarz	ESCS30	100085	04-11-2005
EMI Test Software	Rohde & Schwarz	ES-K1	N/A	N/A
Coaxial cable	SGS	N/A	N/A	04-12-2005
Bilog Type Antenna	Schaffner -Chase	CBL6143	5070	17-01-2005
Horn Antenna	Rohde & Schwarz	HF906	100095	01-04-2005
Spectrum Analyzer	Rohde & Schwarz	FSP30	100324	22-12-2005
0.1-1300 MHz Pre-Amplifier	HP	8447D OPT 010	2944A06252	30-05-2005

5.2 E.U.T. Operation

Input voltage: 6V DC (4 x AA Size Batteries)
 Operating Environment:
 Temperature: 25.0 °C
 Humidity: 50 % RH
 Atmospheric Pressure: 1013 mbar
 EUT Operation: Test the EUT in transmitting mode.

5.3 Test Procedure & Measurement Data

5.3.1 Radiated Emissions

Test Requirement: FCC Part15 C
Test Method: FCC Part15 C Section 15.227
Test Date: 10 January 2005(Initial Test);
 31 January 2005(Test after modification).
Measurement Distance: 3m (Semi-Anechoic Chamber)
Requirements: Carrier frequency will not exceed 80dBuV/m AT 3m.
 Out of band emissions shall not exceed:
 40.0 dBμV/m between 30MHz & 88MHz
 43.5 dBμV/m between 88MHz & 216MHz
 46.0 dBμV/m between 216MHz & 960MHz
 54.0 dBμV/m above 960MHz
Detector: Peak Scan (120kHz resolution bandwidth)



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Test Procedure: The procedure used was ANSI Standard C63.4-2000. The receive was scanned from 30MHz to 1000MHz. When an emission was found, the table was rotated to produce the maximum signal strength. An initial pre-scan was performed for in peak detection mode using the receiver. The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes. The worst case emissions were reported.

An initial pre-scan was performed in the 3m chamber using the spectrum analyser in peak detection mode. The EUT was measured by Bilog antenna with 2 orthogonal polarities and peak emissions from the EUT were detected within 6dB of the class B limit line.

The following measurements were performed on the EUT on 31 January 2005:

Test the EUT in transmitting mode.

Intentional emission

Frequency (MHz)	Antenna Polarization	Peak Measurement			Average Measurement		
		Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)
27.145	Vertical	74.3	100	25.7	71.4	80	8.6
27.145	Horizontal	72.0	100	28.0	71.9	80	16.1

Other emissions

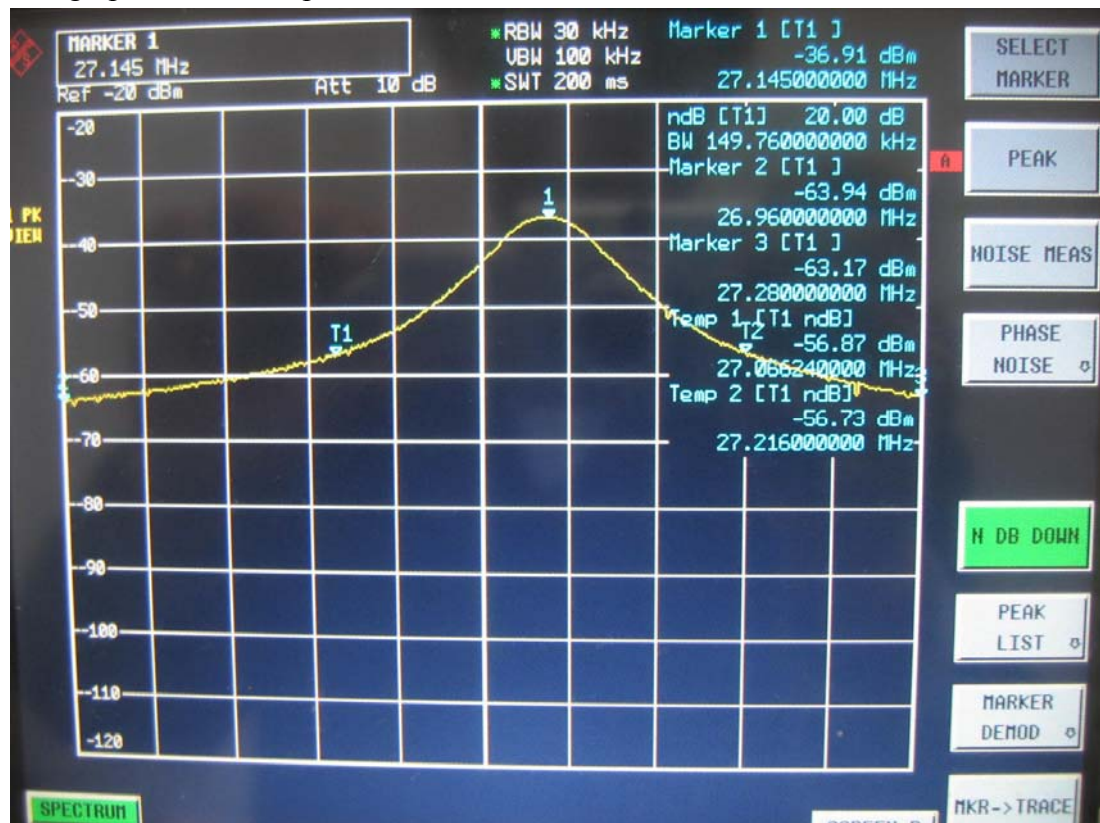
Test Frequency (MHz)		Quasi-Peak (dBμV/m)		Limits (dBμV/m)	Margin (dB)	
		Vertical	Horizontal		Vertical	Horizontal
2nd	54.290	35.1	31.2	40.0	4.9	8.8
3rd	81.435	20.3	21.2	40.0	19.7	18.8
4th	108.580	19.2	18.9	43.5	24.3	24.6
5th	135.725	21.8	21.3	43.5	21.7	22.2
6th	162.870	18.8	18.0	43.5	24.7	25.5
7th	190.015	23.6	22.0	43.5	19.9	21.5
8th	217.160	22.8	20.5	46.0	23.2	25.5
9th	244.305	21.6	18.9	46.0	24.4	27.1
10th	271.450	32.3	24.1	46.0	13.7	21.9
	325.750	32.3	29.3	46.0	13.7	16.7
	488.625	35.3	27.6	46.0	10.7	18.4
	515.750	35.1	29.8	46.0	10.9	16.2

Test Results: The unit does meet the FCC Part 15 C requirements.

5.3.2 Occupied Bandwidth

Test Requirement:	FCC Part 15 C
Test Method:	FCC Part15 C Section 15.227: Operation within the band 26.96 – 27.28 MHz
Test Date:	10 January 2005(Initial Test); 31 January 2005(Test after modification).
Requirements:	The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in Section 15.209.
Method of measurement:	The useful radiated emission from the EUT was detected by the spectrum analyser with peak detector. The vertical Scale is set to –10dB per division. The horizontal scale is set to 5KHz per division.

The graph as below, represents the emissions take for this device.



The results: The unit does meet the FCC Part 15 C requirements.