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Registration number: 282399



Report No.: GLEMO040600116RFF

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FCC ID:: HAP91331T27

FCC TEST REPORT

Application No.: GLEMO040600116RFF

Applicant: ECHO TOYS LTD.

FCC ID: HAP91331T27

Fundamental Carrier Frequency: 27.145 MHz

Equipment Under Test (EUT):

Name: Microbot

Model: 91331

Standards: FCC PART 15, SUBPART C : 2002

Date of Receipt: 7 June 2004

Date of Test: 11 June 2004

Date of Issue: 21 June 2004

Test Result : PASS *

Authorized Signature:

Kent Hsu Laboratory Manager SGS-CSTC Co.,Ltd.

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.

^{*} In the configuration tested, the EUT complied with the standards specified above.

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3 General Information

3.1 Client Information

Applicant Name: ECHO TOYS LTD.

Applicant Address: ROOM 1108, PENINSULA CENTRE, 67 MODY ROAD, TSIM

SHA TSUI EAST, KOWLOON HONG KONG.

3.2 Details of E.U.T.

Product Name: Microbot Model: 91331

Power Supply: 6V DC (4 x 'AAA' Size Batteries) for the Tx;

Internal chargeable battery for the Rx.

Power Cord: N/A-

3.3 Description of Support Units

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

3.4 Test Location

All tests were performed at:-

SGS-CSTC Standards Technical Services Ltd., Guangzhou Safety & 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

3.5 Other Information Requested by the Customer

None.

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3.6 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: 2000611-0. Effective through February 2, 2003.

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-FINKO

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, SGS-CSTC is an authorized test laboratory for the DoC process.



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4 Test Results

4.1 Test Instruments

Test Equipment	Manufacturer	Model	Asset No.	Cal. Due Date
3m Semi- Anechoic Chamber	Frankonia	3m method	EMC0501	15-02-2005
EMI Test Receiver	Rohde & Schwarz	ESCS30	EMC0506	15-02-2005
Bilog Type Antenna	Schaffner Chase	CBL6143	EMC0519	17-01-2005
Coaxial cable	SGS-CSTC	10m	EMC0514	04-11-2004
Temperature, Humidity & Barometer	Oregon Scientific	BA-888	EMC0003	24-07-2004

4.2 E.U.T. Operation

Input voltage: 6V DC (4 x 'AAA' Size Batteries) for the Tx;

Internal chargeable battery for the Rx.

Operating Environment:

Temperature: 25.0 °C Humidity: 56 % RH Atmospheric Pressure: 1009 mbar

EUT Operation: Test the EUT in transmitting mode.

4.3 Test Procedure & Measurement Data

4.3.1 Radiated Emissions

Test Requirement: FCC Part 15 C

Test Method: Based on FCC Part15 C Section 15.227

Test Date: 13 June 2004 (Final test)

Measurement Distance: 3m (Semi-Anechoic Chamber)

Requirements: Carrier frequency will not exceed 80dBuV/m AT 3m.

Out of band emissions shall not exceed: $40.0~dB\mu V/m$ between 30MHz & 88MHz $43.5~dB\mu V/m$ between 88MHz & 216MHz $46.0~dB\mu V/m$ between 216MHz & 960MHz

54.0 dBµV/m above 960MHz

Detector: Peak Scan (120kHz resolution bandwidth)



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Test Procedure: The procedure uesd was ANSI Standard C63.4-2000. The receive was scanned from 30MHz to 1000MHz. When an emission was found, the table was roated 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 19 April 2004: Test the EUT in transmitting mode.

Intentional emission

Test Frequency	Peak (dBuV/m)		Limits	Margin (dB)	
(MHz)	Vertical	Horizontal	(dBuV/m)	Vertical	Horizontal
27.145	70.5	71.7	100.0	29.5	28.3

Test Frequency	Average	(dBuV/m) Limits		Margin (dB)	
(MHz)	Vertical	Horizontal	(dBuV/m)	Vertical	Horizontal
27.145	64.9	66.3	80.0	15.1	13.7

Other emissions

Test Frequency (MHz)		Quasi-Peak (dBuV/m)		Limits	Margin (dB)	
		Vertical	Horizontal	(dBuV/m)	Vertical	Horizontal
2 nd	54.290	37.3	27.8	40.0	2.7	12.2
3 rd	81.435	25.9	15.6	40.0	14.1	24.4
4 th	108.580	18.2	16.4	43.5	25.3	27.1
5 th	135.725	21.5	18.2	43.5	22.0	25.3
6 th	162.870	26.3	18.6	43.5	17.2	24.9
7 th	190.015	20.6	26.1	43.5	22.9	17.4
8 th	217.160	16.9	21.3	46.0	29.1	24.7
9 th	244.305	18.1	21.6	46.0	27.9	24.4
10 th	271.450	19.6	24.6	46.0	30.2	21.4

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

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Occupied Bandwidth

Test Requirement: FCC Part 15 C

Test Method: Based on FCC Part15 C Section 15.227:

Operation within the band 26.96 – 27.28 MHz

Test Date: 11 June 2004

Requirements: The field strength of any emissions which appear outside of

this band shall not exceed the general radiated emission limits

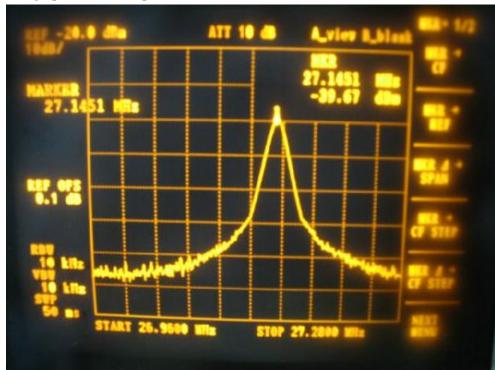
in Section 15.209.

Method of measurement: The useful radiated emission from the EUT was detected by

> the spectrum analyer 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.



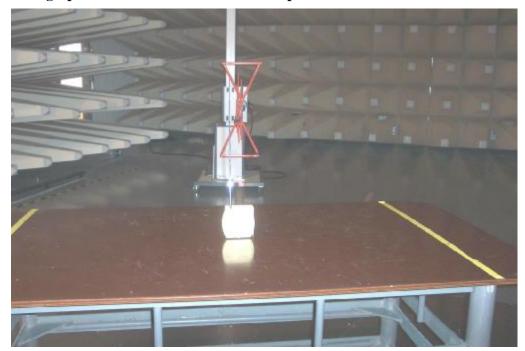
The results: The unit does meet the FCC Part 15 C requirements.



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4.3.3 Photographs - Radiated Emission Test Setup in Chamber





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5 Photographs - EUT Constructional Details







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