**SGS-CSTC Standards Technical Services Ltd.**

1/F., Building No. 1 Building, Agriculture Machinery Materials Co. Wushan Road, Shipai, Tianhe District,Guangzhou, China
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kent_hsu@sgs.com

**FEDERAL COMMUNICATIONS COMMISSION**
Registration number: 282399



# *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 *** |

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

Authorized Signature:

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

# 2 Contents

# 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;<br>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.

## 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.

# 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 Part15 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 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)

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 (MHz) | Peak (dBuV/m) | | Limits (dBuV/m) | Margin (dB) | |
|---|---|---|---|---|---|
| | Vertical | Horizontal | | Vertical | Horizontal |
| 27.145 | **70.5** | **71.7** | 100.0 | **29.5** | **28.3** |

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

Other emissions

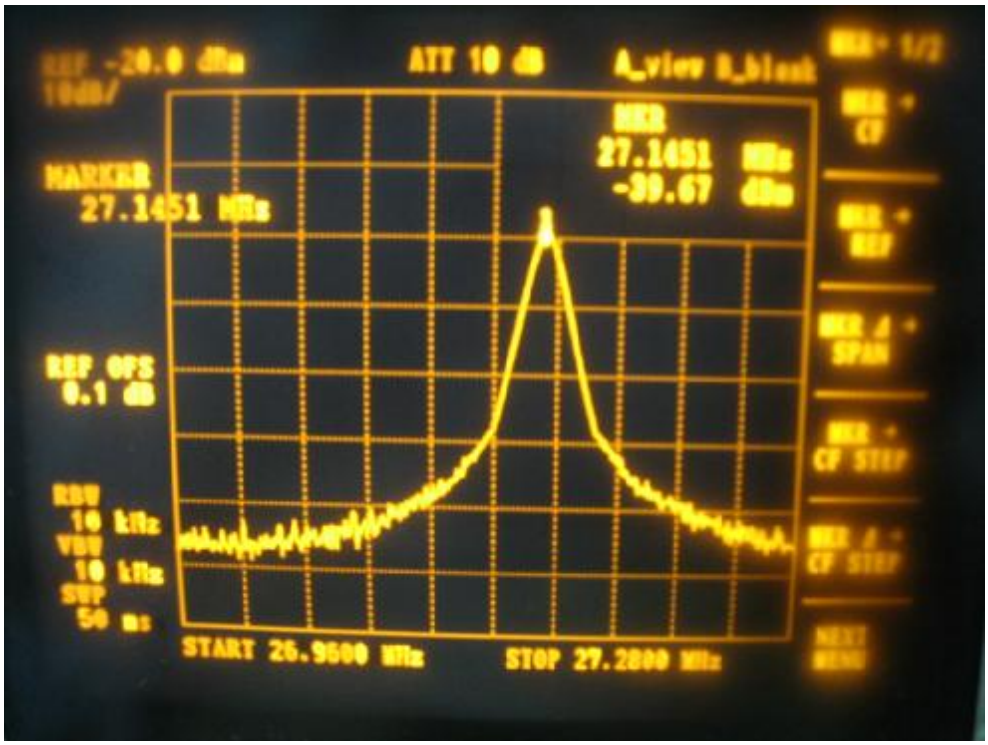
| Test Frequency (MHz) | Quasi-Peak (dBuV/m) | | Limits (dBuV/m) | Margin (dB) | |
|---|---|---|---|---|---|
| | Vertical | Horizontal | | Vertical | Horizontal |
| 2nd 54.290 | **37.3** | **27.8** | 40.0 | **2.7** | **12.2** |
| 3rd 81.435 | **25.9** | **15.6** | 40.0 | **14.1** | **24.4** |
| 4th 108.580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

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

### 4.3.2 Occupied Bandwidth

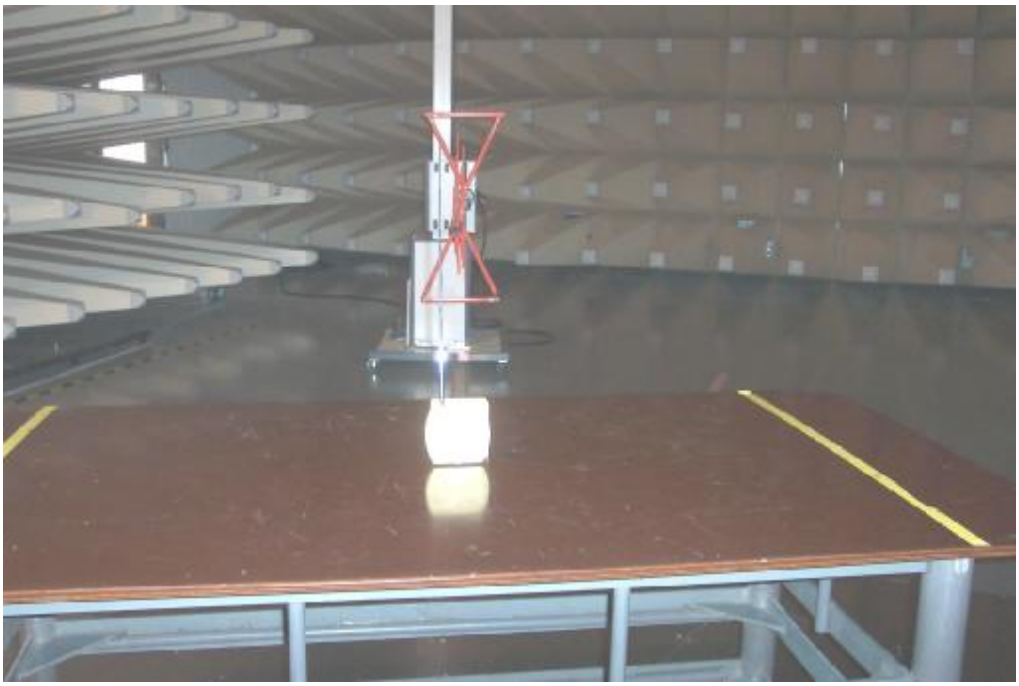
| | |
|---|---|
| Test Requirement: | FCC Part 15 C |
| Test Method: | Based on FCC Part15 C Section 15.227:<br>Operation within the band 26.96 – 27.28 MHz |
| Test Date: | 11 June 2004 |
| Requirements: | The field strength of any emissions which appear outside of this band shall not exceed the general 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.

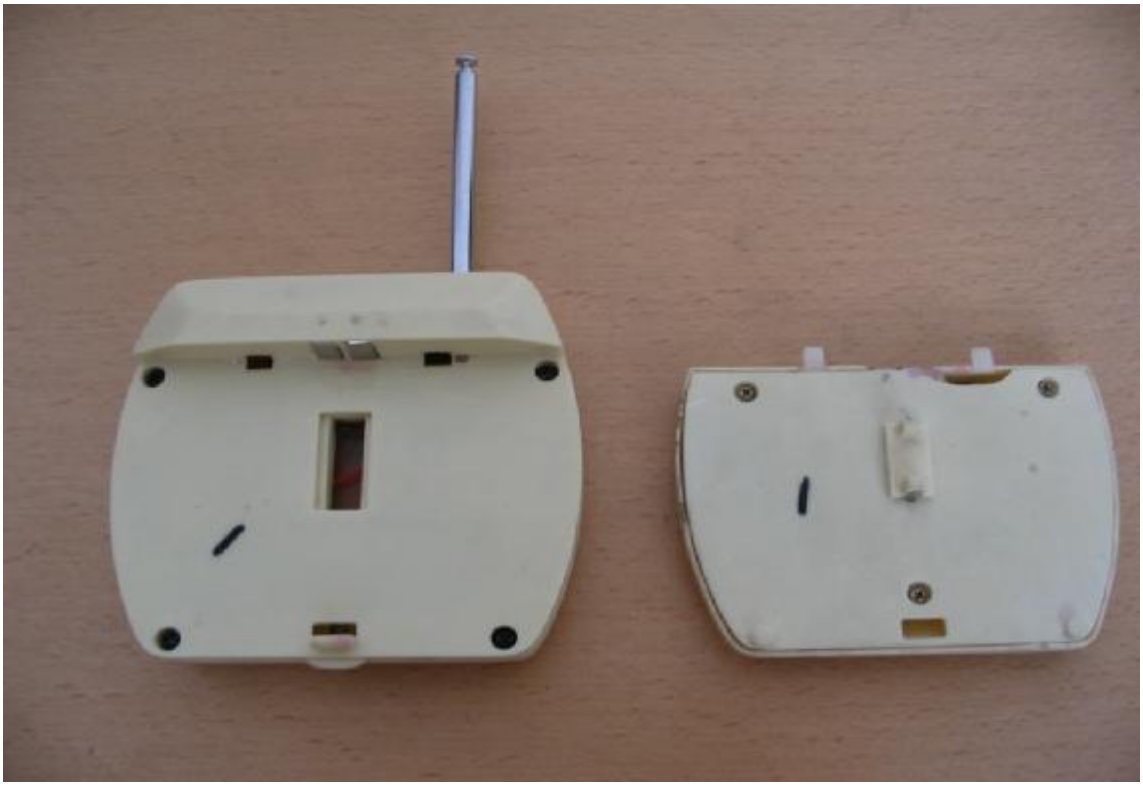


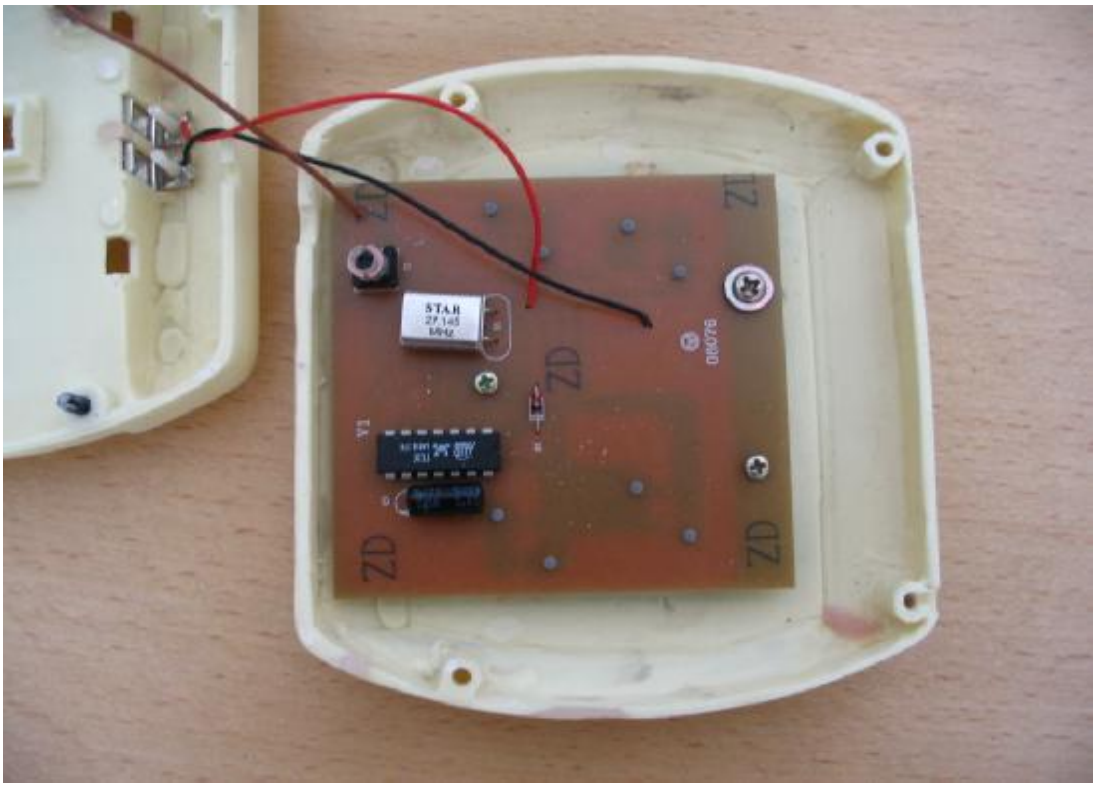

**The results: The unit does meet the FCC Part 15 C requirements.**

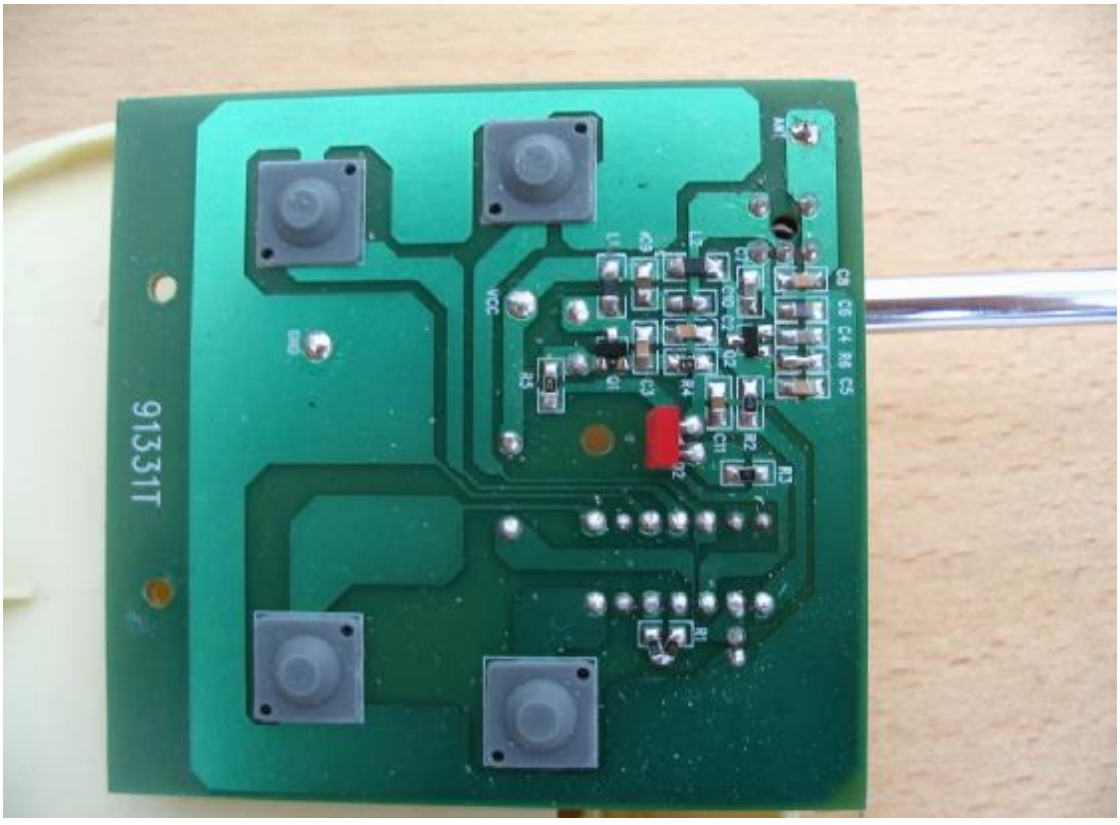
### 4.3.3 Photographs - Radiated Emission Test Setup in Chamber



## 5 Photographs - EUT Constructional Details






91331T