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## Test Report

|                                       |   |
|---------------------------------------|---|
| <b>Applicant</b>                      | Scientific Toys Ltd.  |
| <b>Address</b>                        | Rm. 1108, 11/F., Block B, New Mandarin Plaza,<br>14 Science Museum Road, TST East, Kowloon,<br>Hong Kong                |
| <b>FCC ID Number</b>                  | FCC ID: BY39946-49P   |
| <b>Brand Name(s)</b>                  | None  |
| <b>Model Number(s)/Item Number(s)</b> | 99467, 98866, 98867, 98877, 99357   |
| <b>Product Description</b>            | 49.82-49.90 MHz Wireless Remote Control Toy - RX  |
| <b>Operating Frequency</b>            | 49.860 MHz  |
| <b>Rules/Standards</b>                | Part 15.109 of the FCC Rules,<br>RSS-310 Issue 3 and RSS-Gen Issue 3 of the<br>Industry Canada                          |
| <b>Received Date</b>                  | 29th May, 2013  |
| <b>Tested Date</b>                    | 30th May, 2013  |
| <b>Approved by</b>                    | Dick Chan (Director of Gakkiku)   |
| <b>Tested by</b>                      | <br>Lahm Peng (Engineer of SEM.Test) |
| <b>Signed by</b>                      | <br>Jandy So (Manager of SEM.Test)   |
| <b>Report Number</b>                  | GKK201305290A   |
| <b>Test Results</b>                   | <input checked="" type="checkbox"/> PASSED <input type="checkbox"/> FAILED  |

**GENERAL**

The report is written by Gakkiku Technology Company. The tested device complies with the general approval requirements of the FCC Rules and the Industry Canada as identified in this test report.

**TEST LOCATION**

The tested device was tested at the test site of the SEM.Test Compliance Service Co., Ltd., 3/F, Jinbao Commerce Building, Xin'an Fanshen Road, Bao'an District, Shenzhen, 518101, Guangdong, China. The FCC Recognized 2.948 Listed Test Firm Registration Number is 994117. The Industry Canada IC OATS Filing Number/Assigned Code is 7673A.

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## 1. GENERAL INFORMATION

### 1.1 Product Description for Equipment Under Test (EUT)

#### Client Information

Applicant: Scientific Toys Ltd.  
 Address of applicant: Rm. 1108, 11/F., Block B, New Mandarin Plaza,  
 14 Science Museum Road, TST East, Kowloon, Hong Kong

Manufacturer: Scientific Toys Ltd.  
 Address of manufacturer: Rm. 1108, 11/F., Block B, New Mandarin Plaza,  
 14 Science Museum Road, TST East, Kowloon, Hong Kong

#### General Description of EUT

| Item  | Description                                      |
|---|--|
| Product Description:  | 49.82-49.90 MHz Wireless Remote Control Toy - RX |
| Brand Name(s):  | None   |
| Model Number(s)/Item Number(s):   | 99467, 98866, 98867, 98877, 99357                |
| Power Source:   | DC 9.6V Ni-MH Rechargeable Battery Pack          |
| Rated Current:  | /  |
| For more information refer to the circuit diagram form and the user's manual. |  |

*The test data is gathered from a production sample, provided by the manufacturer.*

### 1.2 Test Standards

The following report is prepared on behalf of the Scientific Toys Ltd. in accordance with Part 2 Subpart J and Part 15 Subparts B of the FCC Rules.

The objective is to determine compliance with Part 15.109 of the FCC Rules and RSS-310 Issue 3 & RSS-Gen Issue 3 of the Industry Canada.

**Maintenance of compliance** is the responsibility of the manufacturer. Any modification of the product, which results in lowering the emission/immunity, should be checked to ensure compliance has been maintained.

### 1.3 Test Methodology

All measurements contained in this report were conducted with ANSI Standard C63.4-2009, American National Standard Institute for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

The equipment under test (EUT) was configured to measure its highest possible susceptibility against the tested phenomena. The test modes were adapted accordingly in reference to the Operating Instructions.

### 1.4 EUT Exercise Software

The EUT exercise program used during the testing was designed to exercise the system components. The test software is started while the whole system is on.

### 1.5 Accessories Equipment List and Details

| Description | Manufacturer | Model | Serial Number |
|-------------|--------------|-------|---------------|
| /           | /            | /     | /             |

### 1.6 EUT Cable List and Details

| Cable Description | Length (M) | Shielded/<br>Unshielded | With Core/<br>Without Core |
|-------------------|------------|-------------------------|----------------------------|
| /                 | /          | /                       | /                          |

**2. SUMMARY OF TEST RESULTS**

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| <b>Description of Test</b>                                | <b>Result</b> |
|---|---------------|
| Part 15.107(a) Conducted Emission                         | N/A           |
| Part 15.109(a) Radiated Emission,<br>RSS-310 Issue 3 §3.1 | Compliant     |

### 3. Part 15.109(a) & RSS-310 Issue 3 §3.1 - RADIATED EMISSION

#### 3.1 Measurement Uncertainty

Base on NIS 81, the Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is  $\pm 5.10$  dB.

#### 3.2 Test Equipment List and Details

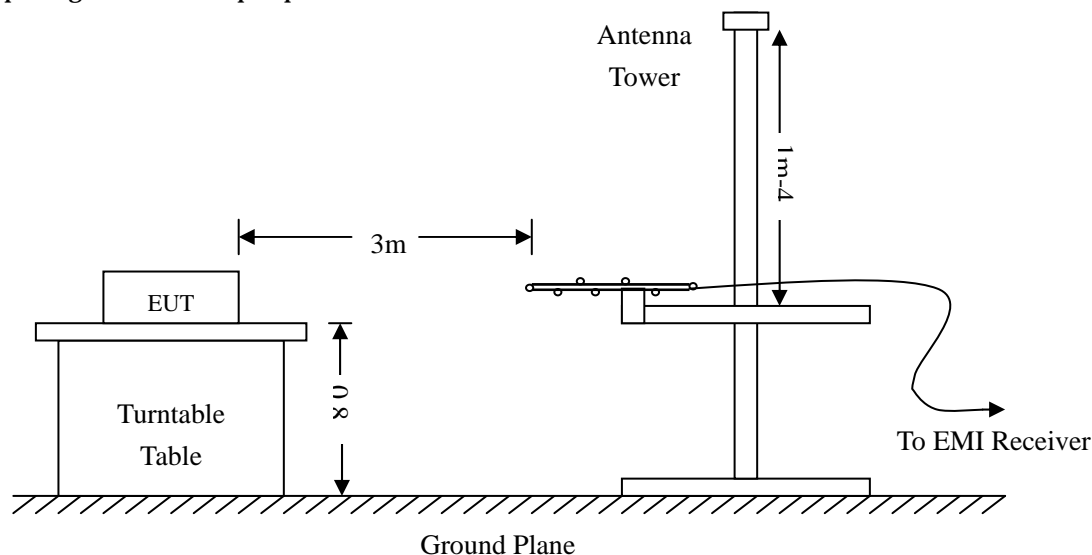
| Description              | Manufacturer         | Model    | Serial Number | Cal. Date  | Due. Date  |
|--------------------------|----------------------|----------|---------------|------------|------------|
| Spectrum Analyzer        | R&S                  | FSP      | 836079/035    | 2013-03-28 | 2014-03-27 |
| EMI Test Receiver        | R&S                  | ESVB     | 825471/005    | 2013-03-28 | 2014-03-27 |
| Positioning Controller   | C&C                  | CC-C-1F  | N/A           | 2013-03-28 | 2014-03-27 |
| RF Switch                | EM                   | EMSW18   | SW060023      | 2013-03-28 | 2014-03-27 |
| Pre-amplifier            | Agilent              | 8447F    | 3113A06717    | 2013-03-28 | 2014-03-27 |
| Pre-amplifier            | Compliance Direction | PAP-0118 | 24002         | 2013-03-28 | 2014-03-27 |
| Trilog Broadband Antenna | SCHWARZBECK          | VULB9163 | 9163-333      | 2013-02-25 | 2014-02-24 |
| Horn Antenna             | ETS                  | 3117     | 00086197      | 2013-02-25 | 2014-02-24 |
| Signal Generator         | HP                   | 8648A    | 3642U01277    | 2013-03-28 | 2014-03-27 |

#### 3.3 Test Procedure

The setup of EUT is according with ANSI Standard C63.4-2009 measurement procedure. The specification used was with the limits of Part 15.109 & 15.205 of the FCC Rules.

According to ANSI Standard C63.4-2009 § 12.1.1.1 (SUPERREGENERATIVE RECEIVER): A Signal Generator was set to the unit under test operating frequency. An unmodulated continuous wave (CW) signal was radiated at the superregenerative receiver operating frequency to cohere the characteristic broadband emissions from the receiver.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle. The spacing between the peripherals was 10 cm.



### 3.4 Test Receiver Setup

During the radiated emission test, the test receiver was set with the following configurations:

Start Frequency ..... 30 MHz  
 Stop Frequency..... 1000 MHz  
 Sweep Speed ..... Auto  
 IF Bandwidth..... 100 kHz  
 Quasi-Peak Adapter Bandwidth ..... 120 kHz  
 Quasi-Peak Adapter Mode ..... Normal

### 3.5 Corrected Amplitude & Margin Calculation

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

$$\text{Corr. Ampl.} = \text{Indicated Reading} - \text{Corr. Factor}$$

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB $\mu$ V means the emission is 6dB $\mu$ V below the maximum limit for Part 15. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Limit of Part 15 (RSS-310 Issue 3)}$$

### 3.6 Environmental Conditions

|                    |           |
|--------------------|-----------|
| Temperature:       | 25 °C     |
| Relative Humidity: | 54%       |
| ATM Pressure:      | 1011 mbar |

### 3.7 Summary of Test Results/Plots

According to the data, the EUT is complied with the standards under Part 15.109 of the FCC Rules and RSS-310 Issue 3 of the Industry Canada, and had the worst margin of:

**-1.88 dB $\mu$ V at 407.5145 MHz in the Vertical polarization, Receiving mode,  
 30 MHz to 1 GHz, 3 Meters**



**Plot of Radiated Emissions Test Data**

*Radiated Disturbance*

*Product Description: 49.82-49.90 MHz Wireless Remote Control Toy - RX*

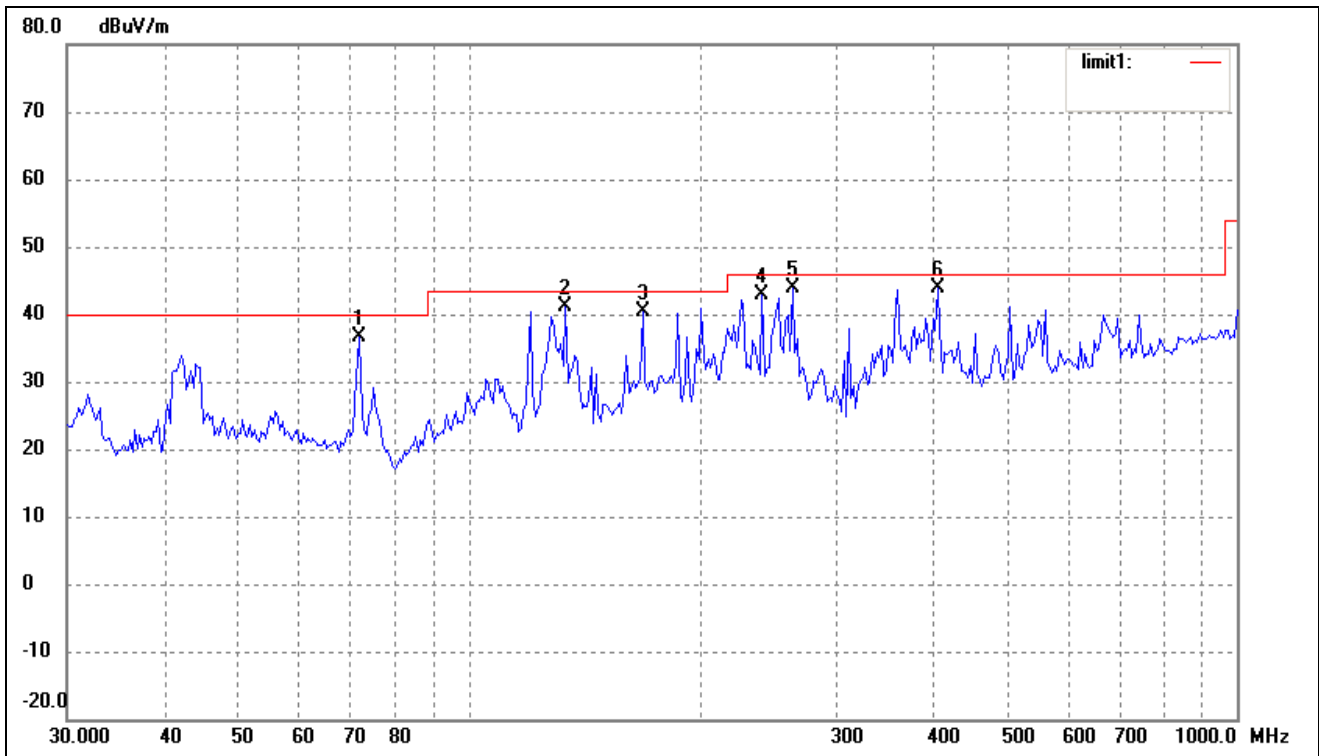
*Model Number(s)/Item Number(s): 99467, 98866, 98867, 98877, 99357*

*Operating Condition: Receiving*

*Test Specification: Horizontal & Vertical*

*Power Source: DC 9.6V Ni-MH Rechargeable Battery Pack*

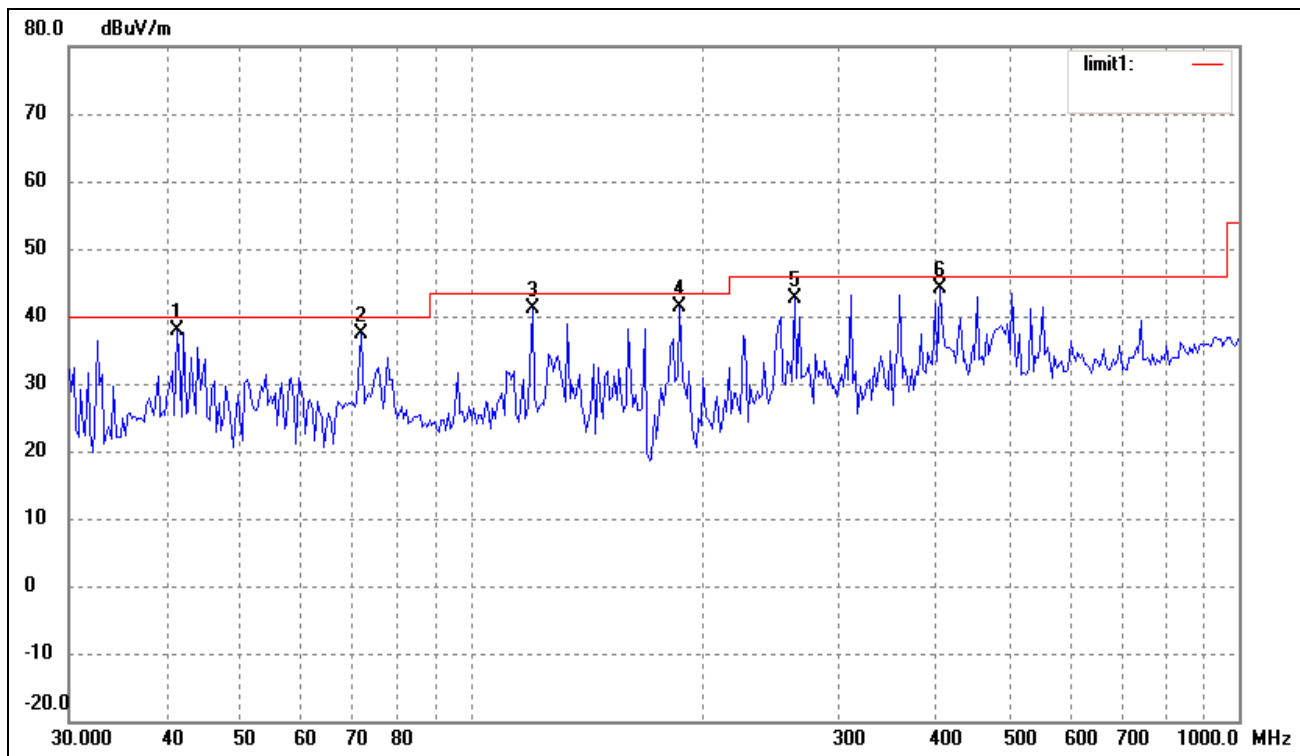
*Horizontal:*



| No. | Frequency (MHz) | Reading (dBuV/m) | Correct Factor(dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (°) | Height (cm) | Remark |
|-----|-----------------|------------------|--------------------|-----------------|----------------|-------------|------------|-------------|--------|
| 1   | 72.0843         | 33.22            | 3.30               | 36.52           | 40.00          | -3.48       | 114        | 110         | QP     |
| 2   | 133.6188        | 36.85            | 4.35               | 41.20           | 43.50          | -2.30       | 42         | 100         | QP     |
| 3   | 168.4138        | 35.59            | 4.83               | 40.42           | 43.50          | -3.08       | 103        | 100         | QP     |
| 4   | 240.8304        | 34.15            | 8.84               | 42.99           | 46.00          | -3.01       | 66         | 100         | QP     |
| 5   | 263.8190        | 34.80            | 9.16               | 43.96           | 46.00          | -2.04       | 99         | 100         | QP     |
| 6   | 407.5145        | 31.73            | 12.22              | 43.95           | 46.00          | -2.05       | 57         | 100         | QP     |

*Note: Emissions attenuated more than 20 dB below the permissible value are not reported.*

Vertical:



| No. | Frequency (MHz) | Reading (dBuV/m) | Correct Factor(dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (°) | Height (cm) | Remark |
|-----|-----------------|------------------|--------------------|-----------------|----------------|-------------|------------|-------------|--------|
| 1   | 41.4215         | 30.59            | 7.25               | 37.84           | 40.00          | -2.16       | 256        | 100         | QP     |
| 2   | 72.0843         | 34.20            | 3.30               | 37.50           | 40.00          | -2.50       | 321        | 100         | QP     |
| 3   | 120.2766        | 35.15            | 5.91               | 41.06           | 43.50          | -2.44       | 15         | 100         | QP     |
| 4   | 187.0958        | 34.80            | 6.49               | 41.29           | 43.50          | -2.21       | 94         | 100         | QP     |
| 5   | 263.8190        | 33.45            | 9.16               | 42.61           | 46.00          | -3.39       | 145        | 100         | QP     |
| 6   | 407.5145        | 31.90            | 12.22              | 44.12           | 46.00          | -1.88       | 62         | 100         | QP     |

Note: Emissions attenuated more than 20 dB below the permissible value are not reported.

\*\*\*\*\* END OF REPORT \*\*\*\*\*