

# TIMCO ENGINEERING INC.

849 NW State Road 45  
Newberry, Florida 32669  
<http://www.timcoengr.com>  
888.472.2424 F 352.472.2030 email: [tei@timcoengr.com](mailto:tei@timcoengr.com)

## Test Report

Product Name: REMOTE CONTROL TRANSMITTER

FCC ID: BY34204-27SP

Applicant:

**SCIENTIFIC TOYS, LTD.  
13/F., CHAI WAN INDUSTRIAL CENTRE  
20 LEE CHUNG STREET CHAI WAN, HONG KONG  
HONG KONG**

**Date Receipt: 6/14/2006**

**Date Tested: 6/16/2006**

APPLICANT: SCIENTIFIC TOYS, LTD.  
FCC ID: BY34204-27SP  
REPORT #: S\SCIENTIF\1261HUT6\1261HUT6TestReport.doc

COVER SHEET

# TIMCO ENGINEERING INC.

849 NW State Road 45  
Newberry, Florida 32669  
<http://www.timcoengr.com>  
888.472.2424 F 352.472.2030 email: [tei@timcoengr.com](mailto:tei@timcoengr.com)

## TABLE OF CONTENTS LIST

**APPLICANT:** SCIENTIFIC TOYS, LTD.

**FCC ID:** BY34204-27SP

### TEST REPORT CONTAINING:

PAGE 1.....TEST EQUIPMENT LIST  
PAGE 2.....TEST PROCEDURE  
PAGE 3-4.....RADIATION INTERFERENCE TEST DATA  
PAGE 5.....OCCUPIED BANDWIDTH  
PAGE 6.....OCCUPIED BANDWIDTH PLOT  
PAGE 7.....TEST SET UP PHOTO

### EXHIBITS INCLUDING:

CONFIDENTIALITY REQUEST LETTER  
BLOCK DIAGRAM  
SCHEMATIC  
INSTRUCTION MANUAL  
LABEL SAMPLE  
LABEL LOCATION  
EXTERNAL PHOTOGRAPHS  
INTERNAL PHOTOGRAPHS  
OPERATIONAL DESCRIPTION  
TEST SET UP PHOTOGRAPH

APPLICANT: SCIENTIFIC TOYS, LTD.  
FCC ID: BY34204-27SP  
REPORT #: S\SCIENTIF\1261HUT6\1261HUT6TestReport.doc

# TIMCO ENGINEERING INC.

849 NW State Road 45  
Newberry, Florida 32669  
http://www.timcoengr.com  
888.472.2424 F 352.472.2030 email: [tei@timcoengr.com](mailto:tei@timcoengr.com)

## EMC Equipment List

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
3/10-Meter OATS	TEI	N/A	N/A	Listed 3/27/04	3/26/07
3-Meter OATS	TEI	N/A	N/A	Listed 1/11/06	1/10/09
Antenna: Biconnical	Eaton	94455-1	1057	CAL 12/12/05	12/12/07
Antenna: Biconnical	Eaton	94455-1	1096	CAL 8/17/04	8/17/06
Antenna: Biconnical	Electro-Metrics	BIA-25	1171	CAL 4/29/05	4/29/07
Analyzer Blue Tower Quasi- Peak Adapter	HP	85650A	2811A01279	CAL 4/13/05	4/13/07
Analyzer Blue Tower RF Preselector	HP	85685A	2926A00983	CAL 9/5/05	9/5/07
Analyzer Blue Tower Spectrum Analyzer	HP	8568B	2928A04729 2848A18049	CAL 4/13/05	4/13/07
LISN	Electro-Metrics	ANS-25/2	2604	CAL 8/27/04	8/27/06
LISN	Electro-Metrics	EM-7820	2682	CAL 4/28/05	4/28/07
Antenna: Log- Periodic	Eaton	96005	1243	CAL 12/14/05	12/14/07
Antenna: Passive Loop	EMC Test Systems	EMCO 6512	9706-1211	CAL 4/27/06	4/27/08

APPLICANT: SCIENTIFIC TOYS, LTD.

FCC ID: BY34204-27SP

REPORT #: S\SCIENTIF\1261HUT6\1261HUT6TestReport.doc

# TIMCO ENGINEERING INC.

849 NW State Road 45  
Newberry, Florida 32669  
<http://www.timcoengr.com>  
888.472.2424 F 352.472.2030 email: [tei@timcoengr.com](mailto:tei@timcoengr.com)

## TEST PROCEDURE

**GENERAL:** This report shall NOT be reproduced except in full without the written approval of TIMCO ENGINEERING, INC.

**RADIATION INTERFERENCE:** The test procedure used was ANSI STANDARD C63.4-2003 using a HEWLETT PACKARD spectrum analyzer with a pre-selector. The bandwidth of the spectrum analyzer was 100 kHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The resolution bandwidth was 100 kHz and the video bandwidth was 300 kHz. The ambient temperature of the UUT was 80°C with a humidity of 76%.

**FORMULA OF CONVERSION FACTORS:** The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB. The gain of the Pre-selector was accounted for in the Spectrum Analyzer Meter Reading.

**Example:**

Freq (MHz) METER READING + ACF = FS  
33            20 dBuV + 10.36 dB = 30.36 dBuV/m @ 3m

**ANSI STANDARD C63.4-2003 10.1.7 MEASUREMENT PROCEDURES:** The unit under test was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The table used for radiated measurements is capable of continuous rotation.

When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

APPLICANT: SCIENTIFIC TOYS, LTD.  
FCC ID: BY34204-27SP  
REPORT #: S\SCIENTIF\1261HUT6\1261HUT6TestReport.doc

# TIMCO ENGINEERING INC.

849 NW State Road 45  
Newberry, Florida 32669  
<http://www.timcoengr.com>  
888.472.2424 F 352.472.2030 email: [tei@timcoengr.com](mailto:tei@timcoengr.com)

**NAME OF TEST:** RADIATION INTERFERENCE

**RULES PART NO.:** 15.227

**REQUIREMENTS:** CARRIER FREQUENCY WILL NOT EXCEEDS 80 dBuV/m AT 3M.  
OUT-OF-BAND EMISSIONS SHALL NOT EXCEED:

30 - 88 MHz	40.0 dBuV/M MEASURED AT 3 METERS
88 - 216 MHz	43.5 dBuV/M
216 - 960 MHz	46.0 dBuV/m
ABOVE 960 MHz	54.0 dBuV/m

## TEST DATA:

Emission Frequency MHz	Meter Reading dBuV	Ant. Pol.	Coax Loss dB	Correction Factor dB	Field Strength dBuV/m	Margin dB
27.14	13.8	H	0.80	34.16	48.76	31.24
27.14	19.5	V	0.80	34.16	54.46	25.54
54.18	16.7	V	1.01	11.20	28.91	11.09
54.28	16.2	H	1.01	11.20	28.41	11.59
81.10	18.6	H	1.24	6.73	26.57	13.43
81.31	14.7	V	1.24	6.76	22.70	17.30
108.43	8.3	H	1.46	12.29	22.05	21.45
108.43	8.3	V	1.46	12.49	22.25	21.25
108.50	10.3	H	1.46	12.30	24.06	19.44
135.48	7.6	V	1.65	12.98	22.23	21.27
135.63	14.2	H	1.65	13.10	28.95	14.55
162.64	8.3	H	1.84	14.26	24.40	19.10
162.65	8.6	V	1.84	15.38	25.82	17.68
189.93	6.7	V	2.03	17.40	26.13	17.37
189.98	8.2	H	2.03	17.40	27.63	15.87
217.16	8.5	H	2.19	11.59	22.28	23.72
217.16	11.6	V	2.19	11.46	25.25	20.75
244.23	16.5	V	2.32	12.15	30.97	15.03
244.29	6.2	H	2.32	12.17	20.69	25.31
271.45	6.7	H	2.46	13.24	22.40	23.60
271.45	14.3	V	2.46	13.27	30.03	15.97

SAMPLE CALCULATION: FSdBuV/m = MR (dBuV) + ACFdB.

**TEST PROCEDURE:** The procedure used was ANSI STANDARD C63.4-2003. The spectrum was scanned from 30 MHz to 1000 MHz. When an emission was found, the table was rotated to produce the maximum signal strength. The antenna was placed in both the horizontal and vertical planes and the worse case emissions were reported. The UUT was tested in 3 orthogonal planes.

**PERFORMED BY:** FRANK DENUZZO

**DATE:** 6/16/2006

APPLICANT: SCIENTIFIC TOYS, LTD.

FCC ID: BY34204-27SP

REPORT #: S\SCIENTIF\1261HUT6\1261HUT6TestReport.doc

# TIMCO ENGINEERING INC.

849 NW State Road 45  
Newberry, Florida 32669  
<http://www.timcoengr.com>  
888.472.2424 F 352.472.2030 email: [tei@timcoengr.com](mailto:tei@timcoengr.com)

**APPLICANT:** SCIENTIFIC TOYS, LTD.

**FCC ID:** BY34204-27SP

**NAME OF TEST:** Occupied Bandwidth

**RULES PART NO.:** 15.227

**REQUIREMENTS:** The field strength of any emissions appearing outside of 26.96 and 27.28MHz shall be attenuated to the general limits of 15.209.

**TEST DATA:**

THE GRAPH ON THE NEXT PAGE REPRESENTS THE EMISSIONS TAKEN FOR THE DEVICE.

**METHOD OF MEASUREMENT:** A small sample of the transmitter output was fed into the spectrum analyzer and the attached plot was taken. The vertical scale is set to 10 dB per division.

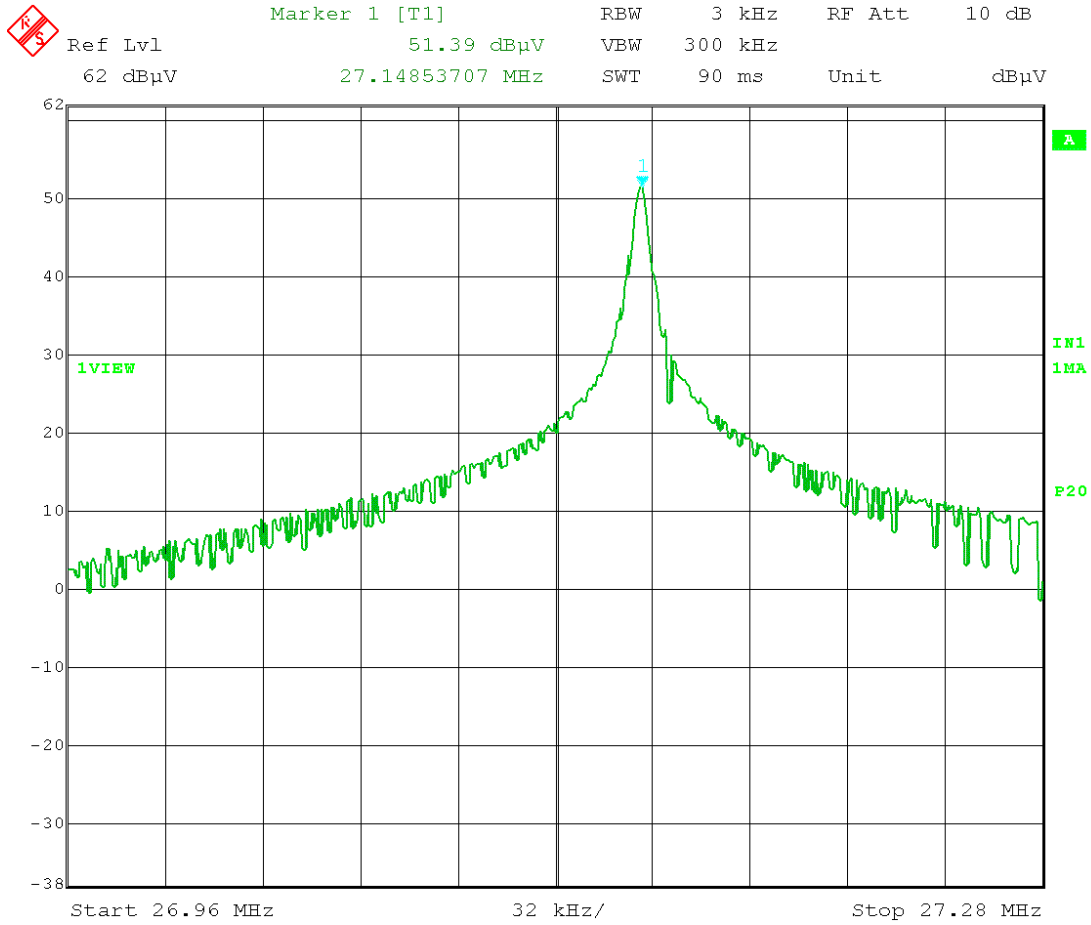
**PERFORMED BY:** FRANK DENUZZO

**DATE:** 06/16/2006

APPLICANT: SCIENTIFIC TOYS, LTD.  
FCC ID: BY34204-27SP  
REPORT #: S\SCIENTIF\1261HUT6\1261HUT6TestReport.doc

# TIMCO ENGINEERING INC.

849 NW State Road 45  
Newberry, Florida 32669  
<http://www.timcoengr.com>  
888.472.2424 F 352.472.2030 email: [tei@timcoengr.com](mailto:tei@timcoengr.com)



Date: 16.JUN.2006 08:48:11

APPLICANT: SCIENTIFIC TOYS, LTD.  
FCC ID: BY34204-27SP  
REPORT #: S\SCIENTIF\1261HUT6\1261HUT6TestReport.doc

# TIMCO ENGINEERING INC.

849 NW State Road 45  
Newberry, Florida 32669  
<http://www.timcoengr.com>  
888.472.2424 F 352.472.2030 email: [tei@timcoengr.com](mailto:tei@timcoengr.com)

TEST SET UP PHOTO



APPLICANT: SCIENTIFIC TOYS, LTD.  
FCC ID: BY34204-27SP  
REPORT #: S\SCIENTIF\1261HUT6\1261HUT6TestReport.doc