THRUlab & Engineering.

RM302,BOKJO,29-15 , CHONGPA3-DONG
YONGSAN-GU, SEOUL, KOREA
81221095059F81221095056 email thrukang@kornet.net

Test Report

Product Name: 49.82-49.90 MHz Wireless R/C Toy - TX

FCC ID: BY32074-49SH

Applicant:
SCIENTIFIC TOYS, LTD.

Rm. 1108, 11/F., Block B
New Mandarin Plaza
14 Science Museum Road TST, Kowloon
Hong Kong

Date Receipt:April/26/2005

Date Tested: May/10/2005

THRUlab & Engineering.

RM302,BOKJO,29-15 , CHONGPA3-DONG
YONGSAN-GU, SEOUL, KOREA
81221095059F81221095056 email thrukang@kornet.net

TABLE OF CONTENTS LIST

APPLICANT: SCIENTIFIC TOYS, LTD.

FCC ID: BY32074-49SH

TEST REPORT CONTAINING:

EXHIBITS CONTAINING:

THRUlab & Engineering.

RM302,BOKJO,29-15 , CHONGPA3-DONG
YONGSAN-GU, SEOUL, KOREA
81221095059F81221095056 email thrukang@kornet.net

Test Equipment List

DEVICE	MODEL	MFGR	SERNO	DUE.CAL
EMI Test Receiver	ESVS 10	Rohde & Schwarz	830489/001	2006.04.23.
Spectrum Analyzer	8566B	Hewlett Packard	2311A02394	2006.04.23
Spectrum Display	85662A	Hewlett Packard	2542A12429	2006.04.23.
Quasi-Peak Adapter	85650A	Hewlett Packard	2521A00887	2006.04.23.
RF Preselector	85685A	Hewlett Packard	2648A00504	2006.04.23
Pre-Amplifier	8449B	Hewlett Packard	3008A00375	2006.04.23.
Pre-Amplifier	8447F	Hewlett Packard	3113A05367	2006.04.23.
Spectrum Monitor	EZM	Rohde & Schwarz	862304/007	2006.04.23.
Bico-Antenna	94455-1	Eaton	977	2007.04.01.
Log-Periodic Antenna	3146	EMCO	2051	2007.04.01.
Dipole Antenna	TDA25/1/2	Electro Metrics	176/200/200	2007.04.01.
Horn Antenna	SAS-571	A.H Systems	414	2007.04.01.
Spectrum Analyzer	R3261C	Advantest	71720189	2006.04.23
LISN	KNW-242	Kyoritsu	8-923-2	2007.04.25.
LISN	8012-50-R-24	Solar	8379121	2007.04.25..
Loop Ant	6507	EMCO	1435	2005.10.06.
Signal Generator	SMS	Rohde & Schwarz	872165/100	2006.04.23.
Modulation Analyzer	8901B	Hewlett Packard	3438A05094	2006.04.23.
Frequency Counter	CMC251	Tektronic	CMC-251TW52489	2006.04.23.

THRUlab & Engineering.

RM302,BOKJO,29-15 , CHONGPA3-DONG
YONGSAN-GU, SEOUL, KOREA
81221095059F81221095056 email thrukang@kornet.net

TEST PROCEDURE

GENERAL: This report shall NOT be reproduced except in full without the written approval of THRULab & ENGINEERING.

RADIATION INTERFERENCE: The test procedure used was ANSI STANDARD C63.4-1992 using a HEWLETT PACKARD spectrum analyzer with a preselector. 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 22ºC with a humidity of 40%.

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 Preselector 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 C63.4-1992 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.

The situation was similar for the conducted measurement except that the table did not rotate. The EUT was setup as described in ANSIC63.4-1992 with the EUT 40 cm from the vertical ground wall.:**Not Applicable, battery operated.**

THRUlab & Engineering.
RM302,BOKJO,29-15 , CHONGPA3-DONG
YONGSAN-GU, SEOUL, KOREA
81221095059F81221095056 email thrukang@kornet.net

APPLICANT: SCIENTIFIC TOYS, LTD.

FCC ID: BY32074-49SH

NAME OF TEST: RADIATION INTERFERENCE

RULES PART NO.: 15.235

REQUIREMENTS: CARRIER FREQUENCY SHALL NOT EXCEEDS 10,000 microvolts/meter AT 3M.

Frequency (MHz)	Reading Receiver dBuv/m PK	Polar	Ant Height m	Antenna Factor dB	Cable Loss dB	Result dBuv PK	Duty Cycle dB	Result dBuv AV	Limit dBuv/m PK	Limit dBuv/m AV	Margin dBuv/m PK	Margin dBuv/m AV
49.848	28.6	H	2.7	10.9	1.0	**40.5**	**-23.02**	**17.5**	100	80	-59.5	-62.5
49.848	39.4	V	1.85	10.9	1.0	**51.3**	**-23.02**	**28.3**	100	80	-48.7	-51.7

Duty Cycle :20log((420usec*4 +240usec*20)/91.80msec)= -23.02

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

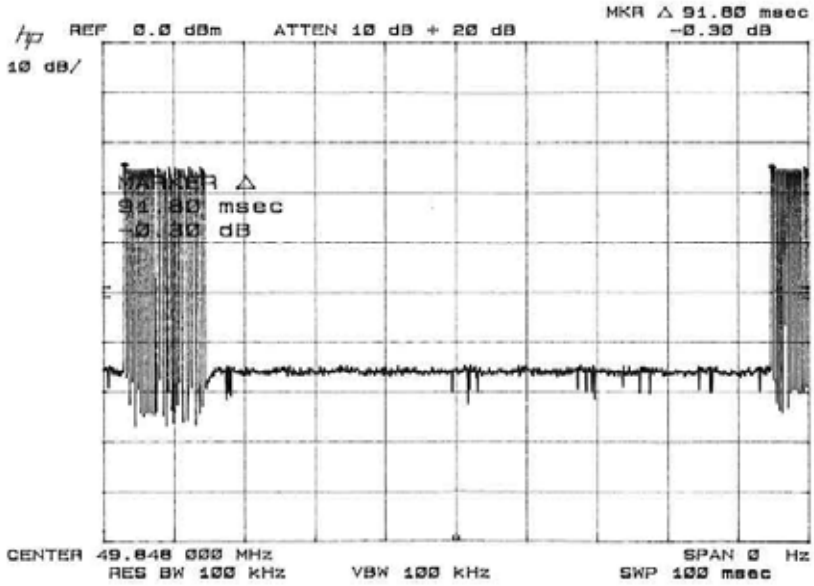
TEST PROCEDURE: The procedure used was ANSI STANDARD C63.4-1992. The spectrum was scanned from 30 MHz to 1000 MHz. When an emission was found, the table was rotated to produce the maximum signal strength. The antenna was placed in both the horizontal and vertical planes and the worse case emissions were reported. The UUT was tested in 3 orthogonal planes.

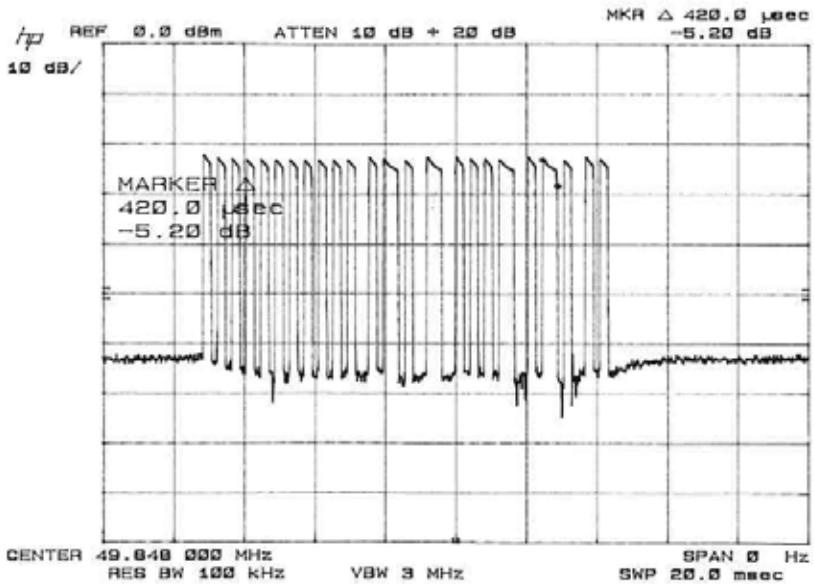
TEST RESULTS: THE UNIT DOES MEET THE FCC REQUIREMENTS.

PERFORMED BY: S.W.Ahn **DATE: May/10/2005**

THRUlab & Engineering.
RM302,BOKJO,29-15 , CHONGPA3-DONG
YONGSAN-GU, SEOUL, KOREA
81221095059F81221095056 email thrukang@kornet.net

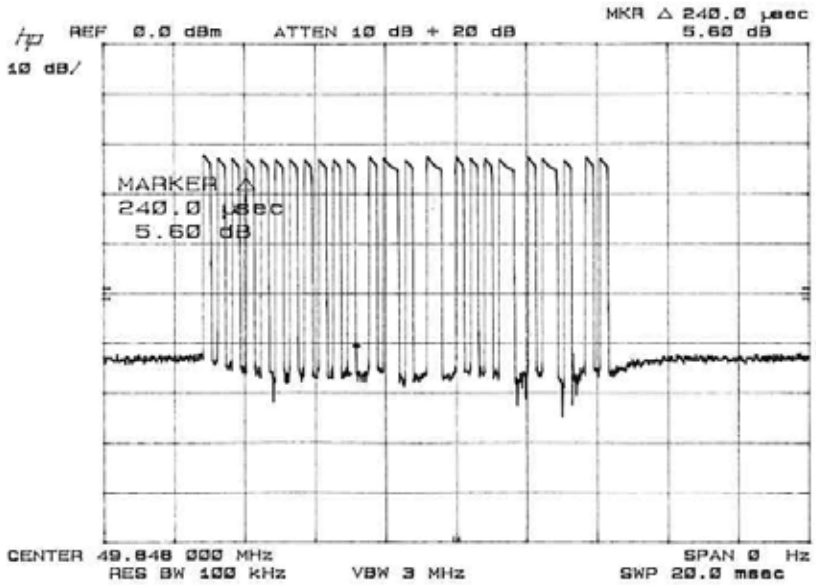
Duty Cycle Plot





THRUlab & Engineering.

RM302,BOKJO,29-15 , CHONGPA3-DONG
YONGSAN-GU, SEOUL, KOREA
81221095059F81221095056 email thrukang@kornet.net



THRUlab & Engineering.
RM302,BOKJO,29-15 , CHONGPA3-DONG
YONGSAN-GU, SEOUL, KOREA
81221095059F81221095056 email thrukang@kornet.net

APPLICANT: SCIENTIFIC TOYS, LTD.

FCC ID: BY32074-49SH

NAME OF TEST: RADIATION INTERFERENCE

RULES PART NO.: 15.235

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:

No	Emission Frequency (MHz)	Meter Reading dBuV	Ant. Polaritry	Correction Factor dB	Cable Loss dB	Field Strength (dBuv/m)	Margin (dBuv)	Limit (dBuv/m)
1	99.70	18.2	H	11.2	1.6	31.0	-12.5	43.5
2	149.56	10.6	H	16.7	2.1	29.4	-14.1	43.5
3	199.41	8.6	H	16.0	2.5	27.1	-16.4	43.5
4	249.26	7.8	H	11.8	3.1	22.7	-23.3	46.0
5	299.11	5.9	H	16.3	3.4	25.6	-20.4	46.0
6	348.96	5.7	H	14.9	3.8	24.4	-21.6	46.0
7	398.80	5.5	H	15.4	4.2	25.1	-20.9	46.0
8	448.65	5.1	H	16.4	4.5	26.0	-20.0	46.0
9	498.49	5.0	H	18.2	4.9	28.1	-17.9	46.0

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

TEST PROCEDURE: ANSI STANDARD C63.4-1992 using a Hewlett Packard Model 8566B spectrum analyzer, a Hewlett Packard Model 85685A Preselector, a Hewlett Packard Model 85650A Quasi-Peak adapter, and an appropriate antenna – see the test equipment list. The bandwidth of spectrum analyzer was 100 kHz with an appropriate sweep speed. 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.

TEST RESULTS: THE UNIT DOES MEET THE FCC REQUIREMENTS.

PERFORMED BY: S.W.Ahn **DATE: May/10/2005**

THRUlab & Engineering.
RM302,BOKJO,29-15 , CHONGPA3-DONG
YONGSAN-GU, SEOUL, KOREA
81221095059F81221095056 email thrukang@kornet.net

APPLICANT: SCIENTIFIC TOYS, LTD.

FCC ID: BY32074-49SH

NAME OF TEST: RADIATION INTERFERENCE

RULES PART NO.: 15.235

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:

No	Emission Frequency (MHz)	Meter Reading dBuV	Ant. Polaritry	Correction Factor dB	Cable Loss dB	Field Strength (dBuv/m)	Margin (dBuv)	Limit (dBuv/m)
1	99.70	19.3	V	11.2	1.6	32.1	-11.4	43.5
2	149.56	10.9	V	16.7	2.1	29.7	-13.8	43.5
3	199.41	10.6	V	16.0	2.5	29.1	-14.4	43.5
4	249.26	9.6	V	11.8	3.1	24.5	-21.5	46.0
5	299.11	7.4	V	16.3	3.4	27.1	-18.9	46.0
6	348.96	6.5	V	14.9	3.8	25.2	-20.8	46.0
7	398.80	5.9	V	15.4	4.2	25.5	-20.5	46.0
8	448.65	6.2	V	16.4	4.5	27.1	-18.9	46.0
9	498.49	6.1	V	18.2	4.9	29.2	-16.8	46.0

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

TEST PROCEDURE: ANSI STANDARD C63.4-1992 using a Hewlett Packard Model 8566B spectrum analyzer, a Hewlett Packard Model 85685A Preselector, a Hewlett Packard Model 85650A Quasi-Peak adapter, and an appropriate antenna – see the test equipment list. The bandwidth of spectrum analyzer was 100 kHz with an appropriate sweep speed. 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.

TEST RESULTS: THE UNIT DOES MEET THE FCC REQUIREMENTS.

PERFORMED BY: S.W.Ahn **DATE: May/10/2005**

THRUlab & Engineering.
RM302,BOKJO,29-15 , CHONGPA3-DONG
YONGSAN-GU, SEOUL, KOREA
81221095059F81221095056 email thrukang@kornet.net

APPLICANT: SCIENTIFIC TOYS, LTD.

FCC ID: BY32074-49SH

NAME OF TEST: RADIATION INTERFERENCE

RULES PART NO.: 15.209

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:

No	Emission Frequency (MHz)	Meter Reading dBuV/m	Ant. Polaritry	Correction Factor dB	Cable Loss dB	Field Strength (dBuv/m)	Margin (dBuv)	Limit (dBuv/m)
1	35.46	6.0	V	12.9	0.7	19.7	-20.3	40.0
2	43.09	4.7	H	12.2	0.9	17.8	-22.2	40.0
3	59.33	2.6	V	7.6	1.1	11.3	-28.7	40.0
4	66.42	4.6	V	6.2	1.2	11.9	-28.1	40.0
5	78.93	5.3	H	7.8	1.3	14.4	-25.6	40.0
6	144.62	3.2	V	15.8	2.1	21.1	-22.4	43.5
7	179.73	2.9	V	14.7	2.3	19.8	-23.7	43.5
8	225.21	3.1	H	10.8	2.8	16.8	-29.2	46.0
9	284.81	2.1	V	17.5	3.3	22.9	-23.1	46.0
10	348.02	3.1	H	15.0	3.8	21.9	-24.1	46.0
11	391.22	3.5	V	15.3	4.1	22.9	-23.1	46.0
12	450.50	3.9	V	16.5	4.6	25.0	-21.0	46.0
13	544.10	3.2	V	18.1	5.2	26.5	-19.5	46.0
14	653.21	4.0	H	20.3	5.9	30.2	-15.8	46.0
15	748.45	3.8	H	21.0	6.5	31.3	-14.7	46.0
16	834.62	2.8	V	22.6	7.0	32.3	-13.7	46.0

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

TEST PROCEDURE: ANSI STANDARD C63.4-1992 using a Hewlett Packard Model 8566B spectrum analyzer, a Hewlett Packard Model 85685A Preselector, a Hewlett Packard Model 85650A Quasi-Peak adapter, and an appropriate antenna – see the test equipment list. The bandwidth of spectrum analyzer was 100 kHz with an appropriate sweep speed. 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.

TEST RESULTS: THE UNIT DOES MEET THE FCC REQUIREMENTS.

PERFORMED BY: S.W.Ahn **DATE: May/10/2005**

THRUlab & Engineering.
RM302,BOKJO,29-15 , CHONGPA3-DONG
YONGSAN-GU, SEOUL, KOREA
81221095059F81221095056 email thrukang@kornet.net

APPLICANT: SCIENTIFIC TOYS, LTD.

FCC ID: BY32074-49SH

NAME OF TEST: Occupied Bandwidth

RULES PART NO.: 15.235

REQUIREMENTS: The field strength of any emissions appearing between the band edges and up to 10 kHz above and below the band edges shall be attenuated at least 26 dB below the level of the unmodulated carrier or to the general limits of 15.209, whichever permits the higher emission levels.

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	

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.

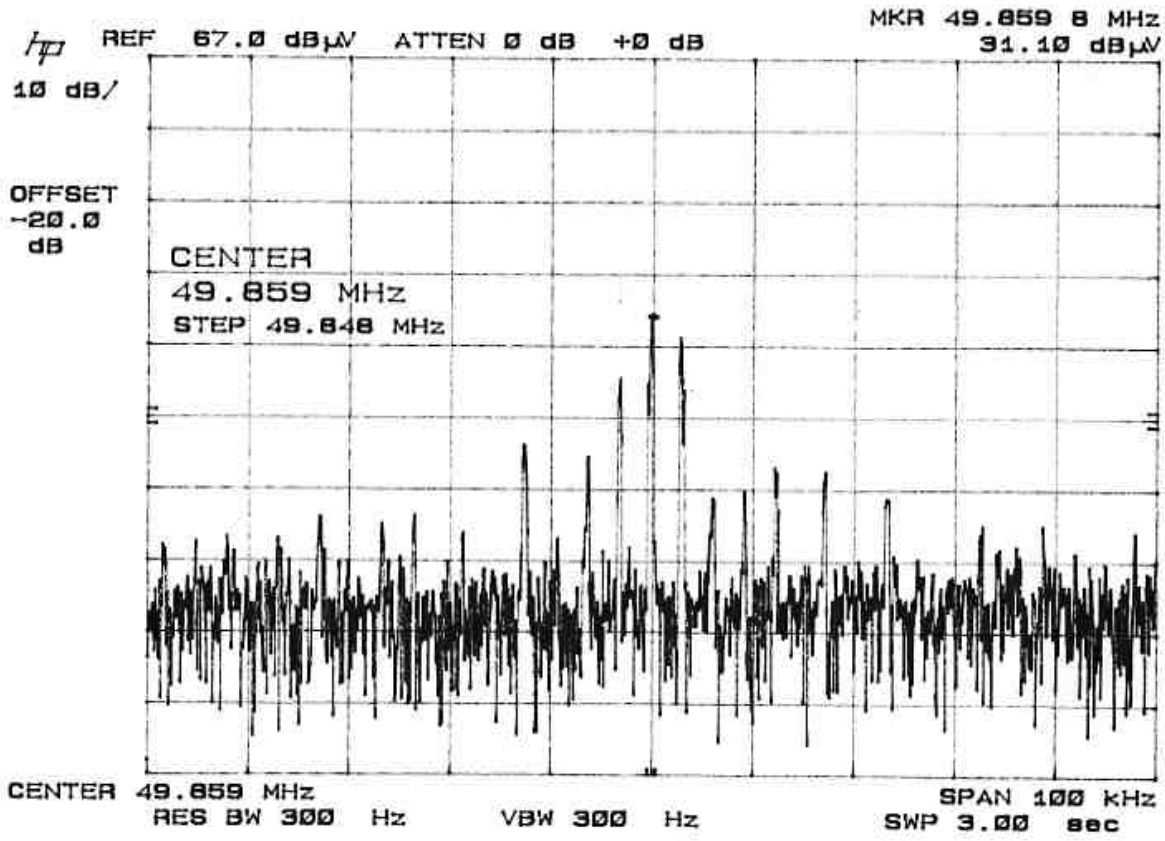
TEST RESULTS: The unit DOES meet the FCC requirements.

PERFORMED BY: S.W.Ahn **DATE: May/10/2005**

THRUlab & Engineering.

RM302,BOKJO,29-15 , CHONGPA3-DONG
YONGSAN-GU, SEOUL, KOREA
81221095059F81221095056 email thrukang@kornet.net

OCCUPIED BANDWIDTH PLOT(1CH)



THRUlab & Engineering.

RM302,BOKJO,29-15 , CHONGPA3-DONG
YONGSAN-GU, SEOUL, KOREA
81221095059F81221095056 email thrukang@kornet.net

OCCUPIED BANDWIDTH PLOT(2ch)