

**ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
CERTIFICATION TO FCC PART 15 REQUIREMENTS**

for

INTENTIONAL RADIATOR

49MHz RADIO CONTROL TRANSMITTER

MODEL NO: 95087-49T

BRAND NAME: TYCO R/C-6V THUNDERBIRD

FCC ID NO: APB95087-00A4T

REPORT NO: 01U0711-1

ISSUE DATE: MARCH 13, 2001

Prepared for

**MATTEL MT. LAUREL
6000 MIDATLANTIC DRIVE
MOUNT LAUREL, NJ 08054
USA**

Prepared by

**COMPLIANCE ENGINEERING SERVICES, INC.
561 F MONTEREY ROAD
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EXHIBITS

1. Proposed FCC ID Label Format
2. Authorization Letter
3. EUT Photographs
4. Schematic Diagram
5. User Manual

1. VERIFICATION OF COMPLIANCE

COMPANY NAME : MATTEL MT. LAUREL
6000 MIDATLANTIC DRIVE
MOUNT LAUREL, NJ 08054
USA

CONTACT PERSON : FRANK WINKLER, SENIOR PROJECT ENGINEER

TELEPHONE NO. : (856) 840-1259

EUT DESCRIPTION : 49MHz RADIO CONTROL TRANSMITTER

MODEL NAME/NUMBER : 95087-49T

BRAND NAME : TYCO R/C-6V THUNDERBIRD

SERIAL NUMBER : N/A

FCC ID : APB95087-00A4T

DATE TESTED : MARCH 19, 2001

REPORT NUMBER : 01U0711-1

EQUIPMENT TYPE	49.86 MHz TRANSMITTER
MEASUREMENT PROCEDURE	ANSI 63.4 / 1992
LIMIT TYPE	CERTIFICATION
FCC RULE	CFR 47, PART 15.235

The above equipment was tested by Compliance Engineering Services, Inc. for compliance with the requirements set forth in CFR 47, PART 15. This said equipment in the configuration described in this report shows that maximum emission levels emanating from equipment are within the compliance requirements.

Warning : This document reports conditions under which testing was conducted and results of tests performed. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification will constitute fraud and shall nullify the document.

Tested and/or Reviewed By:

Released For CCS By:

MIKE ZHU
SENIOR EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

STEVE CHENG
EMC ENGINEERING MANAGER
COMPLIANCE CERTIFICATION SERVICES

2. PRODUCT DESCRIPTION

CHASSIS TYPE	PLASTIC
Fundamental Frequency	49.86 MHz
Power Source	9VOLT BATTERY
Transmitting Time	CONTINUOUS
Type of Antenna	PERMANENTLY ATTACHED
No. of Channel	1
NO. OF LAYER	1
Associated Receiver	APB95086-00A4R

3. TEST FACILITY

The 3/10/30 meter open area test site and conducted measurement facility used to collect the radiated data is located at 561F Monterey Road, Morgan Hill, California, U.S.A. A detailed description of the test facility was submitted to the Commission on May 27, 1994.

4. MEASUREMENT STANDARDS

The site is constructed and calibrated in conformance with the requirements of ANSI C63.4/1992.

5. TEST METHODOLOGY

For an intentional radiator, the spectrum shall be investigated from the lowest radio frequency signal generated in the device, without going below 9 KHz, up to at least the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower. (CFR 47 Section 15.33)

6. MEASUREMENT EQUIPMENT USED

Manufacturer	Model Number	Description	Cal Due Date
H.P.	8568B	Spectrum Analyzer (100Hz - 1.5GHz)	07/14/01
SCHAFFNER-CHASE	CBL6112B	Antenna, Bilog (30-2000MHz)	12/11/01
H.P.	85650A	Quasi-Peak Detector (9 K-1 GHz)	01/18/02
H.P.	8447D	Pre-Amplifier (0.1-1300 MHz)	09/19/01
H.P.	85662A	Spectrum Display	01/18/02
BATTERY	Energizer	9Volt Nicad or 9V Alkaline (4 x AA) 6LR61-6AM6	N/A

7. TEST PROCEDURES AND TEST RESULTS

RADIATED EMISSION TEST: (15.235 (a))

Test Procedure

1. The EUT was placed on a wooden table on the outdoor ground plane. The search antenna was placed 3 meter from the EUT. The EUT was placed in X,Y, and Z position to simulate the actual usage.
2. The turntable was slowly rotated to locate the direction of maximum emission at each EUT position. Once the maximum direction and EUT position was determined, the search antenna was raised and lowered in both vertical and horizontal polarization. The maximum reading so obtained are recorded in the data list below.

Test Result: Peak emission was under average limit. Refer to attached plots.

RADIATED EMISSION TEST: (15.235 (b))

Test Requirement : The field strength between the band edges and up to 10kHz 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 in 15.209, which permits the higher emission levels. All emissions more than 10KHz from the band edges shall be below the levels specified in 15.209.

Test Procedure:

1. The EUT was placed on a wooden table on the outdoor ground plane. The search antenna was placed 3 meter from the EUT. The EUT was placed in X, Y, and Z position to simulate the actual usage.
2. The turntable was slowly rotated to locate the direction of maximum direction and EUT position was determined, the search antenna was raised and lowered in both vertical and horizontal polarizations. For band edge measurements a plot was taken in that position and orientation with 10KHz RES B/W and 10KHz VID B/W and compared to a limit line 26dB below the level measured in 15.235(a) plot . For out of band measurements tabular data was taken.

Test results: All emissions were under specified limits. Refer to attached plots and tabular data sheet.

8. RADIATED EMISSION TEST SETUP PHOTOS



MATTEL FCC15.235 FCCID APB95087-00A4T

MKR 49.8200 MHz 31.80 dBμV

10 dB/

OFFSET
-14.7
dB

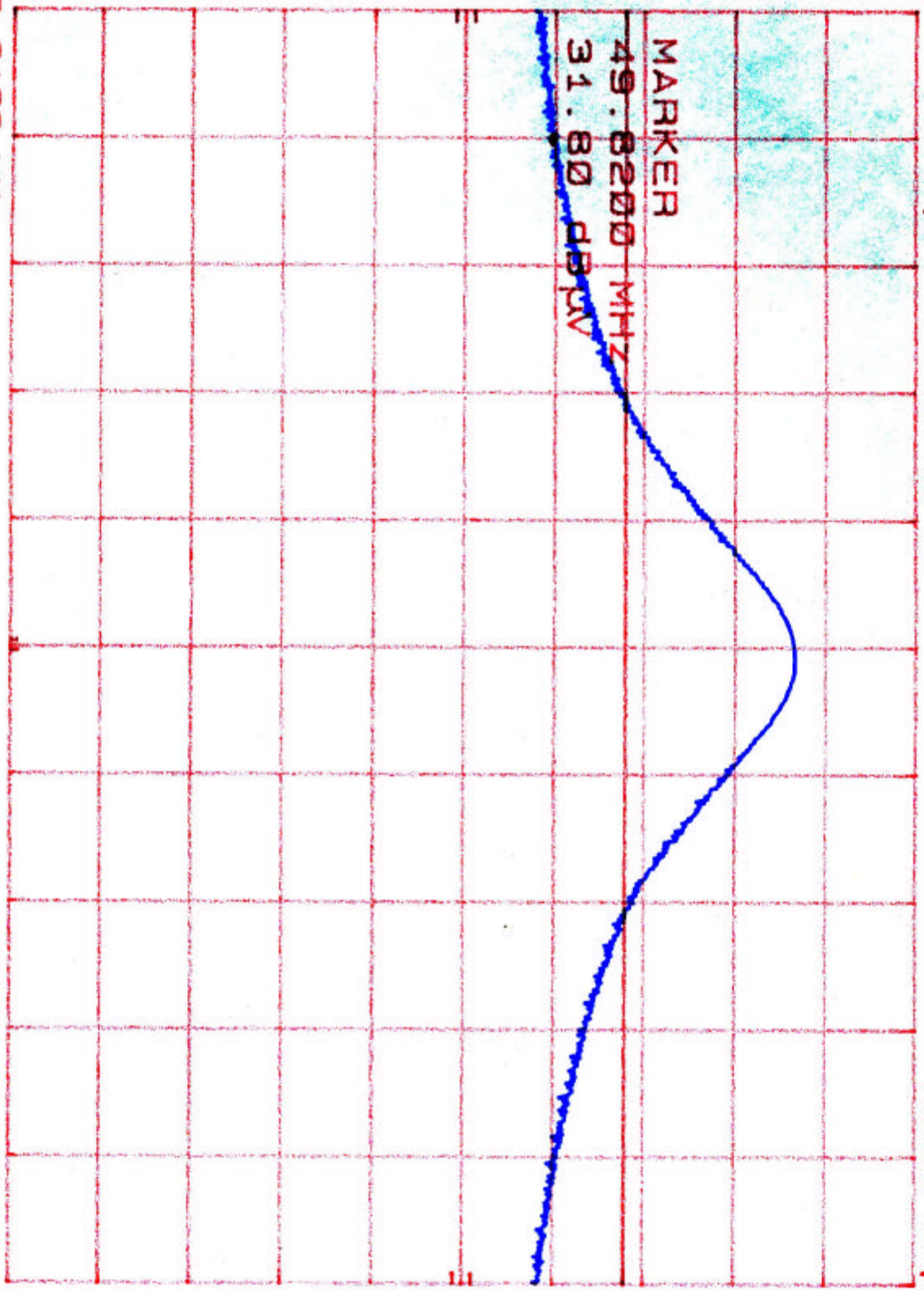
DL
40.0
dBμV

CORR'D

START 49.8100 MHz
RES BW 10 KHZ

VBW 10 KHZ

STOP 49.9100 MHz
SWP 30 msec





FCC, VCCI, CISPR, CE, AUSTEL, NZ
UL, CSA, TUV, BSMI, DHHS, NVLAP

561F MONTEREY ROAD, SAN JOSE, CA 95037-9001
PHONE: (408) 463-0885 FAX: (408) 463-0888

Project #: 01U0711-1
Report #: 010316A1
Date & Time: 03/16/01 12:32 PM
Test Engr: MIKE ZHU

Company: MATTTEL MOUNT LAUREL FW
EUT Description: 49MHZ RADIO CONTROL TRANSMITTER, M/N: 95087-49T
Test Configuration: EUT ONLY
Type of Test: FCC15.235 AND 15.209
Mode of Operation: NORMAL

<< Main Sheet

Freq.	Reading	AF	Closs	Pre-amp	Level	Limit	Margin	Pol	Az	Height	Mark
(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	FCC_B	(dB)	(H/V)	(Deg)	(Meter)	(P/Q/A)
49.90	47.25	12.15	0.93	27.83	32.50	40.00	-7.50	3mV	180.00	1.00	P
49.82	46.51	12.19	0.93	27.83	31.80	40.00	-8.20	3mV	180.00	1.00	P
49.86	73.50	12.17	0.93	27.83	58.77	80.00	-21.23	3mV	180.00	1.00	P
49.86	66.90	12.17	0.93	27.83	52.17	80.00	-27.83	3mV	180.00	1.00	P
49.86	63.70	12.17	0.93	27.83	48.97	80.00	-31.03	3mH	150.00	3.00	P
49.86	62.80	12.17	0.93	27.83	48.07	80.00	-31.93	3mH	180.00	3.00	P
6 Worst Data											



FCC, VCCI, CISPR, CE, AUSTEL, NZ
UL, CSA, TUV, BSMI, DHHS, NVLAP

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Mode of Operation: NORMAL

☒ A-Site ☐ B-Site ☐ C-Site ☐ F-Site

Freq. (MHz)	Reading (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Level (dBuV/m)	Limit FCC B	Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter)	Mark (P/Q/A)
EUT POSITIONS:											
X POSITION:											
49.86	61.10	12.17	0.93	27.83	46.37	80.00	-33.63	3mV	180.00	1.00	P
49.86	63.70	12.17	0.93	27.83	48.97	80.00	-31.03	3mH	150.00	3.00	P
Y POSITION:											
49.86	66.90	12.17	0.93	27.83	52.17	80.00	-27.83	3mV	180.00	1.00	P
49.86	62.80	12.17	0.93	27.83	48.07	80.00	-31.93	3mH	180.00	3.00	P
Z POSITION:											
49.86	73.50	12.17	0.93	27.83	58.77	80.00	-21.23	3mV	180.00	1.00	P
49.86	57.50	12.17	0.93	27.83	42.77	80.00	-37.43	3mH	150.00	3.00	P
Z POSITION, ON THE BAND EDGES:											
49.82	46.51	12.19	0.93	27.83	31.80	40.00	-8.20	3mV	180.00	1.00	P
49.90	47.25	12.15	0.93	27.83	32.50	40.00	-7.50	3mV	180.00	1.00	P
Total data #: 8											
V.2a											

* Completed full scan in the range of 30-1000Mhz in vertical and horizontal pol.

h2

MATTEL FCC15.235 FCCID APB95087-00A4T MKR 49.8602 MHz 58.70 dBμV

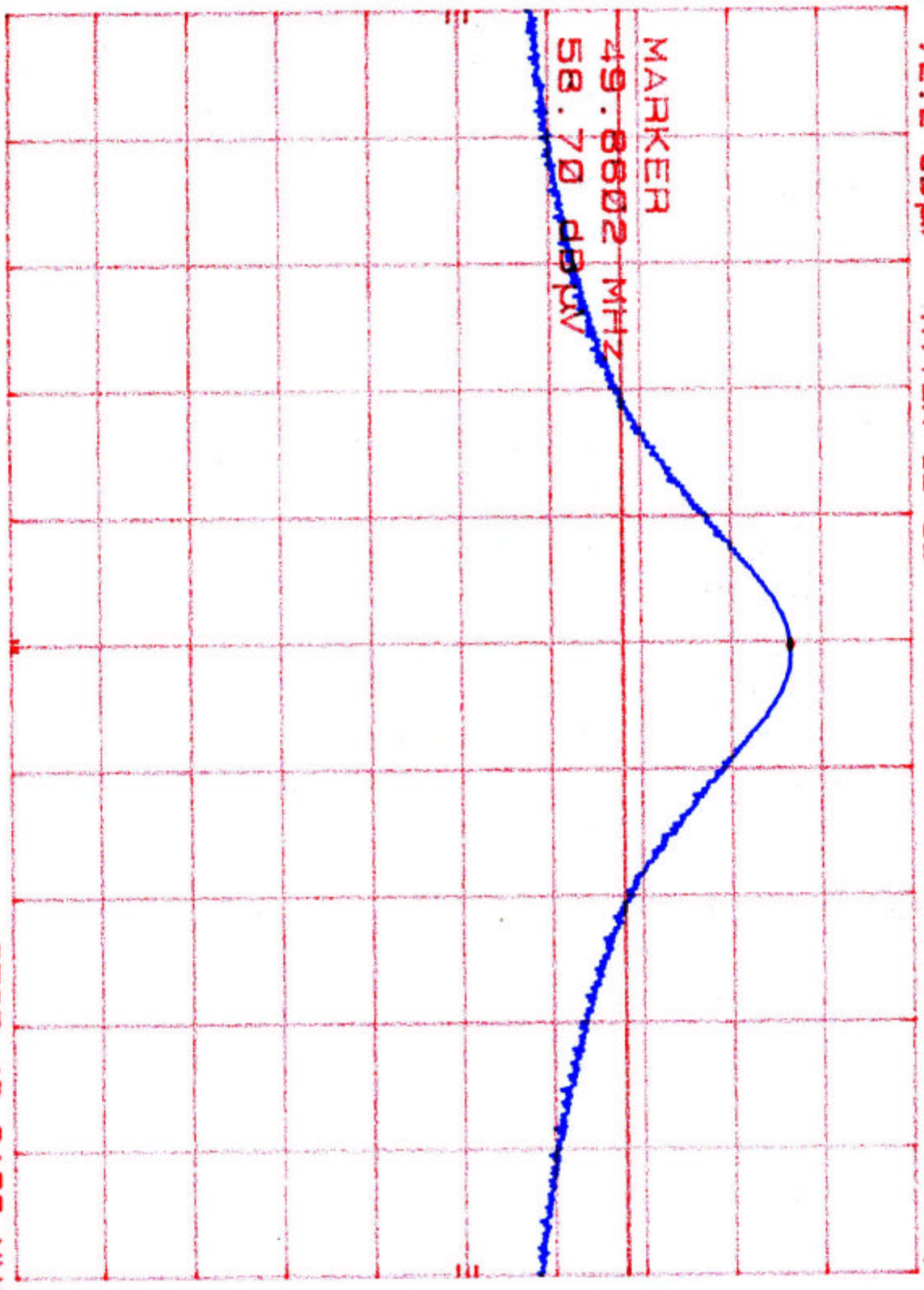
10 dB/

OFFSET
-14.7
dB

DL
40.0
dBμV

CORR'D

START 49.8100 MHz RES BW 10 KHZ VBW 10 KHZ STOP 49.9100 MHz SWP 30 msec



hp

MATTEL FCC15.235 FCCID APB95087-00A4T
REF 72.2 dBμV ATTN 10 dB

MKR 49.9001 MHz
32.50 dBμV

M2

10 dB/

OFFSET
-14.7
dB

DL
40.0
dBμV

COAR'D

START 49.8100 MHz
RES BW 10 KHZ

VBW 10 KHZ

STOP 49.9100 MHz
SWP 30 msec

