# 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**
**MORGAN HILL, CA 95037, USA**
**TEL: (408) 463-0885**
**FAX: (408) 463-0888**

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



COMPLIANCE ENGINEERING SERVICES, INC. CCS DOCUMENT NO:CCSUP4026B
561 F MONTEREY ROAD, MORGAN HILL, CA 95037, USA TEL:(408)463-0885 FAX:(408)463-0888

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# 1. VERIFICATION OF COMPLIANCE

| | | |
|---|---|---|
| COMPANY NAME | : | MATTEL MT. LAUREL<br>6000 MIDATLANTIC DRIVE<br>MOUNT LAUREL, NJ 08054<br>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:

MIKE ZHU
SENIOR EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

Released For CCS By:

STEVE CHENG
EMC ENGINEERING MANAGER
COMPLIANCE CERTIFICATION SERVICES



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## 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)



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# 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 |



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# 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.



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# 8. RADIATED EMISSION TEST SETUP PHOTOS

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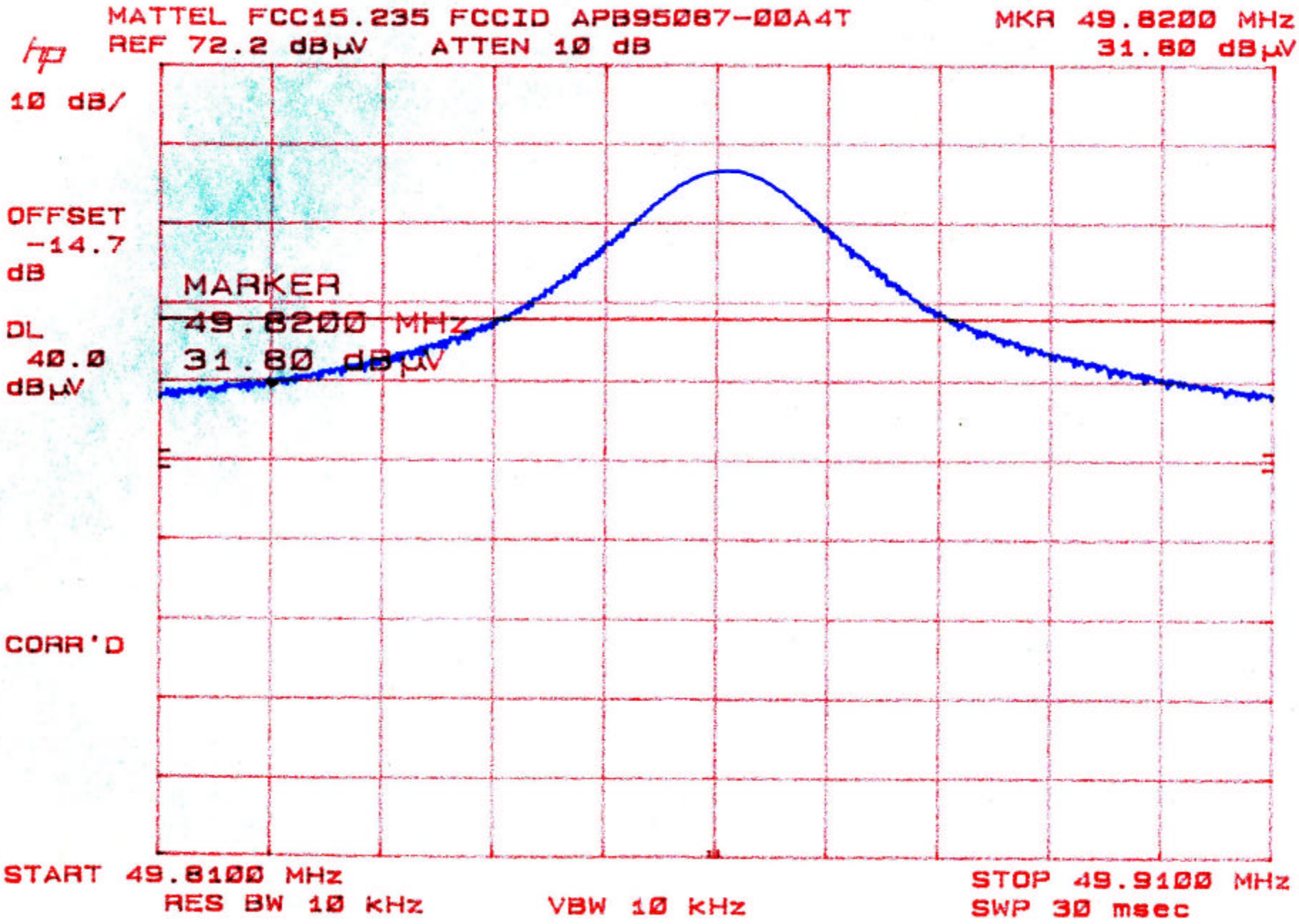

MATTEL FCC15.235 FCCID APB95087-00A4T
REF 72.2 dBµV ATTEN 10 dB
MKR 49.8200 MHz
31.80 dBµV
10 dB/
OFFSET
-14.7
dB
DL
40.0
dBµV
MARKER
49.8200 MHz
31.80 dBµV
CORR'D
START 49.8100 MHz
RES BW 10 kHz
VBW 10 kHz
STOP 49.9100 MHz
SWP 30 msec

COMPLIANCE
Certification Services

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

561F MONTEREY ROAD, SAN JOSE, CA 95037-9001
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*Project #:* 01U0711-1
*Report #:* 010316A1
*Date& Time:* 03/16/01 12:32 PM
*Test Engr:* MIKE ZHU

*Company:* MATTEL 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. (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) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | | | | | | | | | | |

COMPLIANCE
Certification Services

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

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

*Company:* MATTEL 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

(●) A-Site ( ) B-Site ( ) C-Site ( ) F-Site | 6 Worst Data | Descending

| 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.

M2

MATTEL FCC15.235 FCCID AP895087-00A4T

MKR 49.8602 MHz

REF 72.2 dBμV ATTEN 10 dB

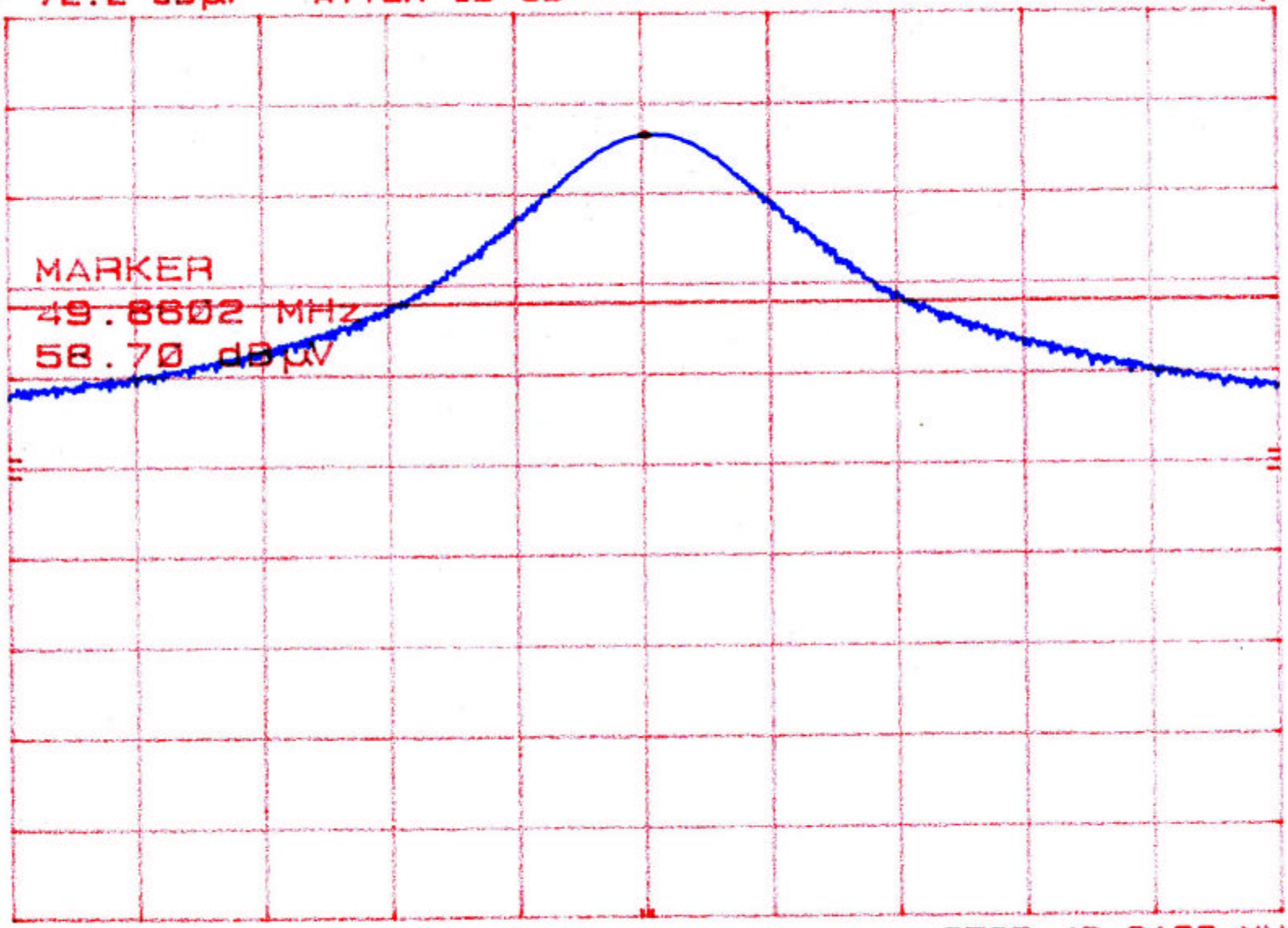
58.70 dBμV

hp

10 dB/

OFFSET
-14.7
dB

DL
40.0
dBμV




CORR'D

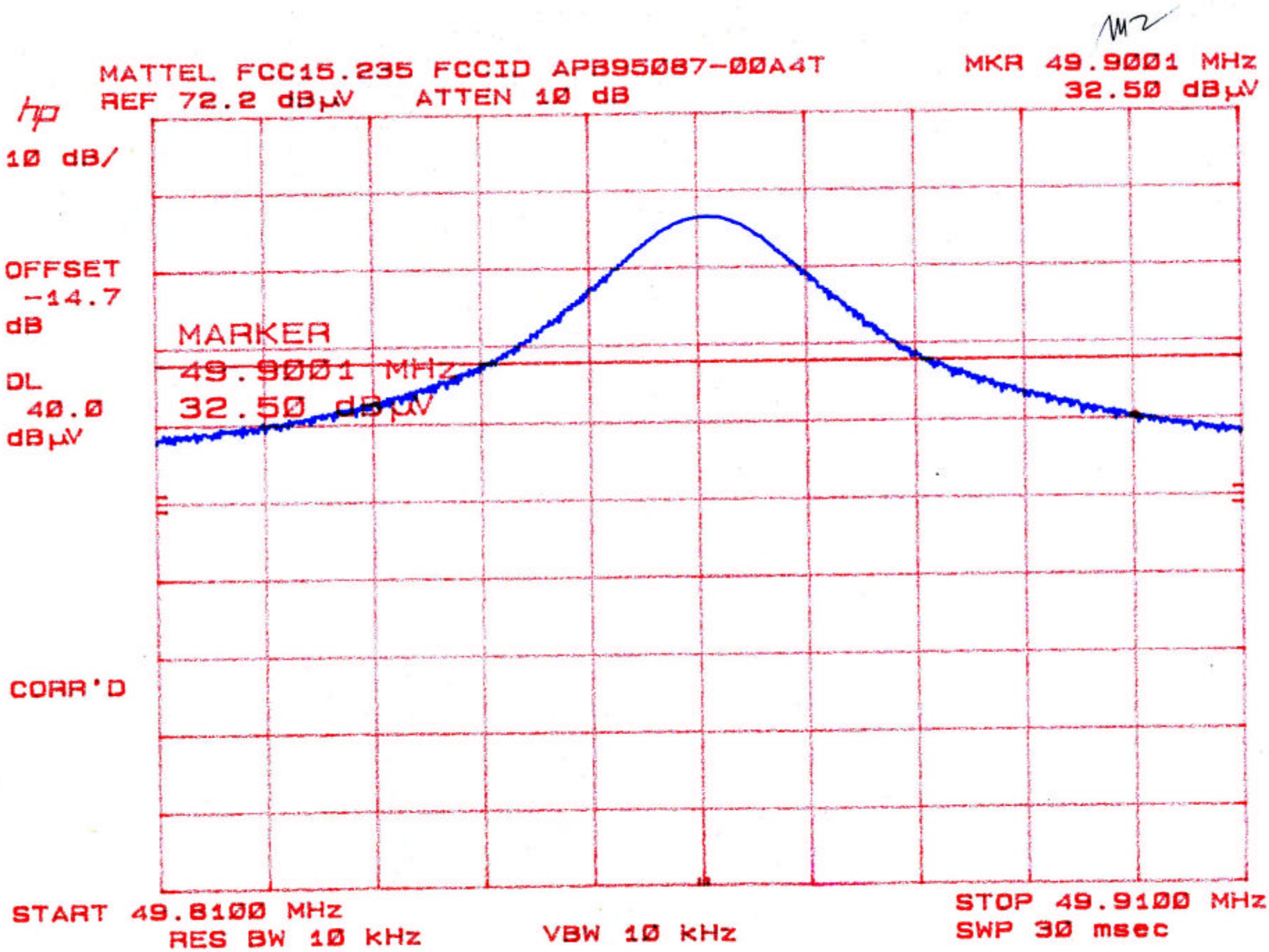
START 49.8100 MHz

RES BW 10 kHz

VBW 10 kHz

STOP 49.9100 MHz

SWP 30 msec


MATTEL FCC15.235 FCCID APB95087-00A4T
REF 72.2 dBµV ATTEN 10 dB
MKR 49.9001 MHz
32.50 dBµV
10 dB/
OFFSET
-14.7
dB
DL
40.0
dBµV
MARKER
49.9001 MHz
32.50 dBµV
CORR'D
START 49.8100 MHz
RES BW 10 kHz
VBW 10 kHz
STOP 49.9100 MHz
SWP 30 msec