ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
CERTIFICATION TO FCC PART 15 REQUIREMENTS

for

INTENTIONAL RADIATOR

49MHz RADIO CONTROL TRANSMITTER

MODEL NO: 97577-49T

BRAND NAME: TYCO R/C-STUNT PACK TX

FCC ID NO: APB97577-01A4T

REPORT NO: 01U0946-1

ISSUE DATE: SEPTEMBER 5, 2001

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

Prepared by
COMPLIANCE CERTIFICATION SERVICES
561 F MONTEREY ROAD
MORGAN HILL, CA 95037, USA
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TABLE OF CONTENTS PAGE

1. VERIFICATION OF COMPLIANCE..... 2

2. PRODUCT DESCRIPTION..... 3

3. TEST FACILITY 3

4. MEASUREMENT STANDARDS 3

5. TEST METHODOLOGY 3

6. MEASUREMENT EQUIPMENT USED 4

7. TEST PROCEDURES AND TEST RESULTS..... 5
Radiated Emission Test Result(15.235 (a))
Radiated Emission Test Result(15.235 (b))

8. RADIATED EMISSION TEST SETUP PHOTO..... 11

APPENDIX
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
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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	:	97577-49T
BRAND NAME	:	TYCO R/C- STUNT PACK TX
SERIAL NUMBER	:	N/A
FCC ID	:	APB97577-01A4T
DATE TESTED	:	August 30, 2001
REPORT NUMBER	:	01U0946-1

TYPE OF EQUIPMENT	RADIO CONTROL
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 By:

PETE KREBILL
ASSOCIATE EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

Reviewed & Released For CCS By:

THU TRAN
SENIOR EMC ENGINEER
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	**APB97577-01A4R**

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	Serial No.	Cal Due Date
H.P.	8568B	Spectrum Analyzer	2841A04227	01/18/02
H.P.	8447D	Pre-Amplifier	2944A06589	09/19/01
H.P.	85650A	Quasi-Peak Detector	12616-127	05/04/02
SCHAFFNER-CHASE	CBL6112B	Antenna, Bilog	2586	12/11/01
BATTERY	Energizer	9Volt Nicad or 9V Alkaline (4 x AA) 6LR61-6AM6	N/A	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 readings so obtained are recorded in the data list below.

Test Result: Peak emission was under average limit. Refer to attached plot and spreadsheet.

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 the maximum emission. Once the maximum direction was determined, the search antenna was raised and lowered in both vertical and horizontal polarizations. Maximum emissions were then recorded. For band edge measurements plots were taken. All plots were offset for cable loss, amplifier gain, antenna factor, etc.

3. In the position and orientation of maximum emission a plot was taken using 100KHz RES B/W and 100KHz VID B/W, Start frequency 49.81MHz, Stop frequency 49.91MHz. The marker function shows the peak emission level.

4. In the same position and orientation as step 3 a plot was taken using 30KHz RES B/W and 30KHz VID B/W, Start frequency 49.81MHz, Stop frequency 49.91MHz. The marker function shows the peak emission level.

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5. In the same position and orientation as step 3 a plot was taken using 10KHz RES B/W and 10KHz VID B/W, Start frequency 49.81MHz, Stop frequency 49.91MHz. The marker function shows the peak emission level.

6. The peak carrier level did not change using 100KHz, 30KHz and 10KHz RES B/Ws. The 10KHz RES B/W plot is used to show compliance to the 15.209 limits in the 10KHz band edges.

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

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Project #: 01U0946
Report #: 010830A1
Date& Time: 08/30/01 10:14 AM
Test Engr: Pete Krebill

Company: Mattel Mount Laurel FW
EUT Description: 49 MHz Radio Control TX M/N:97577-49T
Test Configuration : EUT Only
Type of Test: FCC 15.235 15.209
Mode of Operation: TX

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)
149.58	40.10	12.01	1.61	27.64	26.08	43.50	-17.42	3mV	0.00	1.00	P
Y-Axis											
249.30	39.20	14.45	2.10	27.24	28.51	46.00	-17.49	3mV	180.00	1.00	P
Below Noise Floor:											
299.16	34.80	14.99	2.39	27.21	24.98	46.00	-21.02	3mV	0.00	1.00	P
349.02	32.70	15.88	2.61	27.58	23.61	46.00	-22.39	3mV	0.00	1.00	P
398.82	32.70	16.78	2.82	27.96	24.34	46.00	-21.66	3mV	0.00	1.00	P
448.74	32.30	17.68	3.04	28.26	24.76	46.00	-21.24	3mV	0.00	1.00	P
498.60	32.00	18.57	3.26	28.56	25.28	46.00	-20.72	3mV	0.00	1.00	P
Z-Axis											
149.58	38.60	12.01	1.61	27.64	24.58	43.50	-18.92	3mH	90.00	1.50	P
249.30	39.60	14.45	2.10	27.24	28.91	46.00	-17.09	3mH	90.00	2.00	P
X-Axis											
149.58	37.90	12.01	1.61	27.64	23.88	43.50	-19.62	3mH	0.00	1.50	P
249.30	39.30	14.45	2.10	27.24	28.61	46.00	-17.39	3mH	0.00	2.00	P
X-Axis											
49.86	45.60	12.17	0.93		58.70	80.00	-21.30	3mH	0.00	1.50	P
Z-Axis											
49.86	47.90	12.17	0.93		61.00	80.00	-19.00	3mH	90.00	2.00	P
Y-Axis											
49.86	48.90	12.17	0.93		62.00	80.00	-18.00	3mV	0.00	1.00	P
Total data #: 14											
V.2a											

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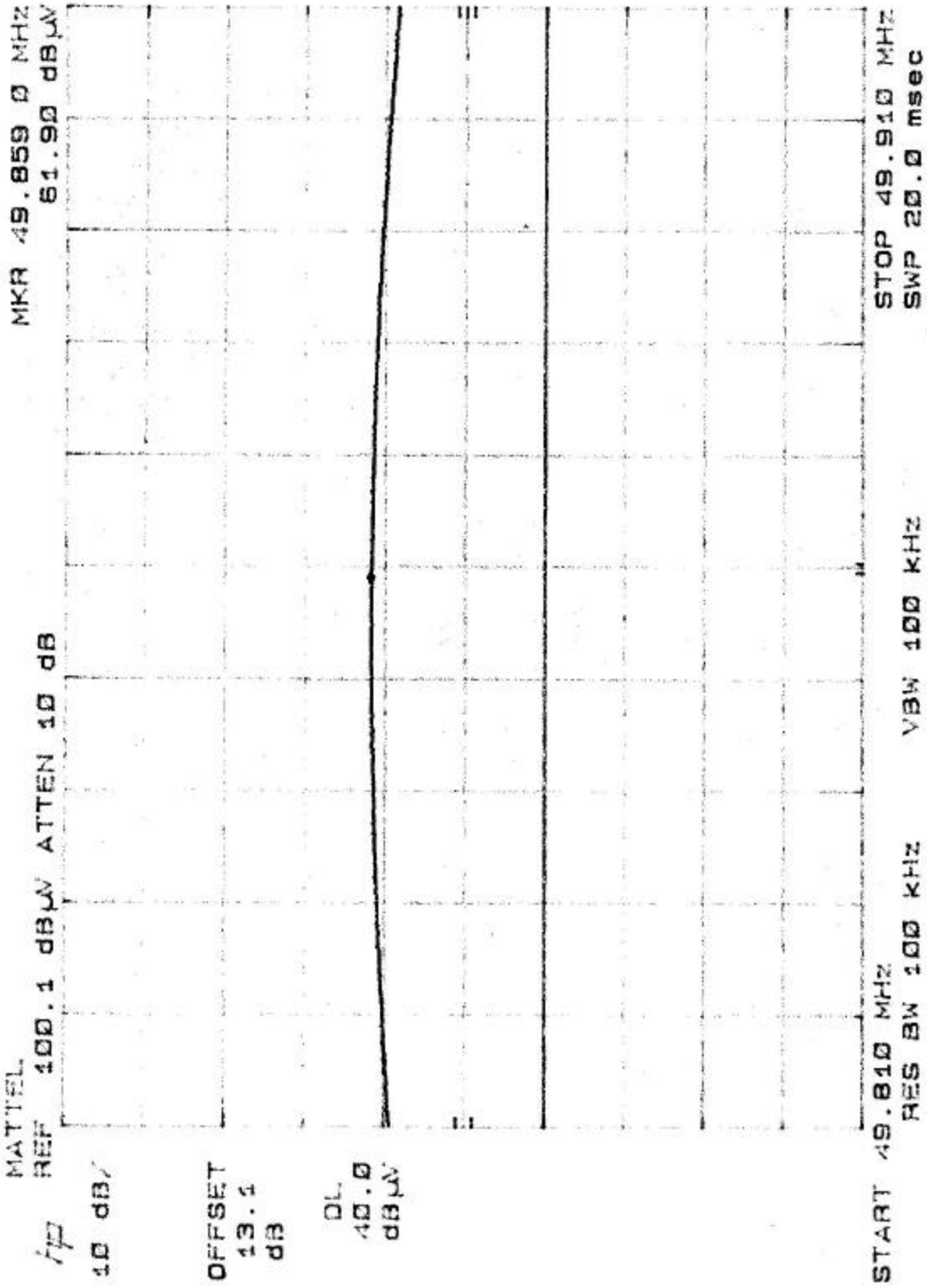
100KHZ RES B/W PLOT



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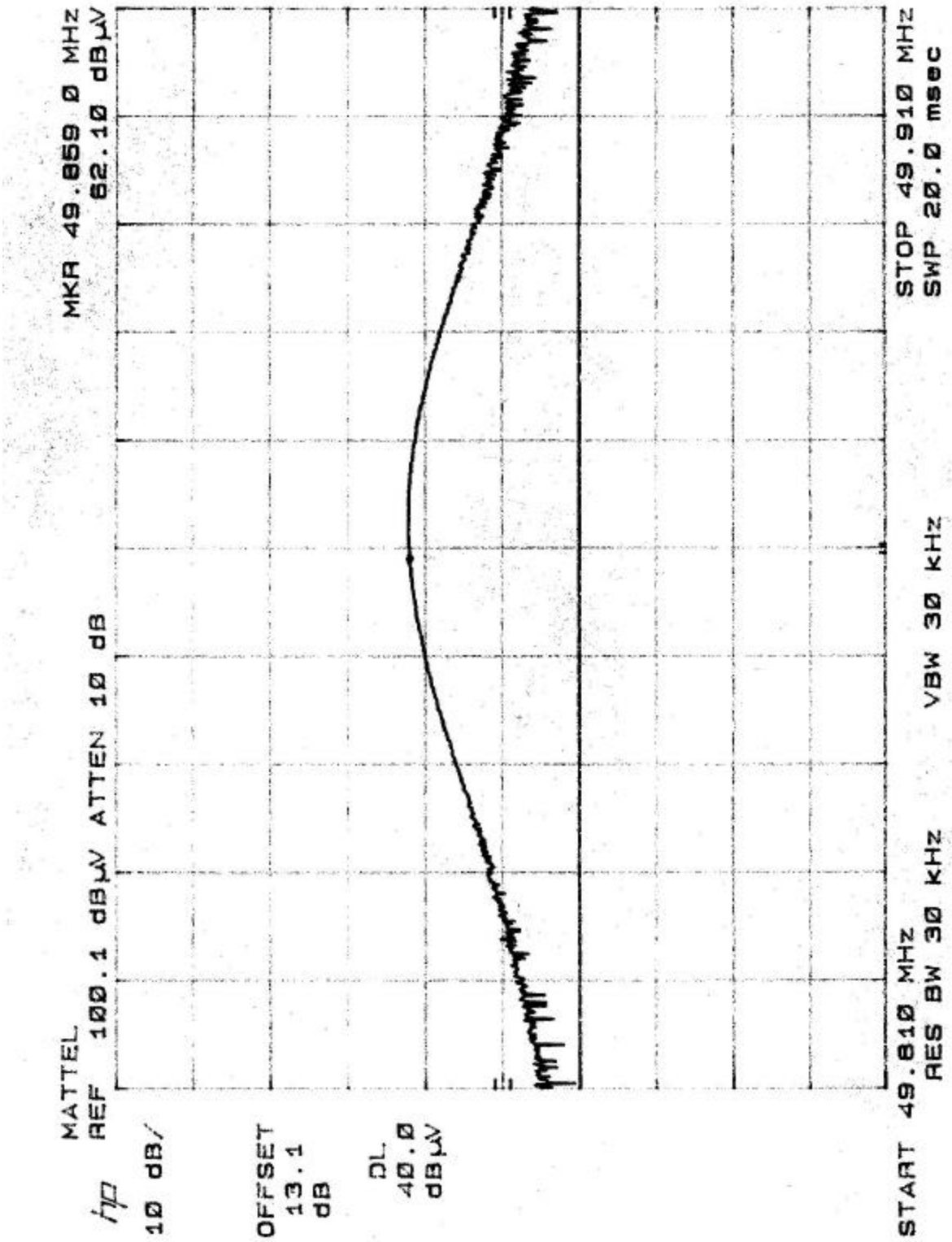
30KHZ RES B/W PLOT



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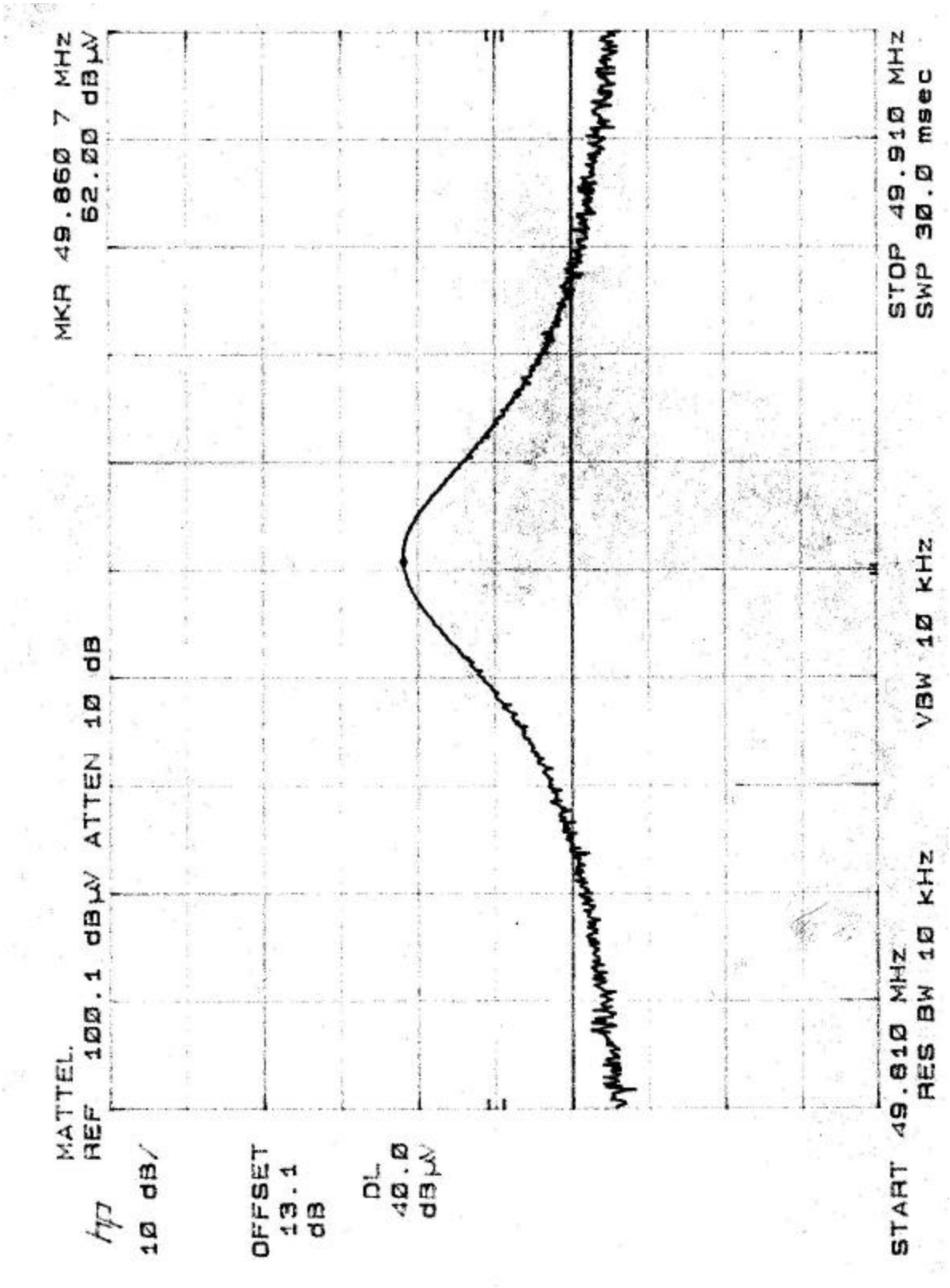
10KHZ RES B/W PLOT



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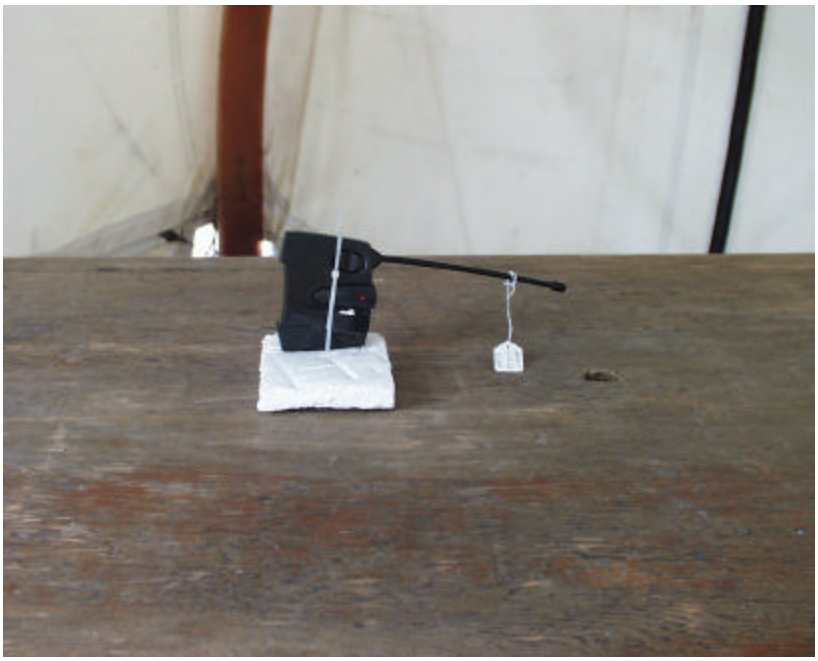
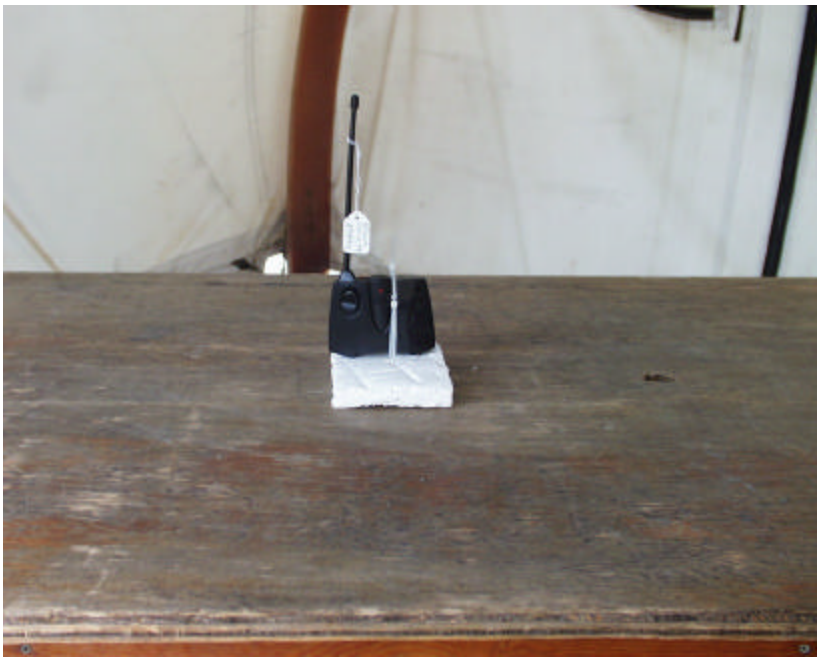
RADIATED EMISSION TEST SETUP PHOTOS





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APPENDIX

EXTERNAL & INTERNAL PHOTOS

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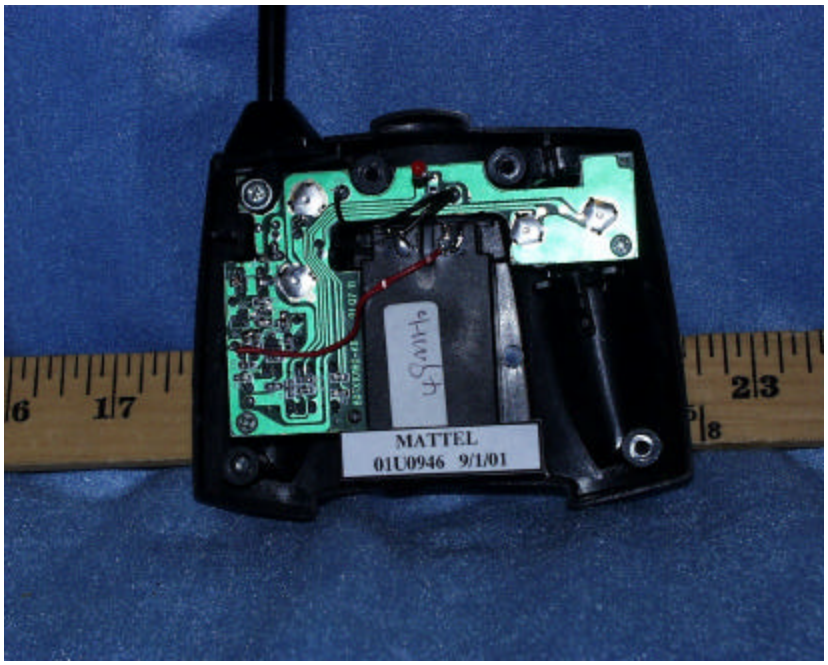

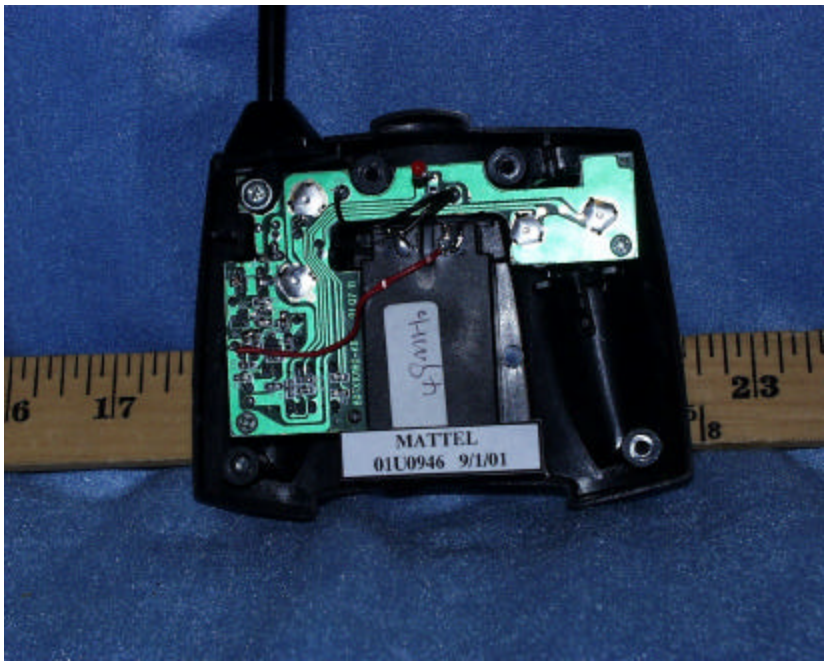

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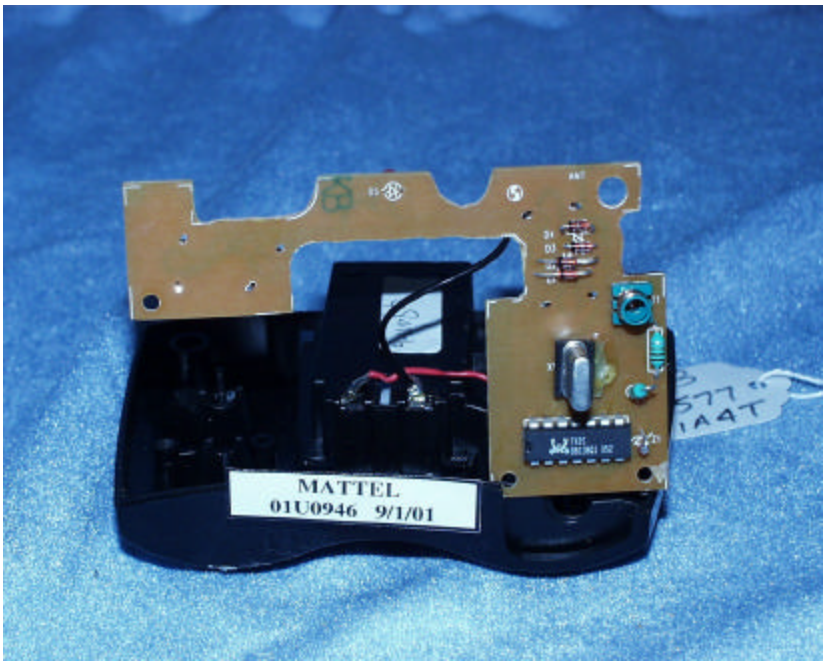

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Schematics

Please refer to attached sheets.

Block Diagram

Please refer to attached sheets.

User Manual

Please refer to attached sheets.

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