

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

for

INTENTIONAL RADIATOR

49.860MHz RC TRANSMITTER

MODEL NO: 97993

BRAND NAME: TYCO RC-9.6V STREET BEAST TRUCK

FCC ID NO: APB97993-02A4T

REPORT NO: 02U1284-1

ISSUE DATE: MAY 22, 2002

Prepared for

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

Prepared by

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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 : 49.860MHz RC Transmitter

MODEL NAME/NUMBER : 97993

BRAND NAME : TYCO RC-9.6V STREET BEAST TRUCK

SERIAL NUMBER : N/A

FCC ID : APB97993-02A4T

DATE TESTED : MAY 13, 2002

REPORT NUMBER : 02U1284-1

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 SUBPART C

The above equipment was tested by Compliance Engineering Services, Inc. for compliance with the requirements set forth in CFR 47, PART 15 SUBPART C. 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:

Reviewed & Released For CCS By:


FRANK IBRAHIM
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES


MIKE HECKROTTE
CHIEF ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2.PRODUCT DESCRIPTION

CHASSIS TYPE	Plastic
Fundamental Frequency	49.86 MHz
Rated FR Output	Less than 30uW (ave)
Type of Transmission	Data & Continuous
Type of Modulation	On Off Keying of a fixed frequency carrier wave
Necessary Channel Bandwidth	3.2KHz
Emission Designator	2K00A1D
Channel Bandwidth & Number of Channels	Single Channel in the 26.96 to 27.28 MHz Band
Channel Access Method	Single Channel
Duplex Method and Duplex Distance	Simplex Transmission
Duty Cycle of Transmitter	50% Duty Cycle
Antenna Type(s) and Number of Each	8" Long, Permanently Attached Whip Antenna
Antenna Gain, dBi	Single Antenna, Permanently Attached
Antenna Requirement	Permanently Affixed
Power Requirement	9VDC
Power Derived From	9 Volt Battery
Describe Intended Use	RC Transmitter For Controlling a Toy Vehicle
Associated Receiver	APB97993-02A4R

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

TEST EQUIPMENTS LIST				
Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
Spectrum Analyzer	HP100Hz - 1.5GHz	8568B	2841A04227	4/15/03
Quasi-Peak Detector	HP9K - 1GHz	85650A	2521A01038	4/15/03
Spectrum Analyzer	HP100Hz - 1.5GHz	8568A	101236	4/15/03
Pre-Amplifier,25 dB	HP0.1 - 1300MHz	8447D (P5)	2944A06550	8/10/02
Antenna, Bicon	Eaton30 - 200MHz	94455-1	1197	8/2/02
Antenna, LP	EMCO200 - 2000MHz	3146	2120	8/2/02

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.

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.



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

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Project #: 02U1284-1
Report #: 020513C01
Date & Time: 05/13/02 2:09 PM
Test Engr: Frank Ibrahim

Company: Mattel Mount Laurel FW
EUT Description: 49MHz Transmitter, Street Beast, model: 97993 (B1)
Test Configuration: EUT only
Type of Test: FCC 15.235
Mode of Operation: Transmitting

[<< 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)
49.86	93.40	10.93	0.88	27.49	77.72	100.00	-22.28	3mV	0.00	1.00	P
49.86	80.50	10.93	0.88	27.49	64.82	80.00	-15.18	3mV	0.00	1.00	Av

Fundamental Freq



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

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PHONE: (408) 463-0885 FAX: (408) 463-0888

Project #: 02U1284-1
Report #: 02U1284-2
Date & Time: 05/15/02 10:44 AM
Test Engr: Frank Ibrahim

Company: Mattel Mount Laurel
EUT Description: 49MHz Transmitter for RC toys, Street Beast
Test Configuration: Stand Alone EUT
Type of Test: FCC 15.235
Mode of Operation: EUT transmitting at 49.86MHz

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)
199.44	45.00	16.37	1.88	26.87	36.37	43.50	-7.13	3mV	0.00	1.00	P
99.72	50.50	10.62	1.25	27.34	35.03	43.50	-8.47	3mV	0.00	1.00	P
99.72	47.10	10.62	1.25	27.34	31.63	43.50	-11.87	3mH	0.00	1.00	P
149.58	39.40	16.42	1.58	27.13	30.27	43.50	-13.23	3mV	0.00	1.00	P
249.33	45.10	12.09	2.20	26.66	32.72	46.00	-13.28	3mH	0.00	1.00	P
149.58	38.50	16.42	1.58	27.13	29.37	43.50	-14.13	3mH	0.00	1.00	P

Spurious Emissions



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

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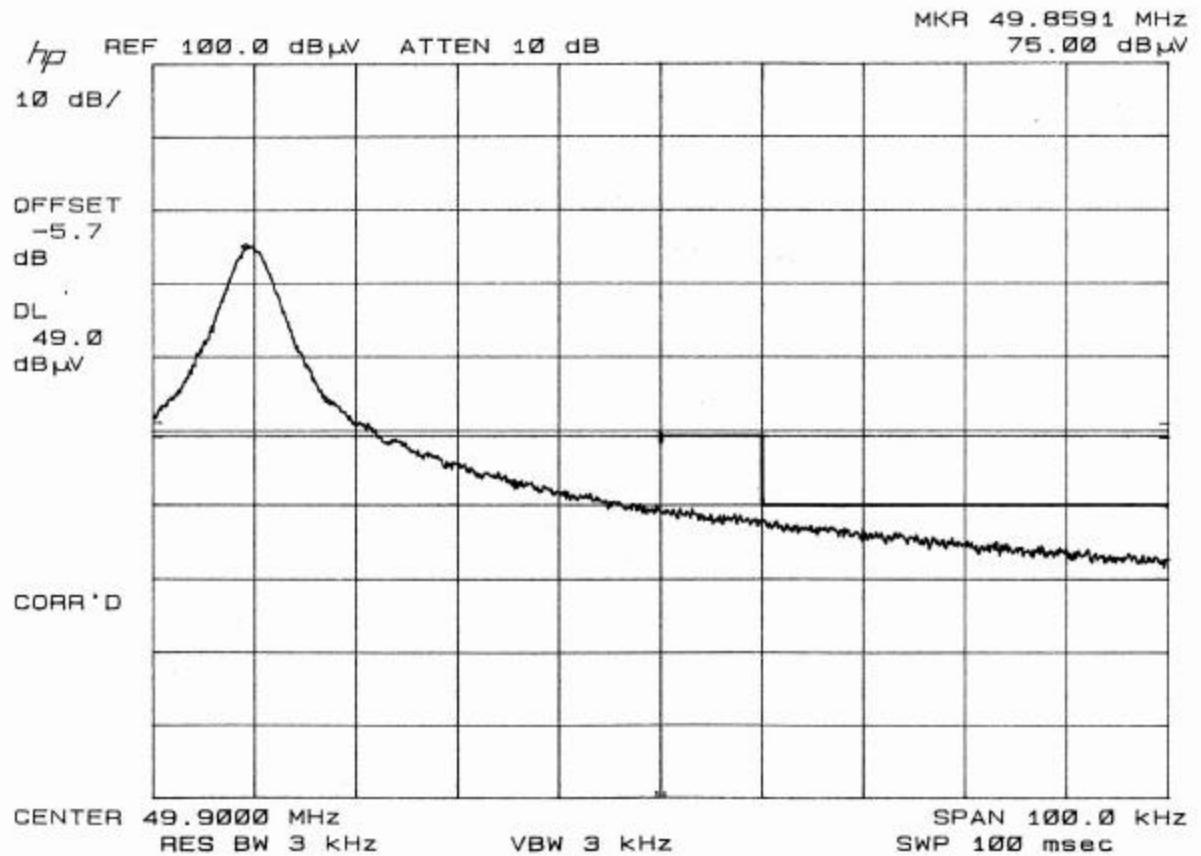
02U1284-1
02U1284-2
05/15/02 10:44 AM
Frank Ibrahim

Company: Mattel Mount Laurel
EUT Description: 49MHz Transmitter for RC toys, Street Beast
Test Configuration : Stand Alone EUT
Type of Test: FCC 15.235
Mode of Operation: EUT transmitting at 49.86MHz

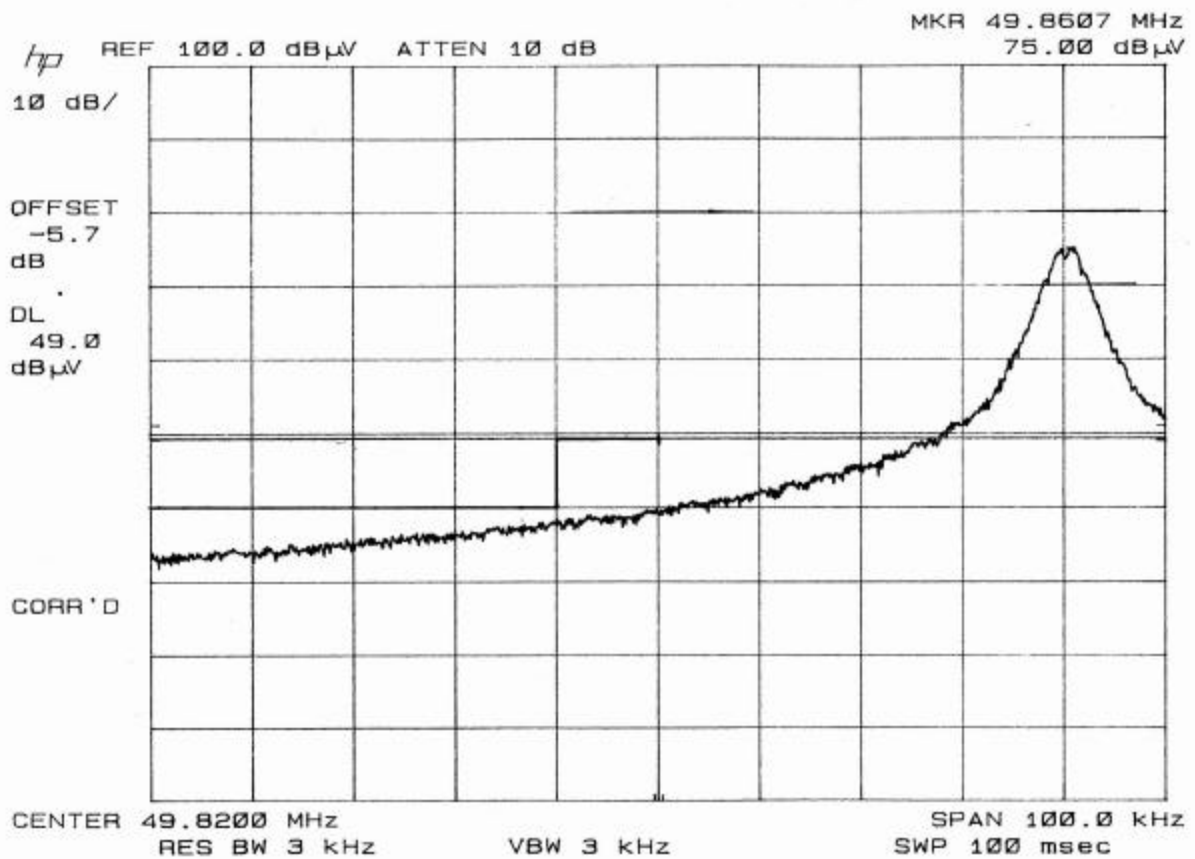
Freq. (MHz)	Reading (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Level (dBuV/m)	Limit FCC_B	Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter)	Mark (P/Q/A)
49.81	52.60	10.95	0.88	27.49	36.94	40.00	-3.06	3mV	0.00	1.00	P
49.91	52.10	10.92	0.88	27.49	36.41	40.00	-3.59	3mV	0.00	1.00	P
49.83	55.80	10.94	0.88	27.49	40.13	49.00	-8.87	3mV	0.00	1.00	P
49.89	54.60	10.93	0.88	27.49	38.92	49.00	-10.08	3mV	0.00	1.00	P

Bandedges

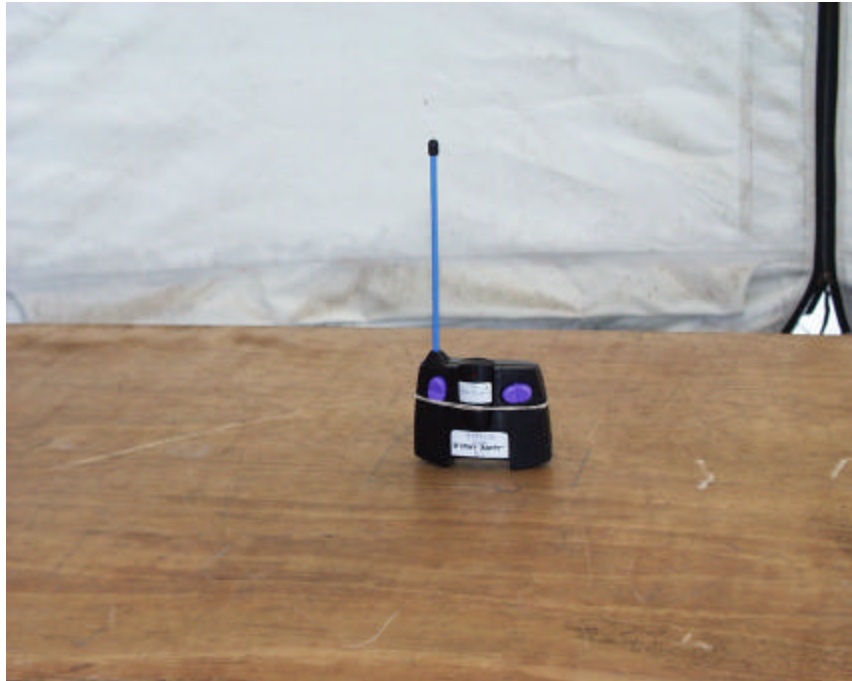
High Bandedge Plot



Low Bandedge Plot

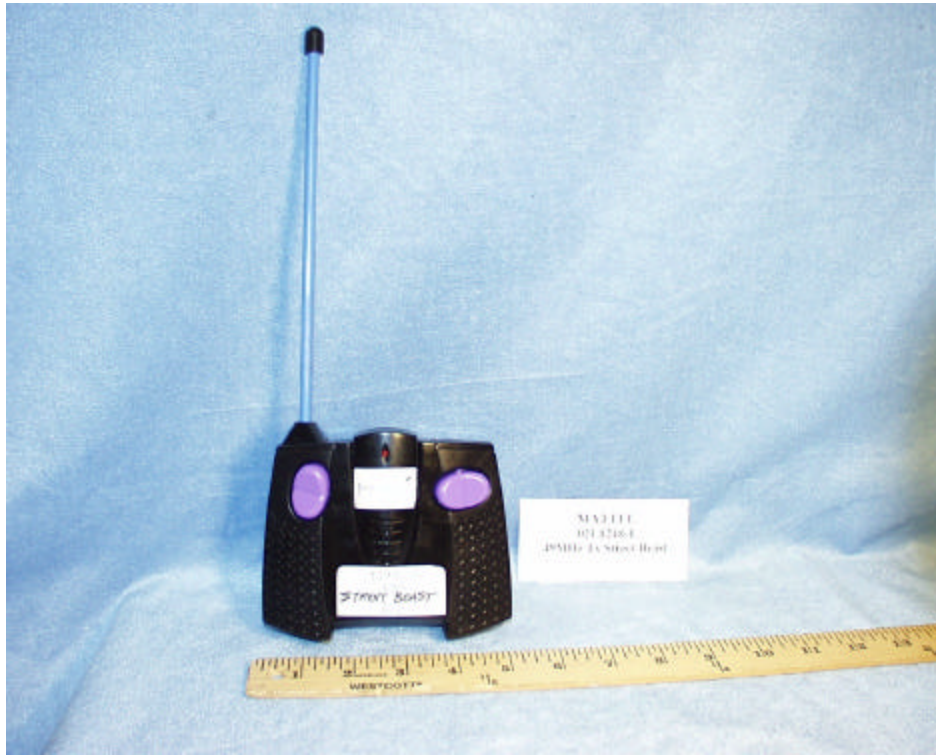


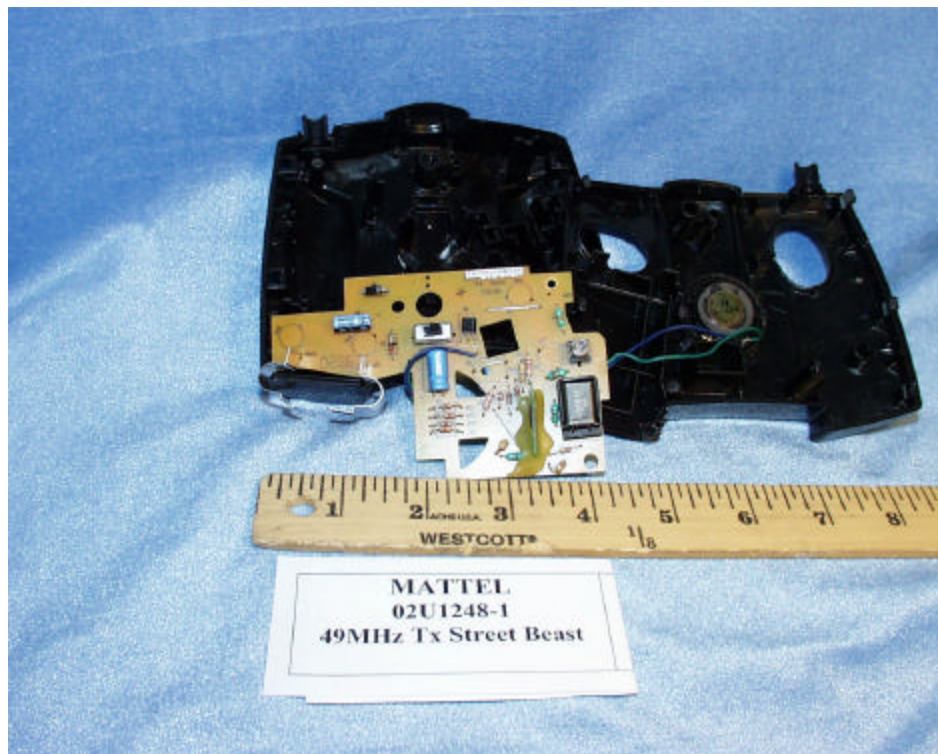
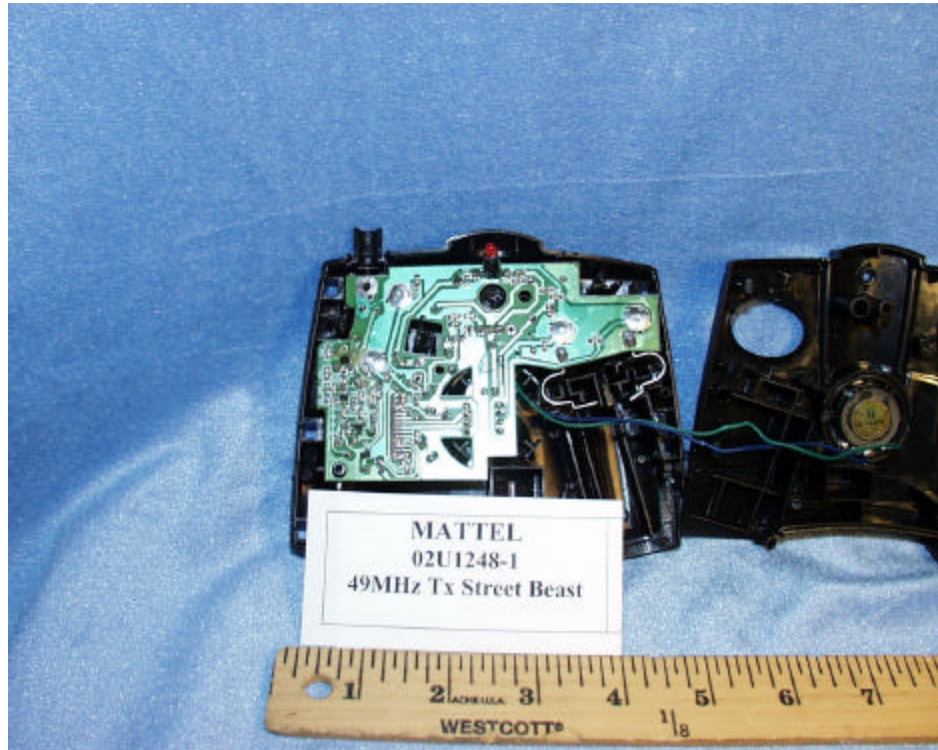
8.RADIATED EMISSION TEST SETUP PHOTOS



9.APPENDIX

EUT PHOTOGRAPHS





SCHEMATICS

Please refer to attached sheets.

BLOCK DIAGRAM

Please refer to attached sheets.

USER'S MANUAL

Please refer to attached sheets.

END OF REPORT