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APPLICANT: SCIENTIFIC TOYS, LTD.

FCC ID: BY3E891

TEST REPORT CONTAINING:

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TEST EQUIPMENT LIST

1._X_Spectrum Analyzer: HP 8566B-Opt 462, S/N 3138A07786, w/ preselector HP 85685A, S/N 3221A01400, Quasi-Peak Adapter HP 8565OA, S/N 3303A01690 & Preamplifier HP 8449B-OPT H02, S/N 3008A00372 Cal. 10/17/99
2.___Signal Generator: HP 8640B, S/N 2308A21464 Cal. 9/23/99
3.___Signal Generator: HP 8614A, S/N 2015A07428 Cal. 5/29/99
4._X_Passive Loop Antenna: EMCO Model 6512, 9KHz to 30MHz, S/N 9706-1211 Cal. 6/23/97
5.___Biconnical Antenna: Eaton Model 94455-1, S/N 1057
6._X_Log-Periodic Antenna: Electro-Metrics Model EM-6950, S/N 632
7._X_Dipole Antenna Kit: Electro-Metrics Model TDA-30/1-4, S/N 153 Cal. 11/24/99
8.___Double-Ridged Horn Antenna: Electro-Metrics Model RGA-180, 1-18 GHz, S/N 2319 Cal. 4/27/99
9.___Horn 40-60GHz: ATM Part #19-443-6R
10.___Line Impedance Stabilization Network: Electro-Metrics Model ANS-25/2, S/N 2604 Cal. 2/9/00
11.___Line Impedance Stabilization Network: Electro-Metrics Model EM-7820, S/N 2682 Cal. 12/1/99
12.___Temperature Chamber: Tenney Engineering Model TTRC, S/N 11717-7
13.___AC Voltmeter: HP Model 400FL, S/N 2213A14499 Cal. 9/21/99
14.___Digital Multimeter: Fluke Model 8012A, S/N 4810047 Cal 9/21/99
15.___Digital Multimeter: Fluke Model 77, S/N 43850817 Cal 9/21/99
16.___Oscilloscope: Tektronix Model 2230, S/N 300572 Cal 9/23/99
17.___Frequency Counter: HP Model 5385A, S/N 3242A07460 Cal 10/6/99

TEST PROCEDURE

GENERAL: This report shall NOT be reproduced except in full without the written approval of TIMCO ENGINEERING, INC.

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 100KHz and the video bandwidth was 300KHz. The ambient temperature of the UUT was 72oF with a humidity of 75%.

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

CIRCUIT_DESCRIPTION:

The circuit is activated by the action of the paddle switches which make ground contact for the battery. This allows the proper current to be supplied to Q1 the crystal oscillator and Q2 the modulator/buffer. The modulation to base of Q2 is supplied by U1. The different modulation patters are generated by U1 using the different actions of the paddle switches. Pin 8 of U1 is the modulation output. C8, C9, C10 and L3 provide the output impedance match to the antenna and harmonic suppression.

ANTENNA_AND_GROUND_CIRCUITRY

This unit makes use of a short, antenna. The antenna is inductively coupled. The antenna is self contained, no provision is made for an external antenna. This unit is powered from a 9.0V battery.

No ground connection is provided. The unit relies on the ground tract of the printed circuit board.

APPLICANT: SCIENTIFIC TOYS, LTD.

FCC ID: BY3E891

NAME OF TEST: RADIATION INTERFERENCE

RULES PART NO.: 15.227

REQUIREMENTS: CARRIER FREQUENCY WILL NOT EXCEED 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:

EMISSION FREQUENCY MHz	METER READING AT 3 METERS dBuV	COAX LOSS dB	ANTENNA CORRECTION FACTOR dB	PEAK FIELD STRENGTH dBuV/m@3m	MARGIN dB	ANT. POL.
27.10	60.70	0.20	11.77	72.67	7.33	V
54.30	22.60	0.80	9.60	33.00	7.00	V
81.40	26.60	0.80	12.13	39.53	0.47	V
108.60	8.10	0.80	8.38	17.28	26.22	V
135.70	8.90	0.80	15.31	25.01	18.49	V
190.00	9.40	0.90	13.68	23.98	19.52	V
217.20	10.70	1.20	12.42	24.32	21.68	H
244.30	11.70	1.20	13.21	26.11	19.89	H
271.50	16.30	1.40	14.00	31.70	14.30	V
298.60	15.00	1.40	15.61	32.01	13.99	V

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:_____ DATE: MARCH 20, 2000

APPLICANT: SCIENTIFIC TOYS, LTD.

FCC ID: BY3E891

NAME OF TEST: Occupied Bandwidth

RULES PART NO.: 15.227

REQUIREMENTS: The field strength of any emissions appearing outside the 26.96-27.28 MHz band shall not exceed 100 uV/m (15.209).

THE GRAPH IN EXHIBIT 11 REPRESENTS THE WORSE CASE OCCUPIED BAND-WIDTH EMISSIONS FOR THIS 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 dBm per division. The horizontal scale is set to 5 kHz per division.

TEST RESULTS: The unit DOES meet the FCC requirements.

PERFORMED BY:_____ MARCH 20, 2000