Test Report

DUT:	Remote Control transmitter
Model:	HBTX-2
Test Date:	22-Oct-2001

Manufacturer: Hunters Buddy
Rt. 1, Box 284-C2
Sheridan, AR 72150

Conducted by: Control Design & Testing, Inc.
6010 Red Fox Drive
Spotsylvania, VA 22553
(540) 582-2826

CD&T FCC ID: M98HBTX-2

A. DEVICE UNDER TEST

The product is a transmitter used to remotely operate an electronic predator calling system. The caller system contains an integral receiver (M98HB250RX) that has been previously certified. This device is a replacement model for a previously certified transmitter (M98HB250TX). The device is designed to operate under the provisions of Part 15.231 of the FCC rules.

The transmit frequency is 433.92 MHz. nominal. The modulation mode is on/off keying using a pulse position code format. This device is manually activated by momentary closure membrane switches. Transmission occurs only when a switch is pressed and ceases immediately when the switch is released. Power for the device is provided by an internal 9 volt battery.

The rf section consists of an RF Monolithics TX5000L transmitter IC and a two element antenna matching network. The antenna is a custom manufactured, quarter wave, rubber cased wire and is soldered directly to the printed circuit board. There is no provision to connect a different antenna.

B. MEASUREMENT PROCEDURE: RADIATED EMISSIONS

Testing of this device was conducted at the Hyak Laboratory test facility located in Spotsylvania, Virginia.

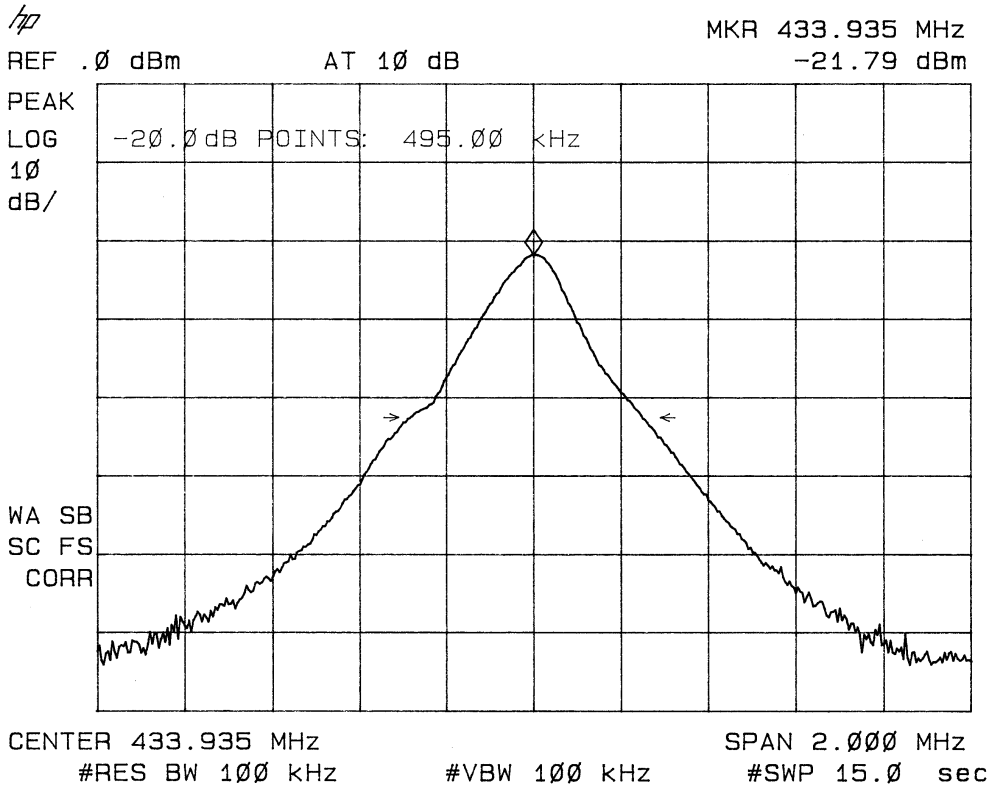
Transmitter field strength measurements were conducted according to the procedures set forth in ANSI C63.4 (1992). Testing was conducted with a fresh battery and monitored periodically to insure that the battery voltage (under load) was maintained at 95% of nominal or greater.

The device under test was placed on a rotating turntable 0.8 meters high, centered at 3 meters distant from the measurement antenna. The device was placed in the center of the turntable and tested in three positions as shown in the test setup photographs.

For testing, the sample was set to transmit the “ON” code continuously by holding the button down with a nylon tie wrap and a small piece of plastic. The occupied bandwidth plot below was also captured using the “ON” code.

The plots for the occupied bandwidth and time domain measurements were taken using an HP8596E spectrum analyzer and plotted on an HP7475A pen plotter.

Occupied Bandwidth



The field strength measurements were taken using an HP8596E spectrum analyzer, an EMCO 3121C dipole set, an EMCO 3115 double ridge guide horn and an Avantek UJ210 preamp. The device was scanned from 30 MHz. to 5 GHz. and all emissions were noted. The only emissions detected were those harmonically related to the fundamental transmit frequency.

At each detected emission frequency, the device was measured by rotating the turntable and adjusting the antenna height over a range of 1 to 4 meters to obtain the maximum output level. This procedure was performed with both horizontal and vertical antenna polarizations for each of the test positions shown in the setup photos. The peak reading for each frequency was recorded in the fourth column in Table 1 below.

Table 1

RADIATED EMISSIONS DATA

CLIENT: HUNTERS BUDDY FCC ID: M98HBTX-2
ANTENNA: DIPOLES/DRG HORN EUT: CONTROL TRANSMITTER
PART 15.231 TEST DATE: 22-OCT-01

Frequency In MHz.	Ant. Polar. H/V	Ant. Factor dB	Peak reading dBm	Duty Cycle -dB	Peak Power uV/m@3m	Corrected Power uV/m@3m	FCC Limit uV/m@3m
433.936	H	23.2	-33.2	20.0	70795	7079	10997
867.872	V	30.0	-76.74	20.0	1030	103	1099
1301.808	V	27.6	-94.08	20.0	106	11	500
1735.744	H	29.7	-96.17	20.0	106	11	1099
2169.681	V	31.6	-98.22	20.0	104	10	500
2603.617	V	33.1	-104.03	20.0	64	6	1099
3037.553	H	34.0	-109.51	20.0	38	4	1099
3471.490	H	35.2	-116.92	20.0	18	2	1099

Measurements taken for weak emissions were performed by reducing the distance from the measurement antenna to 1 meter and factoring –9.54dB into the calculation. This method was used for the 7^{th} and 8^{th} harmonics. Any emissions above the 8^{th} harmonic were either at or below the noise floor.

C. DUTY CYCLE CALCULATIONS

This device uses a pulse position encoding scheme consisting of six, 750 μsec. pulses per packet. The packets are 26.90 msec. long from the rising edge of the first pulse to the falling edge of the sixth pulse. The packets are repeated at 53.35 msec. intervals thus only 12 pulses are present in any 100 msec. time frame.

The calculation for the duty cycle correction factor is:

12 pulses X 750µsec. = 9.0 msec.
20log (9.0msec./100msec.) = -20.915dB.

As provided in Part 15.35 of the FCC rules, a correction factor of –20dB is used for the calculations in Table 1 above
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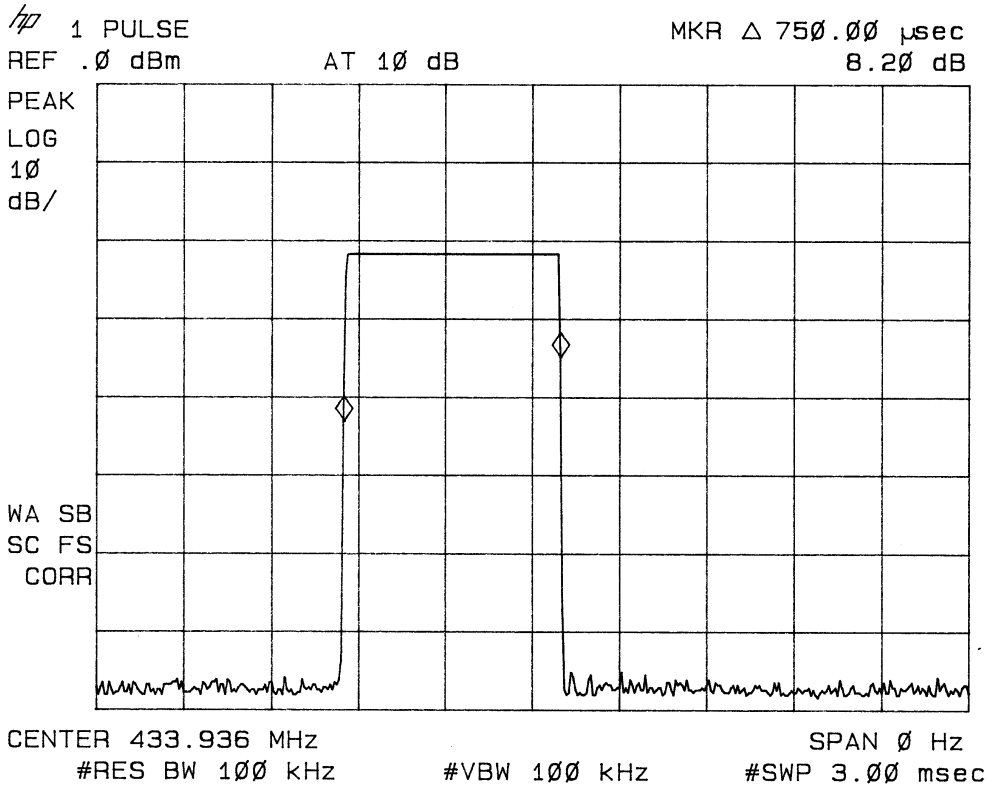
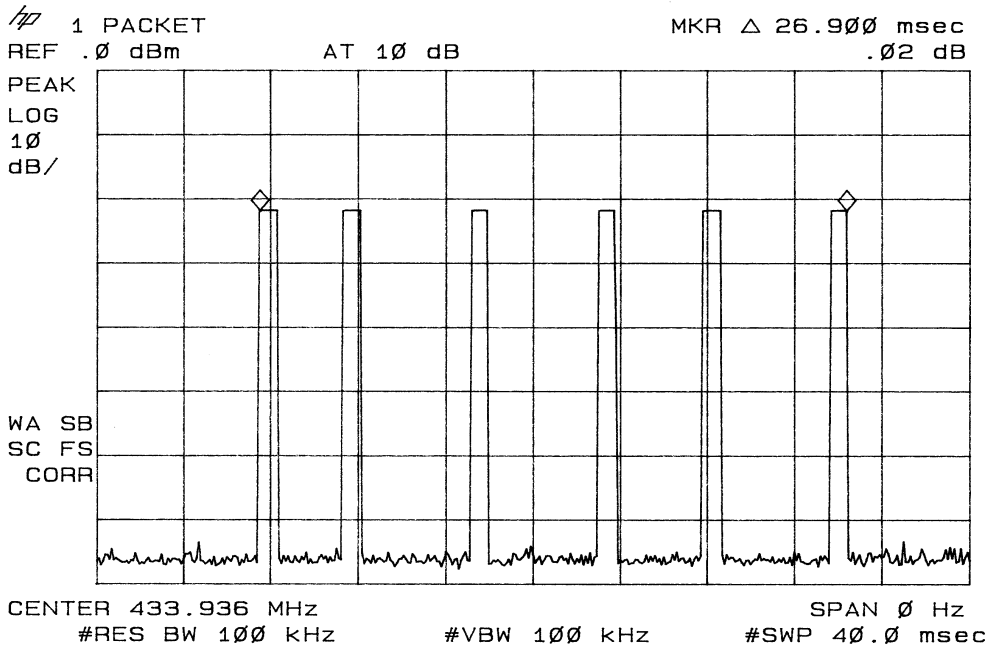
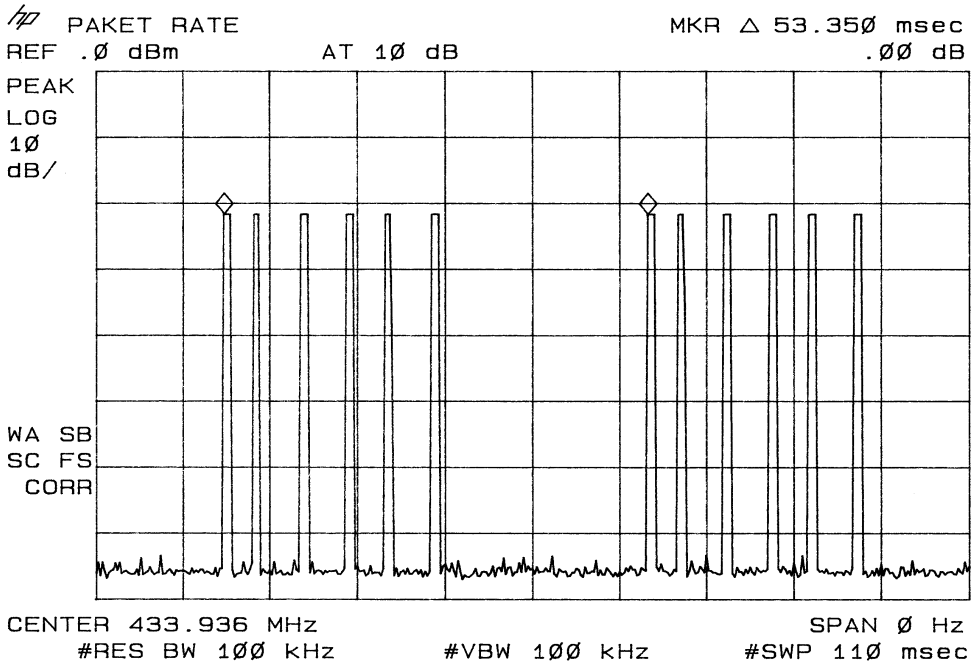
Plot 1



Plot 2


1 PACKET
MKR Δ 26.9ØØ msec
REF .Ø dBm
AT 1Ø dB
.Ø2 dB
PEAK
LOG
1Ø
dB/
WA SB
SC FS
CORR
CENTER 433.936 MHz
SPAN Ø Hz
#RES BW 1ØØ kHz
#VBW 1ØØ kHz
#SWP 4Ø.Ø msec

Plot 3


PAKET RATE
MKR Δ 53.35Ø msec
REF .Ø dBm
AT 1Ø dB
.ØØ dB
PEAK
LOG
1Ø
dB/
WA SB
SC FS
CORR
CENTER 433.936 MHz
SPAN Ø Hz
#RES BW 1ØØ kHz
#VBW 1ØØ kHz
#SWP 11Ø msec

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