(CIRCUIT DESCRIPTION)

**CIRCUIT DESCRIPTIONS

IN TRANSMIT MODE

WHEN THE CONTROL KNOB IS PRESSED,A CW SIGNAL IS TRANSMITTED.THE CRYSTAL CONTROLLED OSCILLATOR

Q3 OUTPUT IS COUPLED THROUGH C10 TO THE BASE OF Q2 FOR MULTIPLE. FROM Q2 THE SIGNAL IS FED THROUGH T-2.

Q2 OUPTUT IS COUPLEED THROUGH C5 TO THE BASE OF Q1. FROM Q1 THE SIGNAL IS FED THROUGH T1.

THE LOW PASS FIETER MADE UP OF C14 & T-1 C2 AND C1 WHICH ARE CONNECTED TO THE ANTENNA ROD.

THE MODULATION IS PROVIDED BY IC2, THEN THE D1 DIODE WILL BE FREQUENCY MODULATED THE CRYSTAL FREQUENCY.

OF Q3 THAT WILL MODULATE THE RF TUNNED CIRCUTT DIRECTLY.

ENERGRY IS SUPPLIED BY A 9.6VDC 6F22 ALKALINE BATEERY.

ANTENNA AND GROUND CIRCUITRY.

THIS UNIT MAKES USE OF AN EXTENAL 12-INCH ANTENNA. THE ANTENNA IS INDUCTIVELY COUPLED.

THE UNIT RELIES ON THE GROUND TRACE OF THE PRINTED CIRCUIT BOARD. NO EXTERNAL GROUND IS PROVIDED.

**BACKGROUND

THE DEVICE DESCRIBED HEREIN IS A WIRELES (RF) TOY AREOPLANE CONTROLLER TRANSMITTER FOR USE WITH THE TOY AEROPLANE CONTROLLED RECEIVER. IT HAS ONLY ONE CHANNEL OF OPERATION WHICH THE USER MAY CHOOSE ONLY. AND IS USED TO SEND BUTTON-STATE DATA FROM THE CONTROLLER TO A WIRELESS RECEIVER CONNECTED WITH MOTORS

**TYPICAL OPERATION

TYPICAL OPERATION WOULD INVOLVE THE USER TURNING ON THE UNIT TO THE TOY GAME WHEN TURNED ON, THE UNIT COMES UP ON THE DEFAULT CHANNEL AND TRANSMITS A CONTINUOUSLY STEAM DATA.THE USER CAN NOT, AT WILL , CHANGE TO ANY OTHER OF THE PREDEFINED CHANNEL.

CONFIGURATION

THE TRANSMITTED RF CIRCUITRY CONSISTS OF A CRYSTAL CONTROLLED OSCILLATOR, FOLLOWED BY TWO RF AMPLIFIER & FINALLY AN ANTENNA. THE MAIN CHARACTERISTICS OF THIS CONFIGURATION ARE SHOWN BELOW:

FREQUENCY RANGES	49.890MHZ	
OCCUPIED BANDWIDTH (-26DB)	<100KHZ	MAX
FREQUENCY STABILITY	.+/-10 PPM	MAX
MODULATION METHOD	F M	5KC DEV. MAX
OUTPUT POWER	80 DBUVM	MAX

REFERENCE OSCILLATOR

A 16.630MHZ CRYSTAL OSCILLATOR IS USED TO GENERATE THE REFERENCE FREQUENCY. IT HAS A STABILITY OF +/-10 PPM.

AMPLIFIER

THE OSCILLATOR IS FOLLOWED BY ONE MULTIPLE AND ONE AMP . THSES ACT MORE AS BUFFER FOR THE OSCILLATOR THAN AS GAIN STAGE. AND ADD VERY LITTLE POWER TO THE SIGNAL. THE FINAL OUTPUT IS 80 DBUV PER METER MAX

ANTENNA

THE SYSTEM ANTENNA IS A COPPER ANTENNA ROD LINKED TO PCB. ANTENNA ROD CAN BE TURNED OUP OR IN PENDNG USER'S WISH.

MICROCONTROLLER

THE TX SYSTEM IS CONTROLLED BY A SMALL MICROCONTROLLER RUNNING WITH A 4MHZ +/-10% OSCILLATOR