

DYNAMIC INDUSTRIES CO LTD
UNIT 2205, 22F, 57, HUNG TO RD.KLN .HONG KONG.
TEL :-852-2389-8230
FAX :-852-2790-5521
ENGINEERING DEPARTMENT

ITEM NO: 1341
MODEL NAME:- EDGE RUMNNER3
FREQUENCY :- 49.860 MHZ
DATE :- 15/1/2004
BY: B.LEE
REV 0
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(CIRCUIT DESCRIPTION)

**** CIRCUIT DESCRIPTION :-**

IN TRANSMIT MODE.

WHEN THE CONTROL KNOB IS PRESSED, A CW SIGNAL IS TRANSMITTED. THE CRYSTAL CONTROLLED OSCILLATOR Q1 OUTPUT IS COUPLED THROUGH C8 TO THE BASE OF Q2. FROM Q2 THE SIGNAL IS FED THROUGH T-1 . THE LOW PASS FILTER MADE UP OF C13 & T-1 & C14 L-3 WHICH IS CONNECTED TO THE ANTENNA. THE MODULATION IS PROVIDED BY IC-1 . WHEN SWITCH IS PUSHED, THE MODULATION SIGNAL WILL BE SENT TO THE BASE OF Q2 THAT WILL MODULATE THE RF WAVE DIRECTLY. ENERGY IS SUPPLIED BY A 9.V ALKALINE BATTERY.

IN RECEIVE MODE

Q1 IS THE SUPERREGENERATOR & DETECTOR.
IC-1 IS THE SIGNAL PRE-AMPLIFIER & DECODER.
Q2/Q3/Q4/Q5/Q6/ Q7/Q8/Q9 ARE THE MOTOR DRIVERS.
U1/U2/U3/U4 ARE THE MOTOR CURRENT DRIVERS.
ENERGY IS SUPPLIED BY FIVE 1.2V AA TYPE NICAB BATTERY.

**** 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. ENERGY IS SUPPLIED BY A 9.V ALKALINE BATTERY.

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(CIRCUIT DESCRIPTION)

** BACKGROUND

THE DEVICE DESCRIBED HEREIN IS A WIRELES (RF) TOY GAME CAR CONTROLLER TRANSMITTER FOR USE WITH THE TOY GAME CAR 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 ONE POWER AMPLIFIER, & FINALLY, AN ANTENNA. THE MAIN CHARACTERISTICS OF THIS CONFIGURATION ARE SHOWN BELOW :-

FREQUENCY RANGES	49.860 MHZ	
OCCUPIED BANDWIDTH (3DB)	./+/- 2KHZ	MAX
FREQUENCY STABILITY	./+/- 20 PPM	MAX
MODULATION METHOD	A M	100% .
OUTPUT POWER	80DBUV / M	MAX

REFERENCE OSCILLATOR

A **49.860 MHZ** CRYSTAL OSCILLATOR IS USED TO GENERATE THE REFERENCE FREQUENCY. IT HAS A STABILITY OF +/- 20 PPM.

AMPLIFIER

THE OSCILLATOR IS FOLLOWED BY ONE AMPLIFIER. THIS ACTS MORE AS BUFFER FOR THE OSCILLATOR THAN AS GAIN STAGE. AND ADD VERY LITTLE POWER TO THE SIGNAL. THE FINAL OUTPUT IS **80DBUV** PER METER MAX

ANTENNA

THE SYSTEM ANTENNA IS A SLEEVED WIRE ANTENNA LINKED TO PCB . ANTENNA CAN **NOT** BE TURNED OUT OR IN PENDING USER'S WISH.

MICROCONTROLLER

- * THE TX SYSTEM IS CONTROLLED BY A SMALL MICROCONTROLLER RUNNING WITH A **128KHZ +/- 20%** OSCILLATOR
- * THE RX SYSTEM IS CONTROLLED BY A SMALL MICROCONTROLLER RUNNING WITH A **128KHZ +/- 20%** OSCILLATOR