

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:**MODEL NAME:- RC BEE**FREQUENCY :- **49.860 MHZ**

DATE :- 22ND JAN 2002

BY: B.LEE

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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 C 2 TO THE BASE OF Q2. FROM Q2 THE SIGNAL IS FED THROUGH T1. THE LOW PASS FILTER MADE UP OF C8 & T-1 & C9 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. Q3 & Q4 ARE THE AUTO DC POWER CUT OFF, WHEN KEY(S) IS NOT TO BE PRESSED, THE DC POWER SUPPLY WILL BE CUT AFTER 3-6 SECONDS FROM THE MAINS SUPPLY. 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.
QQ2/Q3/Q4/Q5/Q6/ & Q7 ARE THE MOTOR DRIVERS.
ENERGY IS SUPPLIED BY FOUR 1.5V AA TYPE ALKALINE BATTERY.

ANTENNA AND GROUND CIRCUITRY.

THIS UNIT MAKES USE OF AN EXTERNAL 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 **TWO** MOTOR

** 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	+/- 2KHZ MAX.
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 MH** 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 ROD ANTENNA LINKED TO PCB. THE ANTENNA CAN BE TURNED OUT OR IN PENDING USER'S WISH.

MICROCONTROLLER

- * THE TX SYSTEM IS CONTROLLED BY A SMALL MICROCONTROLLER RUNNING WITH A **128 KHZ-160KHZ** OSCILLATOR
- * THE RX SYSTEM IS CONTROLLED BY A SMALL MICROCONTROLLER RUNNING WITH A **128 KHZ-160KHZ** OSCILLATOR