

DYNAMIC INDUSTRIES CO LTD
UNIT 209, STR. 17, HONG TO SEIKUN, HONG KONG.
TEL: +852-2399-8208
FAX: +852-1798-5521

ITEM NO:
MODEL NAME: SKY SCREENER
FREQUENCY: 49.000000HZ
DATE: 12TH FEB 2003
BY: BLES
REV: 0000
PAGE: 01 OF 2

ENGINEERING DEPARTMENT (CIRCUIT DESCRIPTION)

CIRCUIT DESCRIPTION:-

IN TRANSMIT MODE:

WHEN THE UNIT IS TURNED ON, A CW SIGNAL IS TRANSMITTED. THE CRYSTAL CONTROLLED OSCILLATOR Q4 OUTPUT IS COUPLED THROUGH C4 TO THE BASE OF Q1. FROM Q1 THE SIGNAL IS FED THROUGH T1, THE LOW PASS FILTER MADE UP OF C8, T1 & C9 WHICH IS CONNECTED TO THE ANTENNA. THE MODULATION IS PROVIDED BY IC1, FORWARD TONE SIGNAL IS TO BE SENT FIRST WHEN POWER IS ON. WHEN ONE OF THE CONTROL SWITCH IS PRESSED, THE MODULATION CONTROL SIGNAL WILL BE SENT TO THE BASE OF Q2 THAT WILL MODULATE Q1 RF WAVE DIRECTLY. ENERGY IS SUPPLIED BY A 9V ALKALINE BATTERY.

IN RECEIVE MODE:

Q4 IS THE SUPERREGENERATOR & DETECTOR. Q2, Q3 & Q4 ARE THE SIGNAL STAGE AMPLIFIERS. IC1 IS THE SIGNAL DECODER. Q1 & Q3 & Q5 & Q6 ARE THE MOTOR-3 DRIVERS. Q4(Q2)(Q3)(Q5) (Q6) Q7 ARE THE MOTOR-1 DRIVERS. Q1(Q2)(Q3)(Q4)(Q5)(Q6) Q7 ARE THE MOTOR-2 DRIVERS. ENERGY IS SUPPLIED BY A 9V (NIMH) RECHARGEABLE NICAD BATTERY.

ANTENNA AND GROUND CIRCUITS:

THIS UNIT MAKES USE OF AN EXTERNAL 30CM 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 9V ALKALINE BATTERY.

DYNAMIC INDUSTRIES CO LTD
UNIT 206, 22F, 51, HUNG TO ROAD, HONG KONG
TEL: +852-2188-8239
FAX: +852-2788-3331
ENGINEERING DEPARTMENT

ITEM NO:
MODEL NAME: RC AIR SURFER
FREQUENCY: 433.92MHz
DATE: 12TH FEB 2001
BY: B LEE
REV: 01A2
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(CIRCUIT DESCRIPTION)

BACKGROUND

THE DEVICE DESCRIBED HEREIN IS A WIRELESS (RF) TOY GAME "SKY SCREAMER" TRANSMITTER FOR USE WITH THE TOY GAME "SKY SCREAMER" 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 AND WITH PROPELLER(S).

TYPICAL OPERATION

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

CONFIGURATION

THE TRANSMITTER 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	433.92MHz
OCCUPIED BANDWIDTH (3dB)	+/- 25KHz
FREQUENCY STABILITY	+/- 30 PPM
MODULATION METHOD	AM
OUTPUT POWER	300mW / 1M APPROX.

REFERENCE OSCILLATOR

A 433.92MHz CRYSTAL OSCILLATOR IS USED TO GENERATE THE REFERENCE FREQUENCY. IT HAS A STABILITY OF +/- 30 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 300mW PER METER MAX.

ANTENNA

THE SYSTEM ANTENNA IS A ROD ANTENNA LINKED TO PCB METAL BRACKET. ROD ANTENNA CAN BE TURNED OUT OR IN PENDING USER'S WISH.

MICROCONTROLLER

THE SYSTEM IS CONTROLLED BY A SMALL MICROCONTROLLER RUNNING

- WITH A 12MHz LOCAL OSCILLATOR FOR TX (SET BY INTERNAL)
- WITH A 12MHz LOCAL OSCILLATOR FOR RX (SET BY EXTERNAL RESISTOR)