FCC requirements § 2.1033 (b)(4)

CIRCUIT DESCRIPTION.
SCHEMATIC DIAGRAM

This page is followed by the RW-R13 transmitter description and schematic diagram.

Technical Description: RW-R13

Circuit Operation

The RW-R13 is a store and forward repeater containing a superheterodyne receiver and transmitter, both operating on 318 MHz. It is used for extending the range of short range communication in security systems. The receiving antenna is connected directly to a terminal on the circuit board. Signals from the receiving antenna are applied to a matching network which is connected to a rf transistor amplifier, T1. The output of T1 passes through a SAW bandpass filter and impedance transforming transistor T2 and is input to an rf integrated circuit, U1. U1 contains a mixer, intermediate frequency amplifier, and am detector. T3 generates the local oscillator frequency of 307.3 MHz. The oscillator is based on a Surface Acoustic Wave (SAW) resonator. After mixing in U1, the resulting 10.7 MHz if signal is filtered by ceramic filter CF1 and further amplified in U1. The detected output of U1 is split into two signal paths which have two separate base band filters and enters two analog-to-digital inputs of microcontroller U4. One input serves as an interference and jamming indicator and the other is the received signal. The microcontroller performs data slicing and decides whether the signal is valid. It makes a decision whether retransmission should be done should be issued and if so, issues appropriate commands to the transmitter circuit.

The transmitter consists of oscillator and buffer transistors T4 and T5 respectively, and a SAW resonator. It is mounted on the same circuit board as the receiver and has a printed circuit antenna.

The RW-R13 has a non volatile electrically programmable memory, U7, for storing system parameters. An on board push button S3 serves to set up the system during security system installation. Address codes of up to eight transmitters can be stored in U7.

Dipswitches SW1 and SW2 are used for chaining repeaters for additional range extension.

The RW-R13 is powered by 12 volts a-c or d-c which is applied to a bridge rectifier consisting of diodes D1, D2, D3, and D4. A voltage regulator integrated circuit, U2, converts unregulated d-c of 12 volts to regulated 5

volts for circuit operation and for charging 3 backup nickel cadmium or nicket metal hydride storage cells connected in series.

Intended Use and Special Features

The RW-R13 is intended for use in security systems extend the range of short range radio communication links from security sensors and remote control transmitters to control panels. Its special features are:

- Superheterodyne receiver circuit with SAW rf bandpass filter and SAW stabilized local oscillator
- SAW stabilized transmitter
- Devices may be chained for additional range
- Signal reception and jamming indicating LED's
- Internal storage battery backup