CIRCUIT DESCRIPTION.

THE DESCRIPTION OF RECEIVER CIRCUIT

1.ANTENNA CIRCUIT

The antenna is internal loop type and it consists of tuning circuit with trimmer capacitor TC1, which selects necessary energies from the air.

2.SMALL SIGNAL AMPLIFIER

The small signal amplifiers are cascode type and they are composed of Q1,Q2 and several passive components. The RF signals of small signal amplifiers are fed from antenna circuit and fed to the mixer(Q3). The amplified RF signal is tuned by L1 and C5.

3.CRYSTAL OSCILLATION CIRCUIT AND MULTIFIER

The crystal oscillation circuit is composed of crystal(X1), transistor(Q6) and several passive components. This oscillation circuit oscillates at the 3rd overtone frequency of nominal crystal frequency and the tuning circuit (L5 & C25) tunes to the 3 times of oscillating frequency. The tuned signal is fed to the multiplier to multiply 3 times of tuned signal. The Fosc X 9 signal is tuned by L7 & C29 and is fed to the mixer (Q3).

4.THE MIXER

The mixer is composed of Q3 and several passive components. The mixer needs two kinds of RF signals to make IF signal. One is RF signal from small signal amplifier and the other is local signal from crystal oscillation circuit. The IF signal is fed to the ceramic filter and the filter filters the signal . The IF signal from ceramic filter is fed to the 1st IF amplifier.

5.1st IF AMPLIFIER

Q4 is an amplifier of 1st IF. It amplifies the 21.4MHz signal, which is fed to the IF IC (KS8514CDIF).

6.2ND LOCAL OSCILLATOR

The 2nd local oscillator makes the 20.945MHz signal using crystal (X2) and transistor inside of IF IC. The 20.945MHz signal is used for 2nd IF signal inside of IF IC.

7.2ND MIXER AND DEMODULATING CIRCUIT

The 2nd IF mixer makes 455KHz signal and demodulating circuit demodulates 455KHz signal and makes demodulated baseband signal inside of IF IC. The demodulated signal is fed to the low pass filter.

8.WAVEFORM RECOVERY CIRCUIT

The demodulated signal is not digital signal yet. The signal is recovered to the digital signal inside of IF IC, which is fed to the CPU.

9.DC-DC CONVERTER

The receiver uses +1.5V AAA battery for the power source. The +1.5V is not enough to operate CPU and EEPROM. The +1.5V is converted to +3.0V by DC-DC converter. U2 (RH5RI301B) , D1 and several passive components consists of DC-DC converter.

10.CPU AND IT'S PERIPHERALS

The CPU has it's own program inside in it and controls the whole circuit of receiver. The CPU has several peripherals. LCD, buzzer and vibrator are used to alert to the user when the receiver receives a specific calls.