CIRCUIT DESCRIPTION(FRS-0168)

TRANSMITTER SECTION

RF Frequency Oscillator(VCO)

Q9 functions as a voltage control clap oscillator (VCO).The frequency is determining by the Q9,C45,C46,C53,C54,C23,D7,DV1 and L1.The RF output of VCO is fed to both of the PLL U2 prescaler input and RF driver of transmitting by the buffer Q10.

PLL CIRCUIT

U2 on main PCB is a phase lock loop (PLL)IC. The output of the oscillator(crystal 20.95MHz)is input to the programmable reference divider .This 20.95MHz frequency is divided to 12.5KHz as the reference frequency built in the PLL IC.RF frequency from VCO is still divided to about 12.5KHz by the prescaler built in the PLL IC. The phase difference between the reference frequency and the divided frequency by the prescaler will output to the tracking filter(C52.R37.C49.R38.C59.) for locking the frequency .The DC voltage by filtering from the tracking filter is fed the varactor diode to control the VCO oscillator frequency until the VCO frequency is locked. For the transmitter ,the frequency is from 462.5625 to 467.7125MHz through CH1 TO CH14.For the receiver ,the frequency is from 441.1625 to 446.3125 MHz .VC1 is used to adjust RF frequency .The choice of crystal and components is such that the required frequency tolerance is maintained over the required range of temperature and voltage.

RF Amplifier and Power Amplifier

In the transmitter mode, the switch diode D13 and D12 are ON.RF signal from the buffer Q14(on main PCB) is fed to the base of T1 through the RF drive Q15 by the coupled capacitor.T1(on main PCB) is RF power amplifier.

Circuits for Suppression of Spurious Radiation

In addition to inter-stage filtering the out of final T1 is coupled to the antenna through one 'LC' and double 'PI' network (L7,C94,C91,L4,L10, L11,C75,C90 and C88)
Which serves both to match and reduce harmonic to adequate level .The RF maximum power is 0.12 Watt ERP.

Circuits for Limiting Power

During alignment, R89 is selected to provide about 0.12 Watt ERP.