

Explanation of circuit

1. The operation of PLL circuit

Then circuit of a PLL part is controlled by the CPU(IC1) in which a LCD driver and A/D converter are built.

- 1) The function selected by the specified buttons recognized by the CPU(IC1) and the contents of display on LCD is displayed by a LCD driver in a CPU(IC1).
- 2) The PD (Phase Det) of the DC voltage is output from #14 Pin of IC2. The PD signal inputs to the oscillating circuit of D5, L18, Q3
- 3) The oscillating circuit composed of D5, L18, Q3 generates the oscillating frequency.
- 4) The oscillating frequency from Q3 is fed to #16 Pin of PLL IC(IC2) to check the error range of the oscillating frequency.
It repeats 1), and 2) procedures to obtain the stable frequency.
- 5) The final frequency is turned minutely by CTI.

2. The operation of RX (Receipt of Signals)

The circuit of the RX is a type of a double superheterodyne. The circuit is composed of a RF amplifier, the 1st oscillation by VCO, the 1st mixer, IF AMP, a detection circuit of FM, a squelch circuit and an audio amplification circuit.

- The 1st Oscillating frequency : 400.8625MHz~447.0125MHz

- The 2nd Oscillating frequency : 21.250MHz

- 1) The signal caught by an antenna is fed to L15 and is amplified into a radio frequency by Q8, Q9. The amplified radio frequency through L17 and L36 (Band Pass Filter) is fed to the base of mixer transistor Q10.

The 1st oscillating frequency of the selected channel is transformed into 27.1 MHz lower than the receiving frequency. It is fed to the base of a transistor Q10 and is mixed with the received frequency.

- 2) The mixed signal from a transistor Q10 goes through the 21.7 MHz filter and the filtered output is fed to the base of a transistor Q13 (IF AMP).
- 3) The signal of the 27.1MHz through Q13 is mixed with the 2nd oscillating frequency (21.250MHz) in IC3(IF IC). The 450KHz signal generated in the 2nd mixer goes through the ceramic filter and the filtered Output is fed to #5 Pin of IC3.
- 4) The detected output of the audio signal through IC5(1/2HPF) cut the low range.
- 5) The sound quantity of the filtered audio signal is controlled with the electric volume (up / down) and is amplified by the audio amplified IC. The amplified audio signal is output to a speaker. The speaker has 85Ω load.

6) Squelch

The noise output from IC3(#9pin) is input again to IC3(#10-#11) and is amplified and output through IC3(C#11pin). The detected voltage is fed again to a micom IC(#64pin) and controls the meter and squelch.

3. The operation of TX (Transmission of signal)

The circuit of a TX part is composed of a radio frequency oscillation by PLL IC2, a frequency modulation circuit, a microphone amplification circuit, a power amplification circuit, a low pass filter circuit, a microphone amplification circuit, a power amplification circuit, a low pass filter circuit and so forth.

-TX frequency : 462.5625MHz~ 467.7125MHz

- 1) The weak low frequency output from a C-MIC is amplified by the low frequency amplifier(IC5 1/4).
- 2) The amplified signal goes through the low pass filter (IC5 1/4) and the frequency is modulated by the variable diode(D6)
- 3) Pressing PTT button, micom IC(IC1) controls PLL IC (IC2) and PLL IC(IC2) activates the voltage control oscillator (VCO) to oscillate the frequency between 462.5652MHz and 4687.2175MHz.
- 4) The signal generated by VCO is amplified by a Q41 predrive and a Q1 drive and is given to the final terminal of the RF power TR Q42,43,45 base.
- 5) The final RF power TR Q42,43,45 are power amplifiers and they output 500mW.
- 6) The amplified signal through LPF is radiated into the air.