



## 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 1<sup>st</sup> oscillation by VCO, the 1<sup>st</sup> mixer, IF AMP, a detection circuit of FM, a squelch circuit and an audio amplification circuit.

- The 1<sup>st</sup> Oscillating frequency : 400.8625MHz~447.0125MHz

- The 2<sup>nd</sup> 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 1<sup>st</sup> 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 2<sup>nd</sup> oscillating frequency (21.250MHz) in IC3(IF IC). The 450KHz signal generated in the 2<sup>nd</sup> 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 in 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.

