

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 button is 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 #3 Pin of IC2. The PD signal inputs to the oscillating circuit of D14, L29, Q26.
- 3) The oscillating circuit composed of D14, L29, Q26 generates the oscillating frequency.
- 4) The oscillating frequency from Q26 is fed to #1 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 tuned minutely by CT1.

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, the 2nd oscillation by a X-TAL and a PLL IC, the 2nd 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 L16 and is amplified into a radio frequency by Q6, Q7. The amplified radio frequency through L19 and L21(Band Pass Filter) is fed to the base of a mixer transistor Q8.
The 1st oscillating frequency of the selected channel is transformed into 27.1MHz lower than the receiving frequency. It is fed to the base of a transistor Q8 and is mixed with the received frequency.
 - 2) The mixed signal from a transistor Q8 goes through the 21.7MHz filter and the filtered output is fed to the base of a transistor Q9(IF AMP).
 - 3) The signal of the 27.1MHz through Q9 is mixed with the 2nd oscillating frequency(21.250MHz) in IC11(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 IC11.
As a result the audio signal is detected and is output.
 - 4)The detected output of the audio signal through IC9(2/4HPF) cut the low range.
 - 5)The sound quantity of the filtered audio signal in controlled with the volume (VR4)and is amplified by the audio amplified IC. The amplified audio signal is output to a speaker. The speaker ha a 850 load.

6) Squelch

The noise output from IC11(#9pin) is input again to IC11(#10-#11pin) and is amplified and output through IC11(C#11pin). The detected voltage is fed again to a micom IC(#32pin) 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 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(IC9 1/4).
- 2) The amplified signal goes through the low pass filter(IC9 1/4) and the frequency is modulated by the variable diode(D16).
- 3) Pressing PTT button, micom IC(IC11) controls PLL IC(IC2) and PLL IC(IC2) activates the voltage control oscillator(VCO) to oscillate the frequency between 462.5625MHz and 4687.7125MHz.
- 4) The signal generated by VCO is amplified by a Q11 predrive and a Q2 drive and is given to the final terminal of the RF power TR Q1 base.
- 5) The final RF power TR Q1 is a power amplifier and it outputs 500mw.
- 6) The amplified signal through LPF is radiated into the air.

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