

The first IF signal is amplified by Q113 and then enters IC102 (TA31136FN), where the signal is mixed again with the second local oscillator signal (50.4MHz) to become a 450KHz second IF signal. The second IF signal is then fed through a ceramic filter (N:

The TX-RF signal outputted from Q703 in VCO circuit is amplified by Q101, driver Q110 and Q109, The amplified signal is then fed to IC101 (final PA) and passes through LPF

before reaching the antenna terminal.

3.3 APC

The APC circuit stabilizes the output power at a predetermined level. D101 and D102 transform the signal from detector to DC voltage, which is then compared with the reference voltage from CPU in IC104 and outputted as DC control voltage. The DC control voltage controls the output power by controlling the grid of IC101.

4. PLL Circuit

The transmit signal and the receive first L.O. signal are generated by PLL circuit. PLL circuit consists of TX frequency oscillator (Q701), RX frequency oscillator (Q702), buffer amplifier (Q703), RF amplifier (Q102), PLL IC (IC801), LPF and TX/RX VCO control switch (Q704, Q706).

In transmit mode, IC120 transmits the frequency data to PLL IC. Q704 is turned on to activate TX VCO. The outputted signal is amplified by Q703, Q102, and then divided by PLL IC into 2.5KHz, 5KHz or 6.25KHz signal. The divided signal is compared with 2.5KHz, 5KHz or 6.25KHz reference signal from 16.8MHz crystal oscillator (2.5 PPM frequency stability) in the phase comparator. The frequency control voltage outputted from the phase comparator is sent to TX VCO after passing through LPF (Q802, Q803). In the meantime, modulation signal (TX) is passed to TX VCO for frequency modulation.

The working principle in receive mode is similar to that in transmit mode.

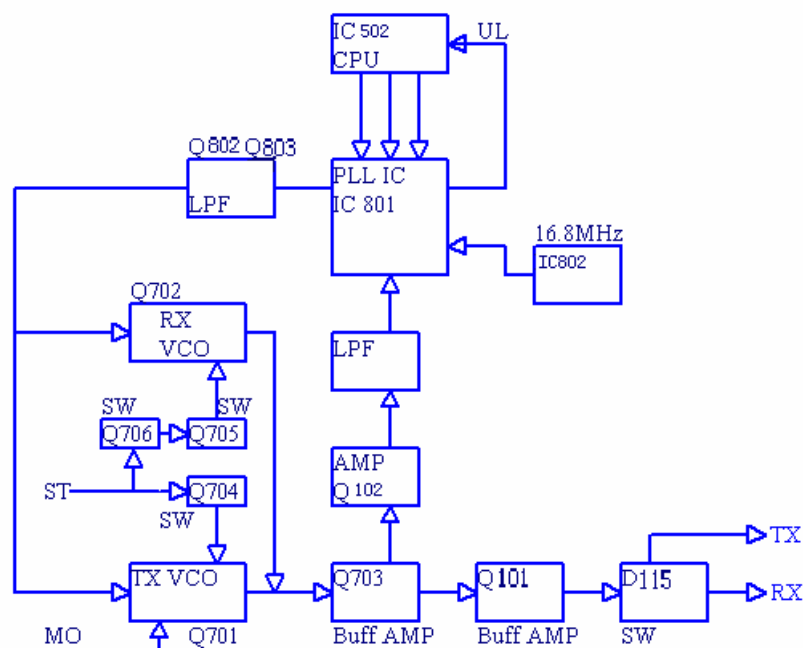


Fig 3 PLL Circuit

5. Control Circuit

The control circuit is composed of CPU, reset IC and power supply control circuit.

5.1 CPU

IC502 (CPU) operates at 9.8304MHz. CPU controls the data transmission among E2PROM (IC501), Rx circuit, Tx circuit, control circuit, display circuit and peripheral circuit.

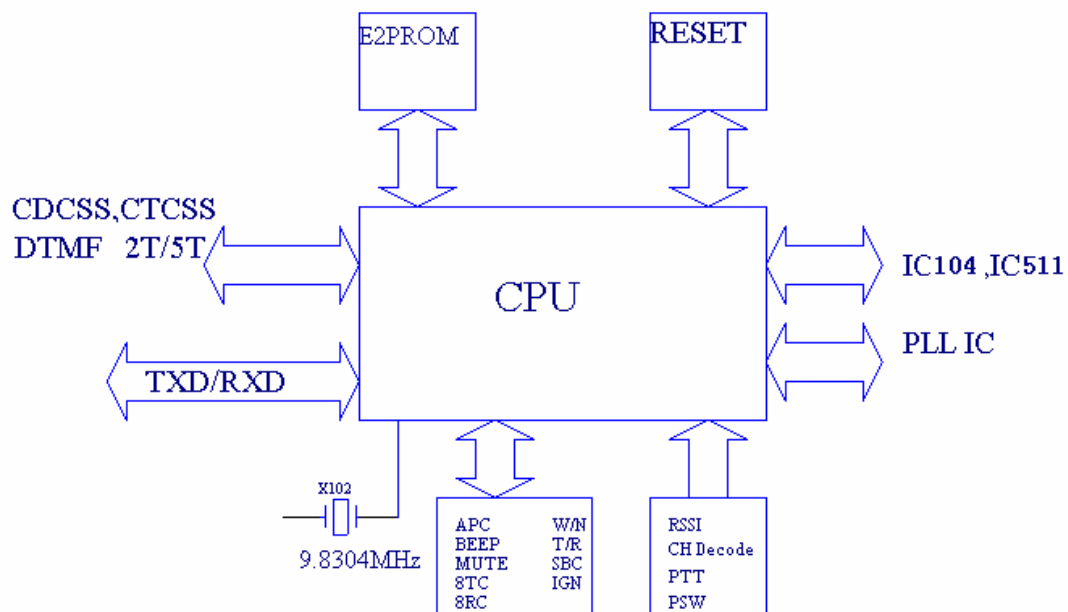


Fig 4 Control Circuit

5.2 Power Supply

Power supply of the radio is derived from the battery which supplies battery B+. D135 and D137 are over-voltage protection diodes. Power-on/off can be controlled by software.

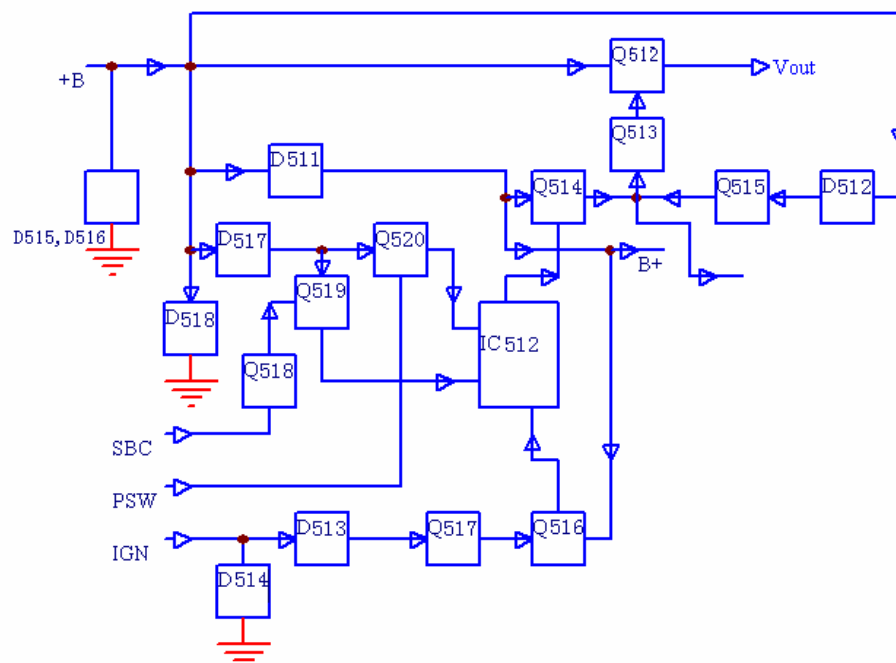


Fig 5 Power Supply Circuit

Fig6. Display Circuit