

4. CIRCUIT DESCRIPTION

4-1 PLL Block

The Phase-Locked Loop(PLL) is comprised of a VCO circuit (Q202,Q203), reference oscillator X201(21.25Mhz), PLL IC201 and PLL Loop filter (C220,R226,C217,R227,C203). Oscillation from the VCO circuit is output from the collector of buffer amplifier Q203.

4-2 Voltage-Controlled Oscillator (VCO)

The VCO circuit is comprised of C204,L202,C205 and D203 is varactor diode which change capacitance with different bias levels applied (determined by error voltage from the PLL filter). The change in capacitance cause D203 to change oscillation frequency. D201 switches the VCO output between the first local signal during receive(LO=RX frequency –21.7Mhz) and the transmission frequency during transmit.

4-3 Bufer Amplifier (TX mode)

The modulated transmit signal is output from Q203 of the VCO circuit and applied to buffer amplifier Q301. The amplified signal passes through C224 and is applied to a second buffer amplifier comprised of Q302 which will amplify the signal from 10mW to 200mW. The amplified signal is then applied to the the final power amplifier Q305(MRF9482)

4-4 Final Power Amplifier (Q305)

The transmit RF signal supplied by Q302 is further amplified to the desired level by final power amplifier Q305. The transmit RF signal output from Q305 passes through a low pass filter comprised of C314 – C320 and L311- L312 to eliminate harmonics and spurious signals. The RF signal then passes through antenna terminal and is output through the antenna.

5. Troubleshooting

Problem	Solution
No Power	Recharge or Replace Battery
Message Not received	Make sure the PTT button is completely pressed as you transmit. Reposition or replace batteries
Message Not received	Confirm transceivers have the same channel and privacy codes settings.

	Increase Volume level Release PTT Button
Reception of unwanted signals	Turn on the Codes mode and set code number to match the setting of the target transceiver.
Cannot change channel and codes settings	Make radio is unlocked. See page for more information.
Low batteries	Replace batteries.

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