

Handheld Transceiver Circuit Description

I .Summary:

Handheld Transceiver is composed of MCU control board, RF radio and battery. Where MCU control board processes the keyboard information, passes the corresponding instructions to the RF radio or receives the data from the RF radio via serial port, The RF radio transmits or receives the data to/from the air. The principle is shown in Fig.1.

Handheld Transceiver

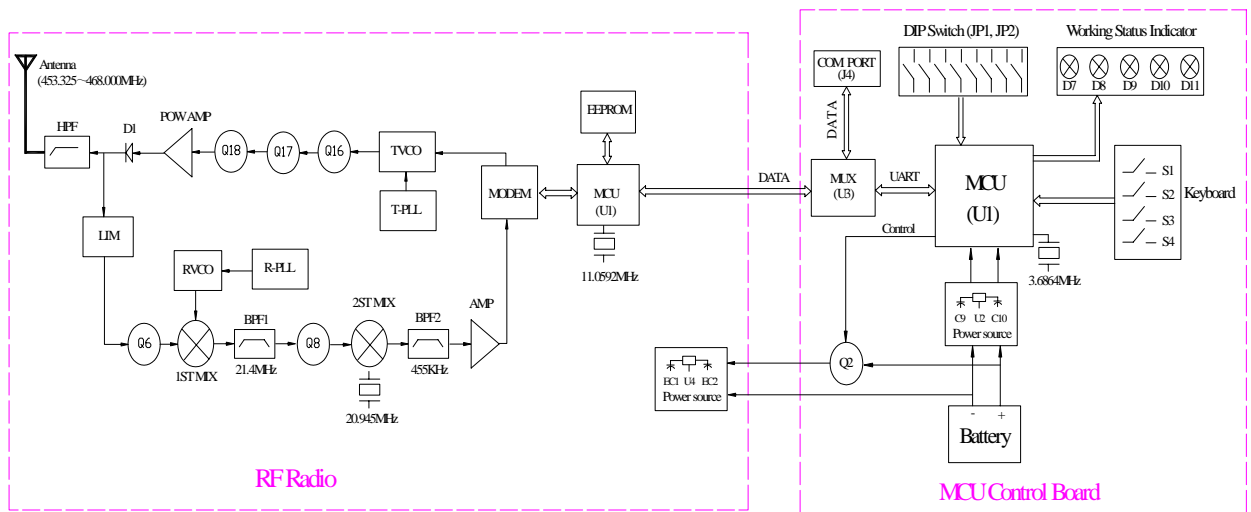


Fig.1

II . Description of all parts

1. RF radio

It includes the following parts shown in Fig.2

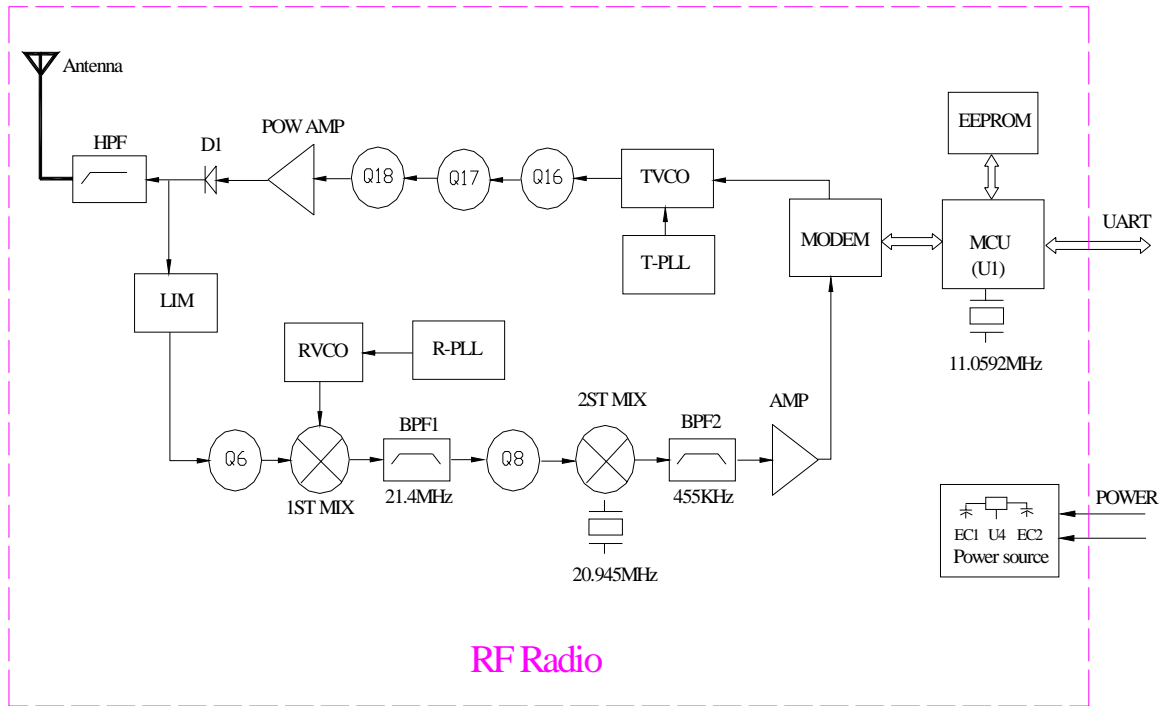


Fig. 2

1) Power Circuit

The RF radio is powered by battery. The power source is stabilized via IC U4 and filtered by EC1 and EC2 to supply to the RF radio circuit.

2) Transmitter system is shown in Fig.3

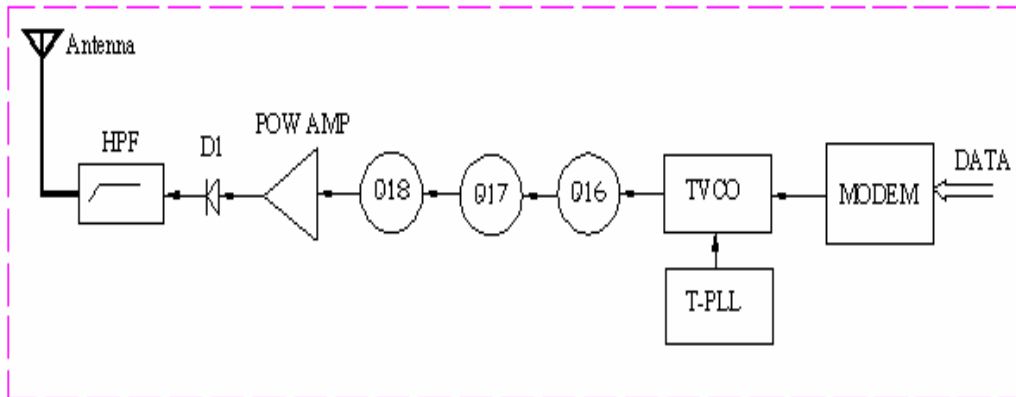


Fig.3

The digital data from MCU is modulated to analog signal by MODEM. The analog signal enters into TVCO and T-PLL for carrier-modulating. The modulated signal will be amplified by audion Q16, Q17, Q18. The amplified signal will enter into POW AMP for power amplifying. The output of AMP passes diode D1 and be filtered by high-pass filter HPF. The filtered signal will be feed-in the antenna and sent out to air.

3) Receiver system is shown in Fig.4.

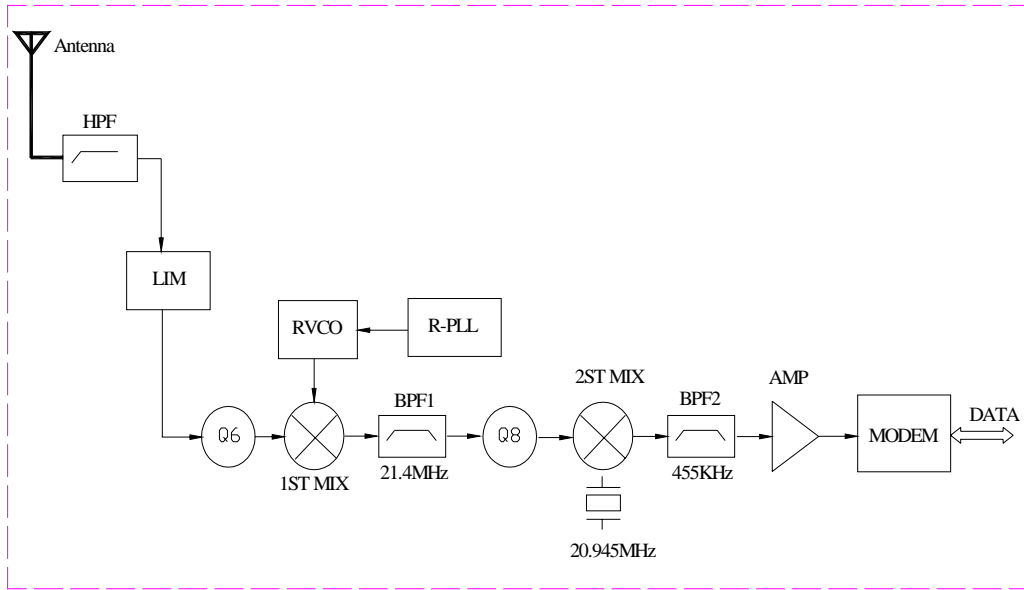


Fig.4

The signal from antenna will be filtered by a high-pass filter HPF to get rid of the undesired low frequency signal. The filtered signal will pass a limiter LIM and be amplified by an audio Q6. The output of Q6 will be mixed with the output frequency from RVCO and R-PLL in 1ST MIX. The output of 1ST MIX will be filtered by a 21.4MHz of band-pass filter BPF1. The output of the BPF1 will be amplified by an audio Q8 and its output will be mixed with 20.945Mhz signal in 2nd MIX. The output of 2nd MIX will be filtered by a 455Khz band-pass filter BPF2 and amplified by the amplifier AMP. The output of AMP will be demodulated by MODEM to digital data and passed to MCU.

4) MCU, memory and Modem is shown in Fig.5.

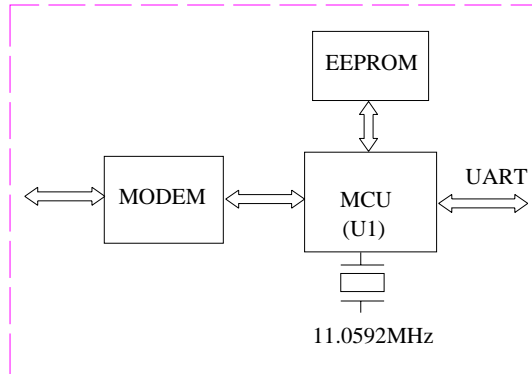


Fig.5

MCU controls the operations of the RF radio. The working clock is 11.0592MHz which is provided by an external crystal. It communicates with external devices via UART and store parameters such as the work mode, channel and transmitting frequency etc. in EEPROM. At the same time it sends or receives data with MODEM via I/O port.

2. MCU Control Board

The main parts are shown in the following Fig.6.

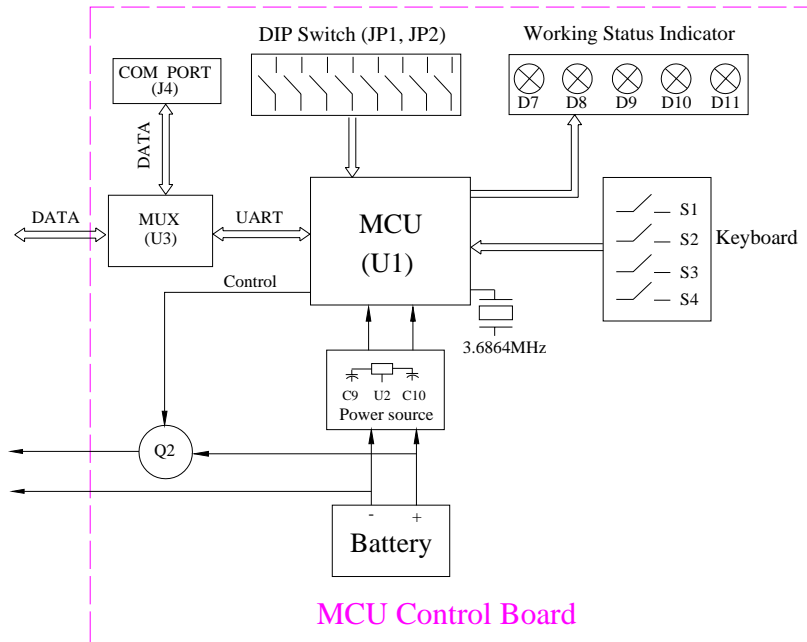


Fig.6

1) Power Circuit

The MCU Control Board is powered by battery. The power source is stabilized via IC U2 and filtered by C9 and C10 to supply to MCU Control Board.

2) MCU control circuit

MCU (U1) is a control IC. It is connected with four keyboards (S1-S4), five LEDs (D7~D11) and two 8-bit DIP switches (JP1, JP2) which form 16 bit address code. The external data interface (COM PORT J4) communicates with MCU via MUX U3. MCU communicates with RF radio via UART and MUX U3. It controls the on-off of the audion Q1 via I/O port to control the power of the RF radio. MCU sends out the corresponding instructions through RF radio while it detects a keyboard pressed and receives the feedback data from the control unit via RF radio. At the same time, It displays the work status of the control unit with five LEDs.