

T/Rx:400-480MHz  
RF Power: 5W  
Spacing:12.5K,F3E&4FSK

## Circuit Description

1 TX Transmitter: Audio signal from MIC is sent to the chip. In RDA1846S, the signal is amplified limited, amplified, pre-emphasis, modulated into RF signal and then sent to the RF power amplifier chip to amplify it . Then the signal passed electronic switching circuit, through the low pass filter circuit to filter out the noise, ultimately transmitted from the antenna.

2 RX receiving section : The desired or undesired audio signal received via the antenna are fed to a band pass filter, to filter out the out-of-band interference signal , and then amplified through a radio frequency amplifier (RF\_AMP) . The amplified signal is then fed to a band pass filter to filter out undesired interference signal. After processed by demodulation, CTCSS / CDCSS decoder, the desired audio signal from the chip RDA1846S output the audio signal to increase the audio signal from the audio power amplifier to directly drive the speaker amplification.

3 Power supply: single lithium through power management chip output through fuse are converted to two flows , one flow through the DCDC supply 3.3V DC voltage supply regulated for control chip, the RF baseband chip RDA1846S. Another flow supply power for the RF power amplifier . 5v output voltage can be supplied from external using adaptor via mini usb port, and then charge the radio battery pack through charge management ic.

4 the MCU control circuit

MCU control circuit consists of the microcontroller , EEPROM, voice ic and other components, this section has the following features : to initialization data of radio and save data to EEPROM; to detects battery voltage and to make response ; to switch and control PTT receive / transmit based on the input signal ; to open / close the squelch circuit and the squelch level signal based on the decoded signal of the input signal; to control high / low power switch , audio amplifier , voltage controlled oscillator power supply, RX power supply and TX power supply ; RDA circuit power supply etc .

26 MHz crystal oscillator for RF IC(RDA1846S).

A major technical description of EUT is described as following:

Hardware Version	Ver.3.0	
Software Version	V2.2.1	
Power Supply	DC 7.4V	
Communication Type	Voice / Data	
Operation Frequency Range	From 400MHz to 480MHz--UHF	
Modulation Type	Analog Voice:	FM
	Digital Voice/Digital Data:	4FSK
Digital Type	DMR	
Channel Separation	Analog Voice:	12.5 kHz
	Digital Voice/Digital Data:	12.5 kHz
Support Data Rate	9600bps	
Emission Designator	Analog Voice:	<input checked="" type="checkbox"/> UHF:10K0F3E-5W-12.5kHz
	Digital Voice/Digital Data:	<input checked="" type="checkbox"/> UHF:6K61F1D-5W-12.5kHz <input checked="" type="checkbox"/> UHF:6K89F1W-5W-12.5kHz
Rated Output Power	5W (It was fixed by the manufacturer, any individual can't arbitrarily change it.)	
Maximum Transmitter Power	36.92dBm(5W-12.5kHz)-Analog	36.90dBm(5W-12.5kHz) - Digital
Antenna Designation	Detachable	
Antenna type	External antenna	
Antenna Gain	2.15dBi	

<b>Communication Type</b>	Voice / Data
<b>Modulation</b>	FM/4FSK
<b>RX Frequency Range</b>	400-480 MHz (Scanning Receiver)
<b>Emission Type</b>	F3E/F1D/F1W
<b>Antenna Designation</b>	Detachable
<b>Antenna Gain</b>	2.15dBi
<b>Hardware Version</b>	Ver.3.0
<b>Software Version</b>	V2.2.1
<b>Power Supply</b>	DC 7.4V,2200mAh by battery, charging for DC8.4V