

2. RECEIVER SECTION (Parent Unit)

The receiver is a conversion superheterodyne with the local oscillator at frequency higher the received frequency to produce the IF 10.7Mhz.

Local Oscillator

IC U4 functions as a local oscillation. D5, C10, L5, L6 and built in U4 combined the VCO circuit. X1 (or X2) functions as the reference oscillation that will compare with the divided frequency of the local oscillation in the PLL circuit built in IC U4 to obtain the stability frequency.

RF amplifier

RF signal from antenna is fed to the base of Q2. Q3 is second stages RF amplifier. The output from the collector of Q3 is given to the base of Q1 for the mixing.

Mixer Circuit

Q1 functions as a mixer.

IF amplifier

Q4, Q5, F4, F5 and built in IC U1 functions as the IF amplifier that which the IF signal output is fed to demodulation circuit built I IC U1.

Demodulation

XT is discriminator which and the built circuit of IC U1 function as the demodulation circuit.

Audio Power Amplifier and Volume Control

The audio amplifier is built in IC U1. Pin 24 of U1 is the input pin of audio amplifier. The Audio output from pin27 of U1 fed to speaker. VR1 is the volume control.

Auto Squelch

When there isn't RF signal, the pin 23 of U1 output the noise that is fed the band passed amplifier (U3A and U3B), and then noise is transferred to DC by Q16 to make Q17 goes to ON. The mute control transistor Q11 goes to ON through Q7 which short the audio signal to ground. The unit goes to mute status automatically.

When there is RF signal, the pin 23 of U1 output the audio that is fed the band passed amplifier (U3A and U3B), and then the output of pin 7 of U3B is down. The DC level from the emitter of Q16 is decreased that make Q17 goes to OFF. The mute control transistor Q11 goes to OFF through Q7. The unit sounds the voice from speakers.

RF Level Indication

Q8-9, Q12-15 and D2-4 function as RF received level indication.

Out – of – Range detector

When the unit haven't receive the signal from the transmitter unit, the pin 23 of U1 output the noise that is fed the band passed amplifier (U3A and U3B), and then noise is transferred to DC by Q16 to make Q20 goes to ON through Q17, Q7. After about 20 seconds, pin 11 of U5D goes to high level which control the out-of-range oscillation(U5A and U5B) go to work. The unit sounds the tone sound. r

Regulator

IC U2 is a regulator designed in the parent unit to provide constant voltage onto RF amplifier, local oscillator and mixer circuit.

Low Battery Detector and Cut-Off

Low Battery Detector consists of IC U5C, Q21 and LED-D1 for providing warning indication during low battery condition.