1. FREQUENCY SYNTHESIZER

Both the TX and RX local frequencies are generated by means of a phase locked loop frequencies synthesizer. In addition, these frequencies are directly obtained from V.C.O. 20.95MHz Crystal oscillator is provided as s reference frequency which is divided by 1676 to 12.5kHz. The frequency determination is calculated as follows:

(Example: 156MHz in TX mode)

where channel space is 25kHz(12.5KHz x 2), therefore; N = 156 × 1 / 0.0125 = 12840

In case of receiving mode;
Since a 1st IF is set to 21.4MHz, the following formula can be expressed.

FL = FR - 21.4 (MHz)

where FR is receiving frequency and FL is local frequency.

When the FL is specified for incoming signal, each dividing ratio can be obtained the same step as taken in TX mode.

IC303 is a microcomputer that recognizes the up/down switch and also read out the data from the read only memory for conversion into serial data. The serial data is then fed into PLL IC (IC421). Overall frequency stability of the unit is determined depending on crystal oscillator X421.

Stability rank of X421 is used +/- 7 ppm in the temperature rang from -20 deg.C to +60 deg.C.

2. TRANSMITTER

The carrier frequency generated in the V.O.C. (Q502) is amplified by Q503, Q201, Q202,MO 201 and then fed into antenna terminal. Tx power level is controlled by adjusting gate voltage of final device MO 201. Q211 and Q212 are TX inhibit transistors.

IC251 and Q310 are amplifier for frequency modulator which provides 6dB/oct of pre-emphasis limiting circuit. IC103 is a low pass filter circuit to avoid the harmful interference in adjacent channels.

3. RECEIVER

Q101 and 102 are RF amplifier and Q103 is 1ST mixer. The local frequency obtained from frequency synthesizer is applied to Q103 and their deferential component, 21.4MHz is extracted
to obtain a 1ST IF frequency.

The 1st frequency is fed to crystal filter FT101 and then fed to IC101 which is having 2nd mixer, 2nd local oscillator, amplifier, limitter and detector circuits. X421(20.95MHz) is crystal oscillator used for PLL reference and 2nd local frequency. At the 2nd mixer portion in IC101, the 2nd 1F
frequency of 450kHz is obtained and is then filtered by FT102.

Q303,Q305 and Q307 are switching circuitry which works for squelching operation. The outgoing signal detected at IC101 is amplified by Q105, IC305 to drive the loud speaker.

4. MICROCOMPUTER

IC303 is a microcomputer which controls all of operative function switches and indicate LCD channel number/status.