

JC-215R Description of Circuit Function

Receiver

The received RF signal coming into an antenna is amplified by Q104. The signal is converted to the 1st IF signal of 10.6 MHz in the 1st mixer Q107. The 1st IF signal goes to the 2nd mixer to be converted to the 2nd IF signal of 450 kHz. The 2nd IF signal is detected and demodulated by the diode D106 to be changed into the audio signal. The 1st local signal of 16.275 to 16.715 MHz generated by VCO which is composed by Q121, Q124 and D108 is fed to the 1st mixer Q107 to be mixed up with the received signal.

Transmitter

The VCO is also used for generating the transmission RF signal. The signal from the VCO goes through Q116, Q113 and Q110 to be amplified up to specified 4W. The level of the audio signal is limited to a certain level so that the modulation rate might not exceed more than 100% and the fed to Q106 and Q108 to be modulated.

PLL

IC103 compares the frequency generated by the VCO with the frequency generated by the reference frequency oscillator to get the DC voltage commensurate to the difference between the two frequencies. The DC voltage is fed to the VCO through the active low pass filter composed of Q125 and Q127 to compensate the difference of the two frequencies. The frequency is shifted to between 26.965 to 27.405MHz for the transmission and 16.275 to 16.715MHz for the reception by the switching transistor Q128 controlled by the CPU IC108.

Limitation of Modulation

The audio signal from Main Control Unit is fed to the ALC IC101 to limit the modulation rate to the specified value. The amplitude gain of the IC is decreased immediately when the level of voice input into a microphone increases. This is the way the signal level fed to the modulator is kept to constant.

Limitation of Output Power

The output power is limited to the specified value by adjusting the collector voltage of the final stage power amplifier with the variable resistor VR101.

M.C.U. Main Control Unit

A Voice signal from a microphone in an optional Headset is fed to CB unit through M.C.U. A demodulated signal from CB unit is fed to the Headset through M.C.U. The control signal from the Remote Controller such as turning on CB unit, channel up/down, squelch up/down and changing audio level is fed to CB unit through M.C.U. The status of CB unit stored in the memory of M.C.U. are displayed on LCD of the Remote Controller. M.C.U. controls a radio in itself and a cassette deck besides CB unit.

Remote Controller

Interfacing with a operator of this system is performed with Remote Controller which has a knob of volume control and squelch control, a channel selection key and a power ON/OFF switch used for CB unit control. These keys and switches are also used for controlling the radio in the M.C.U. and the cassette deck. The key information is from Remote Controller sent to M.C.U. The status of the radio, the cassette and CB unit is sent from M.C.U to Remote Controller.