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# Theory of Operation

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## **Audio Amplifier and Compressor**

The audio signal is amplified by  $\frac{1}{2}$  of IC101 and the gain is set by adjusting R103. A high pass filter (C106 and R106) is used for pre-emphasis on the audio signal. IC102 compresses the audio signal's dynamic range to improve the system S/N ratio. The audio output is routed to the RF PCB to modulate the transmitter. IC102 is also utilized as a low battery voltage detector to illuminate the LOW BATT LED (D101) when the battery is weak and to momentarily flash D101 when the power is turned on.

## **Oscillator and Modulator**

Q201 and Y201, Y202, Y023 are used to form a crystal oscillator and a tuning coil, L201, is used to select the desired oscillator frequency. Frequency modulation is provided by varactor diode D201 when the audio signal is applied to pin 6 of J201.

## **Frequency Doubler**

The oscillator frequency from Q201 is doubled at Q202 and then doubled again at Q203 to become the transmitter's carrier frequency.

## **RF Power Amplifier and Antenna**

Q204 is used as the tuned power amplifier to drive the antenna matching circuits L211, L212, C220, C217, C221.