

FCC Information
Theory of operation
Telex Model PB-1 Transmitter

Audio Section:

I.C. U2B-7 provides regulated voltage, including microphone bias at E1.

Audio from the microphone capsule enters at terminal E3 and is routed to the microphone pre-amplifier at U1B-5. The gain of U1B is controlled by VR1. Amplified audio from U1B-7 is routed through C9, R11 and R32 to U2A-12. Pre-emphasis is provided by C10 in conjunction with R11. U2A is configured as a 2:1 compressor and its output appears at U2A-10. The amplified, compressed audio appears at the vari-cap modulator D6.

RF Section:

Crystal Y1, in conjunction with transistor Q1 oscillate at the transmitter operating frequency divided by 9 ($F_o/9$). Vari-cap D6 is the FM modulator and inductor L4 is used to set the transmitter operating frequency. Diodes D2 through D5 are used to temperature compensate the oscillator circuit frequency drift with temperature. The output of Q1 is tuned to the 3rd harmonic of Y1. L5, L6 and their components provide selectivity at the 3rd harmonic frequency. The X3 frequency is applied to transistor Q2 that functions as a frequency tripler. L7 and its components provide selectivity at the 9th harmonic of Y1. The X9 frequency is applied to transistor Q3, that operates as a straight through amplifier. L8, L9, VC1 and VC2 provide selectivity at the operating frequency and match the RF power to a low pass filter composed of L10 and C36. L10 and C36 also provide an impedance match to the microphone cord, which is used as an antenna.

Miscellaneous:

Switch S1 is the Power on/off switch. U1A is the low battery detector and lights DS1 if the battery is low.

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List of Active Devices.

Q1, Crystal Oscillator/Frequency Tripler. fmmt5179
Q2, Frequency Tripler. fmmt5179
Q3, RF Power Amplifier. fmmt5179
Q4,Q5, Over-modulation clamp. zvn4106
Q6, Audio Rectifier. mmbt3904
Q7,Q8,Q9, Audio Rectifier. mmbt3906
U1A, Low Battery Detector. LM833
U1B, Audio Pre-amplifier. LM833
U2A, Audio Compressor. NE570
U2B, Voltage Reference. NE570
D2,D3,D4,D5, Oscillator TC Diodes. Tmpd4148
D6, Vari-cap Frequency Modulator.