

PST-170 THEORY OF OPERATION

1. Audio section.

Audio from J1 is fed directly to U1. Audio from J2 is attenuated 22dB and fed to U1. U2 allows the gain of U1 to be software controlled. This is user adjusted from 0dB to 42dB in 6dB steps. C6, R9 and R10 provide pre-emphasis. U3C is a compressor that can be switched on or off via U4. When on it has a 2:1 compression ratio and when off it is 1:1. U3A, U3B, Q2 and associated components form a modulation limiter. This limiter will function regardless of what state the compressor is in. U3D is a low pass filter.

2. PLL and Transmit Stages.

Q3 and associated components form a voltage controlled oscillator operating between 72.1MHz and 75.9MHz. The output of the oscillator is buffered by Q4 and fed to PLL U5. U103 provides the serial data to U5 to program the desired frequency of operation. The 10MHz reference is generated by Q102. Varactor D2 is driven by the phase detector output and closes the loop. Audio is fed to a separate varactor, D1. The deviation is set by VR1. Q6 is an amplifier stage and Q8 is the power output stage. Q5 and Q7 are used to switch off Q6 until lock is achieved.