

ALTB72 Assistive Listening Transmitter  
THEORY OF OPERATION

March, 1999

Audio is supplied from an attached lapel microphone cable to the MIC input receptacle and applied to the MIC Gain control, R49. Regulated +5 VDC is supplied through resistor R9 to power the microphone element. Audio ground is provided by RFC element, L9. From R49, the audio passes through a 75 uSec pre-emphasis network followed by a fixed gain audio preamplifier IC with ALC (Automatic Level Control). The amplified audio is applied to a summing junction for the audio and the tuning line of the 72-76 MHz VCO, thus modulating the VCO within a phase locked loop. The bandwidth of the phase-locked loop is sufficiently low to prevent the loop from counteracting the applied audio. The loop is phase-locked to a 7.2 MHz crystal reference oscillator. The Q1 stage amplifies the 72-76 MHz signal prior to applying it to the PLL divider. The modulated 72-76 MHz signal is isolated and amplified by stages composed of Q3 and Q4 respectively. The signal is then lowpass filtered and capacitively coupled to the shield connection of the MIC input receptacle.