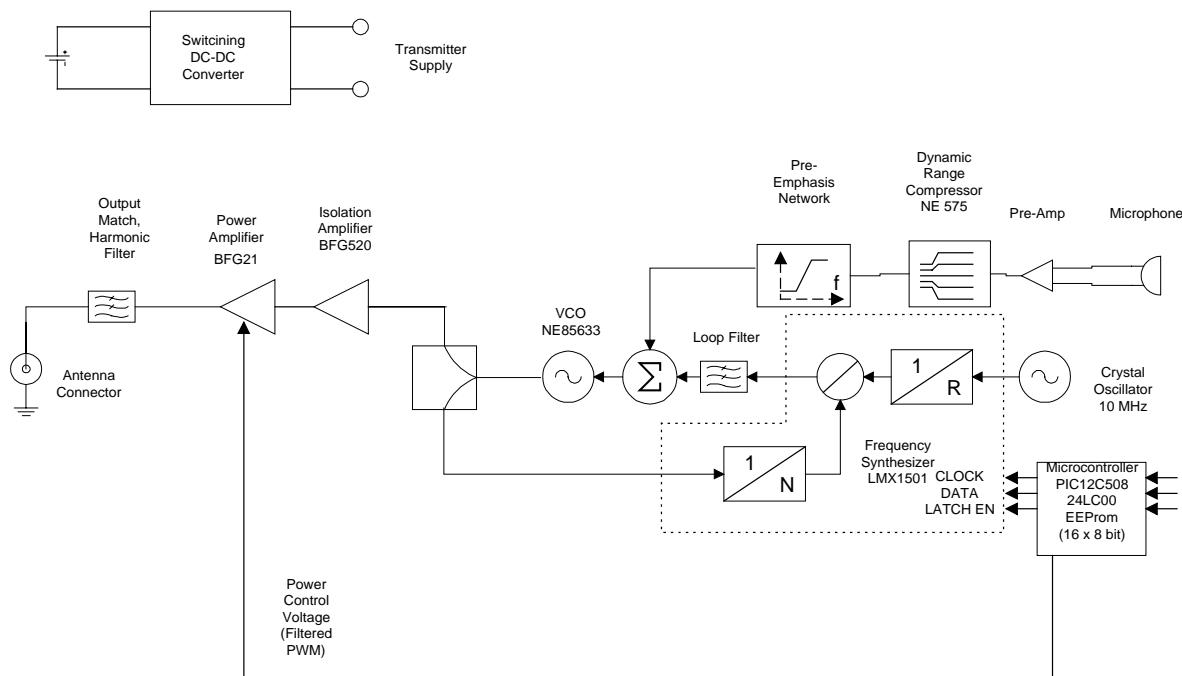




## Transmitter Theory of Operation

The AID PST-1200 Transmitter is a miniature, manufacturer-programmable analog voice transmitter. The frequency band of operation is 150-174 MHz with two nominal output power levels, 125 mW and 50 mW. The frequency channels are programmable via a microprocessor and phase-lock loop synthesizer. The frequency programming is a means for the manufacturer to provide custom, fixed frequency transmitters, while maintaining a common hardware platform. The devices are offered as fixed-frequency, fixed-power units.

The block diagram of the transmitter is presented below for reference:



The microphone output is presented to an audio chain which provides band-limiting, dynamic range compression/ or automatic leveling control, as well as, pre-emphasis. The output of the audio processing chain is then voltage scaled to directly modulate a phase-locked voltage-controlled-oscillator. The phase-locked-loop bandwidth is narrow and the modulation frequencies are above the natural closed-loop frequency. The output power is controlled by a D.C. bias to the final power amplifier stage. The variable bias is produced by a programmable, filtered, pulse-width-modulation waveform originating at the microcontroller. This power control signal also serves as a delayed transmit enable during power up, to allow the phase-lock-loop to frequency settle before the transmitter is enabled. Once powered up, the transmitter is operated continuously on a single channel and power level until it is powered down.

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