# RMTFMTX001 FM Orator
# Operational Description

The FM Orator is a self contained FM transmitter containing a low power FM transmitter IC (BH1415F), a Digital Audio Recorder IC (ISD5116), and a PIC16F871 micro-controller. In addition, a linear voltage power supply converts the 12VDC input into the three internal required voltages of 10VDC, 5VDC, and 3.3VDC. A front panel mounted LCD is interfaced to the micro-controller and is used to display the selected frequency as well as display operational information during programming and monitor transmitter health. The unit operates in two basic modes.

Audio Recording Mode:
In the REC mode, the transmitter is disabled and a Microphone or Audio source is connected through the audio interface jack on the rear panel. The audio supplied is recorded until the REC button is pushed a second time. After the recording is complete the unit is placed in the Broadcast mode.

Broadcast Mode:
In the broadcast mode, the audio in the digital recorder is continuously transmitted as long as the unit is in the broadcast mode and power is supplied to the unit. In the Broadcast mode, the frequency may be changed. To enable frequency change, both the up and down frequency change buttons are pressed simultaneously on the front panel. The unit then enters the frequency programming mode and the frequency will go up or down by FM channel frequency as the selection buttons are pressed. When no button is pressed for 2 minutes, the unit will revert to the locked mode and must be unlocked before the frequency or internal audio recording may be changed.

PLL Lock detection:
The internal PLL is monitored by the internal processor to insure that the PLL is phased locked in the proper relationship to the reference frequency. If a lock failure is detected, the transmitter is disabled to prevent emission out of band and the broadcast led is off.