F8M010 – TuneCast III

Operational Description, refer to Block Diagram:

The TuneCast III accepts audio from any audio device that has a 3.5mm audio jack. The audio signal enters the EUT where it is filtered and attenuated down to a level acceptable for the stereo modulator/FM transmitter IC. This signal is then modulated onto an FM stereo signal (generated by the same IC). This FM signal is then attenuated and connected to an integral wire antenna.

The EUT is powered by 2 AAA batteries, connected in series(1.8VDC to 3.2VDC). This voltage is boosted to 3.75V via a 1.2MHz switching power supply. The 3.75V supplies power to our stereo modulator and FM transmitter circuitry. The 3.75V is also passed to an LDO that generates 3.3VDC which powers our microprocessor and OLED display.

The microprocessor updates the OLED display, senses button presses, and digitally communicates with the FM Transmitter IC to set its transmission frequency.

There are 6 buttons on the device. One increments the frequency in 0.1MHz steps, one decrements the frequency in 0.1MHz steps, and there are 2 user programmable presets. There is also a power button and a button that switches the device between a MONO and STEREO FM transmission signal. An up button press when the transmitter is already on 107.9MHz will “wrap” the frequency down to 88.1MHz. The opposite is true when the user presses the down arrow when the transmitter is set to 88.1MHz.