

Receiver

1. 2.5V voltage regulator

A voltage supplier regulator is applied to provide a 2.5V voltage for the local oscillator, and FM demodulation.

2. 6V battery

The whole system is powered by a 6V battery.

3. 49.86MHz local oscillator

A crystal oscillator is applied to generate a 49.86MHz Local Oscillation frequency for the FM demodulation for direct down conversion. The system is powered by the 2.5V output from the 2.5V voltage regulator block.

4. FM demodulation

The FM demodulation is performed by direct conversion with the local oscillation signal of 49.86 MHz generated from the local oscillator block. The converted signal is a 70kHz IF signal which will be amplified by an IF amplifier. The IF signal will be FM demodulated and the audio signal will be detected from the demodulated signal.

5. RF input

The RF signal is picked up by a quarter-wave antenna and will pass through an antenna matching network before being amplified by a LNA. The amplified RF signal is then input to the FM demodulation block to generate the embedded audio signal from the RF signal.

6. Electronic volume

The audio signal generated from the FM demodulation block will be input to the electronic volume block, which is a digital controlled voltage divider block. As a result, the output of the electronic volume control block will have the amplitude scaled appropriately to achieve the volume control function.

7. Audio power amplifier

A 3W power amplifier is applied to amplify the audio signal obtained from the electronic volume control block. The output of the 3W power amplifier is connected to a 4ohm speaker to generate the audible signal.