

0.2 Watt FM TRANSMITTERGENERAL DESCRIPTION

The kit you have just purchased from your retailer contains a mini yet high performance FM transmitter. Its low power output makes it ideal for experimentation and amateur use for beginners. You can easily impress your friends by broadcasting to them in the FM band and it can also be used for surveillance purposes or to listen to conversations that take place in another room. So apart from your curiosity this little device may well satisfy other interests you may have. Your imagination is the limit!

TECHNICAL SPECIFICATIONS

Modulation type: ..... FM  
 Frequency range: ..... 88-108 MHz  
 Working voltage: ..... 9 VDC  
 Maximum current: ..... 10 mA  
 Output power: ..... 0.2 W  
 Useful range: ..... 100 Metres (typical, depending on antenna used, tuning, area, receiver sensitivity etc.)

HOW IT WORKS

As it has already been mentioned the transmitted signal is Frequency Modulated (FM) which means that the carrier's amplitude stays constant and its frequency varies according to the amplitude variations of the audio signals.

When the input signal's amplitude increases (ie. during the positive half-cycles) the frequency of the carrier increases too, on the other hand when the input signal decreases in amplitude (negative half-cycle or no signal) the carrier frequency decreases accordingly. In figure 1 you can see a graphic representation of Frequency Modulation as it would appear on an oscilloscope screen, together with the modulating AF signal.

The output frequency of the transmitter is adjustable from 88 to 108 MHz which is the FM band that is used for radio broadcasting. You can easily change the output frequency by adjusting the trimmer C1. If you wish to use a frequency outside the FM band (in cases where secrecy is important) you can also change the coil L. More turns will give you lower more lower frequencies and less coil turns or pulling the turns apart will let you transmit at higher than 108 MHz. Of course in that case you will have to re-tune your receiver in order to make it work outside the band it was designed for.

The microphone is of the condenser type which is in reality a capacitor which uses as a dielectric the air and has a moving and a fixed plate. The fixed plate is a thin metallic membrane which vibrates under the sound pressure and this vibration changes the capacitance of the microphone and creates the acoustic signal.

The transmitter needs 9-15 VDC to operate and you can use a small 9 V battery with very good results. The effective range depends on how well the receiver is tuned to the transmitter's frequency, the antenna you are using, the area and the transmitter's placement. In place of an aerial you can use a piece of wire