



## 1 Watt Four Stage FM Transmitter

This FM transmitter circuit uses four radio frequency stages: a VHF oscillator built around transistor BF494 (T1), a preamplifier built around transistor BF200 (T2), a driver built around transistor 2N2219 (T3) and a power amplifier built around transistor 2N3866 (T4). A condenser microphone is connected at the input of the oscillator.

Working of the 1 Watt transmitter circuit is simple. When you speak near the microphone, frequency-modulated signals are obtained at the collector of oscillator transistor T1. The FM signals are amplified by the VHF preamplifier and the pre-driver stage. You can also use transistor 2N5109 in place of 2N2219. The preamplifier is a tuned class-A RF amplifier and the driver is a class-C amplifier. Signals are finally fed to the class-C RF power amplifier, which delivers RF power to a 50-ohm horizontal dipole or ground plane antenna. Use a heat-sink with transistor 2N3866 for heat dissipation (Note: or 2N4427 because it works better at 12 V and delivers up to 1 watt RF power). Carefully adjust trimmer VC1 connected across L1 to generate frequency within 88-108 MHz. Also adjust trimmers VC2 through VC7 to get maximum output at maximum range. Regulator IC 78C09 provides stable 9V supply to the oscillator, so variation in the supply voltage will not affect the frequency generated. You can also use a 12V battery to power the circuit. Assemble the circuit on a general purpose PCB. Install the antenna properly for maximum range. Coils L1 through L5 are made with 20 SWG copper-enameled wire wound over air-cores having 8mm diameter. They have 4,

6, 6, 5 and 7 turns of wire, respectively.

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