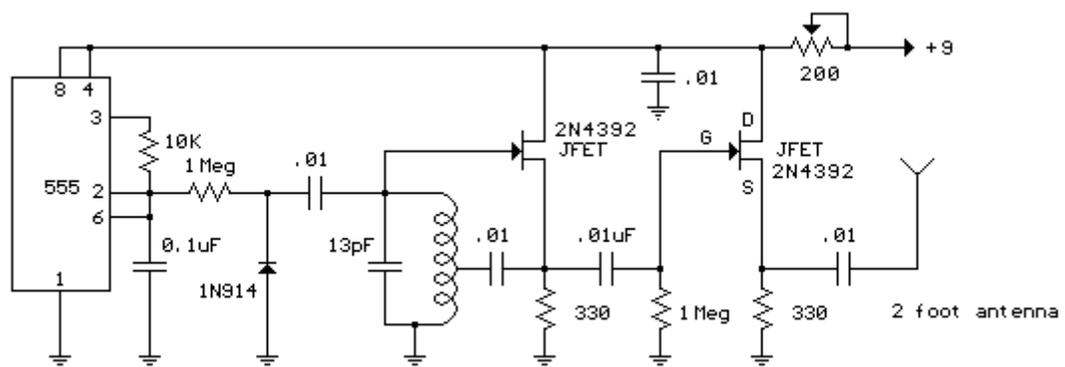


## FM Beacon Broadcast Transmitter (88-108 MHz)

This circuit will transmit a continuous audio tone on the FM broadcast band (88-108 MHz) which could be used for remote control or security purposes. Circuit draws about 30 mA from a 6-9 volt battery and can be received to about 100 yards. A 555 timer is used to produce the tone (about 600 Hz) which frequency modulates a Hartley oscillator. A second JFET transistor buffer stage is used to isolate the oscillator from the antenna so that the antenna position and length has less effect on the frequency. Fine frequency adjustment can be made by adjusting the 200 ohm resistor in series with the battery. Oscillator frequency is set by a 5 turn tapped inductor and 13 pF capacitor. The inductor was wound around a #8 X 32 bolt (about 3/16 diameter) and then removed by unscrewing the bolt. The inductor was then stretched to about a 3/8 inch length and tapped near the center. The oscillator frequency should come out somewhere near the center of the band (98 MHz) and can be shifted higher or lower by slightly expanding or compressing the inductor. A small signal diode (1N914 or 1N4148) is used as a varactor diode so that the total capacity in parallel with the inductor varies slightly at the audio rate thus causing the oscillator frequency to change at the audio rate (600 Hz). The ramping waveform at pins 2 and 6 of the timer is applied to the reversed biased diode through a large (1 Meg) resistor so that the capacitance of the diode changes as the ramping voltage changes thus altering the frequency of the tank circuit. Alternately, an audio signal could be applied to the 1 Meg resistor to modulate the oscillator but it may require an additional pullup resistor to reverse bias the diode. The N channel JFET transistors used should be high frequency VHF or UHF types (Radio Shack #276-2062 MPF102) or similar.



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[Menu](#)