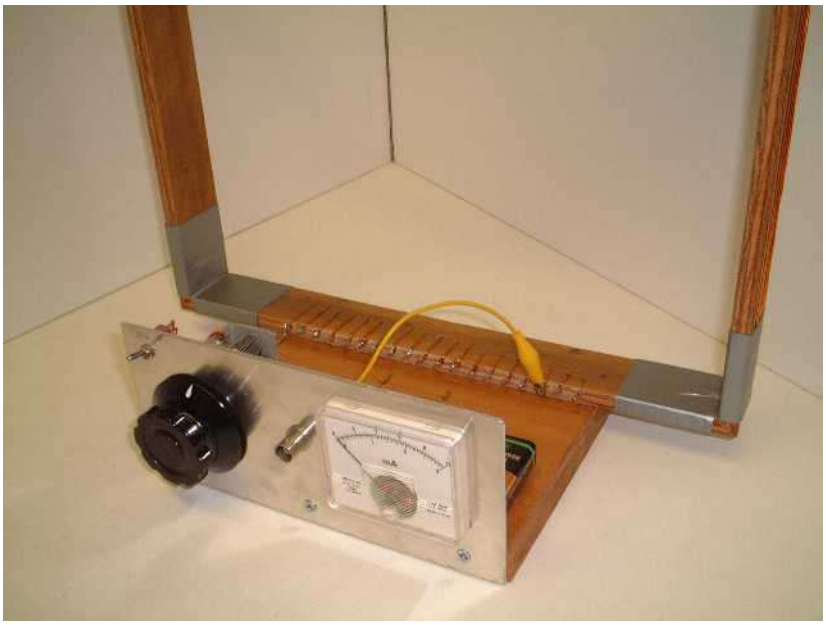
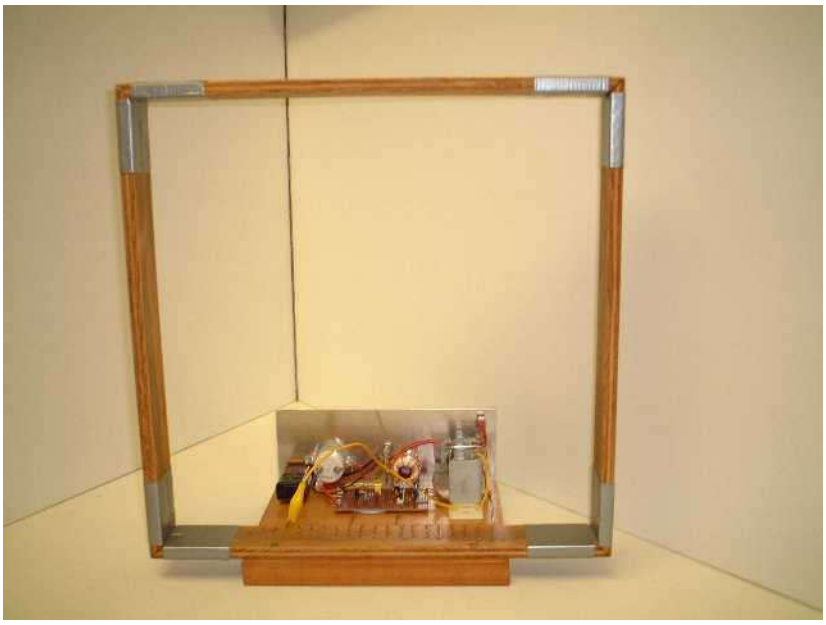
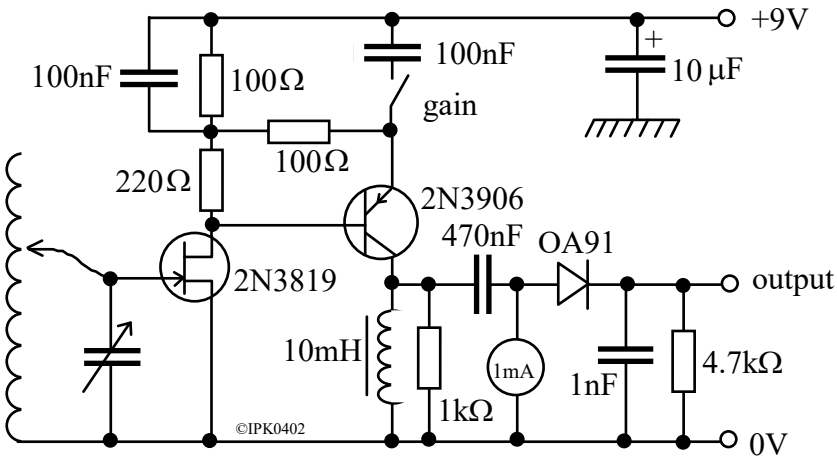
Simple Loop Radio





The Simple Loop Radio, without any extra aerial, will receive local Long and Medium wave radio signals. The rf amplifier provides an increase in signal strength and buffers the tuned circuit from the diode detector and high impedance headphones connected to the output. The radio is very directional and by rotating the radio the signal strength will be observed to decrease to a minimum when the plane of the coil is in the direction of the radio station. Rotating the radio through 90° from this minimum will produce the strongest signal.

Simple loop radio circuit diagram



The coil consists of 30 turns of 24swg wire wound onto a 35cm square former and tapped every two turns.
The tuning capacitor is twin gang 500pF airspaced, with the sections connected in parallel. However any variable capacitor of around 500pF maximum capacitance will work.
The 10mH inductor was extracted from an old computer power supply but a suitable device to use is a common mode suppression choke (Rapid Electronics 26-7084) with the two windings connected in series. (This increases the inductance by a factor of 4).
The meter indicates the strength of the received signal (actually measures the direct voltage produced by the carrier after rectification.). If the meter is omitted then a 1kΩ resistor should replace it.
The af signal is obtained from the output. A good rf modulated signal is obtained from the collector of the 2N3906.
Closing the switch in the emitter lead of the 2N3906 increases the voltage gain of the rf amplifier.
An earth can be attached to the 0V line to increase signal strength, and an aerial to a tapped point on the coil.