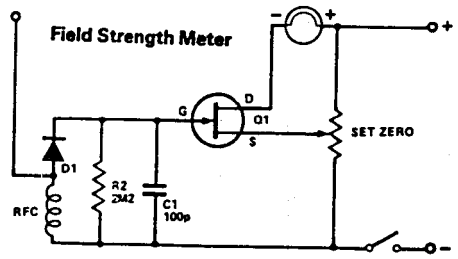
Projects



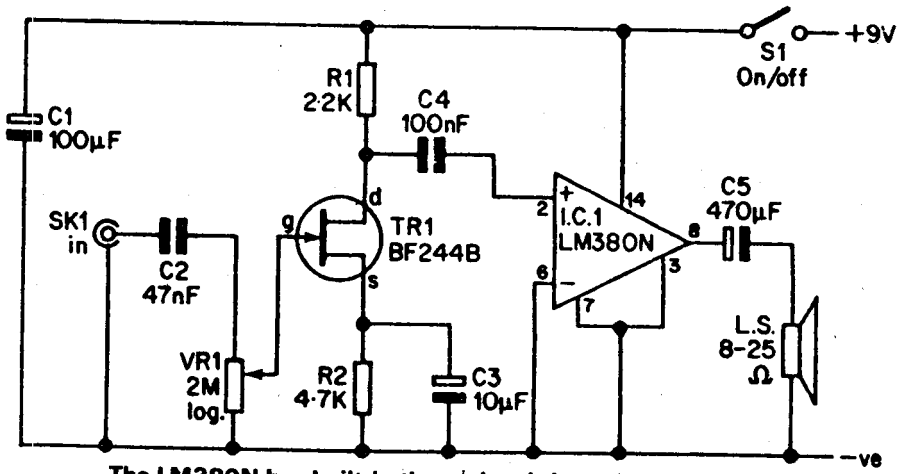
The device will operate at any frequency up to 250MHz or even higher if necessary. A short whip, rod, telescopic or other aerial picks up radio frequency energy and rectification by diode D1 provides a positive voltage for the FET gate, across R1. This FET is only operating as a DC amplifier and the 2N3819 or other general purpose transistor will be satisfactory.

The "Set Zero" potentiometer may be 1k to 10k. With no RF signal present, it allows gate/source potential to be adjusted, so that the meter shows only a small current, which rises in accordance with the strength of the RF present. For high sensitivity, a 100μA meter can be fitted. Alternatively, a meter of lower sensitivity, such as 250μA, 500 μA or 1mA can be used and will provide enough indication in most circumstances.

Should the field strength meter be wanted for VHF only, a VHF choke can be used, but for general usage over lower frequencies, a short wave choke is necessary. An inductance of about 2.5mH is satisfactory for 1.8MHz and higher frequencies.

The device can be constructed in a small insulated or metal box, with the aerial projecting vertically. In use, it allows tuning up a transmitter final amplifier and aerial circuits, or the adjustment of bias, driver and other factors, to secure maximum radiated output. The effect of adjustments will be shown by the rise or fall of the reading of the meter.

General Purpose Amplifier



The LM380N has built-in thermal and short circuit protection, making it the ideal device for test and breadboard situations.

Have built this amp for numerous projects — works F.B

Johnny ZS2DO

A Broad-band 70cm Vertical

by ZS6BT E.R. Cook

The 70cm band is 10 MHz wide, and there is an apparent need for an omni-directional, vertically-polarised antenna for local or mobile use. However, it should be "Repeatable" without the need for intricate matching.

The arrangement described is simple to construct, simple to mount and, if constructed as stated, may have a VSWR of 1 to 1 between 432 and 433 MHz, will not exceed 1,2 between 430 and 435 MHz, and will not exceed 1,4 at 440 MHz. We suggest only that the constructor does not try to "improve" it, except that a low-loss feedline and "N"-type connectors would be an advantage. We provide one adjustment.

The materials needed are a length of 3mm brazing-rod, an SO239 socket and a suitable mounting bracket. Initially, we need two lengths of brazing-rod one about 525mm long and another about 205mm.

The primary assembly is as per Fig 1:-

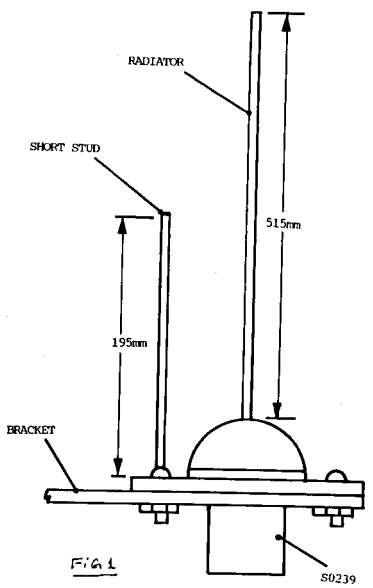


Fig 1

The radiator is soldered to the centre-pin of the SO239 (using hard solder for preference) and the short rod is placed in one hole of the SO239 and soldered (or threaded and held with nuts and washers). The bracket is a matter of choice, but a simple one is as Fig 2, and can be fixed to a length of broom-stick:-

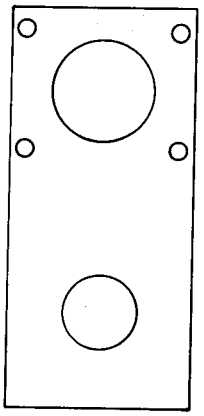


Fig 2

Element Pruning

For simplicity, the elements are measured from the plate of the SO239 as shown in Fig 1; 515mm for the radiating element and 195mm for the short "stub". The relative dimensions of the two elements mean little mathematically because the radiating element is three-quarters of a wavelength at 436,7 MHz, whilst the stub appears to be a quarter-wave at 384,6 MHz.

This trick brings the feed-point impedance down to 50 ohms.

Tuning

This is done by bending the short stub, as shown in Fig 3, with certain limits. If the dimension "X" is 40mm the resonant frequency will be 434 MHz, the VSWR will not exceed 1.2 between 430 and 436 MHz, and will rise to 1.4 at 440 MHz. If dimension "X" is increased by 50mm the resonant frequency will be 440 MHz and the VSWR will rise gradualy from 1 between 440 and 436 MHz to 1.2 at 430 MHz. Obviously, we have an exceptionally broad-band radiator with a small adjustment to suit individual choice of resonant point, and the average dimension for "X" is 45mm.

To prove repeatability, three antennas were built and adjusted in the workshop, and none was re-adjusted after installation. Each gave identical results.

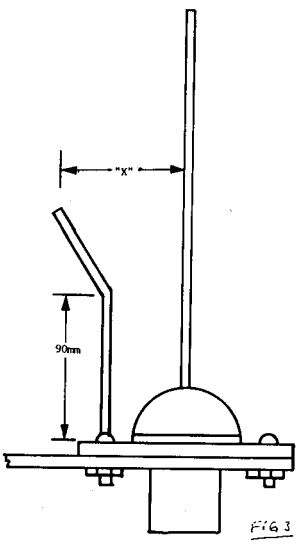


Fig 3

□