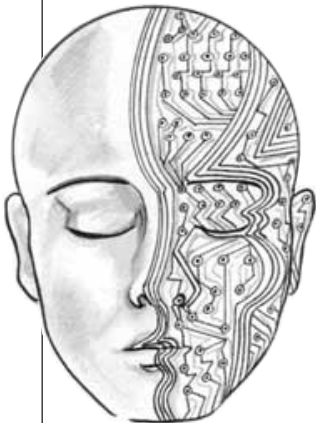


# INGENUITY UNLIMITED



Our regular round-up of readers' own circuits. We pay between £10 and £50 for all material published, depending on length and technical merit. We're looking for novel applications and circuit designs, not simply mechanical, electrical or software ideas. Ideas *must be the reader's own work* and **must not have been published or submitted for publication elsewhere**. The circuits shown have NOT been proven by us. *Ingenuity Unlimited* is open to ALL abilities, but items for consideration in this column should be typed or word-processed, with a brief circuit description (between 100 and 500 words maximum) and full circuit diagram showing all component values. **Please draw all circuit schematics as clearly as possible.**

Send your circuit ideas to: *Ingenuity Unlimited*, Wimborne Publishing Ltd., 408 Wimborne Road East, Ferndown Dorset BH22 9ND. (We **do not** accept submissions for *IU* via E-mail.) Your ideas could earn you some cash **and a prize!**



## WIN A PICO PC BASED OSCILLOSCOPE WORTH £586

- 100MS/s Dual Channel Storage Oscilloscope
- 50MHz Spectrum Analyser
- Multimeter • Frequency Meter
- Signal Generator

If you have a novel circuit idea which would be of use to other readers then a Pico Technology PC based oscilloscope could be yours. Every 12 months, Pico Technology will be awarding an ADC200-100 digital storage oscilloscope for the best *IU* submission. In addition, a DrDAQ Data Logger/Scope worth £69 will be presented to the runner up.

## Simple MW Radio – Easy Listening

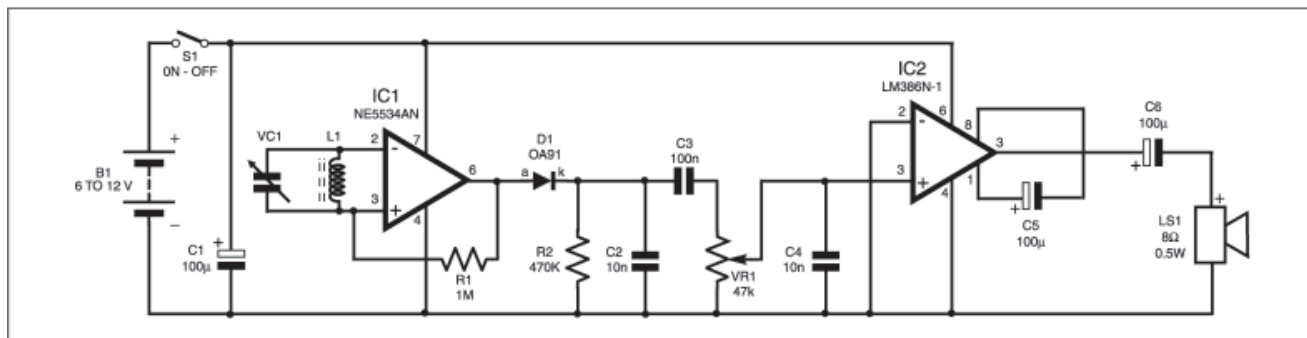


Fig.1. Complete circuit diagram for the Simple M.W. Radio

**T**HE circuit in Fig.1 represents a cheap and simple MW Radio. It has modest selectivity, yet good power (0.5W r.m.s. into 8W), and does not require an external aerial or earth.

The heart of the circuit is around IC1. When a station is tuned in, variable capacitor VC1 and inductor L1 resonate at the tuned frequency. That is, they present a minuscule alternating voltage to the inputs of IC1, which is a low-noise, high-frequency preamplifier. IC1 is essentially wired as a comparator with a little positive feedback, so that the alternating voltage across the tuned circuit is greatly amplified at output pin 6.

A germanium diode, D1, is employed for demodulation (a silicon diode would also work here), with R1 and C2 forming the remainder of the detector circuit, which produces audio by controlling the charge and discharge paths of capacitor C2, which also doubles as a low-pass filter.

An a.c. coupling capacitor, C3, is used to couple the radio circuit to the 0.5W amplifier, IC2, and volume is controlled by potentiometer VR1. Capacitor C4 serves as a low-pass filter, to filter out radio frequencies which might slip through the detector circuit and overload IC2.

Since the output of IC1 is not very high, the gain of IC2 is increased by

wiring a 10µF capacitor, C5, between pins 1 and 8. The usual Zobel network at the amplifier's output is omitted for the sake of simplicity. The small measure of protection which a Zobel network would afford IC2's internal transistors ought not to be missed here.

The most commonly available a.m. tuners typically have two separate sections or gangs, and a tuned circuit for the medium waves could use such a tuner with its two separate sections wired in parallel. Either a ready-made medium wave coil may be used for L1, or this may be wound with about 80 turns of approximately 30s.w.g. (0.315mm) enamelled copper wire, close-wound on a 10mm diameter ferrite rod.

Be sure to use screened microphone cable for connections, and do not use crocodile clips during testing, or the radio may not function properly – or in the worst case, not at all. Also be aware that the placement of the battery, speaker, and tuned circuit may cause radio frequency (r.f.) interference which could interfere with the proper functioning of the circuit.

The MW Radio's quiescent current consumption lies below 10mA, rising to more than 20mA at full volume, which would represent a few days' continuous and loud listening off an AA battery pack.

Thomas Scarborough,  
Cape Town, South Africa

## INGENUITY UNLIMITED BE INTERACTIVE

*IU* is *your* forum where you can offer other readers the benefit of your Ingenuity. Share those ideas, earn some cash and possibly a prize!

