VHF AM receiver

for tracing overhead line noise

For several months I had been experiencing random variable level wideband impulsive noise across the whole 2m band. This manifested itself at times as a strength seven continuous crackling noise. It reached a point where medium and weak FM signals were becoming unreadable. With a vertically polarised aerial there was no way of telling where it originated but with a horizontal Yagi it appeared to be coming from beyond the road at the front of the house. My QTH is within the Forest of Dean and in that direction there is a wide valley with only two houses, the nearest being three hundred metres away. Half a mile (1km) away, across the valley, is a small village and an industrial estate. As the noise was present outside of normal working hours, I guessed that the noise must be coming from one of the overhead 11kV or 240V lines that run in the valley.

I have several portable 2m receivers but all operate either on FM or SSB. With FM it was not easy to detect small changes in signal level; with SSB the noise was significantly less due to the narrow bandwidth filtering. So neither mode was suitable. Why not try AM? But who has a portable AM VHF receiver these days?

The 108-136MHz band is close enough to 2m (in wide band interference terms) so I thought I'd try an air band receiver. Trawling the internet for suitable devices, I came across several cheap air band AM receiver kits for around £10 to £20 – some of the more expensive versions come with a small aluminium case. Of these, some have a printed filter that does not need alignment. One site [1] included a schematic, after which **Figure 1** is drawn. Studying the original diagram, I could see an AGC line around the IF stage (LM358-2 in Figure 1).

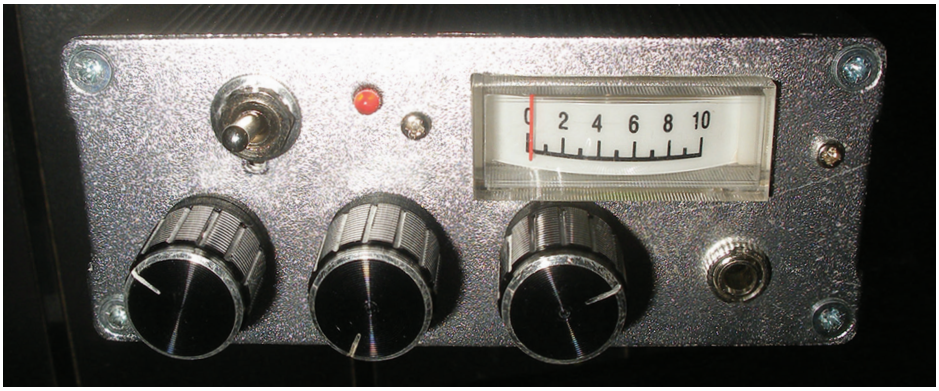

PHOTO 1: **The modified kit with an edge meter. Left to right: Tune, Squelch, Volume and headphone socket.**

S-meter

The front panel has just enough room for a small meter to be mounted to show signal strength. I obtained an edge-reading 100μA meter from CPC [2] (order code PM11086) but any physically similar small meter would do.

The meter location is tight. For the meter I used, a slot 34x14mm is needed 3-4mm from the top edge of the panel and 13-14mm from the right hand side. Any greater distance from the top edge will cause the meter to foul the board components and the volume control knob. Too far right and it will foul the case; too far left will foul the LED.

The case in my kit was pre-drilled but needed fettling to properly align with the power connector. In my kit, there was no provision on the PCB to wire in a power switch or an LED indicator. Others may have this now.

Scribe the back of the panel to avoid spoiling the front and cut the slot for the meter before fitting the controls. The brackets that come with

FIGURE 1: **Block diagram of the air band receiver, with details of the components I added.**