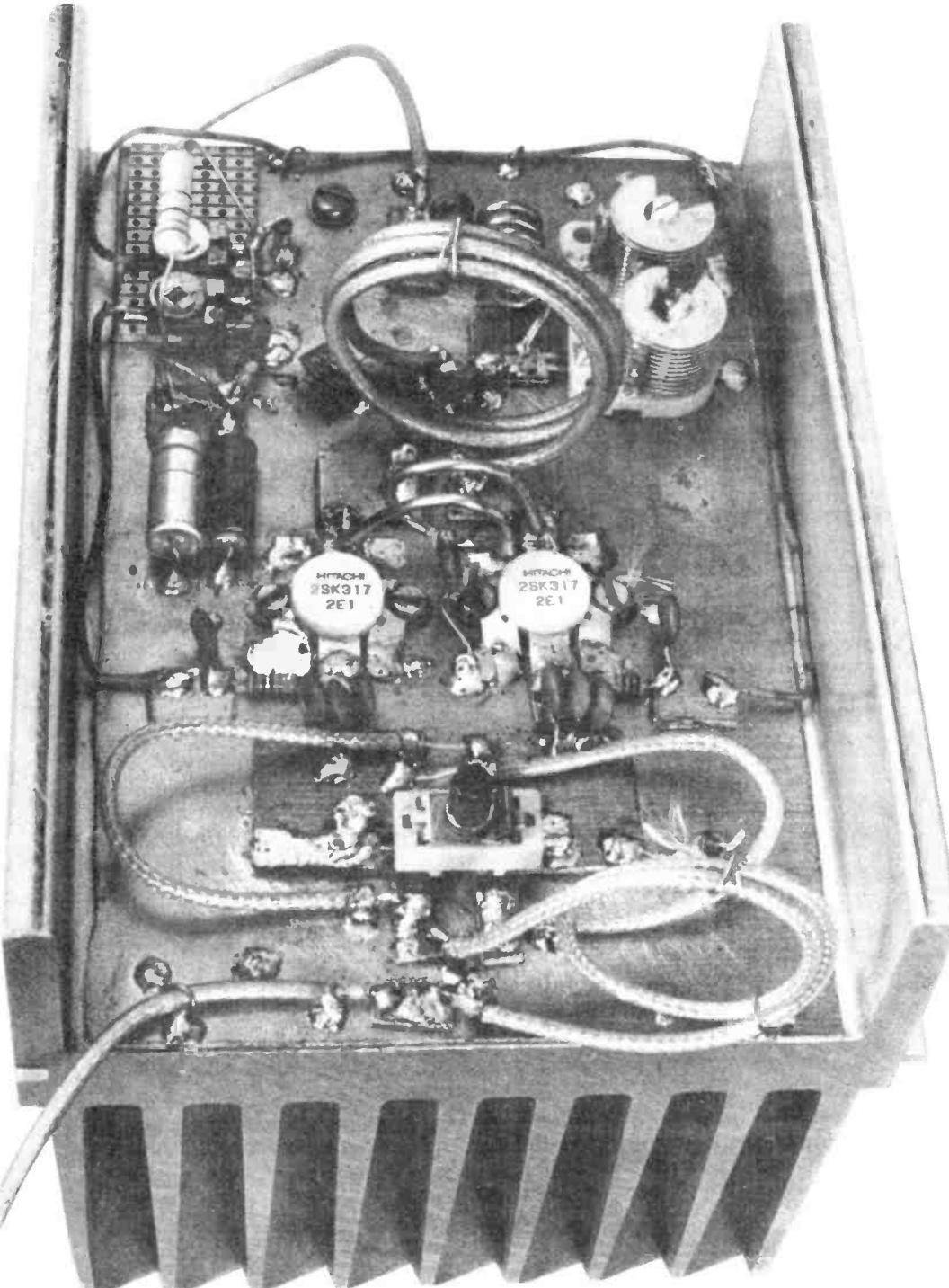


Technicalities

Getting rid of unwanted RF — Compact Top Band aerial — 250W MOSFET linear — 23cm test source

By Frank Ogden G4JST



This month we've got something rather special in our technicalities column, perhaps even a world first. We offer you a look at the continuing development of a 250W MOSFET linear amplifier for two metres. Yes. Big 2SK317 VHF MOSFET transistors running push-pull for the ultimate in 2m linear QRO. But first to the pedestrian: hot HF gear.

Hot gear

By 'hot' I don't mean stolen. Neither do I mean high performance. I mean when everything in the shack is crawling with finger burning RF, enough to leave those little white scorch marks and the nasty smell of burning human flesh.

VHF people with their neat feeders and compact aerials with built in baluns don't suffer the problem. Neither do HF operators who have about £10 million to spend on the latest thing in ready made tri-band Yagi arrays. It's simple backwoodsmen like myself who get along on most of the HF bands with a length of wire strung down the garden. The trouble is that the current flowing in the aerial is reflected in the earth return with such a simple unbalanced system. If you operate with three 4CX250B bottles in parallel as I do, then the return current may amount to several amps.

The typical arrangement is shown in Fig. 1. The TX is coupled to the ATU from which sprouts the now tuned aerial wire and the earth return. Unless it is very short, the earth return will have appreciable inductance and RF current flowing in it will cause an EMF to be developed across it. At a significant fraction of the operating wavelength, the earth wire may well have upwards of 100V of RF developed across it. This potential is reflected back to the equipment which is now live enough to produce quite serious RF burns.

I have actually watched a desk lamp, placed on top of the ATU, start glowing without being plugged in. That is how serious the problem can become.