

course what you will actually do is to reduce the unwanted signals to a level where they no longer cause IMD products, and the wanted signals can then be copied. The actual dynamic range of the receiver is not changed in any way. (See Fig. 3.)

If you have never heard the effect of an attenuator on a poor receiver it is quite an experience. The 40 metre amateur band is always quoted as a testing ground for dynamic range, due to the extremely high level of broadcast station signals, close to (or in) the amateur band. A poor receiver will be just a mess of noise and heterodynes between 7.0 and 7.1MHz. Switching in a suitable level of attenuation results in all the noise disappearing, and the sudden appearance of amateur signals from nowhere.

useful up to 2 metres, especially if housed in a screened enclosure.

## Building your own

As you will know, both myself and Frank are avid home constructors, and we don't seem to be alone. To all those who haven't wielded the soldering iron for years, we suggest that you find it (or go and buy another if you have lost it) and have a go at something. I have been building my own equipment for the past 18 years, and there is still something very rewarding in getting a piece of equipment going after all the trials and tribulations of building and testing it. Reactions over the air to home built equipment are usually very favourable, and lead to quite long QSOs, with the simpler equip-

ment often getting the most interest.

You shouldn't expect to be able to reproduce an item of equipment such as an FT-101, or IC240, nor would you probably want to. However, you can build acceptable high performance equipment at home, providing you have the time and interest, or just limit yourself to accessories which will enhance the day-to-day operational ability of your set-up.

The basics for home brewing need not be extensive. Besides a good modern soldering iron with a small (3mm or less iron-coated tip) and a damp sponge to keep it clean on, you need a pair of sidecutters, a pair of tweezers (which become a third hand after a while), plus a few files, drills, and somewhere to work. A de-solder pump (solder-sucker) is very useful when working with solid state circuits and avoids damage when extracting ICs and transistors. You may find a magnifying glass of help on PCB work — and if you do a lot of PCB construction, do it under a good light, or your eyes will definitely suffer after a few years at it.

Printed circuit boards do suffer from bridges, flux blocked holes, tracks that need cutting etc — RS Components market a set of tools with 6 different heads for dealing with these sort of problems and they can be thoroughly recommended to the busy constructor.

## Tinplating

If you make your own PCBs there is a magic liquid available which can both enhance their appearance, and assist in soldering. This is a tinplating solution in which the PCB is dropped after cleaning. When removed a minute or two later, it is covered with a thin layer of tin.

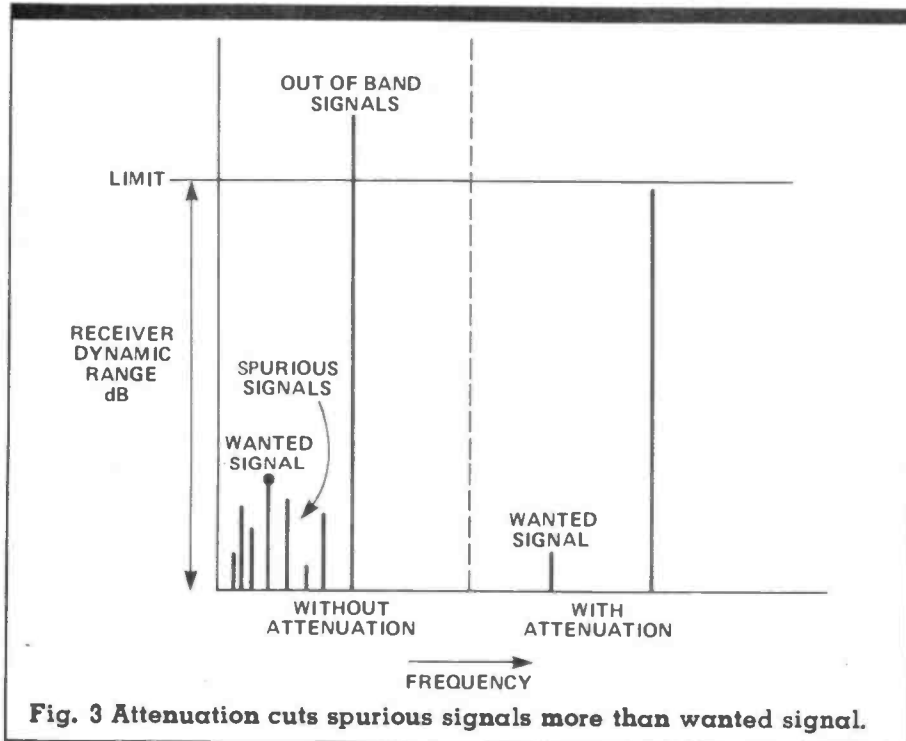


Fig. 3 Attenuation cuts spurious signals more than wanted signal.

## Building an attenuator

The drawing (Fig. 4.) shows a suitable method of constructing an attenuator for amateur use. The switches should be of the slide type, with the tags cut short to reduce capacitance (which will affect the accuracy at higher frequencies) and for best effect, screens should be soldered between switches to reduce coupling. The resistors are soldered directly across the tags for minimum lead length. The resistor values have been selected from the standard ranges, and are for a 50 ohm in and out system. With careful construction, the unit should be

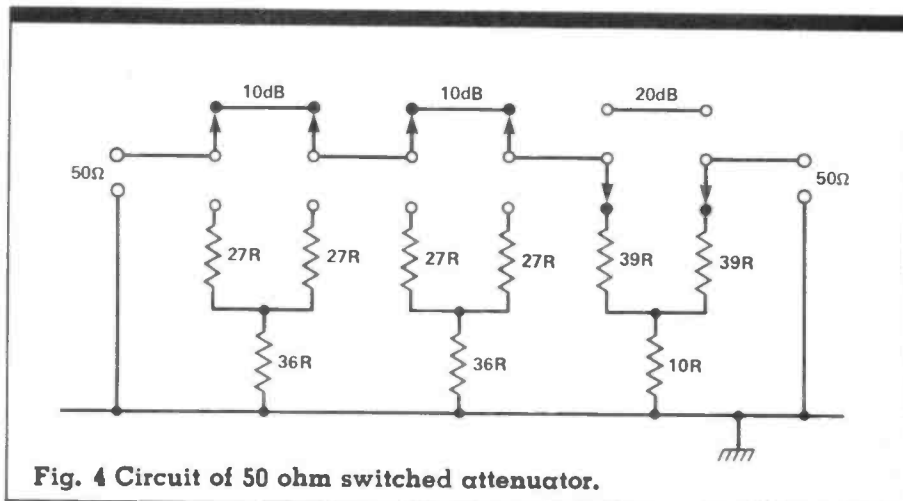


Fig. 4 Circuit of 50 ohm switched attenuator.