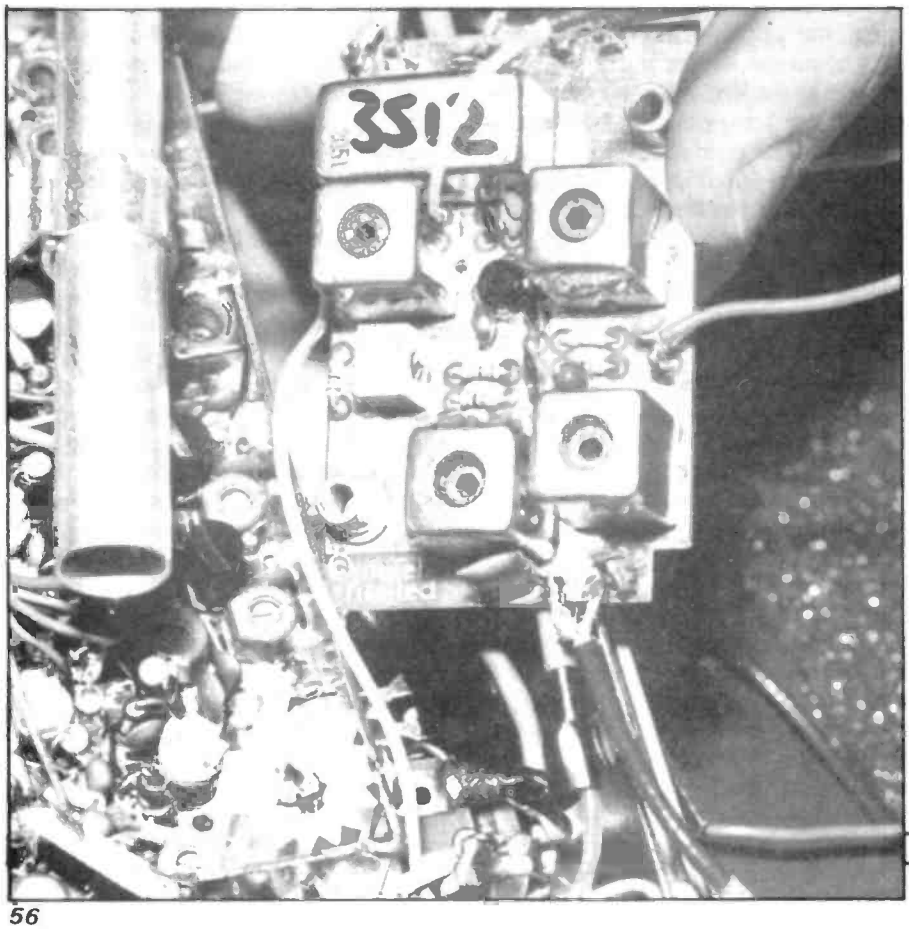
muTek SLNA 145sb – reviewed and fitted to the FT290R

Following the review of the Yaesu FT290R 2-metre multi-mode transceiver (see *Ham Radio Today,* May 1983) it was thought that the performance and overall sensitivity of the receiver could be improved on somewhat. One suggestion put forward was to replace the front-end mosfet with a 3SK88, although cross-mod problems were encountered and SMC, who imported the transceiver, advised against such a modification — so a different solution was sought.

Recently Mutek, that well-known West Country company, have produced an optimised preamplifier on a board that is specially designed to fit the FT290R; our purpose here is to see if it does indeed improve the performance without degrading the overall dynamic range.

The FT290R is probably the most popular 2m portable ever made. Trevor Butler, G6LPZ, looks at the MuTek SLNA 145sb 'transceiver optimised preamplifier with antenna c/o switching' intended for the FT290R. A happy couple?

The unit comes complete and pretuned, with mounting screws and a trimtool, all wrapped in silver foil for protection. The unit is well constructed with average duality soldering to the board which measures some 53 × 35 × 15 mm.



Why is a preamplifier needed in the first place, though? Well, there are two reasons why the sensitivity may be below par, firstly the dynamic range specification has to weigh large signal handling capabilities with good sensitivity. Manufacturers, of course, need to keep within financial constraints which can lead to a common noise figure of some 4dB with some 70dB intermodulation-free dynamic range within typical SSB bandwidths. These financial considerations also mean that antenna switching expenditure is often cut by using diodes instead of a relay. However, diodes can add considerable insertion losses: up to 4dB, which can mean an overall noise figure of 8dB!

At 144 MHz, however, the maximum usable sensitivity can be quoted at about a 2dB noise figure because a figure any lower would not make signals any more audible. It is, nevertheless, an advantage to use a very low noise preamp to minimise the degradation of the dynamic range. The overall figures depend on the noise figure of the preamp and the noise figure of the transceiver. Adjusting the preamp can allow the system to be set until an optimum setting is obtained. The SLNA145sb has a rated noise figure of typically 1dB.

Centre Point

The SLNA145sb is centred on a nitrogen-filled relay with low-noise performance for antenna changeover and a BF981 MOSFET in an input noise-matched, output conjugately-matched configuration for a very good noise figure. The BF981 has excellent figures for VHF applications, typically 0.7dB noise at 100 MHz. The full circuit diagram is shown in **Fig.1.**

A variable attenuator after the