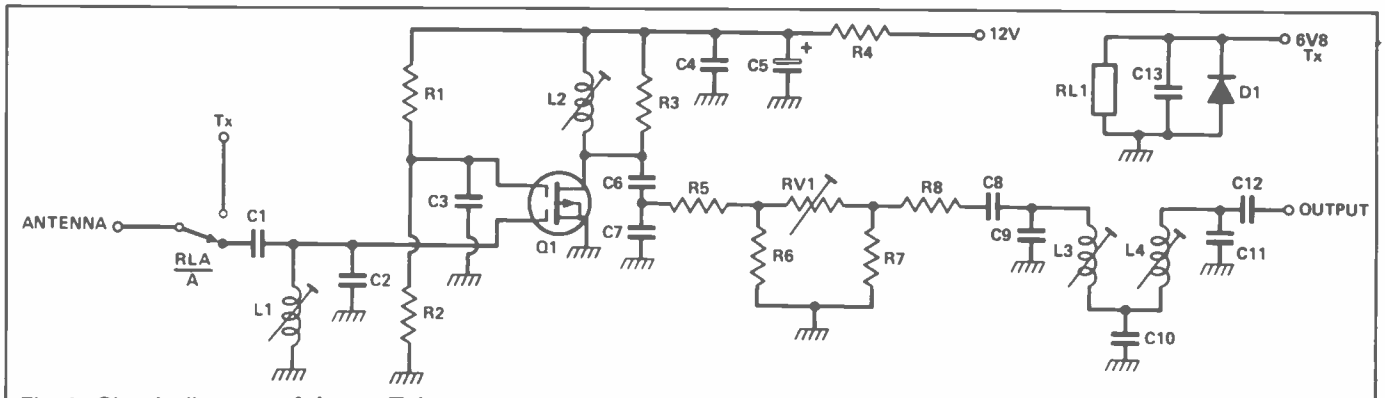
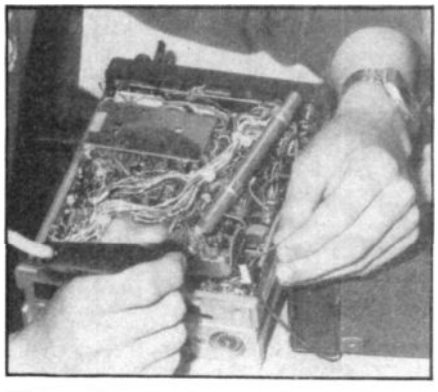


Fig. 1. Circuit diagram of the muTek 145sb

output matching allows for a variable gain control without compromise to the dynamic range. The unit also incorporates a Butterworth bandpass filter which provides substantial rejection of out-of band signals. Typical characteristics are shown in **Fig.2.**

Installation

It was found to be a simple operation to install the preamplifier and full instructions with diagrams were supplied, although the author found two labelling errors which MuTek have promised to correct on future editions. Three colour-coded petrotetra fluoretheylene (PTFE) co-axial wires and two single wires have to be soldered to various points within the FT290R, and two original components, C101 and L02, removed completely. The preamplifier, built on a very small epoxy fibreglass board, then in effect sits across the space left by L02, which should be connected between the antenna and a stand-off within the PA compartment. Bushed



The author getting to grips with the simple installation.

mountings are provided and allow the unit to be fixed where the tone encoder/tone squelch assembly would otherwise be installed.

The instruction leaflet suggests that in order to successfully remove C101, it should be "crushed with a pair of long nosed pliers and then repeatedly bending the leads until they break flush with the PCB." A simpler way to achieve this was to take a soldering iron and solder sucker to the rear of the board — thereby leaving a neater finish and saving the component intact. One of the PTFE co-ax

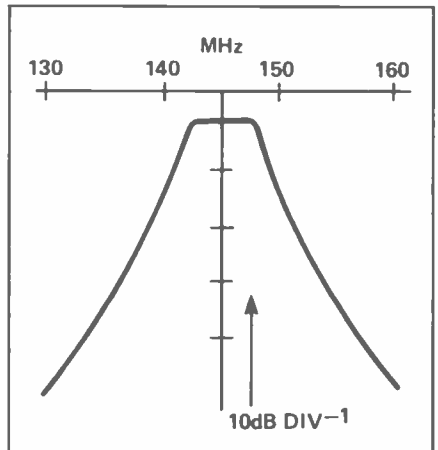


Fig.2. Typical frequency response of 145sb

cables was, in the author's opinion, slightly too short and was replaced so that improved routing of the cable could be achieved.

Having successfully installed the device it is necessary to adjust the gain, which ranges from 0 to 15 dB, so that the best noise figure is achieved whilst insuring that maximum performance is obtained. This is a simple task of tuning to a weak FM signal and adjusting the attenuator on the board with the trimtool supplied until the slightest degradation in signal-to-noise ratio is noticed and then backing off the adjustment slightly. There is no need for expensive and sophisticated test equipment, apart from the human ear!

Conclusions

The device performed very well indeed off-air. Comparisons made in respect of beacons suggested a considerable increase in signal strength and an improved noise factor. As the preamplifier becomes on installation an integral part of the FT290R, preamplifier in/out tests were not possible. In order to provide a further indication of the efficacy of the preamplifier, laboratory tests were conducted upon the FT290R + SLNA 145sb unit and a definite improvement in the signal-to noise ratio over that of the original FT290R specification was noted.

The MuTek SLNA145sb essentially provides the claimed goods but does seem rather 'pricey' when compared to other commercial preamplifier units. We should not forget, however, that the unit also provides a new antenna c/o switching circuit which plays a substantial part in the improvement of the noise factor of the modified FT290R.

Priced at £27.40 plus £1.20 postage and packing, the unit is available from MuTek Ltd., Bradworthy, Holsworthy, Devon, EX22 7TU or from stockists including ARE in Ealing whom we thank for a speedy response to our request for a sample.