EQUIPMENT REVIEW

THE SABTRONICS MODEL 8610B FREQUENCY COUNTER

IT has always been a licence requirement that you have some means of determining your transmitter frequency with reasonable accuracy. Until the advent of digital frequency meters, this was usually met by using an analogue device, such as the popular BC-221 of W.W.II fame. Nowadays an increasing number of HF and VHF transmitters and transceivers incorporate digital readout of frequency. Even so, an independent means of measuring frequency is very useful, not only to comply with licence requirements, but also to use during development and servicing work, for setting up very accurate frequencies for meteor scatter and E-M-E schedules, etc.

My first dabble in DFMs was the 20 MHz design by G3TVU and G8BDO, which appeared in 1971. Although mine worked up to 32 MHz with a selected 7490 IC, it was very basic and is rather old hat now, so I decided it was about time I acquired a modern counter capable of operating at least to 500 MHz without an external prescaler.

The Choice

The advertisements in British and U.S.A. magazines revealed several companies offering suitable products. After carefully reading through the specifications and considering value for money, I decided upon a **Sabtronics** product. The reasons were:—

1) Eight and nine digit models are available.
2) They count up to 600 MHz.
3) They come either ready-built or in kit form.
4) They run off re-chargeable batteries or a mains adaptor.
5) The crystal oscillators are user-adjustable.
6) They are available from a U.K. source.
7) They look smart and have a tough case.

Getting it

An inquiry to the sole U.K. and Eire importers, **Messrs. Black Star Limited** of St. Ives, Cambridgeshire, produced a prompt reply to technical queries, a price list and confirmation that the model I wanted, the **8610B** in kit form, was available from stock. I ordered this nine digit, 600 MHz counter, four NiCad batteries and a mains adaptor. These were sent parcel post and arrived safely in a couple of days.

The Manuals and Components

Two manuals are supplied, one covering assembly, the other operating the counter. The Assembly Manual is a 16-page affair, 8½ by 6½ inches and contains a complete list of components, the customary hints on proper soldering and the step-by-step assembly instructions. The information is all there but the diagrams are a bit "amateurish" and the dot matrix type of printing does not make for easy reading. Pages 11 and 12 were transposed, so you have to do pages 10, 12, 11 and 13. This, and a few other amendments, were incorporated in an addendum stapled to the manual. There is a separate, 17 by 11 inch sheet one side of which is devoted to the circuit diagram of the main counter, the reverse to that of the prescaler and physical layouts of the PCBs, plus an "exploded" assembly sketch.

The components were packed in several sealed polythene bags. They came from several countries including Japan and Mexico, and are of satisfactory quality. The PCB material is single-sided fibreglass and the case is moulded in a very tough plastic material, light grey, with a "crackle" effect finish. Part numbers feature in the lists in the manual but not on the components. However, anyone capable of building kits would have no trouble identifying everything. There were no shortages and an extra 2N5771 transistor was included. It took 75 minutes to check through the 150-odd components, from the main PCB, to lengths of hook up wire. No solder was provided.

The Circuit

The early frequency counters used TTL devices and "Nixie" tubes for the displays. Each digit required a 7490 decade counter and 7441 BCD/decimal decoder, at least and the total current

Fig. 1. The completed counter showing the clean, functional layout of the controls. The tiny hole just discernable beneath the letter E in 'Model' was drilled to gain access to the trimmer for adjusting the crystal oscillator frequency to exactly 10 MHz. *photo: T. Traill*