RTTY with the BBC 'B' Computer and G3LIV Interface

Ken Michaelson, G3RDG, investigates a 'state of the art' approach to RTTY — the long distance typewriter.

Readers of my previous article on RTTY will remember that I discussed a Terminal Unit called the 'ST 5', which was designed to provide the necessary voltages to operate a mechanical teleprinter. This review describes a horse of a different colour, in fact, three horses of a different colour! I am going to discuss the G3LIV MODEM/interface for use between a receiver or transceiver, the BBC model 'B' computer, and, not the least important, the program written by Peter Harris, G3WHO, to operate it.

The G3LIV interface arrived at my home QTH packed in a plastic bag, together with full instructions for assembling it. The PCB is roller-tinned and drilled but not screen printed with the component numbers etc. This in itself is not a disadvantages as a full-sized drawing of the PCB is provided giving all the positions and values of the various items. It measures 170mm by 120mm with 4 mounting holes, and is made of high quality glass fibre. A list of the components was also enclosed and a check showed that everything was in order. I set to with the soldering iron, and without undue strain, completed the job in two evenings quite easily.

Alignment

Having checked all the soldering and external wiring for short-circuits etc, the next thing to do was to apply power and align the active filters. They are designed to have switched centre frequencies to cover both the amateur 170Hz and commercial 425Hz shifts. In fact, the unit can be aligned to cover any two shifts required. However, in this case I was going to align them to cover 1275/1445Hz for amateur use and 1275/1700Hz for the commercial shift. The alignment instructions suggest that an oscilloscope be used to set up the circuits, using an audio generator and a frequency counter. In my view it is essential that they be aligned using a scope. I think that it is impossible to do the job without one, but should any of you readers not be in possession of any of these units of test gear, do not despair. Johnny Melvin, the designer can arrange to do this for you for a small fee. The whole operation of the unit is dependant upon the correct adjustment of the various circuits. There are nine potentiometers, but the unit is aligned in stages, and the end result should be a unit which is selective enough to operate in todays crowded band conditions without the frustration of losing the signal. Provided that care is taken in the alignment of the circuits, this objective is achieved.

Having got the unit electrically functional, the next step was to arrange to connect up the second board, the AFSK tone generator. This would not be required for those of you who are only interested in receiving. In my case, a ready built AFSK board arrived from Johnny Melvin, and this only had to be connected to the proper points on the main board to make the unit operational both for receiving and transmitting.

Since all the operation of the transmitter etc, is controlled from the keyboard of the BBC computer, it was necessary to arrange some method of 'PTT' for the TRIO TS820S that I use. This was done by means of a DIL reed relay, the coil of which was connected between PB2 and the computer's 5 volt line, available on the ribbon cable coming from the computers USER PORT, PB2 switching on and off in response to 'CTRL TRANSMIT' and 'CTRL RECEIVE'. The 'DATA OUT', PB1, was connected to the switching point on the AFSK board and the 'DATA IN' came from the 4.7 volt logic output on the unit to PB0. Signal ground was, of course, '0 volts'. While on this point, I must tell you that there is available from the BBC computer itself, a perfectly good audio output from PB7 of the USER PORT. The only thing is that it is a