

The C7800 70cm UHF FM Transceiver



Nowadays in *PW* we clearly identify all our authors and this is especially important whenever equipment evaluation is featured. In this 1980 article, although he's not named, the author is **Dick Ganderton G8VFH** (now retired), who became Editor of *The Short Wave Magazine* and is photographed 'road testing' the C7800 in his famous 'Maxi' car. **Rob G3XFD**



chromed bar is also provided to act as a front tilt leg to angle the rig when used in the shack.

Appearance

The front panel is particularly pleasing in appearance and is not unduly cluttered with controls. A large 'smoked' window covers the green digital frequency display as well as the various indicator l.e.d.s and the very useful l.e.d. power and signal strength meter. The keyboard under the display window is the main means of driving the rig. This keyboard controls the microprocessor and gives access to the five memories, scanning modes and an 'instant' SU20 calling channel selection.

The actual frequency selection can be performed in two ways. A large round knob on the front panel allows the frequency to be changed up or down in either 25kHz or 50kHz steps. The step size is selected on the rear panel.

The hand-held microphone also carries a rocker switch, which allows the frequency to be changed up or down remotely. Operating this switch gives an initial shift of one step followed a short while later by a continuous shift of frequency until the switch is released. The frequency selected is shown on the display with the first two digits removed.

The volume control also doubles as the push-on-push-off button control for the repeater access tone generator. Concentric inner switch levers are fitted to the squelch and volume controls and control the repeater shifting and the transmitter output power. The front panel is sloped to allow easy use of the controls and this also gives the rig its stylish lines.

The 1980 text:

Seventy centimetres seems to have had an upsurge of interest in recent months, particularly in areas where there is a good repeater with a wide coverage. The Standard C7800 u.h.f. transceiver was therefore looked at with great interest.

The initial impressions of the rig are ones of a Rolls-Royce class of equipment – well built and designed with a solid look with excellent styling. Nothing looks cheap and nasty and all the external parts were well finished and fitted neatly together. The rear panel is black anodised aluminium casting, which acts as the heat sink for the output transistors as well as carrying various sockets and the antenna input SO239 u.h.f. socket.

As with most transceivers intended for mobile use, as well as base station use, the C7800 can be slid into a special mounting rack, which allows it to be adjusted in the car. A

Dick Ganderton G8VFH says, "The initial impressions of the rig are ones of a Rolls Royce class of equipment – well built with a solid look with excellent styling."

Inside the C7800 lives up to its outer appearance. The main printed circuit boards (p.c.b.s) are well made and all internal components are fitted neatly giving the set a professional look and obviously contributing to its potential reliability and stability.

Access to the works is by the simple removal of the top and bottom panels and can be accomplished in a matter of seconds. The instruction manual gives very complete step-by-step instructions for obtaining access to any part of the set as well as full alignment instructions.

In Use

The rig was given a very thorough air-test over a period of some four months, both mobile and fixed and after a few preliminary problems gave a very good account of itself.

At the start of the tests the C7800 was used as a mobile rig fitted into the reviewer's Maxi. The power take-off was from the feed provided for a car radio and so is switched off when the ignition key is removed. The antenna used was a collinear from the SMC range of gutter mounted mobile antennas with the mount on the driver's side at the rear of the gutter.

The first few days were very disappointing with dismal failure every time an attempt was made to access the nearest repeater shown in the RSGB handbooks. A few enquiries locally brought to light the fact that the local Wimborne repeater did not exist except in the repeater books!

Hope rose and attempts were then made to access the next repeater, GB3SD at Weymouth some 30 to 40 miles away. The repeater could be heard very strongly but all attempts to access it failed. By now it was becoming apparent that there was something amiss with either the rig or the operator.

Success was eventually achieved through GB3CB while in the Birmingham area but shortly afterwards (while working GB3LT at Luton) the reports on the audio quality from the Standard were not very complimentary. It would seem that the rig was transmitting way off frequency. This was confirmed

when GB3SD was at last accessed and quite by chance a regular user of SD (**G8TGE**) who also runs a C7800 was listening and was able to pinpoint the trouble.

The C7800 has a phase locked loop system to set the frequency and when the repeater mode is selected another crystal is brought into use for transmit only, to give the required 1.6MHz shift. It seems that the crystals were inserted by the importers but by an oversight, they were not trimmed to give exactly the required 1.6MHz shift. This put the rig outside the pass-band of 'SD when deviated and the repeater failed to recognise the input.

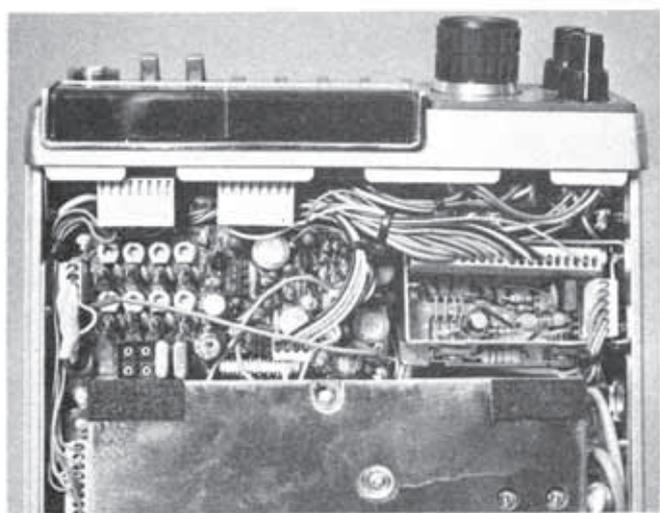
Adjustment proved very simple once the correct trimmer capacitor had been located. Here the instruction manual proved both very helpful and at the same time devious. The location of the trimmers was clearly shown but they were all incorrectly labelled. G8TGE had been through this exercise and was able to pinpoint the correct trimmer.

Five minutes later, the Standard was set up correctly! Since then reports from the many contacts made through SD have been very complimentary on the quality of both signal and audio from the C7800.

Microprocessor

The microprocessor control of the C7800 seems to be very effective once the controls have been mastered. The main keyboard has eight push-buttons controlling the scanning, memories, selection of the MHz band and SU20 calling channel selection. There are five memories each of which can be accessed from the keyboard or scanned at two speeds for either busy or vacant situation.

Setting up the memories is straightforward. After selecting one of the memories, the frequency desired to be entered is set up using the frequency selection knob or the microphone rocker switch. When the display indicates the desired frequency the **MEMORY ENTER** button is pushed and the frequency shown on the display is stored in the memory.



The p.i.l. crystals can be seen on the left with the two sets of trimmer capacitors immediately above them. It was necessary to trim the p.i.l. crystal to net the rig onto frequency for repeater operation. One of the crystals gives a 7.6MHz downshift for Continental operation



The C7800 fits neatly under the dash of the reviewer's Maxi

A simple memory back-up supply is fitted to retain the memory when the main power switch is turned off. However, the back-up is only operative as long as the rig is still connected to a 12V d.c. supply.

If the supply is removed the memories are erased and the rig must be re-programmed the next time the rig is switched on. This is a nuisance but can be overcome by connecting a separate small 9V battery to the accessory socket on the rear heat sink. (A remote keyboard can also be connected through this socket if desired).

Pushing the **CALL** button selects SU20 as the simplex calling channel. This can only be overridden by pushing the cancel button, which then restores the frequency to that selected before the CALL button was pushed.

Unfortunately, there's no reverse repeater facility. This is surprising since there is a spare button on the keyboard. These could have been used simply to provide instant selection of the repeater input frequency, using the appropriate crystal in the phase lock loop system (PLL) system.

It's possible; of course, to use one of the memories to store the repeater input frequency as long as you don't object to losing one of the memory channels.

All the controls fall easily to hand with the exception of the **Tone** button for repeater access. This is the control farthest away from the driver in a right-hand car and in some models the only suitable mounting position could give a long arm stretch to press the button. Fortunately, this only needs to be done to bring the repeater up initially so this is only a minor criticism.

The display is clear and easily read in all conditions while the repeater mode is indicated by white light emitting diodes (l.e.d.s) alongside the frequency display. For certain conditions the transmitter is automatically locked out and this is indicated by a red l.e.d.

The power and signal strength meter is a multicolour l.e.d. type of display and is most effective when operating mobile. It's much simpler to notice that two red l.e.d.s are lit rather than try to read a continuously wavering meter needle, and this is a form of indicator that must surely catch on for transceivers.

The hand-held microphone was comfortable to use but it proved very easy to accidentally operate the frequency change rocker, thus losing the channel being worked.

The transmitter and receiver seem to be very well matched in terms of performance. When the repeater comes in on receive at above about S5 then the transmitter will put a good signal into the repeater. When the S-meter indicates say S1, then the repeater is not accessible.

Towards the end of the tests, a 5A 13.8V stabilised power supply was constructed along with a scaled down version of the 12-element ZL Special beam antenna described in *Out of Thin Air*. These were used to run the Standard as a fixed station working into SD over a distance of some 40 miles. The results have been outstanding with the reports of the Standard's signal showing it to be performing exceptionally well. The r.f. power output was measured at 13W on high power and 900mW on the low power setting.

On test the Standard C7800 transceiver performed really

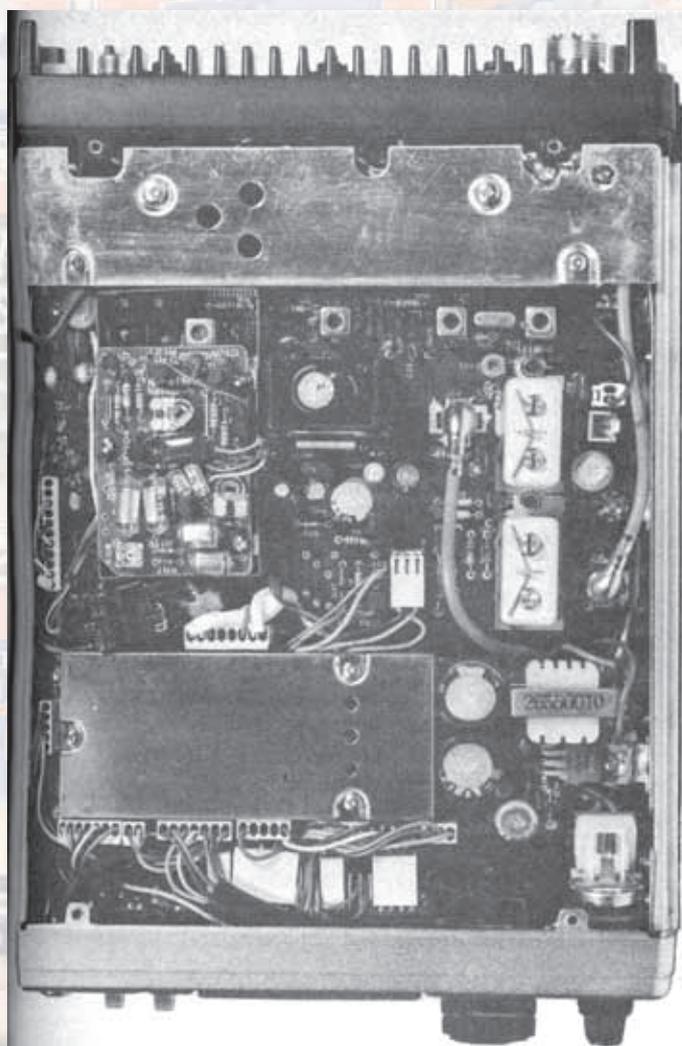
Price

The Standard C7800 costs £275 inc. VAT.

The Standard C7800 was loaned by Lee Electronics, 400 Edgware Road, London W2. Tel: (01732) 5521 and we would like to thank them for their co-operation.

well and was a pleasure to operate. As a fixed station it is compact and all controls fall easily to hand and even on high power it does not require too large a power supply. As a mobile unit it is very good, offering to the Amateur enthusiast a versatile 70 centimetre rig at a reasonable cost.

Thanks must go to the regular users of GB3SD for the reports on the signals from the Standard as well as four months of interesting and well-ordered QSOs over quite incredible distances.



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