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**T**his radio arrived well packed and with a comprehensive user manual. A minor quibble that I have is that there is no index to the manual, and it can be lengthy to search it for a particular item. It would have been helpful perhaps to include a CD version of the manual, with searchable database. Meantime a useful workaround is to download the manual from the Kenwood website in pdf form and search the pdf document by opening a search of the document with Ctrl+F.

### Overview

The TS-890S, **Figs. 1 and 2**, is the latest top-of-the-range transceiver offered by Kenwood. It covers all bands from 1.8 to 70MHz, with 100W output (50W on 70MHz) There are very many configurable options and features in this transceiver as reflected by the thick user manual. This review cannot possibly cover more than a fraction of them, so I've outlined some that I found particularly of note. The sidebar, from the Kenwood website (below) highlights some of the features but I would also recommend downloading and studying the PDF brochure, available on the same site.

<https://kenwoodcommunications.co.uk>

The first impression of this radio is that it is solidly built and beautifully finished. For a radio without an internal power supply – it requires an external 13.8V DC supply – it is quite heavy at 15.8kg. All controls are solid in feel and logically laid out. The controls to which the operator most needs access are correctly placed on the bottom row of control knobs.

This contrasts with the rather odd placement of controls on other radios (the strange placement of the main receiver AF/RF gain well above that for the sub-

# Kenwood TS-890S

**Veteran DXer and contest operator, Ron Stone GW3YDX puts the Kenwood TS-890S through its paces.**



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receiver on the Icom IC-7610 comes to mind).

It's possible to receive outside the amateur bands without decreased performance, retaining all receive features, including the spectrum display. However, the radio is locked to the Region 1 bandplans for transmit. There is even a special screen displaying the broadcast bands for those who like to listen to those bands, simply accessed by pressing the F [SWL] button.

Three bandstacking registers per band are available but that may be menu-expanded to five. Additionally, Kenwood have implemented something common on Icom and some other radios for a long time – an option of a faster tuning rate as the VFO tuning knob is spun faster. This is really a boon when the radio is set to

a slow tuning rate and the user wants to move more quickly around a band.

### Bandscope

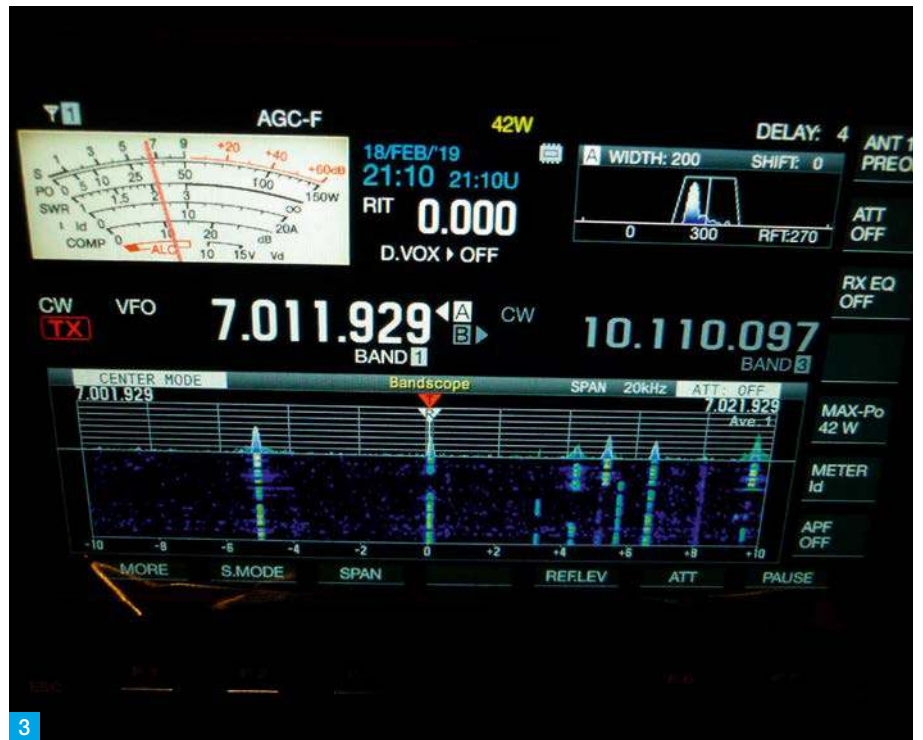
Part of the big touchscreen display can be devoted to a most wonderful bandscope, as depicted in **Fig. 3**. Unlike with some others, there is no slewing of the signal traces as you tune the band, as the bandscope tries to catch up with the tuning speed. The reason for this is very simple. At the default setting, the Kenwood designers stop the trace until the VFO or RIT tuning has stopped. The bandscope is a great aid, particularly for honing in on those faint traces that are often good DX. However, the traces do not identify the signals as the guy down the road or that elusive Pacific DX. Maybe it will be possible with enhancements to

Fig. 1: The TS-890S. Fig. 2: Rear panel view.  
Fig. 3: The waterfall display.

have the traces labelled with the callsigns on CW by interfacing the radio with the internet. This is already possible with other radios using an external IF coupler in conjunction with software such as NaP3, which, on CW and RTTY, takes callsigns from DX spots and the RBN to label the traces. Theoretically it should be possible to use the USB link from the radio to do this but an IF output socket would have been a nice idea anyway. I'm no PC expert and didn't go further down the road of attempting to interface other panadapter display software with the radio. If any of our PW readership find a way of doing it, please let the editor know and the rest of us will benefit.

The Bandscope's finest definition is  $\pm 2.5\text{kHz}$  of the central frequency while the coarsest is  $\pm 250\text{kHz}$ , cycling through intermediate scan ranges. However, the cycling only goes one way, pressing plus for the next scan range, but it is impossible to cycle it in the reverse direction. Instead of 'SPAN' for changing the ranges, it would have been better to have 'SPAN +' and 'SPAN -', given that there are unassigned buttons, which could have been used for that. The bandscope is very sensitive. Weak signals in the noise have an easily visible trace and many times good DX has been found like that. There is an option of a regular 'moving needle' or bargraph display for RF Power, SWR, S-units and so on. Although it's a virtual display, the 'moving needle' display looks very much like a real meter. The display also shows a lot of other parameters, most of which can be user-configured. The 'vital statistics' – the frequency display for both A and B VFOs, and RIT – are displayed in large easy-to-read characters that I can read without glasses.

One little quibble is that if slow tuning is selected (e.g. 1kHz per turn of the main tuning knob), then the RIT becomes very slow indeed, at 50Hz per revolution. That's far too slow. I'm going to contact Kenwood about a couple of firmware changes. Fast RIT tuning while in slow main tuning is one of them. During the recent ARRL CW contest, constant rapid cranking of the RIT control got very tedious, particularly as I was doing a single-band 80m entry and had had about four hours sleep all weekend. Then I had a light-bulb moment. There is an



excellent and very sensitive 'CW-T' button that when pressed automatically brings the signal into the centre of the filter passband. I used that for the remainder of the contest, meaning there was no need to use the RIT again.

### CW, Memories, Split Operation

Various display colour options are available but I found that the default option was as good as any, so remained with it for the duration of the review.

CW can be used in FULL-BK (full break-in) but the internal switching relays are quite noisy in that mode, even while wearing headphones. In transceivers of this class, silent solid-state switching should really be the standard.

Although this radio hasn't got two receivers, split frequency operating is very well thought out. A bold SPLIT appears in yellow on the screen, with a 'delta frequency' marker also appearing to the right of the display. In other radios I've forgotten to turn the split off because it is not so obvious. The way the TS-890S indicates split is very clear. Listening to the transmit frequency is easy, by pressing the XFC button.

CW memory functions could have been better implemented. There are two methods of entering text into memory. The first is by paddle. A paltry 12 seconds is provided for paddle entry. This is totally inadequate, especially as the memory does not accept characters reliably. At

30WPM there is barely enough memory to enter CQ DX DE GW3YDX twice. The other method of text entry is by text input. That works well but instead of eight 50-character memories, it would have been better to provide four 100-character memories instead.

### PC Interfacing

Interfacing to a control PC is everything we have come to expect of modern top-of-the-range radios. A single USB cable back to the host PC can not only provide frequency information for logging programs, but also control for the data modes and CW. I set up the link for both FT8 and for regular RTTY via my logging program, Logger 32, and for RTTY and CW through my favourite contest program, N1MM+ Logger. Setting up of this link is complex, and needed recourse to the manual, which allowed me to complete setup without any mistakes.

As well as using a PC to decode RTTY – and, with the appropriate program, CW – it is possible to do both (and PSK31 and 63) on the TFT touch-screen display. The decoding works very well on those modes with the decoded text displayed in a window, with a helpful tuning aid in another window beside it. Even weak signals were rapidly decoded. Fig. 3 shows the CW decoding screen. Outgoing Morse is also decoded and displayed, allowing a check of your own character spacing.

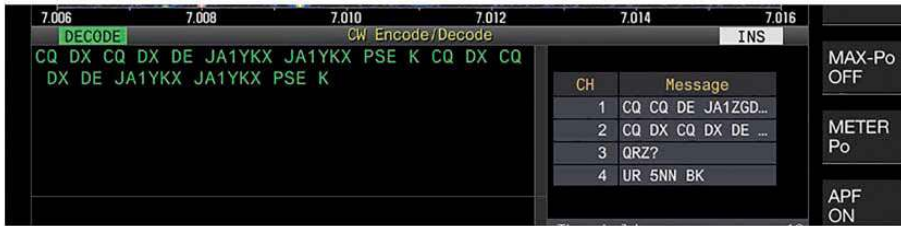


Fig. 4: Morse decoding on screen.

## Other Features

Although this is a multi-mode transceiver, I used it only on SSB, CW and RTTY. I prefer a 300Hz low beat note for CW. This is possible within the range of 300-800Hz available.

Kenwood seems to have thought of every operator's needs in this radio. As well as being able to record speech for CQ calls and the like, there is a facility to record both received speech and CW for later playback. That can be done both internally and on to an external thumb drive inserted into the front-panel USB connector. Recording that way is only limited by the capacity of the drive and can be many, many hours.

As with a few of the top-of-the-range radios, an external screen may be connected but oddly, instead of the HDMI or SVGA connector you might expect, a DVI socket is provided on the rear of the radio. All the reviewer's monitors are 15-pin D-sub connectors for SVGA, so I had to buy a cable adaptor. On a 17in external monitor, the display was very clear.

Connected to N1MM+ for contests, and Logger 32 for regular use, the transceiver was a dream to use. I'm lucky insofar as I have a good antenna farm, including phased verticals on 80m, Yagis on 40m and above, and a high 160m dipole. As well as regular use around the bands, some time was spent in the CQ WPX RTTY contest, the RSGB 160m CW contest and the ARRL DX CW contest. The transceiver handled all contests very well. In particular, there were some massive signals around in the 160m contest. There was no sign of overload, or the transceiver AGC being driven by even close-in strong adjacent channel signals. The spectrum waterfall display was extremely useful when trying to find a CQ spot on busy bands. Received signals on CW were clear and not mushy in any way. I'm a bit of a fussy about the CW sidetone arrangements and have been known to use an unpleasant-sounding sidetone as an excuse for poor Morse! No excuses with this transceiver. The sidetone is lovely.

There was no SSB contest during the review period and most of my SSB operation was on 40m. With the Yagi, European signals can be massive. There were no signs of the receiver struggling to receive weak DX close to them unless, of course, their transmission was dirty. That was easy to establish because dirty transmissions showed up as spiky messes (a technical term!) on the bandscope. It was indeed amazing how often two equally strong signals were very different in the bandwidth they took up.

## A Comparison

My standard of comparison for receiving is the excellent Ten-Tec Orion 2, sadly no longer made. Long testing on CW showed that the filter shape of the TS-890S seems tighter in the skirts. Without using the TS-890S CW peak filter, the Orion is slightly ahead on receiving very weak signals in the noise. This is probably due to AGC issues in the TS-890S DSP, which cannot be overcome by menu changes.

Without the audio peak filter, there were some occasions when the Orion would copy weak DX when the TS-890S struggled. However, when the peak CW audio filter was engaged on both radios, it had the Orion beat nearly every time. Given that I've found my Elecraft K3 to be inferior to the Orion with weak signals, the TS-890S really is a superb radio for digging out the weak ones on CW.

On SSB transmit, the audio quality both with and without the processor was among the best I've ever experienced. That wasn't with a super-expensive studio microphone but the basic fist microphone supplied. I have a fairly bassy voice and the 17-band (!) graphic equaliser was extremely useful in giving greater emphasis to the higher voice components. A monitor for both audible and graphical display may be used to check the quality of the transmitted signal. This graphic equaliser, by the way, can also be used to tailor the received audio on each mode, and automatically switches to your preference depending on mode selected.

No tests were possible on the bands

## Brief specification (from Kenwood website):

- Four kinds of built-in roofing filters: 500Hz / 2.7kHz / 6kHz / 15kHz (270Hz Option)
- 7in Colour TFT Display:
- Roofing Frequency Sampling Band Scope
- Band Scope Auto-Scroll Mode
- Multi-Information Display, including Filter Scope
- Clean and Tough 100W\* Output
- 50W/70MHz
- Built-in High-Speed Automatic Antenna Tuner
- 32-bit Floating-Point DSP for RX/TX and Band Scope
- Remote operation via LAN port, no PC required

above 21MHz, conditions at the time I had the TS-890S being pretty grim.

The transceiver also covers 70MHz. The reviewer has no dedicated antennas for that band, so a 3-element SteppIR was pressed into service, with the centre dipole element being shortened accordingly. The local 4m beacon was copied quite adequately and a quick test also showed that the 50W available on 4m could be generated with no drama.

## Conclusions

My overall conclusion is that this is an excellent transceiver, particularly for CW operators who demand absolutely top performance. However, some will find the absence of a full sub-receiver troubling because very good transceivers with sub-receivers are available in the same or lower price range. Having said that, the TS-890S has a wider range of configurable options than any other transceiver your reviewer has ever used, and very good basic performance.

*[It should also be noted that, although Ron was unable to check it out, Kenwood have included a facility to use the TS-890S alongside a TS-590, working seamlessly together to offer the same facility as an included second receiver – ed.]*

As ever it is up to prospective buyers to evaluate the features/performance/price balance for those transceivers available on the market before making a choice.

The TS-890S is available from all major UK amateur radio retailers and the price was recently reduced to around £3500 (from a launch price of £4300).