



EQUIPMENT REVIEW

Ron Fisher VK3OM

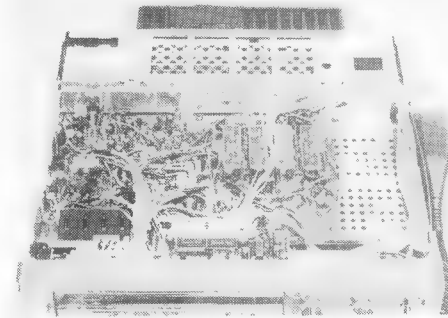
3 Fairview Avenue, Glen Waverley, Vic. 3150

THE KENWOOD TS-430S HF TRANSCEIVER

The trend in amateur equipment design for HF operation seems to be towards the general coverage type transceiver. Up to the present time this has only been available in relatively expensive gear, but with the introduction of the new Kenwood TS-430S, we have the first popular priced transceiver with full general coverage capability. Maybe with the present state of the art in amateur design, it just might be as economically viable to build a full coverage design as it is to build a normal band switched transceiver.

TS-430S is to say that it is a compact version of the TS-930. It does not have a built-in A/C power supply, but is intended for operation from either a 13.8 volt power supply or a 12 volt battery for mobile operation.

A quick look at our photo will show that the 430 is just a little larger than the popular TS-130S transceiver. It is the same height, same depth but 29cm wider than the 130. Now pack into this package a 100 watt transceiver with operation on all amateur bands from 160 to 10 metres, a receiver with full coverage from 150kHz to 30 MHz and we start to see just the beginning of what this amazing transceiver has to offer. Unfortunately my time with the 430 was rather limited, so this review is perhaps more of a preview. However, I hope I can give you a good idea of what you might expect from this transceiver.



Top view with cover removed.

Well you might ask, just what is the TS-430S. Many astute readers might have noticed the introduction of it in the Kenwood advertisement on page 50 of the December issue of Amateur Radio. I would guess that Kenwood decided to

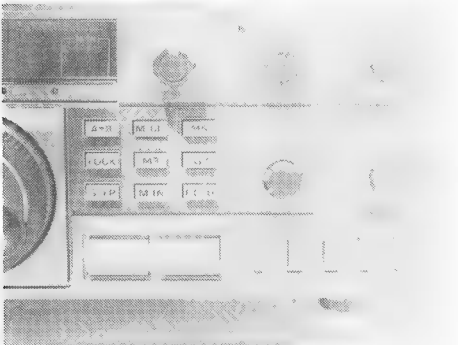
keep its introduction rather subdued, as there will be no way they will be able to keep up the supply when the word gets around about their superb performance.

Perhaps the best way to describe the

THE TS-430S TECHNICAL FEATURES

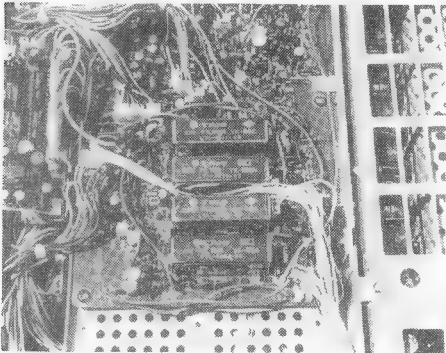
The TS-430 is of course a fully solid state transceiver with a broad band final that does not require any tuning. The receiver has provision for reception on SSB, CW, AM and FM and has full general coverage from 150 kHz

to 30 MHz in one MHz steps. However the band switching up/down buttons can be programmed to select either the next higher or lower amateur band or one MHz up down steps. Split operation is available with two synthesized VFOs which have two tuning rates. Eight memories can be programmed and these are then available for recall at any time, even if the primary supply voltage is removed. An internal lithium battery is built in to store memories for up to five years. Not only do we have the eight memories but it is possible to set up each of them in any particular mode that the 430 is capable of operating in. Memory scanning is selectable from the front panel keyboard with five second monitoring on each in turn. Imagine being able to check a couple of local broadcast stations, your favourite amateur band channels on a mixture of USB, LSB, CW and FM. The FM feature is an optional extra, as are the CW, AM and narrow SSB filters. However with the very low basic price, I can see that many amateurs will put in all the options when they purchase the transceiver.



Front Panel Keyboard.

Other features include an IF shift, notch filter, RIT control for receive only, built-in speech processor, squelch control for use with the optional FM mode. In addition there is a noise blanker and a front end receiver attenuator. A wide/narrow switch selects either the normal or narrow (1.8kHz) SSB filter, or 2.4kHz or 500 Hz CW selectivity.



Filters.

The final transmitter output stage looks very much like the TS-130S PA unit and incorporates the same fan unit which is thermostatically controlled. A carry handle is fitted to one side of the cabinet, which is a great improvement over the TS-130, which did not provide one.

Unfortunately our review TS-430S did not come with a normal handbook, so it is rather hard to comment on the circuit. Apparently the transceiver was an early production model air mailed out for demonstration purposes. I look forward to seeing the handbook in the near future.

THE TS-430S ON THE AIR

The first thing noted when I attempted to get the 430 set up was that there is no AC power switching with the power on/off switch. The power connector is compatible with the PS-30 but you will need to operate two switches instead of one as with the TS-130. Strange to say the least.

Once on and operating, the 430 is a joy to use. Although there are many controls on the front panel, it only takes a very short time to sort out the various functions. Band changing is by two large buttons. One produces an up frequency shift, the other a down shift. To the right of these is a smaller button labelled 1MHz step. Push this and the main band change button then gives the one MHz steps in place of the amateur bands. The tuning knob is a good size and has a very smooth action. The two tuning rates should please everyone. The slow rate is in 10Hz steps and this really spreads things out.

Operation mode is selected by five push buttons to the left of the tuning knob. As each is selected a status indicator comes up alongside the appropriate button. The mode selection is USB, LSB, CW, AM and FSK. By the way, if you are scanning the memories which includes different modes, the status indicators will follow the memory selected mode. The memory channel in use is shown by a special readout to the right of the frequency display.

For mobile operation a frequency lock button holds a given frequency regardless of any operation of tuning or scanning controls.

Due to the short time that I had the 430 I was unable to carry out our normal technical tests. Only power output was checked and the following results were obtained:

| | | | |
|-----|----------|----|----------|
| 160 | 80 watts | 20 | 70 watts |
| 80 | 85 watts | 17 | 65 watts |
| 40 | 80 watts | 15 | 60 watts |
| 30 | 80 watts | 13 | 60 watts |
| | | 10 | 70 watts |

This is a little down on what we might consider a normal 100 watts output, but it is still a very satisfactory result and in fact quite comparable to the older TS-130S transceiver. PEP output on SSB was about the same as viewed on the scope with a clean pattern. On-air tests for intermodulation distortion showed that the 430 was not quite as good as some equipment tested, but quite satisfactory.

The speech processor used in the 430 is a simple audio type and not an RF clipper. It appears to be similar to the processor used in the TS-130 and the TS-530. Results obtained with it were certainly worthwhile but not up to the better RF clipper types. Audible distortion appeared to be quite low.

Receiver sensitivity was very good when compared to our normal station transceiver and strong signal handling excellent. Under normal use we found no front end overload at all.

The noise blanker worked well on ignition noise and fairly well on domestic electrical noise but produced no effect on the Wood Pecker at all. Pity, as in every other respect the 430 performed very well indeed.

CONCLUSION

The TS-430S is certainly a new generation of HF transceiver. It would seem to be in a class of its own and will soon change amateurs' ideas of just what a transceiver should do. In one stroke, it has made most existing transceivers obsolete. The TS-430S is highly recommended. Our test transceiver from KENWOOD Australia via Eastern Communications of Box Hill South, Victoria.

FOR YOU ANTENNA BUFFS:

Aside from physical damage, the most common fault in the antenna system is low resistance to ground. Moisture in the antenna system (ie impedance matching networks, coax cables, etc.) dirty insulators and coax dielectric breakdown all cause varying degrees of shunting resistance and must be guarded against if maximum efficiency is to be expected. Testing is accomplished by using a megger or if one is not handy, a simple ohm meter will suffice.

Theoretically, any transmission line system should read infinity on the megger, but this reading is not always possible to obtain. Abrupt changes in the weather, high humidity, or other natural causes often result in low resistance readings. Often resistances may be raised by cleaning the insulators. The coax cables and other cables and fittings used to connect the equipment should also be tested. A check of continuity of the antenna / transmission line system should be made periodically. The following values are suggested.

1. A resistance of 200 megohms or more to ground indicates that the antenna system is in good condition.
2. A resistance of 5 to 200 megohms to ground indicates the insulators need cleaning or the coax is contaminated with water.
3. A resistance of less than 5 megohms to ground indicates that the antenna system is in bad shape and an urgent need exists to locate the low resistance point and correct it.

from "ARNS Bulletin"
Aug., 82

HAAT IS IMPORTANT . . .

About twenty years ago I was employed by my fellow citizens to ride around in bombers, a mostly boring job, with occasional exciting moments. There is the excitement of physical danger (a different series of stories), and the excitement of snagging exotic DX.

On one of our training missions, due to a computer malfunction, we scrubbed, and hung around our home base to burn off fuel for a safe landing weight. The B-47 had no provisions for dumping. We flew big circles at 22,000 feet, just west of Abilene TX.

It was my custom to set in 14.340 in our ARC-65, for use when I wasn't busy. This mission was lost, so I played with the Collins, calling "CQ, this is K5RPB mobile." I expected no reply, since it was 0300 local. Just maybe someone in Big D or Cowtown would be awake.

"K5RPB, this is VK3AHO."

I switched my Intercom from HF and asked the co-pilot where he learned the exotic call. He denied fooling me, saying he was half asleep. Back to HF. It really was VK3AHO! Excitement, excitement . . .

The three of us talked to Bram for 20 minutes or so, and to two other Aussies. For a little over an hour, K5RPB was the only signal heard from North America. That incident made a believer of me in LeMay's world-wide sideband nets, and highlighted the importance of Height of Antenna Above Terrain.

From Bud Martin, KV4FR
ARNS Bulletin, Aug., 82

EVALUATION AND ON-AIR TEST OF THE KENWOOD TS-430S

| Category | Rating | Comments |
|----------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| APPEARANCE | | |
| Packaging | *** | Foam inserts, plastic wrapped, strong carton. |
| Size | **** | For a full general coverage transceiver, amazing! |
| Weight | *** | |
| External finish | *** | Good, but not quite as good as other Kenwood gear. |
| Construction quality | *** | Seems to be well constructed. |
| FRONT PANEL | | |
| Location of controls | **** | Very practicable layout. |
| Size of knobs | *** | A bit small for big fingers, but for the number of functions, very good. |
| Labelling | **** | Clearly labelled. |
| Meter | ** | Rather tizzy appearance and hard to read. |
| VFO knob action | **** | Very smooth. Finger hole right size and adjustable tension. |
| Digital readout | **** | |
| Analogue | NA | No analogue dial. |
| Status indicators | *** | |
| REAR PANEL | | |
| RECEIVER OPERATION | | |
| VFO stability | **** | See test section. |
| Digital dial accuracy | **** | Spot-on readout. |
| Analogue dial accuracy | NA | |
| Memories | **** | Best yet seen in any transceiver. |
| Shift/width | ** | Only IF shift provided. |
| Notch filter | *** | Audio notch — not IF, but works well. |
| Peak filter | NA | |
| Optional filters | **** | Four filters can be fitted. |
| Spurious responses | *** | A few weak ones. Not audible with antenna connected. |
| 'S' METER | ** | Action good but hard to read under low external light conditions. |
| AGC PERFORMANCE | *** | Not tested, but appeared very good. |
| SIGNAL HANDLING | **** | No overload noted. |
| CLARIFIER (RIT) | ** | Operates on receive only. No frequency indication of shift on digital dial. |
| SENSITIVITY | | |
| RF ATTENUATOR | ** | Normal attenuator — about 15dB. |
| RF GAIN | *** | Smooth, progressive action. Threshold type. |
| NOISE BLANKER | | |
| Line noise | ** | Some reduction in certain types of line noise. |
| Auto ignition | *** | Good effect, but effectiveness reduced on strong signals. |
| Woodpecker | * | No noticeable reduction. |
| Effect on signal handling | **** | No apparent cross modulation. |
| QUALITY OF RECEIVED AUDIO | | |
| Internal speaker | ** | Reasonably well balanced. |
| External speaker | NA | No matching accessories have been released. Good quality with my own external speaker. |
| Headphone output | *** | Stereo headphones match well. |
| Cooling fan noise | **** | Fan only operates under extreme conditions and then very quiet |
| Relay noise | ** | Quite noticeable with VOX operation. |
| TRANSMIT OPERATION | | |
| CW power output | *** | See test section of text. |
| PEP output | *** | |
| Audio quality | *** | Smooth transmit quality. |
| Audio sensitivity | *** | Plenty of audio gain. |
| Speech processor | *** | Audio compressor type. |
| ALC action | *** | Easy to set mic level. |
| Metering | ** | ALC, IC and 'S' meter only. Also see comments on meter above. |
| Cooling | **** | Ran cool even on hot day. |
| VOX operation | *** | Satisfactory apart from relay noise. |
| QSK operation | NA | |
| CW operation | *** | VOX keying worked well. |
| Manual (owner's handbook) | NA | No manual available at time of test. |
| Further comments | | A very compact, highly complex transceiver. Attractive to look at and easy to use after some practice. Band change method both for amateur bands only or for general coverage receive is superb. At the suggested retail price of \$999 with FM option is should sell like hot cakes. |

Rating Code: Poor * Satisfactory ** Very Good *** Excellent ****