

REVIEW OF THE YAESU FT225-RD

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Yaesu's latest two metre all mode transceiver, the FT-225RD, follows the styling of the FT-901 HF transceiver. It also includes some of the excellent innovations of the 901. In essential features the FT-225 is a restyled and updated version of the earlier FT-221 and FT-221R. It provides USB, LSB, AM, CW and FM modes with full tuneable coverage of the entire two metre band from 144 to 148 MHz. In addition to the tuneable coverage, eleven crystal controlled frequencies can be switch selected from the front panel. As the transceiver covers four one megahertz bands, this gives forty-four fixed channels. The crystals are optional extras. All the features of the earlier FT-221 series are included with the addition of some new and interesting operating aids. These include a full seven digit display frequency readout, Yaesu's new frequency memory system and fully variable power output control on the FM and CW modes. Power output has been increased from the 14 watts of the 221 up to 25 watts on FM and CW, with a rated output of 24 watts PEP on SSB and 8 watts of carrier on AM. All of these features have been packaged into an enclosure 280 mm wide, 125 mm high and 315 mm deep. This is the same frontal size as the FT-221, and an additional 20 mm depth over the 221 being used up with a deeper front panel moulding and a slightly increased heat sink size on the rear to cope with the higher power. Total weight has only gone up by .5 kg to 9 kg.

In our review of the FT-221 in the June 1976 issue of Amateur Radio, the styling of that transceiver came in for some criticism, in particular the very poor "S" meter. Let me say right away that the appearance of the FT-225 is excellent and the "S" meter has increased in size and readability to one of the best in the business. The scale is now translucent with two globes providing rear illumination. The intensity of illumination for the "S" meter and the digital readout can be dimmed with a front panel push button. Other new features are a push button receiver RF attenuator and a "TUNE" control to peak the transmitter and receiver outputs. No calibrator is provided on the digital readout version, although it appears that a non-digital model might be available in the future and this will have a calibrator fitted. The operating switch for this would appear to replace the AGC fast/slow selector on the digital model.

Other normal features carried forward from the FT-221 are 600 kHz repeater offset for both normal and reverse operation, full VOX operation for all modes, side tone for CW, clarifier for receive and also transmit/receive, meter switchable for "S" readings or centre discriminator current and relative power output on transmit. A tone burst generator for repeater access is



included but of course not required for Australian repeaters.

Numerous circuit changes have been made to the 225 circuit as compared with the 221, the most obvious being the VFO coverage of one megahertz per range as against the five hundred kilohertz of the 221. The receiver front end has been improved with the substitution of a 3SK51 dual gate FET for the single gate FET in the 221. This gives the receiver noticeably better performance with strong signals. Spurious signals produced in the 221 at our test location by the extremely strong Melbourne channel two repeater are not noticeable on the 225. A new IC type balanced demodulator replaces the four diodes as used in the 221 and this gives cleaner audio output in the SSB mode. The front panel microphone gain control now only controls the SSB and AM mic. level. The FM microphone level is now an internal preset control.

Unfortunately some of the shortcomings of the 221 have been perpetuated in the 225. The 3.5 mm headphone socket is still there on the front panel, making it non-compatible with normal headphones. You can of course plug in your transistor ear-piece. With the meter in the discriminator position, the zero point still drifts. In fact it seems somewhat worse than the FT-221. Perhaps this is made more obvious by the larger and clearer meter but on our review model it took nearly an hour for the zero point to stabilise. Also the range of this function is still very limited with a meter movement of about 3 mm to indicate a 5 kHz offset. This makes it rather hard to accurately set the transceiver to frequency in the FM mode. Also when operating FM there is no guarantee that the transceiver is actually transceiving. This is dependent on the setting of the 10.7 MHz FM carrier generator and in fact the transmit and receive frequencies can be several kilohertz apart. Our sample transceiver had been carefully set up though and the actual off-

set was less than 500 Hz, which is quite acceptable. Strangely the otherwise excellent instruction manual does not give mention to the setting of the 10.7 MHz FM carrier oscillator.

The new Yaesu memory system is an excellent and useful feature. It enables any required frequency to be entered into the system and then recalled for either transmit or receive or both. Two examples of its use would be to have your favourite FM simplex channel set up in the memory and your usual repeater set up on the dial. A flip of the SELECT switch enables either be selected. As the memory operates with the VFO only, the memorised frequency will change up and down in one megahertz steps with changes of the band switch. Again the instruction book gives little mention to the theory of operation of the memory. It does not even include a circuit of it.

THE FT-225RD ON THE AIR

With its built in AC power supply there is no problem in getting on right away. Of course an antenna is required.

The 225 can of course be operated from a 12 volt DC supply as well, but my guess is that most of them will sit on the desk at home as a base station. No mobile mounting bracket is mentioned in the instruction manual and in any case it is a fairly hefty package to be hung under the dash. All of our tests were carried out using the AC power supply only. The digital readout is bright, fairly large and in all easy to read. The readout is to the nearest 100 Hz and is very accurate. As is usual with Yaesu gear, the frequency changes when the opposite sideband is selected, but the readout instantly shows this and it is simple to re-tune to the required frequency. First thing noted on receive was the excellent audio quality. The built in speaker has been positioned facing upwards in the transceiver top cover in contrast to the downward facing speaker under the FT-221. Received audio

is noticeably better in all modes compared with the 221.

The dual speed tuning has now been provided with a finger hole which is both an advantage and a disadvantage. Using the rear or fast tune knob was awkward as the finger hole on the front slow tuning knob extends to a slightly greater diameter than the knob itself and on every rotation knocks against the fingers when extended for the rear knob. With the one megahertz coverage quite a bit of knob turning is needed to cover the range. The push button controls for the noise blanker, receive attenuator, display and meter dimming, memory and tone burst were smooth and easy to operate. Each is accompanied by a small red LED to indicate its status. Transmitted audio was smooth and clean in all modes but reports suggested a slight lack of high frequency response. We arranged for a transmission to be taped along with several other transceivers and it appears that these reports were right. In order to check the microphone, we plugged in the FT-221 mic. and discovered another way to wire a standard Japanese four pin connector. They are just not compatible. To date I think I have

found four ways used by various manufacturers to wire up these connectors.

Power output was checked with our Horwood power meter and found to be spot on the specified figure of 25 watts in all modes except AM, where it was almost exact at 7.5 watts. When transmitting SSB it was found that the effective output could be increased somewhat by pushing the audio gain up above the normal setting. This appears to produce some RF clipping in the final stage and give more talk power. However, before trying this, check it out with your nearest two metre neighbour in case it produces excessive splatter.

Assuming that some amateurs might purchase the FT-225 without the digital dial, a check was made of the analog dial calibration. The one kilohertz indications have been moved on to the tuning knob skirt and so are not illuminated. The 100 kHz increments are to the rear of this and lit in a soft blue colour. The whole thing looks very pretty but perhaps not as practical as the old FT-221. Over the one megahertz range accuracy was within one kHz. This is excellent but it should be remembered that recalibration

is required when changing modes. The kilohertz dial is set to the right frequency held in place while the tuning knob is turned to give the right actual frequency.

INSTRUCTION BOOK

Two mentions have already been made to this in the preceding text, however in most respects it is well up to what we have come to expect from Yaesu. The book is very well illustrated with most adjusting points clearly shown. A full circuit diagram is provided with everything except the memory unit. This is shown as a secret box with external connections only. One point not often covered in manuals these days, and certainly not mentioned in this one, is the replacement of dial lamps. The positioning and replacement of these is not always obvious and often they are the first things to fail in equipment. As I have found out, suppliers don't always know how to replace them either.

The Yaesu FT-225RD used in our review was loaned by Mr. Fred Bail of Bail Electronics Services, Box Hill North, Victoria. Bails have full servicing facilities for the FT-225RD and, incidentally, know how to replace the dial lamps. ■