



the irca technical column

You may have heard that Yaesu is replacing the FRG-7000 with the FRG-7700. Some details, courtesy of Ralph Sanserino:

This unit tunes slightly lower than the FRG-7000--down to 150 kHz, but its medium wave AM sensitivity is given as 25 uV. Sensitivity is comparable to the FRG-7000 above 2 MHz. AM narrow selectivity is given as 2.7 kHz at -6 dB, and 8 kHz at -50 dB; there is also AM medium and AM wide selectivity positions. FM detection is available above 2 MHz. AC house current is needed to power the radio, but a DC kit is an available option. Another option is a memory unit which allows storage and recall of up to 12 frequencies in the receiver's range. The radio also claims a "high performance noise blanker" and "selectable slow-fast AGC". Naturally, it has a digital frequency display. It should be available in October at \$715 with memory, and \$559 without. If you get one, please send in a review.

The Yaesu FRG-7700

If imitation is the sincerest form of flattery, then the Kenwood designers should feel complimented. Ralph Sanserino sent a Yaesu blurb on the FRG-7700 which includes a block diagram of its circuit and it is very similar in design to that of the Kenwood R-1000. Like the R-1000 it uses bandpass filters rather than a preselector, and has a dual conversion circuit---quite different from the triple conversion circuits of the FRG-7 and FRG-7000. Improvements over the R-1000 appear to be a switchable AGC, a potentiometer front end attenuator, FM detection available on SW, better MW and LW sensitivity, and the ability to tune down to 150 kHz. However, the AM narrow IF filter, though 2.7 kHz wide at -6 dB, has much poorer skirts than the filter in the R-1000, at least on paper. A very worthwhile review would be a comparison of the R-1000 and the FRG-7700, especially on MW. Any offers. (Other improvements the FRG-7700 has over the R-1000 include: twelve optional programmable memory channels, and balanced mixers, as opposed to single ended mixers in the R-1000, which theoretically would have better strong signal handling capability. A review of the Kenwood R-1000 appears in the December issue of QST. bp)

From Armand Di Filippo comes the following information:

Yaesu Musen Co. Ltd. will introduce in April 1981 two companion accessories for the FRG-7700 receiver: the FRV-7700 crystal converter series available in four models each covering three different 10 MHz wide VHF bands; also, the model FF-5 low-pass filter designed to prevent cross modulation and intermodulation distortion on longwave caused by strong signals above 500 kHz.

By May 1981, the new FRT-7700 antenna tuner covering a frequency range from 150 kHz to 30 MHz will be available to the world market. Yaesu promises it will greatly improve reception by rejecting unwanted signals and reducing the effects of overloading by strong signals, as well as providing a proper impedance match between antenna and receiver. It incorporates passive preselection and attenuator functions.

These new products should be of great interest to club members who now own the FRG-7700 or who will make a purchase of one in the future. Prices have not been established as of Feb. 17, 1981. Ask your Yaesu dealer for more information on these new products.

The FRG-7700 is a general coverage (150 kHz to 30 MHz) high quality communications receiver that has the capability to store up to 12 frequencies in its optional memory. When introduced, it filled the gap between the much costlier JRC NRD-515 and the smaller, less costly Sony ICF 2001. Memory capability aside, the 7700 is very similar in features and performance to the Kenwood R-1000.

Having used the 7700 for several months now, and using it side by side with a variety of other sets--Drake R-7, Kenwood R-1000 and R-600, Sony 2001 and the Panasonic RF6300 and RF3100--I have found it to be a good performer and very convenient to use. Once you have gotten used to having the memory capability it is hard to go back to, for example, the slow awkward band change system of the R-7. On the other hand, the memory function doesn't make the signals any more readable, which is the primary function of any receiver, a fact that is sometimes forgotten by manufacturers striving to appeal to our basic need for gadgetry!

Features.....coverage is in 30 bands of 1 MHz. Receives AM, USB, LSB, CW and FM. 3 AM selectivity widths of 12, 6 and 2.7 kHz. Fast/slow AGC. Effective noise blanker. FM squelch control. Front mounted speaker. Continuously variable RF attenuator on front panel plus a fixed 20 dB attenuator on the back panel. Memory select, enter, recall and fine tuning if memory option installed. Full featured clock/timer/frequency display

with timer outputs via RCA phono plugs on rear. Accessory connector on rear allows access to AGC, mute and 11 volt supply--mainly for use with the FRV-7700 line of VHF converters or other accessories. The usual wire and coax antenna inputs, separate MW/SW inputs. 110/220 VAC or 12 vdc (with DC kit).

Specifications.....

Selectivity: Wide--12/25 Medium--6/15 Narrow--2.7/8 (kHz at -6 dB and at -50 dB) SSB uses the 2.7 filter. FM is 15/30 kHz at -6 dB and -40 dB.

Sensitivity: LW--30/3 MW 25/2 SW 5/5 (microvolts in AM/SSB modes referenced to 500 ohms for MW, LW and 50 ohms for SW) FM sensitivity is 1 uV/50 ohms.

Drift is less than ± 1 kHz initial 30 minutes and less than ± 300 Hz afterwards. Weighs 6.5 kg. Dimensions (mm) 334W by 129 H by 225D. AC consumption--40 watts, 10 watts in "standby" (for clock/memory etc.) DC consumption--1.1 amps at 12 vdc, 100 mA in clock mode, 50 mA display off

Performance.....Nearly all recent sets have been created equal as far as sensitivity is concerned; what is not equal is their useable sensitivity, i.e. before overload occurs. On SW the sensitivity is excellent even though the quiet "front end" might lead you to think it wasn't, due to the lack of background hiss. At 30 MHz, the R-7 and the 7700 are equal but only if the R-7 has its preamp engaged. No spurious SW signals (caused by other SW signals) were noted, but a strong MW signal can upset the entire SW spectrum if it is powerful enough. Solution here is a resonant SW antenna or, even better, a preselector or filter. I use a single 3 MHz hi-pass filter which eliminates most of the problem. MW performance is limited as overload occurs rather easily. The FRT-7700 should help, but one was not available to test at this time (see note at end of this review).

Selectivity is provided by the usual, inexpensive ceramic filters. Three positions are provided in the AM mode, but in practise the wide and medium filters are so broad that they are of little use, other than to listen to local or very strong signals. I find myself using the narrow filter for all my listening. It does a good job on the majority of situations but the skirts of the filter are neither sharp nor deep enough to be totally effective. To compare, the R-600 has a narrow filter rated at 2.7/5 at -6/-50 dB. This is 3 kHz sharper at -50 dB than the 7700. In listening tests, the R-600 and the 7700 would be very hard to distinguish between.

Tuning.....Tuning is done first by selecting the desired MHz range with the MHz dial and then using the tuning knob (conventional VFO). There is about 50 kHz of over-range on each end. The memory stores frequencies to the nearest kHz, which for SSB, is not nearly close enough. Therefore a Memory Fine Tune (approx. 5 kHz range) is provided to overcome this potential problem. The dial system is very smooth and rapid; dial twirling is made easy with a recessed finger hole on the VFO knob. I've heard people complain about the analog dial as being unnecessary, but I find it very useful. Consider: I use one memory as a "scratch pad" and when I find a channel that I want to check for being in parallel, I simply put that one in the memory. Then using the analog dial I can tune to the second frequency, release the memory and there I am. Instant comparison without missing any of the program (or that possible ID!). Drift was never noticed, and the set performed fine in -10° C weather on a DX'pedition.

Odds 'n Ends.....The S meter reads to +60 dB over S9 and appears to be quite accurate, at least up to 40 over. Under some lighting situations the meter can be hard to read. Both the display and the meter/analog dial light can be dimmed for night time DX'ing. The display is a yellowish color, and a welcome change from the reds and blues/greens of most other displays. It will cause some interference to nearby MW loops but it's not very strong. The R-7 is much worse in this respect. The metal case provides a high degree of shielding, and without an antenna only a few local MW stations could be heard. A slight modification of the rear antenna connections (replacing them with coaxial BNC connectors) would reduce this even more.

Conclusions.....The 7700 fills a large gap in the memory capable SW marketplace, and provides a good level of performance for the price. The companion FRT-7700 antenna tuner should improve performance by reducing overload, thus allowing the 7700 to perform even better.

note: Since writing this, Don has tried the FRT-7700 and found that it matches random wires to FRG-7700 quite well on MW (i.e. there is apparent gain compared with connecting the wire directly to the receiver antenna

terminals) but it has little real selectivity for MW. In a high signal level environment it may not help much with the FRG-7700's overload problems on MW. Don has developed his own MW antenna tuner which gives better protection from overload than the FRT-7700 did when used with the FRG-7700 or other other broadbanded receivers. Details on this tuner next column. Stay tuned!