

The Yaesu FRT-7700 Antenna Tuner

by Randy Tomer

I decided to try an antenna tuner as an aid to the R-600's dismal performance with a random wire, and picked the Yaesu FRT-7700 because of its apparent high quality, numerous features, and its being priced well below the competition. I get the impression that Yaesu is selling the FRT-7700 and the matching FRA-7700 tuneable active antenna at or near cost (possibly to encourage FRG-7700 sales) as they are both loaded with features, yet are quite reasonably priced.

The FRT-7700 did not eliminate all of the R-600's BCB problems, but I found it to be a useful addition to the shack anyway. It immediately eliminated practically all of the BCB garbage that had been swamping the Longwave band, even when using the big 250-foot wire. It made the R-600 much more useable with a random wire on the BCB, allowing use of the 250 footer even with my locals running daytime power, and its Z-matching switch allowed more gain when using the short wire. In spite of the tuner the 250' wire still did not give as much gain with the R-600 as does the Radio West loop, and I consider the use of a good loop to be critical for serious BCB reception with the R-600. At my location, however, a random wire gives quieter reception than does a loop, so I'm looking into hi-Q BCB tuning setups for the Kenwood.

The FRT-7700 did a good job of eliminating BCB interference from the lower shortwave bands. In the higher frequencies, it had little effect, though it probably eliminates strong out-of-band QRM there also. One advantage of this tuner is that it allows quick changeover between two antennas and two receivers, and is useful in making quick comparisons between a loop and random wire.

I tried the FRT-7700 with a FRG-7, and found it to be essentially useless with that receiver. It provided only a slight gain in signal strength (not enough to justify the cost) and little if any reduction in blocking and cross-modulation problems caused by locals. Also the FRT-7700 did not "peak" when tuned with the FRG-7. I've noticed this with other tuners I've tried (home-brew jobs). They may peak well using other receivers, but have effect on the FRG-7...

More on the FRT-7700

by Sheldon Remington

Since my purchase of the FRT-7700 (mentioned in July 10/82 DX Monitor) my supplier, Webster Radio in Fresno, has stopped handling ham gear, so the FRT-7700 is no longer available from them.

Because my ICOM IC-551 receiver with converters has quite a high noise figure on MW, I have added a homebrew preamp inside the FRT-7700 based on articles in The Lowdown in July/Aug '79 and December '80. This preamp can be switched out and does not add any extra tuning to the preselector.

Since putting this set-up together, I have used the FRT-7700 on MW with 7 Beverages, 10 shorter wires, 2 dipoles, a 10-meter delta loop and even a 2-meter Yagi; this using the ICOM chain mentioned above and a Pioneer AM-FM tuner. In general, I've not tried to set up "worst-case" experiments with the system, but overall I've been satisfied with the FRT-7700's ability to clean up the band using the above antennas. On the matching switch, position #2 (occasionally 1 or 3) gave best signal strength, but the 1000' wires were strongest at position #4. Position #4 gives the highest Q (and hence best preselection) but sometimes gave a poor match (-15 dB or so) on the shorter wires. Generally, I can't agree with Don Moman that the FRT-7700 has "little real selectivity for MW", except when using high gain antennas, or receivers which have poor RF selectivity when compared with their strong signal characteristics.

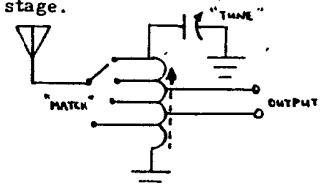
However, in one worst case example, 1010 kHz with a large KABL-960 spur when using a 500' dipole, the FRT-7700 couldn't entirely handle the mess. Straight attenuation of -10 dB in the DX-BC line eliminated this spur, but the "true" 1010 signals were then too weak for monitoring. When using the tuner portion of the FRT-7700 with no attenuation, I couldn't entirely eliminate the KABL spur, even by moving the FRT-7700 tuning far above 1010 kHz. By adding two further stages of homebrew tuning plus my preamp, I ended up with good fat signals on 1010 with no trace of KABL.

Definitely, two or more tuned circuits in a MW preselector is the way to go for optimum results (which means homebrewing), but I still feel that for a single tank circuit, the FRT-7700 is best in terms of construction, price and features.

The Yaesu FRT-7700

by Sheldon Remington

I have just bought one of these little tuners; it cost me \$53 postpaid from Webster Radio (Fresno) It's attractive to look at, although my fingers are a bit too large for the knobs, hi. It has bypass switching, choice of two antennas and two outputs, a step attenuator (genuine pi-networks) with 0-10-20-40-60 dB increments; and a 4-position matching switch in addition to the usual bandswitch and tuning capacitor. Also a low pass filter for longwave. The tuning capacitor is geared down, so it takes 1½ turns end-to-end. There is even room inside for a small preamp stage.



For me, it was an easy choice over the MFJ/Grove tuners, due to what I felt was its better construction, shielded coils, and features. The circuit, omitting antenna, band, bypass and attenuation switching is at the left. The MFJ/Grove is simply a series tuned LC circuit, uses lo-Q "RF chokes" instead of shielded inductors, and costs more.

One hint, by the way for tuning loops and antenna tuners, is to use a strong broadband noise source. I have found the Radio Shack #22-4033 signal injector (\$5.49) to radiate enough broadband noise that it doesn't even need to be connected directly. I just hold it near the loop or longwire lead-in, push the "on" button, and peak all the tuned circuits on the noise. This signal is steady, unlike weak DX signals, and it is not so strong as to overload the receiver (which would produce a false tuner setting). Then I just turn off the noise generator and proceed to DX, knowing that the tuner is exactly peaked on that frequency. Many pocket calculators produce a similar broadband noise spectrum.

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The Grove Signa/Match TUN-2 antenna tuner (not the same as the one mentioned above, Sheldon?) was reviewed positively by W.R. McIntosh in the December 1981 issue of The Lowdown. Mc found that the unit worked primarily as a preselector but could give a few dB gain by matching a random wire to a radio. It worked best on the low frequencies, and considerably lowered images, noise and overloading when using a random wire on LW and MW. Although the RF coils are unshielded, they are apparently of a reasonable Q. Like most antenna tuners, some experience was needed to get the best results from the TUN-2. Mc cautions that those who already use a good tuned antenna (a hi Q loop antenna) would not find much improvement with the TUN-2 however, or other antenna tuners for that matter. In general the TUN-2 was found to be better than the McKay Dymek DP-40 on LW, but perhaps inferior on SW, with a toss-up on MW. More info on the TUN-2 in the flyer from Grove Enterprises, Brasstown, NC 28902. According to the latest issue of "Monitoring Times" put out by Grove, the TUN-3 Minituner is now available from the company. This is less expensive than the TUN-2 and covers from 100 kHz to 30 MHz (the TUN-2 goes down to 10 kHz).

The FRT-7700, the FRA-7700 and the SWH Model 1 RAI Unit:

How do they work on medium wave?

by Don Moman

As most of you know, modern communication receivers are of a broadband design, which means the front end is merely a series of bandpass filters, quite different from the several tuned circuit stages found in older sets. While the broadband feature allows for such luxuries as instant tuning and memory capability, it is a design generally not welcomed by the medium wave DXer, as it often leads to varying degrees of overload, in situations where older sets would be unaffected.

The solution here, of course, is to add a tuned circuit ahead of the set for MW DXing. The Yaesu company has two companions for their FRG-7700 receiver, the FRT-7700 antenna tuner and the FRA-7700 active antenna. The latter is a tuneable preselector/active antenna system designed for the FRG-7700; however, it can be used on other sets if you add a 12 volt power source to it. For comparison we also included results using the Shortwave Horizons Model One Receiver-Antenna Interface, which has a MW BCB preselector (passive, double tuned design) in it. This was featured in DX Monitor #620 and is described above.

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Test Conditions

Receiver--FRG-7700      Antenna--6' of wire up to basement window, 2' lying on ground!  
Local Reception--Daytime signals on local channels were all in the range of 60-75 dB over  
S9, even on this short a wire! Local channels are 1480, 1260, 1110, 930,  
790, 740, 680, 630, 580

Results---These are summarized in the table below, on three of my choice test channels  
for IMD tests--1400, 850 and 540 (CKSQ Stettler, CKRD Red Deer, and CBK Regina)  
Without some tuner, the 7700 is a mass of signals with only the locals being in  
the clear. Completely impossible to hear any of the "proper" signals on the  
above test channels.

<u>Frequency</u>	<u>FRT-7700</u>	<u>FRA-7700 (whip)</u>	<u>SWH #1 RAI</u>
1400	S-7	S-9 + 22	S-9 + 10
850	S-9, some IMD	S-9 + 55	S-9 + 25
540	S-2	S-9 + 22	S-9

Notes: The FRT-7700 only showed any preselection action in position 4 of the MATCH switch.  
Other positions did not clear up the IMD enough to get a clear signal. In position  
4, the unit does perform as a preselector, but it creates a loss of close to 20 dB,  
which would seriously limit its usefulness as a DX tool!

The FRA-7700 was just using its own whip, sitting on the receiver here in the  
basement. In modified form, the FRA-7700 will accept an external "shortwire" but  
in this location, even the 8' wire as above was too much for it!

Conclusions: For the MW only listener, the FRT-7700 is not likely to prove worthwhile.  
However, it is a handy control center, with provisions for two antennas, a  
0/10/20/40/60 dB attenuator and two outputs. The FRA-7700 is a good choice for MW  
DX and is capable of logging TA's and DU signals, as I experienced earlier this  
year. Very good for campers who fancy a bit of MW DX...a short wire tossed in a  
tree makes an excellent antenna when run through the FRA-7700 (just keep a long way  
away from MW transmitters).  
However, those of us with serious overload problems will find the most relief in the  
RAI unit; it's capable of giving your receiver much more "help" than the other units.

(ed note: Don Homan's company, Shortwave Horizons, sells the FRT-7700 and FRA-7700 in  
addition to the Model One RAI.)



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