

## SIGNAL UNIT OUTPUT

If you lack test equipment like an oscilloscope, frequency counter, or RF probe, you can still see if your Signal Unit is putting out RF using a couple tricks. One is with a DMM that has the ability to measure frequency. The other is to make a “quick & dirty” RF probe, using only a diode and a capacitor.

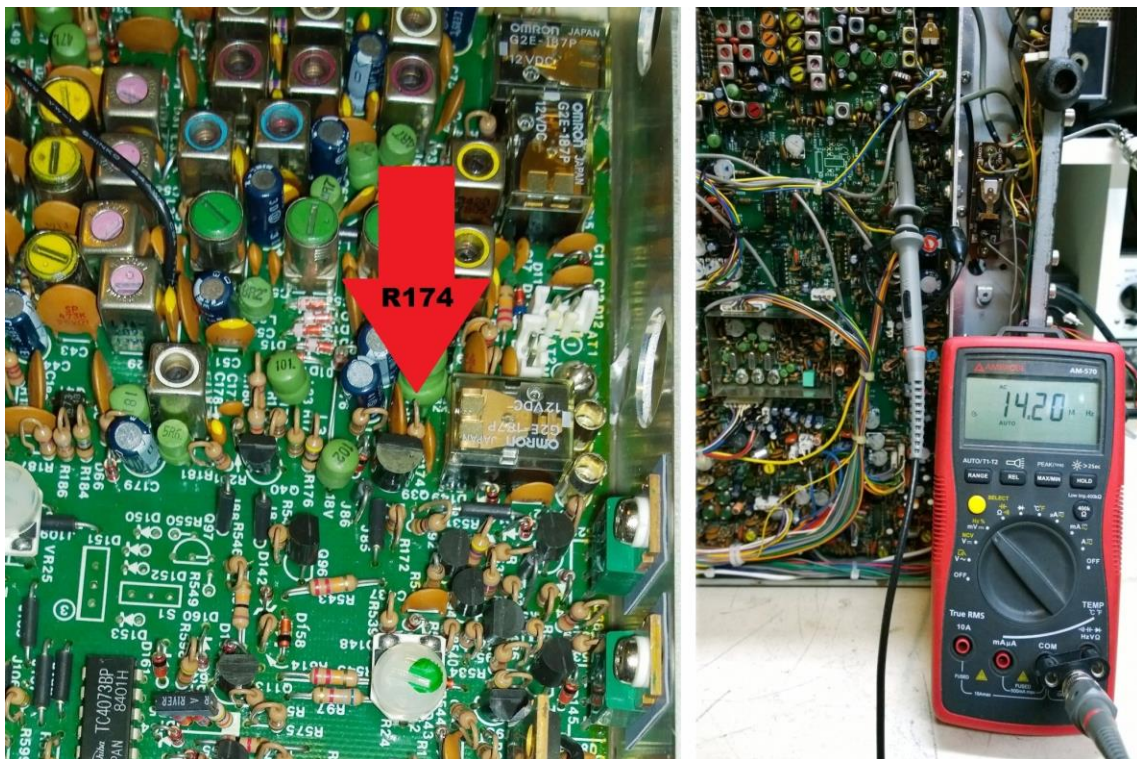
**DMM:** A meter that measures up to 20MHz is ideal, but if yours only reads to 5 or 10 MHz you can still use it. You just have to use a lower band. If yours measures to 10MHz, then use 40M, maybe around 7.2 MHz.

Basically you have two options: You can connect the leads from your meter to the cable that feeds RF into the PA, or you can put the rig up on its side and connect to the wire part of resistor R174, which is just to the left of relay RL-3 next to the DRV/XTR output terminals. I would try the RF cable first. If you don't get a signal there, then I would check at R174 to make sure RL-3 hasn't failed.

Connect your leads to the end of the RF cable to the PA input as shown below. Just don't bend the little center pin. The cable shown below is black instead of gray because I replaced the original with a longer one that I made.



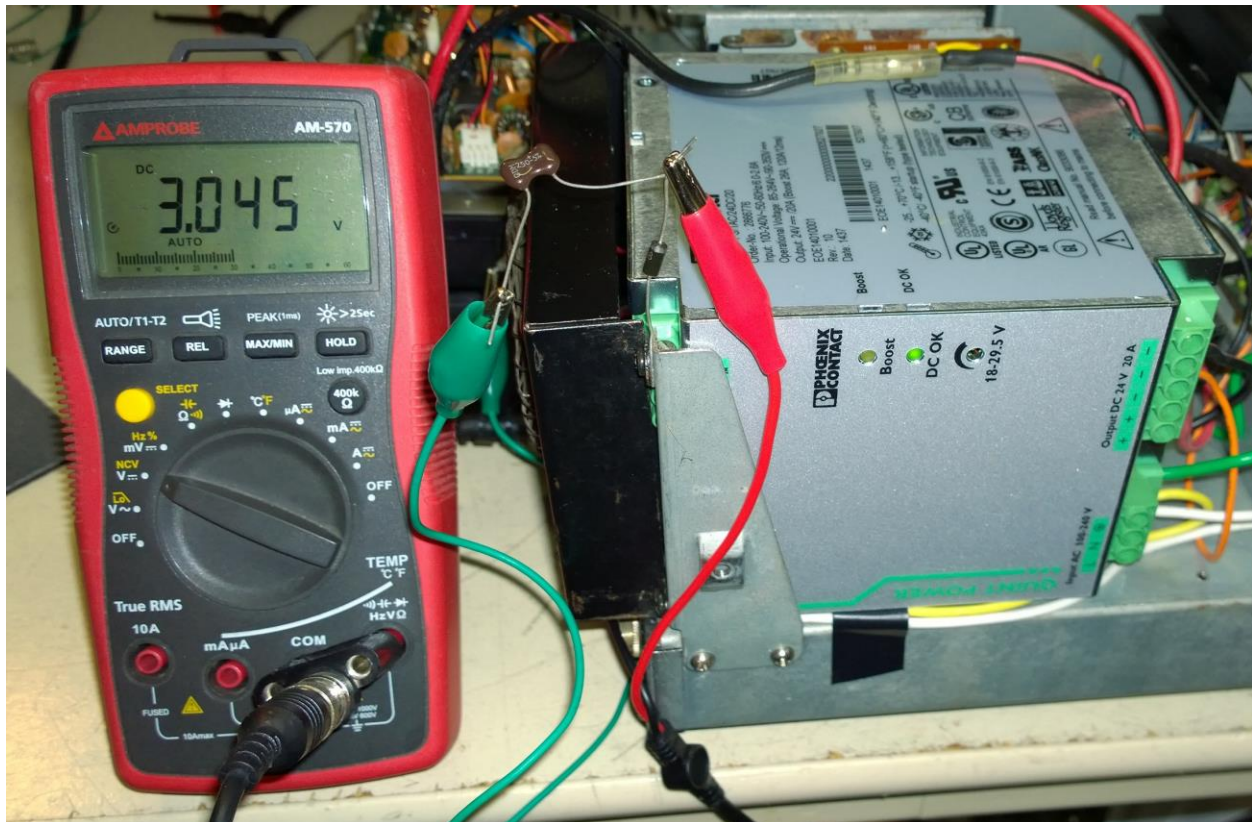
The same test is shown below, but using R174 with my rig set at 14.200 MHz. I've connected a scope probe here, but a J-hook works too. To use the resistor, you will have to scrape some paint from the wire lead shown above (arrow).



I strongly suggest using a J-clip lead for testing. Be careful not to rock R174 back and forth as you remove the paint or you may loosen it. I would use an Exacto knife and work slowly, shaving in the direction of the wire.

**TEST:** Set your rig to TUNE with the CARRIER control at zero. Push the SEND button and slowly turn the CARRIER control clockwise. If your Signal Unit is working properly your meter should display the frequency by the time your control is at the 4 or 5 position. Before you are fully clockwise, it certainly should be. If it's not, carefully check your connections. Try it both ways if necessary. Most DMMs require between 0.250 and 0.400 RF volts to produce a frequency reading, which will produce a power output from a working PA of 35-50 watts.

**Quick & Dirty RF probe:** If you have some diodes lying around your shack and a non-electrolytic capacitor, you can literally make a "one-minute" RF probe. I won't be as accurate as a commercially-made one, but it will do in a pinch.



The little apparatus shown above is just a silicon diode, combined with a 250pF capacitor. The cathode end of the diode is simply pinned between the fan housing and the rig's frame, and the capacitor is hooked to the center pin of the RF cable with a jumper cable. The red alligator clip lead goes to the meter plus terminal, and the black is clipped to the RF cable plug barrel just like it was in the previous test. Set your DMM to DC volts. At full TUNE, the meter shows a little over 3 RF volts. By contrast, my meter with a Fluke 85 RF probe shows 2.5 RF volts. As you back down the Carrier control, you will see the voltage drop down all the way to zero.