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**GETTING AN HF ANTENNA TO WORK.8**

The last article described how to use an Antenna Analyzer to measure the value of the antenna, at the antenna, with no coax attached.

Connecting a length of coax to the antenna will offer a different measurement with your analyzer at the radio end of the coax. Measuring at the radio end of the coax requires a Smith Chart calculation. You will need to know the length of coax in wavelength, velocity factor and frequency. Too much trouble! This is beyond the scope of this article and I can hardly remember how to use it. Let's make it easier

If your Antenna Analyzer does not do a Smith Chart calculation, then it can not give the antenna values at the radio end directly. Regretfully this is as far as the analyzer can go. You can use the Analyzer to measure SWR much like your transceiver will do, however the rest is mostly guess work. Now, what can you do?

The Noise Bridge is an inexpensive device that tells the whole story with coax. It is accurate and reliable.

The Noise Bridge has 2 control settings. X and R. It has 2 connectors, Receiver and Unknown.

At the antenna, connect the Unknown directly to the antenna with a double male connector. Connect the Receiver connector to the coax going back to your radio.

You will have to hear your receiver out at the antenna where the bridge is. I have used the base of a cordless phone and made an adapter to plug into the head phone jack on the receiver. Now you can take the phone handset out to the work site and hear the receiver.

Turn the receiver on and set it to where you will operate. Adjust the volume so you do not blow your ears out from the hand set. Now strut out to the antenna site.

Turn the Noise Bridge on. You will hear noise, lots of it. Turn the X control until the noise is least. Do the same for the R control. Repeat until the noise is gone.

Look at the settings of the 2 controls. If the X setting is on the  $X_L$  side, then the antenna resonant point is lower than where your receiver is set.

If it is on the  $X_C$  side it is higher than the receiver setting.

When it is at 0, you are at the resonant point. Now look at the R setting.

This will tell you the radiation resistance of the antenna. You are hoping for 50 ohms. This will offer a 1:1 SWR. If the reading is higher or lower, the SWR will be directly affected.

The X control reflects 99% of the Tuning. The R is a minor match or mis-match that can be compensated for easily.

Next article will go into more hands on use of the Noise Bridge.

73,  
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