

RF Sniffer

Here's an ultra-simple piece of test equipment

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An old trick for sniffing out RF leaking around the shack can be useful in modern ham station installations. Any RF which does not reach the antenna is not only wasted power, it often can be the source of interference to radios, TV sets, telephones and other home electronics. The opposite is also true - if RF can get out, it can also get in - and RF from motors as well as household electrical and electronic equipment such as TV receivers, VCRs, etc. can raise the noise level in the ham receiver and otherwise interfere with station operation.

Old, surplus coaxial cable and some new coax is so poorly shielded it is little better than open wires. Coax which leaks RF should be replaced with high quality cable. Poor, leaky coax not only wastes RF which never reaches the antenna, it also can pick up interference over its entire length.

Gaps in shielding, especially in high power installations, and poorly soldered or loose RF connectors should also be corrected to eliminate leakage and possible interference.

The junk box solution to visual detection of stray RF is illustrated in **Fig. 1**.

Construction

Making the RF Sniffer is simple. A small diameter wood dowel, or a stiff wire cut from a coat hanger, about two feet long, has the NE-2 neon bulb and 120k Ohm resistor attached at one end with tape. The glass portion of the neon bulb must not be covered because it indicates the presence of RF.

A pair of wires connected to the neon bulb and resistor should be taped along the dowel or stiff wire, leading to the end where the 500k Ohm or one megohm potentiometer is taped or otherwise fastened. A piece of wood or plastic, or a long loop formed in the end of the coat hanger wire, can serve as a handle. The AC line cord is connected to the pot and the wire from the resistor at the handle end of the sniffer and all connections taped to prevent accidental contact.

Adjustment and Operation

Plug the sniffer into a source of 117 Vac. Observe the neon bulb while adjusting the pot. As resistance is decreased slowly, an orange glow will appear around one of the two electrodes in the neon bulb. A further decrease in resistance will result in the orange glow surrounding both electrodes.

Slowly back off the pot until the orange glow is again around only one electrode. Do not readjust the pot from this point!

Using the sniffer as a probe, with the transmitter producing power, investigate coax connectors and jumpers, coax runs, ac wiring in the shack or elsewhere in the house where RF is suspected, while observing the neon bulb.

When leaking RF is detected, the orange glow in the neon bulb will flicker and surround both electrodes.

If RF seems to be detected put the probe back and watch the neon bulb. If the glow retreats to surround only one electrode, RF leakage is present where detected. If, however, the orange glow continues to surround both electrodes, re-adjust the pot so it is visible around only one electrode and recheck for RF leakage. Because transients and other minor disturbances on the ac line are common, they can cause erroneous indications of detected RF when the sniffer is set at its most sensitive point.

Conclusion

This gadget is not frequency sensitive. It will work as well at UHF as it does at HF and even the TV horizontal oscillator frequency. It is extremely sensitive to low levels of RF. Best of all it is cheap, and can be put together from the usual junk box contents. 73

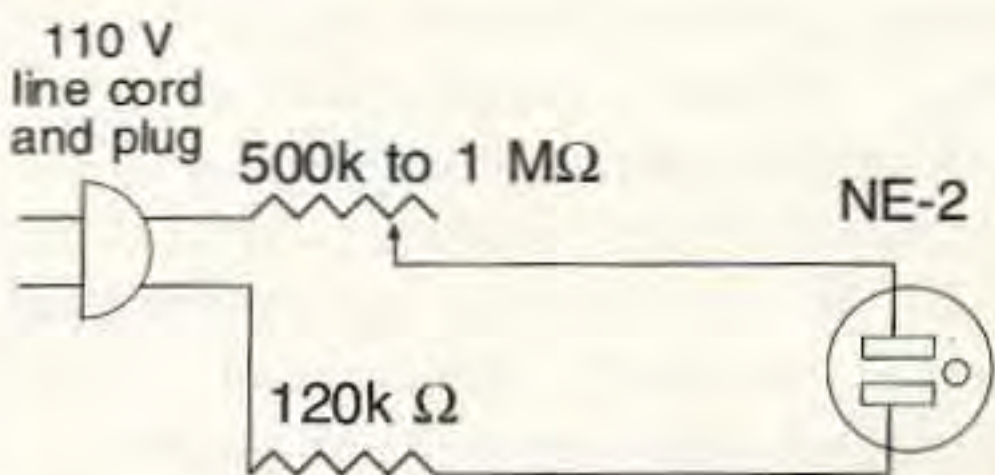


Fig. 1. How simple can you get?