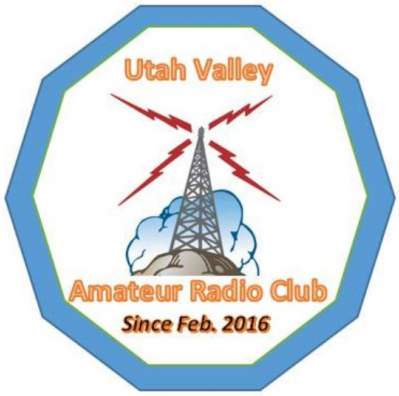
DIY

Worthwhile projects you can build on your own



100-watt dummy load

Seems like every once in awhile you need a dummy load, something that doesn't require an antenna, that you can connect to the output of your radio and make a test without everybody hearing you. This inexpensive one will handle 100 watts from DC to 54 MHz.

Parts list

Four 50-ohm 100-watt resistors

24 inches of 16 AWG stranded speaker wire

Four #6-32 screws, nuts, split washers

Seven 16 AWG #4 stud ring terminals

One 5″ x 7″ x ¼″ fiberboard sheet

One SO-239 bulkhead connector

One 4″ x 10″ copper sheet

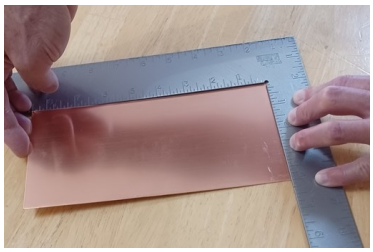
Four adhesive LRFs (little rubber feet)

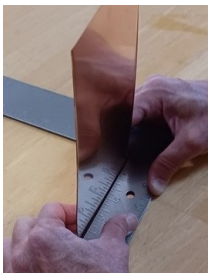
Four each M3 screws, split washers, nuts

Eight #6 ½″ spacers Eight M3 big screws

Body preparation

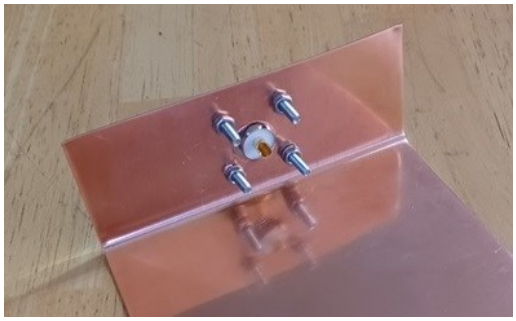
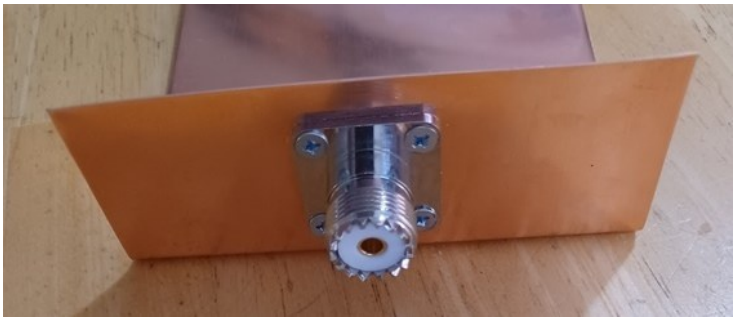
Bend 1½″ of one end of the copper sheet into a right angle. The bend tends to be a littler more uniform and square if you use a carpenter's square, by lining up the long side against the square and pressing down on the square while bending the sheet upward.

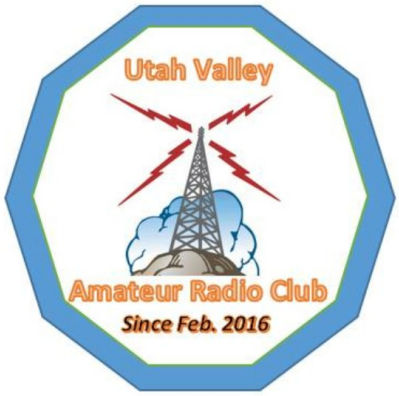





Connector assembly

Drill a ½″ hole in the center of the 1½″ end that's bent upwards. Place the solder end of the SO-239 bulkhead into the ½″ hole on the outside of the enclosure, and using the four mounting holes of the bulkhead as a template, drill a 1/8″ hole for each mounting hole. Assemble the bulkhead onto the copper plate bend using the M3 smaller screws and hardware.

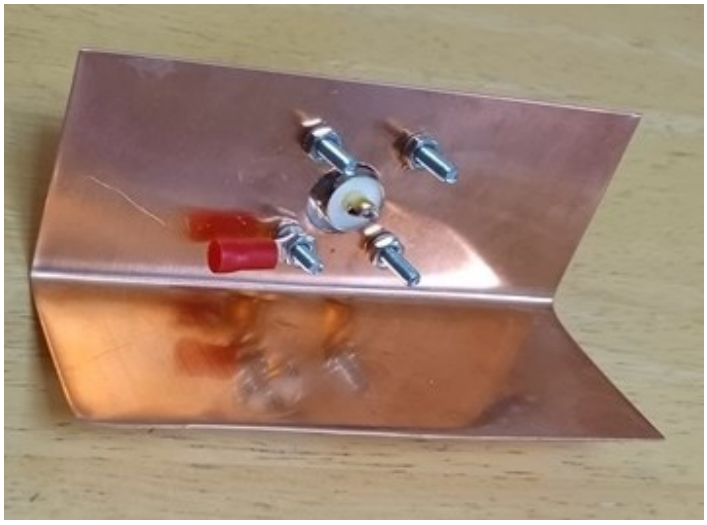



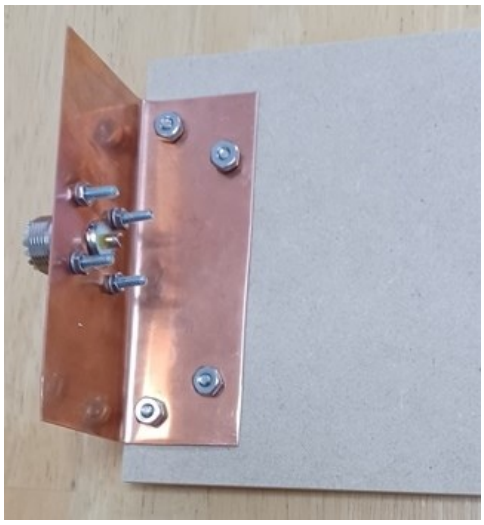


DIY, continued

100-watt dummy load

Cut off all but 1½″ of the copper sheet. I suppose I could have simply started with a 4″ x 3″ sheet, and then bend it in half, but I found it easier to bend the larger 4″ x 10″ sheet, then cut off the excess 7″. Line up the edge of the copper sheet bend with one of the 5″ ends of the fiberboard sheet, and drill four 9/64″ holes in both the copper sheet bottom and the fiberboard sheet. Install the four #6 hardware to secure the copper to the fiberboard base.

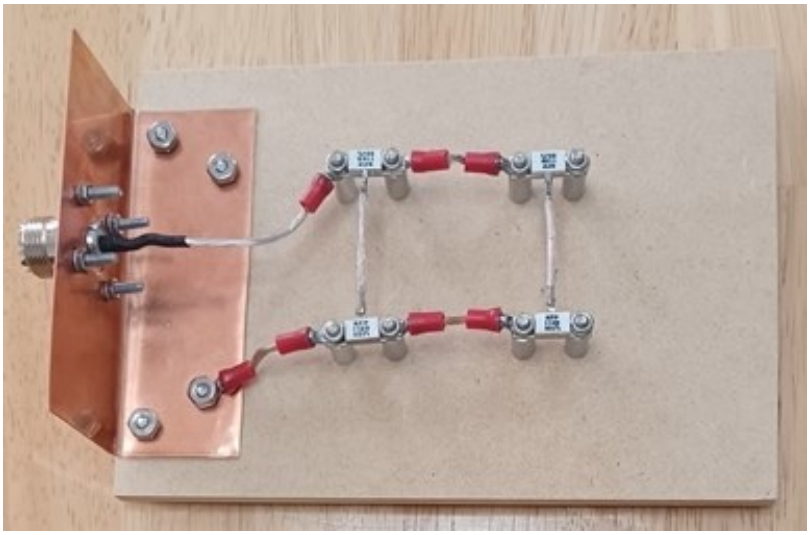




Resistor network assembly

Arrange the resistors on the fiberboard sheet, allowing for plenty of space on the sheet for ventilation, including the spacers. Drill 1/8″ mounting holes for each resistor, and mount the resistors to the sheet using the spacers and M3 25-mm hardware.

Separate the entire length of the speaker wire into its two conductors. Solder one of the speaker wires to the #4 ring terminal that's mounted to the copper sheet. Solder another to the center conductor of the bulkhead connector. (I added heat shrink to cover it.) Cut and strip the speaker wire to accommodate the wiring lengths needed for each connection, then solder the wires according to the photo on the right. *The little foil tabs of the resistors are very delicate; use extreme care when touching and soldering them.*

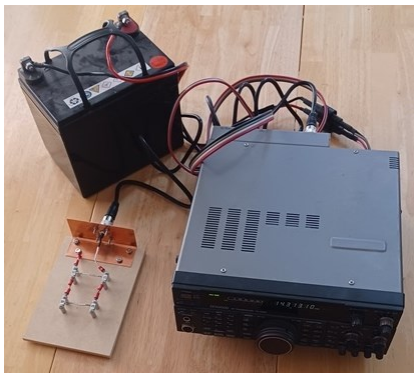


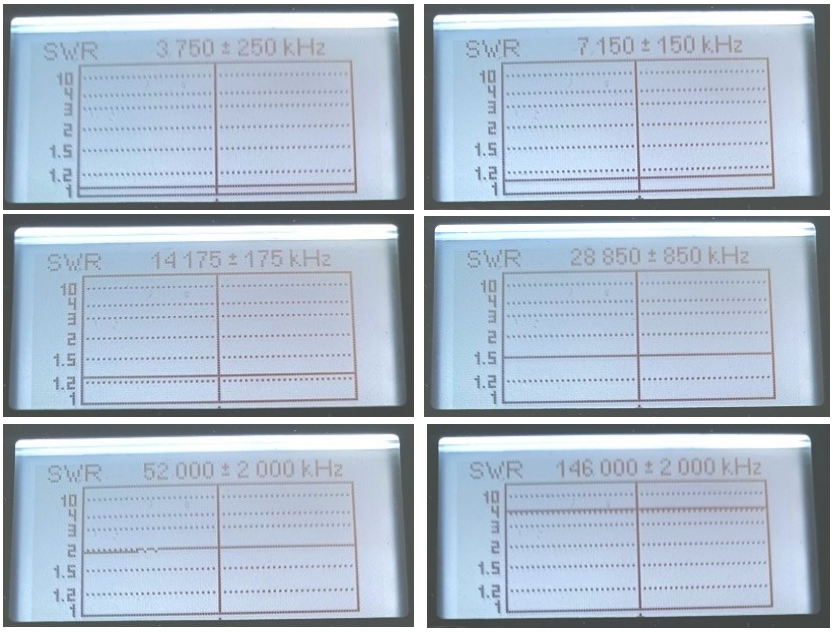
DIY, continued

100-watt dummy load

Solder one wire between the tabs of two of the resistors, and another wire between the tabs of the other two. Connect the wire of the bulkhead center conductor to a pair of the resistor bases, and the wire of the copper sheet to the other pair of resistor bases. Apply the LRFs.

Testing the dummy load





Testing required three steps, first by an ohmmeter, next by an analyzer, and finally by my Kenwood HF rig transmitting FM on 20 meters at maximum power (100 watts) with the Send (not PTT) button pressed. The ohmmeter showed 50.2 ohms, well within the 5% tolerance of the components. The analyzer showed good results for 80 meters, 40 meters, 20 meters, and 10 meters, but not that great for 2 meters. 6 meters was on the acceptable boundary, so it appears that this dummy load is not useful for frequencies higher than 54 MHz, in spite of the resistors' advertisement. In the end, this will probably make a good HF / 6-meter dummy load. Also, this dummy load does get hot at 100 watts, so I recommend that you only use it for about ten to twenty seconds at a time when dissipating high power, since it has no heat sinks.

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