Dipole Antenna Construction

Goal

The following antenna construction guide is based on Adam9A4QV's guide on his website. All credit goes to him for the design. We wanted to put together clear step-by-sep instructions for the construction and use with the standard RTL-SDR. Many of these parts can be easily swapped out with similar ones / adapted for your setup but we listed readily available parts that should let you put it together for relatively cheap.

BOM

Quantity	Price Per	Name	Vendor
1x	$19.24	1/8” Aluminum Tig Rod	Amazon
1x	$9.09	3 Position Screw Terminal Block	Amazon
1x	$9.69	3 Meter SMA Male RG174 Cable	Amazon
1x	$9.99	MCX Male to SMA Female Adaptor	Amazon

Tig Rod

- This was chosen as a cheap way to build the arms of the antenna. The package chosen contains multiple 36” long rods initially designed for welding. Cheaper alternatives may be considered; however this is the brand I went with as it had a quick ship time at the time of purchase.
- Aluminum is the material recommended by Adam for this, however other materials may be used. Width of arms does not have to be 1/8”, however around 3mm / 1/8” seems to be a sweet spot for being both sturdy and lightweight.
- 36” is also overkill, 24” would suffice, as they will eventually be cut down to 53.4cm.

Terminal Block

- This part was chosen as it should easily fit the wire from the cable and the aluminum rod for the antenna. Three-position is not necessary, 2 would be fine, however I chose this three-position because I think it should allow for relatively easy mounting later on.

RG174 Cable

- This cable was chosen as it should easily fit onto the end of the RTL-SDR we are using. Longer cables may be necessary depending on your setup / how high up you want to mount your antenna.
- Coaxial cables are a cheap option you may have lying around your house / you could pick up from a thrift store for cheap. The mounting step would be similar; however, you will need a different adaptor o fit the cable onto your SDR.

MDX Adaptor

- This is necessary to attach the cable to the NOOELEC SDR, a different one may be chosen depending on the SDR you are using.

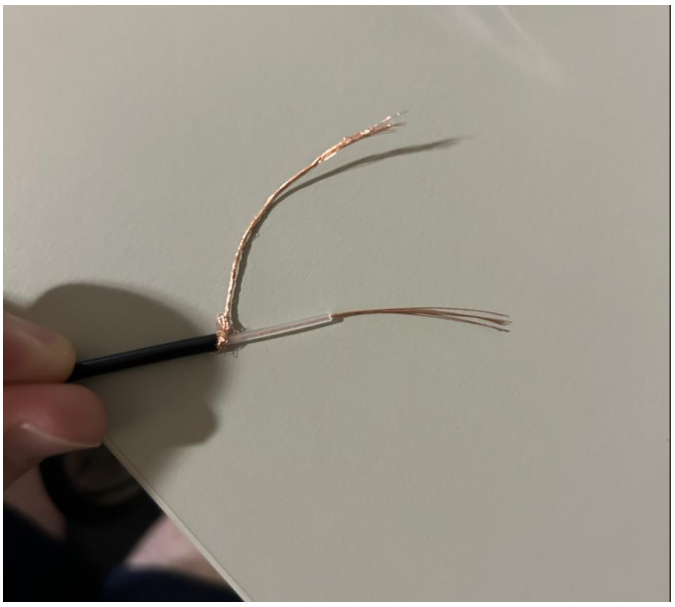
Assembly

Attach the MCX-SMA Adaptor onto the RG174 cable. Verify that the male and female is correctly mated.

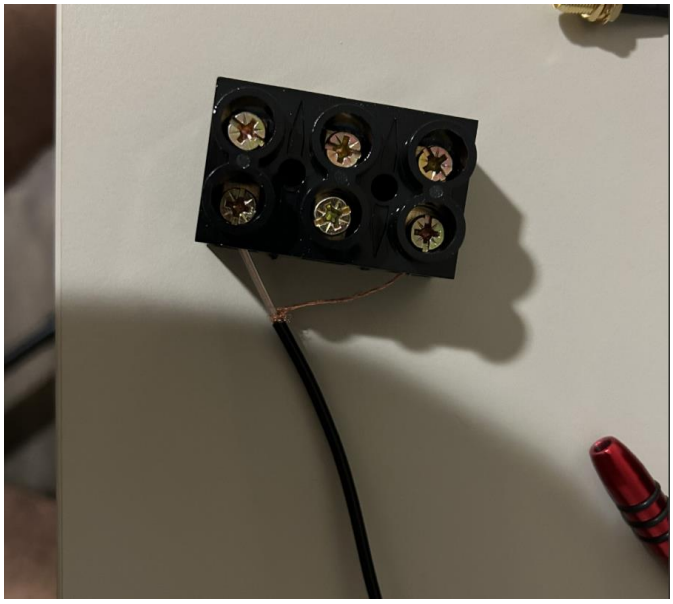
Next verify that the MCX adaptor fits onto your SDR, if using the NOOELEC SDR, it should screw in as shown below.

Once you have verified that the connecting side of the RG174 cable fits onto the SDR, you may now strip the other side of the cable. Begin by cutting off the adaptor side NOT plugged into the SDR.

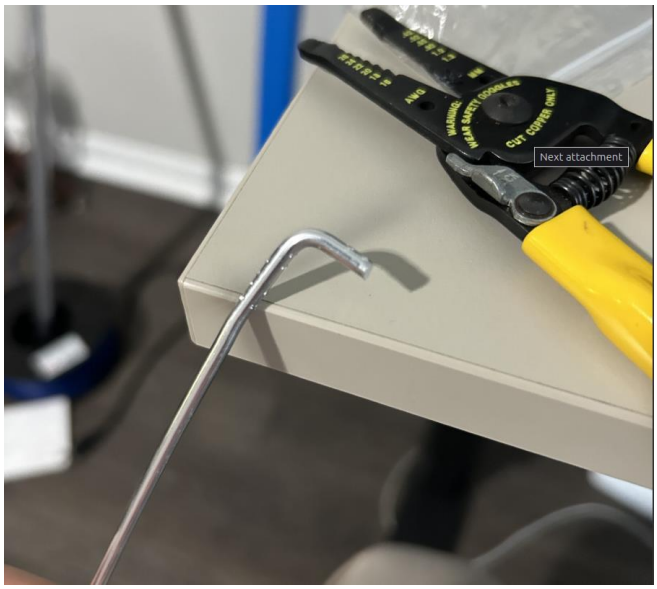
Next, strip back the rubber shielding from the RG174 cable and then separate the grounding from the center data line.



Insert the grounding on one side and the center cable into two of the sides in the screw terminal. It doesn't matter which side / which terminals you put them into, however for the sake of this mounting scheme I will use the two outermost terminals.

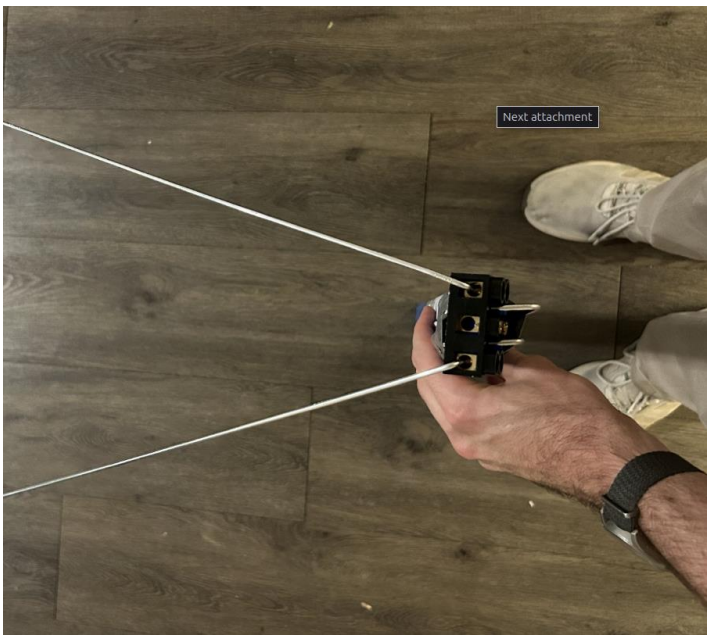


Next you will bend the tig rods so that they can easily be mounted into the screw terminals. Measure X long on the rod, make a mark, and bend by with pliers to 90*. Repeat the process on a new rod, you will have two poles for the antenna.



Finally measure X long on the rod and make a cut. Wire cutters should work well for this.

Once cut to length you may insert the two poles into the screw terminals, spacing apart.



Once screwed down and secured you should be good to attach this block to a pole of your choosing, then be ready to use your antenna!

Result