



Multnomah County ARES

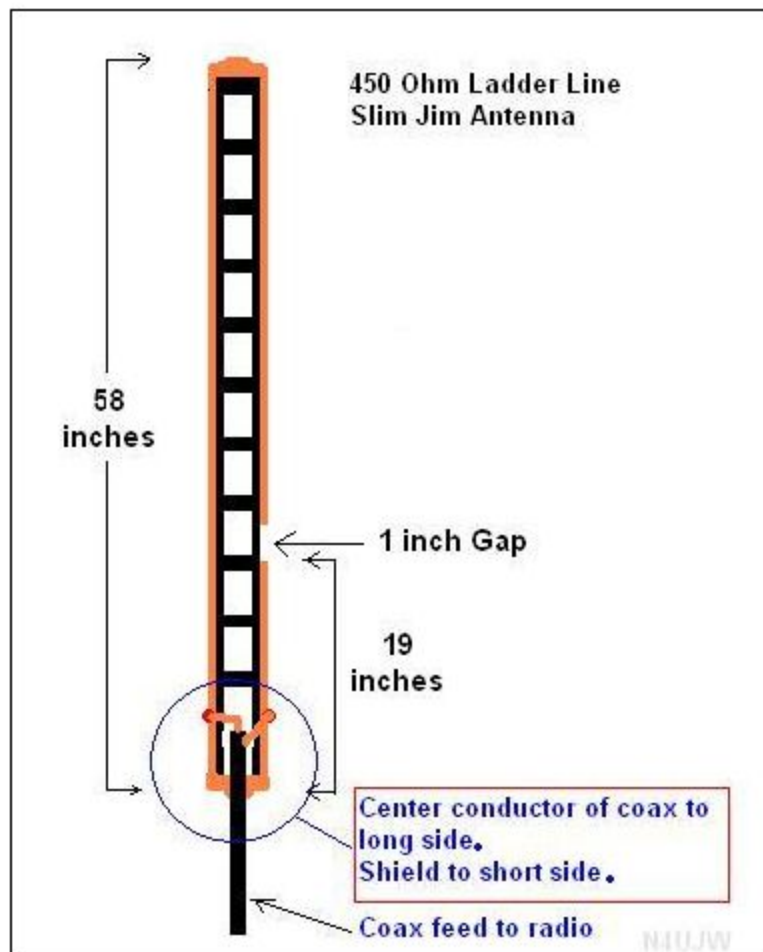
The 450 Ohm Roll-Up Slim Jim Antenna

Construction Guide

One of the most effective ways to enhance the range of your handheld radio is to use a larger external antenna. There are many good choices, a magmount antenna being one of the most versatile. Another good option is what's commonly called a roll up j-pole. It's a long piece of twinlead (tv antenna wire) or ladder line that you can roll up for easy portability and deploy in a dozen different ways.

Mutnomah ARES recommends the *Slim Jim* design. They are available inexpensively online, but they are very easy to make and an excellent first antenna project. It's got considerably more "gain" concentrated parallel to ground rather than skyward, making it more efficient than a typical ground plane type antenna.

It uses a 'J' type matching stub (J Integrated Matching = JIM), hence the name Slim Jim. Credit for the original design goes to F.C. Judd, G2BCX. He estimated the Slim Jim has about 6dB gain over a 5/8 wave antenna due to the extreme low angle of radiation.



Required Parts

- 60" of 450ohm ladder line
- 6" of RG8x (or RG58)
- Female PL259 Connector (or a male UHF connector and a barrel connector)
- 1" wide 2:1 heatshrink

Tools

- Wire cutters
- Box cutter
- Soldering iron (chisel tip, 20-40w)
- Antenna tuner or SWR meter
- Heat gun or a lighter to apply the heatshrink tubing

Construction Instructions

1. Measure out and cut about 59 or 60 inches of ladder line.
2. Strip both ends (top and bottom) about an 1/2 to 3/4 inch and bend each toward the center so they will overlap each other.
3. After you overlap the wire, measure the entire length of the antenna. You are shooting for 58 inches total length after stripping and overlapping the wires.
4. After achieving your 58 inches (give or take a half inch), solder both ends.
5. Determine which end has the solid plastic closest to end and put a hole through it so you'll have some way of hanging the antenna. A wire tie with a good sized loop is a good option.
6. On the opposite end (bottom end), measure up 19 inches from the actual bottom (where the wires are overlapped), and cut out a 1 inch gap of 1 wire from one side only leaving the gap. You should end up with a very thin slim rectangle from top to bottom with a 1 inch gap starting at 19 inches up from the bottom on one side only.
7. Make a rg58 or rg8x pigtail made with a UHF connector on one end and shield and center wire tinned with solder on the other end.
8. Measure up about 4 inches from the bottom and remove the insulation from each side of the Slim Jim antenna using the 4 inch measurement as your center point and remove the insulation about 2 inches up and down from the 4 inch mark to give you access to the conductors on each side of the antenna for SWR tuning.
9. Connect center conductor to the long side and shield to short side in a temporary fashion. (I used crimp connectors bent on the end of the pigtail which would connect around the each wire of the antenna for testing).
10. Check your SWR with an inline meter or built in to your radio. Slide the pigtail up or down looking for the best SWR and solder in place.
11. Cut a 5" length of heatshrink and use it to insulate the 4" wire section exposed in step 8.
12. Using 2 or 3 plastic cable ties, wrap them around the antenna and pigtail so they will be parallel and snug and to reduce strain on the soldered connection.