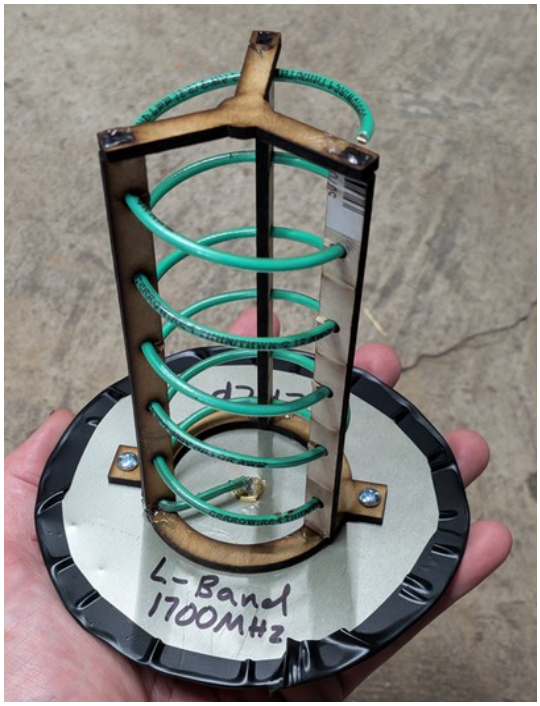
L-Band Antenna Scaffold

Left-Hand Circular Polarization (suitable for RHCP when used as a satellite dish feed).

Laser-Cut 3mm Basswood.



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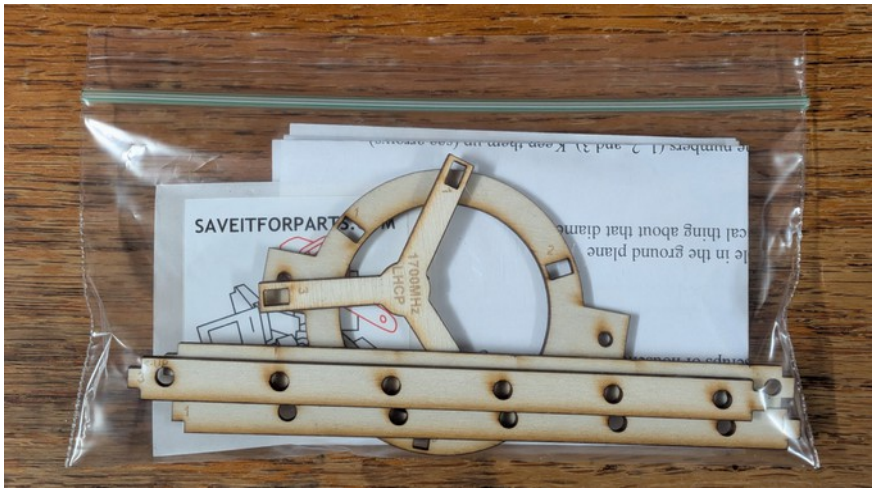
Assembly video: https://youtu.be/3PS_xbb1cd4

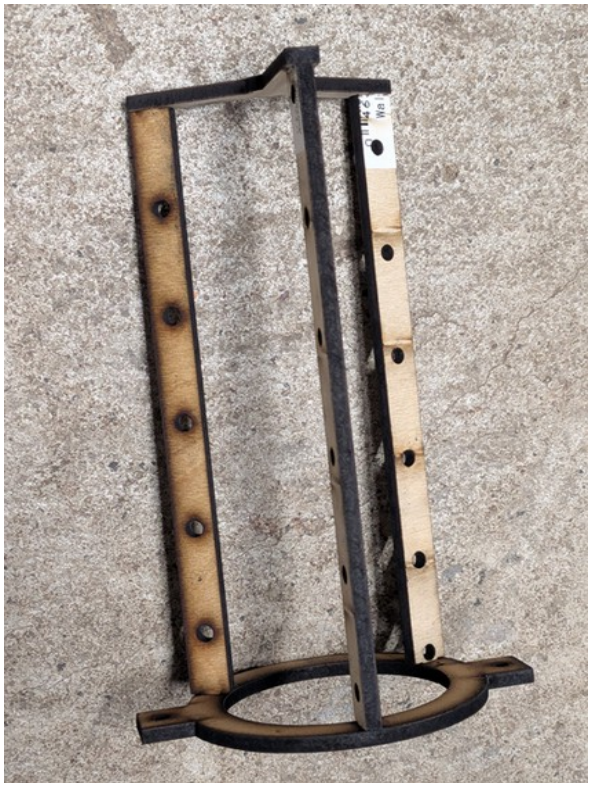


Kit includes:	**You will also need:**
- Wood base ring - Wood top support - (3) wood uprights - SMA connector - Instruction sheet - Sticker	- A flat metal circle about 5” diameter (old pie pan, piece of sheet metal, etc) - About 4ft of stiff metal wire (12-14 gauge, scrap household wiring works) - Soldering iron, solder, flux, etc - Pliers (optional but helpful) - Wire cutters - Wood glue and/or hot glue - Drill (or large nail or something else to make a hole in the ground plane - A scrap of ~1.25-1.5” pipe or other cylindrical thing about that diameter.

Assembly instructions:

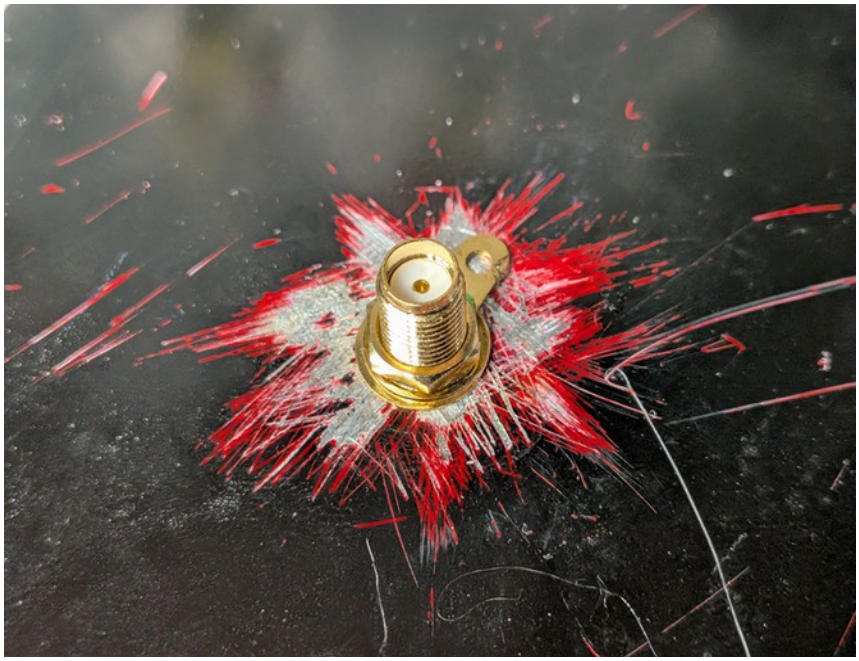
1. Glue the wood uprights into the base, matching the numbers (1, 2, and 3). Keep them up (see arrows)

2. Glue the top support on top of the uprights. Your scaffold should look like this:



3. Drill or punch a 1/4” hole in the center of your ground plane.

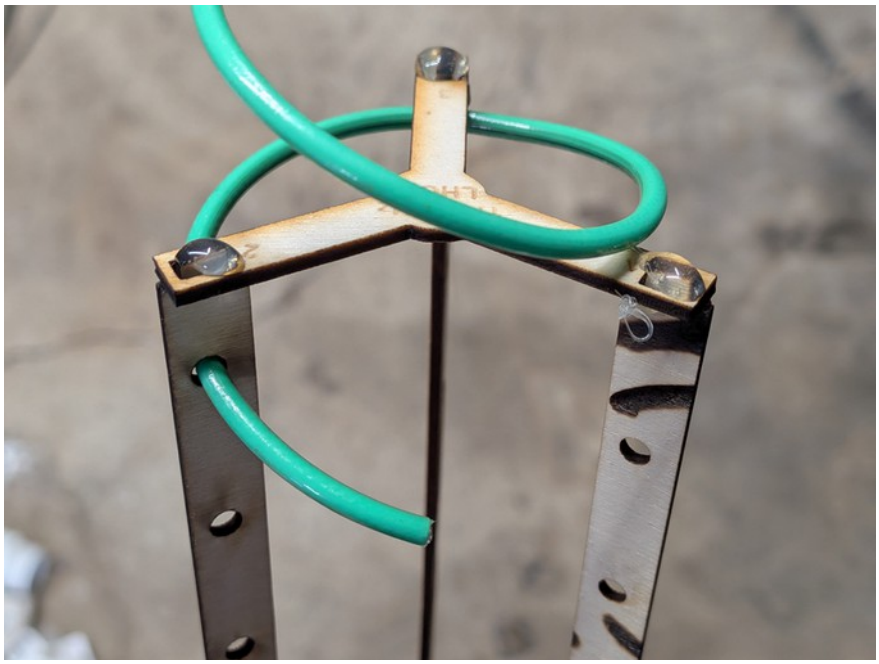
4. Remove the nut from the SMA connecter, insert the connector through the hole in the ground plane, and fasten with the nut.



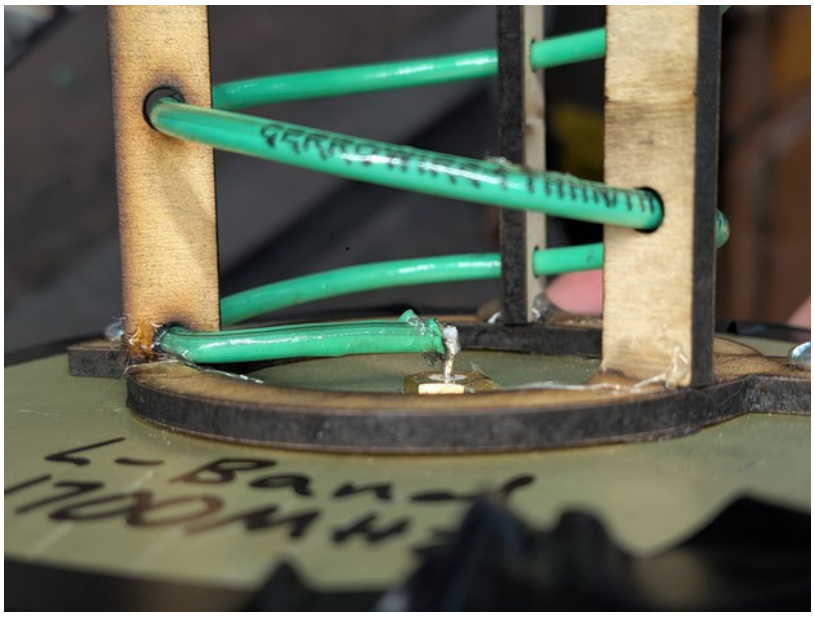
6. Place the wood scaffold over the inside part of the SMA connector (the part sticking through the ground plane with the exposed center pin). Secure it with glue and/or bolts.

7. Coil your wire around a cylinder about 1.25-1.5” in diameter, like a piece of scrap pipe, a flashlight, etc. Be sure to make a left-hand coil (as the wire goes down / away from you, it should curve to the left / counterclockwise)

8. Carefully thread the coiled wire into the scaffolding as seen below. Continue until the coil reaches the bottom of the scaffolding.



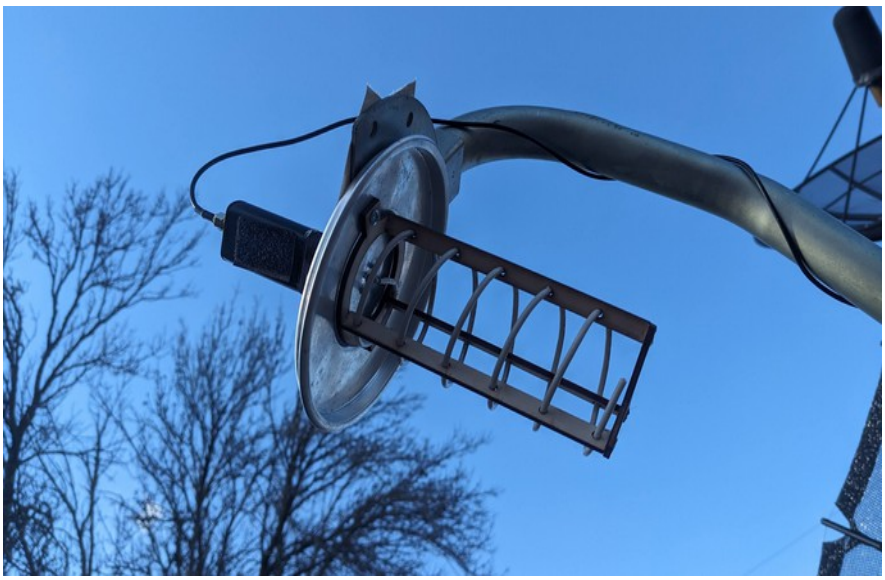
9. Carefully bend the bottom-most coil in to touch the center pin of the SMA connector. Try not to put pressure on the wood, pliers will help with this step. Keep this last wire part parallel to, but not touching, the bottom ground plane.



10. Solder the wire to the center pin of the ground plane

11. Snip off the excess part of the coiled wire that extends past the top of the wood structure. (If you have an SWR Meter or Vector Network Analyzer like a NanoVNA you can slowly trim bits off until the tuning matches the desired frequency. I aimed for around 1.7GHz but I have found that these are very forgiving and will work for a wide frequency range).

Your antenna feed is now complete! You can use it to replace the LNB of a satellite TV dish to receive Meteor, Metop, and Arctic Weather satellites on L-Band. You will also need an LNA (amplifier) like the Sawbird+GOES



For a video version of these instructions, see https://youtu.be/3PS_xbb1cd4

For a demo of this design in use, see https://www.youtube.com/watch?v=GUHieqIKgMM

For info on hand-tracking a dish, see https://www.youtube.com/watch?v=w5DyJHMw7aY

More info on mounting and using this feed: https://sgcderek.github.io/blog/beginner-hrpt-guide.html

Additional info: https://saveitforparts.com/2025/03/19/laser-cut-hrpt-antenna-for-l-band-satellites/

Laser cutting files: https://www.thingiverse.com/thing:6963608

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