

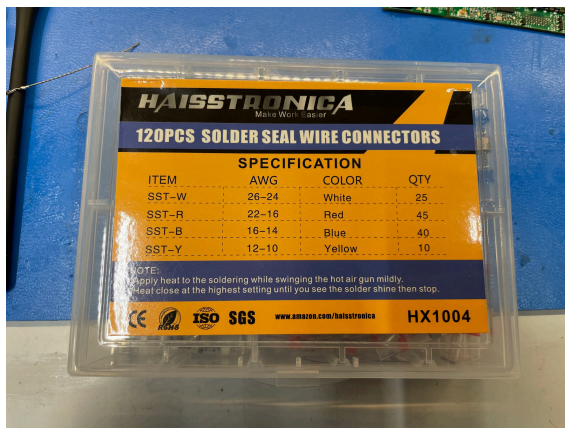
Antenna Fabrication

This document describes how to make DIY antennas for the APRS and GPS of Tag 2.2.

This process was created in July 2023.

Materials:

- Corrosion-Resistant Wire Rope Difficult-to-Bend, 1 x 7, 1/16" Diameter from McMaster Carr
- Moisture-Seal Heat-Shrink Tubing 2:1 Shrink Ratio, 0.13" ID Before Shrinking from McMaster Carr
- Moisture-Seal Heat-Shrink Tubing 2:1 Shrink Ratio, 0.19" ID Before Shrinking from McMaster Carr
- [100PCS White Solder Seal Wire Connectors AWG26-24.haisstronica Marine Grade Waterproof Solder Wire Connectors.Heat Shrink Butt Connectors.Insulated Butt Splice Electrical Connectors: Amazon.com: Industrial & Scientific](#)



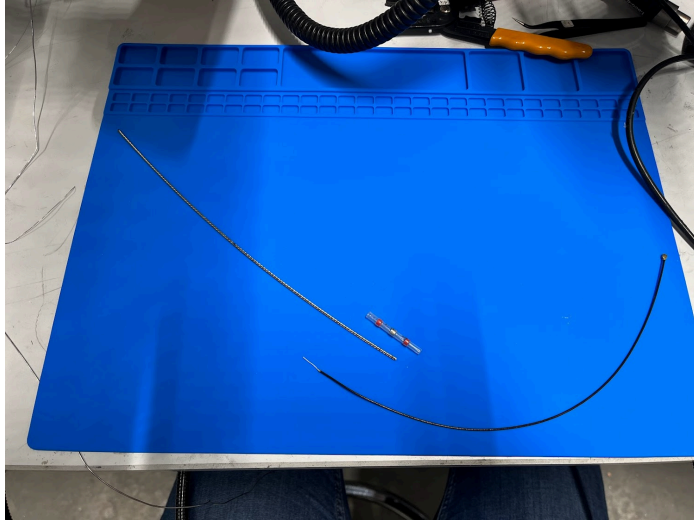
- Coax Wire [CA-DKCA1-152L0-I0-12 Adam Tech | Cable Assemblies | DigiKey](#)

Process:

1. The first step is to decide the length of the active wire and cut the steel cable accordingly. Then get the solder seal wire connector and the coax wire.

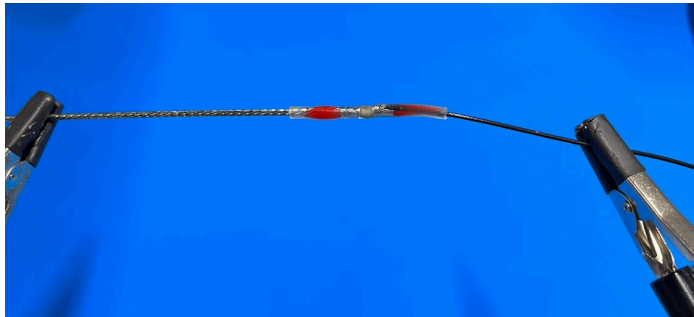
GPS: **4.7625cm** ($\frac{1}{4}$ wavelength)

APRS: **25.95cm** ($\frac{1}{8}$ wavelength)

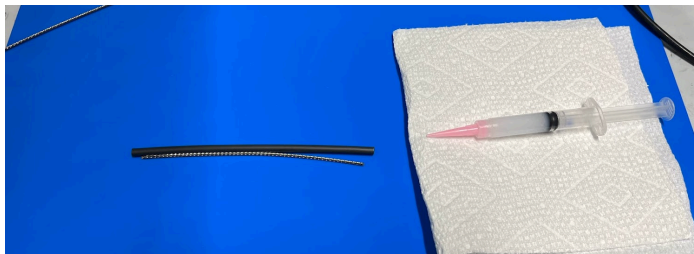


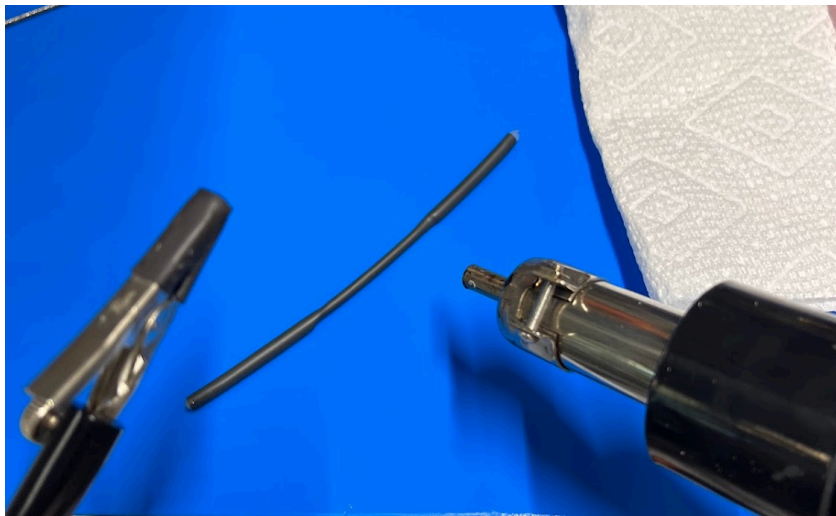
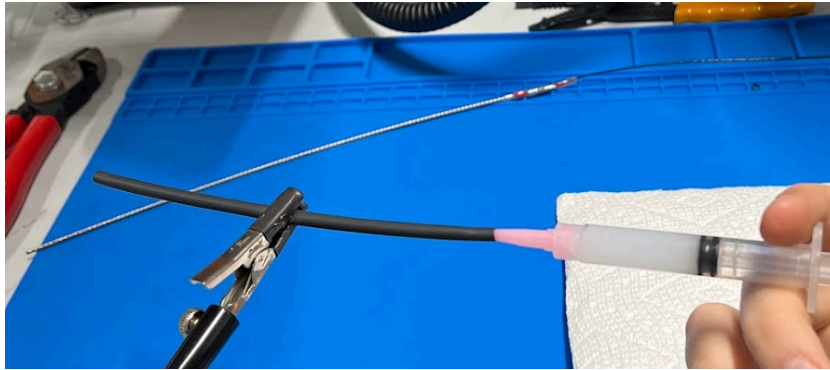
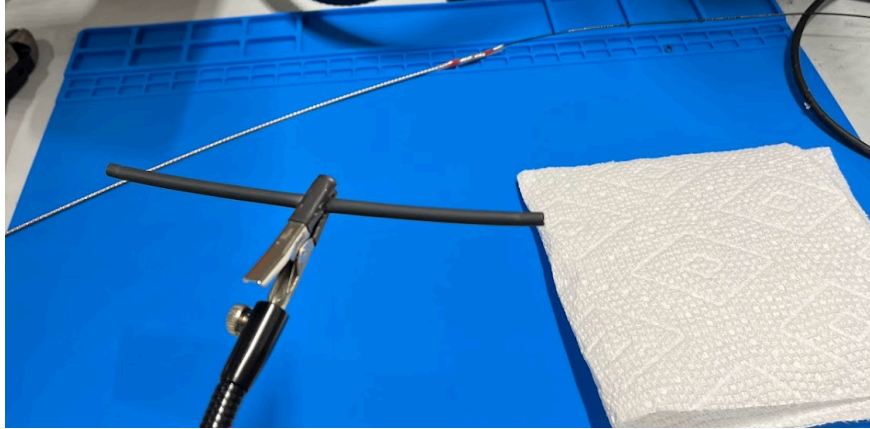
The images in the instructions highlight creating an APRS antenna however either can be created from the same steps.

2. Strip the end of the coax wire by about 0.5 inches. The threaded layer you may have to use tweezers to loosen and cut. The clear insulation should also be removed from the wire. Put the red solder seal wire connector on the antenna. Wrap the stripped end of the coax wire around the antenna and slide the connector over. Lastly, use the heat gun to secure the connection.

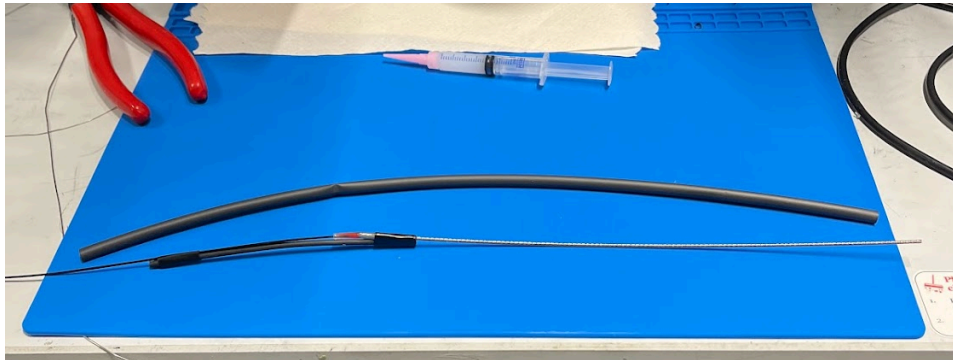


3. The next step is to create the supporting wire. Cut 50 mm from the steel cable and cover it in about 55 mm of the 0.13" moisture resistant heat shrink. Inject sil poxy into each end of the heat shrink and then use the heat gun to shrink the heat shrink around the steel cable.





4. Now you have your support wire and active wire. Cut a large piece of 0.19" moisture resistant heat shrink to cover both wires. The support wire will overlap with the solder seal wire connectors to provide extra support at this connection. Secure this positioning with two small pieces of electrical tape



5. Slide the heat shrink over the active antenna wire and the support wire. Inject sil poxy into each end and at the end of the support wire to prevent air gaps. Use the heat gun to shrink the heat shrink.
6. Inject sil poxy into the cap of the antenna and slide it on the end of the wire.



The antenna is done!

