

RDF BASE STATION ANTENNA



The initial prototype is using 14 ga copper wire. This will eventually be replaced with stainless steel.

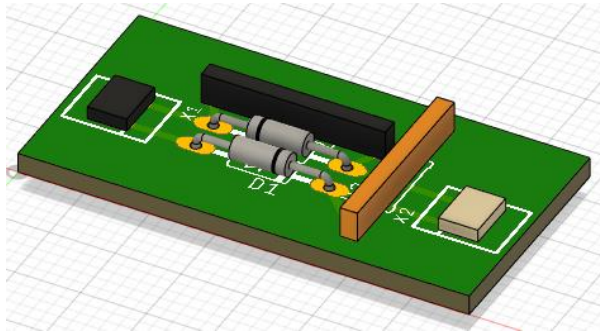
Each leg of the dipole is 19.6".

Coax feeding each of the four dipoles are run down the $\frac{3}{4}$ " PVC and down the center of a five-way coupler where the antenna diode switcher circuit resides.

Switcher circuit fits inside the $\frac{3}{4}$ " PVC pipe. In a permanent installation the LAN cable (antenna switching pulses) and the RG-58 Coax would be routed down the vertical section of pipe that also serves as the mast.

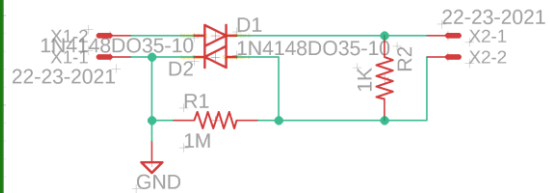
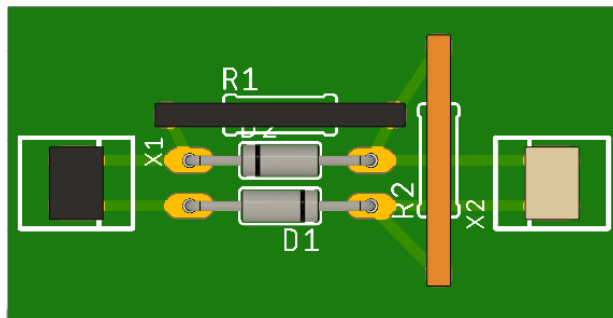
As shown the cables are routed out of a PVC Tee for testing convenience.

DOPPLER ANTENNA NODE (QTY 4)

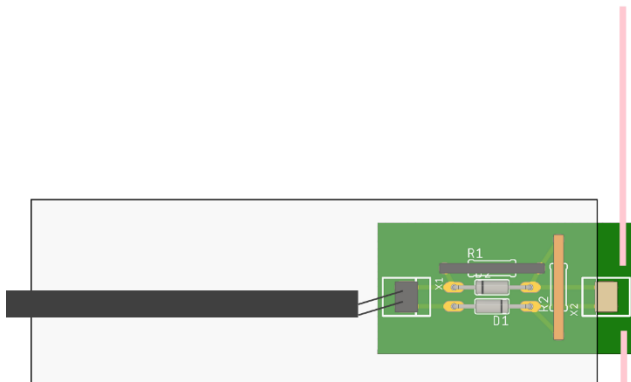


Each of the four antennas have a small board where dipoles are soldered on or mechanically mounted with screws.

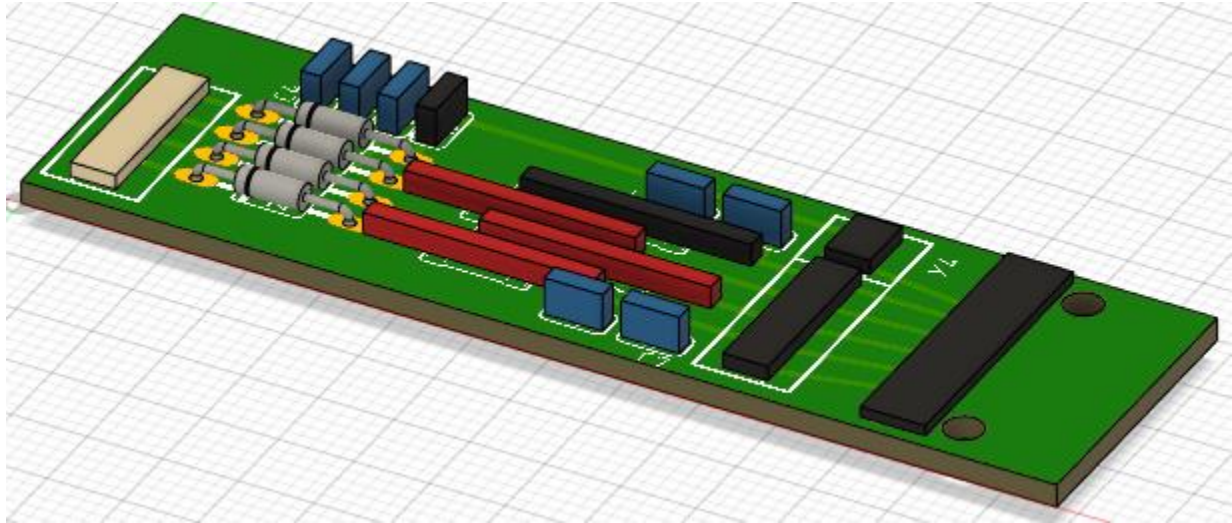
Implementation will be evaluated with R2 as a 1K or a 1 uH inductor. Is not critical so will do initial testing with a resistor.



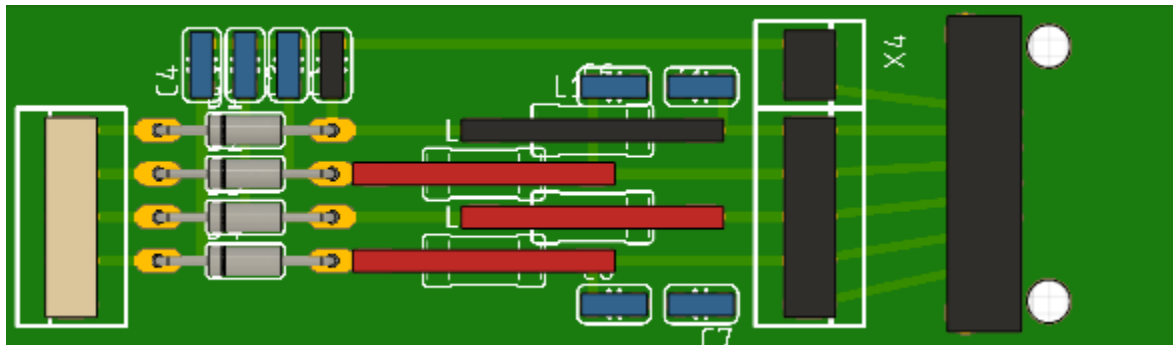
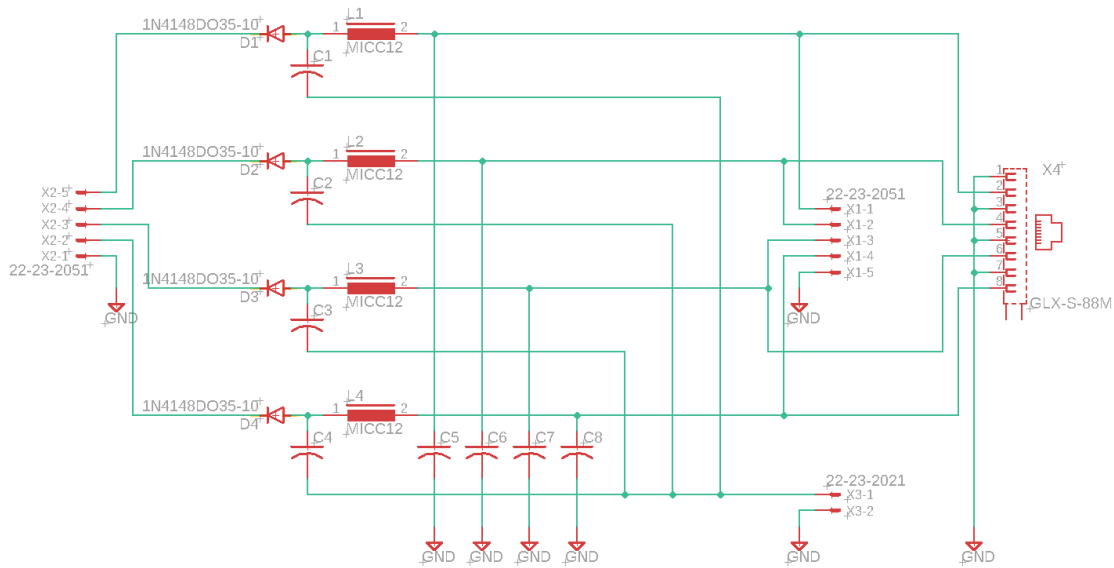
Each dipole is slid into a 12" section of 3/4" PVC pipe. Final board will use a T-shaped PCB more like the prototype.



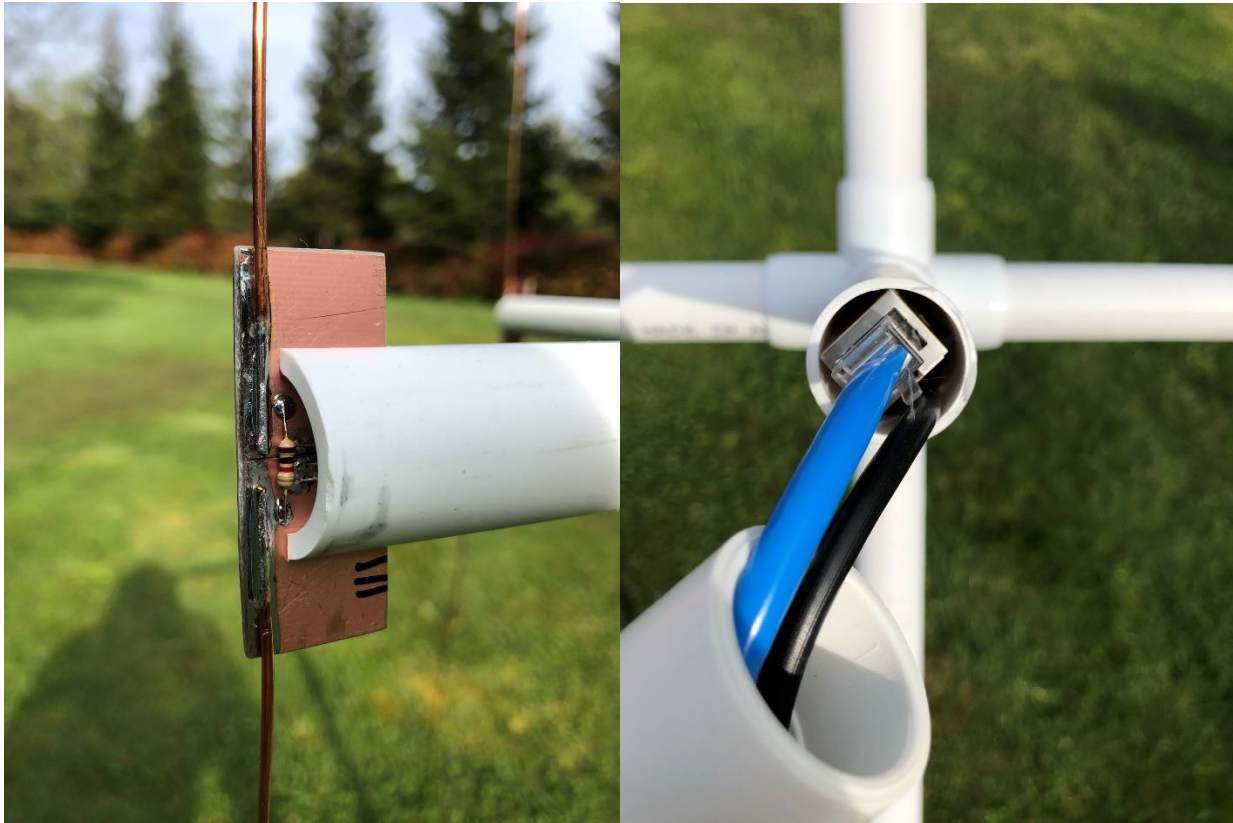
ANTENNA SWITCHER



The antenna switcher is on a PCB fit into the 3/4" PVC pipe. Coax from each dipole is soldered on. Antenna drive signals will be through an RJ45 LAN connector. My goal was to use off the shelf LAN cables and/or coax cables.



IMPLEMENTATION



Dipole with vertical elements soldered on. Will fab PCB as a Tee with the middle section fitting into the ID of a standard $\frac{3}{4}$ " PVC pipe. This should make assembly & vertical alignment easy. Have not thought of a reasonable design using telescopic antennas – will probably focus that on a mobile/portable collapsible antenna.

Antenna switcher board fits a Schedule 40 PVC however with the RJ45 LAN connector requires use of a thin walled $\frac{3}{4}$ " PVC pipe. Coax runs past the RJ45 connector and solders to female SO-239 round connectors (square chassis mount connectors will not fit inside the PVC pipe).

RDF Doppler Unit connections to Antenna

If we can standardize antenna connections from the RDF Doppler units then we should be able to plug & play various antenna builds with all the RDF doppler units under consideration. I propose the following:

1. All doppler units wire to accept a DB-9 male connector.
2. All DB-9 connectors wire RJ45 as follows
 - a. Antenna 1: DB-9 pin 1 to RJ45 pin 2
 - b. Antenna 2: DB-9 pin 2 to RJ45 pin 4
 - c. Antenna 3: DB-9 pin 3 to RJ45 pin 6
 - d. Antenna 4: DB-9 pin 4 to RJ45 pin 8
 - e. Ground: DB-9 pin 5 to RJ45 pin 1, 3, 5, 7

