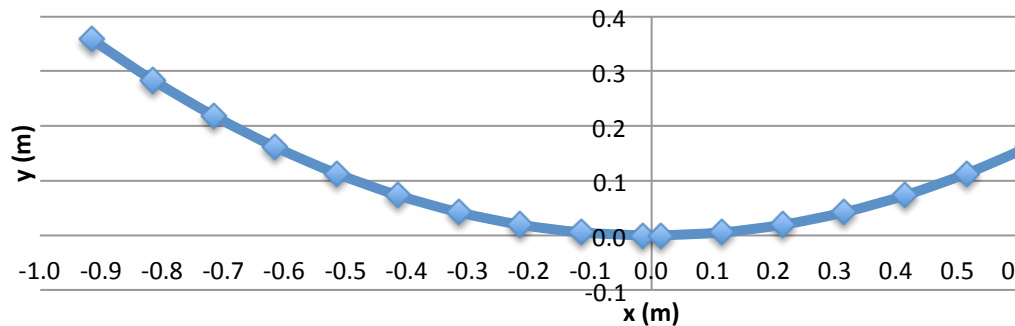


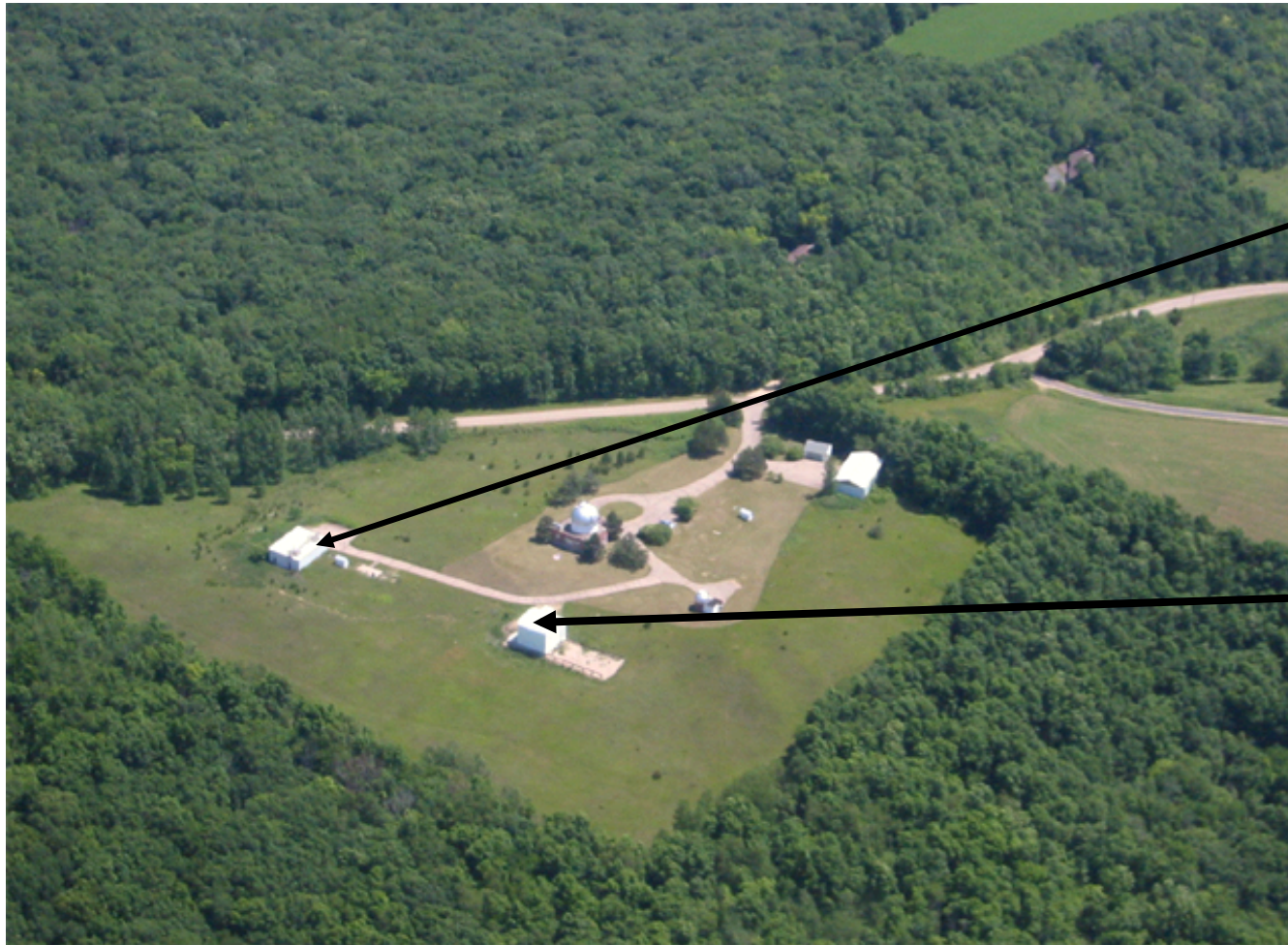
# Scale model of Tianlai cylinder

- Scale by factor of 10.5: 15 m x 40 m  $\rightarrow$  1.5 m x 4 m
- Construct from styrofoam sheets glued to styrofoam 'ribs'. Attach aluminum foil with spray adhesive, join seams with Al tape.
- 'Coffee can' feeds are  $\sim 200/10 = 20$  mm in dia: PCB's for dipoles. Use small coax.

Feed line



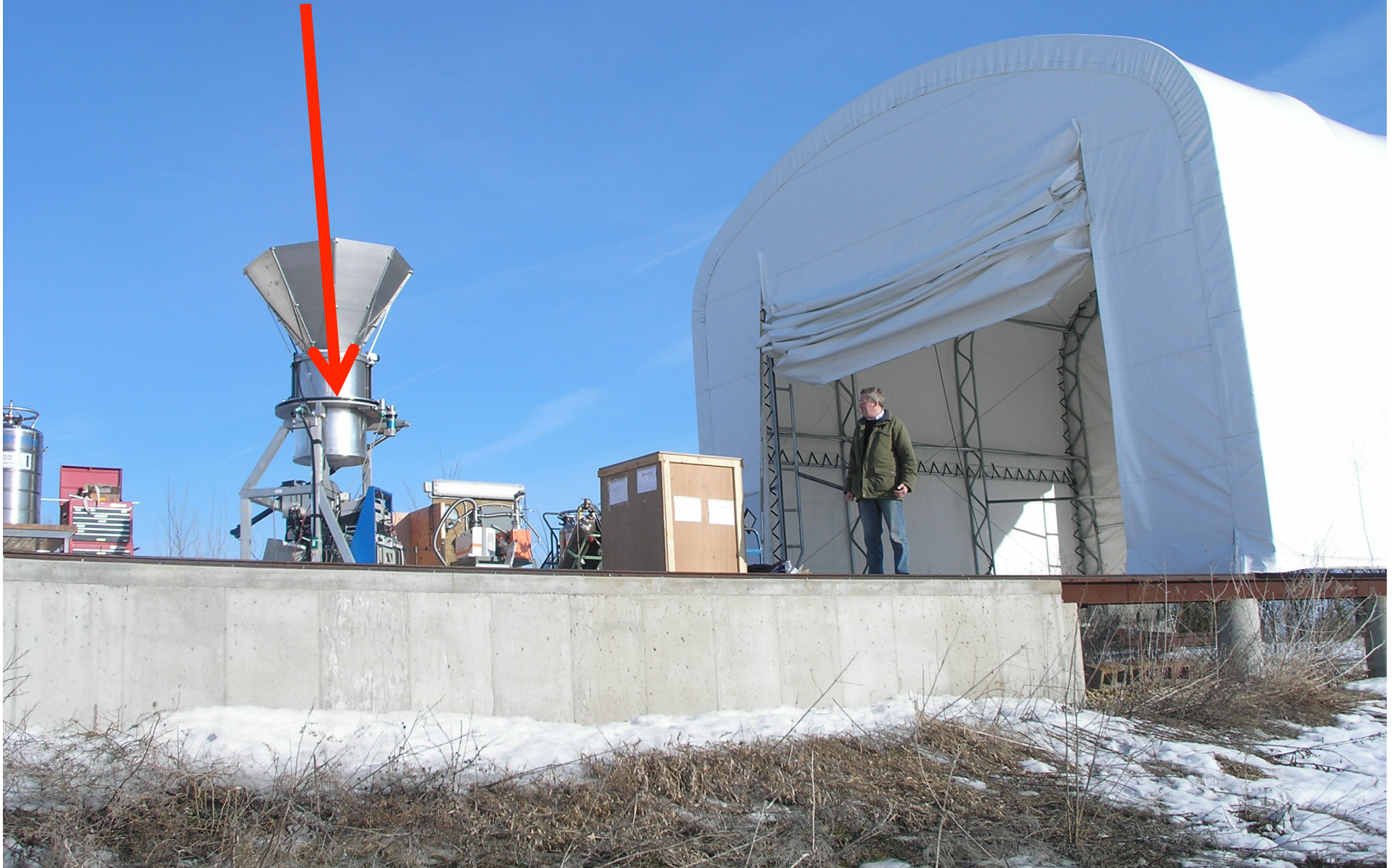
# Proposed antenna range at UW's Pine Bluff Observatory



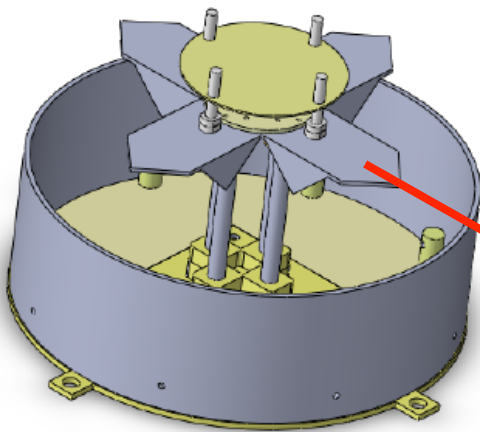
**RF source on  
roof**

**Cylinder  
under test**

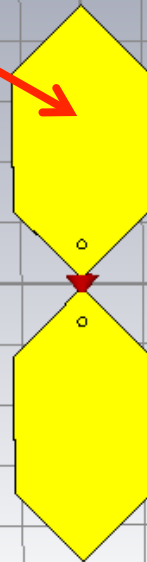
Foam cylinder lies on  
this ring



# Simulation: start with simple dipole feed



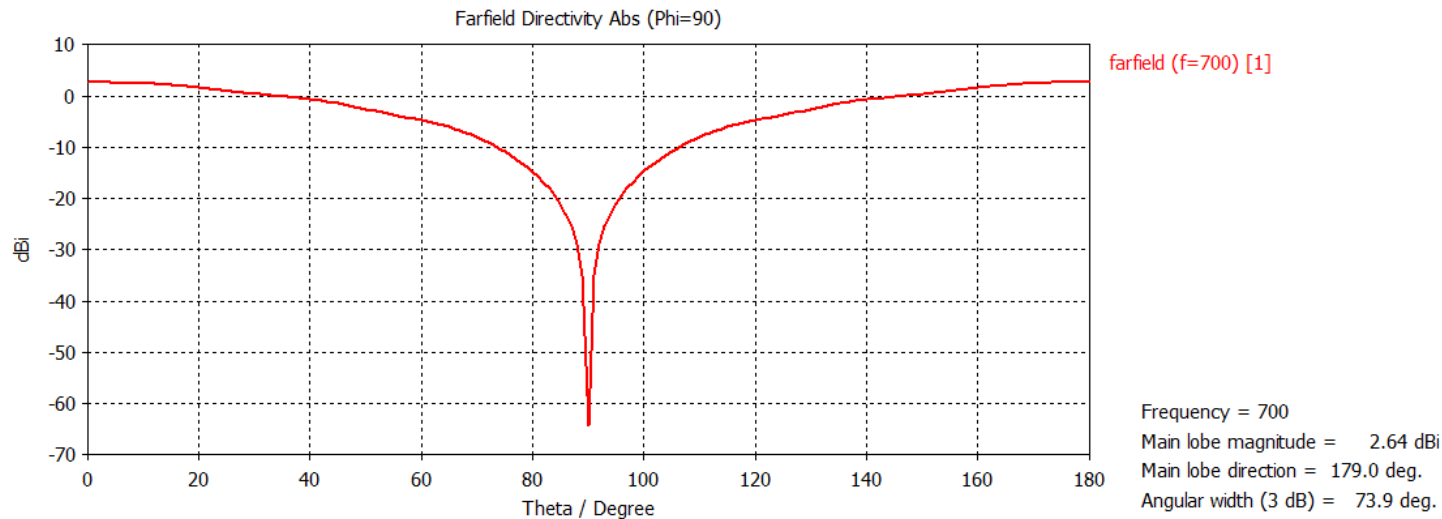
'coffee can' four-square feed



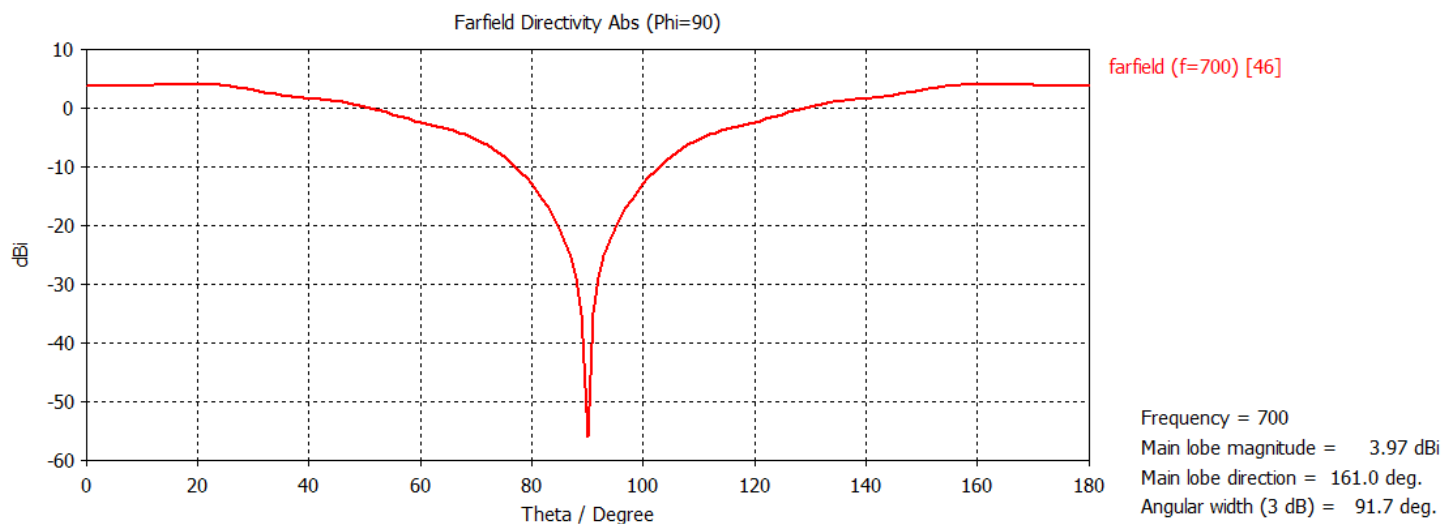
single dipole



# E-plane pattern of simple dipole feed $f = 700$ MHz ('yz plane')

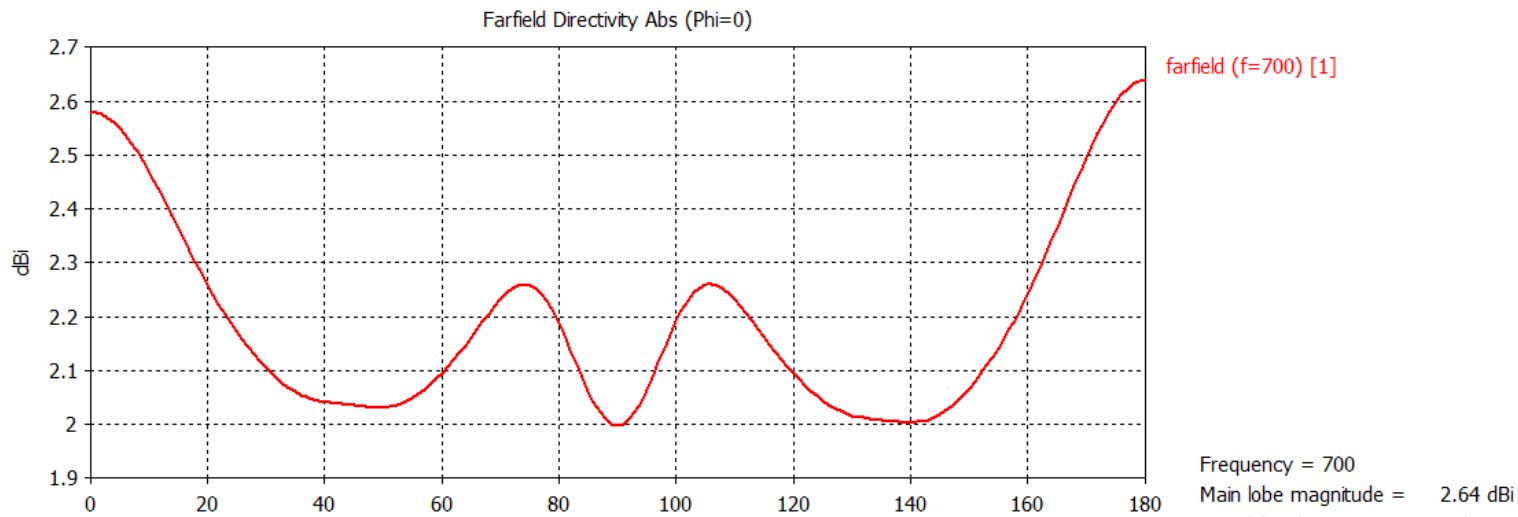


Single,  
isolated  
dipole

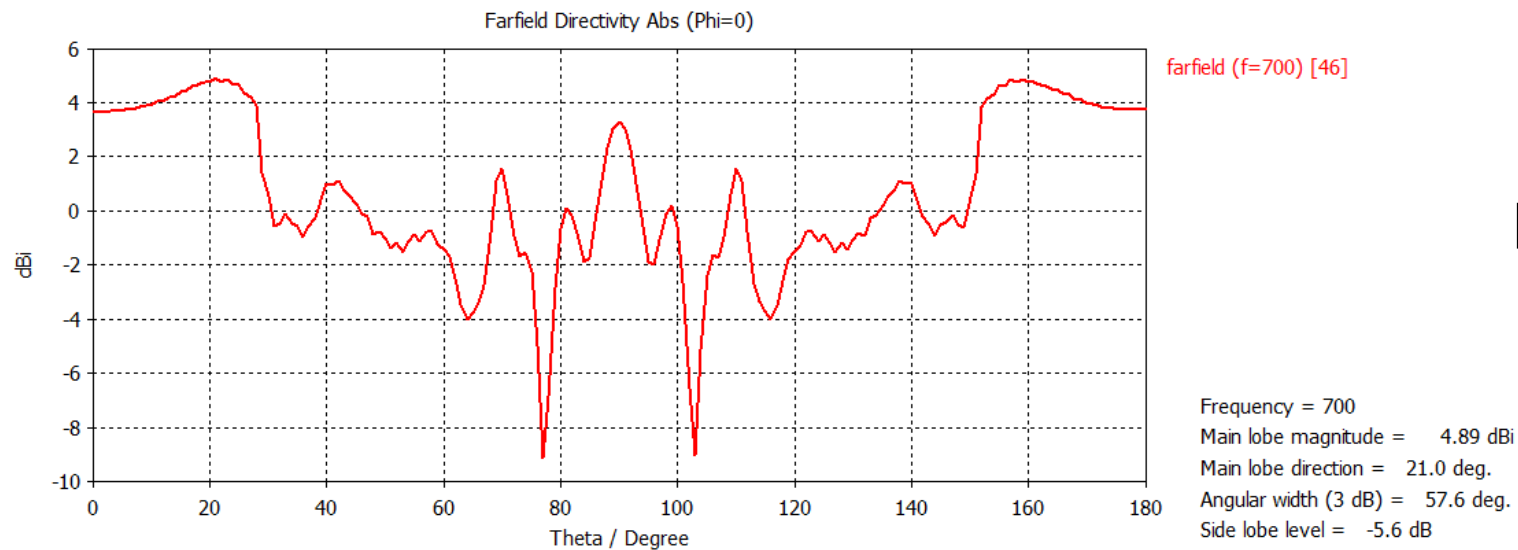


Dipole #46 in  
array of 96  
dipoles

# H-plane pattern of single dipole feed $f = 700$ MHz ('xz' plane)

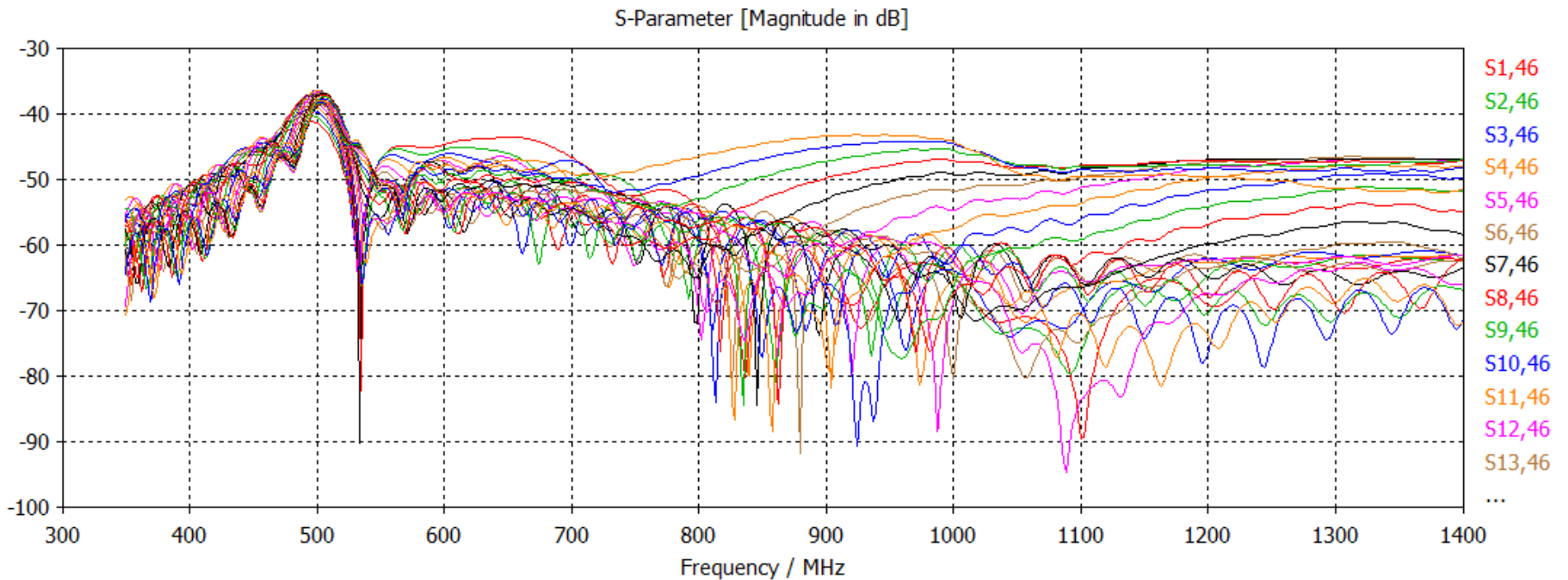


Single,  
isolated  
dipole



Dipole #46 in  
array of 96  
dipoles

# Cross-coupling between some dipoles in linear array of 96 dipoles



# Next steps

- In simulations, replace simple dipoles by actual four-square 'coffee-can' feed antennas
- Finish foam cylinder construction
- Construct 2 scaled 'coffee-can' feed antennas
- Map beam patterns
- Construct total of 96 scaled 'coffee-can' feeds?