



Successfully construct and test copper staircase antennas (repeated 90 degree bends) as shown in Figure 1

Obtain data using a Vector Network Analyzer (VNA)

Collect data for a range of antennas with wire gauges 12 - 22AWG and step size $\Delta s =$ 1.3 - 12 mm

Data gathered will be compared to Finite-Difference Time-Domain (FDTD) simulations done by Dr. Thomas Montoya

Construction of the 90 degree staircase antennas (Figure 2)

Soldiered joint fabrication method (left)

Forming bends using 3D printed additive manufacturing molds (right)

Testing using VNA (Figure 3)

Calibrated VNA to remove effects of cables and SMA connections

Measured S-Parameter (S₁₁) of antennas with the Agilent VNA-4396B utilizing port 1 on S-parameter test set Agilent-85046A connector centered on a 104 X 92cm

ground plane





Staircase Wire Monopole Antennas for Finite-Different Time-Domain Evaluations Jaron Volk (SDSM&T) Samantha Wehrkamp (SDSU)

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