

This report summarizes our design and fabrication approaches to develop a miniature spiral antennas that operates down to 30MHz. An innovative approach for antenna miniaturization using inductive and dielectric loading is presented. The inductive loading allows us to emulated magnetic material loading for the spiral antenna, and enables better impedance control at lower frequencies. In this report, we also introduce new theory to predict the maximum realized gain for a given aperture size replacing our previous empirical performance predictions. The optimal curves imply that an 18 inch aperture will ideally achieve -15 dBi gain at 37 MHz. Several experimental data are provided that fully characterize and provide credence for the performance of a final design delivered at the conclusion of year three of this project.