ABSTRACT

Communication technology drives the development of more efficient antennas with optimal performance. This study discusses the application of a double slit with the proximity-coupled feeding method on a rectangular patch microstrip antenna to support troposcatter technology. This technology is a wireless communication method that utilizes radio wave scattering in the troposphere layer, enabling long-distance signal transmission without requiring a direct line of sight between the transmitter and receiver.

In this study, the antenna was designed, simulated, fabricated, and tested within a working frequency range of 4000-5000 MHz using a Rogers 5880 substrate. Simulation results show that the combination of a double slit and proximity-coupled feeding improves antenna performance by enhancing return loss, gain, and VSWR parameters. Testing using a Vector Network Analyzer (VNA) revealed a frequency shift from 4.29 GHz in the simulation to 4.35 GHz after fabrication, with an improvement in return loss from -16.170 dB to -23.37 dB.

Based on the results of this study, the double-slit microstrip antenna design with the proximity-coupled method has been proven to enhance antenna efficiency and performance, making it suitable for applications in troposcatter-based communication systems.

Keywords: ***Microstrip Antenna, Rectangular Patch, Rogers 5880, Proximity Coupled, Troposcatter***