ABSTRACT

Technological advances have affected various aspects, including radio communication systems. Microstrip antennas have become popular due to their small and thin shape, as well as their ability to transmit and receive signals. Dual polarization on the antenna allows vertical and horizontal signal reception, thereby reducing polarization mismatch. In this study, a dual-polarized microstrip antenna was designed for 5G networks at the N40 frequency band with a coaxial probe feed. This process includes dimension calculation, simulation using CST Studio Suite 2019, fabrication, and measurement. The results show that the antenna functions optimally at a frequency of 2.35 GHz, with return loss and radiation patterns that are in accordance with specifications.

The results of the design of dual polarization microstrip antennas for 5G networks at the N40 band frequency produce optimal performance at the 2.35 GHz Center frequency. With a frequency range varying between 2.30 - 2.43 GHz at each antenna port. Return loss measurements show good results, including the -I port 1 antenna with a value of -15.81 dB and port 2 with a value of -10.45 dB. The resulting radiation pattern is linear directional with linear polarization. Several antennas show horizontal and vertical electromagnetic field directions, with average gain values ranging from -9.88 dBi to -30.08 dBi depending on the port and antenna being tested.

Keywords: *Telecommunication Technology, Microstrip Antenna, Dual Polarization, Coaxial Probe*.