

ABSTRACT

In this modern era of communication, antenna devices that are lightweight, inexpensive, and easy to install are needed. Many transmission devices require antennas with this specification, and these specifications can be found on microstrip antennas. But the disadvantage of microstrip antennas is the small gain of only about 5 dB. Therefore, the antenna is arranged more than one element with the aim of getting a large gain. The array antenna requires the distribution of current, for example binomials, uniforms, and Dolph-Chebyshev. This current distribution is useful to reduce side lobes and wide beamwidth.

In this study, the antenna designed for stacking five microstrip elements with a working frequency of 2.4 GHz with the dolph-chebyshev distribution. The desired specifications are; $VSWR \leq 2$, return loss ≤ -10 Db, with unidirectional radiation patterns and linear polarization. In the realization process the FR-4 substrate material is used with a dielectric constant of 4.4 and thickness of 1.6 mm.

At the of the process, the simulation results and the measurements results are compared. The measurement results of the antenna show that $VSWR$ 1.22285 with a return loss of -21,462 dB, elliptical radiation patterns and circular polarization.

Keywords: *microstrip antenna, current distribution, array antenna, Dolph-Chebyshev*