

ABSTRACT

The need for wireless communication is increasing rapidly resulting in the development of wireless communication is directed to 5G communication technology. 5G communication has a limited frequency range. At present the ideal frequency range for 5G, especially in the Asian region, is 3.5 GHz. However, this frequency is the same frequency used by satellite communication. This can cause interference with each other so we need a system to overcome these problems.

This final project focuses on the design of MIMO 4×2 array of 2 elements which each element has a circular patch that operates at 3.5 GHz frequency. Array arrangement is used so that it can increase the distance of the antenna range without enlarging the antenna dimensions. The substrate used is FR-4 with dielectric constant 4.4 and thickness 1.6.

The antennas are adjusted to the specifications needed to optimize the work of 5G. Antenna design in this final project is done using a software which will be simulated and analyzed to obtain antenna that conforms to predetermined specification. Based on simulation of this undergraduated thesis, the results of MIMO 4×2 of 2 circular patch microstrip antenna array has VSWR 1.15 for each antenna with bandwidth 211.4 MHz for the narrowest. While the highest mutual coupling has -41.126 dB. And the results of MIMO 4×2 of 2 circular patch microstrip antenna array has gain of the antenna 6.874 dB and 6.906 dB with unidirectional polaradiation.

Keywords: antenna, MIMO, array, 5G.