

ABSTRACT

Technological developments in the telecommunication industries is very fast and is directly proportional with the needs of consumers. Consumers are always demanding for the fulfillment of the need for rapid exchange of information and the availability of services for 24 hours non-stop. 4G technology is considered still can't meet customer needs, therefore 5G technology being prepared. In the future, 5G technology is being prepared to complement 4G technology not to replace it. The current 5G technology still does not have standardization set by default in its application. Therefore, academics and researchers are still free to conduct research and research experiments related to 5G.

The 5G technology is designed to meet multiple objectives including increasing the volume of data, increasing the number of connected subscribers, increasing data access speed, improving power efficiency, and reducing delay. One solution to achieve that goal is to use MIMO technology (Multiple Input Multiple Output). In the previous study, an eight array antenna were made to work at frequency of 28 GHz up to 38 GHz with a leaf-shaped bow-tie patch with unidirectional radiation pattern.

In this final project, designing, simulating and analyzing a MIMO microstrip antenna that can work on 5G system for mobile device application that has patch modified shape bow-tie shape at 28 GHz frequency with unidirectional radiation pattern, linear polarization, and bandwidth ≥ 2 GHz, which is subsequently made into an array of eight antennas placed on a PCB assumed as mobile device motherboard.

Based on design, manufacture, and simulation, eight elements of MIMO microstrip antenna were obtained, with an average S-Parameter value of -26.82 dB, 4.16 dB average gain, and 4,156 GHz average bandwidth. After the simulation, then done writer configuring the eight antenna elements with PCB mobile device where the eight elements antenna were placed on the top and left side antenna.

Keyword : *Modified Shape Bow-Tie Microstrip Antenna, MIMO, 5G*