

ABSTRACT

The requirement for internet access is currently greater, to meet these needs a good device is needed. To get the need for greater data access, WiFi with standards set by IEEE has the latest standard that updates the previous standard, 802.11ac. WiFi 802.11ac has high data access speeds and has experienced bandwidth expansion from 40-160 MHz. To get the most out of WiFi 802.11 ac, multibeam and MIMO are also applied.

This Final Project makes the manufacture of antenna devices with multibeam MIMO antenna analysis for WiFi 802.11 ac by using a biquad antenna working at a frequency of 5.2 GHz. In the biquad antenna, MIMO and multibeam antennas are designed. Multibeam with more than one antenna are arranged so as to get a 360 degree coverage area, while the use of the MIMO antenna system has the potential to increase the channel capacity of the antenna.

The results showed that from making multibeam MIMO antennas obtained a coverage area of 360 ° resulting from the beam of each antenna element arranged, where each antenna has directional radiation pattern. The estimated channel capacity in the simulation for SNR 5 dB is 6.482 bps/Hz while for fabrication it is 6.478 bps/Hz. Meanwhile, for SNR 15 dB the estimated capacity in the simulation is 16.07 bps/Hz and fabrication is 16.08 bps/Hz. To reach 1 Gbps channel capacity requires a minimum SNR value of 5 dB.

Keywords: WiFi 802.11ac, multibeam, MIMO, biquad antenna.