ABSTRACT

The increasing need for high speed data transfers with a large number of user capacities has pushed the Institute of Electrical and Electronics Engineers (IEEE) to set 802.11ac as a new standard for wifi devices which is expected to reach a total channel capacity of 1 Gbps. This standard works on the 5 GHz frequency spectrum, 80 MHz and maximum 160 MHz of bandwidth. 802.11ac requires an antenna that supports a 1 GHz data rate using a multiple-input multiple-output (MIMO) scheme and an antenna that is capable of covering all directions around the access point.

In this final project, a Multibeam MIMO antenna with a triangular patch element at a frequency of 5.2 GHz is designed and realized for wifi 802.11ac. One antenna element consists of a triangular patch and a square groundplane with copper material. The substrate between the patch and the groundplane is air. The Multibeam antenna consists of four identical single antennas.

The antenna has four directional radiation patterns in different directions to produce Multibeam which can cover an area of 360º. To reach 1 Gbps channel capacity requires a minimum SNR value of 6 dB.

Keywords : WiFi 802.11ac, MIMO, Multibeam Antenna.