ABSTRACT

The 15 GHz frequency becomes a candidate for the application of 5G technology. However, the consequence of using this high frequency is the wavelength that is transmitted to be short and vulnerable to weather and obstacles. High user mobility leads to many random paths called multipath fading. For that we need an antenna with MIMO system (Multiple Input Multiple Output) which uses more than one antenna on the transmitter and receiver side.

In a previous research, design and realization was done with MIMO antenna rectangular patch 4 element, U-shaped slot, using inset feed technique for 15 GHz frequency. In this final project, the design and realization MIMO antenna hexagonal patch 4 element has been done, using the Rogers Duroid 5880 substrate with $\varepsilon_r = 2{,}2$*, and proximity coupled techniques that work at 15 GHz frequencies.*

In this final project realized a MIMO 4×4 array hexagonal patch at 15 GHz with average S-Parameter value below -15 dB in the frequency range 14.44 GHz - 15.74 GHz for antennas 1 and antenna 2, while antennas 3 in the frequency range 14.42 GHz - 15.74 GHz and 4 antennas in the frequency range 14.42 GHz - 15.76 GHz . The frequency range of each antenna has a bandwidth of ≥ 1 GHz. Gain antennas 1,2,3, and 4 are 9,051 dB, 9,126 dB, 9,140 dB, and 9,106 dB. The radiation pattern of each antenna is unidirectional with elliptical polarization.

Keyword : microstrip antenna hexagonal, mimo, 15 GHz, proximity coupled