# *ABSTRACT*

*5G technology offers faster services and facilitates extensive communication between individuals, between machines, and between people and machines. Internet of Things (IoT) and Machine to Machine (M2M) connectivity will use 5G wireless technology. Of course, 5G technology imposes several demands on the network regarding energy usage, device cost, latency, reliability, and other factors. Antenna components are needed to facilitate this technique.*

*Microstrip antennas provide a viable solution for the advancement of 5G technology due to their small and compact design. This final project examines the design of a microstrip antenna operating at 28 GHz, with a rectangular patch shape, using a Rogers RT5880 substrate characterized by a thickness of 0.254 mm, a loss tangent of 0.0009, and a relative permittivity of 2.2. The purpose of this study is to design a 4x4 MIMO microstrip antenna with the 4x4 butler matrix method for 5G technology at a frequency of 28 GHz and to compare the parameters of the 4x4 MIMO antenna before and after the addition of the 4x4 butler matrix. This final project includes literature review, antenna computation and design, simulation, and data analysis.*

*The simulation results of a 4x4 MIMO antenna with a 4x4 butler matrix at a frequency of 28 GHz show return loss values of -12.18 dB for port 1, -15.69 dB for port 2, -12.25 dB for port 3, and -12.43 dB for port 4. VSWR values are 1.652, 1.39, 1.64, and 1.627. Gain is 10.6 dBi, 12.1 dBi, 12 dBi, and 10.7 dBi. Unidirectional radiation pattern.*

***Keywords:*** 5G *Technology, Microstrip Antenna, MIMO, Butler matrix*