## ABSTRACT

Mobile communication technology is developing very rapidly in today's digital era. In the era of 5G technology, cellular technology really needs data transfer distribution media with wide bandwidth, better network coverage, and minimizing the power loss sent is not too large. Therefore, an antenna design is needed that can support 5G technology at a frequency of 2.3 GHz.

In this study, a MIMO (Multiple Input Multiple Output) antenna device will be designed, where this MIMO system can increase the mobility of network use between users (multipath fadding). The use of MIMO systems also supports much better barrier penetrating power, wider coverage, and can support 5G technology systems. In this study, the authors designed an 8-Element MIMO Array Square Microstrip antenna that is smaller in size than sectoral antennas in general. In this antenna design, it uses the proximity coupled method to overcome the shortcomings in bandwidth and gain in the microstrip antenna system. Then to increase the gain, the author used a patch array method arranged linearly to obtain a better radiation pattern direction. Then the mitered-bends method is added in each 90° corner path on the impedance line, so that maximum power transfer is obtained on the antenna.

From the design results, a return loss value of -46.21 dB, mutual coupling of -44.22 dB, VSWR of 1.00, a bandwidth value of 170 MHz, a gain value of 7.25 dBi, a unidirectional radiation pattern, linear polarization and an impedance value of 50 Ω. While the antenna fabrication results obtained a return loss value of -22.89 dB, mutual coupling -21.43 dB, VSWR of 1.15, bandwidth value of 140 MHz, gain value of 7 dBi, unidirectional radiation pattern, elliptical polarization and impedance value of 52 Ω.



**Key Word**: MIMO, Antenna Microstrip, 5G Network, proximity coupled, mitered-bends, Array.