## *ABSTRACT*

*LTE (Long Term Evolution) is a fourth generation wireless communication technology that is currently undergoing development. One of the devices that is needed in this technology is an antenna. The antenna technique used is the MIMO technique. The MIMO technique uses multiple antennas both on the transmitter side and on the receiver side. To get accurate results, proper antenna beam direction and focus are needed. The problem of directing the antenna beam can be overcome by radiation pattern formation techniques or commonly known as beamforming. Beamforming can be done by adding a feeder to the antenna, one of the antenna feeders that can form 2 beam directions is a 90° hybrid. If more than 2 beam directions are desired, a multidirectional forming antenna feeder can be used, including Rotman Lens, Blass Matrix or Butler Matrix. The Butler Matrix has an advantage over the three multidirectional beam shapers, as it is simpler and requires less number of 90° hybrid couplings, thereby reducing dimensions. In this study, the Butler Matrix 4x4 will be designed for LTE applications at a frequency of 2.3 GHz. The constituent components consist of 4 hybrid couplers and 1 crossover made using microstrip with FR4 Epoxy substrate type with a thickness of 1.6mm. The design of this Butler Matrix using simulation software AWR Design Environment 2009 produces a return loss of -10 dB, isolation -10 dB and produces an average bandwidth of 1000 MHz*



***Keywords :*** *Butler Matrix, LTE, Bandwidth*