

## ABSTRACT

*LTE Advanced Feature is the merger between wifi and cellular data, the data output rate is going to be a double. LTE Advanced technology is the 4th generation (4G), which provides the latest features to achieve high data rate. The data rate for LTE Advanced are expected to reach 1 Gbps for the downlink and 300 Mbps for the uplink. One feature is a factor increasing the data rate is the engineering Carrier Aggregation. This feature can combine two or more components of a carrier with a maximum bandwidth of 20 MHz per carrier either in one or a different frequency band.*

*The increase in network capacity will require an antenna also must support the speed, capacity, quality and quantity of data. Chosen so that the antenna MIMO (Multiple Input Multiple Output) is a communication system that uses more than one antenna which served both as a transmitter and receiver simultaneously. With the ability to maximize the capture of the signal in the area and help implement a simple MIMO technique is commonly done by taking the vertical and horizontal polarization simultaneously.*

*In this final task using carrier aggregation can optimize existing frequency which is currently occupied by the GSM technology. Therefore made Analysis Network Design LTE-A Carrier Aggregation Using Antenna MIMO 2x2, 4x4. In simulations using Atoll Software 3.2.1. So that the expected results of this thesis, analyzing the planning LTE-Advanced using MIMO Antenna 2x2 and 4x4 stare of performance parameter value comparison is CINR reached 11.73 dB, RSRP reached -85.67 dB, Best Signal Level reached -69, 27 and throughput reached 80.42 Mbps.*

**Keywords:** *LTE Advanced, MIMO, Carrier aggregation, CINR, RSRP, Throughput. Best Signal Level*