ABSTRACT

Today the growth of user in cellular network increase significantly with the deployment of LTE-Advanced that can fullfil the users throughput needs. With the deployment of LTE-A network, the growth number of network users would be increase significantly. Especially in the dense urban area that usually has high data rate needs. This certainly cause problems on network capacity. 3GPP released Heterogeneous Network solution (HetNet) which is a network consisting of a traditional macro cell and some small cell in it. The solution resulted in Inter-Cell interference due to LTE-A using frequency reuse one (FR 1).

In this final project, simulation and analysis on the application of LTE-A technology on heterogeneous network based on femtocell. The working frequency used in macro cell and small cell is the frequency of 1800 MHz with simulation scenario before using femtocell, after using femtocell, and to reduce interference between cells on femtocell usage then added one scenario using enhanced Inter-Cell Interference Coordination method to reduce interference.

After the simulation, the signal level parameter increased by 1.26 dBm, in terms of CINR parameters there is an increase on the value by 1.38 dB, from user connections test parameters there is increase up to 3.4%, and the throughput parameters increased to reach 1.59 Mbps. After applied eICIC method, there are no changes on the value of signal level and CINR, while in throughput and user connected parameter trade-off happened. The user connected value increased by 1.8% while the throughput value decreased by 1.15 Mbps.

Keywords : *LTE-Advanced, eICIC, Heterogeneous Network, Femtocell*