

ABSTRACT

The increasing need for data speeds for cellular network service users, as well as the need for limited energy use efficiency has forced technology to develop. In LTE technology in release 10 there is a small cell method that can be a solution, but the application of small cell networks that use adjacent frequency spectrum can cause interference, this problem can handle by the Coordinated Multipoint (CoMP) technique. Systems that use the CoMP technique will use the same radio resources from several small cells, that condition can reduce the reuse efficiency of radio resources, thus causing a decrease in performance parameters, then an effective resource allocation scheme is very important when a system adopts the CoMP technique with the limited radio resources.

This Final Project will propose a coordinated multipoint-joint transmission (CoMP-JT) user association algorithm as a radio resource allocation scheme using the appropriate allocation parameters namely the Signal to Noise Ratio (SNR) parameter and the allocation process is based on the maximum SNR value. In principle, SUE and SBS will be connected or allocated based on the value of the largest SNR, beside that the power control process is added to maximize energy efficiency.

The results obtained from the proposed method when compared to systems with conventional algorithms are an increase in overall data rate performance and spectral efficiency by 46% and an increase in energy efficiency by 50.62%. This proves that the use of the CoMP-JT user association algorithm with power control on dense small cell system can increase maximum system performance.

Keywords: Dense small cell network, CoMP-JT user association, Signal to Noise Ratio, power control, energy efficiency.