

## **ABSTRACT**

*Femtocells are viewed as a promising option for mobile operators to improve coverage and provide system capacity in a cost-effective manner. Problems like low signal in indoor areas can be solved by using femtocell.*

*One of technologies that deploys femtocells is mobile WiMAX (IEEE 802.16e). With femtocell using in this network, interference problem between femtocell and macrocell or between femtocell and femtocell might happen.*

*To solve that interference problem, interference avoidance method is needed. With this kind of method, the network can automatically avoid interference problem that will happen. One of interference avoidance methods is fragmentation spectrum and it is described in this final project.*

*By fragmenting spectrum to 3 fragments, macrocell throughput increases up to 22% and femtocell throughput increases up to 29%. When spectrum is fragmented into 4 and 5 fragments, macrocell throughput is almost same with its throughput when the spectrum is fragmented into 3 fragments. In the other side, with fragmentation 4 and 5 femtocell throughput decreases 15%.*

**Key words** : *femtocell, mobile WiMAX, interference, interference avoidance*