ABSTRACT

The development of the telecommunications world seemed inevitable with the rise of the mobile users from year to year increases. This led to the birth of a new architecture in the world of communication technology to increase the user capacity and improve service quality and to keep the mobile user satisfaction. One of the new technologies in the architecture of the communications network is the birth of femtocells.

Femtocell technology is one of the micro-BTS which uses low power levels, using frequencies used officially as cellular networks, backhaul networks connected to the Internet, is used to expand the coverage and increase capacity, and installation is auto configuration. Why auto configuration? Because the operator is not possible to monitor, installing and maintaining the device on the ground that the amount would be much. The basis of this technology is due to the increasingly widespread birth of mobile users that communicate in a tough spot reached by signals from base stations, one of which is in a high rise building or in a blocked wall.

Femtocell technology have 3 methods of access to the *subscriber* (mobile users enrolled in the femtocell) and *non-subscribers* (mobile users who are not registered in the femtocell), namely : *open-access* (open access), *closed-access* (closed access), and *hybrid-access* (access to open and closed). All three of these methods has advantages and disadvantages in accessing the subscriber and non-subscriber. One is the limited ability of the access provided by the femtocell based access methods. In this final project will be compared with the channel capacity using the block diagram in the third OFDMA communications access method provided femtocells. Simulation parameters using standard LTE downlink direction for transmission bandwidth is 10 MHz.

The simulation results in this paper shows a method of closed channel capacity with greater access than the method of open access and hybrid access at 48.008 Mbps on the addition of 3 users, 77.4 Mbps at a speed of 7 $^{km}/_{h}$ and 102.3 Mbps at a distance of 5 meters from the FAP to the subscriber the voice (the target BER 10^{-3}).

Keywords : Femtocell, *open access*, *closed access*, *hybrid access*, OFDMA, *subscribers*, *non-subscribers*, LTE .