

## ABSTRACT

As the development of technology, long distance communication is no longer an exclusive thing, the need for communication is getting higher, including in the area of indoor building. The big problem experienced today is signal from the BTS degraded because of walls and concrete, so it is necessary for femtocells to maintain signal quality. One of the problems encountered in the use of femtocell itself is the emergence of interference experienced by users who are in direct range of macro base stations, it known as cross-tier interference. The next major issue that emerged from such interference is uneven throughput received by femtocell users.

One of the schemes to maximize signal quality received by users of indoor building on these types of interference issues is the self-configuration scheme. The use of reward and penalty system on the scheme make the throughput obtained by any user will be continuously monitored and eventually got better throughput above the desired value yet still fair to other.

The results obtained in this final project, the self-configuration scheme managed to increase observed user throughput when it below the desired value, and it also managed to lower the throughput that is too excessive in all bandwidth scenarios tested. Self-configuration scheme with 10MHz bandwidth becomes the most effective compared with two other bandwidth with the result when the initial throughput of less than 2Mbps, throughput increased by 6.364 times. Meanwhile, when the initial throughput of more than 2Mbps +  $U_f$ , throughput lowered 1,136 times.

**Keywords :** *cross-tier interference, femtocell, LTE, interference mitigation, SON*