ABSTRACT

Today, the growth of mobile phone users is increasing. Operators as the service provider should continue to improve service quality in line with the growth. However, sometimes the services provided by the operator are far from pleasing especially when the users enter indoor area. The number of coverage holes and low received power are disturbance in the indoor area. But now, femtocells solve the problem. However, users who frequently change the position of the femtocell transmitter device (HeNB) is causing interferences. Interferences discussed here are the interference caused by the overlapping femtocell coverage. The interferences are co-channel interference and co-tier interference. Both interferences become problems in the use of femtocells.

Various interference mitigation techniques have been widely suggested. Interference-free power and resource block allocation algorithm is one of them. This time, IFPRBA algorithm is tested with different power and the physical resource block (PRB) scenario. This algorithm is the newest and the best algorithm today to mitigate interferences caused by overlapping femtocell coverage. This algorithm also provides warranty for better throughput.

Tests conducted showed that IFPRBA algorithm is consistent in mitigating the total power of interference and improve throughput uplink user. The interference power is degrading up to 94.5% of the interference power that occurs without IFPRBA algorithm. User's uplink throughput also increase up to 2.66 times the user's uplink throughput without IFPRBA algorithm.

Key Words**:** *co-channel interference, co-tier interference, femtocell, LTE, interference mitigation, algorithm*