ABSTRACT

Along with the times, technology in the cellular sector is growing rapidly. The increase in the number of Cellular User Equipment (CUE) has resulted in an increase in the demand for capacity so that the traffic load on the eNodeB will increase. Device-to-Device (D2D) communication system is the solution, in this communication system, two devices can communicate without using eNodeB. Communication in D2D is done by sharing resource blocks owned by Cellular User Equipment (CUE) by D2D devices. However, this concurrent use of resources causes interference. Therefore, an efficient allocation scheme for CUE resources to D2D pairs is needed.

In this work, a resource allocation scheme was carried out in a single cell with a downlink communication direction. The resource allocation scheme is carried out using the Greedy algorithm with Particle Swarm Optimization (PSO) as the power allocation which is then compared with the Greedy algorithm. Then performed the calculation and analysis of the performance parameters.

Based on the simulations carried out, Greedy with Particle Swarm Optimization (PSO) as power allocation in 100 iterations produces the best performance parameters with an increase in sumrate of 0.0112%, spectral efficiency 0.0115%, power efficiency 1.049%, fairness CUE 0.085%, fairness D2D 0.0056% and total power drop 0.450%.

Kata Kunci : *Device to Device*, *Resource Block*, *Greedy*, *Particle Swarm Optimization*