ABSTRACT

Device to device (D2D) communication system is communication between two devices without eNodeB. It will be more efficient because it reduces eNodeB workload. D2D communication work by sharing resources owned by Cellular User Equipment (CUE) to D2D pair, this is called as underlaying D2D communication. Sharing resource by CUE with D2D pair causes interference occurs. This research will discuss resource allocation schemes for decreasing interference using the simulation method.

Resource allocation scheme carried out in a single cell on uplink direction using the joint greedy algorithm. This algorithm will be compared with greedy algorithm. Algorithm allocates resources using SINR in capacity form of each user as an input. Allocated resources will be added with the water filling power control method to allocate power based on channel condition

After the allocation scheme implemented, calculation and analysis of the performance parameter are carried out. This simulation shown that joint greedy algorithm with water filling power control method generate the best performance parameters. The result is $2.64\,x\,10^{8}$ bps in sumrate, 29.343 bps/Hz pin spectral efficiency, and $0.939\,x\,10^{7}$ bps/watt in energy efficiency. Beside that, this algorithm result 0.996 in fairness D2D and 0.584 in fairness eNodeB.

Keywords: *Device to Device*, *Resource Block*, *Greedy*, *Joint Greedy*, *Water Filling Power Control*