ABSTRACT

The rapid development of technology has increased the need of communication technology. This causes network traffic density at the Base Station (BS). One of the way to solve this problem is by implementing a Device to Device (D2D) communication system. D2D communication allows communication between users without passing through BS. D2D communication works by using Resource Block (RB) which is possessed by Cellular User Equipment (CUE). The use of RB simultaneously causes interference, thus an allocation scheme to minimize the interference is required.

RB scheduling simulation will be done in the uplink direction. The simulation scheme used is the Joint Greedy algorithm with a sectoring scheme where each D2D pair can only use RB from the nonadjacent CUE. In the Joint Greedy algorithm, the scheduling process is done by considering the capacity from the BS side, then it is compared to the D2D side. The results obtained will be compared with three other algorithms, namely the Joint Greedy algorithm, greedy, and greedy algorithm with a sectoring scheme.

Based on the simulations, the Joint Greedy algorithm with a sectoring scheme shows poor performance compared to other algorithms. The Joint Greedy algorithm with a sectoring scheme has a sum rate value of $1,7 \times 10^8$ bps, energy efficiency of $6,069 \times 10^6$ bps/watt, spectral efficiency of 17,001 bps/Hz, D2D fairness of 0,896, and BS fairness is 0,595.

Keywords: Device-to-Device, Resource Block, Joint Greedy, Sectoring