

ABSTRACT

Device-to-device (D2D) communication is a direct communication between two communication devices. By allowing user equipment (UE) that are close to each other to communicate directly through a link, then the transmitter (Tx) can transmit with lower power usage. Meanwhile, the receiver (Rx) section still receives the signal emitted by Tx with better quality. But this convenience raises an obstacle in the ongoing communication system, namely the disruption of cellular communications, especially if the D2D link re-uses cellular radio resources. The disturbance can be in the form of high interference from the D2D link.

In this work, a job that can reduce the appearance of interference is done. There are various test scenarios for the allocation algorithm used. These algorithms include minimum interference, joint greedy, and minimum mean greedy. Each algorithm performs three job testing scenarios. The results of the algorithm obtained will be compared with each other on each performance parameter (Data rate, spectral efficiency, energy efficiency, and fairness).

The results obtained indicate that the total average of the three simulation scenarios carried out, it is known that joint greedy has more optimal results in testing data rates, spectral efficiency, and energy efficiency. Meanwhile, the fairness test shows that minimum interference has a more optimal value. An increase in the value of the data rate at minimum interference of 0.1213 bps and minimum mean greedy of 0.0319 bps against joint greedy. An increase in the spectral efficiency value at minimum interference by 0.1212 bps/Hz and minimum mean greedy by 0.0592 bps/Hz against joint greedy. An increase in the value of energy efficiency at minimum interference by 0.1104 bps/watt and minimum mean greedy by 0.0414 bps/watt against joint greedy. On the fairness side, there was an increase in the value of joint greedy by 0.0066 and minimum mean greedy by 0.0554 against minimum interference.

Keywords: *D2D, Minimum Interference, Joint Greedy, Minimum Mean Greedy.*