ABSTRACT

One of the features of 5G technology that is being developed is device to device (D2D) communication is an important solution that allows to significantly increase network data rates and reduce traffic loads on a cellular system.

D2D communication is a feature that is able to serve peer to peer communication so that D2D partners can communicate directly without having to pass through the Base Transceiver Station (BTS) by reusing resources from the celuller user.

However, D2D communication causes significant interference in cellular networks when sharing radio resources between the two devices. So as to reduce the interference that occurs when allocating resources, an algorithm is needed to make a proper allocation of resources. In this study resource simulation will be simulated using heuristic algorithms, minimum interference algorithms and random allocation algorithms.

The algorithm will be tested on two scenarios that is variations in the number of D2D pairs and variations in cell radius distance. The value of data rate, fairness and energy efficiency obtained from the simulation results will be compared to determine the most optimal algorithm. The comparison results obtained are the heuristic algorithm has better data rate, fairness, and energy efficiency when variations in the number of D2D pairs compared to the minimum interference algorithm and random allocation algorithm so that it is suitable for use when the level of complexity is high.

Key Word : celluler, device to device, radio resource management, interference mitigation, heuristic