ABSTRACT

Device to device (D2D) communication is a vital technology in terms of future communication systems. Can increase the number of rates, coverage area and reduce network latency. However, the interference caused by the D2D communication introduction can affect the overall performance of the cellular network. The development of this telecommunication is marked by the increasing need to communicate using smartphones. With the increasing need for communication, the data traffic will be higher, which will cause problems with data rates and power efficiency. In Celular User (CU), when communicating, the device must send a signal through the Base Station (BS) or evolved Node B (eNB) in Long Term Evolution (LTE) communications which require large power.

This technology connects between devices directly without having to send a signal to the eNB. In dealing with interference problems, it is necessary to carry out resource allocation so the resources can be used simultaneously by maintaining Quality of Service (QoS) in D2D communications. Therefore, a resource allocation distribution is needed that improves the performance of the data rate, efficiency of spectral, and reduce interference. The allocation of resources is carried out on the underlying communication network. The resource allocation system is only considered in the downlink direction.

The algorithm proposed in this final project is the Hungarian algorithm. The results of this algorithm are compared with other existing algorithms such as Random Allocation and Minimum Interference. The simulation results prove that the Hungarian algorithm can show better fairness results, but the Minimum Interference algorithm is superior in summate, rate, spectral efficiency, and energy efficiency. Thus, the Hungarian algorithm cannot be the best solution.

Keyword : Device to Device (D2D), Interference Management, Resource Allocation, LTE, Hungarian.