ABSTRACT

Device-to-Device (D2D) communication has been proposed in Long Term Evolution (LTE) as an important solution to increase network throughput and reduce traffic load on the core network. D2D is a promising technique to provide wireless peer-to-peer services and increase spectrum utilization in LTE-Advanced networks. However, cellular signal transmission can cause interference on D2D communication when D2D communication uses the same resource as cellular user.

This thesis wants to manage interference by minimizing interference on D2D receiver caused by cellular user signal using Two-Phase Auction-based Fair and Interference Resource Allocation (TAFIRA) algorithm. The TAFIRA algorithm can be used to minimize interference, both on evolved Node B (eNB) and on D2D communication pair receiver while still maintaining a system sum rate and ensuring fair resource allocation between D2D communication pairs. The use of interference management technology currently uses different parameters, so it is not known which technology is better for managing interference. Therefore, This thesis compare the TAFIRA algorithm with other algorithms, namely the Minimum Interference algorithm and the Random Allocation algorithm to discuss the same research problem.

This thesis confirms that the TAFIRA algorithm can obtain a better system sum rate target than the other two algorithms. TAFIRA algorithm raises a slight increase in interference on eNB and D2D receiver. This thesis also confirms that, TAFIRA algorithm is an efficient solution for managing interference.

Keywords: Device-to-Device (D2D), Interference, Data rate, Efeciency energy, Resource allocation, TAFIRA, Random Allocation.