

ABSTRACT

Underlaying Device-to-Device (D2D) communication systems can be a solution in increasing demand for data rates that are getting higher and can reduce eNodeB workload. This communication system works by sharing resources owned by Cellular User Equipment (CUE) to D2D pair. However, one of the problems occur on the D2D underlaying communication system is interference between devices that are using same resources. Therefore, it required a resource allocation scheme to allocate resource owned by CUE to D2D pair as efficient as possible.

In this Final Project simulation of Resource Block (RB) scheduling is performed on uplink direction. The process to allocating CUE's resources to D2D pairs use join greedy algorithm with 2 another algorithm as comparison are mean greedy and greedy. The allocation process is only done on D2D side with the CUE device that has been scheduled. Interference happen caused by reusing resource are D2D transmitter (D2DTX) from CUE and eNodeB from the D2D receiver (D2DRX).

Based on the simulation conducted, the allocation scheme based on joint greedy gives good tendency in terms of data rate with average value $4,57 \cdot 10^7$ bps better 4% than the mean greedy and 7% than greedy, fairness with an average value 0.645 better 5% than mean greedy and 5% than greedy, spectral efficiency with an average value 8,46 bps/Hz better 4% than mean greedy and 7% of greedy and energy efficiency with an average value $1,89 \cdot 10^6$ bps/watt better 3% mean greedy and 7% of greedy.

Keywords: *Resource Block, Greedy, Mean Greedy, Join Greedy, Underlaying, Device-to-Device.*