

ABSTRACT

Device-To-Device (D2D) communication is a concept that allows direct communication from *User Equipment* (UE) without the need to communicate via *Base Station* (BS). D2D communication can share its access and expand the scope of *cell* which can make it easier for users to communicate. This study aims to maximize the allocation of D2D to available channels with the *reuse* channel scheme.

The designed scheme has two phases. For the first phase, each D2D pair is allocated to each available channel using the *Hungarian* algorithm. For D2D pairs that have not been allocated in the first phase, the channel *reuse* is performed using the *Hungarian* algorithm, provided that the channel conditions can be reused. After the simulation is done, it is continued to calculate the performance parameters to determine the quality of the designed system model.

Analysis of the results was carried out after the system model was simulated and the results of the performance parameters were obtained. The results show that sum rate of our system of $2,739 \times 10^8$ bps, the power efficiency of $1,091 \times 10^5$ bps/mW, spectral efficiency of 13,7 bps/Hz, the *fairness* BS of 0,665 and *fairness* D2D of 0,676.

Keywords : *Device-To-Device, Hungarian, reuse channel.*