

ABSTRACT

Commercial cellular communication technology has developed rapidly since the first generation (1G) was used by Nippon Telegraph and Telephone (NTT) in 1979 in the Tokyo city area which can be used for voice and message communication until the introduction of fourth generation Long Term Evolution (4G) technology. - LTE) in early 2002 which was finally able to provide high-speed data services. The Third Generation Partnership Project (3GPP) then introduced a new technology, namely Carrier Aggregation (CA) in order to support a wider transmission bandwidth and have good spectrum efficiency. CA is a very important technology in LTE-Advance.

In CA system, each user can use several carrier component frequencies at once in order to obtain the maximum data rate. Each carrier frequency has different fading characteristics and also different coverage area. By using the conventional mean greedy (MG) scheduling algorithm, optimal fairness is not obtained because the MG algorithm is only based on users with the smallest average CSI can be allocated the best resource block. Therefore it is proposed the use of the User Grouping scheme in this study which is applied to the Mean Greedy (MG) algorithm by using carrier aggregation on the available carriers, so that this algorithm becomes User Grouping-MG (UG-MG).

In this simulation, the observed parameters are spectral efficiency and fairness. The output of the simulation, UG-MG shows fairness value of 0,3492 which is higher than UG-G with value of 0,3475. In other hand, spectral efficiency output for UG-MG is 3,4674 bps/Hz while output for UG-G algorithm is 3,7285 bps/Hz.

Keywords: Carrier Aggregation, User Grouping, LTE-Advanced.