

ABSTRACT

MIMO - OFDMA (Multiple Input Multiple Output - Orthogonal Frequency Division Multiple Access) as a technique with high- speed data-rate which has high resistance to fading and interference . MIMO is a method that uses multiple antennas at the transmitter and at the receiver so that it can increase the channel capacity . While OFDMA is a multiple access technique that uses OFDM (Orthogonal Frequency Division Multiplexing) as a modulation technique . In the future , the number of users will increase so that the need for capacity will increase rapidly . In addition, the existing capacity in subcarrier must be provided to each user equally . The emergence of the need for increased capacity and fairness require subcarrier allocation strategy in order to create an efficient subcarrier allocation .

Greedy algorithm is a solution for efficiently allocating subcarriers to achieve capacity requirements and fairness to each user. In this final simulation subcarrier allocation with GBS 1(Greedy Base Spectral 1), GBS 2(Greedy Base Spectral 2), PF 1(Proportional Fairness 1), and PF 2(Proportional Fairness 2) which is a modified form of the Greedy algorithm in its application to the subcarrier allocation is based on spectral efficiency and proportional fairness.

The simulation results in this paper indicate that the use of GBS 2 ratio 1/4 decreased spectral efficiency 0,49 bps / Hz compared GBS 1 which generates the spectral efficiency 6,4 bps/Hz, but the use of GBS 2 ratio 1/4 increases the value of fairness index 0,0822 of GBS 1 which has a fairness index 0,931. While the application of PF 2 increases the spectral efficiency 0,28 bps/Hz of PF 1 which generates the value 5,9 bps/Hz, but the lower the value of 0,027 fairness of PF 1 which produces fairness index 0,999.

Keywords : OFDMA, MIMO, MIMO-OFDMA, Radio Resource Allocation, Greedy algorithm, Proportional Fairness algorithm.