ABSTRACT

The main characteristics of the radio channel mobile communication system is a variation of the channel changes very fast. Factors such as frequency selective fading, shadowing, and propagation losses gratly affect the signal strength received. Also, interference at the receiver side by transmitting a variety other processes in other cells produce changes in the level of system interference. Combined these factors result in variations in radio link quality in every cell. To accommodate the optimal communication, variations must be calculated to be utilized. This stretcher on the underlying implementation of the Adaptive Subcarrier Allocation channel state variations in utilization to produce optimum quality.

In this Final Project, designed an Adaptive Subcarrier Allocation system using two scheduling algorithms namely Maximum C/I and Adaptive Bit Allocation. Modeled by AWGN and Rayleigh channel type. Modulation used in the Final Project is adaptive modulation with BPSK, QPSK, 8PSK, and 16 QAM mapper. There are 6 users with scenario users has random distance and user variation distance 1 km, 1.5 km, 2 km, 2.5 km, 3 km, and 4 km.

From the simulation result, the algorithm of maximum C/I allocates more radio resources can reach ±70 subcarrier, whereas the ABA algorithm allocates radio resources only reach a maximum ±50 subcarriers. Users gain the maximum data rate with an average of 26.91 Mbps on the Maximum C/I algorithm, while the Adaptive Bit Allocation algorithm user has maximum bit rate 22.54 Mbps. Adaptive Bit Allocation allocate minimum power to each user with ±2.3 Watt, whereas Maximum C/I allocates ±3.3 Watt.

Keywords : OFDMA, maximum bit rate, power allocation, transmit power, adaptive modulation, Channel Dependent Scheduling, Maximum C/I, Adaptive Bit Allocation.