ABSTRACT

Orthogonal Frequency Division Multiple Access (OFDMA) is multiple access technology which every user used one or multi-subcarrier. However sum-rate that can be establishes is not linear as user increasing. Itôs happened because the distance and multipath influence differently to each user when signals transmitted to base station, especially for moving user.

From that reasons and mobile high speed data access needs, we have an idea to combine permutations method in MIMO-OFDMA to increase the performance. However in practice it will face multipath channel variant especially fast fading conditions to achieved it, so performance will also fluctuating. In this script simulated using MATLAB to show performance of system.

Simulation result shown that performance will influence by modulation technique, code rate and also tile type that were chosen. The best performances shown in system which chose QPSK modulation, code rate ½ and tile 3×4 at movement speed of user 0 km/h, it achieved BER 10^{-5} at SNR 12 dB. Tile 3×4 show better BER than tile 3×3 with QPSK modulation, it is achieved 10^{-5} at SNR 13 dB. Performance will decrease by increasing user movement speed.

Key words: MIMO-OFDMA, AWGN and Rayleigh channel, Alamouti and Convolution code, OFDMA 2048 FFT, Interleaver block, Fast Fading