ABSTRACT

The performance of OFDM-CDMA system is well affected by the amount of Multiple Access Interference (MAI). MAI come from other users signal interference beside the desired user signal. Multi User Detection (MUD) is one the techniques combating MAI. Parallel Interference Cancellation (PIC) is one of the MUD techniques which it’s performance close to optimum MUD.

Improvement of the OFDM-CDMA system performance can be done by implementing MUD technique which using PIC algorithm. In PIC, MAI is construct by estimation and subtracted an signal from the previous stage. This final project will discuss the improvement of system that using multistage PIC for several numbers of user in the AWGN and multi path Rayleigh fading channel environment.

The simulation result shows that the performance of OFDM-CDMA system which using PIC is improving either in the AWGN channel environment or multi path Rayleigh fading channel environment for signal to noise ratio (SNR) range between 0 to 10 dB. The two stages PIC with channel coding scheme reaching bit error rate (BER) $10^{-3}$ on SNR 9 dB for AWGN channel with 8 users load. While on AWGN + multi path Rayleigh fading channel, BER $10^{-2}$ is reached on SNR 8 dB.