

## ABSTRACT

Multipath fading phenomena and multiple access interference (MAI) become fundamental problems in wireless communication system, because causing receive signals power fluctuation that degrade system performance. One method to overcome multipath fading effect is diversity technique, that change deep fades to be shallow and operate the system on lower transmit power. The multiple access interference (MAI) can be decreased by using decorrelator at receiver, because decorrelator can reduce cross correlation value from spreading code that causing interference between users.

On previous research the method was implemented on single user case. Present, will be implemented on multiuser, so the Final Task will showing MISO diversity technique performance on WCDMA with interference from other users, and showing decorrelator performance at receiver for reducing Multiple Access Interference ( MAI ).

The research result giving BER improvement and gain diversity on WCDMA system for with or without decorrelator at transmitter through AWGN or Rayleigh fading channel by implementing diversity technique at transmitter. Gain diversity value achieved through AWGN channel is about 3 dB while though Rayleigh fading channel is about 11 dB, but those value will change if user number increase.

Beside that on  $SNR < -3$  dB condition, decorrelator performance is equal relatively with the conventional. Finally, by implementing diversity technique at transmitter and decorrelator at receiver will give better result. Besides that, right spreading code election will improve system performance because orthogonality from used spreading code can decrease interference.