ABSTRACT

3G technology available today such as WCDMA (Wideband Code Division Multiple Access) is slowly starting on the upgrade to the 4G technology. One way to upgrade the technology is to use OFDM system, where the OFDM system is introduced in 4G broadband services. The main reason to use OFDM in 4G technologies is to enhance the resilience of the system when the frequency selective fading channel and also to save bandwidth.

In this final project simulated MIMO DSTBC WCDMA system using OFDM and MIMO DSTBC WCDMA system without using OFDM. The parameters used to test the system performance is the effect of channel coding and interleaver, and a variety of user speed: 0 km / hr, 3 km / hr, 50 km / h rand 120 km / hr.

The results showed that MIMO DSTBC WCDMA system with OFDM has better performance than the MIMO DSTBC WCDMA system without OFDM to speed user different. The use of OFDM optimal for user speed 120 km / hr, where the MIMO DSTBC WCDMA system with OFDM able to achieve a target BER of 10^{-4} with Eb/No of $\pm 11.76\, dB$ while in DSTBC WCDMA MIMO system without OFDM requires Eb/No at $\pm 17.12\, dB$ to achieve the target BER of 10^{-4}. Performance of the system decreases with increasing speed user.

Keywords: 4G, MIMO DSTBC, WCDMA, OFDM