

ABSTRACT

Wide Code Division Multiple Access (WCDMA), one of the air interfaces in cellular communication system which uses only one frequency in each cell in one time. Because of this, the possibility of interference in one cell is big. The interference that can decrease the system performance is called Multiple Access Interference (MAI). One of the steps to overcome MAI is use Multi User Detection (MUD).

Decision Feedback Equalizer (DFE) is one of the sub optimum of multi user detection that is used to overcome MAI problem. DFE will detect all users one by one. DFE also uses adaptive Least Means Square (LMS) algorithm to update coefficient of each tap filter to minimize interference. In this Final Project, the performance will be perceived in the fifteen users, twenty five users, and thirty five users system. The analysis also compares the performance of conventional system and system that uses DFE.

The simulation result in system shows that system performance quite depend on the modeled channel condition. This channel model depend on the relative mean power and relative delay every tap. At the user that uses DFE with 14 interferences, the target of BER will be reached at 23 dB of SNR. The best performance is reached at 3 Km/hour of velocity, the target of BER is reached at 23.2 dB of SNR. The fifteen users system with 3 Km/hour of velocity and DFE can increase performance 99.7 % at 25 dB of SNR. In the twenty five users system with DFE, the target attainment of BER 0.001 is reached at ± 35 dB of SNR. In the thirty five users system with DFE, the target attainment of BER 0.001 is reached at ± 35 dB of SNR. The increasing of users will influence the performance of system with DFE.