

## ABSTRACT

3G wireless system is based on Code Division Multiple Access (CDMA). Wideband CDMA (WCDMA) technology is an European standard and soon become a world standard for 3G cellular system.

Power control is a radio control link function that is most important in WCDMA system. Power control is consist of two parts, they are fast power control and outer loop power control (quality control). Fast power control is used for neutralizing the fast fading effect by match the power which is transmitted from mobile station (MS) to reach the Signal to Interference (SIR) that has targeted. Outer loop power control is used for keeping the quality in terminology of Frame Error Rate (FER). This is done by comparing measured FER value with targetted FER value and using this differences to manage SIR target that is later be used by fast power control.

In this final Task, outer loop power control will be simulated and the change that happened in term of MS transmit power, SIR, FER, and capacities with variable arrangement of  $\Delta\text{SIR}_{\text{target}}$  and speed to look for best quality condition. Closed loop power control will also be simulated to compare the performance between both power control algorithm.

From simulation results, visible that quality will decrease by the increasing of speed. Closed loop power control algorithm more suited for tracking performance of user with slow speed, and outer loop power control algorithm more suited for tracking performance of user with middle speed to high speed. At system with outer loop power control, the best quality condition yielded at  $\Delta\text{SIR}_{\text{target}}$  0.5 dB.