

ABSTRACT

In uplink direction WCDMA FDD system, user can send several channels with different bit rates at the same time. It can be happened because of orthogonal spreading and Code multiplex. In orthogonal spreading, every channel is spread by Orthogonal Variable Spreading Factor (OVSF) code with different length and mutual orthogonal and then summarize. This summary process called Multiplex Code. Then in complex multiplier, data are multiplied with complex scrambling which is yielded from Gold Long Code. Hence, WCDMA receiver system must be able to synchronize those codes simultaneously.

This Final Project will discuss codes synchronization process on scrambling code and spreading code in receiver by simulating the processes with Matlab Simulink. The discussion in this Final project is focused at code synchronization system modeling in WCDMA FDD. Synchronization process must be able to synchronize spreading code and scrambling code. Synchronization must through 2 processes. The processes are acquisition process to define early phase of the code to synchronize transmitter and receiver and tracking process to keep the code still unchanged between transmitter and receiver. Acquisition system which is used is Serial Search, while the tracking system is Non Coherent Delay-Locked Loop (DLL).

Simulation results show us that acquisition and tracking performance is very sensitive to interference and noise. With the increase of interference and noise will make the acquisition and tracking performance become worse. Receiver system performance is more invulnerable from noise, whether from channel or interference, if we use long period integration.