

**Masters Thesis Defense**  
**Synchronization and Equalization of Single Carrier Frequency Division Multiple**  
**Access**

**By**

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**ABSTRACT OF THE THESIS**

With rapid growth in number of wireless users in past decade, enhancement in the capacity and the data rate of wireless networks are required. Third generation partnership project (3GPP) started a project named LTE (Long Term Evolution) in collaboration with major telecommunication companies with a aim to improve wireless mobile standards and to cope with future requirements. SC-FDMA has emerged as a strong candidate to use as a uplink in LTE systems because of its low peak average power ratio (PAPR). System with low PAPR doesn't require high linear power amplifier which in turn reduces the energy consumption thus increases the efficiency of mobile terminals. This thesis gives an introduction to SC-FDMA systems and then investigates and presents a technique for synchronization and equalization of SC-FDMA systems. Synchronization and equalization is important for receiver to successfully demodulate a received data. Timing synchronization is used to determine beginning of a data and the symbol boundaries whereas frequency synchronization is used to synchronize local oscillator to a carrier frequency. Equalization is use to mitigate the effects of channel on the received data using several different channel estimation technique.

**----All are Welcome---**