

## ABSTRACT

Third Generation Partnership Program Long Term Evolution or 3GPP LTE is a wireless technology which is designed to provide Wide-Area Connections and high speed data rate. 3GPP LTE uses communication technique called as multicarrier Orthogonal Frequency Division Multiple Access (OFDMA) to accommodate multiple users simultaneously. OFDMA is multi carrier technique which separates channel bandwidths that is used by a number of carriers, and each carrier is modulated with low speed. But, in the other side, there is another communication technique that can be used to LTE technology: Single Carrier Frequency Division Multiple Access (SC-FDMA) that uses single carrier modulation. Basically, OFDMA and SC-FDMA system are equal. The difference is that SC-FDMA system uses adding operation: FFT in the transmitter and IFFT in the *receiver*.

In this final project, the analysis are about the differences of PAPR value between SC-FDMA and OFDMA systems using different number of subcarrier. Beside that, the analysis of BER at SC-FDMA and OFDMA systems using different number of users.

The simulation results show that SC-FDMA system's PAPR has lower value than OFDMA system (1.75 dB) with 32 user assumption. PAPR has higher value when the number of subcarriers are increasing, from 128 to 512 or from 512 to 2048. Beside that, the value of BER is also increasing when the number of subcarriers are increasing (from 128 to 512 to 2048). In multiuser scenario, BER has higher value if the number of the users (from 4 to 8 to 16 to 32) are increasing. This result goes for both OFDMA and SC-FDMA.

Keyword: *3GPP LTE, SC-FDMA, OFDMA, PAPR, BER, Rayleigh Fading.*