

ABSTRACT

The demand of high data rates, wide bandwidth, and high mobility is increasing in current mobile communication systems. Long Term Evolution is one of the technologies that can provide such services. One of the techniques used in LTE is Orthogonal Frequency Division Multiple Access. OFDMA is a multicarrier technique which is chosen because it has a high resistance to frequency selective fading channel. This is due to the subcarrier in OFDMA system which is made mutually orthogonal with each other. However OFDMA system has one drawback, high Peak to Average Power Ratio, causing the efficiency of power amplifier to be reduced. So for uplink scheme LTE uses SC-FDMA technique that has same complexity but has better PAPR performance.

The technique proposed in this thesis is the use of subcarrier mapping IFDMA and LFDMA with pulse shaping filter Raised Cosine and Root Raised Cosine used in SC-FDMA system. Subcarrier mapping is the process of allocating the symbol into subcarrier. Subcarrier mapping scheme is different according to which technique is used. While pulse shaping filter is a process of convolution with the filter coefficient according to the roll off factor filter is used.

The simulation results in this thesis suggest that on target of CCDF 10^{-3} and BER 10^{-5} , subcarrier mapping IFDMA and pulse shaping filter RRC has better performance compared to LFDMA and RC filter. Using roll off factor=0,1;0,4 and 0,6 values of PAPR were obtained 6,35 dB, 3,438dB, and 3,4 dB. And values of EbNo were 15,613 dB, 14,638 dB, and 15,078 dB.

Keywords: LTE, SC-FDMA, OFDMA, *pulse shaping filter, subcarrier mapping*