

PERFORMANCE ANALYSIS OF WIDE BAND MC-CDMA SYSTEM USING ADAPTIVE EQUALIZATION WITH RLS AND TV-LMS ALGORITHM

The next generation of mobile communication systems, also known as third generation or 3G systems, will be able to provide a whole variety of voice, data and video services to the user. 3G system will operate in the 2 GHz region and provide data rates of up to 2 Mbps. So that can be able to serve the transfer of high-speed data ,for example sports highlights and movie trailers as real time for user.

Technology of conventional CDMA (Code Division Multiple Access) have limitation in the case of capacities because interference between user, bad spectral efficiency and loss propagation. MC-CDMA (Multi Carrier Code Division Multiple Access) technology developed to repair the problems, by joining CDMA as multiple access technique and OFDM as modulation technique of multi carrier. MC-CDMA more resistance to multipath propagation, ISI, and frequency selective fading, and also efficient in usage frequency spectrum. In this final task will be simulated to compare performance of adaptive equalizer as one of technique to repair performance MC-CDMA receiver. Adaptive equalizer will be compared use RLS (Recursive Least Square) and TV-LMS (Time Varying Least Mean Square) algorithm, by using Wideband MC-CDMA system at direction of downlink.

The result indicates that by using 16 sub carriers have better performances than 4 and 8 sub carrier. TV-LMS algorithm have better performance than RLS with repair of BER equal to $1,5 \times 10^{-2}$. While with existence of user movement will result doppler spread where at doppler 0 Hz, MC-CDMA have better performance compared to doppler 500, 1000, and 2000 Hz.

Key Words: MC-CDMA, Adaptive Equalizer, Time Varying LMS, RLS