ABSTRACT

Multicarrier Code Division Multiple Access (MC-CDMA) *is a solution for high speed data transfer and realiable system quality*. MC-CDMA *have advantage that robust to frequency selective fading and Multiple Access Interference* (MAI) *so can be used for system that need high bandwidth and high capacity of users. The conventional* MC-CDMA *system using Discrete Fourier Transform* (DFT) *still has flaws, there are high Peak to Average Power Ratio* (PAPR) *and low mitigation to interference.*

This final project will analyze MC-CDMA *using Discrete Wavelet Transform* (DWT) *instead of the Discrete Fourier Transform* (DFT). *The different that* DWT *have is not requiring the use of cyclic prefix* (CP) *to mitigate intersymbol interference* (ISI). DWT MC-CDMA *and* MC-CDMA DFT *will be tested in multipath Rayleigh Fading channels to analyze which system has a better quality with the parameters of the test are the* BER *and* PAPR. *Computation time will be analyzed to consider the system complexity level.*

The simulation results showed that MC-CDMA *system* DWT *better quality than* DFT MC-CDMA. *When the user's speed is 3 km/h, it needs* SNR ≈ 12.66 dB *to achieve* BER 0.0001 *or repaired* ±3.24 dB. *When the user's speed is* 100 *km/h, it needs* SNR ≈ 20.3 dB *to achieve* BER 0.0001 *or repaired* ±3.85 dB. *The value of* PAPR *in* DWT MC-CDMA *at least* 3.34 dB *lower than the* DFT. *However,* DWT MC-CDMA *has disadvantage that the level complexity higher than* DFT MC-CDMA *with computation time* 0.2978 *seconds longer.*

Keywords: **MC-CDMA, OFDM,** *Wavelet, Fourier, Cyclic Prefix*, **PAPR.**

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