

## ABSTRACT

Today's the increasing of usage radio frequency claim various effort to increase multiplexing and multiple access technique. Multi Carrier Code Division Multiple Access (MC-CDMA) is one of multiple access technique by using multicarrier spread spectrum with Orthogonal Frequency Division Multiplexing (OFDM) modulation. MC-CDMA technique form as CDMA with OFDM modulation, but spreading in frequency domain. The system has proven can be able to improve CDMA conventional system in a condition of channel mobile communication and also has advantage in handling multipath fading.

By applying combining technique to MC-CDMA receiver hence can improve the performance. As the target of this research is to know the performance of MC-CDMA system at condition multipath channel which distributed of Rayleigh and addition of noise AWGN by comparing use four combining technique that is : ORC, EGC, MRC and MMSEC. Analysis simulation is presented by using software Matlab 7.0.

Simulation results in case for single user shown that MC-CDMA system with 64 subcarriers can reach BER  $10^{-3}$  when SNR 24 dB with MMSEC, better than 4,25 dB compared with MRC, better than 4,75 dB compared with EGC and better than 7,25 dB compared with ORC.

In case for 32 users and SNR is specified on 26 dB, MMSEC is yielding BER about  $10^{-2.577}$ . MRC is yielding BER about  $10^{-1} \approx 0,1$ . EGC technique is yielding BER about  $10^{-1.05}$  and ORC technique is yielding BER about  $10^{-1.77}$ . In case for multi user each combining technique incapable for reaching BER  $10^{-3}$ .

Inferential thereby MMSEC technique be able to reach best performance in case for single user and multi user.

Key Words : MC-CDMA, Combining Technique