ABSTRACT

The usage of MC-CDMA system as candidate for next generation now become popular. In communication system generally have 3 component, there are transmitter, receiver, and transmition media (channel). MC-CDMA system, in the receiver side need combiner block that usefull to restoring signal that received. There are many kinds combining techniques that have been developed. MMSEC (Minimum Mean Square Error) is one of the best method for combining techniques. In the implementation, MMSEC scheme was done using Wiener Filter. Next, Adaptive Combining became interesting alternative, it is caused by the weakness from Wiener Filter that can not produce coefficient that can change (adaptive).

On this final project the comparation between MMSEC scheme and Adaptive Combining with LMS (Least Mean Square) in Downlink Channel MC-CDMA System will be analized. Whereas the analyze done in the worst condition using fading channel modelling that have Rayleigh distribution. The purpose are to known performance from both of them, MMSEC and LMS algorithm. Parameter of performance that will be compared are BER (Bit Error Rate) and SNR (Signal to Noise Ratio), considering only voice service that will be simulated. Beside of that, the simulation also looking for the influence of subcarrier to system performance.

From the result using 64 subcarrier, can be obtained for AWGN channel, MMSEC scheme be able to achieve BER = 10^{-3} when SNR = 8,2 dB. On the other hand, by using adaptive combining with LMS algorithm can achieve BER with in SNR = 7,4 dB. The meaning is system had improvement of performance about 0,8 dB. When through fading channel that contain of Rayleigh distribution, LMS scheme still have good performance than MMSEC scheme. For the same subcarrier, 64 subcarrier, LMS algorithm have more good performance about 1 dB.