ABSTRACT

Channel estimation to be used as one of many way to develop reliable communications system. Using channel estimation technic, it can be expected that error rate of data recovery can be minimized. So that, the demand of wireless communication system which is capable to provide high BER performance, low power requirement, and high bandwidth efficiencies can be realized.

This thesis did DCTI-CE (Discrete Cosine Transform Interpolation-Based Channel Estimation) Method testing, as one of many various Channel estimation method, in MIMO-OFDM system. The performance of this channel estimation method is tested under model system simulation-based on mathlab 7.0.1 in multipath fading rayleigh and AWGN environment.

Computer simulation result showed that adding zero padding in MIMO-OFDM system, can be caused performance degradation. But, DCTI-CE –ML method still given reliable performance compared with valenti, about 2,5 dB until 3,4 dB in BER   performance from 10^{-2} untill 10^{-4}. In addition, computer simulation result give the same pattern of result when the system is tested on the various user movement speed. BER performance from DCTI-CE-ML method still can be maintained, although channel condition progressively fast fading. On the other hand, valenti channel estimation method exactly experienced performance degradation especially when the user moved on 43.2 kmph. This method just only capable to reach BER 10^{-1} at 16 dB, whereas in the same power this method can reach BER 10^{-5} at 10 kmph. The similar result was also showed when the system be tested with using different number of subcarrier. DCTI-CE method performance increasingly improve along with the increase of number of subcarrier.