ABSTRACT

Multiuser Detection is the most important aspect on *DS-CDMA* system. The capacities of DS-CDMA with the conventional receiver limited by *multipath fading*, *Multiple Access Interferensi (MAI)* problem, and *near-far* problem. This research study the performance of *MUD decorrelator* compared to a conventional receiver at perfect synchronization condition and also imperfect synchronization, consequence the saturation value of *decorelator* is also increase, it is mean that *decorelator* system have a good performance to *error synchronization*.

Rake Receiver used to overcome the problem of *multipath fading* and *decorrelator detector* to overcome the problem *MAI. Decorrelator detector* performance limited by uplink direction and perceived with the computer simulation posed with the graph of *Bit of Error Rate (BER)* to *Signal to Noise Ratio (SNR)* and *BER* to *error synchronization (*$\frac{Tc}{20}$*).* In this simulation used synchronize *DS-CDMA* system and *BPSK* modulation, that transmitted to canal with *multipath fading* and *Additive White Gaussian Noise (AWGN)* characters on the receiver.

At perfect synchronization, *decorrelator detector* better than conventional performance, goodness in addition of *SNR* and also speed of user, performance of *decorrelator detector* still better than conventional during its error synchronization below dot saturation value. Performance of *Decorrelator detector* will much the same or can be worse than conventional if the error synchronization increased again.