

ABSTRACT

In CDMA system, each user is known as separate of signal set, where other users are known as interferer or more familiar with Multiuser Interference (MUI) . If number of interferer are increase, then quality of receive signal will decrease. Beside that, quality of receive signal is influenced by condition of transmission channel too. Multipath fading channel can causes kind of distortion like Intersymbol Interference (ISI) and Intercarrier Interference (ICI) which can disturb transmission signal.

To reduce influence of MUI, in this Final Project is used frequency-interleaver in transmitter MC-DS-CDMA system. Then, in receiver is used equalizer to overcome noise, ISI and ICI. The equalization method use Minimum Mean Square Error (MMSE) Equalizer with *Least Mean Square* (LMS) adaptive algorithm.

The process of system performance analysis is observed in two parameters, there are SNR (*Signal to Noise Ratio*) and BER (*Bit Error Rate*). From simulation result can be concluded that when number of user 8, without frequency-interleaver be able to achieve $BER = 10^{-4}$ when $SNR \pm 22,1$ dB. Then, with frequency-interleaver system performance will improve ± 3 to 6 dB every increasing of *Spreading Factor frequency-interleaver*. In equalization process, for single user case, step size 0,001 has best performance than other.

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