

ABSTRACT

Multi-Carrier Direct Sequence Code Division Multiple Access (MC DS CDMA) system is a technique of combining multiple access technique variant with Orthogonal Frequency Division Multiplexing (OFDM). The use of MC DS CDMA can combine the advantage from CDMA which anti-jamming (persist in jamming) with OFDM that has efficient bandwidth. Like single carrier CDMA, this technology is so sensitive from interference or Multiple Access Interference (MAI) that exist because of orthogonal thing from each code that is used imperfect or semiorthogonal.

In this Final Project writer reduce effect of MAI using multiuser detection (MUD) technique. This technique can divide signal from each user that is received by receiver. The use of MUD Minimum Mean Square Error (MMSE) and Parallel Interference Cancellation (PIC) is expected can reduced the effect of MAI. We evaluate the performance by taking into account Bit Error Rate (BER) versus Signal to Noise Ratio (SNR) and User Mobility.

The result from simulation using Matlab software, the use of MUD MMSE and PIC make performance better which has 5.9 dB better result than before in 10^{-4} mark of BER. The result of this research conclude before adding MUD, system can reach BER 10^{-4} at SNR 15 dB dB and system with MUD can reach BER 10^{-4} at SNR 9,9 dB. And from this simulation that is done based on change of number of subcarrier, speed of user, and number of user can be obtained

Keywords: MC DS CDMA, MAI, MMSE, PIC