

Abstract

MC-CDMA System (Multi-Carrier Code Division Multiple Access) is a combination of CDMA *spread spectrum* technology with OFDM *multicarrier* techniques which consider *bandwidth* efficiency. On wireless communication, the received signal is amount of the signal from reflection, diffraction and signal distortion caused multipath channel effect. Multipath channel, every time can change because user movement. For minimize delay spread influence cause symbol received, it means *Inter Symbol Interference* (ISI), MC CDMA use cyclic prefix every data symbol. Cyclic prefix length is chosen longer than *root mean square* value from delay spread, so *Inter Symbol Interference* (ISI) can be minimized but multipath delay channel always change cause user movement and will cause delay spread value is also changed. Therefore, we need to know cyclic prefix length value is adaptive with estimation of variation delay spread channel value because user movement to be got the performance of system which doesn't only minimization *Inter Symbol Interference* (ISI) but also minimization degradation of system efficiency.

The result of simulation show that the usage of adaptive cyclic prefix length on MC-CDMA system can work effectively, influenced by some of factors : user speed, *bitrate*, and amount of sent symbol every frame. Adaptive cyclic prefix period depend on amount symbol period every frame. Adaptive cyclic prefix period must be smaller from *coherence time* every user speed of 0, 3, 60, 100 km/hours. The usage of adaptive cyclic prefix can reach 10^{-3} BER value on 12 dB SNR while cyclic prefix with not adaptive can reach same BER value on 15 dB SNR if the adaptive cyclic prefix work effectively if adaptive cyclic prefix period smaller than *coherence time*.

Key words : MC_CDMA, ISI, cyclic prefix, adaptive.