

ICI SELF CANCELLATION TECHNIQUES IN OFDM SYSTEM

SUBHASH CHANDRA, SHILPI GUPTA AND U. D. DALAL

ECED, S. V. N. I. T., Surat, Gujarat, India

Abstract

Orthogonal frequency division multiplexing (OFDM) system is very sensitive to carrier frequency offset. The performance of the OFDM system degrades due to this frequency offset caused by frequency mismatch between the transmitter and the receiver, and Doppler shift. The frequency offset results in the introduction of ICI in the OFDM system. In this paper, we analyze ICI self cancellation techniques to reduce the effect of ICI in multipath scenario. In ICI self cancellation technique, one data symbol is mapped on two sub-carriers with different weighting coefficient and the selection of weighting coefficient is carefully so the ICI signal within two sub-carriers are cancelled by each other. The performances of ICI self cancellation techniques are analyzed in terms of bit error rate (BER) and carrier to interference ratio (CIR). The simulation results show that improvement of BER and CIR is different for using different weighting coefficients and the improvement in CIR of Symmetric Data Conversion Scheme (SDCS) is better compare to other techniques at lower normalized frequency offset.

Keywords: OFDM, Inter carrier interference (ICI), ICI Self-Cancellation, BER, CIR etc.