

Abstract

Ehab Farouk Badran

Linear Companding Transform for the Reduction of Peak-to-Average Power Ratio of OFDM Signals

A major drawback of orthogonal frequency-division multiplexing (OFDM) signals is their high peak-to-average power ratio (PAPR), which causes serious degradation in performance when a nonlinear power amplifier (PA) is used. Companding transform is a well-known method to reduce PAPR without restrictions on system parameters such as number of subcarriers, frame format and constellation type. Recently, a linear nonsymmetrical companding transform (LNST) that has better performance than logarithmic-based transforms such as μ -law companding is proposed. In this paper, we propose a new linear companding transform (LCT) with more design flexibility than LNST. Computer simulations show that the proposed transform has a better PAPR reduction and bit error rate (BER) performance than LNST with better power spectral density (PSD), an excellent BER performance can be achieved by the proposed transform with small input backoffs (IBO) to the power amplifier.