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

**Abstract**

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 (CT) 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 -law companding was proposed. In this paper, a new linear companding transform (LCT) with more design flexibility than LNST is proposed. 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).

**Index Terms**—Companding transform (CT), linear companding transform (LCT), nonlinear power amplifier (PA), orthogonal frequency-division multiplexing (OFDM), peak-to-average power ratio (PAPR).