عنوان مقاله:

PAPR Reduction in OFDM Systems: Performance Evaluation of Zadoff-Chu Matrix Transform

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خلاصه مقاله:

Orthogonal frequency division multiplexing (OFDM) is a well-known multichannel transmission approach in wired and wireless communications. The OFDM technique has been extensively used in many telecommunication devices for its high bit rate, high spectral efficiency, and its strong resistance to frequencyselective fading. One of the main problems of an OFDM signal is the large dynamic range, which is called the peak-to-average power ratio (PAPR). An OFDM signal with the high PAPR is clipped during passing through a nonlinear power amplifier and consequently, the bit error rate is increased. In this work, we investigate the performance of Zadoff-Chu matrix transform (ZCMT) in both pre-coding and post-coding schemes to decrease the high PAPR of the OFDM signals. We show that the serial combinations of two ZCMT and IFFT matrices, with the same dimensions, virtually cancel the effect of each other. In this circumstance, the resulted signal is a single-carrier and its PAPR will be the same as the PAPR of the baseband modulated symbols. This point isproved by mathematical analysis and confirmed by simulation results. The notable results are obtained and compared with the PAPR of an original OFDM signal, Walsh-Hadamard and discrete cosine .pre-coded signals

کلمات کلیدی:

PAPR; OFDM; ZCMT; Pre-coding; Post-coding