

PAPR Reduction of OFDM Signals Using Hybrid PTS Technique in Combination with Clipping

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Abstract:

Orthogonal Frequency Division Multiplexing (OFDM) is an attractive and promising technique for fourth generation wireless communication. Peak-to-Average power ratio (PAPR) is a major drawback in the application of OFDM communication. It leads the power amplifier into a nonlinear region operation resulting into loss of data integrity, which can reduce system efficiency. As such, there is a strong motivation to find techniques to reduce PAPR. Partial Transmit Sequence (PTS) is an attractive scheme for this purpose. Also, the clipping scheme is one of the well known nonlinear PAPR reduction techniques, where the amplitude of the time domain signal is limited to a given threshold. In order to solve the high PAPR problem in high speed wireless system, a hybrid PAPR reduction method is produced in this paper. By using both PTS technique that combines two traditional PTS partitioning methods (adjacent with interleaved) and hybrid with clipping technique. The simulation results show that our enhanced hybrid technique achieves better PAPR reduction performance compared to the conventional PTS sub-blocks partitioning methods. As well as, the enhanced technique is better in PAPR reduction performance than pseudorandom (PRP-PTS) scheme which, as argued in the literature, can achieve the best PAPR reduction performance among the PTS techniques. Furthermore, the PRP sub-block partition PTS scheme is reported to be difficult to design.