PTS Method with Combined Partitioning Schemes for Improved PAPR Reduction in OFDM System

Zeyid T. Ibraheem, Md. Mijanur Rahman, S. N. Yaakob,

Mohammad Shahrazel Razalli, F Salman, Kawakib K. Ahmed

Abstract:

Although orthogonal frequency division multiplexing (OFDM) is an efficient wireless transmission system, it suffers from a crucial drawback namely high peak-to-average power ratio (PAPR) that limits transmitter power efficiency. Thus, different PAPR reduction algorithms have been introduced. Partial transmit sequence (PTS) is the most attractive solution which can provide good PAPR reduction performance without distortion. In any PTS system, partitioning of the OFDM frame into disjoint sub-blocks is a significant step. Out of the existing partitioning techniques, adjacent partitioning (AP) is a fairly simple partitioning scheme achieving efficient PAPR reduction performance. This paper presents an enhanced PTS approach that combines two PTS partitioning schemes, adjacent and interleaved partitioning, in order to effectively reduce the PAPR of OFDM systems. With an aim of determining the effects of length variability of adjacent partitions, we performed an investigation into the performances of a variable length adjacent partitioning (VL-AP) and fixed length adjacent partitioning in comparison with the enhanced PTS scheme. From the various computer simulation results with different types of modulation, we confirmed that the enhanced PTS method offers better PAPR reduction performance compared to adjacent partitioning for fixed and variable length which itself is based on PTS scheme considered efficient in PAPR reduction.