Performance of PTS Techniques with Varied Partition Size in PAPR Reduction of OFDM System

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Abstract:

Orthogonal frequency division multiplexing (OFDM) is a promising modulation technique for transmitting large amounts of digital data through radio waves. One major drawback in OFDM communication is peak-to-average power ratio (PAPR). Mainly because of the nonlinearity of the high power amplifier, these results in high out-of-band radiation, inter-carrier interference, and bit error rate performance degradation. Partial transmit sequences (PTS), an attractive technique of PAPR reduction, provides significant PAPR reduction performance for (OFDM) signals. It essentially involves partitioning the OFDM data frame into disjoint sub blocks. Adjacent partitioning (AP) scheme can be regarded as the best of the existing partitioning schemes when PAPR reduction performance and cost are considered together. In this paper, we study the impact of the size of PTS partitions on the performance through varying the size of the disjoint sub-blocks partition and comparing the PAPR reduction performance of three well known sub-block partitioning schemes namely Adjacent Partitioning (AP), Interleaved Partitioning (IP) and Pseudorandom Partitioning (PRP). Simulation results showed that performance of these PTS schemes largely depends on the chosen size of the partitions.