

PAPR Reduction of FBMC Using Sliding Window Tone Reservation Active Constellation Extension Technique

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Abstract : The high Peak to Average Power Ratio (PAR) in Filter Bank Multicarrier with Offset Quadrature Amplitude Modulation (FBMC-OQAM) can significantly reduce power efficiency and performance. In this paper, we address the problem of PAPR reduction for FBMC-OQAM systems using Tone Reservation (TR) technique. Due to the overlapping structure of FBMC-OQAM signals, directly applying TR schemes of OFDM systems to FBMC-OQAM systems is not effective. We improve the tone reservation (TR) technique by employing sliding window with Active Constellation Extension for the PAPR reduction of FBMC-OQAM signals, called sliding window tone reservation Active Constellation Extension (SW-TRACE) technique. The proposed SW-TRACE technique uses the peak reduction tones (PRTs) of several consecutive data blocks to cancel the peaks of the FBMC-OQAM signal inside a window, with dynamically extending outer constellation points in active(data-carrying) channels, within margin-preserving constraints, in order to minimize the peak magnitude. Analysis and simulation results compared to the existing Tone Reservation (TR) technique for FBMC/OQAM system. The proposed method SW-TRACE has better PAPR performance and lower computational complexity.

Keywords : FBMC-OQAM, peak-to-average power ratio, sliding window, tone reservation Active Constellation Extension

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