

PAPR Reduction of a Universal Filtered Multicarrier Using a Selective Mapping Scheme

The new generation of wireless communication systems involves several different technologies. The universal filtered multicarrier (UFMC) is one of these technologies. UFMC supports various numerology designs; however, the high peak to average power ratio (PAPR) is a major limitation faced by designers. Therefore, diverse approaches have been introduced, such as amplitude clipping, tone reservation, and active constellation extension, to mitigate the PAPR problem. These algorithms produce significant degradation in terms of bit error rate or power consumption. Another proposed solution is multiple signal representation schemes, which have promised to conserve bit error rate performance without power waste. Selected mapping is a multiple signal representation technique that reduces the PAPR without bit error degradation. This paper focuses on integrating the selected mapping method with the UFMC. Simulation results show that the integrated algorithm presents better PAPR performance: the PAPR was reduced by 2.1 dB and 1 dB for UFMC and CP-OFDM, respectively, without bit error rate degradation.