

Neural Network Based Windowing Scheme to Maximize the PSD for 5G and Beyond

Windowing and filtering of the OFDM-based waveforms have been considered as the new trend in waveform design for beyond 5G systems. Different types of windows and filters have been suggested to overcome the inherited limitations of the OFDM. The first part of this paper is suggesting and comparing the performance of several neural networks (NNs) in calculating the best window from a list of 19 windows to achieve the required power spectral density (PSD) subjected to the acceptable adjacent channel leakage ratio (ACLR) and has proved that with only few epochs, we can get great accuracy with error rate in the order of 10^{-7} . The second part is going a step further in using the selected window in the first part in the UFMC system and calculate the PSD and the bit error rate (BER) resulted from that and it shows huge improvement over some well-known windows.