

Performance comparison of Wavelet Packet Modulation and OFDM for multipath wireless channel

In comparison to orthogonal frequency division multiplexing (OFDM), wavelet packet modulation (WPM) offers much lower side lobes in transmitted signal, which reduces inter-carrier interference (ICI) and narrowband interference (NBI). It is also spectrally efficient since it does not utilize cyclic prefix (CP), nevertheless, it requires an efficient equalization technique to counter the inter symbol interference (ISI) and ICI created by the channel. In this paper, performance comparison of OFDM and WPM for several multipath wireless channels is presented. We propose a novel application of zero-forcing (ZF) and minimum mean square error (MMSE) algorithms as time-domain channel equalization techniques for WPM systems. It is shown that, for a multipath wireless channel, WPM using MMSE-equalizer has a better bit error rate (BER) performance as compared to ZF-equalizer in WPM, as well as OFDM system.