

Channel Estimation and Equalization Techniques for ASK-OFDM in Frequency Flat and Selective Slow Fading Channels

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ABSTRACT

The work details the study of channel estimation and equalization techniques for the newly proposed ASK-OFDM. Frequency flat and frequency selective slow fading channels are the two most common channel models that are encountered in the wireless environment. The performance of ASK-OFDM when passed through these channels is evaluated and compared to that of conventional QAM-OFDM. The already existing frequency-domain channel estimation and equalization methods for QAM-OFDM are analyzed and investigated for their applicability in the case of ASK-OFDM. It turns out that frequency-domain channel estimation and equalization are not applicable to the case of ASK-OFDM. As a result time-domain channel estimation and equalization methods are proposed for ASK-OFDM and their performance is compared with the frequency domain channel estimation and equalization methods of QAM-OFDM. The results indicate that the MSE and BER performance of time-domain channel estimation and equalization techniques of ASK-OFDM is comparable to that of QAM-OFDM in frequency flat slow fading channels. In frequency selective slow fading channels, BER and MSE performance is similar to QAM-OFDM when multipath delay is short but degrades when it becomes longer.