Abstract

The objective of this paper is to compare the performance of coherent and non-coherent modulation schemes with the use of error correcting codes and Artificial Neural Network (ANN) assisted equalization as an aid to Maximal Ratio Combining (MRC) in order to improve bit error rate (BER) values of demodulated signals in wireless channels. The wireless channels are assumed to have both Gaussian and multipath fading characteristics. The work mainly focuses on the performance check of coherent and non-coherent modulation schemes in Rayleigh fading channel. Modulation technique used in this work are Bipolar Phase Shift Keying (BPSK), which is a coherent scheme and Differential Phase Shift Keying (DPSK), which is a non-coherent scheme in Gaussian and multipath Rayleigh fading channels. The work adopts a few error correction codes and the use of ANN block as part of a MRC set-up and is tested under SNR variation between -10 to 10 dB in coherent and non-coherent Gaussian and multipath fading channels. In order to demonstrate the advantages of modulation schemes that do not require phase synchronization, BER performances of BPSK are compared with the corresponding differential PSK modulation (DPSK).
References


Index Terms

Computer Science Wireless

Keywords

AWGN, Rayleigh, MRC, ANN, Block Codes, BPSK, DPSK