

A Non-Uniform DMT Transceiver for Noise Reduction in Zero Forcing Equalization

Zero-forcing is a linear equalization technique, with the advantages of simplicity and computational efficiency, and the disadvantage that it can amplify noise in a communication channel. In this paper, we analyze the performance of a nonuniform discrete multitone (DMT) transceiver, having a Daubechies wavelet filter bank transmultiplexer used to reduce the increase in channel-noise. It is shown that for a non-ideal channel, the transceiver's bit error rate (BER) can significantly deteriorate due to inter-channel crosstalk. We also propose a modification by reducing the symbol rate in the sub-band having the maximum number of channel samples of lower magnitude. Matlab simulations using digital subscriber line (DSL) channel show improvement in BER performance of the ideal non-uniform DMT in comparison with a conventional DMTsystem