

A Non-Uniform DMT Transceiver for Multipath Power-Line Channel in the High Frequency Range

A reliable and high speed communication system over the low voltage distribution power-lines, necessitates a robust modulation technique, such as discrete multitone (DMT). Power-lines represent a harsh, noisy and multipath channel, resulting in severe signal attenuation and inter-symbol interference (ISI). DMT being a multi-carrier modulation technique involves much simpler zero-forcing channel equalization, with the drawback that it enhances additive channel noise. A non-uniform DMT transceiver having dyadic wavelet filter bank can be used to reduce the channel-noise amplification problem. In this paper the bit error rate (BER) performance of the non-uniform DMT transceiver is analyzed in two power-line reference channels, and compared with the performance of a conventional DMT system. It is shown that the non-uniform DMT transceiver gives some improvement in BER over the conventional DMT system in identical channel and noise conditions