

Abstract

Power-line networks are widely used today for broadband data transmission. However, due to multipaths within the broadband power line communication (BPLC) systems owing to stochastic changes in the network load impedances, branches, etc., network or channel capacity performances are affected. This paper attempts to investigate the performance of typical medium voltage channels that uses Orthogonal Frequency Division Multiplexing (OFDM) techniques with Quadrature Amplitude Modulation (QAM) sub carriers. It has been observed that when the load impedances are different from line characteristic impedance channel performance decreases. Also as the number of branches in the link between the transmitter and receiver increases a loss of 4dB/branch is found in the signal to noise ratio (SNR). The information presented in the paper could be useful for an appropriate design of the BPLC systems.

Keywords

Communication channel model, Power-line communication, Transfer function, Multipath, Branched network, OFDM, QAM, performance evaluation