

# Performance Analysis of Broadband Power Line Communications with OFDM Transmission

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**Abstract**—Power line noise is significantly affects on the bit error rate performance of broadband power line communications. The channel model is affected by stochastic attenuation and deep notches which can lead to the limitation of the channel capacity and achievable data rate. In this paper, we analyze the bit error rate (BER) of orthogonal frequency division multiplex (OFDM) using binary phase shift keying (BPSK) modulation technique. The channel characteristic is assumed to be generalized broadband power line channel model and the noise behavior is modeled according to Middleton class A, which is contrast to the other wireless channel and power line communications (PLC). Using central limit theorem, the noises on each sub-carriers are behave as Gaussian noise. Bit error rate of BPSK and MPSK are analyzes under different schemes. We notice that the loss factor, frequency and distance are significantly improving BER performance.

**Keyword**—Low voltage, Middleton Class A Noise, Multi-Carrier Modulation, OFDM, Power Line Communication



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