# Advanced metering infrastructure performance using European low-voltage power line communication networks

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**Abstract-**

**Power line communication has recently attracted the attention of energy companies as a useful and natural technology for building the advanced metering infrastructure. In this context, device language message specification/companion specification for energy metering (DLMS/COSEM) is an increasingly popular standardised application protocol for communication between utilities and their customers. This study analyses the communication performance that can be expected when using the power line communication technology, powerline intelligent metering evolution (PRIME), to send DLMS/COSEM messages. Physical phenomena - such as background and impulsive noise sources, channel attenuation and multi-path effect - are taken into account during the first step in the evaluation of this technology&rsquo;s communication performance in the physical layer. This metric is then used in upper layers to compute the packet error rate. An analysis is carried out at the application layer in terms of expected latency in different communication environments. Several simulations are performed in a European low-voltage topology to compute the number of metres that can be read within 15 min. These simulations were carried out using MATLAB and OMNeT++ software.**

**Index Terms- power meters; protocols; telecommunication network topology; carrier transmission on power lines**

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