

## ABSTRACT

Development of telecommunications systems not only on the technology side but also on the side of its network infrastructure. Hence, the need for the addition of new network infrastructure is needed. PLC is the answer to this problem, with this technology it is not necessary to build new infrastructure for PLC ride on the existing power grid is in fact more effective to reach remote areas

PLC (Power Line Communication) is a technology that uses electrical wiring connection that can be used on the existing power grid to provide electricity supply, and at the same time can also be used to transfer data and voice. However, the characteristics of a bad channel inhibits the development of high-speed data transmission on PLC technology. Then to reduce the negative influence of the media on the transmission system PLC, needed a multicarrier modulation technique

There are several kinds of multicarrier modulation scheme that can be used to increase the bit rate on the channel PLC, one of which is the Pulse-Shaped OFDM (PS-OFDM). There is an important parameter in the PS-OFDM that influence the increase in bit rate on the PLC channel, the guard interval, and the number of sub-channels.

In this final project will be analyzed and compared the performance of the system against the effects of code rate, multipath propagation channel on PLC channel, and the effect of the guard interval of data transmission speed. Simulation results show that the PS-OFDM technique gives a pretty good performance, where the target BER is achieved at  $E_b / N_0$  22-24 dB, and a maximum data rate of 41, 033 Mbps is obtained when using 16-QAM mapper with a guard interval of 1/16

Keywords : *PLC, kanal PLC, Bit Rate, coderate, PS-OFDM, guard interval duration, BER (bit error rate)*