

ABSTRACT

Power Line Communication (PLC) is data transmission system by exploiting power cable as transmission media. Elementary principle from this technology is data signals hypodermic into electricity channel at intermediate frequency 1 - 30 MHz^[4]. This technology emerges because of the quickly developed telecommunication technology that forces the operators to look for other alternative in giving amenity of communications access to its customer.

In practice, PLC confronted with constraints that are complicated enough. This thing is caused by PLC to take place directly at network where most of electrical equipment of household is operated; as a result level noise at network will become height. Of course this thing will influence quality of delivery of voice and data, so that it required a method or technique that capable to give solution of this problem.

Some researchs express that Multiple Input Multiple Output (MIMO) technique can increase wireless communications system's performance^[5]. Therefore at this final task the simulation of applying of MIMO at system PLC to know how far this technique can increase system performance if it is compared to without MIMO at PLC will be done.

At this final task the performance of PLC system with and without MIMO will be analyzed and compared. From the result of simulation, at frequency 15 MHz, it has proven that PLC with MIMO is better than PLC without MIMO that is reaching BER 10^{-4} at SNR 8 dB. Otherwise, PLC that applies MIMO has relatively better performance for every range frequency tested that is reaching 10^{-5} at SNR 10 dB. The optimal result reached at condition of 15 MHz frequency with distance between transmitter and also receiver at $\frac{1}{4}\lambda$ or 5 meter is BER 10^{-4} at SNR 8.

Keywords: PLC, MIMO, Channel Coding