

## ABSTRACT

*As the development of telecommunications technology in Indonesia continues to increase, faster and efficient access to information is needed for the public. To realize this, we need a communication technology that is capable, namely Visible Light Communication (VLC). However, behind the advantages of VLC that is still being developed there are some deficiencies, one of them is the range of communication distance. Low Density Parity Check (LDPC) is a channel coding that is used to improve the performance of the transmission channel which allows the transmission signal to avoid noise.*

*In this final project, an evaluation has been carried out on a VLC system using Irregular LDPC with variations in coderate values and variations in the number of iterations in the decoding section so as to produce a good LDPC performance. Then do the comparison with the VLC system without using LDPC to be analyzed with several test parameters namely Bit Error Rate (BER), Signal to Noise Ratio (SNR), receiving power and the range of communication distance.*

*Simulation results prove that the quality of the VLC system has improved until 13.64% on distance range communication, and also BER and SNR value after using Irregular LDPC. The best VLC system performance is obtained when using coderate 1/2 with 20 times iterations. The VLC system uses Irregular LDPC reaching BER of  $10^{-3}$  at a distance of 12.5 m with a SNR of 1.202 dB and a receiving power of  $1.3248 \times 10^{-5}$  mW. This research proves that the VLC system using LDPC is better than the VLC system without LDPC that reaches the BER  $10^{-3}$  target at a distance of 11 m with SNR 6.274 dB and the receiving power is  $2.6005 \times 10^{-5}$  mW.*

**Keywords:** VLC, LDPC, Channel Coding, BER, SNR, coderate, iteration.