

ABSTRACT

The world of telecommunications has always been an important role in this life for communication. This communication can be done not only in the free air space but can also be used in Sea Water. With this challenge, *Visible Light Communication* (VLC) is here to answer all challenges because VLC is a communication system that is carried out by sending files through the light as the transmission media. The constraints found from the development of this VLC in the sea are the short distance that can be traveled and the high *Bit Error Rate* (BER) when it reaches the furthest distance using a green diode laser.

In this final project an analysis of the performance of a green diode laser is performed to determine the farthest distance that can be traveled at depths of 5, 85, and 150 meters under the sea. The VLC system used as a source is a Green Laser Diode with a wavelength of 520 nm and uses On-Off Keying Return Zero (OOK RZ) modulation and On-Off Keying Non Return Zero (OOK NRZ). The VLC system will be tested using the Power parameter, *Signal to Noise Ratio* (SNR), and BER.

The results of the analysis obtained in this Final Project is using a power of 5 watts of the green laser diode can be used for all three ocean depths and at a depth of 150 meters the farthest distance that can be traveled by this green laser diode as far as 38,5 meters using OOK NRZ. The distance obtained at each depth will be taken from the BER value that reaches *threshold* $\leq 10^{-4}$.

Keywords : *Visible Light Communication, OOK NRZ, OOK RZ, Signal To Noise Ratio, Bit Error Rate, Laser Diode*