

ABSTRACT

UVLC has several challenges, i.e. the exponential value of the water attenuation coefficient and the limited bandwidth of the light source. This thesis considered used of *optical concentrator* on *photodetector* to focus and collect light entering the receiver, therefore the received power is increasing within the communication range.

This thesis uses two scenarios to evaluate the performance evaluation. Scenario I analyzes the performance of the UVLC system without the optical concentrator on two types of On Off Keying (OOK) modulation, namely OOK - Non Return to Zero (OOK-NRZ) and OOK-Return to Zero (OOK-RZ), without the addition of an optical concentrator. Scenario II compares system performance UVLC with the addition of an optical concentrator. Both scenarios will be tested based on distance, Received Power, Signal to Noise Ratio (SNR) and Bit Error Rate (BER) parameters.

The result confirmed the addition of optical concentrator has better performance by proving that Received Power and SNR value that obtained in scenario II greater than in the scenario I. This is proven when using an optical concentrator on the photodetector gives an increase in received power of 165% and gives an increase in the value of the SNR of 59%. It can be concluded that the addition of optical concentrator results in better performance.

Keywords: *UVLC, Optical Concentrator, OOK-NRZ, OOK-RZ, SNR, BER.*