

ABSTRACT

Visible Light Communication (VLC) is a technology in optical communication systems that utilizes visible light as a medium for delivering information. Visible light communication can be applied under the sea, the technology used is Underwater Visible Light Communication (UVLC). The UVLC system has a weakness, namely the effect of attenuation caused by sea water, so the transmitted optical signal will experience a large attenuation. To reduce this impact, the Low Density Parity Check (LDPC) coding technique used as Forward Error Correction (FEC) can be applied.

In this final project, a simulation of the UVLC system has been carried out using the Regular LDPC method as FEC which is applied to two different types of water, namely clear ocean and coastal ocean. Furthermore, a comparison is made with the UVLC system without Regular LDPC to be analyzed with several test parameters, namely Bit Error Rate (BER), Signal to Noise Ratio (SNR), receiver power and transmission distance.

From the simulation results, the UVLC system without Regular LDPC reaches a BER of 10^{-3} at a maximum distance of 2.8 m on clear ocean and 2.6 m on coastal ocean, while the UVLC system with LDPC Regular on clear ocean reaches a maximum distance of 2.9 m and on coastal ocean the maximum distance reaches 2.8 m. So it can be said that the application of LDPC as FEC in UVLC system can improve performance which is more optimal 10% - 20% compared to Regular LDPC UVLC system.

Keywords: *UVLC, LDPC Regular, BER, SNR, Power, Transmission Distance.*