ABSTRACT

This final project conducts a research on Optical Wireless Communication (OWC) in a closed room. Optical communication system is an optional solution to overcome various difference of human needs in communication. This is what supports the author to conduct a research on optical wireless network technology. In this final project, proposed a research on performance of down link data performance with color combination emitted by LED for the Indoor Visible Light Communication (VLC) system.

In this final project, an analysis of the performance of capacity can be achieved in the process of sending data measured in the bandwidth. By using three LED-RGB in the position and spectrum of color that has been determined in a closed room with room dimensions of 5m × 5m × 3m, in order to support better down link performance the On-Off Keying Non Return Zero (OOK-NRZ) modulation technique are used. System evaluation is observed using several parameters such as SNR, Q factor, and BER to show how high the performance results can be achieved.

The results of the VLC system design aims to determine the amount of optimum performance that can be achieved for each color spectrum and an analysis of system performance. This is proved by the results of the analysis on the combination of red and green light with the wavelength of 623,74 nm and 519 nm. producing an SNR value of 18,83 dB, a Q factor of 11,31 and a BER valued at 1,06 × 10^{-17}.

Keywords: Multicolor Visible Light Communication (VLC), Bandwidth, Color Spectrum