

ABSTRACT

This Final Project researches the effect of modulation techniques on VLC technology. The idea of this research obtained based on the importance of using modulation techniques as needed. The main subject of this Final Project is power efficiency of each modulation which refers to the coverage area.

The modulation technique used in this Final Project is On Off Keying - Non Return to Zero (OOK-NRZ), On Off Keying - Return to Zero (OOK-RZ), DC-Biased Optical OFDM (DCO-OFDM) and Unipolar OFDM (U-OFDM). The four modulation techniques were chosen because they are categorized as single carrier and multi carrier modulation techniques. OOK modulation techniques have advantages in the simplicity of the system but have low data rate, while OFDM has a complex system but can transmit data at high speed. Related to the characteristics of each modulation, this final project discusses the power efficiency, coverage area and performance Bit Error Rate (BER) from each modulation technique

The modulation technique that is the best propose to use is the U-OFDM. The U-OFDM modulation technique has a wide coverage area and have high power efficiency. The Comparison between four modulation techniques is presented in this Final Project. The results in this Final Project are expected to be a reference in the development of VLC technology for the future.

Keywords : VLC, OOK-NRZ, OOK-RZ, DCO-OFDM, U-OFDM, Power efficiency