

ABSTRACT

Communication system to send or receive data using visible light waves or often called Visible Light Communication (VLC). This VLC system utilizes Light Emitting Diode (LED) as a light source. In this VLC communication system, there are transmitter block and receiver block, each of these blocks has a different function. In the transmitter block consists of a data sender, LED as a light source change the information signals into a light signals. The block receiver consists of a photodetector, changer light signals into information signals, data receiver or information.

The indoor VLC design research conducted on this thesis uses the Asymmetrically Clipped Optical-Orthogonal Frequency Division Multiplexing (ACO-OFDM) method. This method is designed to analyze the performance parameters on the system has been designed. The parameters to be analyzed are Signal to Noise Ratio (SNR) and Bit Error Rate (BER). This thesis research was designed using simulation software.

In this thesis VLC system uses ACO-OFDM modulation using transmitter many as 3, 4, and 5 transmitters. There was a significant increase in the 5 transmitters. In the power distribution and SNR value if using 5 transmitters, which is 467.04% at bit rates of 10 Mbps and 1 Gbps. But at the distance value when BER is worth 10^{-3} is not very significant, at the bit rate of 10 Mbps there is no change, while at 1 Gbps there is a change of 25.09%. The effect of the number of transmitters on power distribution, SNR and BER on the VLC system is presented in this thesis.

Keywords: *Visible Light Communication, Asymmetrically Clipped Optical-Orthogonal Frequency Division Multiplexing, Bit Error Rate, Signal to Noise Ratio.*