ABSTRACT

Light Fidelity (Li-Fi) has become a technology that has gained a great deal of popularity in recent years mainly because it can provide communication services in a wide bandwidth, and is expected to play an important role in future telecommunications services, especially indoor communications. Nevertheless, Li-Fi requires the proper placement of devices to meet Line of Sight (LOS) requirements for visible light communication. This study aims to design a 4-channel Li-Fi Multiplexing communication model in LOS by varying the Transmitter Half Angle (Tx Half Angle) and Field of View (FOV) parameters on the performance of the received power parameters, Signal to Noise Ratio (SNR), Q- Factor and Bit Error Rate (BER). The results showed that an increase in the value of Tx Half Angle and FOV caused a decrease in system performance which was indicated by an increase in the BER value and a decrease in the Q-Factor value. The highest received value for Tx Half Angle obtained is -26,458 dBm. with the highest SNR value of 21,016 dB. The receiving power at FOV gets the highest value of -27,055 dBm with an SNR value of 19,856 dB. The best BER value obtained from the Tx Half Angle variation is 1.23×10^{-57} with a Q-Factor of 15.955, while the best FOV value is 5.41×10^{-56} with a Q-Factor of 15.717. Based on the results of the performance parameters obtained, both variations of Tx Half Angle or FOV get results that meet the standards set.

Keywords: Li-Fi, Line of Sight* (LOS), *Transmitter Half Angle, Field of View.