

ABSTRACT

The communication system that transmits data by utilizing visible light waves is known as Visible Light Communication (VLC) by utilizing Light Emitting Diode (LED) lights as transmitters. VLC can be implemented in various places and supports various facilities in buildings. In building facilities, VLC can support the formation of smart buildings and even smart cities. In Telkom University, VLC can be implemented in the Telkom University Landmark Tower (TULT) building which carries the go-green concept and supports Research & Entrepreneurial University as Telkom University's strategic plan in 2023.

The indoor VLC design research conducted in this Final Project takes one of the rooms in the TULT building, namely the Meeting Room which is often used by many people and requires access to fast data exchange. This simulation is designed to analyze the performance parameters of the system and aims to help Wireless Local-Area Network (WLAN) Radio systems that are already widely used. The parameters to be analyzed are Power, Signal to Noise Ratio (SNR) and Bit Error Rate (BER). This Final Project research is designed using computer simulation.

This final project has designed and analyzed the simulation of VLC technology in the FTE meeting room at TULT. For the 8 LED scenario, the highest SNR value obtained is 47,77 without sunlight interference and the BER On-Off Keying (OOK) Non-Return to Zero (NRZ) value is $1,02 \times 10^{-203}$, while in the scenario with sunlight interference, the SNR value is 29,37 and the BER OOK-NRZ value is $2,44 \times 10^{-3}$. So that the SNR performance of the VLC system without interference is $1.63 \times$ better than if it is exposed to sunlight interference.

Keywords: VLC, SEE Meeting Room, TULT, BER, SNR.