

## ABSTRACT

Visible Light Communications (VLC) is optical communications that use light to carry signals. Vehicle-to-Vehicle (V2V) is an example of the application of VLC outdoors, VLC is used in the field of Intelligent Transport Systems (ITS), to improve road safety and regulate traffic flow. Simulation with unobstructed night conditions with the same vehicle speed and the modulation used is On-Off Keying Non-Return to Zero (OOK-NRZ).

This final project analyzes through simulation the performance of the VLC system on V2V communications. VLC performance is determined by attenuation based on rain intensity. Attenuation is calculated and analyzed using different distances. To calculate the attenuation using the Carbonneau model, the Japanese model, and the Marshall-Palmer model. Then look for the distance until the simulation results produce a Bit Error Rate (BER) of  $10^{-6}$ , Datarate, and Signal Power to Power Noise Ratio (SNR) which are used as parameters.

The results of the simulation and analysis in this final project will show that rain interference will affect the system when there is interference the system performance will be worse. This study resulted in an increase in high rainfall intensity, and the system performance will be worse. And the most suitable model for the Bandung area is the Japanese model, with a maximum SNR of 14.012 dB at a vertical distance of 15 meters a propagation distance of 15 meters with light rain intensity, and a minimum SNR of 2.796 dB at a vertical distance of 10 meters with a propagation distance of 15 meters with rainfall intensity.

**Keywords:** VLC, V2V, OOK-NRZ, SNR, BER, Data Rate