

ABSTRACT

In today's era, Visible Light Communication (VLC) is present as a medium for transmitting information without using cables, but the main weakness of the VLS system is the narrow modulation bandwidth so that it can reduce system capacity. Therefore, in this study implemented using the technique of Non-Orthogonal Multiple Access (NOMA) to increase system capacity.

This final project will design a room measuring 5 x 5 x 3 meters to compare two power allocation methods, namely Static Power Allocation (SPA) with Gain Ratio Power Allocation (GRPA) which takes into account the different channel conditions of each user. In addition, research on the performance of the system with Line of Sight (LOS) and Non-Line of Sight (NLOS) channel conditions will also be carried out.

The simulation results are able to show the results of the application of SPA and GRPA power allocation on the NOMA-VLC system. In this research simulation is also able to show the average data rate performance on the GRPA power allocation with a value of 8.594 Mbps which is more effective, compared to the SPA power allocation with a value of 8.362 Mbps on the LOS channel. Meanwhile, the average value of the data rate on the NLOS channel is the same as the simulation results on the LOS channel because the GRPA power allocation result is higher than the SPA power allocation, but there is a decrease in system performance due to obstacle.

Keyword : VLC, NOMA, SIC, Power Allocation, SPA, GRPA, LOS, NLOS