

## ABSTRACT

One of the drawback in visible light communication (VLC) systems is the narrow modulation bandwidth that decreasing achievable kapasitas system. In this Final Project, non-orthogonal multiple access (NOMA) is implemented to increase the system capacity. NOMA is a technique that multiplexed some users signals based on power domain of each *users*. In NOMA, there are superposition coding at the transmitter side and successive interference cancellation (SIC) is implemented at the receiver side.

This Final Project comparing two power allocation methods, there are gain ratio power allocation (GRPA) which considering the differences between channel gain of each user and static power allocation (SPA). This Final Project also do some research about the effect of the number of residual interference that may exist in successive interference cancellation (SIC) process and the effect of increasing number of users in system performance with NLOS channel propagation.

The result of this research shows that the implementation of GRPA is more effective to be used in NOMA-VLC system than SPA. By implemented GRPA, the achievable capacity can increased up to 4.323% from the implementation of SPA in the system. Moreover, the increasing of residual interference that may exist in SIC process and total number of user give the effect of degrading system performance.

***Keywords:*** VLC, NOMA, NLOS, Power Allocation, SIC.