

## ABSTRACT

Concurrent illumination and communication using LED for Visible Light Communication (VLC) system has been the focus of some researches in the past years. Giving a new purpose of old technology, without addition of a new infrastructure becoming a strong point for VLC system. In this research a diversity technique is used to perform a data communication using visible light medium. With diversity order of 3 with red Light Emitting Diode (LED) , Green LED, and Blue LED. Each carry a redundant data to provide robustness against shadowing. The data and its redundant are coded in a repetition code for improved robustness. Simulation results demonstrate that the proposed scheme is robust to overcome the effect of shadowing, as compared with a Binary Phase-Shift Keying (BPSK) at a bit error rate (BER) of  $10^{-3}$  . This research approach the problem of shadowing in indoor VLC environment with an indoor VLC system that have diversity scheme with a diversity order of 3 and combined with error correcting code of repetition code with repetition level of 3. Successfully reach a results of 0 BER, with 8.6 dB SNR at 3Gbps and BER of  $1.57 \times 10^{-3}$  , with 3 dB SNR at 3Gbps. Our system also proven to be robust against shadowing in an indoor VLC environment , maintaining BER performance of  $1.57 \times 10^{-3}$  in 3Gbps with 3dB SNR even under the effect of shadowing.

**Keywords:** Diversity, VLC