**2017 Thesis Research**

**Visible Light Communication Using Reflected Light**

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**Abstract**

Visible Light Communication (VLC) is an optical wireless communication system that carries information by modulating light of LEDs recently developed for high frequency blinking. Previous researches related to the VLC mainly used line-of-sight communication. Therefore, communication failures frequently occur even in the same room.

In this study, we made an experimental device receiving reflected light and verified the reception performance of the device. Then we clarified issues to improve the communication accuracy and the communication range in the same room as follows; communication accuracy, receivable range, and transmission speed. We evaluated them on the experimental device and found the following results; 1) Under the transmission speed of 115200 [bps], the reception accuracy does not decrease with cable connection and with reflected light. 2) Reflected light could be received source at a distance of 7.2 cm from the LED.

The received signal must be amplified to improve communication accuracy and communication range. In addition to that, an element capable of high-speed operation must be used to improve transmission speed.

*Keywords: Visible Light Communication(VLC), Reflected Light, Confidentiality, IoT, FPGA*