

ABSTRACT

One of the technologies use in Visible Light Communication (VLC) is the use of Light Emitting Diode (LED) as the power source of the indoor positioning system with the Received Signal Strength (RSS) method. The positioning system based on VLC can determine the location more accurately than the Global Positioning System (GPS). Differences in the number of LEDs used in the system impact the accuracy and positioning error.

This undergraduate thesis detect the random position based on the received power in the room with size of $5 \times 5 \times 3$ meter³ and several numbers of LEDs. The first scenario uses 4 LEDs, the second scenario uses 6 LEDs and the third scenario uses 8 LEDs. Random points as the detector placed spread at the room as many as 25 points.

The simulation result shows that the use of more LEDs reduces the positioning error and increases the accuracy. If the accuracy reduce, the positioning error increase and affect the detection results. With 8 LEDs, the number of the detected random point is increase from 18 points to 24 points, the positioning error is reduce from 0.51 meters to 0.08 meters and the accuracy increase from 72.22% to 96.62%.

***Keywords:** VLC, LED, RSS, Accuracy, Positioning, Positioning Error.*