ABSTRACT

House fires are one of the disasters that cannot be avoided, especially the kitchen is the main trigger for fires to occur. The fire can be caused by the user being negligent in the use of kitchen utensils.

In this final project, a comparative analysis of the number of Light Emitting Diode (LED) as a transmitter and a reflector in the form of a reflecting mirror is carried out at the receiver using Visible Light Communication (VLC) which is a technology that allows the transmission of data information through visible light which will be received as a complete information. The data transmitted is the result of data from three sensors, namely the temperature sensor, gas sensor, and fire detection sensor at the transmitter and at the receiver the firebase is used to monitor data.

Based on the results of the lux measurement, the 3 watt lamp experiment has a lower lux value compared to 12 watts of power. At the baudrate measurement at a speed of 115200 the data can be received well and does not experience flicker, at speeds of 1200bps, 2400bps, 4800bps. 56400bps and 9600bps data were received well but experienced flicker, while at speeds of 230400bps and 256000bps the data was not well received and did not experience flicker. In the functional testing of the 7 watt lamp, it shows that there is no noise interference by other light intensities. Likewise, the room lamp coupled with a 5 watt lamp with a distance of 5 cm placed on the receiving side does not indicate that the data sent is damaged. In the simulation of the m × 4 m × 4 m room that using a reflector, the value decreases. While the SNR without using a reflector, the farther the distance, the lower the SNR obtained. In the BER test without a reflector, it was found that for variations of 3 watt lamps at a distance of 2m – 3m, the BER was 0, at variations of 5 watts and 9 watts, it was obtained at a distance of 2.5m-3m. BER was 0 and for variations of 12 watt lamps, the distance was 2.5m- 3.5m BER is worth 0

***Keywords**: Optical Wireless Communication, Smart Kitchen, Sensor, Firebase, Visible Light Communication*