

ABSTRACT

People who live in urban areas usually have space constraints that are not large enough and also limited time to grow crops or create their own plantations. Urban farming land is generally limited and supporting resources are also limited. Urban farming is the concept of moving conventional agriculture to urban agriculture, which differs in the actors and the planting media. Conventional agriculture is more oriented to production results, while urban farming is more on the character of the perpetrator, namely the urban community. The basic principle of VLC is to utilize the blinking of LED lights which lasts for a very short period so that it cannot be seen with the naked eye, the flickering of the VLC lights will form a pulse signal with a high frequency range where this frequency can be used to superimpose an information in the form of data.

In this final project, a Smart indoor farming system designed with the method of monitoring hydroponic plants using the DS18B20 temperature sensor, LDR, TDS and pH Meter. Using a microcontroller for the transmitter and receiver side requires LED lights and photodiodes as visible light communication media. The output issued is a water pump as a diverter of plant nutrients, an LCD to view sensor data results, and an SD Card Module as a data logger.

The results of the Smart indoor farming test using VLC technology were successfully implemented with a maximum distance of 30 cm for a DFT hydroponic system with a size of 40 x 30 x 15 cm. From the results of the Visible light communication test based on the reception angle of the TSL250R and the distance, it is shown that up to a distance of 30 cm, data can be received well at an angle of 0° to an angle of 90°. While at a distance of 40 cm the data can be received at an angle of 0° to 50°. Visible Light Communication technology has been successfully implemented for local monitoring of the Smart Indoor Farming system. Thus plant growth in the DFT hydroponic system can be managed automatically by reducing human intervention.

Keywords: *Urban farming, VLC, distance, angle*