ABSTRACT

Wireless Sensor Network (WSN) is a system that can measure, calculate and communicate to observe some kind of condition, it causes the WSN to grow rapidly and is often used for monitoring process, especially in agriculture. However, the current monitoring process is often being done manually which causes watering process in some part of the land to be inefficient and ineffective.

Therefore, we need a simple tool development that is easy to install and use for watering systems more efficient and effective. To support the performance, the system is equipped with the Arduino Uno, YL-69 sensor, DHT-11 sensor and Ultrasonic sensor. This system was designed for monitoring temperature, soil moisture, and water capacity owned. And to get better system performance, then performed experiments to test network quality that occurs between multiple nodes with several different cases.

After performing some tests, this watering system has 48.22 meters as maximum range of measurement without router and 90 meters with using router, and the largest throughput is 40.46 bytes/s which is resulted in distance of 27 meters without using router and the resulted throughput is 74.24 bytes/s with using router. When the distance is changed to 27 meters, it also gets 0.2872 seconds for the value of interarrival delay without using router and 0.0305 seconds with using router. The result of power consumption measurements when only one node up is 4.08 mW and 4.55 mW when two nodes are up.

Keyword: Wireless Sensor Network, Arduino Uno, DHT11, YL69, Xbee, Monitoring, Watering