ABSTRACT

The development of the Internet of Things has always been supported by the concept of WSN (Wireless Sensor Network). Most WSN concepts use battery power consumption, so there is a constant need to reduce energy requirements. LoRa (Long Range) technology has low power consumption usage and has a wide communication range of more than 2 km, but it cannot send data directly to the server. So we need a data transmission system to connect between devices in the sensor node with a server called a gateway

Water is an irreplaceable source of life. At present many areas often experience drought and difficult to get clean water. This research is expected to solve the problems that have been experienced.

In this Final Project, the author will build a mobile-based water quality monitoring application that runs on the Android platform. So users can monitor water quality only by using their smartphone. The results of successful rate gateway performance testing using distance variables indicate that LoRa (Long Range) is capable of receiving data at a distance of 100 meters.

To find out the created system performance, then the delay settings of 1 second, 3 seconds, 5 seconds, 7 seconds , 9 seconds in Arduino Uno are used to send data from the sensor. So that with these settings testing the quality of the network sending data from Raspberry pi to Firebase can be generated with different parameters of delay, jitter, throughput, and packet loss. In this study, the smallest average delay value is 0.021824 seconds with jitter value 0.101103 seconds, throughput 230 Kbps and 0% packet loss.

Keywords : *Internet of Things, Long Range, Kualitas Air, Monitoring, Smartphone, Android*