ABSTRACT

There are many objects in various field such as transportation, industry and smartphone that can be tracked. The purpose of this thesis is to analyze the performance of Global Positioning System (GPS) tracking system using Firebase application for haulage transport object. The current location of the object is monitored by administrator on website. The content on the website is a database and visualization of coordinates for maps.

This final task is designed as a tool that connects between a microcontroller and a GPS module as well as map visualizations of the coordinate points received by the GPS module. This tool has a tracking system function in which the database is continuously updated until power is depleted.

In general, components used to allow the tracking process to occur are the Global Positioning System (GPS) receiver, Raspberry Pi as microcontroller, and computer as the control unit. This tool is applied to the truck to protect the appliance from rain and also provide Tracking function. By using a Global System for Mobile Communications (GSM)-based modem, the tool can work with a relatively long range of distances. As for the tracking function found from the Neo-6M module which is a tool equipped with an antenna so that it can receive the Coordinate point of the satellite, the Coordinate point received by the Raspberry Pi directly in the database where the database is configured in Firebase realtime-database (FRD).

The results obtained after designing the tool are smaller data transmission interval, then higher the accuracy received. The packet loss is 0 even though the object passes through the tunnel at different speeds. This indicates that QoS (Quality Of Service) obtained is good QoS.

Keywords: GPS, GSM, FRD, Raspberry Pi, Tracking, Neo-6M, QoS.