

## **ABSTRACT**

GPS Tracker is a device that uses the Global Positioning System (GPS) to determine and track the location of an object remotely. The use of LoRa (Long Range) technology enables long-distance data transmission with low power consumption, making it ideal for IoT (Internet of Things) applications in large areas such as agriculture, smart cities, and asset tracking. LoRaWAN (Long Range Wide Area Network) provides a secure, cost-effective, and energy-efficient network framework for device communication.

This project aims to develop a LoRaWAN-based GPS Tracker system capable of accurately and in real-time tracking the location of vehicles, equipment, and workers in mining areas. The system utilizes the Quectel L86 GPS module, which supports various Global Navigation Satellite Systems (GNSS) to enhance tracking accuracy and reliability. The integration between the GPS module and LoRa technology allows for efficient data transmission to the control center with low operational costs.

The implementation of this system is expected to address the challenges of traditional tracking systems that use cellular networks, such as high costs and significant power consumption. By leveraging LoRaWAN technology, this system can provide real-time monitoring that enhances operational efficiency and safety in extensive and remote mining environments.