

Design and Performance Evaluation of Tactical Tracking Operations Based on LoRaWAN Technology

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Abstract

This paper presents the design, development, and system efficiency evaluation of a Troop Tracking Equipment operating via a Long-Range Wide Area Network (LoRaWAN). At Defence Technology Institute, a LoRaWAN system has been developed for use on body of a soldier or on a vehicle in order to track the object's position as well as report certain status. The system can be used for supporting various missions such as surveillance, monitoring, seizure, or intelligence gathering. The system is operated by having a main central processor read certain data from sensors within the module, which include the GPS, 3-axis accelerometer, barometric sensor, temperature sensor, humidity sensor, as well as power level of the module. These data will be transmitted from a client module through LoRaWAN to the Control Center via a Gateway module. At the Control Center, the data will be displayed on a Situation Map so that the Team Supervisor will see and understand overall picture as well as position of all team members on the mission. This results in a precise command and decision-making as well as an increasing success rate of the operation and therefore minimizes any loss which might occur to soldiers in the mission.

Keywords : Tactical Tracking, Internet of Things, IoT, LoRa, LoRaWAN, Command Control, Military Operations, GPS, Sensor

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