

ABSTRACT

Mountain climbing with high risk requires an increase in safety measures and education for climbers to reduce the number of missing individuals. The use of the Global Positioning System (GPS) helps prevent getting lost. However, GPS alone is insufficient, especially when accidents require rapid assistance. The solution lies in long-range communication technology such as Long Range (LoRa), as mobile signals do not reach the mountains. This study aims to analyze the throughput value and signal quality of LoRa for sending location notifications and the status of climbers by adjusting the Spreading Factor (SF) on the LoRa-based Mountain Climbing Emergency Communication Device. Testing was conducted in a point-to-point manner. SF9 performs well at distances of 50-600 meters, with the best Signal-to-Noise Ratio (SNR) and a delay of 154 milliseconds. At distances exceeding 600 meters, SF12 is suitable due to signal sensitivity and high data capacity, making it suitable for both short and long distances. SF12 is effective for mountain climbing notifications due to its small data size and a delay of 1-2 seconds that does not affect missing climber detection.

Key Word : *Climbing, LoRa, Spreading Factor , SNR,RSSI, Throughput*