

ABSTRACT

Communication systems are crucial for traditional fishermen, especially when operating in blank spot areas where cellular networks are unavailable. The lack of reliable communication tools poses significant risks during maritime emergencies and disrupts coordination and evacuation processes. This study proposes a communication system utilizing Long Range (LoRa) technology to enable message and vessel coordinate transmission. The system consists of three main components: a transmitter unit, a receiver unit, and a mobile application. The transmitter is carried by fishermen to send regular and emergency messages, while the receiver is stationed along the coast to receive and respond to the transmitted data. Point-to-point communication is established using LoRa modules. A mobile application functions as the user interface for message exchange. Field tests demonstrate that the system operates effectively up to a maximum range of 1.2 km at sea. However, this range is inadequate for offshore use. Performance limitations are primarily caused by electromagnetic wave attenuation in seawater, vessel movement affecting signal stability, and suboptimal antenna elevation during testing. These constraints indicate that further optimization is required to improve the system's coverage and reliability in maritime environments.

Keywords: blank spot, Long Range (LoRa), point-to-point, mobile application, user interface