# *ABSTRACT*

*In areas without access to electricity, the use of batteries is a suitable solution for accessing and benefiting from LoRa devices without the need to reach their location. Batteries have a limited lifespan due to the power they consume, which must be constantly supplied. This research discusses LoRa energy consumption using the deep sleep mode. The system was created using an ESP32 microcontroller connected to a LoRa RFM95 for data transmission via LoRa communication. Data is sent to the IT Telkom LoRa Gateway and displayed on the Antares platform. Testing was conducted with 36 scenarios, ranging from spreading factor 7 to 12, with each spreading factor given a payload load of 8 bytes, 16 bytes, and 32 bytes for both normal and deep sleep system conditions. Results from the system testing, measurement, and data observation were obtained for approximately 2 minutes, with data sent every 10 seconds. The current obtained when the system is in deep sleep mode is 13 mA, while in normal mode it is 73 mA. The current value remains constant despite the payload load and spreading factor variation. It can be concluded that the more bytes sent, the more power consumed in normal mode, and regardless of the SF used, the difference between the deep sleep and normal modes can reach up to 5.7 times.*



***Keywords*****:** *ESP32, LoRa, Deep Sleep, Spreading Factor, Payload*