ABSTRACT

The implementation of this project aims to build and design an RFID-based identification system using ESP32, 0.96 inch OLED and RDM6300 RFID module. This system is made to improve efficiency and accuracy, reading speed and communication stability. Using the RDM6300 module for reading UID from RFID tag cards that have a frequency of 125KHz, while ESP32 functions as the main controller that processes and sends data to a PC with USB serial communication, a localhost-based web interface. The results of component testing are, ESP32 Dev Kit 1 gets a voltage of 4.97V, RDM6300 gets a voltage of 4.67V, RDM6300 antenna gets a voltage of 1.66V, and 0.96 Inch OLED gets a voltage of 4.85V, and the TV successfully displays products according to the ID that has been sent via PC. Develop a system to allow users to monitor and manage RFID data in real-time. This RFID system is equipped with OLED which functions as a confirmation of successful UID reading and the test results prove that the system is able to read the UID well and this system is suitable for applications such as attendance systems, access control and product information in exhibitions.

Keywords: RFID, ESP32, RDM6300, OLED 0.96 inch, Unique Identifier (UID), Serial communication USB, Web interface.