

ABSTRACT

Base Transceiver Station (BTS) is a type of telecommunication infrastructure built to allow telecommunication devices to communicate with the operator's network wirelessly. The devices in BTS are important in the telecommunication work system, but in reality there are still many cases of theft of devices in the tower area. Most theft cases occur in shelter areas such as batteries and also areas outside the shelter such as ground cables. This causes the network quality at the stolen site coverage to decrease, causing losses to the provider using the site.

To overcome this problem, a surveillance system is needed that can be monitored remotely to monitor the area around the tower. The surveillance system uses hardware such as CCTV cameras that function to monitor the site area and RFID as a tool to access the entrance and exit of the site area. In addition to hardware, this system also uses a website to display all information sent by the device using MQTT and HTTP communication methods, which then the information is stored in the database. In addition to the website, another media to view information from the device is Telegram which functions as a silent notification.

Based on the test results, CCTV cameras are able to take pictures and stream video with the RTSP / IP Cam protocol connected to the router and display information on the website from morning to night. The object detection system on CCTV shows an accuracy rate of 76% (morning), 83% (afternoon), 89% (afternoon), 87% (night); precision 93% (morning), 88% (afternoon), 95% (afternoon), 93% (night); and sensitivity 78% (morning), 88% (afternoon), 91% (afternoon), 93% (night). The RC522 High Frequency RFID type showed good performance in detecting the UID and username as well as controlling the doorlock status, with only three failure out of fifteen trials due to not being connected to WiFi. Communication testing using HTTP and MQTT broker showed that communication between hardware and software runs well. CCTV connected to the website in 5 seconds, while RFID took 10 seconds.

Keywords: *Surveillance System, CCTV, RFID, HTTP, BTS*