ABSTRACT

Vaccines are biological products that contain antigens in the form of microorganisms that have been killed or weakened which when given to a person will cause active specific immunity against certain diseases according to the type of vaccine. The management of vaccine storage temperature at the puskesmas level is between 2°C-8°C. To maintain the quality of the vaccine, a vaccine storage area (Cold Storage / Chiller) is needed to maintain the temperature of the vaccine. This study aims to design and implement a Moving Average Filter on a microcontroller for a LoRa-based vaccine chiller temperature monitoring system. In designing and implementing this Moving Average Filter, it is hoped that this tool can help related health agencies in managing the vaccine cold chain. The method used to determine the temperature of the chiller using the PT-100 sensor by inserting the sensor probe into a vial containing glycol liquid placed in the vaccine chiller is recommended by National Institute of Standards and Technology (NIST) because it resembles the actual vaccine temperature and will not fluctuate quickly when the chiller is opened. Data from PT-100 sensor testing results and processed on the Lynx32 LoRa Development Board and sent to the LoRa gateway then forwarded to the Telkom IoT Console platform to be monitored by accessing the platform. Based on the test results, the PT-100 Temperature Sensor has a fairly high level of accuracy with an average accuracy of 93.44%. The test results before and after the Implementation of the Moving Average Filter 2,3,5 average accuracy value increased to 93.50%. The test results of the Received Signal Strength Indicator with an average value of -114.6 dBm are included in the weak signal category because they are close to the general limit of signal reception which is worth about -120 dBm, in each test data transmission is carried out 30 times with an interval of 10 seconds.

Keywords:*Lynx32 LoRa Development Board, Moving Average Filter, PT-100, Vaccine*