ABSTRACT

Electronic devices have ambient ambient temperature limits at -20^{o}C to +40^{o}C based on IEC 60079-0 to prevent potential bursts. With the result that thermal management is needed in the maintenance of electronic devices, one of them on the green house that has a temperature value can be greater than 40^{o}C. In this study a cooler box with acrylic material with dimensions of 15 cm long, 15 cm wide and 15 cm wide has a cooling load value of 17.57 Watt at 50oC temperature test. The design of the cooling box was carried out with three designs. The first design of the cooling box using heat exchangers and an integrated thermoelectric water block on the outside of the cooling box can withstand an increase in temperature of ± 34.5 ° C. The second design of this cooler using heat exchangers and thermoelectric integrated with water block installed in cooler box can withstand temperature at ± 35,5^{o}C. The third design on the outside of the box along with the inside of the box will use a heat exchanger, can withstand the temperature rise ± 28.5 ° C. In each design, the cooling box can withstand temperatures not exceeding the highest ambient temperature for electronic devices of 40 ° C.

Keyword**:** *electronic device, ambient temperature, thermoelectric, heat exchanger*