**Study for the best resistor value to be used.**

This experiment was conducted to find the optimal resistor value to be used with the DS18B20 temperature sensor.

The need of using a resistor to read the temperature is because a current is needed to amplify the voltage signal produced by the sensor.

In this experiment, five different valued resistors are used, and the output of the temperature reading are tabulated. The resistor values that was used in this experiment are, 1KΩ, 2.2KΩ, 3KΩ, 4.7KΩ and 15KΩ. Each of the reading taken was compared to the actual temperature reading taken from a laboratory thermometer.

This experiment was conducted in three different temperature scenarios which are, at 100 ̊C, at 5 ̊C, and at room temperature. The tabulated data of 100 ̊C is shown in figure 1.1, 5 ̊C is shown in figure 1.2, and room temperature in figure 1.3.

*Figure 1.1: Temperature comparison reading at 100 ̊C*

*Figure 1.2: Temperature comparison reading at 5 ̊C*

*Figure 1.3: Temperature comparison reading at room temperature*

Based on all the results gathered from all scenarios, the most suitable resistor to be used is the 4.7KΩ resistor. The 4.7 KΩ resistor produced the most closes reading of the temperature with the actual temperature compared to the other resistors.

By conducting this experiment, it was possible to conclude the optimal resistor value to be used with the temperature sensor to produce the most closes reading to actual temperature value.