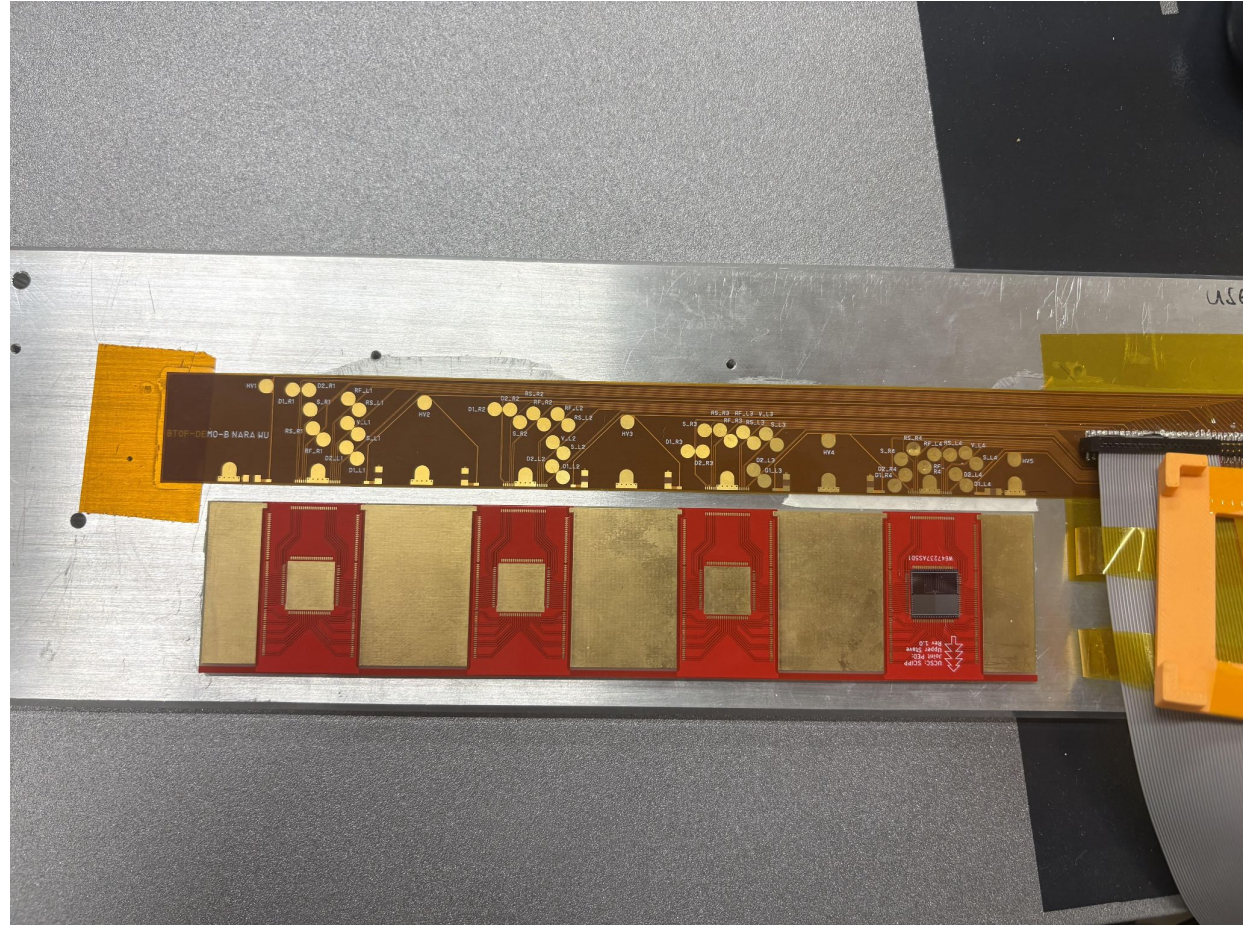


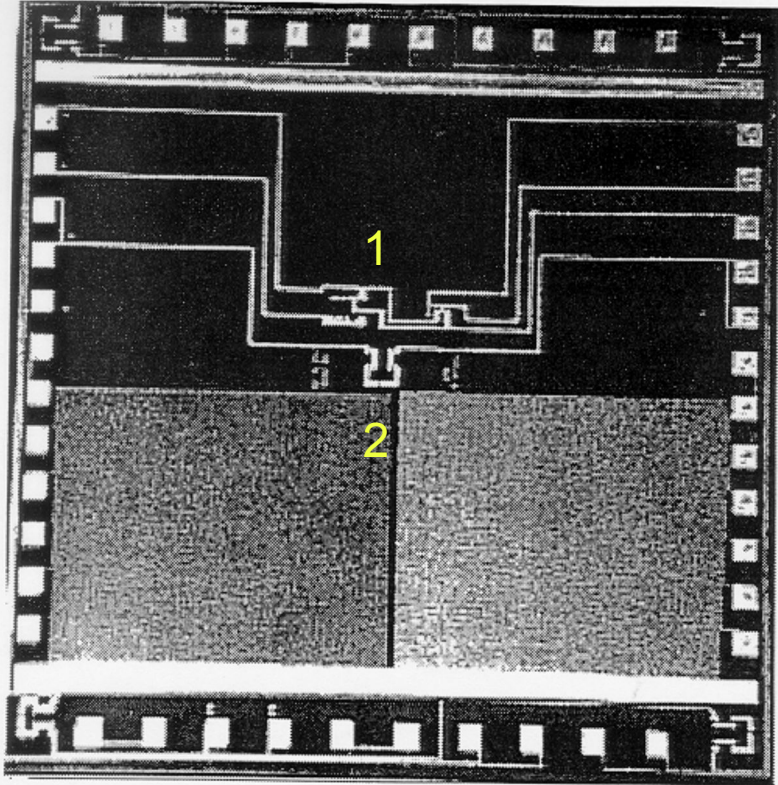
Temp Readout Calibration

Mounting the Stave

Stave is mounted to and wire bonded to an aluminium slab w/ The FPC. Connector Pins are also located to The right of the picture.

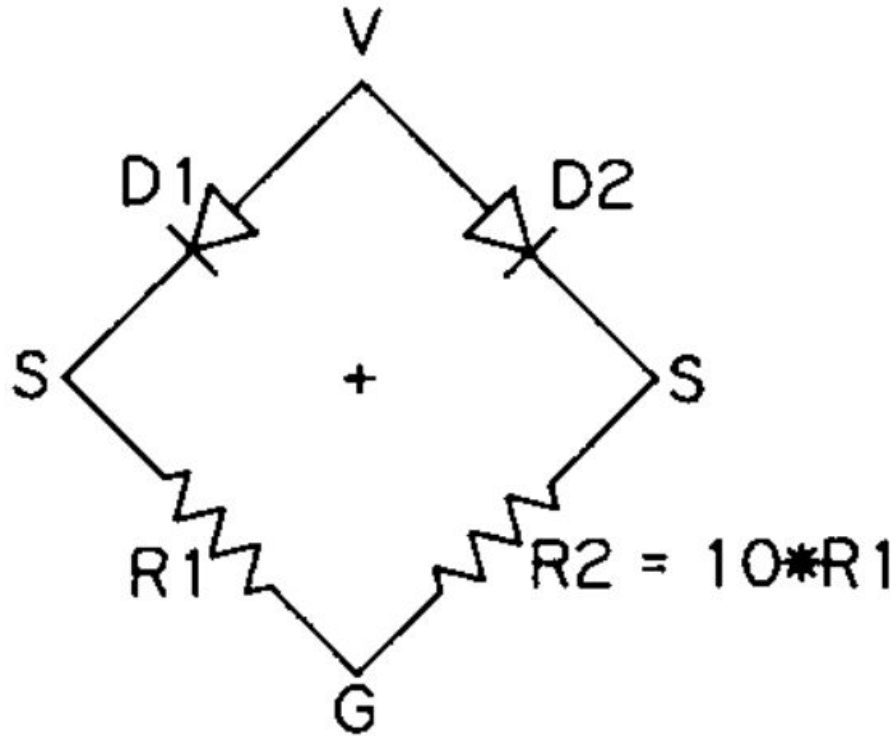


Thermal Diode Chips



1. Bridge Diode Chip
2. Series Diode Chip

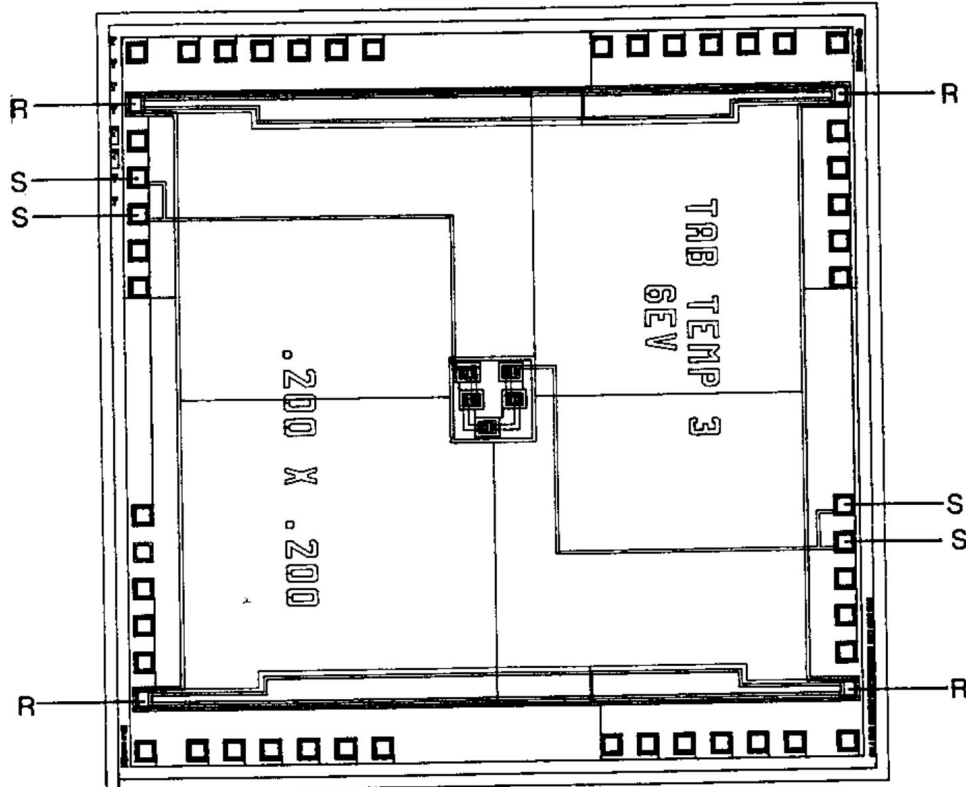
Bridge Chip (diodes in parallel with 10:1 res. ratio)



Bridge chip uses 2 diodes and resistors in parallel to isolate absolute temperature from the known voltage/temp relationship for diodes.

$$V(T) = (kT/q_e)\ln(10)$$

Series Chip (diodes in series)



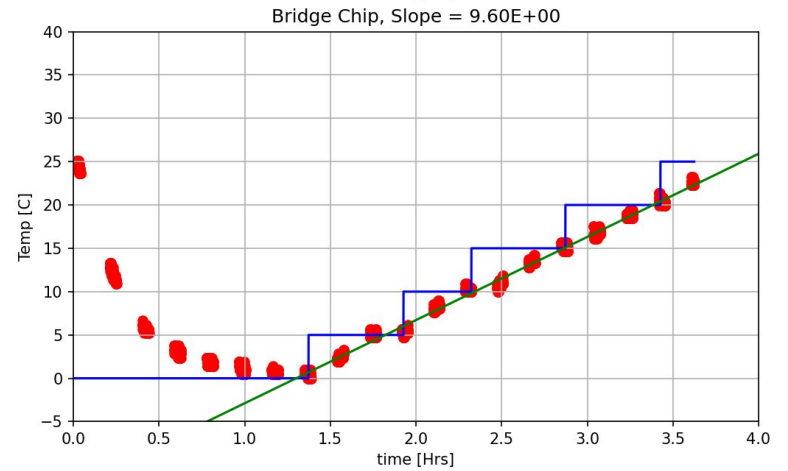
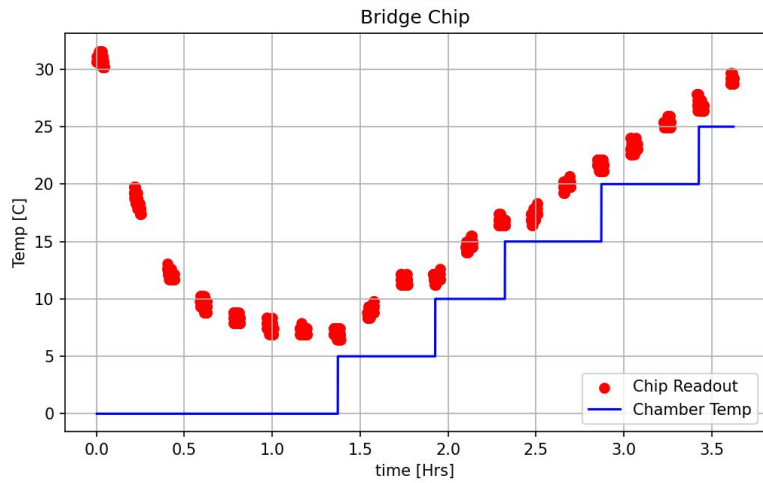
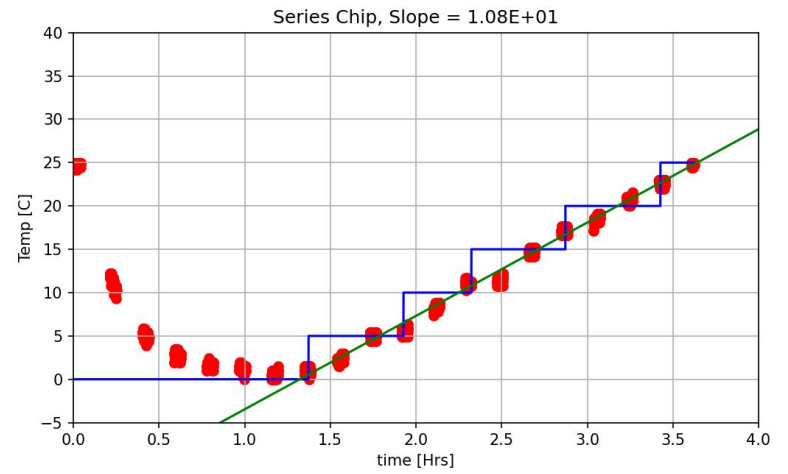
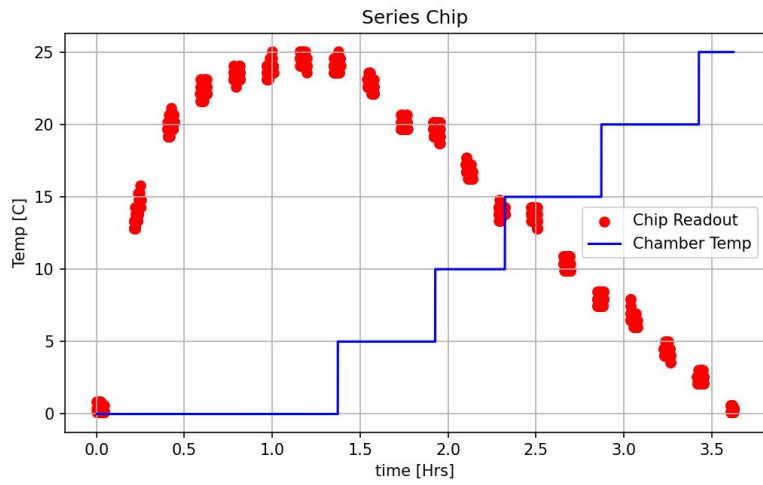
Series Chip uses 5 diodes in series measuring temperature relative to a reference point.

$$dV/dT \approx 10 \text{ mV/Degree C}$$

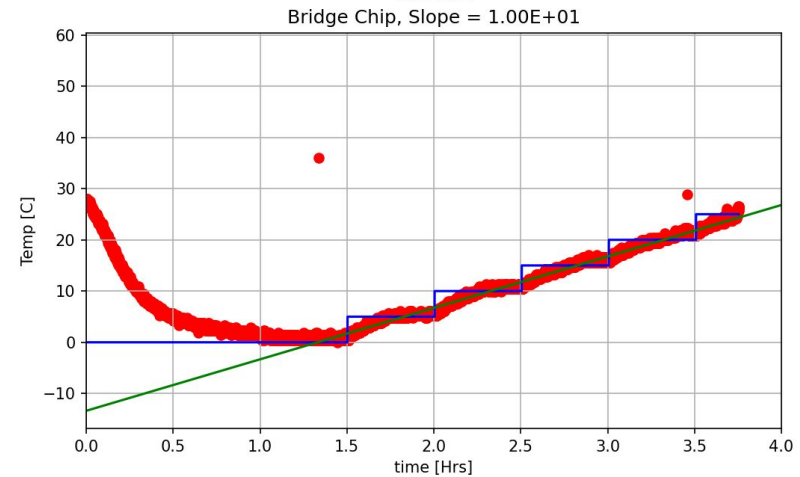
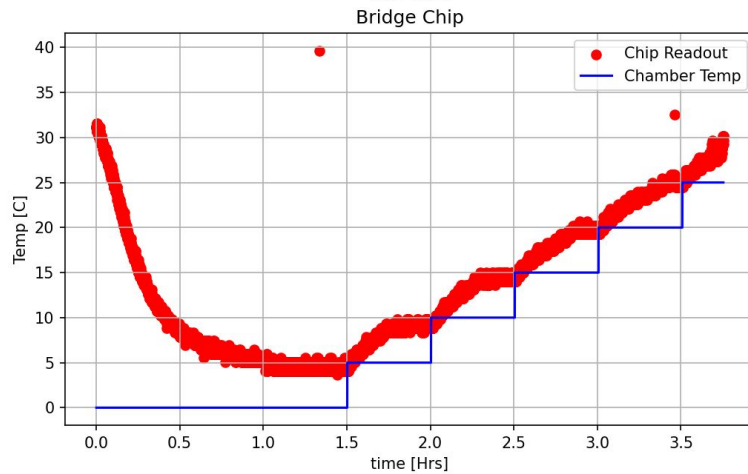
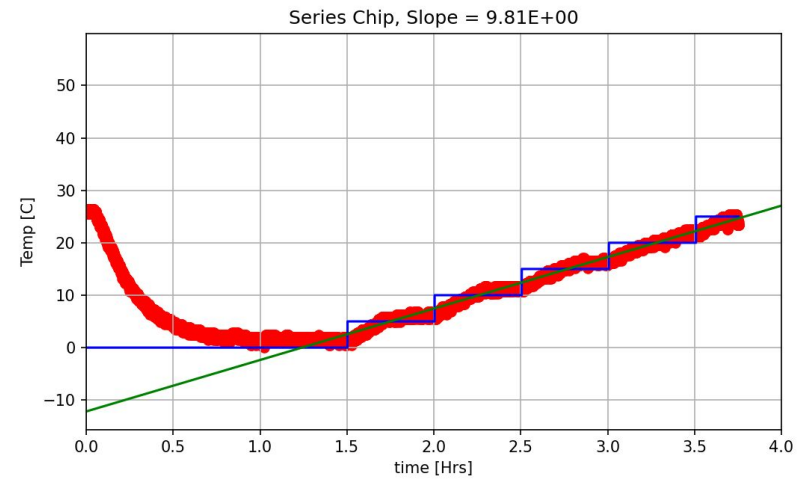
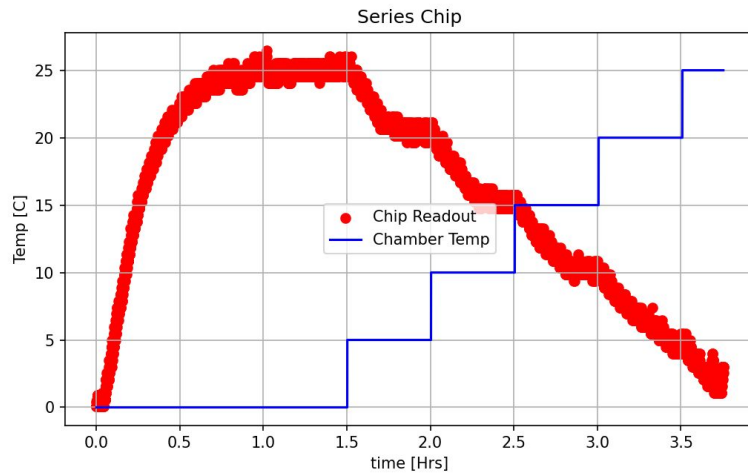
Calibration Experiment

- 1) Write a script to control temperature of climate chamber for set time increments.
- 2) Record data using arduino of real time temperature.
- 3) Comparing Series chip to Bridge chip.
- 4) Observing the trend follows that of the thermal chamber temperature.

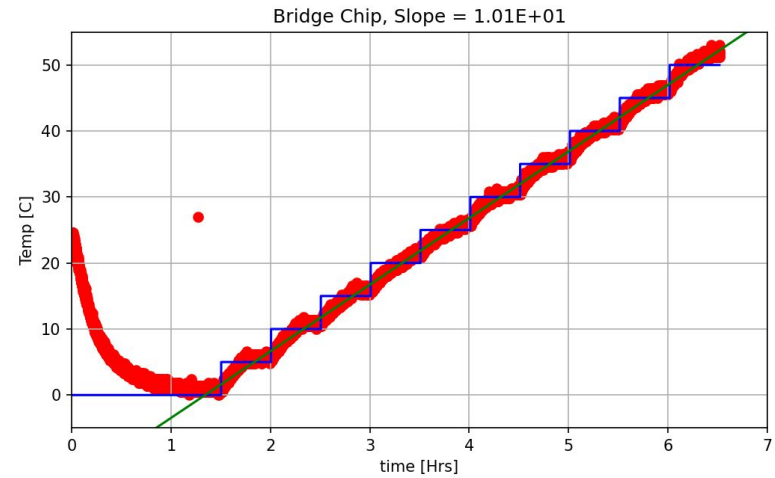
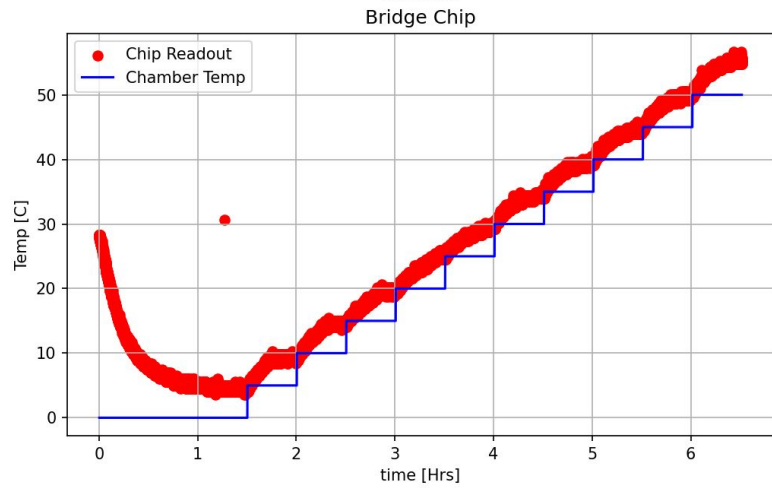
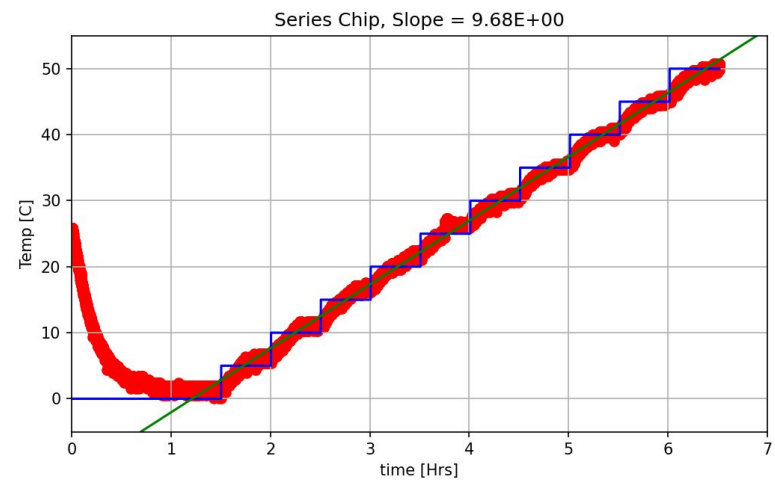
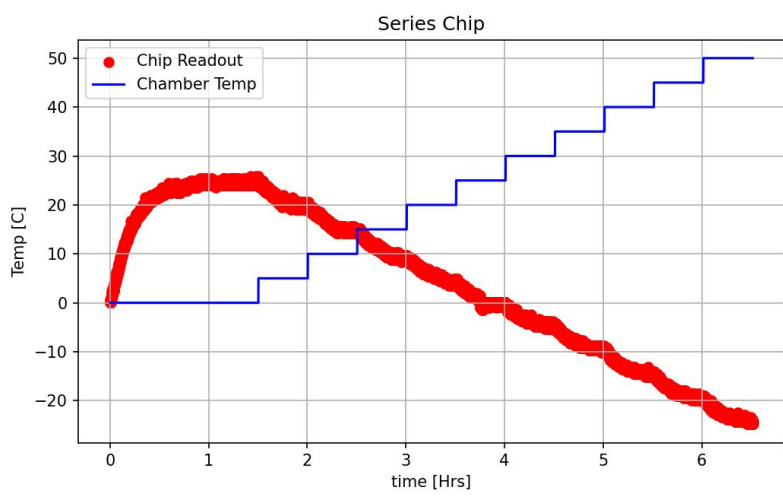
Overnight Run 1



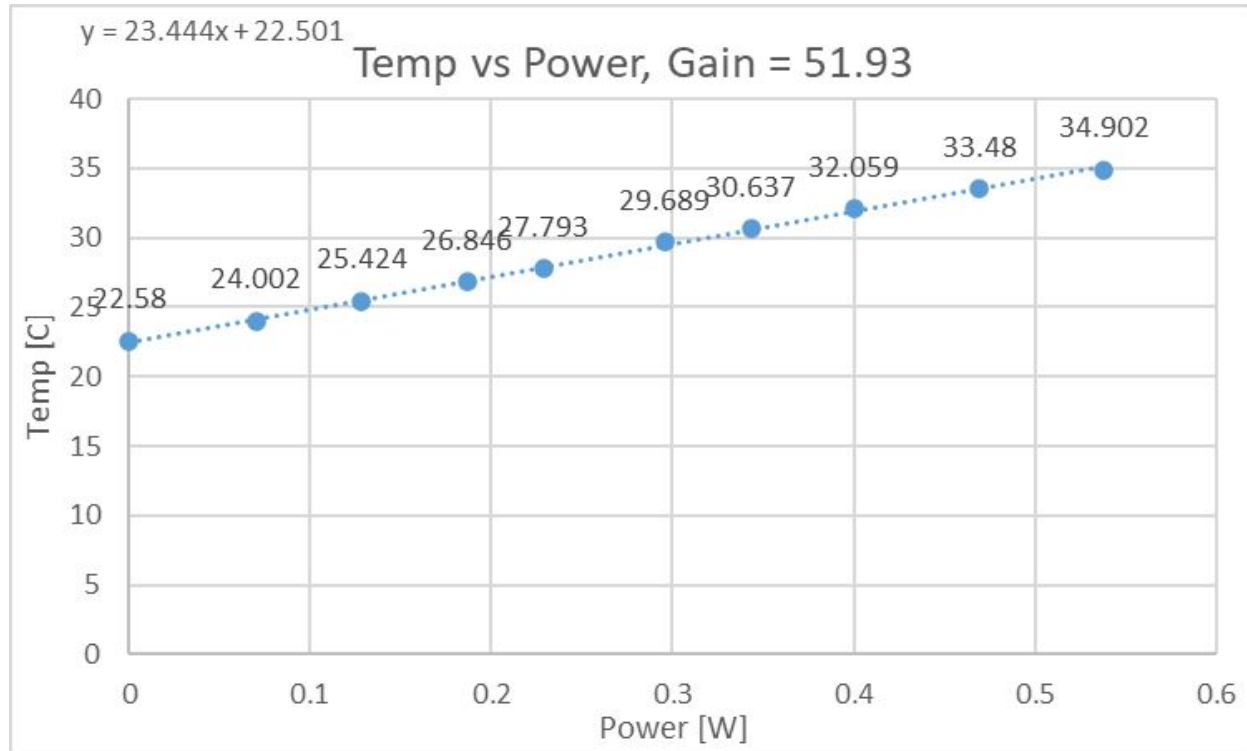
Overnight Run 2



Overnight Run 3



Temp vs Power (Recording data after 2 min intervals)



Temp vs Time (Power = 0.53 W)

