Design Review | Team 2 - Team 5

Group 2:
Cody Reid
Cuauhtemoc Gomez Angeles
Daniel Anishchenko
Tyler Tran

Group 5:
Demetrius Van Sickle
Bucanan Howard
Daniyil Kashkan
Mohammed Alreshoud
Wallace McKenzie

What can be improved
- Give a note that the IR sensor is the same as the MLX92614 on the schematic
- For schematic layout, have the OLED references closer together instead of separate.
- Throw in a couple more diodes or fuses due to the high wattage after the barrel jack
- Maybe implement a hardware failsafe in case the board fails
- Add a capacitor so that when the esp32 fails, it activates the solenoid and ejects the battery
- Throw some pads on the data line and throughout the board
- 10% Surface mount **LOOK INTO THIS** since it is required in Andrew's Design requirements

Our plans to improve based on Team 5's input
- Make our resistors SMD and possibly our diodes as well to solve the surface mount issue
- Use a 90 degree angled micro USB cable to easily reprogram

Questions For Team 2
- Question: Where is the 5V input coming from?
  - Answer: Output is coming from system
- Question: There are 3 different levels of power, what is it for?
  - Answer: 12 volts powers buck converter, the 5 volts connects to ESP32 board (it is wired that way so the volts don't kill the board), the 3.3 is for the OLED
- Question: For Q3, was the threshold met for the power requirements?
  - Answer: The darlington pair allows the power requirements to be met.

- Question: What is the point of the Solenoid?
  - Answer: The point of it is to remove the battery from the bay when it is done charging
- Question: Has there been any timing tests done with the solenoid?
  - Answer: When batteries are done charging, the GPIO outputs high and the solenoid activates
- Question: Which component is the MLX92614?
  - Answer: It is the IR sensor that measures the temperature directly.
- Question: How do you charge the batteries?
  - Answer: It uses a larger voltage source than the battery and uses the flow of current to flow into the battery, thus charging the battery. The voltage divider is used to measure the voltage and approx. around the 1.4V threshold, the board recognizes it as fully charged.
- Question: What is being used to check for the condition of the battery?
  - Answer: It checks a combination of the temperature and voltage, then charges it.
- Question: What speed do you charge the battery?
  - Answer: The expectation is around a 2 hour cycle, due to the fact that the capacity could be damaged
- Questions: If ESP32 fails, will power still be sent to the battery?
  - Answer: No because for it to charge the relay has to be open, the esp32 is constantly in active high.