EE 41430

SmartLint©

Design Review 3

Group 3: SmartLint
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March 31st, 2022

I. Final Board Design: Rev A

A. ESP32 BOARD

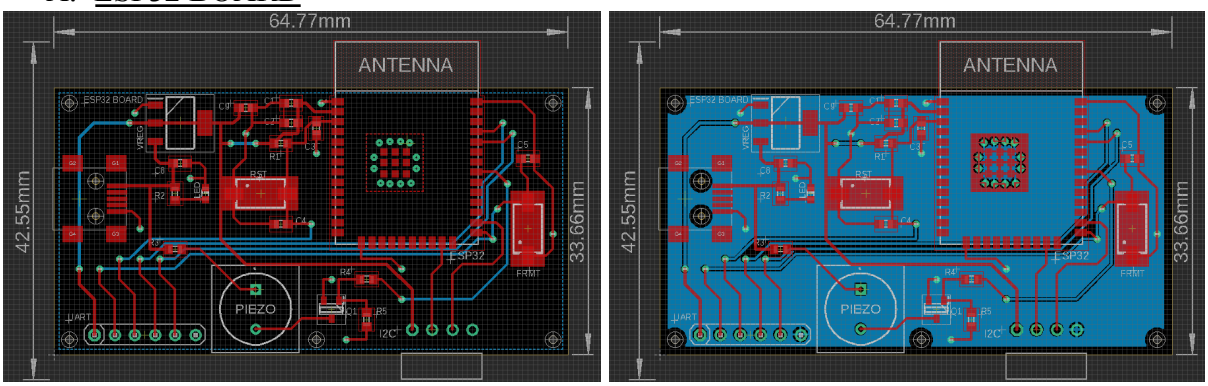


Fig 1: ESP32 Board Layout (a. w/o GND place; b. w/ GND plane)

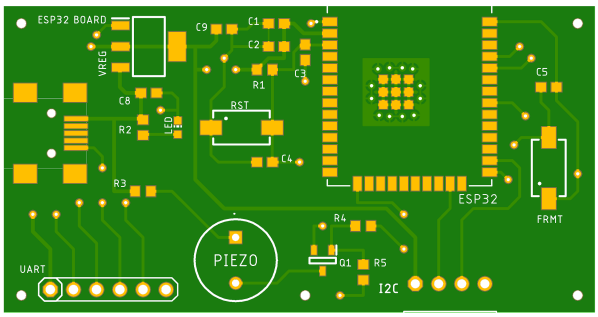


Fig 2: ESP32 Board Top Side

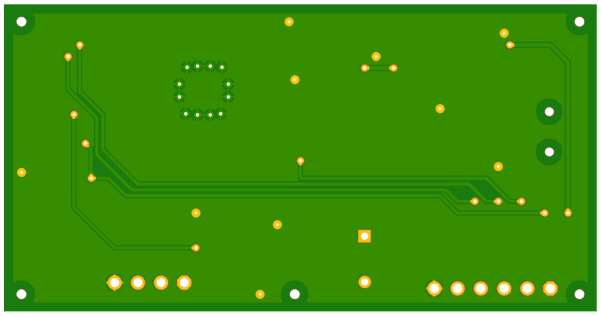


Fig 3: ESP32 Board Bottom Side

B. SENSORS BOARD

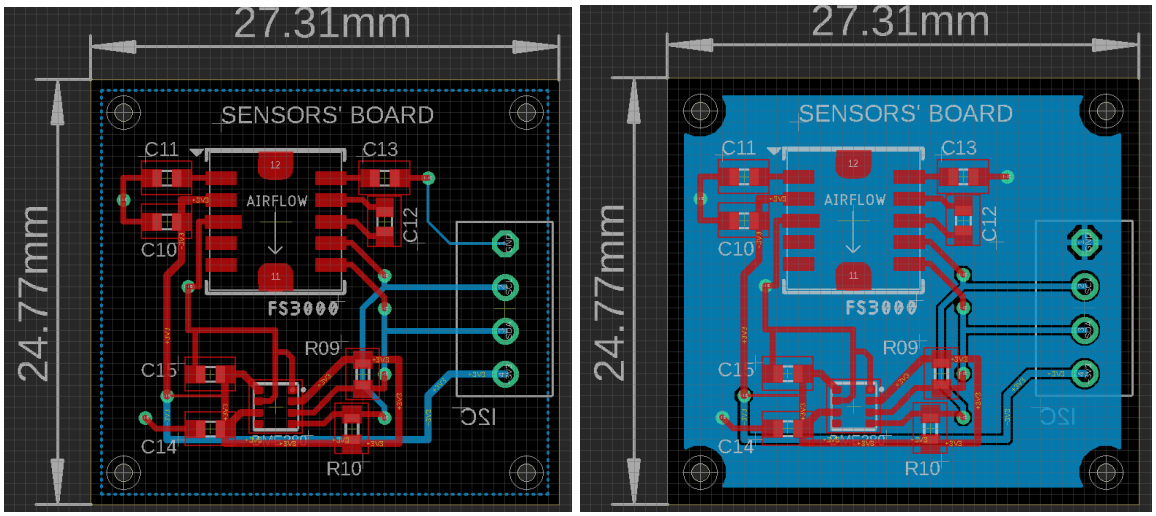


Fig 4: PCB Layout of Sensors' Board (a. w/o GND place; b. w/ GND plane)

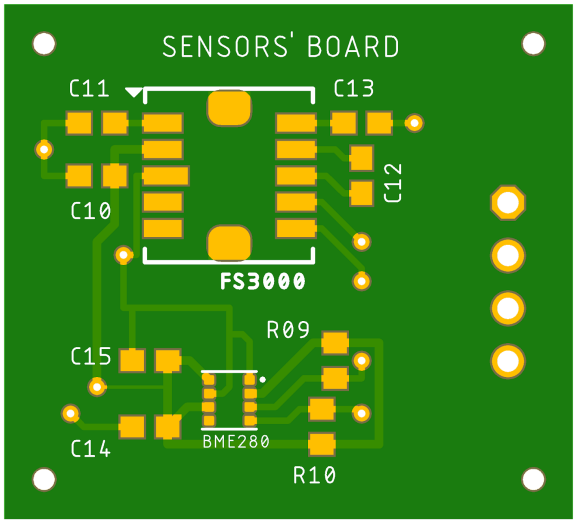


Fig 5: Sensors Board Top Side

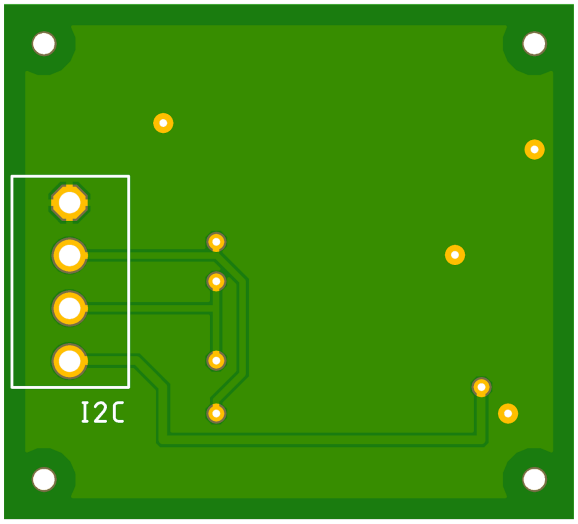


Fig 6: Sensors Board Bottom Side

C. FDM Results:

Summary: our current versions of both boards have 0 errors and are ready for manufacturing and assembling. Since our last meeting, we increased the width of our traces to 12 mil and 16 mil for our power traces (i.e both +5V and +3V3 traces). We used connectors and red LED found in SDLib and used 0603 resistors & capacitors. There were no other changes made since our last meeting.

1. ESP32 Board: https://www.google.com/url?q=https://www.freedfm.com/freedfm/0034581405838889/results/summary2.htm&source=gmail-imap&ust=1649090641000000&usg=AOvVaw0hG51x6Sl3nyNWeX0nVNhS
2. Sensors Board: https://www.google.com/url?q=https://www.freedfm.com/freedfm/0034581405838893/results/summary2.htm&source=gmail-imap&ust=1649090308000000&usg=AOvVaw2eBrZQG0tUYAH9aNceoePF

D. Parts To Order (Link to spreadsheet)

Summary: The majority of parts are either ordered or in stock in the lab. We, however, need to purchase the following:

1. Voltage Regulator: https://www.mouser.com/ProductDetail/Diodes-Incorporated/AZ1117IH-33TRG1?qs=cpo3%2FpBou2jnS4SxLgAVoA%3D%3D
2. N-channel FET: https://www.digikey.com/en/products/detail/rohm-semiconductor/RUC002N05T116/4004578?s=N4IgTCBcDaIEoFUDCAGFYByKCsAVAjPgGwgC6AvkA

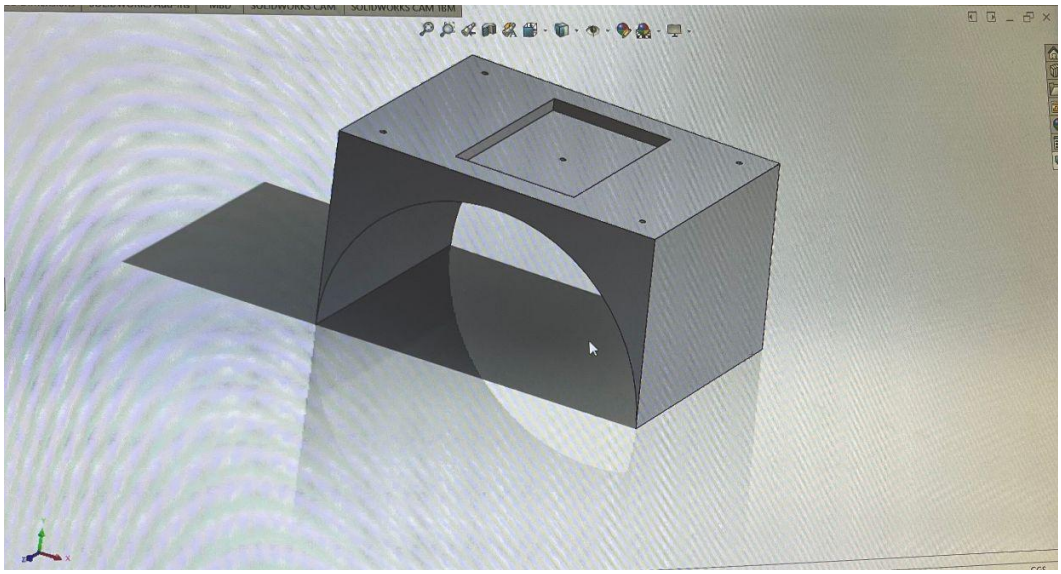
3. 2 Push Buttons: https://www.digikey.com/en/products/detail/w%C3%BCrth-elektronik/434111043826/5209073?s=N4IgTCBcDaICwGY4EZUAZEA4wDYQF0BfIA
4. 10Ω Resistor
5. 22µF Capacitor

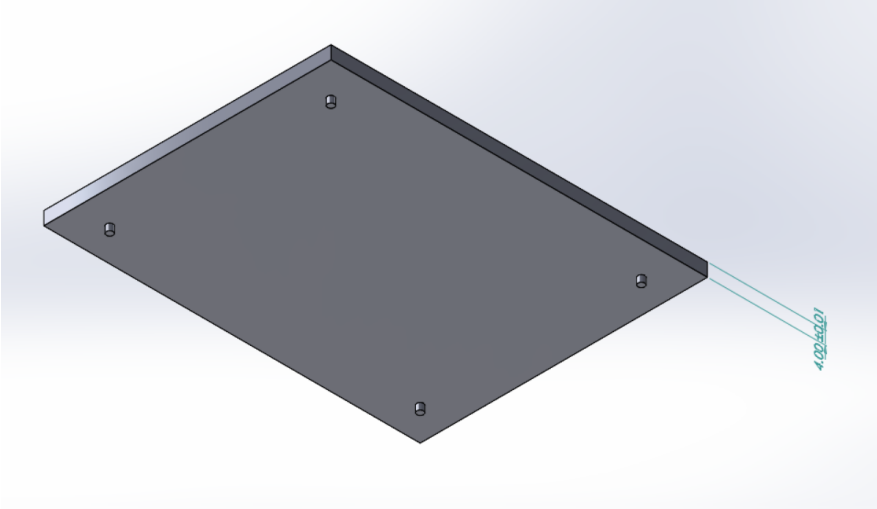
II. Total System Demonstration

A. Live demonstration

III. CAD Design

A. Initial Bottom Draft
   1. Need measurement of completed board
   2. Reduce dimensions overall
   3. Wire hole placing





IV. Questions

1. If manufactured, what is the waiting time for our boards?
2. Do we need a WiFi Manager? If so, how do we implement it?
3. Next steps?
4. What is needed on Demo Day?