

**Report Title:** Designing a Shielded Enclosure using Fusion 360

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**Description:** The previously designed shielded enclosure had to be divided into smaller parts to reduce the printing time. The final design was split into three smaller parts, two of which were printed this week.

**Objective:**

- design and print of a shielded enclosure

## 1. 3D Drawing

This section includes the final designs of the three parts of the shielded enclosure. The previously designed top part was split into two smaller parts. Moreover, unnecessary openings were made to the designs to further reduce the printing time.

Figure 1(a) shows the previously designed top part, and figures 1 (b), and (c) show its split parts. Figure 2 (a) shows the previous base of the design, and figure 2(b) shows the modified design.

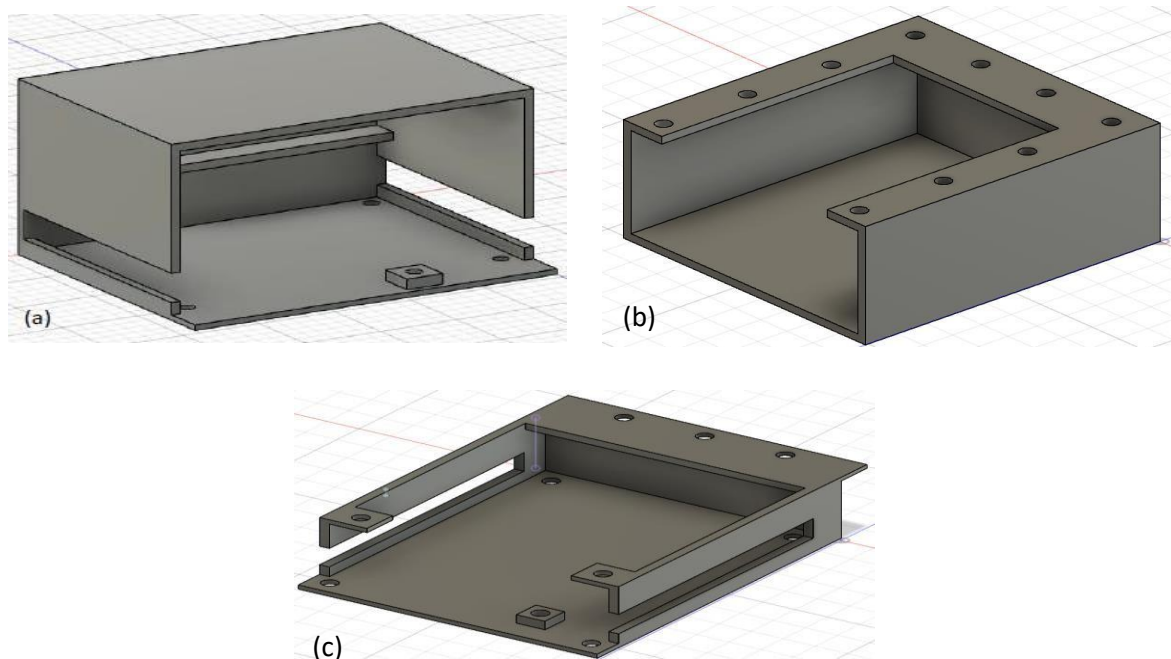


Figure 1. 3D designs of the top part of the shielded enclosure. (a) previously designed part. (b) the top part of the divided part. (c) the bottom part of the designed part.

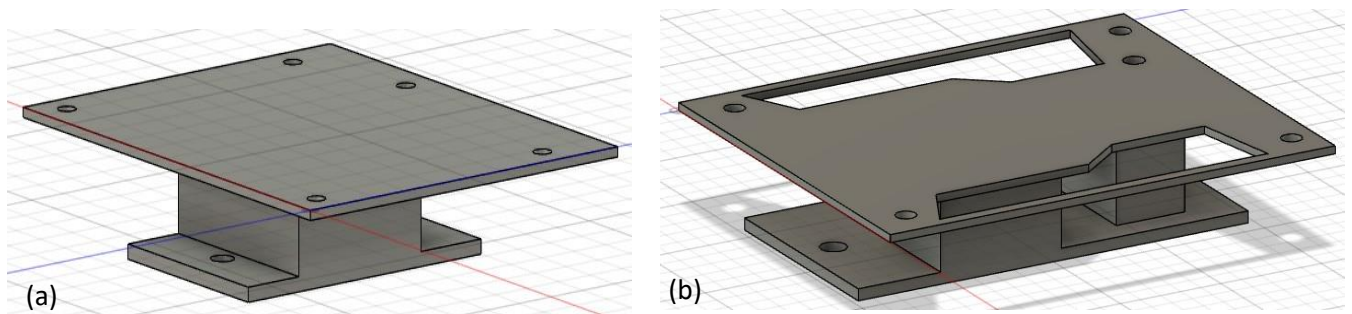


Figure 2. 3D designs of the bottom part of the shielded enclosure. (a) previously designed part. (b) the modified part.

## 2. Design Parameters (unchanged from previous report – except for printing time)

The table below details the shielded enclosure design parameters.

Design parameter	Value
Shielded Enclosure maximum height*	95 mm
Shielded Enclosure maximum width*	95 mm
Shielded Enclosure maximum length*	115 mm
DAQU dimensions (L x W x H) mm	75 x 82 x 22.8
Tolerance added	0.95**
Wall thickness	3 mm
Minimum distance between the DAQU and the top of the Shielded Enclosure ***	20 mm
Minimum height of the Shielded Enclosure stand****	20 mm
Maximum printing time of the design	8 11 hours

\*Measured based on the spacing available for the shielded enclosure on the case containing the power supply, motor drivers, and the DAQU.

\*\*Tolerance considered from previous experience with the 3D printing machine to be used (a designed object of 10 mm length was printed with a 9.5 mm length). However, for screw holes, the diameter is increased by 1mm.

\*\*\*This is to provide space for heat produced by the DAQA.

\*\*\*\*This is to ensure there is enough space for the screws to fasten the DAQU to the casing.

## 3. Results

This section includes the results of printing the two parts of the shielded enclosure. Figure 3 shows the two parts successfully printed with DAQU placed inside, verifying the meeting of the design measurements to the required specifications.

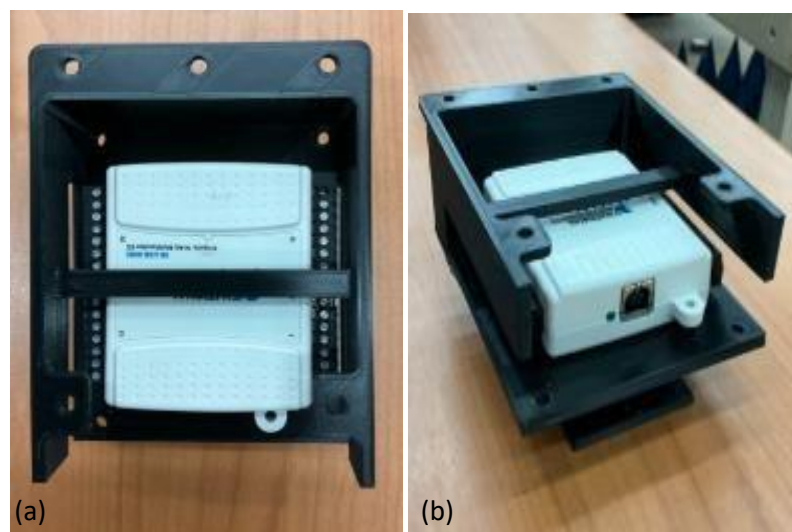


Figure 3. 3D printed designed, DAQU placed to check whether design measurements match the specifications.

#### 4. Future Steps

Next Wednesday, the third part of the shielded enclosure will be printed, and an RF experiment will be conducted with Dr. Ademola. Additionally, Dr. Ademola assigned a problem modeling the scenario of the project, and to read on the Friss equation and related topics.