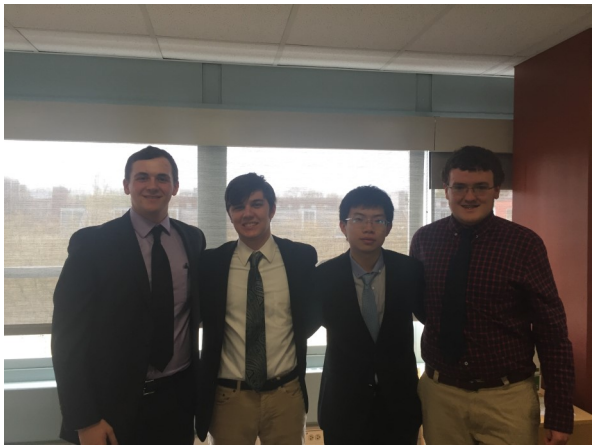
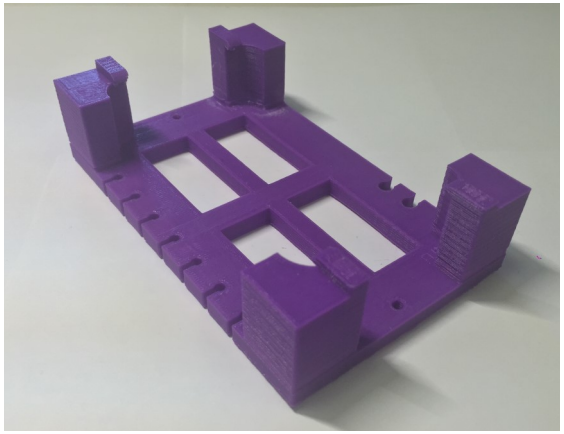


SOLIDWORKS



Section 09

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LOCKHEED MARTIN

THE BIO-BRACKET

Spring 2016
Section 09
April 28, 2016

Created by,

Matthew Bell

Problem Statement

The problem that are team addressed was to redesign a USB Hub bracket to mount the D-Link 7 port USB hub. This new design had to have the following specifications:

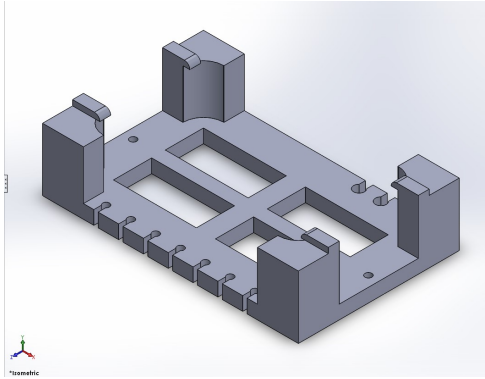
- Fit a 7 port hub
- Provide Cable retention
- Mounts Vertically
- Survive Vibrations
- Additively Manufactured

Materials Used

- **Solidworks**
- **PSU Maker Commons**

Design Process

To come up with a functional design we made multiple preliminary sketches, and eventually arrived at a final design.



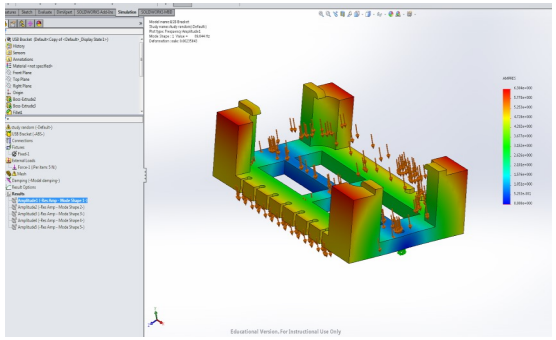
Design Highlights:

- **Efficient:** 3D printed easily and quickly since it is only one part.
- **Economical:** Money is saved since design uses minimal material.
- **Durable:** The design is very strong since the design is reinforced in the center and corners.
- **Environmentally Friendly:** Additively manufactured with Polylactic Acid; a type of strong biodegradable plastic.

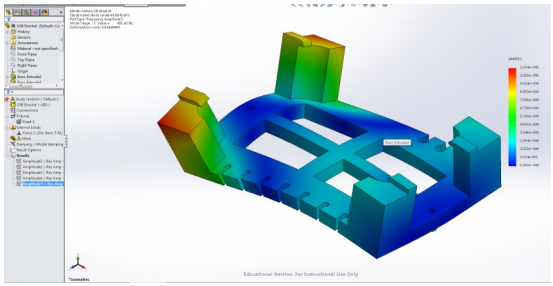
Design Analysis

To test the design, our team did multiple vibration tests and load testing to test the integrity of the structure:

Vibration Testing at 89 Hz



Testing at 455 Hz



Conclusion

The design survived testing and is ready to be manufactured.