

Background

E3 Compliance is an engineering consulting business specializing in Pre Compliance Electromagnetic Compatibility Testing (EMC) and High-Speed design.

Objective

To create and develop an antenna mast that is primarily made out of non-metallic materials that will support the SAS-570 antenna and be able to control the mast from outside the testing chamber. The mast will be able to rotate 90 degrees between horizontal and vertical polarization positions automatically with input from the user, while allowing for manual height adjustment

Key Specifications

- Compliant with FCC and MIL-STD461G
- The use of metallic materials will be minimized in the design of the antenna mast
- Rotate the antenna between the horizontal and vertical polarizations

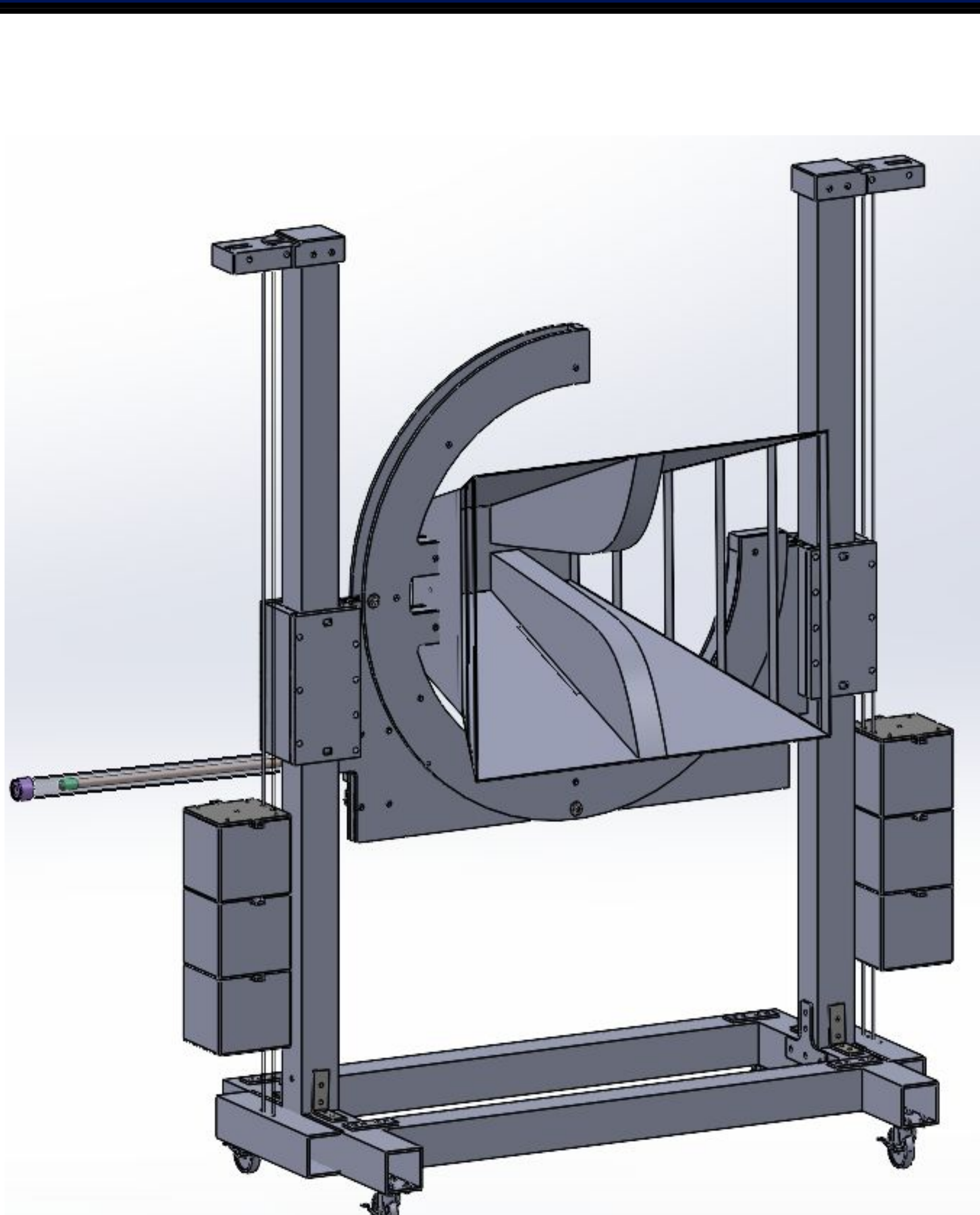
Achievements

- Created a Non-Metallic 32in stroke Pneumatic Piston
- Designed with little metallic reflection components

Design Challenges

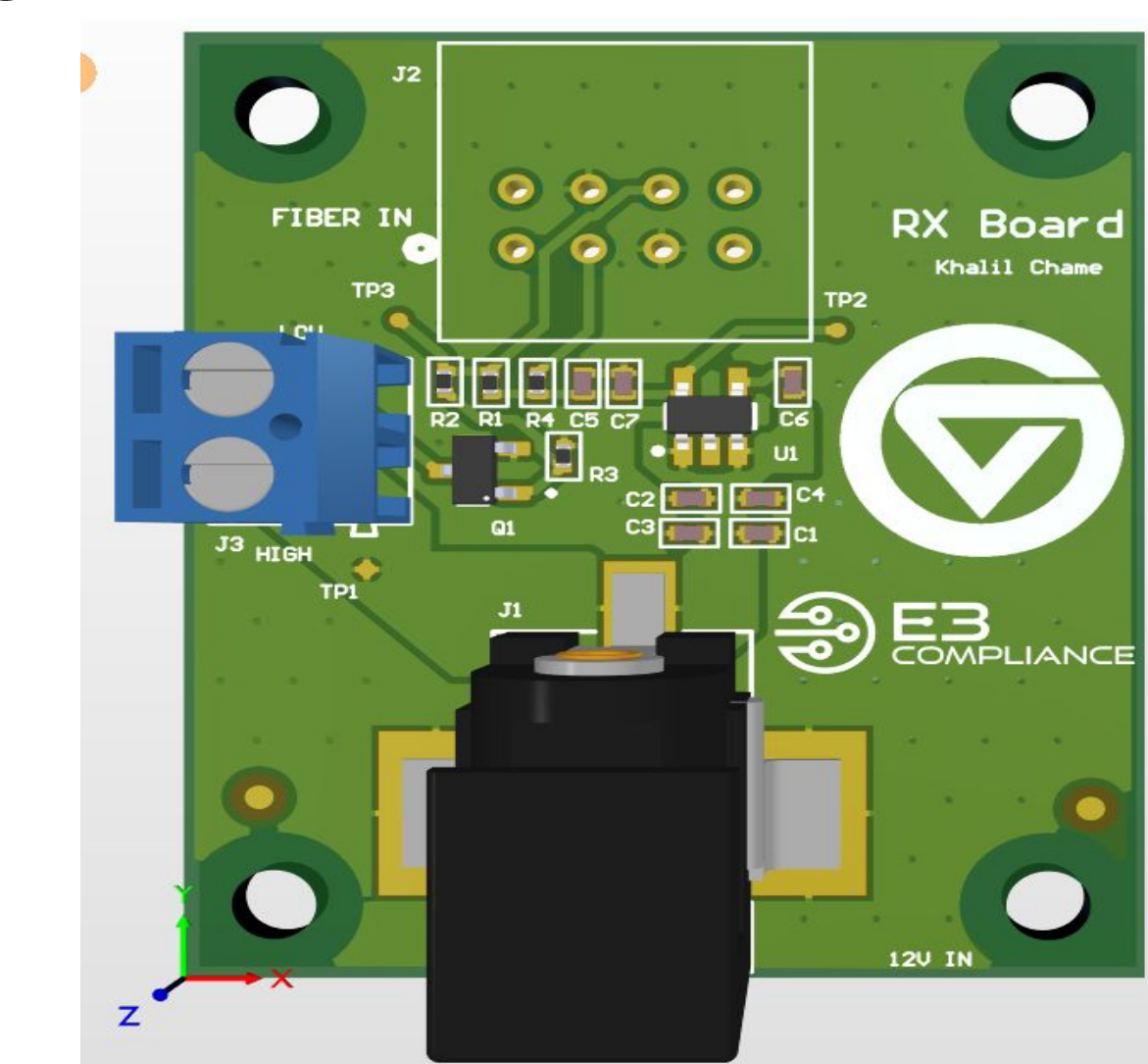
- The weight of the mast components.
- Using minimal metal and absorption materials.
- Designing a custom non-metallic pneumatic cylinder to rotate the antenna.

Mechanical Build



Electrical

- Custom PCB to control pneumatic valve
- Fiber optics used to avoid disturbing EMC testing
- Interfaces with software/setup currently used at E3



Pneumatics

- Designed and build non metallic 32in stroke
- Air regulator to limit piston's operating pressure
- Electrically controlled pneumatic valve for piston



SAS-570



Team 4

