Informal Flight Test 1 Review

Full System Flight Test utilizing Commercial Aerotech M1340W

Flight Video:

https://photos.google.com/share/AF1QipOkpu8wEsxQhfl4QvGEfi2fGYQ2F8St7dAOVClkQnoudu-Au26zbEZeHmA6JrTPaQ?key=M3duUXQ4T0wza25sWmIzN3JGcHprdTRQSVFHRTVR

Different Perspective

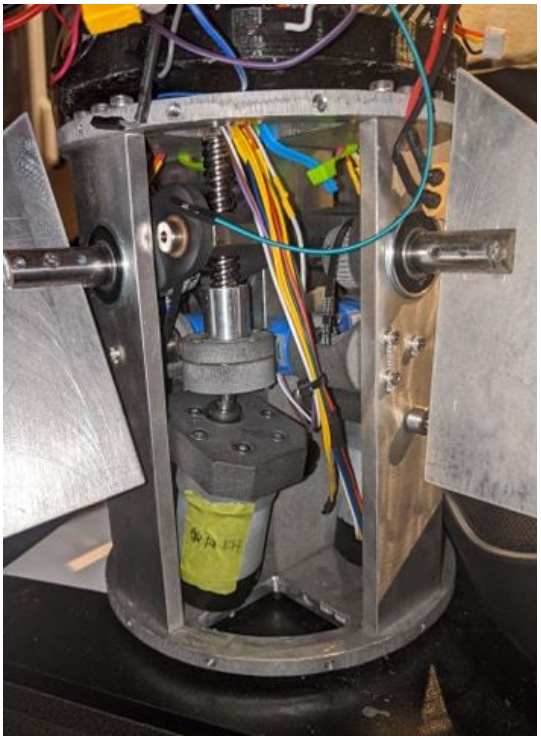
https://photos.app.goo.gl/tjHS99kLofqsjKU59

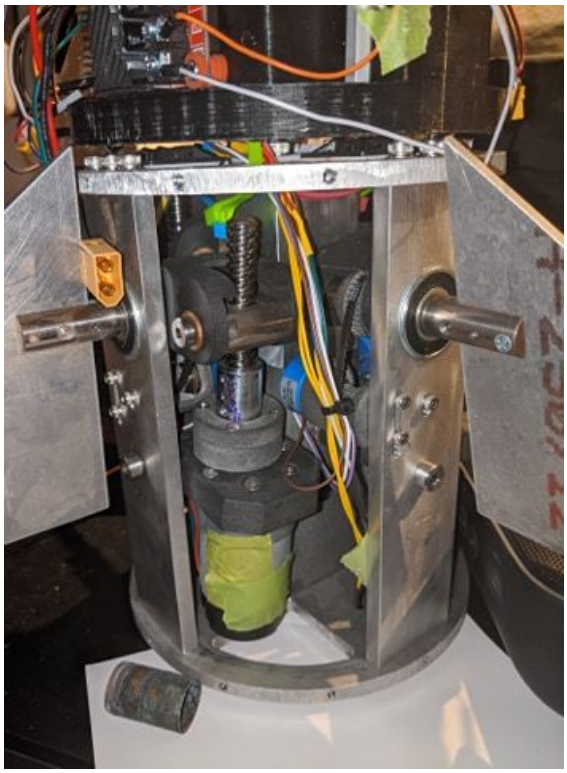
Test Pictures

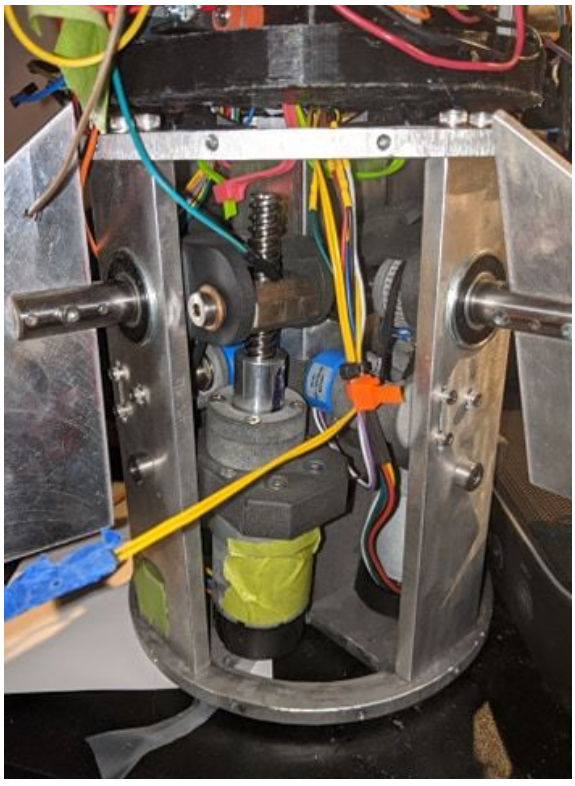
Recovery Analysis

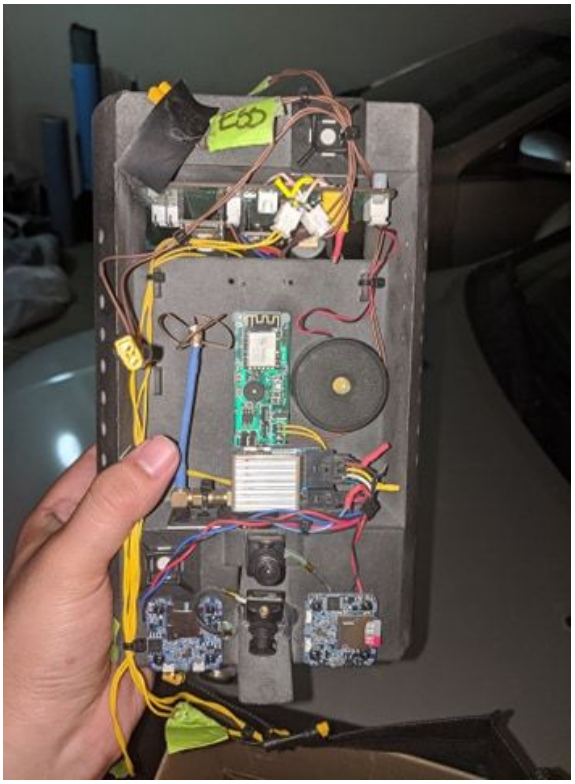
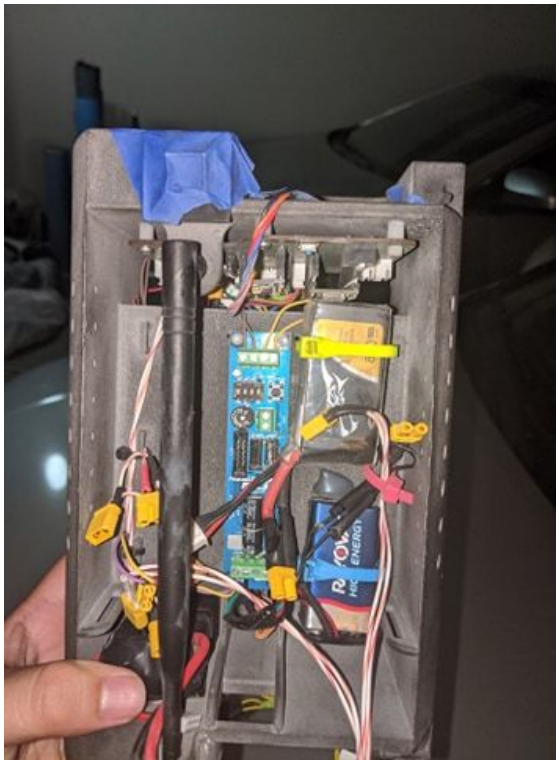
Damage Analysis

(DO NOT SHARE)







E-Bay Sled	
	

Summary

Trajectory: The launch vehicle was able to reach to 5381 ft with braking, which is less than the predicted altitude of 5830 ft with braking (Predicted altitude with no braking is 6800 ft). A possible reason for this is probably due to the additional drag created by the canards when they tried to stabilize the rocket, which was not taken into account in the trajectory simulation. However, this still proved that the braking function of our mechanism works (better than predicted).

GNC: The fin mechanism worked, though inevitably slow, likely due to tuning issues experienced before flight. The system still functioned, though at a slower rate than expected.

Structures: All structural parts of the rocket performed well and did not experience any major failures and all link arms appear to have survived the rough landing.The fin mechanism appeared to have withstood the in-flight and landing forces and which shows our design and calculations were accurate. The safety factors allowed the mech to land in a re-flyable condition with only minor replacements necessary. Going forward we will look into refurbishing the system and get it ready for GNC to further tune before the next launch,

Propulsion: The motor performed as expected and was ejected at apogee along with the boat tail. This is okay, due to both the used motor and boat tail being made to be disposable.

Recovery: The rocket was almost successfully recovered, there were issues with the main parachute in coming out of the rocket due to a snag. The drogue parachute was designed to be oversized in the event of main failure and allowed the rocket to land without major damage.

Damage Analysis: The rocket structurally survived the landing, however the electronics bay coupler was dented and will possibly require a replacement, however all major parts are safe and almost ready to re-fly.