RockSat-X

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Mission Overview

• NNU would like to work with American Semiconductor Inc. and test a flexible antenna in the RockSat-X program to see if the antenna could survive not only the rigors of a rocket launch, but also the cryogenic environment of space.

• Imagining sensors from Aptina will be used to test create a de-spun video of the rocket flight.
Mission Requirements

• Get the antenna to extend and send or receive signals in space

• Record the experiment with video

• De-spin video post-flight

• Collect memory of high definition video flight
Payload

• The payload sent up would contain the flexible antenna from American Semiconductor Inc. Once in space, the rocket will shed its skin allowing for full access to space. The antenna would then be deployed out into space on a boom arm and begin to receive data. The transmissions would be sent either from the payload itself or from the ground.

• A camera will also be sent up in the payload to take high resolution photos and videos of the payload and space and document the deployment of the antenna.
Success Criteria

• Video
  • Receive and de-spin video for a smooth full flight video
  • Collect video from antenna extension

• ASI Antenna
  • Send and receive packets of information after an extension of the arm at varying angles
Design Overview

- Antenna
- PCB Controller
- Receiver
- Camera
Design Specifications

• Antenna boom
  • Mechanical extension system
  • Signal Sender/Receiver

• Video
  • A way to recover data
  • A proper video quality for telemetry
  • Post-flight de-spin program
Team

Dr. Lawrence
Dr. Parke
Team Advisors

Chad Larson
Mentor

Benjamin Gordon
Team Leader

Drew Johnson
Mechanical Lead

Jameson Krueger
Lukas Rieke
Aaron Ewing
Dakota Martin
Patrick Richardson

Seth Leija
Electrical / Software Lead

David Vinson
Darrell Leber
Connor Back
Alex Hanson

Ryan Lofthouse
Jon Hamilton
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## Cost

### RockSat-X Budget

<table>
<thead>
<tr>
<th>Description</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spot on RockSat-X</td>
<td>$14,000</td>
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<tr>
<td>2 x Trip to Wallops ($12,000 each)</td>
<td>24,000</td>
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<tr>
<td>Parts and Supplies</td>
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<td>Total Expenses</td>
<td>Budget</td>
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<td>$40,000</td>
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Benefits

• The testing of an ASI antenna in space would provide data on its durability to survive a space flight as well as the cryogenic environment.

• The RockSat-X program provides students with an opportunity to experience the engineering process. The experience gained from working directly with NASA and industry partners fosters the education of future engineers and scientists.
Questions?