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Space Hardware Club

# Planning and Preparing for the 2017 Solar Eclipse

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# Contents

- Launch Location
- Common Core Hardware
- Common Core Modifications
- Additional Payloads
- Testing
- Post-launch Operations

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# Launch Location

- Clarksville, TN
- Austin Peay University
- Expecting W/NW upper atmosphere flow
  - August 2016 Jetstream was north of Kentucky
  - Fort Campbell is a possible obstacle
- Peak Totality @ 1:25 PM CT

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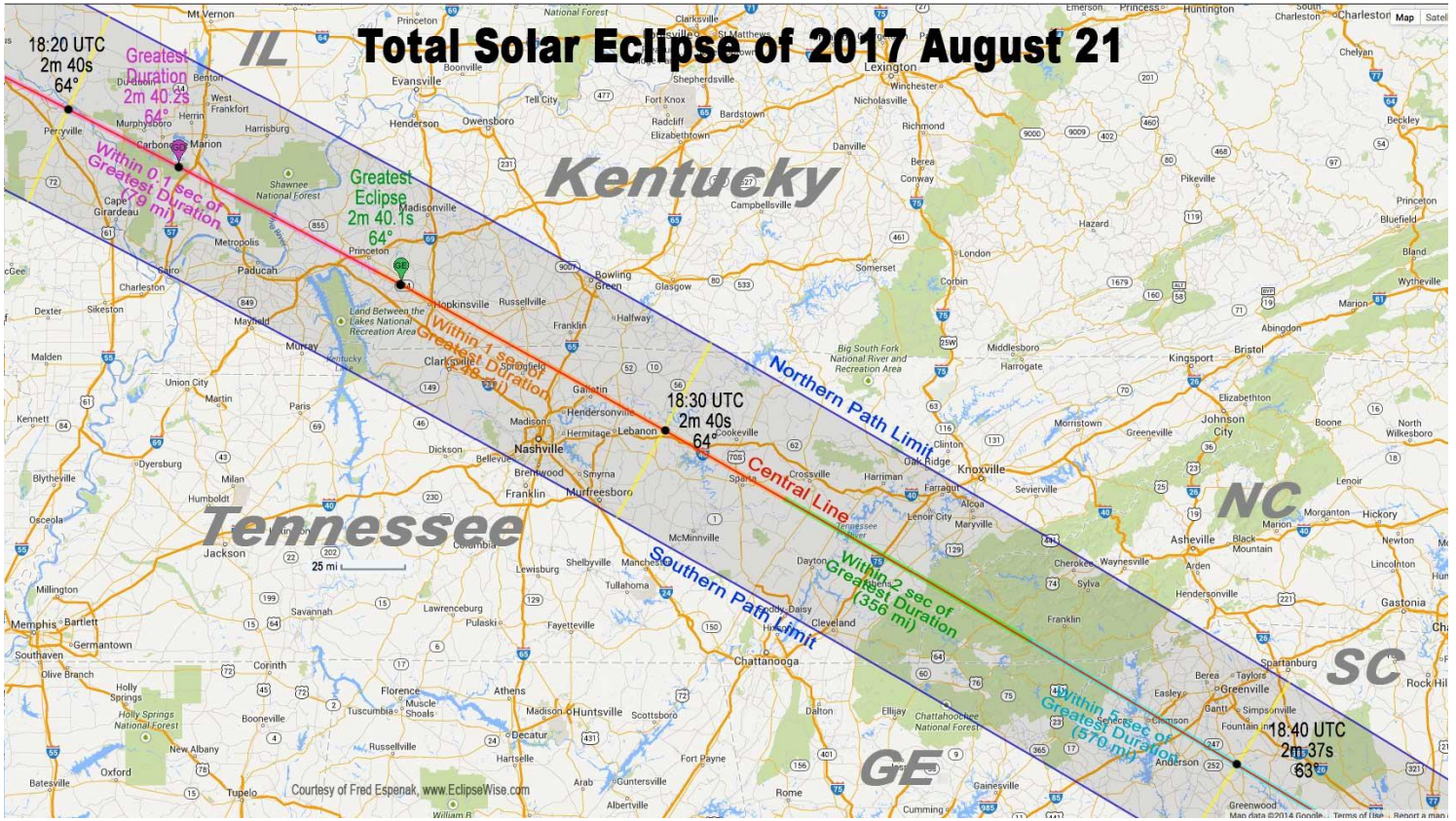


http://eclipsewise.com

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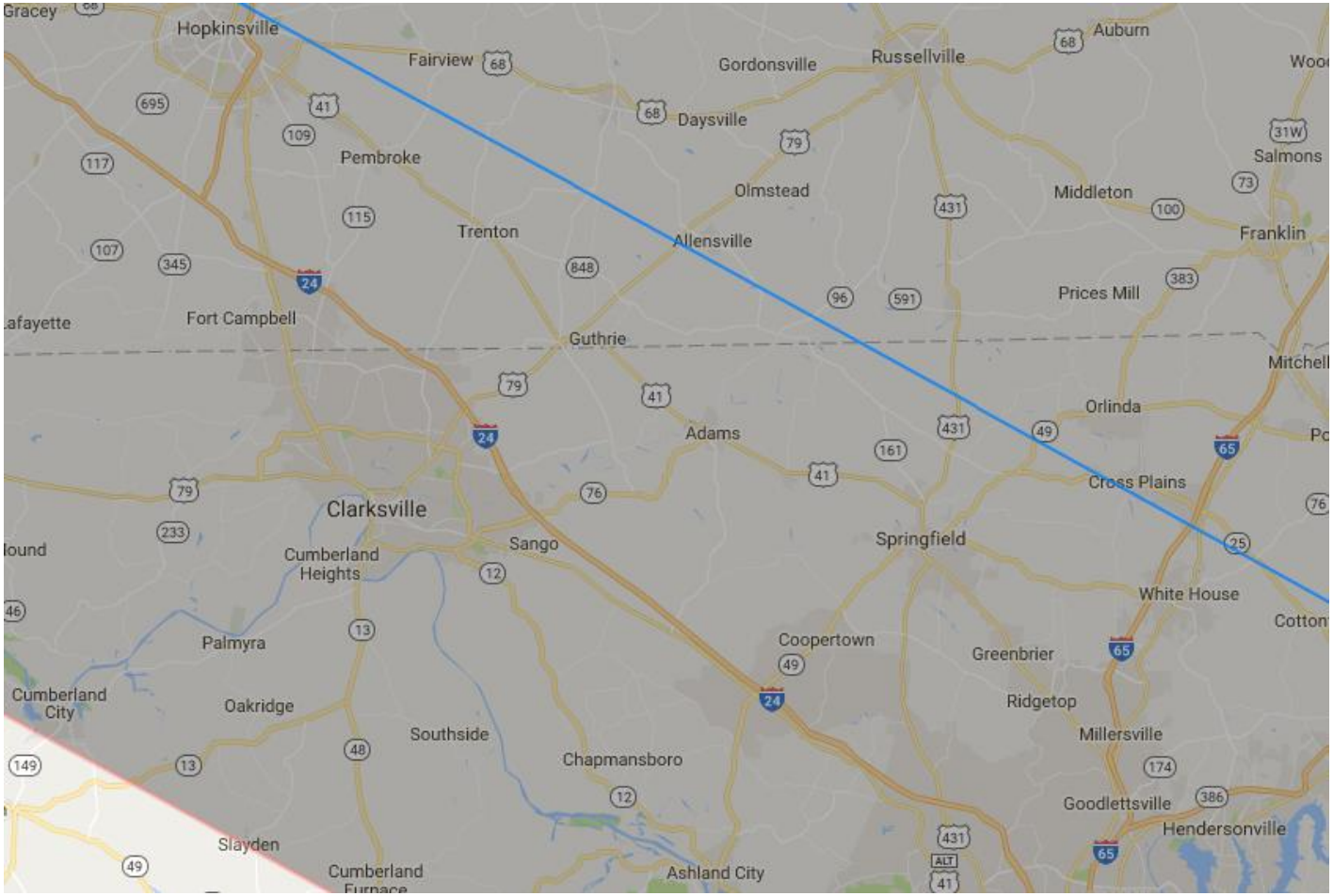


http://www.eclipse2017.org

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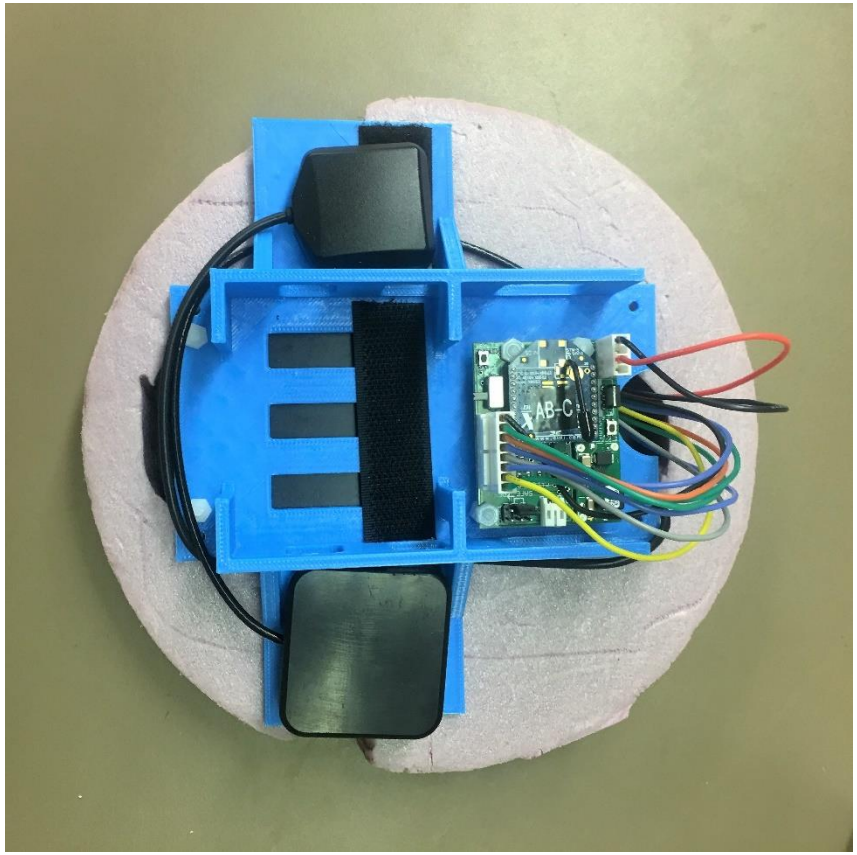
# Common Core Hardware

- Cut-down
- Live Video
- Iridium/Photo-On-Demand Tandem

# Tracker

- Iridium Satellite Module
- OCCAMS Board
  - Zigbee

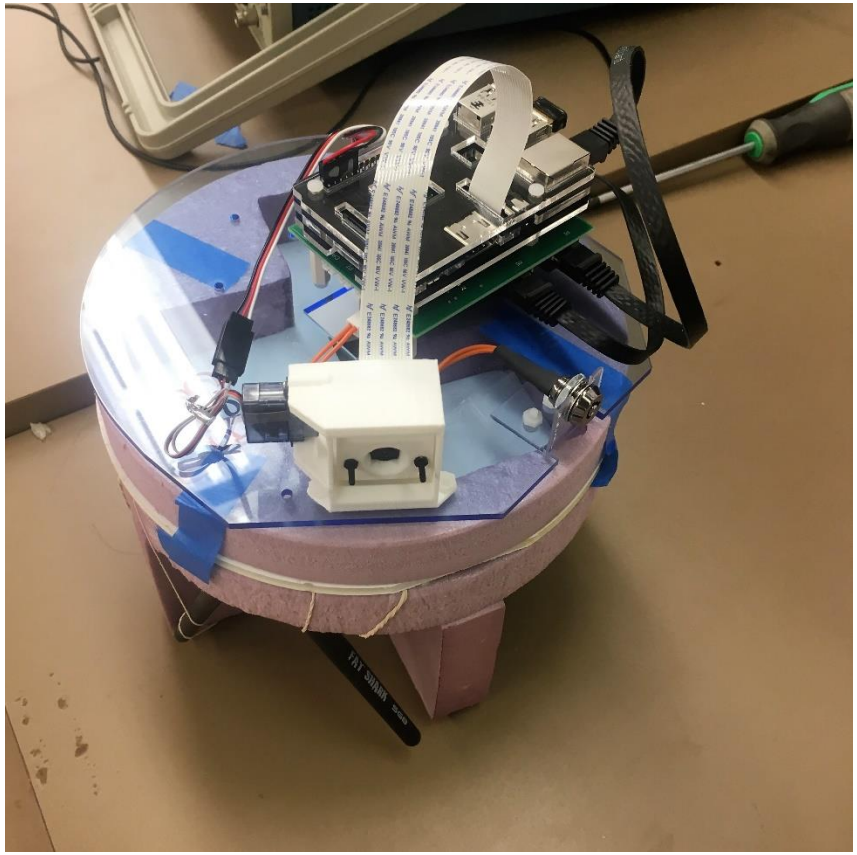


# Cutdown

- 30 rpm high torque motor
- OCCAMS board
  - Zigbee

# Live Video

- HD Video Stream to GS and to online server
- Raspberry pi 2



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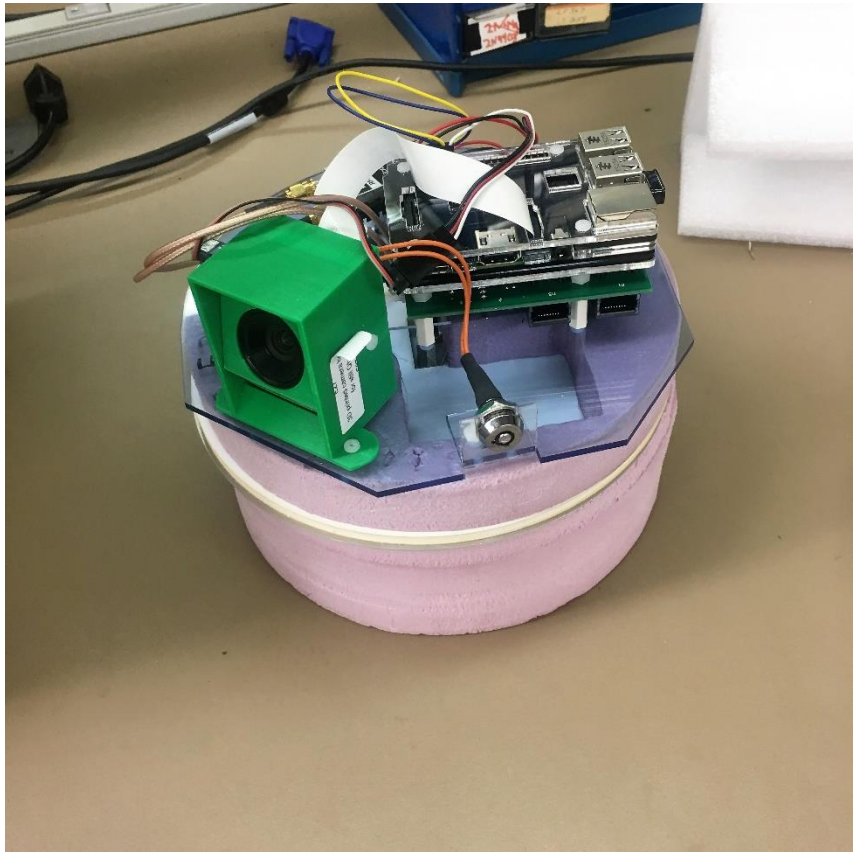
# Photo on Demand

- Still Images Every Minute
- Can be retrieved by GS on command
- Dimensions can be edited from GS
- RDF900



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# Ground Station

- 3 Antenna
  - Patch
  - Yagi
  - Dish
- Tracking is via Internet
- Automatic servo actuation

# Modifications

- Use new regulator but continue using current fill rig
- Replace Yagi with a more directional version
- Modify Ground station to track via APRS packets
- Redesign Payload packages
  - Thermal insulation
  - Waterproofing

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# Current Payload Package

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# Additional Payloads

- Camera Pointing Payload
- Spot Trace
- APRS Beacon: 144.390 K4UAH-12
- Geiger Counter Payload

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# Pointing Payload

- Stabilized GoPro Mount
  - Azimuth Control
- Designed for video at altitude

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# Geiger Counter Payload

- Small form factor kit
- Powered by 9V
- Can share a Payload Package

http://www.imagesco.com

# Testing

- Individual system to GS ground test
- Short-Rage full-system ground test
- Long-Range full-system ground test
- Full system flight test in Huntsville
- 2nd full system test w/ an outreach event

# Post-Launch operations

- Team will begin packing equipment for recovery
  - GS team will monitor the balloon
- Depart on recovery after Eclipse Passes
- Recover payload chain
- Return to Austin Peay
- Return to Huntsville