ESRA 30K ROCKETRY TEAM: AVIONIC

The ESRA's team intends to design, manufacture, and compete with a rocket that will reach 30,000 feet with a student research and developed solid rocket propulsion system and scientific payload.
The Avionic is responsible for design and manufacture flight computers on-board the rocket and motor pressure logging system.

Project Summary

- **Custom flight computer**
  - ARM® Cortex-M0+
  - Single Stage dual deployment e-matches
  - GPS tracking
  - 433MHz ISM band transceiver
  - 9-axis motion tracking
- **Motor Tube pressure logging**
  - Teensy 2.0
  - 2000 PSI pressure range

Figure 1:Full -scale test pressure logging

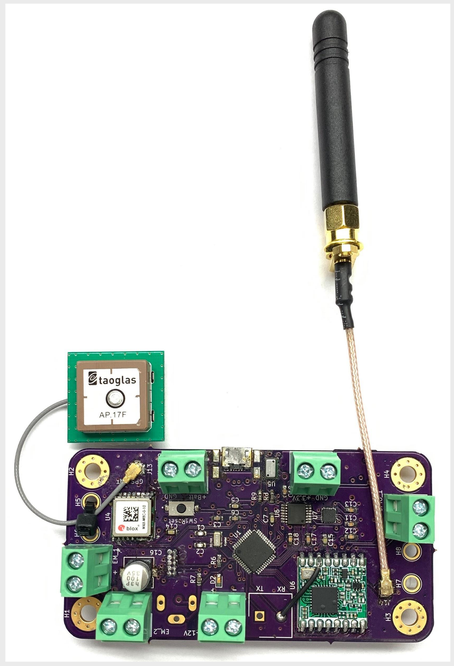

Figure 2: Custom flight computer front side

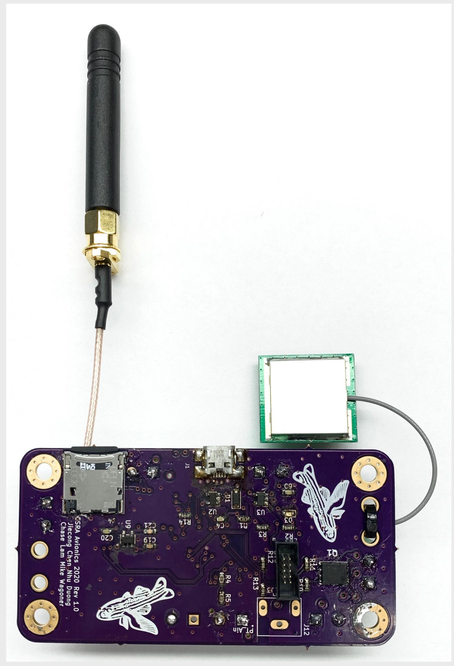

Figure 3: Custom flight computer back side

FUNCTIONS

- GPS location tracker
- Altitude detection
- 3 axis accelerometer sensing
- 3 axis magnetometer sensing
- Temperature sensing
- Pressure sensing up to 2000 PSI
- 24 hours operation capability
- 30,000 ft transmission range
- 2 positions safety switches

IMPROVEMENTS

- Components layout
- Size reduction
- More powerful RF
- Onboard GPS antenna
- Audio indicator

TEAM MEMBERS
Chase Lam
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Dr. Nancy Squires

PROJECT SPONSOR
OSU AIAA

PROJECT STATUS

- Revision 1.0 flight computer completed
- Revision 1.0 Motor Tube pressure logging completed
- Revision 2.0 flight computer in development
- Revision 2.0 Motor Tube pressure logging in development
- Basestation data visulization in development

Oregon State University