Student Payload First Flight (SPIFF) Payload Team Monthly Status Report

Boston University / New Mexico Institute of Mining and Technology / Georgia Institute of Technology

May 25, 2012

Current Team Roster

a. BU: Nate Darling, Chris Hoffman, Nima Badizadegan, Pantelis Thomadis
b. GaTech: Josh Mendez, John Trostel
c. New Mexico Tech: Jordan Klepper, Matt Landavazzo

Boston University

The C&DH (software) team has been meeting on a regular basis during the last two weeks to construct a more concise and manageable satellite mode scheme in order to streamline the software that will be implemented on the HASP single board computer to radio link. Since this link is a robust but simplified version of BUSAT's flight equipment, the software is expected to direct multiple mode changes. These will include shifting from "Safe" mode to "Science" mode in multiple configurations. Progress is ongoing in programming the microcontroller interface that will handle UART communications between the NanoCDH single board computer and the Astrodev He-100 radio.

Upcoming goals and milestones:

1. Continue refining satellite modes to limit the extent of coding required for implementation.
2. Implement modes in software for June SHOT II sounding balloon launch.
3. Troubleshoot software.
4. Refine code for HASP launch.

Georgia Tech

EFM Circuit Board

Over the last month we have focused on the layout of the analog board for the EFM. Careful consideration was given

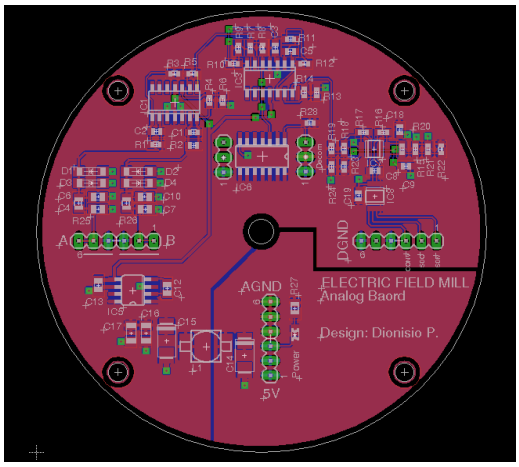

Figure 1: Two-layer EFM analog board. Designed in EagleCAD.

to the PCB's ground planes to avoid current loops and minimize noise. Additionally, analog signals were isolated from the high-frequency analog to digital converter lines. Filtering is also provided on the power lines.

As of the week ending on the 26th of May, the group has submitted the design to Advanced Circuits (4PCB.com) for manufacture. The team expects to have the board populated and tested by next report. A screen shot of the circular PCB design can be seen in Figure (1)

Next milestones (deliverable for end of June):

1) Populate and test analog board
2) Complete digital board design and fabricate board
3) Complete machining of EFM housing

New Mexico Tech

Mechanical

We have received all of the components for the SHM-F experiment and have assembled the unit. Testing is underway and currently the o-ring idea seems feasible. The caps of the structure are still under simulations as there were problems with bolts and stress in the supporting materials. The interface between the line from the BUSAT bus and the NMTRack system has been developed and components for that have been ordered. We hope to have the NMTRack by the end of the month and assembled.

Electrical

Resolved analog issues and have moved to software issues. There are still problems talking to the wave generator chip. After solving this issue, most of the software will be completed. Once these issues have been completed, the team will focus on integration of mechanical and electrical systems.