Abstract

The Satellite Solutions team has worked to design a functioning CubeSat to be launched on an ARLISSS rocket in August of 2003, in accordance with the nanosat program begun by Dr. Twiggs at Stanford University. The goal of this semester’s project was to transition from last summer’s Coke-can sized satellite to a cubic structure, no larger than 10 cm on each side and weighing less than 1 kg. The Satellite Solutions team members have researched the various satellite subsystems and selected several of the design parameters, such as those that follow. The CubeSat payload will consist of several sensors, including GPS, temperature, pressure, and acceleration. The Atmega163 microcontroller has been chosen and work has begun to update the necessary C codes. The communication subsystem underwent several preliminary design changes and will consist of a MaxStream XStream 900 MHz OEM module, a 4-element Yagi-Uda antenna, and a laptop. The power system also has been extensively researched and Lithium-polymer batteries have been selected and will work in conjunction with a recharger, a voltage step-up regulator, and solar cells. Finally, the aluminum structure has been fabricated by the machine shop and a prototype has been built. An estimate of the budget has been calculated at approximately $1,900. The Satellite Solutions team has also outlined the work that needs to be completed by the summer group.