HASP Payload Specification and Integration Plan

Payload Title: Near Earth Object Detection (NEO)

Payload Class: Small Large (circle one)

Payload ID: 2012-6

Institution: **University of North Dakota**

Contact Name: J. Wade Snarr

Contact Phone: 435 503-2548

Contact E-mail: wade@speedhut.com

Submit Date: 4/20/2012

I. Mechanical Specifications:

A. Measured weight of the payload (not including payload plate)

2513 g

B. Provide a mechanical drawing detailing the major components of your payload and specifically how your payload is attached to the payload mounting plate

Not complete to date

C. If you are flying anything that is potentially hazardous to HASP or the ground crew before or after launch, please supply all documentation provided with the hazardous components (i.e. pressurized containers, radioactive material, projectiles, rockets…)

N/A

D. Other relevant mechanical information

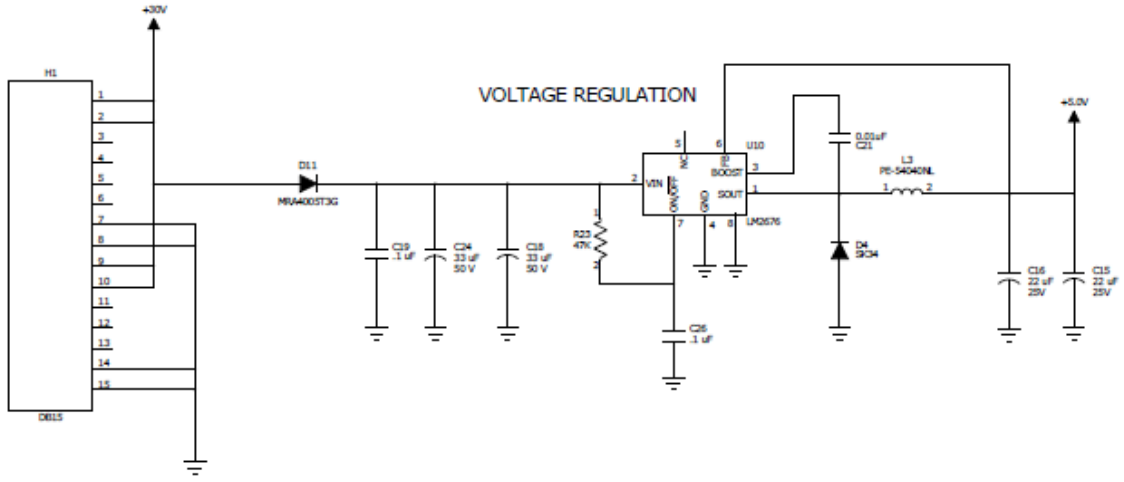
N/A

II. Power Specifications:

A. Measured current draw at 30 VDC

0.423 A

B. If HASP is providing power to your payload, provide a power system wiring diagram starting from pins on the student payload interface plate EDAC 516 connector through your power conversion to the voltages required by your subsystems.



C. Other relevant power information

N/A

III. Downlink Telemetry Specifications:

A. Serial data downlink format: Stream Packetized (circle one)

B. Approximate serial downlink rate (in bits per second)

700 bps

C. Specify your serial data record including record length and information contained in each record byte.

We are still working on our photo compression algorithm. This downlinked data record length is yet known however it will allow us to downlink 2-4 images per hour.

D. Number of analog channels being used:

Two

E. If analog channels are being used, what are they being used for?

Channel one will be used to provide near real time monitoring of our electronic system temperature and channel two will be used to provide near real time monitoring of the CCD camera and lens position relative to the sun's brightness.

F. Number of discrete lines being used:

N/A

G. If discrete lines are being used what are they being used for?

N/A

H. Are there any on-board transmitters? If so, list the frequencies being used and the transmitted power.

N/A

I. Other relevant downlink telemetry information.

N/A

IV. Uplink Commanding Specifications:

A. Command uplink capability required: Yes No (circle one)

B. If so, will commands be uplinked in regular intervals: Yes No (circle one)

C. How many commands do you expect to uplink during the flight (can be an absolute number or a rate, i.e. *n commands per hour*)

4 per hour

D. Provide a table of all of the commands that you will be uplinking to your payload

0x7131 System Reset

0x7232 Downlink System Status

0x7333 Downlink most recent compressed image

0x7434 Logging on

0x7535 Logging off

Others to be added as needed

E. Are there any on-board receivers? If so, list the frequencies being used.

N/A

F. Other relevant uplink commanding information.

N/A

V. Integration and Logistics

A. Date and Time of your arrival for integration:

July 30 2012, 10:00 am

B. Approximate amount of time required for integration:

3-4 Hours

C. Name of the integration team leader:

J. Wade Snarr

D. Email address of the integration team leader:

wade@speedhut.com

E. List **ALL** integration participants (first and last names) who will be present for integration with their email addresses:

Marissa Saad (mrzhasaad@gmail.com)

F. Define a successful integration of your payload:

- **Successful mounting of payload to platform, both mechanically and electronically.**
- **Successful system powerup and stable current draw.**
- **Successful system reboot.**
- **Successful uplink of all uplink commands.**
- **Successful downlink of all requested data packets.**
- **Successful temperature stabilization during TVAC testing.**
- **Passing of TVAC testing.**
- **Successful logging of images, GPS coordinates, compass readings, and remote vibration readings.**

G. List all expected integration steps:

Perform prior and during TVAC testing:

- **Power up payload and wait for downlink "Ready" status**
- **Reboot system via "Reset" command**
- **Wait for downlink "Ready" status**
- **Request "System Status"**
- **Send "Logging" command**
- **Wait predetermined time**
- **Request "System Satus"**
- **Send "Stop Logging" command**
- **Request "System Status"**
- **Request "Recent Compressed Image"**
- **Examine HASP downlinked data file as well as logged image and position data.**
- **Monitor Analog lines for correct readings**

H. List all checks that will determine a successful integration:
Perform communication and data checks.

Successfully execute command set.

Monitor system to ensure proper operation via system data and downlinked photo packets.

I. List any additional LSU personnel support needed for a successful integration other than directly related to the HASP integration (i.e. lifting, moving equipment, hotel information/arrangements, any special delivery needs…):

N/A

J. List any LSU supplied equipment that may be needed for a successful integration:

We will carry all our required equipment and tools. We may need standard set of wrenches, soldering station, oscilloscope, and heat gun.