The University of Victoria’s Center for Aerospace Research (CfAR) required an update to their pre-existing design of a flight data recorder (FDR).

Due to loss of an open source module and on-board communication issues a redesign was essential.

The FDR system’s purpose is to record potentially damaging impact events during transit.

Redesign was based off of the following requirements:

- Must be 3 stacked PCBs
- 2 CAN loggers with identical circuits
- 1 Serial logger

Most components had been previously selected with the exception of the following:

1. Backup power capacitors
2. LED resistors
3. Cross Board Connectors

During PCB design careful considerations were made to avoid errors in testing:

- Right angle traces were non-existent to avoid electro-magnetic interference and issues in manufacturing for smaller trace widths
- Power loops were avoided due to the potential noise concerns
- Proper component spacing for ease of future soldering
- CAN data line traces to be routed next to each other

The results found in the backup power circuit testing were the following:

- The power source was shut down at 15 seconds and the capacitor was capable of gradually decreasing the voltage
- The voltage was held above 1.8 V for at least 1 second
- At 16 seconds the voltage was 2 V, this allows for any critical data to be sent before all power is lost

Future Work to be completed:

- Soldering of both Serial and CAN boards
- Ensuring electrical integrity prior to powering the system by using a multimeter
- Testing functionality of system when power is supplied

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