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Slide Sentinel Progress Report

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Hi all,

Here is another update for the Slide Sentinel project:

This Last Week’s Accomplishments

1. The Base and Rover are communicating RTK RAW data via a LoRa connection. Currently, the base buffers a full RTK string before sending it, and while a LoRa transmission is not ready, the rover is able to read NMEA data into a tinyGPS++ object for processing.
2. The TinyGPS++ object is capable of parsing GPS data, retrieving specific fields from queried NMEA strings, and keeping track of most recent incoming position fix data.
3. None of the code written for data transmission blocks, so the device is able to be configured for multitasking, various interrupt configurations, and datalogging.
4. The Feather M0 is configured to read and write serial data from up to three different UART serial ports at a time. This is to reduce lag time with RTK data transmission, all three ports operate at differing BAUD rates, and the device can still print to serial for debugging purposes. Setting up new serials is a breeze as long as we have the pins for it.

Issues to Solve

1. RTK correction data is reaching the rover, however the rover is not able to correct its position with the RTK data. The strings appear to be in the correct format when outgoing from the microprocessor to the rover, however the data speed is much higher during testing, so I would like to examine the structure of incoming data to make sure that the transmission method is indeed functioning correctly. Debug ideas are as follows:
   1. The Vcc previously being used for the NAVSPARQ GPS was too low: 3.3V as opposed to recommended 3.7V. I have gotten a portable battery to test a 3.7V configuration
   2. Timing may be an issue with the RTK setup, perhaps the strings are coming too late to achieve correction. Use an RTC to assess this.
   3. Satellite constellations require at least 7 mutually-connected satellites for base and rover. At any one time, the most GPS satellites connected has been 8. Try to configure the antenna and EVB to get more satellite connections using skytraq binary configuration within GNSS viewer.