

## General Information

### Mission Information

|                  |                      |
|------------------|----------------------|
| Project name     | 13284-1805_20181211a |
| Processing date  | 2018-12-13 19:03:36  |
| Mission date     | 2018-12-11 16:30:31  |
| Mission duration | 03:22:19.000         |
| Processing mode  | IN-Fusion SmartBase  |
| GPS Station      | ASB                  |

### Rover Hardware Information

|               |                          |
|---------------|--------------------------|
| Product       | POS AV 610 VER6 HW2.5-12 |
| Serial number | S/N9865                  |
| IMU type      | 57                       |
| Receiver type | BD982                    |
| Antenna type  | AV37                     |

## Project File List

### Rover Data Files

| File name                   | File type |
|-----------------------------|-----------|
| 181211_163012_INS-GPS_1.raw | POS Data  |

### Input Files

| File Name       | File type                   |
|-----------------|-----------------------------|
| Ephm3450.18g    | GLONASS Broadcast Ephemeris |
| Ephm3450.18n    | GPS Broadcast Ephemeris     |
| GALP345A.18g    | GLONASS Broadcast Ephemeris |
| WVHU345A.18g    | GLONASS Broadcast Ephemeris |
| WVHU345A.18n    | GPS Broadcast Ephemeris     |
| WVHU345A.18o    | GNSS SingleBase             |
| WVLA345A.18g    | GLONASS Broadcast Ephemeris |
| WVLA345A.18n    | GPS Broadcast Ephemeris     |
| WVLA345A.18o    | GNSS SingleBase             |
| WVMZ345A.18g    | GLONASS Broadcast Ephemeris |
| WVMZ345A.18n    | GPS Broadcast Ephemeris     |
| WVMZ345A.18o    | GNSS SingleBase             |
| WVOH345A.18g    | GLONASS Broadcast Ephemeris |
| WVOH345A.18n    | GPS Broadcast Ephemeris     |
| WVOH345A.18o    | GNSS SingleBase             |
| WVRA345A.18g    | GLONASS Broadcast Ephemeris |
| WVRA345A.18n    | GPS Broadcast Ephemeris     |
| WVRA345A.18o    | GNSS SingleBase             |
| WVRH345A.18g    | GLONASS Broadcast Ephemeris |
| WVRH345A.18n    | GPS Broadcast Ephemeris     |
| WVHA345A.18o    | GNSS SingleBase             |
| WVHA345A.18n    | GPS Broadcast Ephemeris     |
| WVHA345A.18g    | GLONASS Broadcast Ephemeris |
| GALP345A.18n    | GPS Broadcast Ephemeris     |
| GALP345A.18o    | GNSS SingleBase             |
| KYGB345A.18g    | GLONASS Broadcast Ephemeris |
| KYGB345A.18n    | GPS Broadcast Ephemeris     |
| KYGB345A.18o    | GNSS SingleBase             |
| KYPA345A.18g    | GLONASS Broadcast Ephemeris |
| KYPA345A.18n    | GPS Broadcast Ephemeris     |
| KYPA345A.18o    | GNSS SingleBase             |
| MCON345A.18g    | GLONASS Broadcast Ephemeris |
| MCON345A.18n    | GPS Broadcast Ephemeris     |
| MCON345A.18o    | GNSS SingleBase             |
| WVCH345A.18g    | GLONASS Broadcast Ephemeris |
| WVCH345A.18n    | GPS Broadcast Ephemeris     |
| WVCH345A.18o    | GNSS SingleBase             |
| WVFL345A.18g    | GLONASS Broadcast Ephemeris |
| WVFL345A.18n    | GPS Broadcast Ephemeris     |
| WVFL345A.18o    | GNSS SingleBase             |
| WVRH345A.18o    | GNSS SingleBase             |
| igr20311.sp3    | GPS Precise Ephemeris       |
| igr20312.sp3    | GPS Precise Ephemeris       |
| igu20313_00.sp3 | GPS Precise Ephemeris       |
| igu20313_06.sp3 | GPS Precise Ephemeris       |
| igu20313_12.sp3 | GPS Precise Ephemeris       |
| igu20313_18.sp3 | GPS Precise Ephemeris       |

### Output Files

| Filename          | File type            |
|-------------------|----------------------|
| sbt_Mission 1.out | SBET Trajectory File |

## Rover Data Summary

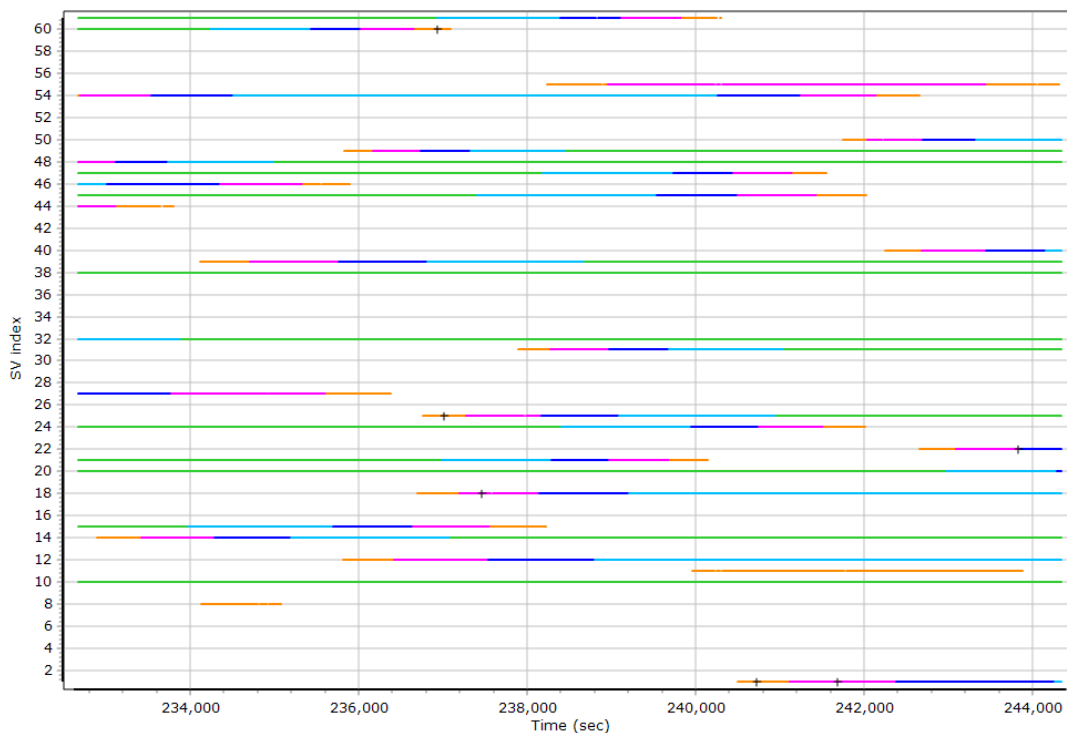
|  |  |       |       |
|--|--|-------|-------|
| First raw data file                                      | 181211_163012_INS-GPS_1.raw  |       |       |
| Last raw data file                                       | 181211_163012_INS-GPS_1.raw  |       |       |
| Start GPS week   | 2031   |       |       |
| Start time   | 232212.959 (12/11/2018 4:30:12 PM)   |       |       |
| End time   | 244352.877 (12/11/2018 7:52:32 PM)   |       |       |
| Start of fine alignment                                  | 232617.865 (12/11/2018 4:36:57 PM)   |       |       |
| Available subsystems                                     | Primary GNSS, Gimbal, IMU  |       |       |
| POS Event Input  | Event 1 Input, Event 2 Input, Event 3 Input, Event 4 Input, Event 5 Input, Event 6 Input |       |       |
| Correction data  | None   |       |       |
| <b>IMU Installation Lever Arms &amp; Mounting Angles</b> |  |       |       |
| Gimbal to IMU lever arm [m]                              | 0.000  | 0.000 | 0.000 |
| Gimbal to IMU mounting angles [deg]                      | 0.000  | 0.000 | 0.000 |
| Gimbal to Primary GNSS lever arm [m]                     | 0.000  | 0.000 | 0.000 |
| Gimbal to Primary GNSS lever arm std dev [m]             | -1.000   |       |       |
| Aircraft to Reference mounting angles [deg]              | 0.000  | 0.000 | 0.000 |

# Raw Data QC

## Raw IMU Import QC Summary

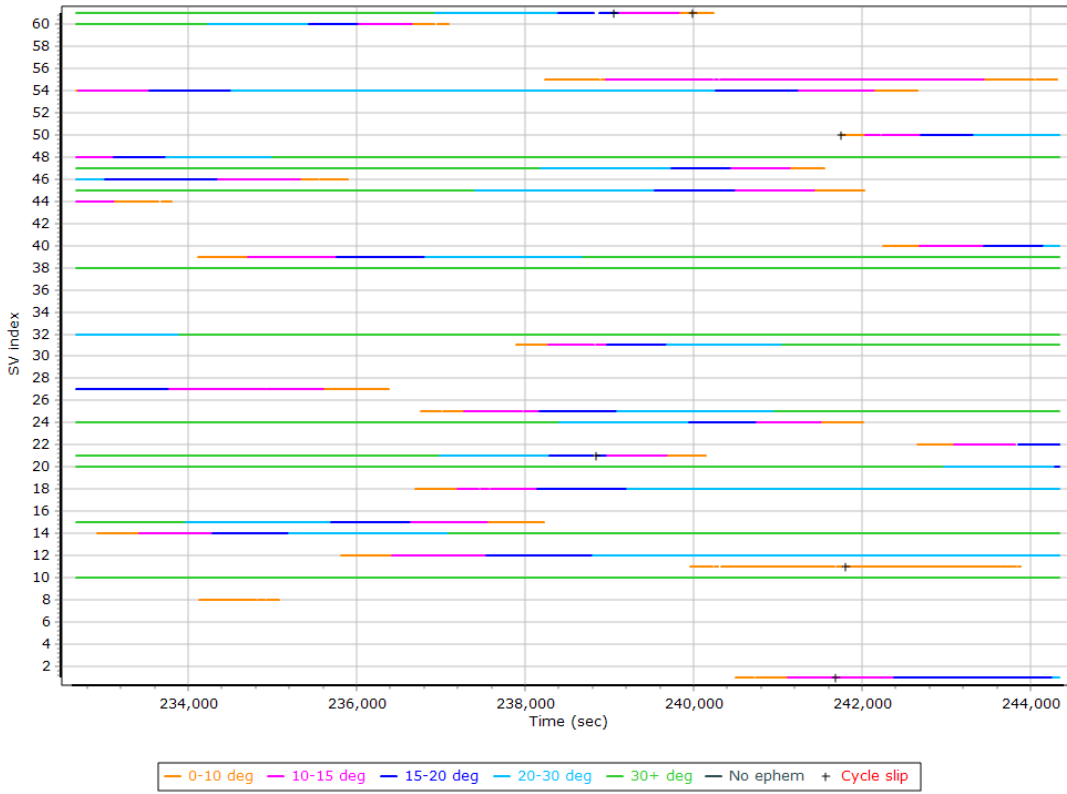
|                         |                     |
|-------------------------|---------------------|
| IMU data input file     | imu_Mission 1.dat   |
| IMU data check log file | imudt_Mission 1.log |
| IMU Records Processed   | 2427511             |
| Termination Status      | Normal              |
| IMU Anomalies           | 0                   |

### L1 Satellite Lock/Elevation

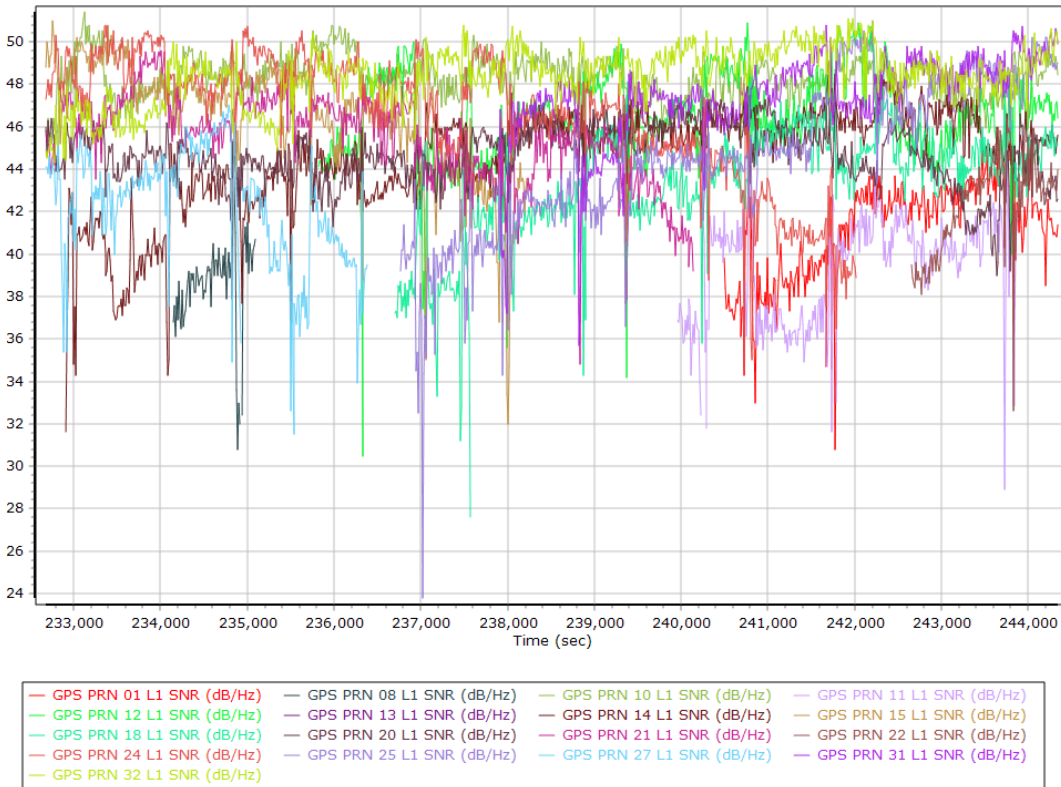


— 0-10 deg — 10-15 deg — 15-20 deg — 20-30 deg — 30+ deg — No ephem + Cycle slip

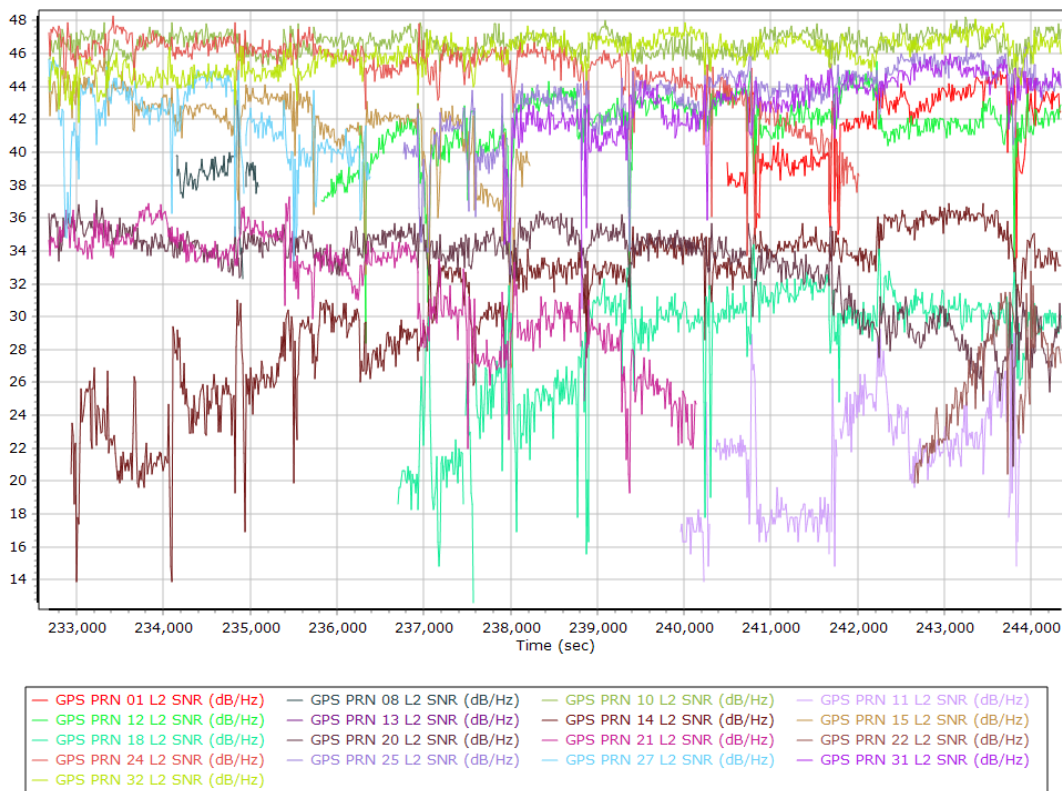
## L2 Satellite Lock/Elevation



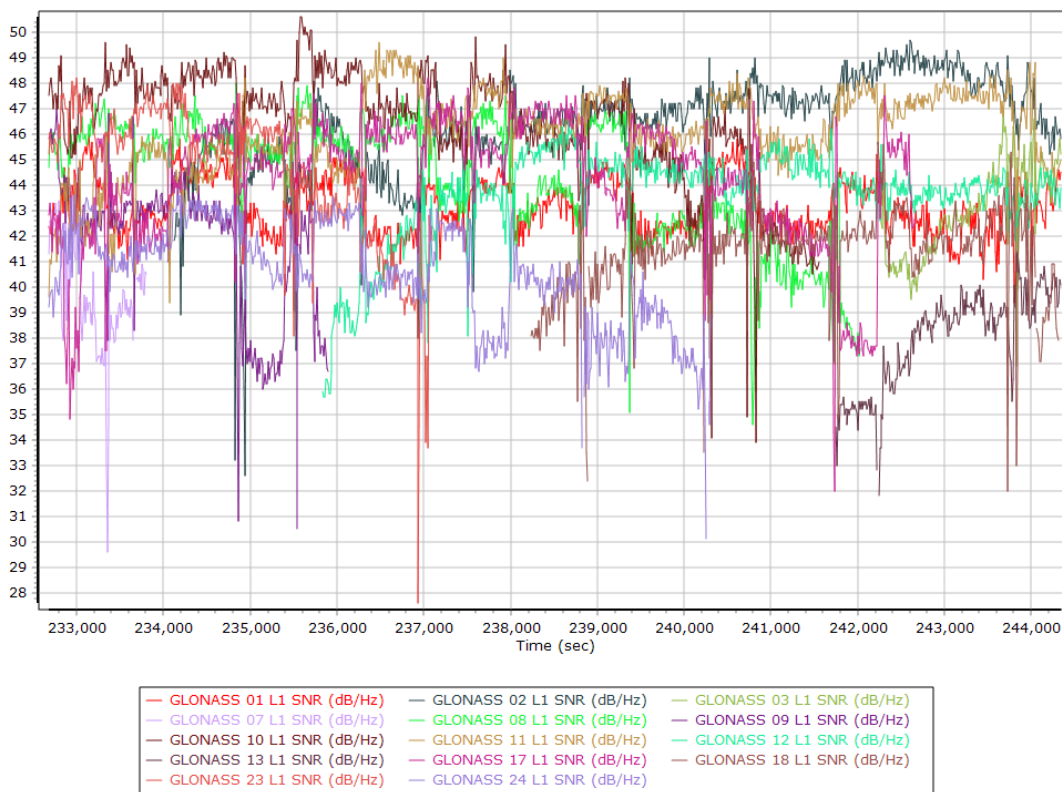
## GPS L1 SNR



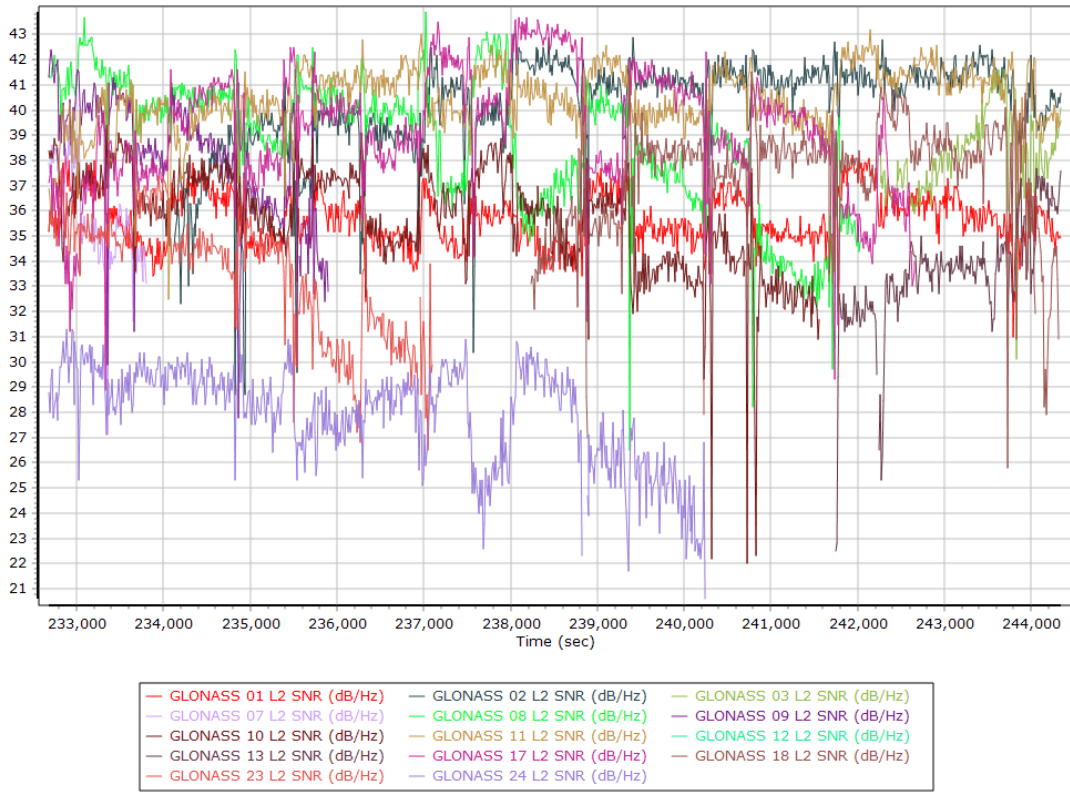
## GPS L2 SNR



## GLONASS L1 SNR

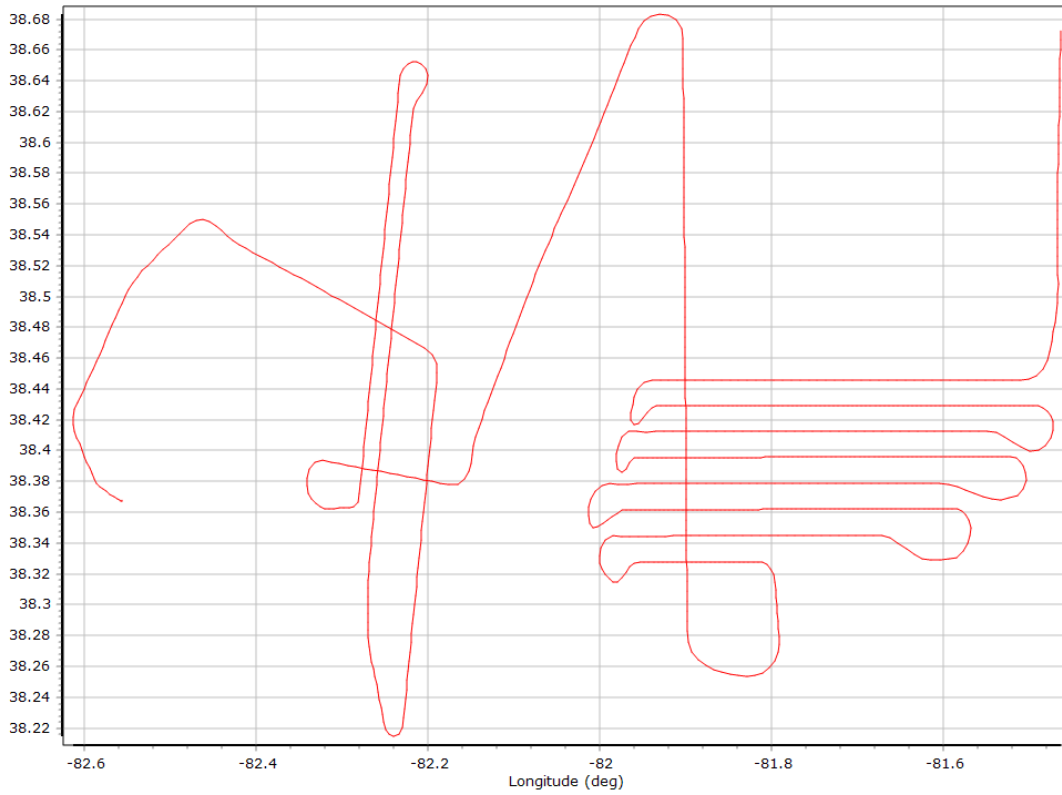


## GLONASS L2 SNR

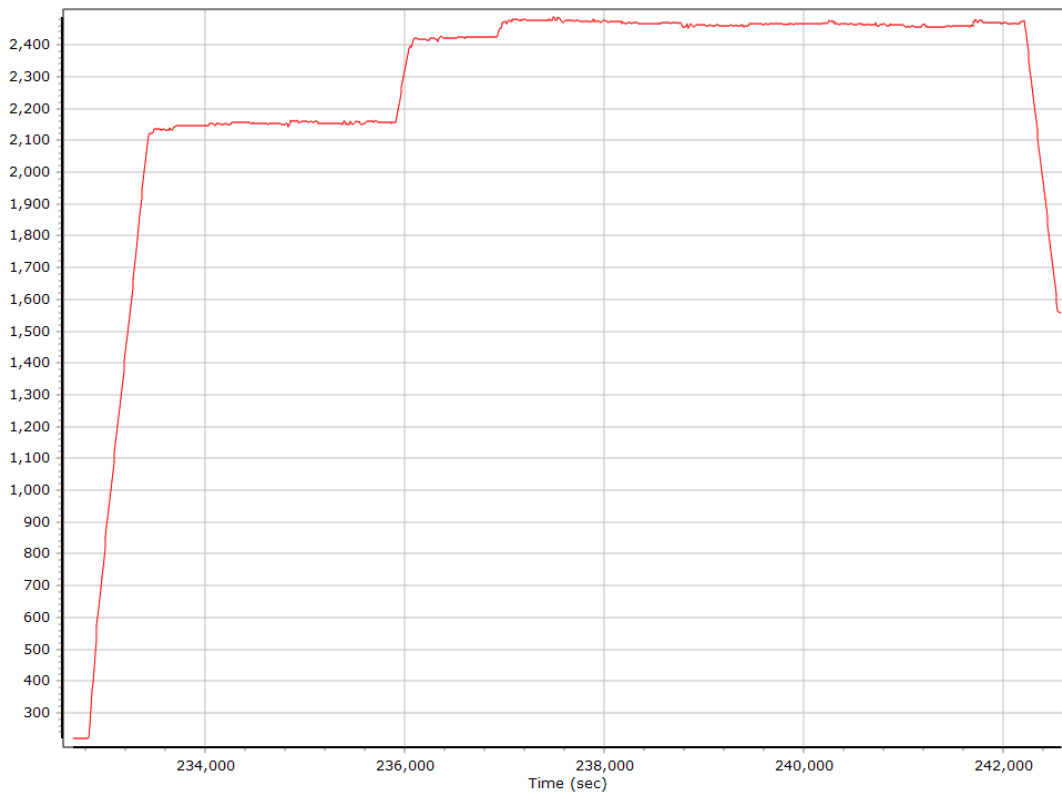


## Trajectory Information

### Top View

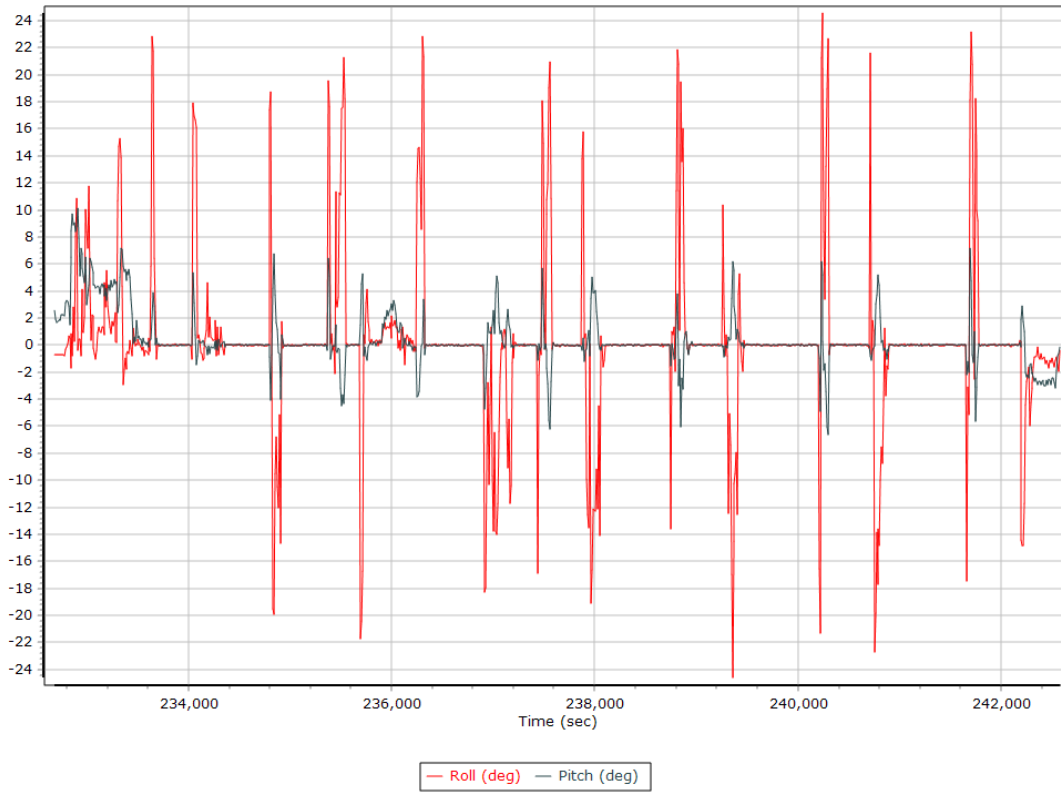


### Altitude

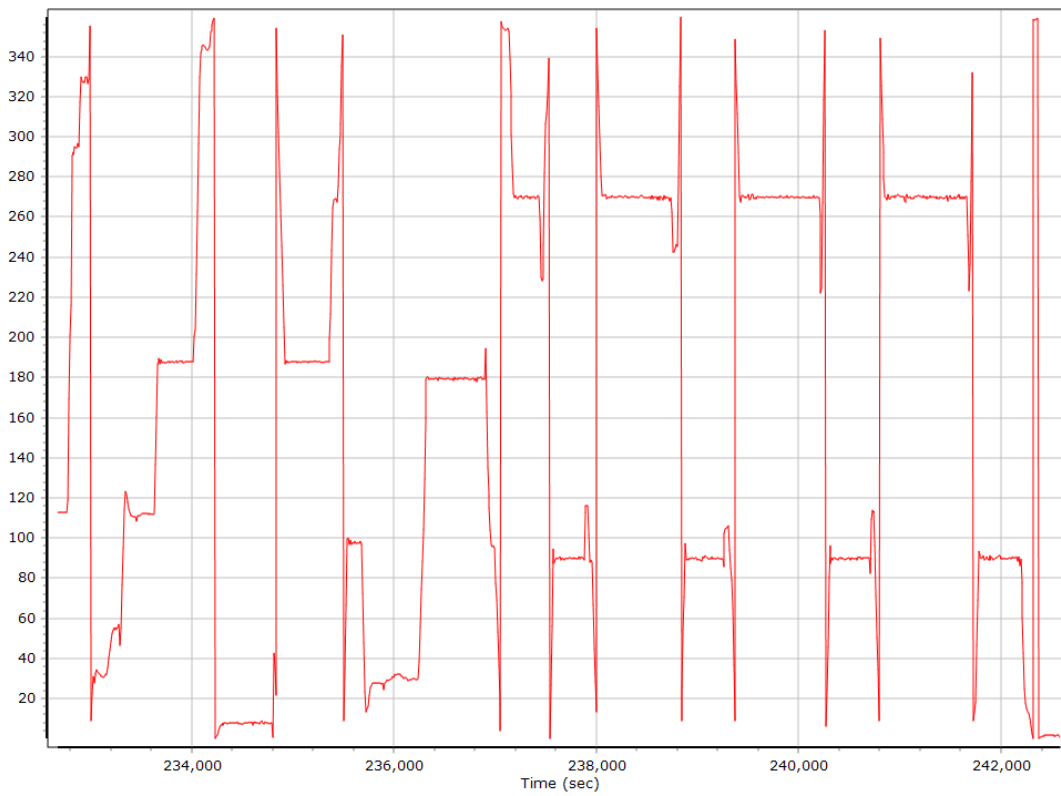




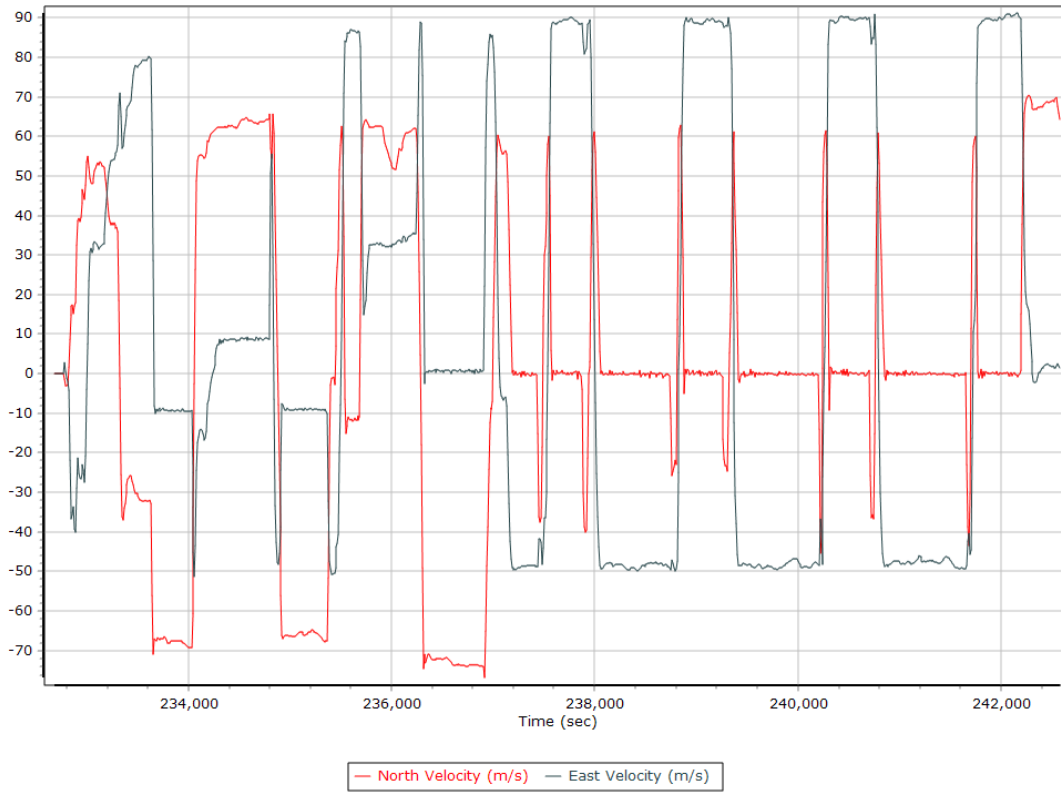
## Roll/Pitch



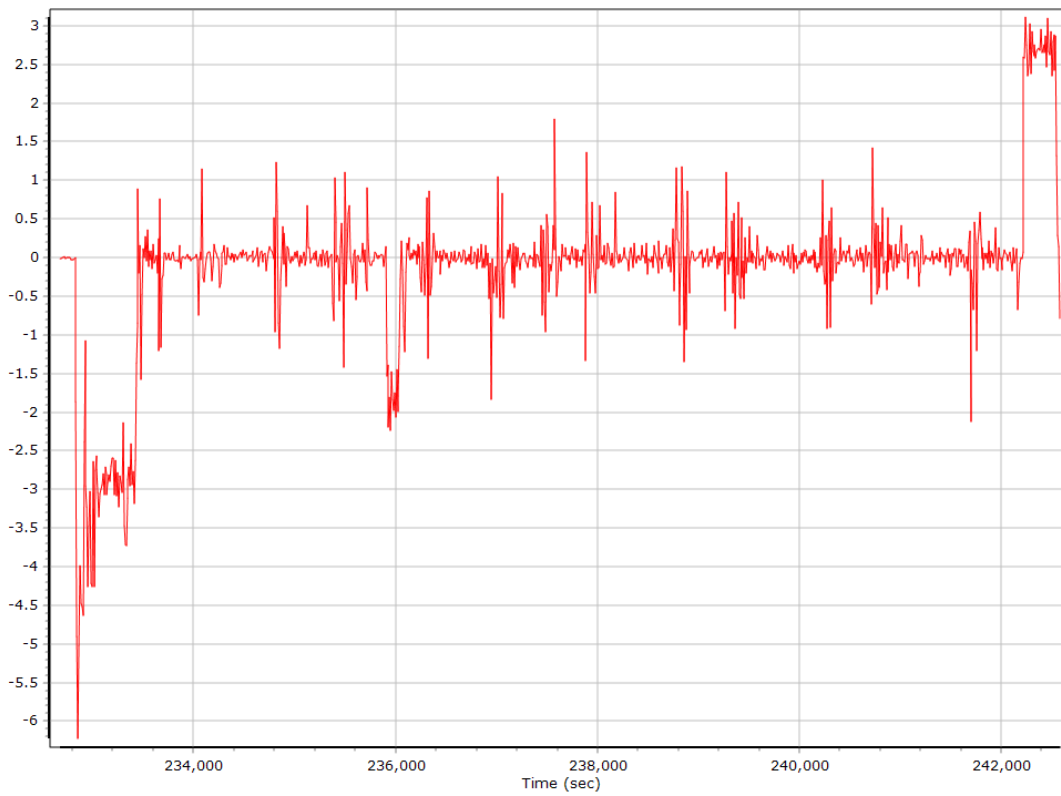
## Heading



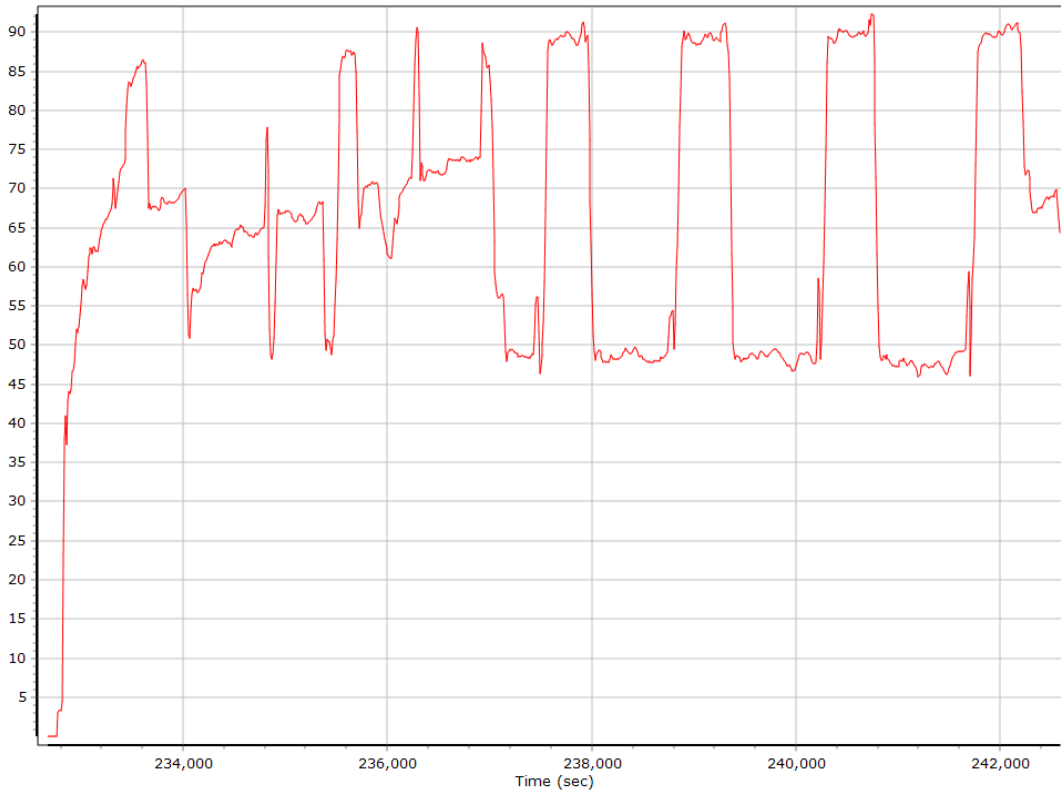
## North/East Velocity



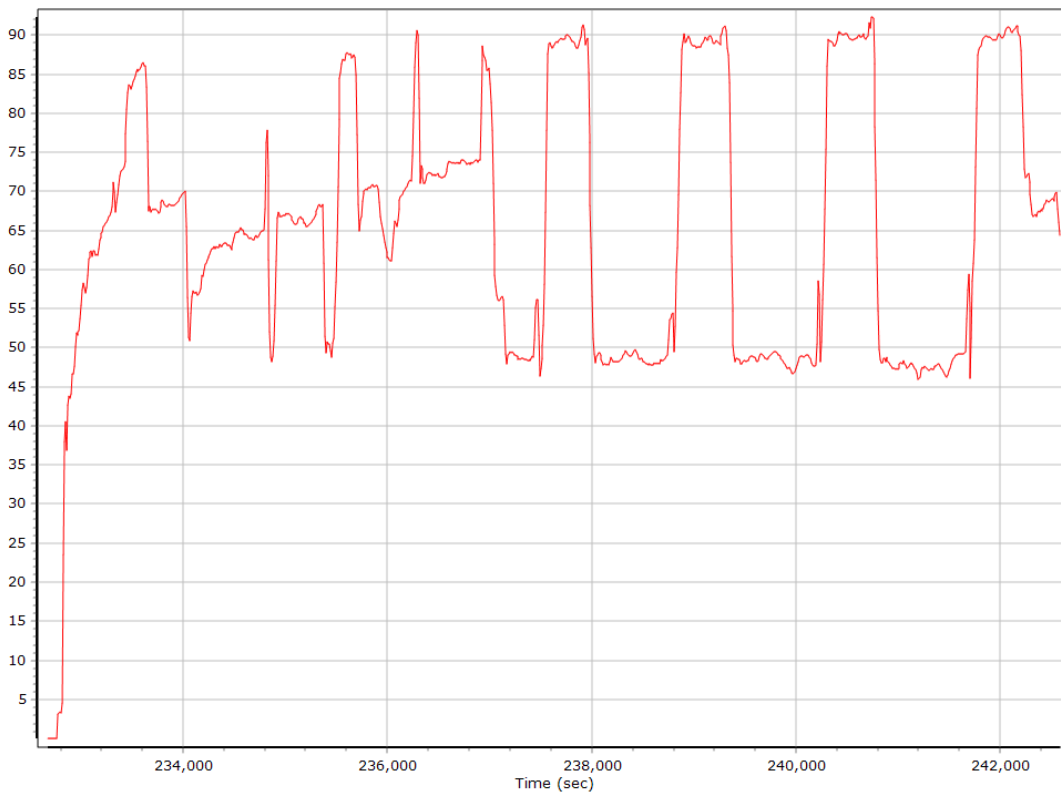
## Down Velocity



## Total Speed



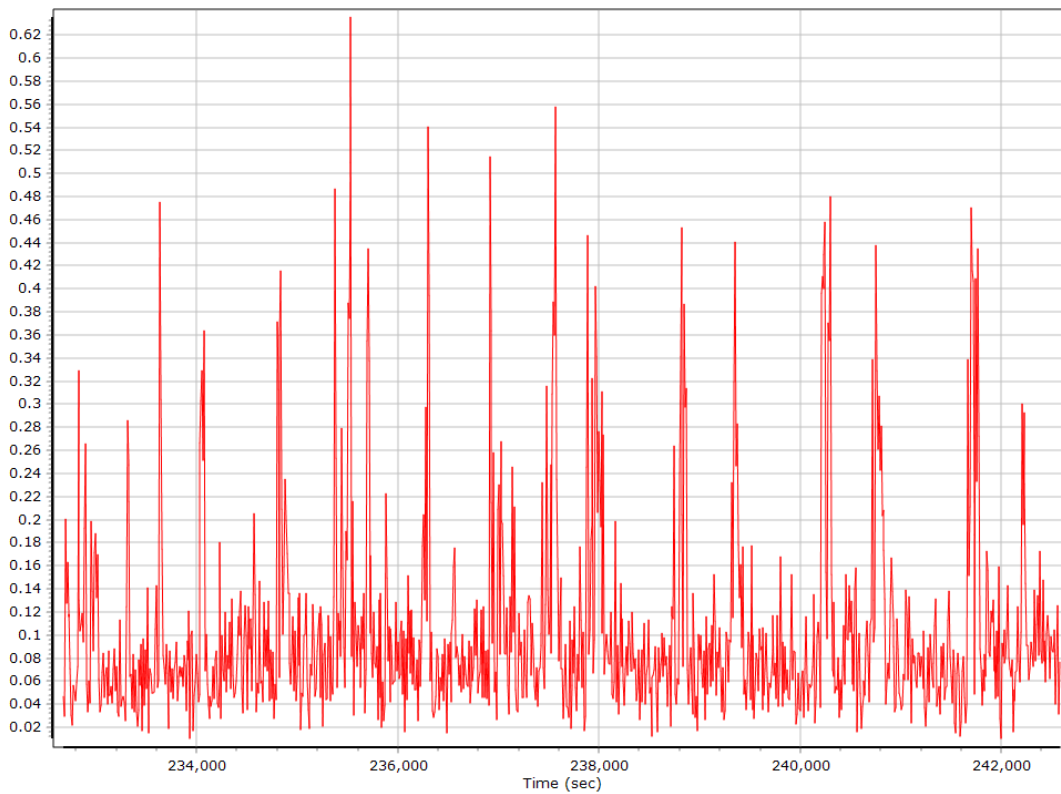
## Ground Speed



## Body Acceleration



## Total Body Acceleration



## Body Angular Rate



## SmartBase Processing Summary

### Smart Select Options

|                              |       |
|------------------------------|-------|
| Archive enabled              | False |
| User database enabled        | False |
| Include high-rate data sites | False |
| Target GNSS Selection        | GNSS  |

### Basestation Selection

| Date | ID | Dist | Data Type | Rate | Service | Database | Status |
|------|----|------|-----------|------|---------|----------|--------|
|------|----|------|-----------|------|---------|----------|--------|

### SmartBase Results

|   |               |
|---|---------------|
| SmartBase status                          |               |
| Primary station Id                        |               |
| Primary station data rate [sec]           | 0.0           |
| VRS/ASB generation rate [sec]             | 0.0           |
| VRS/ASB timespan                          |               |
| Number of reference stations              | 0             |
| Primary station GPS measurement usage [%] | 0.0           |
| Average number of satellites per epoch    | 0.0           |
| Max number of GPS stations used           | 0             |
| Min number of GPS stations used           | 0             |
| Total full data gap [sec]                 | 0             |
| Total individual satellite data gap [sec] | 0             |
| GPS precise vs. broadcast ephemeris used  | 0.0 % / 0.0 % |
| Termination Status                        |               |

## **SmartBase Quality Check**

## GNSS QC

### GNSS QC Statistics

| Statistics           | Min      | Max    | Mean        |
|----------------------|----------|--------|-------------|
| Baseline length [km] | 0.45     | 103.38 |             |
| Number of GPS SV     | 5        | 10     | 9           |
| Number of GLONASS SV | 0        | 9      | 7           |
| Number of QZSS SV    | 0        | 0      | 0           |
| Number of BEIDOU SV  | 0        | 0      | 0           |
| Total number of SV   | 7        | 17     | 15          |
| PDOP                 | 1.23     | 2.45   | 1.39        |
| QC Solution Gaps     | 1.00     | 122.00 |             |
| Solution Type        | Fixed    | Float  | No solution |
| Epoch (s)            | 11886.00 | 0.00   | 238.00      |
| Percentage           | 98.04    | 0.00   | 1.96        |



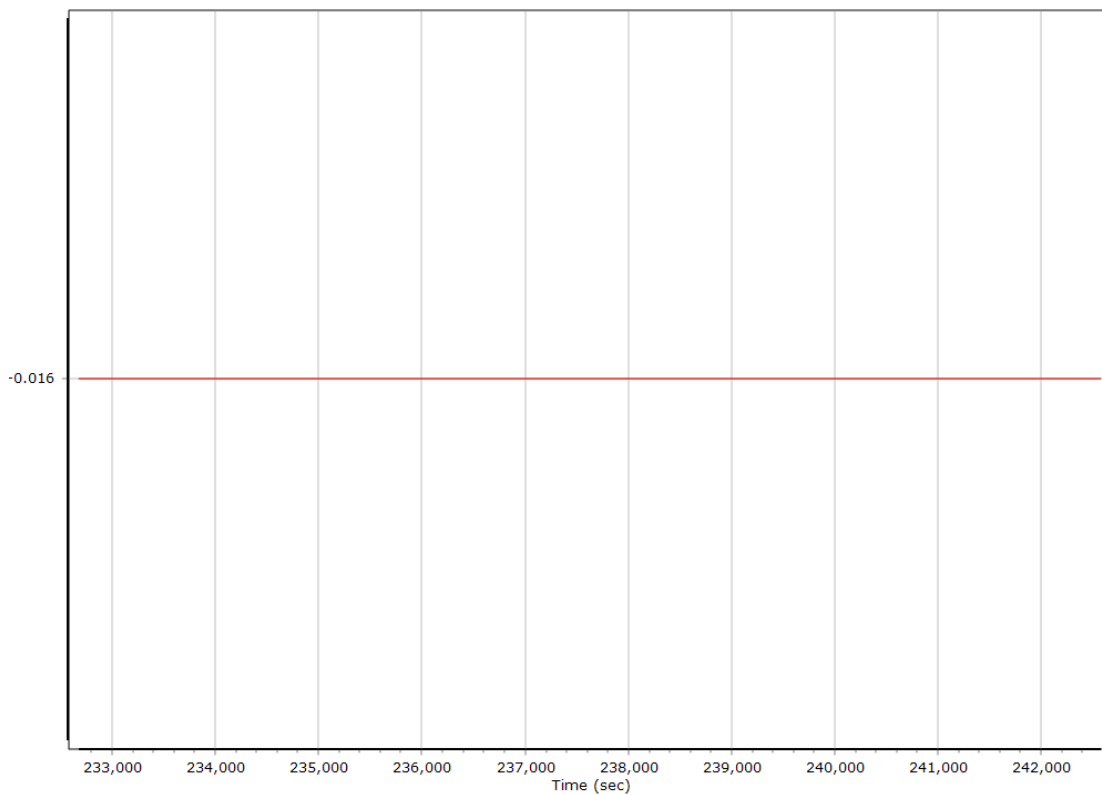
## GNSS-Inertial Processor Configuration

|  |                                    |       |        |
|--|------------------------------------|-------|--------|
| Processing mode                              | IN-Fusion SmartBase                |       |        |
| Stabilized mount                             | True                               |       |        |
| Base station                                 | ASB                                |       |        |
| Processing start time                        | 232213.000 (12/11/2018 4:30:13 PM) |       |        |
| Processing end time                          | 244352.000 (12/11/2018 7:52:32 PM) |       |        |
| Initial attitude source                      | Real-Time VNAV/RNAV Attitude       |       |        |
| IMU Sensor Context                           | Processing with Onboard IMU        |       |        |
| Gimbal to IMU lever arm [m]                  | 0.000                              | 0.000 | 0.000  |
| Gimbal to IMU mounting angles [deg]          | 0.000                              | 0.000 | 0.000  |
| Gimbal to Primary GNSS lever arm [m]         | -0.016                             | 0.008 | -0.680 |
| Gimbal to Primary GNSS lever arm std dev [m] | 0.030                              | 0.030 | 0.030  |
| Aircraft to Reference mounting angles [deg]  | 0.000                              | 0.000 | 0.000  |

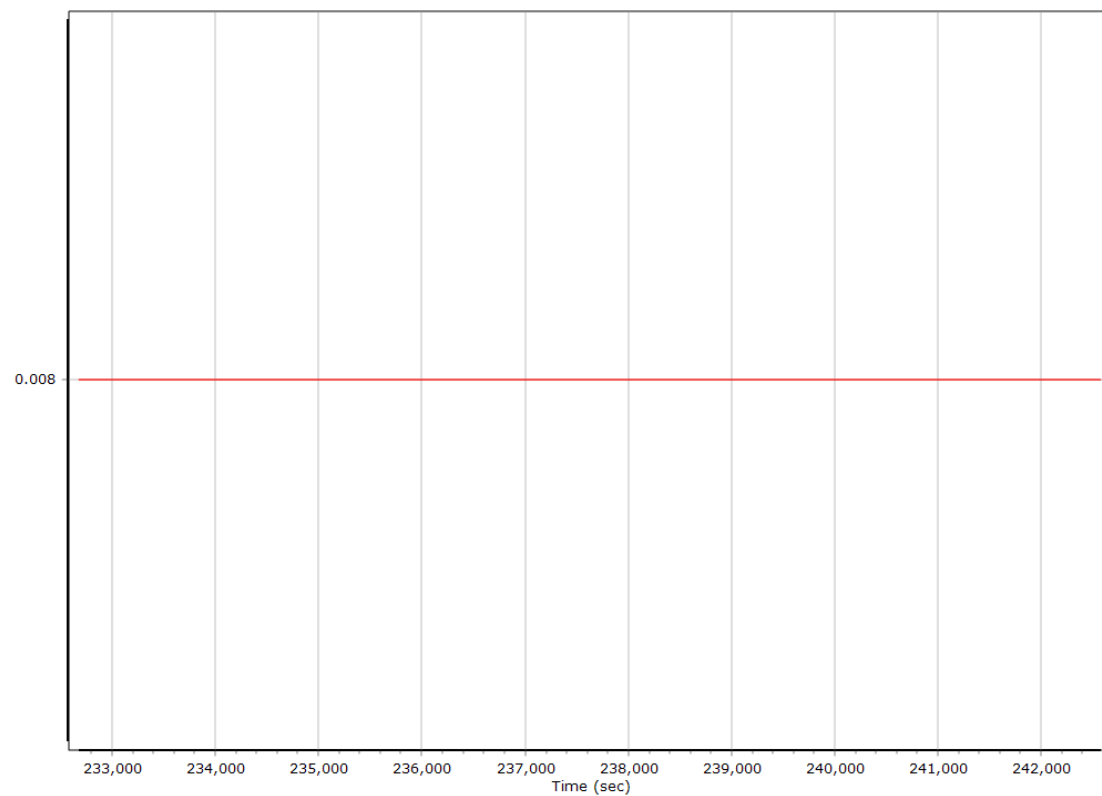
## Calibrated Installation Parameters

### Reference-Primary GNSS Lever Arm

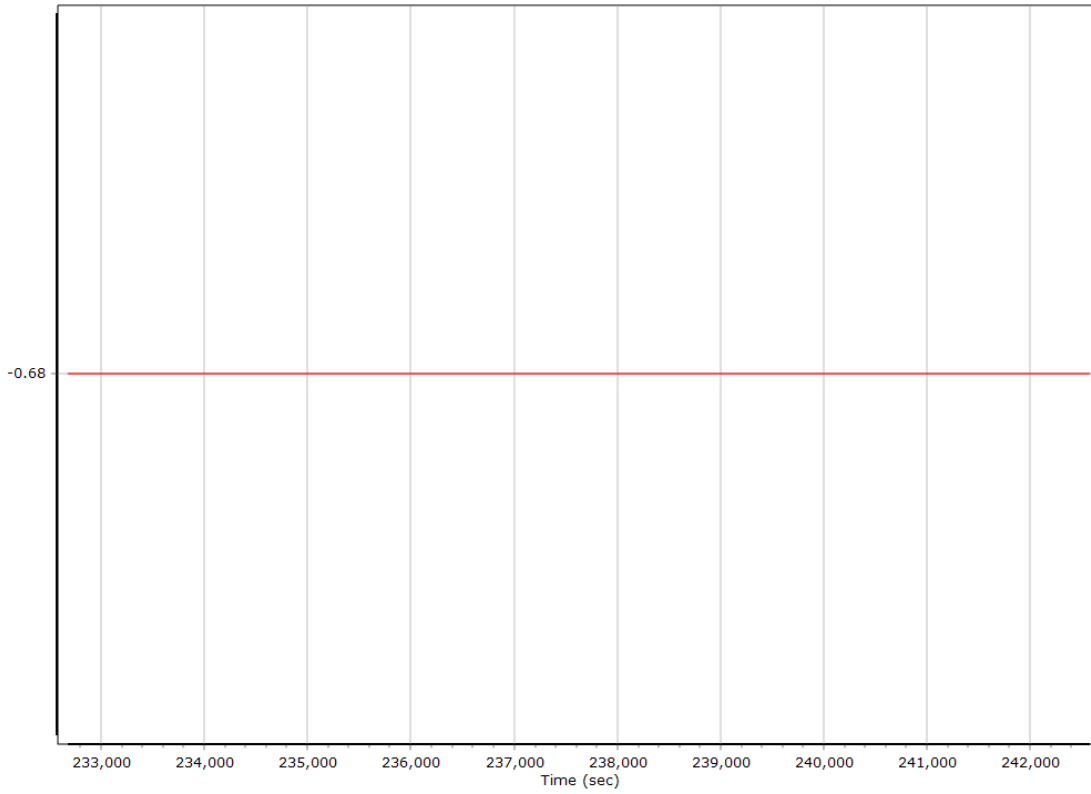
#### X Reference-Primary GNSS Lever Arm (m)



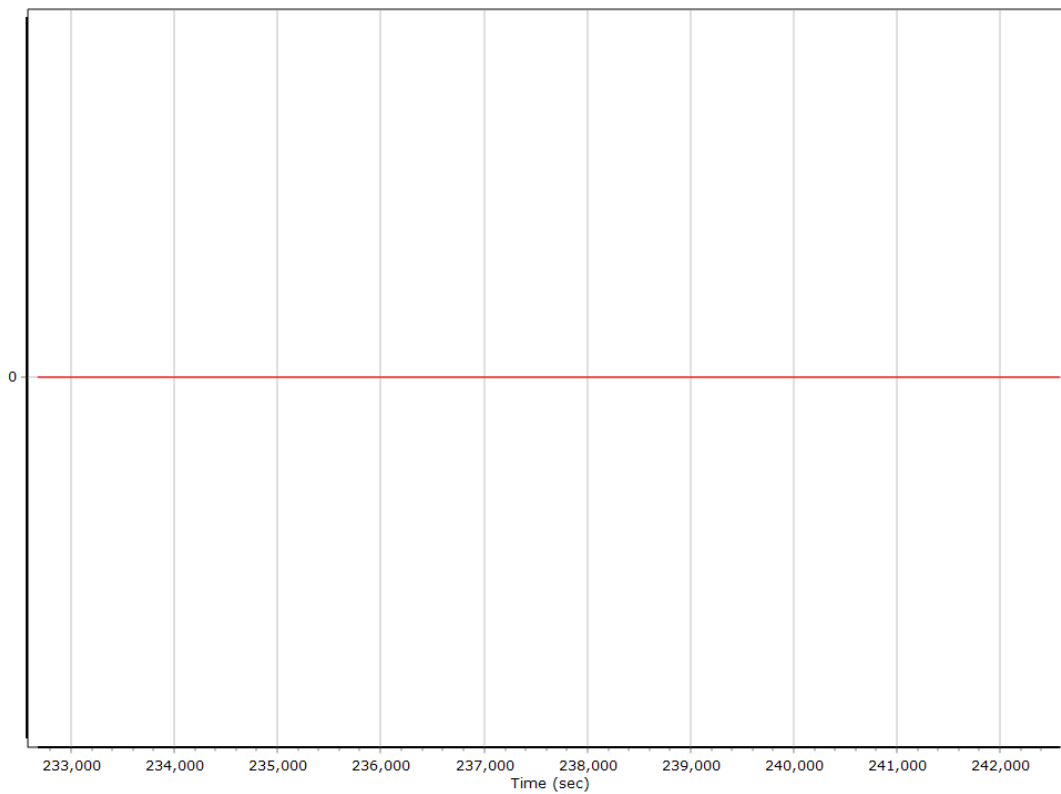
#### Y Reference-Primary GNSS Lever Arm (m)



### Z Reference-Primary GNSS Lever Arm (m)



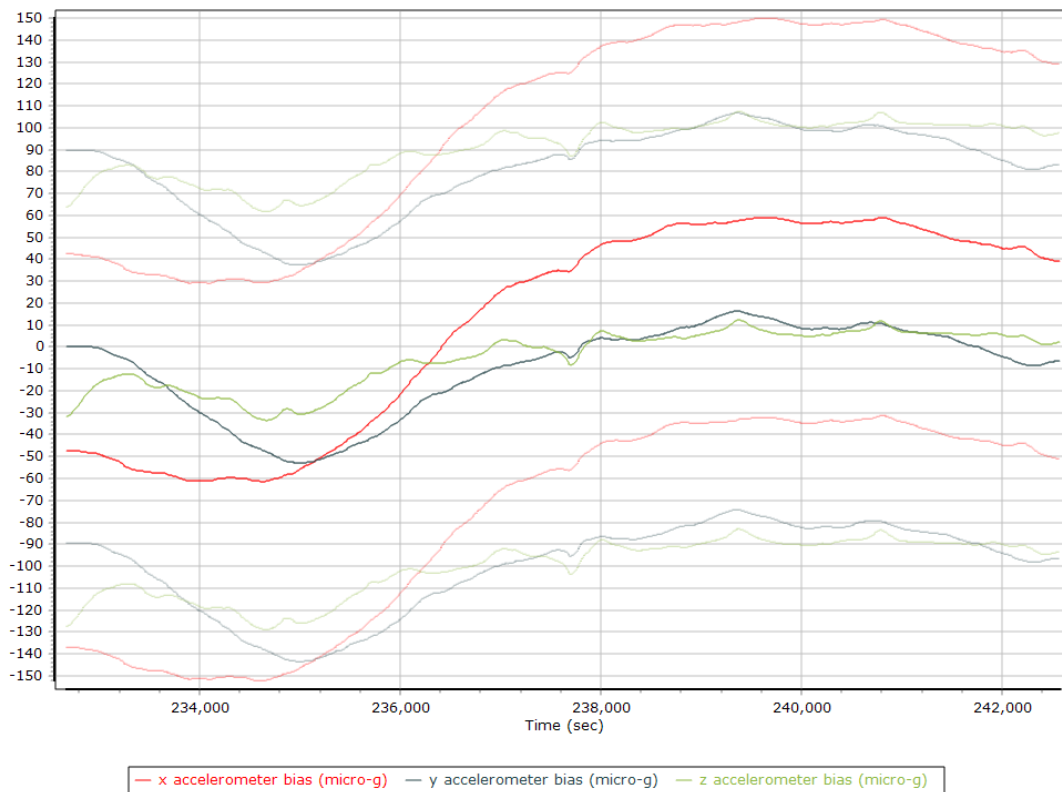
### Reference-Primary GNSS Lever Arm Figure of Merit



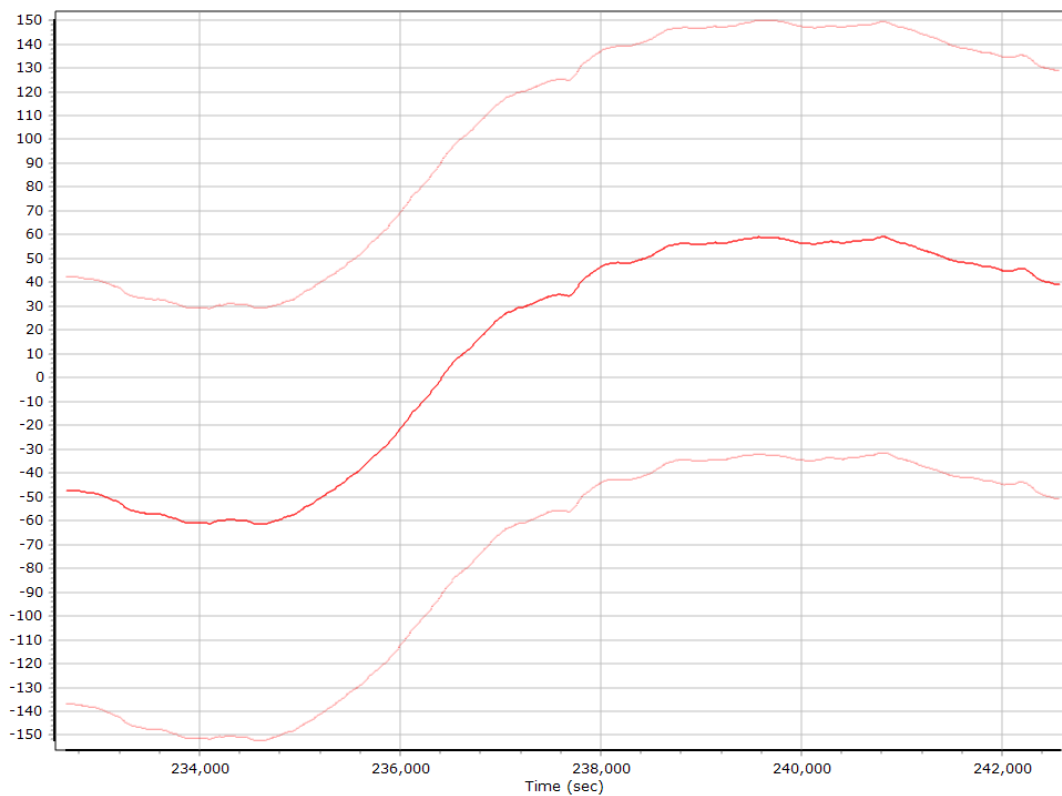
## Smoothed IN-Fusion QC

### Smoothed Estimated Errors, Reference Frame

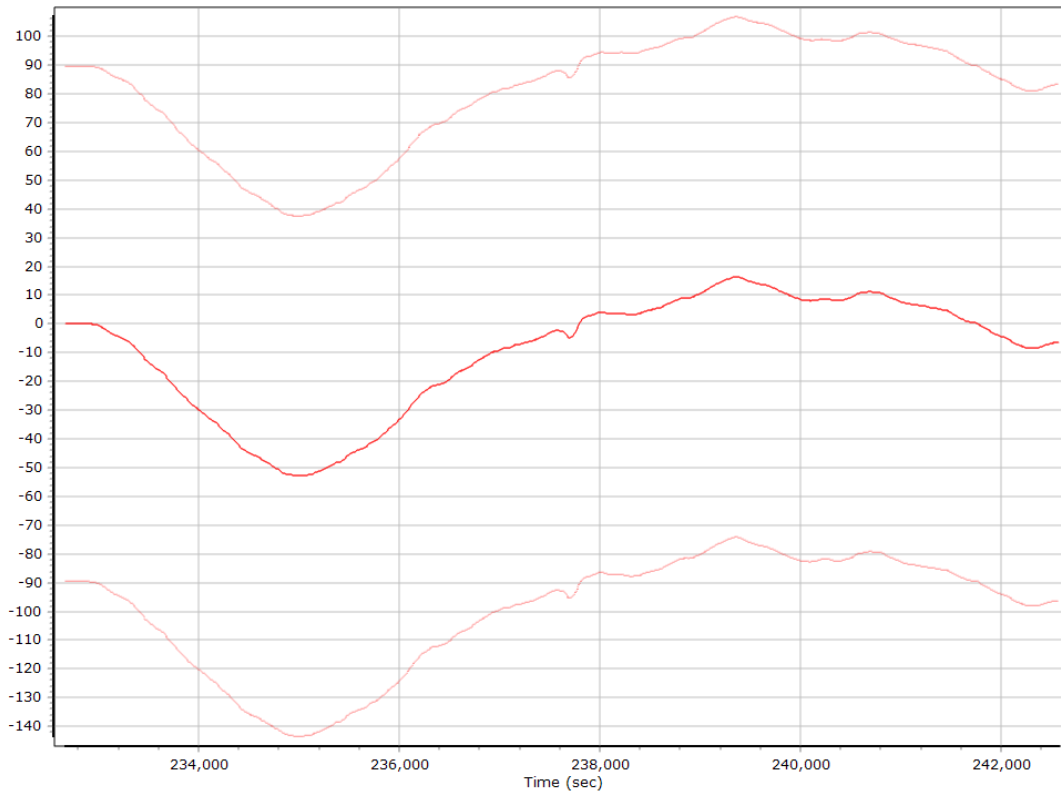
#### Accelerometer Bias (micro-g)



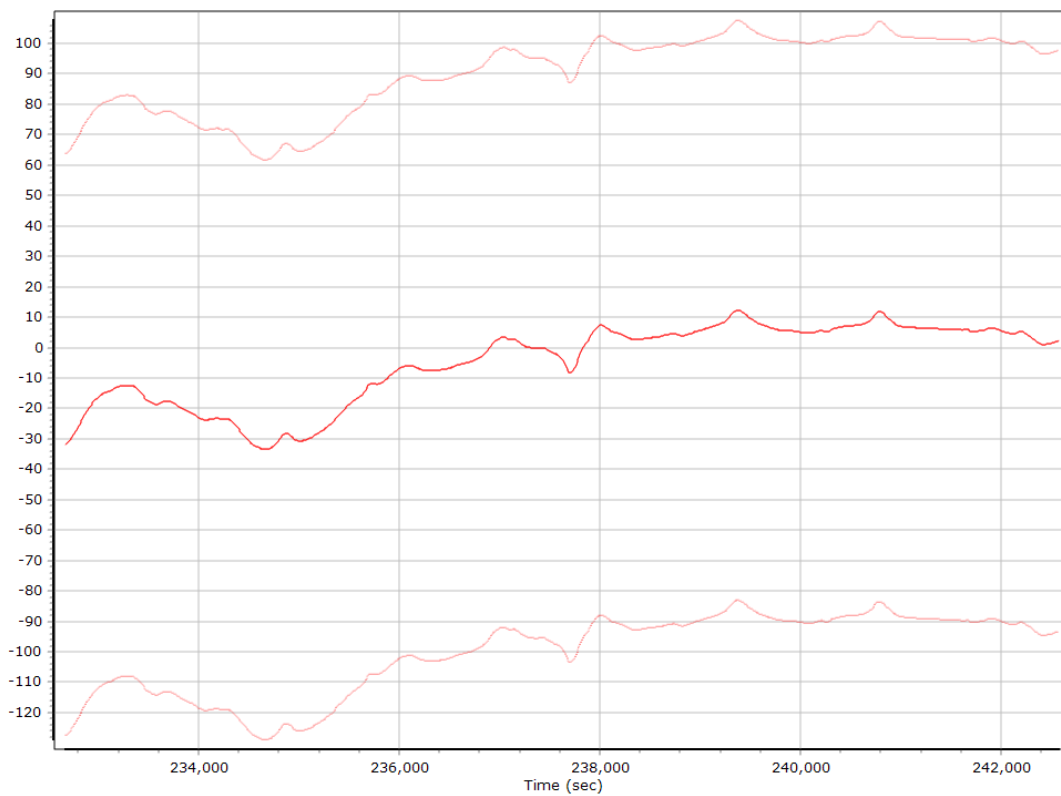
#### X Accelerometer Bias (micro-g)



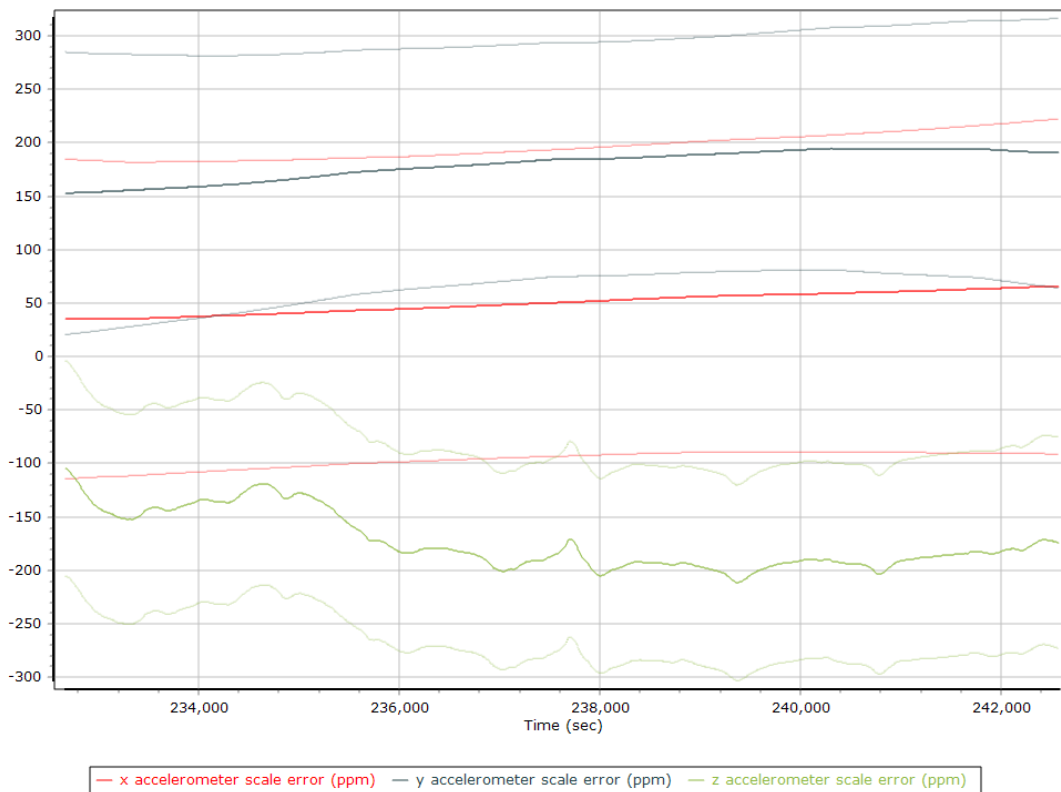
### Y Accelerometer Bias (micro-g)



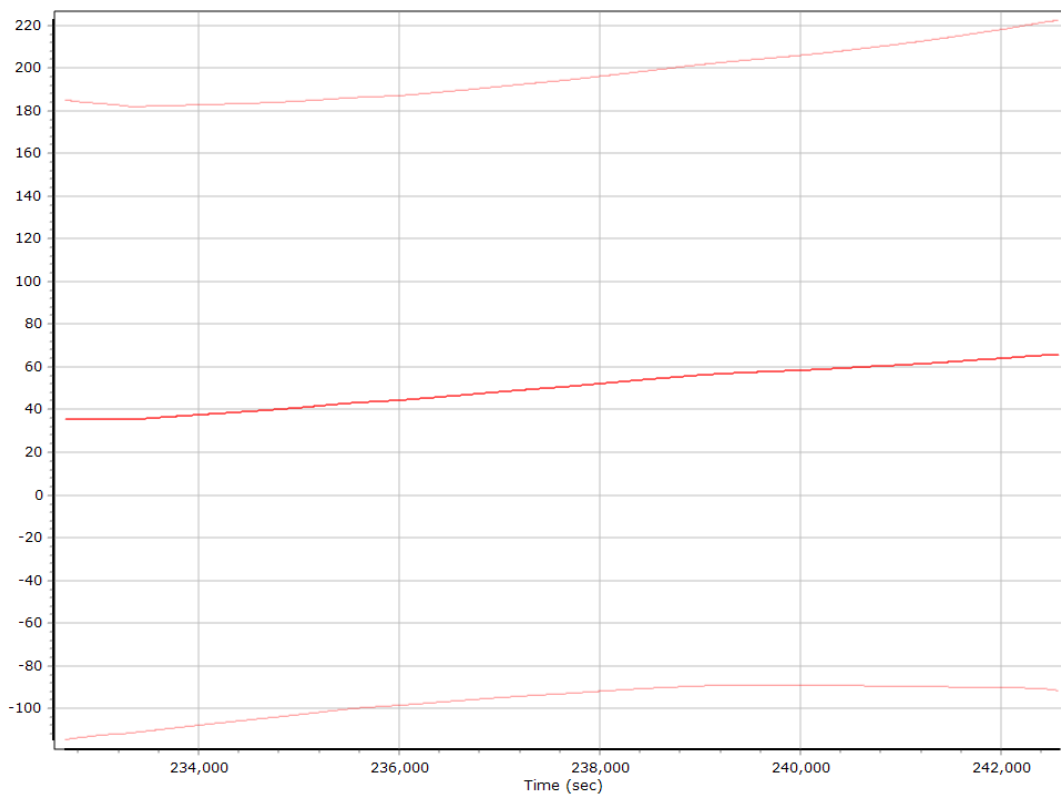
### Z Accelerometer Bias (micro-g)



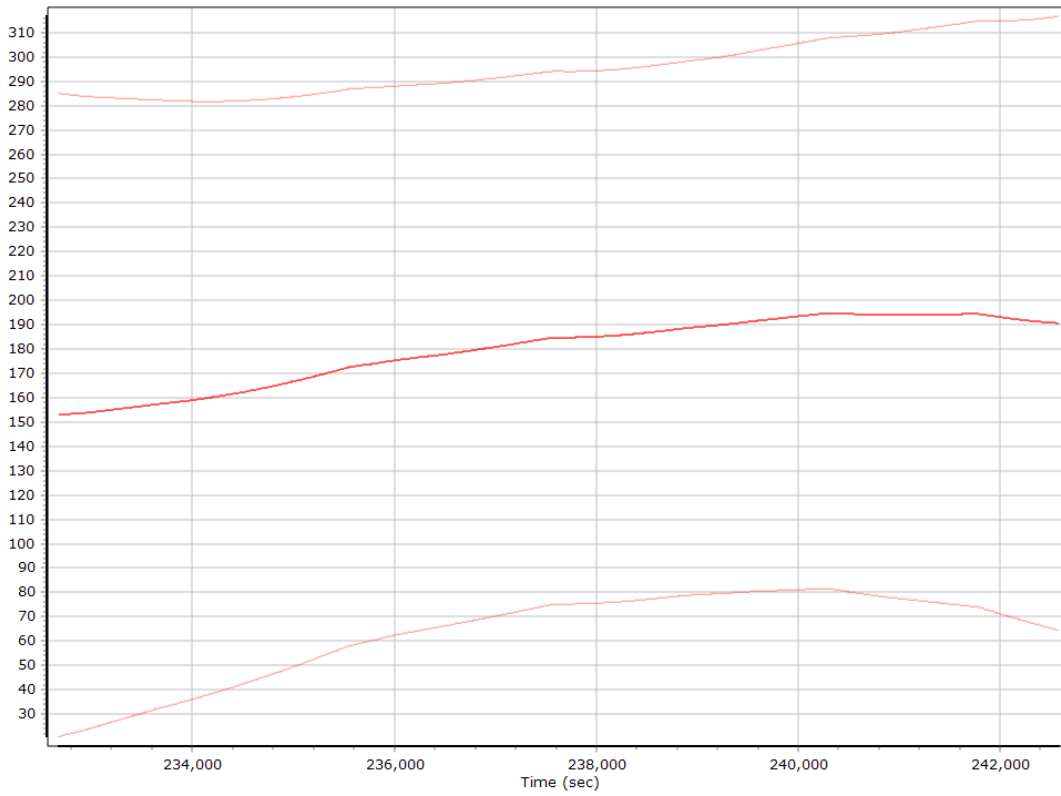
### Accelerometer Scale Error (ppm)



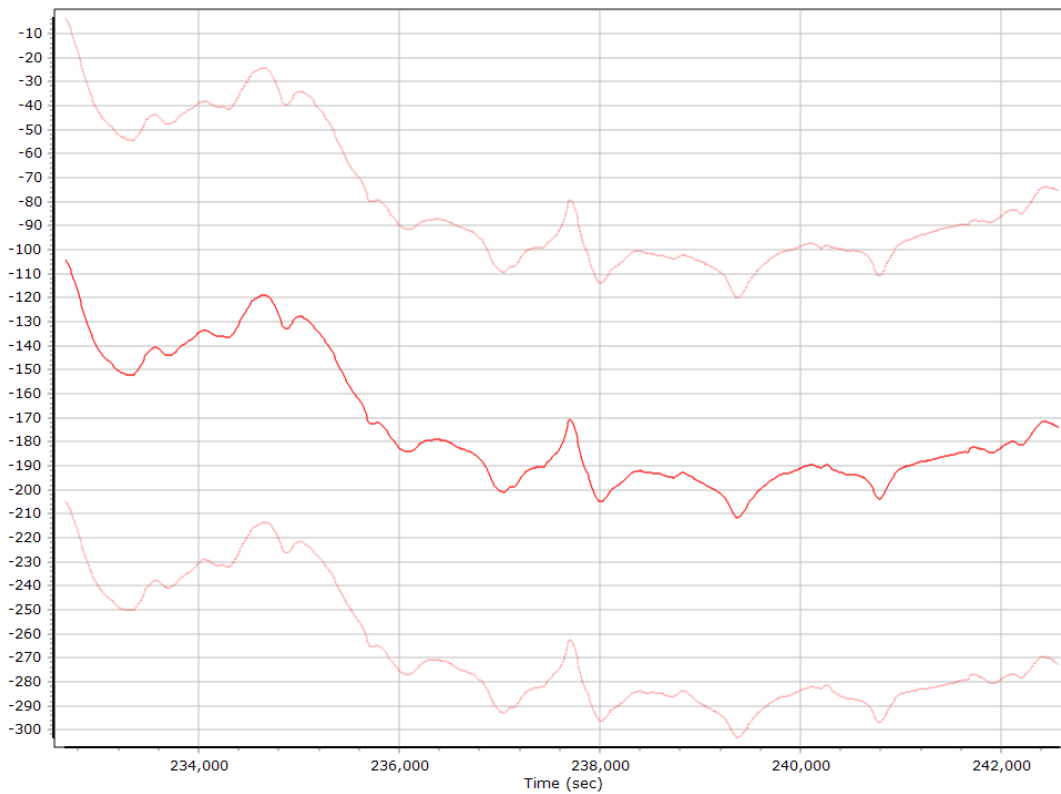
### X Accelerometer Scale Error (ppm)



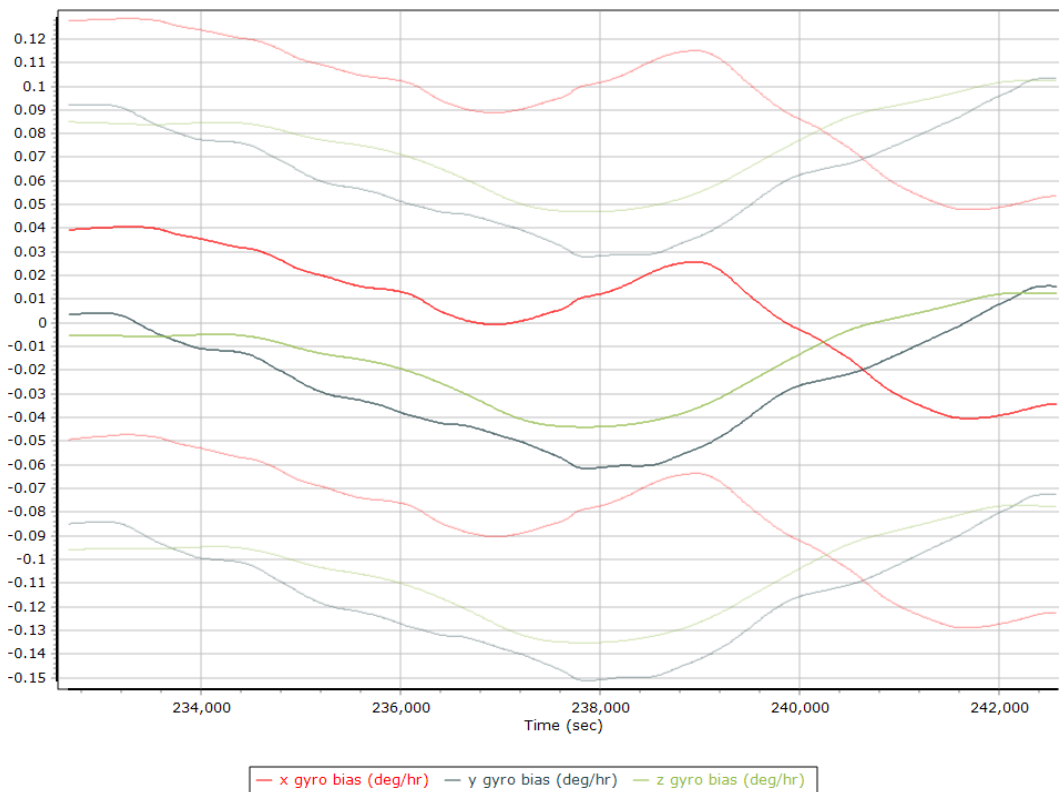
### Y Accelerometer Scale Error (ppm)



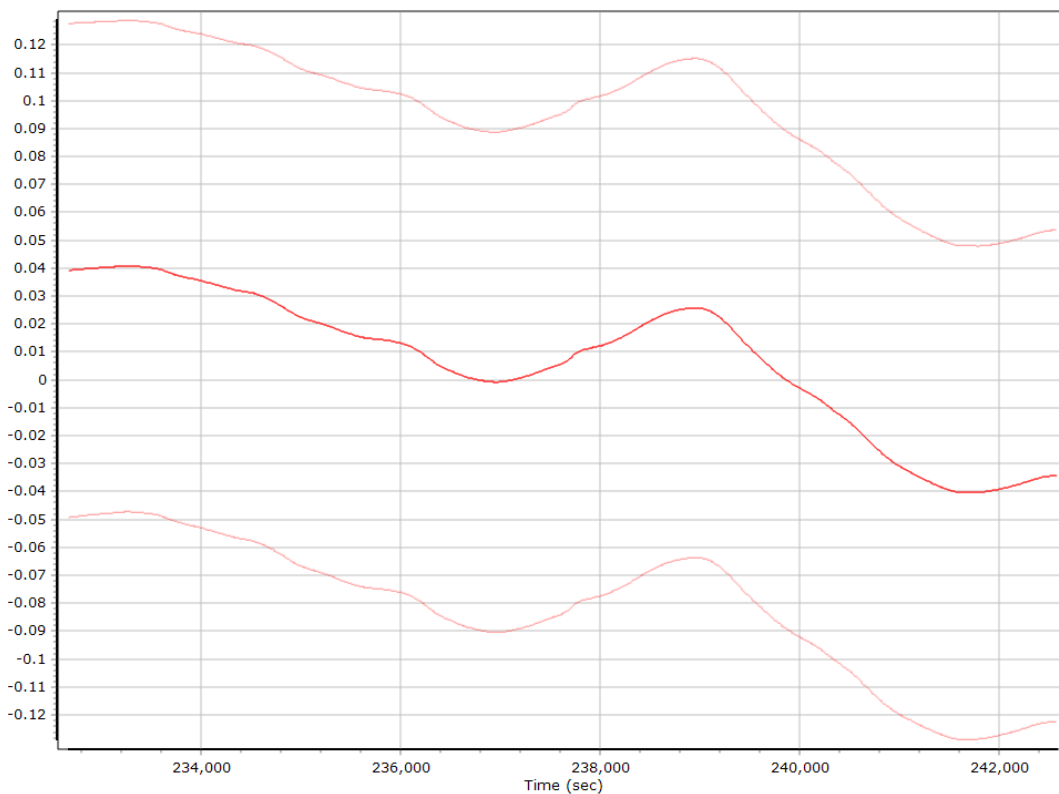
### Z Accelerometer Scale Error (ppm)



### Gyro Bias (deg/h)

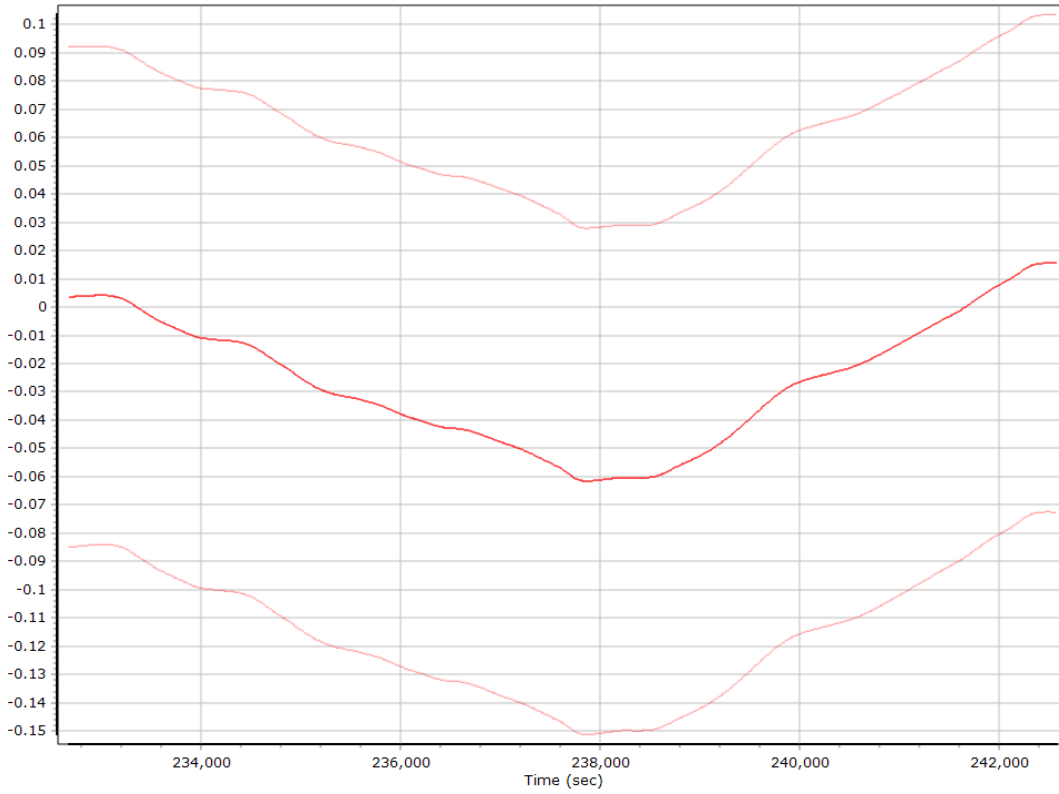


### X Gyro Bias (deg/h)

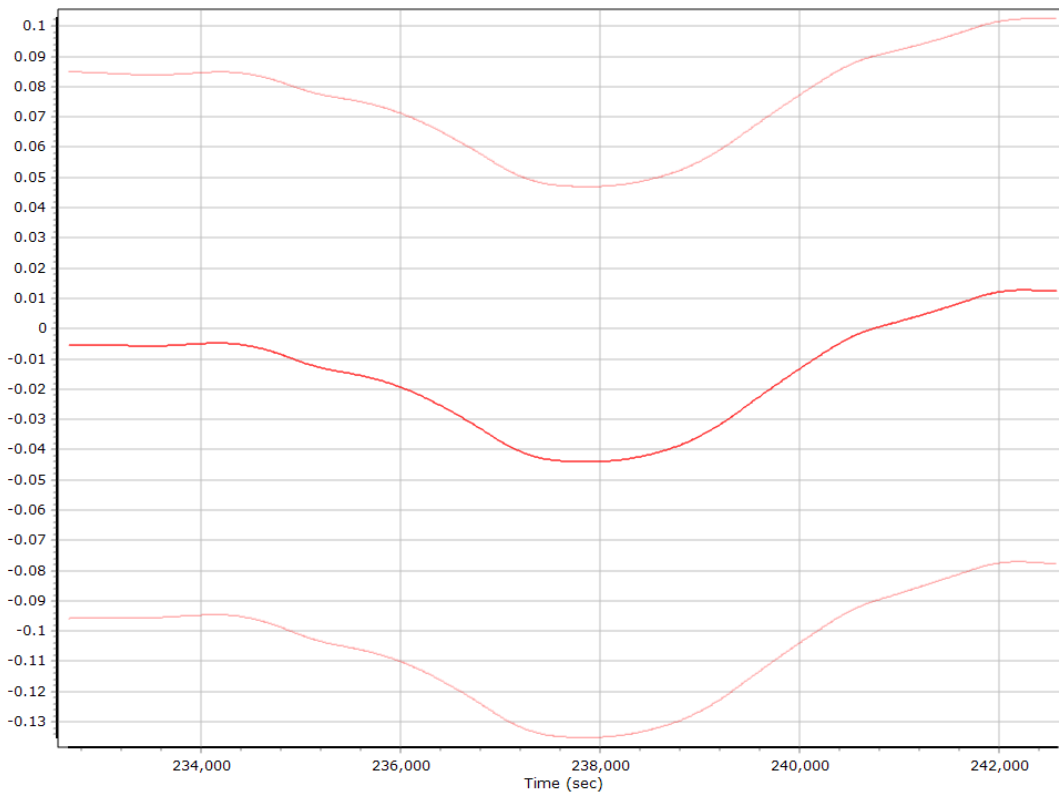




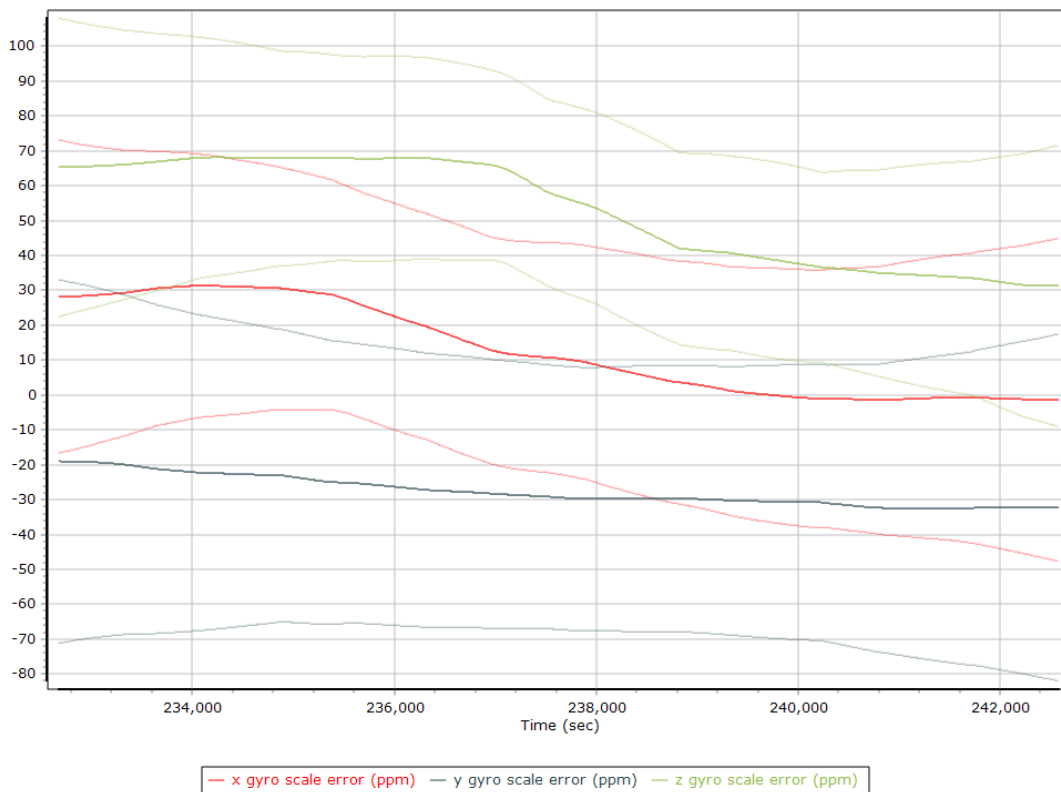
### Y Gyro Bias (deg/h)



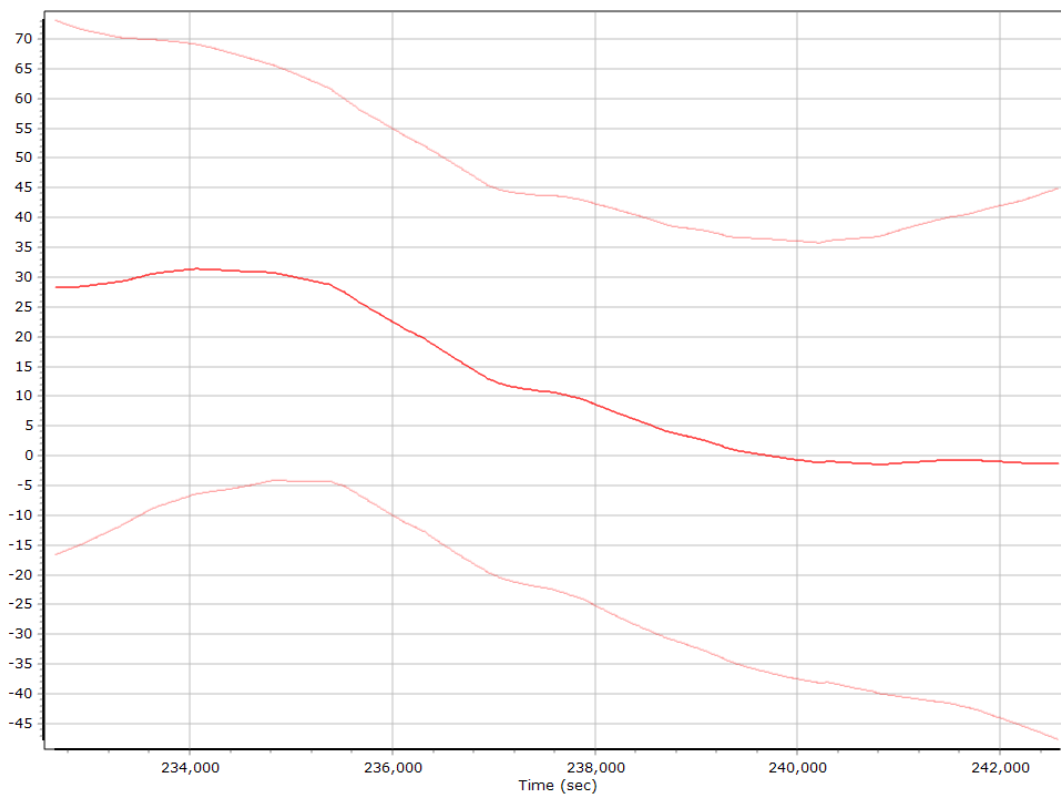
### Z Gyro Bias (deg/h)



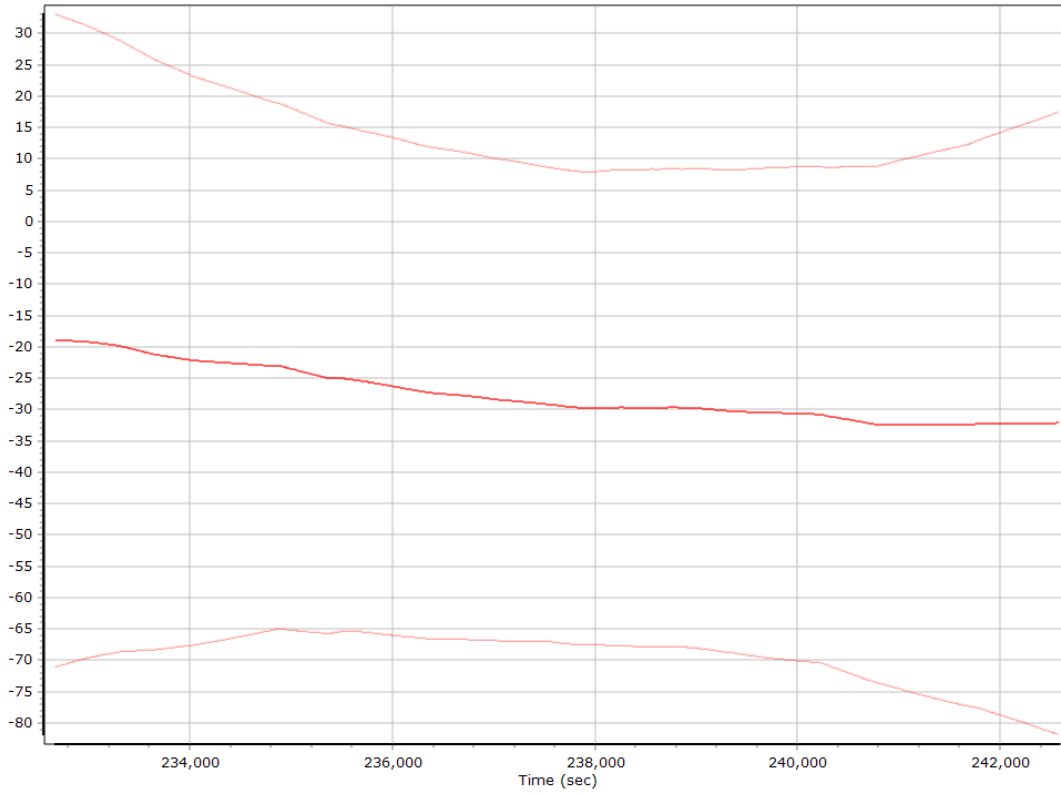
### Gyro Scale Error (ppm)



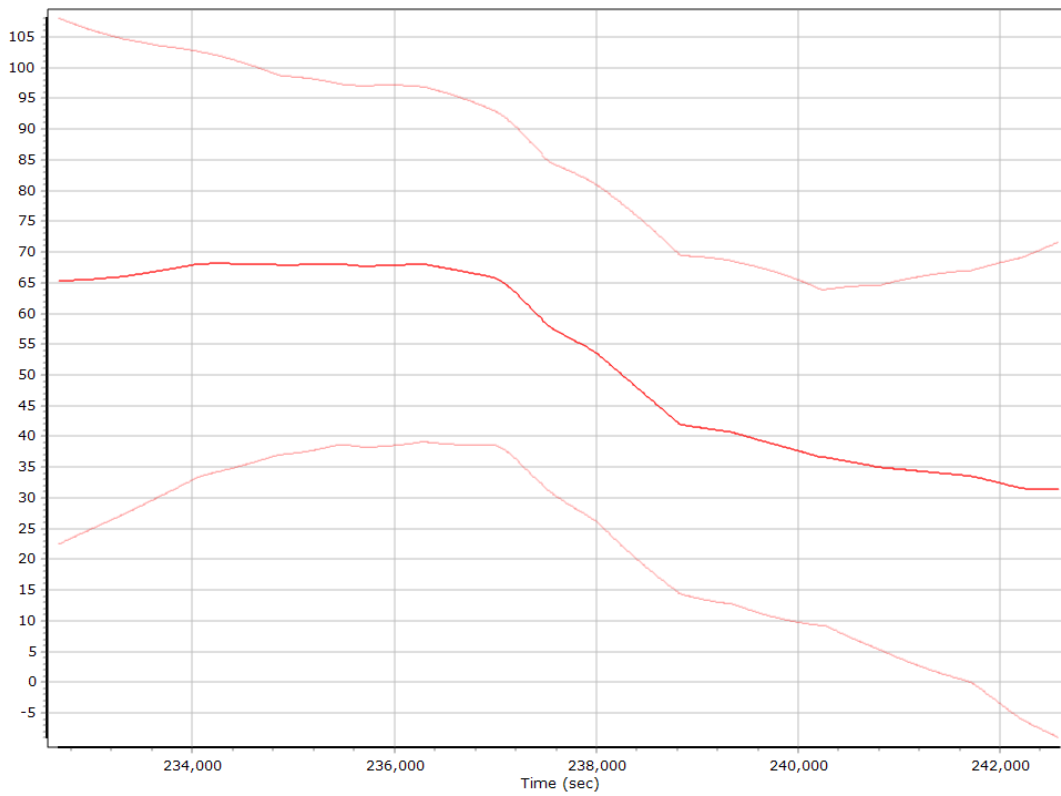
### X Gyro Scale Error (ppm)



### Y Gyro Scale Error (ppm)

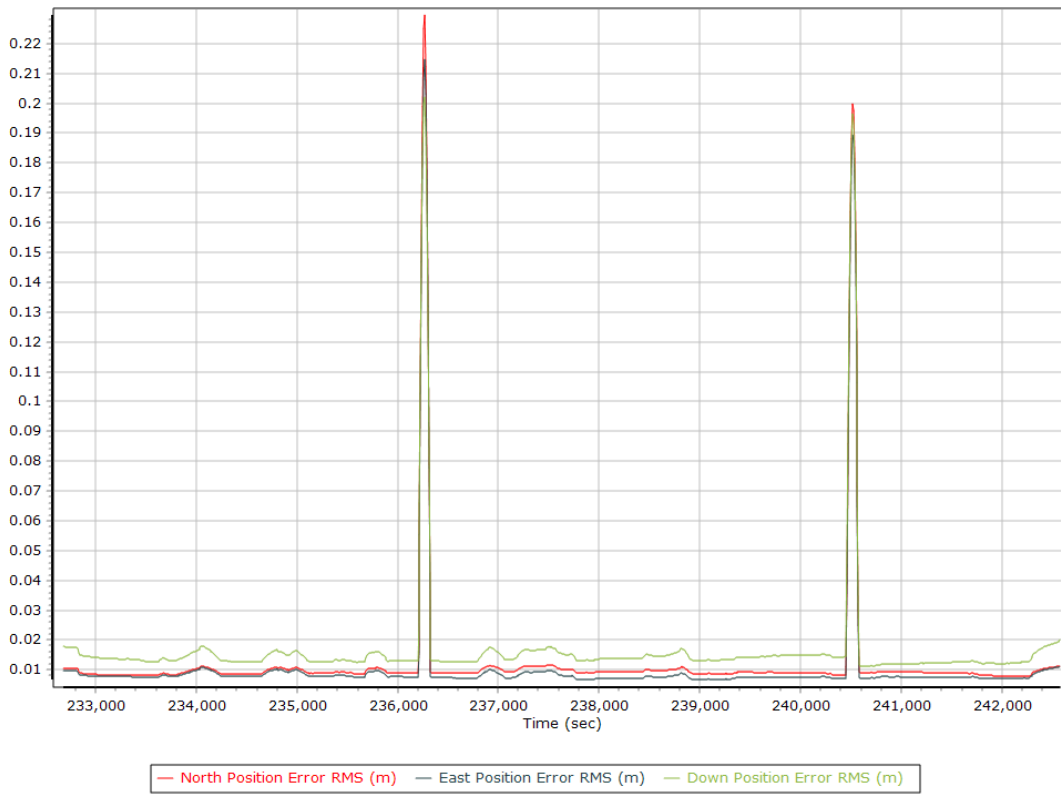


### Z Gyro Scale Error (ppm)

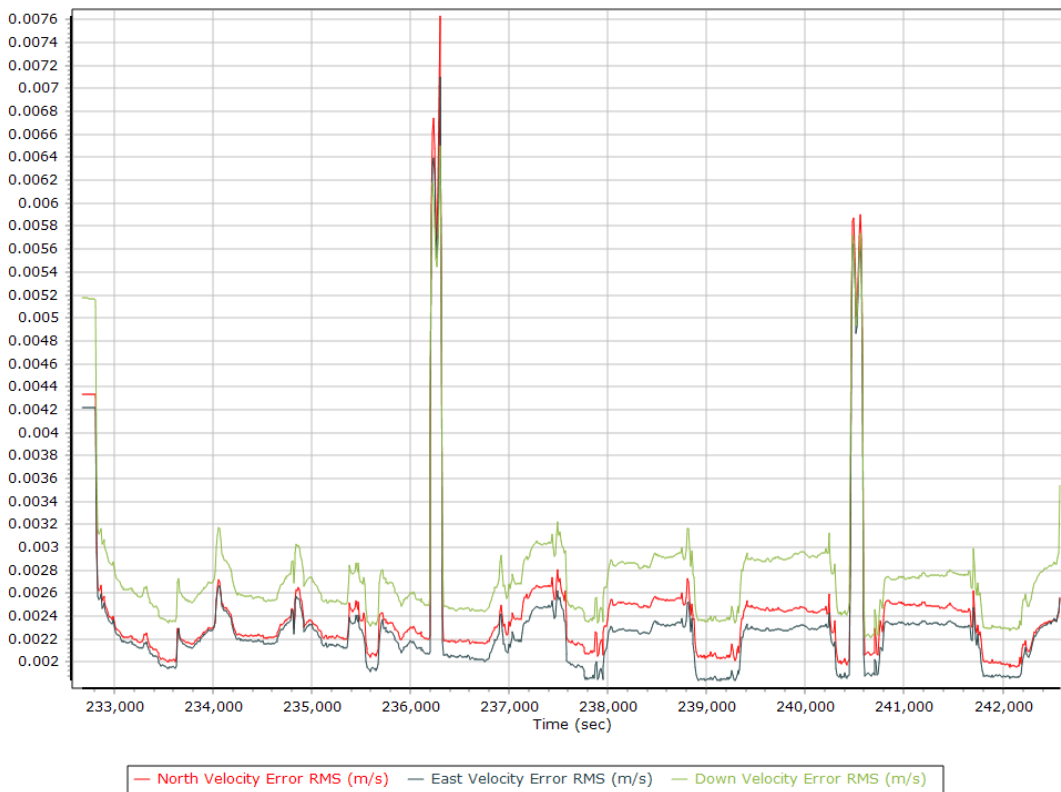


## Smoothed Performance Metrics

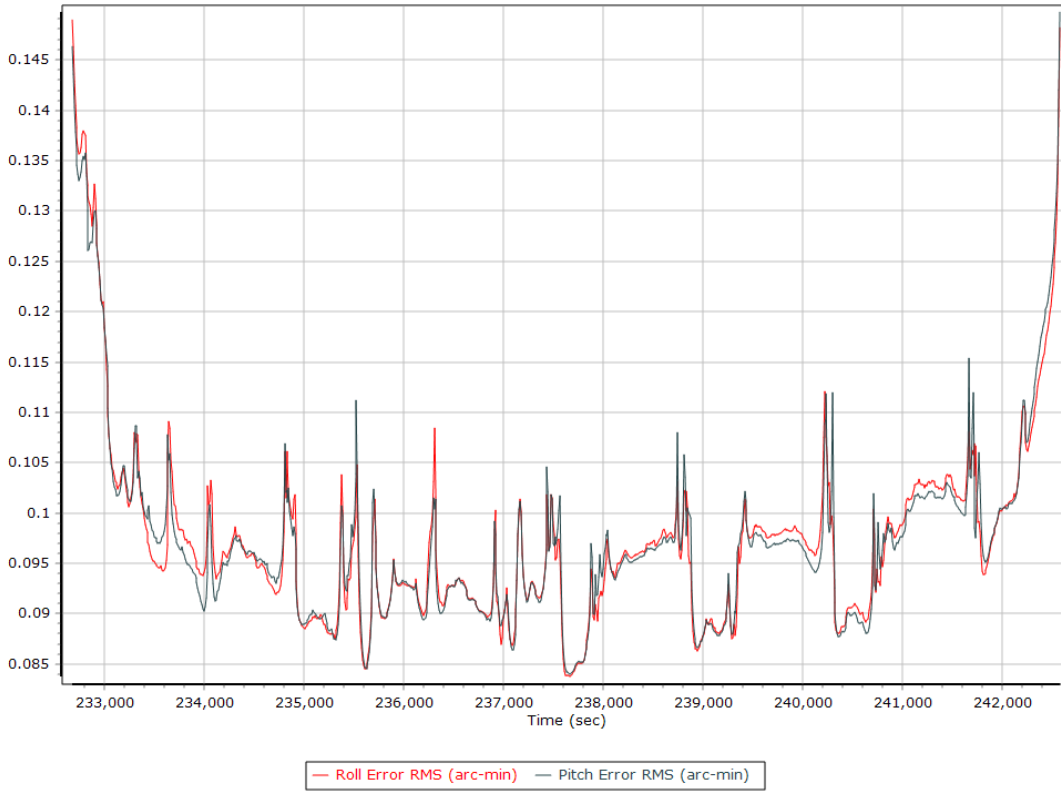
### Position Error RMS (m)



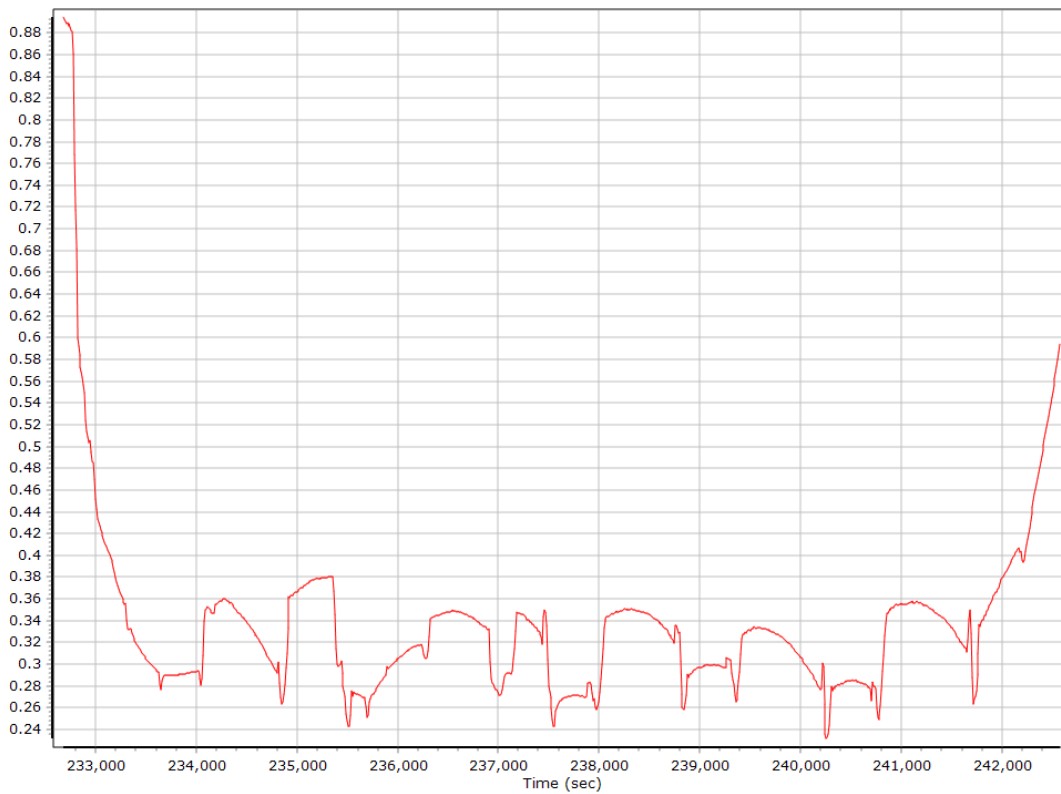
### Velocity Error RMS (m/s)



### Roll/Pitch Error RMS (arc-min)

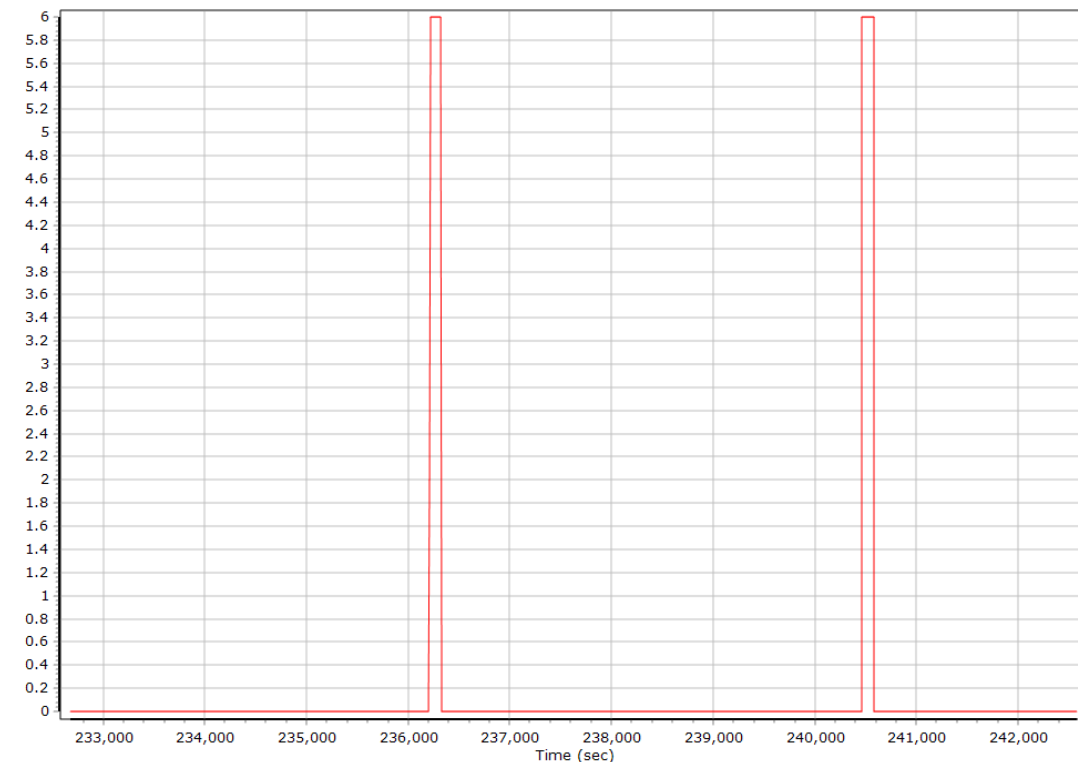


### Heading Error RMS (arc-min)



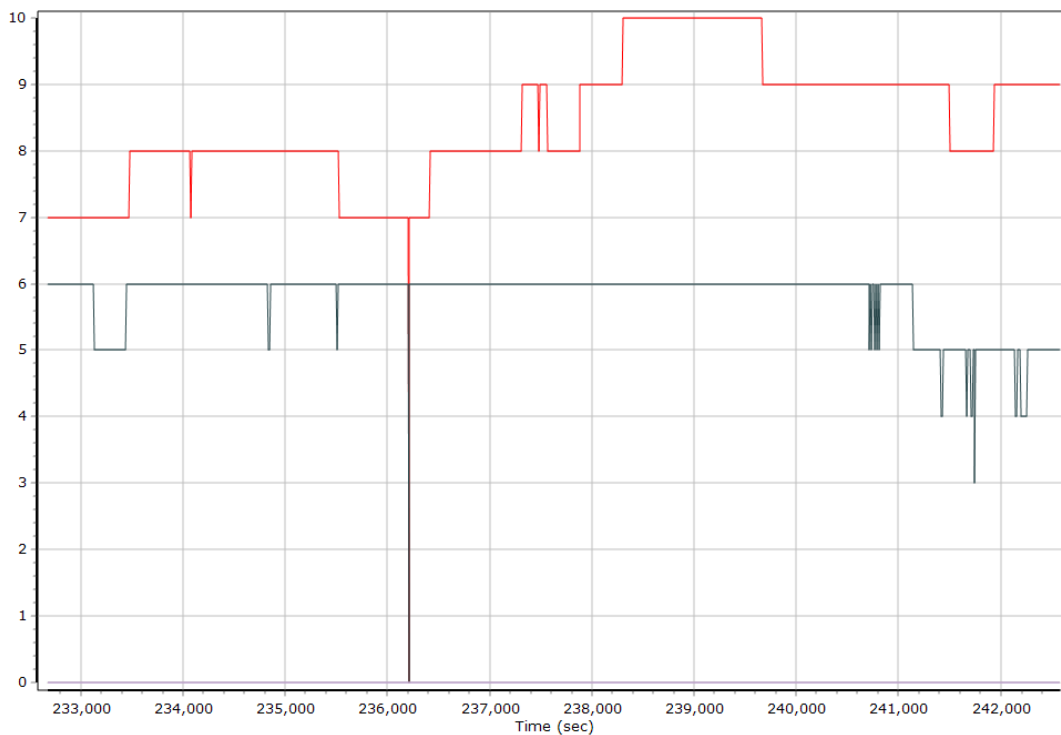
## Smoothed Solution Status

### Processing Mode



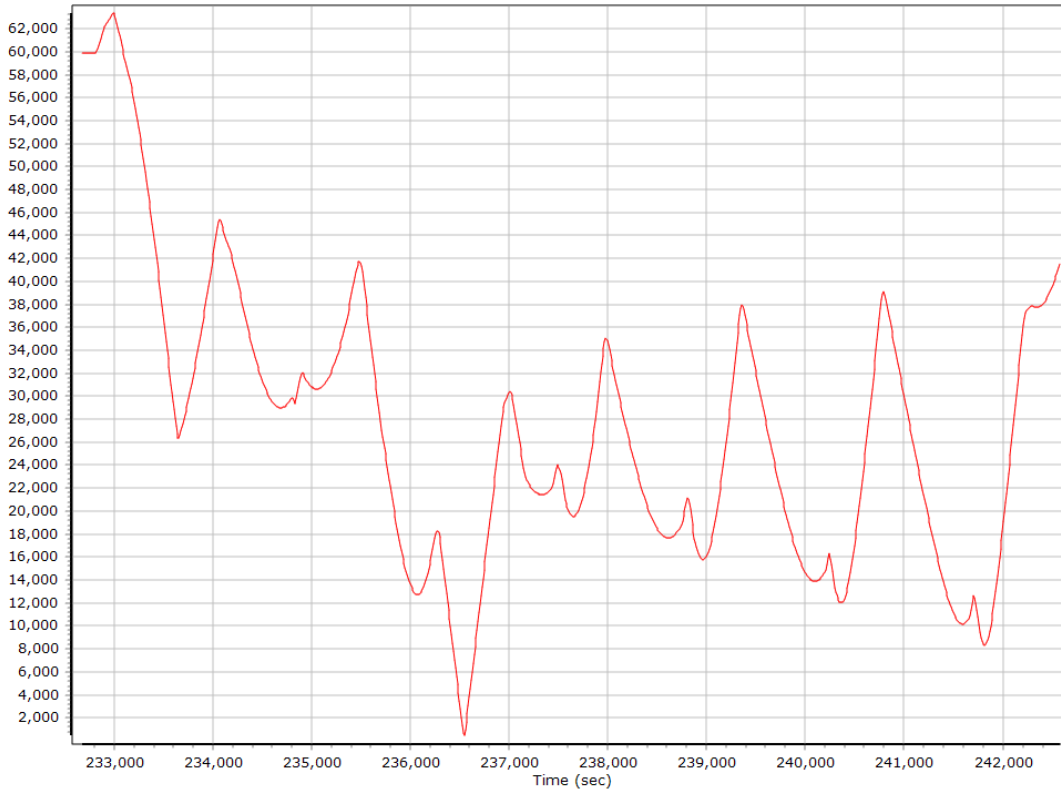
0 = Fixed NL, 1 = Fixed WL, 2 = Float, 3 = DGNSS, 4 = RTCM, 5 = IAPPP, 6 = C/A, 7 = GNSS Nav, 8 = DR

### Number of Satellites



— Number of GPS Satellites — Number of GLONASS Satellites — Number of QZSS Satellites — Number of BEIDOU Satellites

### Baseline Length



### SBET IAkar Separation

