

## General Information

### Mission Information

Project name	RBV20051B_176
Processing date	2020-02-24 14:56:08
Mission date	2020-02-20 17:59:21
Mission duration	02:52:04.961
Processing mode	IN-Fusion SmartBase
GPS Station	ASB

### Rover Hardware Information

Product	POS AV 610 VER6 HW2.5-12
Serial number	S/N9642
IMU type	57
Receiver type	BD982
Antenna type	Unknown External

## Project File List

### Rover Data Files

File name	File type
RBV_20_51_B.335	POS Data
RBV_20_51_B.336	POS Data
RBV_20_51_B.337	POS Data
RBV_20_51_B.338	POS Data
RBV_20_51_B.339	POS Data
RBV_20_51_B.340	POS Data
RBV_20_51_B.341	POS Data
RBV_20_51_B.342	POS Data
RBV_20_51_B.343	POS Data
RBV_20_51_B.344	POS Data
RBV_20_51_B.345	POS Data
RBV_20_51_B.346	POS Data
RBV_20_51_B.347	POS Data
RBV_20_51_B.348	POS Data
RBV_20_51_B.349	POS Data
RBV_20_51_B.350	POS Data
RBV_20_51_B.351	POS Data
RBV_20_51_B.352	POS Data
RBV_20_51_B.353	POS Data
RBV_20_51_B.354	POS Data
RBV_20_51_B.355	POS Data
RBV_20_51_B.356	POS Data
RBV_20_51_B.357	POS Data
RBV_20_51_B.358	POS Data
RBV_20_51_B.359	POS Data
RBV_20_51_B.360	POS Data
RBV_20_51_B.361	POS Data
RBV_20_51_B.362	POS Data
RBV_20_51_B.363	POS Data
RBV_20_51_B.364	POS Data
RBV_20_51_B.365	POS Data
RBV_20_51_B.366	POS Data

### Input Files

File Name	File Type
Ephm0510.20g	GLONASS Broadcast Ephemeris
Ephm0510.20n	GPS Broadcast Ephemeris
freo0510.20o	GNSS SingleBase
wvbr0510.20o	GNSS SingleBase
wvgb0510.20o	GNSS SingleBase
wvmz0510.20o	GNSS SingleBase
wvnr0510.20o	GNSS SingleBase
wvra0510.20o	GNSS SingleBase
wvsh0510.20o	GNSS SingleBase
loys0510.20o	GNSS SingleBase
wvta0510.20o	GNSS SingleBase
igr20933.sp3	GPS Precise Ephemeris
igr20934.sp3	GPS Precise Ephemeris
igr20935.sp3	GPS Precise Ephemeris

### Output Files

Filename	File type
sbet_RB20051B_176.out	SBET Trajectory File
export_RB20051B_176.shp	Shapefile Export Output

## Rover Data Summary

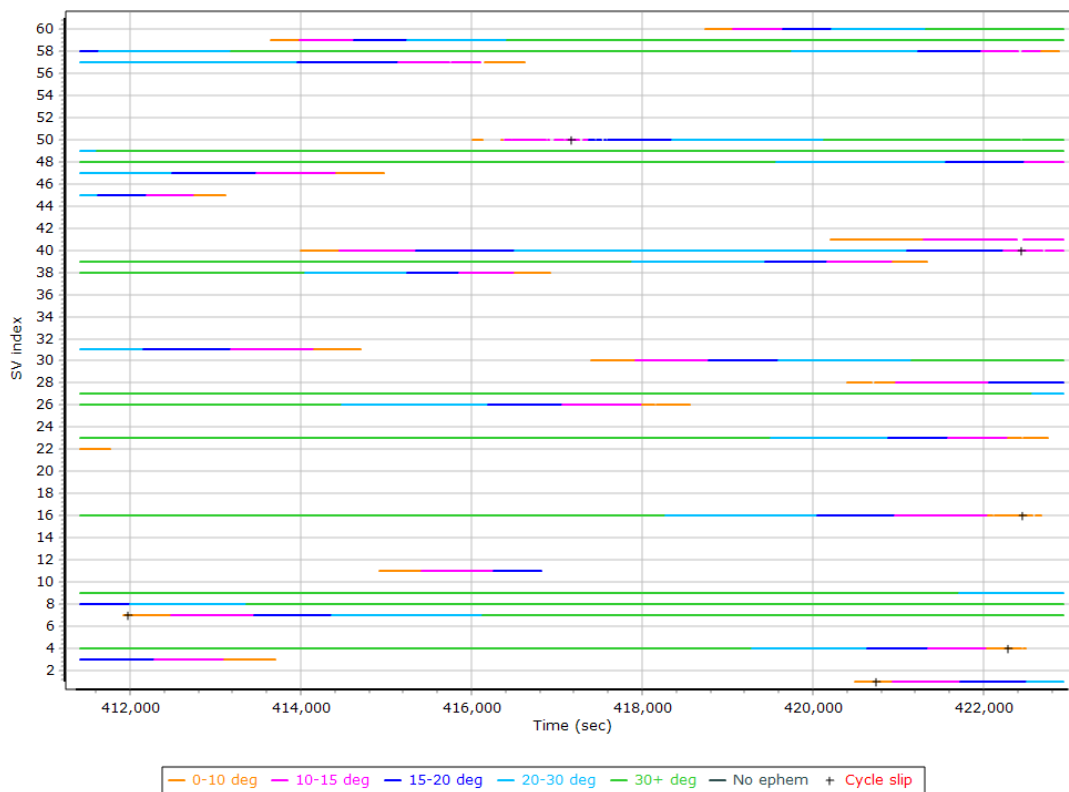
First raw data file	RBV_20_51_B.335		
Last raw data file	RBV_20_51_B.366		
Start GPS week	2093		
Start time	410342.121 (2/20/2020 5:59:02 PM)		
End time	422942.517 (2/20/2020 9:29:02 PM)		
Start of fine alignment	411349.719 (2/20/2020 6:15:49 PM)		
Available subsystems	Primary GNSS, Gimbal, IMU		
POS Event Input	None		
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

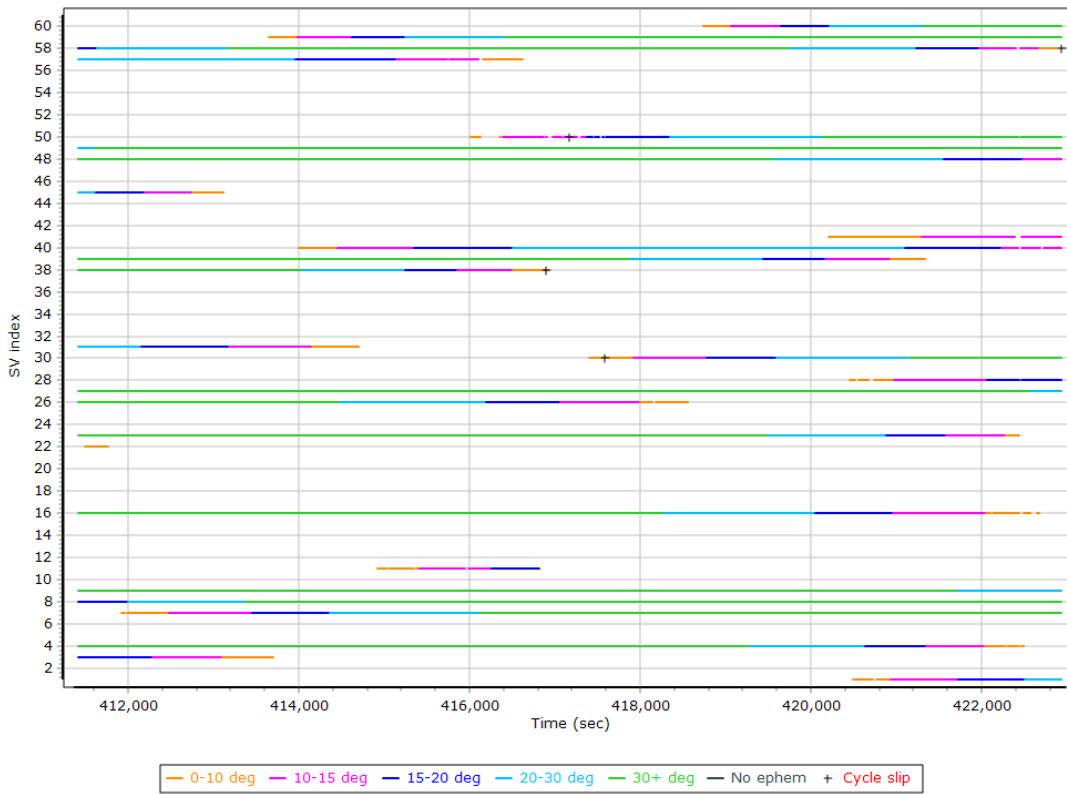
### Raw IMU Import QC Summary

IMU data input file	imu_RB20051B_176.dat
IMU data check log file	imudt_RB20051B_176.log
IMU Records Processed	2519677
Termination Status	Normal
IMU Anomalies	0

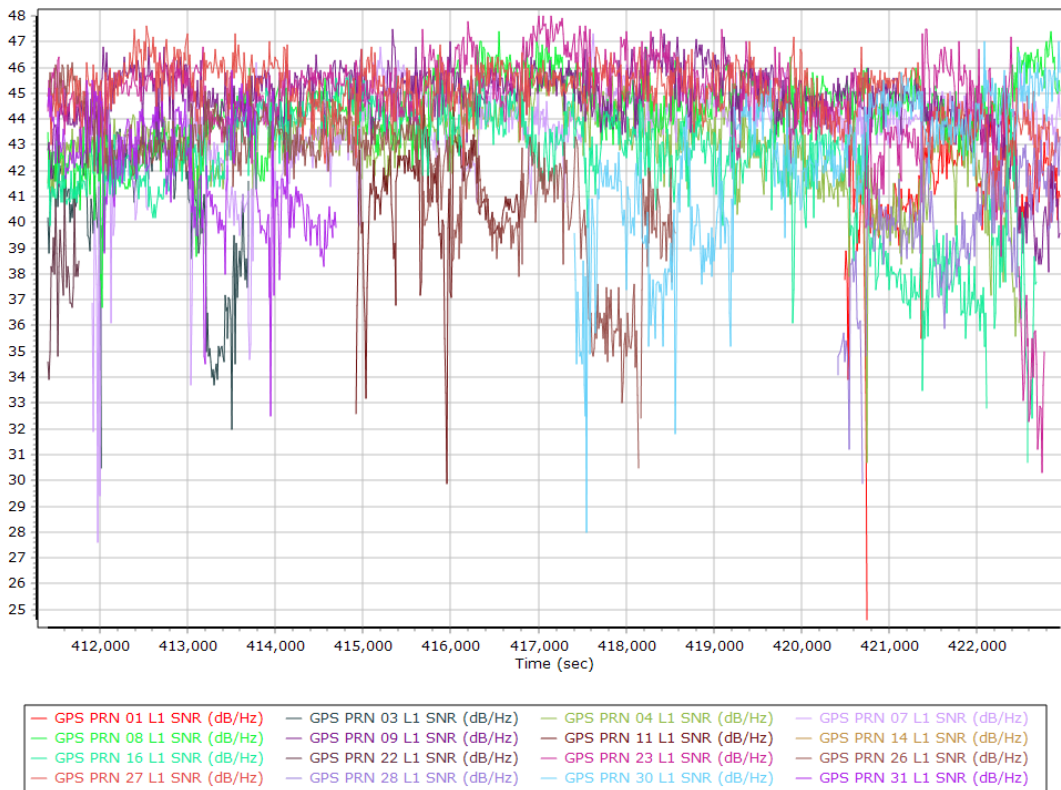
### L1 Satellite Lock/Elevation



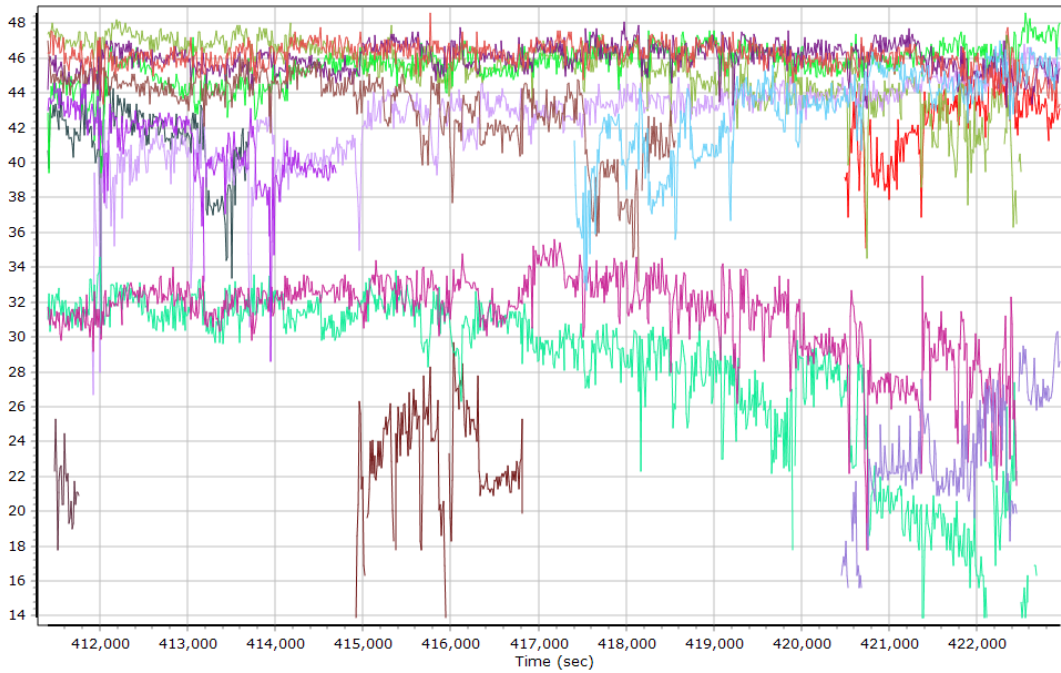
## L2 Satellite Lock/Elevation



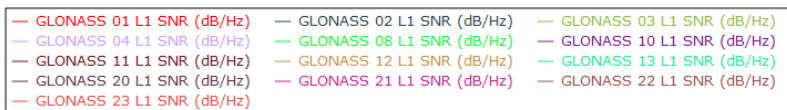
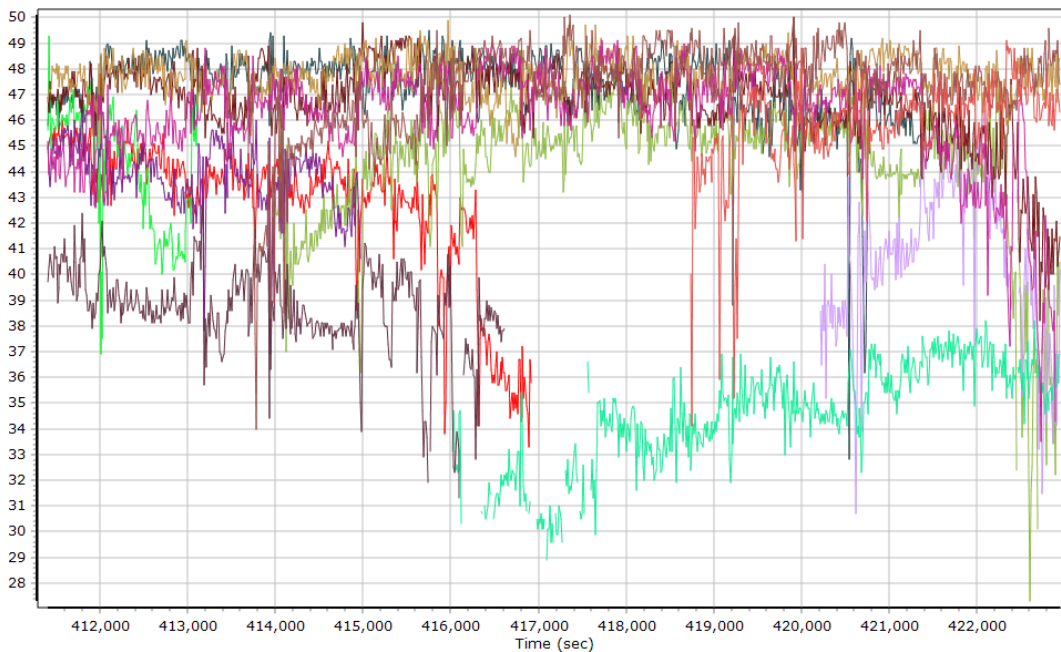
## GPS L1 SNR



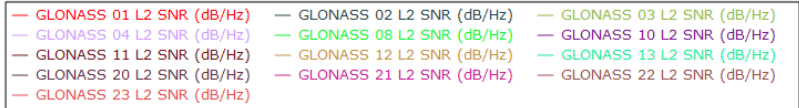
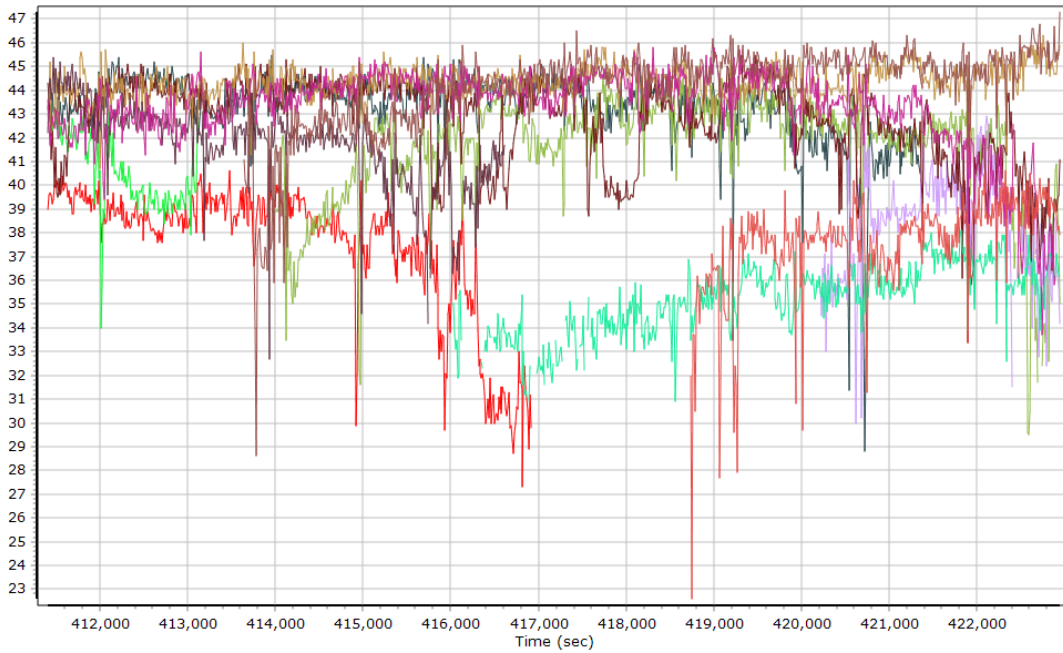
## GPS L2 SNR



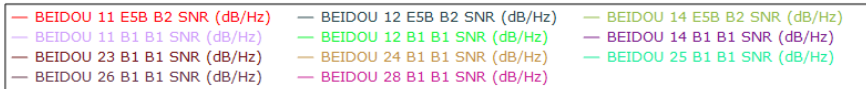
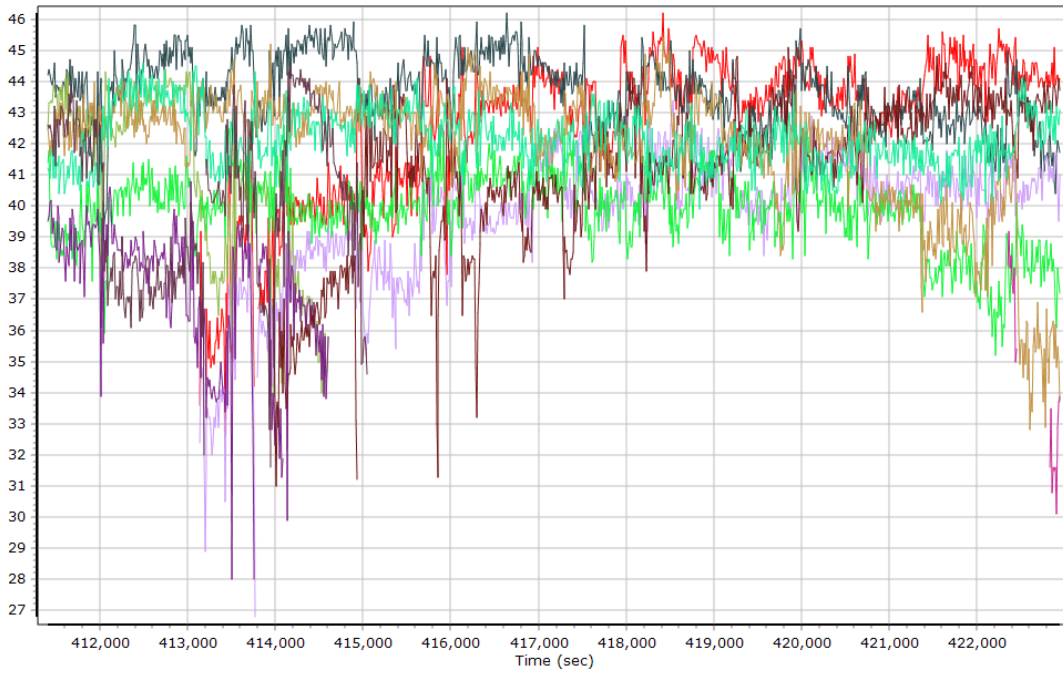
## GLONASS L1 SNR



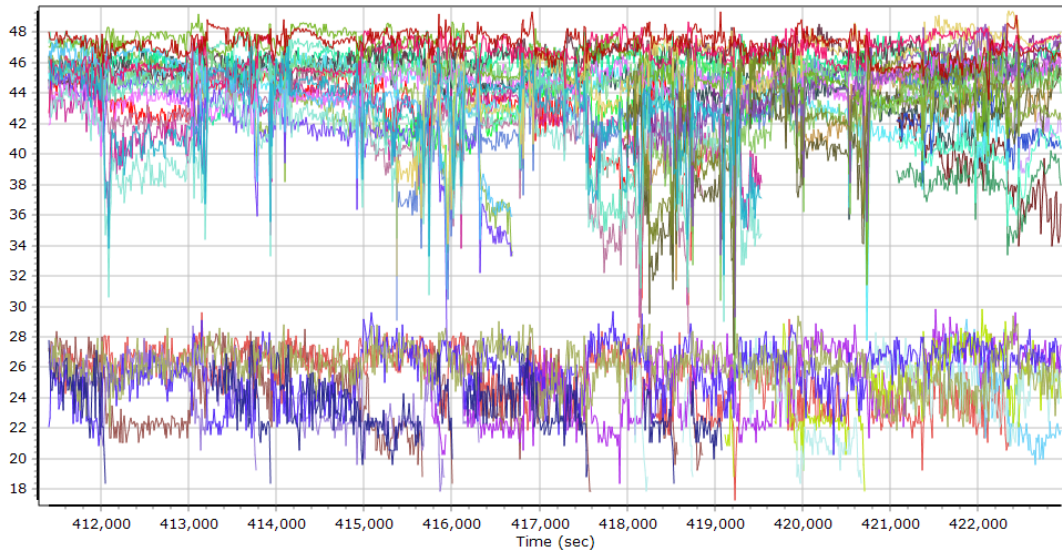
## GLONASS L2 SNR



## BEIDOU SNR



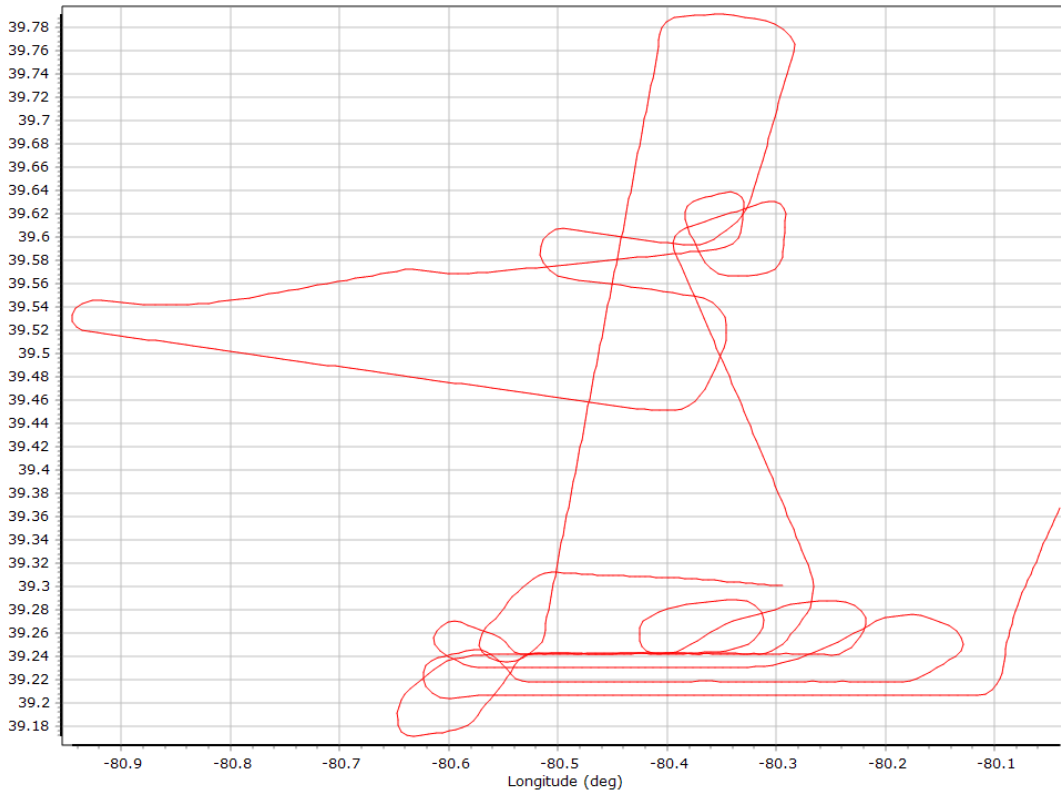
## GALILEO SNR



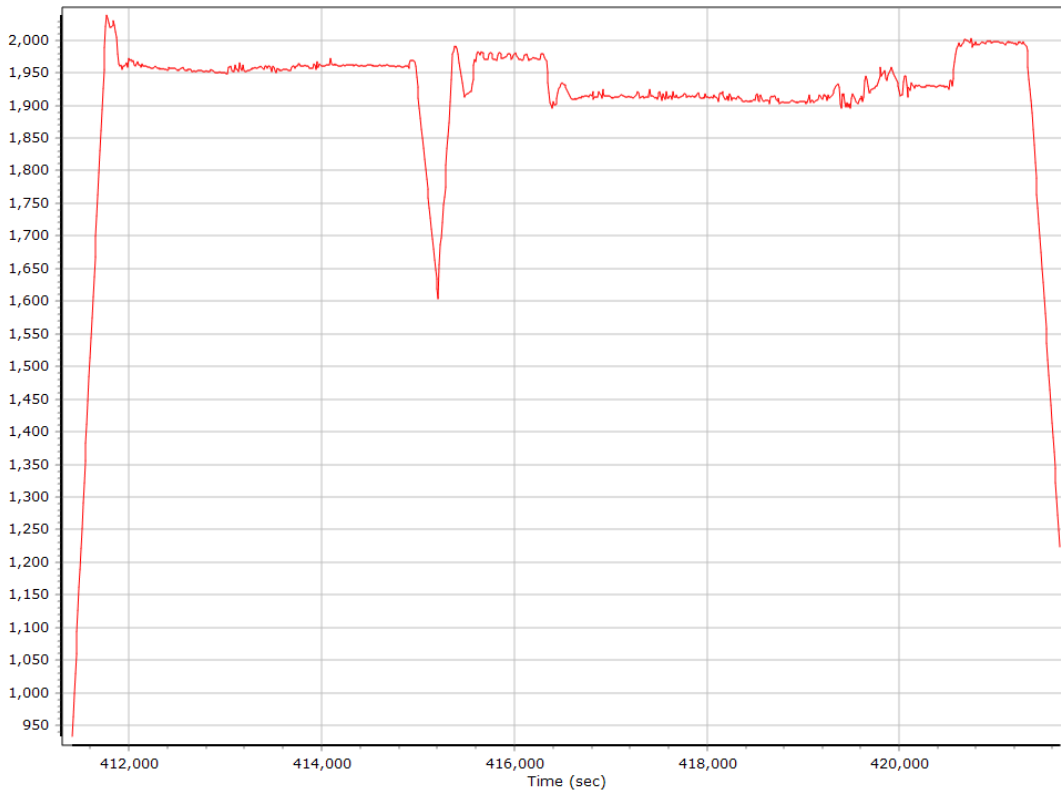


## Trajectory Information

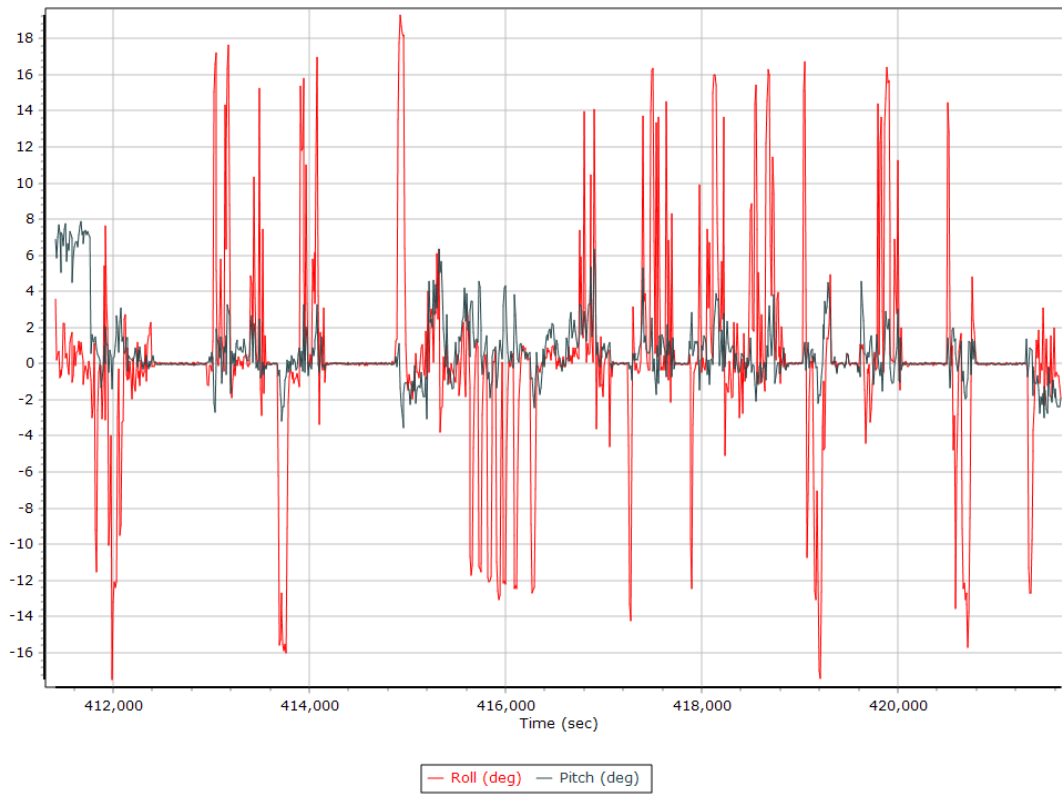
### Top View



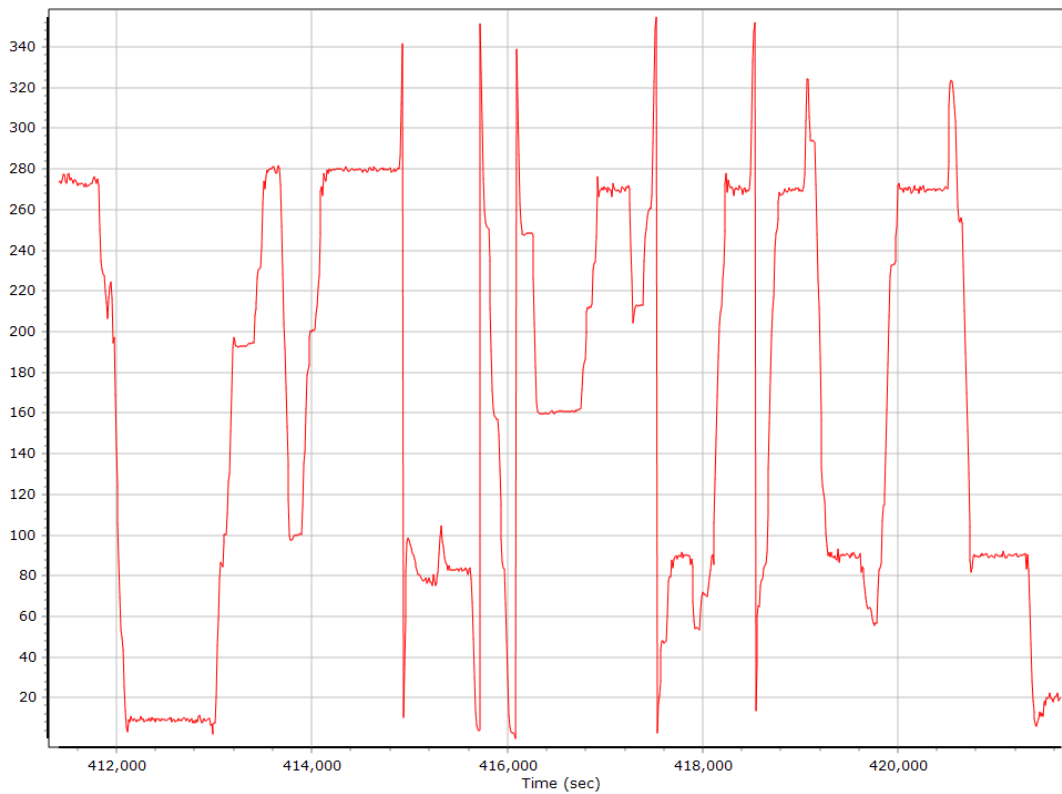
### Altitude



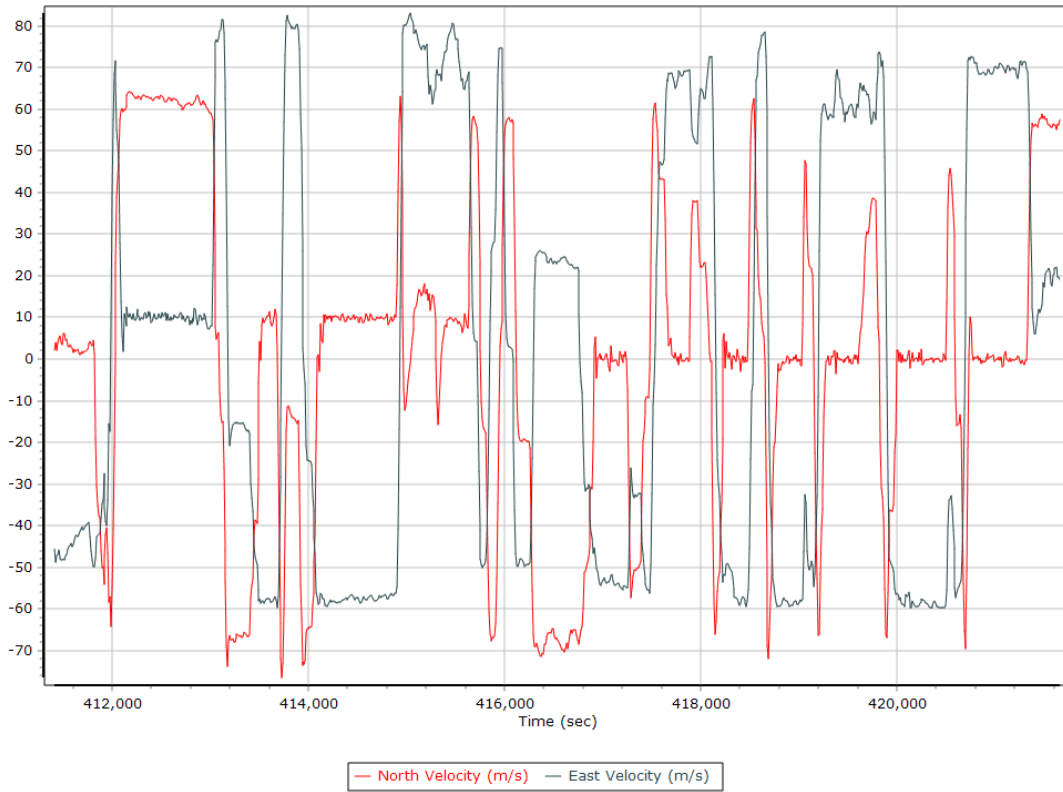
## Roll/Pitch



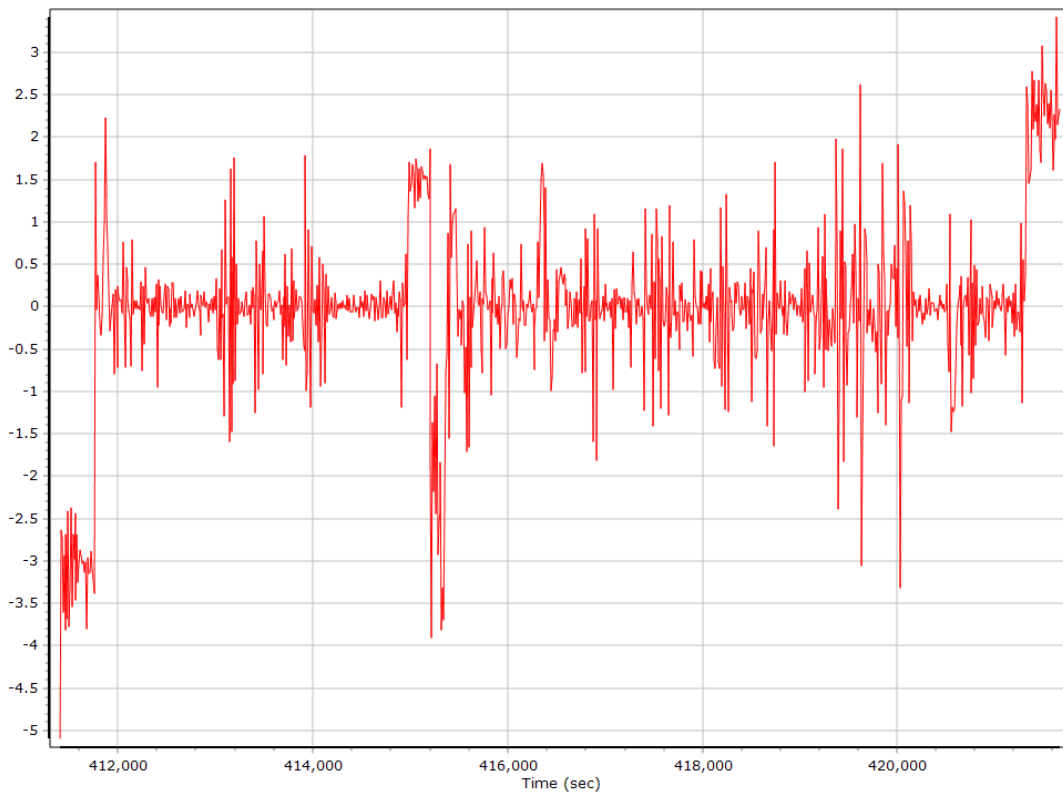
## Heading



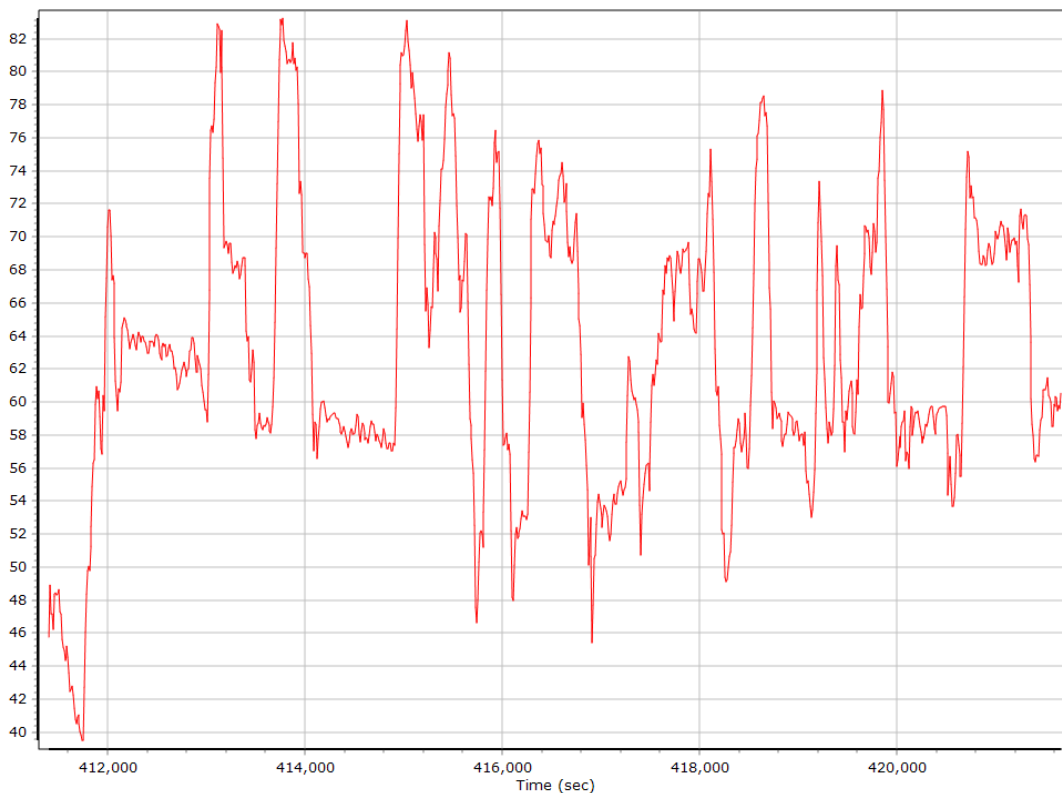
### North/East Velocity



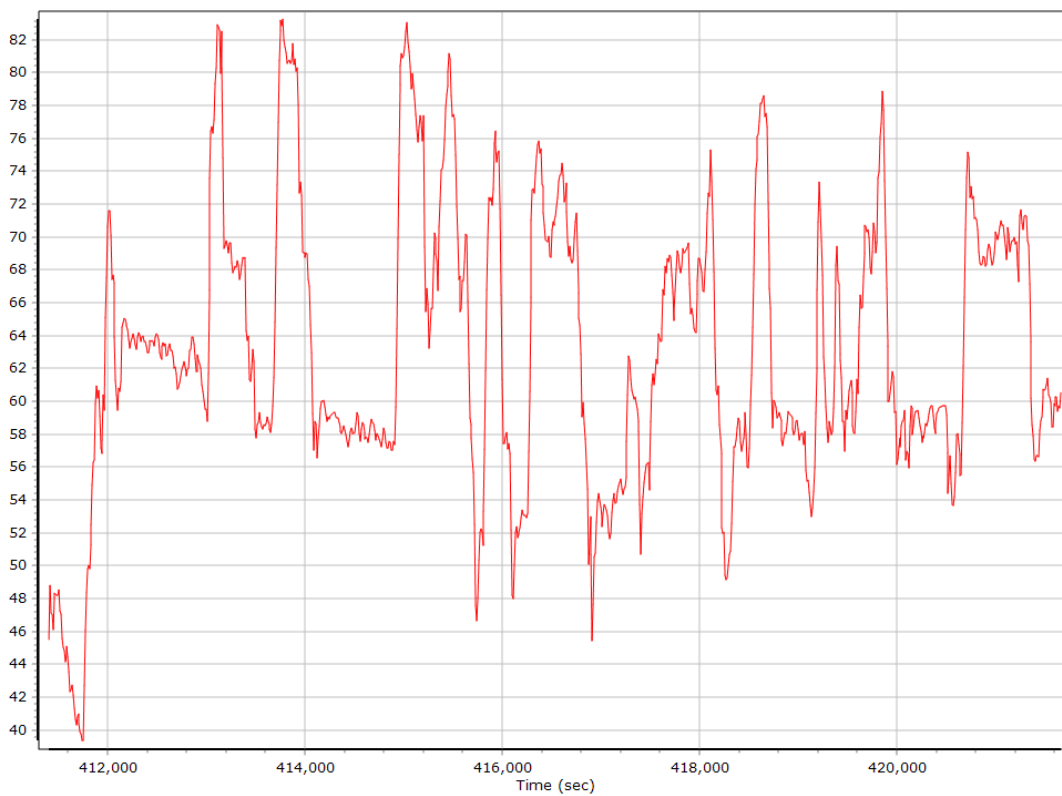
### Down Velocity



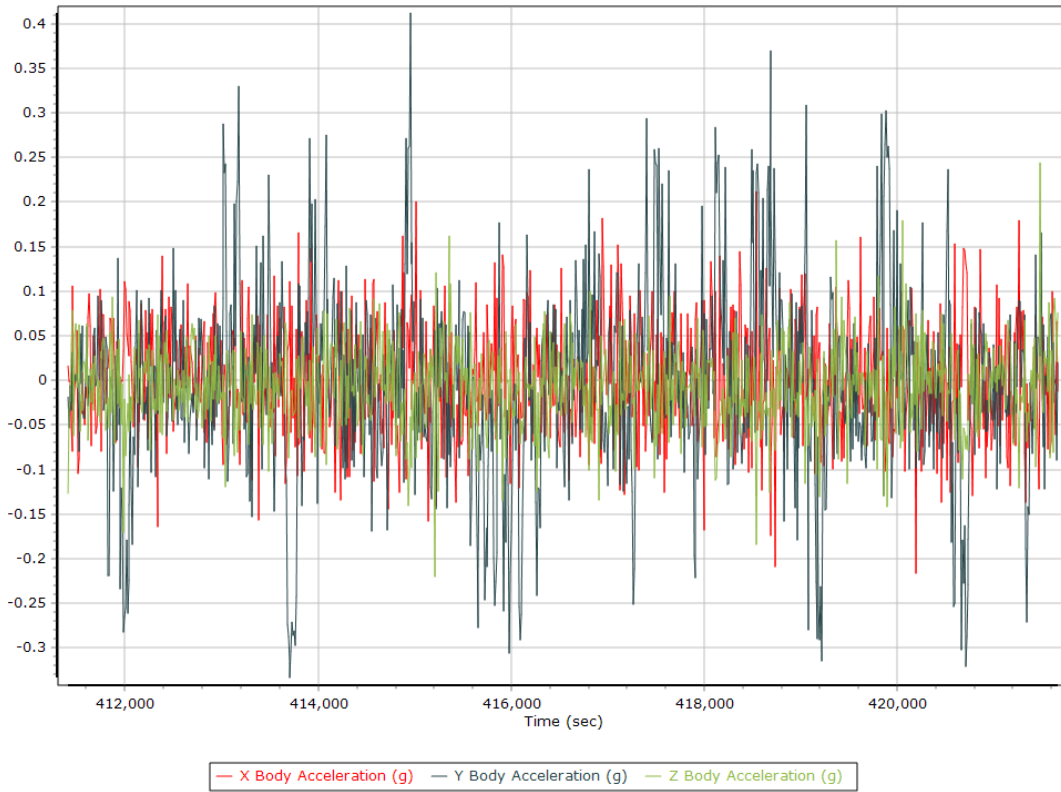
### Total Speed



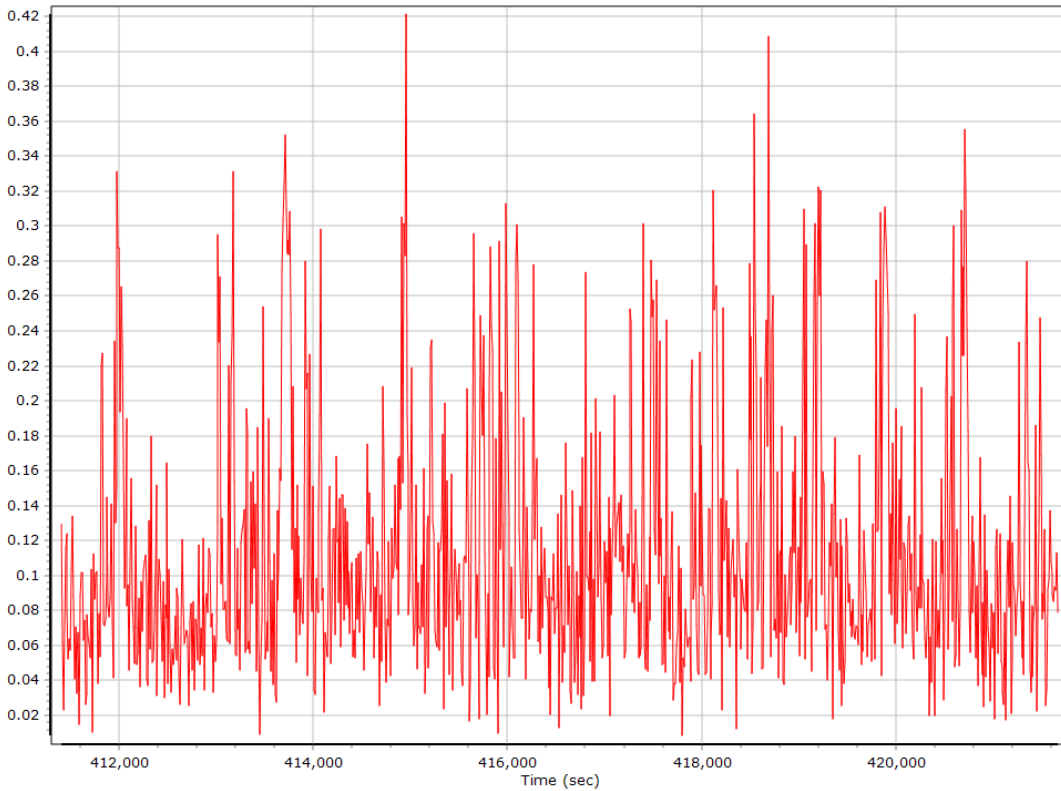
### Ground Speed



### 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	System	Rate	Service	Database	Status
02/20/2020	WVTA	79.05	GNSS	1	User	None	Imported
02/20/2020	LOYS	149.07	GNSS	1	User	None	Imported
02/20/2020	WVSH	71.43	GNSS	1	User	None	Imported
02/20/2020	WVNR	73.32	GNSS	1	User	None	Imported
02/20/2020	WVMZ	84.33	GNSS	1	User	None	Imported
02/20/2020	WVBR	15.66	GNSS	1	User	None	Imported
02/20/2020	FREO	115.28	GNSS	1	User	None	Imported

### SmartBase Results

SmartBase status	PROC_STATUS_OK
Primary station Id	WVBR
Primary station data rate (sec)	1.0
VRS/ASB generation rate (sec)	1.0
VRS/ASB timespan	12598 s (2093 410361 - 2093 422959)
Number of reference stations	6
Primary station GPS measurement usage (%)	99.9
Primary station GLONASS measurement usage (%)	82.5
Average number of satellites per epoch	15.0
Max number of GPS stations used	6
Min number of GPS stations used	3
Max number of GLONASS stations used	6
Min number of GLONASS stations used	3
Total full data gap (sec)	0
Total GPS full data gaps	0
Total GLONASS full data gaps	0
Total individual satellite data gap (sec)	16994
GPS precise vs. broadcast ephemeris used	100.0 % / 0.0 %
GLONASS precise vs. broadcast ephemeris used	0.0 % / 100.0 %
Termination Status	Normal

### Base Station Information - WVTA

Station ID	WVTA		
Filename	wvta0510.20o		
Start date	2/20/2020 12:00:00 AM		
End date	2/20/2020 11:59:59 PM		
Duration	23:59:59.000		
Data type	GNSS		
Receiver manufacturer, model, serial no.	Trimble	NetR5	4922K62119
Antenna manufacturer, model	Trimble	Zephyr Geodetic 2 RoHS	
Antenna height [m]	0.000		
Antenna measurement method	Bottom of antenna mount		
Offset from measured point to APC (m)	0.08546		
Latitude	N39°26'16.64399"		
Longitude	W79°30'52.95303"		
Ellipsoidal height (m)	726.06600		
Frame	ITRF00		
Epoch	1997		
Ellipsoid	WGS84		
Velocity North (mm/y)	0		
Velocity East (mm/y)	0		
Velocity Up (mm/y)	0		

### Base Station Information - LOYS

Station ID	LOYS		
Filename	loys0510.20o		
Start date	2/20/2020 12:00:00 AM		
End date	2/20/2020 11:59:59 PM		
Duration	23:59:59.000		
Data type	GNSS		
Receiver manufacturer, model, serial no.	Leica	GR30	1705733
Antenna manufacturer, model	Leica	AR10	
Antenna height [m]	0.000		
Antenna measurement method	Bottom of antenna mount		
Offset from measured point to APC (m)	0.1085		
Latitude	N39°38'46.39064"		
Longitude	W78°43'47.89728"		
Ellipsoidal height (m)	169.35800		
Frame	ITRF00		
Epoch	1997		
Ellipsoid	WGS84		
Velocity North (mm/y)	0		
Velocity East (mm/y)	0		
Velocity Up (mm/y)	0		



## Base Station Information - WVSH

Station ID	WVSH		
Filename	wvsh0510.20o		
Start date	2/20/2020 12:00:00 AM		
End date	2/20/2020 11:59:59 PM		
Duration	23:59:59.000		
Data type	GNSS		
Receiver manufacturer, model, serial no.	Trimble	NetR5	4924K62366
Antenna manufacturer, model	Trimble	Zephyr Geodetic 2 RoHS	
Antenna height [m]	0.000		
Antenna measurement method	Bottom of antenna mount		
Offset from measured point to APC (m)	0.08546		
Latitude	N39°59'49.09954"		
Longitude	W80°40'46.36115"		
Ellipsoidal height (m)	384.55100		
Frame	ITRF00		
Epoch	1997		
Ellipsoid	WGS84		
Velocity North (mm/y)	0		
Velocity East (mm/y)	0		
Velocity Up (mm/y)	0		

## Base Station Information - WVNR

Station ID	WVNR		
Filename	wvnr0510.20o		
Start date	2/20/2020 12:00:00 AM		
End date	2/20/2020 11:59:59 PM		
Duration	23:59:59.000		
Data type	GNSS		
Receiver manufacturer, model, serial no.	Trimble	NetR5	4922K62042
Antenna manufacturer, model	Trimble	Zephyr Geodetic 2 RoHS	
Antenna height [m]	0.000		
Antenna measurement method	Bottom of antenna mount		
Offset from measured point to APC (m)	0.08546		
Latitude	N38°53'44.50553"		
Longitude	W79°51'30.27007"		
Ellipsoidal height (m)	582.77300		
Frame	ITRF00		
Epoch	1997		
Ellipsoid	WGS84		
Velocity North (mm/y)	0		
Velocity East (mm/y)	0		
Velocity Up (mm/y)	0		

### Base Station Information - WVMZ

Station ID	WVMZ		
Filename	wvmz0510.20o		
Start date	2/20/2020 12:00:00 AM		
End date	2/20/2020 11:59:59 PM		
Duration	23:59:59.000		
Data type	GNSS		
Receiver manufacturer, model, serial no.	Trimble	NetR5	4922K62061
Antenna manufacturer, model	Trimble	Zephyr Geodetic 2 RoHS	
Antenna height [m]	0.000		
Antenna measurement method	Bottom of antenna mount		
Offset from measured point to APC (m)	0.08546		
Latitude	N38°50'20.04352"		
Longitude	W81°06'31.58290"		
Ellipsoidal height (m)	296.83400		
Frame	ITRF00		
Epoch	1997		
Ellipsoid	WGS84		
Velocity North (mm/y)	0		
Velocity East (mm/y)	0		
Velocity Up (mm/y)	0		

### Base Station Information - WVBR

Station ID	WVBR		
Filename	wvbr0510.20o		
Start date	2/20/2020 12:00:00 AM		
End date	2/20/2020 11:59:59 PM		
Duration	23:59:59.000		
Data type	GNSS		
Receiver manufacturer, model, serial no.	Trimble	NetR5	4922K62070
Antenna manufacturer, model	Trimble	Zephyr Geodetic 2 RoHS	
Antenna height [m]	0.000		
Antenna measurement method	Bottom of antenna mount		
Offset from measured point to APC (m)	0.08546		
Latitude	N39°18'28.88440"		
Longitude	W80°16'38.61885"		
Ellipsoidal height (m)	270.24600		
Frame	ITRF00		
Epoch	1997		
Ellipsoid	WGS84		
Velocity North (mm/y)	0		
Velocity East (mm/y)	0		
Velocity Up (mm/y)	0		

**Base Station Information - FREO**

Station ID	FREO		
Filename	freo0510.20o		
Start date	2/20/2020 12:00:00 AM		
End date	2/20/2020 11:59:59 PM		
Duration	23:59:59.000		
Data type	GNSS		
Receiver manufacturer, model, serial no.	TPS	NET-G5	1294-11893
Antenna manufacturer, model	Topcon	CR.G5 w/TPSH Dome	
Antenna height [m]	0.000		
Antenna measurement method	Bottom of antenna mount		
Offset from measured point to APC (m)	0.09345		
Latitude	N40°12'05.96942"		
Longitude	W81°15'28.22083"		
Ellipsoidal height (m)	274.67900		
Frame	ITRF00		
Epoch	1997		
Ellipsoid	WGS84		
Velocity North (mm/y)	0		
Velocity East (mm/y)	0		
Velocity Up (mm/y)	0		

## GNSS QC

### GNSS QC Statistics

Statistics	Min	Max	Mean
Baseline length (km)	4.88	52.19	
Number of GPS SV	6	11	9
Number of GLONASS SV	0	7	6
Number of QZSS SV	0	0	0
Number of BEIDOU SV	0	0	0
Number of GALILEO SV	0	0	0
Total number of SV	9	17	15
PDOP	1.12	3.13	1.55
QC Solution Gaps	1.00	1.00	
Solution Type	Fixed	Float	No solution
Epoch (sec)	12570.00	0.00	1.00
Percentage	99.99	0.00	0.01

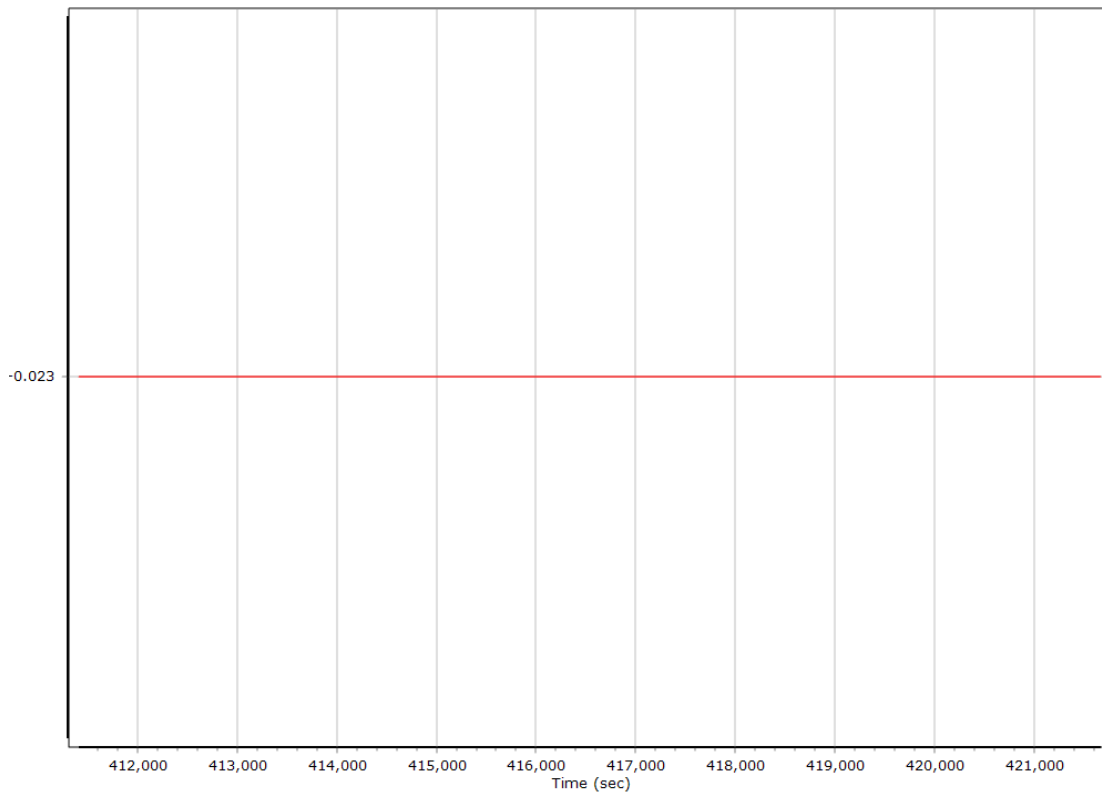
## GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion SmartBase		
Stabilized mount	True		
Base station	ASB		
Processing start time	411349.314 (2/20/2020 6:15:49 PM)		
Processing end time	421674.275 (2/20/2020 9:07:54 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)	-0.023	0.000	-1.028
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

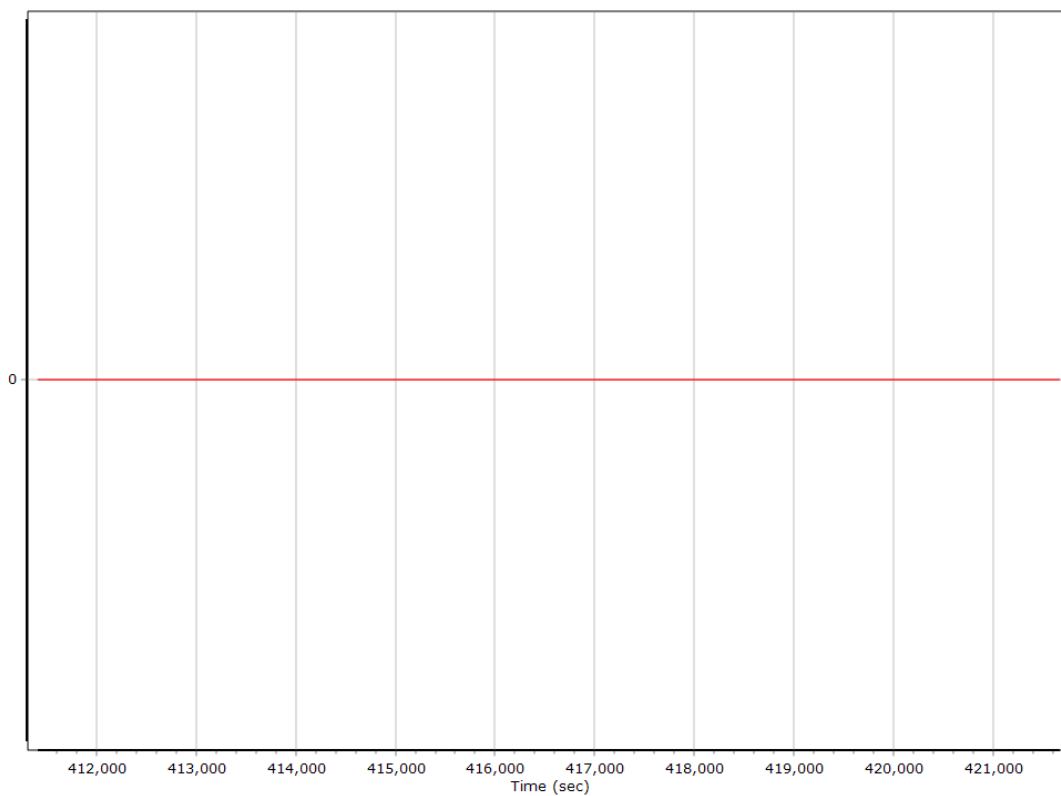
## Calibrated Installation Parameters

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

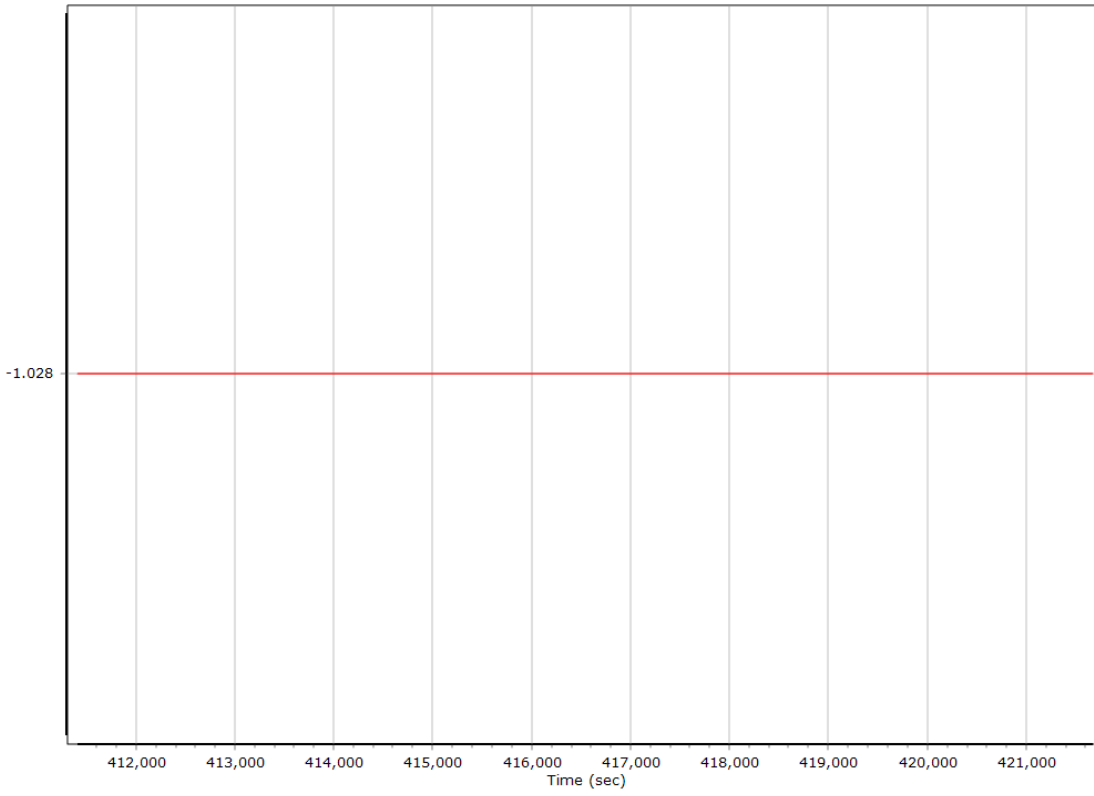
#### X Reference-Primary GNSS Lever Arm (m)



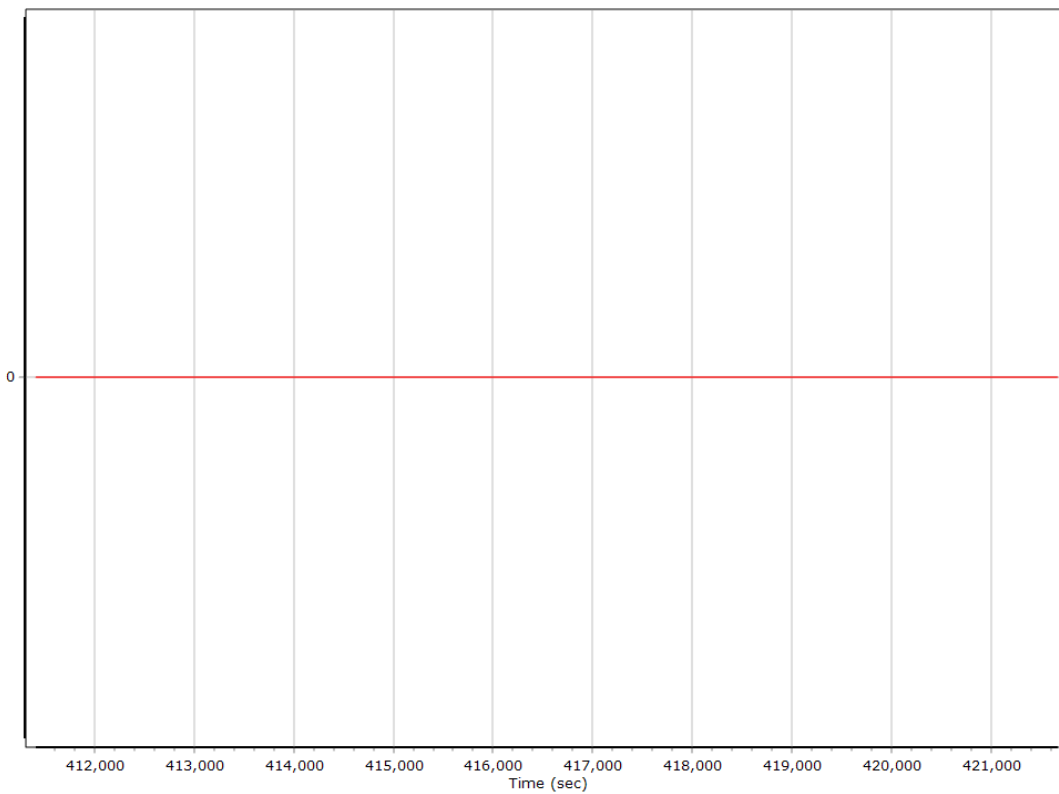
#### Y Reference-Primary GNSS Lever Arm (m)



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



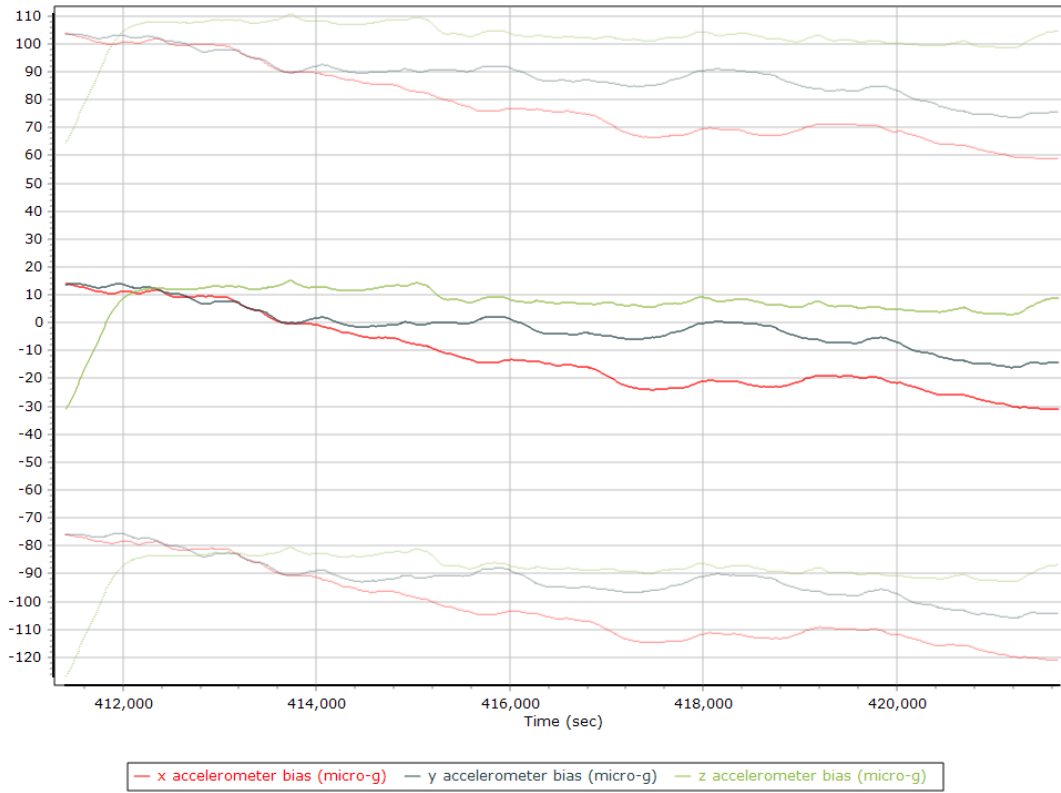
### Reference-Primary GNSS Lever Arm Figure of Merit



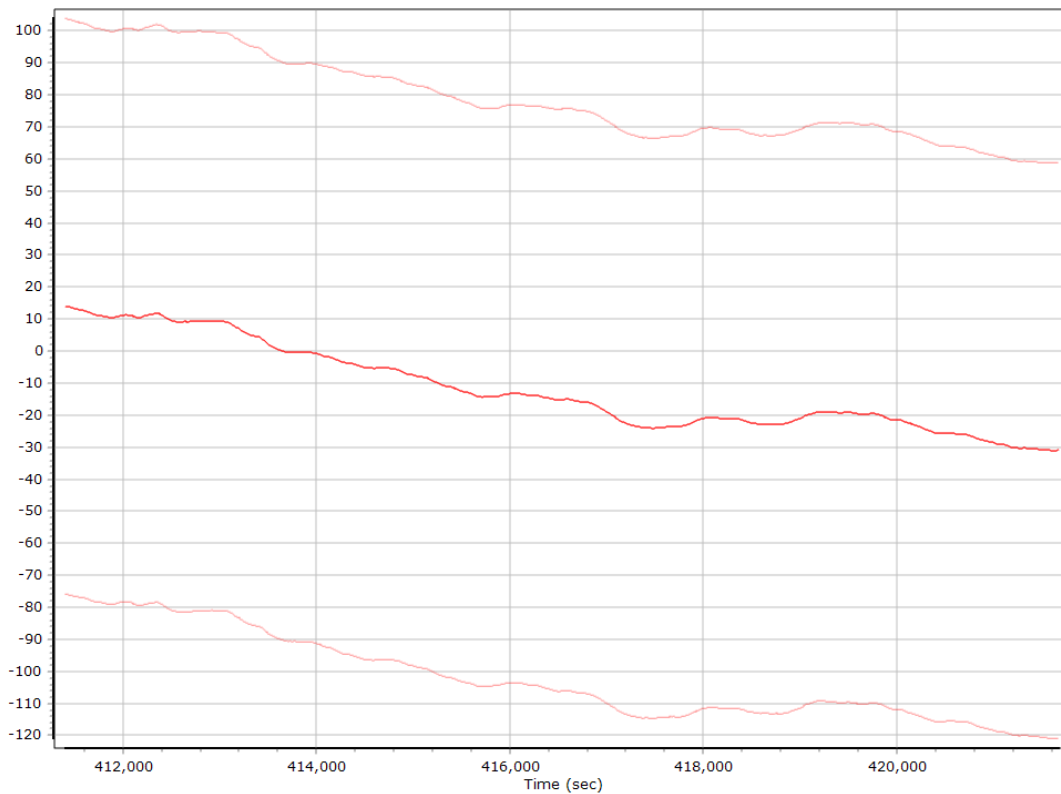
## Smoothed IN-Fusion QC

### Smoothed Estimated Errors, Reference Frame

#### Accelerometer Bias (micro-g)

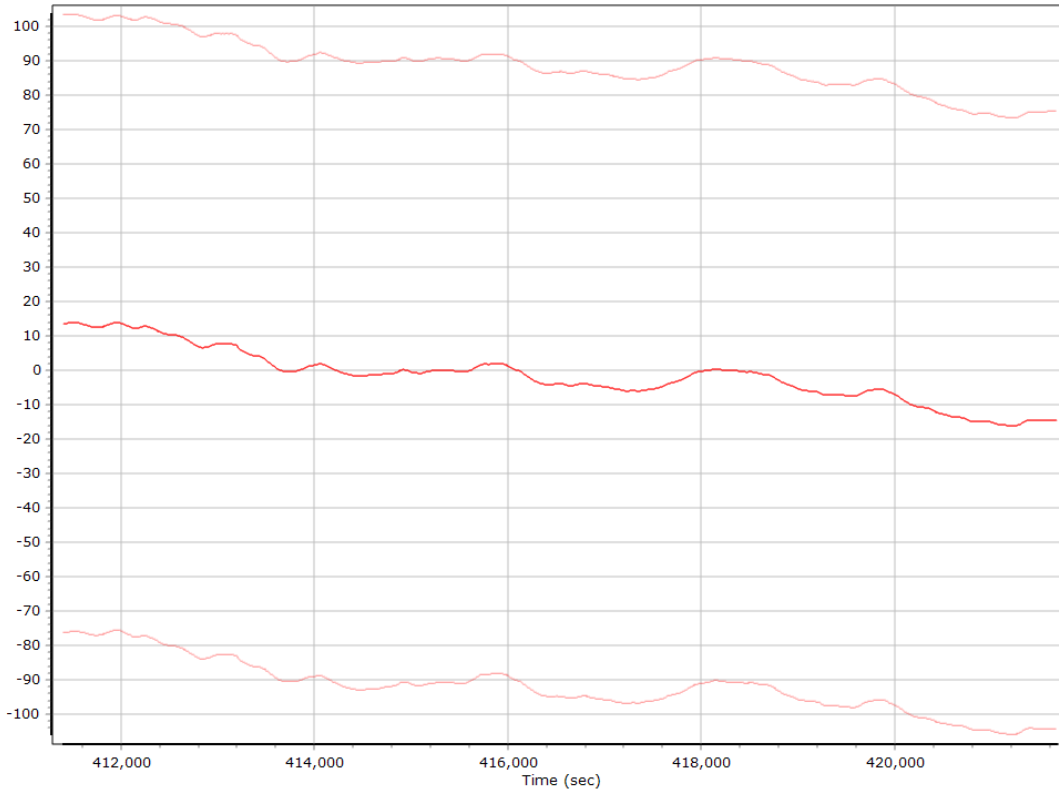


#### X Accelerometer Bias (micro-g)

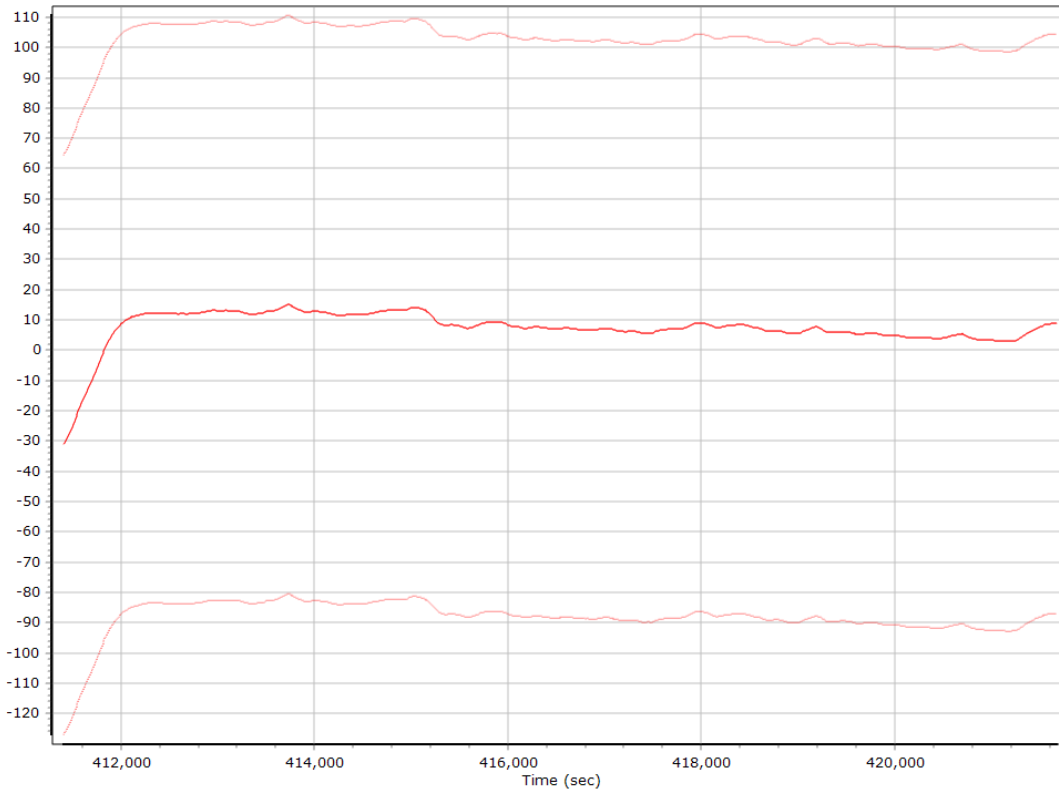




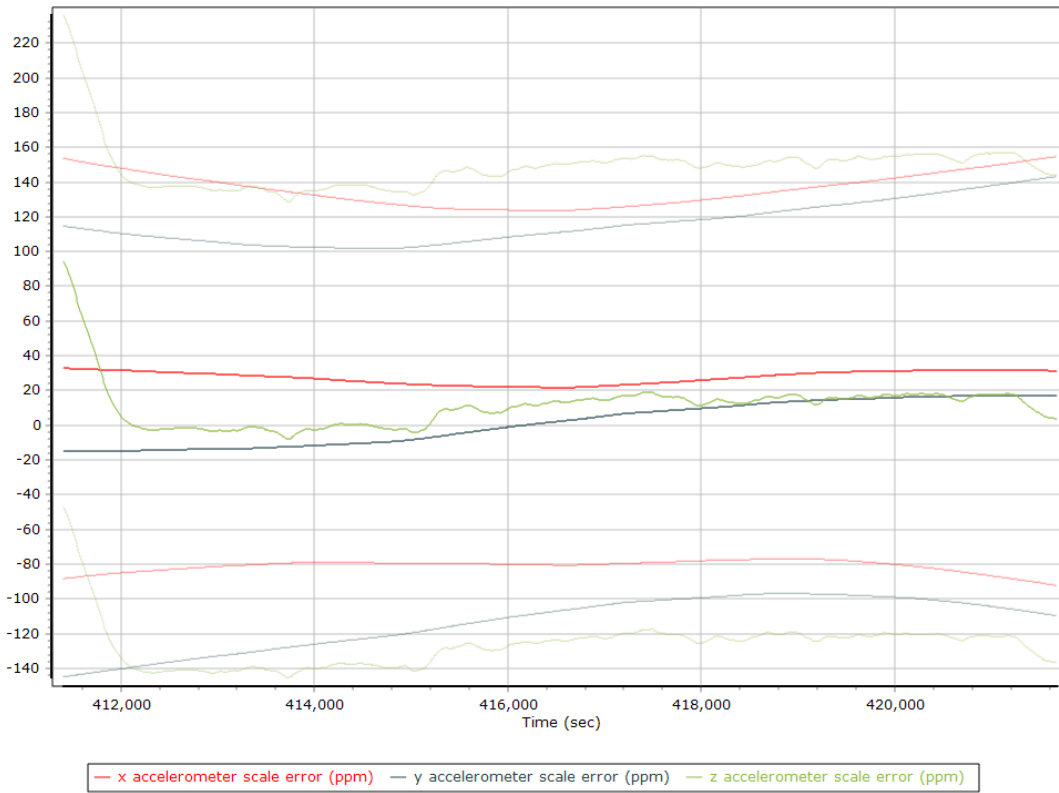
### Y Accelerometer Bias (micro-g)



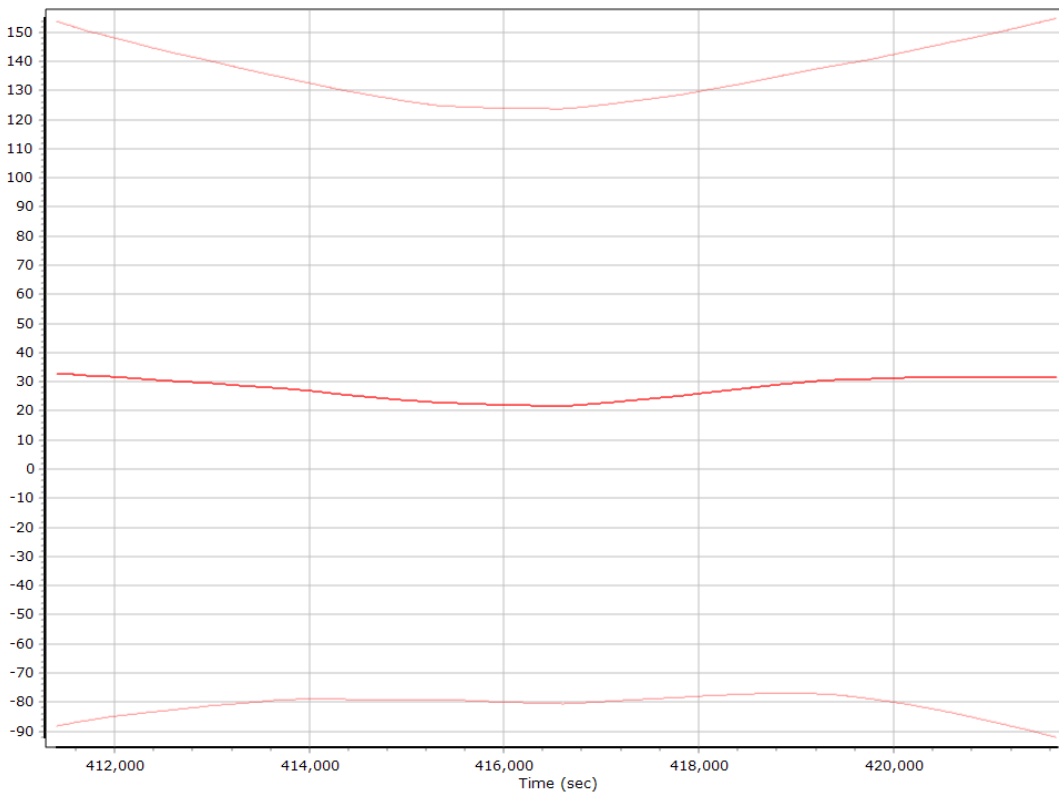
### Z Accelerometer Bias (micro-g)



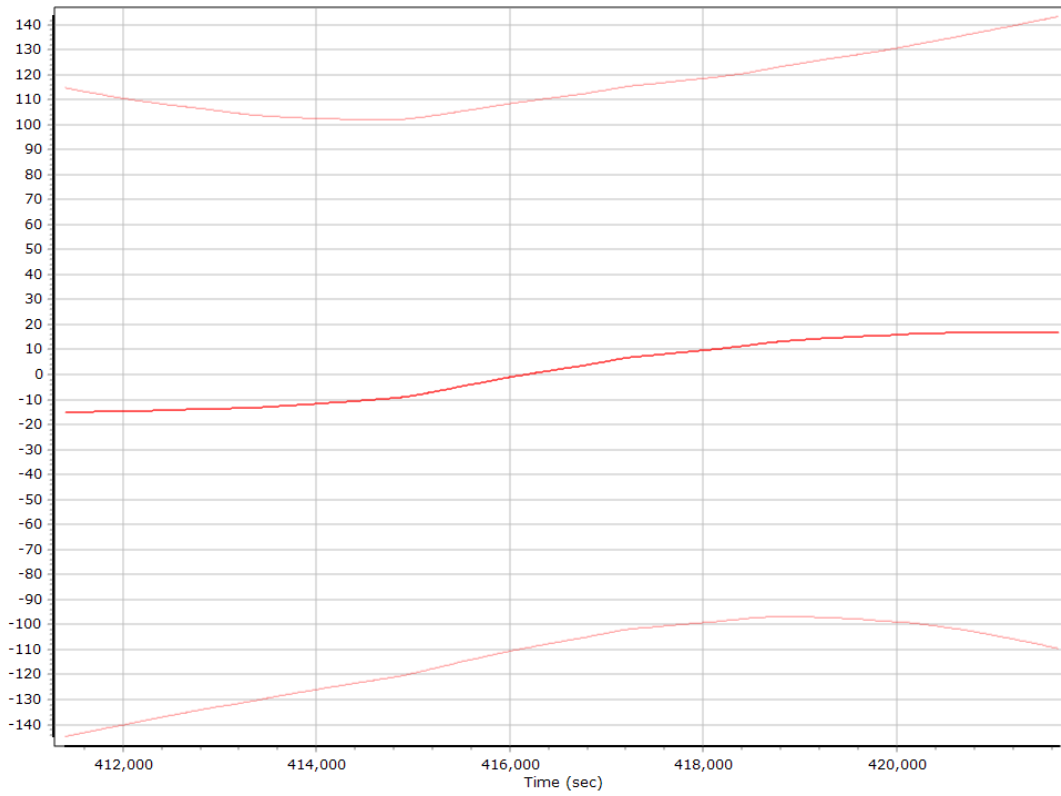
### Accelerometer Scale Error (ppm)



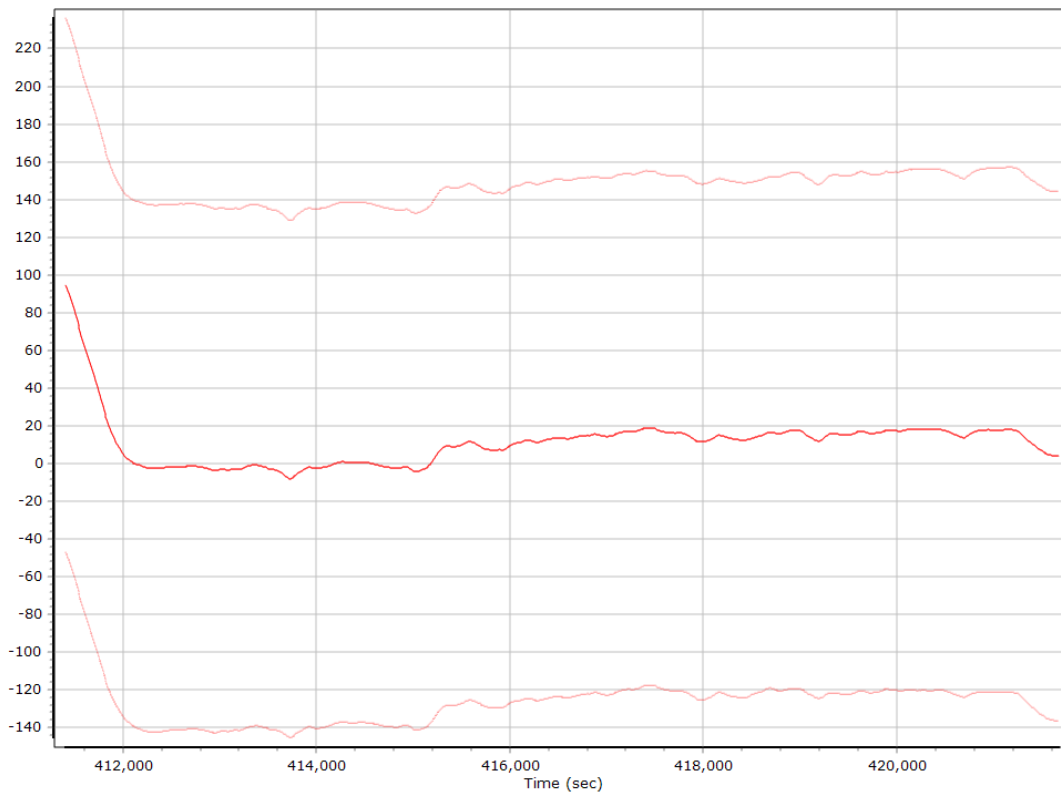
### X Accelerometer Scale Error (ppm)



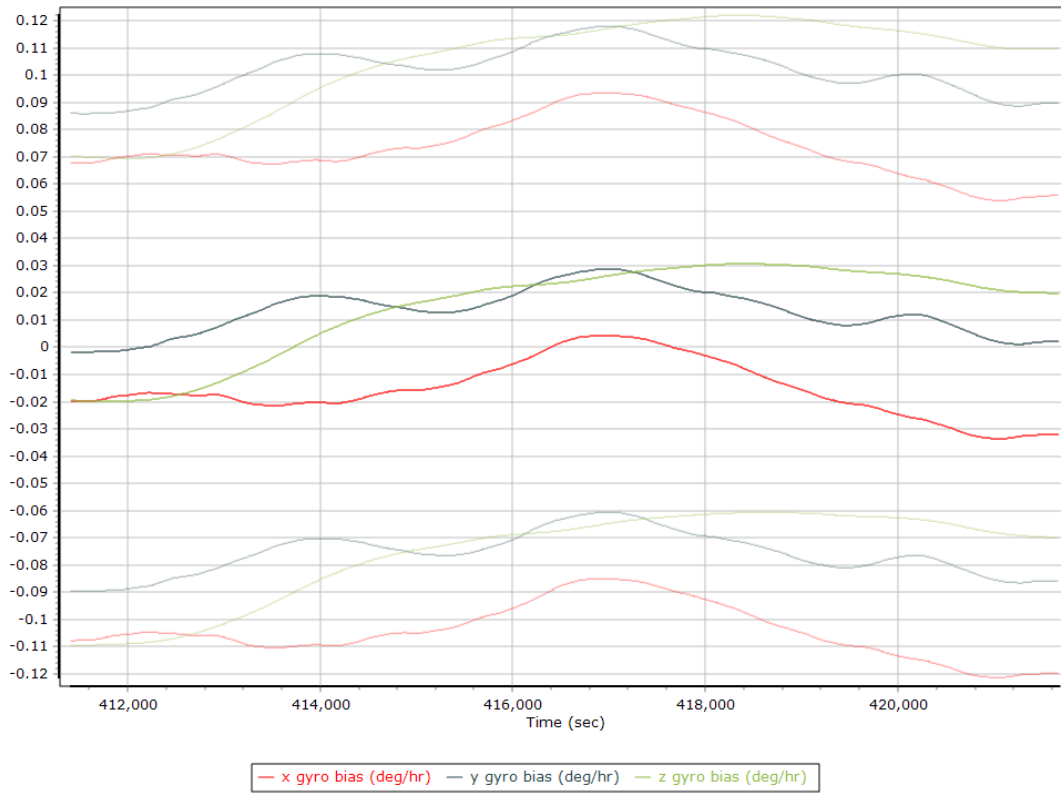
### Y Accelerometer Scale Error (ppm)



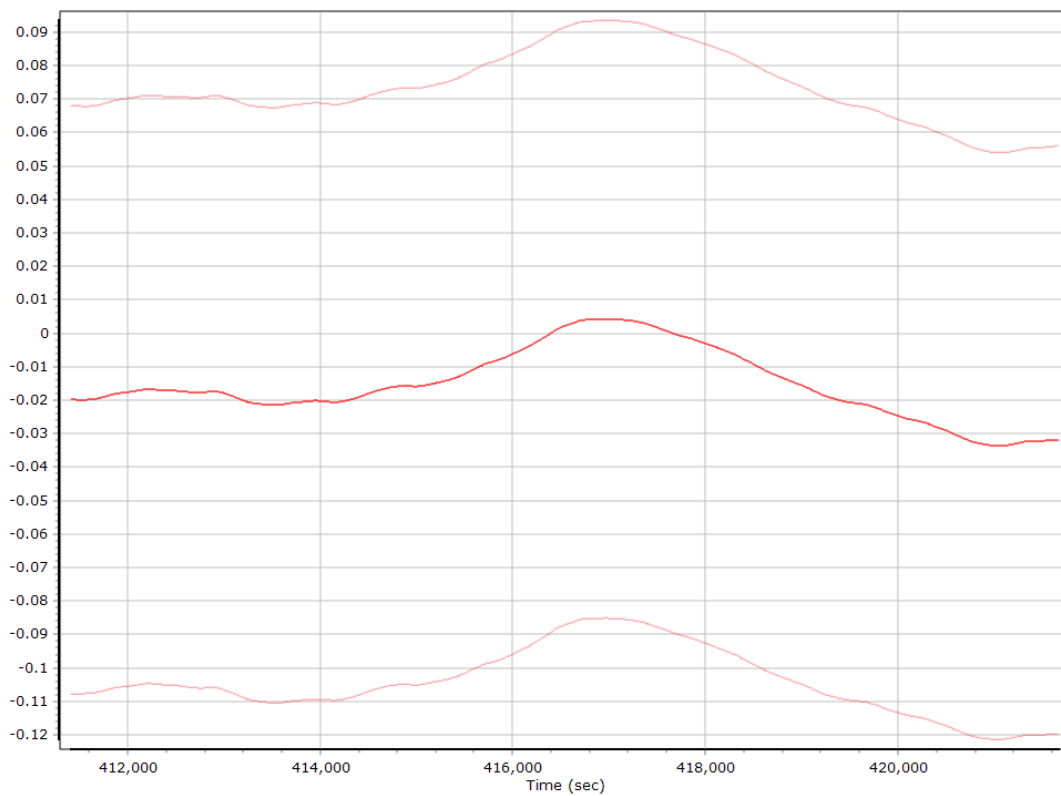
### Z Accelerometer Scale Error (ppm)



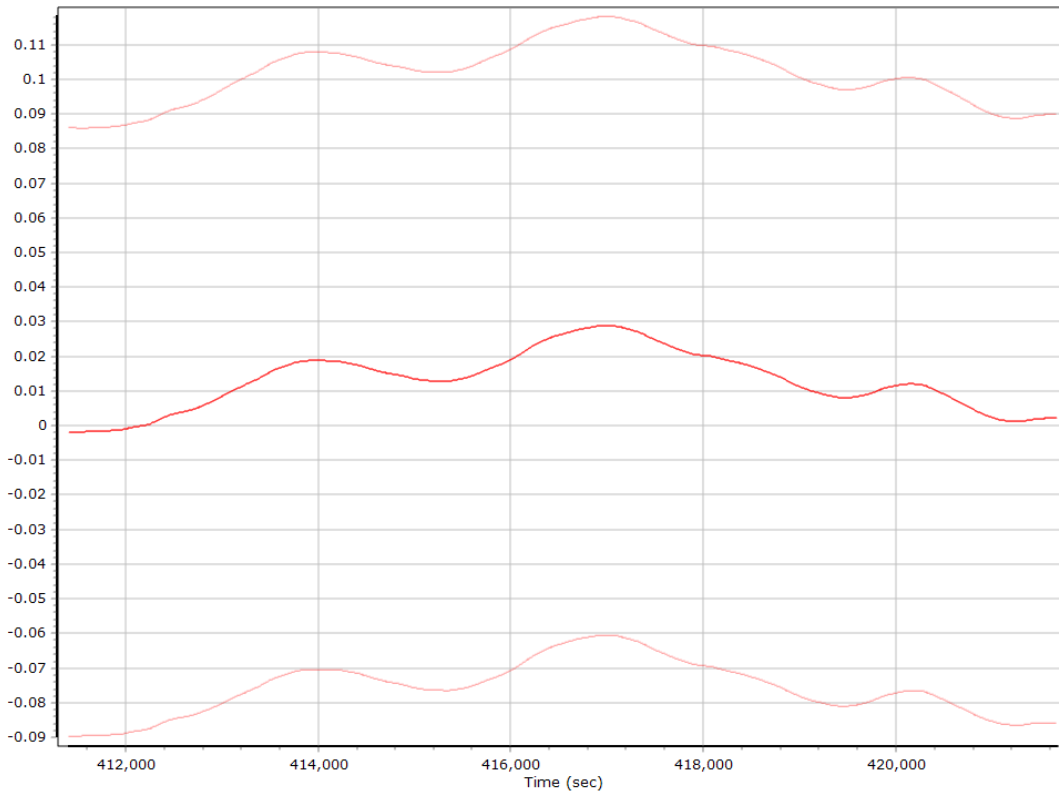
### Gyro Bias (deg/h)



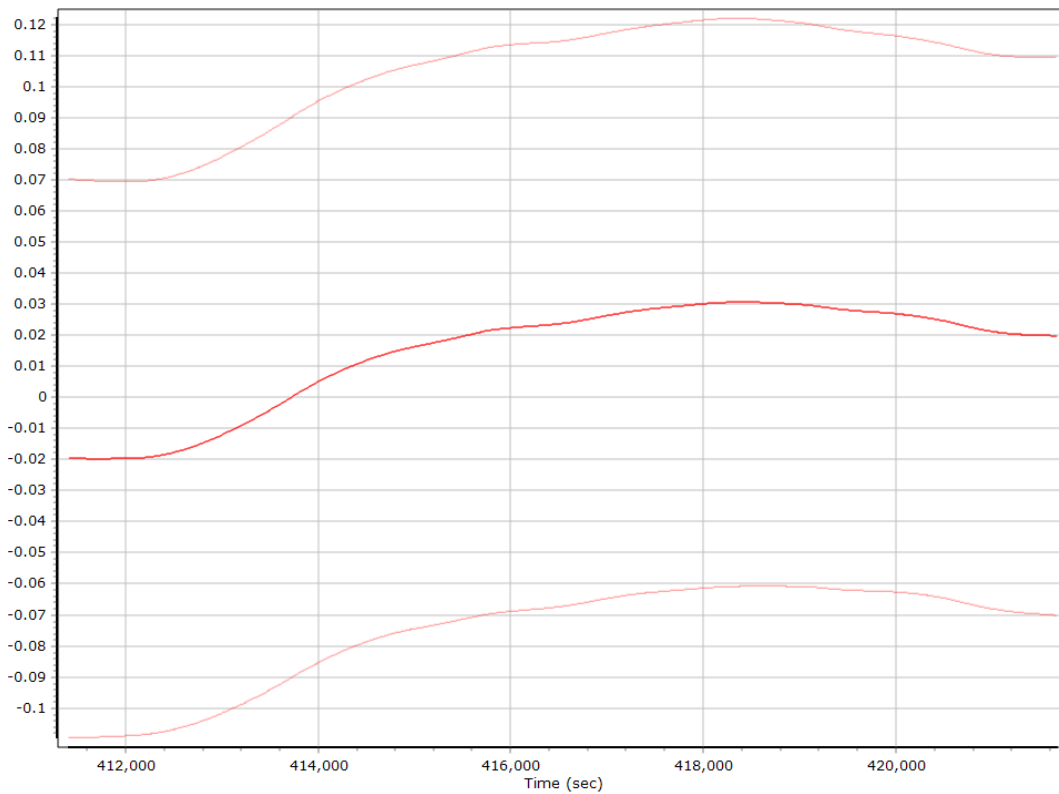
### X Gyro Bias (deg/h)



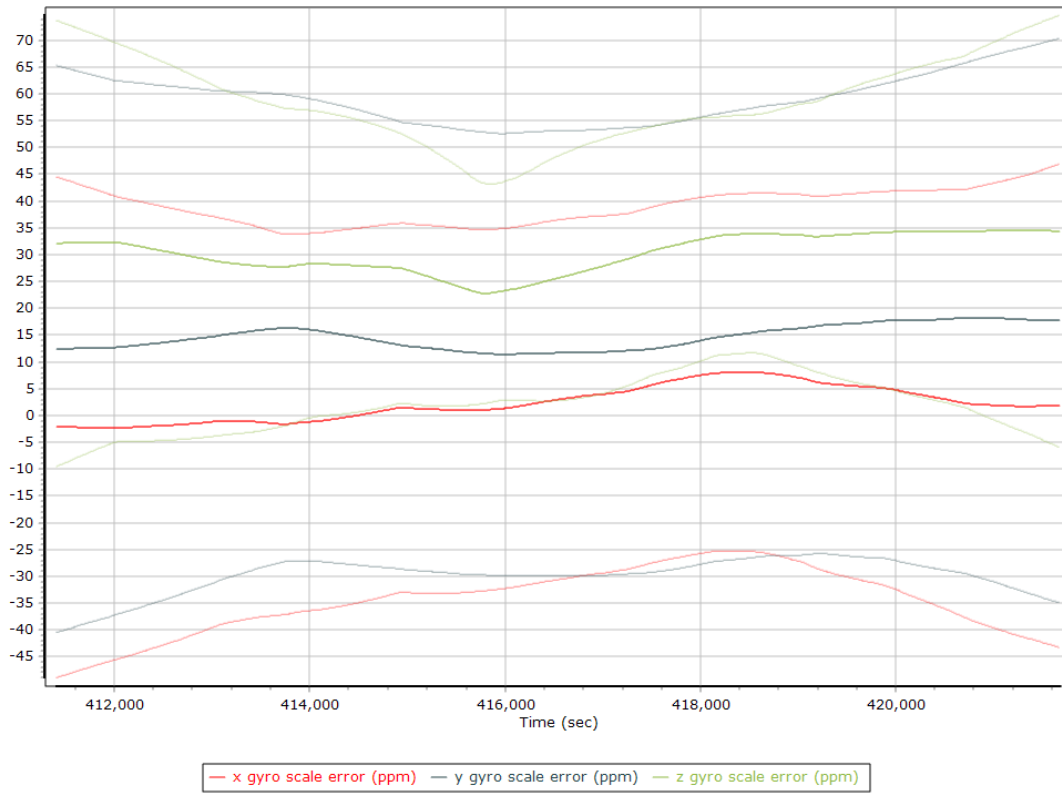
### Y Gyro Bias (deg/h)



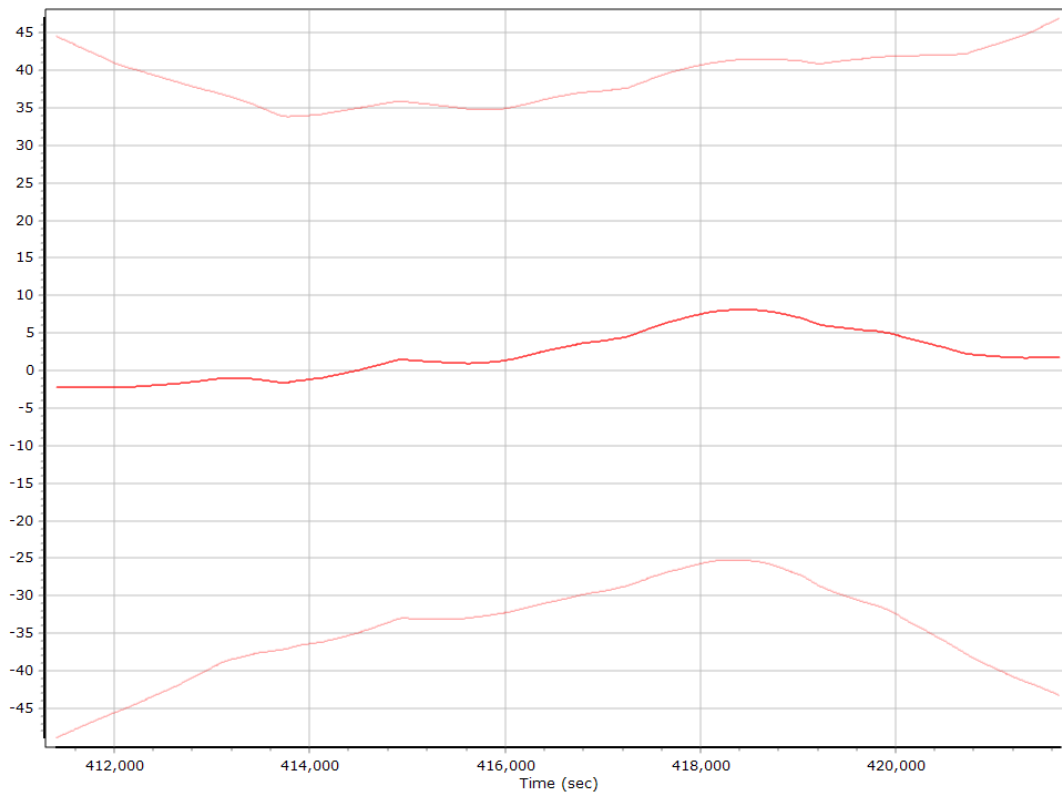
### Z Gyro Bias (deg/h)



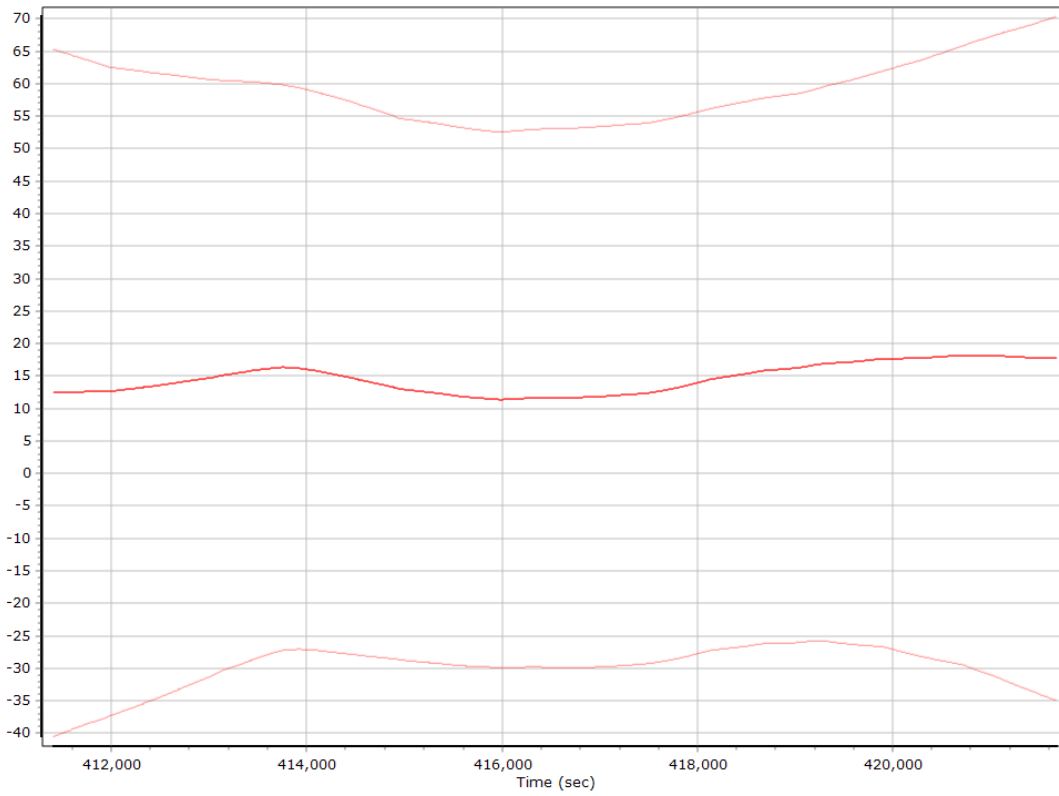
### Gyro Scale Error (ppm)



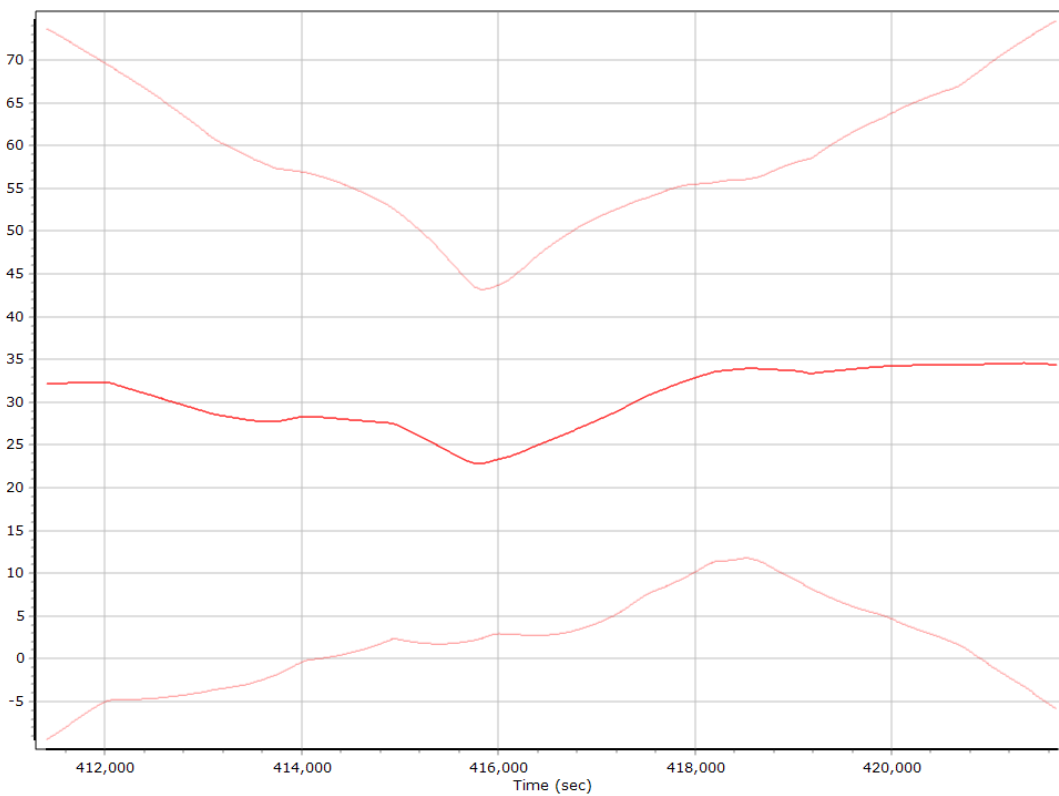
### X Gyro Scale Error (ppm)



### Y Gyro Scale Error (ppm)

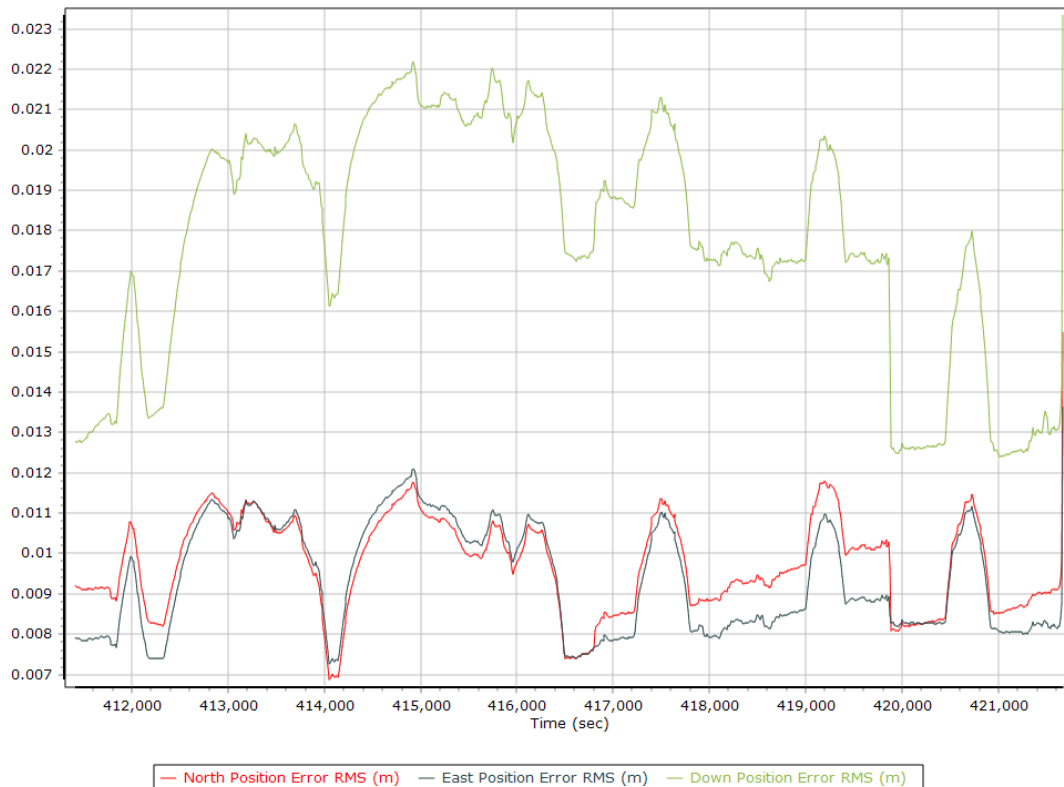


### Z Gyro Scale Error (ppm)

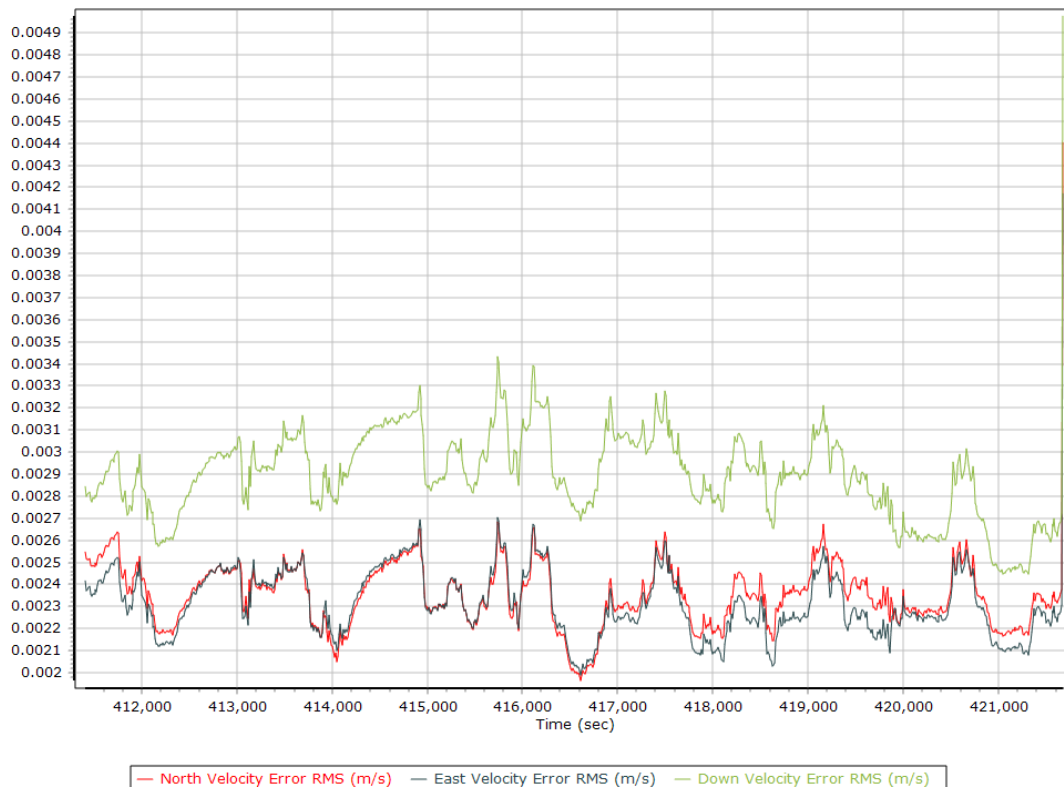


## Smoothed Performance Metrics

### Position Error RMS (m)

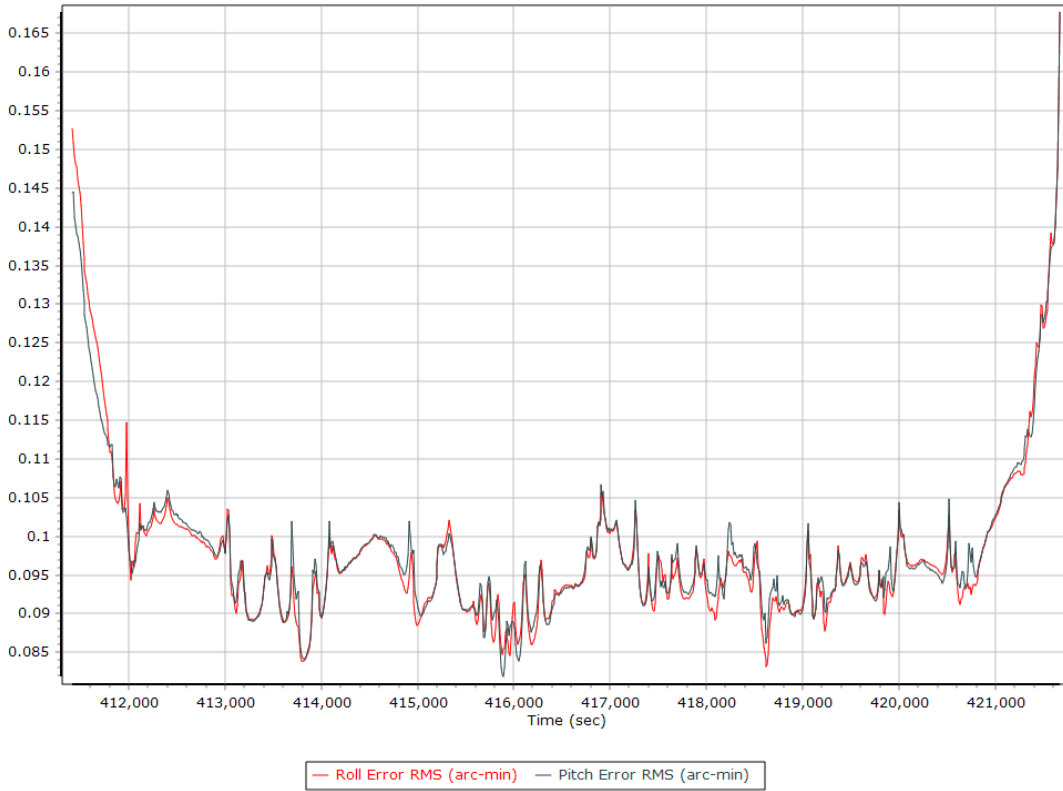


### Velocity Error RMS (m/s)

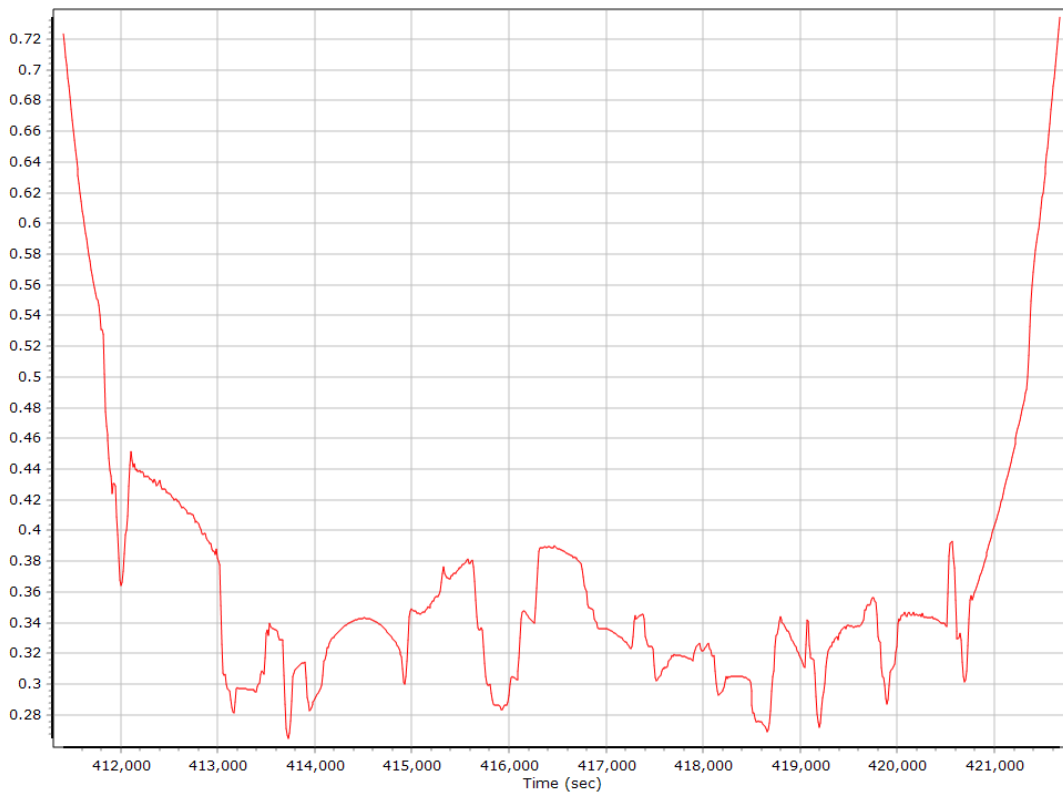




### Roll/Pitch Error RMS (arc-min)

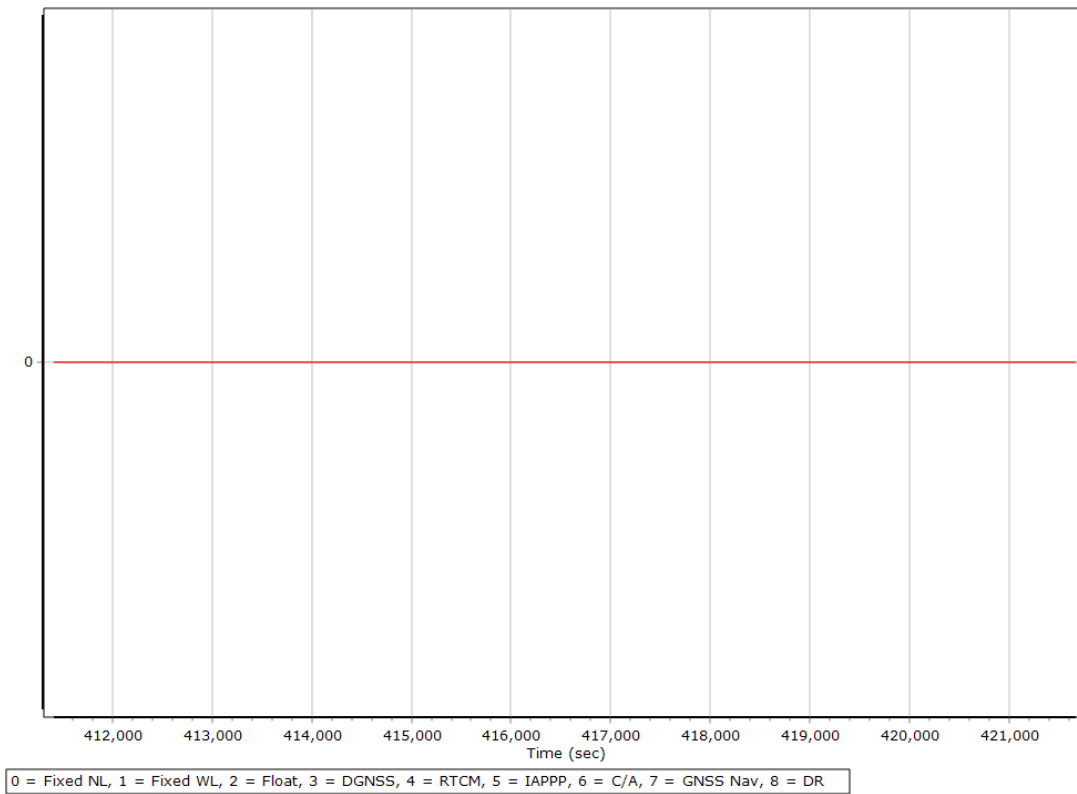


### Heading Error RMS (arc-min)

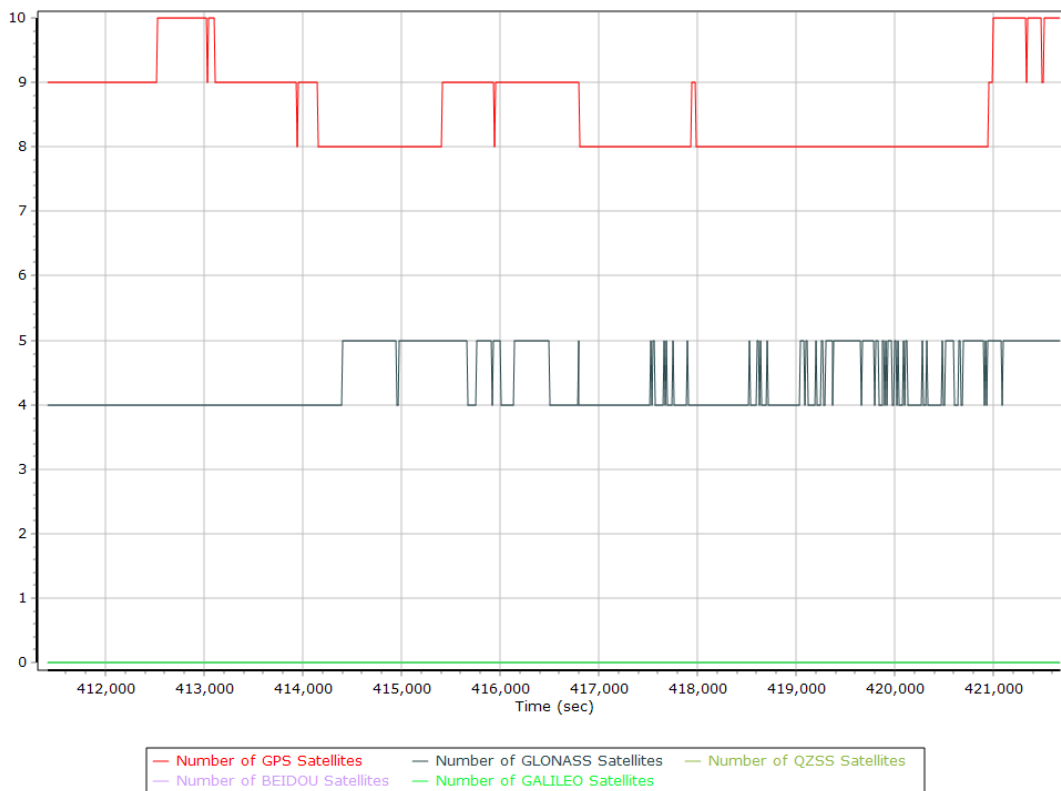


## Smoothed Solution Status

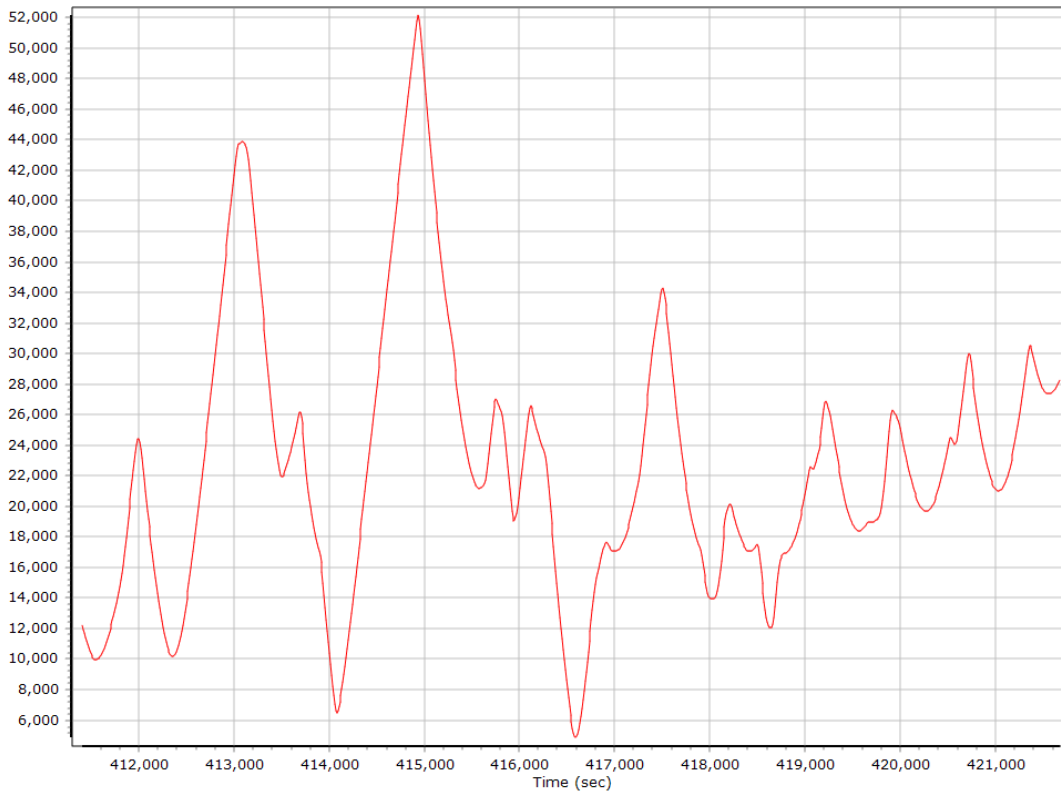
### Processing Mode



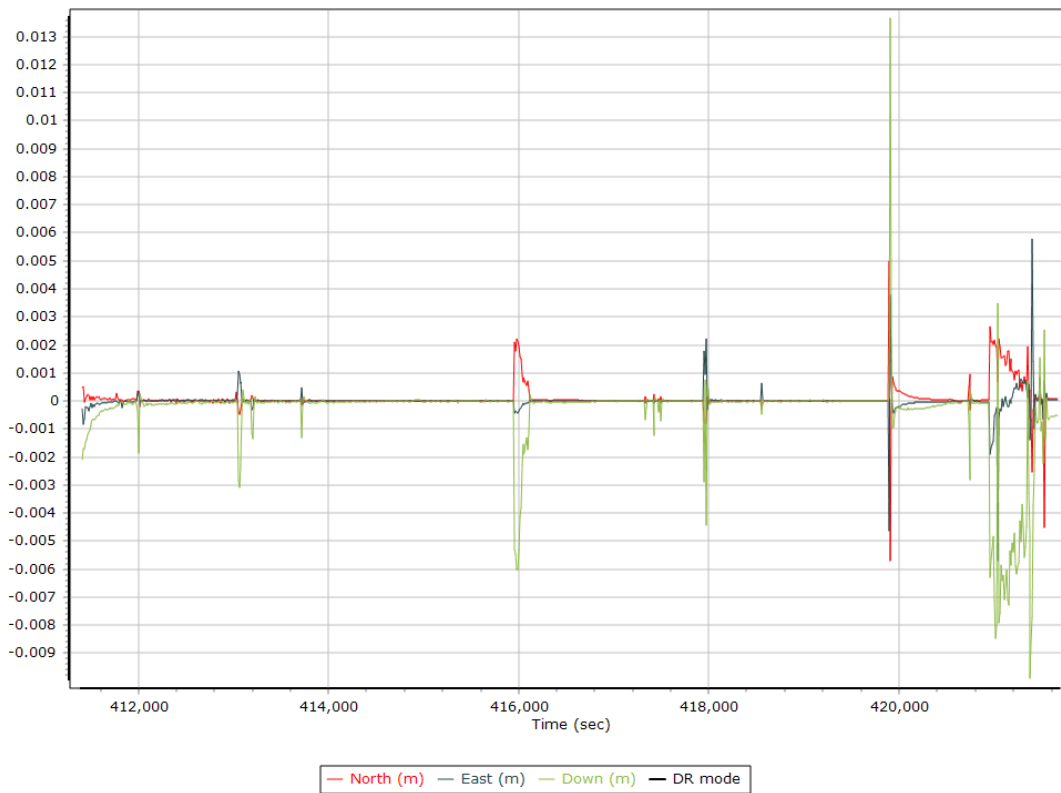
### Number of Satellites



### Baseline Length



### SBET IAKAR Separation



## Export Summary

Export file	export_RB20051B_176.shp		
Export format	Shapefile		
Solution in use	Post-processed		
Output rate	All Records		
Reference to Output lever arm (m)	0.000	0.000	0.000
Reference mounting angles (deg)	0.000	0.000	0.000
Output units (Coordinate / Lat & Lon)	Meter	Deg Decimal	
Export start time	411351.005 (2/20/2020 6:15:51 PM)		
Export end time	421674.275 (2/20/2020 9:07:54 PM)		
Height option	Ellipsoid Height		
WGS84 height flag	False		
Grid	Universal Transverse Mercator		
Zone	UTM North 17 (84W to 78W)		
Datum	WGS84		
Ellipsoid	WGS84		
Local Transformation	NONE		
Target Epoch	2020.136612		