

General Information

Mission Information

Project name	XSS20051A_177
Processing date	2020-02-24 17:24:18
Mission date	2020-02-20 15:34:14
Mission duration	04:36:01.969
Processing mode	IN-Fusion SmartBase
GPS Station	ASB

Rover Hardware Information

Product	POS AV 610 VER6 HW2.5-12
Serial number	S/N9876
IMU type	57
Receiver type	BD982
Antenna type	AV39

Project File List

Rover Data Files

File name	File type
XSS20050.868	POS Data
XSS20050.869	POS Data
XSS20050.870	POS Data
XSS20050.871	POS Data
XSS20050.872	POS Data
XSS20050.873	POS Data
XSS20050.874	POS Data
XSS20050.875	POS Data
XSS20050.876	POS Data
XSS20050.877	POS Data
XSS20050.878	POS Data
XSS20050.879	POS Data
XSS20050.880	POS Data
XSS20050.881	POS Data
XSS20050.882	POS Data
XSS20050.883	POS Data
XSS20050.884	POS Data
XSS20050.885	POS Data
XSS20050.886	POS Data
XSS20050.887	POS Data
XSS20050.888	POS Data
XSS20050.889	POS Data
XSS20050.890	POS Data
XSS20050.891	POS Data
XSS20050.892	POS Data
XSS20050.893	POS Data
XSS20050.894	POS Data
XSS20050.895	POS Data
XSS20050.896	POS Data
XSS20050.897	POS Data
XSS20050.898	POS Data
XSS20050.899	POS Data
XSS20050.900	POS Data
XSS20050.901	POS Data
XSS20050.902	POS Data
XSS20050.903	POS Data
XSS20050.904	POS Data
XSS20050.905	POS Data
XSS20050.906	POS Data
XSS20050.907	POS Data
XSS20050.908	POS Data
XSS20050.909	POS Data
XSS20050.910	POS Data
XSS20050.911	POS Data
XSS20050.912	POS Data
XSS20050.913	POS Data
XSS20050.914	POS Data
XSS20050.915	POS Data
XSS20050.916	POS Data
XSS20050.917	POS Data
XSS20050.918	POS Data
XSS20050.919	POS Data

Input Files

File Name	File Type
Ephm0510.20g	GLONASS Broadcast Ephemeris
Ephm0510.20n	GPS Broadcast Ephemeris
wvbr0510.20o	GNSS SingleBase
wvgb0510.20o	GNSS SingleBase

File Name	File Type
wvmz0510.20o	GNSS SingleBase
wvnr0510.20o	GNSS SingleBase
wvra0510.20o	GNSS SingleBase
wvsh0510.20o	GNSS SingleBase
igu20933_18.sp3	GPS Precise Ephemeris
igu20934_18.sp3	GPS Precise Ephemeris

Output Files

Filename	File type
sbet_XSS20051A_177.out	SBET Trajectory File

Rover Data Summary

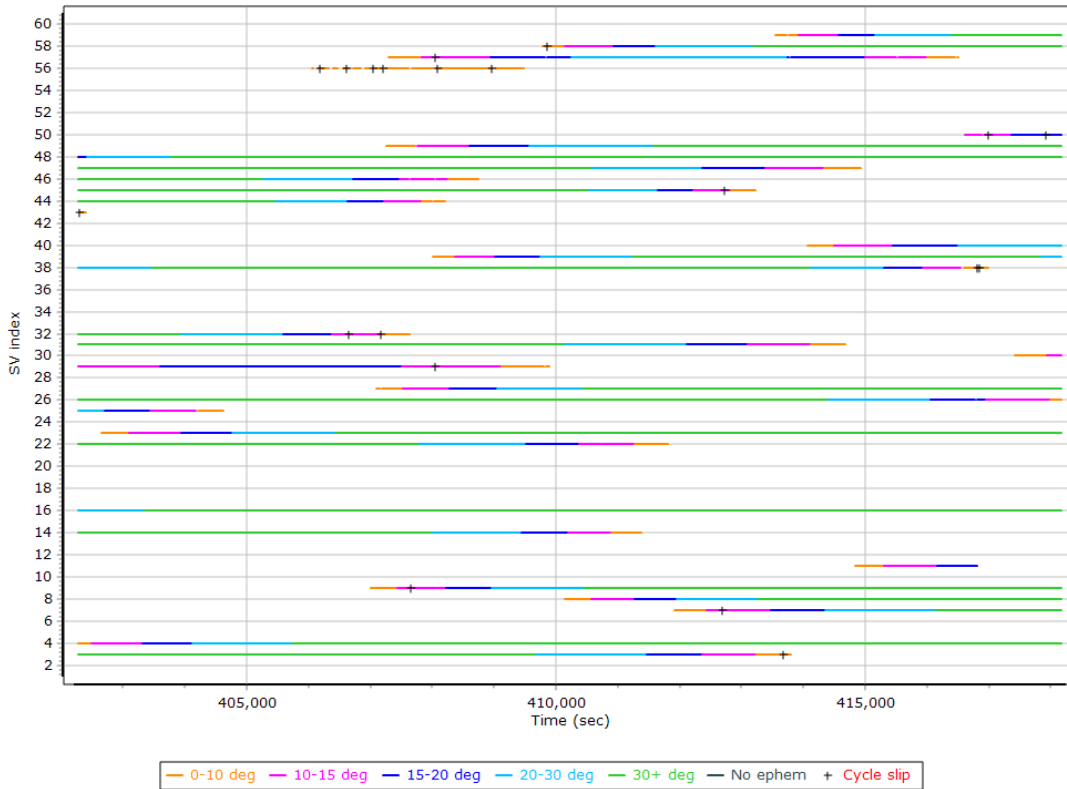
First raw data file	XSS20050.868		
Last raw data file	XSS20050.919		
Start GPS week	2093		
Start time	401636.046 (2/20/2020 3:33:56 PM)		
End time	418198.128 (2/20/2020 8:09:58 PM)		
Start of fine alignment	402202.366 (2/20/2020 3:43:22 PM)		
Available subsystems	Primary GNSS, Gimbal, IMU		
POS Event Input	None		
Correction data	None		
IMU Installation Lever Arms & Mounting Angles			
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

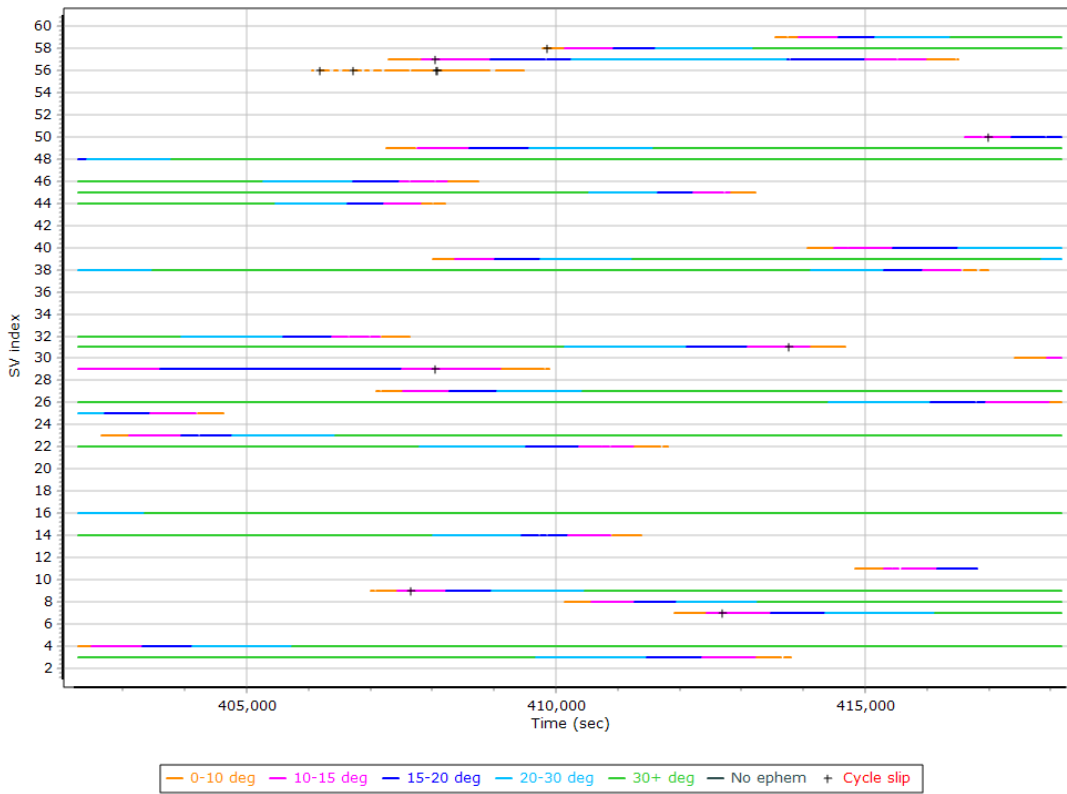
Raw IMU Import QC Summary

IMU data input file	imu_XSS20051A_C-FXSS-174.dat
IMU data check log file	imudt_XSS20051A_177.log
IMU Records Processed	3311703
Termination Status	Normal
IMU Anomalies	0

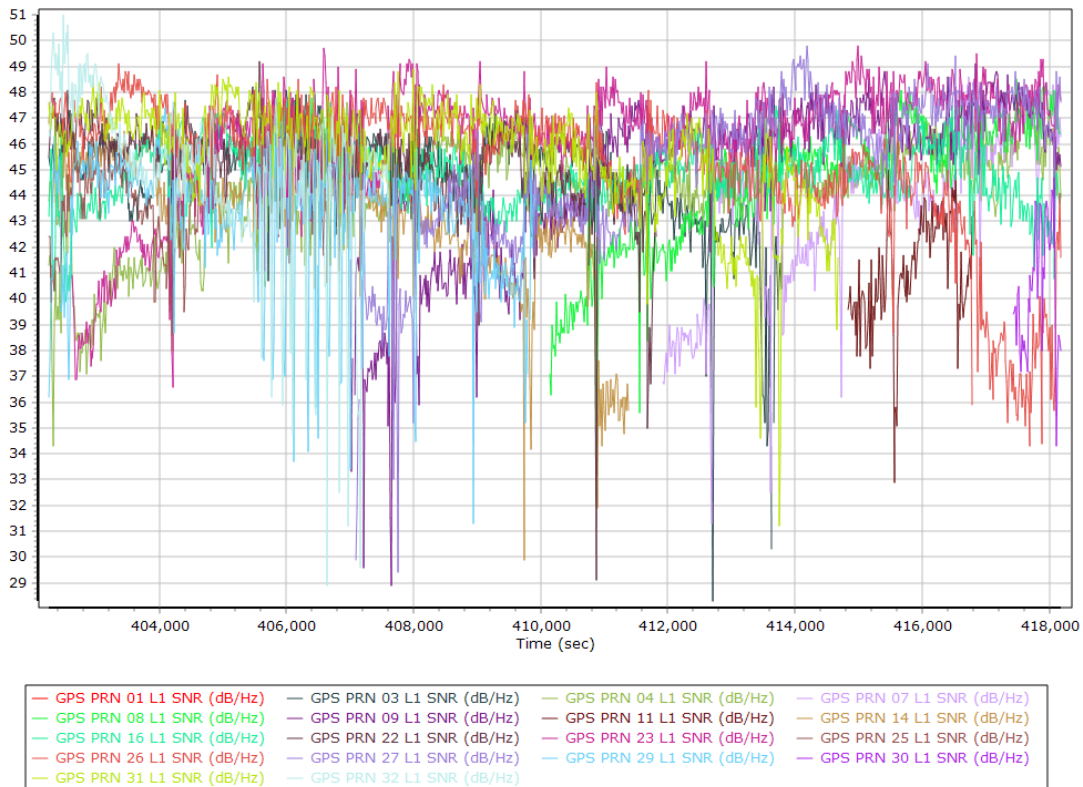
L1 Satellite Lock/Elevation



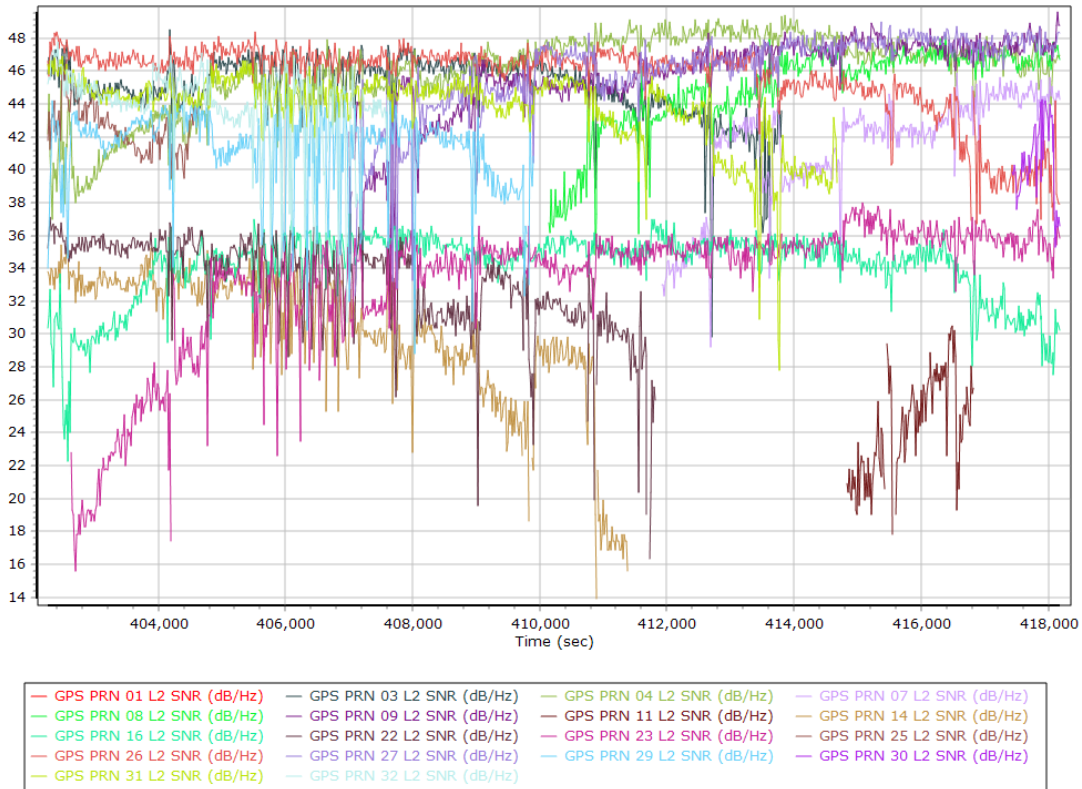
L2 Satellite Lock/Elevation



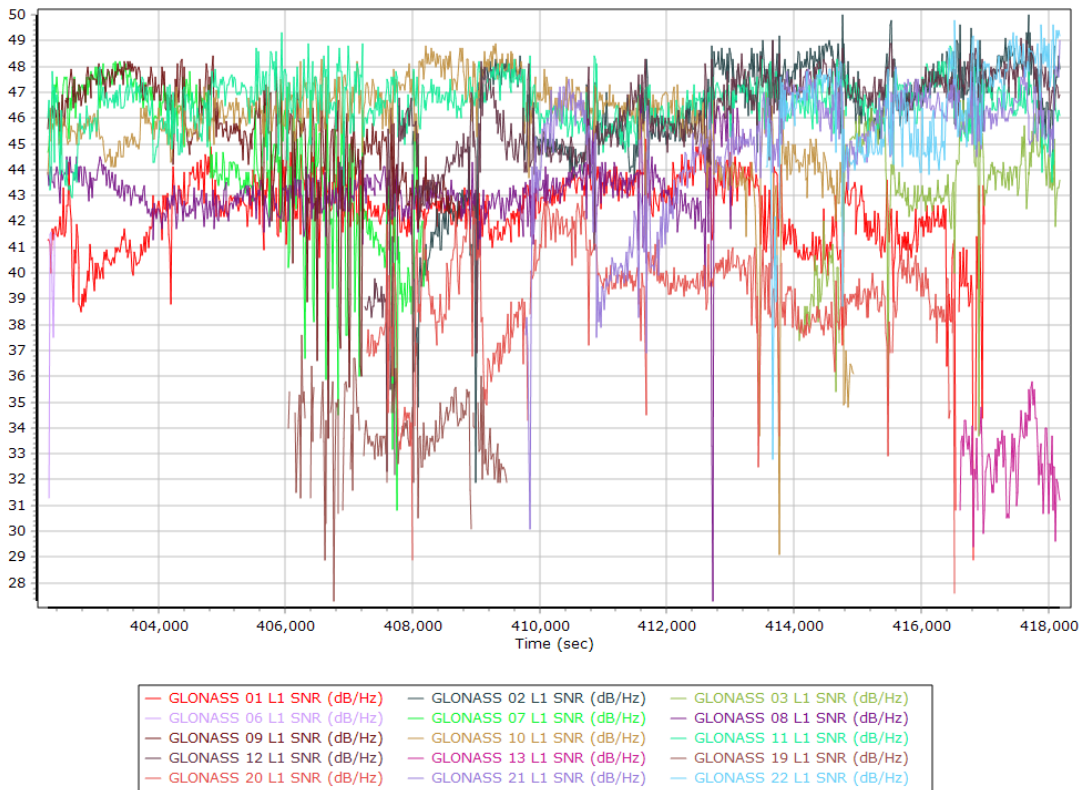
GPS L1 SNR



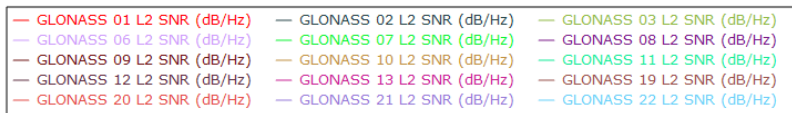
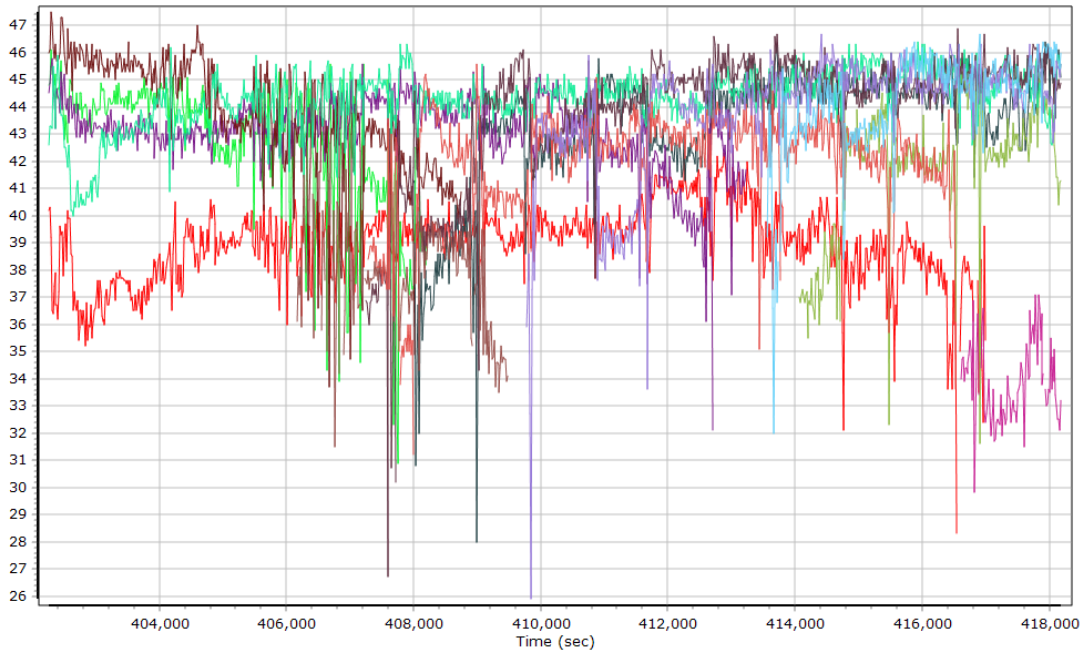
GPS L2 SNR



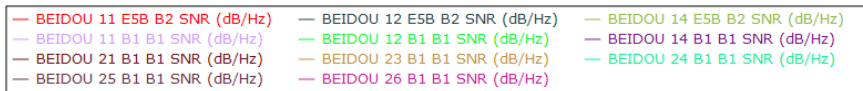
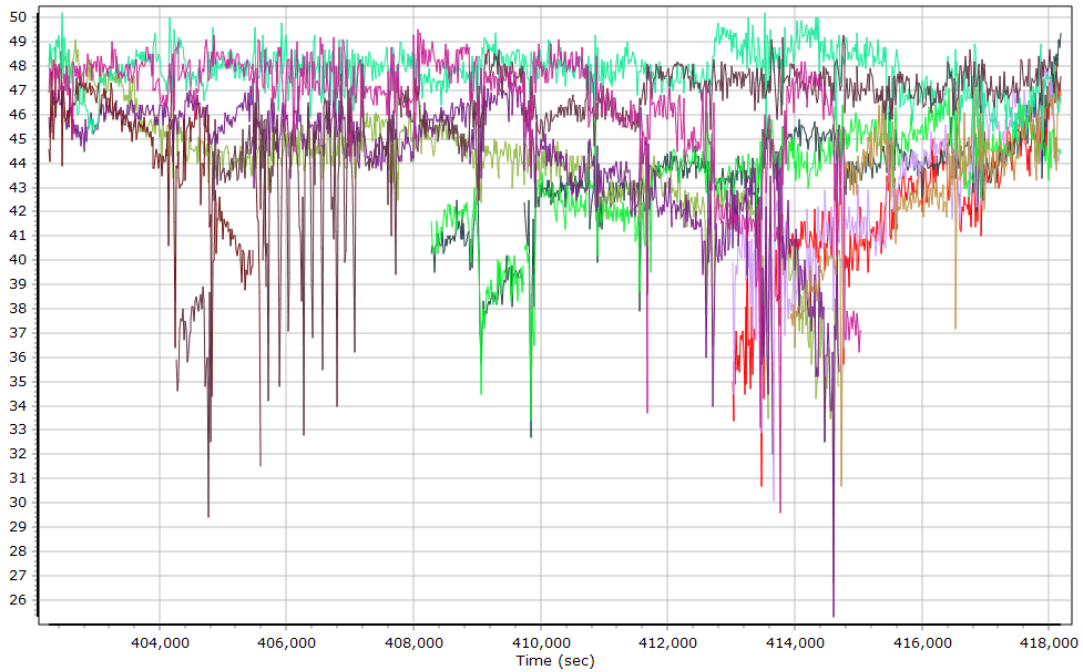
GLONASS L1 SNR



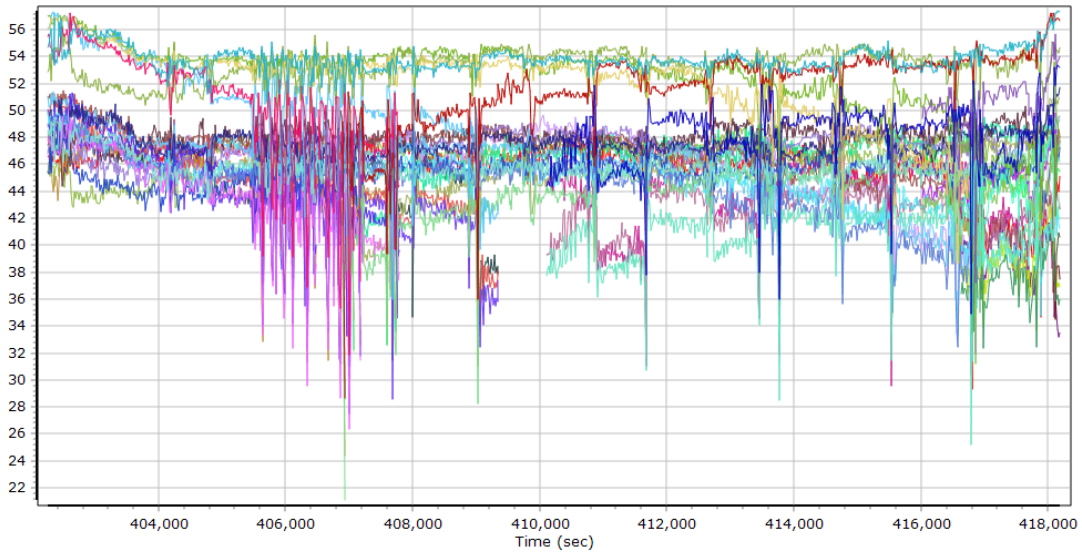
GLONASS L2 SNR



BEIDOU SNR



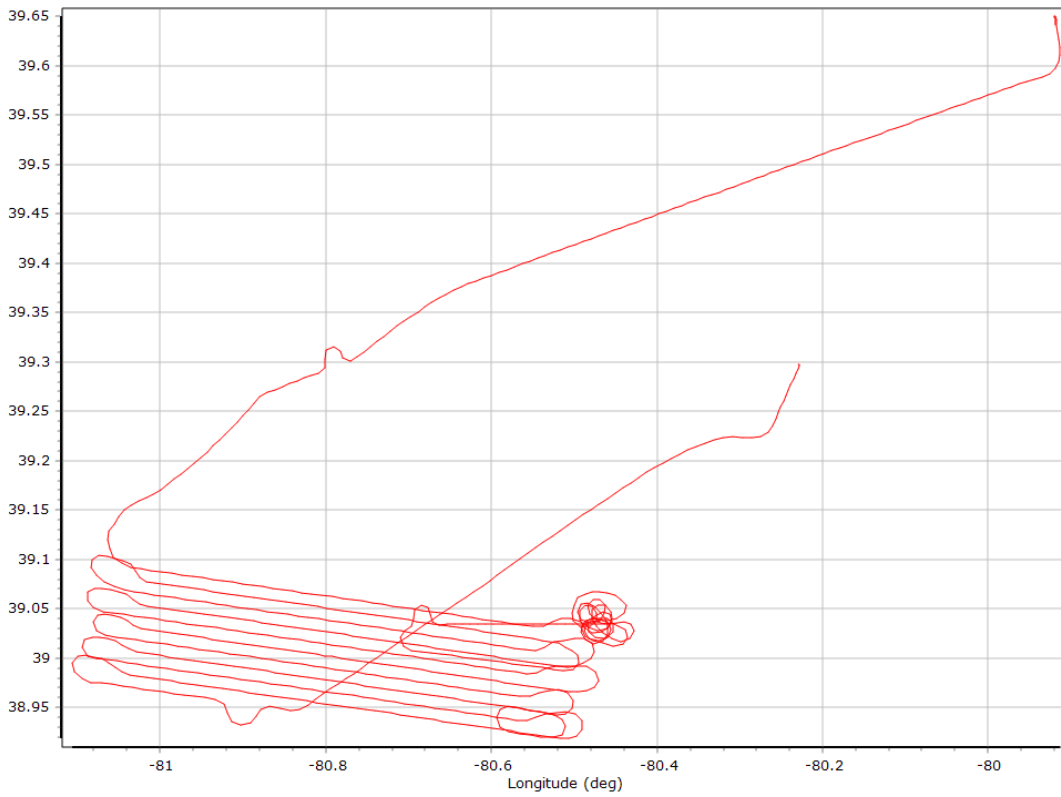
GALILEO SNR



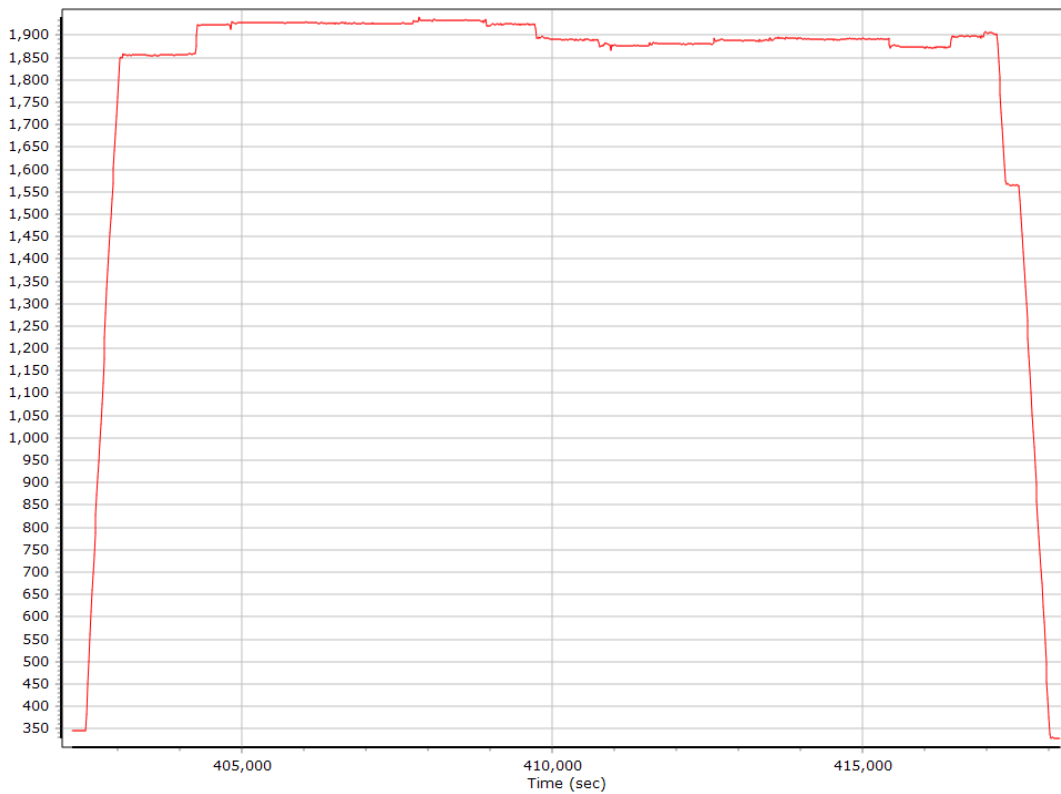
— GALILEO 02 L1 BOC_1_1_D_MBOC SNR (dB/Hz)	— GALILEO 03 L1 BOC_1_1_D_MBOC SNR (dB/Hz)
— GALILEO 07 L1 BOC_1_1_D_MBOC SNR (dB/Hz)	— GALILEO 08 L1 BOC_1_1_D_MBOC SNR (dB/Hz)
— GALILEO 15 L1 BOC_1_1_D_MBOC SNR (dB/Hz)	— GALILEO 19 L1 BOC_1_1_D_MBOC SNR (dB/Hz)
— GALILEO 21 L1 BOC_1_1_D_MBOC SNR (dB/Hz)	— GALILEO 25 L1 BOC_1_1_D_MBOC SNR (dB/Hz)
— GALILEO 27 L1 BOC_1_1_D_MBOC SNR (dB/Hz)	— GALILEO 30 L1 BOC_1_1_D_MBOC SNR (dB/Hz)
— GALILEO 36 L1 BOC_1_1_D_MBOC SNR (dB/Hz)	— GALILEO 02 L5E5A BPSK10_PD SNR (dB/Hz)
— GALILEO 03 L5E5A BPSK10_PD SNR (dB/Hz)	— GALILEO 07 L5E5A BPSK10_PD SNR (dB/Hz)
— GALILEO 08 L5E5A BPSK10_PD SNR (dB/Hz)	— GALILEO 15 L5E5A BPSK10_PD SNR (dB/Hz)
— GALILEO 19 L5E5A BPSK10_PD SNR (dB/Hz)	— GALILEO 21 L5E5A BPSK10_PD SNR (dB/Hz)
— GALILEO 25 L5E5A BPSK10_PD SNR (dB/Hz)	— GALILEO 27 L5E5A BPSK10_PD SNR (dB/Hz)

Trajectory Information

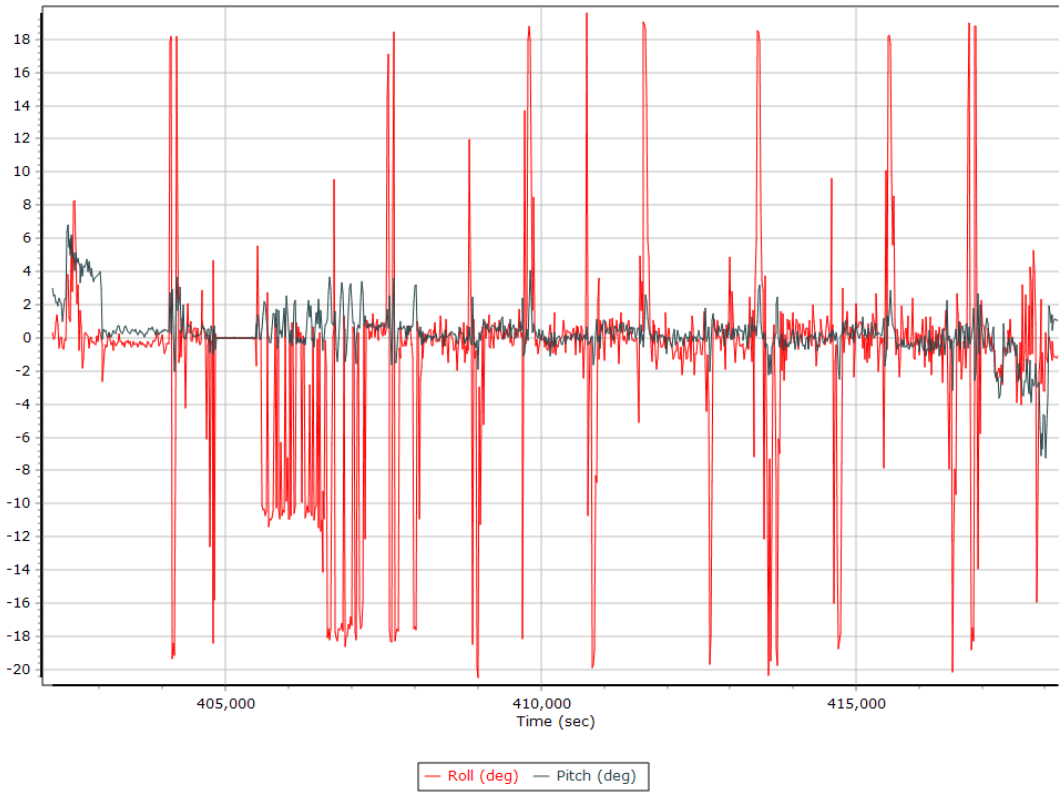
Top View



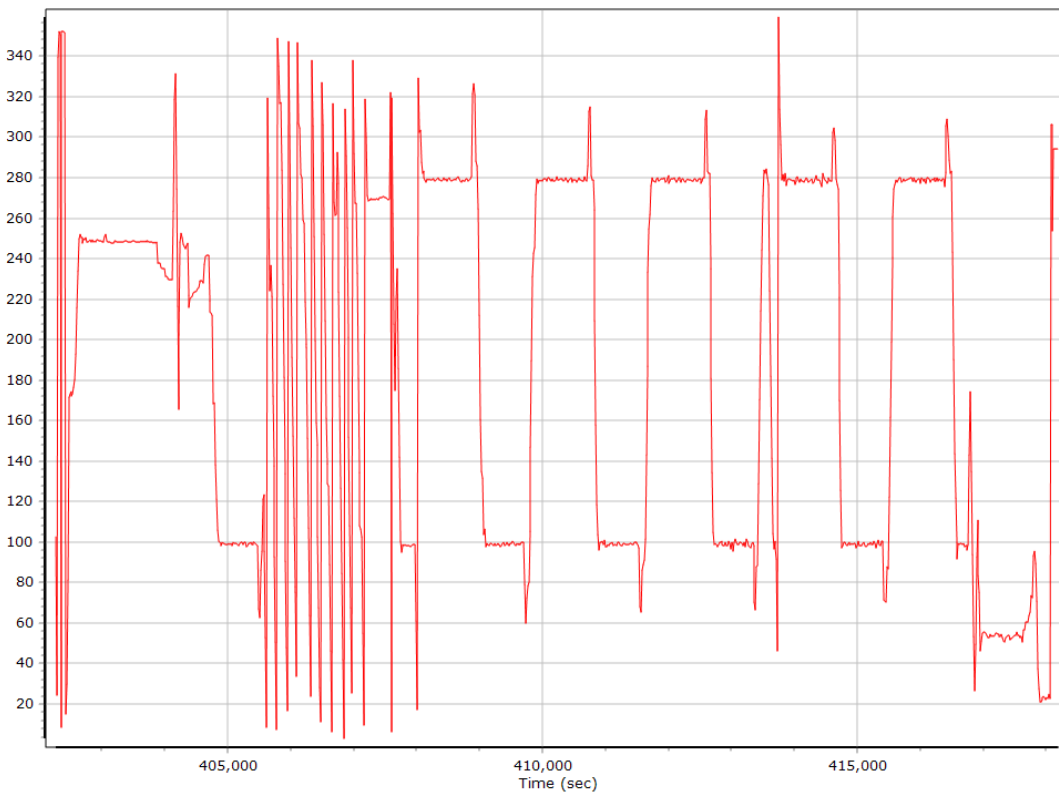
Altitude



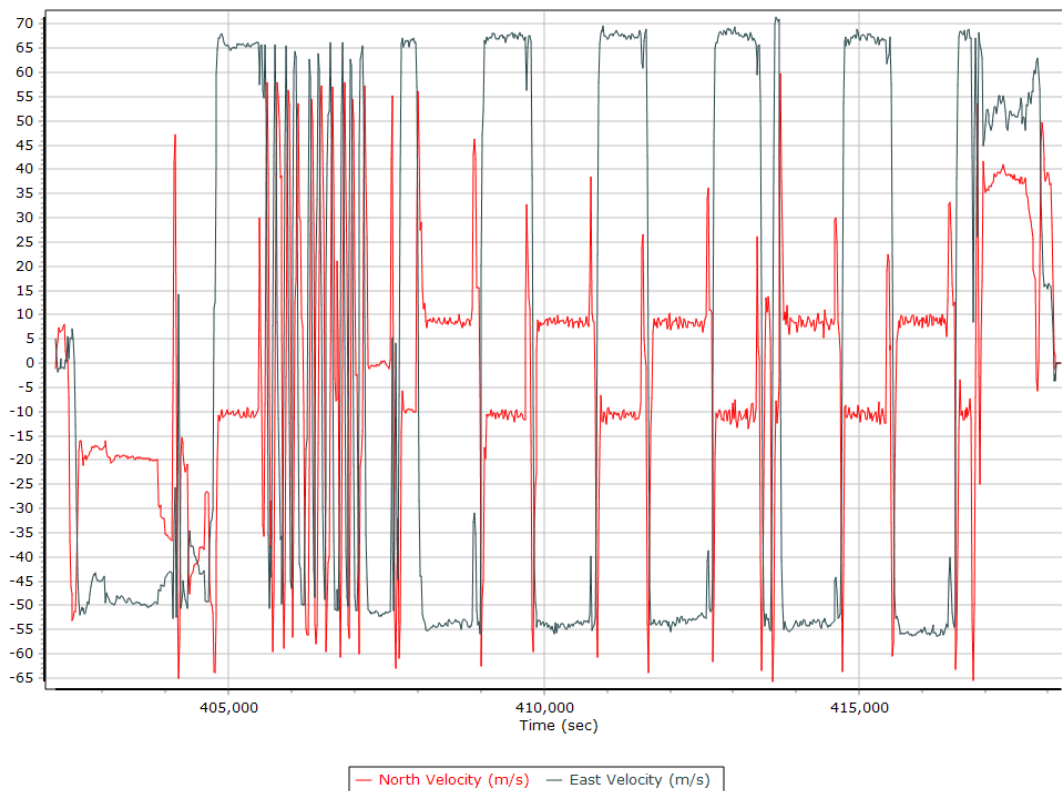
Roll/Pitch



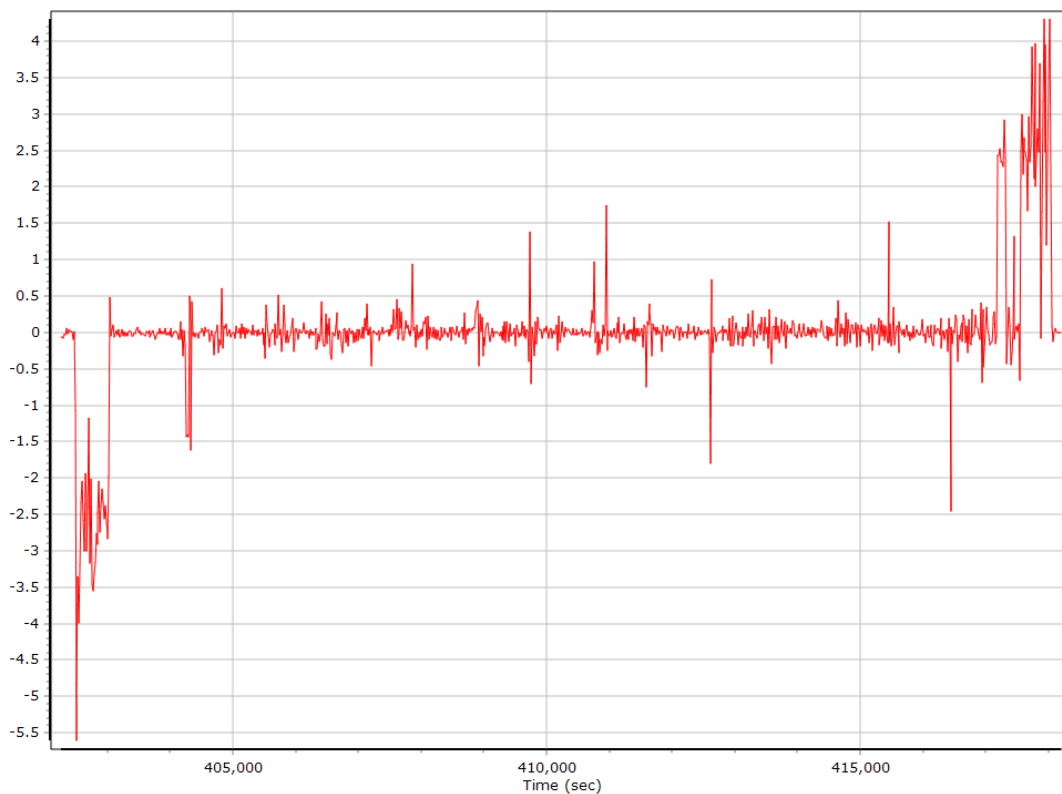
Heading



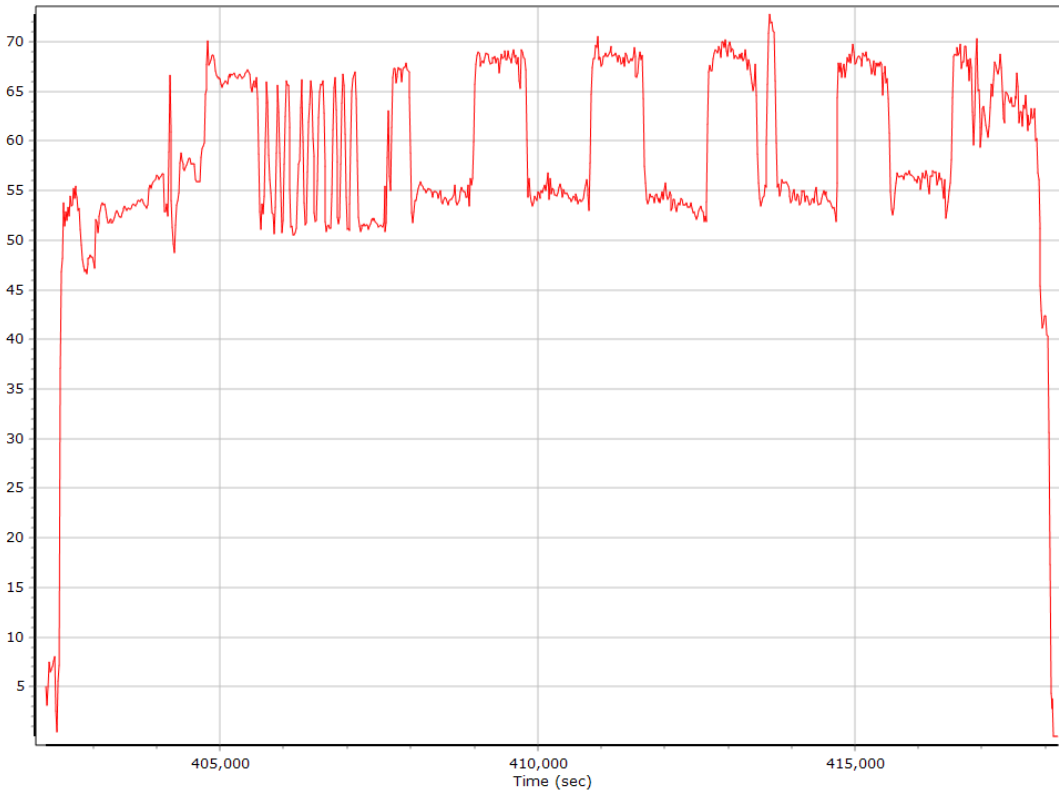
North/East Velocity



Down Velocity



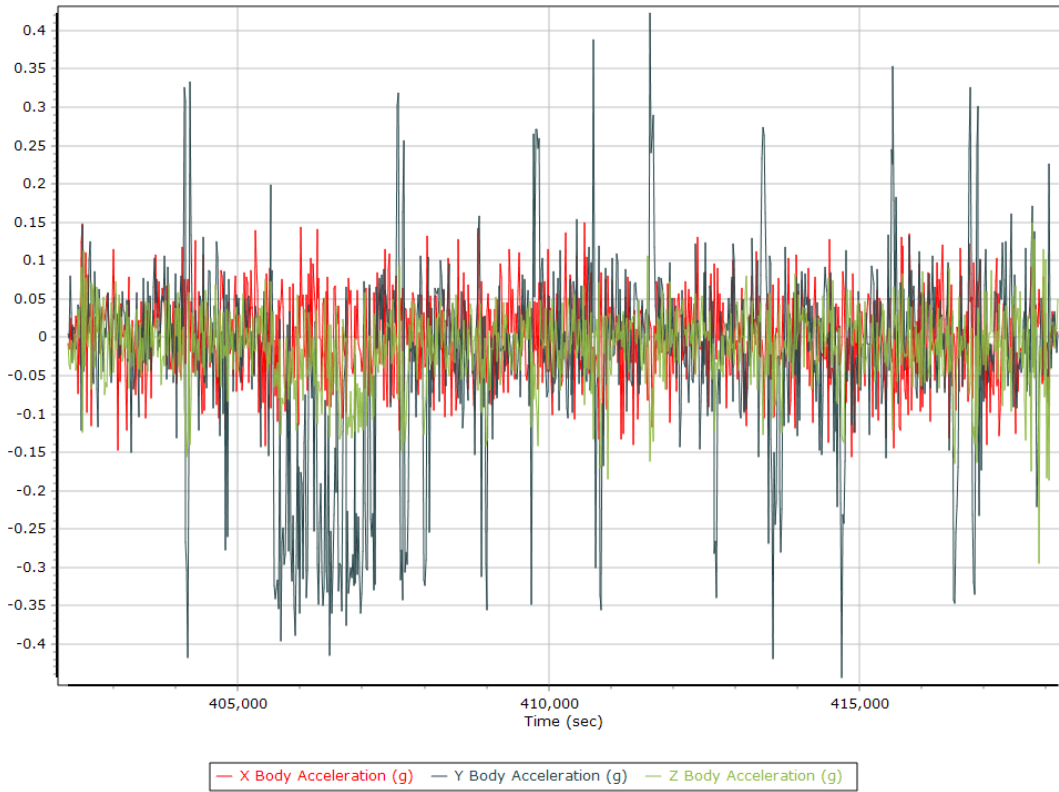
Total Speed



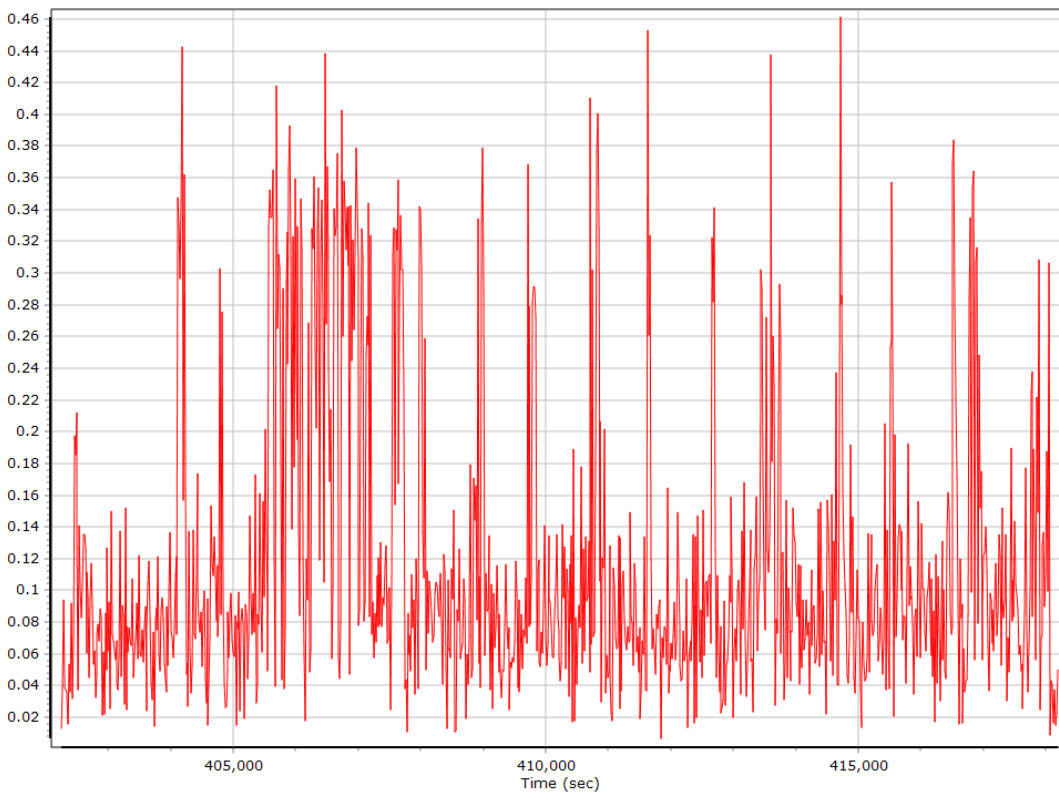
Ground Speed



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	WVSH	98.89	GNSS	1	User	None	Imported
02/20/2020	WVRA	98.22	GNSS	1	User	None	Imported
02/20/2020	WVNR	71.48	GNSS	1	User	None	Imported
02/20/2020	WVMZ	50.57	GNSS	1	User	None	Imported
02/20/2020	WVGB	103.62	GNSS	1	User	None	Imported
02/20/2020	WVBR	38.31	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	16562 s (2093 401654 - 2093 418216)
Number of reference stations	6
Primary station GPS measurement usage (%)	99.6
Primary station GLONASS measurement usage (%)	79.4
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)	24357
GPS precise vs. broadcast ephemeris used	100.0 % / 0.0 %
GLONASS precise vs. broadcast ephemeris used	0.0 % / 100.0 %
Termination Status	Normal

SmartBase Quality Check

Base Station - WVSH

Status	OK	SBQI	0	
Duration (Hours)	23.70	Output Coordinates	Original	
Solution Epochs	5687	Mean Epoch SVs	8.4	
Base Station Coordinates		Latitude	Longitude	Height (m)
Original		N39°59'49.09954"	W80°40'46.36115"	384.551
Adjusted		N39°59'49.09968"	W80°40'46.36169"	384.573
Coordinate Adjustments		Horizontal (m)	Vertical (m)	Total (m)
Adjustments		0.014	0.022	0.026

Base Station Information

Station ID	WVSH		
Filename	wvsh0510.200		
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 - WVRA

Status	OK	SBQI	0
Duration (Hours)	23.64	Output Coordinates	Original
Solution Epochs	5674	Mean Epoch SVs	8.4
Base Station Coordinates	Latitude	Longitude	Height (m)
Original	N38°56'28.86373"	W81°45'04.84260"	149.248
Adjusted	N38°56'28.86331"	W81°45'04.84233"	149.265
Coordinate Adjustments	Horizontal (m)	Vertical (m)	Total (m)
Adjustments	0.014	0.017	0.022

Base Station Information

Station ID	WVRA		
Filename	wvra0510.20o		
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	4923K62358
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°56'28.86373"		
Longitude	W81°45'04.84260"		
Ellipsoidal height (m)	149.24800		
Frame	ITRF00		
Epoch	1997		
Ellipsoid	WGS84		
Velocity North (mm/y)	0		
Velocity East (mm/y)	0		
Velocity Up (mm/y)	0		

Base Station - WVNR

Status	OK	SBQI	0	
Duration (Hours)	23.70	Output Coordinates	Original	
Solution Epochs	5687	Mean Epoch SVs	8.4	
Base Station Coordinates		Latitude	Longitude	Height (m)
Original		N38°53'44.50553"	W79°51'30.27007"	582.773
Adjusted		N38°53'44.50583"	W79°51'30.27000"	582.792
Coordinate Adjustments		Horizontal (m)	Vertical (m)	Total (m)
Adjustments		0.009	0.019	0.021

Base Station Information

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 - WVMZ

Status	CONTROL	SBQI	0	
Duration (Hours)	23.70	Output Coordinates	Control	
Solution Epochs	5687	Mean Epoch SVs	8.4	
Base Station Coordinates		Latitude	Longitude	Height (m)
Original		N38°50'20.04352"	W81°06'31.58290"	296.834
Adjusted		N38°50'20.04352"	W81°06'31.58290"	296.834
Coordinate Adjustments		Horizontal (m)	Vertical (m)	Total (m)
Adjustments		0.000	0.000	0.000

Base Station Information

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 - WVGB

Status	OK	SBQI	0	
Duration (Hours)	23.70	Output Coordinates	Original	
Solution Epochs	5687	Mean Epoch SVs	8.4	
Base Station Coordinates		Latitude	Longitude	Height (m)
Original		N38°25'48.42517"	W79°49'01.29518"	812.475
Adjusted		N38°25'48.42551"	W79°49'01.29522"	812.484
Coordinate Adjustments		Horizontal (m)	Vertical (m)	Total (m)
Adjustments		0.011	0.009	0.014

Base Station Information

Station ID	WVGB		
Filename	wvgb0510.20o		
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	4924K62448
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°25'48.42517"		
Longitude	W79°49'01.29518"		
Ellipsoidal height (m)	812.47500		
Frame	ITRF00		
Epoch	1997		
Ellipsoid	WGS84		
Velocity North (mm/y)	0		
Velocity East (mm/y)	0		
Velocity Up (mm/y)	0		

Base Station - WVBR

Status	OK	SBQI	0	
Duration (Hours)	23.60	Output Coordinates	Original	
Solution Epochs	5665	Mean Epoch SVs	8.4	
Base Station Coordinates		Latitude	Longitude	Height (m)
Original		N39°18'28.88440"	W80°16'38.61885"	270.246
Adjusted		N39°18'28.88447"	W80°16'38.61913"	270.273
Coordinate Adjustments		Horizontal (m)	Vertical (m)	Total (m)
Adjustments		0.007	0.027	0.028

Base Station Information

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		

GNSS QC

GNSS QC Statistics

Statistics	Min	Max	Mean
Baseline length (km)	4.34	86.48	
Number of GPS SV	7	11	9
Number of GLONASS SV	0	7	5
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	1.17	3.13	1.48
QC Solution Gaps	1.00	1.00	
Solution Type	Fixed	Float	No solution
Epoch (sec)	16552.00	0.00	3.00
Percentage	99.98	0.00	0.02

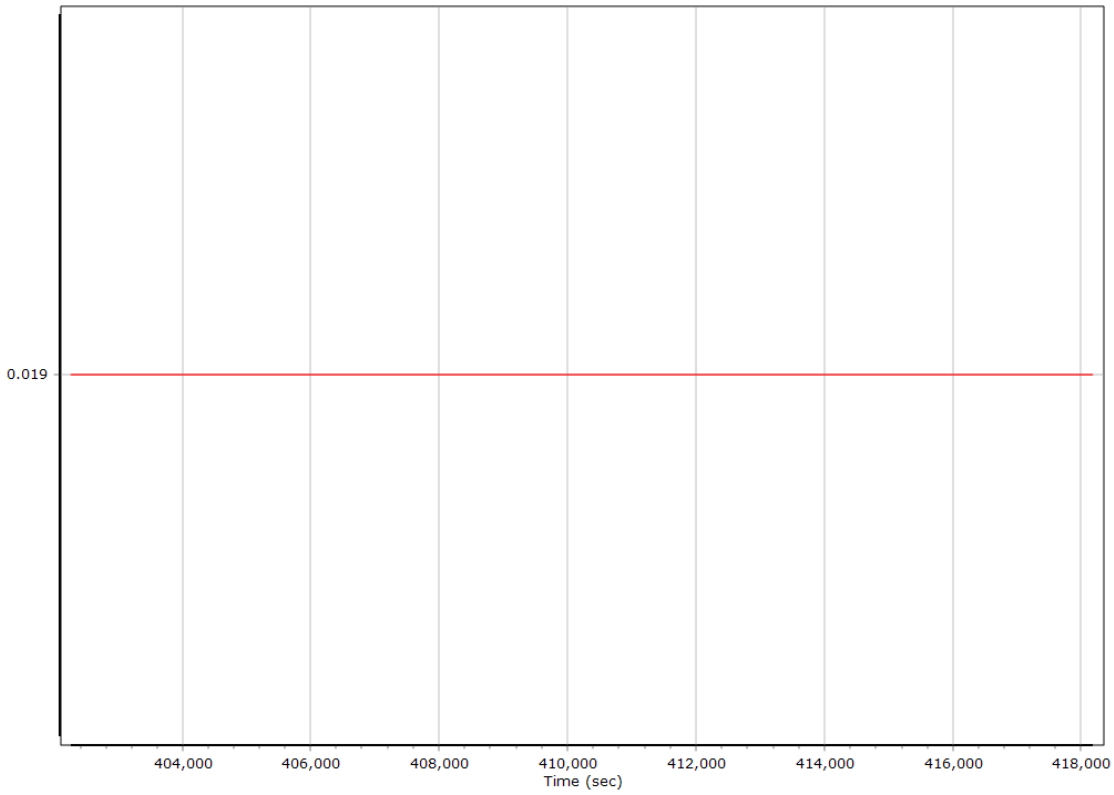
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion SmartBase		
Stabilized mount	True		
Base station	ASB		
Processing start time	401636.031 (2/20/2020 3:33:56 PM)		
Processing end time	418198.000 (2/20/2020 8:09:58 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)	0.019	0.153	-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

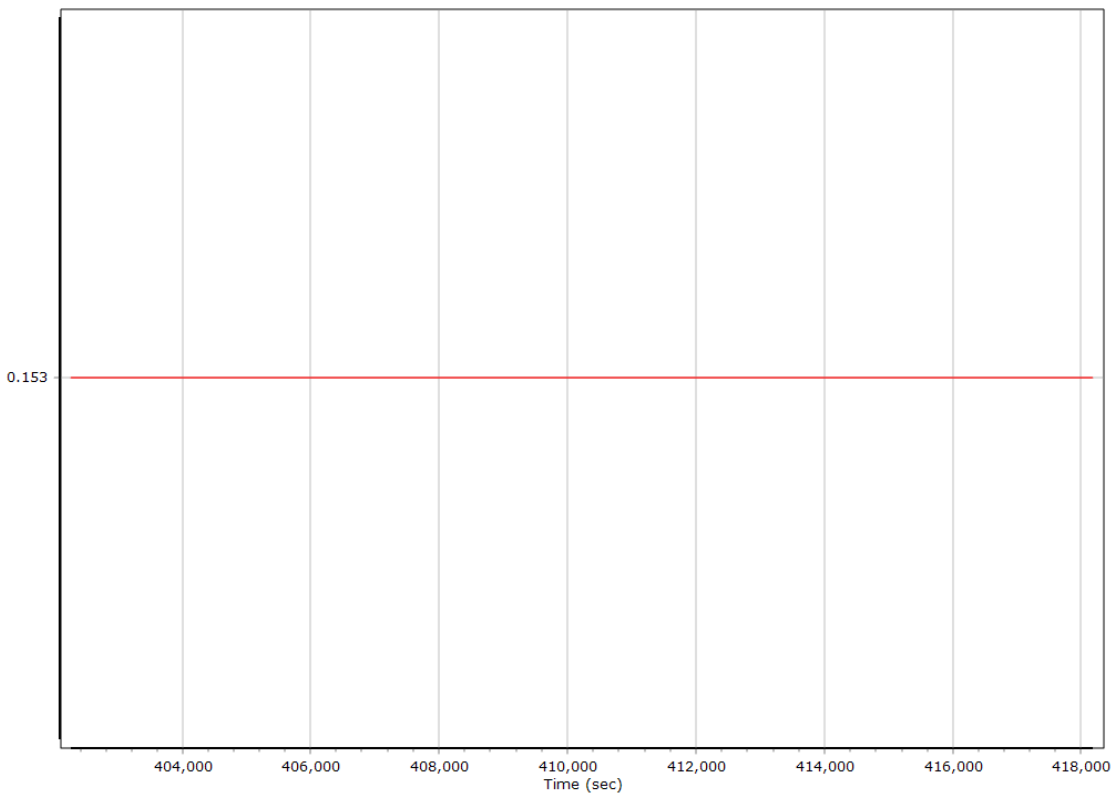
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

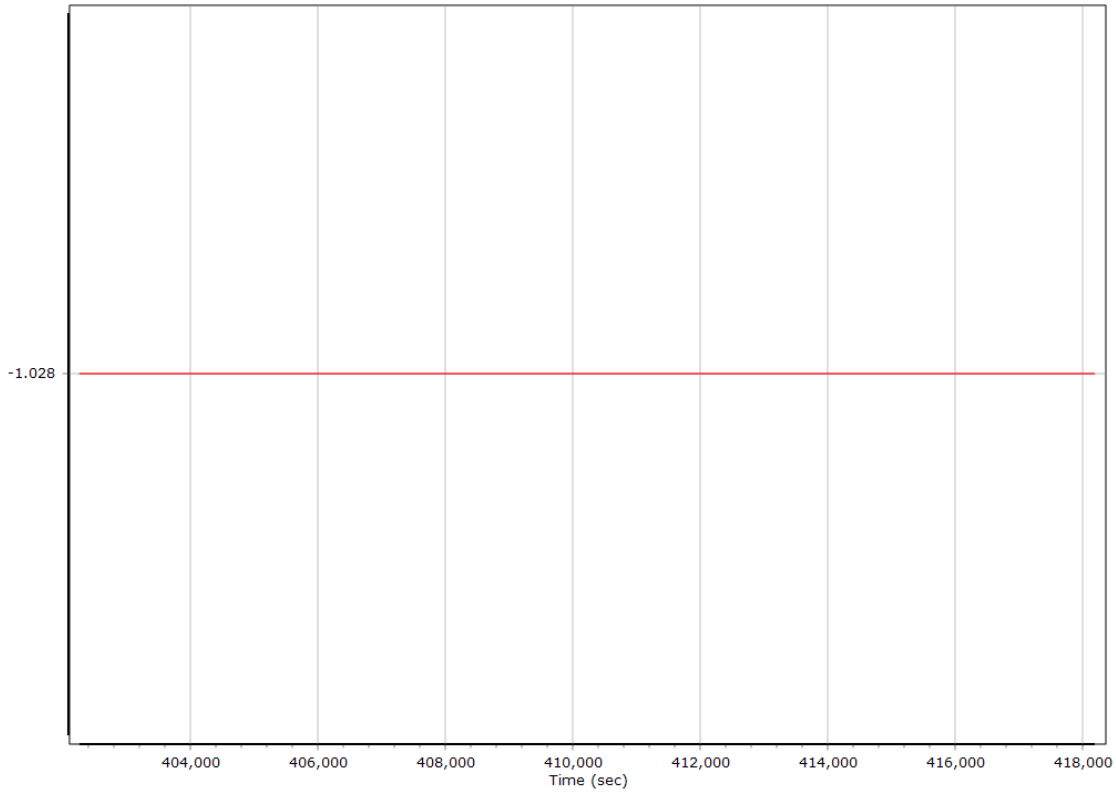
X Reference-Primary GNSS Lever Arm (m)



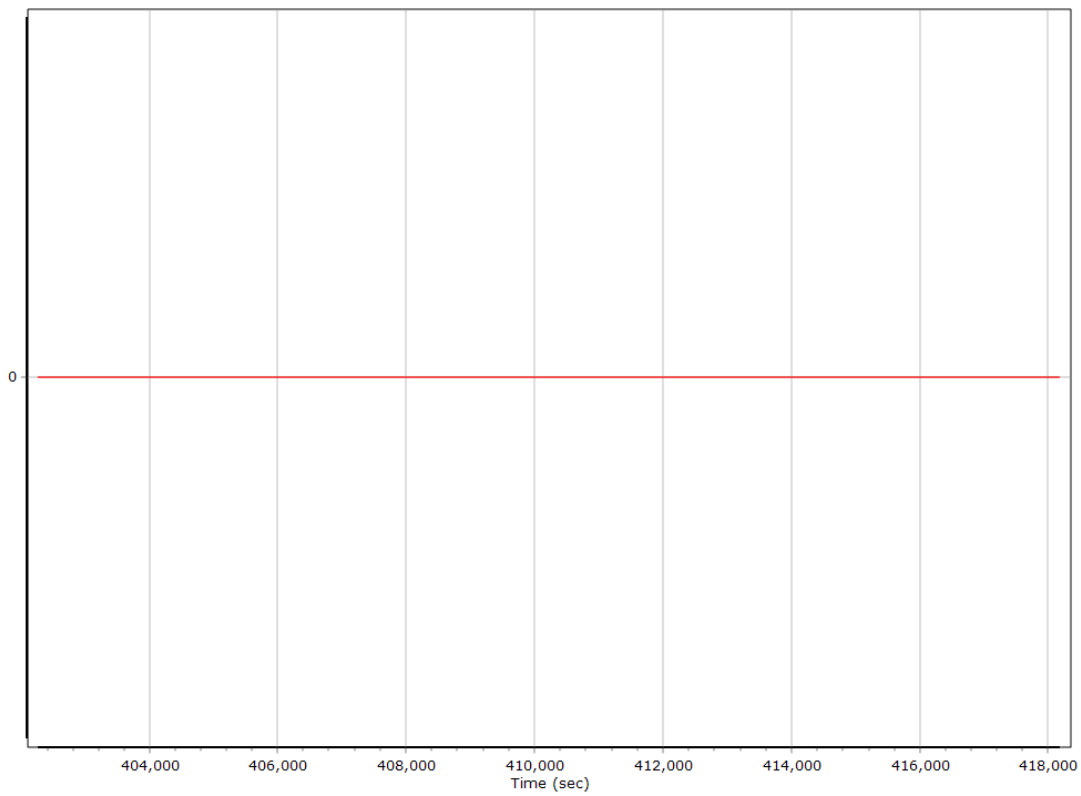
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



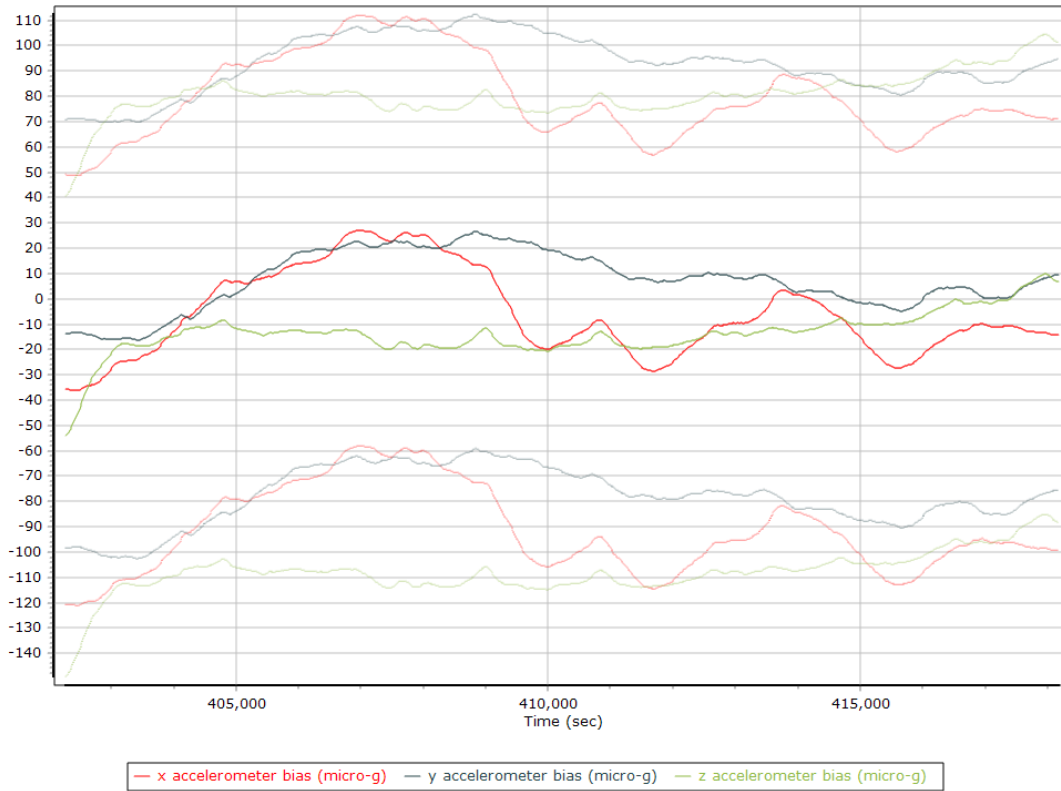
Reference-Primary GNSS Lever Arm Figure of Merit



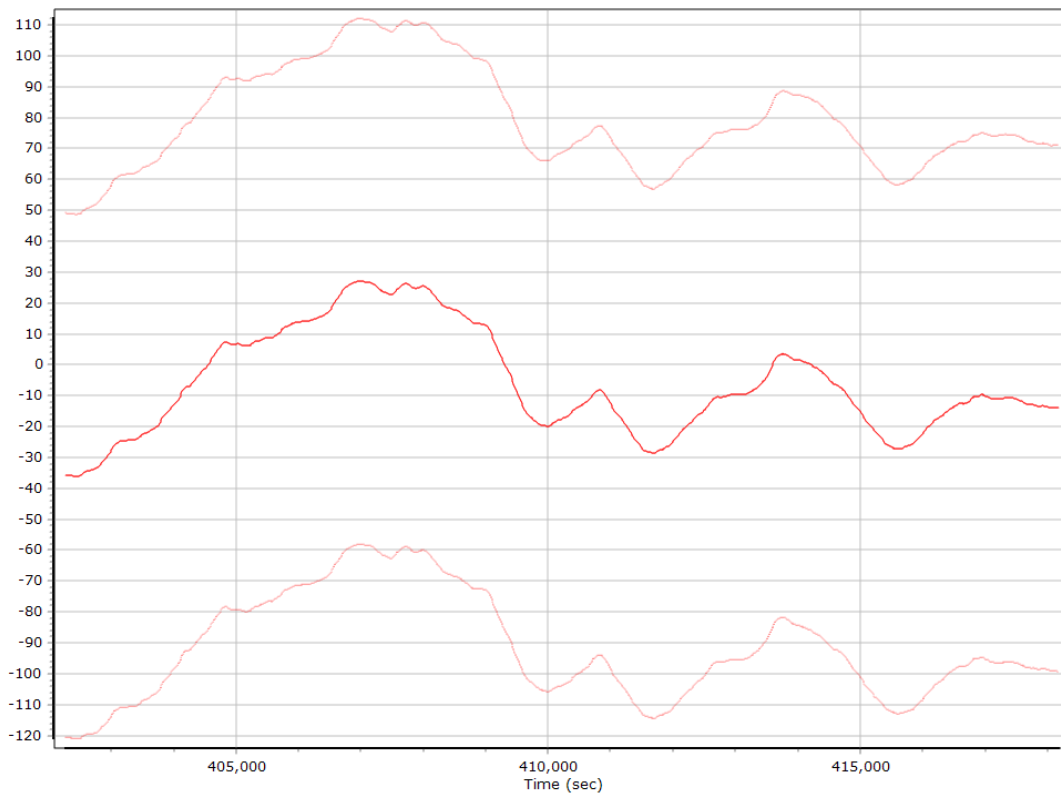
Smoothed IN-Fusion QC

Smoothed Estimated Errors, Reference Frame

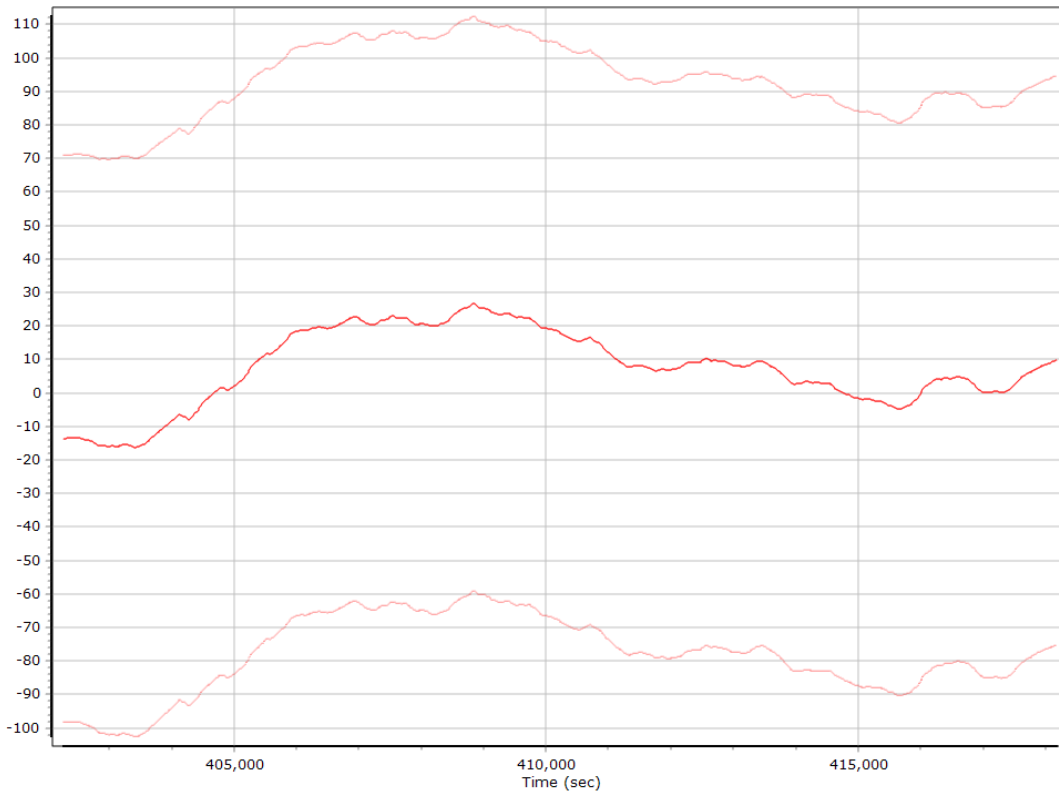
Accelerometer Bias (micro-g)



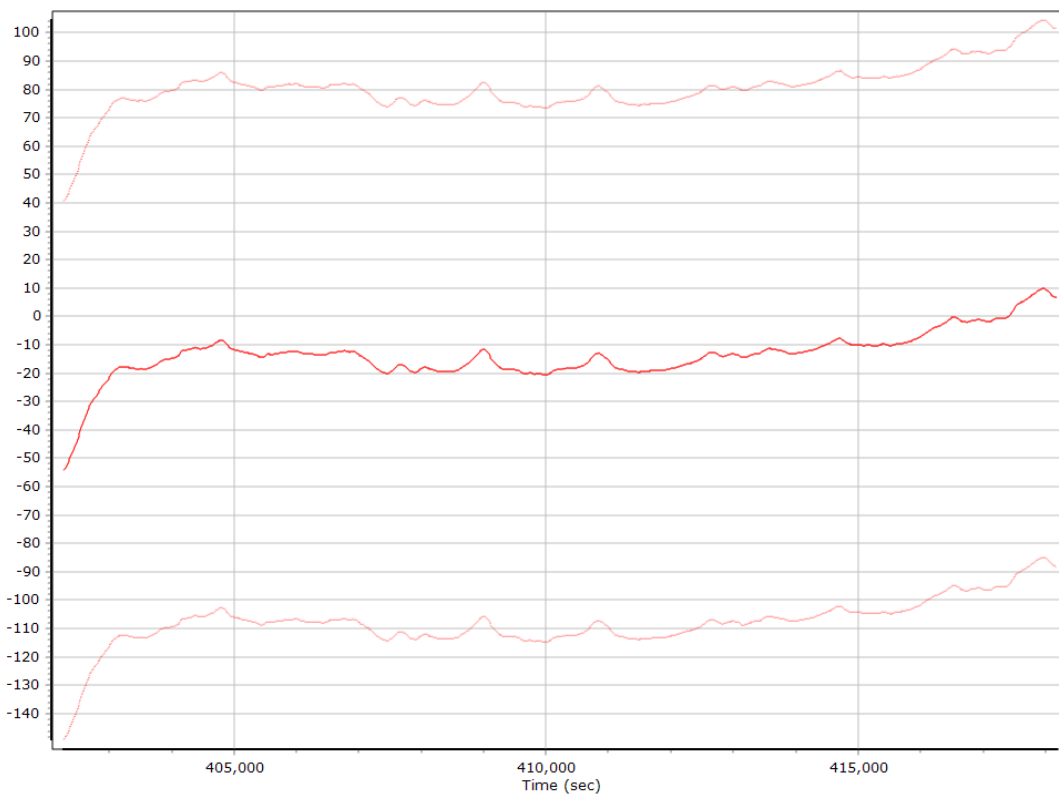
X Accelerometer Bias (micro-g)



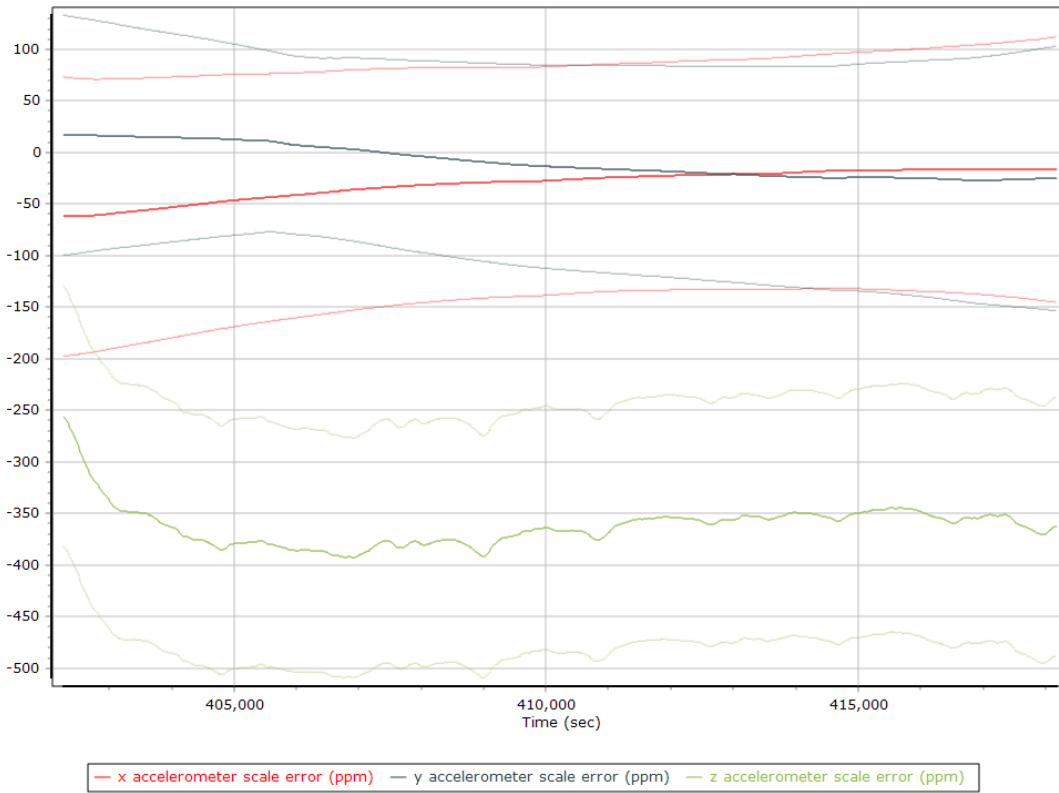
Y Accelerometer Bias (micro-g)



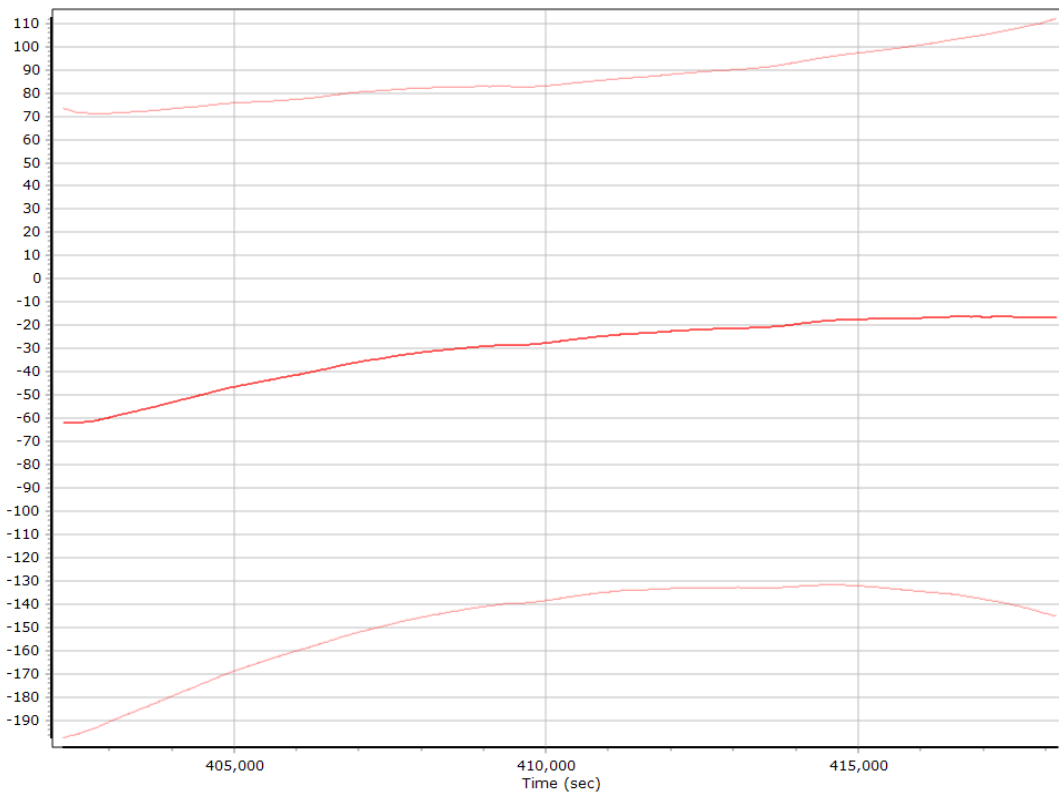
Z Accelerometer Bias (micro-g)



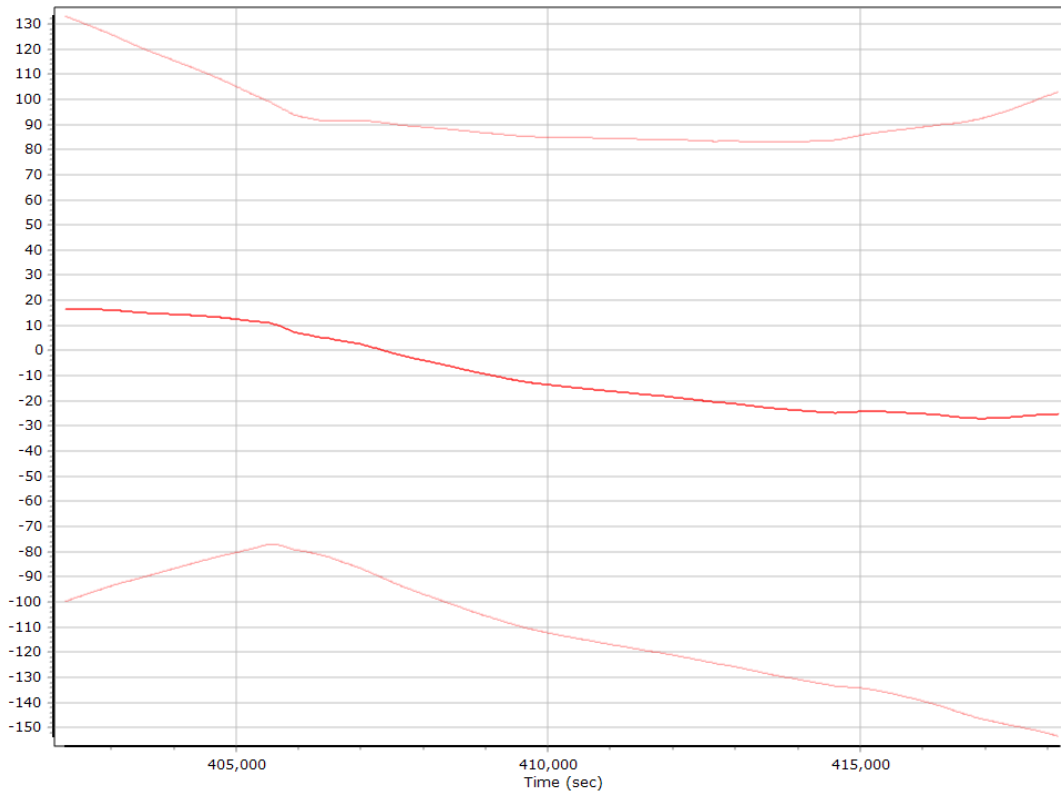
Accelerometer Scale Error (ppm)



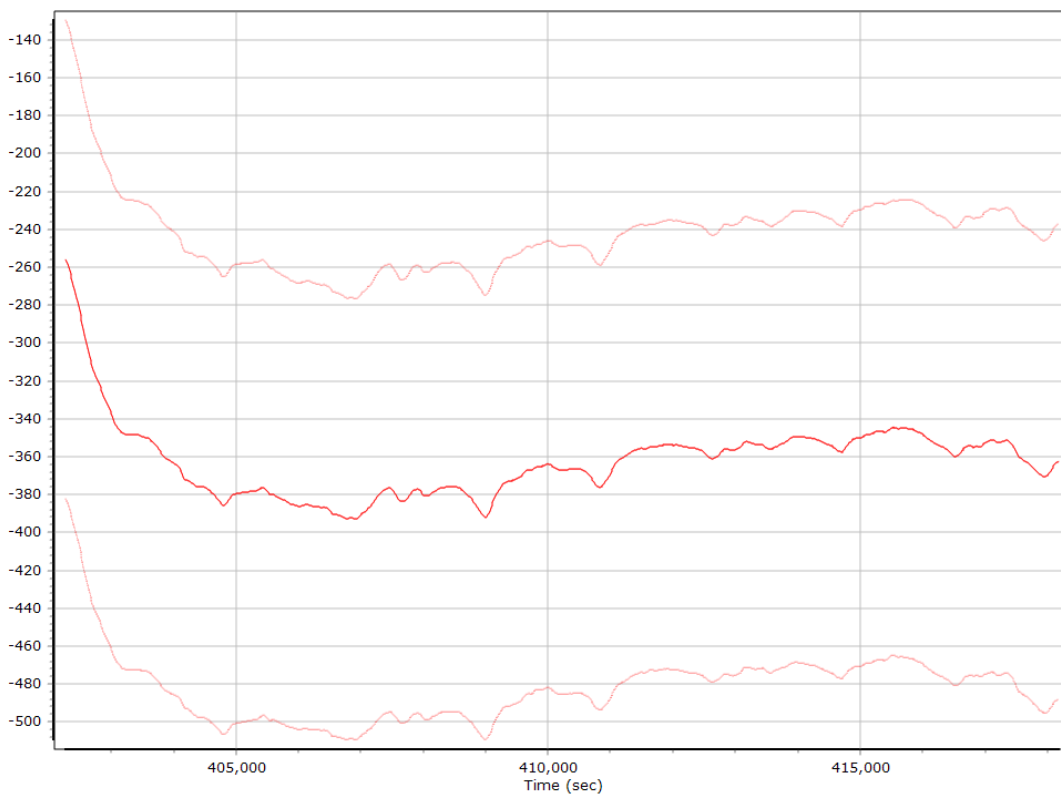
X Accelerometer Scale Error (ppm)



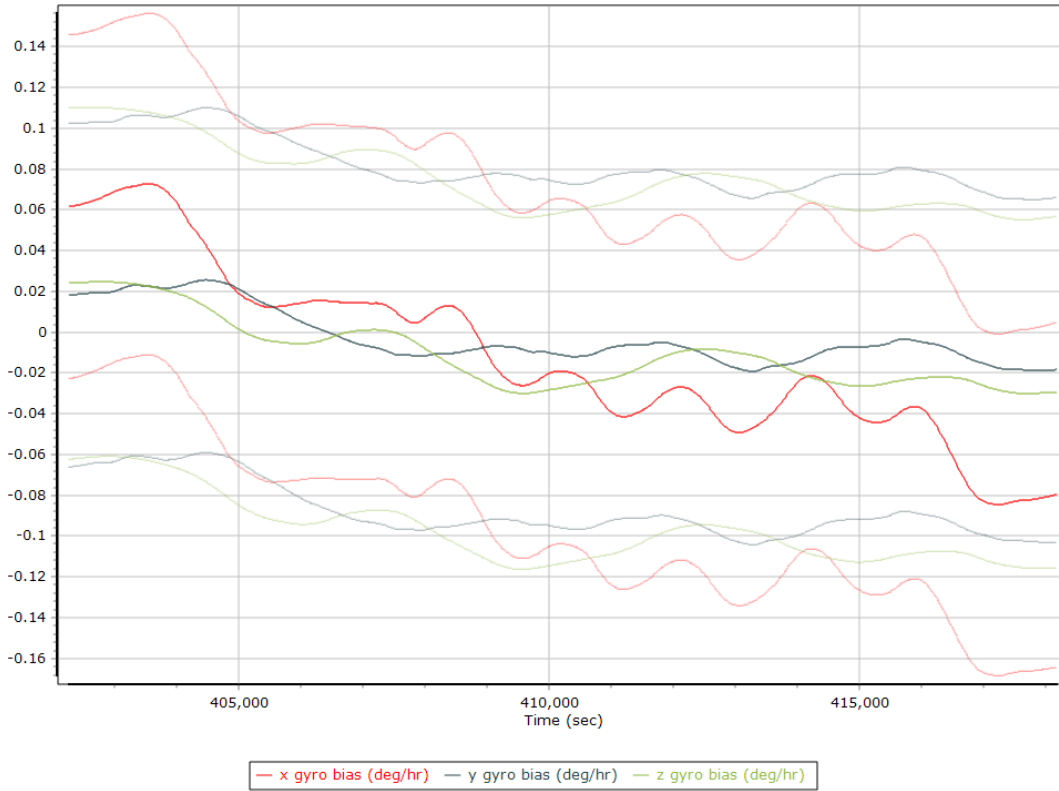
Y Accelerometer Scale Error (ppm)



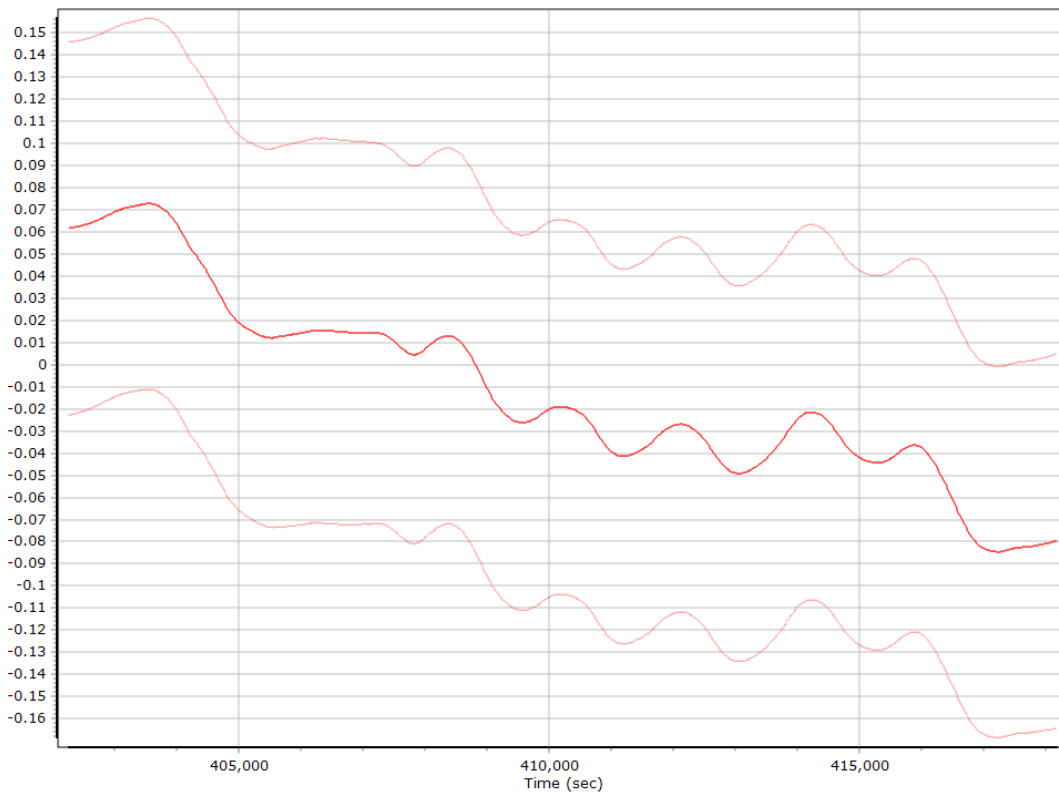
Z Accelerometer Scale Error (ppm)



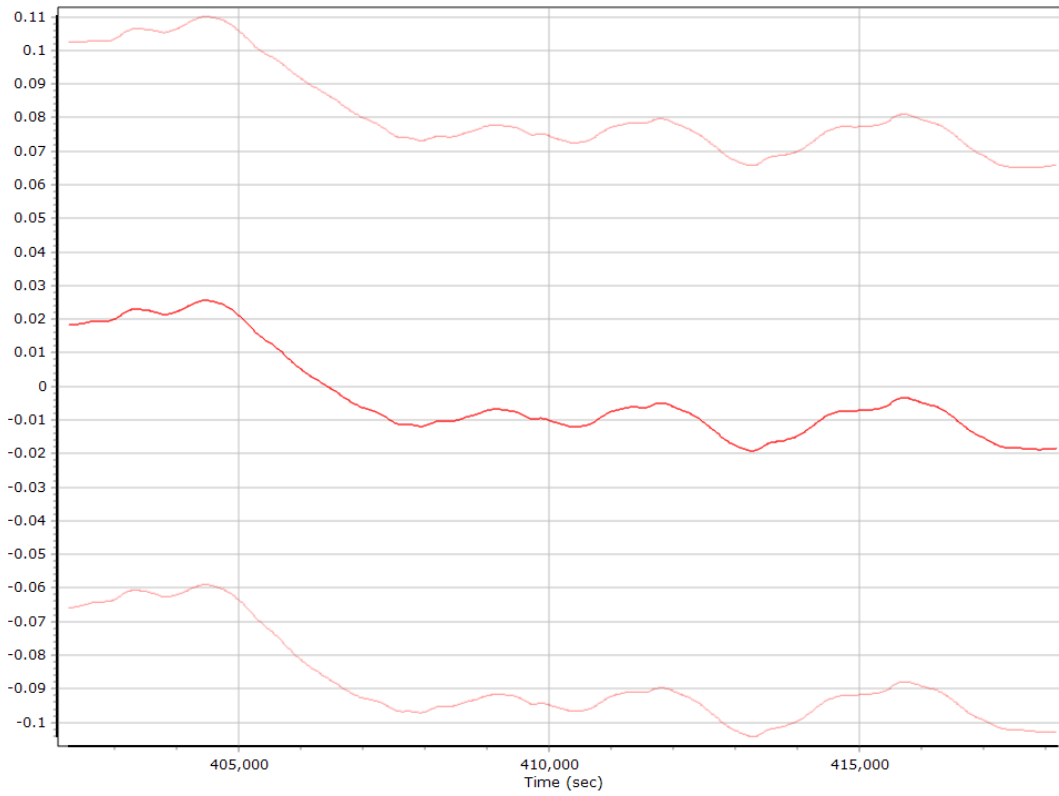
Gyro Bias (deg/h)



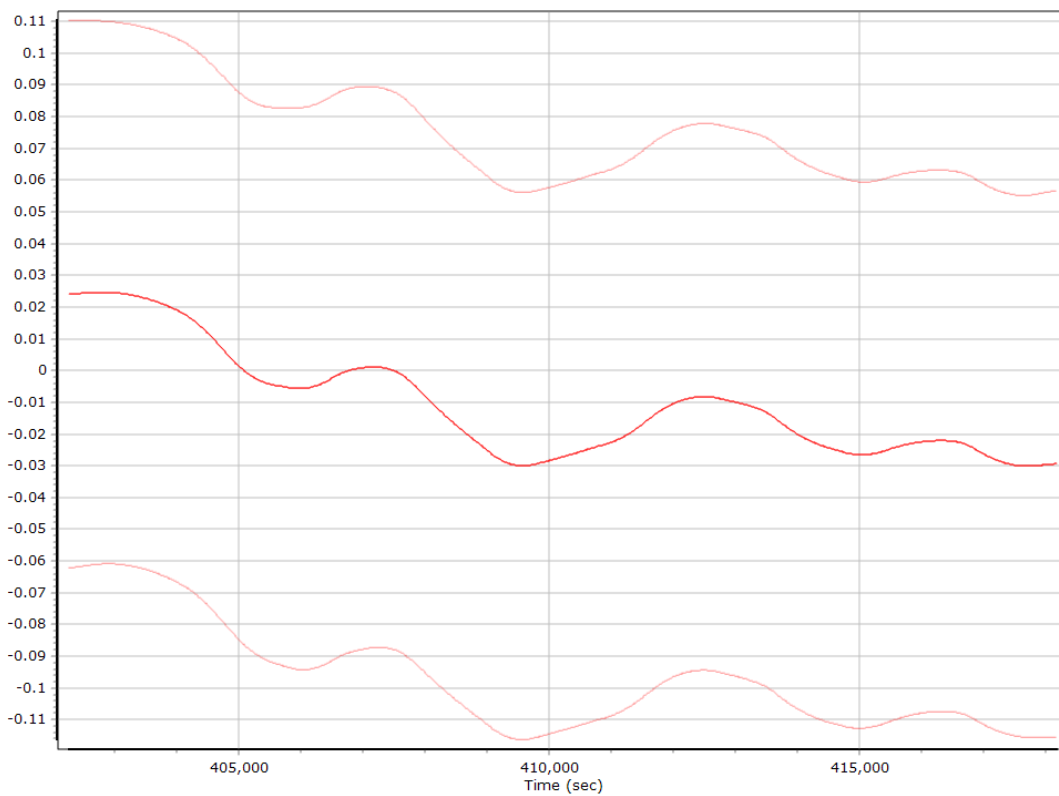
X Gyro Bias (deg/h)



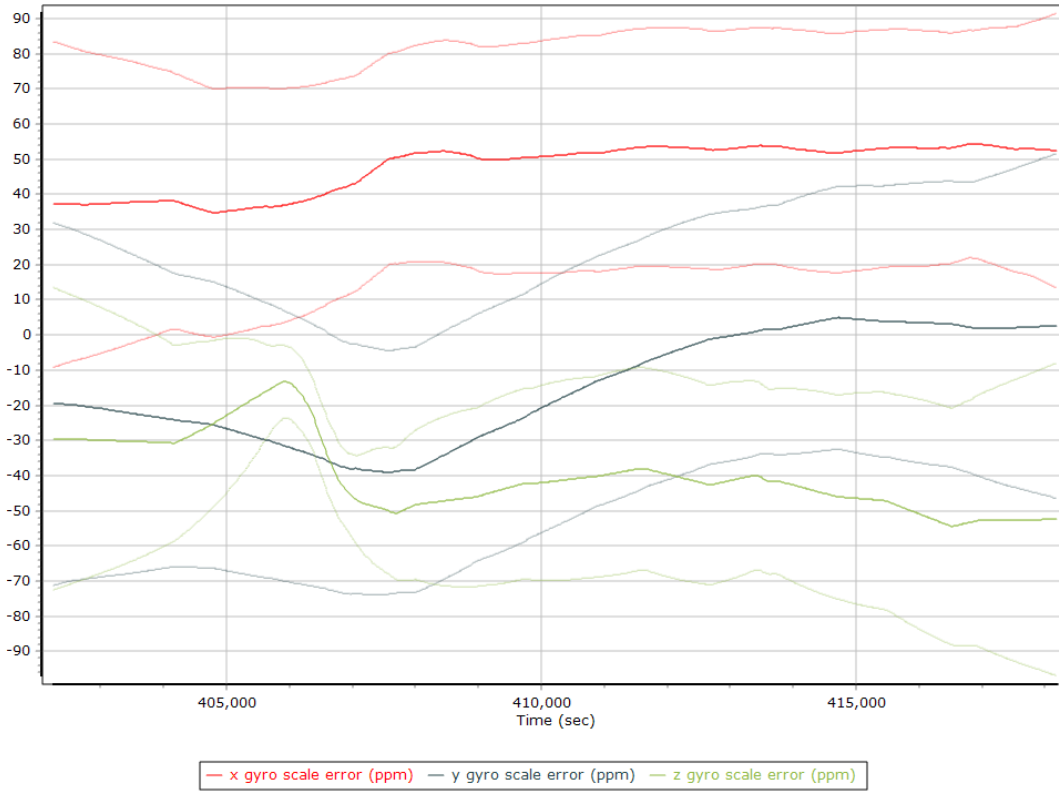
Y Gyro Bias (deg/h)



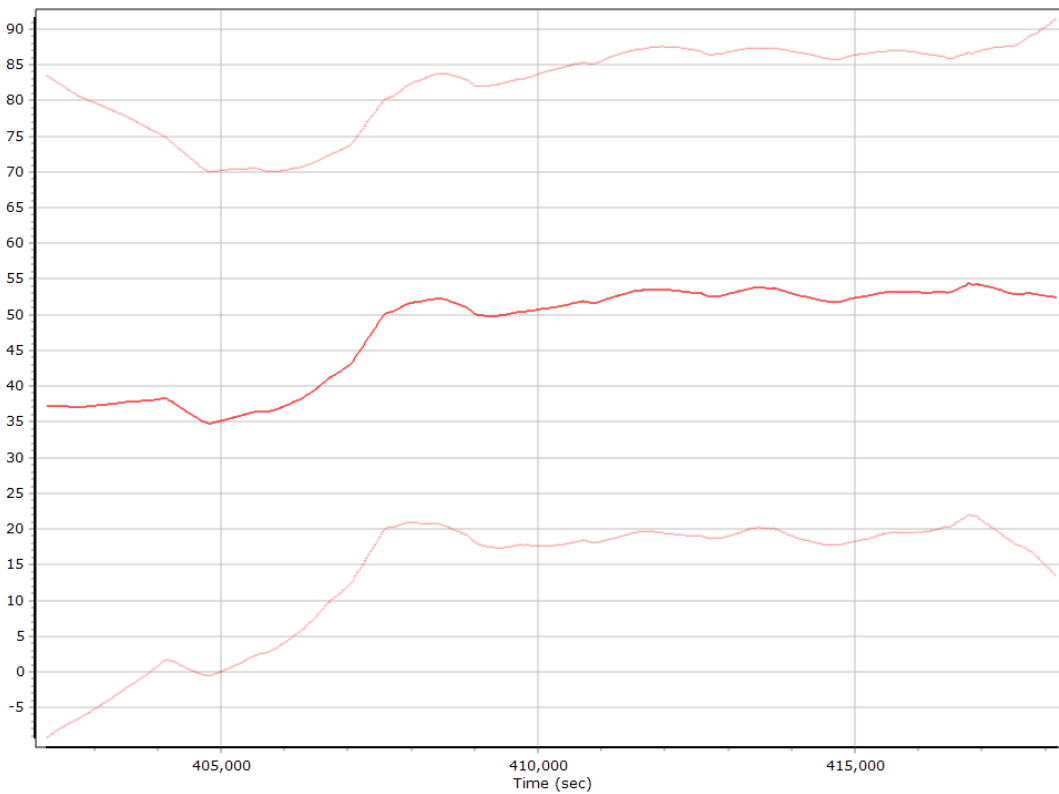
Z Gyro Bias (deg/h)



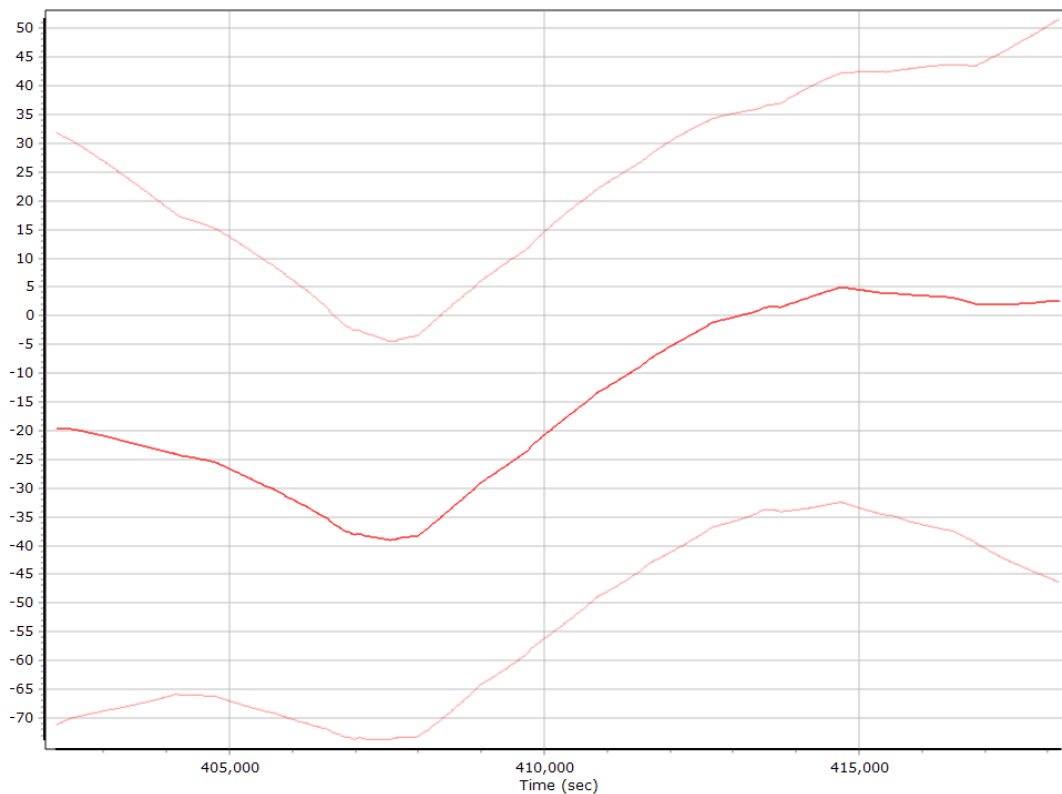
Gyro Scale Error (ppm)



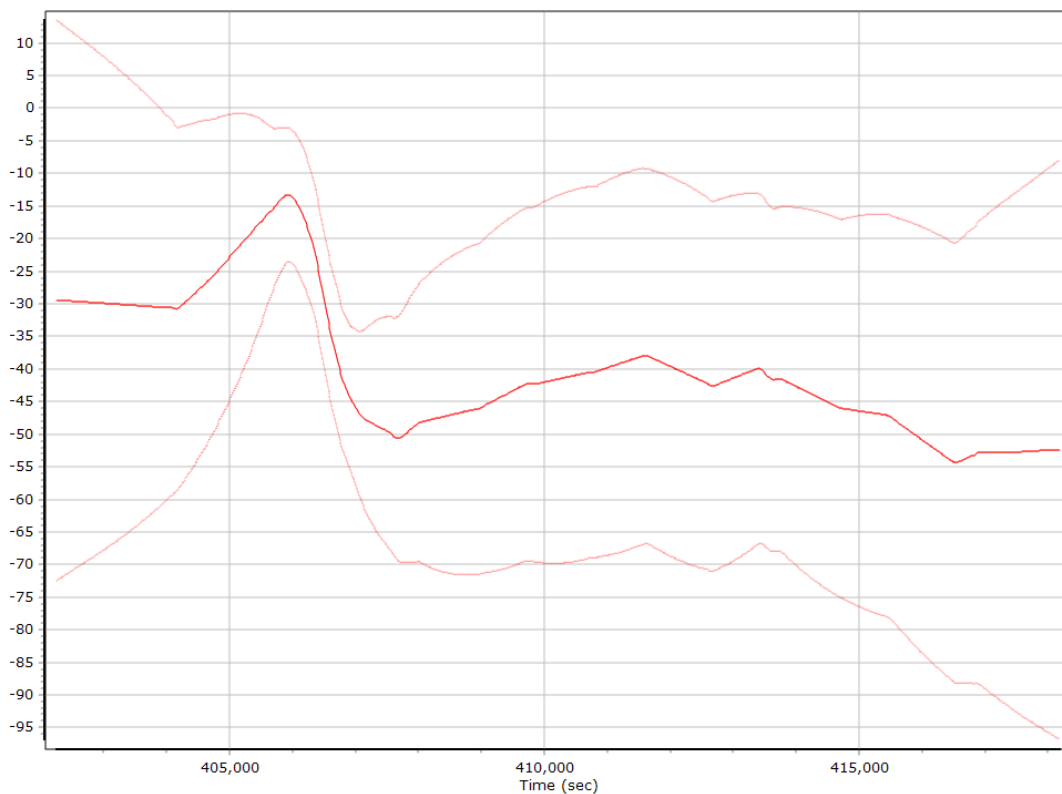
X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)

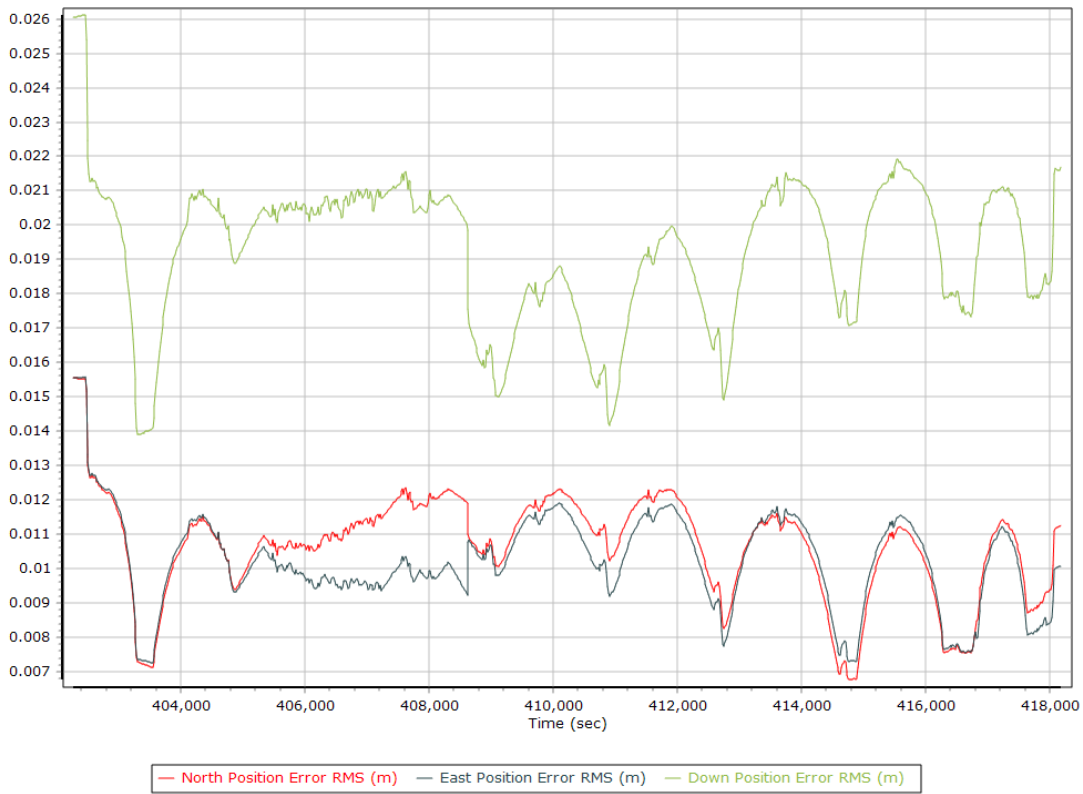


Z Gyro Scale Error (ppm)

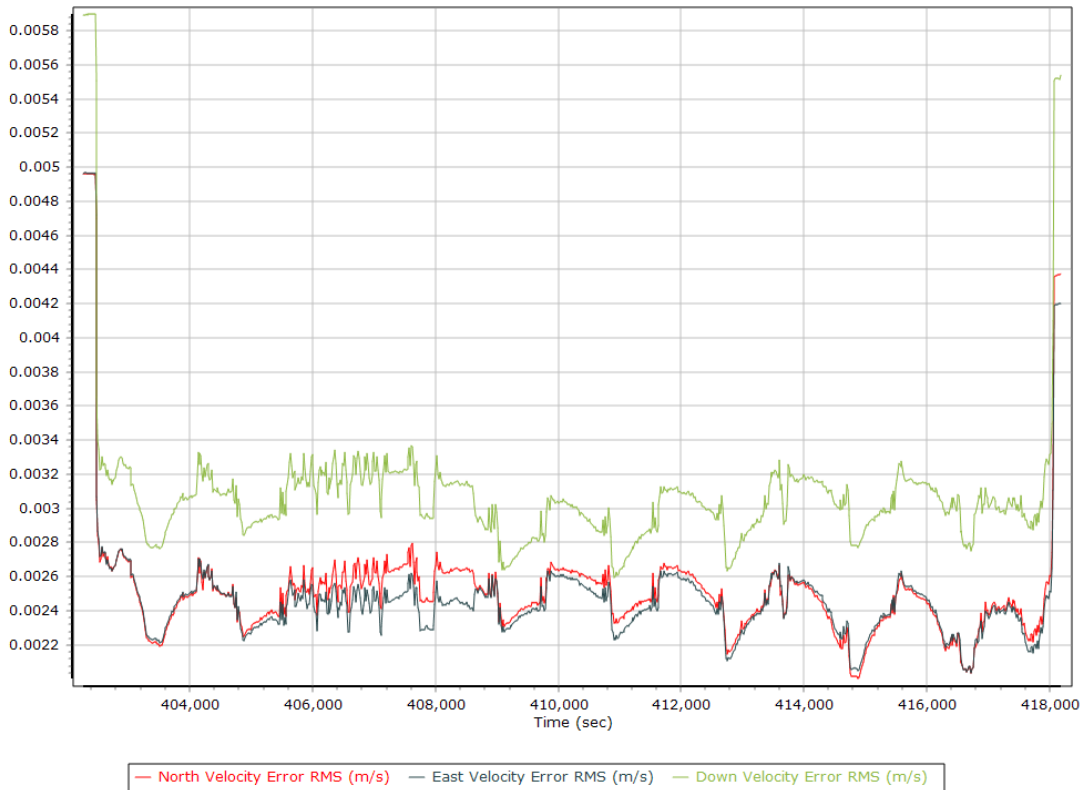


Smoothed Performance Metrics

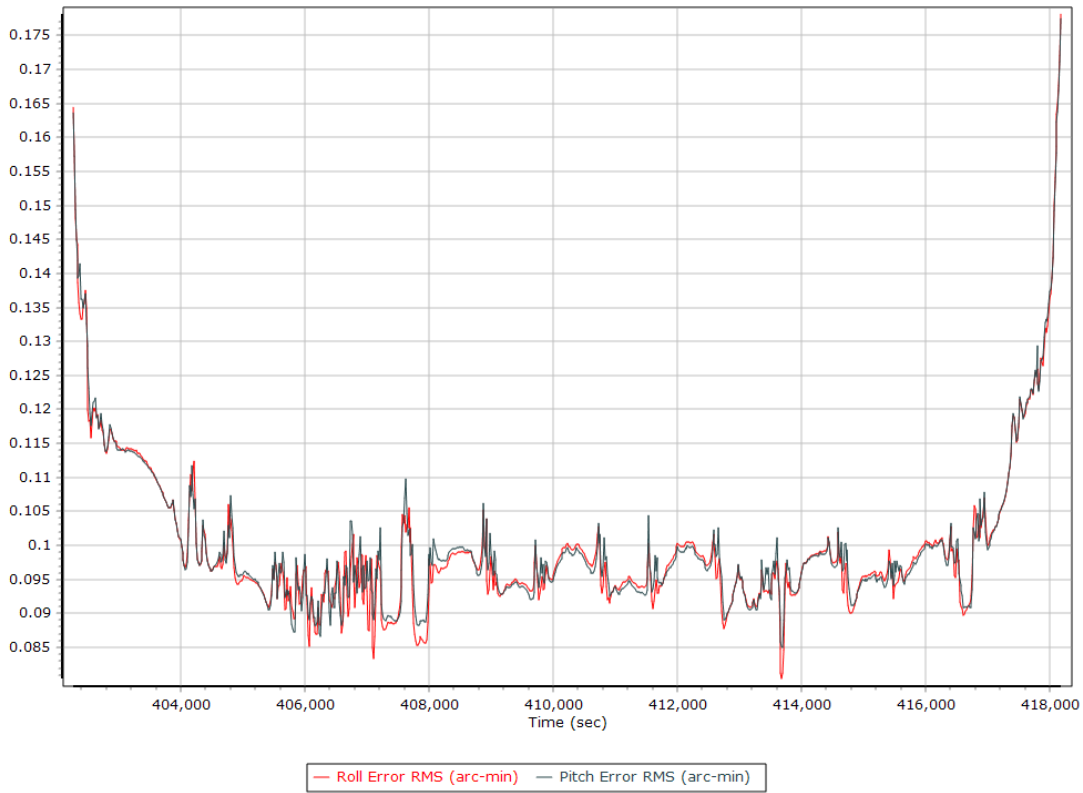
Position Error RMS (m)



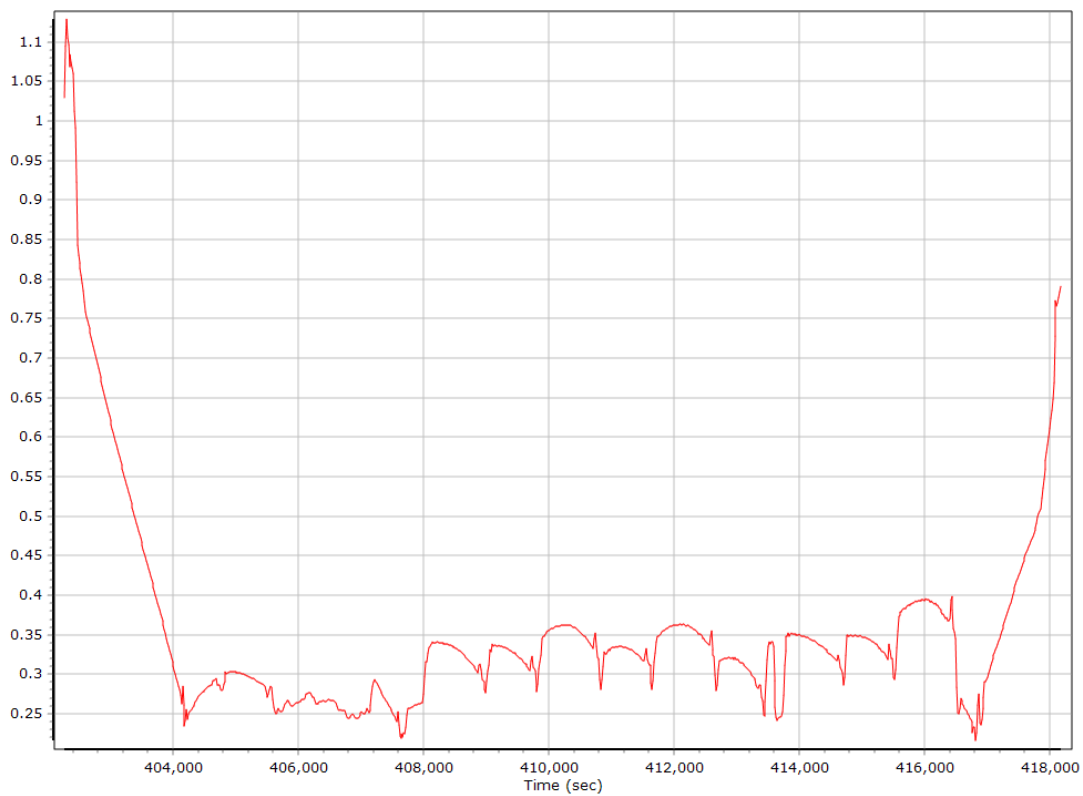
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

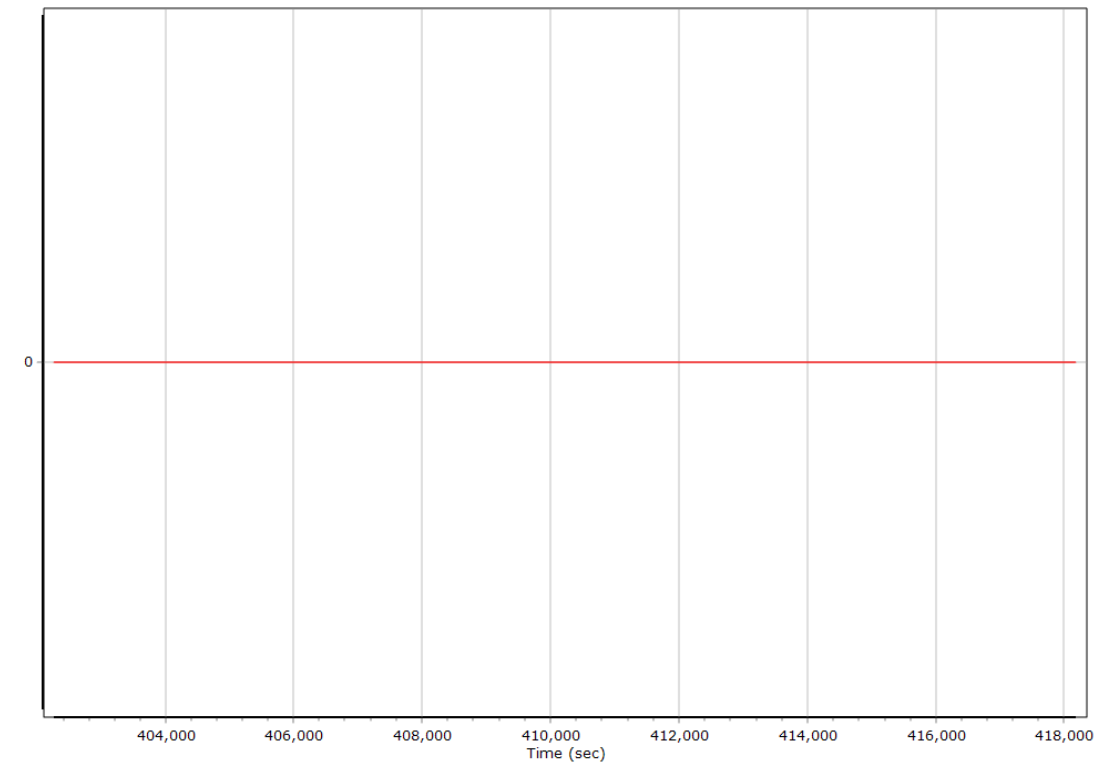


Heading Error RMS (arc-min)



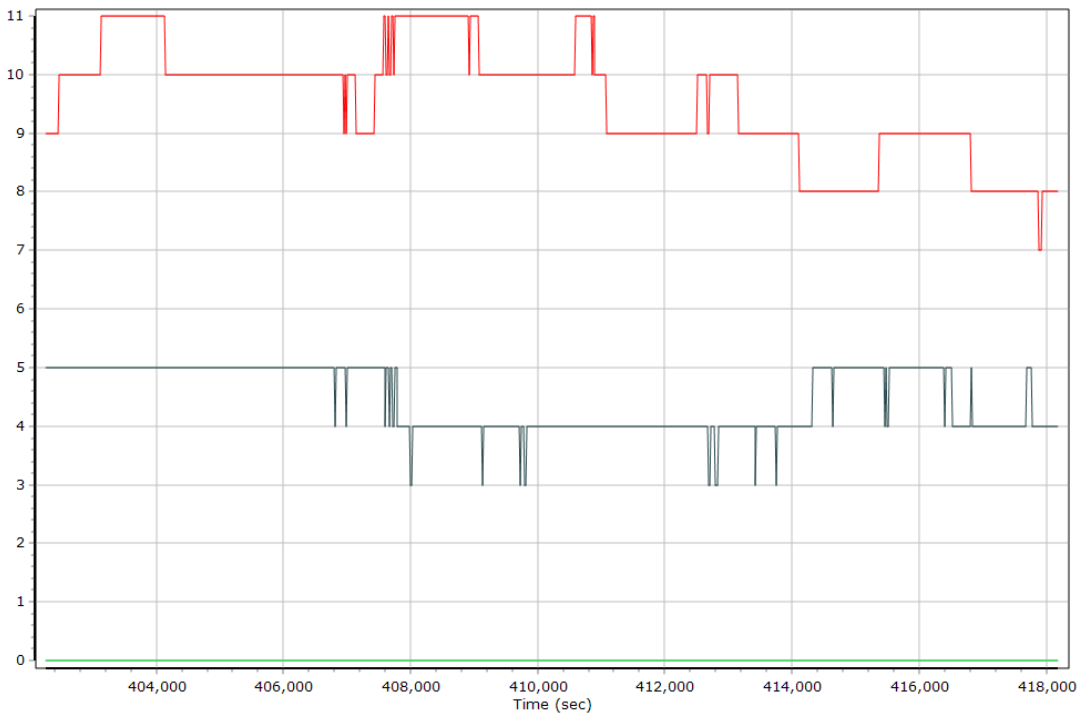
Smoothed Solution Status

Processing Mode



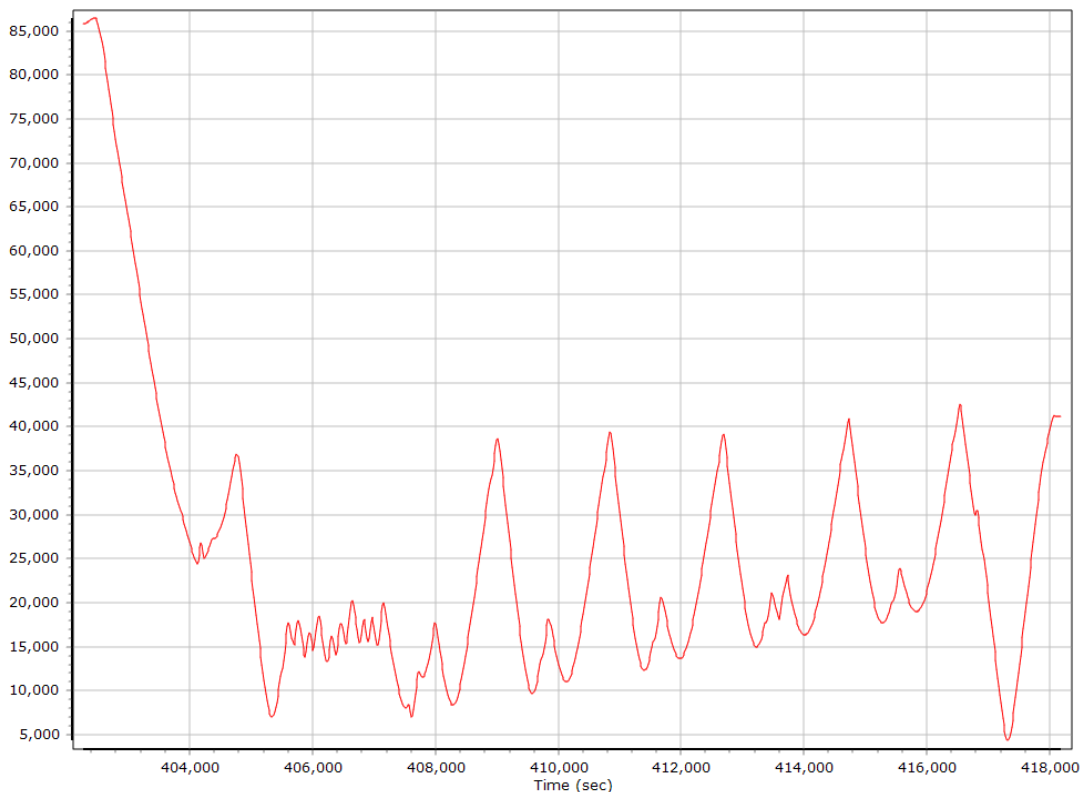
0 = Fixed NL, 1 = Fixed WL, 2 = Float, 3 = DGNSS, 4 = RTCM, 5 = IAPPP, 6 = C/A, 7 = GNSS Nav, 8 = DR

Number of Satellites



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

Baseline Length



SBET IAkar Separation

