

General Information

Mission Information

Project name	RBV20054B_176
Processing date	2020-02-25 13:39:33
Mission date	2020-02-23 18:51:17
Mission duration	04:21:07.000
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	AT1675-80

Project File List

Rover Data Files

File name	File type
RBV20054B.552	POS Data
RBV20054B.553	POS Data
RBV20054B.554	POS Data
RBV20054B.555	POS Data
RBV20054B.556	POS Data
RBV20054B.557	POS Data
RBV20054B.558	POS Data
RBV20054B.559	POS Data
RBV20054B.560	POS Data
RBV20054B.561	POS Data
RBV20054B.562	POS Data
RBV20054B.563	POS Data
RBV20054B.564	POS Data
RBV20054B.565	POS Data
RBV20054B.566	POS Data
RBV20054B.567	POS Data
RBV20054B.568	POS Data
RBV20054B.569	POS Data
RBV20054B.570	POS Data
RBV20054B.571	POS Data
RBV20054B.572	POS Data
RBV20054B.573	POS Data
RBV20054B.574	POS Data
RBV20054B.575	POS Data
RBV20054B.576	POS Data
RBV20054B.577	POS Data
RBV20054B.578	POS Data
RBV20054B.579	POS Data
RBV20054B.580	POS Data
RBV20054B.581	POS Data
RBV20054B.582	POS Data
RBV20054B.583	POS Data
RBV20054B.584	POS Data
RBV20054B.585	POS Data
RBV20054B.586	POS Data
RBV20054B.587	POS Data
RBV20054B.588	POS Data
RBV20054B.589	POS Data
RBV20054B.590	POS Data
RBV20054B.591	POS Data

Input Files

File Name	File Type
Ephm0540.20g	GLONASS Broadcast Ephemeris
Ephm0540.20n	GPS Broadcast Ephemeris
wvbr0540.20o	GNSS SingleBase
wvbu0540.20o	GNSS SingleBase
wvcv0540.20o	GNSS SingleBase
wvnr0540.20o	GNSS SingleBase
wvsh0540.20o	GNSS SingleBase
wvta0540.20o	GNSS SingleBase
brdc0540.20n	GPS Broadcast Ephemeris
igu20936_18.sp3	GPS Precise Ephemeris
igu20940_18.sp3	GPS Precise Ephemeris
igu20941_18.sp3	GPS Precise Ephemeris

Output Files

Filename	File type
sbet_RBV20054B_176.out	SBET Trajectory File
export_RBV20054B_176.shp	Shapefile Export Output

Rover Data Summary

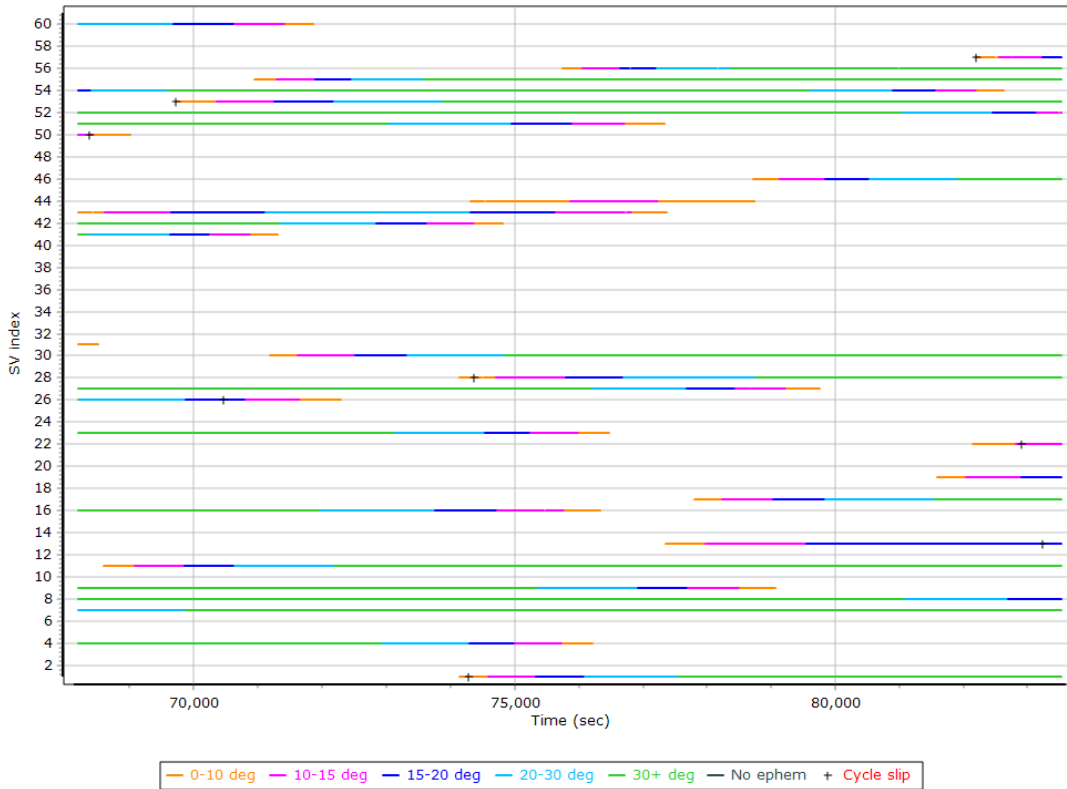
First raw data file	RBV20054B.552		
Last raw data file	RBV20054B.591		
Start GPS week	2094		
Start time	67858.103 (2/23/2020 6:50:58 PM)		
End time	83527.121 (2/23/2020 11:12:07 PM)		
Start of fine alignment	68137.126 (2/23/2020 6:55:37 PM)		
Available subsystems	Primary GNSS, Gimbal, IMU		
POS Event 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

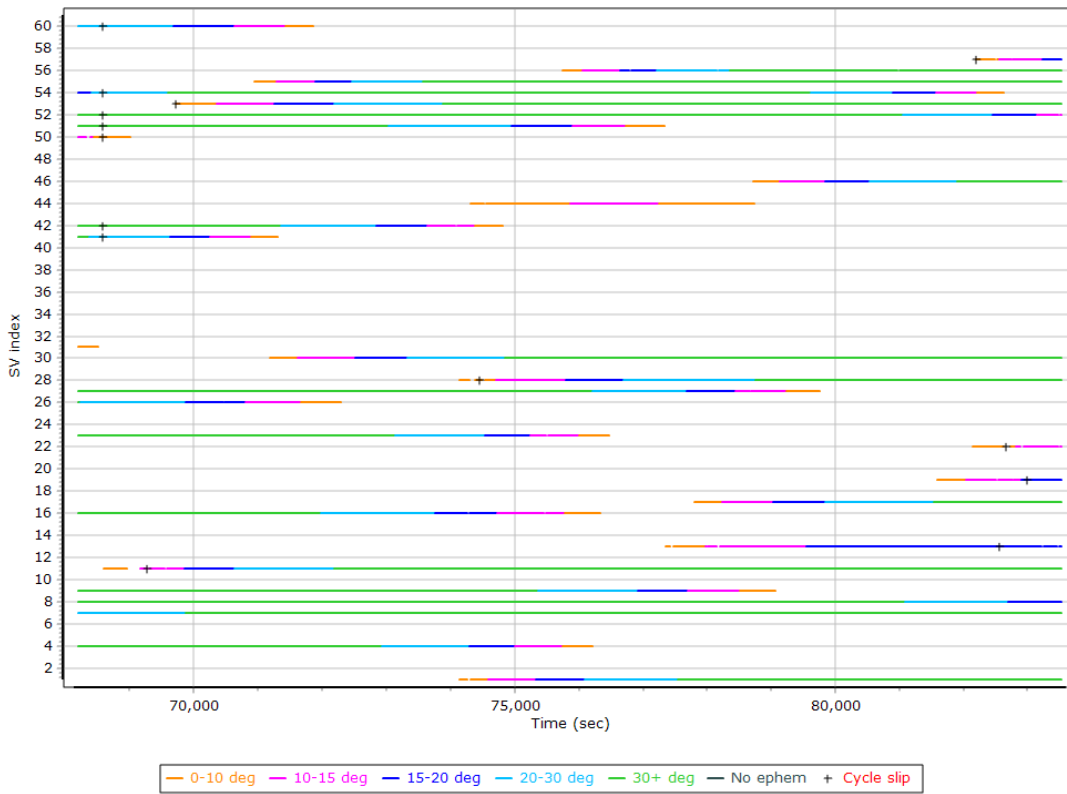
Raw IMU Import QC Summary

IMU data input file	imu_RB20054B_176.dat
IMU data check log file	imudt_RB20054B_176.log
IMU Records Processed	3133214
Termination Status	Normal
IMU Anomalies	0

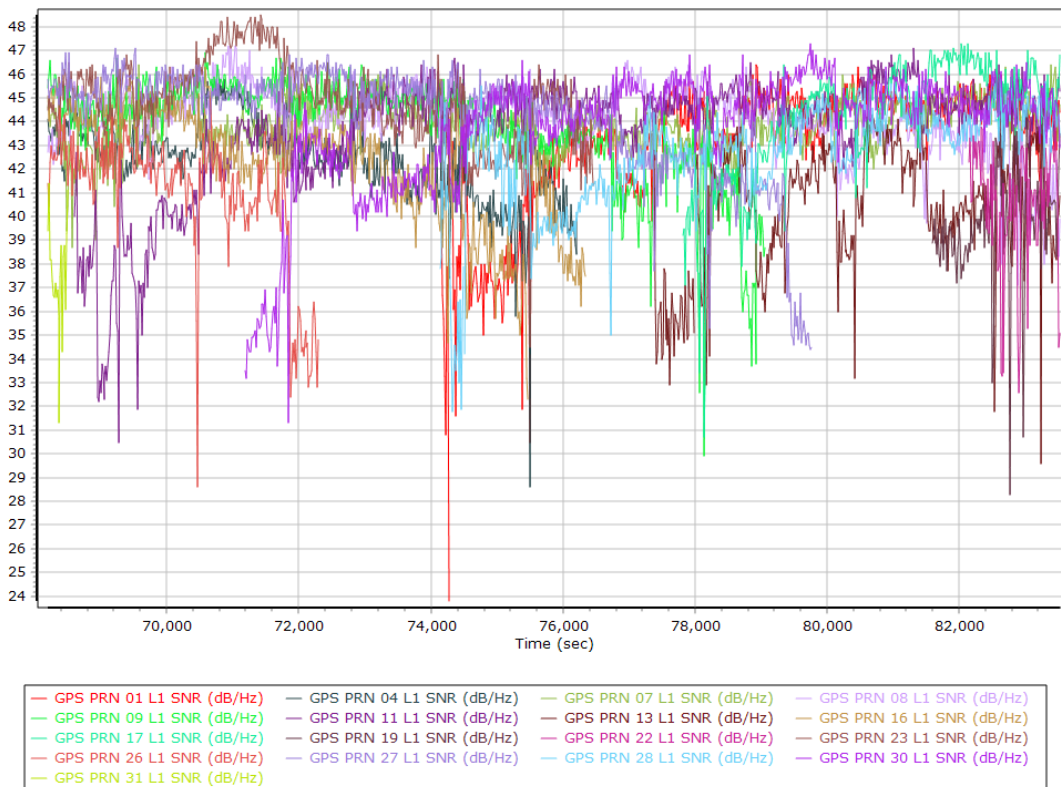
L1 Satellite Lock/Elevation



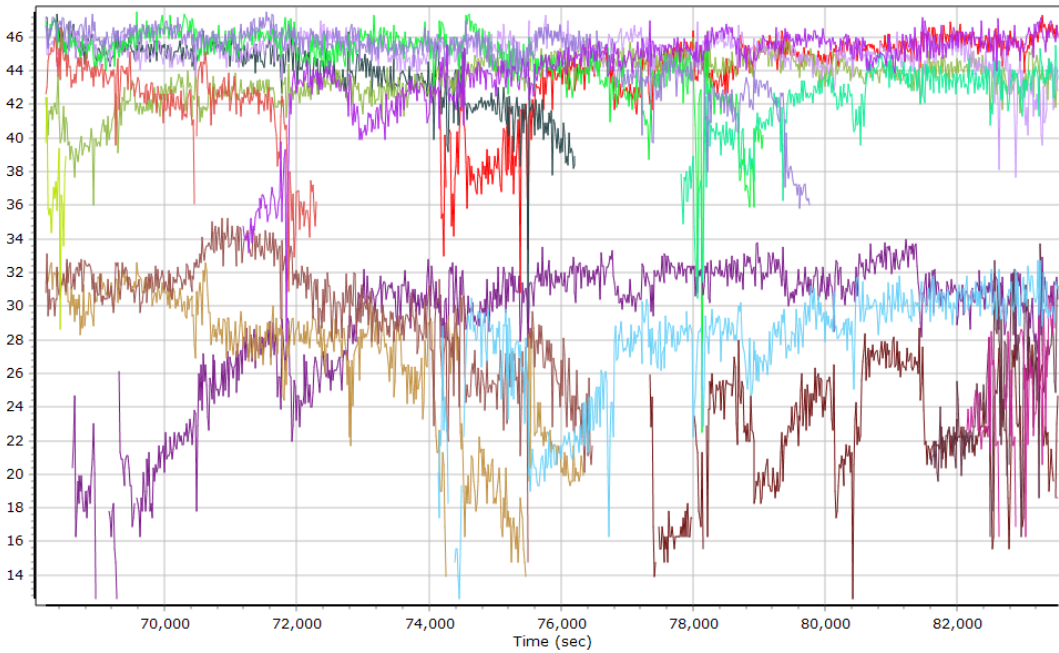
L2 Satellite Lock/Elevation



GPS L1 SNR

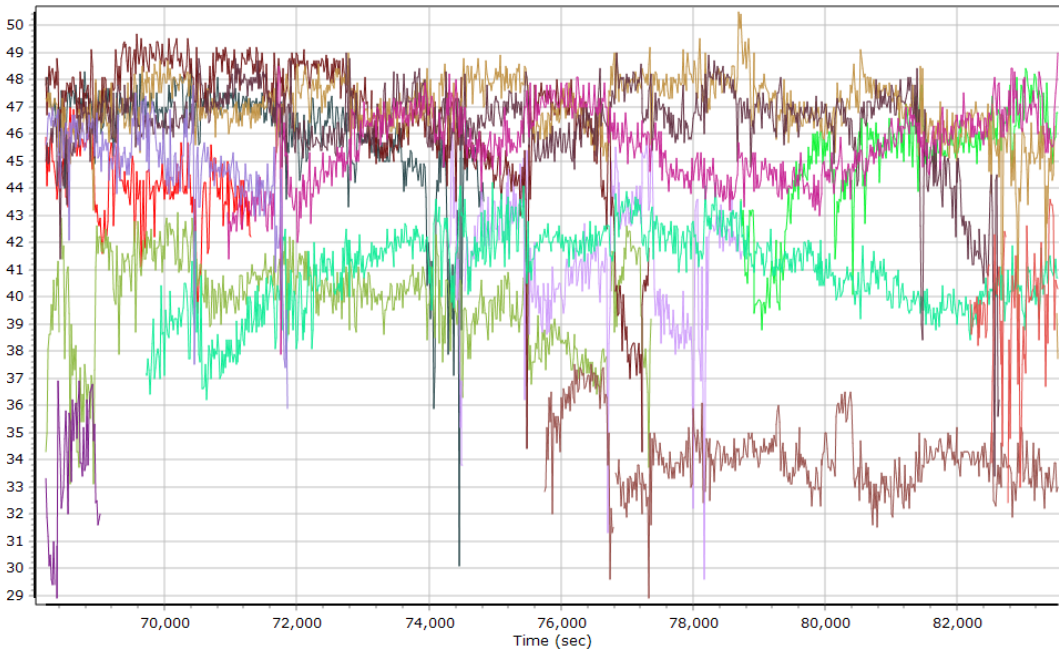


GPS L2 SNR



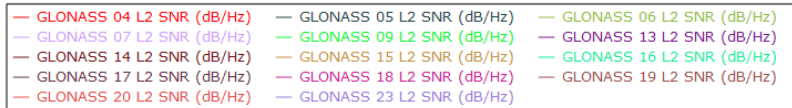
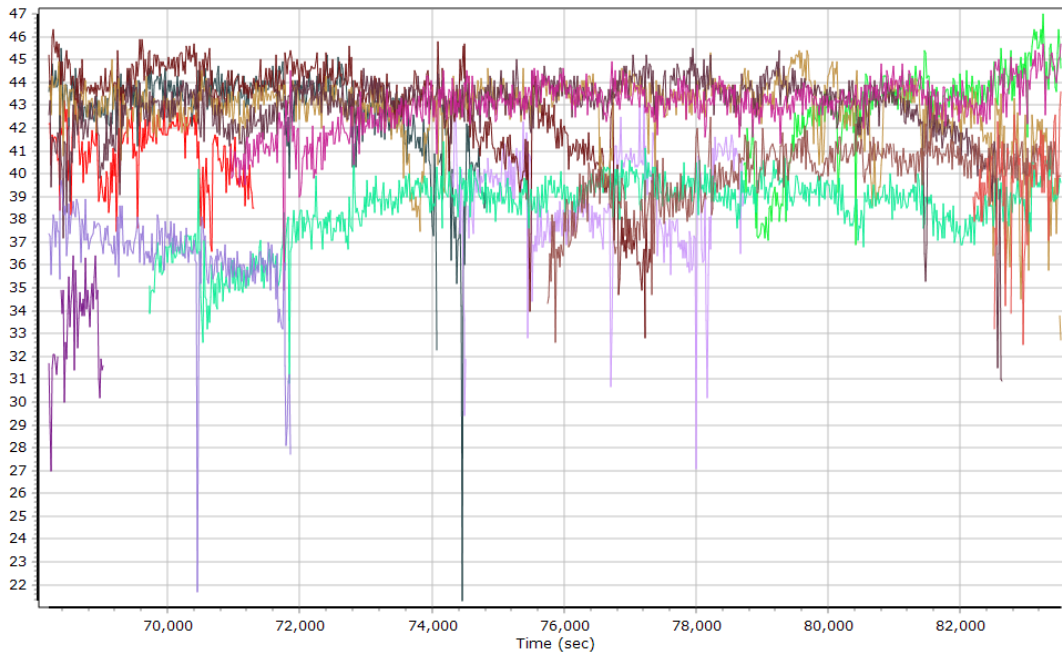
- | | | | |
|---------------------------|---------------------------|---------------------------|---------------------------|
| GPS PRN 01 L2 SNR (dB/Hz) | GPS PRN 04 L2 SNR (dB/Hz) | GPS PRN 07 L2 SNR (dB/Hz) | GPS PRN 08 L2 SNR (dB/Hz) |
| GPS PRN 09 L2 SNR (dB/Hz) | GPS PRN 11 L2 SNR (dB/Hz) | GPS PRN 13 L2 SNR (dB/Hz) | GPS PRN 16 L2 SNR (dB/Hz) |
| GPS PRN 17 L2 SNR (dB/Hz) | GPS PRN 19 L2 SNR (dB/Hz) | GPS PRN 22 L2 SNR (dB/Hz) | GPS PRN 23 L2 SNR (dB/Hz) |
| GPS PRN 26 L2 SNR (dB/Hz) | GPS PRN 27 L2 SNR (dB/Hz) | GPS PRN 28 L2 SNR (dB/Hz) | GPS PRN 30 L2 SNR (dB/Hz) |
| GPS PRN 31 L2 SNR (dB/Hz) | | | |

GLONASS L1 SNR

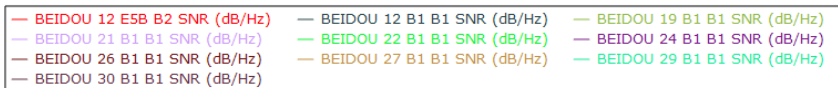
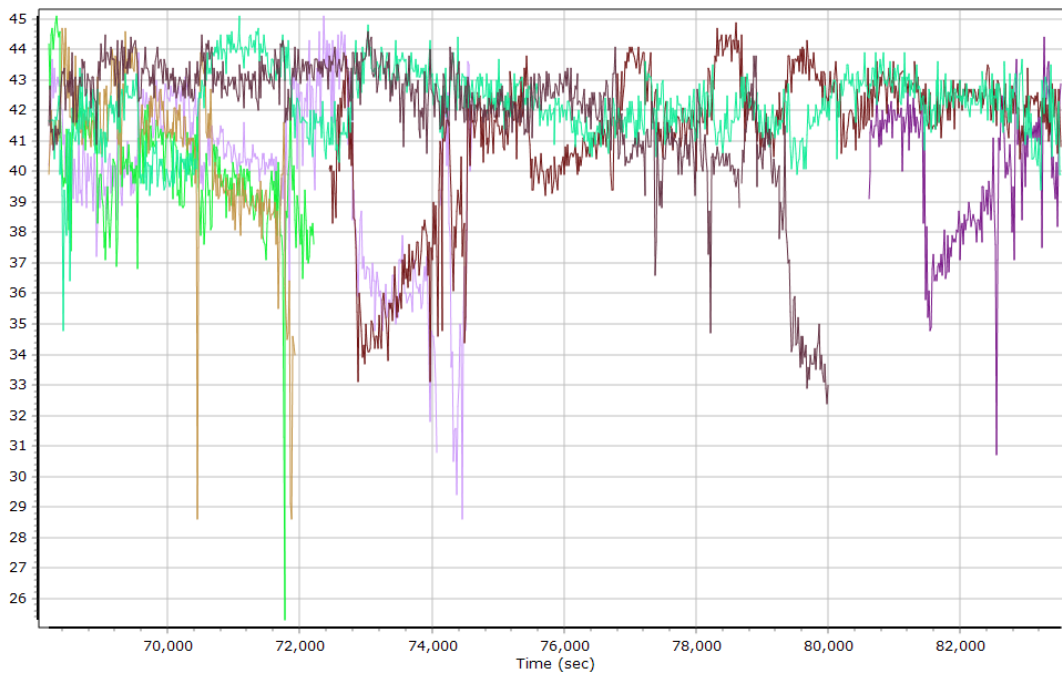


- | | | |
|---------------------------|---------------------------|---------------------------|
| GLONASS 04 L1 SNR (dB/Hz) | GLONASS 05 L1 SNR (dB/Hz) | GLONASS 06 L1 SNR (dB/Hz) |
| GLONASS 07 L1 SNR (dB/Hz) | GLONASS 09 L1 SNR (dB/Hz) | GLONASS 13 L1 SNR (dB/Hz) |
| GLONASS 14 L1 SNR (dB/Hz) | GLONASS 15 L1 SNR (dB/Hz) | GLONASS 16 L1 SNR (dB/Hz) |
| GLONASS 17 L1 SNR (dB/Hz) | GLONASS 18 L1 SNR (dB/Hz) | GLONASS 19 L1 SNR (dB/Hz) |
| GLONASS 20 L1 SNR (dB/Hz) | GLONASS 23 L1 SNR (dB/Hz) | |

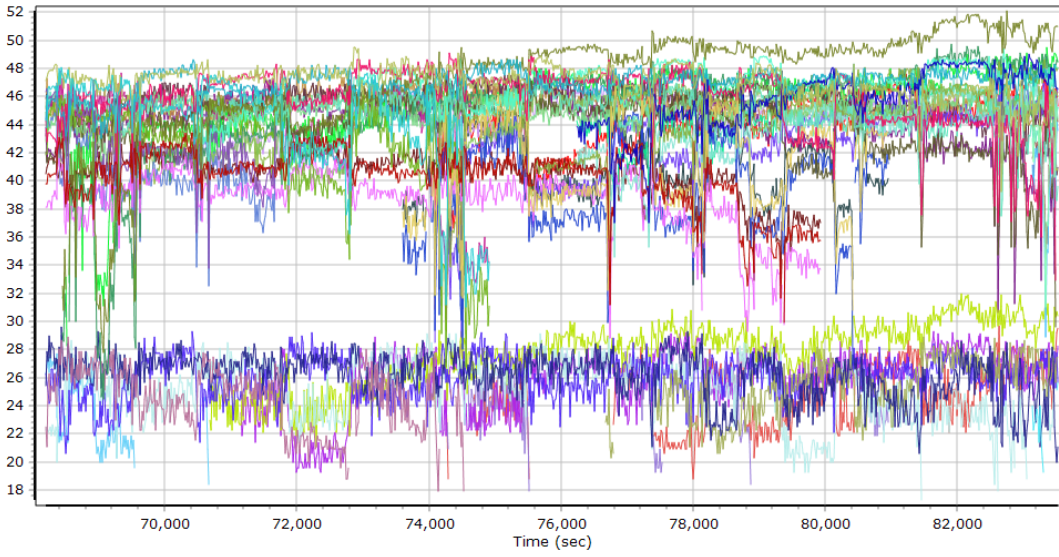
GLONASS L2 SNR



BEIDOU SNR



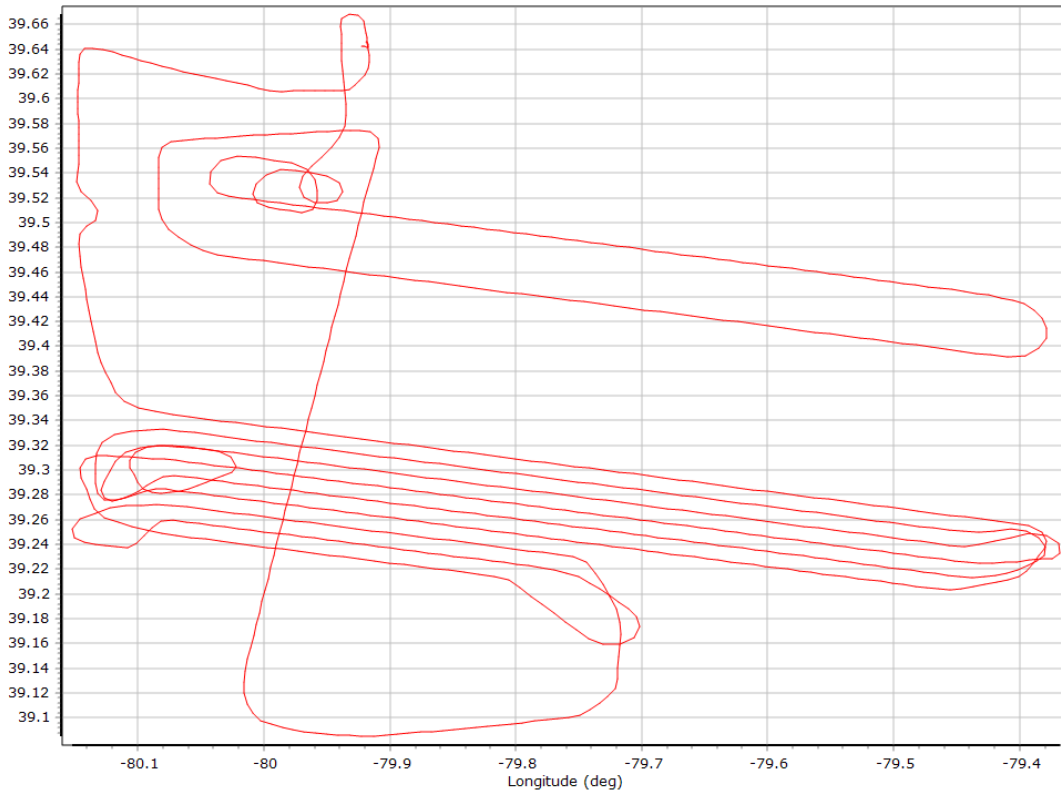
GALILEO SNR



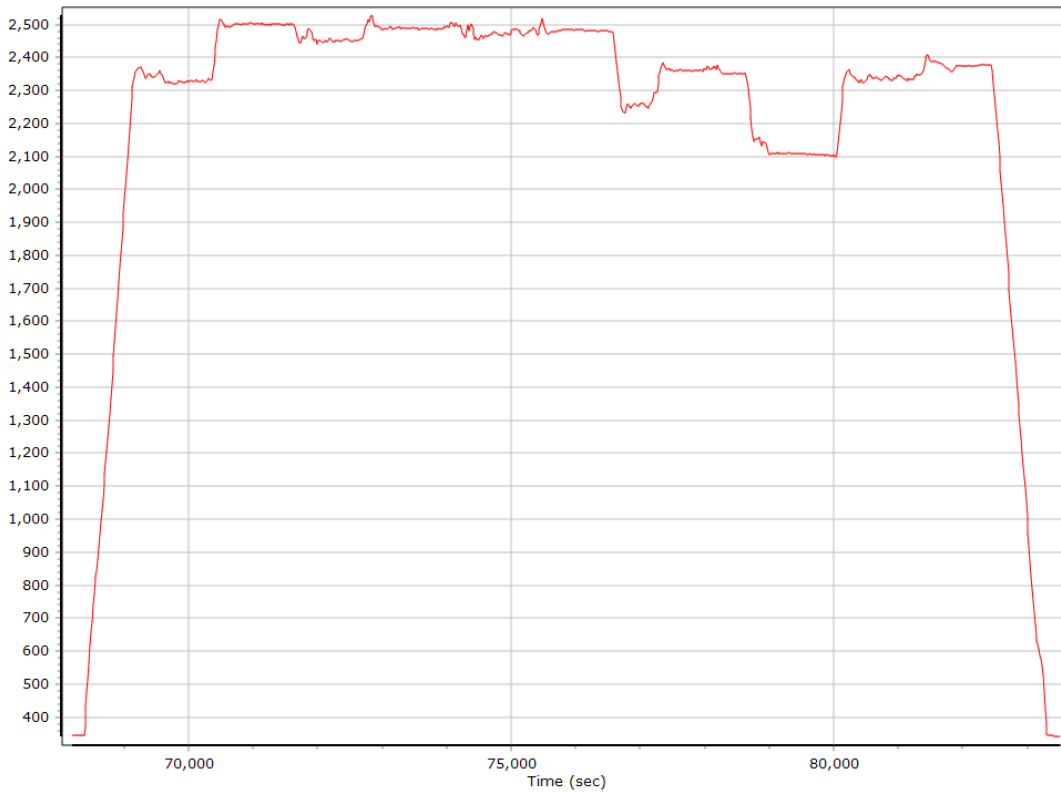
- | | |
|--|--|
| — GALILEO 01 L1 BOC_1_1_D_MBOC SNR (dB/Hz) | — GALILEO 04 L1 BOC_1_1_D_MBOC SNR (dB/Hz) |
| — GALILEO 07 L1 BOC_1_1_D_MBOC SNR (dB/Hz) | — GALILEO 13 L1 BOC_1_1_D_MBOC SNR (dB/Hz) |
| — GALILEO 14 L1 BOC_1_1_D_MBOC SNR (dB/Hz) | — GALILEO 15 L1 BOC_1_1_D_MBOC SNR (dB/Hz) |
| — GALILEO 19 L1 BOC_1_1_D_MBOC SNR (dB/Hz) | — GALILEO 21 L1 BOC_1_1_D_MBOC SNR (dB/Hz) |
| — GALILEO 26 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 33 L1 BOC_1_1_D_MBOC SNR (dB/Hz) |
| — GALILEO 01 L5E5A BPSK10_PD SNR (dB/Hz) | — GALILEO 04 L5E5A BPSK10_PD SNR (dB/Hz) |
| — GALILEO 07 L5E5A BPSK10_PD SNR (dB/Hz) | — GALILEO 13 L5E5A BPSK10_PD SNR (dB/Hz) |
| — GALILEO 14 L5E5A BPSK10_PD SNR (dB/Hz) | — GALILEO 15 L5E5A BPSK10_PD SNR (dB/Hz) |
| — GALILEO 21 L5E5A BPSK10_PD SNR (dB/Hz) | — GALILEO 26 L5E5A BPSK10_PD SNR (dB/Hz) |

Trajectory Information

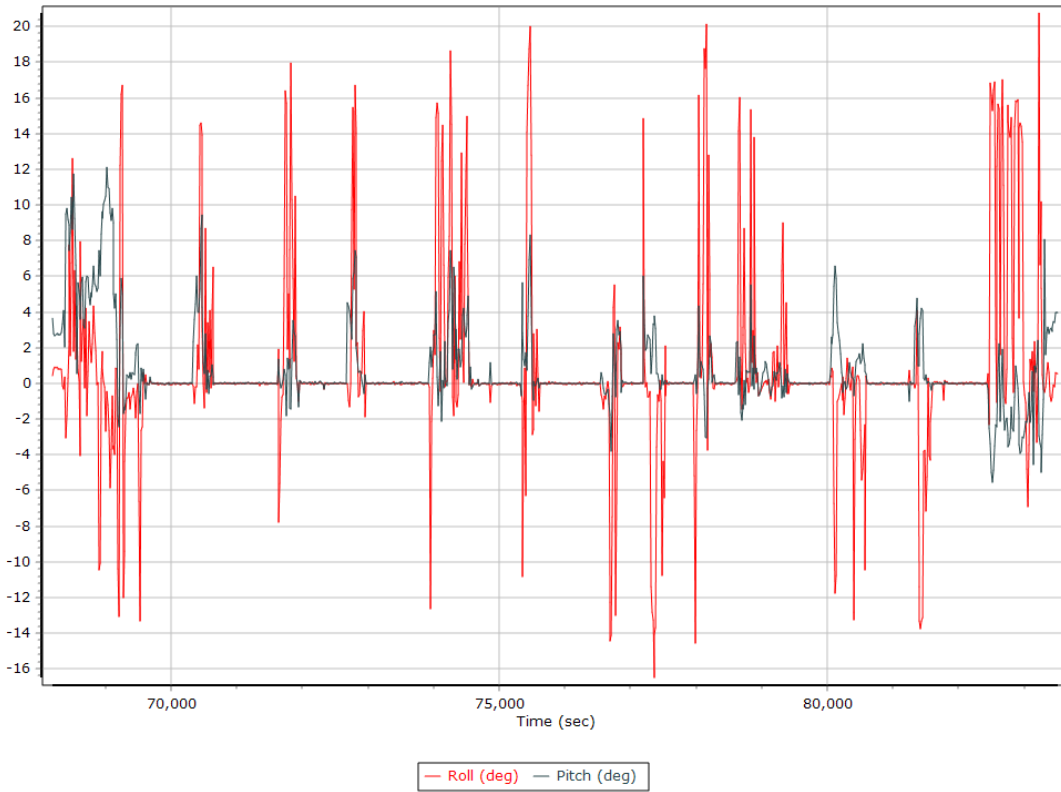
Top View



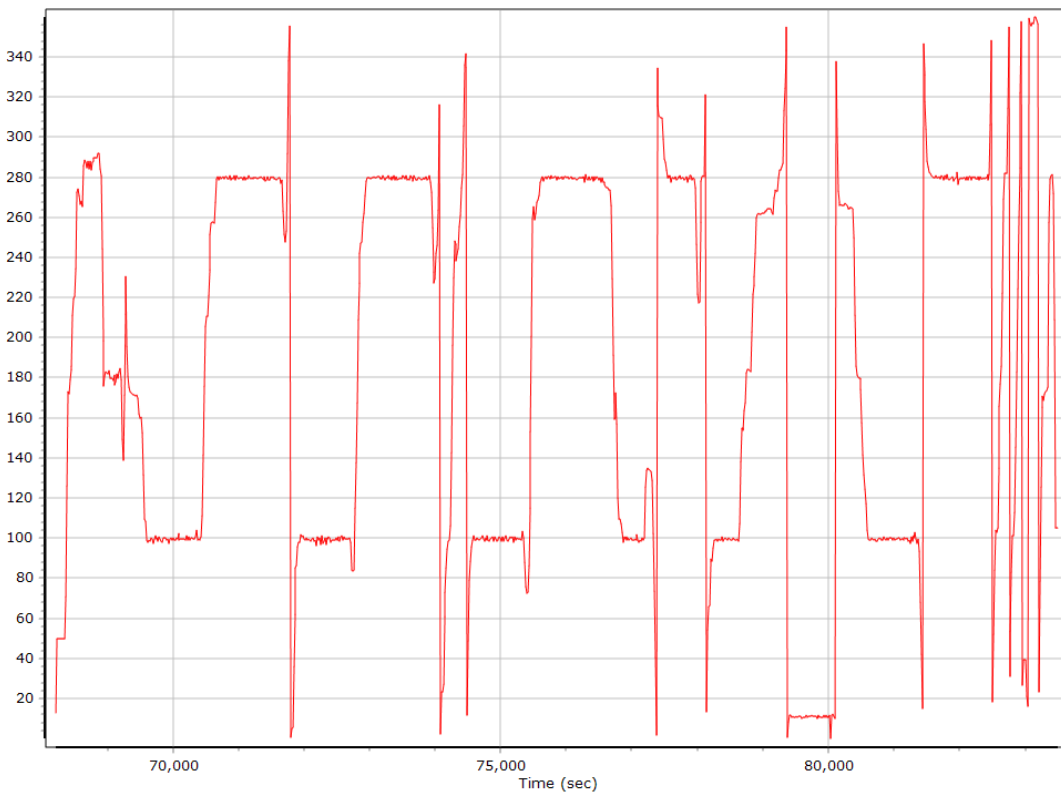
Altitude



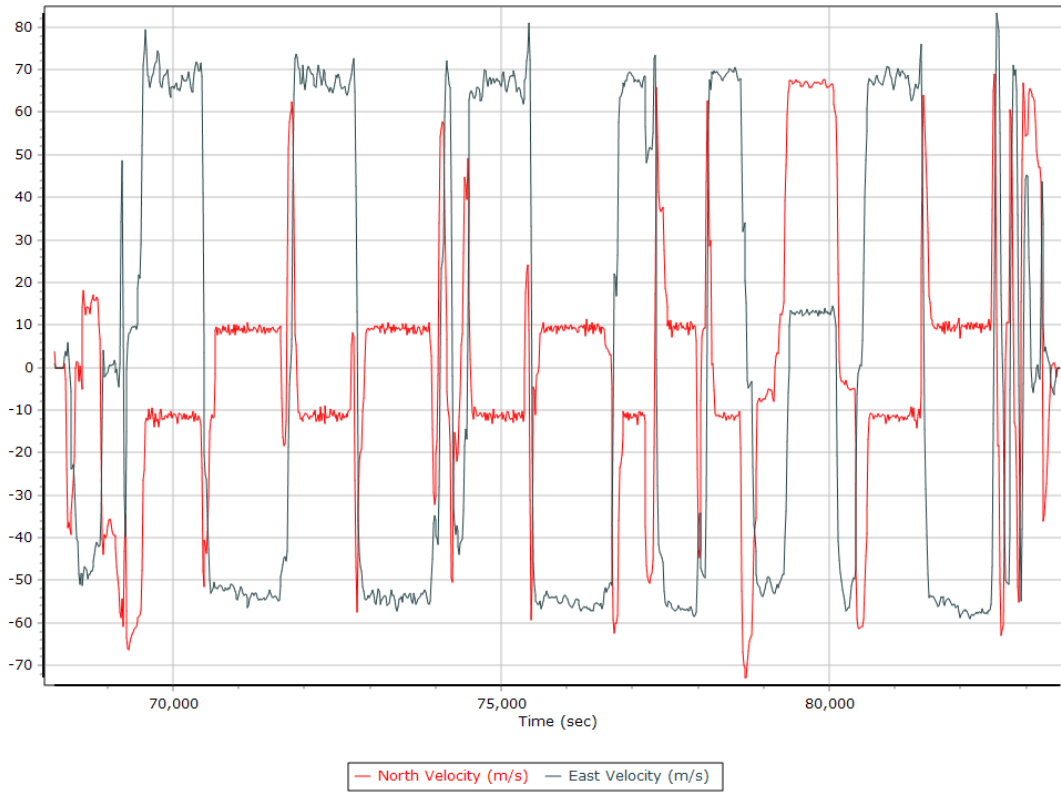
Roll/Pitch



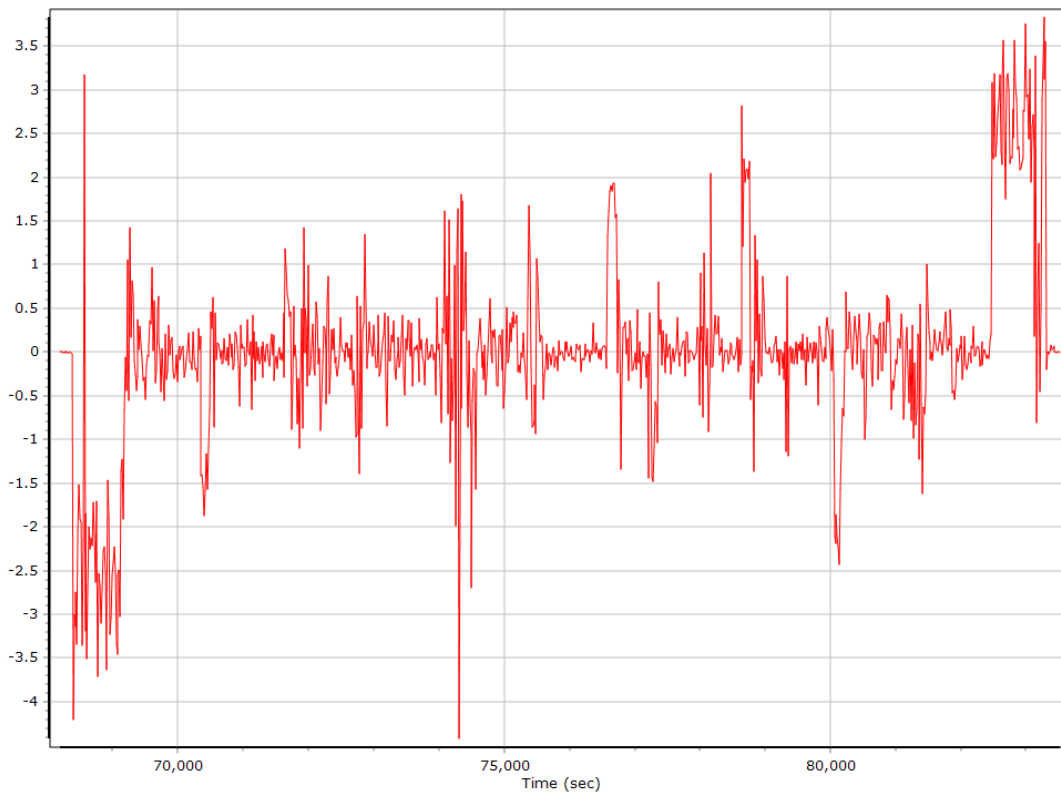
Heading



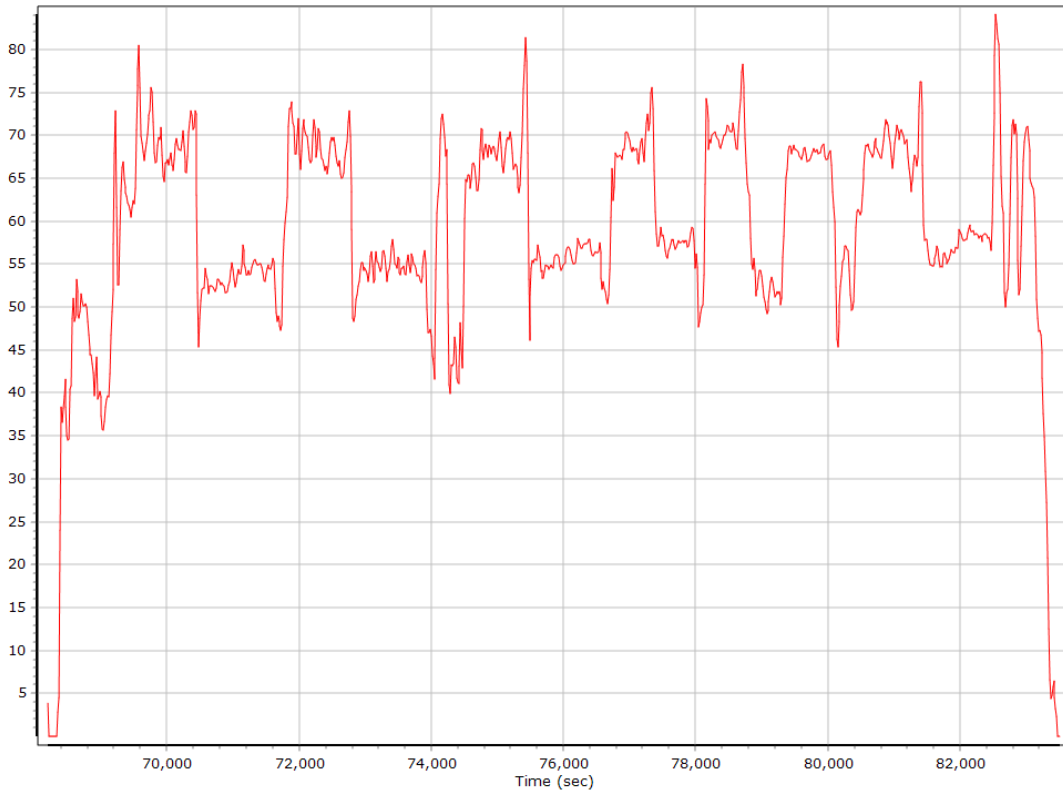
North/East Velocity



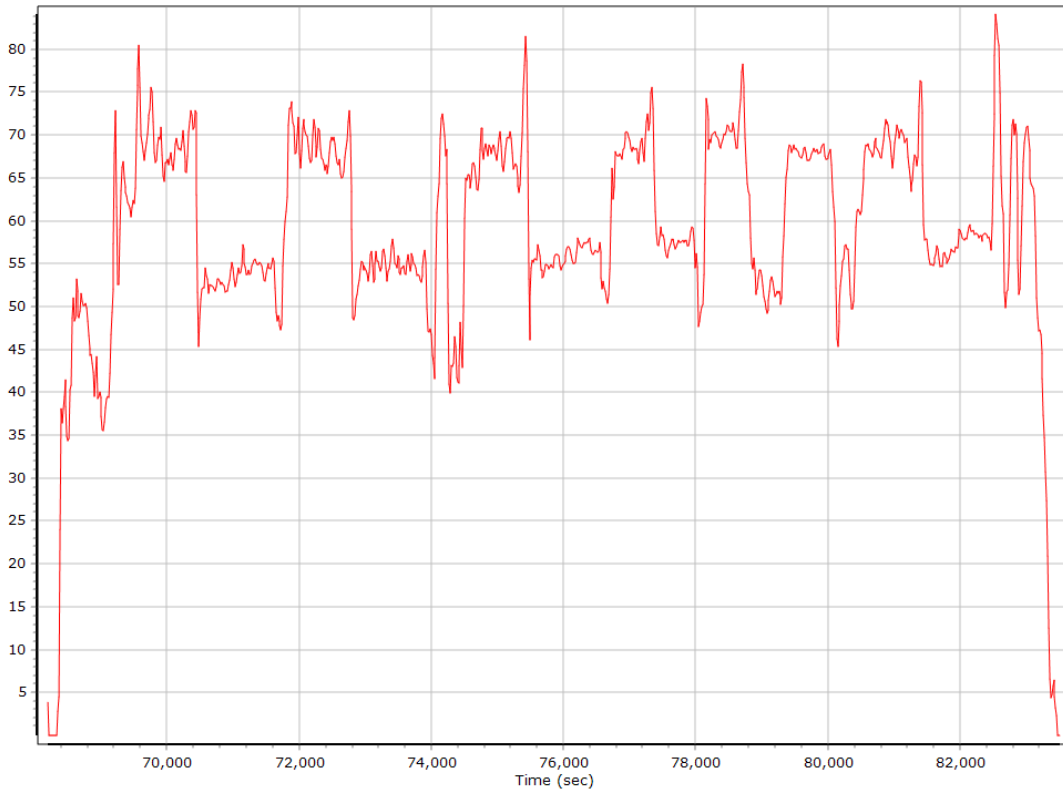
Down Velocity



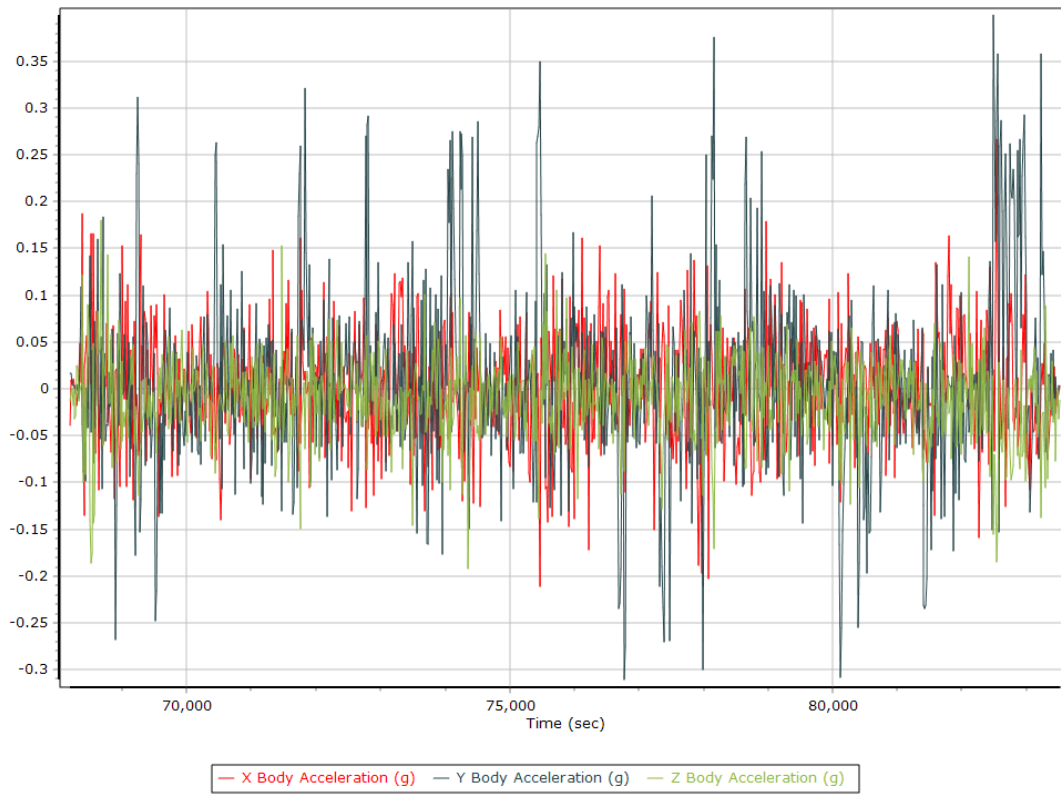
Total Speed



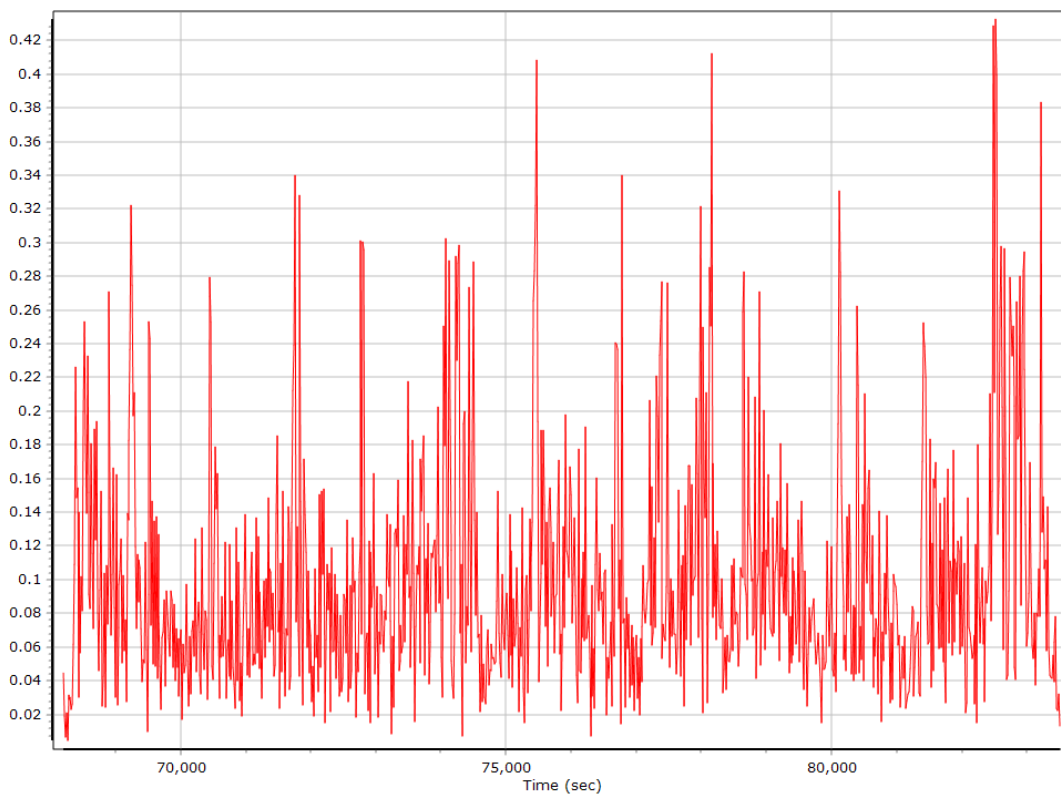
Ground Speed



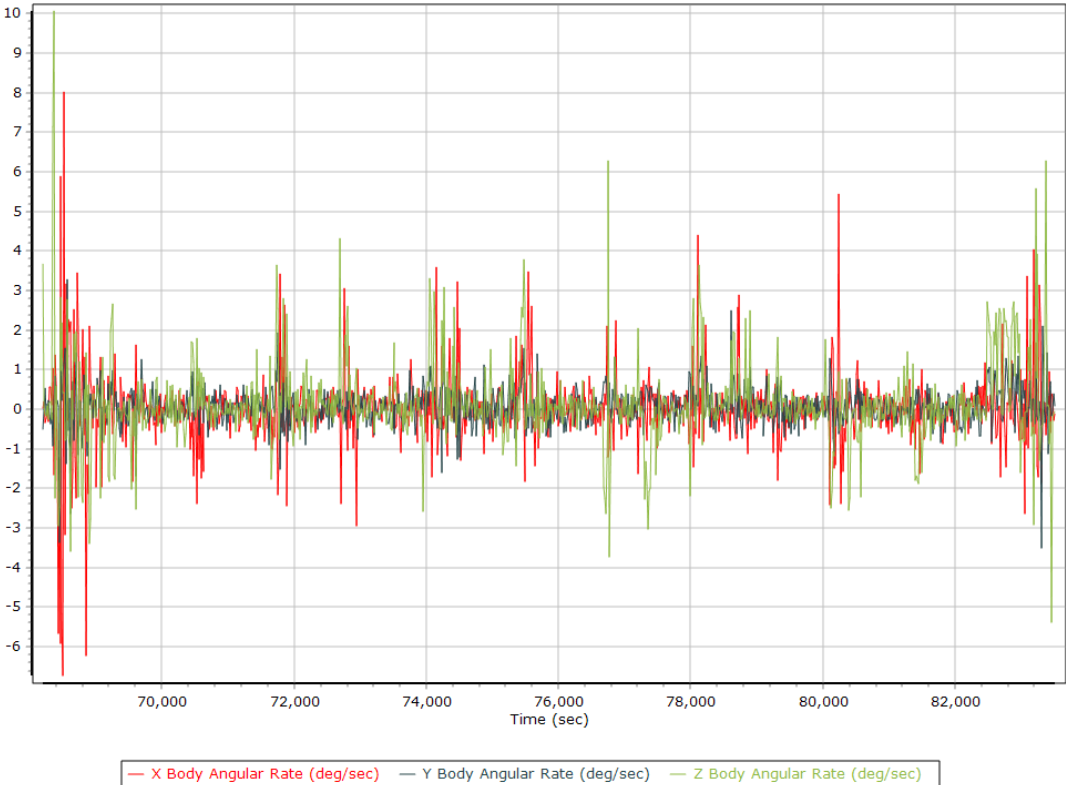
Body Acceleration



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
02/23/2020	WVTA	30.00	GNSS	1	User	None	Imported
02/23/2020	WVSH	101.72	GNSS	1	User	None	Imported
02/23/2020	WVNR	50.31	GNSS	1	User	None	Imported
02/23/2020	WVCV	49.82	GNSS	1	User	None	Imported
02/23/2020	WVBU	80.16	GNSS	1	User	None	Imported
02/23/2020	WVBR	37.80	GNSS	1	User	None	Imported

SmartBase Results

SmartBase status	PROC_STATUS_OK
Primary station Id	WVTA
Primary station data rate (sec)	1.0
VRS/ASB generation rate (sec)	1.0
VRS/ASB timespan	15667 s (2094 67877 - 2094 83544)
Number of reference stations	6
Primary station GPS measurement usage (%)	99.2
Primary station GLONASS measurement usage (%)	77.8
Average number of satellites per epoch	13.7
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)	23108
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 - WVTA

Status	OK	SBQI	0	
Duration (Hours)	23.60	Output Coordinates	Original	
Solution Epochs	5664	Mean Epoch SVs	8.6	
Base Station Coordinates		Latitude	Longitude	Height (m)
Original		N39°26'16.64399"	W79°30'52.95303"	726.066
Adjusted		N39°26'16.64395"	W79°30'52.95285"	726.067
Coordinate Adjustments		Horizontal (m)	Vertical (m)	Total (m)
Adjustments		0.005	0.001	0.005

Base Station Information

Station ID	WVTA		
Filename	wvta0540.200		
Start date	2/23/2020 12:00:00 AM		
End date	2/23/2020 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 - WVSH

Status	OK	SBQI	0
Duration (Hours)	23.55	Output Coordinates	Original
Solution Epochs	5653	Mean Epoch SVs	8.6
Base Station Coordinates	Latitude	Longitude	Height (m)
Original	N39°59'49.09954"	W80°40'46.36115"	384.551
Adjusted	N39°59'49.09948"	W80°40'46.36175"	384.554
Coordinate Adjustments	Horizontal (m)	Vertical (m)	Total (m)
Adjustments	0.014	0.003	0.015

Base Station Information

Station ID	WVSH		
Filename	wvsh0540.20o		
Start date	2/23/2020 12:00:00 AM		
End date	2/23/2020 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 - WVNR

Status	CONTROL	SBQI	0	
Duration (Hours)	23.70	Output Coordinates	Control	
Solution Epochs	5688	Mean Epoch SVs	8.6	
Base Station Coordinates		Latitude	Longitude	Height (m)
Original		N38°53'44.50553"	W79°51'30.27007"	582.773
Adjusted		N38°53'44.50553"	W79°51'30.27007"	582.773
Coordinate Adjustments		Horizontal (m)	Vertical (m)	Total (m)
Adjustments		0.000	0.000	0.000

Base Station Information

Station ID	WVNR		
Filename	wvnr0540.20o		
Start date	2/23/2020 12:00:00 AM		
End date	2/23/2020 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 - WVCV

Status	OK	SBQI	0	
Duration (Hours)	23.70	Output Coordinates	Original	
Solution Epochs	5688	Mean Epoch SVs	8.6	
Base Station Coordinates		Latitude	Longitude	Height (m)
Original		N39°00'55.07616"	W79°27'25.00965"	969.235
Adjusted		N39°00'55.07530"	W79°27'25.00830"	969.228
Coordinate Adjustments		Horizontal (m)	Vertical (m)	Total (m)
Adjustments		0.042	0.007	0.043

Base Station Information

Station ID	WVCV		
Filename	wvcv0540.20o		
Start date	2/23/2020 12:00:00 AM		
End date	2/23/2020 11:59:59 PM		
Duration	23:59:59.000		
Data type	GNSS		
Receiver manufacturer, model, serial no.	Trimble	NetR5	4922K62079
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°00'55.07616"		
Longitude	W79°27'25.00965"		
Ellipsoidal height (m)	969.23500		
Frame	ITRF00		
Epoch	1997		
Ellipsoid	WGS84		
Velocity North (mm/y)	0		
Velocity East (mm/y)	0		
Velocity Up (mm/y)	0		

Base Station - WVBU

Status	OK	SBQI	0	
Duration (Hours)	23.70	Output Coordinates	Original	
Solution Epochs	5688	Mean Epoch SVs	8.7	
Base Station Coordinates		Latitude	Longitude	Height (m)
Original		N39°20'16.82171"	W78°54'48.58712"	200.059
Adjusted		N39°20'16.82192"	W78°54'48.58740"	200.058
Coordinate Adjustments		Horizontal (m)	Vertical (m)	Total (m)
Adjustments		0.009	0.001	0.010

Base Station Information

Station ID	WVBU		
Filename	wvbu0540.20o		
Start date	2/23/2020 12:00:00 AM		
End date	2/23/2020 11:59:59 PM		
Duration	23:59:59.000		
Data type	GNSS		
Receiver manufacturer, model, serial no.	Trimble	NetR5	4922K62096
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°20'16.82171"		
Longitude	W78°54'48.58712"		
Ellipsoidal height (m)	200.05900		
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)	23.70	Output Coordinates	Original
Solution Epochs	5688	Mean Epoch SVs	8.6
Base Station Coordinates	Latitude	Longitude	Height (m)
Original	N39°18'28.88440"	W80°16'38.61885"	270.246
Adjusted	N39°18'28.88422"	W80°16'38.61930"	270.253
Coordinate Adjustments	Horizontal (m)	Vertical (m)	Total (m)
Adjustments	0.012	0.007	0.014

Base Station Information

Station ID	WVBR		
Filename	wvbr0540.20o		
Start date	2/23/2020 12:00:00 AM		
End date	2/23/2020 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)	3.67	42.95	
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	8	16	14
PDOP	1.23	2.61	1.54
QC Solution Gaps	1.00	1.00	
Solution Type	Fixed	Float	No solution
Epoch (sec)	15642.00	0.00	1.00
Percentage	99.99	0.00	0.01

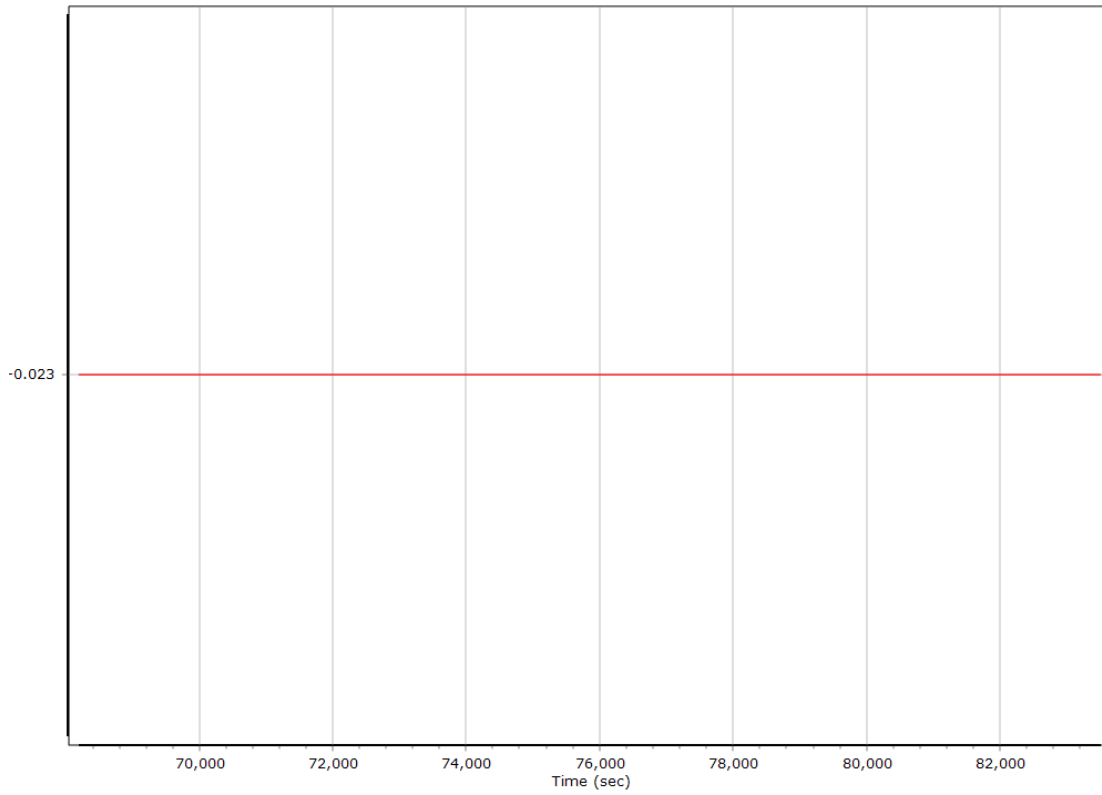
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion SmartBase		
Stabilized mount	True		
Base station	ASB		
Processing start time	67859.000 (2/23/2020 6:50:59 PM)		
Processing end time	83526.000 (2/23/2020 11:12:06 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

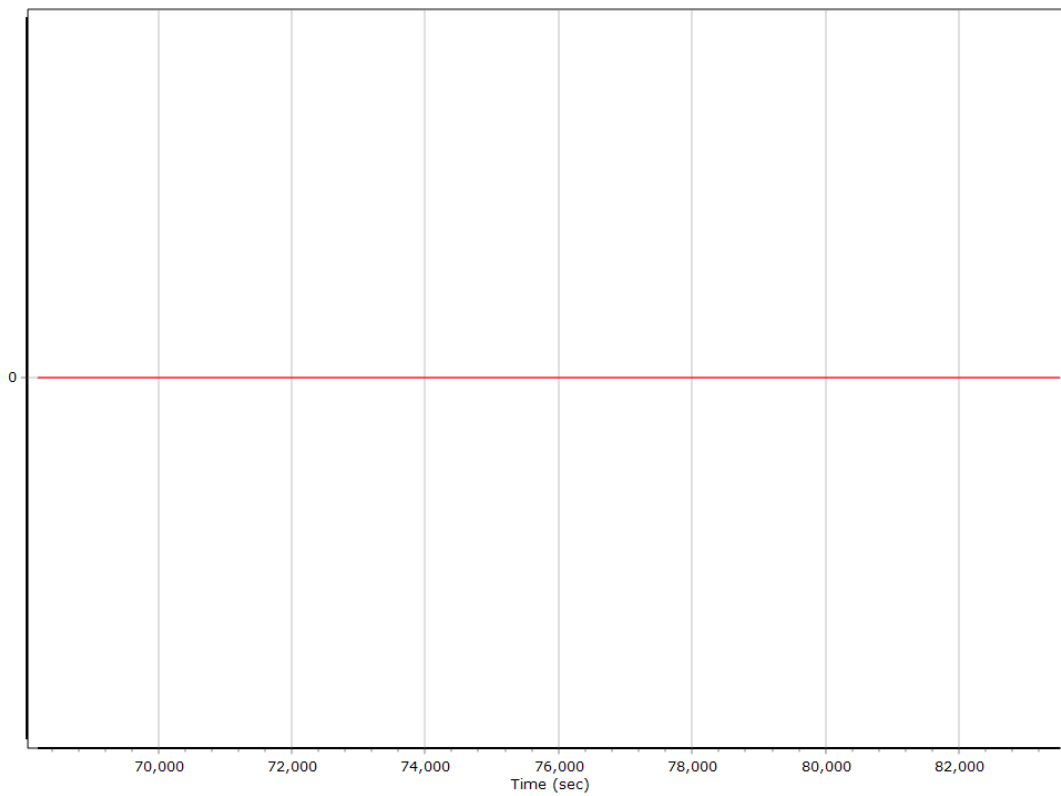
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

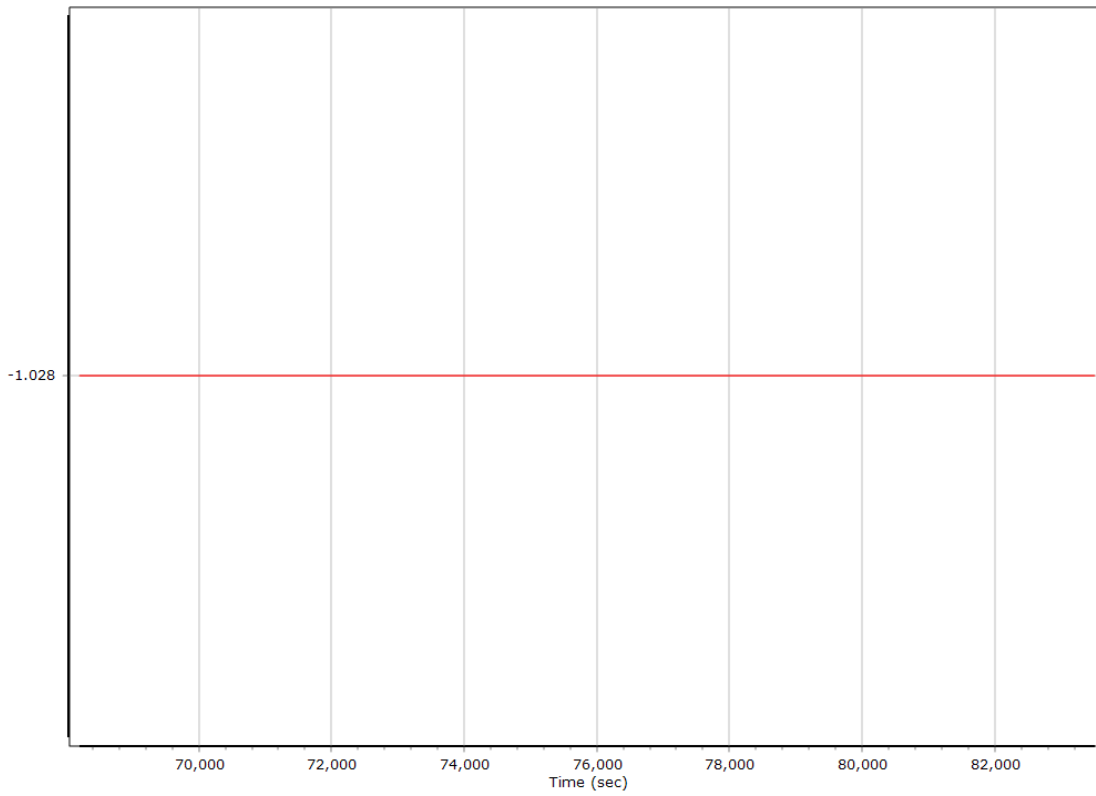
X Reference-Primary GNSS Lever Arm (m)



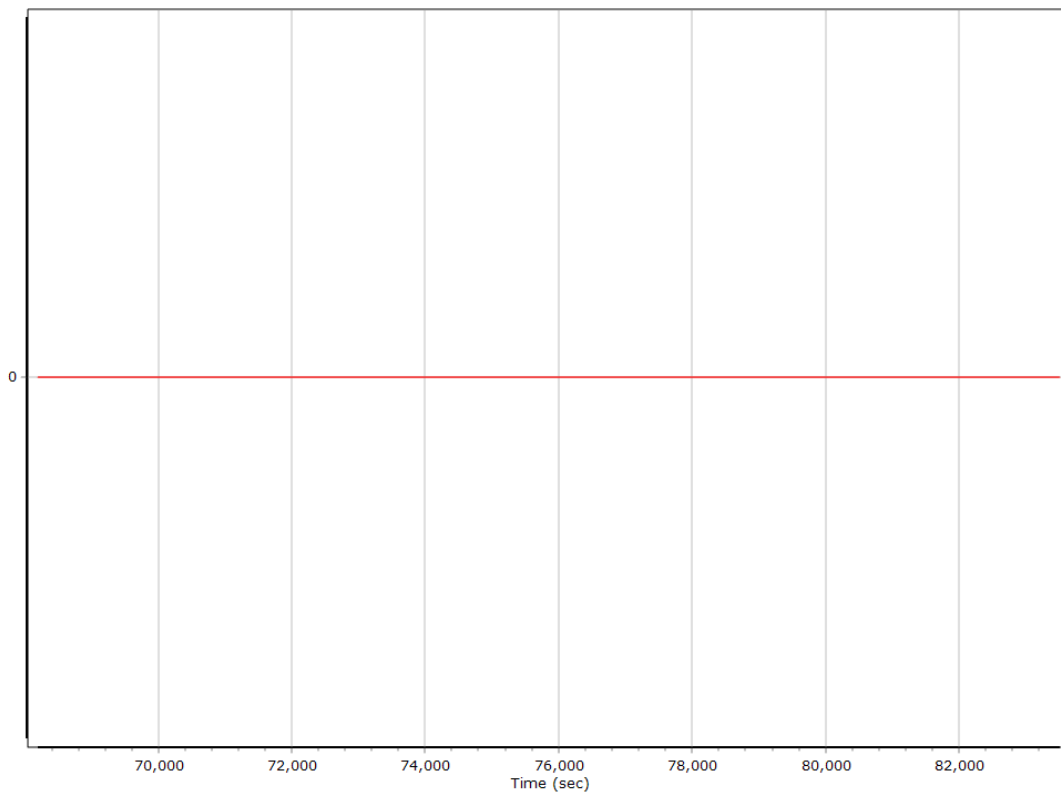
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



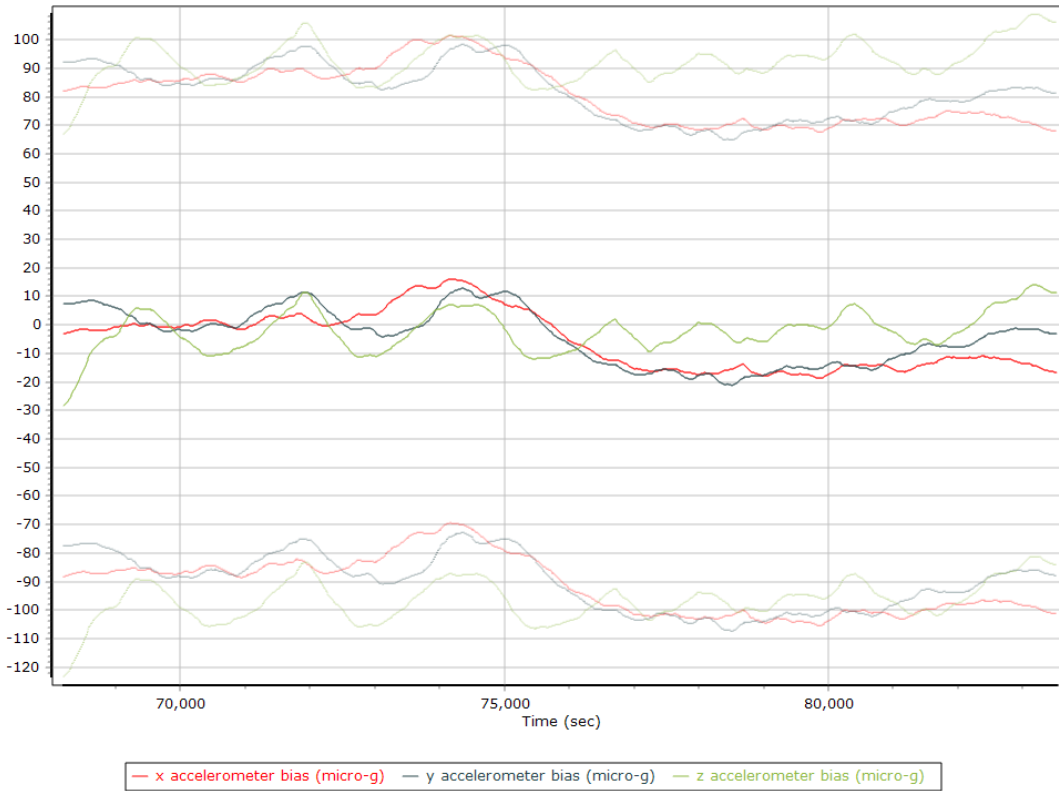
Reference-Primary GNSS Lever Arm Figure of Merit



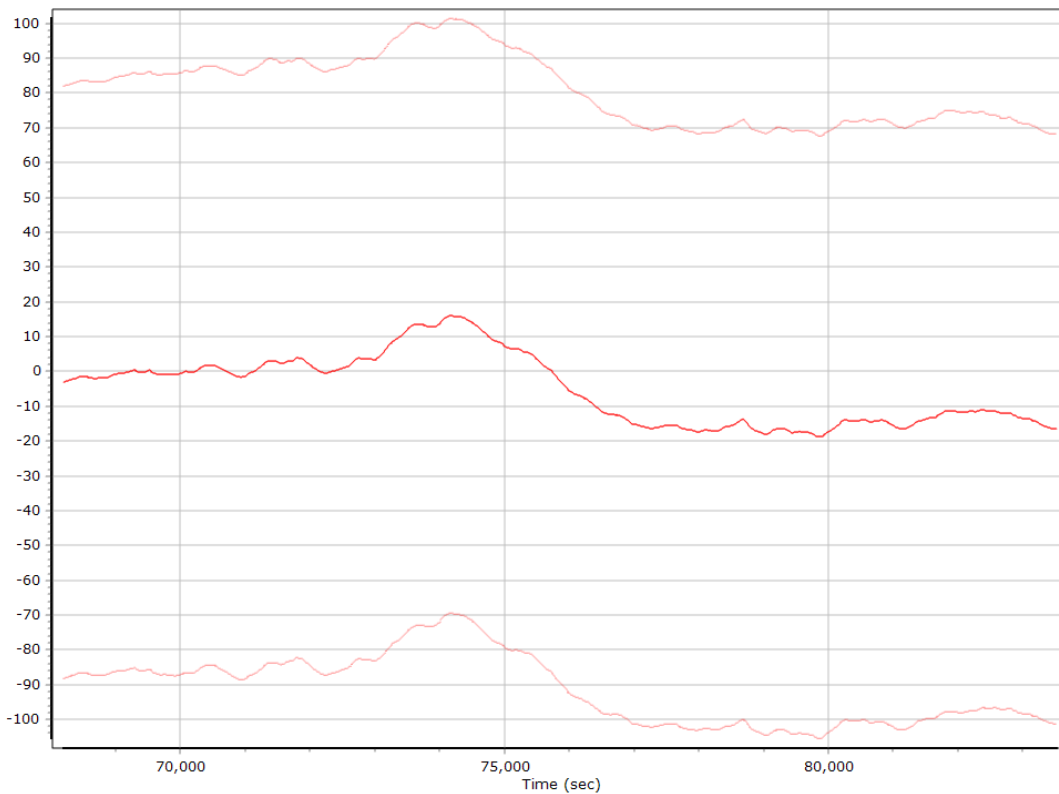
Smoothed IN-Fusion QC

Smoothed Estimated Errors, Reference Frame

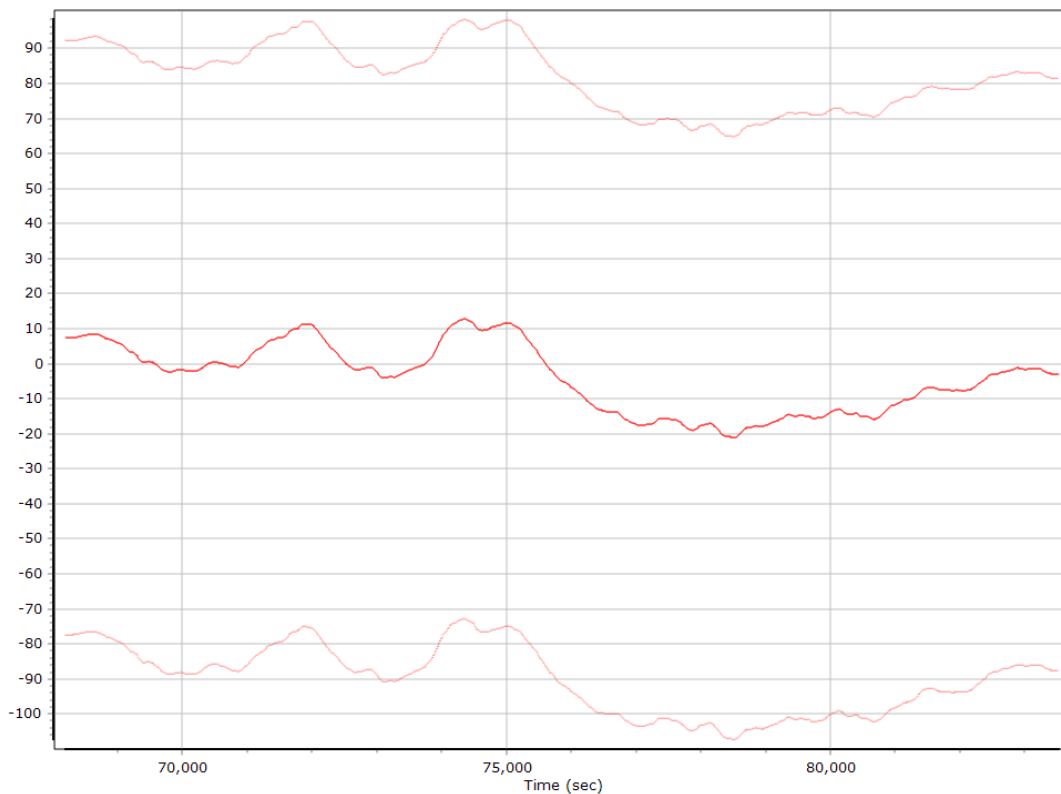
Accelerometer Bias (micro-g)



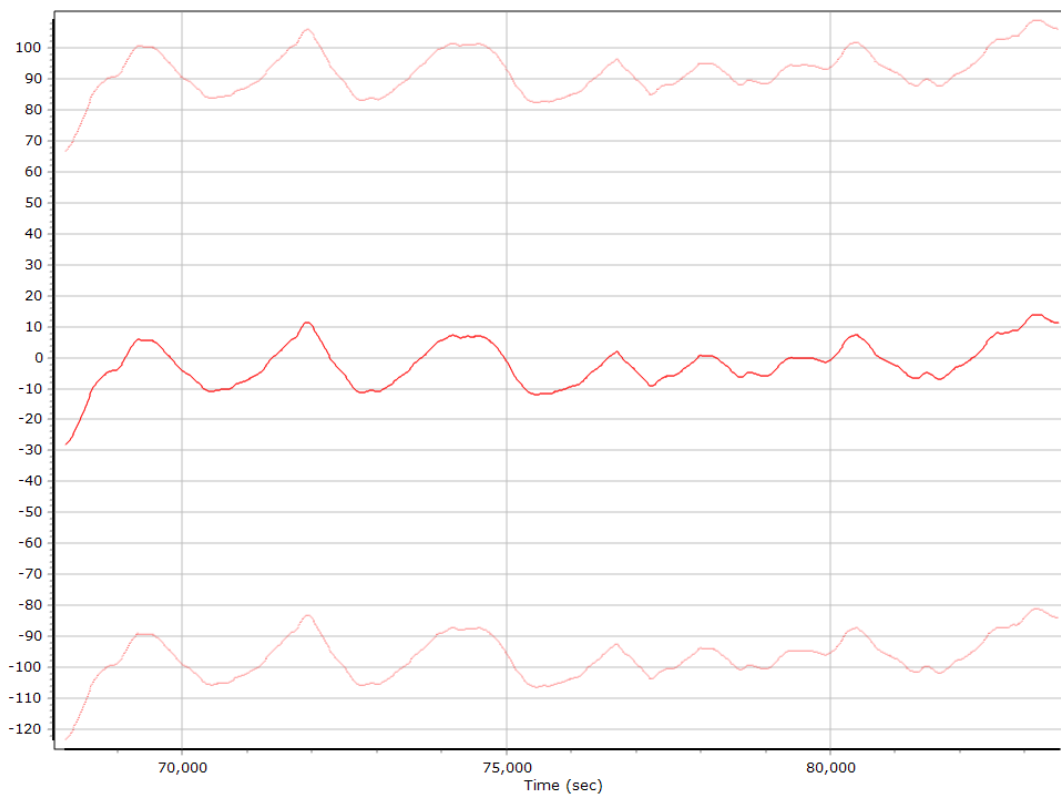
X Accelerometer Bias (micro-g)



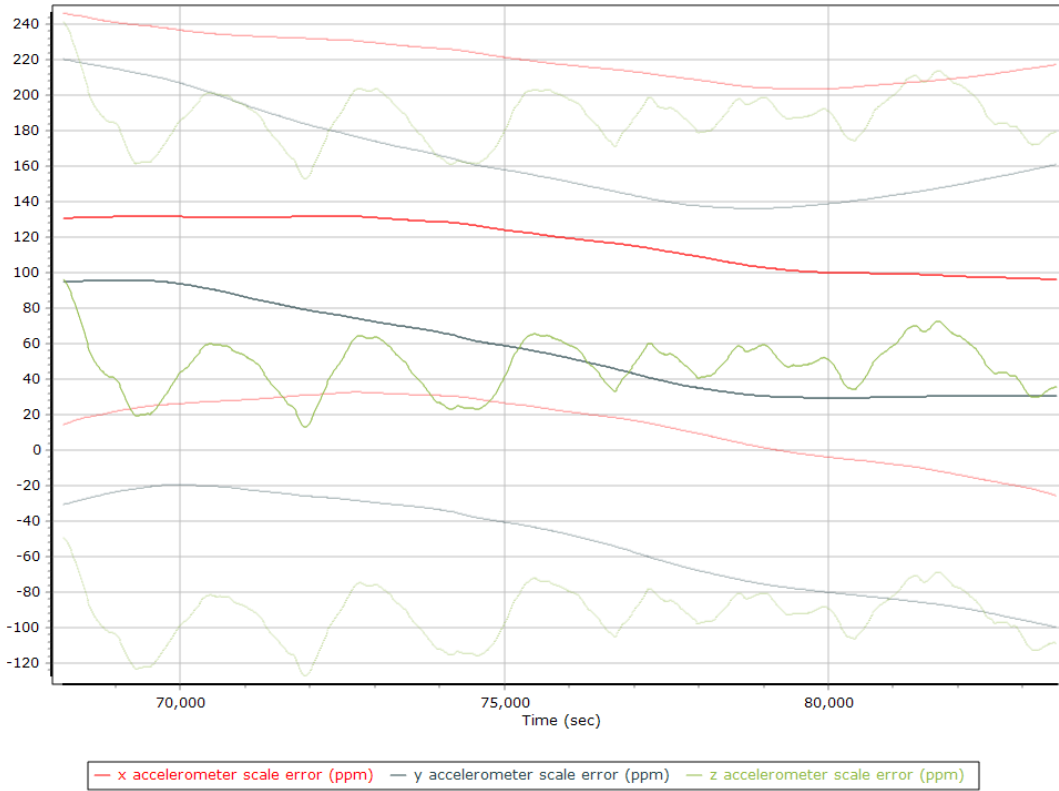
Y Accelerometer Bias (micro-g)



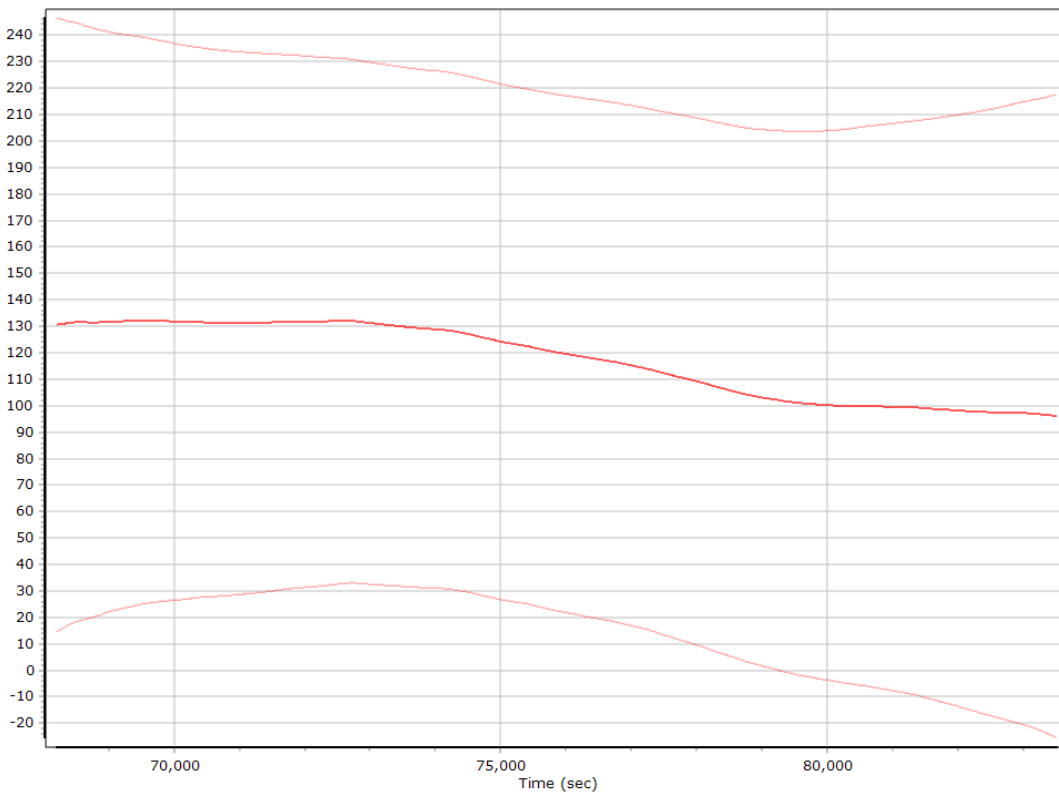
Z Accelerometer Bias (micro-g)



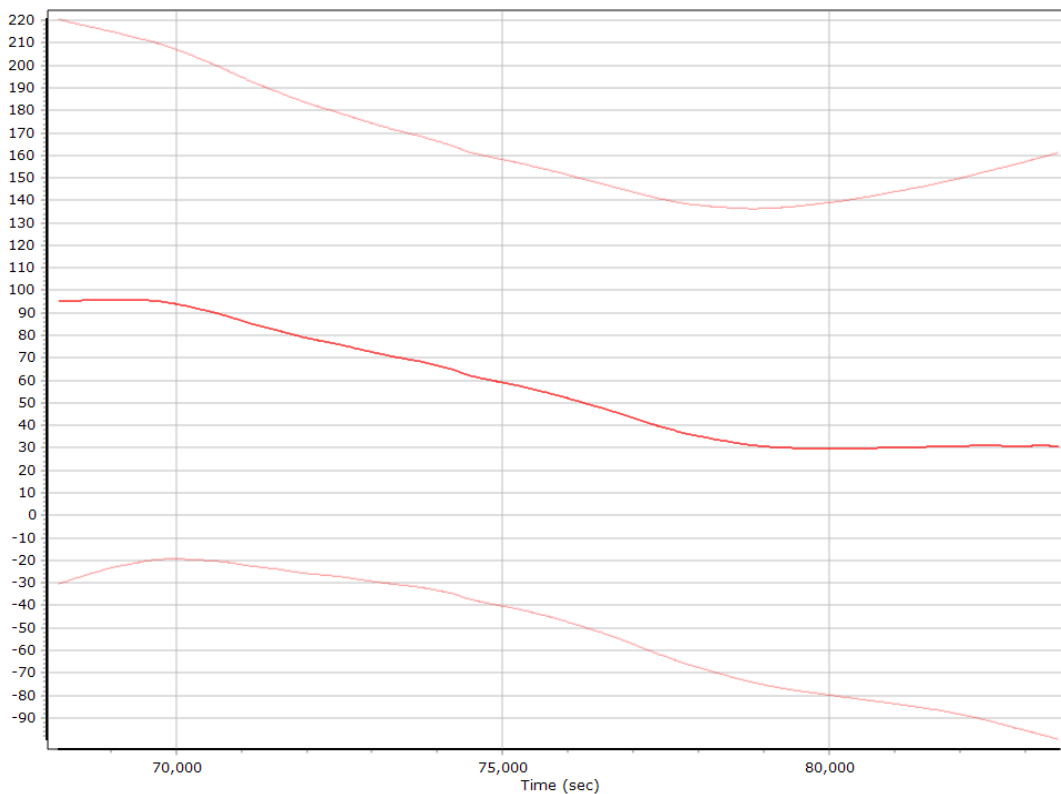
Accelerometer Scale Error (ppm)



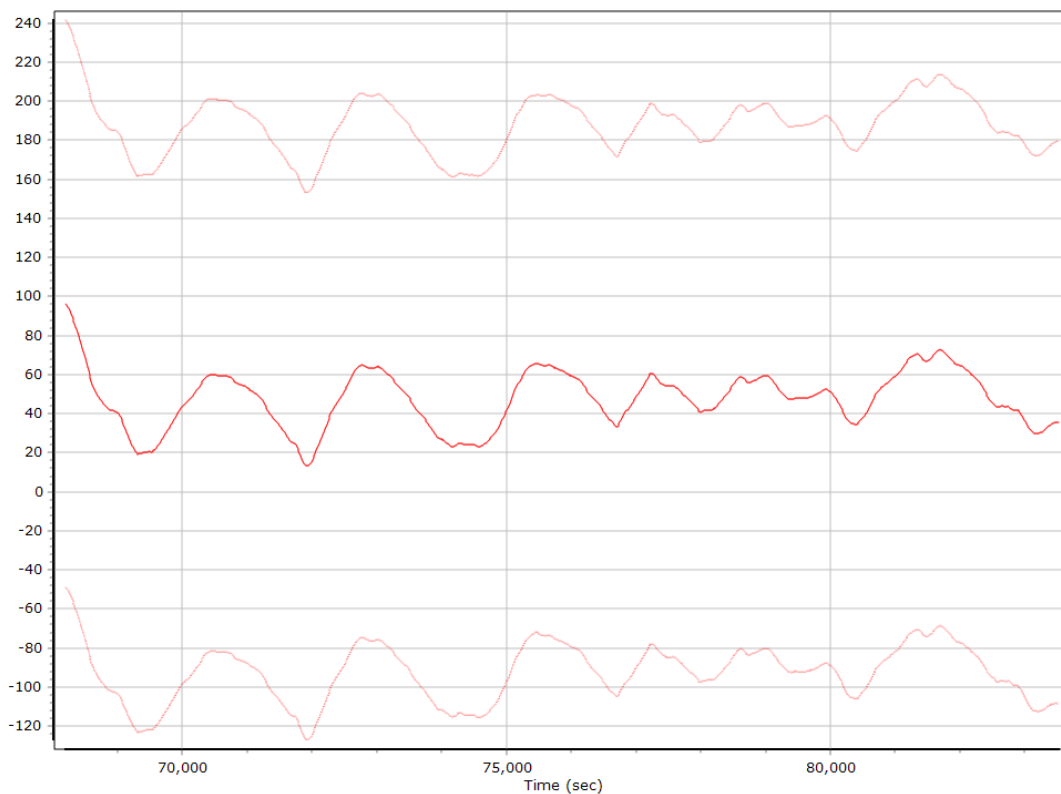
X Accelerometer Scale Error (ppm)



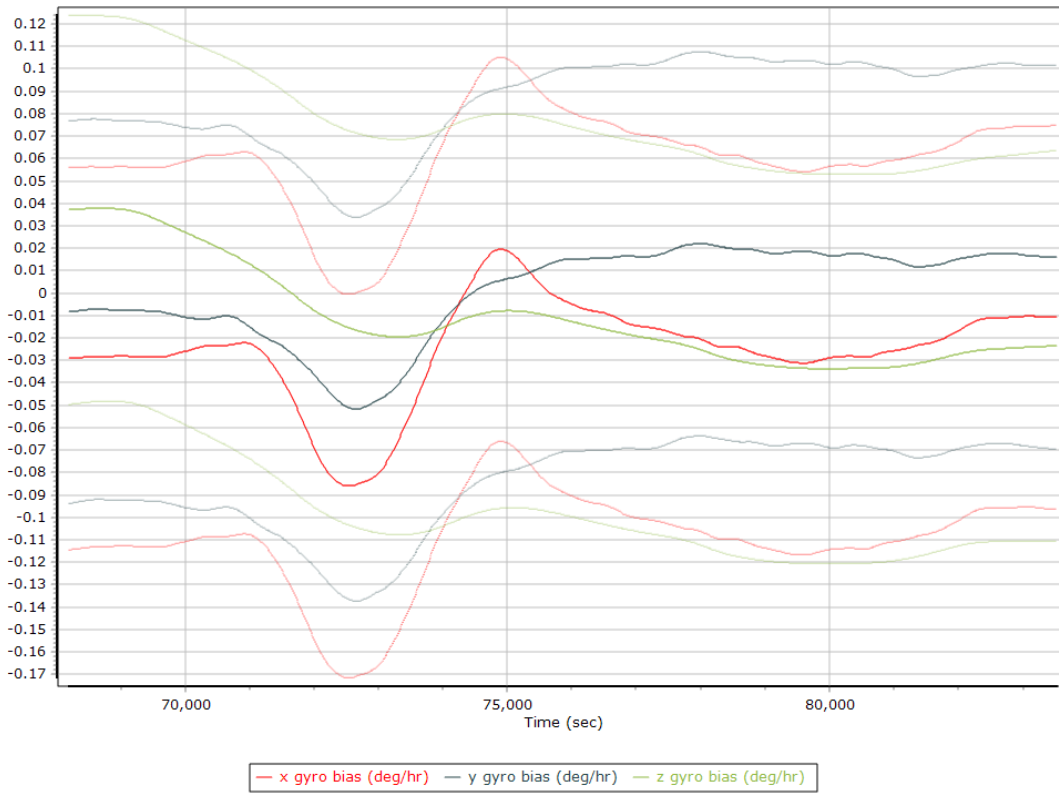
Y Accelerometer Scale Error (ppm)



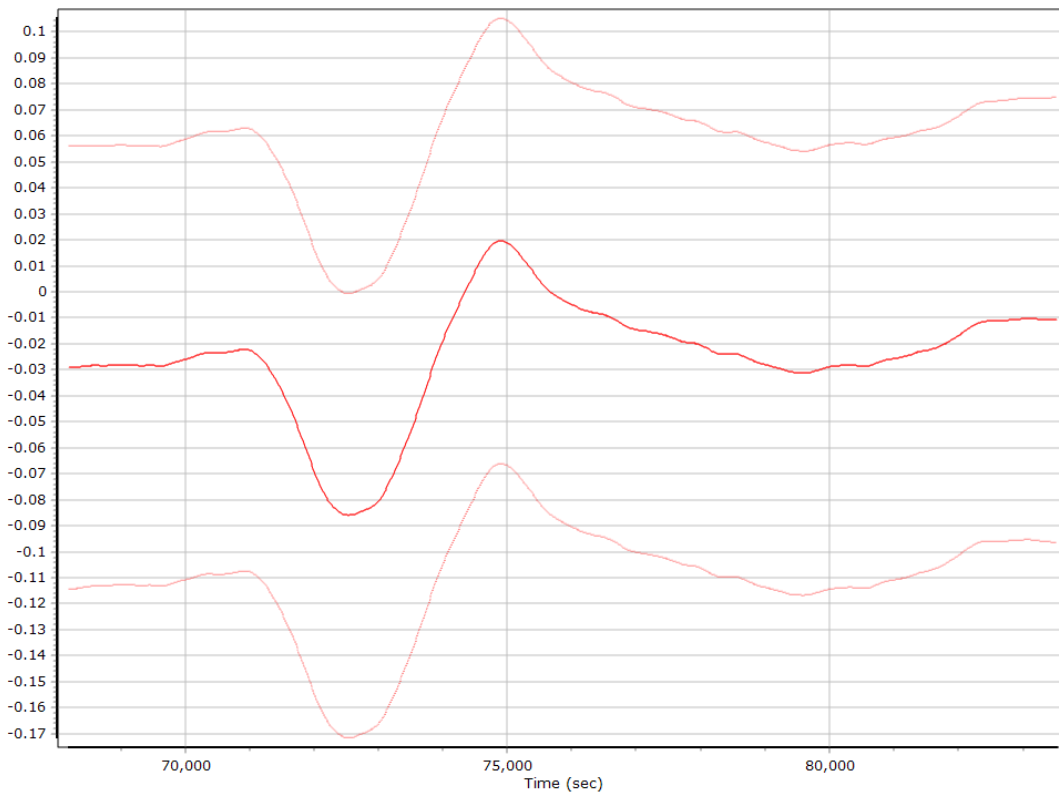
Z Accelerometer Scale Error (ppm)



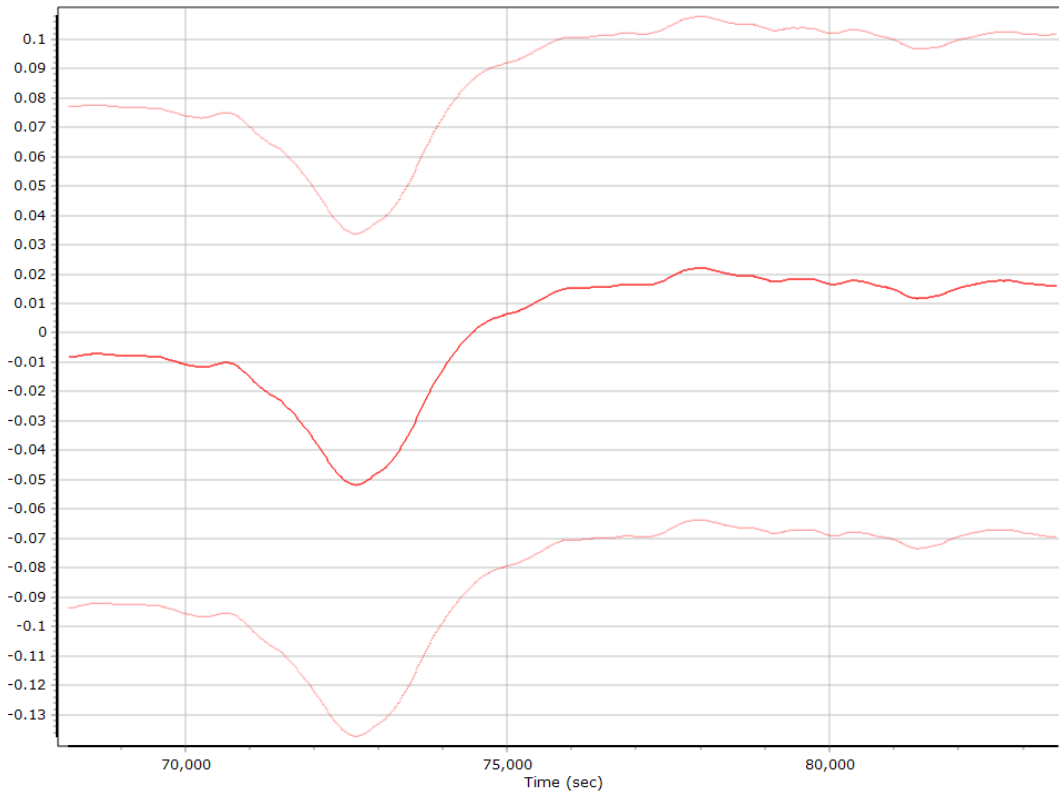
Gyro Bias (deg/h)



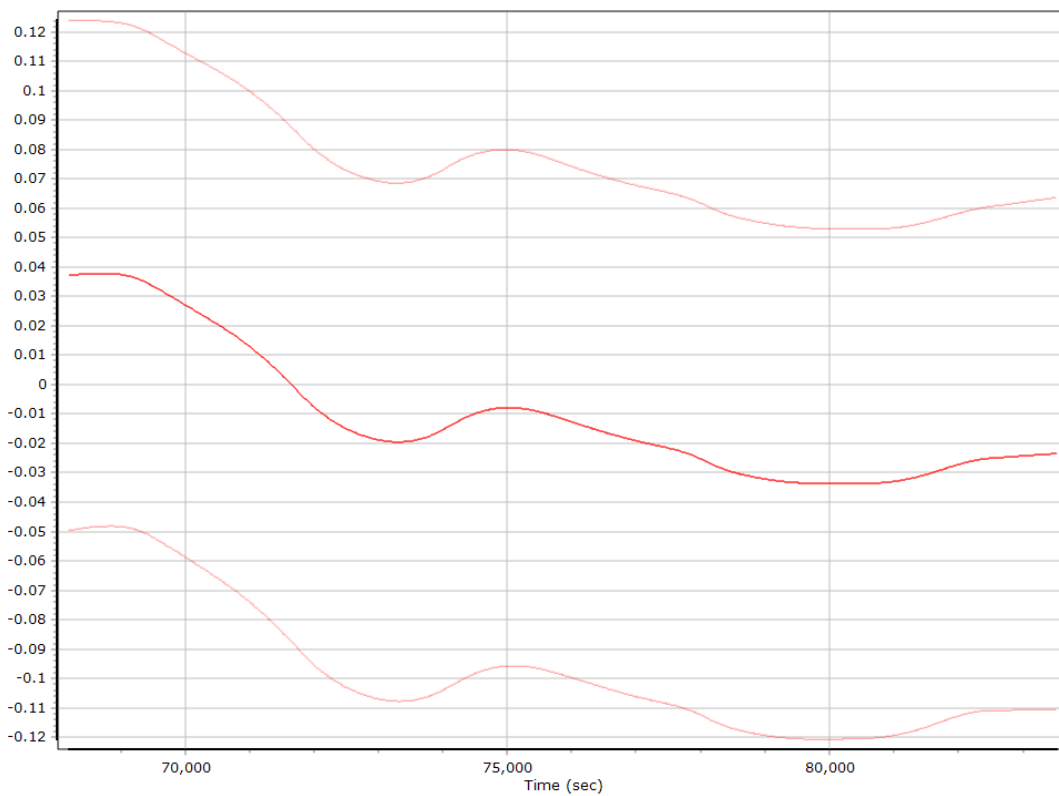
X Gyro Bias (deg/h)



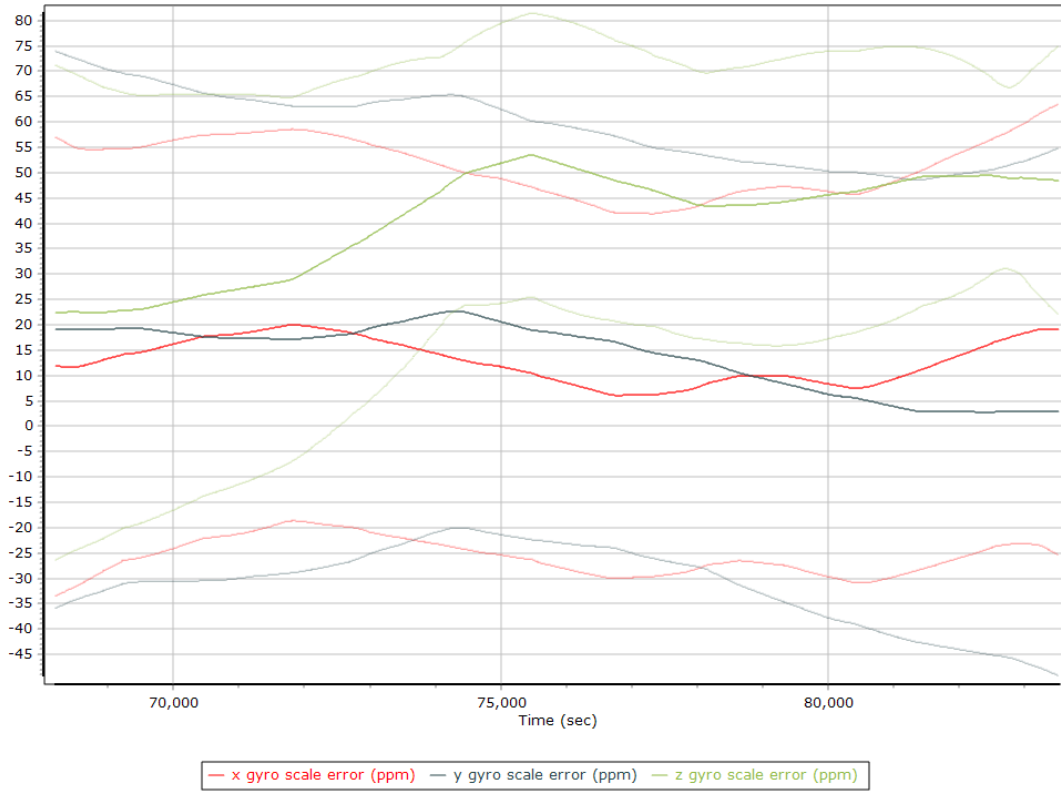
Y Gyro Bias (deg/h)



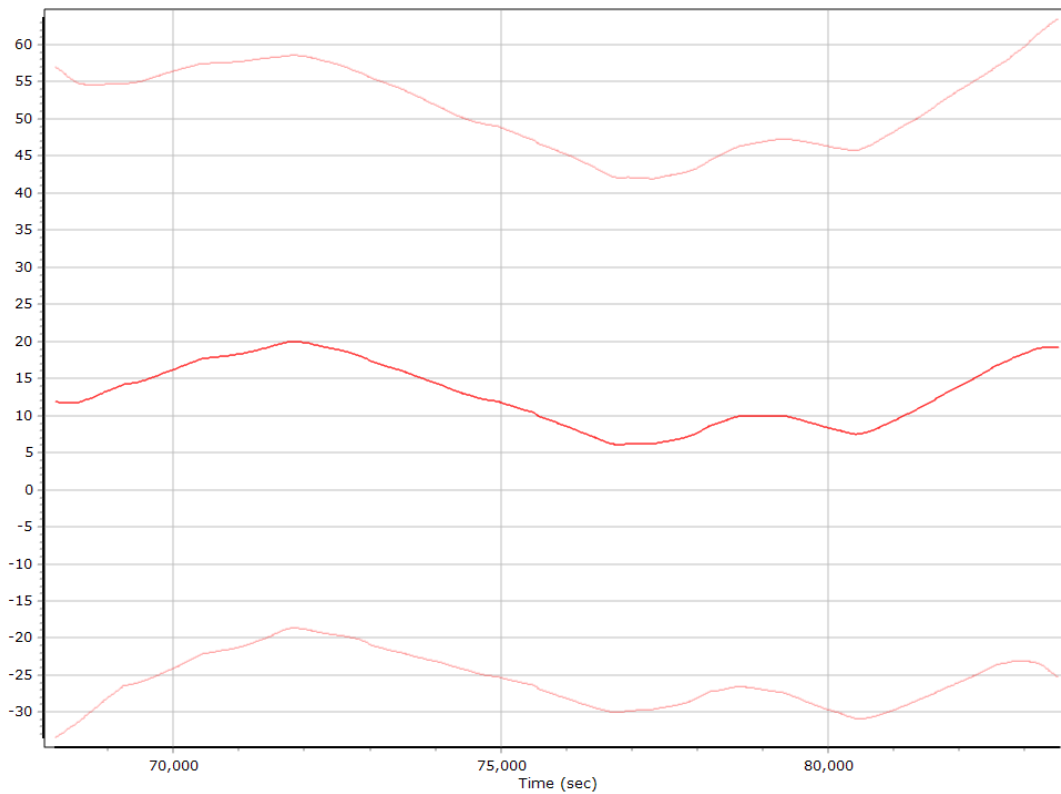
Z Gyro Bias (deg/h)



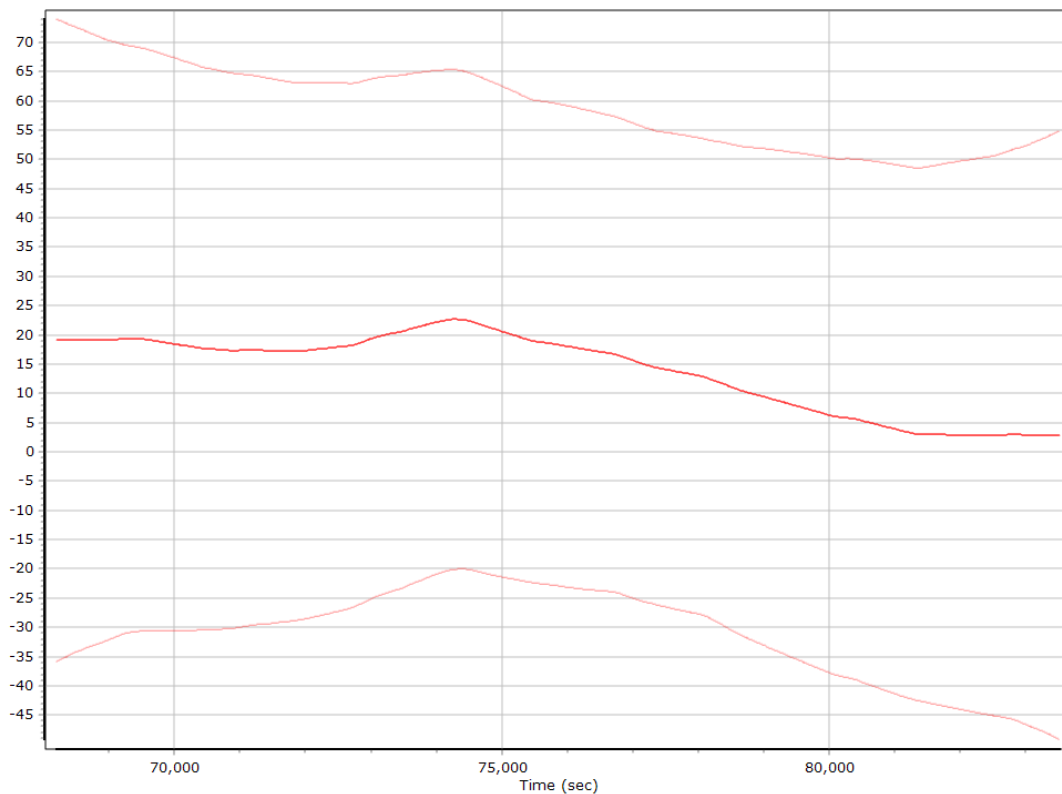
Gyro Scale Error (ppm)



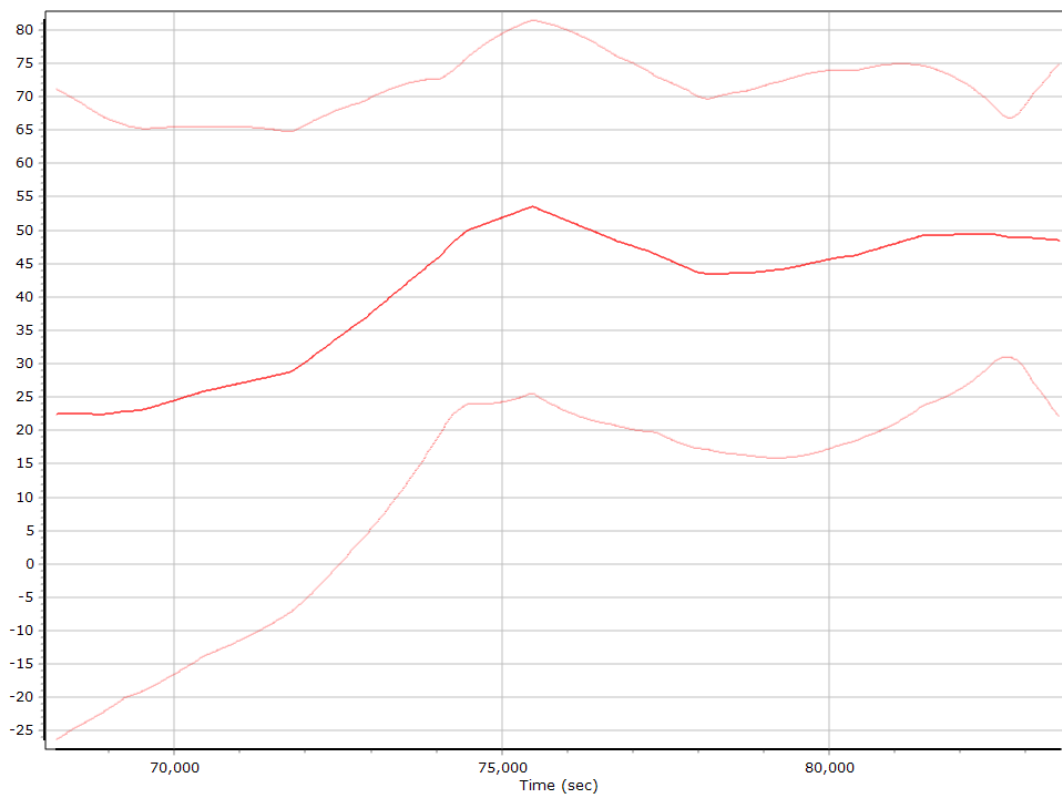
X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)

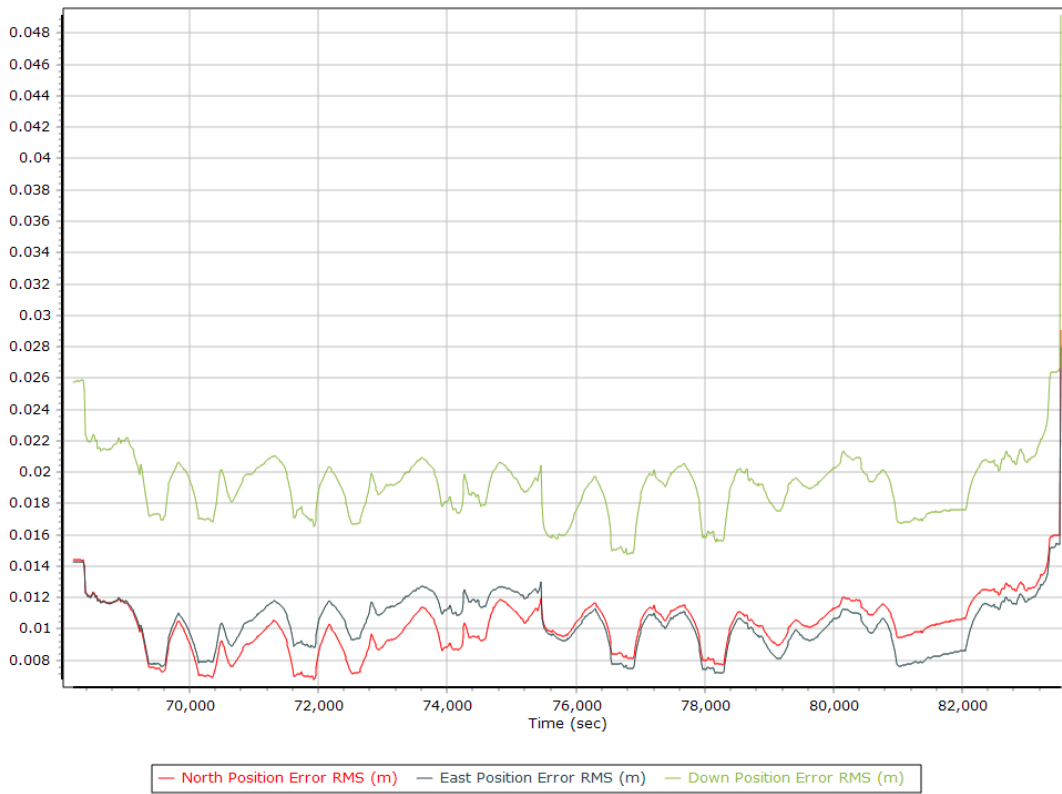


Z Gyro Scale Error (ppm)

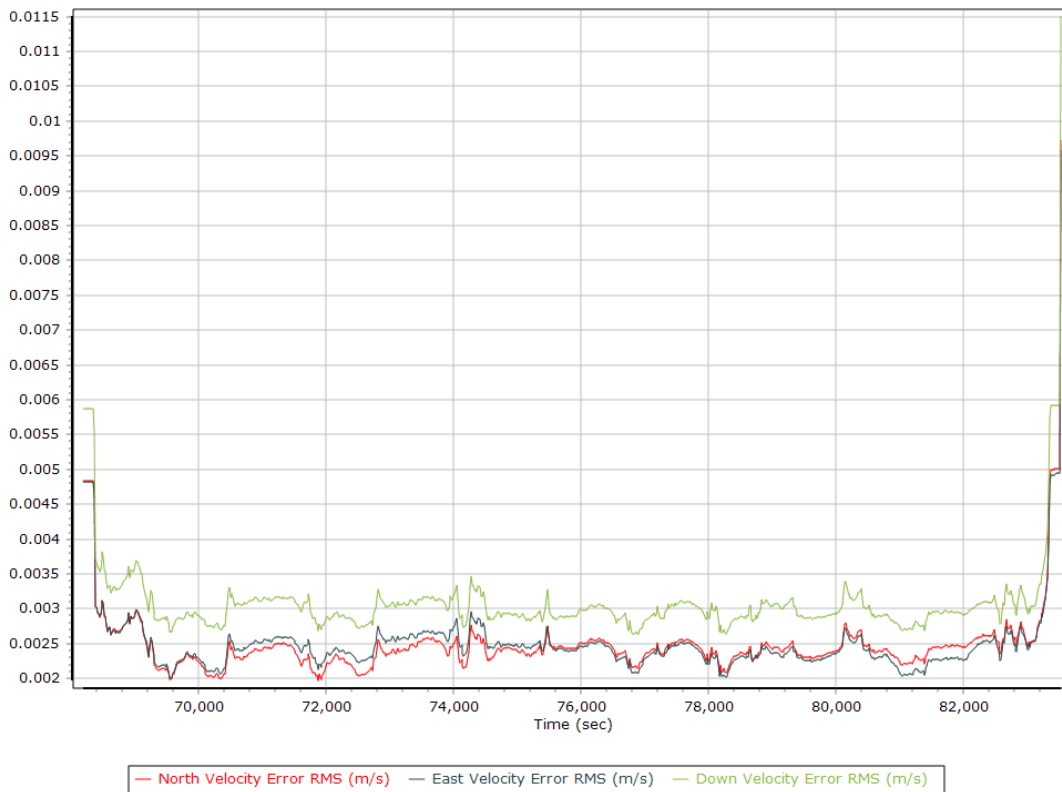


Smoothed Performance Metrics

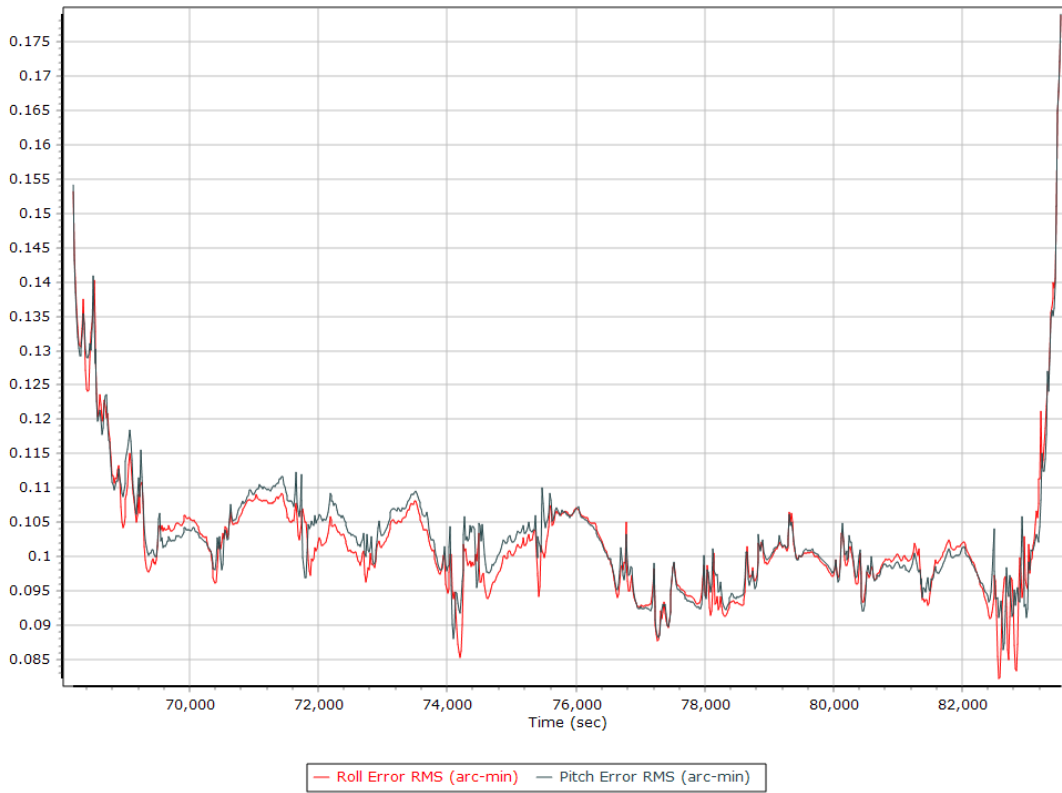
Position Error RMS (m)



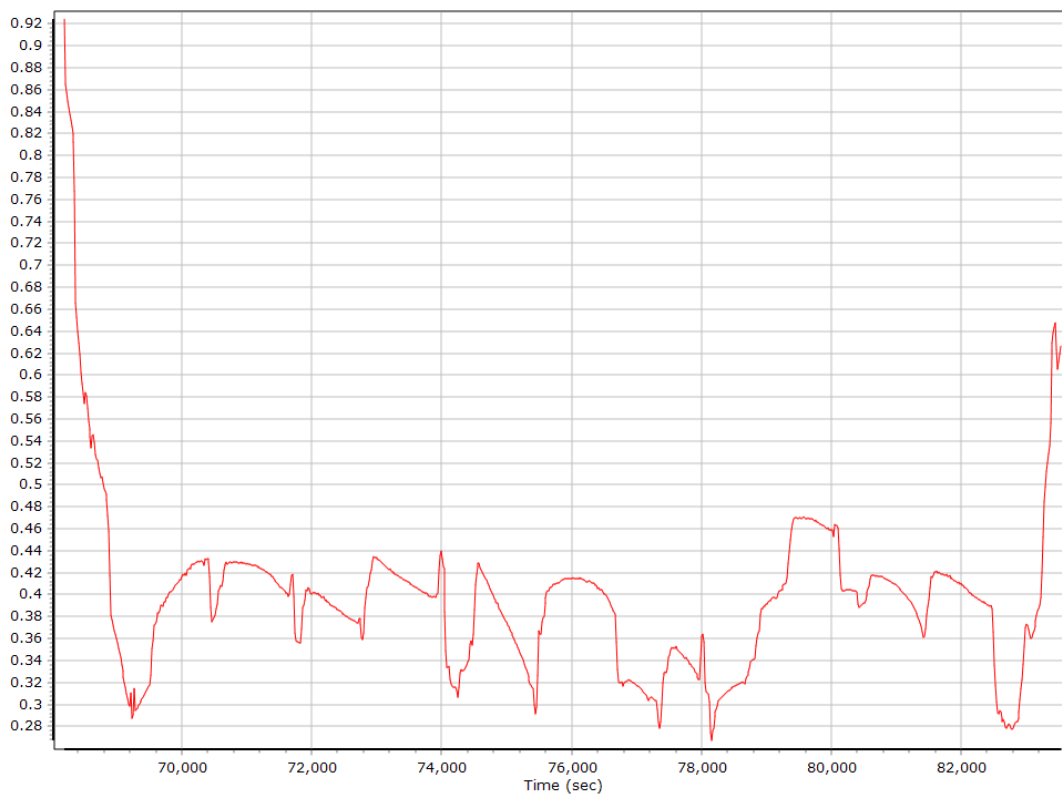
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

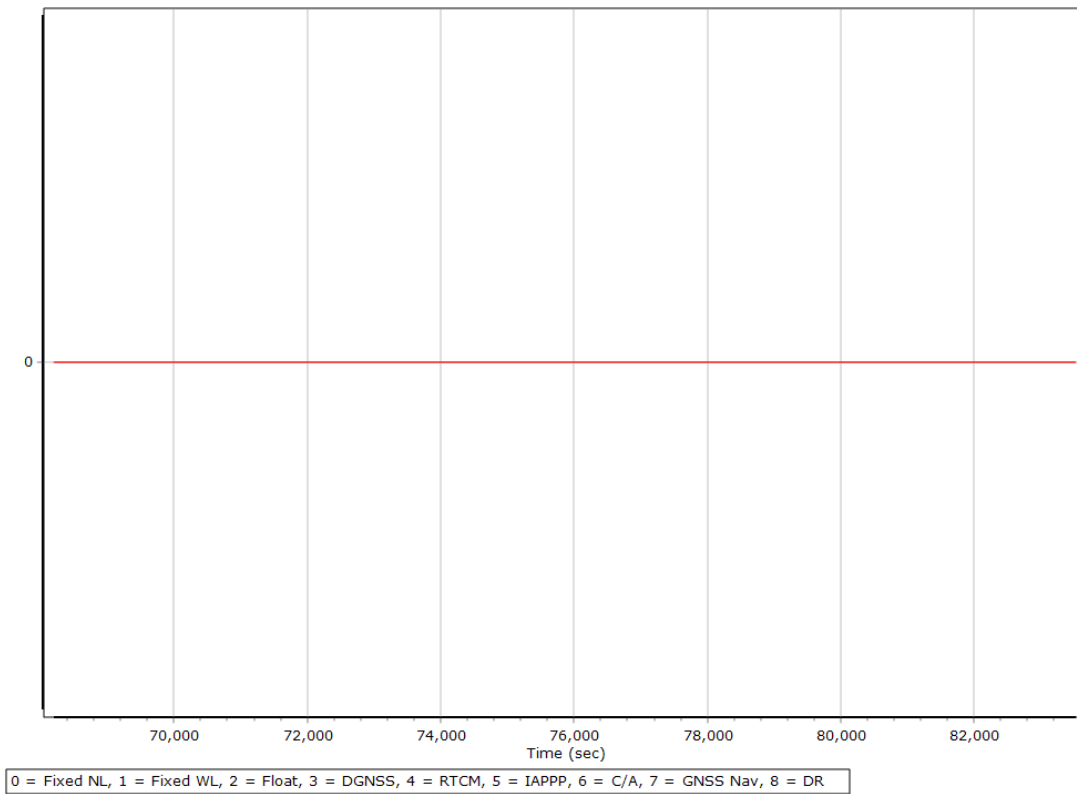


Heading Error RMS (arc-min)

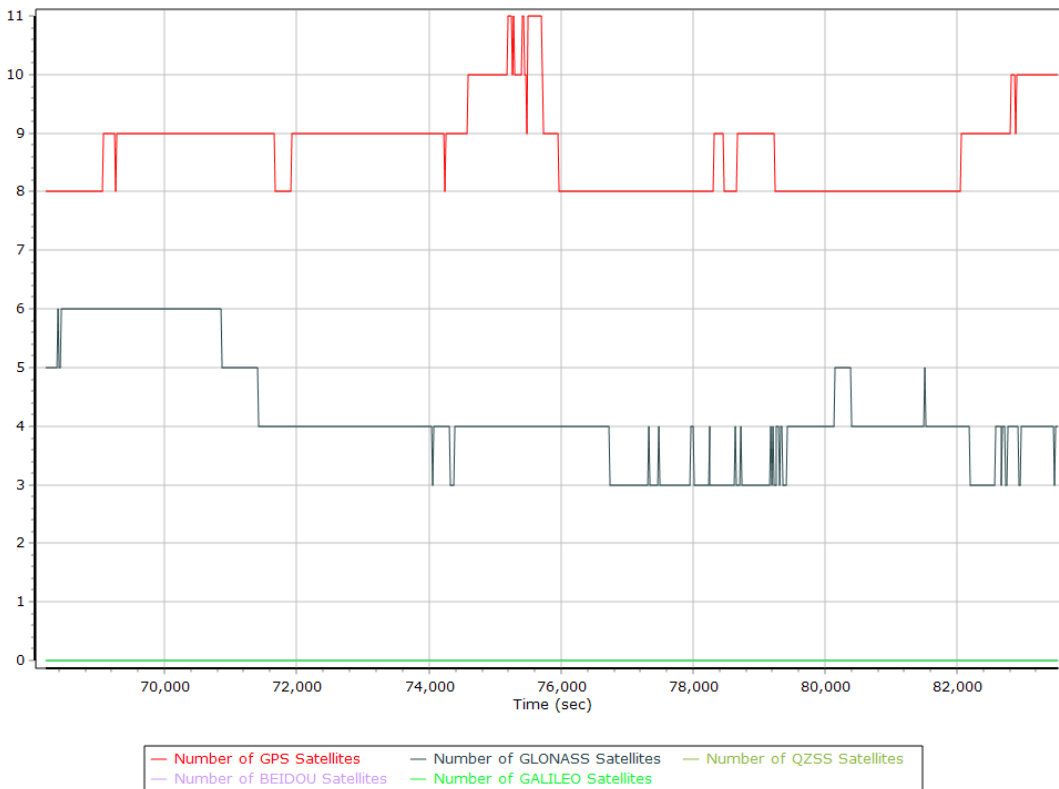


Smoothed Solution Status

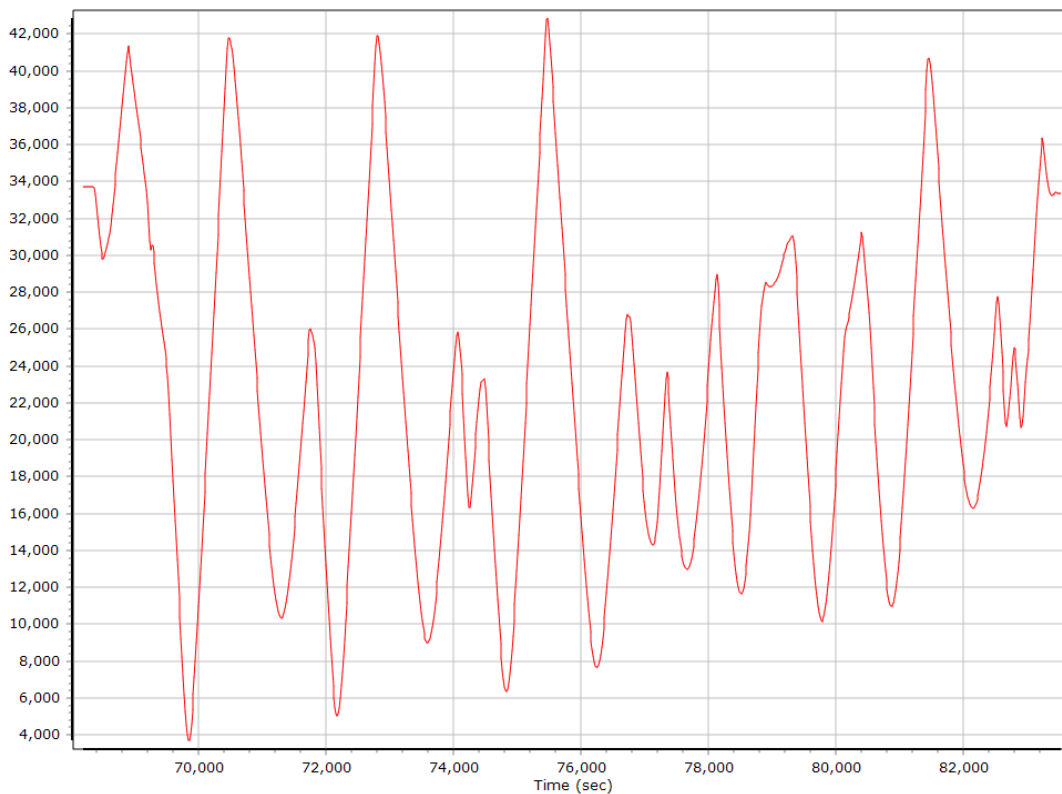
Processing Mode



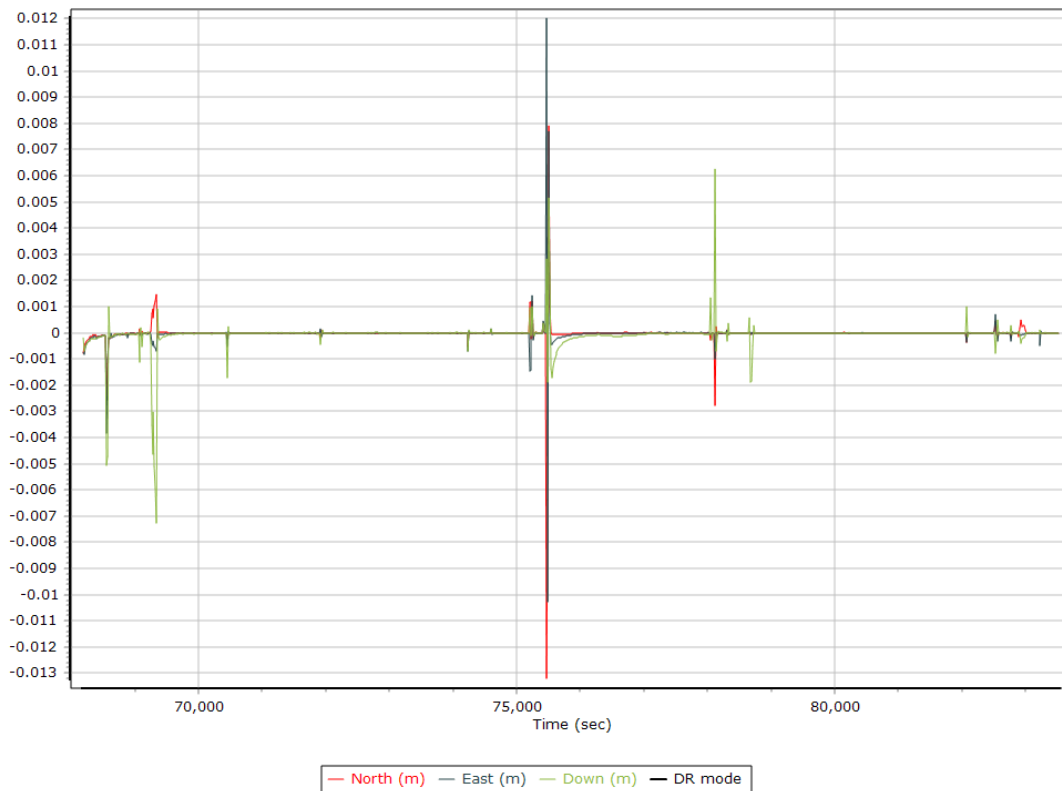
Number of Satellites



Baseline Length



SBET IAKAR Separation



Export Summary

Export file	export_RB20054B_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	68139.002 (2/23/2020 6:55:39 PM)		
Export end time	83526.001 (2/23/2020 11:12:06 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	2020.144809		