General Information

Mission Information

Project name	RBV20053A_176
Processing date	2020-02-24 20:02:28
Mission date	2020-02-22 13:25:02
Mission duration	03:56:34.000
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
RBV20053A.439	POS Data
RBV20053A.440	POS Data
RBV20053A.441	POS Data
RBV20053A.442	POS Data
RBV20053A.443	POS Data
RBV20053A.444	POS Data
RBV20053A.445	POS Data
RBV20053A.446	POS Data
RBV20053A.447	POS Data
RBV20053A.448	POS Data
RBV20053A.449	POS Data
RBV20053A.450	POS Data
RBV20053A.451	POS Data
RBV20053A.452	POS Data
RBV20053A.453	POS Data
RBV20053A.454	POS Data
RBV20053A.455	POS Data
RBV20053A.456	POS Data
RBV20053A.457	POS Data
RBV20053A.458	POS Data
RBV20053A.459	POS Data
RBV20053A.460	POS Data
RBV20053A.461	POS Data
RBV20053A.462	POS Data
RBV20053A.463	POS Data
RBV20053A.464	POS Data
RBV20053A.465	POS Data
RBV20053A.466	POS Data
RBV20053A.467	POS Data
RBV20053A.468	POS Data
RBV20053A.469	POS Data
RBV20053A.470	POS Data
RBV20053A.471	POS Data
RBV20053A.472	POS Data
RBV20053A.473	POS Data
RBV20053A.474	POS Data

Input Files

File Name	File Type
Ephm0530.20g	GLONASS Broadcast Ephemeris
Ephm0530.20n	GPS Broadcast Ephemeris
loys0530.20o	GNSS SingleBase
wvbr0530.20o	GNSS SingleBase
wvbu0530.20o	GNSS SingleBase
wvcv0530.20o	GNSS SingleBase
wvmz0530.20o	GNSS SingleBase
wvsh0530.20o	GNSS SingleBase
wvta0530.20o	GNSS SingleBase
igr20935.sp3	GPS Precise Ephemeris
igr20936.sp3	GPS Precise Ephemeris
igr20940.sp3	GPS Precise Ephemeris

Output Files

Filename	File type
sbet_RBV20053A_176.out	SBET Trajectory File
export_RBV20053A_176.txt	ASCII Export Output

Rover Data Summary

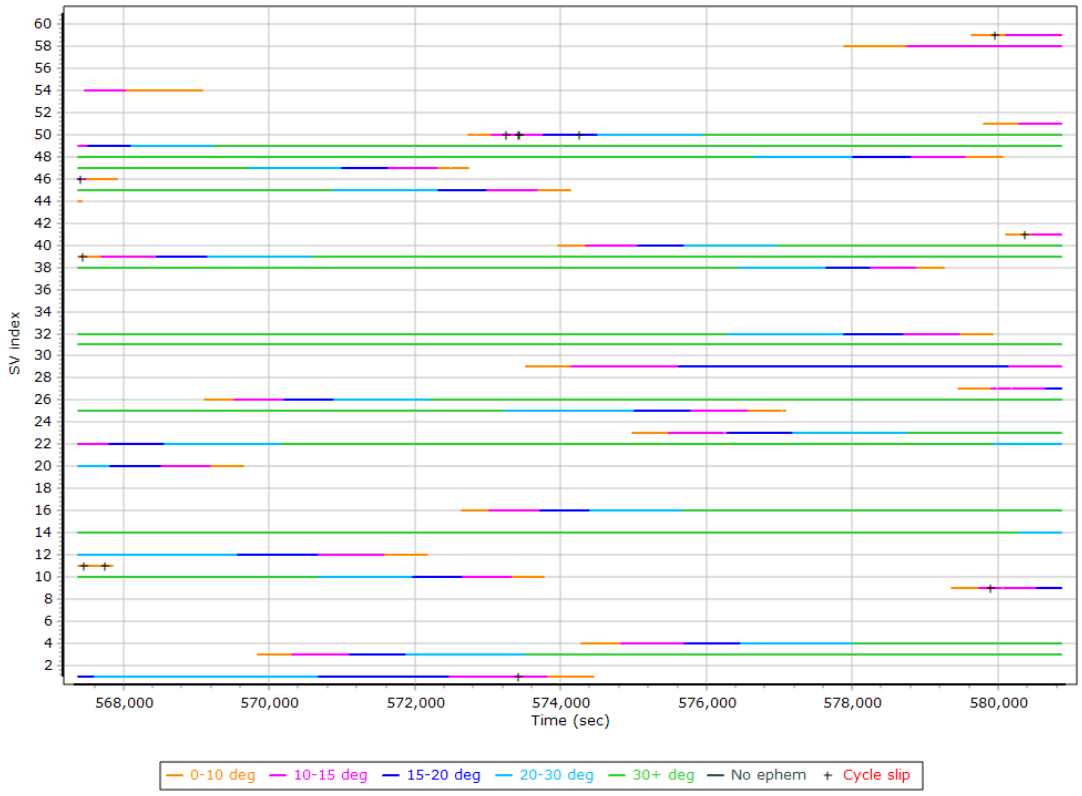
First raw data file	RBV20053A.439		
Last raw data file	RBV20053A.474		
Start GPS week	2093		
Start time	566683.373 (2/22/2020 1:24:43 PM)		
End time	580879.054 (2/22/2020 5:21:19 PM)		
Start of fine alignment	567316.966 (2/22/2020 1:35:16 PM)		
Available subsystems	Primary GNSS, Gimbal, IMU		
POS Event 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

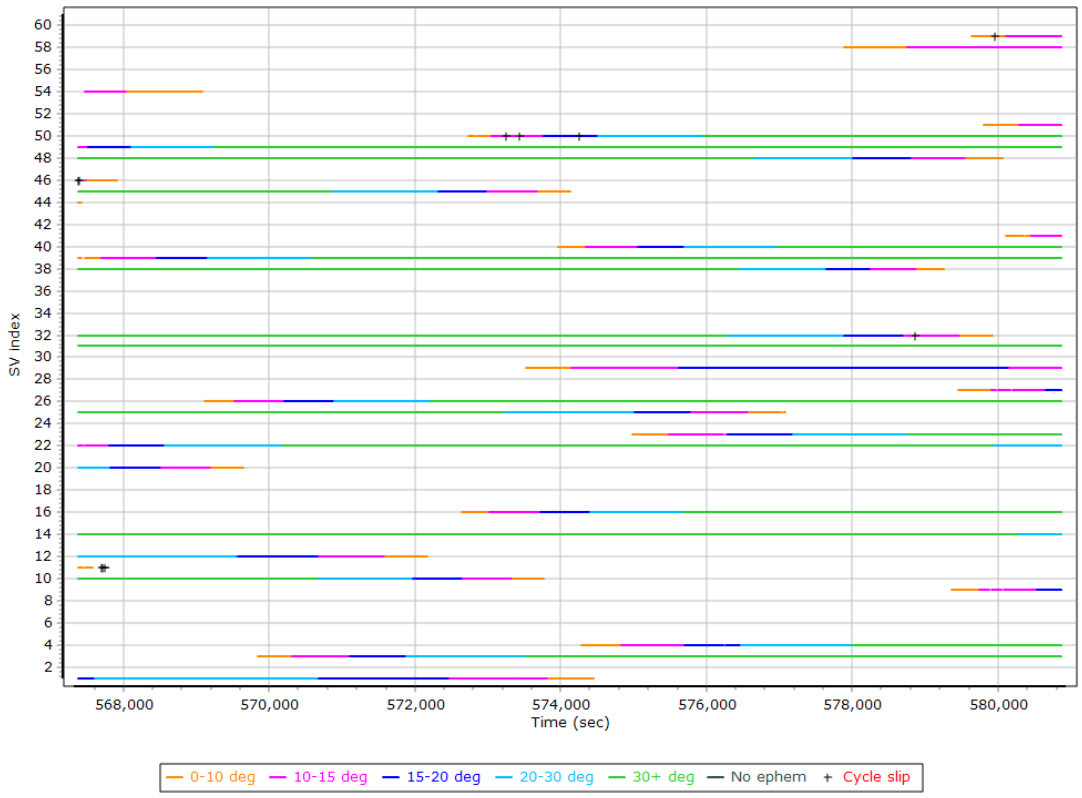
Raw IMU Import QC Summary

IMU data input file	imu_RBV20053A_176.dat
IMU data check log file	imudt_RBV20053A_176.log
IMU Records Processed	2838753
Termination Status	Normal
IMU Anomalies	0

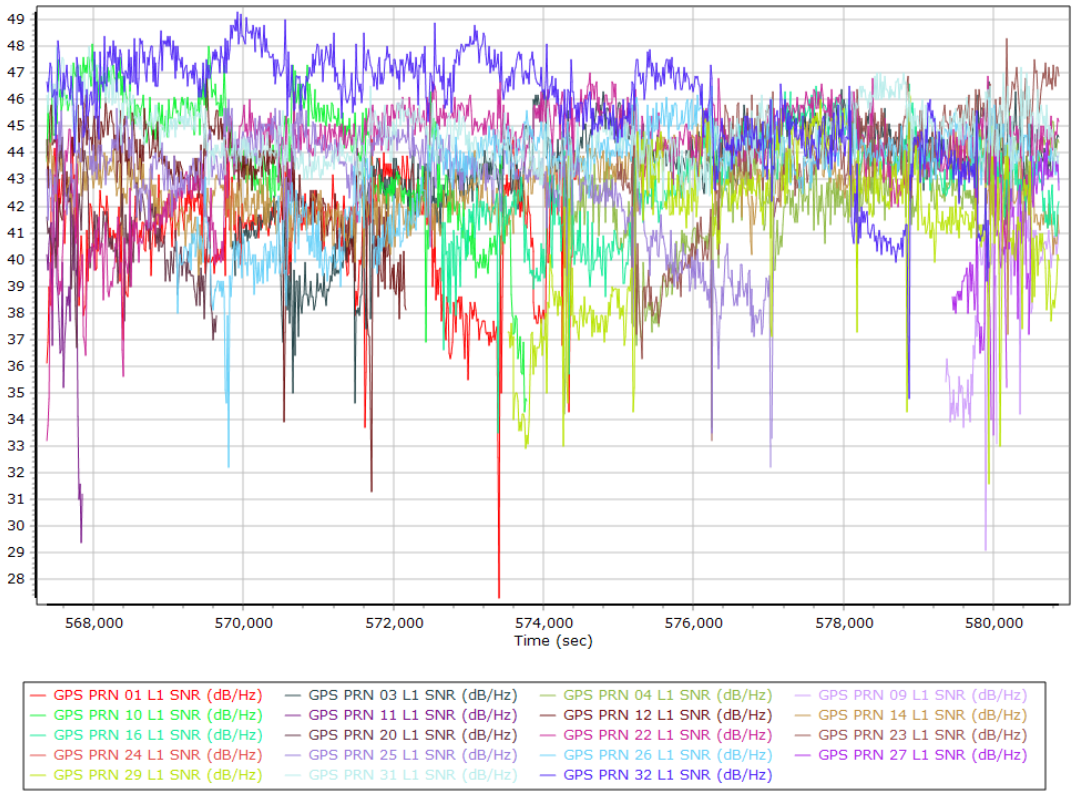
L1 Satellite Lock/Elevation



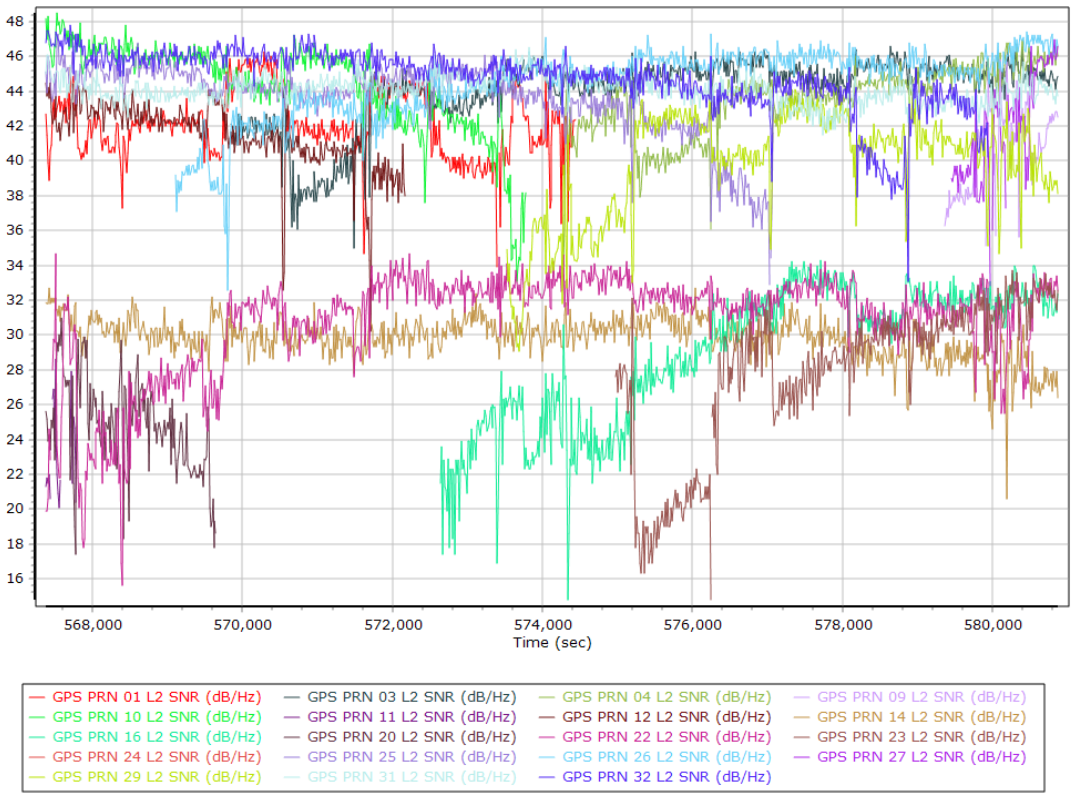
L2 Satellite Lock/Elevation



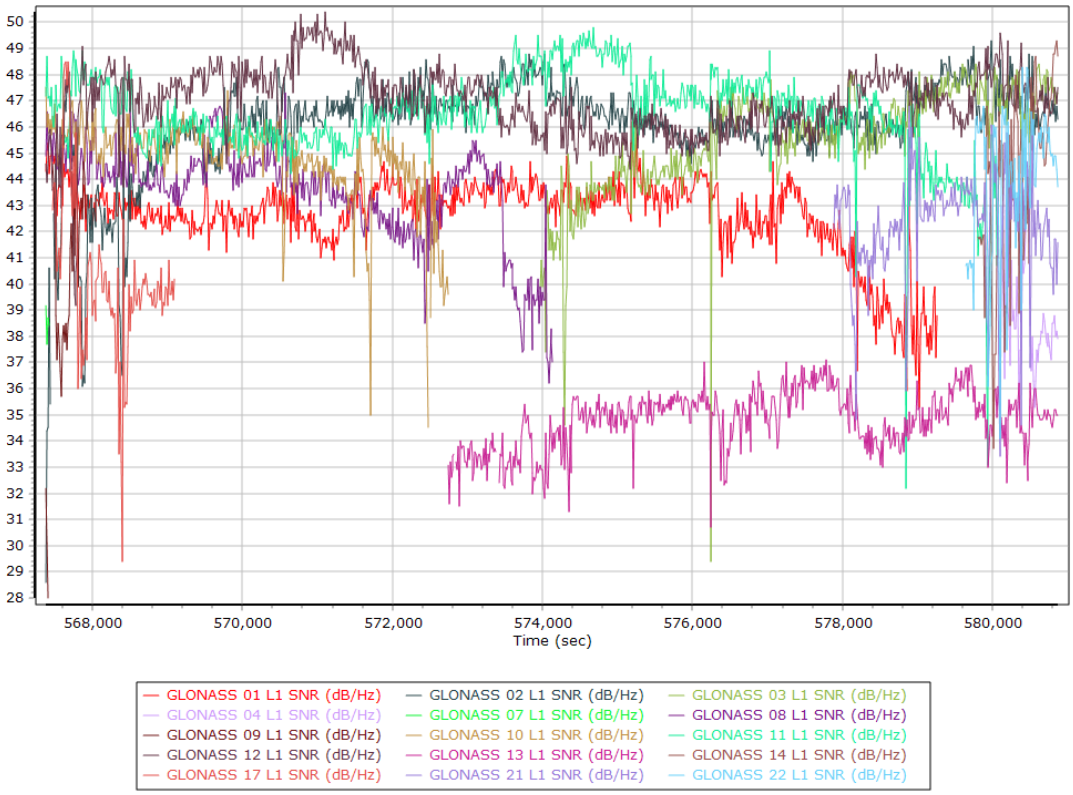
GPS L1 SNR



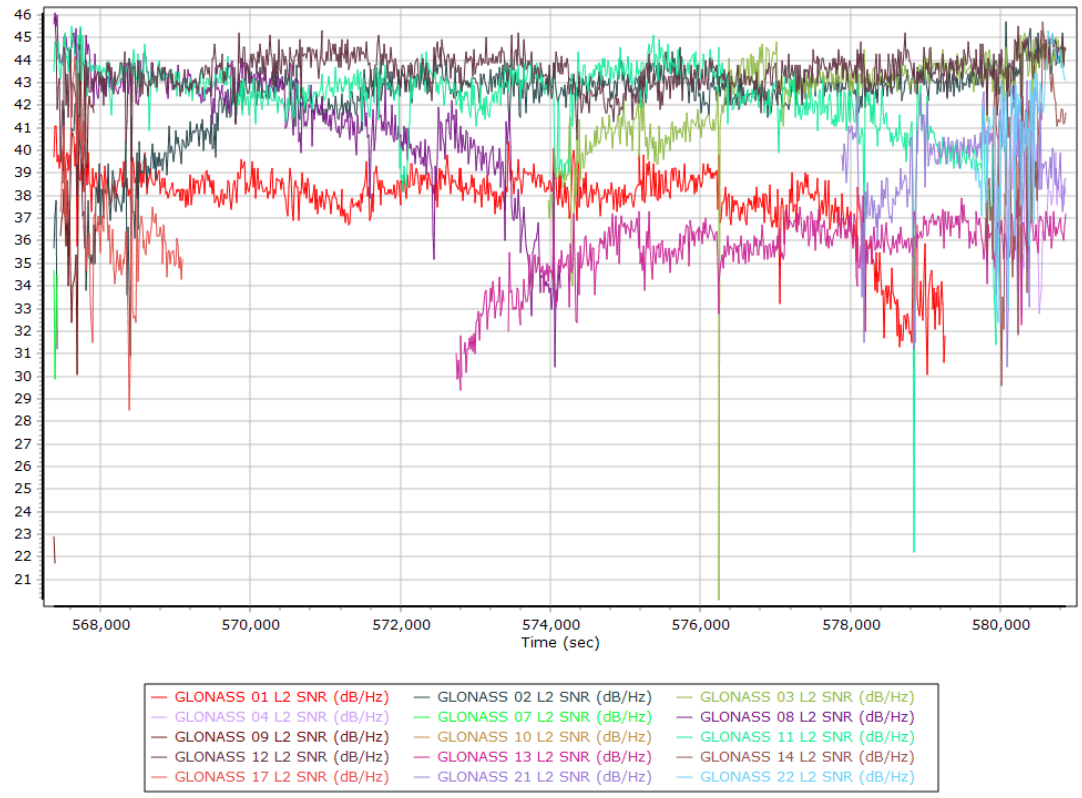
GPS L2 SNR



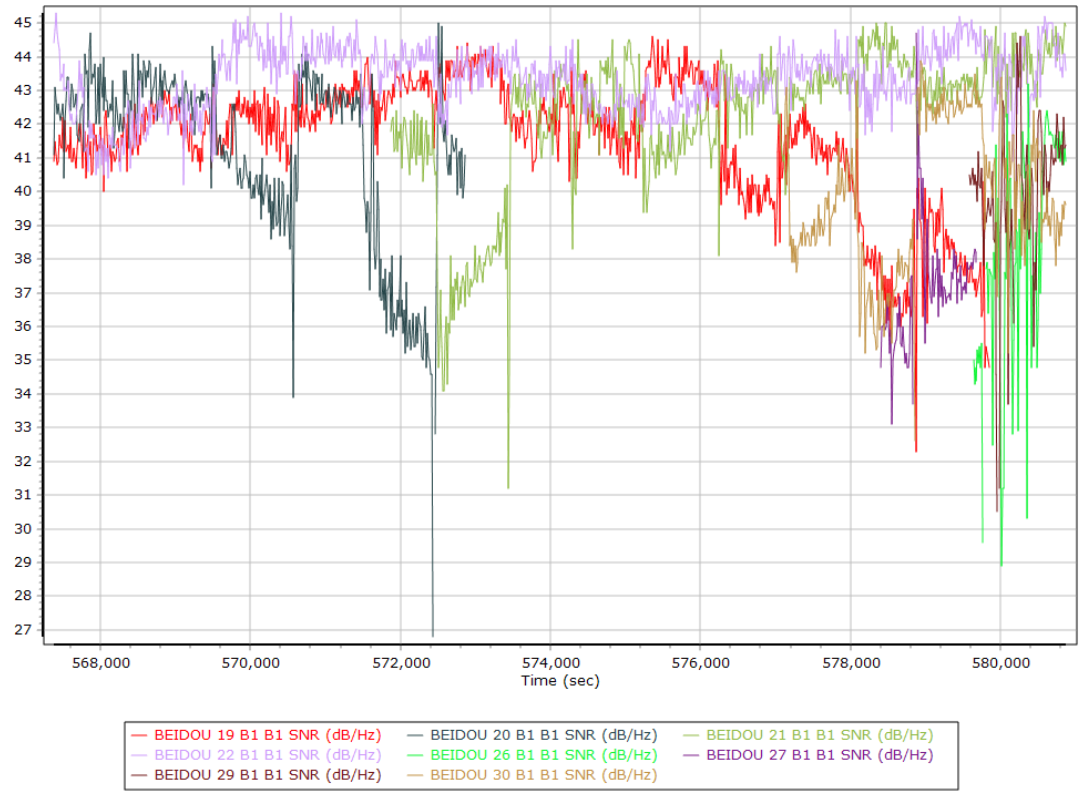
GLONASS L1 SNR



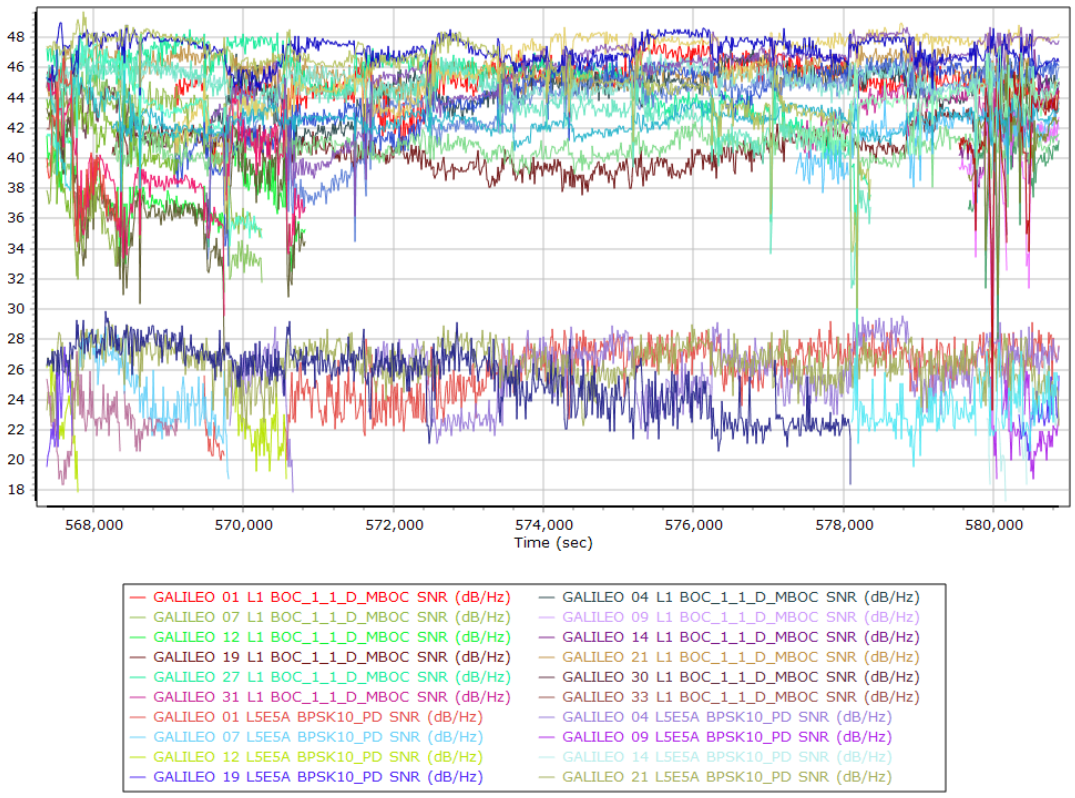
GLONASS L2 SNR



BEIDOU SNR

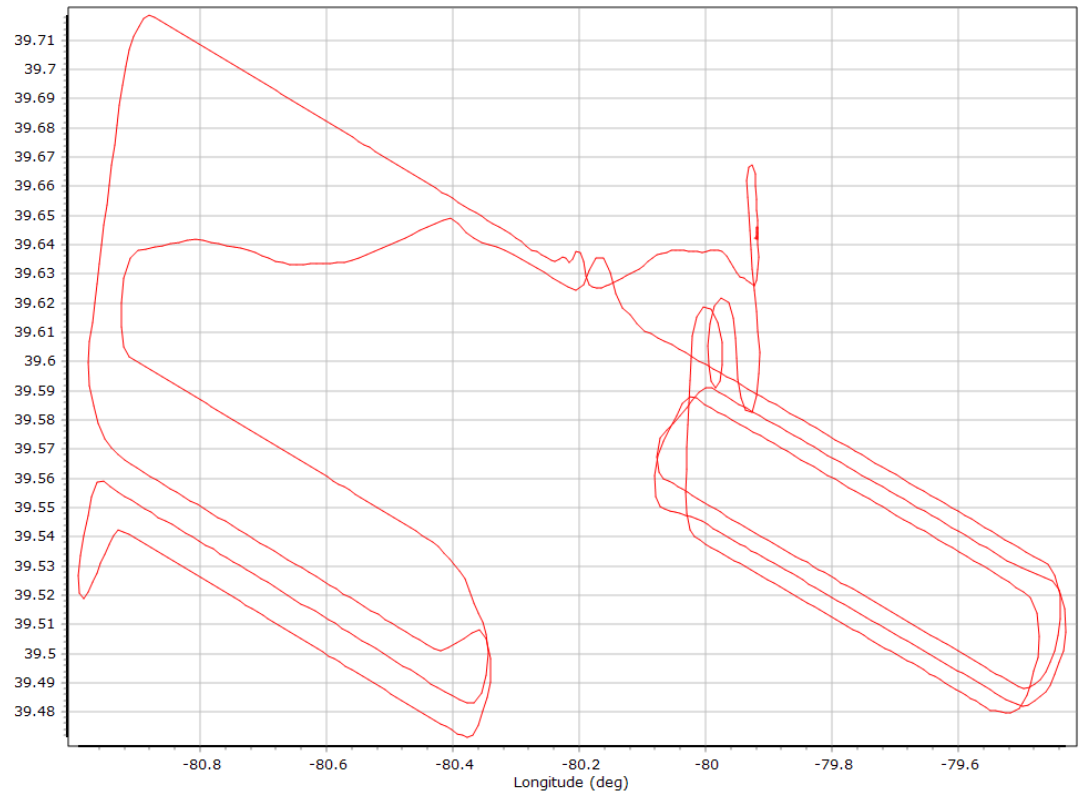


GALILEO SNR

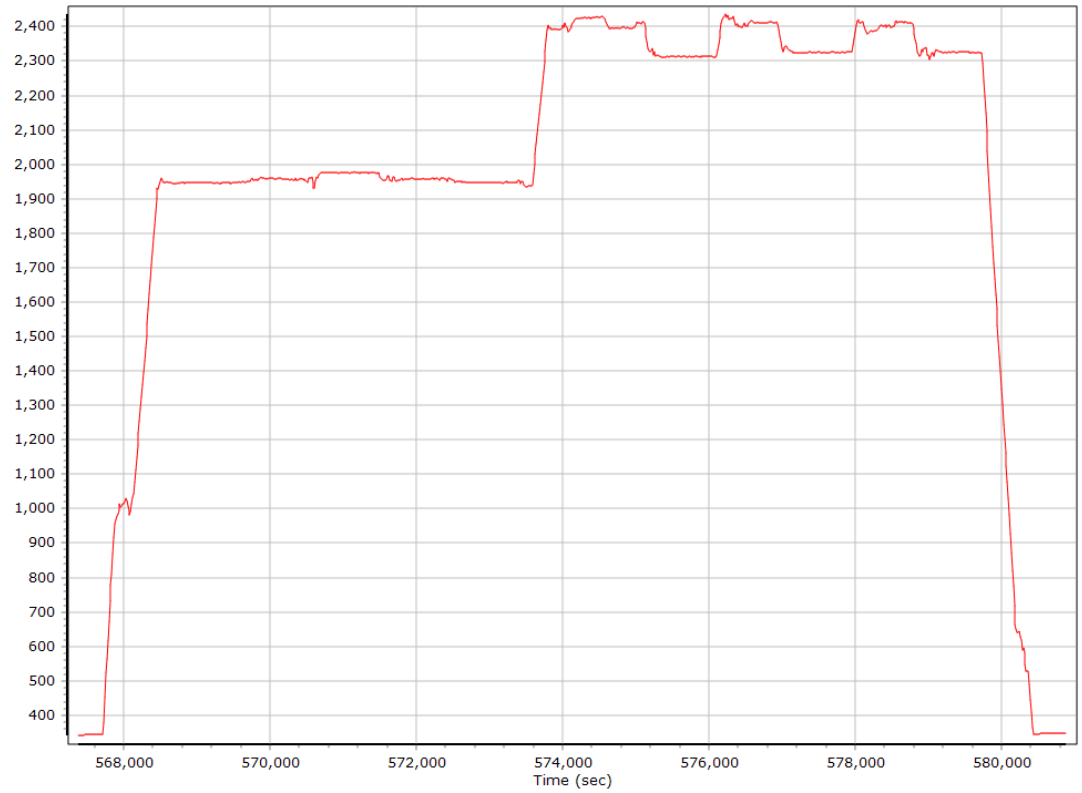

48
46
44
42
40
38
36
34
32
30
28
26
24
22
20
18
568,000
570,000
572,000
574,000
576,000
578,000
580,000
Time (sec)
GALILEO 01 L1 BOC_1_1_D_MBOC SNR (dB/Hz)
GALILEO 04 L1 BOC_1_1_D_MBOC SNR (dB/Hz)
GALILEO 07 L1 BOC_1_1_D_MBOC SNR (dB/Hz)
GALILEO 09 L1 BOC_1_1_D_MBOC SNR (dB/Hz)
GALILEO 12 L1 BOC_1_1_D_MBOC SNR (dB/Hz)
GALILEO 14 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 27 L1 BOC_1_1_D_MBOC SNR (dB/Hz)
GALILEO 30 L1 BOC_1_1_D_MBOC SNR (dB/Hz)
GALILEO 31 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 09 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 12 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 14 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 19 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 21 L5E5A BPSK10_PD SNR (dB/Hz)

Trajectory Information

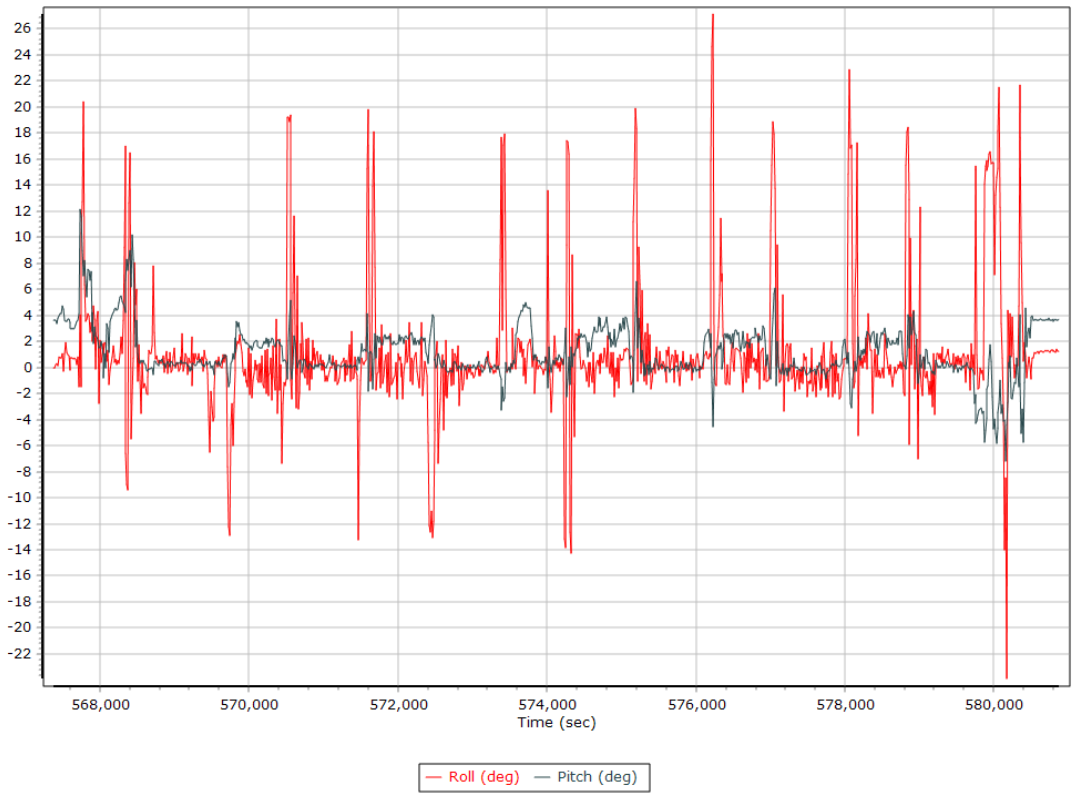
Top View



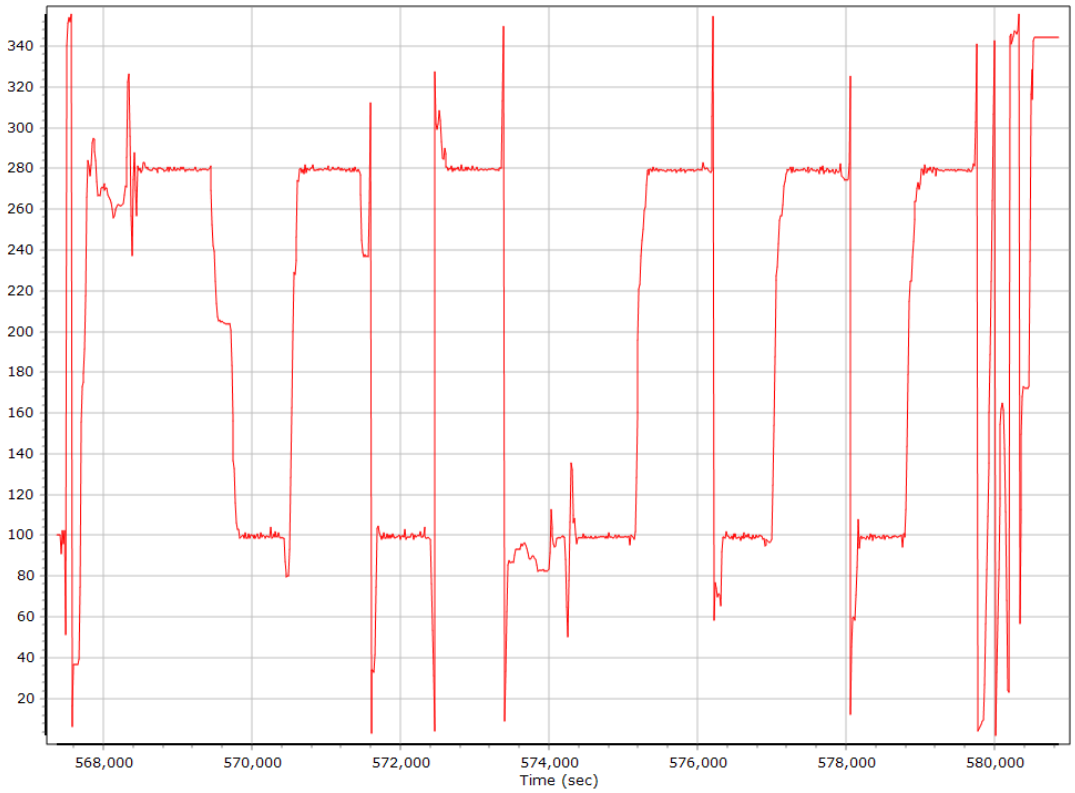
Altitude



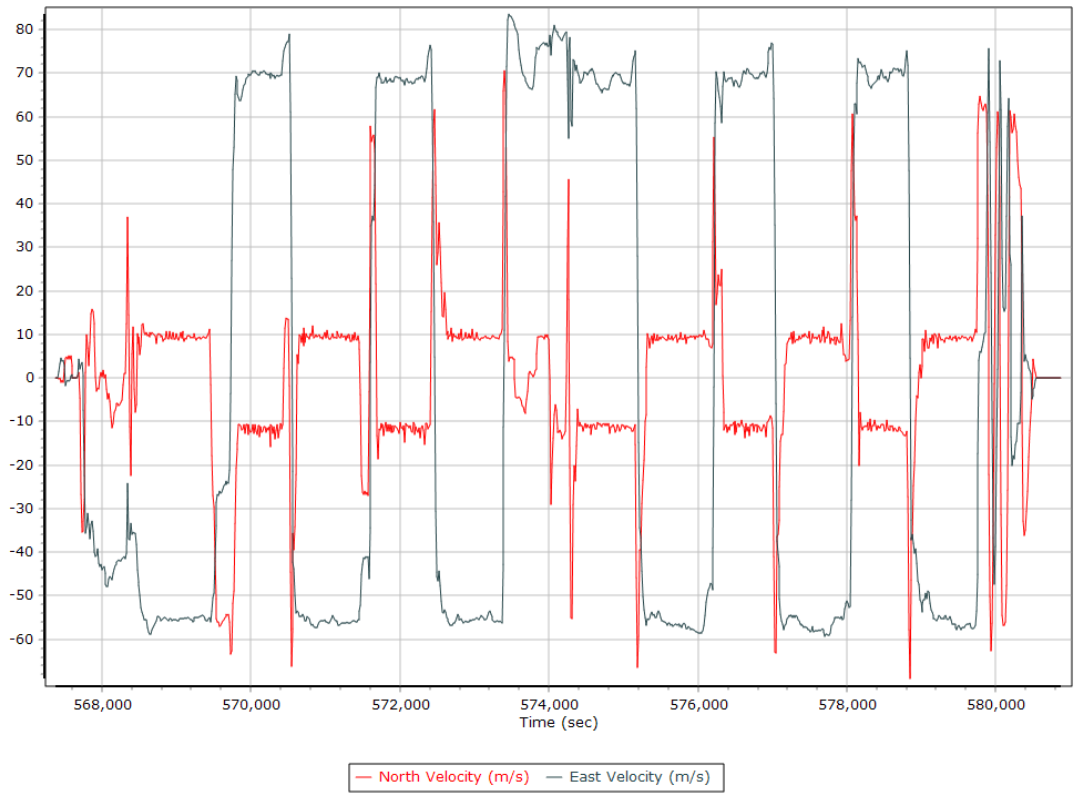
Roll/Pitch



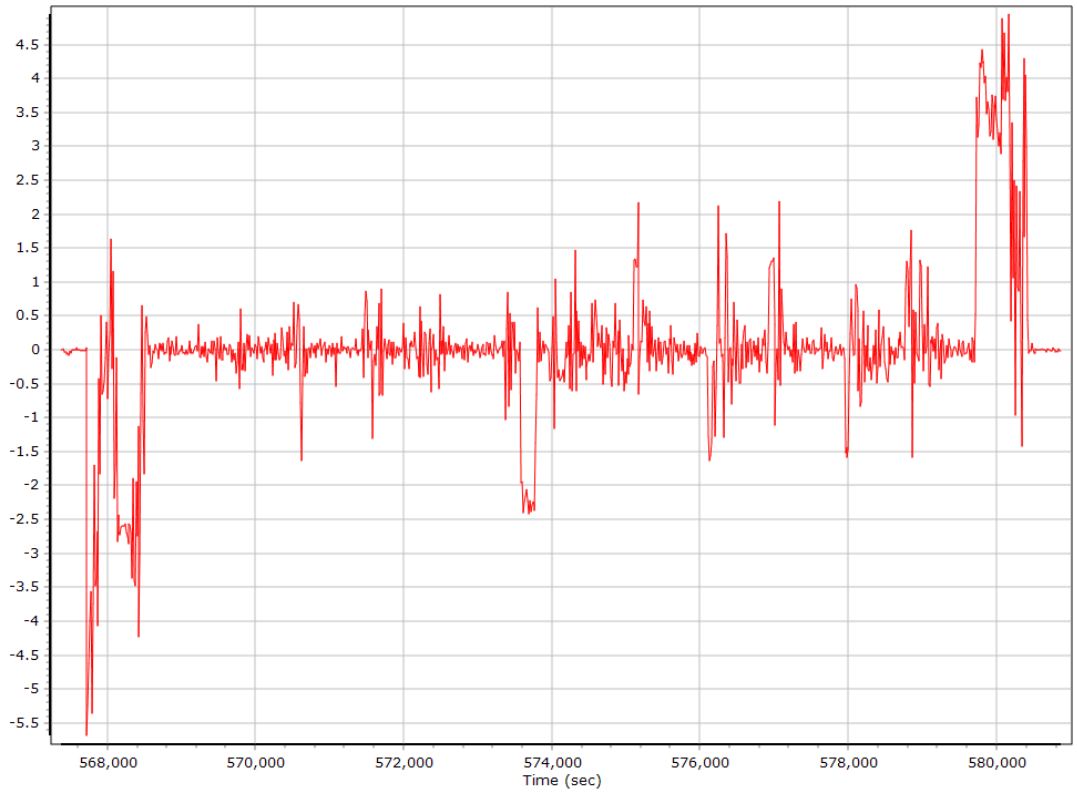
Heading



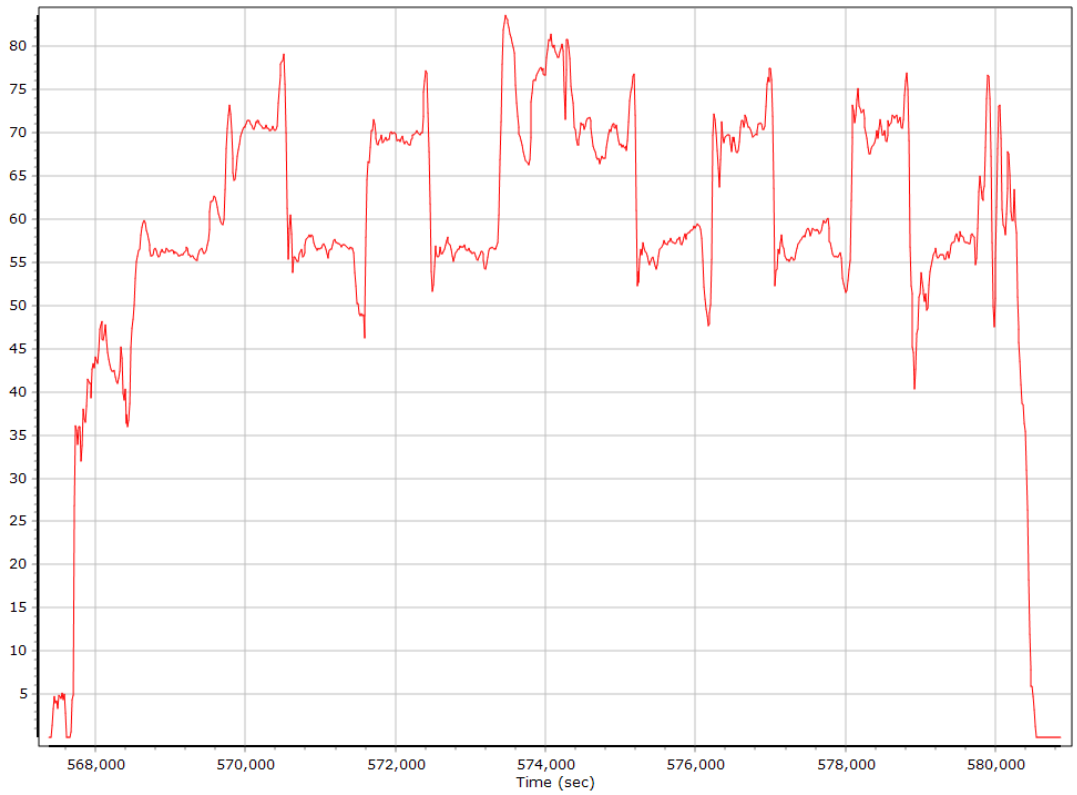
North/East Velocity



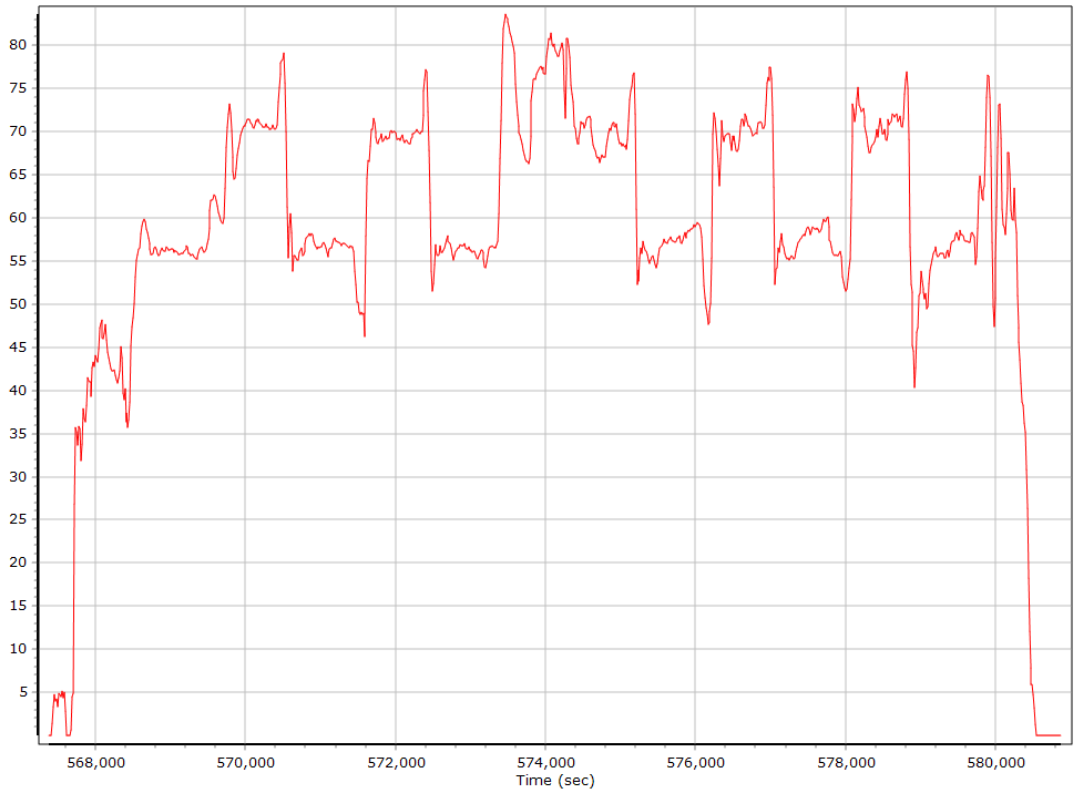
Down Velocity



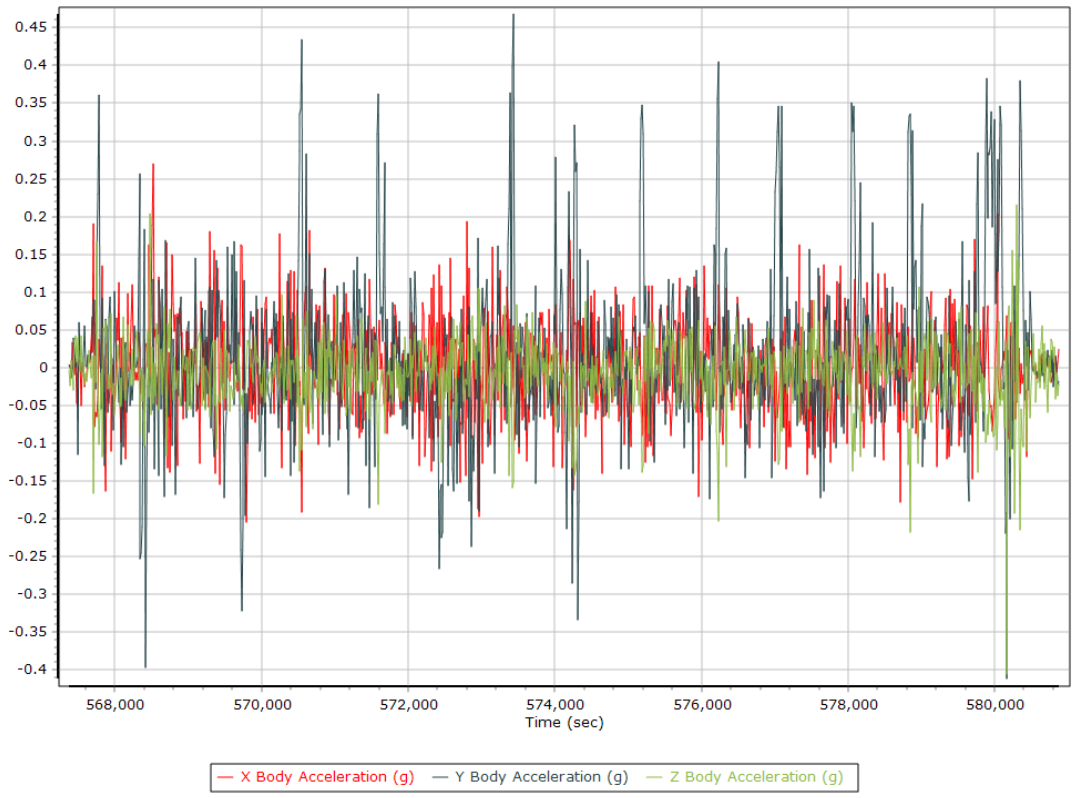
Total Speed



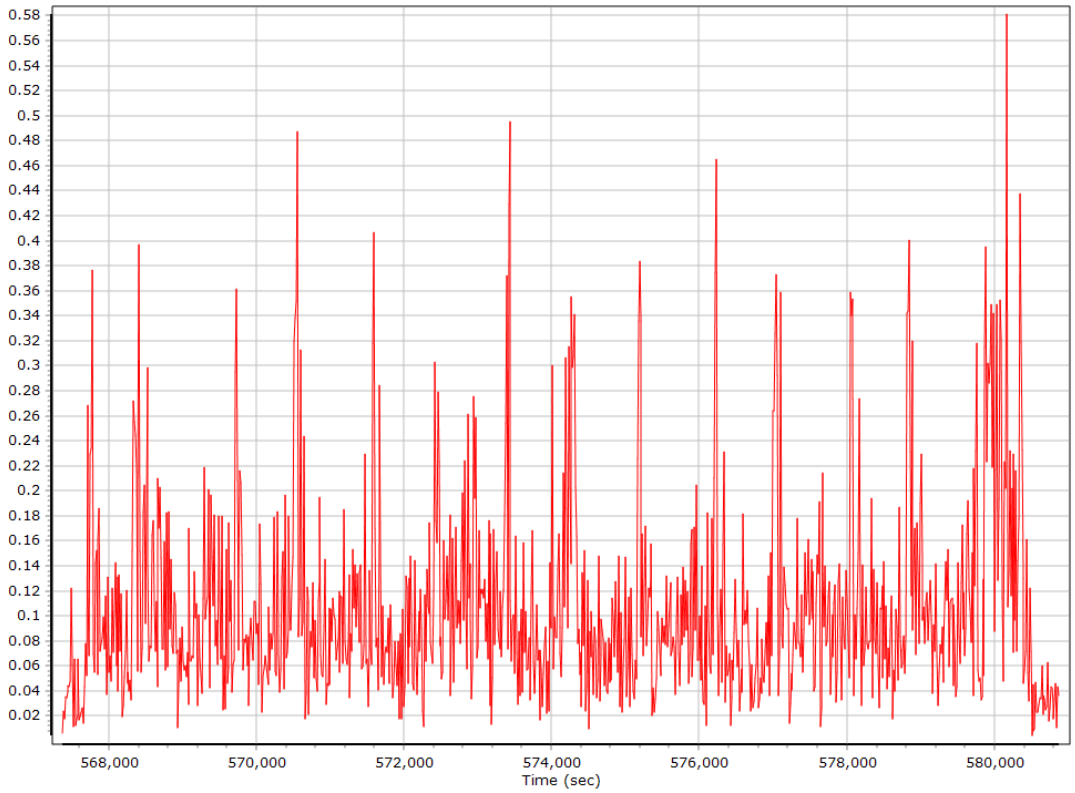
Ground Speed



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
02/22/2020	WVTA	57.90	GNSS	1	User	None	Imported
02/22/2020	WVSH	64.50	GNSS	1	User	None	Imported
02/22/2020	WVMZ	115.38	GNSS	1	User	None	Imported
02/22/2020	WVBU	110.83	GNSS	1	User	None	Imported
02/22/2020	WVBR	31.10	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	14194 s (2093 566702 - 2093 580896)
Number of reference stations	5
Primary station GPS measurement usage (%)	99.8
Primary station GLONASS measurement usage (%)	76.6
Average number of satellites per epoch	14.2
Max number of GPS stations used	5
Min number of GPS stations used	3
Max number of GLONASS stations used	5
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)	20211
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	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		N39°26'16.64399"	W79°30'52.95303"	726.066
Adjusted		N39°26'16.64399"	W79°30'52.95303"	726.066
Coordinate Adjustments		**Horizontal (m)**	**Vertical (m)**	**Total (m)**
Adjustments		0.000	0.000	0.000

Base Station Information

Station ID	WVTA		
Filename	wvta0530.20o		
Start date	2/22/2020 12:00:00 AM		
End date	2/22/2020 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)	23.45	**Output Coordinates**	Original	
Solution Epochs	5629	**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°59'49.09959"	W80°40'46.36200"	384.555
Coordinate Adjustments		**Horizontal (m)**	**Vertical (m)**	**Total (m)**
Adjustments		0.020	0.004	0.021

Base Station Information

Station ID	WVSH		
Filename	wvsh0530.20o		
Start date	2/22/2020 12:00:00 AM		
End date	2/22/2020 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 - WVMZ

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		N38°50'20.04352"	W81°06'31.58289"	296.834
Adjusted		N38°50'20.04318"	W81°06'31.58335"	296.810
Coordinate Adjustments		**Horizontal (m)**	**Vertical (m)**	**Total (m)**
Adjustments		0.015	0.024	0.028

Base Station Information

Station ID	WVMZ		
Filename	wvmz0530.20o		
Start date	2/22/2020 12:00:00 AM		
End date	2/22/2020 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°06'31.58289"		
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 - 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°20'16.82193"	W78°54'48.58753"	200.059
Coordinate Adjustments		**Horizontal (m)**	**Vertical (m)**	**Total (m)**
Adjustments		0.012	0.000	0.012

Base Station Information

Station ID	WVBU		
Filename	wvbu0530.20o		
Start date	2/22/2020 12:00:00 AM		
End date	2/22/2020 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**	8.7	
Base Station Coordinates		**Latitude**	**Longitude**	**Height (m)**
Original		N39°18'28.88440"	W80°16'38.61885"	270.246
Adjusted		N39°18'28.88423"	W80°16'38.61944"	270.254
Coordinate Adjustments		**Horizontal (m)**	**Vertical (m)**	**Total (m)**
Adjustments		0.015	0.008	0.017

Base Station Information

Station ID	WVBR		
Filename	wvbr0530.20o		
Start date	2/22/2020 12:00:00 AM		
End date	2/22/2020 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)	5.73	71.34	
Number of GPS SV	8	11	10
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	18	14
PDOP	1.07	1.97	1.43
QC Solution Gaps	1.00	1.00	
Solution Type	**Fixed**	**Float**	**No solution**
Epoch (sec)	14163.00	0.00	1.00
Percentage	99.99	0.00	0.01

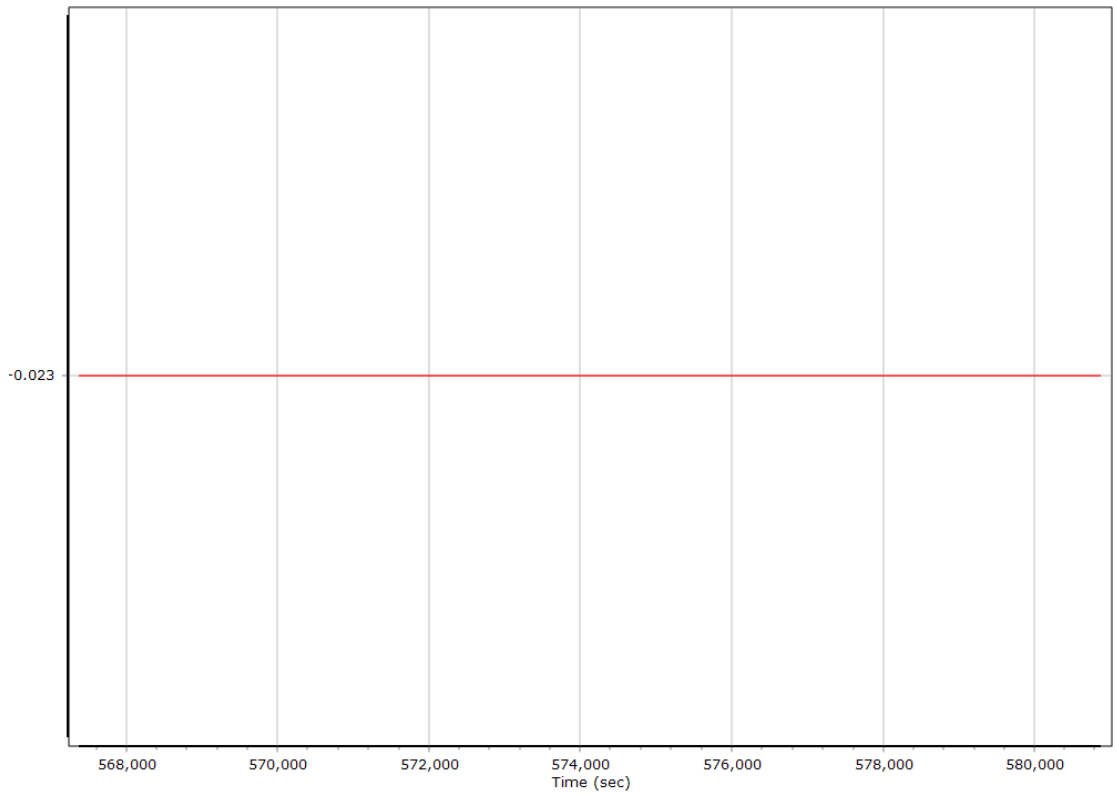
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion SmartBase		
Stabilized mount	True		
Base station	ASB		
Processing start time	566684.000 (2/22/2020 1:24:44 PM)		
Processing end time	580878.000 (2/22/2020 5:21:18 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

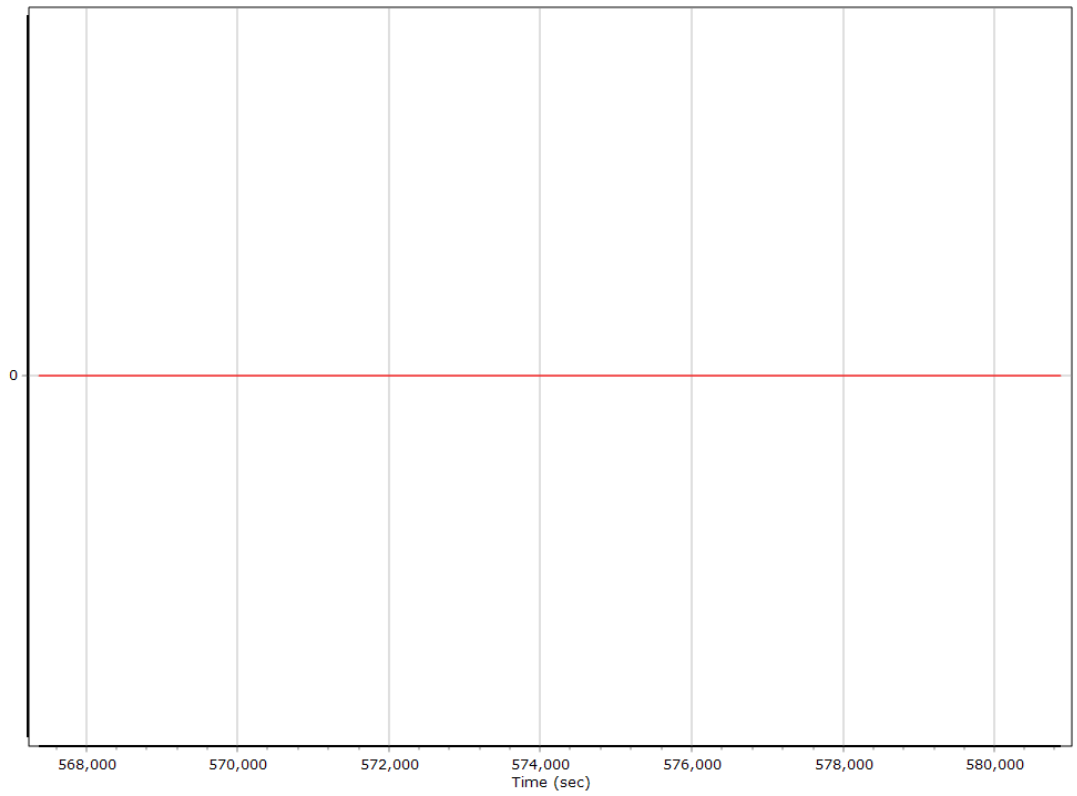
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

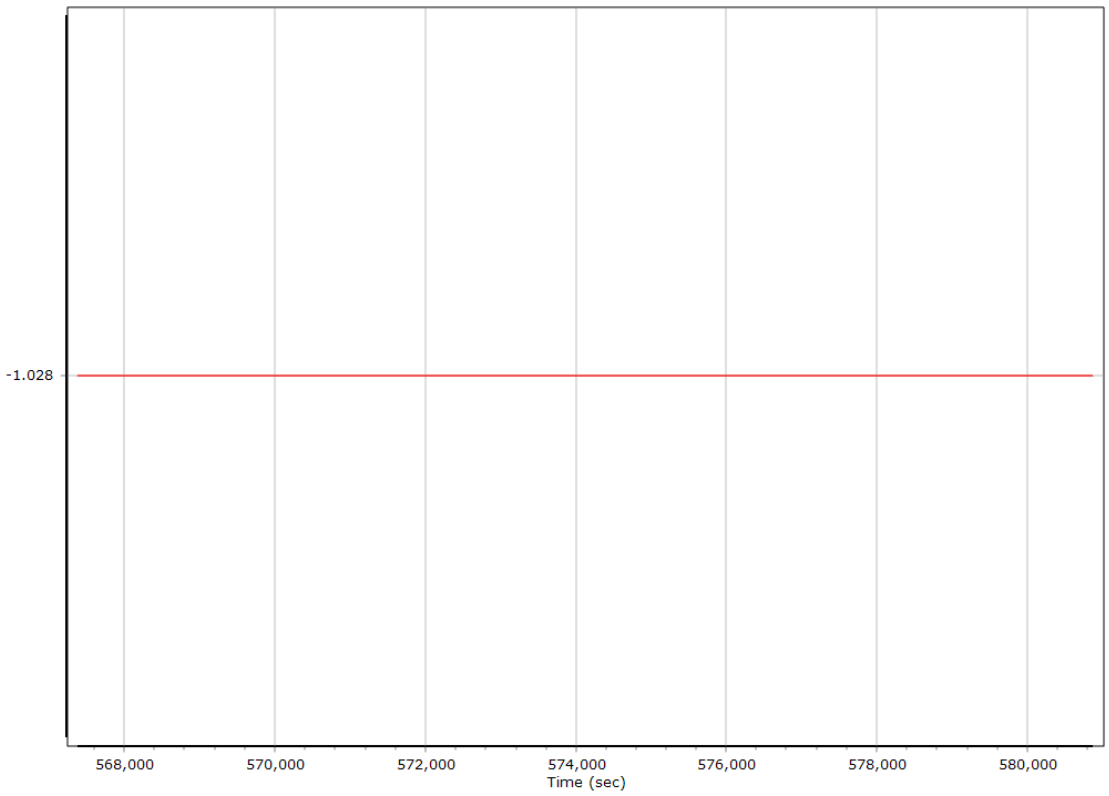
X Reference-Primary GNSS Lever Arm (m)



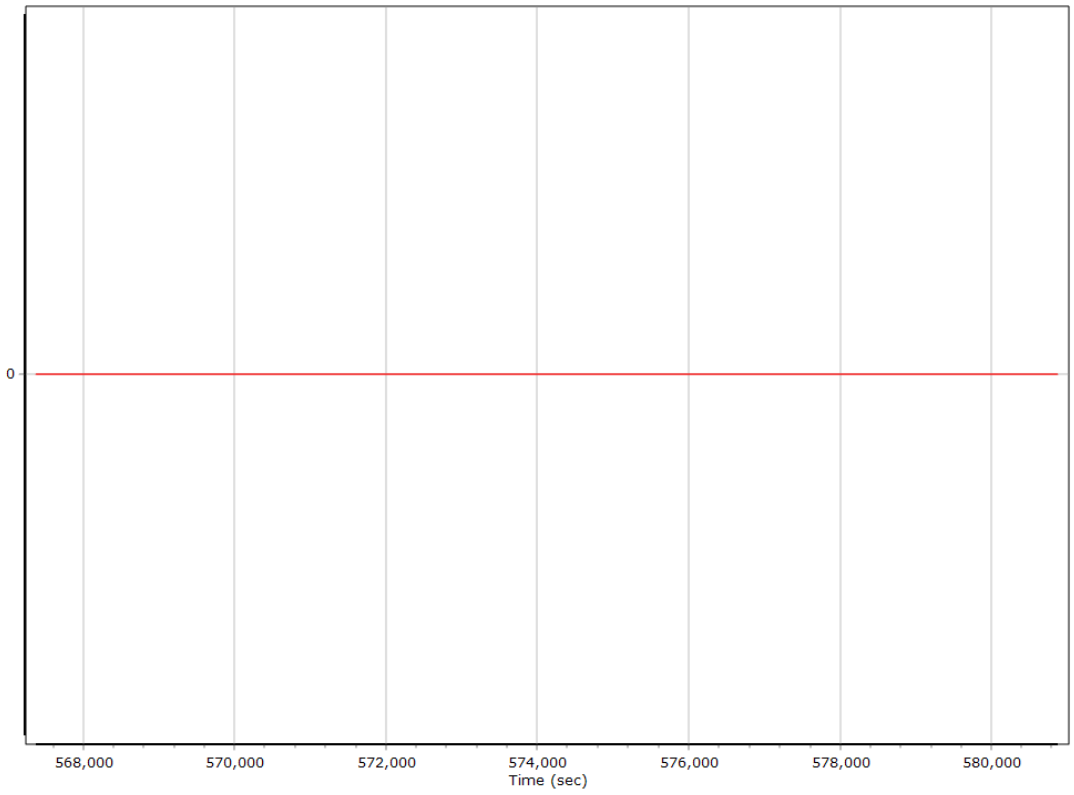
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



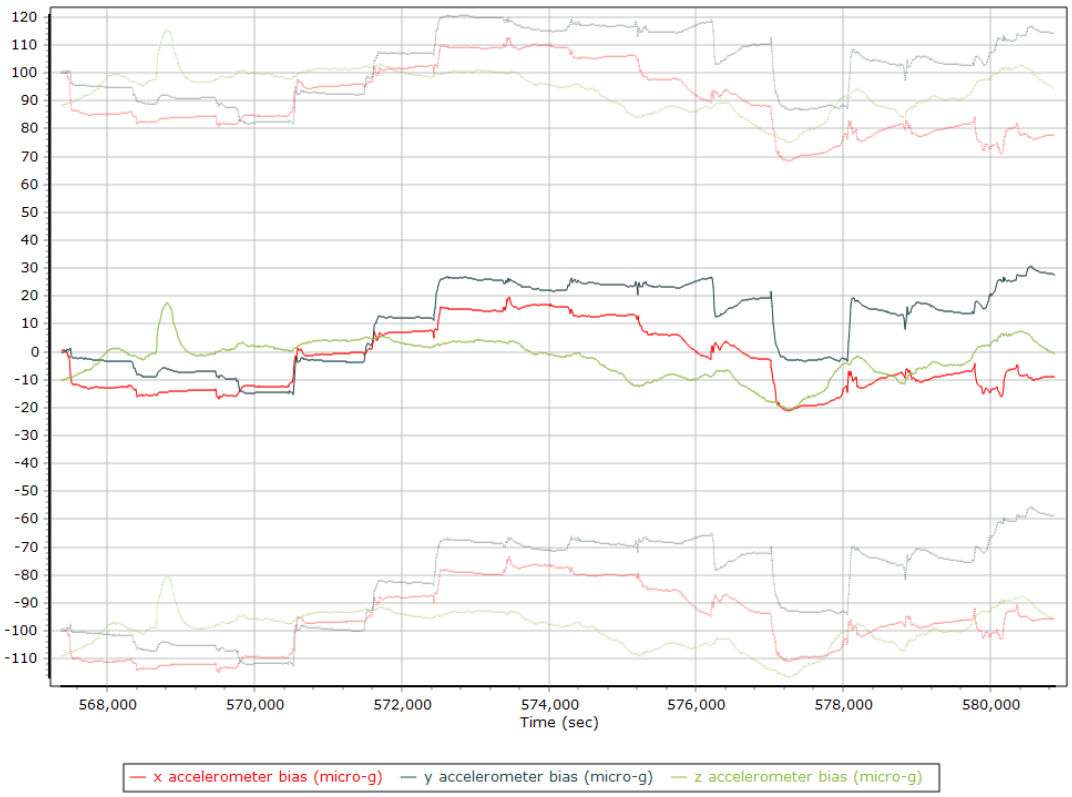
Reference-Primary GNSS Lever Arm Figure of Merit



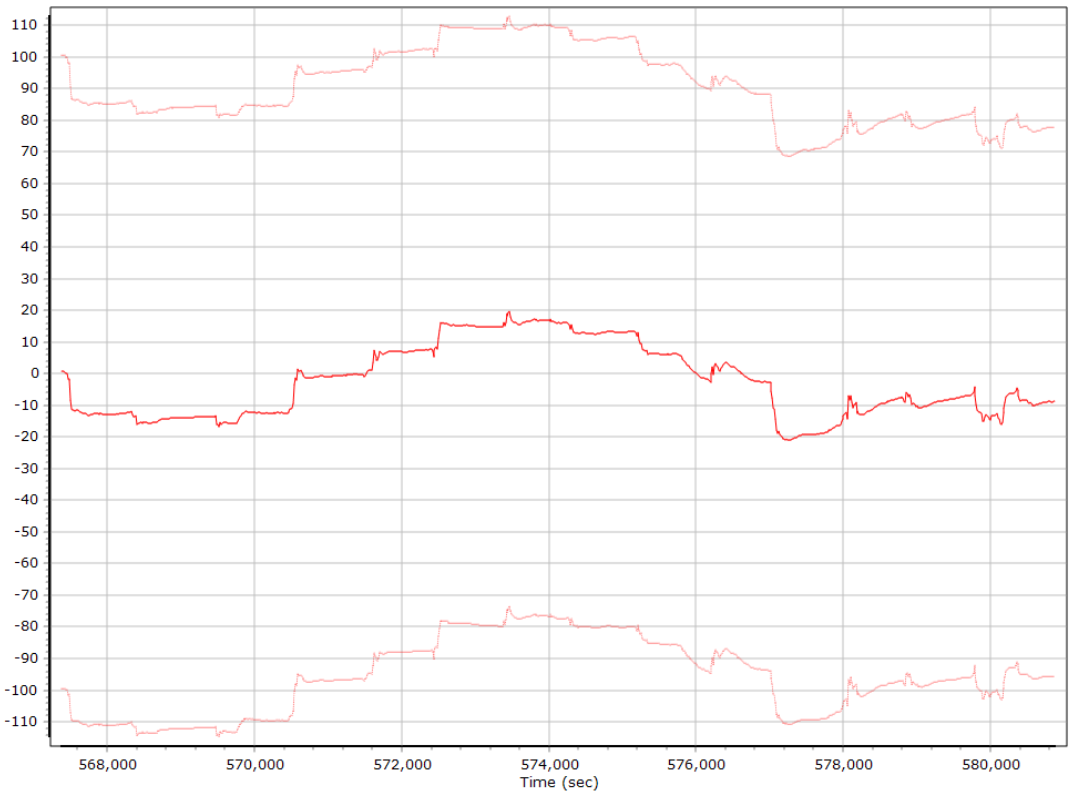
Foward Processed IN-Fusion QC

Forward Processed Estimated Errors, Reference Frame

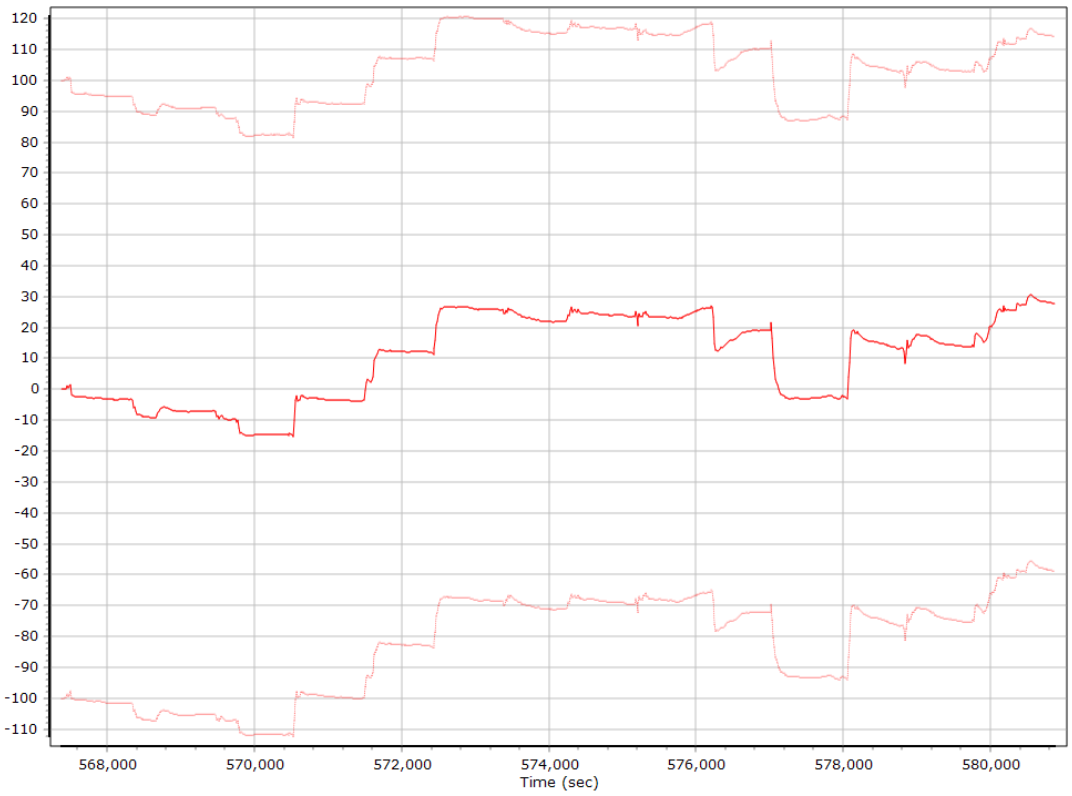
Accelerometer Bias (micro-g)



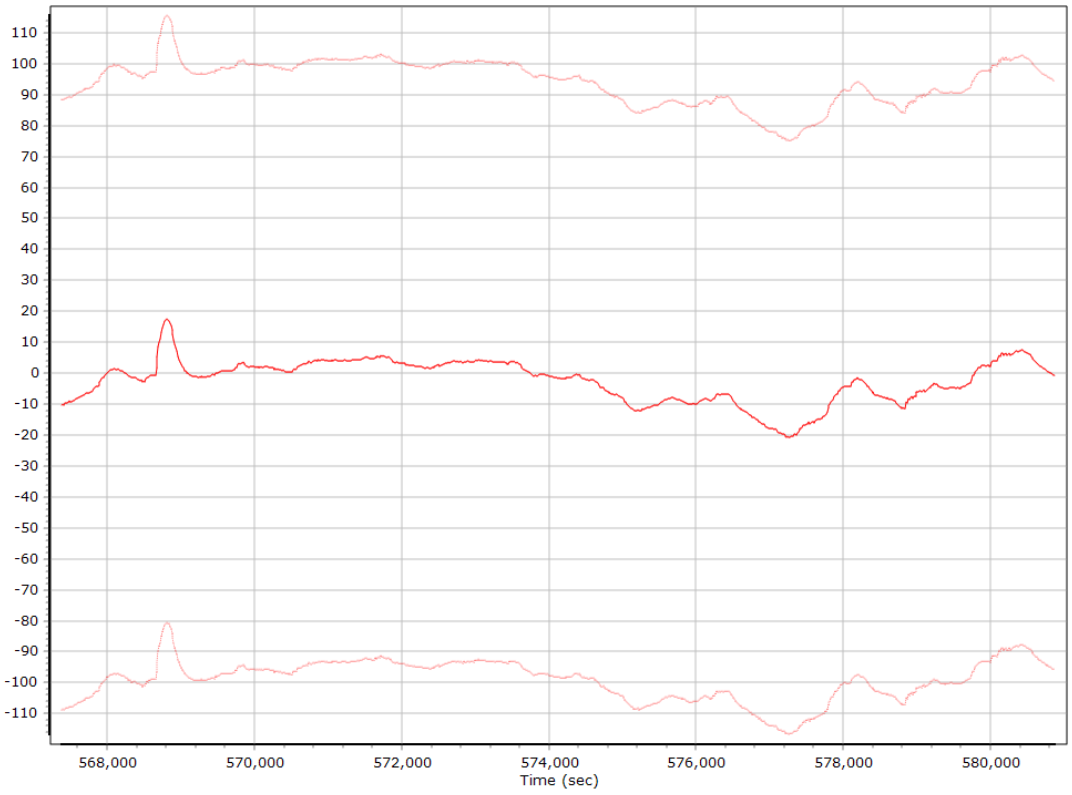
X Accelerometer Bias (micro-g)



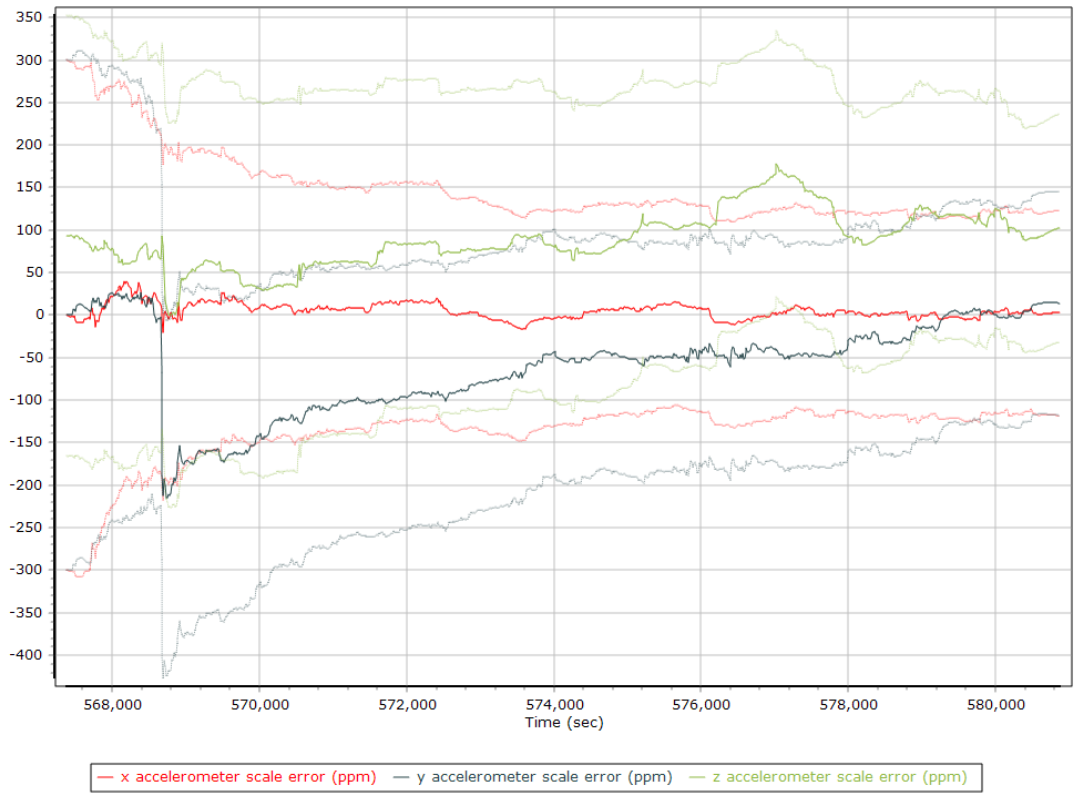
Y Accelerometer Bias (micro-g)



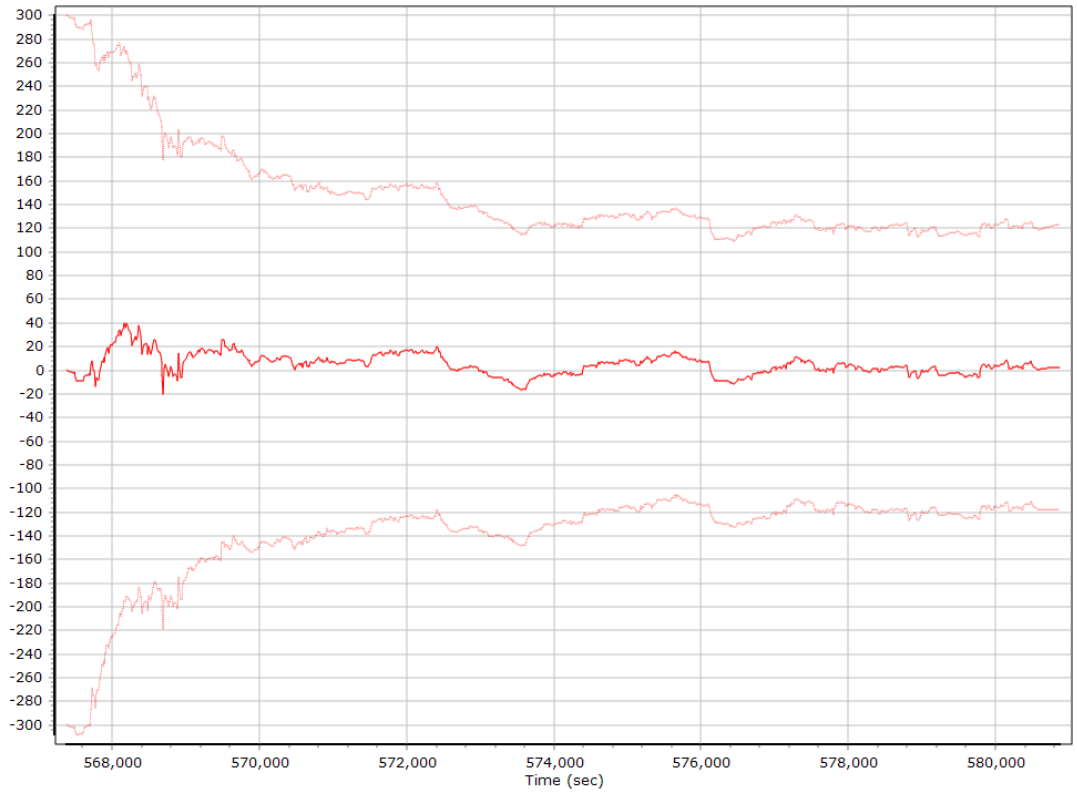
Z Accelerometer Bias (micro-g)



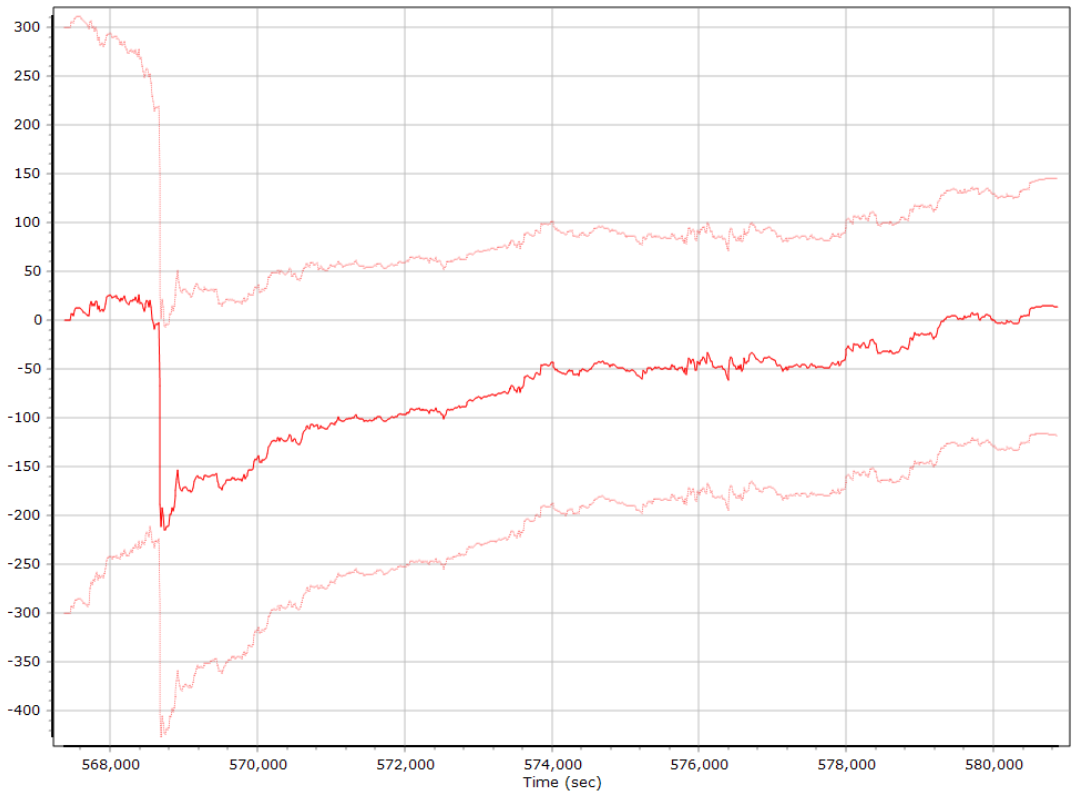
Accelerometer Scale Error (ppm)



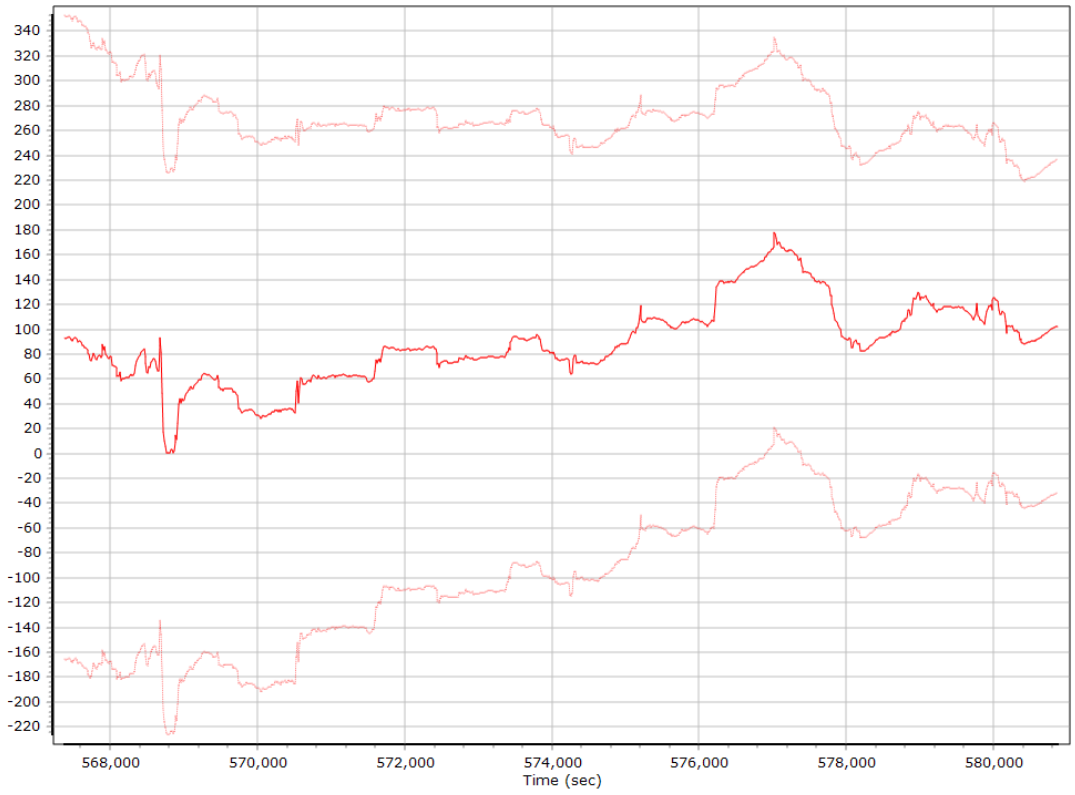
X Accelerometer Scale Error (ppm)



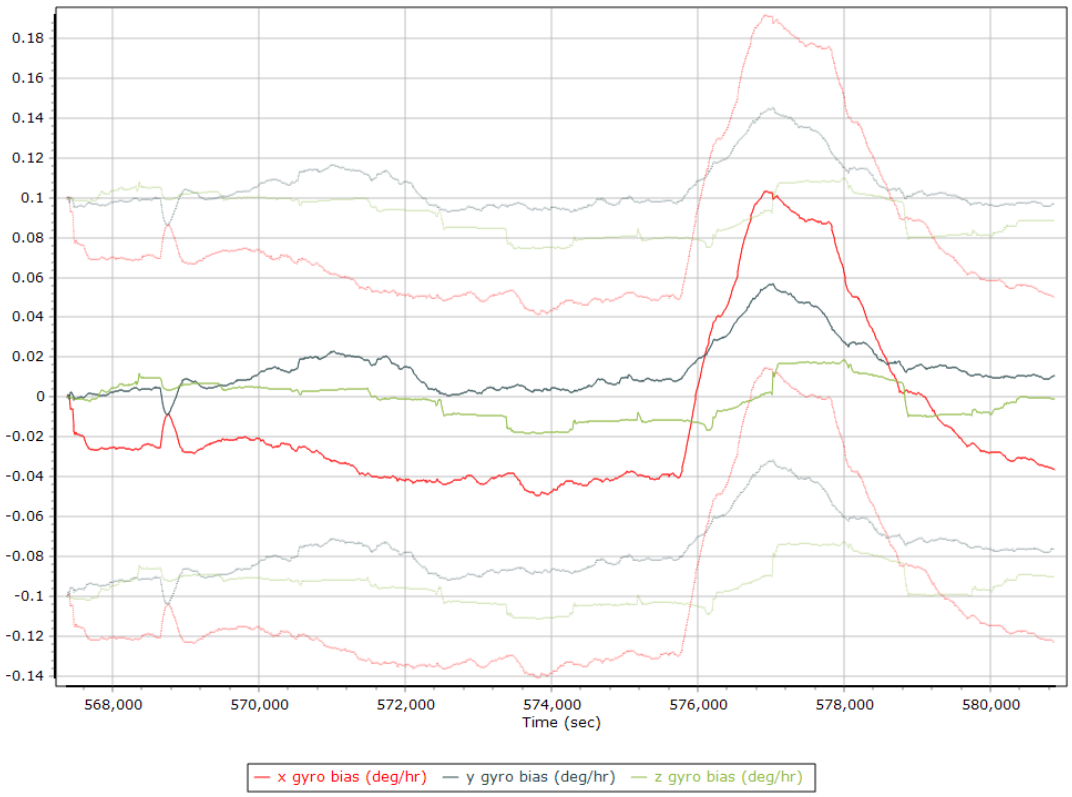
Y Accelerometer Scale Error (ppm)



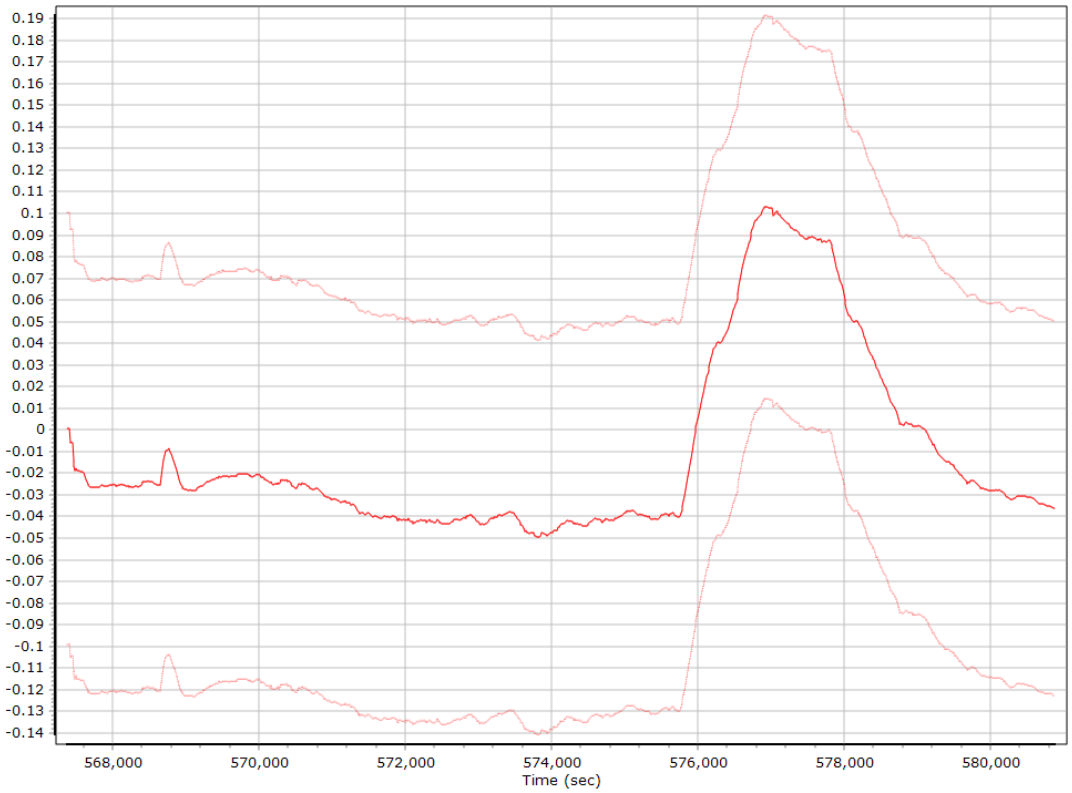
Z Accelerometer Scale Error (ppm)



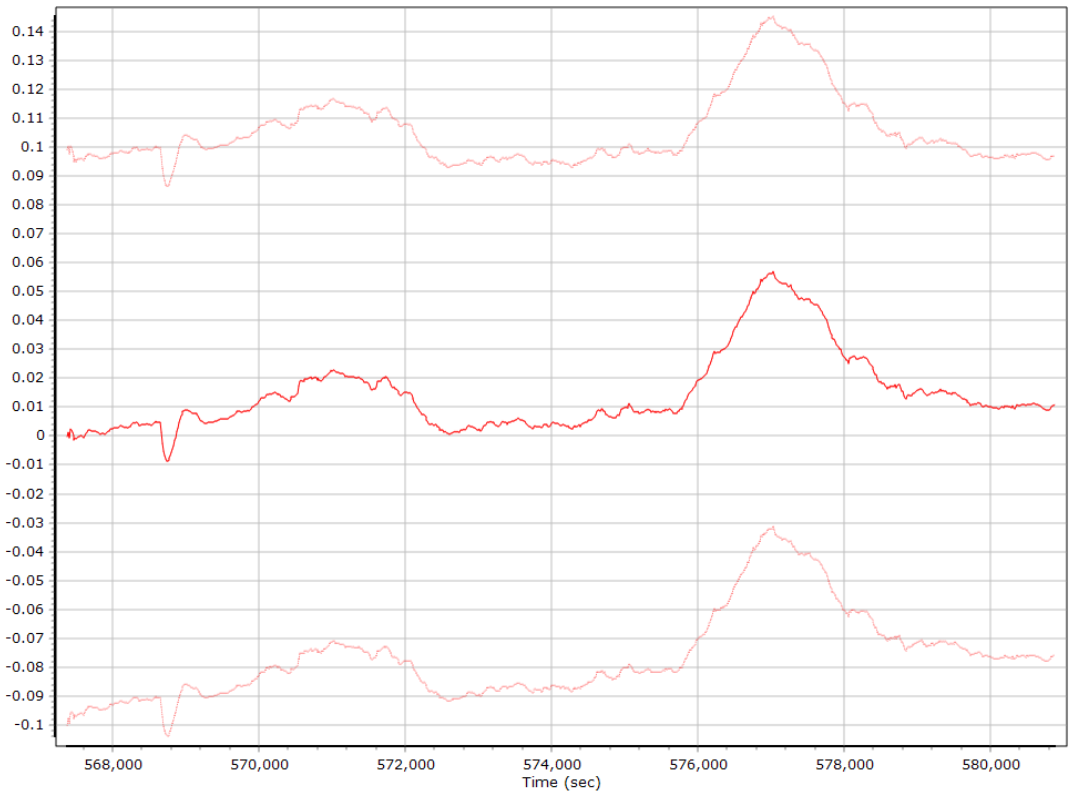
Gyro Bias (deg/h)



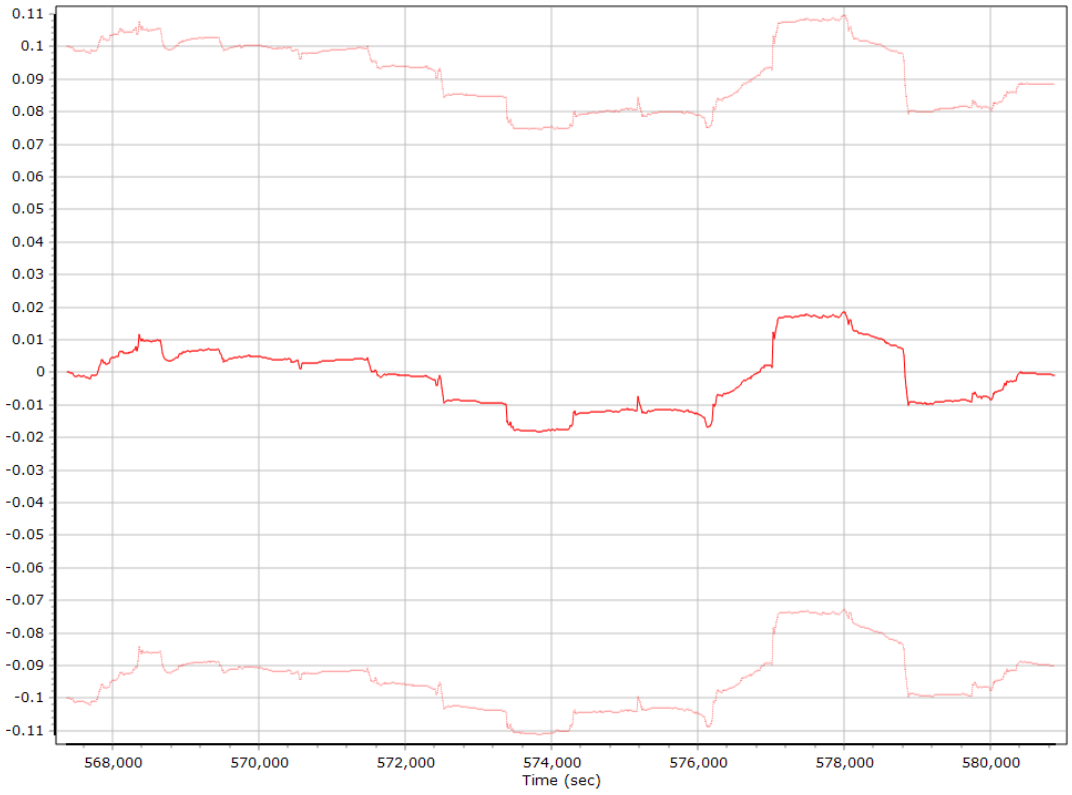
X Gyro Bias (deg/h)



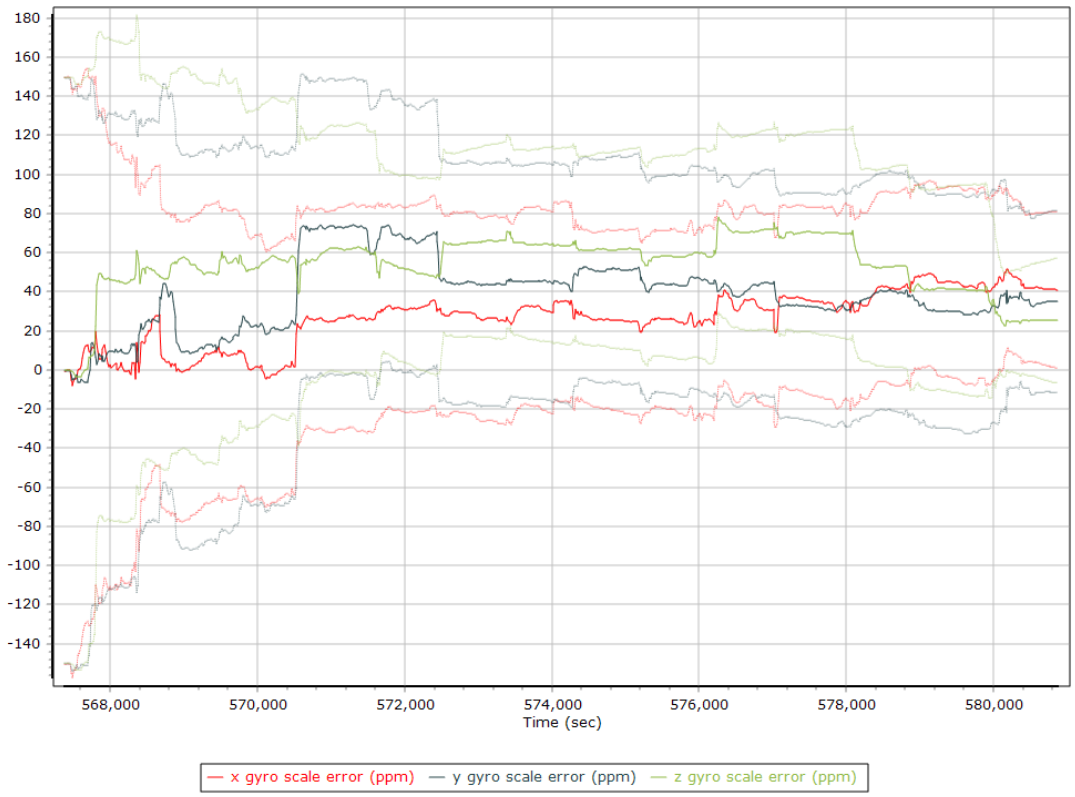
Y Gyro Bias (deg/h)



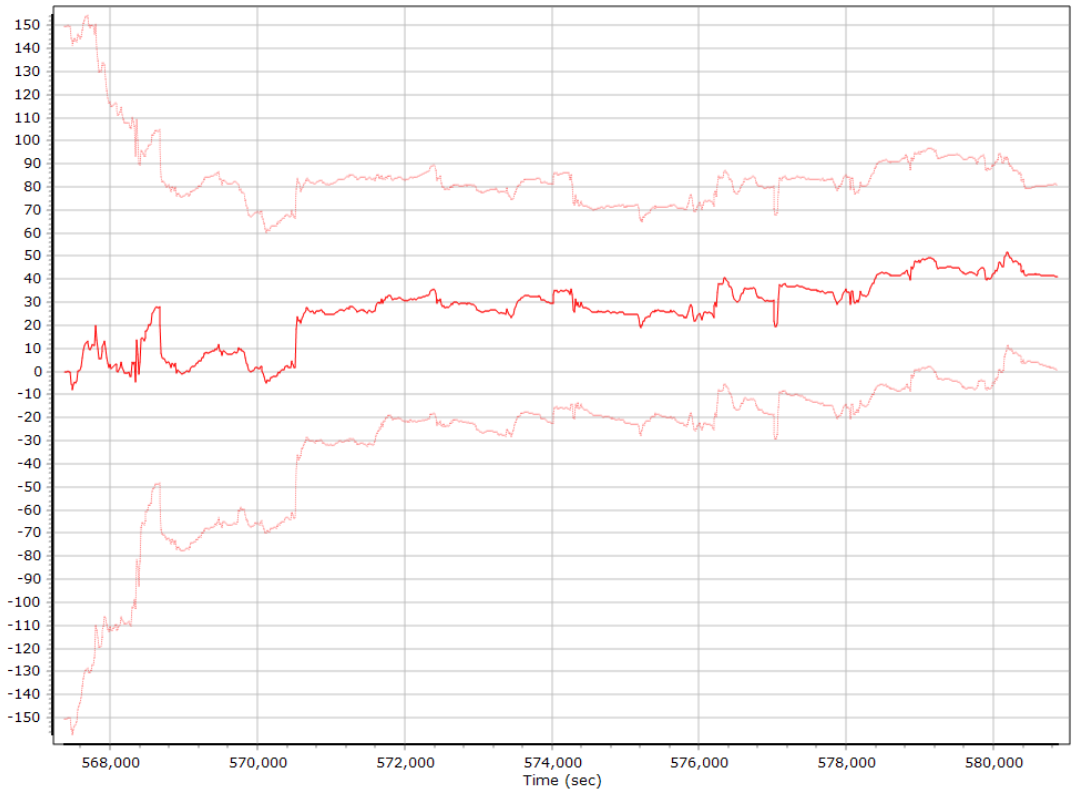
Z Gyro Bias (deg/h)



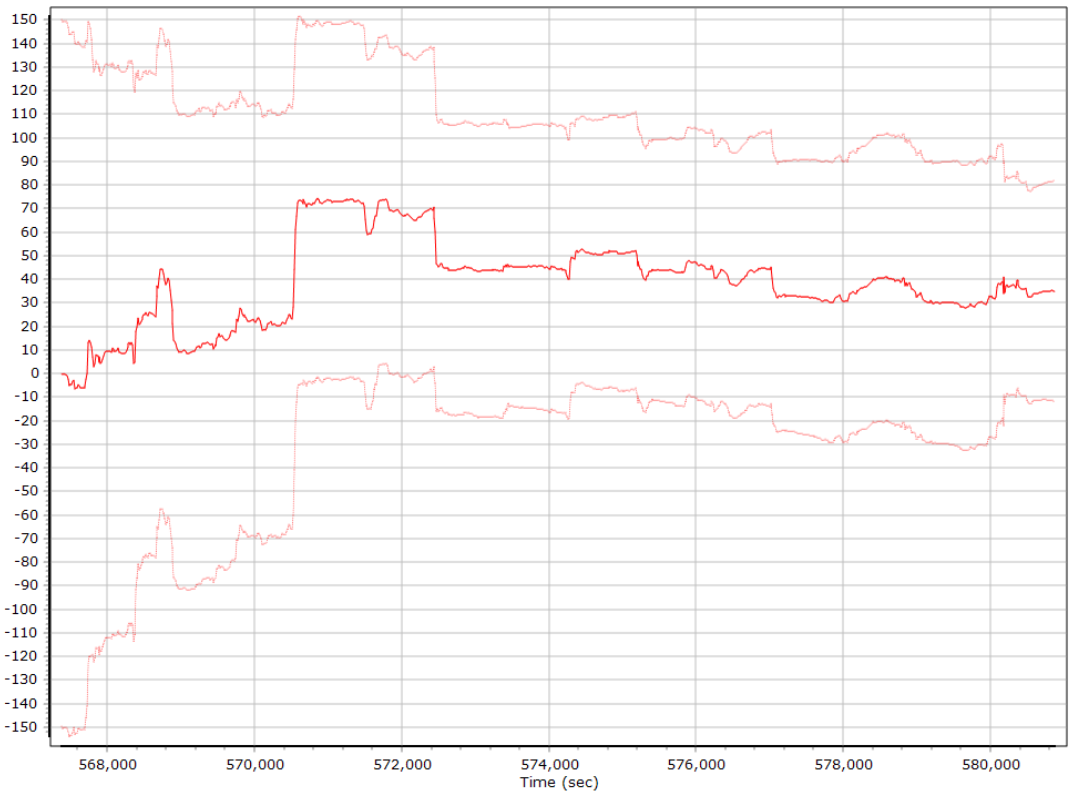
Gyro Scale Error (ppm)



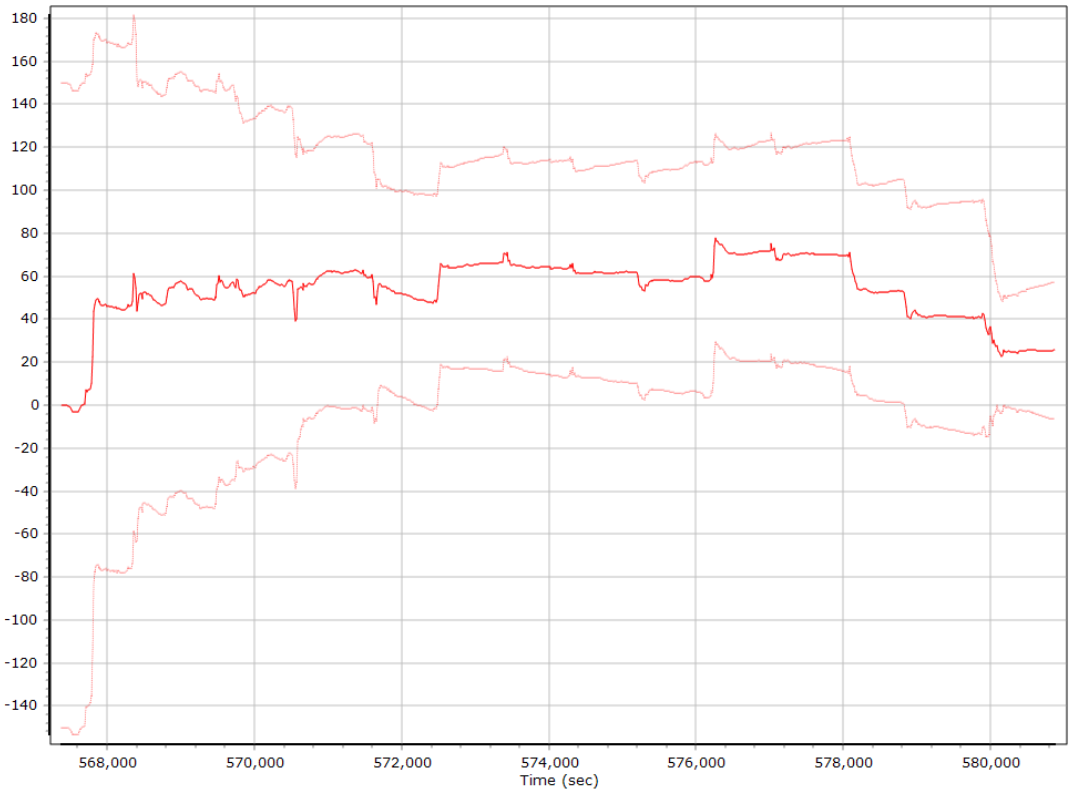
X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)

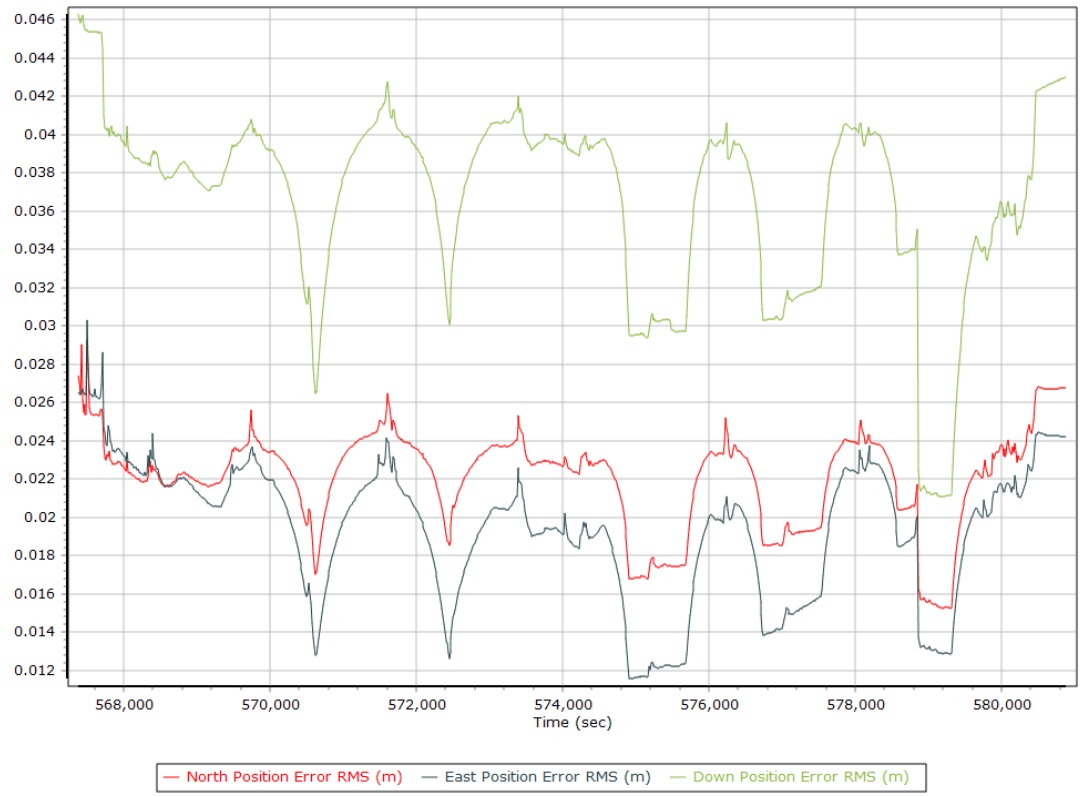


Z Gyro Scale Error (ppm)

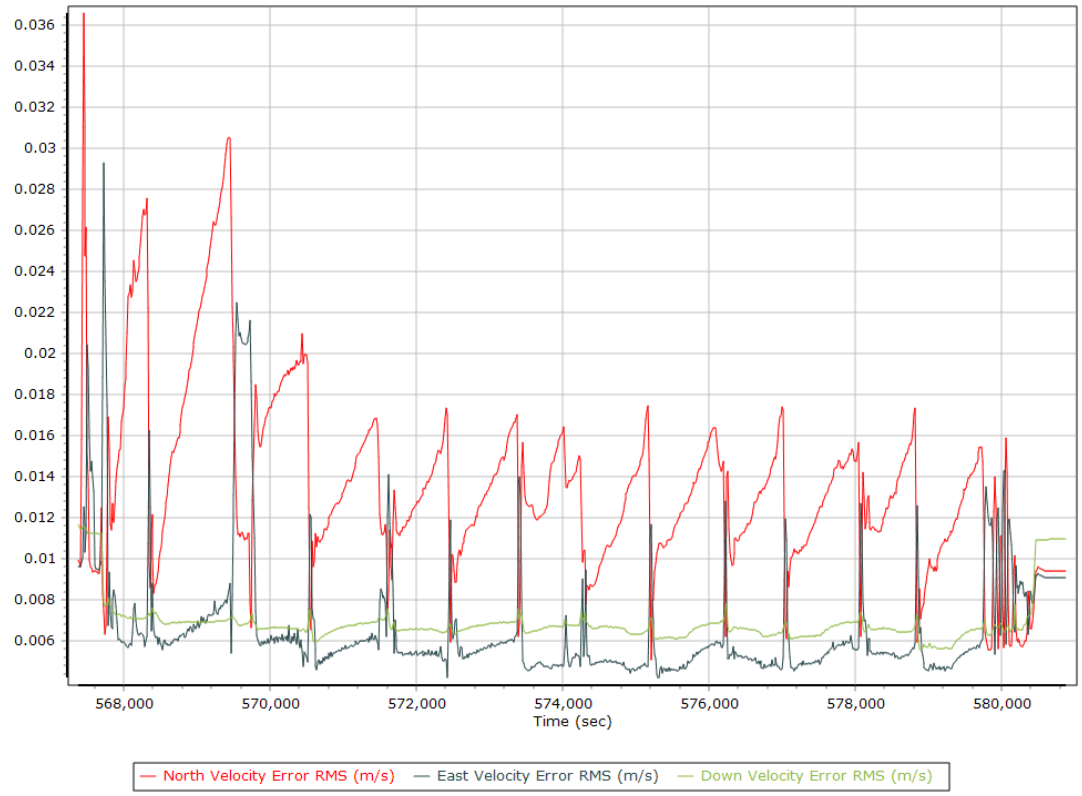


Foward Processed Performance Metrics

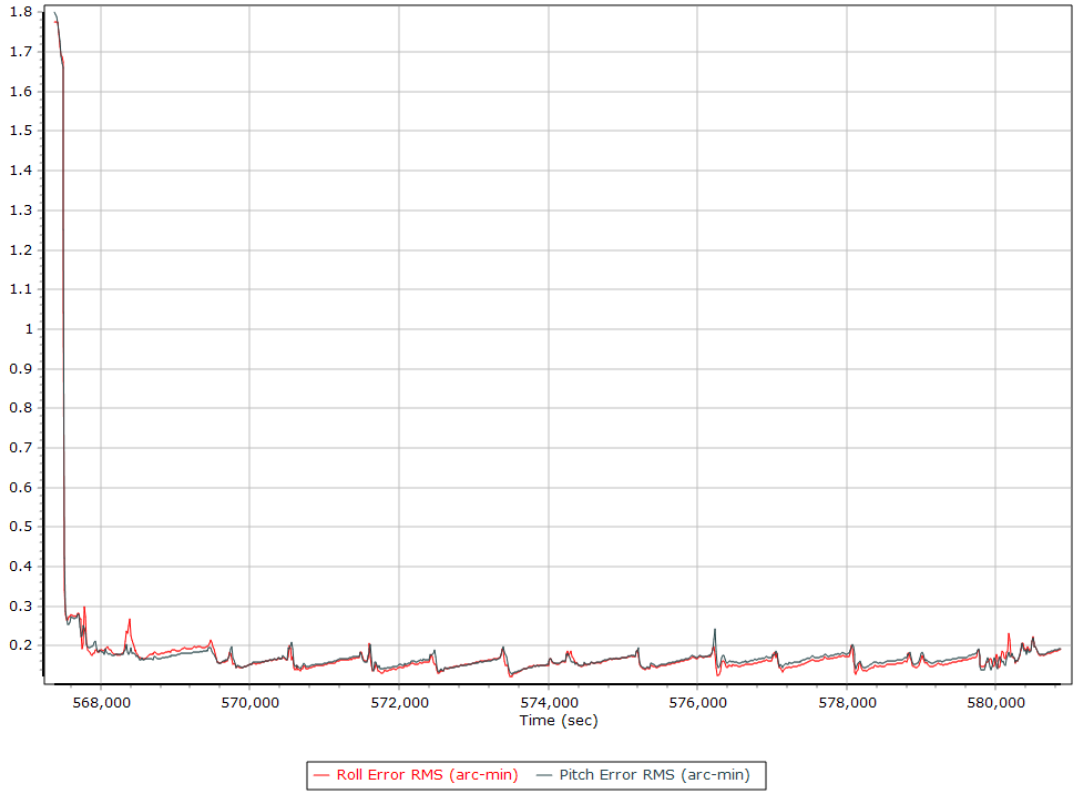
Position Error RMS (m)



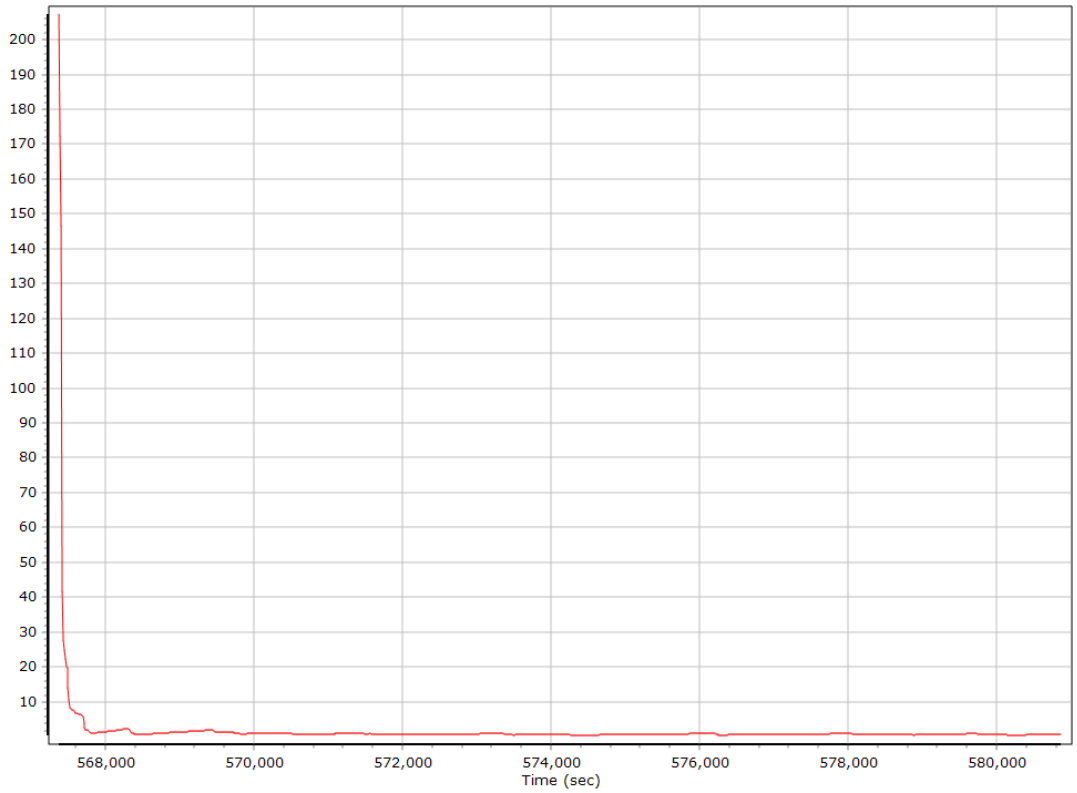
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

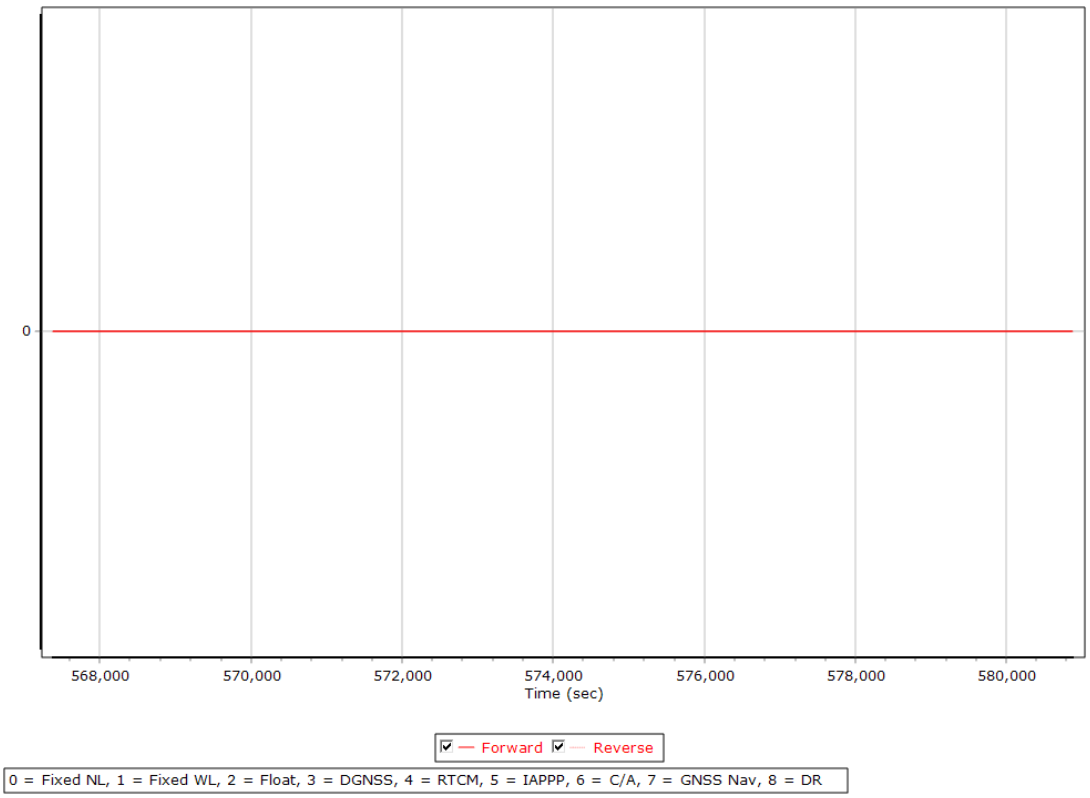


Heading Error RMS (arc-min)

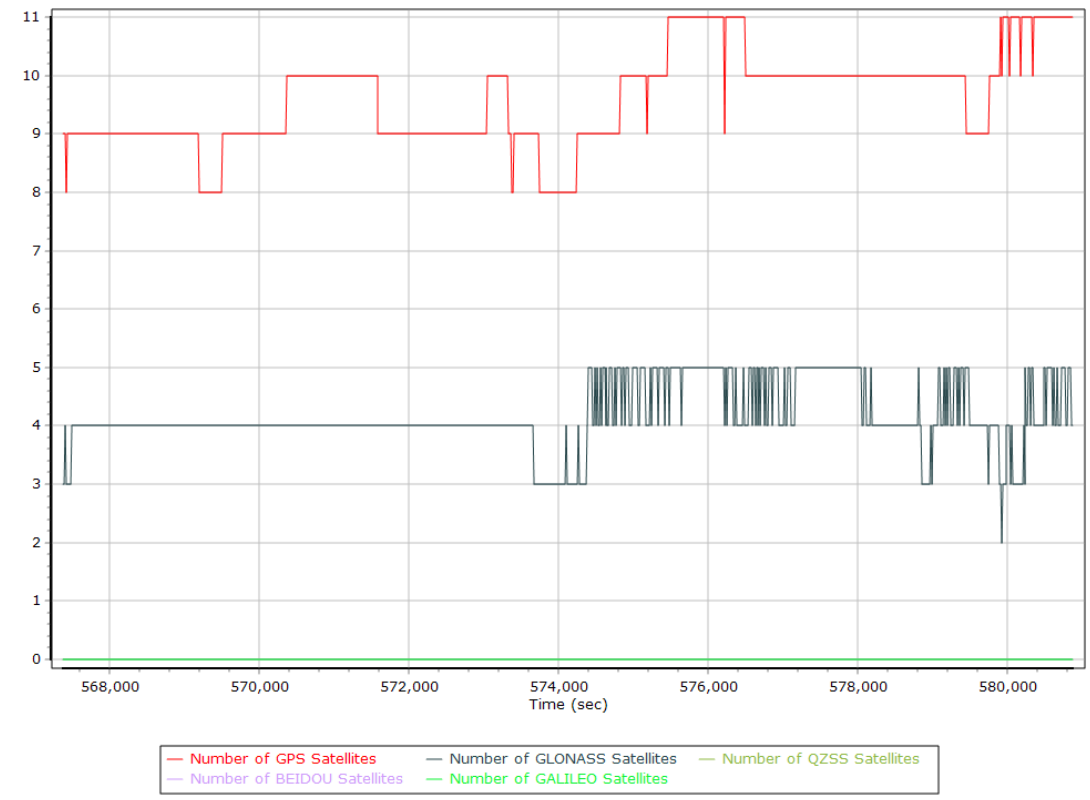


Forward Processed Solution Status

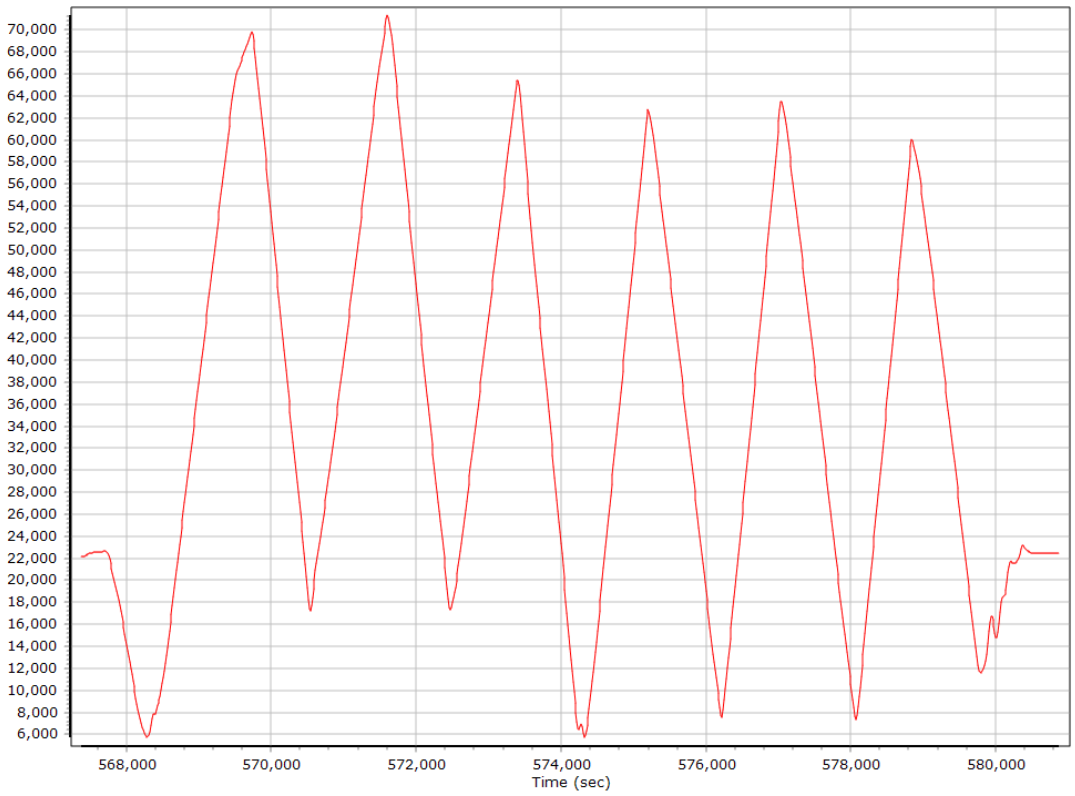
Processing Mode



Number of Satellites



Baseline Length



Export Summary

Export file	export_RBV20053A_176.txt		
Export format	ASCII		
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	567318.002 (2/22/2020 1:35:18 PM)		
Export end time	580878.003 (2/22/2020 5:21:18 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	2020.142077		