

General Information

Mission Information

Project name	RBV20055A_176
Processing date	2020-02-25 14:38:39
Mission date	2020-02-24 13:53:29
Mission duration	03:29:02.376
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
RBV20055A.593	POS Data
RBV20055A.594	POS Data
RBV20055A.595	POS Data
RBV20055A.596	POS Data
RBV20055A.597	POS Data
RBV20055A.598	POS Data
RBV20055A.599	POS Data
RBV20055A.600	POS Data
RBV20055A.601	POS Data
RBV20055A.602	POS Data
RBV20055A.603	POS Data
RBV20055A.604	POS Data
RBV20055A.605	POS Data
RBV20055A.606	POS Data
RBV20055A.607	POS Data
RBV20055A.608	POS Data
RBV20055A.609	POS Data
RBV20055A.610	POS Data
RBV20055A.611	POS Data
RBV20055A.612	POS Data
RBV20055A.613	POS Data
RBV20055A.614	POS Data
RBV20055A.615	POS Data
RBV20055A.616	POS Data
RBV20055A.617	POS Data
RBV20055A.618	POS Data
RBV20055A.619	POS Data
RBV20055A.620	POS Data
RBV20055A.621	POS Data
RBV20055A.622	POS Data
RBV20055A.623	POS Data
RBV20055A.624	POS Data
RBV20055A.625	POS Data
RBV20055A.626	POS Data
RBV20055A.627	POS Data
RBV20055A.628	POS Data
RBV20055A.629	POS Data
RBV20055A.630	POS Data
RBV20055A.631	POS Data
RBV20055A.632	POS Data

Input Files

File Name	File Type
Ephm0550.20g	GLONASS Broadcast Ephemeris
Ephm0550.20n	GPS Broadcast Ephemeris
igu20940_18.sp3	GPS Precise Ephemeris
igu20941_18.sp3	GPS Precise Ephemeris
loys0550.20o	GNSS SingleBase
pafm0550.20o	GPS SingleBase
wvbu0550.20o	GNSS SingleBase
wvcv0550.20o	GNSS SingleBase
wvmf0550.20o	GNSS SingleBase
wvta0550.20o	GNSS SingleBase

Output Files

Filename	File type
sbet_RB20055A_176.out	SBET Trajectory File
export_RB20055A_176.shp	Shapefile Export Output

Rover Data Summary

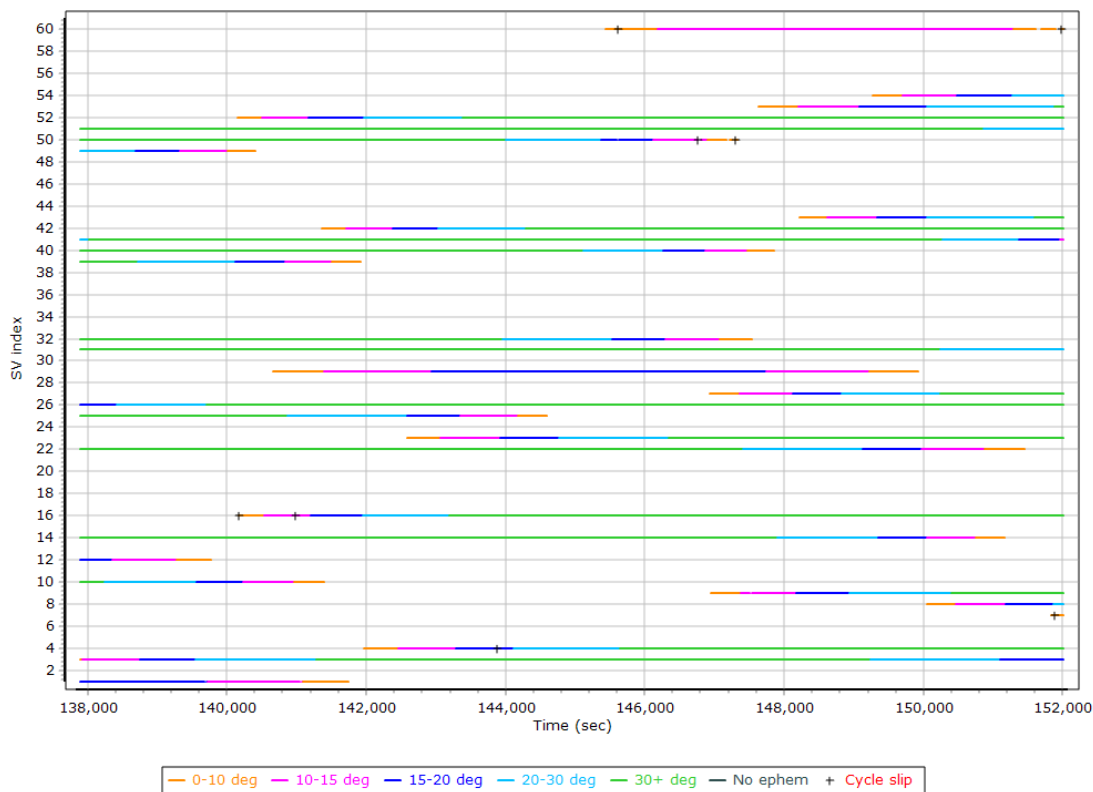
First raw data file	RBV20055A.593		
Last raw data file	RBV20055A.632		
Start GPS week	2094		
Start time	136390.263 (2/24/2020 1:53:10 PM)		
End time	152020.226 (2/24/2020 6:13:40 PM)		
Start of fine alignment	137833.503 (2/24/2020 2:17:13 PM)		
Available subsystems	Primary GNSS, Gimbal, IMU		
POS Event 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

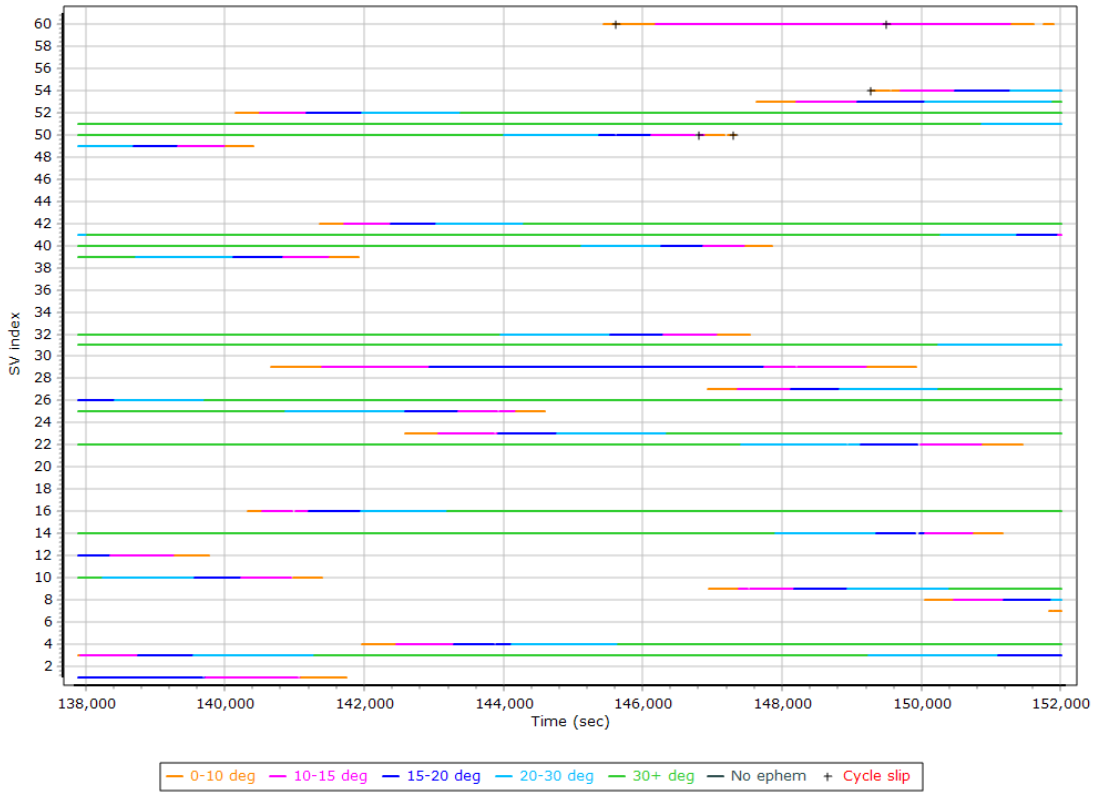
Raw IMU Import QC Summary

IMU data input file	imu_RB20055A_176.dat
IMU data check log file	imudt_RB20055A_176.log
IMU Records Processed	3125420
Termination Status	Normal
IMU Anomalies	0

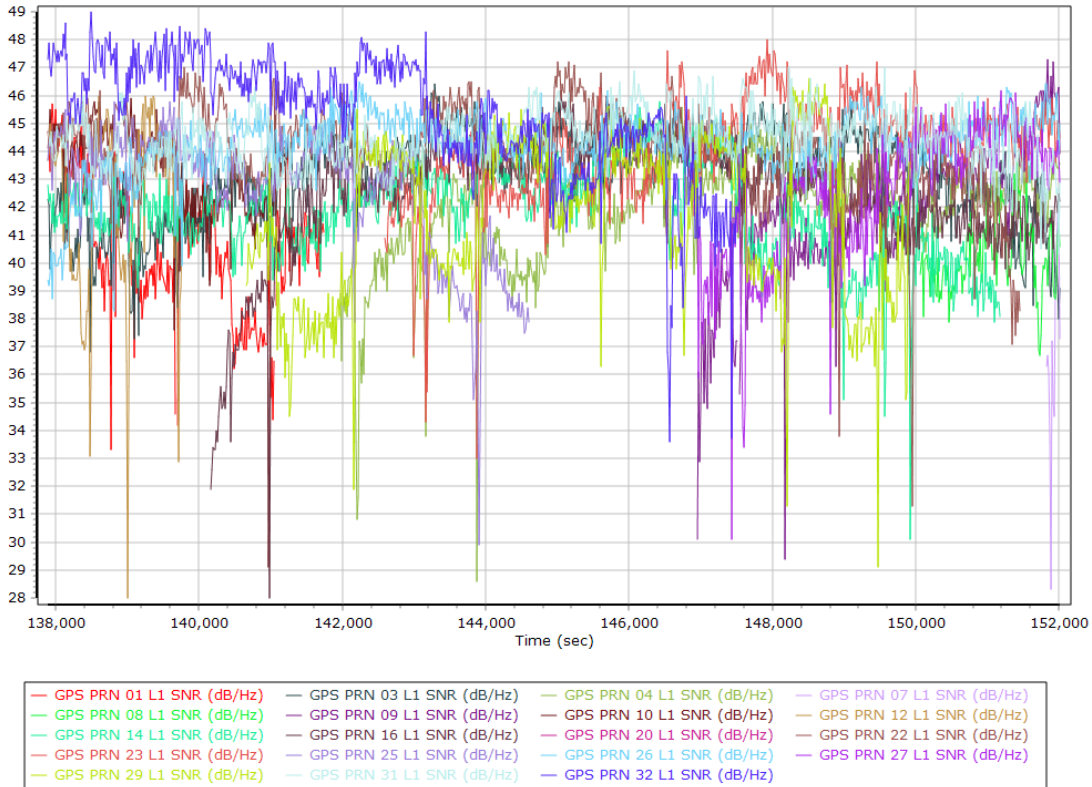
L1 Satellite Lock/Elevation



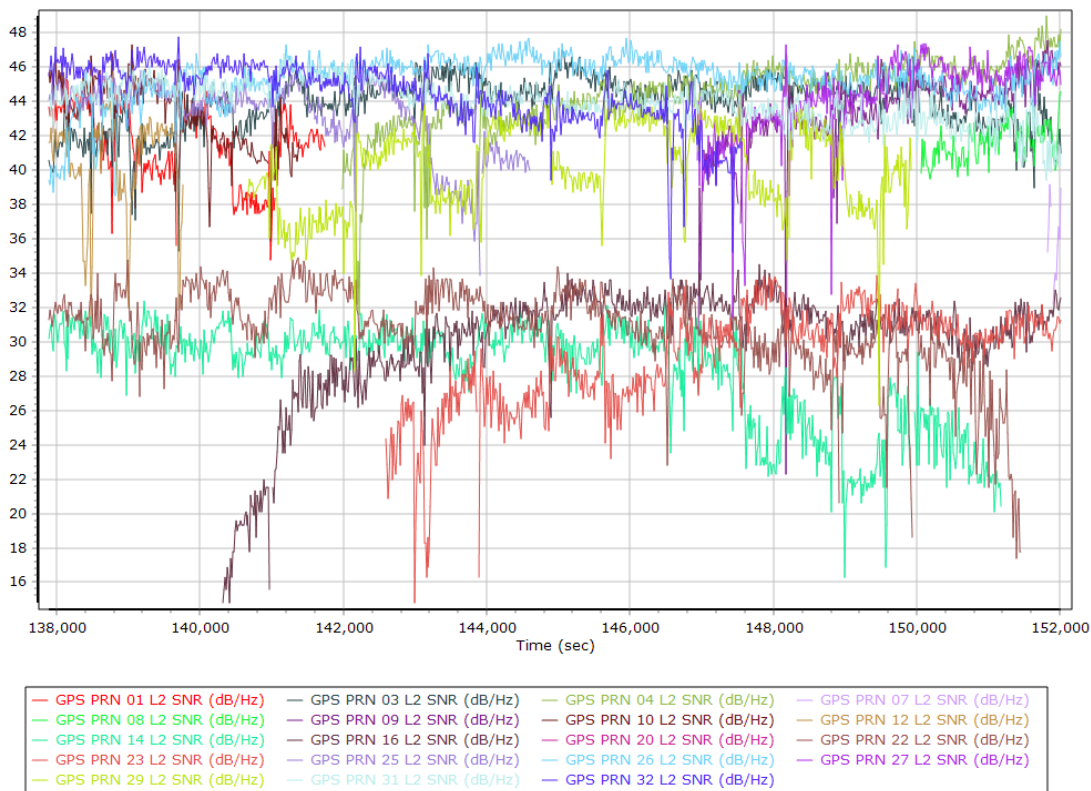
L2 Satellite Lock/Elevation



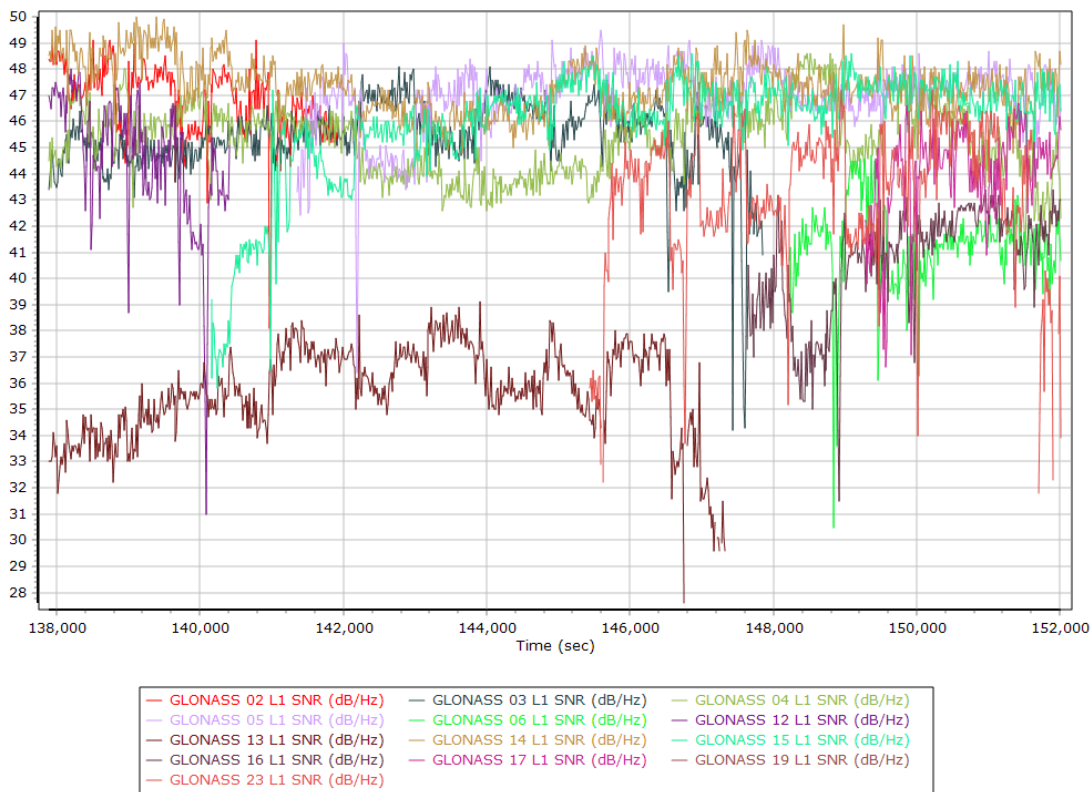
GPS L1 SNR



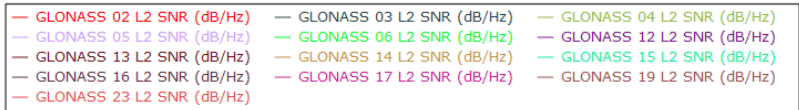
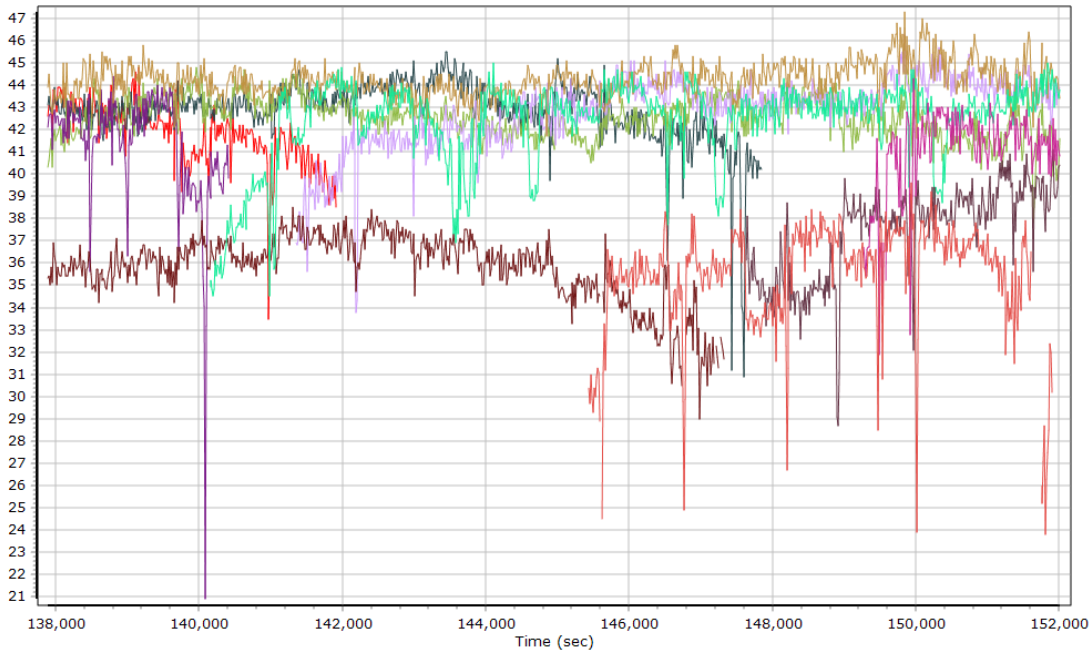
GPS L2 SNR



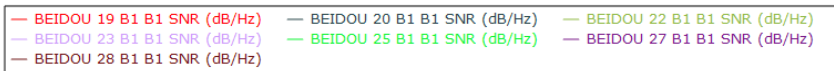
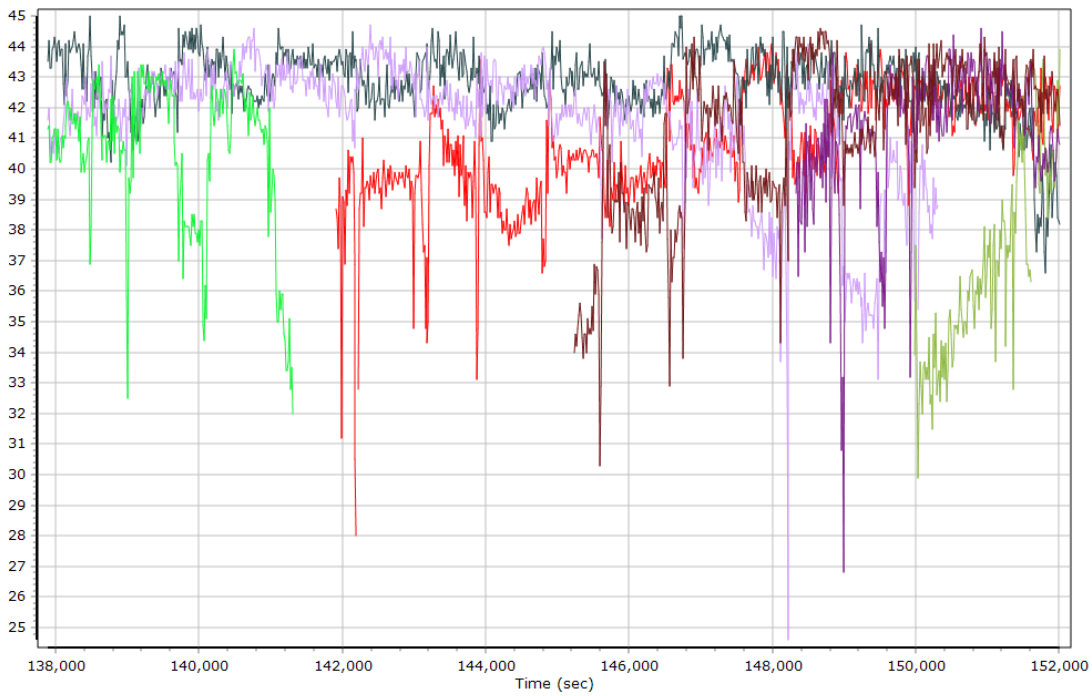
GLONASS L1 SNR



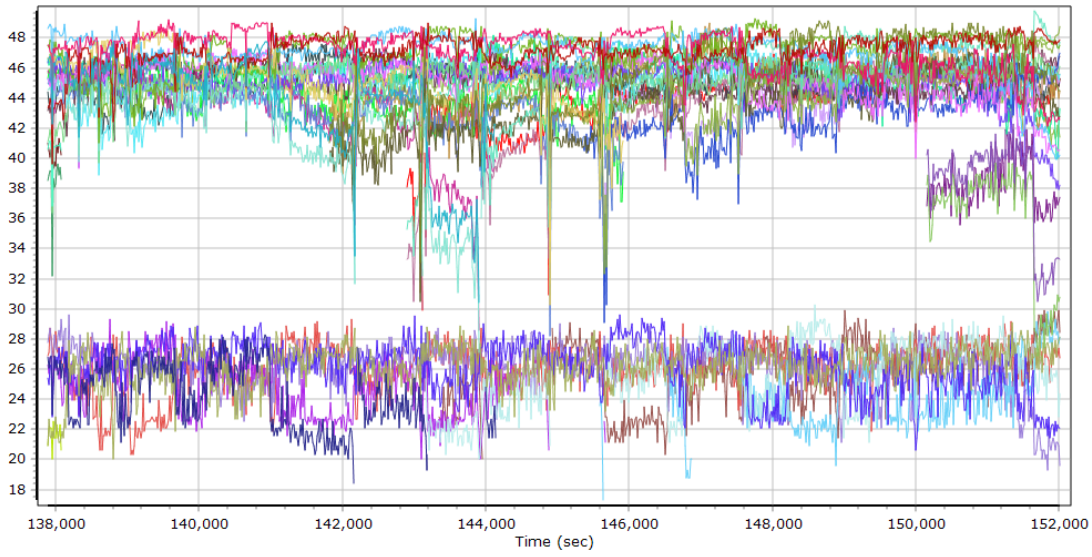
GLONASS L2 SNR



BEIDOU SNR



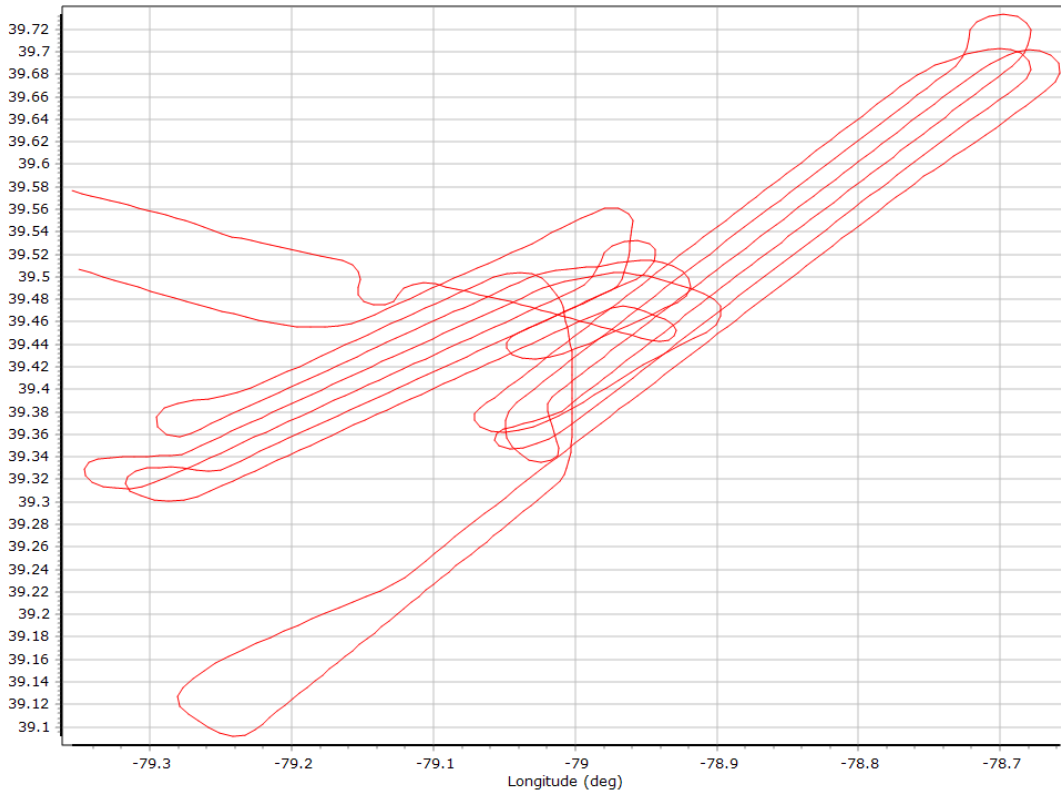
GALILEO SNR



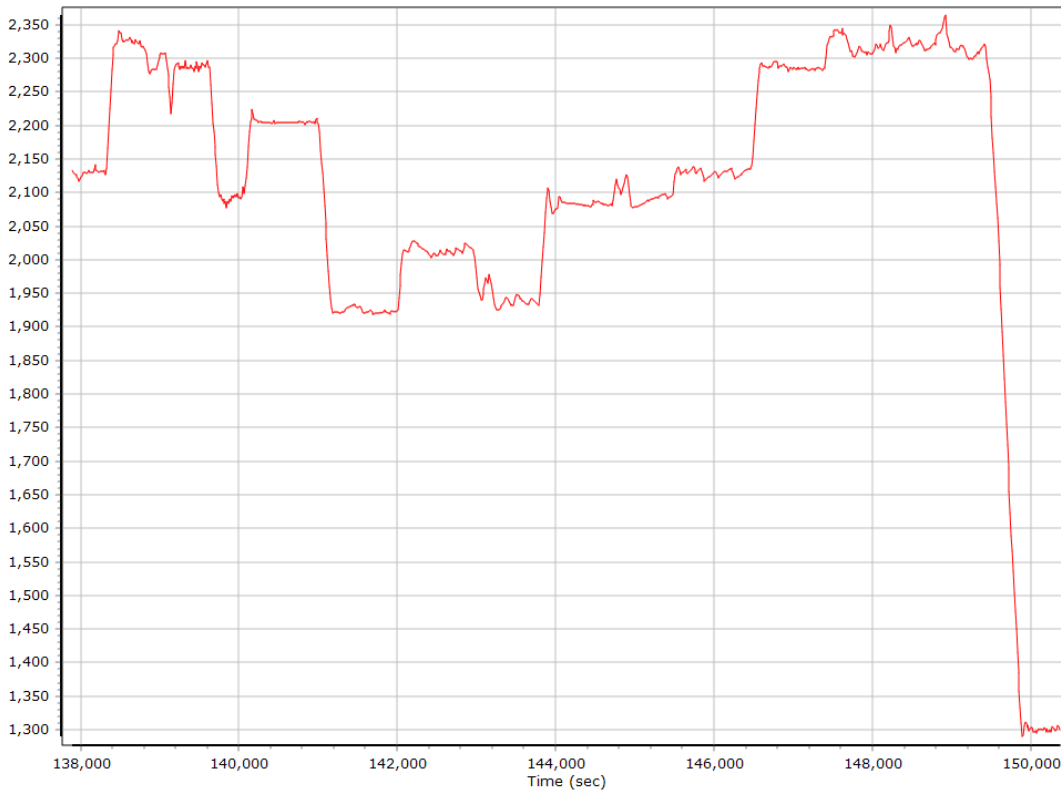
- | | |
|--|--|
| — GALILEO 02 L1 BOC_1_1_D_MBOC SNR (dB/Hz) | — GALILEO 03 L1 BOC_1_1_D_MBOC SNR (dB/Hz) |
| — GALILEO 05 L1 BOC_1_1_D_MBOC SNR (dB/Hz) | — GALILEO 08 L1 BOC_1_1_D_MBOC SNR (dB/Hz) |
| — GALILEO 09 L1 BOC_1_1_D_MBOC SNR (dB/Hz) | — GALILEO 11 L1 BOC_1_1_D_MBOC SNR (dB/Hz) |
| — GALILEO 15 L1 BOC_1_1_D_MBOC SNR (dB/Hz) | — GALILEO 18 L1 BOC_1_1_D_MBOC SNR (dB/Hz) |
| — GALILEO 24 L1 BOC_1_1_D_MBOC SNR (dB/Hz) | — GALILEO 25 L1 BOC_1_1_D_MBOC SNR (dB/Hz) |
| — GALILEO 31 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 05 L5E5A BPSK10_PD SNR (dB/Hz) |
| — GALILEO 08 L5E5A BPSK10_PD SNR (dB/Hz) | — GALILEO 09 L5E5A BPSK10_PD SNR (dB/Hz) |
| — GALILEO 15 L5E5A BPSK10_PD SNR (dB/Hz) | — GALILEO 18 L5E5A BPSK10_PD SNR (dB/Hz) |
| — GALILEO 24 L5E5A BPSK10_PD SNR (dB/Hz) | — GALILEO 25 L5E5A BPSK10_PD SNR (dB/Hz) |

Trajectory Information

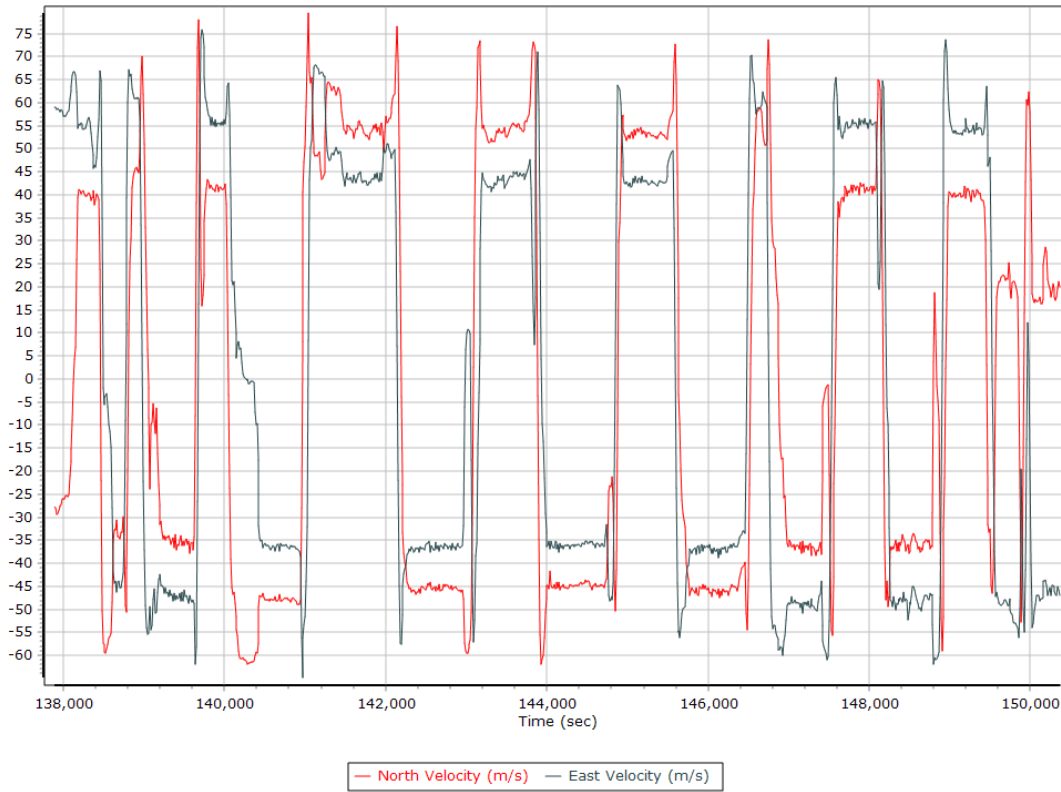
Top View



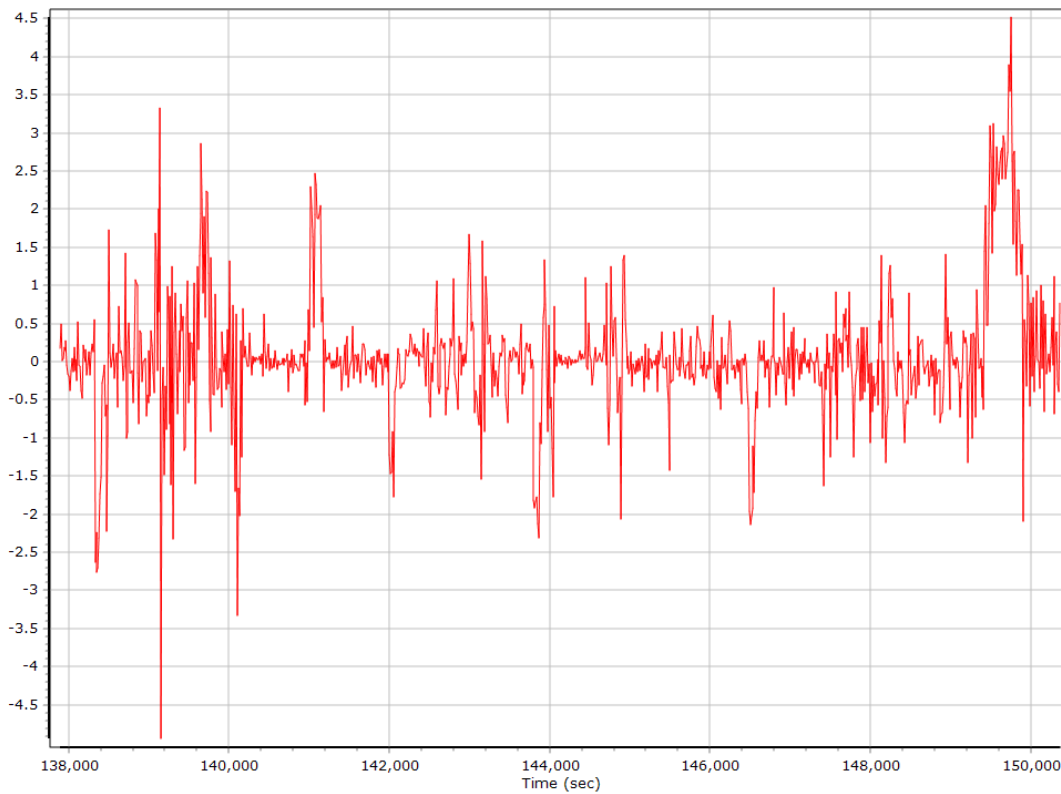
Altitude



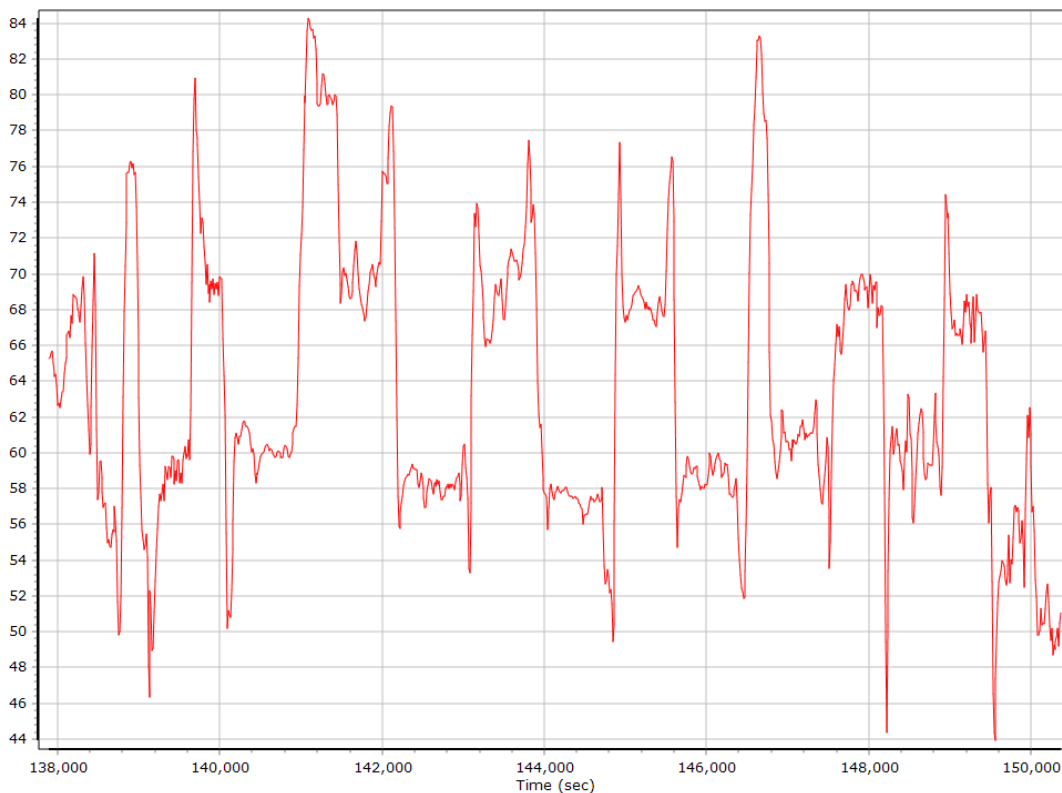
North/East Velocity



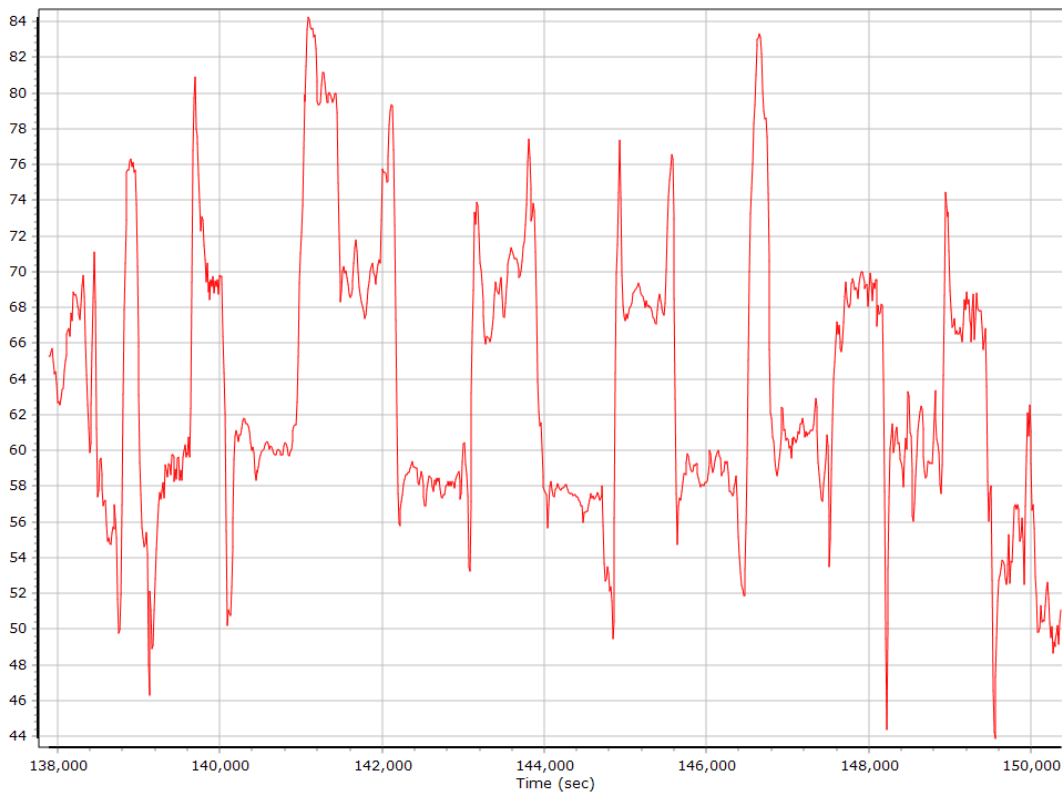
Down Velocity



Total Speed



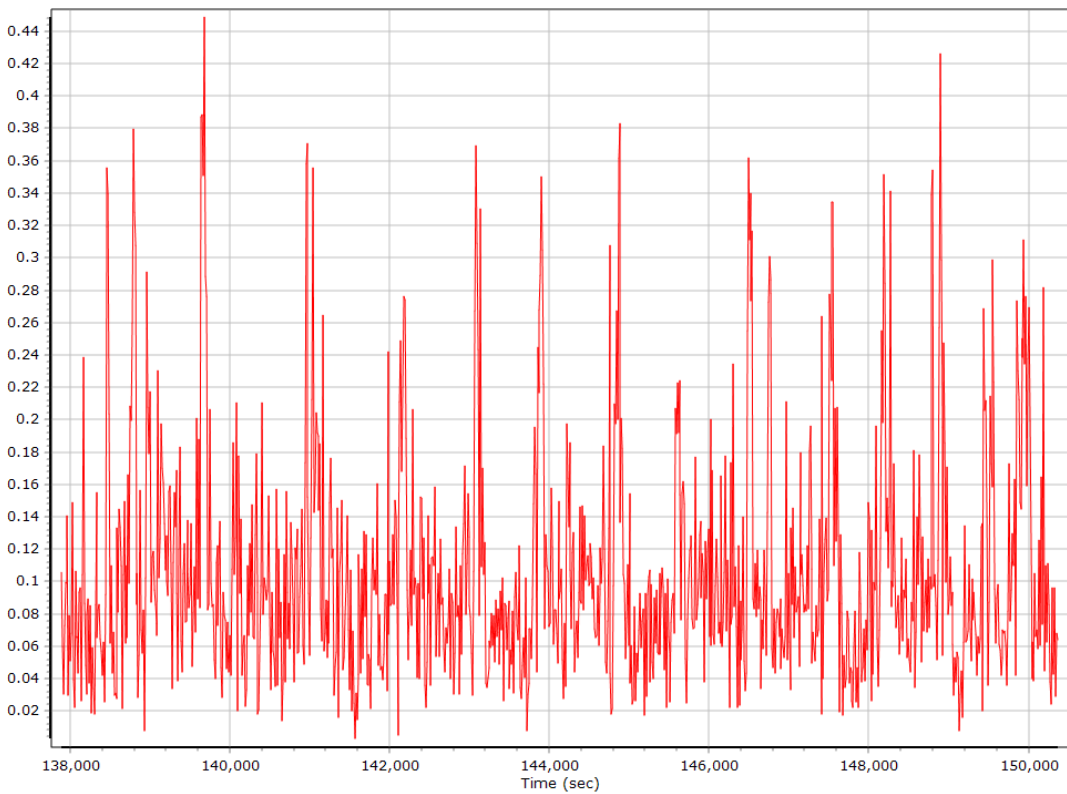
Ground Speed



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
02/24/2020	WVTA	43.17	GNSS	1	User	None	Imported
02/24/2020	WVMF	43.07	GNSS	1	User	None	Imported
02/24/2020	WVCV	62.28	GNSS	1	User	None	Imported
02/24/2020	WVBU	16.01	GNSS	1	User	None	Imported
02/24/2020	PAFM	105.02	GPS	1	User	None	Imported
02/24/2020	LOYS	32.22	GNSS	1	User	None	Imported

SmartBase Results

SmartBase status	PROC_STATUS_OK
Primary station Id	WVBU
Primary station data rate (sec)	1.0
VRS/ASB generation rate (sec)	1.0
VRS/ASB timespan	15628 s (2094 136409 - 2094 152037)
Number of reference stations	6
Primary station GPS measurement usage (%)	99.3
Primary station GLONASS measurement usage (%)	87.4
Average number of satellites per epoch	15.2
Max number of GPS stations used	6
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)	13369
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)	23.80	Output Coordinates	Original	
Solution Epochs	5712	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°26'16.64374"	W79°30'52.95244"	726.067
Coordinate Adjustments		Horizontal (m)	Vertical (m)	Total (m)
Adjustments		0.016	0.001	0.016

Base Station Information

Station ID	WVTA		
Filename	wvta0550.200		
Start date	2/24/2020 12:00:00 AM		
End date	2/24/2020 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 - WVMF

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°04'32.34430"	W78°55'56.99819"	313.553
Adjusted		N39°04'32.34450"	W78°55'56.99807"	313.550
Coordinate Adjustments		Horizontal (m)	Vertical (m)	Total (m)
Adjustments		0.007	0.003	0.008

Base Station Information

Station ID	WVMF		
Filename	wvmf0550.20o		
Start date	2/24/2020 12:00:00 AM		
End date	2/24/2020 11:59:59 PM		
Duration	23:59:59.000		
Data type	GNSS		
Receiver manufacturer, model, serial no.	Trimble	NetR5	4924K62476
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°04'32.34430"		
Longitude	W78°55'56.99819"		
Ellipsoidal height (m)	313.55300		
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)	23.60	Output Coordinates	Adjusted	
Solution Epochs	5663	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°00'55.07508"	W79°27'25.00799"	969.229
Coordinate Adjustments		Horizontal (m)	Vertical (m)	Total (m)
Adjustments		0.000	0.000	0.000

Base Station Information

Station ID	WVCV		
Filename	wvcv0550.20o		
Start date	2/24/2020 12:00:00 AM		
End date	2/24/2020 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	CONTROL	SBQI	0	
Duration (Hours)	23.80	Output Coordinates	Control	
Solution Epochs	5712	Mean Epoch SVs	8.6	
Base Station Coordinates		Latitude	Longitude	Height (m)
Original		N39°20'16.82171"	W78°54'48.58712"	200.059
Adjusted		N39°20'16.82171"	W78°54'48.58712"	200.059
Coordinate Adjustments		Horizontal (m)	Vertical (m)	Total (m)
Adjustments		0.000	0.000	0.000

Base Station Information

Station ID	WVBU		
Filename	wvbu0550.20o		
Start date	2/24/2020 12:00:00 AM		
End date	2/24/2020 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 - PAFM

Status	OK	SBQI	0	
Duration (Hours)	23.80	Output Coordinates	Original	
Solution Epochs	5711	Mean Epoch SVs	8.6	
Base Station Coordinates		Latitude	Longitude	Height (m)
Original		N39°57'44.91208"	W77°58'43.61770"	286.767
Adjusted		N39°57'44.91220"	W77°58'43.61798"	286.764
Coordinate Adjustments		Horizontal (m)	Vertical (m)	Total (m)
Adjustments		0.008	0.003	0.008

Base Station Information

Station ID	PAFM		
Filename	pafm0550.20o		
Start date	2/24/2020 12:00:00 AM		
End date	2/24/2020 11:59:59 PM		
Duration	23:59:59.000		
Data type	GPS		
Receiver manufacturer, model, serial no.	Trimble	5700	0220292729
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°57'44.91208"		
Longitude	W77°58'43.61770"		
Ellipsoidal height (m)	286.76700		
Frame	ITRF00		
Epoch	1997		
Ellipsoid	WGS84		
Velocity North (mm/y)	0		
Velocity East (mm/y)	0		
Velocity Up (mm/y)	0		

Base Station - LOYS

Status	OK	SBQI	0	
Duration (Hours)	23.80	Output Coordinates	Original	
Solution Epochs	5712	Mean Epoch SVs	8.6	
Base Station Coordinates		Latitude	Longitude	Height (m)
Original		N39°38'46.39064"	W78°43'47.89728"	169.359
Adjusted		N39°38'46.39075"	W78°43'47.89766"	169.349
Coordinate Adjustments		Horizontal (m)	Vertical (m)	Total (m)
Adjustments		0.010	0.010	0.014

Base Station Information

Station ID	LOYS		
Filename	loys0550.20o		
Start date	2/24/2020 12:00:00 AM		
End date	2/24/2020 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)	169.35900		
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)	0.89	68.75	
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	8	17	15
PDOP	1.14	2.03	1.38
QC Solution Gaps	1.00	1.00	
Solution Type	Fixed	Float	No solution
Epoch (sec)	15585.00	0.00	1.00
Percentage	99.99	0.00	0.01

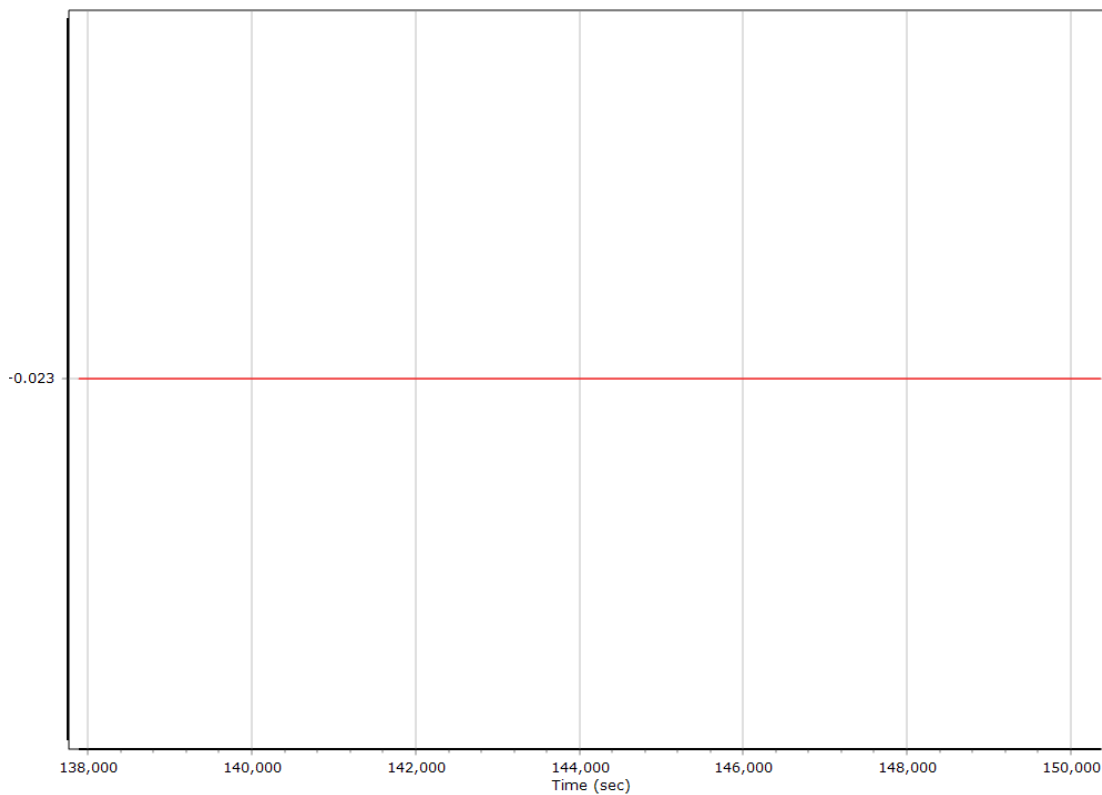
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion SmartBase		
Stabilized mount	True		
Base station	ASB		
Processing start time	137832.533 (2/24/2020 2:17:12 PM)		
Processing end time	150374.909 (2/24/2020 5:46:14 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

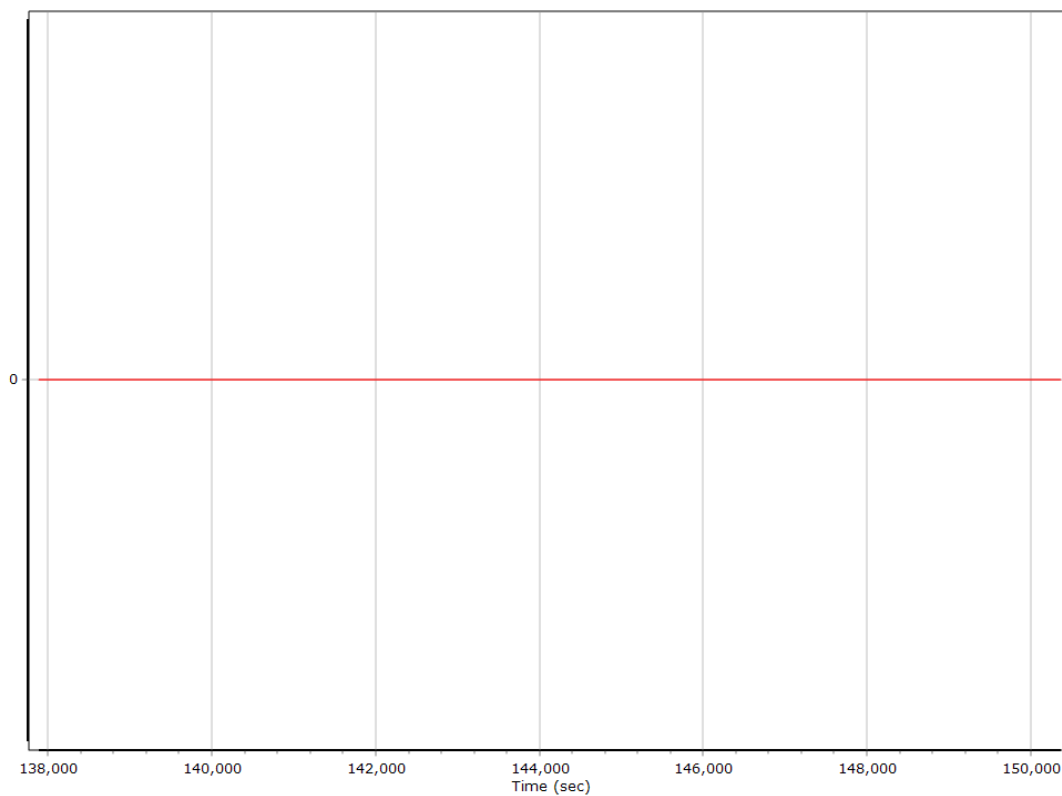
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

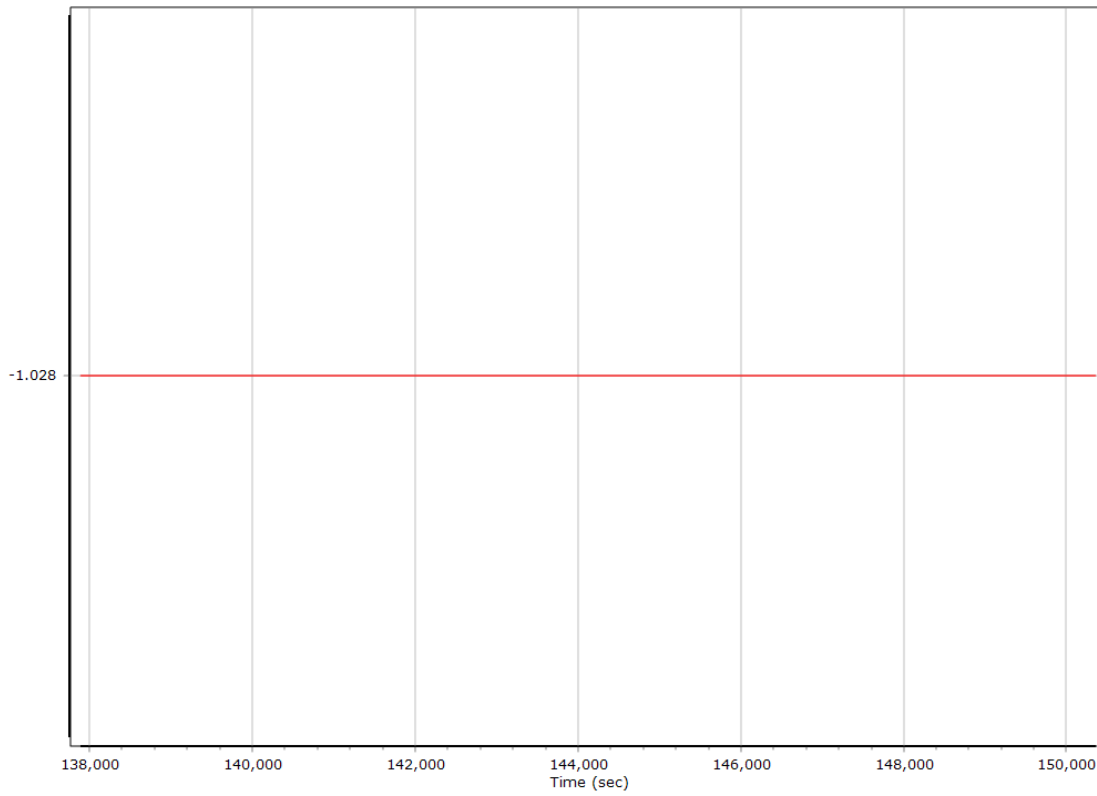
X Reference-Primary GNSS Lever Arm (m)



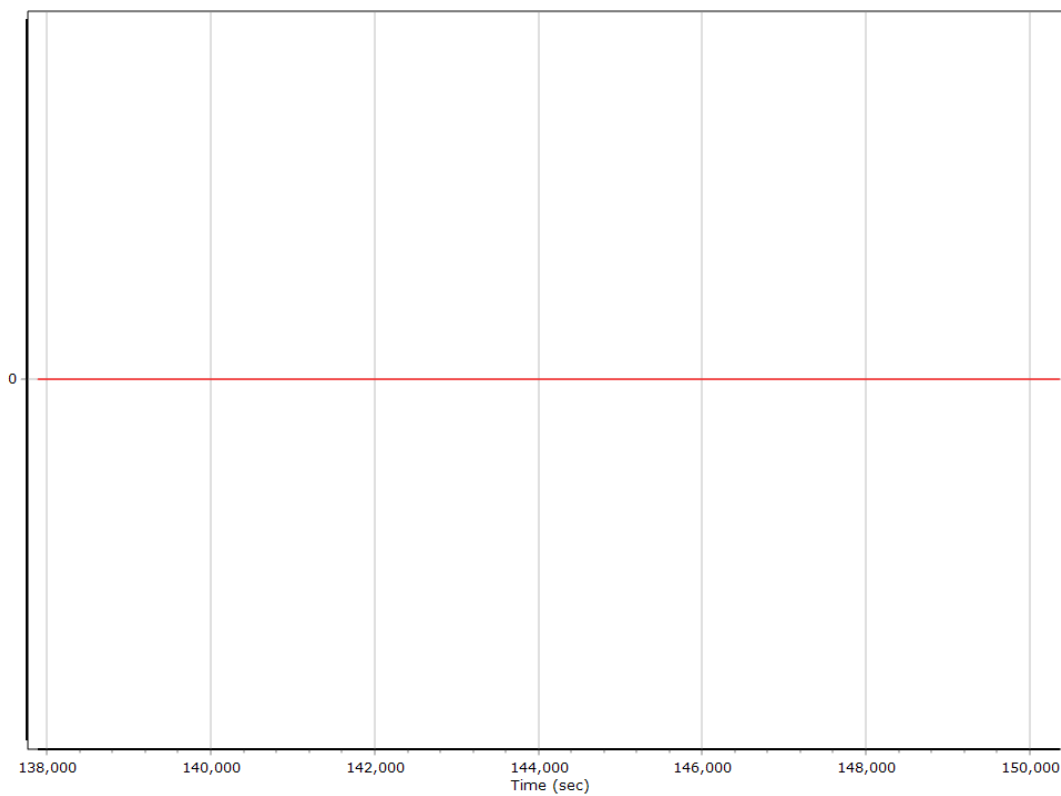
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



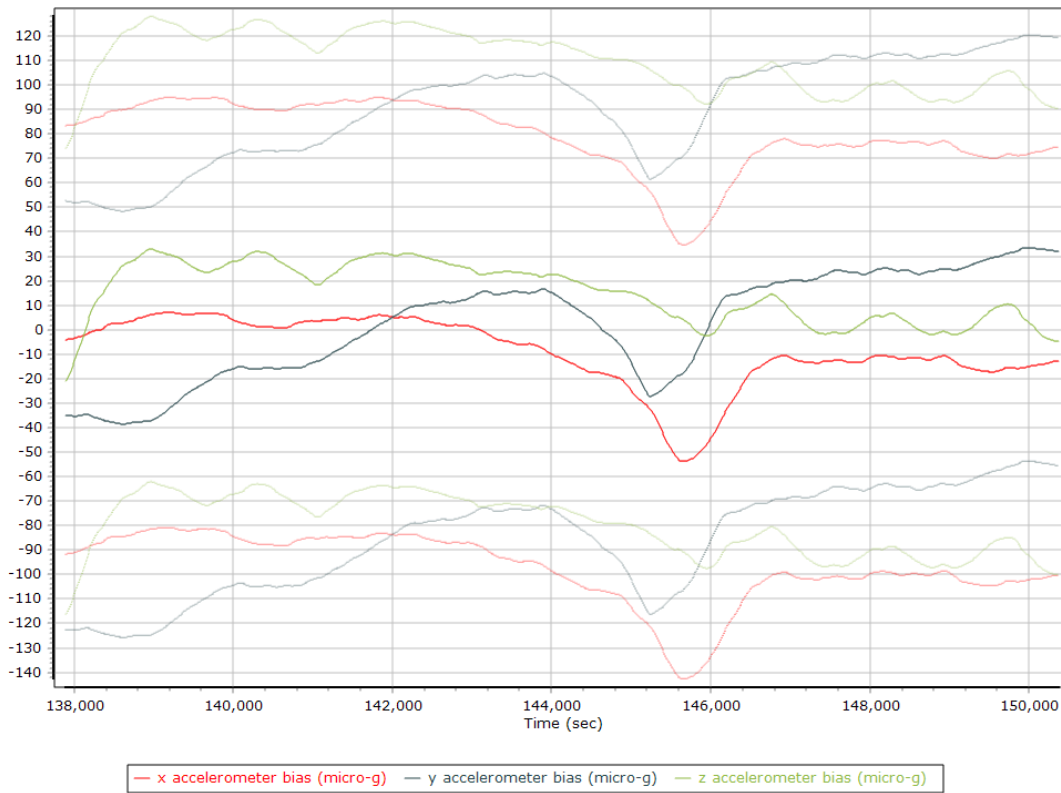
Reference-Primary GNSS Lever Arm Figure of Merit



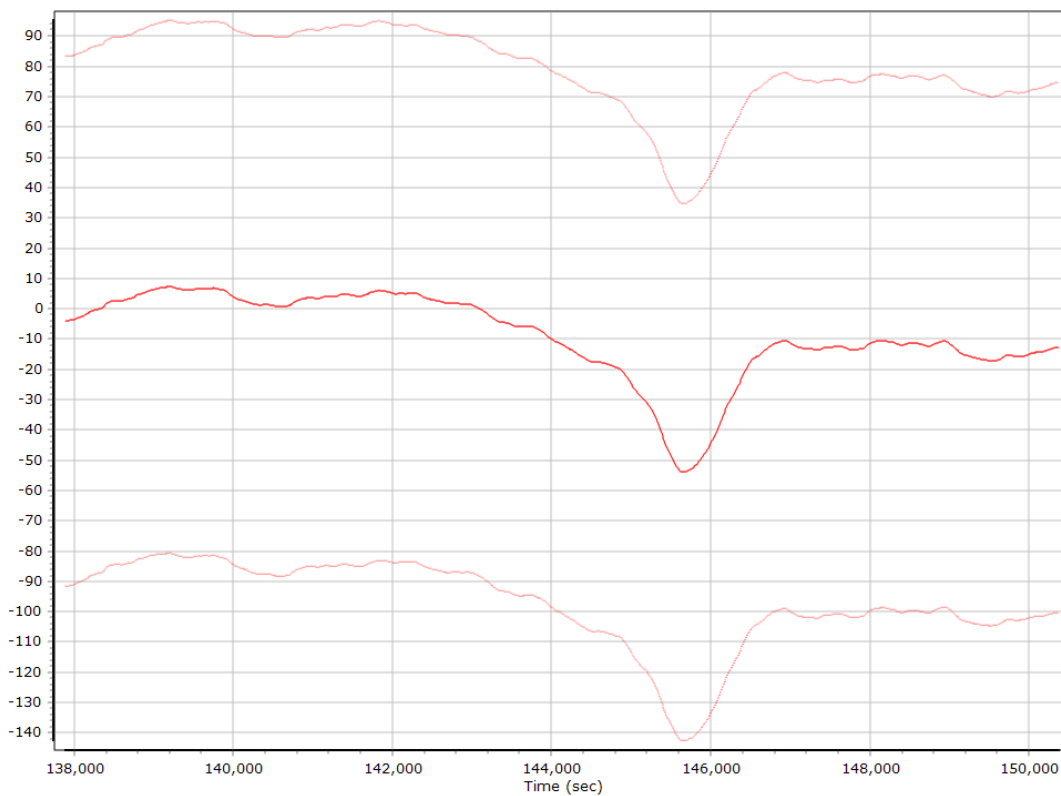
Smoothed IN-Fusion QC

Smoothed Estimated Errors, Reference Frame

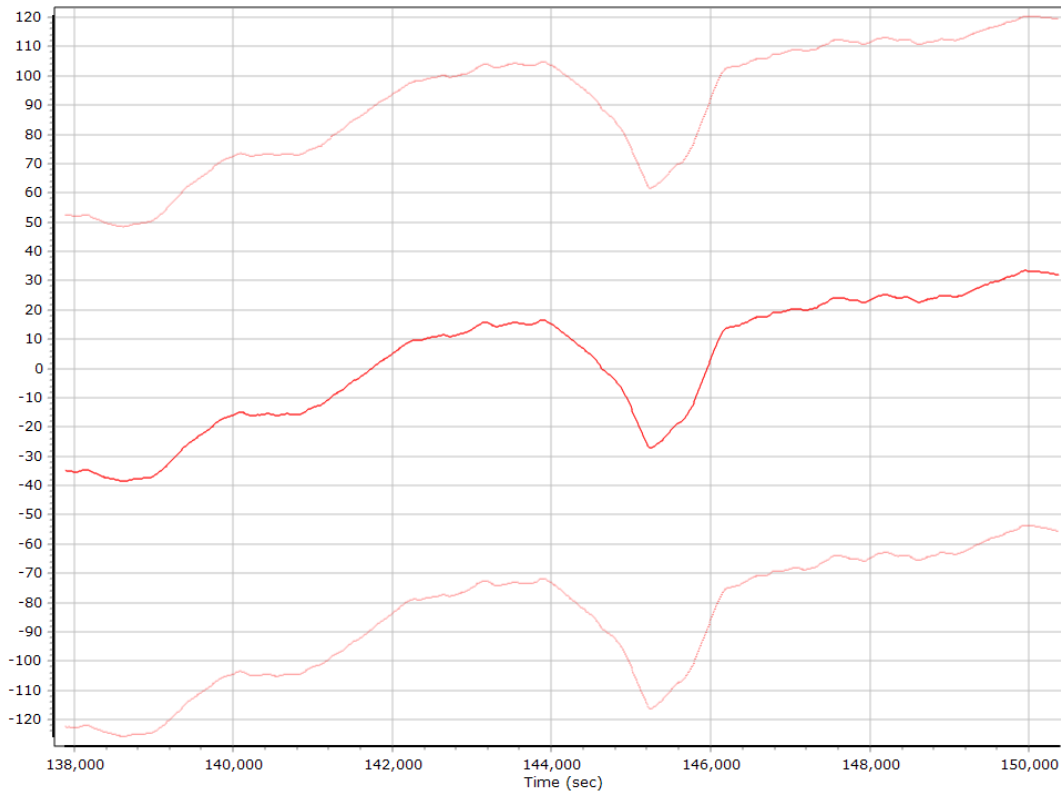
Accelerometer Bias (micro-g)



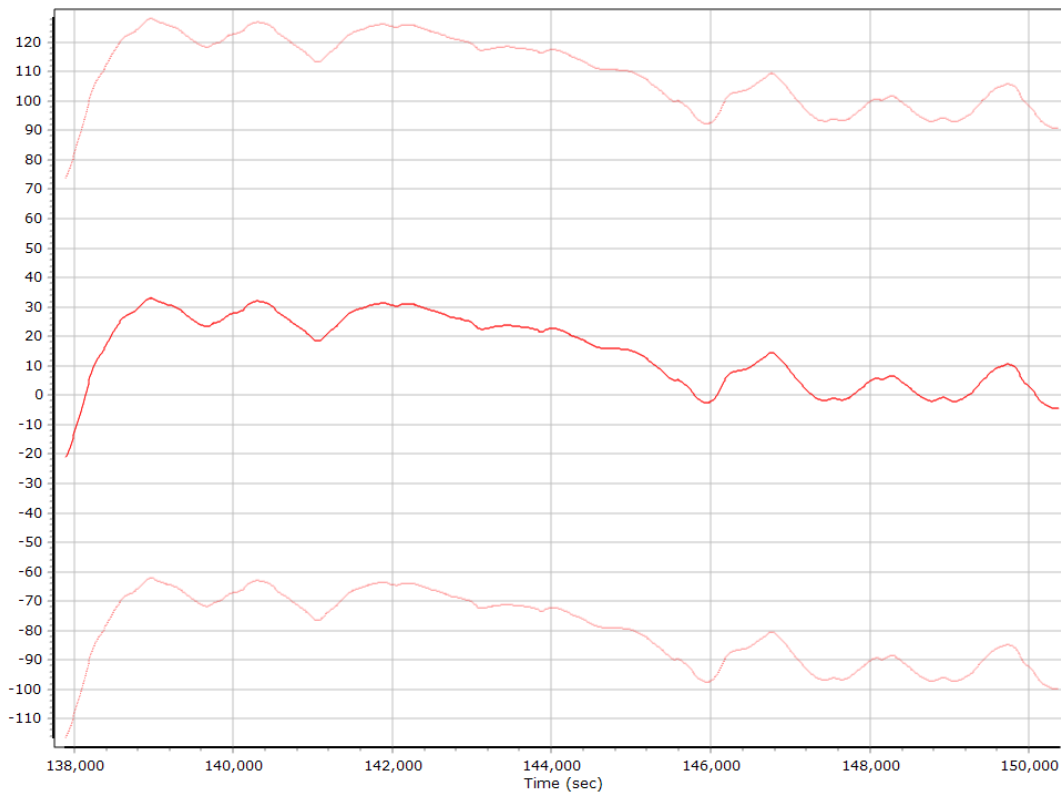
X Accelerometer Bias (micro-g)



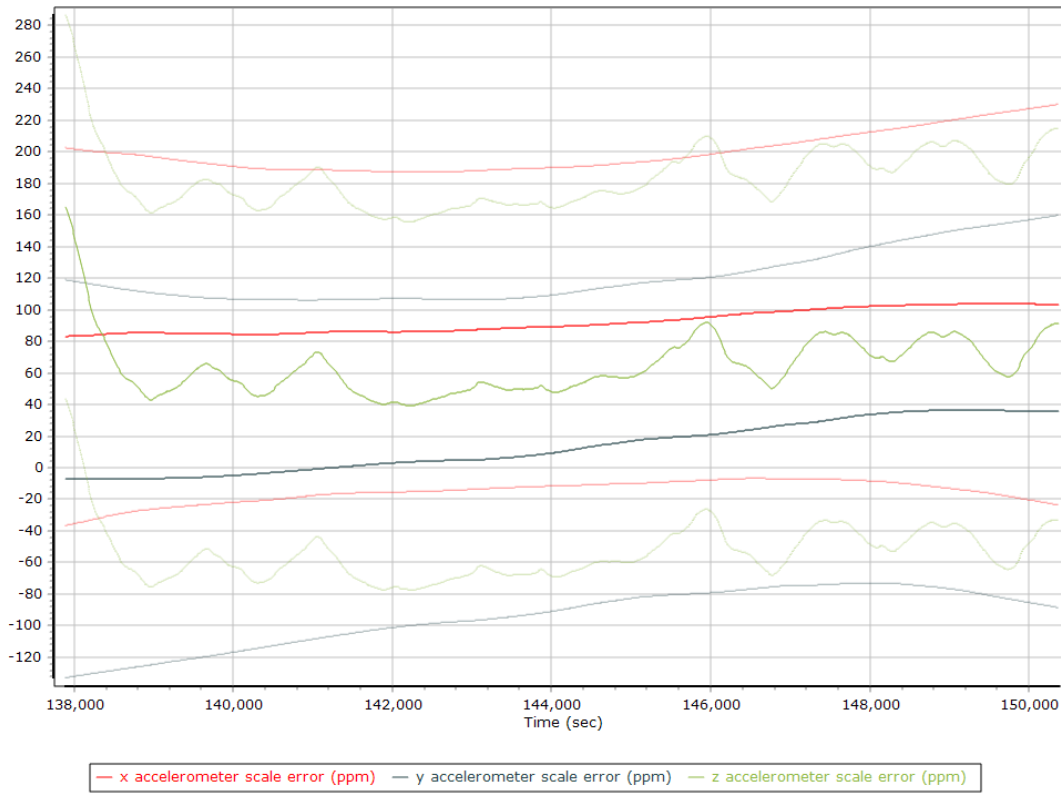
Y Accelerometer Bias (micro-g)



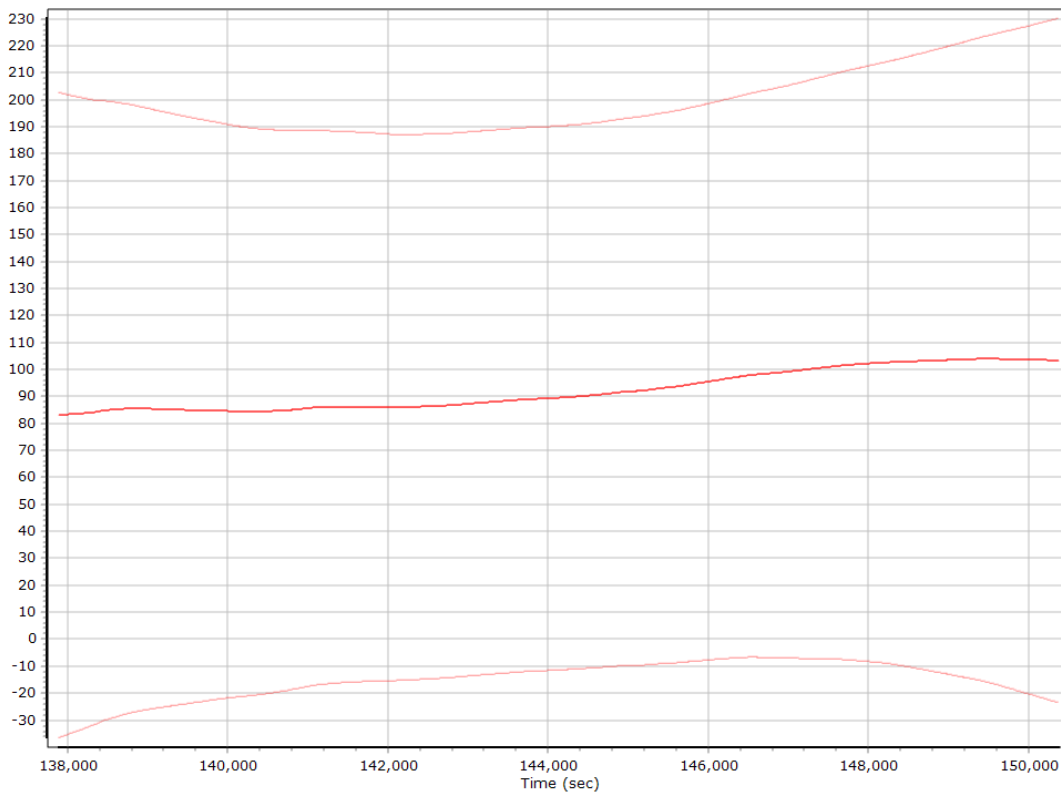
Z Accelerometer Bias (micro-g)



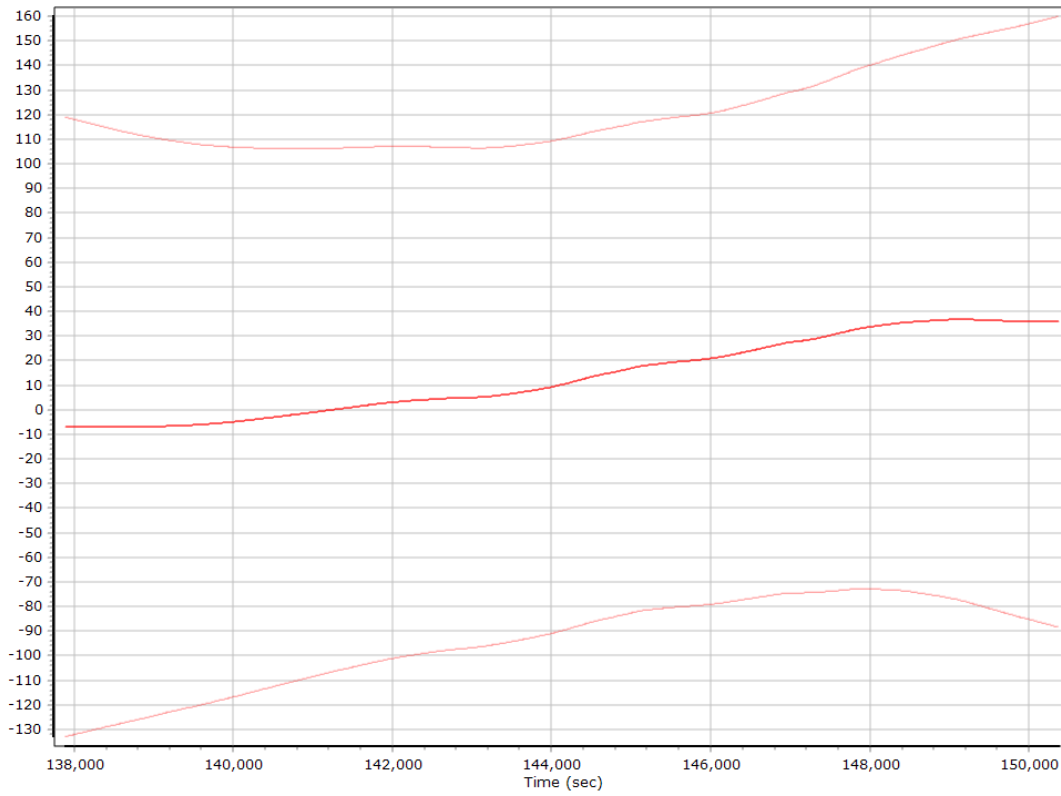
Accelerometer Scale Error (ppm)



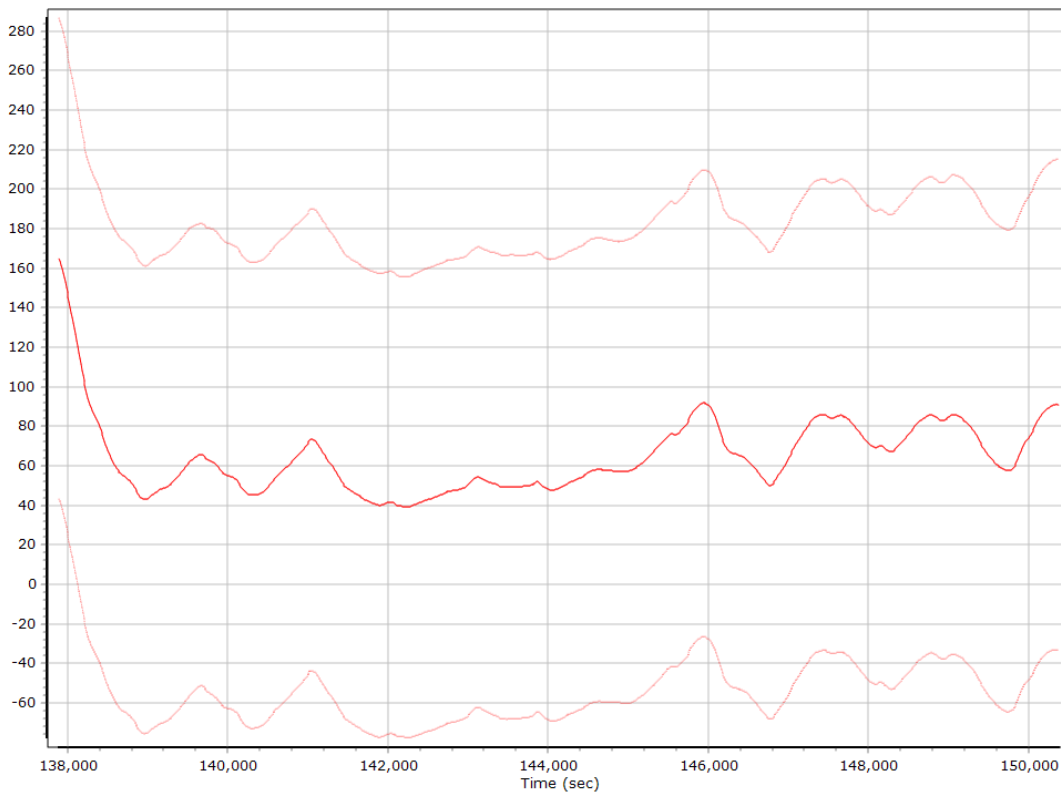
X Accelerometer Scale Error (ppm)



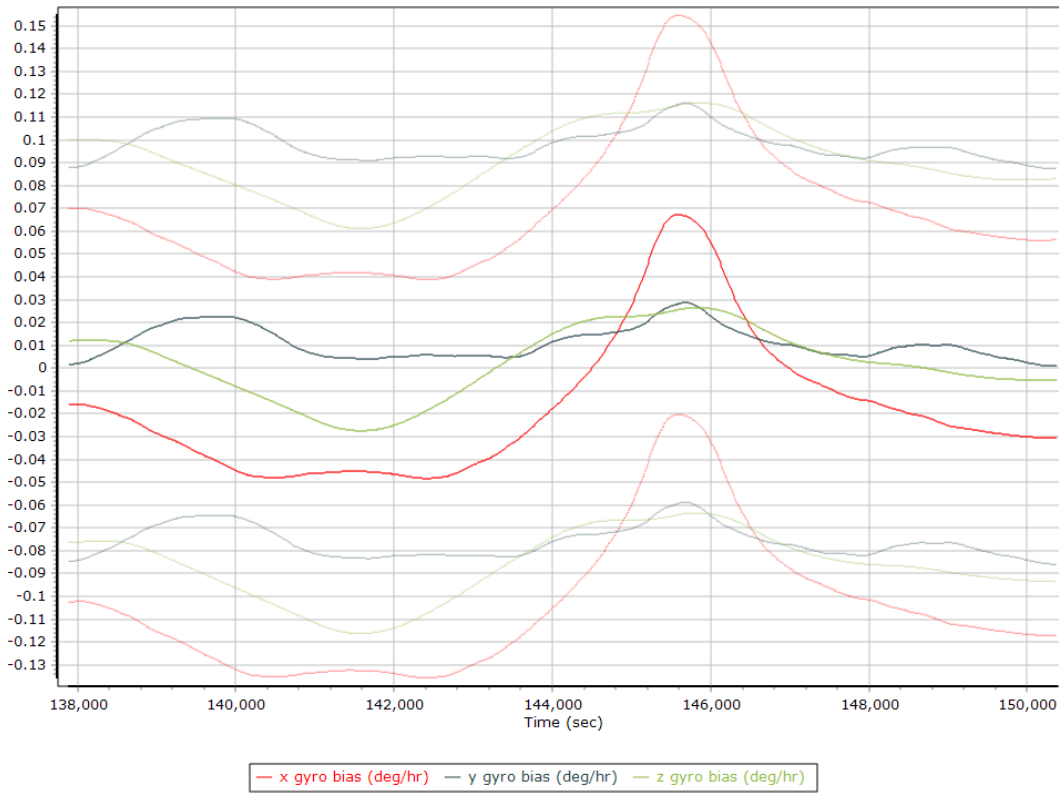
Y Accelerometer Scale Error (ppm)



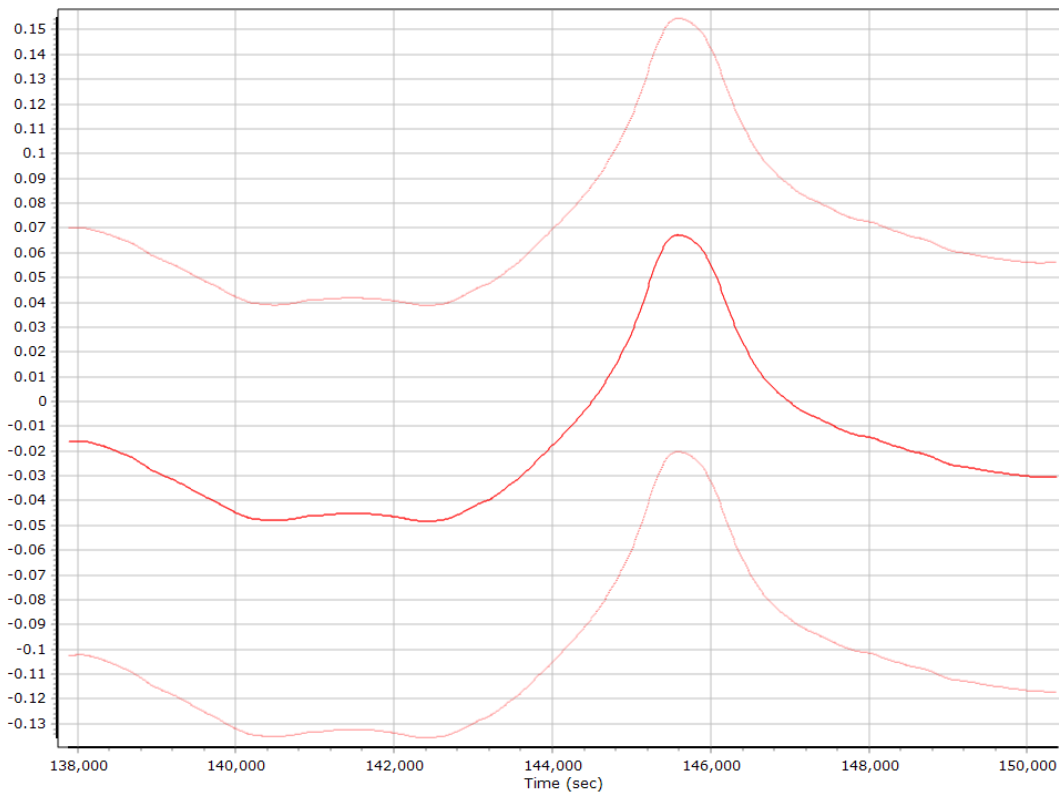
Z Accelerometer Scale Error (ppm)



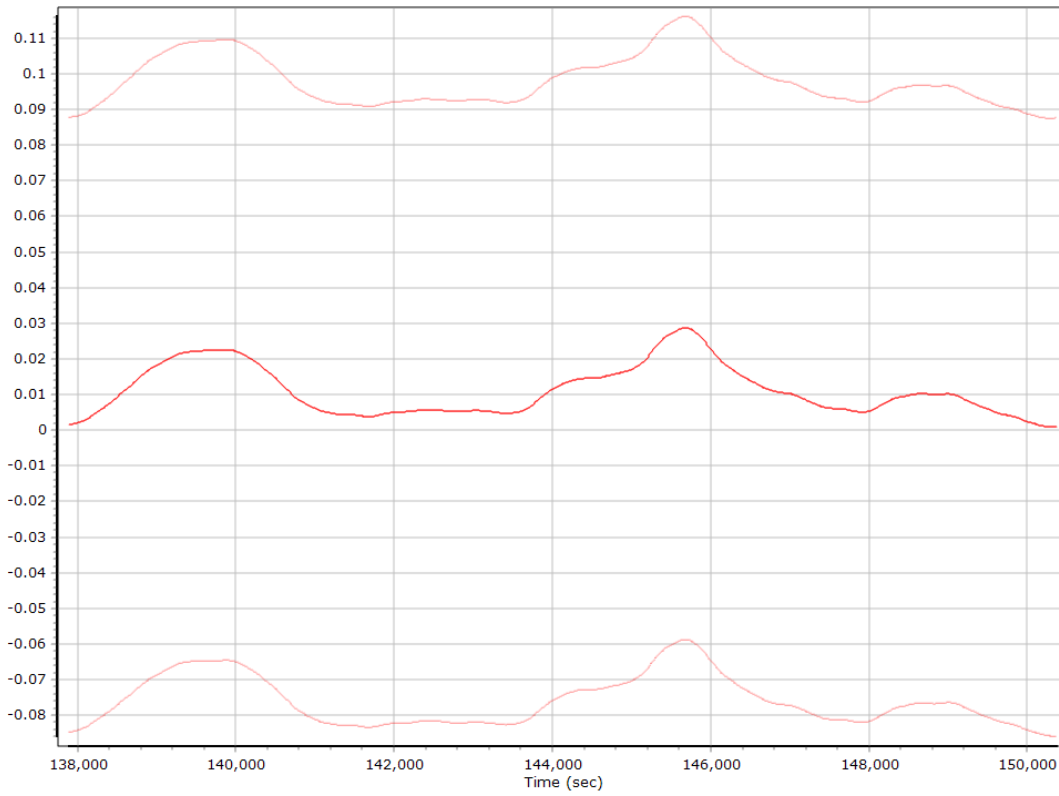
Gyro Bias (deg/h)



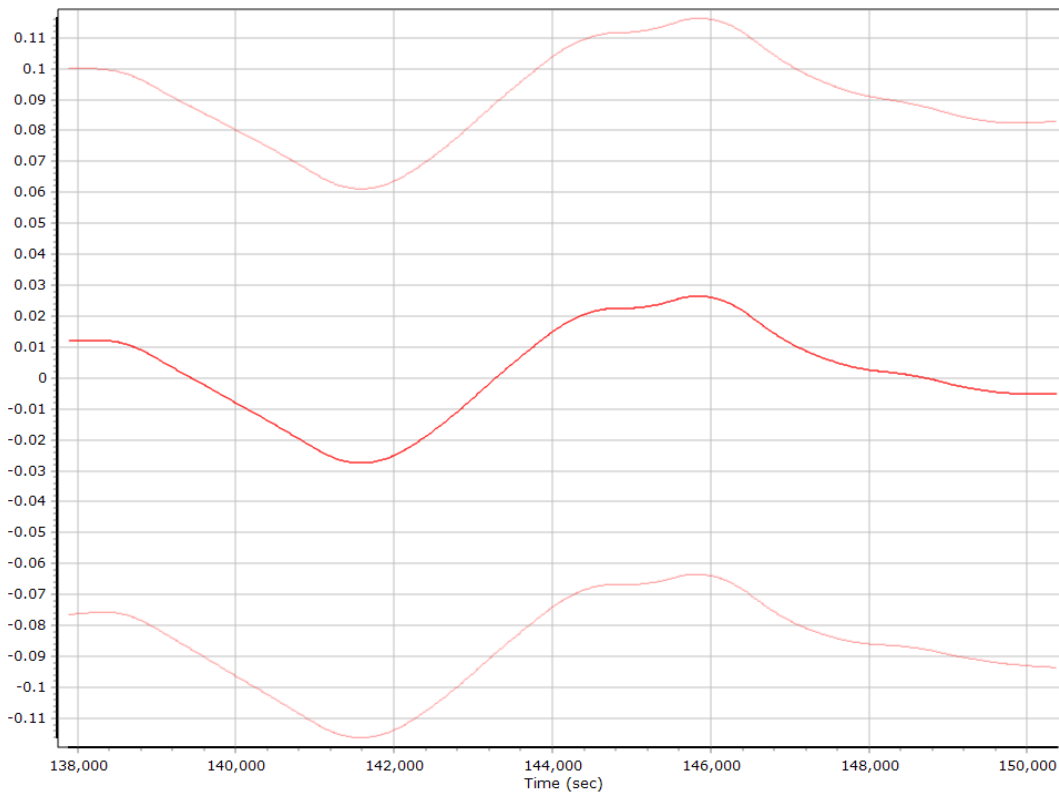
X Gyro Bias (deg/h)



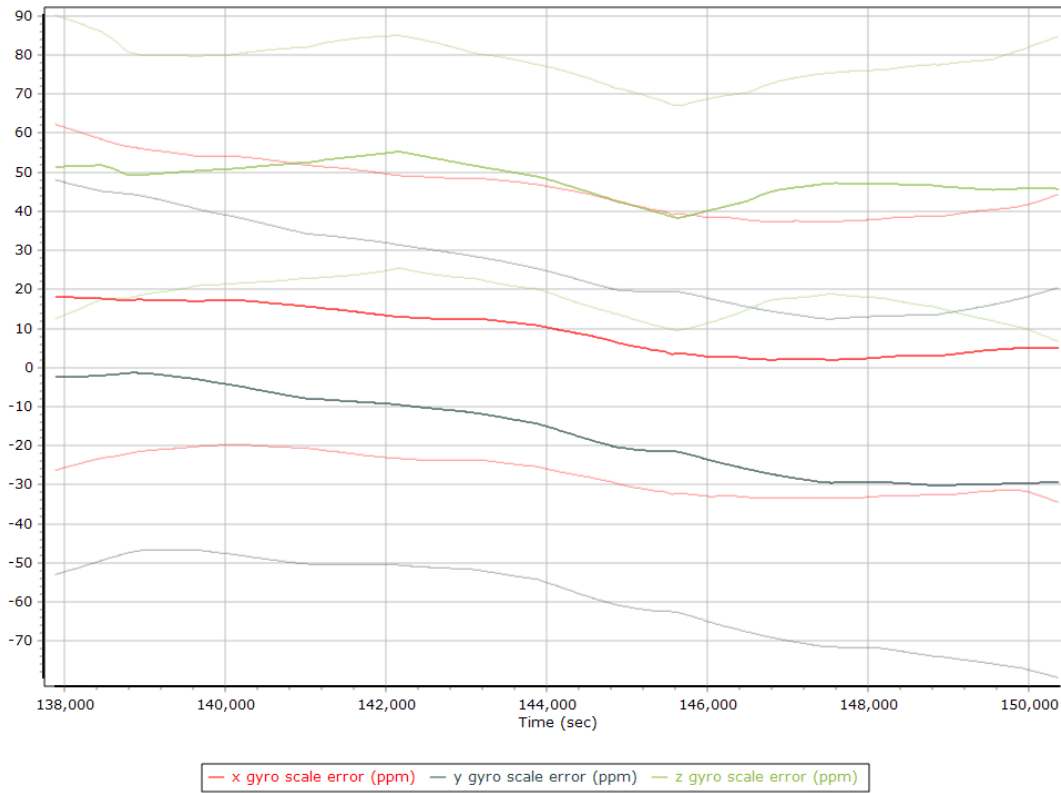
Y Gyro Bias (deg/h)



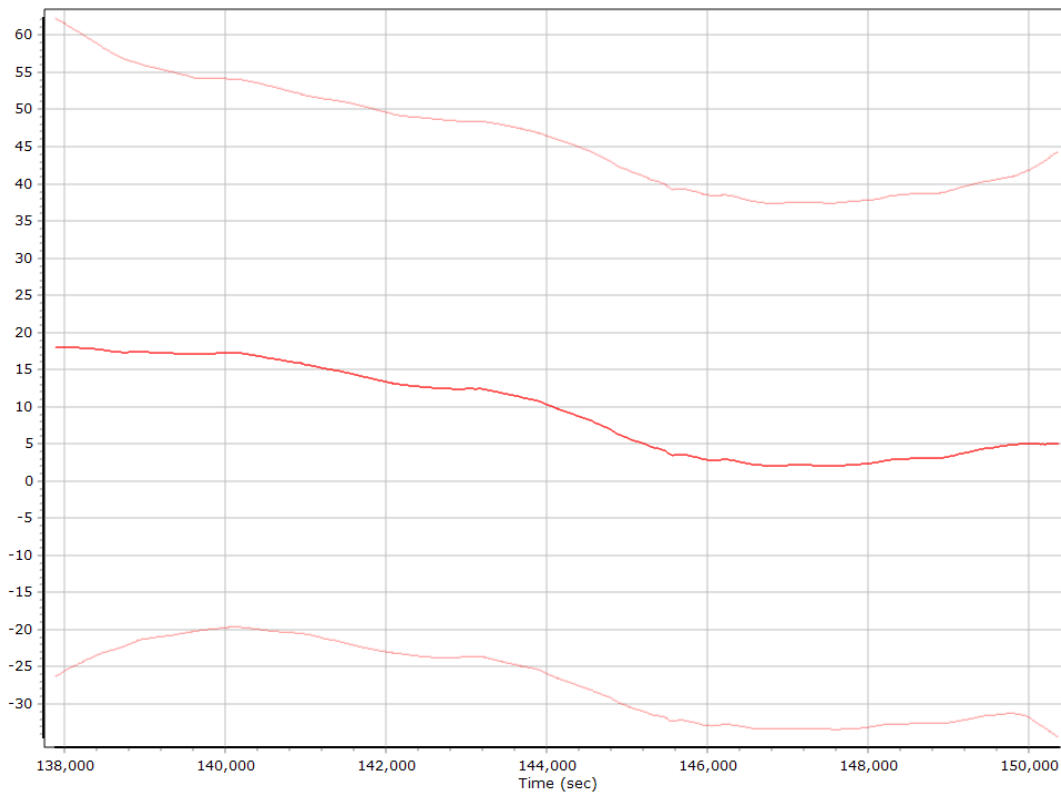
Z Gyro Bias (deg/h)



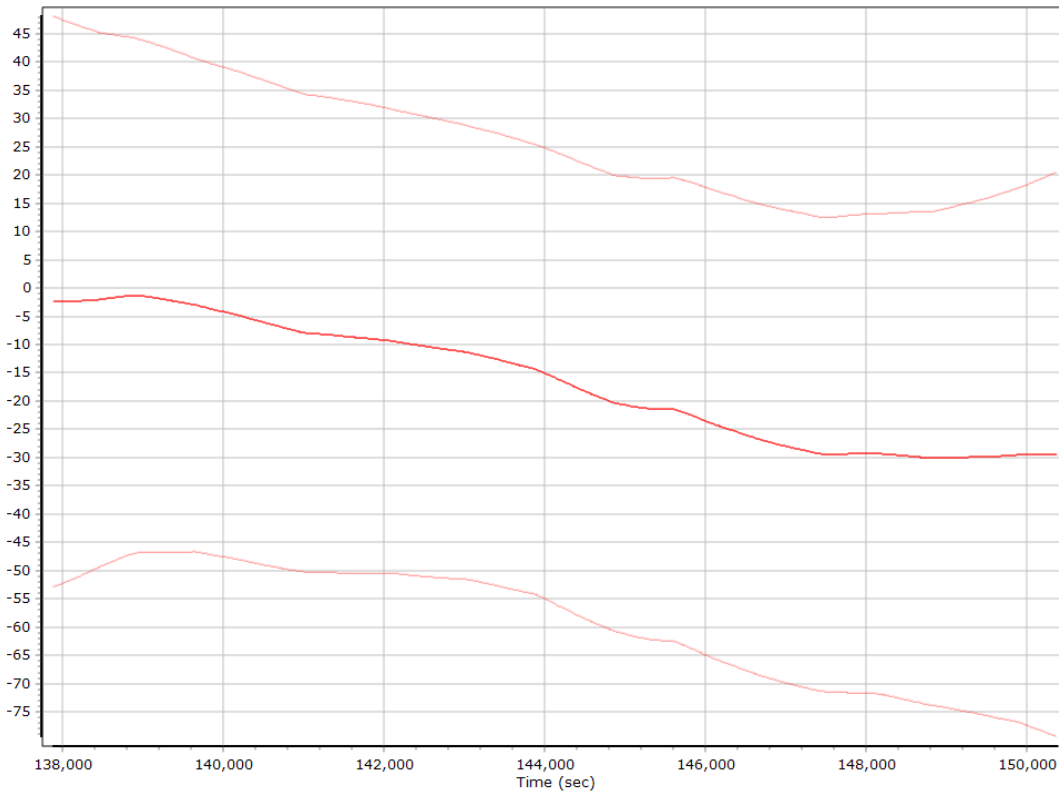
Gyro Scale Error (ppm)



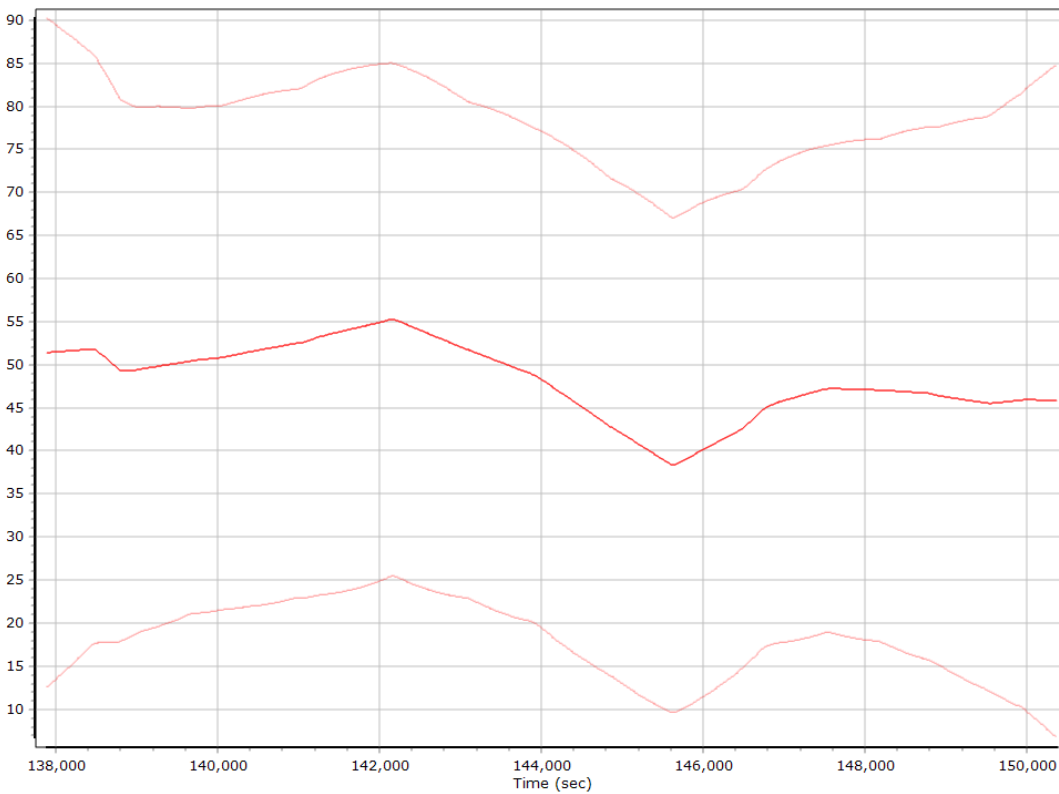
X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)

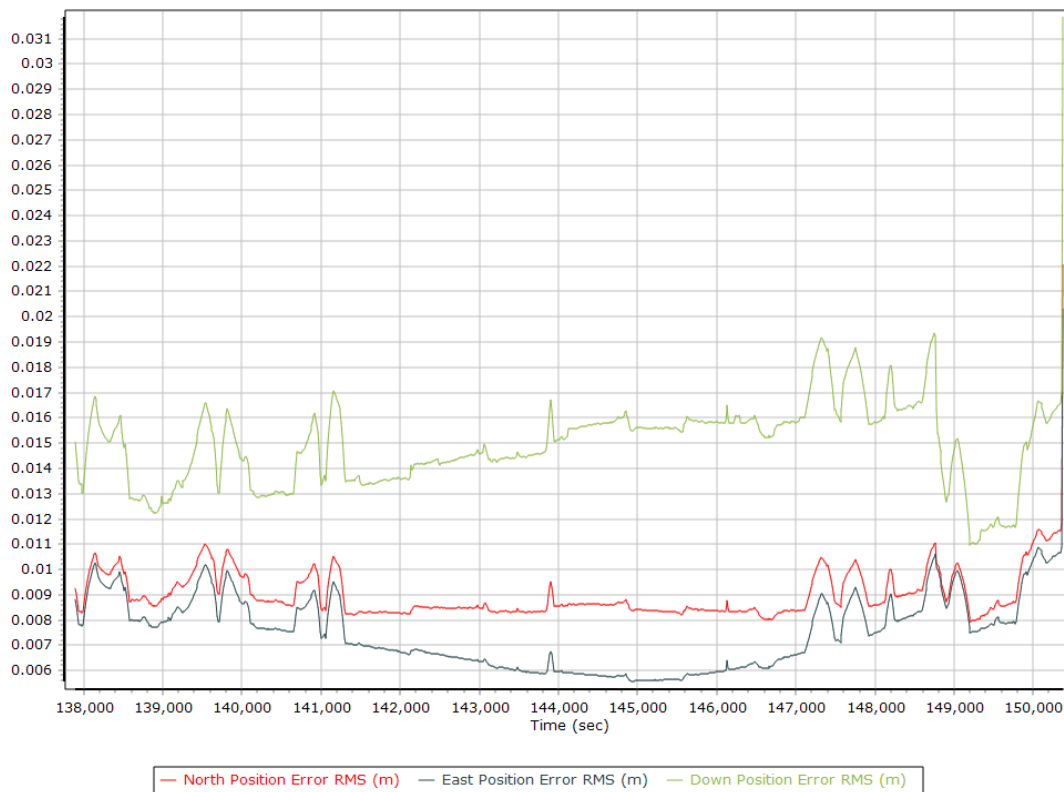


Z Gyro Scale Error (ppm)

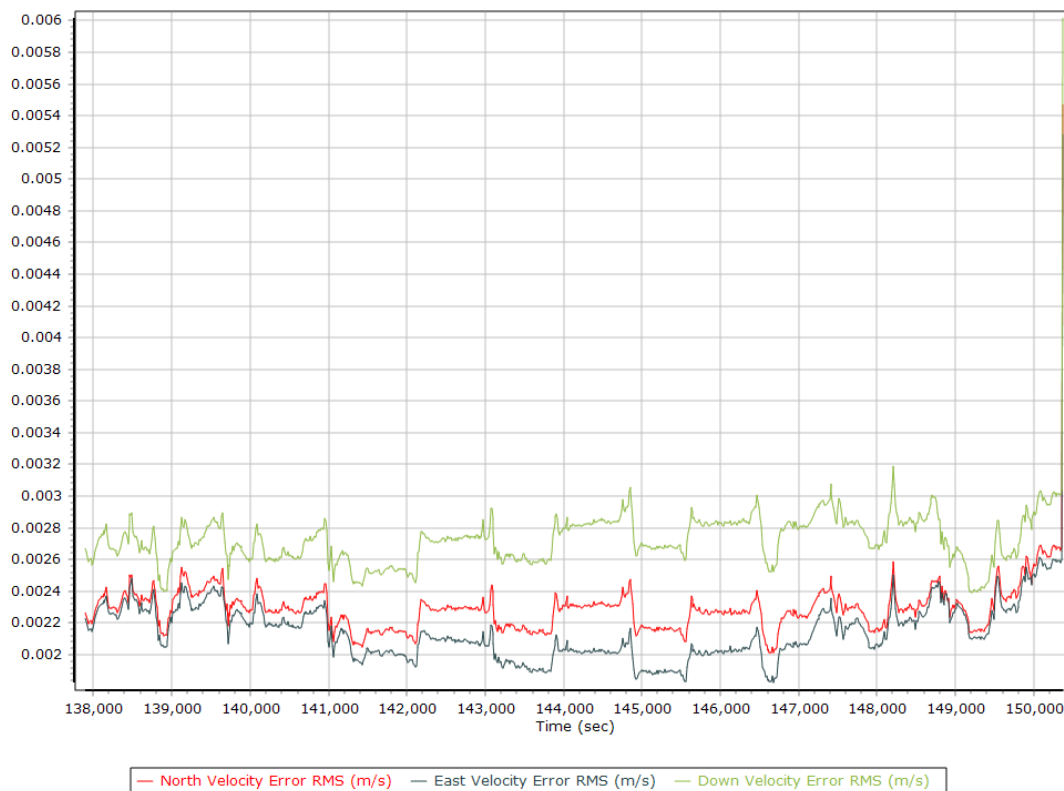


Smoothed Performance Metrics

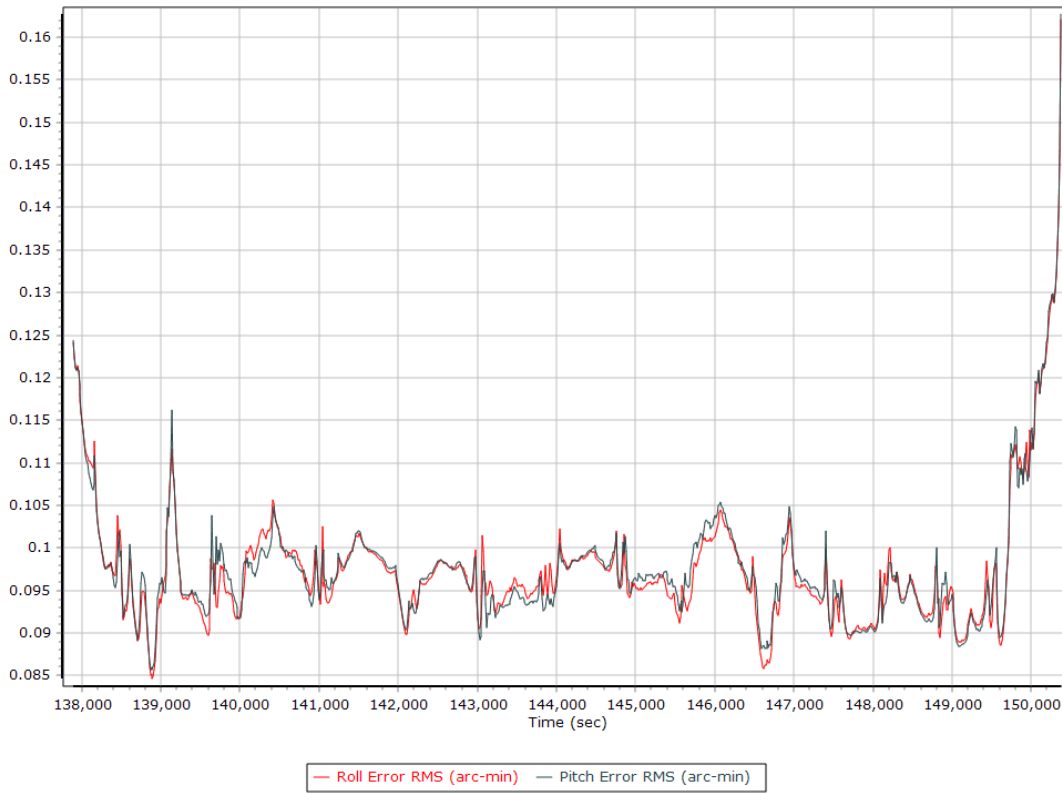
Position Error RMS (m)



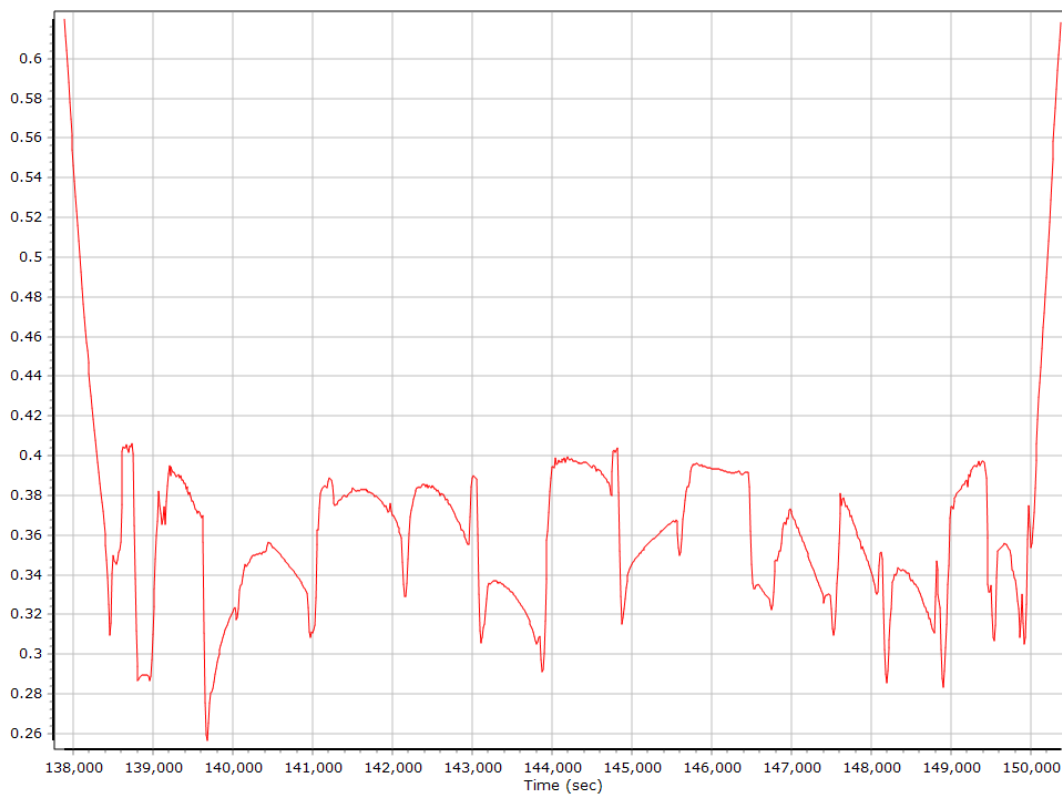
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

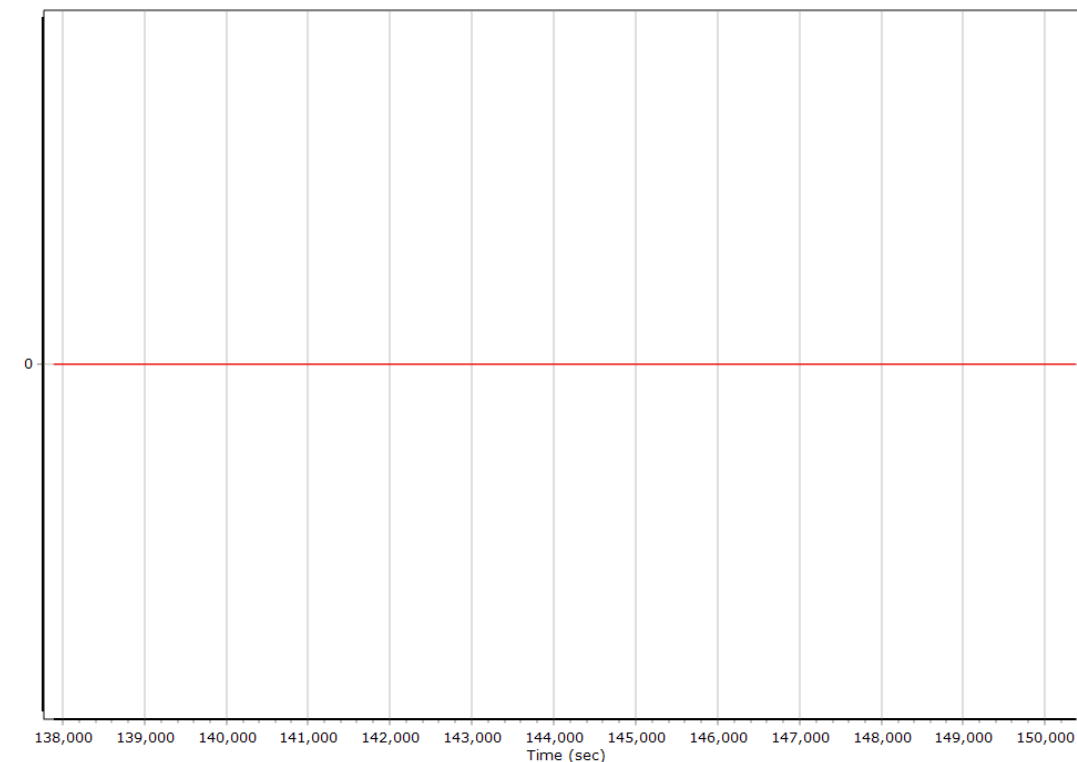


Heading Error RMS (arc-min)



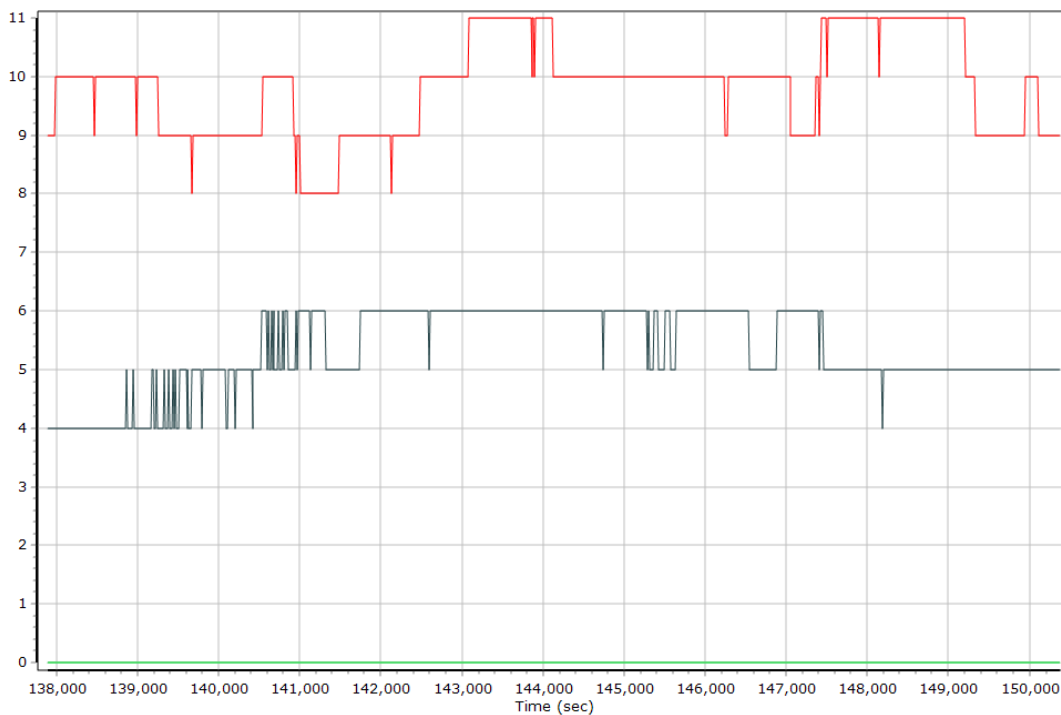
Smoothed Solution Status

Processing Mode



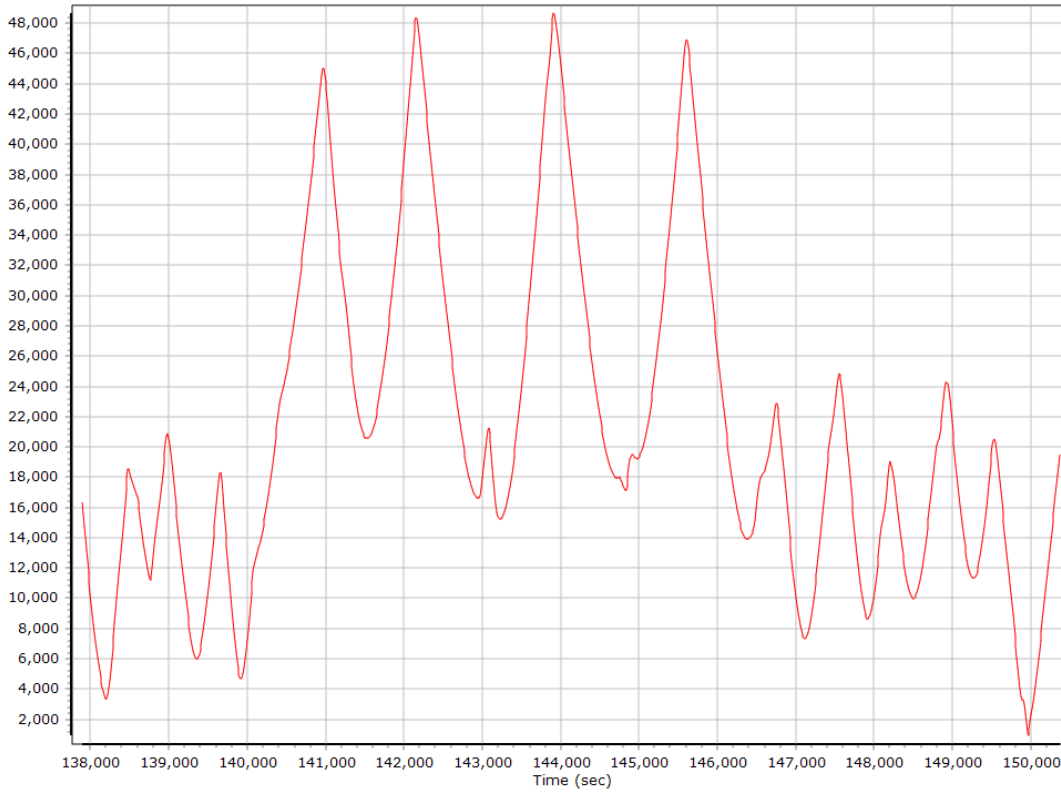
0 = Fixed NL, 1 = Fixed WL, 2 = Float, 3 = DGNSS, 4 = RTCM, 5 = IAPPP, 6 = C/A, 7 = GNSS Nav, 8 = DR

Number of Satellites

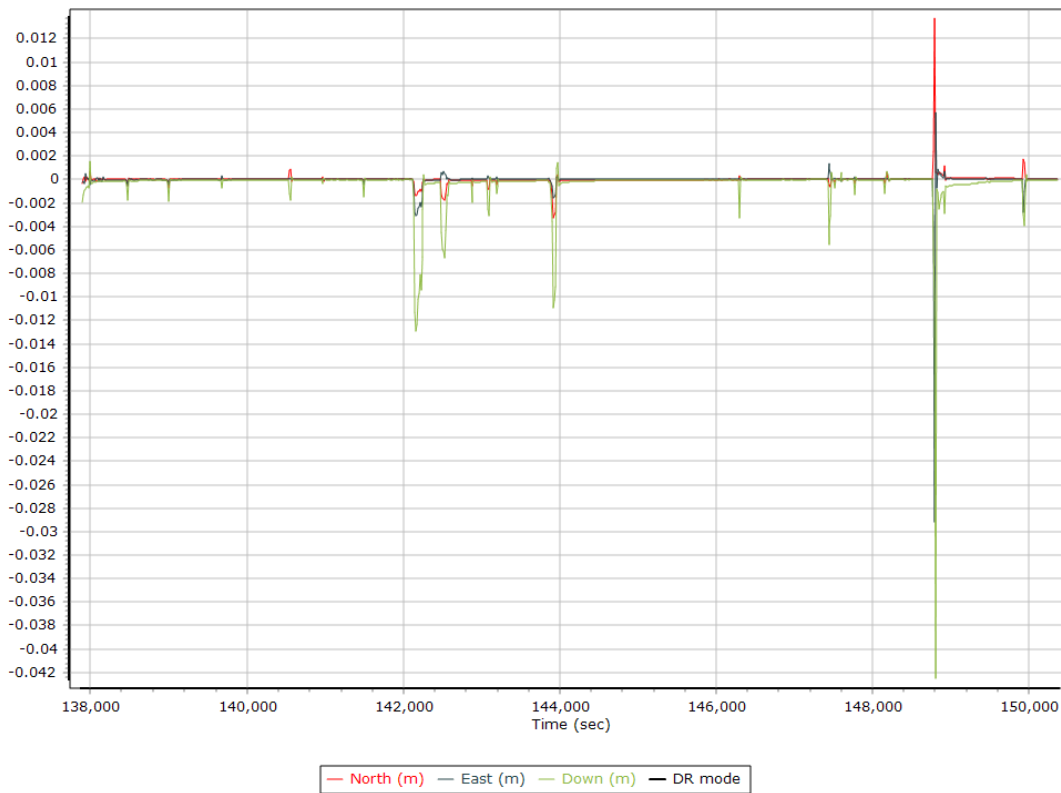


— Number of GPS Satellites
 — Number of GLONASS Satellites
 — Number of QZSS Satellites
— Number of BEIDOU Satellites
 — Number of GALILEO Satellites

Baseline Length



SBET IAkar Separation



Export Summary

Export file	export_RB20055A_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	137835.004 (2/24/2020 2:17:15 PM)		
Export end time	150374.914 (2/24/2020 5:46:14 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	2020.147541		