

General Information

Mission Information

Project name	XSS20050A_177
Processing date	2020-02-24 17:27:05
Mission date	2020-02-19 17:55:47
Mission duration	03:34:22.142
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
XSS1950.801	POS Data
XSS1950.802	POS Data
XSS1950.803	POS Data
XSS1950.804	POS Data
XSS1950.805	POS Data
XSS1950.806	POS Data
XSS1950.807	POS Data
XSS1950.808	POS Data
XSS1950.809	POS Data
XSS1950.810	POS Data
XSS1950.811	POS Data
XSS1950.812	POS Data
XSS1950.813	POS Data
XSS1950.814	POS Data
XSS1950.815	POS Data
XSS1950.816	POS Data
XSS1950.817	POS Data
XSS1950.818	POS Data
XSS1950.819	POS Data
XSS1950.820	POS Data
XSS1950.821	POS Data
XSS1950.822	POS Data
XSS1950.823	POS Data
XSS1950.824	POS Data
XSS1950.825	POS Data
XSS1950.826	POS Data
XSS1950.827	POS Data
XSS1950.828	POS Data
XSS1950.829	POS Data
XSS1950.830	POS Data
XSS1950.831	POS Data
XSS1950.832	POS Data
XSS1950.833	POS Data
XSS1950.834	POS Data
XSS1950.835	POS Data
XSS1950.836	POS Data
XSS1950.837	POS Data
XSS1950.838	POS Data
XSS1950.839	POS Data
XSS1950.840	POS Data
XSS1950.841	POS Data
XSS1950.842	POS Data
XSS1950.843	POS Data
XSS1950.844	POS Data
XSS1950.845	POS Data
XSS1950.846	POS Data
XSS1950.847	POS Data
XSS1950.848	POS Data
XSS1950.849	POS Data
XSS1950.850	POS Data

Input Files

File Name	File Type
Ephm0500.20g	GLONASS Broadcast Ephemeris
Ephm0500.20n	GPS Broadcast Ephemeris
ls080500.20o	GNSS SingleBase
mcon0500.20o	GNSS SingleBase
wvbr0500.20o	GNSS SingleBase
wvmz0500.20o	GNSS SingleBase

File Name	File Type
wvnr0500.20o	GNSS SingleBase
wvra0500.20o	GNSS SingleBase
igu20932_18.sp3	GPS Precise Ephemeris
igu20933_18.sp3	GPS Precise Ephemeris
igu20934_12.sp3	GPS Precise Ephemeris
wvsh0500.20o	GNSS SingleBase
Ephm0500.20g	GLONASS Broadcast Ephemeris
Ephm0500.20n	GPS Broadcast Ephemeris

Output Files

Filename	File type
sbet_XSS20050A_177.out	SBET Trajectory File
export_XSS20050A_177.txt	ASCII Export Output

Rover Data Summary

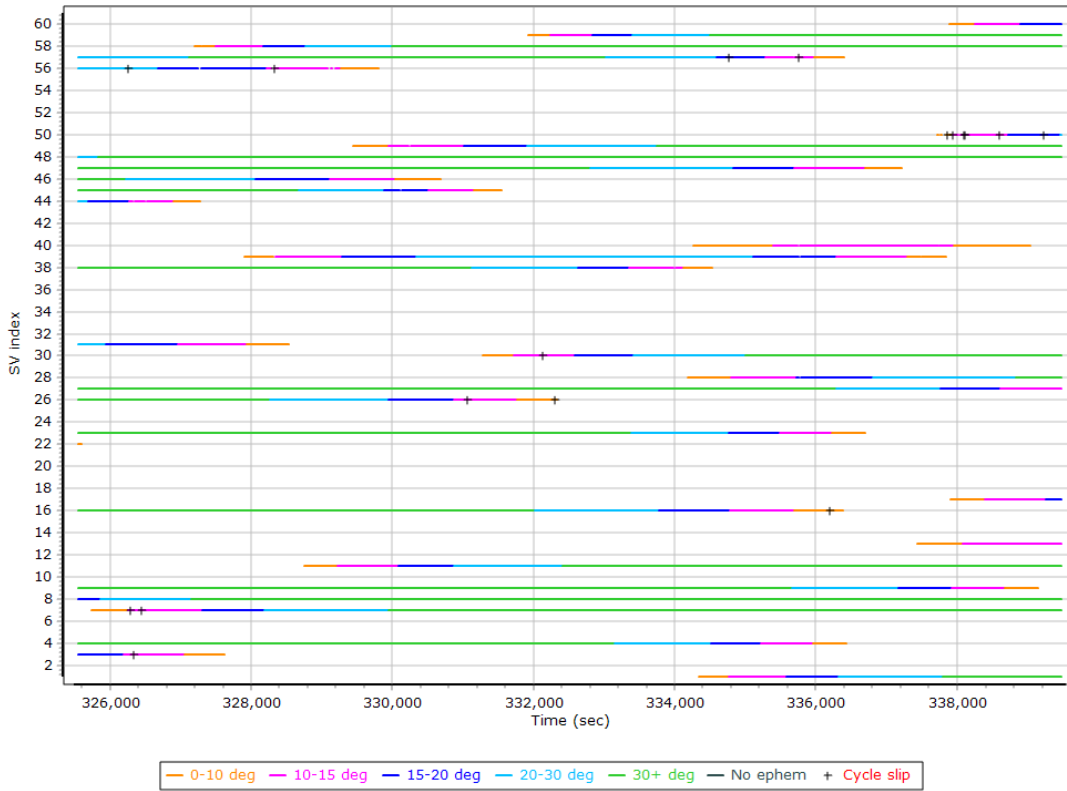
First raw data file	XSS1950.801		
Last raw data file	XSS1950.850		
Start GPS week	2093		
Start time	323728.628 (2/19/2020 5:55:28 PM)		
End time	339481.463 (2/19/2020 10:18:01 PM)		
Start of fine alignment	325488.177 (2/19/2020 6:24:48 PM)		
Available subsystems	Primary GNSS, Gimbal, IMU		
POS Event 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

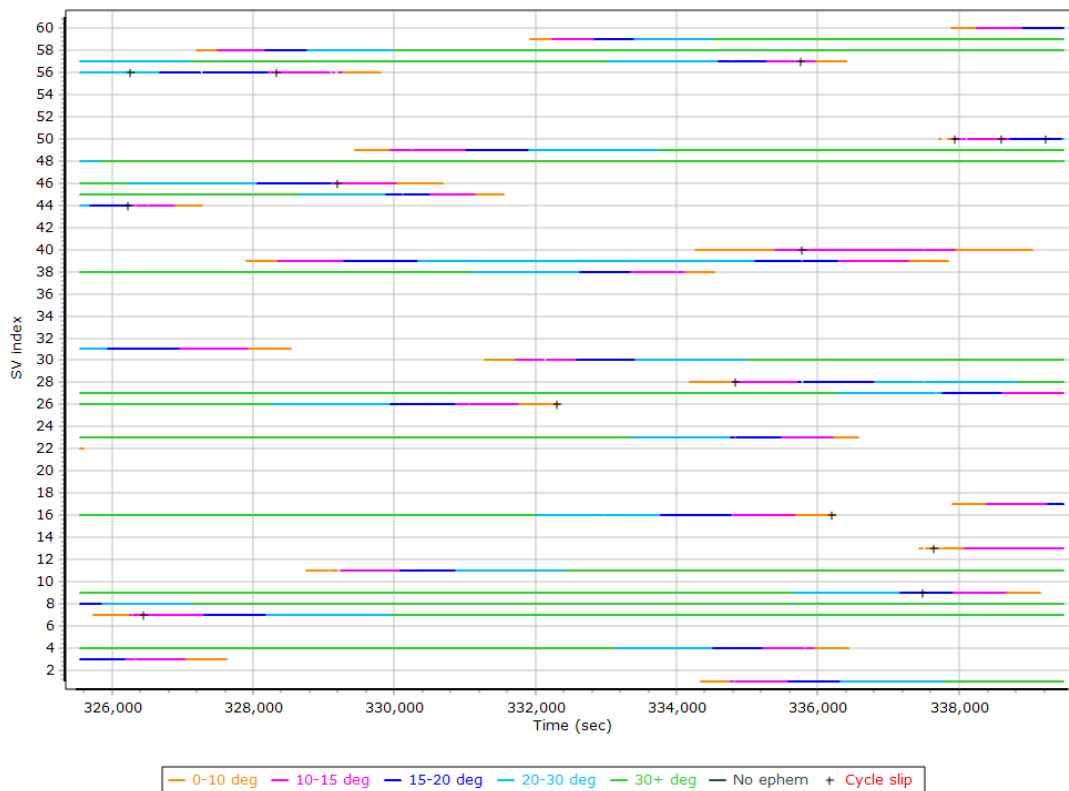
Raw IMU Import QC Summary

IMU data input file	imu_XSS20050A_C-FXSS-174.dat
IMU data check log file	imudt_XSS20050A_177.log
IMU Records Processed	3149877
Termination Status	Normal
IMU Anomalies	0

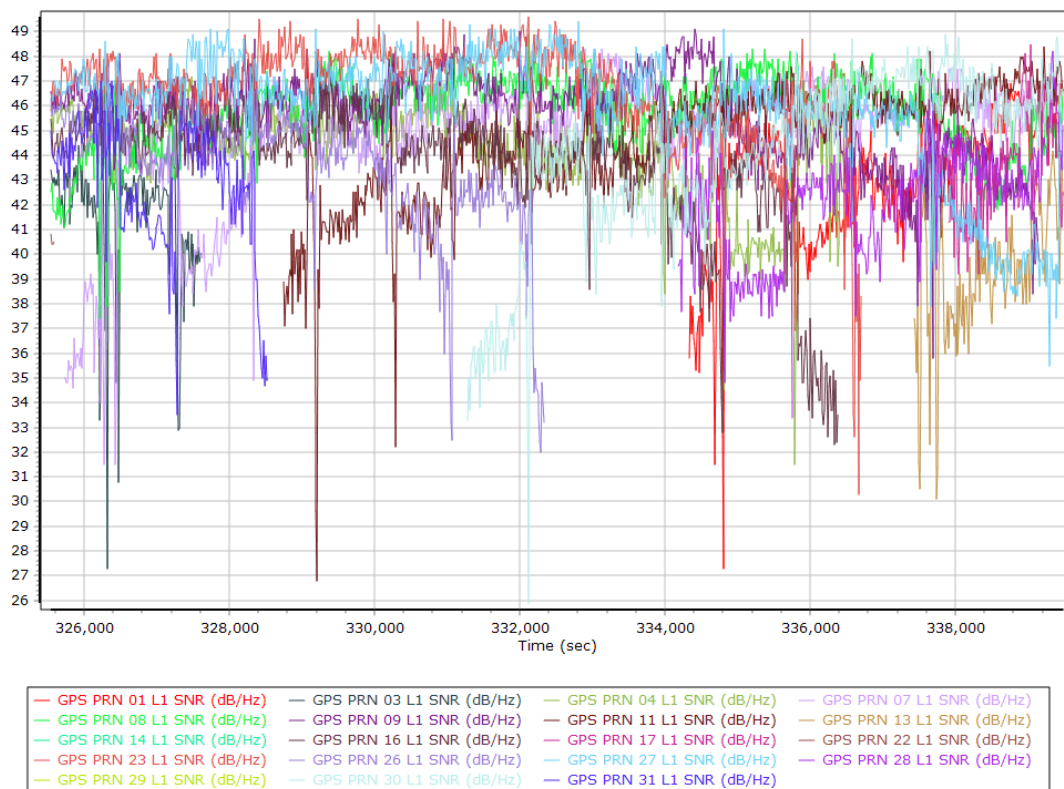
L1 Satellite Lock/Elevation



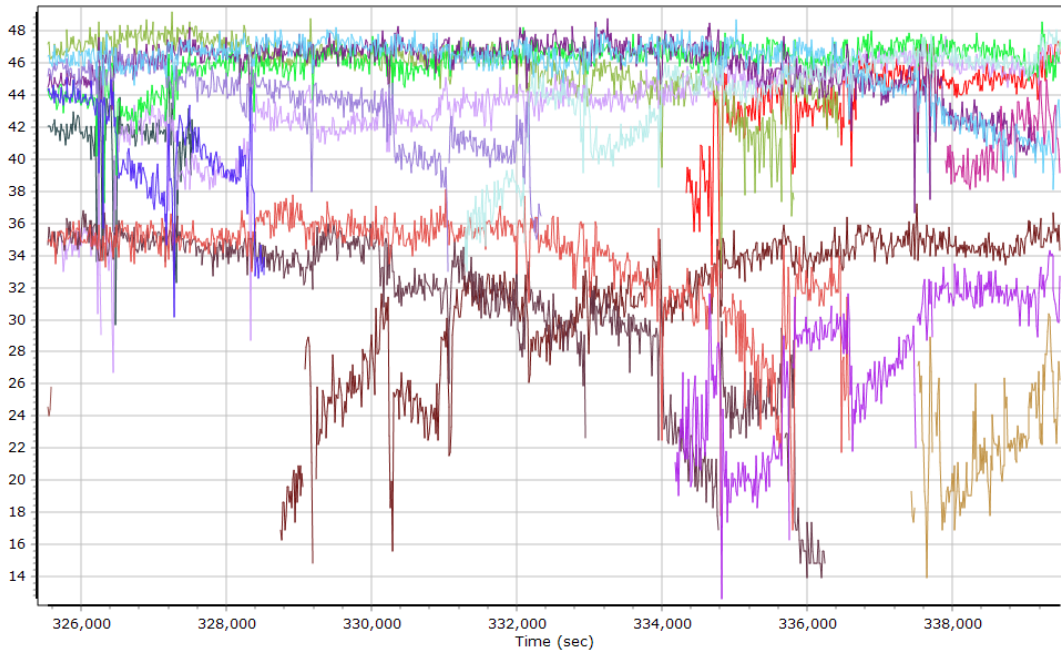
L2 Satellite Lock/Elevation



GPS L1 SNR

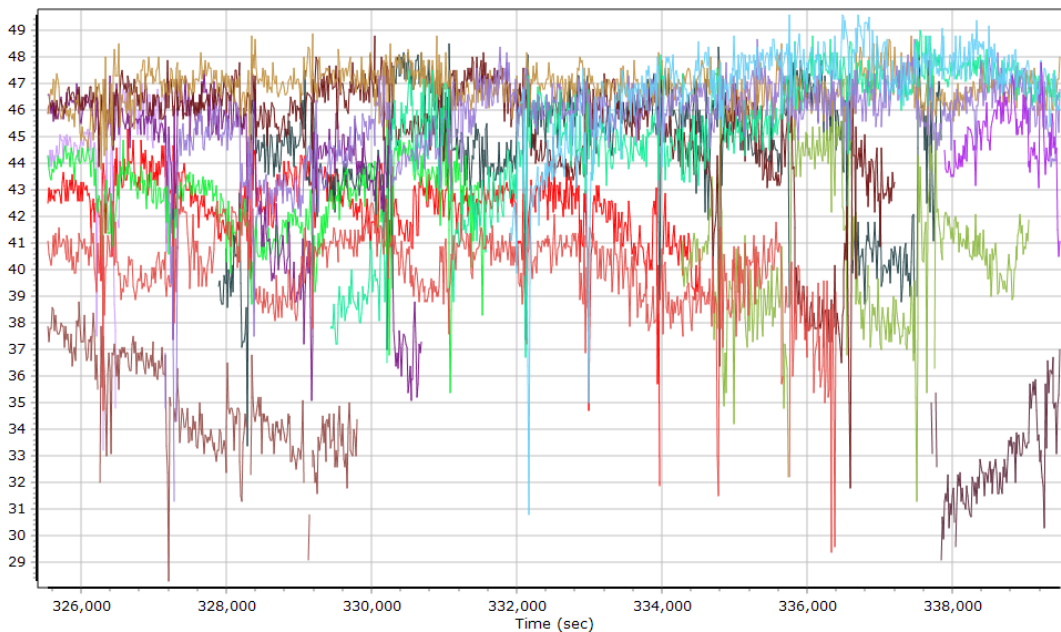


GPS L2 SNR



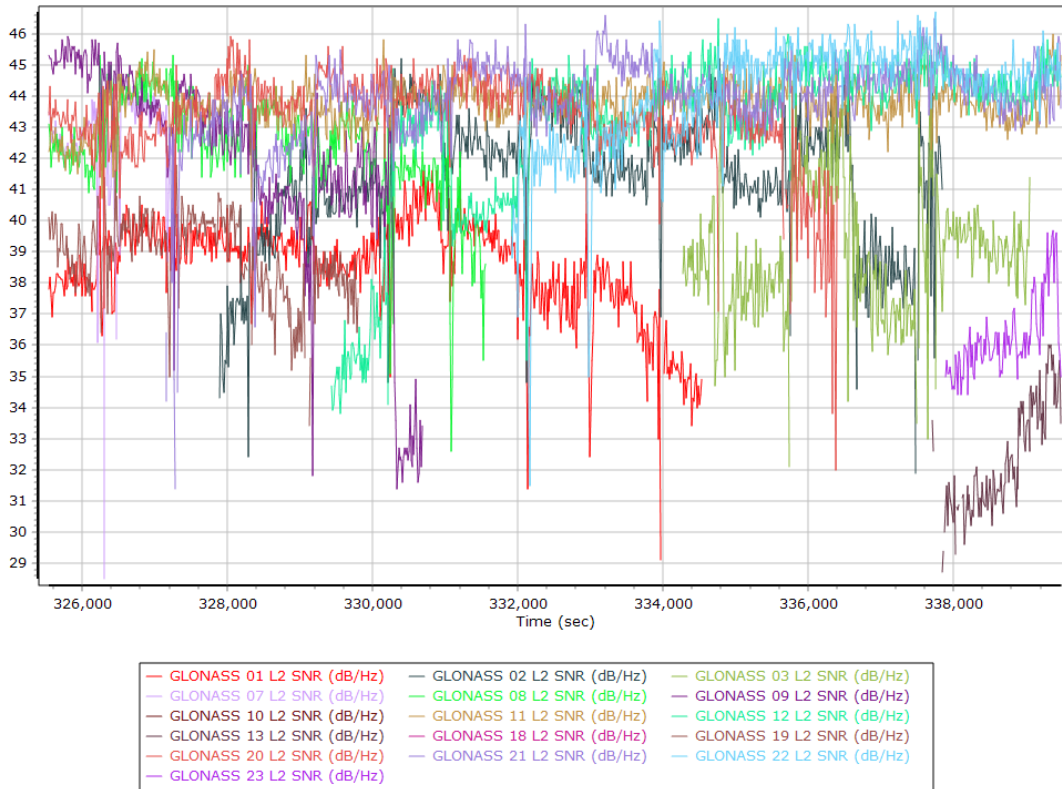
- | | | | |
|---------------------------|---------------------------|---------------------------|---------------------------|
| GPS PRN 01 L2 SNR (dB/Hz) | GPS PRN 03 L2 SNR (dB/Hz) | GPS PRN 04 L2 SNR (dB/Hz) | GPS PRN 07 L2 SNR (dB/Hz) |
| GPS PRN 08 L2 SNR (dB/Hz) | GPS PRN 09 L2 SNR (dB/Hz) | GPS PRN 11 L2 SNR (dB/Hz) | GPS PRN 13 L2 SNR (dB/Hz) |
| GPS PRN 14 L2 SNR (dB/Hz) | GPS PRN 16 L2 SNR (dB/Hz) | GPS PRN 17 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 29 L2 SNR (dB/Hz) | GPS PRN 30 L2 SNR (dB/Hz) | GPS PRN 31 L2 SNR (dB/Hz) | |

GLONASS L1 SNR

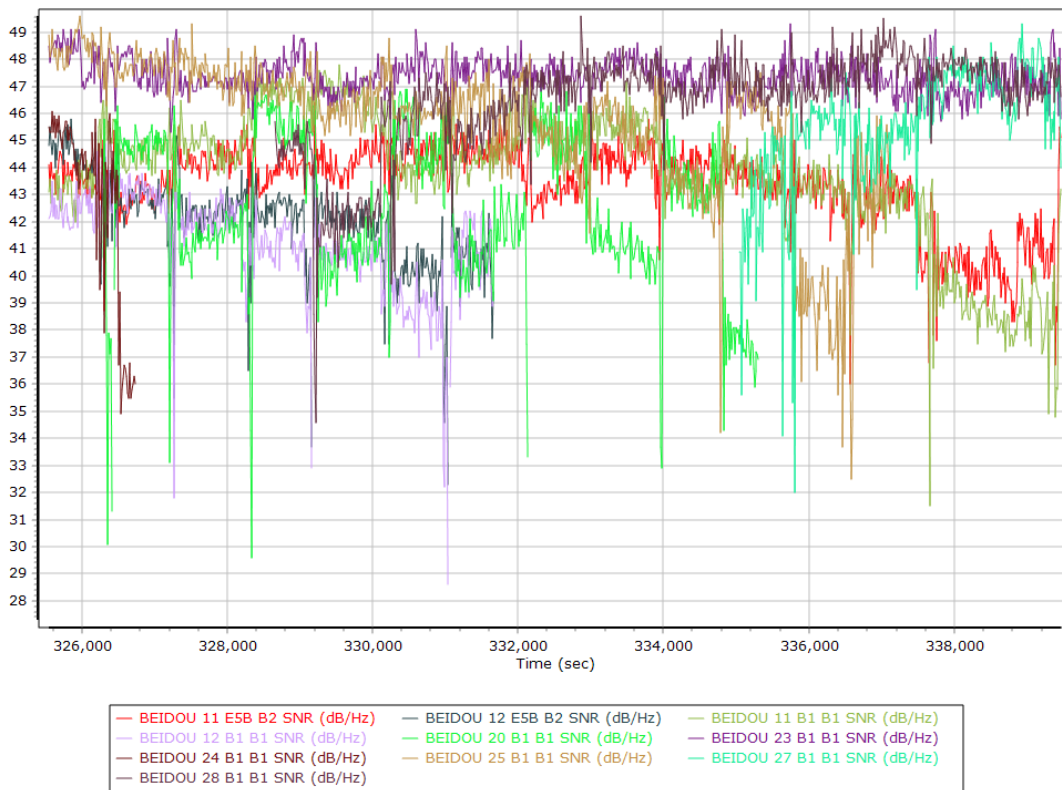


- | | | |
|---------------------------|---------------------------|---------------------------|
| GLONASS 01 L1 SNR (dB/Hz) | GLONASS 02 L1 SNR (dB/Hz) | GLONASS 03 L1 SNR (dB/Hz) |
| GLONASS 07 L1 SNR (dB/Hz) | GLONASS 08 L1 SNR (dB/Hz) | GLONASS 09 L1 SNR (dB/Hz) |
| GLONASS 10 L1 SNR (dB/Hz) | GLONASS 11 L1 SNR (dB/Hz) | GLONASS 12 L1 SNR (dB/Hz) |
| GLONASS 13 L1 SNR (dB/Hz) | GLONASS 18 L1 SNR (dB/Hz) | GLONASS 19 L1 SNR (dB/Hz) |
| GLONASS 20 L1 SNR (dB/Hz) | GLONASS 21 L1 SNR (dB/Hz) | GLONASS 22 L1 SNR (dB/Hz) |
| GLONASS 23 L1 SNR (dB/Hz) | | |

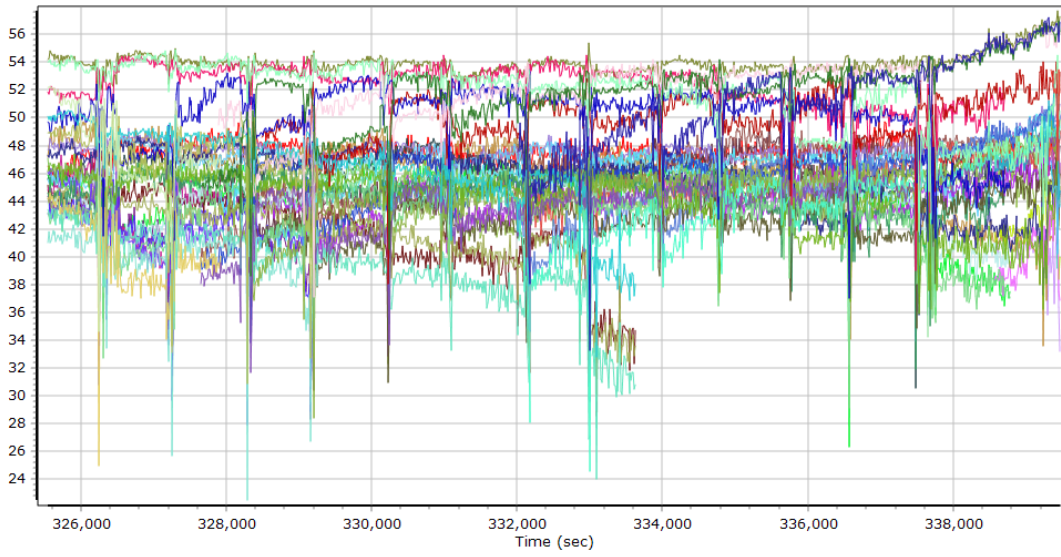
GLONASS L2 SNR



BEIDOU SNR



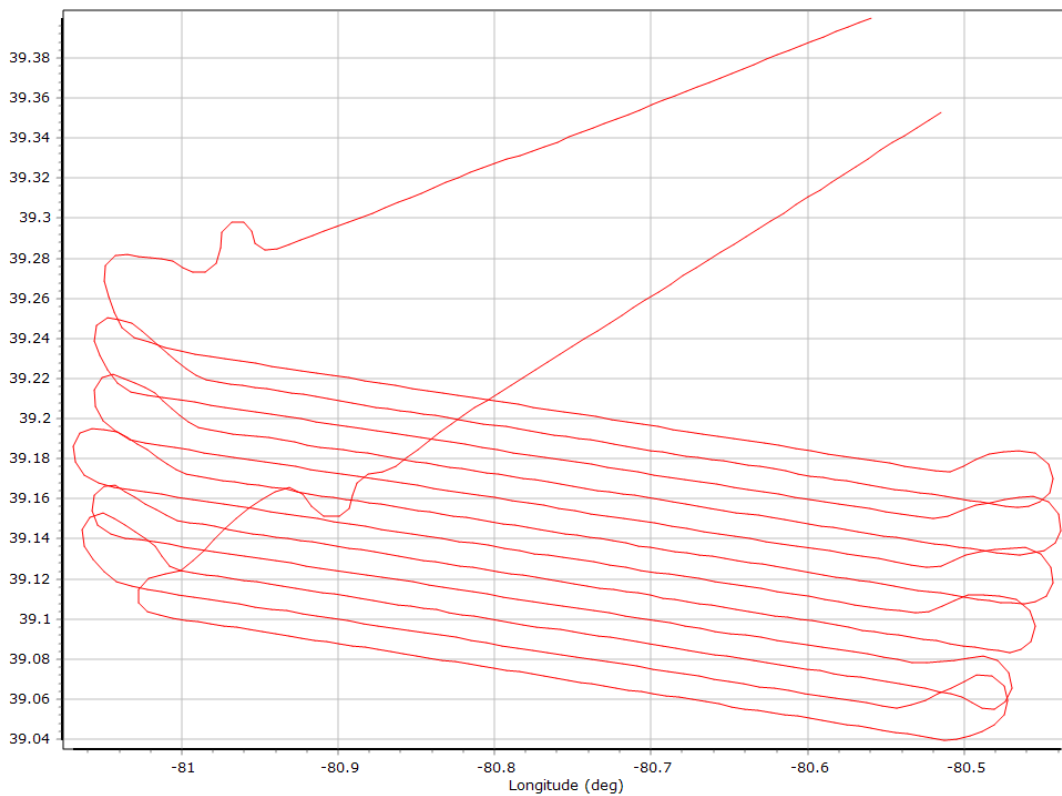
GALILEO SNR



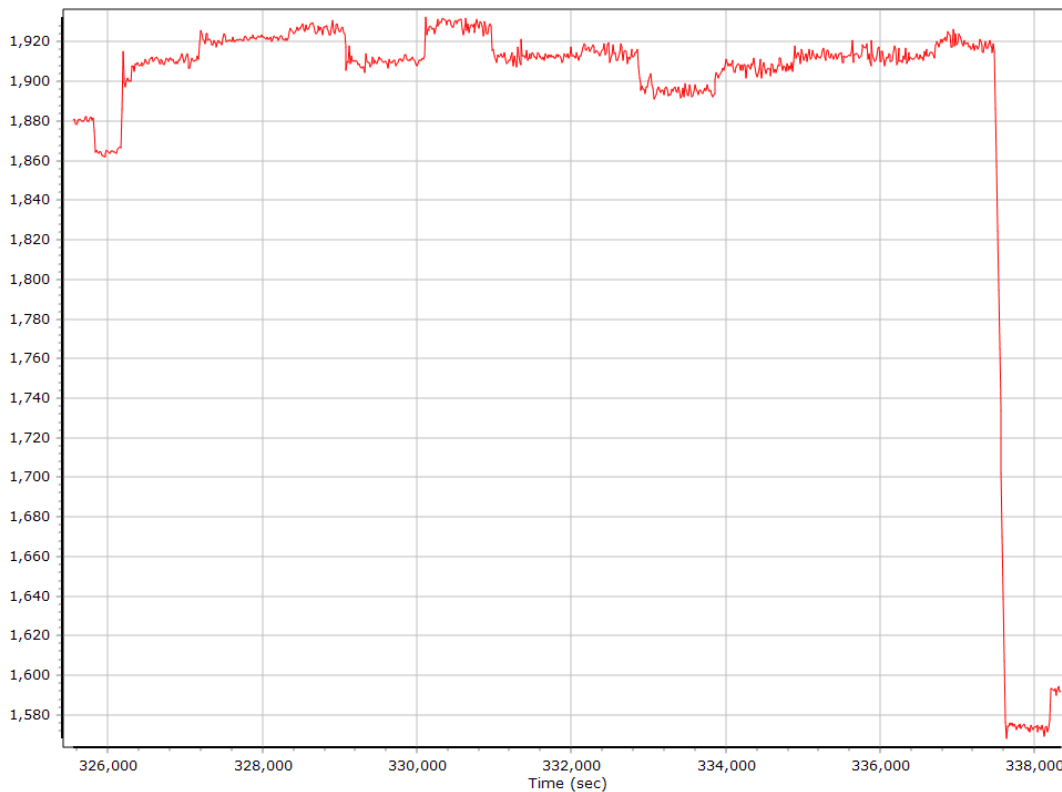
- | | |
|--|--|
| — GALILEO 01 L1 BOC_1_1_D_MBOC SNR (dB/Hz) | — GALILEO 04 L1 BOC_1_1_D_MBOC SNR (dB/Hz) |
| — GALILEO 09 L1 BOC_1_1_D_MBOC SNR (dB/Hz) | — GALILEO 12 L1 BOC_1_1_D_MBOC SNR (dB/Hz) |
| — GALILEO 13 L1 BOC_1_1_D_MBOC SNR (dB/Hz) | — GALILEO 15 L1 BOC_1_1_D_MBOC SNR (dB/Hz) |
| — GALILEO 19 L1 BOC_1_1_D_MBOC SNR (dB/Hz) | — GALILEO 21 L1 BOC_1_1_D_MBOC SNR (dB/Hz) |
| — GALILEO 24 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 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 09 L5E5A BPSK10_PD SNR (dB/Hz) |
| — GALILEO 12 L5E5A BPSK10_PD SNR (dB/Hz) | — GALILEO 13 L5E5A BPSK10_PD SNR (dB/Hz) |
| — GALILEO 15 L5E5A BPSK10_PD SNR (dB/Hz) | — GALILEO 19 L5E5A BPSK10_PD SNR (dB/Hz) |

Trajectory Information

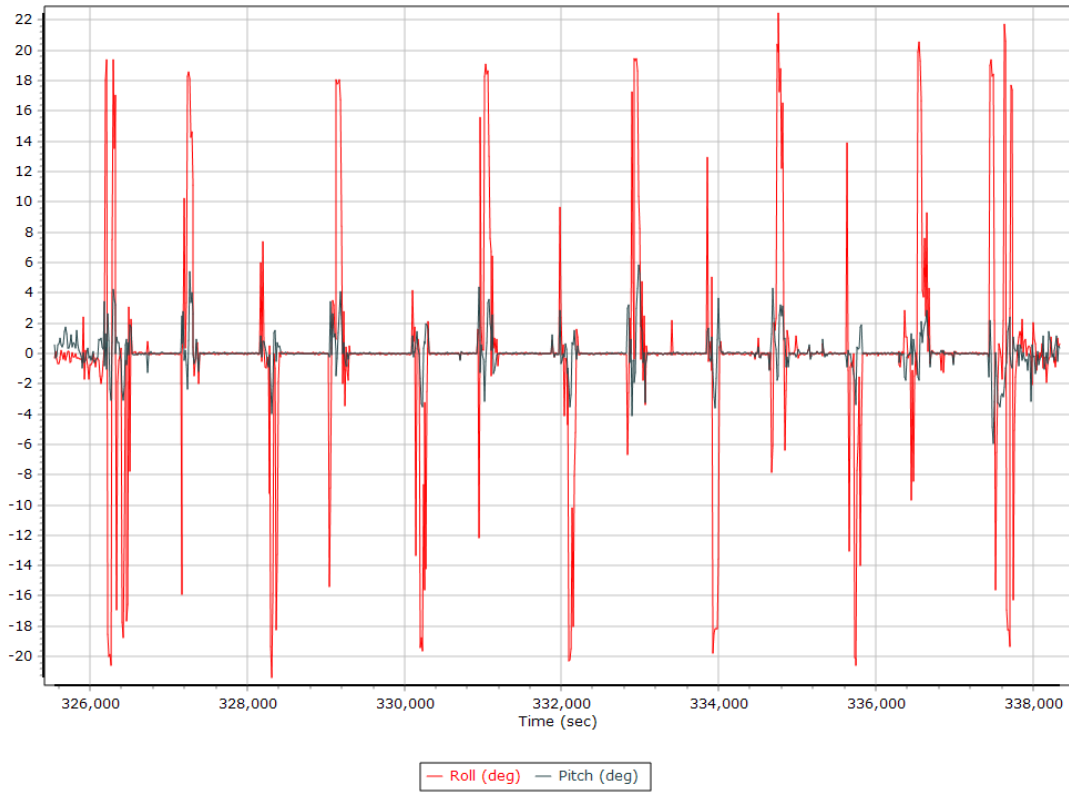
Top View



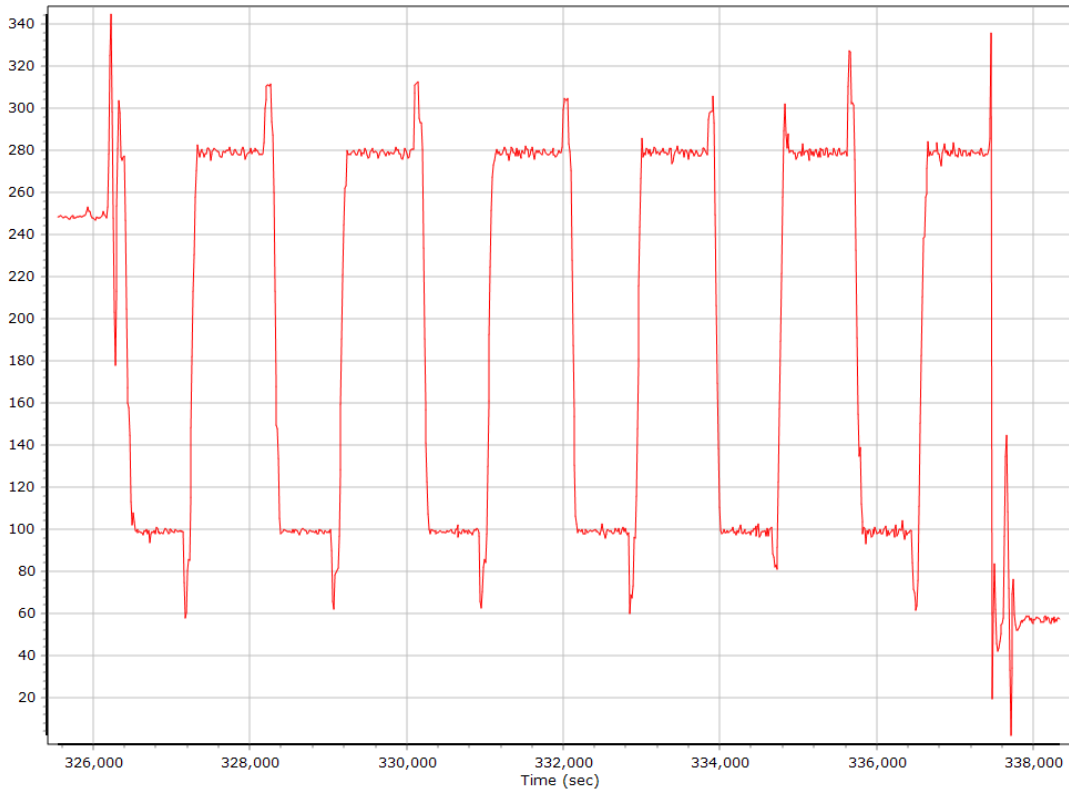
Altitude



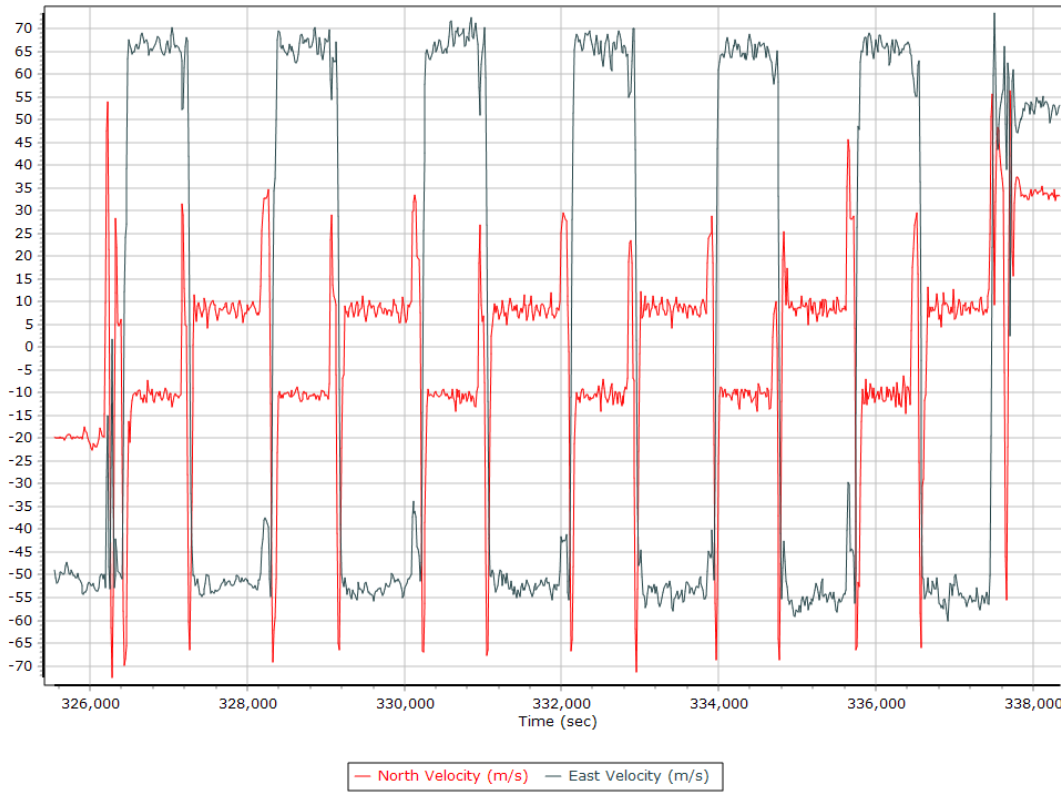
Roll/Pitch



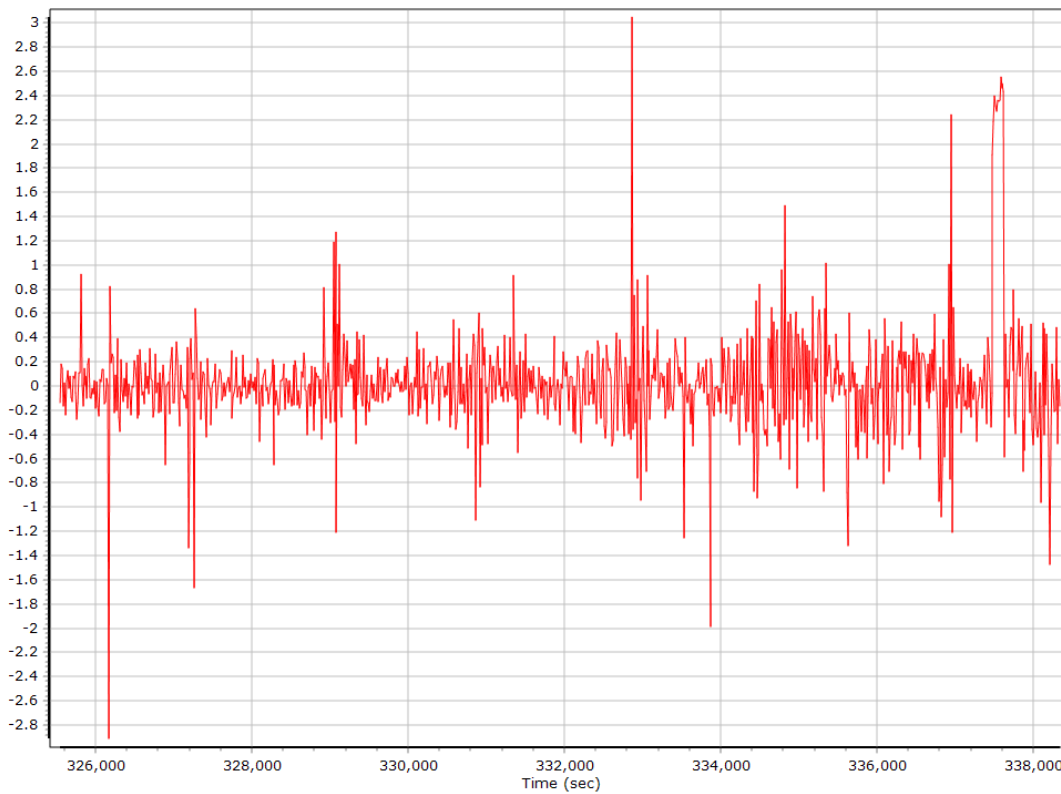
Heading



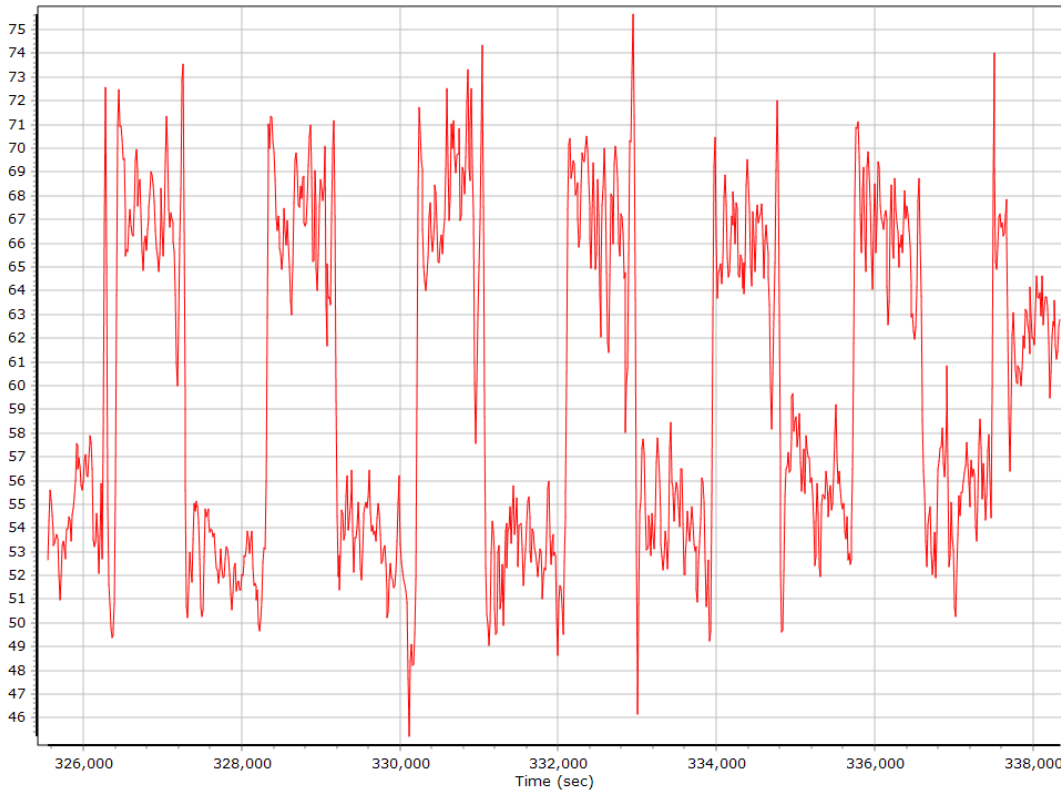
North/East Velocity



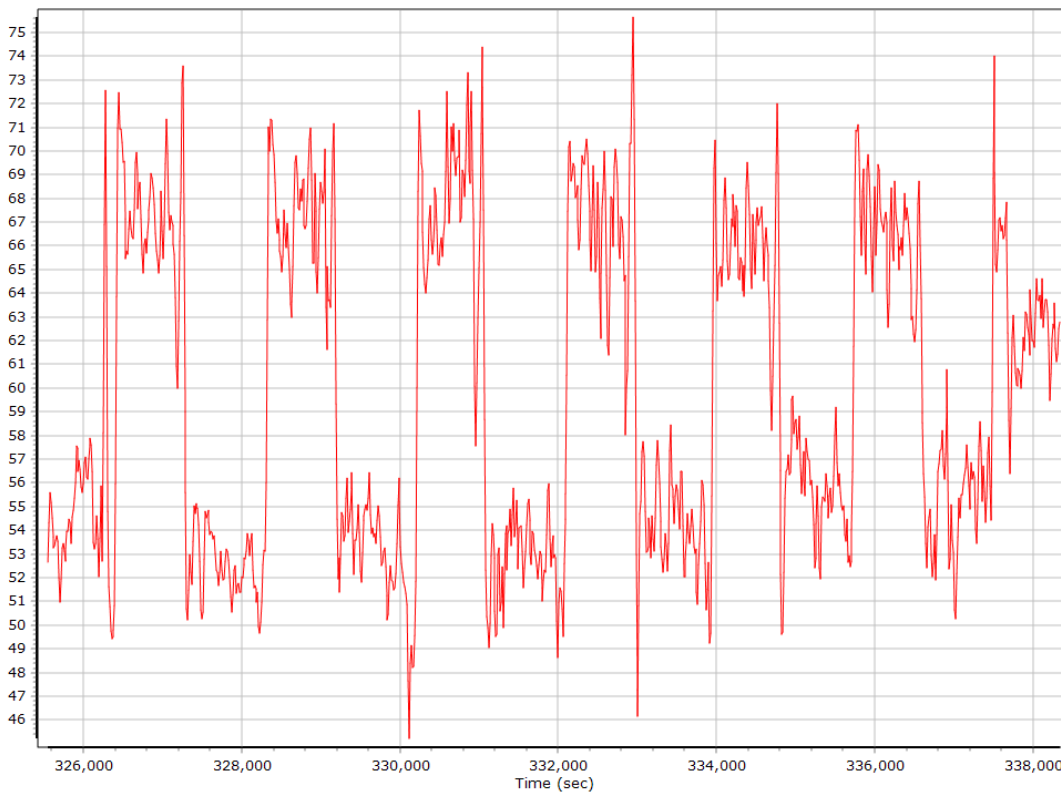
Down Velocity



Total Speed



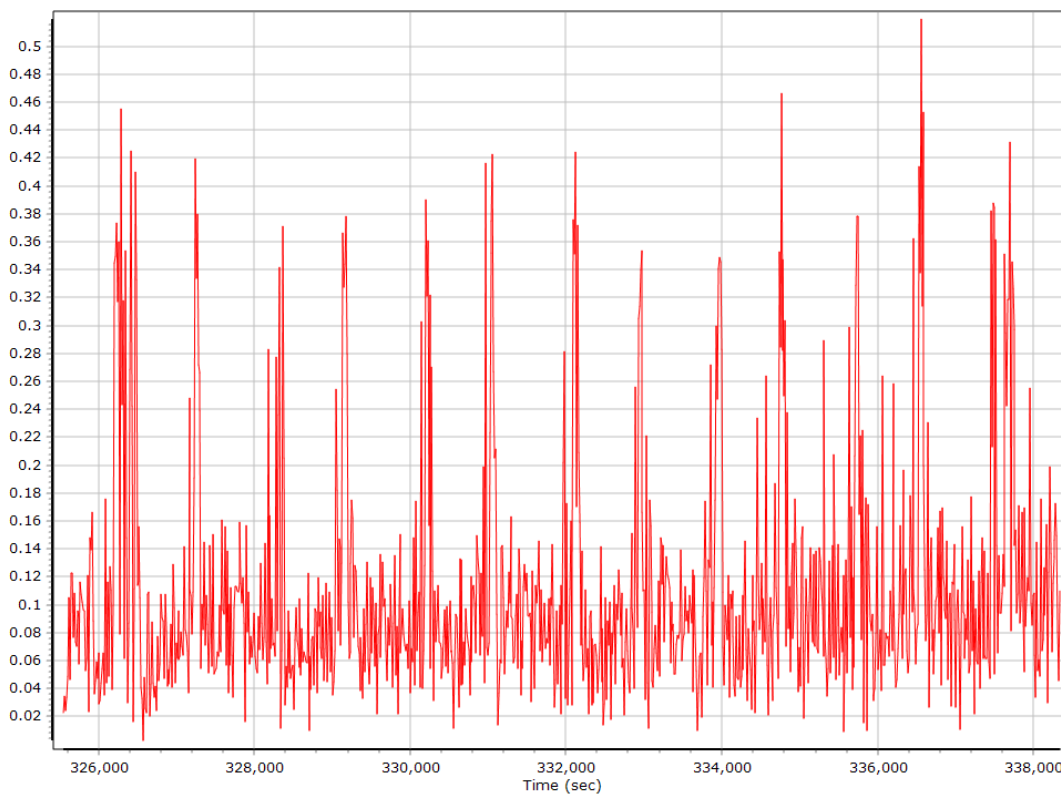
Ground Speed



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
02/19/2020	WVSH	93.27	GNSS	1	User	None	Imported
02/19/2020	WVRA	89.10	GNSS	1	User	None	Imported
02/19/2020	WVNR	83.51	GNSS	1	User	None	Imported
02/19/2020	WVMZ	46.66	GNSS	1	User	None	Imported
02/19/2020	WVBR	44.94	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	15752 s (2093 323747 - 2093 339499)
Number of reference stations	5
Primary station GPS measurement usage (%)	99.6
Primary station GLONASS measurement usage (%)	79.9
Average number of satellites per epoch	15.0
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)	23937
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)	23.33	Output Coordinates	Original	
Solution Epochs	5599	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°59'49.10014"	W80°40'46.36176"	384.557
Coordinate Adjustments		Horizontal (m)	Vertical (m)	Total (m)
Adjustments		0.023	0.006	0.024

Base Station Information

Station ID	WVSH		
Filename	wvsh0500.20o		
Start date	2/19/2020 12:00:00 AM		
End date	2/19/2020 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	CONTROL	SBQI	0	
Duration (Hours)	23.80	Output Coordinates	Control	
Solution Epochs	5711	Mean Epoch SVs	8.6	
Base Station Coordinates		Latitude	Longitude	Height (m)
Original		N38°56'28.86373"	W81°45'04.84260"	149.248
Adjusted		N38°56'28.86373"	W81°45'04.84260"	149.248
Coordinate Adjustments		Horizontal (m)	Vertical (m)	Total (m)
Adjustments		0.000	0.000	0.000

Base Station Information

Station ID	WVRA		
Filename	wvra0500.20o		
Start date	2/19/2020 12:00:00 AM		
End date	2/19/2020 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)	23.80	Output Coordinates	Original	
Solution Epochs	5711	Mean Epoch SVs	8.5	
Base Station Coordinates		Latitude	Longitude	Height (m)
Original		N38°53'44.50553"	W79°51'30.27007"	582.773
Adjusted		N38°53'44.50621"	W79°51'30.26996"	582.778
Coordinate Adjustments		Horizontal (m)	Vertical (m)	Total (m)
Adjustments		0.021	0.006	0.022

Base Station Information

Station ID	WVNR		
Filename	wvnr0500.20o		
Start date	2/19/2020 12:00:00 AM		
End date	2/19/2020 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	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	N38°50'20.04352"	W81°06'31.58289"	296.834
Adjusted	N38°50'20.04386"	W81°06'31.58306"	296.821
Coordinate Adjustments	Horizontal (m)	Vertical (m)	Total (m)
Adjustments	0.011	0.013	0.017

Base Station Information

Station ID	WVMZ		
Filename	wvmz0500.20o		
Start date	2/19/2020 12:00:00 AM		
End date	2/19/2020 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 - WVBR

Status	OK	SBQI	0
Duration (Hours)	23.80	Output Coordinates	Original
Solution Epochs	5711	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°18'28.88484"	W80°16'38.61937"	270.253
Coordinate Adjustments	Horizontal (m)	Vertical (m)	Total (m)
Adjustments	0.018	0.007	0.020

Base Station Information

Station ID	WVBR		
Filename	wvbr0500.20o		
Start date	2/19/2020 12:00:00 AM		
End date	2/19/2020 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)	4.30	78.09	
Number of GPS SV	7	11	9
Number of GLONASS SV	0	8	6
Number of QZSS SV	0	0	0
Number of BEIDOU SV	0	0	0
Number of GALILEO SV	0	0	0
Total number of SV	10	18	15
PDOP	1.09	2.69	1.46
QC Solution Gaps	1.00	1.00	
Solution Type	Fixed	Float	No solution
Epoch (sec)	15699.00	0.00	6.00
Percentage	99.96	0.00	0.04

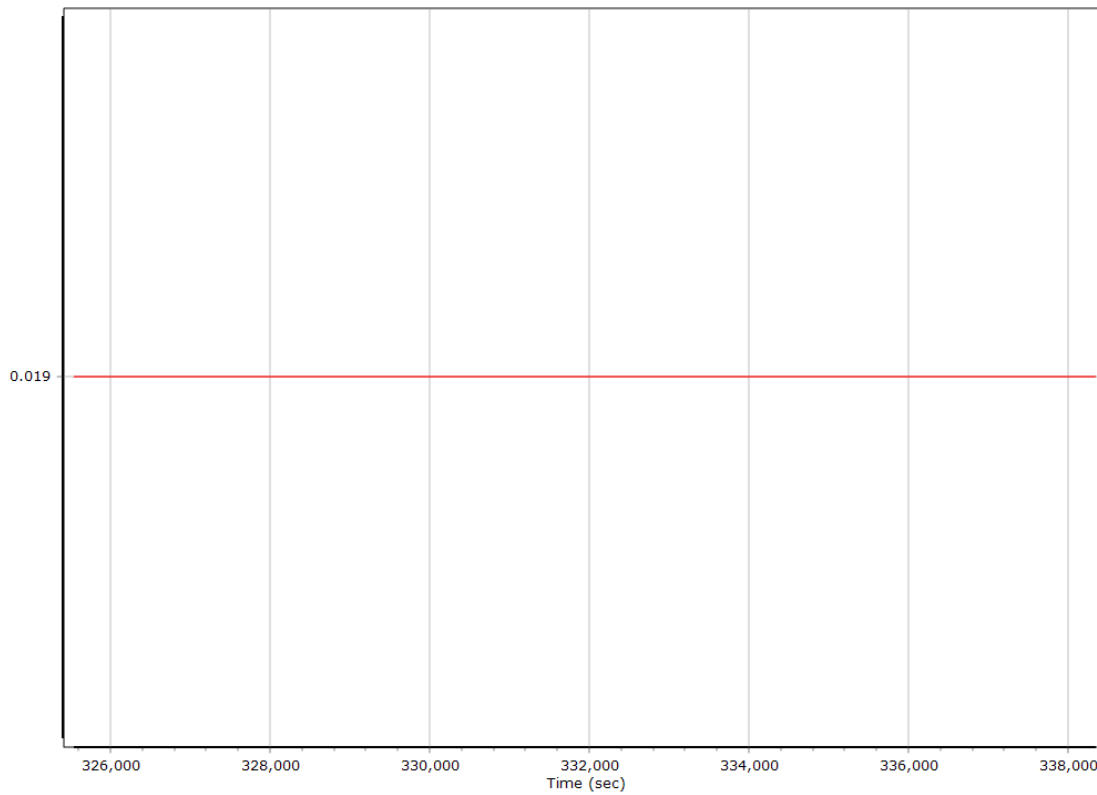
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion SmartBase		
Stabilized mount	True		
Base station	ASB		
Processing start time	325488.042 (2/19/2020 6:24:48 PM)		
Processing end time	338350.184 (2/19/2020 9:59:10 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

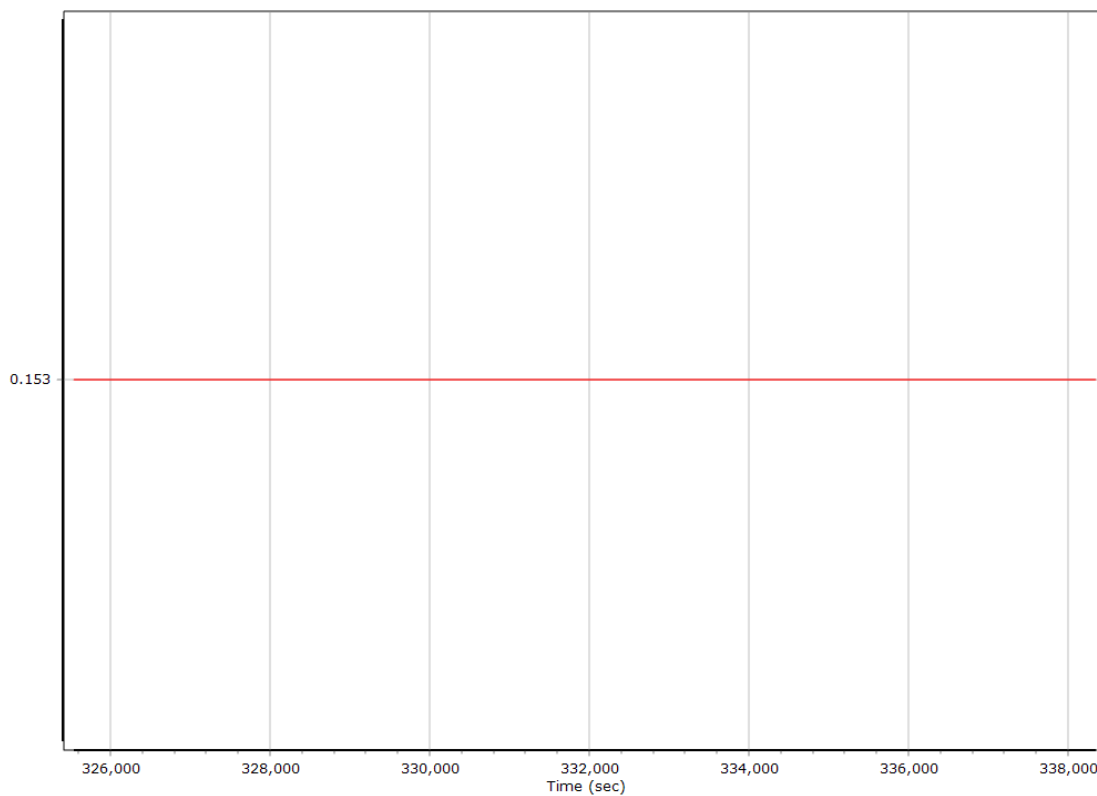
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

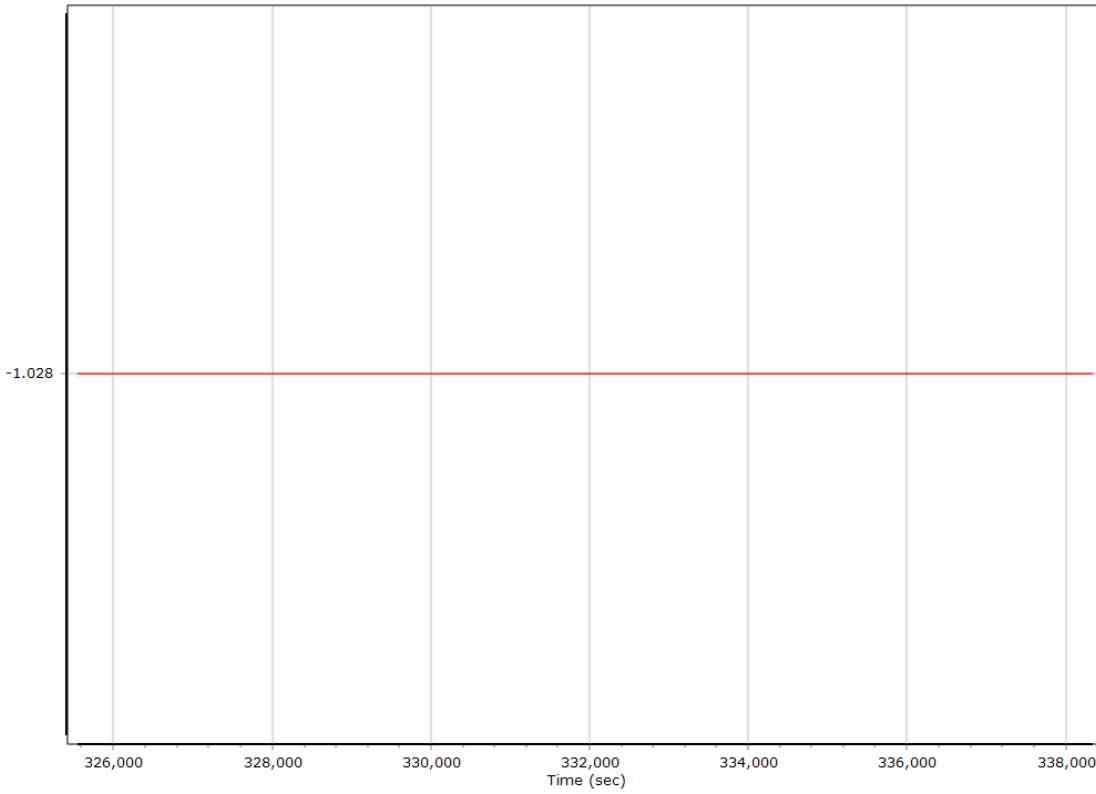
X Reference-Primary GNSS Lever Arm (m)



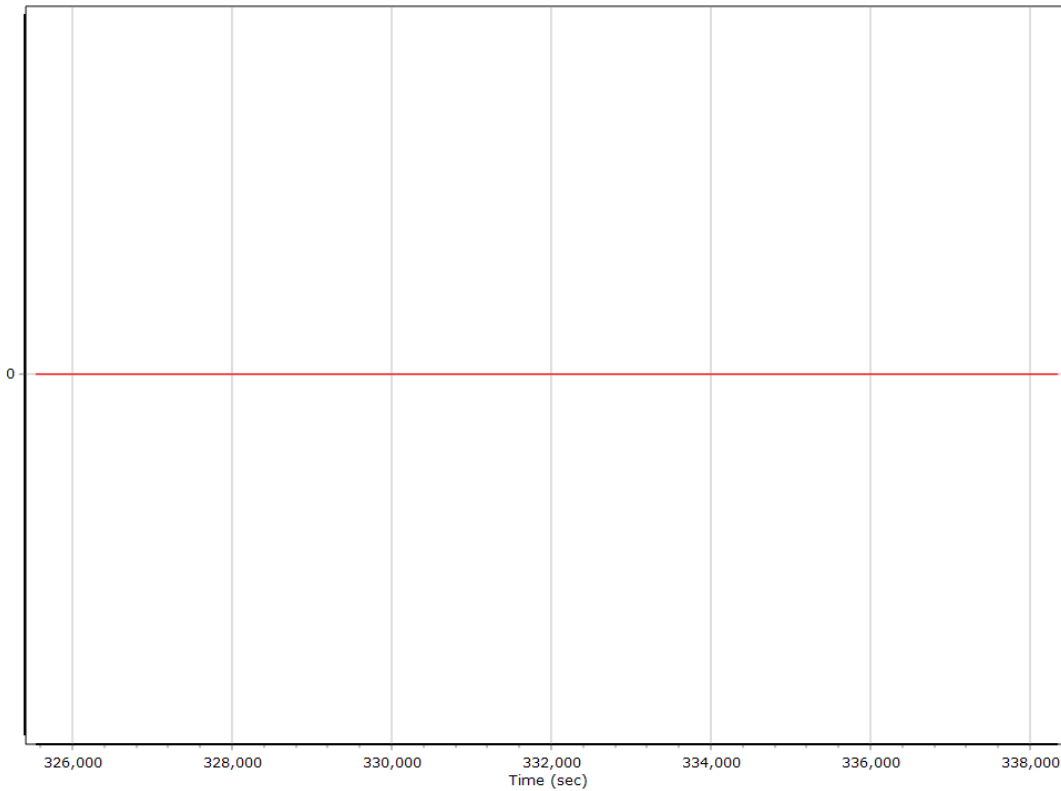
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



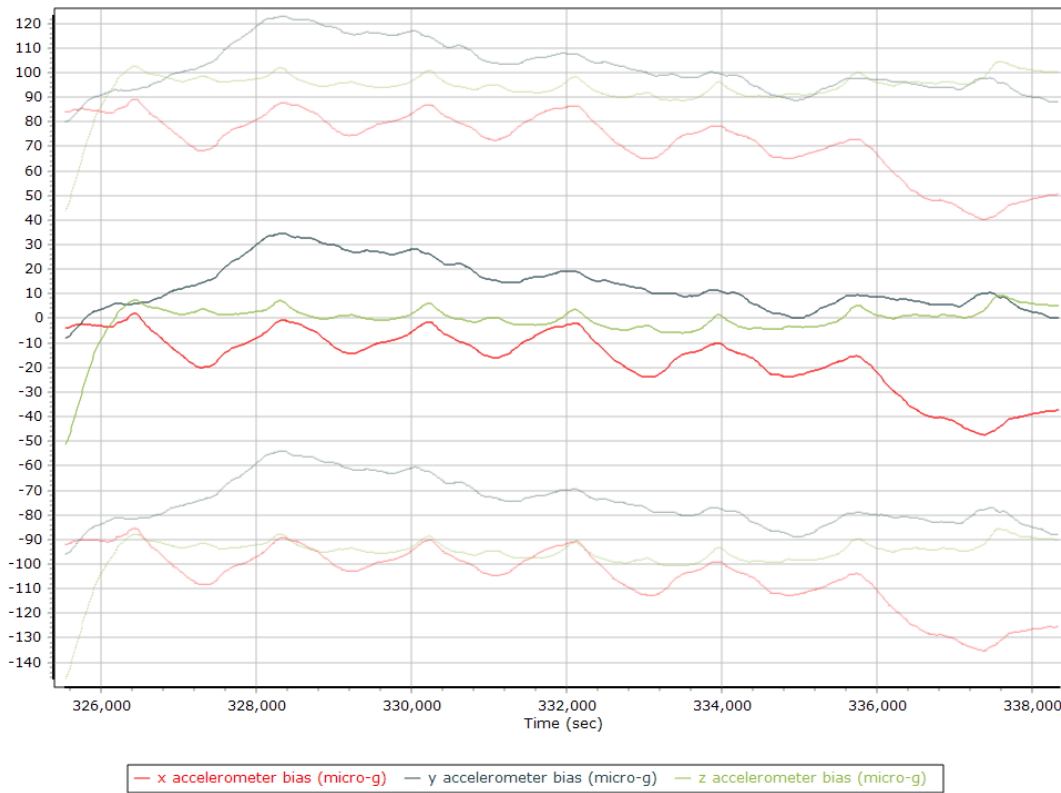
Reference-Primary GNSS Lever Arm Figure of Merit



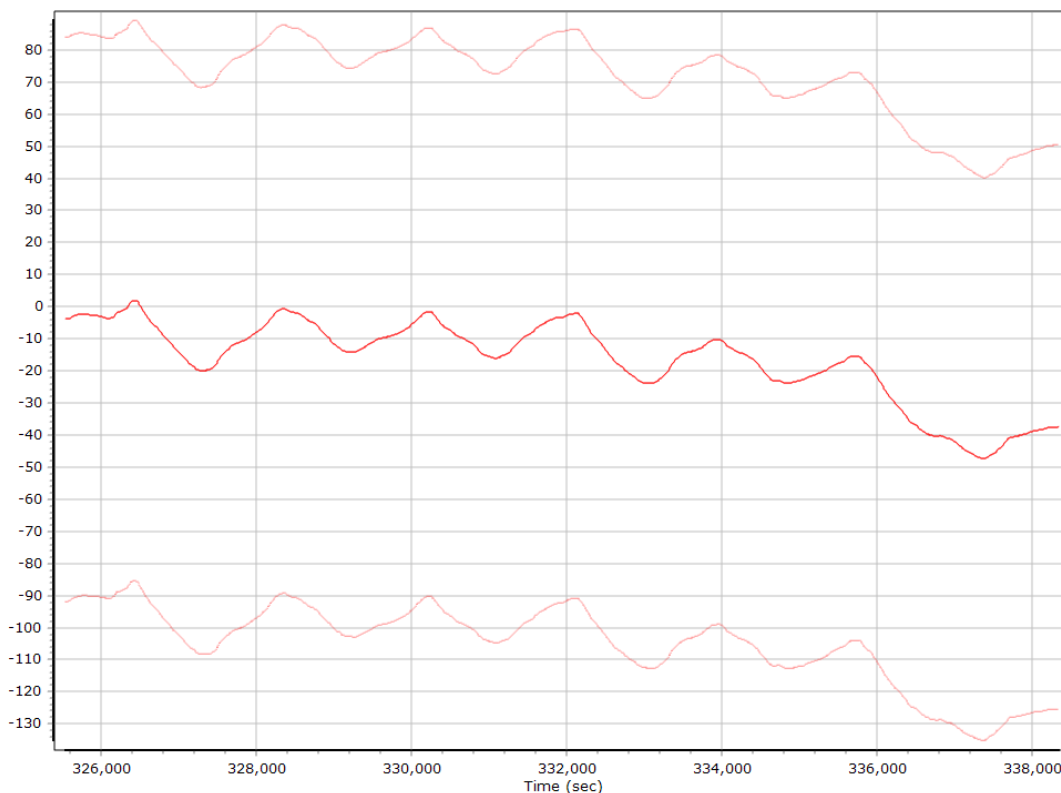
Smoothed IN-Fusion QC

Smoothed Estimated Errors, Reference Frame

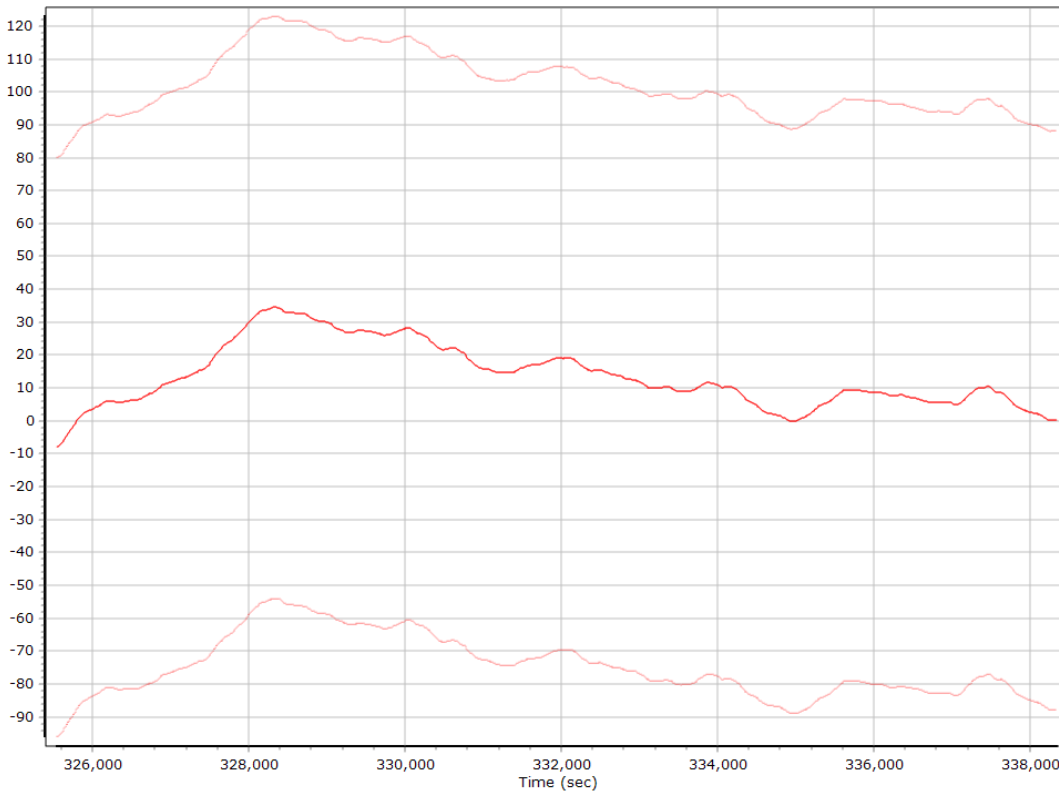
Accelerometer Bias (micro-g)



X Accelerometer Bias (micro-g)



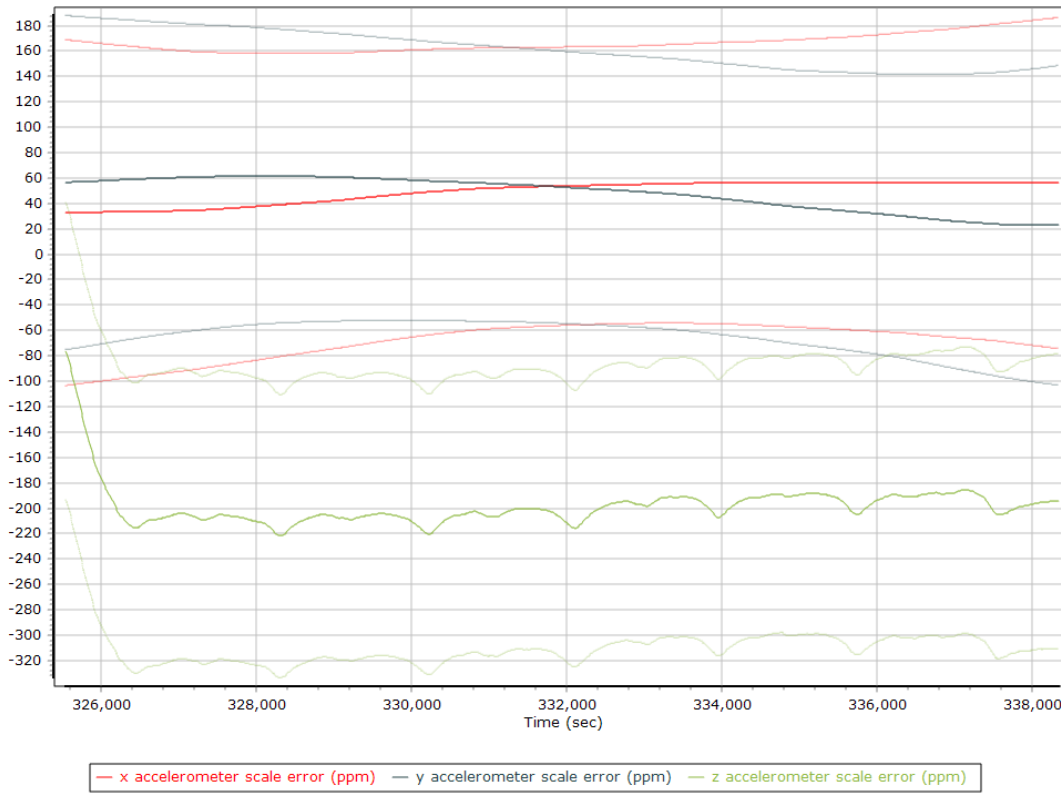
Y Accelerometer Bias (micro-g)



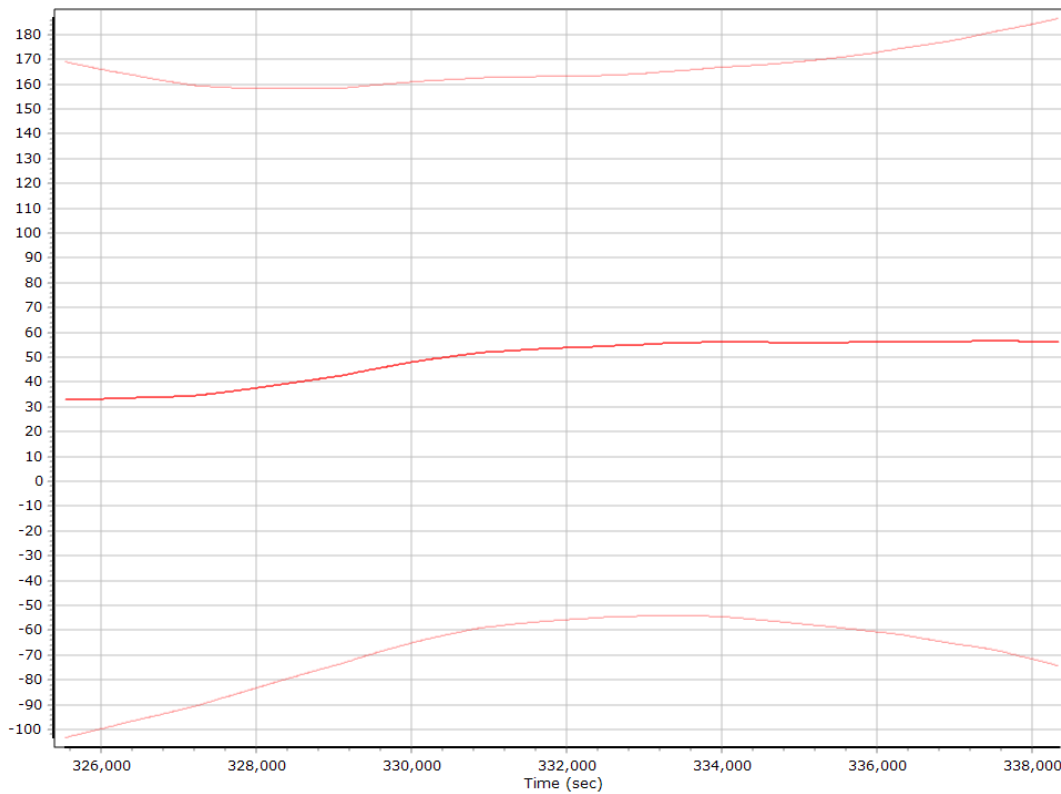
Z Accelerometer Bias (micro-g)



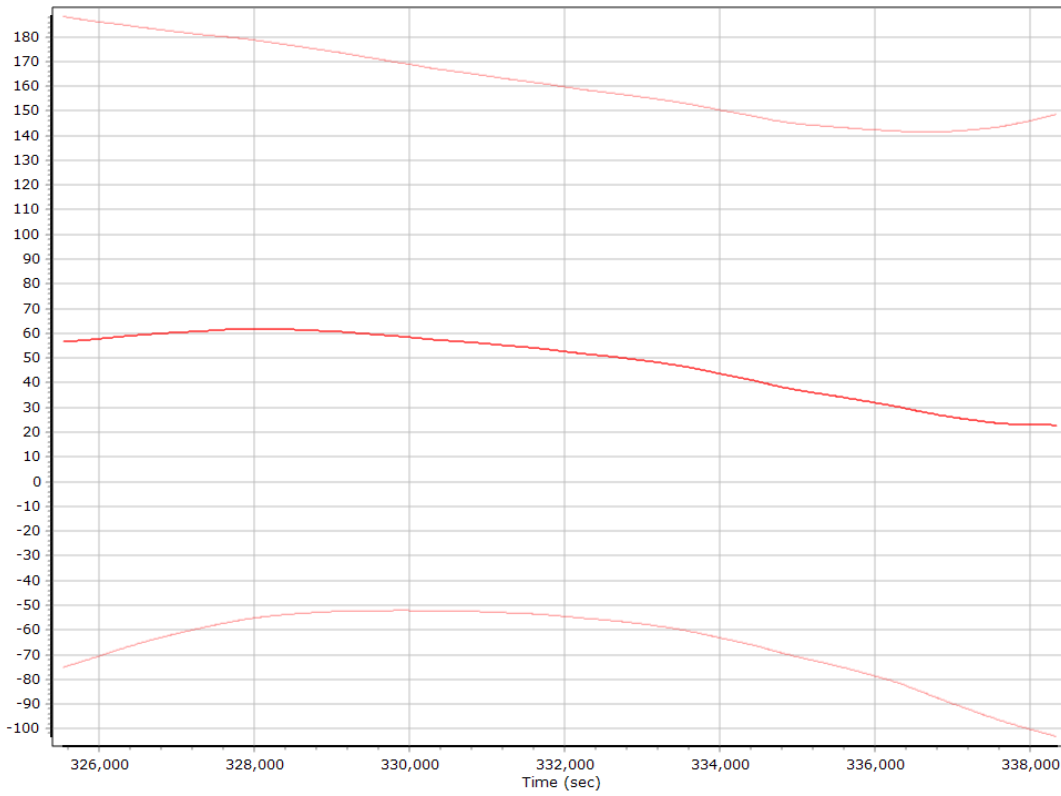
Accelerometer Scale Error (ppm)



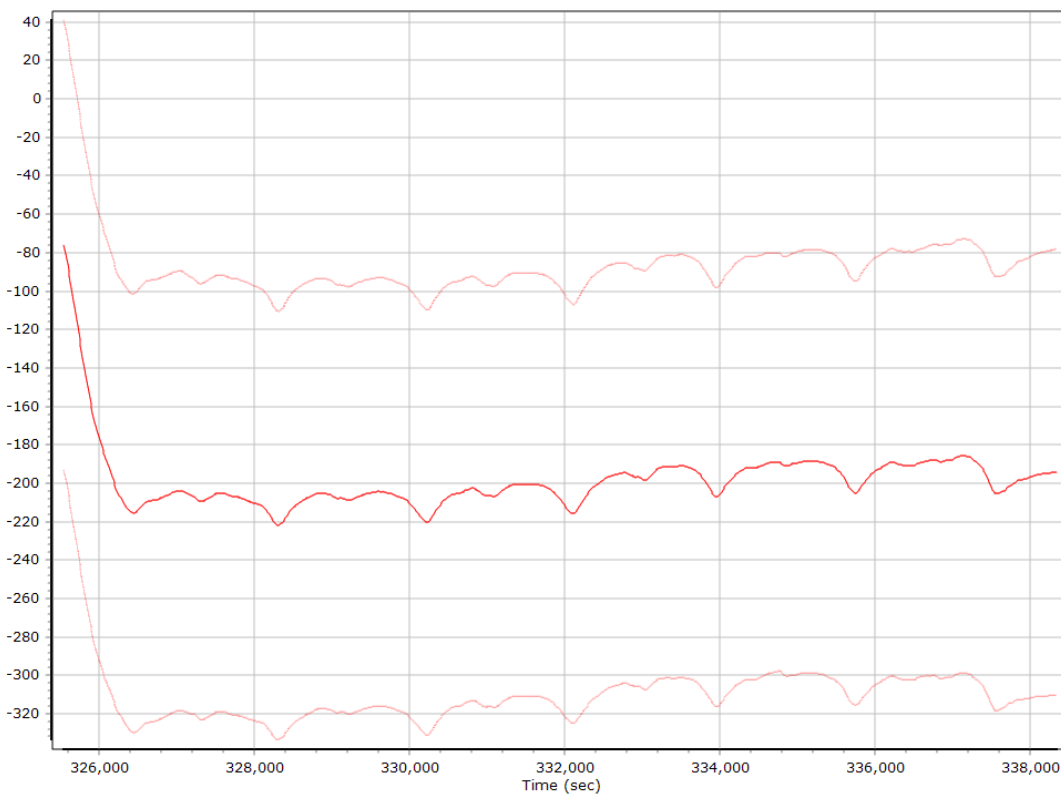
X Accelerometer Scale Error (ppm)



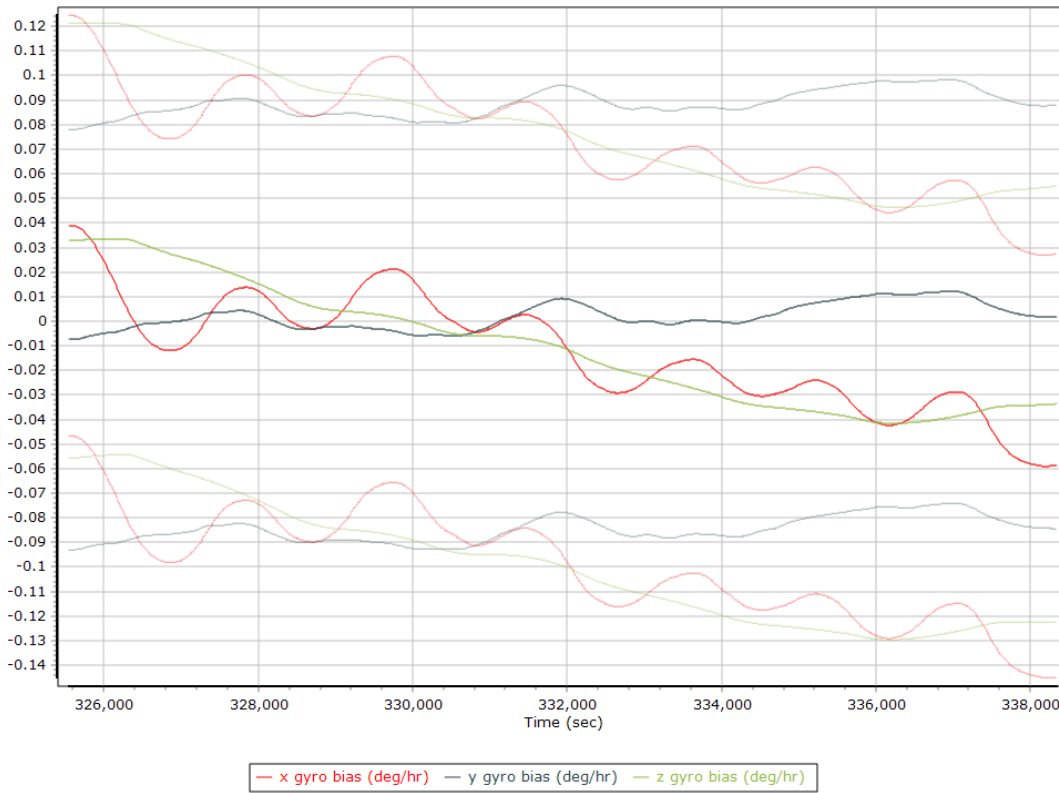
Y Accelerometer Scale Error (ppm)



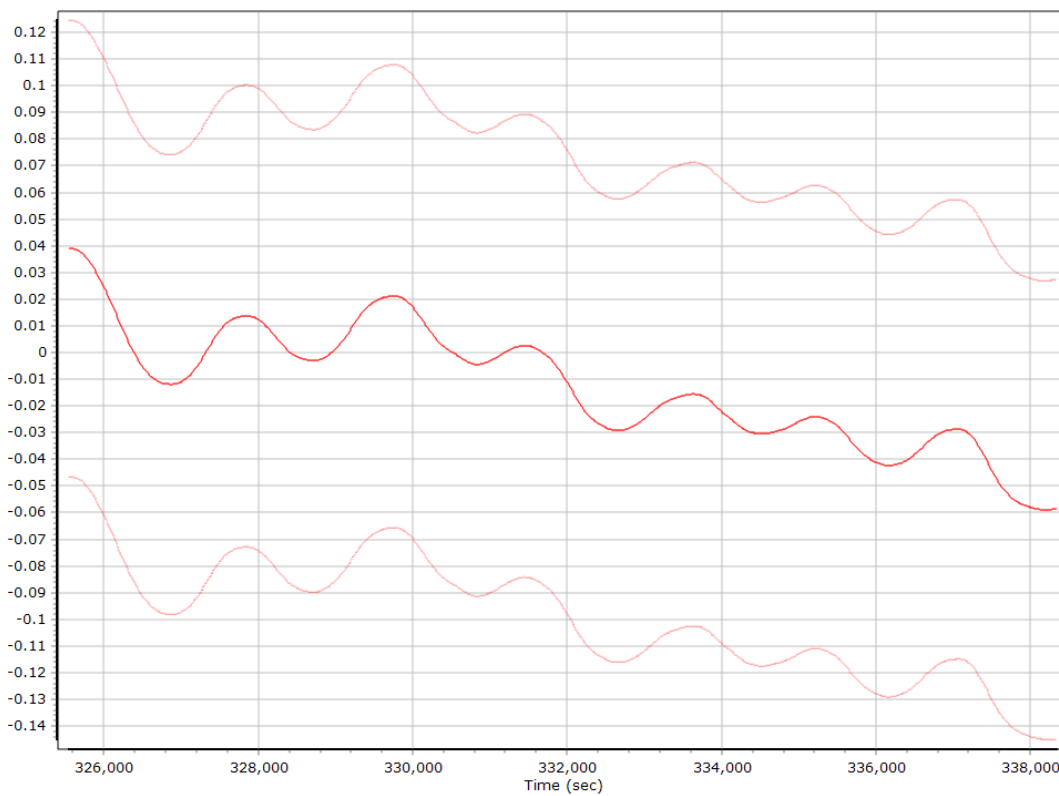
Z Accelerometer Scale Error (ppm)



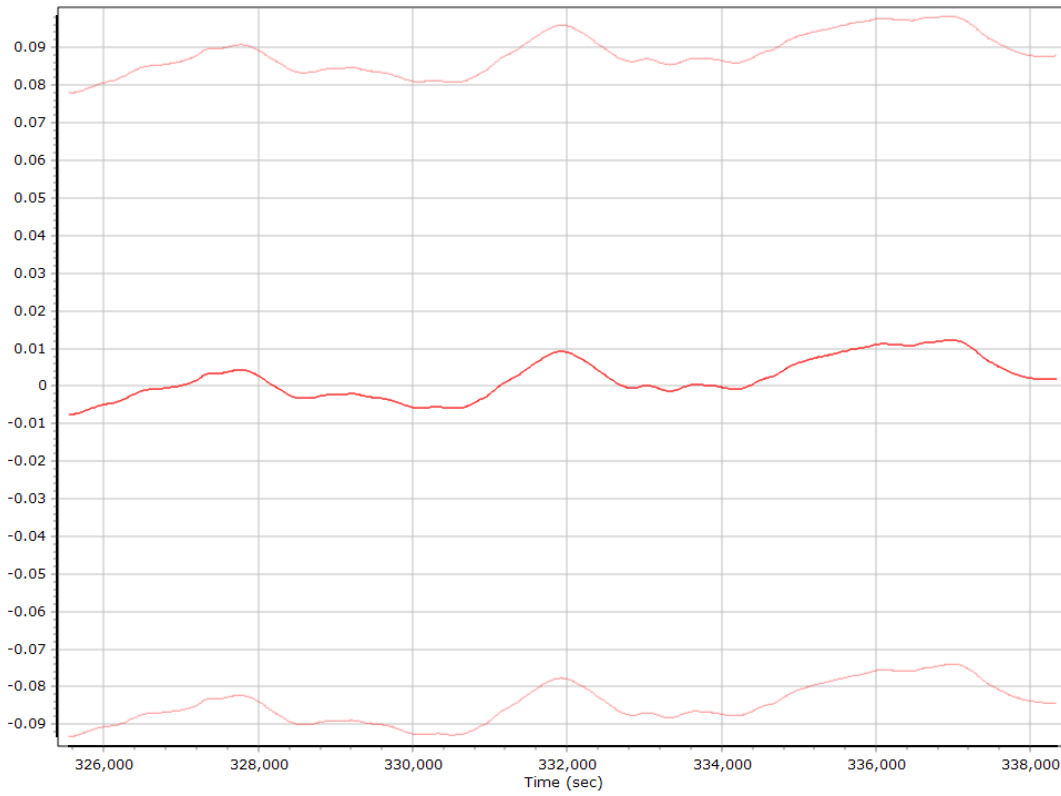
Gyro Bias (deg/h)



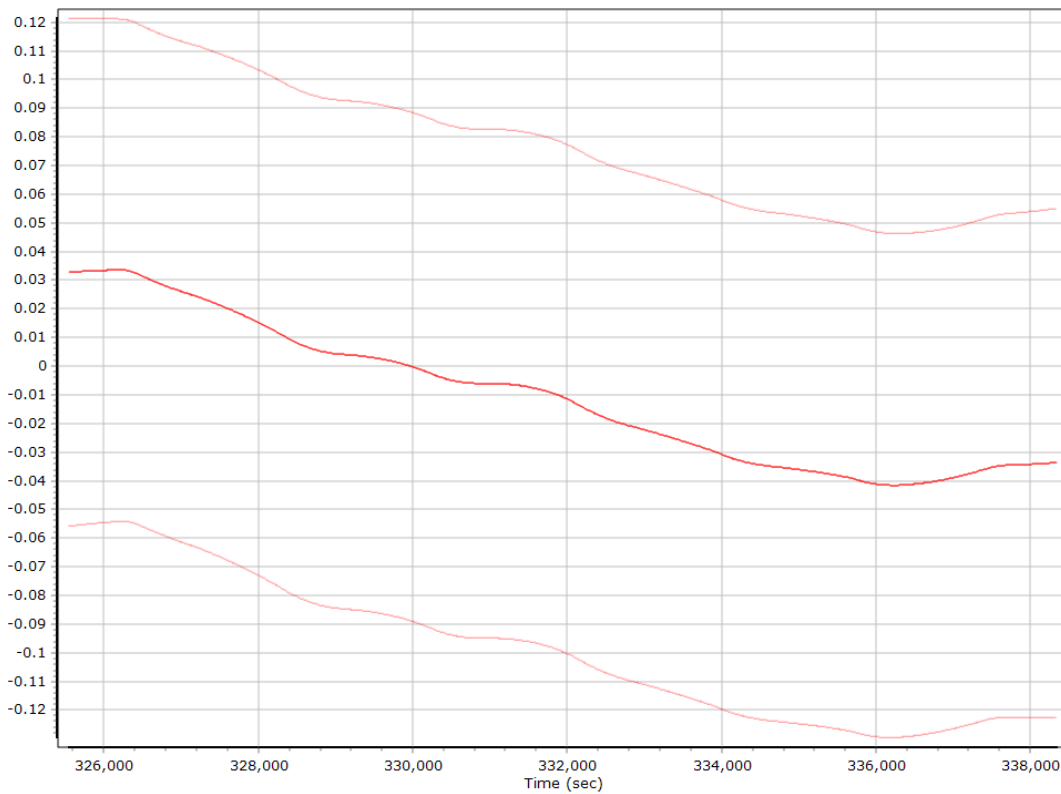
X Gyro Bias (deg/h)



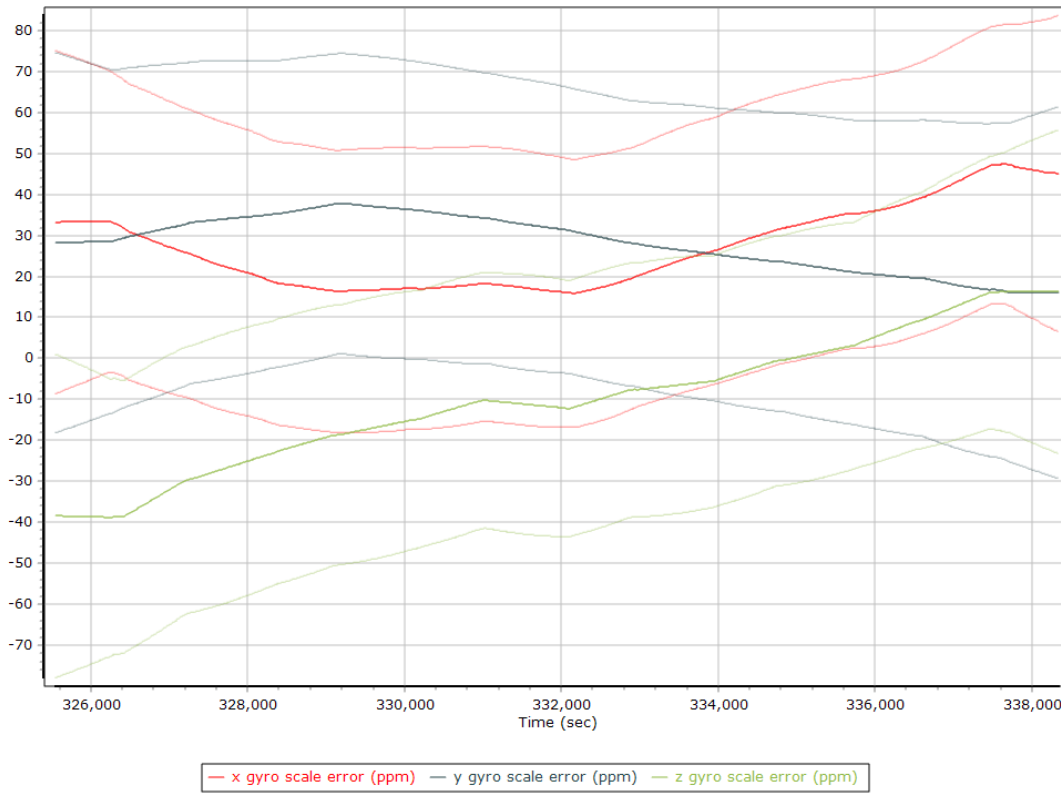
Y Gyro Bias (deg/h)



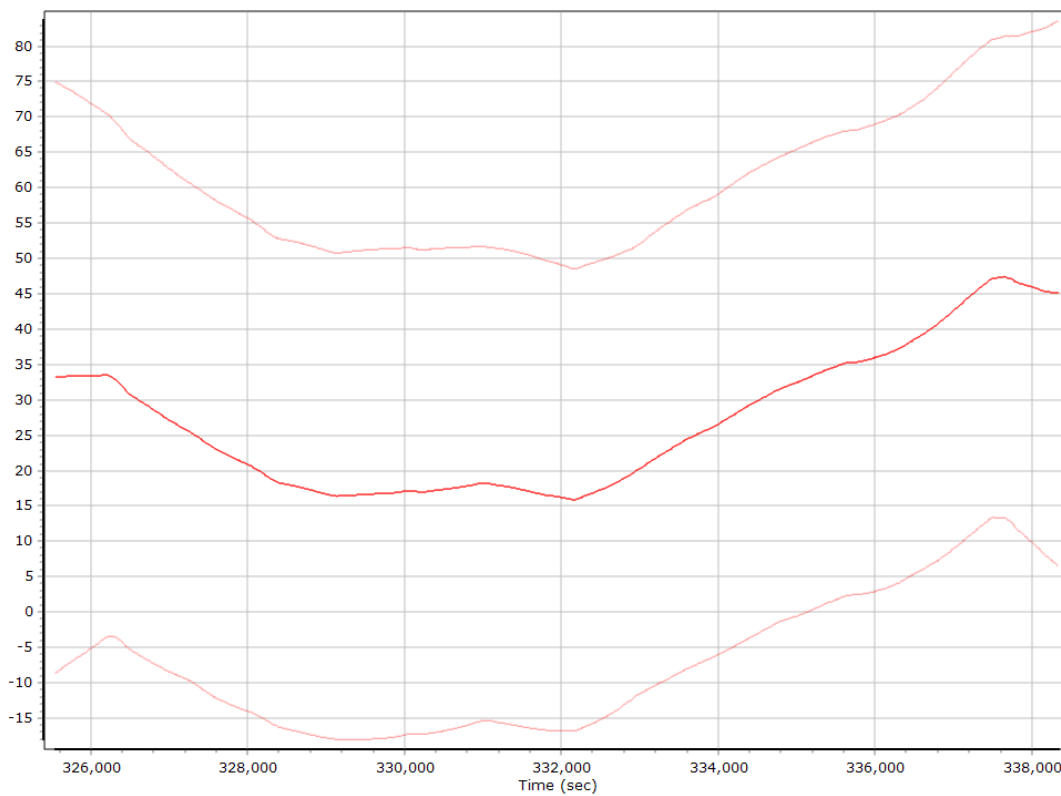
Z Gyro Bias (deg/h)



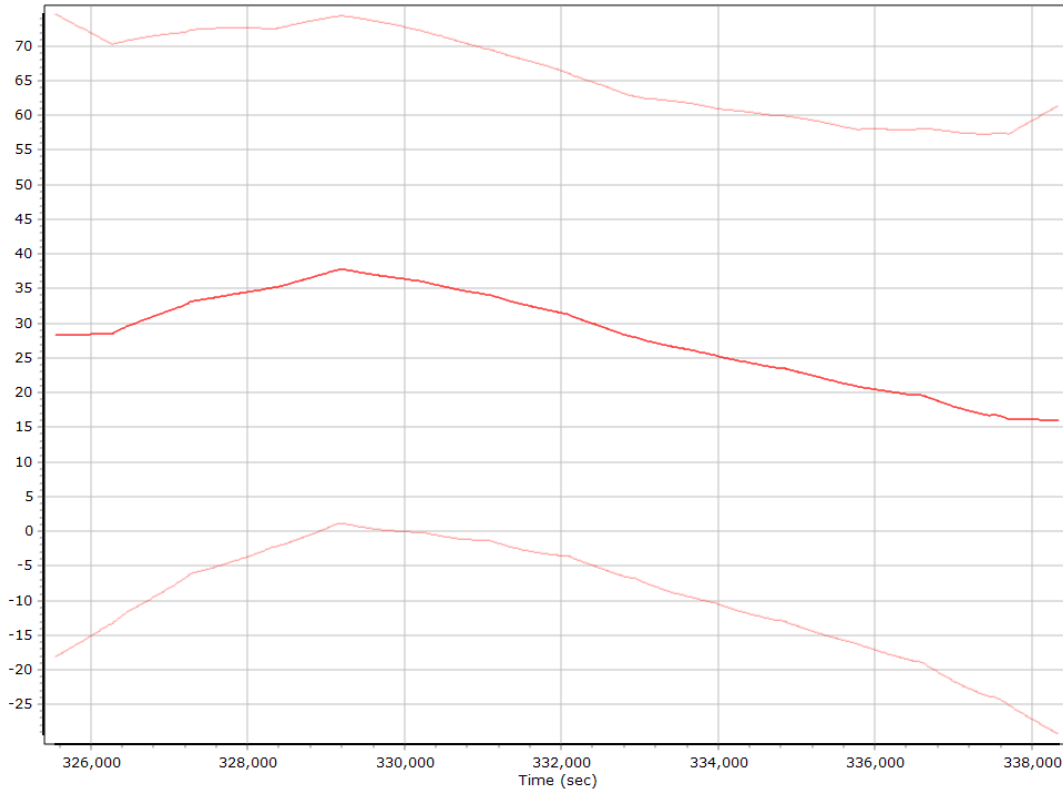
Gyro Scale Error (ppm)



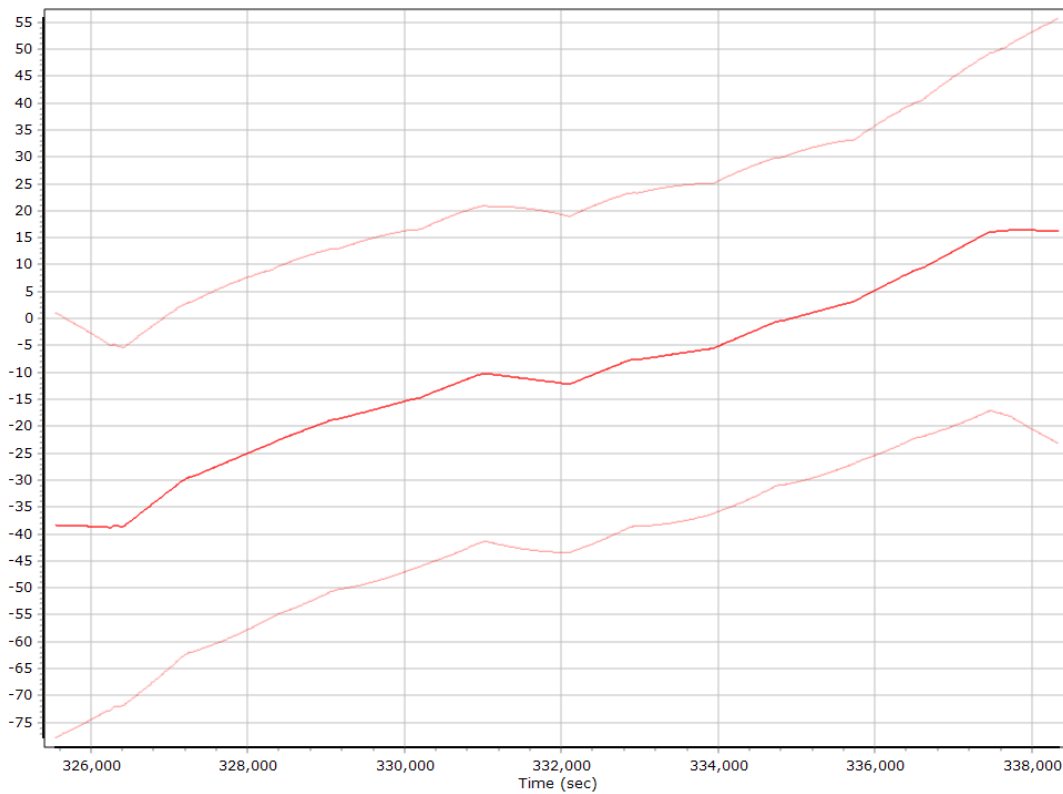
X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)

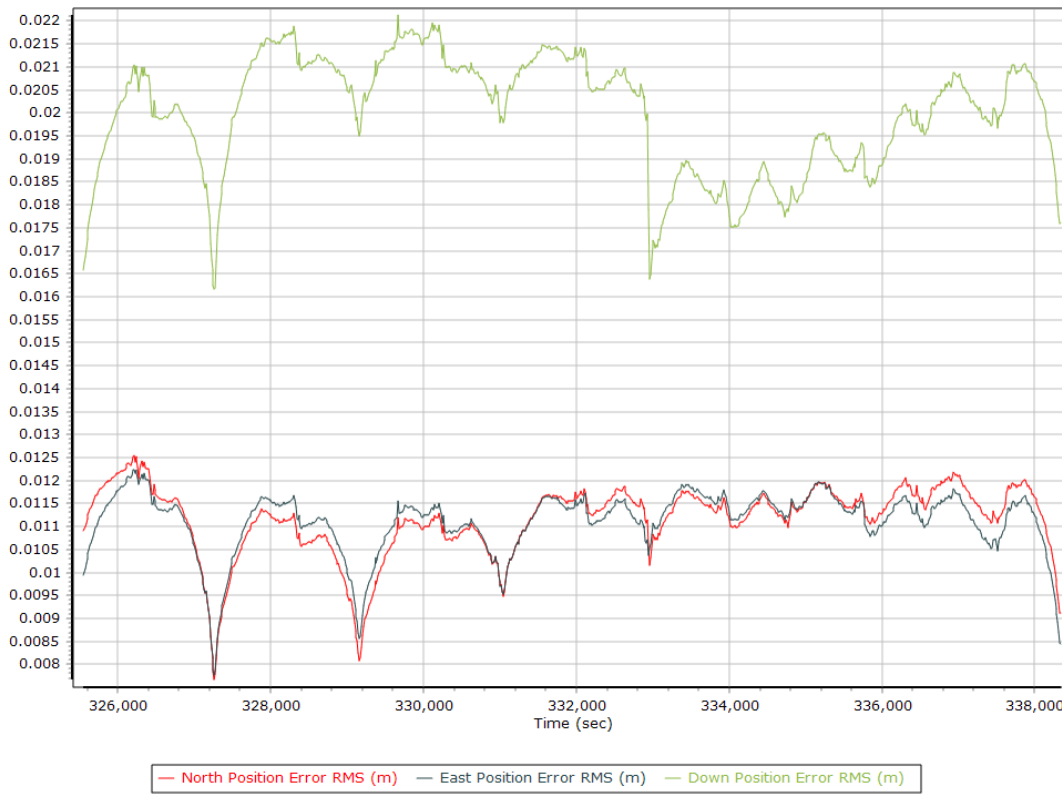


Z Gyro Scale Error (ppm)

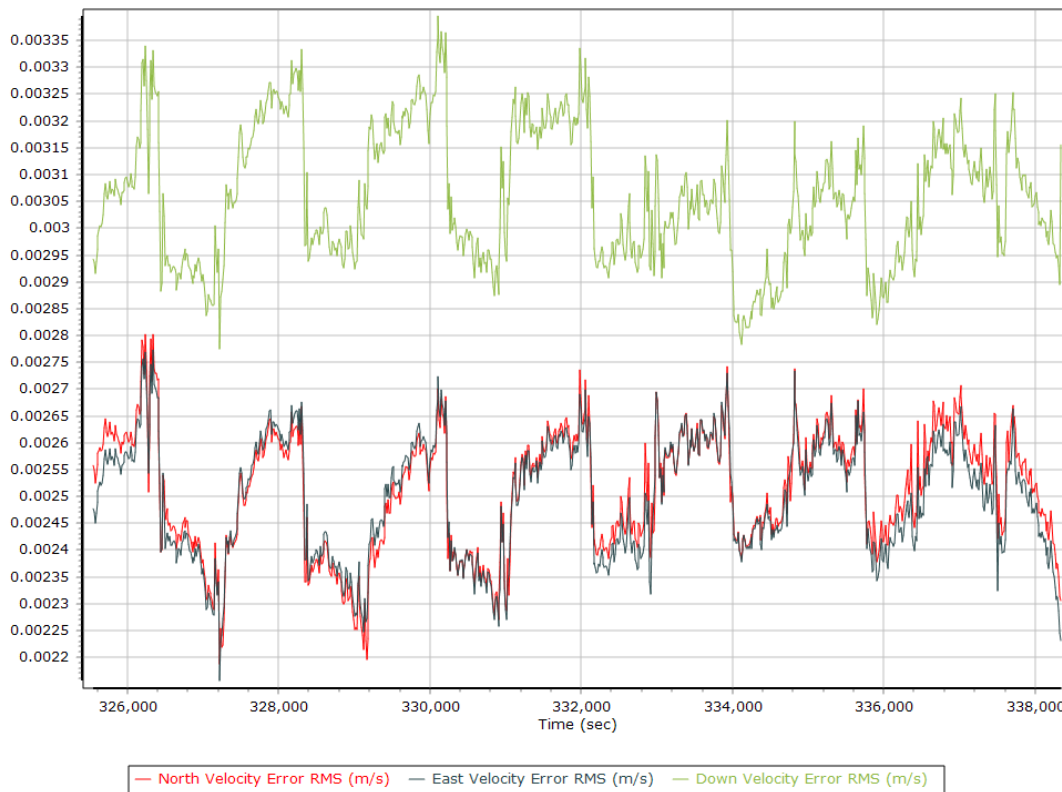


Smoothed Performance Metrics

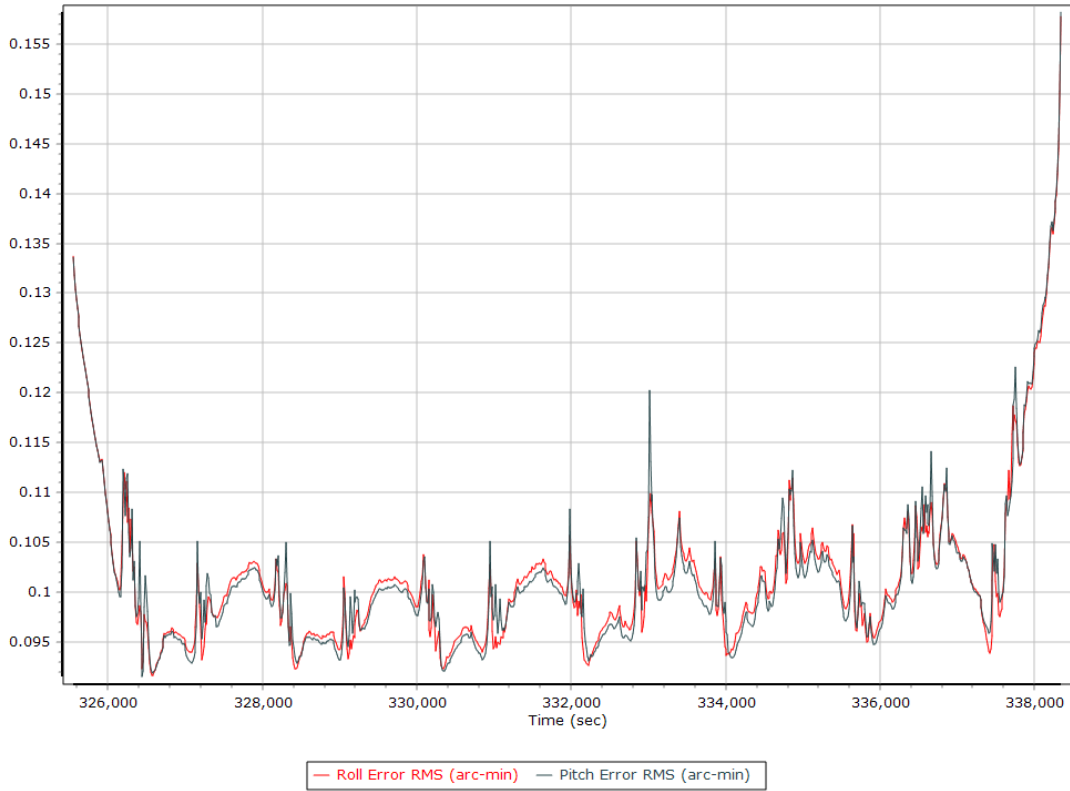
Position Error RMS (m)



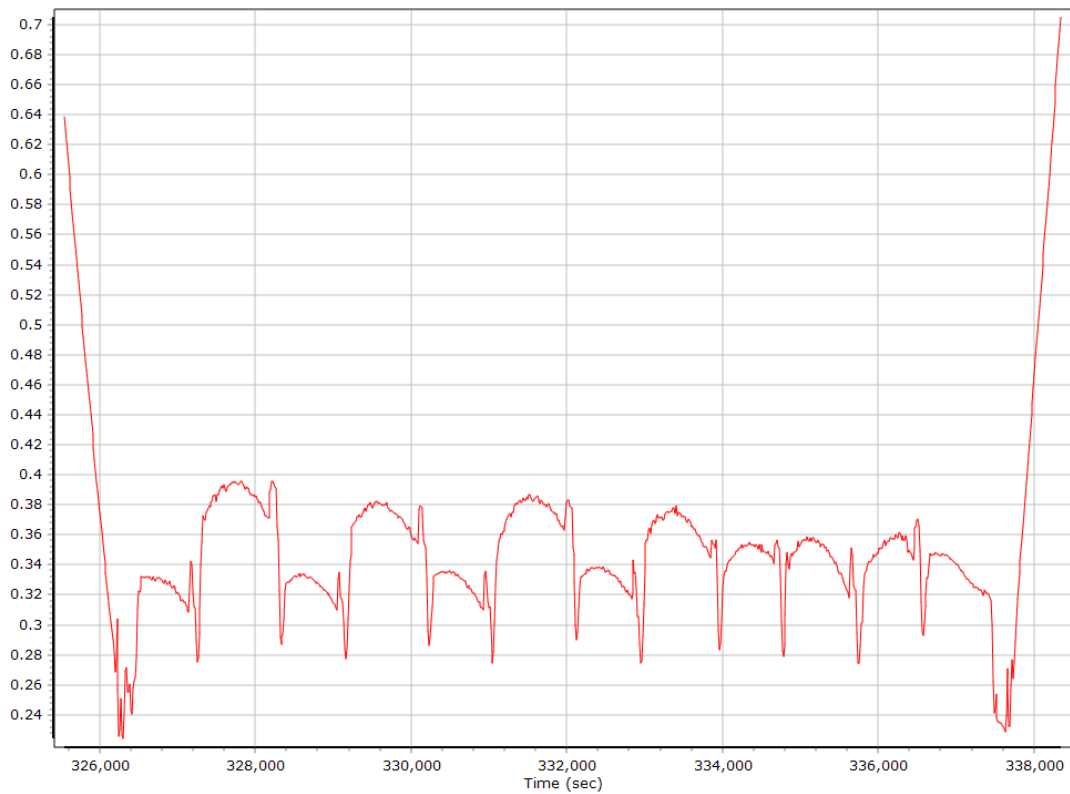
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

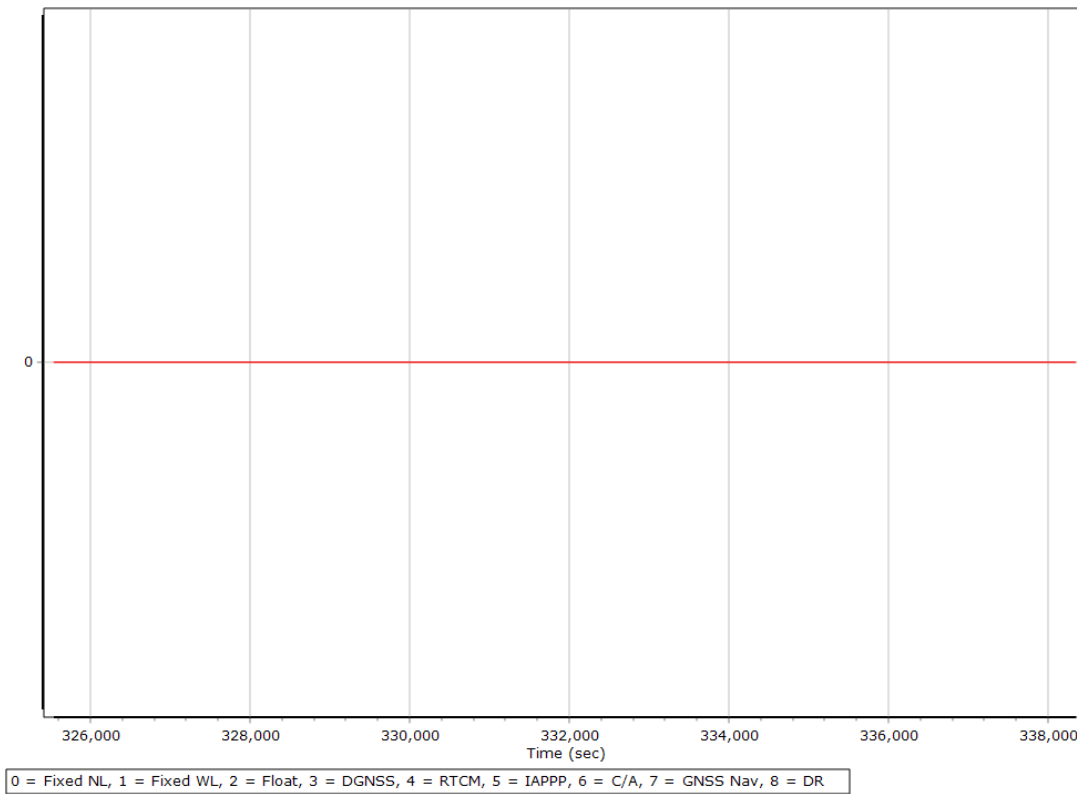


Heading Error RMS (arc-min)

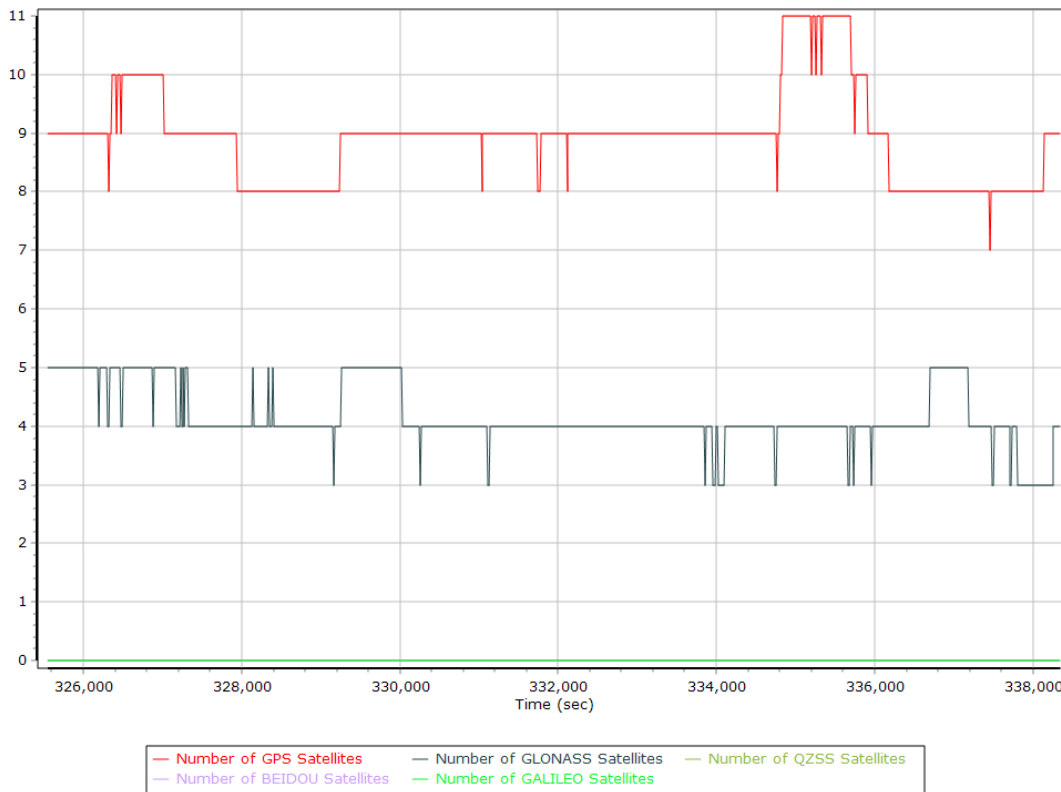


Smoothed Solution Status

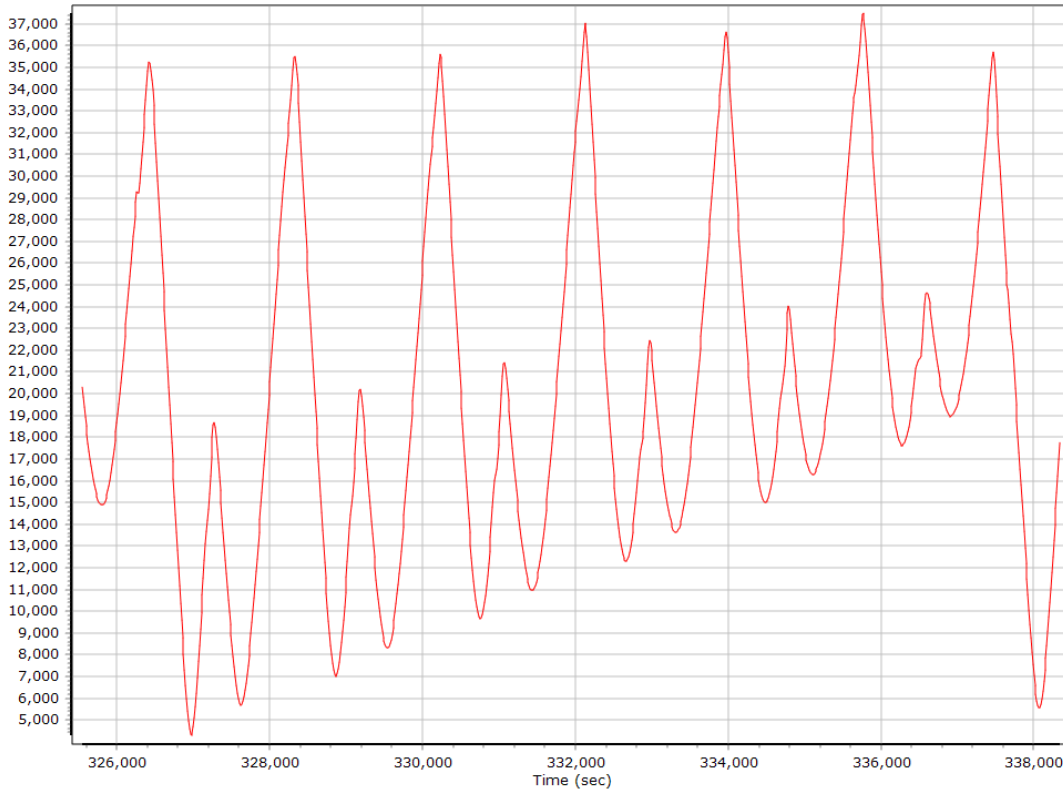
Processing Mode



Number of Satellites



Baseline Length



SBET IAkar Separation



Export Summary

Export file	export_XSS20050A_177.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	325490.003 (2/19/2020 6:24:50 PM)		
Export end time	338350.189 (2/19/2020 9:59:10 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	2020.13388		