

General Information

Mission Information

Project name	RBV20054A_176
Processing date	2020-02-25 13:06:12
Mission date	2020-02-23 13:34:58
Mission duration	04:40:42.000
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.509	POS Data
RBV20053A.510	POS Data
RBV20053A.511	POS Data
RBV20053A.512	POS Data
RBV20053A.513	POS Data
RBV20053A.514	POS Data
RBV20053A.515	POS Data
RBV20053A.516	POS Data
RBV20053A.517	POS Data
RBV20053A.518	POS Data
RBV20053A.519	POS Data
RBV20053A.520	POS Data
RBV20053A.521	POS Data
RBV20053A.522	POS Data
RBV20053A.523	POS Data
RBV20053A.524	POS Data
RBV20053A.525	POS Data
RBV20053A.526	POS Data
RBV20053A.527	POS Data
RBV20053A.528	POS Data
RBV20053A.529	POS Data
RBV20053A.530	POS Data
RBV20053A.531	POS Data
RBV20053A.532	POS Data
RBV20053A.533	POS Data
RBV20053A.534	POS Data
RBV20053A.535	POS Data
RBV20053A.536	POS Data
RBV20053A.537	POS Data
RBV20053A.538	POS Data
RBV20053A.539	POS Data
RBV20053A.540	POS Data
RBV20053A.541	POS Data
RBV20053A.542	POS Data
RBV20053A.543	POS Data
RBV20053A.544	POS Data
RBV20053A.545	POS Data
RBV20053A.546	POS Data
RBV20053A.547	POS Data
RBV20053A.548	POS Data
RBV20053A.549	POS Data
RBV20053A.550	POS Data
RBV20053A.551	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_RB20054A_176.out	SBET Trajectory File

Rover Data Summary

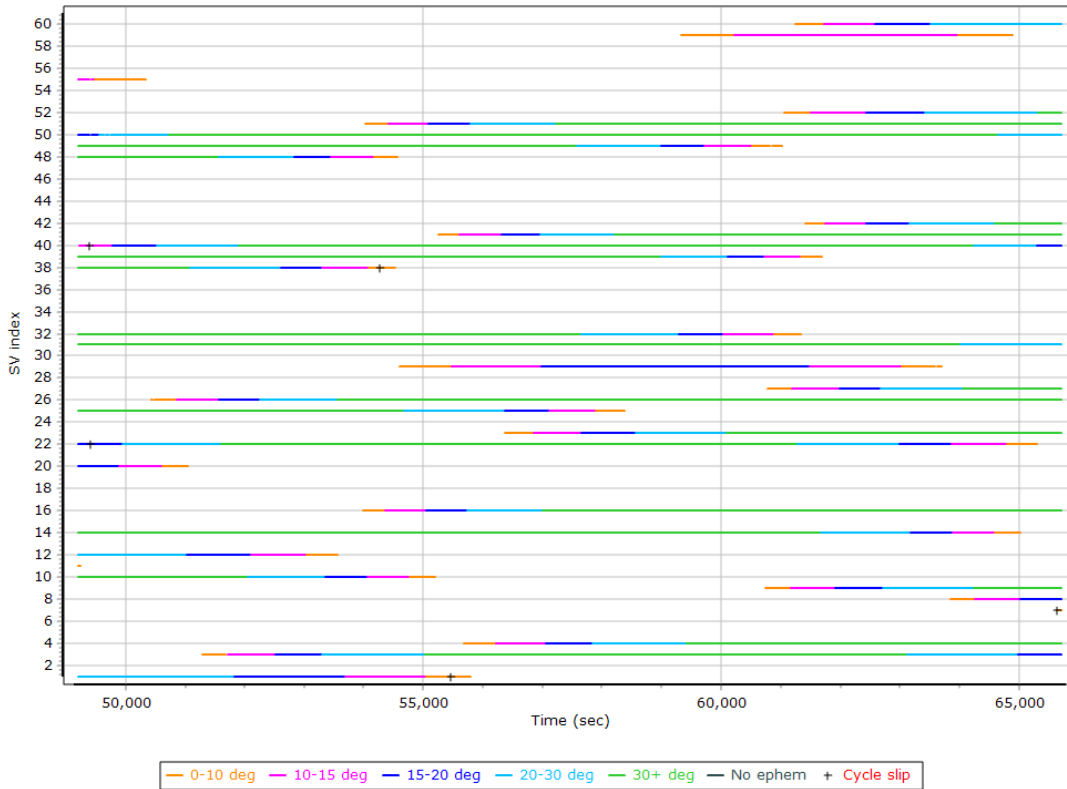
First raw data file	RBV20053A.509		
Last raw data file	RBV20053A.551		
Start GPS week	2094		
Start time	48879.177 (2/23/2020 1:34:39 PM)		
End time	65723.362 (2/23/2020 6:15:23 PM)		
Start of fine alignment	49147.485 (2/23/2020 1:39:07 PM)		
Available subsystems	Primary GNSS, Gimbal, IMU		
POS Event 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

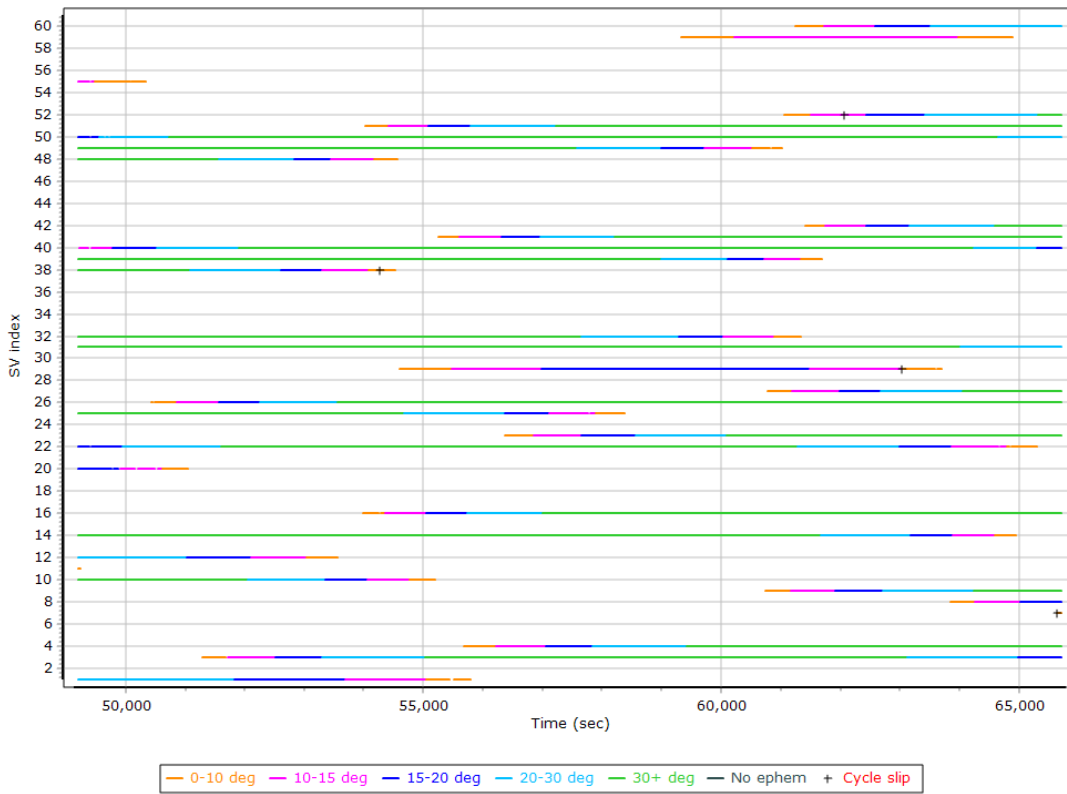
Raw IMU Import QC Summary

IMU data input file	imu_RB20054A_176.dat
IMU data check log file	imudt_RB20054A_176.log
IMU Records Processed	3368302
Termination Status	Normal
IMU Anomalies	0

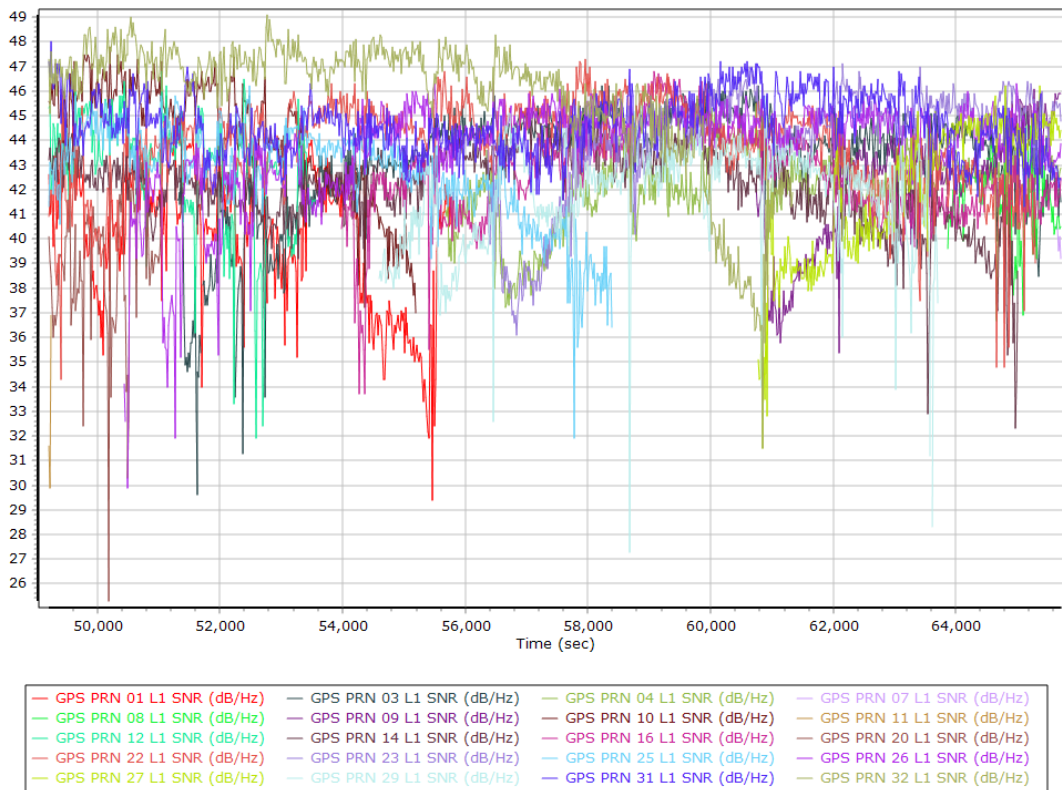
L1 Satellite Lock/Elevation



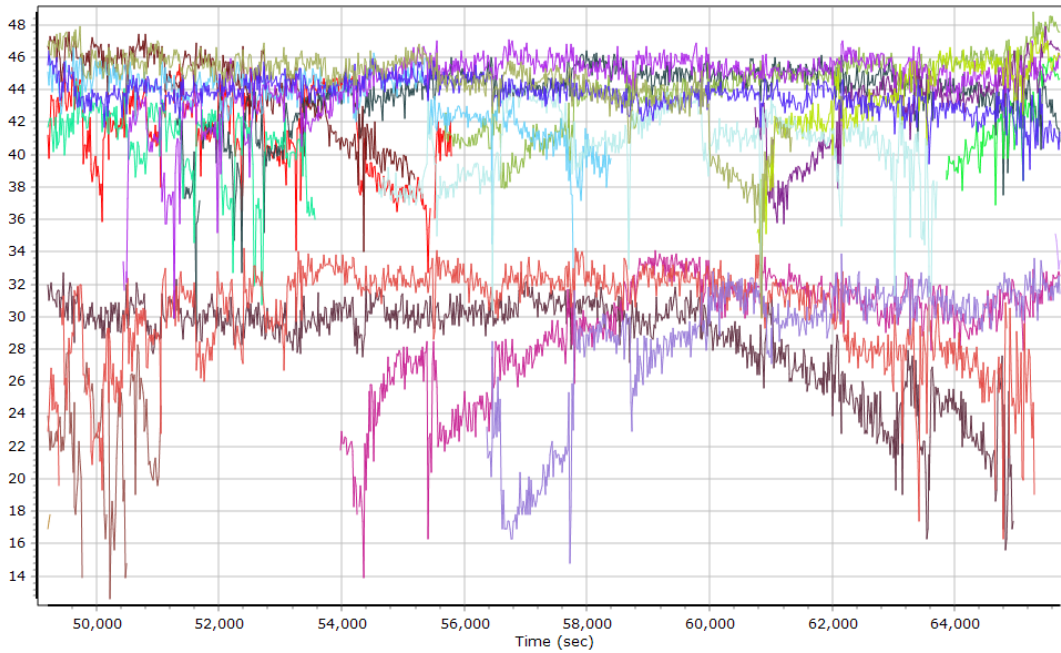
L2 Satellite Lock/Elevation



GPS L1 SNR

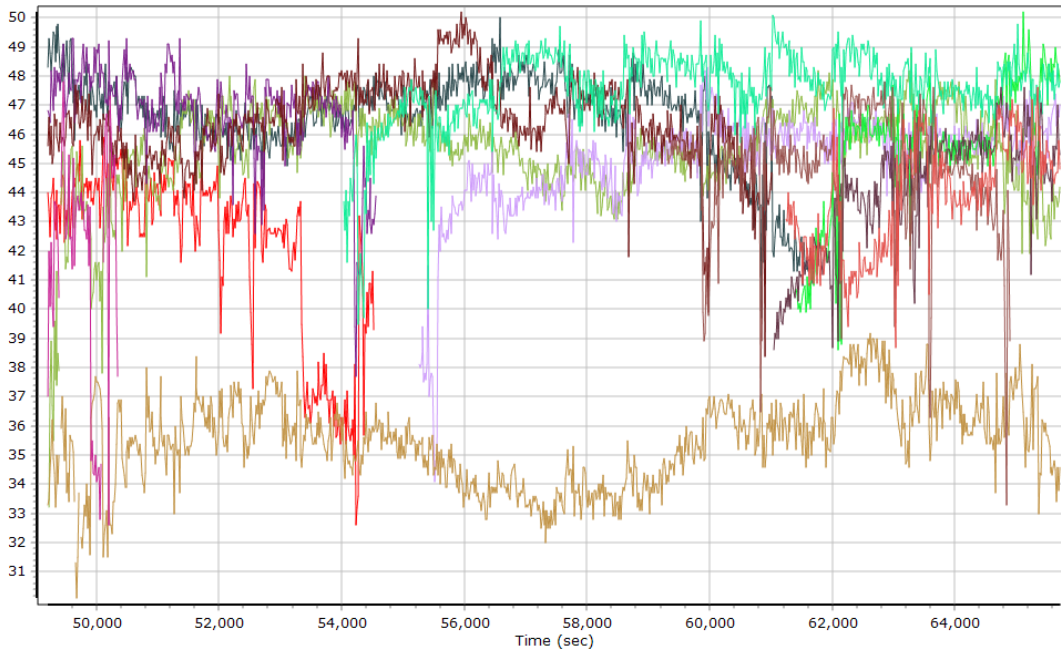


GPS L2 SNR



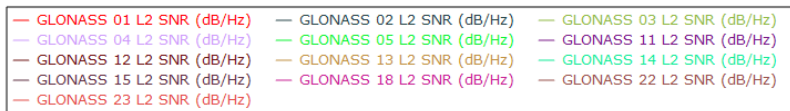
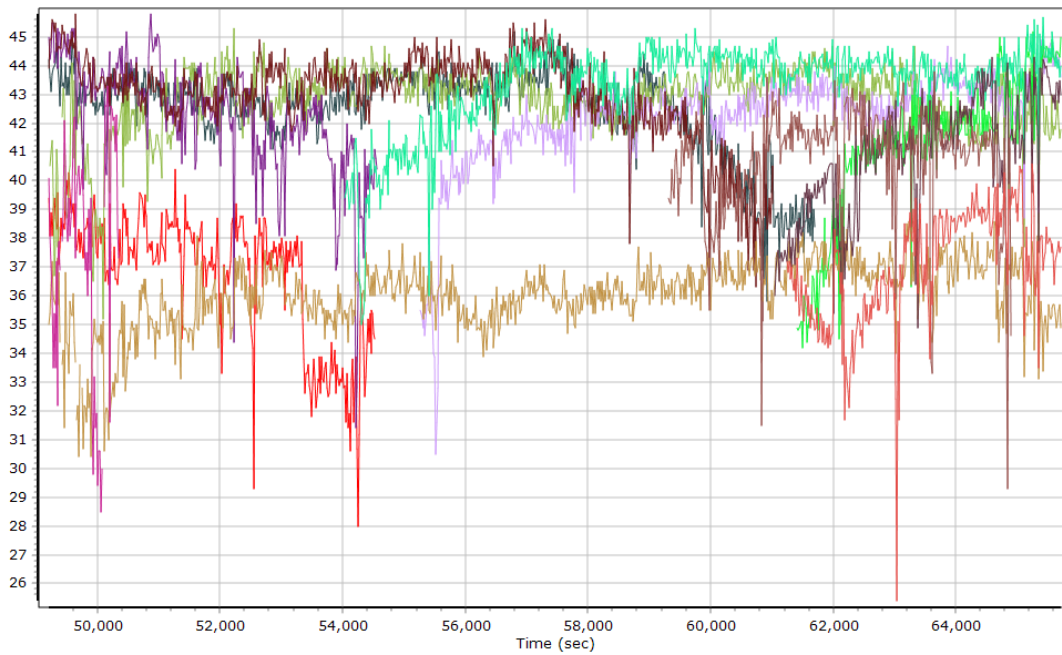
- | | | | |
|---------------------------|---------------------------|---------------------------|---------------------------|
| GPS PRN 01 L2 SNR (dB/Hz) | GPS PRN 03 L2 SNR (dB/Hz) | GPS PRN 04 L2 SNR (dB/Hz) | GPS PRN 07 L2 SNR (dB/Hz) |
| GPS PRN 08 L2 SNR (dB/Hz) | GPS PRN 09 L2 SNR (dB/Hz) | GPS PRN 10 L2 SNR (dB/Hz) | GPS PRN 11 L2 SNR (dB/Hz) |
| GPS PRN 12 L2 SNR (dB/Hz) | GPS PRN 14 L2 SNR (dB/Hz) | GPS PRN 16 L2 SNR (dB/Hz) | GPS PRN 20 L2 SNR (dB/Hz) |
| GPS PRN 22 L2 SNR (dB/Hz) | GPS PRN 23 L2 SNR (dB/Hz) | GPS PRN 25 L2 SNR (dB/Hz) | GPS PRN 26 L2 SNR (dB/Hz) |
| GPS PRN 27 L2 SNR (dB/Hz) | GPS PRN 29 L2 SNR (dB/Hz) | GPS PRN 31 L2 SNR (dB/Hz) | GPS PRN 32 L2 SNR (dB/Hz) |

GLONASS L1 SNR

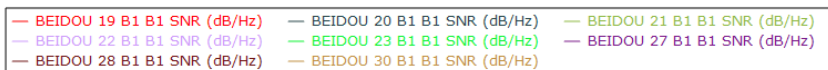
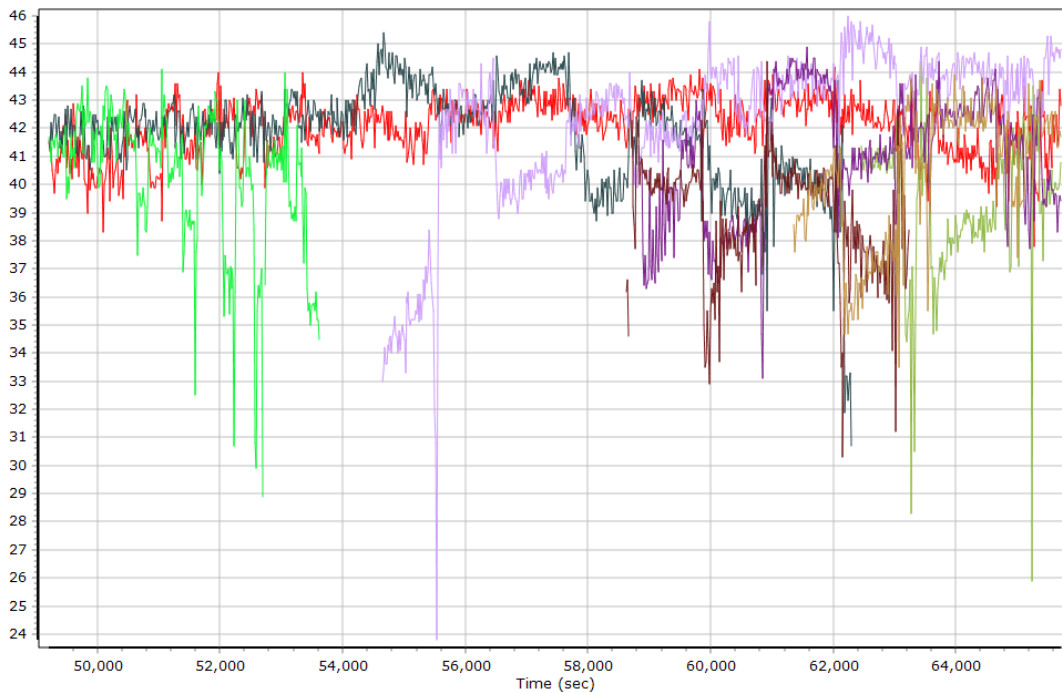


- | | | |
|---------------------------|---------------------------|---------------------------|
| GLONASS 01 L1 SNR (dB/Hz) | GLONASS 02 L1 SNR (dB/Hz) | GLONASS 03 L1 SNR (dB/Hz) |
| GLONASS 04 L1 SNR (dB/Hz) | GLONASS 05 L1 SNR (dB/Hz) | GLONASS 11 L1 SNR (dB/Hz) |
| GLONASS 12 L1 SNR (dB/Hz) | GLONASS 13 L1 SNR (dB/Hz) | GLONASS 14 L1 SNR (dB/Hz) |
| GLONASS 15 L1 SNR (dB/Hz) | GLONASS 18 L1 SNR (dB/Hz) | GLONASS 22 L1 SNR (dB/Hz) |
| GLONASS 23 L1 SNR (dB/Hz) | | |

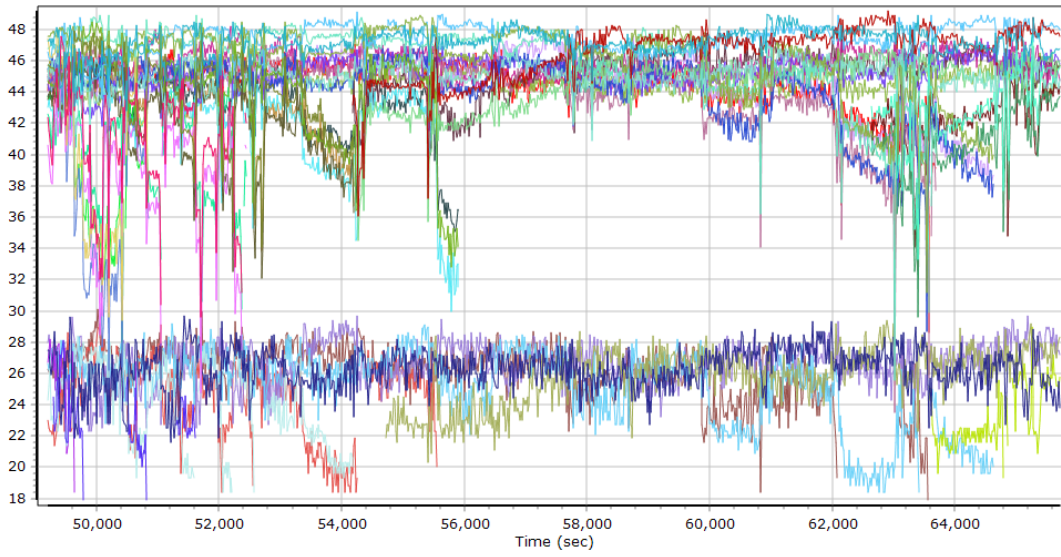
GLONASS L2 SNR



BEIDOU SNR



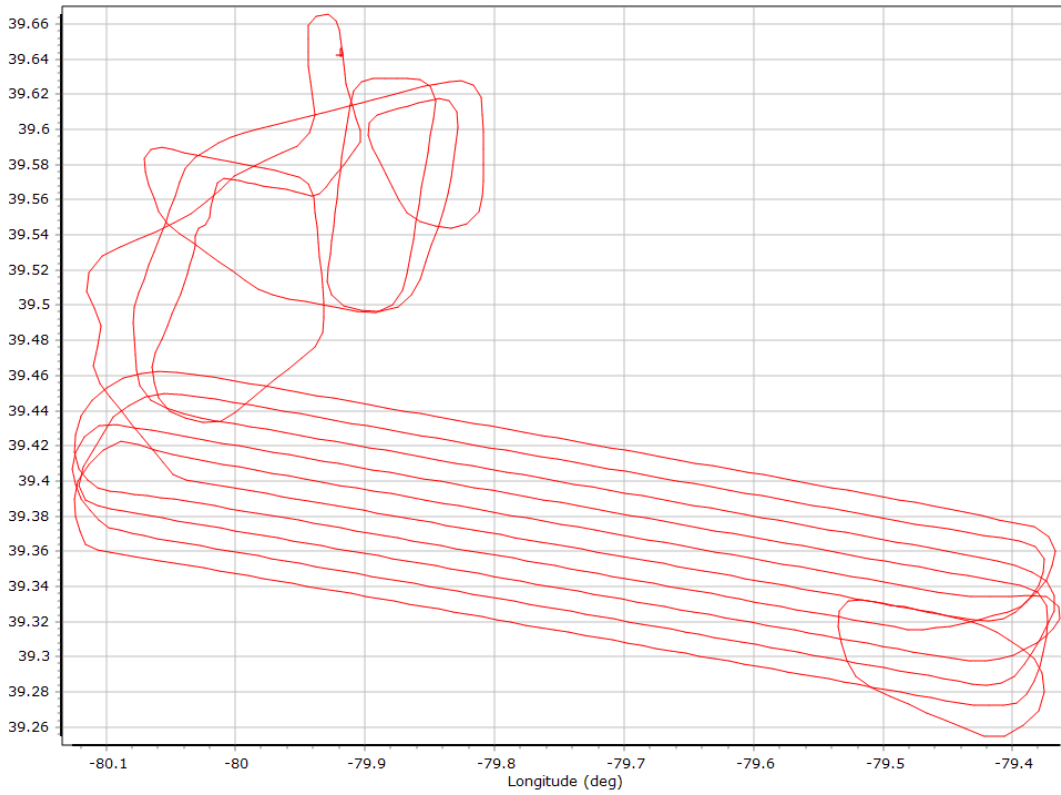
GALILEO SNR



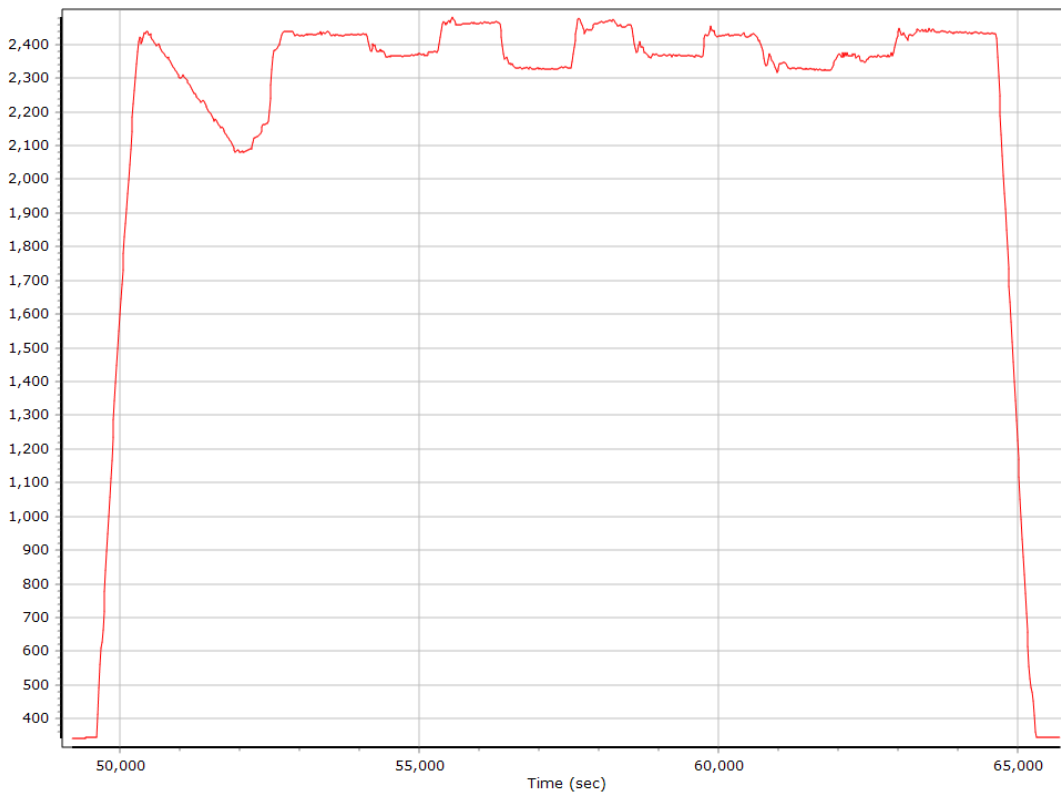
- | | |
|--|--|
| — GALILEO 02 L1 BOC_1_1_D_MBOC SNR (dB/Hz) | — GALILEO 03 L1 BOC_1_1_D_MBOC SNR (dB/Hz) |
| — GALILEO 07 L1 BOC_1_1_D_MBOC SNR (dB/Hz) | — GALILEO 08 L1 BOC_1_1_D_MBOC SNR (dB/Hz) |
| — GALILEO 13 L1 BOC_1_1_D_MBOC SNR (dB/Hz) | — GALILEO 18 L1 BOC_1_1_D_MBOC SNR (dB/Hz) |
| — GALILEO 21 L1 BOC_1_1_D_MBOC SNR (dB/Hz) | — GALILEO 25 L1 BOC_1_1_D_MBOC SNR (dB/Hz) |
| — GALILEO 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 02 L5E5A BPSK10_PD SNR (dB/Hz) |
| — GALILEO 03 L5E5A BPSK10_PD SNR (dB/Hz) | — GALILEO 07 L5E5A BPSK10_PD SNR (dB/Hz) |
| — GALILEO 08 L5E5A BPSK10_PD SNR (dB/Hz) | — GALILEO 13 L5E5A BPSK10_PD SNR (dB/Hz) |
| — GALILEO 21 L5E5A BPSK10_PD SNR (dB/Hz) | — GALILEO 25 L5E5A BPSK10_PD SNR (dB/Hz) |
| — GALILEO 26 L5E5A BPSK10_PD SNR (dB/Hz) | — GALILEO 27 L5E5A BPSK10_PD SNR (dB/Hz) |

Trajectory Information

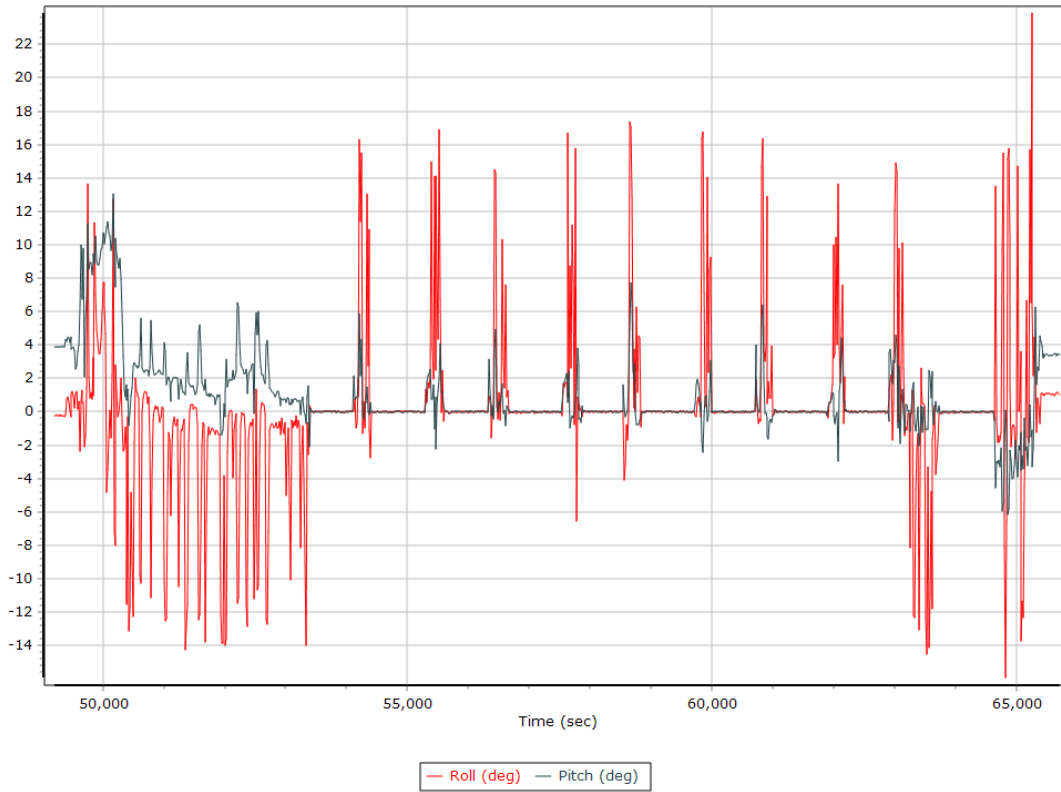
Top View



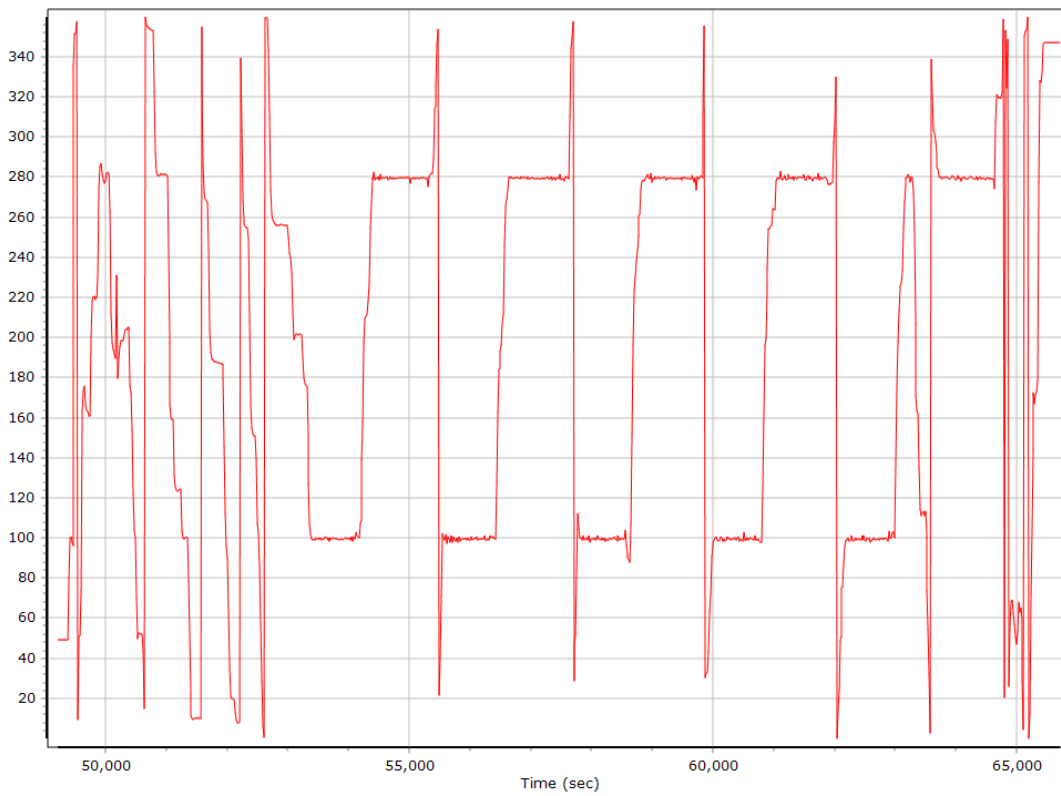
Altitude



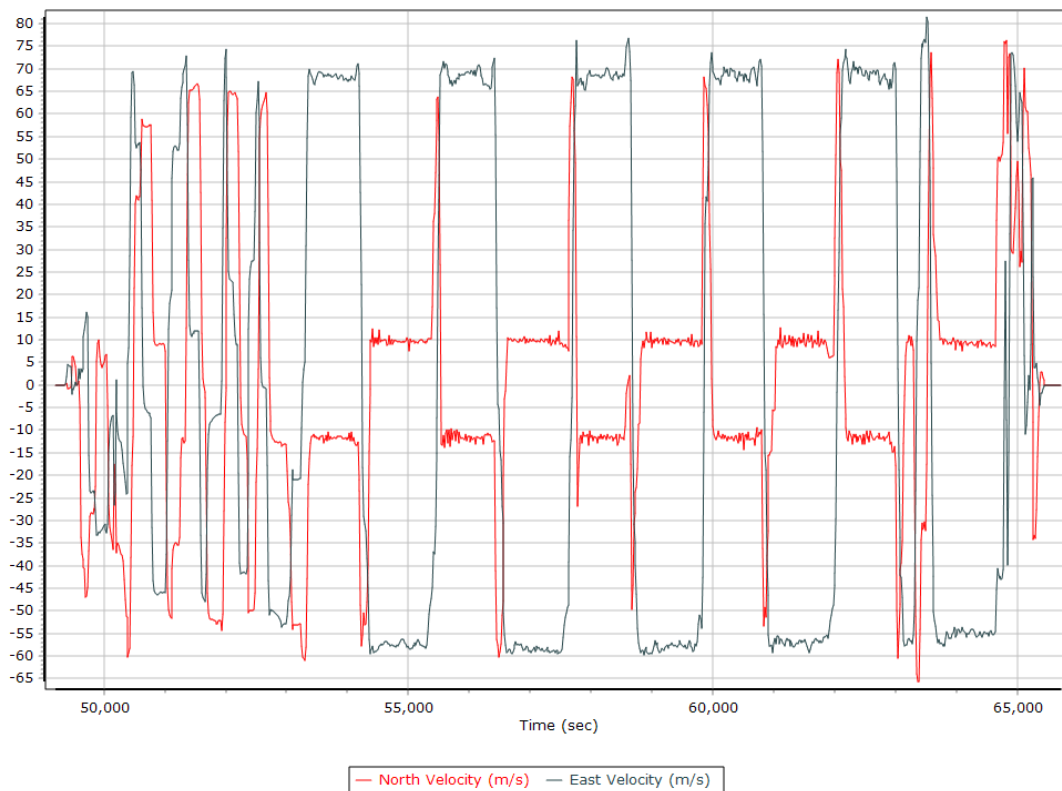
Roll/Pitch



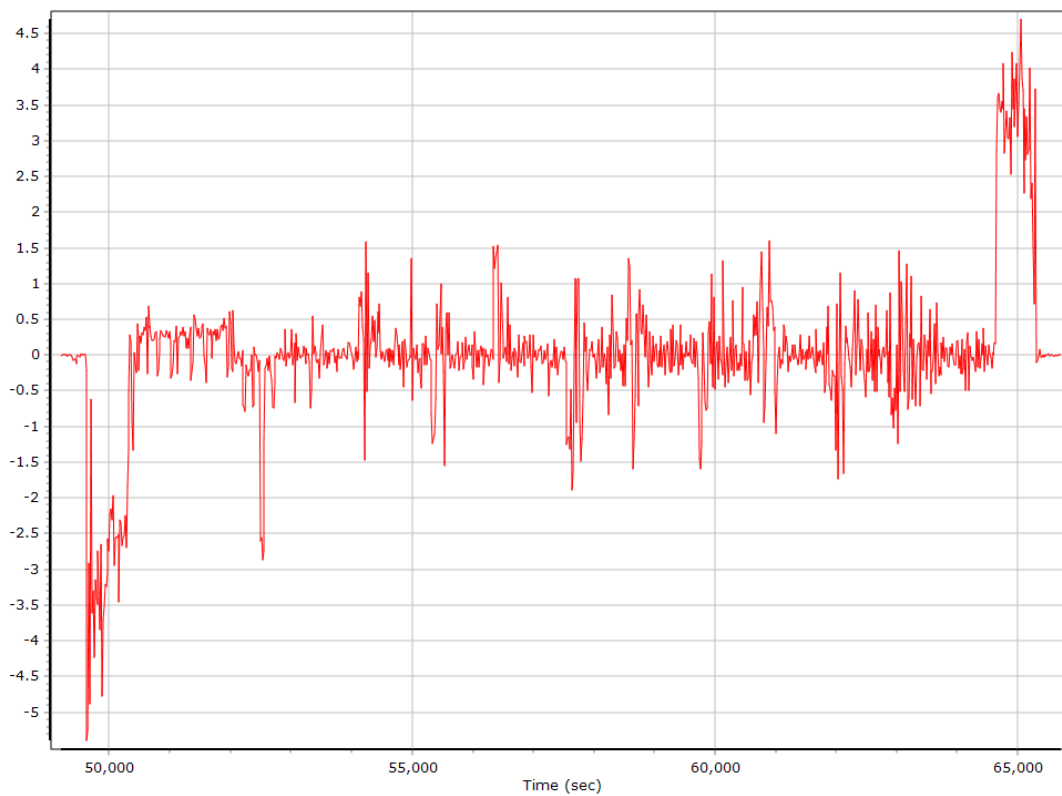
Heading



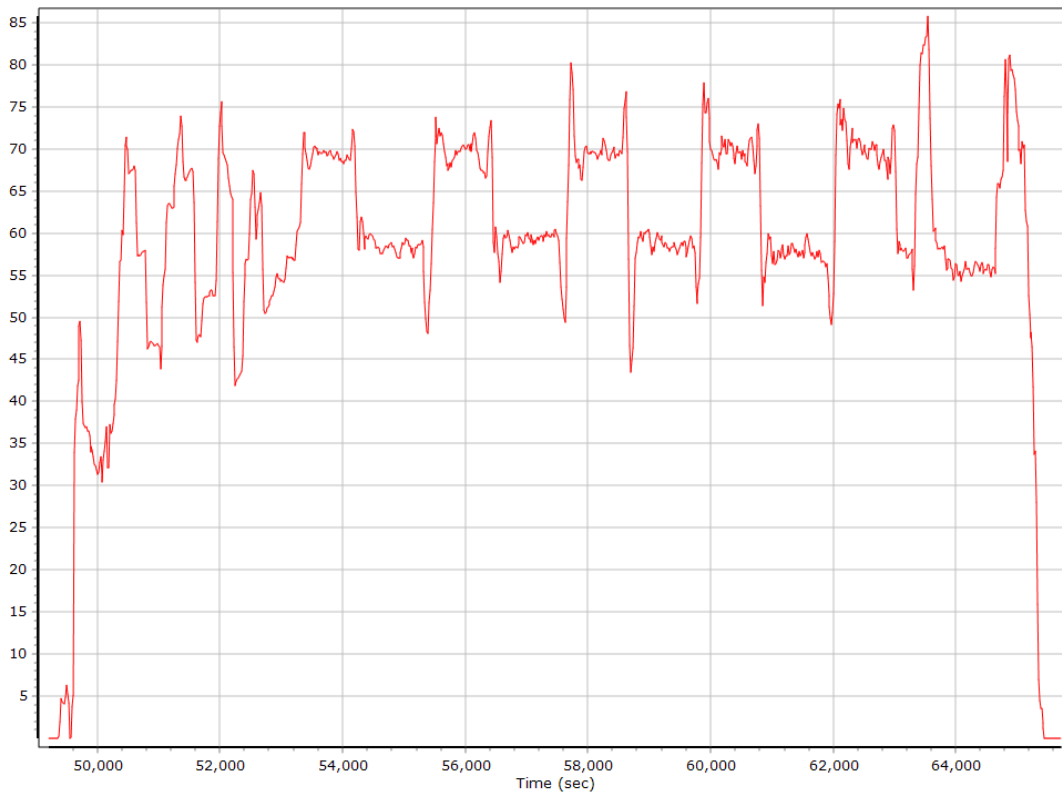
North/East Velocity



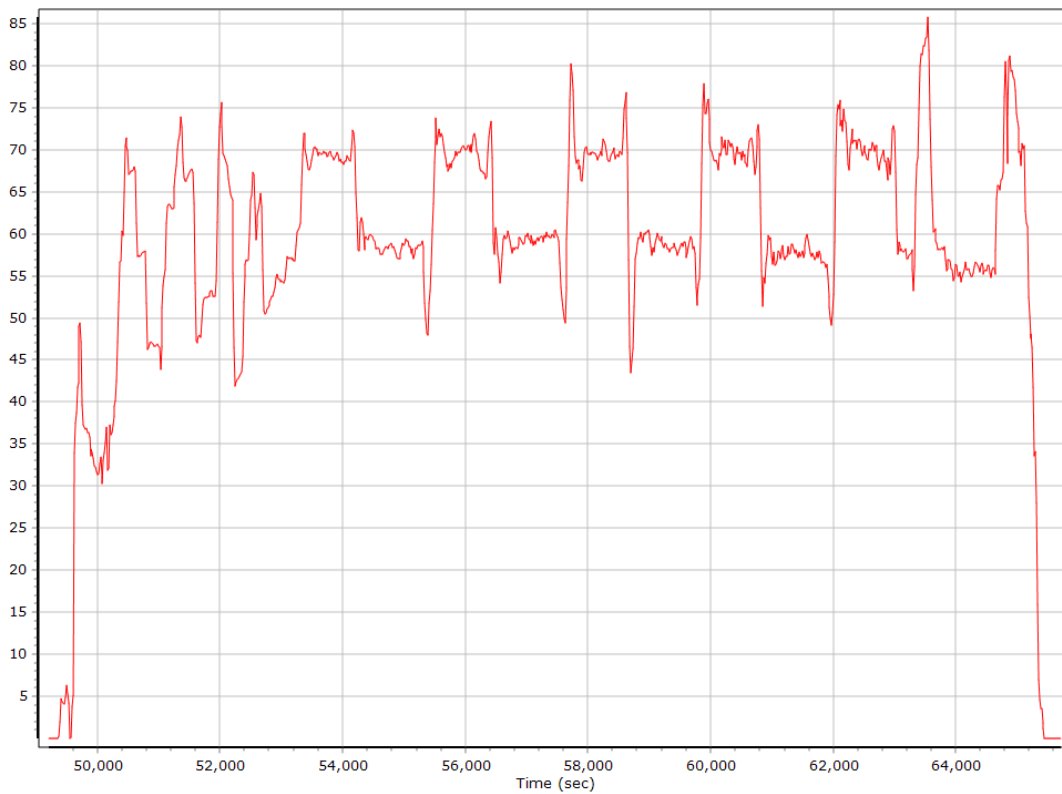
Down Velocity



Total Speed



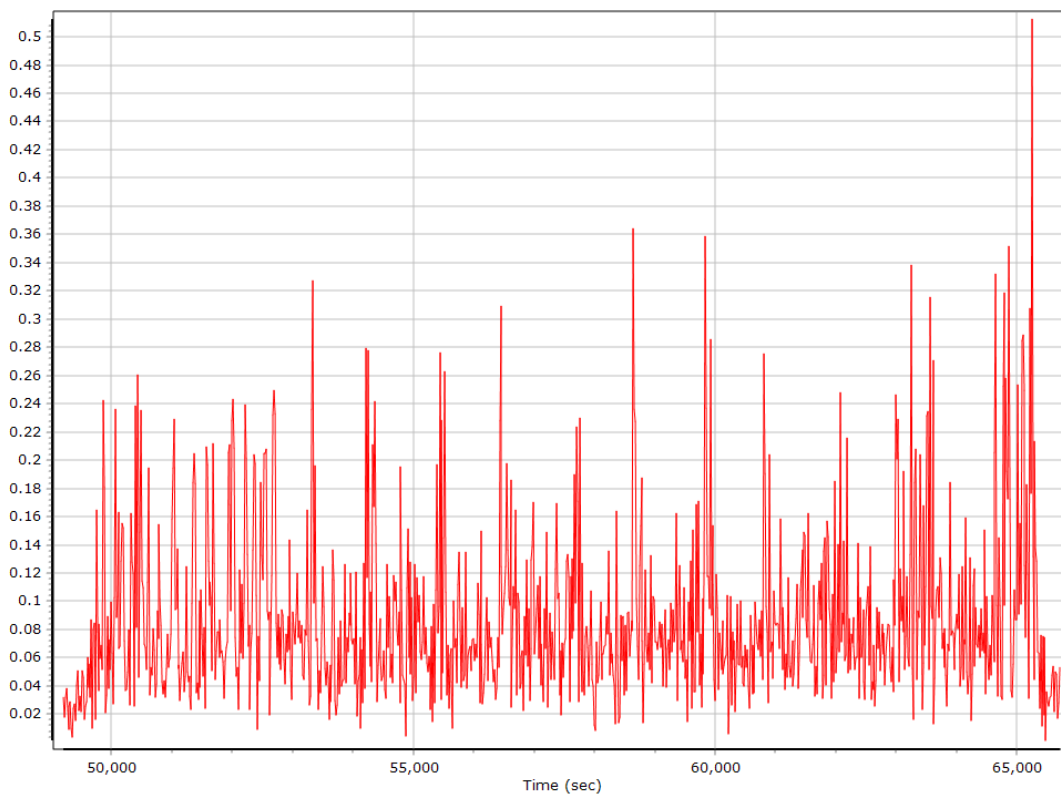
Ground Speed



Body Acceleration



Total Body Acceleration



Body Angular Rate



SmartBase Processing Summary

Smart Select Options

Archive enabled	False
User database enabled	False
Include high-rate data sites	False
Target GNSS Selection	GNSS

Basestation Selection

Date	ID	Dist	System	Rate	Service	Database	Status
02/23/2020	WVTA	24.55	GNSS	1	User	None	Imported
02/23/2020	WVSH	98.21	GNSS	1	User	None	Imported
02/23/2020	WVNR	59.76	GNSS	1	User	None	Imported
02/23/2020	WVCV	54.89	GNSS	1	User	None	Imported
02/23/2020	WVBU	77.05	GNSS	1	User	None	Imported
02/23/2020	WVBR	43.49	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	16842 s (2094 48898 - 2094 65740)
Number of reference stations	6
Primary station GPS measurement usage (%)	99.5
Primary station GLONASS measurement usage (%)	88.7
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	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)	12830
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	wvta0540.20o		
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	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)	0.22	40.39	
Number of GPS SV	7	11	10
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	9	19	15
PDOP	1.03	1.97	1.36
QC Solution Gaps	1.00	1.00	
Solution Type	Fixed	Float	No solution
Epoch (sec)	16837.00	0.00	1.00
Percentage	99.99	0.00	0.01

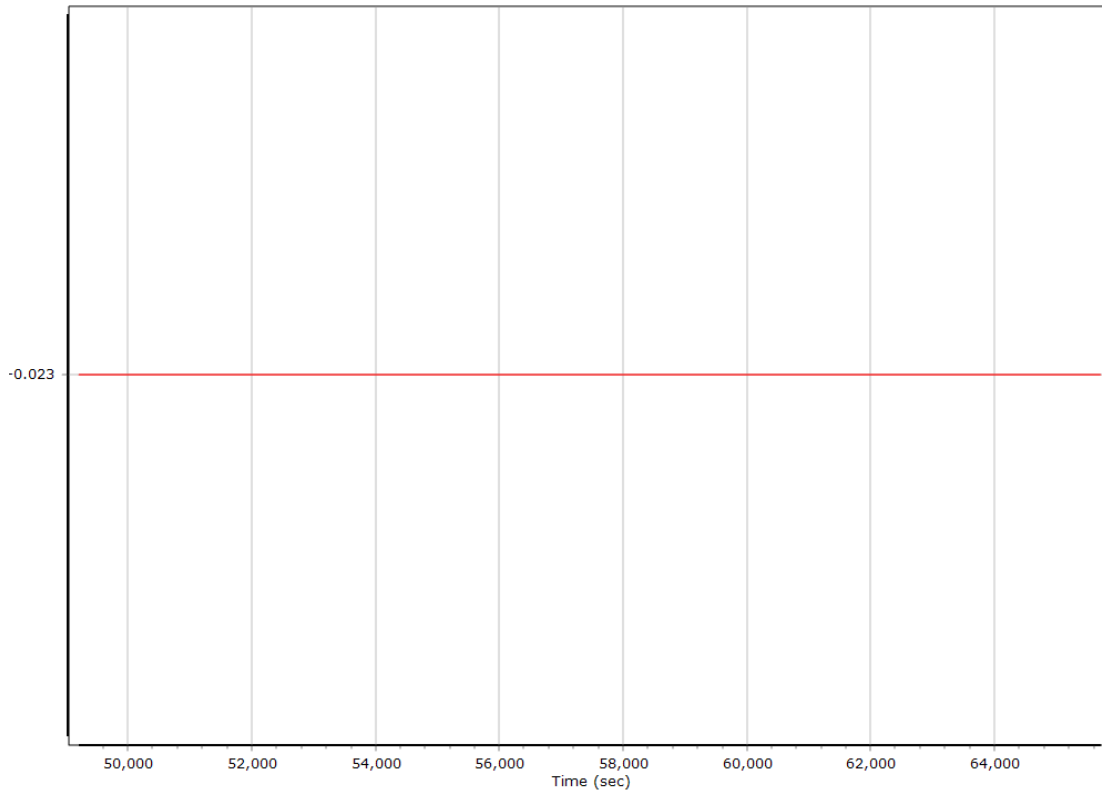
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion SmartBase		
Stabilized mount	True		
Base station	ASB		
Processing start time	48880.000 (2/23/2020 1:34:40 PM)		
Processing end time	65722.000 (2/23/2020 6:15:22 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

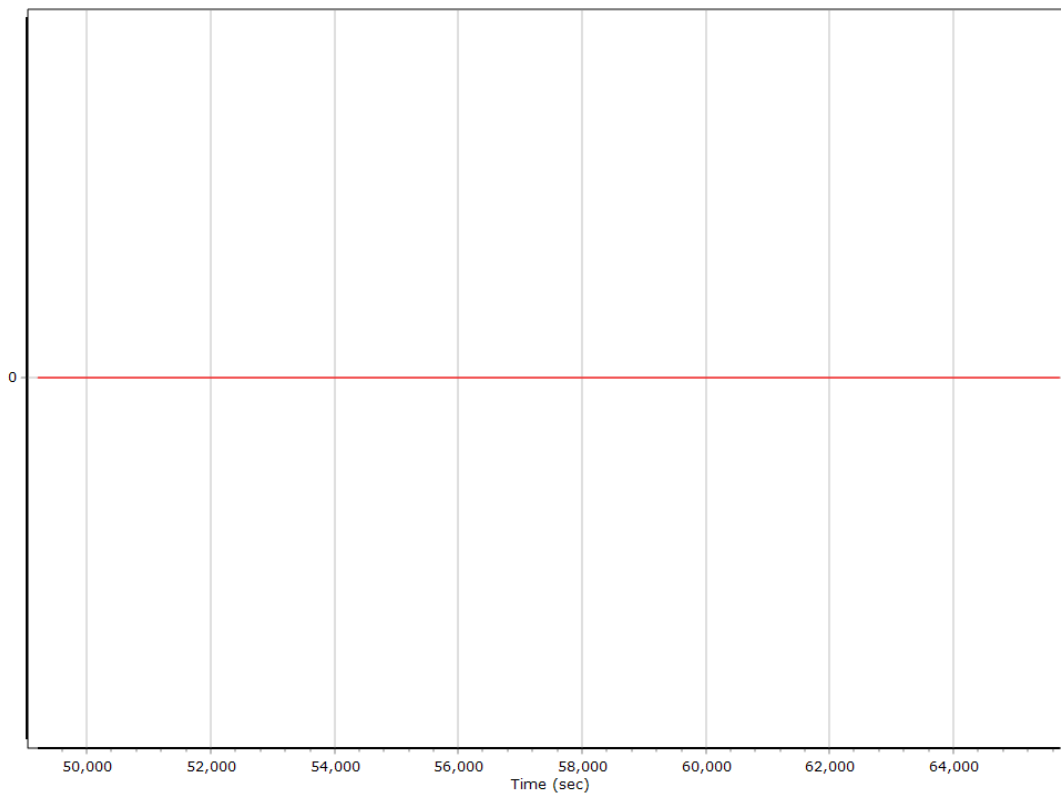
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

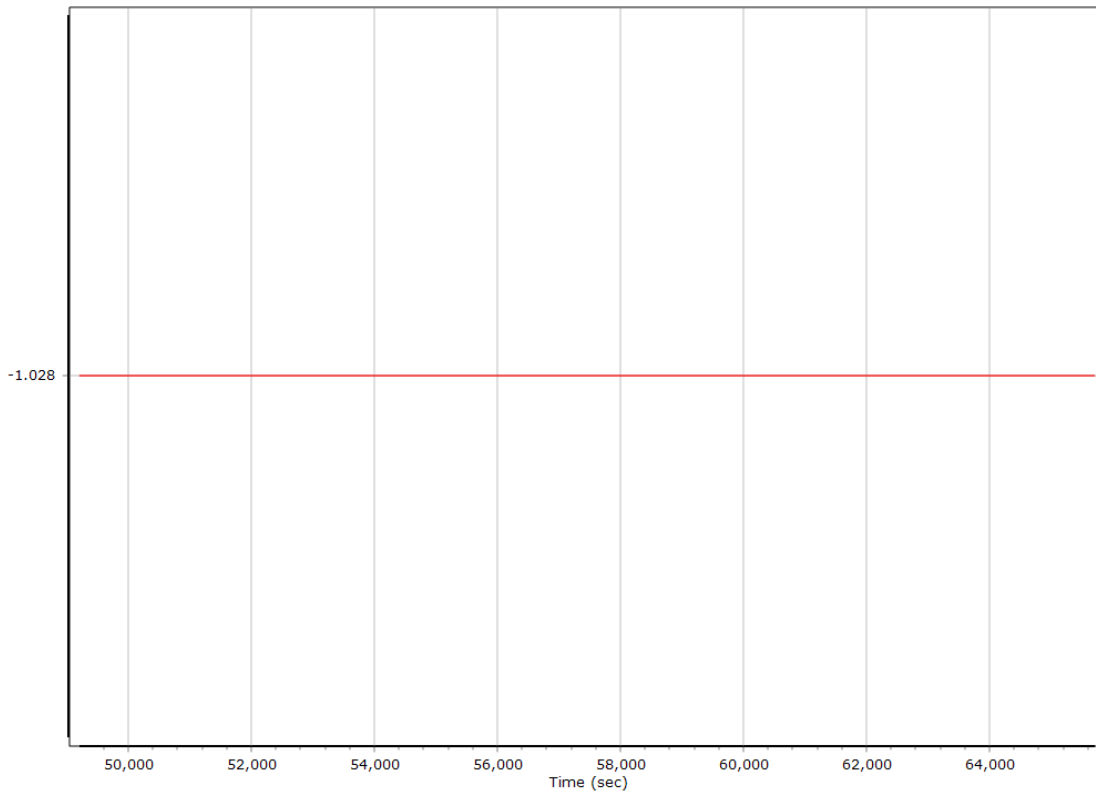
X Reference-Primary GNSS Lever Arm (m)



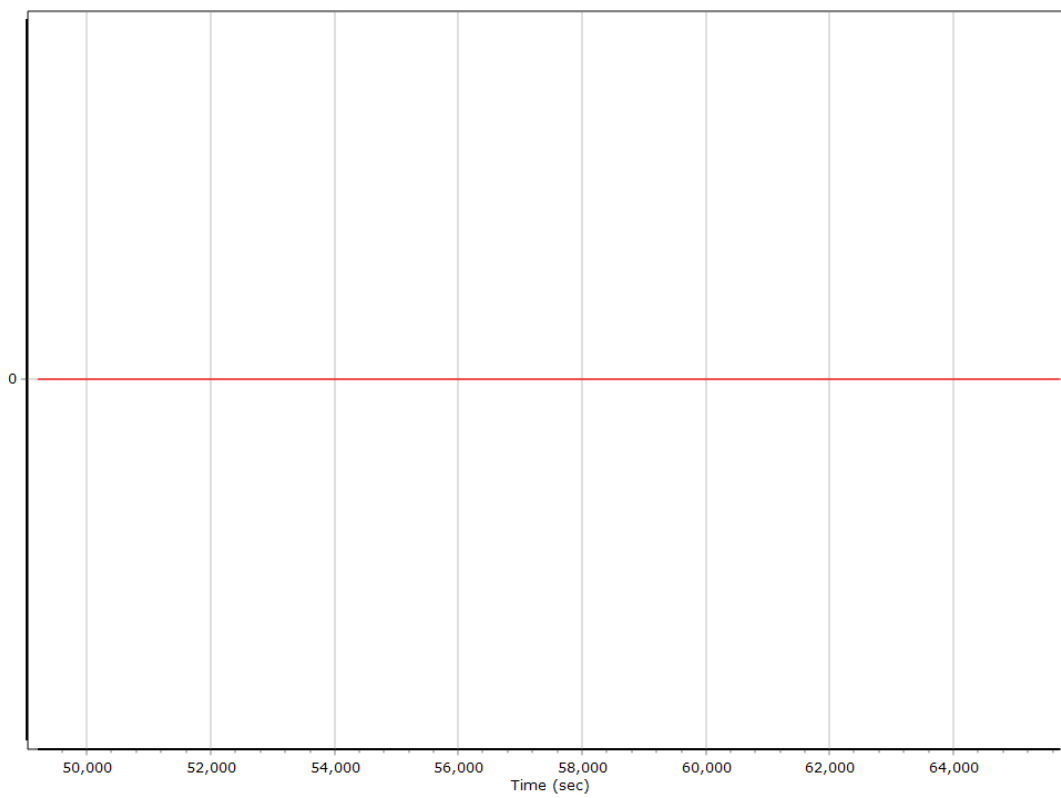
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



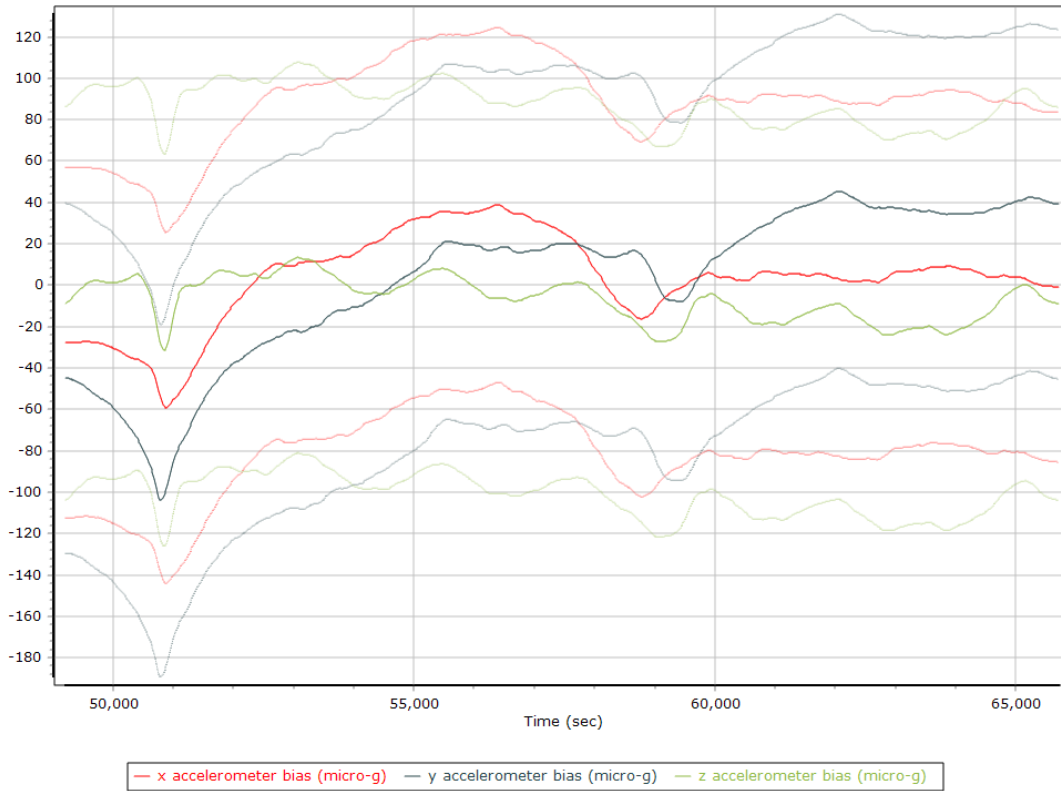
Reference-Primary GNSS Lever Arm Figure of Merit



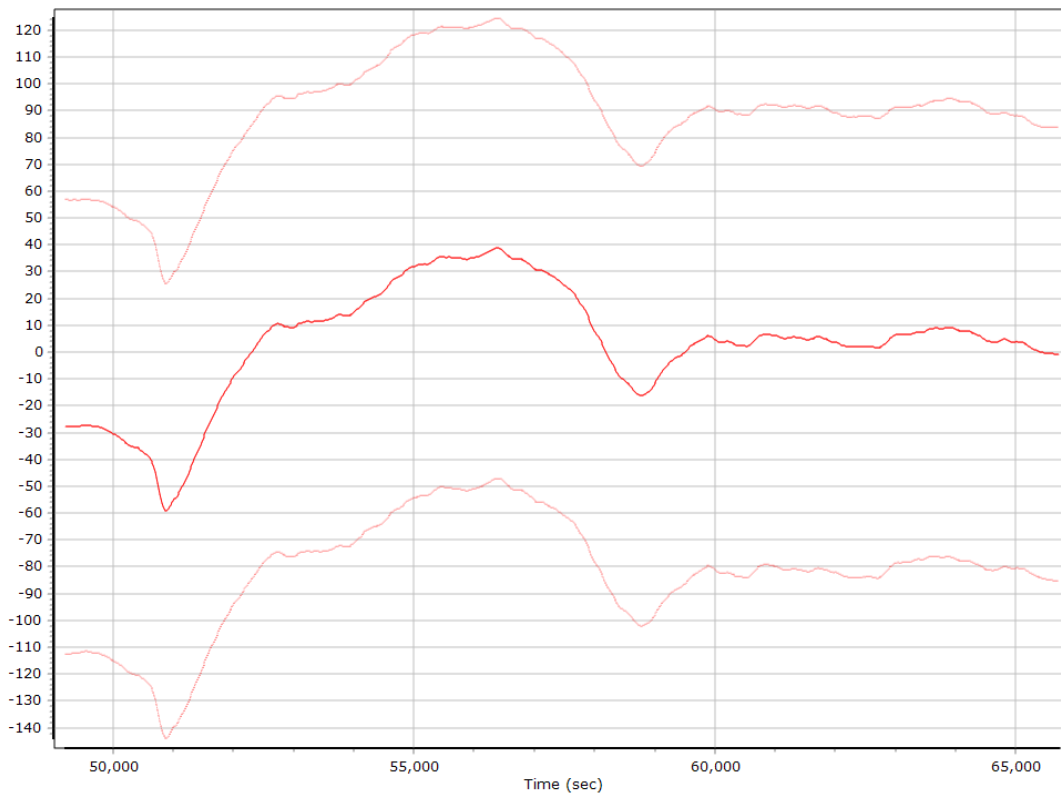
Smoothed IN-Fusion QC

Smoothed Estimated Errors, Reference Frame

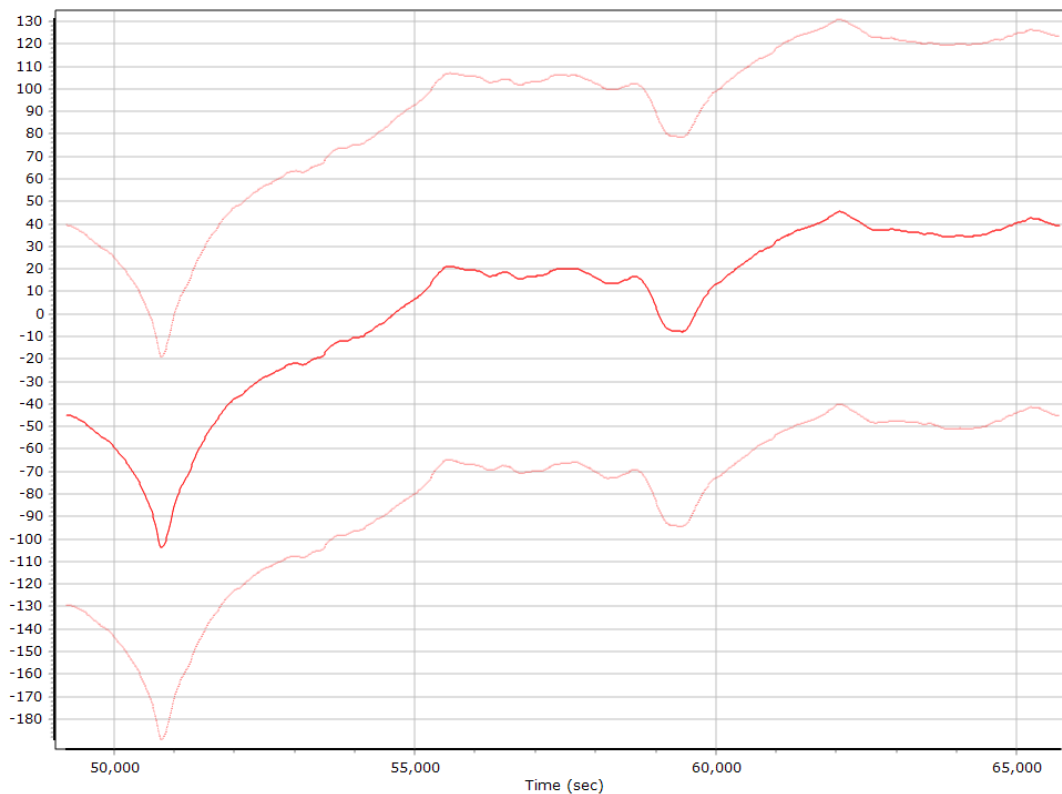
Accelerometer Bias (micro-g)



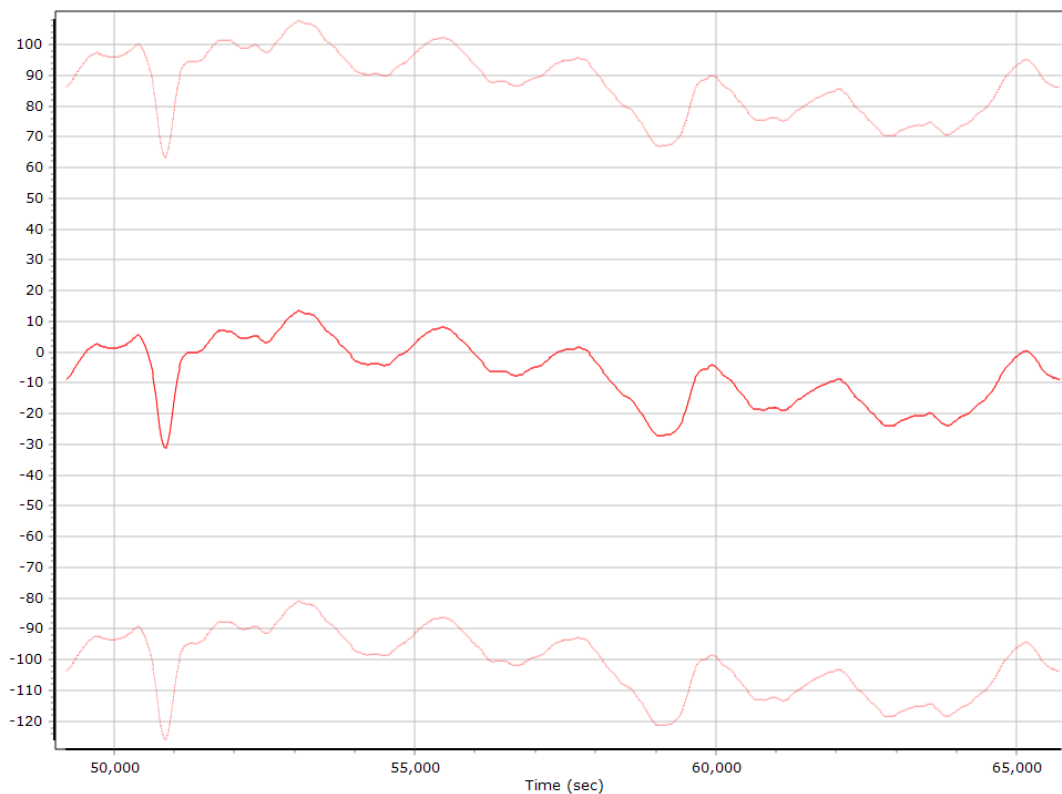
X Accelerometer Bias (micro-g)



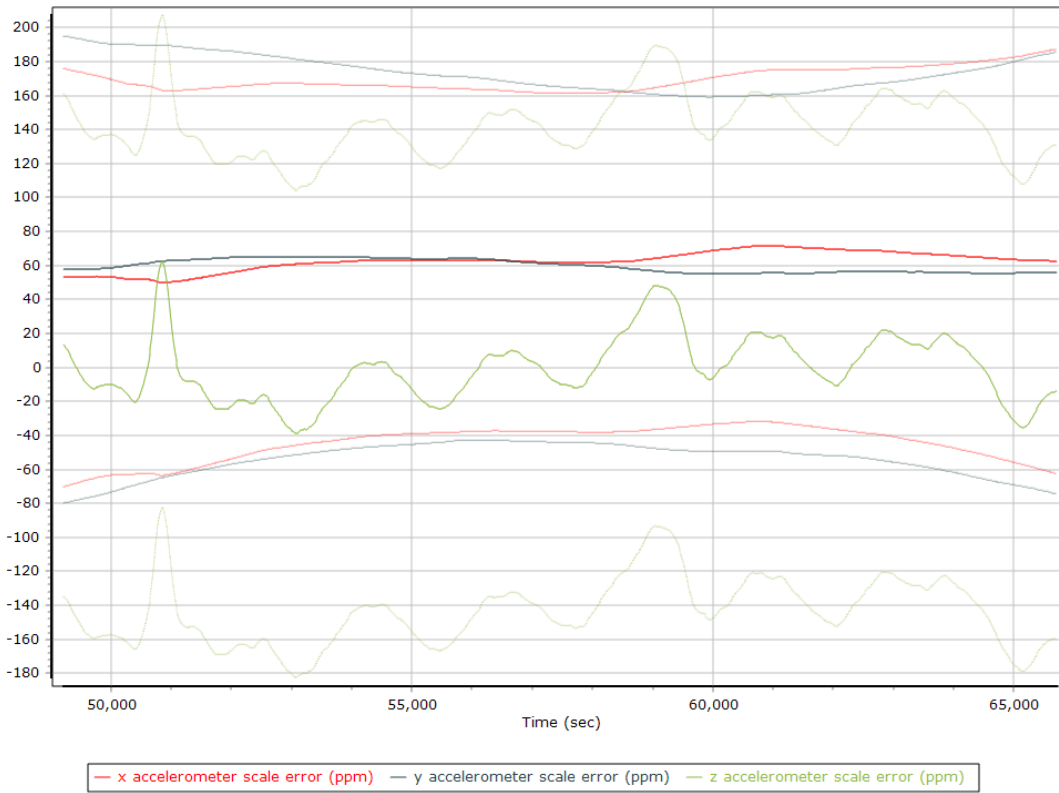
Y Accelerometer Bias (micro-g)



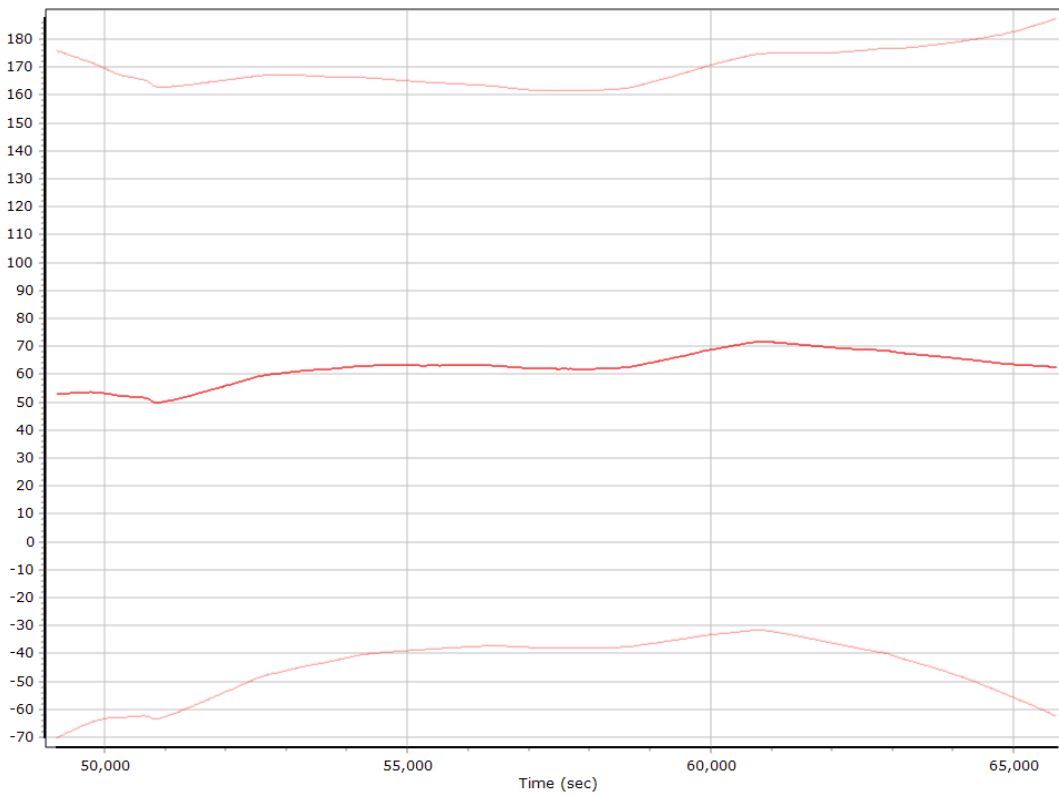
Z Accelerometer Bias (micro-g)



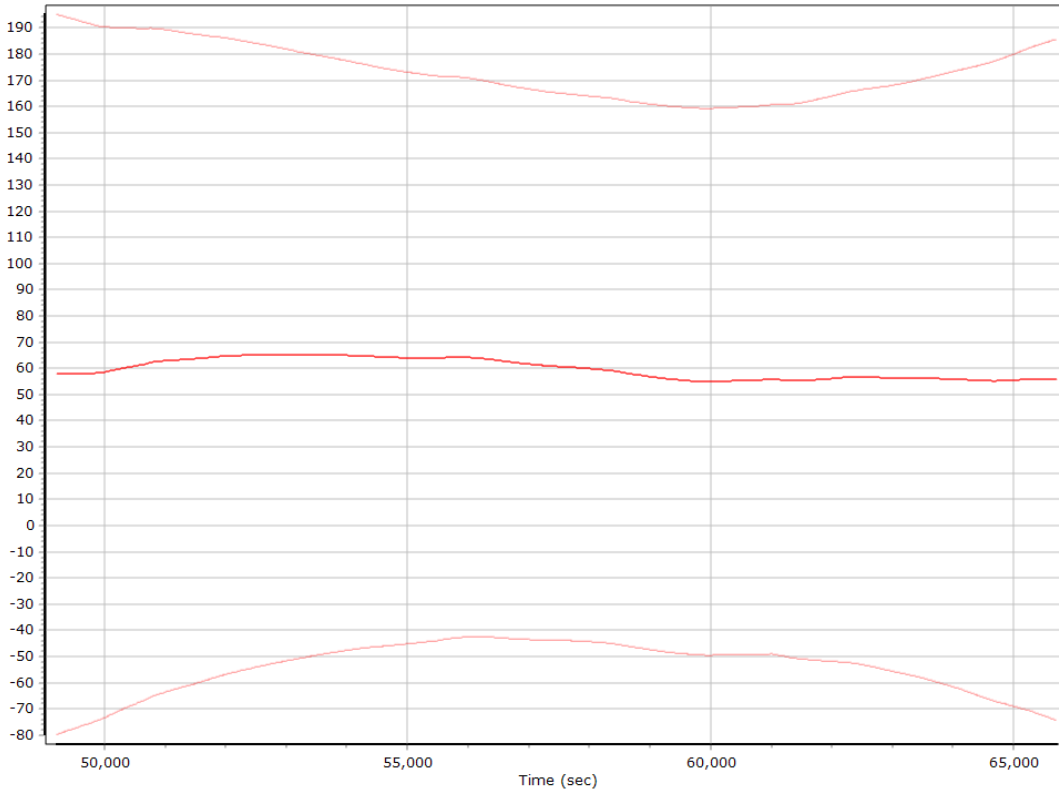
Accelerometer Scale Error (ppm)



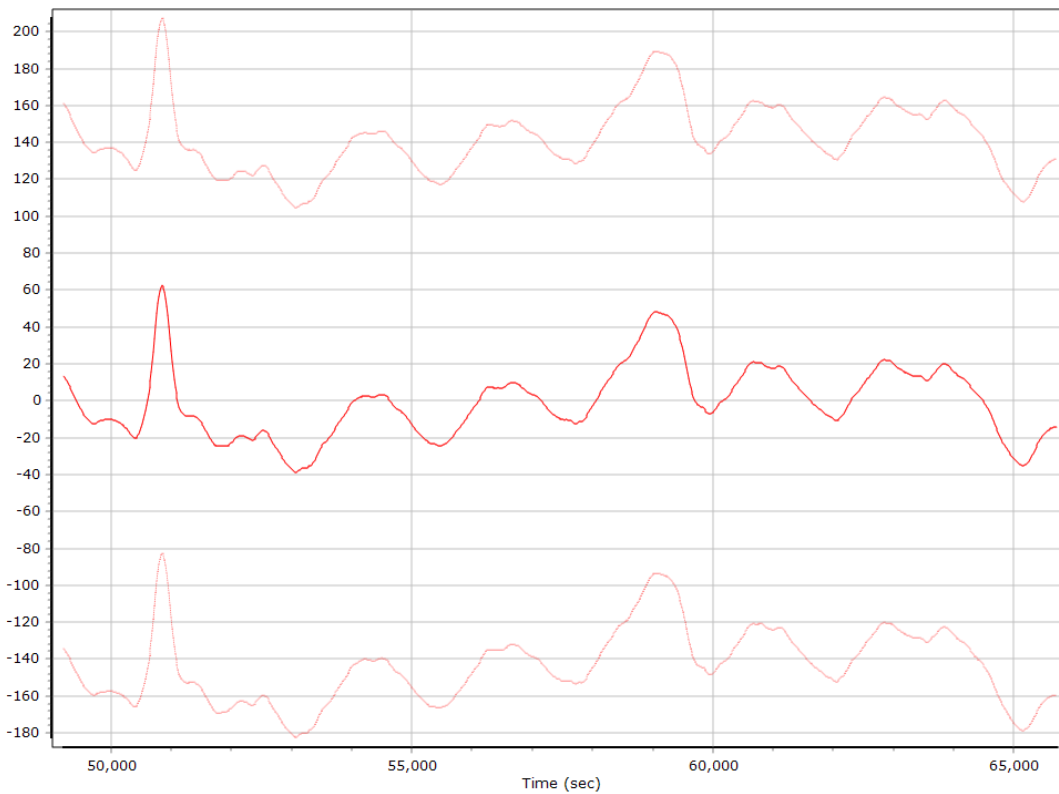
X Accelerometer Scale Error (ppm)



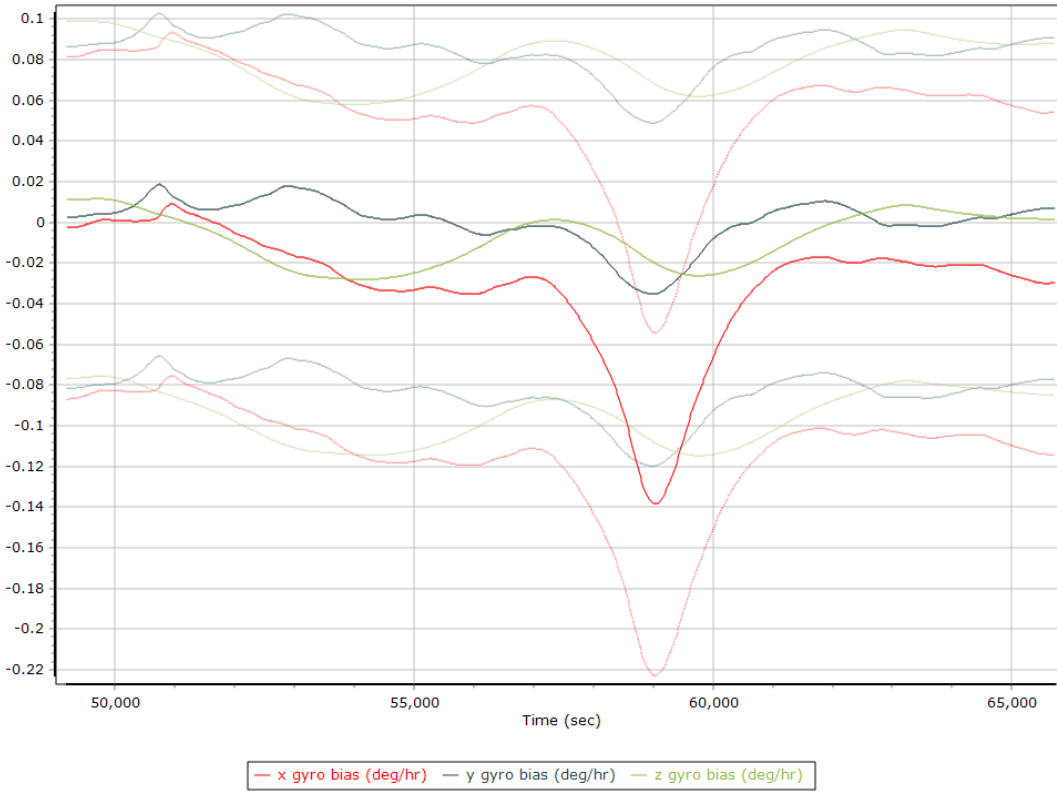
Y Accelerometer Scale Error (ppm)



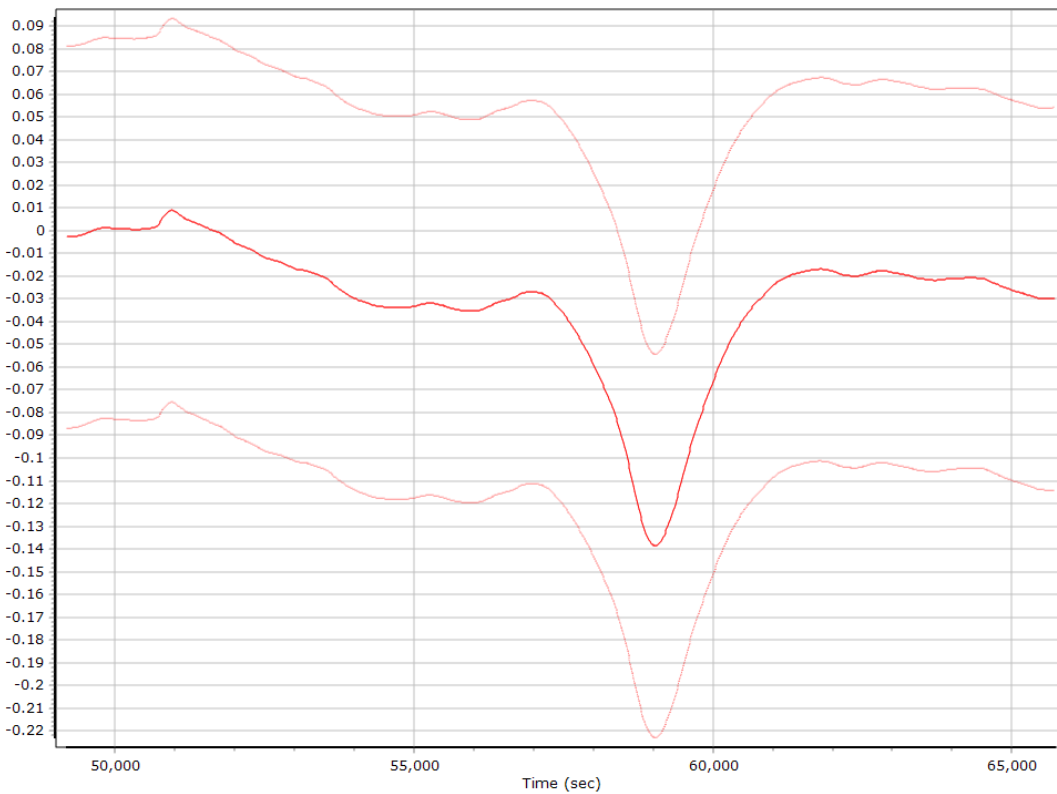
Z Accelerometer Scale Error (ppm)



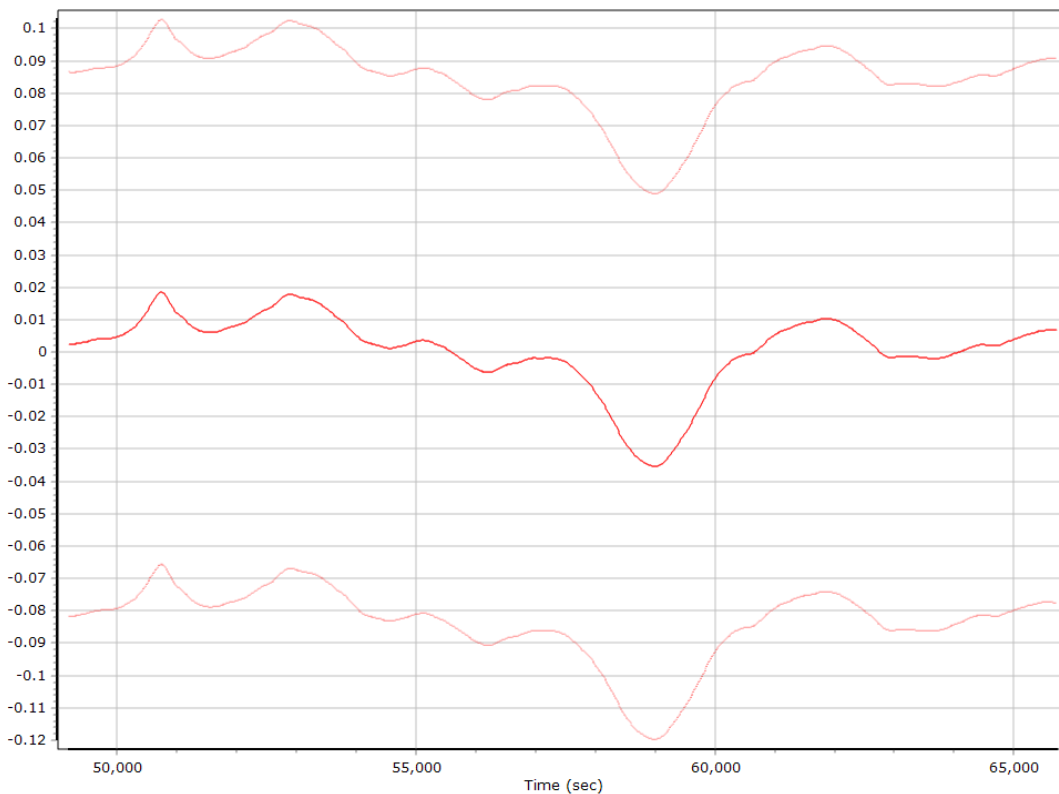
Gyro Bias (deg/h)



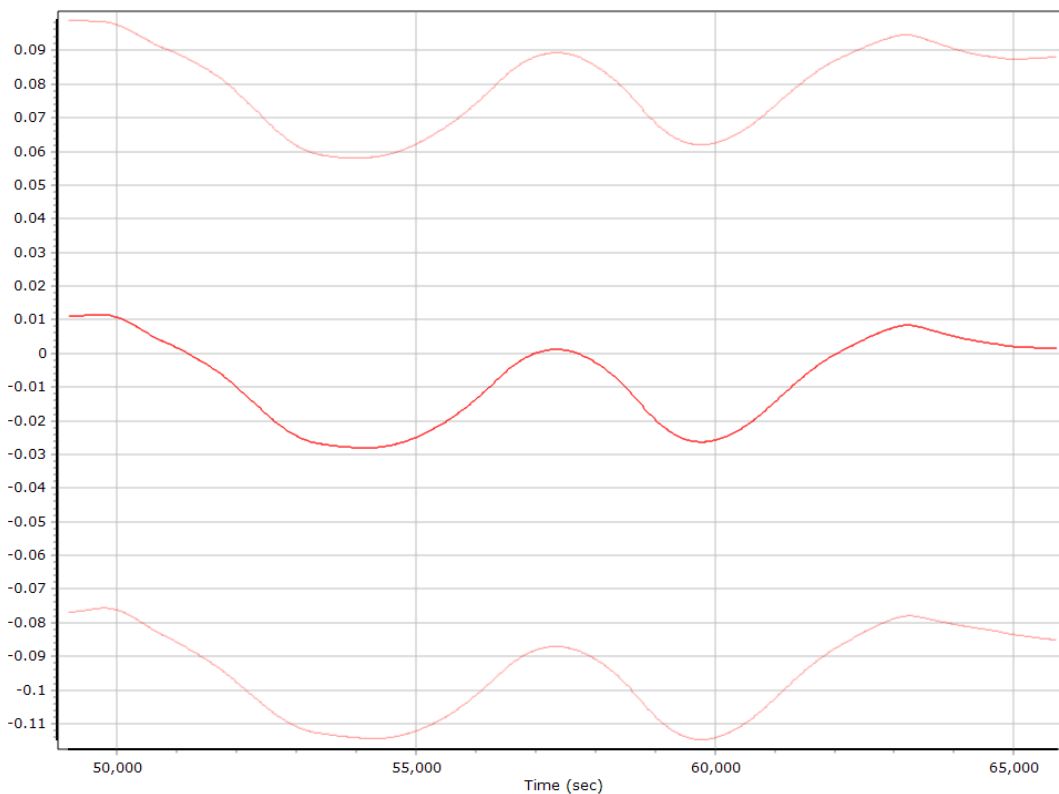
X Gyro Bias (deg/h)



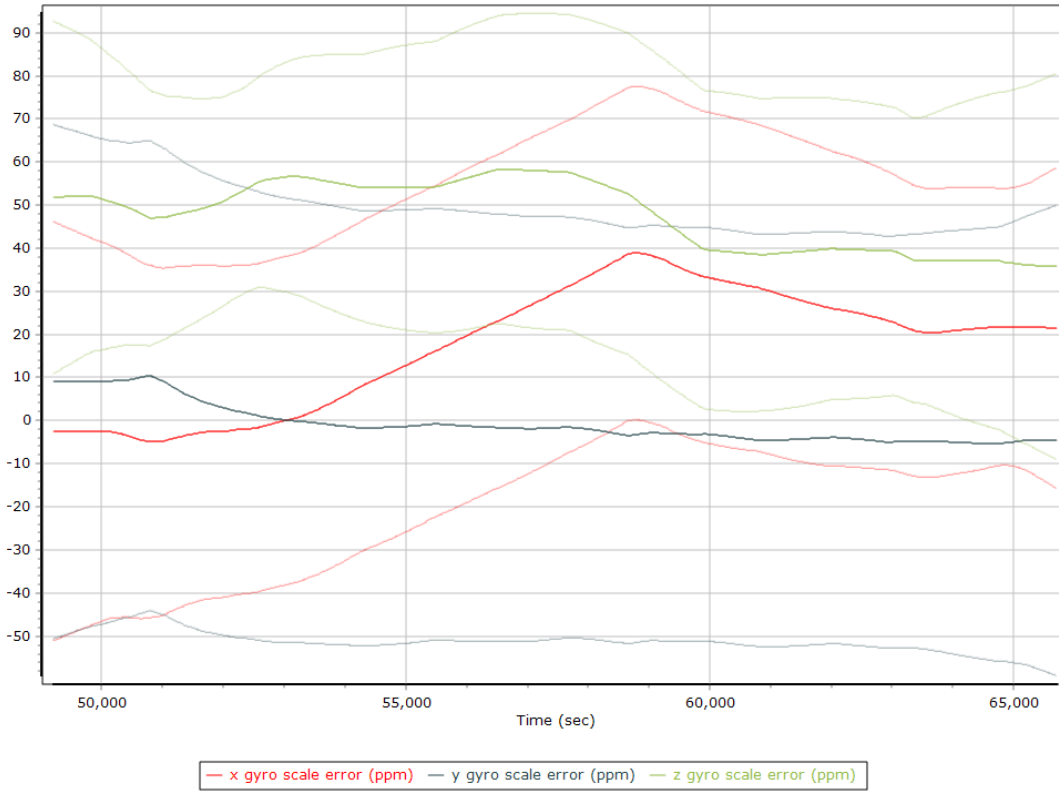
Y Gyro Bias (deg/h)



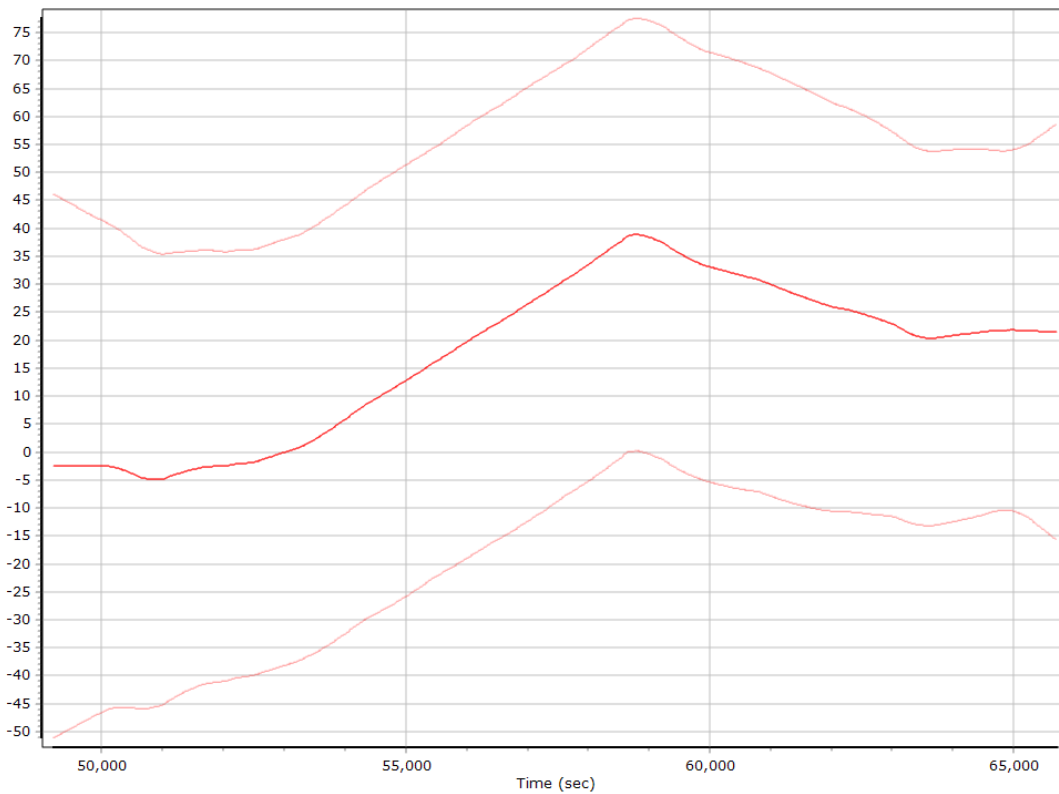
Z Gyro Bias (deg/h)



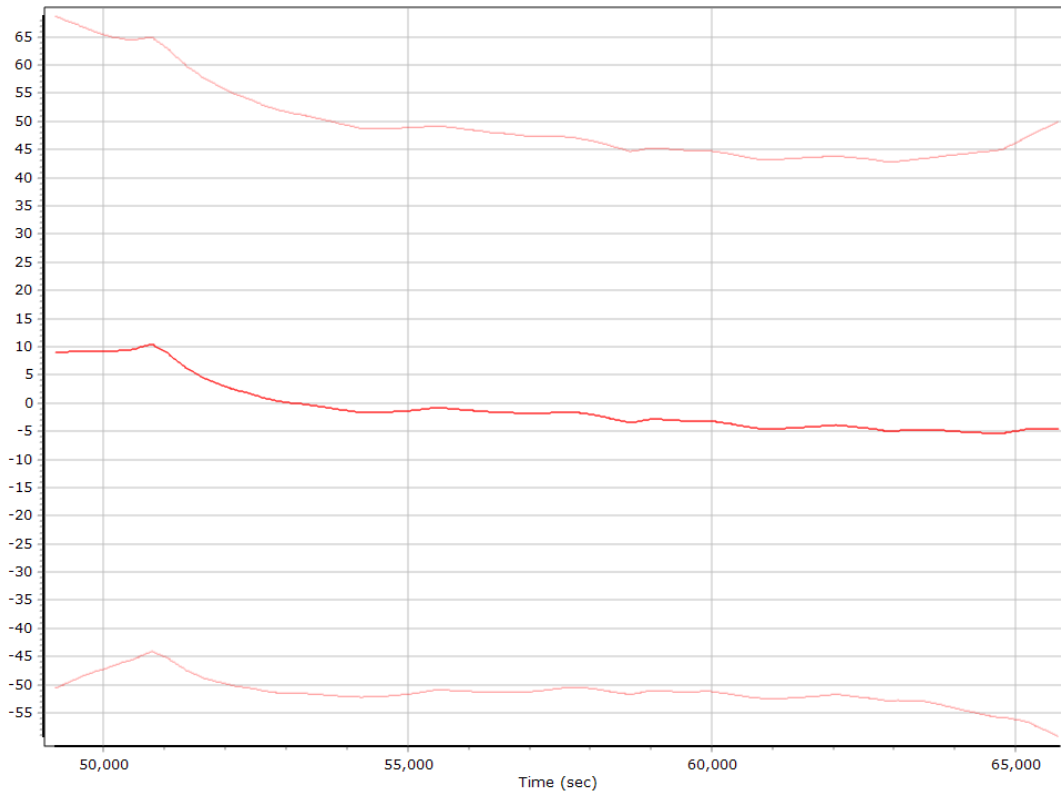
Gyro Scale Error (ppm)



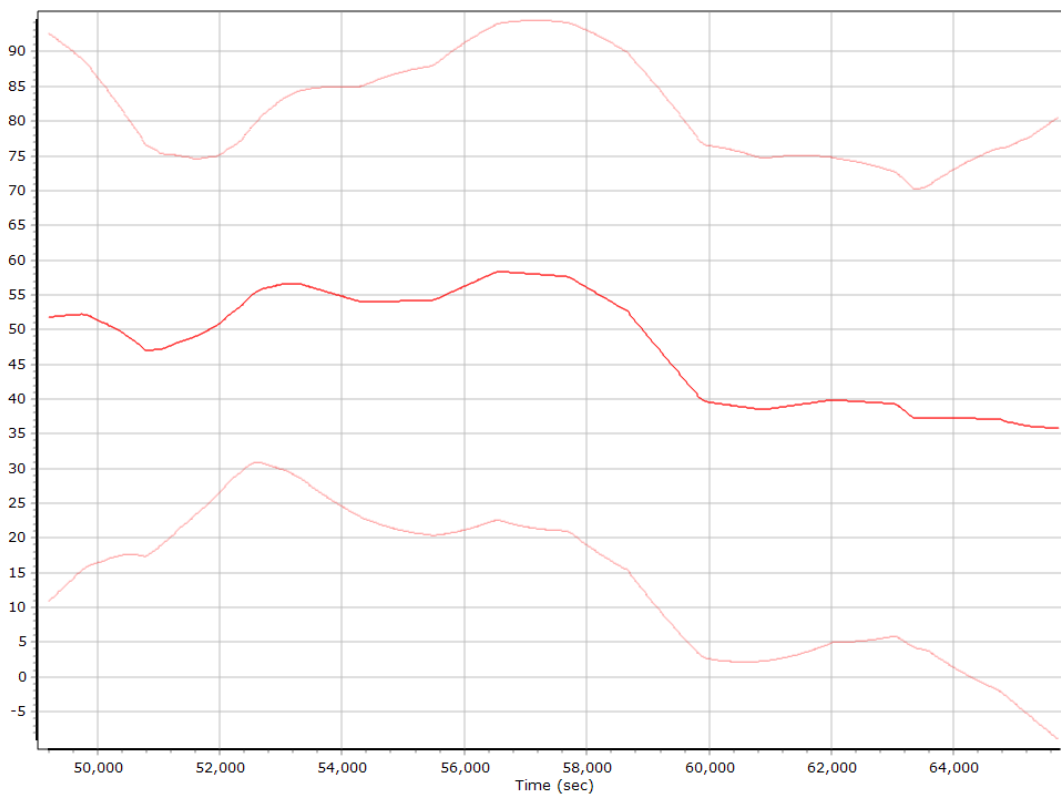
X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)

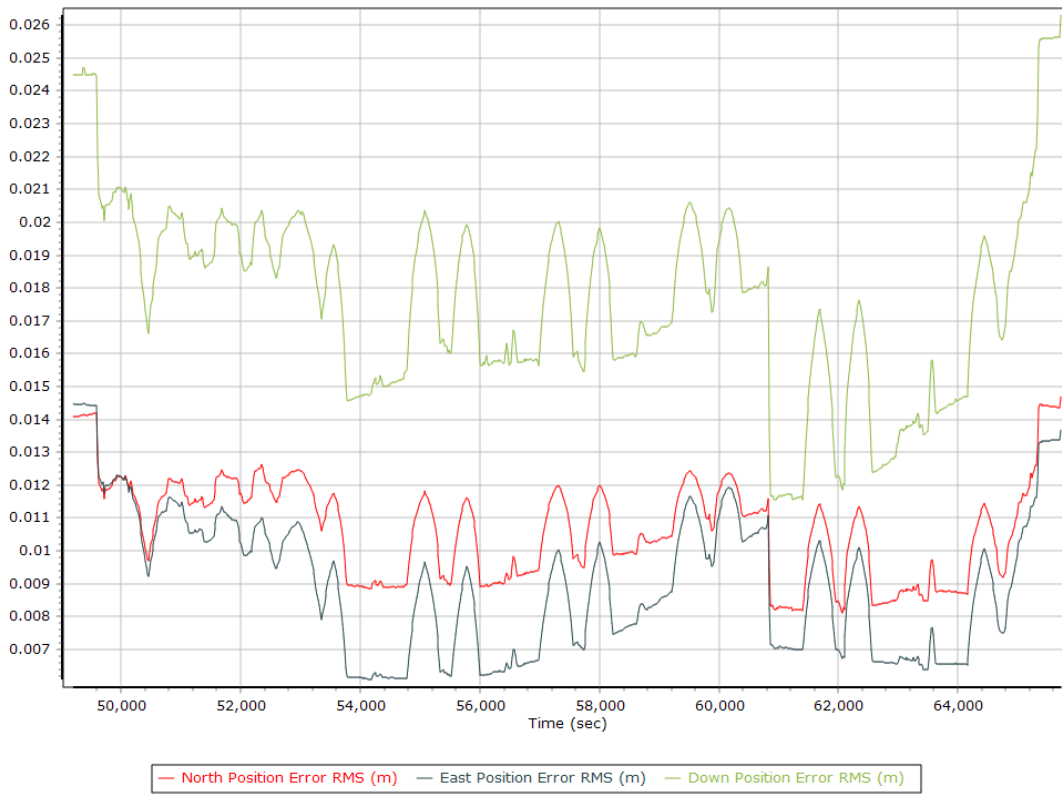


Z Gyro Scale Error (ppm)

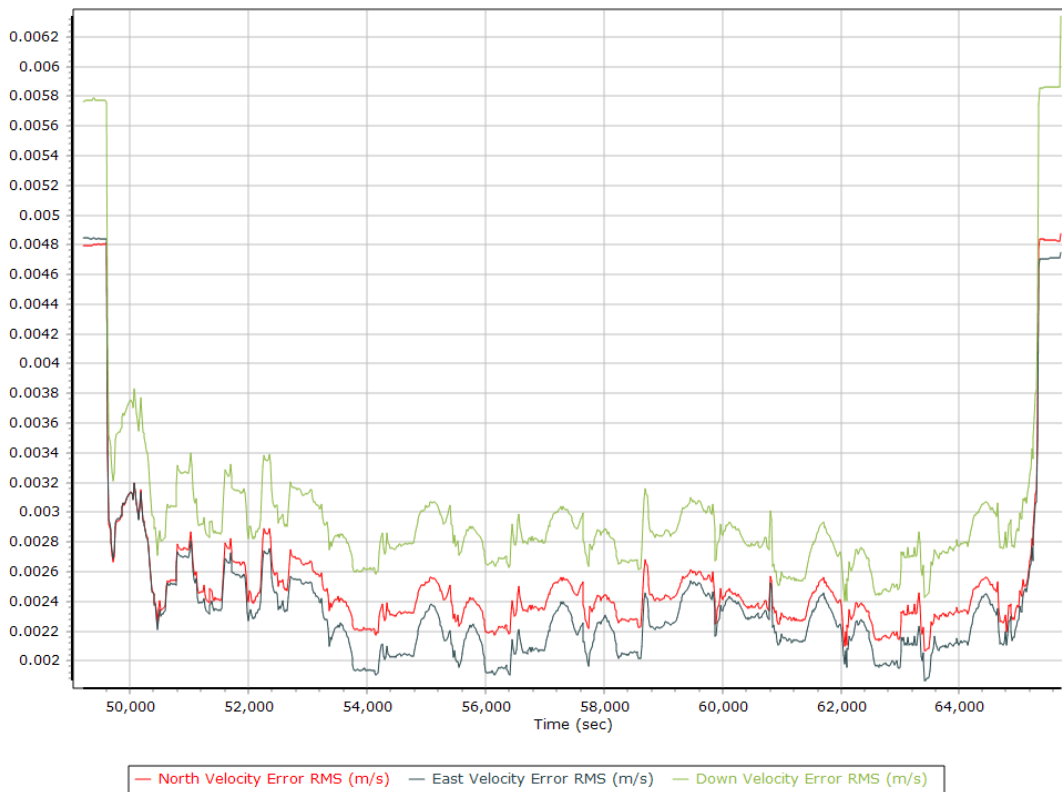


Smoothed Performance Metrics

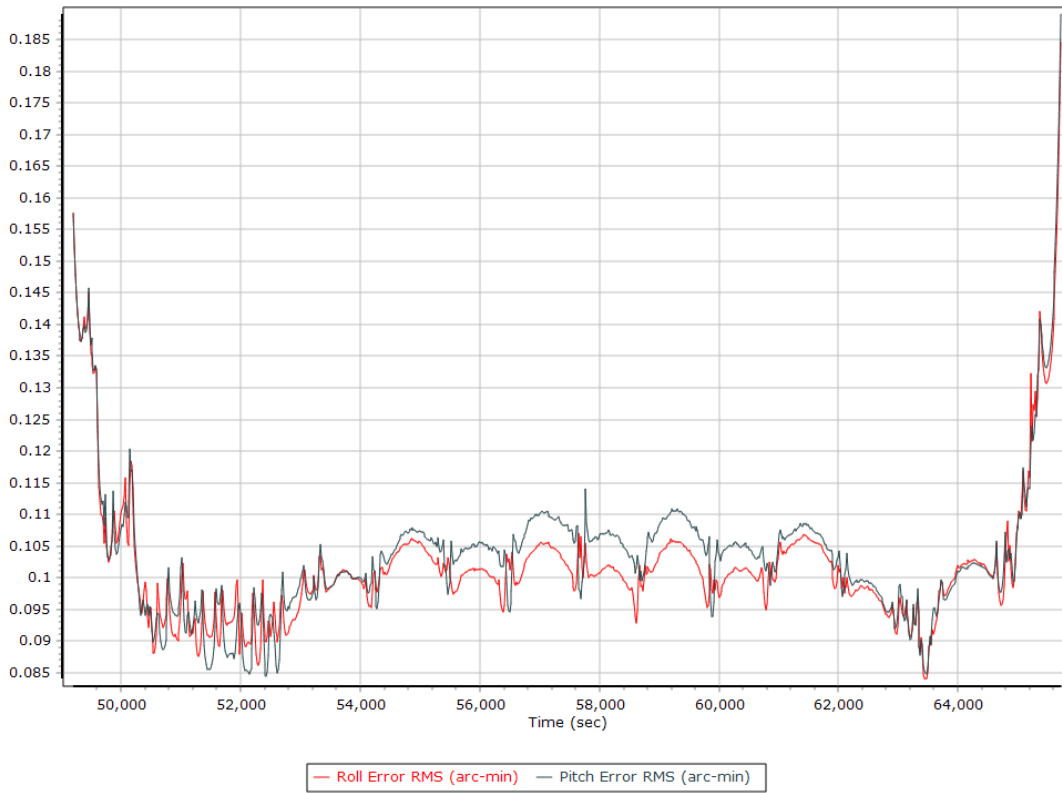
Position Error RMS (m)



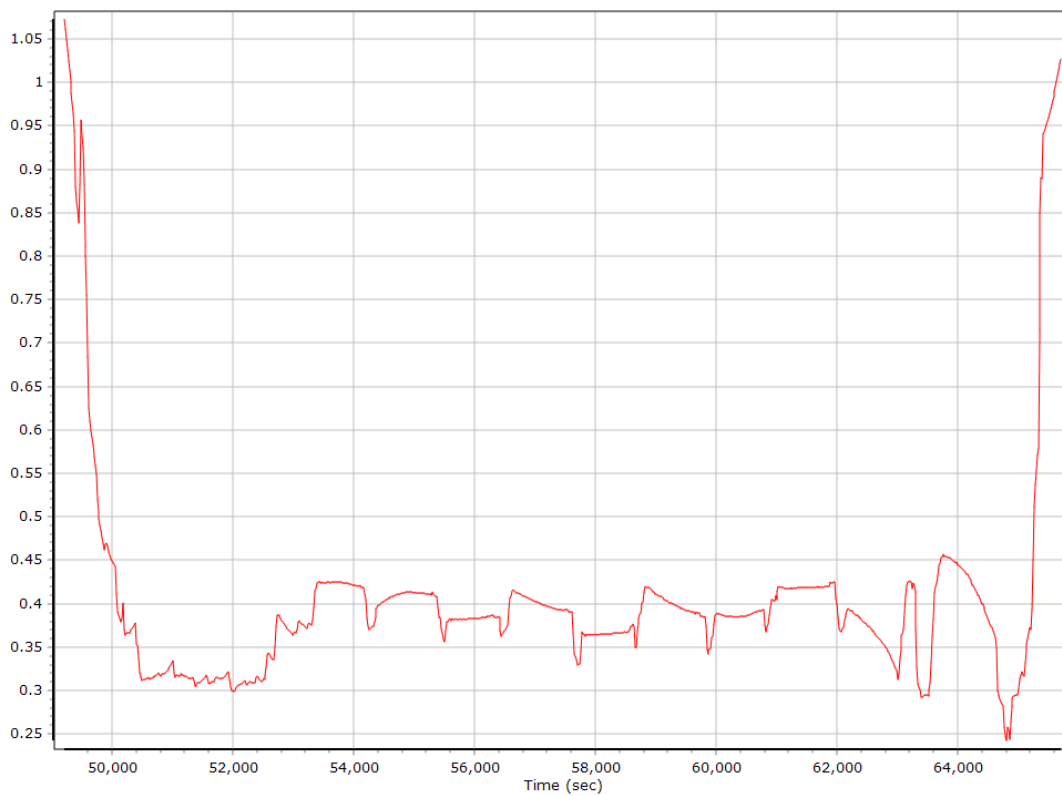
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

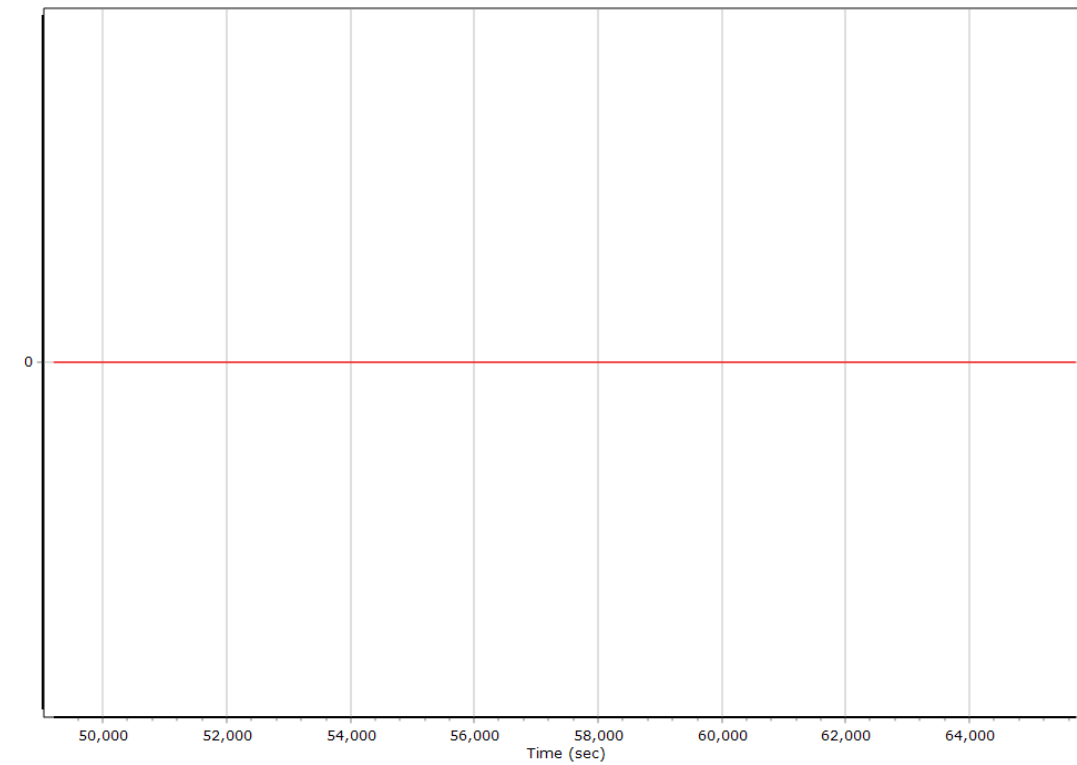


Heading Error RMS (arc-min)



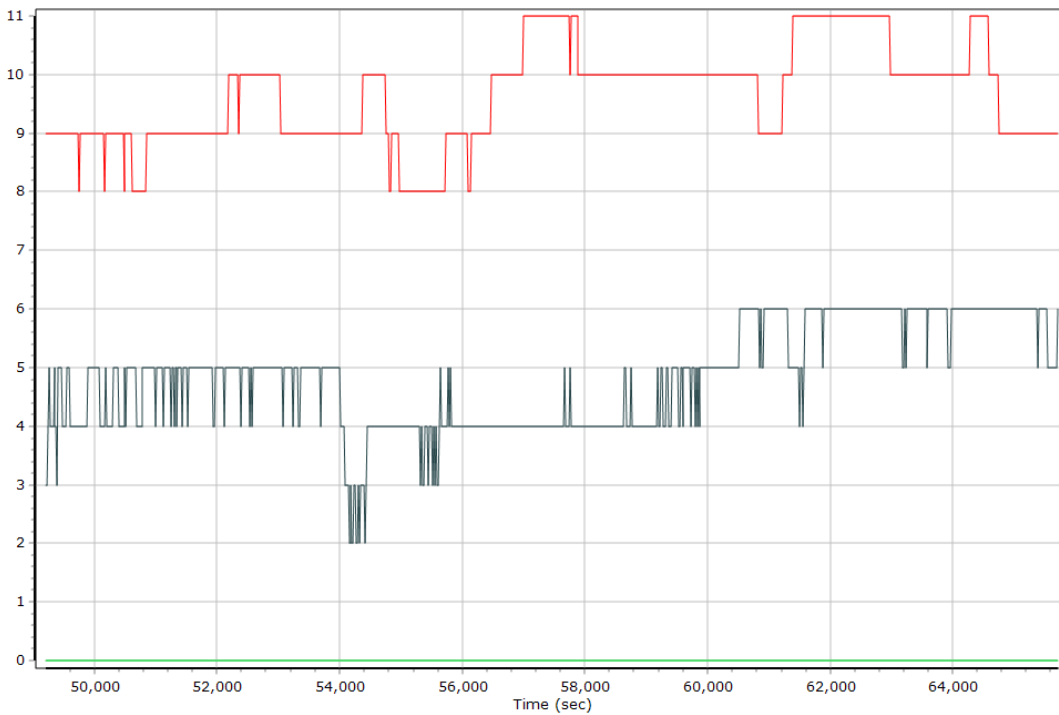
Smoothed Solution Status

Processing Mode



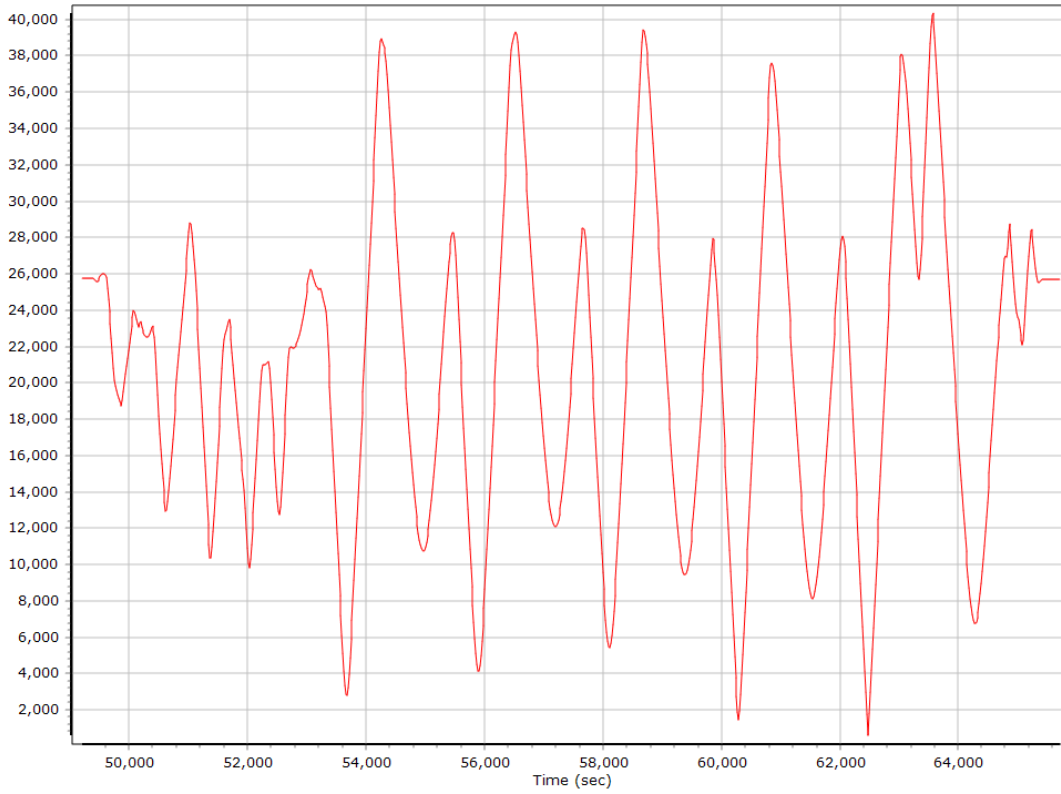
0 = Fixed NL, 1 = Fixed WL, 2 = Float, 3 = DGNSS, 4 = RTCM, 5 = IAPPP, 6 = C/A, 7 = GNSS Nav, 8 = DR

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

