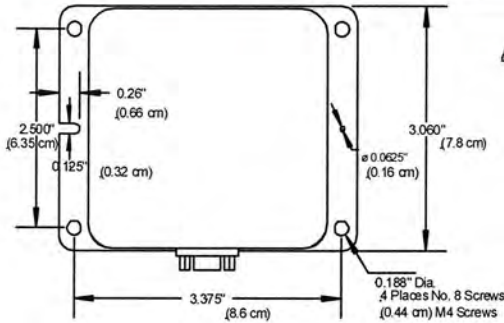
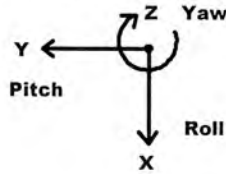


LandMark™ 30 Vertical Gyro (VG)



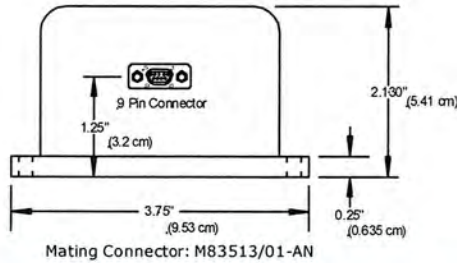
Axes (Top View) Right Hand Rule



Standard LandMark™ 30 VG

LMRK30VG-100-02-100 or -06 or -10
 LMRK30VG-175-02-100 or -06 or -10
 LMRK30VG-300-02-100 or -06 or -10

Specification



Pin No.	Assignment
1	RS-485 A (+)
2	RS-485 B (-)
3	Power Ground
4	Analog/Digital Input (0V to 5V)
5	+6.0V to +36V Input Power
6	External Sync Input (1kHz)
7	+5V Regulator Out
8	Signal Ground
9	Self Test

Note: Any unused inputs (Pins 4, 6, 9) must be connected to signal ground (Pin 8).

Outputs	Serial Sequence at 100Hz
1, 2, 3	Gyros: Roll (X), Pitch (Y), Yaw (Z)
4, 5, 6	Accelerometers: (X), (Y), (Z)
7	IMU Temperature
8, 9, 10	No Magnetometers: (X), (Y), (Z)
11	No Pressure
12, 13, 14	Angles: Roll, Pitch, Zero Yaw
15, 16, 17	AC Velocities: (X), (Y) & Vertical Velocity: (Z)
18, 19, 20	No Altitude, Temp, Forward Velocity (As Input)

User to provide either analog or external velocity for velocity functions to be enabled (pin 4).

PARAMETER	LandMark™ 30 VG					
	RATE AXES			ACCEL AXES		
Range	±100°/sec	±175°/sec	±300°/sec	±2 g's	±6 g's	±10 g's
Bias (Over Temp.)	<0.03°/sec 2σ			<0.5mg	<0.8mg	<1.0mg
Bias (In Run Stability)	8°/hour 2σ			0.02mg	0.06mg	0.08mg
Scale Factor Error %	≤ 0.08% (over temperature) 1σ					
Resolution s	0.002°/sec	0.0025°/sec	0.003°/sec	0.02mg	0.05mg	0.06mg
Angle Random Walk	0.003°	0.005°	0.006°	0.04mg/√Hz	0.1mg/√Hz	0.12mg/√Hz
Pitch & Roll	± 0.25° typical					
Alignment	1mrad typical					
G-Sensitivity	<0.01°/sec/g typical					
Self Test On	Δ 8°/s ± 4 °/s	Δ 8°/s ± 4 °/s	Δ 8°/s ± 4 °/s	Δ 1.5 ±0.5g	Δ 0.3 ±0.2g	Δ 0.3 ±0.2g
	Logic 1 = 3V to 5V at Pin 10					
Temp Range	Operating: -40°C to +85°C Non-Operating: -55°C to +100°C					
Update Rate	100 Hz (user selectable)					
Temp Sensors	6 Internal Temperature Sensors					
Start-up Time	< 0.65 sec AHRS 200 Hz Spec Mode					
Input Power	+6.0V to +36V Max. Input (single sided)					
Power Consumption	2200mW at +12V typical 2350 mW at +12V maximum					
Size	U.S.:	3.0 x 3.06 x 2.13 = 19.6 in ³				
	Metric:	7.62 x 7.8 x 5.4 = 321cm ³				
Weight	388 grams					
Mounting	4ea No.8 or M4 Screws					
Shock	500g's ½ sine 30 msec powered					
Vibration	6 gRMS (20Hz - 2KHz ~ 10g accelerometers)					
MTBF	No inherent wear out modes for long life.					

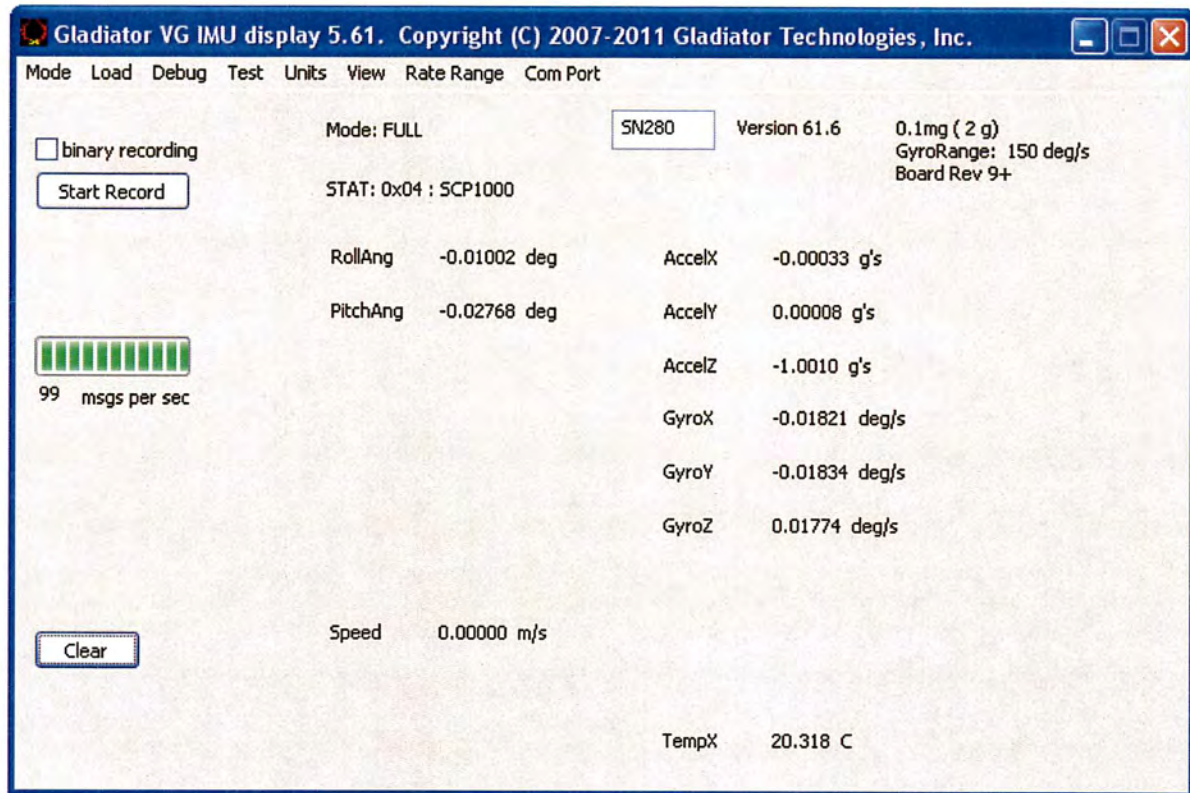
Specification subject to change without notice



Gladiator Technologies

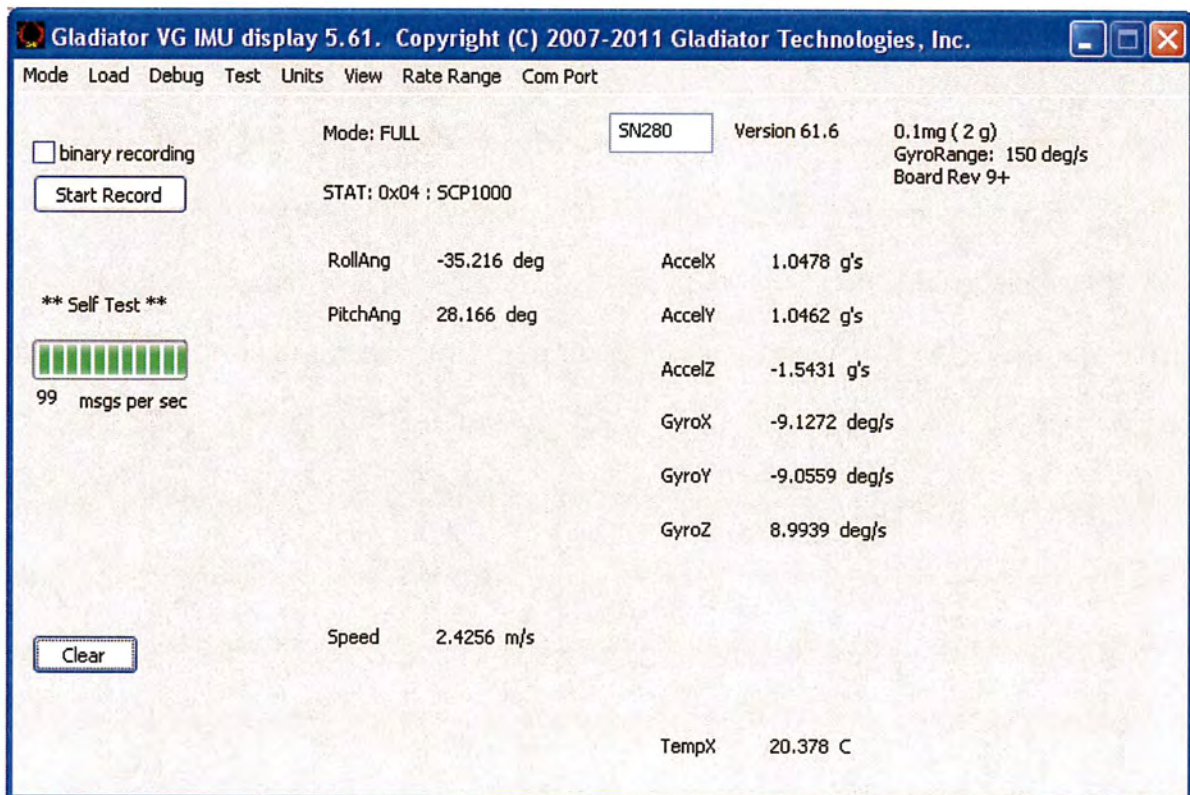
High Performance Inertial MEMS

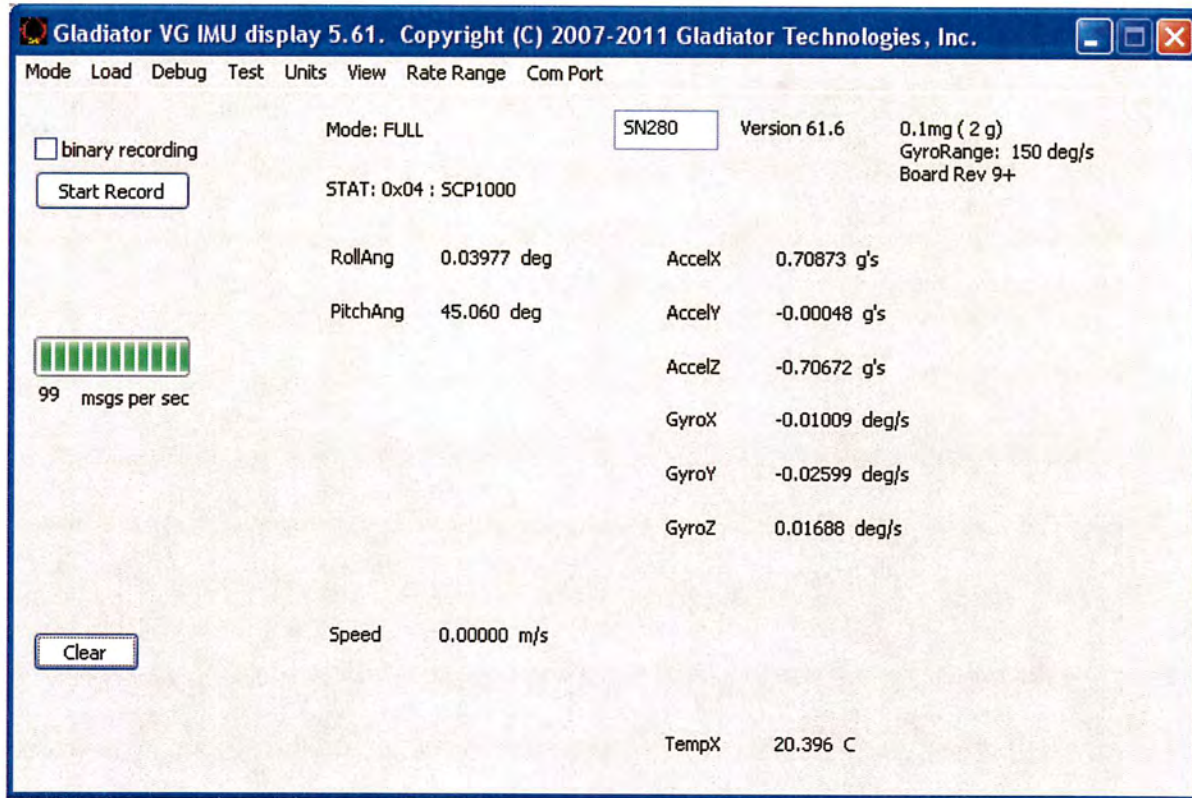
Rev. 12Oct08
 SN: 274



Initial Bench Readout (above)

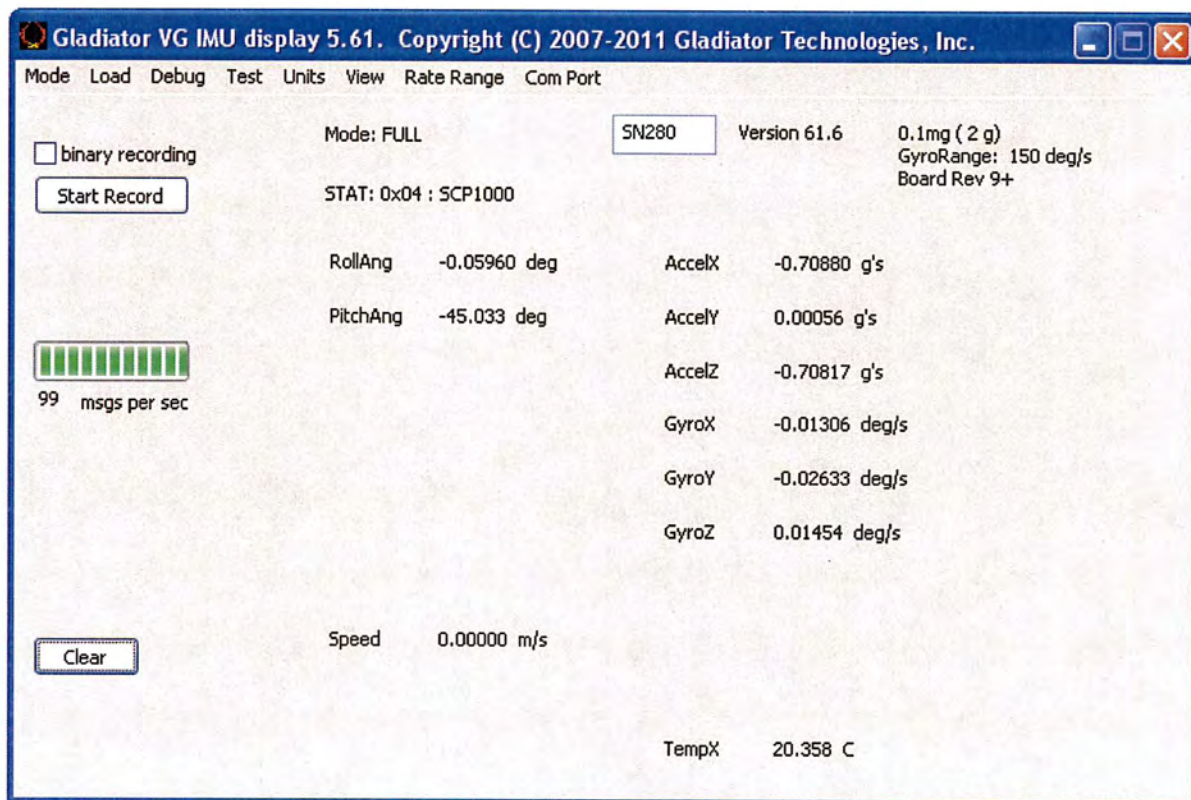
Self Test (below)

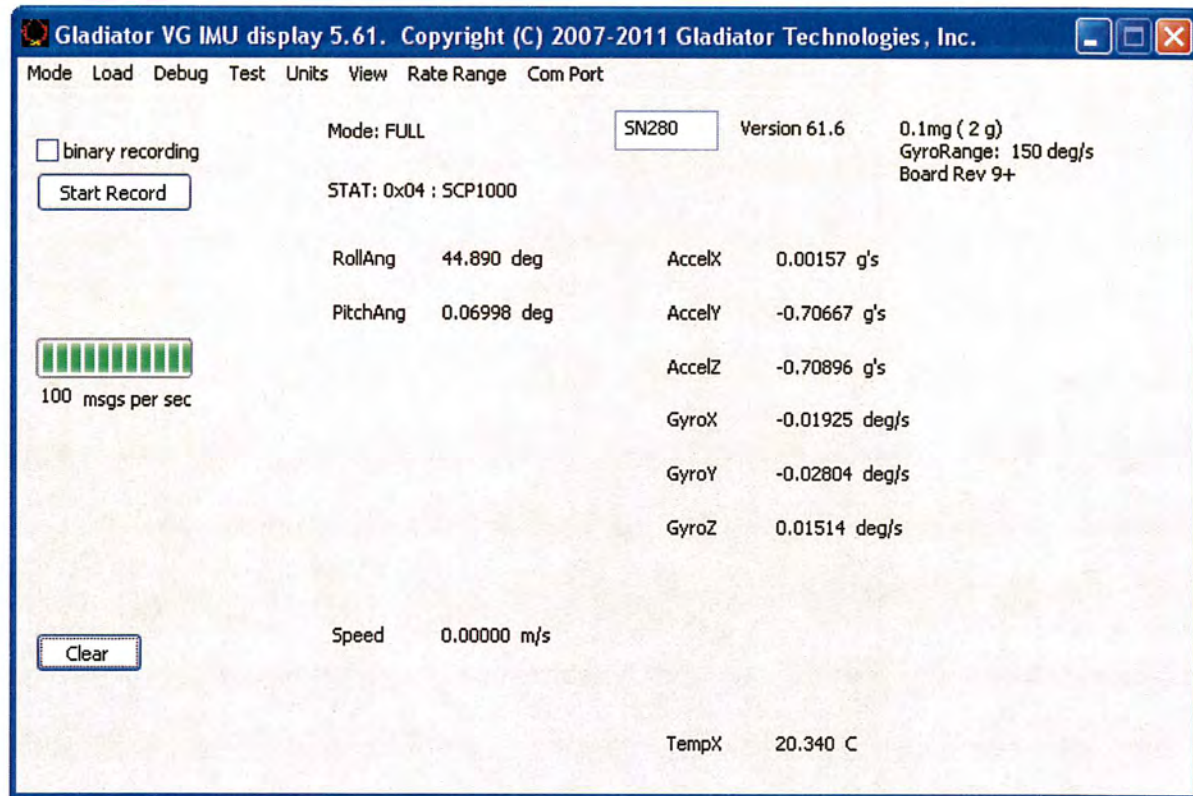




Pitch Up 45° (above)

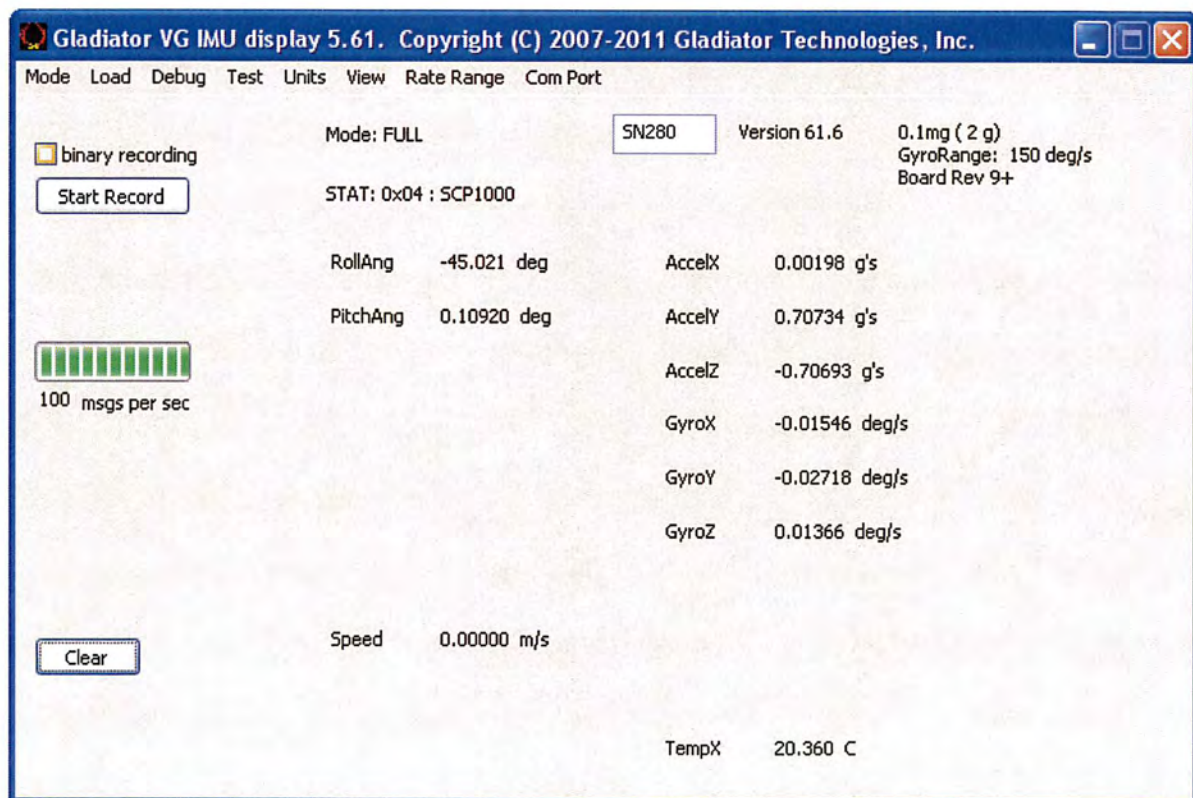
Pitch Down 45° (below)





Roll 45° (above)

Roll -45° (below)





Gladiator Technologies

High Performance Inertial MEMS

SN280 ATP

8/21/2013

LMRK30VG-100-02-100

Rate Spin Test

Test	gyroX	gyroY	gyroZ	accelX	accelY	accelZ	temp X
PX	7207.635	-1.686	0.341	0.9249	0.1662	1.7579	2200.263
NX	-7202.15	-2.841	0.892	0.9299	-4.4275	-3.1159	2202.66
Diff/2	7204.893	0.5775	-0.2755	-0.0025	2.29685	2.4369	-1.1985
Ave	2.7425	-2.2635	0.6165	0.9274	-2.13065	-0.679	2201.462
PY	-3.239	7204.671	1.553	-1.1556	-0.1601	1.7925	2180.752
NY	-1.149	-7201.83	0.028	3.5427	-0.1153	-3.0834	2181.701
Diff/2	-1.045	7203.251	0.7625	-2.34915	-0.0224	2.43795	-0.4745
Ave	-2.194	1.42	0.7905	1.19355	-0.1377	-0.64545	2181.227
PZ	-1.891	-2.467	7200.783	-1.3417	3.3745	0.3163	2086.861
NZ	-2.17	-1.807	-7203.61	-6.0913	-1.5065	0.3274	2090.361
Diff/2	0.1395	-0.33	7202.199	2.3748	2.4405	-0.00555	-1.75
Ave	-2.0305	-2.137	-1.4155	-3.7165	0.934	0.32185	2088.611
RSF Norm	1.00068	1.000452	1.000305				Temp °C 21.57

Gyro Mis-Align deg/sec				Input Rate
x		-0.01	0.00	x
y	0.01		0.00	y
z	0.00	0.01		z

Gyro Mis-align mrad				Input Rate
x		-0.15	0.02	x
y	0.08		-0.05	y
z	-0.04	0.11		z

Accepted by:





LMRK30VG-100-02-100
Accelerometer Tumble Test

Test	gyroX	gyroY	gyroZ	accelX	accelY	accelZ	temp X
PX	-0.034	0.75	0.292	998.8495	-0.0474	0.0786	2180.378
NX	0.079	0.76	-0.268	-1001.85	-0.3715	0.1975	2179.167
Diff/2	-0.0565	-0.005	0.28	1000.348	0.16205	-0.05945	0.6055
Ave	0.0225	0.755	0.012	-1.4989	-0.20945	0.13805	2179.773
PY	-0.113	0.607	0.153	0.8129	999.5993	0.5304	2191.859
NY	0.129	0.312	-0.077	1.0378	-1001.62	-0.6198	2196.849
Diff/2	-0.121	0.1475	0.115	-0.11245	1000.609	0.5751	-2.495
Ave	0.008	0.4595	0.038	0.92535	-1.01005	-0.0447	2194.354
PZ	0.084	0.414	-0.085	1.009	-0.5287	1001.161	2194.922
NZ	-0.24	0.494	0.21	0.9027	0.5477	-1000.14	2187.553
Diff/2	0.162	-0.04	-0.1475	0.05315	-0.5382	1000.651	3.6845
Ave	-0.078	0.454	0.0625	0.95585	0.0095	0.5093	2191.238
Bias %s,mg	0.000	0.006	0.000	0.94	-0.10	0.05	21.88
ASF Norm				1.0003	1.0006	1.0007	Temp °C

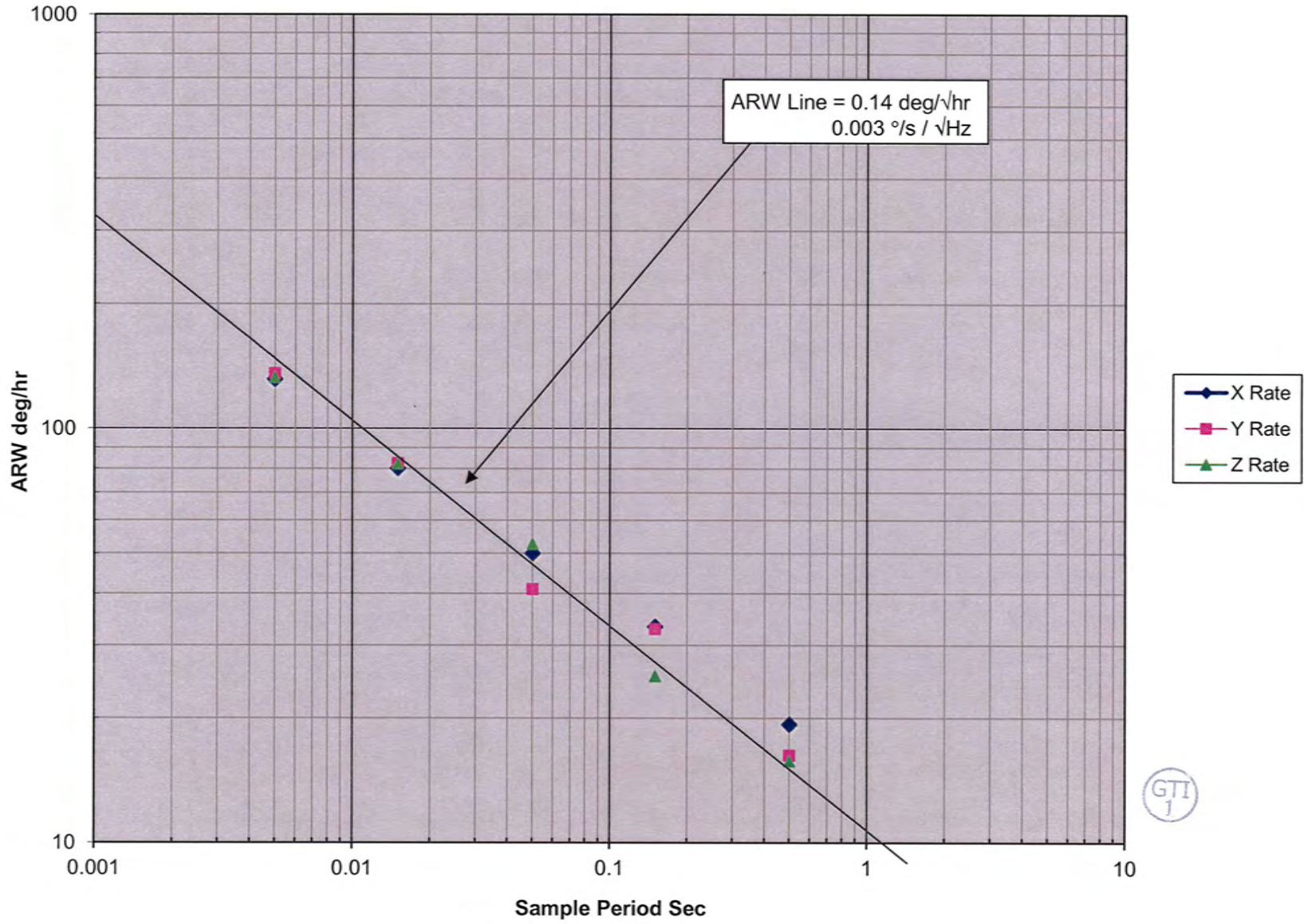
Gyro %s /g	Input g =			Accel In
				g's
x	-0.001	-0.001	0.002	x
y	0.000	0.001	0.000	y
z	0.003	0.001	-0.001	z

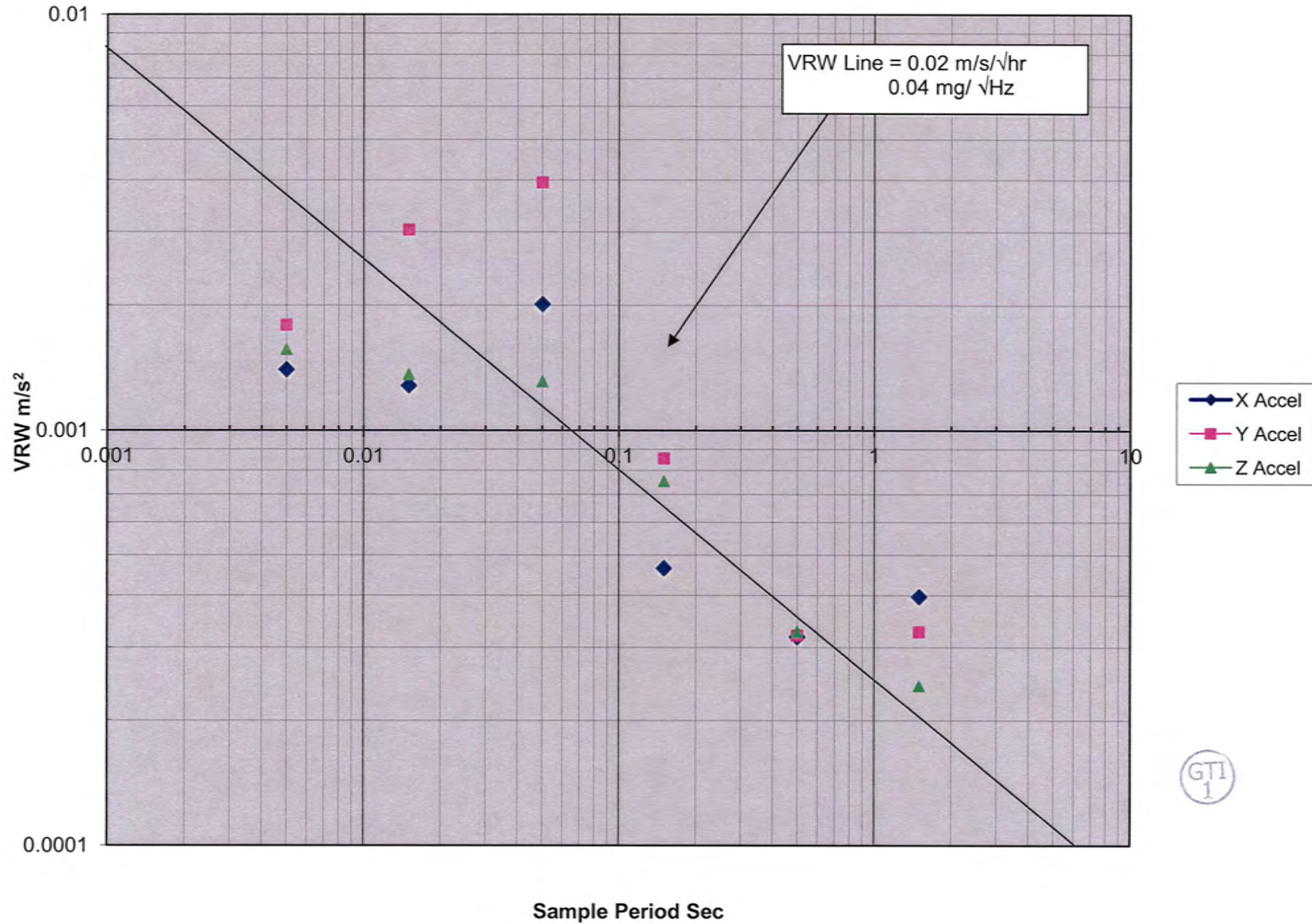
Accel	Mis-Align	mrads	Accel In
	-0.11	0.05	x
0.16		-0.54	y
-0.06	0.57		z



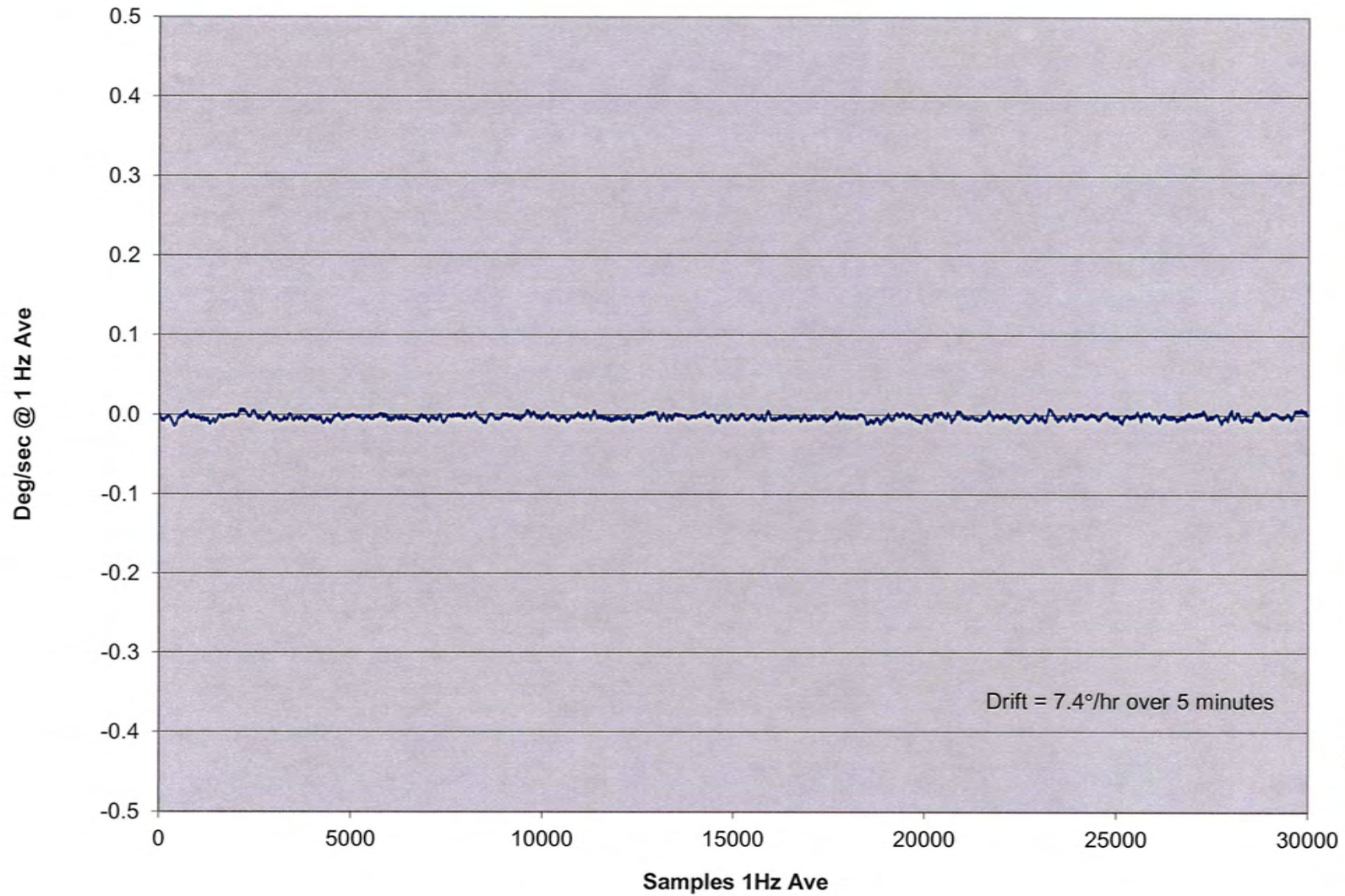
Paul Fritsch

Accepted by:

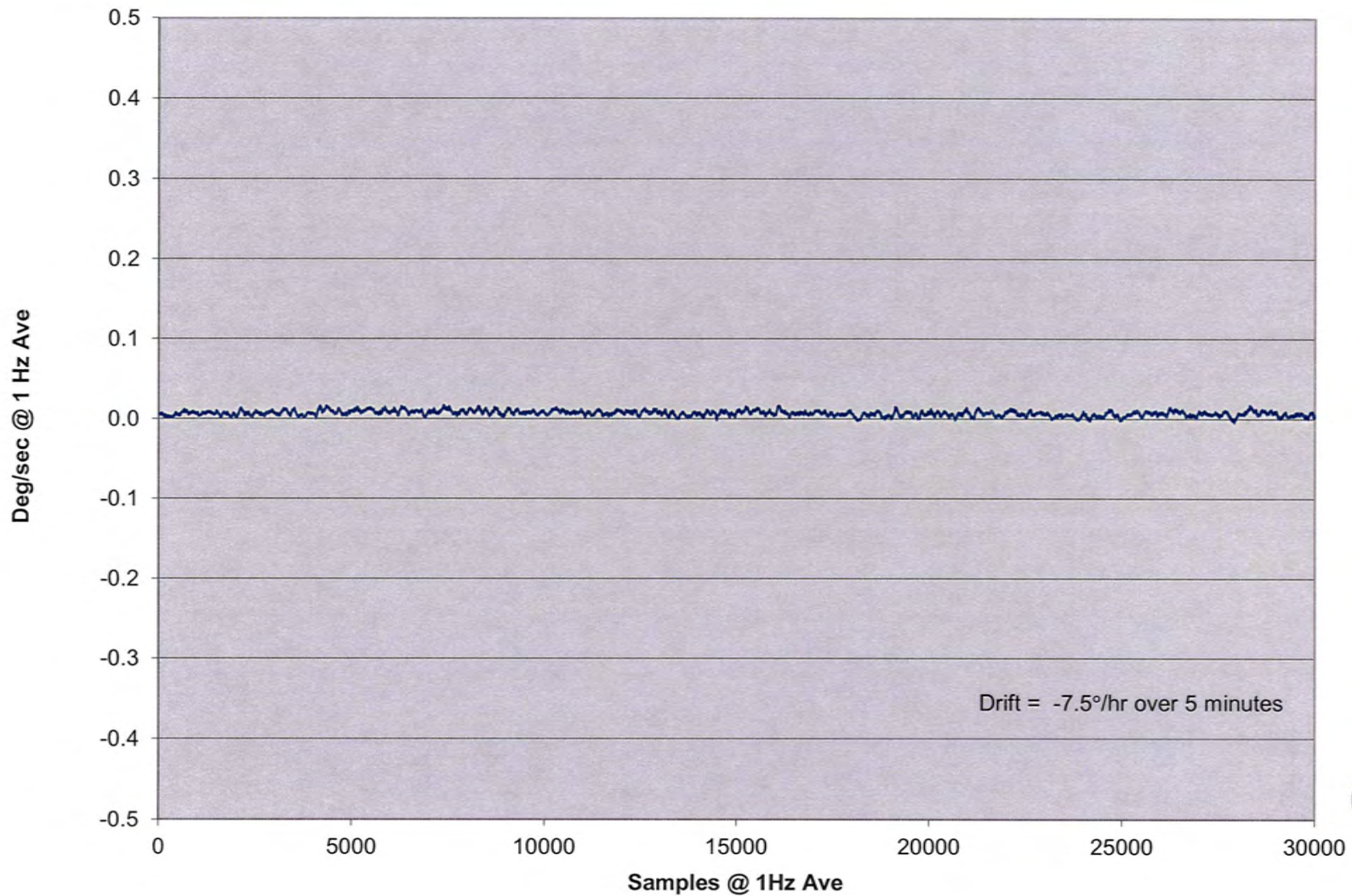




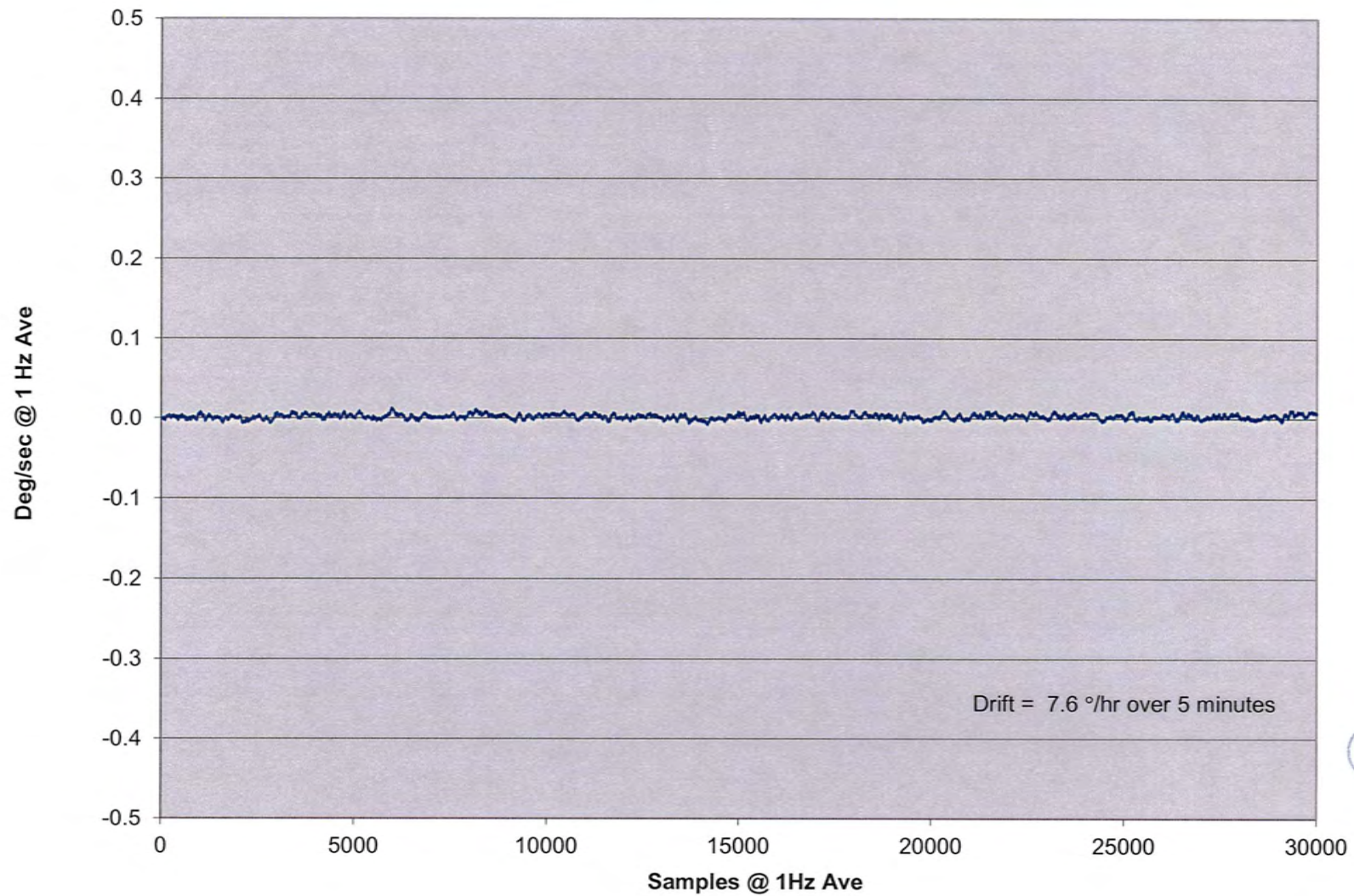
X Gyro In-Run Bias



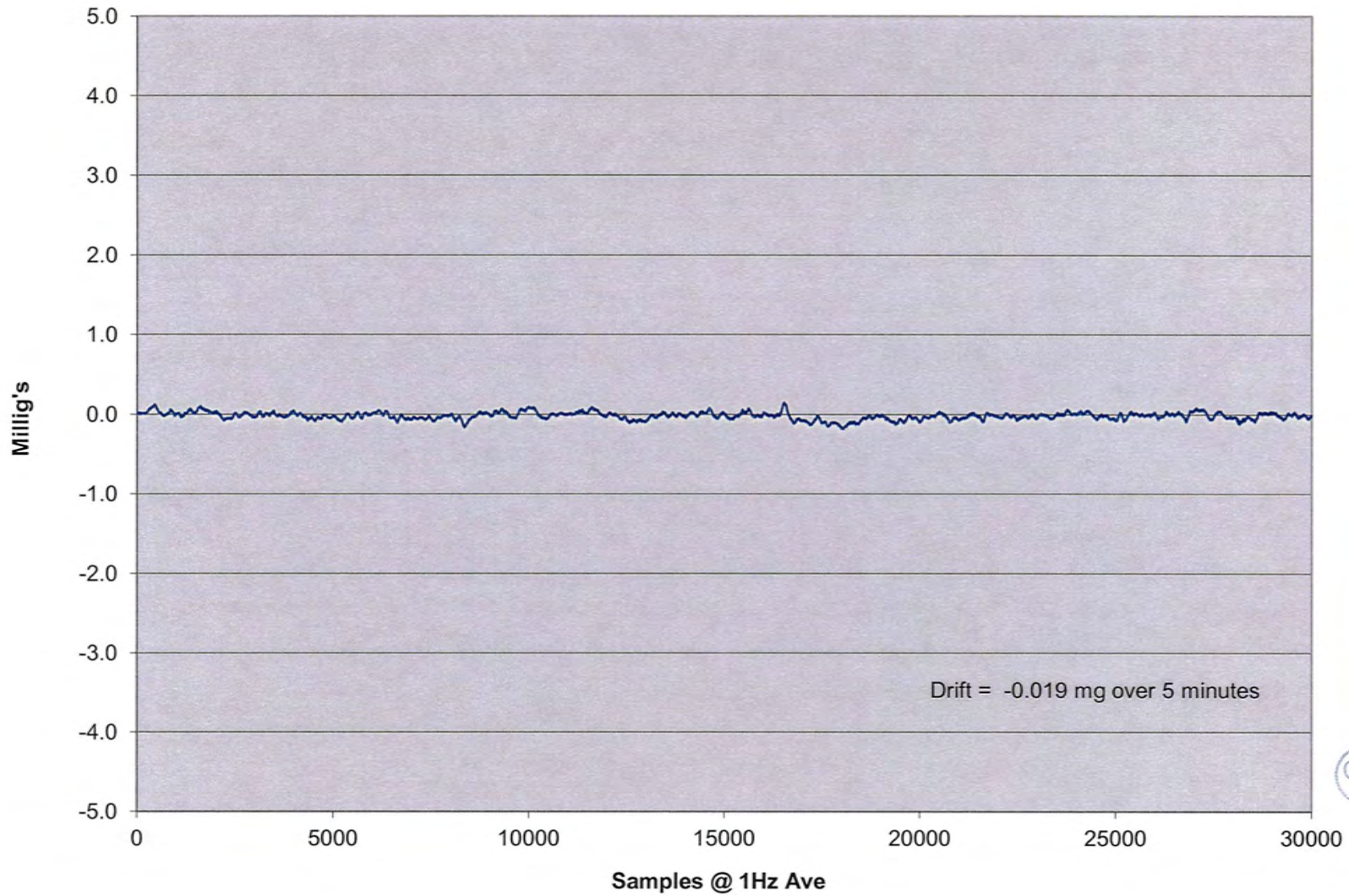
Y Gyro In-Run Bias



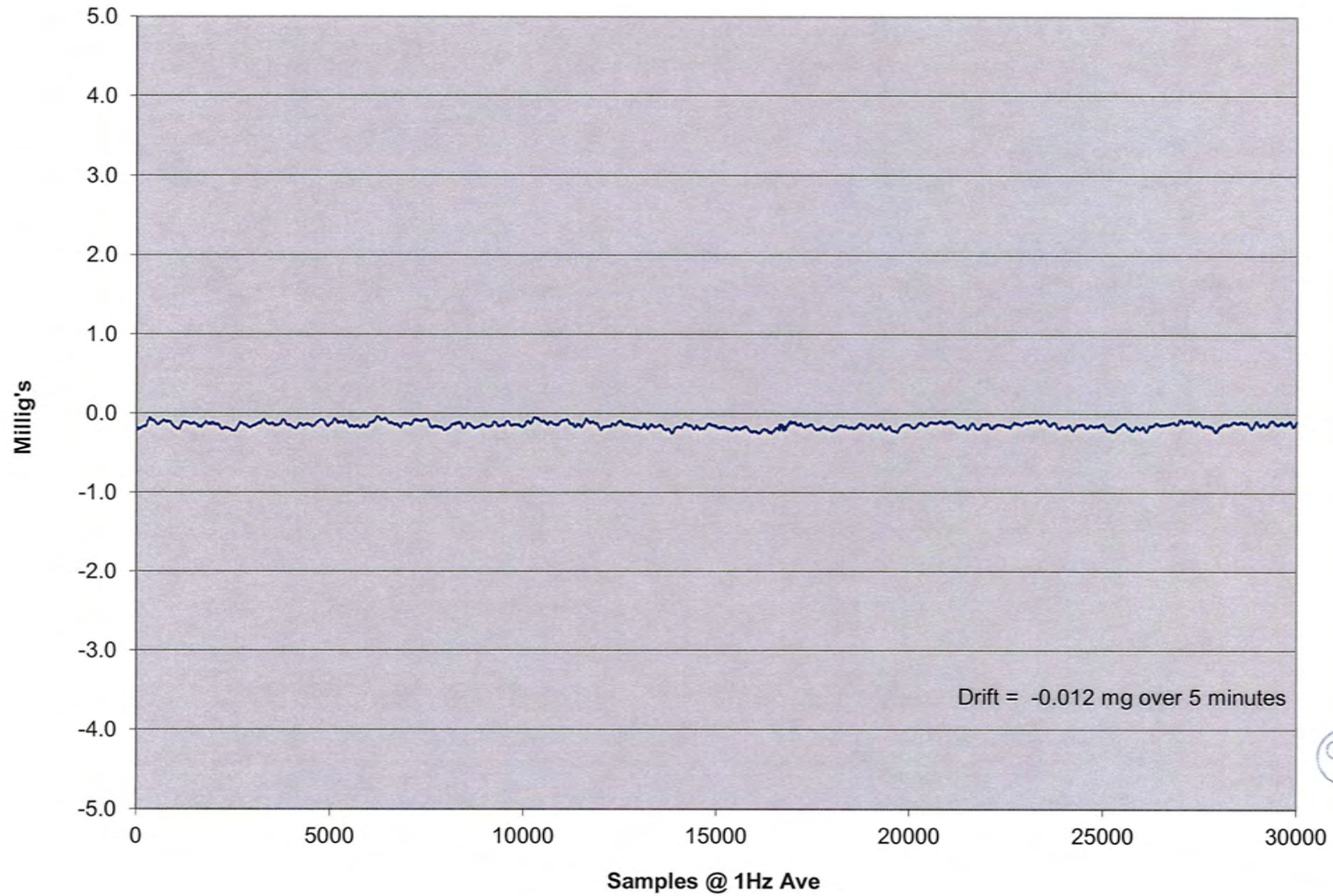
Z Gyro In-Run Bias



X Accel In-Run



Y Accel In-Run



Z Accel In-Run

