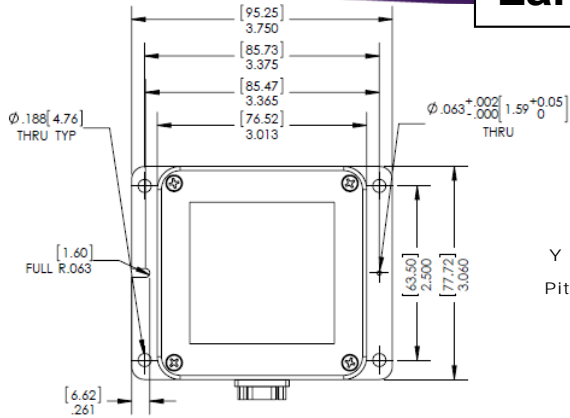
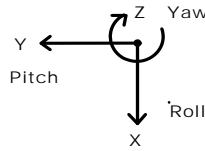


LandMark™ 50 IMU



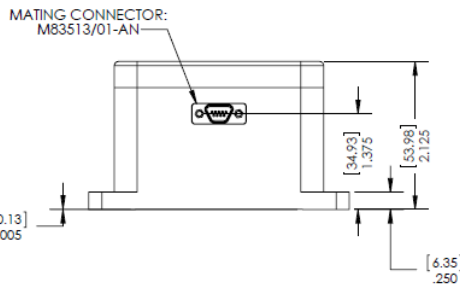
**Axes (Top View)
Right Hand Rule**



LandMark™ 50 IMU

LMRK50IMU-100-02-100 or -06 or -10
 LMRK50IMU-175-02-100 or -06 or -10
 LMRK50IMU-300-02-100 or -06 or -10

Specification



Pin No.	Assignment
1	RS-422/RS-485 A (+)
2	RS-422/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 or 1pps)
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 200Hz
1	Roll Gyro (X)
2	Pitch Gyro (Y)
3	Yaw Gyro (Z)
4	X Accelerometer
5	Y Accelerometer
6	Z Accelerometer
7	Temperature ± 0.5° C Typical

PARAMETER	LandMark™ 50 IMU					
	RATE AXES			ACCEL AXES		
Range	±100°/sec	±175°/sec	±300°/sec	±2 g's	±6 g's	±10 g's
Bias (In Run Stability)	1°/hr	1.5°/hr 1σ	2°/hr	0.02mg	0.04mg 1σ	0.05mg
Angle Random Walk	0.0009°	0.0025° /sec/√Hz 1σ	0.003°	0.02	0.065 mg/√Hz 1σ	0.07
Bias (Over Temp.)	<0.01°/sec	<0.02°/sec 1σ	<0.02°/sec	<1.0mg	<1.3mg 1σ	<1.5mg
Scale Factor Error %	≤0.06% (over temperature)					
Non-Linearity % of FS	<0.1		<0.5	<2	<0.025	<0.05
Sensor Resolution	0.0005°/sec	0.0012°/sec	0.0015°/sec	0.02mg	0.05mg	0.06mg
Alignment	< 0.5 mrad 1σ					
G-Sensitivity	<0.002°/sec/g 1σ					
Self Test On	N/A			Δ 1 ±0.25g	Δ 0.35 ±0.2g	Δ 0.35 ±0.2g
	Logic 1 = 3V to 5V at Pin 9					
Temp Range	Operating: -40°C to +85°C Non-Operating: -55°C to +100°C					
RS422/485 Update Rate	1000Hz, 500Hz, 200Hz, 100Hz, or 10Hz (user selectable) (internally sampled at 4kHz)					
Temp Sensors	6 Internal Temperature Sensors					
Start-up Time	< 0.3 sec at 200 Hz					
Input Power	+6.0V to +36V Max. Input (single sided) (Input Transient Protection to 80V)					
Power Consumption	640 mW at +12V typical 730 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	≤ 450 grams					
Mounting	4ea No.8 or M4 Screws					
Shock	500g's ½ sine 2 msec powered					
Vibration	6 gRMS (20Hz - 2KHz ~ 10g accelerometers)					
MTBF	37,100 hrs (per MIL-STD-217F, Notice 2 based on AIC environment with ambient temperature at 40°C)					

Specification subject to change without notice

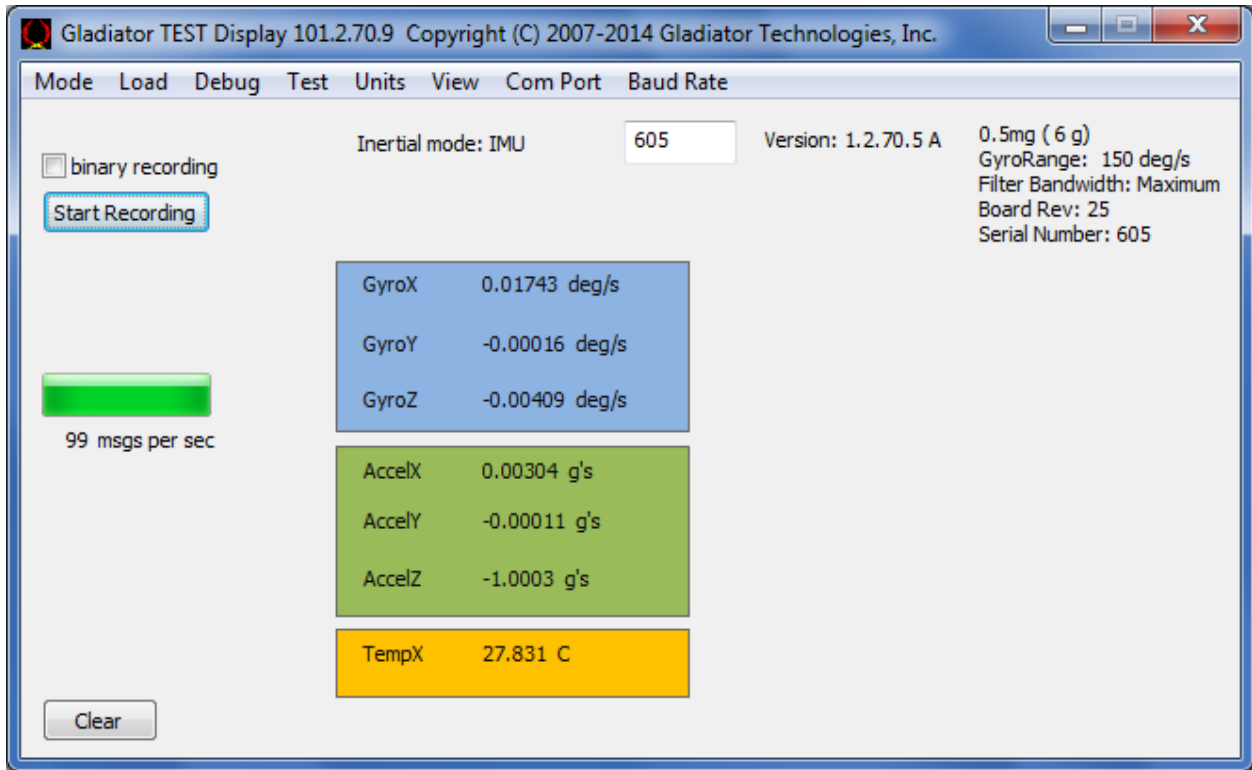


Gladiator Technologies



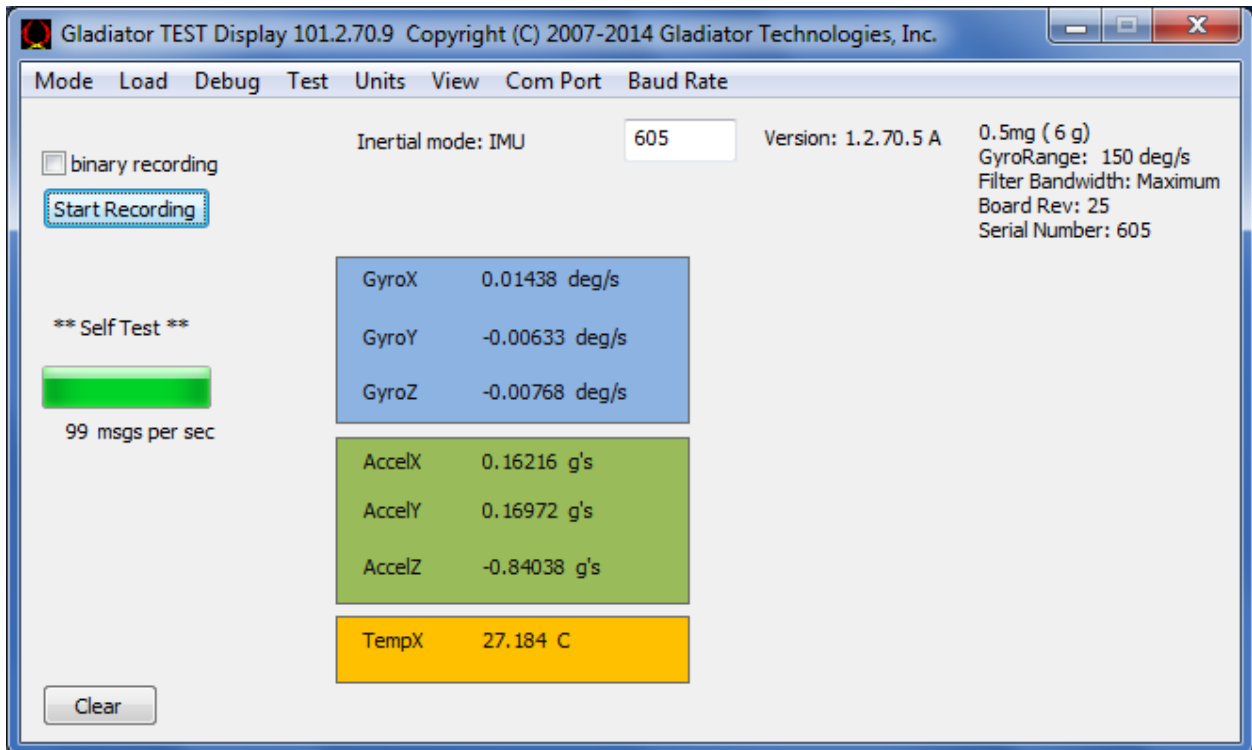
High Performance Inertial MEMS

Rev. 14May08
SN: 600



Initial Bench Readout (above)

Self Test (below)





Gladiator Technologies



High Performance Inertial MEMS

SN605 ATP

7/11/2014

LMRK50IMU-100-06-100

Rate Spin Test

Test	gyroX	gyroY	gyroZ	accelX	accelY	accelZ	temp X
PX	7201.546	-2.936	0.127	-0.024	1.3545	-1.0625	2603.674
NX	-7198.407	-4.463	0.001	-0.0315	0.3225	-2.0355	2605.646
Diff/2	7199.977	0.7635	0.063	0.00375	0.516	0.4865	-0.986
Ave	1.5695	-3.6995	0.064	-0.02775	0.8385	-1.549	2604.66
PY	-1.149	7199.571	-0.049	0.862	-0.71	-1.0525	2588.975
NY	0.069	-7201.52	0.365	1.8575	-0.779	-1.9835	2590.064
Diff/2	-0.609	7200.546	-0.207	-0.49775	0.0345	0.4655	-0.5445
Ave	-0.54	-0.9745	0.158	1.35975	-0.7445	-1.518	2589.52
PZ	-1.622	-3.841	7199.181	-0.502	2.0115	-1.552	2571.944
NZ	-0.651	-3.589	-7200.882	-1.3675	1.089	-1.546	2572.896
Diff/2	-0.4855	-0.126	7200.032	0.43275	0.46125	-0.003	-0.476
Ave	-1.1365	-3.715	-0.8505	-0.93475	1.55025	-1.549	2572.42
RSF Norm	0.999997	1.000076	1.000004				Temp °C 25.89

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

Gyro Mis-align mrad	Input Rate			
x		-0.08	-0.07	x
y	0.11		-0.02	y
z	0.01	-0.03		z

Accepted by:





LMRK50IMU-100-06-100
Accelerometer Tumble Test

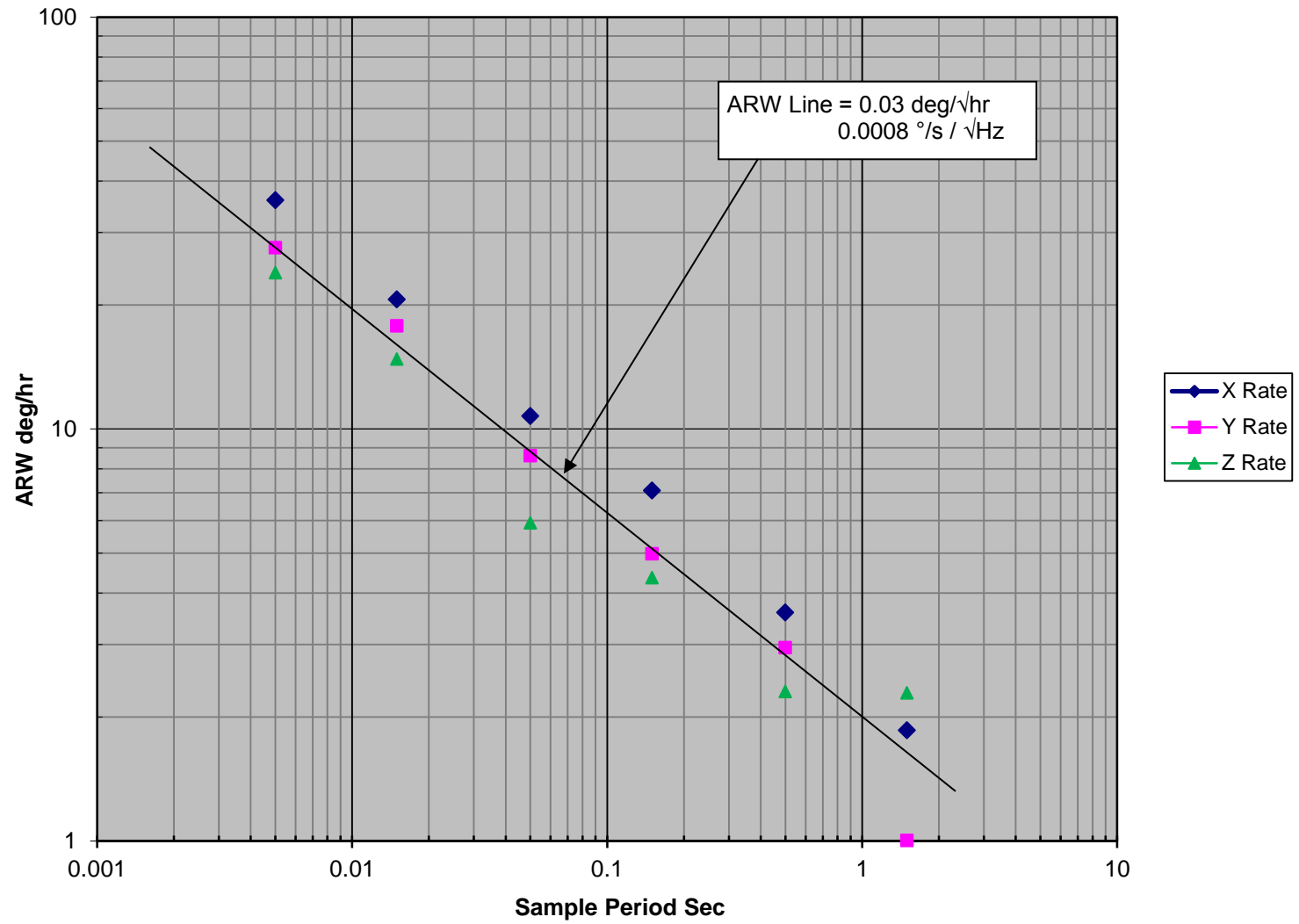
Test	gyroX	gyroY	gyroZ	accelX	accelY	accelZ	temp X
PX	0.486	-0.117	-0.25	1001.161	-0.3475	0.27	2586.389
NX	0.523	-0.143	-0.256	-998.7505	-0.769	-0.077	2583.641
Diff/2	-0.0185	0.013	0.003	999.9558	0.21075	0.1735	1.374
Ave	0.5045	-0.13	-0.253	1.20525	-0.55825	0.0965	2585.015
PY	0.665	0.023	-0.243	-0.2885	1000.382	0.0455	2600.974
NY	0.658	-0.092	-0.334	0.1395	-999.7065	-0.071	2603.012
Diff/2	0.0035	0.0575	0.0455	-0.214	1000.044	0.05825	-1.019
Ave	0.6615	-0.0345	-0.2885	-0.0745	0.3375	-0.01275	2601.993
PZ	0.48	0.009	-0.369	-0.0005	0.4095	999.4875	2603.948
NZ	0.716	-0.062	-0.247	-0.0125	0.6035	-1000.269	2596.888
Diff/2	-0.118	0.0355	-0.061	0.006	-0.097	999.8783	3.53
Ave	0.598	-0.0265	-0.308	-0.0065	0.5065	-0.39075	2600.418
Bias %s,mg	0.006	-0.001	-0.003	-0.04	-0.03	0.04	25.96
ASF Norm				1.0000	1.0000	0.9999	Temp °C

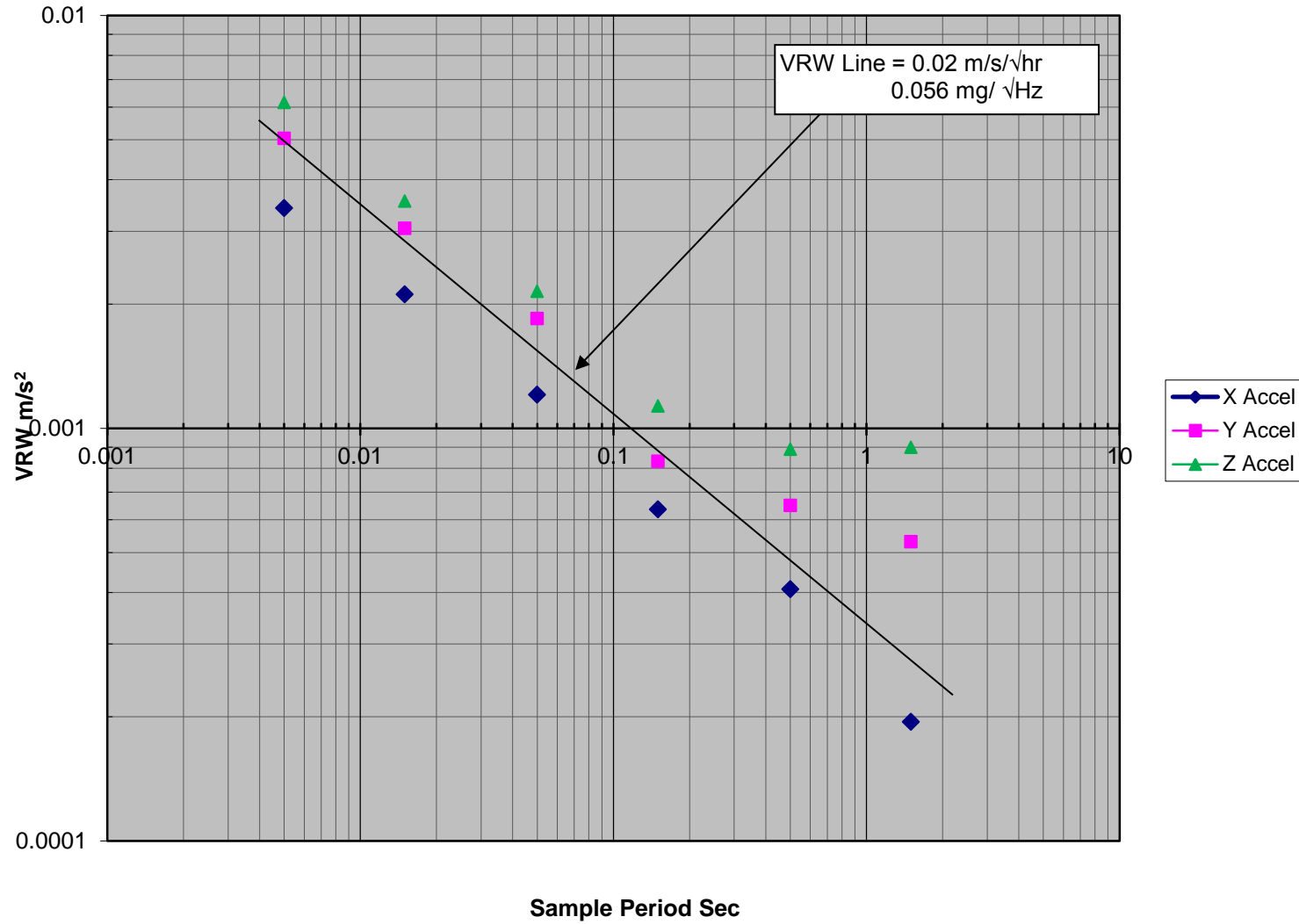
Gyro %s /g	Input g =			Accel In g's
x	0.000	0.000	-0.001	x
y	0.000	0.001	0.000	y
z	0.000	0.000	-0.001	z

Accel		Accel In
Mis-Align	mrads	
-0.21	0.01	x
0.21	-0.10	y
0.17	0.06	z

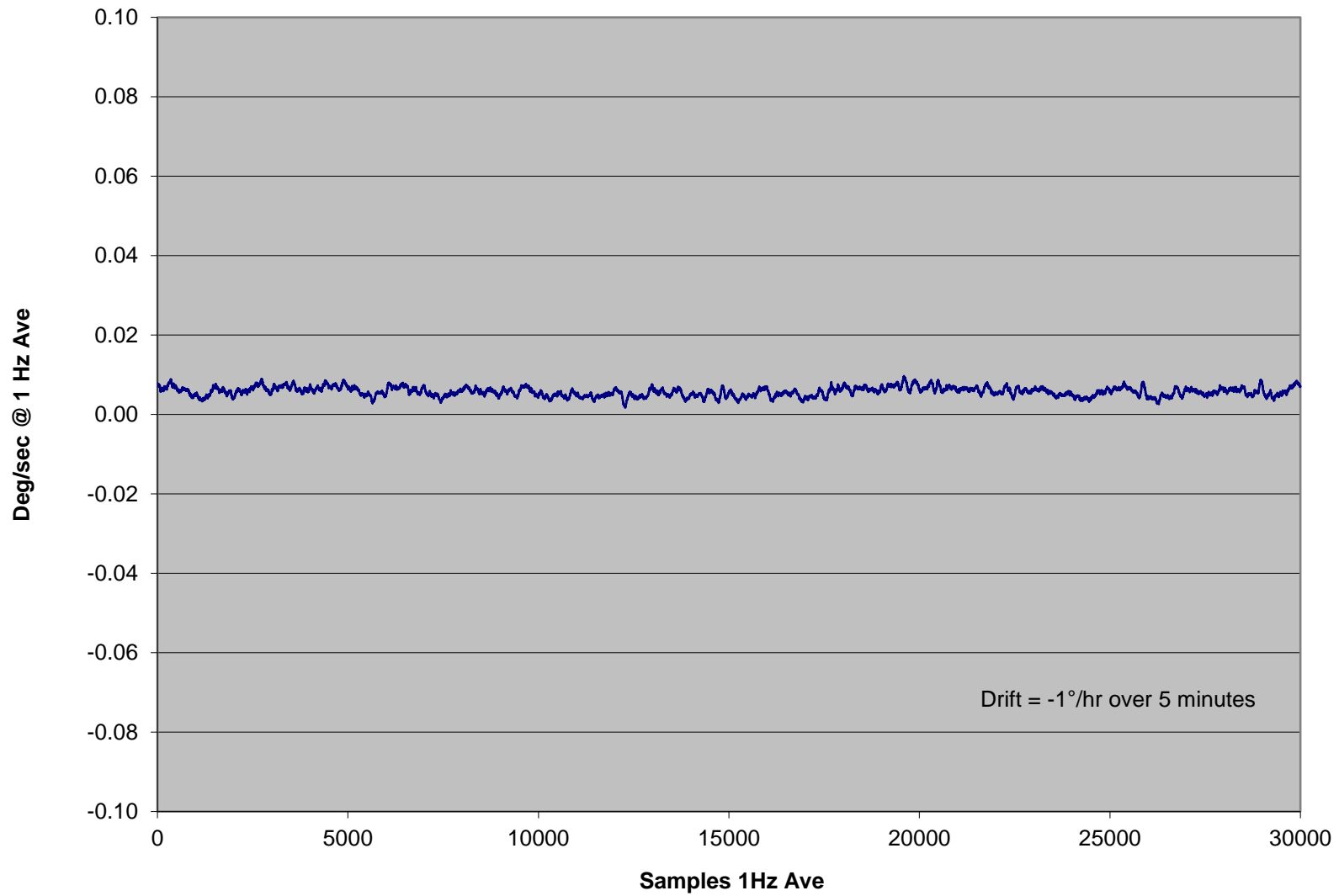
Accepted by:



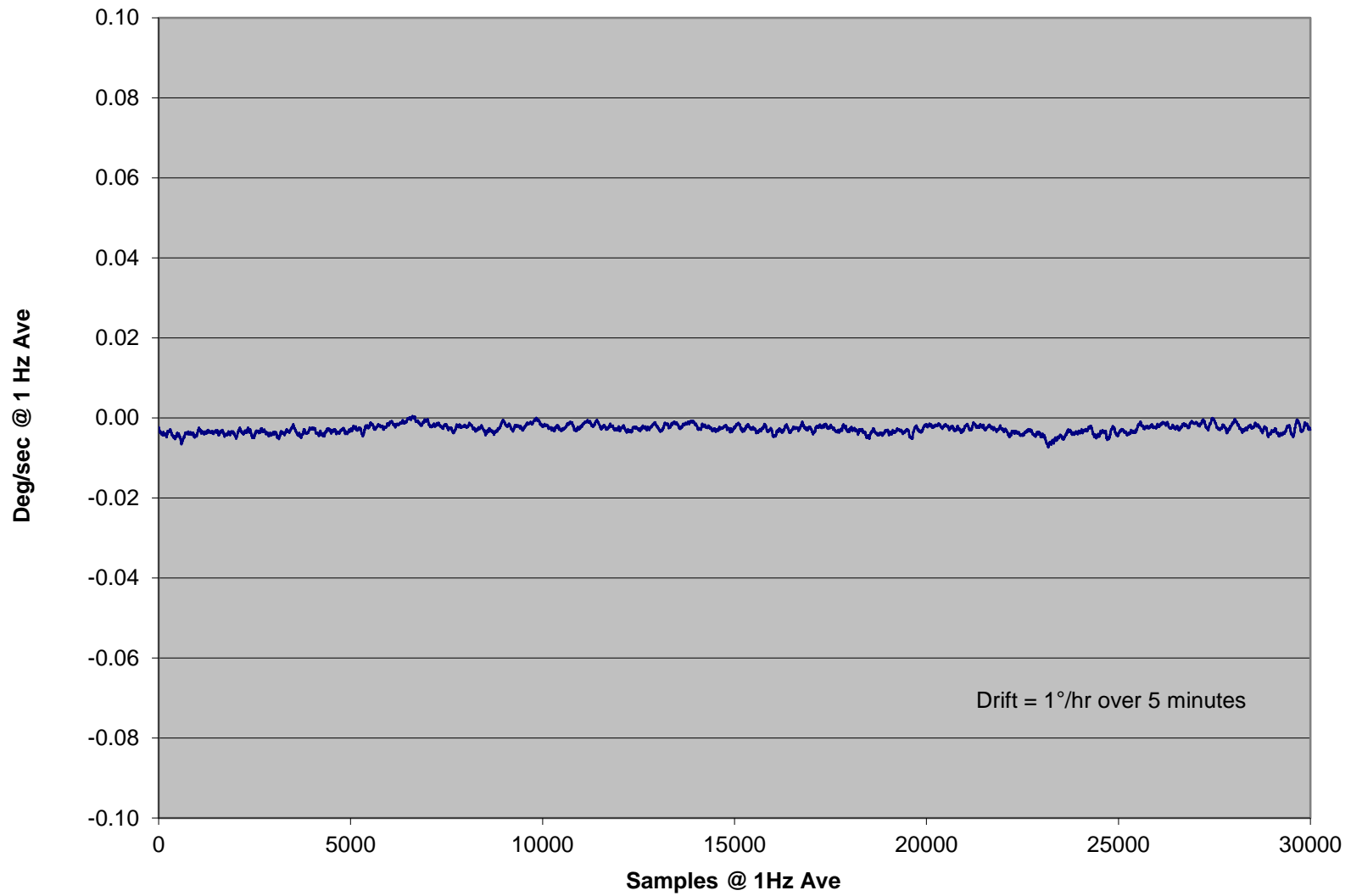




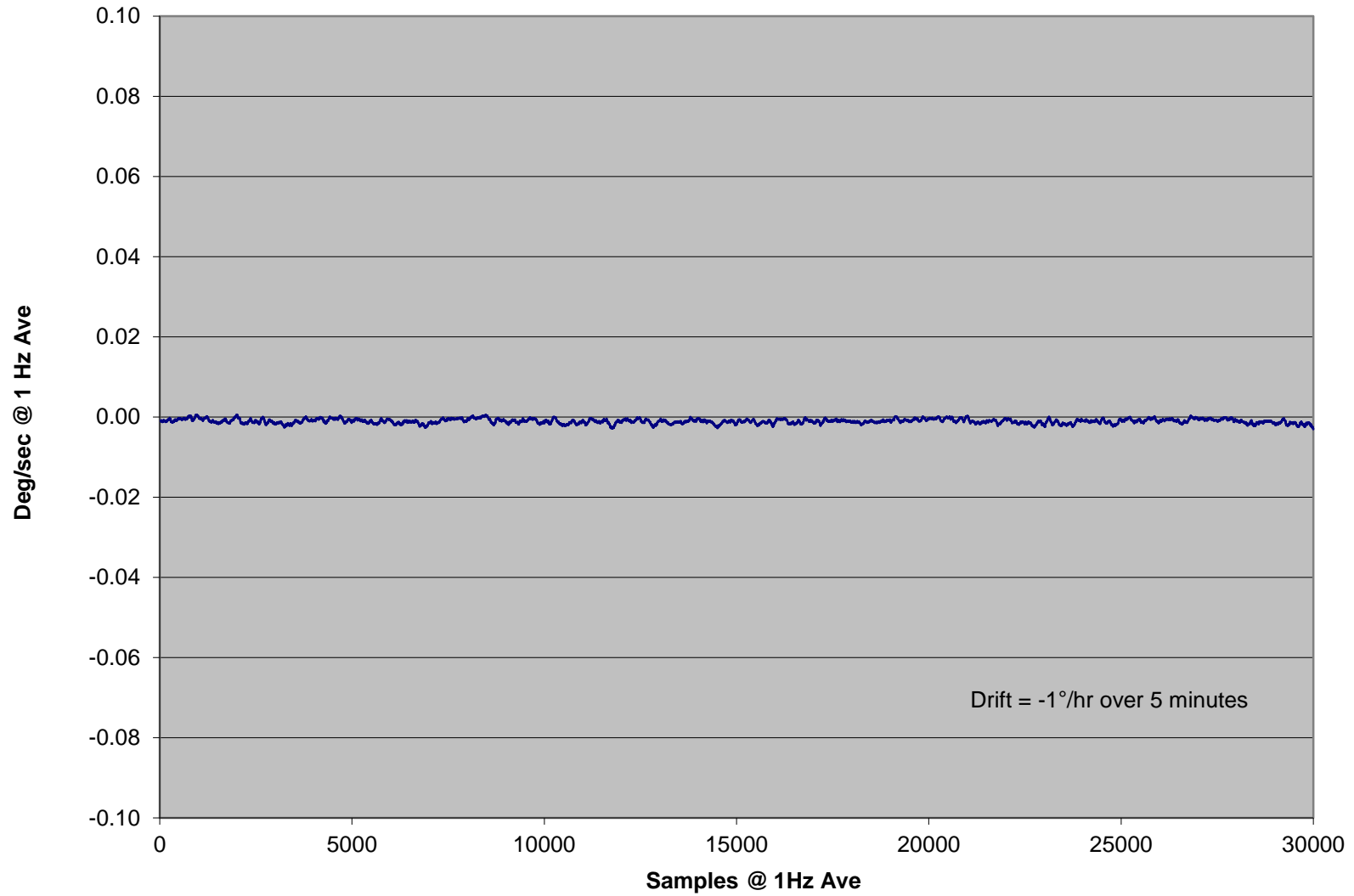
X Gyro In-Run Bias



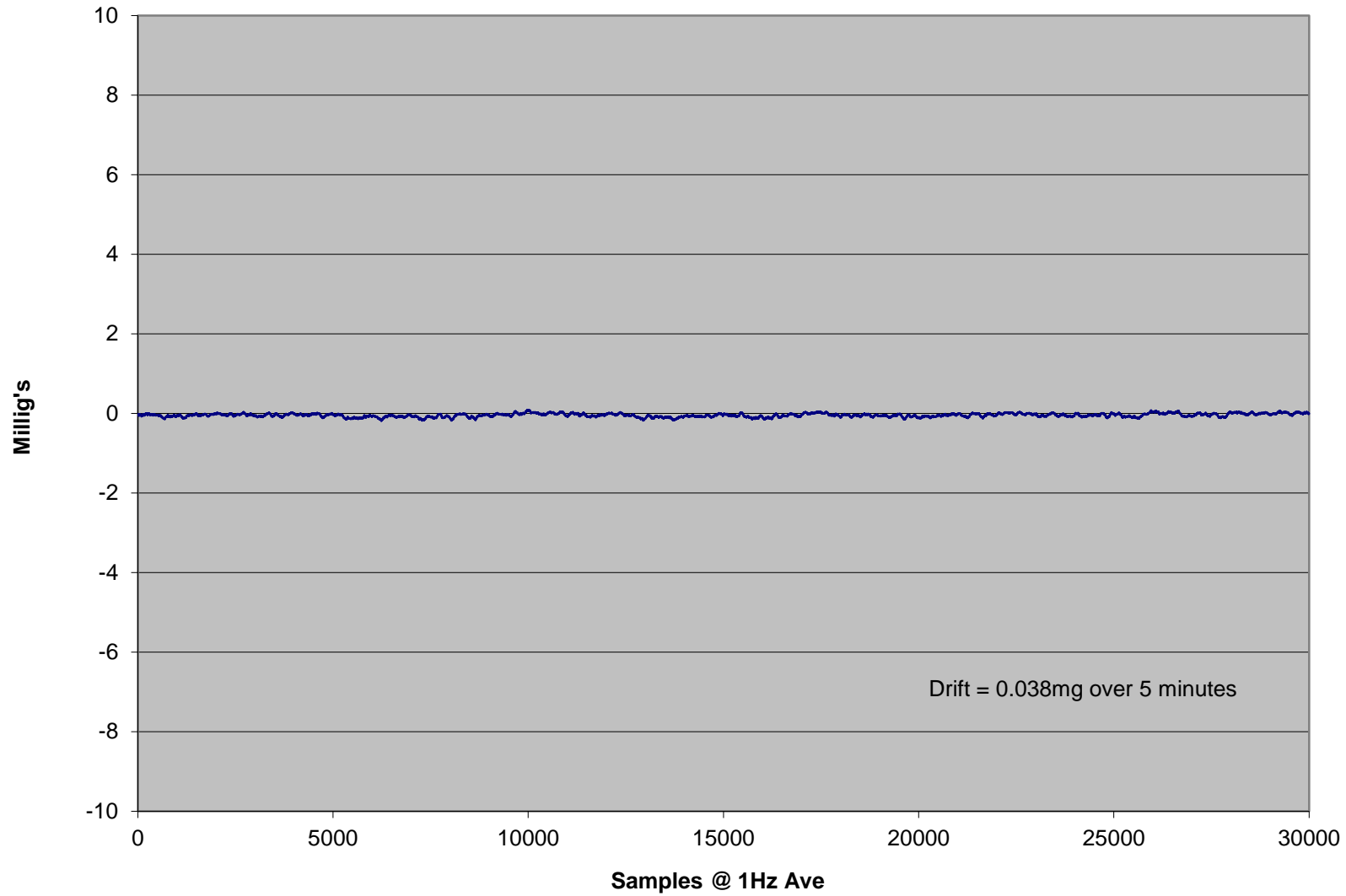
Y Gyro In-Run Bias



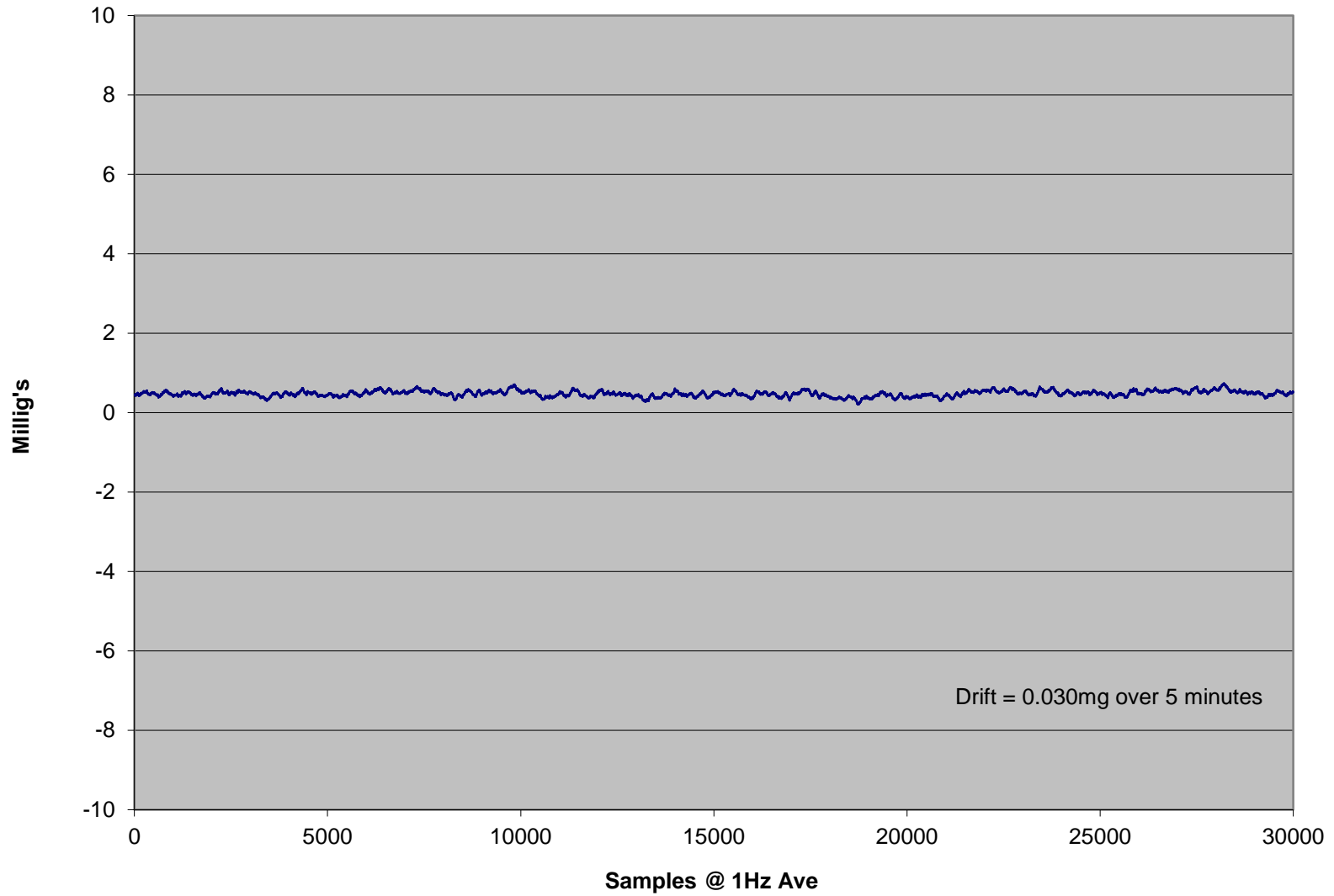
Z Gyro In-Run Bias



X Accel In-Run



Y Accel In-Run



Z Accel In-Run

