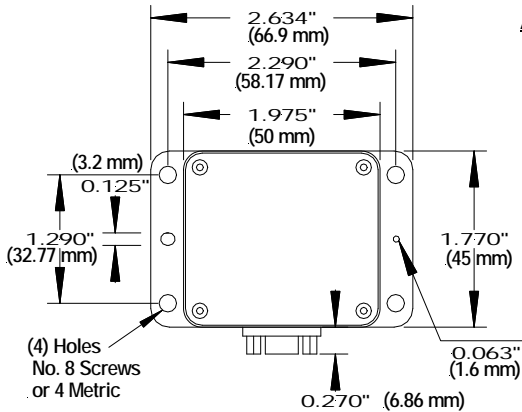
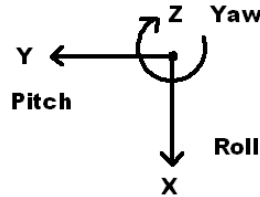


LandMark™ 40 IMU



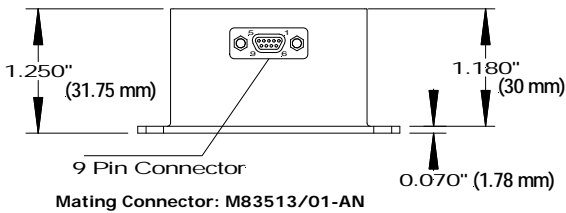
Axes (Top View) Right Hand Rule



LandMark™ 40 IMU

LMRK40IMU-100-02-100 or -10
LMRK40IMU-300-02-100 or -10

Specification



PARAMETER	RATE AXES		ACCEL AXES	
Range	±100°/sec	±300°/sec	±2 g's	±10 g's
Bias (Over Temp.)	<0.03°/sec <i>1 σ</i>	<0.05°/sec	< 0.5mg <i>1 σ</i>	< 1.0mg
Bias (In Run Stability)	6°/hour <i>1 σ</i>	8°/hour	0.035mg <i>1 σ</i>	0.08mg
Scale Factor Error %	≤0.1% (over temperature) <i>1 σ</i>			
Sensor Resolution	0.001°/sec		0.02mg	0.06mg
Angle Random Walk	0.002° /sec/√Hz <i>1 σ</i>	0.0035° <i>1 σ</i>	0.035mg /√Hz <i>1 σ</i>	0.13mg <i>1 σ</i>
Alignment	<0.5 mrad <i>1 σ</i>			
G-Sensitivity	<0.01°/sec/g <i>1 σ</i>			
Self Test On	N/A	Δ 1.5 ±0.5g	Δ 0.3 ±0.2g	
	Logic 1 = 3V to 5V at Pin 9			
Temp Range	Operating: -40°C to +85°C Non-Operating: -55°C to +85°C			
Update Rate	500 Hz, 200 Hz, 100 Hz, or 10 Hz (user selectable)			
Temp Sensors	Internal Temperature Sensors			
Start-up Time	< 0.3 sec at 200 Hz			
Input Power	+3.1V to +5.5V Max. Input (single sided)			
Power Consumption	430 mW at 3.3V Typical 450 mW at 3.3V Maximum			
Size	U.S.:	1.97 x 1.77 x 1.25 = 4.4 in ³		
	Metric:	5 x 4.5 x 3.2 = 72 cm ³		
Weight	≤ 103 grams			
Mounting	4ea No.8 or M4 Screws			
Shock	500g's ½ sine 2 msec powered			
Vibration	6gRMS (20Hz to 2KHz ~ 10g accelerometers)			
MTBF	53,869 hrs (per MIL-STD-217F, Notice 2 based on AIC environment with ambient temperature at 40°C)			

Pin No.	Assignment
1	RS-485 A (+)
2	RS-485 B (-)
3	Power Ground
4	Analog/Digital Input (0V to 5V)
5	+3.1V to +5.5V Max 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

Specification subject to change without notice

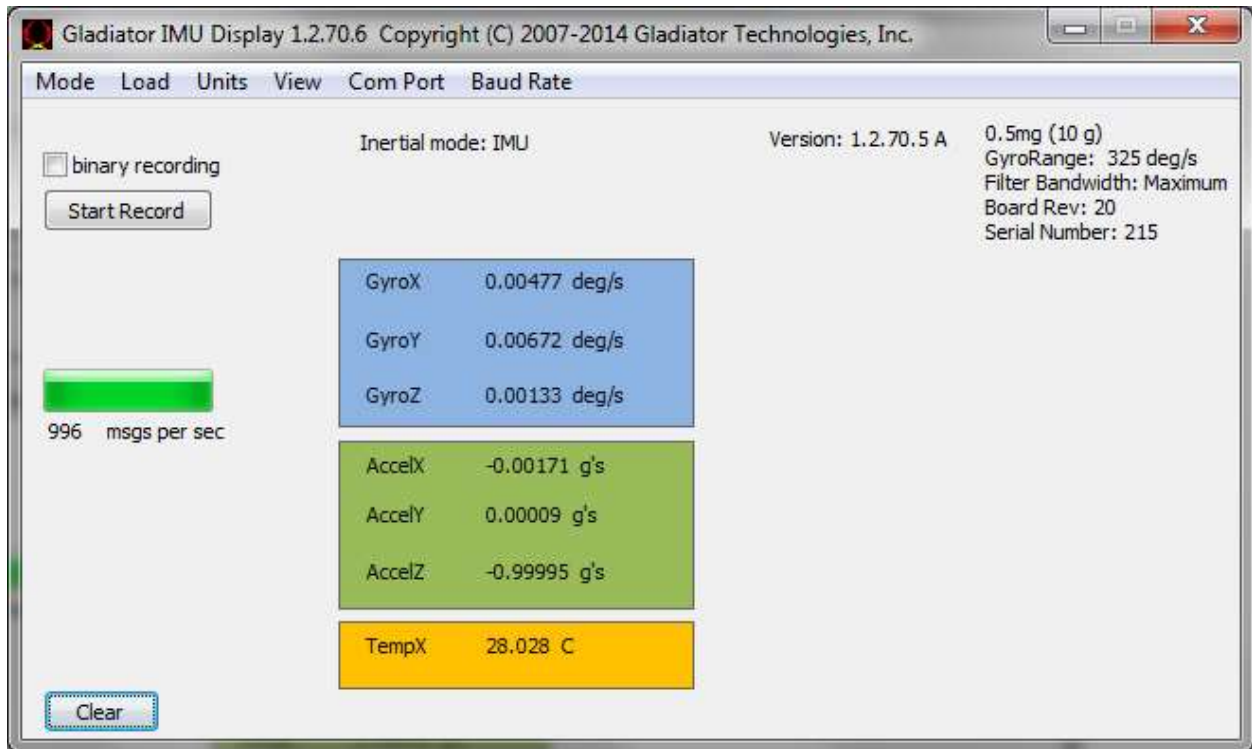


Gladiator Technologies



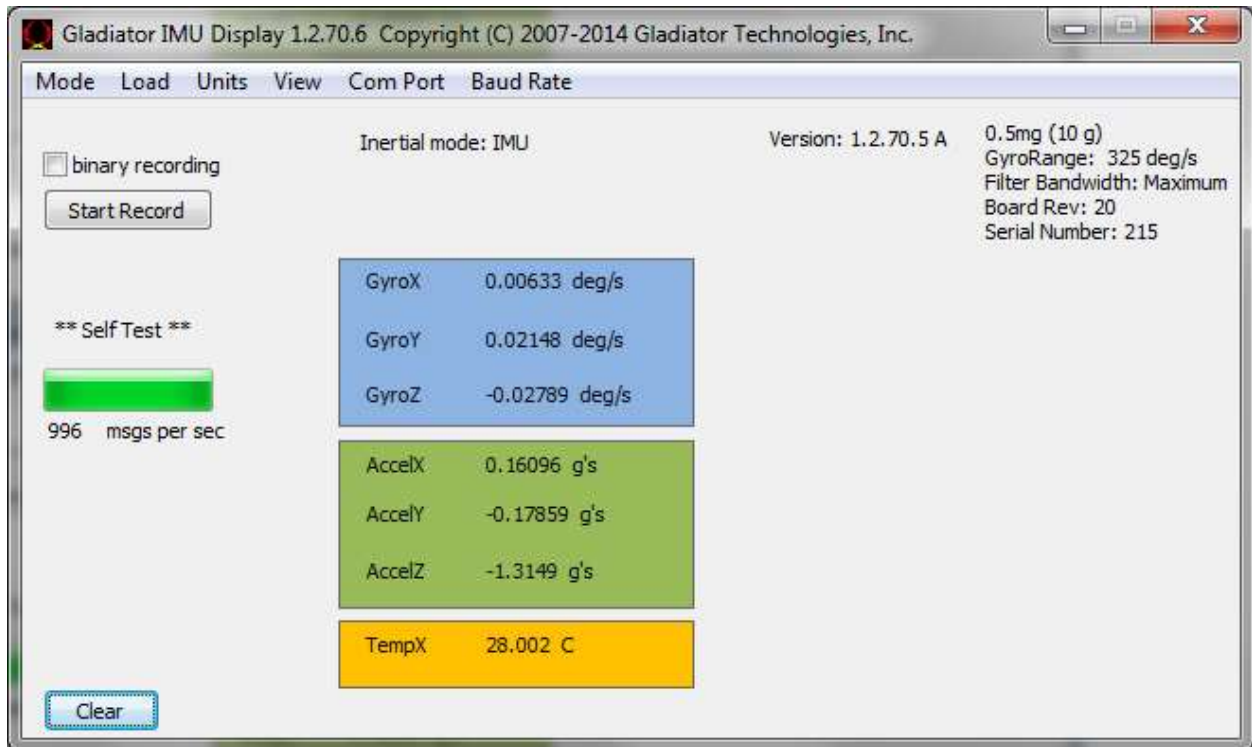
High Performance Inertial MEMS

Rev. 14Feb21
SN: 213



Initial Bench Readout (above)

Self Test (below)





Gladiator Technologies



High Performance Inertial MEMS

SN215 ATP

5/12/2014

LMRK40IMU-300-10-100

Rate Spin Test

Test	gyroX	gyroY	gyroZ	accelX	accelY	accelZ	temp X
PX	14406.09	-8.645	4.01	-0.04	-0.262	-18.7715	2742.089
NX	-14392.81	-9.432	4.06	-0.114	-1.083	-19.088	2742.298
Diff/2	14399.45	0.3935	-0.025	0.037	0.4105	0.15825	-0.1045
Ave	6.6405	-9.0385	4.035	-0.077	-0.6725	-18.92975	2742.194
PY	-2.959	14409.39	4.145	0.424	-0.578	-18.945	2746.703
NY	-5.127	-14390.83	4.987	1.5435	-0.384	-18.981	2746.593
Diff/2	1.084	14400.11	-0.421	-0.55975	-0.097	0.018	0.055
Ave	-4.043	9.28	4.566	0.98375	-0.481	-18.963	2746.648
PZ	-3.306	-8.928	14399.21	1.914	-0.404	-0.589	2750.436
NZ	-5.307	-10.707	-14401.05	0.7845	-0.623	-0.4515	2752.061
Diff/2	1.0005	0.8895	14400.13	0.56475	0.1095	-0.06875	-0.8125
Ave	-4.3065	-9.8175	-0.9195	1.34925	-0.5135	-0.52025	2751.249
RSF Norm	0.999962	1.000008	1.000009				Temp °C 27.47

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

Gyro Mis-align mrad	Input Rate			
x		0.08	0.07	x
y	0.03		0.06	y
z	0.00	-0.03		z

Accepted by:





LMRK40IMU-300-10-100
 Accelerometer Tumble Test

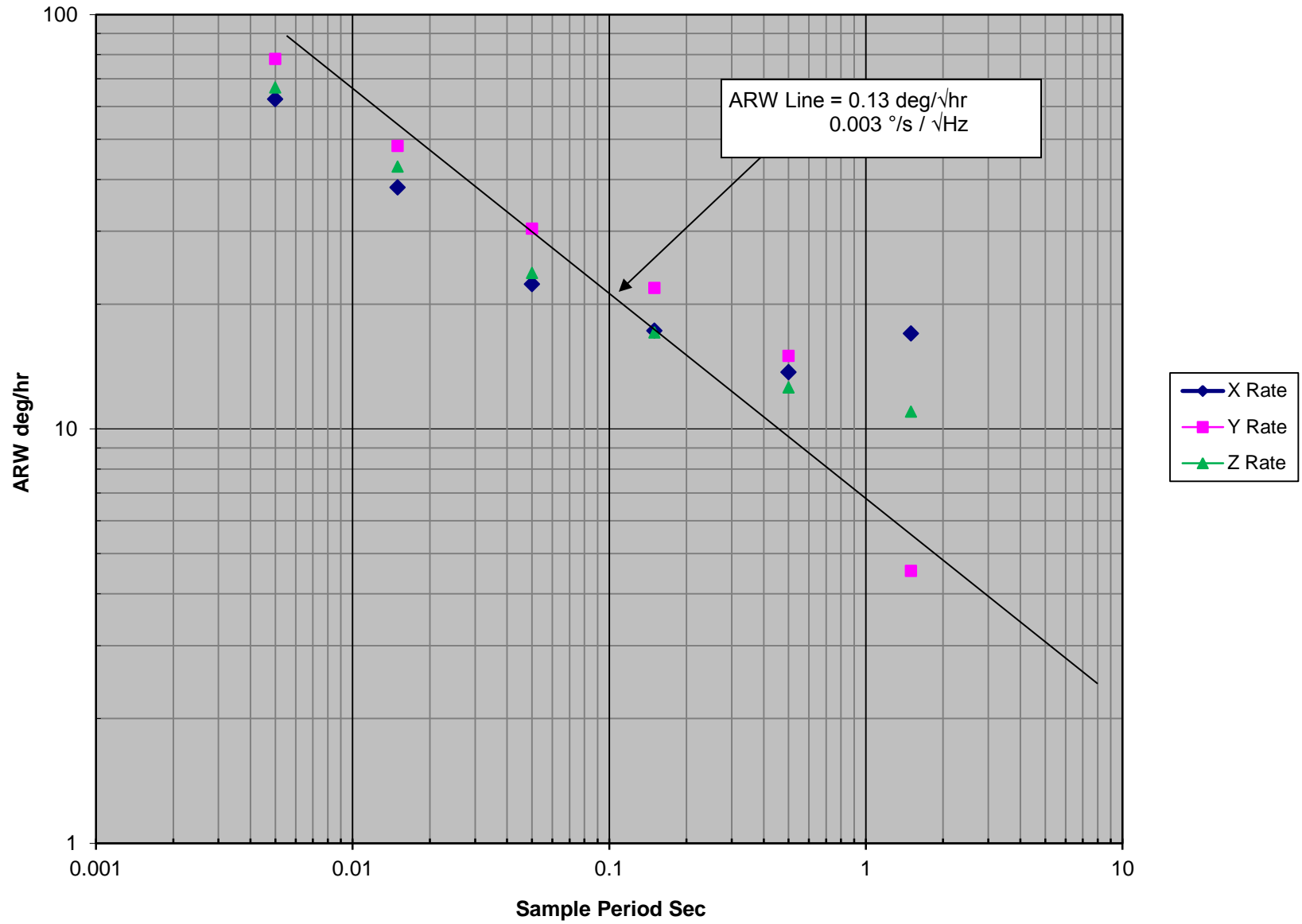
Test	gyroX	gyroY	gyroZ	accelX	accelY	accelZ	temp X
PX	0.846	2.885	0.813	1000.968	-0.372	0.054	2746.663
NX	-0.089	3.815	0.592	-999.246	-0.3365	-0.401	2745.824
Diff/2	0.4675	-0.465	0.1105	1000.107	-0.01775	0.2275	0.4195
Ave	0.3785	3.35	0.7025	0.861	-0.35425	-0.1735	2746.244
PY	-0.354	1.741	0.392	0.2085	999.0995	-0.7605	2741.339
NY	0.482	2.42	0.24	0.2935	-1000.74	-0.4735	2741.751
Diff/2	-0.418	-0.3395	0.076	-0.0425	999.9198	-0.1435	-0.206
Ave	0.064	2.0805	0.316	0.251	-0.82025	-0.617	2741.545
PZ	0.273	2.322	1.513	-0.362	0.257	1000.105	2742.295
NZ	0.602	1.614	-0.207	-0.3725	-0.1505	-999.796	2740.696
Diff/2	-0.1645	0.354	0.86	0.00525	0.20375	999.9505	0.7995
Ave	0.4375	1.968	0.653	-0.36725	0.05325	0.1545	2741.496
Bias %s,mg	0.003	0.025	0.006	-0.06	-0.15	-0.40	27.43
ASF Norm				1.0001	0.9999	1.0000	Temp °C

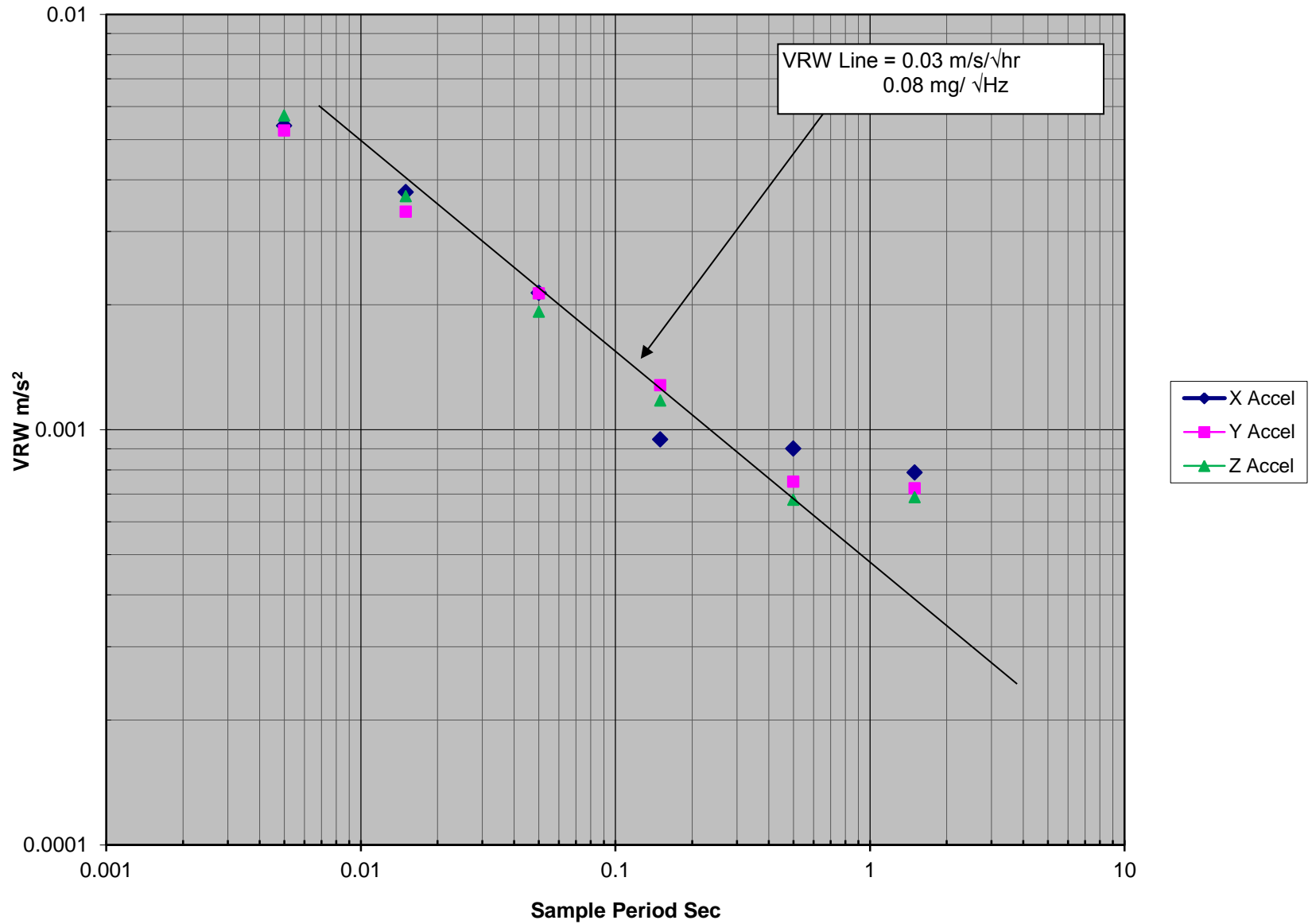
Gyro %s /g	Input g =			Accel In g's
x	0.005	-0.004	-0.002	x
y	-0.005	-0.003	0.004	y
z	0.001	0.001	0.009	z

Accel		Accel In
Mis-Align	mrads	
-0.04	0.01	x
-0.02	0.20	y
0.23	-0.14	z

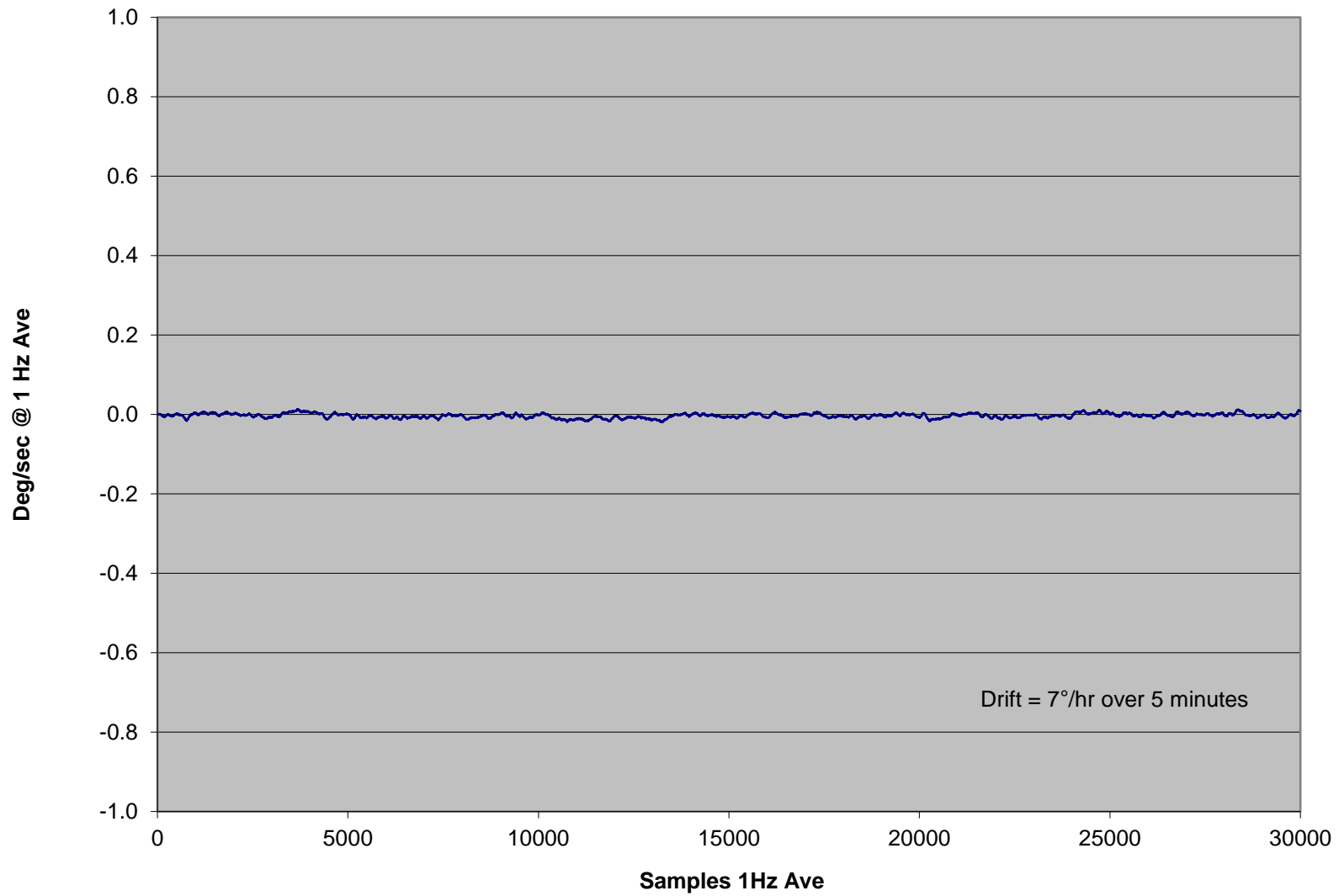
Accepted by:



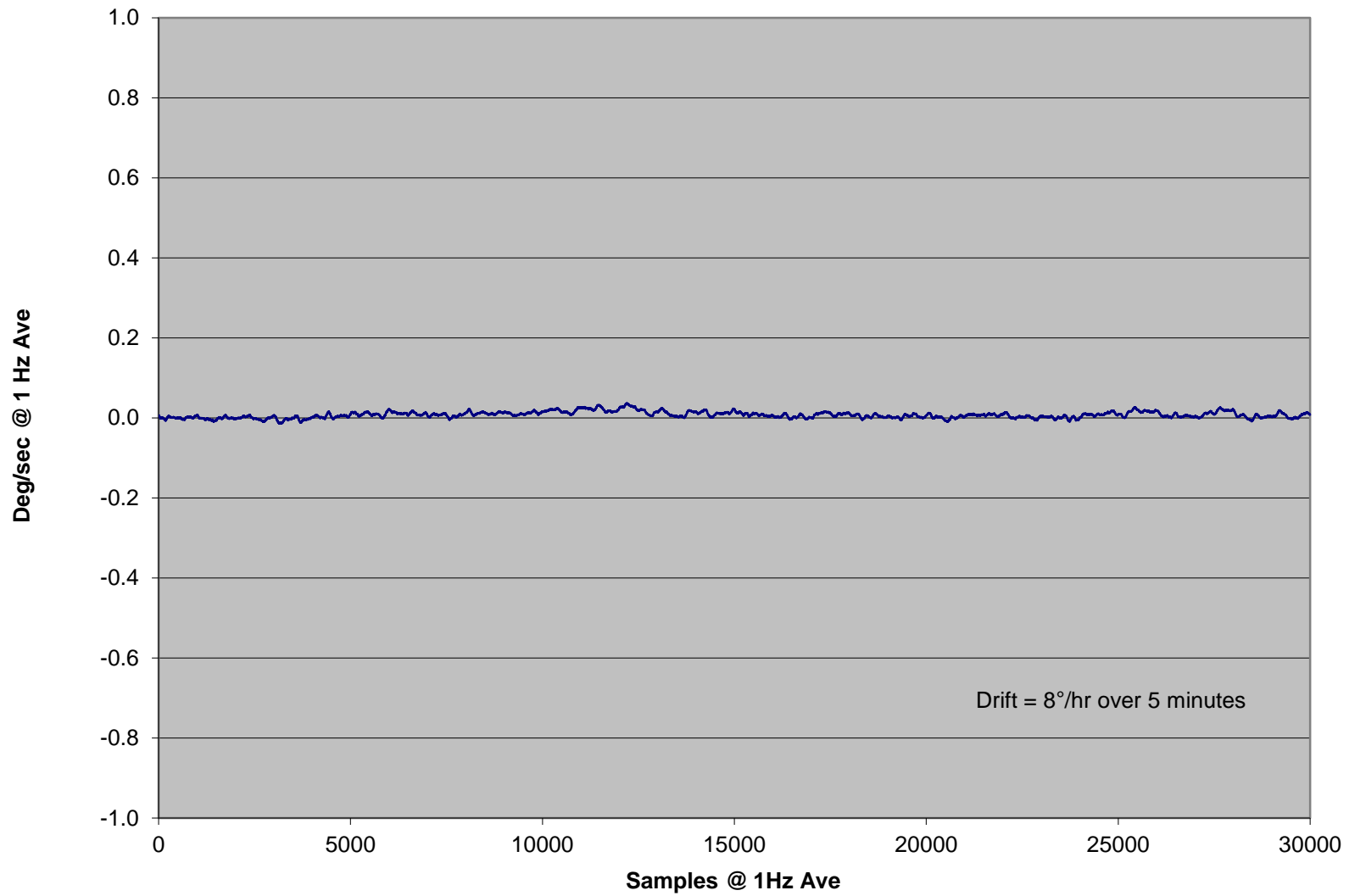




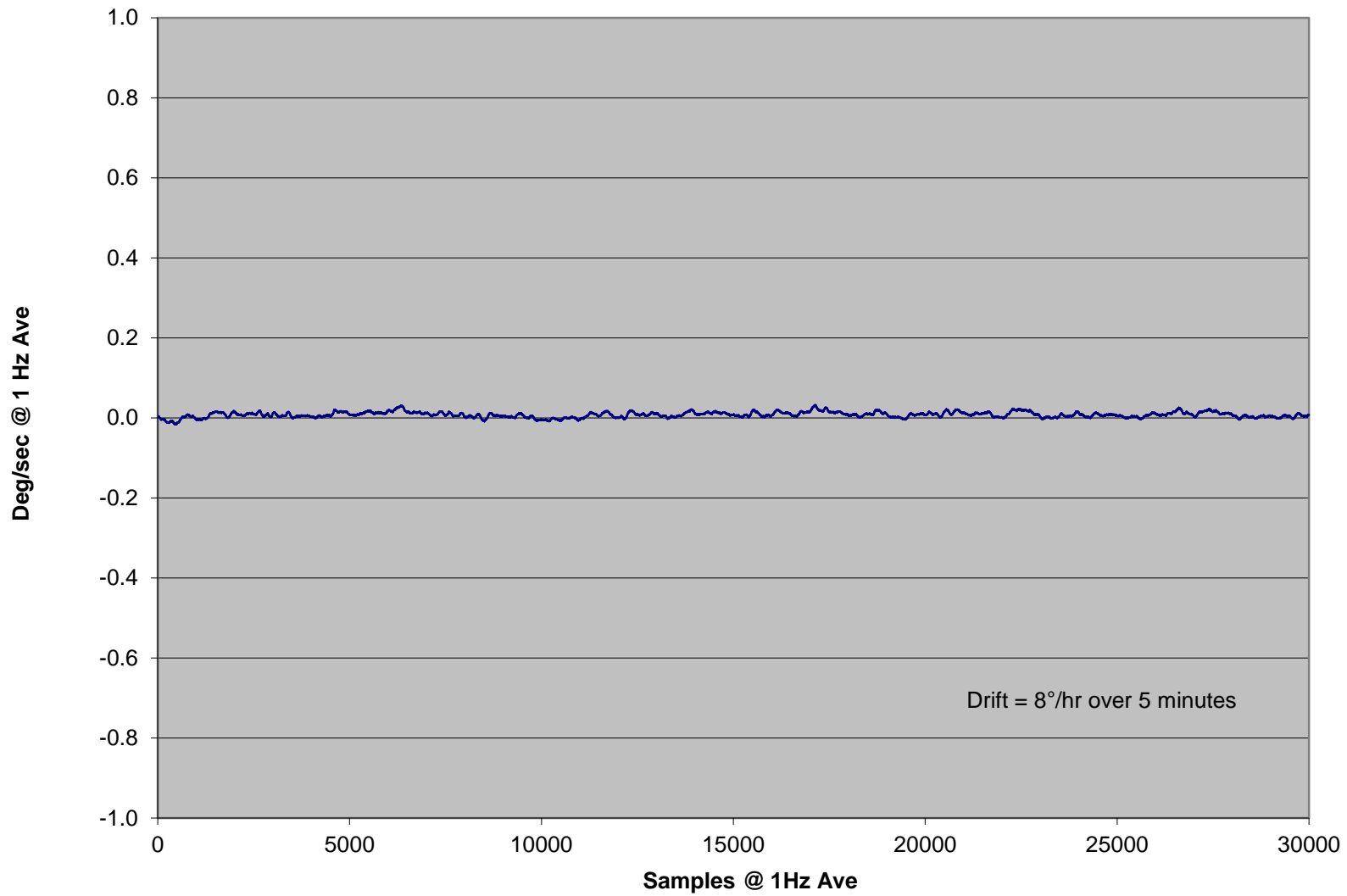
X Gyro In-Run Bias



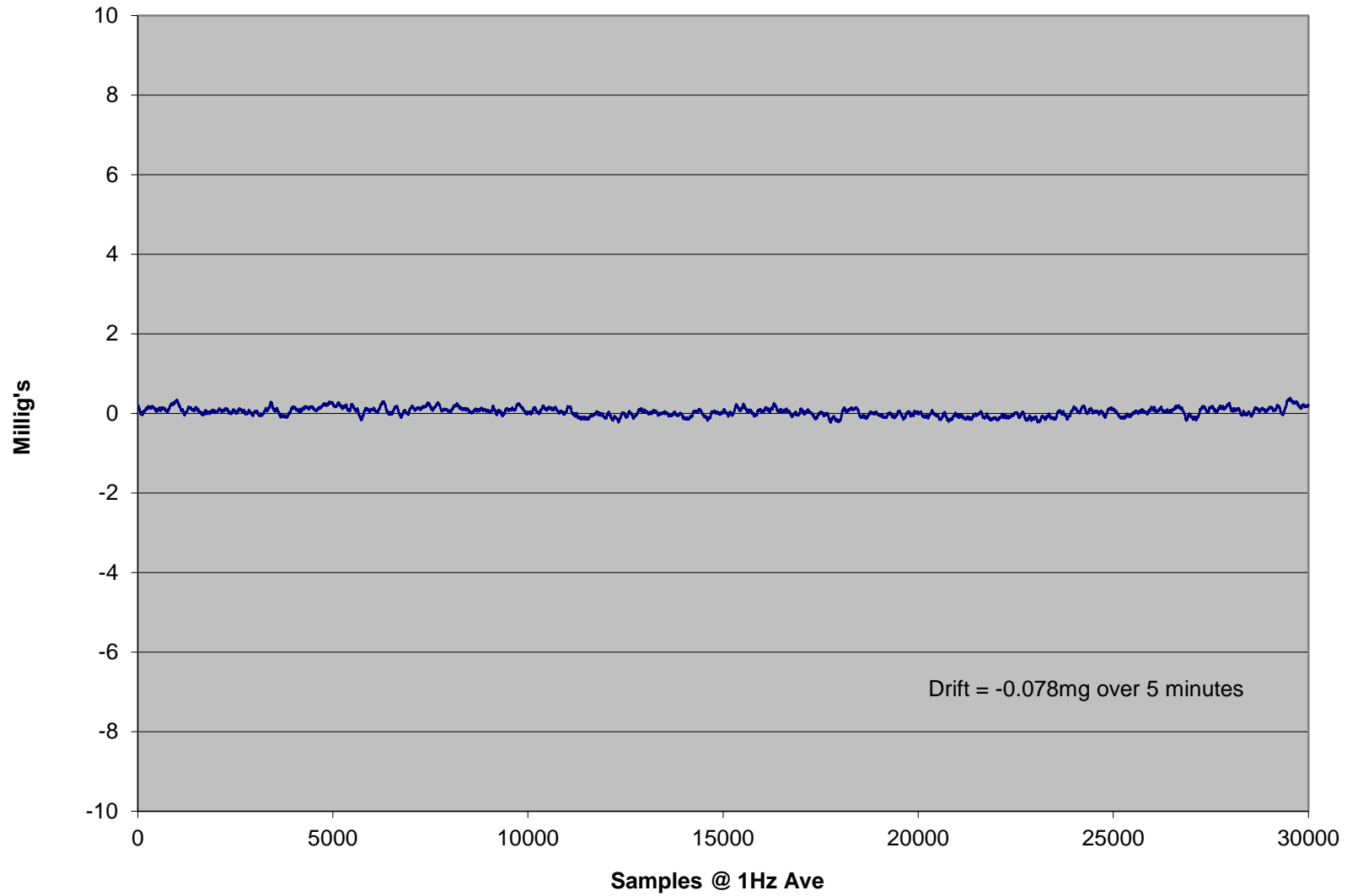
Y Gyro In-Run Bias



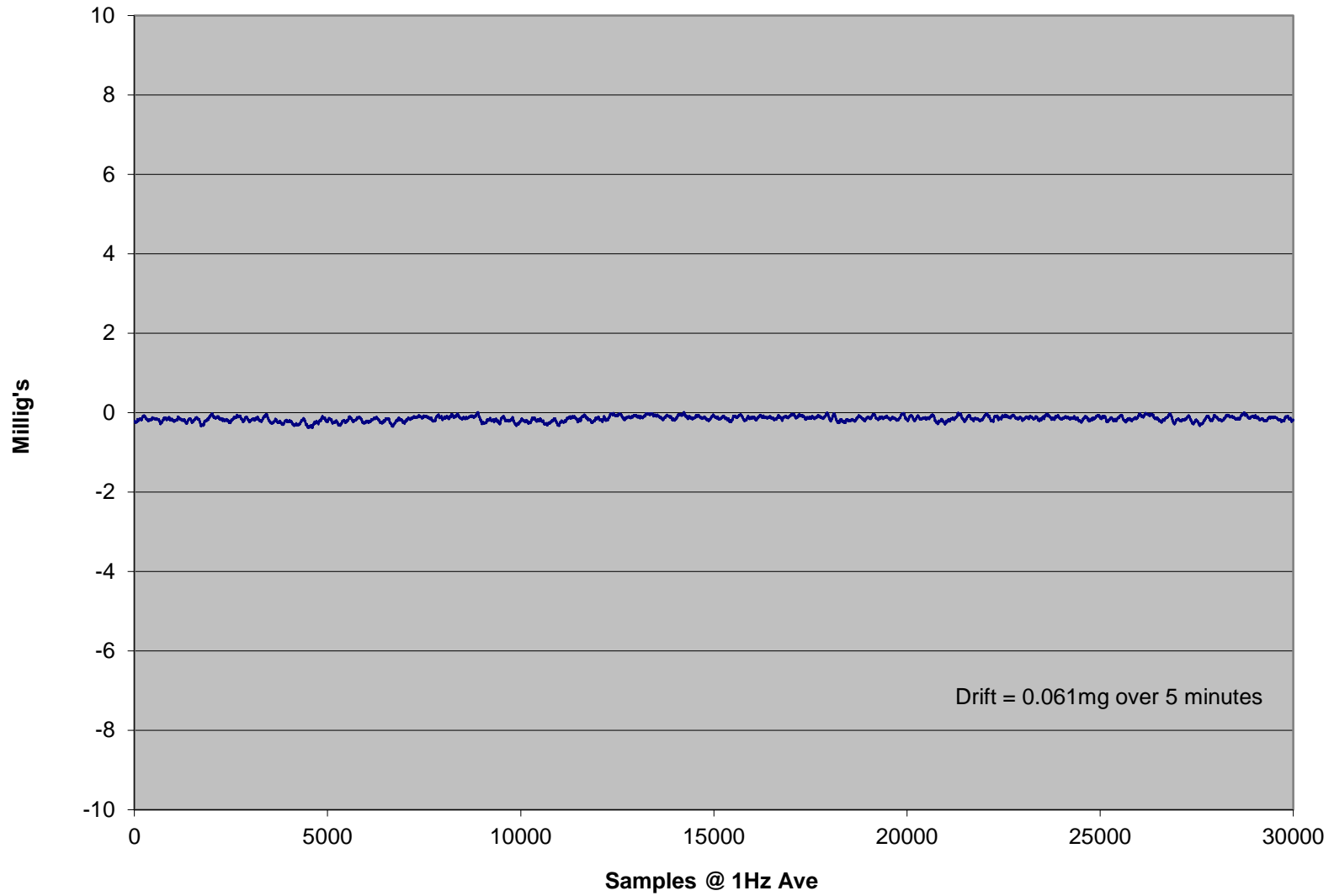
Z Gyro In-Run Bias



X Accel In-Run



Y Accel In-Run



Z Accel In-Run

