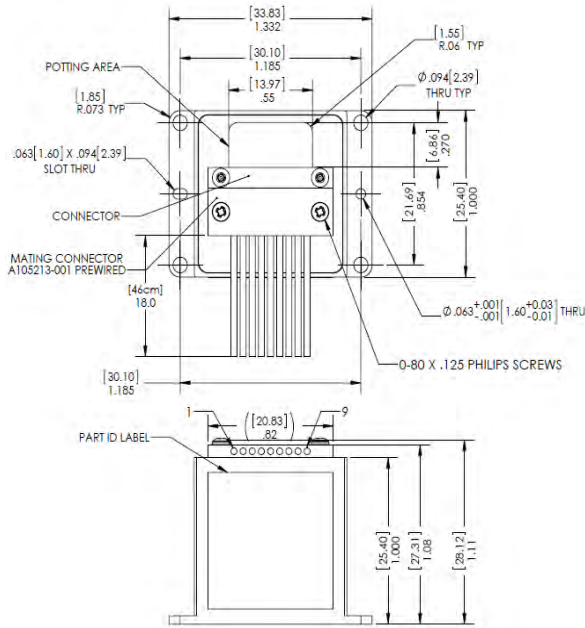
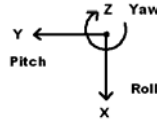


LandMark™ 01 IMU



Axes (Top View)
Right Hand Rule



LandMark™ 01 IMU
 LMRK01IMU-490-10-100

Specification

PARAMETER	RATE AXES	ACCEL AXES
Range	±490°/sec	±10 g's
Bias (In Run Stability)	5°/hour 1σ	45μg 1σ
Angle Random Walk	0.003° /sec/√Hz 1σ	0.09mg /√Hz 1σ
Bias (Over Temp.)	< 0.05°/sec 1σ	< 1mg 1σ
Scale Factor Error %	≤0.05% (over temperature) 1σ	
Scale Factor Non-Linearity % of Full Scale	0.1 %	
Sensor Resolution	0.002°/sec	0.05mg
Alignment	1mrad 1σ	
G-Sensitivity	< 0.01°/sec/g 1σ	
Self Test On	NA	Δ 0.3 ±0.15g
Temp Range	Logic 1 = 3.3V at Pin 8	
Operating:	-40°C to +85°C	
Non-Operating:	-55°C to +85°C	
RS422/RS485 Data Rate	1000Hz (user selectable)	
Temp Sensors	Internal Temperature Sensors	
Start-up Time	< 0.3 sec	
Input Power	+2.7V to 3.6V Max Single Sided	
Power Consumption	240 mW at 3.3V Typical 260 mW at 3.3V Maximum	
Size	U.S.: Metric:	1.0 x 1.0 x 1.0 = 1.0 in ³ 2.54 x 2.54 x 2.54 = 16.4 cm ³
Weight	<29 grams	
Mounting	4ea No.2-56 Screws	
Shock	500g's ½ sine 0.5 msec	
Vibration	6gRMS (20Hz to 2KHz ~ 10g accelerometers)	
MTBF	124,334 hrs (per MIL-STD-217F, Notice 2 and ANSI/VITA 51.1-2008 with environment: ARW at 55°C Ambient)	

Pin No.	Assignment
1	RS-422/485 A (+)
2	RS-422/485 B (-)
3	Power Ground
4	Analog/Digital Input (0V to 5V)
5	+2.7V to 3.6V Max Input Power
6	External Sync Input (1kHz or 1pps)
7	NC
8	Signal Ground
9	Self Test In (3.3V = 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

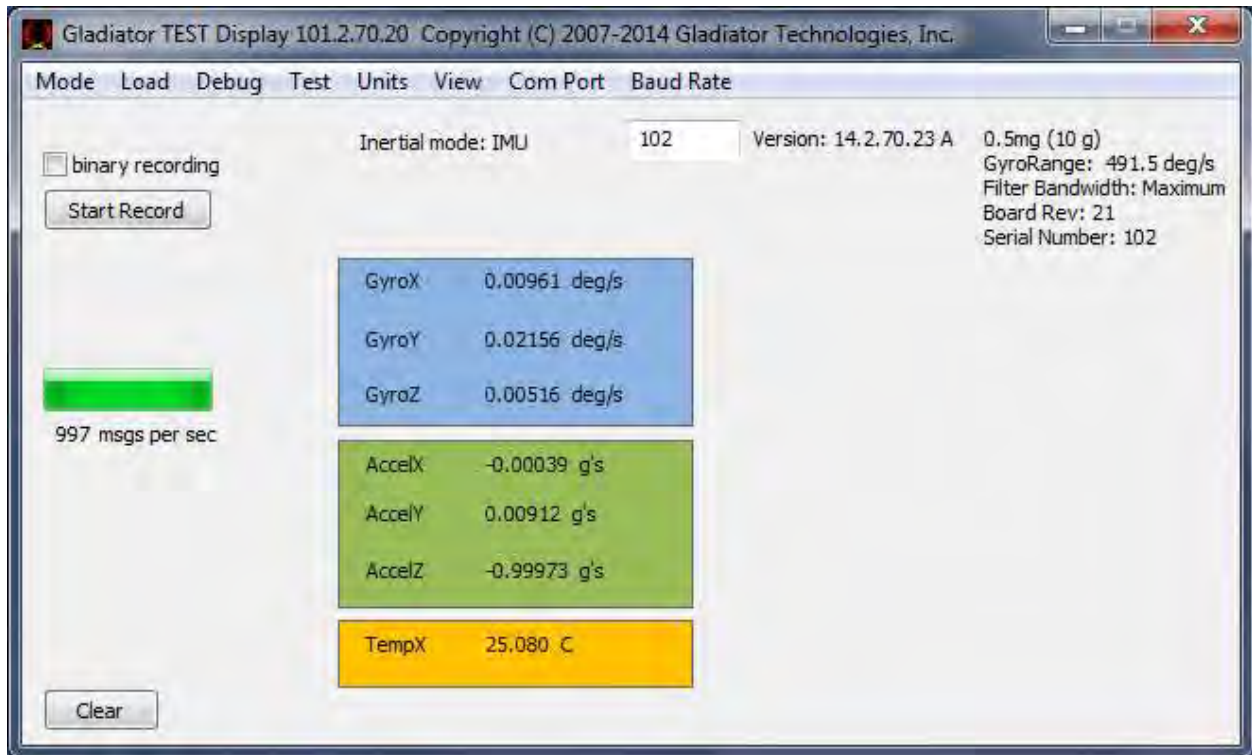
Specification subject to change without notice



Gladiator Technologies

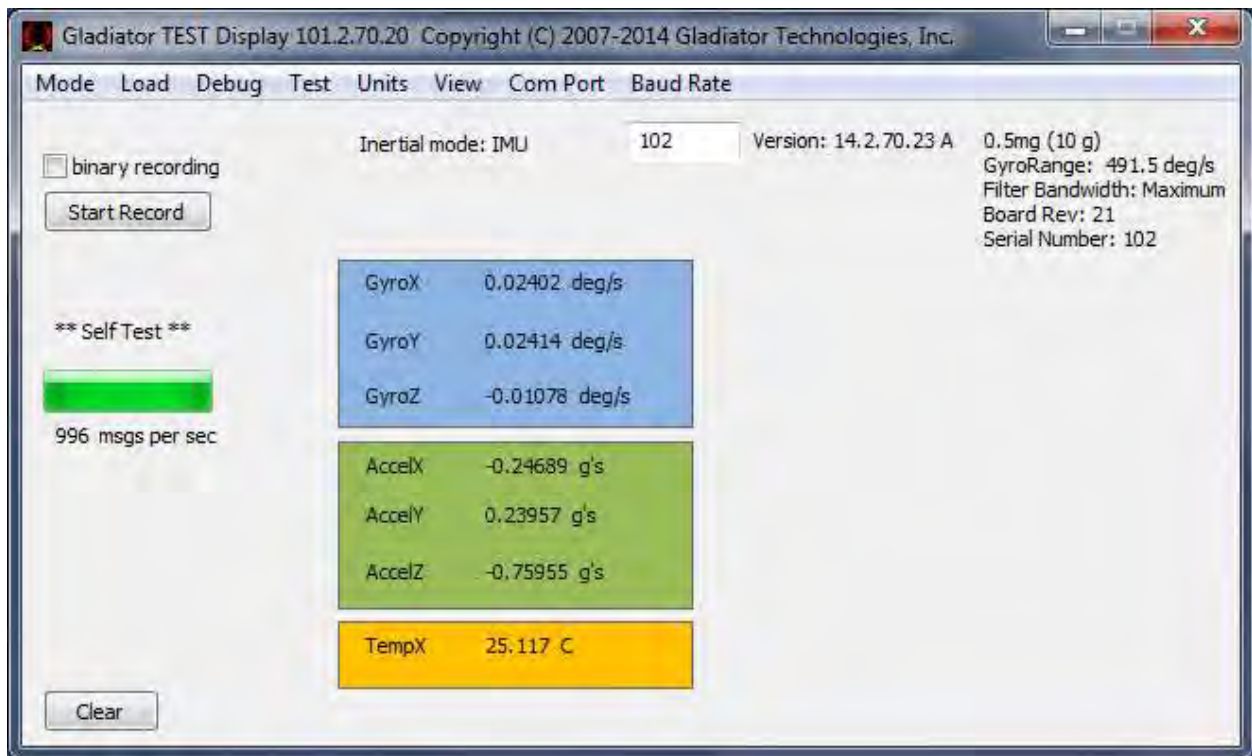
High Performance Inertial MEMS

Rev. 14Dec16
 SN: 100



Initial Bench Readout (above)

Self Test (below)





Gladiator Technologies



High Performance Inertial MEMS

SN102 ATP

12/23/2014

LMRK01IMU-490-10-100

Rate Spin Test

Test	gyroX	gyroY	gyroZ	accelX	accelY	accelZ	temp X
PX	143.979	0.00336	-0.11797	-0.0515	-10.511	-15.7865	2620.765
NX	-144.0065	-0.21883	0.19001	-0.1085	-10.4605	-15.614	2619.176
Diff/2	143.9927	0.111095	-0.15399	0.0285	-0.02525	-0.08625	0.7945
Ave	-0.01372	-0.107735	0.03602	-0.08	-10.48575	-15.70025	2619.971
PY	-0.2664	144.0217	0.0923	0.584	-0.6555	-15.705	2618.413
NY	0.03644	-143.9654	-0.02382	0.2625	-0.364	-15.611	2615.757
Diff/2	-0.15142	143.9936	0.05806	0.16075	-0.14575	-0.047	1.328
Ave	-0.11498	0.028175	0.03424	0.42325	-0.50975	-15.658	2617.085
PZ	0.11708	-0.05573	143.9873	1.081	-10.4845	-0.422	2605.188
NZ	-0.33605	-0.14756	-144.0036	1.0545	-10.373	-0.2085	2606.372
Diff/2	0.226565	0.045915	143.9955	0.01325	-0.05575	-0.10675	-0.592
Ave	-0.109485	-0.101645	-0.00814	1.06775	-10.42875	-0.31525	2605.78
RSF Norm	0.99995	0.999955	0.999968				Temp °C 26.14

Gyro Mis-Align deg/sec	Input Rate			
x		-0.002	0.002	x
y	0.001		0.000	y
z	-0.002	0.001		z

Gyro Mis-align mrad	Input Rate			
x		-0.01	0.02	x
y	0.01		0.00	y
z	-0.01	0.00		z

Accepted by:





LMRK01IMU-490-10-100
Accelerometer Tumble Test

Test	gyroX	gyroY	gyroZ	accelX	accelY	accelZ	temp X
PX	-0.0114	0.00284	0.00033	1000.561	-0.5825	0.086	2621.37
NX	-0.01342	0.00494	0.0001	-999.4325	-0.8435	0.1405	2620.844
Diff/2	0.00101	-0.00105	0.000115	999.9965	0.1305	-0.02725	0.263
Ave	-0.01241	0.00389	0.000215	0.564	-0.713	0.11325	2621.107
PY	-0.01509	0.00175	-0.00096	-0.1125	1000.849	-0.1195	2624.385
NY	-0.01402	0.0034	-0.00043	-0.256	-999.021	-0.4245	2623.408
Diff/2	-0.000535	-0.000825	-0.000265	0.07175	999.9348	0.1525	0.4885
Ave	-0.014555	0.002575	-0.000695	-0.18425	0.91375	-0.272	2623.897
PZ	-0.01335	0.00363	-0.00162	-0.139	0.2555	999.9075	2624.354
NZ	-0.01398	-0.00138	-0.00226	0.0815	-0.0905	-1000.105	2622.913
Diff/2	0.000315	0.002505	0.00032	-0.11025	0.173	1000.006	0.7205
Ave	-0.013665	0.001125	-0.00194	-0.02875	0.0825	-0.09875	2623.634

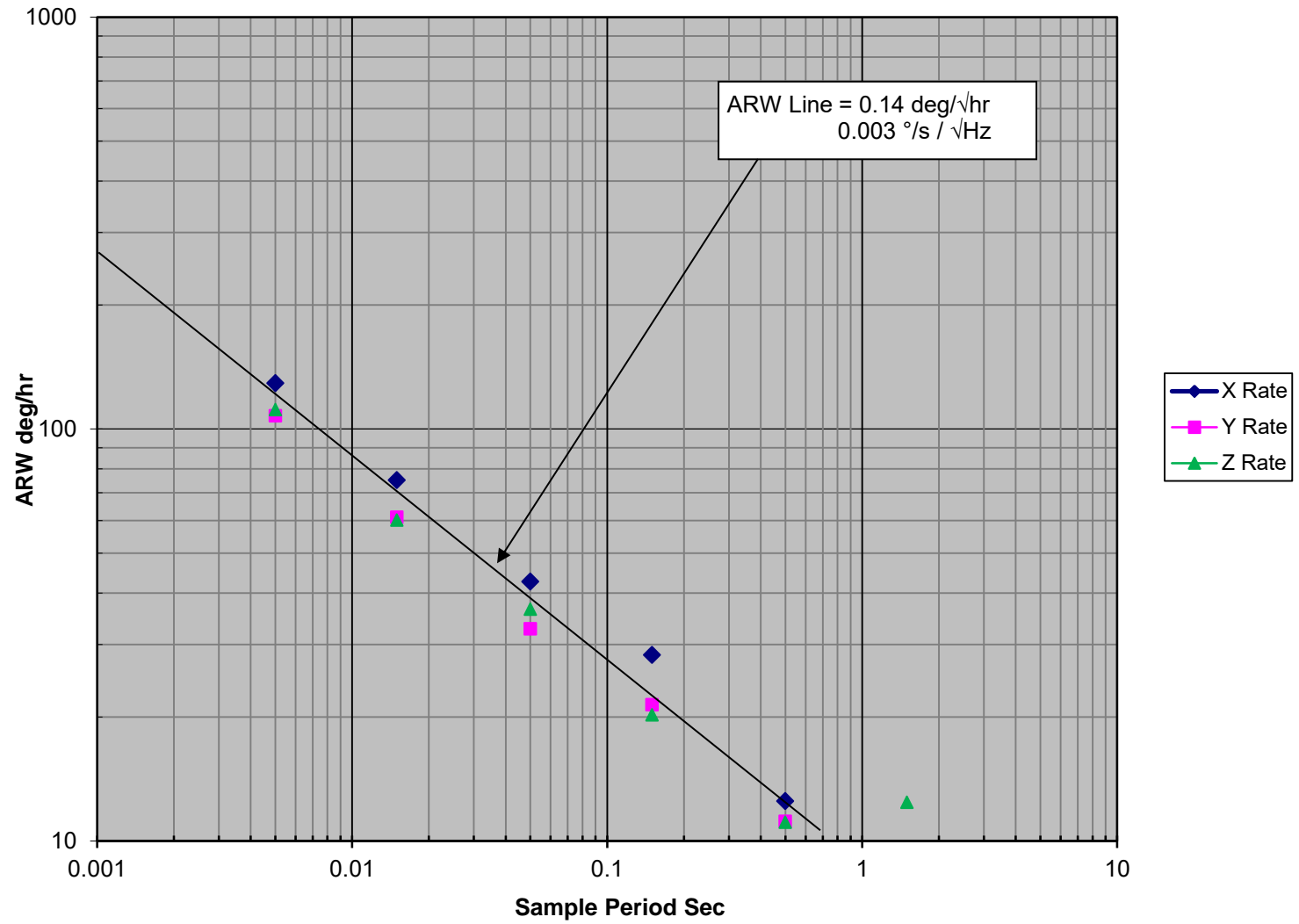
Bias %s,mg	-0.014	0.003	-0.001	-0.11	-0.32	-0.08	26.23
ASF Norm				1.0000	0.9999	1.0000	Temp °C

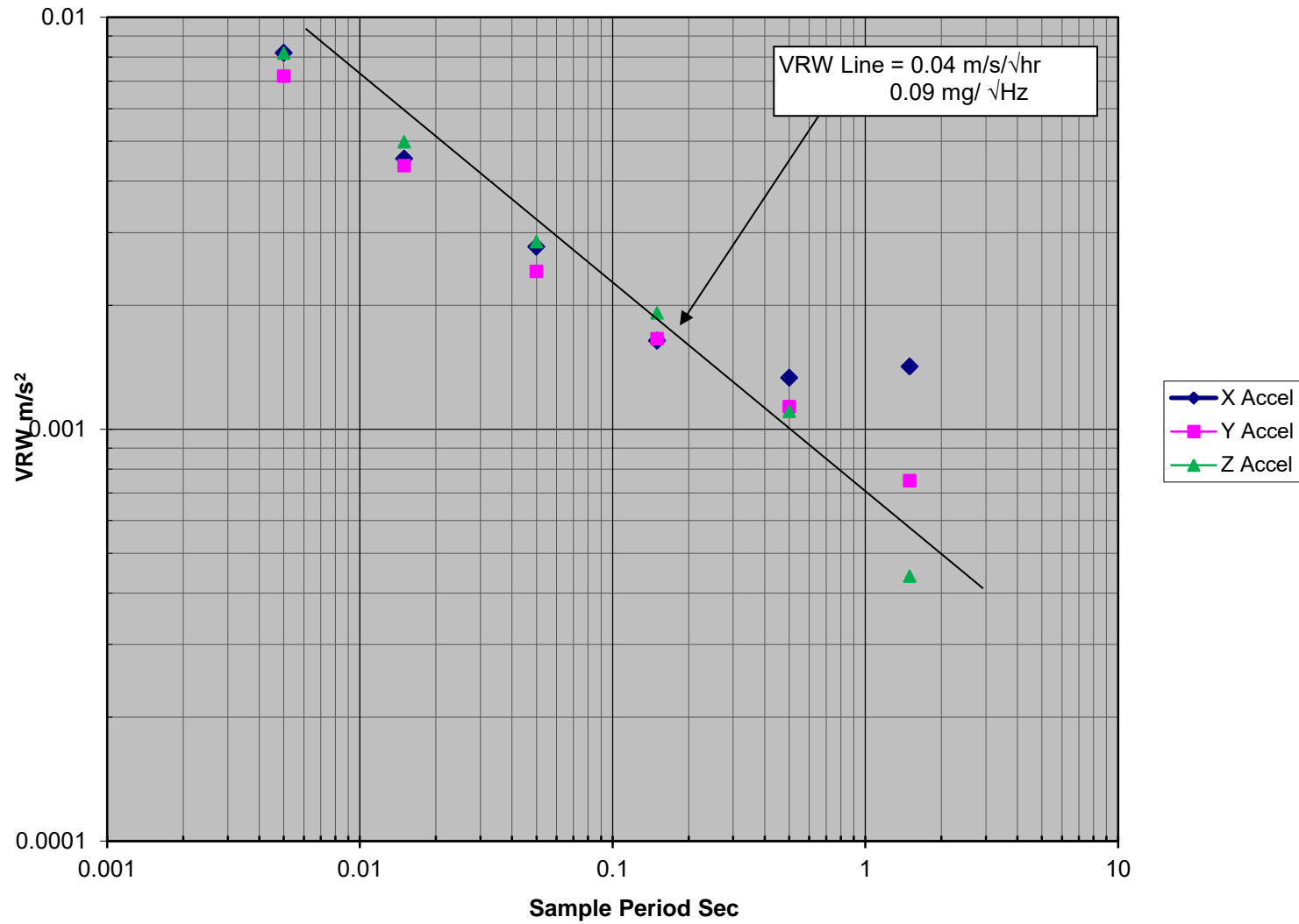
Gyro %s /g	Input g =			Accel In g's
x	0.0010	-0.0005	0.0003	x
y	-0.0011	-0.0008	0.0025	y
z	0.0001	-0.0003	0.0003	z

Accel		
Mis-Align	mrads	Accel In
0.07	-0.11	x
0.13	0.17	y
-0.03	0.15	z

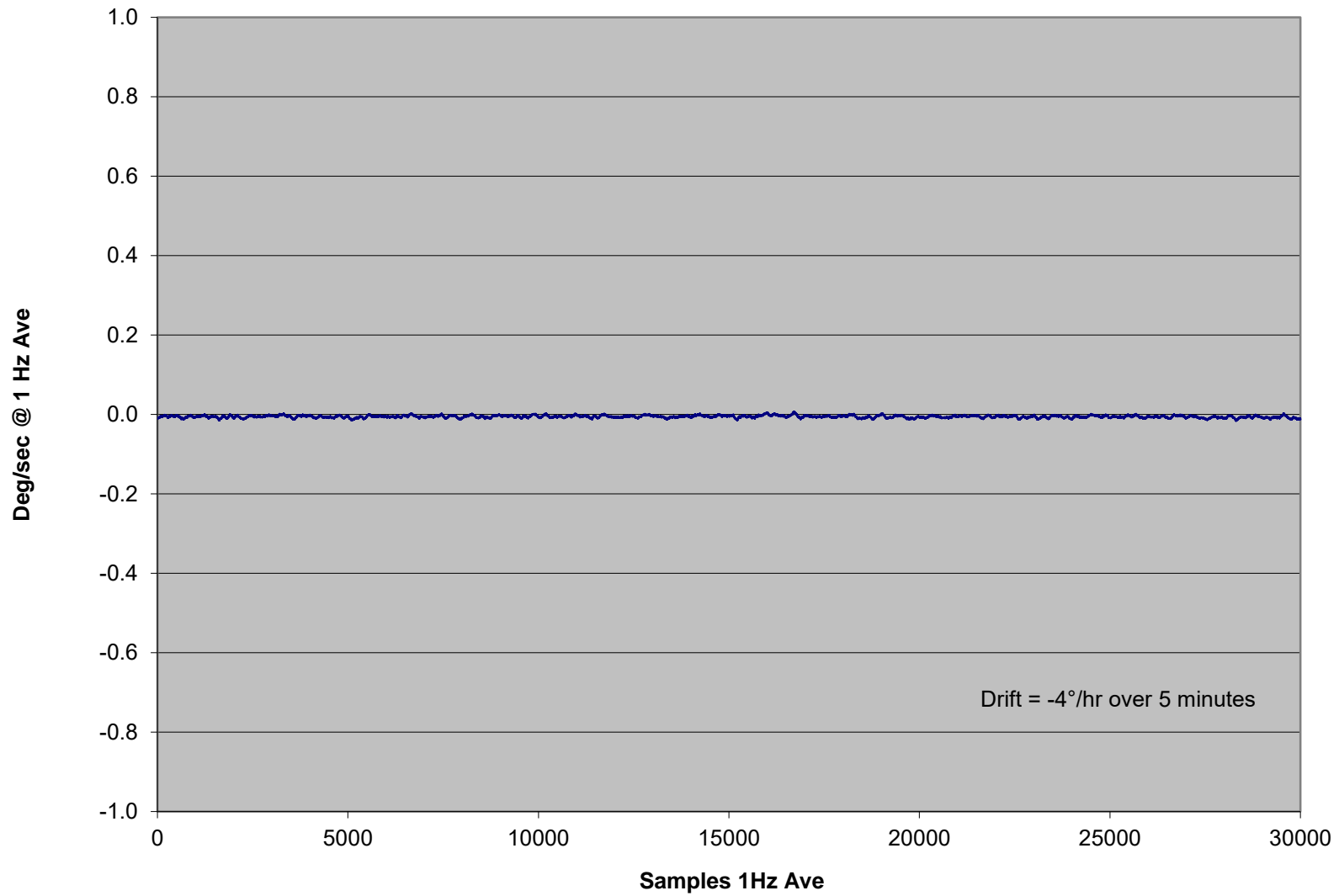
Accepted by:



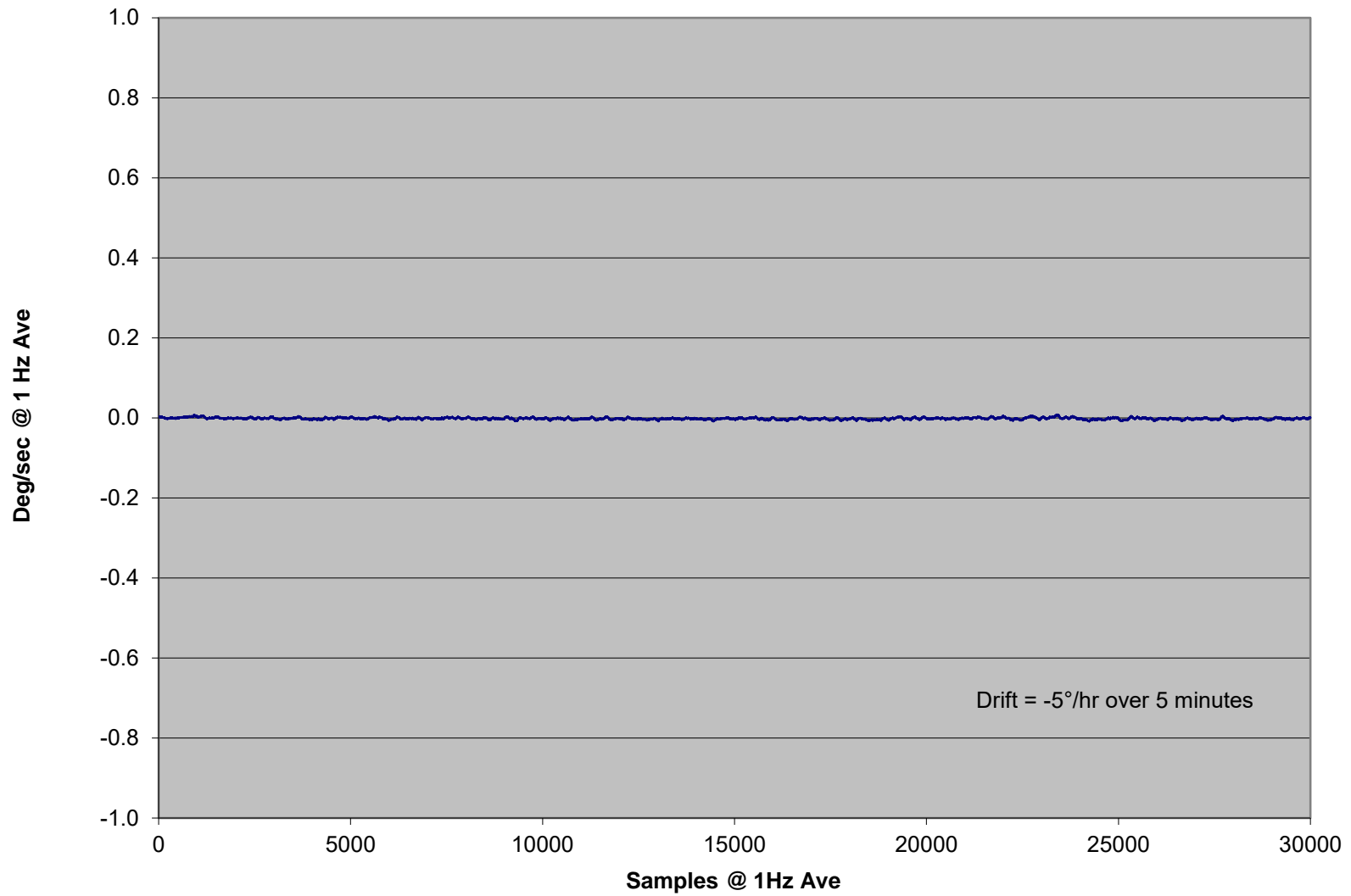




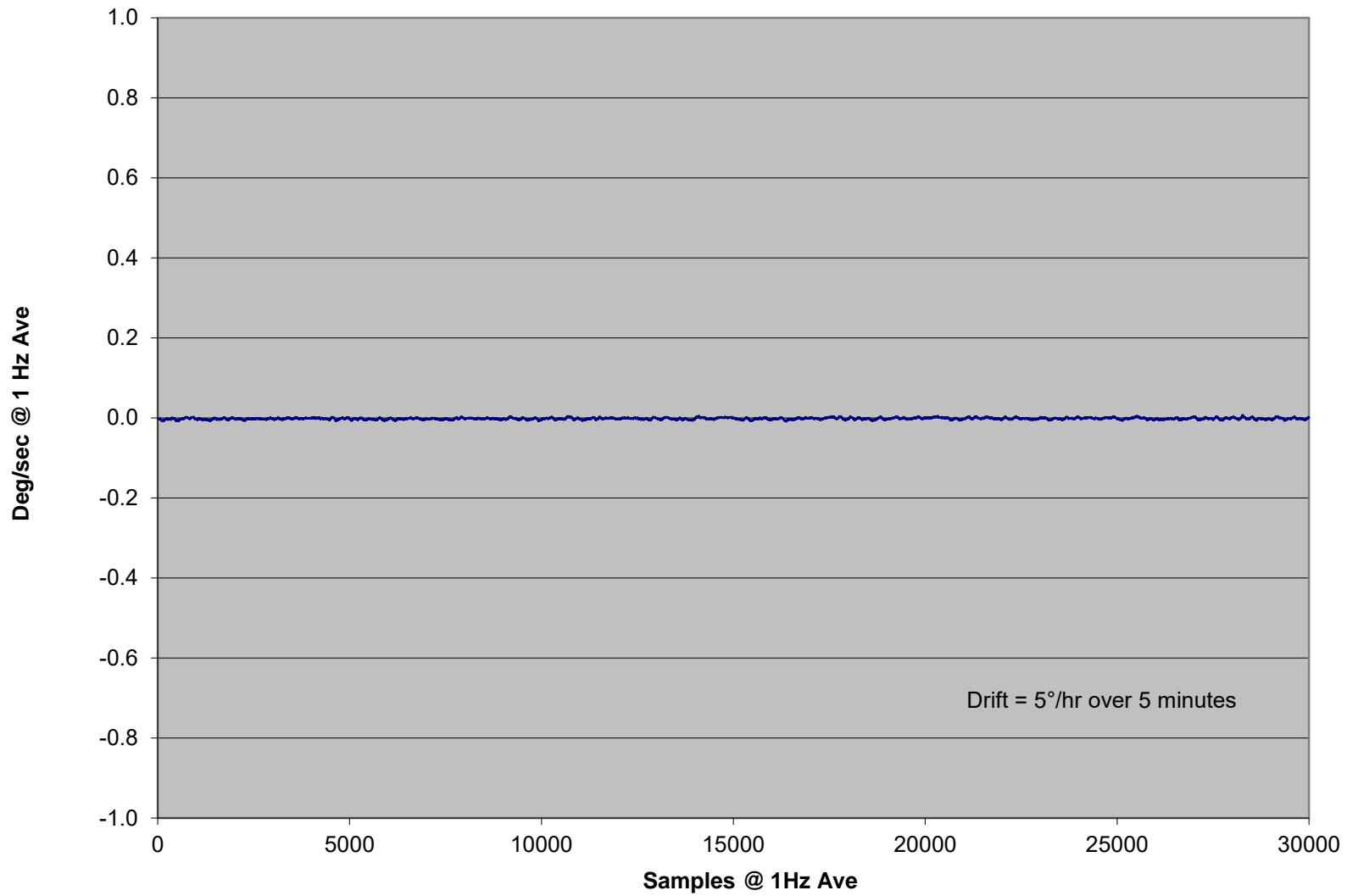
X Gyro In-Run Bias



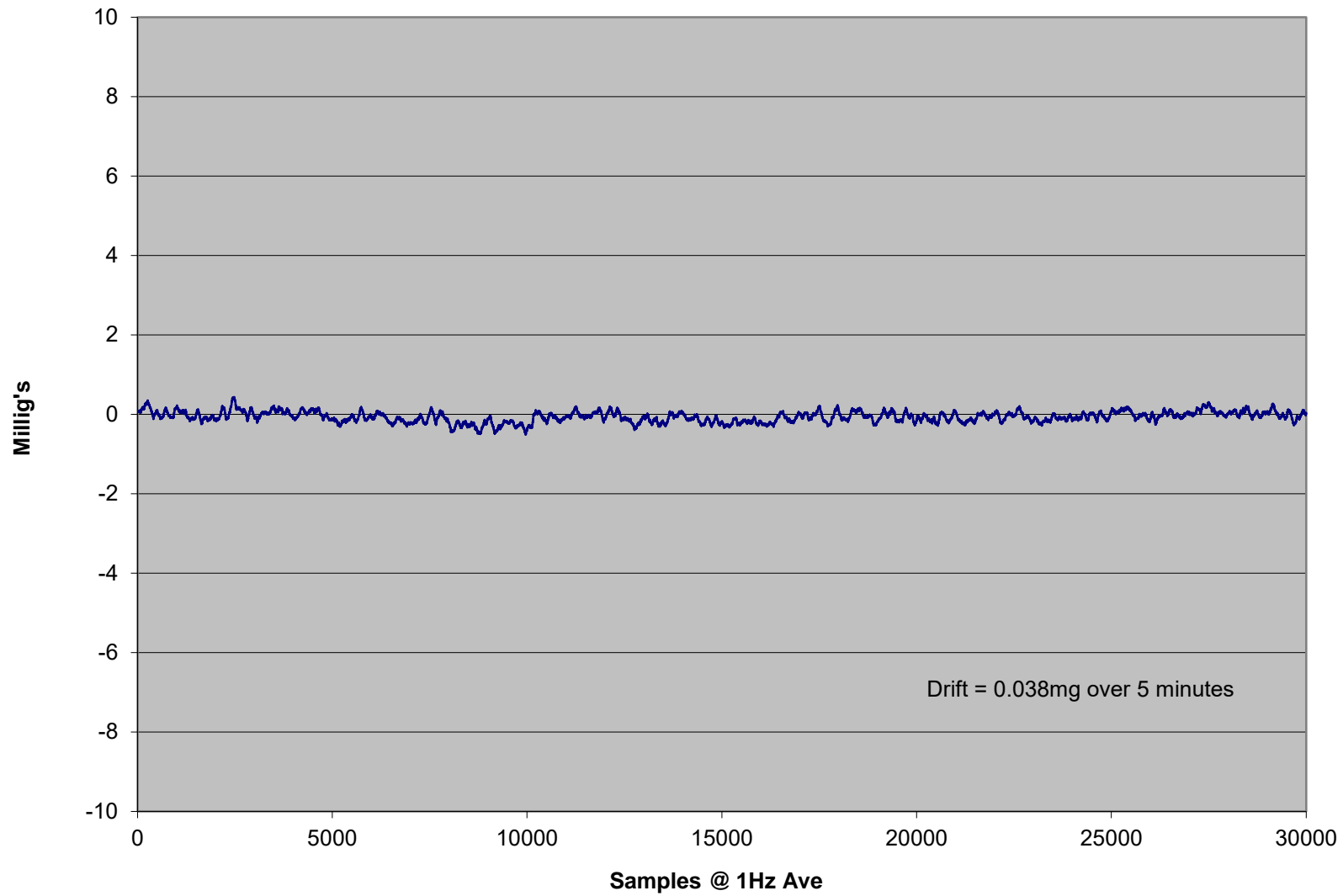
Y Gyro In-Run Bias



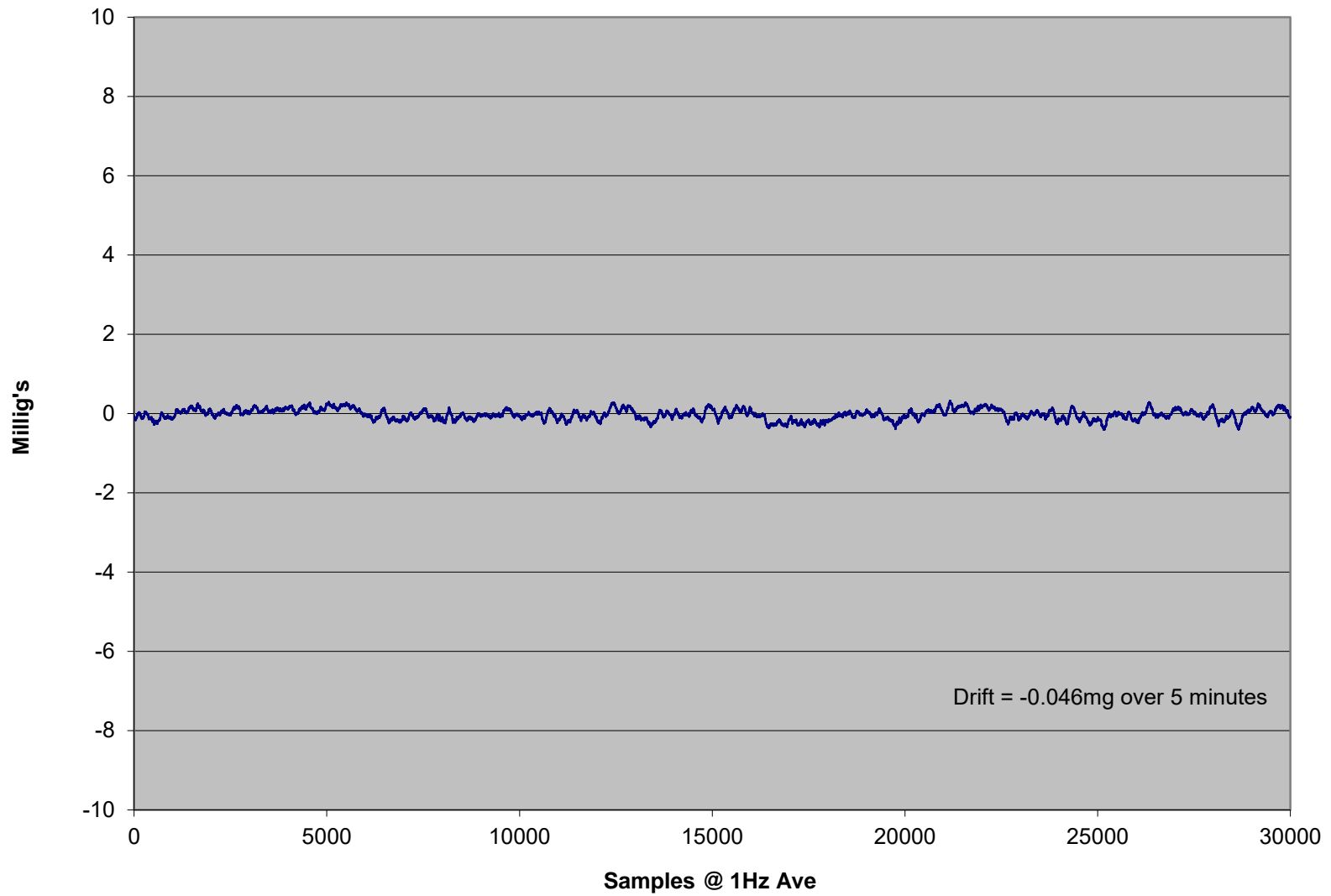
Z Gyro In-Run Bias



X Accel In-Run



Y Accel In-Run



Z Accel In-Run

