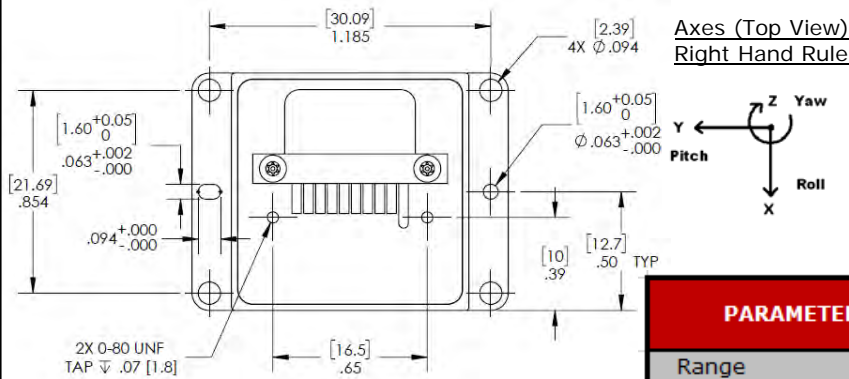
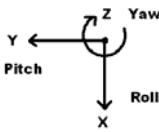


LandMark™ 005 IMU

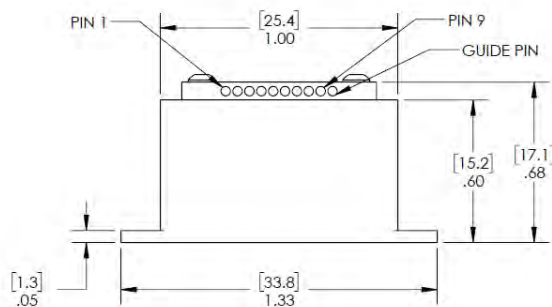


Axes (Top View)
Right Hand Rule



LMRK005 IMU
LMRK005IMU-490-15-100

Preliminary Spec



PARAMETER	RATE AXES	ACCEL AXES
Range	±490°/sec	±15 g's
ARW / VRW	0.0028° /sec/√Hz 1σ	0.09mg/ /√Hz 1σ
	0.12° /√hour 1σ	0.037 m/s /√hour 1σ
Bias In-Run Stability	5°/hour 1σ	0.045mg 1σ
Bias Over Temp.	< 0.05°/sec 1σ	<1mg 1σ
Scale Factor Error %	≤0.05% 1σ	≤0.05% 1σ
Sensor Resolution	0.001°/sec	0.035mg
Alignment	0.5 mrad 1σ	
G-Sensitivity / g²	0.001 °/sec/g 1σ	1 mg/g² 1σ
Output Data Rate	2.5k Hz	
Bandwidth	250 hz	
Self Test On	Δ 4°/s ±1.5°/s	Δ 0.3 ±0.15g
	Logic 1 = 3.3V at Pin 8	
Temp Range	Operating:	-40°C to +85°C
	Non-Operating:	-55°C to +85°C
Start-up Time	< 0.3 sec	
Input Power	+3.8V to +5.5V Max. Input (single sided)	
Power Consumption	200 mW at 5V Typical 270 mW at 5V Maximum	
Size U.S.:	1.0 x 1.0 x 0.6 = 0.6 in³	
	Metric:	2.54 x 2.54 x 1.52 = 9.8 cm³
Weight	≤18 grams	
Mounting	4ea No.2-56 Screws	
Shock	500g's ½ sine 1 msec powered	
Vibration	6gRMS (20Hz to 2KHz)	
MTBF	93,636 hrs (per MIL-STD-217F, Notice 2 and ANSI/VITA 51.1-2008 with environment: ACI at 40°C Ambient)	

Pin No.	Assignment
1	RS-422/485 A (+) (Twisted Pair)
2	RS-422/485 B (-) (Twisted Pair)
3	Power Ground
4	N C
5	+3.8V to +5.5V Max Input Power
6	External Sync Input (2.5kHz, 3.3V logic)
7	Signal Ground
8	Self Test Input (3.3V logic)
9	Case

If pin 6 or 8 is not used connect to pin 7.

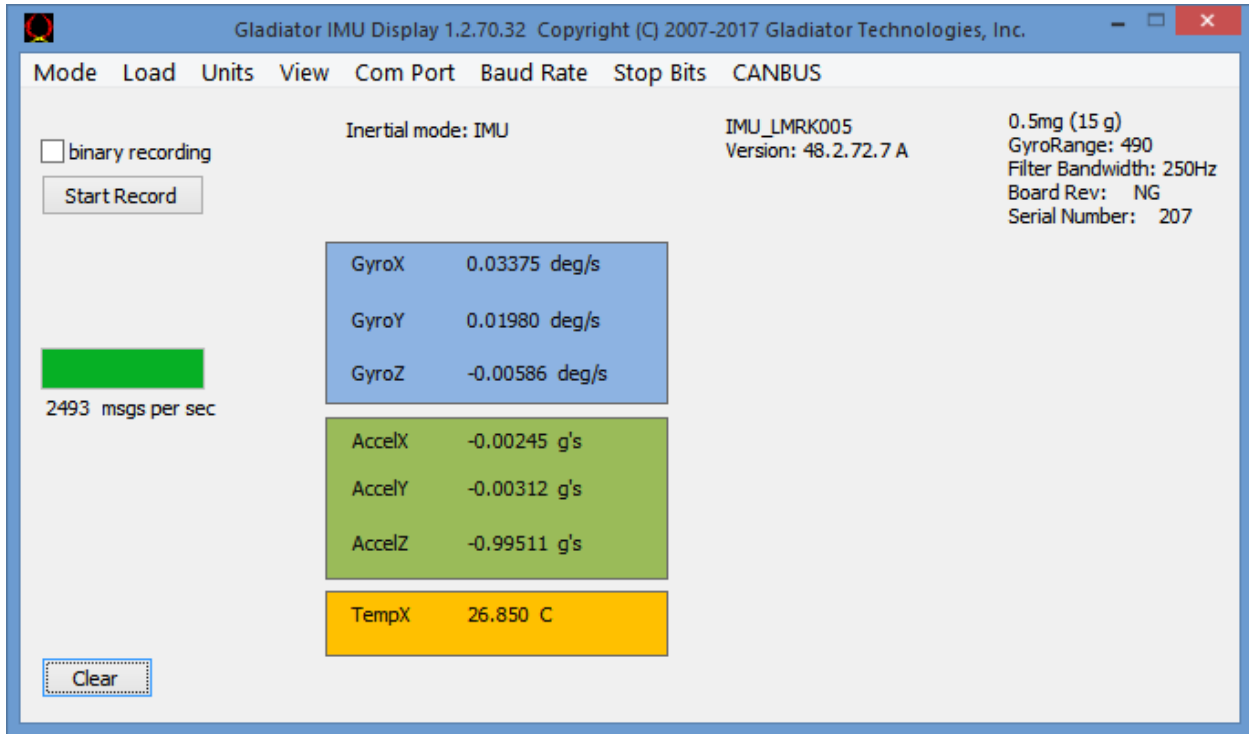
Outputs	Serial Sequence
1	Roll Gyro (X)
2	Pitch Gyro (Y)
3	Yaw Gyro (Z)
4	Roll Accel (X)
5	Pitch Accel (Y)
6	Yaw Accel (Z)
7	Temperature ± 0.5° C typical

Specification subject to change without notice



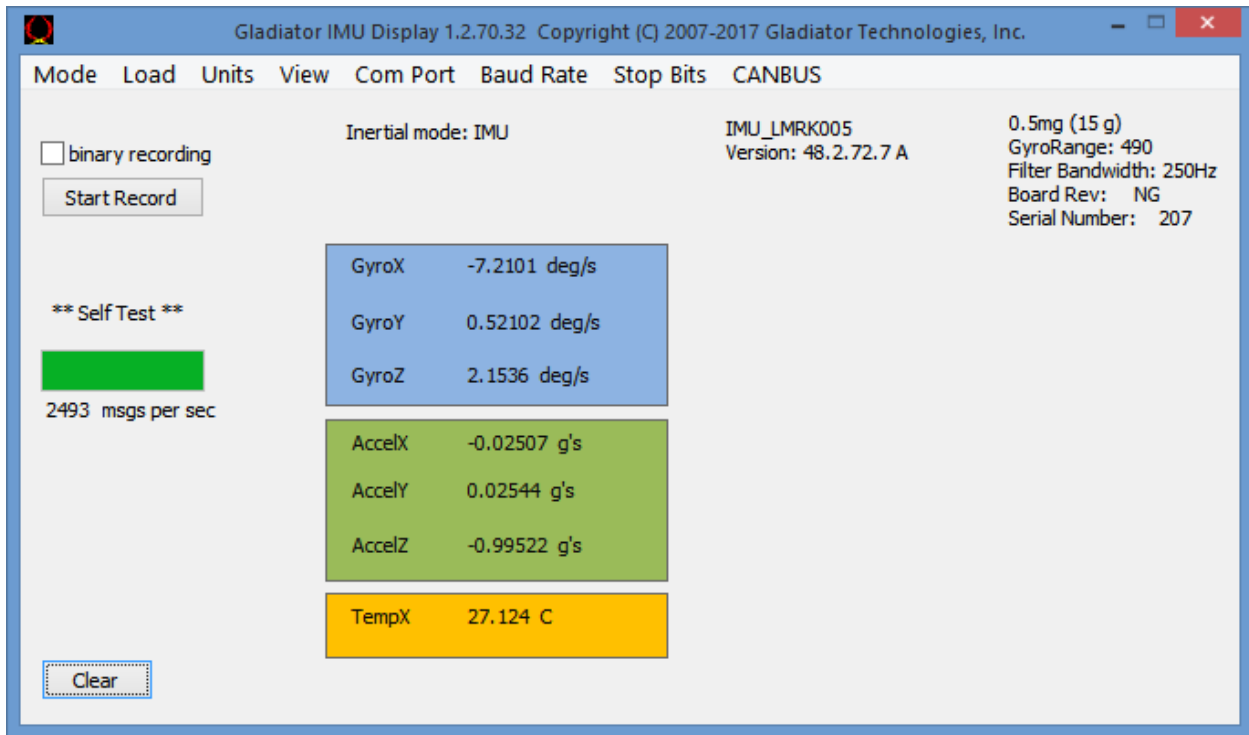
Gladiator Technologies
Division of LKD Aerospace
Low Noise Inertial MEMS

Rev. 17May24
SN: 100



Initial Bench Readout (above)

Self Test (below)





LMRK005IMU-490-15-100
Accelerometer Tumble Test

Test	gyroX	gyroY	gyroZ	accelX	accelY	accelZ	temp X
PX	-0.01707	-0.00205	0.00156	999.508	0.2755	-0.0675	2753.033
NX	-0.01777	-0.00057	0.00175	-1000.44	0.512	0.358	2754.184
Diff/2	0.00035	-0.00074	-9.5E-05	999.9748	-0.11825	-0.21275	-0.5755
Ave	-0.01742	-0.00131	0.001655	-0.46675	0.39375	0.14525	2753.609
PY	-0.00369	-0.00396	0.00367	0.07	999.897	0.838	2753.291
NY	-0.0043	-0.00479	0.00087	0.1365	-1000.01	-0.2615	2753.436
Diff/2	0.000305	0.000415	0.0014	-0.03325	999.9523	0.54975	-0.0725
Ave	-0.00399	-0.00437	0.00227	0.10325	-0.05525	0.28825	2753.364
PZ	-0.00532	-0.00463	0.00364	0.123	-0.9905	1000.593	2753.523
NZ	-0.00373	-0.00369	0.00478	0.0775	0.905	-999.464	2753.019
Diff/2	-0.00079	-0.00047	-0.00057	0.02275	-0.94775	1000.028	0.252
Ave	-0.00452	-0.00416	0.00421	0.10025	-0.04275	0.56425	2753.271
Bias %s,mg	-0.0086	-0.0033	0.0027	0.10	0.18	0.22	27.53
ASF Norm				1.0000	1.0000	1.0000	Temp °C

Gyro °/s /g	Input g =			Accel In g's
x	0.0004	0.0003	-0.0008	x
y	-0.0007	0.0004	-0.0005	y
z	-0.0001	0.0014	-0.0006	z

Accel Mis-Align	mrads	Accel In
-0.03	0.02	x
-0.12	-0.95	y
-0.21	0.55	z



Accepted by:



LMRK005IMU-490-15-100
 Rate Spin Test

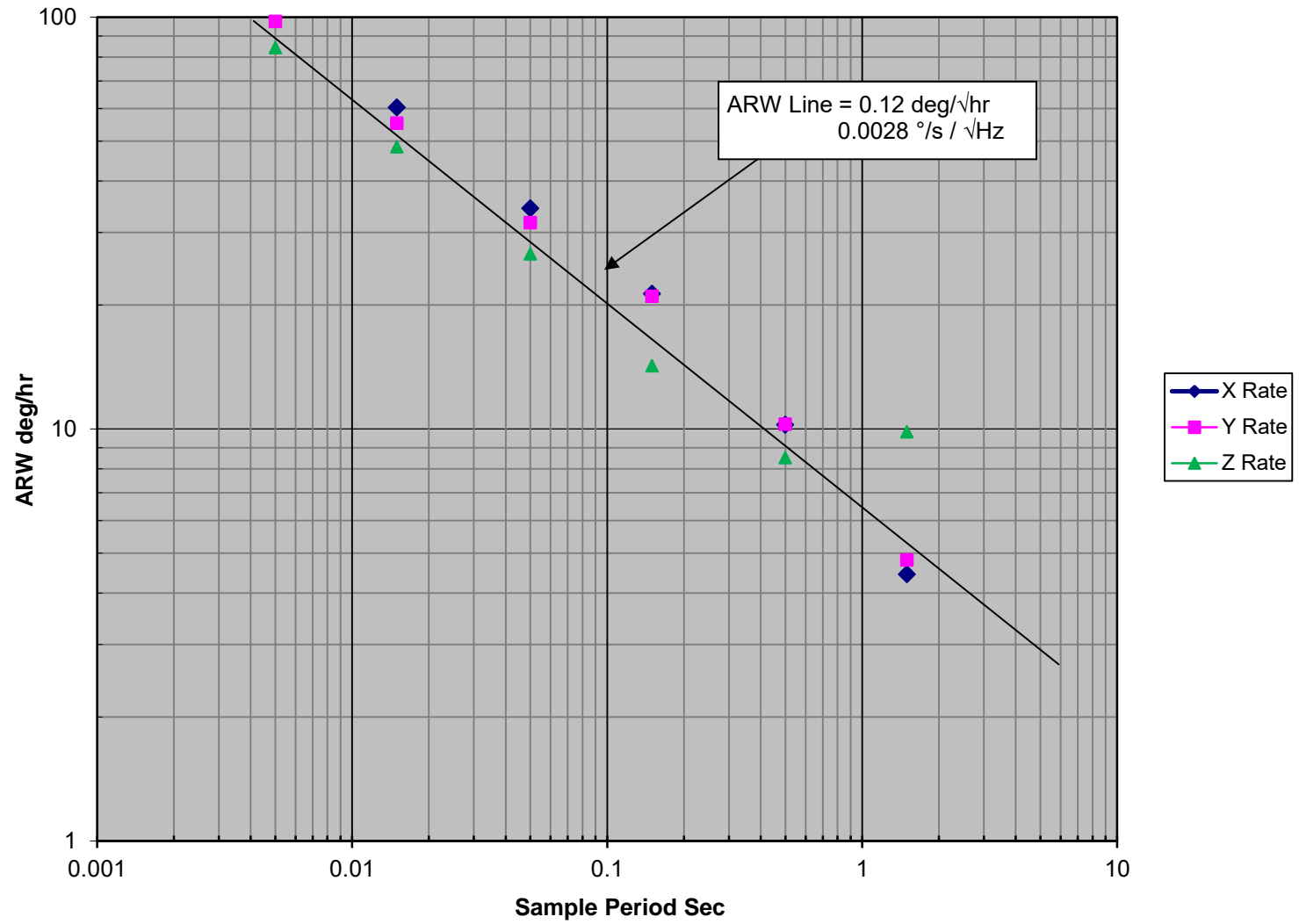
Test	gyroX	gyroY	gyroZ	accelX	accelY	accelZ	temp X
PX	143.9609	0.02081	-0.00386	0.114	-9.2145	-16.8125	2753.312
NX	-143.974	-0.0335	0.01068	0.1215	-13.027	-17.0435	2753.052
Diff/2	143.9673	0.027155	-0.00727	-0.00375	1.90625	0.1155	0.13
Ave	-0.00639	-0.00635	0.00341	0.11775	-11.1208	-16.928	2753.182
PY	0.01032	143.9754	-0.02879	-2.4015	0.465	-16.7765	2750.96
NY	-0.05094	-143.982	0.03298	1.3105	0.433	-17.025	2749.789
Diff/2	0.03063	143.9786	-0.03089	-1.856	0.016	0.12425	0.5855
Ave	-0.02031	-0.00324	0.002095	-0.5455	0.449	-16.9008	2750.375
PZ	-0.01163	-0.01744	143.9939	2.23	-11.096	0.978	2751.598
NZ	0.01038	0.00834	-143.99	-1.926	-11.389	0.902	2751.721
Diff/2	-0.01101	-0.01289	143.9921	2.078	0.1465	0.038	-0.0615
Ave	-0.00062	-0.00455	0.001805	0.152	-11.2425	0.94	2751.66
RSF Norm	0.999773	0.999852	0.999945				Temp °C 27.52

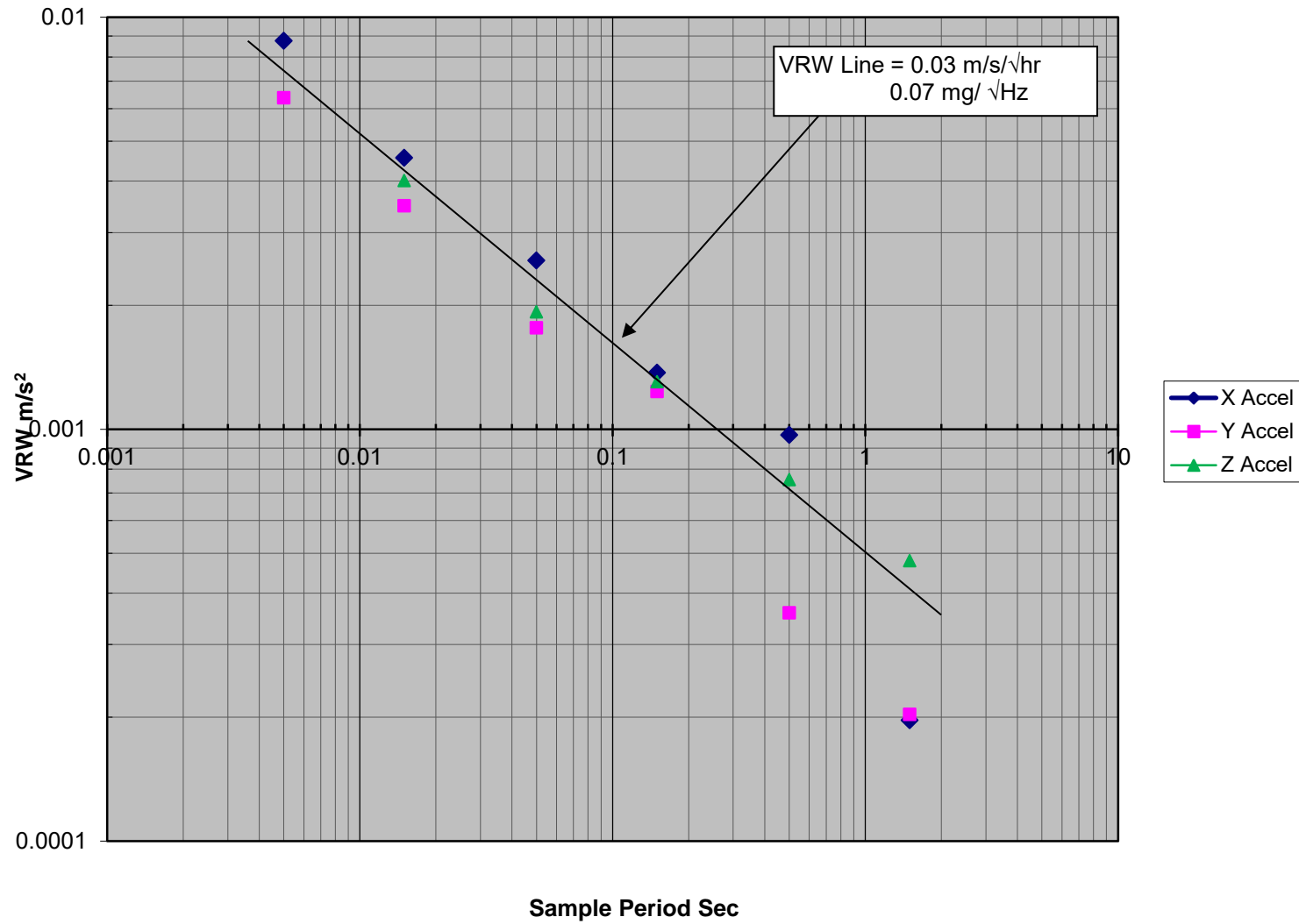
Gyro Mis-Align deg/sec			Input Rate
x		0.0306	-0.0110 x
y	0.0272		-0.0129 y
z	-0.0073	-0.0309	z

Gyro Mis-align mrad			Input Rate
x		0.213	-0.076 x
y	0.189		-0.090 y
z	-0.050	-0.214	z

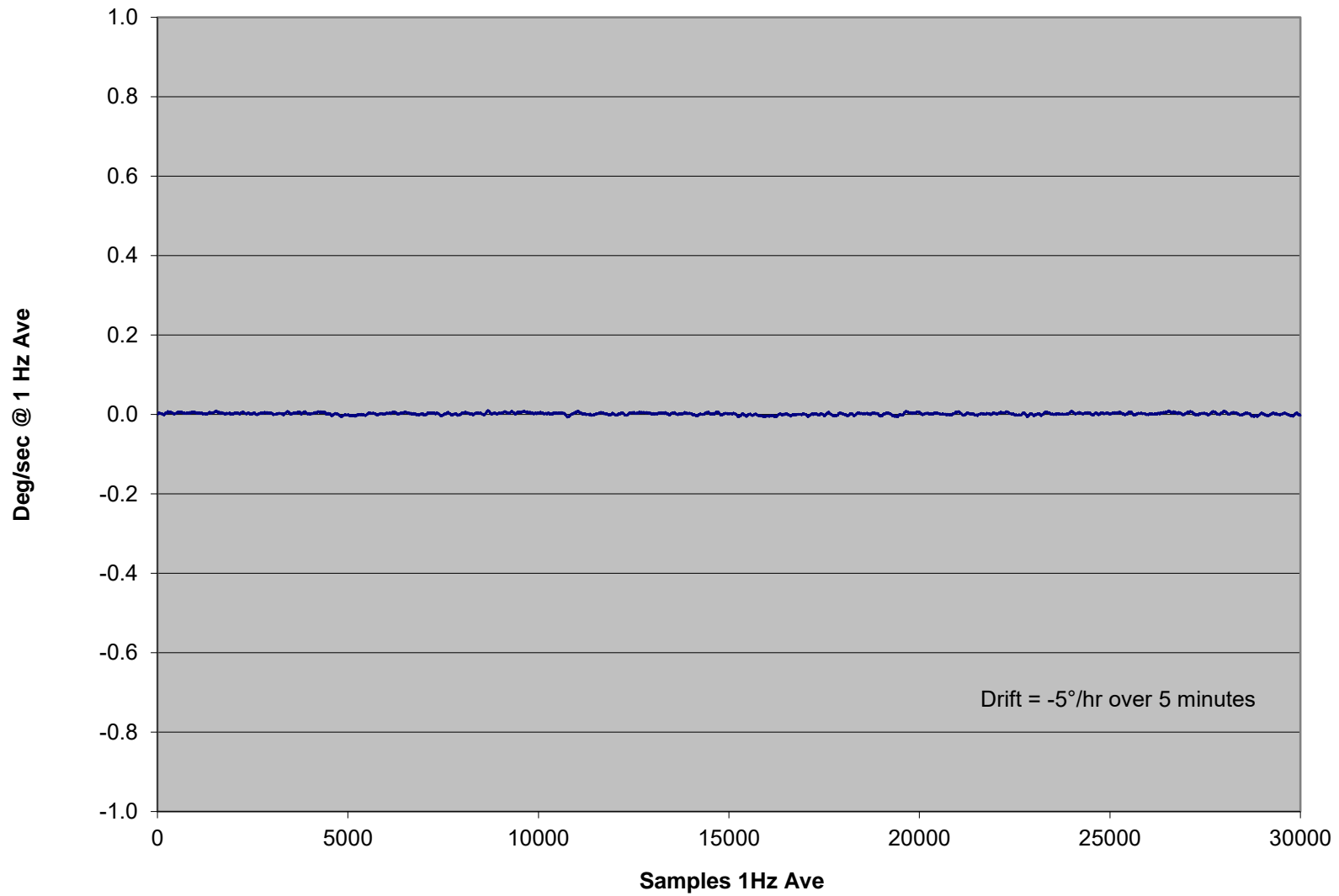


Accepted by:

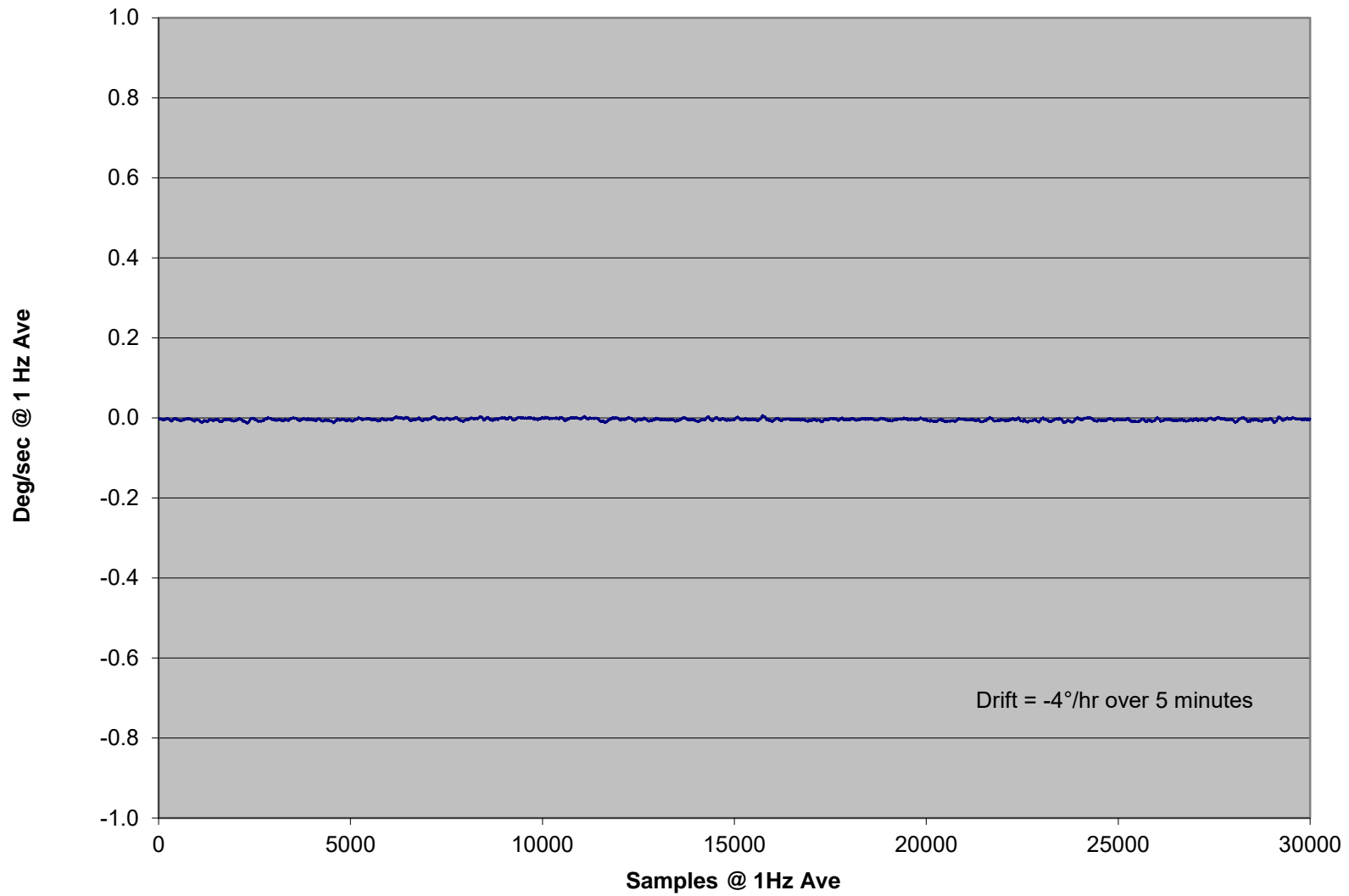




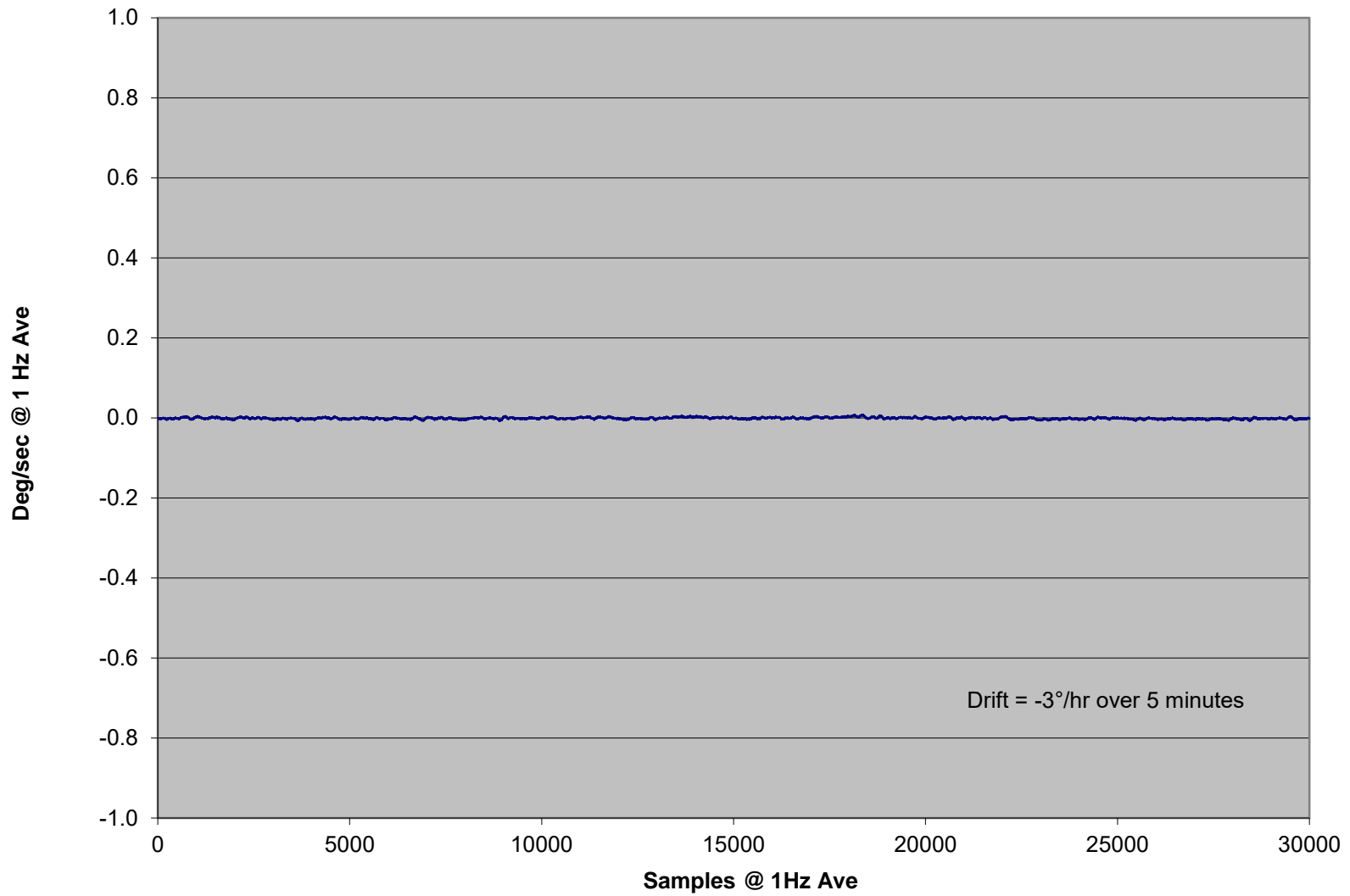
X Gyro In-Run Bias



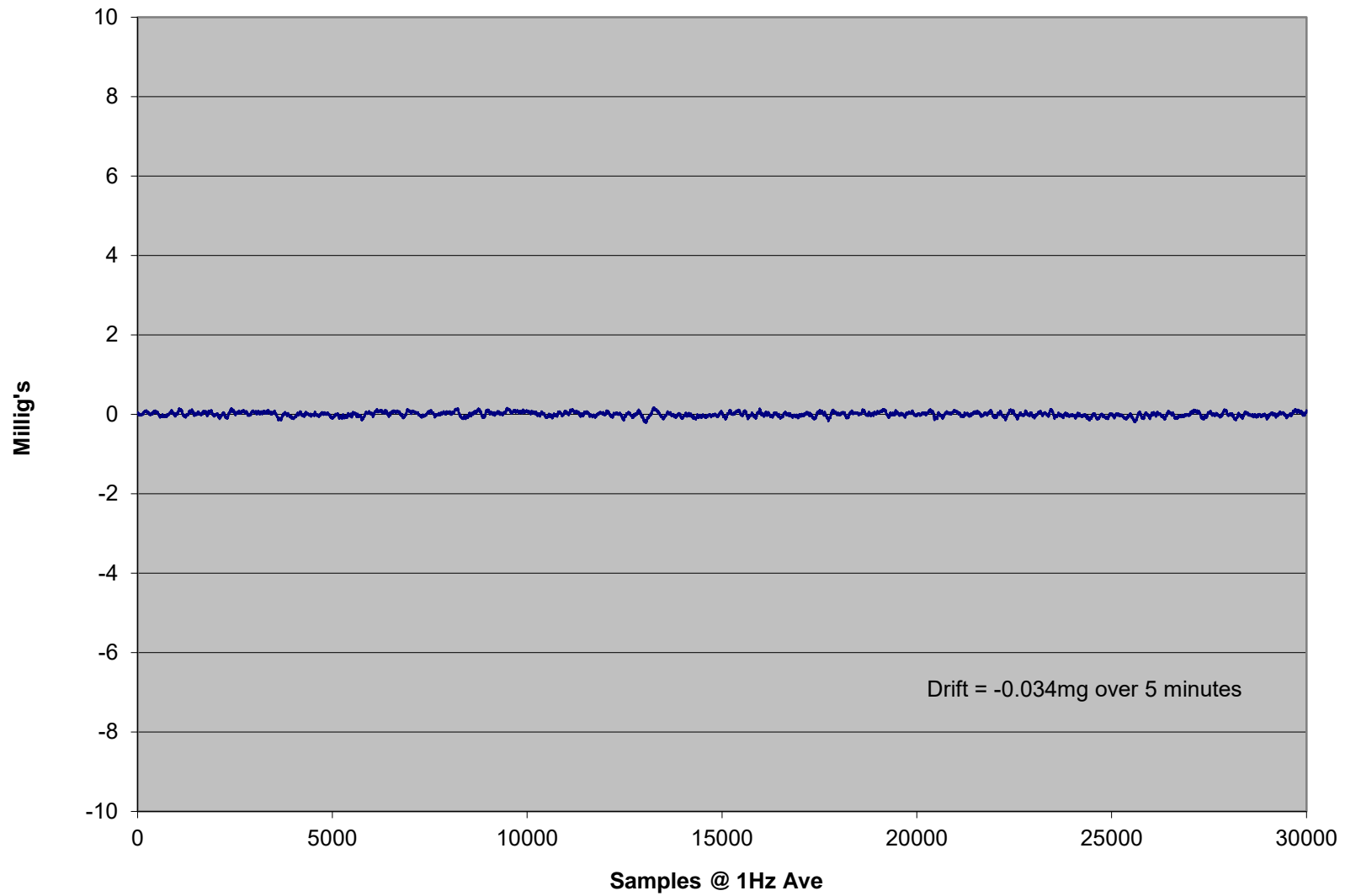
Y Gyro In-Run Bias



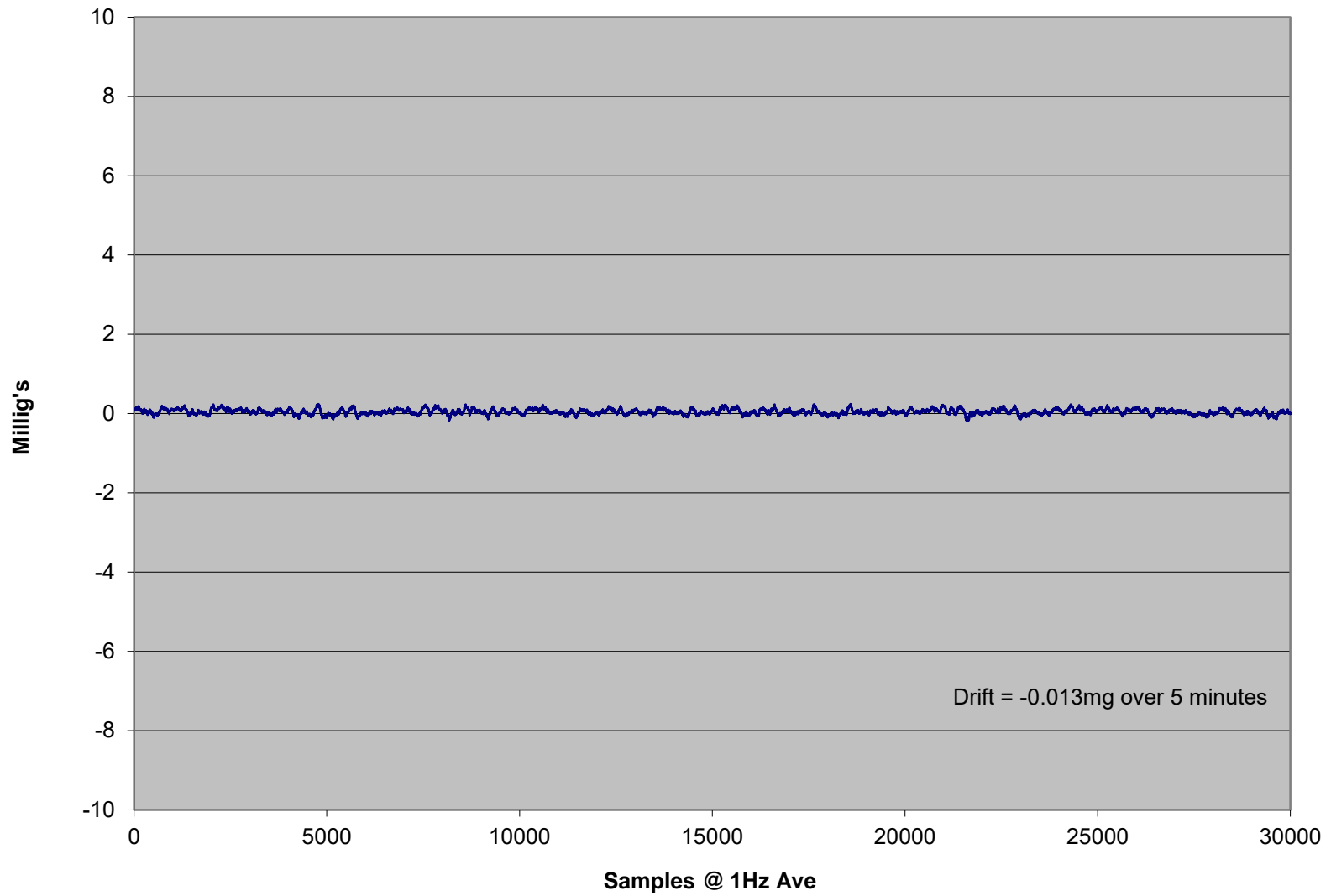
Z Gyro In-Run Bias



X Accel In-Run



Y Accel In-Run



Z Accel In-Run

