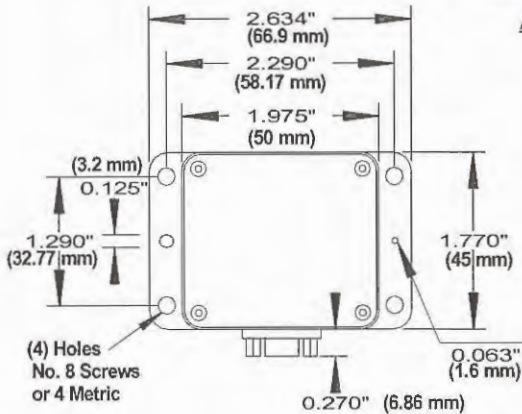
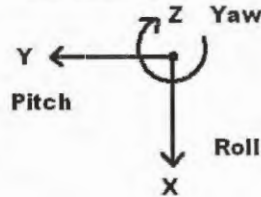


LandMark™ 40 IMU



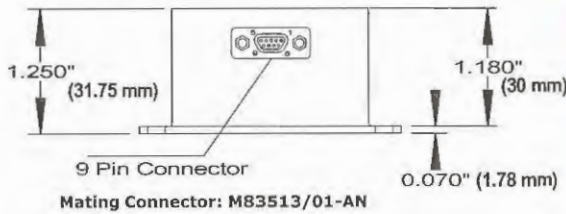
Axes (Top View) Right Hand Rule



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 1σ		< 0.5mg 1σ	< 1.5mg 1σ
Bias (In Run Stability)	5°/hour 1σ		0.02mg 1σ	0.1mg 1σ
Scale Factor Error %	±0.1% (over temperature) 1σ			
Sensor Resolution	0.001°/sec		0.02mg	0.08mg
Angle Random Walk	0.002° /sec/√Hz 1σ	0.003° 1σ	0.04mg /√Hz 1σ	0.16mg /√Hz 1σ
Alignment	<1mrad 1σ			
G-Sensitivity	<0.01°/sec/g 1σ			
Self Test On	N/A		Δ 1.5 ±0.5g	Δ 1.25 ±0.75g
	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 30 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 Input Power
6	External Sync Input (1kHz or 1pps)
7	+5V Regulator Out
8	Signal Ground
9	Self Test

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, Inc.

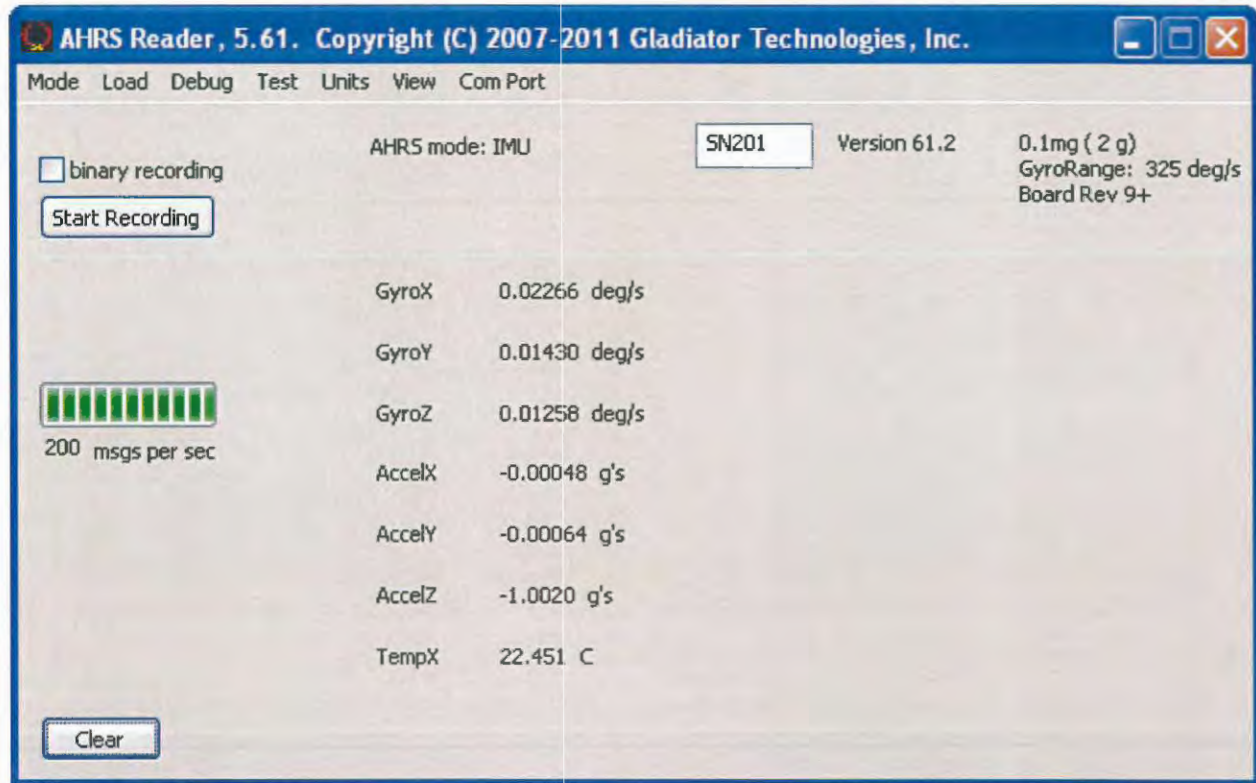


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Rev. Dec0811
SN: 192



Initial Bench Readout (above)

Self Test (below)





LMRK40IMU-300-02-100

IMU eXT

Rate Spin Test

Test	gyroX	gyroY	gyroZ	accelX	accelY	accelZ	temp X
PX	14393.31	-11.329	3.191	-0.36	-10.6811	-22.0846	2233.827
NX	-14406.16	-10.806	4.191	-0.3557	-12.6304	-22.5808	2234.356
Diff/2	14399.74	-0.2615	-0.5	-0.00215	0.97465	0.2481	-0.2645
Ave	-6.4255	-11.0675	3.691	-0.35785	-11.65575	-22.3327	2234.092
PY	-13.217	14399.21	3.786	-11.2621	-1.0488	-22.3383	2226.687
NY	-15.83	-14400.14	3.235	-9.2428	-1.0418	-22.9077	2226.994
Diff/2	1.3065	14399.68	0.2755	-1.00965	-0.0035	0.2847	-0.1535
Ave	-14.5235	-0.468	3.5105	-10.25245	-1.0453	-22.623	2226.841
PZ	-10.85	-15.059	14395.62	-8.1683	-11.5366	-1.9091	2164.708
NZ	-12.312	-11.655	-14401.97	-10.3211	-12.4137	-1.857	2165.664
Diff/2	0.731	-1.702	14398.79	1.0764	0.43855	-0.02605	-0.478
Ave	-11.581	-13.357	-3.178	-9.2447	-11.97515	-1.88305	2165.186
RSF Norm	0.999982	0.999977	0.999916				Temp °C 22.09

Gyro Mis-Align deg/sec				Input Rate
x		0.01	0.01	x
y	0.00		-0.02	y
z	-0.01	0.00		z

Gyro Mis-align mrad				Input Rate
x		0.09	0.05	x
y	-0.02		-0.12	y
z	-0.03	0.02		z

Accepted by:



Paul Fritch



LMRK40IMU-300-02-100
IMU eXT
Accelerometer Tumble Test

Test	gyroX	gyroY	gyroZ	accelX	accelY	accelZ	temp X
PX	-3.436	1.309	0	999.7112	-1.1954	-0.5937	2224.344
NX	-4.538	-0.438	1.761	-1000.45	-1.0738	-0.5301	2229.108
Diff/2	0.551	0.8735	-0.8805	1000.079	-0.0608	-0.0318	-2.382
Ave	-3.987	0.4355	0.8805	-0.3682	-1.1346	-0.5619	2226.726
PY	-5.484	0.323	-0.44	-0.2972	999.8282	0.0589	2231.07
NY	-4.658	0.809	0.412	-0.2107	-1000.21	-0.9906	2232.848
Diff/2	-0.413	-0.243	-0.426	-0.04325	1000.019	0.52475	-0.889
Ave	-5.071	0.566	-0.014	-0.25395	-0.19095	-0.46585	2231.959
PZ	-4.503	-0.114	0.806	-0.4838	0.2307	999.2083	2231.94
NZ	-4.15	-0.082	-0.969	-0.5765	1.3784	-1000.35	2229.635
Diff/2	-0.1765	-0.016	0.8875	0.04635	-0.57385	999.7814	1.1525
Ave	-4.3265	-0.098	-0.0815	-0.53015	0.80455	-0.5731	2230.788
Bias °/s,mg	0.006	0.003	0.003	-0.39	-0.17	-0.51	22.30
ASF Norm				1.0001	1.0000	0.9998	Temp °C

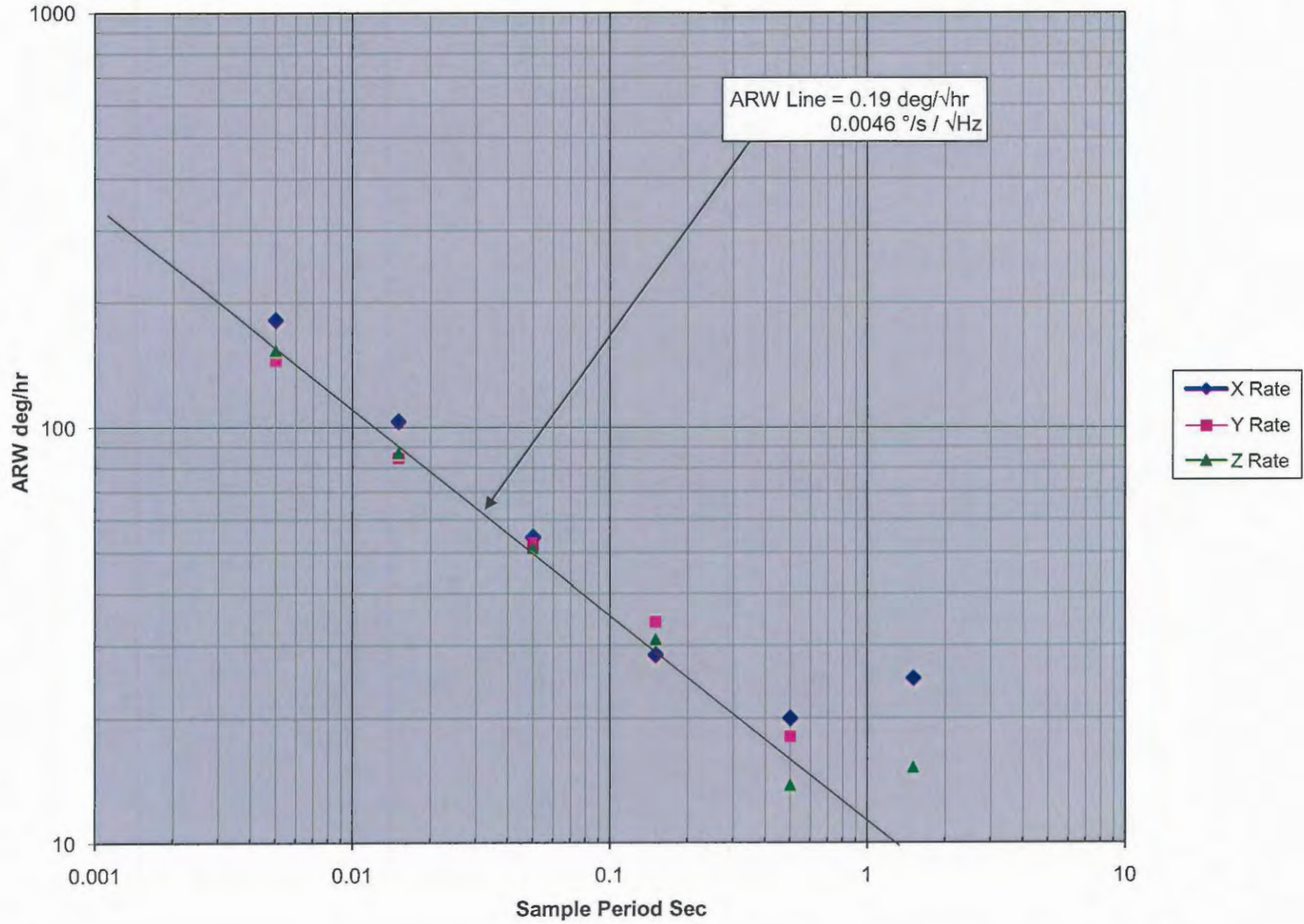
Gyro °/s /g	Input g =			Accel In g's
x	0.006	-0.004	-0.002	x
y	0.009	-0.002	0.000	y
z	-0.009	-0.004	0.009	z

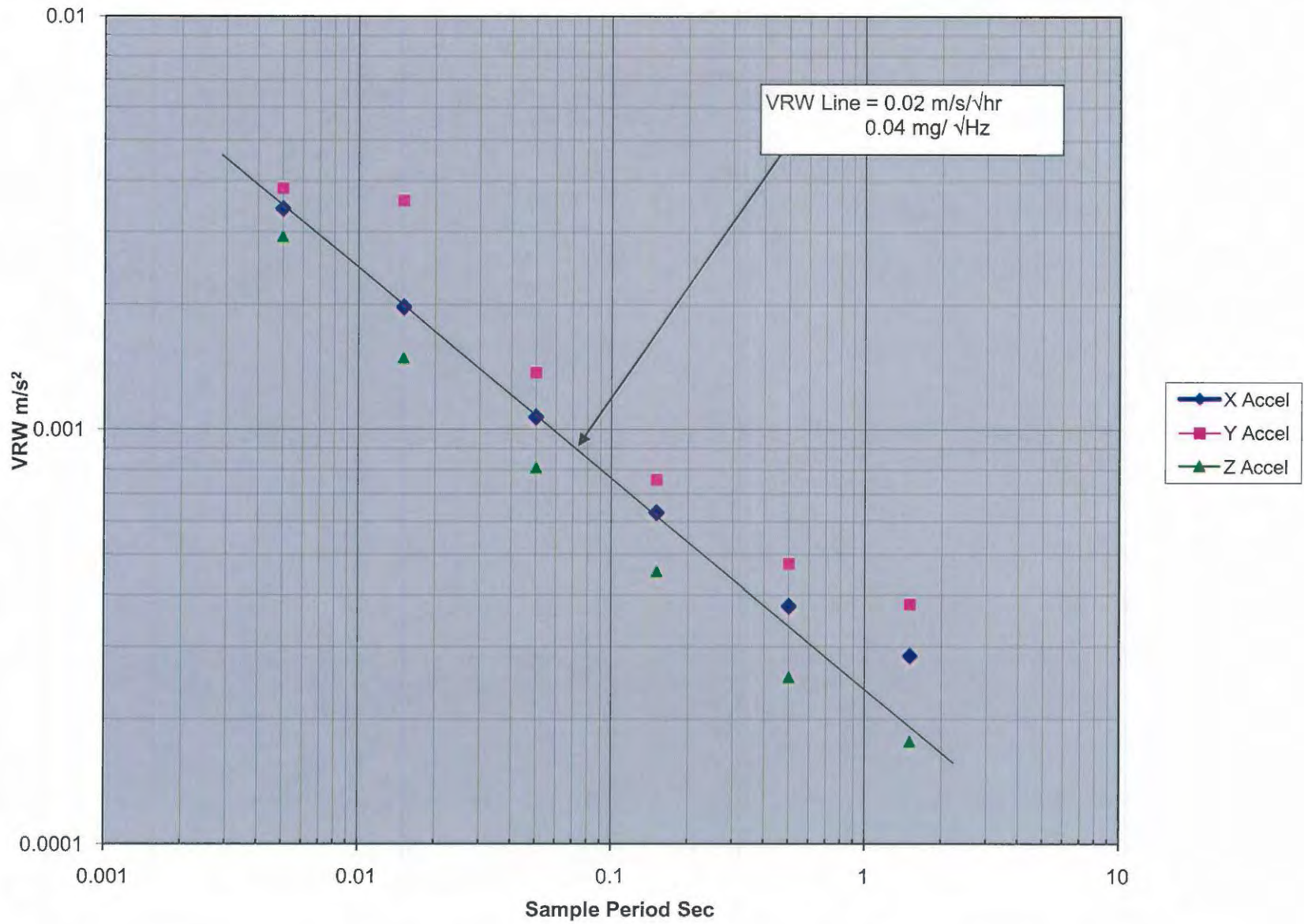
Accel Mis-Align	mrads	Accel In
-0.04	0.05	x
-0.06	-0.57	y
-0.03	0.52	z

Accepted by:

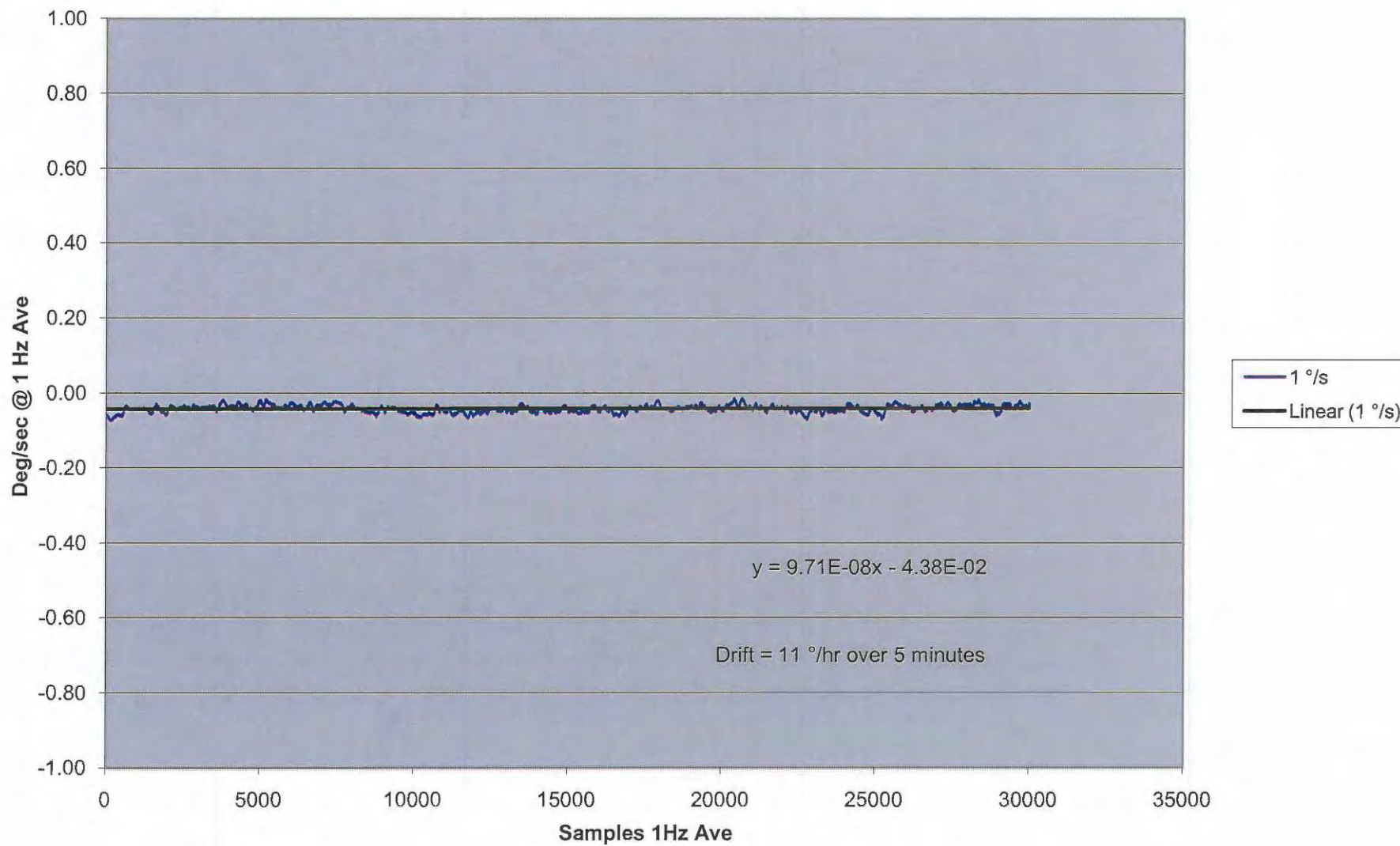


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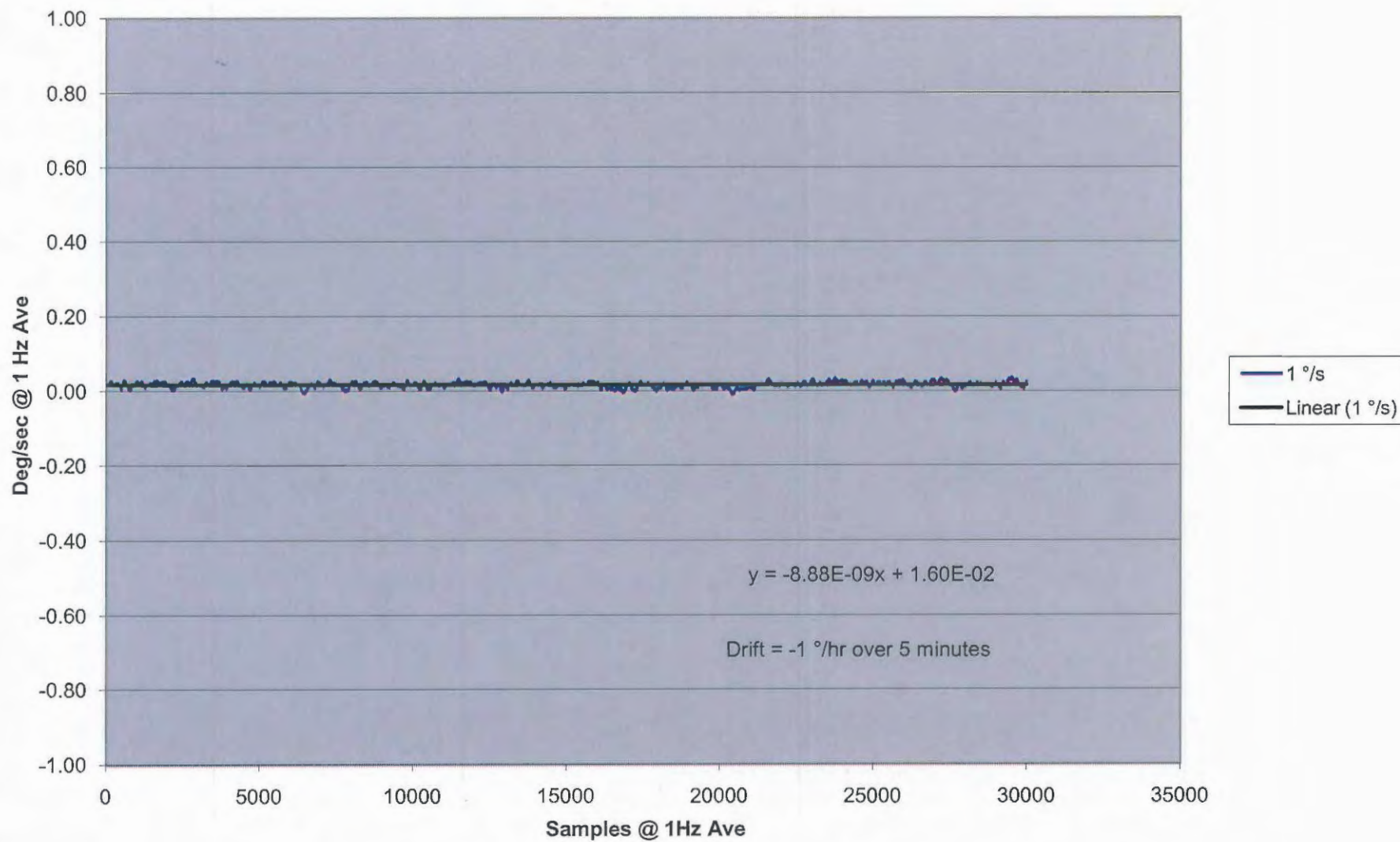




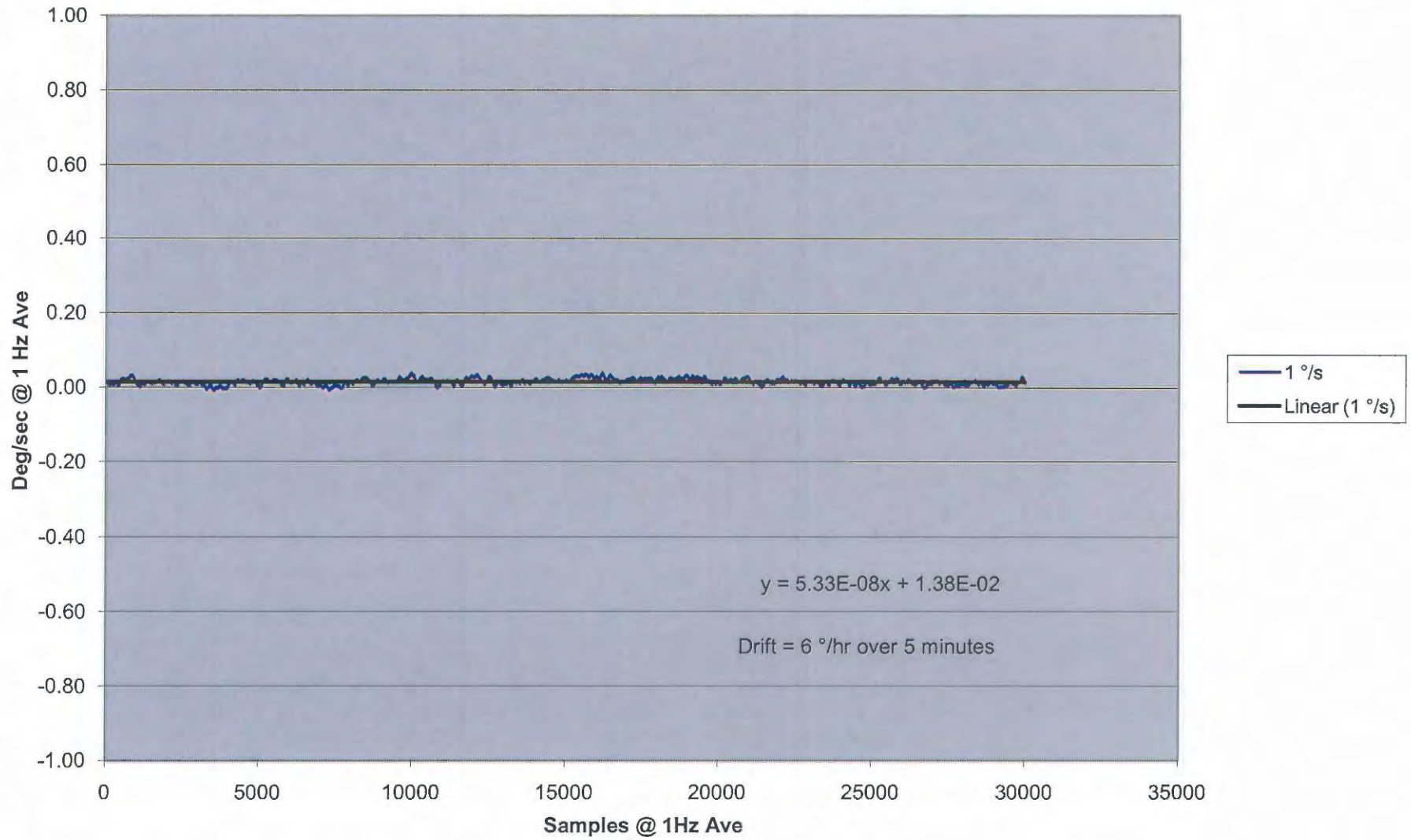
X Gyro In-Run Bias



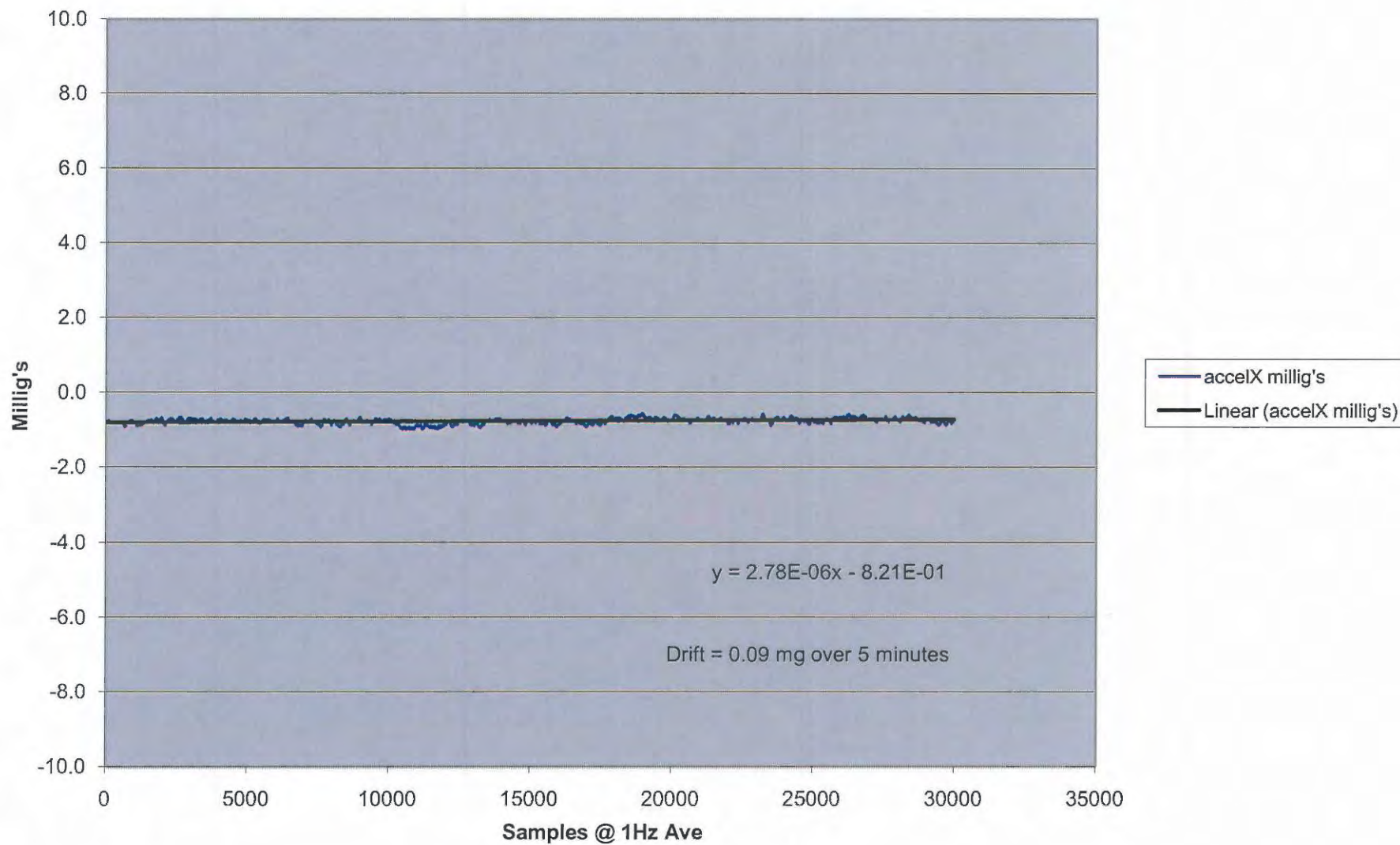
Y Gyro In-Run Bias



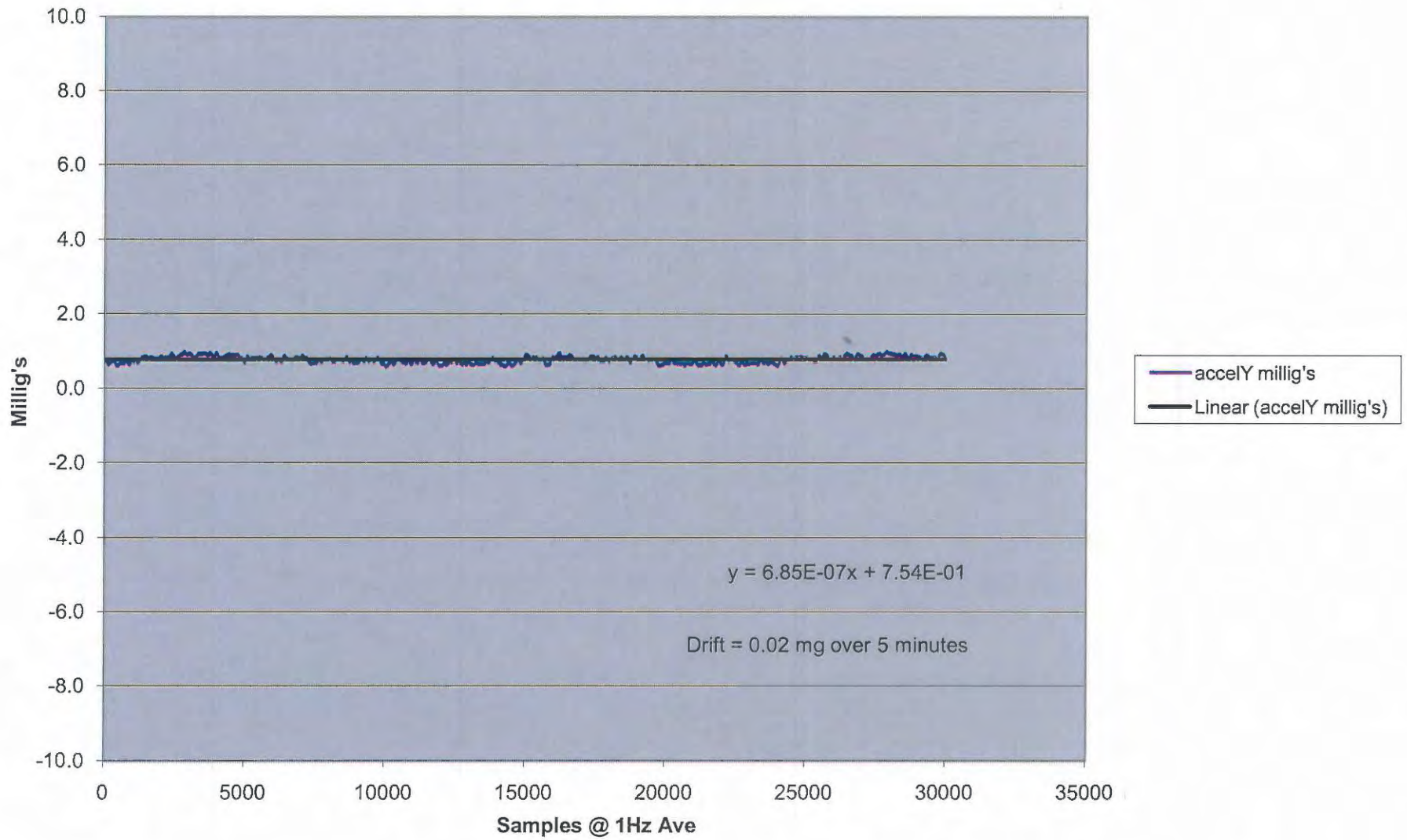
Z Gyro In-Run Bias



X Accel In-Run



Y Accel In-Run



Z Accel In-Run

