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(mailto:~?subject=Sample%20Data%20Sets%20for%20Inertial%  
body=http://www.nxp.com/products/sensors/sample-data-sets-f  
sensors:SENSORDATA)

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### Sample Data Sets for Inertial and Magnetic Sensors

Inertial and magnetic sensors have found their way into a multitude of consumer products, but many engineers have little or no experience with them. The data included here is provided for educational purposes. By comparing/contrasting the various data sets, engineers can develop a better understanding of the pros and cons of various filtering and data recognition approaches associated with these classes of device.

The report presents inertial/magnetic data captured via a third-party IMU (non-NXP inertial measurement unit). The intent is to try to capture typical data sets for a variety of actions such as: lift, slide, tap, nudge, stationary (on table, in pocket), as well as inertial data for walking, standing stationary, etc. Graphs are generated of acceleration, magnetic readings and gyro readings over time. Basic statistics are attached for each data set.

- Inertial Measurement Unit Used For Study (/products/sensors/sample-data-sets-for-inertial-and-magnetic-sensors/inertial-measurement-unit:SENSORDATA\_IMU)
- Data File Format (/products/sensors/sample-data-sets-for-inertial-and-magnetic-sensors/data-file-format:SD\_DATAFILEFORMAT)
- Matlab Scripts (/products/sensors/sample-data-sets-for-inertial-and-magnetic-sensors/matlab-scripts:SD\_MATLAB\_SCRIPTS)

See the Dataset Terms of Use Page regarding limitations of use.

Report Generated: 7/3/2011 19:17:3

### Sample Data Sets

- Actions (/webapp/sps/site/overview.jsp?code=SENSORDATA#Actions)
- Environment (/webapp/sps/site/overview.jsp?code=SENSORDATA\_ENVIRONMENT#Environment)
- Events (/webapp/sps/site/overview.jsp?code=SENSORDATA\_EVENTS#Events)
- Gestures (/webapp/sps/site/overview.jsp?code=SENSORDATA\_GESTURES#Gestures)
- Locomotion (/webapp/sps/site/overview.jsp?code=SENSORDATA\_LOCOMOTION#Locomotion)

Click the listed items to see the data set.

- FastPickup
- Nudge
- Pickup
- Slide
- SlowPickup
- button\_click

#### Link to data file:

Pickup.txt (/files/global\_support\_files/Pickup.txt)

#### Data set gathered:

Thursday 06 January 2011 - 12:50:24 PM

#### Comments:

Simple pickup of IMU

#### Additional Notes:

The Pickup.dat data set starts with the sensor stationary on a table top. Then I simply picked up the sensor at a "normal rate". This data set is 2 of 3: Fast Pickup, Pickup, Slow Pickup. They vary only in the speed at which the IMU was manually picked up from the table top.

#### PSD Plot Y Scale:

Logarithmic

#### Data Plots

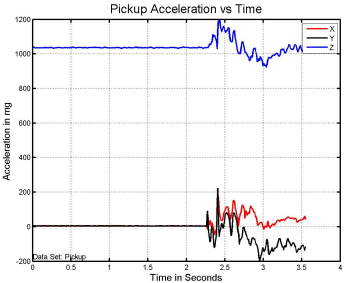
Collected data includes accelerometer, magnetometer and gyro measurements. Raw data is plotted for each, along with a Power Spectral Density plot of the data.

Click on any plot to enlarge it.

Pickup Sensor Statistics

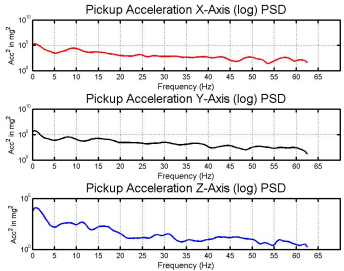
Quantity	Acceleration	Magnetics	Angular Velocity
Units	milli-gs	microteslas	degrees/second
NumPoints	444	444	
MaxTime	3.55	3.55	3.55
MaxX	190.45	21.18	-485.10
MinX	-46.88	17.57	-551.74
RangeX	237.33	3.61	66.64
MaxY	222.68	-1.42	-496.86
MinY	-199.24	-5.56	-548.80
RangeY	421.92	4.15	51.94
MaxZ	1195.44	28.50	-495.88
MinZ	922.95	25.13	-540.96
RangeZ	272.49	3.37	45.08

Acceleration



(/files/graphic/training/sensordata

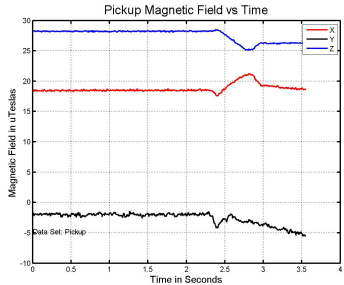
/Pickup\_acc.jpg)



(/files/graphic/training/sensordata

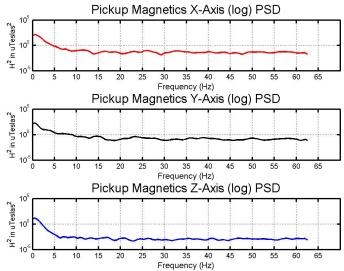
/Pickup\_acc\_PSD.jpg)

Magnetics



(/files/graphic/training/sensordata

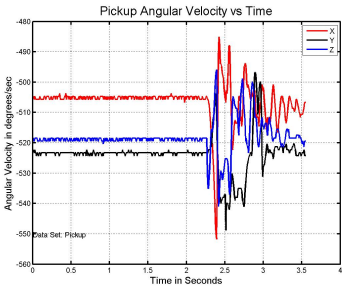
/Pickup\_mag.jpg)



(/files/graphic/training/sensordata

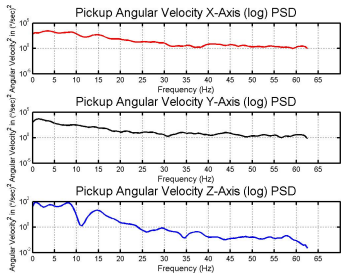
/Pickup\_mag\_PSD.jpg)

Angular Velocity



(/files/graphic/training/sensordata

/Pickup\_av.jpg)



(/files/graphic/training/sensordata

/Pickup\_av\_PSD.jpg)

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