#### Linearity, Sensitivity, Hysteresis

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The above graphs show the results of an example Linearity, Sensitivity, and Hysteresis test run using motor two/MCE2. The first graph shows the amplitude throughout the test, and the second graph shows Plot comparing the commanded and actual positions for each sample compared to each other.

The Sensitivity was calculated using the Best Linear fit using Least Square method (Least Absolute Residual, and Bisquare methods are also available to be used alternatively). This line is shown on the graph above in red.

Linearity in this example was found by taking the difference between the Sensitivity and Ideal slope, a slope of 1 was used in this example.

The width of the Hysteresis curve was found by taking the difference between the two external Position measurements that had the greatest distance for same commanded position. In this example this was found to be at -0.034546 in. and 0.0250404 in. as shown highlighted in the orange box in the graph above.