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	<u>(Deflection and Friction Test for v7 Software on NS5 Systems)</u>	Page 1 of 6
		Products: NS5 MM and Dim Systems
Revision	Description	Date
A	Initial Release – (John Tedesco)	(1/2/08)

Subject: (Deflection and Friction Test for v7 S/W and NS5 Systems)

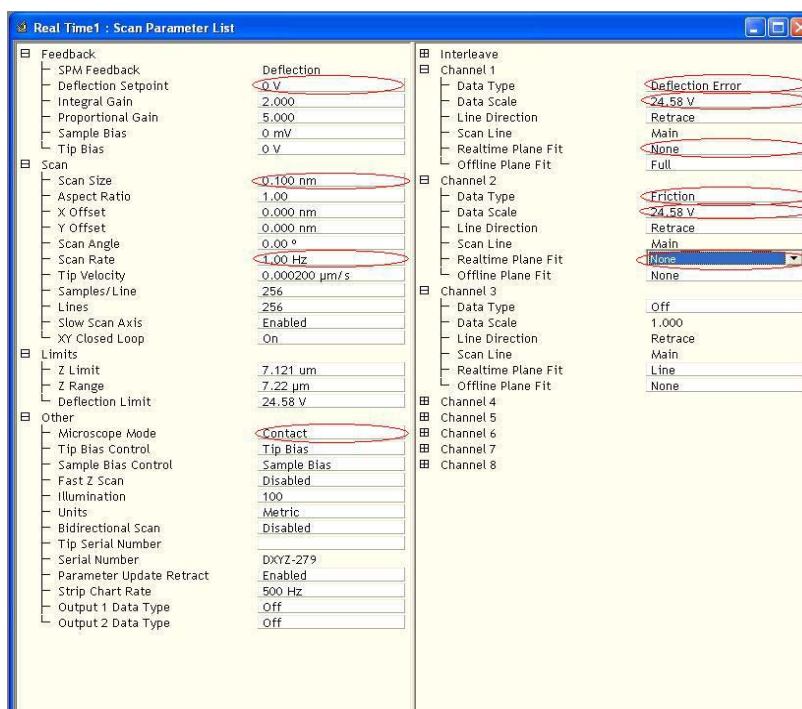
System(s) Affected: (NS5 MM and Dim Systems with Version 7 software)


Action Category: (As Required)

Summary: (To test the main A/D functions of Low Speed A/D 1 and 2 as well as High Speed A/D 1 in the NS5 controller)

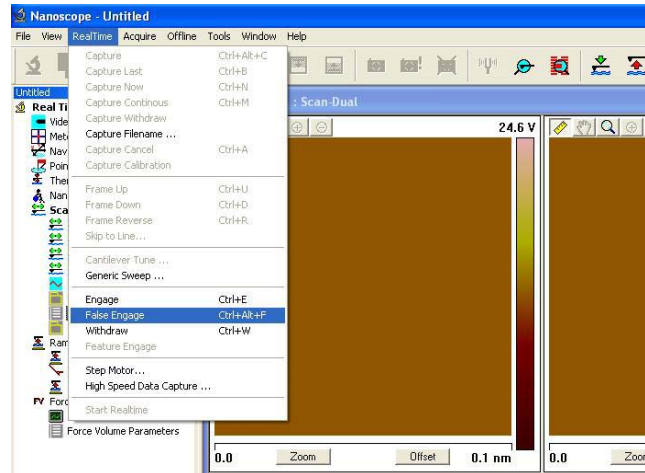
Low Speed A/D Tests

1. Start up nanoscope software as well as the controller normally. (**Note:** This test is for version 7 software only and mainly for Multimode. On a dimension, if the laser spot moves in the cross-hairs the low speed A/D converters are working properly and the High speed test will be necessary).
2. Find the tip with the laser, maximize the SUM signal and center the vertical and horizontal deflections.
3. Set up the parameters as shown in the screen shot below. The important ones have been circled in red.

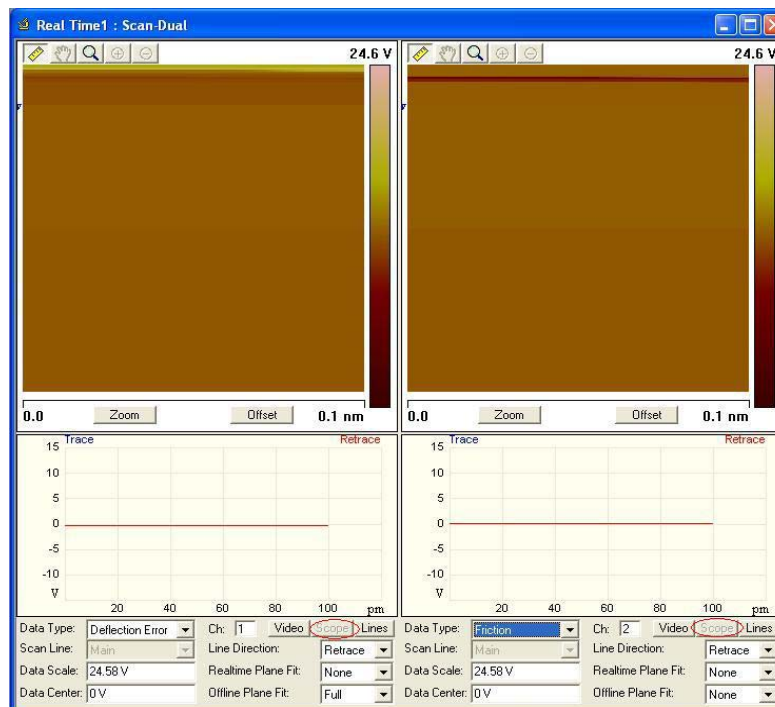



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4. It will be necessary to False Engage the microscope in order for the A/D converters to start collecting data. To false engage go to the Realtime menu and then False Engage (Shown Below).

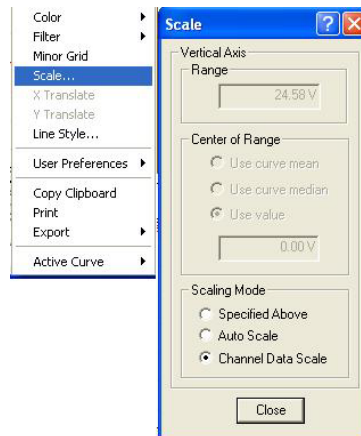


5. After False Engaging the scope traces will need to be shown. To do this click on the "Scan Dual" View. If both channel 1 and 2 scope traces are not shown then you will have to click the "Scope" Button that is circled in red below.




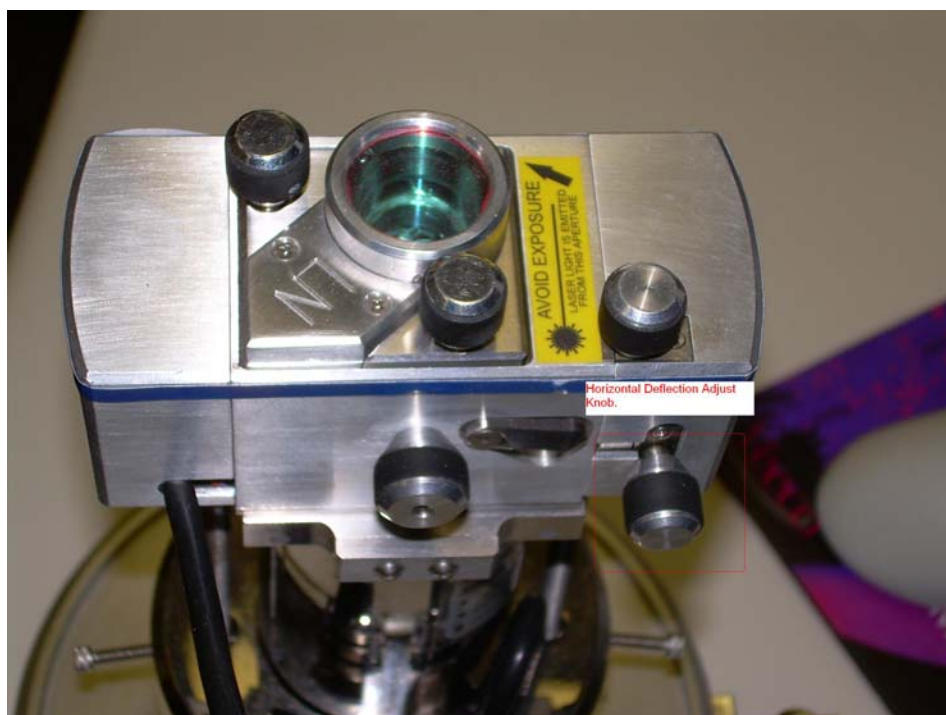
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6. Before the test can fully be completed it is necessary to adjust the data scale of the scope trace. To do so right-click the computer mouse over any portion of the scope that needs a data scale adjustment. Next, go to the "Scale..." button and then click on the appropriate button for "Channel Data Scale".

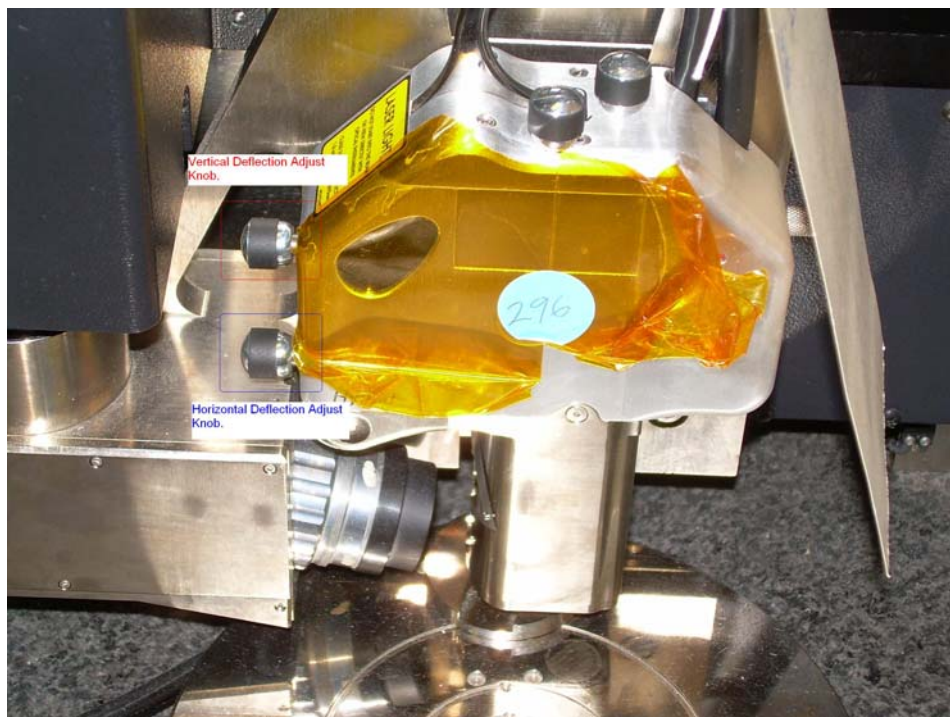


7. Rotate the vertical deflection photo detector adjust knob to move the Deflection scope trace (Ch1) up and down. Rotate the horizontal deflection adjust knob to move the friction scope trace up and down. In the contact mode that we are operating in for this test, the A/D on the Low Speed A/D 2 board is reading in the friction (horizontal deflection) value and digitizing it, and the A/D on the Low Speed A/D 1 board is reading the deflection (vertical deflection) value and digitizing it. Below are a few pictures to help locate the vertical and horizontal deflection adjust knobs for both the Multimode and Dimension systems.

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- As these deflection knobs are moved the scope traces should move up and down. The scope trace on channel 1 should move when the vertical deflection adjust knob is rotated and channel 2 scope trace should move when the horizontal deflection adjust knob is rotated. Note that there will be some coupling meaning that channel 1 (vertical deflection) will move slightly when the horizontal deflection knob is rotated. It should be easy to place both scope traces at 0V and move through the entire range of 24.58V for each.

High Speed A/D Test

- To test the High Speed A/D 1 all that is necessary is to tune the cantilever to its resonant frequency by left-clicking the mouse over the  icon. Next, set the start frequency to 2kHz, the end frequency to 500kHz and click the "Auto Tune" button. A screen shot is below to help.

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