

Huntron Workstation Access RF Tutorial

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Huntron Workstation Access RF Software Tutorial

Huntron Workstation software

It is very helpful if you have a working knowledge of Microsoft Windows prior to using Huntron Workstation.

You are allowed to create a backup copy of the software disk. *Your purchase agreement allows for copies to be made for backup purposes only- copying for distribution or resale is strictly prohibited.*

Installation Instructions

Install the software **BEFORE** connecting any hardware. Uninstall any previous versions prior to loading the current version. For more installation details follow the "Getting Started" sheet included with your Huntron product.

Uninstall any previous versions of Workstation prior to installing the new version.

Insert the Huntron Workstation DVD. The DVD should Autorun and begin the installation process. If your PC has Autorun disabled then browse Window and select WorkstationSetup.exe. This will begin the installation process. During the install you will be asked to install additional software for Access Probers. Select the appropriate response based on your Prober hardware.

Installation of Additional Support Software

Installation of software for the support of supported spectrum analyzers will be required for the proper operation and control.

Keysight N9935A

Insert the Keysight IO Libraries Suite CD or download the software from keysight.com. Run the IO Libraries Suite installer. The install process should begin. Use default selections as prompted during the installation process as there are no special conditions needed for the spectrum analyzer hardware.

Copy the "**HuntronExternal1.dll**" file from the path "C:\Program Files\Huntron Workstation 4.3\E1N9935A" to the path "C:\Program Files\Huntron Workstation 4.3". Select "Yes" to overwrite the existing "HuntronExternal1.dll" file in that path. As an option, rename the existing "HuntronExternal1.dll" before pasting the N9935A "HuntronExternal1.dll" file. This will allow to go back to the default configuration if needed.

Rohde & Schwarz FSH4

Install the support software provided with your model FSH4 spectrum analyzer. Interchangeable Virtual Instrumentation (IVI) installations from other sources such as the Keysight IO Libraries Suite will also work with the FSH4.

Follow the information provided in the "Quick Start" guide provided with your FSH4 to setup PC connection for the instrument.

Copy the "**HuntronExternal1.dll**" file from the path "C:\Program Files\Huntron Workstation 4.3\E1RSFHS4" to the path "C:\Program Files\Huntron Workstation 4.3". Select "Yes" to overwrite the existing "HuntronExternal1.dll" file in that path. As an option, rename the existing "HuntronExternal1.dll" before pasting the RSFSH4 "HuntronExternal1.dll" file. This will allow to go back to the default configuration if needed

Hardware Setup

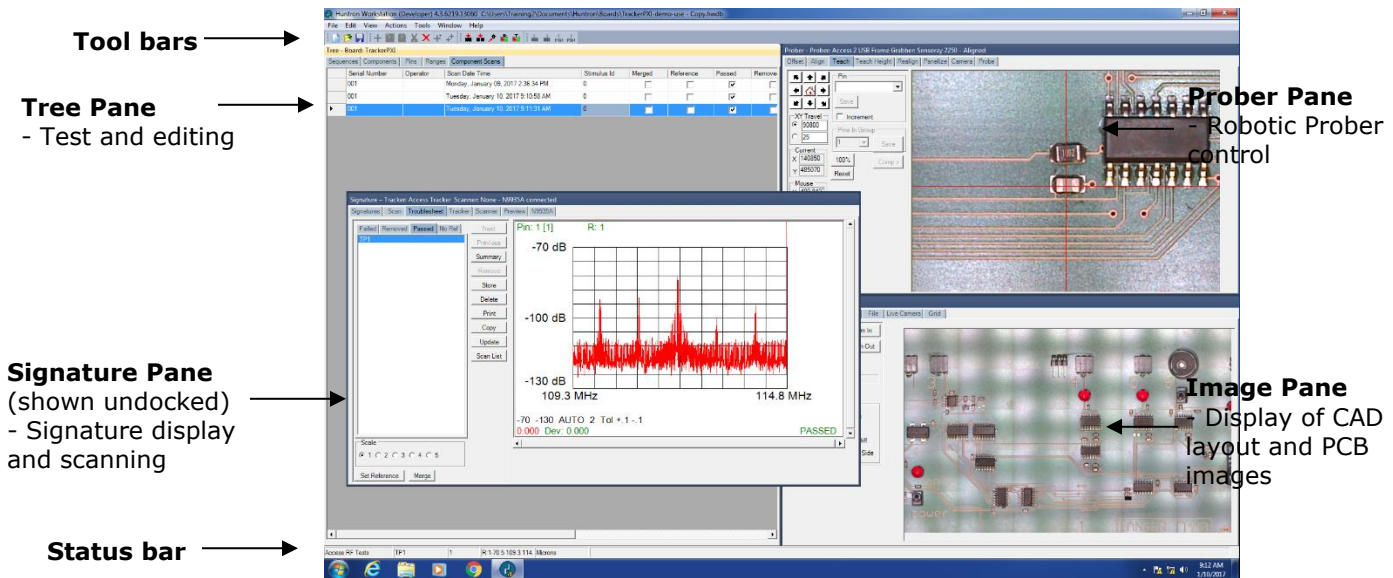
Connect the Huntron Access RF Prober to power.
Connect the Huntron Access RF to the PC with the USB Cable.
Connect the spectrum analyzer to power.
Connect the spectrum analyzer to the PC using the Ethernet cable.
Connect the supplied RF coax cable to the spectrum analyzer RF Input connector Port 2 (N9935A) or Port 1 (RSFSH4) using the supplied adapter.
Connect the other end of the RF coax cable to the connector on the left rear panel of the Access RF prober.
Using the "Access RF Getting Started" instructions, connect the spectrum analyzer to the Huntron Access RF by placing the RF probe into the probe holder mounted to the Z axis rail as shown in the image below. Connect the high frequency cable to the connection on the top of the RF probe.



Huntron Workstation Main Interface

When starting Huntron Workstation for the first time, you will be prompted for an activation code. Type in the code exactly as it is presented on the installation DVD.

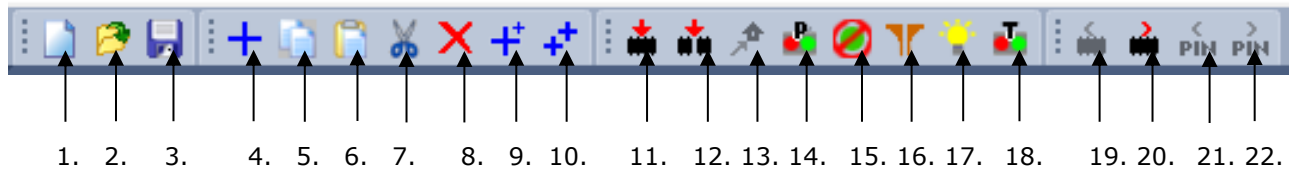
Use upper case letters and note the differences between the letter "O" and the number zero.



The Main Window for Huntron Workstation 4 features a multi-pane layout. The Panes are interactive to a certain degree in that changes in one Pane will affect other Panes. The Panes can be resized, floated independently (undocked) or "tabbed" to the sides of the window. The **Status Bar** displays information about items currently selected and status information while processes are running.

The Toolbar

The Toolbar just under the application menus allows for quick access to several program functions. The function of each is broken out in the diagram below.

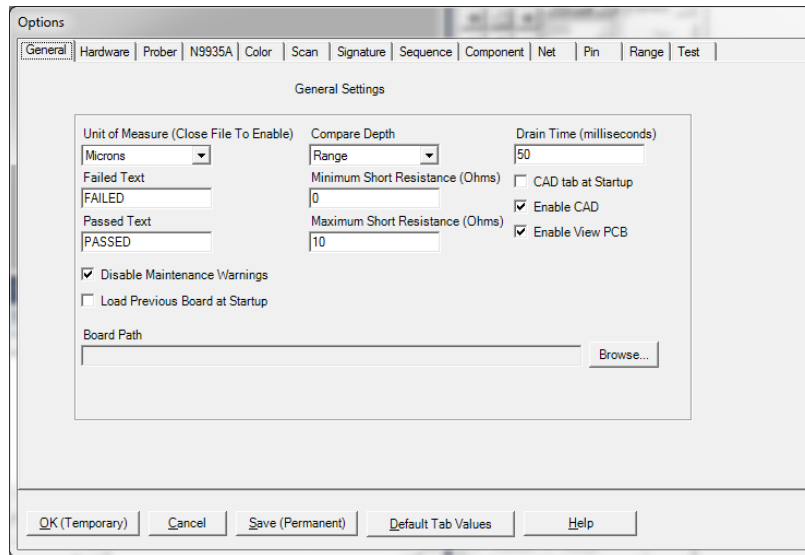


- | | |
|--|--------------------------------------|
| 1. Create New Board database | 13. Initialize Prober Home |
| 2. Open Board database | 14. Connect/Disconnect Prober |
| 3. Save As... | 15. Clear Prober STOP condition |
| 4. Add New (Sequence, Component or Range) | 16. Change Access DH/DH2 Probes |
| 5. Copy (Sequence, Component, Net or Range) | 17. ON/OFF Access DH2 Interior Light |
| 6. Paste (Sequence, Component, Net or Range) | 18. Connect/Disconnect Tracker |
| 7. Cut (Sequence, Component, Net or Range) | 19. Previous Component or Net |
| 8. Delete (Seq., Comp., Net, Range or Scan) | 20. Next Component or Net |
| 9. Build New (Sequence, Component) | 21. Previous Pin |
| 10. Repeat New (Sequence, Component) | 22. Next Pin |
| 11. Scan Component or Net | |
| 12. Scan Sequence | |

Hardware Setup

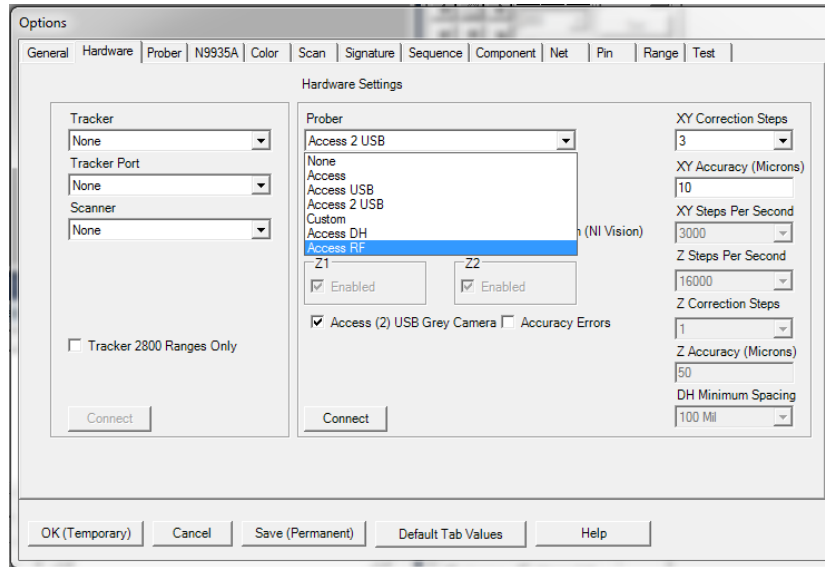
Turn on the Huntron Access and the spectrum analyzer.

When first starting Huntron Workstation, select **Options** from the Tools menu. The Options window is used to setup default settings used when working in Huntron Workstation.

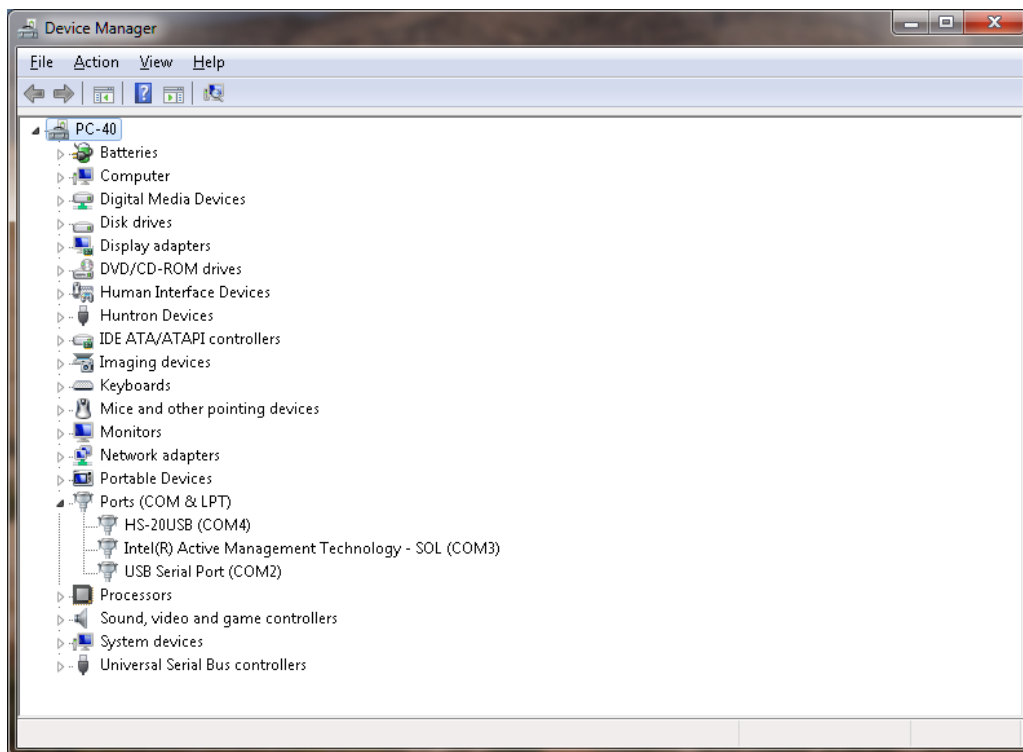


Select the **General** tab and set the desired Unit of Measure (use **Microns** for Huntron Access Probers, **Mils** for any other Prober). Also Select Compare Depth of **Range**.

Select the **Hardware** tab and leave the type of Tracker hardware, the Tracker Port and Scanner options at none.



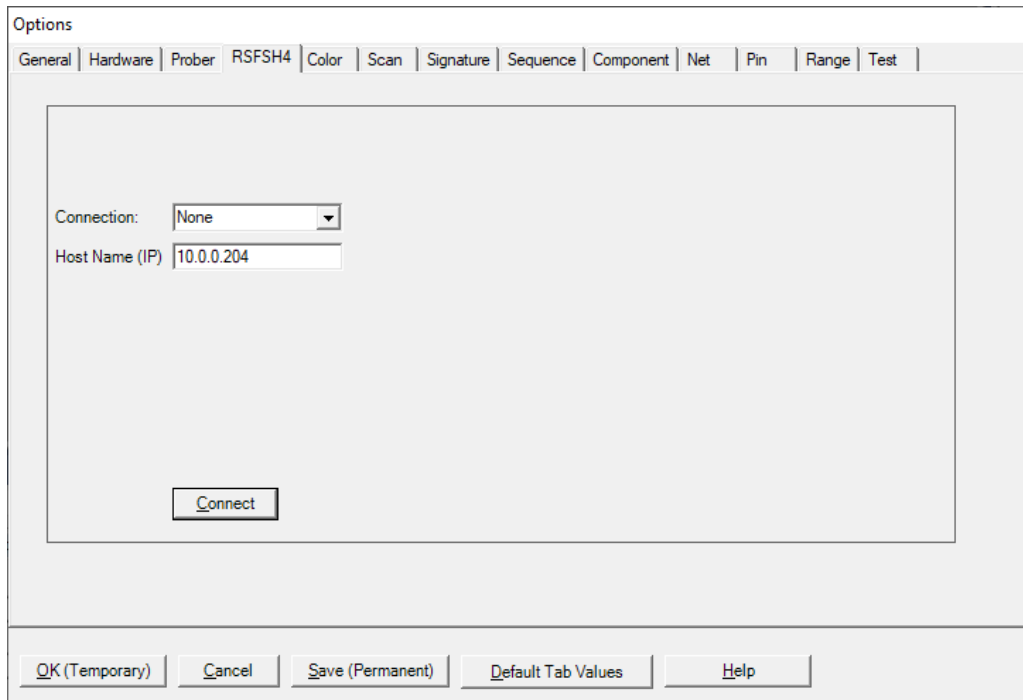
Select the type of Prober as **Access RF**, the serial port for the Prober as **USB** and the Frame Grabber type as **DFK (Single)**. For older Access 2 Probers that use the HS20USB serial motor controller, select the **COM port** that is used by the controller. If you do not know the COM port, go to the Windows **Device Manager**. Locate the Ports settings as shown in the image below. Use the COM number shown next to "HS-20USB".



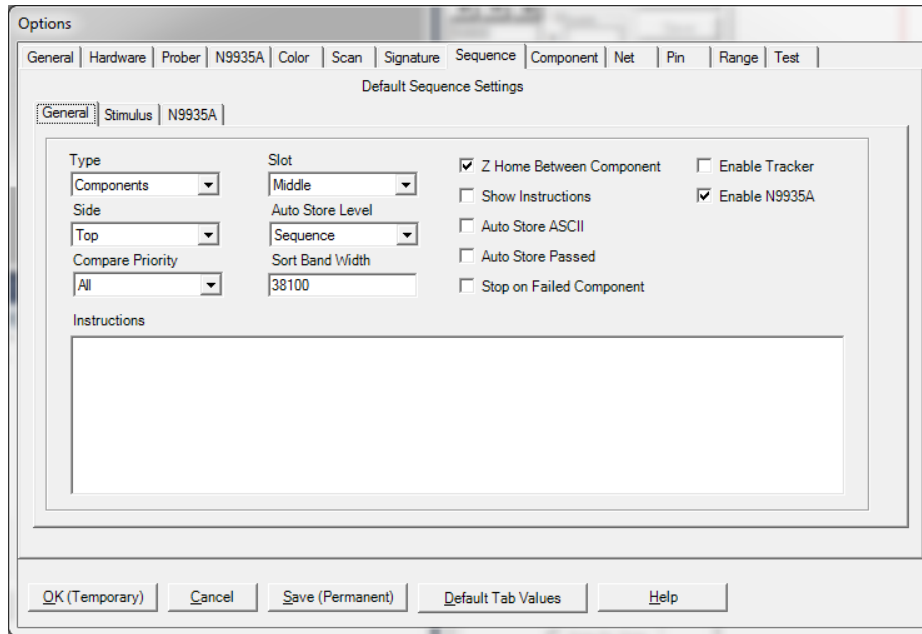
Check the **Access (2) USB Grey Camera** checkbox if your system is not using the DFK (Single) camera.

Click the **Connect** button to initiate communication with the selected hardware.

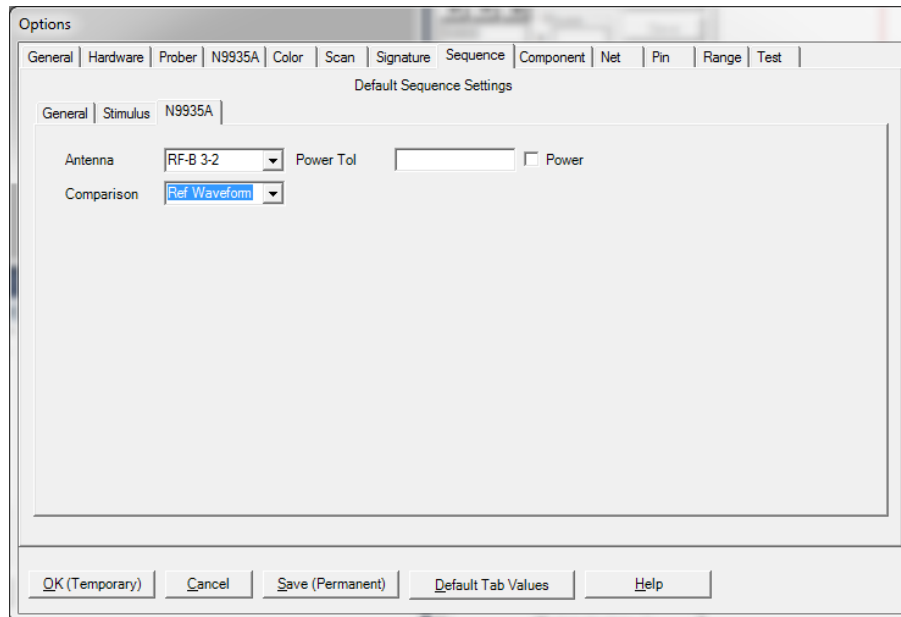
Select the tab that is available for your spectrum analyzer model (i.e. **N9935A**). Set the **Host Name (IP)** using the **Static IP Address** that was used when configuring the spectrum analyzer. Set Connection to "**None**". Click the **Connect** button to connect with the spectrum analyzer.



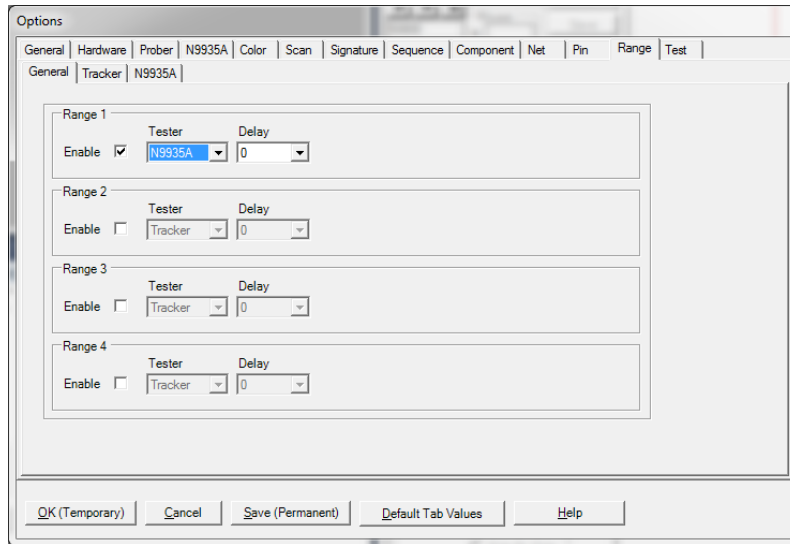
Select the **Sequence tab, General tab** and uncheck the Enable Tracker checkbox and check the **Enable N9935A** or **Enable RSFSH4** checkbox depending on the model used.



Select the **N9935A** or **RSFSH4** tab and configure the menus with your desired default settings. The **Antenna** setting corresponds with the probe type mounted on the Prober head. The Comparison setting can be set for **Reference Waveform** or **Reference Power**.



Select the **Range** tab/**General** tab and check the boxes to enable only Range 1. Set the Range 1 Tester to your model of spectrum analyzer and the Range 1 Delay to 0.



Select the **N9935A** or **RSFSH4** tab under the **Range Tab**.

You can set the plus and minus Tolerance amount, Maximum Signal in dB, Minimum Signal in dB, Start and Stop frequencies, auto attenuation and auto resolution bandwidth (RB). These steps are simply setting defaults for when you add new components to the test. You can change the values at any time by editing the Range for the Component in the Tree pane.



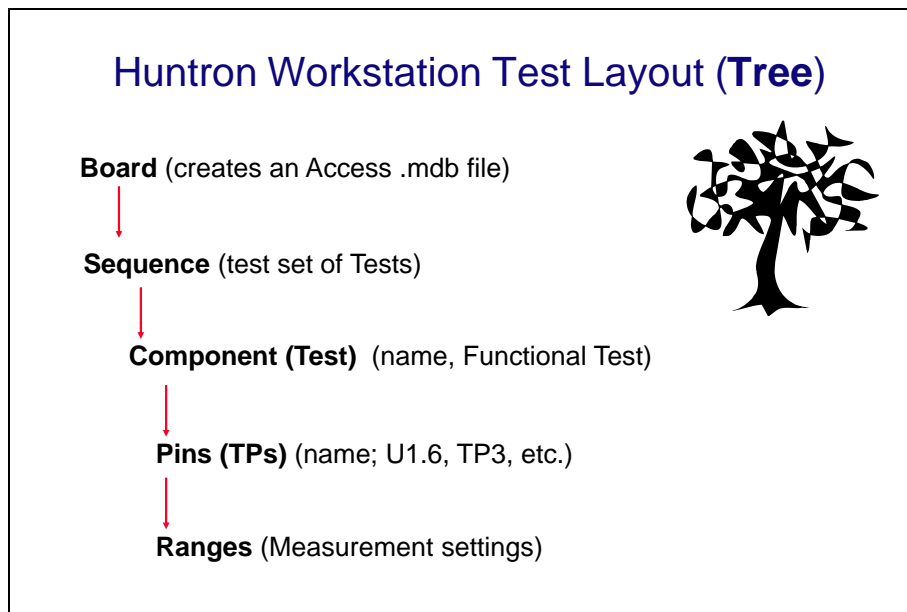
Click the **Save (Permanent)** button to save this configuration as the startup default.

Using Workstation with an Spectrum Analyzer

A spectrum analyzer based test will typically use the concept of Test Points (TP) or Virtual Test Points (VTP). The Workstation Software has, for programming purposes, the concept of components and pins. When using a spectrum analyzer it is best to think of components as tests and pins as Test Points (TP).

Creating a Spectrum Analyzer Board Test

There are a number of steps necessary to creating a spectrum analyzer board test.



Example of Board Test Information:

Board Name: Sample (creates "Sample.hwdb" file)

Revision: (This field is optional)

Sequence: 200Mhz Measurements

Component (Test): Test Points 1-20

Pins (TP): Per TP settings for X, Y, Z locations, etc...

Ranges: Per TP measurement settings, tolerance, etc...

The user has total discretion as to the information input into these fields. There is no "right" way as to what information is entered as every user's situation will be different. The above example is just one way the information might be entered.

Entering information into the entry windows is very straightforward. The easiest way to move from field to field is by pressing the **TAB** key. You can also use the mouse to click into a particular field so you can enter information.

Test Building Procedures

- Determine TP Locations on the board and the tests to be performed
- Create Test Database in the Tree Pane
 - o Add Board, Sequence, and Components (Tests)

If an Access Prober is being used:

- Perform Camera Offset
- Select Alignment points
- Teach component pin (TP)

Using the test:

- Scan Sequences and Set References

Listed above is a general outline on how you would proceed when preparing to test a board. As with any type of complex test equipment, practice makes perfect so take the time to learn and practice these procedures.

Creating a Board Database

The screenshot shows a dialog box titled "Add New Board". It contains the following fields and controls:

- Name: Scope Tests
- Revision: (empty)
- System: (empty)
- Unit: power board
- Top Name: Top
- Manufacturer: (empty)
- Test Routine Number: (empty)
- Unit of Measure: Microns (dropdown menu)
- Data Source: User
- Bottom Name: Bottom
- Buttons: OK, Cancel, Buttons..., Help
- Checkboxes: Show Instructions, F2B File, XML File
- Buttons: Load F2B File..., Remove F2B File..., Load XML File..., Remove XML File
- Instructions: (empty text area)

To create a new Board, select **New** from the File menu or use the New button in the toolbar. Input information into the "Add New Board" dialog as needed. The only field that is required is board **Name** (Example "Sample"). Other fields such as Revision, System, Unit, Manufacturer and Gold Disk Number can be completed with related information if desired.

Adding a New Sequence

To add a new Sequence, select the **Sequence** tab in the Tree pane. Select **Add New Sequence** from the Edit menu or click the Add New button (+) in the toolbar.

Details:

Sequence Name Field: Enter Sequence name

Slot field: Select the Prober slot that the board will be in when scanning.

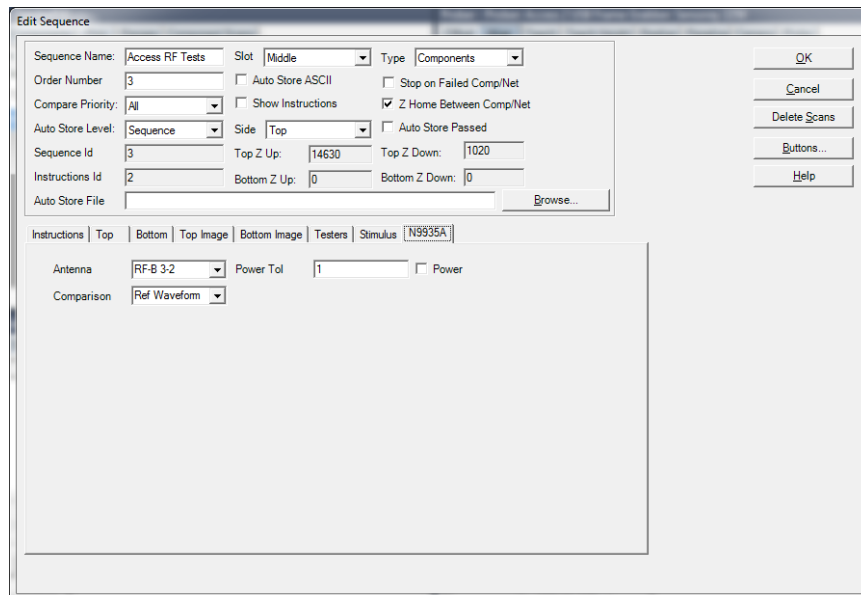
Compare Priority: Selects the signature (or measurement) comparison priority between **Same** (serial number), **All** (serial numbers; this is the recommended setting) or **Min/Max** (Merged min/max signatures)

The **Delete Scans** button will erase all scans for the current Sequence.

Instructions field: Select the **Instructions tab** and enter any instructions or system information that you wish to pass on to future users. Note: the **ENTER** key in this field will work as a carriage return.

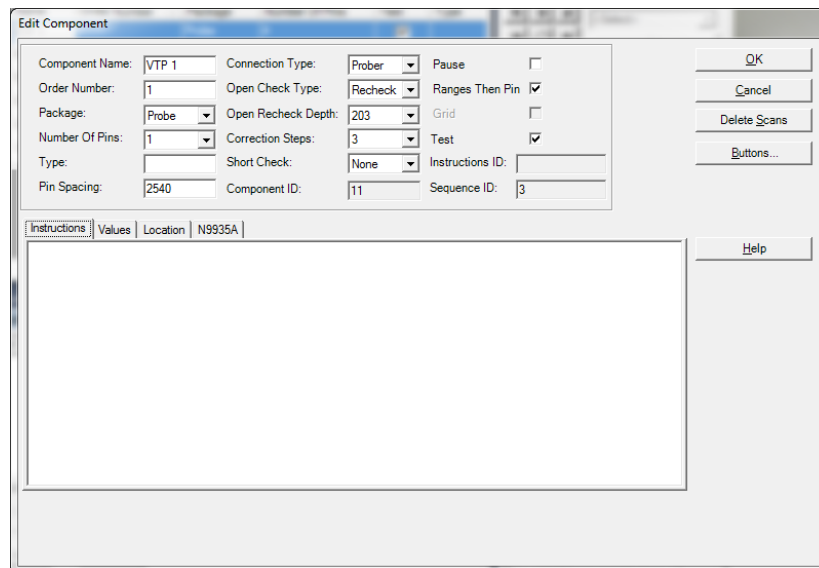
For spectrum analyzer tests, select the **Testers tab** and check the **Enable N9935A** or **Enable RSFSH4** checkbox. Uncheck **Enable Tracker** if it is checked.

Select the **N9935A** or **RSFSH4** tab and make any needed changes to these settings. The default settings are configured in the **Tools menu/Options/Sequence N9935A** tab.



Click **OK** to save the Sequence. Other functions within this window can be read by hovering your mouse over the item and viewing the Tool Tip or by clicking the **HELP** button.

Adding a New Component (Test)



To add a new Component (Test), select the **Component** tab in the Tree pane. Select **Add New Component** from the Edit menu or click Add New button (+) in the toolbar.

Details:

Component Name field: Enter the component name (Test Name) in this field.

Package and **Number of Pins** fields: Set the **Package** type as **Probe**. The Number of Pins should be set to at least the number of TPs in this Test (component). Select more pins than the current number of TPs allows more TPs to be added later. For unused pins (TPs) uncheck the **Scan Pin** check box on the **Pin Tab** after the Component is created.

Type field: This information is optional but you can enter the component type in this field.

Pin Spacing: Not used with spectrum analyzer tests.

Connection Type: Set to Prober for Access RF Prober users

Open Check Type: Not used by with spectrum analyzer tests

Pause checkbox: Sequence tests will pause at this component and display instructions

Test checkbox: Enables or disables testing of the selected component

Correction Steps: Sets the maximum amount of correction steps used with the Huntron Access Prober when moving to the first TP of the Test.

Instructions field: Enter any instructions or component information that you wish to pass on to future users. Rich text images can be pasted into this field.

Other functions within this window can be read about by clicking the **HELP** button.

Pin Edit

Settings for individual pins can be modified by opening the Pin Edit window. You can open the Pin Edit window by selecting the Pin tab in the Tree pane, right-clicking the row header and selecting Edit Pin.

The screenshot shows a 'Pin' dialog box with the following fields and controls:

- Pin Name: 1
- Pin Number: 1
- Net Name: (empty)
- Correction Steps: 0
- Channel: A (dropdown menu)
- Scan Pin:
- Pause:
- Relay Number: 0
- Order Number: 1
- Pin ID: 228
- Component ID: 11
- Instructions ID: (empty)

Buttons: OK, Cancel, Help

Tabbed interface: Instructions (selected), Prober, Pulse, Shorts, Features, N9935A

Name: Type directly into the Name field to change the pin name

Net Name: Type directly into the Name field to change the Net name

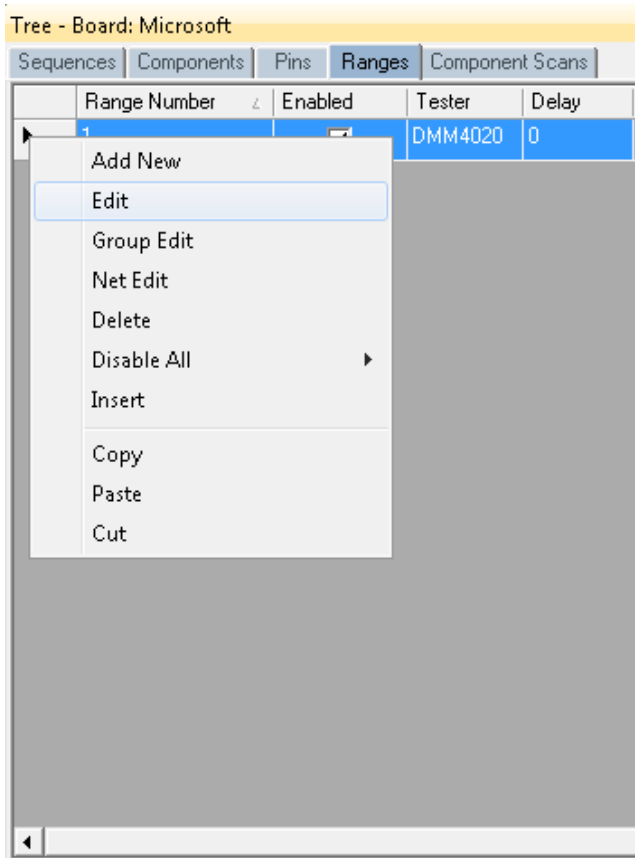
Correction Steps: Modifies the number correction steps used with Access Probers. This may need to be modified for very small pitch devices.

Scan Pin: Enables or disables scanning of the selected pin

Pause: Prober will pause and display Pin Instructions before scanning

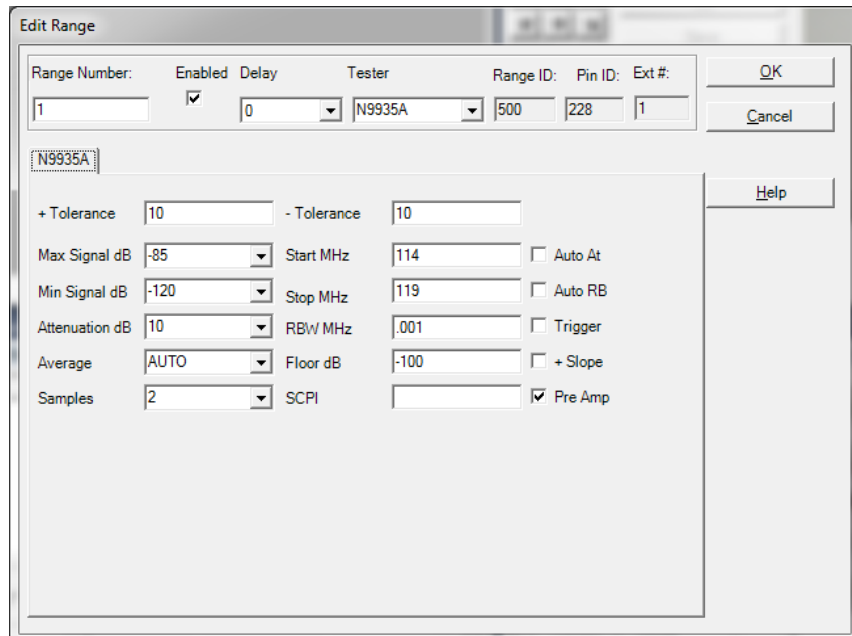
Modifying a Range (Spectrum Analyzer Measurement Setup)

When a new component (Test) is added to a Sequence default range(s) are added to each pin (TP). The defaults are set up in the **Tools/Options/Range/(N9935A or RSFSH4)** tab. These settings need to be modified based on signal being measured at each TP. The goal is to obtain a good measurement at each TP. To stop after a failure of a particular measurement it is best to use multiple Components (Tests) at the same XY coordinate each. The test only stops after a component (test) is completed.



Select the Tree/Range tab to display the ranges for the selected component pin. RIGHT click on the row header (far left grey area of the row) to display a quick menu (shown left)

To edit a Range, select the Range tab in the Tree pane. Select **Edit Range** from the **Edit** menu or the quick menu shown above. The Edit Range dialog will be displayed. The **Tester drop menu** shows the instrument used.



Edit Range Details (settings may be different based on spectrum analyzer model):

Note: All of the settings can be modified directly in the Range grid.

+Tolerance: The amount above the Reference which determines the High Pass Limit. This amount is a value based on the number of deviant data points when comparing to the stored Reference measurement.

-Tolerance: The amount below the Reference which determines the Low Pass Limit. This amount is a value based on the number of deviant data points when comparing to the stored Reference measurement.

Max. Signal dB/Min. Signal dB: Sets the upper and lower limits of allowed dB change for each frequency

Attenuation dB: Set the amount of attenuation for the instrument measurement

Average (N9935A): Sets averaging the samples taken during measurement

Detector (RSFSH4): Sets the detector type. RMS is recommended for cleaner waveforms.

Samples: Sets the number of samples taken during measurement

Start/Stop MHz: Sets the scanning frequency limits

RBW Mhz: Set the resolution bandwidth for the measurement

Floor dB: Sets the lowest level used for comparison (helpful with noise)

SCPI: Used to send additional SCPI commands to the instrument. Refer to your instrument documentation.

Auto At/Auto RB: Set auto mode for attenuation and resolution bandwidth

Trigger: Enables the external trigger for the instrument

+Slope: Enables trigger for positive slope; uncheck for trigger on negative slope

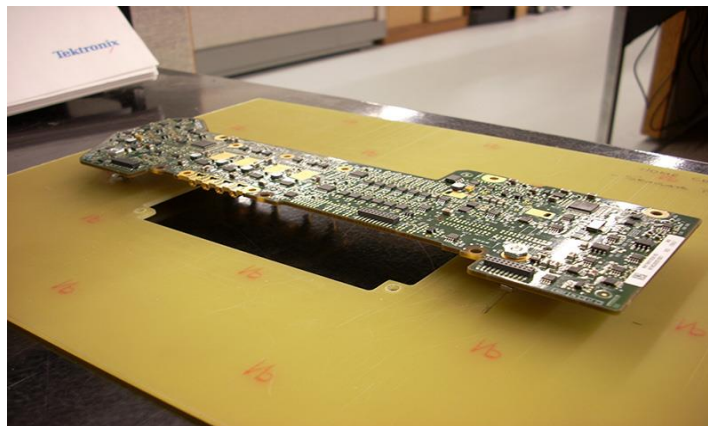
Preamp: Enables the instrument preamp; recommended setting is checked

Mounting a PCB in an Access RF Prober

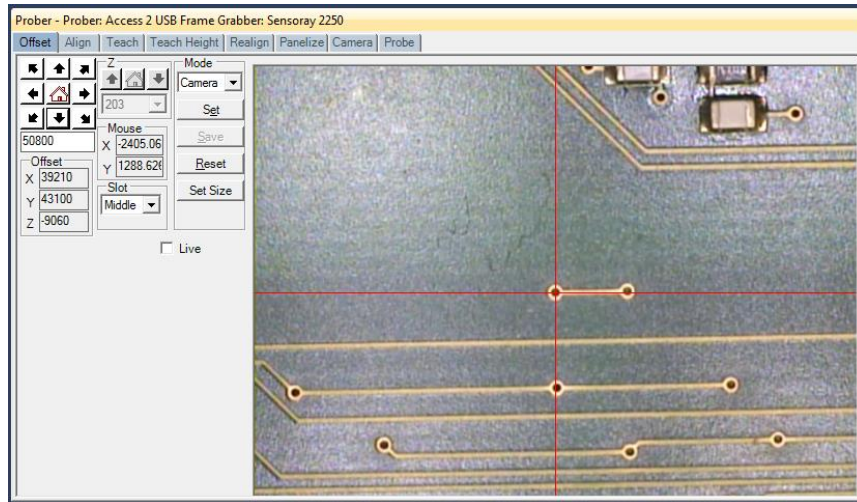
Before software functions relating to an Access RF Prober can be performed, the PCB under test must be mounted into the Prober test area. Use the mounting accessories supplied with the Prober to securely mount your PCB by its edges.



Refer to the Access RF Prober Users manual for more information on mounting a PCB. In some cases, a PCB holder is the best solution especially when the PCB cannot be easily mounted using the standard accessories. You will also need to consider cables and connections for getting the PCB to a power-on stimulated state. PCB holders are typically simple to construct and the only prerequisites are that the holder fit into the Prober and that it holds the PCB precisely at one of the designated Prober "Slots". The Slots are referred to by the position in the Prober as TOP, MIDDLE, BOTTOM and BASE and are set in the Sequence Edit window (see section "**Adding a New Sequence**").



Prober Setup – Camera Offset part 1



Performing the Camera Offset procedure is essential for the Prober to access test points accurately.

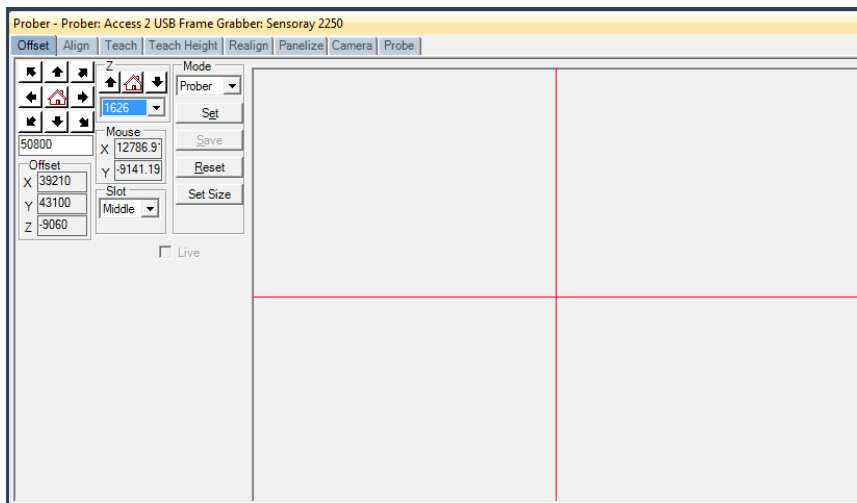
Select the **Offset** tab in the Prober pane.

Navigate the Camera to a target on the PCB. A very small target that is still visible by eye works best. Use the arrow buttons to move the camera the distance set in the travel distance field (directly below the arrow buttons). You can also click directly in the camera image to move the camera crosshairs to the clicked location.

When the target is selected, press **Set**.

Select **Prober** in the Mode drop menu to move to the next step.

Prober Setup – Camera Offset part 2



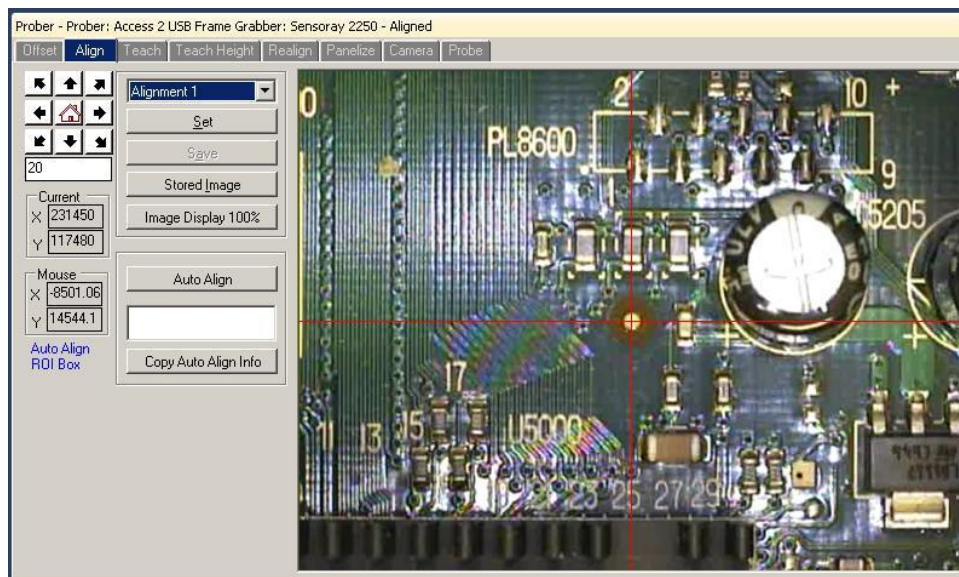
Lower the probe tip down using the **Z** buttons until the probe is as close as possible without contacting with the PCB.

Visually examine the position of the probe tip; it should be located precisely above the target selected in part 1 of Camera Offset, if not move on to the next step. Use a video microscope or magnifying glass if necessary.

Use the **XY** buttons to navigate the probe to the target selected in Part 1. The probe will lift when moving in the X or Y direction.

When the probe is placed precisely over the target press the **Set** and **Save** buttons to calculate the Offset values.

Prober setup – Alignment part 1



Alignment points that are positioned in opposite corners of the board work best. If the test was created using CAD data, the alignment points are pre-selected and you should proceed as described below however be aware that the **Save** button will not become enabled. Refer to the **CAD Import tutorial** for details on Alignment when creating a test from CAD data.

Select the **Align** tab in the Prober pane.

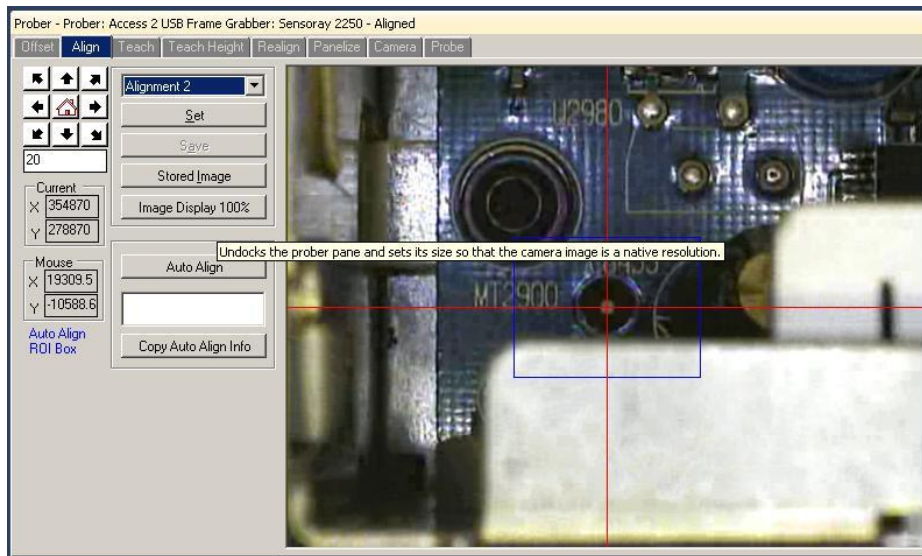
Select **Alignment 1** from the drop menu.

Select and navigate the camera to the first alignment point. Fiducial marks, small vias or traces with 90 degree bends work well for alignment points.

When the camera is set on the first alignment point press **Set**.

The alignment point drop menu will select **Alignment 2** automatically.

Prober setup – Alignment part 2



Make sure **Alignment 2** is selected in the Alignment point drop field.

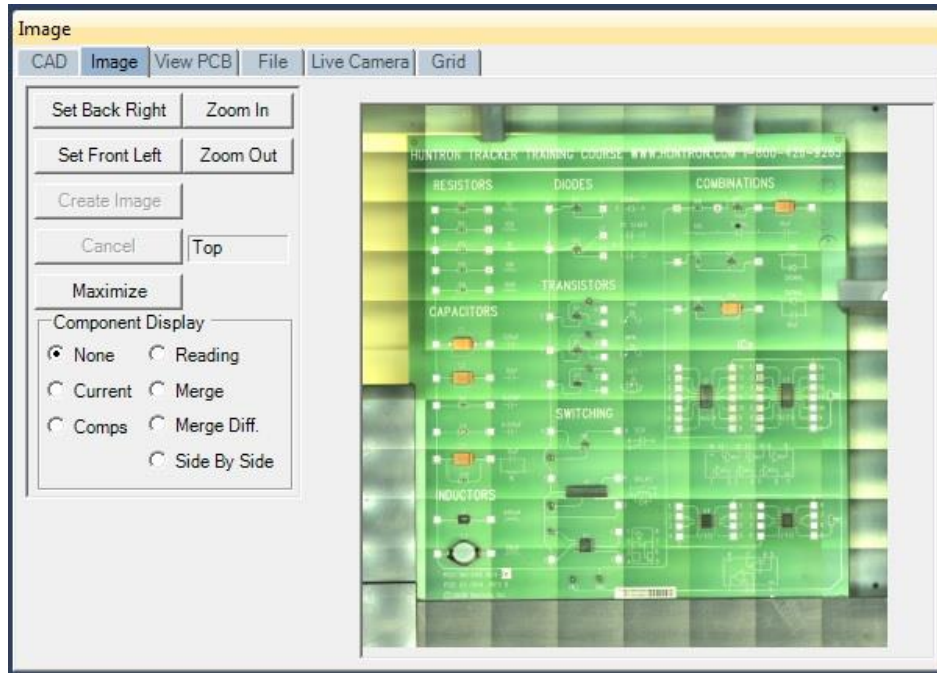
Select and navigate the camera to the second alignment point.

When the camera is set on the second alignment, press the **Set** button.

The **Auto Align** feature will use image recognition to find and automatically center on the alignment point. Auto Align will only work after Align is performed manually the first time.

Press the **Save** button to store the alignment points and the alignment point images.

Creating a Board Image



For Prober users, the built-in color camera can be used to create a “mosaic” of the PCB by capturing images of the board and stitching them together. This is accomplished in the Image/Image Pane. The board must first be aligned before creating the image. Once aligned, you can use any camera view in the Prober pane to set the borders for image capture.

Move the camera to the back right corner of the board.

Press the **Set Back Right** button in the Image/Image Pane.

Move the camera to the front left corner of the board.

Press the **Set Front Left** button in the Image/Image Pane.

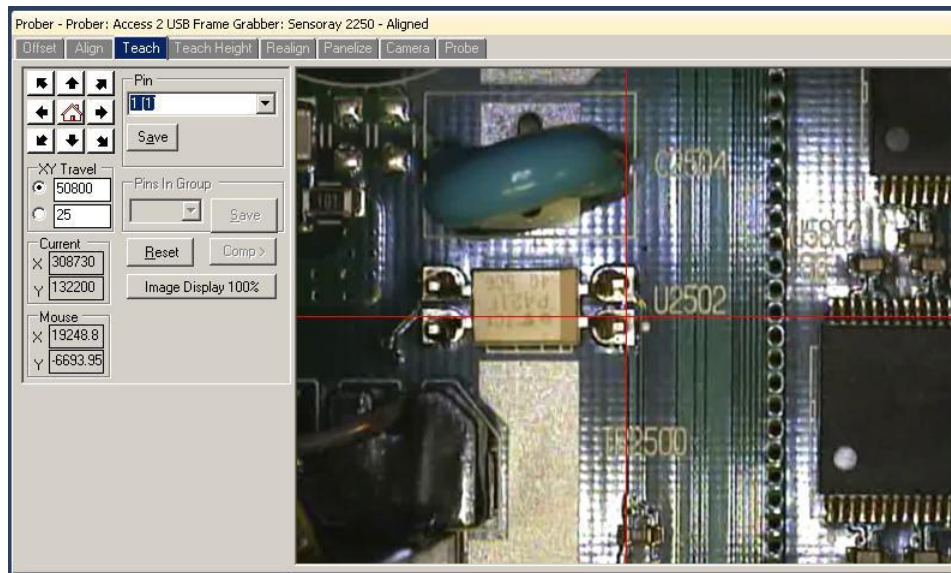
Press the **Create Image** button to create the board image.

Larger boards will require more time to create the board image. Once the board image is created, you can click a point on the board image and the Prober will move the camera to that point.

Right-click on the image to display a menu to **Delete**, **Copy** or **Save As** the board image.

Also, you can enable **Update Image Pane Cursor (Tools menu/Options/Prober tab)** to show the current camera position on the Board image. The position is shown as a transparent grey box with red crosshairs.

Prober setup – TP Teach – XY Setup



Select the **Teach** tab in the Prober pane.

Select the component to teach the **Tree/Component** pane.

Select **1** in the **Pin** drop menu.

Navigate the camera to the location of the first TP (Pin 1) (see image above).

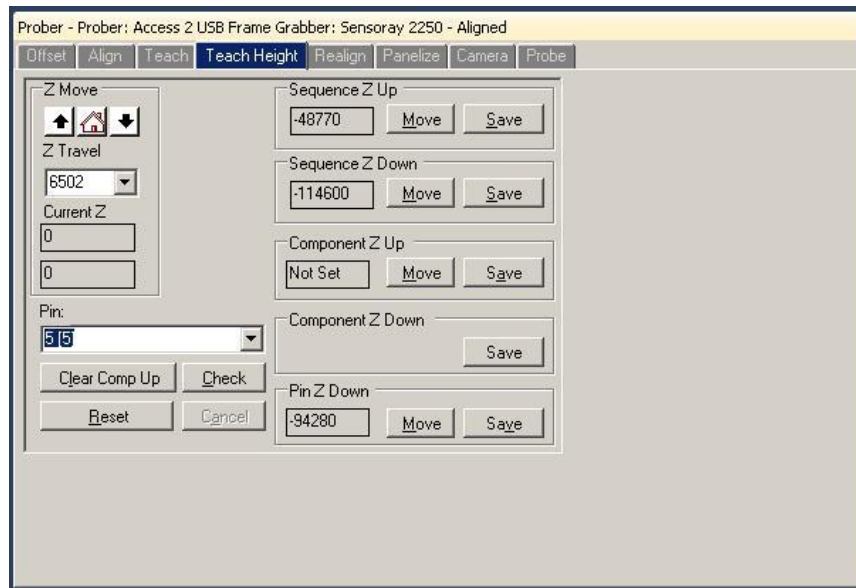
When the camera is set on the first TP, press the **Save** button. The **Pin** drop menu will increment to the next pin.

Navigate the camera to the Location of the 2nd TP.

When the camera is set on the 2nd TP, press the **Save** button.

Continue setting the XY locations of all the TPs.

Prober setup – TP Component Teach Height (Z)



Select the **Teach Height** tab in the Prober Pane.

Select a Pin number in the **Pin Z Down** drop menu. This will position the probe tip at the selected TP.

Use the **Z Move** buttons to lower the Z axis probe to the desired Sequence Up level. Make sure this level is high enough to clear tall components and chassis walls. This is the position the probe will lift to while probing the pins of all components in the Sequence.

Press the **Save** button in the **Sequence Z Up** section to set the Sequence Up position.

If desired, you can set an additional Up level for the selected component. This is the level that the probe will lift to when moving from one pin to the next. Use the **Z Move** buttons to move the probe down to the desired Component Up level. Make sure this level is high enough to clear the component package. Press the **Save** button in the Component Z Up section to set the Component Z Up position.

The next step is to set the probe down position.

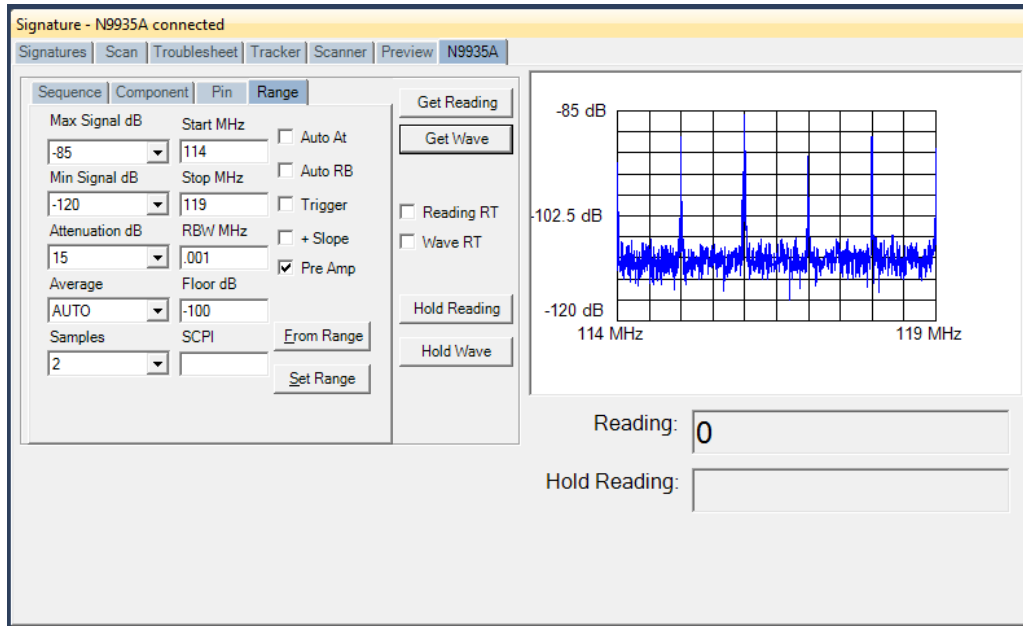
Use the **Z Move** buttons to lower the probe to the position used when the measurement will be taken. You may want to lower the probe in small increments when working close to the PCB surface. Do this by changing the Z Travel distance setting.

Press the **Save** button in the **Sequence Z Down** section to set the Sequence Down level. This is the level the Prober will use when probing the component pins.

If needed, you can also set **Component Z Down** and **Pin Z Down** levels for individual components and pins. If the TPs of the component have varied heights, then use the **Pin Z Down**

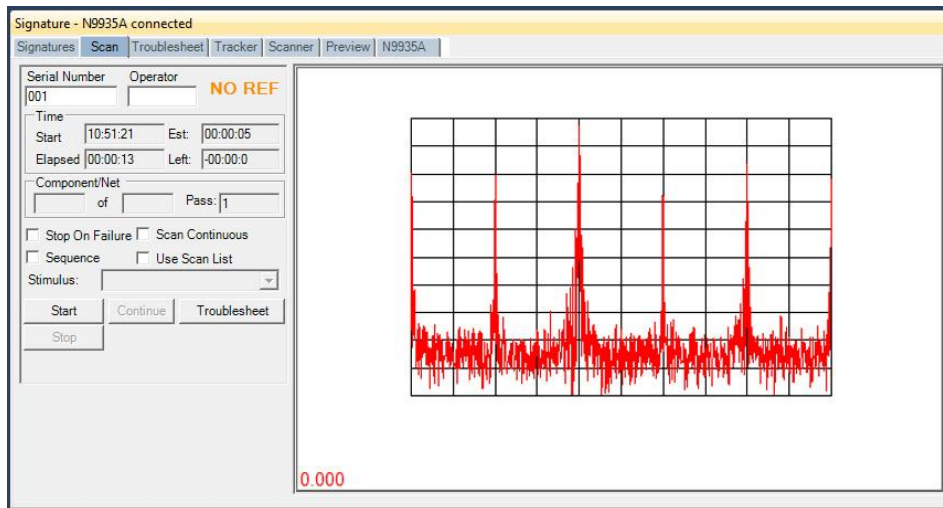
settings to modify the height position for each individual pin. Select the pin in the **Pin** drop menu, position the probe to the desired height and click the **Save** button in the **Pin Z Down** section.

Manual Modes



Manual measurements can be obtained using the **N9935A** or **RSFSH4** tab in the **Signature** pane. This pane may be useful when configuring test parameters for a Test Point (TP). Setup the Measurement parameters and click **Get Reading** to capture and display a numeric Power measurement. Click **Get Wave** to capture and display the spectrum analyzer waveform. Click **Hold Reading** or **Hold Wave** to keep the reading or waveform displayed while capturing and displaying a second measurement. Use the **From Range** button to set the range parameters to the same setting as the selected Component. Use the **Set Range** button to set the ranges for the selected Component/Range using the displayed parameters. **Reading RT/Waveform RT** (RealTime) will enable a constant refresh of the waveform or reading.

Scanning a Sequence or Component



Select the Sequence or Component to be scanned in the Tree Pane.

Select the **Scan** tab in the Signature Pane (shown above).

Input a **Serial Number** into the Serial Number field; this will be the name of the scan.

The **Stop On Failure** check box will cause the scanning to stop if a component comparison fails.

This is most useful when scanning known good boards to add as references.

The **Scan Continuous** check box will cause the scan to go into a loop mode where it will scan without stopping until a signature comparison fails.

Enable the **Sequence** checkbox to scan all of the components in the Sequence.

The **Use Scan List** check box will add the ability to use a Scan List when the Scan Sequence dialog appears (see Creating a Scan List section).

Press the **Start** button to execute the scan.

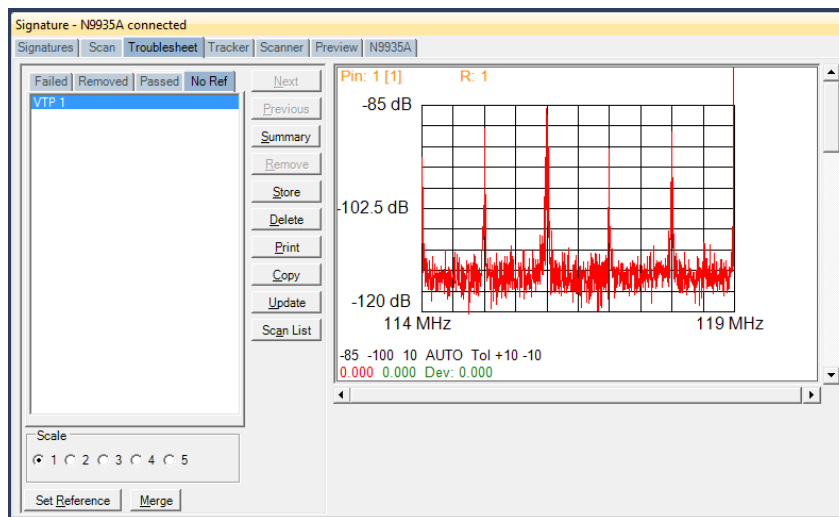
The test instructions prompt will be displayed. Clicking OK will start the scan for probers.

When a scan is complete, the results **NO REF** (No Reference), **PASSED** or **FAILED** will be displayed (the text of the results message can be changed in the **Tools/Options/General** settings). The **NO REF** message will be displayed on the first scan of any test since there are no scans stored as Reference.

Clicking the **Troubleshoot** button will display the waveform differences in the Troubleshoot tab of the Signature pane.

Viewing Signatures – Troubleshoot

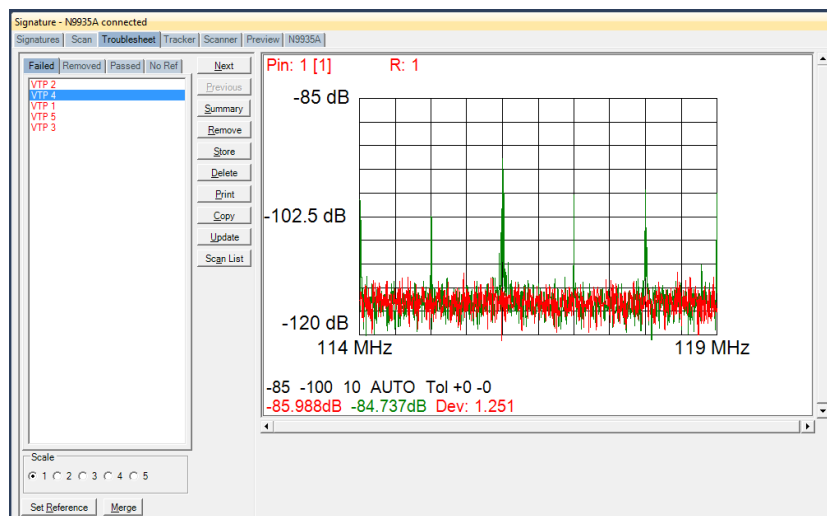
To view the test results, press the **Troubleshoot** button in the Scan Results window.



The current measurement, the measurement type, nominal value, tolerances, deviation and test result will be displayed in the signature box.

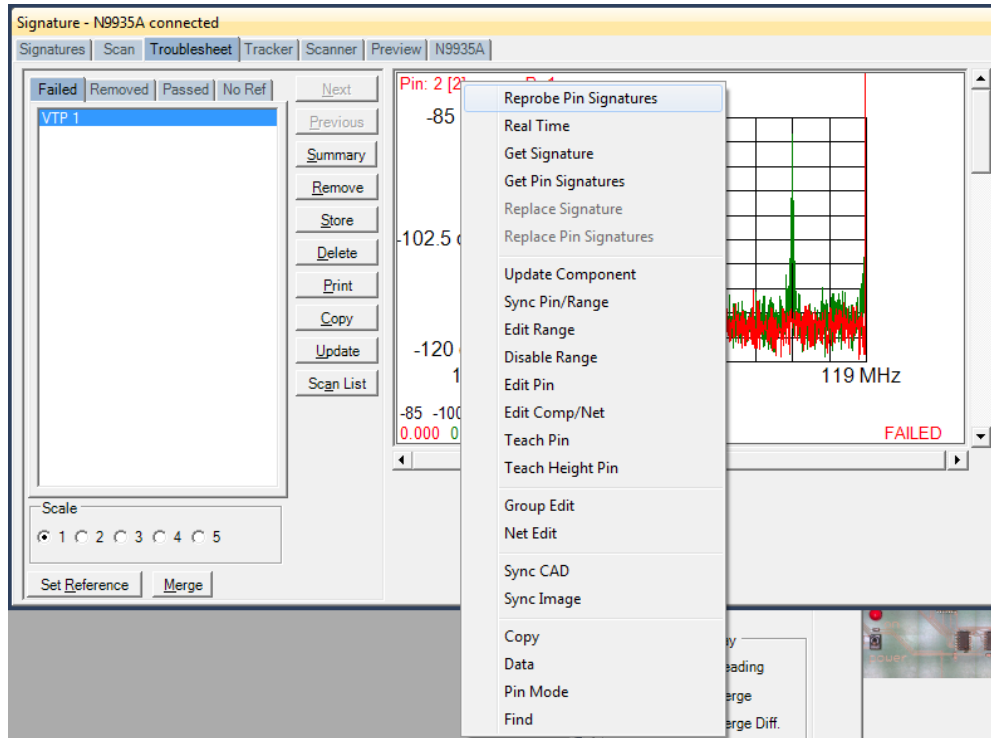
If this is the first scan then clicking the **Set Reference** button will mark the current scanned waveforms as the known good scan for comparison.

When a scan is executed signatures are compared against the Reference set (or sets) if it exists. To add the signatures in the Troubleshoot as a Reference, press the **Set Reference** button (do this only with known good measurements). Signatures of the compared (Reference) signatures are displayed in contrasting colors. By default, the Reference signature is green and the failed signature is red.



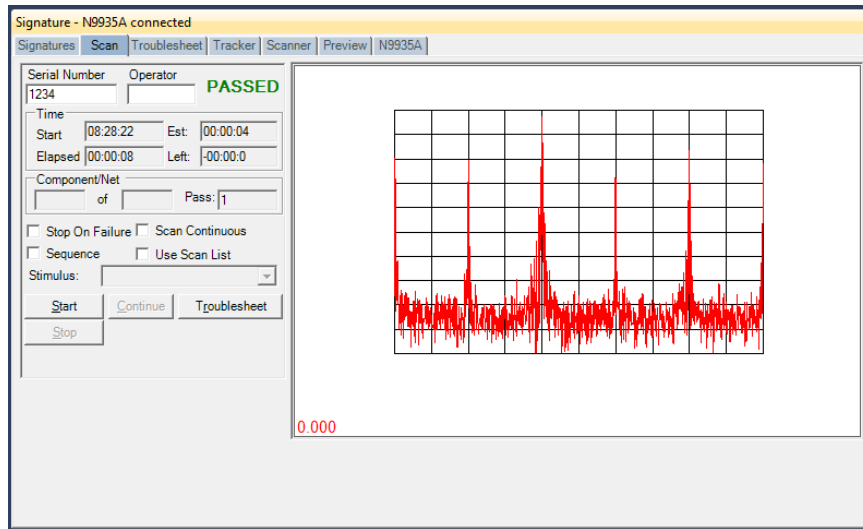
The **Deviation (Dev)** shown in the signature box is the amount that the measured value deviates from the Reference value plus the tolerances set for the range.

Right-click the signature box to display the functions menu.

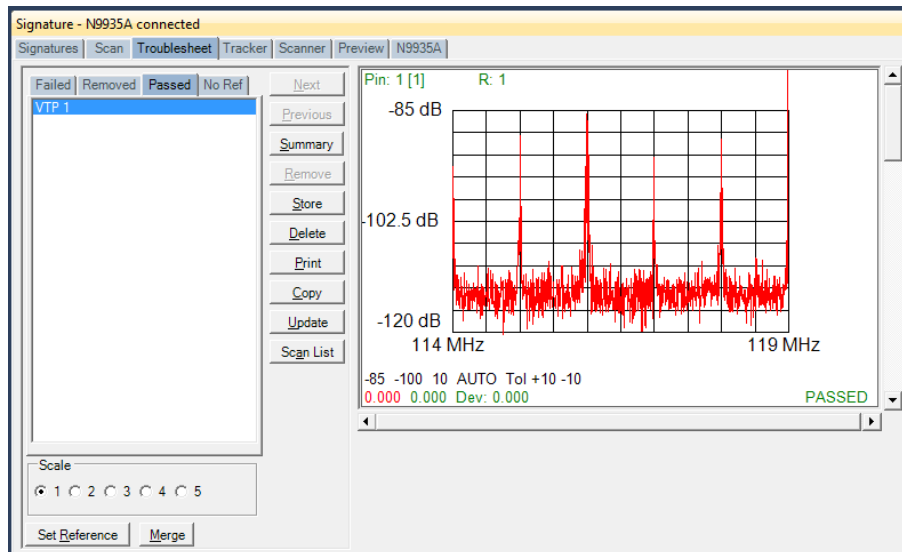


Most of the items on the menu are shortcuts to functions such as **Sync Pin/Range**, **Teach Pin**, **Teach Height Pin**. One of the most useful is **Reprobe Pin Signatures** which will rescan the selected pin and prompt to replace the previous scan with the new scan. See the **Viewing Signatures – Right Click** section below for more details on this menu.

If **Set Reference** is used, run the Scan again. A PASSED result should be indicated.



Click the Troubleshoot button to view the results. The Reference and Passed measurements will be displayed as well as the Deviation (**Dev.**) between the two.



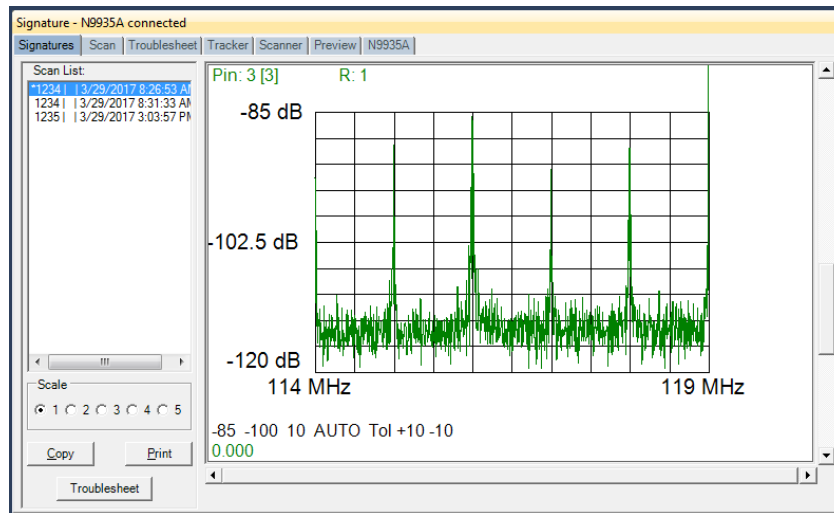
Viewing Signatures Troubleshoot Report

To view and print the Troubleshoot report, press the **Print** button in the Troubleshoot window. You can select from several options including a Sequence or Component Level report, the level of detail and add problem and solution comments to the report. Click **Preview** to view the report on-screen

Board Information			
Name:	89006880	Revision:	A1
Top Name:	Top	Gold Disk:	Manufacturer:
Bottom Name:	Bottom	System:	
Instructions:			
Sequence Information			
Name:	Top	ID:	1
Order Number:	1	Stop on Failed Component:	False
Z Home Between Components:	True	Top Side:	True
Component Sequence:	True	Compare Priority:	All
Show Instructions:	False	Instructions:	
Total Component Nets:	55	Total Scanned:	54
Total Passed:	54	Total Failed:	0
Total Removed:	0		

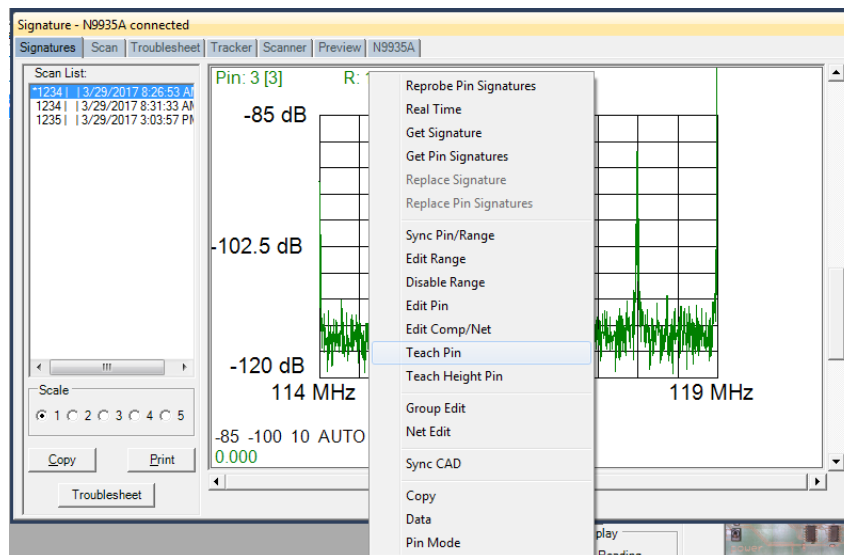
The report can be printed or exported in several different formats including HTML and PDF by selecting **File/Export Document** in the Preview window.

Viewing Waveforms in the Signatures Pane



To view scanned waveforms, select the **Signatures** tab in the Signature Pane. Signatures marked with an asterisk * indicate that this scan is set as a Reference. The Scan name, date and time will be displayed on the left side of the window and waveforms on the right. The **Scale** buttons will change the number of columns displayed. Scaling the window will increase the number of waveforms displayed. The **Copy** button will copy the waveforms to the Windows clipboard so they can be pasted into another program (in a metafile format). The **Print** button will print the waveforms in one of several different user selected formats.

Viewing Signatures – Right Click



Additional options when viewing signatures can be displayed by right clicking in the signature area.

Reprobe Pin Signatures: Gets new signatures and prompts to replace the previous ones. If this option is performed with a Reference scan selected from the list on the left (marked by *), then you can replace the Reference signature. **This is helpful if you had set an incorrect measurement as a Reference and want to replace it.**

Real Time: Updates measurement in real time

Get Signature: Capture signature

Replace Signature: Replaces the stored signature with the current signature displayed for the selected pin, range and scan (shown in the Scan List to the left)

Replace Pin Signatures: Replaces the stored signatures with the current signatures displayed for the selected pin, all ranges and scan – works only in Range Mode

Sync Pin/Range: Selects pin and range in the Tree (see default in Tools/Options)

Edit Range: Selects the pin and range in the Tree and opens the Edit Range dialog

Disable Range: Disables the selected range for the selected Pin

Edit Pin: Selects the Pin the in the Tree and opens the Edit Pin dialog

Edit Comp/Net: Opens the edit window for the selected Component or Net

Teach Pin: Selects the pin the Prober Teach pane

Teach Height Pin: Selects the pin the Prober Teach Height pane

Group Edit: Opens Group Edit dialog for editing of component pin parameters as a group

Net Edit: Opens Net Edit dialog for editing of Net pin parameters as a group

Sync CAD: Will link the selected signature to the CAD image displayed in the Image/CAD pane.

Sync CAD will be disabled if there is no linked CAD data.

Copy: Copies the selected waveform to the Windows clipboard

Data: Displays the numeric data for the selected measurement

Range/Pin Mode: Displays signature with Range priority or Pin priority; see default in Tools/Options).

Component Scans Information

Serial Number	Operator	Scan Date Time	Stimulus	Merged	Reference	Passed	R
001		Friday, May 16, 2014 8:02:12 AM	None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
001		Friday, May 16, 2014 8:01:24 AM	None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
001		Friday, May 16, 2014 8:00:53 AM	None	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Selecting the **Component Scans** tab in the Tree Pane will display all of the scans performed on the **selected component** in a table format. The Scan information displayed includes the serial number, operator, date/time, Merge setting (checked if this scan is included in the Merge set), Reference setting (checked indicates it is set as a comparison Reference), Pass status (will be checked if components passed comparison), Removed status (will be checked if component was removed from Troubleshoot), Area number (highest of scanned pins), Deviation, Min/Max status and other settings (see Help for more information).

Component Scans – Right Clicking (Auxiliary menus)

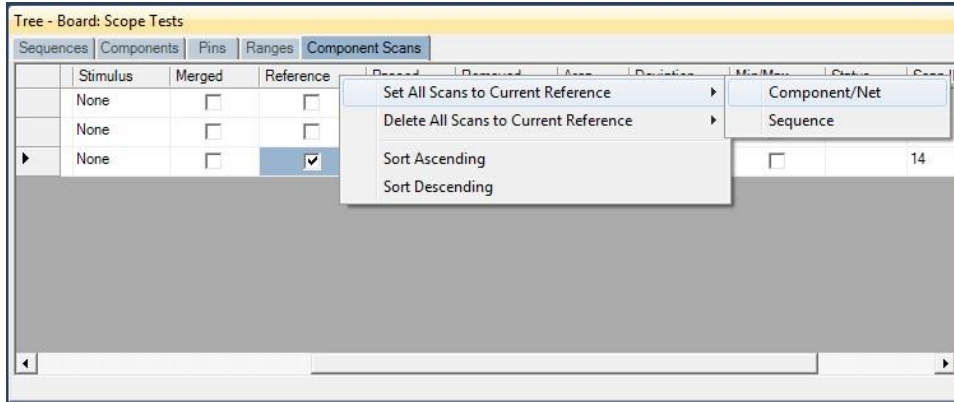
Serial Number	Operator	Scan Date Time	Stimulus	Merged	Reference	Passed	R
001		Friday, May 16, 2014 8:02:12 AM	None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
001		Friday, May 16, 2014 8:01:24 AM	None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
001		Friday, May 16, 2014 8:00:53 AM	None	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

- Enable Sequence Reference
- Disable Sequence Reference
- Delete Scan
- Delete Scan All Components/Nets
- Load Troubleshoot

Right clicking on the Row bar of the **Component Scans** pane displays an additional menu for performing specific tasks such as deleting a scan for the selected components or all components. **Enable Sequence Reference/Disable Sequence Reference** will mark or unmark the selected scan as a Reference (comparison) scan for all components in the Sequence. **Delete Scan** will erase the selected scan for the current component only. **Delete Scan All Components/Nets** will

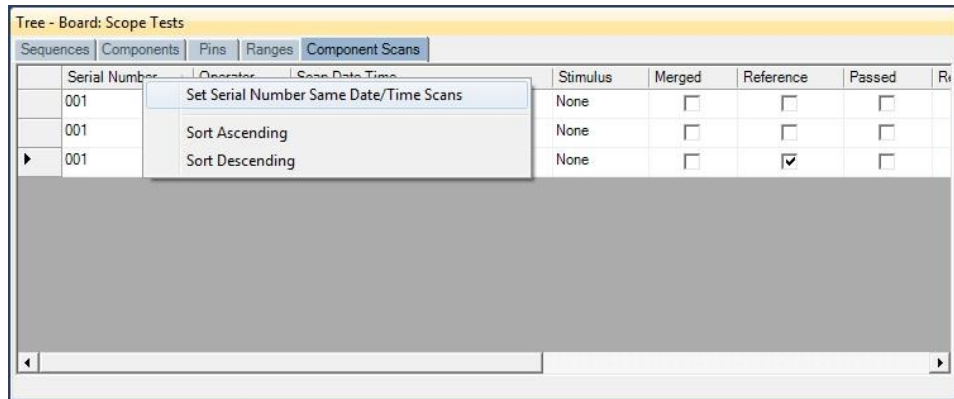
erase the selected scan for all components or nets in the Sequence. **Load Troubleshoot** will display the selected scan in the Signature pane/Troubleshoot tab.

Component Scans – Right Clicking (Auxiliary menus)



Right clicking on the Column bar of the Component Scans pane displays an additional menu for performing specific tasks such as sorting or globally setting parameters. The menu will vary depending on the column selected. In the image above, the Reference column header was right-clicked.

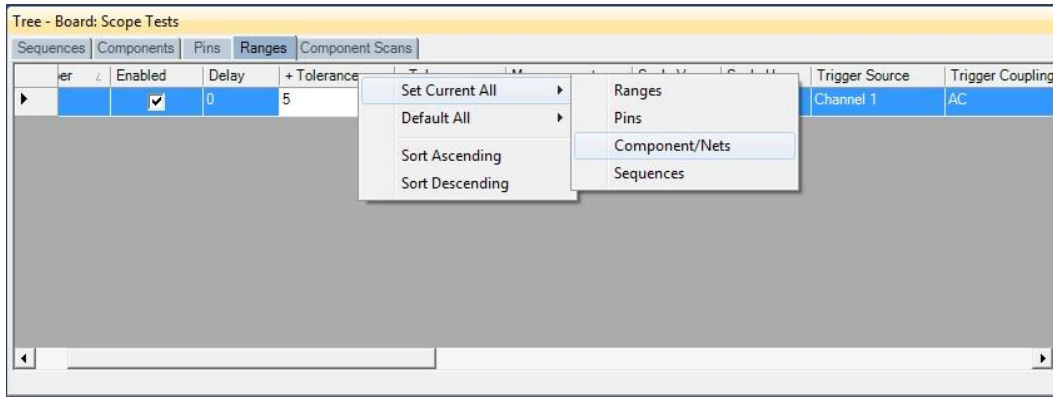
Component Scans – Right Clicking (Auxiliary menus)



Right clicking on the Column bar of the Component Scans pane displays an additional menu for performing specific tasks such as sorting or globally updating items. In the image above, the Serial Number column header was right-clicked.

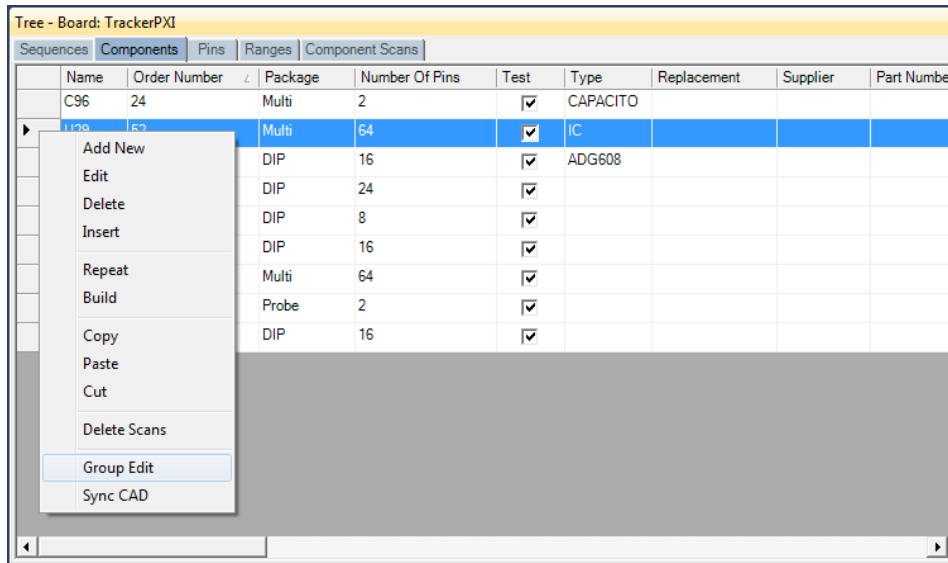
Range Tab – Right-click Menu

One very useful feature making quick global changes to range parameters is the menu available by right-clicking the column header (the title area directly above the column) in the Range tab.



After making a parameter change for the range, **right-click** the column header for that parameter as shown in the image above to display the menu. The most useful selection is **Set Current All/Pins** where all of the pins of the component will be modified to the same setting as the selected Pin. This menu is available for most Range parameters. Remember to make the parameter change first then use **Set Current All/Pins**.

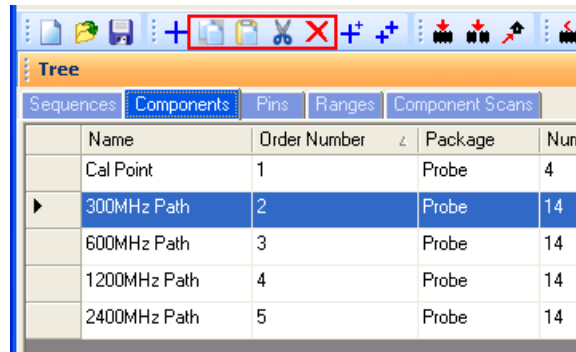
Sequence/Component/Pin Editing – Right Click menus



Right clicking on the Row header bar of the Tree pane displays an additional menu for performing specific tasks such as **Add New**, **Insert**, **Delete**, **Repeat**, **Build** (repeat but with name incremented by 1), **Copy**, **Paste** and **Cut**. Right clicking works at all levels of the Tree pane including Sequence, Component (shown above), Pins, Ranges and Scans. The **Sync CAD** option

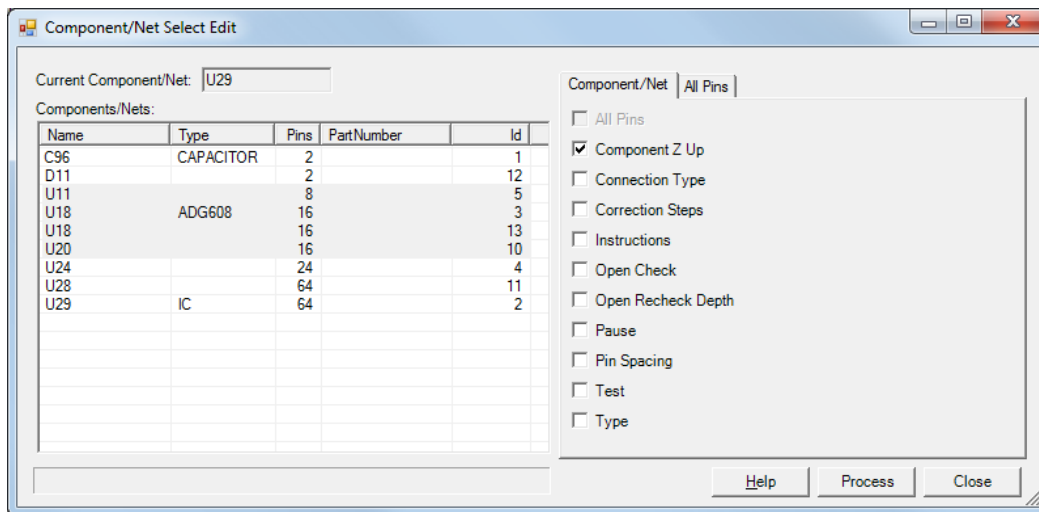
available at the Component and Pin levels will synchronize the selected component or pin to the CAD tab in the Image pane.

It is also possible to select groups of components by holding the **SHIFT** or **CTRL** keys while selecting components in the Tree. To copy, paste, cut or delete groups of components, use the Copy, Paste, Cut or Delete Toolbar buttons below the main menu.



Select **Group Edit** to open the Group Edit window for the selected Component. This allows you to duplicate changes made to the selected Component to other Components in the Tree.

Note: Be sure to make your changes to the selected Component **before** using Group Edit to duplicate the settings to other Components.



To use the Component Group Edit, select the Components on the left that you wish to change. You can **SHIFT** and **CTRL** keys to select groups or individual Components in the list. Mark the setting you want to change by clicking the checkbox. The example above shows the **Component Z UP** as the setting to change. Click **Process** to make the changes to the selected Components.

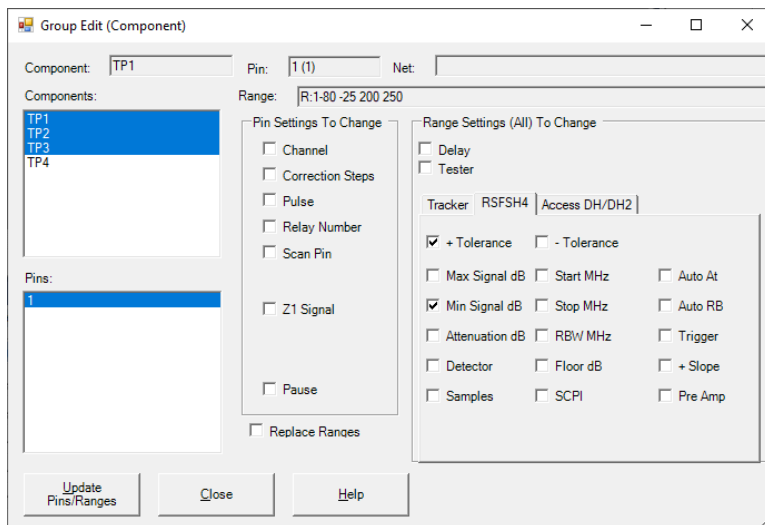
Pin Editing – Right Clicking (Auxiliary menus)

Name	Pin Number	Order Number	Net Name	Scan Pin	Unique Pin	Channel
Edit	1	1	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	A
Group Edit	2	2	0	<input type="checkbox"/>	<input type="checkbox"/>	A
Net Edit	3	3	0	<input type="checkbox"/>	<input type="checkbox"/>	A
Sync CAD	4	4	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	A
SW3 Out A	5	5	0	<input type="checkbox"/>	<input type="checkbox"/>	A
SW3 Out B	6	6	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	A
DIV2 In	7	7	0	<input type="checkbox"/>	<input type="checkbox"/>	A
DIV2 Out	8	8	0	<input type="checkbox"/>	<input type="checkbox"/>	A
SW5 Out	9	9	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	A
DDS In	10	10	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	A
DDS Out	11	11	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	A
SW2 Out	12	12	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	A
ATTEN In	13	13	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	A
ATTEN Out	14	14	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	A

Right clicking on the Row header bar of the Tree/Pins pane allows for editing of the pin information. Select **Edit** to open the Edit window for the selected pin.

Note: Some Pin settings can also be edited directly in the Pins grid by clicking the appropriate field and modifying the setting.

Group Edit and **Net Edit** allow you make changes to the pin of a component and have those modifications also change components that have the same number of pins within the same Sequence.

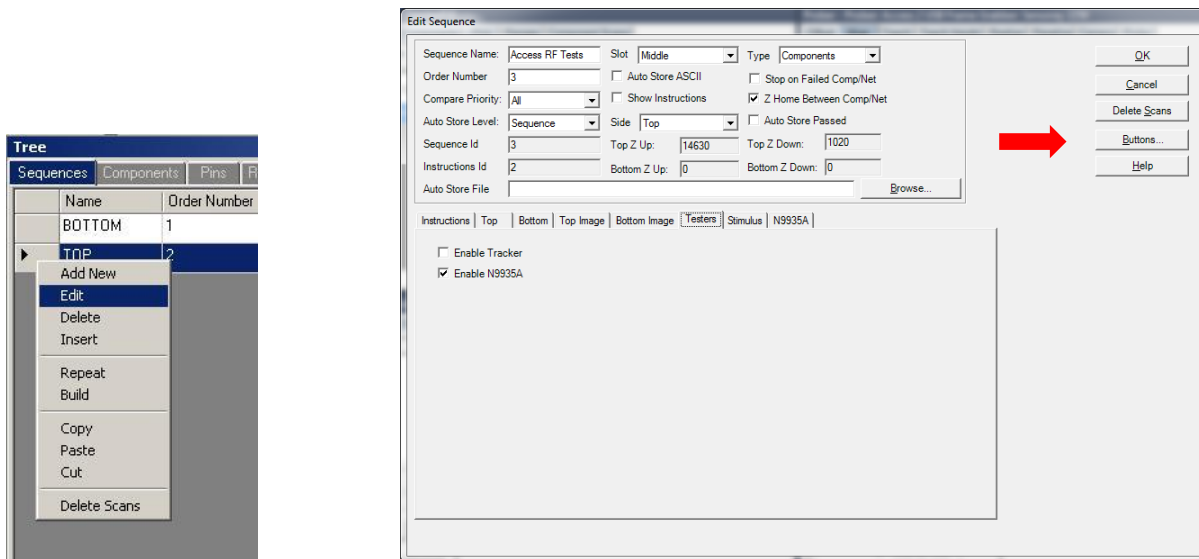


Change the desired settings for the current Pin first then select Group Edit from the right-click menu (see above). Components with the same number of pins will be listed. Select the components and pins you want to be changed. Select the Pin Settings check box(s) for the setting(s) you want changed. Check the Ranges box to match the ranges (this will cause signatures to be deleted). Click the **Update Pins/Ranges** button to make the changes.

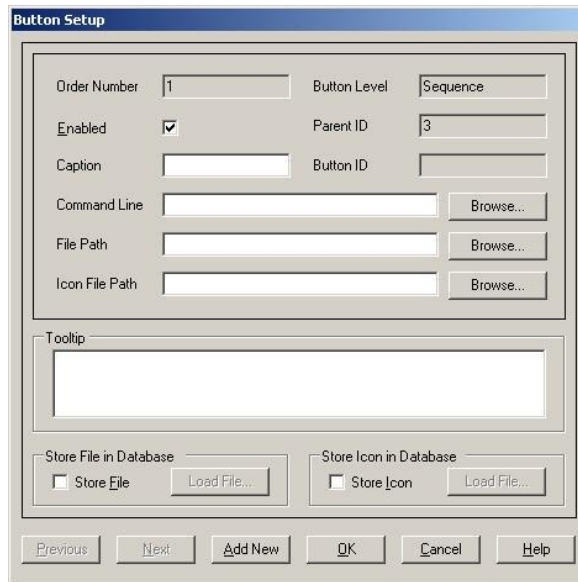
Huntron Workstation Buttons Feature

Huntron Workstation has a built-in feature that allows any Windows based program to be started by clicking a button in the Workstation toolbar. It is very easy to use and a "Button" can be attached to any Board, Sequence or Component/Net. In this example, a Button will be created for a Sequence but the process is the same for the Board and Component/Net levels.

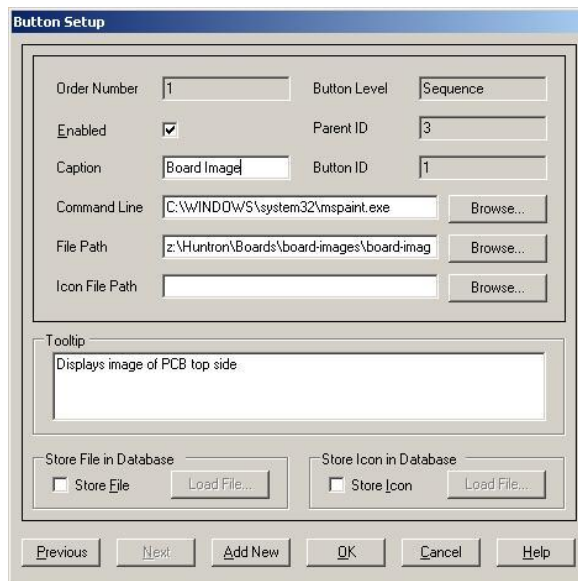
To start, the Sequence edit window is opened by right-clicking the row header for the desired sequence. The Edit window will be displayed (see below).



Select the **Buttons...** button located on the right side of the Sequence Edit window to open the Buttons Setup window.

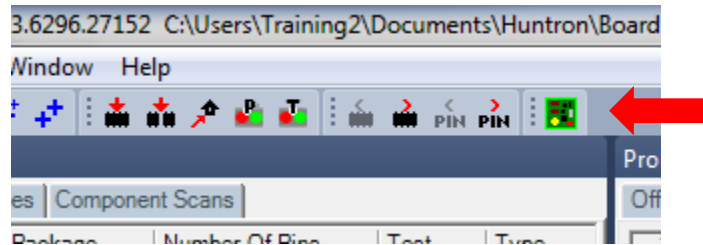


To configure the Button, a Caption (button name displayed in the Tools menu), Command Line (the application to be run) and File Path (the file opened by the executed application) need to be input into the corresponding fields. A File path will not always be required such as instances where a browser is started and pointed to a specific URL. In this example, the button will be configured to start the Microsoft Paint application and open a small PCB image (see image below). If desired, the icon displayed in the main window toolbar can be set by browsing to and setting a path to an .ICO (icon) file in the **Icon File Path** field. Add text that will be displayed when the cursor is placed over the Button in **Tooltip** field. To make the linked file or icon stored as part of the Board database, check the **Store File** and/or **Store Icon** checkboxes.



Click **OK** to accept the Button. To create additional Buttons, repeat this process and click the **Add New** button in the Button Setup window.

When Buttons are created, an additional toolbar button will appear below the Huntron Workstation menu. This toolbar button will change according to the level (board, sequence or component/net) selected.



The icon shown can be replaced by selecting an appropriate icon in the Button Setup window (the default icon is shown). Click the toolbar button to execute the Button.

Technical Support

For questions or assistance in using Huntron Workstation, contact Huntron at 800-426-9265, 425-743-3171 or email info@huntron.com. There is online assistance for Huntron Workstation at www.huntron.com/sales-support/software.htm. This page will contains software updates and updates to documentation such as this tutorial.

Appendix 1: Using the Set Size Feature for Access Probers

The Set Size feature allows the user to make adjustments to the dimensions (units of measure per pixel) of the image used in the Offset, Align, Teach and Realign windows. This is useful to adjust accuracy when clicking in the image to move to a point and to create better stitching of the image used in the Image pane/Image tab.

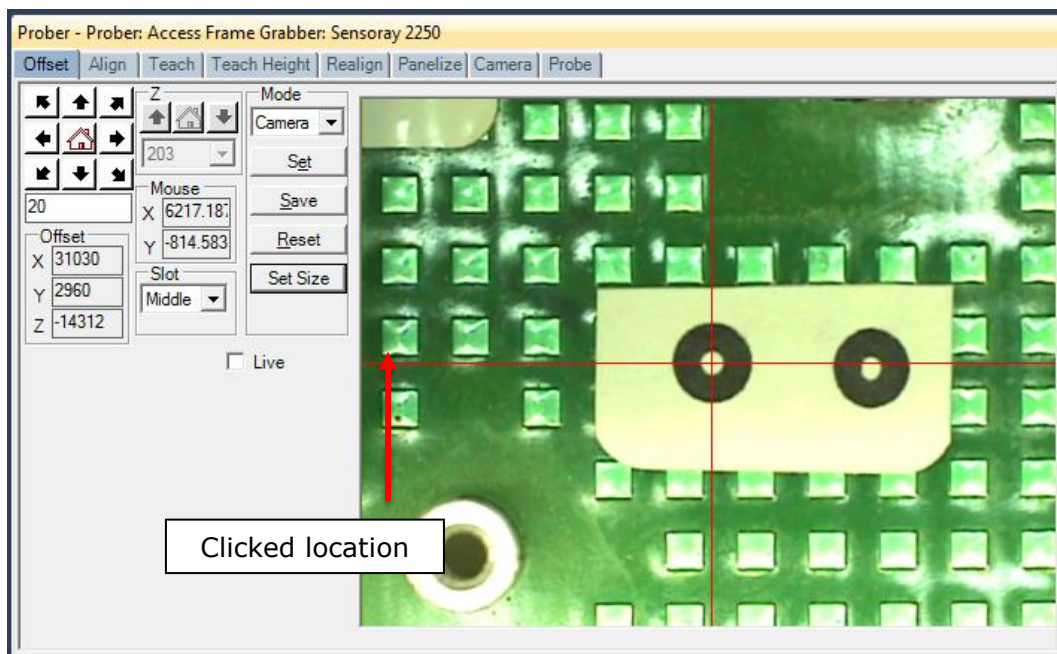
The Set Size feature is available by clicking the **Set Size button** in the Prober pane/Offset tab. The dimensions shown in the Set Size window when opening it for the first time will be factory default values.

The basic rules making adjustments in the Set Size window are:

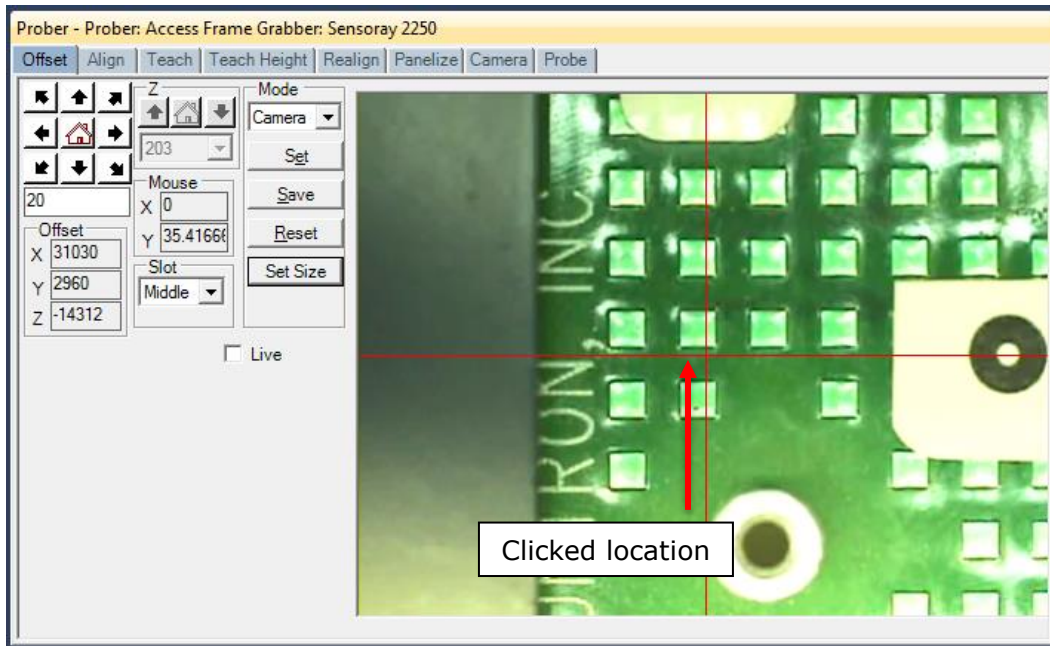
- When clicking on a point in the camera image and the camera moves too far – **decrease** the Horizontal Length and Vertical Height values
- When clicking on a point in the camera image and the camera moves too short – **increase** the Horizontal Length and Vertical Height values

Use the following example to help learn the process of calculating and adjusting the values. In this example we will be adjusting for a camera that moves too short. **Before starting, make sure the circuit board is mounted at the Slot level set for the selected Sequence. The board cannot be above or below the selected Slot level.**

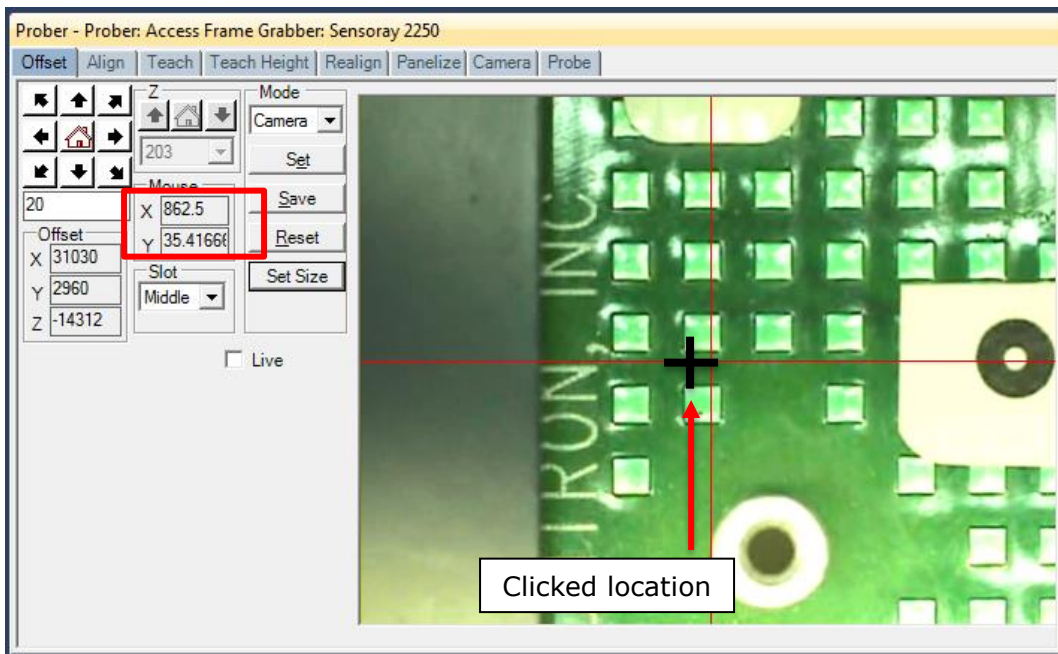
Place the camera crosshairs on a point on the circuit board. Next, click on a point at the extreme left or right edge of the image, in this case, the left side was used.



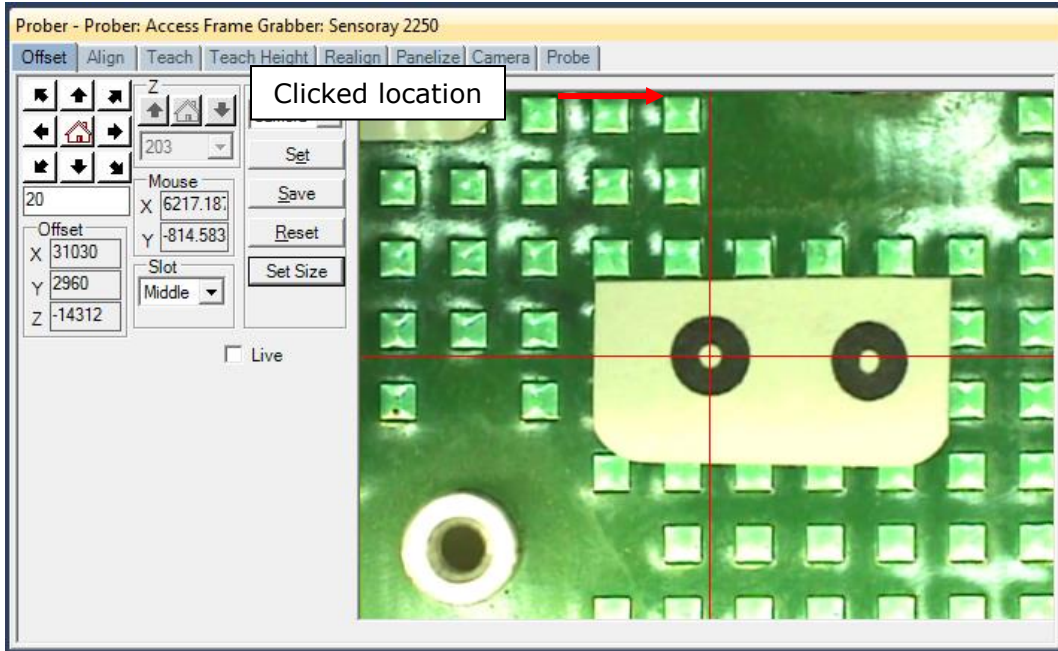
Notice that the camera crosshairs did not go to the clicked location but fell short.



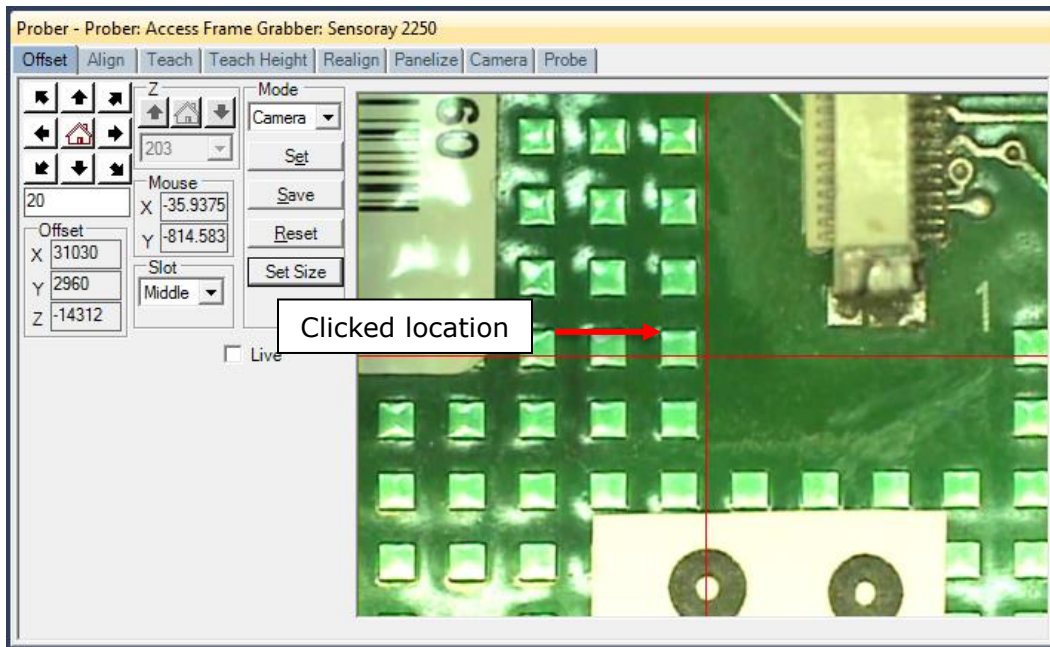
To measure the distance from the crosshairs to the clicked location, move the mouse cursor (crosshairs) to the clicked location but **do not click**. The distance between the camera crosshairs location and the clicked location will be shown on the **Mouse X field** of the Offset window (red box). Write this value down.



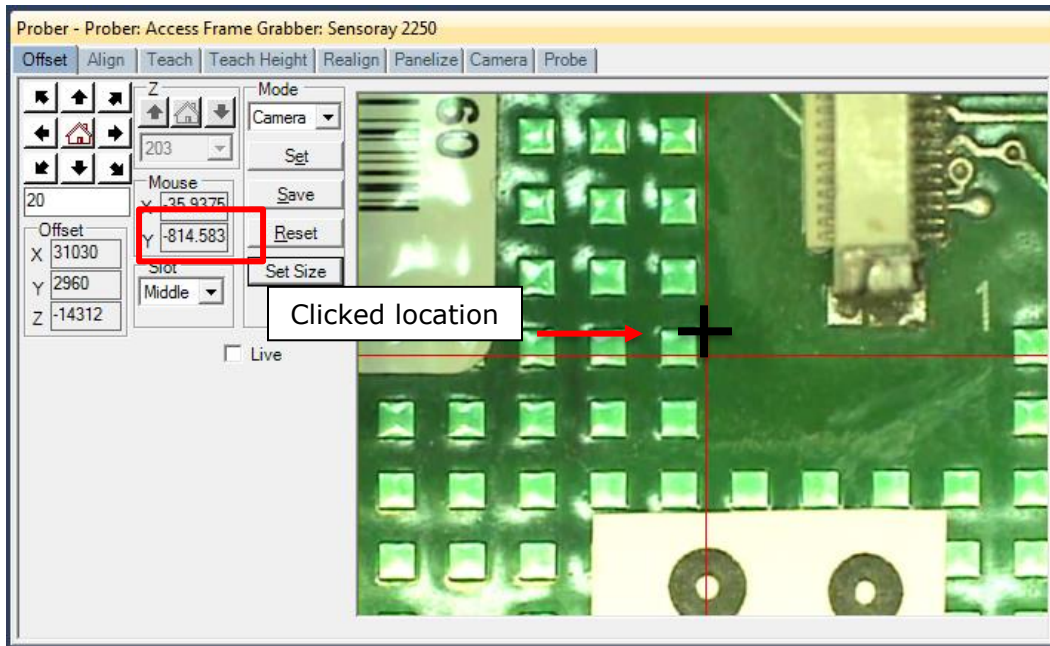
The next step is to calculate the vertical distance. Put the camera crosshairs on a point on the circuit board. Click a location on the extreme top or bottom edge of the camera image. In this example, the top edge was used.



Notice that the camera crosshairs did not go to the clicked location but fell short.

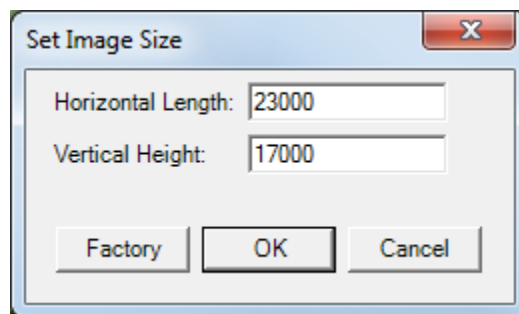


As you did with the horizontal distance, you will need to measure the distance from the camera crosshairs to the clicked location by moving the mouse crosshairs to the clicked location.

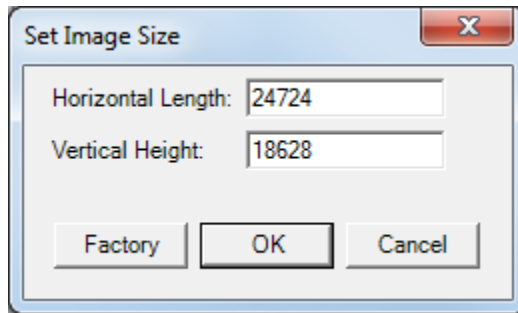


Move the mouse cursor (crosshairs) to the clicked location but **do not click**. The distance between the camera crosshairs location and the clicked location will be shown on the **Mouse Y field** of the Offset window (red box). Write this value down.

Click the **Set Size** button and you will see this window displayed. The values shown will be the factory default unless they were changed previously.



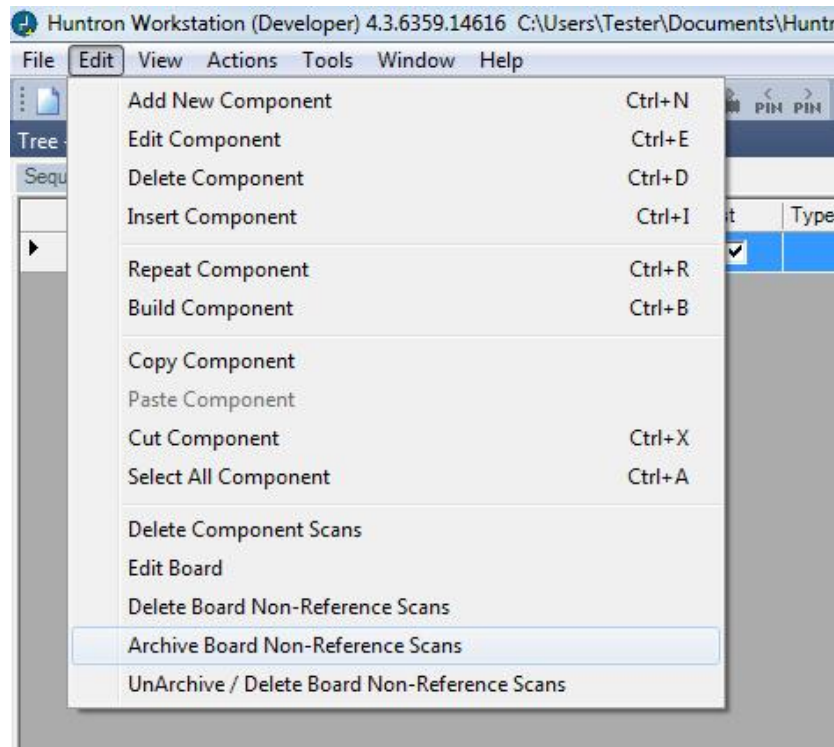
Using the X measurement you wrote down earlier, **multiply this distance X2** and add the result to the **Horizontal Length** value. Next, multiply the Y measurement written down earlier **X2** and add the result to the **Vertical Height** value. It is necessary to multiply by 2 because the dimension needs to be corrected in two directions, top edge to bottom edge and left edge and right edge. The image below shows that values with the measured corrections made.



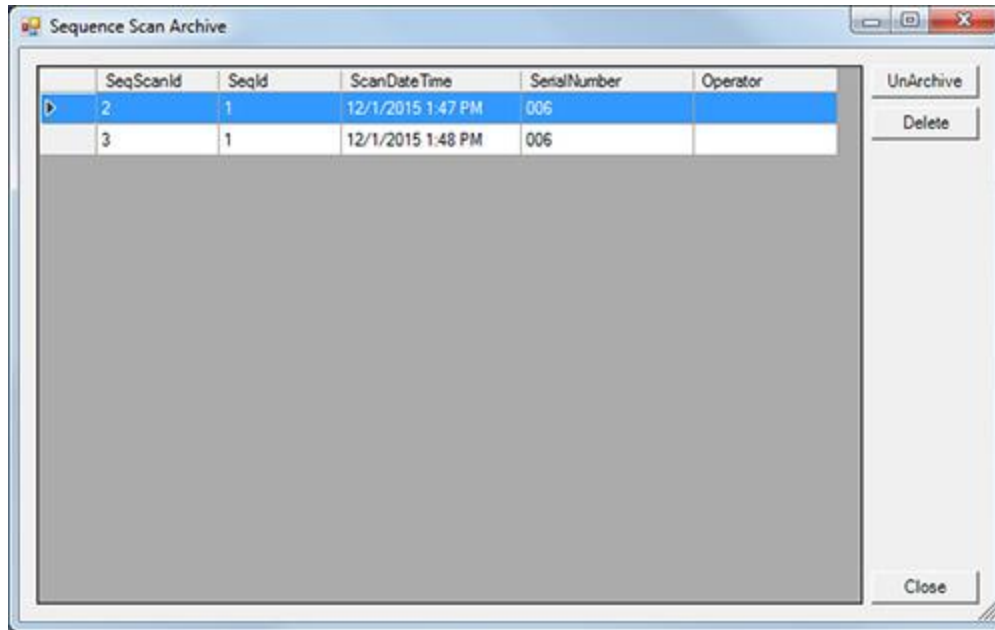
Click **OK** to save the changes and try clicking in the camera image. You will find that the accuracy is much better. You may need to make additional small adjustments to achieve satisfactory accuracy. If you have a board image already created in the **Image pane/Image tab**, you will want to recreate the image again. The result should be better stitching at the image tile seams and an overall better image.

Appendix 2: Huntron Workstation Archive Scans Feature

The new Archive feature built into Huntron Workstation allows you store and remove Sequence scans from the working database to achieve better performance. These archived scans are not deleted but saved away in a different database table and can be restored at any time. It is very simple to use.



- Select "Archive Board Non-Reference Scans" from the Workstation Edit menu
- At this point the software will search the database for non-reference scans that were part of a Sequence scan and remove them from the active database
- If you look at the Components Scans tab in the Tree pane, you will see that the Reference scans remain
- To unarchive a scan, select "UnArchive / Delete Board Non-Reference Scans"
- The Sequence Scan Archive window will be displayed



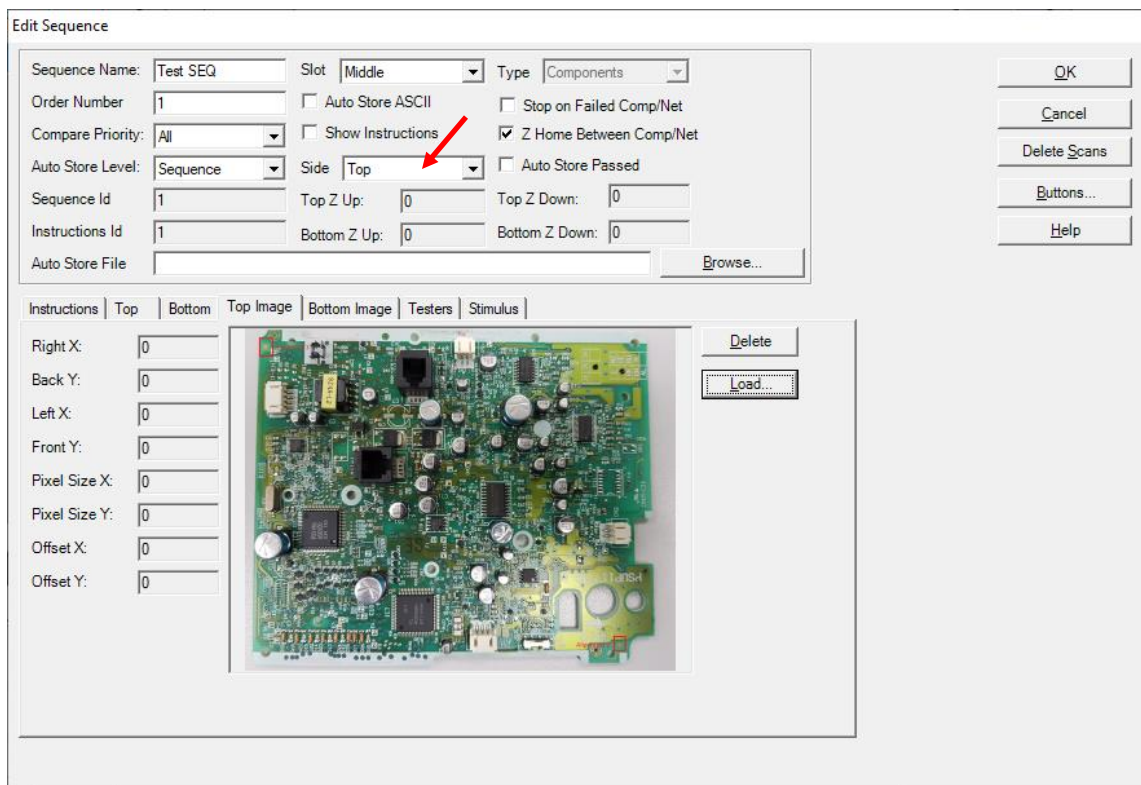
- You will see the Archive Scans listed where you can select the scan you want to restore to your test Sequence. Use the CTRL or Shift keys to select multiple scans if needed
- Click the UnArchive button and the selected scans will be restored to the Sequence
- Use the Delete button to permanently delete scans that are no longer needed.
- Close the Sequence Scan Archive window and look at your Component Scans tab and you will see that your scans have been restored.

Keeping your test database small is the best way to get the most out of Huntron Workstation performance.

Appendix 3: Manually Placing Component Tags in the Image Pane/Image tab

Tracker users will appreciate this feature which allows you to manually place tags with the Component name in the board overview image in the Image pane.

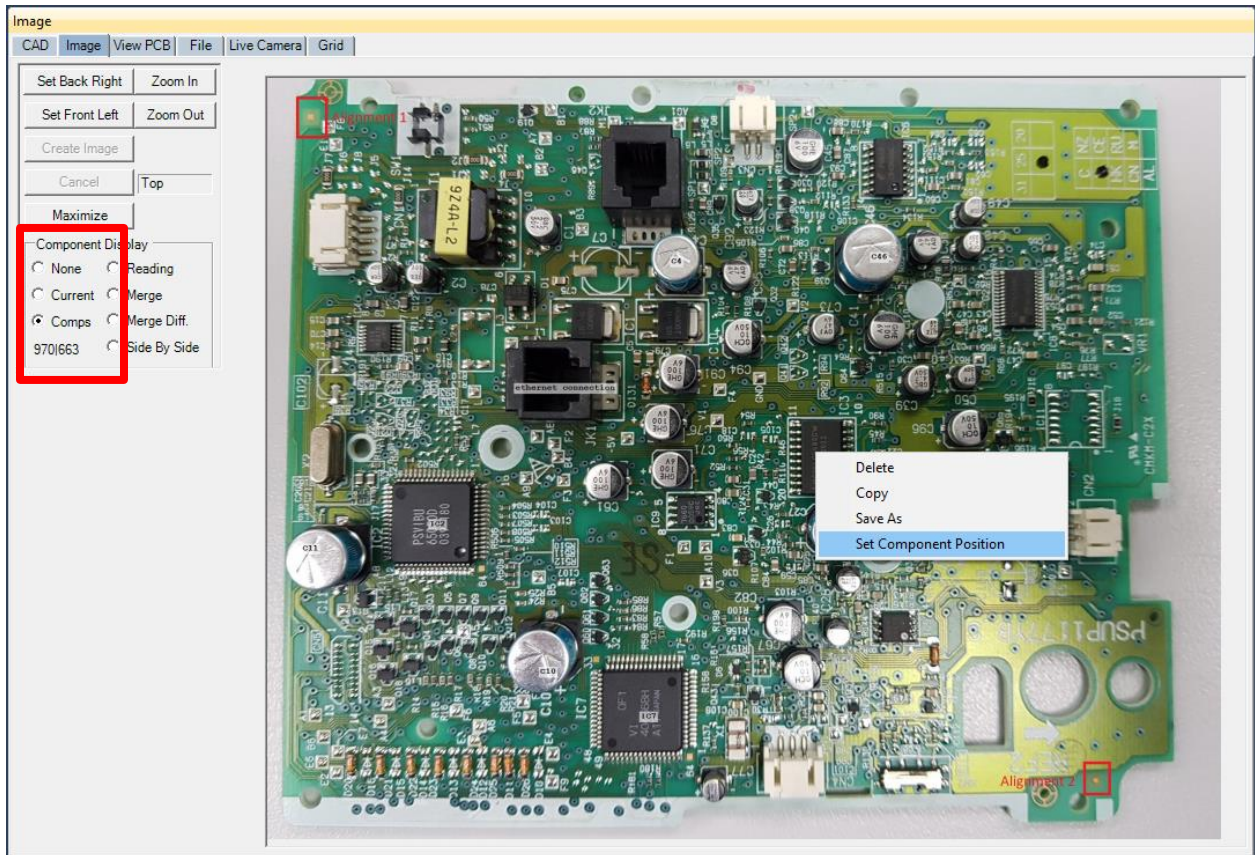
You will first need to get a high quality image of your PCB then select the Sequence where you want to use the image. Select **Edit Sequence (Ctrl+E)** from the Edit menu. Select the **Top Image** tab or **Bottom Image** tab depending on the **Side** setting used above (red arrow). Click the **Load...** button and browse to select and **Open** your image.



The image should now be displayed in the Top (or Bottom) Image tab. Click **OK** to close the Edit Sequence window.

The image you loaded should now be showing the Image pane/Image tab. If you do not see the Image pane go to the Window menu and select **Image Pane**. You may need to adjust your Workstation layout by click-dragging the panes by the title bar to get the arrangement that suits your needs.

To place a Component name tag in the image, select the Component in the Tree pane/Component tab then **right-click** at the component's location in the image. It is best to click slightly left of center as the text will be left justified. Select **Set Component Position** from the popup menu to place the tag. You should see a grey name tag appear.



It is recommended you add all of the tags before running any scans.

The radio buttons on the left side (red box) control what is displayed in the image. **None** disables the tags, **Current** displays the tag of Components in the current Troubleshoot (green tags for Passed and red tags for Failed) and **Comps** displays all tags in grey.

You can have the tags appear during scanning by selecting the **Tools menu/Options/Scan tab** and enabling **Show Components on Image**. As you run your test, a green (Passed) or red (Failed) tag will appear on the component in the image to indicate its test status. This works the same with Prober systems as well.

