

Agilent Quality Tool Online Help

Printable Version

Intelligent Test Software Solutions

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Agilent Technologies

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Introduction to the Agilent Quality Tool

Welcome



Welcome to the Agilent Quality Tool!

The Agilent Quality Tool is a statistical process control and quality control (SPC/SQC) tool for the Agilent 5DX, Agilent SJ Series, and Agilent SP Series test systems. The Agilent Quality Tool provides quick and easy access to actionable information on quality, line throughput, and false calls.

When the Agilent Quality Tool is used in conjunction with the Agilent Repair Tool and Agilent test and inspection systems, you can apply SPC and SQC methods to improve assembly and test processes. These process improvements can help you meet your company's targeted quality levels.

There are several ways to find information about the Agilent Quality Tool. Click any topic in the Help Table of Contents or press the **F1** function key from any screen in the Agilent Quality Tool to get Help related to that topic.



Features and Benefits of the Agilent Quality Tool

Features	Benefits
<p>Pre-Repair Quality Monitoring</p> <ul style="list-style-type: none"> • Easy access to real-time yield, DPMO and defect information for both AXI and AOI • Real-time alarms 	<ul style="list-style-type: none"> • Real-time information allows timely response to process changes • Timely process improvements result in increased first pass yield • Higher first pass yield provides lower costs and improved profits
<p>Post-Repair Quality Monitoring</p> <ul style="list-style-type: none"> • Real-time process information after the repair step • Agilent Repair Tool data is integrated for Post-Repair Quality monitoring 	<ul style="list-style-type: none"> • Real-time information allows timely response to process changes • User may compare Pre-Repair and Post-Repair quality • Provides an accurate measure of true yield (eliminates false calls)
<p>Throughput Analysis</p> <ul style="list-style-type: none"> • Ability to monitor throughput efficiency and work in progress (WIP) • Efficiency trend charts 	<ul style="list-style-type: none"> • Provides visibility into repair WIP and throughput which allows reduction of repair WIP • Provides opportunity to improve efficiency of test and repair loops
<p>False Call Analysis</p> <ul style="list-style-type: none"> • Provides ratios of False: Total Failed or False: Real calls • Absolute numbers of false calls or average false calls 	<ul style="list-style-type: none"> • Allows analysis of false call drivers • Knowledge of false call drivers results in the faster flow of material through the assembly processes and on to the customer • Higher confidence in test data for quality control and process control
<p>Intelligent Drill-Downs for Charts</p> <ul style="list-style-type: none"> • Drill-downs display most likely source of root causes • Pre-configured drill-downs for all standard charts 	<ul style="list-style-type: none"> • Provides, with one click, the information most likely needed to determine root causes • Minimizes user training needed to identify areas for process improvement

Features	Benefits
<p>Spreadsheet Export</p> <ul style="list-style-type: none"> • User is able to select specific data and time frame, whether or not data appears on a chart • Exported file is compatible with Microsoft Excel© 	<ul style="list-style-type: none"> • User may perform further data analysis and create custom charts with Microsoft Excel© or other spreadsheet programs • Provides users with a tool to answer ad-hoc process questions • Allows process engineers to conduct more advanced SQC analysis
<p>Historical views of real-time charts</p> <ul style="list-style-type: none"> • Ability to create historical views of any real-time chart 	<ul style="list-style-type: none"> • Allows comparison of real-time charts to other time periods • Provides quality reporting metrics to monitor quality targets • Helps identify system process issues • Enables reporting of yield or other metrics for OEM-CM relationships
<p>Real-time alarms</p> <ul style="list-style-type: none"> • User may set alarm limits on any chart • User is notified when alarm occurs • All alarm events are recorded and logged 	<ul style="list-style-type: none"> • Users can quickly pin-point specific defects that generate a process alarm • Enables faster corrective action, resulting in higher first pass yields
<p>Runs on the ITF Server</p>	<ul style="list-style-type: none"> • A solution that is scalable to the number of test systems and Client PCs in your manufacturing environment • The same ITF Server may be used for the Agilent Repair Tool and the Agilent Quality Tool • Provides simplified data management • Enables integrated test and repair analysis across multiple test systems and test platforms

Minimum System Requirements

For the Agilent Quality Tool to work correctly, communication links must exist between the Intelligent Test Framework Server, Client PCs, and test systems. The test systems may be any combination of Agilent 5DX and/or SJ Series test systems. The minimum system requirements listed below are necessary in order to establish these communication links.

1. Client PC(s) with the following minimum requirements:

Hardware:

- CPU Pentium® III 800 MHz or higher
- 512 MB RAM
- 1GB of free disk space
- 10/100 TX network interface
- 17" monitor (19" or 21" recommended), SVGA or higher resolution (1024 x 768, 256 colors)

Operating System:

- Microsoft® Windows 2000, Service Pack 4
- Microsoft® Windows XP, Service Pack 2

2. Test systems with the following software versions:

Agilent ICT UNIX with software version 04.00p or later

Agilent ICT WN with software version 3070 04.00p WN or later

Agilent AXI with software version 7.3 or later

Agilent AOI SJ Series with software version 4.07 or later

Agilent AOI SP Series with software version 2.0.0.7 or later

NOTE The minimum installation requires one Client PC and the Intelligent Test Framework (ITF) Server. The individual installation will determine the combination of Agilent SJ Series and/or Agilent 5DX systems connected to the ITF Server and the Client PC(s).

Getting Help

Page-Sensitive Help

Press the **F1** key from any screen to see online Help related to that topic.

Printable Help File

To view a printable version of the Agilent Quality Tool Online Help,

1. Click **Start > Programs > ITF Software Solutions > Agilent Quality Tool > Printable Help**
2. The file will automatically open.

NOTE

If you see an "Open With" dialog box, your system does not know which program to use to open the Printable Help file. This means that you must install Acrobat Reader® on your system before you can open the Printable Help file. Adobe Acrobat Reader software is provided with the Agilent Quality Tool. It is also available from the Adobe web site at <http://www.adobe.com>

Adobe Acrobat Reader must be installed on your system to view the Printable Help file, which is in Adobe Acrobat format (.pdf).

3. Print the file if you wish.

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Technical Support

Agilent Quality Tool and Agilent Repair Tool support is available in the following ways:

Web support

The Agilent Technologies Printed Circuit Board Test and Inspection web site is for the benefit of owners and users of the Agilent Repair Tool, the Agilent Quality Tool, and Agilent Technologies' board test and inspection systems.

Printed Circuit Board Test and Inspection web address: <http://www.agilent.com/see/pcb>

NOTE

Some information areas require users to log in with a user name and password.

Topics available from the web site include:

- Application Notes and Technical Papers
- Data Sheets, Brochures, Demonstrations and Catalogs
- Frequently-Asked Questions (FAQs)
- Manuals, Guides and Notifications
- Newsletters, Presentations, and Articles
- Software, Firmware and Drivers

Phone support

- Phone-based support is free for the first year and highly recommended for subsequent years.
- Customers in the U.S. may call a 24-hour toll free support phone number: 1-800-447-TEST. For customers outside the U.S., please contact your Agilent Technologies representative.

Training Information

A list of education and training opportunities is available on Agilent Technologies' Printed Circuit Board Test and Inspection web site.

1. Connect to the Printed Circuit Board Test and Inspection web site:

<http://www.agilent.com/see/pcb>

2. Click **Education & Training**.

Getting Started

Data Source

What is a Data source?

The Agilent Quality Tool data source specifies the location where the test data is stored.

When can you change the data source?

You must change the data source before you log in to the Agilent Quality Tool. If you are currently logged in, you must log out before you can change the data source.

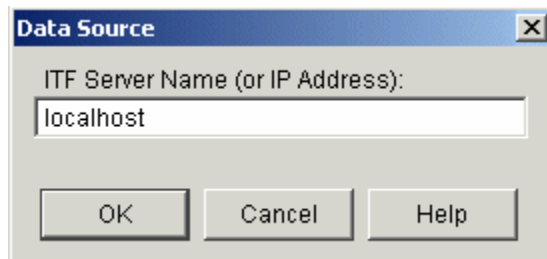
Why would you change the data source?

The data source would need to be changed if you need to change the IP Address or hostname, for example, when the server is relocated or removed.

How do you change the data source?

From the menu bar at the top of the Agilent Quality Tool screen,

1. Click **Tools > Data Source**.



2. Select ITF Server name (or IP Address):
Enter the ITF Server name, IP Address, or type **localhost**.
3. Click **OK**.
4. Click **User > Log in** to proceed to [log in](#) to the Agilent Quality Tool.

Login and Logout

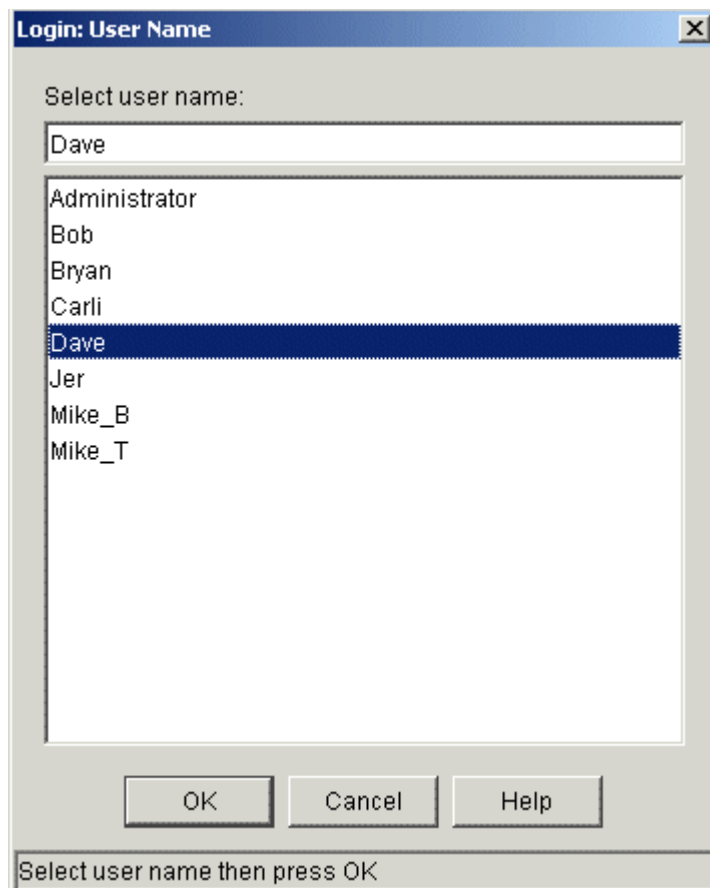
When the Agilent Quality Tool starts up, the first screen that appears is the Login User screen.

NOTE The list of user names includes only users with **Quality User** or **Quality Administrator** privileges.

To log in,

In the Login: User Name dialog box,

1. Select or enter your User Name.
2. Click **OK** or press **Enter**.



In the Login Password dialog box,

1. Enter your Password or Personal ID Number (PIN), if your company requires one.
2. Click **OK** or press **Enter**.

The screenshot shows a dialog box titled "Login: Password". The user is identified as "Dave (Dave F)". There is a text input field for the password or PIN, currently showing three asterisks. Below the input field is a numeric keypad with buttons for digits 0-9 and a "Clear" button. At the bottom of the dialog are "OK", "Cancel", and "Help" buttons. A status bar at the bottom of the dialog contains the text "Enter PIN then press OK".

To log out,

Click **User > Log out** from the menu bar at the top of the screen.

To log in again,

Click **User > Log in** from the menu bar at the top of the screen.

NOTE The alphanumeric password/PIN must be between 3 and 15 characters in length. User names and passwords are set up by your system administrator in the ITF Administration System.

If you are having problems with Login, see [Trouble with Login](#).

Change Password

If you know your current password, you can change your password to another password of three to fifteen alphanumeric characters.

To change your password,

1. Click **User** in the menu bar at the top of the Agilent Quality Tool screen.
2. Select **Change Password**.
3. Enter your current password.
4. Enter your new password (3–15 alphanumeric characters).
5. Repeat your new password to confirm the change.
6. Click **OK**.



The screenshot shows a standard Windows-style dialog box titled "Change Password". It features a blue title bar with a close button (X) on the right. The main area is light gray and contains four text input fields. The first field is labeled "User Name:" and contains the text "Dave F". The second field is labeled "Current Password:" and is empty. The third field is labeled "New Password:" and is empty. The fourth field is labeled "Confirm New Password:" and is empty. To the right of each of the three password fields is a small button with three dots "...". At the bottom of the dialog are three buttons: "OK", "Cancel", and "Help".

NOTE Your system administrator sets up and maintains the list of passwords in the ITF Administration System.

Using the Main Screen

Main Screen Overview

The first screen you will see is the Main Screen.

Look for the following items on this example screen:

1. The [Menu bar](#) at the top of the screen.
2. The current Test Stage. (**AOI** is the current Test Stage in this example.)
3. The current View name in the View name list. (**Starlight-SJ3** is the current View name in this example.)
4. The Main Toolbar with buttons for creating a new view, editing an existing view, looking at other (historical) data for a View, and looking at the Alarm Log.
5. The Tabs. (**Pre-Repair Quality** is the active tab in this example.)

[Pre-Repair Quality Tab](#), [Post-Repair Quality Tab](#), [Throughput Tab](#), [False Call Tab](#)

NOTE

A tab may also be referred to as a dashboard.

NOTE

When you create a View you may select which tabs you want to see for that View. See [tab selection when creating a View](#).

6. The Charts

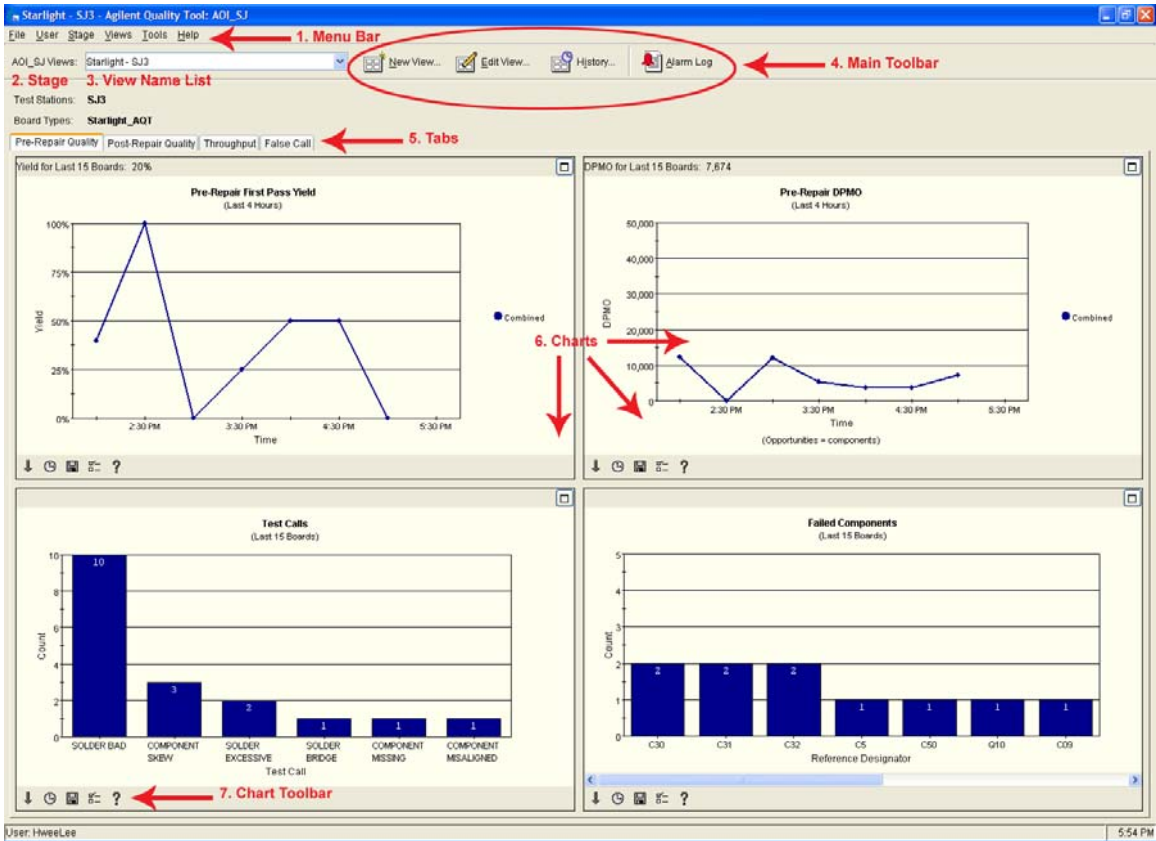
NOTE

Your system administrator defines, in the ITF Administration System, the exact charts that will appear when you select each tab. The charts shown below are just examples of what you might see on your tabs. For a complete list of charts, see [List of All Available Charts](#).

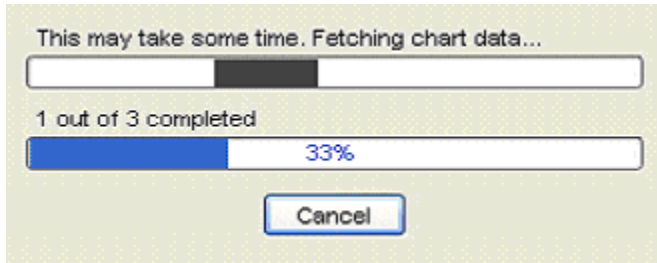
7. The [Chart Toolbar](#) from which you can drill-down for more information, see chart history, save a chart image, set or modify chart options (including alarms), and see the calculation or definition for the current chart.

NOTE

After you click a tab, the other tabs will only be available after all the information on the selected tab is displayed, click the **Refresh** button to fetch the chart again. If not, the chart will be updated the next time the tab is selected.



NOTE If the data fetch involves a large amount of data, the following dialog box with a progress indicator appears:



Menu bar

The Menu bar in the Agilent Quality Tool contains the following:

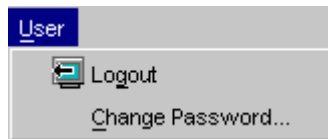
File:

From the File menu you can save chart images or exit the Agilent Quality Tool.



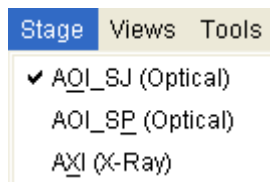
User:

From the User menu you can log in, log out, or change your password.



Stage:

It is on the Stage menu that you select the test Stage, AOI_SJ (Optical), AOI_SP (Optical), or AXI (X-Ray).



Views:

From the Views menu, you can create a new View, edit or delete an existing View, or get to a dialog to show View history.



Tools:

From the Tools menu you can get to the Event Log, Alarm Log, or a dialog to export data to a spreadsheet. Before you log in you may also change the Data Source.



Help:

From the Help menu you can see the contents of the Agilent Quality Tool online help (Contents), the help topic for the current screen (On-Screen), or the version information about the Agilent Quality Tool software (About).



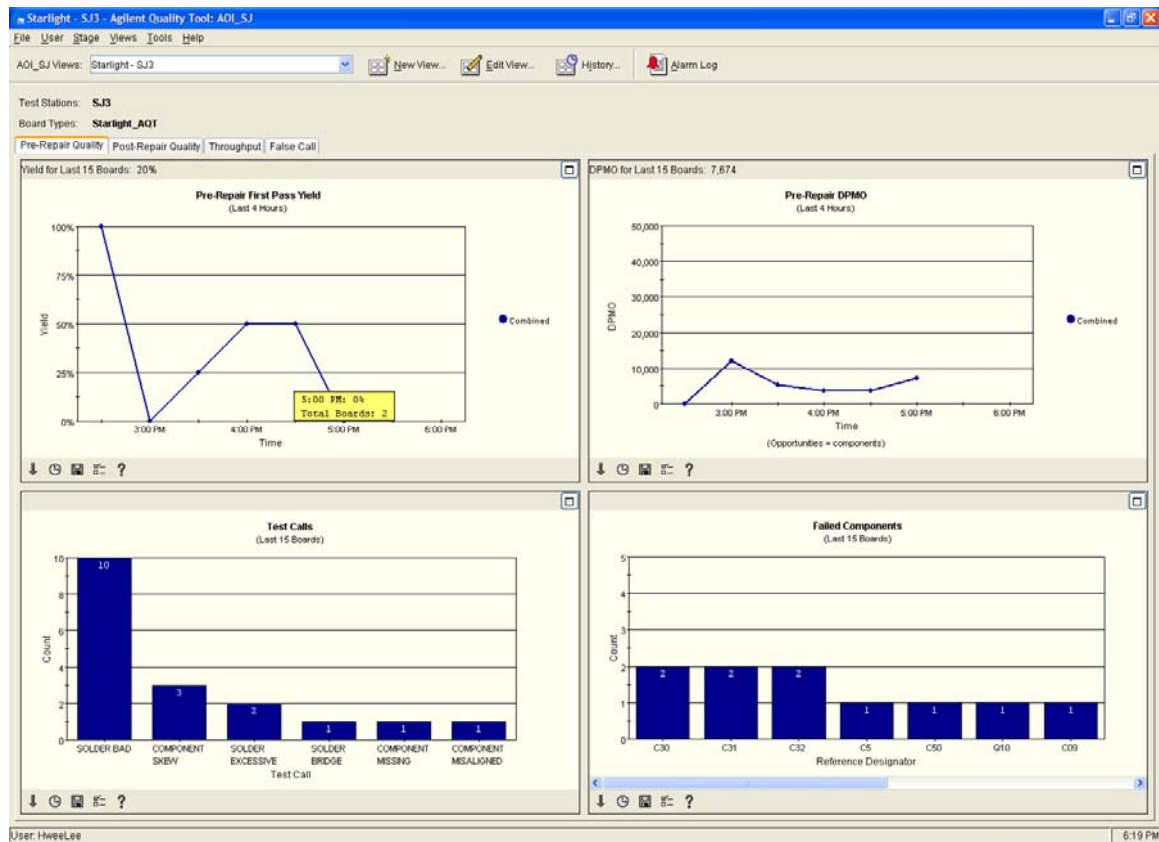
Pre-Repair Quality Tab

The Pre-Repair Quality tab displays charts with test information (pre-repair) for the current View. This information comes directly from the test stations.

Examples of charts on the Pre-Repair Quality tab:

- First Pass Yield
- DPMO
- Test Calls
- Failed Components
- For a complete list, see [List of All Available Charts](#).

NOTE Your system administrator defines, in the ITF Administration System, the exact charts that will appear when you select this tab.



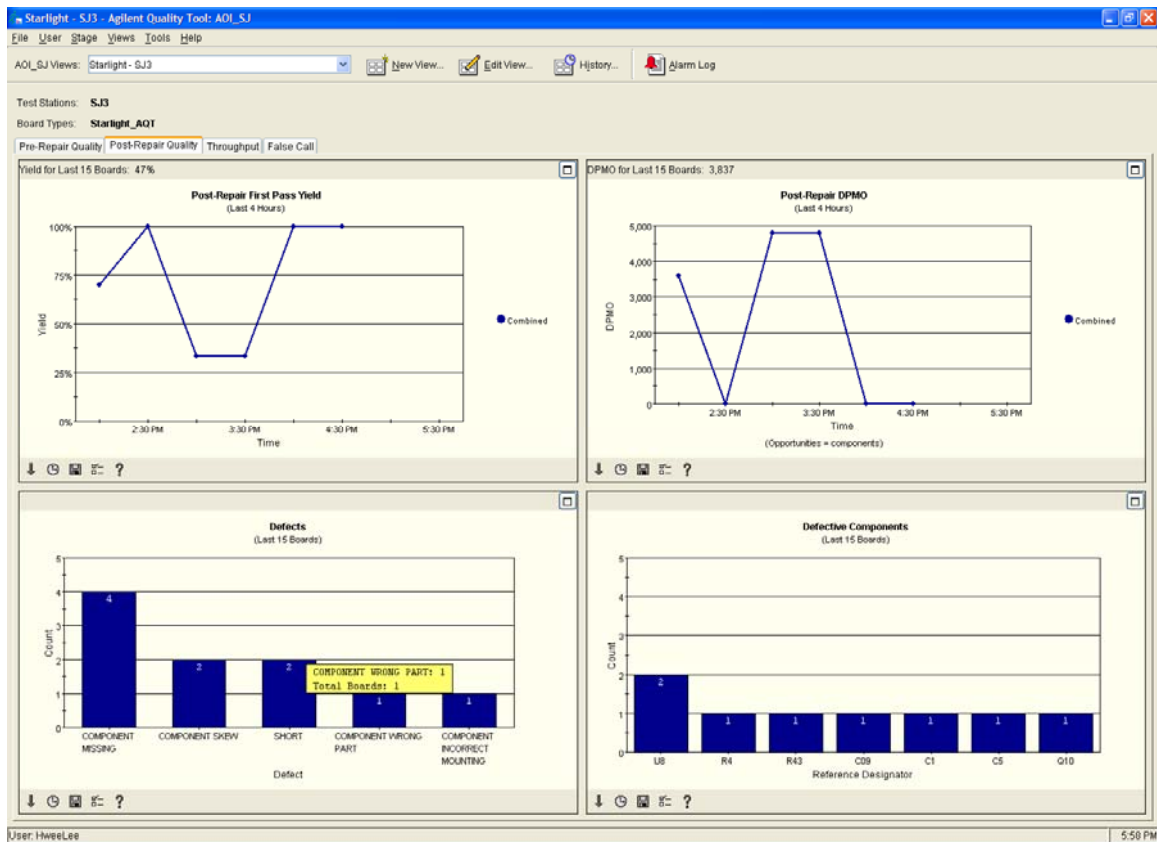
Post-Repair Quality Tab

The Post-Repair Quality tab displays test and repair information for the current View. Post-Repair incorporates data from the Agilent Repair Tool (ART). The charts on this tab display data for boards that have passed test or have been completely reviewed at ART.

Examples of charts on the Post-Repair Quality tab:

- First Pass Yield
- DPMO
- Defects
- Defective Components
- For a complete list, see [List of All Available Charts](#).

NOTE Your system administrator defines, in the ITF Administration System, the exact charts that will appear when you select each tab.



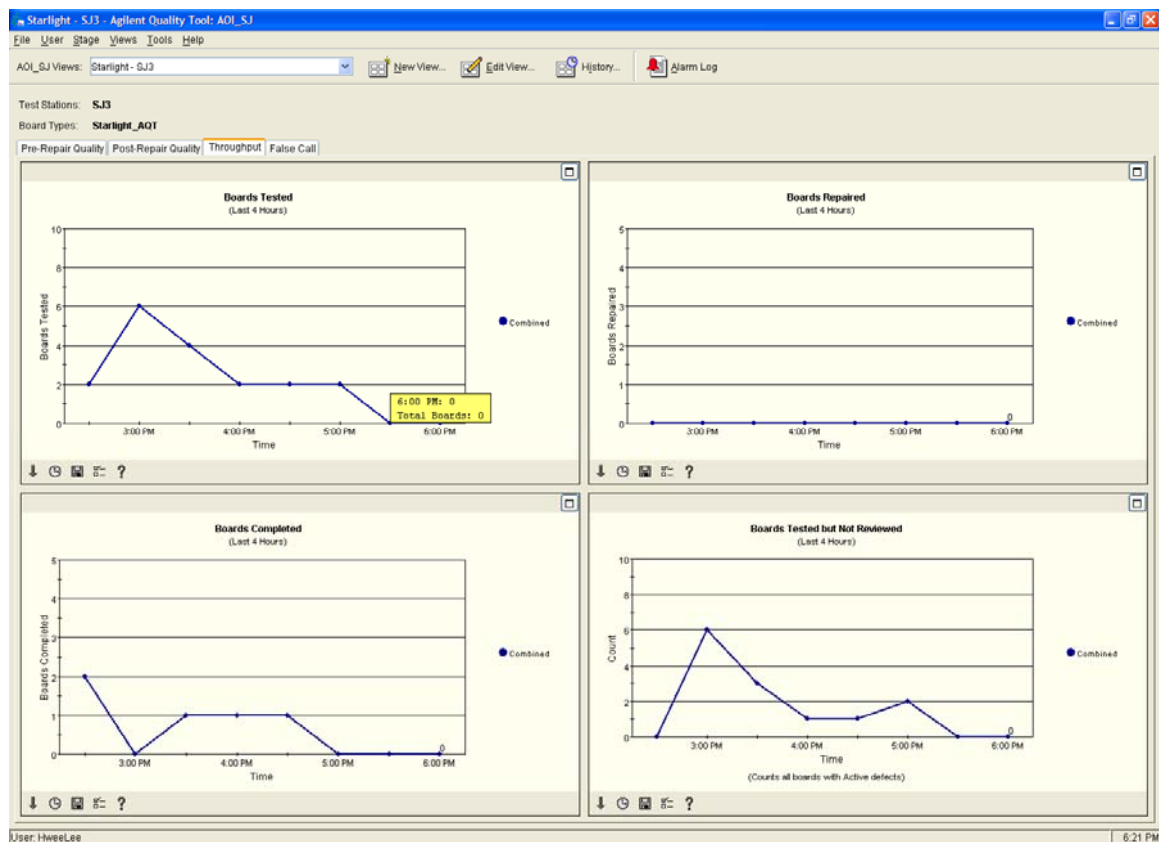
Throughput Tab

The Throughput tab displays charts with throughput information for the current View. These charts are useful for monitoring throughput for test and repair processes as well as work in progress (WIP).

Examples of charts on the Throughput tab:

- Boards Tested
- Boards Repaired
- First Pass Yield (pre-repair)
- Boards Tested but Not Reviewed
- For a complete list, see [List of All Available Charts](#).

NOTE Your system administrator defines, in the ITF Administration System, the exact charts that will appear when you select each tab.



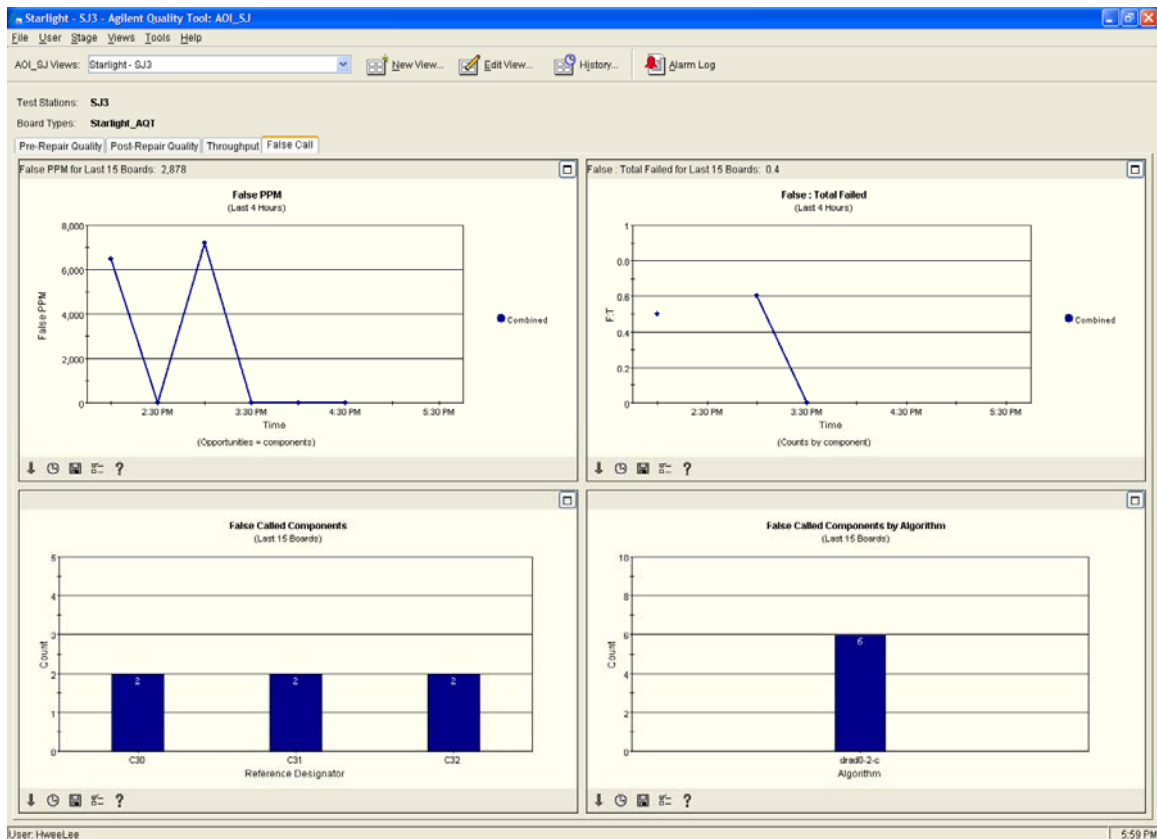
False Call Tab

The False Call tab displays charts that are useful for examining your false call levels and potential causes. These charts combine information from test stations with the information entered at the Agilent Repair Tool (ART).

Examples of charts that could appear on the False Call tab:

- False PPM
- False: Total Failed
- False: Real
- False Called Components
- False Called Components by Algorithm
- Average False Calls
- For a complete list, see [List of All Available Charts](#).

NOTE Your system administrator defines, in the ITF Administration System, the exact charts that will appear when you select each tab.



Creating a View

View Overview

In your manufacturing environment you may build several types of boards on many different assembly lines. You may want to look at quality, throughput and false call charts based on different combinations of test stations, board types, and time frames. The way to specify the data you want to see on your charts is to create a View using the Create View Wizard.

A **View** is a group of selected test stations and board types. A View defines a subset of test, inspection, and repair data that resides on the ITF Server, forming the basis for charts in the Agilent Quality Tool. Views are created and named in the Agilent Quality Tool.

A View:

- Is specific to one test stage, either AOI_SJ, AOI_SP, or AXI.
- Is associated with specific board type(s).
- Is associated with specific test station(s).
- Has a unique name.
- Is stored locally on the Client PC where the View is defined.

Example:

Assume that it is your job to oversee all "CompanyXBigBoard" boards that have gone through AOI inspection during the past 24 hours at your company's manufacturing facility. You could define a new View in the following way:

1. Make sure the Stage is set to AOI_SJ (Optical). To do this, click **Stage > AOI_SJ (Optical)** on the menu bar.
2. Select:
 - Board type = CompanyXBigBoard
 - All test stations
 - Detailed view for a single board type
3. Choose whether you want to (a) combine data for all test stations into a single line on the chart or (b) show one line for each test station.
4. Display data for **last 24 hours** for trend charts (and last **10 boards** for Pareto charts).
5. Give the View a name you like, such as "AOI_SJ CompanyXBigBoard"

NOTE

You must have **Quality Administrator** privileges to create or edit a View.

Create Your First View

It is simple to create your first View with the Agilent Quality Tool.


First, we will define a View. A **View** is a group of selected test stations and board types. A View defines a subset of test, inspection, and repair data that resides on the ITF Server, forming the basis for charts in the Agilent Quality Tool. Views are created and named in the Agilent Quality Tool.

The Create View Wizard guides you through the following steps:

- [Step 1](#) Select test stations
- [Step 2](#) Select detailed or summary view
- [Step 3](#) Select board type
- [Step 4](#) Select whether to compare or combine data
- [Step 5](#) Select chart time frames
- [Step 6](#) Enter the View name and select the tabs you want to see

Before you create a new View:

1. Check to see that you are in the correct Test Stage (AOI_SJ, AOI_SP, or AXI), since a new View is always created using the current Stage setting. The Stage is noted near the View name list at the top of the Agilent Quality Tool screen.
2. If you need to change the Stage, click **Stage** on the menu bar at the top of the screen, then click **AOI_SJ (Optical)**, **AOI_SP (Optical)**, or **AXI (X-Ray)**.

To start the Create View Wizard, click the **New View** button  on the main toolbar. You may also select **Views > New View** from the menu bar at the top of the Agilent Quality Tool screen.

NOTE If a View has not yet been created on this Client PC, the Create View Wizard will start automatically when you log in to the Agilent Quality Tool.

NOTE The options that you select in the Create View Wizard will apply to every chart in that View.

NOTE A user must have **Quality Administrator** privileges to edit a View.

Create View - Step 1: Select Test Stations

Before you create a new View:

1. Verify that you are in the correct Test Stage (AOI_SJ, AOI_SP, or AXI), since a new View is always created using the current Stage setting. The Stage is noted near the View name list at the top of the Agilent Quality Tool screen.
2. If you need to change the Stage, click **Stage** on the menu bar at the top of the screen, then click **AOI_SJ**, **AOI_SP**, or **AXI**.

The first step in the Create View Wizard is to select the test stations that you would like to monitor. All charts in this View will display data from the selected test station(s). You can display data for any test station connected to the Intelligent Test Framework (ITF).

NOTE The list of test stations will include all test stations known to the Agilent ITF for the current test Stage (AOI or AXI). At least one board must be tested on a test station for that test station to appear on the list.

If you would like data from **all** the test stations,

1. Select the **All test stations** radio button.
2. Click **Next >** to continue.

NOTE When you select **All test stations**, this will include new test stations for this Stage that might be added to the ITF in the future.

If you would like data from **specific** test stations,

1. Select the **Specific test stations** radio button.

The Available box contains a list of all test stations known to the ITF for the current Stage (AOI_SJ, AOI_SP, or AXI).

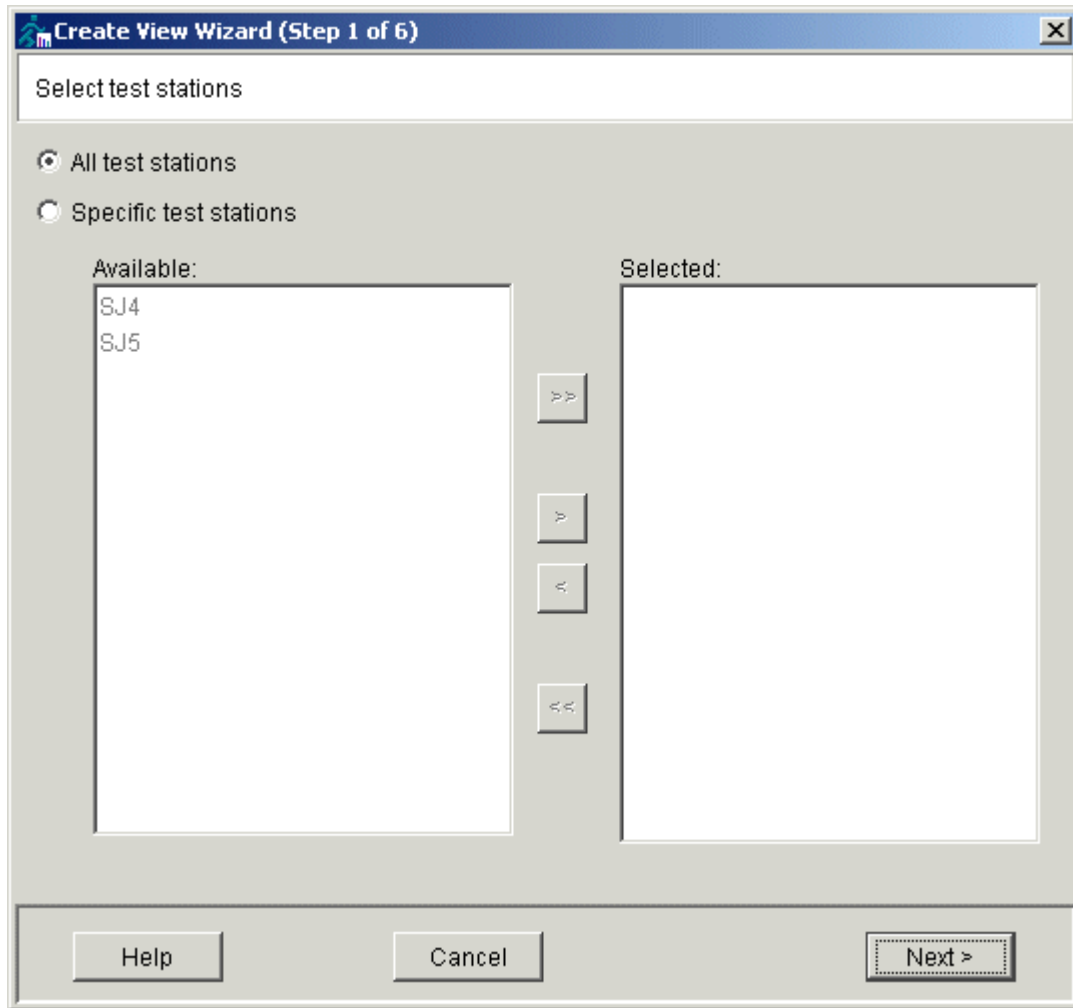
2. To select the test station(s) of interest, first click the test station name(s), then click **>** to move them to the Selected box.

NOTE You may also double-click the item to select it.

3. Click **Next >** to continue.

NOTE If you select **Specific test stations**, the View will not automatically include new test stations added to the ITF in the future. In order to include new test stations, you must specifically add them to this View.

Example of **All test stations**:



Create View - Step 2: Select View Type

The second step in the Create View Wizard is to select the View type.

If you would like the View to reflect a **single** board type,

1. Select **Detailed view for a single board type**.

All charts in this View will display data for the single board type you select in [Step 3](#) of the Create View Wizard. The initial charts displayed on each tab will be both trend charts and Pareto (bar) charts.

2. Click **Next >** to continue.

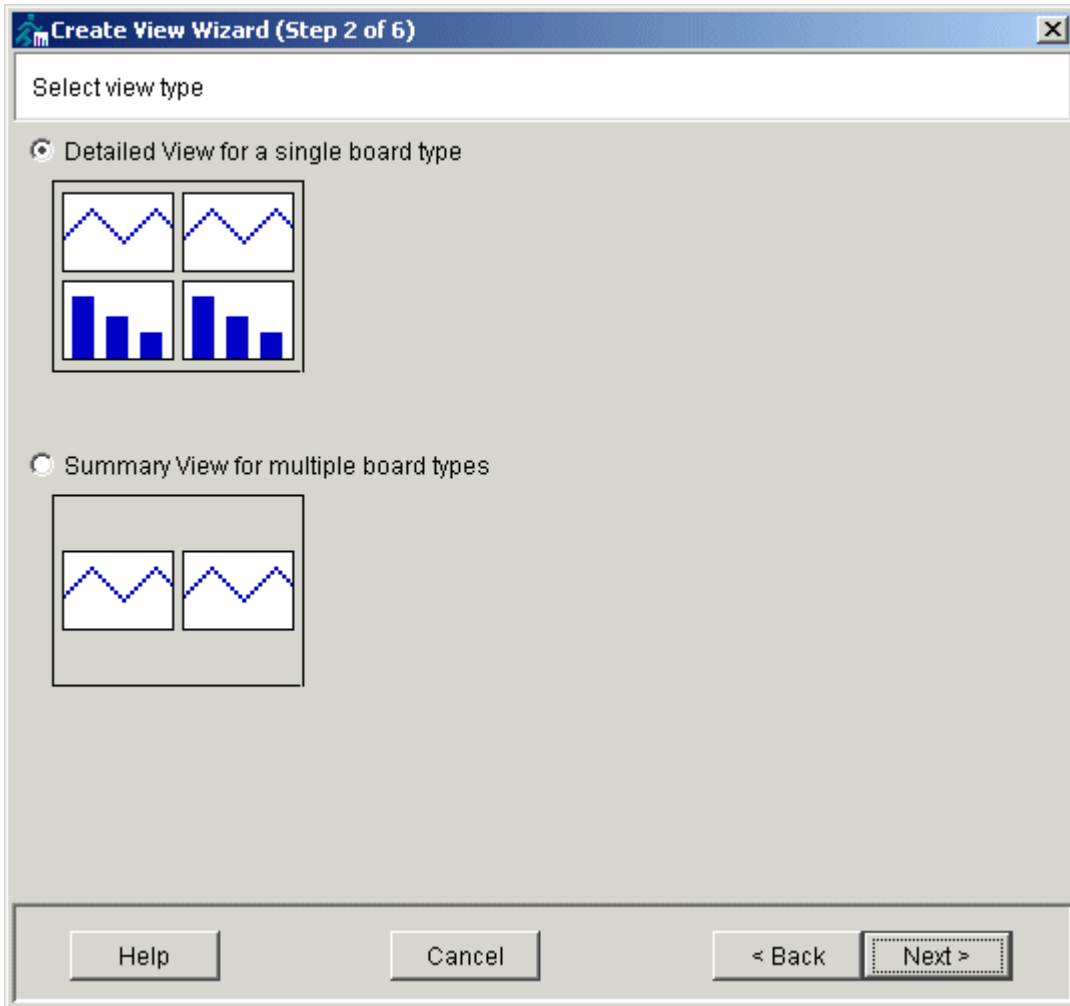
If you would like the View to summarize **multiple** board types,

1. Select **Summary view for multiple board types**.

All charts in this View will display data for the board types you select in [Step 3](#) of the Create View Wizard. Each tab will initially display only trend charts. After you drill down on specific board types, you will also see Pareto (bar) charts.

2. Click **Next >** to continue.

NOTE The View Type is the only setting that cannot be changed after the View has been created.



Create View - Step 3: Select Board Type

The third step in the Create View Wizard is to choose the specific board types from which data is collected.

You will see a list of available board types.

NOTE For more information on the significance of board type names, see [Board Type Names](#).

NOTE The list of board types will include all board types known to the Agilent ITF for the current test Stage (AOI_SJ, AOI_SP, or AXI) . At least one board for a particular board type must have been tested in order for that board type to appear on the list.

If you selected **Detailed view for a single board type** in Step 2, you may select only one board type.

1. Click the name of the board type you wish to select.
2. Click **Next >** to continue.

NOTE If there is just a single test station selected for your View, the <Current board type> option is available in the Board Type box. This option allows you to monitor the current board type at your test station without having to modify the View each time the board type changes.

If you selected **Summary view for multiple board types** in Step 2, you may select multiple board types.

If you would like this View to include data for **all** board types,

1. Select the **All board types** radio button.
2. Click **Next >** to continue.

NOTE When you select **All board types**, this will include new board types for this Stage that are added to the Agilent ITF in the future.

If you would like this View to include data from **specific** board types,

1. Select the **Specific board types** radio button.

The Available box contains a list of all board types known to the Agilent ITF for the test station(s) selected in Step 2.

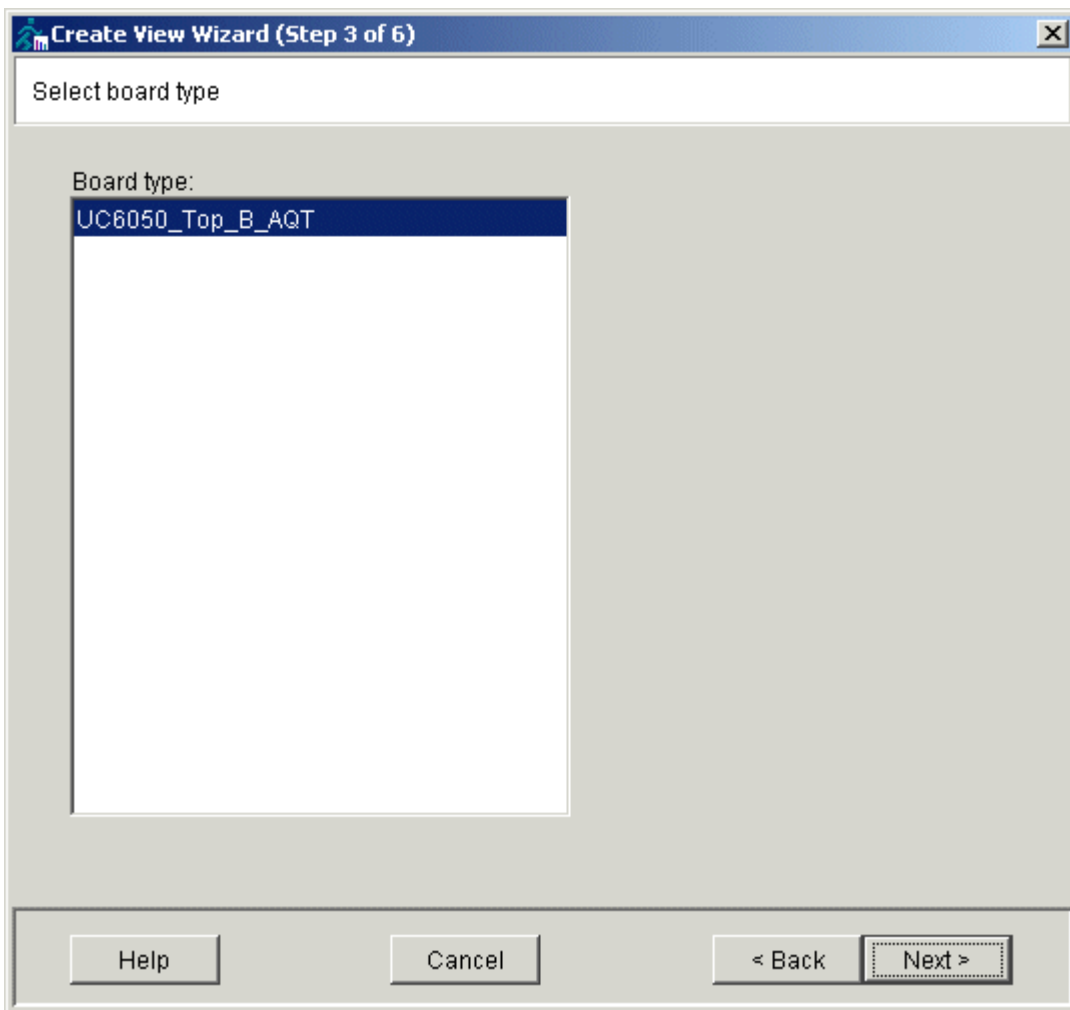
2. To select the board type(s) of interest, click the board type name(s), then click **>** to move them to the Selected box.

NOTE You may also double-click the item to select it.

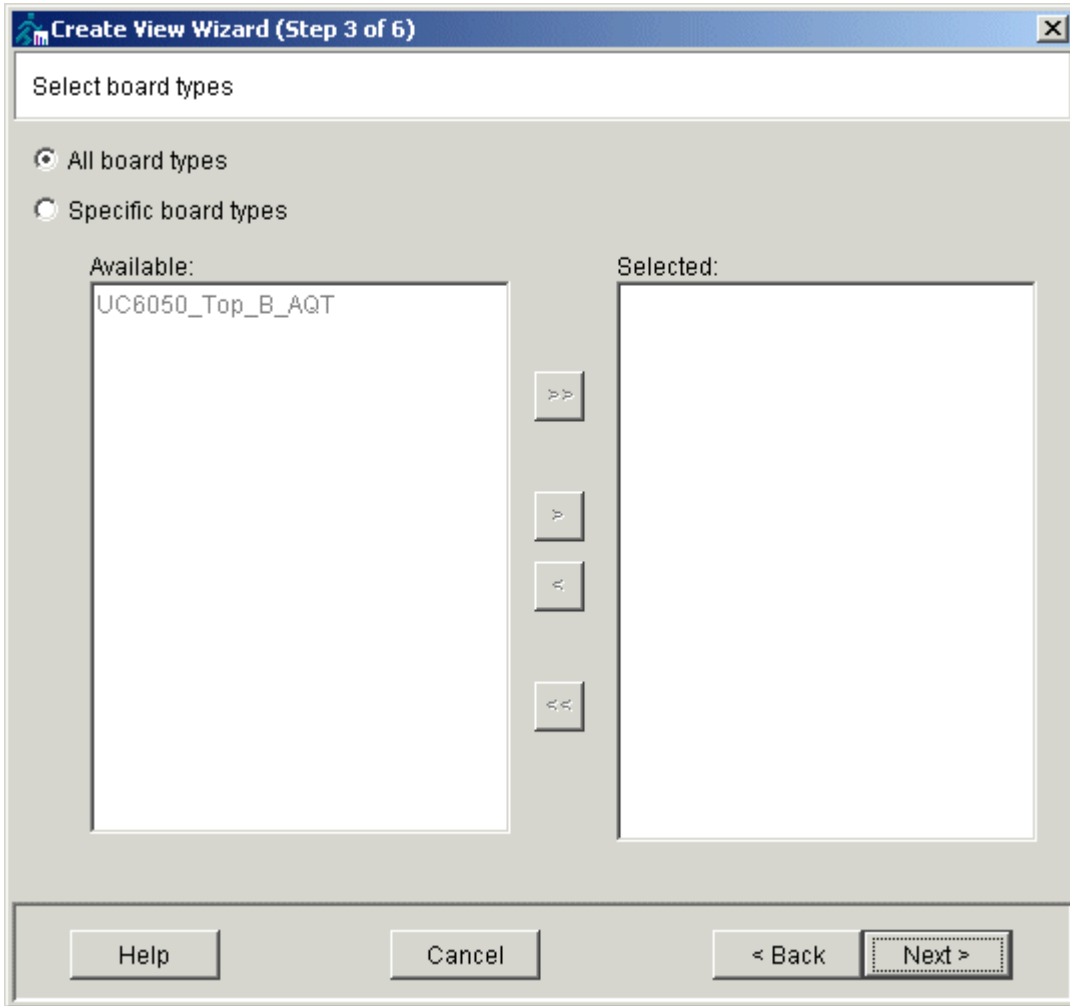
3. Click **Next >** to continue.

NOTE When you select **Specific board types**, the View will not automatically include new board types tested on this test station in the future.

Example of **Single Board type**:



Example of **All Board types**:



Create View - Step 4: Compare or Combine

The fourth step in the Create View Wizard is to choose how you want to display data on all trend charts such as Yield and DPMO. You may either combine all data into a single line or view one line on the chart for each test station or board type.

1. Decide which format you want. You may choose one of the following:

Combine all data

- Combines the data for all test stations and all board types into a single line in a trend chart.

Compare data by test station

- Compares data by test stations (i.e., trend charts display one line for each test station). This is useful if you want to compare the performance of different test stations.

Compare data by board type

- Compares data by board type (i.e., trend charts display one line for each board type). This is useful if you want to compare the quality of different board types.

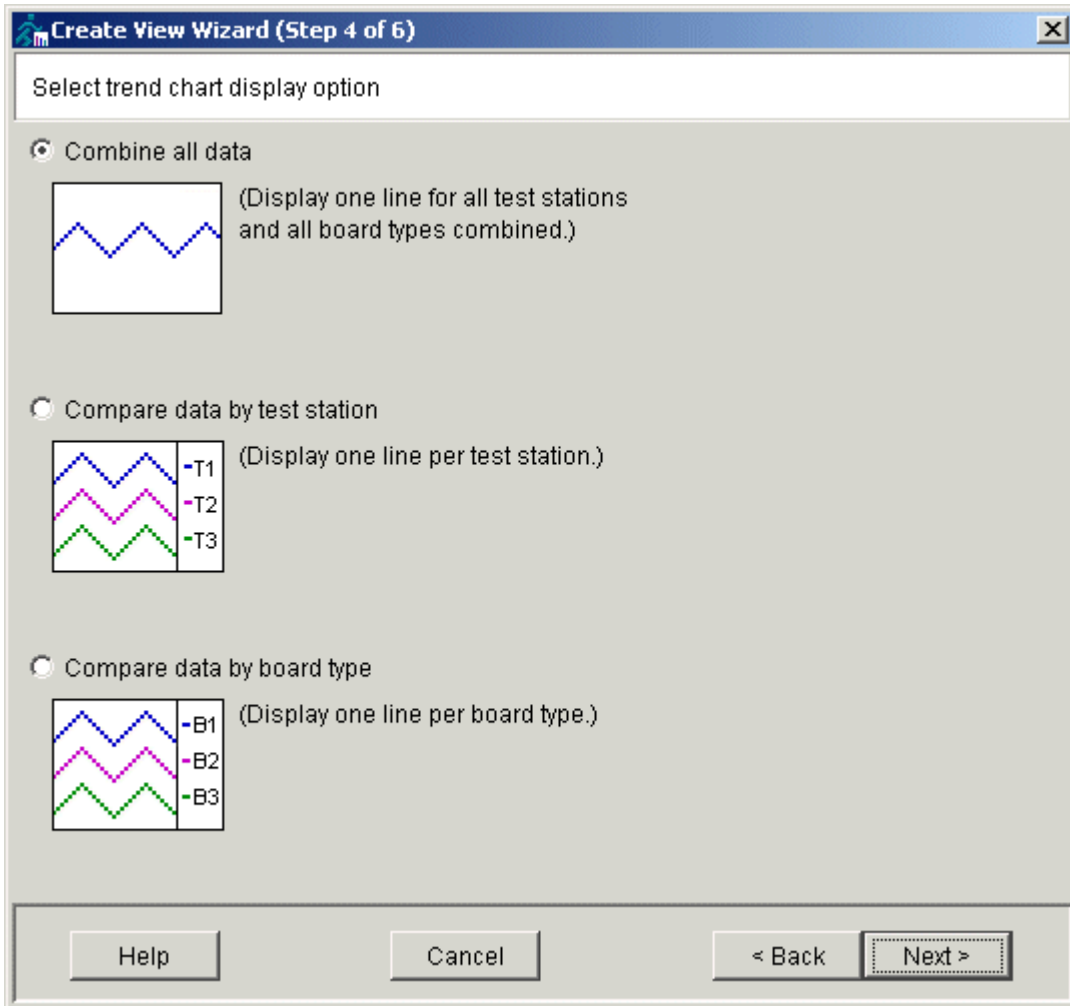
NOTE

This option is not available for Single Board Type Views.

2. Select the format you want by clicking the radio button that corresponds to your choice.
3. Click **Next>**.

NOTE

Sometimes an option is not available based on previous choices for the View. In this case the option is grayed out or unavailable.



Create View - Step 5: Time Frame

The fifth step in the Create View Wizard is to set time frames or limits for your trend and Pareto charts.

Trend charts can display data collected from the last 4, 8, 12 or 24 hours.

Pareto (bar) charts can display data based on the number of boards.

To set the chart time frames,

1. Trend charts:

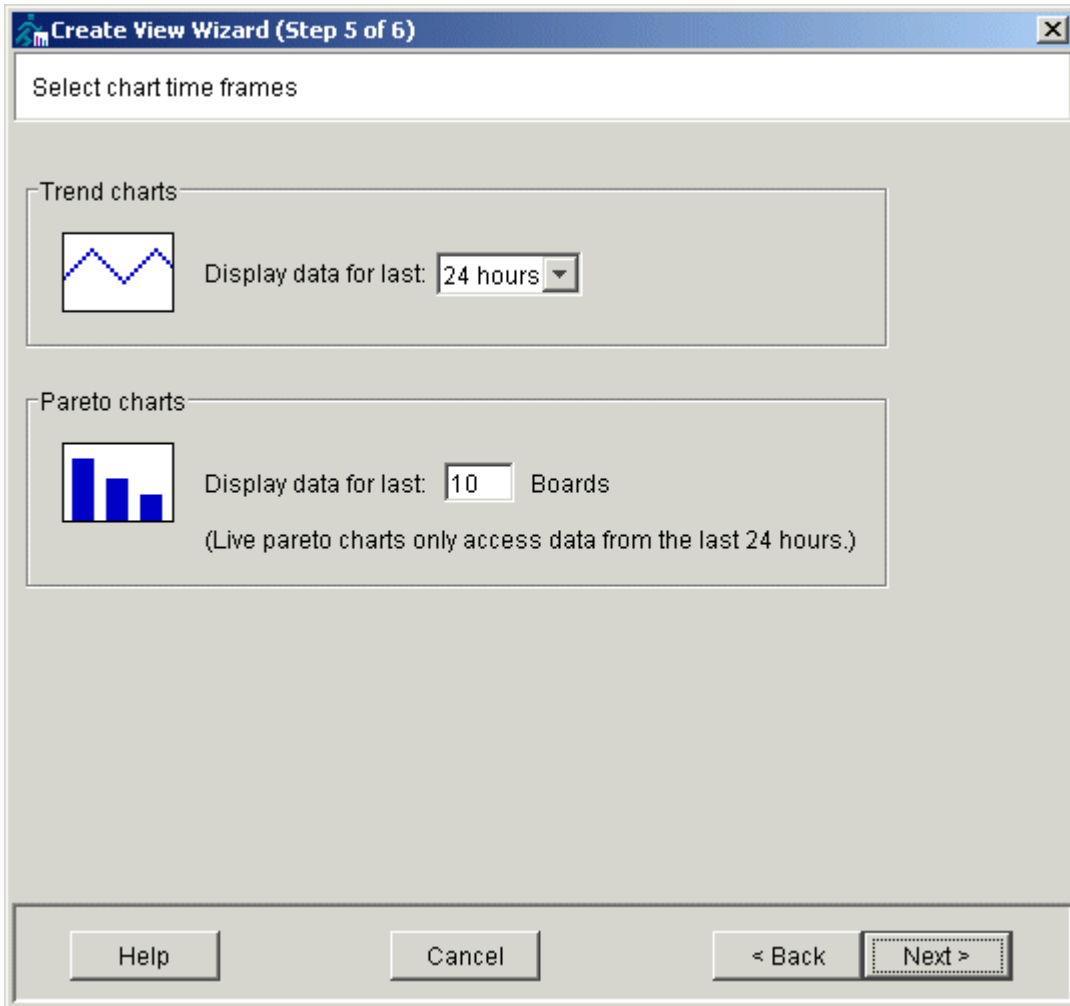
The first time you create a View, the default selection is the last 24 hours. If you wish to change this, click the drop-down menu and select 4, 8, or 12 hours.

2. Pareto (Bar) charts:

The first time you create a View, the default selection is the last 10 boards. You may type a new number in the text box to change the number of boards for which data is shown on Pareto charts.

3. Click **Next >** to continue.

Example dialog box when you have selected a **Single board type**:



Example dialog box when you have selected **Multiple board types**:



Create View - Step 6: View Name and Tab Selection

The last step in the Create View Wizard is to name your View and select the tabs you want to see for this View.

To name your View and select the tabs,

1. Enter a name, up to 50 characters, in the View name text box. The View name must be unique to this Test Stage (AOI_SJ, AOI_SP, or AXI).
2. If you want a tab to be displayed in this View, select its corresponding checkbox in the

Show

Show column .

3. Click **Finish** when you are done.

Example:

View name:
MyView

Tab selection:

Tab	Show	Charts on Tab
Pre-Repair Quality	<input checked="" type="checkbox"/>	YIELD, DPMO, BOARDS_TESTED
Post-Repair Quality	<input checked="" type="checkbox"/>	YIELD, DPMO, BOARDS_REPAIRED
Throughput	<input checked="" type="checkbox"/>	BOARDS_TESTED, BOARDS_REPAIRED, YIELD, BOA
False Call	<input checked="" type="checkbox"/>	FALSE_DPMO, FALSE_TOTAL

Note: Chart selection for each tab is available in the ITF Administration System.

Buttons: Help, Cancel, < Back, Finish

Editing a View

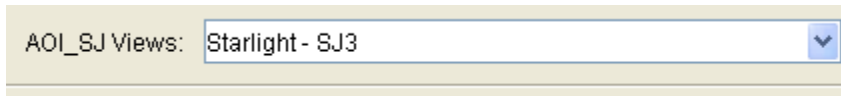
Editing a View

Once a View has been created, you can edit the various characteristics of that View.

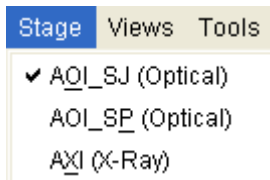
NOTE When you edit a View, changes take effect immediately. In order to "undo" a change, you must edit the View to restore the previous settings.

To edit a View,

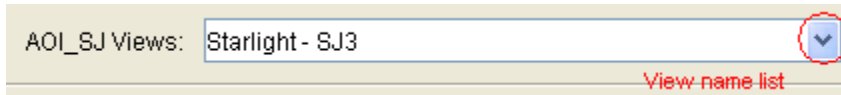
1. Verify, before you proceed, that you are in the correct Test Stage (AOI_SJ, AOI_SP, or AXI). The Stage is noted at the top of the Agilent Quality Tool screen, near the View name list.




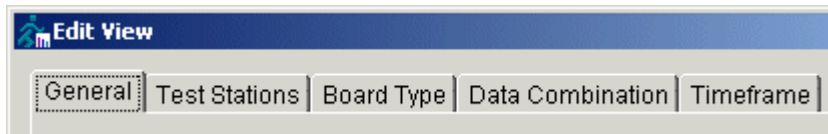
If you need to change the Stage, click Stage on the menu bar at the top of the screen, then click the correct Stage.



2. Select the View to edit. Click the down-arrow on the View name list and select the View name.



3. To edit this View, click the Edit View button  on the main toolbar of the Agilent Quality Tool screen. You will see a dialog box with five tabs.



You may change information on any of the tabs. When you are done making changes on all tabs, click **OK** to save your changes and close the Edit View dialog box.

[General tab](#)

[Test Stations](#)

Board types: [Single Board Type](#) or [Multiple Board Types](#)

[Data Combination](#)

[Time Frame](#)

NOTE When you edit a View, changes take effect immediately. In order to "undo" a change, you must edit the View to the way it was originally.

NOTE A user must have **Quality Administrator** privileges to edit a View.

Edit View - General tab

On the General tab, you may change the name for the current View and the tabs that you want to see for this View.

NOTE

The View type may not be changed after a View has been created.

1. To change the View name,

Enter a new name, up to 50 characters, in the View name text box. The View name must be unique to this test stage (AOI_SJ, AOI_SP, or AXI).


2. To add a tab for this View,

Select the corresponding checkbox for each tab that you want to see for this View.

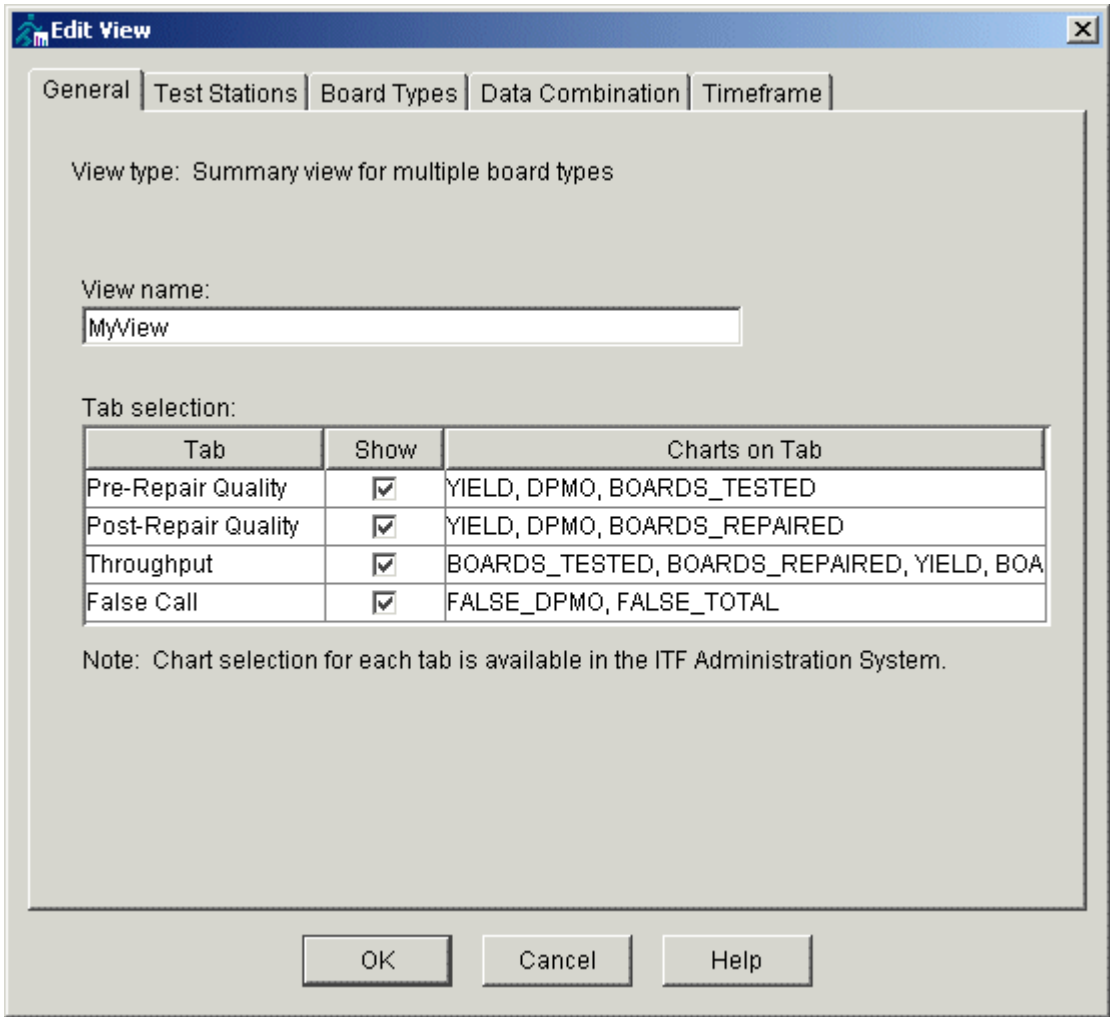


3. To remove a tab from this View,



Clear the checkbox for each tab that you do not want to see for this View. 

4. If you need to check or change any information on another tab, click that tab heading now. Otherwise, click **OK** to save your changes and close the Edit View dialog box.



Edit View - Test Stations

This tab allows you to change the test station(s) that you would like to monitor. All charts in this View display data from the selected test station(s). You can display data for any test station connected to the Intelligent Test Framework (ITF).

NOTE The list of test stations will include all test stations known to the Agilent ITF for the current test Stage (AOI_SJ, AOI_SP, or AXI). At least one board must be tested on a test station in order for that station to appear on the list.

If you would like data from **all** the test stations,

1. Select the **All test stations** radio button.

NOTE When you select **All test stations**, this will include new test stations for this Test Stage that are added to the ITF in the future.

2. If you need to check or change any information on another tab, click that tab heading now. Otherwise, click **OK** to save your changes and close the Edit View dialog box.

If you would like data from **specific** test stations,

1. Select the **Specific test stations** radio button.

The Available box contains a list of all test stations known to the ITF for the current Stage (AOI_SJ, AOI_SP, or AXI).

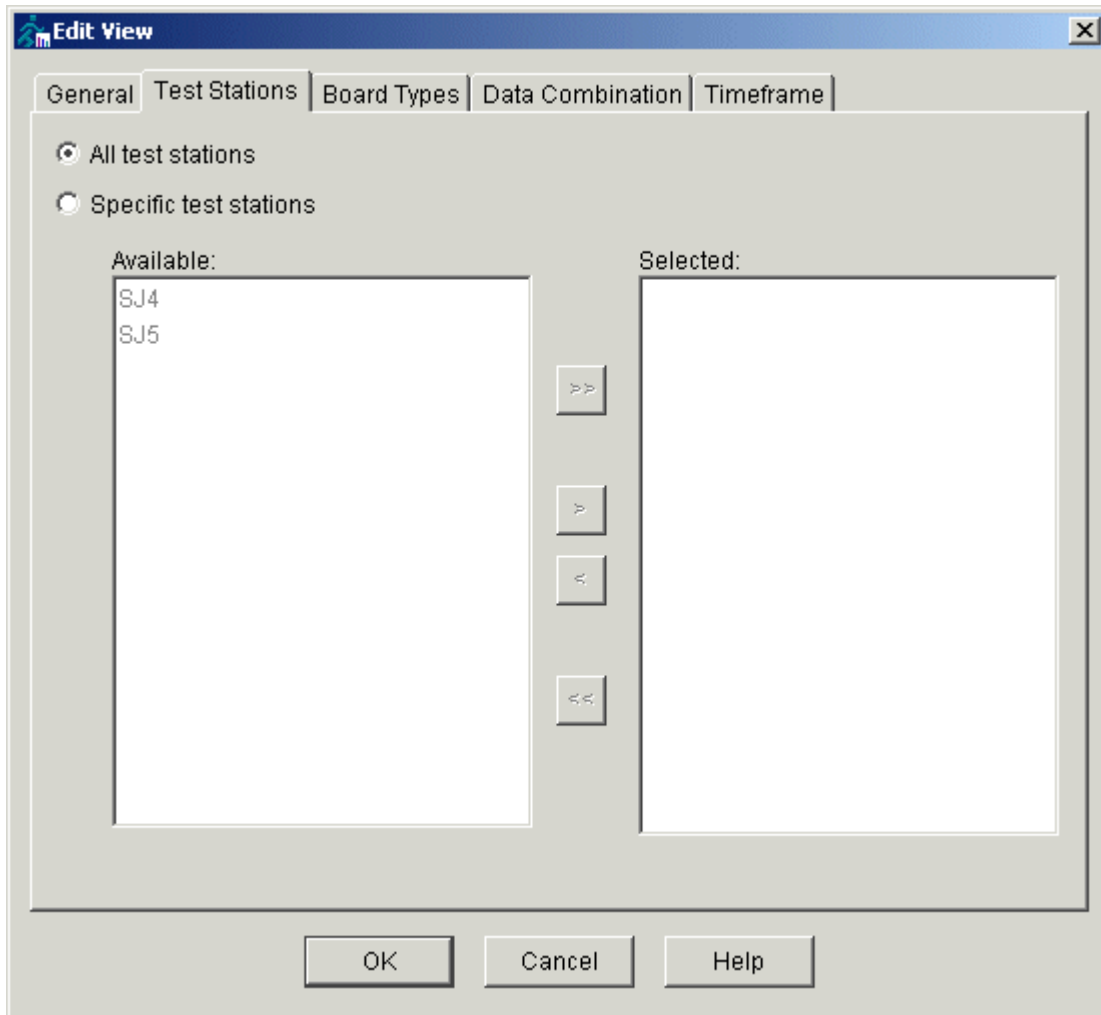
2. To select the test station(s) of interest, first click the test station name(s), then click > to move them to the Selected box.

NOTE You may also double-click the item to select it.

NOTE If you select **Specific test stations**, the View will not automatically include new test stations added to the ITF in the future. In order to include new test stations, you must specifically add them to this View.

3. If you need to check or change any information on another tab, click that tab heading now. Otherwise, click **OK** to save your changes and close the Edit View dialog box.

Example of **All test stations**:



Edit View - Single Board Type

The contents of the Board Type tab depend on the View type. You can see the View type on the [General tab](#) of the Edit View dialog box. This topic refers to Views where a single board type has been selected. The tab name will be **Board Type**.

NOTE For more information on the significance of board type names, see [Board Type Names](#).

NOTE The list of board types will include all board types known to the Agilent ITF for the current test Stage (AOI or AXI). At least one board for a particular board type must have been tested in order for that board type to appear on the list.

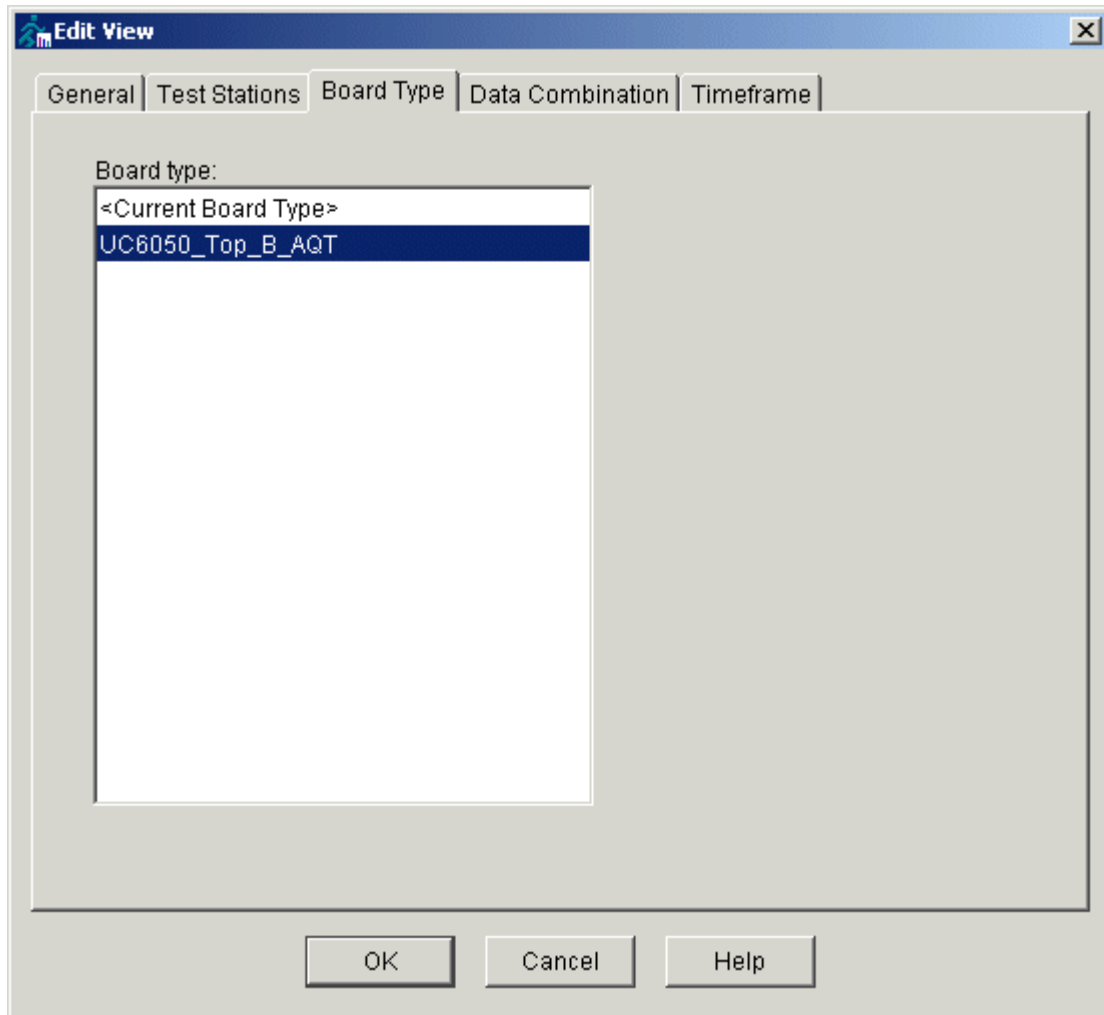
When the View type is "Detailed view for a single board type," you may choose a single board type in the list. You also have the option of selecting "Current board type" if you have selected a single test station in [Step 1: Select Test Stations](#) or the [Test Stations](#) tab.

To change the board type,

1. Click the name of the board type you wish to select.
2. If you need to check or change any information on another tab, click that tab heading now. Otherwise, click **OK** to save your changes and close Edit View dialog box.

NOTE <Current board type> is the board type currently undergoing test on the specified test station. This option allows you to monitor the current board type at your test station without having to modify the View each time the board type changes.

Example of **Single Board type**:



Edit View - Multiple Board Types

The contents of the Board Type tab depend on the View type. You can see the View type on the [General tab](#) of the Edit View dialog box. This topic refers to Views where multiple board types have been selected. The tab name will be **Board Types**.

NOTE For more information on the significance of board type names, see [Board Type Names](#).

NOTE The list of board types will include all board types known to the Agilent ITF for the current test Stage (AOI_SJ, AOI_SP, or AXI). At least one board for a particular board type must have been tested in order for that board type to appear on the list.

When the View type is "Summary view for multiple board types," you may choose **All board types** or **Specific board types**. The board types are those tested on the test station(s) you chose in [Step 1: Select Test Stations](#) or the [Test Stations](#) tab.

If you would like this View to include data from **All board types**,

1. Select the **All board types** radio button.

NOTE When you select **All board types**, this will include new board types for this Stage that are added to the Agilent ITF in the future.

2. If you need to check or change any information on another tab, click that tab heading now. Otherwise, click **OK** to save your changes and close the Edit View dialog box.

If you would like this View to include data from **specific** board types,

1. Select the **Specific board types** radio button.

The Available box contains a list of all board types known to the Agilent ITF for the test station(s) selected in [Step 1: Select Test Stations](#) or the [Test Stations](#) tab.

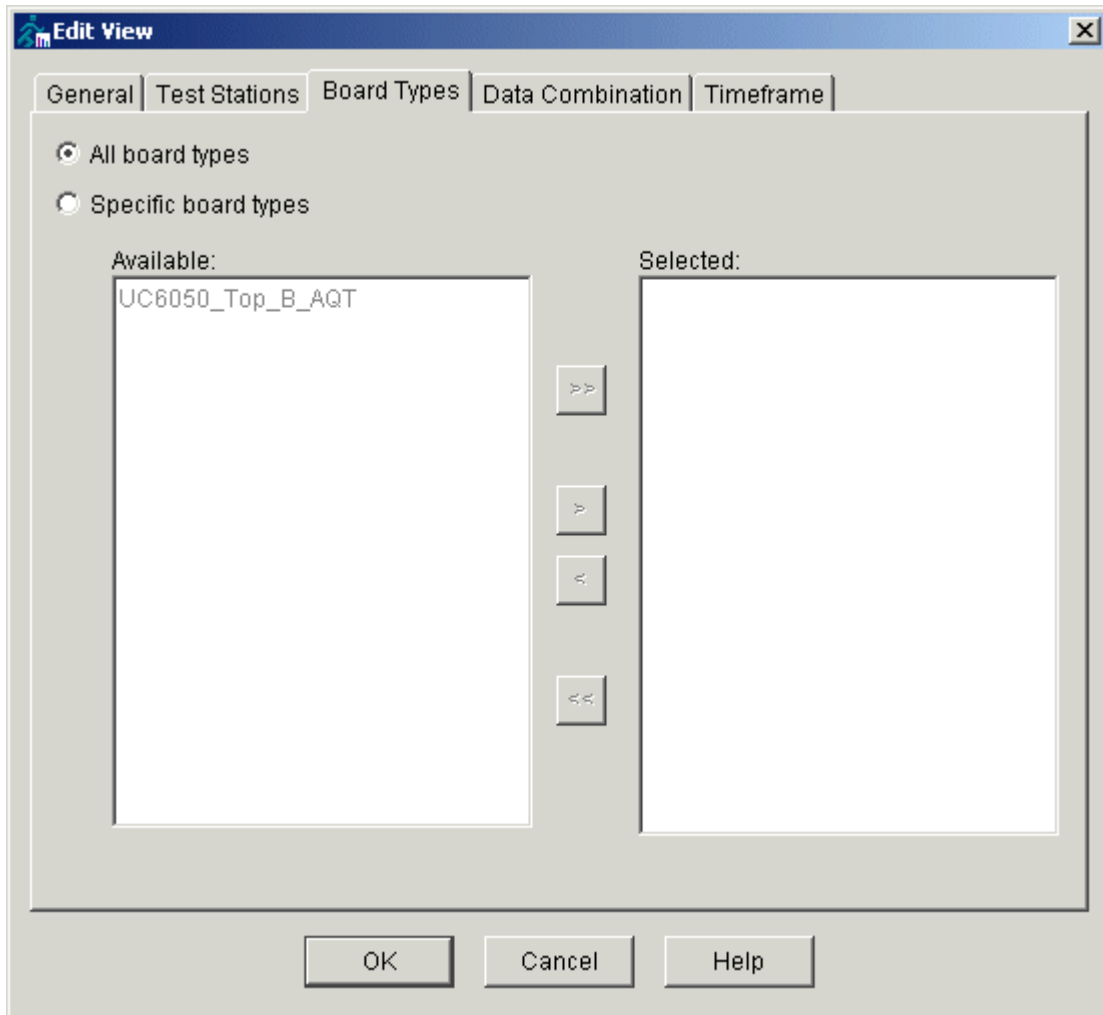
NOTE When you select **Specific board types**, this View will not automatically include new board types tested on this test station in the future.

2. To select the board type(s) of interest, click the board type name(s), then click > to move them to the Selected box.

NOTE You may also double-click the item to select it.

3. If you need to check or change any information on another tab, click that tab heading now. Otherwise, click **OK** to save your changes and close the Edit View dialog box.

Example of **Multiple Board types**:



Edit View - Data Combination

There are several ways you can display data on the Yield and DPMO trend charts. You may either combine all data into a single line, or view one line on the chart for each test station or board type.

1. Decide which format you want. You may choose one of the following:

Combine all data

- Combines the data for all test stations and all board types into a single line in a trend chart.

Compare data by test station

- Compares data by test stations (i.e., trend charts display one line for each test station). This is useful if you want to compare the performance of different test stations.

Compare data by board type

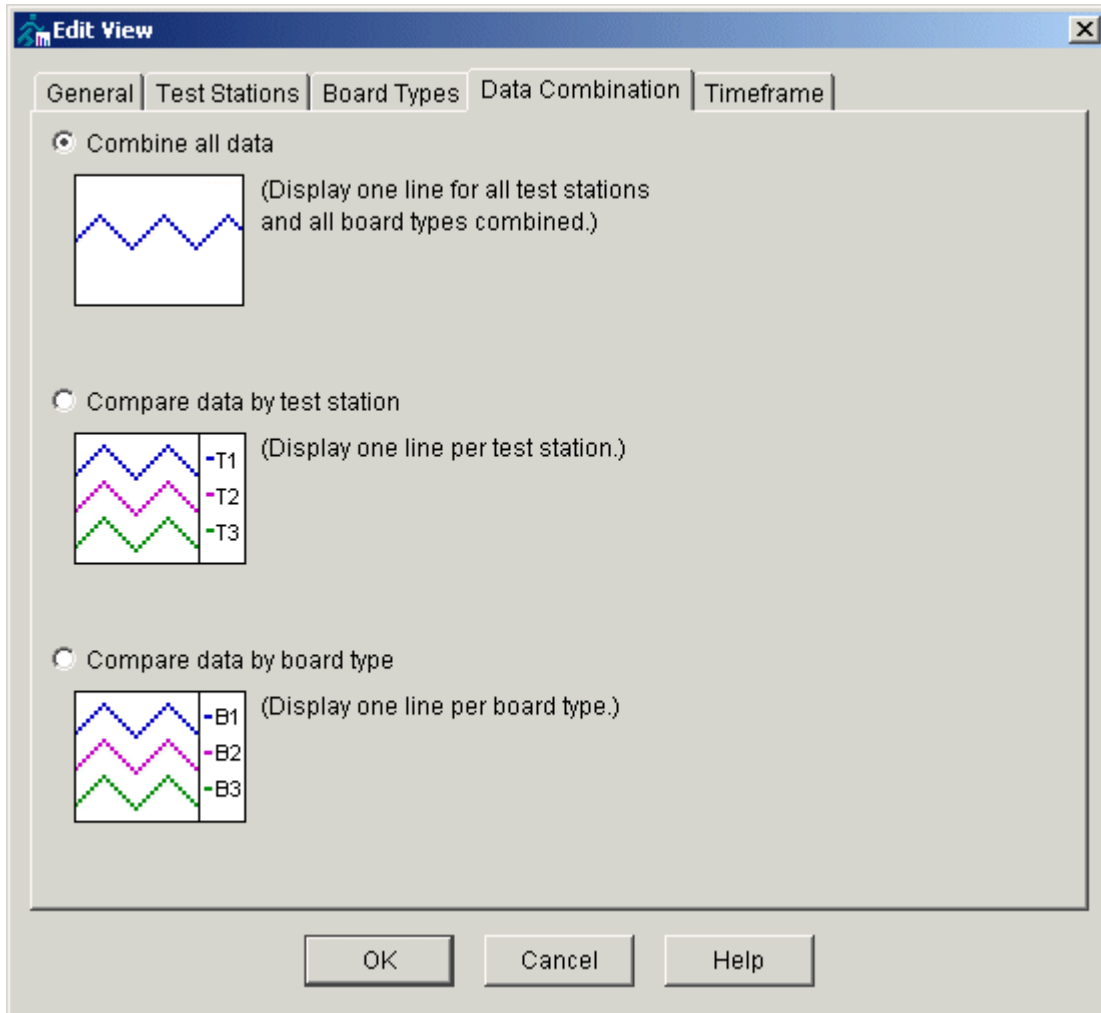
- Compares data by board type (i.e., trend charts display one line for each board type). This is useful if you want to compare the quality of different board types.

NOTE

This option is not available for Single Board Type Views.

2. Select the format you want by clicking the radio button that corresponds to your choice.
3. If you need to check or change any information on another tab, click that tab heading now. Otherwise, click **OK** to save your changes and close the Edit View dialog box.

Example:



Edit View - Time Frame

This tab allows you to change the time frame for your trend charts and the data displayed on your Pareto (bar) charts.

- Trend charts can display data collected from the last 4, 8, 12 or 24 hours.
- Pareto (bar) charts can display data based on the number of boards.

To set the time frames,

1. Trend charts:

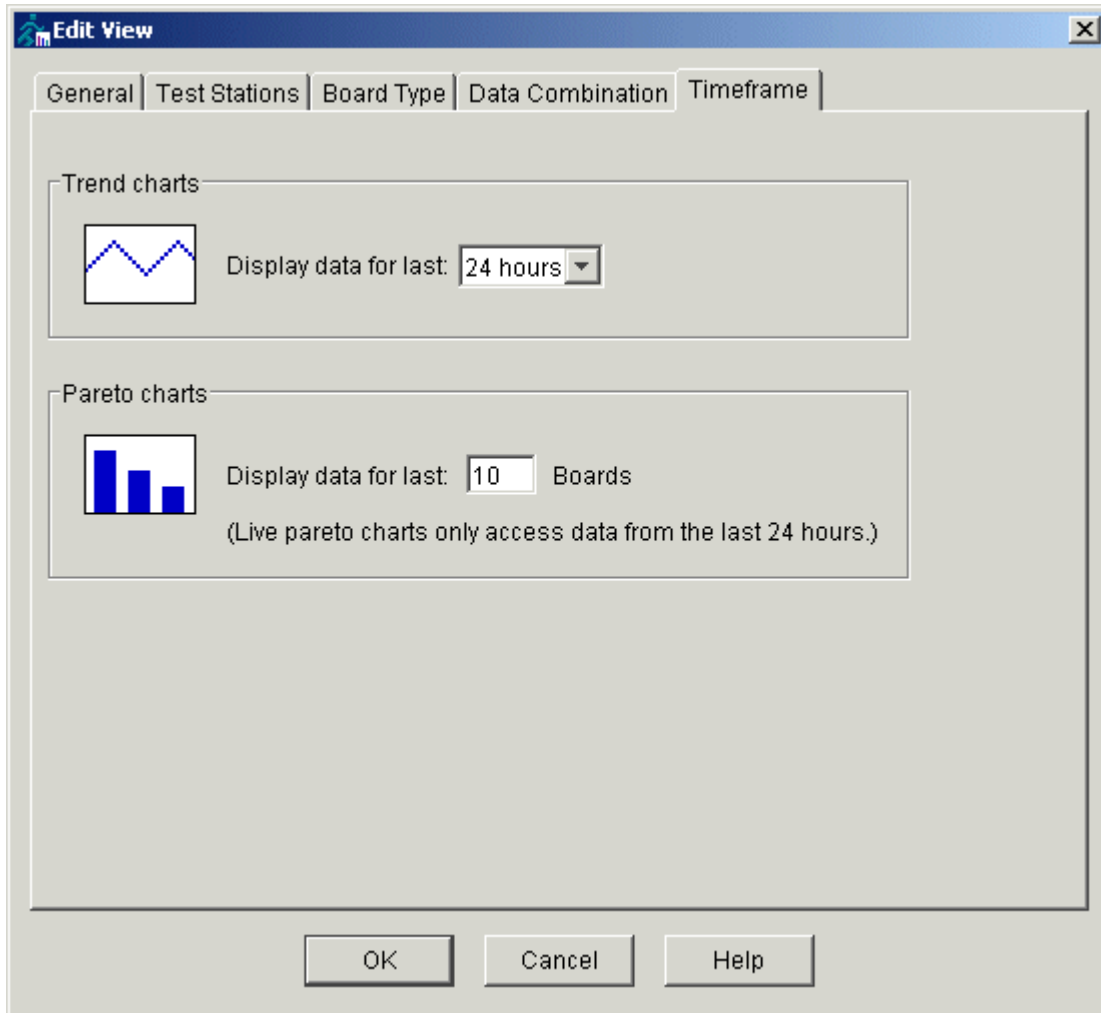
To change the time frame, click the drop-down menu and select 4, 8, 12 or 24 hours.

2. Pareto (Bar) charts:

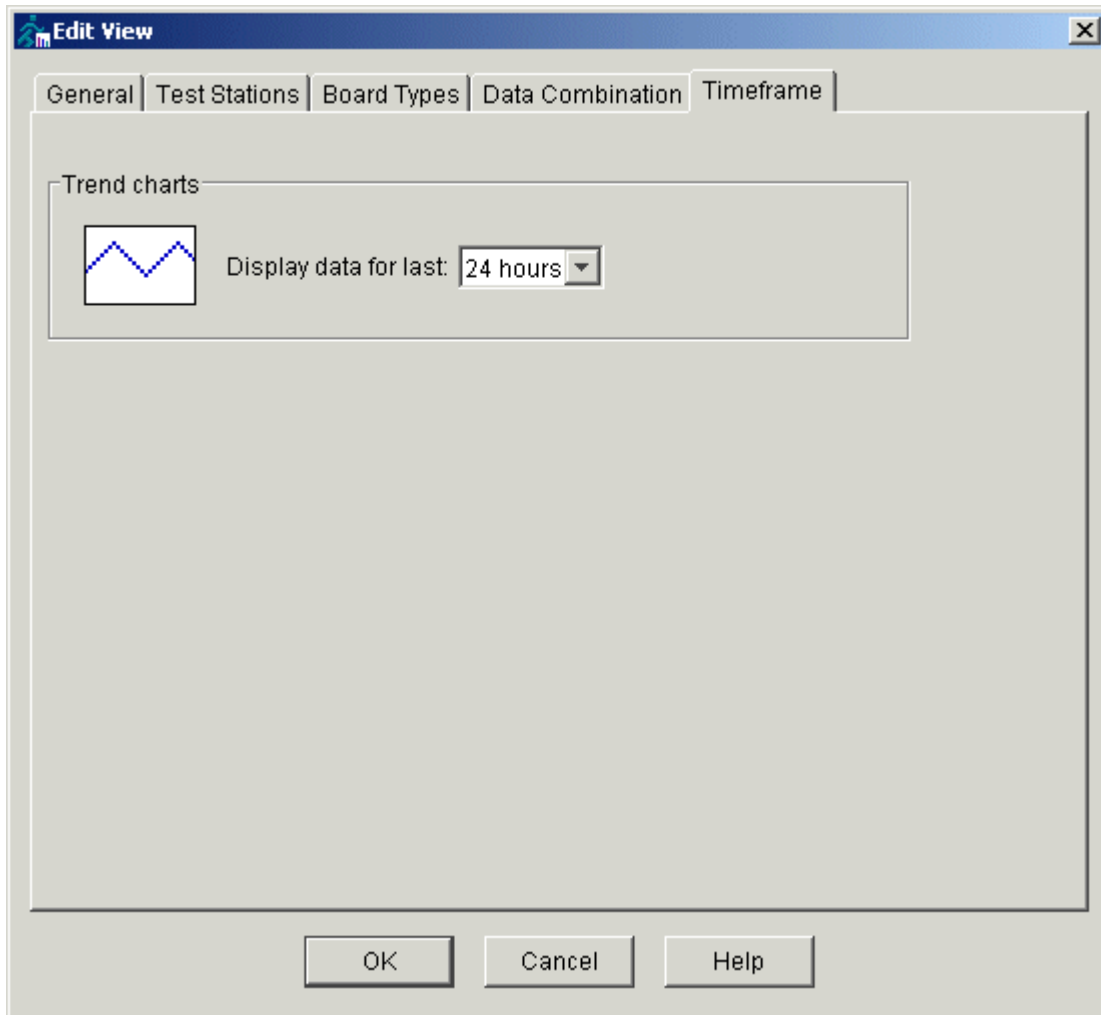
Type a new number in the text box to change the number of boards for which data is shown on Pareto charts.

3. If you need to check or change any information on another tab, click that tab heading now. Otherwise, click **OK** to save your changes and close the Edit View dialog box.

Example dialog box when you have selected a **Single board type**:



Example dialog box when you have selected **Multiple board types**:



Using Charts

The Chart Toolbar

A chart toolbar appears below each chart. You can do the following from the chart toolbar:


 [Drill-down for more information](#)

 [View historical data for this chart](#)

 [Save a chart image](#)

 Edit chart options: [Alarm Tab](#), [Filter Tab](#) or [Calculation Tab](#)


NOTE The Chart Options button appears only if the user has **Quality Administrator** privileges.

 [Chart Information](#): See the formula or definition of a chart calculation


Drill-Down

The Agilent Quality Tool includes a patented feature called **Intelligent Drill-Downs**.

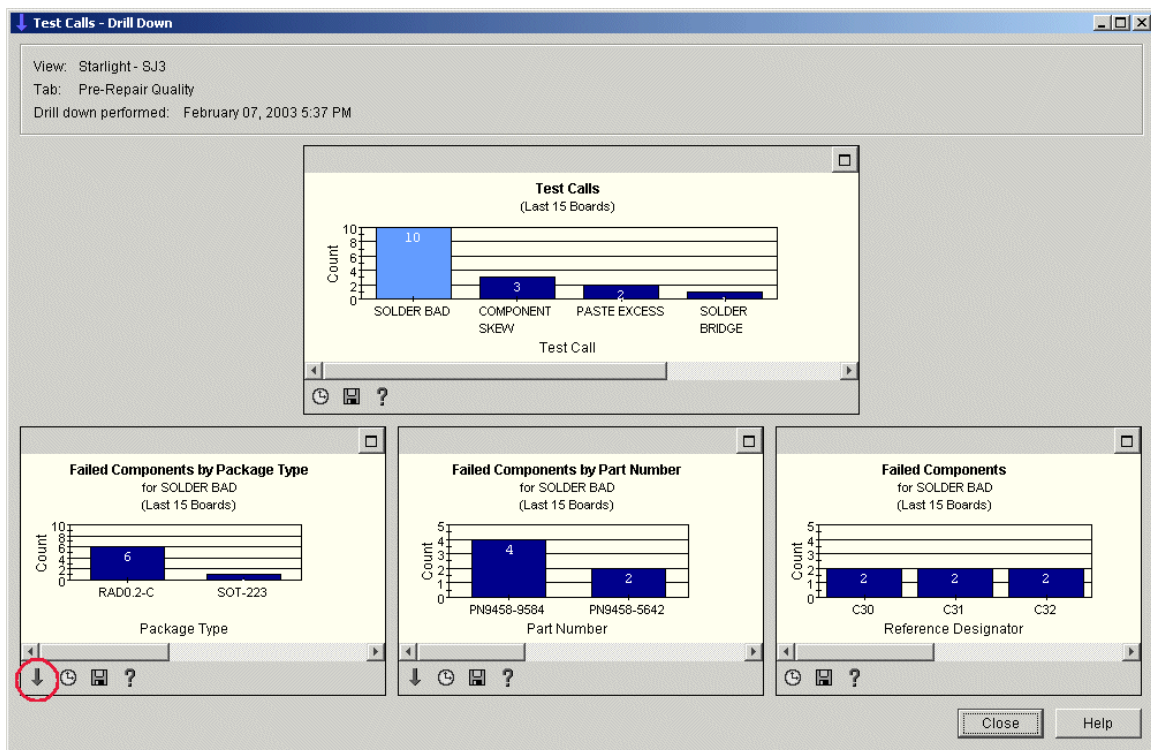
Intelligent Drill-Downs allow you to "drill-down" on a chart to learn more about the factors contributing to the data displayed on that chart.

- To drill-down on an item in a Pareto chart, simply click the bar of interest on that chart or click the drill-down button  on the chart toolbar. Drill-down charts are available when there is a drill-down button on the chart toolbar.

To drill-down on a line in a trend chart, click the item in the chart legend or click the drill-down button on the chart toolbar.

- To return from a drill-down to the previous chart, click the  button on the chart toolbar.

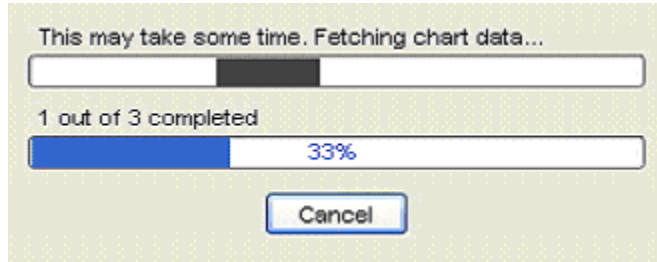
Example: In the screen below, the user sees a Pareto chart showing the most frequent Test Calls. "Solder Bad" is the most commonly-occurring test call at this time. The three charts below the Test Calls chart automatically give the user additional information on the first item in the Pareto chart ("Solder Bad" in this case). The user sees charts for Failed Components by Package Type, Failed Components by Part Number and Failed Components (by reference designator).



To continue the example, assume the user wants to find out additional information on the "RADO.2-C" package type. This is where a drill-down is very valuable. The user clicks the down-arrow below the Failed Components by Package Type chart. A new drill-down dialog box appears (see below). The top chart is Failed Components by Package Type, the original chart from which the drill-down was activated. The lower chart(s) display the drill-down information

for the selected item. The Failed Components chart indicates the component reference designators for package type "RADO.2-C" that had a Solder Bad test call.

NOTE If the data fetch involves a large amount of data, the following dialog box with a progress indicator appears:



NOTE When you click the drill-down button in the chart toolbar, you automatically see the drill-down chart(s) for the first item in the chart. Pin/component package type in AQT is not applicable to SP50. Any charts related to package type in SP50 are not relevant.

To return from the drill-down, the user clicks the up-arrow on the chart toolbar. This returns the user to the previous screen.

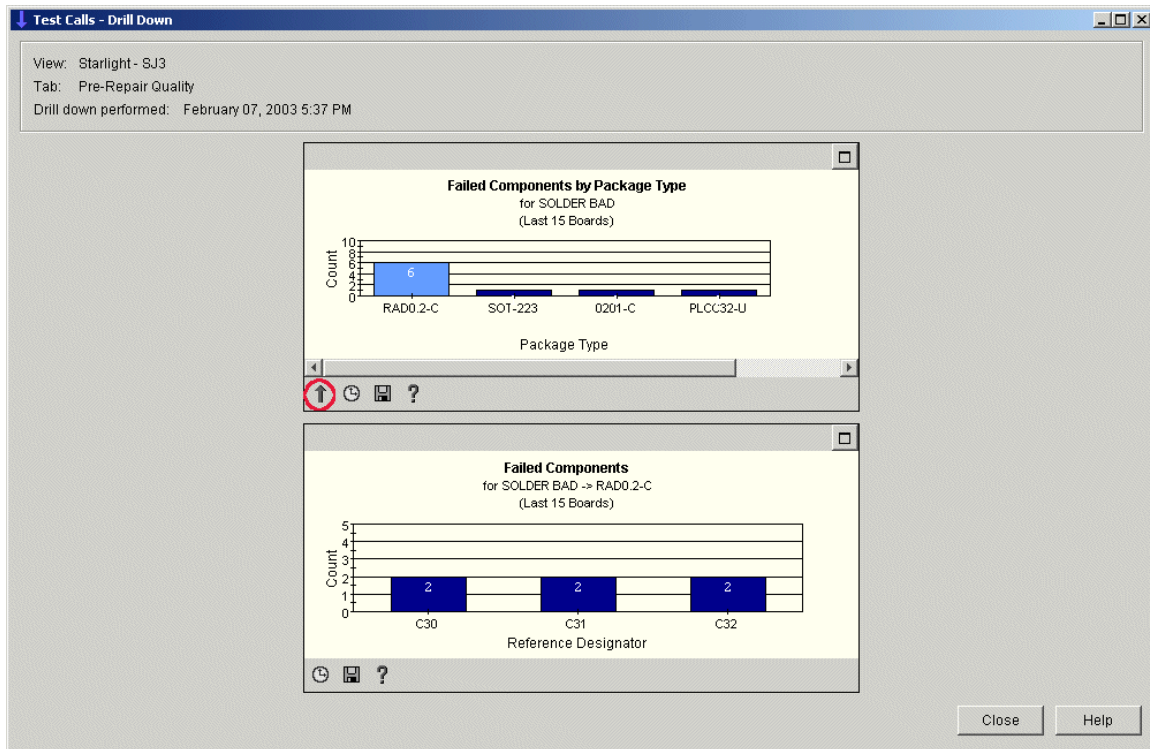

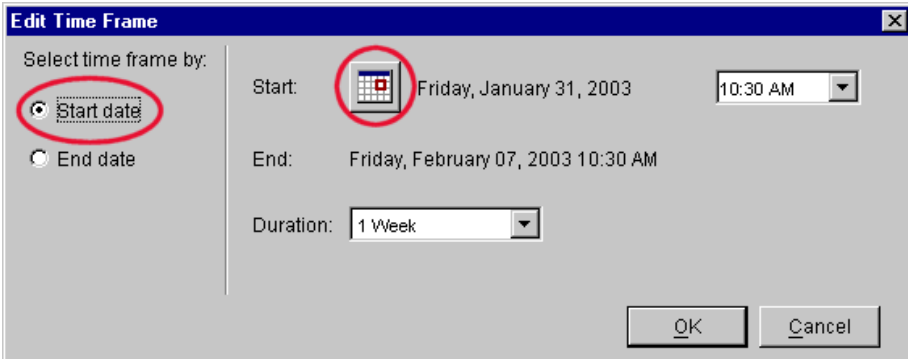


Chart History

The Agilent Quality Tool provides the capability to compare current chart data with chart data from another time frame. This is useful if you wish to compare current performance or quality with recent quality or performance data that resides on the ITF Server.

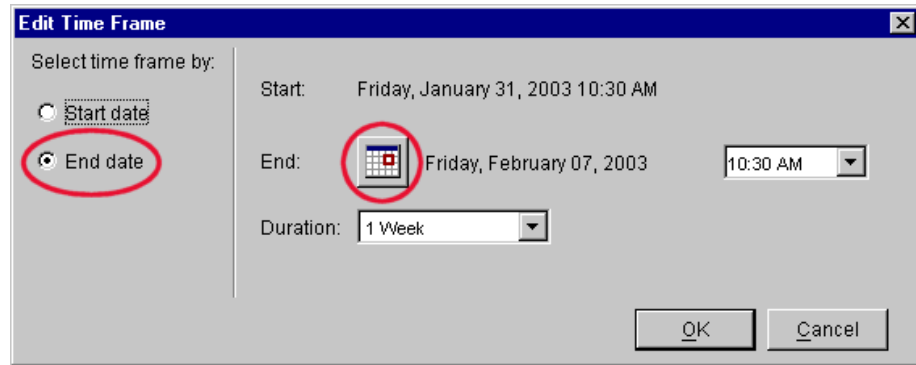
To see chart history,

1. Click the **Chart History** button  on the chart toolbar.
2. For **Trend** charts such as Yield or DPMO, you may set the time frame with either the **Start date** or **End date**.
 - For **Start date**, you may choose the start date and the duration. The end date and time will be calculated automatically.
 - Click the **Start date** radio button
 - Click the **Calendar button** to select the start date from the calendar.
 - Select the start **time** from the drop-down box.
 - Select the **duration** (length of time) from the drop-down box. The choices are Hours (4, 8, 12 or 24) or Weeks (1, 2, 4, 5, 10, 15 or 20).
 - Click **OK**.



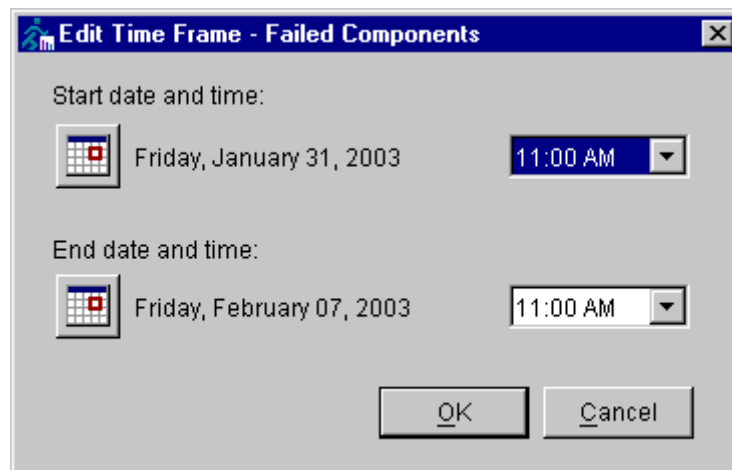
The screenshot shows the 'Edit Time Frame' dialog box. On the left, under 'Select time frame by:', the 'Start date' radio button is selected and circled in red. Below it is the 'End date' radio button. To the right, the 'Start' field is circled in red and contains a calendar icon, followed by the text 'Friday, January 31, 2003' and a time dropdown menu set to '10:30 AM'. The 'End' field contains the text 'Friday, February 07, 2003 10:30 AM'. Below these is a 'Duration' dropdown menu set to '1 Week'. At the bottom right are 'OK' and 'Cancel' buttons.

- For **End date**, you may choose the end date and the duration. The start date and time will be calculated automatically.
 - Click the **End date** radio button
 - Click the **Calendar button** to select the end date from the calendar.
 - Select the end **time** from the drop-down box.
 - Select the **duration** (length of time) from the drop-down box. The choices are Hours (4, 8, 12 or 24) or Weeks (1, 2, 4, 5, 10, 15 or 20).
 - Click **OK**.

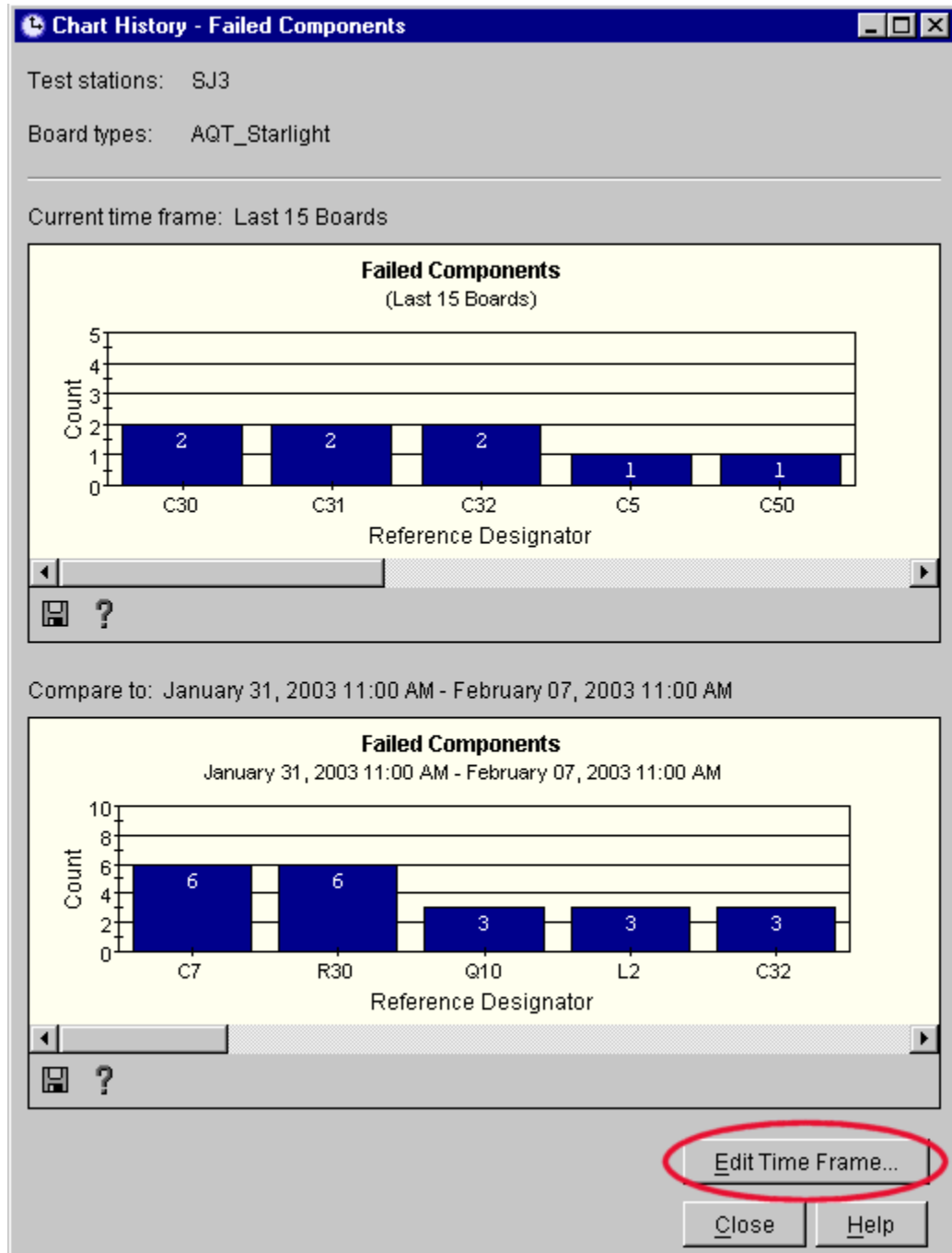


3. For **Pareto** charts such as Failed Components, you may select the exact start date/time and end date/time.

- Select the **Start date** from the **Calendar button**.
- Select the **Start time** from the drop-down box.
- Select the **End date** from the **Calendar button**.
- Select the **End time** from the drop-down box.
- Click **OK**.



4. A dialog box appears with the original chart on the top and the chart for the selected time frame on the bottom.




5. If you want to see a chart comparison for a different time frame, click the **Edit Time Frame...** button at the bottom of the dialog box.
6. Click **Close** when you are done with this dialog box.

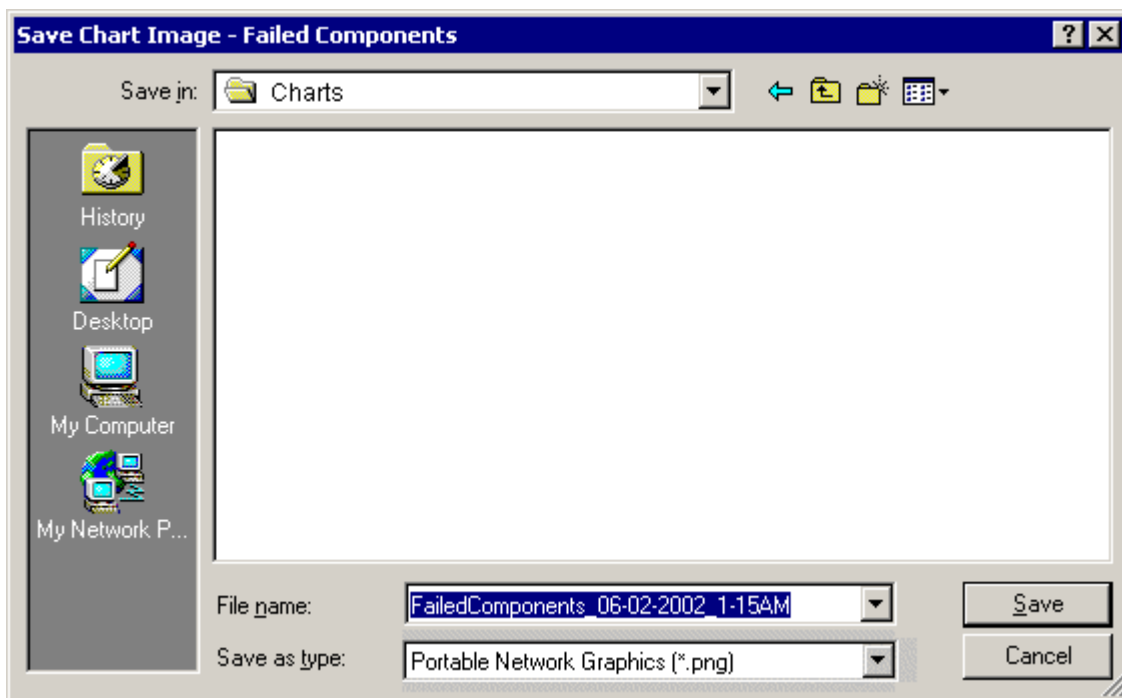
NOTE **Chart History** is different than **View History** (also called History for a View). Chart History is activated from the chart toolbar and shows data from a different time frame for a chart. [View History](#) is activated from the main toolbar and shows data from a different time frame for an entire View (all tabs, all charts).

Saving Charts

To save a chart,

1. Click the **Chart Save** button  on the chart toolbar below the chart.
2. Choose the file name and location:
 - Choose the file folder
 - Use the default file name or type a new name
 - Choose the image file type. The default file type is .png, as this format provides superior resolution. If you prefer, you may change the file type to .jpg.
3. Click **Save**.

Example:



Printing Charts

If you want to print a chart,

1. First, save the chart (see [Saving Charts](#)). The chart will be saved as a .png or .jpg image file.
2. Note the file name and location.
3. Open the image file in another application such as Microsoft Word© or any image editing software.
4. Print the chart image from the software application.

Chart Options

Chart Options: Alarm Tab

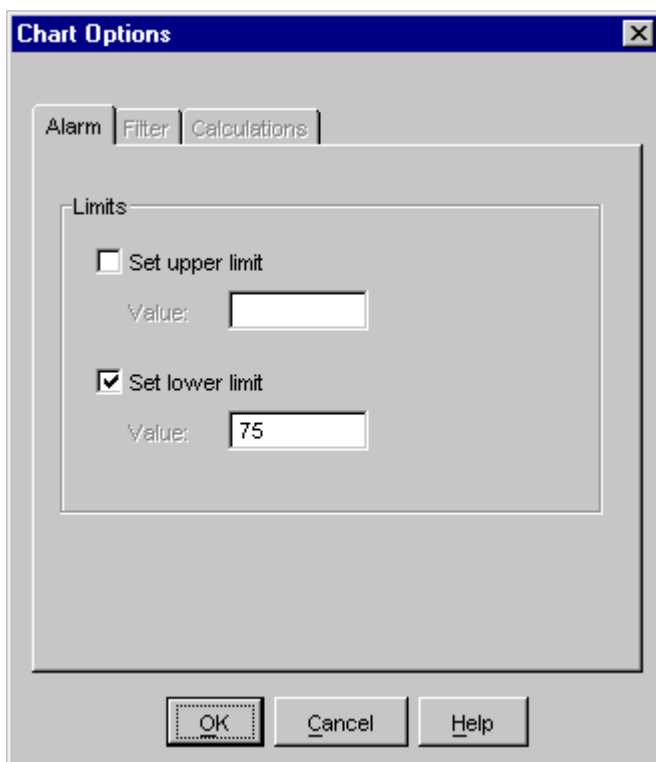
NOTE

A user must have **Quality Administrator** privileges to change Chart Options.

Trend (line) charts:

The Alarm Tab below is an example of a lower limit set on a trend (line) chart.

In this example, the alarm limit for a yield chart is set to 75. The chart will go into an alarm state if the yield drops below 75 percent. If this were a DPMO chart, the user would instead choose a high limit.



The screenshot shows a dialog box titled "Chart Options" with a close button (X) in the top right corner. The dialog has three tabs: "Alarm", "Filter", and "Calculations". The "Alarm" tab is selected. Inside the dialog, there is a section labeled "Limits" containing two options:

- Set upper limit
Value:
- Set lower limit
Value:

At the bottom of the dialog, there are three buttons: "OK", "Cancel", and "Help".

Pareto (bar) charts:

The Alarm Tab below is an example when a high limit of 5 is set for a Pareto chart.

In this example, the alarm limit for a False Called Components chart is set to 5. The chart will go into an alarm state if any single component is marked False Call on 5 of the last 20 boards on this chart.




Chart Options: Filter Tab

On the Chart Options, Filter Tab, the Agilent Quality Tool provides the capability to specify the placement machine for a particular chart in the AOI Test Stage. This is useful if you want to look at components placed by a specific placement machine.

NOTE The Filter tab is available only for the following charts: (a) Pre-Repair: Test Calls, Failed Components, and Failed Components by Feeder and (b) Post-Repair: Defects, Defective Components, and Defective Components by Feeder.

NOTE A user must have **Quality Administrator** privileges to change Chart Options.

To set a filter for a specific placement (pick and place) machine,

1. Click the **Chart Options** button  on the chart toolbar.
2. Select the **Filter** tab.
3. Click the down-arrow for the placement machines to see the list of available machines.

NOTE The default selection is "Any machine."

4. Select the placement machine.
5. Click **OK**.

NOTE The applied filter will be indicated on the chart except when the placement machine is set to "Any machine."

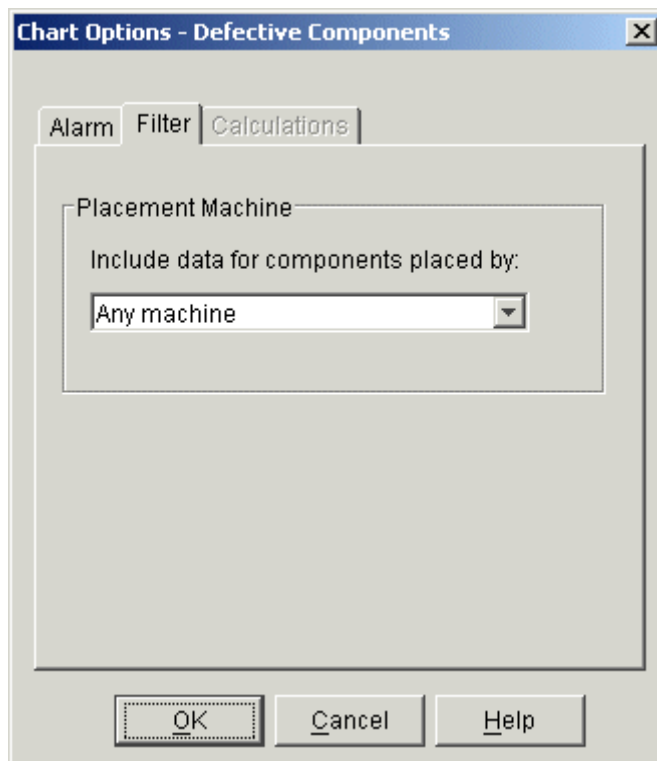


Chart Options: Calculation Tab

NOTE


A user must have **Quality Administrator** privileges to change Chart Options.

For DPMO charts (Defects Per Million Opportunities), you can specify how you would like to define a "defect opportunity." You may choose any of the following:

- Components
- Pins (AXI only)
- Components and pins (AXI only)

If you select:	Pre-Repair DPMO is:
Components	Total number of failed components per million components tested.
Pins (AXI only)	The total number of <u>failed pins</u> per million pins tested.
Components and pins (AXI only)	Total number of failed components and <u>failed pins</u> per million components and pins tested.

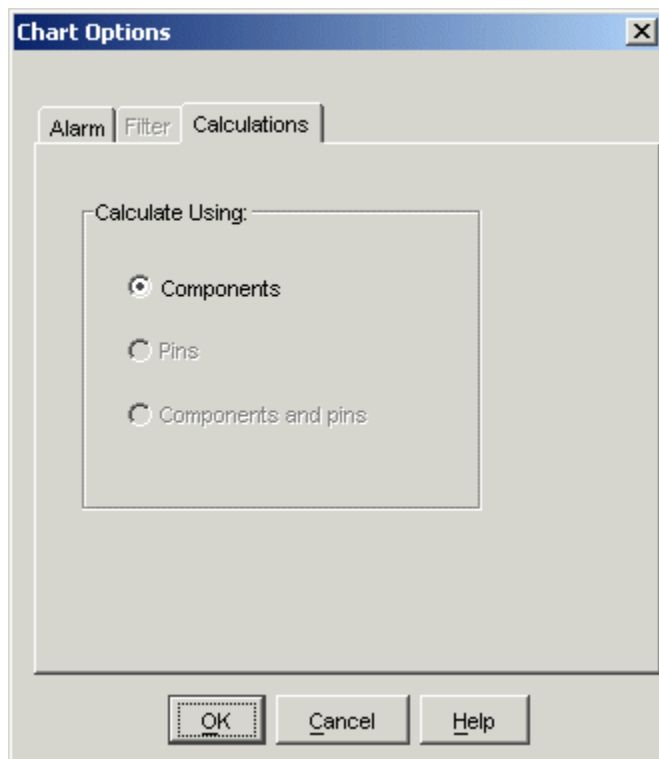
To set the DPMO opportunity,

1. Click the **Chart Options** button  on the chart toolbar below the chart.
2. Select the **Calculation** tab.
3. Click to select either **Components**, **Pins**, or **Components and pins**.

NOTE

Pins options are available only for AXI.


4. Click **OK**.

**NOTE**

DPMO "Opportunities" are set on an individual chart basis.

Chart Information Button

To see the definition or formula for the current chart,

1. Click the **Chart Information** button  on the chart toolbar below the chart.
2. Take note of the definition, formula (if applicable), and notes for this chart metric.

Definition
Formula	<i>(if applicable)</i>
Notes

3. Close the dialog box when you are done.

List of All Available Charts

Your system administrator defines, in the ITF Administration System, the exact charts that will appear when you select this tab. The following table describes the charts available for display on each tab in the Agilent Quality Tool (before Intelligent drill-downs).

Tab Name	Available Charts	Chart Description
Pre-Repair Quality	First Pass Yield (Pre-Repair)	Percentage of boards that passed test or inspection.
	DPMO (Defects per Million Opportunities)	Total number of failed pins, failed components, or both per million pins, components, or both tested.
	Test Calls <i>(single board type only)</i>	Number of failures listed by test call.
	Failed Components <i>(single board type only)</i>	Number of failed components, listed by reference designator.
	Failed Components by Feeder <i>(single board type only)</i>	Number of failed components placed by a particular placement machine and feeder.
	Boards Tested	Number of boards tested on the specified test station(s).

Tab Name	Available Charts	Chart Description
Post-Repair Quality	First Pass Yield (Post-Repair)	<p>Percentage of boards that contain no real defects.</p> <p>Calculation includes boards that passed test or inspection and boards that have been completely reviewed with the Agilent Repair Tool.</p>
	<p>DPMO</p> <p>(Defects per Million Opportunities)</p>	<p>Total number of defective items per million items tested.</p> <p>For AOI, items = components. For AXI, items = components, pins, or components+pins.</p> <p>Calculation includes boards that passed test or inspection and boards that have been completely reviewed with the Agilent Repair Tool.</p>
	<p>Defects</p> <p><i>(single board type only)</i></p>	<p>Number of defects, listed by defect name.</p> <p>Calculation includes boards that passed test or inspection and boards that have been completely reviewed with the Agilent Repair Tool.</p>

Tab Name	Available Charts	Chart Description
Post-Repair Quality	Defective Components <i>(single board type only)</i>	Number of defective components, listed by reference designator.
	Defective Components by Feeder <i>(single board type only)</i>	Number of defective components placed by a particular placement machine and feeder.
	Boards Repaired	Number of boards repaired using the Agilent Repair Tool.
Throughput	Boards Tested	Number of boards tested on the specified test station(s).
	Boards Repaired	Number of boards repaired with the Agilent Repair Tool.
	First Pass Yield (Pre-Repair)	Percentage of boards that passed test or inspection.
	First Pass Yield (Post-Repair)	Percentage of boards that contain no real defects. Calculation includes boards that passed test or inspection and boards that have been completely reviewed with the Agilent Repair Tool.
	Boards Tested but Not Reviewed	Number of boards that failed test and have not been completely reviewed with the Agilent Repair Tool.
	Boards Completed	Number of boards that either passed test or were completely repaired using the Agilent Repair Tool.
False Call	False PPM	Number of false-called items per million items tested.
	Parts Per Million	For AOI, items = components. For AXI, items = components, pins, or components+pins.

Tab Name	Available Charts	Chart Description
False Call (continued)	False: Real	Ratio of false-called items to defective items. For AOI, items = components. For AXI, items = components, pins, or components+pins.
	False: Total Failed	Ratio of false-called items to failed items. For AOI, items = components. For AXI, items = components, pins, or components+pins.
	Average False Calls	Average number of false-called items per board tested. For AOI, items = components. For AXI, items = components, pins, or components+pins.
	False Called Components <i>(single board type only)</i>	Number of false called components, grouped by reference designator.
	False Called Components by Algorithms <i>(single board type only)</i>	Number of false called components, grouped by algorithm.
	False Called Components by Package Type <i>(single board type only)</i>	Number of false called components, grouped by package type.

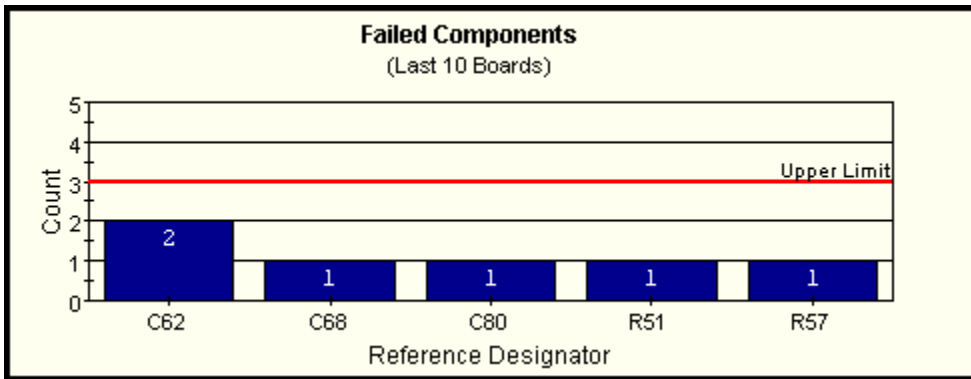
Setting and Viewing Alarms

Alarm Limits

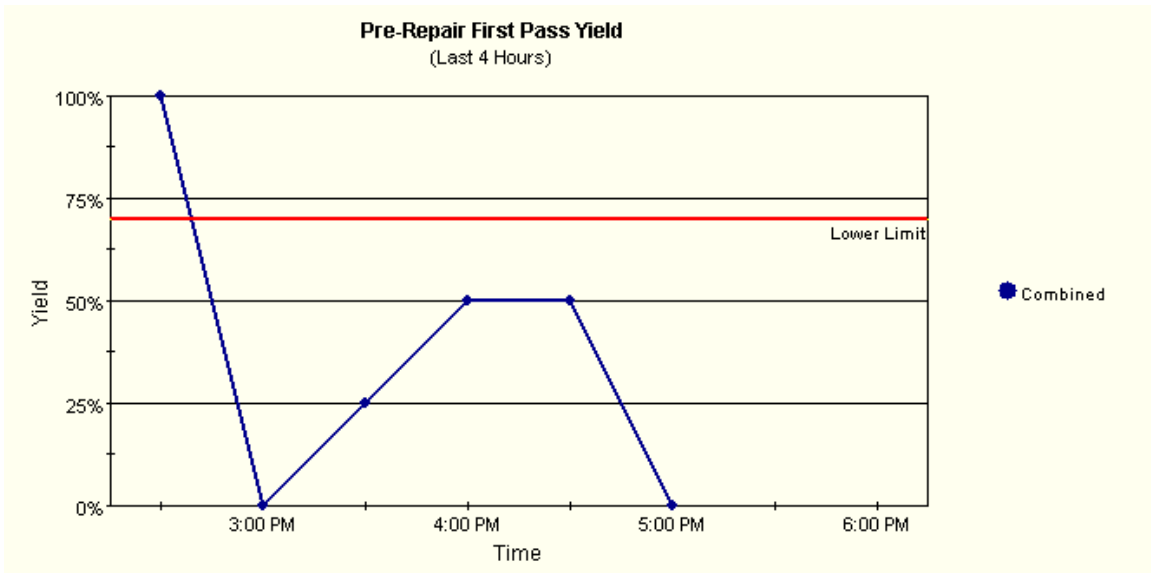
The Agilent Quality Tool can notify you when chart data exceeds predefined limits, allowing you to quickly identify and address process control issues. To set alarm limits, see [Setting Up Alarms](#).

When limits are set for a chart, a red line indicates the limit value.

For Pareto (bar) charts, you can set only an upper limit. If this limit is exceeded, an alarm event occurs and a visual notification is displayed on your Client PC screen.



For trend charts such as Yield and DPMO, you can set either an upper limit or a lower limit. If the last data point on a chart is above the upper limit or below the lower limit, an alarm event occurs and a visual notification is displayed on your Client PC screen.



NOTE Trend charts are updated every 30 minutes. Pareto charts are updated every time a board is tested or repaired. An alarm event occurs if the most recent data, when updated, is outside of the alarm limits. An alarm event is cleared if the most recent data, when updated, is within the alarm limits.

Setting Up Alarms on the Alarm Tab


The alarm feature in the Agilent Quality Tool notifies you when chart data exceeds the limits that you define. If a chart triggers an alarm, an alarm dialog box is displayed at the Client PC and the alarmed chart is highlighted in red.

Alarm limits may be set for any individual chart in a View. Alarms are associated with that specific chart in that View.

NOTE A maximum of eight alarm limits may be set on any single Client PC for a given test Stage.

NOTE Alarm events may occur for charts on tabs and Views that are not currently visible.

To set an alarm for a chart,

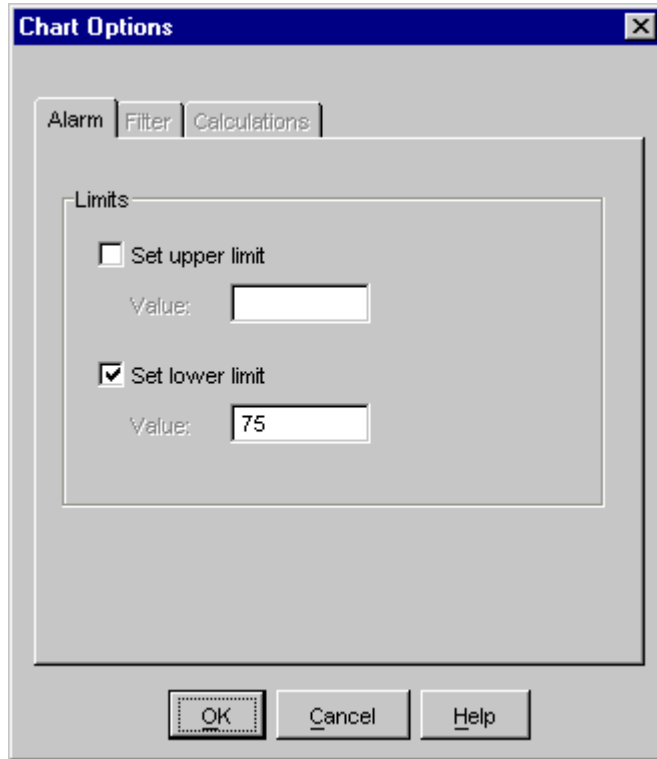
1. Click the Chart Options button  on the chart toolbar below the chart. This opens the Chart Options dialog box.

Click the **Alarm** tab.

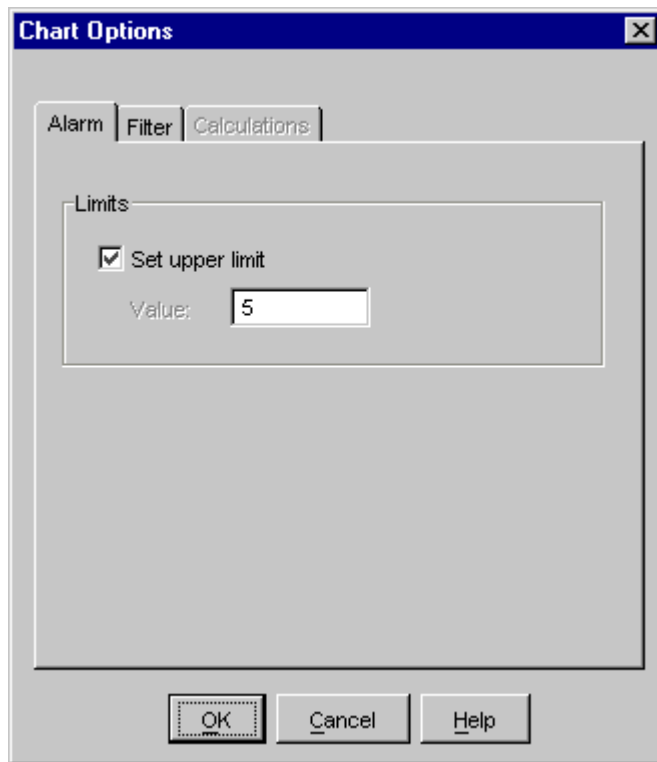
2. On the Alarm tab, select the type of limit(s) you want to set.
 - a. If this is a **trend chart** such as First Pass Yield or DPMO, you may set either an upper limit or a lower limit. An upper limit would be useful for charts such as DPMO. A lower limit would be useful for charts such as First Pass Yield. An alarm event occurs if the data goes above the upper limit or below the lower limit.
 - b. If this is a **Pareto (bar)** chart, you may set only an upper limit. An upper limit is useful for charts such as Failed Components, Defects, or Test Calls. An alarm event occurs if the limit is exceeded.
3. Enter the limit value in the **Value** text box.
4. Click **OK** to return to the main screen.

Repeat the above steps for each chart for which you wish to set an alarm.

Example: In this example of Alarm Limits for a First Pass Yield **trend chart**, the user has set a lower limit of 75. An alarm will be triggered if the yield falls below 75 percent.



Example: In this example of Alarm Limits for a **Pareto (bar) chart**, the user has set an upper limit. An upper limit is useful for charts such as Failed Components, Defects, or Test Calls. If the limit is exceeded, an alarm will be triggered.



NOTE A user must have **Quality Administrator** privileges to set alarms.

Responding to an Alarm

When the data crosses the alarm limit for a chart,

- A notification dialog box appears on the Client PC screen where the alarm limit was set
- The chart background turns red
- An alarm event is recorded in the Alarm Log
- An alarm symbol appears next to the View name in the View name list

NOTE Notification will occur for alarm events on all tabs and Views, even those that are not currently visible.

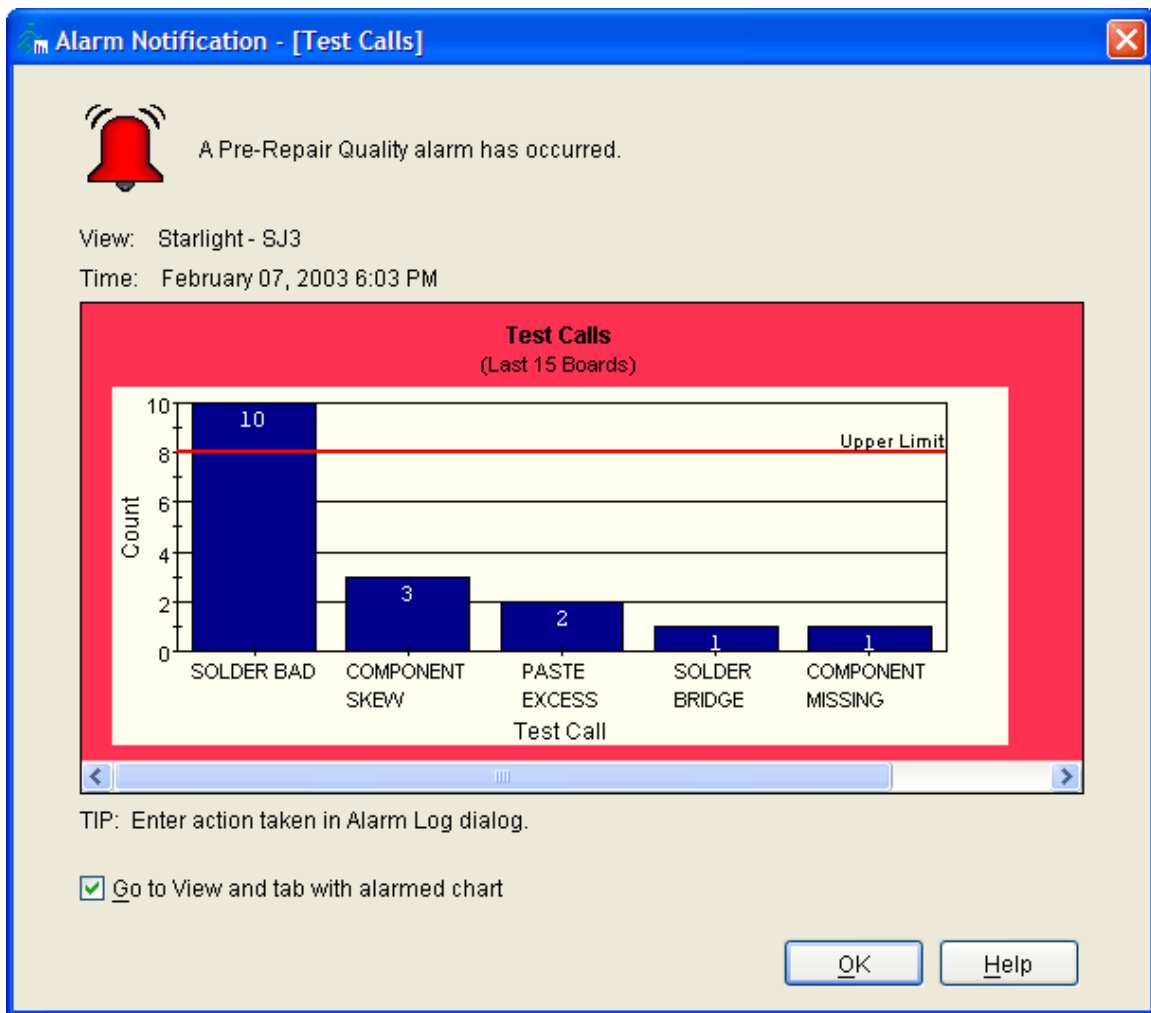
To close the Alarm Notification dialog box and return to the main screen,

Click **OK**.

If there is a check in the "Go to View" check box when you click **OK**, the next screen you see will be the alarmed chart.

Go to View and tab with alarmed chart

Example of Alarm Notification dialog box:

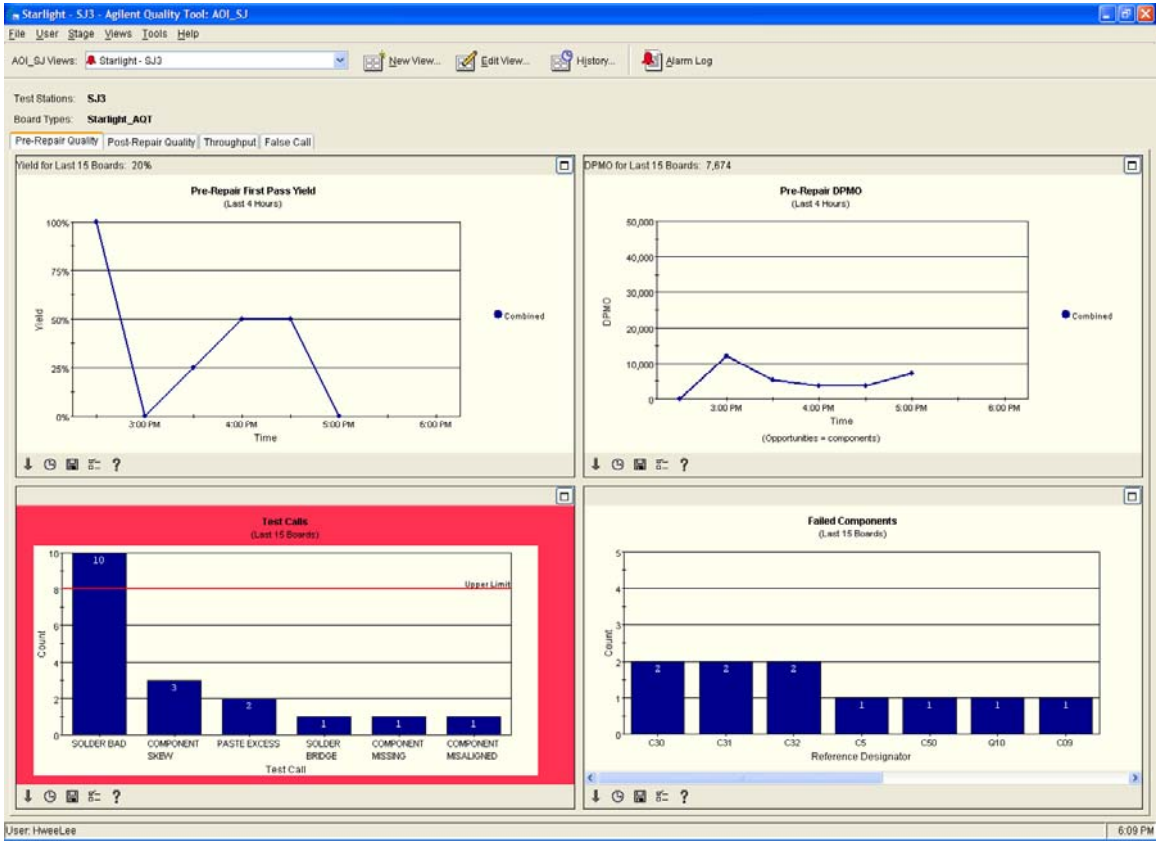


The dialog box, titled "Alarm Notification - [Test Calls]", features a red bell icon and the message "A Pre-Repair Quality alarm has occurred." It displays the view "Starlight - SJ3" and the time "February 07, 2003 6:03 PM". A bar chart titled "Test Calls (Last 15 Boards)" shows the following data:

Test Call	Count
SOLDER BAD	10
COMPONENT SKEW	3
PASTE EXCESS	2
SOLDER BRIDGE	1
COMPONENT MISSING	1

The chart includes a red horizontal line at a count of 8, labeled "Upper Limit". Below the chart, a tip reads "TIP: Enter action taken in Alarm Log dialog." and a checked checkbox is labeled "Go to View and tab with alarmed chart". "OK" and "Help" buttons are located at the bottom right.



Example of alarmed chart in the View:




Alarm Log

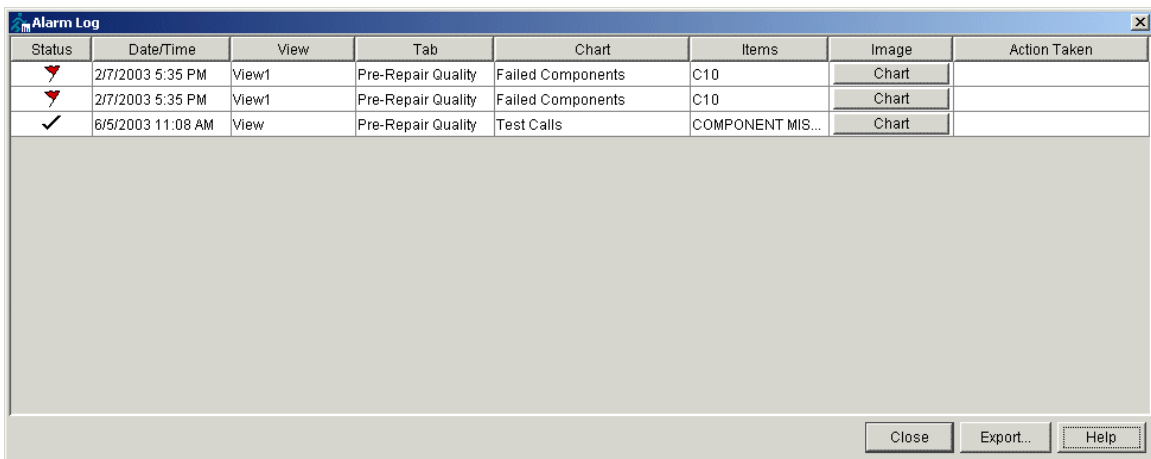
When an alarm event occurs, an entry is made in the Alarm Log. The most recent alarm event is listed first.







The Alarm Log provides a list of all the alarms that have occurred on that Client PC and includes the following information:

- Status for the alarm: Active  or Inactive 
- Date and time of the alarm event
- View name
- Tab name: Pre-Repair Quality, Post-Repair Quality, Throughput or False Call
- Chart name
- The specific defect or component that caused the alarm
- A snapshot of the chart image at the time the alarm was triggered (click **Chart**)
- A brief description of any action taken to deactivate the alarm

To view the Alarm Log, click the Alarm Log button  on the main toolbar or click **Tools > Alarm Log** from the menu bar.

Example of an **Alarm Log**:



Status	Date/Time	View	Tab	Chart	Items	Image	Action Taken
	2/7/2003 5:35 PM	View1	Pre-Repair Quality	Failed Components	C10		
	2/7/2003 5:35 PM	View1	Pre-Repair Quality	Failed Components	C10		
	6/5/2003 11:08 AM	View	Pre-Repair Quality	Test Calls	COMPONENT MIS...		

An alarm is deactivated if the chart data returns within the set limits. The status of the alarm event in the Alarm Log is then changed to "Inactive" and the red outline on the chart returns to its normal color.

To export the current Alarm Log to a .csv file,

1. Click **Export** at the top of the Alarm Log dialog box.
2. Enter a file name and location.
3. Click the **Save** button.

To close the Alarm Log,

Click **Close**. This will return you to the main screen.

NOTE


Alarm entries are retained in the Alarm Log for 31 days.

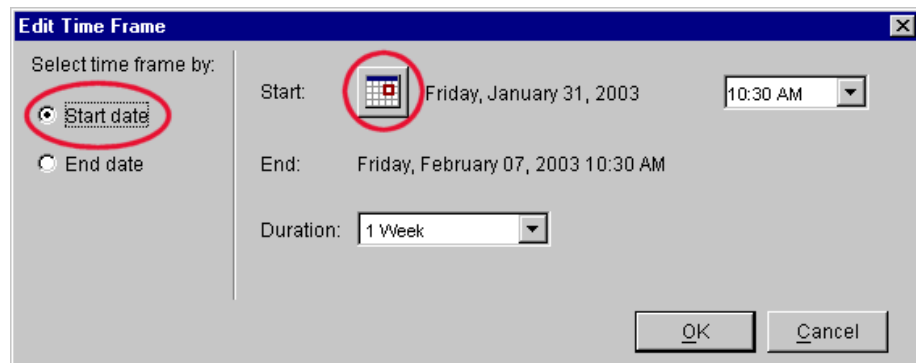
Historical Data

Chart History

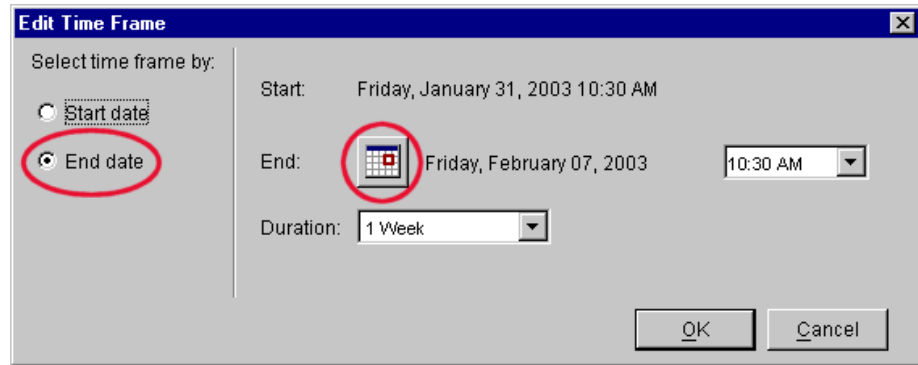
The Agilent Quality Tool provides the capability to compare current chart data with chart data from another time frame. This is useful if you wish to compare current performance or quality with recent quality or performance data that resides on the ITF Server.

To see chart history,

1. Click the **Chart History** button  on the chart toolbar.
2. For **Trend** charts such as Yield or DPMO, you may set the time frame with either the **Start date** or **End date**.
 - For **Start date**, you may choose the start date and the duration. The end date and time will be calculated automatically.
 - Click the **Start date** radio button
 - Click the **Calendar button** to select the start date from the calendar.
 - Select the start **time** from the drop-down box.
 - Select the **duration** (length of time) from the drop-down box. The choices are Hours (4, 8, 12 or 24) or Weeks (1, 2, 4, 5, 10, 15 or 20).
 - Click **OK**.

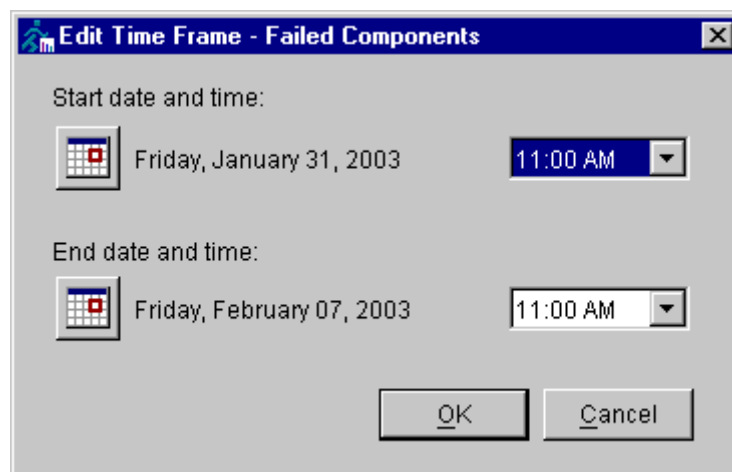


- For **End date**, you may choose the end date and the duration. The start date and time will be calculated automatically.
 - Click the **End date** radio button
 - Click the **Calendar button** to select the end date from the calendar.
 - Select the end **time** from the drop-down box.
 - Select the **duration** (length of time) from the drop-down box. The choices are Hours (4, 8, 12 or 24) or Weeks (1, 2, 4, 5, 10, 15 or 20).
 - Click **OK**.

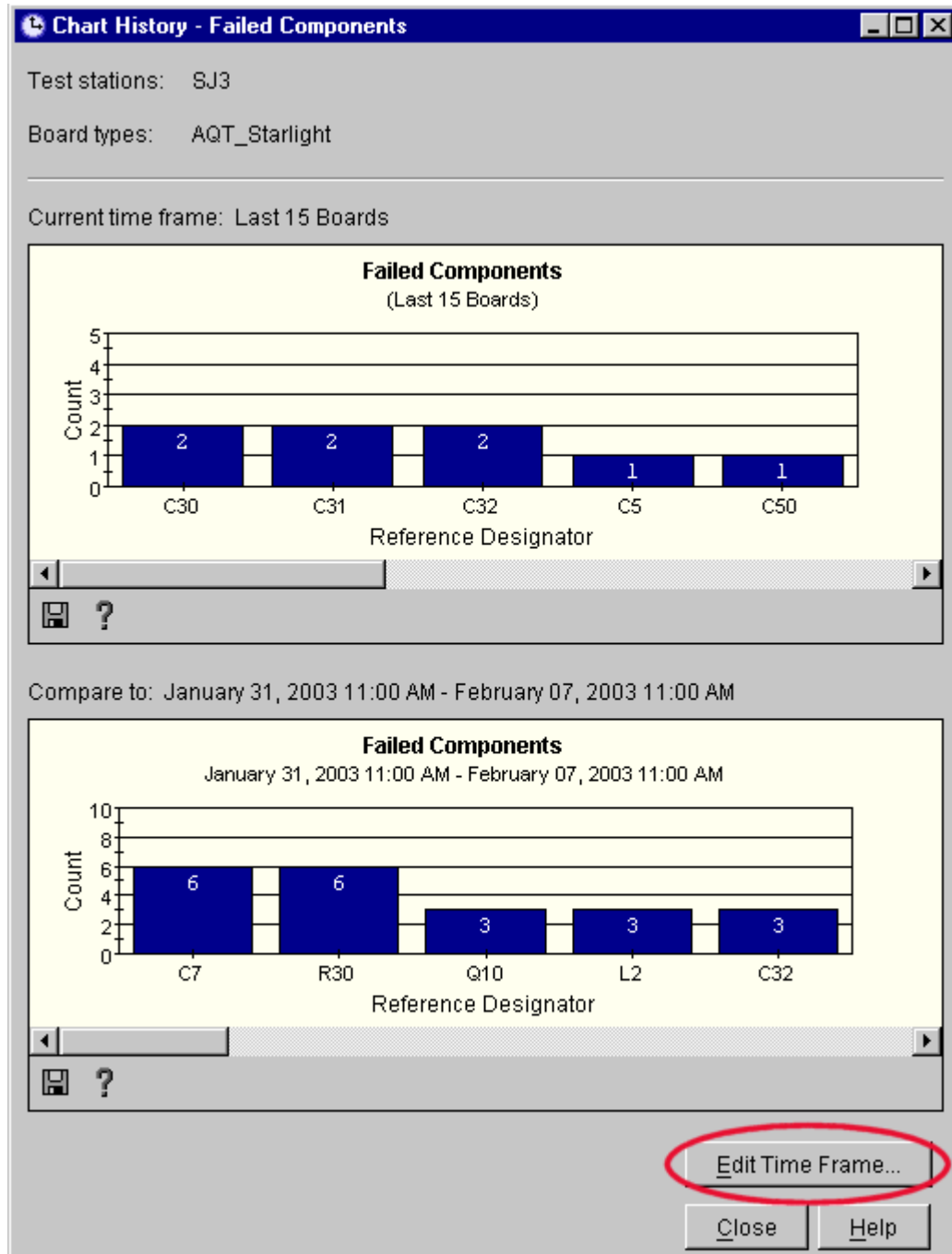


3. For **Pareto** charts such as Failed Components, you may select the exact start date/time and end date/time.

- Select the **Start date** from the **Calendar button**.
- Select the **Start time** from the drop-down box.
- Select the **End date** from the **Calendar button**.
- Select the **End time** from the drop-down box.
- Click **OK**.



4. A dialog box appears with the original chart on the top and the chart for the selected time frame on the bottom.



5. If you want to see a chart comparison for a different time frame, click the **Edit Time Frame...** button at the bottom of the dialog box.
6. Click **Close** when you are done with this dialog box.

NOTE

Chart History is different than **View History** (also called History for a View). Chart History is activated from the chart toolbar and shows data from a different time frame for a chart. [View History](#) is activated from the main toolbar and shows data from a different time frame for an entire View (all tabs, all charts).


History for a View

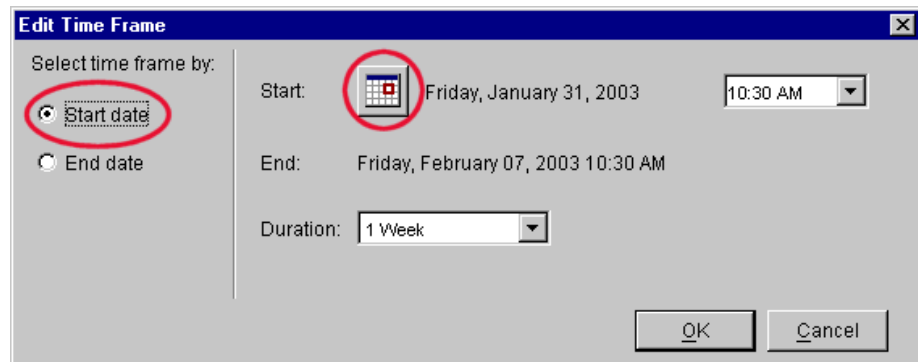
The **View History** feature in the Agilent Quality Tool allows you to look at an entire View in another time frame. You can compare current data with past data that resides on the ITF Server.

View History is useful to:

- Compare current performance or quality to past performance or quality
- Compare current trends with historical trends
- Look at trends over longer periods of time
- Perform drill-downs on charts with longer time periods
- Troubleshoot longer, systemic problems
- Create reports

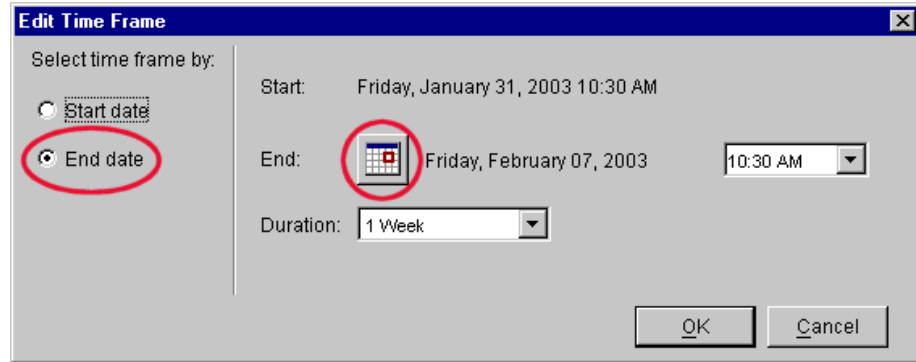
To use **View History**,

1. Click the **History...** button on the main toolbar. 
2. To set the time frame, you may choose either **Start date** or **End date**, and the **duration** of time (for example, 1 week).
 - For **Start date**, you may choose the start date and the duration. The end date and time will be calculated automatically.
 - Click the **Start date** radio button
 - Click the **Calendar button** to select the start date from the calendar.
 - Select the start **time** from the drop-down box.
 - Select the **duration** (length of time) from the drop-down box. The choices are Hours (4, 8, 12 or 24) or Weeks (1, 2, 4, 5, 10, 15 or 20).
 - Click **OK**.



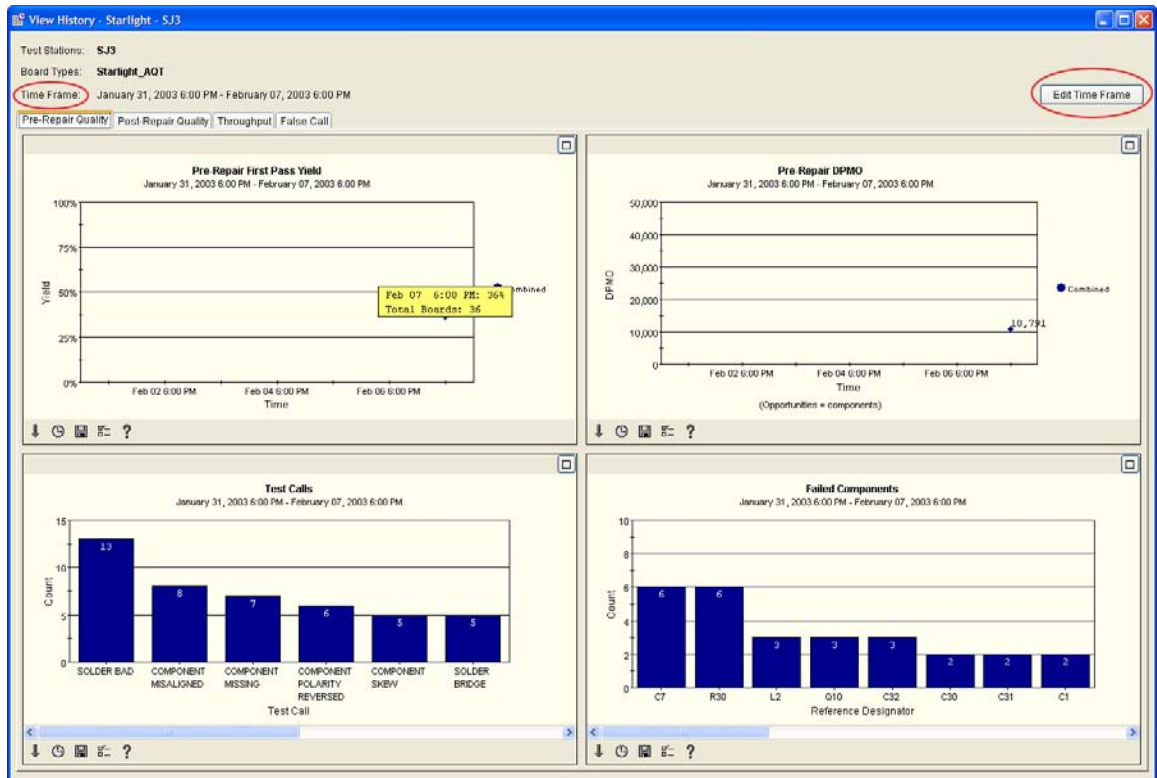
- For **End date**, you may choose the end date and the duration. The start date and time will be calculated automatically.
 - Click the **End date** radio button
 - Click the **Calendar button** to select the end date from the calendar.

- Select the end **time** from the drop-down box.
- Select the **duration** (length of time) from the drop-down box. The choices are Hours (4, 8, 12 or 24) or Weeks (1, 2, 4, 5, 10, 15 or 20).
- Click **OK**.



3. A new screen appears. The time frame is displayed above the tabs.

NOTE The time frame is the same for all charts in the View History dialog box (both trend charts and Pareto charts).



4. If you want to see the View for a different time frame, click the **Edit Timeframe** button.

5. When you are done with the View History dialog box, click the **Close** button.

NOTE **Chart History** is different than **View History**. [Chart History](#) is activated from the chart toolbar and shows data from a different time frame for a chart. **View History** is activated from the main toolbar and shows data from a different time frame for an entire View (all tabs, all charts).

Exporting Data

Spreadsheet Export

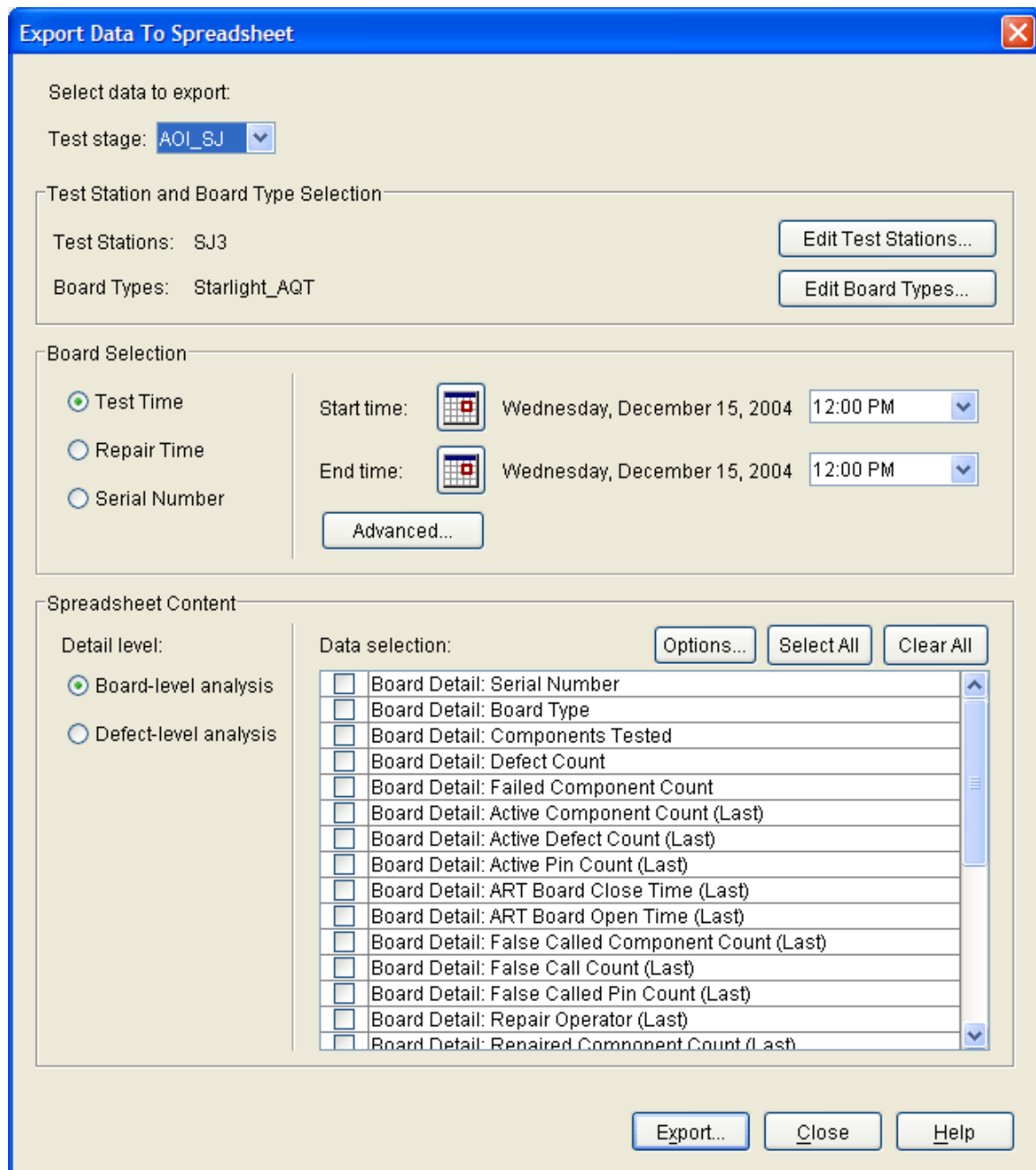
The Agilent Quality Tool allows users to export test and repair data to a .csv file for analysis.

NOTE The .csv file can be imported into Microsoft Excel© or other spreadsheet programs.

To export specific Agilent Quality Tool data to a spreadsheet,

Click **Tools > Export Data to Spreadsheet...** from the menu bar at the top of the Agilent Quality Tool screen.

Example Dialog box:



To specify the data to export,

1. Choose the **Test Stage** (AOI_SJ, AOI_SP, or AXI). The default is the current test stage.
2. Select the **test station(s)** and **board type(s)**. The default selections are the board types and test stations for the current View. If you wish to change the test station and board type selections, click the **Edit Test Stations** or **Edit Board Types** button.
3. Choose the way you will select boards:

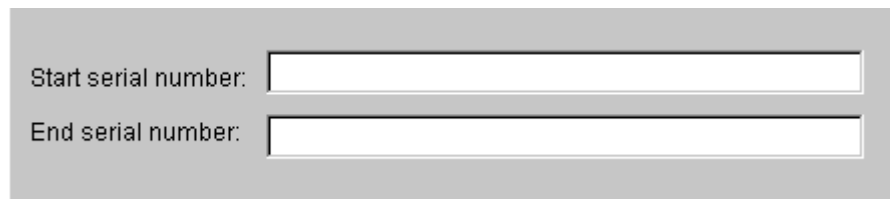
- Test Time: includes data for all boards that were tested during the specified time frame
- Repair Time: includes data for all boards that were repaired during the specified time frame
- Serial Number: includes data for all boards within the specified range of serial numbers

4. Specify the time frame or range of serial numbers:

- If you are selecting boards by test or repair time,

Select the specific start date/time and end date/time. (The default is the time frame for the current View.)

- If you are selecting boards by serial number,
 - For a single serial number, enter the number in the "Start serial number" field.
 - For a range of serial numbers, enter the Start and End serial numbers.



The image shows a screenshot of a form with two input fields. The first field is labeled "Start serial number:" and the second field is labeled "End serial number:". Both fields are empty and have a light gray background.

5. Choose the spreadsheet content that you want to see in the output file:

- Detail level: Choose (a) Board level analysis or (b) Defect level analysis

Choose **Board-level analysis** to get information about test and repair events such as the time the board was tested, the number of test calls, etc. Board level analysis would be useful if you wanted to calculate metrics such as yield or the number of boards tested.

Choose **Defect-level analysis** to get detailed information about the individual defects or repair actions on the board tested. Defect level analysis would be useful if you needed to analyze a specific process problem such as which components had the most failures or the most commonly occurring defects.

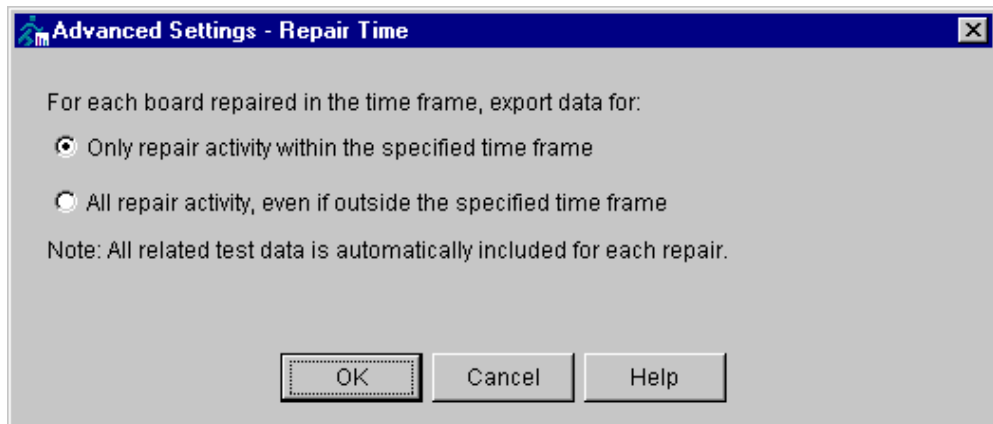
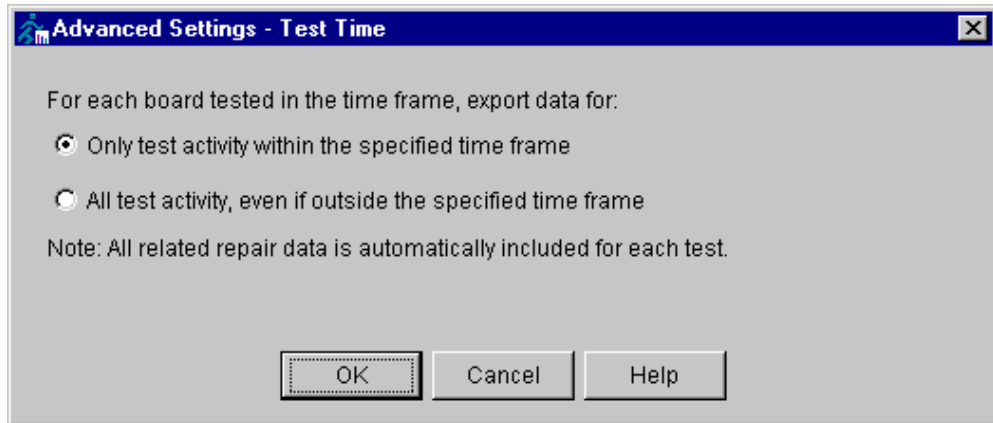
- Data Selection

Select the columns to appear in the spreadsheet. Click the check boxes to include the items you want.

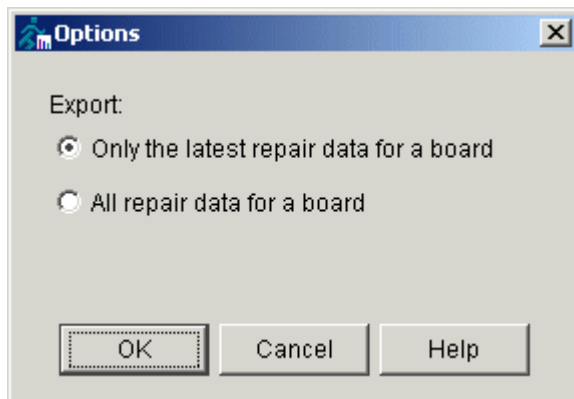
NOTE

The list of available items depends on the detail level you selected.

6. Click the **Advanced** button if you want to specify whether to export (a) only test or repair activity within the specified time frame (the default choice) or (b) all test or repair activity for the boards in the time frame, even if outside of the specified time frame. Click **OK** when you are done.



6. Click the **Options** button if you want to specify whether to export (a) only the latest repair data for a board (the default choice), or (b) all repair data for a board. Click **OK** when you are done.



Example of Options: Suppose that you have a board with one defect, an Open on C1. Repair Operator 1 opens the board in the Agilent Repair Tool (ART) and marks C1 as Repair Later, then closes the board. Operator 2 opens the board in ART, repairs C1, marks C1 as Repaired, and then closes the board.

- If, when you are exporting data, you choose in the Options dialog box to export "only the last repair data for a board," the exported data would reflect only that C1 was Repaired.

- If you instead choose to export "all repair data for a board," the exported data would report both operations on C1: first that it had been marked "Repair Later" and then that it had been "Repaired."
7. Click the **Export...** button on the Spreadsheet Export dialog box.
 8. In the **Save** or **Save As** dialog box,
 - Select the folder
 - Type the file name
 - Click **OK**

NOTE The file type is always .csv

9. Click **Close** when you are done exporting data.
10. Open the .csv file with a spreadsheet program such as Microsoft Excel®.

Optimizing Agilent Quality Tool

Introduction

This chapter illustrates the effective use of the Agilent Quality Tool in production environment so as to enable you to set the Agilent Quality Tool views according to your use models and needs.

First, let us recognize the nature of Agilent Quality Tool:

- **What Agilent Quality Tool is**

It is used strategically for viewing a small window of production data to assist supervisor, engineer and manager to monitor the production parameters. Charts are to be used sparingly to monitor certain production status so as to minimize the resources used on the ITF server while achieving the purpose of monitoring the production data.

- **What Agilent Quality Tool is not**

It is not a tool used for viewing/exporting *large* amounts of production data in conjunction with the ITF applications running at live production. It is not a charting tool that fits all the needs of the applications. When working with live production, it should not be configured with maximum views/charts using large amounts of production data for analysis. Doing so this will draw resources away to the ITF server, thus impeding the performance of Agilent Quality Tool.

Hence, we group the use models into two types: real-time and offline mode. Activities that draw much of the process power and memory would be classified under the offline mode. A good example of a use model under the offline mode would be exporting of production data from ITF. On the other hand, processes that require quick responses from the ITF Server would be under the real-time mode.

Agilent Quality Tool Parameters that are Sensitive to ITF Performance

The following Agilent Quality Tool parameters are sensitive to the performance of the ITF Server:

1. Agilent Quality Tool views
 - Duration
 - View by board types
 - View by last # of boards (sample size)
 - Number of Views and charts configured for Agilent Quality Tool applications
2. Export parameters
 - Duration
 - Table parameters
 - Volume of data to be exported
3. Other parameters those are sensitive to Agilent Quality Tool performance
 - Scheduled/deliberated LME operations
 - ITF currently serving large production data
 - Agilent Repair Tool data migration in ITF 3.1
 - Switching of Agilent Quality Tool views

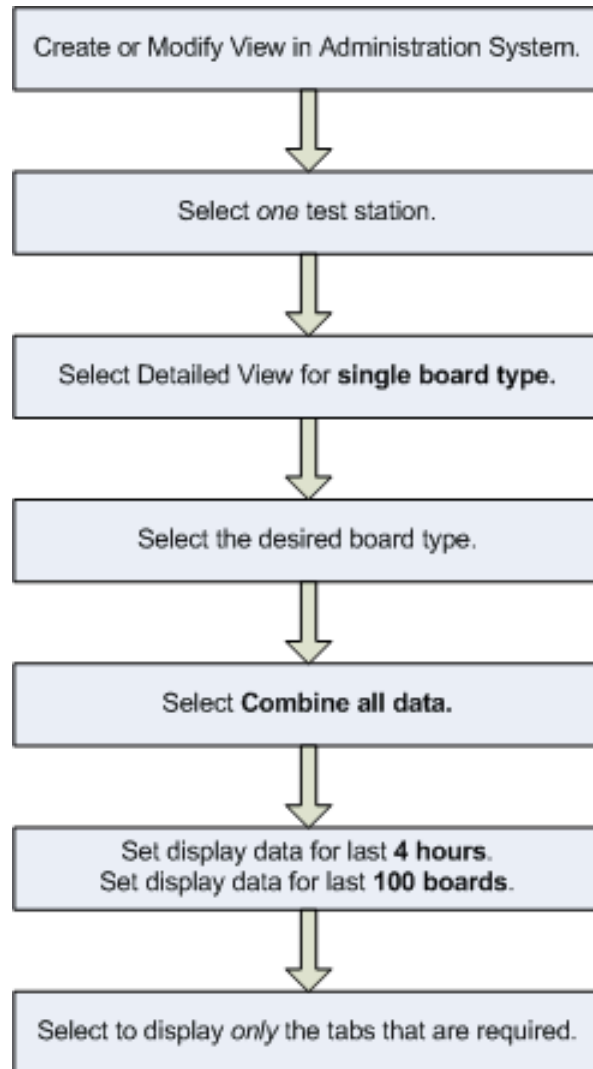
Strategy in Designing or Choosing Agilent Quality Tool Charts

The following is a list of recommended guidelines for designing or choosing Agilent Quality Tool charts:

- Understand your production volume.
- Identify the parameter/s you want to monitor.
- Identify the data volume associated with the view.
- Select the least possible number charts.
- Create different view for different users, instead of loading all views into 1 application.
- Test out your Agilent Quality Tool view with low volume of data first.
- Fine-tune your Agilent Quality Tool view.
- Schedule your Agilent Quality Tool spreadsheet export only during low production volume, else execute it periodically, not exceeding 400 records each time.

Recommended Process Flow for Real-time Mode

The following is the recommended process flow for use models that fall under the real-time mode category.



Pre-conditions for Real-time Mode in Creating a View

1. Log into the Administration System.
2. Click **Application**.
3. Click the tester type, **AOI_SJ**, **AOI_SP**, or **AXI**.
4. Select **Single Board Type** or **Multiple Board Type**.
5. Modify the setting to remove charts that are *not* required from each tab.

The screenshot shows the ITF Administration System interface in Microsoft Internet Explorer. The page title is "Agilent Technologies · Intelligent Test Framework · Administration System". The left sidebar contains a navigation menu with categories: Users, Applications, Repair, Quality, AOI_SJ, View Types, AOI_SP, AXI, General, Framework, Data Management, Licenses, ART/AQT, AQT Option, List, Log Files, Agent Controller, Scheduled Jobs, Help, Resource, and Logout. The main content area displays "AOI_SJ Single Board Type Charts" with a diagram showing four board configurations: a 2x2 grid (A, B, C, D), a 2x1 grid (A, B) with C below A, a 1x2 grid (A, B), and a single box (A). Below the diagram is a table with columns: Action, Tab Name, and Displayed Charts.

Action	Tab Name	Displayed Charts
Edit	Pre-Repair Quality	A: DPMO B: Test Calls C: Failed Components
Edit	Post-Repair Quality	A: First Pass Yield (Post-Repair) B: DPMO C: Defects D: Defective Components
Edit	Throughput	A: Boards Tested B: Boards Repaired C: Boards Completed D: Boards Tested but Not Reviewed
Edit	False Call	A: False : Total Failed B: False : Real C: False Called Components D: False Called Components by Algorithm

Options for Selecting Test Stations

- **All test stations**

This option applies to the offline mode use model.

Select this mode when all testers connected to server are down. This option requires more server CPU time and memory.

- **Specific test stations**

This option applies to the real-time mode use model provided *one* test station is selected.

Select this mode if you want to lower the amount of server CPU time and memory required.

Options for Selecting View Type

- **Detailed View for a single board type**

This option applies to the real-time mode use model.

All charts in this View will display data for the single board type you select in Step 3 of the Create View Wizard.

The initial charts displayed on each tab will be both trend charts *and* Pareto (bar) charts.

- **Summary View for multiple board types**

This option applies to the offline mode use model.

All charts in this View will display data for the board types you select in Step 3 of the Create View Wizard.

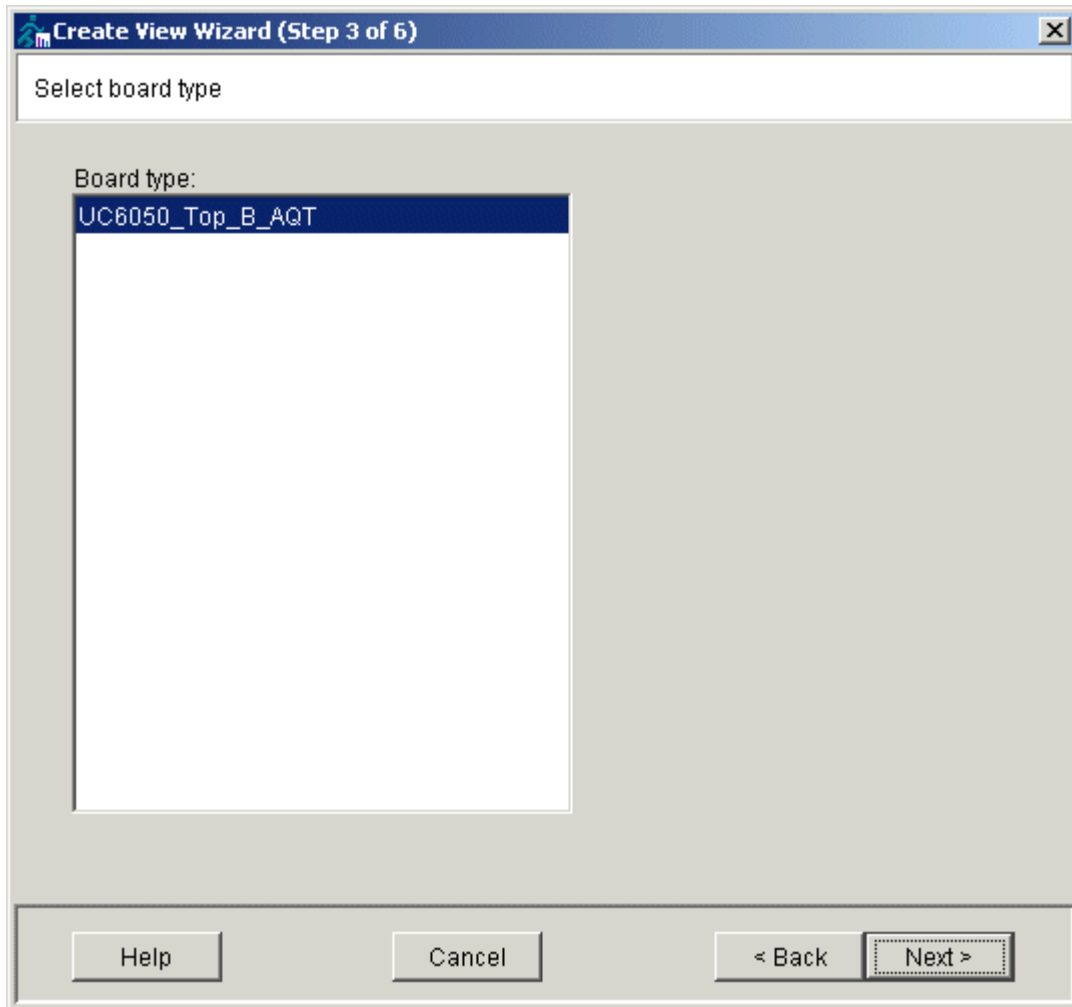
Each tab will initially display *only* trend charts. To display Pareto (bar) charts, drill down on specific board types.

Options for Selecting Board Types

If you have selected **Single Board Type** in Step 2 of the Create View Wizard, select the single board type listed in the **Create View Wizard (Step 3 of 6)** dialog box.

This option applies to the real-time mode use model.

Example:



If you have selected **Multiple Board Types** in Step 2 of the Create View Wizard, you can select one of the following options in the **Create View Wizard (Step 3 of 6)** dialog box:

- **All board types**

This option applies to the offline mode use model.

Select this option when all testers connected to server are down. This option requires more server CPU time and memory.

- **Specific board types**

This option applies to the real-time mode use model provided *one* board type is selected.

Select this option if you want to lower the amount of server CPU time and memory required.

Options for Combining or Comparing Data

- **Combine all data**

This option applies to the real-time mode use model.

Select this option when all testers connected to server are down. This option requires more server CPU time and memory.

- **Compare data by test station
Compare data by board station**

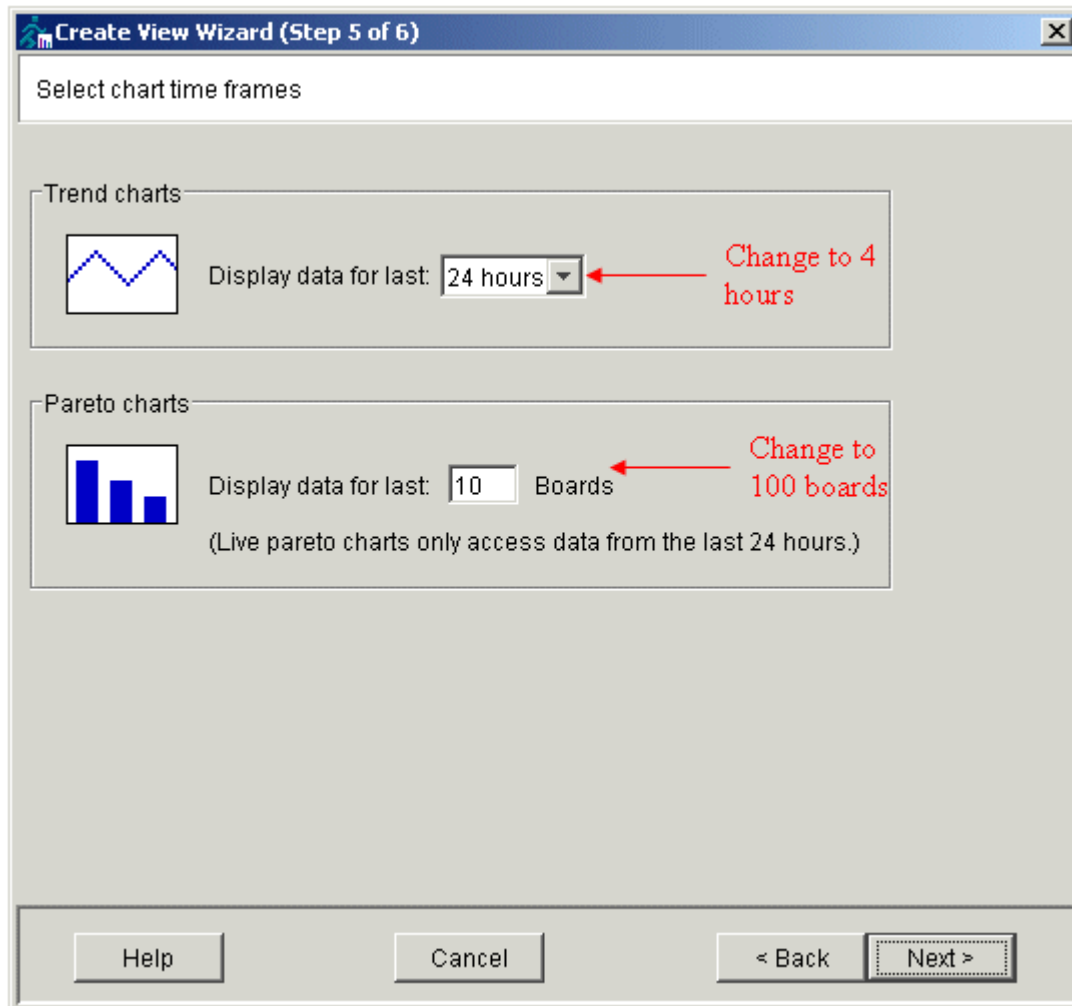
This option applies to the offline mode use model.

Select this option if you want to lower the amount of required server CPU time and memory.

Options for Selecting Chart Time Frames

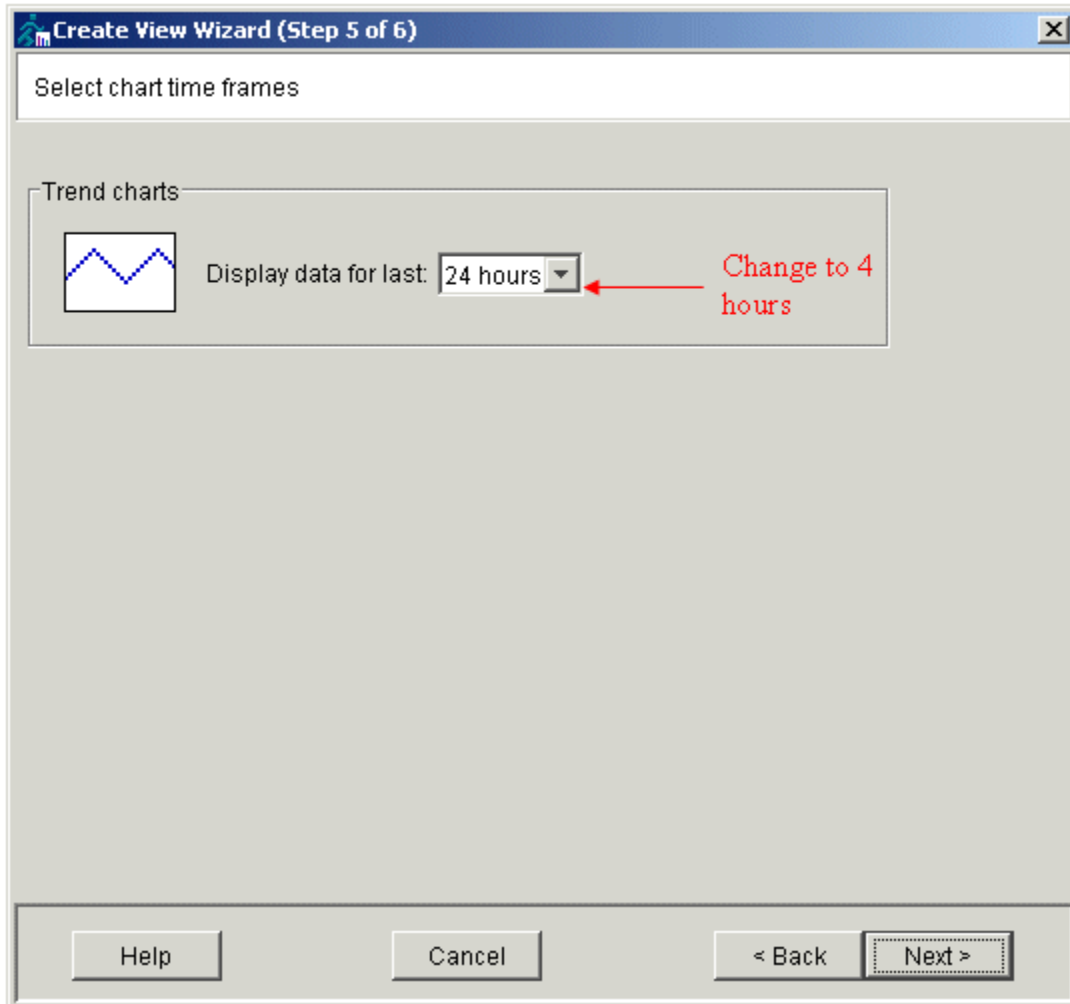
If you have selected **Single Test Station** in Step 1 of the Create View Wizard and **Single Board Type** in Step 2, set the following for real-time mode use model:

- Trend charts: Display data for last **4 hours**
- Pareto charts: Display data for last **100 Boards**



If you have selected **Multiple Board Type** in Step 2, set the following to reduce the amount of processing time required:

- Trend charts: Display data for last **4 hours**



Options for Selecting Tabs

For real-time mode, select *only* the tabs that are required.

View name:
MyView

Tab selection:

Tab	Show	Charts on Tab
Pre-Repair Quality	<input checked="" type="checkbox"/>	YIELD, DPMO, BOARDS_TESTED
Post-Repair Quality	<input checked="" type="checkbox"/>	YIELD, DPMO, BOARDS_REPAIRED
Throughput	<input checked="" type="checkbox"/>	BOARDS_TESTED, BOARDS_REPAIRED, YIELD, BOA
False Call	<input checked="" type="checkbox"/>	FALSE_DPMO, FALSE_TOTAL

Note: Chart selection for each tab is available in the ITF Administration System.

Buttons: Help, Cancel, < Back, Finish

Options for Exporting Data

Exporting of data requires a substantial amount of CPU time and memory. Thus, it is recommended that exporting of data be done offline without any real-time processes running at the background.

To minimize the amount of time taken to export data, you may do the following:

- Set a shorter period for the report. For example, you may want to export one day's of data for a board. Instead of exporting all 24 hours of data at one go, you can export 4 hours of data each time and do this for 6 times.
- In the **Data selection** table, select *only* the data you require.

Export Data To Spreadsheet ✖

Select data to export:

Test stage: AOI_SJ ▼

Test Station and Board Type Selection

Test Stations: SJ3 Edit Test Stations...

Board Types: Starlight_AQT Edit Board Types...

Board Selection

Test Time Start time: [Calendar] Wednesday, December 15, 2004 12:00 PM ▼
 Repair Time End time: [Calendar] Wednesday, December 15, 2004 12:00 PM ▼
 Serial Number

Advanced...

Spreadsheet Content

Detail level:

Board-level analysis
 Defect-level analysis

Data selection: Options... Select All Clear All

<input type="checkbox"/>	Board Detail: Serial Number
<input type="checkbox"/>	Board Detail: Board Type
<input type="checkbox"/>	Board Detail: Components Tested
<input type="checkbox"/>	Board Detail: Defect Count
<input type="checkbox"/>	Board Detail: Failed Component Count
<input type="checkbox"/>	Board Detail: Active Component Count (Last)
<input type="checkbox"/>	Board Detail: Active Defect Count (Last)
<input type="checkbox"/>	Board Detail: Active Pin Count (Last)
<input type="checkbox"/>	Board Detail: ART Board Close Time (Last)
<input type="checkbox"/>	Board Detail: ART Board Open Time (Last)
<input type="checkbox"/>	Board Detail: False Called Component Count (Last)
<input type="checkbox"/>	Board Detail: False Call Count (Last)
<input type="checkbox"/>	Board Detail: False Called Pin Count (Last)
<input type="checkbox"/>	Board Detail: Repair Operator (Last)
<input type="checkbox"/>	Board Detail: Repaired Component Count (Last)

Export...
Close
Help

Conclusion

Customizing a good set of parameters for Agilent Quality Tool ensures strategic data collection for the monitoring of production performance. At the same time, it ensures good system performance. A good understanding of the more intricate aspects of system design is essential and beneficial. It helps to ensure a more effective and efficient implementation of ITF.

Agilent is committed to continuously developing and enhancing the performance of Agilent Quality Tool. With Agilent Quality Tool now supporting more than one type of use models, it is recommended that you select the one that best suits your needs.

Troubleshooting

Trouble with Login

If your User Name and/or PIN do not match the list of allowed users, you will receive an error message.

- Check whether you should enter your User Name in upper case (USER NAME) or lower case (user name).
- Make sure the **Caps Lock** button has not been accidentally pressed, as this could change the way the computer reads your User Name or PIN.
- Verify that your password/PIN is alphanumeric, between 3 and 15 characters in length.
- Try logging in again.

If you still have problems logging in, contact your system administrator.

Data Source

What is a Data source?

The Agilent Quality Tool data source specifies the location where the test data is stored.

When can you change the data source?

You must change the data source before you log in to the Agilent Quality Tool. If you are currently logged in, you must log out before you can change the data source.

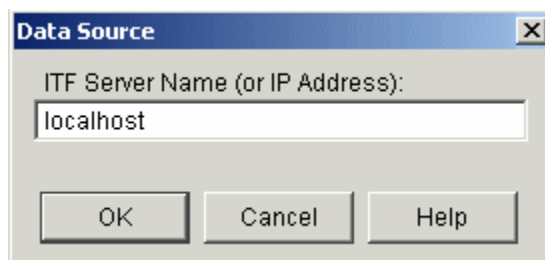
Why would you change the data source?

The data source would need to be changed if you need to change the IP Address or hostname, for example, when the server is relocated or removed.

How do you change the data source?

From the menu bar at the top of the Agilent Quality Tool screen,

1. Click **Tools > Data Source**



2. Select **ITF Server name (or IP Address):**
Enter the ITF Server name, IP Address, or type **localhost**.
3. Click **OK**
4. Click **User > Log in** to proceed to [log in](#) to the Agilent Quality Tool.

Appendixes

Board Type Names

The handling of board type names differs slightly between the Agilent Quality Tool and the Agilent Repair Tool (ART). In ART, board type refers to a specific CAD file. The Agilent Quality Tool does some grouping of ART board types. One board type in the Agilent Quality Tool may refer to several boards types in ART.

In ART, the board type is comprised of three fields:

- Board Type
- Board Revision
- Assembly Revision

In the Agilent Quality Tool, the board type is comprised of one field:

- Assembly Revision
 - For AOI, the Assembly Revision comes from the "Board" field in the REP file.
 - For AXI, the Assembly Revision come from the Agilent 5DX Panel Program Name.

How the Agilent Quality Tool uses IPC Standards

The Agilent Quality Tool is based on ANSI/IPC standards 2547 (CAMX) and 2511 (GenCAM).

IPC standards documents are available at: <http://webstds.ipc.org>

User Roles

A user with **Quality User** privileges can:

- Open Views
- Drill-down to more charts
- Save chart images
- Respond to alarms
- View the alarm log
- Look at chart history or View history

A user with **Quality Administrator** privileges can also:

- Create Views
- Edit Views
- See charts based on operator (False: Real by Operator and False: Total Failed by Operator)
- Modify Chart Options, including:
 - Set Alarms [Alarm Tab](#)
 - Set placement machine filter [Filter Tab](#)
 - Define DPMO calculation [Calculation Tab](#)

Which data is included when there are multiple test and repair cycles?

Pre-Repair

- Test data includes the test results of each board test. By default, AOI_SJ, AOI_SP, and AXI do not support retest.

Post-Repair

- Test data includes the test results of each board test. By default, AOI_SJ, AOI_SP, and AXI do not support retest.

NOTE In order for test data for a failing board to be reflected in AQT, the board must be completely reviewed with ART.

- Repair data:
 - Includes data for the last repair session.

Working in Comfort

To optimize your comfort and productivity, it is important that you set up your work area correctly and use your equipment properly. With that in mind, Agilent Technologies has developed some set-up and use recommendations for your work station. Please read the information in the link below to learn important information based on established ergonomic principles.

[Working In Comfort document](#)

Chart Information

This section describes the information that can be displayed on the charts.

Pre-Repair Quality

DPMO, Components only (Pre-Repair)

Definition	Total number of failed components per million components tested. (Defects per Million Opportunities)
Formula	$\frac{\text{Components Failed}}{\text{Components Tested}} * 1 \text{ million}$
Notes	<ul style="list-style-type: none">• A component with multiple failures is counted only once.• Components marked as "No Test" are not included.• DPMO can be calculated based on pins, components or both. See Chart Options: Calculation Tab for more information.• Which data is included when there are multiple test and repair cycles?

DPMO, Pins only (Pre-Repair)

Definition	Total number of failed pins per million pins tested.
Formula	$\frac{\text{Pins Failed}}{\text{Pins Tested}} * 1 \text{ million}$
Notes	<ul style="list-style-type: none">• Only available for AXI.• A pin with multiple test calls is counted only once.• Pins marked as "No Test" are not included.• DPMO can be calculated based on pins, components or both. See Chart Options: Calculation Tab for more information.• Which data is included when there are multiple test and repair cycles?

DPMO, Pins + Components (Pre-Repair)

Definition	Total number of <u>f</u> ailed components and <u>f</u> ailed pins per million components and pins tested. (Defects per Million Opportunities)
Formula	$\frac{\text{Components Failed} + \text{Pins Failed}}{\text{Components Tested} + \text{Pins Tested}} * 1 \text{ million}$
Notes	<ul style="list-style-type: none"> • Only available for AXI. • A component with multiple failures is counted only once as a failed component. • A pin with multiple failures is counted only once as a failed pin. • Components and pins marked as “No Test” are not included. • DPMO can be calculated based on pins, components or both. See Chart Options: Calculation Tab for more information. • Which data is included when there are multiple test and repair cycles?

DPMO by Board Type, Components only (Pre-Repair)

Definition	Total number of <u>f</u> ailed components per million components tested. Grouped by board type. (Defects per Million Opportunities)
Formula	$\frac{\text{Components Failed}}{\text{Components Tested}} * 1 \text{ million}$
Notes	<ul style="list-style-type: none"> • A component with multiple failures is counted only once. • Components marked as “No Test” are not included. • DPMO can be calculated based on pins, components or both. See Chart Options: Calculation Tab for more information. • Which data is included when there are multiple test and repair cycles?

DPMO by Board Type, Pins + Component (Pre-Repair)

Definition	Total number of failed components and failed pins per million components and pins tested. Grouped by board type. (Defects per Million Opportunities)
Formula	$\frac{\text{Components Failed} + \text{Pins Failed}}{\text{Components Tested} + \text{Pins Tested}} * 1 \text{ million}$
Notes	<ul style="list-style-type: none"> • Only available for AXI. • A component with multiple failures is counted only once as a failed component. • A pin with multiple failures is counted only once as a failed pin. • Components and pins marked as "No Test" are not included. • DPMO can be calculated based on pins, components or both. See Chart Options: Calculation Tab for more information. • Which data is included when there are multiple test and repair cycles?

DPMO by Board Type, Pins only (Pre-Repair)

Definition	Total number of failed pins per million pins tested.
Formula	$\frac{\text{Pins Failed}}{\text{Pins Tested}} * 1 \text{ million}$
Notes	<ul style="list-style-type: none"> • Only available for AXI. • A pin with multiple test calls is counted only once. • Pins marked as "No Test" are not included. • DPMO can be calculated based on pins, components or both. See Chart Options: Calculation Tab for more information. • Which data is included when there are multiple test and repair cycles?

DPMO by Test Station, Components only (Pre-Repair)

Definition	Total number of failed components per million components tested. Grouped by test station. (Defects per Million Opportunities)
Formula	$\frac{\text{Components Failed}}{\text{Components Tested}} * 1 \text{ million}$
Notes	<ul style="list-style-type: none"> • A component with multiple failures is counted only once. • Components marked as “No Test” are not included. • DPMO can be calculated based on pins, components or both. See Chart Options: Calculation Tab for more information. • Which data is included when there are multiple test and repair cycles?

DPMO by Test Station, Pins + Components (Pre-Repair)

Definition	Total number of failed components and failed pins per million components and pins tested. Grouped by test station. (Defects per Million Opportunities)
Formula	$\frac{\text{Components Failed} + \text{Pins Failed}}{\text{Components Tested} + \text{Pins Tested}} * 1 \text{ million}$
Notes	<ul style="list-style-type: none"> • Only available for AXI. • A component with multiple failures is counted only once as a failed component. • A pin with multiple failures is counted only once as a failed pin. • Components and pins marked as “No Test” are not included. • DPMO can be calculated based on pins, components or both. See Chart Options: Calculation Tab for more information. • Which data is included when there are multiple test and repair cycles?

DPMO by Test Station, Pins only (Pre-Repair)

Definition	Total number of failed pins per million pins tested. Grouped by test station. (Defects per Million Opportunities)
Formula	$\frac{\text{Pins Failed}}{\text{Pins Tested}} * 1 \text{ million}$
Notes	<ul style="list-style-type: none">• Only available for AXI.• A pin with multiple test calls is counted only once.• Pins marked as "No Test" are not included.• DPMO can be calculated based on pins, components or both. See Chart Options: Calculation Tab for more information.• Which data is included when there are multiple test and repair cycles?

Failed Components (Pre-Repair)

Definition	Number of failed components, grouped by reference designator.
Notes	<ul style="list-style-type: none">• A component with multiple failures is counted only once.• Which data is included when there are multiple test and repair cycles?

Failed Components by Feeder (Pre-Repair)

Definition	Number of failed components, grouped by placement machine and feeder.
Notes	<ul style="list-style-type: none">• Only available for AOI.• A component with multiple failures is counted only once.• Which data is included when there are multiple test and repair cycles?

Failed Components by Package Type (Pre-Repair)

Definition	Number of failed components, grouped by package type.
Notes	<ul style="list-style-type: none"> • A component with multiple failures is counted only once. • Which data is included when there are multiple test and repair cycles?

Failed Components by Part Number (Pre-Repair)

Definition	Number of failed components, grouped by part number.
Notes	<ul style="list-style-type: none"> • Only available for AOI. • A component with multiple failures is counted only once. • Which data is included when there are multiple test and repair cycles?

Failed Pins (Pre-Repair)

Definition	Number of failed pins, grouped by pin number.
Notes	<ul style="list-style-type: none"> • Only available for AXI. • A pin with multiple failures is counted only once. • Which data is included when there are multiple test and repair cycles?

First Pass Yield (Pre-Repair)

Definition	Percentage (%) of boards that passed test or inspection.
Formula	$\frac{\text{Passing Boards}}{\text{Boards Tested}} * 100$
Notes	<ul style="list-style-type: none"> • Which data is included when there are multiple test and repair cycles?

First Pass Yield by Board Type (Pre-Repair)

Definition	Percentage (%) of boards that passed test or inspection. Grouped by board type.
Formula	$\frac{\text{Passing Boards}}{\text{Boards Tested}} * 100$
Notes	<ul style="list-style-type: none">• Which data is included when there are multiple test and repair cycles?

First Pass Yield by Test Station (Pre-Repair)

Definition	Percentage (%) of boards that passed test or inspection. Grouped by test station.
Formula	$\frac{\text{Passing Boards}}{\text{Boards Tested}} * 100$
Notes	<ul style="list-style-type: none">• Which data is included when there are multiple test and repair cycles?

Test Calls (Pre-Repair)

Definition	Number of <u>failures</u> , grouped by <u>test call</u> .
Notes	<ul style="list-style-type: none">• If a component or pin has multiple failures, every test call is counted.• Which data is included when there are multiple test and repair cycles?

Post-Repair Quality

Defective Components (Post-Repair)

Definition	Number <u>defective components</u> , grouped by reference designator.
Notes	<ul style="list-style-type: none"> • A component with multiple defects is counted only once. • Components marked Repair Later are included. • Boards with <u>Active defects</u> are not included in the calculation. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

Defective Components by Feeder (Post-Repair)

Definition	Number <u>defective components</u> , grouped by placement machine and feeder.
Notes	<ul style="list-style-type: none"> • Only available for AOI. • A component with multiple defects is counted only once. • Components marked Repair Later are included. • Boards with Active defects are not included in the calculation. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

Defective Components by Package Type (Post-Repair)

Definition	Number <u>defective components</u> , grouped by package type.
Notes	<ul style="list-style-type: none"> • A component with multiple defects is counted only once. • Components marked Repair Later are included. • Boards with Active defects are not included in the calculation. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

Defective Components by Part Number (Post-Repair)

Definition	Number <u>defective components</u> , grouped by part number.
Notes	<ul style="list-style-type: none">• A component with multiple defects is counted only once.• Components marked Repair Later are included.• Boards with Active defects are not included in the calculation.• Which data is included when there are multiple test and repair cycles?• <u>Scrapped boards</u> are not included in the calculation.

Defective Pins (Post-Repair)

Definition	Number of <u>defective pins</u> , grouped by pin number.
Notes	<ul style="list-style-type: none">• Only available for AXI.• A pin with multiple defects is counted only once.• Pins marked Repair Later are included.• Boards with Active defects are not included in the calculation.• Which data is included when there are multiple test and repair cycles?• <u>Scrapped boards</u> are not included in the calculation.

Defects (Post-Repair)

Definition	Number of defects, grouped by defect name. Calculation includes boards that have been completely reviewed using the Agilent Repair Tool.
Notes	<ul style="list-style-type: none">• Components or pins marked as False Call or Variation OK are not included.• If one or more pin-level defects on a component (e.g., OPEN) are changed to a component-level defect (e.g., MISSING COMPONENT), each pin on that component is assigned the component-level defect. This may cause a component-level defect to be counted multiple times for the same component. For example, four OPEN pins changed to MISSING COMPONENT result in MISSING COMPONENT being counted four times.• Boards with Active defects are not included in the calculation.• Which data is included when there are multiple test and repair cycles?• <u>Scrapped boards</u> are not included in the calculation.

DPMO, Components only (Post-Repair)

Definition	Total number of <u>d</u> efective components per million components tested. (Defects per Million Opportunities) Calculation includes boards that passed test or inspection and boards that have been completely reviewed using the Agilent Repair Tool.
Formula	$\frac{\text{Defective Components}}{\text{Total Components Tested - Components Tested on Boards with Active Defects}} * 1\text{million}$
Notes	<ul style="list-style-type: none"> • A component with multiple defects is counted only once. • Components marked as "No Test" are not included. • DPMO can be calculated based on pins, components or both. See Chart Options: Calculation Tab for more information. • Which data is included when there are multiple test and repair cycles? • Scrapped boards are not included in the calculation.

DPMO, Pins + Components (Post-Repair)

Definition	Total number of <u>d</u> efective components and <u>d</u> efective pins per million components and pins tested. (Defects per Million Opportunities) Calculation includes boards that passed test or inspection and boards that have been completely reviewed using the Agilent Repair Tool.
Formula	$\frac{\text{Defective Components} + \text{Defective Pins}}{\text{Total Components and Pins Tested - Components and Pins Tested on Boards with Active Defects}} * 1\text{million}$
Notes	<ul style="list-style-type: none"> • Only available for AXI. • A component with multiple defects is counted only once as a defective component. • A pin with multiple defects is counted only once as a defective pin. • Components and pins marked as "No Test" are not included. • DPMO can be calculated based on pins, components or both. See Chart Options: Calculation Tab for more information. • Which data is included when there are multiple test and repair cycles? • Scrapped boards are not included in the calculation.

DPMO, Pins only (Post-Repair)

Definition	Total number of <u>d</u> efective pins per million pins tested. (Defects per Million Opportunities)
Formula	$\frac{\text{Defective Pins}}{\text{Total Pins Tested - Pins Tested on Boards with Active Defects}} * 1\text{million}$
Notes	<ul style="list-style-type: none"> • Only available for AXI. • A pin with multiple defects is counted only once. • Components marked as “No Test” are not included. • DPMO can be calculated based on pins, components or both. See Chart Options: Calculation Tab for more information. • When the chart updates, every data point is updated to reflect the latest repair activity. • Which data is included when there are multiple test and repair cycles? • Scrapped boards are not included in the calculation.

DPMO by Board Type, Components only (Post-Repair)

Definition	Total number of <u>d</u> efective components per million components tested. Grouped by board type. (Defects per Million Opportunities) Calculation includes boards that passed test or inspection and boards that have been completely reviewed with the Agilent Repair Tool.
Formula	$\frac{\text{Defective Components}}{\text{Total Components Tested - Components Tested on Boards with Active Defects}} * 1\text{million}$
Notes	<ul style="list-style-type: none"> • A component with multiple defects is counted only once. • Components marked as “No Test” are not included. • DPMO can be calculated based on pins, components or both. See Chart Options: Calculation Tab for more information. • Which data is included when there are multiple test and repair cycles? • Scrapped boards are not included in the calculation.

DPMO by Board Type, Pins + Components (Post-Repair)

Definition	<p>Total number of <u>defective components</u> and <u>defective pins</u> per million components and pins tested. Grouped by board type.</p> <p>(Defects per Million Opportunities)</p> <p>Calculation includes boards that passed test or inspection and boards that have been completely reviewed using the Agilent Repair Tool.</p>
Formula	$\frac{\text{Defective Components} + \text{Defective Pins}}{\text{Total Components and Pins Tested} - \text{Components and Pins Tested on Boards with Active Defects}} * 1\text{million}$
Notes	<ul style="list-style-type: none"> • Only available for AXI. • A component with multiple defects is counted only once as a defective component. • A pin with multiple defects is counted only once as a defective pin. • Components and pins marked as "No Test" are not included. • DPMO can be calculated based on pins, components or both. See Chart Options: Calculation Tab for more information. • Which data is included when there are multiple test and repair cycles? • Scrapped boards are not included in the calculation.

DPMO by Board Type, Pins only (Post-Repair)

Definition	<p>Total number of <u>d</u>efective pins per million pins tested.</p> <p>(Defects per Million Opportunities)</p> <p>Calculation includes boards that passed test or inspection and boards that have been completely reviewed using the Agilent Repair Tool.</p>
Formula	$\frac{\text{Defective Pins}}{\text{Total Pins Tested - Pins Tested on Boards with Active Defects}} * 1\text{million}$
Notes	<ul style="list-style-type: none"> • Only available for AXI. • A pin with multiple defects is counted only once. • Components marked as "No Test" are not included. • DPMO can be calculated based on pins, components or both. See Chart Options: Calculation Tab for more information. • Which data is included when there are multiple test and repair cycles? • Scrapped boards are not included in the calculation.

DPMO by Test Station, Components only (Post-Repair)

Definition	<p>Total number of <u>d</u>efective components per million components tested. Grouped by test station.</p> <p>(Defects per Million Opportunities)</p> <p>Calculation includes boards that passed test or inspection and boards that have been completely reviewed with the Agilent Repair Tool.</p>
Formula	$\frac{\text{Defective Components}}{\text{Total Components Tested - Components Tested on Boards with Active Defects}} * 1\text{million}$
Notes	<ul style="list-style-type: none"> • A component with multiple defects is counted only once. • Components marked as "No Test" are not included. • DPMO can be calculated based on pins, components or both. See Chart Options: Calculation Tab for more information. • Which data is included when there are multiple test and repair cycles? • Scrapped boards are not included in the calculation.

DPMO by Test Station, Pins + Components (Post-Repair)

Definition	<p>Total number of <u>defective components</u> and <u>defective pins</u> per million components and pins tested. Grouped by test station.</p> <p>(Defects per Million Opportunities)</p> <p>Calculation includes boards that passed test or inspection and boards that have been completely reviewed using the Agilent Repair Tool.</p>
Formula	$\frac{\text{Defective Components} + \text{Defective Pins}}{\text{Total Components and Pins Tested} - \text{Components and Pins Tested on Boards with Active Defects}} * 1 \text{million}$
Notes	<ul style="list-style-type: none"> • Only available for AXI. • A component with multiple defects is counted only once as a defective component. • A pin with multiple defects is counted only once as a defective pin. • Components and pins marked as "No Test" are not included. • DPMO can be calculated based on pins, components or both. See Chart Options: Calculation Tab for more information. • Which data is included when there are multiple test and repair cycles? • Scrapped boards are not included in the calculation.

DPMO by Test Station, Pins only (Post-Repair)

Definition	<p>Total number of <u>d</u>efective pins per million pins tested. Grouped by test station.</p> <p>(Defects per Million Opportunities)</p> <p>Calculation includes boards that passed test or inspection and boards that have been completely reviewed using the Agilent Repair Tool.</p>
Formula	$\frac{\text{Defective Pins}}{\text{Total Pins Tested} - \text{Pins Tested on Boards with Active Defects}} * 1\text{million}$
Notes	<ul style="list-style-type: none"> • Only available for AXI. • A pin with multiple defects is counted only once. • Components marked as “No Test” are not included. • DPMO can be calculated based on pins, components or both. See Chart Options: Calculation Tab for more information. • Which data is included when there are multiple test and repair cycles? • Scrapped boards are not included in the calculation.

First Pass Yield (Post-Repair)

Definition	<p>Percentage (%) of boards that contain no real defects.</p> <p>Calculation includes boards that passed test or inspection and boards that have been completely reviewed using the Agilent Repair Tool.</p>
Formula	$\frac{\text{Passing Boards} + \text{Boards with all test calls marked either FALSE CALL or VARIATIONOK}}{\text{Total Boards Tested} - \text{Boards with Active Defects}} * 100$
Notes	<ul style="list-style-type: none"> • Which data is included when there are multiple test and repair cycles? • Scrapped boards are not included in the calculation.

First Pass Yield by Board Type (Post-Repair)

Definition	Percentage (%) of boards that contain no real defects. Grouped board type. Calculation includes boards that passed test or inspection and boards that have been completely reviewed using the Agilent Repair Tool.
Formula	$\frac{\text{Passing Boards} + \text{Boards with all test calls marked either FALSE CALL or VARIATIONOK}}{\text{Total Boards Tested} - \text{Boards with Active Defects}} * 100$
Notes	<ul style="list-style-type: none"> • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards are not included in the calculation.</u>

First Pass Yield by Test Station (Post-Repair)

Definition	Percentage (%) of boards that contain no real defects. Grouped by test station. Calculation includes boards that passed test or inspection and boards that have been completely reviewed using the Agilent Repair Tool.
Formula	$\frac{\text{Passing Boards} + \text{Boards with all test calls marked either FALSE CALL or VARIATIONOK}}{\text{Total Boards Tested} - \text{Boards with Active Defects}} * 100$
Notes	<ul style="list-style-type: none"> • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

Throughput

Boards Completed

Definition	Number of boards that either passed test or were completely repaired using the Agilent Repair Tool.
Notes	<ul style="list-style-type: none">• Boards with defects marked Repair Later are not counted.• Boards with Active defects are not included in the calculation.• Which data is included when there are multiple test and repair cycles?• <u>Scrapped boards</u> are not included in the calculation.

Boards Completed by Board Type

Definition	Number of boards that either passed test or were completely repaired using the Agilent Repair Tool. Grouped by board type.
Notes	<ul style="list-style-type: none">• Boards with defects marked Repair Later are not counted.• Boards with Active defects are not included in the calculation.• Which data is included when there are multiple test and repair cycles?• <u>Scrapped boards</u> are not included in the calculation.

Boards Completed by Test Station

Definition	Number of boards that either passed test or were completely repaired using the Agilent Repair Tool. Grouped by test station.
Notes	<ul style="list-style-type: none">• Boards with defects marked Repair Later are not counted.• Boards with Active defects are not included in the calculation.• Which data is included when there are multiple test and repair cycles?• <u>Scrapped boards</u> are not included in the calculation.

Boards Repaired

Definition	Number of boards repaired using the Agilent Repair Tool.
Notes	<ul style="list-style-type: none"> • Boards with defects marked Repair Later are not counted. • Boards with Active defects are not included in the calculation. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

Boards Repaired by Board Type

Definition	Number of boards repaired using the Agilent Repair Tool. Grouped by board type.
Notes	<ul style="list-style-type: none"> • Boards with defects marked Repair Later are not counted. • Boards with Active defects are not included in the calculation. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

Boards Repaired by Test Station

Definition	Number of boards repaired using the Agilent Repair Tool. Grouped by test station.
Notes	<ul style="list-style-type: none"> • Boards with defects marked Repair Later are not counted. • Boards with Active defects are not included in the calculation. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

Boards Tested

Definition	Number of boards tested.
Notes	<ul style="list-style-type: none"> • Boards retested after repair are not included. • Which data is included when there are multiple test and repair cycles?

Boards Tested by Board Type

Definition	Number of boards tested, grouped by board type.
Notes	<ul style="list-style-type: none">• Boards retested after repair are not included.• Which data is included when there are multiple test and repair cycles?

Boards Tested by Test Station

Definition	Number of boards tested, grouped by test station.
Notes	<ul style="list-style-type: none">• Boards retested after repair are not included.• Which data is included when there are multiple test and repair cycles?

Boards Tested but Not Reviewed

Definition	Number of boards that failed test and have not been completely reviewed using the Agilent Repair Tool.
Notes	<ul style="list-style-type: none">• Counts are not cumulative.• Boards with Active defects are not included in the calculation.• <u>Scrapped boards</u> are not included in the calculation.

Boards Tested but Not Reviewed, by Board Type

Definition	Number of boards that failed test and have not been completely reviewed using the Agilent Repair Tool. Grouped by board type.
Notes	<ul style="list-style-type: none">• Counts are not cumulative.• Boards with Active defects are not included in the calculation.• <u>Scrapped boards</u> are not included in the calculation.

Boards Tested but Not Reviewed, by Test Station

Definition	Number of boards that failed test and have not been completely reviewed using the Agilent Repair Tool. Grouped by test station.
Notes	<ul style="list-style-type: none">• Counts are not cumulative.• Boards with Active defects are not included in the calculation.• <u>Scrapped boards</u> are not included in the calculation.

False Calls

Average False Calls (AOI)

Definition	Average number of false called components per board tested.
Formula	$\frac{\text{False Called Components}}{\text{Total Boards Tested} - \text{Boards with Active Defects}}$
Notes	<ul style="list-style-type: none">• Defects marked as Variation OK are not counted as false calls.• <u>Scrapped boards</u> are not included in the calculation.• Which data is included when there are multiple test and repair cycles?

Average False Calls (AXI)

Definition	Average number of false called pins per board tested.
Formula	$\frac{\text{False Called Pins}}{\text{Total Boards Tested} - \text{Boards with Active Defects}}$
Notes	<ul style="list-style-type: none">• Defects marked as Variation OK are not counted as false calls.• <u>Scrapped boards</u> are not included in the calculation.• Which data is included when there are multiple test and repair cycles?

Average False Calls by Board Type (AOI)

Definition	Average number of false called components per board tested, grouped by board type.
Formula	$\frac{\text{False Called Components}}{\text{Total Boards Tested - Boards with Active Defects}}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • <u>Scrapped boards</u> are not included in the calculation. • Which data is included when there are multiple test and repair cycles?

Average False Calls by Board Type (AXI)

Definition	Average number of false called pins per board tested, grouped by board type.
Formula	$\frac{\text{False Called Pins}}{\text{Total Boards Tested - Boards with Active Defects}}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • <u>Scrapped boards</u> are not included in the calculation. • Which data is included when there are multiple test and repair cycles?

Average False Calls by Test Station (AOI)

Definition	Average number of false called components per board tested, grouped by test station.
Formula	$\frac{\text{False Called Components}}{\text{Total Boards Tested - Boards with Active Defects}}$
Notes	<ul style="list-style-type: none">• Defects marked as Variation OK are not counted as false calls.• <u>Scrapped boards</u> are not included in the calculation.• Which data is included when there are multiple test and repair cycles?

Average False Calls by Test Station (AXI)

Definition	Average number of false called pins per board tested, grouped by test station.
Formula	$\frac{\text{False Called Pins}}{\text{Total Boards Tested - Boards with Active Defects}}$
Notes	<ul style="list-style-type: none">• Defects marked as Variation OK are not counted as false calls.• <u>Scrapped boards</u> are not included in the calculation.• Which data is included when there are multiple test and repair cycles?

False Called Components

Definition	Number of false called components, grouped by reference designator.
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • Boards with Active defects are not included in the calculation. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False Called Components by Algorithm

Definition	Number of false called components, grouped by algorithm.
Notes	<ul style="list-style-type: none"> • Multiple components may be counted per board. • Boards with Active defects are not included in the calculation. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False Called Components by Package Type

Definition	Number of false called components, grouped by package type.
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • Boards with Active defects are not included in the calculation. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False Called Components by Subtype (AXI)

Definition	Number of false called components, grouped by algorithm subtype.
Notes	<ul style="list-style-type: none">• Only available in AXI.• Defects marked as Variation OK are not counted as false calls.• Boards with Active defects are not included in the calculation.• Which data is included when there are multiple test and repair cycles?• <u>Scrapped boards</u> are not included in the calculation.

False Called Pins

Definition	Number of false called pins, grouped by pin number.
Notes	<ul style="list-style-type: none">• Defects marked as Variation OK are not counted as false calls.• Boards with Active defects are not included in the calculation.• Which data is included when there are multiple test and repair cycles?• <u>Scrapped boards</u> are not included in the calculation.

False Calls by Test Call

Definition	Number of false calls, grouped by <u>test call</u> .
Notes	<ul style="list-style-type: none">• Defects marked as Variation OK are not counted as false calls.• If a component or pin has multiple test calls, each test call is considered in the calculation.• Boards with Active defects are not included in the calculation.• Which data is included when there are multiple test and repair cycles?• <u>Scrapped boards</u> are not included in the calculation.

False PPM**False PPM, Components + Pins**

Definition	Number of false called components and pins per million opportunities.
Formula	$\frac{\text{False Called Component} + \text{False Called Pins}}{\text{Total Components and Pins Tested} - \text{Components and Pins Tested on Board with Active Defects}} * 1\text{million}$
Notes	<ul style="list-style-type: none"> • Only available in AXI. • Defects marked as Variation OK are not counted as false calls. • A component with at least one false call is counted as a false called component, even if it has real defects. • Components and pins marked as "No Test" are not included. • Which data is included when there are multiple test and repair cycles? • Scrapped boards are not included in the calculation.

False PPM, Components only

Definition	Number of false called components per million components tested.
Formula	$\frac{\text{False Called Components}}{\text{Total Components Tested} - \text{Components Tested on Boards with Active Defects}} * 1\text{million}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • A component with at least one false call is counted as a false called component, even if it has real defects. • Components marked as "No Test" are not included. • Which data is included when there are multiple test and repair cycles? • Scrapped boards are not included in the calculation.

False PPM, Pins only

Definition	Number of false called pins per million pins tested.
Formula	$\frac{\text{False Called Pins}}{\text{Total Pins Tested} - \text{Pins Tested on Boards with Active Defects}} * 1\text{million}$
Notes	<ul style="list-style-type: none"> • Only available in AXI. • Defects marked as Variation OK are not counted as false calls. • Pins marked as "No Test" are not included. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False PPM by Board Type, Components + Pins

Definition	Number of false called components and pins per million opportunities. Grouped by board type.
Formula	$\frac{\text{False Called Components} + \text{False Called Pins}}{\text{Total Components and Pins Tested} - \text{Components and Pins Tested on Boards with Active Defects}} * 1\text{million}$
Notes	<ul style="list-style-type: none"> • Only available in AXI. • Defects marked as Variation OK are not counted as false calls. • A component with at least one false call is counted as a false called component, even if it has real defects. • Components and pins marked as "No Test" are not included. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False PPM by Board Type, Components only

Definition	Number of false called components per million components tested. Grouped by board type.
Formula	$\frac{\text{False Called Components}}{\text{Total Components Tested} - \text{Components Tested on Boards with Active Defects}} * 1\text{million}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • A component with at least one false call is counted as a false called component, even if it has real defects. • Components marked as "No Test" are not included. • Which data is included when there are multiple test and repair cycles? • Scrapped boards are not included in the calculation.

False PPM by Board Type, Pins only

Definition	Number of false called pins per million pins tested. Grouped by board type.
Formula	$\frac{\text{False Called Pins}}{\text{Total Pins Tested} - \text{Pins Tested on Boards with Active Defects}} * 1\text{million}$
Notes	<ul style="list-style-type: none"> • Only available in AXI. • Defects marked as Variation OK are not counted as false calls. • Pins marked as "No Test" are not included. • Which data is included when there are multiple test and repair cycles? • Scrapped boards are not included in the calculation.

False PPM by Test Station, Components + Pins

Definition	Number of false called components and pins per million opportunities. Grouped by test station.
Formula	$\frac{\text{False Called Components} + \text{False Called Pins}}{\text{Total Components and Pins Tested} - \text{Components and Pins Tested on Boards with Active Defects}} * 1\text{million}$
Notes	<ul style="list-style-type: none"> • Only available in AXI. • Defects marked as Variation OK are not counted as false calls. • A component with at least one false call is counted as a false called component, even if it has real defects. • Components and pins marked as "No Test" are not included. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False PPM by Test Station, Components only

Definition	Number of false called components per million components tested. Grouped by test station.
Formula	$\frac{\text{False Called Components}}{\text{Total Components Tested} - \text{Components Tested on Boards with Active Defects}} * 1\text{million}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • A component with at least one false call is counted as a false called component, even if it has real defects. • Components marked as "No Test" are not included. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False PPM by Test Station, Pins only

Definition	Number of false called pins per million pins tested. Grouped by test station.
Formula	$\frac{\text{False Called Pins}}{\text{Total Pins Tested} - \text{Pins Tested on Boards with Active Defects}} * 1\text{million}$
Notes	<ul style="list-style-type: none"> • Only available in AXI. • Defects marked as Variation OK are not counted as false calls. • Pins marked as "No Test" are not included. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False:Real

False:Real (AOI)

Definition	Ratio of false called components to <u>defective</u> components.
Formula	$\frac{\text{False Called Components}}{\text{Total Failed Components} - \text{Failed Components on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none">• Defects marked as Variation OK are not counted as false calls.• A component with at least one false call is counted as a false called component, even if it has real defects.• Which data is included when there are multiple test and repair cycles?• <u>Scrapped boards</u> are not included in the calculation.

False:Real (AXI)

Definition	Ratio of false called pins to defective pins.
Formula	$\frac{\text{False Called Pins}}{\text{Total Defective Pins} - \text{Defective Pins on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none">• Defects marked as Variation OK are not counted as false calls.• Which data is included when there are multiple test and repair cycles?• <u>Scrapped boards</u> are not included in the calculation.

False:Real by Algorithm (AOI)

Definition	Ratio of false called components to <u>defective</u> components, grouped by algorithm.
Formula	$\frac{\text{False Called Components}}{\text{Total Defective Components} - \text{Defective Components on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • A component with at least one false call is counted as a false called component, even if it has real defects. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False:Real by Algorithm (AXI)

Definition	Ratio of false called pins to defective pins, grouped by algorithm.
Formula	$\frac{\text{False Called Pins}}{\text{Total Defective Pins} - \text{Defective Pins on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False:Real by Board Type (AOI)

Definition	Ratio of false called components to <u>defective</u> components, grouped by board type.
Formula	$\frac{\text{False Called Components}}{\text{Total Defective Components} - \text{Defective Components on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none">• Defects marked as Variation OK are not counted as false calls.• A component with at least one false call is counted as a false called component, even if it has real defects.• Which data is included when there are multiple test and repair cycles?• <u>Scrapped boards</u> are not included in the calculation.

False:Real by Board Type (AXI)

Definition	Ratio of false called pins to defective pins, grouped by board type.
Formula	$\frac{\text{False Called Pins}}{\text{Total Defective Pins} - \text{Defective Pins on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none">• Defects marked as Variation OK are not counted as false calls.• Which data is included when there are multiple test and repair cycles?• <u>Scrapped boards</u> are not included in the calculation.

False:Real by Component (AOI)

Definition	Ratio of false called components to defective components, grouped by reference designator.
Formula	$\frac{\text{False Called Components}}{\text{Total Failed Components - Failed Components on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • A component with at least one false call is counted as a false called component, even if it has real defects. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False:Real by Component (AXI)

Definition	Ratio of false called pins to defective pins, grouped by reference designator.
Formula	$\frac{\text{False Called Pins}}{\text{Total Defective Pins - Defective Pins on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False:Real by Operator (AOI)

Definition	Ratio of false called components to <u>defective</u> components, grouped by repair operator.
Formula	$\frac{\text{False Called Components}}{\text{Total Defective Components - Defective Components on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none">• Defects marked as Variation OK are not counted as false calls.• Which data is included when there are multiple test and repair cycles?• <u>Scrapped boards</u> are not included in the calculation.• The user must have "Quality Administrator" privileges to see this chart.

False:Real by Operator (AXI)

Definition	Ratio of false called pins to defective pins, grouped by repair operator.
Formula	$\frac{\text{False Called Pins}}{\text{Total Defective Pins - Defective Pins on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none">• Defects marked as Variation OK are not counted as false calls.• Which data is included when there are multiple test and repair cycles?• <u>Scrapped boards</u> are not included in the calculation.• The user must have "Quality Administrator" privileges to see this chart.

False:Real by Package Type (AOI)

Definition	Ratio of false called components to <u>defective</u> components, grouped by package type.
Formula	$\frac{\text{False Called Components}}{\text{Total Defective Components - Failed Components on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False:Real by Package Type (AXI)

Definition	Ratio of false called pins to defective pins, grouped by package type.
Formula	$\frac{\text{False Called Pins}}{\text{Total Defective Pins - Defective Pins on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False:Real by Pin (AXI)

Definition	Ratio of false called pins to defective pins, grouped by pin number.
Formula	$\frac{\text{False Called Pins}}{\text{Total Defective Pins - Defective Pins on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none">• Defects marked as Variation OK are not counted as false calls.• Which data is included when there are multiple test and repair cycles?• <u>Scrapped boards</u> are not included in the calculation.

False:Real by Subtype (AXI)

Definition	Ratio of false called pins to defective pins, grouped by algorithm subtype.
Formula	$\frac{\text{False Called Pins}}{\text{Total Defective Pins - Defective Pins on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none">• Defects marked as Variation OK are not counted as false calls.• Which data is included when there are multiple test and repair cycles?• <u>Scrapped boards</u> are not included in the calculation.

False:Real by Test Call (AOI)

Definition	Ratio of false called components to defective components, grouped by test call.
Formula	$\frac{\text{False Called Components}}{\text{Total Defective Components} - \text{Defective Components on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • A component with at least one false call is counted as a false called component, even if it has real defects. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False:Real by Test Call (AXI)

Definition	Ratio of false called pins to defective pins, grouped by test call.
Formula	$\frac{\text{False Called Pins}}{\text{Total Defective Pins} - \text{Defective Pins on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False:Real by Test Station (AOI)

Definition	Ratio of false called components to <u>defective</u> components, grouped by test station.
Formula	$\frac{\text{False Called Components}}{\text{Total Defective Components - Defective Components on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none">• Defects marked as Variation OK are not counted as false calls.• A component with at least one false call is counted as a false called component, even if it has real defects.• Which data is included when there are multiple test and repair cycles?• <u>Scrapped boards</u> are not included in the calculation.

False:Real by Test Station (AXI)

Definition	Ratio of false called pins to defective pins, grouped by test station.
Formula	$\frac{\text{False Called Pins}}{\text{Total Defective Pins - Defective Pins on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none">• Defects marked as Variation OK are not counted as false calls.• Which data is included when there are multiple test and repair cycles?• <u>Scrapped boards</u> are not included in the calculation.

False:Total Failed**False:Total Failed (AOI)**

Definition	Ratio of false called components to total <u>failed components</u> .
Formula	$\frac{\text{False Called Components}}{\text{Total Failed Components - Failed Components on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • A component with at least one false call is counted as a false called component, even if it has real defects. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False:Total Failed (AXI)

Definition	Ratio of false called pins to total <u>failed pins</u> .
Formula	$\frac{\text{False Called Pins}}{\text{Total Failed Pins - Failed Pins on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False:Total Failed by Algorithm (AOI)

Definition	Ratio of false called components to total failed components, grouped by algorithm.
Formula	$\frac{\text{False Called Components}}{\text{Total Failed Components} - \text{Failed Components on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • A component with at least one false call is counted as a false called component, even if it has real defects. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False:Total Failed by Algorithm (AXI)

Definition	Ratio of false called pins to total failed pins, grouped by algorithm.
Formula	$\frac{\text{False Called Pins}}{\text{Total Failed Pins} - \text{Failed Pins on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False:Total Failed by Board Type (AOI)

Definition	Ratio of false called components to total failed components, grouped by board type.
Formula	$\frac{\text{False Called Components}}{\text{Total Failed Components} - \text{Failed Components on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • A component with at least one false call is counted as a false called component, even if it has real defects. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False:Total Failed by Board Type (AXI)

Definition	Ratio of false called pins to total failed pins, grouped by board type.
Formula	$\frac{\text{False Called Pins}}{\text{Total Failed Pins} - \text{Failed Pins on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False:Total Failed by Component (AOI)

Definition	Ratio of false called components to total failed components, grouped by component reference designator.
Formula	$\frac{\text{False Called Components}}{\text{Total Failed Components - Failed Components on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • A component with at least one false call is counted as a false called component, even if it has real defects. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False:Total Failed by Component (AXI)

Definition	Ratio of false called pins to total <u>failed pins</u> , grouped by component reference designator.
Formula	$\frac{\text{False Called Pins}}{\text{Total Failed Pins - Failed Pins on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False:Total Failed by Operator (AOI)

Definition	Ratio of false called components to total <u>failed components</u> , grouped by repair operator.
Formula	$\frac{\text{False Called Components}}{\text{Total Failed Components - Failed Components on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • A component with at least one false call is counted as a false called component, even if it has real defects. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation. • The user must have "Quality Administrator" privileges to see this chart.

False:Total Failed by Operator (AXI)

Definition	Ratio of false called pins to total <u>failed pins</u> , grouped by repair operator.
Formula	$\frac{\text{False Called Pins}}{\text{Total Failed Pins - Failed Pins on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation. • The user must have "Quality Administrator" privileges to see this chart.

False:Total Failed by Package Type (AOI)

Definition	Ratio of false called components to total failed components, grouped by package type.
Formula	$\frac{\text{False Called Components}}{\text{Total Failed Components - Failed Components on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • A component with at least one false call is counted as a false called component, even if it has real defects. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False:Total Failed by Package Type (AXI)

Definition	Ratio of false called pins to total failed pins, grouped by package type.
Formula	$\frac{\text{False Called Pins}}{\text{Total Failed Pins - Failed Pins on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False:Total Failed by Pin (AXI)

Definition	Ratio of false called pins to total <u>failed pins</u> , grouped by pin number.
Formula	$\frac{\text{False Called Pins}}{\text{Total Failed Pins - Failed Pins on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False:Total Failed by Subtype (AXI)

Definition	Ratio of false called pins to total <u>failed pins</u> , grouped by algorithm subtype.
Formula	$\frac{\text{False Called Pins}}{\text{Total Failed Pins - Failed Pins on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False:Total Failed by Test Call (AOI)

Definition	Ratio of false called components to total failed components, grouped by test call.
Formula	$\frac{\text{False Called Components}}{\text{Total Failed Components - Failed Components on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none">• Defects marked as Variation OK are not counted as false calls.• A component with at least one false call is counted as a false called component, even if it has real defects.• Which data is included when there are multiple test and repair cycles?• <u>Scrapped boards</u> are not included in the calculation.

False:Total Failed by Test Call (AXI)

Definition	Ratio of false called pins to total <u>failed pins</u> , grouped by test call.
Formula	$\frac{\text{False Called Pins}}{\text{Total Failed Pins - Failed Pins on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False:Total Failed by Test Station (AOI)

Definition	Ratio of false called components to total failed components, grouped by test station.
Formula	$\frac{\text{False Called Components}}{\text{Total Failed Components - Failed Components on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • A component with at least one false call is counted as a false called component, even if it has real defects. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

False:Total Failed by Test Station (AXI)

Definition	Ratio of false called pins to total failed pins, grouped by test station.
Formula	$\frac{\text{False Called Pins}}{\text{Total Failed Pins - Failed Pins on Boards with Active Defects}}$
Notes	<ul style="list-style-type: none"> • Defects marked as Variation OK are not counted as false calls. • Which data is included when there are multiple test and repair cycles? • <u>Scrapped boards</u> are not included in the calculation.

Glossary

A

- active alarm:** An alarmed state for a particular chart. The chart data has not yet returned within its specified limits.
- active defect:** A defect with the status "Active." It has not been changed to Repaired, Repair Later, False Call or Variation OK using the Agilent Repair Tool.
- Administration System:** See ITF Administration System.
- administrator:** An individual responsible for maintaining multi-user systems, including: adding and configuring stations, setting up accounts, installing and updating software. Also referred to as system administrator.
- Agilent 3070:** Agilent Technologies' in-circuit board test system family.
- Agilent 5DX:** Agilent Technologies' X-ray inspection system. Automated X-ray Inspection (AXI) uses 3-D X-ray testing to locate manufacturing defects. In addition, it does not require in-circuit test probing or visual access, and does not require a fixture. AXI pinpoints the exact location of the defects, helping to make repairs both fast and inexpensive.
- Agilent Quality Tool:** An SPC/SQC tool for the Agilent 5DX and Agilent SJ Series test systems. The Agilent Quality Tool is a software application that runs on Client PCs. It allows users to apply SPC and SQC methods to improve assembly and test process efficiencies while helping users meet their targeted quality levels.
- Agilent Repair Tool:** The common repair tool for the Agilent 3070, Agilent 5DX, and Agilent SJ series test and inspection systems. The Agilent Repair Tool is a software application that runs on a Client PC. Common abbreviation is ART.
- Agilent SJ Series:** Agilent Technologies' automated optical inspection systems. Current products are the Agilent SJ10 and SJ50 inspection systems.
- Agilent SP Series:** Agilent Technologies' automated optical inspection systems. Current product is the Agilent SP50 inspection system.
- alarm event:** The event that causes a chart to go into an alarmed state. The alarm event is recorded in the Alarm Log.
- alarm limit:** A defined limit for a particular chart. The alarm will go into an alarmed state if the limit is crossed. If a particular chart has an alarm limit set, you will see a horizontal red line on the chart at the limit value. Alarm limits are set from the Chart Options dialog box. Alarms are set specifically for an individual chart in a named View.
- alarm log:** The list of recent alarm events.
- alarm notification:** An alarm dialog box is displayed at the Client PC to notify a user when a chart in one of the defined Views at that Client PC has gone into an alarmed state. This alarm dialog box is displayed when the data for a particular chart goes outside its defined alarm limits.
- alarmed state:** An alarmed condition. A chart is in an alarmed state if the data that the chart is monitoring goes outside of the limits set by the user.
- algorithm:** In the Agilent Quality Tool, an AOI "algorithm" corresponds to an AOI device type. An AXI "algorithm" corresponds to AXI "algorithm families" that are based on the structure of the joint. Examples of AXI algorithm families are BGA, BGA2, Gullwing, FPGullwing, Connector, Res, Cap and Chip.
- AOI:** Automated Optical Inspection. The Agilent SJ10, SJ50, and SP50 are automated optical inspection (AOI) systems.

ART: Abbreviation for Agilent Repair Tool.

assembly: See board

assembly process: Test systems, software, and methodologies used in the development of printed circuit board technology.

assembly type: See board type

AXI: Automated X-ray inspection. The Agilent 5DX X-ray inspection system is an AXI system.

B

board: The physical printed circuit board containing the devices intended for test. One or more copies of a board may exist on a panel.

board type: The classification of a specific printed circuit board assembly type, usually named or numbered.

Boards Tested but Not Reviewed: Boards that have failed test and have not been completely reviewed using the Agilent Repair Tool.

C

CAD: Abbreviation for Computer Aided Design. For the Agilent 5DX or Agilent SJ Series inspection systems, CAD data is the source data used to design or describe an unpopulated circuit board. For Agilent in-circuit test systems, CAD data is used to describe the layout of a printed circuit board to the test machine.

chart information: The definition or formula used to calculate the dependent (y axis) data for a particular chart.

chart options: Chart options apply to a specific chart. The Chart Options dialog box includes an Alarm tab, a Filter tab, and, for DPMO charts, a Calculation tab. The Alarm tab allows the user to set alarms specific to that chart. The Filter tab allows the user to specify the placement machine. The Calculation tab may be used to specify the method to count "opportunities for defects." The user has the option to calculate DPMO by counting (a) all components tested (b) all pins tested or (c) the sum of all components tested plus all pins tested.

Client PC: The computer on which the Agilent Repair Tool or Agilent Quality Tool software runs.

combine data: Combine data for multiple items into one line on a line chart (i.e., aggregate the data).

completely reviewed: A board has been completely reviewed at ART when all test calls have been marked either repaired, repair later, false call or variation OK. There are no active defects remaining on the board.

component: An individual part with contacts (pins) that are connected with solder joints to a corresponding set of pads (land pattern) on a board. Also referred to as a device.

component level defect : A defect that applies to an entire component (for example, component missing).

computer-aided design: See CAD

Create View Wizard: An easy method in the Agilent Quality Tool for a user to select the specific set of test and repair data from the Agilent ITF Server that they want to monitor. The user selects the Test Stage (AOI or AXI), test station(s), board type(s), time frame, method of organizing the data, the tabs, and specifies a name for the View.

D

- dashboard:** The group of live charts on a tab in the Agilent Quality Tool, used to monitor quality, throughput, or false call levels.
- data included for retests and multiple repairs:** For pre-repair calculations, the Agilent Quality Tool uses the test results from the last test run before the board is opened at ART. For post-repair calculations, the Agilent Quality Tool uses the repair results from the last time the board is opened at ART before any re-test occurs.
- data store:** The subsystem within the Agilent ITF where the test and repair information is stored.
- defect:** A physical problem with a component or pin. The defect is specified in the Agilent Repair Tool when the component or pin is marked repaired or repair later.
- defect call:** An item in the defect table or defect list. A possible defect.
- defect list:** A user-defined list of defect types, such as open or short. The list is configured in the ITF Administration System and used in Agilent ITF applications. The defects listed in the Agilent Repair Tool are based upon the defect list.
- defective component:** A component with at least one real defect. The component or one of its pins has been marked either repaired or repair later using the Agilent Repair Tool.
- defective pin:** A pin with at least one real defect. It has been marked either repaired or repair later using the Agilent Repair Tool.
- Defects Per Million Opportunities:** See DPMO
- device:** A component.
- Do not repair:** See false call or variation OK.
- DPMO:** Defects Per Million Opportunities. The number of defects observed in a manufacturing process, divided by the number of opportunities for a defect to occur, multiplied by one million. A "defect opportunity" is defined in the Calculation tab of the Chart Options.
- drill-down:** By clicking a bar in a Pareto chart or a line in a trend chart, or a drill-down button, the user may get more specific information for the current chart. This allows the user to investigate the factors contributing to the data on the current chart.

F

- failed component:** A component with at least one test call.
- failed components:** The number of components with at least one test call.
- failed pin:** A pin with at least one test call.
- failed pins:** The number of failed pins with at least one test call.
- failure:** A possible defect, called by a test system.
- failures:** The number of possible defects that were called by a test system.
- false call:** There is no defect associated with this indictment.
- false PPM:** The ratio of false calls to the total number of defect opportunities.
- false failure:** See false call
- False:Real:** The ratio of false calls to real (valid) defect calls.
- False:Total Failed:** The ratio of false calls to the total number of defect calls.
- feeder:** See placement feeder

filter: A method to narrow down a search by specifying certain characteristics.

first pass yield (post-repair): Percentage of boards, that, after review at ART, contain no real defects. Post-Repair yield would be 100% if every board tested either passed test or had no necessary repairs after review with the Agilent Repair Tool.

first pass yield (pre-repair): Percentage of boards that passed test or inspection. Defined as (boards passed)/(total number of boards tested)*100. Pre-repair yield would be 100% if every board passed the test or inspection phase.

fixed time period: A time period with a specific beginning and end, in contrast to a moving time period such as the last 24 hours.

Framework: See Agilent Intelligent Test Framework

G

graph: See chart.

I

ICT : An acronym for in-circuit test. The Agilent 3070 is an in-circuit test system.

image: An X-ray or optical image of a possible defect. X-ray laminography allows for X-ray images from X-ray inspection (AXI) systems such as the Agilent 5DX. Automated optical inspection allows for optical images from AOI test systems such as the Agilent SJ10 or SJ50.

In-circuit test: An analog or digital test technique that measures the value or performance of a component on the board under test. Abbreviated as ICT.

indictment: A possible defect. A defect call.

Intelligent Drill-Downs: A patented feature of the Agilent Quality Tool that allows the user to "drill down" on a chart to learn more about the factors contributing to the displayed data. The "intelligent" part of the drill-down is that it automatically generates a deeper view of the information most likely needed to determine root causes. Intelligent Drill-Downs anticipate questions that the process engineer might ask in a given context, and provide information to help the engineer answer these questions. Intelligent Drill-Downs are based on extensive research with process engineers.

Intelligent Test: An Agilent Technologies strategy for electronics manufacturers that enables optimized manufacturing processes built on best in class testers and common tools.

Intelligent Test Framework: A collective term that refers to the Intelligent Test Framework software and server.

Intelligent Test Framework : A collective term that refers to the Intelligent Test Framework software and server. Abbreviated as ITF.

Intelligent Test Software Solutions: A suite of software applications that runs on the Intelligent Test Framework.

interface: Interaction or communication is achieved at an interface. A user interface is a computer screen where you receive and/or enter information.

IPC: The Institution for the Interconnecting and Packaging of Electronic Circuits. An international standards generation body that is accredited by ANSI.

IPC Standard: A type of standard developed by the IPC Association Connecting Electronics Industries. The capability supported by some operating systems that allows one process to communicate with another process. The processes can be running on the same computer or on different computers connected through a network. The Agilent

Repair Tool and Agilent Quality Tool are based on ANSI/IPC standards 2547 (CAMX) and 2511 (GenCAM).

ITF Administration System : A browser-based application on the ITF Server that is used to configure system properties such as user access, repair configurations and framework services for ITF Software Applications.

ITF Server: The server hardware on which the ITF software runs.

ITF Software: The software that allows for data sharing and communication among test systems and applications, such as the Agilent Repair Tool and Agilent Quality Tool.

ITF Software Solutions: A suite of software applications that run on the Agilent Intelligent Test Framework.

K

keypad: A keypad is an optional input device for the Agilent Repair Tool. The keypad is comprised of buttons for the most commonly used functions in ART. A keypad is most useful with AXI and AOI repair.

L

LAN: See Local Area Network

line chart: See trend chart

local area network: A group of computers at a single location (usually an office or home) that are connected by phone lines or coaxial cable.

log in: The method to establish communication with a computer program. When the Agilent Quality Tool starts up, the user must first log in to the program. Login requires a valid user name and password. Your system administrator sets up the list of valid user names and passwords.

log out: The method to end communication with a computer program. A user will log out when he/she wants to end communication with the software applications. Another user may then log in to the software application.

M

MHz: Megahertz

O

open: The electrical isolation of two conductor nodes. "Open" is most commonly used when the nodes are supposed to be electrically common, but are not.

opportunity: Any opportunity for a defect on a pin or component. The pin or component must have coverage in the test plan.

optical tester: An optical test inspection machine. The Agilent SJ10 and SJ50 are sometimes referred to as optical testers. This equipment is more formally referred to as an automated optical inspection (AOI) system.

P

package type: For AOI, the package type is a name or code used to designate the shape and size of the component. Examples of AOI package types: SOIC14 or C1206. For AXI,

the package name is usually derived from the land pattern name. The package data includes such characteristics as pin dimensions, locations, pitch and pin type. Examples of AXI package types: SO14_U or 1206_C.

page-sensitive help: A type of online help that gives specific information about the current screen.

panel: A printed circuit board assembly which can contain one or more boards. Note: for the Agilent 5DX, any single board loaded directly into the tester is considered a panel for the purpose of panel programming.

Pareto chart: A vertical bar chart showing items in prioritized order, so it can be determined how much each individual item contributes to the overall problem. A Pareto chart is often used to determine which are the largest problems that should be addressed first.

password: An individual identification code required to access a board, file, computer or program. The password helps ensure that unauthorized users do not access the computer.

PIN: Personal Identification Number (a numeric password).

pin level defect: A defect that applies to an individual pin or joint, rather than an entire component. Examples include open or short.

pin number: A unique number is assigned to every pin of a given package in the package Neutral Data File (NDF). The pin number must match the respective pad number.

placement feeder: A specific feeder on a pick and place machine.

PNG: Acronym for Portable Network Graphics image file type (.png).

post-repair quality tab: The tab in the Agilent Quality Tool for monitoring post-repair quality which incorporates data from the Agilent Repair Tool with test and inspection data. Pre-repair quality data comes directly from the test and inspection systems connected to the Agilent ITF Server.

post-repair yield: See first pass yield (post-repair).

PPM: parts per million.

pre-repair quality tab: The tab in the Agilent Quality Tool for monitoring pre-repair quality.

pre-repair yield: See first pass yield (pre-repair).

R

RAM : Acronym for Random Access Memory. RAM can be read from or written to by the computer or other devices.

reference designator: A name used to designate a particular component on a specific board type. Examples: U11 or R4.

repair later: An action taken to indicate that a specific pin or component is to be repaired later. It may be for reasons such as a lack of tools, components, or expertise that the repair operator indicates that this defect will be repaired later.

repaired: An action taken to confirm or change the specific defect for this pin or component. This defect has been addressed.

reviewed board: A board with all test calls marked repaired, repair later, false call or variation OK. There are no active defects remaining on the board.

S

S/N: See serial number

scrapped board: A board that is discarded. A board may be marked as scrapped using the Agilent Repair Tool.

serial number: A unique series of numbers and/or letters used to identify an individual board or panel. Usually encoded on a barcode label.

Stage: The stage of the manufacturing process: AOI_SJ, AOI_SP, AXI or ICT. Also referred to as Test Stage.

status: The status of a component or pin in the Agilent Repair Tool. Status is active, repaired, repair later, false call, or variation OK.

T

test call: A named test failure, such as open or missing.

test failure: The problem or fault identified by the test or inspection equipment. Examples: short, open, or measurement failed. The in-circuit test machine determines the test failure name.

test name: The process step ID of the in-circuit test that failed. Process step status record from the IPC-2547 standard. Examples: U3, R1, or C56.

Test Stage: The stage of the manufacturing process: AOI_SJ, AOI_SP, AXI or ICT. Also referred to as Stage.

test station: A specific test or inspection system, identified by a name or identification number.

test system: A generic term used to describe a test or inspection machine, such as the Agilent 3070, Agilent 5DX, or Agilent SJ Series.

time frame: A period of time with a specific date and time for its beginning and end.

trend chart: A line chart that displays a trend over time. For example, pre-repair first pass yield over the past 24 hours would be displayed in a trend chart.

U

user: See user name.

user name: Name used to log in to the Agilent Quality Tool from the login dialog box. The system administrator sets up all user names.

V

variation OK: For a given indictment in the Agilent Repair Tool, the slight variation from the ideal is acceptable.

View: A View defines a subset of test, inspection, and repair data that resides on the ITF Server, forming the basis for charts in the Agilent Quality Tool. Views are created and named in the Agilent Quality Tool.

X

X-ray: A form of electromagnetic radiation, similar to light, but, of shorter wavelength and capable of penetrating solid materials. Used by X-ray inspection machines to examine printed circuit board joints.

X-ray inspection: A method of examining printed circuit board components and joints using an X-ray inspection machine such as the Agilent 5DX.

X-ray tester: An X-ray inspection machine. The Agilent 5DX inspection machine is sometimes called an X-ray tester.

XML: Abbreviation for Extensible Markup Language. XML is a specification developed by the World Wide Web Consortium. It allows designers to create their own customized tags, enabling the definition, transmission, validation, and interpretation of data between applications and between organizations.

Y

yield: The percentage of a process that is free of defects. 100% yield = zero defects.

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