

# **Operator's Manual**

Revision B – November, 2007 Relating to the Following Release Versions:

• Software Option Rev. 5.2.0





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Document Number: 915045 Rev B

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# WHAT IS QUALIPHY?

### **Physical Layer Compliance Testing**

As multiple serial data standards converge in today's computer motherboards and multimedia equipment, device designers and their team members must rely on high performance test equipment tools. With the introduction of QualiPHY, LeCroy is committed to offering unsurpassed value by enabling customers to achieve improved time to market while ensuring that standards compliance requirements are fully met.

The new LeCroy compliance software is designed with two major objectives in mind:

- First, to provide the user with a superior, highly automated compliance test tool necessary to develop and validate the PHY (physical-electrical) layer of a device, in accordance with the official documents published by the applicable standards organizations and special interest groups (SIGs).
- Second, to provide a means of reporting all test results, including multiple output file formats, user-adjustable compliance limits, and output to XML format for database archiving.

The standard features of the SDA and other oscilloscopes also provide a broad toolset for advanced debugging of these interfaces, including jitter, eye pattern, and bit error rate. The QualiPHY software is composed of a main user interface that enables the configuration and control of components for each of the standards.

### **Features and Benefits**

- **Compliance Testing**: Fully-automated compliance test runs with custom-configured specification limits.
- Multiple Data Source Capability: Connect to your X-Stream oscilloscope via LAN or GPIB interface.
- User-Defined Test Limits: Parameter interconnect losses can be factored into the parametric results.
- Flexible Test Results Reporting that includes XML Test Record Generation. Understand a device performance distribution, or obtain process related information from the devices under test.

#### LeCroy's Serial Data Analysis tools at the user's fingertips:

- Jitter Analysis and Q-Scale
- Histograms, Trend, and Track functions
- Digital Filter Package
- Custom DSO

### System Compatibility

The QualiPHY software is available as an option to the SDA series of oscilloscopes and to some lower-bandwidth X-Stream oscilloscope models (firmware version greater than 5.1.0 installed). To ensure optimum system performance, run QualiPHY on instruments with adequate bandwidth:

| Standard                       | Option Key | LeCroy Oscilloscope                                                                                                                                                                              |
|--------------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Universal<br>Serial Bus<br>2.0 | QPHY-USB   | High-Speed/Full-Speed/Low-Speed:<br>WR6200, WR204Xi, WP7200, SWP7300, any WM or SDA/DDA<br>Full-Speed/Low-Speed:<br>WR6030, WR6050, WR6100, WR44Xi, WR62Xi, WR64Xi, WP7000,<br>WP7100            |
| Ethernet                       | QPHY-ENET  | 10Base-T/100Base-T:<br>any WR6000, WRXi, WP7000, WM, or SDA with a bandwidth of at least<br>400 MHz<br>1000Base-T:<br>any WR6000, WRXi, WP7000, WM, or SDA with a bandwidth of at least<br>1 GHz |

Table 1. Serial Data Standards and Oscilloscope Option Keys



### **Required Equipment**

- SDA, WaveMaster, WavePro or WaveRunner series of X-Stream oscilloscopes as required for each standard
- QualiPHY compatible software option (i.e. QPHY-XXX)
- Fixtures and Probes, as required for each standard
- A Host computer, though not required, is highly recommended to run the Compliance & Development Software Engine. The oscilloscope is the default host computer.

## HOST COMPUTER MINIMUM SYSTEM CONFIGURATION

### os

- Windows 2000 Professional with service pack 4
- Windows XP Professional with service pack 2
- Windows VISTA is not yet supported

### Memory (RAM)

• 100 MB of free RAM memory

### Connection

- Ethernet network (LAN)
- or GPIB network

### Hard Drive (C:\)

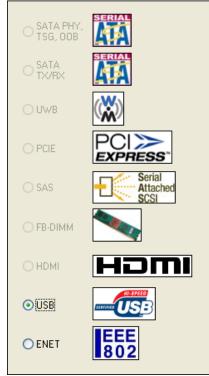
- At least 100 MB to install the application
- Up to 1GB per standard installed to store the log database Each database grows from a few MB to a maximum of 1 GB

# SOFTWARE INSTALLATION AND SYSTEM CONFIGURATION

The new QualiPHY software application is an MS Windows-based application that can be configured with one or more serial data compliance components. Each serial data compliance component is individually enabled by installing a software option key. See **Table 1. Serial Data Standards and Oscilloscope Option Keys** on page 5 for details.

The serial data compliance components are factory installed as part of the main application in your oscilloscope and are individually activated through the use of an alphanumeric code uniquely matched to the oscilloscope's serial number.

When a software key is enabled (list the enabled software options from **Utilities**  $\rightarrow$  **Utilities Setup...** on the main menu drop-down, and then click the **Status** tab), the oscilloscope is ready to accept the commands executed from QualiPHY. Only serial data components installed in QualiPHY with option keys installed on the oscilloscope are enabled.



The previous screen shows that the IEEE 802 (Ethernet) and USB components are installed. Notice how Serial ATA (SATA), ultra-wideband (UWB), PCI Express (PCIE), Serial Attached SCSI (SAS), fully buffered dual in-line memory module (FB-DIMM) and HDMI components are not selectable because they do not apply to this release. In order for each application component to work properly, the oscilloscope must have the corresponding option key enabled. For ultimate flexibility, QualiPHY can be installed and executed from a host computer other than the oscilloscope, provided that there is a Windows-compatible GPIB or LAN connection.



### **Oscilloscope option Key Installation**

Enter the option key code by doing the following:

- 1. Select Utilities → Utilities Setup... on the oscilloscope's menu bar.
- 2. Click the **Options** tab, and then the **Add Key** button.
- 3. Use the Virtual Keyboard to enter the option key code.

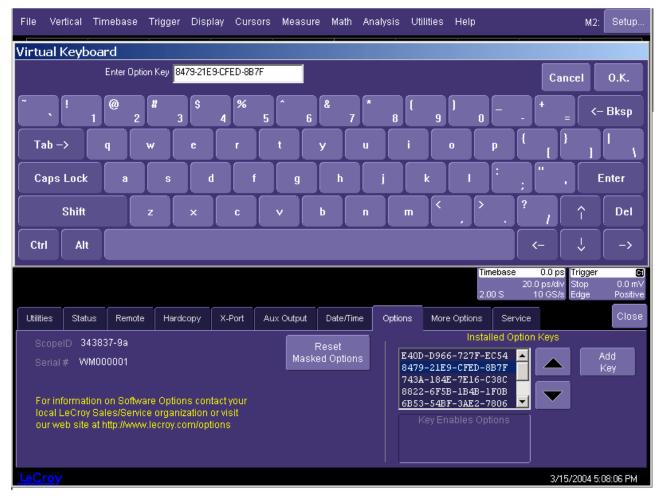


Figure 1: Entering the option key code for a serial data component software option

4. Now, restart the oscilloscope to activate the option after installing.

### **QualiPHY Software Installation**

The latest version of QualiPHY is available at: http://www.lecroy.com/tm/options/software/QualiPHY/default.asp. Use the downloaded file to install QualiPHY on the required system, which can be:

- The oscilloscope with which it was delivered (the use of Dual Monitor Display option is recommended).
- A host computer other than the oscilloscope (for remote control).

A new installation is required whenever a new serial data component is added to an existing QualiPHY installation. An option key is issued and needs to be installed on the oscilloscope. First, install the option keys on the oscilloscope, and then configure QualiPHY with the newly-ordered serial data components.

Note: Some components contain script generation files for specific equipment used with the oscilloscope to perform the compliance test. To allow automation of such equipment, QualiPHY should be installed on the oscilloscope even if it's run from a remote computer. Dedicated equipment control software may have to be installed. Check the relevant section of the corresponding Operator's Manual for additional installation needs.

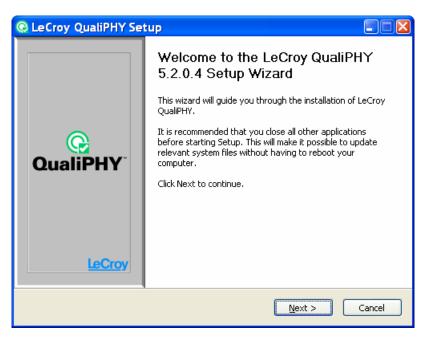
Follow the specific installer application instructions. The installation process prompts for specific choices of serial data components as needed.

When QualiPHY must be installed on an oscilloscope not connected to a network, first copy the QualiPHY installer file **QualiPHYInstaller.exe** from the website onto a USB memory stick (with at least 30MB), and then proceed with the installation as explained in the next section of this manual. An alternate solution is to connect the oscilloscope to a Local Area Network (LAN) to access the installer using the Internet.



## **EXECUTING THE INSTALLER**

• Double-click the installer executable. The **Welcome** screen is shown.



• Read the End User License Agreement. If you agree, click the I Agree button.

| 😪 LeCroy QualiPHY Setup                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                      |            |  |  |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--|--|--|--|
|                                                                                                                                                             | License Agreement                                                                                                                                                                                                                                                                                                                                                                                    |            |  |  |  |  |
| LeCroy                                                                                                                                                      | Please review the license terms before installing LeCroy<br>QualiPHY.                                                                                                                                                                                                                                                                                                                                |            |  |  |  |  |
| Press Page Down to see the                                                                                                                                  | Press Page Down to see the rest of the agreement.                                                                                                                                                                                                                                                                                                                                                    |            |  |  |  |  |
| END-USER LICENS                                                                                                                                             | E AGREEMENT FOR LECROY = XReplay SOFTWARE                                                                                                                                                                                                                                                                                                                                                            | ^          |  |  |  |  |
| ("EULA") IS A LEGAL A<br>LICENSING THE SOFTW<br>CORPORATION ("LECE<br>ACCOMPANYING THIS<br>ANY "ONLINE" OR ELE<br>PROVIDED BY LECROY<br>MEDIA; AND ANY UPDA | EFULLY: THIS END-USER LICENSE AGREEMENT<br>GREEMENT BETWEEN THE INDIVIDUAL OR ENTITY<br>'ARE PRODUCT ("YOU") OR "YOUR") AND LECROY<br>OY") FOR THE SOFTWARE PRODUCT(S)<br>EULA, WHICH INCLUDE(S): COMPUTER PROGRAM<br>CTRONIC DOCUMENTATION AND PRINTED MATERL<br>'HEREWITH ("DOCUMENTATION"); ASSOCIATED<br>TES (AS DEFINED BELOW) (COLLECTIVELY, THE<br>"). BY USING AN INSTRUMENT TOGETHER WITH O | IS;<br>ALS |  |  |  |  |
| If you accept the terms of the agreement, click I Agree to continue. You must accept the<br>agreement to install LeCroy QualiPHY.                           |                                                                                                                                                                                                                                                                                                                                                                                                      |            |  |  |  |  |
| Nullsoft Install System v2.21                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                      |            |  |  |  |  |
|                                                                                                                                                             | < <u>B</u> ack I <u>A</u> gree                                                                                                                                                                                                                                                                                                                                                                       | Cancel     |  |  |  |  |

• If the application is already installed, the following window is shown. Choose to either **Uninstall** (and keep a backup of the existing file to a selected folder) or **Do not uninstall** (and overwrite any existing files).

| 😪 LeCroy Qu                      | 🗣 LeCroy QualiPHY Setup                                                                                                                                                                                                                                                                                             |                                                                   |        |  |  |  |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|--------|--|--|--|
| <b>i</b>                         | eCroy                                                                                                                                                                                                                                                                                                               | Previous installation detected<br>Choose how you want to proceed. |        |  |  |  |
| version before<br>below in which | QualiPHY is already installed on your system. It is recommended that you uninstall the current<br>version before installing. If you choose to uninstall you must choose a destination folder<br>below in which to backup the existing data. Select the operation you want to perform and<br>click Next to continue. |                                                                   |        |  |  |  |
| ⊙Un                              | ninstall before                                                                                                                                                                                                                                                                                                     | installing                                                        |        |  |  |  |
| [                                | C:\Program F                                                                                                                                                                                                                                                                                                        | Files\LeCroy\XReplay\Backup                                       |        |  |  |  |
| ODo                              | O Do not uninstall                                                                                                                                                                                                                                                                                                  |                                                                   |        |  |  |  |
|                                  |                                                                                                                                                                                                                                                                                                                     |                                                                   |        |  |  |  |
|                                  |                                                                                                                                                                                                                                                                                                                     |                                                                   |        |  |  |  |
| Nullsoft Install Sys             | stem v2.21 —                                                                                                                                                                                                                                                                                                        |                                                                   |        |  |  |  |
|                                  |                                                                                                                                                                                                                                                                                                                     | < <u>B</u> ack <u>N</u> ext >                                     | Cancel |  |  |  |

• Install the serial data components required for the operation. While it is possible to install all the serial data components, only ones enabled with an option key are operational.

| 🕞 LeCroy QualiPHY Setup                                       |                                                           |                                                                                   |  |  |
|---------------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|
|                                                               | Choose Components<br>Choose which features of LeCroy (    | QualiPHY you want to install.                                                     |  |  |
| Check the components you<br>install. Click Install to start t | want to install and uncheck the comp<br>the installation. | oonents you don't want to                                                         |  |  |
| Select components to instal                                   | I: QualiPHY<br>C Ethernet<br>USB2<br>PDF Reader           | Description<br>Position your mouse<br>over a component to<br>see its description, |  |  |
| Space required: 35.4MB                                        |                                                           |                                                                                   |  |  |
| Nullsoft Install System v2,21 –                               | < <u>B</u> ack                                            | Install Cancel                                                                    |  |  |



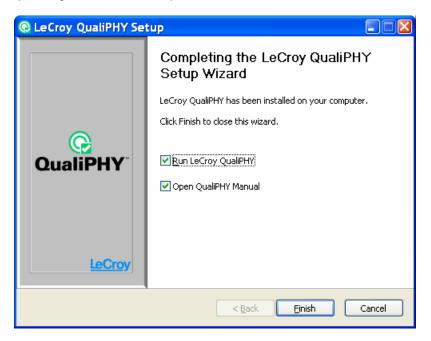
• The installation progress bar is then shown.

| C LeCroy QualiPHY Se            | 🕏 LeCroy QualiPHY Setup                                             |        |  |  |  |
|---------------------------------|---------------------------------------------------------------------|--------|--|--|--|
| LeCroy                          | Installing<br>Please wait while LeCroy QualiPHY is being installed. |        |  |  |  |
| Extract: C:\Program Files\Le    | Croy\XReplay\mfcm80.dll                                             |        |  |  |  |
| Show details                    |                                                                     |        |  |  |  |
|                                 |                                                                     |        |  |  |  |
|                                 |                                                                     |        |  |  |  |
| Nullsoft Install System v2.21 — |                                                                     |        |  |  |  |
|                                 | <back next=""></back>                                               | Cancel |  |  |  |

• Click the Show details button to see more installation details.

| Ģ  | 😪 LeCroy QualiPHY Setup                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |        |  |  |  |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--|--|--|
| 1  | Installing Please wait while LeCroy QualiPHY is being installed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |        |  |  |  |
|    | Extract: QualiPHYENETManual.pdf                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |        |  |  |  |
|    | Create shortcut: C:\Documents and Settings\Jean-Luc.Lehmann\Desktop\QualiPHY.Ink<br>Create shortcut: C:\Documents and Settings\Jean-Luc.Lehmann\Desktop\X-Replay.Ink<br>Create shortcut: C:\Documents and Settings\Jean-Luc.Lehmann\Start Menu\Program<br>Create shortcut: C:\Documents and Settings\Jean-Luc.Lehmann\Start Menu\Programs<br>Create shortcut: C:\Documents and Settings\Jean-Luc.Lehmann\Start Menu\Program<br>Create shortcut: C:\Documents and Settings\Jean-Luc.Lehmann\Start Menu\Program<br>Execute: "C:\Program Files\LeCroy\XReplay.exe" /Register<br>Created uninstaller: C:\Program Files\LeCroy\XReplay.exe" /Register<br>Output folder: C:\Program Files\LeCroy\XReplay<br>Extract: QualiPHYENETManual.pdf |        |  |  |  |
| Nu | lsoft Install System v2.21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Cancel |  |  |  |

• Once finished, you can launch the application and/or display the manual. Un-check a box if you don't want the corresponding automatic action performed, and then click the **Finish** button.



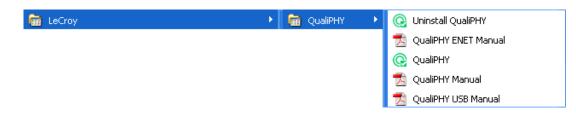
**Note for X-Replay users:** If an application using X-Replay executable was previously installed, it is overwritten (upgrading the X-Replay version). X-Replay is the underlying core application of QualiPHY.

### **INSTALLATION DIRECTORIES**

This section lists all objects created by the installation process.



- A shortcut is created on the desktop:
- A QualiPHY group is created under **All Programs**  $\rightarrow$  **LeCroy**.



It contains shortcuts for launching QualiPHY, uninstalling the application, or opening manuals.

• All application files are installed under C:\Program Files\LeCroy\XReplay.



# **COMPLIANCE TEST – MODE OF OPERATION**

In general, serial data waveforms, primarily LVDS (Low Voltage Differential Signals, data or clock), need to be measured so proper design can be verified or debugged. To capture signals and preserve signal frequency content, it is essential to use active differential probes, and to capture millions of samples (data points) for each test to perform Electrical Signal Integrity measurements. These test conditions are often dictated by the serial data standard in question. In the case of serial data standards under development, the definition of measurement methods and algorithms is undertaken by committee members actively participating in the standards.

- A typical user setup has the oscilloscope in **Compliance Mode** while performing the following test types:
  - Amplitude Tests differential or single-ended voltage, amplitude, etc.
  - Timing Tests rise and fall times, inter- and intra-line skew, jitter, etc.
  - Frequency Domain Tests differential or single-ended return loss

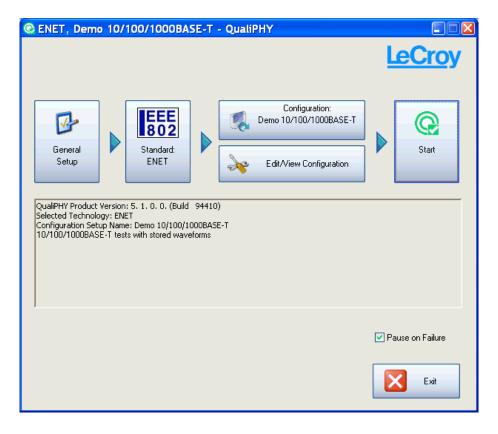
You can display several signals in eye mode (to minimize display size and maximize information display). Typically, users set up a trigger on the clock signal, perform single-shot acquisitions, and then measure timing between specific events. Sometimes, you may be unsure of what you are looking for, or events may be widely separated in time. So, long capture times (and long memory) are important for system analysis.

### An Example Using Ethernet (QPHY-ENET)

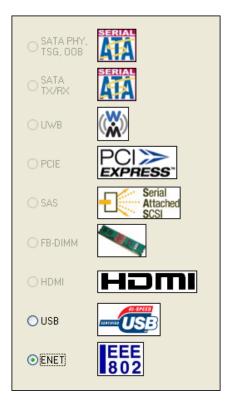
Assuming that the QPHY-ENET automated test solution (Option Key QPHY-ENET) has been installed on the oscilloscope and the QualiPHY installation (on the oscilloscope by default or a host computer) is complete:

Note: For demonstrative purposes, some interfaces used in this example differ from the QPHY-ENET interfaces.

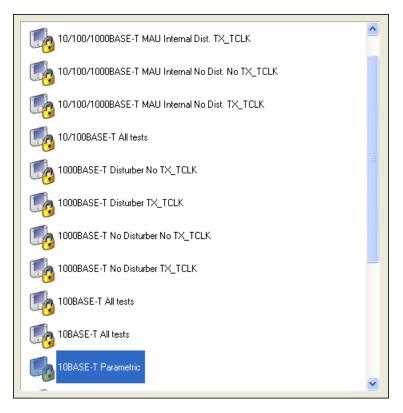
 Double-click the QualiPHY desktop icon (or select Analysis → QualiPHY... on the oscilloscope menu) to launch the QualiPHY automated test solution. There is a brief splash screen and then the main window with a standard selected by default (here Ethernet).



2. Click the **Standard** button and then select **ENET** from the **Standard** menu for tests to be performed on a real-time oscilloscope.



3. Click the **Configuration** button and select the appropriate configuration. A configuration is a pre-defined selection of the tests to be executed during a session.





- 4. Ensure the oscilloscope is connected and ready to collect data from the device under test (DUT).
- 5. If QualiPHY is being run from a computer, click the **General Setup** button and then the **Connection** tab to establish communication with the oscilloscope. If QualiPHY is running on the measuring oscilloscope, you can skip ahead to step 10 of this manual. Otherwise, use the following steps.
- 6. From the Connection tab (General Setup button) click the Scope Selector button, and then the Add button.

| Device           | Status | Bus | Address       | Soft Rev              | S/N         |             |        |
|------------------|--------|-----|---------------|-----------------------|-------------|-------------|--------|
| <b>.</b>         | Dead   | Net | 127.0.0.1     |                       |             |             | OK     |
| 🤝 WR44XI         | Alive  | Net | 172.29.12.110 | 0.5.0.0 (build 87756) |             |             | L      |
| <b>I</b> WR6030A | Alive  | Net | 172.29.12.129 | 0.5.0.1 (build 88969) |             |             | Cancel |
| Add              | Remo   | ve  | Disable       | Test Pr               | operties Us | se Selected |        |

7. Select Network, unless you are using a GPIB connection to the oscilloscope.

| Add Device 🔀                          |                            |  |  |  |
|---------------------------------------|----------------------------|--|--|--|
| How is the scope connected to the PC? |                            |  |  |  |
| GPIB                                  | GPIB (IEEE 488) connection |  |  |  |
| Network TCP/IP connection             |                            |  |  |  |
| Cancel                                |                            |  |  |  |

8. Enter a valid IP address or LeCroy serial number for the oscilloscope connection. When QualiPHY is installed on the oscilloscope, the default IP address is 127.0.0.1. When QualiPHY is installed on a separate host computer, both the host computer and the oscilloscope must be configured in a LAN and have a valid IP address.

| Network Device Address                                                                                                                                                                                     |  |  |  |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|
| Enter network address of device. If the device uses a static address then enter<br>the IP address directly, i.e. 169.12.4.1. If the device has a DNS name then<br>enter that directly, i.e. LCRY0606P18115 |  |  |  |  |  |
| 172.29.12.101                                                                                                                                                                                              |  |  |  |  |  |
| Note: Static IP addresses should not be used to identify devices that use<br>DHCP to define their address. DHCP can cause a device to change its<br>address at any time.                                   |  |  |  |  |  |
| Note: Remote control of a networked scope uses TCP port 1861. Ensure<br>that this port is open on any firewalls between the PC and the DSO.                                                                |  |  |  |  |  |
| Note: You can use the local IP address 127.0.0.1 if this software is<br>running on the oscilloscope.                                                                                                       |  |  |  |  |  |
| OK Cancel                                                                                                                                                                                                  |  |  |  |  |  |

9. Click **OK**. When the oscilloscope is properly detected, the following window is shown. Click the **Test** button, ensure the oscilloscope status is **Alive**, and then click **OK**. To select another oscilloscope, click the corresponding line and then click on **Used Selected**.

| 2 | cope Selecto       | r      |     |               |                       |          |              | ?×     |
|---|--------------------|--------|-----|---------------|-----------------------|----------|--------------|--------|
|   | Device             | Status | Bus | Address       | Soft Rev              | S/N      |              |        |
|   | <b>(31)</b>        | Dead   | Net | 127.0.0.1     |                       |          |              | ОК     |
|   | 🐯 WR44XI           | Alive  | Net | 172.29.12.110 | 0.5.0.0 (build 87756) |          |              |        |
|   | ₩ <b>₩</b> ₩R6030A | Alive  | Net | 172.29.12.129 | 0.5.0.1 (build 88969) |          |              | Cancel |
|   | Add                | Remov  | ve  | Disable       | Test                  | operties | Use Selected |        |



10. Make sure the device under test is properly connected. Now, click the **Start** button. A **Session Info** dialog is shown to enter your name, the device under test, etc.

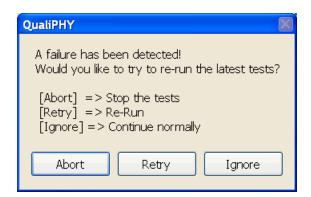
| Session Info         |          |  |  |  |  |
|----------------------|----------|--|--|--|--|
| Operator Name:       | Operator |  |  |  |  |
| Device Under Test:   | DUT      |  |  |  |  |
| Temperature (in °C): | 25       |  |  |  |  |
| Comment:             |          |  |  |  |  |
| Test Compliance      |          |  |  |  |  |
|                      |          |  |  |  |  |
|                      |          |  |  |  |  |
| ОК                   |          |  |  |  |  |

11. With the information provided as desired, click **OK**. The automated testing then starts.

| ENET, 10BASE-T                                                                                                                                       | All tests - Qua             | aliPHY                  |                                                                 |                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-------------------------|-----------------------------------------------------------------|--------------------|
|                                                                                                                                                      |                             |                         |                                                                 | <b>LeCroy</b>      |
| QualiPHY Product Version:<br>Selected Technology: EN&<br>Configuration Setup Name<br>All 10BASE-T tests<br>Oscilloscope address: 172<br>System setup | ET<br>e: 10BASE-T All tests |                         | Configuration:<br>10BASE-T All tests<br>Edit/View Configuration | b Stop             |
| Test 14.3.1.2.1 - Differer                                                                                                                           | ntial output voltage        |                         |                                                                 |                    |
| Test 14.3.1.2.1                                                                                                                                      | - Differential out          | put <del>v</del> oltage |                                                                 | ✓ Pause on Failure |
| Executing te                                                                                                                                         | est 1 of 28. Total fa       | ailures: 0.             |                                                                 | Exit               |

The **Start** button is replaced with the **Stop** button and two progress bars are shown on the bottom-left of the window. As the tests run, the top progress bar indicates individual test progress and the bottom progress bar indicates overall progress. A small animated icon appears during lengthy oscilloscope processing sequences (circled previous).

If the Pause on Failure checkbox is checked, the following message is shown whenever scripts fail.



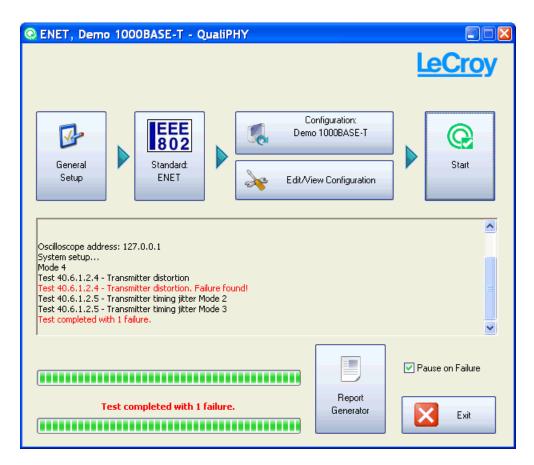
- Click the Retry button to re-run the script from the latest established point defined in the script.
- Click the Ignore button to continue with next test,
- Click the **Abort** button to stop the script.

When all tests are successfully completed, both progress bars are completely green and the message **All tests completed successfully** is shown in green between the progress bars.

| 🕲 ENET, Empty - Quali | iPHY              |       |                                               |                  |
|-----------------------|-------------------|-------|-----------------------------------------------|------------------|
|                       |                   |       |                                               | <b>LeCroy</b>    |
| General S             | ipty              | Edit. | Configuration:<br>Empty<br>/iew Configuration | Start            |
| Test comple           | eted successfully | ····· | Report<br>Generator                           | Pause on Failure |



Errors messages are shown (along with the number of failures) in red, as follows:

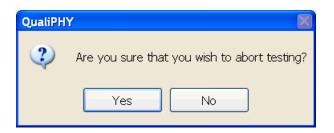


© ENET, Copy of Demo 10/100BASE-T - QualiPHY **LeCrov** Configuration: EEE 802 Copy of Demo 10/100BASE-T 6 1 (**G** Standard: Start General Setup ENET Edit/View Configuration and QualiPHY Product Version: 5, 1, 0, 0, (Build 94410) Selected Technology: ENET Configuration Setup Name: Copy of Demo 10/100BASE-T Modified version of Demo 10/100BASE-T Oscilloscope address: 127.0.0.1 System setup... No failures found, but 10 tests were not executed. Pause on Failure Report No failures found, but 10 tests were not executed. Generator × Exit 

The following error is shown when all tests are not completely executed.



Cancel the tests at any time by clicking the **Stop** button. If **Stop** is clicked while a test is running, a confirmation message is shown after the current script step is completed.



The following message is shown in red if the Yes button is clicked.

| ENET, Demo 1000BASE                                                                                                                                                                                                                          | -T - QualiPHY |                                 |                    |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------------------------|--------------------|--|
|                                                                                                                                                                                                                                              |               |                                 | LeCroy             |  |
|                                                                                                                                                                                                                                              |               | Configuration:<br>mo 1000BASE-T | Q                  |  |
| General Stand<br>Setup ENI                                                                                                                                                                                                                   |               | View Configuration              | Start              |  |
| QualiPHY Product Version: 0, 2, 0, 1, (Build 93747)<br>Selected Technology: ENET<br>Configuration Setup Name: Demo 1000BASE-T<br>1000BASE-T tests (Mode 2, 3 and 4) with stored waveforms<br>Oscilloscope address: 127.0.0.1<br>System setup |               |                                 |                    |  |
| Test aborted!                                                                                                                                                                                                                                |               |                                 | ✓ Pause on Failure |  |
| Test ab                                                                                                                                                                                                                                      | orted!        | Report<br>Generator             | Exit               |  |

After the test is completed or stopped, create a report clicking the **Report Generator** button. Based on default behavior settings, the **Report Generator** can launch automatically, be shown in a dialog window, or directly create the report.

See the **Report tab** section under **General Setup** for more report generation detail.

# MENU REFERENCE

### Launching QualiPHY

Double-click the **QualiPHY** icon on the desktop to launch the QualiPHY automated test solution. A QualiPHY splash screen is shown.



Then the QualiPHY main window is shown, a serial data standard is selected by default. The following shows the Ethernet standard in this manner.

| 🕲 ENET, 10BA                                                                  | SE-T                | Parametric -            | - Qua | liPHY |                                       |           |              |
|-------------------------------------------------------------------------------|---------------------|-------------------------|-------|-------|---------------------------------------|-----------|--------------|
|                                                                               |                     |                         |       |       |                                       | <u>Le</u> | <u>eCroy</u> |
| General                                                                       |                     | EEE<br>802              |       |       | Configuration:<br>10BASE-T Parametric |           | © Start      |
| Setup                                                                         |                     | ENET                    |       | ×     | Edit/View Configuration               |           | Statt        |
| QualiPHY Product<br>Selected Technolo<br>Configuration Setu<br>10BASE-T Param | )gy: ENB<br>up Name | ET<br>e: 10BASE-T Parar |       | )     |                                       |           |              |
|                                                                               |                     |                         |       |       |                                       | 🔽 Paus    | e on Failure |
|                                                                               |                     |                         |       |       |                                       | ×         | Exit         |

At this point you can quit the application by clicking the **Exit** button (or on the top-right close window button). When launched again the QualiPHY window remembers its position on the desktop and the last **Standard** and **Configuration** selected.

### An Alternate way to Launch QualiPHY:

You can also launch QualiPHY by selecting **Analysis**  $\rightarrow$  **QualiPHY**... on the oscilloscope menu. This sets the XStreamDSO application in the windowed mode adjusted to fit the screen. Switch between applications using the application buttons in the Windows task bar (alternately, use the **Alt + Tab** key combination). The Alt + Tab method allows for switching between applications while XStreamDSO remains in full-screen mode.

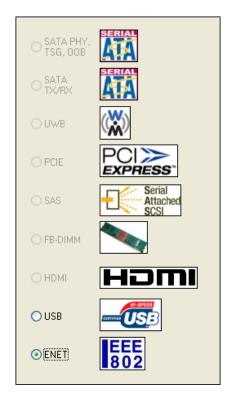


Right-clicking the application from the Windows toolbar provides the following choices:

| æ | Restore  |        |
|---|----------|--------|
|   | Move     |        |
|   | Size     |        |
| _ | Minimize |        |
|   | Maximize |        |
| × | Close    | Alt+F4 |

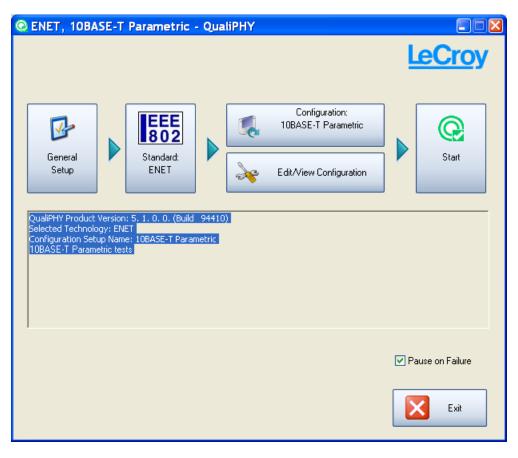
The main QualiPHY window can also be minimized using the standard close window button at the top-right of the screen.

On the main QualiPHY window, click the **Standard** button for a pop-up list. A green radio button is shown on the standard currently selected and unavailable standards are grayed out. Only one standard may be chosen for testing at a time, and in this release, only the ENET IEEE 802 and USB standards may be used.



Press the **Escape** key to close the window.

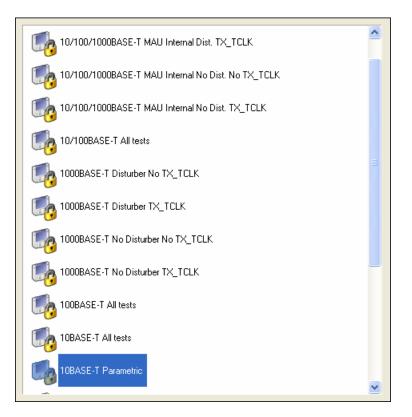
Click a standard (e.g. ENET for Ethernet). New information is shown in the log field (of the QualiPHY main screen) as follows:



Note: The font in the log window is first defined by the core application. Then, it is defined in the selected Standard script. The core application information is shown once a standard is selected. All log information can be copied using standard copy/paste functions.



Click the **Configuration** button for a pop-up configuration selection (example for ENET).



The currently-selected configuration is highlighted. Use the vertical scroll bar on the right to view the list of all available configurations.

Each configuration enables a pre-defined subset of all the tests available for a given standard. A number of predefined configurations are provided with each standard. There is usually a full test configuration and then subsets allowing the test of specific characteristics. Creating configurations can be done (please see the **Editing Configuration** section on page 46 for more information).

Press the **Escape** key to close the configuration selection window.

The following example shows the new log display when the third ENET configuration is chosen.

| © ENET, 10/100/1       | 1000BASE-T MAL                         | Internal No Dist. | No TX_TCLK -                                     | QualiPHY 🔳 🗆 🔀   |
|------------------------|----------------------------------------|-------------------|--------------------------------------------------|------------------|
|                        |                                        |                   |                                                  | LeCroy           |
| Selected Technology: E | ime: 10/100/1000BASE-1<br>T tests<br>J | Edit/Vie          | ofiguration:<br>DOBASE-T MAU<br>Dist. No TX_TCLK | ► Start          |
| ,                      |                                        |                   | [                                                | Pause on Failure |



### **General Setup**

Using **General Setup**, ensure the oscilloscope is connected and ready to collect data from the device under test (DUT). Also, set the default behavior of the application by making configurations on the **Connection** (initially shown), **Session Info**, **Report**, **Advanced**, and **About** tabs.

Click General Setup button.



### CONNECTION TAB

The **Connection** tab is initially shown. This screen enables the establishment of communication with an oscilloscope. The oscilloscope address can be entered directly. The last address is entered by default - 127.0.0.1 corresponds to the local IP address.

| 0 | QualiPHY: G                                                                                                     | eneral Setu                                                                                                                                                                                                                         | Р                                                                                                                                               |                                                                                                  |                                                                   |          |                |  |
|---|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|----------|----------------|--|
|   | Connection                                                                                                      | Session Info                                                                                                                                                                                                                        | Report                                                                                                                                          | Advanced                                                                                         | About                                                             | ]        |                |  |
|   | the IP addr<br>enter that of<br>Address of<br>DHCP to d<br>address at<br>Note: Rem<br>that this po<br>Note: You | ork address of de<br>ress directly, i.e. 1<br>directly, i.e. LCRY<br>the oscilloscope:<br>c IP addresses st<br>efine their addres<br>any time.<br>ote control of a n<br>rit is open on any<br>can use the loca<br>the oscilloscope. | 69.12.4.1. If the<br>0606P18115<br>127.0.0.1<br>nould not be used<br>is. DHCP can can<br>etworked scope<br>firewalls betwee<br>IIP address 127. | device has a DN<br>d to identify devic<br>use a device to<br>uses TCP port 1<br>n the PC and the | NS name then<br>ces that use<br>change its<br>861. Ensure<br>DSO. | 97<br>97 | Scope Selector |  |
|   |                                                                                                                 |                                                                                                                                                                                                                                     |                                                                                                                                                 |                                                                                                  |                                                                   |          | Close          |  |

- If QualiPHY is running on the measuring oscilloscope, check the address is 127.0.0.1 and click Close.
- If QualiPHY is running on a host computer, enter the oscilloscope's **IP address**. For further information on how to set up a connection with an oscilloscope, follow the steps in the **Scope Selector** section of this manual.

## SESSION INFO TAB

The **Session Info** tab allows entering default information for the session (Operator Name, DUT, Temperature and Comment).

The information can be changed in the pop-up dialog shown when the **Start** button is clicked on the main screen. Disable the pop-up dialog by checking the checkbox (circled as follows).

| QualiPHY: O                 | ieneral Setu                                                     | Р                           |          |       | X     |
|-----------------------------|------------------------------------------------------------------|-----------------------------|----------|-------|-------|
| Connection                  | Session Info                                                     | Report                      | Advanced | About |       |
| Disable<br>This op<br>shown | session informatio<br>tion will remove th<br>when the test start | n dialog<br>e dialog<br>ts. |          | 1     |       |
| Operat                      | or Name:                                                         |                             |          |       |       |
| Device                      | e Under Test:                                                    |                             |          |       |       |
| Tempe                       | erature (in °C):                                                 | 0                           |          |       |       |
| Comm                        | ent:                                                             |                             |          |       |       |
|                             |                                                                  |                             |          |       |       |
|                             |                                                                  |                             |          |       | Close |



## REPORT TAB

The Report tab allows setting the default behavior of the Report Generator.

The following behaviors are available after the tests are finished:

- Ask to generate a report
- Never generate a report
- Always generate a report (overwriting the previous report)

The default report file type can be selected between XML, HTML or PDF.

The default output file name and location can also be changed using the **Browse...** button.

A default style sheet is provided in the package. Enabling the selection of another style sheet in the Report Generator is done by checking the **Allow style sheet selection in Report Generator** checkbox.

| QualiPHY: G                 | ieneral Setu                                                                | ıp                 |           |              |                     | X |
|-----------------------------|-----------------------------------------------------------------------------|--------------------|-----------|--------------|---------------------|---|
| Connection                  | Session Info                                                                | Report             | Advanced  | About        |                     |   |
| ⊙ Ask I<br>○ Neve<br>○ Alwa | g behavior<br>to generate a repr<br>er generate a repr<br>ys generate a rep |                    | verwrite) |              | Report<br>Generator |   |
| Output                      | ate XML<br>file name:<br>oram Files\LeCro                                   | ◯ Create HT        |           | ) Create PDF | Browse              |   |
|                             |                                                                             | ection in Report G |           |              |                     |   |
|                             |                                                                             |                    |           |              | Close               |   |

The script is actually contained in a database. All values and pass/fail statuses of the test results are stored in the database. The script also saves screen-shot images in the database. The size of the screen-shot is determined by the size of the XStreamDSO window. For the best resolution (and largest image), the XStreamDSO application must be set to full screen.

Note: Reduce report image size by selecting File  $\rightarrow$  Windowed in the XStreamDSO application, then resize the XStreamDSO window.

Warning: If the XStreamDSO application is minimized, an icon substitutes the trace screen-shot in the report.

Create a report for the current session by clicking the **Report Generator** button. The following screen is shown.

| Report Generator                                         |        |
|----------------------------------------------------------|--------|
| ⊙ Create XML 🔿 Create HTML 🔿 Create PDF                  |        |
| Output file name:                                        |        |
| C:\Program Files\LeCroy\XReplay\Reports\LeCroyReport.xml | Browse |
|                                                          |        |
|                                                          |        |
|                                                          |        |
| Create Cancel                                            |        |
|                                                          |        |

This screen allows the changing of a single report file type. The output file name and location can also be modified for the report from this location.

- If the **Ask to generate a report after tests** radio button option is selected as the default behavior (on the main Report tab, previous), the same window is shown after the tests are complete or aborted.
- If the Allow style sheet selection in Report Generator checkbox is checked (on the main Report tab, previous), a selection field for the style sheet is displayed in the Report Generator screen as follows:

| Report Generator                                                 |        |
|------------------------------------------------------------------|--------|
| ◯ Create XML 		 ⓒ Create HTML 		 ◯ Create PDF                    |        |
| Output file name:                                                |        |
| C:\Program Files\LeCroy\XReplay\Reports\LeCroyReport.htm         | Browse |
|                                                                  |        |
| Style sheet:                                                     |        |
| C:\Program Files\LeCroy\XReplay\StyleSheets\QualiPHY_Report.xslt | Browse |
|                                                                  |        |
|                                                                  |        |
| Create Cancel                                                    |        |
|                                                                  |        |
|                                                                  |        |

Click the Browse... button (or use the text field) to locate another style sheet.

Any change done to this window only applies to the one report instance. After the report is run, the settings revert to the default as defined on the **Report** tab of the **General Setup** (shown previous).

The style sheet also reverts to the one defined in the selected standard database as it is dedicated to the standard as opposed to the other general settings.



When XML is selected, the style sheet choice is not available (not necessary for the XML format).

| Report Generator                                                                 |        |
|----------------------------------------------------------------------------------|--------|
| ⊙ Create XML 🛛 Create HTML 🔵 Create PDF                                          |        |
| Output file name:<br>C:\Program Files\LeCroy\XReplay\Reports\LeCroyReport.xml    | Browse |
|                                                                                  |        |
| Style sheet:<br>C:\Program Files\LeCroy\XReplay\StyleSheets\QualiPHY_Report.xslt | Browse |
| Create Cancel                                                                    | ]      |
|                                                                                  |        |

Note: XML is the basic report format. HTML is created by using the XML data and applying it to the style sheet. A PDF is created by printing the HTML report.

Generate the report by clicking the **Create** button.

If a report with the same file name already exists, a confirmation message is shown.

| QualiPH | Y                                                                                  |
|---------|------------------------------------------------------------------------------------|
| 1       | The file 'C:\Program Files\LeCroy\XReplay\Reports\LeCroyReport.xml' already exist. |
|         | Do you want to replace the existing file?                                          |
|         |                                                                                    |
|         | Yes No                                                                             |

**WARNING:** If the **Always generate a report after tests. (Overwrite)** option is selected as a default behavior (on the main Report tab, previous), this window is not shown, and any existing file is overwritten.

If there is no valid session, the following failure message is shown.



With a valid session, the application proceeds with report creation.

During report generation, a processing message is shown.

| Report Generator                                                                   |        |  |  |  |  |
|------------------------------------------------------------------------------------|--------|--|--|--|--|
| Processing the report please wait                                                  |        |  |  |  |  |
| The time needed depends of the computer speed and report size. (Up to 60 seconds.) |        |  |  |  |  |
| Output file name:                                                                  |        |  |  |  |  |
| Style sheet:<br>C:\Program Files\LeCroy\XReplay\StyleSheets\QualiPHY_Report.xslt   | Browse |  |  |  |  |
| Create Cancel                                                                      |        |  |  |  |  |
|                                                                                    |        |  |  |  |  |

As the generation of a PDF report can take considerably longer to produce (over a minute), an animated window appears during processing of the HTML to PDF conversion.

The PDF report advantage is being a single file with embedded information. The PDF document can be magnified, but elements in the document do not change size relative to one another. The HTML report is viewed in a web browser and requires external files saved in a specific folder.

The report file is saved by default in the C:\Program Files\LeCroy\XReplay\Reports folder. Attached files are stored in a sub-directory of this folder. The sub-directory name uses the following convention:

#### <report file name>\_<report file extension>\_files

When prompted to overwrite a report, selecting **Yes** also removes the corresponding sub-directory before creating the new report.

Once the report is created, QualiPHY asks to open it. The report can always be opened later from the output file specified (shown previous), unless you create another report with the same name (and overwrite it). It is typical to view the report, and then save it from the viewer program with a meaningful name, in a more convenient directory.



with a JPEG file containing your logo (with the same name). The maximum recommended size of the logo image is 250 x 100 pixels @ 72 pixel/inch, 16.7 Million colors, 24 bits.



When opened, the report is shown in the corresponding appropriate viewer application (i.e. an internet browser for an HTML report).



# **ENET Test Report**



# Overall result: Pass

| Comment:               |                                     |
|------------------------|-------------------------------------|
| Time of test:          | 10/01/2007 15:42:54                 |
| Operator:              |                                     |
| Temperature            | 0° C                                |
| Configuration in use:  | Demo 10/100/1000BASE-T              |
| Limits in use:         | Default                             |
| Standard in use:       | ENET                                |
| Oscilloscope Name:     | LECROY-NB.lecroy.net Model: WR204XI |
| Oscilloscope Serial #: | WR000001                            |
| Computer:              | LECROY-NB                           |
|                        |                                     |

5.1.2.8 (Build 96481)

5.1.0.3 (Build 97795)

0.1.2.2

1.0

Oscilloscope firmware version: QualiPHY core version: QualiPHY script version: Stylesheet version:

### **Summary Table**

#### [Hide Table]

| Pass | Test                                         | Measurement                                                 | Current Value | Test Criteria       |
|------|----------------------------------------------|-------------------------------------------------------------|---------------|---------------------|
| ~    | 14.3.1.2.1                                   | Peak Differential Output Voltage 2.52                       |               | 2.20 V < n < 2.80 V |
| ~    | 14.3.1.2.1                                   | 1.2.1 Differential Output Voltage Harmonics 28.9 dB         |               | >= 27.0 dB          |
| ~    | 14.3.1.2.3                                   | 8BT Output Timing Jitter 100 ohm without TPM Internal MAU   | 9.647 ns      | <= 22.000 ns        |
| ~    | 14.3.1.2.3                                   | 8.5BT Output Timing Jitter 100 ohm without TPM Internal MAU | 9.603 ns      | <= 22.000 ns        |
| ~    | 14.3.1.2.3                                   | 8BT Output Timing Jitter 100 ohm with TPM Internal MAU      | 5.925 ns      | <= 22.000 ns        |
| /    | 14.3.1.2.3                                   | 8.5BT Output Timing Jitter 100 ohm with TPM Internal MAU    | 5.038 ns      | <= 22.000 ns        |
| ~    | 14.3.1.2.1                                   | TP IDL 100 ohm without TPM (Head)                           | AllPass       | AllPass             |
| ~    | 14.3.1.2.1 TP_IDL 100 ohm without TPM (Tail) |                                                             | AllPass       | AllPass             |
| ~    | 14.3.1.2.1                                   | 14.3.1.2.1 TP_IDL Load 1 without TPM (Head)                 |               | AllPass             |
|      | 14.3.1.2.1                                   | 14.3.1.2.1 TP_IDL_Load 1 without TPM (Tail)                 |               | AllPass             |
| ~    | 14.3.1.2.1 TP_IDL Load 2 without TPM (Head)  |                                                             | AllPass       | AllPass             |
| ~    | 14.3.1.2.1                                   | TP_IDL Load 2 without TPM (Tail)                            | AllPass       | AllPass             |
| ~    | 14.3.1.2.1 TP_IDL 100 ohm with TPM (Head)    |                                                             | AllPass       | AllPass             |
| ~    | 14.3.1.2.1                                   | 14.3.1.2.1 TP_IDL 100 ohm with TPM (Tail)                   |               | AllPass             |
| ~    | 14.3.1.2.1                                   | TP_IDL Load 1 with TPM (Head)                               | AllPass       | AllPass             |
| ~    | 14.3.1.2.1                                   | TP IDL Load 1 with TPM (Tail)                               | AllPass       | AllPass             |

# ADVANCED TAB

The Advanced tab allows access to advanced features.

| QualiPH | Y: G | eneral Setu  | р      |                  |       | ×     |
|---------|------|--------------|--------|------------------|-------|-------|
| Connec  | tion | Session Info | Report | Advanced         | About |       |
|         |      |              |        |                  |       |       |
|         |      |              |        |                  |       |       |
|         |      |              |        | (T               | 7     |       |
|         |      |              |        | 2                |       |       |
|         |      |              |        | Switch to Expert |       |       |
|         |      |              |        | Mode (X-Replay)  |       |       |
|         |      |              |        |                  |       |       |
|         |      |              |        |                  |       |       |
|         |      |              |        |                  |       |       |
|         |      |              |        |                  |       |       |
|         |      |              |        |                  |       |       |
|         |      |              |        |                  |       | Close |
|         |      |              |        |                  |       |       |

Click the Switch to Expert Mode button to close the QualiPHY screens and open the X-Replay screen:

| M C:\Program Files\LeCroy\XReplay\ENET\E                                                                                                            | NET.IRT - X-Replay                    |              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|--------------|
| File Edit Sequence ResultLog Report (                                                                                                               | Dptions Devices View Help             |              |
| @ 2 ♥ ♥ N > Q ■ P                                                                                                                                   |                                       |              |
| <ul> <li>□ □ → Ethernet tests</li> <li>- ☆ DemoMode: No</li> <li>□ □ ↓ → Check scope model, options, fi</li> <li>□ □ ↓ → Real time scope</li> </ul> |                                       |              |
| - 🗹 💭 ENET option                                                                                                                                   | Operation Arg0                        | Arg1         |
|                                                                                                                                                     | Set QualiPHY_Script_Version           | 1.1.23       |
| 🖻 🔽 💭 Tests                                                                                                                                         | & LogVariable QualiPHY_Script_Version |              |
| 🖻 🔽 💭 Setup Sources                                                                                                                                 | <new step=""></new>                   |              |
|                                                                                                                                                     |                                       |              |
| Real Time Sources                                                                                                                                   |                                       |              |
|                                                                                                                                                     |                                       |              |
| □ □ □ 10BASE-T                                                                                                                                      |                                       |              |
| MAUType: Internal                                                                                                                                   |                                       |              |
| e                                                                                                                                                   |                                       |              |
|                                                                                                                                                     |                                       | >            |
| Operator   DUT   Set   Time   Te                                                                                                                    | Timestamp Command Explanation         | ^            |
| 🛤 Def 14: 0.0                                                                                                                                       | 🛱 2007/ TestFinished                  | _            |
| 🖼 Def 16: 0.0                                                                                                                                       |                                       | <b>N</b>     |
| <                                                                                                                                                   |                                       | <u>&gt;</u>  |
| Ethernet tests\                                                                                                                                     | Mode: Runtim Set: Default WR64XI or   | n 172.29.: 🛒 |

Return to the QualiPHY window by clicking the **QualiPHY icon** in the toolbar (located in the leftmost position). Moving the mouse over the **QualiPHY icon** shows text indicating **Switch to QualiPHY Wizard mode.** 



# ABOUT TAB

The About tab gives information on the QualiPHY version and build as well as LeCroy contact information:

| QualiPHY: C | ieneral Setu                                                                                                | р                             |          |       | E             |
|-------------|-------------------------------------------------------------------------------------------------------------|-------------------------------|----------|-------|---------------|
| Connection  | Session Info                                                                                                | Report                        | Advanced | About |               |
|             | QualiPHY (TM)<br>A software test I<br>LeCroy Oscilloso<br>Product Version<br>Build 99744<br>Copyright © 199 | 5. 2. 0. 4<br>6-2005 LeCroy S | Ģ        |       | YY<br>roy.com |
|             |                                                                                                             |                               |          |       | Close         |

Exit General Setup by clicking the Close button (or the top-right close window button).

## **Edit/View Configuration**

Use **Edit/View Configuration** to view the current configuration settings and edit configurations. Click the **Edit/View Configuration** button.



The Edit/View Configuration screen is shown and made up of the **Configuration** (initially shown), **Test Selector**, **Variable Setup**, and **Limits** tabs.

## **CONFIGURATION TAB**

The Configuration tab is shown initially after clicking the Edit/View Configuration button.

This tab opens with the current configuration highlighted. Changes can be made from this screen. When a new configuration is selected, a corresponding description is shown on the lower field.

| QualiPHY: Edit/View Configuration                                                                    | ×          |
|------------------------------------------------------------------------------------------------------|------------|
| Configuration Test Selector Variable Setup Limits                                                    |            |
| 10/100/1000BASE-T MAU Internal Dist. No TX_TCLK                                                      | Start Edit |
| 10/100/1000BASE-T MAU Internal Dist. TX_TCLK      10/100/1000BASE-T MAU Internal No Dist. No TX_TCLK | Сору       |
| 10/100/1000BASE-T MAU Internal No Dist. TX_TCLK                                                      |            |
| 10/100BASE-T All tests                                                                               | Rename     |
| 1000BASE-T Disturber No TX_TCLK                                                                      |            |
| 1000BASE-T Disturber TX_TCLK                                                                         | Delete     |
| All 10/100/1000BASE-T tests<br>10BASE-T Internal MAU<br>1000BASE-T no Disturber, no TX_TCLK          |            |
|                                                                                                      | Close      |

The locked configurations are supplied by LeCroy and cannot be modified. It is not possible to delete them or modify their content. Change existing (locked) configurations by making a copy and saving it with a new name. Once a locked configuration is saved with a new name, it can be edited, copied again, renamed and deleted. Use the other tabs of the **Edit/View Configuration** window to modify content. The following can be changed:

- Tests to be run
- Configuration variables state
- Limit sets



After clicking the **Copy** button, a proposed name is provided and can be changed.

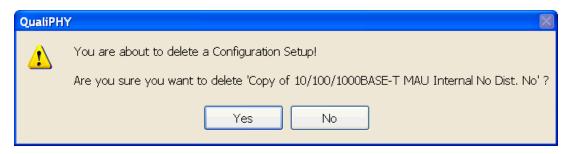
| HY: Configuration Copy 🛛 🛛                                           |
|----------------------------------------------------------------------|
|                                                                      |
| ne:                                                                  |
| py of 10/100/1000BASE-T MAU Internal No Dist.                        |
| scription:                                                           |
| dified version of 10/100/1000BASE-T MAU Internal No Dist. No TX_TCLK |
|                                                                      |
|                                                                      |
|                                                                      |
|                                                                      |
|                                                                      |
|                                                                      |
|                                                                      |
|                                                                      |
|                                                                      |
| OK Cancel                                                            |
|                                                                      |
| OK Cancel                                                            |

Click **OK.** The copy appears highlighted on the list.

| QualiPHY: Edit/View Configuration                                      |            |
|------------------------------------------------------------------------|------------|
| Configuration Test Selector Variable Setup Limits                      |            |
| 1000BASE-T No Disturber No TX_TCLK                                     | Start Edit |
| 1000BASE-T No Disturber TX_TCLK                                        |            |
| 100BASE-T All tests                                                    | Сору       |
| 10BASE-T All tests                                                     |            |
| 10BASE-T Parametric                                                    | Rename     |
| 10BASE-T Template                                                      |            |
| Copy of 10/100/1000BASE-T MAU Internal No Dist. No                     | Delete     |
| Modified version of 10/100/1000BASE-T MAU Internal No Dist. No TX_TCLK |            |
|                                                                        |            |
|                                                                        |            |
|                                                                        |            |
|                                                                        | Close      |

The new copied configuration is shown with a basic description. The **Start Edit**, **Rename**, and **Delete** buttons are active for the new configuration.

When the Delete button is clicked after selecting a non-locked configuration, the following pop-up appears:



Non-locked configurations can be renamed or have descriptions modified by clicking the Rename button.

| QualiPHY: Configuration Rename                                                         | X |
|----------------------------------------------------------------------------------------|---|
|                                                                                        |   |
| Name:<br>Copy of 10/100/1000BASE-T MAU Internal No Dist.                               |   |
|                                                                                        |   |
| Description:<br>Modified version of 10/100/1000BASE-T MAU Internal No Dist. No TX_TCLK |   |
| Modified version of the root booddage 1 MAD Internal No Dist. NO TA_TCER               |   |
|                                                                                        |   |
|                                                                                        |   |
|                                                                                        |   |
|                                                                                        |   |
|                                                                                        |   |
|                                                                                        |   |
|                                                                                        |   |
|                                                                                        |   |
|                                                                                        |   |
| OK Cancel                                                                              |   |
|                                                                                        |   |

Note: The selected configuration copy still cannot be edited, as all information is gray under Test Selector and Variable Setup tabs.

For more information on the use of the Start Edit button, see the Editing Configuration section of this manual.



# TEST SELECTOR TAB

The **Test Selector** tab determines which tests are to be executed by placing a check mark in the box to the left of the test name. By default, only those tests necessary to generate a compliance test report are pre-checked. All other tests are either informational or do not apply to the specific test setup.

| QualiPHY: E   | dit/View Co       | nfiguration                |       |
|---------------|-------------------|----------------------------|-------|
| Configuration | Test Selector     | Variable Setup             |       |
|               | 10BASE-T          |                            |       |
|               | 100 Oh            | m load                     |       |
|               | ····· 🗸           | Peak Differential Voltage  |       |
|               |                   | Harmonics                  |       |
|               | ····· 🔽           | Common mode output voltage |       |
|               | □<br>□<br>□       | Dutput Timing Jitter       |       |
|               |                   | 8 BT                       |       |
|               |                   | 8.5 BT                     |       |
|               | :<br>             | Dutput Timing Jitter       |       |
| There is no d | escription of the | selected test group.       |       |
|               |                   |                            |       |
|               |                   |                            |       |
|               |                   |                            |       |
|               |                   |                            | Close |

Click a test to view its description in the lower text field.

| QualiPHY: Edit/View Configuration                                                                                                                                                                   |   | $\mathbf{X}$ |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|--------------|
| Configuration Test Selector Variable Setup Limits                                                                                                                                                   |   |              |
| 🖳 🔽 10BASE-T                                                                                                                                                                                        | ^ |              |
| □ 100 Ohm load                                                                                                                                                                                      |   |              |
| Peak Differential Voltage                                                                                                                                                                           |   |              |
| Harmonics                                                                                                                                                                                           |   |              |
| Common mode output voltage                                                                                                                                                                          |   |              |
| Uutput Timing Jitter                                                                                                                                                                                |   |              |
| 🔽 8 BT                                                                                                                                                                                              |   |              |
| 8.5 BT                                                                                                                                                                                              |   |              |
| Output Timing Jitter                                                                                                                                                                                | ~ |              |
| 14.3.1.2.1 Differential output voltage<br>The peak differential voltage on the TD circuit when terminated with a 100 Ohm resistive load shall be between<br>2.2 V and 2.8 V for all data sequences. |   |              |
| Close                                                                                                                                                                                               | e |              |

If the selected configuration is not in edit mode, the test tree appears in gray. Returning to this tab automatically selects the first item on the tree.



# VARIABLE SETUP TAB

The **Variable Setup** tab controls values of configuration variables. For example, MAU type for 10BASE-T testing, disturber and TX\_TCLK present for Ethernet 1000 BASE-T testing.

| QualiPHY: Edit/View Configuration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| Configuration Test Selector Variable Setup Limits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                   |
| Image: Second | Edit Variable<br>Reset to Default |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Close                             |

| QualiPHY: Edit/View Configuration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ×                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| Configuration Test Selector Variable Setup Limits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                   |
| Image: Constraint of the second se | Edit Variable<br>Reset to Default |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Close                             |

Click a variable to view its description in the lower text field.

If the selected configuration is not in edit mode, the test tree appears in gray. Returning to this tab automatically selects the first item on the tree.



# LIMITS TAB

The Limits tab shows the limit set used by the currently selected configuration.

| QualiPHY: Edit/View (       | onfiguration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Configuration Test Selector | Variable Setup Limits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                             | Limits Set in use for the selected Configuration:<br>Default<br>Limits controls the tolerance applied to a test<br>measurement.<br>The purpose of limits sets is to change the tolerance<br>applied to one or more measurements.<br>This way, you can apply different tolerances depending<br>on your configuration.<br>Example: you may want to apply different tolerances<br>when you are testing your device at 1.5 or 3.0 GHz.<br>Or you may want to use more strict tolerances.<br>To do so, you can create a custom Limits Set using<br>Limits Manager. |
|                             | Close                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

The limits set provided is locked and cannot be modified. However, limit sets can be copied, renamed, and then edited for use in the tests. Make changes to the limits set by clicking the **Limits Manager** button. See the **Managing Limits** section of this manual for more information.

| QualiPHY: Edit/View Configuration                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                         | X                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Configuration Test Selector Variable Setup                                                                                                           | Limits                                                                                                                                                                                                                                                                                                                                                                                  |                       |
| measurement.<br>The purpose of I<br>applied to one o<br>This way, you ca<br>on your configur<br>Example: you ma<br>when you are te<br>Or you may wan | Limits Set in use for the selected Configuration<br>Gen1i<br>Gen2i<br>are tolerance applied to a test<br>imits sets is to change the tolerance<br>in more measurements.<br>an apply different tolerances depending<br>ation.<br>ay want to apply different tolerances.<br>sting your device at 1.5 or 3.0 GHz.<br>to use more strict tolerances.<br>an create a custom Limits Set using | on:<br>Limits Manager |
|                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                         | Close                 |



## Editing Configuration (on Non-Locked, Configuration Copies)

Now, under the **Configuration** tab, select a non-locked configuration. Notice how the buttons are made active since we're working on configuration copy. Click **Start Edit** to enter Edit mode.

| QualiPHY: Edit/View Configuration                                      |           |
|------------------------------------------------------------------------|-----------|
| Configuration Test Selector Variable Setup Limits                      |           |
|                                                                        |           |
| 1000BASE-T No Disturber No TX_TCLK                                     | Stop Edit |
| 1000BASE-T No Disturber TX_TCLK                                        |           |
| 100BASE-T All tests                                                    | Сору      |
| 10BASE-T All tests                                                     |           |
| 10BASE-T Parametric                                                    | Rename    |
| 10BASE-T Template                                                      |           |
| Copy of 10/100/1000BASE-T MAU Internal No Dist. No                     | Delete    |
|                                                                        |           |
| Modified version of 10/100/1000BASE-T MAU Internal No Dist. No TX_TCLK |           |
|                                                                        | Close     |

The **Start Edit** button toggles and becomes the **Stop Edit** button. The other configurations and buttons are deactivated by the system.

WARNING: At this point, all modifications under Test Selector, Variable Setup and Limits tab are immediately saved. To be safe, make a new copy of the configuration BEFORE starting to edit. Click the Stop Edit or Close buttons to quit edit mode.

While in edit mode, information under the **Test Selector** and **Variable Setup** tabs active (not gray anymore)\_and can be modified.

| QualiPHY: Edit/View Configuration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| Configuration Test Selector Variable Setup Limits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |       |
| □       IOBASE-T         □       IOD Ohm load         □       IOD Ohm load         □       IOD Ohm load         IOD Ohm load       IOD Ohm l |       |
| 8.5 BT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ~     |
| There is no description of the selected test group.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Close |

Click a box to un-check or check it.

# PLEASE NOTE THE FOLLOWING:

- Un-checked **Tests** are not executed.
- Un-checked **Groups** (and all tests in the group) are not executed.



Double-clicking a variable on the **Variable Setup** tab opens a window with a drop-down list. Alternately, select a variable and click the **Edit Variable** button.

Configuration variables are shown with gear icons to their left. Double-click a variable to edit and change its value. When a configuration variable is selected, a description of its function is shown in the text box at the bottom of the screen.

Again, variables can only be edited when working on a copied configuration file.

| QualiPHY: Edit/View Configuration                                                                                                 | ×                                 |
|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| Configuration Test Selector Variable Setup Limits                                                                                 |                                   |
| Specify the type of product undet<br>Filenames (if run<br>Specify the type of product undet<br>hard drive (HDD), optical drive (o | Edit Variable<br>Reset to Default |
|                                                                                                                                   | Close                             |

The **Reset to Default** button sets the variable back to it's default value (hard-coded in the script). When variable group folders are selected, the **Edit Variable** and **Reset to Default** buttons are deactivated.

If the selected variable only has two associated choices/outcomes, click the corresponding button on the prompt.

| QualiPHY: Edit/View Configuration                                                                                                                                                                                                                                                                    | ×                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| Configuration Test Selector Variable Setup Limits                                                                                                                                                                                                                                                    |                                   |
| SATAii IL Phy tests         Automate the SASTracer: No         Product Type: HDD         Save waveforms: Yes         Soft         Select an entry in the list         To automate the SASTracer to assist in the data acquisition set this vanta wave         Wa         File         No         Yes | Edit Variable<br>Reset to Default |
|                                                                                                                                                                                                                                                                                                      | Close                             |



### Managing Limits

Click the **Limits Manager** button, The Limits Manager screen is shown. The functionality is similar to the **Configuration** tab with original limits locked and edits can only be made on a copy.

| en 1 i 🔹 🔨 🚱                              |       | Copy Set F        | lename Set | Dele       | te Set        |   |
|-------------------------------------------|-------|-------------------|------------|------------|---------------|---|
| st of available Limits for the selected s | et    |                   |            |            |               |   |
| Name                                      | Set   | Comparison Method |            | Unit       | Grain         | ^ |
| 🚱 UnitInterval                            | Gen1i | 666.4333e-12 < n  |            | S          | 1.000000e-015 |   |
| 🚱 FrequencyLongTermStability              | Gen1i | -350 < n < 350    |            | ppm        | 1.000000e-002 |   |
| 🚱 SSCfrequency                            | Gen1i | 30e3 < n < 33e3   |            | HZ         | 1.000000e+000 |   |
| 🚱 SSCdeviation                            | Gen1i | -5000 < n < 0     |            | ppm        | 1.000000e+000 |   |
| 🚱 DifferentialOutputVoltage               | Gen1i | 0.4 < n < 0.6     |            | V          | 1.000000e-004 |   |
| 🚱 Rise/FallTime                           | Gen1i | <                 | 273e-12    | S          | 1.000000e-015 | _ |
| 🚱 UlduringOOB                             | Gen1i | 646.67e-12 < n <  |            | S          | 1.000000e-015 |   |
| 🚱 00BBurstLength                          | Gen1i | 103.4672e-9 < n < |            | S          | 1.000000e-012 |   |
| 🚱 COMINIT/COMRESETGapLe                   |       | 310.4016e-9 < n < |            | S          | 1.000000e-012 |   |
| 🚱 COMWAKEGapLength                        | Gen1i | 103.4672e-9 < n < |            | S          | 1.000000e-012 |   |
| 🚱 DifferentialSkew                        | Gen1i | <                 | 20e-12     | S          | 1.000000e-013 |   |
| 6 TJ10                                    | Gen1i | <=                | 0.30       | UI<br>     | 1.000000e-003 | ~ |
| Import Limits                             |       | Export Limits     |            | Edit Limit |               |   |
|                                           |       | Close             |            |            |               |   |

Note: Limit sets can be used by any configuration. However the limit set name must correspond to the variables used in the script.

Use the Selected Limit Set drop-down list (upper-left of the screen) to make a specific limit set selection

WARNING: At this point, all modifications under Test Selector, Variable Setup and Limits tabs are immediately saved. To be safe, make a new copy of the configuration BEFORE starting to edit.

Edit limits by copying a limit set. Select a set and click the **Copy Set** button. A pop-up window appears for name entry.

| QualiPHY: Limits Manager<br>Selected Limit Set:<br>Gen1i<br>This is a parent Set!<br>List of available Limits for the selected a                                                                                                                                                                                         | et:                                                                                    | Copy Set F                                                                       | lename Set           | Dele                                                        | te Set                                                                                                                                                                                  |          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------|-------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| Name                                                                                                                                                                                                                                                                                                                     | Set                                                                                    | Comparison Method                                                                |                      | Unit                                                        | Grain                                                                                                                                                                                   | <u>^</u> |
| <ul> <li>UnitInterval</li> <li>FrequencyLongTermStability</li> <li>SSCfrequency</li> <li>SSCdeviation</li> <li>DifferentialOutputVoltage</li> <li>Rise/FallTime</li> <li>UlduringOOB</li> <li>OOBBurstLength</li> <li>COMINIT/COMRESETGapLe</li> <li>COMWAKEGapLength</li> <li>DifferentialSkew</li> <li>TJ10</li> </ul> | Genli<br>Genli<br>Genli<br>Genli<br>Genli<br>Genli<br>Genli<br>Genli<br>Genli<br>Genli | 666.4333e-12 < n<br>-350 < n < 350<br>Limit Set<br>Name the set: test]<br>Cancel | ОК<br>20е-12<br>0.30 | S<br>ppm<br>HZ<br>S<br>S<br>S<br>S<br>S<br>S<br>S<br>UI<br> | 1.000000e-015<br>1.000000e-002<br>1.000000e+000<br>1.000000e-004<br>1.000000e-015<br>1.000000e-015<br>1.000000e-012<br>1.000000e-012<br>1.000000e-012<br>1.000000e-013<br>1.000000e-003 |          |
| Import Limit                                                                                                                                                                                                                                                                                                             |                                                                                        | Export Limits<br>Close                                                           |                      | Edit Limit                                                  |                                                                                                                                                                                         |          |



After clicking the **OK** button, the new set is shown without a lock.

| est 💌<br>रि<br>The parent Set is "Gen1i"   |              | Copy Set                     | Re      | name Set  | Delete     | e Set          |   |
|--------------------------------------------|--------------|------------------------------|---------|-----------|------------|----------------|---|
| ist of available Limits for the select     | ed set:      | Comparisor                   | Method  | Reference | Unit       | Grain          |   |
| UnitInterval                               |              | 666.4333e-                   |         | Neleience | Unit       | -1.000000e+000 |   |
| Unitinterval<br>FrequencyLongTermStability | test<br>test | -350 < n < 3                 |         |           |            | -1.000000e+000 |   |
| SSCfrequency                               | test         | -350 kin kis<br>30e3 kin kis |         |           |            | -1.000000e+000 |   |
| SSEdeviation                               | test         | -5000 < n <                  |         |           |            | -1.000000e+000 |   |
| DifferentialOutputVoltage                  | test         | 0.4 < n < 0.                 | -       |           |            | -1.000000e+000 |   |
| Rise/FallTime                              | test         | <                            | -       | 273e-12   |            | -1.000000e+000 | _ |
| UlduringOOB                                | test         | 646.67e-12                   | < n <   |           |            | -1.000000e+000 |   |
| 00BBurstLength                             | test         | 103.4672e-                   | 9 < n < |           |            | -1.000000e+000 |   |
| COMINIT/COMRESETGapL                       | e test       | 310.4016e-                   | 9 < n < |           |            | -1.000000e+000 |   |
| COMWAKEGapLength                           | test         | 103.4672e-                   | ∃ < n < |           |            | -1.000000e+000 |   |
| DifferentialSkew                           | test         | <                            |         | 20e-12    |            | -1.000000e+000 |   |
| TJ10                                       | test         | <=                           |         | 0.30      |            | -1.000000e+000 | ~ |
| Import Li                                  | mits         | Export Limits                | e       | ]         | Edit Limit |                |   |

Notice how the Rename Set, Delete Set, and Edit Limit buttons are active.

- Clicking the **Rename Set** button shows the Limit Set naming pop-up.
- The **Delete Set** button deletes the set after a pop-up warning.

| QualiPH | Y                                                                                |
|---------|----------------------------------------------------------------------------------|
| 1       | You are about to delete a Limit Set!<br>Are you sure you want to delete 'test' ? |
|         | Yes No                                                                           |

Note: The Edit Limit button only works if a limit is selected.

Edit limits by either double-clicking your selection or highlight it and click the Edit Limit button.

| 6 | ualiPHY: Limits Manager                                   |      |                                 |                      |
|---|-----------------------------------------------------------|------|---------------------------------|----------------------|
| 2 |                                                           |      |                                 |                      |
| ſ | Selected Limit Set:                                       |      |                                 |                      |
|   | test 💌                                                    | ſ    |                                 |                      |
|   |                                                           |      | Copy Set Rename                 | Set Delete Set       |
|   | The execut Cat is 9C and 9                                | l    |                                 |                      |
|   | The parent Set is "Gen1i"                                 |      |                                 |                      |
| ſ | List of available Limits for the selected                 | set: |                                 |                      |
|   | Name                                                      | Set  | Comparison Method Refe          | erence Unit Grain 🔼  |
|   | UnitInterval                                              | test | 666.4333e-12 < n                | -1.000000e+000       |
|   | FrequencyLongTermStability                                | test | -350 < n < 350                  | -1.000000e+000       |
|   | SSCfrequency                                              | test | 30e3 < n < 33e3                 | -1.000000e+000 🔳     |
|   | SSCdeviation                                              | test | -5000 < n < 0                   | -1.000000e+000       |
|   | DifferentialOutputVoltage                                 | test | 0.4 < n < 0.6                   | -1.000000e+000       |
|   |                                                           |      |                                 | 1000000 000          |
| D |                                                           |      |                                 |                      |
| _ | efine Limit                                               |      | Compare Method                  |                      |
| N | efine Limit<br>Name Set                                   |      |                                 | Reference Unit Grain |
| N | efine Limit                                               | ×    | Compare Method<br>0.4 < n < 0.6 |                      |
| N | efine Limit<br>Name Set                                   | ~    | 0.4 < n < 0.6                   | Reference Unit Grain |
| N | efine Limit<br>Name Set                                   | ×    |                                 | Reference Unit Grain |
| N | efine Limit<br>Name Set                                   | ×    | 0.4 < n < 0.6                   | Reference Unit Grain |
| N | efine Limit<br>Name Set<br>DifferentialOutputVoltage test |      | 0.4 < n < 0.6                   | Reference Unit Grain |
| N | efine Limit<br>Name Set                                   |      | 0.4 < n < 0.6                   | Reference Unit Grain |
| N | efine Limit<br>Name Set<br>DifferentialOutputVoltage test |      | 0.4 < n < 0.6                   | Reference Unit Grain |
| N | efine Limit<br>Name Set<br>DifferentialOutputVoltage test |      | 0.4 < n < 0.6                   | Reference Unit Grain |
| N | efine Limit<br>Name Set<br>DifferentialOutputVoltage test |      | 0.4 < n < 0.6                   | Reference Unit Grain |
| N | efine Limit<br>Name Set<br>DifferentialOutputVoltage test |      | 0.4 < n < 0.6                   | Reference Unit Grain |
| N | efine Limit<br>Name Set<br>DifferentialOutputVoltage test |      | 0.4 < n < 0.6                   | Reference Unit Grain |

The Name and Set fields cannot be changed and are only shown for reference.

The **Compare Method** can be selected from a drop down list and its associated values can be changed. The **Reference**, **Unit** and **Grain** fields can be specified.

Click the **OK** button to accept the edits made or the **Cancel** button to ignore them.



The Import and Export Limits buttons each open the following pop-up windows, respectively.

| Open                                          |                |                               |     |       | ? 🛛    |
|-----------------------------------------------|----------------|-------------------------------|-----|-------|--------|
| Look in:                                      | 🚞 Reports      | ~                             | G 🦻 | ▼     |        |
| D<br>Recent                                   |                |                               |     |       |        |
| Desktop                                       |                |                               |     |       |        |
| My Documents                                  |                |                               |     |       |        |
| My Computer                                   |                |                               |     |       |        |
| <b></b>                                       | File name:     | *.csv                         |     | ~     | Open   |
| My Network                                    | Files of type: | CSV (Comma Delimited) (*.csv) |     | ~     | Cancel |
|                                               |                |                               |     |       |        |
|                                               |                |                               |     |       |        |
| Save As                                       |                |                               |     |       | ?×     |
| Save As<br>Save in:                           | C Reports      | ×                             | G 💋 | : ▷   | ?×     |
|                                               | C Reports      | <b>*</b>                      | G 🦻 | : 🏓▼  | ? 🗙    |
| Save in:                                      | Reports        |                               | G 🗗 | : 📂▼  |        |
| Save in:<br>Pecent                            | Reports        |                               | 9 🗗 | : 🃂▼  |        |
| Save in:<br>Recent<br>Desktop                 | Peports        |                               | 9   | : ▶   |        |
| Save in:<br>Recent<br>Desktop<br>My Documents | File name:     |                               | 3   | : ▶*▼ | Save   |

This functionality enables Limits imported from or saved to a CSV (comma separated values) file.

#### **Scope Selector**

After clicking the **General Setup** button, click the Scope Selector button on the **Connection** tab. The **Scope Selector** screen is shown listing the devices (in the order they were entered).

| Device    | Status | Bus | Address       | Soft Rev              | S/N      |              |          |
|-----------|--------|-----|---------------|-----------------------|----------|--------------|----------|
| <b></b> ) | Dead   | Net | 127.0.0.1     |                       |          |              | ок       |
| 😻 WR44XI  | Alive  | Net | 172.29.12.110 | 0.5.0.0 (build 87756) |          |              | <u>.</u> |
| ■ WR6030A | Alive  | Net | 172.29.12.129 | 0.5.0.1 (build 88969) |          |              | Cancel   |
| Add       | Remov  | /e  | Disable       | Test Pro              | operties | Use Selected |          |

- Remove a device by selecting it and clicking the **Remove** button.
- Enable a device by selecting it and clicking the **Use Selected** button. A green check is shown on the corresponding icon.
- Test a device connection by selecting it and clicking the **Test** button.
- Add a device by clicking the Add button and selecting the connection type from the Add Device pop-up.

| Add Device              |                            | X |  |  |  |  |
|-------------------------|----------------------------|---|--|--|--|--|
| How is the scope connec | cted to the PC?            |   |  |  |  |  |
| GPIB                    | GPIB (IEEE 488) connection |   |  |  |  |  |
| Network                 | TCP/IP connection          |   |  |  |  |  |
|                         | Cancel                     |   |  |  |  |  |

Clicking the **GPIB** button shows the following pop-up:

| GPIB Device                       |        |
|-----------------------------------|--------|
| GPIB Board<br>Default = GPIB0 = 0 | 0      |
| GPIB Address (1-30)               | 1      |
| ОК                                | Cancel |

• Provide addresses as necessary.

Connection to the device is then tested and added to the list.

| s | cope Selecto | r                                             |                            |                                                             |                                                            |         |              | ? 🛛          |
|---|--------------|-----------------------------------------------|----------------------------|-------------------------------------------------------------|------------------------------------------------------------|---------|--------------|--------------|
| S | Cope Selecto | r<br>Status<br>Dead<br>Alive<br>Alive<br>Dead | Bus<br>Net<br>Net<br>GPIBO | Address<br>127.0.0.1<br>172.29.12.110<br>172.29.12.129<br>1 | Soft Rev<br>0.5.0.0 (build 87756)<br>0.5.0.1 (build 88969) | S/N     |              | OK<br>Cancel |
|   | Add          | Remov                                         | /e                         | Disable                                                     | Test Pro                                                   | perties | Use Selected |              |

Back on the **Connection** tab in **General Setup**, the GPIB address is shown in **GPIB::<master>::<slave>** format as follows:

| Qua | liPHY: G                                                                                                                        | eneral Setu                                                                                                                                                                                                                             | Р                                                                                                                           |                                                                                                     |                                                                  |                |  |
|-----|---------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------|----------------|--|
| 6   | onnection                                                                                                                       | Session Info                                                                                                                                                                                                                            | Report                                                                                                                      | Advanced                                                                                            | About                                                            |                |  |
|     | the IP addr<br>enter that of<br>Address of<br>Note: Statio<br>DHCP to d<br>address at<br>Note: Rem<br>that this po<br>Note: You | ork address of de<br>ress directly, i.e. 1<br>directly, i.e. LCRYI<br>the oscilloscope:<br>c IP addresses sh<br>efine their address<br>any time.<br>ote control of a nu<br>rit is open on any<br>can use the local<br>the oscilloscope. | 69.12.4.1. If the<br>D606P18115<br>GPIB::0::1<br>ould not be used<br>s. DHCP can can<br>etworked scope<br>firewalls between | device has a DN<br>I to identify devic<br>use a device to c<br>uses TCP port 18<br>n the PC and the | IS name then<br>es that use<br>shange its<br>261, Ensure<br>DSO, | Scope Selector |  |
|     |                                                                                                                                 |                                                                                                                                                                                                                                         |                                                                                                                             |                                                                                                     |                                                                  | Close          |  |

Clicking the **Network** button on the **Add Device** pop-up (previous), the following screen is shown:

| Network Device Address                                                                                                                                                                                     |  |  |  |  |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|
| Enter network address of device. If the device uses a static address then enter<br>the IP address directly, i.e. 169.12.4.1. If the device has a DNS name then<br>enter that directly, i.e. LCRY0606P18115 |  |  |  |  |  |  |
| 172.29.12.101                                                                                                                                                                                              |  |  |  |  |  |  |
| Note: Static IP addresses should not be used to identify devices that use<br>DHCP to define their address. DHCP can cause a device to change its<br>address at any time.                                   |  |  |  |  |  |  |
| Note: Remote control of a networked scope uses TCP port 1861. Ensure<br>that this port is open on any firewalls between the PC and the DSO.                                                                |  |  |  |  |  |  |
| Note: You can use the local IP address 127.0.0.1 if this software is<br>running on the oscilloscope.                                                                                                       |  |  |  |  |  |  |
| OK Cancel                                                                                                                                                                                                  |  |  |  |  |  |  |

When a valid **IP address** is entered, the connection to the device is tested and then added to the list. Back on the **Connection** tab in **General Setup**, the Network address is shown in **nnn.nnn.nnn** format as follows:

| QualiPHY: G                                                                                                      | eneral Setu                                                                                                                                                                                                                         | Р                                                                                                                                                 |                                                                                                     |                                                                  |                      | × |
|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------|----------------------|---|
| Connection                                                                                                       | Session Info                                                                                                                                                                                                                        | Report                                                                                                                                            | Advanced                                                                                            | About                                                            |                      |   |
| the IP add<br>enter that of<br>Address of<br>Note: Stati<br>DHCP to d<br>address at<br>Note: Rem<br>that this po | ork address of de<br>ress directly, i.e. 1<br>directly, i.e. LCRY<br>the oscilloscope:<br>c IP addresses sh<br>efine their addres<br>any time.<br>ote control of a n<br>rt is open on any<br>can use the local<br>the oscilloscope. | 69.12.4.1. If the<br>0606P18115<br>172.29.12.101<br>nould not be used<br>s. DHCP can ca<br>etworked scope<br>firewalls between<br>IP address 127. | device has a DN<br>d to identify devic<br>use a device to c<br>uses TCP port 18<br>n the PC and the | IS name then<br>es that use<br>change its<br>261, Ensure<br>DSO, | er<br>Scope Selector |   |
|                                                                                                                  |                                                                                                                                                                                                                                     |                                                                                                                                                   |                                                                                                     |                                                                  | Close                |   |

A warning pop-up is shown when the device cannot be reached.

| QualiPH | ۲ 🛛 🖾                                                             |
|---------|-------------------------------------------------------------------|
| ⚠       | Cannot communicate with device<br>Check cables and device address |
|         | ОК                                                                |



# **ERROR MESSAGES**

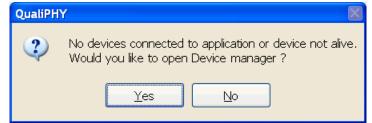
On launch of QualiPHY, if no standard is available (meaning none are enabled), the following pop-up message is shown.



The main window then shows a red question mark on the **Standard** button.

| Image: Second Secon | © QualiPHY             |         |                         |                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|---------|-------------------------|--------------------|
| General<br>Setup       Standard:<br>NONE<br>SELECTED!       Image: Configuration       Image: Configuration         Image: Configuration       Image: Configuration       Image: Configuration       Image: Configuration       Image: Configuration         Image: Configuration       Image: Configuration       Image: Configuration       Image: Configuration       Image: Configuration         Image: Configuration       Image: Configuration       Image: Configuration       Image: Configuration       Image: Co                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                        |         |                         | LeCroy             |
| General<br>Setup Standard:<br>NONE<br>SELECTED! Edit/View Configuration Start                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                        | ?       |                         |                    |
| Pause on Failure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | General St.<br>Setup N | andard: | Edit/View Configuration |                    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                        |         |                         |                    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                        |         |                         |                    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                        |         |                         |                    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ,                      |         |                         | ✓ Pause on Failure |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                        |         |                         | Exit               |

If no device is detected when launching QualiPHY and clicking the **Start** button, the following pop-up message is shown.



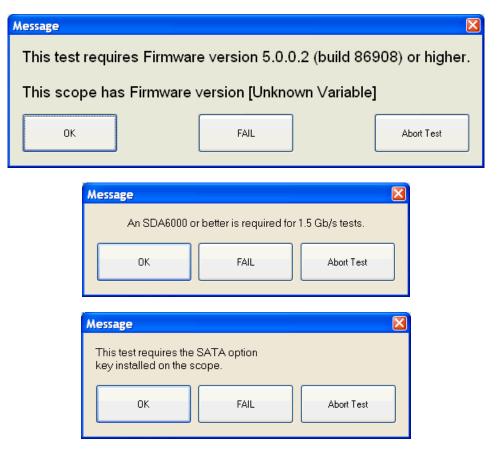
Clicking No ends the session with Test Aborted showing in the log.

| C ENET, Demo 100                                   | 00BASE-T - QualiP                                   | НҮ  |                    |
|----------------------------------------------------|-----------------------------------------------------|-----|--------------------|
|                                                    |                                                     |     | LeCrov             |
| Selected Technology: EN<br>Configuration Setup Nam | ne: Demo 1000BASE-T<br>e 2, 3 and 4) with stored wa |     | Start              |
| (                                                  | Connection failed                                   |     | ✓ Pause on Failure |
| Oscillosco                                         | pe address: 172.29.12.1                             | 101 | Exit               |

Clicking **Yes** starts the **Scope Selector** procedure. Please see the previous **Scope Selector** topic of this manual for more details.



Any of the following error messages can be shown when starting a QualiPHY session and entering session information. These error messages are self-explanatory.



# UNINSTALLING QUALIPHY

Uninstall QualiPHY by clicking the <u>Uninstall QualiPHY</u> button and launching the uninstaller. The **Choose Components** screen is shown.

| LeCroy QualiPHY U                                           | ninstall                                                           |                                                                                   |
|-------------------------------------------------------------|--------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                                             | Choose Components<br>Choose which features of LeCroy               | / QualiPHY you want to uninstall.                                                 |
| Check the components you<br>uninstall. Click Uninstall to s | want to uninstall and uncheck the o<br>tart the uninstallation.    | components you don't want to                                                      |
| Select components to<br>uninstall:                          | <ul> <li>✓ QualiPHY</li> <li>✓ Ethernet</li> <li>✓ USB2</li> </ul> | Description<br>Position your mouse<br>over a component to<br>see its description, |
| Space required: 0.0KB                                       |                                                                    |                                                                                   |
| Nullsoft Install System v2,21 –                             |                                                                    | Uninstall Cancel                                                                  |

Select the components to uninstall and click the **Uninstall** button. While the process is underway, click the **Show** details button for more information about the files being removed.

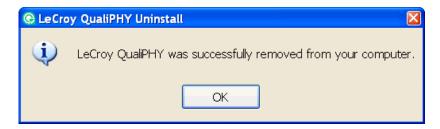
| © LeCroy QualiPHY Uninstall                                                  |        |  |  |  |  |  |  |
|------------------------------------------------------------------------------|--------|--|--|--|--|--|--|
| Uninstalling Please wait while LeCroy QualiPHY is being uninstalled.         |        |  |  |  |  |  |  |
| Delete file: C:\Documents and Settings\Jean-Luc.Lehmann\Desktop\QualiPHY.Ink |        |  |  |  |  |  |  |
| Show details                                                                 |        |  |  |  |  |  |  |
|                                                                              |        |  |  |  |  |  |  |
|                                                                              |        |  |  |  |  |  |  |
|                                                                              |        |  |  |  |  |  |  |
| Nullsoft Install System v2,21                                                |        |  |  |  |  |  |  |
| < Back Close                                                                 | Cancel |  |  |  |  |  |  |



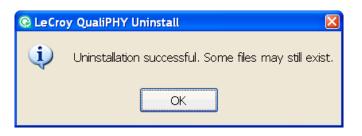
A message is shown when the uninstall is successfully completed.

| <b>e</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | LeCroy QualiPHY Uninstall                                     | 3 |  |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|---|--|--|--|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Uninstallation Complete Uninstall was completed successfully. |   |  |  |  |
| (                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Completed                                                     |   |  |  |  |
| Delete file: C:\Program Files\LeCroy\XReplay\LecAmyUniInstaller.exe<br>Delete file: C:\Program Files\LeCroy\XReplay\P4Wrapper.dll<br>Delete file: C:\Program Files\LeCroy\XReplay\Paper.dll<br>Delete file: C:\Program Files\LeCroy\XReplay\QualiPHY.lnk<br>Delete file: C:\Documents and Settings\Jean-Luc.Lehmann\Desktop\QualiPHY.lnk<br>Delete file: C:\Documents and Settings\Jean-Luc.Lehmann\Desktop\X-Replay.lnk<br>Delete file: C:\Documents and Settings\Jean-Luc.Lehmann\Start Menu\Programs\LeC<br>Delete file: C:\Documents and Settings\Jean-Luc.Lehmann\Start Menu\Programs\LeC |                                                               |   |  |  |  |
| Null                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | soft Install System v2.21                                     | , |  |  |  |

Click the **Close** button. A pop-up window confirms successful removal of the application.



If only a partial uninstall is done, a specific success pop-up message is shown as follows:



Note: Only the executable files initially installed are deleted during uninstall. All script files, reports, and any files added by the user, are not removed (even the original ones). They are left under "C:\Program Files\LeCroy\XReplay" in each specific Standard or Report folder.

§§§