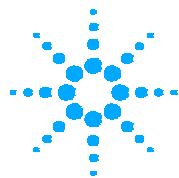


ScopeData Pro User's Guide



Agilent Technologies

Part Number N2605A-071

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Chapter 1

Getting Started

Introduction

ScopeData Pro is a Windows application for managing cable certification data collected by the FrameScope 350, WireScope 350 and WireScope 155 .

Using ScopeData Pro, you can:

- Upload test results and plots from the handheld test unit to a PC
- Organize and/or reorganize test results into a structured wiring hierarchy, easily creating or changing the structure
- Sort test results by Test Name, Date, Length or other parameters
- Print professional reports and plots based on the uploaded data
- Create custom settings profiles and download them to the FrameScope 350 or WireScope 350.
- Prepare and print site-specific cable identifier labels.

System requirements

To install and run ScopeData Pro, you will need the following:

- A PC running Windows 98 2nd edition or higher, Windows 2000, Windows NT 4.0 (service pack 3 or higher), Windows ME, or Windows XP.
- At least 70MB of free hard disk space
- A monitor with at least 800 x 600 resolution

Technical support

If you have questions or comments about ScopeData Pro, contact our Technical Support department:

Location	Telephone number
USA	800 452-4884
Canada	877 894-4414
Brazil	55 11 7297-3600
Central & South America	52 5258-4392 (Mexico)
Asia Pacific	(65) 375-8100 (Singapore)
Japan	(81) 426 56 7832
Europe Africa, & West Asia	(31 30) 547-2323 (Netherlands)

You can also get help at the Agilent Technical Assistance Website:
<http://www.agilent.com/find/assist>

Before you call

Before contacting the Technical Support department, please be ready to provide the following information:

- Software version of ScopeData Pro
- Serial numbers and software and hardware versions of the FrameScope, WireScope or DualRemote.
- Detailed description of the problem, including the exact wording of any error messages.
- Company Name, street address, and telephone number.

Installing ScopeData Pro

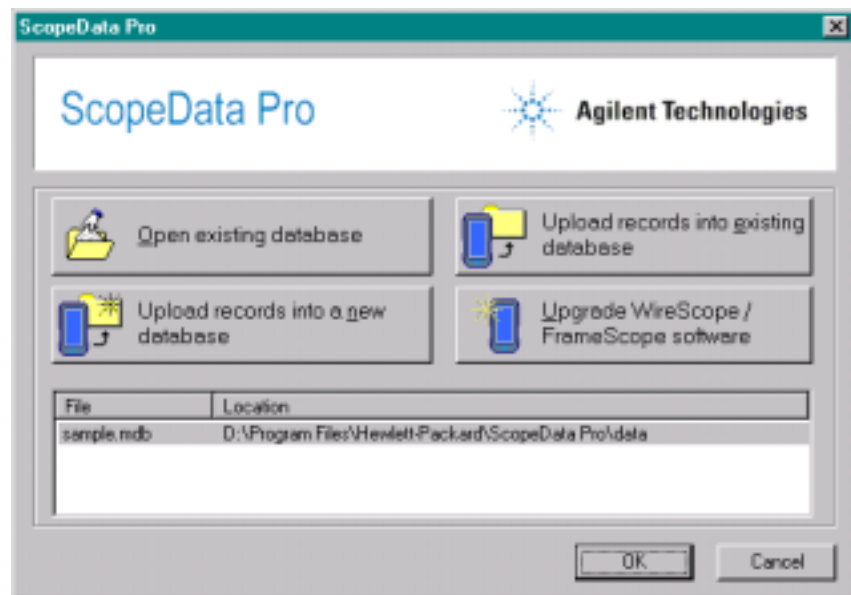
Insert the distribution CD-ROM into the CD drive on your PC. The ScopeData Pro Setup program should automatically start. If not, run the SETUP.EXE installation program on the CD-ROM.



The ScopeData Pro Setup program will guide you through the remainder of the installation. Agilent Technologies recommends that you accept the default settings provided.

Starting the ScopeData Pro application

From your Windows desktop, click Start > Programs > ScopeData Pro > ScopeData Pro. ScopeData Pro displays the following start-up dialog box.

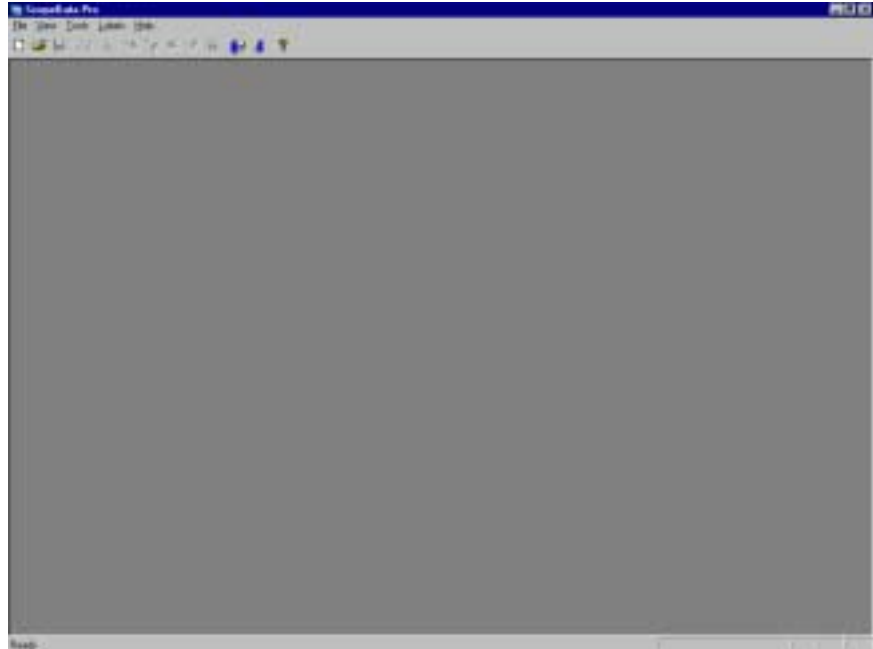


NOTE:

A more convenient way for opening ScopeData Pro is by placing a shortcut on your desktop display.

The choices given in the dialog box aid you in quickly starting tasks described in detail in Chapter 2.

For other functions, such as viewing the software version of ScopeData Pro, click **Cancel**. The main ScopeData Pro window is displayed below.



Viewing the ScopeData Pro software version

To view the software version of ScopeData Pro, first open the application from the desktop. From the main ScopeData Pro window click the question mark (?) on the toolbar, or click **Help**, then **About ScopeData Pro**.



OR

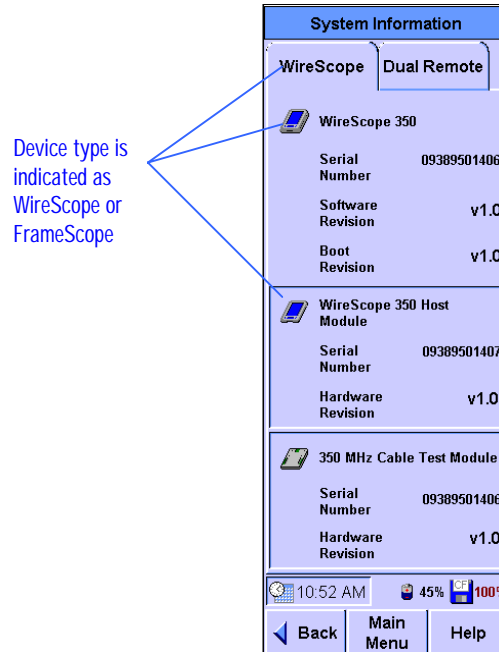


Viewing tester software and hardware versions

At times you will want to know the software and hardware versions of the FrameScope 350, WireScope 350, or WireScope 155. Instructions for getting this information are provided in the following sections.

FrameScope 350 & WireScope 350

To view software and hardware versions:



From the main menu screen of the press the **System** button. At the System Settings screen, select the **System Information** entry and press the **View** button. You will see the following information screen:

The System Information Screen displays serial number, software, and hardware version numbers pertaining to the test device.

To view information for the last used DualRemote 350, press the **DualRemote** tab.

Press the **Main Menu** button to return to the main screen.

WireScope 155

To view the software versions of the WireScope 155:

1. Power on the WireScope 155.
2. Press the **MAIN MENU** key.
3. Press the **RIGHT ARROW** key to highlight **SYSTEM**, the last entry in the menu.
4. Press **ENTER**. You will see a display including the battery level.
5. Press the **OPTIONS** key to activate the pull-down menu.
6. Press the **RIGHT ARROW** key to get to the end of the menu list.
7. Use the **UP ARROW** key to highlight **SYSTEM INFO**.
8. Press **ENTER**. You will then see the serial number and software version of the WireScope 155.

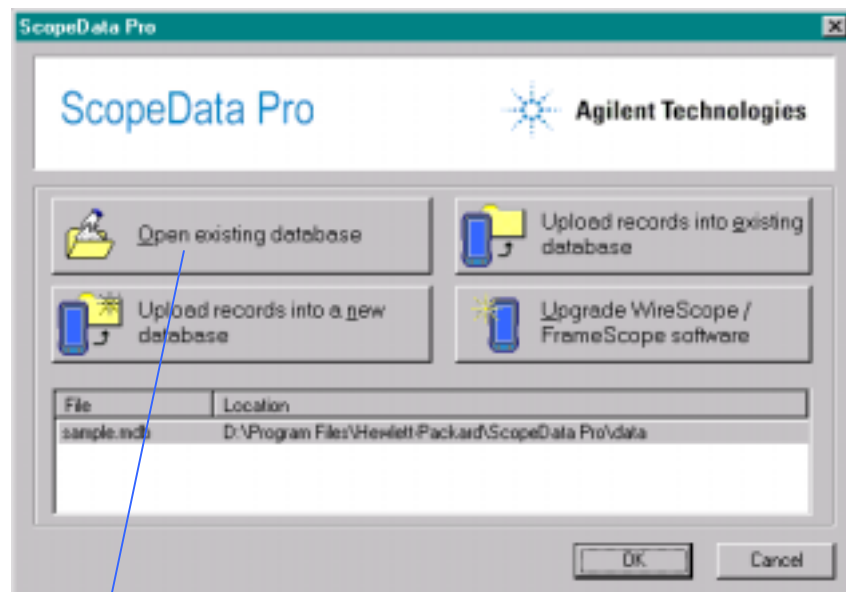
Chapter 2

Managing Test Results

This chapter covers the basics of working with a ScopeData Pro database to view, analyze and organize the test data. The best way to grasp the concepts introduced here is to actually work with ScopeData Pro using the provided sample database as you read.

Working with a database

From the Windows desktop, start the ScopeData Pro application and examine the ensuing start-up window. This window provides easy access to the four most commonly used functions, as listed on the large buttons shown.

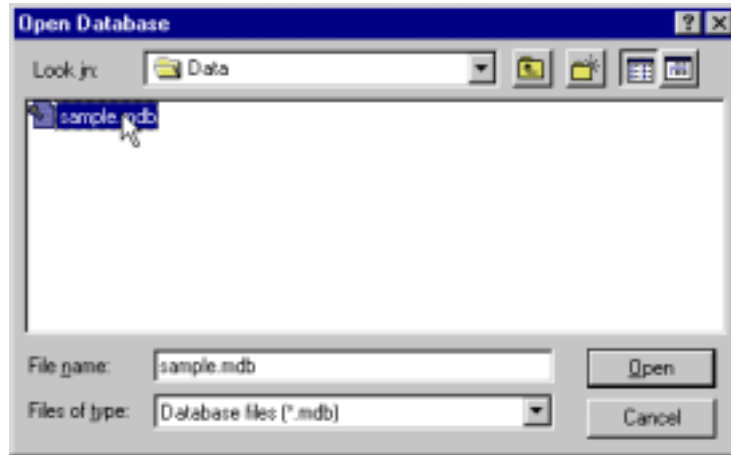


[Click here to open the sample database](#)

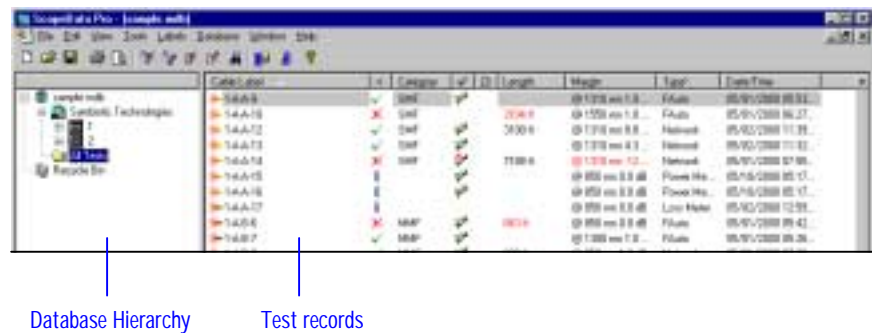
NOTE:

Microsoft Access limits its database size to 1GB. Therefore, for large sites, plan to break tests into more than one database, as needed.

As a training aid, a sample database is included with ScopeData Pro to help you explore the product's features. To access it, click the **Open existing database** button. The **Open** dialog box will appear to let you browse to the sample database file stored in the **data** sub-directory under the C:\Program Files\Agilent\ScopeData Pro\data installation directory. Click **sample.mdb** to open this file.



Once **sample.mdb** is open, you will see a list of test records in the right pane of the window and a hierarchy of the database in the left pane (see window below). This view is called the **results explorer**.



Navigating the results explorer

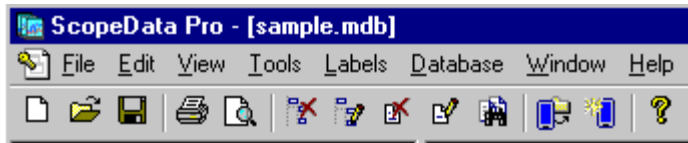
Immediately after a database is open, the **All Tests** branch of the hierarchy is selected in the left pane. When the **All Tests** branch is selected, the right pane displays a summary listing of all records stored in this database, one record per line. If you double-click a specific hierarchy level in the left pane, just that hierarchy is displayed. Double-click downward through the hierarchy elements to display a list of records in the right pane showing the records under the selected hierarchy level. (See page 63 for more information on how to work with the hierarchy structure.)














Date/Time	Category	Pass/Fail	Length	Message	Type	Total Time
01/10/00 08:53	0047	✓	3 344 s	@ 1200 sec 1.5	Fail	05/01/2000 08:53
01/10/00 08:57	0047	✓	3 388 s	@ 1200 sec 1.5	Fail	05/01/2000 08:57
01/10/00 11:26	0047	✓	3 388 s	@ 1200 sec 1.5	Fail	05/01/2000 11:26
01/10/00 11:32	0047	✓	7 188 s	@ 1200 sec 4.3	Fail	05/01/2000 11:32
01/10/00 07:55	0047	✓	7 188 s	@ 1200 sec 1.2	Fail	05/01/2000 07:55
01/10/00 09:11	0047	✓	3 388 s	@ 1200 sec 1.5	Fail	05/01/2000 09:11
01/10/00 08:11	0047	✓	3 388 s	@ 1200 sec 1.5	Fail	05/01/2000 08:11
01/10/00 12:50	0047	✓	3 388 s	@ 1200 sec 1.5	Fail	05/01/2000 12:50
01/10/00 05:42	0047	✓	3 388 s	@ 1200 sec 1.5	Fail	05/01/2000 05:42
01/10/00 08:35	0047	✓	3 388 s	@ 1200 sec 1.5	Fail	05/01/2000 08:35
01/10/00 01:30	0047	✓	3 388 s	@ 1200 sec 1.5	Fail	05/01/2000 01:30
01/10/00 12:51	0047	✓	3 388 s	@ 1200 sec 1.5	Fail	05/01/2000 12:51
01/10/00 05:14	0047	✓	3 388 s	@ 1200 sec 1.5	Fail	05/01/2000 05:14
01/10/00 08:13	0047	✓	3 388 s	@ 1200 sec 1.5	Fail	05/01/2000 08:13
01/10/00 06:36	0047	✓	3 388 s	@ 1200 sec 1.5	Fail	05/01/2000 06:36
01/10/00 06:29	0047	✓	3 388 s	@ 1200 sec 1.5	Fail	05/01/2000 06:29
01/10/00 06:54	0047	✓	3 388 s	@ 1200 sec 1.5	Fail	05/01/2000 06:54
01/10/00 01:18	0047	✓	3 388 s	@ 1200 sec 1.5	Fail	05/01/2000 01:18
01/10/00 02:23	0047	✓	3 388 s	@ 1200 sec 1.5	Fail	05/01/2000 02:23
01/10/00 01:25	0047	✓	3 388 s	@ 1200 sec 1.5	Fail	05/01/2000 01:25
01/10/00 01:26	0047	✓	3 388 s	@ 1200 sec 1.5	Fail	05/01/2000 01:26
01/10/00 11:51	0047	✓	3 388 s	@ 1200 sec 1.5	Fail	05/01/2000 11:51
01/10/00 11:52	0047	✓	3 388 s	@ 1200 sec 1.5	Fail	05/01/2000 11:52
01/10/00 10:44	0047	✓	3 388 s	@ 1200 sec 1.5	Fail	05/01/2000 10:44
01/10/00 08:41	0047	✓	3 388 s	@ 1200 sec 1.5	Fail	05/01/2000 08:41
01/10/00 07:53	0047	✓	3 388 s	@ 1200 sec 1.5	Fail	05/01/2000 07:53
01/10/00 07:56	0047	✓	3 388 s	@ 1200 sec 1.5	Fail	05/01/2000 07:56
01/10/00 16:55	0047	✓	3 388 s	@ 1200 sec 1.5	Fail	05/01/2000 16:55
01/10/00 08:36	0047	✓	3 388 s	@ 1200 sec 1.5	Fail	05/01/2000 08:36
01/10/00 18:05	0047	✓	3 388 s	@ 1200 sec 1.5	Fail	05/01/2000 18:05

Category	Pass	Fail	Length
All L1 - Level 1 (All) (1/5)	25	17	8121 s
All L2 - Level 2 (All) (1/5)	25	17	8121 s
All L3 - Level 3 (All) (1/5)	25	17	8121 s
Total	25	17	8121 s

Understanding the ScopeData Pro toolbar

The ScopeData Pro toolbar contains icons that aid you in quickly performing a task. The icons are identified below.



Icon	Action Performed	Menu Equivalent
	Create a New database <i>filename</i>	File > New
	Open new database <i>filename</i>	File > Open
	Save current database using same filename	File > Save
	Print current database information	File > Print
	Display a print preview of records	File > Print Preview
	Delete selected hierarchy level	Edit > Delete hierarchy Level
	Rename selected hierarchy level	Edit > Rename hierarchy Level
	Delete selected test record	Edit > Delete Test Record(s)
	Rename selected test record	Edit > Rename Test
	View details of selected test record	View > Test Details
	Upload a test record	Tools > Upload All Test Records
	Update FrameScope or WireScope software	Tools > Update Device software
	Help about ScopeData Pro version	Help > About ScopeData Pro

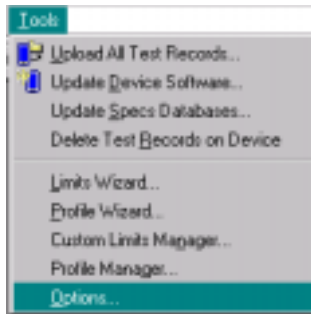


If you attempt to delete a hierarchy level or a test record, ScopeData Pro prompts you to confirm that you want to delete. If you accidentally delete item(s), click the **Recycle Bin** below the **All Tests** folder label. Click the item you want to restore, then under the **Database** menu, click **Restore Test Results**.

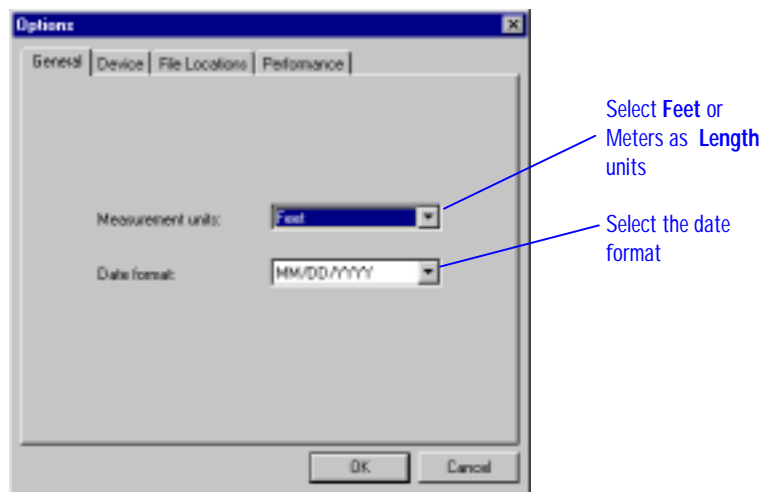
Setting ScopeData Pro options

Prior to navigating the results explorer you may prefer to change certain default operational parameters. To make changes, select **Options...** on the **Tools** menu.

The options dialog box contains four tabs: General (shown below), Device, File Locations, and Performance.

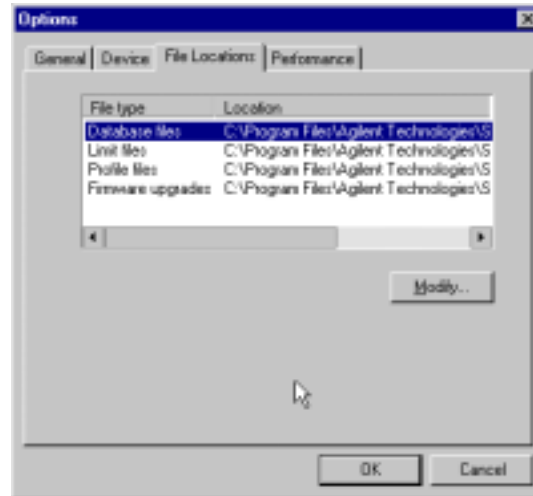


On the **General** tab you can select length units and date format. Select Feet or Meters as units for displaying the length information. Select the date format: MM/DD/YYYY or DD/MM/YYYY.



Click the **Device** tab to set uploading options as described on page 115.

On the **File Locations** tab you can select where database files, limit files, profile files, and firmware upgrades are stored. Normally, the default locations shown should be used. However, if you want to change any, select the item you want to change, then click **Modify**. A display of drives and folders on your system is provided for your selection.



On the **Performance** tab you can limit the system resources that ScopeData Pro uses. You normally do not need to change these settings if your system has more than 64 MB memory. If you are experiencing errors and observe corrupted text when opening two or more databases, or if you have difficulty printing results, try lowering the amount of memory ScopeData Pro allocates by sliding **Database performance** toward the **Minimum** setting.



If you are experiencing slow print time or have problems printing to legacy printers you may improve performance by disabling printing bitmapped graphics. To do this, click the box on the display. If you do this, the bitmapped logo on top and bottom of the page will not be printed.


Interpreting the summary view of results explorer

The right pane of the results explorer provides a summary view of each test record, listing one record per line.

Cable Label	Result	Category	Length	Margin	Type	Date/Time
1-A-A-9	✓	SMF			@ 1310 nm 1.9...	05/01/2000 08:53
1-A-A-10	✗	SMF	2040 ft		@ 1550 nm 1.9...	05/01/2000 08:27
1-A-A-12	✓	SMF	2000 ft		@ 1310 nm 8.8...	05/02/2000 11:38
1-A-A-13	✓	SMF			@ 1310 nm 4.3...	05/02/2000 11:32
1-A-A-14	✗	SMF	7100 ft		@ 1310 nm -12...	05/01/2000 09:58
1-A-A-15	i				@ 850 nm 0.0 dB	05/10/2000 08:17

Cable Label

The **Cable Label** column lists the record names which typically correspond to the cable labels in the telecommunications closet and on the work-area outlet. The symbol to the left of the cable label signifies the type of cable tested.

 = Twisted-pair

 = Fiber optic



The **Result** column lists icons indicating the test pass/fail or information-only result. For example,

✓ = Test pass result

✗ = Test fail result

i = Information-only (no pass/fail result)

Category

The **Category** column contains the target test limit for

SMF = Single-mode fiber test

MMF = multimode fiber test

Cat. 3 = Category 3 twisted pair wire test

Cat. 4 = Category 4 twisted pair wire test

Cat. 5 = Category 5 twisted pair wire test

Cat. 5e = Category 5e twisted pair wire test

Cat. 6 = Category 6 twisted pair wire test

Class B = Class B twisted pair wire test


Class C = Class C twisted pair wire test

Class D = Class D twisted pair wire test


Class E = Class E twisted pair wire test

Class F = Class F twisted pair wire test



The **Networks** column contains the  symbol when the network-specific tests are included in the test record. This column is blank when no network-specific tests were performed. For example, if network tests were enabled during an Autotest, the Networks column contains the network symbol. If the network tests were disabled, the Networks column is blank.



The **Plot** column contains the  symbol when the plots were saved with the test record. This column is left blank when only the worst-case summary points were saved with the test.

Length

The **Length** column lists the length of the cabling under test.

Margin

The **Margin** column indicates the worst case margin with respect to the test limits and the measurement that exhibits the worst case margin. For example,

Margin	
Loss 1.4 dB	
Loss 10.4 dB	
Loss 1.3 dB	
Atten -0.4 dB	Attenuation measurement has the worst case margin. The margin is -0.4 dB.
RLoss 5.0 dB	
RLoss 3.8 dB	Return Loss measurement has the worst case margin. The margin is 3.8 dB.
NEXT -8.6 dB	

Type*

The **Type** column indicates the test type. The following test types are supported:

Auto	Autotest performed by the WireScope 100
Auto L2	Level 2 Autotest performed by the WireScope 155
Auto L2E	Level 2E Autotest performed by the WireScope 155
Auto L3	Level 3 Autotest performed by the FrameScope 350 or WireScope 350
Coax	Coaxial cable test – length and wiremap
FAuto	Fiber optic Autotest performed using Fiber SmartProbes
Loss Meter	Fiber optic loss measurement using Fiber SmartProbes
Network	Network test, twisted-pair or fiber optic
Power Meter	Fiber optic power measurement using Fiber SmartProbes
Twinax	Twinax cable test – length and wiremap
Quick	Quick Check – continuity and pairing

For twisted-pair certification, the Autotest level can be 2, 2E or 3. These levels signify the instrument accuracy and the required measurements.

Level 2 field tester accuracy is defined in the TIA TSB67 [1] document. Level 2 field testers are required for Category 5 certification and measure wiremap, length, attenuation and Near End Crosstalk (NEXT).

Level 2E field tester accuracy is defined in the TIA TSB95 [2] document. Level 2E field testers are required for Category 5E certification and measure wiremap, length, attenuation, NEXT, power-sum NEXT (PSNEXT), return loss, Equal Level Far End Crosstalk (ELFEXT), power-sum ELFEXT (PSELFEXT), delay and delay skew. Level 2E field testers are backwards-compatible with level 2 field testers.

Level 3 field tester accuracy is defined in the IEC 61935 [3] document and also in TIA/EIA-568-B.2-1 [4]. Level 3 field testers are required for Category 6 certification and measure the same parameters as Level 2E field testers. Level 3 field testers are backwards-compatible with level 2 and level 2E field testers.

The minimum frequency range requirement for Level 2 and 2E field testing is 100 MHz. The minimum frequency range requirement for Level 3 field testing is 250 MHz.

Legend and totals

Legend and summary information appear at the bottom of the results explorer window.

Totals:		Pass	Fail	Length
Copper		17	11	5098 ft
Fiber		40	14	38916 ft

The legend defines the common types of tests listed in the **Type** column. The **Totals** field specifies the total number of passing and failing records. This field also specifies the total length of cable by summing the lengths contained in the database records listed in the right pane of the results explorer window. The summary information applies to the records in the selected hierarchy level. To view totals for the entire database, select the **All Tests** hierarchy in the left pane.



Sorting record list by different parameters

The list of records in the right pane of the records explorer can be sorted by any of the parameters displayed. To sort the record list, click the header of any column. For example, to sort the records by margin, click the header of the Margin column.

You can sort the records either in the descending or in the ascending order of any parameter. Clicking the column header repeatedly will toggle the sorting order between ascending and descending.

Viewing detailed test results

The easiest way to display detailed test results is to double-click the record of interest in the right pane of the results explorer. You can also highlight the record and click on the **View Test Details** button on the toolbar, or highlight the record and select **Test Details** from the **View** menu.

Double-click record name or  or 

The test results window presents the detailed view of the selected test record.

The vertical tabs in the results window point to the different tests. The horizontal tabs point to detailed test data for each vertical tab.

You can move the results window to a different position on the window by clicking and holding its title bar and then dragging the window to a new position.

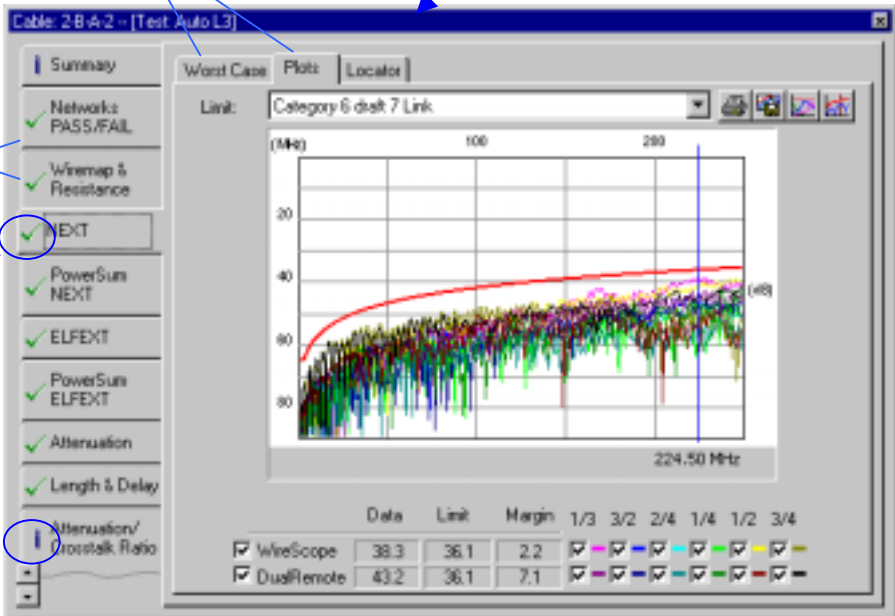
Details of each test are designated by the horizontal tabs

Click and hold here, then drag window to desired position and release

Tests performed are designated by the vertical tabs

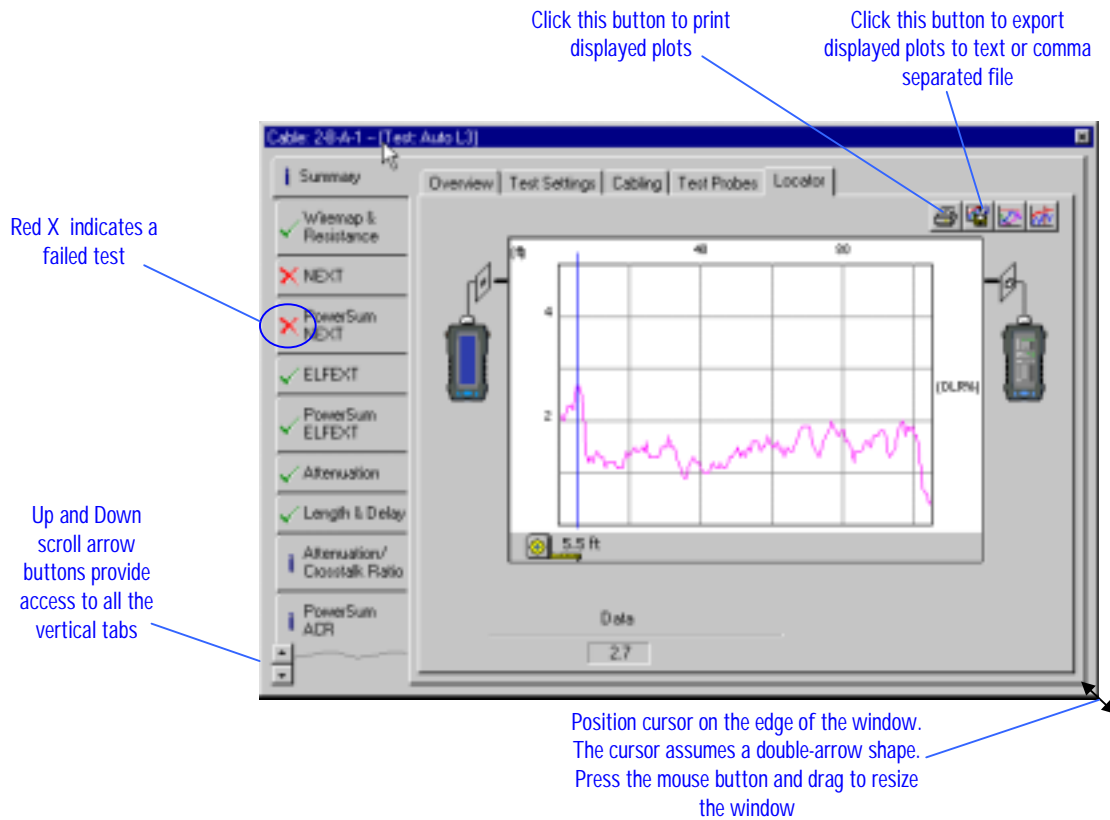
Green Check mark indicates a passing test

i indicates a test result with no test limit included for information only



	Date	Limit	Margin	1/3	3/2	2/4	1/4	1/2	3/4
<input checked="" type="checkbox"/> WireScope	38.3	36.1	2.2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> DualRemote	43.2	36.1	7.1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

If there are more vertical tabs than fit on the results window, scroll buttons will appear in the lower left corner. Click the **up** and **down scroll** buttons to see all the tabs. You can resize the results window by positioning the cursor at the edge of the window and then clicking and holding the mouse button while dragging the corner of the window.



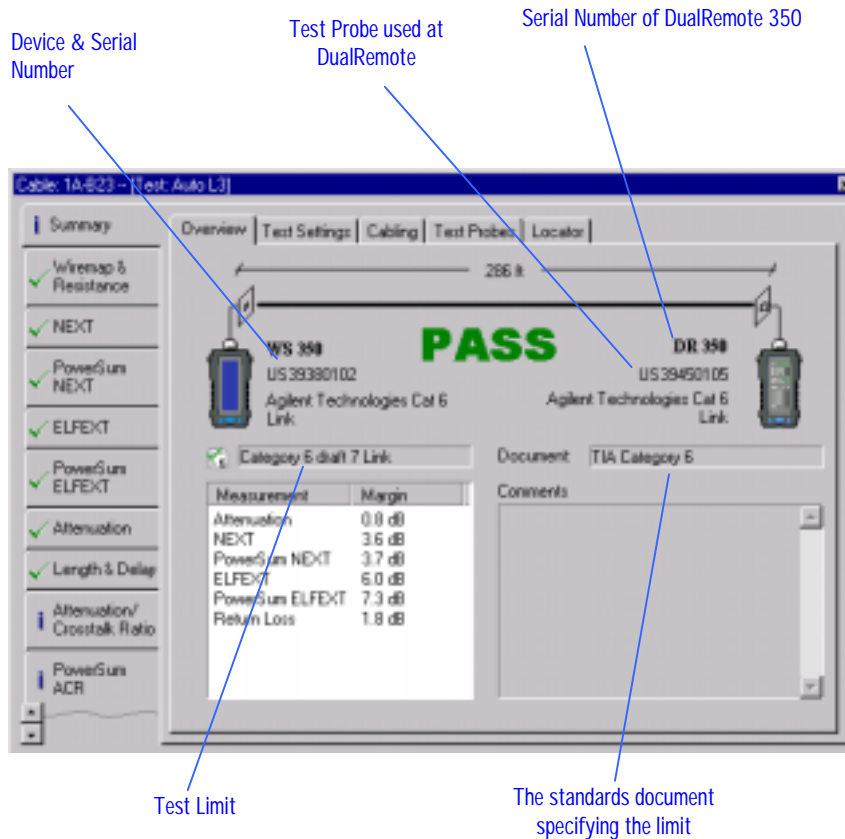
Interpreting twisted-pair Autotest records

Twisted-pair Autotest records can vary in the following ways

- Plots may or may not be included in the record
- If plots are not available, only worst case measurements can be viewed
- Category 5 Level 2 Autotest includes only a subset of the measurements available with Category 5E Level 2E and with Category 6 Level 3 Autotests

Following is a description of a comprehensive Category 6 Autotest record.

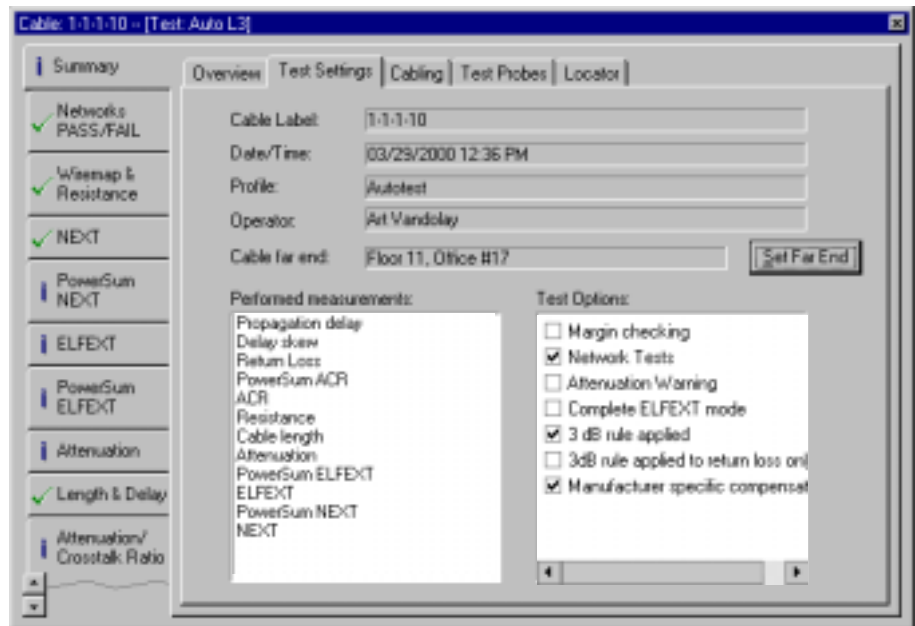
Autotest Summary – Overview Tab



The summary-Overview tab displays:

- The overall test result - PASS or FAIL
- The target test limit and the standards document that defines this limit
- Overall length of the cabling (the length of the shortest pair)
- The device types and their serial numbers
- The test probes used
- Worst case margin with respect to test limits for each measurement performed

Autotest Summary - Test Settings Tab



The Summary – Test Settings tab displays:

- The cable label
- Date and time of the test
- The name of the test profile (if used)
- The name of the operator
- Location of the far end of the cable (typically the work area end)
- Measurements performed
- Test options enabled

Typically, a structured cable label can be decoded to locate the cable termination in the telecommunications closet, but the information about the other end of the cable has to be specified in a separate field.

The **Cable far end** field lets you specify the location of the work area outlet where the cable terminates. To fill in this field, click the **Set far end** button and then enter the description in the dialog box:

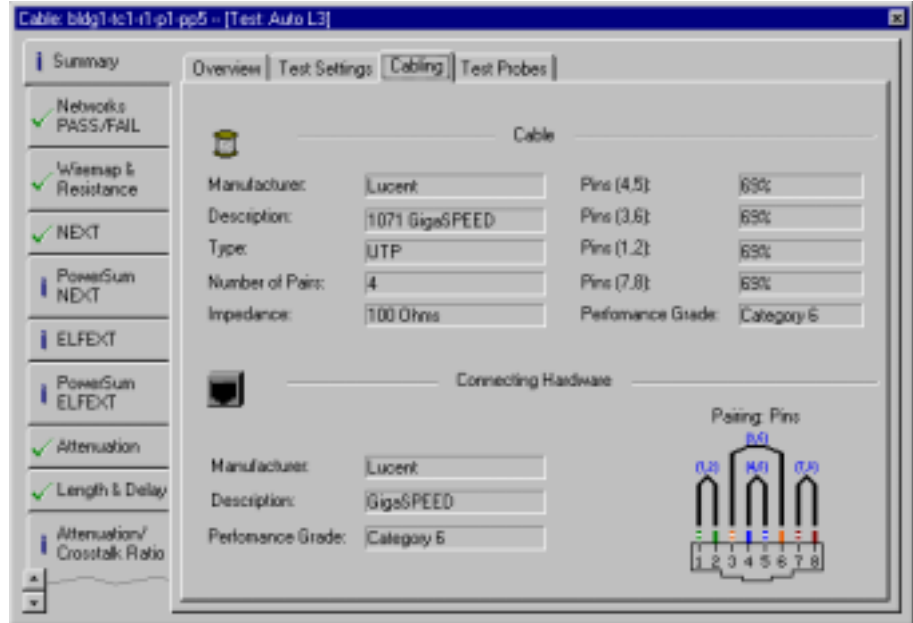


The measurements performed during the test are listed in the bottom left pane. The test options selected during the test are indicated in the bottom right pane.

The **Margin checking** option marks tests which are very close to the test limits as Pass* or Fail*.

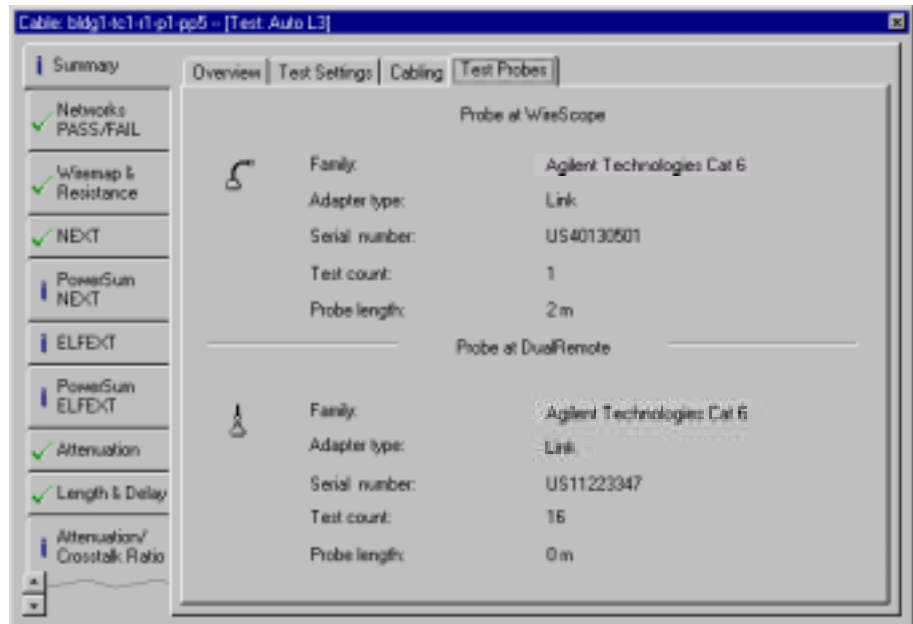
The **Length checking** option causes the test to fail if tested links are longer than 90 meters or when tested channels are longer than 100 meters. The **Attenuation warning** option flags the condition when the measured attenuation is excessive relative to the cable length.

Autotest Summary – Cabling Tab



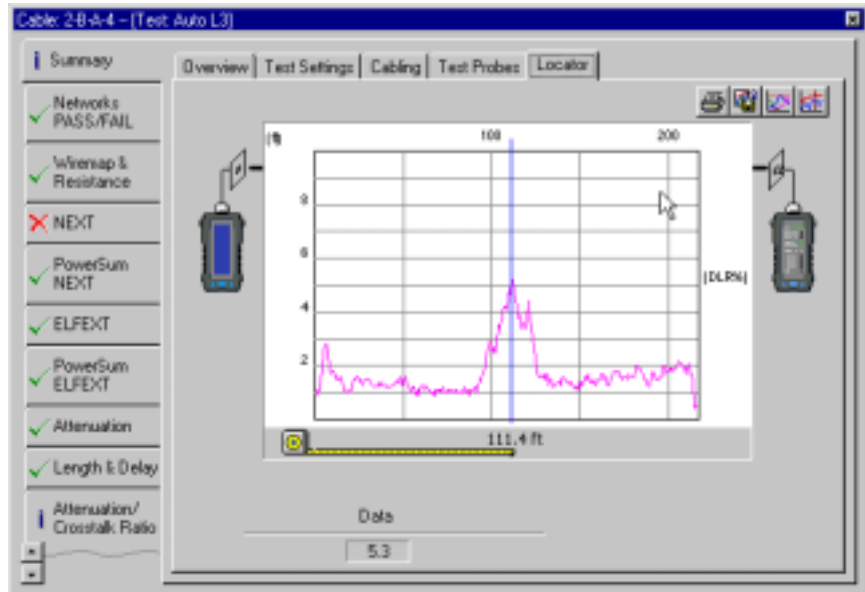
This tab specifies the cable and connecting hardware comprising the installation under test. It also shows the pair numbering convention (e.g. T568A, T568B, or pins only) selected for this test.

Autotest Summary – Test Probes Tab



This tab specifies the probes used to run this test. Displayed information includes the serial number of the probe and the number of tests performed with this probe (**Test count** field).

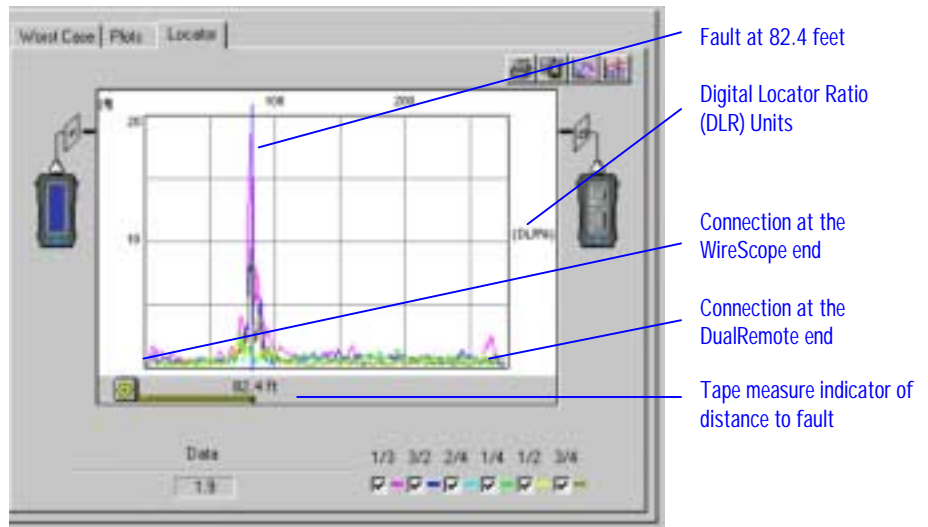
Autotest Summary - Locator Tab



The Summary – Locator tab displays a distance-based plot useful for locating faults or connection points in the tested cabling.

The vertical scale represents the magnitude of the impedance discontinuities in Digital Locator Ratio (DLR) units. The DLR scale is specifically developed for measuring the magnitude of impedance discontinuities as a function of distance. A measure of 100% on the DLR scale represents the worst possible discontinuity – equivalent to an open circuit.

A typical fault location scenario is depicted below. In this example a cable fault 111.4 feet away from the test unit is visible on the locator plot as a peak at 111.4 feet on the distance scale. The peak has the value of 5.2% DLR.



Typically, a cable fault will affect the distance-based characteristics of several measurements. The summary-locator plot combines these measurements in such a way as to accentuate the location of discontinuities beyond what is typically visible on the time-domain plots for individual measurements.

Locator plots are also available for the Near End Crosstalk (NEXT) and Return Loss measurements (see pages 32 and 40).

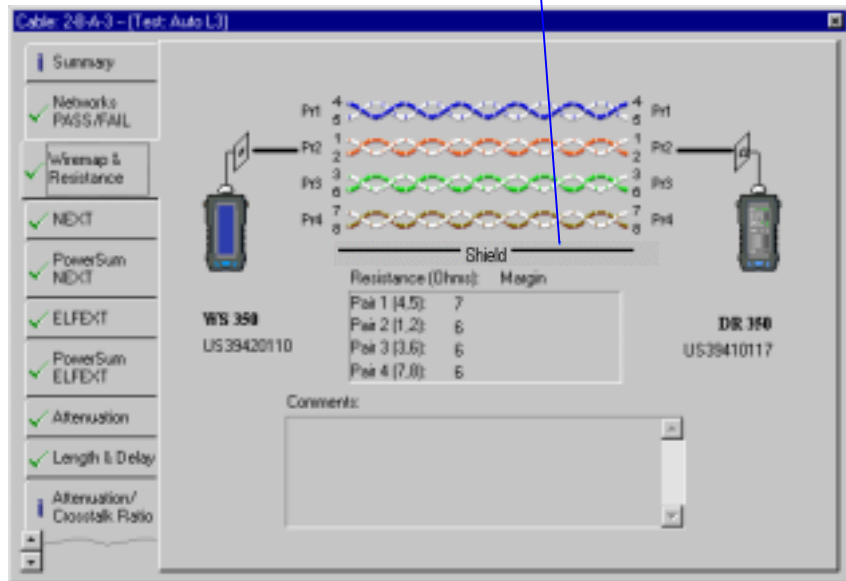
Autotest Networks PASS/FAIL Tab

The Networks PASS/FAIL tab appears only if the network testing option was enabled during the Autotest. This tab lists all the networks enabled for the test with the corresponding Pass/Fail result for each network tested. If you require detailed information about the network test parameters and their measured values run the Certify Networks test (see page 42).

Network Name	Test Result	Network Name	Test Result
10 Base-T	PASS	100 Base-T4	PASS
100 Base-Tx	PASS	Token Ring 4 Passive	PASS
1000 Base-T	PASS	Token Ring 4 Active	PASS
155 Mbps ATM	PASS	Token Ring 16 Passive	PASS
		Token Ring 16 Active	PASS
		802.12 (VGI)	PASS
		TP/FMD	PASS
		25 Mbps ATM	PASS
		51 Mbps ATM	PASS
		ISDN	PASS
		ArchieNet	PASS
		Local Talk	PASS
		3xAS/400	PASS
		3270	PASS

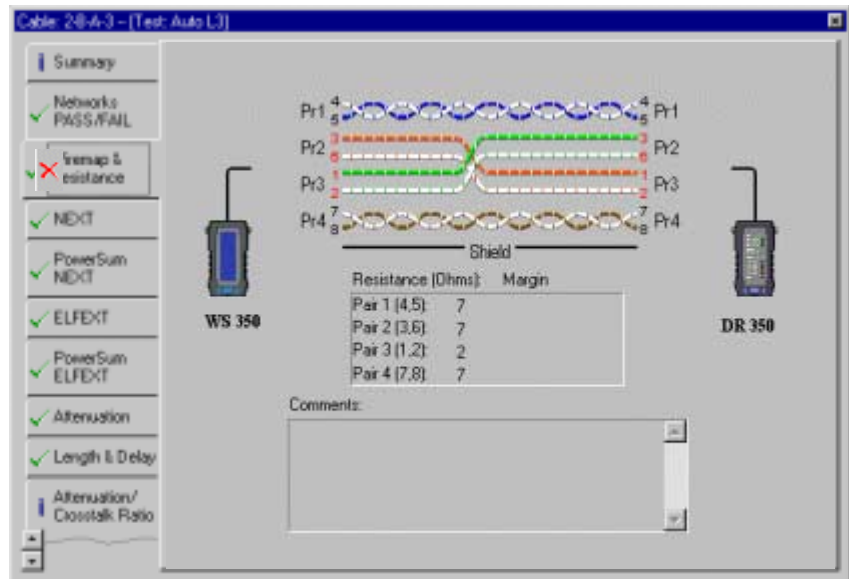
Autotest Wiremap & Resistance Tab

This line indicates that the shield is present

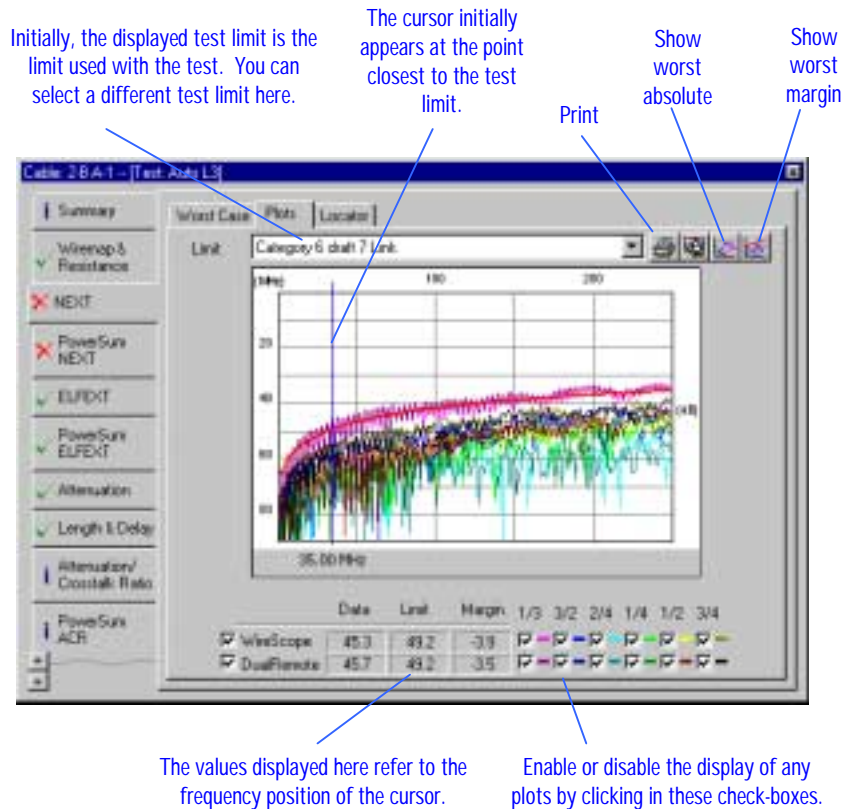


This tab displays the Wiremap of the tested cabling and the resistance of each pair. In the above example, all the wires are properly connected (pin 1 on the WS to pin 1 on the DR, etc.).

The following is an example of mis-wired cabling.



Autotest NEXT - Plots Tab



If plots are stored with the test record, the NEXT tab opens with the Plots tab displayed. Initially, all 12 NEXT pair combinations – 6 at the near end and 6 at the far end – are shown. You can enable or disable the display of any plots by clicking the check-boxes at the bottom of the pane. To enable or disable all the plots at one end or the other, click the check-boxes in the bottom left for either FrameScope, WireScope or Dual Remote.

The vertical line cursor is initially placed at the value closest to the test limit, or at the worst case failure. You can move the cursor by clicking the mouse anywhere in the plots display or by pressing the **arrow** keys on the PC keyboard.

To move the cursor to the worst absolute frequency, click the **Show worst absolute** button in the upper right of the display.

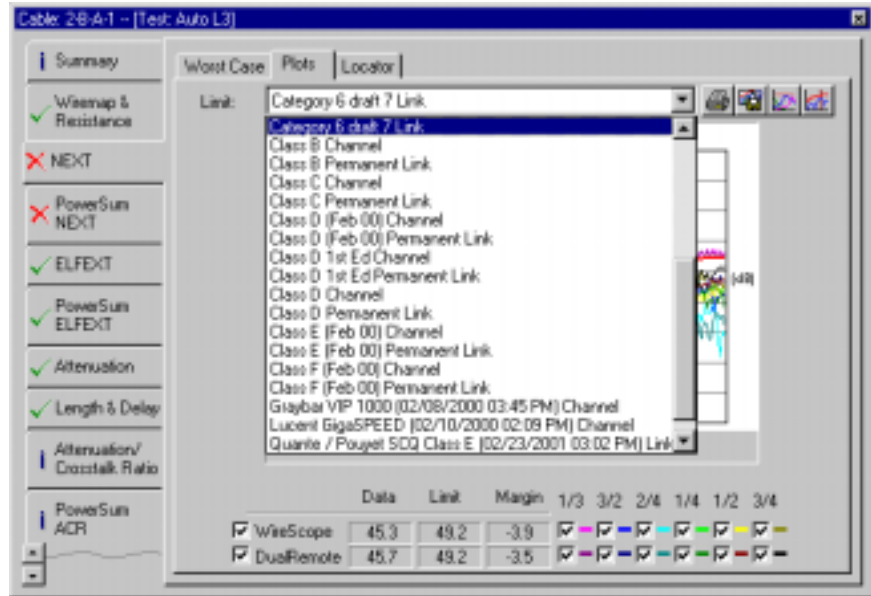
To move the cursor to the worst margin frequency, click the **Show worst margin** button in the upper right of the display.

The test limit selected for the test is shown in red.

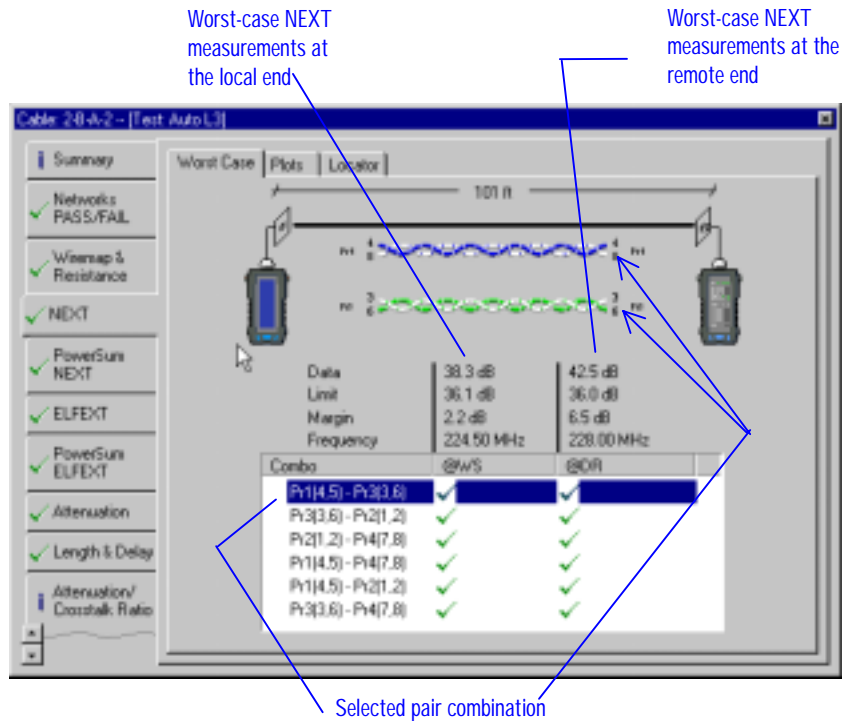
To print the plot, click the **Print** button in the upper right of the display.

To export the plot to a file, click the **Export** button in the upper right of the display as shown on page 80.

You can display a different limit by selecting it from the **Limit** pull-down menu.

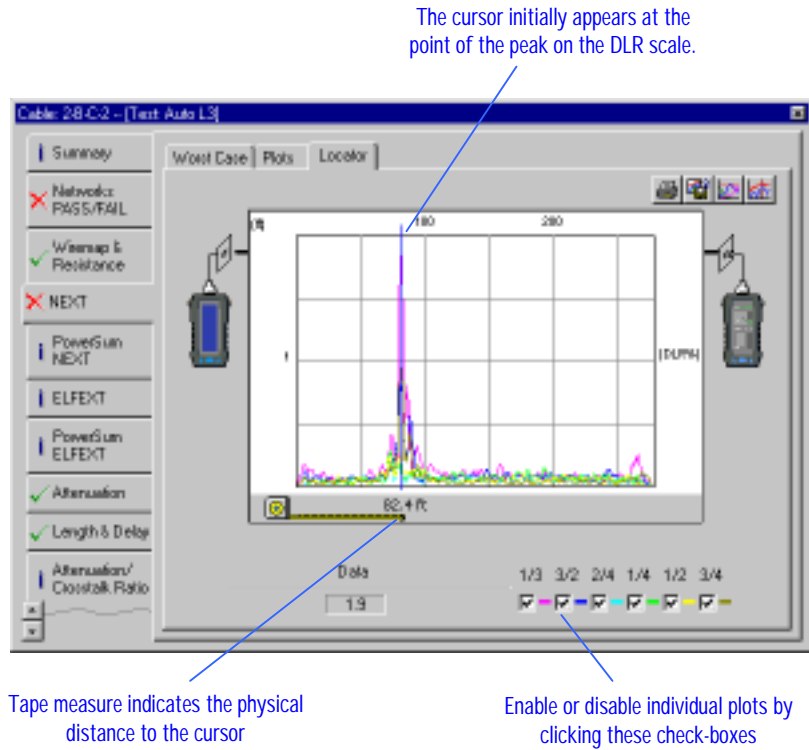


Autotest NEXT - Worst Case Tab



The NEXT – Worst Case tab displays worst case NEXT measurement for each pair combination. To view a particular pair combination, select this combination in the lower pane by clicking it with a mouse. The diagram updates to display the selected pairs. The values under the diagram update to display the worst case measurements for the selected pair combination.

Autotest NEXT – Locator Tab

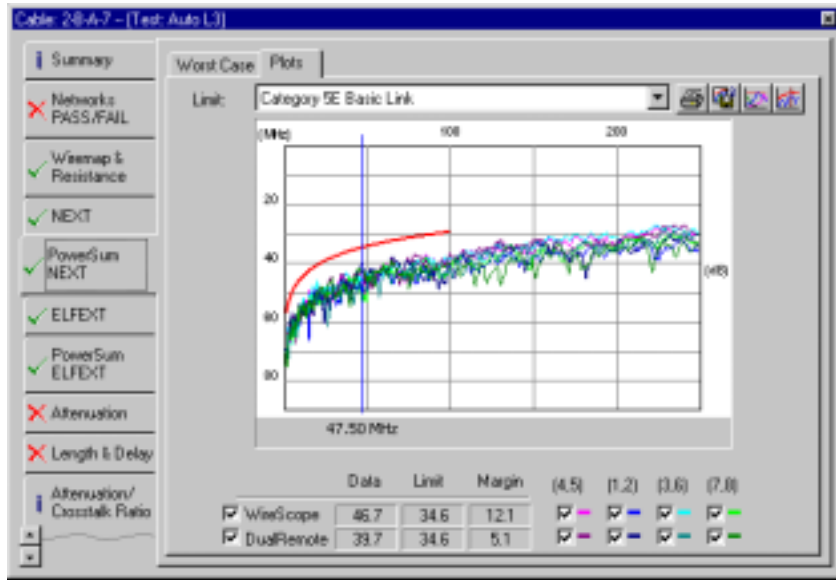


The NEXT-Locator tab displays the time-domain representation of NEXT. This plot helps to locate points in the installation that may be the source of NEXT failure. In the above example, the vertical line cursor is situated on the peak of the DLR response 82.4 feet away from the main test unit.

All 6 pair combinations are initially shown. To enable or disable the plots for different pair combinations click the check-boxes at the bottom of the window.

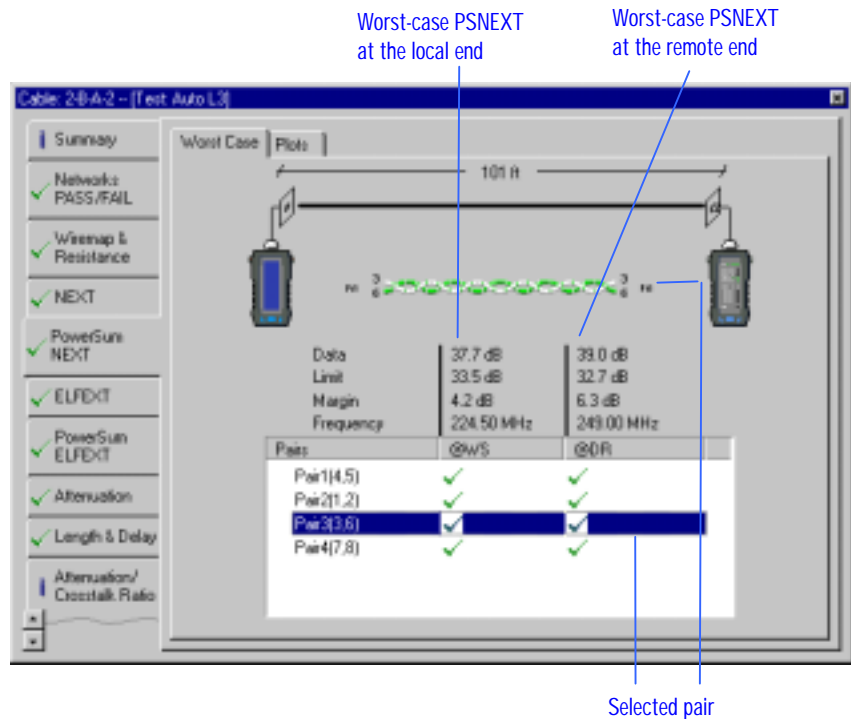
The tape measure at the bottom indicates the physical distance to the location of the vertical line cursor. To move the cursor, click any location in the plot or use the **arrow** keys on the PC keyboard.

Autotest PowerSum NEXT – Plots Tab



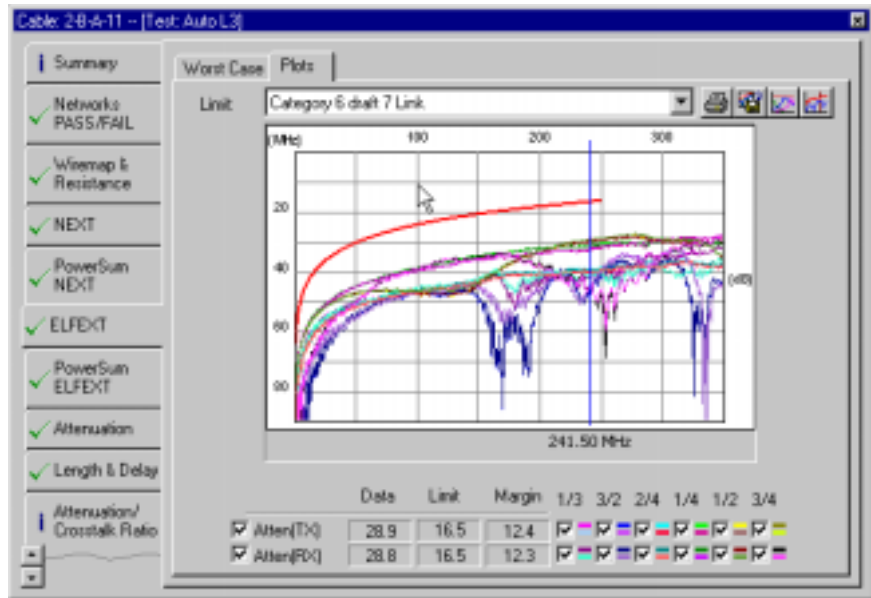
The PowerSum NEXT - Plots tab operates similarly to the NEXT - Plots tab (see page 30) but displays PowerSum NEXT instead of pair-to-pair NEXT.

Autotest PowerSum NEXT – Worst Case tab



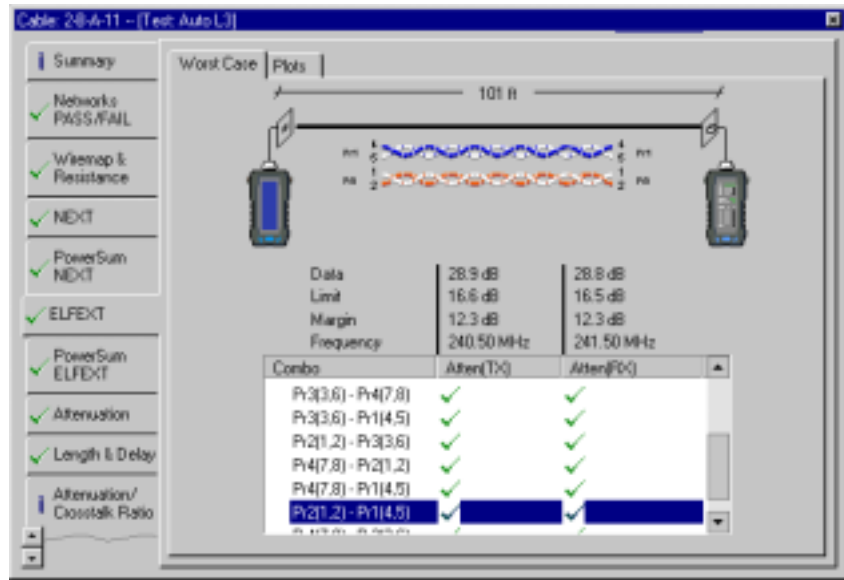
PowerSum NEXT - Worst Case tab operates similarly to the NEXT- Worst Case tab (see page 31) but displays PowerSum NEXT instead of pair-to-pair NEXT.

Autotest ELFEXT – Plots Tab



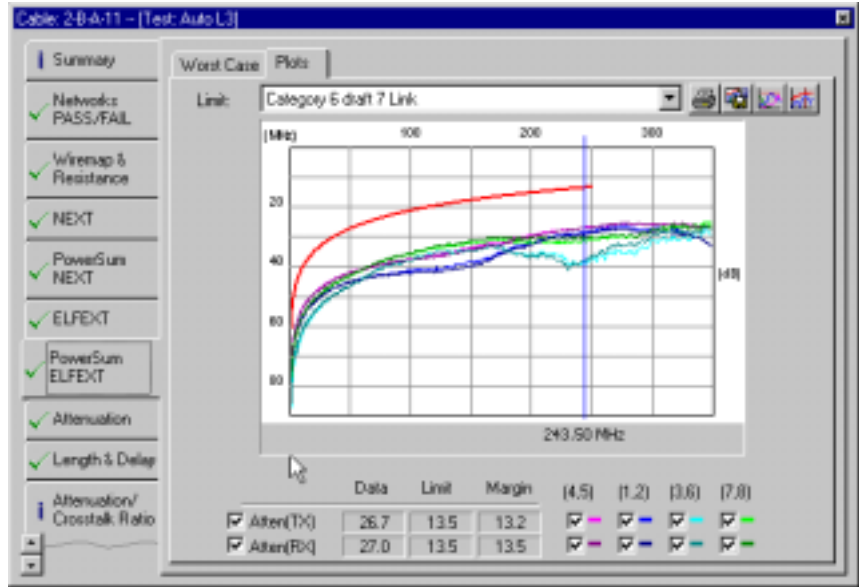
The ELFEXT - Plots tab operates similarly to the NEXT - Plots tab (see page 30) but displays ELFEXT instead of NEXT.

Autotest ELFEXT – Worst Case tab



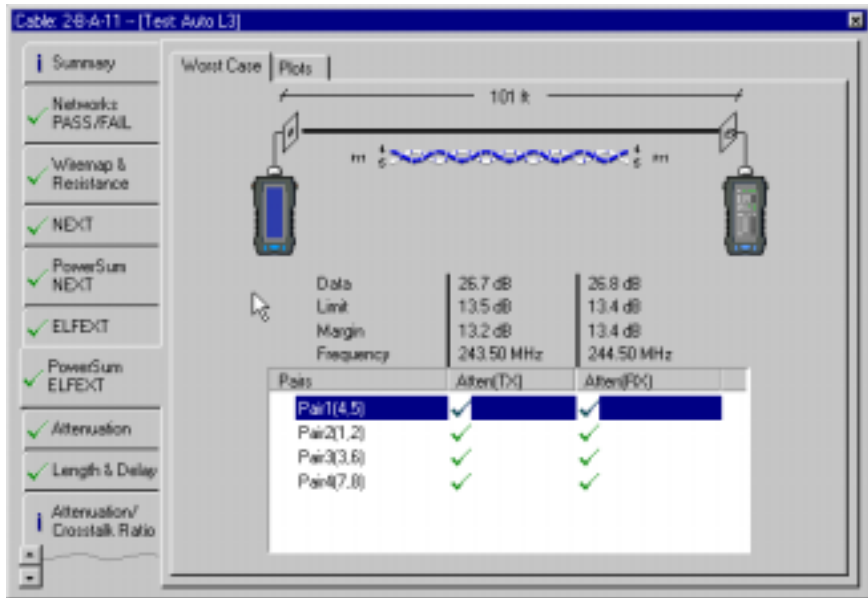
The ELFEXT - Worst Case tab operates similarly to the NEXT - Worst Case tab (see page 31) but displays ELFEXT instead of NEXT.

Autotest PowerSum ELFEXT – Plots Tab



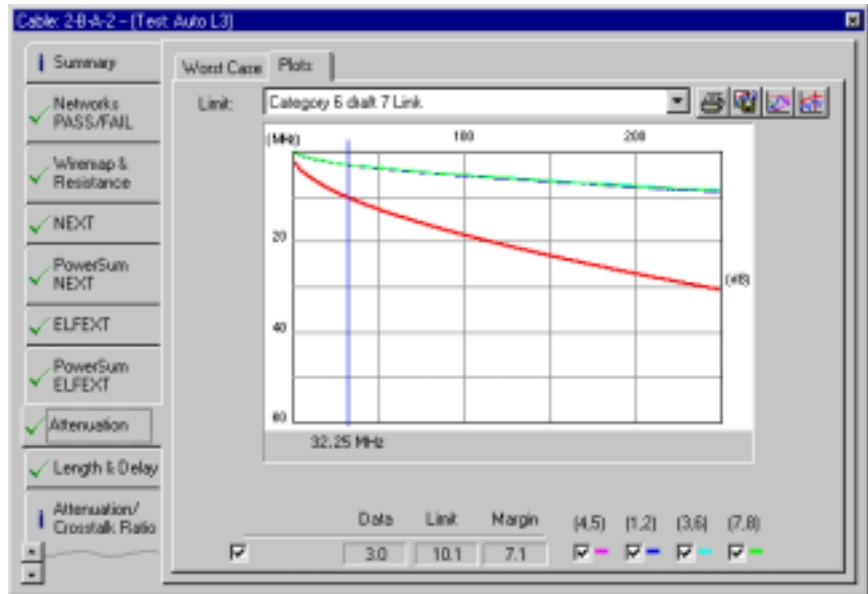
The PowerSum ELFEXT - Plots tab operates similarly to the NEXT - Plots tab (see page 30) but displays PowerSum ELFEXT instead of NEXT.

Autotest PowerSum ELFEXT – Worst Case tab



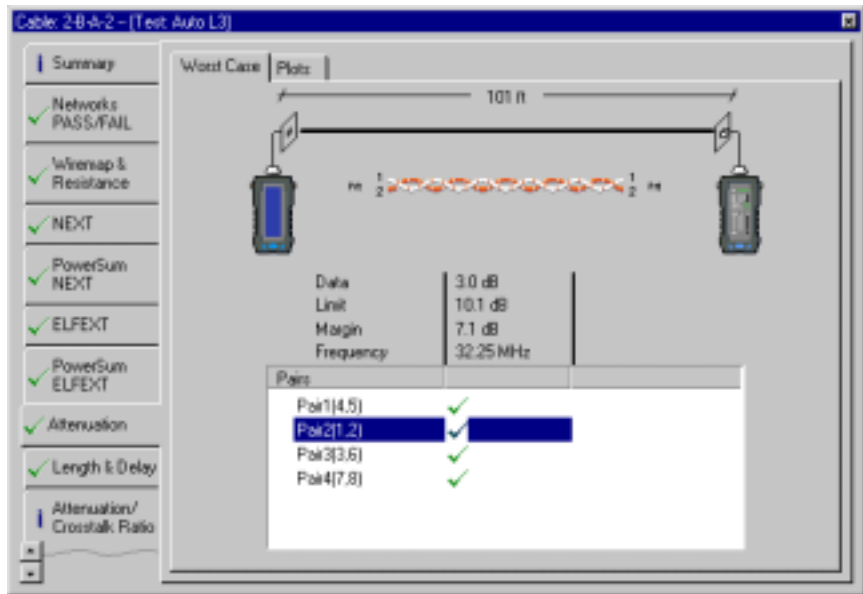
The PowerSum ELFEXT - Worst Case tab operates similarly to the NEXT - Worst Case tab (see page 31) but displays PowerSum ELFEXT instead of NEXT.

Autotest Attenuation – Plots Tab



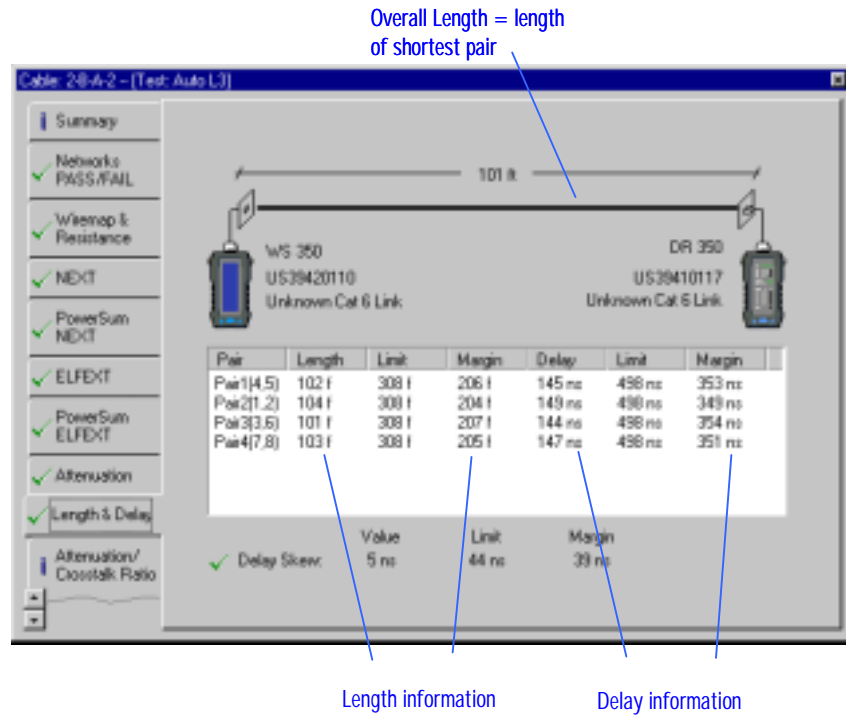
The Attenuation – Plots tab operates similarly to the NEXT – Plots tab (see page 30) but displays Attenuation instead of NEXT.

Autotest Attenuation – Worst Case tab



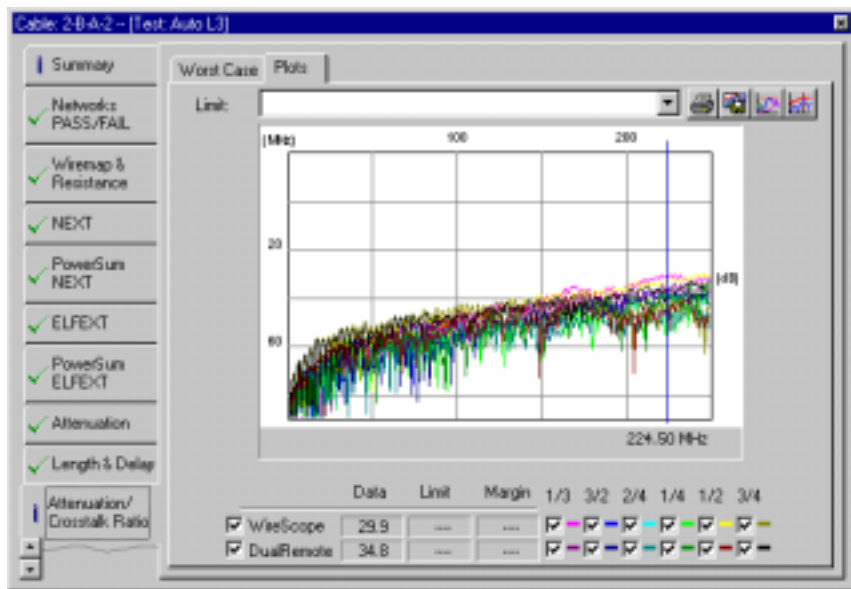
The Attenuation – Worst Case tab operates similarly to the NEXT – Worst Case tab (see page 31) but displays Attenuation instead of NEXT.

Autotest Length & Delay tab



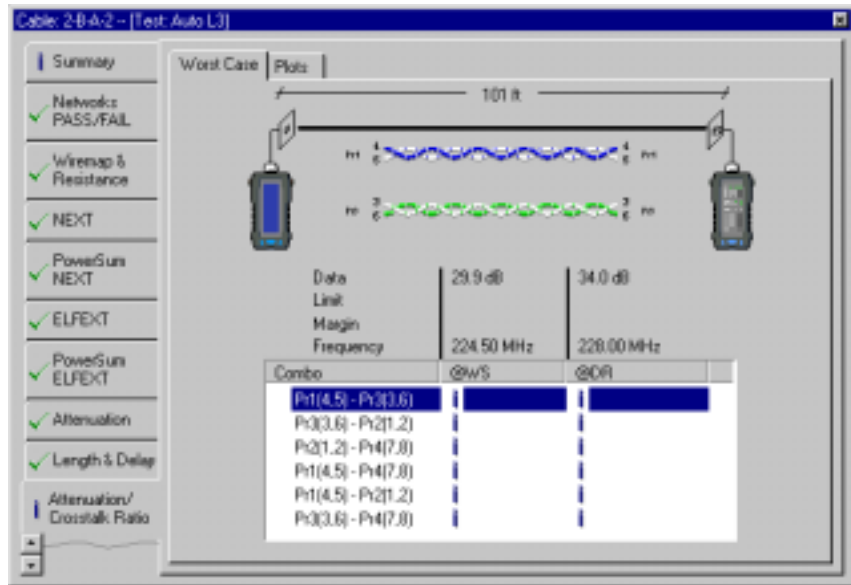
The Length tab shows the length and propagation delay of each pair in the tested cabling. The worst case skew among the pairs is also shown. The Overall length of the cable is the length of the shortest pair. The Skew is the maximum difference in the propagation delay among the pairs.

Autotest Attenuation to Crosstalk Ratio (ACR) – Plots Tab



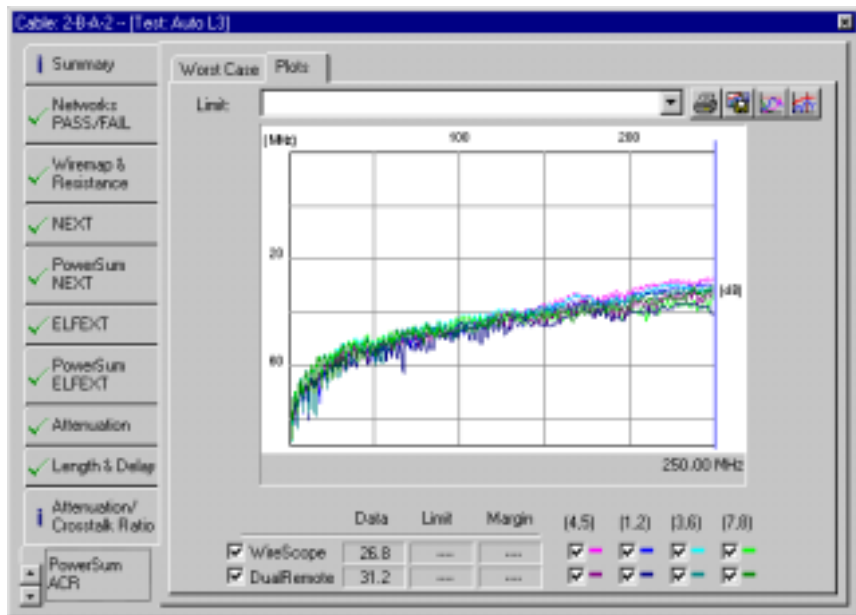
The ACR - Plots tab operates similarly to the NEXT - Plots tab (see page 30) but displays ACR instead of NEXT.

Autotest Attenuation to Crosstalk Ratio (ACR – Worst Case tab



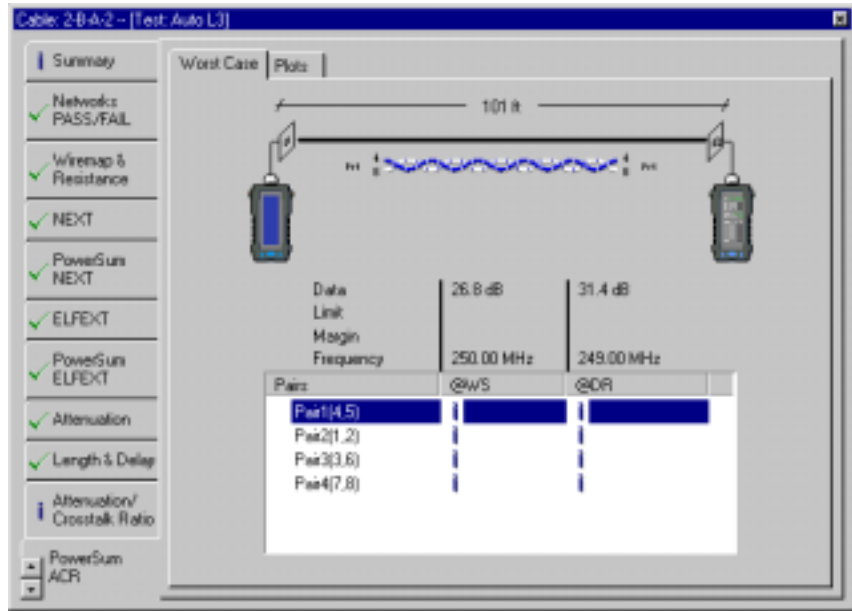
The ACR - Worst Case tab operates similarly to the NEXT - Worst Case tab (see page 31) but displays ACR instead of NEXT.

Autotest PowerSum ACR – Plots Tab



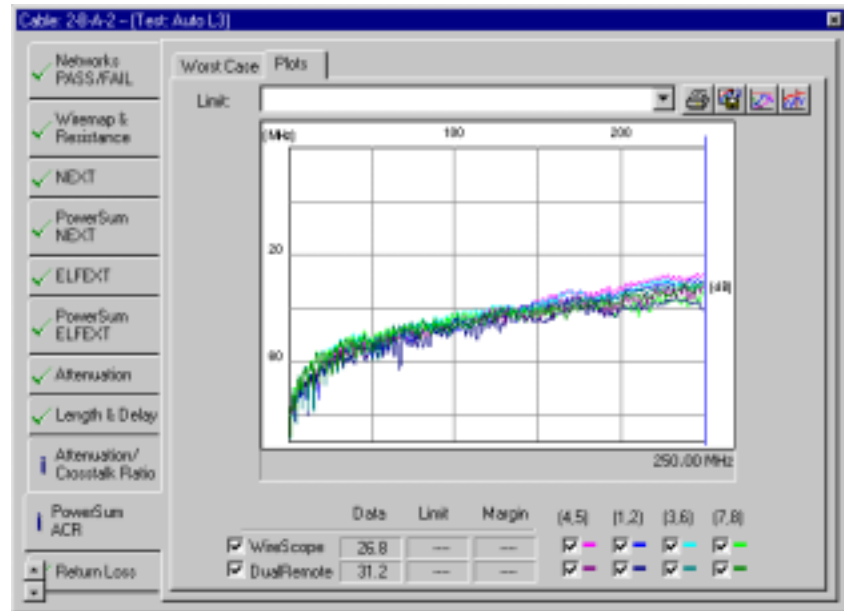
The PowerSum ACR - Plots tab operates similarly to the NEXT - Plots tab (see page 30) but displays PowerSum ACR instead of NEXT.

Autotest PowerSum ACR – Worst Case tab



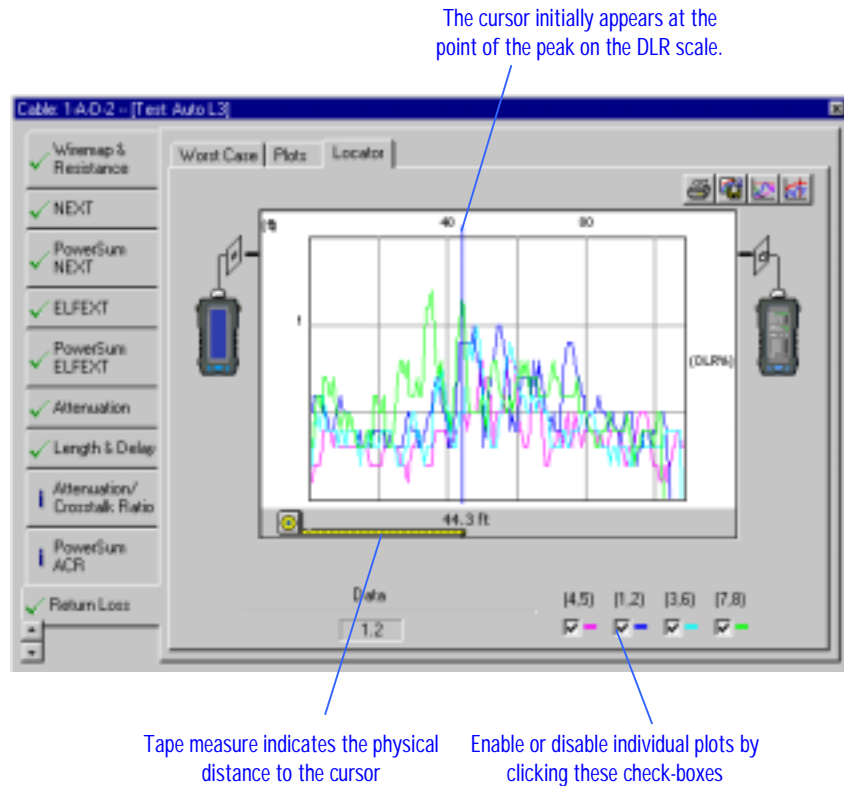
The PowerSum ACR - Worst Case tab operates similarly to the NEXT - Worst Case tab (see page 31) but displays PowerSum ACR instead of NEXT.

Autotest Return Loss – Plots Tab



The Return Loss - Plots tab operates similarly to the NEXT - Plots tab (see page 30) but displays Return Loss instead of NEXT.

Autotest Return Loss – Locator Tab

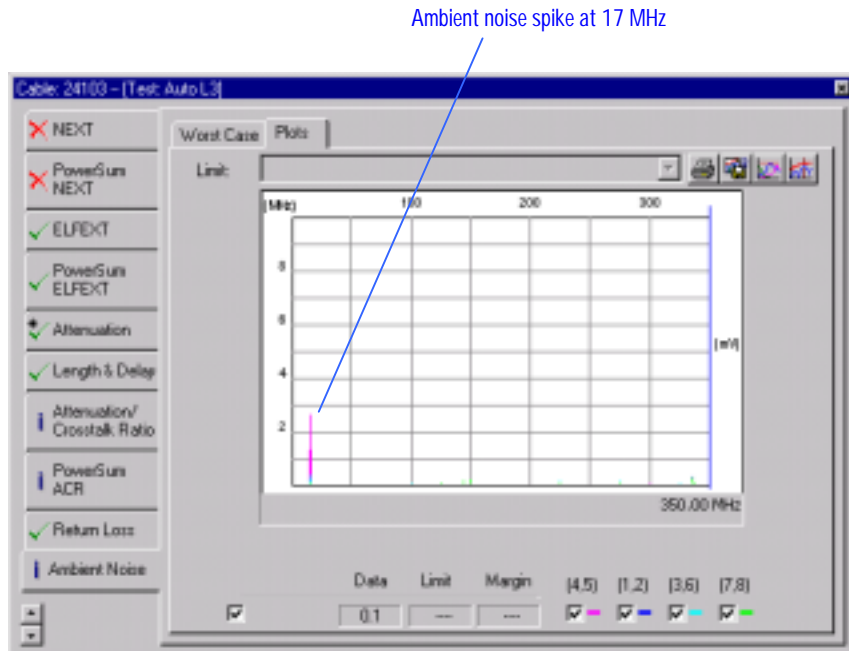


The Return Loss - Locator tab displays the time-domain representation of measured return loss. This plot helps to locate points in the installation that may be the source of failure. In the above example, the vertical line cursor is situated on the peak of the DLR response 44.3 feet away from the main test unit.

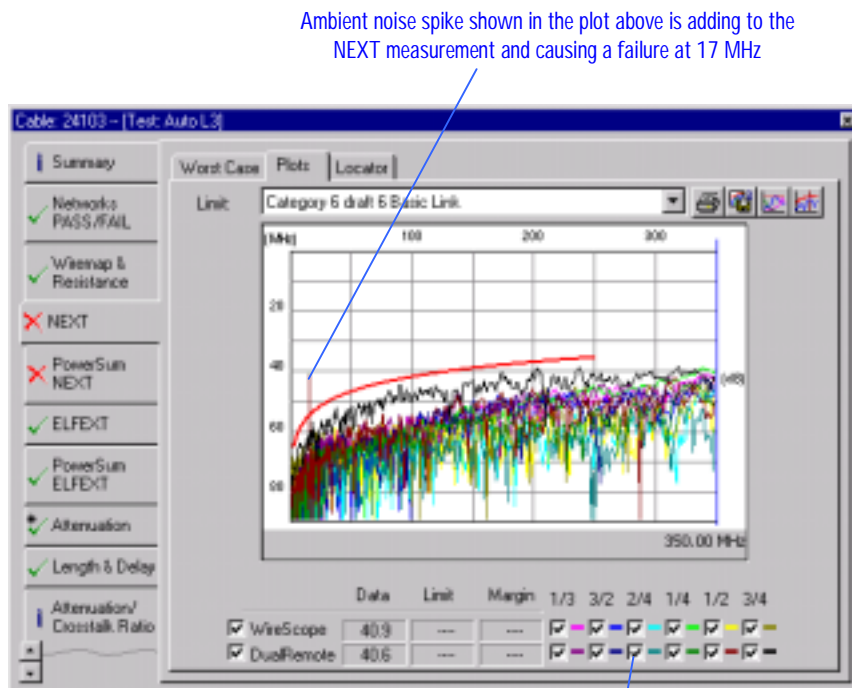
The return loss locator is initially shown for all 4 pairs. To enable or disable the plots for different pairs click the check-boxes on the bottom of the window.

The tape measure on the bottom indicates the physical distance to the location of the vertical line cursor. To move the cursor, click any location in the plot or use the **arrow** keys on the PC keyboard.

Autotest Ambient Noise Tab



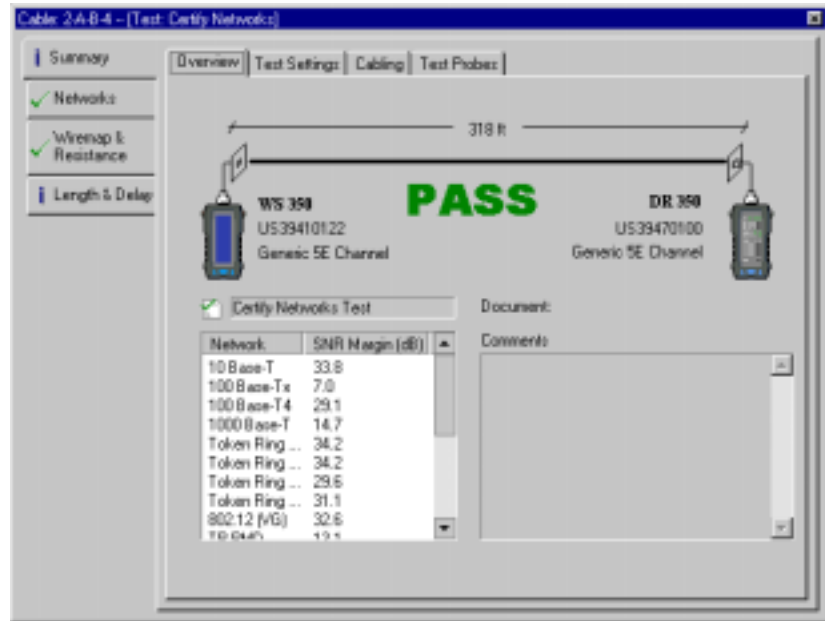
The Ambient Noise tab displays ambient noise measured over frequency. The noise is measured in mV rms. The ambient noise could be the cause of failure for other swept measurements as demonstrated in the following NEXT plot.



Interpreting twisted-pair Certify Networks records

The twisted-pair Certify Network test evaluates the measured cable data against the requirements of networking applications.

Certify Networks Summary – Overview Tab



The Summary – Overview tab of a Twisted-pair Certify Network record displays:

- The Pass/Fail result of the test
- The length of the tested cable
- The testers used and their serial number
- The test probes attached to the testers
- The Networks tested and their corresponding Signal to Noise Ratio (SNR)

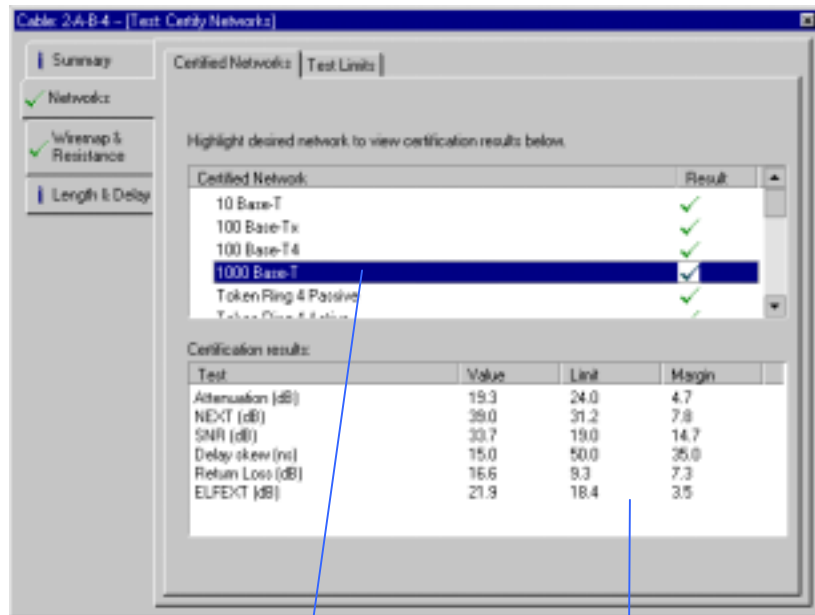
Certify Networks Summary – Test Settings Tab

The Summary – Test Settings tab for the Certify Network test record is the same as the corresponding tab for the Autotest record (see page 25).

Certify Networks Summary – Cabling Tab

The Summary – Cabling tab for the Certify Network test record is the same as the corresponding tab for the Autotest record (see page 26).

Certify Networks – Certified Networks Tab

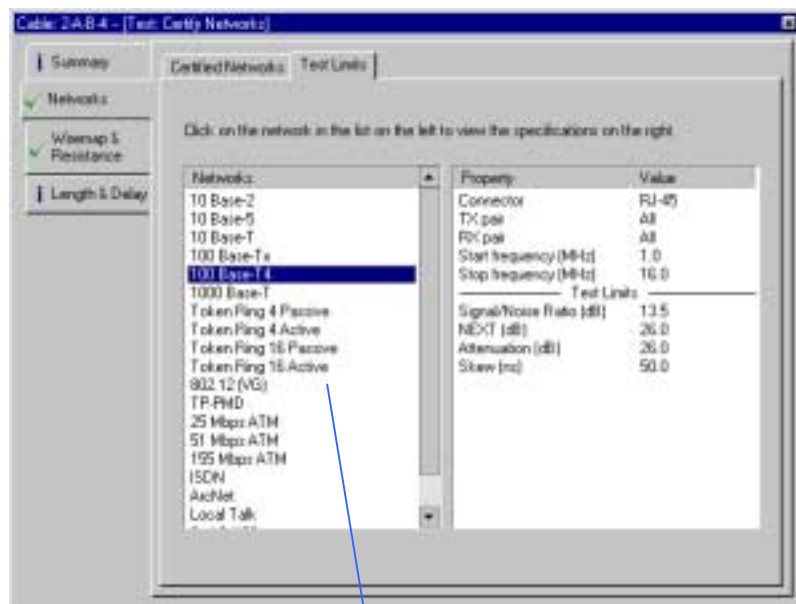


Select the network of interest by clicking it with a mouse and view the test results for this network in the bottom window.

Test results pertaining to the network selected in the top window.

The Networks tab displays the list of tested networks in the top pane. Click the network of interest to display the detailed test results for this network in the bottom pane.

Certify Networks – Test Limits Tab



Select the network of interest by clicking it with a mouse and view the test requirements for this network on the right.

The Networks – Test Limits tab displays test parameters and their corresponding test limits for each network supported. Click the network of interest in the left pane and view the test requirements for this network on the right.

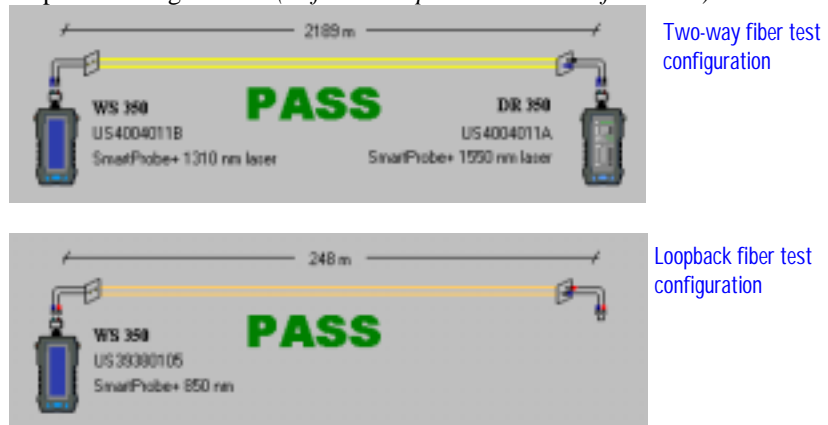
Other Certify Networks Tabs

The remaining tabs on the Certify Networks results window are the same as the corresponding tabs on the twisted-pair Autotest results window.

Interpreting Fiber Autotest records

The Fiber Autotest results incorporate Loss, Length and Network tests. The Length and Network tests are optional and may not be present on all Fiber Autotest records. The Loss results could be at a single wavelength or at two different wavelengths, depending on the fiber test probes that were used to perform the test and on the test configuration.

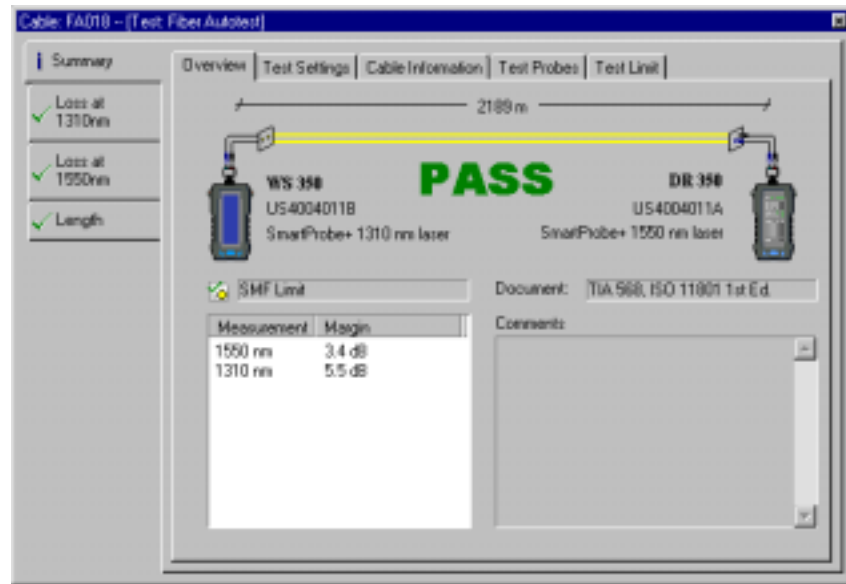
Two test configurations are possible – the two-way configuration and a loopback configuration. (Refer to the product manuals for detail)



A test record for a two-way test typically contains measurements at two different wavelengths. However, both probes in the two-way configuration may be transmitting at the same wavelengths, in which case the test record contains measurements at only one wavelength. The test record for a loopback configuration always contains measurements at only one wavelength.

Following is an example of a comprehensive two-way Fiber Autotest record produced by a WireScope 350 using the Fiber SmartProbe⁺ kit of 1310 and 1550 nm probes.

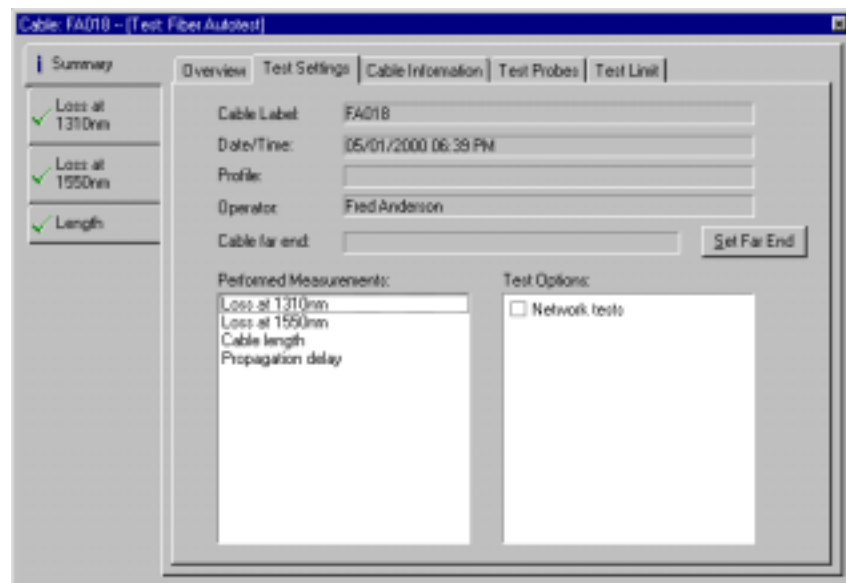
Fiber Autotest Summary – Overview Tab



The Summary – Overview tab of a Fiber Autotest record displays:

- The Pass/Fail result of the test
- The length of the tested cable
- The testers used and their serial number
- The type of fiber probes used and the test configuration (two-way or loopback)
- The target test limits and the standards documenting these limits
- The measurements performed (in this case, loss at 1310 nm and at 1550 nm) and the worst-case margins for each measurement.

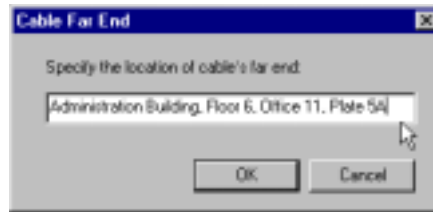
Fiber Autotest Summary – Test Settings Tab



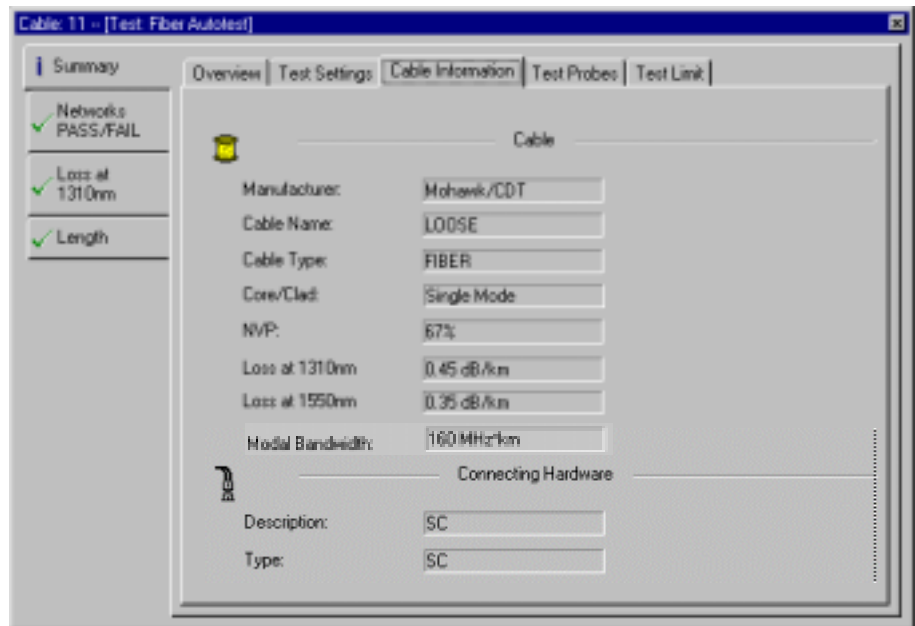
The Summary – Test Settings tab of a Fiber Autotest record displays:

- The cable label
- Date and time of the test
- The name of the test profile (if used)
- The name of the operator
- Location of the far end of the cable (typically the work area end)
- Measurements performed
- Test options enabled

The **Cable far end** field allows you to specify the location of the cable's far end. To fill in this field, click the **Set far end** button and then enter the description in the dialog box:

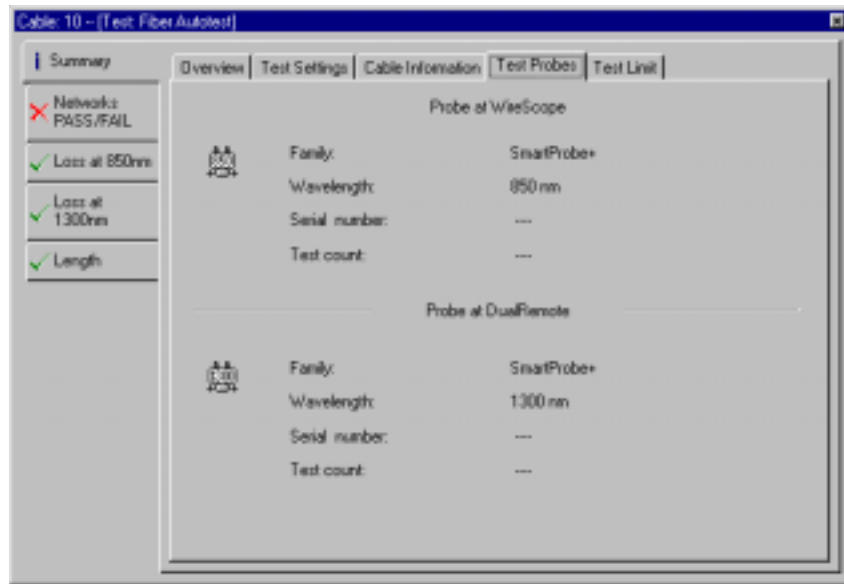


Fiber Autotest Summary – Cable Information Tab



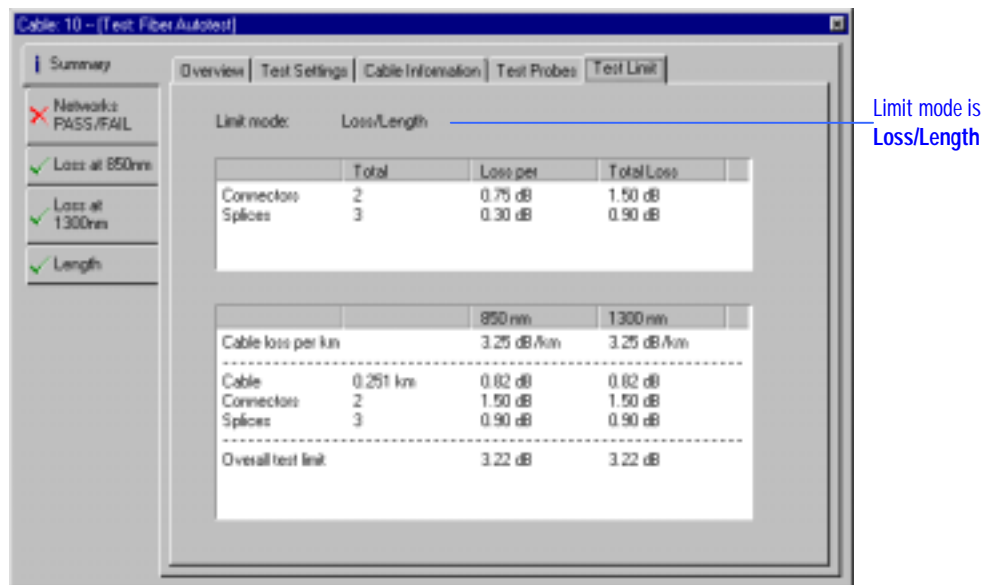
The Summary – Cable Information tab of a Fiber Autotest record displays the specifications of the tested fiber and connector.

Fiber Autotest Summary – Test Probes Tab

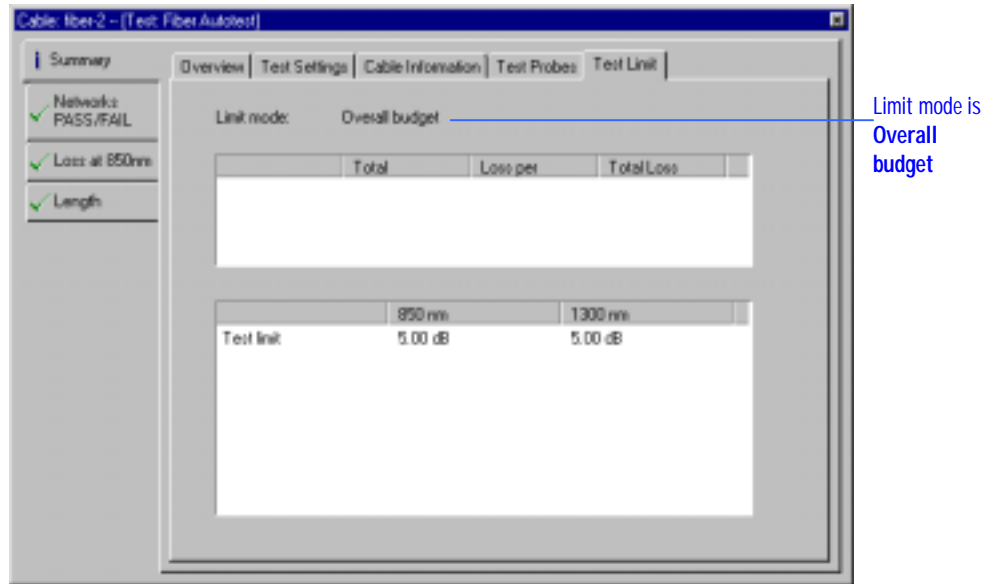


The Summary – Test Probes tab of a Fiber Autotest record displays information about test probe.

Fiber Autotest Summary – Test Limit Tab

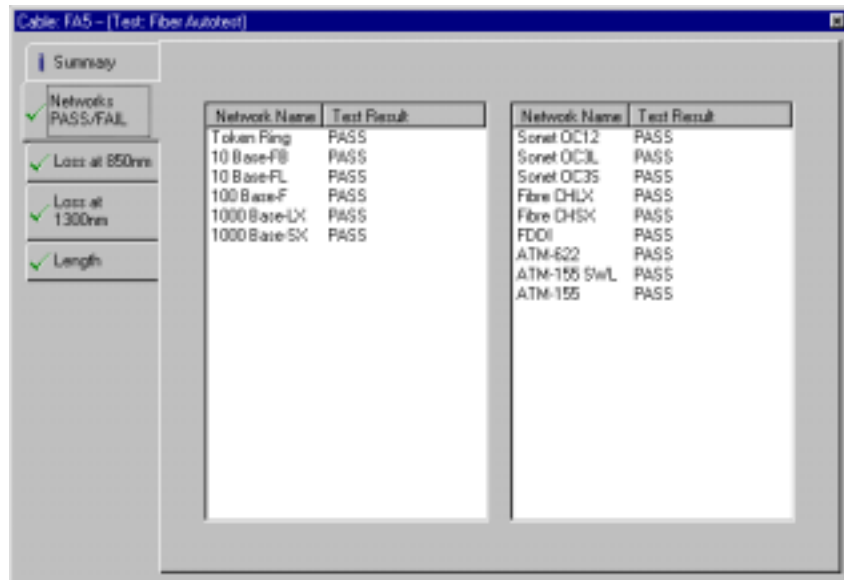


The Summary – Test Limit tab explains how the test limit was calculated. If the limit mode is **Loss per Length**, the overall tests limit calculated from total loss of connectors, splices and cable.



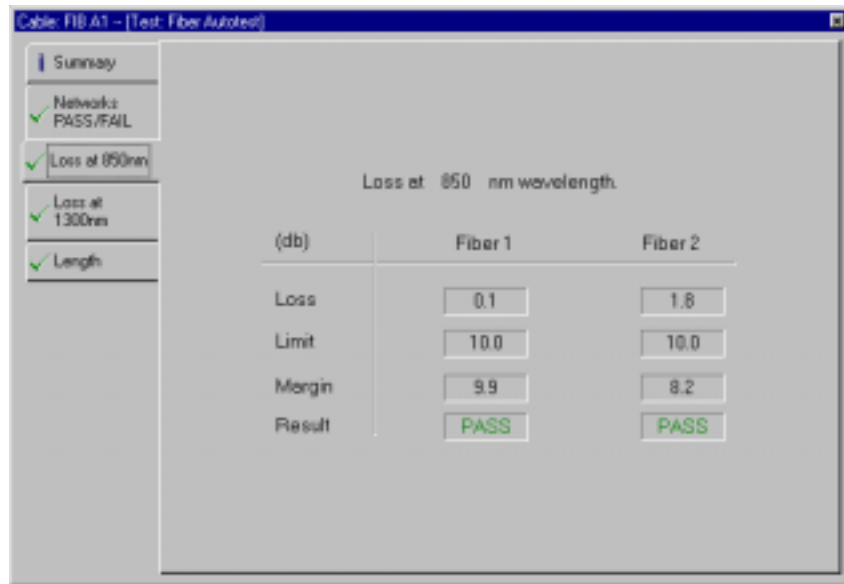
If the limit mode is **Overall Budget**, the test limit is specified independently of the losses of cabling components.

Fiber Autotest Networks PASS/FAIL Tab



The Networks PASS/FAIL tab of a Fiber Autotest lists all the networks evaluated during the test with their corresponding pass/fail test result.

Fiber Autotest Loss Tab



The Loss tabs for the different wavelengths tested (in this case 850 nm and 1300 nm) list the losses in each of the two fibers, the test limits for the loss and the margins with respect to the test limits. The pass/fail result is listed on the bottom line.

Fiber Autotest Length Tab



The Length tab of a Fiber Autotest record displays the length and delay of the tested cable, the length limit, and the pass/fail result.

Interpreting Fiber Certify Network Records

Fiber Certify Network records are similar to the Fiber Autotest records. However, each Certify Network test record applies to a single network and the measurements are pass/fail at only one wavelength. If the test configuration included the measurements at two wavelengths, the results at the second wavelength are listed for information only.

Fiber Certify Network Summary – Overview Tab

Measurements at 1300 nm and 850 nm are provided for information about measured fiber

Certified Network	Result	Comments
1000 Base-SX	PASS	
1000 Base-LX	PASS	
100 Base-F	PASS	
10 Base-FL	PASS	
10 Base-FB	PASS	
ATM-155	PASS	
ATM-155 SWL	PASS	
ATM-622	PASS	
FDDI	PASS	
Other CMV	PASS	

List of certified networks

The Summary – Overview tab for a Fiber Certify Network record is similar to the Summary – Overview tab for a Fiber Autotest Record (see page 45). The only difference is in the test limit field.

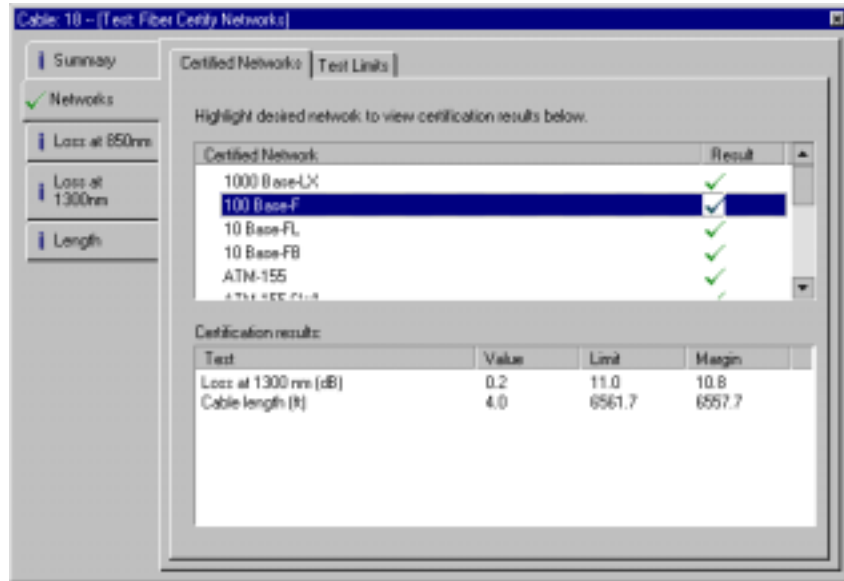
Fiber Certify Network Summary – Test Settings Tab

The Summary – Test Settings tab for the Fiber Certify Network test record is the same as the corresponding tab for the Fiber Autotest record (see page 45).

Fiber Certify Network Summary – Cable Information Tab

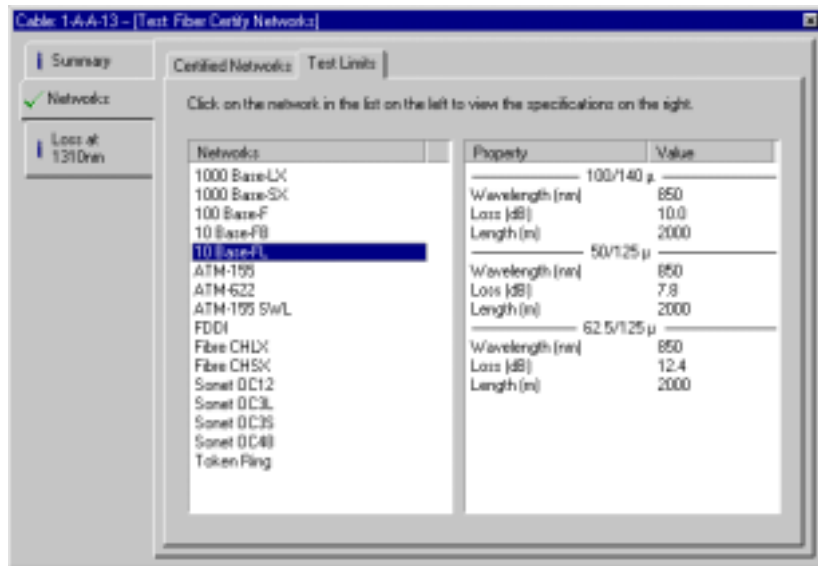
The Summary – Cable Information tab for the Fiber Certify Network test record is the same as the corresponding tab for the Fiber Autotest record (see page 46).

Fiber Certify Networks – Certified Network Tab



The Networks – Certified Network tab displays the measurements performed for the tested network, the test limits for each measurement and a pass/fail result for the test.

Fiber Certify Network Networks – Test Limits Tab



The Networks – Test Limits tab displays a list of fiber optic networks and the pass/fail criteria for each network. Click the network of interest in the left pane and view on the right the measurements required for the selected network and test limits for these measurements. These specifications are shown for four different types of fiber.

Fiber Certify Network Loss Tab

The Fiber Certify Network Loss tab is the same as the Fiber Autotest Loss tab (see page 48).

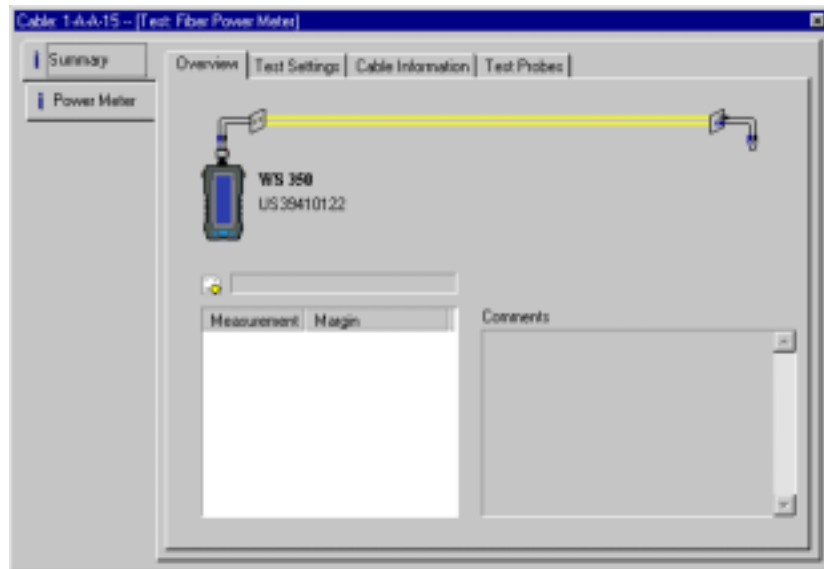
Fiber Certify Network Length Tab

The Fiber Certify Network Length tab is the same as the Fiber Autotest Length tab (see page 49).

Interpreting Fiber Loss Meter and Power Meter records

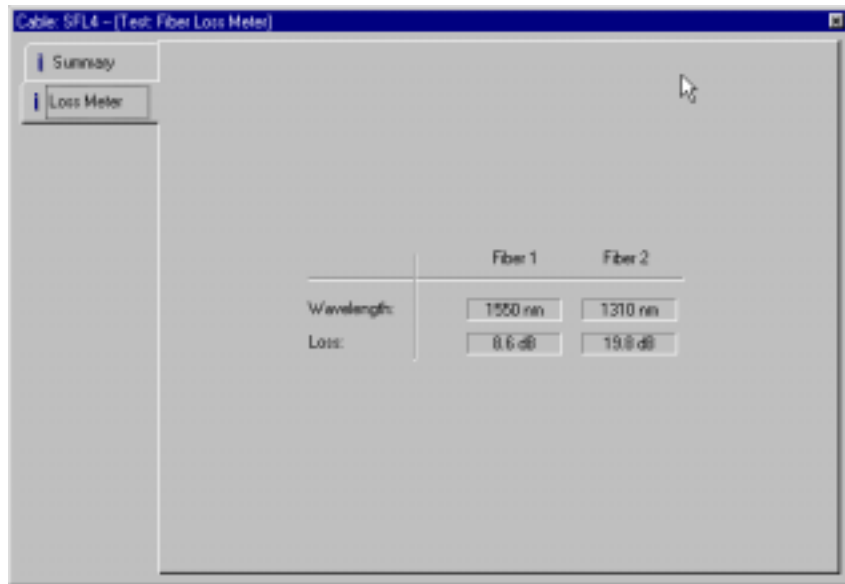
The Loss Meter and Power Meter test records contain a single-measurement – optical loss of the fiber or optical power level detected by the probe. There are no pass/fail criteria for these tests and the measured values are shown on the second vertical tab for information only.

Fiber Loss Meter and Power Meter Summary Tab



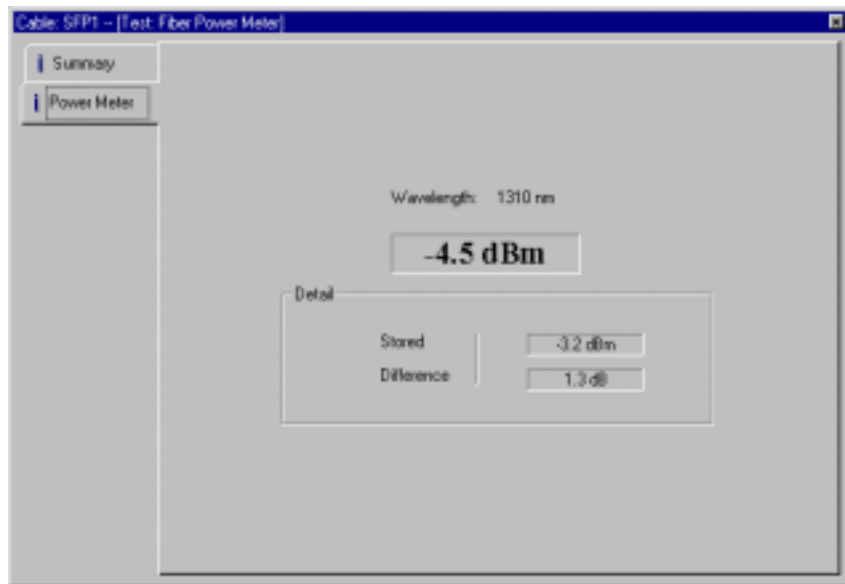
The Summary tab for the Fiber Loss Meter and Power Meter test records is similar to the Summary tab for the Fiber Autotest (see page 45).

Fiber Loss Meter Tab



The Fiber Loss Meter tab displays the loss at the measured wavelength(s).

Fiber Power Meter Tab



The Power Meter tab displays the power measured by the fiber and the dB difference between this power reading and the stored reference power level.

Viewing and editing specifications databases

ScopeData Pro maintains specifications databases of cables, connectors, networks, test probes and profiles. These specifications are loaded into the test unit and are used to:

- verify test configuration for validity
- process measured data

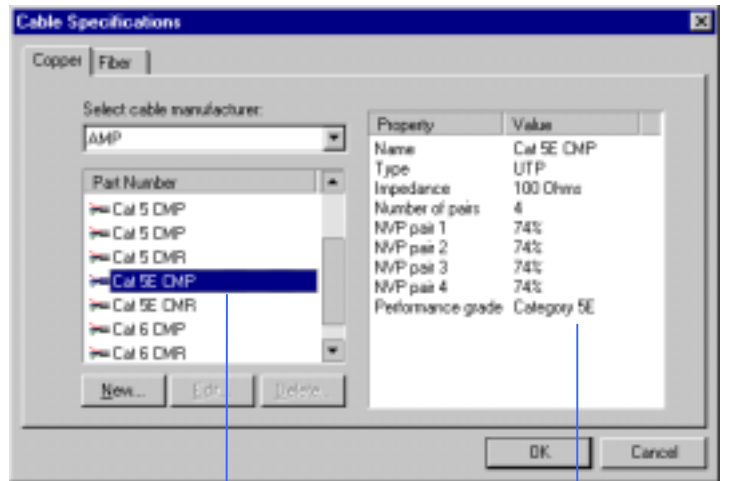
Viewing cable specifications

The cable specifications are used to determine the length of the cable from the measured propagation delay.

To view cable specifications select **Specifications** from the **View** menu and then click **Cables....**



The following dialog box appears.



List of cables for manufacturer selected in the pull-down menu (AMP)

Specifications for the cable selected on the left

The dialog box has two tabs – one displaying the specifications for the copper twisted-pair cables and the other displaying specifications for the fiber optic cables. The list of fiber cables is only available if fiber records are uploaded into the database.

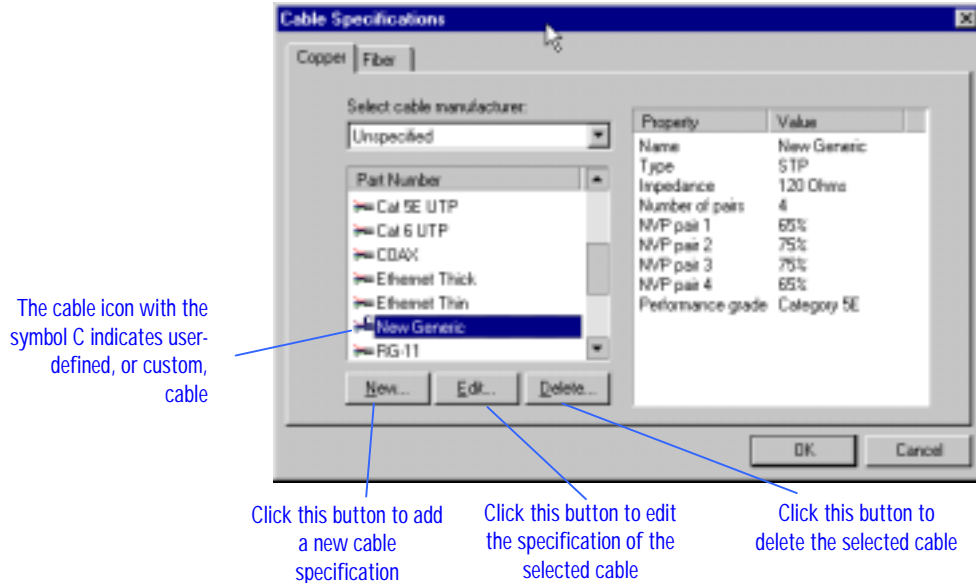
The cables are organized by manufacturer. To view a cable specification, first select the manufacturer in the pull-down menu and then click the cable of interest in the list that appears under the pull-down menu. The specification for the selected cable is shown on the right.

Adding and editing cable specifications

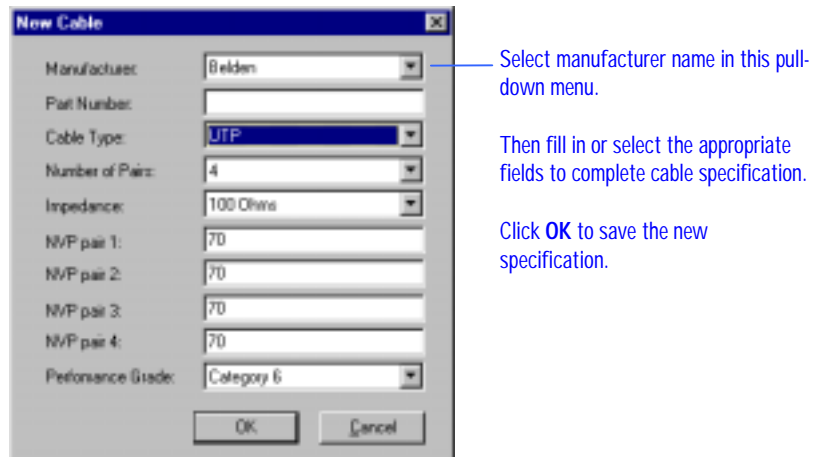
You can add a new cable specification or edit existing specifications.

NOTE:

You may edit or delete user-defined cables, only.

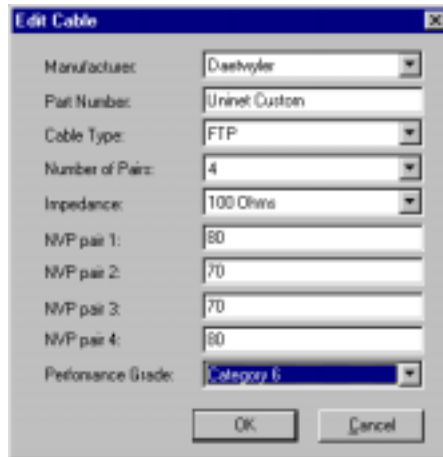


To add a new specification, click the **New** button on the **Cable Specifications** dialog box and fill in the specifications for a new cable in the following dialog box:



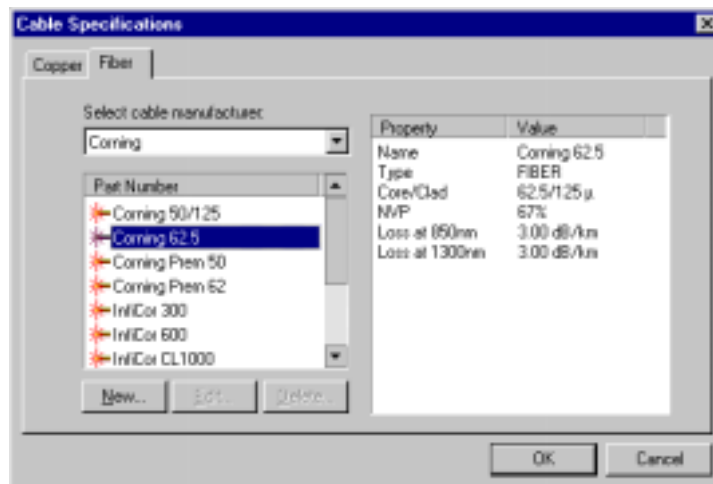
To edit a cable specification, select the cable of interest and then click the **Edit** button.

The following dialog box appears and lets you edit the specifications of the selected cable.

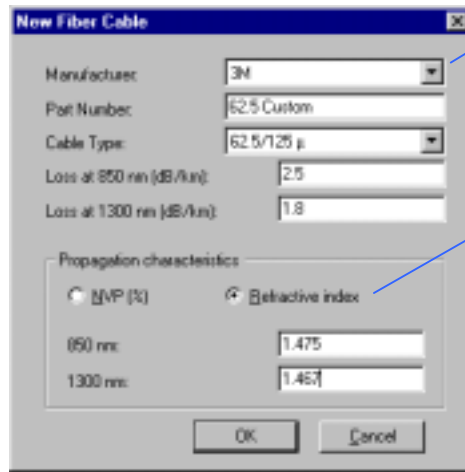


Edit the specifications and click **OK** to save your changes.

To add new fiber cable to the specification database select **Fiber** tab and click the **New...** button.



The **New Fiber Cable** dialog will appear:



Select manufacturer name in this pull-down menu.

Then fill in or select the appropriate fields to complete cable specification.

You can enter either NVP or refractive index to specify propagation delay of this cable.

Click **OK** to save the new specification.

For any changes to take effect, you need to update the specifications database (see page 62).

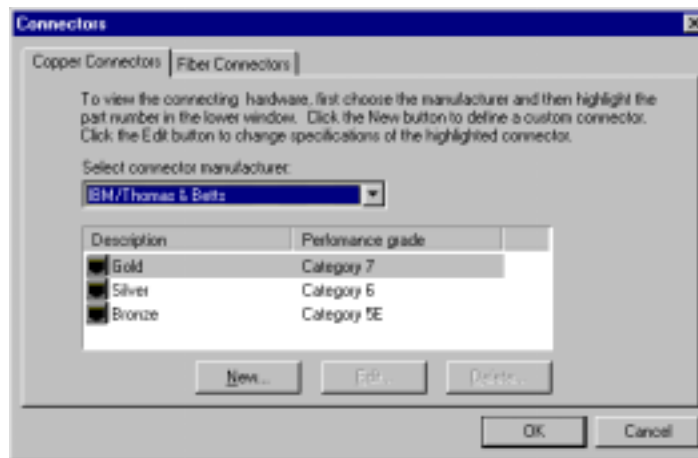
Viewing connector specifications

The tester uses connector specifications to verify that the test probes used for testing match the connecting hardware in the installation under test.

To view connector specifications select **Specifications** from the **View** menu and then click **Connectors...**



The following dialog box appears:



Select the manufacturer of connecting hardware in the pull-down menu to view a list of connectors made by this manufacturer. The connectors are identified by a product family name and target category.

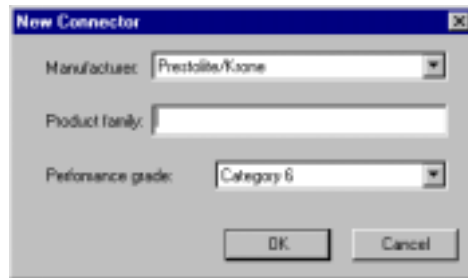
Adding and editing connector specifications

To add new connector specifications, click the **New** button on the **Connectors** dialog box. To edit an existing specification, select the connector of interest and then click the **Edit** button.

NOTE:

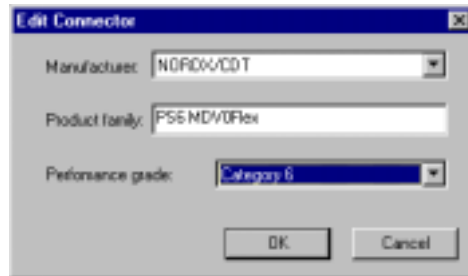
You may edit or delete user-defined cables only.

You can then define new specifications or edit the existing record. Clicking the **New** button brings up the following dialog box:



Select the manufacturer in the pull-down menu and then enter the family name of the product. Select the performance grade of the connector in the lower pull-down menu. Click **OK** to save the new record.

Clicking the **Edit** button brings up the following dialog box:



Edit the settings and click OK to save your changes.

For any changes to take effect, you need to update the specifications database (see page62).

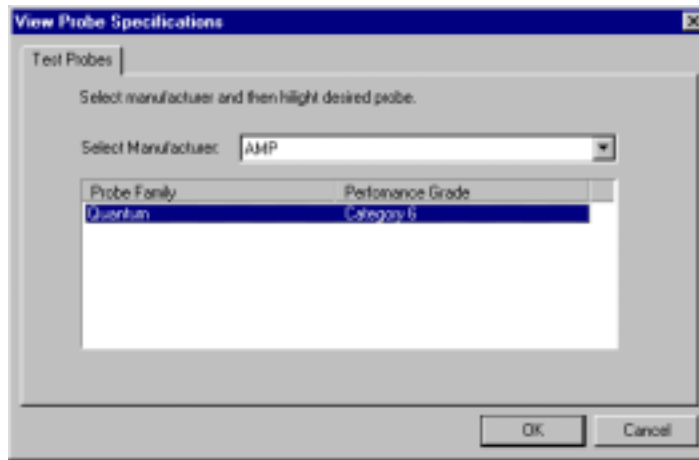
Viewing probe specifications

Probe specifications are used to verify that the probes connected for testing correspond to the connecting hardware used in the installation.

To view probe specifications select **Specifications** from the **View** menu and then click **Probes....**



The following dialog box appears. Select the manufacturer in the pull-down menu and a list of probes supporting that manufacturer's connecting hardware appears.



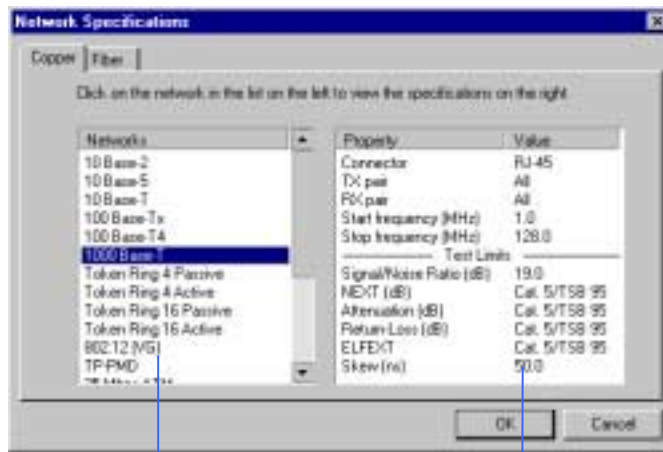
Viewing network specifications

The network specifications are used to perform the **Certify Network** pass/fail evaluation of the measured test data.

To view network specifications select **Specifications** from the **View** menu and then click **Networks**.



The following dialog box appears:



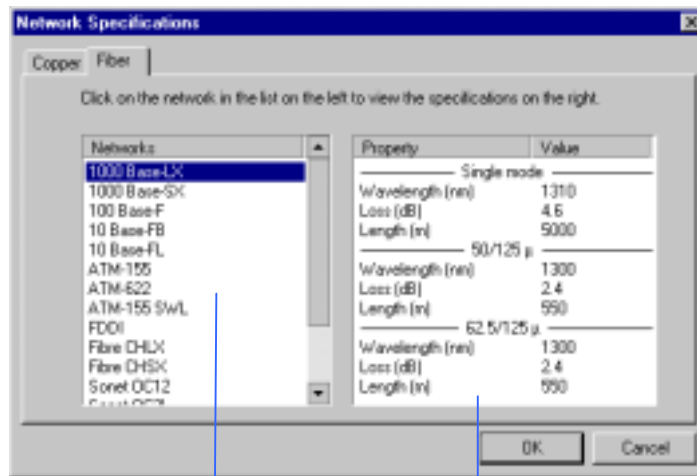
List of twisted-pair networks

Specifications for the network selected on the left

To view the specifications, click the network of interest and view its specifications on the right.

To view the specifications of fiber optic networks, click the **Fiber** tab and then select a network from the list of fiber optic networks to view its specifications.

The specifications of fiber optic network are listed at each appropriate wavelength and for the different types of fiber cables.



List of fiber optic networks

Specifications for the network selected on the left for different fiber optic media

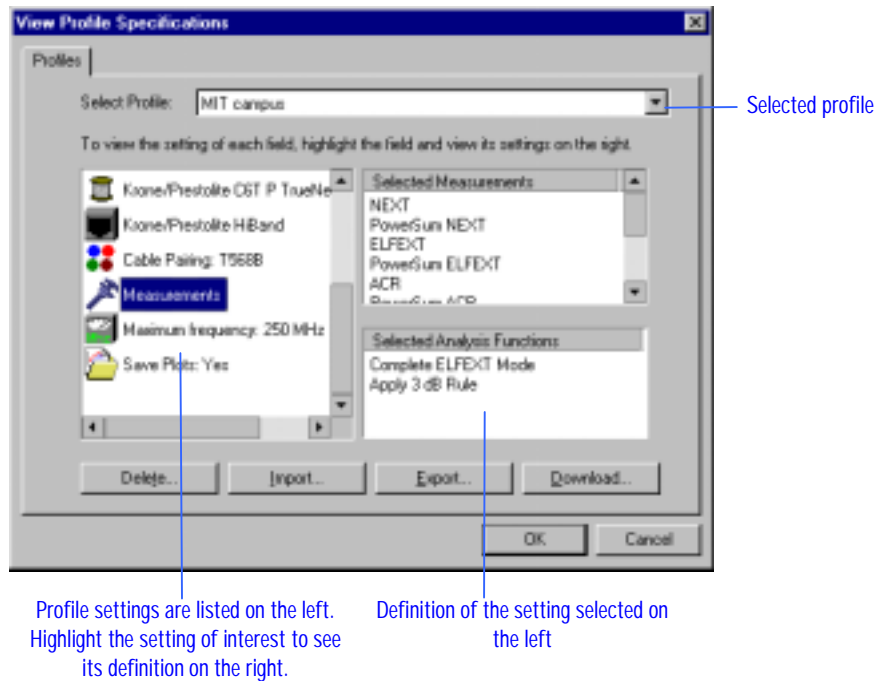
Viewing Profiles

A Profile is a collection of test settings for either the FrameScope 350 or WireScope 350 (See Chapter 3 for more information on how to define a profile.).

To view the profile specifications, select **Specifications** from the **View** menu and then click **Profiles...**



You will see the following dialog box allowing you to select a previously defined profile and to view each setting of this profile.

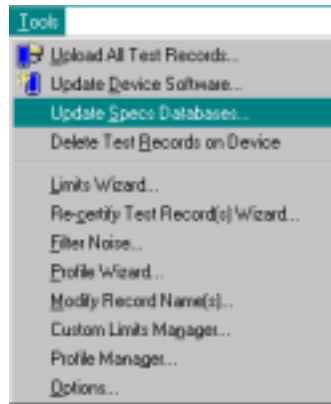


The profile parameters are listed on the left and the definition of the selected parameter is displayed on the right.

Updating the specifications databases

ScopeData Pro can update the specifications databases of cables, connectors, test probes and profiles stored in the FrameScope 350 or WireScope 350.

To update the testers specifications databases, select **Update Specs Databases...** from the **Tools** menu.



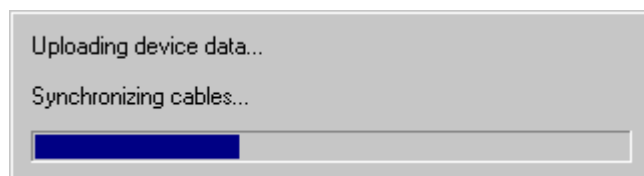
ScopeData Pro then looks for a CompactFlash™ card and either a FrameScope 350 or WireScope 350 at a serial port, then displays the following dialog box if they are present:



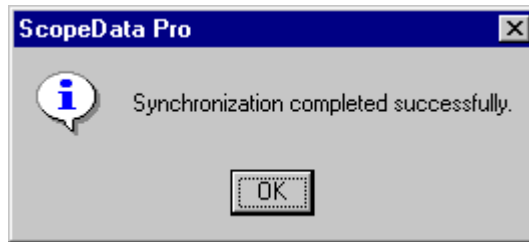
Select the device of interest and then click **OK** to load the specifications records into this device. ScopeData Pro loads complete databases of cables, connectors, test probes and test profiles into the test unit replacing the currently stored records. Any custom specifications records defined on the test unit will be left intact.

You may copy new specifications onto the CompactFlash™ card. This will allow you to update several testers with the same specifications. After the update information was copied, plug this card into the tester and follow the instructions displayed on the tester.

If only the test unit is present, the updating starts immediately. Several messages similar to the following are displayed during the process.



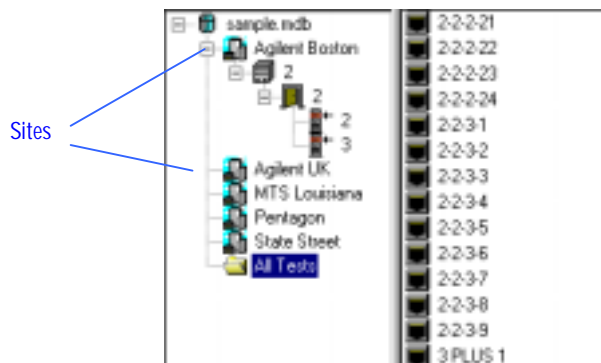
When completed, ScopeData Pro displays the following message.



Organizing test records

Working with the hierarchy structure

The hierarchy shown in the left pane of the ScopeData Pro results explorer can be configured to reflect the physical layout of the tested cabling. This hierarchy is typically associated with a single test site. However, a database can contain multiple sites.



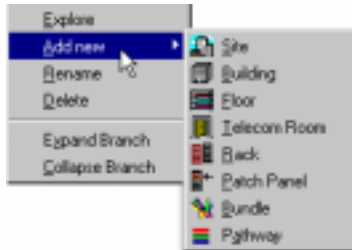
Creating a hierarchy structure

You can create a database hierarchy structure in the following three ways:

- By defining a Site that uses hierarchical labeling and then selecting this site prior to testing (see the User Guide, Chapter 4, Site Settings); the uploaded test results will then automatically be structured as the defined hierarchy
- By defining a Site that uses hierarchical labels as part of a Profile (see page 128 for the description of the Profile Wizard); loading this profile into a tester and selecting the profile; the uploaded test results will then be structured per the defined hierarchy
- By defining a hierarchy for an existing database after the test records are uploaded and then dragging the records to the appropriate locations in the hierarchy

Defining a Hierarchy for an Existing Database

To define the hierarchy after the test records have been uploaded, you can add levels to the hierarchy structure and then move groups of record under these levels. To add a level right-click on any hierarchy level and then select the **Add new** option.

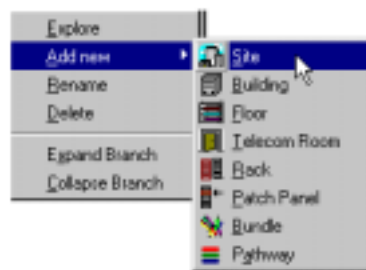


Example:

Starting with an unstructured database, with only the **All Tests** hierarchy level...

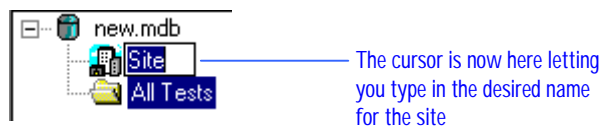


... right click on the top level (the new.mdb), select **Add new** and then click

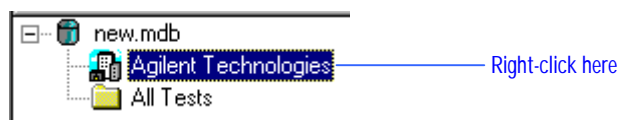


Site

The hierarchy now looks as follows:



Enter the name of the site (e.g. Agilent Technologies) and press **Enter**.



To add a **Building** level under the **Agilent Technologies** site, right click on the **Agilent Technologies** site and then select **Add new** and then click **Building**.

Menu that pops up when you right-click on a hierarchy level



The hierarchy level now looks as follows:

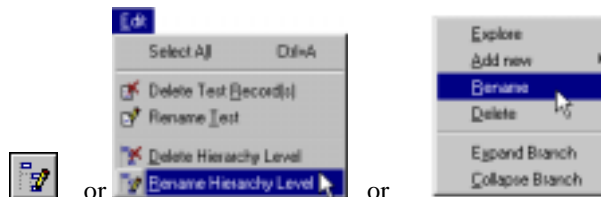


Name the newly created **Building** by entering the name to replace the highlighted text. For example, enter “Administration Building.”



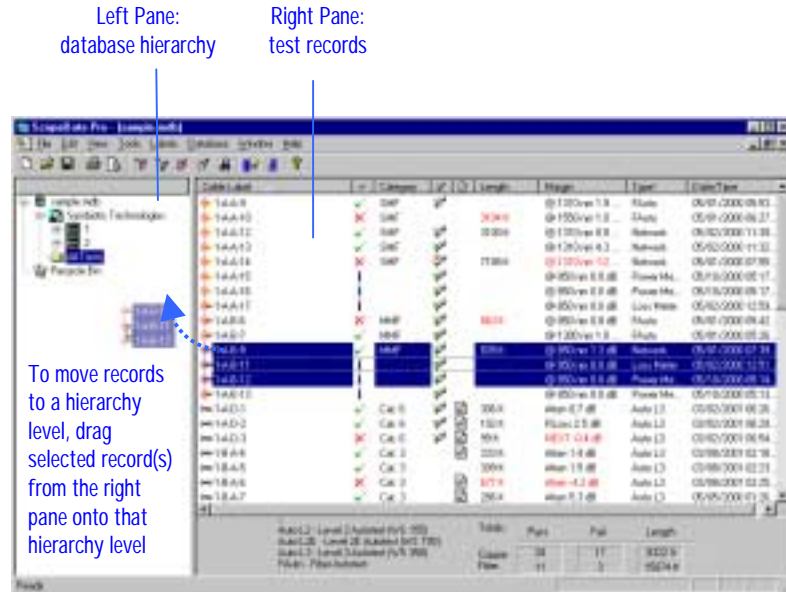
Renaming a hierarchy level

If you want to re-name any hierarchy level, select this level with a mouse and then either click it again after waiting a second or click the **Rename Hierarchy Level** button or select **Rename Hierarchy Level** from the **Edit** menu. You can also right-click the hierarchy level and then select **Rename**.



Moving test records

To move test records to the newly added hierarchy levels, drag the records from the right pane onto a selected hierarchy level. You can drag a single record or a group of records by holding down the left mouse button and dragging the cursor onto the hierarchy level in the left pane.

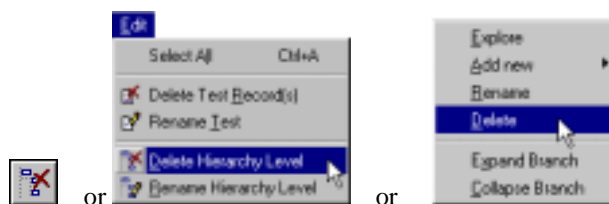


Clicking a hierarchy level (site, building, floor, etc.) in the left pane of the records explorer displays in the right pane the items stored under this level: test records or other hierarchy levels.

Tip: to select a group of records click the first record in the group, then press and hold the **Shift** key and click on the last record in the group. You can add or remove individual record from the selected group by holding down **Ctrl** key and clicking on this record.

Deleting a hierarchy level

To delete a hierarchy level, select the hierarchy level and then either click the **Delete Hierarchy Level** button or select **Delete Hierarchy Level** from the **Edit** menu. You can also right-click the level you want to delete and then select **Delete**.



CAUTION: Deleted records or hierarchy levels cannot be restored.

Deleting test records

To delete a test record or a marked group of test records, first mark the record(s) and then either click the **Delete Test Record(s)** button or select **Delete Test Record(s)** from the **Edit** menu.

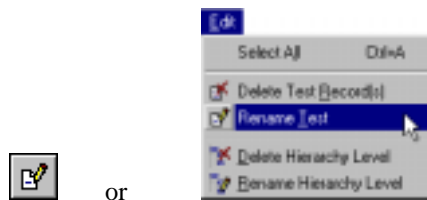


NOTE:

*Deleting test records does not automatically shrink the database in size. To reclaim the space, choose **Compact Database** from the **Tools** menu.*

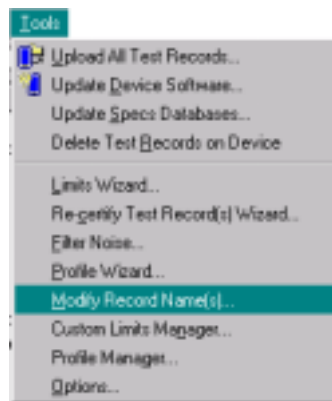
Renaming test records

To change the name of a test record, select the record and then either click the **Rename Test** button or select **Rename Test** from the **Edit** menu.

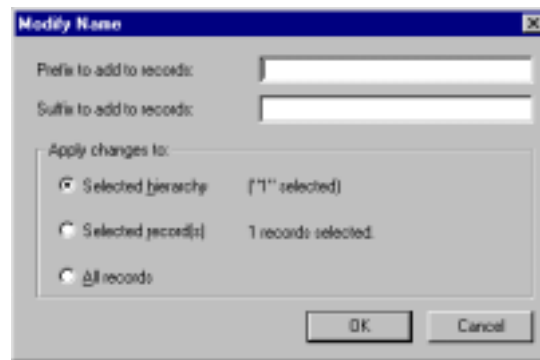


You can also change the record names by adding a prefix or a suffix to a single name or to a group of record names. This could be useful if you are creating new hierarchy levels (see page 63) and want to reflect the hierarchy structure in the record names.

To add a prefix or a suffix to record names, first mark the records you want to rename and then select **Modify Record Name(s)...** from the **Tools** menu.



The following dialog box appears:

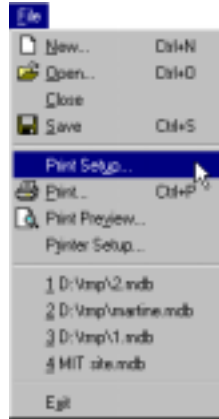


Enter the desired prefix and suffix and then specify which records are to be affected by this operation. The changes made to record names cannot be reversed.

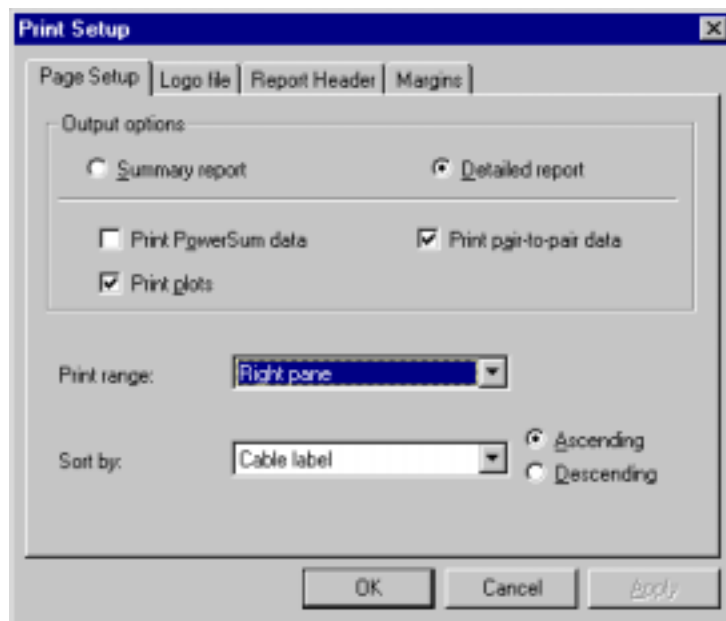
Printing test reports

Print Setup





The **Print Setup** dialog box lets you configure the format of the printed reports. You can also invoke it by selecting **Print Setup** from the **File** menu.



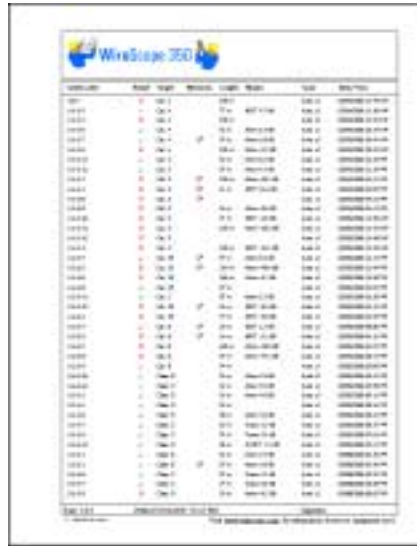
The following **Print Setup** dialog box appears:



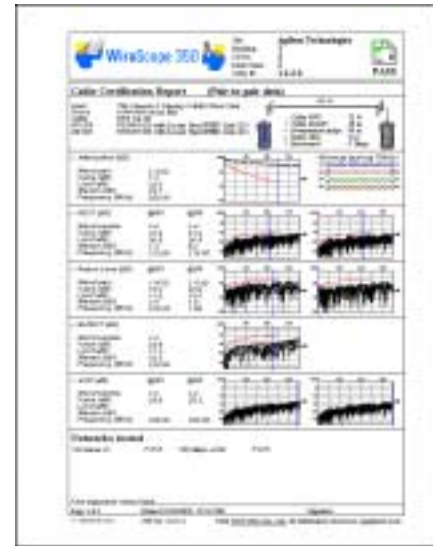
Select **Detailed report** to get a full page report for each record. Select **Summary report** to get a one-line report for each record. The summary report contains the same information as the right pane of the results explorer:

Cable Label	Networks	Result	Plot	Length	Margin	Type*	Date/Time
1-1-a				4 ft	RLoss 4.1 dB	Auto L3	10/27/1999 02:29 PM
1-1-b				4 ft	RLoss 4.0 dB	Auto L3	10/27/1999 02:29 PM

Summary report

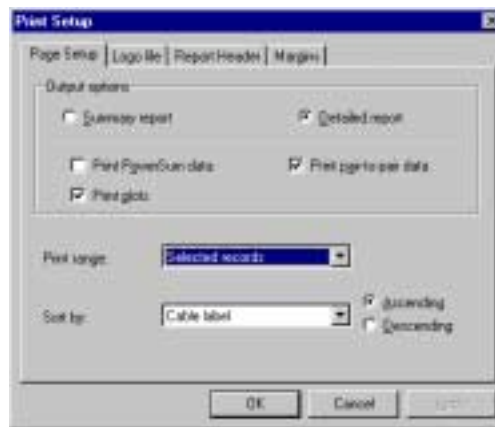


Detailed report



The printed summary report will have the same appearance and sorting order as the right pane of the results explorer. For example, if you have the records sorted by the **Length** field on the window, they will be printed in the same order in the summary report.

If you select detailed reports, you need to specify pair-to-pair or PowerSum format for the report. You can enable both pair-to-pair and PowerSum reports. If you enable both, two pages per record will be printed. You also need to indicate whether plots are to be included on the report.



If **Detailed report** option is enabled, select the report format – **PowerSum** or **pair-to-pair** here. Enable the **Print plots** option for a report with plots. Disable this option for a report listing worst-case points instead of plots.

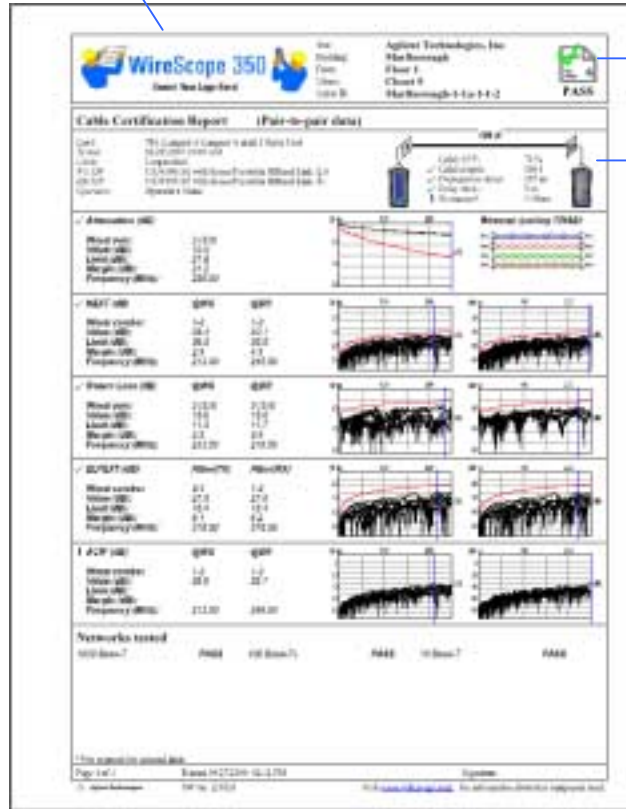
You may specify the set of record to be printed. It could be:

- **Selected hierarchy:** records on the selected hierarchy level and all levels underneath it will be printed;
- **Selected records:** a group of selected record will be printed;
- **All records:** all records in the database will be printed;
- **Right pane:** all records displayed in the right pane of results explorer will be printed.

Tip: to select a group of records click the first record in the group, then press and hold the **Shift** key and click on the last record in the group. You can add or remove individual record from the selected group by holding down **Ctrl** key and clicking on this record.

Customizable Logo

Detailed report with plots enabled



Target test limit and pass/fail status

Test configuration and cable parameters

Plots and worst case values are shown for each measurement. The cursor appears at the worst case point on each plot.

Measurements that are not required for the pass/fail determination may be shown for information only.

If you disable the **Print plots** option, the report shows worst case points for each measurement instead of plots.

Detailed report with plots disabled

The screenshot displays a 'Cable Certification Report' from WireScope 350. The report is titled '(Pair-to-pair data)' and includes a header with the product name and version. Below the header, there is a section for 'Cable Information' and a table of 'Cable Parameters'. The table columns include 'Parameter (dB)', 'Value', 'dBm', 'Loss', 'Margin', and 'dBm/ft'. The data is organized into several sections: '1. Attenuation (dB)', '2. NEXT (dB)', '3. Return Loss (dB)', '4. ELF (dB)', and '5. ACP (dB)'. Each section contains a table of values for different cable pairs. At the bottom of the report, there is a 'Networks tested' section and a footer with page information.

Worst case points for each pair and pair combination are tabulated if plots are not available or not selected for printing.

For the detailed reports, when you need to specify which record(s) are to be printed, you have the following choices – all records in the database, records appearing under the hierarchy level selected in the left pane or records selected in the right pane of the results explorer.

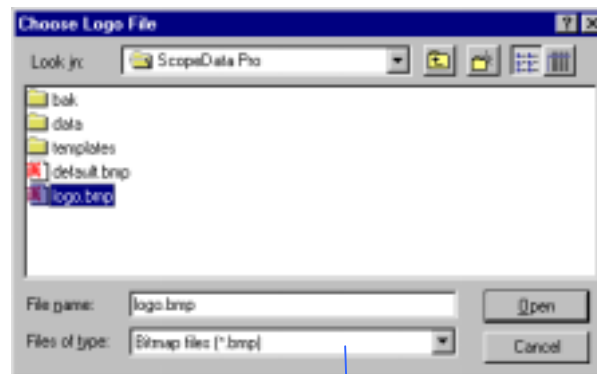
The **Logo file** tab of the Print Setup dialog box lets you specify the logo graphics to appear on the printed reports.



Click here to change the logo appearing on the printed reports

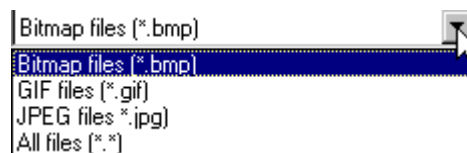
Initially, the default logo is selected

The selected logo is displayed in the preview window. To change the logo, click the **Select file** button and then browse to the graphics file containing the new logo. Only *.jpg, *.gif, and *.bmp formats are acceptable.

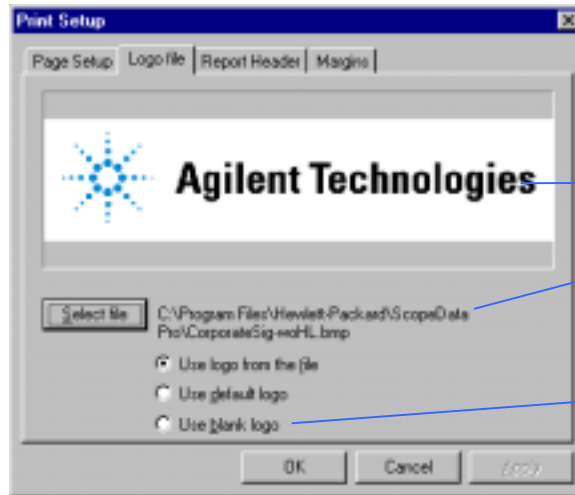


Use this pull-down menu to specify the type of graphics file

Only the selected file types will be visible in the above list. To specify the type of the graphics file, use the **Files of type** pull-down menu.



Once you select a logo file, the path to this file will appear under the preview window on the **Logo file** tab and the selection will change to **Use logo from the file**.



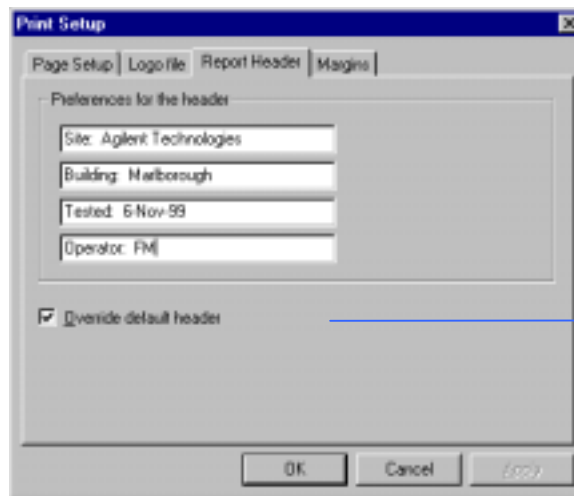
After you select a logo file, the logo is displayed in the preview window.

The path to the logo file appears here

To leave the logo area blank, select this option

To leave the logo area of the printed report blank, click the **Use blank logo** radio button.

The **Report Header** tab of the **Print Setup** dialog box works as follows.



By default, the report header contains the names of the top four hierarchy levels.

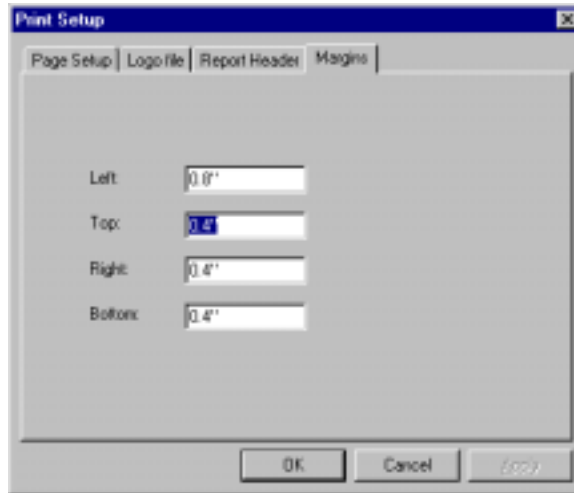
If you want to override the default header, fill in the blanks and check the **Override default header** box

Default report header lists the top three fields in the hierarchy



The default report header lists up to four top fields of the hierarchy corresponding to the record(s) being printed. However, if the database is not hierarchical, this header may be blank by default. To replace the default header, enter the header information on the **Report Header** tab and check the **Override default header** box.

To configure the print margins, fill in the margin settings on the **Margins** tab of the **Print Setup**.



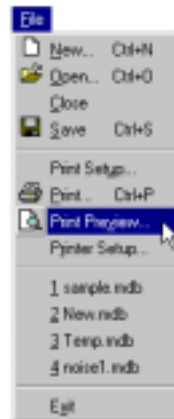
After all the tabs of the **Print Setup** dialog box are configured, click the **OK** button to accept the settings.

Print Preview

Verify the **Print Setup** configuration prior to printing by using **Print Preview** to view the appearance of the printed reports. **Print Preview** can be accessed by clicking the **Print Preview** button or by selecting **Print Preview** from the **File** menu.



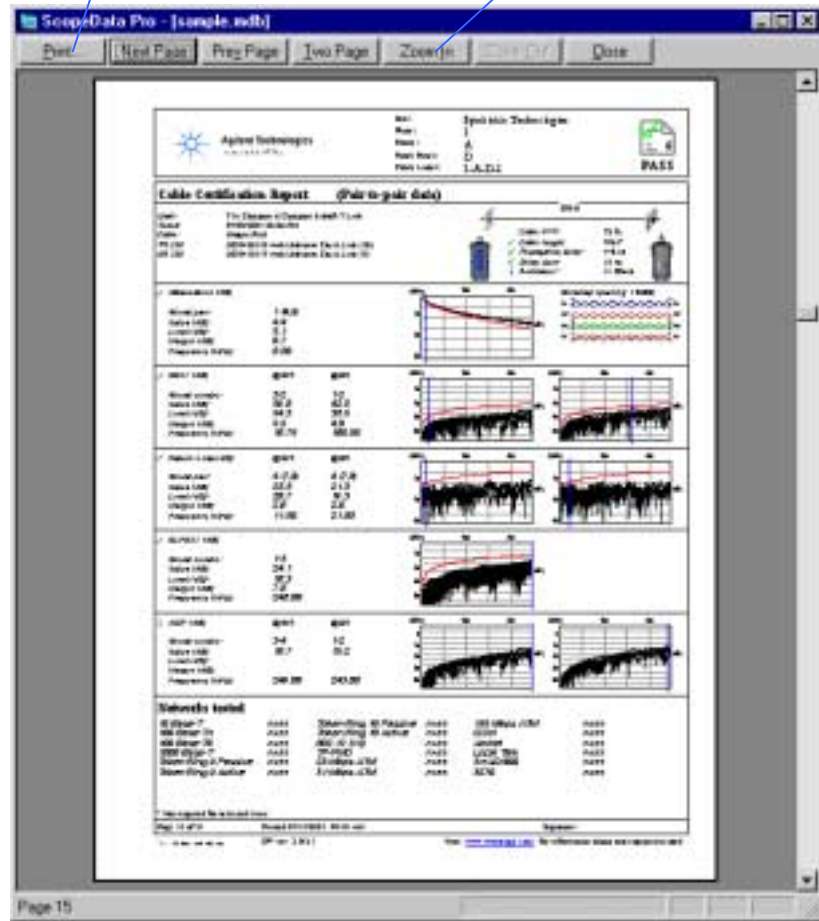
or



The print preview window appears.

Click **Print...** to print the report

Click **Zoom In** to view the details of the report



To display two pages side by side click the **Two Page** button. This can be useful if both pair-to-pair and PowerSum formats were enabled – both can be viewed simultaneously. Otherwise, two consecutive pages (for two different records) will be displayed.

Zoom in to view the details of the report by pressing the **Zoom In** button. The maximum resolution is obtained after the **Zoom In** button is clicked twice. Click the **Zoom Out** button to zoom out. If the **Zoom In** button is clicked when two pages are displayed the display changes to single page mode.

Click **Next Page** to display the report for the next record in the database.

Click **Prev Page** to display the report for the previous record in the database.

To exit the Preview window and print a report, click the **Print** button.

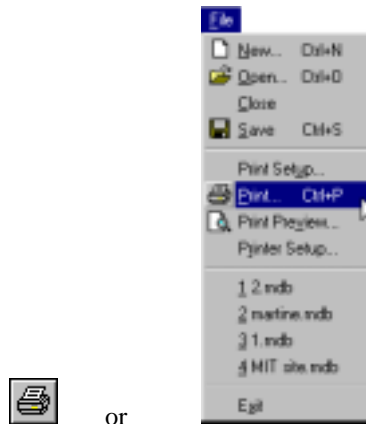
To exit the Preview window without printing a report, click the **Close** button.

Printing a report

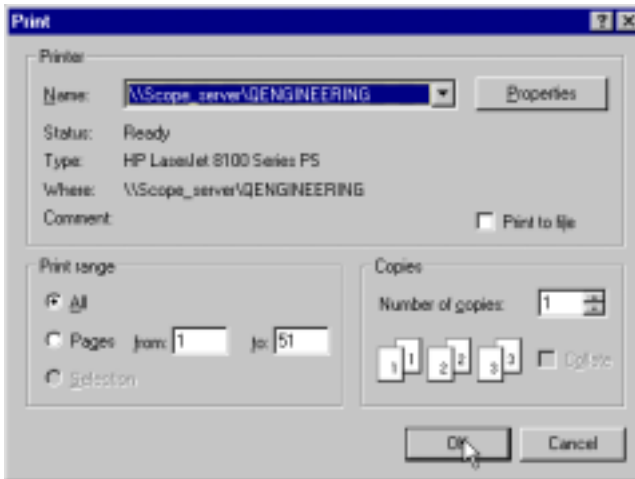
To print the report from the Preview window, click the **Print** button on the toolbar.



To print the report from the main window click the **Print** button or select **Print...** from the **File** menu.



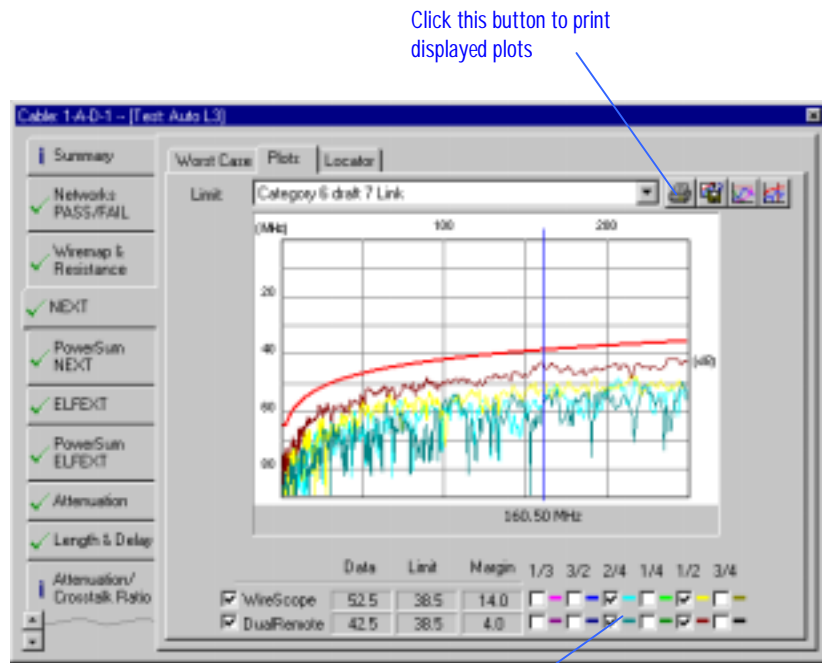
The following dialog box appears:



Verify that the correct printer is selected and click **OK** to print.

Printing individual plots

To print individual plots, click the **Print** button on the detailed test results dialog box while viewing the plot of interest. The printout will reflect the configuration of the Plots display. For example, if some plots are disabled on the window, they will also be disabled on the printout. The position of the cursor on the window will also be preserved on the printout.



Select individual plots for printing by clicking these check-boxes

After clicking the **Print** button, you will see a dialog box allowing you to specify the report header consisting of two lines of text.

Print Plot

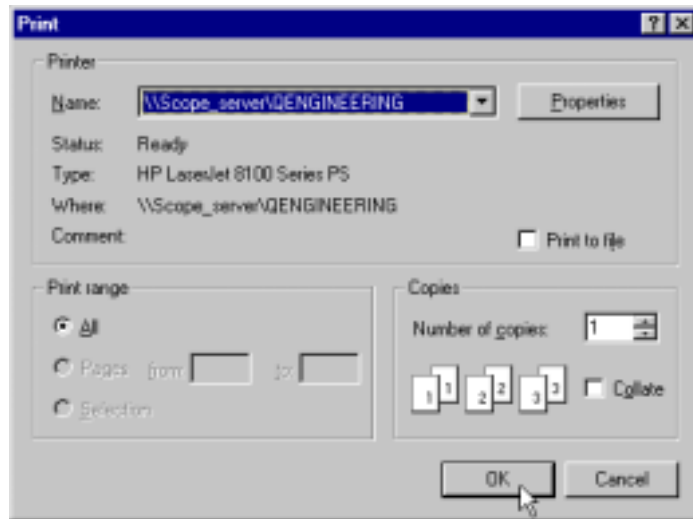
Header Line 1:

Header Line 2:

OK Cancel

Enter the header text and click **OK**.

The **Print** dialog box appears:

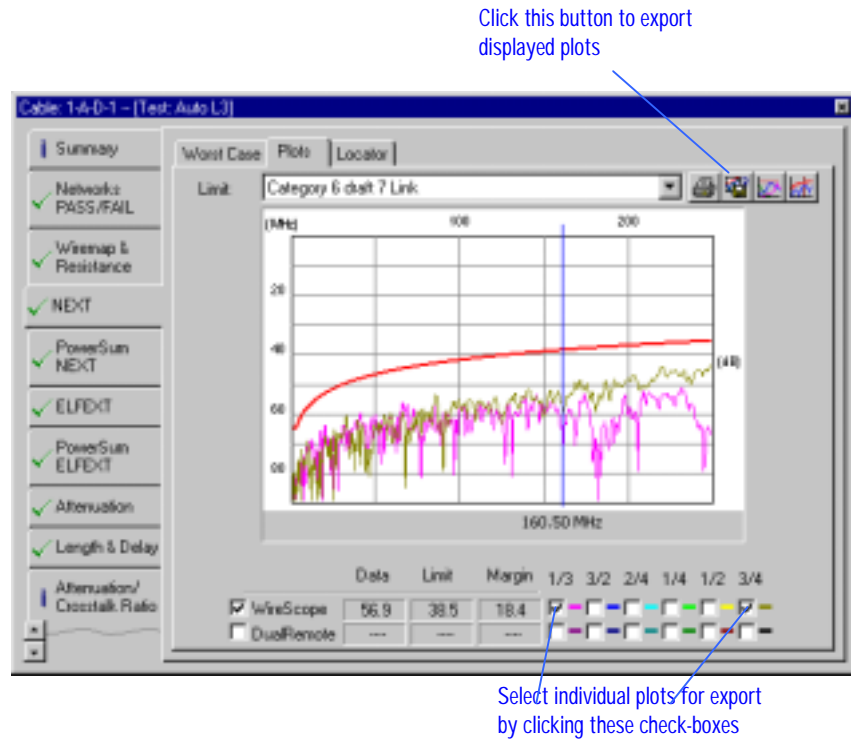


Verify that the correct printer is selected and click **OK** to print.

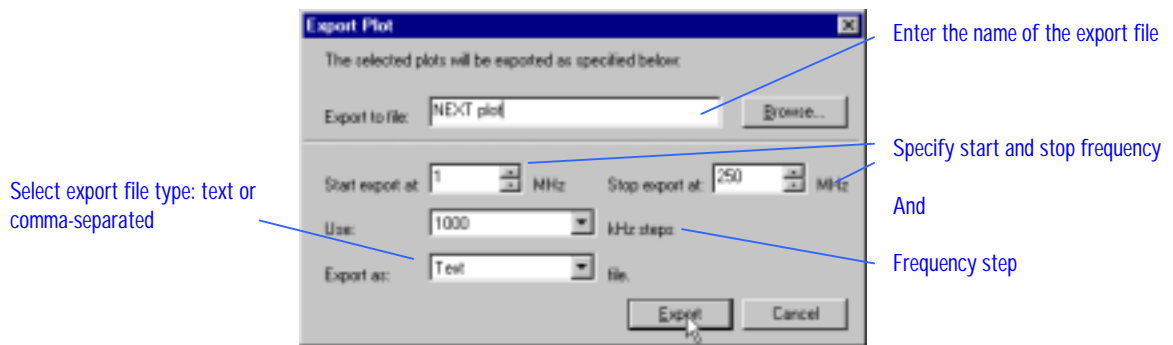
Exporting plots into a text file

To export the plot information to a text file, follow these steps:

1. While viewing plots enable the plot(s) to be exported by clicking the checkboxes at the bottom of the plot display.
2. Click the **Export** button.



The following dialog will appear:



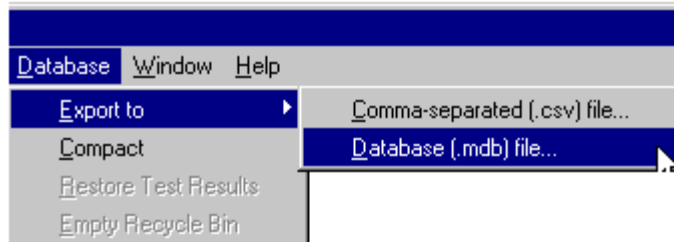
Enter the required information and click the **Export** button. If you did not specify the full path in the file name, the file will be saved under the **Data** subdirectory in the ScopeData Pro installation directory.

Specifying **Autotest** frequency steps will result in exporting all the measured data points.

Exporting test records

The Export function of ScopeData Pro can be used to copy a number of records into another ScopeData Pro database, merge two databases or export test information into comma-separated-variables (CSV) file.

To copy a set of records into another database or to merge two databases together select **Export to → Database (.mdb) file** from the **Database** menu.



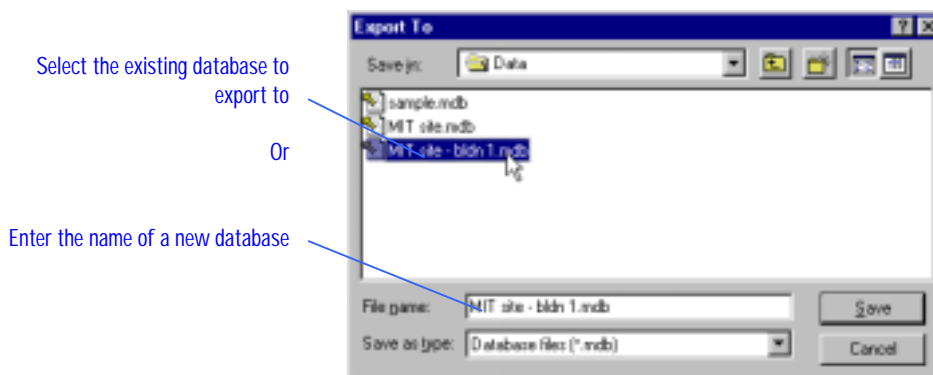
The following dialog will appear to let you specify records you want to copy.



You may export:

- **All records:** all records in this database to another
- **Selected records:** records selected in the right pane of results explorer
- **Selected hierarchy:** records on the selected hierarchy level and all levels underneath it

The following dialog prompts you for the destination database file:



You can choose to export to an existing database. In this case exported records will be added to it. You can also enter a new name to export to a blank database file.

The dialog will appear displaying the progress of the export operation.



The following dialog will appear after export was completed successfully.

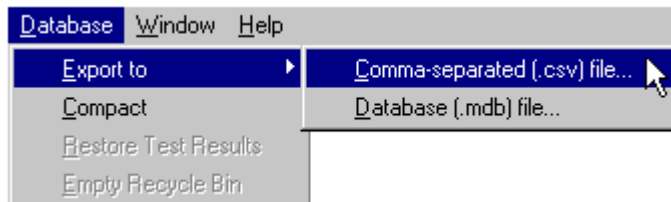


Exporting test data to a CSV file.

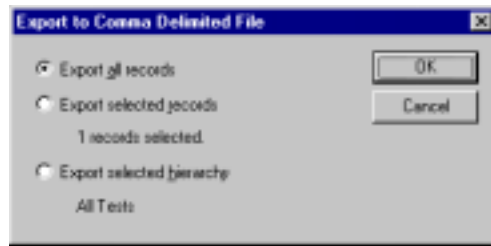
The following information is exported into CSV file:

- cable label
- test result
- target limit
- cable length
- worst case points for each measurement
- test margin (measurement that has the worst margin)
- type of the test
- date and time the test was performed

To export test data to a comma-separated file, on the **Database** menu select **Export to →Comma-separated (.csv) file...**



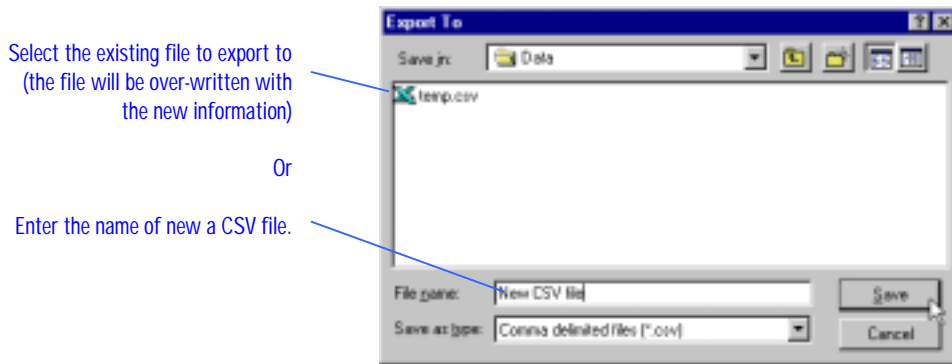
The following appears to let you specify records you want to export.



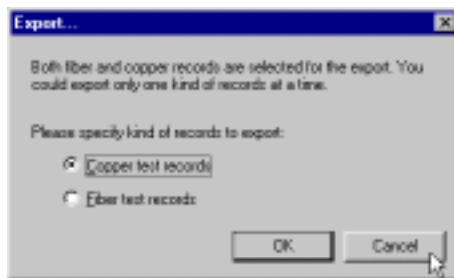
You can export:

- **All records:** all records in this database
- **Selected records:** records selected in the right pane of results explorer
- **Selected hierarchy:** records on the selected hierarchy level and all levels underneath it

The following dialog box prompts you for the destination file:



If your database contains both copper and fiber test records, the following dialog box allows you to export only copper test records or only fiber test records. Select the records you want to export and click **OK**.



The following message box appear after the export was completed successfully.

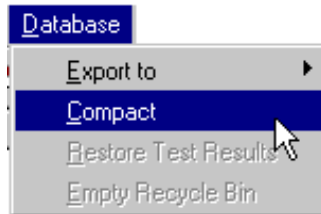


Compacting the database

Over time the database files tend to become fragmented and grow in size. To reclaim the unused space in the database file you may want to compact them. If file size is an issue we recommend compacting a database after:

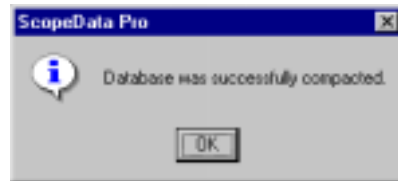
- uploading new test records into the database
- deleting individual test records or hierarchy levels
- exporting records from database to another

To compact currently opened database select **Compact Database** from the **Database** menu.



Depending on the size of the database file the compact operation can take several minutes to complete.

After the database was compacted you will see the following message.



NOTE:

If you attempt to delete a hierarchy level or a test record, ScopeData Pro prompts you to confirm that you want to delete. If you accidentally delete item(s), click the **Recycle Bin** below the **All Tests** folder label. Click the item you want to restore, then under the **Database** menu, click **Restore Test Results**.

If you have deleted test records from the database, and you are certain that you do not want to restore them, empty the recycle bin. To do this, click **Empty Recycle Bin** under the **Database** menu.

Chapter 3

Defining a Settings Profile

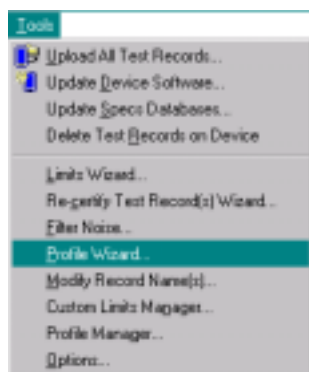
This section explains how to create a settings profile, how to load a profile into a tester and how to export or import profiles created on different systems.

What is a Settings Profile?

A Settings Profile is a collection of settings forming the cable test configuration of the FrameScope 350 or WireScope 350. ScopeData Pro provides a tool – the **Settings Profile Wizard** – to let you define all the instrument settings in the form of a Settings Profile. The Settings Profile is stored in the Specifications Database and can be accessed for viewing or for downloading into either a FrameScope 350 or WireScope 350.

Using the Settings Profile Wizard

To start the Settings Profile Wizard select **Profile Wizard...** from the **Tools** menu.

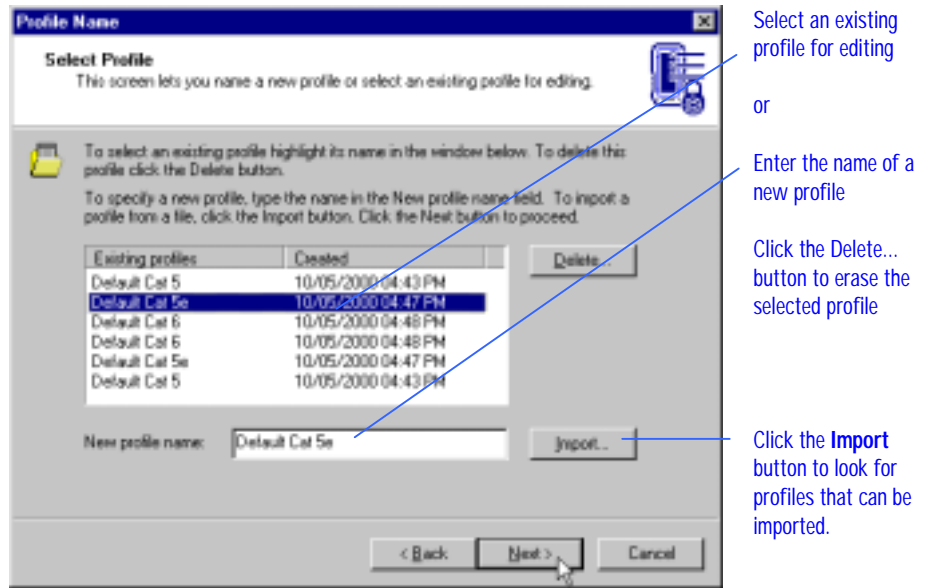


The wizard's opening message appears explaining what the Settings Profile Wizard does.



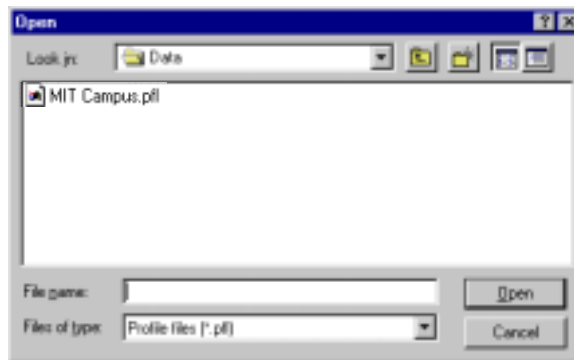
Click the **Next** button to continue.

The second window asks you either to enter the name of a new profile or to select a previously defined profile for editing. You also have the option of importing a profile.



If you want to import a profile into the specifications database click the **Import** button to look for the profile file. Any profile can be exported to a .pfl file and distributed to installers who can then import the profile and program their test unit with the required settings.

If you click the **Import** button, the following **Open** dialog box appears, letting you select a profile file.



The wizard now lets you select the settings to be included in the profile. Check all the settings you want to define. The settings left undefined can later be configured on the test unit.



NOTE:

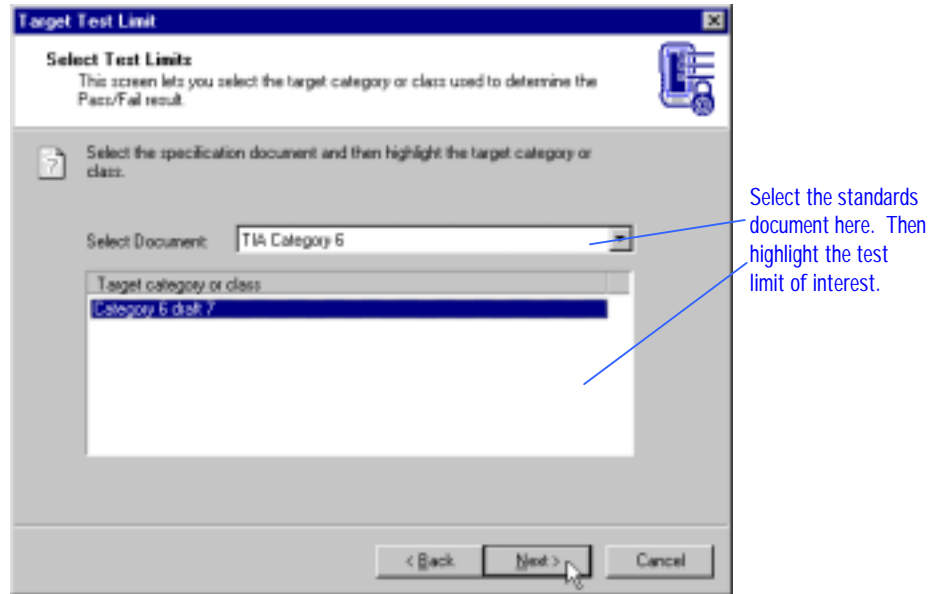
*The **Pass/Fail Target** setting is grayed-out and cannot be changed. The **Pass/Fail Target** is always included in the profile and must be specified.*

Click **Next** to continue. The wizard displays the following to let you protect the profile with a password, if desired. This password will be required to edit this profile on the test unit.



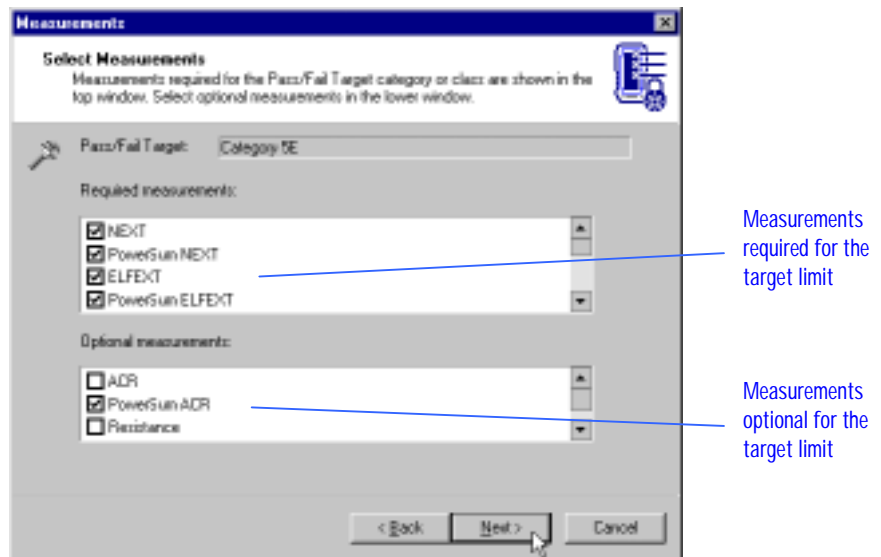
Click **Next** to continue. The following dialog boxes let you configure each setting you selected to be included in the profile.

To specify the target test limit, select the standards document from the pull-down menu and then click the class or category of interest.



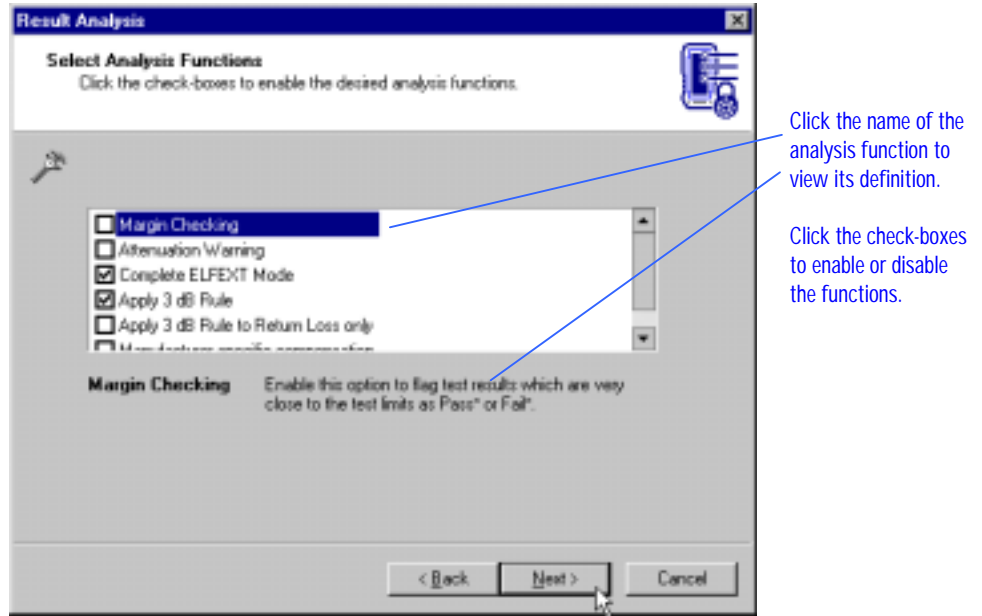
Click **Next** to continue.

The wizard lets you enable and disable measurements. The measurements required for the target limit are listed in the top of the dialog box. The optional measurements are listed in the bottom dialog box.



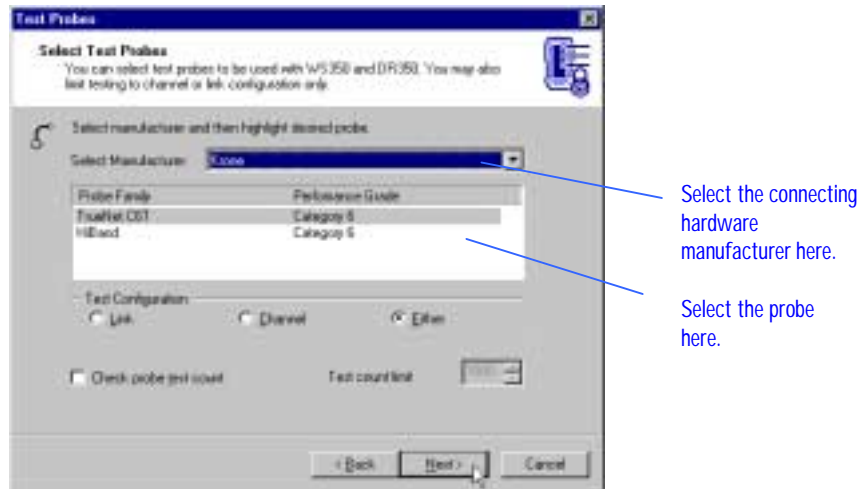
Click the check-boxes to enable or disable the measurement. Click **Next** to continue.

The wizard next lets you enable optional data analysis functions. As you click the name of each function the text explaining what this function does appears under the choices.



Click the check-boxes next to the analysis functions to enable or disable them. Click **Next** to continue.

The wizard next lets you select a manufacturer-specific test probe, as required. To do so, select the connecting hardware manufacturer in the pull-down menu and then click the probe of interest.

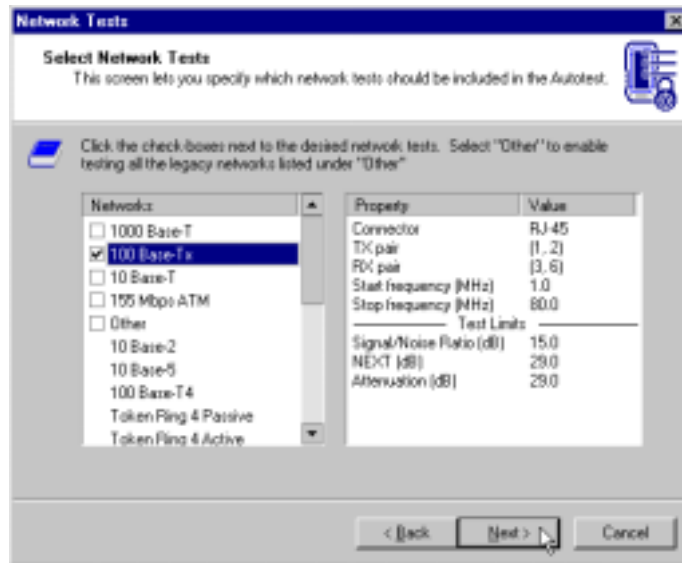


You can restrict the probe type to be either Link or Channel by clicking the appropriate radio buttons under **Test Configuration**. To allow both link and channel configurations, select **Either**.

If a probe test count limit check is required, check **probe test count** and set the **Test count limit** value.

Click **Next** to continue.

The wizard next lets you enable network testing during an Autotest.

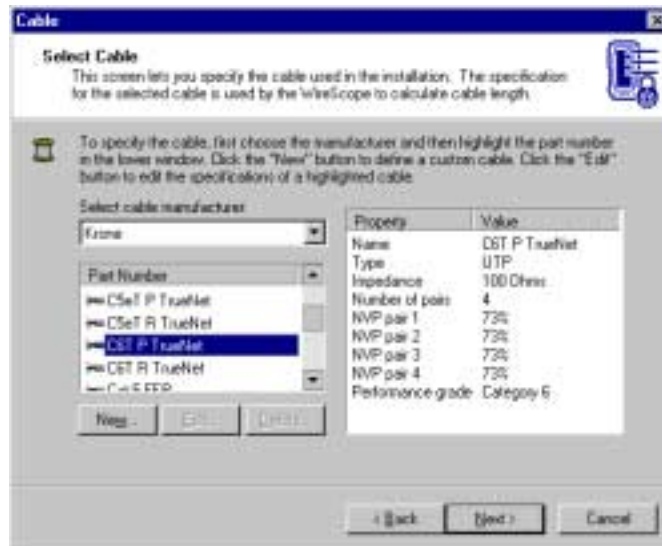


To enable a particular network test, click the check-box next to this test. The legacy network tests can all be enabled by clicking **Other**.

To view the specification of any network test, click the name of the network and examine its specification on the right.

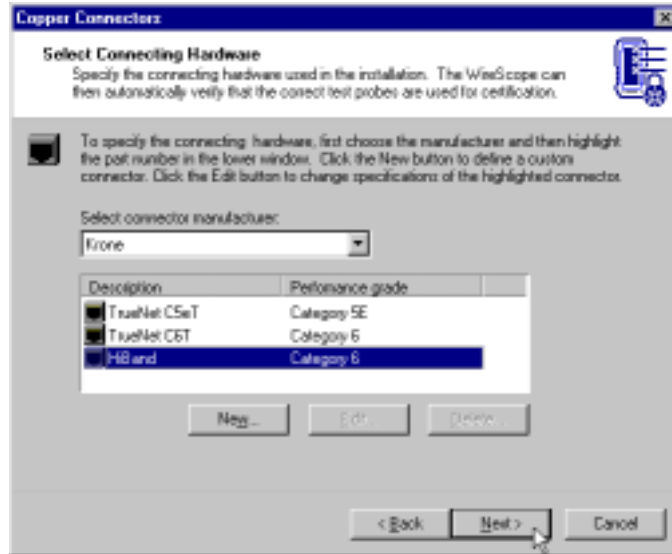
Click **Next** to proceed.

The wizard next lets you specify the cable used in the installation under test. The specified cable's Nominal Velocity of Propagation (NVP) is used to calculate the cable lengths from the measured propagation delay. The specification of the cable is also stored with each test record for the purpose of documenting the installation.



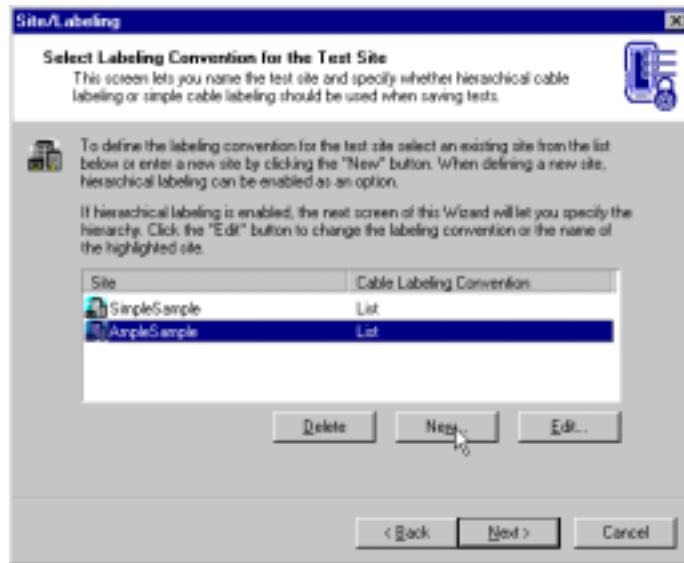
Select the cable manufacturer in the top pull-down menu and then click any cable on the list to select it. The specifications for the selected cable are displayed on the right. Click **Next** to continue.

The wizard next lets you specify the connecting hardware used in the installation under test. The tester verifies that the test probes connected correspond to the installed connecting hardware. The specification of the connecting hardware is also stored with each test record for the purpose of documenting the installation.

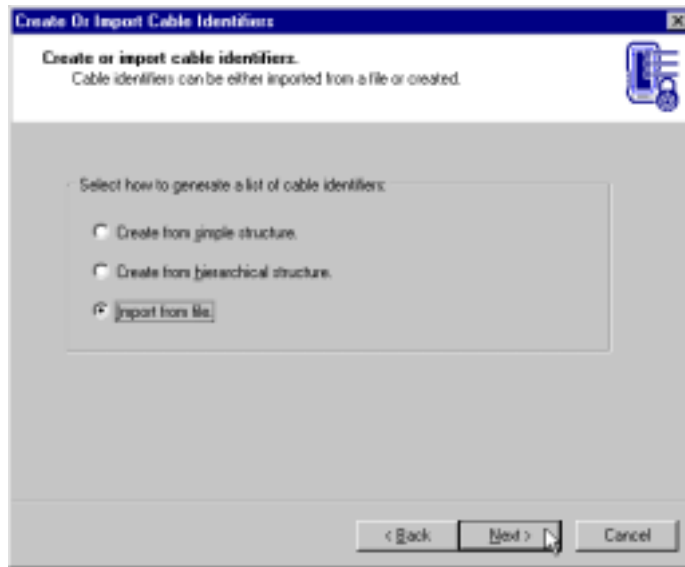


Select the connector manufacturer in the top pull-down menu and then click any connector on the list to select it. The specifications for the selected connector are displayed on the right. Click **Next** to continue.

The wizard next lets you define the test site in terms of the labeling convention. A test site can either use **Hierarchical labeling** or it can use **Simple labeling** or a **Label List**. Simple labeling uses cable labels containing only one field (for example, a cable number). Hierarchical labeling uses cable labels containing multiple fields (for example, Building / Floor / Wall Plate / Jack Number).

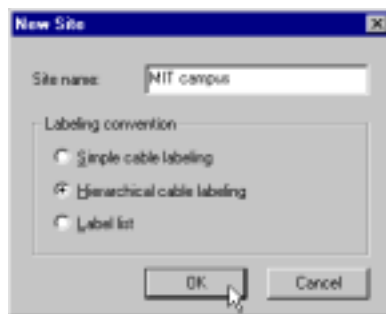


To use an existing label list, highlight the desired Site from any displayed, then click **Next**.



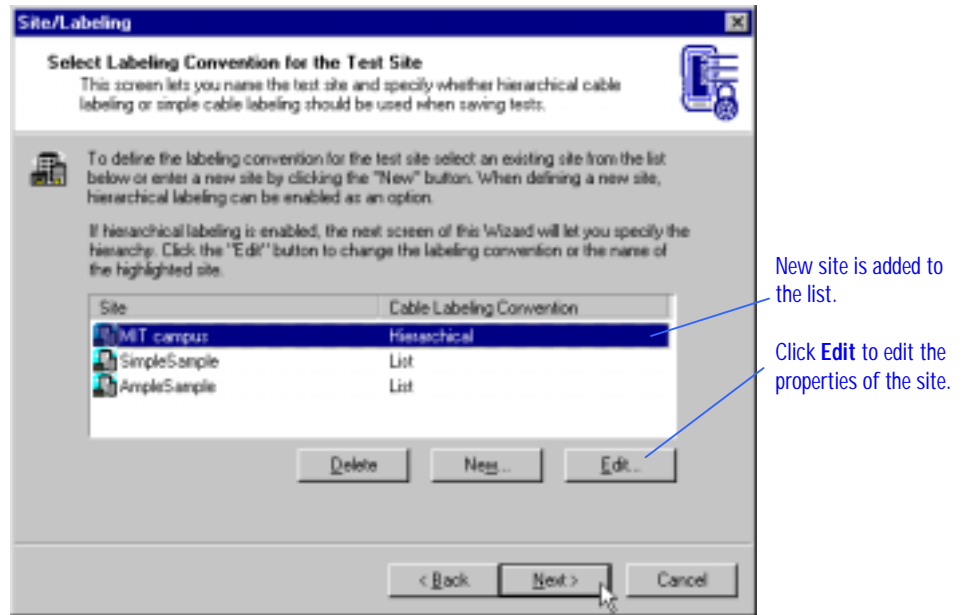
Defining cable identifiers (label lists) is described starting on page 123.

To define a new site, click the **New** button. The following dialog box appears:



Select **Simple cable labeling** or **Hierarchical cable labeling**, or a **Label List** and enter the site name; then click **OK**. For our example, we have selected hierarchical cable labeling for the MIT campus site name.

The new site is added to the list as shown below.



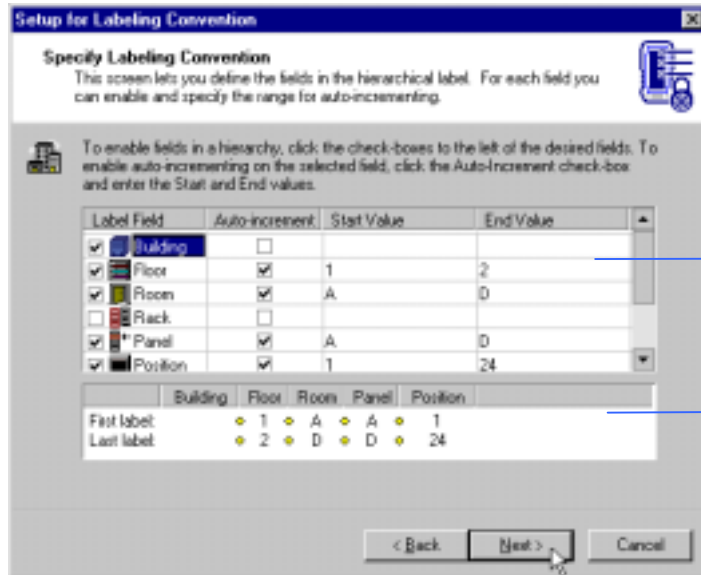
Select the site and then click **Next** to continue.

NOTE:

*If you had imported an existing site, you would now have the opportunity to edit the properties of the site. To do this, click **Edit**.*

If you selected a site with the **Simple labeling** convention, continue to page 95.

If you selected a site with the **Hierarchical labeling** convention, the wizard displays the following to let you define the hierarchy.



Hierarchy levels and their starting and ending values

Preview window displaying the starting and ending label based on selected hierarchy levels.

In the left column, check the levels you want to include in the hierarchy. You can then elect to have auto-incrementing of labels enabled at any level. If auto-incrementing is elected, then you need to enter the start and end values for each field. The preview pane on the bottom displays the starting and ending label based on the hierarchy levels you enable and on the start and end value you define for each level.

When this site is selected for testing, every test can be saved under a consecutively incrementing record name, eliminating the need for entering cable labels on the tester. The cable labels for the above example would increment as follows:

```

1 A A 1
1 A A 2
.
.
.
2 D D 23
2 D D 24

```

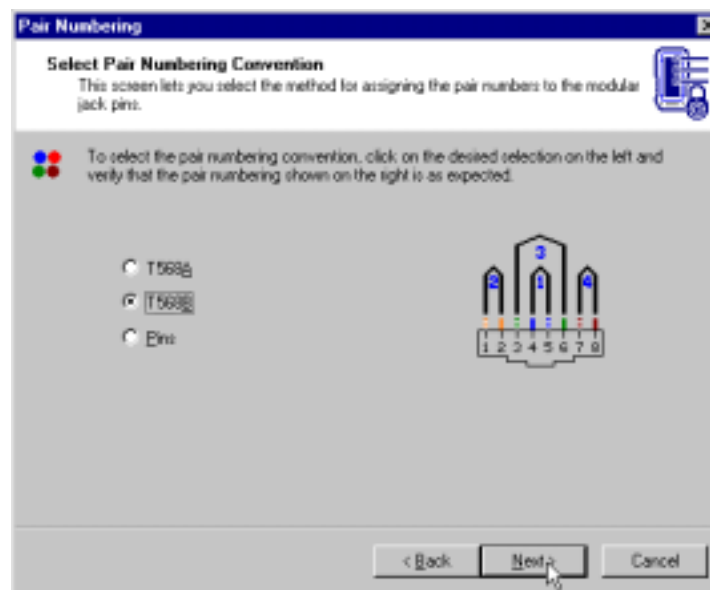
When using this labeling method it is important to test the cabling runs in the correct order as dictated by the hierarchy structure. Once the testing is complete and the database is uploaded to ScopeData Pro, the appropriate hierarchy structure will be created.

If you had selected a site with simple (non-hierarchical) labeling convention , the wizard displays the following:



You can enable auto-incrementing of the simple label by clicking **Enable Auto-Increment**. Then enter the start and end values for the cable labels.

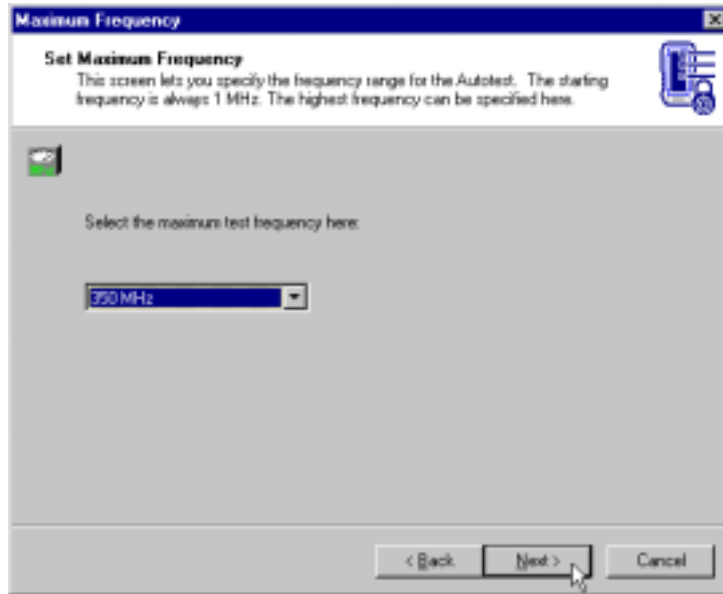
The wizard next lets you specify the pair numbering convention used with copper. This convention defines pin numbers for pairs 1, 2, 3 and 4 on the modular jack.



You can number the pairs according to the T568A convention or according to T568B convention or you can simply use pin numbers to designate the pairs. A diagram showing the selected pair numbering is displayed on the right.

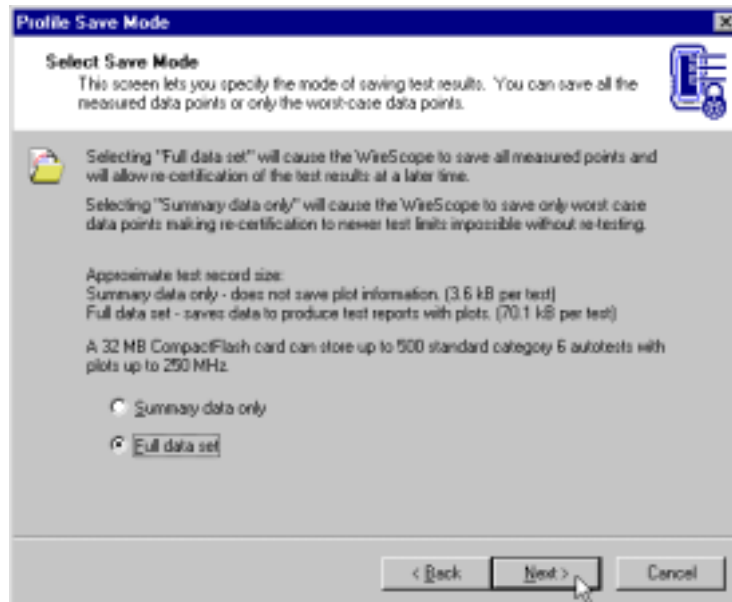
Click the radio button to the left of the desired setting, verify the diagram on the right and click **Next**.

The wizard next lets you specify the upper frequency limit for all the RF measurements. The starting frequency is always 1 MHz.



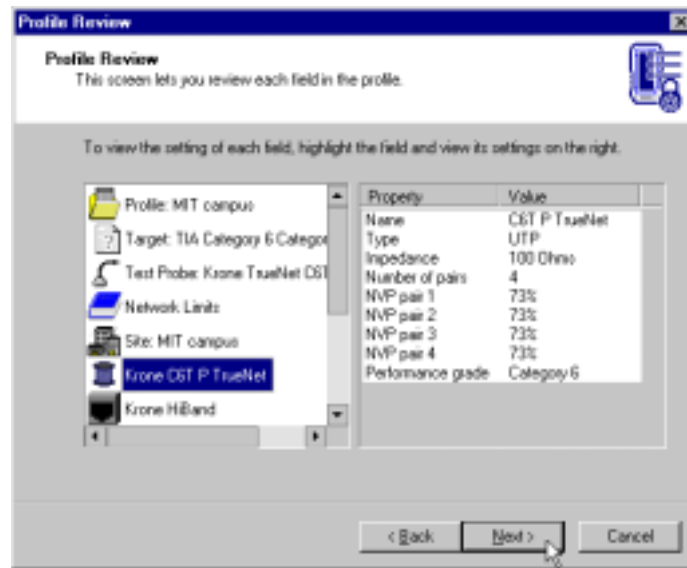
Select the frequency limit in the pull-down menu and click **Next**.

The wizard next lets you specify whether plots are to be stored with each test record. Saving records with plots to 350 MHz requires approximately 70 KB per record. Saving records without plots requires only 3.6 KB per record. A 32 MB CompactFlash™ card can store approximately 500 Category 6 Autotests with plots up to 250 MHz.



Select **Summary data only** or **Full data set** by clicking the appropriate radio button. Click **Next** to continue.

The wizard next lets you review all the settings configured for the profile. The settings are listed on the left. To view the configuration of any setting, click the setting with a mouse and view the configuration on the right (for example, cable type, as shown).



If you want to correct any of the settings, click the **Back** button until you reach the dialog box defining the setting, then make the necessary changes and then click the **Next** button to get back to this review.

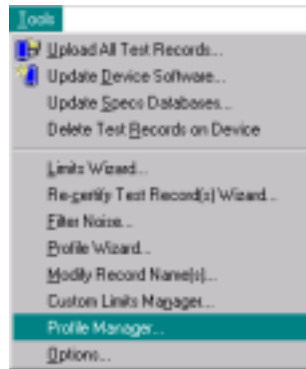
Click **Next** to continue.

Finally, the wizard lets you save, download or export the defined profile.



To save the profile into the specifications database, click the **Finish** button. To download the profile into the test unit click the **Download Profile** button. The wizard searches for download devices and prompts you to select from those available (serial, USB, or CompactFlash™ card). The profile is saved to the database prior to being downloaded.

To export the profile into a .db profile file that can be distributed to installers and imported into any installation of ScopeData Pro., click **Profile Manager** on the Tools menu.



On the View Profiles dialog box, click **Export...**



You are then prompted to select or enter the profile name. Then, click **Save**.



The following message confirms that the selected profile has been exported to the filename you specified. Click **OK**.



Re-certifying Saved Test Records

Background

Modern structured cabling systems and components are designed to support a variety of high speed Local Area Networking (LAN) applications. To ensure that structured cabling systems provide adequate performance to support these high speed applications, cabling standards committees have developed field certification standards.

Although tremendous progress has been made to date in the area of structured cabling specifications, standards development is a continuous process driven by technology innovations and market forces. *As a consequence, there has been and will continue to be an ongoing evolution in the certification requirements specified for commercial cabling projects.*

At present, the structured cabling industry is in the process of transitioning from Category 5 to Category 6 products and standards. This transition will continue for some time as product innovation continues and as standards documents continue to evolve.

The problem

How, then, can an installation contractor guarantee compliance with the next generation of cabling standards?

A contractor could agree to certify a new installation to a currently published standard (Category 5 or 5E, for example) and agree to come back and re-test and re-certify the installation after the next generation of standards documents is published. This approach would be very costly, however, since the contractor would have to pay the costs for a crew of technicians to re-test all of the cabling runs in the installation. Furthermore, once a structured cabling system is in use, re-testing it would disrupt network operations.

A better solution

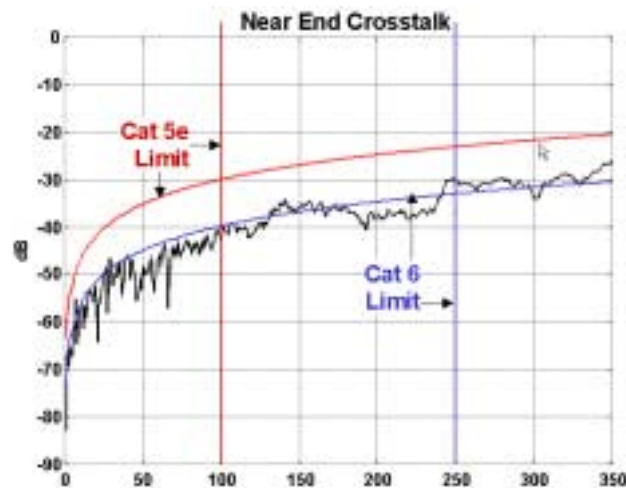
You can substantially reduce the high costs and disruption associated with re-testing by collecting a more complete data set during the initial certification testing process and then re-analyzing the saved data to identify cabling runs that do not comply with new standards. Conceptually, the idea is to store more test data during the initial certification process in order to reduce subsequent labor and maintenance costs.

Requirements for re-certification

To be able to re-certify saved test results, you need to save sufficient test data when saving the test record. Specifically, it is important that you:

- Save full plots for all tests. Without the plot data, re-certification is not possible.
- Save plot data to at least the maximum frequency required by the future standards. To maintain as much flexibility as possible, we recommend that you save plot data to 350 MHz.
- Test using probes appropriate for the target test limits. For example, if you want to initially certify an installation to the TIA Category 5E link specification and then later re-certify the data to the future Category 6 link standard, you must use the appropriate Category 6 link probes when you test.

How re-certification works

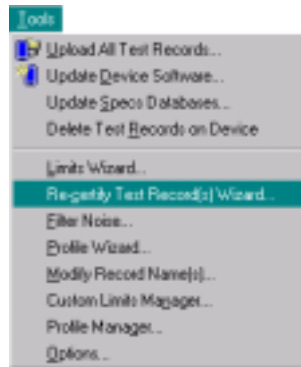


With the appropriate plot data, it is possible to evaluate the performance of a tested cabling run against any test limit after the testing is complete. Provided that the saved plot data was collected properly, it is simply a matter of comparing the plot data file against the new limit to determine pass or fail status.

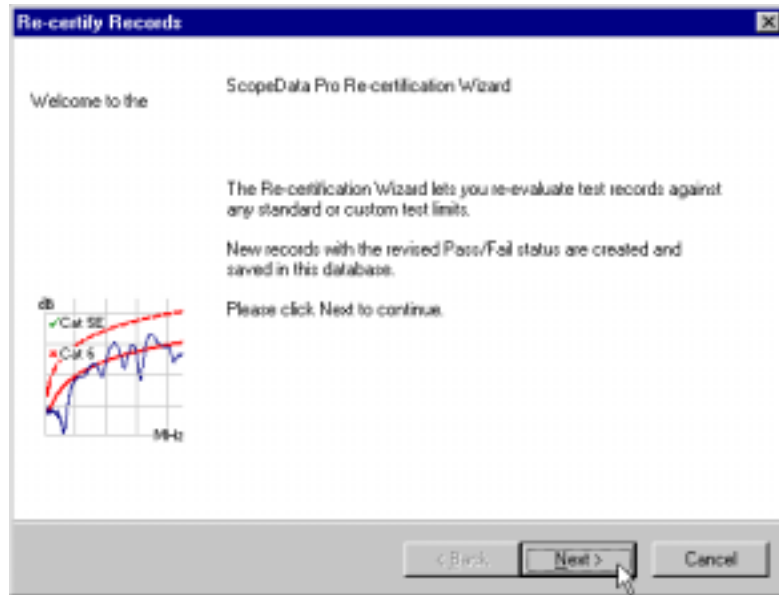
The example above shows a 350 MHz NEXT plot collected during a Category 5E certification test. When evaluated against the Category 5E limit, this cabling run passes. When re-certified against the Category 6 limit, this same cabling run fails.

Running the ScopeData Pro Re-certification Wizard

Select a test record or a group of records that you would like to re-certify. From the **Tools** menu, select **Re-certify Test Record(s) Wizard**.



The re-certification wizard appears.

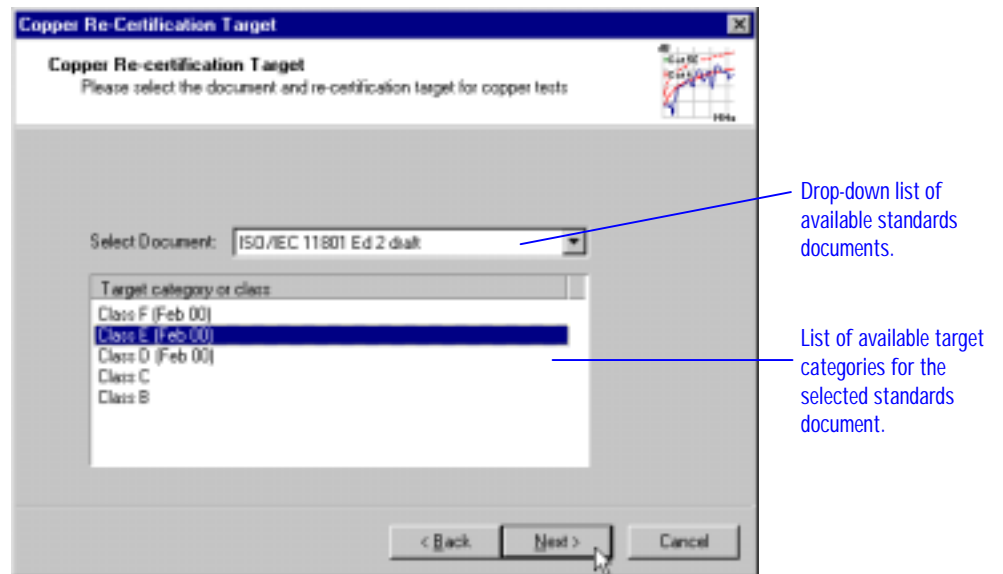


Click **Next** to advance to the next panel in the re-certification wizard.

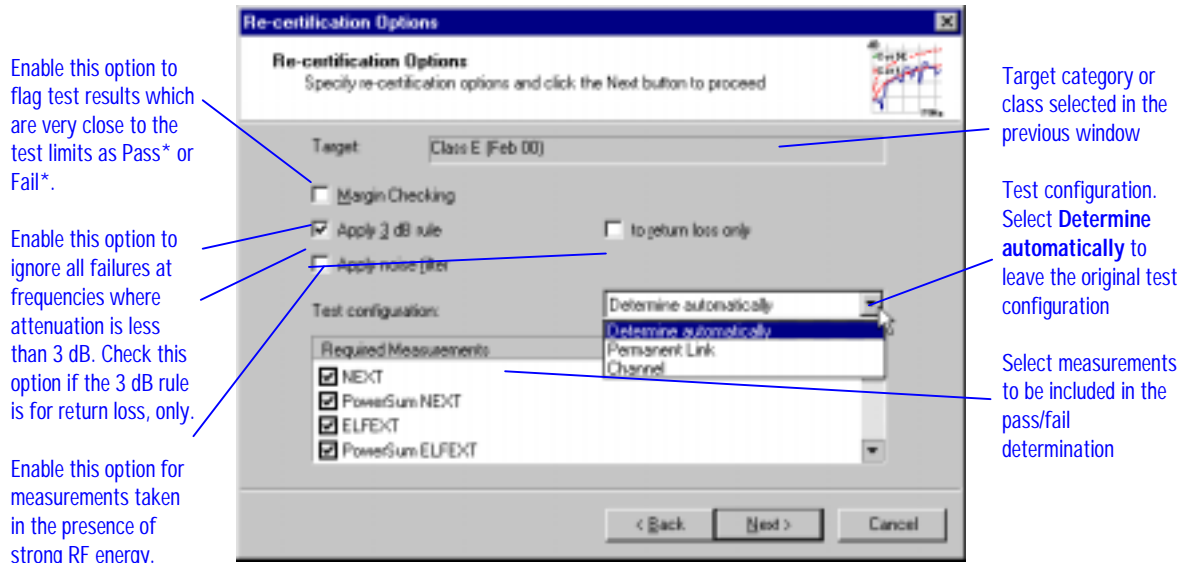


The wizard next presents the option of re-certifying either the records selected in the results explorer window or all the records in the currently open database. Click **Next** to continue after you make your selection.

If you select **All records**, and you have both copper and fiber records in the database, you will see a warning stating that fiber records cannot be re-certified.



Next, you must choose a new limit for re-certification. Select the standards document and the performance grade, then press **Next** to continue.



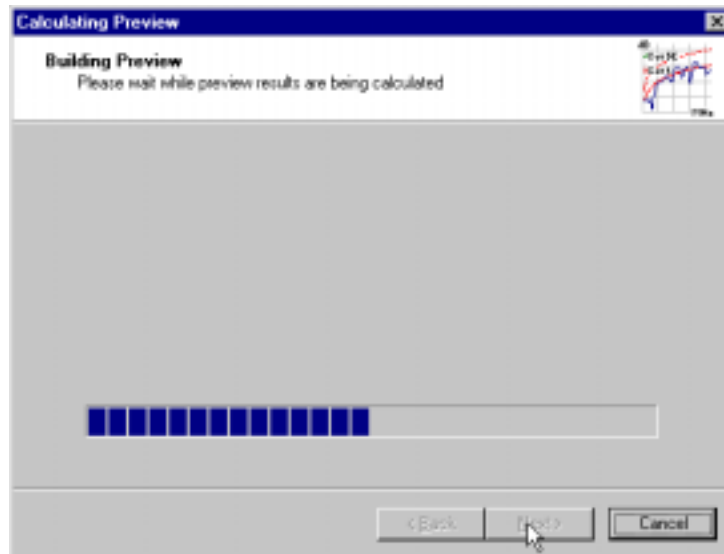
The wizard next presents re-certification options. Select the measurements to be used in the pass/fail determination by clicking the checkboxes to the left of the measurements.

Select test configuration – link or channel in the pull-down menu.

Enable margin checking to flag results with an asterisk (*) that are close to the target limit.

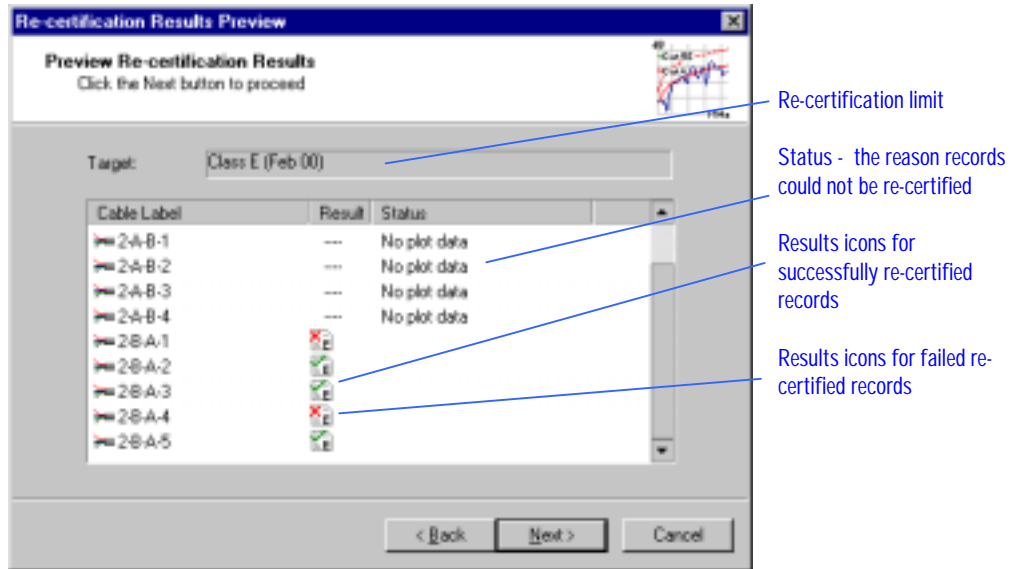
Apply the noise filter when measurements were taken in an environment where strong RF signals are present and generate narrowband interference at a particular frequency (e.g., from a commercial radio broadcasting transmitter).

Click **Next** to continue.



The Re-certification Wizard begins preparing the preview window and displays the progress bar in the process.

The next window of the Re-certification Wizard displays the preview results of the re-certification.



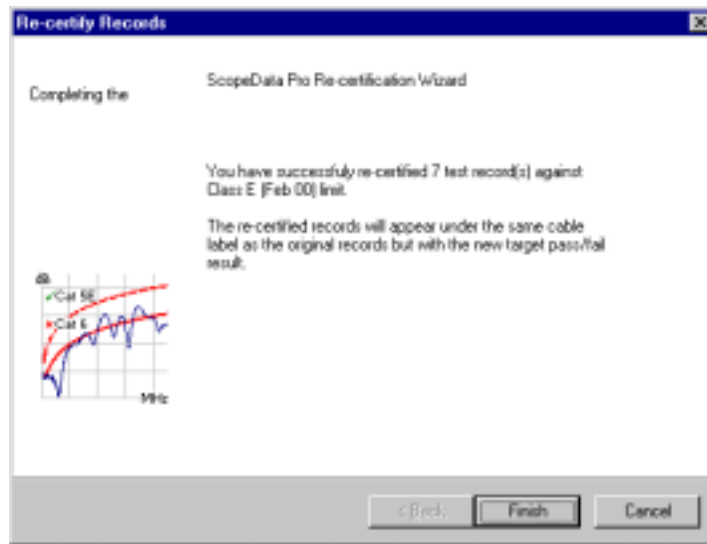
The results icon shows the target limit and the pass/fail status of each re-certified record. Some examples of result icons:

- = a passing Category 5E result
- = a failing Category 6 result
- = a passing Class E result

After viewing the preview, you can save the re-certified results as new records into the current database by clicking the **Next** button. The re-certification process will require some time to execute. This time may be considerable if you are re-certifying a large number of records.



The progress bar is displayed as the re-certification proceeds.



Re-certification of the selected test records is now complete. Click **Finish** to store the results in the database and exit the Re-certification Wizard. Click **Cancel** to exit without saving re-certification results.

Chapter 5

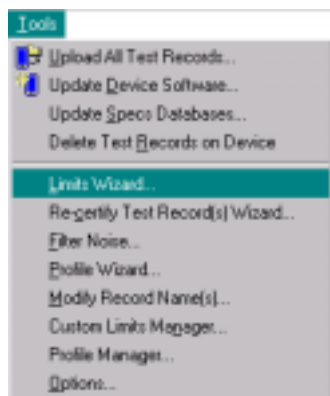
Defining Custom Limits

This chapter explains how to use the ScopeData Pro Limits Wizard to define custom test limits. There are a number of reasons for creating custom limits. You can:

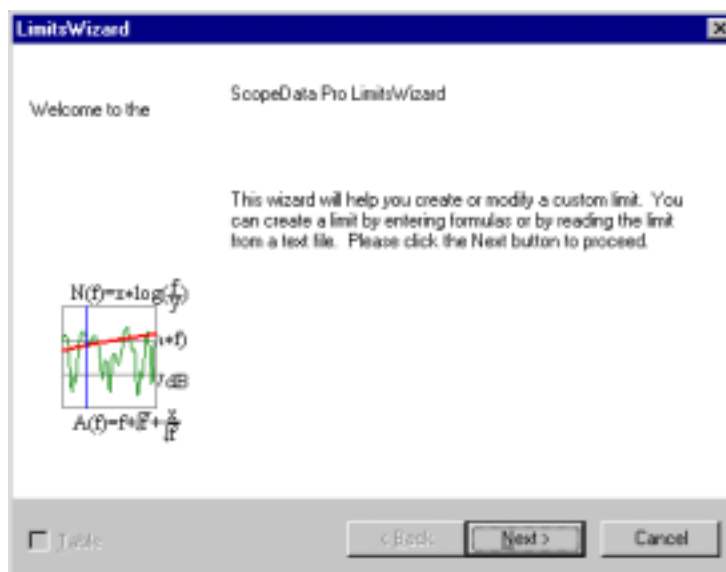
- Define customized tests, for example a patch cord test or a production test
- Select the measurements to be included for the pass/fail determination
- Guarantee margin with respect to standard limits

Running the ScopeData Pro Limits Wizard

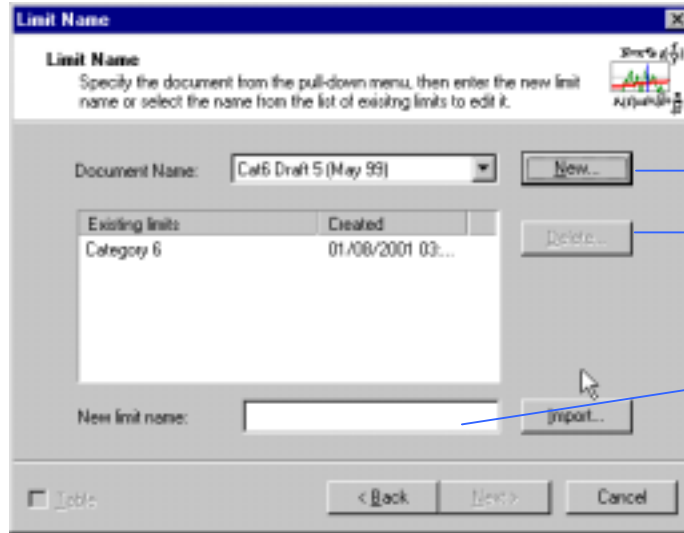
To run the Limits Wizard, select **Limits Wizard** from the **Tools** menu.



The Limits Wizard displays the following message box.



Click **Next** to continue.

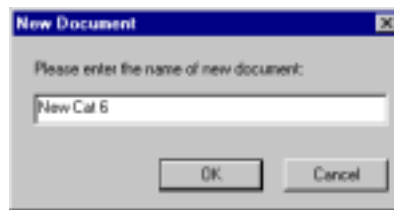


Select the document name or enter a new name.

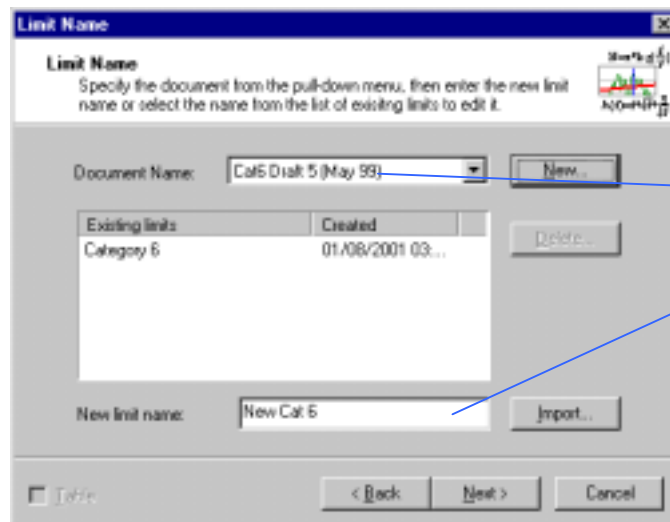
Click the Delete... button to erase this limit

The limit name is entered here.

The wizard lets you specify the document name and the limit name. The test limits are organized by document. Select the document in the pull-down menu or click the **New** button to enter the document name. When you click the **New** button, a dialog box appears letting you enter the document name.



Once you enter the name, this name will be added to the list of document names in the pull-down menu.

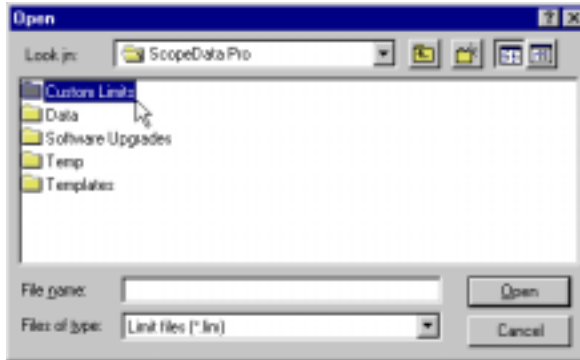


The document name appears in the pull-down menu.

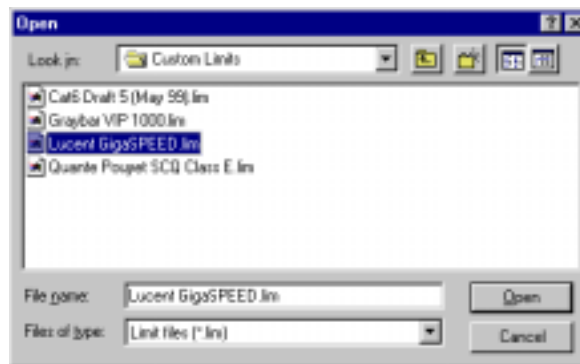
Enter the limit name here or select one from the list above.

Next, you need to specify the limit name by entering it at the bottom of the window or by selecting the name from the list.

You can click the **Import** button to import a custom limit created by a different ScopeData Pro installation or a custom limit provided with the installation of ScopeData Pro. When you click the Browse button, the following dialog box appears letting you browse to the limit you want to import. Typically the custom limits will be stored in the **Custom Limits** subdirectory under the ScopeData Pro installation directory.



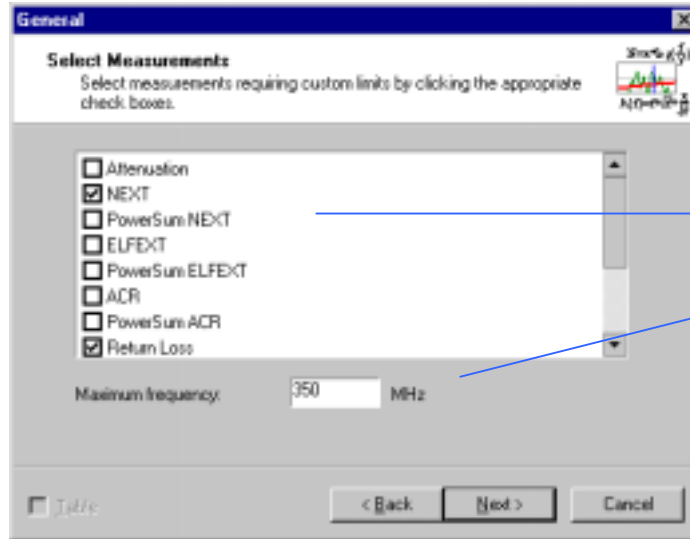
Open the desired .lim file by selecting this file and then clicking **Open**:



You can then select the desired limit from the open document:



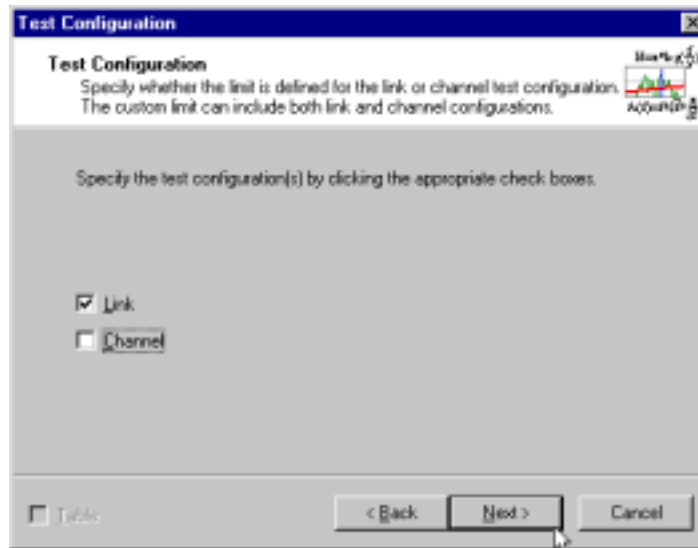
Click **Next** to continue.



Select the measurements to be included in the limit definition.

Enter the maximum frequency here. The starting frequency is always 1 MHz.

The wizard next lets you select the measurements to be included in the custom limit definition. To select the measurements click the appropriate check-boxes. Enter the maximum test frequency at the bottom. The starting sweep frequency is always 1 MHz. Click **Next** to continue.



The wizard next lets you select whether the limits are defined for the link or for the channel configuration, or for both link and channel configurations.

The wizard then steps you through each selected measurement letting you define the limit for each measurement. If you chose to include both link and channel configurations in the limit, the Limits Wizard will ask you to define the link limits for all the parameters first and then the channel limits for the same parameters.

Working with Formulas

You can define limits either as equations or as tables of dB values. The following is an example that lets you enter the limit as an equation.

The screenshot shows the 'NEXT' dialog box with the following fields and options:

- Link NEXT**: Enter the equation coefficients or, if you wish to read this limit from a text file, click the Table check box at the bottom of this window.
- Cable()**: - = $\log\left(\frac{f}{0.772}\right)$
- Include an equation for connector NEXT?**
- Connector()**: - = $\log\left(\frac{f}{200.00}\right)$
- Number of connectors**:
- Minimum value**:
- Table**
- Buttons: < Back, Next >, Cancel

Specify the limit by entering formula coefficients...

or

Click the **Table** check-box to specify the limit as a table of values.

The equations supported by the Limits Wizard have the same format as the TIA equations defining Category 5e and Category 6 limits. The default coefficients are the same as Category 6 coefficients.

You can edit the coefficients or click the Table box to create the limit as a table.

Working with Tables

If you enable the **Table** check-box, the window changes to the following format:

The screenshot shows the 'Table' dialog box with the following fields and options:

- Link Limit from Table**: Select a text file listing the limit at every frequency point to import the limit data.
- Table Limit for NEXT**: Click the Import Table button to specify the name of the text file containing the limit values at each frequency point. The text file should have the following format:

```

freq1 value1[dB]
freq2 value2[dB]
...
```
- Import Table** button
- Table** table:

Frequency (MHz)	Value [dB]
<input checked="" type="checkbox"/> 1.000	65.00
<input checked="" type="checkbox"/> 1.125	65.00
<input checked="" type="checkbox"/> 1.250	65.00
<input checked="" type="checkbox"/> 1.375	65.00
<input checked="" type="checkbox"/> 1.500	65.00
<input checked="" type="checkbox"/> 1.625	65.00
<input checked="" type="checkbox"/> 1.750	65.00
<input checked="" type="checkbox"/> 1.875	65.00
<input checked="" type="checkbox"/> 2.000	65.00
<input checked="" type="checkbox"/> 2.125	65.00
<input checked="" type="checkbox"/> 2.250	65.00
- Table**
- Buttons: < Back, Next >, Cancel

Specify the limit by entering the table values

or

Click the **Import Table** button to read a table of dB values from a text file.

The wizard lets you specify the limit either by entering the dB values at a number of frequency points or by reading the limit from a text file. The text file could be generated by Excel or other applications and must be in the following format:

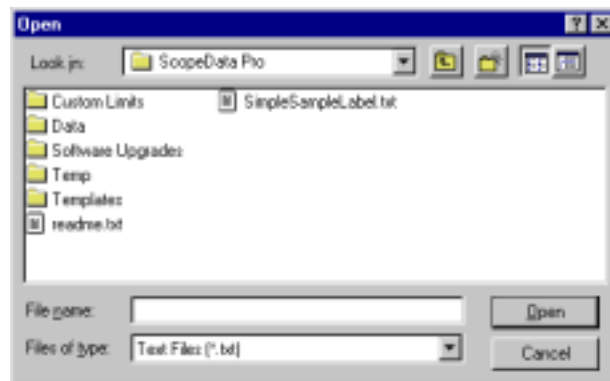
```
Freq1          value1 (dB)
Freq2          value2 (dB)
•
•
•
Freq_max      value (dB)
```

Example:

```
1.0    60
1.1    58
•
•
•
350    27
```

The Limits Wizard will interpolate the specified limit values to the frequency resolution required for the Autotest sweep.

After you click the Import Table button, the following dialog box appears letting you select the text file containing the limit.

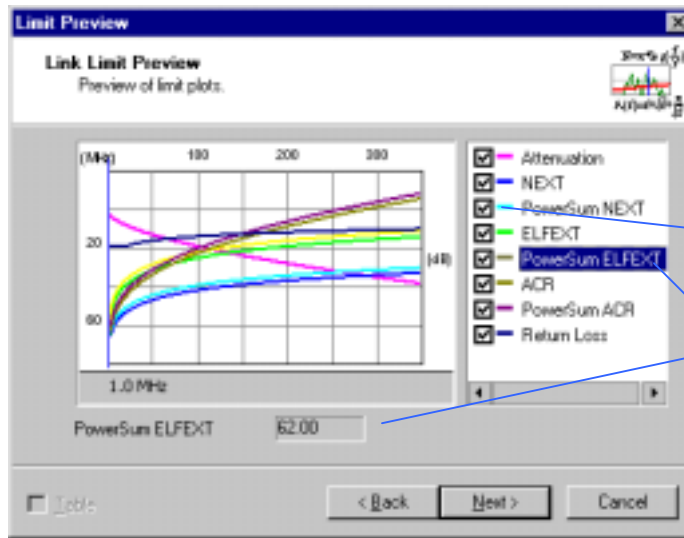


As the Limits Wizard steps you through each remaining selected measurement, you will be asked to define the limits for all the measurements you have selected. The limit for each measurement can be defined either as a formula or as a table.

Viewing the Limits

Once the limits for all the measurements are defined, they will be displayed in the Limit Preview window.

You can enable or disable the display of individual limits by clicking the checkboxes in the right pane. To view the dB value of any limit, highlight this limit in the right pane and place the cursor on the frequency or interest. The dB value at the cursor frequency is displayed under the plot. You can move the cursor by clicking at any point on the plot or by using the arrow keys on the keyboard.

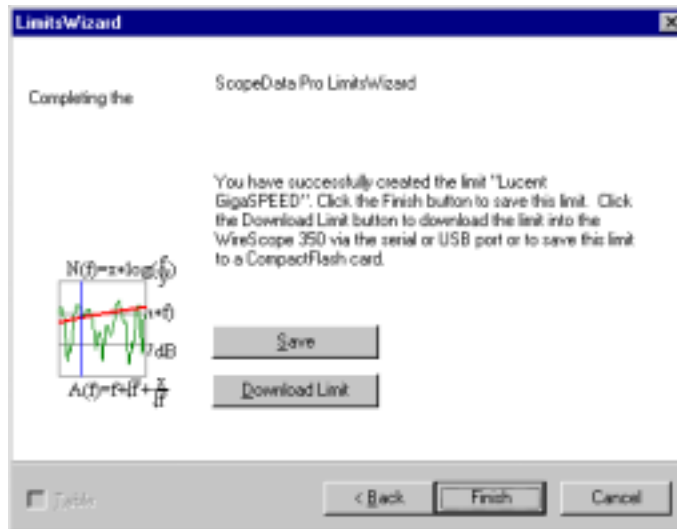


Click the check-boxes to enable or disable the display of limits.

Highlight limit of interest and read its dB value at the cursor frequency.

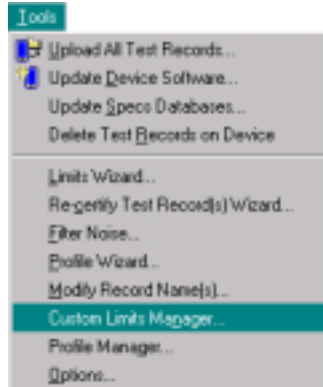
Saving, Downloading, and Exporting the Limits

When you advance past the last settings preview, the wizard displays the following.



Click **Finish** to save the limit. Click **Download Limit** to download the limit into the test unit. The limit will be saved prior to being downloaded.

To export a limit to a file which can be imported into a different installation of ScopeData Pro, click **Custom Limits Manager** on the Tools menu.



On the Custom Limits dialog box, select a limit for export. Then, click **Export**.



On the Save As dialog box, you are prompted to either use the file name shown, or you can enter a new filename. Then click **Save**.



The following message box confirms the limit file has been saved.



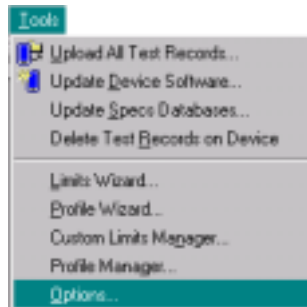
Chapter 6

Uploading Test Results

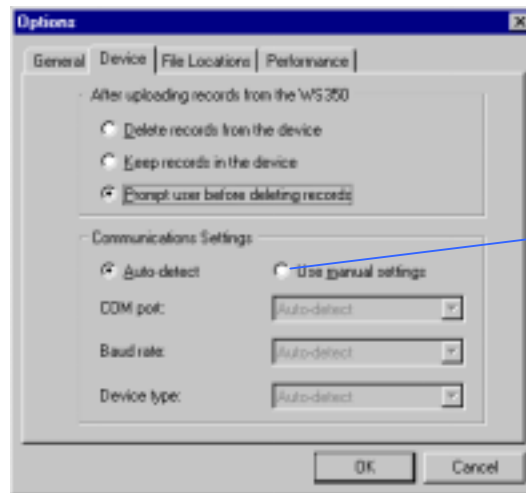
This chapter explains how to upload test results from the FrameScope 350, WireScope 350 and WireScope 155.

Preparing to upload test results

Prior to uploading test results you should configure the options for uploading. To do this, select **Options...** from the **Tools** menu.



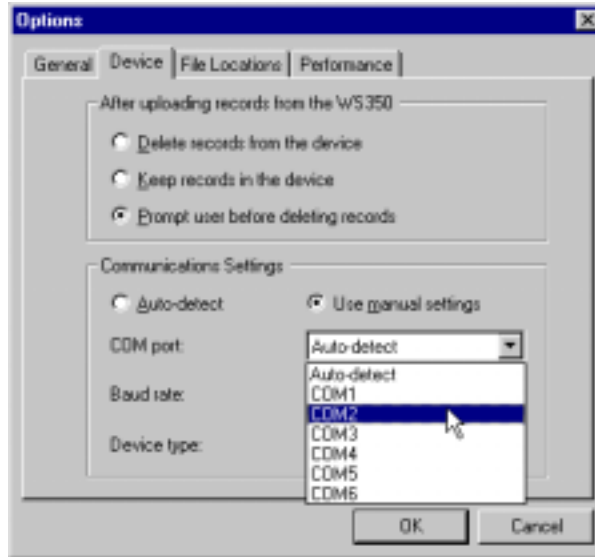
Select the **Device** tab. The following dialog box appears:



Click here to override the Auto-detect serial port settings

You can choose whether to delete the records from the device after the upload is complete. You can also specify the serial port communication settings, which are set to **Auto-detect** by default. The **Auto-detect** selection causes ScopeData Pro to automatically detect the serial port at which the device is connected, the optimum transmission baud rate and the device type type (FrameScope 350, WireScope 350 or WireScope 155).

If you would like to speed up the device detection process or if you are experiencing difficulties with the operation of the serial port, you can enable the **Use manual settings option** and then specify the COM port, the baud rate (115200, 38400, or 19200) or the device type (FrameScope 350, WireScope 350 or WireScope 155). You can leave any of these settings as **Auto-detect**. For example, you might want to specify the COM port as being COM2 to speed up the automatic detection, but leave the baud rate and the device type to be auto-detectable.



Uploading test results

You can upload test results either from a tester via the serial port, USB (Universal Serial Bus) port, or from a CompactFlash™ card. If uploading direct from the tester connect to the PC using either the serial or USB port. If uploading from CompactFlash™ insert the card into a CompactFlash™ reader connected to your PC, or into a PCMCIA adapter that accepts CompactFlash™ cards.

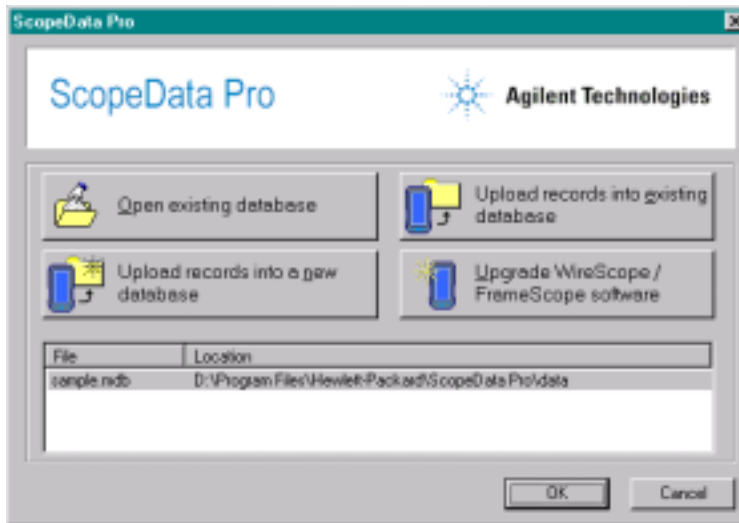
NOTE:

USB support may not be available with older PC operating systems.

Connect the tester to AC power to avoid running low on battery power in the middle of the upload.

Uploading from the opening dialog

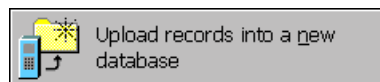
Start the ScopeData Pro application. As shown below, the opening window offers 4 commonly used functions.



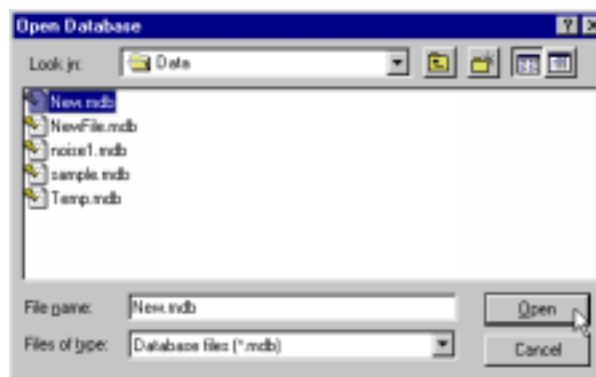
To add records to an existing database, click:



To upload records into a new database, click:



If you choose to upload the records into a new database, you will be asked to enter the name of the database. If you choose to upload records into an existing database, you will be asked to select the database.

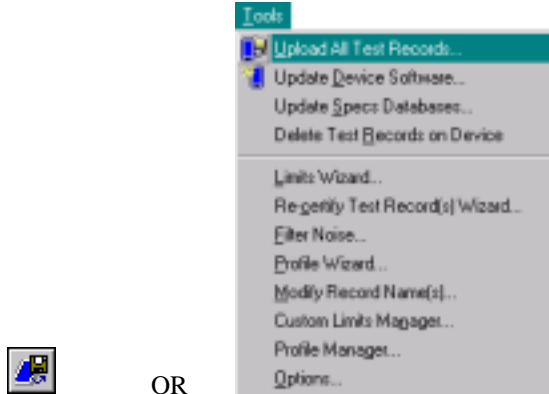


Enter or select the name of the database file and click the **Open** button. It is not necessary to specify the file extension -- the .mdb extension is used automatically.

Uploading records if ScopeData Pro is already running

If you want to upload records into a new database, make sure you do not have any databases open. (Select **Close** from the **File** menu to close any open databases.) If you want to add records to an existing database, open the database.

Click the **Upload All Test Records** button, or select **Upload All Test Records...** from the **Tools** menu.



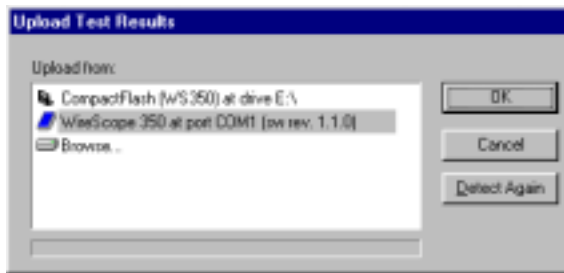
If you chose to upload the records into a new database, you will be asked to name the database before the upload begins.

The upload process

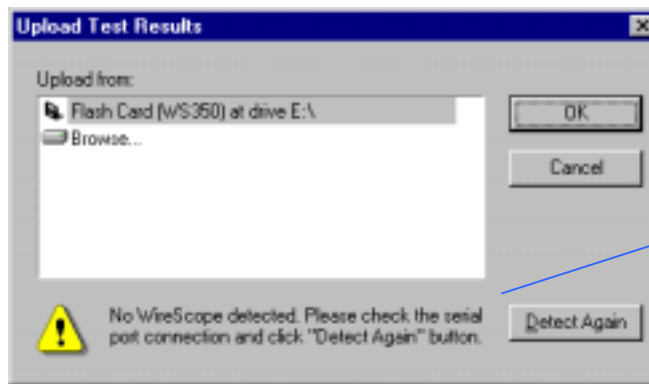
Once the database is open and ready to receive test results, ScopeData Pro looks for any testers attached to a serial port and for any CompactFlash™ devices in the system.



It then lets you select the source of test data:



If a tester is not detected at a serial port, a warning will be displayed as follows:

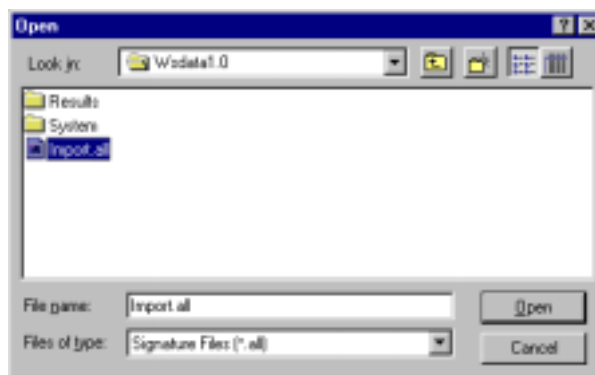


If no test unit is detected at the serial port, a warning will be issued. If you want to upload results, verify the serial port connection and then click the **Detect Again** button.

You can load test data directly from a CompactFlash™ or from a disk.

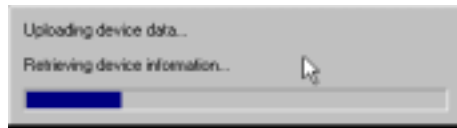
If you are uploading results from a tester or from CompactFlash™, the data is automatically located.

If you select **Browse...** you will see a dialog box allowing you to browse to the location of the test data directory (possibly copied from a CompactFlash™ to a hard disk). The files in this directory are not the database (.mdb) files created by ScopeData Pro. They are the test results files created on the test unit.

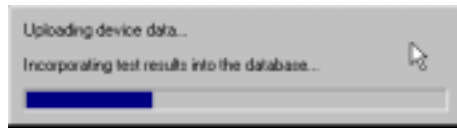


When you browse to the folder containing test results you will see a file called **Import.all**. ScopeData Pro automatically selects this file, so just click **Open** and the results will be imported into the databases.

Once you select the source of records, you will see different progress bars. First the data is uploaded, read from the CompactFlash™ or from the disk. The following progress bar appears during this process.



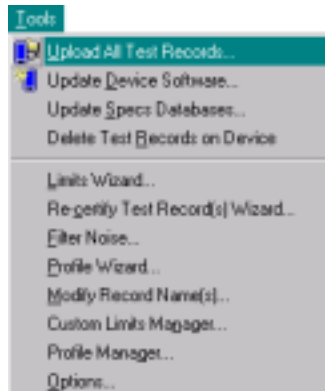
Once the data is in local memory, the second progress bar appears showing the process of incorporating the uploaded test results into the database. This can take a considerable time depending on the amount of test data being incorporated and on the speed of your PC.



Once the data is incorporated into the database, the test results will be displayed.

Uploading WireScope 155 test results

Initiate the upload of test results from the WireScope 155 by connecting to the PC via the serial port.\



Simply select the WireScope 155 from the list of available devices and click **OK**.



ScopeData Pro prompts you to enter the name of the test record:



Enter the name and click **OK**. A progress bar is displayed while the test record is uploaded.

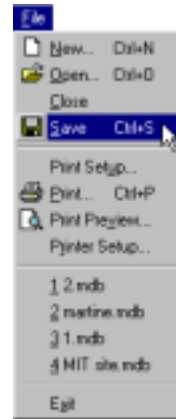


Saving the active database

To save the database, click the **Save** icon on the toolbar, or select **Save** from the **File** menu.



OR



Preparing and Printing Cable Identifiers

This chapter explains how prepare and print wire labels. Three major steps are involved:

- Setting up – Preparing the list of cable identifiers
- Printing – Printing the labels locally
- Downloading – Downloading to the tester for printing labels on-site

Setting up cable identifiers

Creating cable Identifiers for a new site

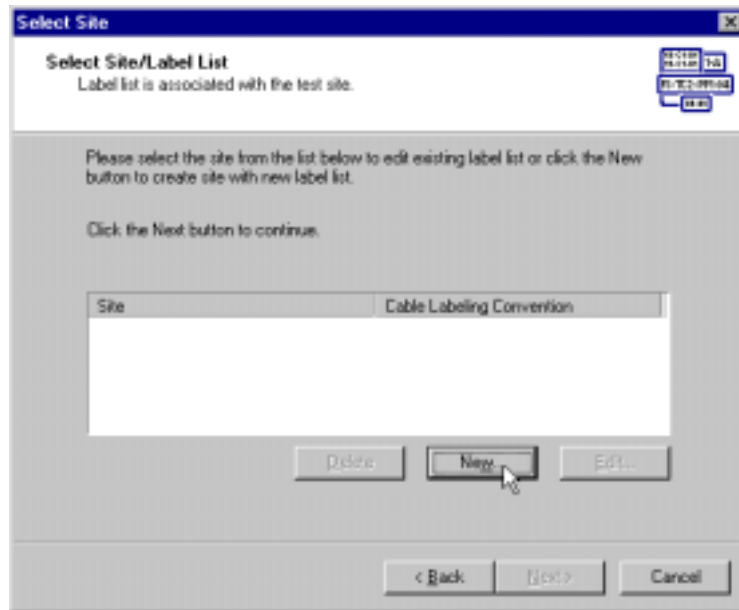
Setting up cable identifiers is simplified by using the Cables Identifier Setup Wizard. To start the wizard, click **Labels > Setup**, as shown:



The wizard appears as shown. To continue, click **Next**.



The wizard prompts you to either select an existing site/label list, or create a new site/label list. Since none are initially available, click **New**.

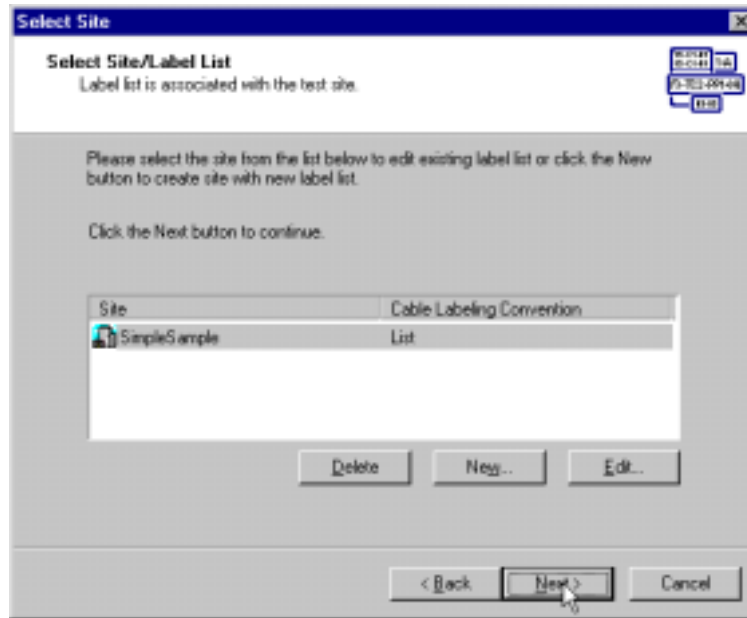


The wizard then prompts you to enter the new site name. In our example, enter the name “SimpleSample,” then click **OK**.

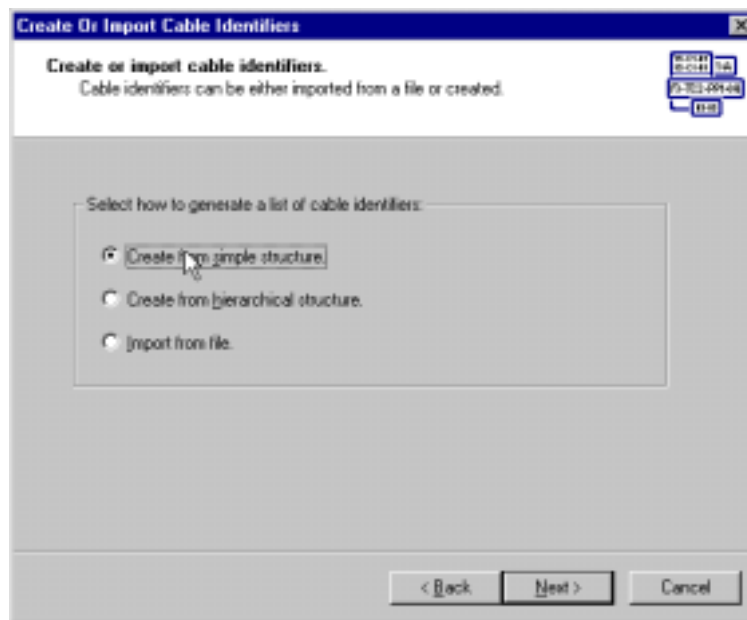


Enter the name for the new site, then click OK.

The wizard then displays the site name. Click **Next** to create labels for the named site.



The wizard prompts you to either create simple/hierarchical structure, or import cable identifiers.



The three options are described as follows:

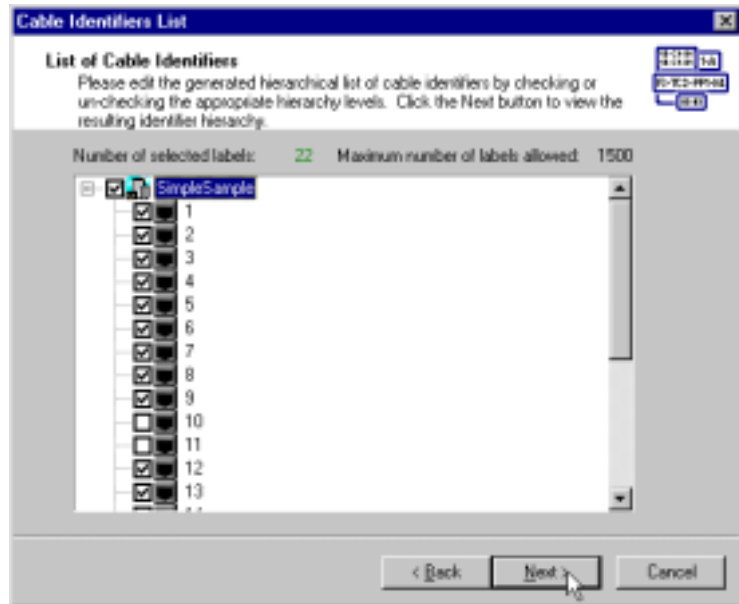
- Create from a simple structure (see page 126)
- Create from a hierarchical structure (see page 128)
- Import from file (see page 130)

Creating labels for a simple structure

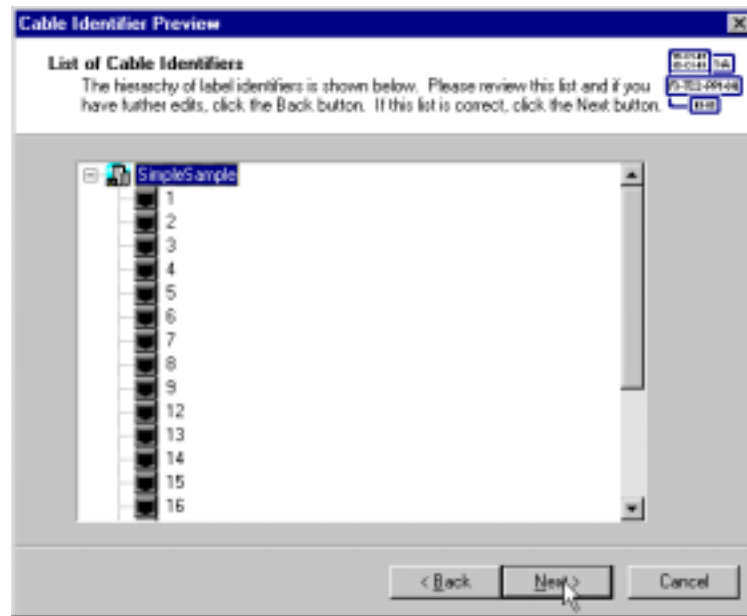
To create a simple structure, click **Create from simple structure**, then click **Next**. Then, enter a Start value and an End value. In the sample shown, enter 1 and 24, respectively, then click **Next**.



The wizard now gives you the opportunity to leave label items checked that you want to print, or non-check (click) items you want to omit from the label list. In our example, we will omit labels 10 and 11. Then, click **Next**.



The wizard then gives you a cable identifier preview that allows you to verify that the cable identifier list is exactly what you want. Notice in our example that labels 10 and 11 are missing as a result of non-checking in the previous list. Click **Next** to continue or **Back** to revise the list.



The wizard next prompts you to:

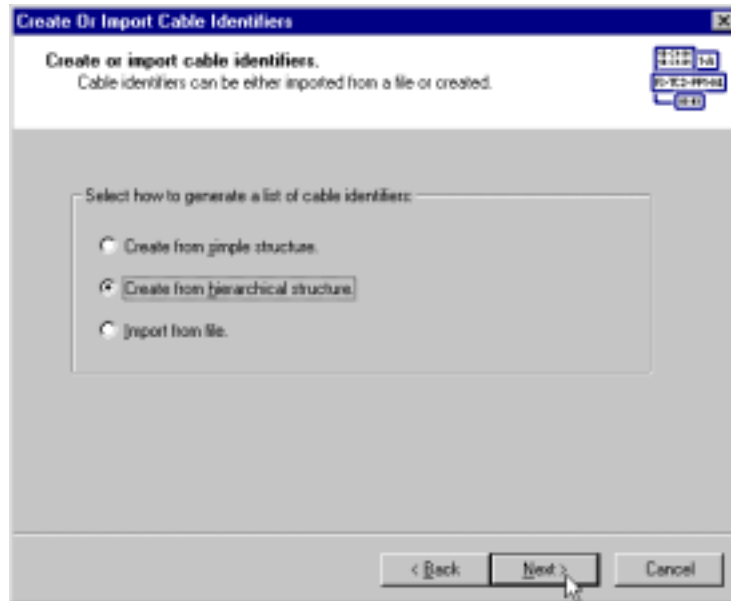
1. Print cable identifiers locally now,
2. Download cable identifiers
3. Finish.



Creating labels for a hierarchical structure

To create a hierarchical structure, click **Create from hierarchical structure**, then click **Next**.

The Setup for Labeling Convention dialog box prompts you to enter/edit values that define the basic hierarchical structure. Click to check/non-check the Label Fields you want to use/not use.



The basic structure is the maximum configuration for that site and does not necessarily mean that you want to print labels for every possible location. Later, you will have the opportunity to de-select discrete entries that are not actually present. (For example, where not all positions on a panel are used.)

For our hierarchical example, only rack, panel, and position are checked.

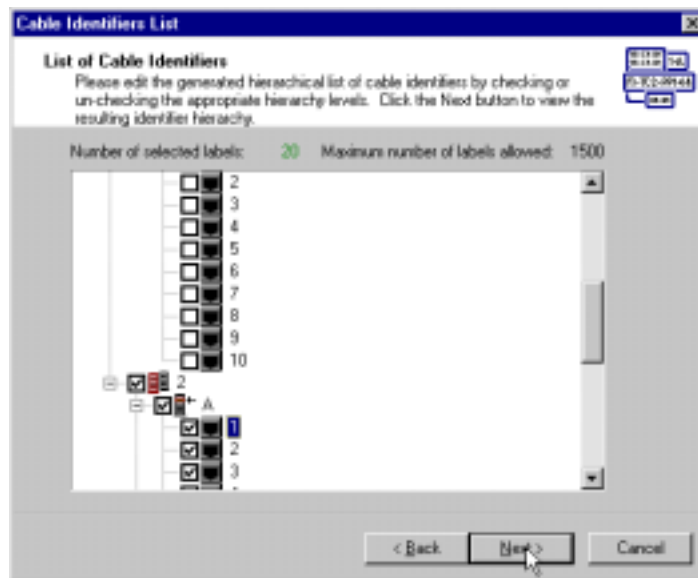


Also, click to check/non-check (enable/disable) the Auto-increment feature.

Be sure to enter a Start Value and an End Value for each Label Field you checked.

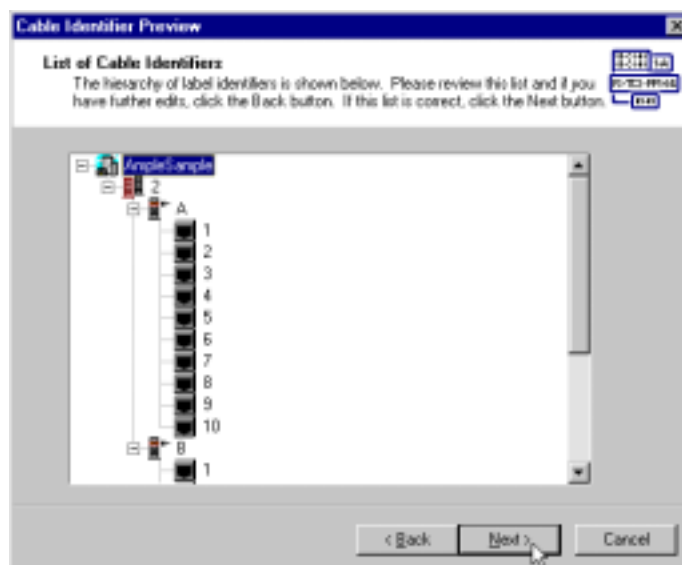
Summary information totals are listed in the bottom of the display. When you have finished entering the basic hierarchical information, click **Next**.

The wizard next presents the List of Cable Identifiers based on the basic site structure. You can now delete (or restore) structure or discrete entries by checking/non-checking the elements shown. For our example, rack number 1 is non-checked, and all panels and positions below its structure become non-checked.



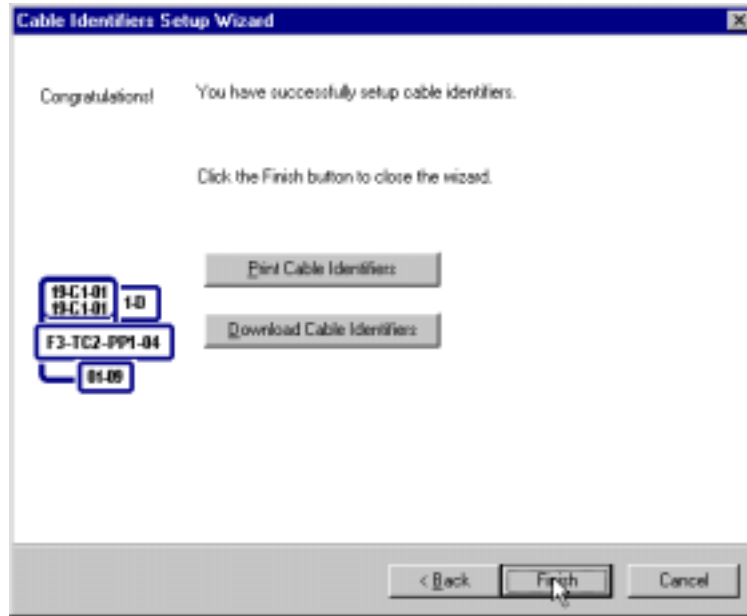
When you are satisfied with your final edits, click **Next**.

The wizard displays the Cable Identifier Preview. If you are satisfied with the list, click **Next**; to make additional changes, click **Back**. Notice that rack 1 and its panels and positions do not appear in our example preview.



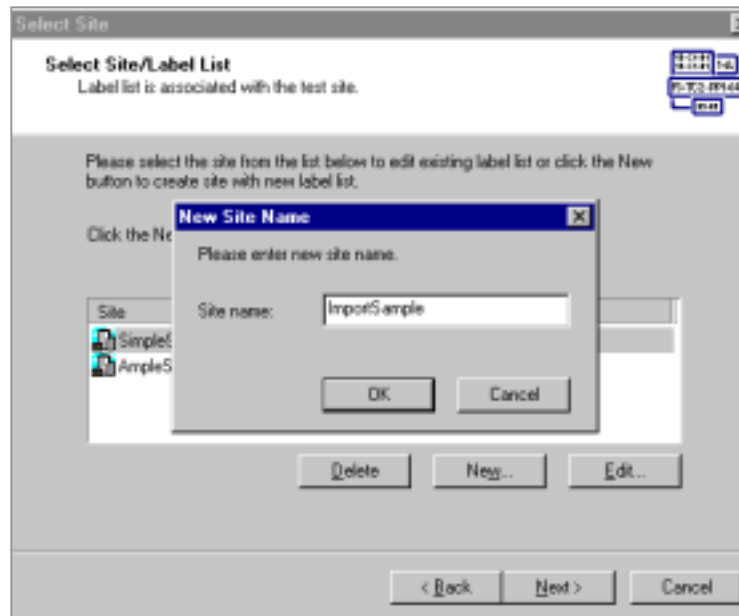
The wizard next prompts you to:

- Print cable identifiers locally now, as directed on page 135,
- Download cable identifiers as directed on page 141
- Finish.

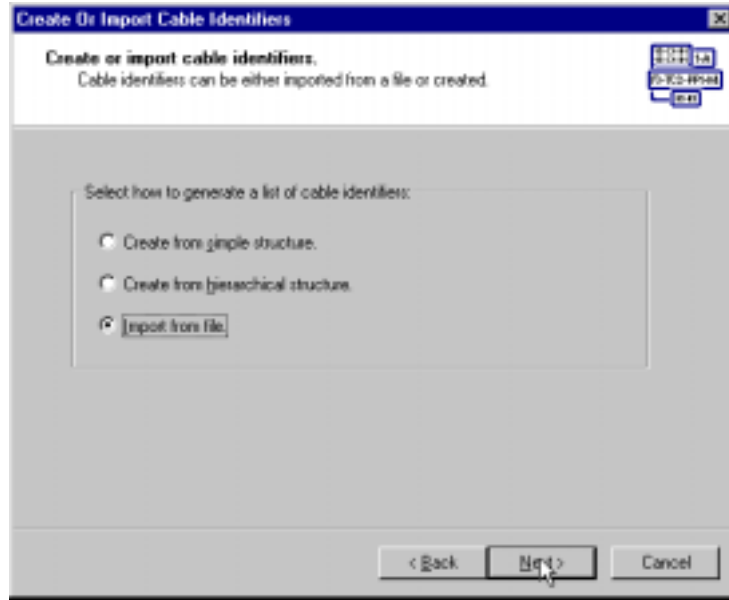


Creating a label structure from an existing file

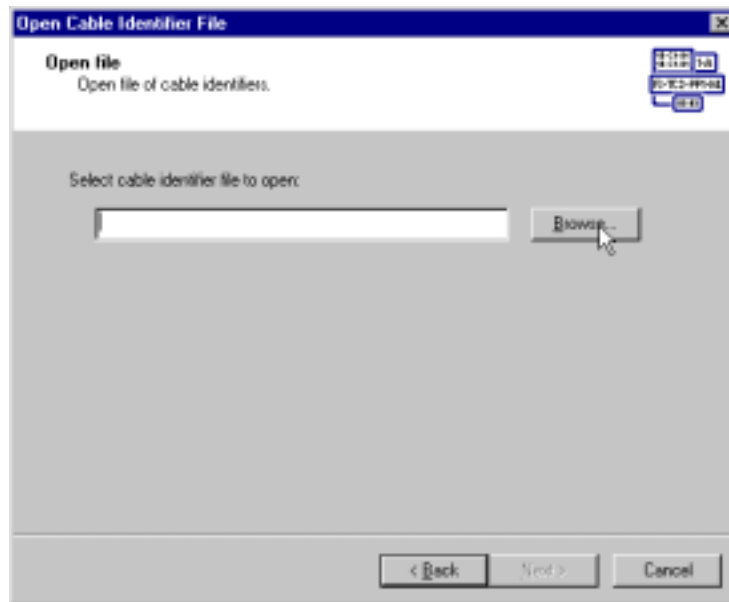
You can import cable label information from other applications such as AutoCAD, etc. Files must be formatted with one label per line. To create a label structure from an existing file, first use the wizard to create the new site name. (For our example, the name is ImportSample, as shown.) Then, click **Next**.



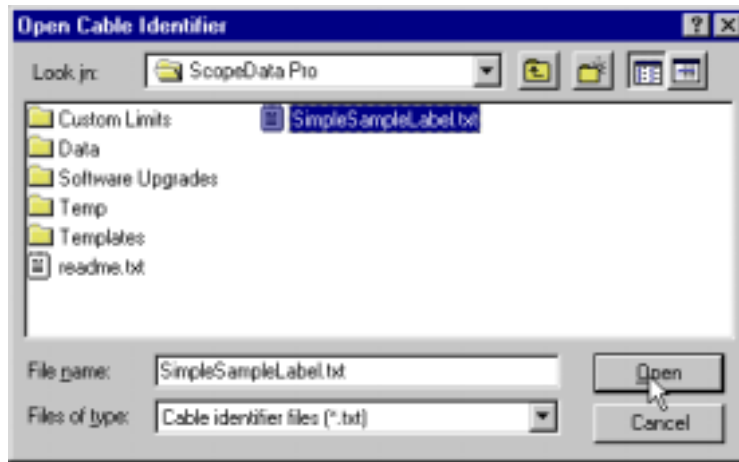
The wizard prompts you to create or import cable identifiers. Click **Import from file**, then click **Next**.



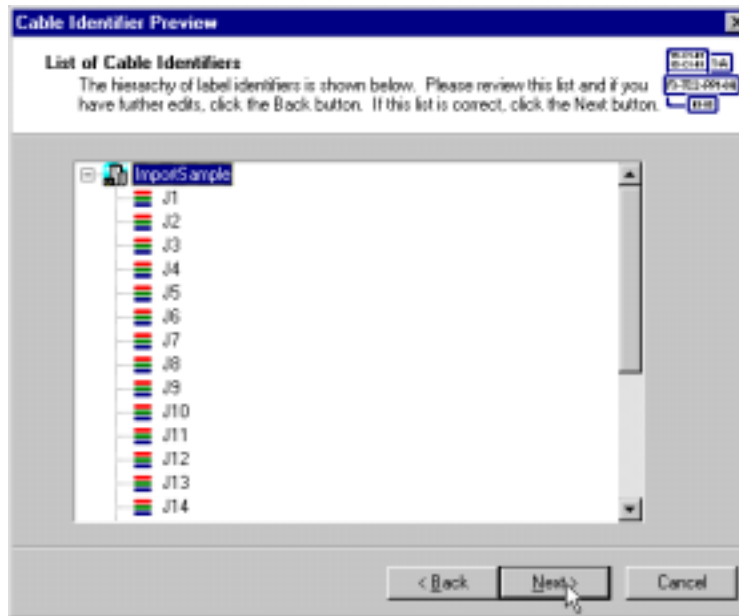
The wizard prompts you to select a cable identifier file to open. Click **Browse**, if necessary, to locate the file you want to import.



Click on the file, then click **Open**, Then click **Next** in response to the create or import cable identifiers prompt.



The wizard then displays the cable identifiers preview.



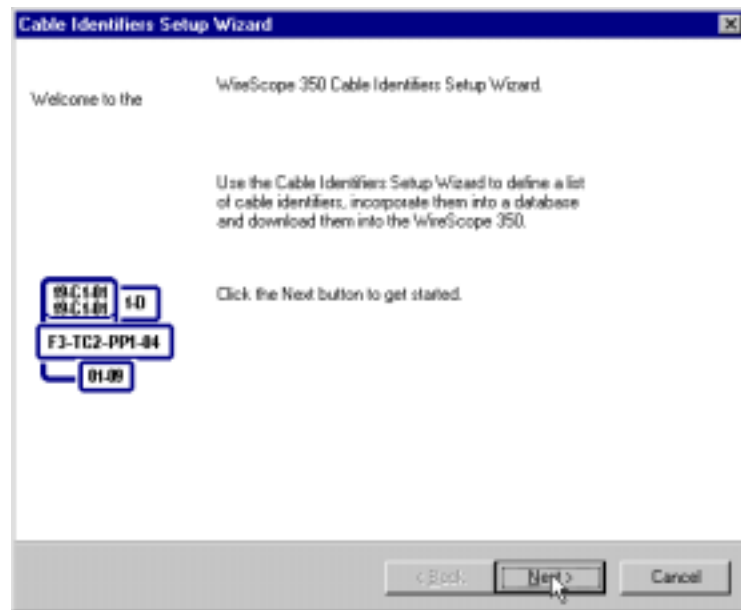
The example preview contains the cable identifiers contained in the imported example SimpleSampleLabel.txt file.

The wizard next prompts you to:

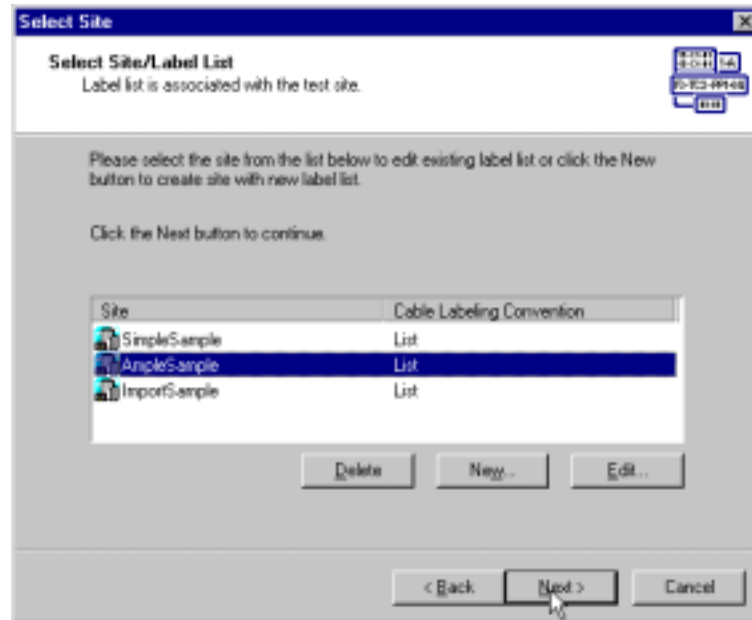
- Print cable identifiers locally now, as directed on page 135,
- Download cable identifiers as directed on page 141
- Finish.

Editing an existing label list

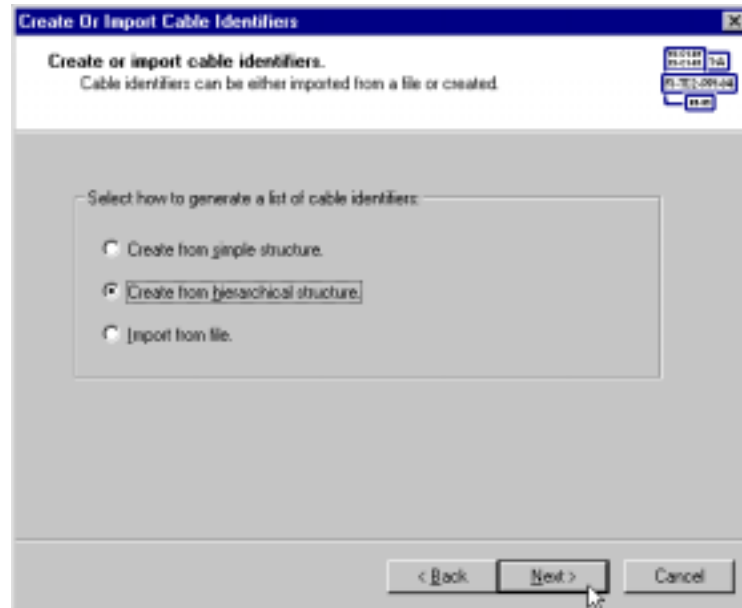
You can use the wizard to edit existing label list. On the ScopeData Pro main window's Labels menu, select **Setup**. Then click **Next** to continue.



Select one of the sites listed by clicking it. (For our example, AmpleSample is selected.) Then, click **Next**.



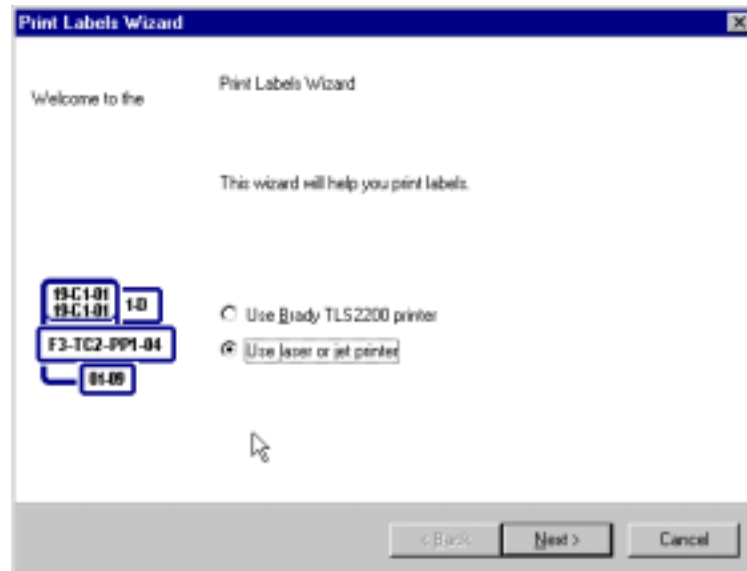
The wizard then prompts you to select a structure or import from a file. The structure must match the file you are going to edit. Click to make your selection, then click **Next**.



At this point, you have the structure displayed and it reflects the information previously stored under that site name. You can make any changes desired, then move toward saving or printing the file.

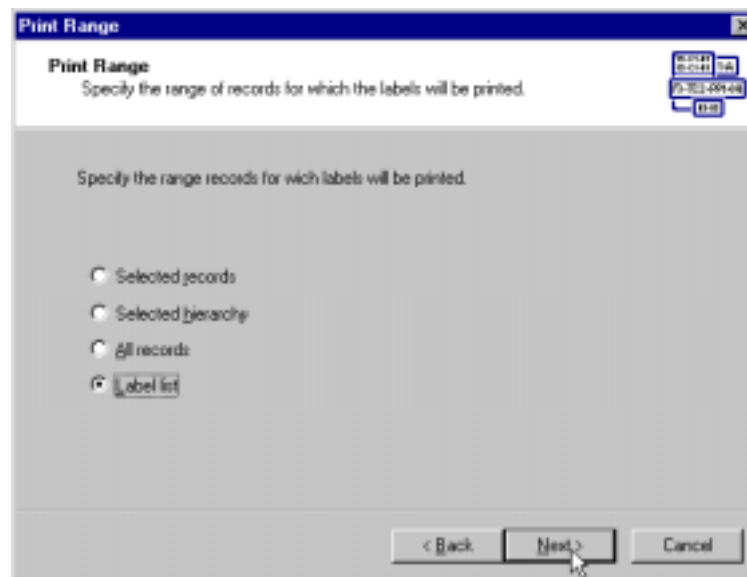
Printing

After setting up the labels for a particular site, you are ready to print the labels. If the label list is not already open, from the ScopeData Pro window Labels menu, select **Print**.



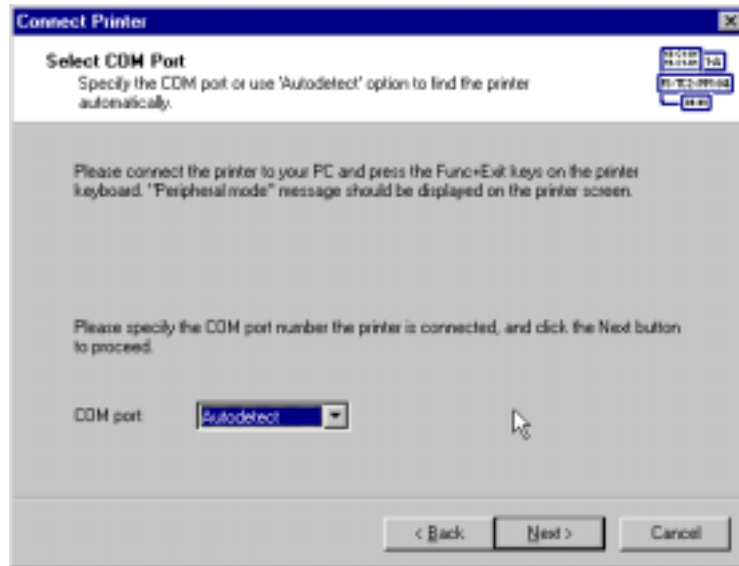
Select the printer you want to use: Brady TLS2200 or laser or jet (inkjet). Click **Next**. You are then prompted to specify the range of labels within the database that you want printed:

- Selected records –
- Selected hierarchy –
- All records –
- Label list –

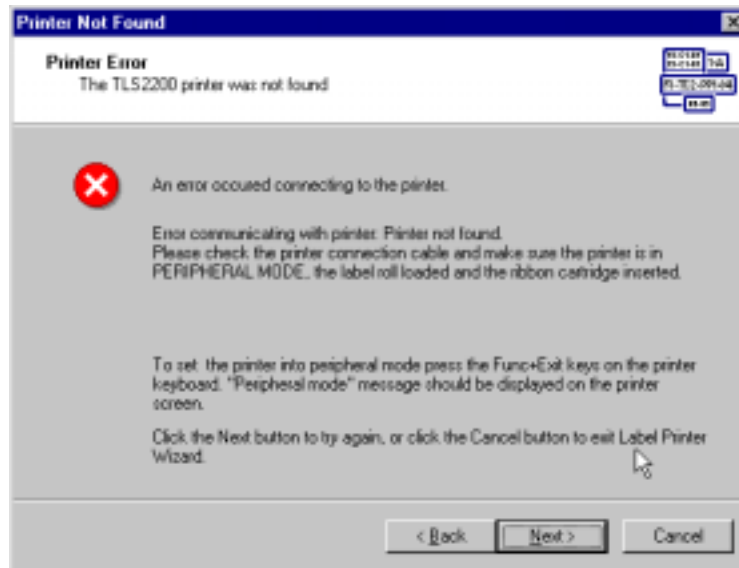


Printing labels on the Brady TLS2200 printer

If you selected the Brady printer, you are prompted to select the serial COM port to which the Brady printer is connected. You can select from COM1 to COM6, or Autodetect (shown). Then click **Next**.



If no printer is detected, the following error message will appear.

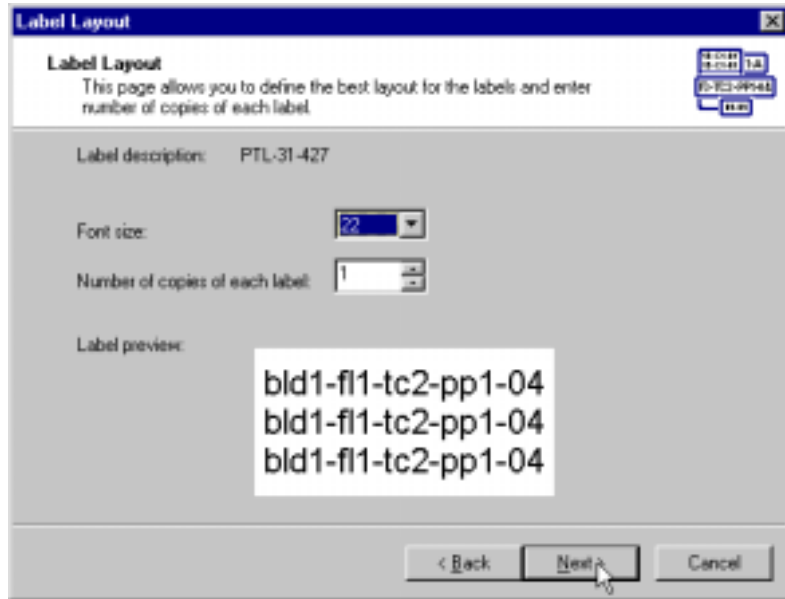


NOTE:

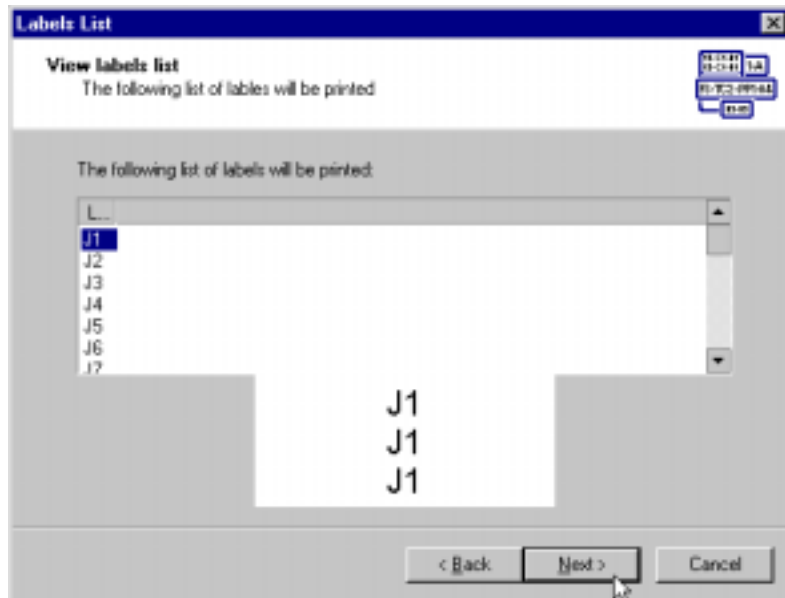
*The most likely cause for this error message is the printer is not turned on and it is not set to Peripheral mode. Turn the printer on, then press the **Func** and **Exit** keys.*

Correct the problem and continue as directed in the message or click **Cancel** to quit the printing session.

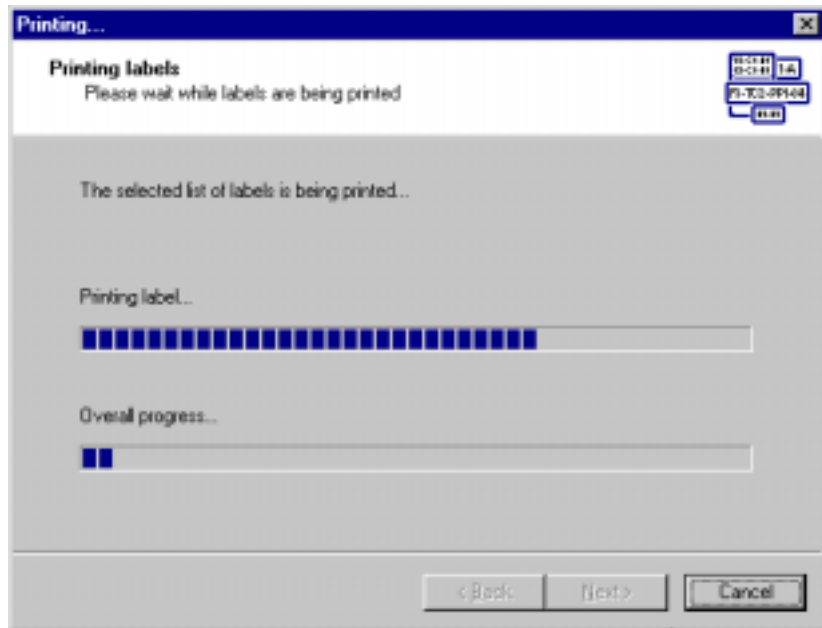
Following printer detection, the wizard prompts you to define a label font size and the number of copies to be printed of each label. The Label preview displayed is not from the actual labels you intend to print; it is sample information for selection, only.



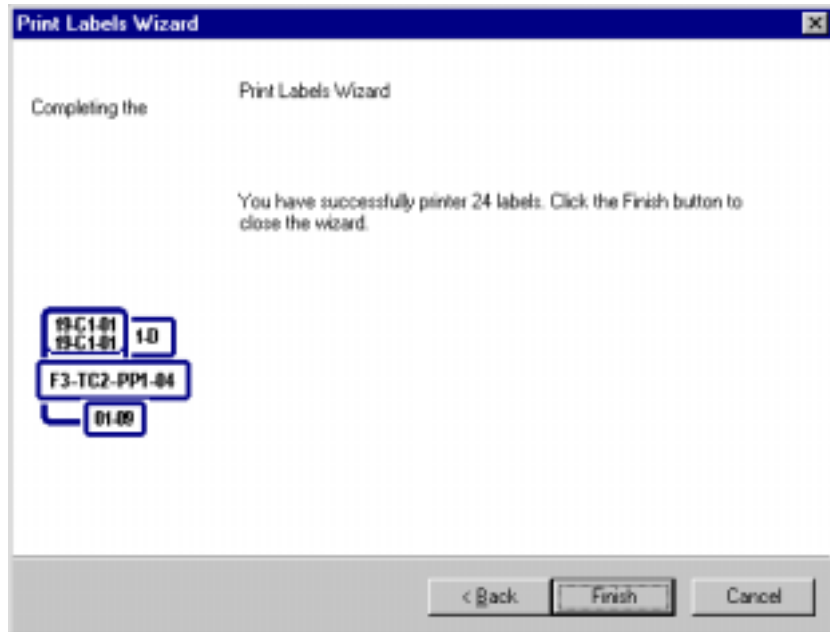
Next, the wizard prompts you view the label list. The list is the vertical column to the left. A sample of the highlighted label is shown in the center-lower portion of the view. If the list is satisfactory, click **Next** to continue.



Printing begins and a progress indicator is displayed.



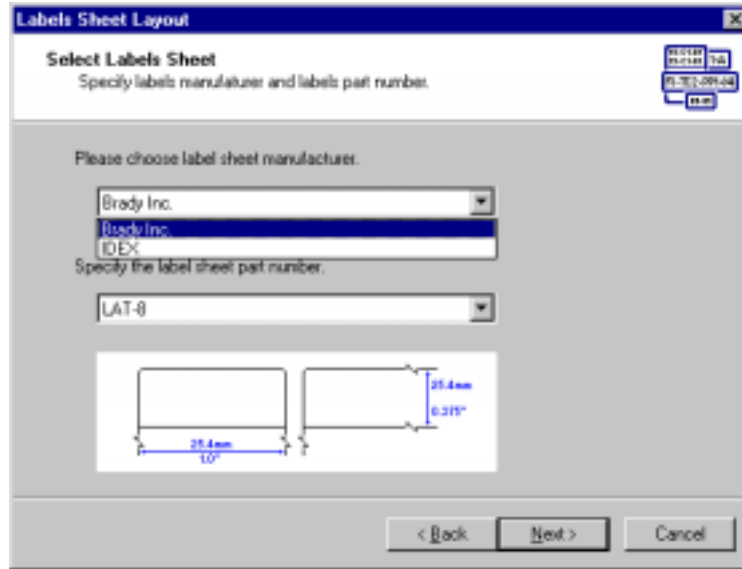
After printing is completed, the following message is displayed.



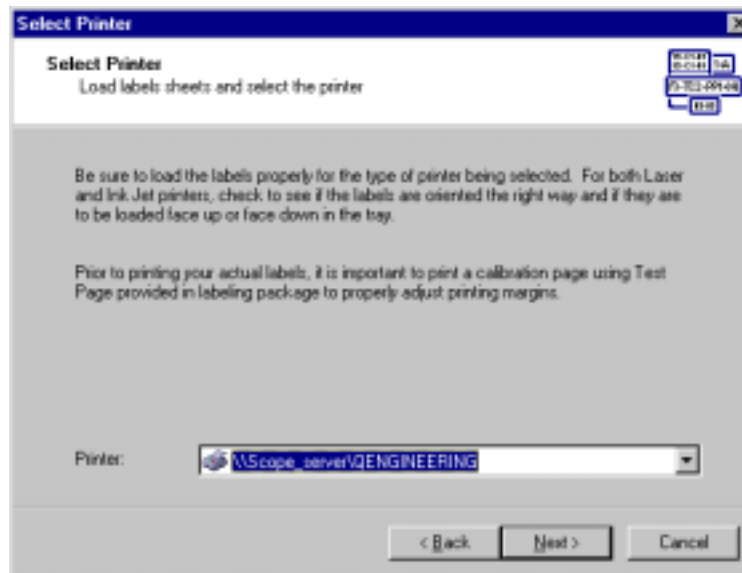
Click **Finish** to exit the wizard.

Printing labels on a laser or inkjet printer

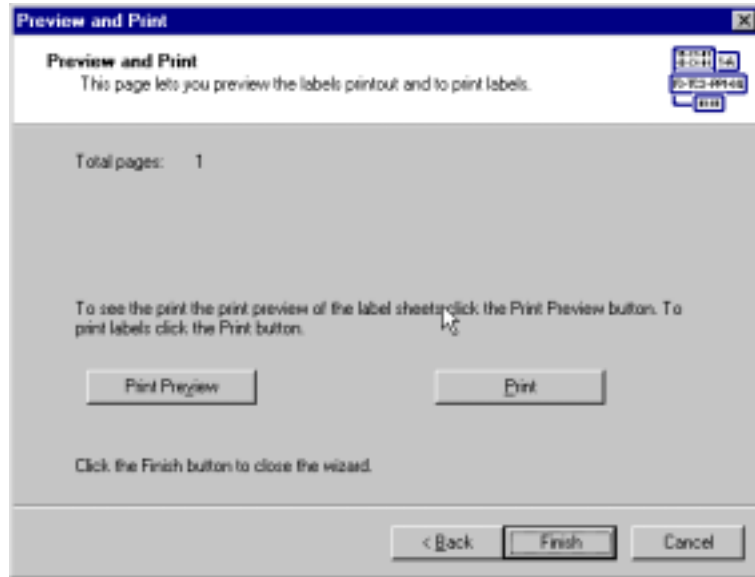
If you selected a laser or jet printer, you are then prompted to select the label sheets you will use. For Brady Inc. label sheets, you also need to specify the label sheet part number (LAT-8, LAT-18, LAT-45, LAT-47, or LAT-1760). Dimensions for the selected Brady labels are shown.



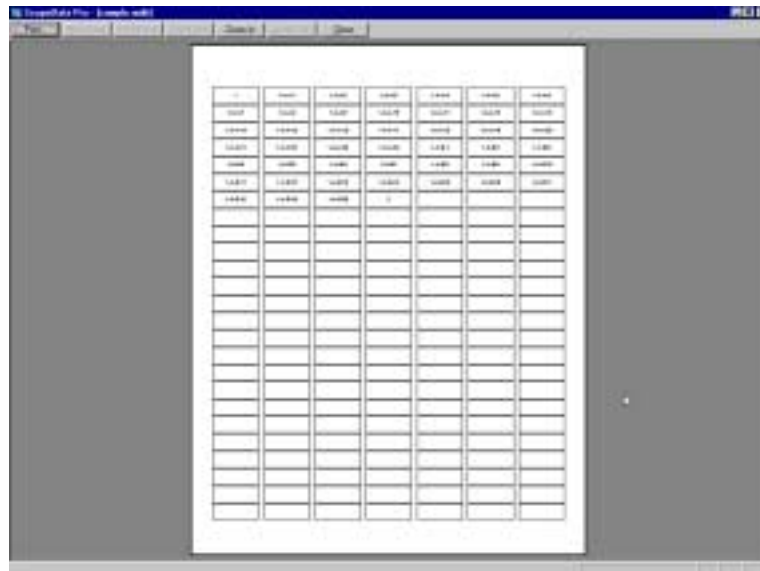
Then click Next. You are then prompted to select the printer you want to use for printing the labels. Click **Next**.



You are now given the opportunity to preview how the printed sheets will be appear.



An example of a print preview for Brady LAT-8 labels using a sample structure example as input follows:



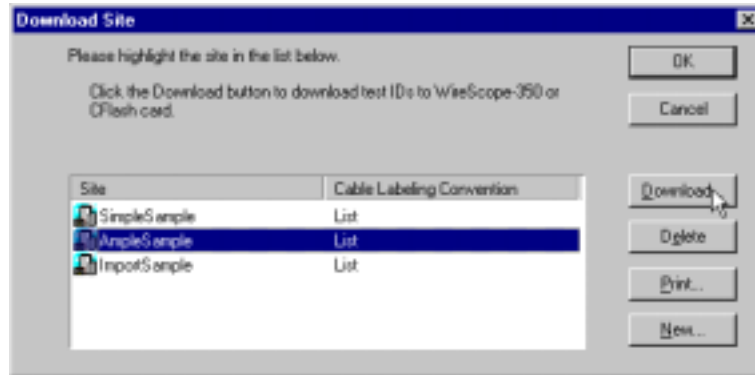
At this point,

- You can examine the sheet by clicking Zoom In (or Zoom Out)
- You can click Close to return to the previous dialog box
- If you are satisfied with the labels to be printed, you can click Print.

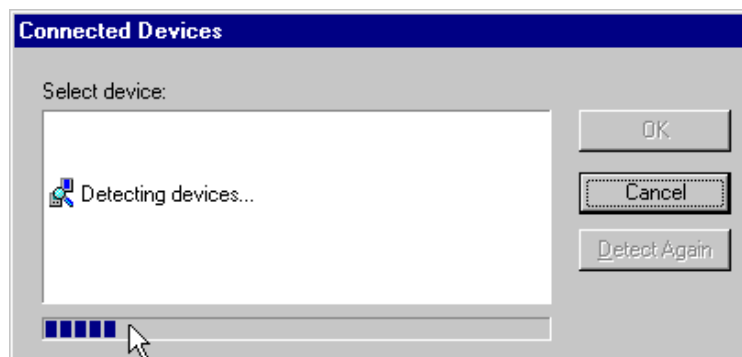
Be sure that you have loaded the printer with the label sheets required for your print job before you click Print.

Downloading

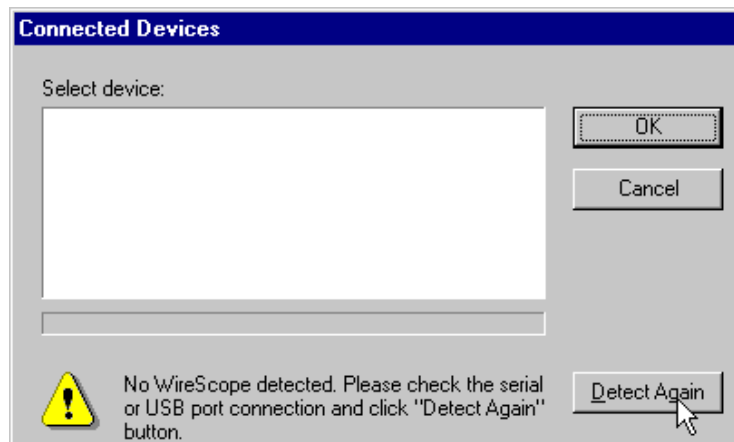
Results can be saved to the predefined label list. To use this feature, first select **Download** from the ScopeData Pro's **Labels** menu. Then, select a listed site for download.



The wizard then searches for the tester connection. During the search for a connection, the wizard appears as shown:

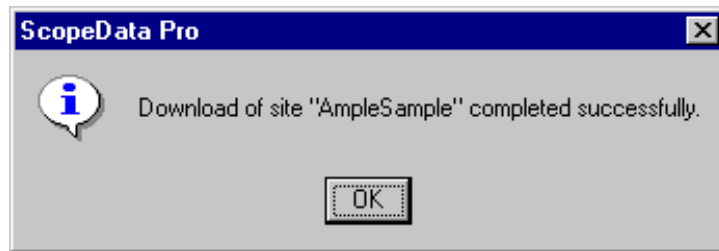


If no connection is detected, the wizard displays the following message:



If the error occurs, correct the problem, then click **Detect Again**.

If the connection is detected successfully, the download automatically starts, and the wizard displays a download completed message. In the example shown, the message includes the name of the example site.



Click **OK** and the wizard returns to the Download Site prompt, as shown on page 141. Click **OK** to exit to the ScopeData Pro main window.

Chapter 8

Upgrading Software

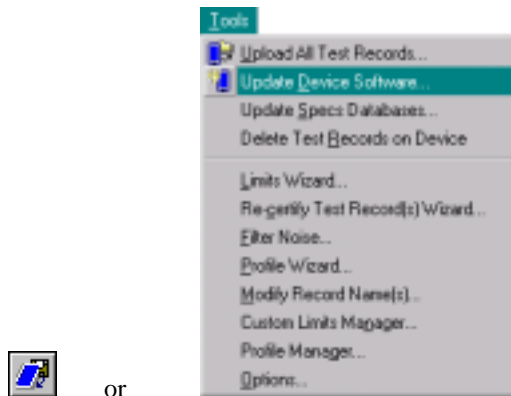
This chapter explains how to upgrade the software in the FrameScope 350, WireScope 350, and WireScope 155.

Preparing for a software upgrade

Before upgrading the software, attach the tester to a serial port on the PC via the serial port cable. If upgrading a FrameScope 350 or WireScope 350 the USB port can be used to facilitate the data transfer.

Connect the test unit to AC power to avoid running low on battery power in the middle of the upgrade.

Press the **Update Device Software** button or select **Update Device Software...** from the **Tools** menu.



ScopeData Pro will look for the device at the serial or USB port.



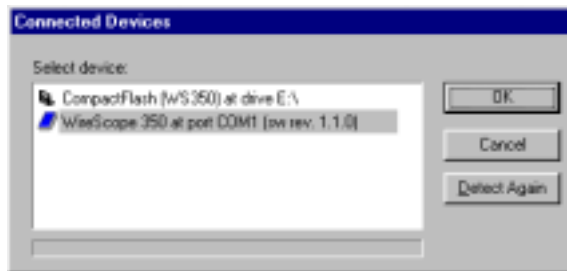
If the device is not properly connected to a serial port, the following message will appear:



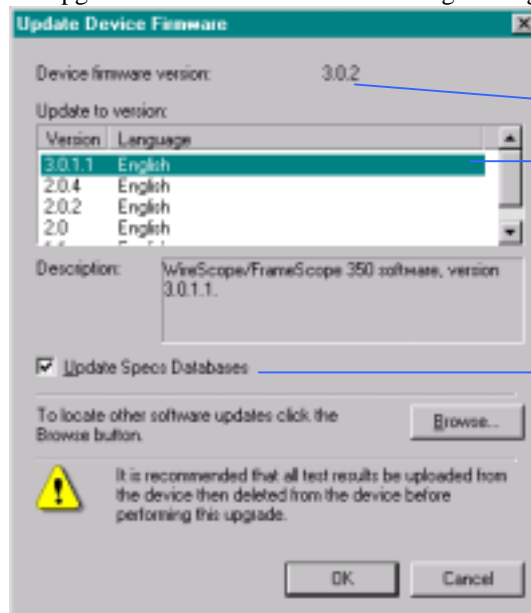
Verify the serial port connection and click the **Detect Again** button.

Upgrading FrameScope 350 & WireScope 350 software

When a tester is detected at the serial or USB port or if a CompactFlash™ card is detected, the following dialog box appears:



The current version of the firmware is displayed in parenthesis. You can either load the upgrade into the tester or you can load the upgrade onto a CompactFlash™ card. Loading a CompactFlash™ card allows for upgrading multiple testers by inserting the card into the test unit. Select the destination for the upgrade and click OK. The following message box will appear:



Current firmware version of the device

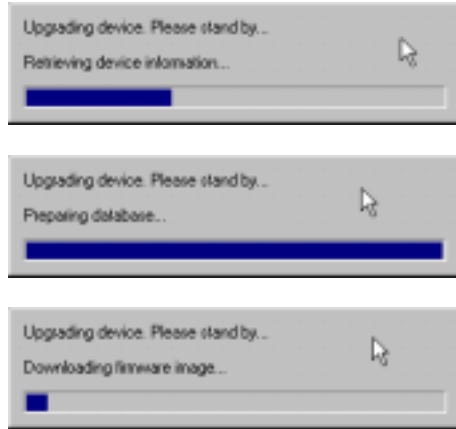
Version and type of upgrade to be performed

Click this checkbox to update cable, connector, probe and limit. If you do this, some custom entries may be erased.

The latest available firmware version is selected for upgrading by default. If there is more than one choice of the firmware version, select the upgrade of interest and then click **OK** to continue.

Agilent Technologies recommends that you enable the **Update Specs Database** check-box to update the test unit cable, connector, probe and limit specifications. However, if you have defined a custom and have not uploaded test results into ScopeData Pro since defining this custom specification, this specification may be erased during the Specs Database update.

ScopeData Pro displays several progress messages during the update:



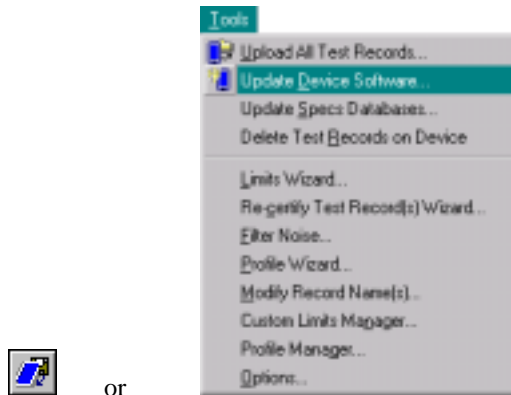
Once the upgrade is complete, the test unit reboots and ScopeData Pro displays the following message:



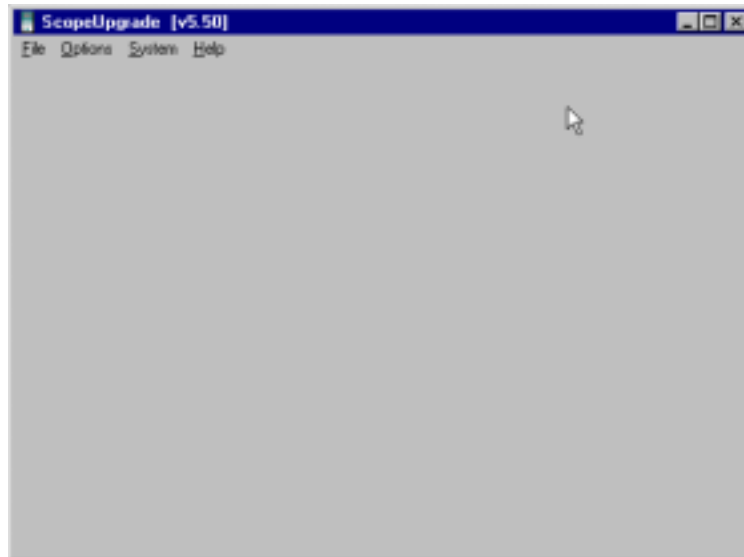
Once the upgrade is completed, the DualRemote 350 will likely require software upgrading. To verify this, connect the FrameScope 350 or WireScope 350 to the DualRemote 350 per the calibration process as described in the *User's Guide*. If upgrading is required, the unit will display a message indicating the mismatch in versions. Follow the prompts displayed to upgrade software on the DualRemote using the same calibration setup. Also, the DualRemote 350 software can be upgraded using the same procedure used for the FrameScope 350 and WireScope 350 by using the serial or USB port.

Upgrading WireScope 155 software

To upgrade the WireScope 155 software, click the **Upgrade Device Software** button or select **Upgrade Device Software** from the **Tools** menu.



ScopeUpgrade utility is then invoked and the following window appears:



To view the software revision of the attached WireScope 155 select **Get Device Info** from the **Options** menu.



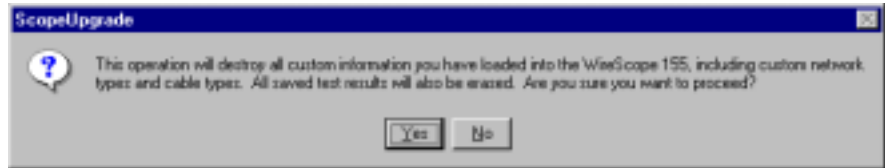
ScopeUpgrade queries the WireScope and displays an informational message:



To upgrade the software select **Update Software** from the **Options** menu.



A warning is issued:



If you would like to proceed click the **Yes** button.

NOTE:

Once you have upgraded software in the WireScope 155, perform the same procedure to upgrade software in the DualRemote 155.

Serial Port Cable Pin-out

The pin-out of the serial port cable (Scope part # CAB802DIN) is shown below. The cable has a DB9 connector on one end and a DIN-8 connector on the other end. The DB25 pin-out is shown for reference only. Use a DB9 to DB25 adapter to connect to a 25-pin serial port on the PC or printer.

Din 8 pin #	Signal	DB9 pin #	DB25 pin #
1	DTR	4	20
2	RXD	2	3
3	GND	5	7
4	NOT USED		
5	TXD	3	2
6	NOT USED		
7	NOT USED		
8	NOT USED		

References

- [1] TIA TSB67, *Transmission Performance Specifications for Field Testing of Unshielded Twisted-Pair Cabling Systems*, October, 1995
- [2] TIA TSB95, *Additional Transmission Performance Specifications for 4-pair 100 Ω Category 5 Cabling*, September, 1999
- [3] IEC 61935, *Generic cabling systems – Specification for the testing of balanced communication cabling in accordance with ISO/IEC 11801; Part 1: Installed cabling*, 1999
- [4] TIA/EIA-568-B.2-1 Addendum 1: *Transmission Performance Specifications for 4-Pair 100 Ω Category 6 Cabling*, June 2002
- [5] TIA 568-A-5 (Addendum No. 5 to TIA-568-A), *Transmission Performance Specifications for 4-Pair 100 Ω Category 5e Cabling*, 1999
- [6] TIA-568-A, *Commercial Building Telecommunications Cabling Standard*, October, 1995
- [7] TIA-568-B.1, *Commercial Building Telecommunications Cabling Standard; Part 1: General Requirements*, April, 2001
- [8] ISO/IEC 11801:1995, Amendment 2, July, 1999
- [9] ISO/IEC 11801 2nd Edition
- [10] Agilent Technologies *WireScope 350 User's Guide*, Part Number N2605A-070, Version 3.0

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