FLUKE
networks ™

CableManager ™

Cable Test Management Software

Getting Started Guide

Table of Contents

Title	Page

Introduction

CableManager software is a Windows® program that lets you do the following:

- Transfer saved Autotest reports and report summaries from the test tool or the memory card reader to a PC.

- Sort and edit Autotest reports.

- Customize the appearance of printed reports and summaries.

- Add plots to printed test reports (DSP-4100)

- Transfer SETUP settings to and from the test tool.

- Update the software in the test tool and remote.

The minimum requirements are a 200 MHz Pentium® microprocessor system with 64 MB of RAM, Windows 95, 98, or NT/2000 software, and a monitor with 800 x 600 resolution.

Notes

The CableManager features described in this manual may vary, depending on the version of CableManager you received.

*CableManager upgrades and documentation on new features are available on the Fluke Networks website at **www.flukenetworks.com**.*

The instructions in this manual assume that you have already installed and know how to use Microsoft Windows® 95, 98, or NT/2000.

Installing and Starting CableManager Software

The CableManager installation program copies the CableManager files from the CD provided to the drive of your choice. The installation program creates a Cblmgr directory on the PC's C: drive for storing files.

The installation program also installs the drivers for the memory card reader.

To install CableManager software on your computer, proceed as follows:

1. Put the CableManager CD into the PC's CD drive.

2. From Windows, use the File Manager to run the file Setup.exe from the root folder of the CableManager CD.

3. Follow the instructions given by the setup program.

4. To start CableManager, double-click on the CableManager icon in the Fluke CableManager group.

Selecting a Language

To select a language for CableManager displays and printed reports, choose **Language** from the **Options** menu; then click on the desired language.

Accessing Online Help

CableManager's online help provides additional information on CableManager's features.

To access the online help, choose **Contents** from the **Help** menu in the CableManager window. Click on any topic for more information

To search the help files for a specific word, click the **Index** button. Follow the instructions on the **Index** or the **Find** tab to search for the word.

Using the Sample File

If you don't have any test data, but want to practice using CableManager, you can use the sample file included with CableManager software. The file is copied to your CableManager directory during installation. See the section "Opening an Existing Project".

Connecting the Memory Card Reader to a PC

To use the memory card reader to upload Autotest reports from a memory card to a PC, connect the reader to the PC as shown in Figure 1.

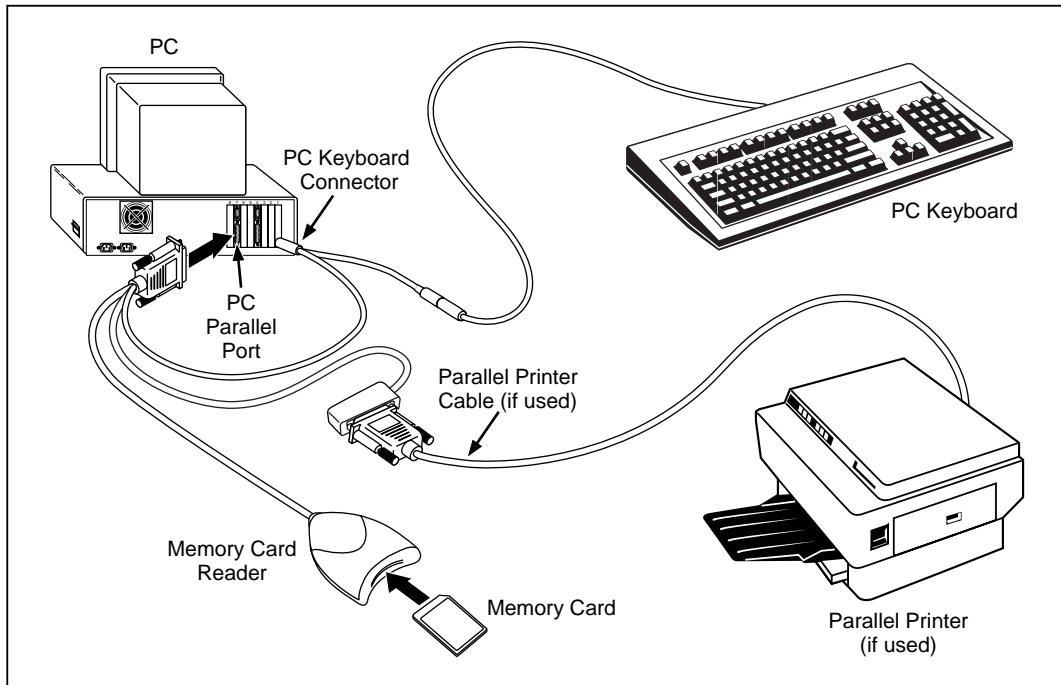The drivers for the card reader are installed on the PC when you install CableManager.

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Figure 1. Connecting the Memory Card Reader to a PC (DSP-4100 only)

Connecting the Test Tool to a PC

To upload Autotest reports from a DSP test tool or from a memory card installed in a DSP-4100 test tool, connect the test tool to a PC using the 9-pin serial interface cable provided with the test tool. Refer to Figure 2. If your PC has a 25-pin serial port, you can use a Fluke 25-pin adapter, Fluke P/N 929187.

To verify the pin assignments for a different 25-pin adapter or a different cable, refer to the pin assignments for the serial interface cable given in "Specifications" in Chapter 8 of your DSP test tool users manual.
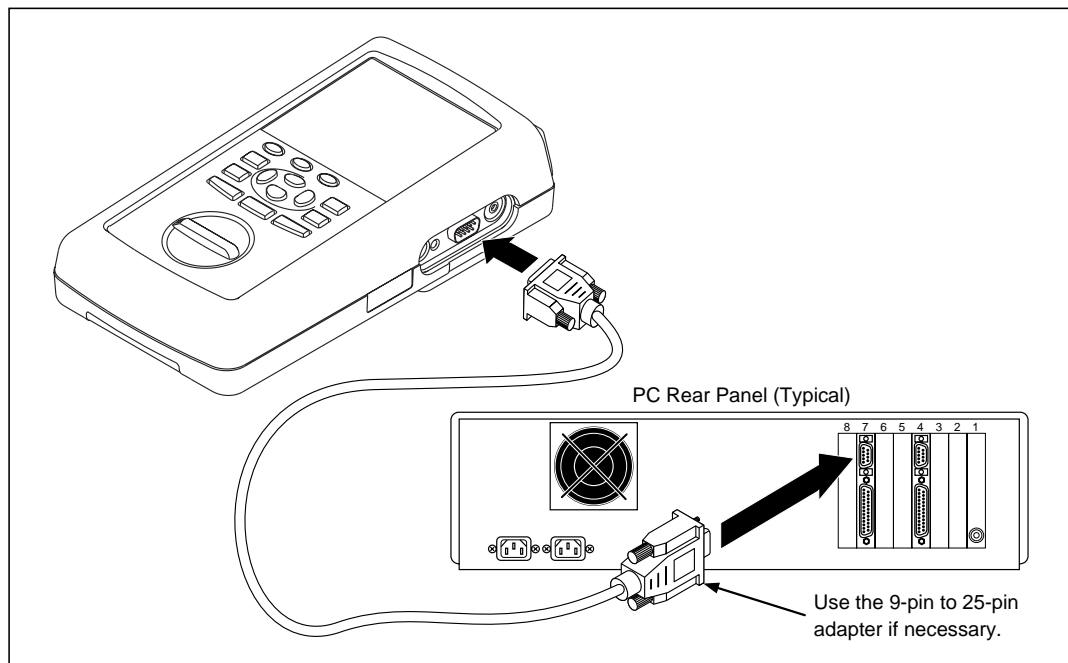

PC Rear Panel (Typical)

Use the 9-pin to 25-pin adapter if necessary.

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Figure 1. Connecting the Test Tool to a PC (DSP-4100 only)

Opening a New CableManager Project

To open a new project, proceed as follows:

1. Connect the test tool or memory card reader to the PC, then start the CableManager program, as described in the previous sections.

2. If you are uploading reports from a test tool or a memory card installed in a test tool, turn on the test tool.

3. On the CableManager tool bar, click on ⬜ (**New**); then click on 📇▸ (**Import from DSP Memory Card**) or 🖩▸ (**Import from DSP Cable Tester**).

4. In the **Autotest Reports** window, select the reports you want to import.

   To select a block of reports, click on the first report in the block; then hold down the Shift key and click on the last block.

   To select multiple, nonconsecutive reports, hold down the Ctrl key and click on the reports.

5. Click on **Import**.

Communication Problems

If CableManager cannot connect to the test tool or memory card reader, try the following:

- Choose **Serial Port** from the **Options** menu, change the **COM** number in the **Serial Port** box; then click **Test**.

- Verify that the interface cable is securely connected to the test tool or card reader and to the selected serial port on the PC.

- If you are not using the cable provided to connect the test tool to a PC, verify that the cable's pin assignment matches the pin assignment given for the serial PC interface cable given in "Specifications" in Chapter 8 of your DSP test tool users manual.

- If the PC still can't connect, set CableManager to a lower baud rate and try again. To select a lower baud rate, choose **Serial Port** from the **Options** menu, select a lower baud rate; then click on **Test**.

Opening an Existing Project

1. Click on (**Open**).

2. Select the drive and directory where the project was saved. The default directory where CableManager saves files is C:\Cblmgr.

3. Click on the project you want to open. To open the sample data file, click on .fcm file that was copied to the Cblmgr directory when you installed CableManager.

4. Click on **Open**.

The CableManager Toolbar

Table 1 describes the icons on the CableManager toolbar.

Table 1. The CableManager Toolbar

Icon	Function
	New: Creates a new project.
	Open: Opens an existing project.
	Close: Saves and closes the current project.
	Save: Saves the current project.
	Cut: Removes the selected item and puts it on the clipboard.
	Copy: Copies the selected item to the clipboard.
	Paste: Inserts a copy of the clipboard contents.
	Find: Lets you search for a character string in your project.
	Fast Print: Prints the selected reports.
	Print Preview: Lets you see what the printed reports will look like.
	First, Previous, Next, Last: Moves to the first, previous, next, or last report in the project.
	Quick Sort: Lets you sort reports in ascending order based on one sorting criterion.
	Advanced Sort: Lets you sort reports in ascending or descending order based on up to four sorting criteria.
	Import from Fluke Cable Tester: Imports saved Autotest reports from a DSP-4000 or a memory card installed in a DSP-4100.
	Import from DSP Memory Card: Imports saved Autotest reports from a memory card installed in the memory card reader.
	Quick Plot: Lets you upload and view plots from the last Autotest run.
	Setup: Lets you transfer SETUP selections to or from the test tool.
	DSP Display: Lets you capture the current display shown on the test tool.
	Software Version: Lets you view the test tool's software and hardware version numbers.
	Software Update: Lets you update the test tool's software.

Viewing Your Project Data

Figure 3 describes the basic features of the CableManager project window.

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①	The command menus and toolbar give you access to CableManager commands.
②	The Autotest summary list shows the summary data for the reports in the project. Results from the selected reports are shown in the lower half of the display. A scroll bar appears at the right of this area if the list is longer than what is visible. To resize a column in the list, drag the border in the heading row left or right.
③	The row of tabs shows the tests run for the Autotest report selected in the summary list. Click on a tab to view the test results.
④	Test results for the selected tab are shown in this area. Where applicable, results from the main unit are shown on the left side and results from the remote are shown on the right side. For a DSP-4100 test tool, if STORE PLOT DATA was enabled when you ran the Autotest, you can click on **Plot** to see a plot of the test data.

Figure 2. The CableManager Project Window

Viewing Plots of DSP-4100 Test Results

If STORE PLOT DATA was enabled during an Autotest on a DSP-4100, the **Plot** function is available for the uploaded results.

To see a plot for all the cable pairs, select a frequency-dependent test in the lower half of the CableManager window; then click the **Plot** button.

To see a plot for one cable pair, double-click on the pair in the list to the left of the **Plot** button.

The plot includes a cursor readout that shows the measurement, frequency, limit, and margin for the crosshair cursor on the plot. You can use the cursor to read the values at any point on the plot as follows:

- To move the cursor, click on the plot, then slide the mouse from side to side or use the left and right arrow keys on the keyboard. Click again to freeze the cursor.

Note

The cursor readout does not show a limit or margin for frequencies that are beyond the test standard's specifications.

- To switch the cursor to a different pair, click on a cable pair listed near the lower right side of the plot, or use the up and down arrow keys on the keyboard. You can add or remove pairs from the plot by using the **Pairs** menu.

- To move the cursor to the worst margin or worst pair, use the **Find** menu.

Organizing and Editing Your Project

CableManager lets you sort the reports in your project and edit the header information.

Sorting Reports in Ascending or Descending Order

To sort the reports in ascending order by a report summary item, click on (**Quick Sort**), select the field you want to sort by; then click **OK**.

To sort in ascending or descending order, click on the summary header button for the field you want to sort by (**Site:** for example). Each time you click on the same button, the sorting order switches between ascending and descending order.

Sorting Reports by Multiple Items

Advanced Sort lets you sort reports by multiple items. For example, you can sort the reports in ascending alphabetical order by site name; then you can sort the reports for each site in descending order by cable identification.

1. Click on (**Advanced Sort**).

2. Select the first sorting item in the **First Field** box. Select to sort by that item in ascending or descending order.

    Selecting **None** as the first field puts the reports in the order they were in when imported from the test tool.

3. Select additional sorting items and ascending or descending order for each item.

4. Click on **OK**.

Editing the Header Information

CableManager lets you edit the header information for each of your reports. For example, if you accidentally entered the wrong cable identifications for some of your tests, you can correct the information before saving or printing the reports.

Note

You can modify the Cable ID for only one report at a time.

1. Select the report or reports in the report summary list.

   To select a block of reports, click on the first report in the block; then hold down the Shift key and click on the last block.

   To select multiple, nonconsecutive reports, hold down the Ctrl key and click on the reports.

2. Click on **Edit**; then select **Single-Report Modify** or **Multi-Report Modify**.

3. In the **Modify Autotest Report** box, enter the new header information; then click **OK**.

Rearranging, Adding, and Removing Headers

You can rearrange the report summary headers and choose which items are shown on printed summaries as follows:

1. From the **Options** menu choose **List Items**.

2. To add or remove items from printed summaries, check or uncheck the box under **Print?**.

3. Click on the item you want to move.

4. Click on **Move Item Up** or **Move Item Down** until the item is in the desired position.

5. Repeat steps 3 and 4 as necessary. Click **OK** when finished.

Changing the Numeric Formats in Your Project

To change the length units and the date, time, and number formats in your project, use the **Display** selection from the **Options** menu.

Adding Plots to Printed Reports (DSP-4100 only)

If a DSP-4100 test tool's STORE PLOT DATA setting was enabled during testing, you can add plots to printed reports.

To add plots to printed reports choose **Printing** from the **Options** menu; then select **Use Graphical Reports for DSP-4100 results**. Printed reports will show the test data in both tables and plots.

When **Use Graphical Reports for DSP-4100 results** is not selected, data is shown in tabular format only. To see what a graphical or tabular report will look like for a report selected in the summary list, choose **Print Preview** from the **File** menu on the main CableManager toolbar.

Figures 4 and 5 show examples of Autotest reports in tabular and graphical format.

```
Cable ID: 0001                          Test Summary: FAIL
The Big Old Cable Company               HEADROOM: 6.2 dB (NEXT @ Remote 36-45)
SITE: Bud's Garage                      Date / Time: 07/17/2000  01:18:17pm
OPERATOR: Fred1                         Test Standard: TIA Cat 5e Channel
Standards Version: 3.72                 Cable Type: UTP 100 Ohm Cat 5e
Software Version: 3.72                   FLUKE DSP-4100   S/N: 5251965 LIA012
NVP: 69.0%   FAULT ANOMALY THRESHOLD: 15%  FLUKE DSP-4100SR S/N: 3171963 LIA012
SHIELD TEST: N/A
```

Wire Map PASS		Result	RJ45 PIN:	1 2 3 4 5 6 7 8 S	
			RJ45 PIN:	1 2 3 4 5 6 7 8	

Pair	Length (ft)	Limit	Prop. Delay ns	Limit	Delay Skew ns	Limit	Resistance ohms	Limit	Impedance ohms	Limit	Anom. (ft)	Attenuation Result (dB)	Freq. MHz	Limit (dB)
12	76	328	112	555	3	50			109	80-120		5.5	100.0	24.0
36	75	328	111	555	2	50			107	80-120		5.6	100.0	24.0
45	76	328	112	555	3	50			108	80-120		5.5	100.0	24.0
78	74	328	109	555	0	50			109	80-120		5.2	100.0	24.0

	Main Results						Remote Results						
	Worst Margin			Worst Value			Worst Margin			Worst Value			
Pair	Result (dB)	Freq. MHz	Limit (dB)	Result (dB)	Freq. MHz	Limit (dB)	Result (dB)	Freq. MHz	Limit (dB)	Result (dB)	Freq. MHz	Limit (dB)	
RETURN LOSS FAIL													
12	14.5*F	28.4	15.5	14.5	28.4	15.5	13.7*F	28.2	15.5	13.7	28.2	15.5	
36	14.3*	42.6	13.7	13.5	57.4	12.5	14.0*	42.4	13.8	14.0	42.6	13.7	
45	14.5*	37.6	14.3	14.5	37.6	14.3	13.9*F	37.4	14.3	13.9	37.4	14.3	
78	16.1*	33.6	14.8	15.5	43.8	13.6	15.5*	33.6	14.8	15.3	38.4	14.2	
PSNEXT													
12	39.0	61.6	30.7	36.1	99.0	27.2	37.0	93.2	27.6	37.0	93.2	27.6	
36	39.2	61.2	30.8	37.7	99.0	27.2	37.1	72.6	29.4	35.5	97.4	27.3	
45	39.9	61.2	30.8	38.0	85.8	28.3	35.3	96.8	27.3	35.3	96.8	27.3	
78	38.9	72.2	29.5	38.6	93.2	27.6	37.6	72.2	29.5	37.2	100.0	27.1	
PSACR													
12	57.8	4.5	45.3	30.7	99.0	3.2	58.0	5.1	44.1	31.8	93.2	4.5	
36	58.0	5.0	44.3	32.2	99.0	3.2	58.7	4.5	45.3	30.1	97.4	3.6	
45	60.0	4.5	45.3	33.1	91.4	4.9	57.8	4.7	44.8	30.0	96.8	3.7	
78	56.7	8.3	39.1	33.6	93.2	4.5	65.8	2.4	51.2	32.0	100.0	3.0	
NEXT													
12-36	41.2	61.6	33.7	40.6	99.0	30.2	41.9	78.0	32.0	41.9	78.0	32.0	
12-45	62.7	4.6	52.6	41.8	94.0	30.5	40.0	92.8	30.6	40.0	92.8	30.6	
12-78	39.2	99.0	30.2	39.2	99.0	30.2	40.0	99.2	30.2	40.0	99.6	30.1	
36-45	41.5	70.8	32.6	40.5	90.8	30.8	36.5	97.0	30.3	36.5	97.0	30.3	
36-78	42.2	73.4	32.4	42.2	73.4	32.4	39.8	72.8	32.4	39.8	72.8	32.4	
45-78	40.6	86.2	31.2	40.6	86.2	31.2	39.6	85.8	31.3	39.6	86.0	31.2	
ACR													
12-36	60.2	4.7	47.6	35.1	99.0	6.3	62.9	4.9	47.2	37.0	98.2	6.4	
12-45	61.6	4.6	47.8	36.6	94.0	7.3	60.2	5.1	46.8	34.9	92.8	7.6	
12-78	58.3	10.0	39.9	34.1	99.0	6.3	59.7	10.1	39.8	34.8	99.6	6.1	
36-45	64.4	4.7	47.6	35.5	90.8	8.0	61.1	4.6	47.8	31.2	97.0	6.7	
36-78	60.4	7.2	43.4	37.8	73.4	12.1	56.1	9.4	40.6	35.5	72.8	12.2	
45-78	63.0	8.1	42.2	35.8	86.2	9.0	68.5	2.4	53.7	34.9	100.0	6.0	
ELFEXT													
12-36	38.3	86.0	18.7	38.0	100.0	17.3	38.3	86.0	18.7	38.0	91.4	18.2	
12-45	36.3	95.6	17.8	36.3	96.0	17.7	36.3	94.6	17.9	36.3	96.0	17.7	
12-78	53.4	26.4	29.0	43.3	93.2	18.0	53.3	26.4	29.0	43.1	93.2	18.0	
36-12	38.6	80.6	19.3	38.5	91.2	18.2	38.6	80.6	19.3	38.5	91.2	18.2	
36-45	50.4	17.0	32.8	36.9	100.0	17.3	50.4	17.0	32.8	36.8	100.0	17.3	
36-78	52.0	17.4	32.6	45.7	61.8	21.5	52.0	17.4	32.6	45.4	62.2	21.5	
45-12	35.8	92.4	18.1	35.8	93.6	17.9	35.8	92.4	18.1	35.8	93.6	17.9	
45-36	48.4	21.9	30.6	35.6	99.8	17.4	48.3	21.9	30.6	35.7	99.8	17.4	
45-78	48.3	20.7	31.1	40.1	98.8	17.5	48.5	20.0	31.4	39.8	98.8	17.5	
78-12	53.0	26.1	29.1	44.8	99.0	17.4	53.1	26.1	29.1	45.1	99.0	17.4	
78-36	49.5	26.1	29.1	40.3	100.0	17.3	49.6	26.1	29.1	40.7	100.0	17.3	
78-45	48.4	20.2	31.3	40.4	92.0	18.1	48.4	20.2	31.3	40.6	92.0	18.1	
PSELFEXT													
12	34.0	91.6	15.2	34.0	92.0	15.1	34.0	91.6	15.2	33.9	96.4	14.7	
36	32.8	100.0	14.4	32.8	100.0	14.4	47.9	17.4	29.6	34.5	100.0	14.4	
45	44.8	21.5	27.8	33.3	100.0	14.4	42.8	27.0	25.8	32.4	94.2	14.9	
78	44.1	26.7	25.9	38.5	98.0	14.6	44.5	26.1	26.1	37.4	97.4	14.6	

```
* Measurement is within the accuracy limits of the instrument.
```

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Figure 3. Autotest Report in Tabular Format

FLUKE DSP-4100

Operator: Fred1
Standards Version: 3.72 Software Version: 3.72
NVP: 69.0% Fault Anomaly Threshold: 15%
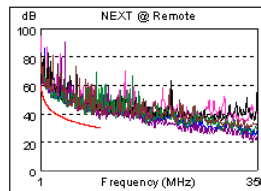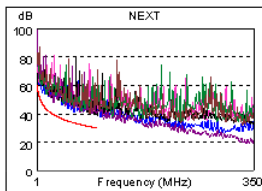Shield Test: N/A

Test Summary: FAIL
Cable ID: 0001
Headroom: 6.2 dB (NEXT @ Remote 36-45)
Site: Bud's Garage
Date / Time: 07/17/2000 01:18:17pm
Test Standard: TIA Cat 5e Channel
Cable Type: UTP 100 Ohm Cat 5e
FLUKE DSP-4100 S/N: 5251965 LIA012
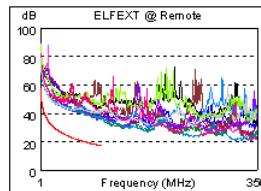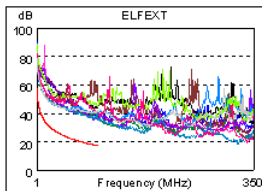FLUKE DSP-4100SR S/N: 3171963 LIA012

Wire Map	1 2 3 4 5 6 7 8 S
PASS	| | | | | | | | |
	1 2 3 4 5 6 7 8

Length (ft), Limit 328 [Pair 12]	76
Prop. Delay (ns), Limit 555 [Pair 12]	112
Delay Skew (ns), Limit 50 [Pair 12]	3
Resistance (ohms)	
Impedance (ohms), Limit 80-120 [Pair 12]	109
Anomaly (ft)	
Attenuation (dB) [Pair 36]	5.6
Frequency (MHz)	100.0
Limit (dB)	24.0
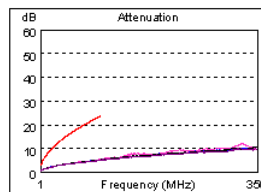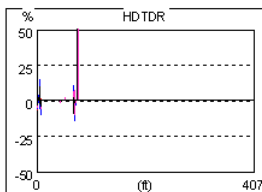
	Worst Margin		Worst Value	
PASS	MAIN	SR	MAIN	SR
Worst Pair	12-36	36-45	12-78	36-45
NEXT (dB)	41.2	36.5	39.2	36.5
Freq. (MHz)	61.6	97.0	99.0	97.0
Limit (dB)	33.7	30.3	30.2	30.3
Worst Pair	12	36	12	45
PSNEXT (dB)	39.0	37.1	36.1	35.3
Freq. (MHz)	61.6	72.6	99.0	96.8
Limit (dB)	30.7	29.4	27.2	27.3

PASS	MAIN	SR	MAIN	SR
Worst Pair	78-45	45-78	45-36	45-36
ELFEXT (dB)	48.4	48.5	35.6	35.7
Freq. (MHz)	20.2	20.0	99.8	99.8
Limit (dB)	31.3	31.4	17.4	17.4
Worst Pair	45	45	36	45
PSELFEXT (dB)	44.8	42.8	32.8	32.4
Freq. (MHz)	21.5	27.0	100.0	94.2
Limit (dB)	27.8	25.8	14.4	14.9

PASS	MAIN	SR	MAIN	SR
Worst Pair	12-36	36-45	12-78	36-45
ACR (dB)	60.2	61.1	34.1	31.2
Freq. (MHz)	4.7	4.6	99.0	97.0
Limit (dB)	47.6	47.8	6.3	6.7
Worst Pair	12	45	12	45
PSACR (dB)	57.8	57.8	30.7	30.0
Freq. (MHz)	4.5	4.7	99.0	96.8
Limit (dB)	45.3	44.8	3.2	3.7
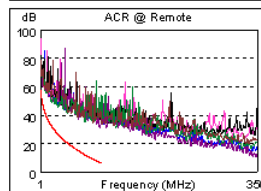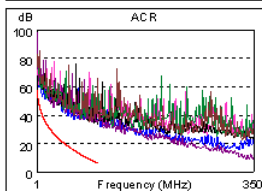
FAIL	MAIN	SR	MAIN	SR
Worst Pair	12	12	36	12
RL (dB)	14.5*F	13.7*F	13.5	13.7
Freq. (MHz)	28.4	28.2	57.4	28.2
Limit (dB)	15.5	15.5	12.5	15.5

* Measurement is within the accuracy limits of the instrument.

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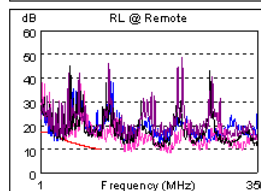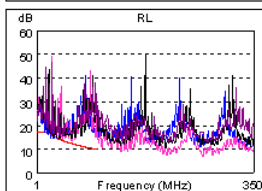
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Figure 4. Autotest Report in Graphical Format (DSP-4100 only)

Other Options for Printed Reports

Use the **Printing** selection from the **Options** menu to make the following selections for printed reports or summaries:

- **Report** and **Summary Font Size**: Choose a font size for printed reports and summaries.

- **Summary Report Items:** You can add to your printed summaries the total length of cable represented in the printed summaries, the number of reports printed, and the number of printed reports with passing and failing results.

  The **Header Info** selection lets you add a title to the summary printout.

- **Standard** or **Custom Bitmap** buttons **(DSP-4100)**: You can replace the default image shown on printed Autotest reports with your own bitmap (.bmp) image. For example, you can add your company's logo to printed reports. To use a custom bitmap on reports, do the following:

Note

To avoid distortion of a custom bitmap used on graphical reports, the dimensions of the bitmap image should be 450 x 95 pixels.

1. Select **Use Graphical Reports for DSP-4100 results**; then click the **Custom Bitmap** button.

2. Locate and select your bitmap; then click on **Open**.

3. In the **Printing Options** box, click on **OK**.

Previewing and Printing Reports and Summaries

CableManager offers the following options when printing reports and summaries:

- To see what the printed reports or summaries will look like, select the desired report or reports; then click ▣ (**Print Preview**).

- To print the selected Autotest reports without changing any print options, click ▤ (**Fast Print**).

- To change the printer properties, the range of reports printed, and the number of copies printed, use the **Print…** selection from the **File** menu.

- To change the printer properties, the paper size and source, and the page orientation, use the **Print Setup** selection from the **File** menu.

- To always print summaries in addition to the full reports, choose **Printing** from the **Options** menu; then select **Automatic Summary Print**.

Saving a Project on a PC

1. To save a CableManager project on a PC click on ▤ (**Save**).

2. Enter a file name and directory for your project. CableManager's ".fcm" extension is automatically added to the file name.

3. When you have finished entering a file name and directory, click on **Save**.

Saving Project Data in Other Formats

You can save Autotest report or summary data as a comma-separated value (.csv) file or a text (.txt) file for use in other applications. The .csv file can be opened in a spreadsheet application. The .txt file can be opened in a word processor or spreadsheet application.

To save your project data as a .csv or .txt file, use the **Export to File** selection from the **File** menu.

Editing a Test Tool's SETUP Settings

You can use CableManager to save some of the test tool's SETUP settings on a PC, edit the settings on the PC, and download the settings to the test tool. This feature is useful for setting up multiple test tools or entering multiple site or operator names into a test tool.

Note

When you upgrade the test tool's software, CableManager lets you save the test tool's SETUP settings as part of the upgrade procedure.

Uploading SETUP Settings from the Test Tool

1. On the main CableManager toolbar, click 📳 (**DSP Setup**).

2. In the **Setup** window click **From DSP**. The editable settings are uploaded from the test tool.

Editing, Saving, and Downloading SETUP Settings

1. If a setup file is already open, go to step 4.

2. On the main CableManager toolbar, click 📳 (**DSP Setup**).

3. To edit an existing setup file, click 📂(**Open**). Select the desired setup file (.set extension); then click **Open**.

   To create a new setup file, click 🗋 (New).

4. To edit a setup item, click on the + box; then double-click on the selection below the item, or choose **Properties** from the **Items** menu.

5. Enter a new selection in the **Set Item** dialog box; then click **OK**.

6. To save the settings on the PC, click 💾 (**Save**). Choose a directory and file name for the setup file; then click **Save**.

   To download the settings to the test tool, click **To DSP**.

17

Getting Software Updates from Fluke Networks

The Fluke Networks web site at **www.flukenetworks.com** offers new versions of software and test standards for your test tool and upgrades to CableManager software. You can also get software updates on diskettes or CD from Fluke Networks.

If you need help downloading software, call the Fluke Networks Applications Help Line at 1-800-283-5853. Or, send email to **fluke-assist@fluke.com**.

Installing Software Upgrades

Use the following procedure to install new software in your test tool and remote:

Cautions

Downloading new software overwrites the existing test software in your test tool. You will not have access to the old version of the software.

Downloading new software erases all data stored in the test tool's memory. To save stored Autotest results or SETUP settings, use CableManager to upload the data to a PC.

To prevent an unexpected loss of battery power to the test tool or remote, connect the battery charger to the test tool and the remote during the downloading process.

1. Install the newest version of the CableManager utility on your PC, as follows:

   If you received the upgrade on diskettes or CD, install CableManager by running Setup.exe from disk number 1 of the software upgrade disks or the "disk1" folder on the upgrade CD. Follow the directions given by the SETUP program.

   If you downloaded the upgrade files from the web, which runs a self-extracting setup program, the new version of CableManager is already installed on your PC.

   The utility setup program installs CableManager and copies the software upgrade files to one of the following folders:

   - If you don't specify otherwise, files are placed in the default folder C:\Cblmgr.

   - Or, the files are placed in the directory you specified in the "Select Destination" window during the CableManager installation.

2. Connect the instrument to the PC using a 9-pin to 9-pin or 9-pin to 25-pin PC interface cable.

3. Start CableManager on the PC.

4. Click on (**Software Update**).

5. When prompted for the location of the software update source file, enter the path to the DSPx_xx.bin file on your C drive; then click on **Open**.

6. When the test tool software is installed, connect the PC interface cable to your remote unit and turn the remote on. In the CableManager window, click on (**Software Update**).

7. Select the file SRx_xx.bin as the software update source file for the remote; then click on **Open** to install the new software in your remote.